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Date: NOVEMBER 1-29, 1994

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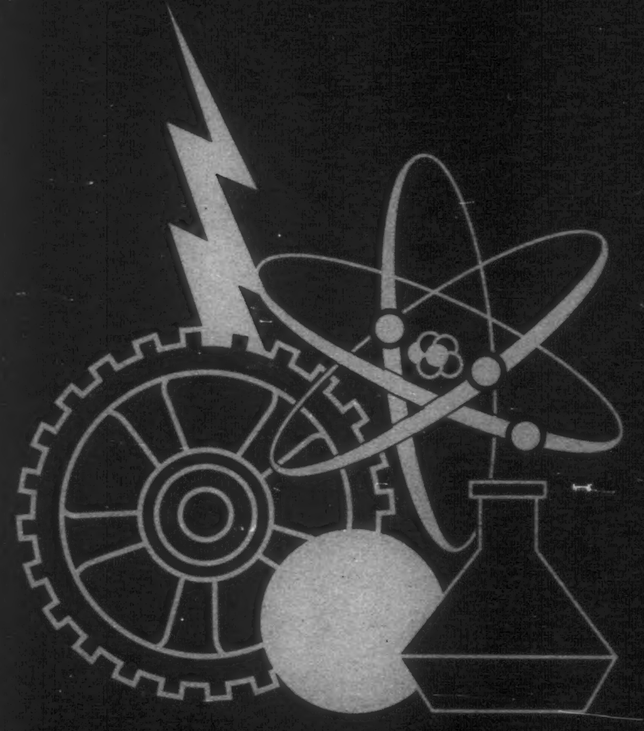
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Office

Vol. 1168 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
November 1, 1994



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

November 1, 1994 Volume 1168 Number 1

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Patents Granted			
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for a Decision Without a Hearing as of September 30, 1994.

Chemical Discipline -	September 4, 1992*
Mechanical Discipline -	February 23, 1994*
Electrical Discipline -	September 1, 1993

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of September 30, 1994.

Chemical Discipline -	October 2, 1992*
Mechanical Discipline -	December 1, 1992*
Electrical Discipline -	July 22, 1992

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of September, 1994.

Affirmed	183
Affirmed-in-Part	42
Reversed	127
Total Decided	352

* These cases were just recently received from the examining group.

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 29, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,060,313 through 5,062,155
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 27, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,701,962 through 4,703,520
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 25, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,411,023 through 4,412,356
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 24, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,609	07/004,384	02/23/88
(4,606,836)	(06/693,664)	(08/19/86)
Re. 32,628	06/934,459	03/22/88
(4,607,069)	(06/751,389)	(08/19/86)
Re. 34,492	07/807,792	12/28/93
(4,950,059)	(07/256,019)	(08/21/90)
4,345,340	06/261,392	08/24/82
4,345,405	06/248,633	08/24/82
4,345,419	06/249,610	08/24/82
4,345,440	06/230,248	08/24/82
4,345,479	06/224,783	08/24/82
4,345,503	06/274,661	08/24/82
4,345,518	06/240,717	08/24/82
4,345,547	06/237,571	08/24/82
4,345,608	06/257,178	08/24/82
4,345,621	06/230,209	08/24/82
4,345,642	06/220,074	08/24/82
4,345,652	06/219,606	08/24/82
4,345,670	06/222,767	08/24/82
4,345,704	06/298,641	08/24/82
4,345,705	06/241,099	08/24/82
4,345,731	06/264,203	08/24/82
4,345,736	06/226,689	08/24/82
4,345,744	06/274,375	08/24/82
4,345,746	06/261,509	08/24/82
4,345,833	06/237,327	08/24/82

Patent Number	Serial Number	Issue Date
4,345,898	06/294,232	08/24/82
4,345,919	06/225,837	08/24/82
4,345,927	06/221,740	08/24/82
4,345,935	06/308,621	08/24/82
4,345,936	06/308,728	08/24/82
4,345,944	06/244,405	08/24/82
4,345,948	06/282,353	08/24/82
4,345,955	06/307,657	08/24/82
4,345,962	06/277,327	08/24/82
4,345,969	06/246,783	08/24/82
4,345,981	06/237,470	08/24/82
4,345,983	06/265,798	08/24/82
4,345,985	06/219,841	08/24/82
4,345,990	06/212,725	08/24/82
4,346,001	06/273,209	08/24/82
4,346,008	06/216,447	08/24/82
4,346,016	06/254,822	08/24/82
4,346,020	06/220,427	08/24/82
4,346,023	06/244,629	08/24/82
4,346,038	06/306,106	08/24/82
4,346,040	06/285,488	08/24/82
4,346,041	06/219,198	08/24/82
4,346,043	06/235,812	08/24/82
4,346,045	06/239,899	08/24/82
4,346,068	06/222,671	08/24/82
4,346,069	06/228,462	08/24/82
4,346,075	06/252,062	08/24/82
4,346,091	06/311,846	08/24/82
4,346,092	06/311,849	08/24/82
4,346,099	06/304,531	08/24/82
4,346,104	06/217,365	08/24/82
4,346,105	06/217,366	08/24/82
4,346,106	06/277,378	08/24/82
4,346,108	06/275,871	08/24/82
4,346,110	06/268,554	08/24/82
4,346,117	06/280,192	08/24/82
4,346,122	06/220,590	08/24/82
4,346,126	06/262,686	08/24/82
4,346,128	06/265,099	08/24/82
4,346,140	06/249,225	08/24/82
4,346,154	06/276,330	08/24/82
4,346,186	06/305,455	08/24/82
4,346,193	06/260,150	08/24/82
4,346,195	06/301,935	08/24/82
4,346,197	06/219,063	08/24/82
4,346,198	06/243,279	08/24/82
4,346,200	06/220,939	08/24/82
4,346,201	06/229,160	08/24/82
4,346,207	06/288,856	08/24/82
4,346,233	06/249,536	08/24/82
4,346,240	06/307,031	08/24/82
4,346,241	06/305,884	08/24/82
4,346,247	06/286,492	08/24/82
4,346,268	06/229,887	08/24/82
4,346,269	06/242,597	08/24/82
4,346,277	06/256,442	08/24/82
4,346,294	06/280,841	08/24/82
4,346,299	06/264,566	08/24/82
4,346,319	06/250,837	08/24/82
4,346,324	06/263,432	08/24/82
4,346,334	06/284,803	08/24/82
4,346,341	06/239,696	08/24/82
4,346,356	06/233,234	08/24/82
4,346,359	06/226,718	08/24/82
4,346,374	06/222,304	08/24/82
4,346,386	06/275,189	08/24/82
4,606,079	06/787,993	08/19/86
4,606,081	06/779,637	08/19/86
4,606,084	06/771,767	08/19/86
4,606,085	06/716,538	08/19/86
4,606,087	06/683,067	08/19/86
4,606,090	06/618,878	08/19/86
4,606,093	06/713,311	08/19/86
4,606,094	06/703,514	08/19/86
4,606,096	06/727,753	08/19/86
4,606,097	06/746,357	08/19/86
4,606,098	06/654,034	08/19/86
4,606,104	06/659,624	08/19/86
4,606,105	06/671,774	08/19/86
4,606,106	06/662,520	08/19/86
4,606,108	06/803,326	08/19/86
4,606,113	06/715,545	08/19/86
4,606,115	06/733,550	08/19/86
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4,606,129	06/788,966	08/19/86
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4,606,140	06/574,746	08/19/86
4,606,141	06/708,234	08/19/86
4,606,143	06/647,526	08/19/86
4,606,145	06/654,938	08/19/86
4,606,147	06/622,103	08/19/86
4,606,149	06/627,642	08/19/86
4,606,150	06/783,406	08/19/86
4,606,151	06/673,864	08/19/86
4,606,153	06/624,763	08/19/86
4,606,158	06/649,317	08/19/86
4,606,161	06/732,586	08/19/86
4,606,165	06/760,747	08/19/86
4,606,168	06/676,481	08/19/86
4,606,169	06/538,824	08/19/86
4,606,172	06/728,394	08/19/86
4,606,179	06/732,320	08/19/86
4,606,184	06/692,113	08/19/86
4,606,186	06/662,186	08/19/86
4,606,189	06/594,627	08/19/86
4,606,192	06/765,822	08/19/86
4,606,193	06/567,615	08/19/86
4,606,197	06/711,209	08/19/86
4,606,199	06/678,643	08/19/86
4,606,201	06/789,004	08/19/86
4,606,203	06/606,871	08/19/86
4,606,204	06/565,403	08/19/86
4,606,215	06/753,032	08/19/86
4,606,217	06/681,761	08/19/86
4,606,219	06/625,710	08/19/86
4,606,222	06/519,553	08/19/86
4,606,227	06/703,787	08/19/86
4,606,229	06/718,745	08/19/86
4,606,233	06/636,092	08/19/86
4,606,235	06/537,202	08/19/86
4,606,245	06/717,016	08/19/86
4,606,250	06/758,715	08/19/86
4,606,251	06/761,209	08/19/86
4,606,252	06/496,512	08/19/86
4,606,255	06/655,326	08/19/86
4,606,257	06/602,698	08/19/86
4,606,258	06/670,312	08/19/86
4,606,259	06/762,929	08/19/86
4,606,267	06/670,778	08/19/86
4,606,269	06/711,988	08/19/86
4,606,273	06/674,004	08/19/86
4,606,277	06/676,636	08/19/86
4,606,280	06/764,563	08/19/86
4,606,284	06/475,392	08/19/86
4,606,289	06/445,032	08/19/86
4,606,290	06/722,730	08/19/86
4,606,292	06/767,526	08/19/86
4,606,293	06/776,058	08/19/86
4,606,299	06/680,672	08/19/86
4,606,300	06/732,700	08/19/86
4,606,302	06/685,260	08/19/86
4,606,303	06/623,927	08/19/86
4,606,304	06/322,724	08/19/86
4,606,316	06/705,399	08/19/86
4,606,322	06/634,369	08/19/86
4,606,323	06/728,991	08/19/86
4,606,324	06/687,054	08/19/86
4,606,331	06/772,039	08/19/86
4.606,332	06/649,220	08/19/86

Patent Number	Serial Number	Issue Date
4,606,333	06/662,333	08/19/86
4,606,334	06/649,550	08/19/86
4,606,335	06/642,366	08/19/86
4,606,337	06/486,580	08/19/86
4,606,339	06/691,446	08/19/86
4,606,342	06/702,119	08/19/86
4,606,355	06/702,874	08/19/86
4,606,359	06/272,341	08/19/86
4,606,367	06/719,690	08/19/86
4,606,369	06/750,798	08/19/86
4,606,371	06/743,724	08/19/86
4,606,374	06/482,218	08/19/86
4,606,377	06/666,472	08/19/86
4,606,380	06/741,037	08/19/86
4,606,385	06/675,691	08/19/86
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4,606,404	06/658,843	08/19/86
4,606,408	06/703,623	08/19/86
4,606,409	06/743,045	08/19/86
4,606,414	06/354,753	08/19/86
4,606,417	06/720,980	08/19/86
4,606,418	06/759,459	08/19/86
4,606,423	06/657,408	08/19/86
4,606,426	06/667,534	08/19/86
4,606,429	06/601,433	08/19/86
4,606,431	06/591,200	08/19/86
4,606,433	06/665,727	08/19/86
4,606,434	06/649,060	08/19/86
4,606,437	06/617,514	08/19/86
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4,949,916	07/368,359	08/21/90
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4,949,927	07/422,595	08/21/90
4,949,932	07/320,715	08/21/90
4,949,933	07/342,339	08/21/90
4,949,937	07/462,227	08/21/90
4,949,944	07/356,499	08/21/90
4,949,945	07/308,267	08/21/90
4,949,947	07/114,937	08/21/90
4,949,956	07/398,378	08/21/90
4,949,959	07/419,509	08/21/90
4,949,960	07/338,186	08/21/90
4,949,961	07/441,619	08/21/90
4,949,964	07/338,185	08/21/90
4,949,966	07/174,042	08/21/90
4,949,972	07/239,221	08/21/90
4,949,977	07/308,632	08/21/90
4,949,979	07/317,752	08/21/90

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4,949,980	07/449,558	08/21/90
4,949,987	07/178,991	08/21/90
4,949,988	07/141,846	08/21/90
4,949,994	07/389,459	08/21/90
4,949,998	07/246,094	08/21/90
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4,950,005	07/412,644	08/21/90
4,950,006	07/309,604	08/21/90
4,950,010	07/367,626	08/21/90
4,950,014	07/339,580	08/21/90
4,950,016	07/342,340	08/21/90
4,950,018	07/456,954	08/21/90
4,950,023	07/309,487	08/21/90
4,950,028	07/272,439	08/21/90
4,950,032	07/384,371	08/21/90
4,950,033	07/309,879	08/21/90
4,950,037	07/455,803	08/21/90
4,950,039	07/402,624	08/21/90
4,950,040	07/337,354	08/21/90
4,950,042	07/232,905	08/21/90
4,950,047	07/361,385	08/21/90
4,950,053	07/000,339	08/21/90
4,950,063	07/317,161	08/21/90
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4,950,508	06/882,911	08/21/90
4,950,509	07/381,028	08/21/90
4,950,517	07/227,518	08/21/90
4,950,519	07/341,797	08/21/90
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4,950,657	07/420,083	08/21/90
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4,950,664	07/245,031	08/21/90
4,950,666	07/331,563	08/21/90
4,950,667	07/394,565	08/21/90
4,950,676	07/317,313	08/21/90
4,950,677	07/222,593	08/21/90
4,950,679	07/232,008	08/21/90
4,950,681	07/239,750	08/21/90
4,950,687	07/379,787	08/21/90
4,950,689	07/032,840	08/21/90
4,950,691	07/297,785	08/21/90
4,950,706	07/354,846	08/21/90
4,950,710	07/153,763	08/21/90
4,950,722	07/294,927	08/21/90
4,950,729	06/924,034	08/21/90
4,950,730	07/360,280	08/21/90
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4,950,737	07/201,879	08/21/90
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4,950,747	07/173,946	08/21/90
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4,950,752	07/086,961	08/21/90
4,950,759	07/374,736	08/21/90
4,950,767	07/265,191	08/21/90

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4,950,783	06/922,598	08/21/90
4,950,787	07/236,080	08/21/90
4,950,808	07/341,717	08/21/90
4,950,809	07/281,408	08/21/90
4,950,810	07/330,062	08/21/90
4,950,826	06/899,452	08/21/90
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4,950,829	07/229,199	08/21/90
4,950,830	07/274,499	08/21/90
4,950,840	06/776,758	08/21/90
4,950,842	07/354,777	08/21/90
4,950,846	07/352,436	08/21/90
4,950,851	07/232,223	08/21/90
4,950,854	07/429,702	08/21/90
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4,950,864	07/311,781	08/21/90
4,950,865	07/452,921	08/21/90
4,950,868	07/319,172	08/21/90
4,950,871	07/072,976	08/21/90
4,950,872	07/394,752	08/21/90
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4,950,912	07/309,335	08/21/90
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4,950,934	07/393,155	08/21/90
4,950,937	07/406,933	08/21/90
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4,950,956	07/096,862	08/21/90
4,950,957	07/267,150	08/21/90
4,950,967	07/337,612	08/21/90
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4,950,971	07/221,677	08/21/90
4,950,976	07/414,862	08/21/90
4,950,980	07/225,869	08/21/90
4,950,986	07/212,263	08/21/90
4,950,995	07/332,255	08/21/90
4,950,997	07/386,437	08/21/90
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4,951,008	07/163,841	08/21/90
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4,951,049	07/327,071	08/21/90
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4,951,062	07/282,485	08/21/90
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4,951,139	07/430,748	08/21/90
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4,951,151	07/225,349	08/21/90
4,951,152	07/095,230	08/21/90
4,951,155	07/124,761	08/21/90
4,951,167	07/196,222	08/21/90
4,951,169	07/310,225	08/21/90
4,951,181	07/417,787	08/21/90
4,951,188	07/314,576	08/21/90
4,951,202	07/358,486	08/21/90
4,951,213	07/302,632	08/21/90
4,951,215	07/312,491	08/21/90
4,951,217	07/229,564	08/21/90
4,951,225	07/272,135	08/21/90
4,951,235	07/340,453	08/21/90
4,951,242	07/402,970	08/21/90
4,951,243	07/420,357	08/21/90
4,951,250	07/272,973	08/21/90
4,951,265	07/350,281	08/21/90
4,951,268	07/349,760	08/21/90
4,951,270	07/368,801	08/21/90
4,951,286	07/102,039	08/21/90
4,951,300	07/332,528	08/21/90
4,951,301	07/056,915	08/21/90
4,951,311	07/377,127	08/21/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,261,646, Re. S.N. 08/291,415, Aug. 16, 1994, Cl. 285/137.1, WINCH HAVING AUTOMATIC BRAKE, Thomas M. Telford, Owner of Record: *Warn Industries Inc., Milwaukie, Ill.*, Attorney or Agent: Robert L. Harrington, Ex. Gp.: 3501

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

5,155,460, Reexam. No. 90/003,432, May 13, 1994, Cl. 335/205, SWITCH HOUSING WITH MAGNETIC ROLLER PLUNGER, Charles M. Huckins, et. al., Owner of Record: *Sentrol, Inc., Portland, Oreg.*, Attorney or Agent: J. Scott Denko, Stoel, Rives, Boley, Jones & Grey, Portland, Oreg., Ex. Gp.: 2103, Requester: Kobishi America, Inc., Carson, Calif.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED AUGUST 29, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
41,511	70/041,511	11/24/1903
94,311	71/071,266	11/25/1913
94,313	71/071,268	11/25/1913
308,039	71/332,546	11/21/1933
308,051	71/338,267	11/21/1933
308,055	71/338,674	11/21/1933
308,181	71/340,400	11/21/1933
308,195	71/339,563	11/21/1933
582,596	71/546,227	11/24/1953
582,598	71/551,287	11/24/1953
582,602	71/569,751	11/24/1953
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582,613	71/583,692	11/24/1953
582,614	71/584,061	11/24/1953
582,618	71/589,686	11/24/1953
582,623	71/598,771	11/24/1953
582,632	71/607,275	11/24/1953
582,640	71/609,774	11/24/1953
582,643	71/610,040	11/24/1953
582,651	71/613,239	11/24/1953
582,652	71/613,414	11/24/1953
582,653	71/613,860	11/24/1953
582,654	71/614,332	11/24/1953
582,665	71/617,336	11/24/1953
582,677	71/620,803	11/24/1953
582,679	71/621,266	11/24/1953
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582,693	71/624,576	11/24/1953
582,703	71/625,740	11/24/1953
582,706	71/625,883	11/24/1953
582,715	71/627,498	11/24/1953
582,719	71/627,951	11/24/1953
582,721	71/628,311	11/24/1953
582,727	71/629,827	11/24/1953
582,729	71/629,634	11/24/1953
582,730	71/629,633	11/24/1953
582,731	71/629,472	11/24/1953
582,734	71/629,345	11/24/1953
582,739	71/628,658	11/24/1953
582,747	71/630,797	11/24/1953
582,763	71/631,823	11/24/1953
582,768	71/632,451	11/24/1953
582,769	71/632,576	11/24/1953
582,771	71/632,707	11/24/1953
582,772	71/632,801	11/24/1953
582,778	71/633,880	11/24/1953
582,782	71/634,344	11/24/1953
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582,801	71/635,228	11/24/1953
582,821	71/639,758	11/24/1953
582,822	71/639,789	11/24/1953
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582,832	71/640,398	11/24/1953
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973,146	72/361,531	11/20/1973
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973,151	72/421,569	11/20/1973
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973,191	72/402,005	11/20/1973
973,196	72/448,112	11/20/1973
973,198	72/418,759	11/20/1973
973,199	72/439,468	11/20/1973
973,201	72/404,390	11/20/1973
973,202	72/404,481	11/20/1973
973,204	72/415,821	11/20/1973
973,206	72/417,687	11/20/1973
973,207	72/418,227	11/20/1973
973,209	72/419,560	11/20/1973
973,211	72/421,082	11/20/1973
973,212	72/421,818	11/20/1973
973,213	72/423,364	11/20/1973
973,216	72/425,173	11/20/1973
973,225	72/438,103	11/20/1973
973,227	72/433,300	11/20/1973
973,229	72/436,829	11/20/1973
973,237	72/420,403	11/20/1973
973,243	72/378,059	11/20/1973
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973,247	72/365,123	11/20/1973
973,252	72/432,566	11/20/1973
973,253	72/433,996	11/20/1973
973,254	72/436,029	11/20/1973
973,256	72/444,672	11/20/1973
973,258	72/372,549	11/20/1973
973,261	72/405,814	11/20/1973
973,262	72/410,830	11/20/1973
973,263	72/419,971	11/20/1973
973,266	72/433,355	11/20/1973
973,270	72/450,187	11/20/1973
973,272	72/433,403	11/20/1973
973,288	72/347,779	11/20/1973
973,289	72/393,605	11/20/1973
973,296	72/423,917	11/20/1973
973,307	72/325,930	11/20/1973
973,309	72/373,061	11/20/1973
973,310	72/378,639	11/20/1973
973,311	72/389,290	11/20/1973
973,313	72/398,187	11/20/1973
973,319	72/411,945	11/20/1973
973,323	72/416,436	11/20/1973
973,324	72/416,852	11/20/1973
973,325	72/417,211	11/20/1973
973,326	72/419,235	11/20/1973
973,327	72/422,492	11/20/1973
973,329	72/423,208	11/20/1973
973,332	72/425,420	11/20/1973
973,333	72/426,163	11/20/1973
973,336	72/427,843	11/20/1973
973,339	72/432,701	11/20/1973
973,341	72/434,203	11/20/1973
973,342	72/435,470	11/20/1973
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973,360	72/411,629	11/20/1973

Reg. Number	Serial Number	Reg. Date
973,361	72/411,676	11/20/1973
973,362	72/414,160	11/20/1973
973,363	72/415,050	11/20/1973
973,364	72/415,743	11/20/1973
973,365	72/415,752	11/20/1973
973,369	72/418,826	11/20/1973
973,370	72/420,304	11/20/1973
973,377	72/437,925	11/20/1973
973,378	72/438,651	11/20/1973
973,386	72/439,395	11/20/1973
973,387	72/411,126	11/20/1973
973,388	72/439,672	11/20/1973
973,389	72/439,952	11/20/1973
973,392	72/436,770	11/20/1973
973,399	72/421,300	11/20/1973
973,400	72/421,301	11/20/1973
973,401	72/421,998	11/20/1973
973,402	72/422,266	11/20/1973
973,408	72/418,120	11/20/1973
973,410	72/436,847	11/20/1973
973,411	72/388,262	11/20/1973
973,412	72/438,976	11/20/1973
973,419	72/429,727	11/20/1973
973,422	72/449,450	11/20/1973
973,433	72/432,661	11/20/1973
973,441	72/443,103	11/20/1973
973,443	72/443,983	11/20/1973
973,444	72/443,988	11/20/1973
973,445	72/390,871	11/20/1973
973,448	72/417,591	11/20/1973
973,451	72/422,032	11/20/1973
973,454	72/424,807	11/20/1973
973,460	72/432,090	11/20/1973
973,464	72/435,486	11/20/1973
973,465	72/435,678	11/20/1973
973,468	72/437,276	11/20/1973
973,469	72/437,467	11/20/1973
973,472	72/439,566	11/20/1973
973,473	72/440,060	11/20/1973
973,479	72/442,326	11/20/1973
973,485	72/439,544	11/20/1973
973,488	72/441,314	11/20/1973
973,494	72/433,498	11/20/1973
973,495	72/436,091	11/20/1973
973,497	72/434,726	11/20/1973
973,499	72/445,056	11/20/1973
973,501	72/389,891	11/20/1973
973,503	72/411,300	11/20/1973
973,509	72/420,241	11/20/1973
973,516	72/424,868	11/20/1973
973,517	72/425,505	11/20/1973
973,520	72/433,377	11/20/1973
973,523	72/440,673	11/20/1973
973,526	72/442,383	11/20/1973
973,529	72/380,358	11/20/1973
973,531	72/451,617	11/20/1973
973,538	72/452,755	11/20/1973
973,540	72/453,408	11/20/1973
973,543	72/454,340	11/20/1973
973,549	72/454,811	11/20/1973
973,550	72/454,891	11/20/1973
973,556	72/442,271	11/20/1973
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973,562	72/418,569	11/20/1973
973,564	72/429,075	11/20/1973
973,575	72/442,006	11/20/1973
973,578	72/451,809	11/20/1973
973,579	72/451,811	11/20/1973
973,580	72/451,812	11/20/1973
973,581	72/451,813	11/20/1973
973,582	72/328,620	11/20/1973
973,583	72/412,149	11/20/1973
973,584	72/414,289	11/20/1973
973,586	72/431,077	11/20/1973
973,589	72/443,935	11/20/1973
973,594	72/400,252	11/20/1973
973,597	72/406,644	11/20/1973
973,599	72/417,141	11/20/1973
973,603	72/424,565	11/20/1973
973,605	72/430,467	11/20/1973
973,608	72/434,645	11/20/1973
973,609	72/435,601	11/20/1973
973,611	72/441,699	11/20/1973
973,617	72/405,046	11/20/1973
973,618	72/408,806	11/20/1973
973,619	72/414,605	11/20/1973
973,620	72/417,139	11/20/1973
973,626	72/432,890	11/20/1973
973,628	72/435,217	11/20/1973
973,631	72/439,575	11/20/1973
973,632	72/439,992	11/20/1973
973,635	72/441,047	11/20/1973
973,637	72/402,359	11/20/1973
973,640	72/443,292	11/20/1973
973,644	72/430,558	11/20/1973
973,645	72/423,801	11/20/1973
973,646	72/433,983	11/20/1973
973,647	72/439,944	11/20/1973
973,656	72/430,124	11/20/1973
973,661	72/421,872	11/20/1973
973,662	72/431,967	11/20/1973
973,664	72/426,852	11/20/1973

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Prestige Securities, Inc. Beaverton, Oreg., Reg. No. 1,579,349 for the mark CELLUGUARD, Canc. No. 21,905.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Volume Independent Purchasers Incorporated, Sherman Oaks, Calif., Reg. No. 1,238,723 for the mark VIP AND DESIGN, Canc. No. 21,748.

JEAN BROWN
Administrator,
Trademark Trial and
Appeal Board,
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Notice of Examination For Registration
Wednesday, May 3, 1995

Pursuant to the provisions of 37 CFR §§ 10.5, 10.6 and 10.7, an examination for persons seeking registration before the U.S. Patent and Trademark Office as patent attorneys and agents will be held on **Wednesday, May 3, 1995.** The deadline for filing applications along with the **$300.00** examination fee and *all* necessary showings required by 37 CFR § 10.7(a) and (b) is **January 31, 1995.**

With the exception of those persons who actively served four years or more in the patent examining corps of the U.S. Patent and Trademark Office for whom the examination may be waived, all persons who wish to become recognized to practice before the U.S. Patent and Trademark Office in patent cases must, pursuant to the above noted rules, pass the examination. Note that passing the examination does not qualify one for recognition for practice before the U.S. Patent and Trademark Office in trademark cases. Such recognition is governed by 37 CFR § 10.14 which does not require the passing of an examination.

There is no limit on the number of times the registration examination may be taken. The examination consists of two parts, a morning section and an afternoon section. To pass the examination, an applicant must pass both sections. An applicant who passes one section of the examination, but who fails the other section, will not be required to retake the section passed, *provided* the applicant takes and passes the section failed in one of the next three examinations regularly scheduled by the U.S. Patent and Trademark Office. If the applicant does not pass the section failed in one of the next three examinations scheduled, the applicant must retake both sections of the examination. No extensions of time will be granted except in extraordinary circumstances, e.g., an accident or hospitilization just prior to the examination which prevented the applicant from taking the examination.

In view of the rapidly growing number of individuals applying to take the registration examination, the increased investigation workload in the Office of Enrollment and Discipline, and the constraints on the U.S. Patent and Trademark Office for funding and staffing, the examination scheduled for May 3, 1995 will be the only examination given in calendar year 1995. At this time, it is anticipated that only one examination will be given in subsequent calendar years 1996, 1997 and 1998 and that the examination in each of these calendar years is tentatively scheduled to be held on the third Wednesday of August.

Application forms may be obtained from the Office of Enrollment and Discipline, Suite 4B30, 2900 Crystal Drive, South Tower, Arlington, Va., by mail addressed to U.S. Patent and Trademark Office, Box OED, Washington, D.C. 20231 or by calling (703) 308-5316.

October 6, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 16, 1994.

Albritton, Clarence L., 1401 Albert Dr., Mitchellville, Md. 20721
Burke, Elizabeth M., 250 Elm St., #121, Clemson, S.C. 29631
Covert, John M., 1305 Belle View Blvd., #A-2, Alexandria, Va. 22307
Fairbanks, Jonathan C., 616 E. Franklin St., East Tawas, Mich. 48730
Gilreath, Stanley N., 14200 Vint Hill Rd., Nokesville, Va. 22123
Price, William I., 5611 Cornish Way, Alexandria, Va. 22310

October 5, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Certificates of Correction
For Week of November 11, 1994

P. 8,528	5,165,979	5,243,798	5,293,544
P. 8,598	5,171,671	5,243,919	5,293,569
P. 8,622	5,173,582	5,244,094	5,293,853
P. 8,635	5,175,537	5,245,025	5,293,947
P. 8,682	5,178,846	5,245,484	5,294,406
D. 292,188	5,182,341	5,246,502	5,294,475
D. 329,733	5,189,952	5,248,994	5,294,959
D. 340,896	5,192,300	5,249,611	5,294,966
D. 345,908	5,196,224	5,251,148	5,295,989
D. 347,602	5,196,370	5,252,527	5,296,035
4,406,770	5,198,301	5,254,755	5,296,050
4,526,869	5,201,010	5,255,313	5,296,326
4,567,148	5,202,359	5,255,393	5,296,368
4,774,235	5,202,769	5,256,407	5,297,265
4,859,525	5,202,981	5,257,635	5,297,755
4,893,567	5,202,998	5,258,261	5,297,967
4,898,658	5,203,713	5,258,905	5,298,309
4,917,067	5,204,522	5,259,225	5,299,630
4,924,215	5,204,766	5,260,288	5,300,639
4,939,118	5,207,124	5,260,432	5,301,559
4,970,296	5,207,672	5,261,316	5,301,933
4,971,552	5,208,472	5,262,130	5,301,969
4,979,992	5,208,683	5,262,498	5,302,010
4,984,750	5,212,195	5,262,528	5,302,436
4,991,325	5,213,037	5,263,571	5,302,559
4,997,456	5,215,099	5,264,163	5,302,612
5,014,975	5,216,006	5,264,194	5,302,975
5,017,347	5,217,802	5,266,511	5,303,230
5,017,489	5,217,863	5,267,383	5,303,423
5,030,827	5,221,248	5,268,052	5,303,983
5,038,190	5,221,254	5,270,655	5,304,024
5,040,941	5,221,872	5,270,967	5,304,400
5,042,525	5,222,092	5,273,510	5,304,510
5,044,970	5,222,980	5,275,731	5,304,547
5,048,933	5,223,227	5,276,466	5,304,678
5,058,299	5,225,361	5,276,498	5,305,054
5,063,164	5,225,561	5,276,687	5,305,183
5,071,666	5,225,569	5,276,707	5,306,531
5,073,969	5,225,604	5,277,719	5,306,605
5,074,749	5,225,703	5,278,663	5,306,774
5,075,216	5,226,913	5,278,995	5,307,714
5,085,971	5,227,170	5,279,637	5,308,290
5,087,737	5,227,182	5,279,765	5,308,340
5,101,059	5,229,410	5,280,294	5,308,720
5,105,090	5,229,951	5,280,483	5,309,185
5,106,994	5,231,212	5,281,354	5,309,238
5,116,018	5,231,223	5,282,041	5,309,268
5,116,977	5,232,826	5,282,064	5,309,416
5,119,190	5,232,851	5,283,184	5,309,740
5,119,589	5,233,010	5,283,798	5,310,246
5,124,187	5,233,445	5,284,500	5,310,278
5,125,002	5,234,126	5,284,730	5,310,880
5,127,921	5,235,058	5,285,409	5,311,389
5,132,305	5,235,515	5,285,772	5,311,489
5,136,717	5,236,667	5,286,100	5,311,513
5,138,041	5,236,831	5,286,452	5,311,580
5,139,796	5,237,443	5,286,601	5,311,674
5,142,063	5,238,800	5,287,157	5,311,725
5,146,156	5,239,068	5,289,213	5,312,313
5,146,574	5,239,216	5,289,699	5,312,338
5,152,126	5,239,804	5,289,735	5,312,394
5,153,323	5,240,187	5,290,087	5,312,486
5,155,052	5,240,291	5,291,285	5,312,536
5,156,982	5,241,006	5,291,507	5,312,993
5,162,085	5,242,921	5,292,302	5,313,114
5,164,274	5,243,682	5,293,054	5,313,343

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

September 5-9, 1994

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-6	EX	74/129,357	John Harvey & Sons Ltd.	Section 6 Disclaimer Requirement (of the word "BRISTOL")	Refusal Reversed		"HARVEY'S BRISTOL CREAM" [bakery goods, namely, cakes]		Yes
9-6	CANC	20,394	Turner Broadcasting System, Inc. v. Lamoureaux	Abandonment	Petition to Cancel Dismissed		"THE CARTOON CHANNEL" (and design) [cable television broadcasting services featuring the presentation of cartoons]		No
9-8	EX	74/287,441	Ben's Kosher Deli and Restaurant Corp.	2(d)	Refusal Affirmed (on the basis of all three cited registrations		"BEN'S" (in stylized lettering) [kosher meats and processed foods, kosher catering services, kosher delicatessen services, and kosher restaurant services]	"BENS MONTREAL" [corned beef, salami, etc.]; "BENS OF MONTREAL" [restaurant services]; "BEN'S BEST" [pickles]	No
9-8	EX	74/193,813	Culinary Foods, Inc.	2(e)(1)	Refusal Affirmed		"QUALITY CUISINE" [frozen foods, namely, sauces, pastas, noodles, and rices]		No
9-8	EX	74/255,205	Premium Pet Mart, Inc.	2(e)(1)	Refusal Affirmed		"THE PET SUPPLY SUPERSTORE" [retail pet stores featuring pet food and pet supplies and animal grooming]		No
9-8	EX	74/168,031	Dayton Hudson Corp.	2(d)	Refusal Affirmed (as to both cited registrations)		"ELEGANCE" (home launderable bath rugs sold only in applicant's department stores]	"SUPREME ELEGANCE" [textile rugs, carpets, and carpeting]; "RETURN TO ELEGANCE" [textile carpets]	No

(1)EX - EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

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Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

The following special departments should be used only for their specified purpose. Address mail as follows:

Commissioner of Patents and Trademarks
Box _____
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O.Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
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	Tampa Campus Library, University of South Florida	(813) 974-2726
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/01/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	08/26/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	01/11/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/11/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/09/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/10/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	03/22/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	09/28/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	10/03/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/07/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	03/10/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	01/05/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	10/11/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	09/21/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	10/28/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	05/07/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	08/26/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during October 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 4,051,552 to 4,055,851 inclusive
Plant Patents ..... 4,117 to 4,137

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Oct. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	08/30/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	07/27/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/20/94	07/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/03/94	07/05/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	07/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/94	07/05/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	06/27/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/94	07/13/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/17/94	06/04/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	09/08/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & ■		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	04/26/94	—0—
Renewals (All Classes)	07/07/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

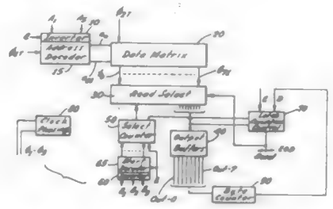
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

NOVEMBER 1, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,771,145 (2416th)
INTEGRATED CIRCUIT READ-ONLY MEMORY
Patricia P. Wiener, 12 Thornwood Rd., Armonk, N.Y. 10504
Reexamination Request Nos. 90/003,110, Jun. 30, 1993 and 90/003,236, Oct. 29, 1993.
Reexamination Certificate for Patent No. 3,771,145, issued Nov. 6, 1973, Ser. No. 111,193, Feb. 1, 1971.
Int. Cl.[5] G11C *17/00, 7/00*
U.S. Cl. 365—240



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** to **23** is confirmed.

9. In a memory circuit on an integrated circuit chip having plural, individually addressable word locations, each word location holding a plurality of bytes, each byte having a plurality of bits, a read-out circuit comprising:

first means on the chip for defining a data matrix having addressing rows and data columns, the intersection of a row and of a column defining a memory location;

second means on the chip responsive to a first, externally applied addressing code and connected for addressing one of the rows, pursuant to such addressing the content of the memory locations is available on the columns;

third means on the chip connected for sequentially calling on the columns for one byte at a time and providing bit value defining signals representing one respective byte for external extraction of the bytes as provided in particular sequence;

fourth means on the chip connected to the third means for establishing a particular beginning of a byte call sequence, and

fifth means on the chip for establishing a particular end for the byte call sequence.

B1 4,701,350 (2417th)
PROCESS FOR ELECTROLESS METAL DEPOSITION
Deborah J. Lindsay, Princeton, N.J., assignor to Surface Technology Inc., Princeton, N.J.
Reexamination Request No. 90/003,192, Sep. 13, 1993.
Reexamination Certificate for Patent No. 4,701,350, issued Oct. 20, 1987, Ser. No. 899,095, Aug. 22, 1986.
Division of Ser. No. 578,829, Feb. 10, 1984, U.S. Pat. No. 4,634,619, which is a continuation of Ser. No. 310,785, Oct. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 204,495, Nov. 6, 1980, abandoned
Int. Cl.[5] B44D *1/14*
U.S. Cl. 427—97

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–26** is confirmed.

1. A process for the metallization of a substrate by electroless plating or chemical plating comprising:

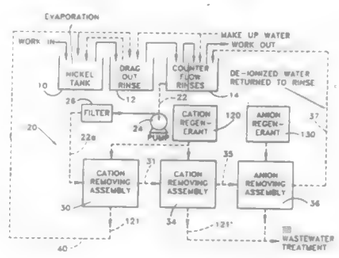
a. contacting said substrate with a composition comprising and adsorption modifier, said modifier being a polyelectrolyte, thereby providing a path for the increased catalytic site density,

b. rinsing said substrate to remove excess adsorption modifier, and thereafter without the use of a sensitizing step

c. contacting said treated substrate with a noble catalytic metal composition, comprising a noble catalytic metal capable of electroless plating initiation, which directly or serving as a precursor leads to the catalytic sites which are capable of electroless plating initiation and wherein said noble catalytic metal may be either in the elemental state, an alloy, a compound, or a soluble complex, and mixtures thereof, and

d. contacting said substrate with a compatible electroless plating bath to deposit a metallic layer.

B1 4,863,612 (2418th)
APPARATUS AND METHOD FOR RECOVERING MATERIALS FROM PROCESS BATHS
Lyle E. Kirman, Cleveland Heights, and Kenneth C. Seufer, Jr., Middlefield, both of Ohio, assignors to Kinetico, Inc., Newbury, Ohio
Reexamination Request No. 90/002,765, Jun. 18, 1992.
Reexamination Certificate for Patent No. 4,863,612, issued Sep. 5, 1989, Ser. No. 83,721, Aug. 10, 1987.
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—662



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **2**, **6**, **10**, **13** and **14** are determined to be patentable as amended.

Claims **3–5**, **7–9**, **11** and **12**, dependent on an amended claim, are determined to be patentable.

1. Apparatus for [selectively] recovering a *selected* cation from an aqueous solution containing a plurality of cations, comprising:

a) a first cation removing assembly containing an ion exchange material having an affinity for the selected cation that is greater than its affinity for at least most other cations in the aqueous solution;

b) a second cation removing assembly *containing an ion exchange material capable of capturing substantially all cations present in a processed aqueous solution discharged by said first cation assembly to thereby produce decationized water;*

c) *first* conduit means for delivering *said* processed aqueous solution from said first cation removing assembly to said second cation removing assembly;

d) *second conduit means for delivering decationized water from said second cation removing assembly to* an anion removing assembly, *said anion removing assembly* operative to remove anions from said *decationized water* [aqueous solution] *to produce deionized water;*

e) means for determining the presence of said selected cation in an output stream discharged by said first cation removing assembly; [and]

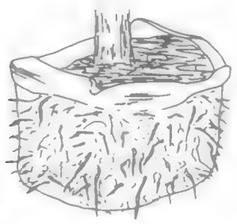
f) means for regenerating said first cation removing assembly upon determining that [a predetermined amount of] said selected cation is present in said output stream and conveying a regeneration solution containing said selected cation to a reservoir for holding a solution of said selected cation; *and,*

g) *means for separately regenerating said second cation removing assembly and said anion removing assembly, including means for discharging regeneration solutions containing waste cations and waste anions to a waste discharge means.*

B1 4,884,367 (2419th)
ROOT CONTROL BAG

Peter A. Lawton, Berwick, Australia, assignor to W & G Precision Instruments Pty, Ltd., Australia

Reexamination Request No. 90/002,903, Dec. 4, 1992.
Reexamination Certificate for Patent No. 4,884,367, issued Dec. 5, 1989, Ser. No. 260,248, Oct. 20, 1988.
Claims priority, application Australia, Oct. 21, 1987, P14995; Jul. 14, 1988, PI9302
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—78



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **8** are determined to be patentable as amended.

Claims 2–7 and 9, dependent on an amended claim, are determined to be patentable.

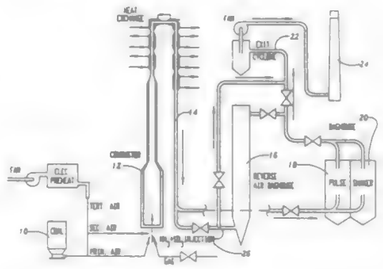
New claims **10–21** are added and determined to be patentable.

1. A root control bag having a wall manufactured from a non-woven fabric formed of a multiplicity of substantially continuous, randonly aligned, polymeric fibres, needle puncture bonded together, the physical characteristics of said fabric being such that when subjected to a set of standard probe penetration tests [as herein defined] *wherein a penetration probe simulating a growing root of a specific plant to be grown in said root control bag is pressed against the taut fabric and the initial puncture load required to initially penetrate the fabric and the final penetration load required to reach a diameter simulating the maximum desirable diameter of xylem of said growing root of said specific plant are determined, said physical characteristics are such that* in not more than 33⅓% of the tests is the initial puncture load greater than 1 kg, and in not more than 2% of said tests is the final penetration load less than 1.25 kg., said fabric having a resistance to deterioration such that no significant deterioration of said physical characteristics will be shown over a period of prolonged use under normal conditions.

B1 4,931,073 (2420th)
PROCESS OF FLUE GAS CONDITIONING APPLIED TO FABRIC FILTRATION

Stanley J. Miller, and Dennis L. Laudal, both of Grand Forks, N. Dak., assignors to The University of North Dakota School of Engineering & Mines Foundation (UNDSEM Foundation), Grand Forks, N. Dak.

Reexamination Request No. 90/002,538, Dec. 6, 1991.
Reexamination Certificate for Patent No. 4,931,073, issued Jun. 5, 1990, Ser. No. 375,205, Jul. 3, 1989.
Int. Cl.[5] B01D *46/04, 51/10*
U.S. Cl. 95—280



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–11** are cancelled.

[**1**. A method improving control of atmospheric emission of particulate matter from the emission stack of a coal combustion facility which employs baghouse particle controllers said method comprising:

injecting upstream of said baghouse a small but particle conditioning effective amount of ammonia gas and sulfur trioxide gas, with said ammonia being injected upstream of said sulfur trioxide.]

B1 4,951,833 (2421st)
END CONSTRUCTION WITH HOLLOW BEAM CONSTRUCTION FOR A DRUM

Herbert L. Carpenter, Jr., Cullman, Ala., and James A. Hale, Red Bank, N.J., assignors to Greif Bros., Delaware, Ohio

Reexamination Request No. 90/003,335, Feb. 18, 1994.
Reexamination Certificate for Patent No. 4,951,833, issued Aug. 28, 1990, Ser. No. 321,965, Mar. 10, 1989.
Int. Cl.[5] B65D *3/30*
U.S. Cl. 229—5.6

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

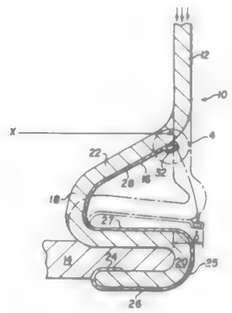
Claims **1–3, 5–7** and **9** are determimed to be patentable as amended.

Claims **4, 8** and **10–15**, dependent on an amended claim, are determined to be patenable.

9. A circular chime for drum construction incldiuing:

a portion of an inwardly opening C-shaped cross section with a first and a second leg, said first leg terminating in a lip pointing to an interior of said C-shaped cross section;

a flange extending diagonally from said second leg of said C-shaped cross-section portion terminating with a portion of increased cross section *forming a hollow beam thereby increasing the cross-sectional area and second moment of area of the portion of increased cross-section whose circumference is expanded thereby absorbing substantially energy resulting in a stiffer and more stretch resistant chime able to accommodate increased state and dynamic forces on the drum;*



wherein forces perpendicular to a diameter of said chime applied to said flange urge said flange from a diagonal toward a horizontal position and increase a circumference of said portion of increased cross section as measured about a geometric center of said circular chime.

B1 5,235,979 (2422nd)
DUAL BATTERY SYSTEM FOR IMPLANTABLE DEFIBRILLATOR

Theodore P. Adams, Edina, Minn., assignor to Angeion Corp., Plymouth, Minn.

Reexamination Request No. 90/003,242, Nov. 3, 1993.
Reexamination Certificate for Patent No. 5,235,979, issued Aug. 17, 1993, Ser. No. 913,626, Jul. 16, 1992.
Continuation of Ser. No. 670,188, Mar. 15, 1991, abandoned
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5

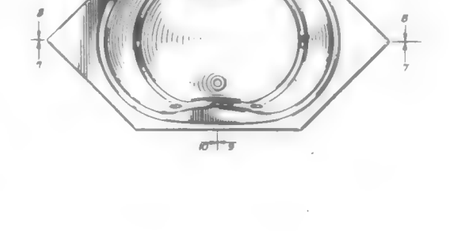
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7** are cancelled.

[**1**. An implantable defibrillator comprising:

a. a first implantable energy source connected to an implantable monitoring circuit means, said implantable monitoring circuit means being powered by said first implantable energy source; and,

b. a second implantable energy source having a predetermined different energy output than said first implantable energy source, connected to an implantable inverter/output circuit means, said implantable inverter/output circuit means being powered by said second implantable energy source.]



B1 Des. 310,566 (2415th)
WHIRLPOOL BATHTUB

Remo C. Jacuzzi, Little Rock, Ark., assignor to Jason International, Inc., Little Rock, Ark.

Reexamination Request No. 90/003,834, Feb. 14, 1994.
Reexamination Certificate for Patent No. Des. 310,566, issued Sep. 11, 1990, Ser. No. 83,088, Aug. 10, 1987.
U.S. Cl. D24—205

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of the claim is confirmed.

STATUTORY INVENTION REGISTRATIONS

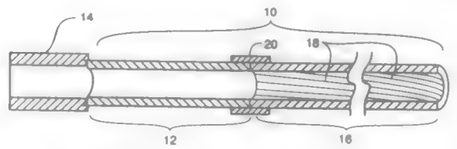
PUBLISHED NOVEMBER 1, 1994

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1365
HYBRID GUN BARREL

Michael R. Amspacker, Niceville; Nunzio Zummo, Ft. Walton Beach, and Duane Finello, Shalimar, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1994, Ser. No. 194,998
Int. Cl.[5] F41A *21/04, 21/18*
U.S. Cl. 42—78 **8 Claims**



1. A gun barrel having a breech end and a muzzle end, comprising:

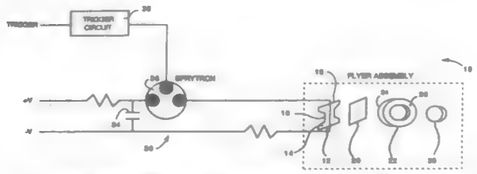
(a) a smooth bore section at the breech end of the gun barrel; and,

(b) a rifled bore section at the muzzle end of the gun barrel, wherein the pitch of the rifling increases from its beginning nearer the breech end of the gun barrel to its end nearer the muzzle end.

H1366
SCB INITIATOR

Robert W. Bickes, Jr.; Anita M. Renlund, and Philip L. Stanton, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 28, 1989, Ser. No. 321,659
Int. Cl.[5] F42C *19/12*
U.S. Cl. 102—202.5 **7 Claims**



1. A detonator for high explosives initiated by mechanical impact, said detonator comprising:

a layer of flyer material;

a substrate;

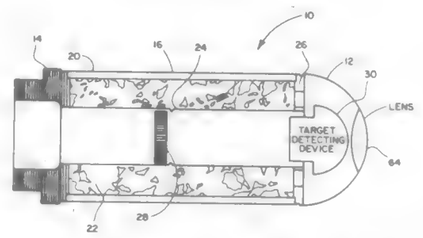
a semiconductor bridge ignitor on said substrate including a pair of electrically conductive pads connected by a semiconductor bridge, said bridge being in operational contact with said layer, whereby ignition of said bridge forces a portion of said layer through said barrel to detonate the explosive; and

input means for igniting said semiconductor bridge ignitor.

H1367
WIRE ASSAULT WEAPON WARHEAD

Louie A. Allen, Jr., and Tucker T. Yee, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 7, 1991, Ser. No. 651,857
Int. Cl.[5] F42B *12/22*
U.S. Cl. 102—493 **18 Claims**



1. A warhead for breaching a barbed-wire barricade, comprising:

a projectile capable of being launched from a weapon, the projectile comprising:

an outer frangible envelope means for defining an exterior surface of the projectile and an inner chamber;

an inner frangible wall means within the inner chamber, score means defined by the inner frangible wall means; and

explosive means for fragmenting the inner frangible wall means into fragments and expelling the fragments through the outer frangible envelope means.

H1368
METHOD FOR IMPROVING THE LONG-TERM COLOR STABILITY OF JET FUEL

Michael C. Fraytet, 4656 Ironwood Ave., Seal Beach, Calif. 90740

Filed Dec. 11, 1992, Ser. No. 989,292
Int. Cl.[5] C10G *17/06*
U.S. Cl. 208—254 R **10 Claims**

1. A method for improving the long-term color stability of jet fuel containing nitrogen compounds, said method consisting essentially of:

a) intimately mixing said jet fuel with a quantity of concentrated sulfuric acid, at least about 98 percent sulfuric acid, sufficient to remove at least about 90 percent of said nitrogen compounds during a contact time equal to less than about 30 seconds;

b) separating said jet fuel from said concentrated sulfuric acid within said contact time;

c) mixing said jet fuel with an aqueous caustic solution to remove residual acid from said jet fuel;

d) separating said jet fuel from said aqueous caustic solution;

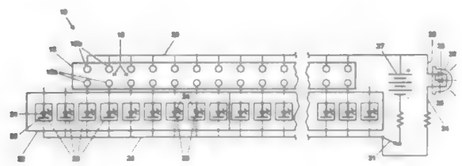
e) mixing said jet fuel with water; and

f) separating said jet fuel from said water.

H1369
CABLE CONTINUITY TEST APPARATUS

Randolph N. Verbin, 215 Riverside Ave., Ben Lomond, Calif. 95005

Filed Jul. 29, 1991, Ser. No. 741,846
Int. Cl.[5] H04B *3/46*
U.S. Cl. 324—539 **3 Claims**



1. Test apparatus for multiconductor cable having a plurality of pairs of coextensive conductors, each of said conductors being connected at opposite ends to connectors, said apparatus comprising:

a short detector connected to one end of the cable and a reversal detector connected to the other end of the cable;

said short detector comprising a plurality of bargraph display elements, said elements having anodes and cathodes, said cathodes respectively connected across said pairs of conductors, said detector also having a direct current source with a positive terminal and a negative terminal, said positive terminal being connected to first conductors of each of said pairs of conductors, said negative terminal being connected through the cathodes and anodes of said display elements to the second conductors of each of said pairs of conductors, each of said elements emitting light when energized by electric current passing therethrough from anode to cathode;

said reversal detector comprising a plurality of light-emitting diodes (LEDs), each LED having first and second terminals and each LED being capable of emitting light in open of at least two colors depending on the direction of flow of electric current through said LED, the first of said LED terminals being connected to said first conductors and the second of said LED terminals being connected to said second conductors whereby light at a first color from an LED indicates reversal of an associated pair of conductors in said cable and light at a second color indicated correct orientation of the associated pair of conductors;

the combination of energization or lack of energization of said elements and said LEDs together with the color of light emitted by said LEDs providing indications of open, reversal, shorted or normal conditions of identified conductors in said cable.

H1370
INTERFEROMETRIC VIBRATION AND THERMAL EXPANSION COMPENSATOR

John D. Wolch, Versailles, and William J. Stachnik, Griswold, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

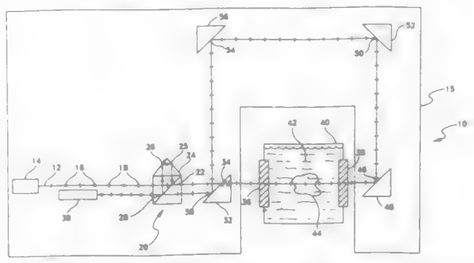
Filed Apr. 15, 1991, Ser. No. 691,071
Int. Cl.[5] G01N *21/41*
U.S. Cl. 356—361 **7 Claims**

1. An interferometric vibration and thermal expansion compensator for a system to study changes in the refractive index of a medium in a test tank full of the medium using a two-frequency orthogonally polarized laser beam having a first horizontally polarized component and a second vertically polarized component, said compensator comprises:

means for allowing second vertically polarized component of said laser beam to pass through the medium in said tank;

means for providing different optical paths for the first horizontally polarized component and the second vertically polarized component of said two-frequency and orthogonally polarized laser beam;

means for recombining the first horizontally polarized component and the second vertically polarized component of



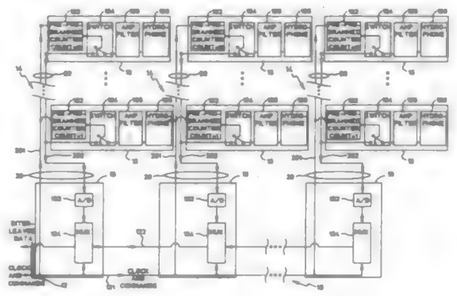
said two-frequency and orthogonally polarized laser beam so as to cause interference; and

means for subtracting the changes in the refractive index measurements resulting from vibration and thermal expansion effects.

H1371
SUBMERGED SENSING SYSTEM USING LINE ARRAY SEGMENTS

Homer P. Bucker; Michael F. Morrison; R. Bruce Williams; Jack R. Olson, and Richard C. Shockley, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1993, Ser. No. 115,964
Int. Cl.[5] H04B *11/00*
U.S. Cl. 367—134 **24 Claims**



1. An underwater sensing system, comprising:

a trunk cable for transmission of a plurality of clock signals from a first end to a second end of said trunk cable;

a plurality of signal handling nodes connected to said trunk cable in a spaced apart relationship, wherein each successive one of said plurality of signal handling nodes is located further from said first end of said trunk cable than a preceding one of said plurality of signal handling nodes;

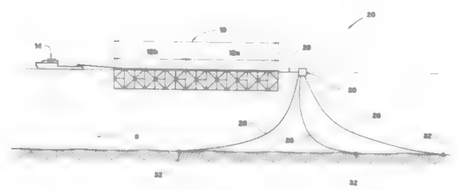
a plurality of sensor arrays, each of said plurality of sensor arrays connected to and extending from a corresponding one of said plurality of signal handling nodes, each of said plurality of sensor arrays connecting a plurality of sensors that generate a data output signal in response to said plurality of clock signals, wherein each said data output signal passes to said corresponding one of said plurality of signal handling nodes; and

each said plurality of signal handling nodes including a multiplexer connected to said trunk cable and a corresponding one of said plurality of sensor arrays, for interleaving each said data output signal received from said corresponding one of said plurality of sensor arrays in a continual throughput time orderly fashion with concatenated data output signals received over said trunk cable from said successive one of said plurality of signal handling nodes.

H1372
METHOD FOR MATING FLOATING SECTIONS OF AN OFFSHORE STRUCTURE

Maynard S. Glasscock, Houston, Tex., and Gerasime M. Monopolis, Morristown, N.J., assignors to Exxon Production Research Company, Houston, Tex.

Filed Jul. 12, 1993, Ser. No. 90,711
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—204 **2 Claims**



1. A method for mating the first and second floating sections of an offshore structure at a mating site in the ocean comprising the steps of:

(a) installing a single point mooring at said mating site;

(b) towing said first floating section to said mating site;

(c) attaching said first floating section to said single point mooring;

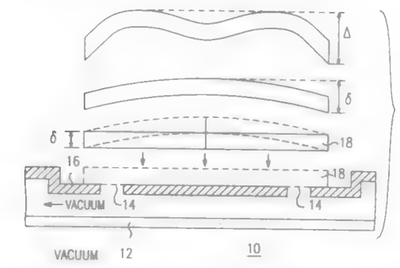
(d) towing said second floating section to said mating site; and

(e) mating said second floating section to said first section so that the mated sections freely rotate about said single point mooring.

H1373
WAFER HANDLING APPARATUS AND METHOD

Christopher E. Durham, Lower Pottsgrove Township, Montgomery County; William J. Malriat, Alsace Township, Berks County; Allen R. Melcher, Washington Township, Berks County, and Randy J. Penn, Salisbury Township, Lehigh County, all of Pa., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Apr. 6, 1992, Ser. No. 862,920
Int. Cl.[5] B65G *65/02;* **B66C** *1/02*
U.S. Cl. 414—786 **8 Claims**



7. A method of transferring a semiconductor wafer from a first location to a second location, the method comprising the steps of:

a) moving a transfer arm into the vicinity of a selected wafer, the transfer arm comprising a top and a bottom major surface with a vacuum port formed therebetween, said transfer arm including a plurality of vacuum-assisted apertures;

b) activating a vacuum source coupled to said transfer arm vacuum port;

c) attaching the selected wafer against the plurality of apertures;

d) moving the transfer arm and attached wafer to the second location; and

e) deactivating the vacuum source so as to release the selected wafer.

H1374
PARTICLES OF HYDROPHOBIC POLYMERS CONTAINING VOIDS

Herve Adam; Henri G. Riess, both of Mulhouse, and Claude G. S. Nicaud, Paris, all of France, assignors to Imperial Chemical Industries plc, Herts, England

Continuation of Ser. No. 544,697, Jun. 27, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 939,426
Claims priority, application France, Jul. 13, 1989, 89 4020171
Int. Cl.[5] B32B *3/26, 5/16*
U.S. Cl. 428—315.7 **11 Claims**

1. A particle of a hydrophobic polymer containing at least one void and comprising an essentially hydrophobic surfactant in the region of the internal surfaces defining the voids and an essentially hydrophilic surfactant in the region of the external surface of the particle wherein

a) the essentially hydrophobic surfactant is a block copolymer having a molecular weight of from 5,000 to 150,000 and comprising a hydrophobic chain and at least one hydrophilic chain which chain is present in an amount such that the hydrophilic portion of the block copolymer is from 5 to 45% of the weight of the block copolymer and

b) the essentially hydrophilic surfactant has a molecular weight of at least 2,000 and comprises at least one hydrophilic chain which chain is present in an amount such that the hydrophilic portion of the essentially hydrophilic surfactant is from 40 to 90 of the weight of the essentially hydrophilic surfactant, whereby the particle when dry is free-flowing in the presence of like particles and can be dispersed in water.

H1375
POLYKETONE POLYMER BLENDS

Eric R. George, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1991, Ser. No. 775,405
Int. Cl.[5] C08L *23/00*
U.S. Cl. 525—185 **18 Claims**

1. A polymer blend comprising a major proportion of a linear alternating polyketone polymer and from about 0.5 wt % to about 25 wt %, based on total blend, of a cracked polypropylene polymer which exhibits a melt flow index of at least about 20 grams/10 minutes.

H1376
CAPACITY INDICIA FOR ABSORBENT ARTICLES

Thomas Osborn, III, and Nona J. Redwine, both of 6100 Center Hill Rd., Cincinnati, Ohio 45224

Division of Ser. No. 539,779, Jun. 18, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 982,131
Int. Cl.[5] A61F *13/42*
U.S. Cl. 604—361 **7 Claims**

1. A disposable absorbent article for absorbing liquids and having a longitudinal centerline and two longitudinal side margins, said article comprising:

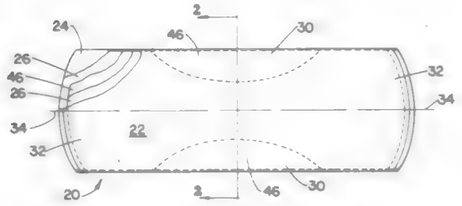
a liquid pervious topsheet;

a liquid impervious backsheet joined to said topsheet;

a generally planar absorbent core positioned between said topsheet and said backsheet, said core having a top surface a bottom surface, and two longitudinal side edges; and

a liquid previous means for visually indicating when liquid

has approached the longitudinal side margins of said disposable absorbent article, said means comprising two visually discernible indicia disposed between said topsheet and said backsheet, wherein one indicium is disposed



along each said longitudinal side edge of said absorbent core and being in contact with and in liquid communication with the longitudinal side edge of said absorbent core at points located between the top surface and bottom surfac of said absorbent core.

H1377

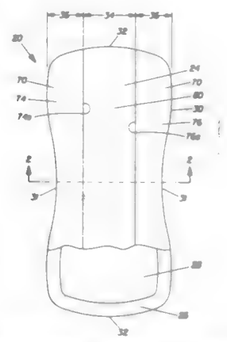
ABSORBENT ARTICLE WITH MULTI-FUNCTIONAL TOPSHEET

Bruce F. Perry, 2625 Briarcliff Ave., Cincinnati, Ohio 45212

Filed Feb. 25, 1993, Ser. No. 23,023

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.1 **13 Claims**



1. A multi-zone, unitary, polymeric web having a liquid pervious central zone and an outer zone extending outwardly from and contiguous with said central zone, said web comprising:

(a) a central portion located substantially in said central zone, said central portion including a plurality of macroscopically expanded apertures, said macroscopically expanded apertures transmitting bodily fluid deposited on said web; and

(b) an outer portion located substantially in said outer zone, said outer portion including a plurality of microapertures.

H1378

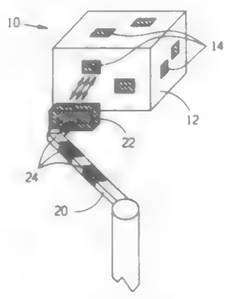
ELECTROMAGNETIC FASTENERS

Randolph W. Crane, and Donna J. Marts, both of Idaho Falls, Id., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jul. 14, 1992, Ser. No. 913,094

Int. Cl.[5] B66C *1/04;* **B25J** *15/10*

U.S. Cl. 414—737 **5 Claims**



5. A method for manipulating an object in a space environment comprising:

providing a magnetically permeable area on the object to be manipulated;

positioning a manipulator having an end effector with a metal complementary to the metallic patch toward the patch,

supplying a current to the end effector to cause the object to be drawn and affixed to the manipulator;

deactivating the current in the end effector to release the object.

REISSUES

NOVEMBER 1, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,769

CURRENT MIRROR AMPLIFIER FOR USE IN AN OPTICAL DATA MEDIUM DRIVING APPARATUS AND SERVO-CIRCUIT

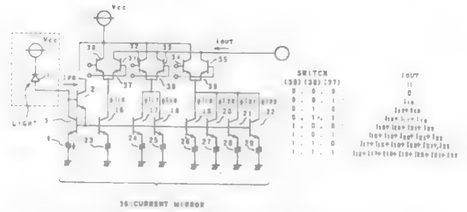
Kyosuke Yoshimoto, and Kyouji Shimoda, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Original No. 5,004,901, dated Apr. 2, 1991, Ser. No. 212,566, Jun. 28, 1988. Continuation-in-part of Ser. No. 3,798, Jan. 16, 1987, Pat. No. 4,812,726. Application for reissue Nov. 27, 1992, Ser. No. 983,088

Claims priority, application Japan, Jan. 16, 1986, 61-8265; Jan. 28, 1986, 61-18451; Jun. 4, 1987, 62-139044; Jun. 30, 1987, 62-160841

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.5 **13 Claims**



1. An optical data medium driving apparatus and a servo circuit, comprising:

a photosensor which outputs a current signal corresponding to a quantity of transmitted light or reflected light from an optical data medium;

an amplification means intercoupled to and receiving said photosensor output current signal including a current mirror circuit having a plurality of switching elements, each switching element providing a current signal equal to said photosensor output current signal; and

means for combining selected ones of said current signals thereby amplifying said output current signal from said photosensor by said current mirror circuit.

2. An optical data medium driving apparatus and a servo circuit as set forth in claim **1**, wherein said amplification means includes a plurality of current mirror circuits each current mirror circuit having a different amplification factor, and wherein the combining means includes switching means for selecting an output of at least one of said current mirror circuits, so that the photosensor output current signal is amplified by [the plurality of] said *at least one* current mirror [circuits, the output signal of at least one of said current mirror circuits is selected by said switching means,] *circuit* thereby providing variable amplification of the photosensor output current signal.

Re. 34,770

AMINE DERIVATIVES, PROCESSES FOR PREPARING THE SAME AND FUNGICIDES CONTAINING THE SAME

Tetsuya Maeda, Tokorozawa; Toshiyuki Yamamoto, Tokyo; Mituo Takase, Hino; Kazuya Sasaki, Higashikurume; Tadashi Arika, Kasukabe; Mamoru Yokoo, Kawagoe; Rieko Hashimoto, Asaka; Kouji Amemiya, Kodaira, and Sakae Koshikawa, Kawaguchi, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

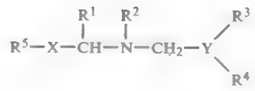
Original No. 5,106,866, dated Apr. 21, 1992, Ser. No. 479,894, Feb. 14, 1990. Division of Ser. No. 283,055, Dec. 7, 1988, Pat. No. 5,021,458, which is a continuation of Ser. No. 73,329, Jul. 13, 1987, abandoned, which is a continuation of Ser. No. 740,596, Jun. 3, 1985, abandoned. Application for reissue May 21, 1993, Ser. No. 64,646

Claims priority, application Japan, Jun. 9, 1984, 59-118636

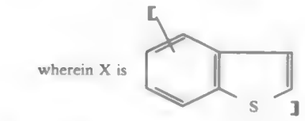
Int. Cl.[5] C07D *333/58;* **A61K** *31/38*

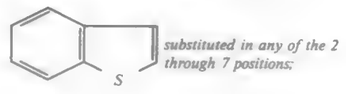
U.S. Cl. 514—443 **4 Claims**

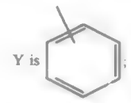
1. An amine derivative represented by formula (I):



(I)







R^1 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms;

R^2 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms;

R^3 is hydrogen atom or an alkyl group of 1 to 6 carbon atoms;

R^4 is hydrogen atom, an alkyl group of 1 to 10 carbon atoms, a cycloalkyl group of 3 to 7 carbon atoms or a halogenated alkyl group;

R^5 is hydrogen atom, an alkyl group of 1 to 6 carbon atoms, a halogen atom or a nitro group,

wherein R^5 is attached to an arbitrary position of X, and R^3 or R^4 is attached to an arbitrary position of Y.

Re. 34,771

VOLTAGE FOLLOWER CIRCUIT HAVING IMPROVED DYNAMIC RANGE

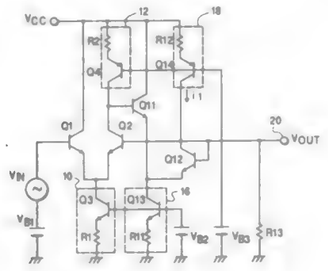
Yuuzi Itou, and Syuniti Tutida, both of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Original No. 5,068,552, dated Nov. 26, 1991, Ser. No. 579,628, Sep. 10, 1990. Application for reissue Oct. 23, 1992, Ser. No. 965,693

Claims priority, application Japan, Sep. 11, 1989, 1-232939

Int. Cl.[5] H03K *5/22*

U.S. Cl. 327—333 **6 Claims**



1. A voltage follower circuit comprising:

a differential amplifier including a first and a second transistor whose emitters are connected to each other, a first constant current source connected to said emitters and a second constant current source connected to the collector of said second transistor,

a third transistor, having a base connected to the collector of said second transistor, the first and third transistors having collectors connected to a reference voltage.

a diode connected between the emitter of said third transistor and the base of said second transistor,

a third constant current source connected to the emitter of said third transistor, and

a fourth constant current source connected to the base of said second transistor wherein the base of said first transistor receives an input signal and wherein the base of said second transistor is an output terminal.

Re. 34,772

VOLTAGE GENERATOR FOR GENERATING A STABLE VOLTAGE INDEPENDENT OF VARIATIONS IN THE AMBIENT TEMPERATURE AND OF VARIATIONS IN THE SUPPLY VOLTAGE

Patrick Bernard, Eybens, and Christophe Magnier, Coublevie, both of France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly, France

Original No. 5,030,903, dated Jul. 9, 1991, Ser. No. 463,616, Jan. 11, 1990. Application for reissue May 7, 1993, Ser. No. 59,825

Claims priority, application France, Jan. 11, 1989, 89 00274

Int. Cl.[5] G05F *3/26*

U.S. Cl. 323—313 **18 Claims**

1. [Stable] *A stable* reference voltage generator [comprising, disposed] *for connection* between a voltage supply [(V_{DD})] and [an earth connection,] *a ground potential, comprising:*

a reference voltage generating section including:

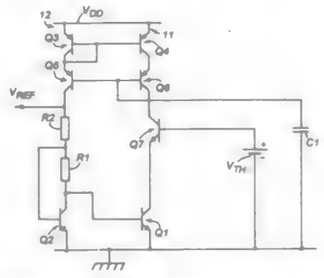
a current mirror circuit comprising a primary branch and a secondary branch which, in operation, carries a current with characteristics at least comparable with [, and if possible identical to,] those of the current in the primary branch[,];

a first [bipolar] transistor [(Q1) with its collector connected] in series with the primary branch of the current mirror[,];

an isolation transistor in series between the primary branch of the current mirror circuit and the first transistor;

a voltage divider [bridge] comprising [at least] two [series-connected] resistors [(R1, R2) said bridge being connected in series between the secondary branch of the current mirror and the collector of] *interconnected at a common point;*

a second [bipolar] transistor [(Q2), the base of the second transistor (Q2) being] *in series between the resistors and the ground potential, and having a current control element* connected to the common point of said resistors, [the base] *a current control element* of the first transistor [(Q1)] being connected to [the collector of] *a node between* the



second transistor [(Q2), the] *and the resistors; said voltage divider being connected in series between the secondary branch of the current mirror circuit and the second transistor;*

an output of the *reference voltage* generator [(V_{REF})] being [connected to the terminal] derived from one of the [bridge opposite that connected to the collector of] *resistors with respect* the second transistor [(Q2), the geometry of said transistors being such that the first transistor (Q1) is equivalent to "N" transistors identical to the second transistor (Q20) connected in parallel, the reference voltage (V_{REF}) being given by the equation:

$$V_{REF} = V_{BE2} + \frac{R2}{R1} \frac{kT}{q} \text{Log}N$$

in which:

T: Ambient temperature

V_{BE2}: Base-emitter voltage of the second transistor (Q2), in turn given (neglecting other than first order terms) by the equation:

$$V_{BE2} = V_{CO2} + \alpha T$$

in which α and V_{CO2} are constants related to the design of the second transistor

R1: Value of the resistor of the bridge connected to the collector of the second transistor (Q2)

R2: Value of the second resistor of the bridge connected in series with R1

k,q: Universal constants R1, R2 and N being chosen so that the sum of the terms αT and

$$\frac{R2}{R1} \frac{kT}{q} \text{Log}N$$

is null, characterised in that it further comprises

an isolation bipolar transistor (Q7) connect in series between the primary branch of the current mirror circuit and the first transistor, the collector of the latter being connected to the emitter of the isolation transistor,]and *the characteristics of the first and second transistors and the magnitudes of the first and second resistors having been selected such that a reference voltage provided at the output of the reference voltage generator is substantially independent of variation in ambient temperature; and*

means, distinct from said reference voltage generating section, for [feeding to the base of] *biasing* the isolation transistor [a voltage predetermined]to enable conduction in said isolation transistor.

Re. 34,773

DRIVER ALERTING DEVICE

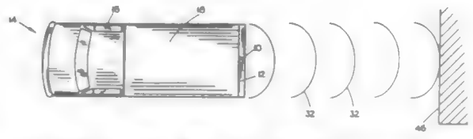
Anthony E. Dombrowski, 130 32 Mullen Cir., Omaha, Nebr. 68144

Original No. 4,803,488, dated Feb. 7, 1989, Ser. No. 895,537, Aug. 13, 1986. Continuation of Ser. No. 579,160, Feb. 10, 1984, abandoned. Application for reissue Jul. 16, 1990, Ser. No. 552,555

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[5] G08G *1/00*

U.S. Cl. 340—904 **24 Claims**



1. A driver alerting device for a vehicle having a back-up light circuit reverse switch, comprising

a transceiver comprising a micro-wave radar device using the doppler shift principle to detect the presence of a target within the transceiver range,

means for supporting said transceiver at the rearward end of a vehicle for directing the wave output thereof rearwardly of the vehicle, *said transceiver range being limited to a span substantially the width of the vehicle and extending a maximum of approximately 20 feet,*

means for supplying to said transceiver return wave signals from any target within the transceiver range, [an intermediate frequency amplifier operatively connected to said transceiver, said amplifier being operative to amplify and shape said return wave signals,]

a remote indicator adapted for placement within or adjacent the passenger compartment of a vehicle,

[means for electrically connecting] said remote indicator *being coupled* to said transceiver for activation of said indicator in response to detection by said transceiver of return wave signals from any target within the transceiver range, and

means for [electrically connecting] *coupling* said transceiver to the back-up light circuit reverse switch of a vehicle for activation of said transceiver in response to activation of said back-up light circuit reverse switch of a vehicle, said device being substantially unaffected, in operation, by varying weather conditions.

Re. 34,774

LINEAR MOTION GUIDE UNIT HAVING A REDUCED HEIGHT

Akihiko Kamimura, Kanagawa, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Original No. 5,134,670, dated Jul. 28, 1992, Ser. No. 631,601, Dec. 20, 1990. Application for reissue Sep. 13, 1993, Ser. No. 120,986

Claims priority, application Japan, Dec. 26, 1989, 1-149498[U]

Int. Cl.[5] F16C *29/04*

U.S. Cl. 384—49 **4 Claims**

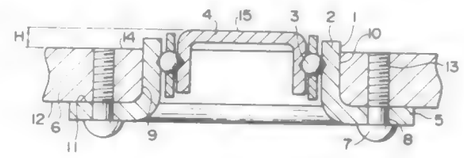
1. A linear motion guide unit comprising:

a bed having a first guiding means, said bed being generally in the shape of a picture frame; p1 a sliding table having a second guiding means located opposite to and in parallel with said first guiding means when assembled; and

a plurality of rolling members interposed between said first and second guiding means, thereby providing a sliding contact between said bed and said sliding table;

whereby said bed includes:

a pair of guide wall sections formed with said first guiding means and spaced apart from each other over a predetermined distance, said guide wall sections extending generally vertically;



at least one connecting wall section connecting said pair of guide wall section; and

at least one mounting wall section which extends generally horizontally from each of said pair of guide wall sections in a direction away from the opposite guide wall section, thereby allowing said mounting wall section to be placed on a desired object to be mounted, wherein said object to be mounted includes a recess or hole in which said unit is partly located.

Re. 34,775

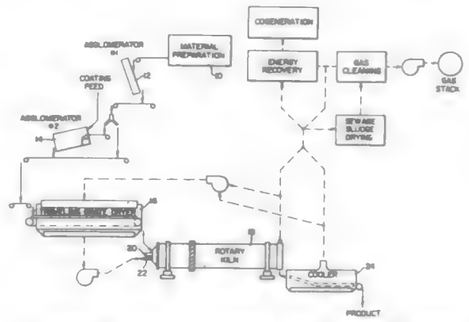
LIGHTWEIGHT AGGREGATE FROM FLYASH AND SEWAGE SLUDGE

Timothy M. Nechvatal, Waukesha, and Glenn A. Heian, Franklin, both of Wis., assignors to Minergy Corp., Milwaukee, Wis.

Original No. 5,057,009, dated Oct. 15, 1991, Ser. No. 640,184, Jan. 11, 1991. Application for reissue Aug. 2, 1993, Ser. No. 101,516

Int. Cl.[5] F27B *15/00*

U.S. Cl. 432—14 **23 Claims**



1. A method of producing a lighweight aggregate, comprising the steps of:

mixing flyash and sewage sludge;

agglomerating the resulting mixture;

drying the agglomerate; [and]

creating a flow of hot gases along the length of a rotary kiln; passing the dried pellets through the rotary kiln co-current with the flow of hot gases; and

indurating the agglomerate *while* in [a] *the* rotary kiln to a temperature below the melting point of the agglomerate.

PLANT PATENTS

GRANTED NOVEMBER 1, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,964

HYBRID TEA ROSE PLANT NAMED HILRED

Daniel L. Tracy, Richmond, Ind., assignor to Hill's Floral Group, Richmond, Ind.

Filed Jul. 31, 1992, Ser. No. 924,621
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct Hybrid Tea Rose cultivar, substantially as herein shown and described, characterized by its long pointed buds, the clear bright red color of the flower petals, and by its moderately free and continuous flower production under greenhouse culture.

8,965

HEUCHERA CHOCOLATE RUFFLES

Dan M. Heims, Portland, Oreg., assignor to Terra-Nova Nurseries, Inc., Portland, Oreg.

Filed Dec. 30, 1993, Ser. No. 176,134
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct hybrid of Heuchera substantially as shown and described, characterized by unique, ruffled leaves of chocolate coloration showing the burgundy underside through the ruffles.

8,966

CHRYSANTHEMUM PLANT NAMED DARK REAGAN

Martinus Van Der Jagt, CJ Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Continuation of Ser. No. 780,332, Oct. 22, 1991, abandoned.
This application Jul. 8, 1993, Ser. No. 88,104
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Dark Reagan, as described and illustrated.

8,967

GERANIUM NAMED KLEGARBO

Siegfried Klemm, Stuttgart, Germany, assignor to Klemm & Sohn, Stuttgart-Muhlhausen, Germany

Filed Dec. 23, 1993, Ser. No. 173,671
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct geranium cultivar substantially as herein shown and described, particularly distinguished by its very round shape and compact growth and its early appearing pink flowers in an upright cluster over medium green foliage.

161-128 O.G.-94-2

PATENTS

GRANTED NOV. 1, 1994

ERRATA

For CLASS	See PATENT NO.
280-816	5,359,797
451-005	5,359,814
451-347	5,359,815
451-492	5,359,818
403-294	5,359,944
108-051	5,359,955
126-004	5,359,992
604-022	5,359,996
239-553	5,360,171
239-586	5,360,172
239-591	5,360,173
271-125	5,360,206
271-265	5,360,207
273-001	5,360,208
273-026	5,360,209
248-672	5,360,236
408-204	5,360,301
117-217	5,360,599
514-772	5,360,609
435-290	5,360,741
435-320	5,360,742
117-093	5,360,760
424-680	5,360,824
525-526	5,360,884
385-014	5,360,982
327-530	5,361,000
327-530	5,361,001
327-530	5,361,002
326-021	5,361,003
326-070	5,361,004
326-056	5,361,005
326-073	5,361,006
327-427	5,361,007
327-427	5,361,008
327-470	5,361,009
347-051	5,361,084

ERRATA—CONTINUED

347-101	5,361,085
347-044	5,361,087
376-211	5,361,377
381-025	5,361,378
382-036	5,361,379
381-024	5,361,380
381-024	5,361,381
385-049	5,361,382
385-027	5,361,383
385-134	5,361,384

PATENTS

GRANTED NOVEMBER 1, 1994

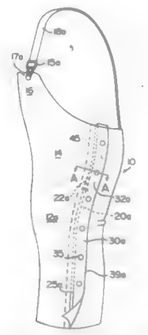
GENERAL AND MECHANICAL

5,359,731

PROTECTIVE GARMENT

Earl J. Cavalier, 3890 Southdown Mandalay, Houma, La. 70360

Filed Feb. 3, 1993, Ser. No. 12,659
Int. Cl.[5] A41D *1/00, 3/00, 13/00*
U.S. Cl. 2—46 **16 Claims**



1. A protective garment which comprises at least outer trousers sized to fit over and substantially encase a pair of regular long trousers worn by the user, said protective garment being characterized in that:

a) said protective garment includes a pair of leg portions contiguous with a torso section wherein said leg portions define a left leg portion having a lower end and a right leg portion having a lower end, and wherein said leg portions and contiguous torso section are sized such that when said protective garment is worn by the user over a pair of regular trousers (i) the lower end of said left leg portion terminates in proximity to the left ankle of the user, (ii) the lower end of said right leg portion terminates in proximity to the right ankle of the user, and (iii) the contiguous torso section extends up to at least the user's waist, said torso section having (iv) a left side terminating at an upper left end, (v) a right side terminating at an upper right end, (vi) a frontal portion disposed on said protective garment such that when said protective garment is worn by the user over a pair of regular trousers said frontal portion fits over at least a frontal portion of the torso of the user, and a rearward portion disposed on said protective garment such that when said protective garment is worn by the user over a pair of regular trousers said rearward portion fits over at least a rearward portion of the torso of the user;

b) said left leg portion and contiguous torso section immediately thereabove has a seam comprising a pair of edge portions which edge portions, by use of a left slide fastener referred to hereinafter, are (i) detachably connectable to each other and (ii) completely disconnectable from each other, said seam when detachably connected extending along the full length of the protective garment such that when said protective garment is worn by the user over a pair of regular trousers said detachably connected seam extends from the lower end of said left leg portion upwardly along the left outside of the user's left leg, left hip and left waist to the upper left end of the torso section;

c) said right leg portion-and contiguous torso section immediately thereabove has a seam comprising a pair of edge portions which edge portions, by use of a right slide fastener referred to hereinafter, are (i) detachably connectable to each other and (ii) completely disconnectable from each other, said seam when detachably connected extending along the full length of the protective garment such that when said protective garment is worn by the user over a pair of regular trousers said detachably connected seam extends from the lower end of said right leg portion upwardly along the right outside of the user's right leg, right hip and right waist to the upper right end of the torso section;

d) said protective garment has said left slide fastener disposed along the seam of said left leg portion and contiguous torso section immediately thereabove, said left slide fastener being oriented such that (i) said seam can be detachably connected and secured together in closed position by connecting the slide fastener and actuating it in a downward direction, and (ii) said seam can be completely detached by actuating the slide fastener in the upward direction and disconnecting it;

e) said protective garment has said right slide fastener disposed along the seam of said right leg portion and contiguous torso section immediately thereabove, said right slide fastener being oriented such that (i) said seam can be detachably connected and secured together in closed position by connecting the slide fastener and actuating it in a downward direction, and (ii) said seam can be completely detached by actuating the slide fastener in the upward direction and disconnecting it;

f) said protective garment has (i) a left elongate flap which is aligned with and extends along substantially the entire length of the seam of said left leg portion and contiguous torso section immediately thereabove, and (ii) a right elongate flap which is aligned with and extends along substantially the entire length of the seam of said right leg portion and contiguous torso section immediately thereabove, said flaps each having a forward portion and a rearward portion terminating in an edge, the forward portion being on the side of the closed seam that is closer to the front of the user when said protective garment is worn by the user over a pair of regular trousers and the rearward portion being on the side of the closed seam that is closer to the back of the user when said protective garment is worn by the user over a pair of regular trousers, said left elongate flap being positioned on the protective garment to cover and conceal said left slide fastener and the seam when secured together in closed position thereby, and said right elongate flap being positioned on the protective garment to cover and conceal said right slide fastener and the seam when secured together in closed position thereby, said flaps being further characterized in that the respective front portions of said flaps are non-detachable whereas the rear edge portions of said flaps are detachably attachable onto said protective garment; and

g) said protective garment further includes fastening means enabling each said flap to be detachably secured in place over the slide fastener and closed seam to be covered and concealed thereby.

5,359,732

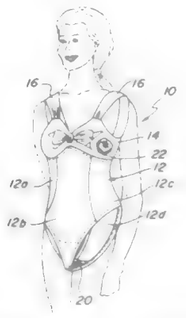
SWIMSUIT HAVING CONTROL HOLDING POWER INTEGRAL IN BODY FABRIC LAYER

Herman B. Waldman, 900 Fairfield, Easton, Pa. 18042, and Mark S. Waldman, 266 Sidney School Rd., Annandale, N.J. 08801

Filed Jul. 17, 1991, Ser. No. 731,552
Int. Cl.[5] A41D *5/00*
U.S. Cl. 2—67 **27 Claims**

1. A swimsuit comprising: a front panel, a back panel, the front panel and back panel forming a torso portion to be worn on the torso of the body and forming a crotch panel with leg openings on opposite sides thereof, and a bra portion to be worn over the bust area of the body, the bra portion attached

to the torso portion, at least the front or back panel of the torso portion made of a fabric capable of stretching in both the vertical and horizontal directions of the swimsuit, the modulus of the fabric of the torso portion in the horizontal direction of the swimsuit being in the range of 1.4 to 3.0 pounds of holding



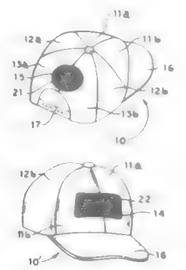
power and the modulus of the fabric in the vertical direction of the swimsuit being in the range of 0.9 to 1.5 pounds of holding power, the fabric of the front or back panel permitting the torso portion of the swimsuit to stretch in both the vertical and horizontal directions and providing figure control horizontally across the body.

5,359,733

PATCH ATTACHMENTS FOR HATS

Garry A. Brannon, 5715 Spence Cir., College Park, Ga. 30349, and Michael S. Jacobson, 2886 Sandpiper Cir., Atlanta, Ga. 30311

Filed Aug. 30, 1993, Ser. No. 120,572
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—195.1 **16 Claims**



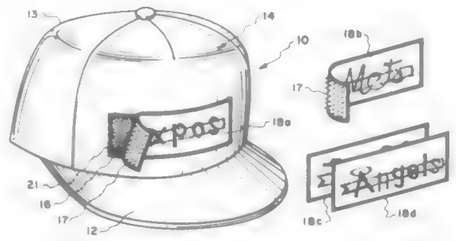
1. A hat and patch combination comprising:
a substantially fabric hat having at least a crown, a visor connected to said crown, a first discrete area of hook material located on said crown and proximal to said visor, a second discrete area of hook material located on said crown, said crown including a lower substantially circular edge defining a hat circumference, said first discrete area of hook material separated from and located substantially opposite to said second discrete area of hook material across the hat circumference;
a plurality of patches, each of said patches having a first surface bearing visual indicia and a second surface covered with loop material, each of said patches is connectable to one of said first and second discrete areas of hook material of said hat, and
a border of material surrounding said first discrete area of hook material, said material forming said border is different from said hook material and said fabric of said hat.

5,359,734

HAT WITH INTERCHANGEABLE DISPLAY PANELS

William H. Rathburn, Ruston, La., assignor to The Patch Hat Corp., Dubach, La.

Filed Jun. 2, 1993, Ser. No. 71,588
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—195.1 **3 Claims**



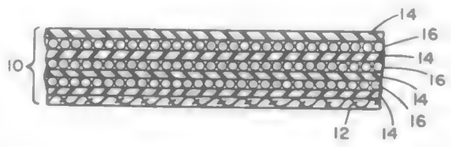
1. A versatile head gear system comprising:
a hat having an essentially vertical wall in a portion of which an opening has been made, and having a seam formed about the periphery of said opening;
one part of a two-part hook-and-pile fastening means filling said opening and also extending behind said wall portion around the periphery of said opening and secured to the interior surface of said wall portion by sewing said one part to said seam;
a plurality of cloth panels, each of substantially the same size and shape as said opening and each bearing a name, logo, character, or other message on one side thereof; and
each of said plurality of cloth panels, on the other side thereof, having secured thereto a fastening means corresponding to the other part of said two-part fastening means, whereby a particular cloth panel bearing one of said name, logo, or other message may be selected for display with said hat, and the other side of the particular cloth panel may then be removably attached to said one part of said two-part fastening means that is accessible through said opening.

5,359,735

SURFACE COATING PROCESS

Gregg M. Stockwell, 1513 Via Madrina St., San Diego, Calif. 92111

Continuation-in-part of Ser. No. 670,579, Mar. 18, 1991, Pat. No. 5,196,240. This application Dec. 28, 1992, Ser. No. 997,327
Int. Cl.[5] A41D *27/24*
U.S. Cl. 2—243.1 **26 Claims**



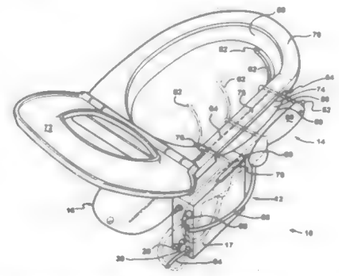
20. A seamless, one-piece garment, comprising:
an inner foundation layer of textile material for covering part of a wearer's body including at least part of the torso, the inner layer comprising a plurality of pieces of said material secured together along seams;
a continuous coating completely covering said inner layer including said seams to provide a seamless outer layer;
the coating including at least one layer of sprayable rubber material; and
the coating including a layer of hollow, gas-filled bodies on top of said one layer.

5,359,736

SPRAY MEANS FOR A TOILET PEDESTAL

Gerard J. Olivier, Perth, Australia, assignor to Colivier Pty Ltd., Australia

PCT No. PCT/AU91/00523, § 371 Date May 17, 1993, § 102(e) Date May 17, 1993, PCT Pub. No. WO92/00851, PCT Pub. Date May 29, 1992
PCT Filed Nov. 15, 1991, Ser. No. 50,403
Claims priority, application Australia, Nov. 16, 1990, PK 3392
Int. Cl.[5] A61H *35/00*
U.S. Cl. 4—448 **8 Claims**



1. A spray attachment for a toilet pedestal having an upper peripheral rim defining front, rear and side edges comprising a guide base shaped and configured for mounting over said rim, said guide base further including a recess formed along a bottom edge thereof which defines a longitudinal slotted opening substantially parallel to a for and aft axis of the toilet pedestal between said bottom edge and one of said side outer edges, said attachment further including a housing adapted to be mounted to one side of said toilet pedestal, said housing having an inlet adapted to be connected to a water supply, said housing having a forced air source, therein a conduit means supported at one end thereof from said housing and extending from said housing and through said longitudinal slotted opening to be received within the pedestal and to be movable for at least a portion of its travel along said fore and aft axis of the pedestal, an upwardly directed outlet nozzle provided at an outer end of said conduit means and adapted to be located at a position below the lowermost portion of the body of an occupant of the pedestal, said conduit means being connected at its one end to a first end of a first conduit, said first conduit further comprising a second end having a first portion extending therefrom and connected to said inlet and a second portion extending from said second end of said first conduit and connected to said forced air source, a first valve provided in the first portion and a second valve provided in the second portion, a handle connected to said conduit means to facilitate manipulation of said conduit means by the occupant to enable said conduit means to be moved from a stored position wherein said nozzle is located adjacent an inner wall of the pedestal to a range of positions along said fore and aft axis below the anus and genitalia of the occupant, a control means operatively connected to said first and second valves to selectively open said first valve and said second valve when said conduit means is moved to said range of positions.

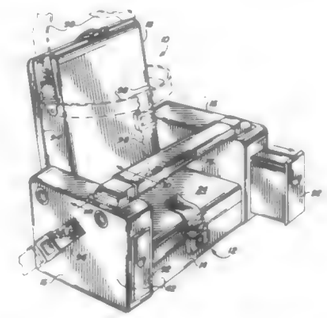
5,359,737

CONVERTIBLE MULTI-FUNCTIONAL SEAT APPARATUS

Trevorlyn H. Hodge, 62 Winfield Ave., Mt. Vernon, N.Y. 10552

Filed Feb. 17, 1993, Ser. No. 18,742
Int. Cl.[5] A47K *11/04*
U.S. Cl. 4—483 **17 Claims**

1. A convertible multi-functional seat apparatus, comprising:
(a) a base having a generally horizontal seat and a pair of generally vertical armrests disposed along and extending above opposite sides of said seat, said seat having means defining an opening formed therein;
(b) a seat back attached to said seat of said base and being disposed in a generally upright position along a rear end of said seat of said base;
(c) a seat potty cover supported on said seat for movement between a first position adjacent to said seat in which said cover overlies and conceals said opening and a second position remote from said seat in which said cover is displaced from and exposes said opening; and
(d) a potty assembly disposed in said opening and supported by opening defining means of said seat, said potty assembly including a flexible receptacle and a retainer member supporting said receptacle about a peripheral edge portion thereof and being supported in said opening by said opening defining means of said seat;



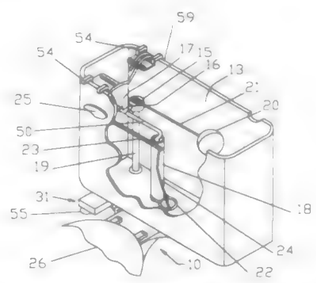
(e) said flexible receptacle of said potty assembly being a flexible liner bag fabricated of a material impervious to fluids and having an upper peripheral edge portion defining an open top on said bag;
(f) said retainer member of said potty assembly being an annular ring incorporating means for adjusting the circumferential size of said annular ring to removably fit within said opening in said seat, said upper peripheral edge portion of said plastic liner bag being foldable over said annular ring such that said bag edge portion surrounds said annular ring and is anchored between said annular ring and said opening defining means of said seat wherein said means for adjusting the circumferential size of said annular ring includes a pair of end portions of said annular ring being telescopically inter-fitted together.

5,359,738

TOILET TISSUE WETTING DEVICE

John G. Kurtz, 102 Hoffman Rd., Rochester, N.Y. 14622

Filed Apr. 25, 1994, Ser. No. 232,660
Int. Cl.[5] A47K *17/00*
U.S. Cl. 4—661 **3 Claims**



1. A toilet tissue wetting device adapted for use with a conventional water closet/toilet having a water reservoir tank including a ballcock valve having a water inlet and water outlet means in communication with an external water source,

a hollow overflow tube having an upper opening, reservoir tank outlet means, a toilet bowl having a flat uppermost flange with an upper and a lower surface, a toilet seat fastened to the upper surface of the uppermost flange with a pair of bolts, washers and nuts, means for releasing water from said water reservoir tank through said reservoir tank outlet means to said toilet bowl, and means for actuating said ballcock for admitting water from said external water outlet means into said water reservoir tank, said tissue wetting device comprising:

a bracket having a first end and a second end, said bracket fastened at said first end to said lower surface of said flat uppermost flange with a bolt, washer and nut, said second end extending outwardly from said flange and under said water closet reservoir tank,

reservoir means, for holding a small quantity of water, fastened to said second end of said bracket, said reservoir means having a back end located beneath said water closet reservoir tank and a front end protruding beyond said water closet reservoir tank, said reservoir means having a water inlet, an air vent, a water dispensing nozzle and a bottom, said bottom having a pivot mount formed thereon,

a plurality of toilet closet tank cover spacer clips attached to said water closet walls, said spacer clips for retaining said cover in a slightly raised position, and each of said clips having an oblong hole therein,

a tubular "T" fitting attached to said ballcock valve water outlet means, said fitting having flexible tubing attached thereto, and said tubing running up and over the top of said water closet tank wall through said oblong hole in one of said spacer clips and being connected to said reservoir means water inlet, for replenishing said quantity of water,

flexible tubing attached to said reservoir means air vent, said tubing running parallel to said water outlet tubing, up and over the top of said water closet rear wall through said oblong hole in one of said spacer clips and ending above the water line in said closet tank, and

water dispensing means, for dispensing selected quantities of water for wetting said toilet tissue, pivotally connected to said pivot mount, said dispensing means having a valve lever handle, a sealing pad for closing said water dispensing nozzle, and having spring biasing means mounted thereon for holding said sealing pad against said water dispensing nozzle and thus sealing said water dispensing nozzle when not being used.

5,359,739

PATIENT REPOSITIONING AND POSITION MAINTENANCE DEVICE

Thersa J. Rains, and Mark Pempsell, both of Wagoner, Okla., assignors to DeMar Technologies, Inc., Wagoner, Okla.

Filed Aug. 30, 1993, Ser. No. 113,076
Int. Cl.[5] A61G *12/00*; A47G *9/00*; A47C *21/08*
U.S. Cl. 5—81.1 **7 Claims**

1. An adult patient repositioning and position maintenance device adapted to be positioned on the supporting surface of a bed of conventional width, comprising:

a rectangular sheet of fabric material,

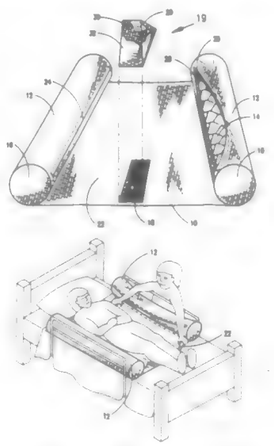
a pair of resilient cylindrical cushions,

the rectangular sheet of fabric material being folded and stitched such that a rectangular patient resting area is disposed between a pair of cylindrical pockets, the cylindrical pockets being situated on opposite sides of the rectangular patient resting area, each cylindrical pocket having a cylindrical cushion received therein, the distance between the cylindrical pockets being approximately equal to the width of the bed upon which the device is used,

a leg cushion, and

means for connecting the leg cushion to the rectangular sheet of fabric material, the leg cushion being attached to the rectangular sheet of fabric material equidistant from each cylindrical pocket,

whereby one of the cylindrical pockets with cushion therein can be used to maintain the position of a bedfast patient by



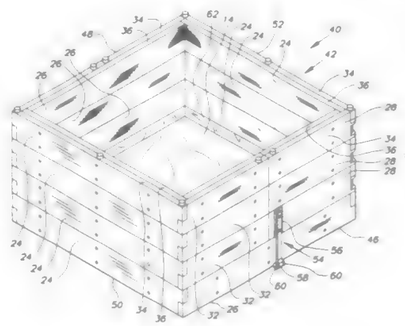
rolling the cylindrical pocket with cushion therein snugly against the bedfast patient's shoulder, back and buttocks.

5,359,740

PATIENT RESTRAINT BED

David Markley, Norristown; Margaret Lawler, Lester; Jane Erdman, Lafayette Hill, and Timothy Pierson, Bryn Mawr, all of Pa., assignors to Bryn Mawr Rehabilitation Hospital, Malvern, Pa.

Filed Jan. 31, 1991, Ser. No. 648,557
Int. Cl.[5] A47C *21/08*
U.S. Cl. 5—425 **2 Claims**



1. A bed, comprising:

(a) a mattress, disposed horizontally;

(b) a wall, disposed vertically, and extending about all of said mattress, said wall comprising:

(i) a plurality of lightweight panels disposed in a plurality of courses, said panels being arranged in end-to-end relation in each of said courses, each one of said panels comprising a rigid structural section on a side of said wall facing outward from said mattress and padding on a side of said wall facing said mattress, said padding being provided over substantially all of said side of said wall facing said mattress, said padding having a washable covering substantially impermeable to moisture; said rigid structural section shaving a washable surface substantially impermeable to moisture; and

(ii) engaging means for removably maintaining adjacent ones of said panels in each course rigidly engaged with respect to one another;

wherein said wall further comprises a front wall section having a first end and a second end comprising, in a first course a front wall panel rigidly secured at each end, and a gate panel and a half panel in at least one course above the first course, said gate panel hingedly mounted at a hinge end thereof and openably latched at a latch end thereof opposite to said hinge end, a rear wall section having a first end and a second end, said first end of said first side wall section being rigidly joined to said first end of said front wall section and said second end of said first side wall section being rigidly joined to said first end of said rear wall section, and a second side wall section having a first end and a second end, said first end of said second side wall section being rigidly joined to said second end of said front wall section and said second end of said second side wall section being rigidly joined to said second end of said rear wall section, said wall sections forming right angles to one another where the wall sections are joined.

b) a tray having a lower surface and base plate engagement means disposed on said lower surface for slidably and rotatably engaging the base plate, said base plate engagement means comprising first and second opposed substantially L-shaped flanges depending from the lower surface and projecting towards one another, and said tray being removable from the base plate.

5,359,742

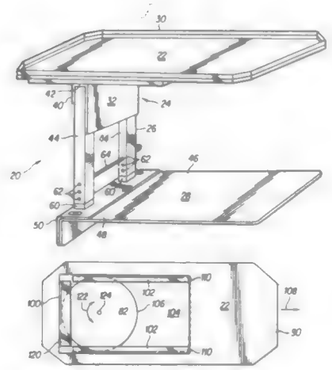
Patent Not Issued For This Number

5,359,741

ROTATABLE AND REMOVABLE BED TRAY

Brian Lang, 39 Greenwood Trail, Brantford, Ontario, N3R 6G4, Canada

Filed Apr. 21, 1993, Ser. No. 49,373
Int. Cl.[5] A47B *23/02*
U.S. Cl. 5—507.1 **19 Claims**



1. A bed tray assembly comprising:

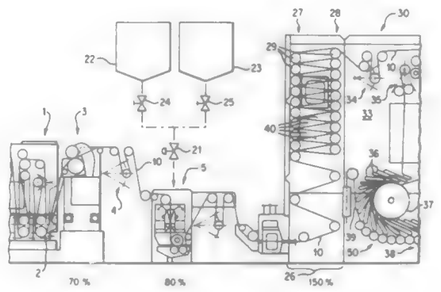
a) a disk-shaped base plate having an upper face, a lower face and side rail engagement means for removably engaging a bed side rail and maintaining the base plate in a horizontal orientation; and

5,359,743

CONTINUOUS PROCESS AND INSTALLATION FOR TREATING TEXTILE FABRIC WEBS

Günter Von Harten, Kaarst; Walter Keller, Willich; Johannes Kutz, Tönisvorst; Bernhard Benz, Krefeld; Christian Meyer, Viersen-Dülken, and Wolfgang Kurschatke, Krefeld, all of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH, Krefeld, Germany

PCT No. PCT/DE91/00101, § 371 Date Aug. 12, 1992, § 102(e) Date Aug. 12, 1992, PCT Pub. No. WO91/13200, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 8, 1991, Ser. No. 920,313
Claims priority, application Germany, Feb. 26, 1990, 4005980
Int. Cl.[5] D06B *3/12*
U.S. Cl. 8—151 **10 Claims**



1. A continuous method for treating a textile fabric web, comprising the steps of:

applying at least a first treatment liquor in at least one step;

squeezing out said first treatment liquor such that the web has a moisture content of 60 to 120% to form a damp fabric web;

applying a second treatment liquor to both sides of the damp fabric web, such that the web contacts only small liquor supply, said supply being continuously consumed and replenished at a substantially equal rate

feeding the web with said treatment liquor into a heating zone of an ager; and

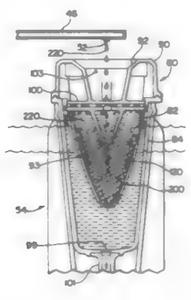
guiding the web in said heating zone along a zig-zag path formed by a plurality of essentially horizontal loops that are inclined downward in an upstream direction, said horizontal loops being located one over the other, wherein the web attains a moisture content of 100–220% in the course of the treatment.

5,359,744

FABRIC SOFTENER DISPENSER SYSTEM FOR AN AUTOMATIC WASHER

Vance A. Kimball, Lincoln Township, Berrien County; Vincent P. Gurubatham, and Phalguni S. Roy, both of St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 16, 1993, Ser. No. 106,673
Int. Cl.[5] D06F *39/02*
U.S. Cl. 8—158 **17 Claims**



6. In an automatic washer including a tub, a basket disposed within said tub such as to rotate about a rotational axis, an agitator disposed within said basket, a motor for selectively rotating said basket and said agitator about said rotational axis and a fill valve interconnected with an external water supply for controlling a supply of washing liquid into said tub, a dispensing system comprising:

a receiving cup capable of receiving and containing a wash additive, said receiving cup being disposed on said agitator for rotation therewith;

a dispensing cup secured to receive said wash additive from said receiving cup, said dispensing cup being disposed at least partially below said receiving cup and disposed on said agitator for rotation therewith;

a cover member being toroidally shaped and having an inner periphery defining a funnel portion extending into said receiving cup for directing said wash additive and said wash liquid into said receiving cup, said cover member being disposed on said agitator at least partially above said receiving cup;

means for continuously supplying wash liquid from said external source into said receiving cup during operation of said fill valve;

an overflow tube extending from the interior of the funnel portion of said cover member to the exterior of said receiving cup wherein said overflow tube is positioned on said funnel portion for defining a maximum fluid level in said receiving cup such that wash liquid supplied to said receiving cup in excess of the quantity required to fill said receiving cup to said maximum fluid level is directed from said funnel directly into said dispensing cup through said overflow tube; and

means for dispensing said mixed wash additive and wash liquid from said receiving cup into said tub.

5,359,745

METHOD OF STONE WASHING FABRIC WITH A SYNTHETIC ABRASIVE STONE

Henry C. Oat, P.O. Box 9307, Santa Fe, N. Mex. 87504

Continuation of Ser. No. 889,452, May 27, 1992, Pat. No. 5,266,087. This application Oct. 12, 1993, Ser. No. 135,761
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] D06B *3/10*
U.S. Cl. 8—159 **20 Claims**

1. A method of stone washing fabric, comprising:

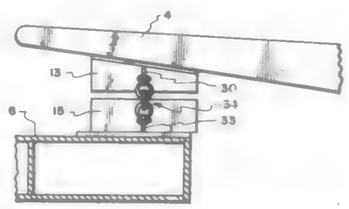
washing fabric with a synthetic abrasive stone comprising a foamed glass derived from a mixture of glass and a foaming agent.

5,359,746

RAMP JUNCTION

Patrick R. Kane, Port Hueneme; Billie R. Karrh, Santa Paula; Kit Mack, Camarillo, and Samuel J. Oppedisano, Ojai, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1991, Ser. No. 808,303
Int. Cl.[5] E01D *1/00;* **E02D** *23/00*
U.S. Cl. 14—711 **14 Claims**



1. A ramp junction for connecting a ramp and a platform, the ramp having a bottom and the platform having a top, comprising:

a) an upper beam attached to the bottom of a ramp;

b) a lower beam attached to the top of a platform;

c) means for pivotally connecting the upper beam to the lower beam the pivotal connecting means capable of pivoting in all directions to accommodate roll, pitch, heave and other relative motions between a ramp and a platform;

d) means mounted on a ramp for dampening and stabilizing the movement of a ramp relative to a platform;

e) means mounted on a ramp for limiting the movement of a ramp relative to a platform.

5,359,747

POWER TOOTHBRUSH

Mikio Amakasu, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1993, Ser. No. 110,606
Claims priority, application Japan, Aug. 31, 1992, 4-231968; Feb. 24, 1993, 5-35301
Int. Cl.[5] A61C *17/34;* **A46B** *13/02*
U.S. Cl. 15—22.1 **11 Claims**

1. A power toothbrush comprising:

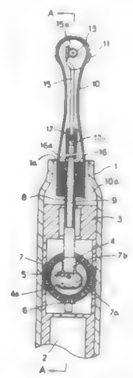
a case;

a drive motor operable to effect rotary motion mounted inside said case;

a drive shaft mounted inside said case in such a way that said drive shaft is free to move in an axial direction;

a first transmission mechanism for converting the rotary motion of said drive motor into a reciprocating motion and transmitting the reciprocating motion to said drive shaft;

an attachment carried by said drive shaft;



a rotary brush member mounted on said attachment; and

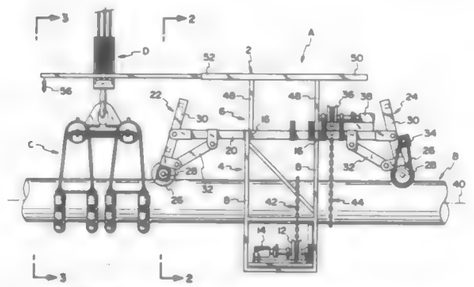
a second transmission mechanism for converting the reciprocating motion of said attachment in said axial direction into a rotary motion and transmitting this rotary motion to said rotary brush member.

5,359,748

APPARATUS FOR CLEANING THE EXTERIOR OF A PIPE

Thomas J. Etheridge, Columbus, Tex., assignor to Pipeline Rehab, Inc., Houston, Tex.

Filed Jan. 15, 1993, Ser. No. 62,953
Int. Cl.[5] B08B *9/02*
U.S. Cl. 15—93.1 **20 Claims**



1. An apparatus for cleaning the exterior of a pipe; comprising:

a) a frame having upper and lower sections, said upper section of said frame being positioned above a pipe to be cleaned when the frame is mounted thereon, said lower section of said frame being positioned below the pipe to be cleaned when the frame is mounted thereon;

b) means operably associated with said frame for supporting said frame for movement on the pipe to be cleaned;

c) a first pulley being secured to the lower section of said frame such that said first pulley is positioned beneath the pipe to be cleaned when said frame is mounted thereon;

d) a second pulley being secured to the upper section of said frame such that said second pulley is positioned above the pipe to be cleaned when said frame is mounted thereon;

e) at least one elongated flexible cleaning member drivingly connected to one of said first and second pulleys and extending around said pipe for cleaning an exterior surface of the pipe; and,

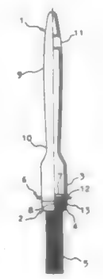
f) a drive member drivingly connected to said one of said first and second pulleys to drive said at least one flexible cleaning member to clean the exterior surface of the pipe.

5,359,749

PAINT BRUSH WITH REPLACEABLE HEAD

Alan C. Chu, 1611 Edgewood Dr., Alhambra, Calif. 91803

Filed Apr. 6, 1992, Ser. No. 864,038
Int. Cl.[5] A46B *7/04*
U.S. Cl. 15—176.1 **4 Claims**



1. A paint brush comprising:

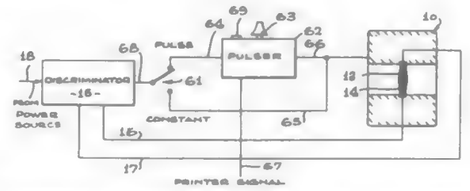
a handle portion and a bristle portion, said handle portion having a hand gripping portion and a substantially rectangular shaped chamber having opposing side walls attached to one end of said hand gripping portion, and an open end for receiving said bristle portion; said bristle portion having a substantially rectangular shaped bristle retaining member with bristles adhesively attached thereto, said retaining member adapted to be mounted in said chamber, said chamber side walls and said retaining member having a plurality of aligned apertures therethrough; a removable pin means extending through said apertures to retain said retaining member in said chamber; flange means extending around said chamber open end and overlapping said bristles adjacent said retaining member.

5,359,750

CONTROL DEVICE FOR FILM CLEANERS THAT REMOVE DUST, LINT AND STATIC CHARGE FROM FILM

Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356

Division of Ser. No. 920,646, Jul. 28, 1992, abandoned. This application May 7, 1993, Ser. No. 57,869
Int. Cl.[5] B08B *6/00*
U.S. Cl. 15—319 **2 Claims**



1. In an electrically operated film cleaner for removing dust, lint and static charge from the film, used in conjunction with a film printer and located adjacent to a film entrance to the film printer such that the film passes through the film cleaner before entering the film printer, said film cleaner having an upper jaw and a lower jaw, and between which there is a space for inserting the film,

a device to activate the film cleaner that turns said cleaner

ON and OFF continuously in a regular periodic cycle when film is inserted into the space between the jaws and to deactivate the film cleaner to remain off when there is no film between the jaws comprising:

a discriminator means that detects the presence of film within the space between the jaws of the film cleaner and produces an output signal,

a pulser means, connected by circuitry means to the discriminator means, which upon receiving a signal from the discriminator means, indicating the film is between the jaws of the film cleaner, operates the power to the film cleaner to cycle the film cleaner ON and OFF repeatedly at regular intervals of ON and regular intervals of OFF, said intervals of ON and OFF, each being set by separate adjustment means, to coincide with regular stop and go motion of the film printer as the printer stops the film to print each individual frame and then advances and stops the film to print each subsequent frame, in a repetitive cyclic manner, on when film advances and off when film stops,

a switch means that selects or excludes the use of the pulser means for the operation of the film cleaner.

5,359,751

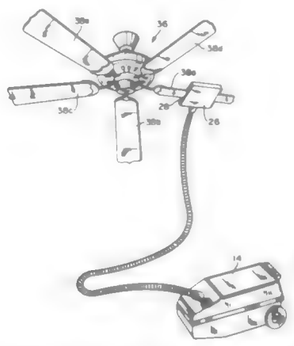
VACUUM ATTACHMENT FOR CLEANING ELONGATE SLATS SUCH AS CEILING FAN BLADES

Tullio L. Bellardini, 57 Seminole Ave., Rockaway, N.J. 07866

Continuation of Ser. No. 54,773, Apr. 27, 1993, abandoned. This application Apr. 6, 1994, Ser. No. 224,135

Int. Cl.[5] **A47L** *9/06*

U.S. Cl. 15—394 **4 Claims**



1. A vacuum cleaner attachment for cleaning elongate slats such as ceiling fan blades comprising:

a housing adapted to receive at least one of the slats therein, said housing having:

(a) an elongate top panel and an elongate bottom panel defining a predetermined height therebetween as determined by opposing first and second side walls, wherein said top and bottom panels define a width of a distance sufficient to receive said at least one slat therein, and an elongate length adapted to extend a predetermined distance along said at least one slat corresponding to a distance at least as substantially great as that of said width; and

(b) a receiving side for receiving said at least one slat therein and an exit side for permitting emergence of said at least one slat therefrom, wherein said opposing first and second side walls define the distance between said receiving side and said exit side;

flexible flap means for sealing said exit side of said housing and concentrating the flow of air generated by the vacuum cleaner within said housing, said flap means being adapted to permit the at least one slat to extend therethrough and to at least partially close said exit side of said housing with the at least one slat extending therethrough, so that the concentrated flow of air within said housing facilitates the sucking up of particulate matter into said vacuum cleaner; and

means for pivotally connecting said housing to a vacuum cleaner at said first or second side wall, thereby maintaining said housing coplanar with said slat in the plane of rotation of said ceiling fan blade, so that the elongate slats are less likely to become imbalanced or otherwise damaged as a result of cleaning the same with the attachment, whereby said housing can be manipulated to receive the at least one slat and particulate matter can be sucked into a vacuum cleaner during cleaning of the at least one slat.

5,359,752

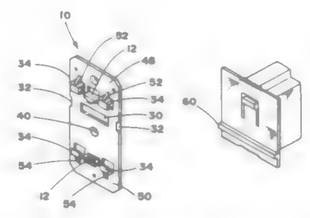
LATERALLY ADJUSTABLE MOUNTING BRACKET FOR USE ON A DRAWER AND WITH A TONGUELESS DRAWER GUIDE IN CONNECTION WITH A DESK OR CABINET

Georg Domenig, 1205 Bayhill Ct., Kernersville, N.C. 27284

Continuation-in-part of Ser. No. 929,754, Aug. 12, 1992, abandoned. This application May 14, 1993, Ser. No. 60,838

Int. Cl.[5] **E05D** *15/00*

U.S. Cl. 16—94 R **3 Claims**



1. A laterally adjustable mounting bracket for use with a drawer maintained by a supporting surface and with a tongueless drawer guide, the bracket comprising: a base plate releasably secured to the supporting surface; a movable drawer guide plate cooperatively receiving a tongueless drawer guide and cooperatively associated with the base plate; and means associated with base plate and guide plate adjustably securing the drawer guide plate to the base plate, the adjustably securing means including base plate spring members having a plurality of serrations, guide plate engaging members having a plurality of serrations cooperatively engaging the serrations of the base plate spring members to enable preselective lateral adjustment of the drawer and the carried drawer guide and drawer guide plate, the drawer guide plate having a resilient stop and the base plate having an elongated slot and connecting ramp cooperatively receiving and engaging the resilient stop to limit the preselected adjustment of the drawer, drawer guide, and drawer guide plate wherein the guide plate and the base plate means includes a support ridge on one of the plates and a channel on the other of the plates cooperatively receiving the support ridge.

5,359,753

METHOD AND APPARATUS FOR PLACING FIBER BALES IN READINESS FOR FIBER TUFT REMOVAL THEREFROM

Ferdinand Leifeld, Kempen, and Josef Temburg, Jüchen, both of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Germany

Filed Aug. 28, 1992, Ser. No. 936,645

Claims priority, application Germany, Aug. 28, 1991, 4128452; Sep. 21, 1991, 4131473; Apr. 25, 1992, 4213718; May 6, 1992, 4214933

Int. Cl.[5] **D01B** *1/00*

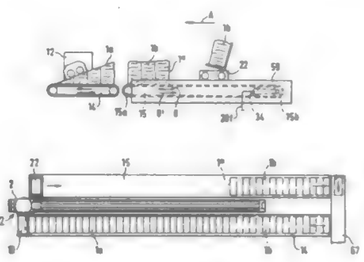
U.S. Cl. 19—97.5 **33 Claims**

1. An apparatus for placing fiber bales in readiness for removing fiber tufts therefrom by a travelling bale opener having an operational range; said apparatus comprising:

(a) first means for supporting thereon a plurality of consecutively positioned fiber bales forming a standby bale series having a leading end and a trailing end;

(b) second means for supporting thereon a plurality of consecutively positioned fiber bales forming an operational bale series to be worked on by the bale opener; the trailing end of the standby bale series being farther from said second means than said leading end; said second means receiving fiber bales from said first means for replenishing the fiber bales of the operational bale series with fiber bales of the standby bale series; and

(c) a bale transporting means for conveying a fiber bale along said first means to the trailing end of the standby bale series and for depositing the fiber bale onto said first means at said trailing end to replenish the standby bale series; said bale transporting means comprising a carriage.



5,359,754

TOP END STOP FOR CONCEALED SLIDE FASTENER

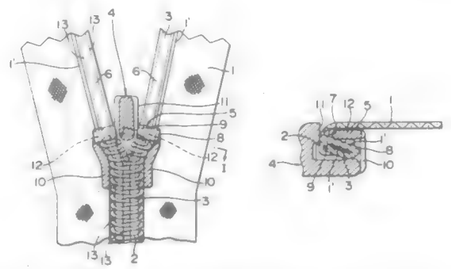
Naoki Kondo, and Yoshinori Fujisaki, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 12, 1993, Ser. No. 89,553

Claims priority, application Japan, Jul. 16, 1992, 4-049971[U]

Int. Cl.[5] **A44B** *19/00*

U.S. Cl. 24—436 **3 Claims**



1. A concealed slide fastener top end stop formed by wrapping around an edge of a fastener tape, said end stop comprising:

a U-shaped piece of synthetic resin wherein said U-shaped piece of fused at its open ends through the fastener tape, such fused-through portion being shifted inwardly from a folded-in part of the fastener tape to which a row of fastener elements is attached wherein the folded-in part with the fused-through portion opens such that an end of the U-shaped piece opposite the fused-through portion is raised at an angle.

5,359,755

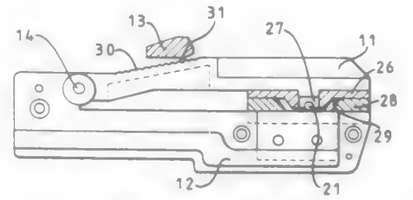
GARMENT SECURITY CLIP

Paul W. Dalton, Coventry, and David A. Cooper, Market Drayton, both of England, assignors to Volumatic Ltd., Coventry, England

Filed Oct. 8, 1992, Ser. No. 958,292

Int. Cl.[5] **A44B** *21/00*

U.S. Cl. 24—515 **3 Claims**



1. A garment security clip comprising a pair of relatively movable clamping jaws, restraining means adapted to limit the separation of the jaws and slidable relative to the jaws between free and restraining positions, the jaws having face members adapted to contact each other in a clamped condition, one face member including an aperture means and the other face member including switch means aligned with the aperture means so that, in the clamped condition, the switch means is not normally operated by clamping together of the jaws except when a layer of fabric overlies and effectively closes the aperture means, said face members being detachable and replaceable and wherein detent means are provided for the slidable restraining means at spaced positions between the free and restraining positions thereof, wherein the detachable face members comprise one face member having a generally frusto-conical boss and another face member having a generally frusto-conical recess, the frusto-conical boss and recess being aligned to cooperate in use and the frusto-conical boss having said aperture means provided centrally therein and the frusto-conical recess having switch means therein.

5,359,756

AUTOMATIC BUCKLING DEVICE

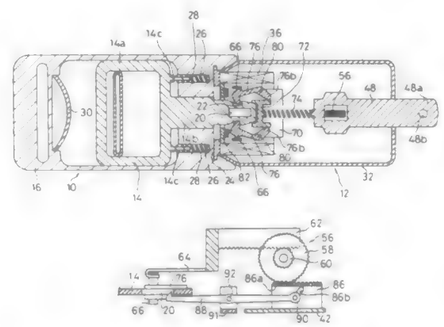
Kiyotaka Miyauchi, and Tetsuya Hamaue, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Jan. 18, 1994, Ser. No. 183,407

Claims priority, application Japan, Jan. 26, 1993, 5-010867

Int. Cl.[5] **A44B** *11/00*

U.S. Cl. 24—603 **5 Claims**



1. An automatic buckling device comprising:

a tongue accommodating a plate-like tongue base which can project from the forward end of said tongue and a tongue spring which urges said tongue base backward; and

a buckle which draws said tongue base of said tongue into

the interior of said buckle so as to lock said tongue in said buckle and maintain the connection therebetween;

said tongue base being provided with a hole for receiving a hook at the forward end portion thereof, and notched portions for enabling said tongue base to be latched on both sides thereof;

said buckle including an ejector holder affording an admission space into which said tongue base is inserted, a pair of rocking arms which are engageable with said notched portions of said tongue base, a hook which is engageable with said hole of said tongue base, a latch plate for holding said rocking arms in the state of being engaged with said notched portions, an ejector which is provided in said admission space in such a manner as to be advanced and withdrawn in the direction of insertion of said tongue base, an ejector spring which urges said ejector to push said tongue base backward, a sensor for detecting the approach of said tongue, and a driving mechanism for driving said hook and said latch plate in accordance with a detection signal of said sensor;

said rocking arms extending along the length of said buckle in such a manner as to clamp said tongue base therebetween which enters said admission space, and being provided at the forward end portion thereof with claw portions which engage said notched portions of said tongue base;

the longitudinal middle portions of said rocking arms being pivotably supported by said ejector holder so as to allow the advance and the withdrawal of said claw portions into and from said admission space;

the rear end portions of said rocking arms enter said admission space when said claw portions of said rocking arms are withdrawn from said admission space;

said ejector being disposed between said pair of rocking arms in such a manner as to be engageable with said rear end portions of said rocking arms so that the rear end portion of said ejector pushes said rear end portions of said rocking arms to the outside of said admission space when said ejector withdraws, thereby advancing said claw portions of said rocking arms into said admission space;

said latch plate being disposed on the outside of said pair of rocking arms so as to be movable to the back sides of said claw portions of said rocking arms by said driving mechanism when said claw portions of said rocking arms enter said admission space; and

said hook being retained in said hole of said tongue base and moved in the direction of insertion of said tongue base by said driving mechanism, when said tongue base advances in said admission space.

5,359,757

METHOD AND APPARATUS FOR TREATING A BELT-LIKE ARTICLE

Yoshimichi Yamakita, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 5, 1993, Ser. No. 56,541

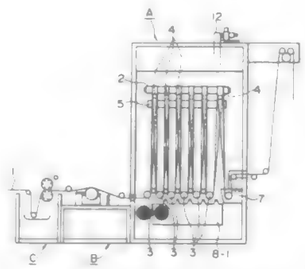
Claims priority, application Japan, May 15, 1992, 4-123006

Int. Cl.[5] D06B *3/22*

U.S. Cl. 28—167 **7 Claims**

1. A method of treating a continuously travelling belt-like article with various processes in a tightly closed treatment chamber, comprising the steps of:

(a) introducing the belt-like article horizontally into said treatment chamber; p1 (b) guiding the introduced belt-like article up and down in a meandering path between an upper roller and a number of successive lower rollers in said treatment chamber while the belt-like article is being treated with the various processes, said lower rollers aligned along a vertical plane parallel to an axis of the upper roller said guiding including firstly directing the belt-like article upwards via said first lower roller, twisting the belt-like article by 90° in one direction, winding the belt-like article around said upper roller, then directing the belt-like article downwards and winding around a second lower roller, secondly directing the belt-like article upwards again, twisting the belt-like article by 90° in a direction opposite to said one direction, winding around



said upper roller, then directing the belt-like article downwards and winding around a third lower roller; and

(c) discharging the treated belt-like article horizontally out of said treatment chamber.

5,359,758

PROCESS AND AN ARRANGEMENT FOR THE PIERCING OF A SLIVER

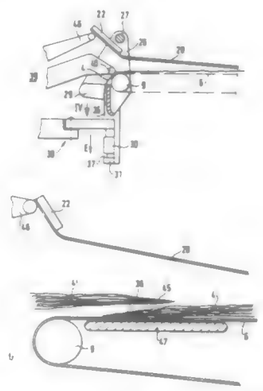
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Germany

Filed Apr. 20, 1992, Ser. No. 871,127

Claims priority, application Germany, Jul. 3, 1991, 4121980

Int. Cl.[5] D04H *1/16;* **D01H** *11/00;* **D01G** *25/00*

U.S. Cl. 28—117 **17 Claims**



1. A process for the piecing of a starting portion of a new sliver to an end portion of a sliver that travels into a spinning arrangement including providing a spinning machine with a transport device between a can containing sliver and a drafting unit, the transport device including a transport belt having a drive and a skid that presses the sliver against the transport belt, the drive and the skid having an inlet area, comprising:

lifting the skid off the transport belt at the inlet area of the transport belt and the skid,

connecting the end portions of the slivers with one another in an overlapping and supported manner so as to form an overlapping area,

placing the slivers in the overlapping area on said transport belt,

placing the skid on the overlapping area, and loading the overlapped sliver by means of the skid thereby pressing the slivers onto the transport belt.

5,359,759

TWO-COMPONENT LOOP SEWING YARN AND MANUFACTURE THEREOF

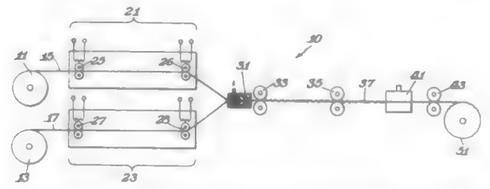
Ingolf Jacob, Untermeitingen, and Josef Geirhos, Bobingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 773,705, Oct. 9, 1991, abandoned, which is a division of Ser. No. 417,904, Oct. 6, 1989, Pat. No. 5,100,729. This application Dec. 3, 1993, Ser. No. 161,980

Claims priority, application Germany, Oct. 7, 1988, 3834139

Int. Cl.[5] D02G *1/16;* **D02J** *1/22*

U.S. Cl. 28—271 **12 Claims**



1. A process for manufacturing a loop sewing yarn having a plurality of components, said plurality of components comprising core and effect filaments of high tenacity and low shrinkage and made of synthetic polymers having an ultimate tenacity of above 40 cN/tex, a thermoshrinkage at 180° C. of below 8% and an ultimate tensile strength elongation of below 18%, said process comprising:

supplying to a texturing jet a core feed yarn strand and an effect feed yarn strand, the core feed yarn strand and the effect feed yarn strand being supplied at different speeds, the core feed yarn strand and the effect feed yarn strand having different total and filament linear densities but both of said feed yarn strands comprising high-tenacity, low shrinkage and low-stretch filaments, wherein the high-tenacity, low-shrinkage and low-stretch filaments of both of said feed yarn strands comprise a synthetic polymer having an ultimate tenacity of at least 65 cN/tex, a thermoshrinkage at 180° C. of not more than 9% and an ultimate tensile strength elongation of at least 8%, further wherein the core feed yarn strand filaments are fed into the texturing jet at an overfeed of 3 to 10% and the effect feed yarn filaments are fed into the texturing jet at an overfeed of 10 to 60% and

air-jet texturing both of said feed yarn strands.

5,359,760

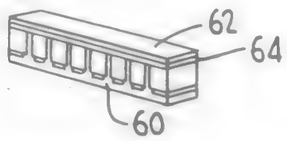
METHOD OF MANUFACTURE OF MULTIPLE-ELEMENT PIEZOELECTRIC TRANSDUCER

Lawrence J. Busse, Littleton, Colo.; Jeffry W. Stevenson, and Wayne Huebner, both of Rolla, Mo., assignors to The Curators of the University of Missouri on behalf of the University of Missouri-Rolla, Columbia, Mo.

Filed Apr. 16, 1993, Ser. No. 46,965

Int. Cl.[5] H04R *17/00*

U.S. Cl. 29—25.35 **28 Claims**



1. A method for manufacture of a plurality of flat plates of lead zirconate-titanate (PZT) piezoelectric material, comprising the steps of:

preparing a slurry comprising PZT powder in a liquid binder;

forming a green precursor tape by tape-casting said slurry;

allowing said green precursor tape to dry;

cutting said green precursor tape into strips;

stacking said strips of green precursor tape, said strips being interspersed by and in direct contact with flat spacer members comprising sintered PZT;

sintering said stacked strips of precursor tape and PZT spacer members, forming flat PZT plate members; and

removing said spacer members from said flat PZT plate members.

5,359,761

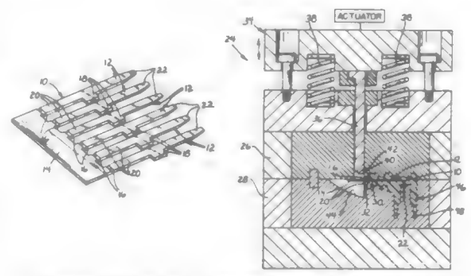
METHOD OF MAKING A HEADER OR HOUSING FOR ELECTRICAL CONNECTION TO A HYBRID CIRCUIT INCLUDING AN IN-CAVITY TRIM OF A TERMINAL FRAME

Duane E. Whitson, Amboy, and Daniel A. Lawlyes, Cicero, both of Ind., assignors to Delco Electronics Corp., Kokomo, Ind.

Filed Sep. 9, 1993, Ser. No. 118,546

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—883 **4 Claims**



1. A method of making a device comprising:

placing a single-piece terminal frame having a plurality of substantially parallel electrical connection fingers held together at one end by a tie-bar and having a notch formed on a surface of each of the electrical connection fingers at a location adjacent the tie-bar;

closing upper and lower molding shells of a molding apparatus, each having cavities formed therein to partially define a header for mounting to a semi-conductor device, and so that the upper and lower shells hold the single-piece terminal frame along a portion of the electrical connection fingers adjacent the notch and so that the tie-bar extends outwardly from the upper and lower mold shells;

advancing a trim punch held within the molding apparatus so that the terminal frame is bent by the trim punch at the notch, and further advancing the trim punch to tear the tie-bar off of the terminal frame at the location of the notch.

5,359,762

DUAL-USAGE RIVETERS

Yang-Ting Liu, No. 76-1, 4 Lin, Shang-Guan LI, Yuan-Li, Miao-Li Hsien, Taiwan, Province of China

Filed Oct. 13, 1993, Ser. No. 135,397

Int. Cl.[5] B21J *15/04*

U.S. Cl. 29—243.527 **1 Claim**

1. A dual-usage riveter comprising:

a base member having a centrally located through bore extending longitudinally therethrough and an external thread formed on one end thereof, said base member having two pairs of lugs extending from an external surface of said base member, each of said pairs of lugs being disposed on opposing sides of said base member;

two handles, each of said handles having a respective front

end pivotally coupled to a respective one of said pairs of lugs;

two symmetrical holder frames connected between said handles by links;

a pair of first rollers respectively mounted on said handles;

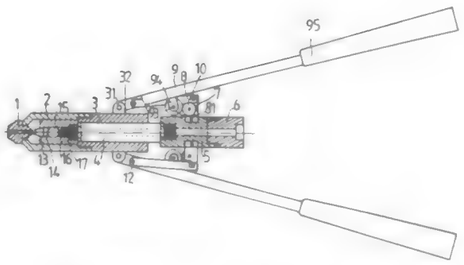
a pair of second rollers respectively mounted on said holder frames and disposed in contact with said pair of first rollers;

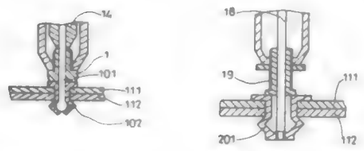
a pull shaft retained between said holder frames, said pull shaft being moved forwards as said handles are closed and backwards as said handles are opened;

an outer sleeve having an inner thread formed on one end thereof for threaded coupling with the external thread of said base member, said outer sleeve having a longitudinal bore formed therethrough;

connecting shaft disposed within said through bore of said base member and connected to said pull shaft on a first end there; and,

means for applying a tensile force to a rivet type fastener coupled to a second end of said connecting shaft, said force applying means being selected from (1) means for





displacing a rivet rod of a rivet type fastener, or (2) means for displacing means including (1) a hollow guide screw member coupled to a distal end of said outer sleeve, (2) an inner sleeve coupled to said second end of said connecting shaft and disposed within said bore of said outer sleeve, (3) a tapered clamping member disposed within a longitudinal bore formed through said inner sleeve and formed of two symmetrical clamping plates, (4) a plug member disposed within said longitudinal bore of said inner sleeve adjacent said connecting shaft, and (5) a first stop member and spring disposed within said longitudinal bore of said inner sleeve between said tapered clamping member and said plug member, said means for displacing a portion of a rivnut type fastener including (1) a second stop member coupled to said distal end of said outer sleeve, said second stop member having a longitudinal through bore formed therein, and in axial alignment with said longitudinal bore of said outer sleeve, and (2) a pull rod coupled to said second end of said connecting shaft and passing through said axially aligned bores of said outer sleeve and said second stop member.

5,359,763

PROGRESSIVE DIE ASSEMBLY APPARATUS WITH ROTATION AND INTERLOCK FOR THE MANUFACTURE OF LAMINATED PARTS

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L. H. Carbide Corporation, Fort Wayne, Ind.

Division of Ser. No. 42,992, Apr. 5, 1993, which is a division of Ser. No. 874,860, Apr. 28, 1992, which is a division of Ser. No. 724,866, Jul. 2, 1991, Pat. No. 5,123,155, which is a continuation of Ser. No. 171,555, Mar. 22, 1988, Pat. No. 5,087,849, which is a continuation of Ser. No. 853,207, Apr. 17, 1986, Pat. No. 4,738,020, which is a division of Ser. No. 478,692, Mar. 25, 1983, Pat. No. 4,619,028. This application Mar. 22, 1994, Ser. No. 216,303

The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—738 **8 Claims**

1. A die apparatus for manufacturing electric motor parts from a sheet of stock material, said die apparatus comprising:

a blanking station;

a stacking station;

first means at said blanking station for blanking generally planar laminas from said sheet stock material, each said lamina including interlocking means and having an axis substantially perpendicular to the lamina plane;

second means at said stacking station for receiving and stacking said laminas to form an interlocked stack having a central axis substantially coaxial with said lamina axes, said second means being rotatable within said die apparatus; and

third means coupled to said second means for providing rotation of said second means so that at least one of said laminas and said stack is rotated relative to one another, about said stack axis, prior to stacking said at least one lamina, to compensate for thickness variations in said sheet stock material.

5,359,764

METHOD FOR DISASSEMBLING AND ASSEMBLING A MOLD

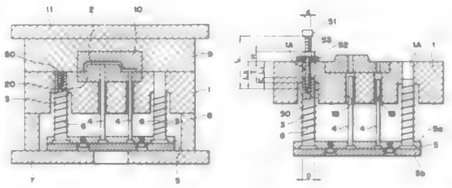
Nobuki Sasaki, Ibaraki, and Shigeo Negataki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,408

Claims priority, application Japan, Jul. 10, 1991, 3-195061; May 13, 1992, 4-146963

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—426.6 **8 Claims**



1. A method for assembling/disassembling a molding mold comprising the steps of:

providing a molding mold having a fixed mold plate, a movable mold plate positioned opposite to the fixed mold plate, mold members mounted opposite to each other on the fixed and movable mold plates and defining a cavity therebetween, a return pin slidably fitted through a sliding hole in the movable mold plate and having a first end facing the fixed mold plate, a return spring disposed about said return pin, an ejector plate supporting a second end of the return pin, and an ejector pin supported on the ejector plate and axially movable through an opening in the movable mold plate to extend into the cavity,

providing a screw member with a threaded shaft insertable into the sliding hole in the movable mold plate;

exposing the first end of the return pin;

inserting the screw member in the sliding hole and into a threaded opening of a predetermined depth at the first end of the return pin to engage the return pin; and

axially feeding the screw member to effect relative movement between the return pin and the moving mold plate to regulate the elastic force of the return spring, wherein a length of the screw member fed in the sliding hole is longer than the depth of the opening in the return pin.

5,359,765

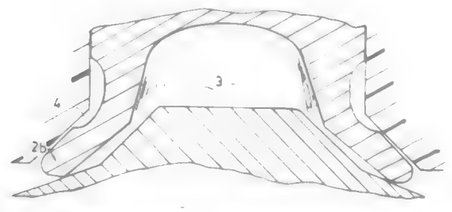
RIVET FOR COMPOSITE MATERIAL AND COMPOSITE MATERIAL ASSEMBLY PROCESS

Jean-Marc Auriol, and Philippe Bornes, both of Flourens, France, assignors to STE Ateliers de la Haute-Garonne-Ets Auriol et Cie, Balma, France

Filed Dec. 16, 1991, Ser. No. 808,448

Int. Cl.[5] B21D *39/00;* **B23P** *11/00*

U.S. Cl. 29—525.2 **3 Claims**



1. A riveting process for assembling sheets of fragile or brittle materials comprising:

providing in the sheets to be assembled a bore having a cylindrical portion, a first countersunk inlet portion at one end of said cylindrical portion flaring outwardly toward the surface of the sheets to be assembled,

providing a rivet having a preformed head and a shank having an external diameter corresponding to that of the cylindrical portion in said sheets to be assembled, said shank having an axial bore extending at least partially thereinto from the end opposite said preformed head in such a manner as to form a tubular shank portion, and a peripheral groove formed on the outer surface of said shank opposite said axial bore so as to locally reduce the external diameter of the shank, said axial bore having a frustoconical shape in the portion thereof opposite said groove, and said groove having an essentially cylindrical bottom so that the wall of said bore and the bottom of said groove define a zone of minimum thickness of the wall of the tubular portion and a zone of increasing thickness of said wall; said groove being spaced a distance from the open end of said tubular section by a portion of said shank defining a pinning surface, said spacing being such that when the rivet is introduced into said bore in the sheets to be assembled, said groove is positioned facina the juncture of the cylindrical portion and said first countersunk inlet portion of said bore,

positioning said rivet in said bore in such a manner that said pre-formed head is in contact on one side of said sheets with the sheets being assembled and said groove is positioned on the other side of said sheets facing the juncture of said cylindrical portion and said first countersunk inlet portion,

exerting a back-up pressure against said pre-formed head and substantially simultaneously exerting an axial shaping pressure through a riveting die against the tubular portion in such a manner as to radially outwardly deform said tubular portion progressively along said groove, and continuing to apply said pressure until said pinning surface comes into contact with said sheets being assembled, whereby said groove defines a region facing the juncture of said cylindrical portion and said first countersunk inlet portion in which said shank portion does not contact the wall of said bore after said pinning surface contacts said sheets being assembled.

5,359,766

CONTAINERS

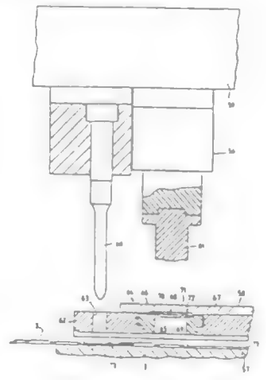
Andrew P. Pavely, Lower Blunsdon; Roy J. Marr, Newbury; Peter S. Foskett, and David M. White, both of Abingdon, all of United Kingdom, assignors to CarnaudMetalbox plc, United Kingdom

Division of Ser. No. 781,693, Oct. 23, 1991, Pat. No. 5,191,695. This application Dec. 22, 1992, Ser. No. 995,017

Claims priority, application United Kingdom, Oct. 25, 1990, 9023243

Int. Cl.[5] B23P *19/00*

U.S. Cl. 29—564.6 **4 Claims**



1. Apparatus for retaining a token on a lever or ring pull said apparatus comprising:

(a) means to feed a strip of material including token portions to a parting station;

(b) a parting station at which the token portion is severed from the strip of material;

(c) means to transfer the parted token to a location in a partly formed lever or ring pull; and

(d) means to clinch a peripheral portion of the lever into clinched engagement with a peripheral portion of the token.

5,359,767

METHOD OF MAKING MULTILAYERED CIRCUIT BOARD

William T. Chen, Endicott; Thomas P. Gall, Endwell; James R. Wilcox, Vestal, and Tien Y. Wu, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,499

Int. Cl.[5] H05K *3/36*

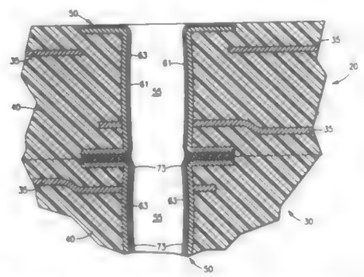
U.S. Cl. 29—830 **13 Claims**

1. A method of making a multilayered circuit board assembly including at least two layered subassemblies each including at least one dielectric layer, electrically conductive wiring in the form of at least one conductive layer and at least one conductive through-hole therein, said method comprising the steps of:

aligning said layered subassemblies relative to one another such that at least a first of said conductive through-holes of one layered subassembly is aligned with and engages a second conductive through-hole in a second layered subassembly, said first and second conductive through-holes each of a first height and including a layer of first metal

thereon, said second conductive through-hole further including a layer of second metal thereon;

subjecting said aligned and engaged layered subassemblies to a predetermined pressure sufficient to cause at least partial reduction of said first height of said first and second engaged conductive through-holes;



heating said layered subassemblies having said through-holes having said reduction of said first height to a pre-established temperature for a predetermined time period sufficient to form a metallurgical bond between said first and second metals of said conductive through-holes; and

cooling said layered subassemblies.

5,359,768

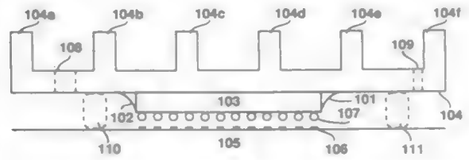
METHOD FOR MOUNTING VERY SMALL INTEGRATED CIRCUIT PACKAGE ON PCB

Kevin J. Haley, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 922,184, Jul. 30, 1992, abandoned. This application Jul. 16, 1993, Ser. No. 92,747

Int. Cl.[5] H05K *3/34*

U.S. Cl. 29—840 **15 Claims**



1. A method for mounting an integrated circuit package having a die to a circuit board comprising the steps of:

mounting a heat sink directly to the back of the die to create the integrated circuit package, wherein said die is handled during manufacturing using said heat sink; and then

coupling the die to the circuit board at the same time as the heat sink is mounted to the back of the circuit board, wherein the integrated circuit package becomes electrically connected to the circuit board, such that the die is sealed from an ambient environment.

5,359,769

INSTALLATION METHOD FOR POOL PURIFIER

Michael A. Silveri, 483 Skylake Ct., Incline Village, Nev. 89451

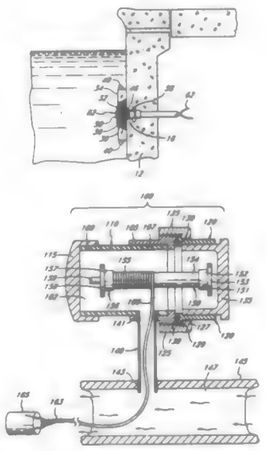
Continuation-in-part of Ser. No. 960,265, Oct. 13, 1992, and Ser. No. 786,304, Nov. 1, 1991, Pat. No. 5,240,228, which is a continuation-in-part of Ser. No. 770,074, Oct. 1, 1991, abandoned, said Ser. No. 960,265, is a continuation of Ser. No. 759,692, Sep. 6, 1991, abandoned, which is a continuation of Ser. No. 680,591, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 597,085, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 424,305, Aug. 18, 1989, Pat. No. 4,992,156. This application Jul. 2, 1993, Ser. No. 88,067

Claims priority, application WIPO, Mar. 6, 1989, PCT/US89/00853

The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.

Int. Cl.[5] H01R *43/00;* **B23P** *19/04*

U.S. Cl. 29—857 **8 Claims**



1. A method of installing a water purifier in a pool of water, wherein said pool of water is in communication with a fluid flow conduit which contains a fluid under pressure and extends outside of the pool, said method comprising:

locating at least a portion of said water purifier beneath a surface level of water in the pool;

threading first and second electrical wires through the fluid flow conduit such that said electrical wires extend from within the pool to a location outside the pool;

connecting one end of said first electrical wire to said water purifier and the other end of said first electrical wire to a power terminal of a power supply at said location outside said pool; and

connecting one end of said second electrical wire to said wire purifier and the other end of said second electrical wire to a return terminal of said power supply.

5,359,770

METHOD FOR BONDING ABRASIVE BLADE TIPS TO THE TIP OF A GAS TURBINE BLADE

Lawrence E. Brown, Indianapolis; David L. Clingman, Carmel; Michael J. Barber; John F. Kroemer, both of Martinsville, and Kenneth R. Cross, Lebanon, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 8, 1992, Ser. No. 941,617

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.1 **20 Claims**

1. A method for bonding an abrasive blade tip cap to the tip of a rotor blade, said method comprising the steps of:

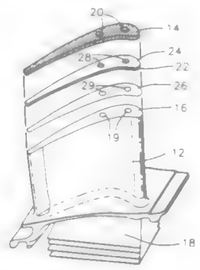
forming a mat from an abrasive composition;

heating said mat to a temperature which is sufficient to consolidate said abrasive composition;

cooling said mat to a temperature sufficient to solidify said abrasive composition;

forming a preform from said mat;

mounting said preform to a bonding surface on said tip of said rotor blade;



heating said preform and said rotor blade to a temperature so as to bond said preform to said tip without degrading the microstructure and strength of said rotor blade, said preform forming said abrasive blade tip cap upon bonding to said rotor blade;

cooling said abrasive blade tip cap and said rotor blade.

5,359,771

PROCESS FOR THE MANUFACTURE OF A GEAR WHEEL IN AN INTERNAL GREARED

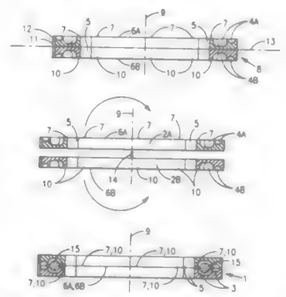
Michael Krehl, Lauterstein-Nenningen; Rolf Schwarze, and Gerhard Subek, both of Aalen-Wasseralfingen, all of Germany, assignors to Schwaebische Huettenwerke GmbH, Germany

Filed Apr. 28, 1993, Ser. No. 54,873

Claims priority, application Germany, May 21, 1992, 4216823

Int. Cl.[5] B21D *53/28;* **F16H** *55/12*

U.S. Cl. 29—893 **9 Claims**



1. A process for producing a gear wheel, for an internal gear wheel pump, comprising two mating half-wheels; each half-wheel having a joint surface, with half-cavities being formed in the joint surface thereof, and internal gear teeth being formed on an inner periphery of the gear wheel; the half-cavities, when the joint surfaces of the two half-wheels are joined together, forming overflow ducts, and valve balls being inserted into the overflow ducts prior to assembly of the gear wheel;

said process comprising the steps of:

forming, from a unitary wheel, the internal gear teeth on an inner periphery of the unitary wheel and forming the half-cavities in two opposed external joint surfaces of the unitary wheel, and the internal gear teeth defining an axis of rotation of the unitary wheel;

dividing the unitary wheel in half along a plane that extends perpendicular to the axis of rotation thereby forming the two half-wheels;

flipping both of the two half-wheels 180° about an axis lying perpendicular to the axis of rotation;

inserting valve balls into the half-cavities of one of the half-wheels;

engaging the two joint surfaces of the two half-wheels together with one another and aligning the internal gear teeth and the half cavities; and

welding the two half-wheels together.

5,359,772

METHOD FOR MANUFACTURE OF A ROLL RING COMPRISING CEMENTED CARBIDE AND CAST IRON

Jan-Erik Carlsson, Singapore, Singapore, and Gert Sundstedt, Bergisch Gladbach, Germany, assignors to Sandvik AB, Sandviken, Sweden

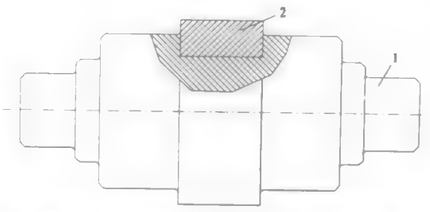
Division of Ser. No. 833,750, Feb. 11, 1992, Pat. No. 5,248,289, which is a continuation-in-part of Ser. No. 658,651, Feb. 21, 1991, Pat. No. 5,104,458, which is a division of Ser. No. 449,820, Dec. 13, 1989, Pat. No. 5,044,056. This application Jun. 4, 1993, Ser. No. 70,943

Claims priority, application Sweden, Feb. 11, 1991, 9100405

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] B21B *31/08*

U.S. Cl. 29—895.32 **5 Claims**



1. A method of forming a roll ring comprising sintering a cemented carbide into a ring of predetermined size, thereafter casting iron about a portion of said cemented carbide ring to form a composite body barrel including a metallurgical bond between the cemented carbide and the cast iron, said cast iron having a microstructure comprising austenite and bainite, said barrel being east in one piece and thereafter heat treating the composite body to convert at least a portion of the austenite to bainite, the differential shrinkage during cooling after casting between the east iron body and the ring of cemented carbide being at least partly eliminated by the transformation of austenitc to battie.

5,359,773

MANUFACTURING METHOD OF THE ROLL MAIN BODY OF A CALIBER ROLL

Masayuki Nagai, Suita, Japan, assignor to Sumitomo Metal Industries, Ltd., Osaka, Japan

Division of Ser. No. 833,527, Feb. 11, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 102,952

Claims priority, application Japan, Dec. 5, 1991, 3-349698

Int. Cl.[5] B23P *11/02*

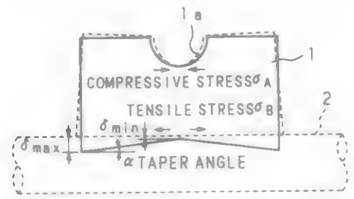
U.S. Cl. 29—895.212 **9 Claims**

1. A method of manufacturing a caliber roll for rolling comprising steps of:

inserting a roll shaft into a shaft hole of a roll main body, the roll main body having a caliber on an outer circumference thereof and the shaft hole penetrating therein in an axial direction; and

applying a compressive stress in a widthwise direction of said roll main body to a bottom of the caliber, the compressive stress being applied by forming first and second

spaced-apart tapered sections either on an internal circumference of the shaft hole of said roll main body or on a circumference of said roll shaft and shrinkage-fitting or cold-fitting said roll main body and said roll shaft, the first and second tapered sections being formed so as to provide a shrinkage-fitting or cold-fitting allowance which gradually decreases from opposed end faces of the roll main body towards a central part of the roll main body, and the



first and second tapered sections on the internal circumference of the roll main body having diameters which both increase as the tapered sections become closer and closer together in the axial direction or the first and second tapered sections on the circumference of the roll shaft having diameters which both decrease as the tapered sections become closer and closer together in the axial direction.

5,359,774

RAZOR HEAD OF A WET RAZOR

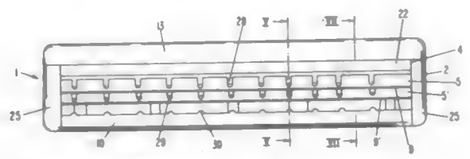
Wolfgang Althaus, Wuppertal, Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 26, 1993, Ser. No. 37,371

Claims priority, application United Kingdom, Mar. 28, 1992, 9206844.4

Int. Cl.[5] B26B *21/00, 21/14, 21/16*

U.S. Cl. 30—50 **25 Claims**



1. A razor head, comprising:

a plastic body, with a razor blade means having at least one cutting edge being disposed in said plastic body, which plastic body includes a top cover and a front guardbar that define surface means for engaging the skin of a user, and with both said guardbar and said top cover each being provided with at least two comb-like projections, wherein said comb-like projections are spaced at least 2 mm from one another and have a thickness of at least 0.2 mm, wherein said at least one cutting edge of said razor blade means has a protrusion at a trough of said comb-like projections that is at the least minus 0.1 mm and at most 0.5 mm, and wherein said at least one cutting edge has a protrusion at a tip of said comb-like projections that is at the least minus 0.5 mm and at most 0.1 mm.

5,359,775

STEEL-MATERIAL SHEARING MACHINE

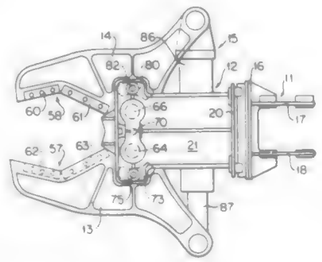
Sumio Morikawa, and Hiroyuki Satone, both of Osaka, Japan, assignors to Ohyodo Diesel Co., Ltd., Osaka, Japan

Continuation of Ser. No. 916,615, Jul. 22, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,733

Claims priority, application Japan, Mar. 31, 1992, 4-075068

Int. Cl.[5] B23P *19/00*

U.S. Cl. 30—134 **4 Claims**



1. A shearing machine comprising:

a mounting bracket mounted to the end of a work vehicle arm;

a supporting frame;

means connected between the mounting bracket and the frame for allowing the frame to swivel relative to the bracket;

upper and lower angled jaws connected to the frame by respective pivots;

a lining plate attached to an inner side surface of a front recess of said lower angled jaw for slidingly contacting a front side portion of the upper jaw thereby guiding the upper jaw into the recess;

a plurality of arcuate patching plates flush mounted within outer surfaces of the upper and lower jaws, confronting the supporting frame;

a plurality of adjusting pins mounted to the supporting frame contacting corresponding patching plates for adjusting lateral play between the upper and lower jaws:

each jaw portion between transversely aligned patching plates being solid;

hydraulic means connected to at least one of the jaws for moving the jaws into and out of engagement; and

means connected between the mounting bracket and the frame for biasing the supporting frame relative to the mounting bracket for preventing swivel rotation therebetween until a twist force, exceeding a predetermined value, is exerted on the supporting frame.

5,359,776

WINDSHIELD WIPER SHARPENING DEVICE

Arthur J. Glazar, 31 Amapola La., Kings Park, N.Y. 11754-3908

Filed Nov. 22, 1993, Ser. No. 157,465

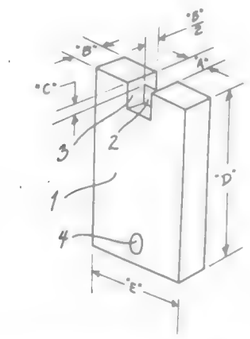
Int. Cl.[5] B26B *3/00*

U.S. Cl. 30—169 **2 Claims**

1. A windshield wiper blade sharpening device for restoring the cleaning ability of a vehicle's windshield wiper while said windshield wiper is attached to said vehicle, and comprising:

(a) a solid body;

(b) means for controllably removing worn or otherwise deteriorated material from said windshield wiper blade to effect said restoration of cleaning ability, said material being the material of composition of said windshield wiper blade;



(c) means for limiting bending, twisting and displacement of said windshield wiper blade during said removal of material.

5,359,777

CUTTERHEAD FOR A STRING TRIMMER

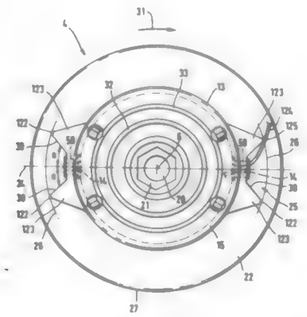
Peter Bauer, Winnenden; Horst Eckhardt, Auenwald; Roland Schierling, Affalterbach, and Joachim Hoffmann, Aichwald, all of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed May 20, 1993, Ser. No. 63,663

Claims priority, application Germany, May 22, 1992, 4217028; Apr. 14, 1993, 4212135

Int. Cl.[5] A01G *3/06*

U.S. Cl. 30—276 **14 Claims**



1. A cutterhead for a string trimmer having a rotatable drive shaft, the cutterhead being adapted to hold and meter a cutting filament during operational use thereof and comprising:

a disc-like carrier having a central opening defining a rotational axis;

means for fixedly connecting said carrier to one end of said drive shaft in said opening so as to permit said carrier to rotate about said axis;

said carrier having a peripheral edge and a peripherally extending outer wall approximately perpendicular to said carrier along said edge and concentric to said axis;

said outer wall having an outside wall surface and defining an inner space for accommodating the cutting filament in said cutterhead and having a guide eyelet disposed therein to define a pass-through for guiding the filament from said space to the outside of said cutterhead where a segment of said filament extends radially outwardly from said outer wall to define a filament plane when the drive shaft rotates;

said guide eyelet being made of wear-resistant material and being adapted to the diameter of said cutting filament;

said guide eyelet having an end face defining an opening of said pass-through to the outside of said cutterhead and said end face extending radially from said rotational axis a pregiven first radial distance;

stop means disposed in said filament plane for receiving said segment of said cutting filament thereagainst when said segment strikes an obstacle and is deflected during operation of the string trimmer;

said stop means projecting radially outwardly from said outside wall surface so as to be at a pregiven second radial distance from said rotational axis greater than said first radial distance;

said stop means being spaced laterally from said end face in the peripheral direction of said outside wall surface;

said outer wall having a lower end below said filament plane; said lower end being disposed so as to face away from said carrier;

said outer wall having an annular flange extending radially outwardly from said lower end approximately parallel to said filament plane; and,

said annular flange extending radially outwardly beyond said stop means a pregiven third radial distance from said rotational axis greater than said second radial distance.

5,359,778

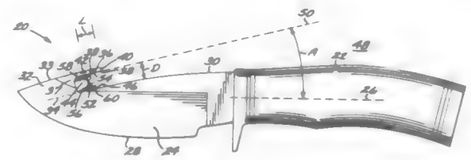
KNIFE WITH CUTTING HOOK

Brett P. Seber, Escondido; Randolph J. Morton, Lakeside; William H. Keys, El Cajon; Patrick W. Kraft; William R. Bates, Jr., both of Santee, and Marlow D. Hussey, Alpine, all of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.

Filed Aug. 13, 1992, Ser. No. 929,731

Int. Cl.[5] B26B *29/00*

U.S. Cl. 30—294 **13 Claims**



1. A knife, comprising:

a handle;

a blade having a blade back; and

a hook integral with the blade and including

a hook body extending laterally outwardly from the blade back side of the knife blade, the outwardly extending margin of the hook body defining a hook back,

a finger extending rearwardly toward the handle from the outward margin of the hook body, the finger having a finger back forming a continuous surface with the hook back,

the hook body, the finger, and a portion of the blade back defining a hook slot having a slot outer side, a slot inner side, and a slot bottom that is substantially straight and oriented at an angle of about 90 degrees to the hook back,

an outer ramp from the slot outer side to a first end of the slot bottom,

an inner ramp from the slot inner side to a second end of the slot bottom, and

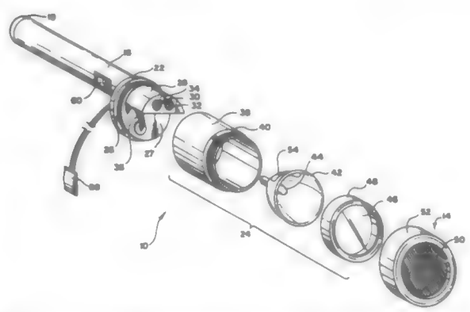
a cutting edge at the slot bottom.

5,359,779

ILLUMINATION AND LASER SIGHTING DEVICE FOR A WEAPON

Richard N. Polk, P.O. Box 9802, No. 833, Austin, Tex. 78766, and Thomas A. Pertierra, 1005 Romano Ave., Orlando, Fla. 32807

Filed Oct. 8, 1992, Ser. No. 958,869
Int. Cl.[5] F41G *1/36, 1/35*
U.S. Cl. 33—241 16 Claims



1. A low-profile illumination and laser sighting device comprising:

a housing surrounding a single compartment and having a receptacle at one end of said compartment;

at least one laser fixed to a support member adjustably coupled to the outside surface of said receptacle, wherein said support member comprises:

a first support adjustment screw adjustably received at one location within said support member;

a second support adjustment screw adjustably received at another location within said support member;

a center pivot member partially received within said support member between said first and second adjustment screws, whereby said support member and attached lasers move about said pivot member during rotational movement of said first and second adjustment screws;

an illumination lamp coupled to said receptacle in an offset position over said laser; and

pressure means mounted on the outside of said housing for selectively controlling said laser and said illumination ramp.

5,359,780

BOW SIGHT ASSEMBLY

Guy Dallaire, 83, 6iéme Avenue, Apt. 301, Montmagny, Canada G5V 3W1

Filed Dec. 29, 1993, Ser. No. 174,707
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 8 Claims

1. A bow sight assembly for use with a rangefinder mountable thereon, said assembly comprising:

a main frame;

connecting means for securing said main frame to a bow;

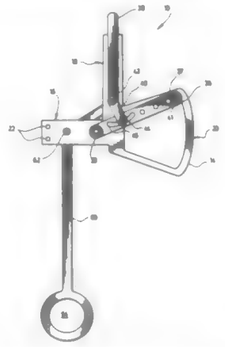
a sight positioning assembly comprising:

a substantially vertical member slidably connected to said main frame for operating said rangefinder, said member being movable between an upper position and a lower position;

a sight arm having a first end rotatably connected to said main frame about a first pivot axis, said sight arm being rotatable in a substantially vertical main plane around said first pivot axis between an upper position and a lower position, said sight arm comprising a curved slot longitudinally extending along it and having an end close to said first pivot axis;

an adjusting lever having a first end rotatably connected to said member about a second pivot axis, said lever being movable in said main plane about said second pivot axis and having a second end provided with a follower engaged in and movable along said curved slot;

said curved slot having a radius equal to the distance between said second pivot axis and said follower when said member and said sight arm are at their respective upper position, said curved slot having a center of curvature substantially coinciding with said second



pivot axis when said member and said sight arm are at their respective upper position; and

means for locking said lever in a given position relative to said member;

a sight pin secured to said sight arm and sidely projecting therefrom; and

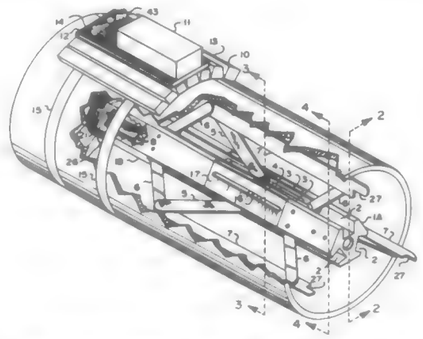
trigger means mounted on said main frame and mechanically connected to said sight positioning assembly for moving said member and said sight arm between their respective upper and lower positions.

5,359,781

SELF CENTERING PIPE AXIS LASER GUIDE AND SADDLE

Kenneth B. Melville, 9507 50th Pl., College Park, Md. 20740

Filed Mar. 31, 1993, Ser. No. 41,038
Int. Cl.[5] G01B *11/27*
U.S. Cl. 33—286 10 Claims



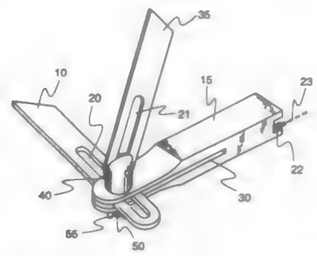
1. A self centering pipe or pillow block axis laser guide for a pipe or pillow block having an inside diameter and an outside diameter, comprising: an expandible and contractible linkage mechanism (that is inserted) for insertion into the interior of said pipe, said linkage mechanism including three parallel links spaced 120 degrees apart that when expanded contact the interior of said pipe or pillow block and establish the center axis of said pipe or pillow block, said parallel links being connected to a pair of of radial links inclined in the same direction and an intermediate lever link located between said radial links, a housing having a front end and a rear end and comprising a front end spider element and a rear end spider element and a spider lever therebetween, said spider elements and said spider lever each having three channels having legs and spaced 120 degrees apart, a pair of axis links located adjacent each leg of each said channel and having narrow slots, said slots extending between said front end spider element and said rear end spider element, means fastening said lever link to said spider lever and extending through said slots of said axis links, said housing constituting a base centrally located with respect to said parallel links, a lead screw extending through said base, said spider lever having internal threads that mesh the threads of the lead screw, means at the rear end of the housing for rotating said screw and expanding or contracting the links therewith, and a laser beam module located in the front end of said housing for alignment with said center axis of the pipe or pillow block.

5,359,782

COMPOUND SLIDING BEVEL SQUARE

Jonathan C. Langmaid, P.O. Box 705, Yarmouth, Me. 04096

Filed Oct. 5, 1993, Ser. No. 132,105
Int. Cl.[5] B43L *7/10*
U.S. Cl. 33—415 7 Claims



5. A compound angle blade apparatus for use with a T-bevel having a planar blade and an adjustment bolt to adjust the position of said planar blade, said apparatus comprising:

an angle measuring blade;

compression mounting means for selectively rotatably mounting said angle measuring blade to said T-bevel, wherein the selectively rotatable positions of said angle measuring blade are independent of the pivoting of the planar blade of said T-bevel and wherein the selectively rotatable positions of said angle measuring blade rotate to form a conical section having an axis that is perpendicular to a plane formed by adjusting the planar blade of said T-bevel;

locking means, within said mounting means, for simultaneously releasably fixing the position of said planar blade and the position of said angle measuring blade.

5,359,783

TILE SPACER FOR SIMULTANEOUSLY ALIGNING TILES ALONG THEIR WIDTH DURING SETTING

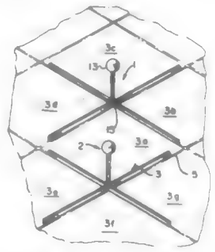
Freddie Smith, 6814 Hollow Hearth, Houston, Tex. 77084

Continuation of Ser. No. 871,123, Apr. 20, 1992, abandoned. This application Jul. 20, 1993, Ser. No. 93,650
Int. Cl.[5] G01B *3/30*
U.S. Cl. 33—527 2 Claims

1. A method of spacing tiles being laid comprising the steps of:

(a) providing a tile spacer comprised of a pair of cross-members intersecting at a cross point and which are generally perpendicular to each other, and having a handle extending upwardly therefrom at the cross point, the cross-members extending from the cross point a substantial distance to approximately the width of the tiles to be laid, each cross-member having an outer end, said pair of cross-members forming four quadrants in the tile spacer,

(b) placing said tile spacer at the desired location of the tiles,



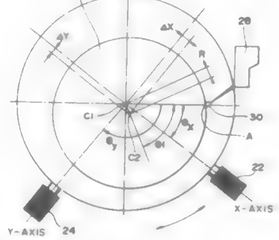
(c) placing at least one tile in adjacent quadrants so that two sides of said at least one tile in each quadrant are adjacent the walls of the two cross-members that form the respective quadrant so that a grout joint between the two adjacent tiles is evenly spaced.

5,359,784

METHOD OF CENTERING IN ROUNDNESS MEASURING INSTRUMENT AND SYSTEM THEREFOR

Miyoshi Tomida, and Asao Matsumoto, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 877,197, May 1, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 3,871
Claims priority, application Japan, May 2, 1991, 3-100937
Int. Cl.[5] G01B *5/20, 5/25*
U.S. Cl. 33—550 20 Claims



1. A method of centering in a roundness measuring instrument, which is applied to the roundness measuring instrument, in which an article to be measured is rested on an X-Y table rotatably provided on a main body, a measurement element of a detector is abutted against the article to be measured and the article to be measured is rotated through the X-Y table to measure the roundness of the article to be measured on the basis of a position of displacement of the measurement element, wherein an X-axis knob and a Y-axis knob, which are provided on the X-Y table, are operated such that the X-Y table is moved in directions of an X-axis and a Y-axis, whereby the center of the article to be measured is made to coincide with the center of rotation of the X-Y table, wherein said method comprises:

making the X-Y table, with the article to be measured rested thereon, to be rotated one turn or more, and shifting the center of the article to be measured between the directions of the X-axis and the Y-axis on the X-Y table from the center of rotation of the X-Y table on the basis of a displacement signal obtained during the rotation in accordance with the relationships:

$$\Delta X = R \cos(\theta 1 - \theta_X) \text{ and } \Delta Y = R \sin(\theta 1 - \theta_Y)$$

where R is a radial value of eccentricity measured along a line between the center of the article to be measured and the center of the X-Y table, $\theta 1$ is an angle of eccentricity of the article relative to the X-Y table measured between said line and the measuring element of the detector, θ_x is an angle of the detector between the X-axis of the X-Y table and the measuring element of the detector, θ_y is an angle of the detector between the Y-axis of the X-Y table and the measuring element of the detector, and ΔX and ΔY are the shifts of the center of the article to be measured relative to the center of rotation of the X-Y table along the X-axis and Y-axis, respectively;

displaying the shift of the article to be measured between the X-axis and the Y-axis on the X-Y table from the center of rotation of the X-Y table; and

operating the X-axis knob and the Y-axis knob with the shift between the directions of the X-axis and the Y-axis, which is displayed, being watched;

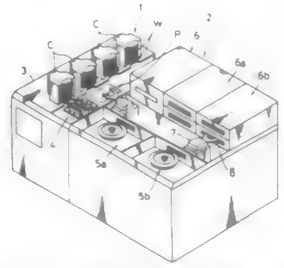
whereby the centering of the article to be measured is performed by only a single operation of each of the X-axis and Y-axis knobs on an individual basis.

5,359,785

SUBSTRATE TRANSPORT APPARATUS

Yoshiteru Fukutomi; Masami Ohtani, and Takeo Okamoto, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 18, 1992, Ser. No. 977,990
Claims priority, application Japan, Nov. 26, 1991, 3-337802
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—60 **18 Claims**



1. A substrate transport apparatus comprising:

means for storing a plurality of substrates;

means for cleaning said substrates;

means for taking out said substrates from said storing means and for transporting said substrates to said cleaning means while supporting said substrates by vacuum suction;

means for transporting said substrates cleaned by said cleaning means from said cleaning means to said storing means while supporting said substrates by vacuum suction and for placing said substrates in said storing means; and

a first movable member and a second movable member movable between said storing means and said cleaning means,

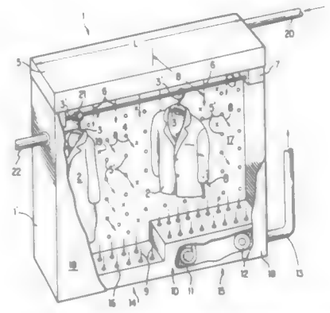
wherein said taking-out and transporting means is mounted on said first movable member, and said transporting and placing means is mounted on said second movable member.

5,359,786

APPARATUS FOR AFTERTREATING DRYCLEANED GARMENTS

Paul F. Vierling, Wallstr. 3, D-2953, Rhauderfehn, Germany

Continuation of Ser. No. 678,848, Apr. 4, 1991, abandoned, which is a continuation of Ser. No. 623,334, Dec. 4, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 770,034
Claims priority, application Germany, Apr. 4, 1989, 3910808
Int. Cl.[5] F26B *13/30*
U.S. Cl. 34—92 **10 Claims**



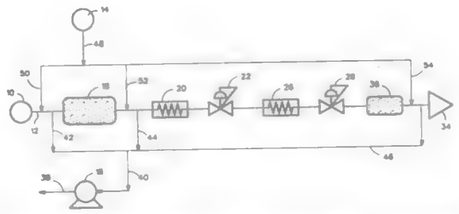
1. Apparatus for aftertreating drycleaned garments comprising a closet-like housing, a steam generator or an external steam source, steam inlet nozzles, an air source, and air inlet nozzles arranged above and/or at the side of the garments to be aftertreated characterized by a vacuum source whereby an appreciable vacuum is to be produced in the housing and a suction blower for aspirating away the solvent-laden waste steam and/or air, the aspiration opening(s) being arranged underneath the garments hanging in the housing and the aspiration opening(s) being followed by a disposal means wherein the solvent present in the waste steam and/or air is to be disposed of.

5,359,787

HIGH PURITY BULK CHEMICAL DELIVERY SYSTEM

Lewis J. Mostowy, Jr., Fogelsville, and Naser M. Chowdhury, Schnecksville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 16, 1993, Ser. No. 49,042
Int. Cl.[5] F26B *3/00*
U.S. Cl. 34—343 **18 Claims**



12. A process for transferring and delivering a hygroscopic, corrosive chemical from an elevated pressure source of supply to a lower pressure use point comprising:

(a) conveying said chemical from said source of supply to a delivery conduit by operation of an appropriate valve;

(b) heating said chemical and removing moisture from the chemical by passage of the chemical through a dehydrator;

(c) heating said chemical and reducing the pressure on the chemical from substantially an elevated pressure of said source of supply to a lower pressure of said use point by passage through at least one pressure regulator;

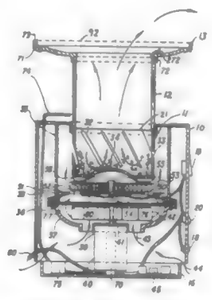
(d) delivering said chemical at reduced pressure to a use point in a substantially dehydrated single phase gaseous condition.

5,359,788

COFFEE ROASTER

Harold A. Gell, Jr., 13720 Lockdale Rd., Silver Spring, Md. 20906-2117

Filed Dec. 22, 1993, Ser. No. 171,162
Int. Cl.[5] F26B *3/08*
U.S. Cl. 34—360 **20 Claims**



11. A method for roasting coffee, including the steps of:

depositing a charge of green coffee beans in a lower chamber of a two part circular oven comprised of said lower chamber which is thermally conductive and an upper chamber which is thermally insulating and transparent and coaxially aligned with said lower oven chamber;

heating air to a temperature high enough to roast green coffee beans;

forcing said heated air into said lower oven chamber at a rate and angle relative to the wall of said circular oven sufficient to suspend said coffee bean charge in a fluidized bed rotating in a horizontal plane about the vertical axis of said circular oven;

heating said lower oven chamber with the same means used to heat said air; heating said charge of green coffee beans via radiant heat from said lower oven chamber;

expanding said charge of green coffee beans into said upper oven chamber via the reaction of said fluidized bed; and thermally insulating via the wall of said upper oven chamber said green coffee beans that have expanded into said upper oven chamber.

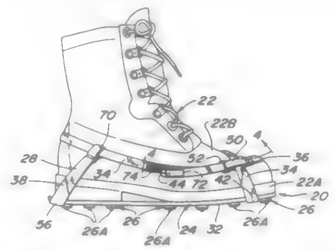
5,359,789

ICE GRIPPING SANDAL FOR USE ON OTHER FOOTWEAR

Michael Bell, 1705 Triumphe Way, Warrington, Pa. 18976

Filed Sep. 14, 1993, Ser. No. 121,128
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—7.6 **12 Claims**

1. A sandal for use on a primary footwear having a heel portion and a toe portion to provide a non-slip sole, said sandal comprising a sole and attachment strap means, said sole having a pair of sides, a front end, a rear end, said attachment strap means comprising a first flexible strap connected to said front end of said sole adjacent one of said sides, a second flexible strap connected to said front end of said sole adjacent the other of said sides, a third strap having an opening therein connected to said rear end of said sole adjacent one of said sides, and a fourth strap having an opening therein connected to said rear end of said sole adjacent the other of said sides, one of said first or second straps having a free end at which a buckle is mounted and an opening located adjacent said buckle for receipt of the other of said first or second straps extending therethrough, the other of said first or second straps being an elongated member having a free end arranged to be extended through said opening over said toe portion of said primary footwear to the opposite side of said sole from which it is connected, around the upper of said primary footwear at said heel portion and through said openings in said third and fourth



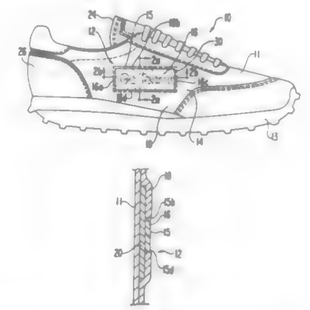
straps, back to the side of said sole from which it is secured and from there through the buckle of said one of said first or second straps, to releasable secure said free end of said other of said first or second straps to said one of said first or second straps, whereupon said strap means secures said sandal to said primary footwear at said toe portion and at said heel portion.

5,359,790

SHOE HAVING INDIVIDUALIZED DISPLAY AREAS

Donald D. Iverson, McLean, and Thomas A. Strobel, Sterling, both of Va., assignors to Gamer Corporation, McLean, Va.

Continuation-in-part of Ser. No. 936,204, Aug. 27, 1992, abandoned. This application Aug. 6, 1993, Ser. No. 102,831
Int. Cl.[5] A43B *23/00*
U.S. Cl. 36—136 **23 Claims**



1. A shoe having an upper portion including a quarter portion, heel and tongue comprising:

(a) outer covering material permanently affixed to said upper portion of the shoe;

(b) an indicia display opening having perimetric edges formed in a portion of the outer covering material and located in at least one of said quarter portion, heel and tongue of said upper portion;

(c) an indicia attachment panel overlying said shoe upper portion and underlying said outer covering material and both visible and accessible through said opening, said indicia attachment panel being capable of having an indicia display panel durably adhesively secured thereto; and

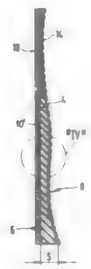
(d) an indicia display panel which is visible through said opening, said indicia display panel being positioned on and secured to said indicia attachment panel within said display opening so that the peripheral edges of said display panel are in abutting contact with the perimetric edges of said display opening for protecting said display panel peripheral edges from abrasion.

5,359,791

ARCH SUPPORT FOR BEDDING LOAD-SENSITIVE FEET

Jan Prahl, Rullstorf, and Jean P. Comtesse, Adendorf, both of Germany, assignors to IPOS GmbH & Co. KG, Luneburg, Germany

Continuation of Ser. No. 799,540, Nov. 27, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,663
Claims priority, application Germany, Jan. 12, 1991, 9100326
Int. Cl.[5] A61F *5/14;* **A43B** *13/38*
U.S. Cl. 36—145 **2 Claims**



1. A shoe insole for bedding load-sensitive feet of persons suffering from foot defects, said sole insole having a multi-layered structure comprised of:

a) a supporting layer (**10**) comprised of a flexible and compression-resistant material of a flexible cork plate (**10'**), and having a thickness (d) of 1.5 to 3 mm;

b) a highly resilient elastomer-core layer (**4,104**) applied to the supporting layer (**10**) having a thickness of 1.5 to 15 mm and comprised of an addition cross-linking, silicon rubber material with a Shore A hardness lying in the range of 1° to 10°, and in which the supporting layer (**10**) is vulcanized onto the elastomer-core layer (**4,104**); and,

c) an upper covering layer (**14,114**) applied to the supporting layer (**10**) and comprised of a synthetic fiber material; in which,

d) the contact surfaces (**6**) between the elastomercore layer (**4**) and the supporting layer (**10**) are plane, and

e) the sole-shaped supporting layer (**10**) is provided with a recess (**18**) grounded out of said supporting layer so as to resiliently supports the load-sensitive feed.

5,359,792

FREE STANDING, UPRIGHT CLOTHES PRESS

Toru Hanada, Takarazuka; Atsushi Matsuo, Minoo, and Kenichi Iwami, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1992, Ser. No. 939,651
Claims priority, application Japan, Sep. 10, 1991, 3-229980; Oct. 7, 1991, 3-258932; Oct. 31, 1991, 3-285936
Int. Cl.[5] D06F *71/28*
U.S. Cl. 38—72 **30 Claims**

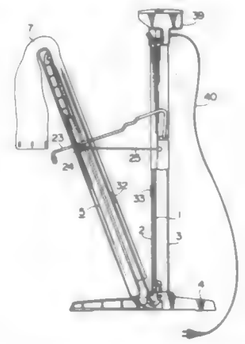
1. A clothes press for hot-pressing clothes, comprising:

a mount base adapted to be positioned in a horizontal plane;

a fixed board which has a lower end fixed to said mount base and which extends in a vertical direction relative to said mount base;

a movable board which has a lower end pivotally attached to a portion of said fixed board adjacent to said lower end of said fixed board and which is movable toward and away from said fixed board, a major portion of said movable board comprising a hollow structure which comprises a panel for pressing clothes between said movable board and said fixed board, center cores for supporting said panel, and an outer wall provided at a side of said center cores opposite said panel; and

a lock mechanism mounted on said movable board and said fixed board for holding said movable board in a state in



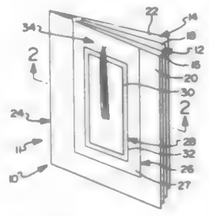
which said movable board is pressed against said fixed board.

5,359,793

GREETING CARD WITH BOOKMARK

Janice A. Copperstone, 4493 Brafferton Dr., Bloomfield Hills, Mich. 48302

Filed Apr. 14, 1993, Ser. No. 48,423
Int. Cl.[5] G09F *1/00*
U.S. Cl. 40—124.1 **23 Claims**



1. A greeting card compising:

a sheet forming at least one leaf from at least one layer of sheet material;

a bookmark having at least one layer of elongated sheet material and carrying a decorative indicia;

a connecter for releasably securing the bookmark directly to said at least one leaf without substantially expanding page separation thickness of the bookmark and greeting card thickness and so that said bookmark overlies a portion of said at least one leaf; and

means for displaying decorative indicia corresponding to said bookmark decorative indicia on a first of said at least one leaf.

5,359,794

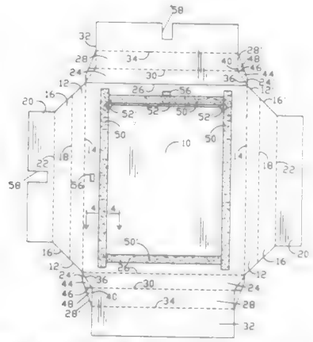
PICTURE FRAME AND SHEET BLANK THEREFOR

Harold W. Wood, Portland, Oreg., assignor to Tickers, Inc., Portland, Oreg.

Filed Jan. 26, 1993, Ser. No. 9,328
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—155 **12 Claims**

7. A picture frame blank made of flexible sheet material foldable to form a picture frame, the blank comprising a central rectilinear base section, a first pair of opposed peripheral side sections extending from said central base section, a second pair of opposed peripheral side sections extending from said central base section, scored fold lines defining a boundary between each of said peripheral side sections and said central base section, a plurality of fold lines on each of said peripheral side

sections defining inner, middle, and outer segments extending respectively from said central base section, said segments configured to be folded inwardly forming three dimensional side elements, said inner and middle segments of said second pair of opposed peripheral side sections including outwardly projecting extension flap members, scored fold lines acting as a hinge between each of the said segments and their respective extension flap members, said extension flap members being over-



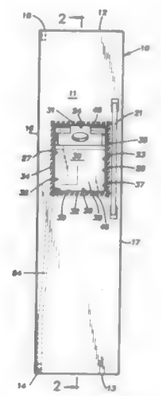
lapped by said first pair of opposed peripheral side sections when all the peripheral frame side sections are folded into three dimensional side elements, said extension flap members prevent unsightly corner gaps between adjacent said three dimensional elements, and adhesive means for securing said three dimensional elements to said base section, and picture stop means on the base section for engaging and confining the picture in proper position therein.

5,359,795

REFRIGERATOR DOOR CONSTRUCTION

Harold S. Mawby, Belding; David J. Donaghy, Gowen; Rick L. Gunderson, Greenville; Thomas Frost, Ionia; Ace Fairchild, Lowell, and Marvin L. Spohn, Gowen, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 2, 1993, Ser. No. 25,285
Int. Cl.[5] F25D *23/02*
U.S. Cl. 40—405 **8 Claims**



1. An insulated door for a refrigerator, said door having a rectangular front face, said door having a front panel of sheet material forming the rectangular front face of the door, said panel having front and rear sides and having inturned edges along each side forming the top, bottom and sides of the door, each of said edges terminating in an inturned lip extending in a plane parallel to said front face, an opening in said front face,

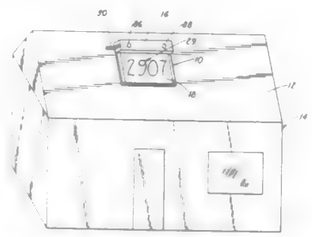
a dispenser liner secured in abutting relation to the rear side of said front panel and extending completely over said opening, fastener means extending through said front face clamp said liner in place, said liner having an inlet opening at a rear of said door, said liner extending rearwardly beyond said inturned lips, and a layer of rigid insulating foam in contact with the rear side of said front panel said inturned edges, said inturned lips and said liner, said foam layer being unbroken and uninterrupted except for an opening at said inlet opening, said opening in said foam layer being slightly larger than said inlet opening.

5,359,796

ROOF SUPPORTED DISPLAY

John M. Werling, Las Vegas, Nev., assignor to Roy N. Brown and Charles A. Codding, Oklahoma County, Okla.

Continuation of Ser. No. 76,306, Jun. 11, 1993, Pat. No. 5,307,577, which is a continuation of Ser. No. 31,079, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 731,165, Jul. 15, 1991, abandoned. This application Mar. 24, 1994, Ser. No. 217,302
Int. Cl.[5] G09F *11/18*
U.S. Cl. 40—514 **2 Claims**



1. A method for displaying a house number indicia on a roof of a house structure, comprising the steps of:

providing a display comprising:

a case having a panel opening; and

a panel having an upper surface and a lower surface, the house number indicia being disposed on the upper surface of the panel, the panel being extendible through the panel opening in the case; and

connecting the display to the roof so that the house number indicia are visible from a position above the roof of the house structure.

5,359,797

SKI POLE TRAIL MAP HOLDER

Roger L. Williamson, 6821 Avenida de Santiago, Anaheim, Calif. 92807

Continuation of Ser. No. 886,985, May 21, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,318
Int. Cl.[5] G09F *11/18*
U.S. Cl. 280—816 **9 Claims**

1. An apparatus for navigating on a ski slope, comprising:

a ski pole having a generally cylindrical shaft with a curved exterior surface;

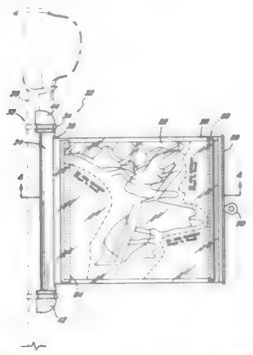
a generally tubular-shaped housing having a longitudinal axis and two ends, said housing comprising a longitudinal slot therein interposed between a first end cap and a second end cap, each said end cap comprising an arcuate surface having a curvature which substantially matches that of said ski pole shaft,;

a first disc and a second disc mounted inside said housing and positioned apart from each other;

an inner roller having a first end and a second end, said roller being rotatably mounted inside said housing generally along the longitudinal axis thereof, said roller having a surface upon which a map can be rolled;

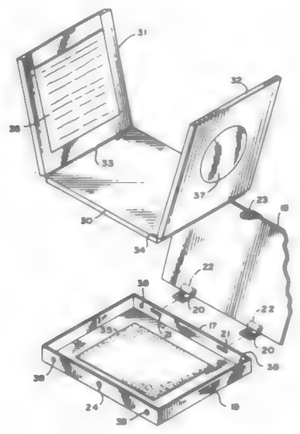
a first shaft supporting said first end of said roller and connected to said first disc;

a second shaft supporting said second end of said roller and connected to said second disc; and



a torsion spring connected to said first shaft and coupled to said inner roller.

5,359,798
IDENTIFICATION PENDANT
Raymond K. Pelosi, 5446 Arthur Kill Rd., Staten Island, N.Y. 10307
Filed Jun. 9, 1992, Ser. No. 895,651
Int. Cl.[5] G09F *03/18*; A44C *15/00*
U.S. Cl. 40—642 **17 Claims**



1. A miniaturized, personal identification device, comprising:

a housing having a bottom wall, front and back walls, opposite end walls, and an openable top cover pivotally attached along one edge to the back wall of the housing;

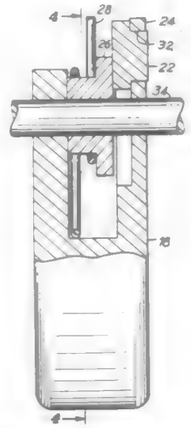
a first foldable panel mounted about a hinge means at one end of the housing for movement between a stored position in the housing, lying generally parallel to the bottom wall, to an upright, exposed position outside the housing and lying in a plane generally perpendicular to the bottom wall and to the cover said first panel carrying a piece of microfilm or other suitable miniaturized indicia containing personal identification and/or medical information related to an individual wearing the device;

a second foldable panel mounted about a hinge means in the other end of the housing for movement between a stored position in the housing, lying generally parallel to the housing bottom wall and in stacked relationship to the first panel, to an upright, exposed position lying in a plane generally perpendicular to the housing bottom wall and parallel to the first panel, said second panel carrying a lens having a focal length essentially equal to the distance between the two panels when they are in their upright exposed positions generally parallel to one another;

said housing and openable cover defining protective means to prevent damage and/or contamination of the film and lens when the panels are in their stored positions inside the housing and the openable cover is closed, said cover, when closed, holding said first and second panels in their closed positions in the housing; and

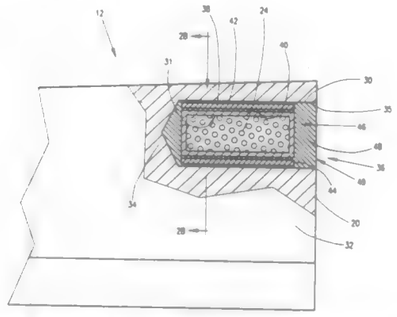
spring means engaged with the first and second panels, automatically biasing said first and second panels upwardly out of the housing to their upright exposed positions when the cover is opened.

5,359,799
FIREARM TRIGGER BAR ATTACHMENT
Kook-Jin Moon, 630 Rte. 303, Blauvelt, N.Y. 10913
Filed Jun. 25, 1993, Ser. No. 81,226
Int. Cl.[5] F41A *19/10*
U.S. Cl. 42—69.02 **3 Claims**



1. A firearm trigger mechanism for use in a handgun having a handle, a barrel, a firing chamber, a trigger, a trigger bar, a cartridge, a magazine for holding the cartridge and a slide for moving said cartridge from the magazine into the firing chamber comprising a side lug of said trigger for attachment to said trigger bar, a shouldered washer, defining shoulders, for securing said trigger to said trigger bar to retain said trigger bar, a trigger tensioning spring, for which said shouldered washer performs as a spacer and as a boss, a stud for securing said trigger to said trigger bar, said trigger side lug defining a hole therein for allowing the trigger bar to rotate with said hole as a center, a pivot shaft about which said trigger pivots, said shouldered washer being installed onto said pivot shaft, whereby the weight of the pull of said trigger is varied by varying the thickness of said spring, along with varying the thickness of the shoulders defined by said shouldered washer.

5,359,800
ILLUMINATED GUN SIGHT
Bradley Fisher, Rehovot, and Aharon Nechushtan, Kibbutz Hagoshrim, both of Israel, assignors to Scopus Light (1990) Ltd., Kibbutz Mayan Zvi, Israel
Filed Jun. 9, 1992, Ser. No. 895,924
Int. Cl.[5] F41G *1/32*
U.S. Cl. 42—103 **4 Claims**



1. An illuminated gun sight for day and night use comprising:

a housing defining a recess;

a radioluminous light source mounted in said recess;

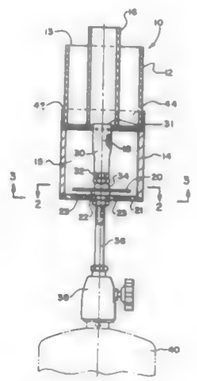
light reflecting and transmitting material disposed in said recess outside of said light source and being operative to provide the appearance of a full white dot under full light conditions and the appearance of a full dot under other light conditions,

wherein said light reflecting and transmitting material comprises:

a light reflecting coating disposed on the interior of the recess; and

a white insert disposed in the recess and surrounding the light source.

5,359,801
SCENT DISPENSER
Raymond S. Mattucci, 126 Gertrude St., Jeannette, Pa. 15644; Denis G. Hays, 26 N. Urania Ave., Greensburg, Pa. 15601, and Chris A. Oplinger, 240 Ashbaugh Rd., Jeannette, Pa. 15644
Filed Jul. 26, 1993, Ser. No. 97,385
Int. Cl.[5] F41C *27/00*
U.S. Cl. 43—1 **20 Claims**



1. A heating device, comprising:

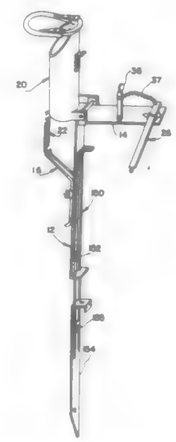
a) a reservoir for holding a liquid and exposing the liquid to the atmosphere;

b) a burner which heats the liquid in said reservoir;

c) a burner housing having a chamber which receives said burner, said chamber having at least one opening for admission of air into said chamber; and

d) means for receiving exhaust from said burner, said means comprising a vent in communication with said chamber and extending through said reservoir.

5,359,802
FISHING ROD HOLDER
Manuel Gutierrez, 1273 Meadow Sweet Rd., Golden, Colo. 80401
Filed Jul. 2, 1993, Ser. No. 86,734
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—16 **15 Claims**



1. A fishing rod holder for supporting a fishing rod and automatically lifting said fishing rod in response to pulling motion on the fishing line carried by said fishing rod, the rod holder comprising in combination:

(a) a tubular receiver having forward and rearward ends; wherein said forward end is open to slidably receive and support said fishing rod;

(b) an upright stand member having upper and lower ends; wherein said rearward end of said tubular receiver is hingedly attached to said upper end of said stand member and is movable between lower and upper positions;

(c) spring means having first and second ends; wherein said first end is secured to said rearward end of said tubular receiver, and wherein said second end is attached to said stand member in a manner such that the tension in said spring means may be adjusted; wherein said spring means biases said tubular receiver toward said upper position;

(d) an elongated arm member having first and second ends; wherein said first end of said arm member is secured to said upper end of the stand member; wherein said arm member projects forwardly from said stand member;

(e) latch means carried by the tubular receiver;

(f) trigger means pivotably carried by the second end of said arm member; said trigger means being movable between (1) a first position engaging said latch means when said tubular receiver is in said lower position, and (2) a second position out of engagement with the latch means; wherein said trigger means is movable from said first position to said second position by a pulling force on said fishing line; and

(g) sensitivity adjustment means for adjusting the amount of force required to move said trigger means from said first

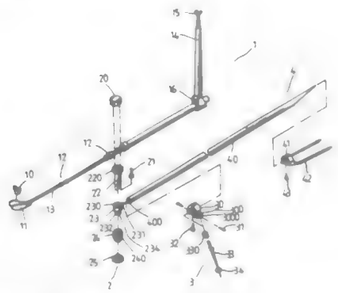
position to said second position; wherein said adjustment means comprises: (1) trigger spring means connected between said trigger means and said arm member; and (2) an adjustment lever, pivotably attached to said arm member; wherein said trigger spring means is connected to said adjustment lever.

5,359,803

ADJUSTABLE POLE REST

Gwo-Nan Shieh, No. 439, Min-Tsu 1st Rd., Kaohsiung,

Filed Nov. 2, 1993, Ser. No. 144,521
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **1 Claim**



1. An adjustable pole rest comprising:

a mounting device fastened to the ground, said mounting device comprised of a locating rod having a pointed front end pierced into the ground and a rear end made with an end hole, and a fork fastened to the pointed front end of said locating rod by a tightening up screw;

a balancing device to support said locating rod on the ground, said balancing device comprising a mounting socket fastened around said locating rod and locked in position by a tightening up screw, two telescopic legs fastened to lugs on said the mounting socket of said balancing device by pins and respectively pierced into the ground to support said mounting socket above the ground, said telescopic legs having a respective circular stop plate spaced above a respective bottom end for supporting on the ground;

a supporting device to support a fishing rod on said locating rod, said supporting device comprising a first telescopic rod, a second telescopic rod, and a connector to connect said second telescopic rod to said first telescopic rod permitting said second telescopic rod to be adjusted to a desired angular position on said first telescopic rod within a fixed angle, said first telescopic rod comprised of a telescopic rod body which consisted of a plurality of half-round rod sections that slide one inside another, a plurality of rubber sockets to hold the half-round rod sections of the telescopic rod body of said first telescopic rod to one another, a forked pole resting tip connected to one end of the telescopic rod body of said first telescopic rod and attached with a V-shaped non-skid pad to support a fishing pole at one end, said second telescopic rod comprised of a telescopic rod body which consists of a plurality of half-round rod sections that slide one inside another, and a U-shaped pole resting tip connected to one end of the telescopic rod body of said second telescopic rod to support said fishing pole at an opposite end; and

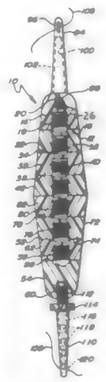
a swivel coupling device connected between said supporting device and said mounting device for permitting said supporting device to be turned on said mounting device horizontally, said swivel coupling device comprising a grooved cap mounted on said first telescopic rod of said supporting device, a rotating member connected to said grooved cap by screws permitting said first telescopic rod of said supporting device to be retained between said grooved cap and said rotating member, a split screw member fastened to said locating rod of said mounting device to support said rotating member, a screw nut fastened to said split screw member, and a plug fastened to said split screw member and said screw nut, said split screw member comprising a side rod fitted into said end hole of said locating rod, a top blind hole, which receives said rotating member permitting said rotating member to be turned on said split screw member, and a split screw rod having a bottom hole, said screw nut being threaded onto said split screw rod of said split screw member, said plug having a rod inserted through said screw nut into the bottom hole on said split screw rod and being firmly retained to said screw nut and said split screw member upon tightening of said screw nut on said split screw member.

5,359,804

FISHING BOBBER

Thomas P. Burns, 4108 Meadowlark Rd., Eagan, Minn. 55122

Continuation-in-part of Ser. No. 877,845, May 1, 1992, Pat. No. 5,235,777. This application Aug. 16, 1993, Ser. No. 107,445
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—43.14 **10 Claims**



1. A solid crush-proof modular double frustum-shaped fishing bobber attachable to a fishing line, comprising:

(a) two opposing frustum-shaped end sections each with a parallel opposing face made of a heavy solid rigid foamed plastic chosen from a group comprising polystyrene, acrylonitrile butadiene styrene, nylon, polycarbonate, polypropylene, polyethylene, polyphenylene oxide, polyacetal and polyester, the plastic having a specific gravity less than that of water;

(b) at least two opposing frustum-shaped intermediate sections each with two parallel end faces made of the plastic; and

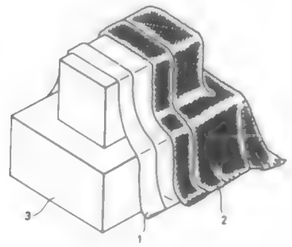
(c) releasable connecting means on each face for securing the bobber sections together for farther and more accurate casting and care of the bait which follows the bobber when casting.

5,359,805

RAT GUARD METHOD

Iwao Kadokura, Saitama, Japan, assignor to Kabushiki Kaisha Okanishi, Tokyo, Japan

Filed Aug. 10, 1993, Ser. No. 103,703
Claims priority, application Japan, Nov. 17, 1992, 4-329918
Int. Cl.[5] A01M *29/00*
U.S. Cl. 43—124 **6 Claims**



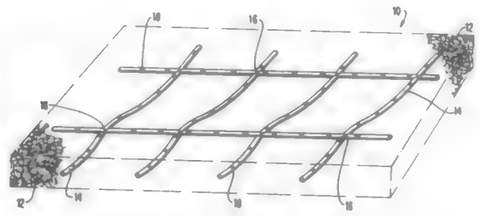
1. A rat guard method which comprises covering an article to be protected with a sheet of a flexible material and further covering the sheet with a net which is formed by connecting links of a rigid material freely movably to one another in a two-dimensional pattern.

5,359,806

RECHARGEABLE TERMITE BARRIER FOR BUILDINGS

Andrew B. Jeffery, North Quincy, and John Skelton, Sharon, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed May 24, 1993, Ser. No. 66,530
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—131 **14 Claims**



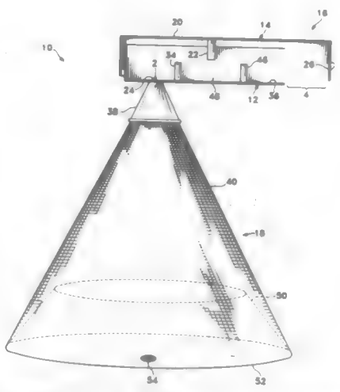
1. A flexible membrane for permanent burial in the soil at a building site as a barrier against termites and other subterranean pests, said membrane comprising an assembly of interconnected fibers, said fibers having an average size smaller than 6 denier, and said assembly having an average void volume of less than 85% when measured under a pressure of 10 kPa (1.45 psi), and at least one permeable-walled tube contiguous with said assembly, said tube being permeable-walled to permit a liquid within to pass therethrough, so that said at least one permeable-walled tube may convey an insecticide throughout said flexible membrane while said flexible membrane is in situ at a building site.

5,359,807

METHOD AND APPARATUS FOR AUTODISSEMINATION OF INSECT PATHOGENS

David M. Jackson, Oxford, N.C.; Grayson Brown, Vesailles, and Gerald L. Nordin, Danville, both of Ky., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 28, 1993, Ser. No. 68,039
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—131 **11 Claims**



1. An autodissemination dusting station comprising

a structure having an inner base portion which includes a floor and three peripheral walls and an outer removable cover portion which includes a top and outer casing walls wherein said cover walls extend over said base walls;

a divider means which forms a reservoir for a biocontrol agent composition and directs flying insects through said composition; and

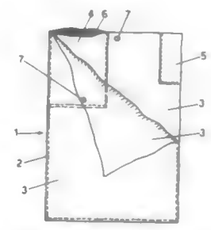
a fitting means for attaching said station to a means for trapping insects wherein said fitting means extends into an opening in said floor of said base portion.

5,359,808

TRAP BAG FOR THE EXTERMINATION OF INSECTS WITH AN INSECTICIDE SOAKED SURFACE AND A LIQUID SOLUTION CONTENT WITH INSECT ATTRACTING SUBSTANCES

Thomas Fitsakis, 31, Antiochetas Str, Heraklion, Greece 713 05

Filed Feb. 19, 1993, Ser. No. 19,653
Claims priority, application Greece, Feb. 19, 1992, 920100069
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—132.1 **6 Claims**



1. Trap for the extermination of insects, particularly of mayflies (olive, domestic, cherry and Mediterranean flies), comprising a trap bag, said trap bag being internally divided in at least two compartments, a relatively larger first compartment containing water and a relatively smaller second compartment containing insecticide and insect attracting substances, said trap bag being made from a porous material adequate in con-

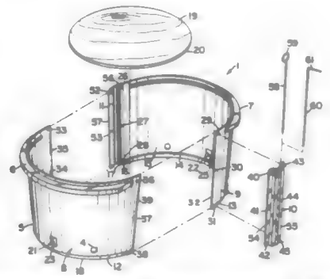
taining water and allowing a constant, slow and controlled evaporation of water vapours and insect attracting substances contained therein, said trap bag having an insecticide soaked surface, said insects being exterminated when falling upon said insecticide soaked surface, said trap bag comprising an upper aperture for hanging upon a branch of a tree.

5,359,809

REUSABLE POT FOR RECEIVING A TREE ROOT BALL AND FACILITATING TRANSPORT, HANDLING AND PLANTING THEREOF

Floyd L. Johnson, Maywood Evergreen, 14595 Ostlund Trail, Marine on the St. Croix, Minn. 55047

Filed Jun. 17, 1993, Ser. No. 78,056
Int. Cl.[5] A01G *23/02*
U.S. Cl. 47—73 **6 Claims**



1. A containment vessel for plants and soil, comprising:
a) a first half, the first half having a lower region and an upper region;
b) a second half, the second half having a lower region and an upper region;
c) a first hinge;
d) a second hinge, the first and second hinges being formed as a plurality of metal strips, each metal strip being affixed to one of the halves, the metal strips being adapted to be hingedly affixed to an adjacent metal strip, thereby forming a containment vessel having a substantially continuous perimeter surface;
e) a bottom member, the bottom member being supported near a lower region of the first half and the second half;
f) a ridge portion, the ridge portion being integrally formed as a part of the lower region of the first half and the second half, the bottom member residing upon the ridge portion;
g) a first tab integrally formed within the lower region of the first half; and
h) a second tab integrally formed within the lower region of the second half, the first and second tabs being spaced apart from the ridge portion so as to create a region within which a perimeter portion of the bottom member resides, wherein the first and second tabs are resiliently deformable such that each tab may be deflected so as to be substantially continuous with an adjacent surface contour of the first half and the second half, respectively.

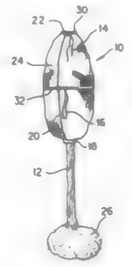
5,359,810

PROTECTIVE SHROUD FOR NURSERY STOCK

Debbie J. Aul, 3704 Love Rd., Darlington, Md. 21034

Filed Oct. 22, 1993, Ser. No. 139,719
Int. Cl.[5] A01G *13/00*
U.S. Cl. 47—84 **3 Claims**

1. A protective shroud for use in the transportation of nursery stock, said shroud comprising:
an essentially oval-shaped protective permeable fabric cover, said fabric cover having an upper portion, a middle portion, a lower portion, and two opposing side edges;
zipper means disposed on said opposing side edges of said fabric cover;
a first drawstring means disposed on said upper portion of said fabric cover;
a second drawstring means disposed on said middle portion of said fabric cover; and



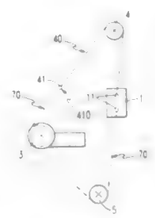
reuseable fastening strip means disposed on said lower portion of said fabric cover for detachably securing said opposing side edges of said lower portion around the nursery stock.

5,359,811

CABLE MECHANISM FOR RAISING AND LOWERING WINDOWS OF MOTOR VEHICLES

Uwe Klippert, Oberaula, Germany, assignor to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Coburg, Germany

Filed Sep. 16, 1992, Ser. No. 945,518
Claims priority, application Germany, Sep. 16, 1991, 4131100
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 **13 Claims**



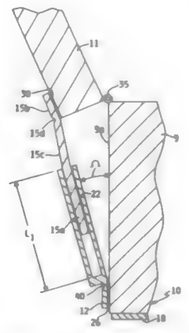
1. A device for raising and lowering a window pane of a window of a motor vehicle, the window pane having a maximum raised position to fully close the window and a maximum lowered position to fully open the window, said maximum raised position and said maximum lowered position defining a first distance therebetween, and said device comprising:
first and second carrier means attached to the window pane and spaced apart from one another, said first and second carrier means being configured for movement along with, and parallel to one another;
a cable for being attached to said first and second carrier means for moving said first and second carrier means to move the window pane over at least a portion of the first distance;
first and second cable guide means for guiding movement of said cable during raising and lowering of the window pane, said first and second carrier means being movable towards said first and second guide means during raising of the window pane, and said first and second carrier means being movable away from said first and second guide means during lowering of the window pane;
said cable forming a closed cross-over loop extending from said first carrier means over said first guide means to said second carrier means and from said second carrier means over said second guide means back to said first carrier means;
said cable having at least a first segment and a second segment, said first segment extending from said first carrier means to said first guide means, said first segment passing over said first guide means during raising and lowering of the window;
said first segment bearing a load of the window pane during at least the raising of the window pane and said second segment bearing a load of the window pane during at least the lowering of the window pane;
said load during raising the window pane being greater than said load during lowering the window pane;
said first segment having a first load rating and said second segment having a second load rating; and
said first load rating being greater than said second load rating.

5,359,812

FINGER GUARD

Charles D. Mayfield, 373 Arglen Dr., Owatonna, Minn. 55060

Filed Oct. 25, 1993, Ser. No. 140,517
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—383 **10 Claims**



1. A slidable door guard for temporarily bridging an opening between a door and a casing comprising:
a male member having a first portion securable to a first surface, said male member having a second portion for extending away from said first portion, said first portion hingedly connecting to said second portion;
a female member securable to a second surface, opposite said male member, said female member including an edge member having a hinged region formed in said female member, said female member having a wear pocket therein for slidingly receiving said second portion of said male member, so that, when the door is opened, said female member pivots about said hinged region and said second portion of said male member slides partially out of said wear pocket to cover the opening between the door and the casing to prevent children from sticking their fingers therein and being injured as the door is closed.

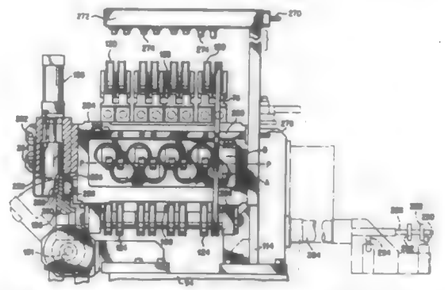
5,359,813

LOCKING MECHANISM FOR CONTOURING HEAD ASSEMBLY FOR MULTIPLE BELT GRINDING MACHINE

Russell E. Kaiser, Jr., Mercersburg, Pa., and Steven G. Lueckeman, Oscoda, Mich., assignors to Western Atlas Inc., Paramus, N.J.

Filed Sep. 30, 1992, Ser. No. 953,798
Int. Cl.[5] B24B *21/02*
U.S. Cl. 451—285 **10 Claims**

1. A belt grinding machine comprising:
a) a bed,
b) means adapted to support a workpiece that extends laterally across said bed,
c) a drive drum assembly carried by said bed,
d) a positioning slide mounted for longitudinal movement along said bed,
e) a feed assembly for said positioning slide,
f) a contouring head assembly mounted atop said positioning slide for movement therewith,
g) said contouring head assembly including a top, a bottom, and spaced side walls,
h) abrasive belt receiving means disposed within said contouring head assembly,
i) a plurality of endless belts having at least abrasive sides and backing sides, with each such belt being of a predetermined size and configuration and being entrained in spaced, substantially parallel, relationship about said drive drum assembly and said abrasive belt receiving means of said contouring head assembly.
j) said contouring head assembly further comprising a plurality of contour feed units,



k) each of said contour feed units including a curved back-up shoe, shoe drive means for pressing said shoe against said backing surface of an abrasive belt, and motor means for supplying motive force to said shoe drive means;
l) a standard extending upwardly above said positioning slide,
m) one side wall of said contouring head assembly being secured to said standard,
n) and locking means for locking said contouring head assembly to said bed,
o) said locking means comprising:
1) a rotary actuator having an outwardly extending arm, said actuator being secured to said bed,
2) means for energizing said rotary actuator to pivot said arm,
3) a socket defined in said arm,
4) a protrusion carried by said contouring head assembly at a position remote from said standard, whereby said socket in said arm, when pivoted, engages said protrusion to securely support said contouring head assembly and prevent sagging thereof.

5,359,814

SYSTEM FOR GRINDING A WORKPIECE

Lawrence C. Baltazar, Schenectady; Robert J. Buck, Ballston Lake, and David W. Davis, Loudonville, all of N.Y., assignors to Constant Velocity Systems, Inc., Ballston Spa, N.Y.

Continuation of Ser. No. 658,178, Feb. 20, 1991, Pat. No. 5,197,228, which is a continuation-in-part of Ser. No. 367,890, Jun. 19, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 971,482
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] B24B *48/00*
U.S. Cl. 451—5 **10 Claims**

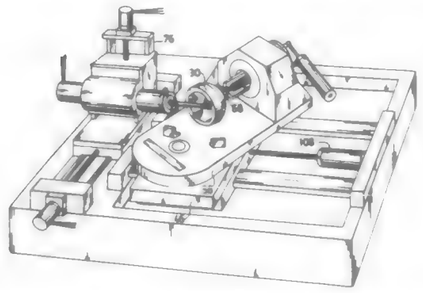
1. A machine for regrinding a component part of a constant velocity universal joint, said constant velocity universal joint

having ball bearings, an outer housing with an outer ball race member and an inner ball race member, said members provided with curved ball receiving grooves, and a ball cage between said members having ball containing grooves, comprising:

(a) means for holding said component part, comprising a chuck mechanism and an adaptor for mounting said component in said chuck mechanism;

(b) a grinding bit comprised of a grinding tip, wherein said grinding tip comprises boron nitride and consists essentially of a steel blank coated with cubic boron nitride;

(c) rotatable support means for supporting said chuck mechanism, wherein said rotatable support means is comprised of means for disposing said component part contacts said grinding tip of said grinding bit in such a manner that said tip contacts said surface at a specified angle of incidence;



(d) means for rotating said rotatable support means in order to change said angle of incidence between said grinding tip and said surface of said component part;

(e) a motorized grinding tool comprised of said grinding bit, wherein said grinding bit has a head larger than the diameter of the original ball bearings;

(f) means for adjusting the position of said motorized grinding tool in the Z axis to move said motorized grinding tool up and down;

(g) means for adjusting the position of said motorized grinding tool in the Y axis to move said grinding tool in and out;

(h) a lubricating fluid injection system for lubricating said component part and said grinding tool during the grinding operations; and

(i) a protective enclosure surrounding the grinding machine components for containing lubricating fluid during grinding operations.

5,359,815

PROFILE GRINDER

Robert R. Schrunk, III, Truman, Minn.; Harry Madison, Germantown, Tenn., and Michael B. Gilbert, Fairmont, Minn., assignors to Harsco Corporation, Wormleysburg, Pa.

Filed Nov. 6, 1992, Ser. No. 972,014

Int. Cl.[5] B24B *23/00*

U.S. Cl. 451—347 **28 Claims**

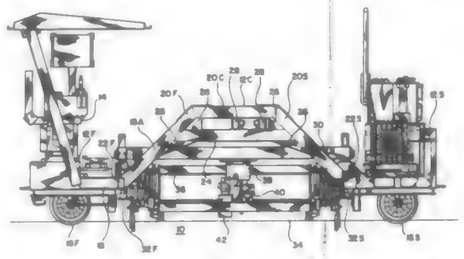
1. A rail maintenance vehicle comprising:

a main frame having a front and a back and four rail engagement wheels supported thereon;

a grinder support member supported by said main frame;

a grinder mounted to said grinder support member, said grinder having a grindstone, a grind motor for rotating the grindstone, and a feed jack for moving the grindstone against and away from a rail; and

a longitudinal displacer connected to said grinder support member for moving said grinder support member longitudinally relative to said main frame in a line extending in a front to back direction such that said grindstone grinds in a path extending lengthwise along a rail as said main frame remains stationary; and 'wherein said longitudinal displacer includes a carriage mounted to a carriage track extending in a front to back direction and a carriage mover for moving said carriage along said carriage track; and further comprising a slide frame and wherein said carriage track is part of said slide frame, and further comprising a grinder angle positioner supported by said main frame and operably connected to said grinder support



member such that said grinder angle positioner rotates said grinder about a longitudinal axis in the rail to different grinding angles and wherein said slide frame is rotated relative to said main frame by said grinder angle positioner.

5,359,816

BUILDINGS AND METHODS OF CONSTRUCTING BUILDINGS

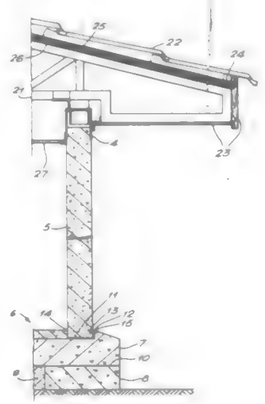
Efthyuoulos Iacouides, Nicosia, Cyprus, assignor to Permahome (Steel Constructions) Ltd., Nicosia, Cyprus

Filed Mar. 18, 1991, Ser. No. 670,768

Claims priority, application United Kingdom, Mar. 16, 1990, 9005959.3

Int. Cl.[5] E02D *27/01;* **E04B** *2/56*

U.S. Cl. 52—274 **9 Claims**



1. A building comprising a foundation base, a free standing substantially rigid load bearing frame including a plurality of substantially vertical columns supported on the foundation base and a plurality of substantially horizontal wall location lower beams having horizontally and vertically extending flanges connected between the lower ends of the columns, a foundation layer formed above said base and around the wall locating beams so as to define upwardly facing U-shaped channels with the wall locating lower beams positioned as elongate rigid inserts therein, and a plurality of wall panels arranged between the columns with their lower ends received within said upwardly facing channels and positioned by said elongate rigid inserts.

5,359,817

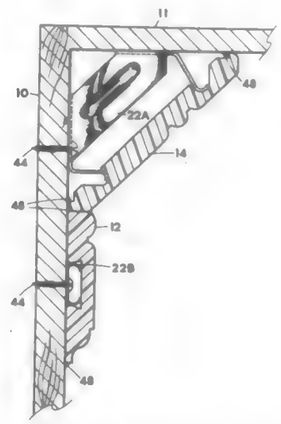
ARCHITECTURAL MOLDINGS OF RIGID THERMOSET POLYMER BASED MATERIAL

Fred D. Fulton, Chico, Calif., assignor to Transfer Flow International, Inc., Chico, Calif.

Continuation of Ser. No. 656,808, Feb. 19, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 50,978

Int. Cl.[5] E04F *19/04*

U.S. Cl. 52—288.1 **10 Claims**



1. In combination, an elongated substantially rigid architectural trim molding having the appearance of being made of natural stone, Said substantially rigid molding shaped by milling of substantially rigid non-laminated thermoset polymer based material having the appearance of natural stone so as to provide said substantially rigid molding with a sculptured decorative front surface and an oppositely disposed back surface with said back surface having an elongated generally dovetail shaped groove extending the full length of said substantially rigid molding, a narrower portion of said dovetail shaped groove being positioned near said back surface, and a wider portion of said dovetail shaped groove positioned more toward said front surface of said substantially rigid molding than said narrower portion of said dovetail shaped groove, a plurality of attachment fixtures affixed to a wall with said fixtures in straight-line alignment and in spaced relationship to one another, each of said fixtures including a rigid mounting base having extending and curved flexible spring biased tabs, each of said mounting bases having at least one elongated aperture with a fastener in said aperture attaching the fixture to said wall, each of said fixtures affixed to said wall with said mounting base against said wall and said curved flexible spring biased tabs extending outward away from said wall, said curved flexible spring biased tabs of said fixtures extending into said dovetail shaped groove of said substantially rigid molding with said back surface of said substantially rigid molding against said wall, each of said fixtures sized relative to said dovetail shaped groove so as to have said curved flexible spring biased tabs under constant tension within said dovetail shaped groove and applying constant outward pressure against the rigid material of said substantially rigid molding defining said dovetail shaped groove so as to hold and draw said substantially rigid molding securely against said wall, said substantially rigid molding sized relative to said fixtures so as to obscure from view said fixtures holding said substantially rigid molding, said substantially rigid molding being substantially and sufficiently rigid so as to require substantially all deflection which occurs during an initial placement of said curved flexible spring biased tabs into said dovetail shaped groove to occur in said curved flexible spring biased tabs of said fixtures.

5,359,818

HAND TOOL AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Jean L. Costa, Almont, Mich., assignor to Covil Products, Inc., Almont, Mich.

Continuation of Ser. No. 822,974, Jan. 21, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,263

Int. Cl.[5] B24D *15/00*

U.S. Cl. 451—492 **20 Claims**



17. A tool, comprising:

first means for removably and selectively storing a length of working material;

second means forming a tool handle portion;

third means for selectively securing at least a first portion of said working material in an operable working position;

said first means, said second means, and at least part of said third means being formed as an integral unitary structure;

said third means including a tapered blade member, and movable means for increasing retention between said blade member and said first portion of said abrasive material;

said movable means comprises a tapered member having a central opening defined therethrough such that said tapered member can be slid over said blade member and said first portion of said abrasive material;

said tapered member being adapted to cooperate with said tapered blade member to frictionally lock said first portion of said abrasive material therebetween; and

said blade member including first and second ends, said first end of said blade member being disposed adjacent said first means and being tapered to a greater degree than is the second end of said blade member.

5,359,819

SOUND AND VIBRATION DAMPING DEVICE BASED ON TIRES

Roland Beyler, 61 avenue du Maréchal Joffre, 94360 Bry sur Marne, France

PCT No. PCT/FR91/00604, § 371 Date Jan. 4, 1993, § 102(e) Date Jan. 4, 1993, PCT Pub. No. WO92/01837, PCT Pub. Date Jun. 2, 1992

PCT Filed Jul. 23, 1991, Ser. No. 960,366

Claims priority, application France, Jul. 24, 1990, 90 09417

Int. Cl.[5] E04B *1/82*

U.S. Cl. 52—144 **21 Claims**

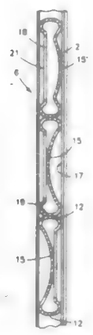
1. A unitary acoustic device for damping vibrations, sound and undesirable noise comprising:

an incombustible casing having a plurality of wall elements defining a container,

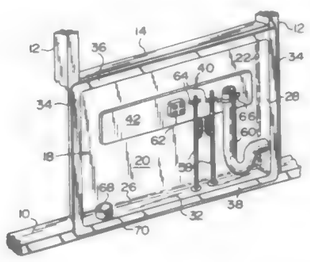
a first wall element having a plurality of openings communicating with the interior of the container,

at least two automotive tires,

each said tire being divided into at least two parts,
each said tire part having an exterior tread portion and a hollow interior portion,
said tire parts being arranged in vertical stacks sandwiched in close contact within said container so that the hollow interior portion of each tire part faces the openings of said first wall element whereby when the first wall element of said container is exposed to a source of vibrations, sound or undesirable noise, the hollow interior portion of each tire part is operative to focus acoustic waves thereby damping vibrations, sound or undesirable noise.



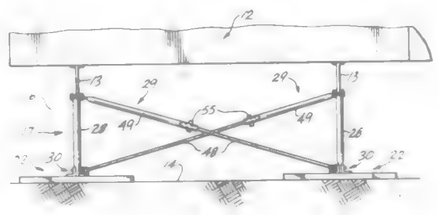
5,359,820
SPACE SAVER WALL INSERT FOR APPLIANCES
Michael R. McKay, 7130 N. Foxmoore Ct., Jackson, Mich. 49201
Filed Mar. 16, 1993, Ser. No. 31,893
Int. Cl.[5] A47K *3/16;* **F16L** *5/00*
U.S. Cl. 52—34 **8 Claims**



1. A wall insert to accommodate appliance fittings within the dimensions of a vertical wall comprising, in combination, a recessed panel molded of synthetic plastic material having a base portion having an exposed side and an unexposed side and having upper, lower and lateral edges, flanges extending from said base portion exposed side from at least two of said edges defining nailing supports, a pocket defined in said base portion unexposed side intermediate said edges, and an appliance fitting support located within said pocket.

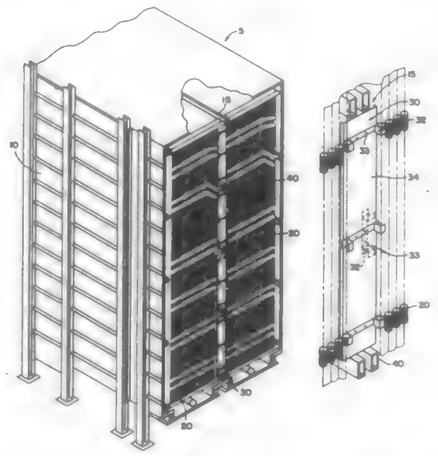
5,359,821
SUPPORT SYSTEM FOR MOBIL AND MANUFACTURED HOUSING
Denys J. Merriman, 13359 Rimview Ct., Yucaipa, Calif. 92399
Filed Aug. 24, 1992, Ser. No. 934,796
Int. Cl.[5] E02D *27/48*
U.S. Cl. 52—169.9 **15 Claims**

1. A bracing system for mobil homes and manufactured housing units, each unit including a chassis comprised of a pair of spaced, parallel longitudinal metal structural beams, the bracing system comprising, for each said unit,
at least a pair of foundation pads adapted for placement at grade at spaced locations along and below each unit chassis beam and, in combination with each foundation pad, a pair of tubular longitudinal braces of predetermined length adapted to be pinned to the foundation pad at lower ends thereof and to diverge upwardly in a first vertical plane in opposite directions to upper ends thereof which are adapted for bolted connections to a corresponding unit chassis beam, and a tubular transverse brace assembly adapted to be pinned at a lower end thereof to the foundation pad, to extend in a second vertical plane substantially normal to the first plane, and to be bolted at an upper end thereof directly to the other chassis beam, each transverse brace assembly comprising relatively larger and smaller tubular members telescopically engagable with each other centrally of the ends of the assembly and securable from axial relative motion via a pin connection defined to establish a distinctive site-determined as-installed length of the transverse brace assembly and in which pin connection all of a selected number of holes through each tubular member are aligned with corresponding holes through the other tubular member.



5,359,822
Patent Not Issued For This Number

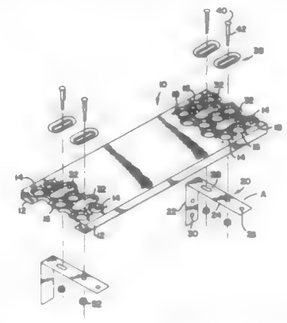
5,359,823
GAS LANE BARRIERS BETWEEN MODULES OF HEAT RECOVERY STEAM GENERATORS
Raymond G. Kidaloski, Canal Fulton, and Roger A. Detzel, Norton, both of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Apr. 2, 1993, Ser. No. 42,328
Int. Cl.[5] E04B *2/00;* **F22B** *37/00*
U.S. Cl. 52—506.01 **11 Claims**



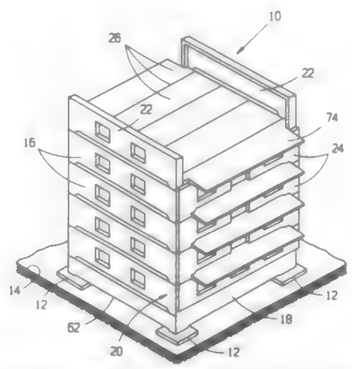
1. A barrier for blocking a passage between adjacent structures, the barrier comprising:
at least one plate for extending between the structures; and
at least one bracket mounted to the plate for engaging each structure, each end of the bracket having one U-shaped end which is engageable with one structure and an opposite U-shaped end which is engageable with the other structure, the bracket for securing the plate between the structures such that the passage is blocked, the barrier including a reinforcement mounted to the plate on a side opposite of the bracket and at least one fastener for mounting the reinforcement to the plate.

5,359,824
SLOTTED BOLT SEAT FASTENING DEVICE
Michael L. Koberstein, Murphysboro, Ill., assignor to GS Metals Corp., Pinckneyville, Ill.
Filed Nov. 10, 1992, Ser. No. 974,096
Int. Cl.[5] E04C *2/42;* **F16B** *2/12*
U.S. Cl. 52—507 **5 Claims**

1. A fastening apparatus for securely connecting a platform structure to a support element comprising:
a non-circular aperture in said platform structure, said non-circular aperture having an inner rim;
a seat element having an aperture extending therethrough and a substantially flat portion surrounding said aperture, said aperture in said seat element conforming substantially to the configuration of the aperture in said platform structure, said substantially flat portion of said seat element having an underside adapted to bear upon an upper surface of said platform structure when said seat element is brought into contact with said non-circular aperture;
said seat element further including flange means extending substantially downward from an inner rim of said aperture through said seat element, said flange means adapted to abut against said inner rim of said non-circular aperture in said platform structure when said seat element is brought into contact with said non-circular aperture; and
fastening means extending through said apertures in said seat element and said platform structure, and extending through apertures in said support element to engage said seat element and said support element and hold said platform securely to said support element.



5,359,825
MODULAR CONSTRUCTION SYSTEM
George D. Makarov, Chicago, Ill., assignor to Concrete Concepts, Inc., Des Plaines, Ill.
Filed Jan. 17, 1992, Ser. No. 822,615
Int. Cl.[5] E04B *5/04*
U.S. Cl. 52—602 **5 Claims**



1. A modular wall panel for use in a structure having vertically stacked construction modules wherein each module includes a plurality of upright wall panels and at least one substantially horizontal floor panel, the wall panel comprising:
a pair of spaced apart upright columns each having first and second mutually perpendicular legs, said first and second legs having lower ends which collectively define a bottom edge of the wall panel;
a beam integral with and extending between the first legs of said columns, said first and second legs having upper ends which together with the beam define an upper edge on the wall panel for supporting a wall panel of an overlying construction module; and
a substantially horizontal flange integral with and extending between said second legs transversely of the beam along said wall panel upper edge for supporting a floor panel of an overlying construction module;
the second legs of said columns having a width characterized by the distance which said second legs project transversely from the beam and in which said flange has a width characterized by the distance which said flange projects transversely from the beam, the width of said

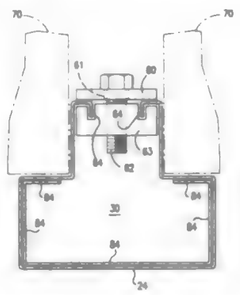
second legs being substantially equal to the width of said flange.

5,359,826

STRUCTURAL FRAMING MEMBER AND PREFABRICATED PANEL STRUCTURE

Kenneth R. Grearson, Park Ridge, Ill., assignor to Multuloc International Systems Corporation, Chicago, Ill.

Filed Oct. 26, 1992, Ser. No. 966,756
Int. Cl.[5] E04C *3/00*; F16B *7/02*
U.S. Cl. 52—650.1 7 Claims



1. A structural framing assembly comprising:

two elongated structural framing members each comprising a base having two opposing sides, two opposing side walls each projecting from corresponding said sides of said base in a direction approximately perpendicular to said base, each said side wall having an intermediate flange approximately parallel to said base, each said intermediate flange dividing each corresponding said side wall into a first side wall portion and a second side wall portion, a first plane defined by said first side wall portion being approximately parallel to a second plane defined by said second side wall portion, a first distance between said first side wall portions being greater than a second distance between said second side wall portions, each said second side wall portion having an upper flange directed toward an opposite said second side wall portion and positioned approximately perpendicular with respect to said side walls, each said upper flange having a terminal end portion angled toward said base and approximately perpendicular to said upper flanges, and said terminal end portions spaced apart from each other forming a continuous slot along a length of the structural framing member, said base and said side walls defining a longitudinal hollow space; and

a first of said structural framing members longitudinally aligned with respect to a second of said structural framing members, both said bases positioned within a same approximate plane;

a splice plate, said splice plate having a first through hole and a second through hole, a first fastener extending through said first through hole and within said continuous slot of said first structural framing member, a second fastener extending through said second through hole and within said continuous slot of said second structural framing member, securement means for fixing said first fastener with respect to said first structural framing member and for fixing said second fastener fixed with respect to said second structural framing member; and

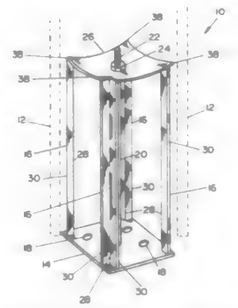
a splice member positioned within said longitudinal hollow space of said first structural framing member and within said hollow space of said second structural framing member, said splice member spanning at least a portion of both said structural framing members, and said splice member secured to said first structural framing member and secured to said second structural framing member.

5,359,827

HOLLOW FENCE POST ATTACHMENT FIXTURE

N. James Gehman, 242 Buchanan Dr., Ephrata, Pa. 17522, assignor to M. Dorothy Gehman and N. James Gehman, Ephrata, Pa.

Filed Sep. 7, 1993, Ser. No. 116,710
Int. Cl.[5] E04C *5/12*
U.S. Cl. 52—698 7 Claims



1. An attachment fixture for hollow posts comprising:

a base plate with boundaries, a center and attachment means for attaching the base plate to a support structure;

at least two angle irons attached to a surface of the base plate, the angle irons extending transverse from the base plate and constructed with an angular cross section, with the angular cross section formed by two legs which meet at an apex, so that the angle irons each have three edges, an apex edge located at the apex of the angle and two leg edges on the edges of the legs remote from the apex, the angle irons being oriented on the base plate so that the leg edges are adjacent to a base plate boundary and the apex edge is located nearer to the center of the base plate than the leg edges, the angle irons also formed with end edges at the ends of the leg edges remote from the base plate and an acute angle between each leg edge and its end edge;

a rod attached to the base plate and extending from the base plate in the same direction as the angle irons, the rod being located on the base plate between the angle irons, extending at least as far from the base plate as the angle irons, and including an end portion adjacent to its end remote from the base plate;

a top plate with a hole through which the rod extends and including contact surfaces contacting the end edges of the angle irons so that moving the top plate along the rod and toward the base plate moves the contact surfaces along the end edges of the angle irons and nearer to the angle iron apexes and forces the end edges of the angle irons to move away from each other; and

a fastener attached to the end portion of the rod and forcing the top plate toward the base plate and against the end edges of the angle irons.

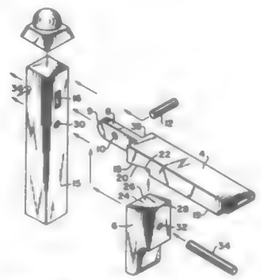
5,359,828

POST ASSEMBLY

John E. Day, 24 Rose Hill Ter., Yonkers, N.Y. 10703

Filed Sep. 30, 1993, Ser. No. 129,326
Int. Cl.[5] E09C *5/04*
U.S. Cl. 52—665 2 Claims

1. A post assembly comprising an upright post, a cross beam having an inclined plane formed in a recess in a lower surface of said crossbeam, beam support member having an upper end with a top surface and a lower end, and two locking dowel pins, said upright post having a front face and a back face with a mortise running through said post between said front and rear faces, said cross beam having a dorsal end and a proximal end, and a longitudinal tenon extending from said proximal end and through said mortise in said upright post, a first of said dowel pins running through a transverse aperture in said tenon and extending on both ends thereof and bearing firmly against the rear surface of said upright post, said beam support member lying against the front face of said upright post with the upper



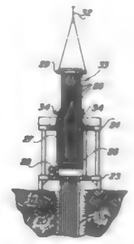
end of said support member supporting said cross beam, a second dowel pin extending through axially aligned apertures drilled in said support member and said upright post, said top surface of said support member having an inclined plane matching said inclined plane of said recess formed in the lower surface of said cross beam.

5,359,829

FABRICATION AND INSTALLATION OF STEEL REINFORCEMENT CAGES FOR PIER FOUNDATIONS

John M. Voita, 2502 E. Elm, Phoenix, Ariz. 85016

Filed Dec. 7, 1992, Ser. No. 986,454
Int. Cl.[5] E04B *1/18*
U.S. Cl. 52—742 6 Claims



1. A method for fabricating a drilled, concrete pier in the earth at a construction site comprising the steps of:

drilling a hole in the earth to a selected, specified depth;

positioning above the hole horizontal tie rings to be used in the construction of a reinforcing cage;

providing a template for supporting the vertical reinforcing bars of said reinforcement cage;

positioning said template above said horizontal ties;

providing vertical reinforcing bars having a length somewhat greater than the finished length of said reinforcing cage;

depositing said reinforcing bars through said template and reinforcing rings and hanging said bars from said template suspended downward into the drilled hole in the earth.

fastening said horizontal tie rings to said vertical bars when all said vertical bars have been positioned and suspended from said template;

as the horizontal tie rings are assembled to the vertical bars, lifting said template out of the hole so that the attachment of the horizontal tie rings may continue apace;

completing the assembly of said reinforcement cage suspended above the earth-drilled hole;

lowering said finished cage, still coupled to said template, into said hole; and

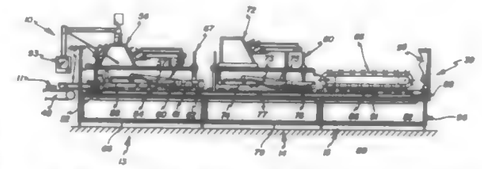
adjusting the position of said template to establish correct spacing between the walls of the reinforcing cage and the walls of said hole.

5,359,830

CLIP-TYPE ARTICLE CARRIER PACKAGING MECHANISM

Allen L. Olson, Crosby, Minn., and James W. Emerson, Woodstock, Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Filed Sep. 11, 1992, Ser. No. 943,756
Int. Cl.[5] B65B *17/02, 21/00, 61/14*
U.S. Cl. 53—398 29 Claims



1. An apparatus for assembling clip-type article carriers, comprising:

a) means to input at least one metered, linear stream of article groups;

b) a conveyor assembly constructed and arranged to receive said at least one stream of article groups from said input means and longitudinally translate said groups in a downstream conveyance path;

c) an overhead transfer mechanism constructed and arranged above said conveyor assembly to deposit a clip-type article carrier onto a top surface of at least one said article group, said overhead transfer mechanism having a first end disposed at a first height above said conveyor assembly and a second end located downstream with respect to said first end and at a second lower height above said conveyor assembly, means to supply carrier blanks at said first end, a pair of spatially parallel tracks separated a predetermined distance, a first conveyance section having at least one driven lugged chain disposed and operative along a first predetermined segment of said tracks, and a second conveyance section having at least one driven lugged chain disposed and operative along a second predetermined segment of said tracks; and

d) means to bring said clip-type article carrier into mating engagement with said top surface of at least one said article group.

5,359,831

MOLDED SUTURE RETAINER

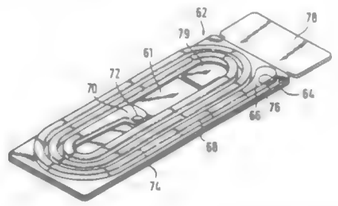
David L. Brown, Wallingford, and Henry A. Holzwarth, Weston, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 637,465, Jan. 4, 1991, Pat. No. 5,246,104, which is a continuation-in-part of Ser. No. 388,152, Aug. 1, 1989, and a continuation-in-part of Ser. No. 566,263, Aug. 13, 1990, Pat. No. 5,154,283, and a continuation-in-part of Ser. No. 568,089, Aug. 16, 1990, Pat. No. 5,222,978. This application Jun. 18, 1993, Ser. No. 79,642
Int. Cl.[5] B65B *63/04, 31/00*
U.S. Cl. 53—430 7 Claims

1. A method of packaging a suture in a molded suture retainer including the steps of:

providing a molded suture retainer comprising a molded cover member having a substantially spiral passageway formed therein, said passageway defining a channel, open at the top and interconnecting a suture receiving section at a proximal end thereof with a vacuum receiving section at a distal end thereof, said vacuum receiving section being angularly offset from said distal end of the channel, and a

cover sheet adhered to said molded cover member to close said channel, said cover sheet including a suture entrance aperture aligned with said suture receiving section and a vacuum aperture aligned with said vacuum receiving section and a recess, formed in the molded



suture retainer, for receiving a package stabilizing element therein;

inserting a package stabilizing element into said recess; and

loading a suture into said spiral passageway to form a loaded molded suture retainer.

5,359,832

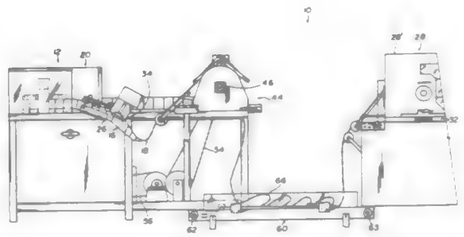
ACCUMULATOR AND COLLATOR FOR PACKAGING APPARATUS

Doan A. Hartman, Gurnee, and William N. Pearson, Highland Park, both of Ill., assignors to Cloud Corporation, Des Plaines, Ill.

Filed Sep. 4, 1992, Ser. No. 940,521

Int. Cl.[5] B65B *9/08, 61/10*

U.S. Cl. 53—435 **63 Claims**



1. A method of accumulating packages upstream of a downstream processing apparatus of a packaging machine upon stoppage of said downstream processing apparatus, said method comprising the steps of:

creating chained packages of product;

feeding said packages into and through a control apparatus which is operable at a rate corresponding to a chosen rate of package creation;

said control apparatus supplying said chained packages onto an accumulator structure;

said packages feeding from said accumulator to a cutting station which severs the chained packages apart;

said severed packages being supplied to a downstream processing apparatus; and

shutting down operation of said cutting station on discontinuance of operation of said downstream processing apparatus and accumulating uncut chained packages upon said accumulator for a predetermined time period; and

decreasing package production rate to increase the time period for accumulation.

5,359,833

METHOD OF DEPOSITING EXTRUDED PIECES OF SUBSTANCES ONTO INDIVIDUAL WRAPPING SHEETS AND APPARATUS FOR CARRYING OUT THE METHOD

Per Gronskov, Frederiksberg C., Denmark, assignor to Gerstenberg & Agger, A/S, Frederiksberg C., Denmark

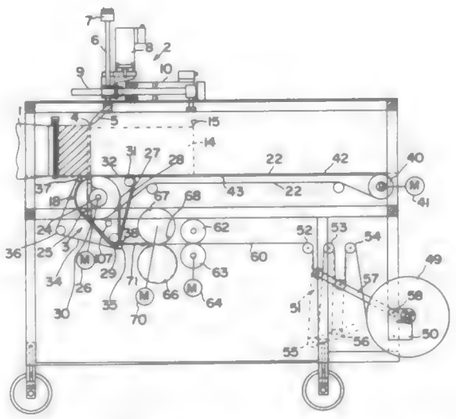
PCT No. PCT/DK91/00229, § 371 Date Feb. 10, 1993, § 102(e) Date Feb. 10, 1993, PCT Pub. No. WO92/03340, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 13, 1991, Ser. No. 969,230

Claims priority, application Denmark, Aug. 14, 1990, 1927/90

Int. Cl.[5] B65B *11/08, 25/06, 39/14, 35/10*

U.S. Cl. 53—435 **9 Claims**



1. A method of cutting pieces from an extruded substance and depositing each cut piece into a pertaining wrapping sheet, comprising feeding each sheet to a position immediately below an extruder by a conveyor means in such a manner that a trailing edge of a sheet overlaps a leading edge of a succeeding sheet, placing a leading end of the piece of substance being extruded from a mouth of the extruder directly onto the wrapping sheet conveyed by the conveyor means and at a certain distance from the leading edge of the said wrapping sheet to enable the protruding leading edge part of the sheet to form a front end closure of the cut piece, advancing the trailing edge of the wrapping sheet and the leading edge of the succeeding wrapping sheet in a manner so that they have a mutual overlap having a length which is sufficient to form a rear end closure of the sheet and a front end closure of the succeeding sheet of the cut piece, and where the sheet and the cut piece of substance are then accelerated from said position with a velocity higher than the extruding velocity of the substance in order to separate the sheet with a piece of substance thereon from the overlapping pat of the succeeding sheet, wherein the extruded pieces of substances are cut immediately downstream of the mouth of an extruder such that the portion of a cut piece facing away from the mouth of the extruder is deposited onto the pertaining wrapping sheet on that part of the sheet which is not overlapping the succeeding sheet, whereas the portion of the extruded piece closest to the mouth of the extruder is still located at a certain distance above the sheet and then accelerate the sheet with said higher velocity to separate the sheet from the succeeding sheet before the said piece of substance as a whole is deposited onto the sheet and before the succeeding sheet is in a ready position in relation to the extruder to receive the succeeding extruded piece of substance.

5,359,834

CONVEYOR SYSTEM WITH VARIABLE SPACING BETWEEN THE CARRIER UNITS

Preben H. Holdensgaard, Mårslet, Denmark, and Lloyd M. Spencer, Sr., Albion, Mich., assignors to O.G. Høyer A/S, Hojbjerg, Denmark

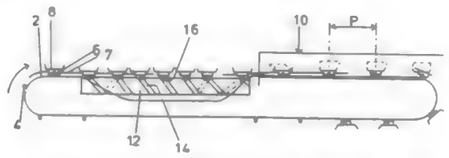
PCT No. PCT/DK92/00195, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/22486, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 19, 1992, Ser. No. 969,319

Claims priority, application Denmark, Jun. 10, 1991, 1185/91

Int. Cl.[5] B65B *39/14, 5/04;* **B65G** *15/00*

U.S. Cl. 53—566 **3 Claims**



1. A machine for cartonizing articles, the machine comprising a filling station in which articles to be cartonized are supplied to carrier units, a carton erecting station in which cartons are successively prepared for receiving the articles, a transfer station in which the articles are successively loaded into the cartons from the carrier units while the cartons are advanced at a predetermined mutual spacing, and a conveyor system operable to move the carrier units from the filling station to and through the loading station, wherein in the loading station, the carrier units are advanced successively with a mutual spacing corresponding to that of the cartons, and the conveyor system is adapted to advance the carrier units with a reduced mutual spacing during passage of the carrier units through the filling station.

5,359,835

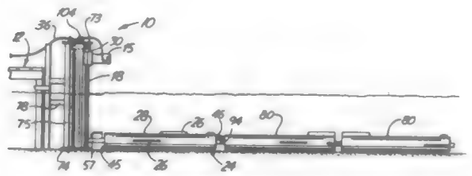
UNDERWATER WEED ROLLER

David S. Majkrzak, West Fargo, N. Dak., assignor to Crary Company, West Fargo, N. Dak.

Filed Dec. 28, 1992, Ser. No. 998,139

Int. Cl.[5] A01B *29/00;* **A01G** *1/12*

U.S. Cl. 56—8 **15 Claims**



1. An apparatus for inhibiting the growth of plant life in a selected area on a bed of a body of water, the apparatus comprising:

an elongated roller located in the body of water and being disposed substantially parallel to the bed, the roller having an outer surface contacting the bed;

means secured to the bed and joined to the roller for guiding the roller as the roller rolls in the selected area; and

means for rotating the roller so that the outer surface of the roller rolls on the bed as guided by the means for guiding in the selected area to disturb the bed in the selected area, the means for rotating including reciprocating means for reciprocating the roller over the selected area to inhibit the growth of plant life.

5,359,836

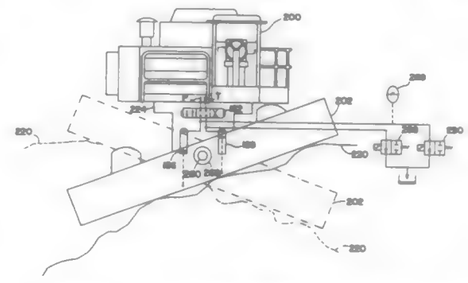
AGRICULTURAL HARVESTER WITH CLOSED LOOP HEADER CONTROL

Kenneth W. Zeuner, New Hope; Thomas A. Chmielewski, Jr.; Mark K. Torbett, both of Langhorne; Carl E. Bohman, and Charles P. Heisig, both of New Holland, all of Pa., assignors to Control Concepts, Inc., Newtown, Pa.

Filed Feb. 1, 1993, Ser. No. 12,000

Int. Cl.[5] A01D *75/28*

U.S. Cl. 56—10.2 E **12 Claims**



1. A control system for an agricultural harvester having a cut crop receiving header coupled to a hydraulic cylinder, the header applying a force against the ground which is adjusted by applying fluid under pressure to the cylinder, comprising:

first proportional control valve means fluidly coupled to the cylinder responsive to a first input signal for increasing fluid pressure in the cylinder to a setpoint value, when the pressure in the cylinder is less than the setpoint value;

second proportional control valve means fluidly coupled to the cylinder responsive to a second input signal for reducing fluid pressure in the cylinder to the setpoint pressure value when the pressure in the cylinder is greater than the setpoint value;

means for producing an electrical pressure signal that represents fluid pressure in the cylinder; and

means for determining the first and second input signals as a function of the difference between the pressure signal and the setpoint value, for maintaining pressure in the cylinder substantially at the setpoint value, thereby maintaining the force applied against the ground by the header substantially constant, the determining means comprising:

(a) means for generating respective first, second and third signal components that are proportional to the difference between the pressure signal and the setpoint value, the integral of the difference with respect to time and the derivative of the difference with respect to time, and

(b) means for combining the first, second and third signal components to form the first and second input signals.

5,359,837

HYDRAULIC ELEVATING MECHANISM FOR STRUCTURAL ASSEMBLIES ON AGRICULTURAL MACHINES

Gustav Schumacher, Gartenstrasse 8, and Guenter Schumacher, Raiffeisenstrasse 10, both of, D 5231 Eichelhardt, Germany

Filed May 3, 1993, Ser. No. 56,630

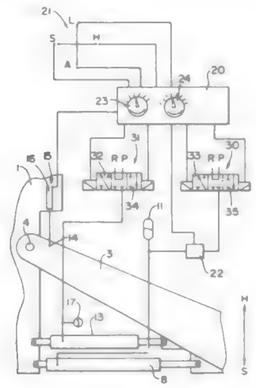
Claims priority, application Germany, May 1, 1992, 4214265

Int. Cl.[5] A01D *67/00, 75/18*

U.S. Cl. 56—10.4 **6 Claims**

1. Hydraulic elevating mechanism for lifting and lowering an engineering structure sluingly supported around a rotational axis on a base unit and comprising at least three hydraulic lift cylinders pivoted to the base unit at one end and to the engineering structure to be slued at another end, said hydraulic lift cylinders being controlled by hydraulic control circuits separated from each other, at least one of said lift cylinders being connected to a pressure reservoir, wherein two of said hydrau-

lic lift cylinder controlled by a first hydraulic control circuit and hydraulically connected with one another by an hydraulic



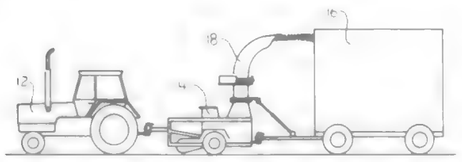
duct and a third hydraulic lift cylinder is controlled by a second hydraulic control circuit.

5,359,838

APPARATUS FOR CONTROLLING THE DIRECTION OF A CROP DISCHARGE SPOUT ON AGRICULTURAL MACHINERY WITH RESPECT TO AN ASSOCIATED COLLECTOR

William H. Madsen, P.O. Box 23, Mayerthorpe, Alberta, Canada T0E 1N0

Filed Jan. 27, 1994, Ser. No. 187,056
Int. Cl.[5] A01D *17/00*
U.S. Cl. 56—16.6 **8 Claims**



1. An apparatus for controlling the direction of a crop discharge spout on an agricultural machine with respect to an associated collector vehicle, comprising:

a. a discharge spout having at a stationary first section, a second section rotatable relative to the first section and a third section rotatable relative to the second section, the first section and the second section being rotatably connected at a lower joint and the second section and the third section being rotatably connected at an upper joint;

b. a telescopic member extending between a drawbar on a collector vehicle and the second section, such that the second section of the discharge spout rotate about the lower joint in unison with the drawbar to maintain spout positioning relative to the collector vehicle, the telescopic member telescopically extending and retracting in response to downward and upward deflections of the drawbar; and

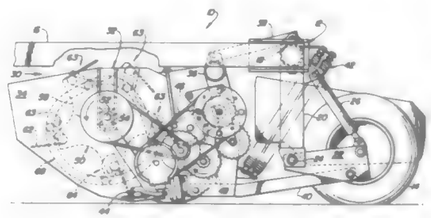
c. drive means between the second section and the third section, the drive means causing rotation of the third section about the upper joint, whereby control over the aim of the discharge spout is maintained by the operator.

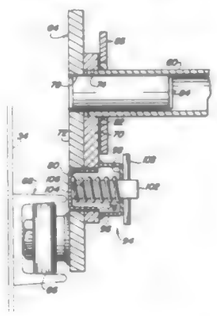
5,359,839

TOOTHBAR RELEASE FOR HARVESTER HEADER REEL

Stephen K. Parsons, and Craig A. Richardson, both of Ottumwa, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 19, 1993, Ser. No. 93,426
Int. Cl.[5] A01D *57/03*
U.S. Cl. 56—130 **9 Claims**





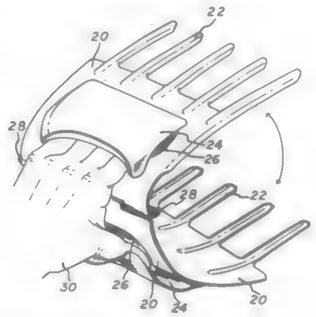
1. In a harvester header comprising a frame having opposite upright side structures, a cutterbar extending between and being connected to opposite lower locations of the upright side structures, a reel including a central axle having opposite ends rotatably supported in the opposite upright side structures at respective locations above and forwardly of the cutterbar, said reel including at least two spider structures fixed for rotation with the axle at transversely spaced locations therealong, a plurality of equiangularly spaced toothbars rotatably supported in the spider structures at locations spaced equidistant from the axle, each toothbar having a plurality of teeth supported thereby for rotation therewith, a toothbar guide arm extending radially relatively to and being fixed to an end of each toothbar and carrying a roller at an end thereof, an inwardly opening endless cam track being fixed to an inner side of that side structure closest to the guide arms, and the roller of each toothbar guide arm being received in the cam track so that as the reel is rotated the cam track causes the toothbar guide arms to oscillate their associated toothbars so that the teeth are presented in the correct attitude for effectively sweeping standing crop against the cutterbar and then for sweeping the cut crop rearwardly from the cutterbar, the improvement comprising: at least one toothbar guide arm including an inner arm section having an end fixed to said toothbar and an outer arm section mounted for pivoting relative to said inner arm section and carrying a respective one of the rollers; and a releasable connector acting between the inner and outer arm sections and normally preventing relative movement therebetween but being selectively releasable to permit the inner arm section together with an associated toothbar to be manually pivoted to thereby pivot the teeth, associated with the latter toothbar, away from a work zone adjacent the cutterbar to permit access to perform service or repair work on the cutterbar.

5,359,840

COMBINATION HANDRAKE, SCOOP, GRASPING TOOL AND METHOD OF USE

Donald G. Costar, P.O. Box 9905, Reno, Nev. 89507-0905

Filed Jan. 4, 1994, Ser. No. 177,868
Int. Cl.[5] A01D *7/02*
U.S. Cl. 56—400.12 **2 Claims**



2. A method of raking, gathering, scooping and grasping materials, objects, or debris using a one hand operable rake and grasping implement which comprises;

(a) grasping said one hand operable rake and grasping implement with one hand of a user with the fingers and thumb of said hand inserted into finger guards;

(b) closing said raking and grasping implement by exerting pressure of said users fingers and thumb in a grasping manner;

(c) allowing tines of said implement to pass by and between each other forming a rake;

(d) performing a raking operation with said tines while holding said implement in a closed position;

(e) opening said raking and grasping implement by exerting reverse pressure of said users fingers and thumb and

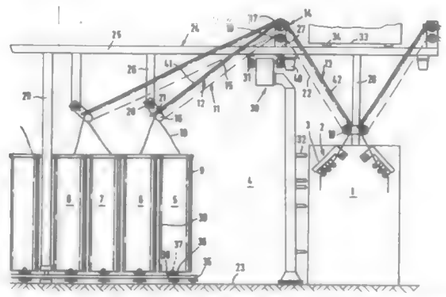
(f) grasping, picking up or scooping up said materials, objects or debris for transfer or disposal by again exerting pressure of said users fingers and thumb in a grasping manner.

5,359,841

SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Germany, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, France

Continuation-in-part of Ser. No. 948,638, Sep. 23, 1992. This application Jun. 4, 1992, Ser. No. 894,520
Claims priority, application Germany, Dec. 21, 1990, 4041112; Jan. 11, 1991, 4100618; Jun. 5, 1991, 4118379
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—90 **26 Claims**



1. A spinning machine having a machine frame, comprising:

a plurality of spinning stations arranged along at least one side of a spinning machine, each of said spinning stations having a front side facing an operating aisle for accommodating operating personnel access to the respective front sides of the spinning stations;

depositing sites for cans containing sliver to be spun in the respective spinning stations, said depositing sites being arranged adjacent the operating aisle at the side thereof opposite the front side of the spinning stations,

sliver transport devices for supporting and transporting sliver upwardly from the cans and above and over the operating aisle in the manner of a roof to the spinning stations, and

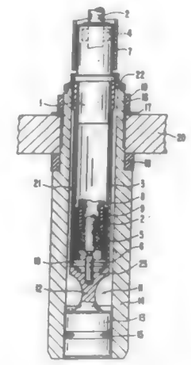
a frame attached to the machine frame of the spinning machine and on which the sliver transport devices are mounted, wherein the frame bridges in a manner of a roof the operating aisle and includes means for holding at least one auxiliary device.

5,359,842

SPINNING OR TWISTING SHAFT BEARING ASSEMBLY WITH VIBRATION ISOLATION CONNECTION ARRANGEMENT

Hans Braxmeier, Süssen, and Gerd Stahlecker, Eislingen, both of Germany, assignors to Fritz Stahlecker, Bad Ueberkingen and Hans Stahlecker, Suessen, both of Germany

Continuation-in-part of Ser. No. 879,441, May 1, 1992, abandoned, which is a continuation of Ser. No. 606,724, Oct. 31, 1990, abandoned, and a continuation-in-part of Ser. No. 855,477, Mar. 23, 1992, Pat. No. 5,201,170, which is a continuation of Ser. No. 615,277, Nov. 19, 1990, abandoned, and a continuation-in-part of Ser. No. 691,808, Apr. 26, 1991, abandoned, and Ser. No. 672,078, Mar. 19, 1991, abandoned.
This application Nov. 2, 1992, Ser. No. 970,059
Claims priority, application Germany, Nov. 17, 1989, 3938255; Dec. 23, 1989, 3942912; Mar. 27, 1990, 4009695; Aug. 8, 1990, 4025130
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] D01H *7/08, 7/14*
U.S. Cl. 57—132 **20 Claims**



1. A spinning or twisting spindle bearing assembly for supporting a spinning or twisting spindle shaft, comprising:

a spindle shaft neck bearing engageable with a spindle shaft at a first axial location thereof and serving to radially support the spindle shaft,

a spindle shaft step bearing for radially and axially supporting an end portion of the spindle shaft at a location spaced axially of the first axial location,

a spindle bearing housing enclosing the neck bearing and step bearing,

an outer housing surrounding the spindle bearing housing with a radial spacing between the spindle bearing housing

and outer housing forming an annular gap which extends from adjacent the location of the step bearing along a substantial portion of the axial length of the spindle bearing housing, said bearing housing being closed to prevent flow of lubricant fluid between the interior of the bearing housing to the annular gap,

connecting structure for connecting the outer housing directly to a spinning machine frame member at an axial location of the spindle shaft which is axially spaced from the spindle shaft step bearing, wherein the annular gap between the outer housing and the spindle bearing housing extends from the connecting structure over substantially the entire remaining length of the outer housing,

and a vibration isolation connection of the outer housing and bearing housing located axially spaced from the neck bearing and from the machine frame member, such that vibrations experienced in use at the neck bearing are transmitted indirectly to the machine frame member substantially only by way of the bearing housing to the vibration isolation connection and then through the outer housing to the machine frame member.

5,359,843

METHOD AND APPARATUS FOR SUPPLYING EMPTY BOBBINS TO AND REMOVING YARN PACKAGES FROM TEXTILE MACHINES

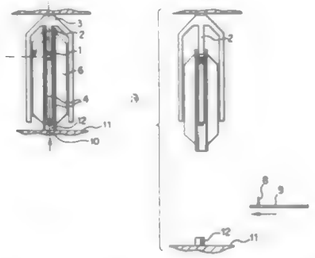
Hans-Jörg Herold, Crimmitschauer; Gerald Rascher, Stieglitzweg; Joachim Schneider, Vielaw, and Holger Wurlitzer, Feuerbachweg, all of Germany, assignors to Innovatex Automatisierungstechnik GmbH, Lichtentanne, Germany

Filed Nov. 10, 1992, Ser. No. 974,039

Claims priority, application Germany, Apr. 29, 1992, 4214001

Int. Cl.[5] D01H *9/04, 9/00*

U.S. Cl. 57—267 **3 Claims**



1. A method for doffing yarn packages from and supplying empty bobbins to textile machines, in which the full packages from a bobbin rail are guided and detachably anchored at a storage system with a transporting mechanism above the textile machine and the empty bobbins are guided and detachably anchored by the storage system at the bobbin rail, and a moving means for moving the bobbin rail in a vertical direction, said method comprising:

signalling an impending exchange of bobbins to the storage system at the textile machine by means of a control mechanism, making ready a storage hoist directly over a bobbin creel with mandrels,

moving the bobbin rail with the full packages downwards, ending a winding up process of the packages, including slubbing, separation between the full package and the textile machine, moving the bobbin rail upwards and locking a spindle holding mechanism by means of a switching mechanism,

lowering the bobbin creel at columns in front of the textile machine to a height of the bobbin rail,

lowering the bobbin rail with the switching mechanism, whereby the package remains suspended at the spindle holding mechanism and becomes free from below, so that it can be supported on the mandrel of the bobbin creel that is moving into a spinning station of the textile machine,

raising the bobbin creel, which has been moved into the textile machine, whereby the mandrels take hold of the full packages and unlock the spindle holding mechanisms to release the full packages,

lowering the bobbin creel, moving it out of the textile machine, moving it to empty slots of the storage hoist and fastening the full packages thereto,

moving the bobbin creel slightly out of a region of the storage hoist, and shifting the storage hoist, whereby the empty bobbins are above the mandrels of the bobbin creel,

removing the empty bobbins of the bobbin creel from the storage hoist by the lifting motion of the bobbin creel, lowering the bobbin creel with the empty bobbins to a level of the bobbin rail and guiding them into the textile machine below the spindles,

mounting the empty bobbins onto the spindles by the lifting motion of the bobbin creel and locking their holding mechanism by the mandrels,

subsequently lowering the bobbin creel again, moving it out of the textile machine and bringing it to an above waiting position,

moving the bobbin rail upwards and unlocking the spindle holding mechanism by means of the switching mechanism, and

subsequently, commencing the spinning of roving yarn slubbing on the empty bobbins.

5,359,844

SLIVER CAN EXCHANGE APPARATUS WITH CAN TRANSPORT CARRIAGE HAVING A ROTATABLE PLATFORM WITH THREE CAN SUPPORTS

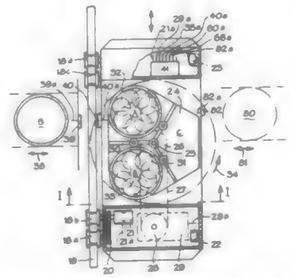
Hans-Werner Schwalm, Moenchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jul. 31, 1992, Ser. No. 922,816

Claims priority, application Germany, Jul. 31, 1991, 4125382

Int. Cl.[5] D01H *9/10, 5/28*

U.S. Cl. 57—281 **10 Claims**



1. Apparatus for transporting full sliver cans to the spinning stations of a textile spinning machine for exchange of full sliver cans for empty sliver cans at the spinning stations, comprising:

a can transport carriage movable to and between the spinning stations, the can transport carriage including means forming three can supports each for supporting a sliver can thereon, said three can supports being disposed on a rotatable platform at generally equal angular spacings from one another relative to the axis of rotation of said platform and means for indexing movement of the can supports to sequentially position each can support at a can transfer location at which a can is transferred between the can support and the textile spinning machine during a can exchange operation, a standby location, and a ready location from which the respective can support thereat is indexed into the can transfer location, the can transfer location and the ready location being arranged such that two sliver cans supported at these two locations are substantially aligned in the direction of travel of the can transport carriage and the can supports forming means being dimensioned such that an outward lateral extent thereof at said can transfer and ready locations in generally no greater than an outward radial extent of the two sliver cans at said can transfer and ready locations, the sliver cans being generally cylindrical and include a circumferential edge, said can support forming means having sides extending between can support locations at a lateral extent when adjacent can supports are at said can transfer and ready locations which is no greater than the radial extent of the edges of the cans at said can transfer and ready locations, and having ends connecting said sides at each can support, with said ends extending laterally from said axis of rotation at said standby location no greater than an opposite lateral extent of the side that extends between said can transfer and ready locations.

5,359,845

PROCESS AND APPARATUS FOR COOLING A HEATED YARN

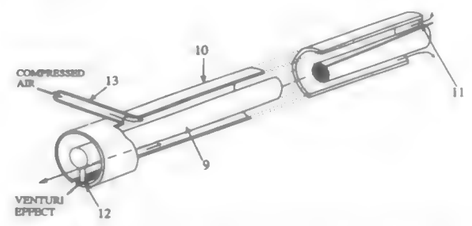
Carlos M. Gabalda, Granges les Valence, and Pierre Mirabel, Roanne, both of France, assignors to ICBT Roanne, France

Filed Feb. 26, 1993, Ser. No. 23,373

Claims priority, application France, Apr. 29, 1992, 92 05541

Int. Cl.[5] D02G *1/00;* **D01H** *13/04*

U.S. Cl. 57—290 **20 Claims**



1. A process for cooling a yarn exiting from a heater before passing into a texturing zone, comprising the steps of:

passing the yarn along a first direction through a volume defined between an internal guide core and an external housing disposed about said guide core, said yarn being in contact with an outer surface of said guide core;

flowing gaseous cooling medium through said volume along a second direction which is opposite said first direction.

6. An apparatus for cooling a yarn exiting from a heater before passing into a texturing zone, comprising:

a housing having an entrance and exit for passing a yarn therethrough;

an internal guide core disposed inside said housing thereby defining a volume between said housing and said guide core;

gas flow means for flowing a gaseous cooling medium through said volume towards said entrance such that the gaseous cooling medium flows in a direction opposite to a traveling direction of the yarn; and

guide means for holding the yarn in contact with an outer surface of said guide core.

5,359,846

SPINNING APPARATUS OF ROTOR TYPE OPEN-END SPINNING UNIT AND ROTOR DRIVING METHOD

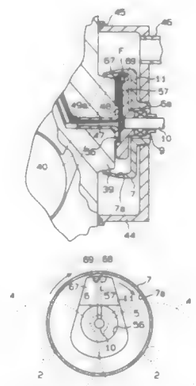
Noriaki Miyamoto; Masashi Kaneko; Kenji Ito, and Yasuyuki Kawai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jul. 28, 1992, Ser. No. 921,312

Claims priority, application Japan, Jul. 29, 1991, 3-189033; Dec. 26, 1991, 3-345131

Int. Cl.[5] D01H *4/40, 4/50*

U.S. Cl. 57—417 **16 Claims**



1. A rotor type open-end spinning unit comprising:

a rotor with an open side and having a fiber-collecting section for collecting opened fibers supplied thereto;

a yarn drawing passage provided in communication with said open side of said rotor and having a first end portion that is located coaxial with said rotor;

a rotary assembly, provided in said rotor coaxially therewith, said rotary assembly including means for active driving thereof separate from said rotor, said rotary assembly having at least a first part facing toward and proximate to said fiber-collecting section and a second part facing toward said first end portion of said yarn drawing passage in proximity thereto;

a yarn passage, formed in said rotary assembly extending from said first to said second part of said rotary assembly, for guiding a fiber bundle from said fiber-collecting section to a position opposite said first end portion of said yarn drawing passage; and

twist propagation preventing means extending into the end of said yarn passage which is located in said first part of said rotary assembly.

5,359,847

DUAL FUEL ULTRA-LOW NOX COMBUSTOR

Paul W. Pillsbury, Winter Springs, and David T. Foss, Winter Park, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 1, 1993, Ser. No. 69,496

Int. Cl.[5] F02C *7/26*

U.S. Cl. 60—39.06 **20 Claims**

1. A gas turbine, comprising:

a) a compressor for compressing air;

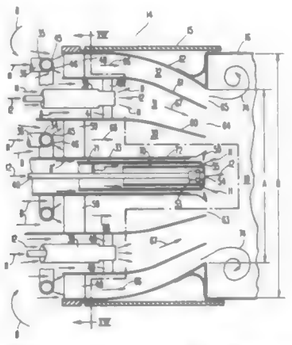
b) a combustor for producing a hot gas by burning a fuel in said compressed air, said combustor having:

(i) a combustion zone,

(ii) a centrally disposed first fuel nozzle in flow communication with said combustion zone and having a first discharge port for discharging a liquid fuel and a second discharge port for discharging a gaseous fuel,

(iii) first and second concentrically arranged annular passages surrounding said first fuel nozzle and in flow communication with said combustion zone,

(iv) means for introducing a liquid fuel into said first passage so as to circumferentially distribute said liquid fuel around said first passage,



(v) first means for introducing a gaseous fuel into said second passage so as to circumferentially distribute said gaseous fuel around said second passage; and

c) a turbine for expanding said hot gas produced by said combustor.

5,359,848

DEVICE FOR OPERATION OF A GAS TURBINE ENGINE THRUST REVERSER SYSTEM

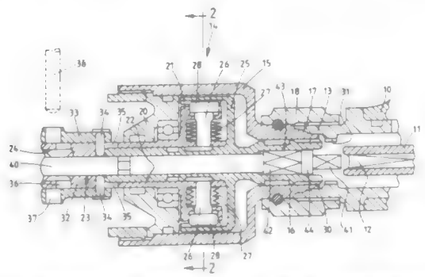
Stephen H. Davies, Telford, England, assignor to Lucas Industries public limited company, West Midlands, England

Filed Mar. 27, 1992, Ser. No. 852,317

Claims priority, application United Kingdom, Mar. 27, 1991, 9106515.1

Int. Cl.[5] F02K *3/02*

U.S. Cl. 60—226.2 **8 Claims**



1. A device for hand operation of a gas turbine engine thrust reversing system having a rotatable part, said device comprising an input drive element, an output drive element, a torque limiting device for limiting torque, and an engagement means for selectively engaging a relatively fixed part of the thrust reversing system, said torque limiting device being arranged between said input drive element and said output drive element, said output drive element being selectively engagable with the rotatable part of the thrust reversing system, and said engagement means being coupled to said output drive element and selectively engagable with the relatively fixed part to prevent rotation of the rotatable part when said output drive element is engaged with the rotatable part.

5,359,849

AFTERBURNER ASSEMBLY FOR A GAS TURBINE ENGINE

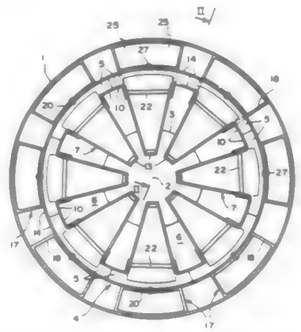
Didier L. C. Auffret, Combs la Ville; Gérard C. L. Berger, Quincy s/Senart; Eric Conete, Le Mee s/Seine; Frédéric Delage, Paris; Gérard E. A. Jourdain, Saintry sur Seine, and Christophe J. F. Thorel, Paris, all of France, assignors to Societe National D'Etude et de Construction de Moteurs D'Aviation, Paris Cedex, France

Filed Dec. 8, 1993, Ser. No. 162,883

Claims priority, application France, Dec. 16, 1992, 9215119

Int. Cl.[5] F02K *3/10*

U.S. Cl. 60—261 **36 Claims**



1. An afterburner assembly for a gas turbine engine comprising:

a) an outer casing extending about a central axis;

b) an inner casing extending about the central axis and spaced from the outer casing so as to define an afterburner duct therebetween;

c) a plurality of arms extending generally radially with respect to the central axis located in the afterburner duct, each arm having a segment of a flameholder ring integrally formed therewith and extending from opposite sides of each arm; and,

d) a support member attached to each arm and to the outer casing such that the flameholder ring segments form an annular flameholder ring extending about the central axis, wherein the support members are attached to the outer casing such that the inner end of the arms slidably contact the inner casing.

5,359,850

SELF VENTING CARBON OR GRAPHITE PHENOLIC ABLATIVES

Billy H. Prescott, Willard, Utah, assignor to Thiokol Corporation, Ogden, Utah

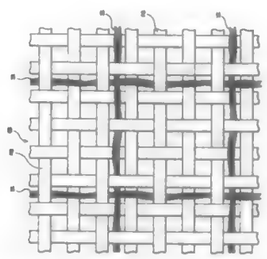
Filed Mar. 15, 1993, Ser. No. 31,652

Int. Cl.[5] F02K *1/00*

U.S. Cl. 60—271 **16 Claims**

1. A process for preparing an ablative fiber composite insulation material for use on a rocket motor nozzle comprising:

(a) positioning a reinforcing cloth containing degradable fibers interwoven therein into a desired rocket motor nozzle shape, said reinforcing cloth being impregnated with a thermosetting resin binder; wherein the degradable fibers degrade at a temperature above the cure temperature of the thermosetting resin binder and below the decomposition temperature of the thermosetting resin binder; and



(b) curing the resin binder to form a solid ablative fiber composite insulation material.

5,359,851

VARIABLE GEOMETRY EXHAUST NOZZLE FOR A TURBOJET ENGINE

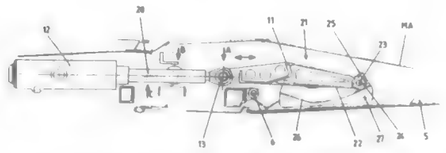
Pierre A. L. M. Bannerot, Melun; Guy J. Lapergue, Rubelles; Eric F. M. Maingre, La Rochette; Xavier J. Pasquali, Le Mee sur Seine, and Jean-Claude H. Reghezza, Maincy, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.), Paris, France

Filed Nov. 22, 1993, Ser. No. 155,217

Claims priority, application France, Nov. 25, 1992, 92 14165

Int. Cl.[5] F02K *1/12*

U.S. Cl. 60—271 **7 Claims**



1. A variable geometry nozzle for a turbojet engine having an exhaust duct extending about a longitudinal axis and having a downstream end portion, the nozzle comprising:

a) a set of inner upstream flaps each having an upstream edge portion pivotally attached to the downstream end portion of the turbojet engine and further having a downstream edge;

b) a set of inner downstream flaps each having an upstream edge pivotally attached to the downstream edge of an inner upstream flap and further having a downstream edge;

c) a cowling support attached to and spaced from the downstream edge of the turbojet engine so as to be movable in a direction generally parallel to the longitudinal axis between upstream and downstream positions;

d) a set of outer flaps pivotally attached to the cowling support;

e) a control ring movable in a direction generally parallel to the longitudinal axis between a forwardmost position and a rearwardmost position;

f) first actuating means connected to the control ring to move the control ring between its forwardmost and rearwardmost positions;

g) first link rods connecting the control ring to the set of inner upstream flaps;

h) means connecting the cowling support to the set of inner, downstream flaps;

i) cam means interconnecting the set of outer flaps to the control ring; and,

j) second actuating means connected to the cowling support so as to move the cowling support between the upstream and downstream positions whereby, in a converging-diverging configuration the cowling support is stationary such that the nozzle geometry is controlled solely by the first actuating means, and whereby, in a converging-diverging configuration the nozzle geometry is controlled by simultaneous actuation of the first and second actuating means.

5,359,852

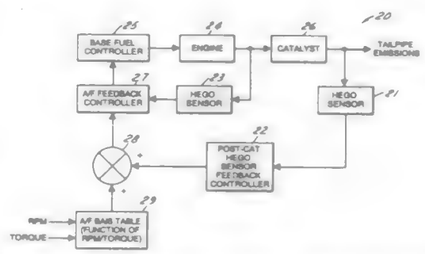
AIR FUEL RATIO FEEDBACK CONTROL

Judith M. Curran, Northville; Thomas R. Culbertson, Livonia, and Douglas R. Hamburg, Bloomfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 7, 1993, Ser. No. 117,590

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—274 **5 Claims**



1. A method of controlling air/fuel ratio using electronic engine controls for an internal combustion engine including the steps of:

providing a pair of sensor means for characterizing at least one constituent of an exhaust gas in an exhaust stream from the internal combustion engine, a first sensor means being positioned upstream of a catalyst and a second sensor means being positioned downstream of the catalyst;

providing a control module having an input connected to the upstream and downstream sensors means and an output connected to the actuators controlling the engine, as to establish a first feedback loop including the first upstream sensor means and a second feedback loop including the second downstream sensor means;

providing an air/fuel ratio bias table in said first feedback loops to alter the transfer function of said first feedback loop; and

using an output of said second downstream sensor means to bias the output of the air/fuel bias table thereby compensating the first and second air/fuel ratio feedback loops for aging of said first upstream sensor means and providing a capability to stay within a catalyst window of operation as a function of engine speed and torque operating points, including the steps of:

determining a purge flow is low;

determining vehicle speed is above a predetermined low speed and has a predetermined amount of stability;

determining that the engine speed, load and coolant temperature are within a predetermined window;

determining that an air meter associated with the internal combustion engine is properly working; and

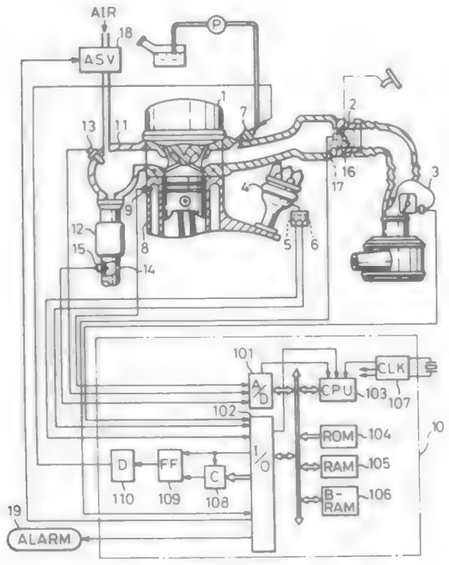
determining that the second downstream sensor means in a non-test mode of operation.

5,359,853

DEVICE FOR DETECTING DETERIORATION OF A CATALYTIC CONVERTER FOR AN ENGINE

Yasuhiro Shimizu, Nishikamo, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 16, 1993, Ser. No. 152,236
Claims priority, application Japan, Dec. 9, 1992, 4-329405
Int. Cl.[5] F02D *41/14*
U.S. Cl. 60—276 30 Claims



1. A device for detecting deterioration of a three-way catalytic converter disposed in an exhaust passage of an internal combustion engine, said engine comprising, an upstream air-fuel ratio sensor disposed in the exhaust passage upstream of said catalytic converter for detecting an air-fuel ratio of the exhaust gas upstream of said catalytic converter, a downstream air-fuel ratio sensor disposed in the exhaust passage downstream of said catalytic converter for detecting the air-fuel ratio of the exhaust gas downstream of said catalytic converter, and a feedback control means for controlling the air-fuel ratio of the engine by a feedback control based on, at least, the output of said upstream air-fuel ratio sensor, said device comprising:

a means for calculating the ratio of the length of the output signal response curve of said downstream air-fuel ratio sensor and the length of the output signal response curve of the output signal response curve of said upstream air-fuel ratio sensor, when the engine is controlled by said feedback control means;

a means for calculating the ratio of the area bounded by the output signal response curve of said downstream air-fuel ratio sensor and a reference line thereof and the area bounded by the output signal response curve of said upstream air-fuel ratio sensor and a reference line thereof, when the engine is controlled by said feedback control means;

a transition determining means for determining the degree of transition of the operating condition of the engine; and,

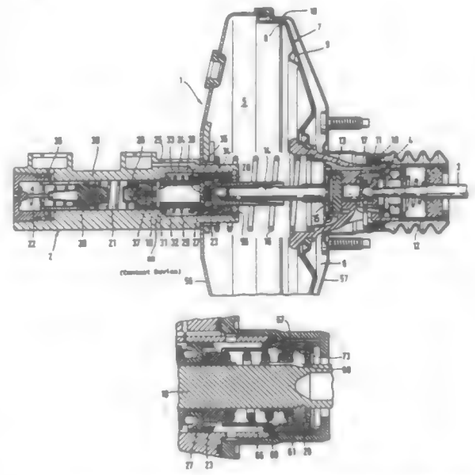
a deterioration detecting means for detecting deterioration of said catalytic converter based on said ratio of the lengths, said ratio of the areas and said degree of transition of the operating condition of the engine.

5,359,854

ACTUATING UNIT FOR HYDRAULIC BRAKE SYSTEM

Wilfried Wagner, Huettenberg, and Lothar Schiel, Hofheim, both of Germany, assignors to Alfred Teves GmbH, Frankfurt, Germany

PCT No. PCT/EP92/02509, § 371 Date Aug. 5, 1993, § 102(e) Date Aug. 5, 1993, PCT Pub. No. WO93/11010, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 2, 1992, Ser. No. 98,321
Claims priority, application Germany, Dec. 5, 1991, 4140066
Int. Cl.[5] F15B *7/00*
U.S. Cl. 60—535 10 Claims



1. An actuating unit for a hydraulic brake system comprising:

an actuating member responsive to movement of a brake pedal;

a pneumatic brake power booster having a housing and a movable wall subdividing said housing into a vacuum chamber and a working chamber;

a master brake cylinder having:

(a) a housing,

(b) a hydraulic pressure chamber adapted to develop hydraulic pressure,

(c) a filling chamber connectible to said hydraulic pressure chamber, and

(d) a primary piston responsive to movement of said actuating member, having a longitudinal axis, and confining said hydraulic pressure chamber;

a stop;

a contact device adapted to activate a warning apparatus, said contact device positioned in the area of said stop; and

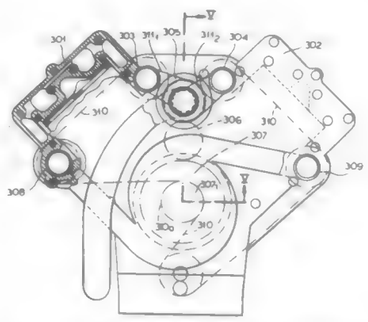
an annular piston of diameter larger than that of said primary piston, said annular piston coupled to said primary piston, confining said filling chamber, adapted to be uncoupled from said primary piston when said pressure in said hydraulic pressure chamber reaches a predeterminable amount, and sliding on said primary piston and cooperating with said stop after being uncoupled from said primary piston.

5,359,855

V-BLOCK TWO-STROKE INTERNAL COMBUSTION ENGINE

Hermann Klaue, Case Postale 1344, CH-1820 Montreux, Switzerland

Continuation-in-part of Ser. No. 984,893, Dec. 2, 1992, Pat. No. 5,287,701. This application Aug. 11, 1993, Ser. No. 105,309
Claims priority, application Germany, Jul. 14, 1992, 4223393; Jun. 14, 1993, 4319606
Int. Cl.[5] F02B *33/44*
U.S. Cl. 60—607 7 Claims



1. An autoignition two-stroke internal combustion engine, comprising:

an engine block of V pattern formed with a plurality of working chambers of generally rectangular cross section configured to operate in an autoignition two-stroke cycle, said working chambers being elongated and diverging upwardly symmetrically in said V pattern with respect to a vertical symmetry plane between chambers on opposite sides of the engine block;

respective pistons of generally rectangular cross section reciprocatable in said working chambers upon ignition of a fuel/air mixture in the respective chambers to drive said pistons and produce an exhaust gas in said chambers, said pistons being sealed with respect to said working chambers by planar rib seals;

a crankshaft rotatable in said engine block about an axis in said plane and coupled with said pistons so as to be rotated by said pistons upon said pistons being driven by said ignition of said fuel/air mixture;

respective exhaust rotary sleeve valves disposed on opposite sides of said symmetry plane in said V pattern between said chambers on opposite sides of said block and communicating with said chambers, rotatable about axes parallel to an axis of said crankshaft and discharging exhaust gas from each working chamber;

respective intake rotary sleeve valves disposed adjacent said chambers on opposite outer sides of said block, rotatable about respective axes parallel to said crankshaft axis and feeding air to said chambers, each of said rotary sleeve valves having openings cooperating with slits formed in said engine block;

a turbocompressor on said engine block having an axis in said symmetry plane and disposed below said exhaust rotary sleeve valves, said turbocompressor being connected with the intake rotary sleeve valves feeding fresh air to said chambers for supercharging the engine;

at least one exhaust gas turbine on said engine block having an axis in said symmetry plane and disposed above said turbocompressor and below said exhaust rotary sleeve valves and connected to at least one of the exhaust rotary sleeve valves so as to be driven by exhaust gas therefrom; and

gearing operatively coupling said exhaust gas turbine with said turbocompressor for driving said turbocompressor with said exhaust gas turbine and Operatively coupling said exhaust gas turbine with said crankshaft; and

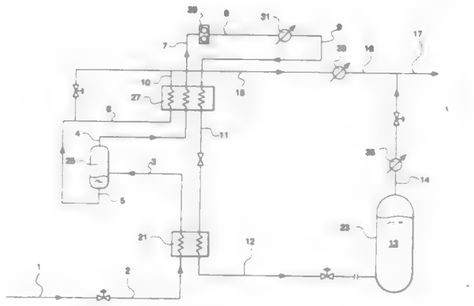
a friction device for selectively activating and inactivating said gearing respectively in actuated and deactivated positions of the friction device, said turbine being coupled with said crankshaft in said actuated position of said friction device and being decoupled from said crankshaft in said deactivated position of said friction device.

5,359,856

PROCESS FOR PURIFYING LIQUID NATURAL GAS

George D. Rhoades, LaGrange; Ronald C. Weber, Brookfield, and Gerald E. Engdahl, Wheaton, all of Ill., assignors to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Oct. 7, 1993, Ser. No. 133,667
Int. Cl.[5] F25J *1/00*
U.S. Cl. 62—9 11 Claims



1. A process for increasing the methane content of liquid natural gas to provide a substantially pure liquid methane product comprising:

(a) introducing a liquid natural gas stream into a first heat exchanger in indirect heat exchange with a purified methane vapor stream so as to liquefy said purified methane vapor stream to provide a substantially pure liquid methane product and to partially vaporize said liquid natureal gas stream to provide a mixture of a major amount of substantially pure methane vapor and a minor amount of liquid containing methane and higher molecular weight hydrocarbons;

(b) transferring said mixture of vapor and liquid from said first heat exchanger to a low pressure separator to provide a liquid bottom fraction and a substantially pure methane top vapor fraction;

(c) introducing at least a portion of said liquid bottom fraction and all of said vapor fraction into a second heat exchanger in indirect heat exchange with said vapor fraction after said vapor fraction has been processed in accordance with step (d);

(d) transferring said vapor fraction exiting from said second heat exchanger through a compressor and an aftercooler to provide the said processed top vapor fraction for use as a heat exchange medium in said second heat exchanger; and

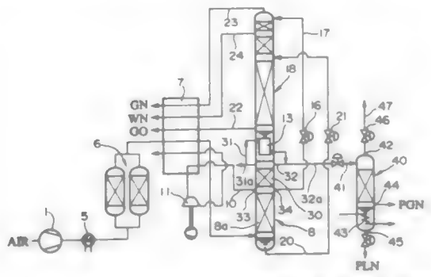
(e) introducing said processed top vapor fraction exiting from said second heat exchanger into said first heat exchanger to provide a heat exchange medium for said partial vaporization of said liquid natural gas and to provide said substantially pure liquid methane stream.

5,359,857

INSTALLATION FOR AIR LIQUEFACTION SEPARATION AND PROCESS THEREFOR

Hideyuki Honda, Kawasaki, Japan, assignor to Nippon Sanso Corporation, Tokyo, Japan

Filed May 10, 1993, Ser. No. 60,017
Claims priority, application Japan, May 8, 1992, 4-116186
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 **12 Claims**



1. An air liquefaction separation installation for isolating from compressed, refined, and cooled feed air at least one atmospheric constituent and nitrogen in which the amount of carbon monoxide is reduced, said air liquefaction separation installation having a rectification column into which said feed air is introduced and which carries out liquefaction rectification separation so as to separate said feed air into oxygen-enriched liquefied air and nitrogen gas, said air liquefaction separation installation further comprising:

a carbon monoxide rectification section, located in the upper part of said rectification column, for further rectifying said nitrogen gas so as to separate said nitrogen gas into carbon monoxide-containing nitrogen and nitrogen in which the amount of carbon monoxide is reduced;

a collecting means, connected to the upper part of said carbon monoxide rectification section, for withdrawing a part of said nitrogen in which the amount of carbon monoxide is reduced from said carbon monoxide rectification section; and

a carbon monoxide-containing nitrogen withdrawal means, connected to the lower part of said carbon monoxide rectification section, for withdrawing said carbon monoxide-containing nitrogen from said carbon monoxide rectification section.

5,359,858

METHOD AND APPARATUS FOR FREEZING AQUEOUS LIQUID

Jeremy P. Miller, Caxton House, Victoria Road, Mortimer, Nr. Reading, Berkshire RG7 3SL, and Charles M. Monroe, 24 Queen Street, High Wycombe, Buckinghamshire HP13 6EZ, both of United Kingdom

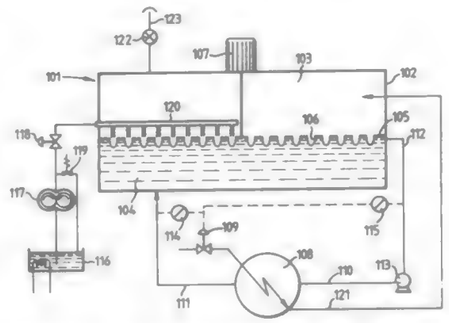
Filed Jul. 7, 1993, Ser. No. 89,071
Claims priority, application United Kingdom, Jul. 7, 1992, 9214427.8
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—71 **16 Claims**

1. A method of freezing an aqueous liquid which method comprises the steps of:

positioning a mold fabricated from a metal used in freezing of foodstuffs and having a wall thickness of at least 1 mm to receive the aqueous liquid;

pre-cooling the surface of the mold intended to be contacted by the aqueous liquid to a temperature between −50° C. and −85° C.;

introducing the aqueous liquid into the mold;



allowing at least the aqueous liquid in contact with the mold to freeze; and

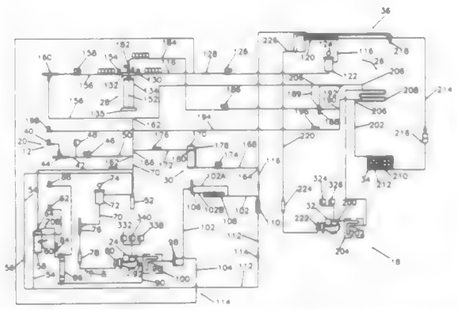
releasing said frozen aqueous liquid from the mold.

5,359,859

METHOD AND APPARATUS FOR RECOVERING REFRIGERANTS

William J. Bench, Holland, Mich.; Donald J. Bench, Sun City Center, Fla., and Gary L. Molenaar, Hamilton, Mich., assignors to Russell Technical Products, Holland, Mich.

Filed Dec. 23, 1992, Ser. No. 996,125
Int. Cl.[5] F25B *47/00*
U.S. Cl. 62—85 **17 Claims**



7. A method for removing a refrigerant from a non-functioning refrigeration system and storing the recovered refrigerant for reclaiming or recycling, comprising the steps of:

drawing the refrigerant in from the non-functioning refrigeration system through a regulated inlet;

cleansing contaminants from the refrigerant;

compressing the refrigerant;

removing heat from the compressed refrigerant and condensing it to a liquid by passing the refrigerant in heat exchange relationship with a second refrigeration system; and

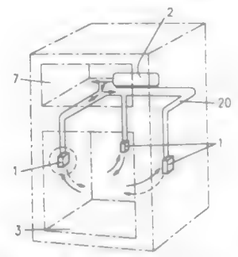
storing the liquid refrigerant in a chilled storage container.

5,359,860

METHOD AND APPARATUS FOR CONTROLLING A TEMPERATURE IN A REFRIGERATING CHAMBER OF A REFRIGERATOR

Sa Yoon Oh, Seoul, Rep. of Korea, assignor to Goldstar Co. Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 685,848, Apr. 16, 1991, abandoned.
This application Sep. 3, 1992, Ser. No. 939,515
Int. Cl.[5] F25D *17/06*; G05D *23/00*
U.S. Cl. 62—97 **15 Claims**



1. A method of controlling a temperature in a refrigerating chamber of a refrigerator wherein there are a first cold air, a second cold air, and a third cold air comprising the steps of:

(a) sensing a first temperature of the second cold-air by a first temperature sensor disposed in the vicinity of a cold-air suction port;

(b) sensing a second temperature of the third cold-air by a second temperature sensor disposed in the vicinity of the third cold-air feed port;

(c) when the sensed first temperature is higher than a maximum set temperature, feeding the .first cold-air into the refrigerating chamber, and if not, determining whether the sensed first temperature is higher than a minimum set temperature;

(d) when the sensed first temperature is not higher than the minimum set temperature, an air circulation is stopped, and when the sensed first temperature is higher than the minimum set temperature, the sensed first temperature is checked to determine whether it is descending or not;

(e) when the sensed first temperature is not descending, reducing the a flow of the second cold-air and increasing the feeding of the third cold air flow, and when the sensed first temperature is descending, maintaining the difference between the sensed first temperature and the sensed second temperature to lie between an upper tolerance and a lower tolerance by controlling the mixing of the flow of the first cold air and the feeding of the third cold air.

5,359,861

ADAPTER FOR AN ADSORPTION SYSTEM AND METHOD FOR UTILIZING THE SAME

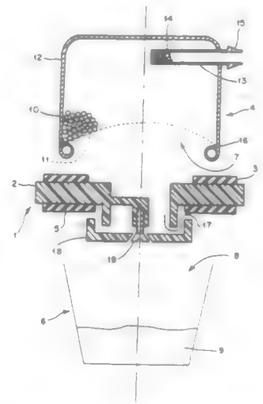
Peter Maier-Laxhuber; Andreas Becky; Gert Richter, and Reiner Wörz, all of München, Germany, assignors to Zeo-Tech GmbH, Unterscheissheim Bei Munchen, Germany

Filed Dec. 21, 1993, Ser. No. 171,273
Claims priority, application Germany, Dec. 23, 1992, 4243817
Int. Cl.[5] F25B *19/00*
U.S. Cl. 62—100 **9 Claims**

8. A method for utilizing an adapter for an adsorption system, the adapter coupling an adsorption agent container having adsorption agent therein, to an operating medium steam source having operating medium therein, the adapter including a sealing seat for coupling the adsorption agent container to the adapter in a vacuum tight manner, a sealing face for coupling the operating medium steam source to the adapter in a vacuum tight manner, a flow conduit providing fluid communication between the operating medium steam source and the adsorption agent container when the adsorption agent container is coupled to the sealing seat and the operating medium steam source is coupled to the sealing face, and separating means defining a tortuous path for substantially permitting a flow of operating medium steam and substantially preventing operating medium particles from traversing through the flow conduit, the method comprising:

vacuum tight sealing the adsorption agent container to the sealing seat;

vacuum tight sealing the operating medium steam source to the sealing face;



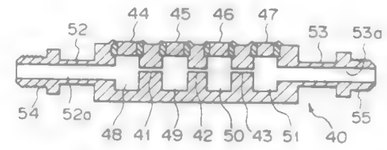
removing air and nonabsorbed gases such that operating medium evaporates creating operating medium steam, a temperature of the operating medium being reduced as operating medium steam is generated, the operating medium steam flowing through said flow conduit into said adsorption agent container wherein the operating medium steam is exothermically adsorbed by the adsorption agent.

5,359,862

METHOD AND APPARATUS FOR DETECTING AN AMOUNT OF COOLING MEDIUM CHARGED IN A REFRIGERATION CIRCULATION SYSTEM

Hisao Nagashima; Hideaki Sato, both of Anjo; Shin Honda, Nagoya, and Keiichi Kitamura, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 8, 1993, Ser. No. 133,384
Claims priority, application Japan, Oct. 9, 1992, 4-271838
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—129 **12 Claims**



1. In a refrigeration circulation system which includes a compressor for compressing a gaseous cooling medium, a condenser for cooling said gaseous cooling medium compressed by said compressor and converting it to a liquid cooling medium, first pressure reduction means for reducing the pressure of said cooling medium converted to said liquid cooling medium by said condenser and converting it to an atomized cooling medium, and an evaporator for subjecting said cooling medium atomized by said first pressure reduction means to heat-exchange with air, and in which said cooling medium on the inlet side of said first pressure reduction means has a certain degree of supercooling, a cooling medium charge amount

detection method for detecting whether or not an actual amount of a cooling medium is a desired amount in comparison with an amount of said cooling medium necessary for having a desired degree of supercooling, said method comprising:

disposing second pressure reduction means in parallel with said first pressure reduction means, for reducing the pressure of said cooling medium flowing from said condenser to an evaporation pressure at said evaporator over a plurality of stages through at least a desired intermediate pressure; and

detecting whether said cooling medium immediately after the pressure reduction to said desired intermediate pressure is in a two-phase gas-liquid condition or a liquid phase condition so as to detect whether or not the amount of said cooling medium is a desired amount.

5,359,863

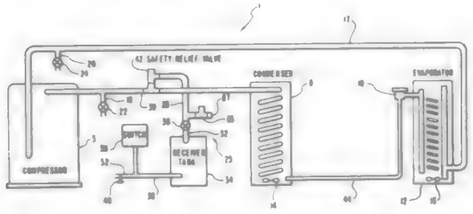
REFRIGERANT CONSERVATION SYSTEM

Gordon A. C. Lewis, Ronkonkoma, N.Y., assignor to Conair Corporation, Garden City Park, N.Y., a part interest

Filed Jun. 29, 1993, Ser. No. 83,304

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—149 **15 Claims**



1. A refrigerant conservation system for preventing the release of refrigerant to the atmosphere during a pressure safety relief situation comprising:

a) a refrigerant receiver tank having an inlet and an outlet,

b) a refrigerant conduit connecting said inlet of the receiver tank to a refrigerant loop of a mechanical refrigeration system, said loop having a compressor a high pressure side, and a low pressure side,

c) a safety relief valve in said refrigerant conduit comprising means for preventing flow of refrigerant to the receiver tank unless the pressure on the side to which the receiver tank is connected exceeds a first predetermined value which is higher than the safe operating pressure of the side to which the receiver tank is connected,

d) a reverse acting low pressure switch, attached to said receiver tank, comprising means for preventing further operation of the compressor of the mechanical refrigeration unit when the pressure in said receiver tank exceeds a second predetermined value which is substantially lower than said safe operating pressure.

5,359,864

COOLING APPARATUS

Yasuo Yamada, Isesaki, Japan, assignor to Sanden Corp., Isesaki, Japan

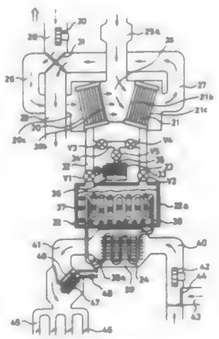
Filed Jun. 29, 1993, Ser. No. 85,323

Claims priority, application Japan, Jun. 30, 1992, 4-173186; Jul. 30, 1992, 4-203732

Int. Cl.[5] F25B *17/08*

U.S. Cl. 62—480 **2 Claims**

1. A cooling apparatus including an improved cooling vessel and a vapor absorber, the cooling vessel containing a liquid as a thermal medium which evaporates therein absorbing latent heat, thereby lowering the temperature in the cooling vessel, the vapor absorber absorbing vapor of the liquid generated in the cooling vessel, the improved cooling vessel containing a plurality of capsules each sealingly enclosing a refrigerant therein, said capsules being submerged in the liquid for exchanging heat with the liquid, said capsules being separated into at least two groups including a first group and a second group, each of the capsules belonging to said first group containing a first quantity of said refrigerant and a first volume of empty space, thereby having a first amount of buoyancy in the liquid, each of the capsules belonging to said second group containing a second quantity of said refrigerant and a second volume of empty space, thereby having a second amount of



buoyancy in the liquid, said first quantity of said refrigerant being less than said second quantity, said first volume of empty space being larger than said second volume of empty space, thereby said first amount of buoyancy in the liquid being greater than said second amount of buoyancy, all of the capsules belonging to said first group staying at a first depth in the liquid and all of the capsules belonging to said second group staying at a second depth in the liquid, and said first depth being less than said second depth.

5,359,865

INTERLOCK KNITTING MACHINE FOR JACQUARD KNITTING

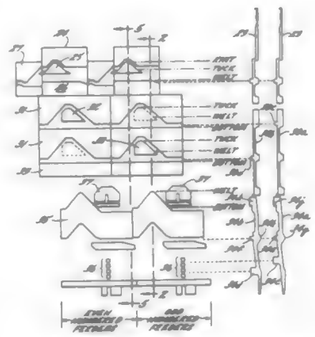
Hidetoshi So, Kobe, Japan, assignor to Precision Fukuhara Works, Ltd., Japan

Filed Sep. 29, 1993, Ser. No. 128,603

Claims priority, application Japan, Oct. 9, 1992, 4-297977

Int. Cl.[5] D04B *15/68*

U.S. Cl. 66—19 **15 Claims**



1. In a circular interlock knitting machine for jacquard knitting having a cylinder with vertical grooves therein, a cylinder needle slidably mounted in each of the cylinder grooves for movement between welt, tuck and knit positions, intermediate and lower jacks slidably mounted in each cylinder groove beneath said cylinder needle, a dial operatively associated with said cylinder and having dial grooves extending radially in one

side thereof, at least one dial needle slidably mounted in each dial groove for movement between welt and knit positions along paths of travel which intersect the paths of travel of said cylinder needles, dial needle operating cam means for selectively moving certain of said dial needles from the welt position to the knit position, the combination therewith of cylinder needle selection and operating means for selecting certain of said cylinder needles for movement from the welt position to the knit or tuck positions while avoiding any collision of said cylinder needles with said dial needles, said needle selection and operating means comprising

(a) lower jack raising cam means for raising selected lower jacks from a bottom position to the welt position,

(b) means for selectively moving the lower jacks in the cylinder grooves containing the cylinder needles selected for movement to the knit or tuck positions into the path of said lower jack raising cam means so that said selected lower jacks are raised from the bottom position to the welt position and said selected lower jacks raise corresponding intermediate jacks from a bottom position to the welt position, and

(c) intermediate jack raising cam means selectively movable between operating and non-operating positions responsive to the selection of said dial needles and said cylinder needles for movement from the welt positions to the knit or tuck positions for raising from the welt position to the tuck position only those intermediate jacks beneath cylinder needles which will not collide with dial needles which have been selected for movement to the knit position.

5,359,866

LATCHING HOLDER

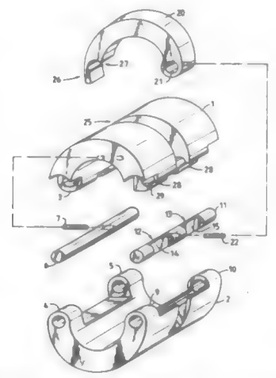
Roy N. Boddy, Manor Farm, Chinnor Hill, Chinnor, Oxon OX9 4BG, England

Filed Jan. 5, 1993, Ser. No. 685

Claims priority, application United Kingdom, Jan. 11, 1992, 9200548.7

Int. Cl.[5] F16B *41/00*

U.S. Cl. 70—18 **13 Claims**



1. A latching holder for engaging an article, the holder comprising:

first and second co-acting members,

said members defining a recess for receiving an article, said recess having first and second sides,

said members being pivotally engaged on the first side of the recess; and

releasable rotatable cam means on the second side of the recess, said cam means being operable to lock the first and second co-acting members together, said cam means comprising:

a cam member having a part-circular cam surface rotatably mounted on said second member for rotation about a single longitudinal axis, and

a recess on said first member having a corresponding part-circular cam surface for receiving the cam member, and wherein said first and second co-acting members are pivotally connected along an axis parallel to said longitudinal axis of the cam member.

5,359,867

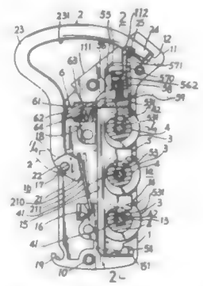
COMBINATION PADLOCK WITH MAGNIFIABLE COMBINATIONS

Chong-Kuan Ling, Taipei, Taiwan, Prov. of China, and Roger Pedlar, London, England, assignors to Samsonite Corporation, Denver, Colo.

Filed Sep. 25, 1992, Ser. No. 951,278

Int. Cl.[5] E05B *37/14*

U.S. Cl. 70—28 **15 Claims**



1. A padlock comprising: a lock body, a projecting portion protruding upwardly from a first side portion of said lock body having a hasp socket formed in the projecting portion; a hasp pivotally mounted in a second side portion of said lock body opposite to said projecting portion of said lock body and operatively engageable with said hasp socket for locking said hasp in said hasp socket; a latch slidably held in said lock body for locking said hasp in said hasp socket for locking said padlock; said padlock further includes a plurality of dials rotatably mounted in said lock body having a plurality of numerals annularly formed on each said dial; and a transparent cover which engages a portion of said lock body, said hasp engaging said transparent cover when said hasp is locked in said socket whereby unintended removal thereof is prevented, and when said hasp is pivoted to another position said transparent cover is released from said engaging with said hasp.

5,359,868

AUTOMOBILE ANTI-THEFT GAS PEDAL LOCK

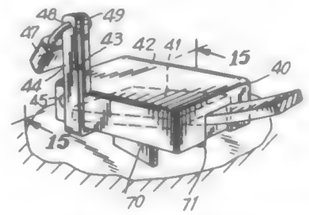
Fiorenzo L. Villani, 243 Deems Ave., Staten Island, N.Y. 10314

Division of Ser. No. 910,630, Jul. 8, 1992, Pat. No. 5,311,756.

This application Sep. 1, 1993, Ser. No. 115,347

Int. Cl.[5] G05G *5/28*

U.S. Cl. 70—203 **1 Claim**



1. In combination, an automobile with a gasoline foot pedal,

a device for preventing the movement of fuel through a fuel line conduit of an automobile for operating the automobile, said device comprising a lock including a padlock, a container adapted to enclose the gasoline foot pedal for preventing actuation thereof, said lock being rotatable between one position enclosing the foot pedal to prevent flow of the fuel and to another position releasing the foot pedal to permit flow of the fuel to the engine of the automobile, for securing the fuel line against unauthorized use, said container including two closable levers pivotable about a hinge member, each of said levers urged away from each other of said levers by a coil spring located about a hinge about which said hinge said levers rotate, said levers disposed to a closable top portion of said container, said closable top portion movable towards said container for enclosing the foot pedal therein and said top portion movable away from said container upon opening the device,

one lever of said levers having extending therethrough a transverse hole in positional register with a further transverse hole extending through a second of said levers when said closable top portion engages said container in a closed position about the foot pedal,

said transverse holes being located in each of said levers at respective ends of said levers opposite said hinge joining said levers,

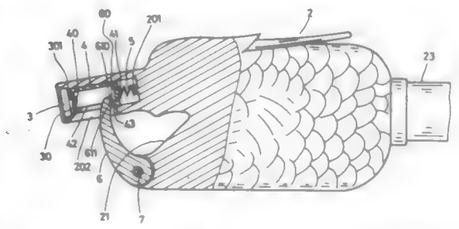
said padlock engagable through each of said transverse holes of each of said levers for maintaining said top portion in a closable position about said container for locking the foot pedal therein.

5,359,869

CONFIGURATION OF AUTOMOBILE STEERING WHEEL LOCKING DEVICES

Tian-Yuan Chen, No. 95-4, Ming-Hsiang Street, Chung-Ho, Taipei Hsien,

Filed Aug. 16, 1993, Ser. No. 106,846
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 **1 Claim**



1. A locking device for an automobile steering wheel comprising:

(1) a main body equipped with a cavity at an upper front part thereof, a raised rod located at a rear wall of said cavity, an opening located at a lower side of said cavity, an opening at a front lower side of said main body, a notch at a front of said opening on the lower side of the main body, a through hole on each side of said notch, and a stopping bar welded at a rear of said main body,

(2) a lock placed inside said cavity equipped with a protruding cross bar at an end of a turning piece of the lock,

(3) a casing that binds to a rear of said turning piece, a raised rod at a rear end of the casing, an opening at a bottom of the casing, and a beveled surface on one side of said opening at the bottom of the casing,

(4) a spring secured to the raised rod at the end of said casing and the raised rod at the rear wall of the main body's cavity,

(5) a hook pivotally secured in the notch in the main body, wherein the tip of said hook is round, an inner side of the tip is equipped with a grip slot, an upper side thereof is a flat surface, the lower side thereof is a beveled surface, and a bottom of said hook is equipped with a through hole, and

(6) a holding shaft that holds said hook in the notch at the front of said main body, said locking device being characterized by the facts that:

(a) turning of the lock's turning piece with a key causes the cross bar at the end of said turning piece to push back said casing and compress the spring, thereby quickly releasing the hook and allowing said locking device to be removed from the steering wheel,

(b) said locking device can be quickly locked around the steering wheel by pushing the hook upward, thereby causing the grip slot on the inner side of said hook to grip onto the opening on the bottom of said casing, and allowing the locking operation to be automatic, with no requirement that a key be used, and

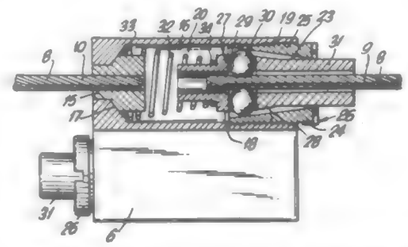
(c) the stopping bar at the rear of the main body is employed and confined to a corner defined by a windshield and a front edge of a dashboard, thereby preventing the steering wheel from being turned and achieving optimum anti-theft effects.

5,359,870

KEY CHAIN

Wolf Reutlinger, Frankfurt am Main, Germany, assignor to Seil-und Netztechnik Reutlinger GmbH, Frankfurt am Main, Germany

Filed Sep. 30, 1992, Ser. No. 954,729
Claims priority, application Germany, Oct. 1, 1991, 9112195[U]
Int. Cl.[5] A47G *29/10*
U.S. Cl. 70—456 R **2 Claims**



1. A key chain comprising a base body; at least one attachment element for attaching at least one key to said base body and having a clamping end and a free end; and locking means received within said base body for fastening said at least one attachment element to said base body, said locking means including at least two locking devices for securing said clamping end and said free end of said at least one attachment element, respectively, against axial displacement;

wherein said at least one attachment element is one of a rope and a nylon cord;

wherein one of said two locking devices comprises a pull-responsive clamping lock including self-locking in a pull direction means for retaining said clamping end of said one of a rope and a nylon cord, and another of said two devices comprises a nipple provided with a bevel for retaining said free end of said one of a rope and a nylon cord fixed to said nipple;

wherein said self-locking means comprises a displaceable tubular ball cage having a truncated conical tubular portion with a plurality of radial openings formed therein for receiving a corresponding plurality of balls, a cone socket surrounding said ball cage and having an inner surface, and a spring for biasing said ball cage in the pull direction to put said clamping lock in a locking condition thereof, said plurality of balls in the locking condition of said clamping lock firmly engaging said inner surface of said cone socket and said clamping end of said one of a rope and a nylon cord;

wherein said spring is formed as a volute helical spring; and

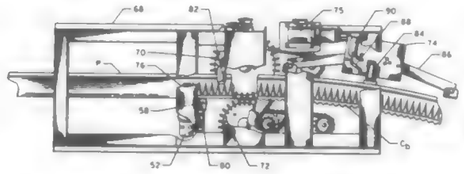
wherein said base body has a bore having a first portion for receiving said clamping lock and a second reduced diameter portion for receiving said nipple, said bore having a bottom defining said second portion and provided with a bevel cooperating with said bevel of said nipple for retaining said free end of said one of a rope and a nylon cord, said ball cage having a tubular projection extending inward in said base body, said volute spring having a small diameter end supported on said tubular projection of said ball cage and a large diameter end engaging said bevel of said bottom of said bore.

5,359,871

MICROPROCESSOR CONTROLLED APPARATUS AND METHOD FOR FORMING METAL BUILDING PANELS

Frederick Morello, Johnstown, Pa., assignor to M.I.C. Industries, Inc., Reston, Va.

Continuation-in-part of Ser. No. 872,005, Apr. 22, 1992, Pat. No. 5,249,445. This application Apr. 30, 1993, Ser. No. 54,135
Int. Cl.[5] B21D *13/04, 53/00*
U.S. Cl. 72—7 **15 Claims**



1. A microprocessor controlled apparatus for automatically producing a building panel from sheet material, at least a portion of the panel being curved, by continuously monitoring processing of the sheet material; the apparatus comprising:

a panel-former for forming the sheet material into a panel having a bottom portion and lateral edge portions;

means for generating a first signal corresponding to a length of panel output from the panel-former;

means for controlling feeding of the sheet material through the panel-former in response to receiving the first signal to produce a selected length of formed panel;

a curve-former including means for curving the formed panel by crimping the bottom portion of the panel;

means for selecting a predetermined curvature to operate the curve-former to receive the formed panel from said panel-former and crimp the bottom portion of the formed panel to produce a panel having at least a portion curved according to said preselected curvature;

means for generating a second signal corresponding to the curvature of the panel that will be output from the curve-former; and

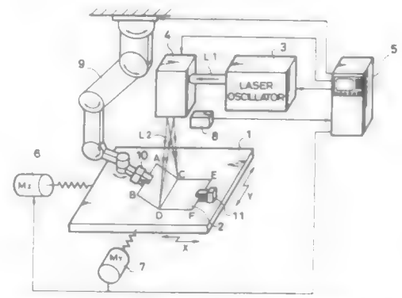
a microprocessor for controlling the panel-former in response to said first signal to produce a selected length of formed panel and for controlling the curve-former in response to said second signal so that a panel is output with at least a portion curved according to the preselected curvature.

5,359,872

METHOD AND APPARATUS FOR SHEET-METAL PROCESSING

Masayuki Nashiki, Niwa, Japan, assignor to Okuma Corporation, Aichi, Japan

Filed Aug. 28, 1992, Ser. No. 936,834
Claims priority, application Japan, Aug. 29, 1991, 3-244601; Dec. 26, 1991, 3-357729
Int. Cl.[5] B21D *5/04;* **B23K** *26/08*
U.S. Cl. 72—9 **7 Claims**



1. A method of sheet-metal processing comprising the steps of:

irradiating a portion to be deformed of a metal sheet with a laser beam being scanned at a high speed to heat said portion to be deformed;

measuring a bending reaction force of the metal sheet while irradiating said portion to be deformed with said laser beam;

comparing a preset value denoting an initial bending reaction force of said metal sheet and the measured bending reaction force of said metal sheet to obtain a comparison result, said preset value obtained either by measuring said initial bending reaction force of said metal sheet before said irradiating of said laser beam or by estimating said initial bending reaction force of said metal sheet based on a configuration and a material of said metal sheet;

controlling an intensity of said laser beam on the basis of said comparison result; and

applying a predetermined force to said portion to be deformed so as to process said metal sheet upon detecting that said metal sheet is deformable upon application of said predetermined force based on said comparison result.

5,359,873

FIBER FOR REINFORCING CONCRETE OR SIMILAR MATERIALS MADE OF WIRE OF A FLAT MATERIAL STRIP AND DEVICE FOR MANUFACTURING SUCH FIBERS

Marian Grondziel, Herne, Germany, assignor to Vulkan Harex Stahlfasertechnik GmbH & Co. KG, Herne, Germany

Filed Aug. 13, 1993, Ser. No. 106,382
Claims priority, application Germany, Aug. 13, 1992, 4226744
Int. Cl.[5] B21H *8/02*
U.S. Cl. 72—186 **4 Claims**

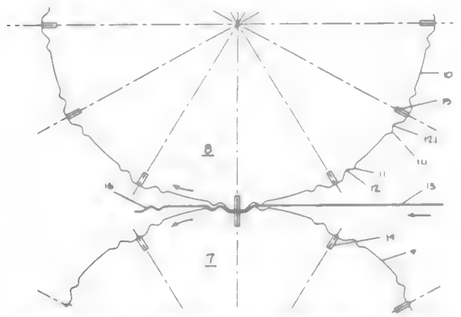
1. A device for manufacturing a fiber for reinforcing concrete from a material in a form selected from the group consisting of wire and a flat band, the fiber having: a linear center section with a first and a second end; a first intermediate section connected to said first end and a second intermediate section connected to said second end, said first and said second intermediate sections having a wavy shape and being shorter than said center section; and a first end section connected to said first intermediate section and a second end section connected to said second intermediate section, said device comprising:

two oppositely and synchronously rotating stamping rollers each having an outer circumferential surface, said stamp-

ing rollers positioned relative to one another such that said outer circumferential surface of a first one of said stamping rollers is spaced at a distance from said outer circumferential surface of said second roller, said distance corresponding to a thickness of the fiber;

each said outer circumferential surface having projections and depressions, with said projections of said first stamping roller engaging depressions of said second stamping roller and with depressions of said first stamping roller engaging projections of said second stamping roller;

said first stamping roller comprising stamping elements connected within said outer circumferential surface and distributed in a circumferential direction of said first stamping roller with an identical angular displacement



relative to one another, said stamping elements extending radially and having, viewed in a plane of rotation, a triangularly shaped free end projecting past said outer circumferential surface; and

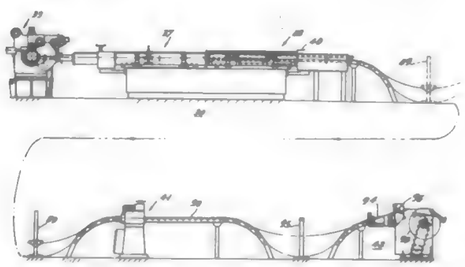
said second stamping roller comprising separate individual stamping abutments connected within said outer circumferential surface and distributed in a circumferential direction of said second stamping roller with said identical angular displacement relative to one another so as to correspond to said stamping elements, said stamping abutments extending radially and having, viewed in a plane of rotation, a planar free end flush with said outer circumferential surface, with a circumferential length of said angular displacement at said first and said second stamping rollers corresponding to a length of the fiber.

5,359,874

METHOD AND APPARATUS FOR PRODUCTION OF CONTINUOUS METAL STRIP

Richard D. Buckley, Watkinsville, Ga.; Thomas L. Linsenbardt, Lohman, Mo.; Harold Younger, Halifax, Va.; Darrell D. Harris, Fulton, and Dennis J. Struemph, Mea, both of Mo., assignors to ABB Power T & D Company, Inc., Blue Bell, Pa.

Filed Nov. 12, 1991, Ser. No. 791,103
Int. Cl.[5] B21C *23/06*
U.S. Cl. 72—256 **20 Claims**



1. Apparatus for opening and flattening an elongated tube having a longitudinal axis of symmetry, a diameter and a longitudinal slit in the circumferential wall thereof, which apparatus comprises:

an elongated forming member having an entrance end, an exit end, a longitudinal axis and a top surface, the entrance end having a width equal to or less than the diameter of the tube, the width of the forming member progressively increasing from the entrance end toward the exit end of the member; and

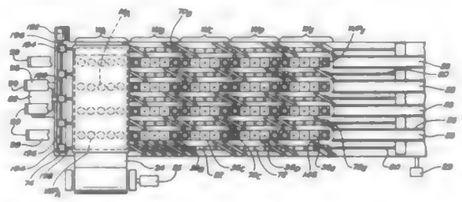
means including a surface opposed to the top surface of the forming member for advancing the tube over the forming member, the forming member bending the tube outwardly in opposite directions at the slit to form the tube into a substantially flat strip with the forming member engaging the top surface of the tube to maintain the tube in contact with the top surface of the forming member.

5,359,875

APPARATUS AND METHOD FOR TRANSFERRING AND FORMING PARTS IN A PRESS

Lester J. Sova, Ray, Mich., assignor to AMSD Partnership, Roseville, Mich.

Filed May 14, 1993, Ser. No. 62,842
Int. Cl.[5] B21D *43/05, 43/10*
U.S. Cl. 72—336 **23 Claims**



1. An apparatus for progressively forming and moving workpieces through a plurality of longitudinally disposed workstations of a strokable press, the apparatus comprising:

a plurality of forming sets of cooperating upper and lower dies affixed to the press, each forming set of cooperating upper and lower dies being located in a respective one of the plurality of workstations of the press and strokable with the press to create a forming workstation, the forming sets of cooperating dies being longitudinally disposed along the length of the press, each forming set of cooperating upper and lower dies having a matrix of punches and a matrix of cavities therein which move into and out registration with one another during a stroke of the press to form a corresponding matrix of workpieces located in a respective forming workstation, each of the matrices of punches, cavities and workpieces in each forming workstation being numerically identical in size and having at least two longitudinally spaced columns and at least two laterally spaced rows, each of the punches and cavities in each respective forming workstation being identically configured to produce identically shaped workpieces while the matrices of punches and cavities in other respective forming workstations are configured differently so that the matrices of workpieces passing downstream through the respective forming workstations are progressively formed; and

a parts transfer system mounted relative to the press and having a translation base which carries a grasping unit which releasably grasps the matrices of workpieces in their respective forming workstations of the press, the translation base being sufficiently longitudinally translatable such that each matrix of workpieces in its respective forming workstations may be grasped and transferred from an upstream forming workstation to a downstream workstation;

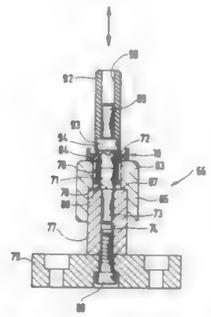
wherein the cooperating sets of upper and lower dies in the forming workstations simultaneously stamp and form matrices of workpieces in a single stroke of the press and the parts transfer system grasp and transfer the matrices of workpieces between workstations between strokes of the press to form one complete matrix of finished workpieces in the downstream most forming workstation with each stroke of the press.

5,359,876

METHOD FOR PRODUCING A NOZZLE HOLDER OF AN ELECTROMAGNETICALLY ACTUATED INJECTION VALVE

Stefan Maier, Schwieberdingen, and Jochen Hommel, Leonberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 978,012, Nov. 18, 1992, Pat. No. 5,255,855.
This application Jun. 29, 1993, Ser. No. 83,239
Claims priority, application Germany, Nov. 19, 1991, 4137994
Int. Cl.[5] B21D *17/02, 37/02*
U.S. Cl. 72—412 **3 Claims**



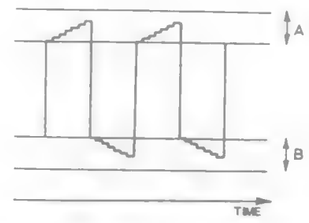
1. A method for producing armature guide protrusions on one end of a bore of a nozzle holder of an electromagnetically actuatable injection valve thereby forming at least one guide segment on one end thereof, wherein an armature is disposed in the nozzle holder bore of an injection valve which comprises placing the nozzle holder (**18**) with the nozzle holder bore over one end of a cylindrical workpiece receptacle (**70**), pushing the nozzle holder (**18**) onto the cylindrical workpiece receptacle (**70**) with a shoulder of the nozzle holder seated on a workpiece support of a stamping tool (**66**); mounting a stamping die (**92**) having a guide bore (**90**) and stamping edges (**93**) with said guide bore (**90**) positioned over the workpiece receptacle (**70**) with said stamping edges facing said one end of the nozzle holder juxtaposed said bore of said nozzle holder, forcing the stamping die to contact said at least one guide segment (**40**) of the nozzle holder (**18**); and finally, by a motion of the stamping die (**92**) in a direction toward the nozzle holder (**18**), plastically deforming the guide segment (**40**) of the nozzle holder (**18**) in a region of contact points (**94**) in such a manner that a number of guide protrusions (**42**) protrude into the nozzle holder bore (**26**), in which the number of guide protrusions correspond to the number of stamping edges (**93**), and are formed and function to guide said armature upon placement of said nozzle holder (**18**) in the injection valve.

5,359,877

METHOD OF DEFINING AN OPERATING AND A RESET POINT FOR A LIMIT VALUE DEVICE

Osmo Luotsinen, and Marko Stenbacka, both of Pietarsaari, Finland, assignors to Oy Beamex AB, Pietarsaari, Finland

Filed Feb. 18, 1992, Ser. No. 837,211
Claims priority, application Finland, Mar. 8, 1991, 911173
Int. Cl.[5] G01L *27/00*
U.S. Cl. 73—1 R **4 Claims**



1. A method of using calibration instrumentation for determining the operating and reset points for a device having an input and an output, the method comprising the steps of:

supplying a first variable input signal having a first rate of change to the input of the device;

detecting values of the first variable input during which the device changes state at the output of the device;

establishing areas from said values within which the device changes state at the output of the device;

supplying a second variable input signal having a second rate of change to the input of the device, the second input signal varying in the areas of said establishing step; and

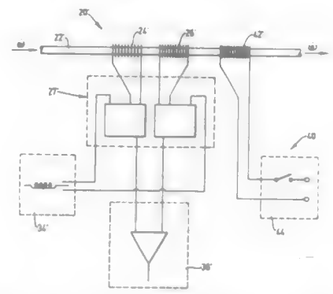
detecting values of the second variable input signal when the device changes state at the output of the device.

5,359,878

APPARATUS AND METHOD FOR IN-LINE CALIBRATION VERIFICATION OF MASS FLOW METERS

Daniel T. Mudd, Long Beach, Calif., assignor to DXL International, Inc., Torrance, Calif.

Continuation of Ser. No. 792,235, Nov. 14, 1991, abandoned, which is a continuation-in-part of Ser. No. 661,570, Feb. 26, 1991, abandoned. This application Jan. 25, 1994, Ser. No. 186,101
Int. Cl.[5] G01F *1/68, 25/00*
U.S. Cl. 73—3 **15 Claims**



1. A method for verifying the calibration of a flow meter having a flow tube defining an axial fluid flow path, first and second resistance thermometers, in thermal contact with the flow tube, means for supplying electric power to the resistance thermometers, means for producing an output in response to a difference between the electric power being supplied to the first resistance thermometer and the electric power supplied to

the second resistance thermometer, and heat transfer means for effecting asymmetric heat transfer between the heat transfer means and the resistance thermometers, said method comprising:

controlling the power supplied to each of the resistance thermometers to maintain each of the resistance thermometers at a respective constant temperature;

effecting a first asymmetric heat transfer between the heat transfer means and the first and second resistance thermometers independently of fluid flow through the flow tube, when the flow meter is calibrated;

measuring the output of the flow meter in response to the first asymmetric heat transfer;

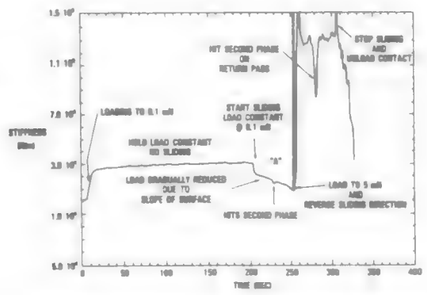
subsequently effecting a second asymmetric heat transfer between the heat transfer means and the first and second resistance thermometers and measuring the output in response to the second asymmetric heat transfer, said first and second heat transfers simulating fluid flow through said flow tube, and then comparing the two outputs.

5,359,879

SCANNING MICRO-SCLEROMETER

Warren C. Oliver, Knoxville, and Peter J. Blau, Oak Ridge, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Nov. 4, 1992, Ser. No. 971,175
Int. Cl.[5] G01N *3/46, 3/56*
U.S. Cl. 73—7 **3 Claims**



2. A method for continuously measuring scratch characteristics during sliding contact between first and second bodies, comprising the steps of:

determining contact stiffness between the first and second bodies at a predetermined load applied to a contact junction between the first and second bodies;

imparting sliding motion between the first and second bodies by moving one relative to the other; and

measuring changes in the contact stiffness over time while maintaining the load on the contact junction, the change in stiffness being indicative of scratch characteristics.

5,359,880

FIBER MICRONAIRE MEASURING APPARATUS AND METHOD

Francis E. Elam, and Larry E. Teague, both of Dallas, Tex., assignors to Motion Control, Inc., Dallas, Tex.

Filed Sep. 15, 1993, Ser. No. 121,745
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **14 Claims**

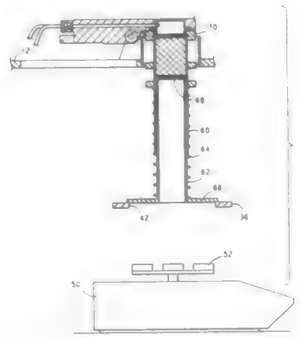
1. A fiber micronaire measuring device, comprising:

(a) a chamber adapted to receive a fiber sample, the chamber having a movable wall to vary the volume thereof;

(b) a platform scale adjacent the chamber;

(c) a carriage for placing the chamber on the platform of the scale to weigh the chamber;

(d) means for moving the carriage on and off the scale and for driving the movable wall to reduce the volume of the chamber;



(e) air flow means for forcing air through the chamber; and

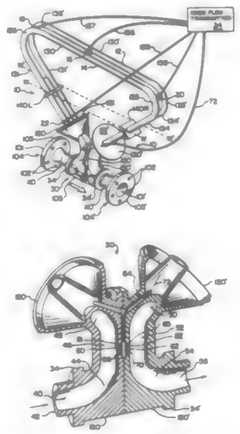
(f) means for measuring the air flow rate.

5,359,881

VISCOMETER FOR SANITARY APPLICATIONS

Paul Z. Kalotay, Lafayette, and Craig B. Van Cleve, Lyons, both of Colo., assignors to Micro Motion, Incorporated, Boulder, Colo.

Continuation of Ser. No. 856,089, Mar. 20, 1992, abandoned. This application Oct. 21, 1993, Ser. No. 140,740
Int. Cl.[5] G01N *11/02*
U.S. Cl. 73—54.06 **32 Claims**



1. Apparatus for determining the viscosity of material flowing in a supply conduit, said apparatus comprising:

a first flow tube means connected to a second flow tube means;

said first tube means being effective for transporting said material from a first section of said supply conduit to said second flow tube means;

said second flow tube means being effective for transporting said material to a second section of said supply conduit;

at least a portion of said first flow tube means and at least a portion of said second flow tube means being positioned adjacent to and integral with one another;

said portion of first flow tube means and said portion of said second flow tube means each having a separate internal flow channel with each flow channel having a substantially flat inner surface;

differential pressure sensing means coupled to said internal flow channel of both said first flow tube means and said second flow tube means for measuring the differential pressure generated by said material flow between said first flow tube means and said second flow tube means;

a pair of pressure sensing diaphragms on said differential pressure sensing means with each of said diaphragms comprising a surface that is substantially flush with said substantially inner flat surfaces of a different one of said internal flow channels so as to provide a smooth surface for material flow in each of said flow tube means; and

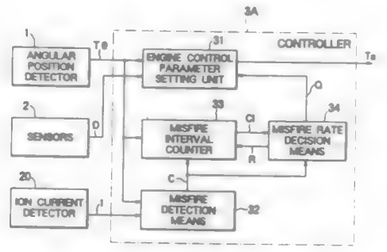
means responsive to said measurement of said differential pressure for determining the viscosity of said material.

5,359,882

APPARATUS FOR DETECTION AND DECISION OF OCCURRENCE OF MISFIRE IN INTERNAL COMBUSTION ENGINE

Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,675
Claims priority, application Japan, Feb. 4, 1992, 4-019144
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **7 Claims**



1. An apparatus for detecting and deciding occurrence of misfire in an internal combustion engine, said apparatus comprising:

angular position detecting means for generating a reference position signal corresponding to a predetermined crank angle of an engine cylinder in synchronism with rotation of said internal combustion engine;

sensor means for detecting a running state of said internal combustion engine;

combustion state detecting means for detecting combustion state in at least one of a number of cylinders of said internal combustion engine;

control parameter setting means for setting a control parameter of said internal combustion engine on the basis of said reference position signal and said running state;

misfire detecting means for generating a misfire detection signal indicative of occurrence of misfire in said internal combustion engine on the basis of detection of an output of said combustion state detecting means;

misfire interval counter means for measuring as a misfire interval an interval between successive misfire detection signals;

misfire rate decision means for generating a misfire rate decision signal when said misfire interval is shorter than a predetermined interval; and

transient operation decision means for detecting a transient operation state of said internal combustion engine on the basis of at least one of said reference position signal and said running state;

wherein said misfire rate decision means decreases said predetermined interval when said transient operation state is detected; and

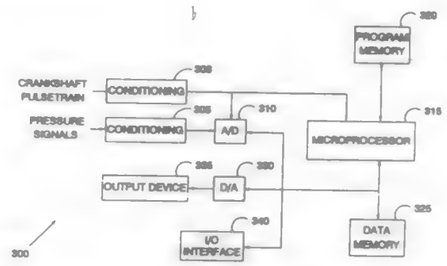
wherein said control parameter setting means corrects said control parameter on the basis of said misfire rate decision signal.

5,359,883

APPARATUS AND METHOD FOR ANALYZING EVENTS FOR AN INTERNAL COMBUSTION ENGINE

Darryl D. Baldwin, Lacon, and Tien D. Doan, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 16, 1993, Ser. No. 106,725
Int. Cl.[5] G01L *23/00*
U.S. Cl. 73—117.3 **17 Claims**



1. An apparatus for analyzing a plurality of events of an internal combustion engine having at least one cylinder, a rotatable crankshaft and a reciprocating piston, the cylinder having a fuel injector, an intake valve and an exhaust valve, comprising:

a crankshaft sensor being adapted to monitor the rotational position of the crankshaft and responsively produce a crankshaft pulsetrain;

a cylinder pressure sensor being adapted to sense the pressure produced in the engine cylinder and responsively produce a cylinder pressure signal corresponding to predetermined crankshaft positions;

memory means for storing precalculated values representing a plurality of engine cylinder volumes at predetermined crankshaft positions; and

processing means for receiving the crankshaft pulsetrain and cylinder pressure signals and determining the start of combustion for occurring engine cycle relative to the crankshaft position in response to the cylinder pressure signal magnitude, P_2, at a current crankshaft position being equal or greater than the following relationship:

$$P_1(V_1/V_2)^n$$

where,

P_1=cylinder pressure corresponding to a previous crankshaft position;

V_1=cylinder volume corresponding to the previous crankshaft position;

V_2=cylinder volume corresponding to the current crankshaft position; and

n=predetermined polytropic value;

wherein the start of combustion is determined prior to the next occurring engine cycle.

5,359,884

DISPLACEMENT SENSOR FOR AN ACTUATING DRIVE IN PARTICULAR IN A VEHICLE

Rainer Fey, Schweinfurt, and Albert Thein, Hassfurt, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 15, 1992, Ser. No. 962,327
Claims priority, application Germany, Oct. 22, 1991, 4134794
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **17 Claims**

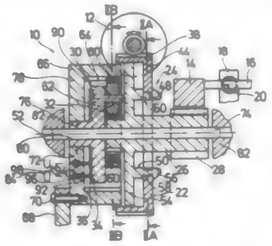
1. A displacement sensor for an actuating drive, having an

actuating motor (12) operatively coupled to a power take-off member (14) for imparting motion to the power take-off member (14), comprising:

a sensor housing (66) having an axis (52);

a drive member (22) drivable by the actuating motor (12) and rotatably supported coaxially to said sensor housing (66);

an intermediate member (26) rotatably supported coaxially with respect to said drive member (22), which intermediate member engages the power takeoff member (14) and is connected to the drive member (22) via at least one of an overload clutch (24) and a return stroke clutch (100);



a rotary displacement pick-up means (84, 34, 60, 36) arranged in said sensor housing (66) for detecting the instantaneous rotary position of the intermediate member (26) and of regenerating a signal (U) indicating said rotary position; and

said overload clutch (24) having at least one detent element (50) on one of the intermediate member (26) and the drive member (22), and a counterpart detent element (48) on the other of the intermediate member (26) and the drive member (22), said detent element (50), upon an overload, being released instantaneously from the counterpart detent element (48) to decouple the drive member (22) and the intermediate member (26).

5,359,885

METHOD OF MEASURING RUN-OUT OF A ROTARY MEMBER

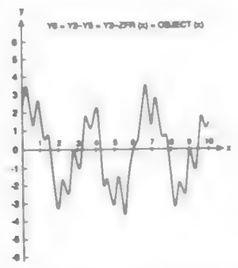
Klaus-Peter Ohms, Darmstadt, Germany, assignor to Hofmann Maschinenbau GmbH, Pfungstadt, Germany

Filed Apr. 1, 1993, Ser. No. 41,264

Claims priority, application Germany, Jul. 30, 1992, 4225195

Int. Cl.[5] G01M *1/00*

U.S. Cl. 73—146 **8 Claims**



1. A method of measuring run-out of a rotary member, comprising the steps of mounting a rotary member in a play-compensating clamping mounting arrangement in a testing machine, rotating the rotary member, sensing movement of the rotary member in the region of at least one of its peripheral and lateral surfaces and generating data, generating first and second run-out diagrams from the data generated as a result of the sensing step, turning the first and second run-out diagrams relative to each other in relation to the clamping mounting arrangement, arithmetically combining the run-out diagrams together so that geometrical measurement errors in the first and second diagrams resulting from the clamping mounting arrangement are compensated in the diagram produced by the combining operation.

5,359,886

DEVICE FOR WARNING OF TIRE UNDERINFLATION BY CREATING IMBALANCE

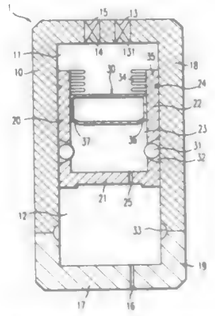
Antoine Pradelle, Cournon-D'Auvergne, France, assignor to Compagnie Generale Des Etablissements Michelin - Michelin & Cie, Clermont-Ferrand Cedex, France

Filed Dec. 22, 1992, Ser. No. 995,043

Claims priority, application France, Dec. 23, 1991, 91 16154

Int. Cl.[5] B60C *23/02*

U.S. Cl. 73—146.2 **20 Claims**



1. A device for warning of the under-inflation of a pneumatic tire when the pneumatic tire is mounted to a wheel, comprising means mountable to one of the vehicle wheel and tire for creating an imbalance in the wheel sufficient to alert a driver of a vehicle to which the wheel is mounted of the under-inflation of the tire, by vibrations arising due to the imbalance, only when an inflation pressure of the tire is below a given threshold pressure.

5,359,887

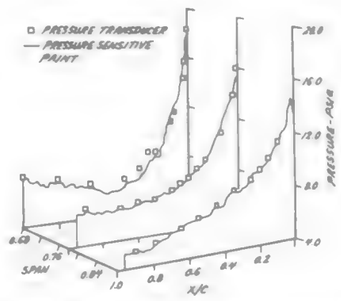
PRESSURE SENSITIVE PAINT FORMULATIONS AND METHODS

Scott D. Schwab, 3441 Riverchase Pkwy., St. Charles, Mo. 63301, and Ram L. Levy, 1622 Parquet Ct., St. Louis, Mo. 63146

Filed Aug. 3, 1992, Ser. No. 924,145

Int. Cl.[5] G01M *9/00*; **G01L** *9/00*

U.S. Cl. 73—147 **30 Claims**



1. A material for use in wind tunnel luminescent barometry comprising a combination of a photoluminescent compatible resin in a solvent vehicle, the resin being permeable to oxygen and the combination of resin and vehicle also containing an effective amount of a photoluminescent active agent to indicate the pressure on a coated surface, the photoluminescent material being selected from the group consisting of photoluminescent active ruthenium complexes, photoluminescent active mixtures of pyrene and perylene and mixtures thereof, the combination being effective to uniformly coat surfaces to be examined by luminescent barometry and the photoluminescent active agent being effective to indicate the barometric pressure on said coated surfaces by oxygen quenching of excited photoluminescence.

5,359,888

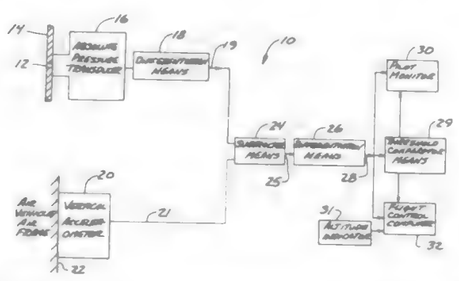
AIR TURBULENCE AND WIND SHEAR SENSOR

Floyd W. Hagen, Eden Prairie, Minn., assignor to The BF Goodrich Company, Akron, Ohio

Filed Feb. 16, 1993, Ser. No. 18,071

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—178 R **20 Claims**



1. An apparatus for the detection of air turbulence and wind shear encountered by an air vehicle having an accelerometer attached thereto which provides an inertia affected vertical acceleration signal indicating sensed air vehicle vertical acceleration, the apparatus comprising:

sensor means for substantially instantaneously sensing a pressure parameter related to local airflow adjacent the air vehicle and providing a first signal representing substantially instantaneous changes in the pressure parameter relative to time and responding to any change in the pressure parameter more rapidly than the accelerometer providing the vertical acceleration signal; and

means for combining the first signal and the vertical acceleration signal from the accelerometer and obtaining a wind shear indicating signal indicative of an increase in air turbulence as a function of the difference between the signals.

5,359,889

VERTICAL POSITION AIDED INERTIAL NAVIGATION SYSTEM

Albert Jircitano, Grand Island, and Daniel E. Dosch, Hamburg, both of N.Y., assignors to Textron Inc., Providence, R.I.

Continuation-in-part of Ser. No. 805,544, Dec. 10, 1991, Pat. No. 5,339,684. This application Mar. 5, 1993, Ser. No. 26,570

Int. Cl.[5] G01C *21/00*

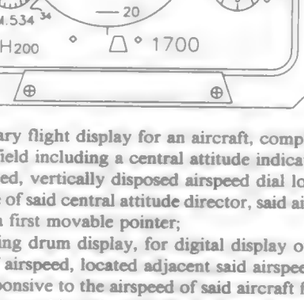
U.S. Cl. 73—178 R **1 Claim**

1. A navigation system, comprising:

a three axis inertial navigation system including an inertial vertical position data output port;

a vertical position sensor including a sensed data output port;

a gravity anomaly map means comprising a memory containing gravity anomalies data and an anomalies data output port; and



an optimal filter including input ports connected to said anomalies data output port, said inertial vertical position data output port and said sensed data output port.

5,359,890

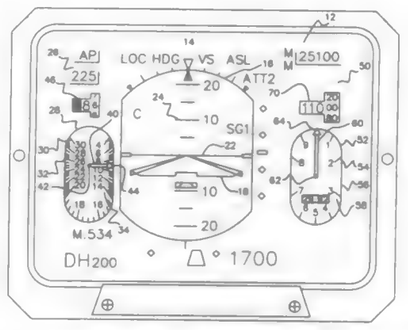
INTEGRATED ELECTRONIC PRIMARY FLIGHT DISPLAY

Stephen D. Fulton. Federal Way, Wash., and Thomas M. Leard, Carefree, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 4, 1993, Ser. No. 57,720

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—178 R **11 Claims**



1. A primary flight display for an aircraft, comprising:

a display field including a central attitude indicator;

an elongated, vertically disposed airspeed dial located on a first side of said central attitude director, said airspeed dial having a first movable pointer;

a first rolling drum display, for digital display of a present value of airspeed, located adjacent said airspeed dial;

means responsive to the airspeed of said aircraft for moving said first movable pointer to display macro airspeed information on said airspeed dial and changing said rolling drum display to display a present value of airspeed;

an elongated primarily vertically disposed altitude dial located on a second side of said central attitude director, said altitude dial having a second movable pointer,

a second rolling drum display, for digital display of a present value of altitude, located adjacent said altitude dial;

means responsive to the altitude of said aircraft for moving said second movable pointer in response to a change in aircraft altitude and changing said second rolling drum display to display a present altitude value.

5,359,891

THERMAL TYPE FLOWMETER

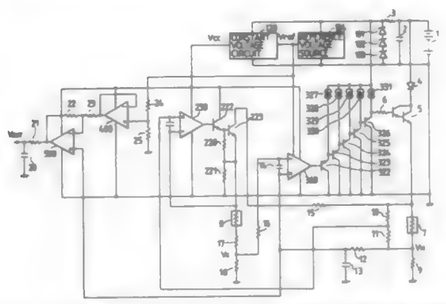
Noboru Yamamoto, Kariya, and Yasushi Sugiura, Handa, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 8, 1992, Ser. No. 910,449

Claims priority, application Japan, Jul. 8, 1991, 3-167048; Jul. 8, 1991, 3-167054; Jul. 8, 1991, 3-167064; Jul. 9, 1991, 3-168191; Jul. 10, 1991, 3-170162

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.15 **19 Claims**



1. A thermal type flowmeter for measuring a flow rate of a fluid in accordance with a heating quantity of a heating resistor, comprising:

a thermo-sensitive resistor provided within a fluid passage and arranged to heat when being energized;

an electric power adjusting element provided in series to said thermo-sensitive resistor so as to adjust an electric power to be supplied to said thermo-sensitive resistor in accordance with a current inputted to an input terminal of said electric power adjusting element;

a control circuit for outputting an adjustment signal to adjust an energization electric power to said thermo-sensitive resistor so that said thermo-sensitive resistor has a predetermined temperature;

a constant current source circuit connected to said input terminal of said electric power adjusting element to supply a predetermined constant current to said input terminal of said electric power adjusting element; and

a current adjusting circuit connected to said input terminal of said electric power adjusting element and arranged to divide said constant current from said constant current source circuit in accordance with said adjustment signal from said control circuit so as to adjust the input current to said electric power adjusting element.

5,359,892

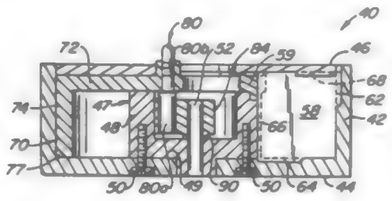
FLOWMETER MEASURING CHAMBER

Thomas W. Felt, 905 Hazel Ave., Ukiah, Calif. 95482

Filed Jul. 26, 1993, Ser. No. 97,360

Int. Cl.[5] G01F *3/08;* **F16N** *13/20*

U.S. Cl. 73—257 **24 Claims**



1. A flowmeter measuring chamber comprising;

a first wall having a generally cylindrical inner surface;

a second wall having a generally cylindrical outer surface facing and being substantially concentric with said inner surface;

a hollow piston having a tubular wall disposed between and being movable in a plane substantially perpendicular to the inner and outer surfaces of said first and second walls, said tubular wall having an interior and exterior surface; and

means for controlling movement of said tubular wall so that a capillary space, which effectively prevents fluid flow thereby when a fluid seal is formed therein, is maintained between said tubular wall exterior surface and first wall inner surface and between said tubular wall interior surface and second wall outer surface at all positions of said tubular wall and contact between said tubular wall and said inner and outer surfaces is prevented.

5,359,893

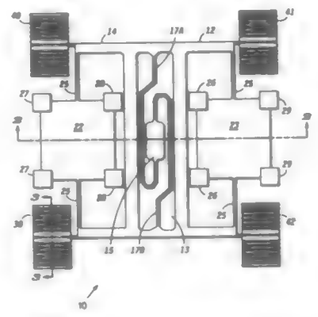
MULTI-AXES GYROSCOPE

William C. Dunn, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1991, Ser. No. 810,062

Int. Cl.[5] G01P *9/04*

U.S. Cl. 73—505 **10 Claims**



1. A multi-axes vibration monolithic gyroscope comprising:

a mounting post fixedly attached to a base and defining a first axis;

a planar mass having a first portion fixedly attached to the post for limited relative rotational movement about two orthogonal axes and a second portion fixedly attached to the first portion for relative vibrational movement and the first and second portions being positioned in a plane perpendicular to the post, the mass defining second and third axes mutually perpendicular to each other and to the first axis;

driving apparatus mounted adjacent to the second portion of the mass for causing the second portion of the mass to move in a vibrational motion along the second axis; and

sensing apparatus positioned adjacent to the first portion of the mass for sensing movement of the first portion of the mass about the third axis in response to forces produced by rotational motion and for sensing movement of the first portion of the mass about the first axis in response to forces produced by rotational motion.

5,359,894

ACCELERATION DETECTOR HAVING HIGHLY ACCURATE GAPS IN MAGNETIC CIRCUIT INCLUDING A DIFFERENTIAL TRANSFORMER

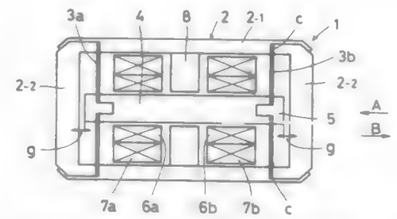
Hidetoshi Saito, and Masahiro Kume, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1992, Ser. No. 851,947

Claims priority, application Japan, Mar. 15, 1991, 3-015307[U]; May 17, 1991, 3-034923[U]

Int. Cl.[5] G01P *15/11*

U.S. Cl. 73—517 R **18 Claims**



1. An acceleration detector comprising: a case, a magnetic body disposed in said case, leaf springs supporting said magnetic body so as to be movable within said case under a force of acceleration, and a differential transformer disposed in said case, said differential transformer including primary coils and secondary coils, said magnetic body extending axially through each of said coils and having opposite ends disposed axially outwardly of said coils such that an output differential is produced between said secondary coils when said magnetic body is displaced axially under the force of acceleration, said leaf springs supporting said magnetic body at said opposite ends thereof, said case including a cylindrical body surrounding an outer peripheral portion of said differential transformer and having openings at opposite ends thereof, and a pair of lids attached to said cylindrical body at the opposite ends of the cylindrical body closing said openings, said openings each being larger than the outer peripheral portion of said differential transformer, whereby the differential transformer can pass into said cylindrical body through said openings during assembly of the detector, and each of said leaf springs being sandwiched between and secured in position by said cylindrical body and a respective one of said lids.

5,359,895

PROCESS AND DEVICE FOR THE ULTRASONIC TESTING FOR WELDS BETWEEN PLASTICS PACKAGING AND COVER FOILS

Heinz H. Isenberg, Braunschweig; Göran Vogt, Burgwedel-Wettmar, and P. Gerhard Althaus, Garbsen, all of Germany, assignors to Schmalbach-Lubeca AG, Braunschweig and MPV MEB-und Pruftechnik Vogt GmbH, Burgwedel, both of Germany, a part interest

PCT No. PCT/DE91/00232, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO91/15759, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 19, 1991, Ser. No. 930,677

Claims priority, application Germany, Apr. 15, 1990, 4010952

Int. Cl.[5] G01M *3/00*

U.S. Cl. 73—582 **20 Claims**

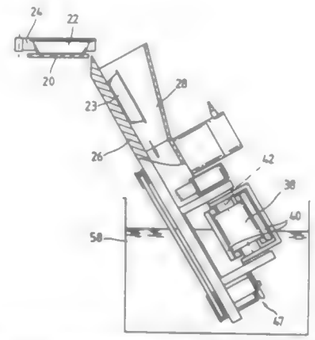
1. Process for the ultrasonic testing of a heat-sealed joint between a plastic package in a form of a tray for ready-to-eat meals and a cover film, in which:

packages are supplied successively to a test position of an ultrasonic test device:

a transmitter of ultrasonic radiation is acoustically coupled to the heat-sealed joint of a package at the test position through a water advance interval in a form of a water jet, the heatsealed joint is periodically exposed to pulses of ultrasonic radiation in an ultrasonic transmission area, the pulses passing through the heat-sealed joint are received, and an amplitude of the pulses is evaluated,

the ultrasonic transmission area is sufficiently small that the pulses pass only through a region of the heat-sealed joint itself,

the package at the test position and the transmitter are moved relative to each other in order to pass the ultrasonic transmission area at least once along a whole course of the joint,



the pulses are supplied at a pulse rate selected such that one area on the heat-sealed joint covered by one pulse overlaps another area on the heat-sealed joint covered by a successive pulse, and

a baffle plate is provided for the packages being conveyed on a conveyor belt, which baffle plate deflects packages that are evaluated as defective.

5,359,896

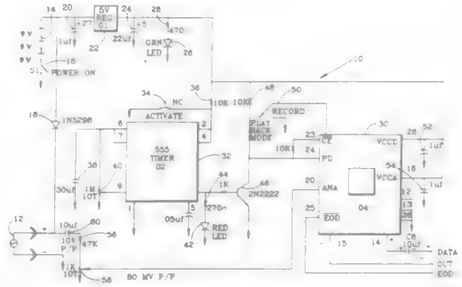
ACCELERATION RECORDER AND PLAYBACK MODULE

Richard J. Bozeman, Jr., Dickinson, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 3, 1992, Ser. No. 940,420

Int. Cl.[5] G06F *15/74*

U.S. Cl. 73—590 **10 Claims**



1. A method for recording and playback of an analog transducer signal, comprising the following steps:

conditioning said analog transducer signal by scaling said analog transducer signal to form a conditioned analog signal;

placing a solid state analog storage device into a record mode;

applying said conditioned analog signal to said solid state analog storage device;

producing a first timing pulse of a predetermined duration;

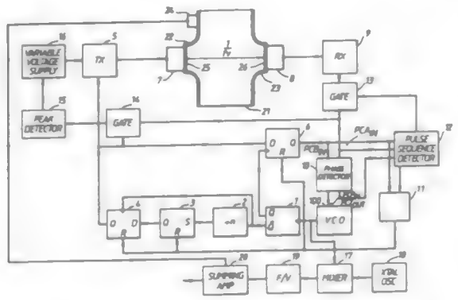
applying said first timing pulse to said solid state analog storage device to enable operation of said solid state analog storage device;
storing said conditioned analog signal; and
sequentially enabling a plurality of solid state analog storage devices.

5,359,897

APPARATUS FOR DETERMINING THE TIME TAKEN FOR SOUND ENERGY TO CROSS A BODY OF FLUID IN A PIPE

Peter J. Hamstead, and Alan C. Smith, both of Herts, England, assignors to Front Engineering Ltd., Herts, England

PCT No. PCT/GB90/01242, § 371 Date Feb. 7, 1992, § 102(e) Date Feb. 7, 1992, PCT Pub. No. WO91/02246, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 8, 1990, Ser. No. 829,060
Claims priority, application United Kingdom, Aug. 8, 1989, 8918068.1
Int. Cl.[5] G01N *29/18, 9/24*
U.S. Cl. 73—597 **11 Claims**



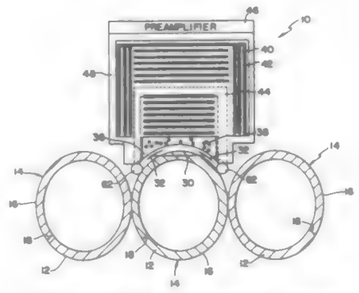
1. An apparatus for determining the time taken for sound energy to cross a body of fluid in a pipe, including:
a first electro-acoustic transducer which, in operation, sends sound energy through fluid in the pipe,
a second electro-acoustic transducer which, in operation, receives sound energy that has passed from the first electro-acoustic transducer through the fluid,
electrical means for energizing the first electro-acoustic transducer,
means for determining the difference between the time at which the first electro-acoustic transducer is energized and the time at which an electrical signal comes from the second electro-acoustic transducer in response to the transmitted acoustic signal, and
said electro-acoustic transducers being disposed against respective substantially flat members which are positioned on opposite sides of the pipe and are substantially parallel to each other, which substantially flat members seal respective apertures in the pipe, wherein pipe material around each aperture curves away from the center of the pipe towards the periphery of the aperture and contacts the respective substantially flat member along the entire periphery of the aperture.

5,359,898

HYDROGEN DAMAGE CONFIRMATION WITH EMATS

Paul J. Latimer, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 710,271, Jun. 4, 1991, Pat. No. 5,243,862. This application Jun. 1, 1992, Ser. No. 891,595
Int. Cl.[5] G01N *29/08, 29/26*
U.S. Cl. 73—600 **11 Claims**



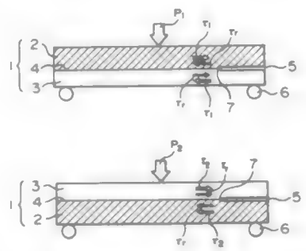
1. An apparatus for detecting hydrogen damage in a boiler tube, comprising:
a pair of spaced apart electromagnetic acoustic transducer coils;
first mounting means connected to the coils for changing a spacing between the coils;
second mounting means connected to the coils for holding the coils in a spaced chordal orientation so that each coil faces an outside surface of a boiler tube;
beam angle control means operatively connected to the coils for adjusting a beam angle of an acoustic beam between the coils so that the acoustic beam passes along a chord of the boiler tube within a wall thickness of the boiler tube;
electromagnetic pulser/receiver means operatively connected to the coils for generating and receiving acoustic beams between the coils; and
means for monitoring a received acoustic beam, an attenuation of the received acoustic beam being indicative of hydrogen damage in the boiler tube.

5,359,899

METHOD FOR MEASURING ADHESION STRENGTH OF RESIN MATERIAL

Asao Nishimura, Ushiku; Naotaka Tanaka, Ibaraki, and Isao Hirose, Toyohashi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,543
Claims priority, application Japan, May 18, 1992, 4-124503
Int. Cl.[5] G01N *3/24*
U.S. Cl. 73—842 **5 Claims**



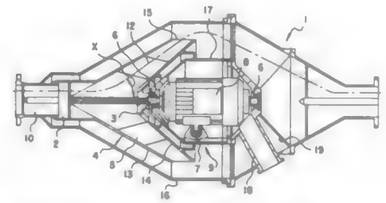
1. A method for determining an adhesion strength of a resin material in a structure having two or more kinds of materials including at least one resin material, comprising steps of:
forming a delamination portion at an adhering interface between said at least one resin material and another material adhered to said at least one resin material;
applying two types of loads respectively such that opposed shear stresses are generated to the adhering interface; and
obtaining a delamination propagating strength for each of the two types of loads.

5,359,900

APPARATUS FOR MEASURING THE MASS THROUGHPUT OF A FLOW OF POURABLE MATERIAL ACCORDING TO THE CORIOLIS PRINCIPLE

Hans W. Häfner, Aichach-Walchshofen, Germany, assignor to Pfister GmbH, Augsburg, Germany

Filed Oct. 16, 1992, Ser. No. 961,952
Claims priority, application Germany, Oct. 17, 1991, 4134318
Int. Cl.[5] G01F *1/82*
U.S. Cl. 73—861.37 **25 Claims**



1. An apparatus for measuring, according to the Coriolis principle, a mass throughput of a flow of pneumatically conveyed pourable material, comprising:
a measuring wheel means driven by a driving motor and rotating in a housing, wherein said measuring wheel means comprises an interior wall and ann exterior wall each configured as a cone with a plurality of guide blades extending between said interior and exterior walls for deflecting said flow of material from an axial charging direction into a spin-off movement all around a periphery of said measuring wheel means, the center lines of said guide blades extending at an acute angle, at an angle substantially less than 90°, with respect to an axis of said measuring wheel means, wherein said plurality of guide blades are connected to said interior and exterior walls, and are radially oriented; and
a torque measuring means for determining changes of a driving torque caused by said driving motor, which changes occur during flow of said material through said measuring wheel means, as a measuring value for determining said mass throughput,
wherein said measuring wheel means, which rotates, forms a space configured as a cone between an interior wall and an exterior wall and with the center line of said guide blades formed therebetween extending at an acute angle with respect to the axis of said measuring wheel means.

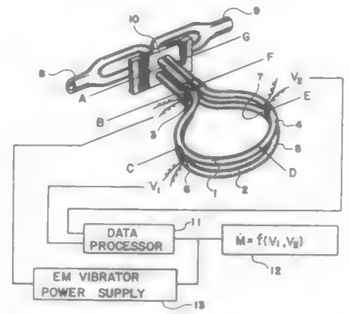
5,359,901

METHOD FOR MEASURING MASS FLOW RATE

Hyok S. Lew, and Yon S. Lew, both of 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 643,420, Jan. 22, 1991, Pat. No. 5,295,398. This application Mar. 8, 1993, Ser. No. 27,450
The portion of the term of this patent subsequent to Sep. 10, 2009, has been disclaimed.
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **10 Claims**

1. A method for determining mass flow rate of media moving through ar least one conduit under a flexural vibration comprising in combination:
a) generating a primary flexural vibration of the conduit in one of symmetric and antisymmetric modes about a mid-section of the conduit by exerting a vibratory force onto the conduit;
b) obtaining a first alternating electrical signal representing the flexural vibration of the conduit at a first section of the conduit, and a second alternating electrical signal representing the flexural vibration of the conduit at a second section of the conduit;



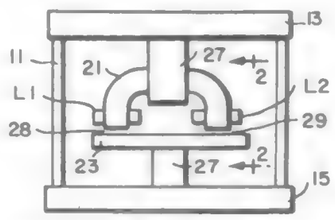
c) taking a value of the first alternating electrical signal measured at an instant when the second alternating electrical signal reaches a zero value; and
d) determining mass flow rate of media moving through the conduit as a function of said value of the first alternating electrical signal.

5,359,902

LOAD CELL

James E. Barger, Winchester, and Richard Madden, Groton, both of Mass., assignors to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed Jul. 15, 1993, Ser. No. 92,127
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.626 **4 Claims**



1. A transducer for sensing relative displacement between a pair of parts mounted in spaced relationship along a preselected axis on a member constructed of a material providing a substantially repeatable elastic characteristic along said axis, said transducer comprising:
a first magnetic core extending transversely to said axis and providing a pair of spaced faces which are essentially perpendicular to said axis and mounted on one of said parts;
a magnetically permeable core of generally C-shaped configuration mounted on the other of said parts with the ends of the C-shaped core each being in close proximity to said spaced faces of said first core thereby to form magnetic gaps whose widths are aligned with said axis, the respective face of said first core facing each of said C-shaped core ends being broader in all directions perpendicular to said axis than the respective facing end of said C-shaped core;
respective winding portions on each of said ends of said C-shaped core closely adjacent said magnetic gaps

thereby providing connection to an inductance which is variable as a function of the widths of said gaps and thus also as a function of relative displacement of said parts along said axis resulting from strain of said member along said axis.

5,359,903

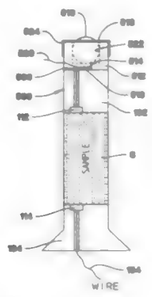
LOAD CELL

Ronald P. Steiger, Houston; Peter K. Leung, Sugar Land, both of Tex., and Rudolf J. Stankovich, Park City, Utah, assignors to Exxon Production Research Company, Houston, Tex.

Division of Ser. No. 671,367, Mar. 19, 1991. This application Jul. 15, 1992, Ser. No. 913,853

Int. Cl.[5] G01L *1/18*

U.S. Cl. 73—862.627 **4 Claims**



1. A load cell comprising

a body with a ball recess therein,

strain gauge means disposed in the body centrally beneath the ball recess,

a ball removably disposed in the ball recess above the strain gauge means, the ball contacting a bottom of the ball recess at an area substantially directly above the strain gauge means, and

a portion of the ball extending above the body for contact by a load inducing member.

5,359,904

DEVICE AND METHOD FOR MEASURING THE TENSION STRESS OF AN OPTIC FIBER OR A CORRESPONDING WIRE

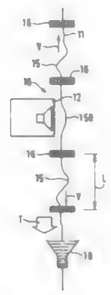
Mauri Luukkala, Espoo, Finland, assignor to Soundek Oy, Finland

Filed Jan. 6, 1993, Ser. No. 1,315

Claims priority, application Finland, Jan. 9, 1992, 920083

Int. Cl.[5] G01L *1/00*

U.S. Cl. 73—862.391 **16 Claims**



1. A measuring device for measuring tension of an optic fiber, comprising

means for producing a traveling wave and directing the wave into an optic fiber such that the wave advances along the optic fiber as a linearly polarized wave, and

at least two location-sensitive indicators for measuring the advancing velocity (v) of the wave provided in the optic fiber, said indicators being successively arranged at a known distance apart along a length of the optic fiber, whereby the tension (T) of the optic fiber is calculated from the equation $T=v^2 \cdot M$, when (M) is the fiber mass per length unit of the optic fiber.

5,359,905

FUEL CHECKER FOR USE WITH PET COCK OR BALL AND SPRING DRAIN VALVES

Robert M. Brodbeck, 9310 S. Watson Gulch Rd., Littleton, Colo. 80127

Filed Oct. 26, 1992, Ser. No. 966,289

Int. Cl.[5] G01N *1/12, 33/22*

U.S. Cl. 73—863.86 **17 Claims**



1. A hand-manipulative apparatus for receiving a specimen of the fuel tank contents of a fuel tank, said fuel tank of the type utilizing either a pet cock drain valve or a ball and spring drain valve, said apparatus comprising:

a) an elongated body of substantially circular cross-section, said body being fabricated of transparent molded material and being open at its upper end, said body further being of tubular character through a portion of its length for defining a fuel-receiving compartment having a central axis and communicating with the open upper end of said body, said body having a plurality of spaced-apart indentations in its upper end edge, for alignment and cooperation with associated actuating arms of a pet cock drain valve, when such a pet cock drain valve is utilized, said tubular portion being closed at its lower end portion;

b) a resilient, semi-rigid rod removably attached at a first end to said lower end portion of said tubular portion and extending along said central axis and beyond the upper end edge of said body so as to engage and manipulate a ball and spring drain valve at a second end of said rod, when such a ball and spring drain valve is utilized; and

c) means for supporting said rod at an intermediate portion thereof.

5,359,906

METHOD OF PARTITIONING PARTICLE SIZE DISTRUBUTION DATUM

Kazuyuki Kanai, Kasai, Japan, assignor to Toa Medical Electronics Company, Limited, Kobe, Japan

Filed Jan. 23, 1992, Ser. No. 823,975

Claims priority, application Japan, May 9, 1991, 3-135979

Int. Cl.[5] G01N *15/02*

U.S. Cl. 73—865.5 **6 Claims**

1. A method for determining partition points in order to establish boundaries between ranges of various substances of a mixture of plural kinds of granular substances, and comprising the steps of:

measuring sizes and corresponding frequencies of occurrence of particles of said substances;

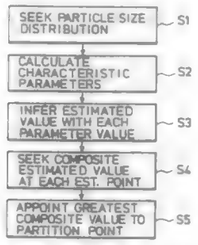
obtaining a particle size distribution based upon said measuring and indicative of a relationship between size and frequency of said particles of said mixture;

selecting a plurality of particle size values of said particle size distribution;

calculating values of a plurality of predetermined characteristic parameters for each of said particle size values,

seeking an estimated value of each of said particle size values as each partition point for the respective characteristic parameter values based upon fuzzy production rules respectively prescribing relationships between said characteristics parameter values and said estimated values,

combining said estimated values for said characteristic parameters of each particle size value to seek a composite estimated value for said particle size value, and



appointing a particle size value corresponding to a greatest one of said composite estimated values for all of said selected particle size values to said partition point,

said characteristic parameters including a first characteristic parameter which is a relative frequency of a frequency of each said particle size value with respect to a greatest frequency, a second characteristic parameter which is a sum of a frequencies corresponding to a particle size values within a small interval including each said particle size, and a third characteristic parameter which is a value relating to a difference between each said particle size value and a particle size value corresponding to said greatest frequency,

said fuzzy production rules comprising prescribing respectively that the estimated value is high if the first characteristic parameter value is small, that the estimated value is high if the second characteristic parameter value is small, and that the estimated value is high if the third characteristic parameter value is close to a predetermined value.

5,359,907

METHOD AND APPARATUS FOR DRY PARTICLE ANALYSIS

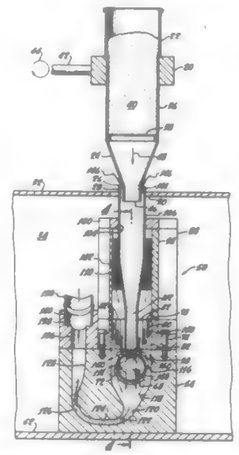
Jeffrey P. Baker, Poway; Steven C. Mott, and Craig A. Wright, both of San Diego, all of Calif., assignors to Horiba Instruments, Inc., Irvine, Calif.

Filed Nov. 12, 1992, Ser. No. 975,019

Int. Cl.[5] G01N *15/02, 21/85*

U.S. Cl. 73—865.5 **21 Claims**

1. A dry particle analyzer comprising: means for drizzling particles from a bulk sample thereof, means for providing a downward flow of first sheath ambient air around said drizzling particles, means for downwardly columnating the first sheath air flow and drizzling particles, means for providing a downward and columnar flow of second sheath ambient air around said columnated first sheath air and drizzled particles and substantially in velocity union therewith, and means defining a vertically downwardly extending optical analysis cell passage receiving the unified downward flow of drizzled particles and first and second sheath air for columnated downward flow therein, whereby the drizzled particles flow downwardly



continuously from said bulk sample and through said analysis cell passage means.

5,359,908

SYSTEM FOR REVERSIBLY TRANSFORMING ROTARY MOTION INTO SELF-GUIDED RECTILINEAR MOTION

Rolando Poeta, Piazza Affari, 20, I-24040 Zingonia (Bergamo), Italy

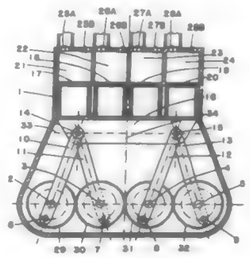
PCT No. PCT/IT91/00104, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/10696, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 2, 1991, Ser. No. 915,847

Claims priority, application Italy, Dec. 6, 1990, 2960 A/90

Int. Cl.[5] F16H *21/22*

U.S. Cl. 74—44 **10 Claims**



1. A system for transforming rotary motion into reciprocating rectilinear motion, and vice versa, comprising:

at least one pair of side-by-side pistons, each piston having affixed thereto an extending cheek, said cheeks defining a crosspiece, each said piston rectilinearly reciprocable within an associated piston chamber, said crosspiece fixed to said pistons and rectilinearly movable therewith;

first and second common pivot means located on said crosspiece;

a first pair of connecting rods, one end of each of said first pair of connecting rods pivotally connected to said first common pivot means;

a second pair of connecting rods, one end of each of said second pair of connecting rods pivotally connected to said second common pivot means;

a geared wheel associated with each connecting rod, the two

wheels associated with each said pair of connecting rods being adjacent and having mutually engageable teeth; and

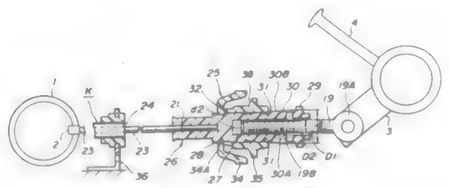
a crank associated with each wheel, each said crank being fixed at the center of its associated wheel and having a pivotal connection with the other end of the connecting rod associated with the same wheel, said pivotal connection being radially spaced from the center of its associated wheel.

5,359,909

CONTROL CABLE ADJUSTING ARRANGEMENT

Yasuhiko Ito, Zama; Makoto Shiota, Osaka; Hiroshi Yokote, Ina; Takumi Watanabe, Yokohama, and Norio Togano, Kosai, all of Japan, assignors to Nissan Motor Co., Ltd.; Nippon Cable System Inc., Uni Flex Co., Ltd.; Ohi Seisakusho Co., Ltd. and Fuji Kiko Co. Ltd., Japan

Filed Jan. 19, 1993, Ser. No. 5,358
Claims priority, application Japan, Jan. 21, 1992, 4-008419
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.6 **8 Claims**



1. A control member adjustment arrangement, comprising:

a holder portion being substantially cylindrical in shape, wherein said holder portion includes:

(i) a first stopper flange projecting around an outer circumference of said holder portion at one end thereof,

(ii) an adjusting portion at said one end immediately behind said first stopper flange, wherein a circumference of said adjusting portion being flared so as to be larger adjacent said first stopper flange,

(iii) a first tapered section extending from an adjacent end of said adjusting portion toward the other end of said holder,

(iv) an engaging portion at which said first tapered section terminates and having a circumference larger than an adjacent end of said first tapered section,

(v) a second tapered section formed spaced from said engaging portion in the direction of said other end,

(vi) a second stopper flange at which said second tapered section terminates and formed in the outer circumference of said holder,

(vii) a cable securing portion extending from said second stopper flange to said other end,

(viii) a first receiving opening at said one end being of a first diameter for receiving a first member, and

(ix) a second receiving opening at said other end, said second receiving opening being of smaller diameter than said first receiving opening for receiving a second member of smaller diameter than said first member; and

a slider, substantially ring shaped and disposed concentrically around said holder portion between said first and second stopper flanges, wherein said slider includes:

(i) an inner circumference smaller than the flared circumference of said adjusting portion

(ii) tapered locking portions disposed on said inner circumference,

(iii) at least a pair of arm portions operatively associated with said tapered locking portions to widen the distance between said locking portions and extending from said slider at opposite sides thereof and curving toward said one end of said holder; and

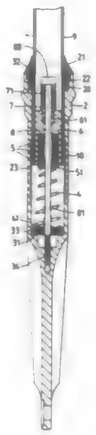
(iv) wherein at a first position of said slider, said tapered locking portions being engagable with said second tapered portion adjacent said second stopper flange and, at a second position of said slider said tapered locking portions being engagable with said engaging portion of said holder.

5,359,910

BICYCLE FRONT FORK SHOCK ABSORBING MECHANISM

Wu-Sung Chang, and Huan-Yang Huang, both of Changhwa Hsien, , assignors to Bettis Corporation, Waller, Tex.

Filed Dec. 28, 1993, Ser. No. 174,405
Int. Cl.[5] B62K *21/14*
U.S. Cl. 74—551.2 **1 Claim**



1. A bicycle front fork shock absorbing mechanism comprising:

a lower cylindrical casing having a friction lining covered around an inside wall thereof and a center screw hole on the inside spaced from a top opening thereof;

an upper cylindrical casing having a locating block fastened to a bottom end thereof inserted through said top opening into said lower cylindrical casing, said locating block having a stepped through hole through the longitudinal center line thereof;

a lower rubber ring received inside said lower cylindrical casing and supported above said screw hole;

a plurality of upper rubber rings received inside said lower cylindrical casing and retained within said locating block;

a shock absorbing conical spring received inside said lower cylindrical casing and retained between said lower rubber ring and said upper rubber rings;

a headed adjusting screw rod having a head disposed above said locating block and a screw rod inserted through said stepped through hole on said locating block and said upper rubber rings and said shock absorbing conical spring and said lower rubber ring and then threaded into said screw hole;

a buffer spring mounted around said headed adjusting screw rod and retained between the head of said headed adjusting screw rod and said locating block;

a friction ring mounted around the bottom end of said upper cylindrical casing and connected to said friction lining of said lower cylindrical casing through a slide contact; and

a bushing made of wear resistant copper alloy and mounted within said lower cylindrical casing near the top opening thereof and connected around said upper cylindrical casing through a slide contact.

5,359,911

LIGHTWEIGHT SELF-INSULATING COMPOSITE TOOL

August H. Kruesi, Melrose, N.Y., assignor to U.S. Composites Corp., Guilderland, N.Y.

Filed Jun. 30, 1993, Ser. No. 83,567
Int. Cl.[5] B25B *15/00*
U.S. Cl. 81—436 **27 Claims**



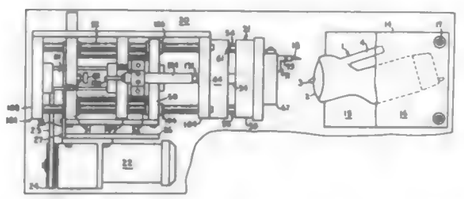
1. A lightweight self-insulating hand tool comprising: a tool tip having a working end and an integral tip shank, an electrically insulative material tool shank molded about said tip shank and extending from said tip shank away from the tool tip working end, a molded-in mechanical interlock coupling between said tool tip and said tool shank resisting axial tensile and compression stress and torsion stress separation of said tool tip from said tool shank, and an electrically insulative handle carried by said tool shank remote from said tool tip.

5,359,912

UNIVERSAL URINAL TRIMMING METHOD AND PRODUCT

Ralph E. Hastings, 5421 Oxford, Raytown, Mo. 64133

Filed Oct. 23, 1992, Ser. No. 965,994
Int. Cl.[5] B23B *3/00*
U.S. Cl. 82—1.11 **5 Claims**



1. A method of trimming a urinal mouth opening from a blow-molded plastic universal urinal with a trimming means where the opening has an oval shape in a first plane and an alternately concave and convex shape in a second plane which is orthogonal to said first plane, the method comprising the steps of:

(a) holding the urinal with the first plane oriented perpendicular to the trimming means; and

(b) moving the trimming means in an oval path in said first plane while simultaneously moving the trimming means in an alternately concave and convex path in the second plane while contacting said urinal; whereby

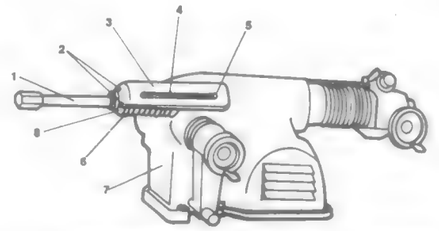
(c) said trimming means smoothly trims said mouth opening.

5,359,913

AUTOMOTIVE BRAKE LATHE BOOT PROTECTOR

Richard L. Kimmell, 13907 Emir Ave., Sylmar, Calif. 91342

Filed Apr. 5, 1993, Ser. No. 43,026
Int. Cl.[5] B23B *5/04, 25/04*
U.S. Cl. 82—112 **9 Claims**



1. In an automotive brake maintenance lathe comprising a motorized mount, an axially movable lathe shaft arm extending from said motorized mount, said lathe shaft arm having a rotatable spindle portion is a non-rotatable sleeve portion, in a protective flexibly extendable bellows on said lathe shaft arm, the improvement comprising:

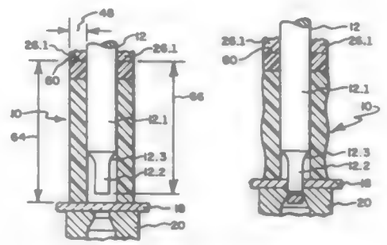
a substantially rigid protective shield with an at least partial generally cylindrical cross-section attached to the non-rotating sleeve portion of the shaft arm so as to move axially with the operating of the lathe and extend over the bellows, whereby the bellows may be protected from impingement from a grinding wheel as recommended in the final surfacing of brake drums and discs.

5,359,914

TWO PART URETHANE PUNCH STRIPPER

Richard H. Brown, 4850 Meadowbrook Rd., Williamsville, N.Y. 14221

Filed Jun. 29, 1993, Ser. No. 84,571
Int. Cl.[5] B26F *1/14*
U.S. Cl. 83—139 **6 Claims**



1. A two part urethane punch stripper for use with a punch having a cylindrical upper shank portion and a lower working end portion, the upper shank portion having upper, intermediate, and lower sections, the upper section of the upper shank portion being supported by a punch retainer, and the lower working end portion of the punch being adapted to contact a workpiece, the retainer being secured to a press; the two part urethane punch stripper comprising:

a generally cylindrical tubular lower part formed of a urethane of conventional hardness for a punch stripper in the range of 80A–100A (Shore), the lower part having a concentric bore, an upper portion of the bore being adapted to closely engage the lower section of the cylindrical upper shank portion of the punch;

the punch stripper being characterized by

a generally cylindrical tubular upper part formed of an unadulterated urethane substantially harder than the

lower part of the stripper for minimizing cutting or tearing of the stripper, the upper part having substantially the same diameter as the lower part of the punch stripper, the upper part having a concentric bore, the bore being adapted to closely engage the intermediate section of the shank portion of the punch, the upper surface of the upper part contacting the lower surface of the punch retainer when the stripper is properly positioned about a punch;

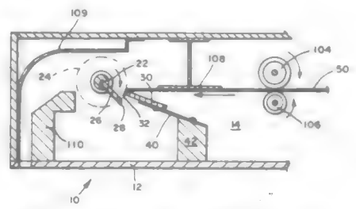
the upper and lower tubular parts being bonded to each other, and the upper and lower parts of the stripper having a combined length greater than the length of the intermediate and lower sections of the upper shank portion of the punch and the lower working end portion of the punch.

5,359,915

WEB CUTTER

Mark A. Hitz, Granada Hills, Calif., assignor to Datametrics Corporation, Chatsworth, Calif.

Filed Jun. 9, 1993, Ser. No. 73,897
Int. Cl.[5] B26D *1/56*
U.S. Cl. 83—342 **16 Claims**



1. A web cutter to be used in conjunction with a web transport system having a web support surface, the cutter comprising:

a) a rotatable shaft;

b) a frame supporting said shaft;

c) drive means for rotating said shaft;

d) a first cutter bar including a cutting edge mounted longitudinally on said shaft and rotatable therewith, with said cutting edge directed substantially outwardly therefrom, said cutter bar being slightly helical about said shaft;

e) a cantilever spring having a fixed edge and a free edge, said fixed edge being attached to said frame; and

f) blocking means in the form of a second cutter bar attached to said spring free edge for performing a cutting function by partially impeding the path of said first cutter bar and thereby contacting a portion of said first cutter bar and by said first cutter bar displacing said blocking means in an arcuate path with rotational direction opposite that of said first cutter bar, said first cutter bar portion clearing said blocking means to form a moving point of contact between the cutting edge of said first cutter bar and said blocking means which moves with the rotation of said shaft.

5,359,916

PERFORATOR

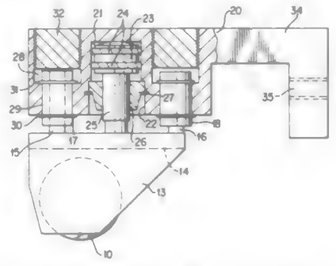
Werner Bonnet, Muhlackerstr. 6, 7140 Ludwigsburg 12, Germany

PCT No. PCT/DE89/00754, § 371 Date Jan. 8, 1991, § 102(e) Date Jan. 8, 1991, PCT Pub. No. WO90/06215, PCT Pub. Date Jun. 14, 1990
PCT Filed Dec. 6, 1989, Ser. No. 646,749
Claims priority, application Germany, Dec. 9, 1988, 3841492; Aug. 3, 1989, 3925667
Int. Cl.[5] B26F *1/08*
U.S. Cl. 83—482 **21 Claims**

1. In a perforator having a perforator disk (10; 110) rotatably sealed in a U-shaped bearing bracket (13; 112), said U-shaped bearing bracket (13; 112) being movable into and out of a path of movement of a piece to be perforated by a piston-cylinder unit which is actuated from either side of a piston, said piston-cylinder unit being housed in a quadrate fastening element (20) connected to a machine frame, a plurality of guide bolts (15, 16; 135, 139) of said U-shaped bearing bracket (13; 112) movably disposed within said quadrate fastening element (20), said plurality of guide bolts (15, 16; 135, 139) maintaining said bearing bracket (13; 112) fixed against rotation within respect to said fastening element (20),

the improvement comprising:

said quadrate fastening element (20) forming a cylinder having a blind bore (21) extending from a blind bore side



facing said U-shaped bearing bracket (13), in which said piston (23), having seal rings (24), is sealingly guided in a displaceable manner,

said blind bore (21) being closed by a seal bushing (26), through which extends a piston rod (25) connected at one end to said piston (23) and connected at an opposite end to said U-shaped bearing bracket (13), and

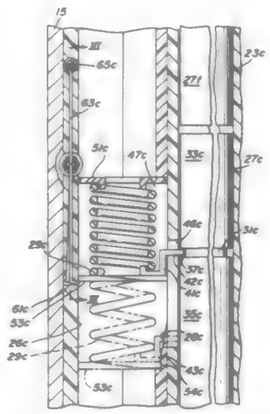
said blind bore (21) transforming on said blind bore side facing said bearing block (13) into a blind bore end section (22) having a larger diameter forming a shoulder against which said seal bushing (26) rests.

5,359,917

SIMPLIFIED REUSABLE SONOBUOY LAUNCHER

Bruce W. Travor, Holland, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 28, 1993, Ser. No. 102,023
Int. Cl.[5] B64D *1/04;* **F41F** *5/00*
U.S. Cl. 89—1.51 **5 Claims**



1. A mechanically, simplified sonobuoy launcher, comprising:

a hollow container having a breech end and a discharge end and containing buoy chambers and drive spring chambers;

a plurality of compression drive springs, each load into an individual spring chamber;

a plurality of buoys, each loaded into a buoy chamber;

a plurality of drive means connected one each to said individual springs and to one each of a plurality of buoys;

a plurality of release means, one each in a movement blocking position with one each of said drive springs and said drive means; and

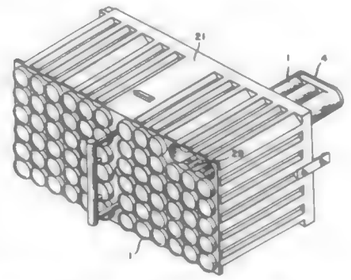
a plurality of electric control means, each connected to one each of said release means, to receive an electrical pulse and to move said release means from the drive spring movement blocking position, whereby a buoy is launched.

5,359,918

MULTI-RECEPTACLE PYROTECHNIC CARTRIDGES AND CORRESPONDING AMMUNITION

Gérard Meili, Bordeaux, and Jean-Luc Pinchot, Saint Medard en Jalles, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris Cedex, France

Filed May 27, 1993, Ser. No. 68,424
Claims priority, application France, Jun. 5, 1992, 92 06854
Int. Cl.[5] F41F *3/042, 3/052, 3/06*
U.S. Cl. 89—1.816 **9 Claims**



1. A cartridge (1) which consists of a case (3), a sole (2) fixed to said case, a plurality of receptacles within said case, a plurality of assemblies (11) accommodated in said receptacles, each of said assemblies comprising a pyrotechnical ejection charge (6), a pyromechanical device (7), an ignition charge (8), an effective charge (9) and a cap, said assemblies (11) being independent and being arranged in parallel in said receptacles, each assembly comprising one electric fuse (5), said electrical fuses being received in said sole (2), said sole (2) being common to said receptacles.

5,359,919

METHOD OF CONFINEMENT OF PROPELLANTS FOR IGNITION

Richard A. Beyer, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 10, 1993, Ser. No. 17,092
Int. Cl.[5] F41A *1/04*
U.S. Cl. 89—7 **23 Claims**

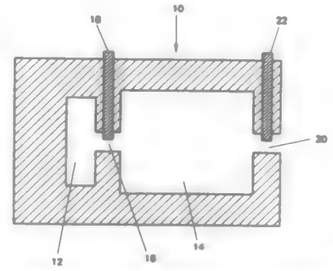
1. A method for confinement of a propellant during the initial stage of an ignition of a gun, comprising in combination, the following steps:

providing the propellant in a substantially closed chamber, a portion of the propellant being in a conduit exiting from the chamber,

providing the ignition to the propellant,

cooling the propellant portion in the exit conduit to a sufficiently low temperature for producing a substantially solidified condition to enhance the propellant containment,

providing a closure means in the exit conduit to selectively vary the amount of flow thereby maintaining a relatively high temperature, and



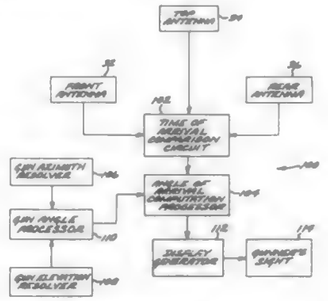
venting of the formed combustive products through the exit conduit whereby sufficient thermal energy is generated to sustain combustion and to ignite in the next stage.

5,359,920

MUNITION IMPACT POINT INDICATOR AND AUTOMATIC GUN AIMPOINT CORRECTION SYSTEM

James O. Muirhead, San Pedro, and Ronald A. Steen, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 15, 1992, Ser. No. 991,848
Int. Cl.[5] F41G *3/22*
U.S. Cl. 89—41.07 **12 Claims**



1. A munition impact point indicator system for a gun, comprising:

a munition projectile fired by said gun which upon impact radiates a burst of RF energy;

at least three antennas for receiving RF energy emitted by said projectile upon impact, said antennas mounted on a mobile platform and separated from each other to form an antenna triangulation network carried by said platform, and wherein the distances from the point of impact of said projectile to said antennas is much greater than the separation distances between said antennas;

time of arrival comparison circuit means for measuring the relative time of arrival of said RF energy emitted by said projectile at each said antenna;

processing means responsive to said respective relative times of arrival to compute the angle of arrival of said RF energy in relation to said gun; and

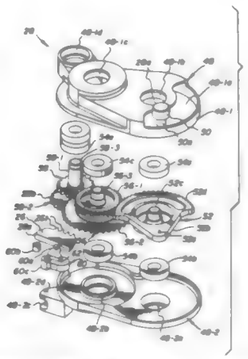
means for providing an indication to the gun operator of the projectile impact location.

5,359,921

GUN BOLT ACCELERATOR MECHANISM

Peter C. Wolff, Georgia; Stephen J. Bullis, Colchester, and Larry W. Hayes, South Burlington, all of Vt., assignors to Martin Marietta Corporation, Philadelphia, Pa.

Filed Jun. 29, 1993, Ser. No. 83,553
Int. Cl.[5] F41A *5/08*
U.S. Cl. 89—169 12 Claims



1. A mechanism for use in a cartridge-firing weapon for moving a gun bolt toward and away from a firing chamber of a barrel assembly having movement relative to a receiver, having a camming channel formed therein, comprising:

a rack member having a first end coupled to the gun bolt and a second end, and adapted for longitudinal motion with the gun bolt in said receiver toward and away from said chamber; and

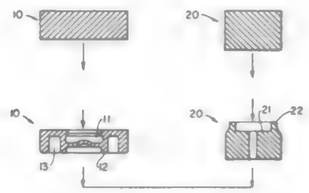
gear means having an input moved in the camming channel responsive to barrel assembly movement, relative to said receiver, for causing an output to move the rack member and attached gun bolt toward and away from the chamber with displacement, velocity and acceleration greater than the associated displacement, velocity and acceleration of the moving barrel assembly with respect to the weapon receiver.

5,359,922

HEAD OF TWO WELDED PARTS FOR TWO-PIECE ARTICULATED PISTON

Jose M. Martins Leites; Jose A. Cardoso Mendes; Andre Lippai, all of Sao Paulo, and Paulo T. Dellanoce, Sao Caetano Do Sul, all of Brazil, assignors to Metal Leve S/A Industria E Comercio, Sao Paulo, Brazil

Continuation of Ser. No. 858,547, Mar. 27, 1992, abandoned, which is a division of Ser. No. 687,468, Apr. 16, 1991, Pat. No. 5,150,517. This application Jan. 27, 1994, Ser. No. 188,601
Claims priority, application Brazil, Apr. 17, 1990, 9001859
Int. Cl.[5] F16J *1/14*
U.S. Cl. 92—189 6 Claims



1. A head for a two-piece articulated piston comprising:

a first blank of solid metal material with top and bottom surfaces machined into generally cylindrical shade and to have a combustion bowl on the top surface, a central recess on the bottom surface, and a circular peripheral groove outwardly of and surrounding said central recess so as to leave an annular rim with a flat lower face transverse to the central axis of said first blank around said central recess and a circular outer skirt wall,

a second blank of solid metal material with top and bottom surfaces machined into a generally circular shape of smaller diameter than said first blank and to have a central recess on its top surface defining a surrounding annular collar with a flat upper face of the same diameter as and parallel to the flat lower face of said first blank annular rim and a pair of spaced opposed pin bosses beneath said annular collar each with a hole therein to which a piston skirt is to be attached,

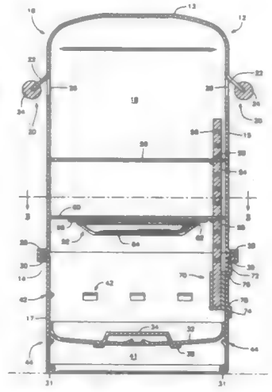
the flat lower face of the first blank annular rim and the flat upper face of said second blank annular collar abutting each other with the second blank being connected to said first blank in the area of the abutting faces of said annular collar and said annular rim.

5,359,923

SMOKER AND COOKER WITH IMPROVED ADJUSTABLE SPACED GRILL SUPPORT

Burl Boswell, 6507 Barksdale Blvd., #80, Bossier City, La. 71112

Filed Sep. 14, 1993, Ser. No. 120,367
Int. Cl.[5] A47J *37/00, 37/04, 37/07*
U.S. Cl. 99—340 19 Claims



1. A smoker and cooker comprising:

a vertically oriented housing comprising a base and a lid, wherein said lid vertically and removably fits onto the base;

a fuel support pan being disposed in said base and having air vents therein;

grill support means having a plurality of vertically spaced intervals for adjustably supporting multiple grills within the housing;

securing means for removably securing the grill support means in place in said cooker; and

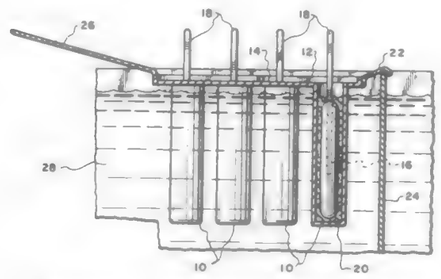
at least one grill means comprising a cooking surface and including means for removably attaching to the grill support means at each of said plurality of vertically spaced intervals.

5,359,924

COOKING APPLIANCE FOR COOKING A BATTER WRAPPED MEAT PRODUCT ON A STICK

Gordon G. Roberts, 38 Camelback, Pleasant Hills, Calif. 94523, and Gordon E. Roberts, 9314 S. Gunn, Whittier, Calif. 90605

Filed Jul. 21, 1992, Ser. No. 918,500
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—416 7 Claims



1. An appliance for cooking a meat product skewered on a stick and covered with a batter in a vat of hot oil comprising;

a plurality of cylinders having a length slightly longer than a meat product skewered on said stick;

plate mounting means for mounting said plurality of cylinders in a vertical position;

hanging means on said plate mounting means for hanging said plate means on a side of a deep fat frying basket so that said vertically oriented cylinders may be partially submerged in said vat of hot oil to heat and cook said batter;

spillage preventing means around said cylinders to prevent said batter from being spilled over the sides of said cylinders when they are being filled;

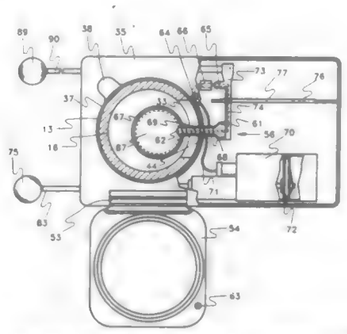
whereby a meat product on a stick can be surrounded with a batter and cooked.

5,359,925

APPARATUS FOR PRODUCING AN EDIBLE SANDWICH

Joel C. Forker, 1643 Ocean Blvd., Rye, N.H. 03870

Continuation-in-part of Ser. No. 770,984, Oct. 1, 1991, abandoned. This application Jul. 2, 1993, Ser. No. 87,205
Int. Cl.[5] A21C *9/06;* A23L *1/00*
U.S. Cl. 99—450.8 4 Claims



1. An apparatus for making a fillable sandwich roll from a one piece pre-baked soft bread casing having two major faces, a soft core, a peripheral edge, said apparatus comprising:

a housing having a slot, said slot having upper and lower cam surfaces; said housing also having a circular seat for holding said bread casing and having an integral key-hole shaped cam surface corresponding to the peripheral edge of said bread casing, said key-hole shaped cam surface located beneath said circular seat, with said key-hole shaped cam surface defining a cutting plane;

a first rigid member, having a knife end and a pivotal end, said first rigid member having a fixed circular knife blade wheel attached to the knife end, said knife blade wheel having a planar range of motion;

a second rigid member, having a handle end and a pivotal end, said first rigid member having a handle attached to the handle end;

a rod, rigidly aligning said first rigid member and said second rigid member together at their respective pivotal ends, said rod having upper and lower pin-type cam followers, said pin-type cam followers movably attaching said rigid members to said upper and lower cam surfaces in said slot;

a roller-type cam follower, attached to said second rigid member, and engaging said key-hole shaped cam surface, thereby limiting the range of motion of said circular knife blade wheel to said cutting plane such that when said handle is pulled, said circular knife blade cuts through a section of the peripheral edge of said casing and into the soft core to form a planar key-hole shaped slit within said casing, with said planar key-hole shaped slit interposed approximately equidistant from the two major faces of said casing;

an expandable mandrel, movably attached to said housing, said mandrel having a flat circular bladder, said bladder dimensioned to fit within the key-hole shaped slit within said casing;

means for pumping air, connected to said mandrel, for expanding said bladder to form a cavity of compressed soft core within said casing when said bladder is placed within said planar key-hole shaped slit, said cavity having a substantially uniform wall thickness and approximately centered between said two major faces within said casing, wherein a fillable sandwich roll is obtained that can be filled with an edible filling that is substantially uniformly surrounded by compressed soft core.

5,359,926

ROTARY PULPING MACHINE FOR EXTRACTING FRUIT AND VEGETABLE JUICES

Carlo Sassi, 43100 Parma, Italy, assignor to Metro International S.R.L., Parma, Italy

Filed Jul. 1, 1993, Ser. No. 86,551
Claims priority, application Italy, Jul. 29, 1992, PR92A000032
Int. Cl.[5] A23N *1/00*
U.S. Cl. 99—510 8 Claims

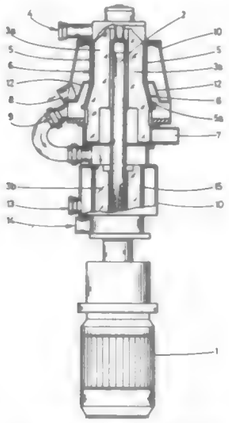
1. A rotary pulping machine for extracting fruit and vegetable juices and purées wherein the pulping machine is of the type which includes a first extraction stage comprising:

a rotor having a central rotation shaft equipped with blades to move an introduced product and to provide a centrifugal effect on said product;

a first stage sieve of cylindrical or conical shape, through which liquid is extracted from a centrifuged product passes;

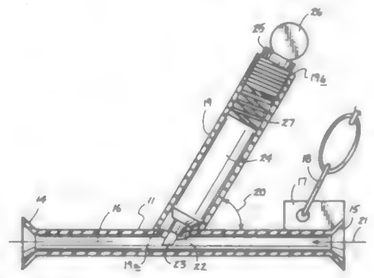
separate outlets for waste materials remaining inside the first stage sieve and for juice or refined part of the product which has passed through the first stage sieve;

motorization means to rotate the central rotation shaft, at least a second refinement stage coaxial to the first extraction stage, said motorization means connected to both said first extraction stage and said second refinement stage,



sieve, and a first extraction stage outlet connected to a second refinement stage inlet.

5,359,927
WIRE STRIPER
Richard G. Demeyer, 7 Inwood Dr., West Milford, N.J. 07480
Filed Oct. 20, 1993, Ser. No. 138,723
Int. Cl.[5] B41F *17/00*
U.S. Cl. 101—35 5 Claims



1. A wire striper, comprising,

an elongate wire guide tube having a first end spaced from a second end, and a cylinder guide housing integrally mounted to the guide tube, the guide tube symmetrically oriented about a tube axis, and the cylindrical guide housing oriented at an acute included angle relative to the guide tube, with the guide housing canted toward the second end,

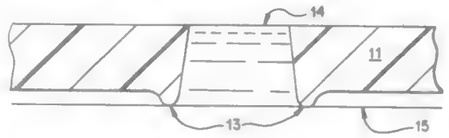
and

the guide housing having a housing first end in integral communication with the guide tube, and a housing second end spaced from the guide tube, with the guide tube having a guide tube wall, and the guide tube wall including a guide tube opening, with the housing first end arranged in surrounding relationship relative to the guide tube opening,

and

a marker member mounted within the guide housing, having a tip arranged for projection through the guide tube opening, and a marker housing arranged for abutment onto the guide tube wall.

5,359,928
METHOD FOR PREPARING AND USING A SCREEN PRINTING STENCIL HAVING RAISED EDGES
Daniel R. Blessington, deceased, late of Rochester by Elizabeth L. Blessington, legal representative ; Gary T. Marks, Phelps; Jerry E. Sergeant, Palmyra; Judy A. Sline, Romulus, and Stephen A. De Lucia, Webster, all of N.Y., assignors to AMTX, Inc., Canandaigua, N.Y.
Continuation-in-part of Ser. No. 849,862, Mar. 12, 1992. This application Oct. 20, 1992, Ser. No. 963,641
Int. Cl.[5] B41C *1/14;* C25D *1/10*
U.S. Cl. 101—128.4 28 Claims



1. A method of forming a printed product with a screen printing stencil, comprising:

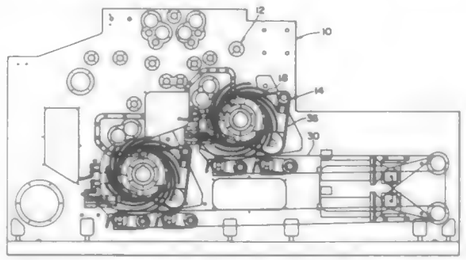
(a) providing a screen printing stencil formed by controlling electroforming factors of current density, anode and cathode distances and amount of leveling agent to provide orifices circumvallated by raised edges for passage of printing materials;

(b) placing said stencil on a surface of a substrate to be printed with said raised edges contacting said surface;

(c) applying said printing material to said surface through said orifices; and

(d) removing the stencil from the substrate.

5,359,929
DEVICE FOR DELIVERING SIGNATURES IN A PRINTING PRESS
Robert E. Hansen, Clarendon Hills, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Aug. 25, 1993, Ser. No. 111,743
Int. Cl.[5] B41F *13/24;* B65H *29/20*
U.S. Cl. 101—232 13 Claims



1. A device for delivering signatures in a printing press, comprising:

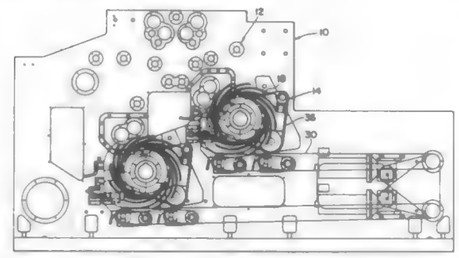
a fly having a plurality of open pockets to receive signatures;

means for rotating said fly;

means for stripping the signatures from the fly in an exit portion of the fly; and

means for driving the stripping means at a speed relative to the speed of the fly in a manner reducing their relative velocity less than the relative velocity between the fly and a stationary condition of the stripping means.

5,359,930
DEVICE FOR ALIGNING FLIES FOR A PRINTING PRESS
Robert E. Hansen, Clarendon Hills, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sep. 17, 1993, Ser. No. 123,014
Int. Cl.[5] B41F *13/24;* B65H *29/20*
U.S. Cl. 101—232 9 Claims



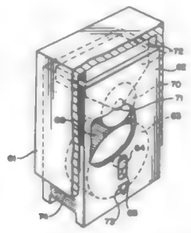
1. A device for delivering signatures for a printing press, comprising:

a delivery device having a plurality of sets of flies, with the flies each having a plurality of open pockets disposed around the flies;

means for stripping signatures from the pockets disposed between a pair of adjacent flies in each set of flies; and

means for laterally modifying the distance between different sets of flies and accompanying stripping means in each of the sets.

5,359,931
HIGHLIGHTING FOR PHOTOCOPIERS AND FACSIMILE MACHINES
Scott W. Voorhees, 1308 Devil's Reach Rd, Ste. 302, Woodbridge, Va. 22912
Division of Ser. No. 321,732, Mar. 10, 1989, Pat. No. 5,098,817. This application Sep. 3, 1991, Ser. No. 753,904
Int. Cl.[5] B41F *13/10*
U.S. Cl. 101—375 6 Claims



1. An applicator for applying a tone pattern of dots or lines to a surface, comprising:

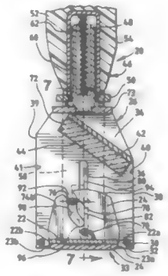
an applicator roller having a peripheral, circumferential surface with a tone pattern of dots or lines thereon having a density of about 10–22%;

a housing;

means for mounting said applicator roller in said housing for rotation about an axis, a portion of the circumferential periphery of the roller, having the tone pattern thereon, extending outwardly from said housing; and

means mounted within said housing for applying ink to the applicator tone pattern so that as said roller rolls on a surface to be marked with ink a marking in the form of said tone pattern of a density of about 10–22% is applied thereto.

5,359,932
SELF-INKING HAND STAMPER WITH TILTED INKING PAD
Johannes M. Van Breene, Amersfoort, Netherlands, assignor to Louis Melind Co., Skokie, Ill.
Filed Sep. 21, 1992, Ser. No. 947,734
Int. Cl.[5] B41K *1/42*
U.S. Cl. 101—334 20 Claims



1. In a self-inking hand stamper that includes:

a die plate for carrying a die that contains information to be transferred to a predetermined surface by stamping the information thereon, said die plate having a front edge, a back edge, two side edges and a back surface;

support legs for said die plate, one of said support legs extending perpendicularly from said die plate back surface at a location adjacent each of the side edges of the die plate, each of said support legs having two side edges and a third edge that is remote from the die plate;

a frame for containing the die plate in both its retracted, inking position in the upper portion of the frame and in its forward, stamping position at the base of the frame, the bottom of said frame base defining a planar opening through which the die carried by the die plate can contact the predetermined surface on which said information is to be stamped, said frame having two vertical side walls each of which defines a single, straight, vertical guide slot that is associated with a respective one of said die plate support legs, the outer edges of said frame side walls defining front and back boundary planes, respectively, for said frame;

inking means positioned within said frame above the die plate and facing downward toward the same;

an actuator having a handle extending above said frame,

a yoke member attached to the bottom of the actuator and having a leg extending downward outside of said frame adjacent each side thereof;

spring biasing means for holding said actuator in its uppermost position until the handle is pushed downward by the user of the stamper;

means for guiding said actuator downward and upward, respectively, as the handle is pushed down and then released, and

axle means operatively connected with each of said die plate support legs and with said downwardly extending yoke legs, said axle means being slidably journaled, for vertical downward and upward movement, in the guide slots in said frame side walls,

the improvement which comprises:

(a) positioning said axle means between the side edges of each of said die plate support legs and adjacent the die plate, with a base reference line extending from the center of said axle means perpendicularly away from the die plate along each die plate support leg;

(b) fixedly securing a single pivot pin for each of said die plate support legs on the one of said frame side walls with which the support leg is associated, said pivot pin having a circular cross section, the center of said pivot pin being spaced a first predetermined distance from the

longitudinal center line of the guide slot in said associated frame side wall,

each of said pivot pins being spaced from the frame bottom a sufficient distance that the die plate and its support legs do not at any time protrude downward through said planar opening defined by the bottom of the frame base as the die plate and its support legs pivot upward from the forward, stamping position of the die plate toward its retracted, inking position;

(c) providing a single cam slot in each of said die plate support legs in which slot the pivot pin associated with said support leg is slidably journaled, the outer end portion of said cam slot being located adjacent the edge of the support leg that is remote from the die plate, and the inner end of said cam slot in each of said die plate support legs being located adjacent said axle means for the support leg, said cam slot being curved in outline for at least the major part of its length;

(d) slidably journaling said axle means only in said straight, vertical guide slots in the frame side walls; and

(e) positioning said inking means so that it is tilted from a plane parallel to said planar opening that is defined by the bottom of the frame base, to bring the portion of the inking means that is on the opposite side of said guide slots from said pivot pins that are mounted on the side walls of the frame closer to the frame base than the other portion of the inking means is,

said inking means being spaced above said pivot pins a sufficient distance that the die plate and its support legs are not impeded as they pivot upward from the forward, stamping position of the die plate and the die carried by it to the retracted, inking position of the die plate where the die comes into contact with the inking means,

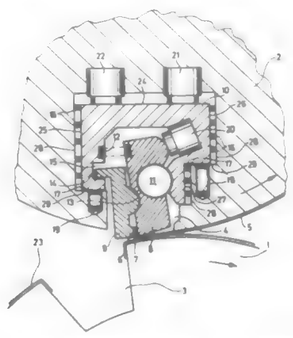
whereby the die plate, in moving upward from its forward, stamping position at the base of said frame to its retracted, inking position in the upper portion of the frame, pivots through an arc of substantially less than 180°.

5,359,933

CLAMPING AND TENSIONING DEVICE FOR A PRINTING PLATE IN A PRINTING MACHINE

Peter T. Blaser, Dielheim; Karl-Hermann Miltner, Dossenheim, and Anton Rodi, Leimen, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Mar. 30, 1993, Ser. No. 39,883
Claims priority, application Germany, Mar. 30, 1992, 4210316
Int. Cl.[5] B41F *27/12*
U.S. Cl. 101—415.1 **11 Claims**



1. Clamping and tensioning device for a printing plate in a printing machine, wherein the printing plate is a flexible printing plate having an inwardly bent trailing edge, and the printing machine includes a plate cylinder defining axial and radial directions and having an axial gap formed therein, a blanket cylinder disposed in a spaced-apart relationship with the plate cylinder, the clamping and tensioning device comprising:

two clamping bars displaceably supported in said axial gap formed in said plate cylinder and extending in an axial direction of the plate cylinder, said two clamping bars having radially outer edges as seen in a radial direction of the plate cylinder, and said two clamping bars defining a clamping slot therebetween for receiving said inwardly bent trailing edge of a printing plate;

means for applying reversible clamping forces on said two clamping bars for clamping the bent trailing edge of the printing plate therebetween; and

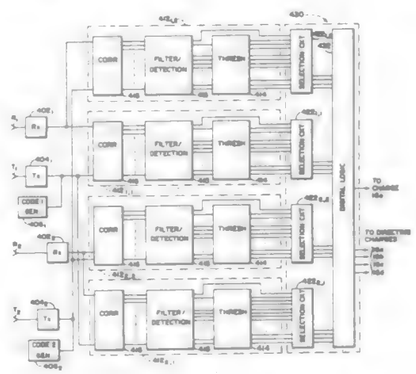
means for displacing said two clamping bars in a radial direction of the plate cylinder, said displacing means diplacing said radially outer edges of said two clamping bars radially outwardly at least to a circumferential periphery of the plate cylinder, and displacing said two clamping bars radially inwardly with the bent trailing edge of the printing plate clamped between said two clamping bars for tensioning the printing plate on the plate cylinder.

5,359,934

DIRECTIONAL WARHEAD FUZE

Alex J. Ivanov, Chelmsford; James A. Driscoll, Haverhill, both of Mass.; Richard P. Linnehan, Litchfield, N.H.; Malcolm F. Crawford, Lexington, Mass.; A. Robert Chinchillo, North Reading, Mass., and Ernest Goldberg, Westford, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 19, 1990, Ser. No. 584,681
Int. Cl.[5] F42C *13/04*
U.S. Cl. 102—214 **21 Claims**



1. A missile comprising:

a) a first transmit antenna and a second transmit antenna;

b) means, coupled to the first-and second transmit antennas, for generating a first pseudo noise signal and a second pseudo noise signal;

c) a first receive antenna and a second receive antenna; and

d) means, coupled to the first and second receive antennas, for determining the levels of the first and second pseudo noise signals received at the first and second receive antennas.

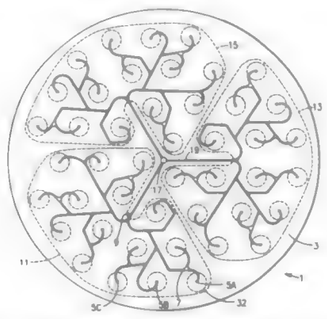
5,359,935

DETONATOR DEVICE AND METHOD FOR MAKING SAME

John D. Willett, Princeton, Mass., assignor to Applied Energetic Systems, Inc., Princeton, Mass.

Filed Jan. 13, 1993, Ser. No. 16,591
Int. Cl.[5] F42B *1/02, 3/00*
U.S. Cl. 102—307 **21 Claims**

1. A device for generating a substantially planar shockwave in a main explosive charge, and comprising, a substrate having two surfaces, one of said two surfaces having an initiation point, three identically configured clusters of 15 through-holes each, said clusters being symmetrically disposed in said substrate about said initiation point, a plurality of grooves of substantially equal length connecting said through-holes to said initiation point, and explosive material contained within said initiation point, through-holes, and said grooves.

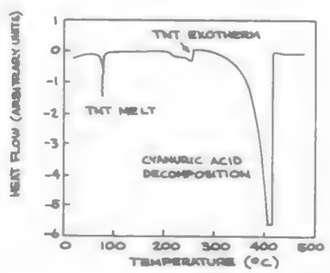


5,359,936

NON-DETONABLE EXPLOSIVE SIMULATORS

Randall L. Simpson, and César O. Pruneda, both of Livermore, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Mar. 8, 1993, Ser. No. 27,366
Int. Cl.[5] F42B *4/18*
U.S. Cl. 102—355 **10 Claims**



1. An explosive simulant comprising:

a quantity of an explosive material;

a quantity of a non-explosive material;

said materials being mixed in proportions such that the mixture produces at least scent and elemental equivalents to said explosive material, but cannot chemically react to produce detonation or explosion thereof.

5,359,937

REDUCED ENERGY CARTRIDGE

William A. Dittrich, Denville, N.J., assignor to SNC Industrial Technologies Inc./Les Technologies Industrielles SNC Inc., Quebec, Canada

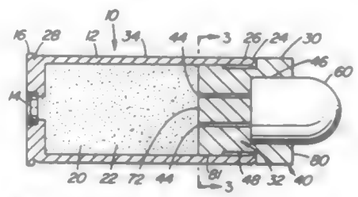
PCT No. PCT/CA91/00090, § 371 Date Jan. 21, 1992, § 102(e) Date Jan. 21, 1992, PCT Pub. No. WO91/14916, PCT Pub. Date Oct. 3, 1991
Continuation-in-part of Ser. No. 497,027, Mar. 22, 1990, abandoned. This PCT application Mar. 22, 1991, Ser. No. 773,591
Int. Cl.[5] F42B *5/02*
U.S. Cl. 102—430 **13 Claims**

1. A cartridge **10** for insertion into a firearm having a barrel with an inner bore and a firearm chamber **102**, the firearm chamber **102** having an annular step **100** at its forward end, the inner diameter of such step bounding the inner bore of the barrel of the firearm, comprising

(1) a cartridge case having a base end **16** and front end **26** and an inner diameter at said front end **26**;

(2) a source **14** for propellant gas within the cartridge **10**;

(3) a piston **30** having a substantially closed rearward end, wherein said rearward end is sealingly positioned within said cartridge case **12** at a location spaced from the base end **16** of the cartridge case **12** and defining a closed cavity **22** within the cartridge case **12**, said cavity **22** containing the source for propellant gas, the piston **30** having a front piston end **40** bounded by an outer, annular shoulder **76** defining the forwardmost portion of the piston **30**, said front piston end **40** extending forward of the front end **26** of the case **12**, said annular shoulder **76** having a diameter that is larger than the inner diameter of the case **12** at its front end **26** and larger than the inner diameter of the step **100** at the forward end of the firearm chamber **102**; and



(4) gas passage means, extending from said closed cavity **22** through said piston **30**, to permit gas generated within the cavity **22** subsequent to firing of the cartridge **10** to pass outwardly from the front piston end **40** of the piston,

at least a portion of said cartridge case **12** being slidable on said piston **30**, and means for limiting sliding displacement in the rearward direction of the case **12** with respect to said piston **30** upon firing of the cartridge **10**.

5,359,938

ULTRA LIGHT WEIGHT SABOT

Ralph F. Campoli, Mine Hill, N.J., and Edwin G. Steiner, York, Pa., assignors to Olin Corporation, St. Petersburg, Fla.

Filed Oct. 24, 1990, Ser. No. 602,831
Int. Cl.[5] F42B *14/06*
U.S. Cl. 102—521 **50 Claims**



1. A sabot assembly for a projectile having an axis, an outer surface, an a radius, said sabot assembly comprising:

a plurality of sabot segments adjoining one another to define an annulus extending in an axial direction along the surface of the projectile having a radial width which combined with the radius of the projectile is less than a radius of a gun bore through which the projectile and sabot assembly is fired, each of said sabot segments including opposite front and rear ramped portions and a bulkhead portion centrally located intermediate said front and rear ramped portions;

said bulkhead portion having an arcuate outer surface with a selected arc length for slidably abutting an inner surface of the gun bore, a concave rear face, and a concave front face substantially about the center of gravity of said segment facing said front ramped portion;

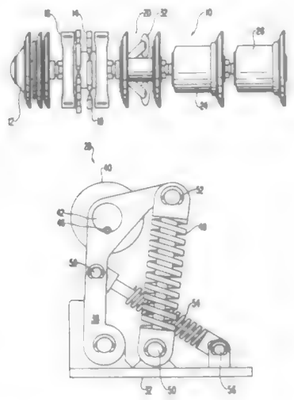
said segments together with said projectile defining therebetween a single annular cavity around said projectile beneath said bulkhead portion and between said front and rear ramped portions to minimize the mass of said bulkhead portion while maintaining the strength of said bulkhead portion.

5,359,939

SUPPORT DEVICE FOR IN-LINE PIPE INSPECTION TOOL

Robert L. Watt, Friendswood, Tex., assignor to Tuboscope Vetco International, Inc., Houston, Tex.

Filed Jun. 17, 1993, Ser. No. 77,435
Int. Cl.[5] B61B *13/00*
U.S. Cl. 104—138.2 **8 Claims**



1. A variable force support device for supporting an in-line pipe inspection tool during longitudinal travel of the tool through a pipe being inspected, said device comprising, rotating means for rotational contact with an interior surface of said pipe during travel of said tool through the pipe, a first spring means for applying force to said rotating means to normally urge said rotating means against said interior surface and adapted for compression in response to a compressive force transmitted thereto from said rotating means resulting from contact of said rotating means with said interior surface, a second spring for applying a supplemental biasing force to said rotating means with said supplemental biasing force increasing in relation to decreases in the force applied by said first spring means to minimize force changes between said rotating means and said interior surface.

5,359,940

METHOD AND DEVICE FOR THE DECOUPLING/COUPLING OF TRANSPORT ELEMENTS TO A DRIVE MECHANISM

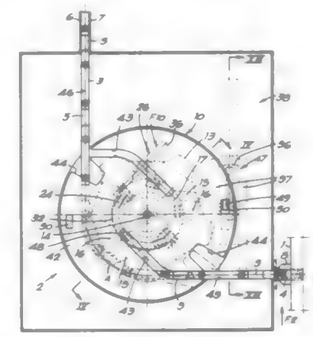
Carlos-Gustaaf-Arthur Van Lierde, Zomerstraat, , assignor to Elektriciteit Voor Goederenbehandeling Marine En Industrie in het verkort Egemin, naamloze vennootschap, Schoten,

Filed Jun. 17, 1993, Ser. No. 77,649
Claims priority, application Belgium, Jun. 18, 1992, 09200570
Int. Cl.[5] B61B *10/00*
U.S. Cl. 104—172.3 **14 Claims**

1. A device for coupling and decoupling transport elements with a continuously moving drive element, said transport elements having coupling elements cooperating with said moving drive element, comprising:

means for coupling and decoupling being configured to gradually reduce the speed of one of said coupling elements prior to a decoupling and to gradually increase the speed of one of said coupling elements after a coupling, said means for coupling and decoupling including:

(A) a rotating guiding element provided with a substantially circular recess, and a plurality of coupling element guides



extending outward from said circular recess, and each said guide positioned oblique to a radial direction of the guiding element; and

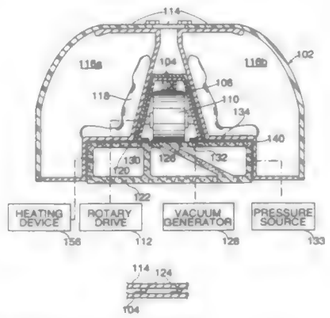
(B) a semi-circular guide positioned under the circular recess for selectively controlling one of said coupling elements.

5,359,941

TRANSPORTATION SYSTEM, VEHICLE AND METHOD

John Z. DeLorean, Bedminster, N.J., assignor to Genesis III, LLC, Bedminster, N.J.

Filed Apr. 14, 1993, Ser. No. 47,635
Int. Cl.[5] B61C *11/00*
U.S. Cl. 105—73 **17 Claims**



1. A transport assembly comprising:

a track;

a frame mounted to said track for motion therealong, said frame including housing means for defining a traction chamber in communication with said track;

at least one traction wheel rotatably mounted to said frame and in friction contact with said track, said traction wheel being at least partially disposed in said traction chamber:

car means for defining a passenger compartment;

shock absorbing means for connecting said car means to said frame so that said car means is substantially isolated from irregularities in said track during motion of said frame and said car means along said track;

suction means operatively connected to said housing means for generating a vacuum in said traction chamber during motion of said frame and said car means along said track; and

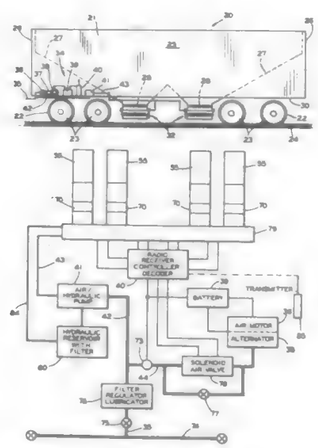
drive means mounted to said frame and operatively connected to said traction wheel for drivingly rotating said traction wheel to propel said frame and said car means along said track.

5,359,942

REMOTE CONTROL POSITIONING SYSTEM FOR CONTROLLING HOPPER DOORS

Robert J. Ward, Findlay, Ohio, assignor to DIFCO, Inc., Findlay, Ohio

Filed Aug. 27, 1993, Ser. No. 113,216
Int. Cl.[5] B65D *47/00*
U.S. Cl. 105—240 **18 Claims**



1. A radio frequency controlled positioning system utilizing a pneumatic power supply to position doors on a hopper car, said system comprising:

a) a pneumatic power supply for supplying power to the system;

b) pressure fluid power means for converting pneumatic power to pressure fluid power, connected to said pneumatic power supply;

c) electric power means for converting pneumatic power to electric power, connected to said pneumatic power supply;

d) a pressure fluid drive system connected to said pressure fluid power means, said pressure fluid drive system including one or more motor means, each motor means being coupled to a door for selectively effecting the motion of the door between an open and a closed position, whereby the actuation of the motor means determines the position of the door;

e) a controller connected to said electric power means and in electrical communication with said pressure fluid drive system, said controller including a radio frequency receiver for receiving remote signals, and a processor for processing the remote signals and transmitting control signals to said pressure fluid drive system to control the movement of the motor means; and

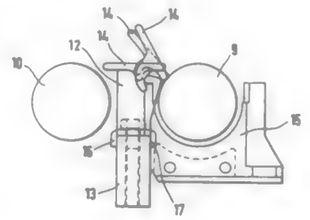
f) a remote operator station, said operator station including a radio frequency transmitter and control switches for transmitting remote signals from said operator station to the receiver in said controller, whereby the positioning of the doors is controlled by said remote operator station.

5,359,943

APRON TABLE ARRANGEMENT FOR A DRAFTING UNIT

Hans Stahlecker, Süssen, and Norbert Barauke, Donzdorf, both of Germany, assignors to Spindelfabrik Suessen, Schurr, Stahlecker & Grill GmbH, Suessen, Germany

Filed Apr. 20, 1992, Ser. No. 871,096
Claims priority, application Germany, Jul. 11, 1991, 4122881
Int. Cl.[5] A47B *13/08;* **B65D** *85/66*
U.S. Cl. 108—90 **18 Claims**



1. A drafting unit for a textile machine, comprising:

a first bottom roller mounted to the drafting unit;

a second bottom roller mounted to the drafting unit and disposed downstream of the first bottom roller with respect to sliver being drafted during operation of the drafting unit;

a guiding table disposed between the first and second bottom rollers, said table including a table top and a downwardly extending hook shaped projection;

a bottom apron wound around the first bottom roller and guided over the table top; and

a table holder mounted to the drafting unit and having a guide slot which guidably engages the hook shaped projection to support the table;

wherein the guide slot and hook shaped projection have respective curved guide surfaces engaged with one another to control relative movement of the table and holder during operations with lap formation at the second bottom roller pushing the downstream end of the table upwardly, said curved guide surfaces engaging one another to guidable control pivotal movement of the table during drafting operations from a first bottom position of the downstream end of the table to a second raised position of the downstream end of the table, said curved guide surface being configured to prevent separation of the table and table holder during pivotal movement between said first and second positions while permitting separation of the table and holder when the table is pivoted upwardly beyond the second position.

5,359,944

FURNITURE CONSTRUCTION AND METHOD OF MANUFACTURING

Linn A. Steinbeck, Auburn, Wash., assignor to Hon Industries Inc., Muscatine, Iowa

Filed May 29, 1992, Ser. No. 891,272
Int. Cl.[5] A47B *3/00, 13/08*
U.S. Cl. 403—294 **19 Claims**

1. A wood office furniture panel construction comprising:

a first wood panel member forming a top panel member and having uniform thickness, said first wood panel member having an outer exposed surface, an opposite surface parallel to said outer surface, and edge surfaces;

a plurality of additional wood panel members disposed in a substantially coplanar array with one another, said additional wood panel members being of substantially uniform thickness and each having an outer surface and an opposite surface parallel to said outer surface thereof, and edge surfaces;

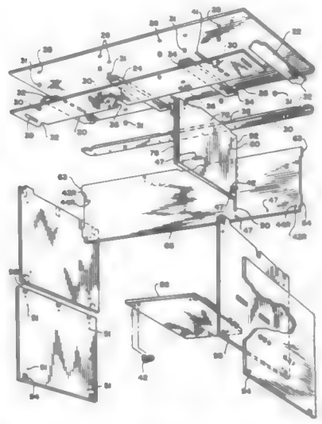
said additional wood panel members being affixed to said

first wood panel member with said opposite surfaces of said additional wood panel members in contact with said opposite surface of said first wood panel member and providing a planar interface therewith;

a plurality of spaced recesses extending only partially into the opposite surface of the first wood panel member;

a like plurality of corresponding spaced recesses extending only partially into said plurality of additional wood panel members; and

shear support members traversing said interface and extending into said first wood panel member spaced recesses and only partially into the corresponding spaced recesses in



said additional panel members so as to precisely locate said additional wood panel members relative to said top panel member with a substantial portion of said edge surfaces of said additional wood panel members being coextensive with a substantial portion of said edge surfaces of said first wood panel member while simultaneously providing shear support between said first and said additional wood panel members, thereby forming a unified panel construction having a unified edge thickness equal to the combined thickness of said first and additional wood panel members along said substantial portions of said edge surfaces.

5,359,945

BALANCED PRESSURE SOLID FUEL HEATING UNIT

Carrol E. Buckner, Fletcher, and Carrol D. Buckner, Hendersonville, both of N.C., assignors to Dovetech, Inc., Fletcher, N.C.

Continuation of Ser. No. 15,029, Feb. 8, 1993, abandoned, which is a continuation of Ser. No. 628,158, Dec. 17, 1990, abandoned. This application Mar. 25, 1994, Ser. No. 218,033

Int. Cl.[5] F23B *7/00*

U.S. Cl. 110—233 **45 Claims**

1. A fuel pellet burning heating unit comprising:

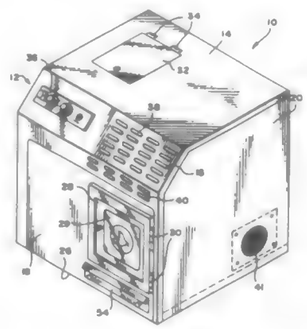
(a) means for containing a combustion zone;

(b) means for providing fuel pellets to be burned in said combustion zone;

(c) means for holding fuel to be burned in said combustion zone;

(d) means for providing air to said combustion zone simultaneously from below said combustion zone and from above said combustion zone;

(e) means for removing combustion gases from said combustion zone containing means; and



(f) blower means for directing air past said combustion gas removing means and into a space to be heated.

5,359,946

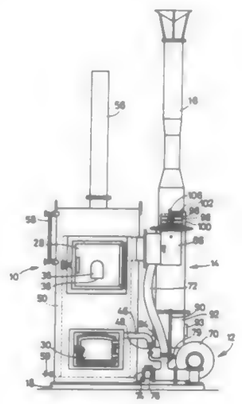
COMBUSTION GAS PURIFYING METHOD, ACID GAS REMOVER INCLUDING CALCIUM COMPOUND TO REMOVE ACID GASES, AND INCINERATOR EQUIPPED WITH SUCH ACID GAS REMOVER

Keisuke Asoh, Owariasahi, and Akihiro Nagai, Aichi, both of Japan, assignors to Kabushiki Kaisha Daito, Aichi, Japan

Filed Jun. 8, 1993, Ser. No. 73,076

Int. Cl.[5] F23J *15/00*

U.S. Cl. 110—345 **18 Claims**



1. A method of purifying combustion gases by removing acid gases therefrom, wherein a stream of combustion gases is caused to flow in contact with a surface of an acid gas remover formed from a mixture including a calcium compound for neutralizing said acid gases, and a binder for holding together particles of said calcium compound.

5,359,947

EQUIPMENT AND PROCESS FOR WASTE PYROLYSIS AND OFF GAS OXIDATIVE TREATMENT

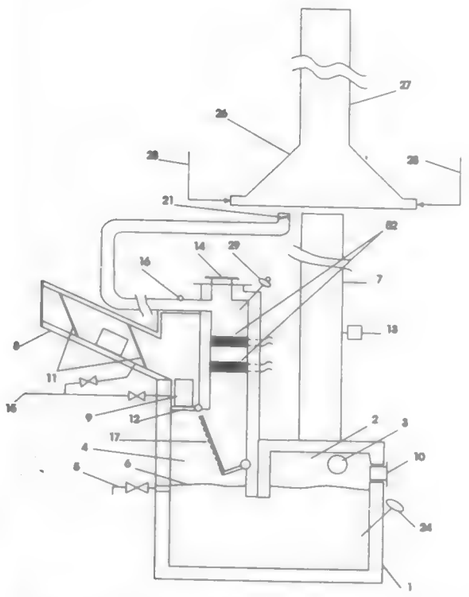
Anthony S. Wagner, 13709 Highway 71, West, Bee Caves, Tex. 78738-3112

Continuation-in-part of Ser. No. 982,450, Nov. 27, 1992, Pat. No. 5,271,341, which is a continuation-in-part of Ser. No. 699,756, May 14, 1991, Pat. No. 5,171,546, which is a continuation-in-part of Ser. No. 524,278, May 16, 1990, Pat. No. 5,000,101. This application Aug. 9, 1993, Ser. No. 103,122

The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.

Int. Cl.[5] F23G *7/04*

U.S. Cl. 110—346 **10 Claims**



1. Equipment and process for waste pyrolysis and off gas oxidative treatment comprising:

a) a refractory lined chamber;

b) a reactive metal alloy in said refractory lined chamber;

c) a heating means to heat said reactive metal alloy in said refractory lined chamber to a minimum of about 800° C. to form a molten alloy mass;

d) a feeding chute means to feed said waste to a surface of said molten alloy mass;

e) a plunger means in said refractory lined chamber to submerse said waste in said molten alloy mass;

f) a back flow prevention means in an exit line from said refractory lined chamber;

g) an oxidation chamber connected to said exit line upstream from said back flow prevention means;

h) a burner means and inlet air line in a beginning end of said oxidation chamber, said burner means supplying continuous ignition to burn oxidizable components in said off gas as said off gas is mixed with said inlet air in said oxidation chamber and;

i) an aqueous scrubbing means connected with an exit line from said oxidation chamber to scrub off gas from said oxidation chamber before said off-gas is vented to the atmosphere.

5,359,948

SEED PLANTING DEVICE

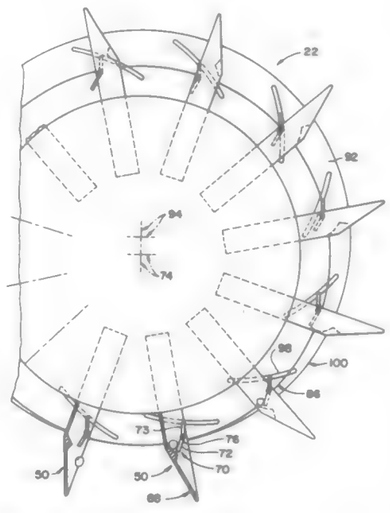
Andrew E. Makkink, Doornbult, Sanniesbof, Delareyville District, Transvaal Province, South Africa

Filed Apr. 27, 1993, Ser. No. 54,151

Claims priority, application South Africa, Apr. 28, 1992, 92/3079

Int. Cl.[5] A01C *7/12*

U.S. Cl. 111—177 **17 Claims**



1. A seed planting device comprising

a frame;

a planting wheel mounted on the frame for rotation about a planting wheel axis for rolling over an agricultural land in use;

a predetermined plurality of hollow tines mounted at predetermined angular spacings on the planting wheel to extend outwardly for cyclic penetration of a surface of the agricultural land in use;

a seed cell in each hollow tine and having an inlet for receiving a seed and an outlet towards an outer end of the respective tine for releasing the seed in use;

seed dispensing means mounted on the frame and adapted to dispense seeds individually to the respective seed cells;

a release member in each seed cell, which release member is movable between a retain condition in which it retains a seed in the seed cell and a release condition in which it releases the seed from the seed cell in use; and

control means for controlling the respective release members respectively to retain and to release the respective seeds in response to angular positioning of the respective tines, the control means including

a control rotor mounted on the frame about a control rotor axis which is parallel to the planting wheel axis and transversely spaced from the planting wheel axis a predetermined amount in a predetermined angular direction,

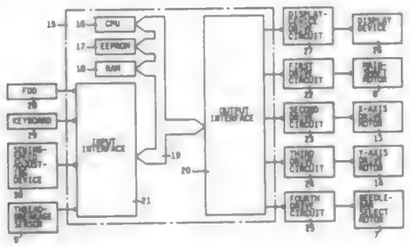
link means linking each release member to a respective predetermined position on the control rotor such that the release member is in its retain condition while the respective tine moves through angular positions approaching but not yet at a penetrating angular position in which the tine penetrates the surface of the agricultural land in use, and such that the release member is in its release condition when the respective tine is at its soil penetrating angular position.

5,359,949

SEWING SYSTEM HAVING FUNCTION TO STORE OPERATION-STATE DATA UPON DETECTION OF ABNORMALITY

Fumiaki Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 12, 1993, Ser. No. 59,952
Claims priority, application Japan, May 18, 1992, 4-124549; Nov. 10, 1992, 4-299912
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **36 Claims**



34. A sewing system comprising:

a sewing device which includes (a) a sewing needle, (b) a first driver to reciprocate the needle, (c) a second driver to move the needle and a work sheet relative to each other in a direction crossing an axis line of the needle, and (d) a synchronizer to synchronize the reciprocation of the needle and the relative movement of the needle and work sheet, with each other, so as to form a series of stitches on the work sheet;

a detector connected to the sewing device to detect an abnormality of the sewing device;

a memory connected to the sewing device and the detector to store operation-state data indicative of an operation state of the sewing device upon detection of said abnormality; and

utilizing means for utilizing the stored operation-state data for control of the sewing system,

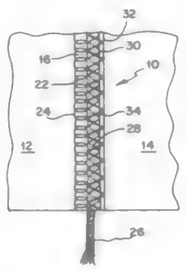
wherein the memory stores, as said operation-state data, abnormality-frequency data indicative of a frequency of occurrence of said abnormality per unit operation amount of the sewing device.

5,359,950

TEAR-RESISTANT SEAMS INCLUDING MULTIPLE AND OVERLAPPING STITCHES FOR CLOTHING

Patricia Schellas, 1015 Hastings Ave., Baldwin, N.Y. 11510

Filed Oct. 26, 1993, Ser. No. 143,300
Int. Cl.[5] D05B *3/02, 1/18*; A41D *27/24*
U.S. Cl. 112—417 **11 Claims**



1. A stitching pattern for creating a tear-resistant seam to join together two pieces of fabric, comprising

a serging stitch for attaching the two pieces of fabric to create a seam;

a first zigzag stitch for sewing a cord into the seam created by the serging stitch;

a first line of straight stitching adjacent to said first zigzag stitch;

a second line of straight stitching adjacent to said first line of straight stitching; and

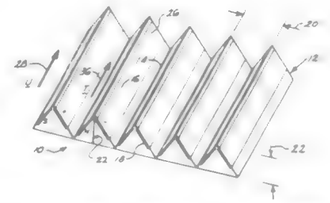
a second zigzag stitch which overlaps said first zigzag stitch and said first line of straight stitching.

5,359,951

ACTIVE TURBULENCE CONTROL USING MICROELECTRODES, PERMANENT MAGNETS IN MICROGROOVES

James C. S. Meng, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1993, Ser. No. 16,326
Int. Cl.[5] B63B *1/34*
U.S. Cl. 114—67 R **5 Claims**



1. An electromagnetic turbulence controller that controls turbulence generated by a vessel as it experiences relative motion with an electrically conducting medium along a direction, said controller comprising:

at least one pair of spaced-apart anode and cathode electrodes that are elongated at least along said direction;

at least one pair of north and south magnetic poles elongated at least along said direction which are in alternating relation with said at least one pair of spaced-apart anode and cathode electrodes; and

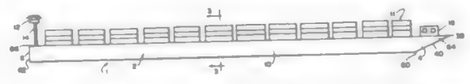
said at least one pair of anode and cathode electrodes are formed in a predetermined manner along constitutive confronting vanes of v-shaped ridges that are elongated along said direction.

5,359,952

WATERBORNE CONTAINER CARRIER

Victor J. Klundt, and Dona L. Williams, both of Rock Island, Ill., assignors to Barto International, Inc., Rock Island, Ill.

Filed Oct. 26, 1992, Ser. No. 966,259
Int. Cl.[5] B63B *25/00*
U.S. Cl. 114—72 **7 Claims**



1. Inland waterway self-propelled water borne container carrier vessel comprising a hull having a flat bottom U-shaped cross section and having an elongated mid-section, and having a short bow section and a shorter stern section and a relatively long intermediate container carrier section, a U-shaped channel section extending lengthwise of the vessel between the stern section and bow section and through the container carrying section, wherein the vessel is rectangular in planform and

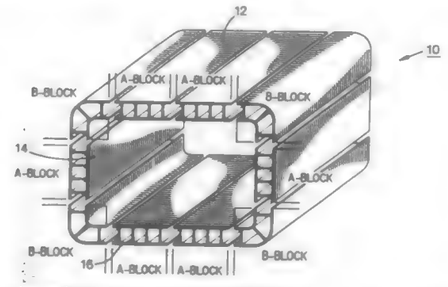
is of a size which substantially fills a standard 600′×110′ river lock.

5,359,953

SIMPLIFIED MIDBODY SECTION FOR LIQUID CARGO VESSELS AND METHOD AND APPARATUS FOR CONSTRUCTION

Ole Skaarup, Greenwich, and James H. Hara, Ridgefield, both of Conn., assignors to US Shipbuilding Corporation, Inc., Greenwich, Conn.

Filed Nov. 10, 1992, Ser. No. 974,159
Int. Cl.[5] B63B *25/08*
U.S. Cl. 114—74 A **6 Claims**



1. A method of fabricating a sandwich section for the construction of a midbody section for a liquid cargo vessel of the double hull type, said method comprising:

(a) placing a first hull panel on a first horizontal support;

(b) placing a plurality of first longitudinal plates vertically on said first hull panel and welding edges of said first longitudinal plates thereto;

(c) placing a second hull panel on a second horizontal support;

(d) placing a plurality of second longitudinal plates vertically on said second hull panel and welding edges of said second longitudinal plates thereto;

(e) rotating said first hull panel 180 degrees and placing said first hull panel over said second hull panel with edges of said first longitudinal plates in contact with said second hull panel and edges of said second longitudinal plates in contact with said first hull panel;

(f) welding edges of said first longitudinal plates to said second hull panel; and

(g) welding edges of said second longitudinal plates to said first hull panel.

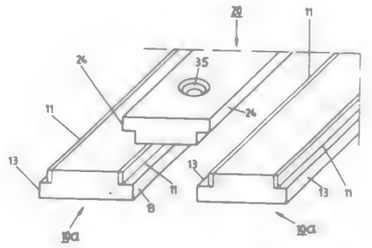
5,359,954

DECK ELEMENT SYSTEM AND METHOD FOR INSTALLING THE SYSTEM

Tapio Kordelin, Turku, Finland, assignor to Schauman Wood Oy, Finland

Continuation of Ser. No. 896,590, Jun. 10, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 155,248
Claims priority, application Finland, Jun. 10, 1991, 912773
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—85 **11 Claims**

1. A layered deck system comprising in combination, a plurality of deck elements and a plurality of installation planks for installation on a deck base, each of said deck elements comprising a base layer and an upper layer, said base layer comprising a base plate defining substantially the planar dimensions of a deck element and said upper layer comprising at least two deck element planks, each of said planks being fastened on the base layer, each of said deck elements further comprising a pair of longitudinal edges, and a pair of end edges substantially perpendicular to said longitudinal edges, said pair of longitudinal edges adapted for receiving an installation plank, and said pair of end edges provided with means for receiving an adjacent deck element to accomplish direct joint connection between the two deck elements, said pair of longitudinal edges having protruding lower ledge portions configured to face in a spaced-apart position a protruding lower ledge portion of another deck element, said installation planks having longitudinal edges with protruding upper ledge portions resting on and substantially covering the protruding lower ledge portions at the longitudinal edges of said spaced-apart deck elements, each



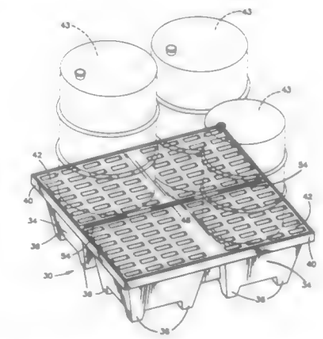
of said installation planks having substantially the same visible surface dimensions and appearances as each of the deck element planks, at least said installation planks being provided with means for securing said installation planks against the deck base and thus securing said deck system on the deck base, the deck element planks and the installation planks having upper deck surfaces which form the visible surface of the deck system.

5,359,955

SPILL PALLET WITH IMPROVED LOAD BEARING CAPABILITY

Alexander Grebenyuk, Williamsfield, Ohio, assignor to Enpac Corporation, Chardon, Ohio

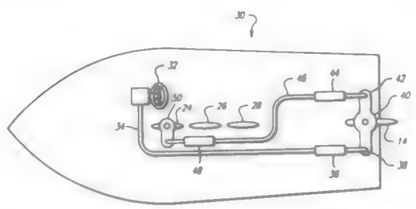
Filed Jul. 16, 1993, Ser. No. 93,089
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.1 **9 Claims**



1. A spill pallet for supporting a plurality of fluid containing vessels, said pallet having a bottom wall and a series of vertically-oriented side walls, said bottom wall cooperating with said side walls to define an open-topped box structure, said side walls providing a peripheral rim and said bottom wall having a central support member extending upwardly therefrom, a grate mounted on said central support member and having edges supported by said peripheral rim, a series of supporting rails also extending upwardly from said bottom wall and inwardly from said side walls toward the central support member to further support said grate, the rails interconnecting the side and bottom walls and laterally stiffening the side walls, a series of fluid-receiving chambers being bounded by the rails, central support member, and side walls, terminal ends of the rails being spaced from the central support member to define

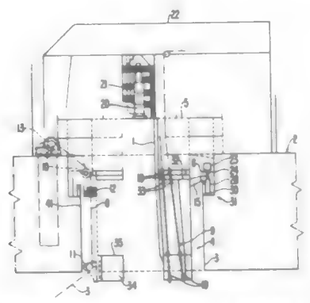
fluid communication channels which fluidly interconnect adjacent chambers.

5,359,956
STEERING SYSTEM FOR HIGH PERFORMANCE POWERBOATS
Richard D. Lee, 934 Tyner, Incline Village, Nev. 89451
Continuation of Ser. No. 858,794, Mar. 27, 1992, abandoned.
This application Jan. 28, 1994, Ser. No. 188,655
Int. Cl.[5] B63H *25/38*
U.S. Cl. 114—163 9 Claims



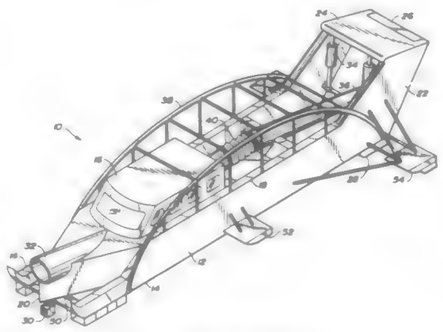
1. A steering system for a high performance planing powerboat, comprising:
- a main rudder extending from the hull of the powerboat substantially near the stern, said rudder being pivotable about an axis of rotation;
- actuating means for rotating said main rudder about its axis of rotation to effect steering of the boat;
- a secondary rudder disposed on the centerline of the hull of said boat forward of said main rudder and at a central portion on said boat hull, said secondary rudder being pivotable about an axis of rotation;
- actuating means for effecting rotation of said secondary rudder; and
- at least one stabilizing fin disposed on the centerline of the hull forward of said main rudder and aft of said secondary rudder and spaced closely to said secondary rudder for cooperating with said secondary rudder to reduce lateral slippage of the powerboat during a turn caused by the deflection of said rudders said secondary rudder having a fin-like shape approximating the shape of said stabilizing fin.

5,359,957
TURRET FOR DRILLING OR PRODUCTION SHIP
Sigmund Askestad, Saetre, Norway, assignor to Norsk Hydro a.s., Oslo, Norway
PCT No. PCT/NO92/00165, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO93/07049, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 30, 1992, Ser. No. 70,348
Claims priority, application Norway, Sep. 30, 1991, 913825
Int. Cl.[5] B63B *21/52*
U.S. Cl. 114—230 16 Claims



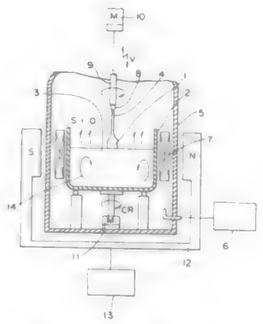
1. In a turret installed in a well in the hull of a vessel such that said turret is rotatable relative thereto, said turret including plural bearing arms supporting axial and radial bearing elements acting on corresponding respective axial and radial bearing track elements on said vessel, the improvement comprising:
- said bearing arms being connected to and supported on a substructure of said turret such that each said bearing arm may be flexed individually and independently of adjacent said bearing arms, thereby enabling said bearing arms to individually absorb unevenness and deformations in said bearing elements;
- said axial bearing track element being mounted on an elevated area of a pedestal structure mounted on said hull of said vessel, said pedestal structure being rigid axially of said turret; and
- said radial bearing track element comprising a cylindrical band-shaped member.

5,359,958
HIGH-SPEED WATERCRAFT
Johnithan R. Guild, P.O. Box 504, Sonoma, Calif. 95476
Filed May 6, 1994, Ser. No. 239,246
Int. Cl.[5] B63G *1/16*
U.S. Cl. 114—272 3 Claims



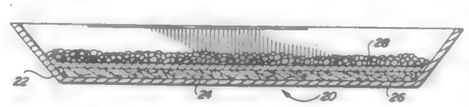
1. A high-speed watercraft comprising:
- a catamaran hull having a bow, stern, and gunnel, said hull mounted on a pair of hull pontoon ski members;
- at least one water chute member attached to the underside of each of said hull pontoon ski members proximate the stern;
- a box rudder/water chute member attached to said hull proximate the bow;
- a belly plate member attached to the underside of the hull proximate the stern and extending between said hull pontoon ski members;
- a tail member including a tail flap;
- an arch frame for structural reinforcement of said hull, said arch frame extending from proximate the bow to proximate the stern; and
- gas turbine propulsion means including an exhaust nozzle directed from said stern, said exhaust nozzle conditioned for vertical movement relative to said stern.

5,359,959
METHOD FOR PULLING UP SEMI-CONDUCTOR SINGLE CRYSTAL
Izumi Fusegawa, and Hirotoshi Yamagishi, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 703,750, May 21, 1991, abandoned.
This application Sep. 30, 1992, Ser. No. 953,918
Claims priority, application Japan, May 25, 1990, 2-136365
The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
Int. Cl.[5] C30B *15/22*
U.S. Cl. 117—13 11 Claims



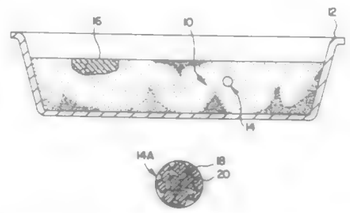
1. A method of pulling a single crystal rod from a semiconductor melt retained in a quartz glass crucible under application of a magnetic field comprising:
- i) maintaining the rotational speed at a constant level selected between 0 to 3 rpm;
- ii) applying the magnetic field in a horizontal direction;
- iii) maintaining the strength of the magnetic field within a range between 500 to 5000 gauss; and
- iv) varying the strength of the magnetic field in correspondence with the length of pull-up of said crystal rod, the variation being on the basis of experimental results concerning change of the interstitial oxygen concentration along the axial direction of the crystal rod obtained in a plurality of growth conditions where at least the magnetic field strength and the rotational speed of the quartz glass crucible are kept constant through each whole process.

5,359,960
DIAGNOSTIC SYSTEM FOR USE WITH SMALL ANIMALS
Patrick Yananton, 160 Palo De Oro Dr., Islamorada, Fla. 33036
Continuation of Ser. No. 303,136, Jan. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 236,675, Mar. 26, 1988, abandoned, and a continuation-in-part of Ser. No. 224,944, Jun. 27, 1988, Pat. No. 5,025,752, which is a continuation of Ser. No. 885,932, Jul. 15, 1986, abandoned. This application Mar. 14, 1991, Ser. No. 669,674
Int. Cl.[5] A01K *45/00*
U.S. Cl. 119—165 15 Claims



1. A method of collecting urine from an animal for use in diagnostic testing, the method comprising the steps of:
- a) placing a urine collecting member in an animal accessible location, said urine collecting member including a claw proof member and a moisture impermeable member,
- b) attracting the animal to the urine collecting member utilizing a plurality of inert, non-absorbent particles, said non-absorbent particles having a sufficiently high density and hydrophobicity to resist scattering and clinging to a foot of the animal and having an average particle size of at least a sufficiently large diameter to provide sufficient interparticle spacing to permit a free flow of urine through said non-absorbent particles, and wherein said non-absorbent particles are substantially free of filler particles which fill spaces between adjacent ones of said non-absorbent particles so as to inhibit urine flow to said urine collecting member,
- c) collecting urine which flows through said non-absorbent particles on said moisture impermeable member,
- d) isolating at least a portion of the urine collected on said moisture impermeable member, and
- e) performing a diagnostic test on the isolated portion of the urine.

5,359,961
ANIMAL LITTER WITH GALACTOMANNAN GUM CLUMPING AGENT AND CARRAGEENAN GUM EXTENDER
G. Robert Goss, Quincy; Olga I. Spaldon, Crystal Lake, and Nancy L. Nolan, Mundelein, all of Ill., assignors to Oil-Dri Corporation of America, Chicago, Ill.
Filed Feb. 5, 1993, Ser. No. 14,216
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—173 3 Claims

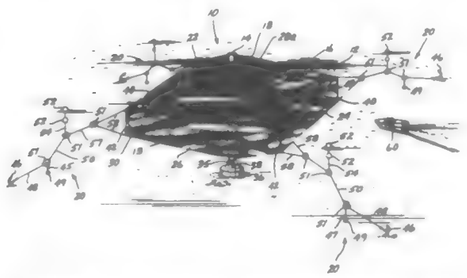


1. A particulate, free-flowing but clumpable animal litter composition which comprises discrete, non-swelling, absorbent clay particles having quar gum and carrageenan gum carried on the surface of said clay particles in an amount sufficient to form clay particle clumps when contacted with an aqueous liquid aliquot.

5,359,962
CENTER-SPAR FISH PEN
Gary F. Loverich, Bainbridge Island, Wash., assignor to Nor-'Eastern Trawl Systems, Inc., Bainbridge Island, Wash.
Continuation of Ser. No. 968,388, Oct. 29, 1992, abandoned.
This application Feb. 7, 1994, Ser. No. 192,810
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—223 24 Claims

1. A spar buoy pen for use in a marine environment comprising:
- a substantially vertically oriented center spar extending above the sea bed;
- a rigging assembly including a set of lower radial lines attached to said center spar at a first location along the length of said center spar above the sea bed, and a set of upper radial lines connected to a second location on said center spar spaced from said first location wherein, said radial lines have distal ends spaced away from said center spar;
- a net disposed around said center spar having a top section attached to said upper radial lines and a bottom section attached to said lower radial lines whereby said net top and bottom sections are spaced apart and said net bottom section is located above the sea bed;
- a plurality of anchor assemblies, each said anchor assembly

including an anchor, a mooring line having a first end attached to said anchor and a second end connected to the distal end of at least one radial line, and a tensioning assembly attached to said mooring line, said tensioning assembly maintaining said mooring line in a taut condition, wherein said anchor assemblies are positioned to urge said



radial lines away from said center spar to suspend said net top and bottom sections away from said center spar to define an enclosed pen space and to maintain said net above the sea bed; and

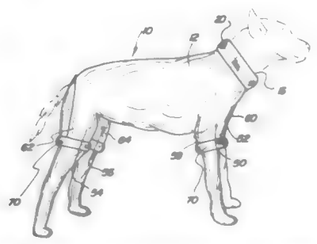
an access assembly for providing a selectively closeable opening into said pen space.

5,359,963

DOG SWEATER

Ronald C. Jesse, Jr., and Darlene L. Jesse, both of 1314 Moonlite Dr., Eagle River, Wis. 54521

Filed Dec. 6, 1993, Ser. No. 162,238
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—850 **4 Claims**



1. A new and improved dog sweater comprising:

a fabric torso portion for covering the body of a dog in inclement weather;

a first aperture adapted to be positioned about a dog's neck with the first aperature circumferentially extending through the front end of the fabric torso portion for accepting a dog's head;

a circumferential and generally rigid neck collar for protecting a dog's neck positioned about, and integral with, the first aperture in a closed loop configuration at the front portion of the fabric torso portion;

a second opening extending through the posterior end of the fabric torso portion for enabling a dog to eliminate bodily waste without soiling the fabric torso portion;

a pair of similar aperatures one each at the front and posterior lower portions of the fabric torso portion for receiving the fore and rear limbs of a dog, respectively;

a sleeve integral with and extending downwardly from each aperature at the front and posterior lower portions of the fabric torso portion for protecting the upper portions of the fore and rear limbs of a dog, respetively;

a leg collar positioned about, and integral with the bottom of each sleeve at the front and posterior lower portion of the fabric torso portion for receiving leggings; and

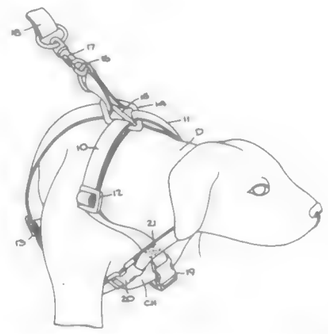
a legging detachably coupled at the bottom end of each leg collar for protecting the lower portion of the fore and rear legs of a dog from the elements.

5,359,964

LEASH-CONTROLLABLE DOG HARNESS

Joseph S. Sporn, 274 W. 86th Street, New York, N.Y. 10024

Continuation-in-part of Ser. No. 23,638, Feb. 26, 1993. This application Feb. 10, 1994, Ser. No. 194,720
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—864 **10 Claims**



1. A leash-controllable dog harness adapted to inhibit a dog from straining against a leash held by an individual, said harness comprising:

A. a shoulder junction having left and right openings which when the harness is installed on said dog, then overlies the dog's shoulder intermediate the left and right forelegs; and

B. a pair of loops each formed by a strap whose leading end is linked to the junction and whose trailing end slides through a respective opening; the loops being angled with respect to each other to interconnect at a crossover site under the chest of the dog, one strap running from the site through the right foreleg crotch, the other strap running from the site to the right foreleg crotch; and

C. means to detachably fasten together the trailing ends of the straps extending from the junction openings and to couple these ends to said leash whereby should the harnessed dog strain against the leash, both straps will then ride up the respective crotches to impose pressure on the foreleg pits and cause such discomfort as to induce the dog to relax the strain.

5,359,965

FURNACE WINDBOX/WATER WALL SEAL

Ronald J. Tenerowicz, Agawam, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1993, Ser. No. 172,622
Int. Cl.[5] F22B *37/00*
U.S. Cl. 122—6.5 **10 Claims**

1. A furnace apparatus which comprises:

a plurality of water walls each including a plurality of tubes, said water walls collectively enclosing a combustion chamber;

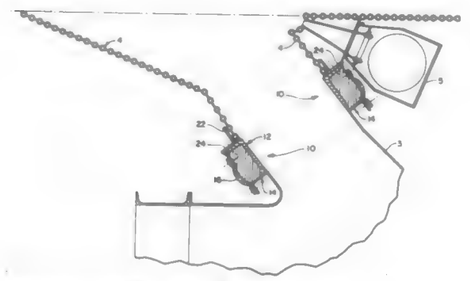
a plurality of windboxes, each of said windboxes being disposed intermediate adjacent water walls;

a seal assembly sealing the interface respective windboxes with said water walls adjacent thereto;

each of seal assemblies comprising first and second generally planar plates disposed in face to face abutting relationship;

first means for mounting said first plate to said water wall and second means for mounting said second plate to said windbox, said means for mounting said first plate and said

means for mounting said second plate defining a chamber therebetween, said apparatus including means for enclosing said chamber that includes a flexible member allowing relative movement between said first and second plates; and



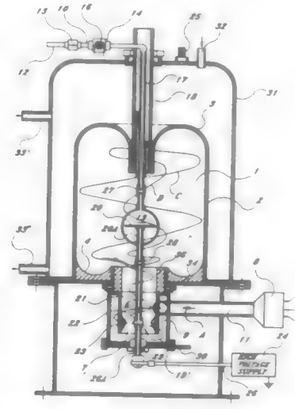
insulation disposed within said chamber to obstruct the passage any gasses passing intermediate said first and second plates into said chamber.

5,359,966

ENERGY CONVERTER USING IMPLODING PLASMA VORTEX HEATING

Donald C. Jensen, 138 Alhambra Pl., West Palm Beach, Fla. 33405

Filed Jun. 10, 1992, Ser. No. 896,610
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—14 **33 Claims**



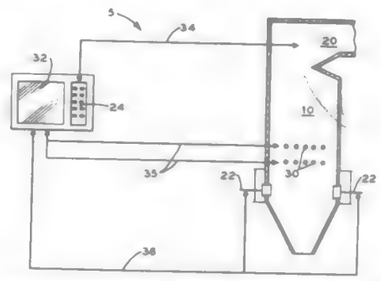
1. A heating system for heating a heat sink via a heat transfer medium, comprising a vortex chamber having opposite first and second inwardly curved end walls, a combustion chamber fluidly communicating with said vortex chamber, fuel-air supply means fluidly communicating with said combustion chamber for injecting fuel-air mixture into said combustion chamber, ignition means in said combustion chamber for igniting said fuel-air mixture, a fuel ionizing chamber disposed in said vortex chamber fluidly communicating with said fuel-air supply means for ionizing fuel entering said fuel-air supply means, and heat transfer medium containing means for holding said heat transfer medium in thermal contact with said vortex chamber.

5,359,967

COMBINED THERMAL AND FUEL NO_x CONTROL UTILIZING FURNACE CLEANLINESS AND STOICHIOMETRIC BURNER COMBUSTION

Hudson R. Carter, 104 Millspring Dr., Forest, Va. 24551, and John T. Huston, 823 Reese Ave., Lancaster, Ohio 43130

Filed Jun. 15, 1993, Ser. No. 76,030
Int. Cl.[5] F22B *37/18*
U.S. Cl. 122—379 **13 Claims**



1. A method for controlling nitrogen oxide (NO_x) levels in a gas produced by a fossil fuel fired unit, the method comprising:

establishing an optimum gas temperature range for the unit;

monitoring a gas temperature of the unit;

cleaning the heat exchanger surfaces of the unit until the monitored gas temperature is within the optimum gas temperature range;

establishing an optimum fuel combustion rate range for the unit;

monitoring a fuel combustion rate of the unit; and

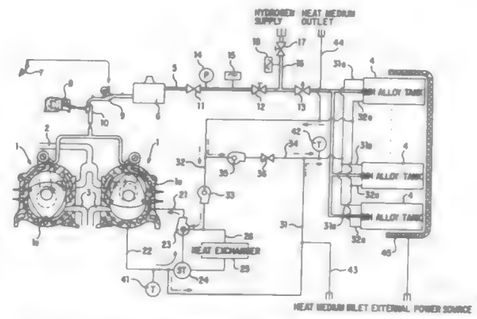
providing air to the unit until the monitored fuel combustion rate is within the optimum fuel combustion rate range.

5,359,968

HYDROGEN GAS SUPPLY SYSTEM FOR HYDROGEN ENGINE

Noriaki Shiraishi; Yoshio Mizushima; Kenji Takamuku, and Masaki Kadokura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 29, 1993, Ser. No. 96,819
Claims priority, application Japan, Jul. 29, 1992, 4-202522
Int. Cl.[5] F02B *43/08*
U.S. Cl. 123—3 **12 Claims**



1. A hydrogen gas supply system, having a tank which contains a hydride storage alloy and in which hydrogen at a specific pressure is released within a specified range of temperatures and supplied to a internal combustion hydrogen engine, said hydrogen gas supply system comprising:

a looped coolant circulation system, in which said engine and said tank are connected in parallel, for circulating a coolant through said engine and said tank; and

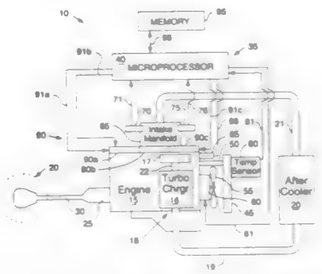
temperature regulation means, positioned in said looped coolant circulation system in parallel with both said engine and tank, for forcing said coolant returning from said tank to mix with said coolant delivered from said engine when said coolant from said engine is at above said specified range of temperatures so as to regulate the temperature of said coolant circulating said tank.

5,359,969

INTERMITTENT COOLING FAN CONTROL

David L. Dickrell, Chillicothe; Kyle W. Scholl, Dunlap, and Scott G. Sinn, Morton, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 5, 1994, Ser. No. 177,876
Int. Cl.[5] F01P *7/02*
U.S. Cl. 123—41.12 **33 Claims**



1. A control for use in connection with an internal combustion engine having a plurality of combustion cylinders, an intake manifold, and a radiator, said control comprising:
a microprocessor;
a memory device electrically connected to said microprocessor;
engine cooling means for drawing air through said radiator, said engine cooling means being electrically connected to said microprocessor;
an engine brake associated with at least one of said combustion cylinders and electrically connected to said microprocessor;
a coolant temperature sensor attached to said radiator and electrically connected to said microprocessor;
an intake manifold pressure sensor connected to said intake manifold and electrically connected to said microprocessor;
an engine speed sensor electrically connected to said microprocessor; and
wherein said microprocessor engages said engine cooling means as a function of inputs from said coolant temperature sensor, said intake manifold pressure sensor, and said engine speed sensor and as a function of an output from said microprocessor to said engine brake.

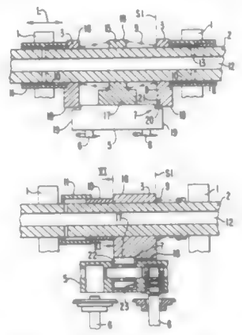
5,359,970

VALVE DRIVE FOR AN INTERNAL COMBUSTION ENGINE

Winfried Krebs, Ludwigsburg, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Nov. 1, 1993, Ser. No. 143,896
Claims priority, application Germany, Oct. 30, 1992, 4236655
Int. Cl.[5] F01L *1/34, 1/04;* **F02D** *13/02*
U.S. Cl. 123—90.17 **20 Claims**

1. A valve drive for an internal combustion engine which actuates at least one gas-exchange valve, comprising:
a camshaft mounted in bearings;
at least one axially displaceable cam provided on said camshaft;
a transfer element interposed between said at least one axially displaceable cam and said at least one gas exchange valve;
wherein said at least one axially displaceable cam is a sliding cam, said sliding cam being axially displaceable and non-



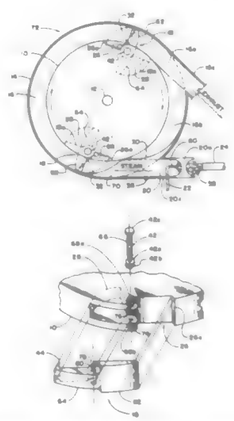
rotatable relative to said camshaft and being axially pretensioned in a first position on said camshaft;
wherein said sliding cam positively abuts a stop provided between said sliding cam and said transfer element in the first position.

5,359,971

ROTARY STEAM/INTERNAL COMBUSTION ENGINE AND ROTARY HYDRAULIC MOTOR

Espie Haven, 102 N. Vine, Ashland City, Tenn. 37015

Filed May 7, 1993, Ser. No. 57,856
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—200 **9 Claims**



1. A rotary engine, self-starting with a positive displacement and powered through 360° of each revolution, comprising:
a flattened, cylindrical flywheel;
a drive shaft, penetrating the center of and connected to said flywheel;
2 recesses in the outer, circular portion of said flywheel, diametrically opposed to one another;
2 cavities in the outer, circular portion of said flywheel, in close proximity to said recesses and diametrically opposed to one another;
2 retractable power vanes, diametrically opposed to each other and hinged about midway along the length of each vane to the outer, circular portion of said flywheel, said power vanes capable of rotating 90° to about the hinge

from a completely retracted position within said recess and said cavity of said flywheel to a position where one side of said hinged power vane is completely extended away from said flywheel while the other side is fully retracted into said cavity and anchored against the farthermost inside surface of said cavity;
2 power arms, each of which is that side of said hinged power vane that extends away from said flywheel and receives power in the extended position;
2 anchor arms, each of which is that side of said said hinged power vane that retracts into said cavity and anchors against the farthermost inner surface of said cavity;
2 compressive springs, each connectively placed between said power arm of said power vane and said recess in said outer, circular portion of said flywheel;
an engine housing, comprising a top cover plate, a bottom plate and a circular rim joining said plates at their outer perimeters, said housing enclosing said flywheel and providing a space between said outer, circular surface of said flywheel and said circular rim of said engine housing;
a power chamber, exhaust chamber and transition chamber in said space provided between said outer, circular surface of said flywheel and said circular rim of said engine housing;
a "combination backstop for the power chamber and lifter/-release for the power vanes" with a curved, cam-like surface facing said outer, circular surface of said flywheel, said cam-like surface having a high point about midway along its length and in close proximity to said outer, circular surface of said flywheel, said cam-like surface alternately lifting and releasing each said power vane upon passage thereover, said "combination backstop, lifter/-release" anchored and sealed to said top cover plate, bottom plate and said circular rim of said engine housing and being located between said transition chamber and said power chamber, said "combination backstop, lifter/-release" having a channel running through same and exiting into said power chamber;
a tubular power generating chamber, immediately preceding in a clockwise direction said channel in the "combination backstop, lifter/release", and, in combination with said channel running tangent to the point of intersection with said power chamber, one end of said tubular power generating chamber affixed and sealed to said circular rim of said engine housing and connected through an opening in said rim to said channel in said "combination backstop, lifter/release", and thence connected to the power chamber, and the other end of said tubular power generating chamber hereby designated as "the outer end";
a tubular exhaust duct on a tangent point to and immediately following said power chamber in a clockwise direction, said tangent point being approximately 245° in a clockwise direction from said high point of said "combination backstop, lifter/release", one end of said tubular exhaust duct affixed and sealed to said circular rim of said engine housing and connected through an opening in said rim with said power chamber;
means of generating power within said power generating chamber.

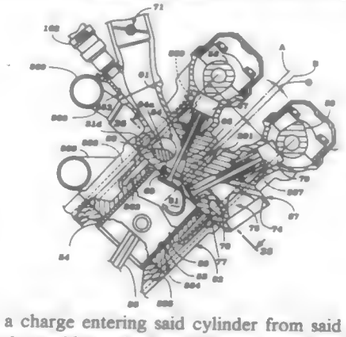
5,359,972

TUMBLE CONTROL VALVE FOR INTAKE PORT

Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kasha, Iwati, Japan

Filed Feb. 12, 1992, Ser. No. 834,604
Claims priority, application Japan, Feb. 21, 1991, 3-047436; Apr. 8, 1991, 3-101789; Apr. 15, 1991, 3-111182; Jun. 28, 1991, 3-185400; Aug. 5, 1991, 3-218015; Aug. 30, 1991, 3-247015; Aug. 30, 1991, 3-247018
Int. Cl.[5] F02B *31/00*
U.S. Cl. 123—308 **62 Claims**

1. A porting arrangement for an internal combustion engine having a cylinder, a piston reciprocating within said cylinder, a cylinder head fixed to said cylinder, inlet port means for admitting a charge into said cylinder, and means cooperating with said inlet port means for selectively generating a circular



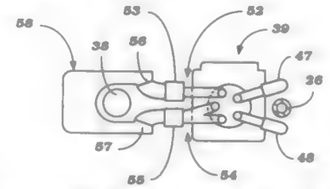
swirl to a charge entering said cylinder from said inlet port means and a tumble motion to said charge around said cylinder between said cylinder head and a head of said piston.

5,359,974

SINGLE OVERHEAD CAM MULTI-VALVE ENGINE

Kenichi Nonogawa; Makoto Shimamoto, and Wataru Fuchigami, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 734,180, Jul. 22, 1991, Pat. No. 5,291,868, which is a continuation-in-part of Ser. No. 619,907, Nov. 28, 1990, Pat. No. 5,230,317. This application Sep. 7, 1993, Ser. No. 116,709
Claims priority, application Japan, Nov. 29, 1989, 1-309466; Nov. 29, 1989, 1-309467; Nov. 29, 1989, 1-309469; Nov. 29, 1989, 1-309470
Int. Cl.[5] F02B *15/00*
U.S. Cl. 123—432 **1 Claim**



1. A cylinder head assembly for an internal combustion engine for attachment in sealing relationship to a cylinder block for closing a cylinder bore comprising a first intake passage extending from a first inlet opening in the exterior of said cylinder head to a first valve seat communicating with said cylinder bore, and a second siamese intake passage extending from a second inlet opening in the exterior of said cylinder head to second and third valve seats communicating with said cylinder bore, said second intake passage diverging from said second inlet opening and dividing at a point spaced from said second inlet opening and contiguous to said second and third valve seats into a pair of sections each communicating with a respective one of said second and third valve seats, the center of said second valve seat and the center of one of said sections of said second intake passage all lying in a first plane disposed parallel to the portion of said first intake passage terminating at said first valve seat, the center of said third valve seat and the center of the other section of said second intake passage all lying in a second plane disposed at an acute angle to said first plane so that the charge entering the cylinder bore from said second and third valve seats will flow in divergent directions.

5,359,973

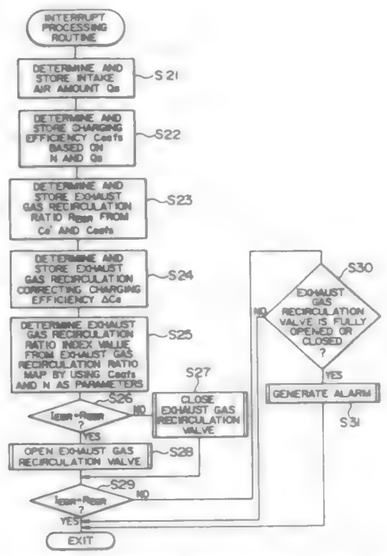
Patent Not Issued For This Number

5,359,975

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hideaki Katashiba; Ryoji Nishiyama, and Hitoshi Inoue, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1992, Ser. No. 983,319
Claims priority, application Japan, Dec. 6, 1991, 3-323105
Int. Cl.[5] F02D *41/10*; F02M *25/07*
U.S. Cl. 123—435 **3 Claims**



1. An internal combustion engine control system, comprising:

pressure sensor means for detecting a pressure within an engine cylinder of an internal combustion engine;

crank angle sensor means for detecting an engine cylinder identification number and crank angles in synchronism with rotation of said engine;

intake air flow sensor means disposed in an air intake pipe of said engine for detecting an intake air flow;

exhaust gas recirculation flow control means for controlling a flow of exhaust gas of said engine which is recirculated to said engine;

pressure difference determining means for determining difference in the pressure within said engine cylinder between predetermined crank angles during a compression stroke of said engine on the basis of output signal of said pressure sensor means;

charging efficiency determining means for arithmetically determining a first engine charging efficiency on the basis of the outputs of said crank angle sensor means and said pressure difference determining means;

charging efficiency converting means for converting the intake air flow derived from the output of said intake air flow sensor means to a second engine charging efficiency on the basis of the output of said crank angle sensor means; and

exhaust gas recirculation ratio determining means for arithmetically determining an exhaust gas recirculation ratio on the basis of said first and second engine charging efficiencies;

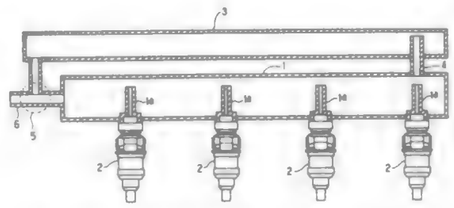
wherein said exhaust gas recirculation flow control means is controlled in accordance with the output of said exhaust gas recirculation ratio determining means.

5,359,976

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazushi Nakashima, and Shinichi Iwamoto, both of Obu, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 14, 1993, Ser. No. 135,984
Claims priority, application Japan, Oct. 15, 1992, 4-277095
Int. Cl.[5] F02M *37/04, 55/02*
U.S. Cl. 123—516 **5 Claims**



1. A fuel supply system for supplying fuel from a fuel tank to an engine through fuel injectors comprising:

a fuel piping for supplying fuel from said fuel tank;

a delivery pipe connected to said fuel piping and having a closed end at a most downstream portion of fuel flow for storing therein fuel supplied from said fuel piping therein;

a plurality of connectors provided in said delivery pipe for supplying therethrough said stored fuel to said fuel injectors, at least one of said plurality of connectors being extended upwardly to open at an upper portion in said delivery pipe so that air and vapor in said delivery pipe is injected into said engine with fuel;

a fuel pipe mounted above said delivery pipe and branched off from said fuel piping for receiving therein air and vapor in said fuel before it is supplied to said delivery pipe; and

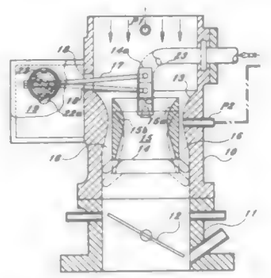
a connecting orifice connecting said delivery pipe to said fuel pipe and extended upwardly to open at an upper portion in said fuel pipe to promote an introduction of air and vapor in said fuel pipe into said delivery pipe.

5,359,977

FLUIDIC METERING SYSTEM

Harold G. Abbey, 12735 Headwater Cir., Wellington, Fla. 33414

Continuation of Ser. No. 795,928, Nov. 20, 1991, abandoned.
This application Mar. 30, 1993, Ser. No. 41,147
Int. Cl.[5] F02M *41/00*; F02D *9/08*
U.S. Cl. 123—452 **7 Claims**



1. A variable air metering system to provide proportional outputs from low rpm to high rpm engine operation, said outputs being linearly proportional to the mass volume of an air stream passing therethrough of an internal combustion engine producing outputs for controlling fuel in an optimum fuel-air ratio thereto throughout an extended operating range from idle rpm to full speed rpm, said fuel air metering system comprising:

a tubular casing into which air is admitted, connected to said internal combustion engine as an air supply;

a movable member coaxially mounted within said tubular casing and supported and spaced therein for downstream movement, said movable member having streamlined upstream surfaces and contours which in conjunction with the interior surface contours define an annular parabolic Venturi passage in the space between said movable member and said tubular casing, whereby the air stream admitted into the casing encompasses said member and flows through said passage exerting aerodynamic force on said movable member, displacing said member in the downstream direction;

means connected to said movable member within said tubular casing for providing a countervailing force against the downstream movement of said movable member;

means to amplify the downstream aerodynamic force on said movable member including a linkage means connected to said movable member and said countervailing force means providing a mechanical advantage greater than 1:1 between said movable member and said countervailing force means; and

fuel flow control valve means connected to said linkage means whereby a light force aerodynamically on said movable member by said air stream is amplified by said linkage means for providing a countervailing force connected to said fuel valve means thereby providing a proper amount of fuel relative to an optimum ratio of air-fuel mixture linearly, wherein the extent of movable member displacement is a result of the aerodynamic force provided by said air intake on the movable member and the countervailing force fuel flow control valve means, the displacement being an air metering output; and

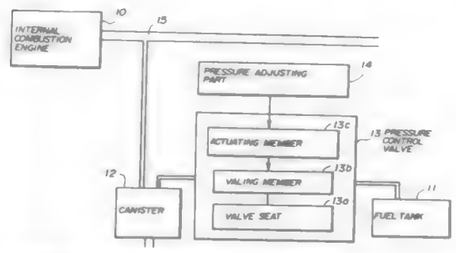
wherein said metering system includes a pressure tap P2 at the throat section of the variable venturi passage in said tubular casing and displacement of said movable member by aerodynamic force and countervailing force connected to said linkage means, said displacement yielding differential air velocity pressure between upstream intake air pressure P1 and velocity pressure tap at the throat section P2, said differential air pressure P1—P2 being an air metering output proportional to mass-volume of air stream flow, means applying force equivalent of P1—P2 to linkage means and to fuel control valve means providing fuel in optimum ratio to air from idle rpm to full speed rpm of said engines.

5,359,978

APPARATUS FOR CONTROLLING AN INTERNAL PRESSURE OF A FUEL TANK IN AN EVAPORATED FUEL PURGE SYSTEM

Toru Kidokoro; Takaaki Ito; Yoshihiko Hyodo, and Akinori Osanai, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aich, Japan

Filed Jul. 12, 1993, Ser. No. 90,395
Claims priority, application Japan, Jul. 13, 1992, 4-185174; Jul. 15, 1992, 4-188394; Aug. 28, 1992, 4-229707
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **14 Claims**



1. An apparatus for controlling an internal pressure of a fuel tank provided in an evaporated fuel purge system, said evaporated fuel purge system including the fuel tank containing fuel, a canister for storing fuel vapor supplied from the fuel tank, a purge control valve arranged in a purge passage between the canister and an intake passage of an engine, and a control part for opening the purge control valve when the engine is operating under prescribed operating conditions so that fuel vapor stored in the canister is fed into the intake passage through the purge passage, said apparatus comprising:

valve means for controlling the internal pressure of the fuel tank, said valve means including a valving member, a valve seat, and an actuating member for pressing the valving member on the valve seat with a set pressure, such that the internal pressure of the fuel tank is in equilibrium with the set pressure; and

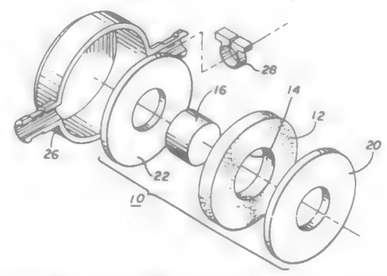
pressure adjusting means for adjusting the set pressure of the actuating member of the valve means to a first set pressure when the engine is operating, said first set pressure being higher than an atmospheric pressure, thus allowing the internal pressure of the fuel tank to be in equilibrium with said first set pressure by using a negative pressure of the intake passage, and for adjusting the set pressure to a second set pressure when the engine stops operating, said second pressure being higher than the first set pressure, thus allowing the internal pressure of the fuel tank to be increased when, the engine stops operating, to a pressure higher than the first set pressure wherein the pressure adjusting means comprises a negative pressure passage arranged between the canister and the valve means, and a vacuum transmitting valve provided at an intermediate portion of the negative pressure passage, one end of the negative pressure passage being connected to a chamber of the valve means and the other end thereof being connected to the canister, and wherein the negative pressure passage includes a bypass passage arranged so that the negative pressure passage communicates with the purge passage via the bypass passage.

5,359,979

MAGNETIC FUEL CONDITIONER

Mike Anfinson, and Ron Chavarria, both of San Clemente, Calif., assignors to Environments 2000, San Clemente, Calif.

Filed Mar. 29, 1994, Ser. No. 219,638
Int. Cl.[5] F15C *1/04*; C02F *1/48*
U.S. Cl. 123—538 **25 Claims**



1. A magnetic fuel treating assembly coupled to a fuel line of an internal combustion engine, comprising:

an annular permanent magnet that has an inner hole; and,

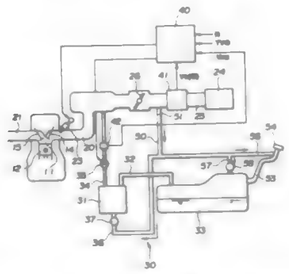
a ferromagnetic plug that extends through said inner hole of said annular permanent magnet acting to maximize the flux density through the fuel passing therethrough.

5,359,980

APPARATUS FOR CONTROLLING FUEL DELIVERY TO ENGINE ASSOCIATED WITH EVAPORATED FUEL PURGING UNIT

Naoki Tomisawa, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Oct. 15, 1993, Ser. No. 136,403
Claims priority, application Japan, Oct. 16, 1992, 4-279037
Int. Cl.[5] F02M 33/02
U.S. Cl. 123—520 4 Claims



3. A fuel delivery control apparatus for use with an internal combustion engine including a throttle valve located in an induction passage for controlling the amount of air supplied to the engine through the induction passage, the engine being associated with an evaporated fuel purging unit having a canister adapted to accumulate evaporated fuel from a fuel tank and a purge passage for connecting the canister tc the induction passage at a position downstream of the throttle valve to supply the evaporated fuel from the canister to the engine, the fuel delivery control apparatus comprising:

sensor means provided in the induction passage upstream of the throttle valve for measuring a first value of the amount of air passing through the sensor means;

means for connecting the canister and the fuel tank to the induction passage between the sensor means and the throttle valve so that the whole amount of air introduced into the canister and the fuel tank has passed the sensor means;

means for calculating a basic value of the amount of fuel metered to the engine based upon the first value;

means for measuring a second value of the amount of evaporated fuel supplied to the engine through the purge passage;

means for subtracting the second value from the calculated basic value to correct the basic value; and

means for controlling the amount of fuel metered to the engine based on the corrected basic value.

5,359,981

APPARATUS FOR PREVENTING ELECTRO-MAGNETIC WAVE NOISE FROM BEING RADIATED AND CONDUCTED FROM IGNITING DEVICE OF GASOLINE ENGINE

Kim Kwi-Ju, Kwangju, Rep. of Korea, assignor to ASIA Motors Co., Inc., Seoul, Rep. of Korea

Filed May 21, 1993, Ser. No. 65,329
Claims priority, application Rep. of Korea, Jun. 23, 1992, 1992-10899
Int. Cl.[5] F02P 11/00
U.S. Cl. 123—633 1 Claim

1. An apparatus for preventing the radiation and conduction of an electro-magnetic wave noise generated by the ignition device of a gasoline engine, comprising:

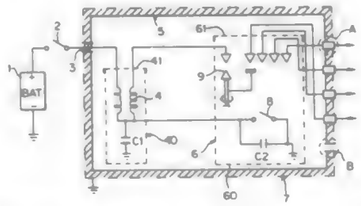
a ceramic capacitor (C1) for absorbing an electro-magnetic wave noise of a low frequency band generated by an igniting coil (4);

a contact breaker contact protecting capacitor (C2) for damping an electro-magnetic wave noise of a low frequency band generated by and conducted from a power distributor (6);

a through capacitor (3) for damping a conducted noise of a low frequency band generated from between an igniting switch (2) and said igniting coil (4);

a shielding box (7) for shielding and bypassing a conduction noise generated from said igniting coil (4);

a ferrite sealant (5) unitizingly attached to the inside of said shielding box (7) in such a manner as to seal off all the gaps and slits of said shielding box (7), and for absorbing a



conduction noise of a low frequency band to convert the noise to a thermal energy;

a ferrite absorber (12) provided as a part of an igniting cable (70) connected to said igniting device, and for damping an electro-magnetic wave noise of a wide frequency band;

a wire network (13) provided as the outer part of said igniting cable (70), and for bypassing the conduction of an electro-magnetic wave noise; and

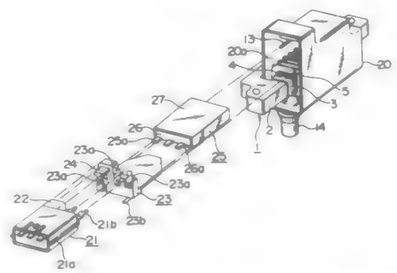
a resistance member (29) disposed inside an igniting plug (50), and for damping and converting the absorbed noise into a thermal energy to bypass it to ground.

5,359,982

IGNITOR FOR AN INTERNAL COMBUSTION ENGINE

Masaaki Taruya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1993, Ser. No. 104,585
Claims priority, application Japan, Aug. 13, 1992, 4-216180
Int. Cl.[5] F02P 11/00
U.S. Cl. 123—634 7 Claims



1. An ignitor for an internal combustion engine, comprising:

a casing;

an ignition coil disposed within said casing;

a power-transistor package disposed within said casing and electrically connected to said ignition coil for interrupting an electric current flowing through said ignition coil;

an electrical connector mechanically attached to said power-transistor package and for electrically connecting said coil and said power transistor package to an external circuit; and

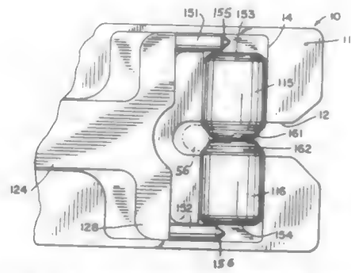
an electrically insulating resin filled within said casing for hermetically sealing and supporting therein said ignition coil and said power-transistor package.

5,359,983

BOW STRING RELEASE

Paul L. Peck, Fond du Lac, Wis., assignor to Tru-Fire Corporation, North Fond du Lac, Wis.

Continuation of Ser. No. 805,876, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 536,426, Jun. 11, 1990, Pat. No. 5,070,854. This application Feb. 25, 1993, Ser. No. 23,240
Int. Cl.[5] F41B 5/18
U.S. Cl. 124—35.2 3 Claims



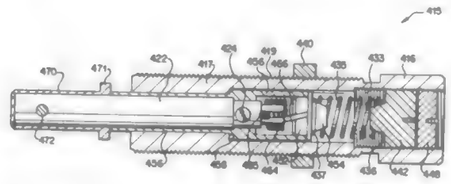
1. A bow string release comprising a pair of opposed sears each having an outer end including a smooth, rounded surface for nesting and releasing a bow string along its length and periphery, the outer ends movable in a linear motion between a closed position and an open, separated position and a trigger actuator engaging at least one of the sears and operable between a first, engaged position for maintaining the sears in the closed position for retaining a bow string and a second, actuated position permitting the sears to move to the separated position for releasing the string, the outer ends of the sears each contoured to form a string retaining surface conforming substantially to both the periphery of the string when in the closed position and the shape of the string along its length.

5,359,984

MOUNTING APPARATUS WITH RETURNABLE PIVOTING AND/OR PLUNGER ACTION

Miroslav A. Simo, 370 N. Delaplaine Rd., Riverside, Ill. 60546

Continuation-in-part of Ser. No. 710,032, May 31, 1991, Pat. No. 5,179,930, which is a continuation-in-part of Ser. No. 693,776, Apr. 26, 1991, Pat. No. 5,148,796, which is a continuation of Ser. No. 418,190, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 170,161, Mar. 18, 1988, Pat. No. 4,881,515, which is a continuation-in-part of Ser. No. 57,383, Jun. 2, 1987, Pat. No. 4,809,670, which is a continuation-in-part of Ser. No. 788,486, Oct. 17, 1985, Pat. No. 4,732,135, which is a continuation-in-part of Ser. No. 482,186, Apr. 5, 1983, Pat. No. 4,548,188. This application Dec. 8, 1992, Ser. No. 986,717
Int. Cl.[5] F41B 5/22
U.S. Cl. 124—44.5 24 Claims



19. A mounting apparatus having returnable pivotal action, the mounting apparatus comprising:

a plunger shaft having a longitudinal through bore;

a housing having a longitudinal bore, said plunger shaft slidably mounted within said longitudinal bore, a compression spring mounted within said longitudinal bore and biasing said plunger shaft into a linear rest position;

a rod rotatably mounted within said longitudinal through bore; and

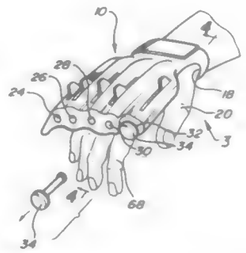
a torsion spring mounted within said longitudinal through bore, and said torsion spring having one end secured with respect to said rod.

5,359,985

PROJECTILE DISCHARGE APPARATUS

Dean Schumacher, 3245 K South Port Royale Dr., Fort Lauderdale, Fla. 33308

Filed Mar. 8, 1993, Ser. No. 27,623
Int. Cl.[5] F41B 7/00, 11/00
U.S. Cl. 124—66 16 Claims



1. A projectile apparatus comprising:

a planar portion having a first chamber and a second chamber;

a first projectile which is movably deployed within said first chamber;

a second projectile which is movably deployed within said second chamber;

a first movement means deployed within said first chamber and selectively activated to discharge said first projectile from said first chamber;

a second movement means deployed within said second chamber and selectively activated to discharge said second projectile from said second chamber;

means for positioning said planar portion on top of a hand of an operator of said projectile apparatus;

a first release mechanism means adjacent said planar portion, said first release mechanism means activating said first movement means, said first release mechanism means adapted to align with a first extended finger of said hand for actuation by said first extended finger; and

a second release mechanism means adjacent said planar portion, said second release mechanism means activating said second movement means, said second release mechanism means adapted to align with a second extended finger of said hand for actuation by said second extended finger, each said first and second release mechanism means being thereby adapted for actuation individually by separate individual fingers of said hand for successive or simultaneous discharge of said first and second projectiles, whereby the same said hand positions said planar portion and actuates said first and second release mechanism means.

5,359,986

PITCHING SYSTEM AND METHOD

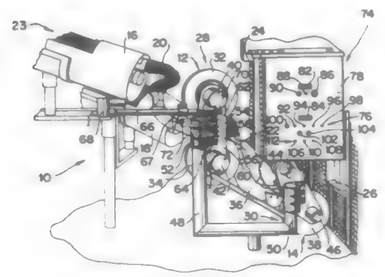
Earl K. Magrath, III; Earl K. Magrath, Jr., and W. Edward London, all of Chattanooga, Tenn., assignors to Golf Players Inc., Chattanooga, Tenn.

Filed Aug. 18, 1993, Ser. No. 107,650
Int. Cl.[5] A63B 69/40
U.S. Cl. 124—78 23 Claims

1. A pitching system comprising:

a pitching machine:

means for sequentially feeding balls to the pitching machine which throws the balls therefrom;
at least one motor for driving the pitching machine;
tilting means for tilting the pitching machine to adjust an angle from which the balls are thrown from the pitching machine, the angle being measured from a generally horizontal plane;
speed control means for adjusting a speed at which the pitching machine throws the balls; and
control means for controlling the tilting means and speed control means to coordinate throwing of the balls from the pitching machine, the control means automatically controlling the tilting means to decrease the angle in response to the speed control means increasing the speed at which the pitching machine throws the balls.



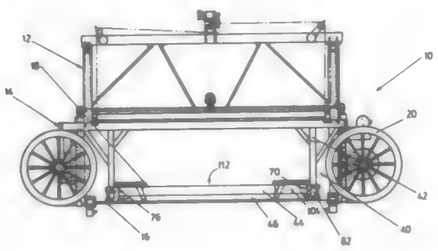
20. A method for pitching a ball comprising the following steps:
providing a pitching machine;
selecting a speed for throwing balls from the pitching machine;
sequentially feeding balls to the pitching machine;
throwing balls from the pitching machine, the balls being thrown at a selected angle;
selectively changing speed at which balls are thrown by the pitching machine; and
automatically changing the angle at which the balls are thrown in response to the changing of the speed at which balls are thrown, the angle being based on the selected speed, the angle decreases as the speed increases.

5,359,987

GUIDE BAR FOR STONE SLAB SAW

Brian D. Elliott, P.O. Box 756, 3326 Mitchell Rd., Bedford, Ind. 47421

Filed Jan. 11, 1994, Ser. No. 179,980
Int. Cl.[5] B28D *1/08, 1/12*
U.S. Cl. 125—21 **11 Claims**



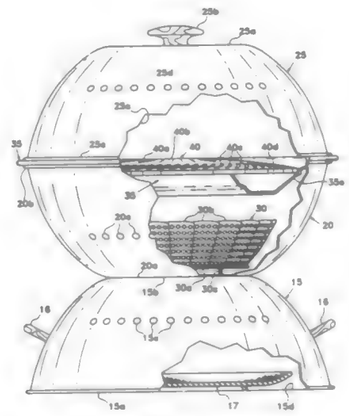
1. A stone slab saw with multi-sectional guide bars comprised of:
(a) a cutting frame,
(b) a guide bar system comprised of an upper and lower guide bar wherein the upper guide bar has a tongue extending downward to be placed within a slot in an upper edge of the lower guide bar, a wear strip which fits within a slot in a lower edge of the lower guide bar, guide bar supports for securing the guide bar to the cutting frame including a pair of guide bar tension adjustment bolts at one end of the upper and lower guide bars and a third adjustment bolt for independently adjusting the tension of one of the guide bars, and
(c) a continuous flexible saw belt supported by the guide bar system.

5,359,988

SPHERICAL COOKING UNIT

Paul W. Hait, Sun River, Oreg., assignor to Pyromid, Inc., Redmond, Oreg.

Filed Sep. 28, 1992, Ser. No. 937,558
Int. Cl.[5] F24B *3/00*
U.S. Cl. 126—25 R **11 Claims**



1. An outdoor cooking unit comprising:
(a) a generally hemispherical hollow base increasing in diameter from the top thereof toward the bottom thereof;
(b) a generally hemispherical hollow firebox attached to the top of said generally hemispherical base, said generally hemispherical firebox decreasing in diameter from the top thereof toward the bottom thereof; and
(c) a holder for fuel elements disposed in said firebox, said holder being adjustable in depth and in diametric extent for regulating the concentration of heat produced by fuel elements, said holder being formed with apertured panels for combustion air to enter said holder.

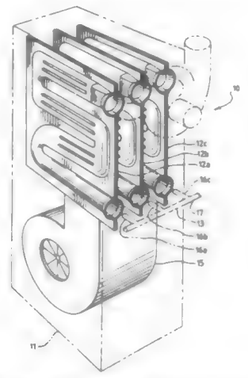
5,359,989

FURNACE WITH HEAT EXCHANGER

Thomas Chase, Derby, and Alan Zimmerman, Wichita, both of Kans., assignors to Evcon Industries, Inc., Wichita, Kans.

Filed Mar. 4, 1993, Ser. No. 26,537
Int. Cl.[5] F24H *3/00*
U.S. Cl. 126—110 R **18 Claims**

1. In a furnace having burner means for providing hot products of combustion, a heat exchanger for transferring heat from the products of combustion to air moving through the furnace, the heat exchanger comprising: first and second plate members secured together in face-to-face relation to define an inlet passageway for receiving the products of combustion, a plurality of sets of connecting passageways, at least one manifold passageway for joining one set of connecting passageways with another set of connecting passageways, and an outlet passageway, the passageways cooperating to form serial and serpentine flow paths for the products of combustion from the inlet passageway, through the connecting passageways, to the outlet passageway, the cross sectional area of the inlet passageway at any point along its length being greater than the cross-sectional area of any of the connecting passageways, the cross-



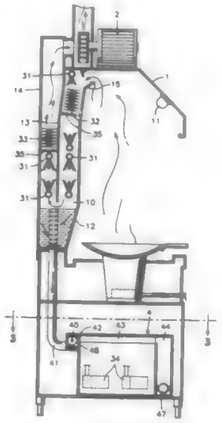
sectional area of each set of passageways decreasing from one set to the next from the inlet to the outlet passageways.

5,359,990

OILY SMOKE TREATING AND EXHAUSTING DEVICE

Teng-Hsien Hsu, No. 105, Lin-Hsi St., Lin-Ya Dist., Kaohsiung, Taiwan, Province of China

Filed Nov. 3, 1993, Ser. No. 145,237
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 E **2 Claims**



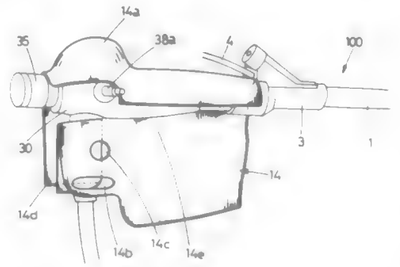
1. An oily smoke treating and exhausting device mounted above a cooking stove, comprising:
an upper smoke housing extending horizontally at a spacing above the cooking stove to receive and guide oily smoke mixed in air produced from food cooked on the stove;
three vertical plates including, a front plate, an intermediate plate and a rear plate, extending down from a rear portion of said smoke housing and being spaced apart in parallel to form two passageways, comprising a first passageway between the front plate and the intermediate plate said first passageway having a smoke inlet leading from its housing and a second passageway between the intermediate plate and the rear plate, the first and the second passageway communicating with each other at a bottom end of the intermediate plate for oily smoke mixed in air to flow from said inlet down through the first passageway and up through the second passageway;
a filter means including a plurality of spray nozzles connected with water tubes and a plurality of filter plates in said passageways, said spray nozzles for spraying clean water in said two passageways, to mix the clean water with oil contained in the oily smoke, whereby said water with oil can drop down to the bottom of the passageways, an inlet tube leading from the bottom of the passageways to a separating tank installed below the cooking stove, a clean water tank and a waste oil tank below the stove, a separating wall between the separating tank and the waste oil tank, said clean water tank having a level controller for a pump to replenish water therein if the water level in said clean water tank becomes lower than a preset level, said separating tank having a side hole for clean water in the clean water tank to flow into said separating tank, said clean water tank, the separating tank and the waste oil tank being combined with one another to have respective liquid levels receding from said clean water tank to the separating tank and to the waste oil tank, said separating tank having a plurality of pairs of vertical baffle plates therein to form a flow passageway for liquid to flow from bottom to top and then from top to bottom alternately through the separating tank, enabling oil to separate from water and float on top of the separating tank to overflow said separating wall between said separating tank and said waste oil tank into said waste oil tank, an exhausting tube for flow of oil out of said waste oil tank, a pump means for recycling water from the separating tank to the spray nozzles through said water tubes, and an exhaust fan for drawing the smoke from said smoke inlet through said passages, to an outlet atop the second passage.

5,359,991

COVER DEVICE FOR ENDOSCOPE

Nagashige Takahashi; Teruo Ouchi, and Hiromichi Shibuya, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1992, Ser. No. 871,711
Claims priority, application Japan, Apr. 24, 1991, 3-187112; May 31, 1991, 3-228165
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **14 Claims**



1. A cover device which is removably fitted over an endoscope to cover an insert part of said endoscope and a control part connected to a proximal end of said insert part, said cover device comprising:
a tubular sheath for covering said insert part so as to isolate it from the outside;
a first securing means for securing said proximal end of said sheath to said proximal end of said insert part;
a control part cover for wrapping said control part, said control part cover being separate from said sheath and spreadably provided in contiguity with said proximal end of said sheath, said control part cover being a flexible sheet having opposed edges, said flexible sheet being wrapped around and secured to said control part so that said opposed edges overlap each other on a surface of said control part; and

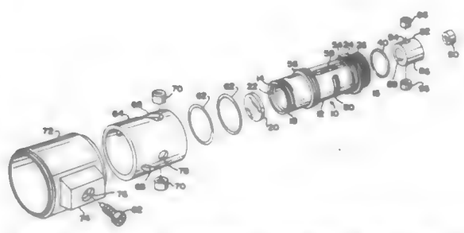
second securing means on said control part cover for securing said control part cover to said tubular sheath.

5,359,992

ENDOSCOPE COUPLER WITH MAGNETIC FOCUS CONTROL

Koichiro Hori, Framingham, and Dennis Arsenault, Ashland, both of Mass., assignors to Linvatec Corporation, Largo, Fla.

Filed Oct. 20, 1992, Ser. No. 963,356
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **18 Claims**



1. An endoscope coupler for mechanically and optically coupling an endoscope to a viewing device, said coupler comprising:

a lens;

a sealed chamber surrounding said lens, said chamber including a peripheral wall disposed about a longitudinal axis and a window permitting light to enter said chamber and said lens;

a lens holder disposed inside said chamber and having a peripheral wall disposed about said longitudinal axis, said lens holder being movable along said longitudinal axis within said chamber and being arranged to cause motion of said lens in said chamber when said lens holder is moved;

driven magnet means supported on said lens holder in said chamber and occupying an angle corresponding to less then ten percent of the peripheral wall of said lens holder;

drive magnet means supported outside said chamber and ferromagnetically coupled to said first driven magnet through a wall of said chamber said drive magnet means occupying an angle less then ten percent of the peripheral wall of said chamber;

a focus control member mechanically linked to said drive magnet means for selectively moving said drive magnet means to thereby move said ferromagnetically coupled driven magnet means longitudinally in said chamber in response to rotation of said focus control member about the longitudinal axis of said chamber;

wherein said ferromagnetic coupling between said drive magnet means and said driven magnetic means occupying said angle opposes both rotation of said lens holder within said chamber and separation of said drive and driven magnet means; and

means for preventing longitudinal movement of said focus control member along said longitudinal axis.

5,359,993

APPARATUS FOR COUNTING THE NUMBER OF TIMES A MEDICAL INSTRUMENT HAS BEEN USED

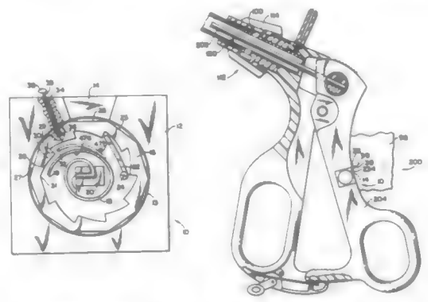
Charles R. Slater, Fort Lauderdale; Thomas O. Bales, Miami; Jurgen A. Kortenbach, Miami Springs; George Nunez, and David Turkel, both of Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed Dec. 31, 1992, Ser. No. 998,951
Int. Cl.[5] A61B *1/00*; G01K *5/00*
U.S. Cl. 128—4 **55 Claims**

1. In an endoscopic surgical instrument having a proximal handle coupled to a tube containing a push rod, an integral heat responsive counter for counting the number of times the surgical instrument has been sterilized, said heat responsive counter comprising:

a) a ring-like ratchet member having interior teeth and an exterior display surface, said ratchet member being arranged substantially coaxial to said tube, and said display surface having a plurality of incremental indicia;

b) heat responsive advancing pawl means for engaging one



of said teeth such that when said medical instrument is subjected to a sterilization temperature, said advancing pawl means moves said tooth a first distance to advance said ratchet member so that a next one of said incremental indicia is indicated;

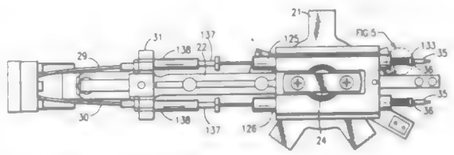
c) blocking pawl means for engaging said ratchet member and for allowing movement of said ratchet member in one direction only.

5,359,994

PROXIMAL STEERING CABLE ADJUSTMENT

Allan I. Krauter, Syracuse, and Robert L. Vivenzio, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 24, 1994, Ser. No. 185,515
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **6 Claims**



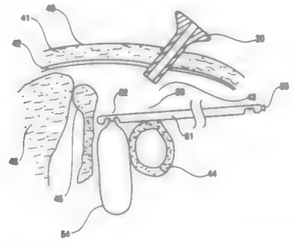
1. A steering mechanism for bending a cable-actuated steering section of an elongated probe of the type in which a pair of steering cables are moved differentially to effect the bending of the steering section, said cables having cable sheaths that are substantially incompressible axially, the steering mechanism comprising an elongated frame; a toothed wheel rotatably mounted on said frame; first and second racks slidably held in said frame for proximal-distal motion, each of said racks having an elongated passage through which a respective one of said cables passes and a set of teeth engaging said toothed wheel; cable sheath terminator means positioned on said frame distally of said racks for securing proximal ends of said cable sheaths; first and second proximal cable terminators affixed onto proximal ends of said cables, and first and second proximal cable adjuster means adjustably positioned on proximal ends of said first and second racks, respectively, and situated between the respective rack and associated proximal cable terminator for permitting adjustment of cable tension from the proximal end of the steering mechanism.

5,359,995

METHOD OF USING AN INFLATABLE LAPAROSCOPIC RETRACTOR

Frank Sewell, Jr., 1413 N. Elm, Henderson, Ky. 42420

Continuation-in-part of Ser. No. 650,049, Feb. 4, 1991, abandoned. This application Feb. 5, 1992, Ser. No. 831,155
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **3 Claims**



1. A method of retracting tissue during laparoscopic surgery comprising the steps of:

making a first incision into an abdominal cavity,

inflating the abdominal cavity by providing a gas through the first incision, the first incision being substantially sealed but for the provision of gas therethrough,

making a laparoscopic incision into the abdominal cavity,

placing a laparoscopic trocar cannula into the laparoscopic incision,

providing a retractor, the retractor comprising

an elastic skin enclosing a variable volume cavity, and

seal means in communication with the cavity of the elastic skin to prevent deflation of the skin after it has been inflated,

inserting into the abdominal cavity through the trocar cannula substantially the entire retractor including the seal means,

positioning the elastic skin against tissue within the abdominal cavity to be retracted while the abdominal cavity remains inflated and sealed,

inflating the elastic skin such that the tissue is thereby retracted,

deflating the elastic skin,

removing the retractor from the abdominal cavity through the trocar cannula, and

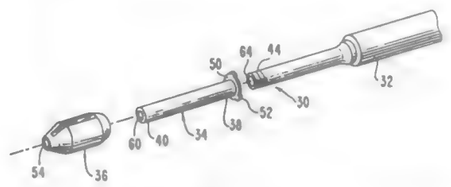
deflating the abdominal cavity.

5,359,996

ULTRASONIC CUTTING TIP AND ASSEMBLY

Larry L. Hood, Laguna Hills, Calif., assignor to Nestle, S.A., Switzerland

Division of Ser. No. 260,702, Oct. 21, 1988, Pat. No. 4,989,583. This application Sep. 26, 1990, Ser. No. 588,396
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **34 Claims**



1. For an ultrasonic surgical cutting instrument having an ultrasonic transducer, an ultrasonic cutting tip assembly comprising:

a transition horn operatively couplable to the ultrasonic transducer,

a vibration-transmitting tube separable from said horn and having a tube proximal end and a tube distal end, a line between the tube distal end and the tube proximal end defining a longitudinal direction; and

a retaining nut adapted to engage said transition horn to hold said tube proximal end and said transition horn together so that ultrasonic vibrations can thereby be transmitted to said tube and emitted from said tube distal end to the surgical site, wherein:

said retaining nut and said tube are formed as a single piece with said tube extending out from said retaining nut, and

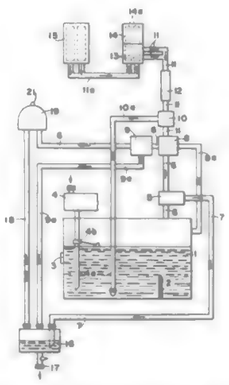
said retaining nut has at least one nut wrench notch extending in the longitudinal direction from a forward end of said nut and adapted to be engaged by a wrench for turning said retaining nut to secure said retaining nut to said transition horn.

5,359,997

APPARATUS FOR CONTROLLABLY TREATING HAIR BY TEMPERATURE AND TIME USING A NEBULIZED MIXTURE OF AIR, STEAM AND OZONE

Giuseppe Rigo, C.so Europa 675/7, and Enzo Bertolacci, Via Emilio Salgari 209/20, both of Genova, Italy

Filed Mar. 26, 1992, Ser. No. 858,051
Claims priority, application Italy, Mar. 29, 1991, GE91 A 000054
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—202.16 **8 Claims**



1. An apparatus for controllably treating hair of a user with a nebulized mixture of air, steam and ozone, the apparatus comprising:

a boiler (1) containing water to produce steam and condensate;

heating means (2) for heating the water;

temperature detection means (3) for detecting the temperature of the water;

control means (2*a*) for controlling the temperature of the water;

compressed air production means (15) for providing compressed air;

an ozone generator (14) for providing ozone comprising a pair of capacitors (14*a*) operatively connected to a pair of generator bulbs (14*b*) and a wrapping net surrounding the capacitors and the bulbs, the wrapping net having mesh openings less than approximately 0.5 mm^2, the wrapping net also having a cross-section surface area ranging approximately from 0.1 to 0.3 mm^2;

duct means (6, 7, 8*a*, 9*a*, 10*a*, 11, 11*a*, 18) communicating with the boiler, the compressed air generator and the

ozone generator for distributing steam, compressed air, ozone and condensate;

mixing means (8, 13) communicating with the duct means for mixing the compressed air with ozone to produce ozonized air and for mixing the ozonized air with steam, the ozonized air with steam defining a treatment mixture; and

a headpiece (19) for covering the hair of the user and communicating with the duct means for receiving the treatment mixture.

5,359,998

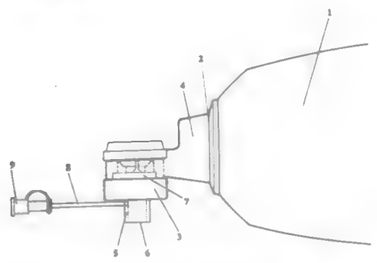
MANUAL RESUSCITATOR

Lee J. Lloyd, Route 2, Box 121, Micanopy, Fla. 32667

Filed Oct. 23, 1992, Ser. No. 965,494

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—203.11 **12 Claims**



1. In a manual resuscitator comprising a bag having an inlet valve and an outlet opening; a valve housing having a bag end and a patient end, an opening in each end, and defining an interior passageway from said bag-end opening through said patient-end opening, said valve housing being connected at said bag end to said outlet opening; a non-rebreathing valve mechanism disposed inside said valve housing between said bag-end opening and said patient-end opening; the improvement comprising a lavage port having an inside diameter of less than about ¼-inch disposed in said valve housing between said non-rebreathing valve mechanism and said patient end opening, wherein said lavage port does not lie on a longitudinal axis extending through said valve housing and out of said patient end opening such that a solution introduced through said lavage port does not pass through said lavage port in a linear route directly along the longitudinal axis extending through said valve housing and out from said patient end opening, and accordingly such that any matter ejected from a patient connected to said patient end opening cannot travel along the longitudinal axis through said patient end opening in a linear route and exit said lavage port without deviating from that longitudinal axis.

5,359,999

ASYNCHRONOUS CYCLING OF MECHANICAL VENTILATORS

James B. Kinsman, 177 Heather La., Macedon, N.Y. 14502

Continuation of Ser. No. 718,263, Jun. 20, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 23,131

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.21 **12 Claims**

1. A ventilator system comprising:

an inflatable bladder worn by a subject;

a first ventilator connected to said inflatable bladder, said first ventilator having an input signal receiver;

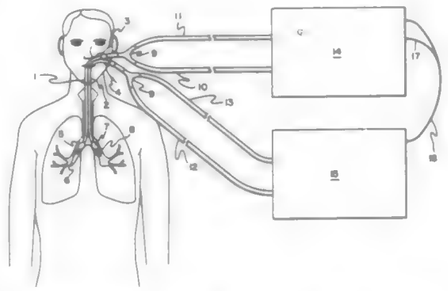
an endotracheal tube inserted into said subject;

a second ventilator having an input signal receiver and being connected to said endotracheal tube;

means for generating signals representative of the start of each of patient inspiration and expiration;

means for transmitting said signal representative of patient expiration start time from said first ventilator to said input signal receiver of said second ventilator;

means for starting patient expiration on said first ventilator; and



means for starting patient inspiration on said second ventilator responsive to the receipt of said signal representative of said expiration start time and following patient expiration, said first and second ventilators thereby operating asynchronously.

5,360,000

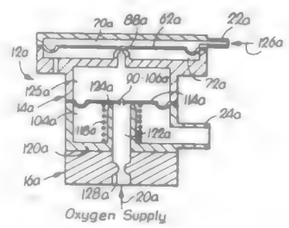
PNEUMATIC DEMAND OXYGEN VALVE

William Carter, Indianapolis, Ind., assignor to Puritan-Bennett Corporation, Overland Park, Kans.

Continuation of Ser. No. 787,775, Nov. 6, 1991, abandoned, which is a continuation of Ser. No. 680,028, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 305,446, Feb. 1, 1989, abandoned, which is a continuation of Ser. No. 27,943, Mar. 19, 1987, abandoned. This application Feb. 1, 1993, Ser. No. 13,226

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.26 **27 Claims**



1. An apparatus for controlling discharge of oxygen from an oxygen supply source to a patient through a breathing line coupled to the patient as the patient inhales and exhales, the apparatus comprising

means for conducting oxygen provided by an oxygen supply source through a supply passageway having a gas inlet for attachment to an oxygen supply source and a gas outlet for attachment to a breathing line, the conducting means including a valve seat in the supply passageway,

means for storing a supply of oxygen extant in the supply passageway in a first chamber to develop a pressure head in the first chamber, the storing means including inlet means for admitting oxygen from the supply passageway into the first chamber and outlet means for discharging oxygen from the first chamber to the atmosphere,

means for selectively blocking flow of oxygen through the supply passageway from the gas inlet to the gas outlet, the blocking means including a flexible diaphragm valve member including a first side communicating with oxygen admitted into the first chamber and a second side facing the valve seat in the supply passageway, the diaphragm valve member being mounted for movement between a flow-blocking position engaging the valve seat in the supply passageway and a flow-delivery position disengaging the valve seat in the supply passageway, the blocking means further includes spring means for yieldably biasing the diaphragm valve member toward its flow-delivery position, the spring means lying in the supply passageway, and

control means for closing the outlet means in response to exhalation of a patient breathing through the gas outlet to store pressurized oxygen in the first chamber so that oxygen pressure in the first chamber acting against the first side of the diaphragm valve member will increase to move the diaphragm valve member to its flow-blocking position and opening the outlet means in response to inhalation of a patient breathing through the gas outlet to vent pressurized oxygen in the first chamber to the atmosphere through the outlet means so that oxygen pressure in the first chamber will decrease to allow pressurized oxygen in the supply passageway to move the diaphragm valve member away from the valve seat to its flow-delivery position.

5,360,001

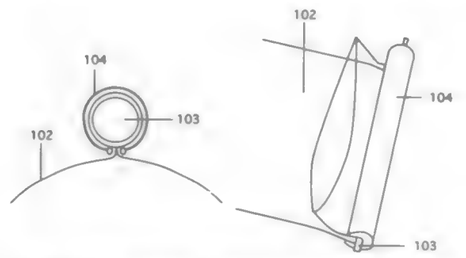
HYPERBARIC CHAMBER CLOSURE MEANS

Lance Brill, P.O. Box 2485/108 Lee Lane, Breckenridge, Colo. 80424, and R. Igor Gamow, 186 Canyon Park, Boulder, Colo. 80302

Continuation-in-part of Ser. No. 690,634, Apr. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 341,645, Apr. 21, 1989, Pat. No. 5,109,837, which is a continuation-in-part of Ser. No. 10,046, Feb. 2, 1987, Pat. No. 4,974,829, which is a continuation-in-part of Ser. No. 743,011, Jun. 10, 1985, Pat. No. 4,716,297. This application Jun. 19, 1992, Ser. No. 901,194

Int. Cl.[5] A61G *10/00;* **A62B** *31/00*

U.S. Cl. 128—205.26 **3 Claims**



1. A portable hyperbaric rebreather comprising a chamber large enough to contain a whole normally proportioned adult human body, said rebreather made of a flexible, nonbreathable, transparent, and lightweight material, said chamber maintaining air pressures in the range of 1–3 psi greater than ambient, pumping means connected to said chamber through a one-way intake valve for achieving said air pressures inside said rebreather; an internal bladder for collection of exhaled air; said bladder being formed of a lightweight material substantially conforming to the available space in said chamber; a face mask comprising a one-way intake valve and a one-way exhaust valve connecting to said bladder whereby inhalation occurs through said intake valve from the interior of said chamber and exhalation occurs through said exhaust valve into said bladder; and a pressure responsive exhaust valve connecting said bladder to the environment outside said rebreather through said rebreather wall at a preselected pressure; said chamber being in the shape of a cylinder which is open at both ends for entry of a person, and is sealed by means of a resealable pressure containing closure device, said closure device comprising a rod and a tube, said tube having a longitudinal slot running the length of the tube with said slot having a predetermined width, said predetermined width accommodating the material of said open ends of said rebreather and the rod, the rod having a diameter smaller than the internal diameter of the tube by a small dimension that permits the tube to be easily slipped over the rod after the chamber material, at the open ends, has been wrapped around the rod, the rod diameter being of a size to insure that a tight seal is formed, the rod and the chamber material at the open ends being fully encased by the tube, with the open ends of said chamber material being sealed by extending through the slot in the tube; the seal becoming more effective as the chamber is pressurized, wherein said material pulls the rod with increasing force against the internal diameter and slot of the tube.

5,360,002

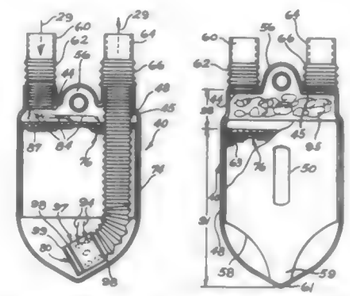
SINGLE PATIENT USE DISPOSABLE CARBON DIOXIDE ABSORBER

Charles A. Smith, 625 E. Market, Louisville, Ky. 40202

Continuation-in-part of Ser. No. 699,485, May 13, 1991, Pat. No. 5,228,435. This application Oct. 28, 1991, Ser. No. 818,658 The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] A62B *7/10, 23/02, 19/00*

U.S. Cl. 128—205.28 **5 Claims**



1. In a recirculatory aided respiration system for patients, the improvement comprising; a disposable, single patient use apparatus, for conditioning air administered to a patient under anesthesia including an air impervious independently supported container located in immediate proximity to the patient having an inlet and an outlet opening, a mass of granular carbon dioxide absorption material disposed within said container in air flow communication with said inlet and outlet openings, said apparatus further including an air impervious hose means in fluid communication with said outlet opening extending inwardly into the lower portion of said air impervious container for insuring air passage through said granular material prior to said air proceeding through said outlet opening wherein said hose means contains therewith a bacteria filter located within said air impervious container said filter being surrounded by said carbon dioxide absorption material whereby the bacteria filter is warmed for improving its efficiency and whereby condensation of water vapor is avoided thereby providing for longer bacteria filter life said apparatus further comprising means for air laden with carbon dioxide entering said container contacting said carbon dioxide absorption material whereupon carbon dioxide is absorbed therein with resultant instantaneous generation of heat and water vapor, the size of the container and amount of carbon dioxide absorption material being selected such that the normal breathing of a patient causes air to be freed of carbon dioxide and available to be recirculated to the patient upon completion of the second and subsequent patient breaths at a desirable humidification level and temperature and said container and said amount of material are preselected to provide means for said container and material to be self regulating such that air at an acceptable temperature and humidity and carbon dioxide level

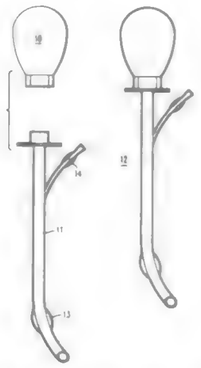
will be delivered, compatible to the patient's breathing rate and tidal volume.

5,360,003

INTUBATION ASSEMBLY AND METHOD OF INSERTING SAME HAVING A BALLOON TO INDICATE THE POSITION OF TUBE INSIDE OF THE PATIENT

Cecilio L. Capistrano, 809 New Albany Rd., Moorestown, N.J. 08057

Filed Jun. 11, 1993, Ser. No. 75,737
Int. Cl.[5] A61M *16/00;* **A62B** *9/00, 27/00;* **G08B** *3/00*
U.S. Cl. 128—207.15 **14 Claims**



1. An intubation assembly comprising an endotracheal tube having proximal and distal ends and a balloon adapter attached to said proximal end of said endotracheal tube, said balloon adapter comprising means for indicating the position of said distal end of said endotracheal tube inserted into a patient, said means comprising an elastic, thin-walled inflatable balloon portion and a connector portion, said connector portion being the sole means for entry of air into said balloon portion, said connector portion comprising a hollow cylindrical member having a first end circumferentially sealed to said balloon portion and a second end adapted for connection to said proximal end of said endotracheal tube,

said balloon adapter indicating the location of said distal end of said endotracheal tube by the expansion and contraction of said balloon portion with the expiration and inspiration, respectively, of the patient upon insertion of said distal end of said endotracheal tube into the opening of the patient's trachea,

said balloon portion indicating placement of said distal end of said endotracheal tube past the vocal cords and within the trachea upon increased intensity of the inflation and deflation of said balloon portion.

5,360,004

NON-INVASIVE DETERMINATION OF ANALYTE CONCENTRATION USING NON-CONTINUOUS RADIATION

David L. Purdy, Marion Center; Richard L. Wiggins, and Paul Castro, both of Indiana, all of Pa., assignors to Diasense, Inc., Pittsburgh, Pa.

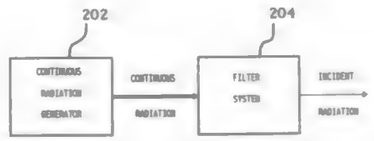
Continuation-in-part of Ser. No. 987,766, Dec. 9, 1992. This application May 7, 1993, Ser. No. 59,164
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **20 Claims**

1. A method for non-invasive determination of the concentration of at least one analyte in a mammal, comprising the steps of:

(a) concurrently irradiating a portion of the body of the mammal with incident radiation, said incident radiation including two or more distinct bands of continuous-wavelength incident radiation;

(b) sensing the resulting radiation emitted from said portion of the body; and

13



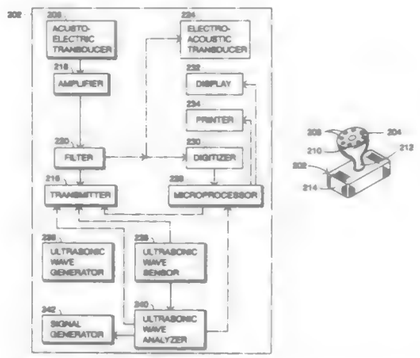
(c) deriving from the sensed resulting radiation a value for the concentration of said analyte.

5,360,005

MEDICAL DIAGNOSIS DEVICE FOR SENSING CARDIAC ACTIVITY AND BLOOD FLOW

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 819,120, Jan. 10, 1992. This application Apr. 9, 1992, Ser. No. 865,991
Int. Cl.[5] A61B *5/00, 8/06*
U.S. Cl. 128—653.1 **7 Claims**



1. A medical device comprising:

a casing small enough to hold in one's hand, said casing having a surface adapted for engagement with the skin of a patient;

acoustoelectric transducer means mounted to said casing for sensing an acoustic vibration originating within the patient and for converting the sensed vibration to a first electrical signal;

transmitter means mounted to said casing and operatively coupled to said transducer means for wirelessly transmitting, to a receiver, a second electrical signal incorporating information from said first electrical signal;

ultrasonic wave generating means mounted to said casing for generating an ultrasonic pressure wave; and

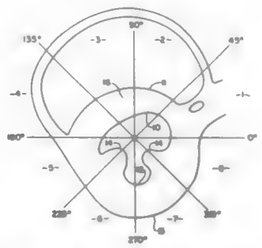
ultrasonic sensor means mounted to said casing for detecting a reflected ultrasonic pressure wave returning to said casing upon generation of said wave by said wave generating means, said transmitter means being operatively connected to said sensor means for transmitting a signal encoding ultrasonic information from said sensor means.

5,360,006

AUTOMATED METHOD FOR DIGITAL IMAGE QUANTITATION

Edward A. Geiser; David C. Wilson, and Gordon L. Gibby, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 955,865, Jan. 28, 1993, abandoned, which is a continuation-in-part of Ser. No. 537,032, Jun. 12, 1990, abandoned. This application Dec. 29, 1993, Ser. No. 174,763
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—653.1 **25 Claims**



1. A method for quantitatively analyzing diagnostic images of approximately curvilinear bounded organs, including the steps of:

a. generating a diagnostic image of an approximately curvilinear bounded organ;

b. determining a center-point for the approximately curvilinear bounded organ depicted in the diagnostic image by repeatedly filtering the diagnostic image with a set of circular arc filters until a maximum value for the set of filters is obtained;

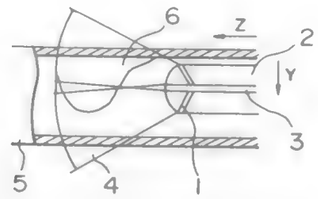
c. indicating the position of the center-point in connection with the diagnostic image.

5,360,007

ULTRASONIC APPARATUS

Ryuuichi Shinomura, Higashimatsuyama, and Kageyoshi Katakura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 858,083, Mar. 26, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 105,906
Claims priority, application Japan, Mar. 24, 1991, 3-118975; Mar. 26, 1991, 3-061472
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—661.01 **22 Claims**



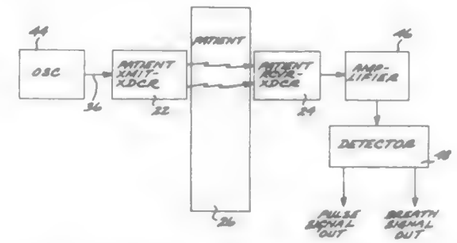
1. An ultrasonic apparatus for transmitting ultrasonic waves and receiving reflection waves from an examination subject for display comprising at least one transdducer which transmits ultrasonic waves in respective directions determined by each of a plurality of frequencies of a transducer drive signal and receives reflection waves from the examination subject, wherein tomogram images obtained by the transducer are displayed.

5,360,008

RESPIRATORY AND CARDIAC MONITOR

William G. Campbell, Jr., 2019 Orangeview La., Orange, Calif. 92667

Filed Nov. 18, 1992, Ser. No. 977,913
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—671 **40 Claims**



1. A respiratory monitor for a human patient, the monitor comprising:

first transmitter means adapted to be placed in close proximity of the body of the patient for transmitting an electromagnetic carrier signal in the direction of the patient's body;

transducer means adapted to be placed in close proximity of the body of the patient for receiving the electromagnetic signal transmitted by the transmitter, the transducer means being in a location such that the electromagnetic signal of the transmitter means is transmitted to the transducer through the patient's body, the electromagnetic signal being modulated by the varying permeability of the patient's body caused by the patient's respiration, an output of the transducer means reflecting said modulated electromagnetic signal, and

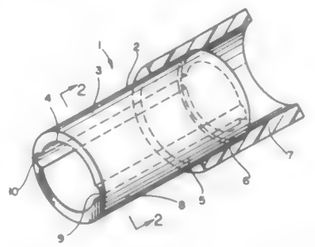
signal decoding means operatively connected to the transducer means and receiving the output of the transducer means, for decoding the modulated electromagnetic signal and for producing a second signal which is indicative of the varying permeability of the patient's body and is therefore indicative of the patient's respiration.

5,360,009

SPIROMETER MOUTHPIECE

Stuart Herskovitz, Dix Hills, N.Y., assignor to Qosina Corp., Edgewood, N.Y.

Filed Aug. 14, 1992, Ser. No. 930,853
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—725 **5 Claims**



1. A disposable spirometer mouthpiece for directing air into a lung capacity measuring apparatus comprising:

a tubular member having a longitudinal axis and a cylindrical wall, the tubular member having an outer surface and an inner surface, the cylindrical wall having a wall thickness defined by the distance between the inner and outer sur-

faces, said cylindrical wall having first and second longitudinal zones of reduced thickness,

said first and second zones being substantially 180° apart such that the tubular member is collapsible along the first and second zones to reduce the tubular member to a flat state, the tubular member having a first end adapted for mating with the lung capacity measuring apparatus, in an airtight fit, and a second end adapted for use as a mouthpiece, the cylindrical wall having sufficient strength to prevent collapse of the tubular member as air is directed therethrough into the lung capacity measuring apparatus, wherein the tubular member is composed of a plastic material from the group consisting of polyethylene, polypropylene, polyvinylchloride and nylon.

5,360,010

VASCULAR ENTOPTOSCOPE

Raymond A. Applegate, San Antonio, Tex. and Arthur Bredley, Bloomington, Ind., assignors to Board of Regents, The University of Texas System, Austin, Tex.

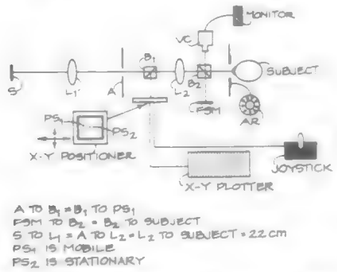
PCT No. PCT/US91/02996, § 371 Date Nov. 2, 1992, § 102(e) Date Nov. 2, 1992

Continuation-in-part of Ser. No. 518,065, May 2, 1990. U.S. Pat. No. 5,016,643. This PCT application Jan. 5, 1991, Ser. No. 946,321

The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.

Int. Cl.[5] A61B *3/13*

U.S. Cl. 128—745 **85 Claims**



1. An apparatus for entoptically perceiving the macular area retinal vasculature of a human subject's eye under examination, the apparatus comprising:

(a) a light beam source; and

(b) a means of continuously directing a light beam from said source into a subject's eye, such that with time the light beam illuminates a same retinal area from constantly varying angles.

5,360,011

BLOOD SAMPLE COLLECTION

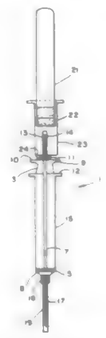
Teresa D. McCallister, Rte. 1, 45 Pine Pl., Mount Hope, W. Va. 25880

Filed Jul. 13, 1993, Ser. No. 90,621

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—763 **44 Claims**

1. Blood sample collection and transfer apparatus, comprising a syringe with upper and lower needles, and a plunger for inserting in the syringe, the plunger having a plunger body with upper and lower extremities, having an end-to-end cylindrical opening, a rubberized end on the lower extremity, a flange on the upper extremity, the lower needle being connected to a lower end of the syringe, a rubber sleeve covering the upper needle on the upper extremity for using in connection with the syringe and the plunger, and a blood tube holder



and a vacuum-type blood connection tube attached on the upper extremity surrounding the upper needle.

5,360,012

BLOOD SAMPLER AND AN AMPLIFIER FOR USE THEREWITH

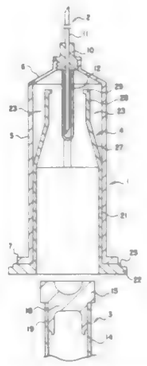
Yukinori Ebara, Suita, and Tomoyo Kusakawa, Kusatsu, both of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 31,136

Claims priority, application Japan, Mar. 24, 1992, 4-098947; Mar. 24, 1992, 4-098948

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—764 **7 Claims**



1. An adapter to be used with a blood sampler, the blood sampler including a tube holder, a double ended sampling needle having a first end extending through a top end of the holder, an elastic sheath fitted on and covering a second end of the double ended needle, an evacuated blood sample tube having a plug fitted in an open end of the tube, with the evacuated tube being adapted for insertion in a cylindrical body of the holder when a blood sample is to be taken, wherein during taking of a blood sample the elastic sheath is compressed in an axial direction so that the second end of the needle penetrates both the sheath and the plug so as to allow the blood sample to be sucked into the tube, the adapter being interposed between the holder and the evacuated blood sample tube, the adapter comprising:

a cylindrical body having a circumferential outer dimension less than an inner dimension of the holder;

a plurality of flexible extensions integral with and protruding from a top end of the cylindrical body;

said flexible extensions extending axially of said body so as to surround the plug of an inserted blood sample tube;

each of said flexible extensions comprising:

a slanted portion inclined from the top end of the cylindrical body towards an axial center of the cylindrical body in a direction of the top end of the holder; and

a gripping portion integral with the slanted portion and extending parallel to the axial center of the cylindrical body, said plug having a top portion with an outside diameter greater than an outside diameter of said evacuated tube, said top portion being in frictional contact with said gripping portion when the needle penetrates the plug, said frictional contact preventing movement of the tube in a direction away from said top end.

5,360,013

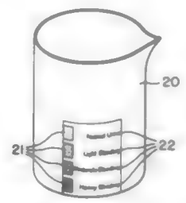
METHOD AND DEVICE FOR QUALITATIVE DETECTION OF BLOOD IN URINE

Edward C. Gilbert, 9706 Logan Dr., Potomac, Md. 20854

Filed Oct. 19, 1993, Ser. No. 137,921

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—771 **19 Claims**



1. A device for the qualitative determination of the amount of blood in visually bloody urine comprising a plurality of colors corresponding to the relative blood content of the urine.

5,360,014

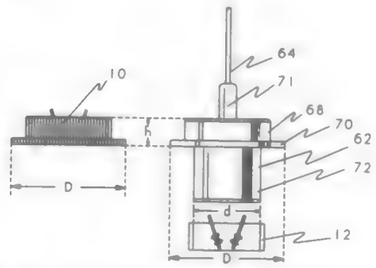
SIZING APPARATUS FOR HEART VALVE WITH SUPRA ANNULAR SUTURE RING

Joseph A. Sauter, and Ronald S. Bell, both of Austin, Tex., assignors to Carbomedics, Inc., Austin, Tex.

Filed Nov. 10, 1993, Ser. No. 150,595

Int. Cl.[5] A61F *2/00*

U.S. Cl. 128—774 **8 Claims**



1. An apparatus for determining the appropriate size of a supra-annular mechanical prosthetic heart valve, said heart valve having a height, a diameter orthogonal thereto and an orifice extending through said valve for passage of blood therethrough, said apparatus comprising

a handle; and

probe means mounted proximally from said handle, said probe means comprising

a body portion having a height and a diameter orthogonal to said height, said height approximating the height of said supra-annular heart valve,

a circumferential lip proximal from said body portion, said lip having a proximal edge for preventing said body portion from entering said site of said excised heart valve and having a constant diameter greater than said diameter of said body portion, said lip diameter approximating the diameter of said supra-annular heart valve; and

an annulus portion extending proximally from said circumferential lip, said annulus portion having a side wall congruent with said orifice in said heart valve.

5,360,015

APPARATUS FOR STUDY AND REEDUCATION OF THE ANKLE

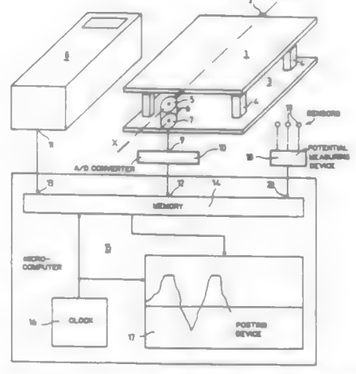
Alain Heurte, 6, rue de la Fontaine, F-29239 Gouesnou, France

Filed May 15, 1992, Ser. No. 700,197

Claims priority, application France, Oct. 13, 1989, 89 13651

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—779 **4 Claims**



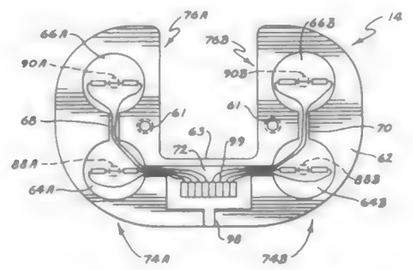
1. A system for measuring the articulation and assessing the function of a human ankle, said system comprising a plate (**1**) mounted on a shaft to pivot about a horizontal axis (X—X'), said plate (**1**) forming a means for receiving a first foot associated with the ankle being assessed, a base (**3**), said shaft having ends which are rotatably secured to said base (**3**), at least one post (**4**) mounted on said base (**3**) for limiting the pivoting motion of said plate (**1**) about the horizontal axis (X—X'), a weighing instrument (**8**) for receiving the other foot of a patient whose ankle is being assessed and giving value outputs responsive to the weight placed thereon, means (**7**) for measuring and giving value outputs responsive to the angular amount of pivoting motion of said plate (**1**) responsive to motion of said first foot, memory means (**14**) having a first input (**12**) for storing said values received from said measuring means (**7**), said memory means having a second input (**13**) for storing said values received from said weighing instrument (**8**), said memory means giving an output representing said stored values, and means (**17**) for displaying said output representing values received at the first (**12**) and second (**13**) inputs of said memory means (**14**).

5,360,016

FORCE TRANSDUCER FOR A JOINT PROSTHESIS

Nebojsa Kovacevic, Plymouth, Minn., assignor to N. K. Biotechnical Engineering Company, Minneapolis, Minn.

Division of Ser. No. 681,099, Apr. 5, 1991, Pat. No. 5,197,488.
This application Mar. 22, 1993, Ser. No. 1,048
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—782 9 Claims



1. A transducer for measuring forces between two components of a joint prosthesis, the transducer comprising:

a central body having a plurality of spaced apart integral flexure members forming an upper surface of the central body wherein each flexure member is formed by a corresponding cavity of a plurality of spaced apart cavities;

a plate spaced apart from the upper surface;

a plurality of support posts connecting the plate to the central body wherein each support post is located within the perimeter edge of the plate and has a first end attached to only one of the flexure members, and a second end attached to the plate, the support posts localizing forces applied to the plate onto the flexure members; and

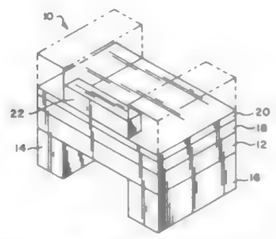
a force sensing element coupled to each flexure member, each force sensing element providing an output signal representative of the force applied to the corresponding flexure member.

5,360,017

ADJUSTABLE THERAPEUTIC PILLOW

David G. Austin, 5190 Brynwood Dr., Columbus, Ohio 43220

Filed May 27, 1993, Ser. No. 67,583
Int. Cl.[5] A61G *15/00;* A47C *20/02*
U.S. Cl. 128—845 17 Claims



1. A therapeutic pillow assembly comprising:

a resilient base component of substantially rectangular configuration having a topside surface, an underside surface, a pair of lateral side surfaces and a pair of longitudinal side surfaces;

a resilient, adjustable neck-support component positioned upon and detachably secured to said base component topside surface and extending parallel to one of said lateral side surfaces; and

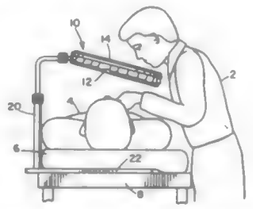
said neck-support component being selected from a group of interchangeable neck-support components of different sizes.

5,360,018

POSITIONABLE VIEWING SHIELD WITH DISPOSABLE TRANSPARENT MEDIUM

Sutton Chen, 7866 East Roseland Dr., La Jolla, Calif. 92037

Continuation of Ser. No. 887,889, May 26, 1992, abandoned.
This application Nov. 18, 1993, Ser. No. 154,395
Int. Cl.[5] A61B *19/00;* A61F *5/37*
U.S. Cl. 128—849 16 Claims



15. A viewing device for enabling a medical attendant positioned adjacent one side of a substrate to view an area of a patient's body being supported atop the substrate, the head and upper torso of said attendant being protected by said device from contact with fluid and solid emissions from said area, comprising said substrate:

a single, elongated post having an upper and a lower end;

a means for supporting said lower end whereby said post is in an upright orientation extending upwardly from the substrate, said support means releasably engagable along a side opposite said one side of the substrate;

a splash guard comprising a frame including a continuous wall having a top edge and forming a perimeter thereof with an area within said perimeter being open to permit visual observation through said open area;

a positioning means interconnected between said upper end and a point along said frame nearer to said opposite side than said one side of the substrate for retaining said splash guard in an elevated position above the substrate at a plurality of distances from and a plurality of angular orientations relative to the substrate;

a sheet of disposable, flexible transparent film positionable across said open area against said top edge;

releasable retaining means connected against said wall surface immediately adjacent and below said top edge releasably securing said transparent sheet between said retaining means and said wall surface whereby said sheet of transparent film is positioned under tension across said open area.

5,360,019

ADJUSTABLE LIMB HOLDER APPARATUS

Steven M. Witzel, 2754 N. Hampden Ct., Chicago, Ill. 60614, and Marshall Witzel, 2733 Hawthorne, Wilmette, Ill. 60091

Filed Dec. 16, 1992, Ser. No. 992,844
Int. Cl.[5] A61F *5/37*
U.S. Cl. 128—878 9 Claims

1. An adjustable limb holder apparatus for use in securing a patient's limb to a fixed object, to, in turn, substantially restrain movement of the limb and, in turn, the patient, wherein the apparatus will not inadvertently tighten, or loosen, after initial adjustment has been made, so as to preclude inadvertent constriction by the apparatus to the restrained limb during movement by the patient, said adjustable limb holder apparatus comprising:

cuff means for encircling at least a portion of the limb to be restrained,

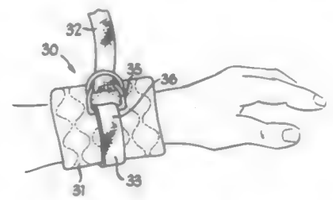
said cuff means having a first end, a second end opposite said first end, a top surface and a bottom surface, wherein at least a portion of said bottom surface is in operable contact with the limb during restraint;

strap means operably attached to said cuff means at a strap attachment position for providing operable secured cooperation, without constriction, between said cuff means and said fixed object,

said strap means having at least one first end, at least one second end and at least one third end, wherein said first end and said third end operably emanate and are operably distanced from said strap attachment position towards positioning and joinder of said first and third ends, and in turn said strap means about said encircling cuff means, said second end operably emanating and being operably distanced from said strap attachment position and being operably attachable to said fixed object means for precluding operable encircling of a portion of said strap means about said cuff means between said strap attachment position and said second end, where said second end extends from said fixed object directly to said strap attachment position without encircling said cuff means to, in turn, preclude constriction of said portion of said strap means about said restrained portion of said limb,

securement means operably cooperating with said cuff means and said first and third ends of said strap means for releaseably maintaining at least a portion of said strap means and said encircling cuff means in a restrained orientation about the limb of the patient,

said securement means including coupling means having a first attachment member and a second attachment member releaseably attachable to each other for joining said first



and third ends of said strap means into said position about said encircling cuff means in a fixedly restrained manner; substantially resistant to said tension which may be imparted to said strap means by forces applied to said second end and, in turn, said strap attachment position which absorbs forces, to, in turn, isolate said second end from interfering with the relative position of said joined first and third ends of said strap means about said cuff means,

said first attachment member being operably attached to a portion of said strap means proximate said first end of said strap means, and said second attachment member being operably attached to a portion of said strap means proximate said third end of said strap means,

said first and second attachment members and said operably attached strap means being capable of operably encircling said outer surface of said cuff means after said cuff means has been operably positioned about said patient's limb for restraint and after said first and second attachment members have been operably yet releasably attached to each other,

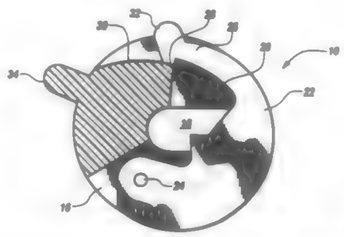
said isolation of said second end from interfering with the relative positions of said joined first and third ends of said strap means about said cuff means to, in turn, substantially preclude said forces applied to said second end from inadvertently tightening the portion of said strap means operably encircling said limb of a patient, and, it turn, preventing said strap means from causing potentially painful and injurious construction about said cuff means and, in turn said restrained limb of the patient during movement of said patient's limb and applications of forces from said second end.

5,360,020

PIN SITE SHIELD RETAINER

Harry E. Lee, Sr., Paris, Tenn., and Harry E. Lee, Jr., Southaven, Miss., assignors to Memphis Orthopaedic Design, Inc., Memphis, Tenn.

Filed Apr. 14, 1993, Ser. No. 46,633
Int. Cl.[5] A61B *17/34;* A61F *13/56*
U.S. Cl. 128—888 4 Claims



1. A retainer for securing an antiseptic sponge at the point of entry for an orthopedic implement, removably securable to said implement adjacent said sponge, comprising:

a body having a slot formed therein for receiving said implement, said body comprising a disc-shaped member having an internal cavity formed therein and an access opening through an annular portion thereof, said slot being oriented substantially radially and intersecting said cavity, said cavity having a first interlocking surface formed thereon;

a clamping member having a proximate end hingedly secured to said body within said cavity and a distal end extending arcuately therefrom, said distal end having a second interlocking surface formed thereon, said clamping member being selectively moveable between open and closed positions; wherein

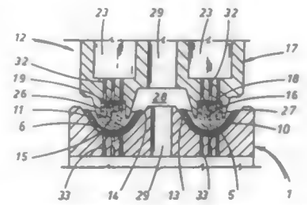
movement of said clamping member to said closed position operatively closes said slot in said body, thereby compressively securing said implement within said slot, said first and second interlocking surfaces frictionally engaging one another to maintain said retainer in said closed position.

5,360,021

CIGARETTE MANUFACTURING MACHINE OF THE DOUBLE TOBACCO ROD TYPE

Bruno Belvederi, S.Martino di Monte S.Pietro; Duilio Balestrazzi, Anzola Emilia, and Luigi Lanzarini, Crespellano, all of Italy, assignors to G.D. S.p.A., Bologna, Italy

Continuation of Ser. No. 851,546, Mar. 13, 1992, abandoned.
This application Sep. 21, 1993, Ser. No. 124,430
Claims priority, application Italy, Mar. 15, 1991, BO91 A 000079
Int. Cl.[5] A24C *5/18*
U.S. Cl. 131—84.1 2 Claims



1. A cigarette manufacturing machine of the double rod type, comprising:

two substantially parallel first conveyor belts for respectively carrying two continuous fillets of tobacco toward a transfer station;

two substantially parallel second conveyor belts for support-

ing and advancing two respective strips of paper, said second conveyor belts being positioned beneath and in vertical alignment with respective ones of said first belts, at least in the vicinity of said transfer station, in such a way as to take up respective ones of said fillets of tobacco from beneath;

suction means respectively associated with and operated in conjunction with said first belts and said second belts for causing said continuous fillets of tobacco to remain in contact with respective ones of said first belts and for causing said strips of paper to remain in contact with respective ones of said second belts due to suction action of said suction means;

a top support structure and a bottom support structure, around which said first and the second conveyor belts are looped, said top and bottom support structures cooperatively encompassing means defining a void which is located centrally between said first and second conveyor belts and exposed to said suction action of said suction means; and

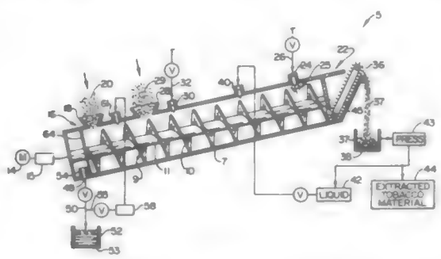
pressure balancing means for generating a pressure within said void, which pressure is substantially identical to that of the environment surrounding said cigarette manufacturing machine, thereby neutralizing negative pressure generated in said void through said suction action of said suction means, said pressure balancing means comprising at least one passage through both said top and bottom support structures.

5,360,022

TOBACCO PROCESSING

Donald A. Newton, Winston-Salem, N.C., and Timothy R. Lang, Willoughby, Australia, assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jul. 22, 1991, Ser. No. 733,477
Int. Cl.[5] A24B *15/24*
U.S. Cl. 131—297 8 Claims



1. A process for extracting a tobacco material, the process comprising the steps of:

(a) providing tobacco material;

(b) providing a liquid solvent;

(c) providing an apparatus for extracting the tobacco material using the solvent, the apparatus having a screw conveyor and being positioned at an incline relative to horizontal;

(d) continuously introducing the tobacco material and solvent into the apparatus in a counter current manner such that the tobacco material moves overall upwards through the apparatus and the solvent moves overall downwards through the apparatus;

(e) subjecting the tobacco material to extraction conditions while operating the screw conveyor in a counter rotating manner;

(f) removing extracted tobacco material from the apparatus and collecting such extracted tobacco material; and

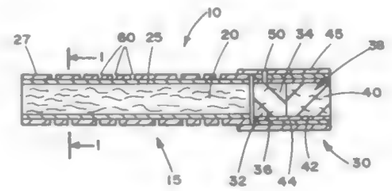
(g) removing solvent and tobacco extract from the apparatus and collecting such solvent and extract.

5,360,023

CIGARETTE FILTER

Richard L. Blakley, Pfafftown; Gary R. Shelar, Greensboro; Jeffery S. Gentry, Pfafftown; Gary W. Worrell, Tobaccoville, and Thomas A. Perfetti, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation-in-part of Ser. No. 408,433, Sep. 15, 1989, Pat. No. 5,137,034, which is a continuation of Ser. No. 194,696, May 16, 1988, abandoned, and Ser. No. 759,266, Sep. 13, 1991, Pat. No. 5,271,419, which is a continuation-in-part of Ser. No. 414,833, Sep. 29, 1989, Pat. No. 5,074,321. This application Jun. 12, 1992, Ser. No. 898,111
Int. Cl.[5] A24D *3/04*
U.S. Cl. 131—331 29 Claims



1. A cigarette comprising a tobacco rod connected to a filter element having two ends and a cross-sectional area, said filter element comprising at least first and second separately formed filter segments positioned in longitudinal abutting relation, said first filter segment having a mouth end and comprising a gathered web of a paper including a carbonaceous material, the paper being gathered so as to form a plurality of longitudinal channels each having a longitudinal axis, each channel being open from end to end of said first filter segment alone the longitudinal axis thereof, each channel further having a cross-sectional void area, the total cross-sectional void area of said open channels comprising more than about 5 percent of the cross-sectional area of the first filter segment such that at least some mainstream smoke from the tobacco rod passes through the open channels in the first filter segment, the cross-sectional area of the first filter segment being entirely filled with the carbonaceous paper material and said open channels, said second filter segment comprising a filamentary tow material abutting the mouth end of the first filter segment, said second filter segment having a draw resistance such that the cigarette has a total pressure drop of between about 50 to about 200 mm of water at 17.5 cc/sec. airflow.

5,360,024

RELATING TO POLYMER VISCOSITY AND APPLICATION OF SUCH POLYMERS

Colin C. Greig, Redlynch, England, assignor to British-American Tobacco Company Limited, Middlesex, England

Filed May 19, 1992, Ser. No. 885,952
Claims priority, application United Kingdom, May 23, 1991, 9111148
Int. Cl.[5] A24B *3/14*
U.S. Cl. 131—370 7 Claims

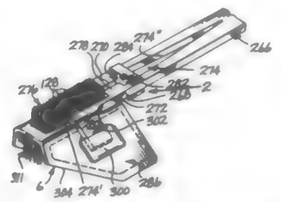
1. A process which comprises; forming a mixture comprised of particulate tobacco material or tobacco substitute material with a binder mixture comprised of water and an alginate selected from the group consisting of calcium ammonium alginate, calcium sodium alginate and propylene glycol alginate, the loading level of the alginate being less than 10% by weight of the water present; homogenising the mixture by subjecting the mixture to high shear at pressures greater than about 1000 psi to thereby substantially increase the viscosity of the mixture; and casting the mixture; whereby a reconstituted tobacco product or tobacco substitute is obtained.

5,360,025

TOOTH BRUSHING DEVICE AND METHOD

Ronald W. Klinkhammer, Seattle, Wash., assignor to Oral Logic, Inc., Renton, Wash.

Continuation of Ser. No. 40,078, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 926,837, Aug. 7, 1992, abandoned, which is a continuation of Ser. No. 664,487, Mar. 4, 1991, Pat. No. 5,137,039, which is a continuation of Ser. No. 145,771, Jan. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 937,554, Dec. 4, 1986, abandoned. This application Jan. 24, 1994, Ser. No. 185,766
Int. Cl.[5] A45D *44/18*
U.S. Cl. 132—308 19 Claims



1. A straddle-type tooth brushing device comprising:

means including a pair of elongated arms having tooth brushing means on the distal end portions thereof forming a head for straddling about a row of teeth to be cleaned, elongated support means including a handle for supporting the head adjacent the row of teeth, and biasing means acting on the distal end portions of the arms from within the head to yieldably bias the tooth brushing means into engagement with the inside and outside faces of the teeth when the head is straddled about the row thereof,

said support means having a distal end,

said arms having longitudinal axes and being rigidly interconnected with the support means at the distal end thereof so as to form relatively rigid longitudinal extensions of the support means which project from the distal end of the support means in generally spaced parallel relationship to one another, and have an elongated slot in the space therebetween which is coextensive with the arms and opens to the outside of the device between the distal end of the support means and the distal end portions of the arms in a central plane of the slot extending between the longitudinal axes of the arms generally parallel thereto,

the distal end portions of the arms having generally laterally inwardly directed surfaces thereon which are relatively opposed to one another across the central plane of the slot, extend in planes generally parallel to the longitudinal axes of the arms, and have relatively upper, lower and forward edges formed thereabout at the peripheries thereof, which are disposed relatively remote from, and adjacent to the gum lines of the respective row of teeth being brushed, and forwardly of the surface, respectively, when in an operational mode of the device, the head is straddled about the row of teeth so that the central plane of the slot is aligned with the row of teeth, the arms are generally parallel to the row, and the surfaces of the distal end portions of the arms are generally opposed to the inside and outside faces of the teeth in the row,

the tooth brushing means comprising a pair of brush forming members which are supported on the distal end portions of the arms at the surfaces thereof to oppose one another across the central plane of the slot and engage the faces of the teeth when the head of the device is straddled abut the row of teeth in the operational mode of the device,

the brush forming members comprising skirts of plastic resin material which are secured to the distal end portions of the arms so as to overlie the surfaces thereof, and have oppositely disposed fields of birstle thereon, the bristles of which are formed by strands of the plastic resin material that upstand monolithically on the skirts and are so individually spaced apart from one another on the skirts as to be individually laterally deflectable in relation to one another, yet collectively operable to form brushes for the faces of the teeth,

the arms being constructed of a stiff but resiliently flexible material terminating at the relatively upper, lower and forward peripheral edges of the relatively laterally inwardly directed surfaces of the distal end portions of the arms, so that the respective arms are independent of one another transverse the central plane of the slot, and

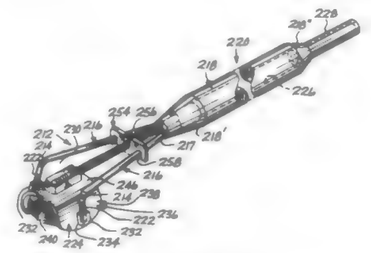
the distal end portions of the arms being so closely spaced apart from one another at the relatively laterally inwardly directed surfaces thereof, and so yieldably biased relatively toward one another by the biasing means, transverse the central plane of the slot in the relaxed state of the arms, that the user must forcibly wedge the teeth between the brush forming members when inserting the teeth between the surfaces of the distal end portions of the arms to straddle the head about the row of teeth in the operational mode of the device.

5,360,026

TOOTH CLEANING DEVICE AND METHOD

Ronald W. Klinkhammer, Seattle, Wash., assignor to Oral Logic, Inc., Renton, Wash.

Continuation of Ser. No. 924,096, Aug. 3, 1992, Pat. No. 5,284,168, which is a continuation of Ser. No. 664,487, Mar. 4, 1991, Pat. No. 5,137,039, which is a continuation of Ser. No. 145,771, Jan. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 937,554, Dec. 4, 1986, abandoned. This application Feb. 4, 1994, Ser. No. 191,968
Int. Cl.[5] A45D *44/18*
U.S. Cl. 132—308 22 Claims



1. In a straddle-type tooth cleaning device,

carrier means adapted for insertion in a mouth of a person whose teeth are to be cleaned, tooth cleaning means that are operatively connected with the carrier means for straddling about a row of teeth, and elongated positioning means, including a handle, for supporting the carrier means adjacent the row of teeth while the tooth cleaning means are straddled thereabout,

the positioning means having a distal end and the carrier means comprising a pair of elongated arms which project from the distal end of the positioning means in generally spaced parallel relationship to one another, the arms having an elongated slot extending therebetween, and being rigidly interconnected with the positioning means so as to form relatively rigid extensions of the same, longitudinally thereof,

the arms having distal ends and first and second axes that extend longitudinally of the respective arms, and the tooth cleaning means being supported on the distal end portions of the arms so as to coincide with a third axis of the arms that extends crosswise of the first and second axes,

the tooth cleaning means comprising tooth cleaning elements that are spaced apart from one another on opposing sides of the slot and reciprocable in relation to one another along the third axis to adjustably grip the opposing sides

of the row of teeth when the tooth cleaning means are straddled thereabout, and

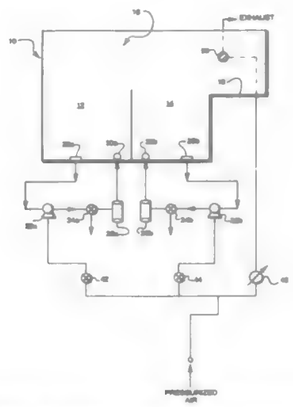
drive means which are interconnected with the arms at points between the tooth cleaning means and the distal end of the positioning means, said drive means being reciprocable along perpendiculars to the third axis of the arms to reciprocate the tooth cleaning elements in relation to one another along the third axis for adjustment of their grip on the opposing sides of the row of teeth.

5,360,027

PNEUMATIC CLEANING SYSTEM

Jonathan W. Harman, Ponte Vedra, Fla., assignor to Environmental Solvents Corporation, Jacksonville, Fla.

Filed Oct. 5, 1993, Ser. No. 132,057
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—102.3 **5 Claims**



1. A pneumatic driven cleaning apparatus comprising:

a. a housing comprising at least one chamber recessed therein for containing a solvent, the at least one chamber opening into a plenum;

b. an air venturi in communication with the plenum and having an output port directed away from the plenum;

c. venting means associated with the output port of the air venturi for conducting vapor withdrawn by the venturi away from the plenum, thereby creating a vapor gradient within and an air flow across the plenum;

d. means for supporting, within the plenum and in a zone of the vapor gradient of low vapor concentration, an article to be cleaned;

e. means for coupling the air venturi to a source of air under pressure;

f. pneumatic agitation means associated with at least one chamber;

g. pneumatic draining means associated with at least one chamber for actively withdrawing liquid contained therein; and

h. a common air line originating with the source of air under pressure, operatively connected to the draining means, the agitation means and the air venturi, and terminating at the air venturi.

5,360,028

SELF-ERECTING TENT ON FOLDING BASE

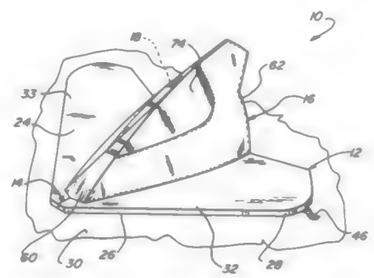
Mark S. Jasin, 3333 Blake St., Denver, Colo. 80205

Filed Mar. 11, 1994, Ser. No. 212,563
Int. Cl.[5] E04H *15/36*
U.S. Cl. 135—137 **19 Claims**

1. A self-erecting and collapsible tent, comprising:

a base having a top surface and a bottom surface, said base having a shape which is symmetrical about a fold line, said fold line delineating identical first and second halves which are selectively movcable between an open position in which the bottom surface of said base is supported on a substantially planar support surface and a closed position in which said two halves are folded over upon one another along said fold line;

a shell of substantially concave shape having an exterior surface, an interior surface, and an open bottom defining an outer periphery around said open bottom, said outer periphery defining a front end and a rear end, and having a shape symmetrical about a line of symmetry extending between said front end and said rear end, said outer periphery of said shell releasably attached to said top surface of said base so that said line of symmetry is coincident with and overlies said fold line of said base and so that said shell may be detached from said top surface to provide access to said base;



a resilient frame member supporting said shell above said top surface of said base to define an interior volume between said base and said interior surface of the shell when said first and second halves of said base are in said open position; and

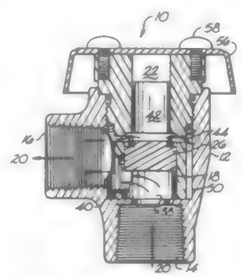
said shell and said resilient frame member fitting between said first and second halves of said base when said two halves are moved to said closed position.

5,360,029

VACUUM BREAKER

Richard J. Goughneour, Travelers Rest, S.C., assignor to T & S Brass and Bronze Works, Inc., Travelers Rest, S.C.

Filed Jun. 17, 1993, Ser. No. 78,401
Int. Cl.[5] E03C *1/10*
U.S. Cl. 137—218 **7 Claims**



1. A vacuum breaker, comprising:

a body member, said body member having an inlet and an outlet defined therein;

a chamber defined within said body member, said chamber defining a liquid passage through said body member from said inlet to said outlet;

a vent passage defined in said body member, said vent passage defining a vent path from said outlet to atmosphere;

a piston member movably disposed within said chamber between an upper limit stop and a lower limit stop so as to variably restrict said liquid passage, wherein at said lower limit stop said piston essentially seals said inlet from said outlet with said vent passage venting said outlet, and at said upper limit stop said piston essentially seals said vent passage from said outlet;

a core insert member fitted into said chamber, said piston member being movable within said core insert member, said core insert member defining an inlet opening mateable with said body inlet and an outlet opening mateable with said body outlet; and

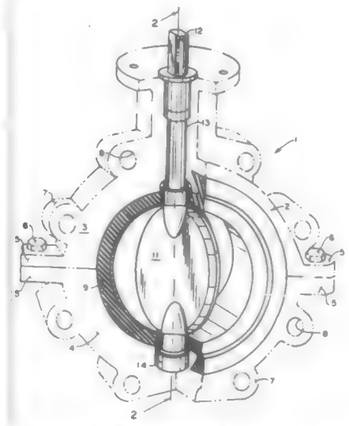
a drain passage separate from said outlet opening defined in said core insert member between said outlet opening and said upper limit stop, said drain passage defining a drain path for liquid entrapped within said chamber above said piston member to said outlet during movement of said piston within said chamber, wherein said piston member seals said drain passage from said vent passage when at said upper limit stop.

5,360,030

BUTTERFLY VALVE INCORPORATING SLEEVE SEALS

David E. Sisk, Rte. 1, Box 246 E, Bonne Terre, Mo. 63628

Filed Oct. 14, 1993, Ser. No. 136,093
Int. Cl.[5] F16L *7/00*
U.S. Cl. 137—375 **3 Claims**



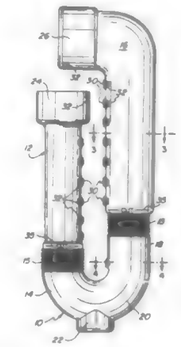
1. An industrial butterfly valve of the type including a disc valve pivotally mounted within a tubular housing through which material flows, said tubular housing having a flow chamber provided approximately centrally therethrough, said butterfly valve being located between spaced flanges provided within a material flow line, said flow line having a passageway therethrough and through which material flows as it also passes through the flow chamber of the tubular housing, said butterfly valve incorporating a pivot stem supporting said disc valve for its pivotal movement between the opened and closed positions, and pivot mounts in the form of apertures arranged diametrically of and within said tubular housing to mount for pivotal movement of the stem and disc valve, a gasket means provided within said tubular housing, said gasket having a liner formed thereon to isolate the gasket from the material flowing through the flow chamber, said liner having integral extensions extending diametrically away from each other and into the apertures forming the pivot mounts within the tubular housing, said stem extending from opposite edges of the disc valve and pivotally mounting through said housing, gasket means, and the extensions of its liner within the disposed apertures, the improvement comprising a sleeve device for lining the apertures from an inner surface of the flow chamber to an outer surface of the gasket means and said adjacent stem, thereby precluding any material flowing through the flow line from leaking proximate the valve stem and contacting the gasket means and said adjacent stem, said disc element being lined with a chemically resistant material, and said material extending a distance radially outwardly upon the stem supporting the disc element, said sleeve device also formed of chemically resistant material and mounting upon each valve stem and being in contact with the extended portions of the liner material upon the disc stem, and lapping the liner extensions provided upon the gasket liner, so as to prevent leakage of conveyed fluid material therethrough, and to separate the material flowing through the flow chamber from contacting the butterfly valve, its pivot stems, the gasket, and the tubular housing through which the material flows, each sleeve having a reduced diameter portion for contiguously mounting upon the pivotal stem and the stem therein, and said sleeve including an integrally enlarged diameter portion nearer the disc valve for contiguously lap mounting upon the proximate gasket liner extensions, each valve stem having an integrally formed shoulder provided a spaced distance from its mounted disc element, and the liner material coating the disc element extending outwardly upon said valve stem and to its formed integral shoulders, and the extended liner portions provided upon the disc and radially outwardly upon its stem extending outwardly of the gasket means through which the valve stem extends.

5,360,031

P-TRAP INSULATION AND ARTICLE

Steven R. Trueb, and Thomas W. Trueb, both of Ellington, Conn., assignors to Truebro, Inc., Ellington, Conn.

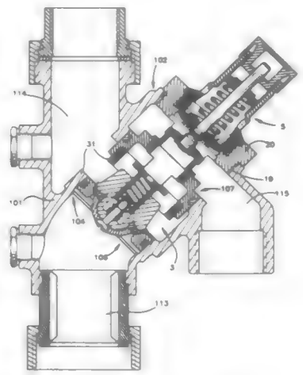
Continuation-in-part of Ser. No. 44,026, Apr. 8, 1993, Pat. No. 5,303,730, which is a continuation-in-part of Ser. No. 944,836, Sep. 14, 1992, Pat. No. 5,259,410, which is a continuation-in-part of Ser. No. 754,048, Sep. 3, 1991, Pat. No. 5,163,469, which is a continuation-in-part of Ser. No. 569,995, Aug. 20, 1990, Pat. No. 5,054,513. This application Feb. 22, 1994, Ser. No. 199,952
Int. Cl.[5] F16L *7/00, 9/22*
U.S. Cl. 137—375 **2 Claims**



1. A thermal insulation system for the P-trap piping assembly of a sink or the like, comprising a first, substantially J-shaped tubular piece and a second, substantially L-shaped tubular piece, both of said pieces being of unitary construction and fabricated from a resiliently yieldable material having thermal insulating properties, and both being longitudinally slit to permit spreading of the marginal portions extending along said slit for facile installation, said J-shaped piece including a toric section and two substantially straight sections extending in the same direction from said toric section, one of said straight sections having an end portion thereon of circular cross section, said L-shaped piece having a relatively short section and a relatively long section extending perpendicularly to one another, said relatively short section having an end portion thereon of circular cross section, said end portion of one of said pieces being enlarged relative to said end portion of the other

of said pieces so as to permit telescopic interengagement thereof with said pieces assembled with one another in any selected orientation of relative rotation.

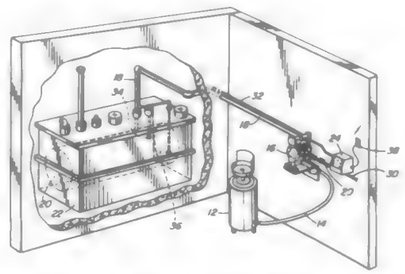
5,360,032
CONTROL VALVE ASSEMBLY
Rudolf Schenk, Alte Distelbergstra.se 5, CH-5035 Unterentfelden, Switzerland
Filed Aug. 30, 1993, Ser. No. 113,974
Claims priority, application Germany, Aug. 31, 1992, 4228944
Int. Cl.[5] F16K *15/06, 17/04*
U.S. Cl. 137—454.5 11 Claims



1. A home water supply station comprising:
a housing having an inlet chamber, an outlet chamber, and a flow back chamber.
a first orifice located between said inlet chamber and said outlet chamber, and a second orifice located between said outlet chamber and said flow back chamber;
a check valve member and a spring loaded safety valve member;
a support body member adapted to receive said check valve member and said safety valve member;
said check valve member and said safety valve member being arranged in said support body member one behind the other one along a common central longitudinal axis such that said first orifice can be closed by said check valve member and that said second orifice can be closed by said safety valve member;
said support body member together with said check valve member and said safety valve member received therein forming a modular unit; and
said modular unit being releasably inserted into said housing in such a manner that it can be removed from the outer side of said housing.

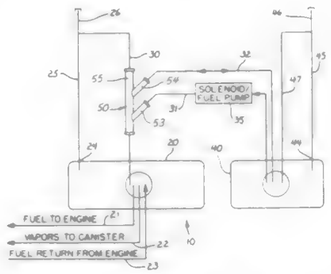
5,360,033
OIL TRANSFER SYSTEM
Tom Williams, Erin, and Larry Goertzen, Waterloo, both of Canada, assignors to Ecologic Waste Systems Corporation, Milton, Canada
Filed Aug. 25, 1993, Ser. No. 111,769
Claims priority, application Canada, Aug. 27, 1992, 2077024
Int. Cl.[5] F04B *49/10*
U.S. Cl. 137—565 6 Claims

1. A hazardous liquid removal and storage apparatus comprising, in combination:
an enclosed liquid storage tank;
an enclosed containment tank in which the storage tank is placed;
a liquid container for receiving hazardous liquid liquids to be disposed remote from the liquid storage tank and containment tank;
an air-actuated liquid pump in communication with the liquid container and the storage tank located intermediate the liquid storage tank and containment tank and the liquid container for transferring liquid from the liquid container to the storage tank;
a pressurized air supply for actuating the liquid pump;
an electrically energized solenoid actuated valve in the air supply separate from and remote from the liquid storage tank and containment tank for controlling the flow of air to the pump;
a control panel separate from and remote from the liquid storage tank and containment tank housing the electrically energized solenoid actuated valve and an electrical con-



trol circuit, said electrical control circuit having a pair of normally-closed electrical switches in series with the electrically energized solenoid actuated valve in the air supply;
a leak detector sensor in said containment tank and a tank full sensor in the storage tank each in electrical communication with one of the pair of normally-closed electrical switches to form a normally-closed series connected control circuit in electrical series with the solenoid-actuated valve for normally actuating the solenoid valve to permit the flow of pressurized air to the liquid pump for actuation of the pump, whereby sensing of a leak by the leak detector or sensing of a full tank by the tank full sensor will open the said series connected control circuit to de-energize the solenoid and stop the flow of air to the pump to cease the transfer of the liquid.

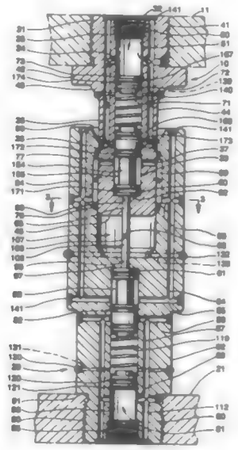
5,360,034
DUAL FUEL TANK SYSTEM
Raffi Der Manuelian, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 28, 1994, Ser. No. 203,175
Int. Cl.[5] E03B *11/00*
U.S. Cl. 137—571 5 Claims



1. A fuel tank system for a vehicle comprising:
a first fuel tank;
a second fuel tank;

a filler pipe communicating with the first fuel tank for adding fuel to the first fuel tank;
a fill limiter line communicating with the first fuel tank and the filler pipe including a fill limiter tee disposed in the fill limiter line;
fuel transfer means communicating with both fuel tanks for transferring fuel from the second fuel tank to the first fuel tank through the fill limiter tee;
a vapor-overflow conduit communicating with both fuel tanks for transferring fluid between the fuel tanks through the fill limiter tee.

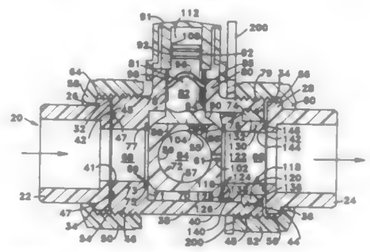
5,360,035
PRESSURE BALANCED POPPET VALVE FOR HYDRAULIC COUPLINGS
Robert E. Smith, Missouri City, Tex., assignor to National Coupling Company, Inc., Stafford, Tex.
Filed Jun. 25, 1993, Ser. No. 82,767
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.04 13 Claims



1. An undersea hydraulic coupling, comprising:
(a) a female member having a receiving chamber, and having a central bore for slidably receiving a poppet valve therein, and at least one pair of radial fluid passages extending into the central bore;
(b) a male member insertable into the receiving chamber, and having a central bore for slidably receiving a poppet valve therein, and at least one pair of radial fluid passages extending into the central bore;
(c) a poppet valve in at least one of the male and female members, the poppet valve axially slidable in the central bore of the member for blocking fluid flow between the pair of radial fluid passages when the poppet valve is in the closed position, and opening fluid flow between the pair of radial fluid passages when the poppet valve is in the open position, the fluid flow being in a direction substantially perpendicular to the axial sliding of the poppet valve.

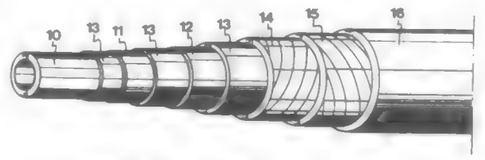
2. The undersea hydraulic coupling of claim 1 further comprising a poppet valve in each of the male and female members, and a valve actuator on each poppet valve, each valve actuator being positioned for contact with the opposing valve actuator to slide the poppet valve into the open position.

5,360,036
VENTED BALL VALVE WITH LOCK-OUT RING
Douglas A. Kieper, Finchville, Ky., assignor to Nibco, Inc., Elkart, Ind.
Filed Aug. 24, 1992, Ser. No. 934,789
Int. Cl.[5] F16K *11/02*
U.S. Cl. 137—625.22 21 Claims



1. A vented valve assembly comprising:
a valve body having first and second flow-through ends with a valve member receiving chamber thereinbetween;
a valve member disposed within said chamber, said valve member having a throughbore therein in operable alignment with said first end second flow-through ends and at least one valve member vent hole in flow communication with said throughbore;
means to rotate said valve member in and out of flow-through alignment with said first and second ends, said means to rotate said valve member comprising a stem extending through and being rotatably mounted within a stem receiving passage within said valve body communicating with said chamber, said stem being in cooperative relationship with said valve member; and,
atmospheric vent means in selected flow communication with said valve member vent hole, cooperative with said means to rotate said valve member, said atmospheric vent means including said valve body having a vent hole therethrough in flow communication with said atmosphere and a stem receiving passage, said stem receiving passage being in flow communication with said valve body vent hole and said chamber, said stem and stem receiving passage comprising sealing means selectively positionable providing a seal above, on, or below said valve body vent hole for controlling the venting of said fluids.

5,360,037
DIFFUSION-PROOF RUBBER HOSE HAVING PLASTIC MEMORY
Peter J. Lindström, Trelleborg, Sweden, assignor to Trelleborg Industri AB, Trelleborg, Sweden
Filed Jun. 29, 1992, Ser. No. 906,289
Claims priority, application Sweden, Jun. 28, 1991, 9102000-8
Int. Cl.[5] F16L *11/08*
U.S. Cl. 138—138 8 Claims



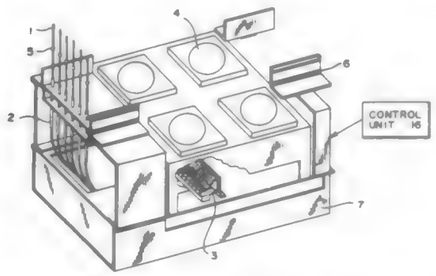
1. A plastically deformable hose made from elastomeric material and having a plurality of layers, comprising, an inner insert of metal material for making the hose diffusion-proof, said insert of metal material including at least two substantially completely overlapping metal foil layers which make the hose plastically deformable so as to have a plastic memory, each of

said metal foil layers being formed of a ductile metal material, and a polyethylene binder layer bonding said foil layers to each other.

5,360,038
SEAM WEAVING METHOD USING A SHEDDING SYSTEM WITH PNEUMATICALLY OPERATED HEDDLES

Seiji Sano, Tokyo, Japan, assignor to Nippon Filcon Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1992, Ser. No. 939,472
Claims priority, application Japan, Sep. 10, 1991, 3-307252
Int. Cl.[5] D03C *3/22*
U.S. Cl. 139—383 AA **16 Claims**

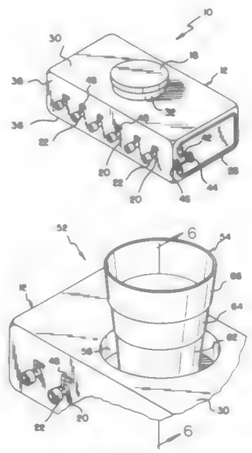


1. A method of joining ends of a fabric by a woven seam to form an endless fabric, comprising:
(a) preparing an interweaving piece made of the same kind of fabric as said fabric to be joined, and which has an interweaving width corresponding to a woven seam width of a woven seam for joining ends of said fabric, and a length longer than a transverse width of said fabric to be joined, said interweaving piece having a longitudinal end area with a fabric structure and a remaining area containing weft threads alone having warp threads removed therefrom,
(b) removing weft threads in end zones of said fabric over a width substantially equal to said woven seam width to form interweaving portions made up of warp threads alone,
(c) holding said interweaving portions on a weaving table so that said interweaving portions face each other at a distance equal to said woven seam width, so as to define a space therebetween, and placing said interweaving piece in said space so that said longitudinal end area of said interweaving piece is positioned along a transverse end of each of said interweaving portions,
(d) causing said weft threads of said interweaving piece to pass through eyes of a plurality of heddles, said heddles being supported at an end and being individually coupled to top ends of piston rods of a plurality of pneumatic cylinders,
(e) attaching weights to ends of said weft threads of said interweaving piece which are opposite said longitudinal end area, so as to apply tensile force to said weft threads,
(f) operating electromagnetic valves connected to said pneumatic cylinders by a signal from a control unit,
(g) moving said heddles vertically upwardly and downwardly by stroke movement of said pneumatic cylinders so as to form a shed in an array of said weft threads passing through said eyes of said heddles, and
(h) introducing said warp threads of said interweaving portions into the shed to form said woven seam.

5,360,039
WASTE OIL COLLECTOR

Michael J. Verrilli, 2985 Montessouri St., Las Vegas, Nev. 89117

Filed Jul. 22, 1993, Ser. No. 95,333
Int. Cl.[5] B65B *39/00;* **B67C** *11/00;* **F16N** *31/00*
U.S. Cl. 141—98 **1 Claim**

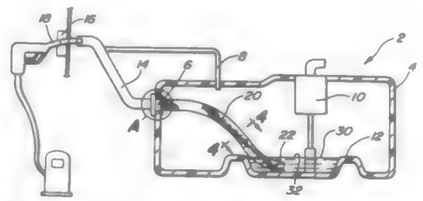


1. An oil collection and dispensing apparatus comprising:
a container adapted to be positioned beneath a vehicle engine, said container having a top wall, a bottom wall, and a side wall therearound, said container further having an opening in said top wall of said container through which oil from said vehicle engine may flow into said container;
a plurality of apertures in said side wall;
a plurality of valves, with each of said valves being coupled to one of said apertures in said side wall, said valves being operable to selectively allow fluid communication therethrough;
a plurality of couplers, each of said couplers being coupled to one of said valves, said couplers each being operable to engage a substantially emptied oil bottle and allow fluid communication between said bottle and said valve, whereby a plurality of said bottles may be simultaneously filled;
a cap removable coupled to said top wall to cover said opening;
at least one leg coupled to said container for supporting said container above a ground surface such that a portion of said sidewall is parallel to said ground surface;
a funnel assembly in fluid communication with said opening, said funnel assembly comprising a plurality of concentrically nested funnel portions, said funnel portions being slidably operable to telescopically extend from a compacted position;
and,
a debris removable assembly removably coupled to a portion of said funnel assembly, said debris removably assembly comprising a filter tray having a plurality of apertures in a bottom area thereof, a filer having a filtering material encapsulated by a mesh netting positionable within said filter tray, and a magnet removably coupled to said filter tray and positioned below said plurality of apertures;
wherein said magnet is formed in the shape of a truncated cone defining a top area thereof which is positioned immediately below said plurality of apertures in said filter tray and a bottom area thereof against which metal particles may reside removed from a flow of oil thereover.

5,360,040
FUEL TANK FILL CONTROL DEVICE

John E. Thorn, Sylvania, Ohio, and Daniel R. Clayton, Owosso, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1993, Ser. No. 131,224
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—98 **12 Claims**

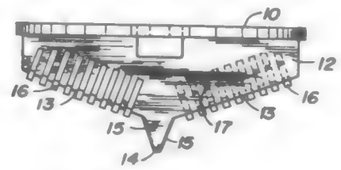


1. A fuel tank assembly for liquid fuel, comprising:
a fuel tank having a filler pipe, said filler pipe having a first end for receiving fuel and a second end communicating with the interior of said tank; and
a conduit comprised of pervious material attached to said second end and extending into said tank, said conduit having a portion that is at least partially collapsible, wherein the at least partially collapsible portion of said conduit collapses after fuel delivered to said tank reaches a predetermined fill point.

5,360,041
STUMP GRINDER

H. J. Stevens, 518 Gould Field Rd., Smackover, Ark. 71762

Filed Dec. 15, 1993, Ser. No. 166,834
Int. Cl.[5] B27C *3/00;* **A01G** *23/00*
U.S. Cl. 144—2 N **6 Claims**



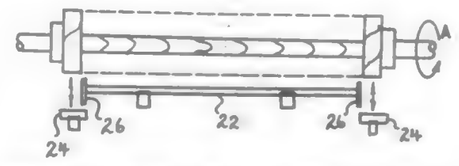
1. A stump grinder adapted to be attached to and driven by a bushhog, comprising:
(a) a horizontal circular plate having mounting holes for attachment to the bushhog;
(b) a vertical plate rigidly affixed to and depending from said horizontal circular plate, said vertical plate having a central bit and a plurality of cutting teeth depending from said vertical plate and rigidly affixed thereto.

5,360,042
VENEER MANUFACTURING PROCESS

Tai Y. Teh, Lot 8028, Batu 4, Jalan, Mengkibol, 86000 Kluang, Johor, Malaysia

Filed Jul. 20, 1993, Ser. No. 94,464
Claims priority, application Malaysia, Nov. 27, 1992, PI 9202191
Int. Cl.[5] B27C *7/00;* **B27L** *5/02*
U.S. Cl. 144—365 **8 Claims**

1. A veneer manufacturing process, comprising the steps of:
engaging each end of a log with a chuck, the chuck being proportionally smaller than the diameter of the log;
rotating the log about its longitudinal axis;
bringing a blade system into engagement with the rotating log such that a continuous sheet of veneer is cut from the log, the blade system having retractable end sections and a central blade section combining to form a blade having a length greater than the entire length of the log such that the sheet of veneer is as wide as the entire length of the log;
retracting the end sections of the blade system prior to the blade system striking the chucks; and

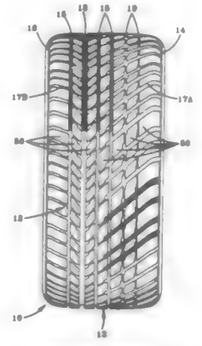


continuing engagement of the central blade section with the rotating log such that a narrower continuous sheet of veneer is removed from a central portion of the log between the chucks.

5,360,043
ASYMMETRIC TREAD FOR A TIRE

Warren L. Croyle, Akron, and Randall R. Brayer, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 26, 1991, Ser. No. 736,182
The portion of the term of this patent subsequent to Apr. 20, 2007, has been disclaimed.
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 A **8 Claims**



1. An asymmetric directional tread for a tire wherein the tread when configured annularly has an axis of rotation, a tread width TW, first and second lateral edges and an equatorial plane centered between the edges, the tread comprising a plurality of ground engaging tread elements separated by grooves, the grooves comprising one wide circumferentially continuous groove having a width W, located in a range of 25% to 40% of the tread width TW from the first lateral edge, a plurality of circumferentially continuous grooves of an intermediate width between greater than ½ and ¾W, at least one circumferentially continuous groove narrower than the intermediate width groove having a width 1/10 to less than ½W, the wide groove located between circumferential grooves of a lesser width and the narrow grooves being axially located in proximity to and axially between a lateral edge and a circumferential groove of greater width, a first set of lateral grooves extending angularly from the second lateral edge to a first axially inner end location of the first set of lateral grooves in proximity of the equatorial plane, the axially inner end location being within 5% of the tread width from the equatorial plane and intersecting at least one circumferential groove, the lateral

grooves of the first set having an intermediate width of ½ to ¾W over a distance between 50% and 100% of the length of the lateral groove, a second set of lateral grooves oppositely angled over a majority of the length of the groove relative to the lateral grooves of the first set, the lateral grooves of the second set extending from the first lateral edge to an axially inner end location of the second set of lateral grooves in proximity of the equatorial plane, the axially inner end location of the second set of lateral grooves being within 5% of the tread width from the equatorial plane, the second set of lateral grooves having a width between ¼ and ½W the width of the first set of lateral grooves being greater than the width of the second set of lateral grooves.

5,360,044

PNEUMATIC RADIAL TIRE WITH HIGH CORNERING AND STEERING STABILITY

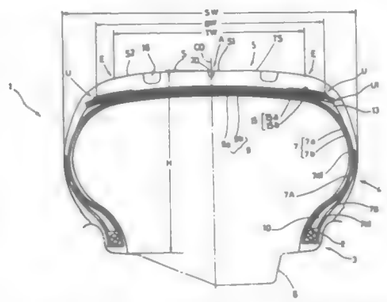
Kenji Saito; Akira Kajikawa, and Kazuo Asano, all of Kobe, Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Division of Ser. No. 964,034, Oct. 21, 1992, Pat. No. 5,277,235, which is a division of Ser. No. 598,390, Oct. 18, 1990, Pat. No. 5,222,537. This application Jun. 18, 1993, Ser. No. 78,111

Claims priority, application Japan, Oct. 19, 1989, 1-272460; Dec. 29, 1989, 1-341264

Int. Cl.[5] **B60C** *3/00, 11/00*

U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic tire comprising a carcass in radial structure extending from a tread part through side wall parts and folded at each edge around a bead core of a bead part, and a belt layer composed of two belt plies disposed radially outside said carcass, said belt layer having a pair of axial outer edges, each of said pair of axial outer edges being defined where the two belt plies overlap, wherein;

a tread surface is formed along a specific curvature plane which includes

a first arc with the curvature radius R1 having a center on the tire's equatorial plane and passing through the tire's equatorial point,

a second arc with the curvature radius R2 having a center on the tire's equatorial plane and intersecting with said first arc at an intersection distant from the tire's equatorial plane by 0.2 to 0.25 times the tire width SW, and

a third arc with the curvature radius R3 passing through a ground contact outer edge point of the ground contact surface in the axial direction of a tire when a standard load is applied and a belt intermediate height point on the tread surface,

said belt intermediate height point on the tread surface being defined as a point at which a tire axial direction line crosses the tread surface extending in parallel with the tire's axis from a thickness center of one of said pair of axial outer edges; and

the tread surface is provided with a pair of main circumferential grooves, one of said main circumferential grooves extending on each side of the tire's equatorial plane at said intersection of the first arc and the second arc in the tire circumferential direction for dividing the tread surface into a crown part and an outer shoulder part, each said main circumferential groove having a groove width of 0.06 to 0.10 times the tire width SW, and with a plurality of narrow lateral grooves crossing the tire circumferential direction for dividing the crown part and the shoulder parts into a plurality of blocks, wherein

the specific curvature plane has a curvature radius ratio R2/R3 in a range from 4 to 12, and a curvature radius ratio R1/R2 in a range from 1.2 to less than 1.6 when the aspect ratio H/SW of the tire sectional height H to the tire width SW is 0.70 or more.

5,360,045

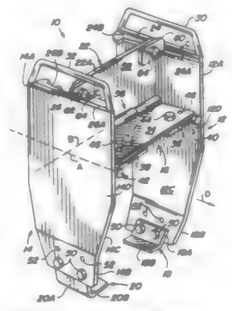
WHEEL TRACTION LOG ASSEMBLY

Donald R. Campbell, 1210 W. 7th Rd., Aurora, Nebr. 68818

Filed Aug. 9, 1993, Ser. No. 103,424

Int. Cl.[5] **B60C** *27/04*

U.S. Cl. 152—225 C **16 Claims**



1. A wheel traction lug assembly, comprising:

(a) a pair of side members being disposed in parallel relationship to a forward direction of movement of a wheel upon which said traction lug assembly is mounted during use, said side elements having wedge-shaped elements on upper ends thereof extending toward one another so as to define a wedge-shaped gap therebetween being wider at respective front ends than rear ends of the wedge-shaped elements;

(b) a cross member pivotally attached to and extending between said side members between upper and lower ends thereof such that said side members are pivotal relative to said cross member and toward and away from one another about respective first axes extending parallel to one another and to the forward direction of movement of the wheel mounting said traction lug assembly;

(c) means disposed on said lower ends of said side members for gripping opposite sides of a rim on the wheel; and

(d) a lug extension member pivotally mounted to said cross member for pivotal movement about a second axis extending perpendicular to said first pivotal axes of said side members, said lug extension member extending upwardly through said wedge-shaped gap between said wedge-shaped elements on said side members and engaging said wedge-shaped elements between said respective front and rear ends thereof whereby, as said extension lug plate is forced to pivot in a rearward direction relative to said side members between said wedge-shaped elements toward said rear ends thereof in response to encountering the ground due to forward movement with the wheel mounting said lug assembly, said side members are forced to pivot away from one another at said upper ends thereof and toward one another at said lower ends thereof such that the tighter said lug extension member becomes wedged between said wedge-shaped elements on said upper ends of said side members the tighter said gripping means on said lower ends of the side members grip opposite sides of the wheel rim so as to remain at a stationary position about the wheel rim.

5,360,046

HEAVY DUTY TIRE WITH REDUCED SHOULDER WEAR AND IMPROVED WANDERING PERFORMANCE

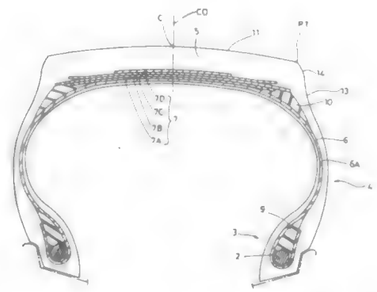
Yoshiyuki Takada, Kobe, and Atsushi Yamahira, Nishinomiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jun. 3, 1991, Ser. No. 709,297

Claims priority, application Japan, Jun. 15, 1990, 2-158199; Mar. 19, 1991, 3-081763

Int. Cl.[5] **B60C** *3/00, 9/20, 11/03*

U.S. Cl. 152—454 **4 Claims**



1. A pneumatic tire for heavy duty having a profile comprising

a tread profile extending between tread edges (PT),

a buttress profile extending radially inwardly from a point (PB) on the surface of each tire sidewall, and

a connecting profile extending between each tread edge (PT) and said point (PB),

wherein in a cross section including the tire axis,

the tread profile is formed by an arc having an outwardly swelling curvature of a radius (TR),

each buttress profile is formed by an arc having an inward swelling curvature of a radius (BR),

each connecting profile is formed by an arc having an outwardly swelling curvature and intersecting the tread profile at the tread edge (PT) to form a angled corner and smoothly connected with the buttress profile at the point (PB),

the ratio (t/m) of the radial distance (t) between the tread edge (PT) and the equatorial point (C) on the tread profile to the axial distance (m) therebetween is 0.09 to 0.12,

the ratio (m/L) of said axial distance (m) to the axial distance (L) between the equatorial point (C) and an imaginary point (PS) at which the tread are having the radius of curvature (TR) and the buttress arc having the radius of curvature (BR) intersect each other if extended is 0.85 to 0.95, and

the inclination angle (θ) of the tangential line (T) to the connecting profile drawn at each tread edge (PT) is 20 to 60 degrees with respect to the radial direction of the tire.

5,360,047

HEAVY DUTY RADIAL TIRE WITH SPECIFIED BELT RADIUS ,

Kenichi Fujiwara, Miki, Japan, assignor to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Nov. 6, 1992, Ser. No. 972,909

Claims priority, application Japan, Nov. 8, 1991, 3-320989; Nov. 8, 1991, 3-320990

Int. Cl.[5] **B60C** *3/04, 9/20, 9/28*

U.S. Cl. 152—454 **2 Claims**

1. A heavy duty radial tire comprising

a tread portion with a tread face,

a pair of axially spaced bead portions,

a pair of sidewall portions extending between tread edges and the bead portions,

a pair of bead cores each disposed in each of the bead portions,

a carcass having at least one ply of cords extending between the bead portions and turned up around the bead cores, and

a belt disposed radially outside the carcass in the tread portion and composed of four plies of parallel cords laid at an angle of from 5 to 70 degrees with respect to the tire equator, said four plies including a first ply, a second ply, a third ply, and a fourth ply disposed in that order from the carcass toward the tread surface, the second ply being the widest of said four plies and the fourth ply being the narrowest of said four plies,

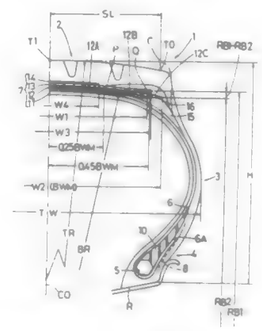
the cords in the first ply inclined at a larger angle, and the cords in the second ply inclined at a smaller angle, with respect to the tire equator,

the cords in the second ply inclined toward the same direction as the first ply with respect to the tire equator,

the cords in the third ply inclined toward the reverse direction to the second ply with respect to the tire equator,

the cords in each of the widest second ply and the third ply inclined at an angle of 14 to 22 degrees with respect to the tire equator,

the difference RB1–RB2 of the belt radius RB1 measured at



a pair of axially inner points P from the belt radius RB2 measured at a pair of axially outer points Q in an unloaded state being in the range of 0 to 0.05 times a half ground contacting width SL, wherein

each of said belt radius RB1 and of said belt radius RB2 is defined as measured from the tire axis to the radially inner surface of the second ply,

said pair of axially inner points P are defined on the radially inner surface and each spaced apart from the tire equator toward each side thereof by a distance of 0.25 times the axial width (BWM) of the second ply,

said pair of axially outer points Q are defined on the radially inner surface and each spaced apart from the tire equator toward each side thereof by a distance of 0.45 times the axial width (BWM) of the second ply,

said half ground contacting width SL is ½ of the axial width measured in said unloaded state between two points on the tread face which two points correspond to the axially outermost edges of the ground contacting area of the tread face in a loaded state,

said loaded state is that the tire is mounted on its regular rim and inflated to its regular inner pressure and loaded with its regular tire load, and

said unloaded state is that the tire is mounted on its regular rim and inflated to its regular inner pressure but loaded by no tire load, and

in a cross section including the tire axis, the radially inner surface of the second ply having lateral parts each having

a single radius (BR) of curvature being in the range of 2.0 to 2.8 times the maximum section width (TW) of the tire, each said lateral part defined as extending from each said axially inner point P to the axially outer edge thereof, wherein

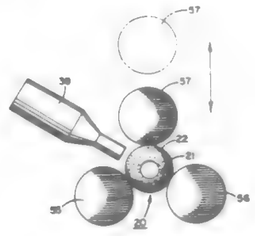
the aspect ratio of the tire is in the range from 0.85 to 1.2, and the axial width (BWM) of the second ply is in the range of 0.68 to 0.95 times the maximum tire section width.

5,360,048

SURFACE COATED, EASILY MOUNTABLE CUSHIONING MEMBER AND METHOD OF MANUFACTURE

Eduardo Lauer, Zebulon, N.C., assignor to NMC of North America, Inc., Zebulon, N.C.

Filed May 27, 1993, Ser. No. 67,587
Int. Cl.[5] B32B *31/26*
U.S. Cl. 156—86 **3 Claims**



1. A system for manufacturing an integrally bonded, surface coated, cushioning member constructed for mounting to an otherwise hard-surfaced product wherein said surface coated cushioning member comprises a substrate having a desired overall configuration formed from one or more compounds selected from the group consisting of thermoplastic polymers, elastomeric polymers, copolymers, natural rubbers, and synthetic rubbers and further comprises an elongated, hollow, substantially cylindrically shaped configuration which is formed by foaming, providing a soft, compressible substrate capable of imparting the desired cushioning effect to the hard-surfaced product upon which it is mounted, and said surface coating comprises a thin film layer formed from heat shrinkable material which loosely peripherally surrounds the outer surface of said substrate, said system comprising

A. support means for securely retaining the substrate and the thin film layer and comprising at least one roller assembly incorporating three roller members, each mounted for rotational movement about an axis, with each of said axes being parallel to each other and substantially parallel to the central axis of the cylindrically shaped substrate, thereby continuously rotating the substrate at a preset, desired rate of speed; and

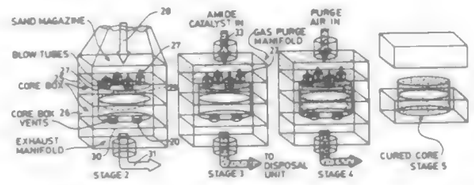
B. at least one hot air delivery member positioned directly adjacent one end of the substrate and film layer for delivering a continuous flow of heated air thereto and mounted for being automatically advanced along the length of the substrate at a predetermined rate of speed for heating a portion of the film layer to its melting point and causing said film layer to shrink into bonded affixation with the outer surface of the substrate while continuously advancing along the entire length of the film coated substrate for automatically intimately bonding the entire film layer to the surface of the substrate.

5,360,049

CORE BOX VENT CONSTRUCTION

Melvin L. Rowe, 9434 Lakewood, Grosse Ile, Mich. 48138

Filed Jan. 7, 1993, Ser. No. 1,700
Int. Cl.[5] B22C *7/06, 9/12*
U.S. Cl. 164—16 **3 Claims**



1. A core box vent construction for use in a core box that molds sand grains, comprising a porous cylinder of sintered ceramic material, selected from Al_2O_3 and SiO_2, the pores of such ceramic material providing the sole means for passage of material through the vent, said pores being circuitous, labyrinthium and having a dimension less than that which allows passage of said sand grains to be introduced to the core box.

3. A method of making cores, comprising:

(a) forming mateable core box sections with blow tubes permitting introduction of an air fluidized sand mixture into the interior of the mating core box sections, and further forming one or more ceramic core box vents in the exhaust side of the mated core box section to permit egress of air used to fluidize the sand mixture, said vents having a labyrinth of passages or pores smaller in diameter than that which allows intrusion of the grain size of said sand mixture;

(b) blowing a sand and resin mixture through said blow tubes into said mated core box sections and prevented from exiting through said vents, said resin being curable to polyurethane by chemical reaction;

(c) forcing a catalyst curing gas through said blow tubes to cure said sand and resin mixture again without migration of any of said sand through said vents; and

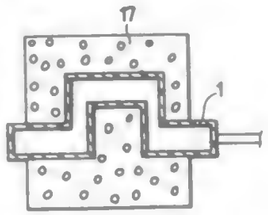
(d) purging said core box sections with air introduced through said blow tubes and exiting from said core sand mixture via said vents.

5,360,050

METHOD OF PREPARING DISAPPEARING MODEL

Hidenobu Miyajima, Shizuoka, Japan, assignor to Asahi Tec Corporation, Shizuoka, Japan

Continuation of Ser. No. 858,849, Mar. 27, 1992, abandoned. This application Mar. 24, 1994, Ser. No. 217,216
Claims priority, application Japan, Mar. 29, 1991, 3-067224; Jul. 11, 1991, 3-171449; Nov. 26, 1991, 3-311095
Int. Cl.[5] B22C *7/02, 9/04;* B22D *19/00*
U.S. Cl. 164—45 **10 Claims**



1. A method of preparing a disappearing model, comprising the steps of:

forming a hollow film-like molded body in a mold, said film-like molded body including an inner portion being substantially the same shape of a hollow portion of a predetermined contour, said film-like molded body being able to retain its shape without additional support;

preparing a disappearing foam model around said film-like molded body; and

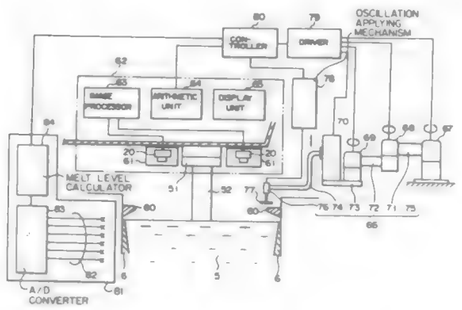
applying a facing agent to the entire exposed surface of said disappearing model.

5,360,051

CONTINUOUS CASTING METHOD AND APPARATUS FOR IMPLEMENTING SAME METHOD

Makoto Takahashi; Masami Temma, and Atsuhiro Goto, all of Sakai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 700,118, May 10, 1991, Pat. No. 5,242,014, which is a continuation of Ser. No. 443,541, Nov. 30, 1989, abandoned. This application Jun. 8, 1993, Ser. No. 73,649
Claims priority, application Japan, Nov. 30, 1988, 63-303236; Dec. 16, 1988, 63-317844; Mar. 6, 1989, 1-053468; Mar. 8, 1989, 1-055900; Mar. 8, 1989, 1-055901
Int. Cl.[5] B22D *43/00*
U.S. Cl. 164—155.3 **8 Claims**



1. In a continuous casting apparatus including a mold and a multi-functional robot said robot further comprising:

a multi-articulated support arm, said support arm being freely rotatable and vertically movable, and having at its distal end an automatic tool changer mechanism, and a drive controller for driving said support arm;

at least one visual sensor disposed near a working region of said support arm for picking up images of the working region of said robot;

a load sensor disposed near said automatic tool changer mechanism for detecting the load exerted on a tip end of a tool;

a process detecting sensor for detecting operating conditions of said continuous casting process to be handled by said robot; and

a synthetic judgement controller which includes:

a) an input means for receiving input signals from said visual, load and process detecting sensors;

b) a judging means for processing said input signals in accordance with a previously established sequence, and judging situations in working contents of said robot and the working region of said robot at a current time;

c) a setting means for pre-setting priority of working positions and the working contents based on current operating conditions of the process to be handled by said robot and situations in the working region of said robot;

d) a comparing and deciding means for comparing respective signals from said judging means and said setting section with each other, and scheduling and deciding the highest-priority or a most efficient working content dependent on the current situations; and

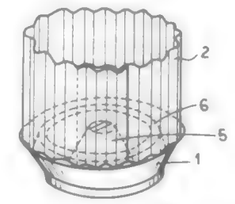
e) a control means for issuing at least one of a tool change command signal to said automatic tool changer mechanism, a drive control signal to said support arm drive controller, and a control signal to control said process based on decision of the working contents made by said comparing and deciding means.

5,360,052

CASTING RING FORMERS

Aleksander Tomic, Dvori 9, 66310 Izola, Yugoslavia, and Stefan Zaiaznik, Saskova 6, 61201 Ljubljana, Yugoslavia

Continuation of Ser. No. 895,888, Jun. 8, 1992, abandoned. This application Nov. 25, 1992, Ser. No. 982,247
Int. Cl.[5] B22C *9/04, 7/02*
U.S. Cl. 164—412 **4 Claims**



1. A casting ring former for producing a mold for a dental prosthesis, comprising:

a base formed with a central funnel-shaped rise upon which a form for a dental prosthesis can be disposed, and an annular wall surrounding said funnel-shaped rise; and

an undulating tape assembly received in said base between said rise and said wall and forming a casting ring in which a material can be cast to provide said mold, said funnel-shaped rise having an upwardly converging frustoconical configuration terminating in a pedestal, said base further comprising a ridge defined between two upwardly converging frustoconical flanks between said rise and said wall, said wall having a frustoconical configuration, an outer one of said flanks is formed with two nipple-shaped protuberances and said wall is formed with two inwardly-extending bulges engageable with said tape for retaining same in a cylindrical configuration within said base.

5,360,053

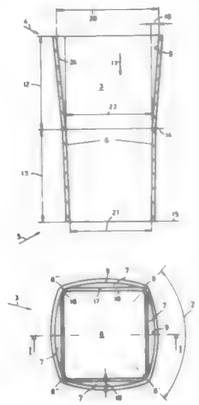
CONTINUOUS CASTING MOLD FOR STEEL

Franciszek Kawa, Adliswil, and Adrian Stilli, Bülach, both of Switzerland, assignors to Concast Standard AG, Zürich, Switzerland

Filed Feb. 5, 1992, Ser. No. 831,681
Claims priority, application Switzerland, Feb. 6, 1991, 00367/91; Nov. 8, 1991, 03263/91
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—418 **19 Claims**

1. Mold for the continuous casting of metals, comprising wall means defining a casting passage having a periphery, a longitudinal axis, an open inlet end for molten metal and an open outlet end for a continuously cast strand of the metal, said ends being spaced from one another axially of said passage, and said passage including a portion in which said periphery comprises a plurality of first sections circumferentially of said passage, said portion extending axially from said inlet end towards said outlet end, and said first sections being located in the region of said inlet end and abutting one another along axially extending boundaries, each of said first sections having a corresponding second section at said outlet end, and each of said first sections defining a cross-sectional enlargement of said passage, relative to the corresponding second section, in the form of a bulge, each of said bulges having a depth which decreases in a direction from said inlet end towards said outlet

end such that the strand is shaped during travel through said axially extending portion of said passage, and each of said

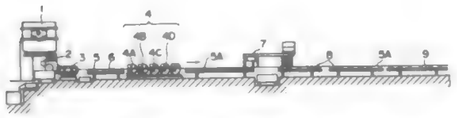


bulges extending from one boundary of the respective first section to the other.

5,360,054
METHOD AND APPARATUS FOR PERFORMING HORIZONTAL CONTINUOUS CASTING

Hideo Kaneko, and Hatsuyoshi Kumashiro, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Oct. 6, 1992, Ser. No. 957,040
Claims priority, application Japan, Oct. 11, 1991, 3-292192; Sep. 3, 1992, 4-235485
Int. Cl.[5] B22D *11/12, 11/128*
U.S. Cl. 164—476 **22 Claims**



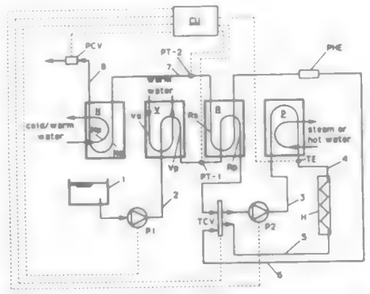
1. A horizontal continuous casting apparatus, comprising:
a tundish in which a molten metal material is stored;
a mold assembly connected air-tightly to the tundish for casting an initial billet having a substantially round cross section; and
an extraction means disposed on a downstream side of the mold assembly for forming a billet having a predetermined shape from the initial billet fed from the mold assembly, said extraction means comprising a plurality of formation roll means arranged along a casting direction of the initial billet, said formation roll means being composed of horizontal circular roll pairs, press means for pressing the roll pairs against the initial billet and drive means for driving the roll pairs.

15. A horizontal continuous casting method performed using a tundish in which a molten metal is stored and having a mold assembly air-tightly connected to the tundish, said method comprising the steps of:
feeding a molten metal to the mold assembly from the tundish;
molding a billet in the mold assembly so as to cast a billet having a substantially circular cross section; and
press forming the billet drawn from the mold assembly so as to have a predetermined thin plate-like thickness, said press forming step being carried out in a plurality of stages along a billet casting direction towards a downstream side thereof.

5,360,055
METHOD AND APPARATUS FOR HEAT TREATING A FLUID PRODUCT

Gerhard Hup, Leeuwarden, and Warmold Huizing, Asserstraat, both of Netherlands, assignors to Friesland(Frico Domo) Cooperatie B.A., Leeuwarden, Netherlands

Filed Feb. 8, 1993, Ser. No. 14,660
Claims priority, application Netherlands, Feb. 7, 1992, 9200235
Int. Cl.[5] A23C *3/033;* **F28F** *27/00;* **A23L** *3/22, 2/16*
U.S. Cl. 165—2 **7 Claims**



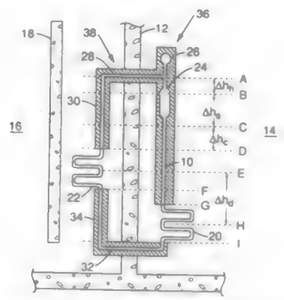
1. A method for heat treating a fluid product, in which the product is drawn from a supply and preheated in one or more stages by countercurrent heat exchange, brought up to the desired treatment temperature in a throughflow heat exchange process and subsequently maintained at the treatment temperature for a given time, and in which the product, as long as it has the proper treatment temperature, is discharged through pumping action for further processing after the countercurrent heat exchange stage wherein the heat of the treated product is at least partly used for preheating and wherein a positive pressure difference between the secondary and the primary countercurrent heat exchange sections is maintained through said pumping action, if the temperature of the treated product is below said desired treatment temperature, the treated product is recirculated in the final-temperature heating section through said pumping action, and including the steps of maintaining in the primary countercurrent heat exchanger section, a higher pressure than the atmospheric pressure through supply pump action, switching off said supply pump action when the product is recirculated through the final-temperature heating section, maintaining said secondary countercurrent heat exchange section at a higher pressure than the pressure in said primary countercurrent heat exchanger section, switching off said supply pump action when the pressure difference between the primary and the secondary countercurrent heat exchanger sections drop out, recirculating the product to be treated through the final-temperature heating section and stopping the discharge of the product.

3. In an apparatus for heat treating a fluid product and discharging said product via a discharge pipe, comprising a supply tank interconnected, by means of pipes, in the order named to the primary ducts of at least one preheating heat exchanger, to be referred to as regenerator, a first pump, a final-temperature heat exchanger, to be referred to as pasteurizer, a temperature maintaining element, and a multi-position valve, a temperature sensor arranged between the pasteurizer and the multi-position valve, said multi-position valve, in a first position, being in communication with the secondary duct of the preheating heat exchanger arranged upstream of the pasteurizer, and, in a second position, being in communication with the entrance of said first pump, said apparatus further including a second pump, to be referred to as product supply pump, arranged directly downstream of the supply tank, and means for maintaining a positive pressure difference between the secondary and primary ducts of each preheating heat exchanger, both in the first and in the second position of the multi-position valve and including means to switch off said product supply pump when said multi-position valve is in said second position.

5,360,056
TEMPERATURE INITIATED PASSIVE COOLING SYSTEM

Charles W. Forsberg, Oak Ridge, Tenn., assignor to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jul. 28, 1993, Ser. No. 98,550
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—32 **7 Claims**

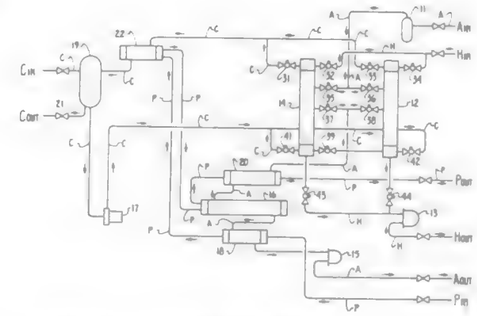


1. A temperature initiated passive cooling system for removing heat from an enclosure to a heat sink comprising:
a passive closed heat transfer loop comprising first and second heat exchangers, said first heat exchanger disposed in communication with said enclosure at a first level, said second heat exchanger disposed in communication with said heat sink at a second level, said second level being above said first level;
a first communicating means for communicating an outlet of said first heat exchanger with an inlet of said second heat exchanger, said first communicating means extending to a predetermined third level, said third level being above said second level, said first communicating means being insulated from said third level downwardly toward both said first heat exchanger and said second heat exchanger to a fourth level, said fourth level being above said second level and below said third level;
a second communicating means for communicating an outlet of said second heat exchanger with an inlet of said first heat exchanger; and,
a heat transfer fluid contained in said heat transfer loop, said heat transfer fluid having a particular thermodynamic critical point temperature,
said heat transfer fluid existing partly as an essentially stagnant gas and partly as an essentially stagnant liquid at an enclosure temperature no higher than a maximum standby temperature, said heat transfer fluid having a gas/liquid interface above each of said first heat exchanger and said second heat exchanger, each of said gas/liquid interfaces being at a level between said third and fourth levels, minimizing heat transfer from said enclosure to said heat sink,
said heat transfer fluid existing as a single phase at an enclosure temperature at least as high as said particular thermodynamic critical point temperature, said heat transfer fluid circulating through said heat exchange loop to transfer heat from said enclosure to said heat sink.

5,360,057
DUAL-TEMPERATURE HEAT PUMP APPARATUS AND SYSTEM

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Filed Sep. 9, 1991, Ser. No. 756,445
Int. Cl.[5] F25B *17/08*
U.S. Cl. 165—104.12 **25 Claims**



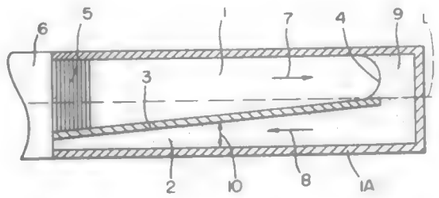
1. Apparatus for simultaneously supplying heating and cooling or refrigeration, comprising:
first and second reactors, each containing a reactant comprising a complex compound of a metal salt selected from the group consisting of a metal oxide, halide, nitrate, nitrite, sulfate, oxalate and sulfide and mixtures and compounds thereof, wherein the metal is selected from the group consisting of alkali metal, alkaline earth metal, transition metal, aluminum, zinc, cadmium and tin, and a gaseous refrigerant adsorbed thereon selected from the group consisting of ammonia, water, sulfur dioxide, lower alkanol, alkanolamine, polyamine and phosphine, or a metal carbonate comprising a reaction product of said metal oxide and carbon dioxide gaseous refrigerant,
a condenser for condensing said gaseous refrigerant;
a first refrigerant conduit assembly for directing said gaseous refrigerant alternately to said first and second reactors, respectively, a second refrigerant conduit assembly for directing gaseous refrigerant alternately from said first and second reactors, respectively, to said condenser, and a third refrigerant conduit assembly for directing condensed gaseous refrigerant from said condenser to refrigerant condensate receiving means,
heating means for heating said complex compound or said metal carbonate alternately in said first and second reactors, respectively, and heat extraction means including a first heat exchanger for providing heat exchange communication between said condenser and said first and second reactors for extracting heat from said complex compounds carbonate alternately in said first and second reactors, respectively, and
a first fluid conduit assembly for directing a heat transfer fluid in heat exchange communication with said condenser and said heat extraction means whereby said heat transfer fluid becomes heated by said heat exchange communication, and a second fluid conduit assembly for directing said heated heat transfer fluid from said condenser to receiving means therefor.

5,360,058

HEAT PIPE FOR TRANSFERRING HEAT

Alois Koeppl, and Robert Mueller, both of Moordeich, Germany, assignors to ERNO Raumfahrttechnik GmbH, Bremen, Germany

Filed Jul. 8, 1993, Ser. No. 90,334
Claims priority, application Germany, Jul. 8, 1992, 4222340
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—104.26 12 Claims



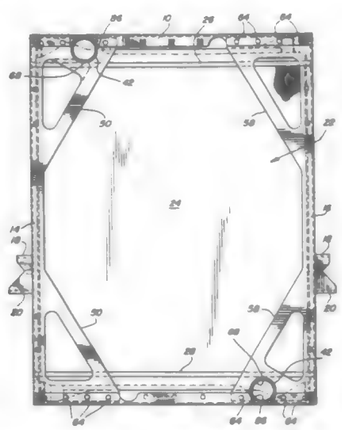
1. A heat pipe for transmitting heat from a location of higher temperature to a location of lower temperature, comprising a hollow tubular housing including an evaporator end (6), a condenser end (9), and a longitudinal separator wall for separating said hollow tubular housing lengthwise between said evaporator end (6) and said condenser end (9) into a single liquid flow channel (2, 12) and into a single vapor flow channel (1, 11) for a heat carrier fluid in said heat pipe, and wherein said single liquid flow channel (2, 12) has a cross-sectional liquid flow area that increases from said evaporator end (6) toward said condenser end (9) of said heat pipe.

5,360,059

FRAME FOR A VEHICULAR RADIATOR

Gregg D. Olson, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Oct. 6, 1988, Ser. No. 254,035
Int. Cl.[5] F28D *1/00*
U.S. Cl. 165—149 11 Claims



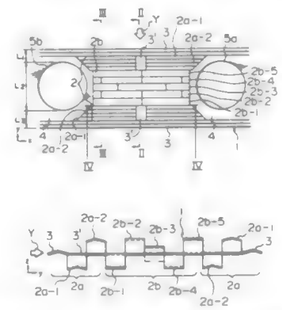
1. A heavy duty radiator comprising:
a core and tank structure including a heat exchanger core having the shape of a rectangular solid, a pair of spaced headers, one on each end of said core, and interconnected by tubes which in turn are spanned by serpentine fins a pair of spaced side pieces one on each side of said core and extending between and secured to said headers and a pair of tanks, one secured to each of said headers;
a separate rectangular frame for said tank and core assembly, said frame comprising two each of first and second channels with the first channels being substantially identical and the second channels being substantially identical, the first channels being disposed at opposite ends of said tank and core assembly and encompassing corresponding ones of said tanks, the second channels fitting about said sides and embracing the corresponding side pieces to provide pressure resistance to the sides of said core;
first fasteners securing said second channels to said first channels; and
second fasteners securing said second channels to said tanks.

5,360,060

FIN-TUBE TYPE HEAT EXCHANGER

Takeo Tanaka, Ibaraki; Toshio Hatada; Masaaki Itoh, both of Tsuchiura; Takao Senshu, Shizuoka; Naoto Katsumata, Shimizu; Yoshihiko Mochizuki; Hirokiyo Terada, both of Shizuoka; Minetoshi Izushi; Minoru Sato, both of Shimizu; Hiromi Tsuji, Shizuoka, and Makoto Nagai, Yaizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,702
Int. Cl.[5] F28D *1/04*
U.S. Cl. 165—151 8 Claims



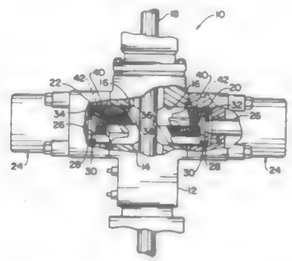
1. A fin-tube type heat exchanger comprising:
at least two substantially parallel heat transfer tubes for a first heat-exchanging medium; and
a stack of a plurality of elongated heat transfer fins mounted on said tubes in a heat transferring relationship;
each heat transfer fin comprising at least two substantially flat tube-mounting sections spaced in the longitudinal direction of said fin and extending substantially in a first plane perpendicular to axes of said heat transfer tubes, tube-mounting holes respectively formed in said tube-mounting sections, two bent side sections integral with each of said tube-mounting sections and extending between the tube-mounting section and the side edges of said fin, respectively, and a louver section disposed between said two tube-mounting sections and the associated bent side sections;
said heat transfer tubes extending through said tube-mounting holes, respectively;
each adjacent pair of said heat transfer fins cooperating to define therebetween a passage through which a second heat-exchanging medium is caused to flow across the widths of said fins in heat exchanging relationship with the first heat-exchanging medium flowing through said heat transfer tubes;
said louver section including a planar slat group extending between said two tube-mounting sections and a non-planar slat group disposed in side-by-side relationship with one of the side edges of said planar slat group and having longitudinal ends connected to the two bent side sections respectively associated with said tube-mounting sections;
said planar slat group including a plurality of elongated slats extending substantially in parallel with a line connecting axes of said two heat-transfer tubes and having side edges spaced from each other, each of said slats having a substantially planar configuration substantially parallel to said first plane, as viewed in a cross-section taken along a second plane perpendicular to said line connecting said tube axes and also perpendicular to said first plane;
said non-planar slat group including at least one slat having end portions each connected to one of the two bent side sections associated with one of said two tube-mounting sections and a longitudinal central portion connected to and disposed between said two end portions and having a generally V-shaped or inverted V-shaped configuration as viewed in a cross-section taken along a third plane parallel to said second plane;
each of said end portions being divided into a plurality of small slats by substantially parallel cuts extending longitudinally of said fin, each of said small slats having a generally V-shaped or inverted V-shaped configuration as viewed in a cross-section taken along said second plane; and
each of said bent side sections having a generally V-shaped or inverted V-shaped configuration as viewed in a cross-section taken along a fourth plane parallel to said second plane.

5,360,061

BLOWOUT PREVENTER WITH TUBING SHEAR RAMS

Lee M. Womble, 3403 Saratoga Dr., Houston, Tex. 77088

Filed Oct. 14, 1992, Ser. No. 960,690
Int. Cl.[5] E21B *29/08*
U.S. Cl. 166—55 5 Claims



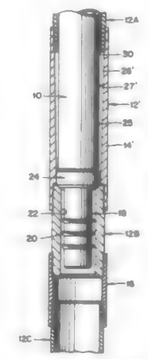
1. A blowout preventer comprising
a body having a central bore therethrough and a pair of opposed guideways extending outwardly from the bore,
a ram in each of said guideways,
means for moving said rams in said guideways to cause them to move into said bore, in use to shear tubing in the bore, and to withdraw from said bore,
each of said rams having coacting upper and lower shear blades, one of said blades being the upper shear blade and the other being the lower shear blade,
the ram with the upper shear blade having a front shearing edge and a flat surface extending rearwardly therefrom and terminating in a wall, a recess in said upper shear blade flat surface, a tapered conical recess in the upper shear blade above said flat surface, and a tapered conical recess in the upper shear blade below said flat surface,
the ram with the lower shear blade having its forward cutting edge positioned to pass immediately under said flat surface on said upper shear blade when said rams are moved together, and a flat surface extending rearwardly from its cutting edge to provide a sealing surface, a tapered conical recess in said blade extending below said sealing surface,
sealing means positioned in the recess on said upper shear blade flat surface for sealing against the flat surface n said lower shear blade, and
said conical recesses in said shear rams being sized and positioned to coact to engage a tubular member extending through said body bore to cause the upper end of the tubular member after shearing to have a substantial opening therein and to be no larger in its exterior dimension transversely of the rams than a preselected maximum dimension.

5,360,062

WELL TUBING AND TUBING COLLAR THEREFOR

H. Wade White, 1404 W. Thomas St., Carlsbad, N. Mex. 88220, assignor to H. Wade White, Carlsbad, N. Mex.

Filed Nov. 18, 1991, Ser. No. 793,453
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—105 10 Claims



4. In combination, a well tubing and an insert pump,
said insert pump comprising a no-go ring, a hold-down projection extending downwardly from said no-go ring, and seal means carried on an outer surface of said hold-down projection, said well tubing comprising a plurality of tubing sections interconnected by tubing collars, said tubing collars having internal threading connected to external threading on successively arranged ones of said tubing sections, one of said tubing sections comprising a seating nipple having an internal surface in which said hold-down projection is disposed such that said sealing means seats sealingly against said inner surface, one of said tubing collars being disposed between an upper end of said seating nipple and a lower end of the next upper tubing section, said one tubing collar including an inner surface tapering from an upper cross-section to a smaller lower cross-section to provide an upwardly expanding volume for receiving accumulated debris as the pump is raised relative to said well tubing.

5,360,063

WEAR BUSHING WITH LOCKING COLLET

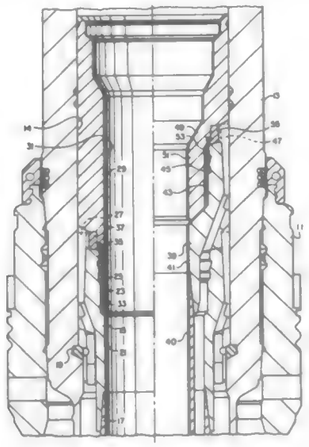
Herman O. Henderson, Jr., Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Oct. 15, 1992, Ser. No. 962,374
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—208 17 Claims

1. In a well assembly of the type having a wellhead housing having a longitudinal axis, a casing hanger landed in the wellhead housing and supporting a string of casing extending into the well, an annular profile formed in an interior portion of the casing hanger, the profile having a downward facing shoulder, an improved means for reducing wear damage occurring when a string of drill pipe is rotated in the well, comprising in combination:
a wear bushing which lands on an upper end of the casing hanger;
a metal collet having a plurality of slots so as to allow radial deflection of the collet, the collet having an external upward facing shoulder and an undeflected outer diameter at the upward facing shoulder which is greater than an inner

diameter of the casing hanger at the downward facing shoulder of the casing hanger; and

securing means for carrying the collet on the wear bushing in a position such that downward movement of the wear



bushing onto the casing hanger will cause the upward facing shoulder of the collet to slide past the downward facing shoulder of the casing hanger and deflect outward into the profile, preventing upward movement of the wear bushing unless a sufficient upward force is applied.

5,360,064

INJECTION OF ORGANIC PHOSPHATES FOR SUBTERRANEAN MICROBIAL PROCESSES

Gary E. Jenneman, and J. Bennett Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1992, Ser. No. 995,278

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] E21B *43/22*

U.S. Cl. 166—246 **7 Claims**

1. In a process for sustaining microbial activity in subterranean formations comprising the steps of injecting a substantially carbon-nutrient-free first nutrient solution comprising a phosphorus nutrient source into said subterranean formation; and thereafter, injecting a substantially phosphorus-nutrient-free second nutrient solution comprising a carbon nutrient source into said subterranean formation, the improvement which comprises using as said phosphorus nutrient source an organic phosphate.

5,360,065

SCALE INHIBITOR AND PROCESS FOR USING

David O. Falk, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 29, 1993, Ser. No. 85,276

Int. Cl.[5] E21B *47/00, 37/06;* C02F *5/10*

U.S. Cl. 166—250 **25 Claims**

1. A process for inhibiting scale including barium sulfate in aqueous fluid and being present in or produced from a subterranean formation, the process comprising:

contacting said aqueous fluid with an amount of a copolymer of sodium vinyl sulfonate and polyalkylene glycol mono- or di-methacrylate which is effective to inhibit formation of said scale in said aqueous fluid, said copolymer having a molecular weight of from about 2,000 to about 30,000.

5,360,066

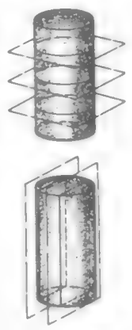
METHOD FOR CONTROLLING SAND PRODUCTION OF FORMATIONS AND FOR OPTIMIZING HYDRAULIC FRACTURING THROUGH PERFORATION ORIENTATION

James J. Venditto; Hazim H. Abass; David E. McMechan, and Matthew E. Blauch, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 16, 1992, Ser. No. 992,847

Int. Cl.[5] E21B *43/26*

U.S. Cl. 166—250 **8 Claims**



1. A method for controlling the flow of sand and other solids from a wellbore, comprising the steps of:

determining the azimuthal direction of the maximum horizontal stress field within a formation having a wellbore formed therein by obtaining an oriented core from said formation after a fracture has been initiated in said formation, and observing the direction of fracture propagation within said oriented core;

orienting a perforating device capable of perforating said formation within said wellbore such that perforations produced by said perforating device are substantially aligned with said azimuthal direction of said maximum horizontal stress field; and

actuating said perforation device so as to perforate said formation in the direction of said azimuthal direction of said maximum horizontal stress field.

5,360,067

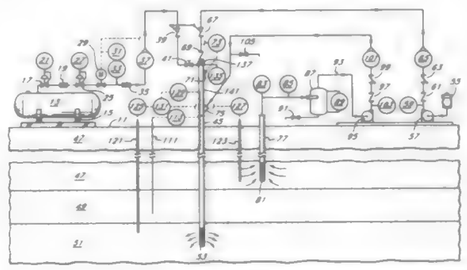
VAPOR-EXTRACTION SYSTEM FOR REMOVING HYDROCARBONS FROM SOIL

Dominic Meo, III, 1807 Tradewinds La., Newport Beach, Calif. 92660

Filed May 17, 1993, Ser. No. 64,592

Int. Cl.[5] E21B *43/243*

U.S. Cl. 166—256 **15 Claims**



1. A process for performing soil remediation comprising the steps of:

burning a hydrocarbon fuel at a fire well at a first location to produce combustion gasses and injecting the combustion gasses below grade with said fire well;

withdrawing gaseous vapors with an extraction well at a second location; and

reinjecting said gaseous vapors into said fire well at said first location.

5,360,068

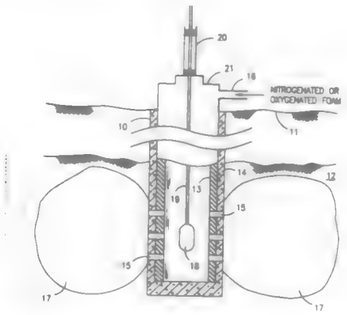
FORMATION FRACTURING

Eve S. Sprunt, Farmers Branch; Alfred R. Jennings, Plano, both of Tex., and Robert S. Timmer, Bakersfield, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 19, 1993, Ser. No. 47,983

Int. Cl.[5] E21B *43/24*

U.S. Cl. 166—259 **9 Claims**



1. An in-situ method for creating a self-propped fracture in a hydrocarbon-bearing reservoir within a diatomite-containing subterranean formation penetrated by a well, comprising the steps of:

a) creating a fracture within said reservoir,

b) initiating combustion within said reservoir to burn the reservoir adjacent said fracture and harden the formation adjacent the fracture so as to increase the permeability of said reservoir to the point of being able to be shattered, and

c) shattering the formation hardened during the fracturing of said reservoir to create in-situ proppants for forming a self-propped fracture within said reservoir.

5,360,069

FAILSAFE LINER INSTALLATION ASSEMBLY AND METHOD

Phillip W. Schmuck, New Waverly; Steven R. Hayter, Houston; James R. Zachman, The Woodlands, and John V. Salerni, Kingwood, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Mar. 30, 1993, Ser. No. 40,130

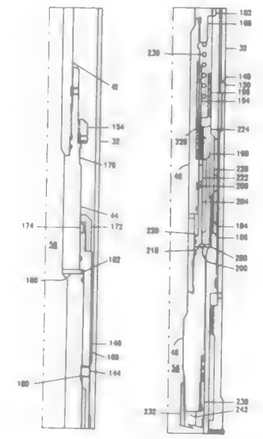
Int. Cl.[5] E21B *43/04*

U.S. Cl. 166—383 **48 Claims**

1. An apparatus for running in a downhole tool, comprising:

supporting means for supporting the tool from the surface at the desired depth;

lock means on said supporting means for selectively preventing release of the tool from said support means and actuation of said tool during run-in, said lock means retaining its locking function despite application of mechanical force



to said support means or the tool or the application of fluid pressure within support means.

5,360,070

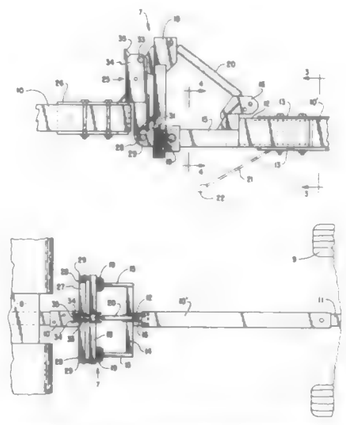
MOUNTING BRACKET FOR IMPLEMENT GUIDE SYSTEM

Duane R. Milton, Spencer, Iowa, assignor to Timothy J. Fairchild, Terril, Iowa

Continuation-in-part of Ser. No. 894,571, Jun. 5, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,462

Int. Cl.[5] A01B *63/32*

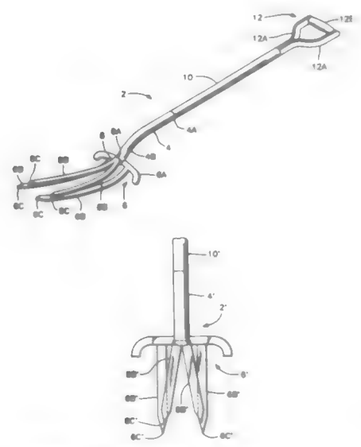
U.S. Cl. 172—6 **4 Claims**



1. In combination with a pull-type farm implement adapted to be pulled by a pulling device, said pulling device having a drawbar with attachment means thereon; means for guiding said implement comprising a stub tongue on said implement, a pulling tongue substantially longer than said stub tongue for pulling said implement pivotally attached to said drawbar on said pulling device about a first pivot, a bracket fixed to said pulling tongue and an adjusting device attached to said bracket, said adjusting device including hooks extending therefrom opposite to said bracket, said adjusting device including a second pivot about which the position of said bracket may be

adjusted, said pulling tongue being thereby pivotally adjustable, an attaching bracket on said stub tongue engageable with said hooks to releasably attach said adjusting device to the stub tongue on said implement.

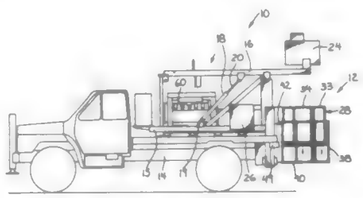
5,360,071
GARDENING TOOL HAVING DIVERGING PRONGS AND STRAIGHT PRONGS
Frank H. Bergendorf, P.O. Box 4592, Pocatello, Id. 83205
Filed Aug. 5, 1993, Ser. No. 102,255
Int. Cl.[5] A01B *1/00*
U.S. Cl. 172—378 **21 Claims**

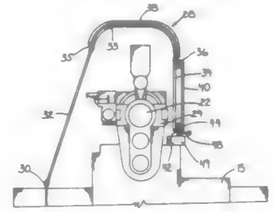


1. A gardening tool comprising:
a handle for manipulating the gardening tool;
two straight prongs mounted laterally with respect to the handle, and extending parallel to one another from a first end of the handle; and
a pair of medially mounted diverging prongs which are mounted to said first end of the handle, and extend in a gradually diverging manner from one another to define a V-shape, wherein said straight prongs and said diverging prongs have distal tips which overlap one another.

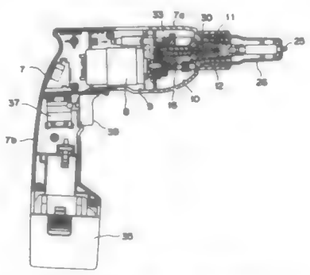
5,360,072
DRILL RIG HAVING AUTOMATIC SPINDLE STOP
James E. Lange, P.O. Box 1670, LaPorte, Ind. 46350
Filed Apr. 26, 1993, Ser. No. 53,544
Int. Cl.[5] E21B *19/00*; B23B *49/00*
U.S. Cl. 173—2 **9 Claims**

1. In a drill rig including a support frame, a spindle rotatably connected to said support frame, means for rotating said spindle relative to said support frame, the improvement comprising a barrier pivotally connected to said support frame for movement relative to the support frame between an open position exposing said spindle and a closed position substantially surrounding said spindle, said barrier including fastener means for securing said barrier to said support frame when the barrier is in its said closed position, sensor means associated with said barrier and support frame for sensing the position of said barrier, and switch means operably connected to said means for rotating and said sensor means wherein said spindle is automatically stopped when the barrier is not secured to said support frame.



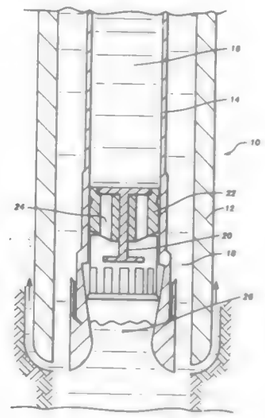


5,360,073
BATTERY TYPE SCREW DRIVER
Shumi Akazawa, Fuchu, Japan, assignor to Ryobi Limited, Tokyo, Japan
Filed Mar. 10, 1993, Ser. No. 28,991
Claims priority, application Japan, Mar. 12, 1992, 4-53207
Int. Cl.[5] B25B *23/00*
U.S. Cl. 173—15 **10 Claims**



1. A battery type screw driver comprising:
a driving shaft rotated by a motor disposed in a housing of said battery type screw driver;
a driven shaft disposed to axially slide with respect to said driving shaft so as to move away from and close to said driving shaft, said driven shaft holding a bit at its front end;
a clutch interposed between said driving shaft and said driven shaft;
an operation bar disposed slidably on the central axis of said driving shaft, a front end part of said operation bar being engaged with said driven shaft; and
an auxiliary switch connected directly or indirectly to a rear end part of said operation bar to be turned on and off in accordance with an axial movement of said operation bar.

5,360,074
METHOD AND COMPOSITION FOR PRESERVING CORE SAMPLE INTEGRITY USING AN ENCAPSULATING MATERIAL
Pierre E. Collee, Kingwood; William A. Mallow, Helotes, both of Tex., and Steven R. Radford, South Jordan, Utah, assignors to Baker Hughes, Incorporated, Houston, Tex.
Filed Apr. 21, 1993, Ser. No. 51,093
Int. Cl.[5] F21B *25/08*
U.S. Cl. 175—58 **24 Claims**

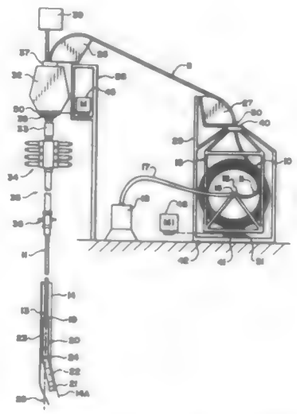


1. A method for maintaining the mechanical integrity and maximizing the chemical integrity of a core sample during transport from a subterranean formation to the surface comprising:
cutting a core sample downhole using a coring tool, said core sample having an outer surface;
encapsulating said core sample, as said core sample enters an inner tube in said coring tool, with an encapsulating material comprising a polyglycol capable of increasing in viscosity in response to a decrease in temperature during transport to a level and at a time sufficient to protect said integrity of said core sample during transport; and
transporting said encapsulated core sample to said surface.

17. A core sample whose mechanical and chemical integrity has been maintained during transport from a subterranean formation to the surface by a process comprising:
cutting a core sample downhole using a coring tool, said core sample having an outer surface;
encapsulating said core sample, as said core sample enters an inner tube in said coring tool, with an encapsulating material comprising a polyglycol capable of increasing in viscosity in response to a decrease in temperature during transport to a level and at a time sufficient to protect said integrity of said core sample during transport; and
transporting said encapsulated core sample to said surface.

5,360,075
STEERING DRILL BIT WHILE DRILLING A BORE HOLE
Benjamin Gray, Silver Valley, Canada, assignor to Kidco Resources Ltd., Silver Valley, Canada
Filed Nov. 29, 1993, Ser. No. 158,830
Int. Cl.[5] E21B *4/20, 7/04, 17/20*
U.S. Cl. 175—61 **7 Claims**

1. A method of drilling a bore hole in the earth comprising providing a continuous drill tubing coiled on a supply reel and having a trailing tubing end at the supply reel and a leading tubing end for insertion into the bore hole; connecting a supply of drilling fluid to the trailing tubing end for pumping the drilling fluid to the leading tubing end; providing a drilling tool having an elongate tool body, a motor mounted on the tool body to generate drive power, a drilling bit mounted on the tool body at a leading end thereof for rotation relative to the tool body in responsive to the drive power from the motor and means defining a bend section in the tool body defining a bend axis transverse to the longitudinal axis of the tool body such that the tool body tends to steer the drilling direction of the drill bit and the tool body in a direction at right angles to a plane parallel to the longitudinal axis of the tool and containing the bend axis; connecting a trailing end of the drilling tool body to the leading end of the tubing so as to communicate drilling fluid from the tubing to the tool body and so as to prevent rotation of the tool body relative to the leading end of the tubing; passing the tubing through an injector into the bore hole as so to feed the tubing into the bore hole; rotating the tubing at the injector by rotating the injector about an axis longitudinal of the tubing so as to cause rotation of the leading end of the tubing, the drilling tool and the transverse bend axis about the longitudinal axis so as to effect steering of the drilling direction of the drill bit, mounting the reel at a position which is fixed angularly relative to the well bore and rotating the reel and a reel support assembly on which the reel is mounted about an axis substantially parallel to the well bore in a direction which is opposite to the direction of rotation of the tubing at the injector when viewed from above.



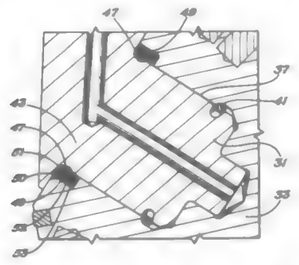
5,360,076
DUAL METAL FACE SEAL WITH SINGLE RECESSED ENERGIZER
Joseph L. Kelly, Jr., and Michael F. Welsh, both of Houston, Tex., assignors to Hughes Tool Company, Del.
Filed Apr. 3, 1992, Ser. No. 862,973
Int. Cl.[5] E21B *10/22*
U.S. Cl. 175—371 **6 Claims**

1. An earth-boring bit with an improved pressure compensating rigid face seal, the bit comprising:
a body;
a cantilevered bearing shaft having an axis of rotation, including a base secured to the body and a cylindrical journal bearing surface, extending obliquely inward and downward;
a lubrication system in the body, including a hydrostatic pressure compensator;
an earth-disintegrating cutter secured for rotation about the cylindrical journal bearing surface;
a cutter seal groove partially formed by an outwardly facing radial wall;
a shaft seal groove formed in the base of the bearing shaft radially inward of the cylindrical journal bearing surface toward the axis of rotation, opposite the cutter seal

groove, the shaft seal groove including a generally conical circumferential surface;

a shaft rigid seal ring including a radial seal face opposite the radial wall in the cutter seal groove, and a generally conical circumferential surface opposite and spaced from the conical circumferential surface of the shaft seal groove;

a shaft resilient energizer ring compressed between the opposed conical surfaces of the shaft rigid seal ring and shaft seal groove, with its inner periphery inside the journal bearing surface, thereby locating the shaft rigid seal relative to the shaft seal groove to define a volume there between that remains essentially constant as the cutter,



shaft rigid seal ring, and shaft energizer ring move during drilling;

a cutter rigid seal ring including a radial face opposing and sealingly engaging the radial seal face of the shaft rigid seal ring; and

a cutter resilient energizer ring compressed between the radial wall of the cutter seal groove and the cutter rigid seal ring to maintain the sealing engagement between the radial seal faces of the cutter rigid seal ring and the shaft rigid seal ring, and to permit movement of the sealingly engaged shaft rigid seal ring and cutter rigid seal ring relative to the bearing shaft and the cutter.

5,360,077

ELECTRIC POWER STEERING APPARATUS

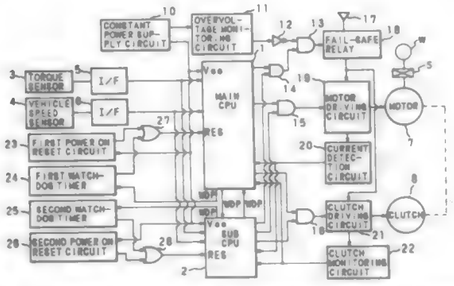
Mitsuhiko Nishimoto, Yoshino; Hirofumi Matsuoka, Souraku, and Hidetoshi Tabuse, Wakayama, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed May 28, 1993, Ser. No. 69,070

Claims priority, application Japan, Jun. 1, 1992, 4-044158[U]; Jul. 28, 1992, 4-222144

Int. Cl.[5] B62D *5/04*

U.S. Cl. 180—79.1 **4 Claims**



1. A control circuit for an electric power steering apparatus in which the output of a steering assisting electric motor is transmitted to a steering wheel through a clutch comprising:

a first controller for controlling the actuation of the steering assisting electric motor and a second controller for monitoring the operation of the first controller;

a power supply connected in common to both said first and second controllers for supplying a power-on voltage for the first and second controllers:

means for monitoring the power supply for an excessive voltage;

circuit means connected to the first and second controllers for performing power-on and reset operations on the respective controllers, said circuit means resetting the operations of the respective controllers for a prescribed length of time until the voltage being supplied from the power supply for the controllers rises to a rated value after power-on of the controllers;

switching circuit means for supplying power to actuate the motor and the clutch; and

a gate circuit for accepting signals output from said first and second controllers indicating whether the controllers are operating normally and activating said switching circuit to supply power for engagement of the clutch and the actuation of the electric motor only when the power supply for the controllers is delivering a voltage which is not excessive and both the first and second controllers are operating normally and for deactivating the motor and disengaging said clutch when at least one of said first and second controllers is reset.

5,360,078

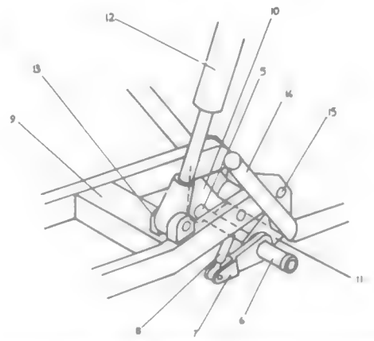
MOTORCYCLE TORSION BAR REAR SUSPENSION

Byron P. Rifenburg, 12743 Paddy Creek La., Lodi, Calif. 95240; Christopher J. Handley, Bellevue, Wash., and Randy R. Stark, Santa Clara, Calif., assignors to Byron P. Rifenburg, Lodi, Calif.

Filed Jun. 22, 1992, Ser. No. 901,824

Int. Cl.[5] B62K *11/02*

U.S. Cl. 180—227 **3 Claims**



1. A suspension system, suitable for a motorcycle comprising a frame, a motor, a damper, comprising;

(b) a swing arm comprising at least one arm supporting at least one wheel, said swing arm is pivotally mounted to said frame, said swing arm rotates about its pivot mount with respect to said frame;

(c) a torsion tube member which resists torsional moments having a first end portion and a second end portion, the first end portion is rotationally carried by said frame; and

(d) a torsion bar member which resists torsional moments having a first end portion and a second end portion, the first end portion is secured to said frame, the second end portion of said torsion bar is attached to said second end portion of said torsion tube;

(e) a lever arm having a first end portion and a second end portion, the first end portion of said lever arm is rigidly attached to said torsion tube; and

(f) a linkage means pivotally connected to said swing arm and pivotally connected to the second end portion of said lever arm, said linkage means comprising at least one member, said swing arm and said linkage means and said

torsion tube are attached such that an angular displacement of said swing arm causes a rotation of said torsion tube, a rotation of said torsion tube causes an increase in the resisting moments dependent on angular displacement of said swing arm.

5,360,079

FUEL INJECTED AUTOMOTIVE ENGINE

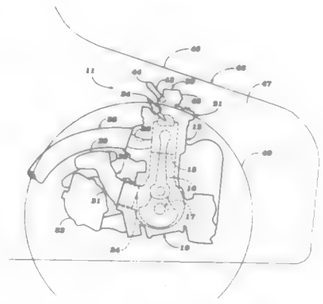
Ryuichi Ichikawa; Junichi Kaku, and Takahiro Suzuki, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 2, 1990, Ser. No. 591,704

Claims priority, application Japan, Oct. 2, 1989, 1-257460

Int. Cl.[5] B60K *5/04*

U.S. Cl. 180—297 **17 Claims**



1. In a motor vehicle having an engine compartment, an engine positioned in said engine compartment, said engine having an output shaft rotating about an axis extending transversely across said engine compartment, said engine compartment being defined in part by a downwardly sloping hood, said engine having a cylinder head juxtaposed to said hood, the vertical distance between one side of said cylinder head and said hood being less than the vertical distance between said hood and the other side of said cylinder head, and a plurality of fuel injectors mounted on said other side of said cylinder head, the area between said hood and said fuel injectors being generally open for free access to said fuel injectors when said hood is opened.

5,360,080

VEHICLE VIBRATION CONTROL SYSTEM

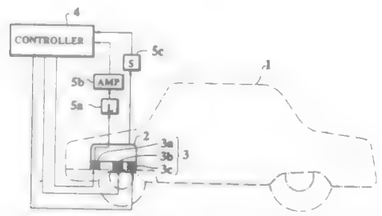
Ichiro Yamazaki, Tokyo, Japan, assignor to Nissan Motor Company, Ltd., Yokohama City, Japan

Filed Aug. 22, 1991, Ser. No. 748,724

Claims priority, application Japan, Sep. 4, 1990, 2-232410

Int. Cl.[5] B60K *3/02*

U.S. Cl. 180—300 **7 Claims**



1. The vehicle vibration control system for an automotive vehicle having a vehicle body and an engine, comprising;

(a) at least two engine mounting means for elastically supporting the engine on the vehicle body, dynamic spring constant of each of said engine mounting means being controllable;

(b) means for detecting engine speed;

(c) means for detecting vibration load transmitted from the engine to the vehicle body via said engine mounting means; and

(d) control means for controlling each dynamic spring constant of said engine mounting means on the basis of the detected engine speed and load, to cancel vibration caused by one engine mounting means by vibration caused by the other engine mounting means,

wherein said at least two engine mounting means are a basic engine mounting means and at least one other engine mounting means, and said control means controls the dynamic spring constant of the other engine mounting means with reference to a stored table in which theoretically optimum load ratios and phase differences between the basic engine mounting means and the other engine mounting means are listed on the basis of empirically obtained transfer functions between the engine mounting means and at a least two evaluation points on the vehicle body, and on the basis of the detected engine speed and engine vibration load transmitted via the basic engine mounting means.

5,360,081

DEVICE FOR PROTECTING OXYGEN SENSOR OF MOTORCYCLE

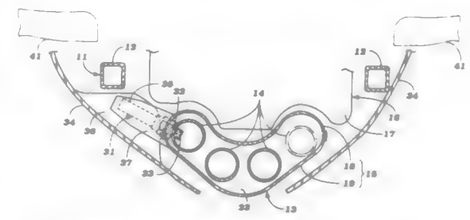
Masaki Takegami, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 893,253, Jun. 3, 1992, Pat. No. 5,271,480. This application Aug. 10, 1993, Ser. No. 103,802

Claims priority, application Japan, Sep. 11, 1991, 3-261039

Int. Cl.[5] B60K *13/04*

U.S. Cl. 180—309 **4 Claims**



1. An exhaust device for an internal combustion engine comprising an outer shell defining a cavity, a plurality of exhaust pipes opening through said outer shell into said cavity at one end thereof, a solid baffle attached to said outer shell and disposed to the rear of said exhaust pipes in confronting relationship thereto, and an oxygen sensor having a sensing portion extending into said cavity and disposed between said baffle and said exhaust pipes, and a tail pipe extending from said outer shell at the end thereof opposite said one end and to the rear of said baffle.

5,360,082

FALL PREVENTION AND LOWERING SYSTEM, METHODS OF USE AND BODY ENGAGEMENT MEANS UTILIZABLE THEREWITH

Michael Bell, 1705 Triumphe Way, Warrington, Pa. 18976

PCT No. PCT/US90/06609, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO91/10475, PCT Pub. Date Jul. 25, 1991

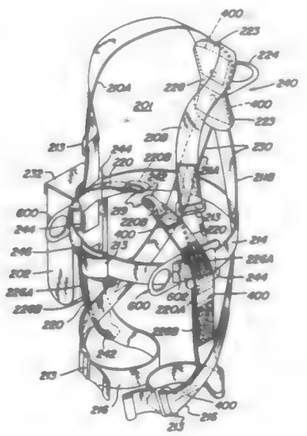
PCT Filed Nov. 13, 1990, Ser. No. 910,157

Int. Cl.[5] A62B *1/14*

U.S. Cl. 182—3 **20 Claims**

1. A safety harness to be worn by a person and to be attached to a first support means to hold the person at an elevated

position, said harness having a front portion and a rear portion and being adapted to permit the person to readily connect and disconnect said harness to said first support means and to a second support means, characterized in that said harness comprises a plurality of flexible straps which are secured together, first connection means for releasably connecting said harness to said first support means, second connection means for releasably connecting said harness to said second support means, said second connection means comprising a pair of extendable straps each of said straps having a first end fixedly secured to



said harness adjacent a respective hip of the person and a second end releasably secured to said harness by respective releasable securement means so that said second end can be readily moved from a retracted position to an extended position, wherein when each of said extendable straps is in said retracted position it is located adjacent said rear portion of said harness so that said strap does not interfere with the activities of said person, and wherein when each of said extendable straps in said extended position it projects outward from said front portion of said harness to permit said person to easily connect said free end to said second support means.

5,360,083

SAFETY DESCENDER FOR A ROPE

Jean-Marc Hede, La Tronche, France, assignor to Zedel, Crolles, France

Filed Oct. 1, 1993, Ser. No. 130,435
Claims priority, application France, Oct. 12, 1992, 92 12325
Int. Cl.[5] A63B *29/00*
U.S. Cl. 182—5 **6 Claims**

1. A descender used for abseiling a person along a rope comprising:

a first flange having lateral edges;

a second flange pivotally mounted parallel to said first flange, and being movable between a closed position and an opened position;

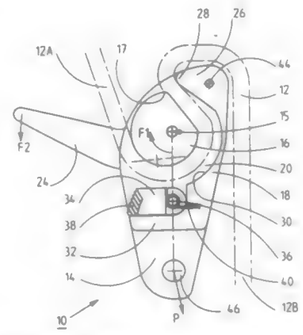
a pulley mounted on said first flange;

stationary spacer means positioned together with said pulley transversely between said first and second flanges;

said flanges, pulley and spacer means defining:

an internal space arranged between the pulley and the spacer means having a bottom orifice and a top orifice for the entry of the rope via said bottom orifice and the exit of said rope from said top orifice;

an auxiliary braking lever pivotally mounted on said first flange to enable said rope to pass between said lever and said pulley for locking automatically the rope when a tension force is applied to the rope following incorrect winding of the rope from the top orifice to the bottom orifice;



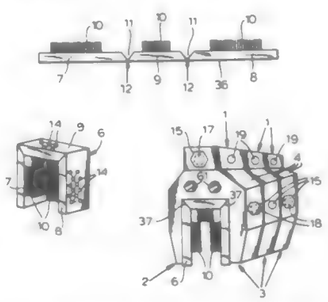
and a return spring urging said auxiliary braking lever out of contact with said rope.

5,360,084

APPARATUS FOR THE LUBRICATION AND CLEANING OF ELONGATED ARTICLES, ESPECIALLY RAILS AND CHAINS

Walter Graf, Euerdorf, Germany, assignor to Satzinger GmbH & Co., Euerdorf, Germany

Filed Nov. 19, 1993, Ser. No. 155,117
Claims priority, application Germany, Nov. 27, 1992, 4239839
Int. Cl.[5] B61K *3/00*
U.S. Cl. 184—3.2 **9 Claims**



1. An apparatus for the lubrication and cleaning of an elongated article which are relatively movable, said apparatus comprising:

a plurality of identical shoe modules joined together in an assembly and aligned with one another, each of said shoe modules comprising:

a body formed with a shoe bridgepiece and a pair of shoe shanks,

brush-receiving grooves formed along inner sides of said shank and said bridgepiece, and

lubricant-distribution passages formed in said body and communicating with said grooves;

a respective brush module received in each of said shoe modules, each brush module comprising:

a pair of brush shanks shaped and dimensioned to fit into the grooves of respective shoe shanks and a brush bridgepiece connecting said brush shanks and shaped and dimensioned to fit into a respective groove of the respective shoe bridgepiece, said brush module sealingly engaging the respective body along edges of the respective grooves whereby floors of said grooves and backs of said brush module define spaces communicating with said passages,

respective bundles of bristles on said brush shanks and said brush bridgepiece and extending inwardly to engage said article with the shanks of said shoe and brush modules straddling same, and

lubricant bores formed in said brush shanks and said brush bridgepiece and communicating with said distribution passages through said spaces for delivering said lubricant to said bristles; and

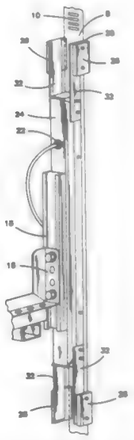
at least one automatic lubricant feeder connected to the passages of at least one of said shoe modules for feeding said lubricant to the passages thereof, said lubricant feeder, the passages of said one of said shoe modules, said spaces of said one of said shoe modules and the bores of the brush module of said one of said shoe modules forming a closed hydraulic system opening to the exterior only at the bores feeding the lubricant to the bristles.

5,360,085

ELEVATOR CAB POSITION SENSING WITH REDUCED OPERATING NOISE

Young S. Yoo, Avon, and Richard C. McCarthy, Simsbury, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Aug. 20, 1993, Ser. No. 110,035
Int. Cl.[5] B66B *7/02*
U.S. Cl. 187—406 **2 Claims**



1. An elevator cab position sensing assembly comprising:

a) a tape suspended in an elevator hoistway, said tape including electronically detectable components thereon located in the vicinity of landing zones in the hoistway;

b) proximity sensing means secured to the elevator cab and positioned closely adjacent to said tape, said proximity sensing means being stationary relative to the elevator cab;

c) guide means engaging opposite side edges of said tape for controlling the relative positioning of said proximity sensing means and said tape; and

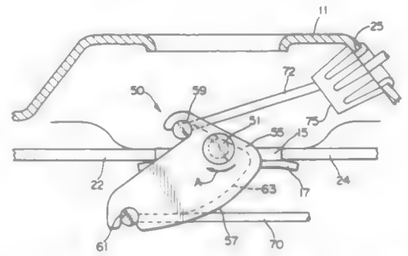
d) flexible mounting means connecting said guide means to said proximity sensing means, said flexible mounting means providing flexible movement of said guide means along said tape in a direction parallel to the plane of the tape while concurrently restricting movement of said guide means and said tape in a direction perpendicular to the plane of the tape whereby said electronically detectable components will be positioned in close proximity to said proximity sensing means as the elevator cab travels through the hoistway.

5,360,086

DRUM BRAKE WITH CAM OPERATED PARKING BRAKE LEVER

Djamel Charmat, South Bend, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 7, 1993, Ser. No. 163,019
Int. Cl.[5] F16D *65/56*
U.S. Cl. 188—79.54 **10 Claims**



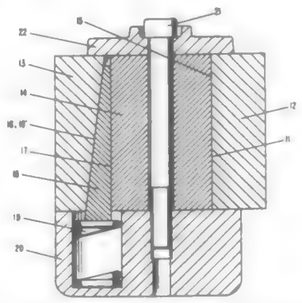
1. A drum brake, comprising a backing plate supporting actuation means for a pair of drum brake shoes, the actuation means disposed between a first pair of brake shoe ends, a second pair of brake shoe ends engaging abutment means, a parking brake lever connected with one of said drum brake shoes and engaging strut means extending between the first pair of brake shoe ends, a cam mechanism attached pivotally to the backing plate adjacent the abutment means and extending transversely to said backing plate, the backing plate having an opening through which extends cable means connected with said cam mechanism, and attachment means extending from said cam mechanism to an associated end of the parking brake lever, such that displacement of said cable means effects rotatable displacement of the cam mechanism and displacement of the attachments means and parking brake lever wherein the shape of the cam mechanism causes the end of the parking brake lever to travel a greater distance than a displacement distance of said cable means.

5,360,087

ASSEMBLED BRAKE DISC FOR A DISC BRAKE WITH PARTIAL LINING

Wolfgang Wiebelhaus, Mulheim an der Ruhr; Manfred Gronemann; Wolfgang Lehmann, both of Remscheid; Jürgen Schneider, Bochum, and Hans Rocholl, Remscheid, all of Germany, assignors to Bergische Stahl-Industrie, Remscheid, Germany

Filed Mar. 4, 1992, Ser. No. 845,917
Claims priority, application Germany, Mar. 4, 1991, 4106808
Int. Cl.[5] F16D *65/12*
U.S. Cl. 188—218 XL **4 Claims**



1. An assembled brake disc for a disc brake with partial lining, said brake disc comprising two components in the form of a brake ring and a hub and at least one dog and at least one

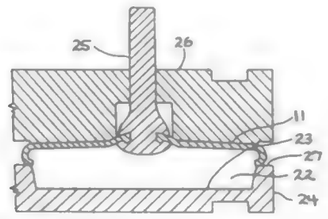
corresponding groove provided at least at one of said components, said components being connected to one another by said dog extending into said groove, said dog having outer contact surfaces resting at mating inner side walls of said groove, with at least one of said outer contact surfaces and a corresponding one of said mating inner side walls being slanted relative to an axial direction of said brake disc, and further comprising screws extending parallel to said axial direction for pressing said outer contact surfaces against said mating inner side walls, wherein said dog is comprised of a main body and an additional wedge-shaped part, said additional wedge-shaped part having said slanted outer contact surface, and said brake disc further comprising a pressure spring for pressing said additional wedge-shaped part between said main body and said mating inner side walls of said groove.

5,360,088

METHOD OF MANUFACTURING A BICYCLE BRAKE BLOCK AND THE BLOCK

Darrell W. Voss, 577 NE. Jefferson #2, Chehelis, Wash. 98532

Filed Aug. 15, 1991, Ser. No. 745,351
Int. Cl.[5] F16D *69/00*
U.S. Cl. 188—250 B **1 Claim**



1. A method for manufacturing a bicycle brake block, comprising the steps of:
   a. providing an elongated shaped metal cup having a base, a endless rim and an inwardly curved endless lip, said curved endless lip having a first planiform surface,
   b. providing a die having a cavity set into a flat surface, said cavity having a second planiform surface matching said first planiform surface,
   c. providing tooling to hold said curved lip of said metal component against said flat surface with said first planiform matching said second planiform surface,
   d. completely filling said cup-shaped component and said cavity with uncured elastomer, and
   e. curing the elastomer.

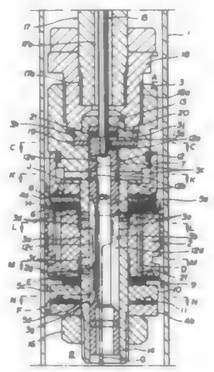
5,360,089

AUTOMOTIVE SUSPENSION CONTROL SYSTEM UTILIZING VARIABLE DAMPING FORCE SHOCK ABSORBER

Michiya Nakamura, and Shinobu Kakizaki, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Japan

Filed May 18, 1993, Ser. No. 62,746
Claims priority, application Japan, May 21, 1992, 4-128898
Int. Cl.[5] B60G *17/015;* **F16F** *9/46;* **F16K** *31/04*
U.S. Cl. 188—299 **5 Claims**

1. A suspension control system for an automotive vehicle comprising:
   a shock absorber disposed between a vehicle body and a suspension member rotatably supporting a wheel, said shock absorber being controllable to assume damping force characteristics in a range between preselected higher and lower damping coefficients over extension and compression strokes;
   an adjusting member, disposed in said shock absorber, movable for modifying the damping force characteristics of said shock absorber;
   a motor providing driving torque of a preselected operating level to said adjusting member to move said adjusting member for modifying the damping force characteristics;
   a stopper restricting the movement of said adjusting member at a preselected position when said motor is initialized; and



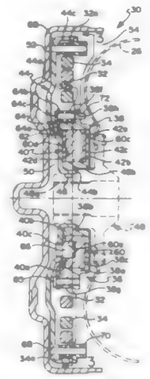
   motor driving controlling means for controlling the driving torque provided from said motor to said adjusting member, said motor driving controlling means reducing the driving torque to a level lower than the preselected operating level when said motor is initialized.

5,360,090

VALVING FOR VANE DAMPER

Dale A. Stretch, Novi, and Kent M. Curtis, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 23, 1992, Ser. No. 873,434
The portion of the term of this patent subsequent to Jul. 13, 2010, has been disclaimed.
Int. Cl.[5] F16D *3/80, 35/00*
U.S. Cl. 192—3.29 **9 Claims**



1. A torsion isolator assembly adapted to be disposed for rotation about an axis in a driveline torque converter housing filled with an incompressible torque converter fluid, the assembly immersed in the fluid and drivingly connected between first and second rotatably mounted drives; the assembly comprising resilient means for transmitting driveline torque between the drives and a hydraulic coupling for damping torque fluctuations in response to flexing of the resilient means; the coupling including first and second relatively rotatable housing means defining an annular chamber having radially spaced apart cylindrical surfaces and first and second axially spaced apart end surfaces, the cylindrical surfaces and the first end

surface defined by the first housing means, and circumferentially spaced apart walls sealingly fixed to the first housing means and extending radially and axially across the annular chamber for dividing the annular chamber into at least two independent arcuate chambers; a piston disposed in each arcuate chamber for dividing each arcuate chamber into pairs of first and second volumes which vary inversely in volume in response to movement of the pistons relative to the first housing means, each piston having radially oppositely facing surfaces in sliding sealing relation with the chamber cylindrical surfaces and having first and second axially oppositely facing end surfaces in sliding sealing relation respectively with the first and second end surfaces of the chamber; the second housing means including an annular radially extending housing member having an axially facing surface defining the second end surface of the annular chamber, the second end surface being in sliding sealing relation with each piston second end surface, the housing member being in sliding sealing relation with portions of the first housing means and retained against axial movement in a direction away from the first end surface of the annular chamber by means affixed to the first housing means, and the housing member having a set of circumferentially spaced and axially extending through openings; piston drive means for connecting the pistons to the first drive via a path independent of the resilient means, the piston drive means extending through the housing member openings with circumferential free play therebetween for allowing limited to-and-fro circumferential movement of the pistons relative to the housing member; housing drive means for connecting the first housing means to the second drive independent of the resilient means; and passage means for effecting fluid communication of each pairs of volumes with the fluid in the torque converter housing; characterized by:

the passage means associated with each piston and extending axially through the housing member and blocked and unblocked from communication with the first and second volumes by circumferential movement of the pistons relative to the housing member in response to flexing of the resilient means, said communication blocked and unblocked respectively with the first and second volumes in response to said flexing in a direction tending to decrease the first volumes and increase the second volumes, and said communication blocked and unblocked respectively with the second and first volumes in response to said flexing in a direction tending to decrease the second volumes and increase the first volumes.

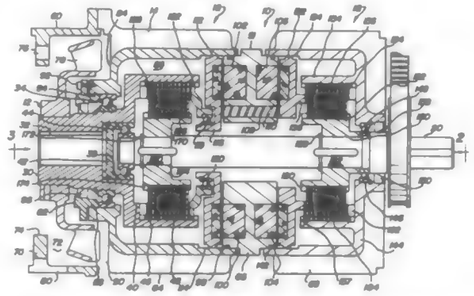
5,360,091

ELECTRICALLY ACTUATED CLUTCH BRAKE APPARATUS

Gordon M. Sommer, Grosse Pointe Farms, Mich., assignor to Midwest Brake Bond Co., Warren, Mich.

Continuation of Ser. No. 920,261, Jul. 27, 1992, Pat. No. 5,291,977. This application Nov. 29, 1993, Ser. No. 158,916
Int. Cl.[5] F16D *67/06;* **B60K** *41/24*
U.S. Cl. 192—18 B **9 Claims**

1. A drive for an apparatus comprising:
   a stationary housing;
   output means for transmitting rotation from said drive, said output means rotatably mounted in said housing;
   input means for transmitting rotation to said drive, said input means rotatably mounted in said housing;
   selectively operable brake means for prohibiting rotation of said output means with respect to said housing;
   selectively operable clutch means for locking said input means to said output means; and
   means for controlling said selectively operable brake and clutch means such that said input means drives said output means between a start position and a stop position along a specified multi-speed program, said controlling means



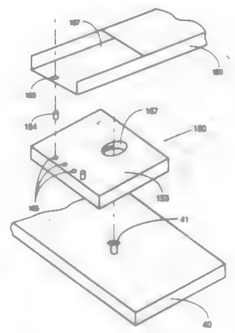
   being capable of self-adjusting to meet said specified multi-speed program.

5,360,092

FIXTURE FOR POSITIONING ELECTRICAL COMPONENTS

Timothy G. Sachtschale, Vista, and Steven P. Barry, San Diego, both of Calif., assignors to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Dec. 17, 1992, Ser. No. 992,336
Int. Cl.[5] B65G *11/18*
U.S. Cl. 193—2 R **9 Claims**



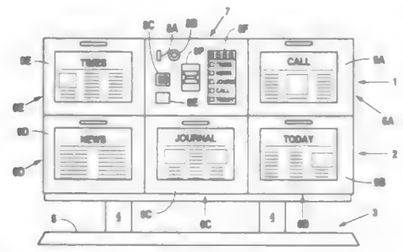
1. A fixture for positioning an electrical component for removal from a storage tube, the storage tube having a longitudinal axis and including a passage, the electrical component being confined to slide in the storage tube along the longitudinal axis, the storage tube defining a window through which the electrical component is removable in a direction other than along the longitudinal axis, the fixture comprising:
   a body; and
   means, disposed on the body, for connecting the storage tube such that when the electrical component is disposed adjacent the window, the electrical component is
   located in a desired removal position;
   wherein the means for connecting comprises a pin connected to the body, the pin being sized to fit within a hole formed in the storage tube, thereby connecting the storage tube to the body.

5,360,093

METHOD AND APPARATUS FOR THE CONTROL OF A MULTIPLE OF DOOR ACCESSIBLE NEWSPAPER VENDING CABINETS WITH A SINGLE VEND CONTROL MECHANISM OPERATING REMOTE DOOR LATCHES

Scott D. Baer, Shiner, Tex., assignor to Kaspar Wire Works, Inc., Shiner, Tex.

Filed Jun. 5, 1992, Ser. No. 893,738
Int. Cl.[5] G07F *7/04, 11/04*
U.S. Cl. 194—206 22 Claims



13. A device for vending a newspaper from one of a plurality of separate cabinets, the device comprising:

a frame;

a power supply;

at least two similarly dimensioned newspaper cabinets, each positioned on said frame and capable of receiving therein a stack of newspapers, each of said newspaper cabinets comprising:

a door providing access to the interior of said cabinet, said door movable between a closed and an open position;

latch means for locking said door in said closed position;

release means for unlocking said latch means in response to an electronic signal;

a vend control cabinet dimensioned similar to said newspaper cabinets and positioned on said frame, said vend control cabinet comprising:

money receiving means;

price setting means for selectively setting a preset price for each of said newspapers;

a central processing unit for totalizing said monies received and electronically signaling said release means when said total money received is equal to or greater than said preset price; and

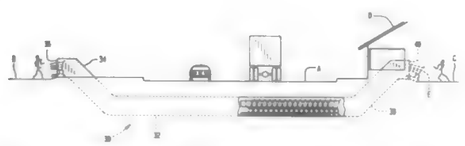
an electrical conductor between said vend control cabinet and said release means of each of said cabinets.

5,360,094

COLLECTION, STORAGE AND DISPENSING SYSTEM FOR SHOPPING CARTS

John Adams, Holmes Beach, Fla., and Mel Decker, 5441 Vanderpipe Rd., Sarasota, Fla. 34241, assignors to Mel Decker, Sarasota, Fla.

Filed Jan. 24, 1994, Ser. No. 185,685
Int. Cl.[5] G07F *7/00*
U.S. Cl. 194—212 11 Claims



1. A collection, storage and dispensing system for shopping carts comprising:

an elongated tubular conduit means sized to allow a shopping cart to be rolled in generally upright longitudinal orientation therethrough;

said conduit means having a generally horizontal mid section positioned below a driving surface of a parking area adjacent a store and sloping first and second end sections, said first end section defining a shopping cart main entrance opening positioned at grade level of the parking area at a remote location from the store, the other said end section defining a shopping cart exit opening positioned at floor level within the store;

a floor means sized and positioned within said conduit means for rollably supporting a plurality of shopping carts thereon;

downwardly extending engaging means connected to a lower area of each shopping cart;

guide means centrally positioned along said floor means for receiving and laterally directing each one of said engaging means whereby each shopping cart entering said conduit means is generally centered and guided along said floor means;

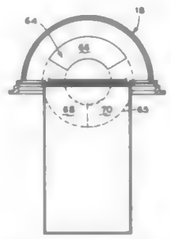
conveyor means mounted in said floor engagable with each said engaging means for transporting each shopping cart upwardly along said first end section and along said mid section to be, then assisted by gravity along said second end section for discharge from said exit opening, each cart being assisted by gravity to roll along said first end section and said mid section.

5,360,095

POWER CONSERVING ELECTRONIC PARKING METER

Gary W. Speas, Little Rock, Ark., assignor to POM Incorporated, Russellville, Ark.

Filed Apr. 7, 1992, Ser. No. 864,479
Int. Cl.[5] G07F *17/24*
U.S. Cl. 194—217 17 Claims



1. A power conserving electronic parking meter system for receiving at least one type of payment element, comprising:

the payment element being a coin;

a coin chute having a free-fall section through which the coin falls;

means for providing power;

means for processing connected to said means for providing power, said means for processing having at least an operational mode and a standby mode;

means for receiving the coin and generating an interrupt request signal upon receipt of the coin, the interrupt request signal being received by the means for processing which in response thereto changes from said standby mode to said operational mode, said means for receiving having means for sensing coupled to said free-fall section of said coin chute for detecting the coin as the coin falls past said means for sensing;

at least one means for identifying the coin and providing an identification signal to said means for processing indicative of the coin, said means for identifying having an active mode and a low-power mode, said at least one means for identifying receiving an enable signal from said means for processing when said means for processing changes from said standby mode to said operational mode, said enable signal causing said means for identifying to change from said low-power mode to said active mode, said at least one means for identifying being coupled to said free-fall section of said coin chute; and

means for displaying information connected to said means for processing, said means for displaying having means for reduced power display, said means for displaying having a rotatable disk connected to a stepping motor, said rotatable disk having a plurality of flag areas each of which may be rotated into a viewable area of said means for displaying by said stepping motor, said stepping motor receiving motor control signals from said means for processing and receiving power substantially from a stored charge on a capacitor;

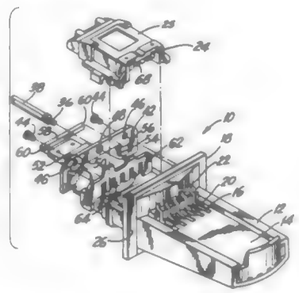
wherein said at least one means for identifying is coupled to said free-fall section below said means for receiving, and wherein said coin substantially free-falls past said means for sensing of said means for receiving and substantially free-falls past said at least one means for identifying.

5,360,096

MAGNET RETENTION FOR SLUG REJECTION IN A COIN CHUTE ASSEMBLY

Pierre Lier, Wantagh, and Arkady Zirkiev, Forest Hills, both of N.Y., assignors to Greenwald Industries Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 938,710, Sep. 1, 1992, Pat. No. 5,261,519. This application Nov. 12, 1993, Ser. No. 152,202
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—235 9 Claims



1. In a coin chute assembly having a top housing containing a coin sizing mechanism, said coin sizing mechanism having an outer surface and an inner surface, said assembly further having a substantially vertical flange formed with coin slot openings to permit the passage of coins therethrough, said coin chute flange having an outer surface and an inner surface, said assembly further having a coin slide disposed for reciprocal movement for carrying vertically oriented coins positioned in said slide outboard of the outer surface of said coin chute flange through the coin slot openings of said flange, the presence of proper coins permitting said coin slide to be moved inwardly of said assembly for carrying the coins past the inner surface of said coin sizing mechanism and permit continued inward movement of said coin slide to an operate position, and an abutment surface positioned within said assembly, the presence of a ferro-magnetic slug carried by said coin slide being detected by said assembly and carried into engagement with said abutment surface to restrict continued inward movement of said coin slide, wherein the improvement comprises:

said abutment surface being located inboard of said coin chute flange by an amount which is no greater than the distance between the inner surface of said flange and the outer surface of said coin sizing mechanism;

a magnet located inboard of the outer surface of said coin chute flange and outboard of said top housing, said magnet having an outer surface, an inner surface, and opposed end edges;

a substantially vertical cover plate having an outer surface and an inner surface, the outer surface of said plate being mounted to the inner surface of said coin chute flange;

said magnet being mounted to said cover plate and positioned above a zone of the coin slot openings of said coin chute flange through which the coins pass, inward movement of said coin slide causing any coins carried by said slide to pass under said magnet;

inward movement of said coin slide placing an edge of a ferro-magnetic slug carried by said slide under said magnet causing the slug to be raised up against said magnet; and

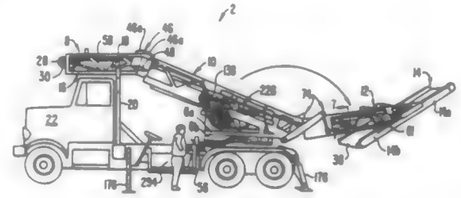
continued inward movement of said coin slide with the raised slug causing the slug to abut against said abutment surface to restrict entry of the slug into said housing and prevent passage thereof through said coin sizing mechanism to thereby prevent further movement of said coin slide to its operate position inwardly of said assembly.

5,360,097

MOBILE CONVEYOR SYSTEM

J. C. Hibbs, Santa Cruz, Calif., assignor to Granite Rock Company, Watsonville, Calif.

Filed Oct. 28, 1992, Ser. No. 967,348
Int. Cl.[5] B65G *15/06*
U.S. Cl. 198—313 19 Claims



1. A conveyor system including a conveyor and a power vehicle, said conveyor being coupled to said vehicle and comprising:

a first section having first and second portions;

a second section slidably coupled to the second portion of said first section and having a forward end portion and a rearward end portion;

a conveyor belt extending about said first and second sections;

a hinge that pivotally couples said first and second portions;

a first link pivotally coupled to said first portion along a first axis;

a second link pivotally coupled to said first link along a second axis and to said second portion along a third axis; and

a rod coupled to said first link along a fourth axis and adapted for coupling to a reciprocating drive for pivoting said first link about said first axis.

5,360,098

YARN PACKAGE CONVEYING SYSTEM

Hisao Nishikawa, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Feb. 4, 1993, Ser. No. 13,720
Claims priority, application Japan, Feb. 7, 1992, 4-056130
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—346.1 4 Claims

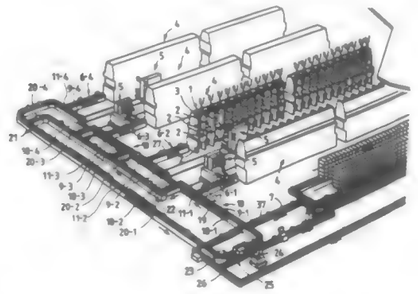
1. A package conveying system, comprising:

a main line for conveying trays,

a feed line branched from the main line, the feed line having a first end adjacent the main line and a second end,

means for transferring a plurality of empty trays substantially simultaneously from the main line to the first end of the feed line,

means for transferring a yarn package from a doffing machine to an empty tray at the first end of the feed line to



thereby produce a loaded tray at the first end of the feed line, and

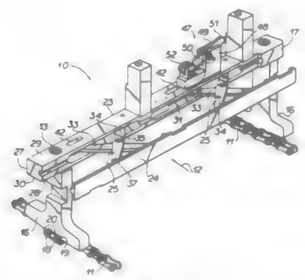
means for individually transferring each loaded tray at the first end of the feed line from the first end of the feed line to the main line.

5,360,099

ADJUSTABLE FLIGHT BAR SYSTEM

Will L. Culpepper, Covington, and Glenn Robinson, Atlanta, both of Ga., assignors to The Mead Corporation, Smyrna, Ga.

Filed Nov. 2, 1993, Ser. No. 146,518
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—473.1 **6 Claims**



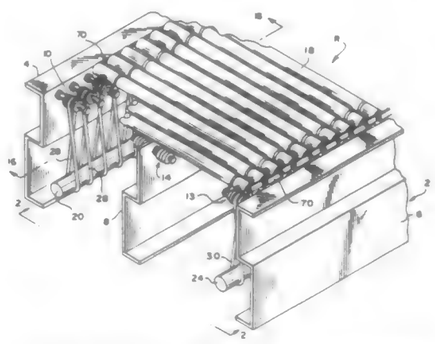
1. The system for advancing articles in sequence along a predetermined path comprising an endless conveyor chain and a plurality of flight bars coupled to said conveyor chain defining article receiving spaces between adjacent flight bars, and wherein each of said flight bars has a support member mounted to said conveyor chain, an auxiliary member coupled to said conveyor chain, means for positioning said auxiliary member in at least two different positions relative to said support member for adjusting the size of the article receiving spaces therebetween, and wherein said positioning means includes at least one pair of cross links pivotably mounted together with one end of each link pivotably mounted to said support member and the opposite end of each link pivotably mounted to said auxiliary member.

5,360,100

ROLLER CONVEYOR

Ronald D. Bourgeois, 80 Front St., Scituate, Mass. 02066

Filed Jan. 21, 1994, Ser. No. 184,189
Int. Cl.[5] B65G *13/07*
U.S. Cl. 198—790 **29 Claims**



1. A roller conveyor, comprising:

a) a frame having oppositely disposed substantially parallel sides;

b) a plurality of pulleys disposed on each side of said frame, said pulleys on one side being coaxial with said pulleys on the other side of said frame;

c) a line shaft disposed on one side of said frame;

d) a plurality of belts operatively secured to said line shaft and respective pulleys such that rotation of said shaft causes rotation in one direction of said pulleys;

e) a plurality of rollers resting freely and disposed between adjacent pairs of said pulleys, whereby rotation of said pulleys causes rotation of said rollers; and

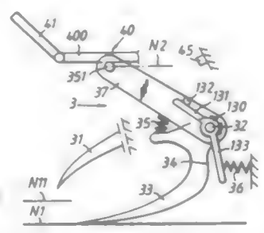
f) each of said pulleys including a resilient ring in frictional engagement with said rollers.

5,360,101

GRIPPER CONVEYOR

Bo Carlen, Sollentuna, Sweden, assignor to Idab Wamac AB, Eksjo, Sweden

Filed Mar. 15, 1993, Ser. No. 31,404
Claims priority, application Sweden, Mar. 16, 1992, 9200797
Int. Cl.[5] B65G *47/86*
U.S. Cl. 198—803.7 **12 Claims**



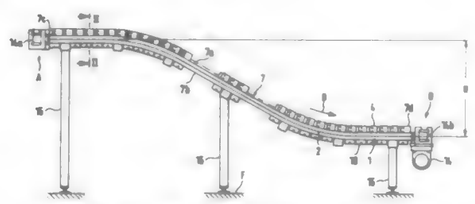
1. A gripper conveyor comprising a moving conveyor chain (1) which is provided with grippers (3) each including a fixed clamping jaw (31), a pivotable clamping jaw (33) and a spring means (36) which functions to bias the grippers towards a closed state, and an opening means (6, 41, 42, 68) for opening selected grippers (3) as the conveyor chain (1) moves, wherein the pivotable jaw (33) of the grippers (3) is connected to a maneuvering arm (37) which can be swung by the opening means to its open position in a direction such as to dog the pivotable clamping jaw towards its open position against the action of the spring means, wherein at said open position of the maneuvering arm the pivotable clamping jaw (33) is mounted on a pivot in order to be substantially freely swingable on the pivot in order to drop to the open state of the gripper and for limited pivotal movement in relation to the pivotal maneuvering arm (37) in the open state of the gripper; and wherein means (331; 35) are provided for driving the movable clamping jaw (33) towards its outer end position in the opening actuating state of the maneuvering arm (37).

5,360,102

BELT CONVEYOR WITH ROTARY GUIDES FOR MARGINAL PORTIONS OF THE BELT

Uwe Schöning, Hildesheim, Germany, assignor to Transnorm System GmbH, Harsum, Germany

Continuation of Ser. No. 2,826, Jan. 8, 1993, abandoned. This application Apr. 15, 1994, Ser. No. 228,183
Claims priority, application Germany, Jan. 11, 1992, 4200539
Int. Cl.[5] B65G *15/62*
U.S. Cl. 198—831 **20 Claims**



1. Apparatus for transporting commodities from a first station at a first level to a second station at a second level, the first level being different than the second level, comprising an endless belt having an upper reach defining a straight path extending from said first station to said second station, a lower reach along the straight path, a first turn at said first station, a second turn at said second station and first and second marginal portions; substantially unitary means for supporting said first reach; means the driving said belt so that said upper reach advances in a direction from said first station toward said second station, including a pulley for at least one of said turns; means for guiding the marginal portions of said upper reach, including a series of groups of rollers adjacent each marginal portion at said upper reach and each of said groups comprising a first roller which engages one side of the respective marginal portion and a second roller which engages the other side of the respective marginal portion at least substantially opposite the first roller; substantially upright lateral guides for confining said commodities to said belt during transport from said first station to said second station; and a support for said guiding means.

5,360,103

QUICK SPLICE FOR BELT CONVEYOR

Curtis G. Loosli, 311 Westmoreland Dr., Idaho Falls, Id. 83402

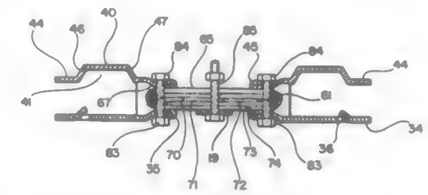
Filed Aug. 11, 1993, Ser. No. 104,629
Int. Cl.[5] B65G *15/30*
U.S. Cl. 198—844.2 **15 Claims**

1. A belt splice for connecting the ends of a conveyor belt together to form a endless loop comprising:

a pair of belt connectors wherein each connector includes a lower plate and an upper plate having apertures therein which are aligned with one another;

a flexible joint assembly secured between said connectors wherein said flexible joint assembly is made from a rubber material and includes a rigid pin embedded in each end thereof having at least one cutout therein; and,

fastener means for securing the ends of said flexible joint assembly between corresponding upper and lower plates



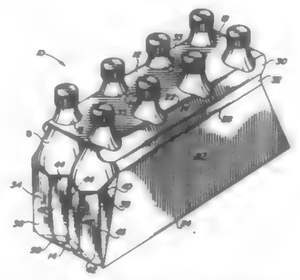
wherein said fastener means cooperates with said cutout in said pins and said apertures in said plates.

5,360,104

WRAP-AROUND CARRIER WITH FLEXIBLE END PANELS

Robert L. Sutherland, Kennesaw, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Oct. 26, 1993, Ser. No. 143,324
Int. Cl.[5] B65D *75/08*
U.S. Cl. 206—147 **20 Claims**



1. A package comprised of a wrap-around carrier containing a plurality of articles, comprising:

opposite side panels, each side panel being connected along an upper fold line to a top panel and along a lower fold line to a bottom panel flap, the bottom panel flaps being connected to each other to form the bottom panel of the carrier;

each side panel having spaced apart end portions and being connected along a fold line at each end portion thereof to an end panel flap;

each end panel flap having an upper edge and a lower edge;

a gusset panel connected along a first fold line to the lower edge of each end panel flap and along a second fold line to an adjacent end edge of an associated bottom panel flap;

each gusset panel having an intermediate diagonal fold line about which gusset panel is folded, portions of the gusset panel being positioned between the bottom panel and the bottoms of adjacent articles in said carrier; and

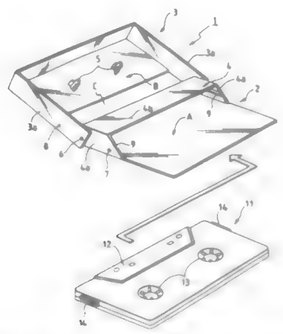
each end panel flap including a transverse fold line extending generally transversely of the height of the articles and an intermediate fold line extending from the transverse fold line to the upper edge of the end panel flap, said transverse and intermediate fold lines permitting the end panels to flex outwardly in order to more closely follow the contour of adjacent articles in the package.

5,360,105

CONTAINER CASE FOR MAGNETIC TAPE CASSETTE

Kiyoo Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 958,160, Oct. 9, 1992. This application Jan. 11, 1994, Ser. No. 179,825
Claims priority, application Japan, Oct. 15, 1991, 3-091901
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—232 5 Claims



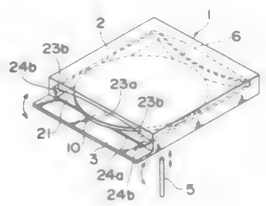
1. In a magnetic tape cassette container case accommodating a magnetic tape cassette having first and second surfaces each having respective first and second portions and an opening, said first portions being formed opposite one another adjacent said opening and having a thickness greater than that of said second portions, wherein a lid member, having a pocket receiving said first portions of said magnetic tape cassette, is pivotally connected to a casing member having rotation prevention projections, the improvement wherein grooves receiving externally projecting guide portions on each of right and left side walls of the cassette are formed respectively in inner surfaces on right and left side walls of said lid member constituting said pocket extending only partially through said side walls such that said guide portions of said tape cassette are not exposed outside of said pocket.

5,360,106

METHOD FOR TRANSPORTING/STORING WAFER AND WAFER CARRIER

Ichiro Nakayama, Kadoma; Masuo Tanno, Hirakata, and Kazuhiro Mori, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 2, 1993, Ser. No. 25,629
Claims priority, application Japan, Mar. 3, 1992, 4-045339
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—309 10 Claims



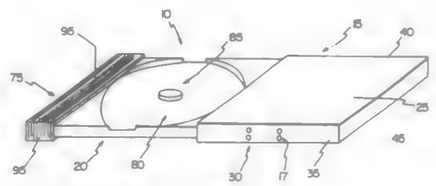
1. A wafer carrier comprising:
a flat casing having a single-wafer accommodating space defined therein, one side surface of said casing having an opening formed therein constituting a wafer entrance/exit;
a cover movably mounted to said flat casing at said wafer entrance/exit for movement between a wafer entrance/exit closed position and a wafer entrance/exit open position; and
a cover urging member, operably disposed between said casing and said cover, to urge said cover toward said wafer entrance/exit closed position;
wherein said single-wafer accommodating space is bounded by upper and lower inner surfaces of said flat casing, said upper and lower inner surfaces having front and rear ends and opposing side ends;
wherein said upper inner surface has a first flat intermediate portion spaced inwardly from said opposing side ends of said upper inner surface, and first and second side end portions respectively adjacent said opposing side ends of said upper inner surface;
wherein said first and second side end portions of said upper inner surface are inclined relative to said first flat intermediate portion in respective directions outwardly away from said first flat intermediate portion and downwardly toward said lower inner surface;
wherein said lower inner surface has a second flat intermediate portion spaced inwardly from said opposing side ends of said lower inner surface, and third and fourth side end portions respectively adjacent said opposing side ends of said lower inner surface; and
wherein said third and fourth side end portions of said lower inner surface are inclined relative to said second flat intermediate portion in respective directions outwardly away from said second flat intermediate portion and upwardly toward said upper inner surface.

5,360,107

COMPACT DISC BOX AND MEANS FOR INTERCONNECTING

Lawrence C. Chasin, 4 Jamaica Rd., Morris Plain, N.J. 07950, and Erik B. Cherdak, 26 S. Main St., #208, Concord, N.H. 03303

Continuation of Ser. No. 652,516, Feb. 8, 1991, abandoned. This application Apr. 6, 1992, Ser. No. 863,846
Int. Cl.[5] B65D *85/57, 21/02*; F16B *12/00*
U.S. Cl. 206—313 15 Claims



1. A compact disc box comprising:
a drawer wherein a compact disc is stored;
a housing having two side walls wherein said drawer can be reciprocated from a retracted position in which said compact disc is enclosed within said housing to an extended position in which said compact disc is accessible and removable; and
a plurality of female connecting means disposed upon said side walls for connecting said compact disc box to other structures above, below and otherwise adjacent to said compact disc box, each of said plurality of female connecting means being operatively accessible from a direction substantially perpendicular to said side walls.

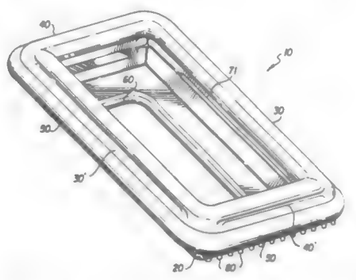
11. A kit for storing compact discs comprising:
a plurality of compact disc boxes, each of said compact disc boxes comprising a drawer wherein a compact disc is stored, and a housing having a top wall, a bottom wall, a first side wall, a second side wall, a back wall, and upper female connecting means and lower female connecting means each disposed in different horizontal planes upon said first side wall and upon said second side wall, wherein said drawer reciprocates from a retracted position in which said compact disc is enclosed within said housing to an extended position in which said compact disc is accessible and removable; and
a plurality of separately attachable and detachable male connecting means operable with said upper female connecting means and with said lower female connecting means in a direction substantially perpendicular to said sideways for connecting each compact disc box of said plurality of compact disc boxes to at least one other compact disc box of said plurality of compact disc boxes, such that said plurality of compact disc boxes can be removed from or inserted into custom vertical and horizontal storage arrangements without removing said compact disc boxes from said custom vertical and horizontal storage arrangements.

5,360,108

ELECTRONIC DEVICE SHOCK ABSORBER

Giovanni Palma Alagia, Agropoli, Italy, assignor to SEDI S.R.L., Italy

Filed Aug. 24, 1993, Ser. No. 110,954
Int. Cl.[5] B65D *81/16*
U.S. Cl. 206—320 6 Claims



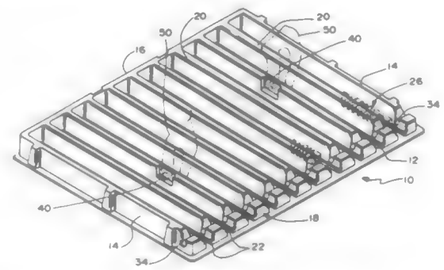
1. A housing for protecting hand held electronic device having buttons or controls thereon from damage due to the impacts or falls, the housing being made of an elastomer which is flexible and stretchable to at least substantially three times its normal size, comprising a base, and four sides, wherein two of the four sides are substantially long and parallel to each other, and the other two sides are substantially shorter than the two long sides and parallel to each other as well,
wherein at least one side of the substantially shorter sides, presents a transverse slot of predetermined length for passage of signals from the electronic device to a receptor if needed, and at least one of the two substantially long parallel sides presents a transverse groove of predetermined length along the length thereof,
wherein one side of the base, presents on the surface thereof, a multiplicity of spaced small cylindrical projections integral with said base in a predetermined pattern,
wherein the surface of the four sides thereof presents a substantially semi-cylindrical flange protective border integral with said sides,
where said sides further define an opening therebetween for insertion of the electronic device into said housing as well as for access to the buttons or controls thereon, while still retaining said electronic device in said housing,
such that due to the resiliency of the material, the housing can be used to encase electronic devices up to at least three times the original size of said housing whilst protecting the electronic device from damage due to impacts or falls while still allowing access to the buttons or controls thereon.

5,360,109

PACKAGING TRAY FOR ELECTRICAL CONNECTORS

Kenneth F. Janota, Lisle, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Apr. 28, 1993, Ser. No. 54,333
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—328 1 Claim



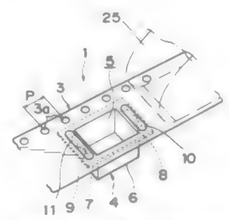
1. In a manually manipulatable tray for supporting electrical connectors, including a thin sheet of formed plastic material having generally parallel side walls, an open end, a closed end and a floor, the floor having a plurality of generally parallel, spaced-apart upwardly extending rails generally parallel to the side walls and defining generally parallel channels between adjacent rails and each side wall and its adjacent rail, wherein the improvement comprises a finger-gripping portion formed on each of a pair of said rails, each of said pair of rails spaced inwardly of the side walls a sufficient distance such that an individual can finger-grip the finger-gripping portions with the individual's hands substantially being within the side walls of the tray,
wherein said pair of finger-gripping portions are located on opposite sides of a mid-point line located generally equidistant between said open and closed ends, and
each of said finger-gripping portions comprise a reduced cross-section portion of one of said pair of rails and said reduced cross-section portions extending in opposite directions from said mid-point line.

5,360,110

COMPONENT CONTAINER

Hiroyuki Hirai, Habikino, and Kuninori Takezawa, Kofu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

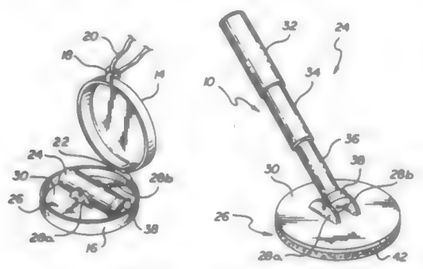
Filed Sep. 14, 1992, Ser. No. 944,443
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—330 3 Claims



1. A component container, comprising:
a carrier tape comprising a flexible transporting material in the form of a tape having a longitudinal direction, a plurality of openings therein at predetermined intervals, a first fixing through-hole forward of each of said openings, and a second fixing through-hole rearward of each of said openings, wherein each of said first and second fixing through-holes are separate from each of said openings; and

a package inserted into each of said openings, of said carrier tape, each package defining a component accommodating recess therein and having a first fixing portion extending through said first fixing through-hole of a respective one of said openings of said carrier tape so as to be movable in said longitudinal direction of said carrier tape in said first fixing through-hole, and a second fixing portion extending through said second fixing through-hole of the respective one of said openings of said carrier tape.

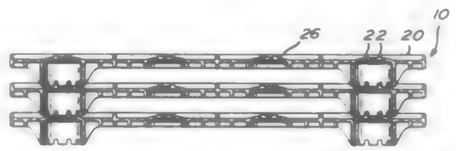
5,360,111
COMPACT LOTION APPLICATOR
Steven E. Arispe, 11793 Briar Knoll Pl., Moreno Valley, Calif. 92557
Filed Sep. 2, 1993, Ser. No. 116,008
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—361 **9 Claims**



1. A compact applicator for applying lotions and other like fluids, comprising:
a folding case, the folding case having an upper portion hingeably attached to a lower portion, the upper and lower portions defining a cavity between them;
a telescoping handle having a width and a plurality of nested segments, an innermost nested segment terminating in a cap having two oppositely opposed tab pins, the telescoping handle fitting within the case cavity when the telescoping handle is collapsed;
an applicator base, the applicator base fitting within the case cavity and having a first substantially flat applicating surface and a second handle-engaging surface, the second handle engaging surface having a pair of oppositely opposed tab pin holders centrally located on the second handle-engaging surface, the tab pin holders spaced apart a distance slightly less than the width of the telescoping handle; whereby
the collapsed telescoping handle fits snugly between the tab pin holders to form a base-handle pair, the base-handle pair fitting within the folding case so that it may completely close.

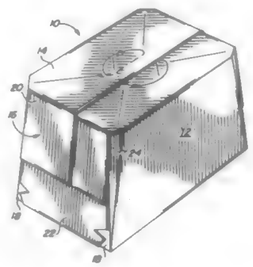
5. A compact lotion applicator, comprising:
a folding case defining an interior cavity, the folding case having an upper portion and a lower portion, the lower portion hingedly attached to the upper portion, the upper and lower portions defining the interior cavity between them; and
a collapsible applicator, the collapsible applicator fitting within the interior case cavity when collapsed, the collapsible applicator having a telescoping handle and an applicator base, the applicator base detachably attaching to the telescoping handle.

5,360,112
DEVICE FOR USE WITH PALLETS SUPPORTING STACKED BOTTLES
Maurice Beauchamp, St-Damien, Canada, assignor to IPL Inc., St. Damien, Canada
Filed Jul. 29, 1993, Ser. No. 99,000
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—427 **3 Claims**



1. A device for use with pallets supporting stacked bottles, comprising:
a rectangular panel having a top face adapted to bear against part of a pallet undersurface and a bottom face adapted to sit on top of a number of the stacked bottles;
wherein said top face of said panel displays a series of ribs extending horizontally vertically and obliquely to one another;
wherein said bottom face displays a plurality of recesses arranged in rows and columns and configured to rest on tops of the bottles;
wherein a number of said recesses display a downwardly extending cylindrical wall defining an inverted cup-shaped extension to confine therein the top portion of a bottle so as to provide a secure arrangement of said panel on said bottles;
wherein said inverted cup-shaped extension is provided at each corner of the panel; and
wherein said panel is stackable with correspondingly shaped panels; said cylindrical wall having a peripheral lower edge configured to inter-engage with the ribs on the top face of an underlaid panel.

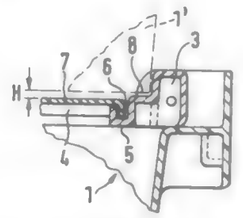
5,360,113
ENCLOSED SLEEVE-TYPE CARRIER
Randall L. Harris, Powder Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.
Filed Nov. 3, 1993, Ser. No. 147,216
Int. Cl.[5] B65D *65/12*
U.S. Cl. 206—427 **3 Claims**



1. An enclosed sleeve-type carrier for packaging a plurality of articles having tapered upper portions, comprising:
top and bottom panels connected to side panels along fold lines to from a sleeve;
an end panel at each end of the sleeve;
each end panel being comprised of upper and lower end panel flaps connected by fold lines tot he top and bottom panels, respectively, the end panel flaps being adhered to associated glue flaps extending transversely of the side panels;

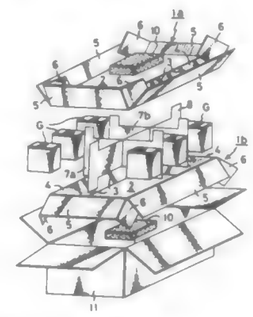
the lower end panel flap of each end panel being connected on either side thereof to the lower portion of the associated glue flap by a gusset tab, each tab being connected to said lower portion by a first tab fold line and to the lower end panel flap by a second tab fold line, each tab being folded about its second tab fold line so as to be in face-to-face relationship with the interior face of the lower end panel flap, and about its first fold line so as to be in face-to-face relationship with the exterior face of the associated glue flap, the upper end panel flaps being joined only by glue to associated glue flaps;
the fold lines connecting the side panels to the top panel being shorter than the fold lines connecting the side panels to the bottom panel whereby the end panels are inwardly tapered;
bevel panels between the glue flaps and the side panels, each bevel panel being connected by a respective fold line to each of the adjacent glue flap and side panel, each bevel panel having a greater width at the top thereof than at the bottom, each bevel panel extending up from a lower corner of the sleeve, the fold lien connecting the bevel panel to the adjacent side panel meeting the fold line connecting the side panel to the top panel at one end of the fold line connecting the side panel to the top panels; and
each glue flap having a free edge opposite the fold line connecting the glue flap to an adjacent bevel panel.

5,360,114
NESTABLE TRANSPORT CONTAINER
Karl Adolf Weidt, Siegen, Germany, assignor to Fritz Schafer Gesellschaft mit Beschrankter Haftung
Filed Mar. 22, 1994, Ser. No. 215,806
Claims priority, application Germany, Mar. 30, 1993, 4310392
Int. Cl.[5] B65D *21/06, 43/16*
U.S. Cl. 206—506 **10 Claims**



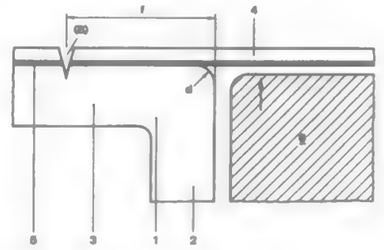
1. A nestable transport container comprising a rectangular bottom and outwardly inclined longitudinal and transverse side walls integrally connected to and extending upwardly from the bottom, the longitudinal and transverse side walls having upper edges defining a container opening, a container interior being defined by the longitudinal and transverse side walls, cover halves, each cover half connected by hinge means to the upper edges of the longitudinal side walls, stacking flaps, each stacking flap hinged to the upper edges of the transverse side walls, the stacking flaps being configured to swing between a position of operation facing the interior of the container and a position of rest extending away from the interior of the container, the cover halves having end edges facing the transverse side walls, the stacking flaps having gutter-like border ledges for support of the end edges of the cover halves when the stacking flaps are in the position of operation and the cover halves are swung onto the stacking flaps, the stacking flaps having stacking surfaces located outwardly from the gutter-like border ledges, the cover halves having upper surfaces, wherein, when the cover halves rest on the stacking flaps, the upper surfaces of the cover halves are located below the stacking surfaces of the stacking flaps.

5,360,115
SUPPORTING PANEL FOR PACKAGE AND PACKING DEVICE
Kuniji Makino, Tokyo, Japan, assignor to Dainippon Printing Co., Ltd., Tokyo, Japan
Filed Jun. 7, 1993, Ser. No. 71,988
Claims priority, application Japan, Jun. 16, 1992, 4-180539
Int. Cl.[5] B65D *81/02*
U.S. Cl. 206—523 **13 Claims**



1. A packing device comprising:
a supporting panel having a rectangular base plate,
four inclining plates respectively connected at four sides of the base plate for forming an inner wall supporting packaged things by folding said inclining plates, and
four erecting plates respectively connected at an outer edge of each inclining plate for forming an outer wall by folding said erecting plates in the a first direction toward the base plate and folding said inclining plates in a second direction opposite the first direction,
a partition made by crossing strips, and
said inclining plates having slits in which edge portions of said partition are inserted to be in locking engagement.

5,360,116
BLISTER PACK WITH A TEAR-OFF AID
Dieter Schmiletzky, Worblingen, Germany, assignor to Alusuisse-Lonza Services Ltd., Zurich, Switzerland
Filed Oct. 29, 1992, Ser. No. 968,272
Claims priority, application Switzerland, Nov. 18, 1991, 3362/91
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—531 **9 Claims**



1. A blister pack comprising:
a base section containing at least one compartment holding an item to be dispensed;
each said compartment being defined by a recessed portion of said base section and being surrounded by a rim defined by ridge regions of said base section;
a peelable cover positioned over each said compartment and over said rim;
said cover being formed by at least one cover segment hav-

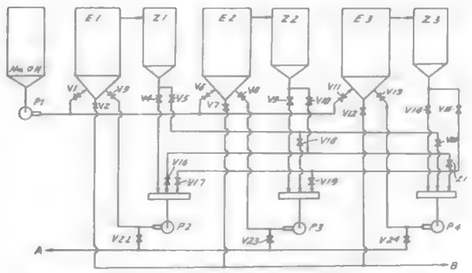
ing a base adhesively secured to said ridge regions surrounding said at least one compartment;
each said cover segment containing a tear-off aid;
said at least one cover segment due to said tear-off aid being at least partially detachable about a circumference of said at least one compartment by pushing the item in said at least one compartment through said at lest one cover segment without the need to manually remove any part of said cover segment from said pack;
the base section and said cover being formed from materials essentially consisting of the same types of plastics; and
said tear-off aid comprising a substantially V-shaped notch which extends through said cover and partially into said rim.

5,360,117

PROCESS FOR THE EXTRACTION OF PEAT AND APPARATUS FOR CARRYING OUT THE PROCESS

Stanislaw Tolpa; Tadeusz Gersz; Stanislawa Ritter; Ryszard Kukla; Malgorzata Skrzyszewska, and Stanislaw Tomkow, all of Wroclaw, Poland, assignors to Torf Establishment, Liechtenstein

Division of Ser. No. 851,670, Mar. 16, 1992, Pat. No. 5,290,554. This application Aug. 23, 1993, Ser. No. 110,584
Claims priority, application European Pat. Off., Mar. 16, 1991, 91104099.6
Int. Cl.[5] B03B *5/66*
U.S. Cl. 209—158 **8 Claims**



1. Apparatus for the extraction of peat comprising
an extraction agent storage tank;
an extraction unit comprising an extraction tank having an outlet in an upper part and first and second bottom inlets, a circulation tank having an inlet and an outlet, a first conduit connecting the circulation tank outlet and the extraction tank second bottom inlet, a second conduit connecting the circulation tank inlet and the extraction tank outlet and an adjustable pump connecting to one of the first and second conduits; and
a first extraction agent conduit connecting the storage tank and the extraction unit extraction tank first bottom inlet.

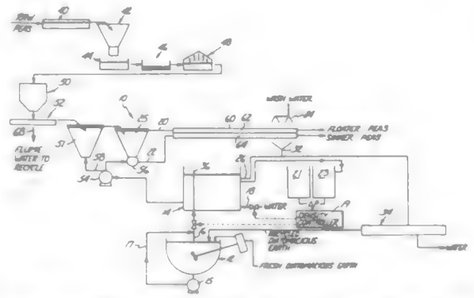
5,360,118

PEA SEPARATING PROCESS USING DIATOMACEOUS EARTH

Thomas P. Kempf, Brooklyn Park, and Dennis B. Usgaard, New Hope, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Jul. 9, 1993, Ser. No. 89,262
Int. Cl.[5] B03B *5/30*
U.S. Cl. 209—172.5 **11 Claims**

1. A process for separating food particles based on specific gravity, comprising:
providing a feedstock of the food particles that have been precleaned and blanched;
providing a slurry of diatomaceous earth and water having a selected specific gravity effective for particles of a lower specific gravity to float in the slurry and for particles of a higher specific gravity to sink;
adding the feedstock of the food particles to the slurry; and



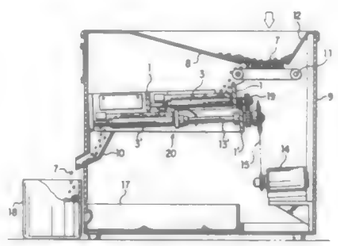
separating the particles of the higher specific gravity from the particles of the lower specific gravity.

5,360,119

SEPARATOR FOR REMOVING FOREIGN MATERIALS IN GRANULATED MATERIALS

Teruyuki Nakamura, Ojiya, and Yasunori Nitta, Sapporo, both of Japan, assignors to Kyowa Kogyo Co., Ltd., Ojiya, Japan

Filed Sep. 1, 1993, Ser. No. 114,224
Claims priority, application Japan, Sep. 3, 1992, 4-621705[U]
Int. Cl.[5] B07C *5/36*
U.S. Cl. 209—618 **7 Claims**



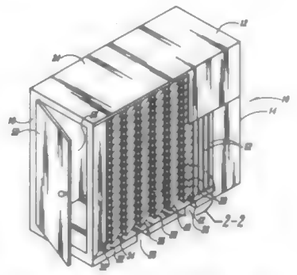
1. A separator for removing foreign materials from granulated materials, comprising:
a supplying section for providing the granulated materials with the foreign materials, and
a separating section for receiving the granulated materials with the foreign materials from the supplying section and separating the foreign materials from the granulated materials, said separating section including at least one pair of rollers formed of first and second rollers arranged parallel to and at a predetermined distance spaced apart from each other, another pair of said rollers disposed under said pair of rollers to partly overlap with each other, and means for rotating the rollers in opposite directions, said first roller having a spiral projection on an outer surface thereof and said second roller having a frictional surface thereon so that when the granulated materials with the foreign materials are supplied onto one end of the pair of rollers, the foreign materials are easily caught between the rollers and the granulated materials are transferred to the other end of the rollers, said each pair of rollers having a wide space portion at said other end of the rollers, said granulated materials situated on the pair of rollers and transferred by the spiral portion to said other end being ejected through the wide space portion so that the foreign materials are removed from the granulated materials by the two pairs of the rollers.

5,360,120

RACK SYSTEM

Gerald J. Stanton, Jr., Clive, Iowa, assignor to Mighty Metal, Inc., Des Moines, Iowa

Filed Jun. 8, 1993, Ser. No. 73,782
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—60.1 **11 Claims**



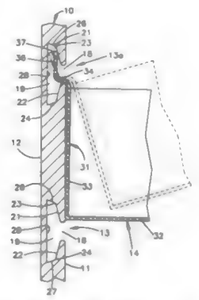
1. A rack system for storing a plurality of pieces comprising:
a frame having a front, a back, and opposite ends;
a plurality of compartments extending horizontally and diagonally within the frame, each compartment being adapted to store a piece in a horizontal orientation and such that the piece is horizontally slidable from the compartment into an area forward of the front of the frame for removal from the compartment, and whereby a piece having a length greater than the width or depth of the frame is storable in one of the compartments; and
each compartment being formed by a tube having a first end positioned adjacent the front of the frame, the tube extending diagonally toward the back of the frame.

5,360,121

SLOTTED DISPLAY WALL PANEL

Donald J. Sothman, Menomonee Falls, Wis., assignor to Commerical and Architectural Products, Inc., Dover, Ohio

Filed Aug. 7, 1992, Ser. No. 927,142
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—87 **10 Claims**



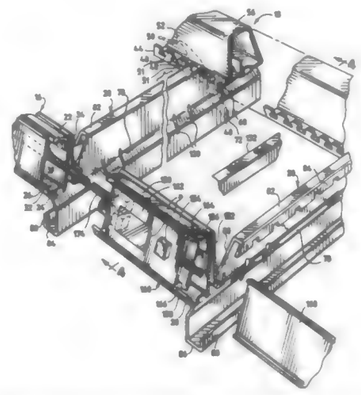
1. A slotted display wall comprising a panel formed of material having horizontally extending vertically spaced slots constructed to allow the installation of cantilever brackets for support of articles, said panel having a predetermined thickness and parallel front and back substantially planar faces, said horizontally extending slots having a modified "T" shape open through said front face, said slots each having a throat open to said front face and extending a depth toward said back face to an inner end, the inner end of said throat joining opposed planar angled walls, said angled walls diverging from said throat in opposite directions to opposed extremities and being angled toward said back face, said throat depth being substantially less than the length of said angled wall, said angled walls increasing in thickness from substantially said throat to substantially said opposed extremities, a slot end wall joining said extremities of said angled walls and extending therefrom toward said back face, said end wall joining an inner slot wall spaced from and parallel to said panel back face.

5,360,122

STORAGE RACK WITH READILY ACCESSIBLE WIRE TRACK BEAM

Richard E. Benton, Springfield, Tenn., assignor to UNR Industries, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 61,214, May 13, 1993, Pat. No. 5,279,430. This application Dec. 23, 1993, Ser. No. 172,435
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—151 **13 Claims**



1. A storage rack having a plurality of storage bays, each bay comprising:
a. a plurality of upright columns including front columns and rear columns;
b. a plurality of generally horizontally extending vertically spaced shelves within each bay, each said shelf including at least two side beams, a front beam, and a rear beam, each of said side beams having a front portion and a rear portion, at least one of said front and rear portions having a notch extending horizontally therein, at least one of said front and rear beams having a first external lip, said first external lip having notches therein coacting with the notches of said side beams;
c. at least one of said front and rear beams having a top portion and extending between at least two adjacent bays and having a second external lip terminating in an upturned end wall portion, said second external lip being formed to define a continuous external wire track to establish a path for a wire extending therethrough;
d. an angle plate mounted to at least one of said front and rear beams, at the top portion thereof, in spaced relation to said upturned end wall portion so as to accommodate a panel therebetween; and
e. a panel mountable to said front beam and extending along at least a portion thereof, said panel having top and bottom edges, and having means for mounting said panel to said front beam.

5,360,123

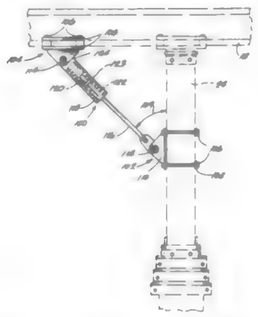
GANTRY STABILIZER

Roger L. Johnston, Muskego, Wis., assignor to J&R Engineering Company, Inc., Big Bend, Wis.

Filed Mar. 5, 1993, Ser. No. 27,185
Int. Cl.[5] B66C *5/02*
U.S. Cl. 212—140 **8 Claims**

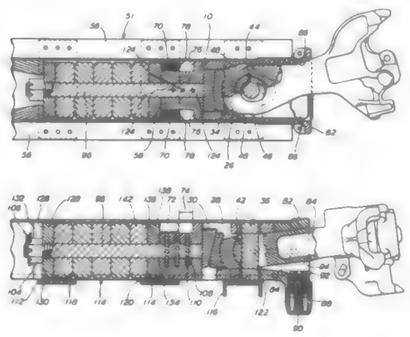
1. A gantry comprising:
a pair of spaced, wheeled bases;

a pair of vertically extendible columns extending upwardly from said bases in substantially parallel relation to each other, each of said columns having upper end;
a substantially horizontal beam extending been said upper ends of said vertically extendible columns; and
a pair of stabilizer bars, each extending diagonally between said beam and an adjacent one of said upper ends of said vertically extendible columns;
each of said stabilizer bars comprising a barrel, a shaft within said barrel and a pair of coaxially oriented coil springs within and engaging said barrel and encircling said shaft;



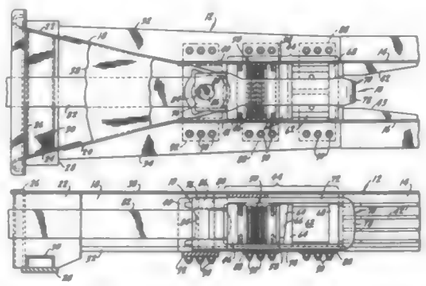
said coil springs providing a first retaining force when said shaft is displaced between a starting position and first displaced position and a second greater retaining force when said shaft is displaced beyond said first displaced position such that said stabilizer bar substantially permits angular movements between said beam and said vertically extendible column that are insufficient to displace said shaft beyond said first displaced position and such that said stabilizer bar substantially resists angular movements between said beam and said vertical extendible column that displace said shaft beyond said first displaced position.

5,360,124
SLACKLESS BUFF GEAR CONNECTION SYSTEM WITH SLIDING YOKE CASTING
Jeffrey D. Wurzer, and Peter S. Mautino, both of Pittsburgh, Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.
Filed Jul. 27, 1993, Ser. No. 97,960
Int. Cl.[5] B61G *9/00*
U.S. Cl. 213—62 R **20 Claims**



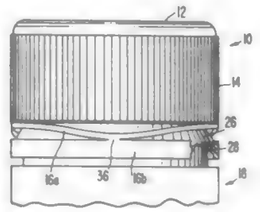
1. A railway car connection system for a railway car having a center sill with a predetermined interior cross section, said connection system including a sliding yoke, said sliding yoke comprising:
(a) a front pocket portion open at a front end thereof;
(b) a top wall portion forming a top of said front pocket portion;
(c) a bottom wall portion forming a bottom of said front pocket portion;
(d) a pair of radially opposed side wall portions forming each side of said front pocket portion;
(e) said top wall portion, said bottom wall portion and said side wall portions forming a continuous outer wall of said front pocket portion;
(f) said continuous outer wall having an outer cross section so as to be capable of being received in such center sill and capable of sliding within such center sill longitudinally thereof;
(g) said top wall portion having a first bore therethrough, said bore having a predetermined diameter;
(h) said bottom wall portion having a second bore therethrough having a predetermined diameter and concentric with said first bore;
(i) a rear block portion having a top wall portion, a bottom wall portion and side wall portions each adjacent said corresponding top wall portion, bottom wall portion and side wall portions of said front pocket portion and at least said side wall portions of said rear block portion being recessed inwardly toward a longitudinal center line of said sliding yoke from corresponding adjacent portions of said continuous outer wall of said front pocket portion such that at least the entire width of said rear block portion is less that the width of said front pocket portion; and
(j) said rear block portion having a rear wall surface and being provided with a bore having its axis along said longitudinal centerline of said front pocket portion, said bore extending through said rear wall surface of said rear block portion and at least partly through said rear block portion.

5,360,125
DRAW BAR CONNECTION HAVING A RELATIVELY RIGID FILLING MEMBER TO ALLOW ABOUT ONE HALF INCH OF TRAVEL
Richard W. Dawson; Ronald P. Sellberg, both of Naperville, and Richard P. Yeates, Aurora, all of Ill., assignors to TTX Company, Chicago, Ill.
Continuation of Ser. No. 913,000, Jul. 14, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,777
Int. Cl.[5] B61G *9/00*
U.S. Cl. 213—62 R **11 Claims**



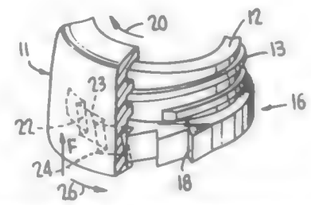
1. In a railroad car of the type having a standard draft gear pocket defined by front and rear draft lugs attached to a draft sill, an improved drawbar connection, comprising:
relatively rigid filling means disposed in the draft gear pocket and extending from the front draft lugs to the rear draft lugs, the filling means being disposed so as to transmit draft loads to the front draft lugs, and having a travel of no more than about one half inch;
a yoke having first and second longitudinally-extending arms spanning the filling means, the arms being connected at one end by a head portion and at the other end by a heel, the head having first and second openings disposed on horizontal and vertical axes, respectively, the heel engaging the end of the filling means closest to the rear draft lug;
a drawbar extending through the first opening in the yoke and having a hole at one end aligned with the second opening of the yoke; and
a coupler pin disposed in the hole of the drawbar and the second opening of the yoke.

5,360,126
TAMPER-EVIDENT PLASTIC CLOSURE WITH 2-TIER BRIDGE ARRANGEMENT
William J. Snyder, Brockton, and Rocco D. Walker, Hazleton, both of Pa., assignors to Zapata Industries, Inc., Hazleton, Pa.
Filed Dec. 21, 1992, Ser. No. 994,299
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **8 Claims**



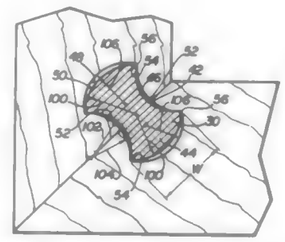
1. A plastic closure for a container having a neck surrounding a dispensing opening, the neck having means for releasably retaining the closure thereon and having an external locking shoulder, said closure comprising a top part including a top wall and a side wall depending from the top wall, and a bottom part including a tamper-evident band depending from the side wall, the band having a lower portion with an internal locking bead adapted to engage said locking shoulder so as to resist removal of the closure from the container, and having an upper portion between upper and lower annular lines of weakness, and means for facilitating the deformation of said upper portion of said band into a zig-zag shape when the closure is moved relative to the neck of the container in a direction to remove the closure from the container, said means including bridges spaced along each line of weakness, the bridges of the upper line of weakness connecting the tamper-evident band to the side wall of the closure, and the bridges of the lower line of weakness connecting the lower portion of the tamper-evident band to the upper portion of the tamper-evident band, the bridges of the lower line of weakness being stronger than bridges of the upper line of weakness and being staggered circumferentially of the bank with respect to bridges of the upper line of weakness, whereby when the closure is moved relative to the neck of the container in a direction to remove the closure from the container, the bridges of the upper line of weakness move upwardly relative to the bridges of the lower line of weakness and the upper portion of the band is deformed into said zig-zag shape, and whereby, when the closure is further moved in said direction, bridges of the upper line of weakness break, so that at least the top part of the closure may be separated from the container.

5,360,127
NON-REMOVABLE CONTAINER CLOSURE
Jacques J. Barriac, Claremont, and Ron E. Harriman, Montebello, both of Calif., assignors to Calmar Inc., City of Industry, Calif.
Filed Feb. 17, 1994, Ser. No. 197,804
Int. Cl.[5] B65D *49/00*
U.S. Cl. 215—263 **4 Claims**



1. A non-removable closure assembly for connecting a manually actuated liquid dispenser to a container, the assembly comprising a closure cap having an opening in a top wall thereof for receiving the dispenser, the container having a cylindrical neck finish, the closure and the container neck finish having threads for mutual tightening engagement upon cap rotation in a predetermined direction, means for locking the cap on the container when the cap is threaded onto the container, said means comprising a series of ratchet teeth inside the cap and on the outside of the neck finish arranged for mutual engagement, the teeth on the neck finish each having a radially extending trailing face entirely lying in a plane containing the central axis of the neck finish, and the teeth inside the cap each having a trailing face extending radially at an upper end thereof and lying in a plane sloping from said upper end to a lower end thereof toward said predetermined direction at an angle of at least 1° relative to the central axis of the closure for creating a camming action between the closure teeth and the neck finish teeth tending to cam the closure down on the container in response to closure unthreading rotation in a direction opposite said predetermined direction.

5,360,128
JEWELRY CASE AND COMPONENTS
George D. Hessenthaler, 1415 Skyview Dr., Salt Lake City, Utah 84124
Filed Jan. 23, 1992, Ser. No. 824,037
Int. Cl.[5] B65D *6/26*
U.S. Cl. 217—13 **6 Claims**



1. A miter joint spline comprising a rod made of a material and having, transverse to its length, a cross sectional shape having:
(a) two opposed convex sides that have a first radius of curvature and are separated by the rod material, and
(b) two opposed concave sides that have a second radius of curvature different from and substantially congruent to the first radius of curvature and are separated by the rod material, and

(c) wherein adjacent rod sides intersect to form a longitudinal edge.

5,360,129

CONTAINERS FOR USE ON AIRCRAFT FOR THE PROTECTION OF AIRCRAFT STRUCTURES

Peter R. Lee, Kent, England, assignor to Royal Ordnance plc, London, England

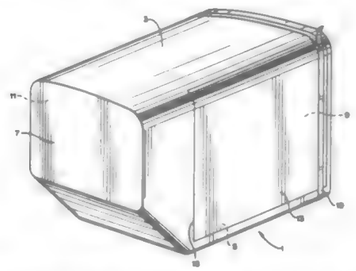
PCT No. PCT/GB90/01724, § 371 Date Jul. 3, 1991, § 102(e) Date Jul. 3, 1991, PCT Pub. No. WO91/07337, PCT Pub. Date May 30, 1991

PCT Filed Nov. 8, 1990, Ser. No. 720,754

Claims priority, application United Kingdom, Nov. 8, 1989, 8925193

Int. Cl.[5] B65J *1/02*

U.S. Cl. 220—1.5 **4 Claims**



1. An aircraft cargo container for transporting cargo in an aircraft, said aircraft having an aircraft hull, said hull having a longitudinal axis, said container comprising:

a plurality of strengthened faces, said strengthened faces comprised of a blast resistance/absorbent material; and

at least two weakened faces, said strengthened and at least two weakened faces comprising a means for generally directing blast energy from a detonation within said container out of said container and to an adjacent region of the aircraft hull and in a direction along said longitudinal axis to an adjacent container in a longitudinal row.

5,360,130

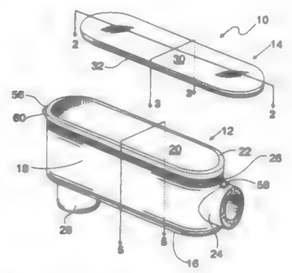
JUNCTION BOX

Martin Lehmann, Auburndale; John Davies, Lakeland, and Helmut Fochler, deceased, late of Haines City, all of Fla. by Helga S. Fochler, legal representative , assignors to Cantex Inc., Mineral Wells, Tex.

Continuation of Ser. No. 37,912, Mar. 26, 1993, abandoned. This application Mar. 31, 1994, Ser. No. 221,536

Int. Cl.[5] H07N *3/08*

U.S. Cl. 220—3.8 **13 Claims**



1. A junction box comprising:

a housing member having a base and a housing wall extending upwardly from said base about the periphery thereof, said housing wall terminating at an open top end of said housing member;

a cover having a top and a cover wall extending downwardly from said top about the periphery thereof, said cover wall terminating at an open bottom end of said cover member, said cover wall having an inner configuration closely conforming to said housing member wall exterior configuration;

a lip disposed about said housing wall adjacent said housing member top end and extending outwardly and downwardly therefrom;

5,360,131

COVER HEIGHT ADJUSTER

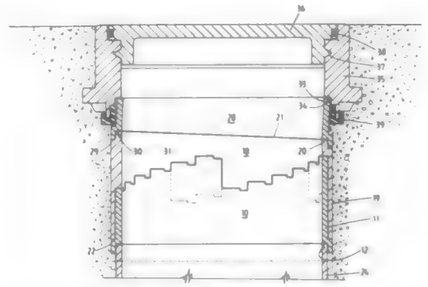
Guy M. Phillippe, and Wayne A. Harris, both of Plympton, Australia, assignors to Philmac Pty. Ltd., Australia

Continuation-in-part of Ser. No. 722,962, Jun. 28, 1991. This application Mar. 1, 1993, Ser. No. 24,526

Claims priority, application Australia, Jun. 29, 1990, PK0921; Mar. 2, 1992, PL1142

Int. Cl.[5] B65D *88/76*

U.S. Cl. 220—8 **1 Claim**



1. A cover height adjuster assembly comprising a lower ring, an upper ring vertically above the lower ring and having a skirt surrounding the lower ring;

the lower ring having an upwardly castellated upper surface and the upper ring having a downwardly castellated lower surface within said skirt complementary to said upwardly castellated surface and being supported thereby, one of said castellated surfaces comprising horizontal steps separated by notches defined by notch surfaces and the other of said castellated surfaces comprising horizontal steps separated by projections at last some of which are positionable in respective said notches and inhibited by the notch surfaces thereof against relative rotation of the rings when so positioned, said castellated upper and lower surfaces generally sloping around at least three sectors of said lower and upper rings, respectively, such that the height of said upper ring with respect to said lower ring varies with different relative rotational positions of said upper and lower rings, said upper ring having a sloping upper surface; and

a cover support ring surmounting said upper ring and having an upper surface and a lower surface which slopes with respect to said cover support ring upper surface and which abuts said sloping upper ring upper surface, such that said cover support ring upper surface has a slope which varies with relative rotational positions of said cover support ring and upper ring.

5,360,132

COLLECTING CONTAINER FOR WASTE

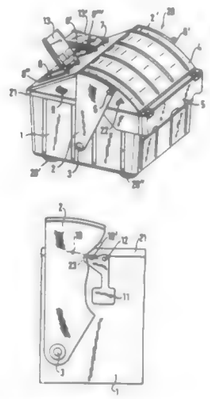
Gustav D. Edelhoff, Iserlohn, Germany, assignor to Edelhoff Polytechnik GmbH, Iserlohn, Germany

Filed Aug. 31, 1992, Ser. No. 937,594

Claims priority, application Germany, Sep. 2, 1991, 4129163

Int. Cl.[5] B65D *43/14*

U.S. Cl. 220—334 **3 Claims**



1. A collecting container (20) comprising a bin (1) having a plurality of walls and an opening provided with a lid (4) having pivot arms (2) which are pivoted on pivot pins (3) located on said bin (1) and which form a pivot axis for said lid (4), said lid (4) being movable about said pivot axis to a closed position covering said opening and an open position permitting access to said bin and removal of contents therefrom, and locking means comprising a locking pin (10) located on one said pivot arm and a gravity pendulum (11) located on at least one wall of said bin (1) and pivoting about an axis (12) disposed parallel to said pivot axis to locked and unlocked positions, said gravity pendulum (11) provided with a hook-like tail (23) which in locked position fits behind said locking pin (10) located on said one pivot arm.

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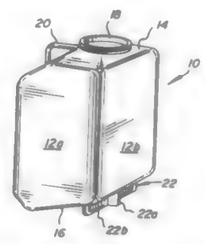
BULK MATERIAL CONTAINER WITH A SUPPORT STAND THEREFOR

Kenneth D. Corby, Rochester, and Andrew W. Elder, Crary ville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 14, 1994, Ser. No. 181,927

Int. Cl.[5] B65D *90/14*

U.S. Cl. 220—630 **6 Claims**



1. A container for bulk material, said container comprising:

a bottom wall; side walls extending upwardly from said bottom wall and oriented such that when said side wails are substantially vertical, said bottom wall is at an angle to the horizontal; an upper wall connected to said side walls, means for enabling said container to be filled or emptied; and means for supporting said container in a substantially upright position, said support means including a first foot integrally formed with said bottom wall and extending therefrom to lie in a plane perpendicular to the plane of said bottom wall, and a second foot removably attached to said first foot in a first configuration, and detachably engagable with said first foot in a second configuration different from said first configuration to lie in a plane perpendicular to said first foot.

5,360,134

MULTIPLE-PRODUCT MERCHANDISING MACHINE

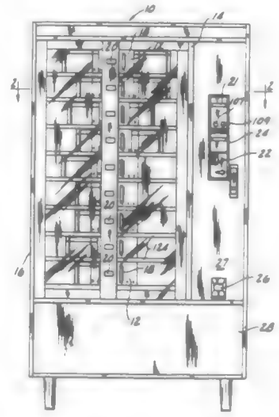
Leonard P. Falk, Florissant, and Paul K. Griner, St. Louis County, both of Mo., assignors to Unidynamics Corporation, Stamford, Conn.

Continuation of Ser. No. 959,676, Oct. 13, 1992, Pat. No. 5,285,926, which is a continuation of Ser. No. 760,769, Sep. 16, 1991, Pat. No. 5,169,027, which is a continuation of Ser. No. 523,979, May 16, 1990, Pat. No. 5,048,717, which is a continuation of Ser. No. 112,475, Oct. 26, 1987, Pat. No. 4,927,051. This application Aug. 12, 1993, Ser. No. 105,403

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] B65H *5/00*

U.S. Cl. 221—2 **4 Claims**



1. A multiple-product merchandising machine, comprising:

a cabinet having at least one product access door;

a plurality of product compartments mounted in the cabinet for movement by the at least one product access door;

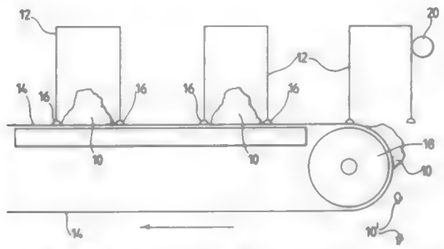
at least one electronic price display mounted in said cabinet adjacent and associated with a respective at least one access door for displaying the price of an item in a product compartment aligned with the at least one access door; and

means for setting different prices for different compartments associated with a particular at least one access door and for causing the set price of a compartment to be displayed in the associated electronic price display as the compartment becomes aligned with the associated at least one access door and for automatically changing any of the prices to a different price at a predetermined time, said means for setting prices including a control panel for entering the price and means for storing the price entered and to be displayed in the electronic price display.

5,360,135

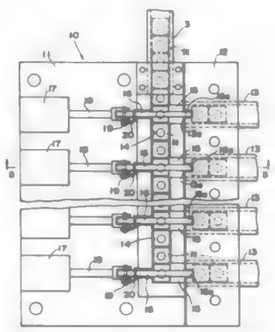
Patent Not Issued For This Number

5,360,136
DISPENSING APPARATUS
John R. Fyson, and Edward C. Glover, both of London, United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/EP92/02114, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO93/06012, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 15, 1992, Ser. No. 50,486
Claims priority, application United Kingdom, Sep. 24, 1991, 9120349
Int. Cl.[5] G07F 11/00
U.S. Cl. 221—85 5 Claims



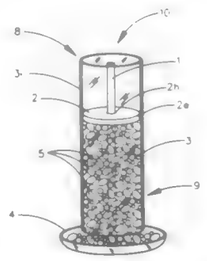
1. A dispensing apparatus for dispensing materials stored in rigid vessels which are then attached to a continuous flexible web so as to contain the material in the closed vessel, the apparatus comprising:
drive means for driving the web through the apparatus, and removal means for removing the material from the vessels, characterized in that the removal means includes an obstruction for engaging each rigid vessel for detaching it from the web and a web direction changing means over which the web passes for releasing the material.

5,360,137
ROW FEEDER FOR DISTRIBUTING NUTS
Hiroshi Shinjo, Osaka, and Arata Takeda, Aichi, both of Japan, assignors to Yugenkaisha Shinjo Seisakusho, Osaka, Japan
Filed Jul. 16, 1993, Ser. No. 92,493
Claims priority, application Japan, Jul. 17, 1992, 4-213498
Int. Cl.[5] B65H 5/00
U.S. Cl. 221—238 5 Claims



1. A row feeder for distribution of nuts, the row feeder comprising:
a main unit;
a guide passage formed on the main unit so as to receive a number of successively delivered nuts in a series;
a plurality of distribution passages formed on the main unit and each extending from and perpendicular to the guide passage;
stroking pushers reciprocatable across the guide passage so as to transfer the nuts thereon to the respective distribution passages;
drivers causing the respective stroking pushers to reciprocate; and
individual feed chutes respectively connected to the distribution passages,
wherein each stroking pusher has a lower face formed with a cutout such that the successively delivered nuts are not prevented from advancing forward along the guide passage while any stroking pusher is disposed across it to enter the distribution passage.

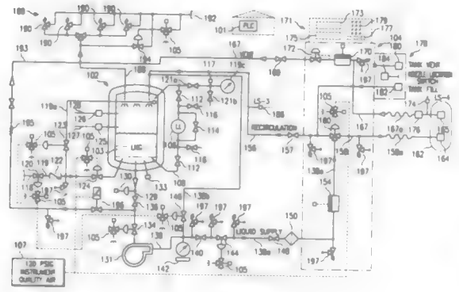
5,360,138
DISPENSING SYSTEM SUITABLE FOR USE IN DISPENSING FOOD FOR HUMAN CONSUMPTION AND METHOD OF USE
Charles W. Zeller, Box 103, Bartley, Nebr. 69020
Filed Aug. 16, 1993, Ser. No. 106,845
Int. Cl.[5] B67B 7/00
U.S. Cl. 222—1 2 Claims



1. A method of dispensing dispensable items comprising the steps of:
a. obtaining a dispensing system of the type including an essentially horizontally oriented plate upon which removably rests, at its lower end, an essentially vertically oriented hollow storage cylinder, which dispensing system further comprises a spindle and disc system; said spindle projecting essentially vertically from said essentially horizontally oriented plate inside said essentially vertically oriented hollow storage cylinder and slidably projecting through a hole through said disc; such that during use dispensable items can be entered into said essentially vertically oriented hollow storage cylinder with said disc being placed thereabove, such that said dispensable items are released onto the upper surface of said essentially horizontally oriented plate by a user action of lifting said essentially vertically oriented storage cylinder;
b. removing said disc;
c. causing dispensable items to be entered into said essentially vertically oriented hollow storage cylinder;
d. placing said disk atop said dispensable items such that said spindle slidably projects through said hole therethrough;
e. lifting said essentially vertically oriented hollow storage cylinder upward such that dispensable items exit therefrom and accumulate upon the upper surface of said essentially horizontally oriented plate.

5,360,139
LIQUIFIED NATURAL GAS FUELING FACILITY
John E. Goode, Arlington, Tex., assignor to Hydra Rig, Inc., Fort Worth, Tex.
Filed Jan. 22, 1993, Ser. No. 7,540
Int. Cl.[5] B67D 5/378
U.S. Cl. 222—40 23 Claims

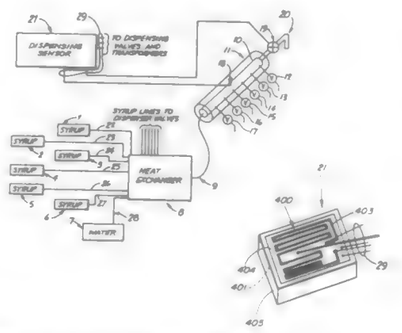
1. A method of automatic operation of a facility for dispensing liquid methane into a motor vehicle through a dispenser system from a supply stored in a cryogenic storage tank comprising the steps of:
measuring pressure of the liquid methane near an outlet of a cryogenic tank with a pressure sensor and communicating a signal indicative of the pressure to a controller;
measuring temperature of cryogenic fluid near the outlet of the cryogenic tank with a temperature sensor and communicating a signal indicative of the pressure to the controller;
determining with the controller, in response to the signal indicative of temperature, a set pressure for the liquid methane, the set pressure substantially equal to a sum of a



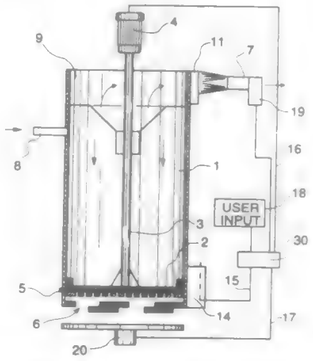
liquid saturation pressure for the liquid methane at the indicated temperature and an additional compression, the compression of the liquid methane being supplied by methane gas trapped in the cryogenic tank; and
enabling the dispenser system to permit a user to dispense on demand liquid methane into a vehicle only if a signal from the pressure sensor indicates that the pressure of the liquid methane is substantially at or above the set pressure, thereby tending to assure that homogenous phase liquid methane is dispensed into a motor vehicle.

5,360,140
LOW COST CONTROL CIRCUIT FOR SENSING THE OPERATION OF AN ELECTRICALLY OPERABLE DEVICE
Karl A. Senghaas, San Antonio, Tex., assignor to The Cornelius Company, Anoka, Minn.
Continuation of Ser. No. 648,474, Jan. 31, 1991, abandoned, which is a continuation of Ser. No. 286,438, Dec. 16, 1988, abandoned. This application Aug. 10, 1992, Ser. No. 907,464
Int. Cl.[5] B67D 5/00
U.S. Cl. 222—52 9 Claims

1. An electronic control circuit for sensing the operation of an electrically operated device, comprising:
a double sided printed circuit board having an electronic control circuit means on a first surface thereof, and a resistance means comprising a plated conductor extending in a meandering pattern over a second surface of the circuit board from a first conductor end to a second conductor end thereof, and the plated conductor electrically connected to each of one or more first electrically operable devices, and the control circuit means including electrical current sensing means, the sensing means electrically connected to the plated conductor for sensing a voltage drop there across resulting from the operating of one or more of the first devices, and the control circuit means connected to a second electrically operable device for controlling the operation thereof, and the control circuit means further including means for preventing the operating of the second device during the sensed operating of one or more of the first devices as determined by the current sensing means.



5,360,141
DEVICE FOR METERING POWDER, GRAINED OR MICROPEARL DYEING MATERIALS
Mario Scatizzi, Pistoia, Italy, assignor to Tecnorama S.R.L., Florence, Italy
Continuation-in-part of Ser. No. 865,081, Apr. 8, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,403
Claims priority, application Italy, Apr. 8, 1991, PT 91A006
Int. Cl.[5] B07B 9/00; B65B 1/34; G01G 13/00
U.S. Cl. 222—55 7 Claims



1. A device for metering powder, the device comprising:
a container;
input means connected to said container and for supplying the powder to said container;
a sieve extending across one end of said container;
scraper means positioned inside said container and positioned against said sieve, said scraper means being for compaction and ejection of the powder;
shutter means positioned on a side of said sieve opposite to said scraper means, and for opening and closing to pass and block the powder exiting said container;
a shutter motor for activating said shutter means between said opening and closing;
balance means for weighing the powder passing through said shutter means;
computer means for reading a weight of the powder from said balance means and for controlling a rotational speed of said scraper means and for controlling said opening and

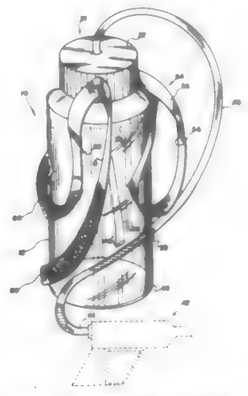
closing of said shutter means through said shutter motor, said computer means varying said rotational speed of said scraper and said opening and closing of said shutter means to cause a predetermined weight of powder to pass through said shutter means as indicated by said balance means.

5,360,142

SUPPLY ASSEMBLY FOR WATER PROPELLING DEVICE

Gary M. Stern, 561 SW. 75th Ter., Plantation, Fla. 33317, and Michael Banschbach, 6521 NW. 24 St., Sunrise, Fla. 33313, Hector Koba, 1236 Canarias St. Pto. Nuevo, Puerto Rico 00920

Filed Dec. 7, 1992, Ser. No. 985,648
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **4 Claims**



1. A supply assembly designed for use in combination with a liquid propelling device for delivering liquid thereto, said assembly comprising:

a) a container having a hollow interior and being structurally adapted to hold a quantity of liquid therein,

b) conduit means having an elongated configuration and two oppositely disposed open ends and being adapted for conducting liquid from within said container to the liquid propelling device exteriorly of said container,

c) one of said openings connected to the liquid propelling device and the other of said open ends disposed within said container in fluid communication with liquid therein,

d) adaptor means mounted on said container and connected to said conduit means and structurally adapted for positioning said conduit means at each parcel within said container,

e) mounting means secured to said container and adapted for removably mounting said container and adaptor means on the body of the user,

f) said conduit means including a sufficiently longitudinal dimension to dispose the propelling device and one of said ends attached thereto a spaced distance from said container and the other of said ends disposed interiorly of the container adjacent the bottom thereof,

g) said container including an access opening communicating with said hollow interior and said adaptor means includes a cover structure attached in covering relation to said access opening,

h) said cover structure being removably connected to said conduit means and adapted and disposed at opposite ends of said conduit means interiorly and exteriorly respectively of said container,

i) said cover structure further including attachment means mounted thereon and structured and disposed to removably secure said cover structure to said container in covering relation to said access opening,

j) said attachment means including an attachment opening formed therein and having an internally threaded surface portion defining peripheral boundaries of said attachment opening,

k) said attachment means also including an externally threaded skirt portion disposed in surrounding relation to said access opening of said container and congruently dimensioned and configured to be removably attached with said attachment opening and in threaded engagement with said internally threaded surface,

l) said mounting means being attached to said cover structure and removably secured to said container at said cover structure,

m) said cover structure including a base, and a skirt portion secured continuously about a periphery of said base and extending outwardly therefrom and terminating at an open end,

n) said cover structure further including an open recess disposed between an inner surface of said base and said open end and peripherally bounded by said skirt portion,

o) said base further including an attachment opening formed on said base and extending inwardly within said base from said inner surface towards and in spaced relation to an outer surface of said base, said attachment opening being adapted to be removably secured about a peripheral boundary surrounding said access opening of said container,

p) a gripping aperture formed in said base and extending therethrough from said outer surface of said base inwardly to and in communication with said attachment opening, said gripping aperture dimensioned to allow frictional, movable engagement and passage of said conduit means therethrough,

q) said gripping aperture being aligned with and having a similar diameter with said attachment opening,

r) vent means formed in said base and extending between said outer surface thereof inwardly in fluid communication with said hollow interior of said container and adapted for establishing a path of air flow between the interior and exterior of said container, and

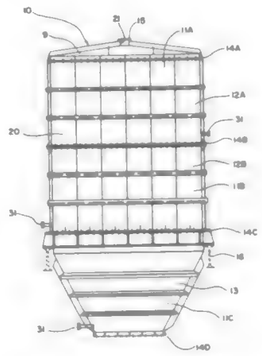
s) said vent means having a plurality of vent chambers extending from said outer surface or said base inwardly to and in communication with said attachment opening.

5,360,143

LINED HOPPER FOR STORING SOLIDS

Jeffrey H. Stultz, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 29, 1993, Ser. No. 55,155
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 **16 Claims**



1. A hopper for storing solids, the hopper comprising

a main body for containing the solids, the main body having an interior surface,

an inlet for introducing solids into the main body, the inlet having an interior surface,

a discharge section in communication with the main body for discharging solids from the hopper, the discharge section having an interior surface,

a plastic liner means secured to the main body and loosely covering the interior surface of the main body,

the plastic liner means loosely covering the interior surface of the discharge section, a part of the plastic liner means secured to the discharge section,

the main body comprised of body sub-sections, each body sub-section having flanges extending therefrom with bolt holes therethrough, the sub-sections bolted together with bolts extending through the bolt holes,

the plastic liner means comprising a plurality of sub-liners, one sub-liner corresponding to and attached at each body sub-section, and a lower sub-liner overlapped by a portion of corresponding upper sub-liner, the sub-liners held between the flanges of the body sub-sections, an overlapping end of an upper sub-liner secured to a portion of its corresponding underlying sub-liner, and

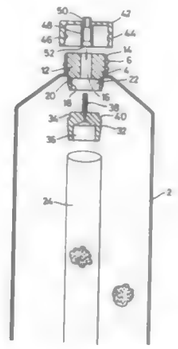
a sealed compartment is formed beneath each sub-liner.

5,360,144

DISPENSING MEANS FOR SIMULTANEOUSLY DISPENSING TWO LIQUIDS

Brian P. Slade, Ashford, Great Britain, assignor to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Apr. 2, 1993, Ser. No. 41,464
Claims priority, application United Kingdom, Apr. 2, 1992, 9207292.5
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—134 **22 Claims**



1. Dispensing means for simultaneously dispensing two liquids, comprising a pair of tubular passages, one within the other, each tubular passage having an inlet and an outlet for a respective one of said two liquids for flow of both liquids from the dispensing means;

the outlet of the inner of the tubular passages being disposed within the outer tubular passage at a spacing from the outlet of said outer passage;

a common conduit being provided by said outer passage between the respective outlets of the inner and outer passages for the flows of both liquids whereby said outer passage outlet serves as a common outlet for both flows;

the common conduit comprising an elongate downstream portion having an uninterrupted interior with a cross-section that reduces in size in the direction of fluid flow, whereby to inhibit mixing of the flows of said two liquids along its length,

an upstream portion of the common conduit extending between said downstream portion and the inner tubular passage, said upstream portion having a cross-section that reduces in size in the direction of fluid flow,

said reductions of cross-section of the upstream and downstream portions being at a greater rate over the length of the upstream portion than over the length of the downstream portion,

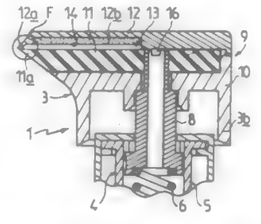
said reduction of cross-sectional size of the upstream portion of the common conduit forming part of a continuing reduction of cross-sectional size of the outer tubular passage overlapping the outlet of the inner tubular passage.

5,360,145

DISPENSER FOR AT LEAST ONE LIQUID OR PASTY PRODUCT COMPRISING A CLOSURE SYSTEM THAT ALLOWS NO INGRESS OF AIR, AND PRESERVATION PROCESS USING THE SAID DISPENSER

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jun. 28, 1993, Ser. No. 82,358
Claims priority, application France, Jul. 21, 1992, 92 08976
Int. Cl.[5] B67D *5/58*
U.S. Cl. 222—190 **18 Claims**



1. Dispenser for at least one of a liquid and pasty product, comprising:

(a) a container holding the product; and

(b) a head for dispensing the product, said head having a dispensing channel that connects the container to an external dispensing orifice, the channel being provided, at the dispensing orifice, with a closure system that allows substantially no ingress of air,

wherein the dispensing head includes an inserted part positioned adjacent the dispensing channel and defining at least a portion of the dispensing channel, said part being made of synthetic polymer material and including at least one of an antiseptic agent and an antioxidant agent which contacts the product, when the product is in the dispensing channel, to prevent degradation of the product in the dispensing channel.

5,360,146

LIQUID DISPENSER PLUNGER

Kazumasa Ikushima, Tokyo, Japan, assignor to Musashi Engineering Inc., Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,730
Claims priority, application Japan, Jan. 23, 1992, 4-010277
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—386 **7 Claims**

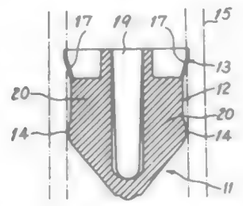
1. A liquid dispenser for a viscous liquid, including a hollow cylinder having a predetermined inner diameter, and a plunger which is axially slidably accommodated within said cylinder, wherein said plunger comprises:

a front section which is tapered to a front end from a rear end, said rear end having an outer diameter smaller than the inner diameter of the cylinder;

an intermediate drum-shaped section having an outer diameter smaller than the outer diameter of the rear end of the front section;

a rear thin wall section having a maximum outer diameter greater than the inner diameter of the cylinder and having

a plurality of axial slits spaced in a circumferential direction to define a plurality of flaps which are resiliently deformable radially inwards, and a center bore extending



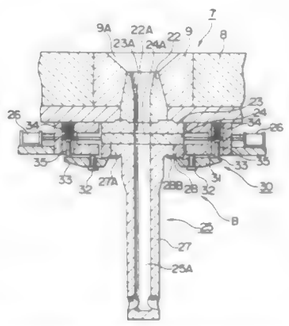
axially from a rear end surface of the plunger into the front section and having a threaded inner surface engageable with a tool for removing the plunger out of the cylinder.

5,360,147

SLIDING NOZZLE FOR MOLTEN STEEL RECEIVING VESSEL

Takafumi Aoki; Masumi Ito, both of Gifu, and Noriyoshi Naruse, Tokyo, all of Japan, assignors to Tokyo Yogyo Kabushiki Kaisha, Tokyo and Akechi Ceramics Co., Ltd., Gifu, both of Japan

Filed Apr. 30, 1993, Ser. No. 55,134
Claims priority, application Japan, Oct. 23, 1992, 4-309706
Int. Cl.[5] B22D *41/54*
U.S. Cl. 222—600 **4 Claims**



1. A sliding nozzle for a molten steel receiving vessel, which comprises:

an upper nozzle (22) made of a refractory, said upper nozzle (22) having a bore (22A) therein and said upper nozzle (22) being inserted vertically from below into an opening (9*a*) in a nozzle receiving brick (9) provided on a bottom wall (8) of a molten steel receiving vessel (7);

a fixed plate (23) made of a refractory, said fixed plate (23) having a through-hole (23A) and a horizontal lower surface, and said fixed plate (23) being secured horizontally and stationarily to a lower end of said upper nozzle (22), said through-hole (23A) of said fixed plate (23) being aligned with said bore (22A) of said upper nozzle (22) relative to a common vertical axis;

a horizontally and reciprocally movable sliding plate (24) made of a refractory, said sliding plate (24) having a through-hole (24A) and having a horizontal upper surface and a horizontal lower surface, said horizontal upper surface of said sliding plate (24) being slidable along said horizontal lower surface of said fixed plate (23);

a lower nozzle (25) made of a refractory, said lower nozzle (25) having a bore (25A) and a horizontal upper surface, and said lower nozzle (25) being secured vertically and stationarily below said sliding plate (24), said lower nozzle (25) comprising a nozzle body (27) and a metallic frame (28) fitted to a flange (27A) at an upper end of said nozzle body (27), an upper portion of said bore (25A) of said lower nozzle (25) comprising an upper bore portion (36A) and a lower bore portion (36B), said upper bore portion (36A) comprising a high-Al_2O_3 refractory having a carbon (C) content of up to 10 wt. %, and said lower bore portion (36B) comprising any one of an Al_2O_3-SiO_2 refractory and an Al_2O_3-SiO_2-C refractory having a carbon (C) content of up to 10 wt. %, said lower nozzle (25) having a length sufficient to cause a lower portion thereof to be immersed into molten steel in a mold arranged below said lower nozzle (25), said bore (25A) of said lower nozzle (25) being aligned with said bore (22A) of said upper nozzle (22) relative to a common vertical axis, and said horizontal lower surface of said sliding plate (24) being slidable along said horizontal upper surface of said lower nozzle (25);

fitting means (30) for pressing said lower nozzle (25) against said lower end of said upper nozzle (22) through said sliding plate (24) and said fixed plate (23); and

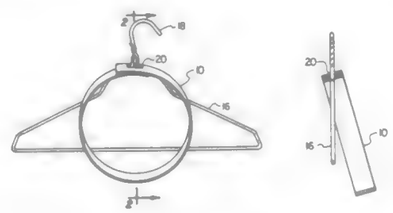
driving means (26) for causing said sliding plate (24) to slide horizontally and reciprocally along said horizontal lower surface of said fixed plate (23) and along said horizontal upper surface of said lower nozzle (25).

5,360,148

HANGERED SHIRT COLLAR PROTECTOR

Edmund J. Goscin, and David K. Goscin, both of 7620 Fallmeadow La., Dallas, Tex. 75248

Filed Jan. 6, 1993, Ser. No. 1,059
Int. Cl.[5] A41D *27/22*
U.S. Cl. 223—88 **9 Claims**



1. A garment hanger comprising:

(a) a conventional wire garment hanger having a triangular portion to support garments and further having a hook portion extending above the triangular portion;

(b) a strip of flexible semi-rigid material having oppositely disposed first and second ends, the first and second ends disposed in an overlapping relationship to form a substantially cylindrical shape;

(c) means for fastening the first and second ends of the strip together in the overlapping relationship; and

(d) an aperture through the strip, wherein the hook portion extends through the aperture to support the strip on the wire hanger.

5,360,149

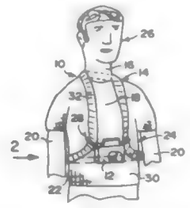
CARRYING HARNESS FOR AN OPTICAL DEVICE

Jerome C. Lacot, P.O. Box 19, Brookville, Pa. 15825

Filed Feb. 22, 1993, Ser. No. 20,376
Int. Cl.[5] A45F *3/14*
U.S. Cl. 224—257 **3 Claims**

1. A carrying harness for an optical device consisting essentially of:

a) an endless strap loop consisting essentially of an elongated neck portion and an elongated lower back back portion extending directly across a back of a neck and a small of a back, respectively, and a pair of front portions extending in laterally spaced apart relation down a front of a chest, and under a pair of arms of an upper torso of a person so as to join respective ends of the neck portion to respective ends of the lower back portion, wherein said strap loop consists essentially of only a single, flexible non-elastic band of material joined only at opposite longitudinal ends thereof to form only a single closed loop; and



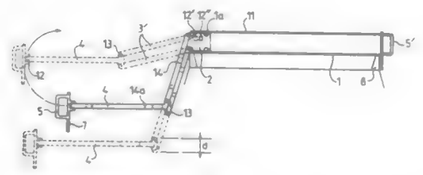
b) a pair of slide fasteners each slidably connected to said strap and adapted for connecting said optical device to a front portion of said strap loop so that said front portion are linked together at a front of a person only be said optical device, and which will normally position said optical device against an abdominal area below the chest of the person when in a carrying mode and selectively allows said optical device to be slid into an eye level position when in an operating mode.

5,360,150

ROOF RACK FOR VEHICLES

Jean-Luc Praz, 1997 Haute-Nendaz, Switzerland

Filed Apr. 29, 1993, Ser. No. 54,739
Claims priority, application Switzerland, May 4, 1992, 1414-92; May 7, 1992, 1463-92
Int. Cl.[5] B60R *9/04*
U.S. Cl. 224—310 **23 Claims**



1. A roof rack for carrying a load on a roof of a vehicle, adapted to be mounted on the roof of the vehicle, comprising:

a support bar having a means for fixing the load to be carried thereto;

said support bar comprising a stationary longitudinal element, adapted to be mounted across the roof of the vehicle in a generally horizontal position;

at least one mobile element capable of sliding horizontally and longitudinally with respect to said stationary element between a home position and an extended position;

said at least one mobile element comprising a guide portion for guiding the horizontal sliding motion and a support portion adapted to execute a movement having a vertical component, said support portion being connected to the guide portion so as to maintain a horizontal orientation during vertical movement thereof;

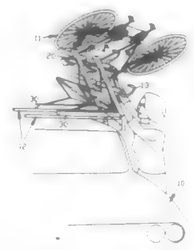
said guide portion cooperating with said stationary element so as to permit the execution of said vertical movement when said at least one mobile element is in said extended position, said support portion being in an elevated position when said at least one mobile element is in said home position as well as during horizontal sliding of said at least one mobile element, and is capable of being lowered during said vertical movement.

5,360,151

EASY TO LOAD VEHICLE-TOP CARRIER FOR BICYCLES

Richard A. Fine, 5 Eden La. West, Mercer Island, Wash. 98040

Filed Jul. 16, 1993, Ser. No. 92,720
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—310 **19 Claims**



1. A carrier device for transporting at least one bicycle on a vehicle, comprising in combination:

(a) a rack for receiving and supporting one or more bicycles,

(b) a base mountable in a fixed substantially horizontal position to said vehicle,

(c) mounting means to detachably secure said base in said fixed position on said vehicle,

(d) connecting means for attaching said rack to said base comprising a substantially horizontal pivot axis having a substantially stationary location with respect to both said base and said rack, whereby said rack is pivotable about said pivot axis between a position wherein said rack is in a substantially horizontal carrying position substantially coplanar with said base over a roof of said vehicle and a position wherein said rack is in a substantially horizontal loading position substantially coplanar with said base and extending outward from said base.

(e) supporting means for holding said rack with respect to said base in said loading position,

(f) attaching means for removably securing one or more bicycles to said rack, and

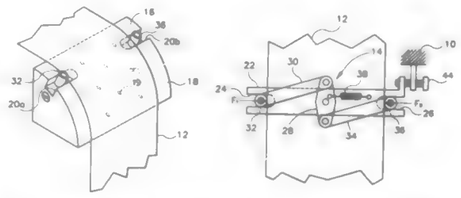
(g) releasable retaining means for securing said rack in said carrying position.

5,360,152

WEB GUIDANCE MECHANISM FOR AUTOMATICALLY CENTERING A WEB DURING MOVEMENT OF THE WEB ALONG A CURVED PATH

Robert J. Matoushek, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 838,976, Feb. 21, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 81,724
Int. Cl.[5] B65H *23/02*
U.S. Cl. 226—199 **19 Claims**



1. A web guidance mechanism for automatically laterally centering a thin web traveling longitudinally in a direction, comprising:

a cylindrical member having a curved outer surface for changing the direction of travel of said web, said curved outer surface having a laterally extending slot;

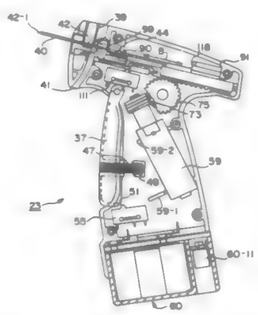
an elongated base member having first and second slots and extending laterally inside said cylindrical member to a lateral position;
a crank having first and second end portions and being rotatably mounted on said base member;
a first slider arm having one end portion pivotally connected to said first end portion of said crank and having a distal end portion;
a first web guide mounted on said distal end portion of said first slider arm and engageable with said first slot of said base member and extending through said laterally extending slot of said curved outer surface of said cylindrical member;
a second slider arm having one end portion pivotally connected to said second end portion of said crank and having a distal end portion;
a second web guide mounted on said distal end portion of said second slider arm and engageable with said second slot of said base member and extending through said laterally extending slot of said curved outer surface of said cylindrical member; and
biasing means for biasing said first and second web guides towards one another to create two normally equal but opposite centering edge forces.

5,360,153

ELECTRIC POWERED APPARATUS FOR DISPENSING INDIVIDUAL PLASTIC FASTENERS FROM FASTENER STOCK

William J. Cooper, Woonsocket, R.I., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed May 13, 1993, Ser. No. 61,703
Int. Cl.[5] B65C *7/00*
U.S. Cl. 227—67 **2 Claims**



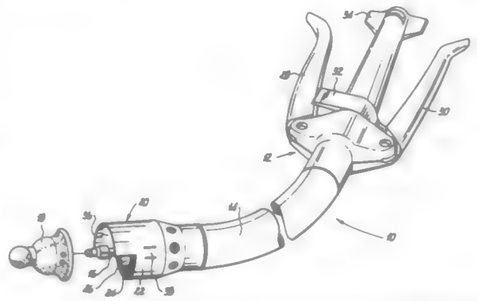
1. Apparatus for dispensing fasteners from fastener stock comprising:
a. a casing,
b. a mechanism in the casing for ejecting fasteners loaded into the casing,
c. an electric motor for driving said mechanism, and
d. a battery pack for powering said electric motor, said battery pack being removably mounted in said casing and including:
i. a container,
ii. at least one rechargeable battery in said container,
iii. terminals on said container for electrically coupling said at least one battery to said electric motor, and
iv. a charging receptacle in said container and electrically coupled to said at least one battery, said charging receptacle containing a plug operated switch, said plug operated switch being constructed for operation with a DC charging device and being located in said container such as to be accessible for connection to said DC charging device when said battery pack is mounted in said casing and removed from said casing, said charging receptacle including a normally closed terminal of one polarity, a first fixed terminal of the same polarity as said normally closed terminal and a second fixed terminal of the opposite polarity of said first fixed terminal contained therein.

5,360,154

APPARATUS FOR CREATING PARTIAL ANASTOMOSES

David T. Green, Westport, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jul. 17, 1992, Ser. No. 915,109
Int. Cl.[5] A61B *17/115*
U.S. Cl. 227—179 **23 Claims**



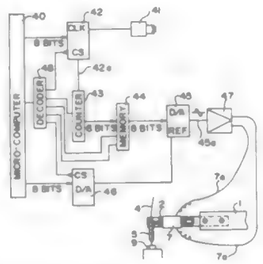
1. A circular anastomosis fastening apparatus comprising: p1 an elongated housing;
a staple cartridge mounted at a distal end of said elongated housing; and
shroud means detachably mounted adjacent to said staple cartridge for shielding a predetermined portion of tissue from being engaged by said staple cartridge, wherein upon actuation of the circular anastomosis fastening device, a full circular anastomosis is prevented and a partial anastomosis is created.

5,360,155

WIRE BONDING APPARATUS

Toyokazu Ooki, Hino, and Kuniyuki Takahashi, Musashimurayama, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 89,704
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—1.1 **2 Claims**



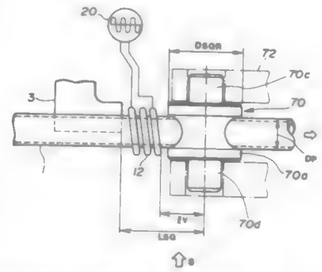
1. An ultrasonic wire bonding apparatus comprising; a bonding arm having a capillary through which a wire is passed and being pivotally movable up and down, a piezoelectric element that transmits a vibration via electric strain or magnetic strain effect to said capillary of said bonding arm; a microcomputer that outputs frequency data and amplitude data; and an open-loop control circuit that determines output waveform data and amplitude in accordance with said frequency data and amplitude data supplied from said microcomputer and applies an output voltage or current to said piezoelectric element and wherein said bonding arm is not resonant at an ultrasonic frequency set by said frequency data.

5,360,156

WELDING MANAGEMENT APPARATUS

Yuji Ishizaka; Takashi Katanosaka; Osamu Masuda, and Hiroyasu Kimura, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Division of Ser. No. 20,373, Feb. 22, 1993, Pat. No. 5,265,787.
This application Aug. 9, 1993, Ser. No. 104,505
Claims priority, application Japan, Mar. 25, 1992, 4-066726; Apr. 7, 1992, 4-084264; Apr. 20, 1992, 4-099372; May 25, 1992, 4-131263; May 25, 1992, 4-131264
Int. Cl.[5] B23K *13/02, 101/06*
U.S. Cl. 228—17.5 **9 Claims**



1. A tube production machine comprising:
means for forming a workpiece fed from a roll of metal strip in a tubular formation having side surfaces opposite to each other;
a pair of squeeze rollers for providing an upsetting pressure to joint the opposite side surfaces of the workpiece at a jointing point, each of the squeeze rollers being a one-piece member having a cylindrical center portion and upper and lower cylindrical end portions extending coaxially in opposite directions from the cylindrical center portion, the upper and lower cylindrical end portions being formed for rotation in unison with the cylindrical center portion, the cylindrical center portion being formed in a side peripheral surface with an annular groove to define a path for the workpiece along with the annular groove of the other squeeze roller;
a roller holder for bearing each of the squeeze rollers at the cylindrical end portions thereof; and
means for supplying a high frequency power to the workpiece to weld the opposite side surfaces at the jointing point so as to produce a metal tube member.

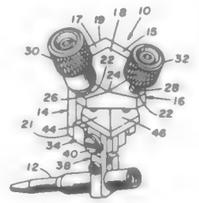
5,360,157

WELDING NOZZLE POSITION MANIPULATOR

Jeffrey L. Gilbert, Van Nuys, and David A. Gutow, Thousand Oaks, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 31, 1993, Ser. No. 114,043
Int. Cl.[5] B23K *37/02*
U.S. Cl. 228—45 **12 Claims**

1. A welding nozzle position manipulator comprising:
an angle support;
a manipulator screw bracket attached at one end thereof to said angle support and provided at the distal end thereof with a pair of spaced apart threaded apertures;
a pair of manipulator screws, each of said screws being threadedly attached to one of said pair of spaced apart threaded apertures in said manipulator screw bracket;
a fulcrum;
a fulcrum pivot pivotally attaching said fulcrum to said angle support;
a holding link having a pair of tapered friction surfaces, each of said tapered surfaces being frictionally engaged with one of said pair of manipulator screws;
a holding link pivot pivotally attaching said holding link to said fulcrum; and



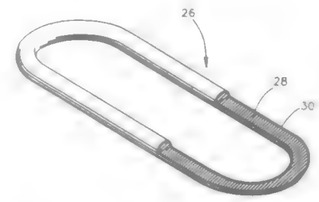
biasing means mounted between said angle support and said holding link and adapted to bias each of said pair of frictional surfaces of said holding link against one of said pair of manipulator screws, whereby adjustment of one of said manipulator screws will pivot said fulcrum relative to said angle support and whereby adjustment of the other of said manipulator screws will pivot said holding link relative to said fulcrum.

5,360,158

METHOD FOR JOINING ALUMINUM ALLOY TUBES

Paul J. Conn, Grand Island, and William J. Schrameck, East Amherst, both of N.Y., assignors to The S.A. Day Mfg. Co., Inc., Buffalo, N.Y.

Filed Jul. 15, 1993, Ser. No. 92,231
Int. Cl.[5] B23K *35/365*
U.S. Cl. 228—56.3 **13 Claims**



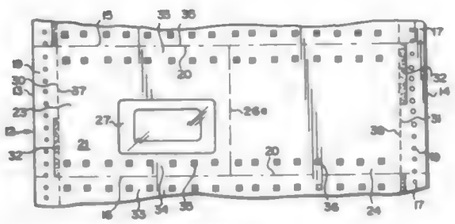
1. A flux-coated alloy member for selectively placing a flux compound between an aluminum-containing alloy and a joint of an assembly which is to be joined by heating the assembly to a temperature which is above the melting temperature of the alloy and less than the melting temperature of the assembly, the flux-coated alloy member comprising:
a band member formed from the alloy, the band member having a substantially annular shape; and
a flux coating adhered to substantially all external surfaces of the band member so as to form a continuous, substantially dry and solid coating on the band member such that the flux-coated alloy member can be handled without deterioration of the flux coating, the flux coating comprising the flux compound dispersed in an adhesive binder wherein the adhesive binder constitutes about 25 to about 75 weight percent of the flux coating, the flux compound being composed of at least about 96 weight percent of a tetrafluoroaluminate compound whose particle size is in the range of about 8 to about 15 microns in size, the adhesive binder being selected from the group consisting of natural resins and water-soluble epoxy resins;
whereby the flux-coated alloy member enables the flux compound to be selectively placed at the joint of the assembly so as to substantially eliminate the presence of excess flux compound at the joint.

5,360,159

MAILERS AND BUSINESS FORM ASSEMBLIES FOR PRODUCING MAILERS

Victor H. Perriman, London, England, assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed May 5, 1992, Ser. No. 878,479
Claims priority, application United Kingdom, Aug. 15, 1991, 9117589; Aug. 15, 1991, 9117590
Int. Cl.[5] B65D *27/04, 27/34, 27/32*
U.S. Cl. 229—92.3 5 Claims



1. A sealed mailer comprising:

a first sheet and a second sheet overlying said first sheet, at least one of said sheets being suitable for passage through a printer for receiving information thereon;

said sheets having longitudinal and transverse edge portions in respective registration one with the other;

means for joining the registering longitudinal and transverse edge portions of said first and second sheets one to the other and thereby defining longitudinal and transverse edges of said mailer;

said mailer having registering lines of perforations along said first and second sheets defining a margin adjacent one of the edges of said mailer and extending inside the joining means along said one mailer edge, said joining means along said one mailer edge including a first line of adhesive extending in part along an edge portion of said first sheet a distance equal to about one-half the length thereof and leaving a remaining portion thereof void of adhesive and a second line of adhesive extending in part along an edge portion of said second sheet for a distance equal to about one-half the length thereof and leaving a remaining portion thereof void of adhesive, said adhesive along said edge portion of said first and second sheets lying in respective registration with the remaining portions void of adhesive whereby a substantially continuous line of adhesive along said margin is provided;

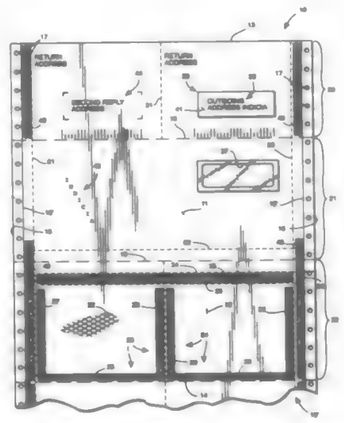
the first and second sheets along at least two of said joined edge portions thereof adjacent said one mailer edge and extending normal thereto being secured together by a peel-apart adhesive arrangement having spaced apart discrete areas of adhesive separated by areas free of adhesive, said discrete areas of said peel-apart adhesive lying on each edge portion of said two joined edge portions of said first and second sheets being interspaced between the discrete areas of said peel-apart adhesive on the registering edge portion of said two joined edge portions such that, when the mailer unit is folded to bring said two edge portions together, peel-apart lines of non-continuous adhesive are provided for sealing the perpendicular edge portions together along their lengths in a manner enabling the edges thereof to be peeled apart substantially without tearing one or the other of the first and second sheets.

5,360,160

ECCENTRIC C-FOLD MAILER WITH A PLURALITY OF REPLY ENVELOPES

Dean N. Sauerwine, Zionsville, Pa., and Richard A. Jenkins, Lindenhurst, Ill., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 1, 1993, Ser. No. 84,591
Int. Cl.[5] B65D *27/06, 27/08*
U.S. Cl. 229—304 30 Claims



1. An intermediate for a mailer type business form comprising:

a single sheet of paper having front and back faces, parallel top and bottom edges, and first and second parallel side edges;

first and second lines of weakness extending parallel to said top and bottom edges, and defining the sheet into first, second and third panels, said first and second lines of weakness being positioned so that said panel is bordered by said top edge and said first line of weakness, and is smaller than said second and third panels, which are substantially identical in size, said second panel between said first and third panels;

first and second patterns of U-shaped adhesive provided on said front face of said third panel with one portion of each U-shaped pattern adjacent said bottom edge, said patterns adjacent each other;

means defining a reply envelope flap associated with each of said U-shaped patterns in said third panel, and an activatable adhesive strip disposed on said front face of said third panel on said reply envelope flap;

a third line of weakness formed in said third panel between said U-shaped patterns of adhesive, perpendicular to said bottom edge, and a continuation of said third line of weakness in said first panel

a window in said second panel on one side of a continuation of said third line of weakness; and

an outgoing address area on said front face of said first panel, on one side of said third line of weakness, in alignment with said window when said intermediate is folded about said first line of weakness.

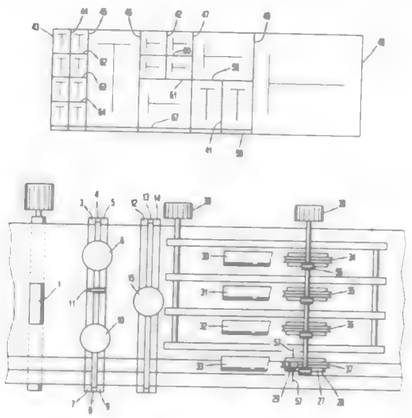
5,360,161

APPARATUS FOR CUTTING PHOTOGRAPHIC PAPER

Wolfgang Schaller, and Rolf Unger, both of Gera, Germany, assignors to Agfa - Gevaert AG, Leverkusen, Germany

Filed Aug. 17, 1993, Ser. No. 107,492
Claims priority, application Germany, Sep. 4, 1992, 4229518
Int. Cl.[5] B26D *1/14, 1/16*
U.S. Cl. 234—42 11 Claims

1. In apparatus for cutting an advancing strip of photographic paper into prints of different size along and across the strip, said strip of paper having two opposite parallel edges, said apparatus comprising (a) first means for cutting the strip of paper in a direction perpendicular to the edges of the strip; (b) second means for cutting the strip of paper in a direction parallel with the edges of the strip; and (c) means for securing the strip of paper in position while it is being cut; the improvement



wherein said first cutting means is arranged upstream of said second cutting means in the direction of the advancing strip, wherein said first cutting means include means for making two adjacent parallel cuts substantially simultaneously in said perpendicular direction and wherein said second cutting means include means for making two adjacent parallel cuts substantially simultaneously in said parallel direction, thereby to cut a narrow strip of waste from said strip of paper.

5,360,162

METHOD AND COMPOSITION FOR PRECIPITATION OF ATMOSPHERIC WATER

Slavko Mentus, Belgrade, Yugoslavia, assignor to Alberta Ltd., Okotoks, Canada

Filed Jun. 4, 1992, Ser. No. 893,284
Claims priority, application Yugoslavia, Jun. 11, 1991, P-1034/91
Int. Cl.[5] B01D *17/00;* C06D *3/00;* C09K *3/30;* E01H *13/00*
U.S. Cl. 239—2.1 6 Claims

4. A method of atmospheric water precipitation comprising seeding the moist atmosphere at a temperature below 0° C. by an aerosol generated by burning a pyrotechnic mixture comprising a compacted mixture of 14% by weight silver iodide, 25% by weight sodium iodate, 3% by weight copper iodate, 4% by weight barium chromate, 42% by weight ammonium perchlorate and 14% by weight poly-p-phenylene.

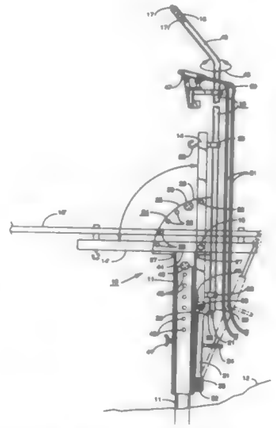
5,360,163

ADJUSTABLE SNOW MAKING TOWER

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Continuation-in-part of Ser. No. 61,525, May 17, 1993, abandoned. This application Oct. 21, 1993, Ser. No. 140,687
Int. Cl.[5] F25C *3/04*
U.S. Cl. 239—14.2 15 Claims

1. An adjustable snow making tower comprising: a substantially vertical support pole having a bottom end anchored in a ground surface, a pipe having upper and lower ends and coaxially received on said pole for support and free axial rotation thereon, a support arm pivotally connected to said pipe adjacent the upper end of said pipe for pivotal movement substantially from horizontal to vertical, snow making nozzle means detachably secured to and supported from said support arm for elevating said nozzle means at least six feet above ground with pivotal movement of said support arm toward vertical, air and water supply conduit means adapted for conveying water at pressures greater than 100 psi and air under pressure to said nozzle means from a remote source for discharge into ambient



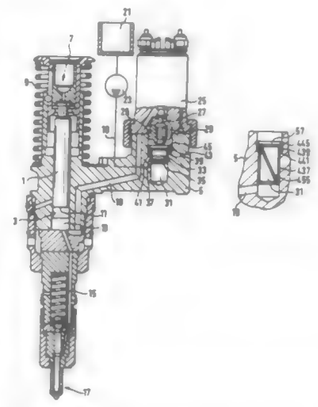
atmosphere through said nozzle means for manufacturing snow in subfreezing conditions, and lock means for temporarily locking said support arm with said supported nozzle means in preselected pivotal positions.

5,360,164

FUEL FILTER IN A FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Werner Pape, Lyons, and Francois Rossignol, Mornant, both of France, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 24, 1993, Ser. No. 127,029
Claims priority, application Germany, Nov. 6, 1992, 4237469
Int. Cl.[5] F02M *57/00, 57/02, 59/44, 51/00*
U.S. Cl. 239—88 13 Claims



1. A fuel injection device for an internal combustion engine, having a pump piston guided in a cylinder bore (3) of a pump housing (5), the piston being driven axially back and forth by a cam drive (7) and with one face end of said piston, remote from the cam drive (7), defining a pump work chamber (13), said pump work chamber communicates via a pressure conduit (15) with an injection valve (17) that protrudes into the combustion

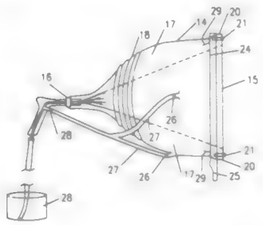
chamber of the engine to be supplied with fuel via a fuel line (19) that communicates with a fuel supply tank (21) and has a feed pump (23), and for controlling a high-pressure pumping phase of the pump piston (1), an electromagnetic valve (25) is provided in the fuel line (19), said electromagnetic valve is adjoined, on a side remote from the pump work chamber (13) in a direction of the pump housing (5), by a region that forms a diversion chamber (31) in the fuel line (19) that extends within the pump housing (5), said diversion chamber has a larger cross section than the fuel line, a fuel filter (33) is inserted into the diversion chamber (31) in the pump housing (5) between the electromagnetic valve (25) and a part leading onward of the fuel line (19), the fuel flowing out of the electromagnetic valve emerges essentially in the same direction as an axis of the diversion chamber (31), which is embodied as a bore, and a baffle device (43) is disposed between the fuel filter (33) and the electromagnetic valve (25), said baffle device prevents a highly pressurized diversion stream from directly striking the fuel filter (33).

5,360,165

SPRAY PAINT NOZZLE AND NOZZLE SHROUD

Tara C. Singhal, P.O. Box 5075, Torrance, Calif. 90510

Filed Sep. 28, 1992, Ser. No. 951,777
Int. Cl.[5] B05B *1/28, 9/01*
U.S. Cl. 239—122 **18 Claims**



1. A fluid spray system comprising:
(a) a sprayer nozzle comprising an atomizer for spraying fluid in the nozzle;
(b) a shroud attached around the sprayer nozzle, the shroud having apertures therein; and
(c) a spray vapor and spillage capturing and recirculating mechanism in the shroud, the mechanism comprising:
(i) a U-Shaped channel attached to the shroud and positioned proximate to the apertures in the shroud, the U-shaped channel provided for capturing the spray vapor and spillage; and
(ii) a plurality of tubes having one end connected to the apertures in the shroud and the other end connected to the nozzle, the tubes provided for returning spray vapor and spillage to the nozzle using the back pressure caused by the fluid spray system,
wherein the shroud is sized sufficiently larger than the spray pattern from the atomizer to isolate and recirculate the spray vapor and spillage into the apertures in the shroud.

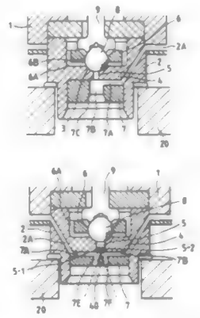
5,360,166

FUEL INJECTION VALVE

Toshiharu Nogi; Minoru Ohsuga; Yoshishige Ohyama, all of Katsuta, and Mamoru Fujieda, Tomobe, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1992, Ser. No. 854,539
Claims priority, application Japan, Mar. 20, 1991, 3-55372
Int. Cl.[5] F02M *61/16*
U.S. Cl. 239—404 **11 Claims**

1. A fuel injection valve comprising,
a cylindrical nozzle body having a raised bottom portion constituting a lower part of the fuel injection valve, the raised bottom portion being provided with a metering orifice serving as a fuel nozzle;
a fuel swirler located upstream of said metering orifice for applying to the fuel a swirling force, said fuel swirler being disposed inside said cylindrical nozzle body above the raised bottom portion; and



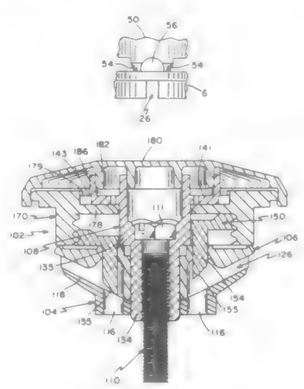
an air swirler including an air swirling chamber and an air nozzle disposed inside said cylindrical nozzle body below the raised bottom portion for introducing air into said air swirling chamber and causing a swirling air flow therein directed opposite to the swirling fuel flow, whereby the swirling fuel flow immediately after being injected from said fuel nozzle is caused to collide with the swirling air flow in said air swirling chamber.

5,360,167

ADJUSTABLE RADIUS SPRINKLER NOZZLE

Michael J. Grundy, Phelan; Jeff B. McKenzie, and Rebecca R. Reade, both of Riverside, all of Calif., assignors to The Toro Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 703,897, May 22, 1991, Pat. No. 5,226,602, which is a continuation-in-part of Ser. No. 406,795, Sep. 13, 1989, Pat. No. 5,031,840. This application Jul. 13, 1993, Ser. No. 91,662
Int. Cl.[5] B05B *1/32*
U.S. Cl. 239—460 **18 Claims**



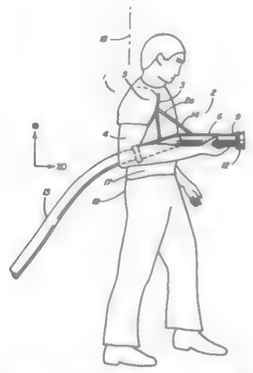
1. An adjustable radius sprinkler nozzle suited for connection to a sprinkler body, which comprises:
(a) a nozzle body having at least one nozzle passageway for spraying water therefrom, wherein the nozzle body includes a top surface and a peripheral sidewall portion, wherein the nozzle passageway(s) extend through the peripheral sidewall portion such that at least one radial stream of water is thrown out of the sidewall portion of the nozzle body beneath the top surface thereof;
(b) selectively operable radius adjustment means carried on the nozzle body for varying the amount of water flowing through the nozzle passageway(s) to adjust the radius of throw of the nozzle; and
(c) selectively operable locking means carried on the nozzle body for preventing the operation of the radius adjustment means to prevent any change in the radius of throw when the locking means is engaged, wherein the locking means when engaged is located on the top surface of the nozzle body to be accessible by the user from above the nozzle body, and wherein the locking means comprises a cover that is removably engageable with the top surface of the nozzle body, the cover having means for preventing movement of the radius adjustment means when the cover is in place on the top surface of the nozzle body but which movement preventing means is disengaged from the radius adjustment means by separating the cover from the top surface of the nozzle body to completely remove the cover from the nozzle body.

5,360,168

FIRE HOSE SUPPORT

David N. McCue, R.R. 2, Carrying Place, Ontario, Canada K0K 1L0

Filed Dec. 14, 1992, Ser. No. 991,088
Int. Cl.[5] B05B *9/00*
U.S. Cl. 239—525 **20 Claims**



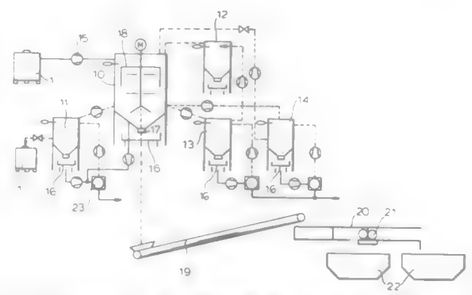
8. A hose support in combination with a hose, that extends upwardly and forwardly from the ground comprising:
(a) a horizontally positioned straight pipe section having a nozzle end and a hose end to which the hose is connected;
(b) a brace means extending upwardly from the pipe section at an angle to terminate at a butt end for resting against a user's shoulder
wherein the hose end of the pipe section is located forwardly of the butt end of the brace whereby fluid flowing into the hose support through the hose is deflected in its flow through an angle of less than 90° degrees, from an upward to a more nearly horizontal direction in the region located below the shoulder of the user.

5,360,169

PROCESS AND APPARATUS FOR THE DISPOSAL OF ARTICLES CONTAINING METALS OR METAL VAPORS

Antonius Köhler, Gummersbach, Germany, assignor to Ubib Unternehmensberatungs GmbH, Illerrieden, Germany

PCT No. PCT/DE92/00055, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO92/13976, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 29, 1992, Ser. No. 952,871
Claims priority, application Germany, Feb. 1, 1991, 4102972
Int. Cl.[5] C22B *43/00, 9/02;* **H01J** *9/00;* **B09B** *3/00*
U.S. Cl. 241—24 **31 Claims**



1. A process for the waste disposal of articles containing a contaminant metal or metal vapor, comprising the steps of:
(a) providing a container containing a bath of a liquid chemically reactive with said metal and said metal vapor to produce harmless compounds thereof;
(b) pushing said articles into said bath of said liquid so that sufficient liquid of said bath is above said articles to prevent escape of said vapor;
(c) crushing said articles within the bath to release said metal or said metal vapor from said articles and thereby reacting the liquid with said metal or said metal vapor to produce said compounds, so that the container contains said liquid, said compounds and residues of said articles as contents of said container;
(d) emptying the contents of said container into a receptacle of a central processing plant;
(e) separating at said central processing plant said contents of said receptacle into components including said liquid, said residues and a slurry of said compounds; and
(f) separately discharging said components.

5,360,170

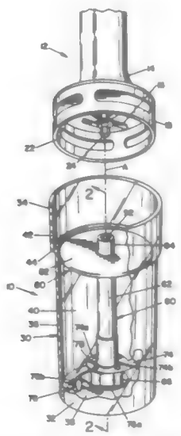
CHOPPING ATTACHMENT FOR HAND HELD BLENDER

Mark Cartellone, Rocky River, Ohio, assignor to Mr. Coffee, Inc., Bedford Hts., Ohio

Filed Aug. 20, 1993, Ser. No. 110,096
Int. Cl.[5] A01D *55/00;* **A47J** *42/00*
U.S. Cl. 241—169.1 **12 Claims**

1. An attachment to a hand-held blender for chopping solids comprising:
a receptacle having a closed lower end and an open upper end, said receptacle being generally symmetrical about a central axis,
an elongated pin extending along said axis into said receptacle from said closed lower end,
an elongated shaft having blade means at one end and attachment means at the other end, said shaft being positionable on said pin in coaxial alignment therewith for rotation about the axis of said pin, said shaft being freely rotatable on said pin with said blade means positioned adjacent said closed lower end and said attachment means positioned adjacent said open upper end, and
a coupling element comprised of a circular disc dimensioned to close the upper end of said receptacle, said coupling

element having first coupling means on one side of said disc for attachment to a rotatable member on said blender and second coupling means on the other side of said disc



for loose attachment to said attachment means on said shaft, said coupling element being rotatable with said rotatable member.

5,360,171

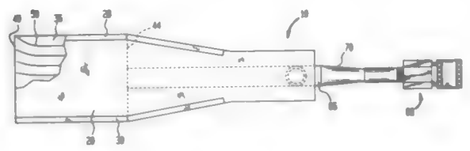
FUEL BURNER APPARATUS AND METHOD EMPLOYING DIVERGENT FLOW NOZZLE

Loo T. Yap, Princeton, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Division of Ser. No. 23,511, Feb. 26, 1993. This application Oct. 25, 1993, Ser. No. 142,266

Int. Cl.[5] B05B *7/30*

U.S. Cl. 239—553.5 **2 Claims**



1. A nozzle for producing a flat, uniformly divergent flow of a fluid, said nozzle comprising:

a body portion including a passageway terminating at opposite ends in an outlet for discharging the flow of the fluid and an inlet to the passageway for introducing the flow of the fluid into the passageway, the outlet and the inlet oriented so as to be directly opposite to one another and entrance areas to such being spatially parallel so that said flow of fluid enters and is discharged from said passageway in a plane common with said inlet and outlet comprising a plurality of outwardly; and

means curving vanes of varying curvature extending from said inlet to said outlet of said passageway and dividing the passageway in a lengthwise direction thereof and the flow of the fluid into a plurality of subflows having an essentially equal velocities and oriented so as to gradually diverge in a transverse direction to the flow of the fluid and thereby produce the uniformly divergent flow of fluid in the fluid upon being discharged from said outlet of said nozzle.

5,360,172

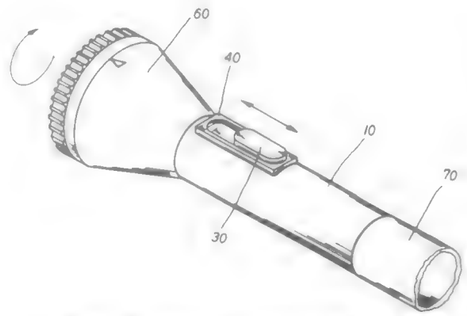
DEVICE FOR CONTROLLING INCOMING/OUTGOING OF WATER FLOW OF A SPRINKLER

King Y. Wang, Changhua Hsien, Taiwan, Prov. of China, assignor to Yuan Mei Corp., Changhua Hsien, Taiwan, Prov. of China

Filed Apr. 28, 1994, Ser. No. 234,363

Int. Cl.[5] B05B *1/30*

U.S. Cl. 239—586 **1 Claim**



1. A device for controlling incoming/outgoing of water flow of a sprinkler, comprising a control tube, a control pin fitted into said control tube for controlling water flow, a pushing block for urging said control pin to move to a lower opening position, a frame member with which said pushing block is slidably associated, and a spring for restoring said control pin to an upper closing position, wherein:

said control tube has a water incoming end and a water outgoing end, an outer surface of said control tube being formed with a rectangular recess and a pin chamber being disposed at a middle section of said recess and extends downward therefrom, said pin chamber having a first side wall formed with a water inlet, a second side wall formed with a water outlet, and a bottom wall formed with a communicating hole;

said control pin has a substantially semispherical head section, a first projecting ring section formed with an annular groove and located at an upper section of said control pin, a second projecting ring section formed with an annular groove and located at a lower section of said control pin, and a third projecting ring section formed with an annular groove and located at said lower section of said control pin below said second projecting ring section, a water sealing ring being disposed in each annular groove;

said pushing block has a bottom face formed with a depression, two lateral projecting ribs, and an inclined wall located in said depression;

said frame member is formed with an elliptic hole and a rectangular peripheral groove surrounding said elliptic hole, Whereby said spring and control pin are fitted into said pin chamber of said control tube and said pushing block is fitted into said frame member from a bottom side thereof, and said frame member is affixed on said rectangular recess of said control tube, so that said pushing block is switchable to displace said control pin between said lower opening position and said upper closing position so as to control incoming/outgoing of water flow of the sprinkler.

5,360,173

Patent Not Issued For This Number

5,360,174

ARRANGEMENT FOR REGISTERING THE INSTANT GRINDING CHARGE VOLUME OF A GRINDING DRUM

Sture Persson, Skellefteå , Sweden, assignor to Skega AB, Ersmark, Sweden

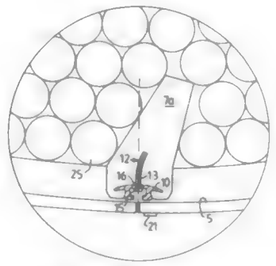
PCT No. PCT/SE92/00439, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993, PCT Pub. No. WO93/00996, PCT Pub. Date Jan. 21, 1993

PCT Filed Jun. 16, 1992, Ser. No. 983,563

Claims priority, application Sweden, Jul. 12, 1991, 9102174-1

Int. Cl.[5] B02C *17/20, 17/16;* **G01D** *3/00*

U.S. Cl. 241—183 **11 Claims**



1. An arrangement for registering an instant volume of a grinding charge in a rotating drum of a drum mill, comprising:

a rotary drum including at least one internal lifting device for material to be ground in the drum mill, said lifting device being resilient and provided with a load detecting device adapted to detect when said lifting device comes into and out of engagement with the grinding charge in the drum during each revolution of the drum, said detecting device comprising a flexible bar which is mounted in said lifting device and adapted to follow a displacement in a diametrical plane of the lifting device caused by a load to which the lifting device is subjected by the grinding charge, and a tension sensor provided on the flexible bar to register a tension in said flexible bar corresponding to said load.

5,360,175

REFINER HAVING OSCILLATION REDUCTION MEANS

Olof G. Kjellqvist, Sundsvall, Sweden, assignor to Sunds Defibrator Industries Aktiebolag, Sweden

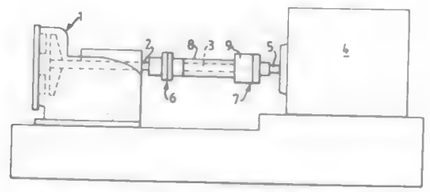
PCT No. PCT/SE92/00050, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/17637, PCT Pub. Date Oct. 15, 1992

PCT Filed Jan. 28, 1992, Ser. No. 122,516

Claims priority, application Sweden, Mar. 27, 1991, 9100922

Int. Cl.[5] B02C *7/06*

U.S. Cl. 241—261.2 **14 Claims**



1. A refiner for the treatment of cellulose-containing material between a pair of opposed, relatively rotatable refining members, at least one of said refining members being rotatably supported on a refiner shaft, said refiner comprising a motor, a rotor shaft driven by said motor, an intermediate shaft having a first end and a second end interposed between said refiner shaft and said rotor shaft for transferring the drive moment therebetween, a first coupling member rigidly connecting said first end of said intermediate shaft to said rotor shaft, a second coupling member rigidly connecting said second end of said intermediate shaft to said refiner shaft, outer pipe means having a first end and a second end concentrically disposed about said intermediate shaft for providing stiffness against torsion created in said refiner, said outer pipe means interconnecting said first and second coupling members, and friction damper means interposed between said first end of said outer pipe means and at least one of said first and second coupling members whereby oscillations in said refiner are reduced thereby.

5,360,176

BLENDER

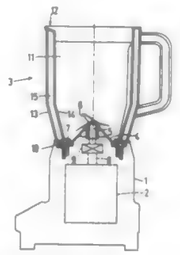
Jan Mugge, Hoogeveen, Netherlands, and Karen P. Morakis, Norwalk, Conn., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 9, 1991, Ser. No. 639,483

Claims priority, application Netherlands, Jan. 10, 1990, 9000059

Int. Cl.[5] A47J *43/07*

U.S. Cl. 241—282.1 **5 Claims**



1. An improved blender comprising

(a) a plurality of separate bases, at least one first separate base comprising a motor housing (1) with a motor (2) for driving a drive shaft (8) mounted in the motor housing; and at least one second separate base (16), devoid of a motor or housing therefor and comprising a bottom (18) and a wall (19), said at least one second separate base including an insulating space;

(b) a blender container (3) adapted to be detachably placed either on the motor housing of the first separate base or on the second separate base, said blender container (3) comprising container walls (12) which define an inner space (11) for blending ingredients, and a cutter holder (4), secured in a bottom portion (7) of the container and rotatably supporting a shaft (5) provided with a cutter (6), which shaft (5) is detachably coupled to the drive shaft (8) by coupling means (9); and

(c) means for thermally insulating the inner space (11) inside the blender container (3) from the environment;

wherein upon detachment of the thermally insulated blender container (3) from said first separate base and placement on said second separate base, the thermally insulated blender container (3) with the cutter holder (4) and shaft (5) provided with the cutter (6) and coupling means (9) and the second separate base form said insulating space (17) between the cutter holder (4) and the bottom (18) and the wall (19) whereby the inner space (11) is substantially completely insulated.

5,360,177

TOOL CHANGING APPARATUS FOR AN ARMATURE WINDING MACHINE

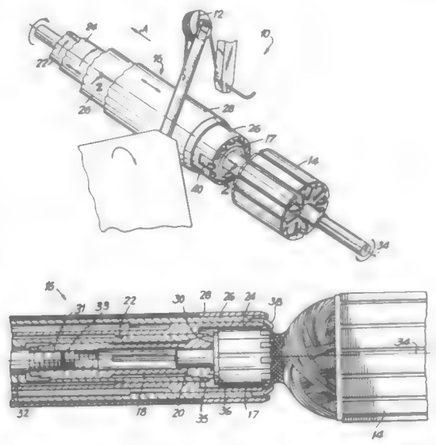
Massimo Lombardi, and Gianluigi Pisani, both of Florence, Italy, assignors to Axis USA, Inc., Marlborough, Mass.

Continuation of Ser. No. 874,959, Apr. 23, 1992, Pat. No. 5,257,744, which is a continuation of Ser. No. 531,843, May 31, 1990, Pat. No. 5,127,594. This application Aug. 4, 1993, Ser. No. 102,149

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] H02K *15/09; 29 605, 596*

U.S. Cl. 242—7.05 B **20 Claims**



1. Apparatus for holding an armature having an armature shaft, said apparatus comprising:

a collect-receiving shaft having a longitudinal bore;

a collet having a first end for gripping said armature shaft and a second end positioned in said longitudinal bore;

means coupled to said collet-receiving shaft for coupling said second end of said collet to said collet-receiving shaft by engaging the exterior of said second end of said collet within said longitudinal bore to prevent axial movement between said collet and said collet-receiving shaft; and

means coupled to said coupling means for selectively actuating said coupling means to release said collet from said collet-receiving shaft.

5,360,178

MULTIPLE COILING MACHINE FOR WINDING ELECTRICAL COILS

Ernst Arnold, Buchs, Switzerland, assignor to Meteor AG, Ruschlikon, Switzerland

Filed Apr. 1, 1992, Ser. No. 863,674

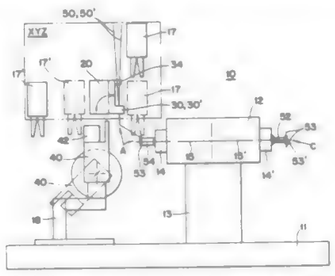
Claims priority, application Switzerland, Apr. 5, 1991, 01 020/91-3

Int. Cl.[5] H01F *41/06*

U.S. Cl. 242—7.09 **14 Claims**

1. In a multiple coiling machine for winding electrical coils of the type having a plurality of winding spindles arranged side by side at a distance from each other, and a support bar extending along the winding spindles, with a plurality of wire guide heads mounted on the support bar, each spindle cooperating with one of the heads, each wire guide head having a plurality of wire guides, the improvement comprising:

means for mounting the wire guide heads for pivoting movement on said support bar between a winding position and a stand-by position, said heads each having at least two wire guides offset from each other and having a clamp for each wire guide, said means for mounting including actuator means for causing pivoting movement of said heads in unison relative to said support bar, said clamps including a lift pin and a spring opposing the displacement of the lift



pin, whereby the guides may be used for different coil wires and for different wire gauges.

5,360,179

METHOD AND DEVICE FOR REELING A WEB

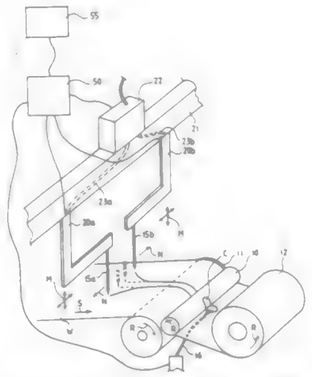
Kalevi A. Vesterinen, and Vesa K. T. Markkanen, both of Helsinki, Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Nov. 13, 1992, Ser. No. 976,272

Claims priority, application Finland, Nov. 18, 1991, 915432

Int. Cl.[5] B65H *18/00*

U.S. Cl. 242—526.3 **9 Claims**



1. A method for reeling a web, comprising the steps of:

reeling a web from a first roll onto a second roll,

initiating the cutting and forming of a tip part from the web by directing one water jet against the web at a first edge thereof,

blowing the tip part into contact with a third roll, such that the tip part of the web begins to reel onto the third roll, and

directing said water jet to a second edge of the web opposite from said first edge to sever the web across its entire width so that the web stops reeling onto the second roll and begins to reel onto the third roll.

5,360,180

ROLL-SUPPORT SYSTEM FOR PAPER-WINDING MACHINE

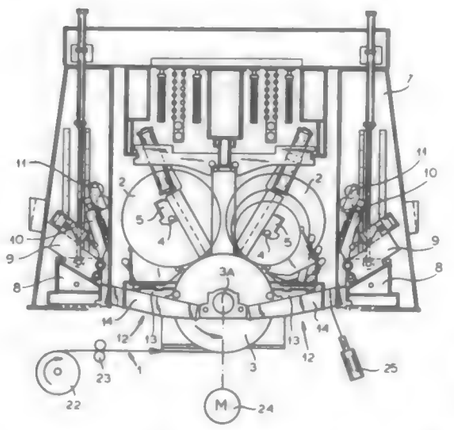
Ewald G. Welp, Erkrath; Erhard Milke, Langenfeld, and Reinhard Hehner, Haan, all of Germany, assignors to Jagenberg Aktiengesellschaft, Duesseldorf, Germany

Filed Jun. 14, 1993, Ser. No. 77,208

Claims priority, application Germany, Jun. 13, 1992, 4219485

Int. Cl.[5] B65H *18/16, 19/30*

U.S. Cl. 242—530.4 **5 Claims**



1. An apparatus for making a plurality of relatively narrow rolls of paper from a relatively wide strip of paper, the apparatus comprising:

a relatively wide main roller rotatable about and centered on a main axis;

means for longitudinally slitting the wide paper strip into relatively narrow strips of papers and for feeding same to the main roller with the strips axially closely juxtaposed;

a plurality of pairs of support heads arranged in two rows extending along the main roller with the rows spaced angularly from each other relative to the main axis, each pair of support heads being spaced in the respective row axially from the other support heads of the respective row and each pair of support heads being adapted to engage in an end of a roll core about which a respective one of the strips is wound;

drive means for rotating the main roller and thereby winding the strips up on the respective roll cores;

two respective beams extending axially along the main roller underneath the respective rows of support heads substantially the full length of the main roller;

means for raising and lowering the beams;

respective guides extending along each of the beams substantially the full length of the main roller;

respective carriages associated with the holder pairs and travelable along the guides of the respective beams;

a respective blower box on each of the carriages having an upwardly open mouth snugly engageable with the roll held in the respective pair of holders;

means for raising and lowering each blower box relative to the respective carriage and thereby fitting the respective mouth to the respective roll; and

means for ejecting air from the mouths of the blower boxes and thereby at least partially supporting the respective rolls via respective air cushions on the respective blower boxes.

5,360,181

AUTO-PASTER FOR PASTING A PAPER WEB WHICH PREVENTS BOUNCING OF PRESSING MEMBERS

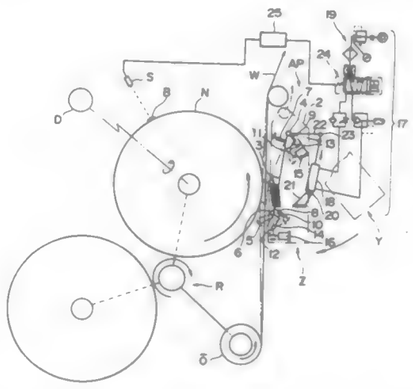
Mamoru Hayashi, Kawasaki, and Tsuyoshi Okeyoshi, Tokyo, both of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan

Continuation of Ser. No. 793,085, Nov. 15, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,757

Claims priority, application Japan, Nov. 29, 1990, 2-325786

Int. Cl.[5] B65H *21/00*

U.S. Cl. 242—555.6 **5 Claims**



1. An auto-paster for pasting a paper web which is being drawn out from one paper roll supported on a paper roll support frame, against a circumferential surface of another paper roll to bond said paper web to another paper web from said another paper roll, comprising:

pressing members;

an operating force applying means for operating said pressing members to press quickly said paper web in motion against the circumferential surface of said another paper roll;

a pressing force applying means for suppressing bouncing of said pressing members which occurs after said pressing members have pressed the web into contact with said circumferential surface by applying an additional force urging said pressing members to press said paper web in motion against the circumferential surface of said another paper roll; said pressing force applying means including a fluid cylinder connected to said pressing members and a solenoid control valve connected to said fluid cylinder for actuating said fluid cylinder to apply said additional force urging said pressing members to press said paper web in motion against the circumferential surface of said another paper roll;

a sensor detecting a front end portion of said another paper roll and producing an output signal in response to detection of said front end portion of said another paper roll; and

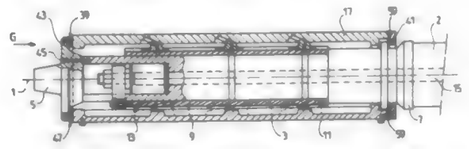
a control means receiving said output signal from said sensor for controlling said operating force applying means and said pressing force applying means, said control means producing a control signal in response to said output signal from said sensor; and wherein said solenoid control valve is connected to receive said control signal from said control means and is responsive to said control signal to actuate said fluid cylinder to cause said pressing force applying means to apply said additional force urging said pressing members to press said paper web in motion against the circumferential surface of said another paper roll, so as to prevent bouncing of said pressing members.

5,360,182

EXPANDABLE CYLINDRICAL CHUCK FOR COILER OR UNCOILER

Jean-Claude Badiou, Veauche, France, assignor to Clecim, Cergy-Pontoise, France

Filed Jan. 14, 1993, Ser. No. 4,237
Claims priority, application France, Jan. 14, 1992, 92 00311
Int. Cl.[5] B65H 75/24
U.S. Cl. 242—573.7 9 Claims



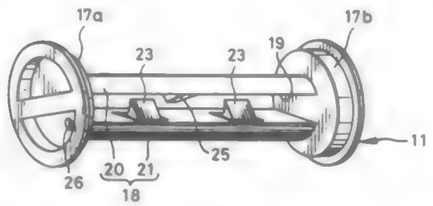
1. Expandable cylindrical chuck for a coiler or uncoiler, said chuck having at least one restricted position and one expanded position, said chuck having a longitudinal axis and comprising:
(a) a chuck body with a nose and a rear section and a tubular sheath;
(b) a plurality of segments;
(c) rack-mounted means for longitudinal displacement to move said segments crosswise relative to said longitudinal axis;
(d) a control shaft controlling longitudinal displacement of said segments;
(e) closing bars located parallel to said longitudinal axis, between and in contact with said segments;
(f) a driving shaft operatively connected to said chuck body for rotating said chuck body around said longitudinal axis;
(g) a pinching bar connected to said chuck and adapted to perform a crosswise movement under control of said driving shaft;
(h) said nose and said rear section of said chuck body each comprising an annular surface ensuring tight contact between said chuck body and said segments, and between said closing bars and said pinching bar; and
seals located between said annular surfaces of said chuck body and said segments, said closing bars and said pinching bar.

5,360,183

PHOTOGRAPHIC FILM CASSETTE HAVING A FILM ANCHOR

Koichi Takahashi, and Katsuhiko Tanaka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1991, Ser. No. 760,034
Claims priority, application Japan, Sep. 13, 1990, 2-242886
Int. Cl.[5] B65H 75/28
U.S. Cl. 242—587.3 5 Claims



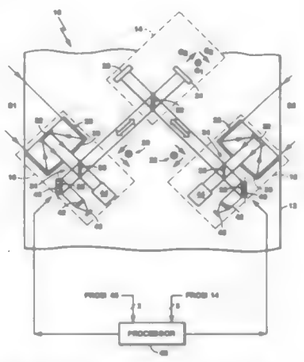
1. A photographic film cassette, comprising:
a spool having a core on which photographic film is wound, said core also having a slit formed therein into which a trailer of said photographic film is inserted, said slit dividing said core into first and second portions, said second portion having a cavity defined therein and an aperture formed in a surface thereof which opposes said first portion;
an engaging member for engaging with said trailer, said engaging member being mounted in cantilever fashion in said cavity and extending through said aperture and a free end thereof projecting into said slit, said engaging member being movable between a first position where said engaging member is engaged with said trailer and a second position where said engaging member is disengaged from said trailer; and
a cassette shell for rotatably housing the spool, said cassette shell being formed with a film passage mouth through which said photographic film may pass.

5,360,184

HIGH-PERFORMANCE, LOW-COST INERTIAL GUIDANCE SYSTEM

William M. Johnson, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jan. 15, 1992, Ser. No. 820,849
Int. Cl.[5] F41G 7/00; F42B 15/02
U.S. Cl. 244—3.2 25 Claims



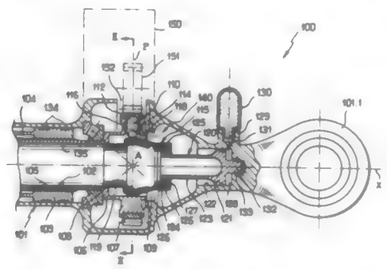
11. An inertial guidance system, comprising:
a gyro module having a plurality of gyro elements that provide gyro output signals about three mutually orthogonal axes;
a first star tracker mociule having a first field-of-view in confronting relation with and defining a first orientation to the gyro module that provides a first signal representative of inertial angle of an object sighted within the first field-of-view;
a first autocollimator cooperative with the gyro module and with the first star tracker module that provides a first autocollimator signal representative of relative motion between the gyro module and the first star tracker module;
a second star tracker module having a second field-of-view in confronting relation with and defining a second orientation different from the first orientation to the gyro module that provides a second signal representative of inertial angle of an object sighted within the second field-of-view;
a second autocollimator cooperative with the gyro module and with the second star tracker module that provides a second autocollimator signal representative of relative motion between the gyro module and the second star tracker module; and
a controller responsive to said gyro output signals, to said first and second signals, and to said first and second autocollimator signals for isolating relative motion respectively between the first and second star tracker modules and the gyro module in such a way that the first and second signals on the one hand and the gyro output signals on the other hand should be measuring the same inertial angle and for compensating the gyro output signals for gyro drift for any difference therebetween.

5,360,185

LINEAR ACTUATOR, IN PARTICULAR FOR DRIVING AN AIRCRAFT LANDING GEAR LEG

Michel Derrien, Versailles, France, assignor to Messier-Bugatti, Velizy Villacoublay, France

Filed Feb. 1, 1993, Ser. No. 11,780
Claims priority, application France, Feb. 3, 1992, 92 01162
Int. Cl.[5] B64C 25/18
U.S. Cl. 244—102 R 6 Claims



1. A linear actuator, in particular for driving an aircraft landing gear leg, the actuator comprising a main body with a screw that is prevented from moving axially and that is now constrained to rotate with a coaxial gear wheel that meshes with the outlet gear wheel of a driving motor and gear box assembly, and a nut that is secured to a sliding guide rod inside said main body, wherein the rotary connection between the screw and the coaxial gear wheel is provided by declutchable coupling means, which means is declutched in an emergency for the purpose of releasing the screw by associated trigger means whose operation requires very little energy,
said coupling means being essentially a linear actuator, wherein the coupling means is essentially constituted by at least one radial finger carried by an extension of the screw on which the coaxial gear wheel is mounted to rotate, said radial finger having its radial inner end bearing against an associated cam and having its radially outer end cooperating with an associated recess in the coaxial gear wheel, said cam being axially displaceable between a coupled position and a decoupled position by triggering the trigger means, and said trigger means comprising a gas cartridge and a piston slidable in a blind bore of the main body and having a free end coupled to the associated cam in such a manner that triggering said trigger means causes axial displacement of said piston and of said cam under drive from gas released by said cartridge.

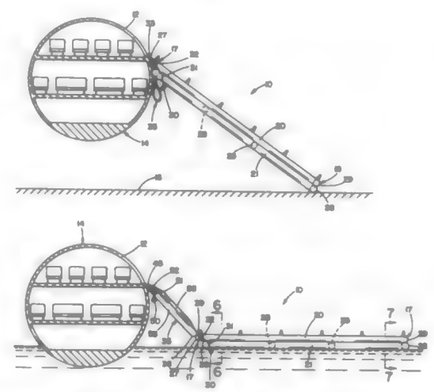
5,360,186

INFLATABLE SLIDE RAFT ASSEMBLY

Libert K. Danielson, Scottsdale, and Ray McBurnett, Phoenix, both of Ariz., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 26, 1993, Ser. No. 99,012
Int. Cl.[5] B64D 25/14
U.S. Cl. 244—137.2 14 Claims

1. An aircraft life raft escape slide assembly for use from an egress door of an aircraft comprising an assembly of at lest two inflatable side tubes and two inflatable transverse tubes which join the ends of said side tubes arranged to hold said side tubes in spaced relationship when all of said tubes are inflated, a strip of flexible material secured to said tubes to define a life raft slide extending in a longitudinal direction when said tubes are inflated, said life raft slide having a head end and a toe end, girt means releasably connects said head end of said life raft slide to said aircraft adjacent to said egress door, a first pressurized means mounted on said life raft slide operative upon actuation to inflate all of said tubes, an inflatable boarding slide having a head end and a toe end, said head end of said boarding slide releasably connected to said aircraft adjacent to said egress door, said toe end of said boarding slide releasably connected



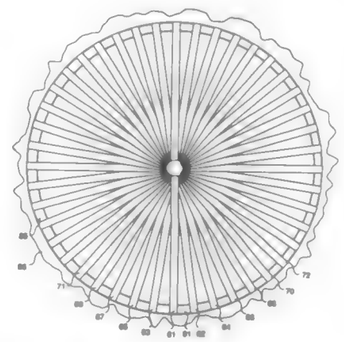
to said head end of said life raft slide, and a second pressurized means operative upon actuation to pressurize said inflatable boarding slide to deploy said boarding slide as a slide and to deploy said life raft into a horizontal position for use as a raft while still connected to said boarding slide.

5,360,187

PARACHUTE HAVING IMPROVED VENT LINE STACKING

John E. Hengel, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

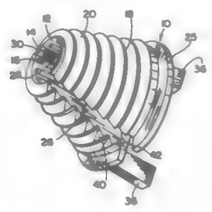
Filed Mar. 29, 1993, Ser. No. 37,877
Int. Cl.[5] B64D 17/02
U.S. Cl. 244—145 3 Claims



1. A parachute; comprising
a. a canopy having a central vent opening;
b. a vent band secured to the canopy and extending around the vent opening;
c. a plurality of vent lines, each of said vent lines lying on a diameter of the vent opening and being attached to the vent band at diametrically opposed points between the ends of adjacent vent lines, said vent lines crossing each other to form a stack at the center of the vent opening," said vent lines being so positioned in the stack such that each and every vent line is separated in the stack by no more than one vent line from those vent lines attached to

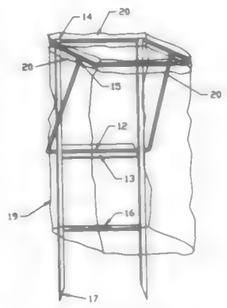
the vent band at points adjacent to the points of attachment of said each vent line.

5,360,188
THREADED INSULATOR CLAMP
Duane R. Condon, Ramona, Calif., assignor to Oatey Co., Cleveland, Ohio
Filed Nov. 27, 1992, Ser. No. 982,590
Int. Cl.[5] F16L *5/00*
U.S. Cl. 248—56 **19 Claims**



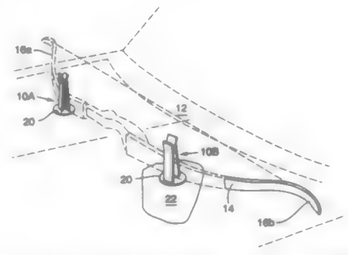
1. A clamp for installation in an opening in a structural member such as wallboard or a stud to support a pipe or conduit within such opening, said clamp having an interior surface defining an axially extending cylindrical passage through the clamp for receipt of a conduit, an exterior tapered surface for positioning the clamp in different size openings in the member, said exterior tapered surface having external threads to permit said exterior tapered surface to be screwed into an opening in the member, and a flange extending radially outward from the clamp adjacent a radial outer end of said exterior tapered surface.

5,360,189
OUTDOOR BAG HOLDER
Casey Hart, 160 Grandview Street, Winnipeg, Manitoba, Canada R2G 0L3
Filed Jun. 5, 1992, Ser. No. 894,603
Int. Cl.[5] B65B *67/12*
U.S. Cl. 248—97 **6 Claims**



1. An outdoor bag holder, comprised of:
(i) a rigid, multi-cornered, bag supporting member having a front, a back and two sides;
(ii) two rigid rods, the tops of which are rotatably attached to the back of the bag supporting member;
(iii) a "U"-shaped support, rotateably attached, at one of its ends, to a first side of the bag supporting member, and rotateably attached, at the other of its ends, to a second side of the bag supporting member;
(iv) a resting plate, permanently attached to the two rigid rods, between and perpendicular to the two rigid rods, at a distance from the tops of the two rigid rods, such that when the "U"-shaped support is held by it, the bag supporting member is held at an approximate 90 degree angle to the two rigid rods;
(v) wherein the dimensions of the bag supporting member are such that, when a bag, of the size that the outdoor bag holder was designed to hold, has its mouth folded over the bag supporting member, the bag will be held to the bag supporting member by the tension between its folded over mouth and the bag supporting member;
(vi) and wherein the rigid rods are of a cross-sectional measurement, such that they can be inserted into the ground, and of a height, such that they can be inserted sufficiently far into the ground, so that said insertion securely holds the outdoor bag holder upright, and that there is sufficient clearance between the bag supporting member and the ground, for the bag for which the outdoor bag holder was designed.

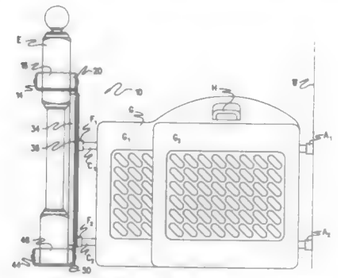
5,360,190
ARCHERY BOW-MOUNTING HOLDER
James C. Walker, Lynnwood; Daniel L. Nichols, Puyallup, and Claude O. Rawley, Renton, all of Wash., assignors to Limrak Industries, Inc., Tacoma, Wash.
Filed Jun. 23, 1992, Ser. No. 903,257
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—201 **10 Claims**



1. A mounting fixture for an archery bow, comprising:
a. an adjustably rotatable holder for mounting on a surface, said holder having two resilient fingers extending substantially normal to said surface:
1. a first of said two resilient fingers is longer than a second of said fingers; and
b. said holder removably gripping and retaining one of the limbs of said bow between said two fingers.

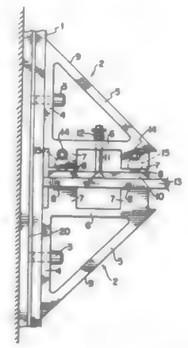
5,360,191
BANNISTER ATTACHMENT ESPECIALLY ADAPTED FOR FACILITATING THE MOUNTING OF A CHILD SAFETY GATE
Randy N. Carson, and Marion E. Carson, both of 47 Deerfield Circle SE, Calgary, Alberta, Canada T2J 6L7
Filed Sep. 29, 1992, Ser. No. 952,958
Int. Cl.[5] F16B *1/00*
U.S. Cl. 248—218.4 **20 Claims**

6. A bannister attachment for mounting a laterally extensible child safety gate including at least one abutment foot to a bannister post comprising:
an elongated body member dimensioned to span a central portion of a bannister post in substantially parallel overlying relation and including a mounting surface having substantially parallel spaced longitudinally extending rail members defining a recessed channel dimensioned and disposed for releasable engagement with at least one abutment foot of a child safety gate;
a first mounting assembly secured to an upper end of said body member and including a box frame clamp having spaced parallel end frame members connected by spaced parallel side frame members and dimensioned for engagement around a quadrilateral transverse cross-sectional shaped upper portion of a bannister end post; and
a second mounting assembly secured to a lower end of said body member and including a box frame clamp having



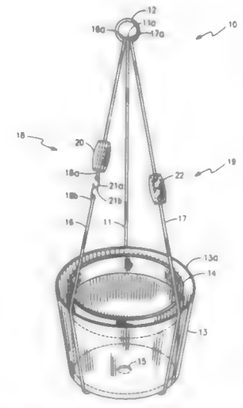
spaced parallel end frame members connected by spaced parallel side frame members and dimensioned for engagement around a quadrilateral transverse cross-sectional shaped lower portion of a bannister end post.

5,360,192
BRACKET FOR CANTILEVER MOUNTING OF SHELVES AND CABINETS
Joseph A. Pittella, 42 Riviera Dr., San Remo, N.Y. 11754
Continuation-in-part of Ser. No. 929,407, Aug. 11, 1992, Pat. No. 5,271,591. This application May 26, 1993, Ser. No. 67,568
The portion of the term of this patent subsequent to Oct. 25, 2001, has been disclaimed.
Int. Cl.[5] A47G *29/02*
U.S. Cl. 248—250 **78 Claims**



1. Bracket for mounting articles such as shelves, racks, and cabinets, comprising independently mountable first and second projections; and means for clamping part of an article between said projections, said clamping means including a clamping element receivable between said projections for movement in a direction from one of said projections towards the other of said projections, and means for moving said clamping element in said direction, said first projection having a clamping surface portion arranged to face said second projection and an external additional surface portion which diverges from said clamping surface portion at an angle different from 90 degrees, and said clamping and additional surface portions being oriented and designed so that loads on said first projection are transmitted to a support for said first projection.

5,360,193
DETACHABLE HANGING PLANT SUPPORT
David E. Cobb, 3920 Washakie, Casper, Wyo. 82609
Filed Nov. 29, 1993, Ser. No. 157,976
Int. Cl.[5] A47H *1/10*
U.S. Cl. 248—318 **18 Claims**

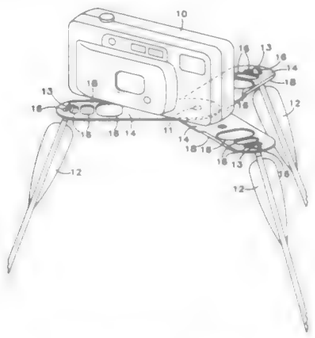


1. A detachable hanging plant support for supporting a plant in a container, comprising:
flexible means adapted for supporting said container, said flexible means including more than two of said flexible means, and each of said flexible means having a first end and a second end;
said first end of each of said flexible means attached to means for suspending said detachable hanging plant support;
said second end of each of said flexible means being attached together and adapted for enclosing and supporting said container;
means adapted for separating at least one of said flexible means apart into tow halves, said means adapted for separating being disposed intermediate to said first end and to said second end of said at least one of said flexible means; and
means for preventing said means adapted for separating from inadvertently separating apart into said two halves;
whereby said means for preventing includes a first position and a second position, wherein when said means for preventing is urged into said first position said means for preventing prohibits any separation of said means adapted for separating from occuring, and when said means for preventing is urged into said second position said means for preventing allows for the separation by said means adapted for separating to occur.

5,360,194
SUPPORT ASSEMBLY FOR OPTICAL EQUIPMENT
Kenneth R. Jacobson, 2150 NE. Division, Bend, Oreg. 97708
Filed Oct. 13, 1992, Ser. No. 960,593
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—431 **23 Claims**

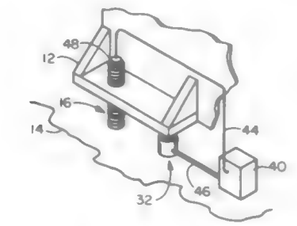
1. An assembly for supporting an optical device, comprising:
(a) a plurality of elongate feet, each said foot having a first end, a second end and a leg aperture disposed at said first end thereof for receiving an object to serve as a leg; and
(b) fastener means for attaching said feet to said optical

device at a point of attachment so as to extend outwardly from said second end to said first end away from said



optical device, said feet being flat from their leg aperture to their point of attachment.

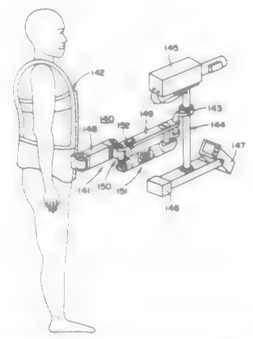
5,360,195
POWER ASSISTED ADJUSTMENT SYSTEM
Sheldon E. Young, 1141 Indian Trail, Hinsdale, Ill. 60521
Filed Mar. 15, 1993, Ser. No. 30,919
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **21 Claims**



1. A power assisted adjustment system, comprising:
(a) adjustment means adaptable for assuming a load;
(b) actuable load-relieving means for temporarily reducing the load on said adjustment means;
(c) actuating means for actuating said load-relieving means;
(d) force-responsive means operably connected to said adjustment means and to said actuating means, whereby application of force to said force-responsive means substantially concomitantly
(i) actuates said load-relieving means to reduce said load assumed by said adjustment means and
(ii) effects a desired adjustment of said adjustment means, said force being nominal relative to said load.

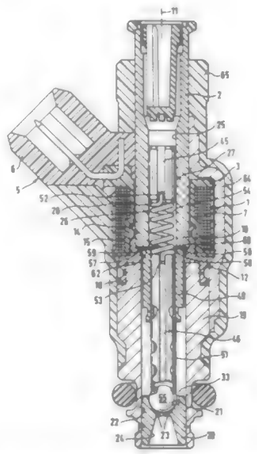
5,360,196
ADJUSTABLE, ISO-ELASTIC SUPPORT APPARATUS
Arnold DiGiulio, Encino; Edmund DiGiulio, Malibu, both of Calif., and Garrett W. Brown, 515 Addison Ct., Philadelphia, Pa. 19147, assignors to Garrett W. Brown, Philadelphia, Pa.
Filed Sep. 15, 1992, Ser. No. 945,105
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—576 **32 Claims**

1. A weight support apparatus especially adapted for operation as a portable device on a moving carrier which is capable of being hand-guided by an operator in substantially free-floating manner to also isolate the weight from unwanted lateral and vertical movement caused by the motion of the carrier, which apparatus comprises:
weight support means for connection to and adapted to support at least part of the weight, which means is further adapted for connection to the carrier, and including a pair of support sections interconnected by a hinge, wherein at least one of the support sections includes a series of pivotally interconnected links;
tensioning means connected to the support section including the series of links for providing forces for weight support; and



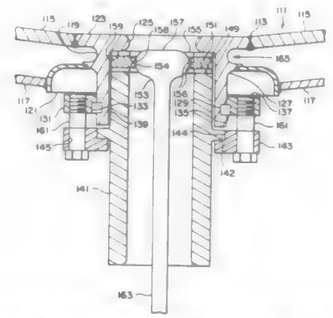
means for adjusting the tensioning means to provide weight support forces which are substantially constant during articulation of the weight support means for all lateral and vertical movements of the weight support means., wherein the adjusting means includes means for adjusting an attachment point connecting the series of interconnected links and the tensioning means.

5,360,197
ELECTROMAGNETICALLY OPERATED INJECTION VALVE
Ferdinand Reiter, Markgroeningen, and Martin Maier, Moeglingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE92/00727, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO93/06360, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 2, 1992, Ser. No. 39,191
Claims priority, application Germany, Sep. 21, 1991, 4131500
Int. Cl.[5] F16K *31/02;* **F02M** *51/06*
U.S. Cl. 251—129.21 **10 Claims**



1. An electromagnetically operated injection valve for fuel injection units of internal combustion engines, comprising a metal core extending along a valve's longitudinal axis, a magnetic coil and an armature through which a valve closing member acting in conjunction with a fixed valve seat is operated, and a cylindrical setting bushing pressed into the core which is designed concentrically with the valve's longitudinal axis, on which setting bushing a return spring is supported which engages on a needle sleeve which is connected to the valve closing member, the return spring (**26**) is bent at upper and lower opposite (**52, 55**) ends, in which arrangement the upper spring end (**52**) which faces the setting bush (**27**) engages in a recess (**45**) of the setting bushing (**27**) and the lower spring end (**53**) which faces the needle sleeve (**51**) engages in a recess (**46**) of the needle sleeve (**51**) in a form-locking manner in the circumferential direction.

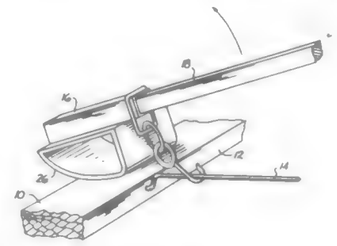
5,360,198
VALVE FOR CLEAN CHEMICAL REACTOR
Franklyn J. Amorese, Hilton, and Morris E. Gruver, III, Rochester, both of N.Y., assignors to The Pfaudler Companies, Inc., Rochester, N.Y.
Continuation-in-part of Ser. No. 541,619, Jun. 21, 1990, Pat. No. 5,069,423. This application Oct. 24, 1991, Ser. No. 782,526
Int. Cl.[5] F16K *51/00;* **G01F** *11/28*
U.S. Cl. 251—144 **17 Claims**



1. In a vessel, means for emptying said vessel comprising:
a) valve housing means integral with and fixed to said vessel;
b) valve body means removably mounted to said valve housing means;
c) means for sealing said valve body means to said valve housing means, said means for sealing also functioning to inhibit and prevent the accumulation and retention of contamination from materials flowing from said vessel through said valve housing means and said valve body means past and in direct contact with said means for sealing; and
d) valve means which function to commence and halt the flow of materials from said vessel through said valve housing means and through said valve body means, said valve body means functioning to hold, align and contain said valve means, wherein substantially the entire vessel is covered with a jacket.

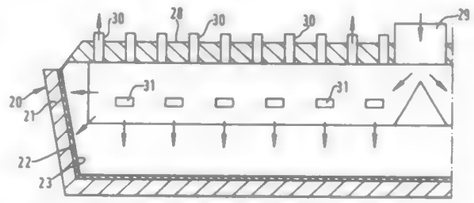
5,360,199
BAR APPARATUS FOR REMOVING A METAL GRILLE FROM A BUILDING OPENING
Norman A. Speier, 4935 Bullard, Hartland, Mich. 48353-1318
Filed Mar. 30, 1993, Ser. No. 40,149
Int. Cl.[5] B66F *3/00*
U.S. Cl. 254—129 **1 Claim**

1. Heel structure for use with a bar having first and second ends, comprising:
a heel element having a generally elongated, convex curved surface;
a tubular socket structure attached to the heel element so as to be movable therewith, the tubular socket structure having an opening for receiving the first end of a bar having first and second ends, to a position in the socket structure that is in near proximity to the convex curved surface of the heel element and in which the curved surface of the heel element is on one side of the bar;
a hook attached to the socket structure;
a multiple link chain having a first link connected to the socket structure, and a second link, spaced from the first



link, and having a length sufficient to engage an object, the second link receiving the hook whereby the user can rock the second end of the bar about the heel element when the heel element is supported on a supporting surface that is relatively movable with respect to said object to induce relative movement between the object and the supporting surface.

5,360,200
LINING OF MOLTEN METAL HANDLING VESSEL
Heinz Kloth, Mettman, and Klaus Friede, Voerde, both of Germany, assignors to Foesco International Limited, Birmingham, United Kingdom
Filed Jul. 23, 1993, Ser. No. 95,859
Claims priority, application United Kingdom, Jul. 28, 1992, 9216079.5
Int. Cl.[5] B22D *41/02*
U.S. Cl. 266—44 **21 Claims**

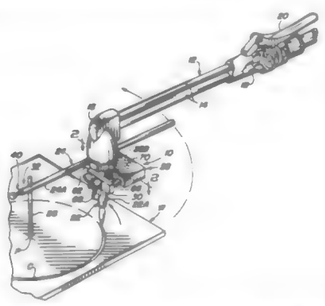


1. A former for in-situ manufacture of an expendable lining in a molten metal handling vessel, comprising:
a three dimensional unitary structure comprising at least one channel shaped central section and two end sections, the sections dimensioned to fit within a molten metal handling vessel; and
said end sections disposed in sliding overlapping relationship with said at least one central section so as to slidably move with respect to said at least one central section in response to thermal expansion as the former is heated in the molten metal handling vessel during use of the former.

5,360,201
HOLE AND CIRCLE TORCH CUTTING ATTACHMENT
Darrell G. Balentine, 627 N. First, Merkel, Tex. 79536
Filed May 13, 1993, Ser. No. 61,198
Int. Cl.[5] B23K *7/10*
U.S. Cl. 266—70 **15 Claims**

1. A hole and circle cutting attachment for use with a cutting torch, comprising:

(a) an elongated rigid rod;
(b) an elongated pointer;
(c) means for adjustably mounting said pointer at one end portion of said rod and extending in a generally transverse orientation relative to said rod, said adjustable mounting means including
(i) a first hole extending substantially transversely through said one end portion of said rod for receiving said pointer therethrough,
(ii) a second hole extending substantially axially from an end of said rod through said one end portion of said rod, said second hold intersecting with said first hole, said one end portion of said rod being threaded internally within said second hole thereof, and



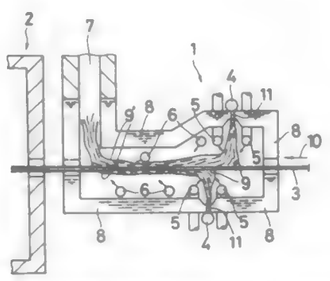
(iii) a first fastener having a stem being threaded externally so as to be threadable into said second hole of said rod for engaging the portion of said pointer extending through said first hole and securing said pointer to said rod, said fastener also having an enlarged head on one end of said stem to grip for turning said stem;
(d) a body part having means for adjusting said body part to any position along said rod and toward and away from said pointer and for releasably clamping on said rod; and
(e) a clamp part mounted to said body part and adjustable relative thereto for securing a torch tip of a cutting torch between said body and clamp parts.

5,360,202

BLACKENING TREATING FURNACE FOR TREATING STAINLESS STEEL STRIP SURFACE

Takakatsu Adachi, Shinnanyo, Japan, assignor to Chugai Ro Co., Ltd., Osaka and Nisshin Steel Co., Ltd., Tokyo, both of Japan

Division of Ser. No. 902,892, Jun. 23, 1992, Pat. No. 5,306,354.
This application Mar. 23, 1993, Ser. No. 35,971
Claims priority, application Japan, Jul. 10, 1991, 3-195116
Int. Cl.[5] C21D *9/56*
U.S. Cl. 266—103 **9 Claims**



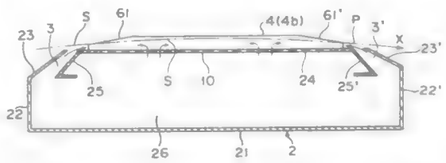
1. In a blackening treating furnace, to be positioned upstream of a continuous annealing furnace, for blackening treatment of a surface of a stainless steel strip moved through said blackening treating furnace, after which the treated stainless steel strip is passed to the continuous annealing furnace, the improvement wherein said blackening treating furnace comprises:
a soot generation burner for incompletely combusting a fuel to thereby generate an incomplete combustion flame including soot and directing said incomplete combustion flame toward the surface within said treating furnace, such that the soot deposits on and blackens the surface;
a pair of secondary air nozzles, separate from said soot generation burner and located at positions to enclose said incomplete combustion flame, for injecting secondary combustion air toward the surface, and thereby for combusting further fuel from said incomplete combustion flame to form a combustion reaction flame;
a flame guide air nozzle, separate from said soot generation burner and said secondary air nozzles and located downstream thereof relative to the direction of movement of the stainless steel strip through said treating furnace, for injecting flame guide air toward the surface in a direction perpendicular to the direction of movement of the strip through said treating furnace or in a direction inclined downstream to the direction of movement; and
an exhaust duct, located at a position downstream of said flame guide air nozzle such that said combustion reaction flame is drawn toward said exhaust duct, for discharging gas from said treating furnace.

5,360,203

FLOATATION PRESSURE PAD FOR METAL STRIPS

Tadashi Yamamoto, Takarazuka; Takao Seno, Mino, and Yoshito Sakaguchi, Kyoto, all of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan

Filed Jun. 28, 1993, Ser. No. 82,837
Claims priority, application Japan, Jun. 29, 1992, 4-170542
Int. Cl.[5] C21D *1/74*
U.S. Cl. 266—110 **5 Claims**



1. A flotation pressure pad for metal strips, comprising:
a plenum chamber, connectable to a pressurized-fluid supply means, having a pair of parallel slit nozzles formed in a top wall of the chamber, and said chamber being arranged underneath a path of a continuously floating strip,
wherein said plenum chamber is provided with a plurality of holes in the top wall thereof and at least two obstructing means on the top wall thereof, said holes being arranged on imaginary lines that extend between said slit nozzles on both sides of the top wall and central portions thereof point to adjacent edges of the path, and each of said obstructing means comprising at least one obstructing wall arranged on either side of one of said imaginary lines.

5,360,204

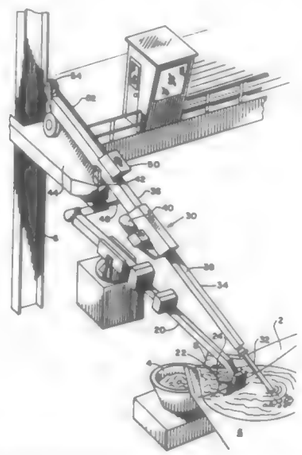
BOOM AND LANCE FOR REMOVING SLAG FROM CRUCIBLE

Matthew A. Mancuso, New Kensington, Pa., assignor to Keibler-Thompson Corp., New Kensington, Pa.

Filed Sep. 20, 1993, Ser. No. 123,894
Int. Cl.[5] C21B *3/04*
U.S. Cl. 266—226 **1 Claim**

1. A telescoping boom and lance for injecting inert gas into a body of molten iron having a slag layer on a surface thereof,

the body contained in a crucible having a side thereof for removing said slag therefrom, the lance capable of injecting the inert gas through an area of the surface opposed from the side thereof for removing the slag, the telescoping boom comprising:
(a) a first section in telescoping relationship with a second



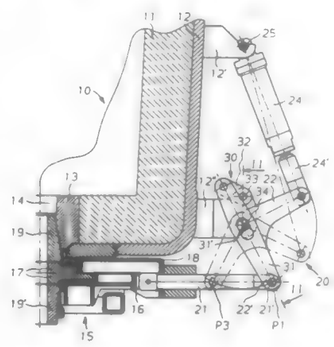
section, the first section having said lance fastened thereto; and
(b) a counterbalance weight mounted on said second section in communication with said first section, the counterbalance weight capable of retracting said first section and said lance from said molten iron upon an electric power failure.

5,360,205

DRIVING ASSEMBLY FOR SLIDE GATE ON A METALLURGICAL VESSEL

Walter Ellend, Unterägeri, Switzerland, assignor to Stopinc Aktiengesellschaft, Baar, Switzerland

Filed Jul. 13, 1993, Ser. No. 90,536
Claims priority, application Switzerland, Jul. 17, 1992, 2258/92
Int. Cl.[5] B22D *41/38*
U.S. Cl. 266—236 **19 Claims**



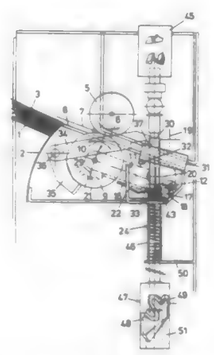
1. In a driving assembly for moving a slidable member of a slide gate on a metallurgical vessel, said driving assembly including a thrust rod of the slide gate, said thrust rod to be moved in opposite directions, a movable drive unit, and at least one deflection member to be pivotally connected to the vessel, said at least one deflection member being connected to said drive unit to be pivoted by movement thereof and transducing said movement of said drive unit to movement of said thrust rod, the improvement comprising:
said thrust rod having at an outer end thereof an axle;
said at least one deflection member being connected to said axle; and
a guide unit engaging said axle and causing pivotal movement of said at least one deflection member to be transferred to said axle as substantially rectilinear movement over the entire length of movement of said axle and said thrust rod in said opposite directions.

5,360,206

APPARATUS FOR DELIVERING FLAT ARTICLES COMPRISING ONE OR MORE LAYERS

Hendrik A. de Haan, Bergum, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Filed May 22, 1992, Ser. No. 887,052
Claims priority, application Netherlands, May 23, 1991, 9100891
Int. Cl.[5] B65H *3/52*
U.S. Cl. 271—125 **13 Claims**



1. An apparatus for delivering flat articles, such as sheets of paper and envelopes, one by one from a stack in a direction of transport, comprising a transport roller which is coupled to drive means for rotating the transport roller in the direction of transport, a separation roller located opposite the transport roller, means for pressing said transport roller and said separation roller against each other with a substantially constant force in a first operative condition, a slip coupling for exerting a limited couple opposite the direction of transport, said separation roller in the first operative condition being rotatable in the direction of transport by the transport roller against the limited couple exerted by the slip coupling, and spacing means for keeping said transport roller and said separation roller at a mutual distance in a second operative condition.

5,360,207

SMART PAPER TRAY FOR DETERMINING PAPER SIZE

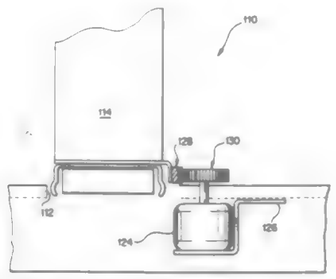
David F. Rauen, Ontario, and Mark Stevens, Henrietta, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1993, Ser. No. 72,254
Int. Cl.[5] B65H *7/02, 1/00*
U.S. Cl. 271—265 **7 Claims**

1. A printing apparatus including a smart paper tray for determining paper size, comprising:
a tray for receipt of paper;
at least one slide for contacting at least one edge of the paper;
a detector attached to the at least one slide, the detector sensing at least one dimension of the paper, the detector comprising a rotary encoder that is connected to a microwheel, and a spring applying force to keep the micro-

wheel in contact with a frictional surface of the at least one slide; and

a pitch controller for controlling a pitch between leading edges of the paper passing through the printing apparatus, the pitch controller responding to a signal from the detector to determine the appropriate pitch to enable maximum throughput of the printing apparatus.

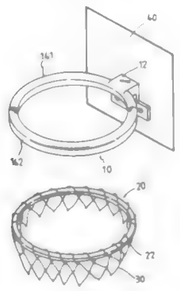


5,360,208

STRUCTURE OF BASKETBALL RIM HOOP RING

Yao-Chien Fang, Ste. 1, 11F, No. 95–8, Chang Ping Road Sec. 1, Taichung, Taiwan, Prov. of China

Filed Sep. 27, 1993, Ser. No. 126,555
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 R **1 Claim**



1. A basketball hoop comprising,

a) a circular ring shaped rim having an inverted U-shape in lateral cross section at each point about the rim, said inverted U-shape defining a convex upper rim surface formed by the bail of the U-shape and a pair of downwardly extending space apart legs defined by the sides of the U-shape, and forming a downwardly opening groove under the upper surface and between the legs, said groove having a first width and depth,

b) a plurality of pairs of transversely space apart, opposed, inwardly facing protrusions on the inner sides of each leg adjacent the lower edges of the legs, said pairs of protrusions being generally uniformly circumferentially spaced from each other about the rim and defining between the protrusions of each pair a gap having a second width,

c) means secured to said rim for mounting said rim to a backboard,

d) a circular ring having a narrow gap extending transversely therethrough at one point in its circumference for passing portions of a backetball net therethrough for mounting such net to the ring, said ring having a maximum width in transverse cross section smaller than said first width and slightly greater than second width and a maximum height no greater than the depth of the groove,

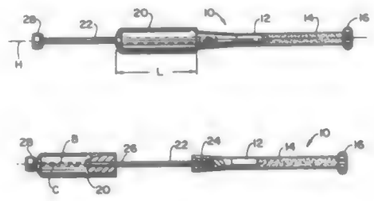
e) said rim and said ring having the same median diameter, whereby a net may be mounted on said ring and said ring may be snapped between said protrusions into said groove to secure said net to said rim.

5,360,209

BATTING TRAINING DEVICE

Robert D. Mollica, 99C Arch St., Ramsey, N.J. 07446

Filed May 6, 1993, Ser. No. 58,456
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—26 R **8 Claims**



1. A batting training device for training a batter to perform an accurate contact hitting swing, in which the wrists of the batter are turned relative to the arms of the batter for proper acceleration of the batting training device only during that portion of the swing subsequent to the batting training device crossing the center plane of the body of the batter, the batting training device comprising:

a handle extending longitudinally along a longitudinal axis, the handle having a configuration generally emulating the handle portion of a conventional bat and including a handgrip of sufficient length along the longitudinal axis to be gripped by the batter in a conventional two-hand batting manner;

a weighted member of predetermined weight and dimensions; and

coupling means coupling the weighted member with the handle for visible movement essentially freely along the longitudinal axis at all positions between a near position juxtaposed with the handle and a far position spaced longitudinally away from said near position in the direction extending longitudinally away from the handle, the weight and dimensions of the weighted member being sufficient to emulate the appearance and feel of the conventional bat while enabling said visible movement throughout the entire swing such that upon swinging the batting training device through the contact hitting swing, the position of the weighted member relative to the handle is observed visually, enabling adjustment of the swing by the batter to assure that the weighted member moves from said near position toward said far position in response to acceleration of the batting training device only during that portion of the swing appropriate to contact hitting.

5,360,210

PIPE RESTRAINT

Lawrence A. Loziuk, Vernon Hills, Ill., assignor to Vectra Technologies, Inc., Federal Way, Wash.

Continuation-in-part of Ser. No. 915,477, Jul. 16, 1992, Pat. No. 5,240,232, which is a continuation-in-part of Ser. No. 808,132, Dec. 16, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 978,018
Int. Cl.[5] F16F *3/02*
U.S. Cl. 267—136 **15 Claims**

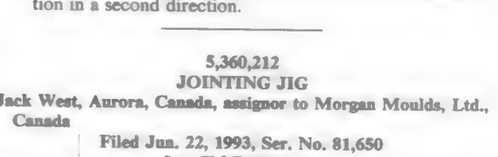
1. An energy absorption and pipe displacement limiting restraint for connection between a pipe subject to movement due to dynamic loads and thermal deformation, and an adjacent structure, the restraint comprising:

a central rod that telescopes within a hollow central cylinder;

a housing defining walls spaced outwardly from and surrounding an intermediate portion of the central cylinder, the housing being connected to the central cylinder so as to allow axial movement of the central cylinder relative to the housing;

a first base forming member coupled to the intermediate portion of the central cylinder;

a second base forming member coupled to a wall of the housing opposite said first base forming member;



a slide bearing located between the second base forming member and the central cylinder;

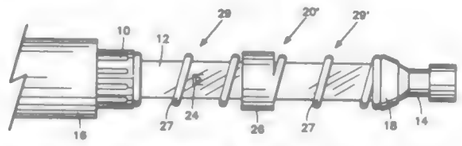
an arrangement of bights coupled to the first base forming member and to the second base forming member and providing restraint to movement of the pipe connected to one end of the restraint.

5,360,211

SPRINGS AND LOCKING COLLARS FOR RETRACTABLE SLEEVE-PROTECTED INJECTION APPARATUS

Craig W. Smith, and Randall E. Ohnemus, both of Ventura, Calif., assignors to InjectiMed, Inc., Ventura, Calif.

Division of Ser. No. 850,442, Mar. 10, 1992, Pat. No. 5,261,894. This application Aug. 24, 1993, Ser. No. 110,889
Int. Cl.[5] F16F *1/06*
U.S. Cl. 267—180 **2 Claims**



1. A unitary plastic helical compression spring capable of being injection molded from a single point of injection comprising:

a) an integral plastic cylindrical collar portion disposed in a center portion of the spring and including a point of molding plastic injection;

b) an integral plastic first compression portion comprising a first plurality of helical compression spring turns extending longitudinally from said cylindrical collar portion in a first direction; and,

c) an integral plastic second compression portion comprising a second plurality of helical compression spring turns extending longitudinally from said cylindrical collar portion in a second direction.

5,360,212

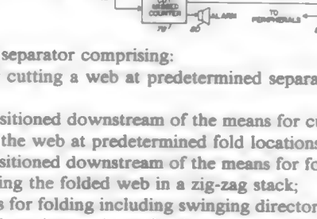
JOINTING JIG

Jack West, Aurora, Canada, assignor to Morgan Moulds, Ltd., Canada

Filed Jun. 22, 1993, Ser. No. 81,650
Int. Cl.[5] B25B *1/20*
U.S. Cl. 269—40 **14 Claims**

1. A jointing jig, comprising:

a pair of hingedly connected rigid bodies, each rigid body being formed with a plurality of channels shaped to respectively accommodate parallel-sided members to be jointed, one said channel being located along a hinged edge of each rigid body, and the channels in each rigid body having a longitudinal axis, the longitudinal axes being coplanar and intersecting, and each channel including means for locating a parallel-sided member received therein so that the parallel-sided member is inhibited from movement in at least two opposite directions normal to the longitudinal axis; and



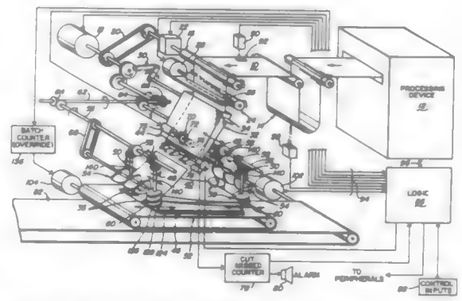
a removable connector means for connecting the rigid bodies so that the rigid bodies are at right angles to each other and the channels along the hinged edge form a socket for receiving a one of the parallel-sided members.

5,360,213

APPARATUS FOR SEPARATING FOLDED WEB

H. W. Crowley, Newton, and Joseph R. Bilinski, Tewksbury, both of Mass., assignors to Roll Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 641,472, Jan. 15, 1991, Pat. No. 5,149,075, and a continuation-in-part of Ser. No. 912,822, Jul. 13, 1992, which is a continuation of Ser. No. 761,692, Sep. 18, 1991, Pat. No. 5,131,640, which is a continuation of Ser. No. 534,724, Jun. 7, 1990, Pat. No. 5,065,992. This application Sep. 10, 1992, Ser. No. 943,446
Int. Cl.[5] B41L *1/32;* **B23B** *3/04;* **B31B** *1/00*
U.S. Cl. 270—39 **40 Claims**



1. A web separator comprising:

means for cutting a web at predetermined separation locations;

means, positioned downstream of the means for cutting, for folding the web at predetermined fold locations;

means, positioned downstream of the means for folding, for supporting the folded web in a zig-zag stack;

said means for folding including swinging director means to guide advancing sections of web to opposing fold edges of the zig-zag stack;

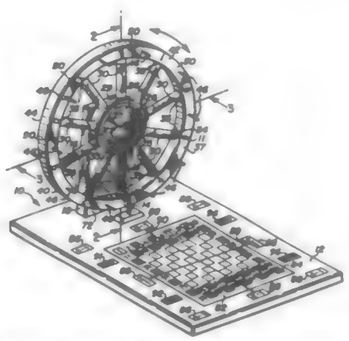
means for driving the web through the means for cutting into the director means at selected times; and

means for determining each of separation and fold locations upon the web, each of the separation and fold locations being positionable independently of one another whereby predetermined sections of web can be folded and cut to sizes different than other sections of web in a zig-zag group.

5,360,214
SPOKE-WHEEL RANDOM OBJECT SELECTOR GAMING APPARATUS

Larry V. Harmen, 4606 Eggers Dr., Fremont, Calif. 94536

Filed Feb. 2, 1994, Ser. No. 190,271
Int. Cl.[5] A63F *5/02*
U.S. Cl. 273—144 B 13 Claims



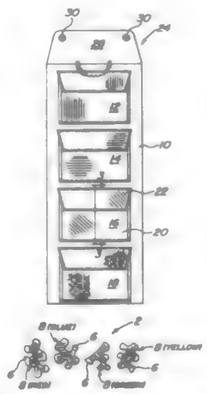
1. A gaming apparatus for mixing and randomly selecting individually identifiable spherical objects comprising:
- a least one spherical object;
- a rigid circular ring having an axial center, outside peripheral wall and an inside peripheral wall with a face wall interconnecting said outside peripheral wall and said inside peripheral wall;
- a plurality of hollow spokes connected to said inside peripheral wall and projecting towards said axial center;
- a central hub having a hollow interior and coaxial with said axial center for receiving a plurality of objects;
- an axial coaxial with said axial center engaged to the hub with the hub being rotatable about the axle;
- the hub being connected to each of the spokes and including passageways extending from said hollow interior to an interior of said spokes, with each of said hollow spokes having one end communicating directly into one of said passageways and a second end abutting said inside peripheral wall of the ring; and
- a divider means protruding from said face for forming a plurality of individually identifiable ring sectors about said circular ring.

5,360,215
PUZZLE STORAGE DEVICE WITH IDENTIFYING INDICIA

Janet Ruben, 500 Kane Dr., Maple Glen, Pa. 19002

Filed Aug. 17, 1993, Ser. No. 107,511
Int. Cl.[5] A63F *9/10*
U.S. Cl. 273—157 R 6 Claims

1. A combination comprising a plurality of toys and a storage device therefor, for use by children, wherein:
- each of the toys comprises multiple, disengageable parts, and each of said parts of each of the toys bears sensorially perceptible means for identifying said part as a part of a particular toy of the plurality and distinguishing said part from the parts of each of the other toys of the plurality.
- the storage device comprises a plurality of storage compartments, one for each of the toys, each of said storage compartments having associated therewith sensorially perceptible identifying means, and said identifying means associated with each of said compartments being different from said identifying means associated with each of the other compartments and corresponding to said sensorially perceptible identifying means of said parts of one of the toys, and means for connecting said storage compartments together;
- said sensorially perceptible identifying means on each part of each toy is substantially identical to said sensorially perceptible identifying means associated with said storage compartment therefor; and each of said storage compartments is capable of containing all of said parts of the toy said parts of which have the corresponding identifying means; whereby, after use of the toys, a child can readily place said parts of the toys in the appropriate storage compartment; and

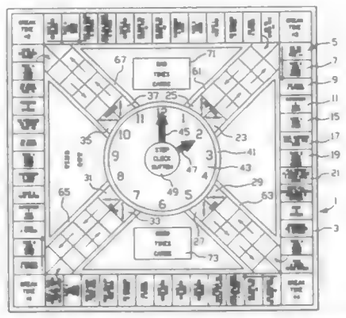


each of said toys is a jigsaw puzzle comprising multiple pieces and in which said parts of each toy are the pieces of the jigsaw puzzle, in which each of said parts has a front side bearing a part of a puzzle image and a reverse side, and in which said sensorially perceptible identifying means of each part is a color on said reverse side thereof.

5,360,216
TIME BOARD GAME

Christopher S. Counterman, R.R. #1, Box 441, Scotrun, Pa. 18355

Filed Apr. 5, 1994, Ser. No. 222,901
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 20 Claims

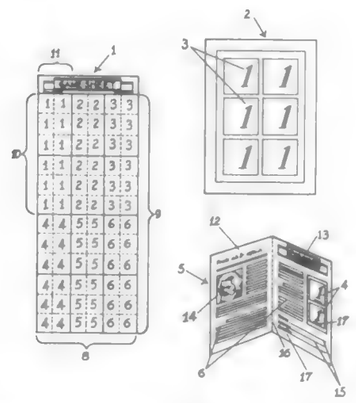


1. An educational time board game, which comprises:
- a) a game board;
- b) a space track on said game board which runs continuously around said game board and is divided into a predetermined number of sequential spaces;
- c) at least one START space and one FINISH space on said board physically associated with said space track on said board;
- d) a clock which has a normal clock face thereon and includes mechanical setting means for automatically moving the clock least five times faster than a normal clock;
- e) stop means connected to said clock;
- f) a first plurality of cards, being time cards having preselected various times stated thereon;
- g) a second plurality of cards, such cards indicating various predetermined penalties thereon;
- h) a third plurality of cards, such cards indicating various rewards thereon;
- i) chance means for determining a movement along said space track; and,
- j) a plurality of pieces for movement along said space track.

5,360,217
COLLECTIBLE FACTSPAK CARD BOARD GAME

H. LeBaron Taylor, 504 Sunshine Lakes Dr., Voorhees, N.J. 08043

Filed Aug. 4, 1992, Ser. No. 925,511
Int. Cl.[5] A63F *3/00*; A63B *71/00*
U.S. Cl. 273—459 7 Claims

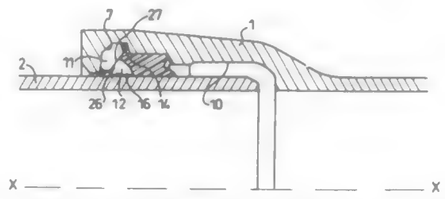


1. A collectible card board game for one or more players comprising
- (a) a game sheet the surface of which is divided up into a plurality of symmetrically shaped rectangles that are disposed in a horizontal and vertical rows of rectangles, the rows of rectangles are divided up into groups that are color coded and numbered where each group of rectangles either has the same number labeled therein or is consecutively numbered which denotes different categories of collectible figures, the sizes of the groups are from 4–10 depending on the size of the board, and the number of categories are from 2 to 13,
- (b) a plurality of pocket size game boards where each board that is divided up into from 4–10 rectangularly shaped boxes with each board having the same number in each of the boxes or is consecutively numbered and is the same color but each card in the plurality of game boards is a different color and either has a different number thereon or is numbered consecutively, and
- (c) a deck of collectible figure cards with each card having thereon a representation of a collectible figure in a particular category of collectibles, each individual card comprises at least 2 leafs with factual information of the collectible figure being on one or more surfaces of the leafs in order to educate a player of vital information concerning the collectible figure and also is color coded and has two stickers that are color coded and has a number thereon corresponding to one of the numbers on the game sheet and game board, each deck of collectible figure cards includes 4 to 10 cards with not more than two cards in the deck having the same color and number thereon.

5,360,218
PIPE SOCKET JOINT AND SEALING GASKET THEREFOR

Alain Percebois, Blenod les Pont-A-Mousson; Philippe Renard, Vandoeuvre les Nancy, and Patrick Berraud, Blenod les Pont-A-Mousson, all of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jan. 12, 1993, Ser. No. 3,509
Claims priority, application France, Jan. 13, 1992, 92 00262
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—181 8 Claims

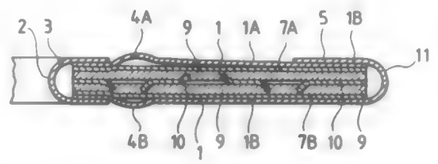


1. A pipe socket joint of the type comprising a male pipe end inserted in a female socket and a sealing gasket radially compressed between the pipe end and the socket, said gasket comprising an annular elastomer body defining, on a side closest to the socket inlet, an outwardly-projecting anchoring heel housed in an anchoring throat of the socket, a plurality of toothed metal inserts embedded in the elastomer and designed to retentively engage the male end, and a plurality of support members embedded in the anchoring heel and having an external shape matching the shape of the anchoring throat, the support members and the toothed inserts having linear, slideably engaged, inclined, substantially flat faces sloping in relation to an axis of the socket such that the inserts slide on the support members without undergoing rotation, thereby avoiding any substantial penetration of the insert teeth into the male pipe end and an attendant perforation thereof.

5,360,219
EXHAUST MANIFOLD GASKET

Hiroaki Okuda, Hiroshima; Kazuhiro Nomoto, Higashiosaka; Kenji Kubouchi, Hirakata; Shizuo Itani, Daitou; Sadao Isomura, Ichikawa, and Einosuke Suekuni, Higashihiroshima, all of Japan, assignors to Nippon Gasket Co., Ltd., Osaka, Japan

Filed Oct. 15, 1992, Ser. No. 961,867
Claims priority, application Japan, Oct. 15, 1991, 3-293914
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—235 B 13 Claims



1. An exhaust manifold gasket comprising:
- a pair of beaded plates which have first exhaust holes through which an exhaust gas passes, and which consist of a thermally resistant elastically deformable metal material, said beaded plates being provided with sealing beads extending along the circumferences of said first exhaust holes,
- a piled plate assembly disposed between said beaded plates and having a second exhaust hole concentric with said first exhaust holes, said piles plate assembly consisting of a

pair of flat plates formed out of a thermally resistant metal material, a refractory sheet member disposed between said flat plates having compression restoring characteristics, and a core plate buried in said refractory sheet member and formed of a thermally resistant metal material having cut-and-raised portions projecting into said refractory sheet member, and

a grommet enclosing the circumferences of said first and second exhaust holes respectively in said beaded plates and said piled plate assembly, said grommet formed of a thermally resistant metal material.

5,360,220

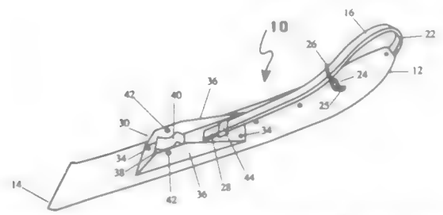
SNOWMOBILE SKI FLEXING APPARATUS

Verlin M. Simmons, 495 S. Main, Providence, Utah 84332

Continuation of Ser. No. 988,820, Dec. 9, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 88,411

Int. Cl.[5] B62B *17/02*

U.S. Cl. 280—28 **19 Claims**



1. A snowmobile ski flexing apparatus for use with a flexible elongate ski having front and rear portions, the front portion being curved upwardly, comprising:

a flexible elongate loop having first and second ends, the first end being attached to the front portion of the ski and extending upwardly and rearwardly toward the rear portion of the ski, then downwardly toward the ski such that the second end is disposed adjacent the ski;

an attachment device mounted on the ski and operatively attaching the loop to the ski, the attachment device allowing the second end of the loop to move lengthwise relative to the ski; and the attachment device comprises an elongate retainer mounted at a first end to the ski, at a first attachment point, and at a second end to the loop, at a second attachment point.

5,360,221

BABY CARRIAGE CONVERTIBLE TO A SAFETY CAR SEAT

Yoon Sick Chai, Seoul, Rep. of Korea, assignor to Ok J. Kim, Seoul, Rep. of Korea

Filed Dec. 27, 1993, Ser. No. 174,285

Claims priority, application Rep. of Korea, May 19, 1993, 93-8567

Int. Cl.[5] B62B *7/06, 7/12*

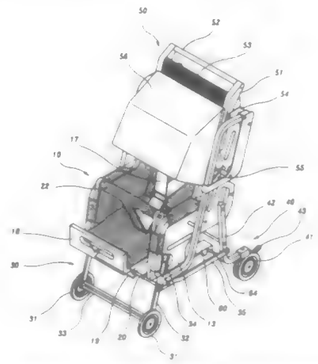
U.S. Cl. 280—30 **1 Claim**

1. A baby carriage convertible to a safety seat comprising:

a body assembly including a pair of side plates, seat and back plates fixedly interposed between the side plates, a foot rest plate disposed in front of the seat plate and pivotally interposed between the side plates, and a pair of body frames fixed to the side plates, said foot rest plate being moved between a horizontal position and a vertical position and having means for maintaining the horizontal position;

a wheel assembly including a pair of front supporting legs which are pivotally connected at upper ends thereof to the side plates and fixed at lower ends thereof to a wheel shaft, a pair of rear supporting legs fixedly spaced from each other by a spacing bar, which are pivotally connected at upper ends thereof to the side plates and have at lower ends thereof horizontal shafts, connecting bars pivotally connected between middle portions of the front supporting legs and middle portions of the rear supporting legs, a pair of front wheels rotatably connected to the both ends of the wheel shaft, and a pair of rear wheels rotatably connected to the horizontal shafts of the rear supporting legs;

a handle assembly including a pair of handle frames pivotally connected to middle portions of the side plates, a handle interposed between free ends of the handle frames, and an arm rest plate disposed below the handle and interconnected between the handle frames; and



a locking assembly including a body plate disposed below the seat plate and pivotally connected between the side plates, and means for causing the body plate to be moved upward, said body plate being provided at a free end with locking means for gripping the spacing bar;

whereby the spacing bar of the wheel assembly is released from the locking means of the locking assembly for allowing the wheel assembly to be retracted rearward and upward and means for allowing rotation of the handle assembly into a horizontal position from a vertical position for allowing the arm rest plate of the handle assembly to be moved to a generally horizontal use position when the carriage is converted the safety seat.

5,360,222

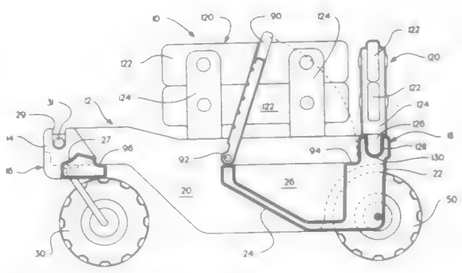
TOY WAGON

Jay M. Bro, and Philip M. Baerenwald, both of Plano, Tex., assignors to Today'Kids, Inc., Boonesville, Ark.

Filed Feb. 5, 1993, Ser. No. 14,392

Int. Cl.[5] B62B *3/02;* **B62M** *1/00*

U.S. Cl. 280—87.021 **7 Claims**



7. A toy wagon comprising:

a body member having side members and a rear member attached to said side members and extending therebetween and a bottom member which comprises a rearwardly sloping portion, said bottom member extending

between said side members and being attached to said side members and said rear member to define a storage well in said body member;

a plurality of wheels rotatably attached to said body member for movably supporting said body member on a surface;

an opening in said body member through which an occupant's legs and feet may extend to contact said surface;

a seat member pivotally attached to said body member, said seat member pivoting between a first occupant supporting position overlying said storage well and a second position wherein said seat member overlays said opening in said body member;

a plurality of panel members removably attachable to said body member, each said panel member having at least one connection member attached thereto that is adapted to be slidably received in a corresponding receptacle provided in said body member such that when said connection member of said panel member is received within said corresponding receptacle, said panel member extends upwardly from said body member;

a hollow first handle member pivotally attached to said body member and having a plurality of apertures therein;

a second handle member having a first end and a second end, said first end having a grippable member attached thereto and said second end being slidably received within said hollow first handle member such that said second handle member may be slidably extended to a plurality of predetermined positions with respect to said first member; and

means for selectively retaining said second handle member in any of said predetermined positions comprising at least one button member attached to said second handle member, said button member being sized to be received in any one of said apertures in said first handle member to thereby retain said second handle member in one of said predetermined positions, said button member being selectively movable between a first position wherein said button member is received within one of said apertures and a second position wherein said button member is not received in any of said apertures to thereby enable said second handle member to be slidably moved to one of said predetermined positions.

5,360,223

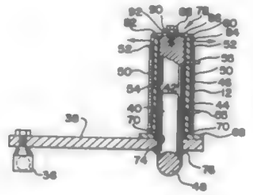
CAPPED WHEEL SPINDLE ASSEMBLY

Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.

Filed Mar. 10, 1993, Ser. No. 28,958

Int. Cl.[5] B62D *7/06, 7/16*

U.S. Cl. 280—96.1 **14 Claims**



1. A wheel spindle assembly for a steerable vehicle chassis, said assembly comprising:

an elongate generally horizontally extending chassis rail adapted to receive steerable wheels adjacent its ends;

a vertically extending sleeve mounted at an end of the chassis rail, said sleeve having a cylindrical passage therein over substantially the length of said sleeve for receiving a cylindrical wheel spindle for journaled rotation therein;

a enlarged plate at the bottom of said sleeve, said plate having an opening therethrough for the wheel spindle, and having a width greater than the cross-sectional dimension of said sleeve, said plate being welded to the bottom of said sleeve and the underside of said chassis rail; and

a sealing closure at the top of said sleeve for sealing said passage against the ingress of water and other contaminants through the top of said sleeve.

5,360,224

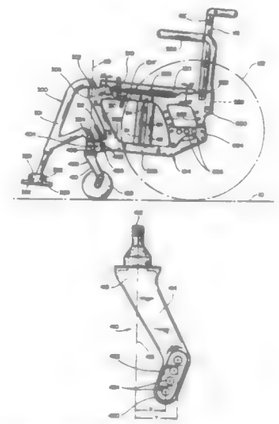
WHEELCHAIR FRAME ASSEMBLY AND COMPONENTS FOR USE THEREON

Richard Geiger, Alameda; A. Scott Robertson, and Neville Page, both of San Francisco, all of Calif., assignors to Medical Composite Technology, Inc., Watsonville, Calif.

Continuation-in-part of Ser. No. 886,850, May 22, 1992, Pat. No. 5,284,350, and Ser. No. 789,173, Nov. 8, 1991, Pat. No. 5,267,745. This application Nov. 18, 1992, Ser. No. 978,941

Int. Cl.[5] B62M *1/14*

U.S. Cl. 280—250.1 **11 Claims**



1. A wheelchair frame comprising:

two side frame assemblies connected to one another, each side frame assembly including a drive wheel axle receiving means for receiving a drive wheel axle; and

a caster mounting assembly mounted on each side frame assembly for securing a caster to each of the side frame assemblies, each of said caster mounting assemblies including a stem and a fork extending from the stem, said stem having a longitudinal axis, the fork of each caster mounting assembly including a plurality of holes for receiving a caster axle, said plurality of holes being arranged to position a caster axle at progressively greater distances from a free end of the fork while simultaneously positioning the caster axle at progressively greater distances from the longitudinal axis of the stem.

5,360,225

FOLDABLE BICYCLE FRAME

Robert W. P. Chen, No. 5, Hwang Pou Village, Fuhsing Hsiang, Chang Hua,

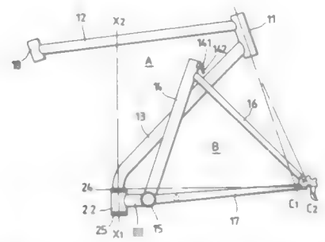
Filed Jul. 20, 1993, Ser. No. 93,680

Int. Cl.[5] B62K *15/00, 3/16*

U.S. Cl. 280—278 **4 Claims**

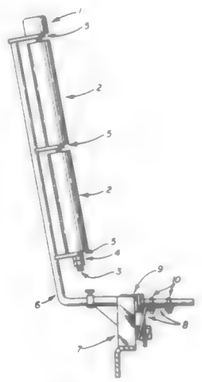
1. A foldable bicycle frame comprising a front frame and a rear frame which are pivoted to each other, and a seat tube located between said front frame and said rear frame, a connection tube being provided over top of said seat tube, the front end of said rear frame being fastened with the seat tube; an inner tube having a rear end fastened with the connection tube and a front end inserted into a top tube of said front frame, said

front frame and said rear frame being capable of rotating in relation to each other at the time when a seat post is pulled out



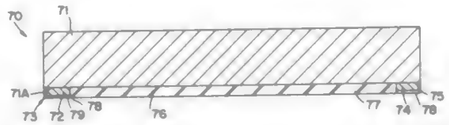
of said seat tube, and wherein the inner tube can be pushed further into the top tube when the frame is folded.

5,360,226
GRAB AND CENTER GUIDE SYSTEM FOR BOAT LOADING
Ova L. Gussler, Jr., 5045 Maid Marion Ct., and Ova L. Gussler, III, 4311 Ferguson Dr., both of Ashland, Ky. 41101
Filed May 14, 1993, Ser. No. 61,292
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **7 Claims**



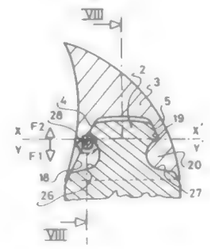
1. A pair of pivotally mounted guide means capable of being oriented with respect to a boat-trailer for positioning into a proper loading line relative to said boat-trailer, a boat having a bottom and lateral hull surfaces, said guide means comprising:
1. means for attaching said pair of pivotally mounted guide means to said boat-trailer, wherein each of said pair of guide means has an individual pivot point;
2. a slidable guide adapted when in a vertical orientation to come into sliding contact with at least a portion of said lateral hull surfaces of said boat, so that when said boat is both floating and positioned between said pair of guide means, is moved into said proper loading line; whereby contact of said at least a portion of lateral hull surfaces with said pair of guide means moves said floating boat during loading into proper position onto said boat-trailer; and
3. a spring means for orienting said slidable guide in a substantially vertical orientation when not under a forward pressure due to contact with said boat during said loading and capable of permitting said guides to move forward, down, and under said boat upon movement of said guide around said pivot point upon movement during loading off said proper loading line of said boat; wherein said means for attaching is capable of maintaining said pivot point of said pivotally mounted guide means in a substantially fixed position relative to said boat-trailer.

5,360,227
SKIS AND RUNNERS
Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450
Continuation-in-part of Ser. No. 494,689, Mar. 16, 1990, Pat. No. 5,255,929, which is a continuation-in-part of Ser. No. 32,352, Mar. 31, 1987, Pat. No. 4,960,643. This application Mar. 10, 1992, Ser. No. 849,156
Int. Cl.[5] A63C *5/04*
U.S. Cl. 280—608 **20 Claims**



1. (Amended) A ski for use on snow comprising in combination:
a) a ski base having an elongated configuration and being substantially rectangular in cross section,
b) elongated support means for hard surfacing material secured to said ski base and having side edge portions each of which is defined by respective horizontal and vertical surface portions which respectively extend substantially parallel to the bottom and side surfaces of said ski,
c) said horizontal and vertical-surface portions of said edge portions of said support means being coated with a hard surfacing material having a hardness in the range of diamond and formed in situ on said surface portions of carbon atoms stripped from carbon atom containing molecules of a fluid adjacent said surface portions of said elongated support means for said hard surfacing material, said hard surfacing material defining the lower left and right lateral edging of said ski, said hard surfacing material serving to impart high wear resistance to the lower left and right edge portions of said ski and to maintain the integrity and sharpness off the edging of said ski over an extended time of use which is substantially greater than the sharpness retained by the edging of skis formed with metal edging.

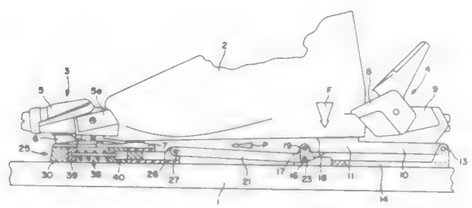
5,360,228
REMOVABLE SPATULA TIP
Marie-Claude Palau, Saint-Jorioz, France, assignor to Salomon S.A., Annecy Cedex, France
Continuation of Ser. No. 607,103, Oct. 31, 1990, abandoned. This application Sep. 3, 1991, Ser. No. 753,845
Claims priority, application France, Dec. 1, 1989, 89 16308
Int. Cl.[5] A63C *5/06*
U.S. Cl. 280—609 **62 Claims**



1. A ski having a generally vertical longitudinal plane of symmetry, said ski comprising:

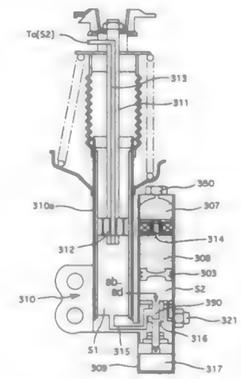
(a) a ski body having a front end, said front end including two lateral sides, a first cutout formed in one of said lateral sides, a second cutout formed in the other of said lateral sides;
(b) a spatula tip including an opening adapted to receive said front end, and a non-removable bump projecting towards the interior of said opening for cooperating with said first cutout, said bump being unitary with said spatula, said bump being fixedly and rigidly mounted to said cutouts;
(c) a blockage element for acting on said second cutout at a location which is opposite a location where said bump cooperates with respect to said first cutout, with respect to said generally vertical longitudinal plane of symmetry, said blockage element being removable from said spatula tip, whereby said blockage element comprises means for preventing said spatula tip from being longitudinally removed from said ski body.

5,360,229
INTERFACE DEVICE DESIGNED TO MODIFY THE NATURAL PRESSURE DISTRIBUTION OF A SKI ON ITS SLIDING SURFACE
Joel Arduin, Metz-Tessy, and Gilles Renaud-Goud, Annecy, both of France, assignors to Salomon S.A., Courbevoie, France
Filed Apr. 15, 1993, Ser. No. 46,948
Claims priority, application France, Apr. 17, 1992, 92 04963; Apr. 17, 1992, 92 04964
Int. Cl.[5] A63C *9/08*
U.S. Cl. 280—617 **10 Claims**



1. An interface device between a boot and a ski intended to modify the natural pressure distribution of the ski on a sliding surface of the ski in the direction of a vertical thrust force which at least one portion of the boot exerts on the ski, said boot being held in place on the ski by a front binding (3) and a rear binding (4), each of said bindings being assembled to the ski by respective bases (12,14), said interface device comprising a sensor device (11) intended to absorb stresses between said boot and said ski, linkage means (16) for transforming said stresses into at least one force of thrust directed approximately longitudinally to at least one of the ends of the ski, and a transmission device (21) intended to transmit the longitudinal force to said base (25) of said front binding (3) on a side facing one end of said ski, said transmission device (21) being connected to said base of said front binding in a zone raised off an upper surface of the ski, wherein said transmission device (21) is connected to a longitudinally movable transmission element (31, 50, 71) of said base of said front binding, and a deformable element (38, 53, 73) which opposes the relative motion of said movable transmission element in relation to the upper ski surface and longitudinally in the direction of the longitudinal force.

5,360,230
DAMPING FORCE CONTROL DEVICE FOR SUSPENSION SYSTEM
Naoki Yamada, Shimoyamamura, and Junji Yamamoto, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Dec. 2, 1991, Ser. No. 801,419
Claims priority, application Japan, Nov. 30, 1990, 2-334781; Nov. 30, 1990, 2-334782
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **3 Claims**

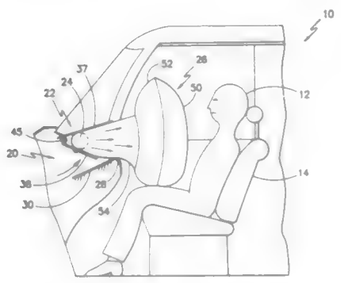


1. A hydraulic shock absorber for a suspension system of a vehicle comprising:
a first cylinder;
a first piston slidably fitted in the first cylinder and defining a first chamber within the first cylinder;
a second cylinder;
a free piston slidably fitted in the second cylinder, said free piston defining a second chamber within the second cylinder that is located under the free piston;
a passage for establishing hydraulic communication between the first chamber and the second chamber;
adjustable opening orifice means disposed in the passage for controlling the hydraulic communication between the first chamber and the second chamber in order to adjust a damping force of the hydraulic shock absorber;
air spring means positioned in the second cylinder for adjusting a spring constant of the hydraulic shock absorber based on prevailing road conditions, said air spring means including a lower air spring positioned above the free piston, an electrically operated solenoid valve positioned above the lower air spring and an upper air spring positioned above the solenoid valve; and
control means for opening and closing the solenoid valve.

5,360,231
ROTATABLE OCCUPANT RESTRAINT
Bryan Adin Adams, Tyrone, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.
Filed Aug. 2, 1993, Ser. No. 100,935
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—728A **5 Claims**

1. An occupant restraint assembly for use in a vehicle conveying a passenger, the occupant restraint assembly comprising:
an inflator for generating gas;
a bag for receiving and containing the gas generated by said inflator such that said bag may be inflated; and
a hingedly mounted rotatable container for enclosing and supporting said inflator and said bag, said hingedly mounted rotatable container being mounted in a support structure opposing said passenger such that during infla-

tion of said bag said hingedly mounted rotatable container rotates at least partially out of said support structure into



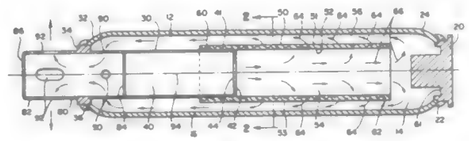
an activated position during deployment of said bag between said passenger and said support structure.

5,360,232

FILTRATION IN HYBRID INFLATORS

William G. Lowe; Walter A. Moore, both of Ogden, and Linda M. Rink, Liberty, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Sep. 14, 1993, Ser. No. 121,397
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—741 20 Claims



1. An apparatus suitable for use in inflating a vehicle occupant restraint comprising:

a container having a first chamber for storing a gas generating material and a second chamber for storing a supply of gas under pressure, the gas generating material when ignited generating a hot gas, the generated hot gas containing particulate of the gas generating material and byproducts thereof and being releasable from said first chamber into said second chamber by means of at least one gas exit nozzle;

a structure comprising at least one filter material housed in said container and extending into said second chamber about the gas exit nozzle of said first chamber, said filter structure defining an inner mixing zone in said second chamber for mixing at least a portion of the particulate-containing generated hot gas with at least a portion of the stored gas to form a gas mix, said filter structure being contacted by a gas comprising at least a portion of the particulate-containing generated hot gas and effecting reduction in the particulate content of the contacting gas, said filter structure further defining an outer mixing zone in said second chamber wherein an inflation gas for use in inflating the vehicle occupant restraint and comprising a mix of gas of reduced particulate content and stored gas is formed; and

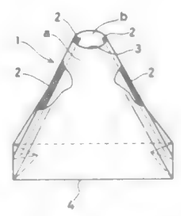
a diffuser having at least one controlling orifice for providing passage therein of the inflation gas from said container and at least one exit port for dispensing the inflation gas into the vehicle occupant restraint.

5,360,233

AIR BAG IN AN AIR BAG UNIT

Toshio Takamiya, Hikone, Japan, assignor to Takata Corporation, Tokyo, Japan

PCT No. PCT/JP90/00699, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/18764, PCT Pub. Date Dec. 12, 1991
PCT Filed May 30, 1990, Ser. No. 820,681
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 R 9 Claims



1. An air bag for an air bag unit that is inflated by high pressure gas from an inflator, comprising:

a hollow weave cloth;

two opposite edges of said hollow weave cloth being at least partially provided in single weave;

said two opposite edges converging toward one another such that the air bag has a narrow width at one end and a substantially greater width at an opposite end; and

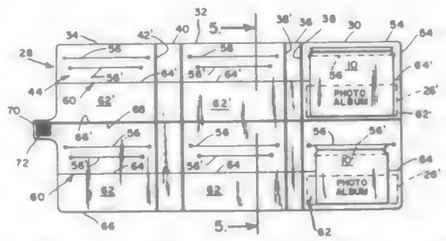
wherein portions of said air bag at said two opposite edges at said opposite end having a substantially greater width are overlapped and bonded so that a substantially rectangular shape can be formed at said opposite end of the air bag.

5,360,234

APPARATUS FOR HOLDING PHOTOGRAPH ALBUMS AND METHOD

William R. Miller, Walnut; Mary Sarandon, Marina del Rey, both of Calif., and Janice R. Jenkins, Durham, N.C., assignors to Rembrandt Photo Services, Commerce, Calif. and Qualex Financial Corporation, Wilmington, Del.

Filed Aug. 31, 1992, Ser. No. 938,402
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—31 29 Claims



1. Apparatus for holding photo albums, comprising in combination:

three substantially rectangular panels;

a first spine pivotally connecting a first one of said panels and a second one of said panels;

a second spine longitudinally parallel to said first spine pivotally connecting said second panel and a third one of said panels;

said panels being pivotable along said spines into a closed condition with said first panel overlapping said second panel and spaced therefrom along said first spine, and with said third panel overlapping said first panel and spaced therefrom along said second spine;

album retaining means carried by each of said panels for retaining photoprint albums thereon; and

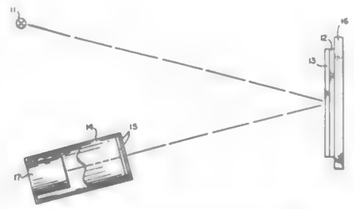
negatives storage means carried by each of said panels for storing photo negatives in localized association with respective ones of said album retaining means.

5,360,235

SECRET OPTICAL MARKING

Louis F. Drummeter, Washington, D.C.; Gordon L. Stamm, Oxon Hill, Md.; Gerald E. Rohl, Woodbridge, Va., and Alfred G. Rockman, Brandywine, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1969, Ser. No. 870,568
Int. Cl.[5] B42D *15/00;* G09C *3/00*
U.S. Cl. 283—89 9 Claims



1. A method identifying objects with coded marks comprising the steps of:

affixing a first material to said object for reflecting radiation in a non-visible wavelength band,

covering a portion of said first material with a second material which does not reflect radiation in said wavelength band,

illuminating both materials with radiation in said wavelength band, and

observing the reflected radiation through an optical filter which transmits only said wavelength band.

5,360,236

APPARATUS AND METHODS FOR MOUNTING AN INERTIAL SENSOR CHASSIS TO AN AIRCRAFT SUPPORT FRAME

Harry R. Brown, Buffalo, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 14, 1992, Ser. No. 990,145
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—672 23 Claims

21. An inertial sensor chassis mounting system comprising:

a support frame including,

first and second frame mounting members each having a frame planar mounting surface in non-parallel alignment with a first axis, and

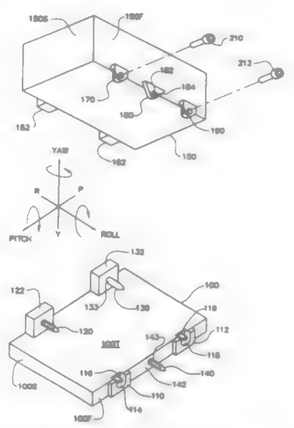
three alignment pin members extending from said support frame in parallel with said first axis, said alignment pin members establishing a first reference plane;

a chassis including,

first and second chassis mounting members each having a chassis planar mounting surface,

three alignment pin receiving means configured for mating with said three alignment pin members, and

said first and second chassis mounting members and said three alignment pin receiving means being spatially related such that said first and second frame planar mounting surfaces are in substantial planar contact with said chassis planar mounting surfaces concurrently with said three alignment pin members mating with said three alignment pin receiving means; and



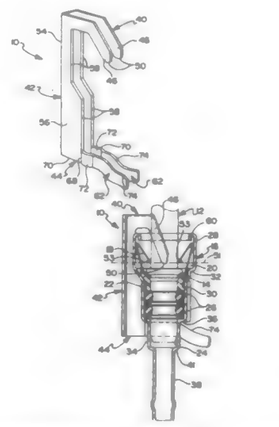
means for rigidly fixing said chassis planar mounting surfaces against said support frame planar mounting surfaces.

5,360,237

QUICK CONNECTOR

Anthony K. Carman, Waterford, and Duane J. Pontbriand, Metamora, both of Mich., assignors to ITT Corporation, New York, N.Y.

Filed Mar. 23, 1993, Ser. No. 35,823
The portion of the term of this patent subsequent to Oct. 11, 2011, has been disclaimed.
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—81 16 Claims



16. A quick connect assembly comprising:

a male member having an upset portion and a connector housing having a recess with a primary connector positioned therein, said primary connector defining a line of engagement, said connector housing receiving said male member and said upset, and a generally L-shaped redundant clip member, said clip including a retaining head, a body portion and a base member, said retaining head having an insertion means for insertion into said connector housing to engage said upset portion, said insertion means being at least at said line of engagement, and said base member including spaced legs extending outwardly from

said body portion and adapted to extend about said connector housing to interconnect said clip to said connector housing, and said leg members having free ends spaced apart to be easily clipped about said female member, with said free ends being turned outwardly to facilitate clipping of said clip to said connector housing, said clip being slidable with respect to said connector housing between a locked and an unlocked position.

5,360,238

PIPE COUPLINGS

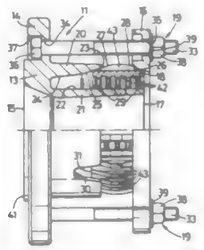
Geoffrey C. Godfrey, Mansfield, England, and David Bassett, Marple Bridge, United Kingdom, assignors to Underpressure Engineering Co., Limited, Nottinghamshire, England

Filed Apr. 9, 1993, Ser. No. 45,993

Claims priority, application United Kingdom, Apr. 10, 1992, 9207924.3; May 1, 1992, 9209547.0

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—93 **8 Claims**



1. A metal fitting for an end of a plain length of "rigid" plastics pipe comprising a body with flange means adjacent a first end, a gland ring adjacent the other end of the body, a grip and seal ring between the body and the gland ring, and screw fasteners for urging the gland ring towards the flange means;

the body having an integral outer tubular spigot projecting towards the gland ring and a co-axial integral inner tubular spigot having a cylindrical outer surface projecting beyond the free end of the outer tubular spigot, the inside of the outer spigot being provided with a frustoconical portion adjacent and converging from that free end;

the gland ring having its inside provided with a similar frustoconical portion converging in the opposite direction;

and the grip and seal ring being a split ring having an external surface mating with the frustoconical portions in the body and the gland ring, an a plurality of internal circumferentially disposed ribs initially spaced radially from the cylindrical outer surface of the inner spigot by no less than the thickness of a plain length of rigid plastics pipe on one end of which the metal fitting is intended to be fitted, the ribs being spaced apart by cylindrical portions of the inside of the grip and seal ring and the rib at the gland ring end of the grip and seal ring being spaced apart from the adjacent end proper of the grip and seal ring by a cylindrical portion of the inside of the grip and seal ring having the same diameter as the portions spacing the ribs apart, so that, after fasteners by the requisite amount, the gap between the outside of an inserted pipe and that end proper of the grip and seal ring will be fully closed, thus indicating full penetration of the ribs into the pipe.

5,360,239

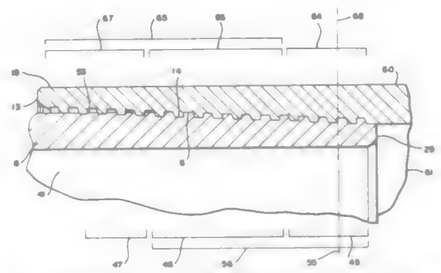
THREADED TUBULAR CONNECTION

Erich F. Klementich, Houston, Tex., assignor to Antares Marketing, S.A., Fribourg, Switzerland

Continuation of Ser. No. 386,740, Jul. 28, 1989, abandoned. This application Apr. 20, 1992, Ser. No. 873,341

Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—94 **77 Claims**



1. In combination, a length of threaded pipe comprising a pipe body, a male thread with a run-out portion and regular turns having load flank, stab flank, crest and root, and a female member with female thread to enable coupling of said pipe to a further length of said threaded pipe to form a threaded connection, said combination comprising:

A. said male thread being tapered over at least a portion of its axial length, including a nose portion thereof,

B. said female thread being tapered over at least a portion of its axial length, including an inner portion thereof which threadably engages with said nose portion when said threads are in made-up position,

C. said male and female threads having load flank angles and thread heights sufficient to ensure that with the threads in made-up position in the threaded connection, at least the load flank of the male thread of said connection will remain engaged with the load flank of the female thread of said connection, even in response to an axial load on said connection substantially corresponding to the axial yield strength of the pipe body;

D. said male and female threads being so dimensioned in relation to each other at said nose and inner portions to ensure that in made-up position in said connection a root-to-crest and/or flank-to-flank interference fit will exist between said nose and inner portions, said interference being sufficiently large for forming in the threads, with the aid of thread compound present in gaps which may optionally exist between said male and female threads, a seal that substantially prevents leakage of fluid through the threads

1. when the connection is subjected to internal fluid pressure corresponding to the internal pressure rating of the pipe body; or

2. when the connection is subjected to external fluid pressure corresponding to the external pressure rating of the pipe body; and

E. said male and female threads being so dimensioned in relation to each other that in made-up position in said connection the run-out portion of the male thread will engage a corresponding portion of the female thread in an interference fit, said interference being sufficient to retain threaded engagement between said run-out and corresponding portions

1. when the connection is subjected to axial tension corresponding to the axial yield strength of the pipe body and to internal fluid pressure corresponding to the internal pressure rating of the pipe body, or

2. when the connection is subjected to axial tension corresponding to the axial yield strength of the pipe body and to external fluid pressure corresponding to the external pressure rating of the pipe body,

and said interference being less than that which will cause either substantial destructive hoop stress yield deformation of said pipe or female member or substantial destructive galling of said male or female threads.

5,360,240

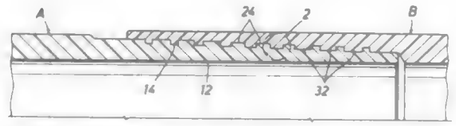
METHOD OF CONNECTING PLASTIC PIPE JOINTS TO FORM A LINER FOR AN EXISTING PIPELINE AND A PLASTIC PIPE JOINT FOR FORMING SUCH LINER

Keith C. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.

Filed Mar. 5, 1993, Ser. No. 27,280

Int. Cl.[5] F16L *25/00, 33/16*

U.S. Cl. 285—95 **16 Claims**



16. A method of connecting two joints of plastic pipe using a pin on one joint and a box on the other having mating, tapered, dovetail shaped threads having flat roots and crests and inclined flanks and thread lubricant coating the threads that will remain in sealing engagement due to either internal pressure or external pressure even though the plastic creeps sufficiently to relieve the initial make-up stress in the threads, the method comprising the steps of rotating one of the pin and box relative to the other until the roots and crests of the threads engage, continuing relative rotation to move the flanks and roots and crests into sealing engagement and creating hoop compressive stress in the pin and hoop tensile stress in the box, whereby internal or external pressure creates a normal force between the engaged flanks having a component urging the flanks, and roots and crests into sealing engagement.

5,360,241

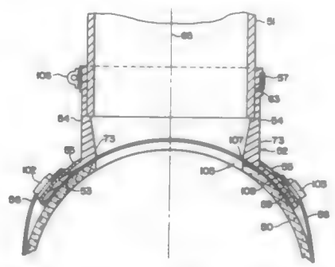
UNIVERSAL SADDLE TEE FOR PIPES

William P. Gundy, Milford, N.H., assignor to NPC, Inc., Milford, N.H.

Continuation-in-part of Ser. No. 992,708, Dec. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 741,751, Aug. 7, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,737

Int. Cl.[5] F16L *25/00, 41/12*

U.S. Cl. 285—197 **38 Claims**



1. A saddle tee assembly for interconnecting a first pipe of a given size extending along a first axis to a second pipe extending along a second axis with an access aperture formed through a wall thereof wherein the second pipe has a size taken from a range of sizes, said saddle tee assembly comprising:

A. saddle tee boot means formed of a flexible material for interconnecting the first and second pipes, said boot means having a flexible sealing saddle portion for conforming to the surface of a second pipe in the range of sizes surrounding the access aperture and having a hollow tee portion having a first hollow section along the first axis for receiving the first pipe and a second hollow section on the first axis interconnecting said saddle portion and the first hollow section, said second hollow section being internally tapered from the size of the opening through said first hollow portion to the size of the access aperture thereby to produce an elongated internally tapered passage,

B. flexible metal collar means for engaging said outer surface of said saddle portion about the periphery of said hollow tee portion, said collar means having first and second positions disposed oppositely of said continuous passage and aligned along a circumference of the second pipe, and

C. main clamping means adapted to circumscribe the second pipe and connect to said collar means at said first and second positions for applying a force conforms and seals that said collar means and said saddle portion to the second pipe about the periphery of the access aperture.

5,360,242

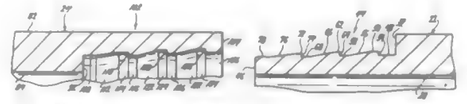
PIPE CONNECTING ASSEMBLY AND METHOD FOR JOINING TWO LENGTHS OF STEEL PIPE BY A PRESS-FIT CONNECTION

Michael F. Argent, 7800 S. Rock Hill Rd., St. Louis, Mo. 63123

Filed Oct. 7, 1992, Ser. No. 958,011

Int. Cl.[5] A16L *25/00*

U.S. Cl. 285—330 **19 Claims**



1. A pipe connecting assembly for joining two lengths of steel pipe, the connecting assembly comprising:

first and second steel tubular members both having opposite ends and cylindrical exterior surfaces with substantially equal exterior diameters and both having cylindrical interior surfaces extending through the members between their opposite ends with substantially equal interior diameters;

a tubular male connector formed on one end of the first tubular member and extending coaxially from the member to a distal end of the connector, the male connector having an exterior surface with a plurality of annular tapered ridges formed thereon, each tapered ridge extending radially outwardly from the connector from a small diameter of the tapered ridge to a large diameter of the tapered ridge, and a plurality of flat annular surfaces formed on the male connector parallel to the center axis of the male connector with each flat annular surface positioned adjacent a tapered ridge and each flat annular surface having a diameter, where the large diameters of the plurality of tapered ridges become progressively larger as the exterior surface of the male connector extends from the distal end of the male connector toward the first tubular member and the diameters of the plurality of flat annular surfaces become progressively larger as the exterior surface of the male connector extends from the distal end of the male connector toward the first tubular member, the ridges giving the male connector a plurality of different exterior diameters all of which are smaller than the exterior diameter of the first tubular member, the exterior diameter of the male connector at the distal end of the connector being the smallest of the plurality of exterior diameters;

a tubular female connector formed on one end of the second tubular member and extending coaxially from the second member to a distal end of the female connector, the female

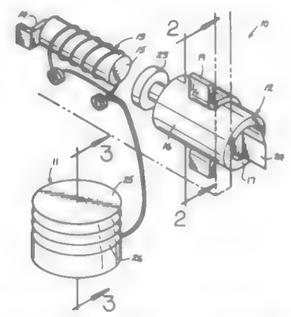
connector having an interior surface with a plurality of annular tapered ridges formed thereon, each tapered ridge extending radially inwardly from the connector from a small diameter of the tapered ridge to a large diameter of the tapered ridge, and a plurality of flat annular surfaces formed on the female connector parallel to the center axis of the female connector with each flat annular surface positioned adjacent a tapered ridge and each flat annular surface having a diameter, where the large diameters of the plurality of tapered ridges become progressively smaller as the interior surface of the female connector extends from the distal end of the female connector toward the second tubular member and the diameters of the plurality of flat annular surfaces become progressively smaller as the interior surface of the female connector extends from the distal end of the female connector toward the second tubular member, the ridges giving the female connector a plurality of different interior diameters all of which are larger than the interior diameter of the second tubular member, wherein the male connector is insertable into the female connector to form a press-fit connection between the first and second tubular members with the tapered ridges and flat annular surfaces of said male and female connectors interengaged so that said connection is capable of transmitting compression forces, tension forces and bending moments across the press-fit connection.

5,360,243

CHILD SAFETY LOCK APPARATUS

Sydney Hirsh, 146 B130 St., Rockaway Park, N.Y. 11694

Filed May 24, 1993, Ser. No. 65,394
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—144 **3 Claims**



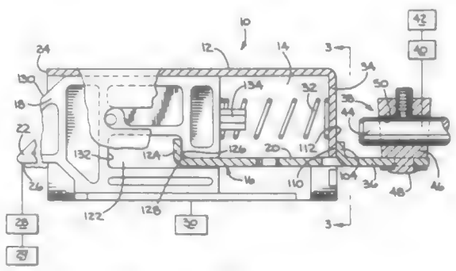
1. A child safety lock apparatus, comprising,
a switch housing, a latch member, and an electromagnetic member, and
the switch housing arranged in electrical communication with the electromagnetic member, with the electromagnetic member arranged in a coaxially aligned orientation relative to the latch member, the latch member including a latch housing, with the latch housing including a slide rod, and
actuation of the electromagnetic member through the switch housing effects displacement of the slide member relative to the latch housing, and
the latch housing includes a latch housing first end wall spaced from a latch housing second end wall, the slide rod slidably directed through the second end wall and directed into the latch housing, wherein the slide rod includes an abutment block fixedly and orthogonally mounted to the slide rod within the latch housing, with the abutment block having a latch plate slidably directed through the first end wall, and a slide rod spring interposed between the second end wall and the abutment block within the latch housing effects biasing of the abutment block to the second end wall and projection of the latch plate through the second end wall, and
the slide rod includes a slide rod head fixedly mounted to the slide rod exteriorly of the latch housing between the second end wall and the electromagnetic member, whereupon actuation of the electromagnetic member effects ferromagnetic attraction of the slide rod head to the electromagnetic member, and
the switch housing includes a switch housing top wall, a flexible switch housing side wall, and a switch housing bottom wall, the bottom wall including a bottom wall insert removably mounted relative to the bottom wall, with at least one battery holder mounted to the insert within the switch housing, and a support post fixedly and orthogonally mounted to the insert within the switch housing, the support post including a first plate fixedly and orthogonally mounted to the support post within the switch housing spaced from the insert, and a second plate mounted to the support post between the first plate and the switch housing top wall, the second plate having a second width, with the first plate having a first width, with the second width less than the first width, and a switch spring captured between the switch housing top wall and the first plate to bias the switch housing top wall in a spaced relationship relative to the second plate, and a top wall contact plate mounted to the top wall within the switch housing in facing relationship relative to the second plate and biased relative to the second plate, with the second plate and the contact plate positioned within the switch spring.

5,360,244

LOCK ASSEMBLY

Stephen J. Gleason, Charles City, and Marvin L. Larsen, New Hampton, both of Iowa, assignors to Tri/Mark Corporation, New Hampton, Iowa

Filed Mar. 9, 1993, Ser. No. 28,307
Int. Cl.[5] E05C *1/12*
U.S. Cl. 292—167 **19 Claims**



1. A lock assembly comprising:
a plunger assembly;
a housing;
first means cooperating between the plunger assembly and housing for guiding relative movement of the plunger assembly and housing between a) a latched position and b) an unlatched position with the plunger assembly and housing in assembled relationship;
second means on one of the plunger assembly and housing for engaging the other of the plunger assembly and housing and maintaining the plunger assembly and housing in assembled relationship,
said second means comprising a tab on the one of the plunger assembly and housing that is repositionable from an assembly position into a holding position, there being a cut-out around at least a portion of the tab,

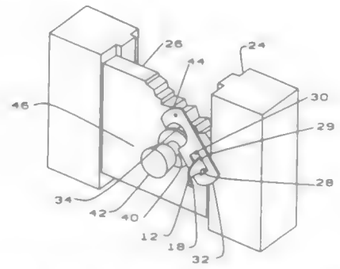
said tab in said assembly position allowing the plunger assembly and housing to be placed in assembled relationship,
said tab in said holding position maintaining the plunger assembly and housing in assembled relationship,
said housing comprising a single piece of sheet metal that defines a) a receptacle for guiding movement of the plunger assembly between its latched position and its unlatched position and b) a means for anchoring the housing to a support for the lock assembly.

5,360,245

REMOVABLE DOOR LOCK FOR HOTELS AND THE LIKE

Johnnie David, and Melanise David, both of 29 Heather Way, Ventura, Calif. 93004

Filed Feb. 22, 1994, Ser. No. 199,641
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—289 **9 Claims**



1. A security device for locking a door having a doorknob to a door jamb having a latch recess, said security device comprising:
a first member insertable between said door and said door jamb when said door is closed and formed with a first portion projectable into said latch recess and having a second portion which projects beyond an edge of said jamb and the first member defining a first edge and a second edge extending from the first portion to the second portion and defining a width between the edges and having at least one recess formed in at least one edge thereof, and
a second member releasably engageable with said first member and with the doorknob of said door to prevent unauthorized opening of said door and formed with an elongated opening having a first dimension greater than the width of said first member to allow said elongated opening to slideably receive said first member and a second dimension less than the width of said first member and engageable with the recess of said first member to prevent disengagement of said first member from said second member.

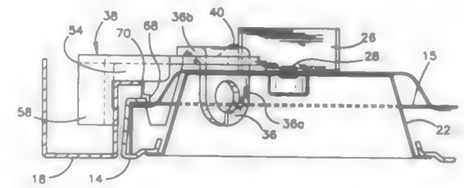
5,360,246

LATCH PLATE FOR STORAGE LOCKERS

Earl Leiter, and Thomas A. Joseph, both of Louisville, Ohio, assignors to Republic Storage Systems Company, Inc., Canton, Ohio

Filed Apr. 21, 1993, Ser. No. 50,855
Int. Cl.[5] E05C *19/00*
U.S. Cl. 292—302 **20 Claims**

1. A storage locker comprising:
a frame assembly having a longitudinal hinge side frame member and a longitudinal latch side frame member spaced from and parallel to said hinge side frame member, wherein said latch side frame member and said hinge side frame member are connected at their ends by a pair of lateral frame members;
a door having a hinged side pivotally connecting said door to said hinge side frame member and a latch side opposite and parallel to said hinged side;
a latch plate fixed to said latch side frame member inside said locker at a location adjacent to said latch side when said door is closed, wherein said latch plate is adapted to engage a lock device for locking said door to said latch plate when said door is closed to prevent unauthorized entry to said locker; and



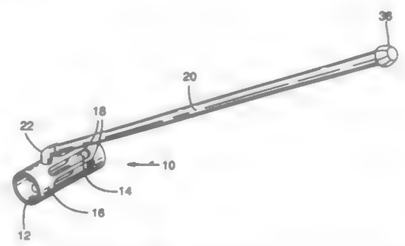
a security finger projecting from said latch plate towards said door and engaging said door when said door is closed, said security finger having a notch formed on a side of said finger facing said latch side frame member wherein a cooperating rim of said door is adapted to engage said finger where it is notched to provide resistance to pivotal movement of said door.

5,360,247

DEVICE FOR SCOOPING ARTICLES FROM A SURFACE

Charles A. Vachter, 18343 French Prairie Rd., Woodburn, Oreg. 97071

Continuation of Ser. No. 55,561, May 3, 1993, abandoned. This application Mar. 3, 1994, Ser. No. 206,033
Int. Cl.[5] A01D *45/00*; A01K *29/00*
U.S. Cl. 294—1.4 **5 Claims**



1. A device for scooping articles from the ground surface comprising:
a cylindrical receptacle having front and rearward ends and defining side, top and bottom walls forming an inner walled surface with said rearward end, said front end being open and said rearward end being closed,
and an elongated handle on said receptacle,
said handle having a lower end leading rigidly from said receptacle to an outer gripping end for gripping and manipulation by a person in a forward motion of the receptacle to scoop articles into said front open end for collection in said receptacle,
said handle comprising a first portion at its said lower end projecting vertically in diametral alignment from the tom wall of said receptacle to an outer end spaced from said receptacle,
said handle having an elongated second portion leading from the outer end of said first portion laterally of said receptacle at an angle of approximately 45° relative to said first portion wherein said receptacle is capable of being suspended from said first portion adjacent the ground by a person gripping said handle,
said receptacle, when manipulated longitudinally by the

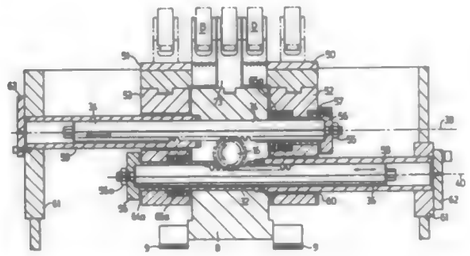
person relative to the ground and when tilted to the horizontal by rotation of said second portion, maintaining a straight ahead alignment with the direction of longitudinal movement to pick up articles on the ground by a forward selected tilted position during operation thereof.

5,360,248

BEARING CAP SPREADER

Joel W. Jones, Windsor, Canada, assignor to Tri-Way Machine Ltd., Windsor, Canada

Filed May 18, 1993, Ser. No. 62,749
Int. Cl.[5] B66C *1/42*
U.S. Cl. 294—87.1 **4 Claims**



1. An apparatus for moving at least two workpieces from a relatively close spacing to a relatively distant spacing, comprising:

a support block,

a gear shaft having an axis of rotation, and being mounted to the support block for rotation about said axis,

a pinion gear means on time gear shaft, the pinion gear means rotating with the gear shaft and having pinion gear teeth,

a first elongate rack means supported by said support block for longitudinal sliding movement in a direction perpendicular to the axis of rotation of the gear shaft, and defining a first rack of gear teeth meshing with the teeth of said pinion gear means,

a second elongate rack means supported by said support block for longitudinal sliding movement parallel with the direction of movement of said first elongate rack means, and defining a second rack of gear teeth meshing with the teeth of said pinion gear means,

the first and second elongate rack means engaging the pinion gear means at diametrically opposed locations, whereby rotation of the gear shaft causes the two elongate rack means to slide in opposite directions,

first gripping means mounted for movement with the first elongate rack means, the first gripping means being adapted to grip a first workpiece such that the first workpiece, after being gripped, moves with the first elongate rack means,

second gripping means mounted for movement with the second elongate rack means, the second gripping means being adapted to grip a second workpiece such that the second workpiece, after being gripped, moves with the second elongate rack means,

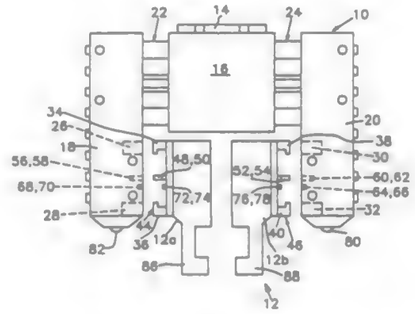
and drive means for rotating the gear shaft in a controlled manner.

5,360,249

MULTIFUNCTIONAL END EFFECTORS

Mathew L. Monforte, Hamilton, and Edward D. Dreyfus, Clark, both of N.J., assignors to Refac Technology Development, Corporation, New York, N.Y.

Continuation of Ser. No. 760,059, Sep. 13, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,429
Int. Cl.[5] B25J *15/04*
U.S. Cl. 294—119.1 **7 Claims**



1. A quick release finger locking mechanism for an end effector having a pair of extending fingers and disposed on the distal end of a robotic arm, comprising:

a) a base plate affixed in each of said fingers, said base plate having;

i) a relatively large elongated through aperture, said through aperture being provided with a first pivotal axis disposed proximate one end thereof and a second pivotable axis disposed proximate the other end thereof;

b) an elongated yoke member affixed on one end of a shaft means adapted to be slidably received in said relatively large elongated through aperture, said yoke member being provided with;

i) a pair of elongated openings, one of said openings being disposed on each end thereof,

ii) a third and a fourth pivotal axis generally centrally disposed within each of said elongated openings;

c) a pair of elongated translating means;

i) said first translating means being provided with, a first transverse through aperture disposed proximate one end thereof adapted to slidably receive said first pivotable axis, a second transverse elongated through aperture generally centrally disposed adapted to slidably receive said third pivotable axis therein and a first capturing notch disposed on the distal portion of the other end thereof,

ii) said second translating means being provided with, a first transverse through aperture disposed proximate one end thereof adapted to slidably receive said second pivotable axis, a second transverse elongated through aperture generally centrally disposed adapted to slidably receive said fourth pivotable axis therein and a second capturing notch disposed on the distal portion of the other end thereof; and

d) drive means disposed in each of said fingers coupled to a source of energy and connected to said shaft means, said drive means being adapted to move said shaft means to a first or release position and to move said shaft means to a second or locking position, said energy source being remotely controlled;

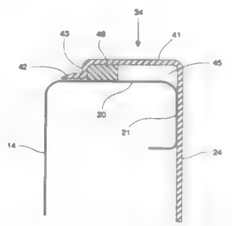
wherein when said drive means moves said shaft means to said second position, said translating means moves to permit said capturing notches to engage a cooperating means provided on an end effector replaceable tool, locking it into position.

5,360,250

TRUCK BED LINER WITH RAIL PROTECTION

Stephen R. Wood, and Richard J. Kremer, both of Bloomingdale, Ind., assignors to Futurex Industries, Inc., Marshall, Ind.

Filed Mar. 30, 1993, Ser. No. 39,980
Int. Cl.[5] B62D *33/02*
U.S. Cl. 296—39.2 **12 Claims**



1. A vehicle bed liner, for use with vehicle cargo beds comprising at least one vertical wall, the vertical wall having a generally horizontal top rail, the liner comprising:

an upright surface which substantially covers the vertical wall of the cargo bed;

a rail protector, integral with the upright surface and which substantially covers the top rail, comprising,

an upper portion extending generally outwardly from the cargo bed, the upper portion comprising an upper surface and a lower surface which define a thickness therebetween, the upper portion disposed outward of the upright surface and positioned with respect to the upright surface so as to be spaced from the top rail of the vertical wall,

a generally horizontal and outwardly extending lower portion comprising an upper surface and a lower surface, wherein the lower portion is positioned with respect to the upright surface such that the lower portion lower surface is spaced from the top rail of the vertical wall,

a vertically extending connecting portion connecting the upper and lower portions, the connection portion having an inward surface, an outward surface, and a height greater than the thickness of the upper portions,

wherein the lower portion extends outwardly beyond the outward surface of the connecting portion, and

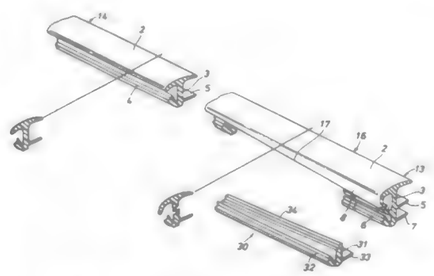
a resilient, load-bearing foam member contacting the rail protector and positioned inward of the inward surface of the vertically extending connecting portion.

5,360,251

FLUSH MOUNT MOLDING MEMBER

Koji Watanabe, and Toru Sugita, both of Kanagawa, Japan, assignors to NIFCO, Inc., Yokohama, Japan

Filed Nov. 9, 1993, Ser. No. 149,586
Int. Cl.[5] B60J *10/02*
U.S. Cl. 296—93 **8 Claims**



1. A molding member adapted to fit in a gap between a windshield and an associated opening of a vehicle body, said molding member extending along two side edges of said windshield and an upper edge of said windshield, said vehicle body opening being defined by a vertical wall portion extending substantially vertically from an outer wall portion of said vehicle body, said vertical wall portion being provided with a flange portion extending inwardly, behind said windshield, from a lower end of said vertical wall portion remote from said outer wall portion, comprising:

a head portion extending between a part of said outer wall portion of said vehicle body peripheral to said vehicle body opening and a peripheral part of an external surface of said windshield;

a leg portion extending from a middle part of said head portion into said gap between said windshield and said vertical wall portion of said vehicle body; and

first and second engagement pieces extending from said leg portion toward said windshield, wherein:

said head portion has a continuous extension of a side edge of said head portion adjacent to said windshield, said extension extending substantially in parallel with said leg portion and abutting said external surface of said windshield at a free end thereof;

said extension has a full length along either side edge of said windshield, and a length that gradually decreases from said full length to a substantially zero length along a corner portion of said molding member extending between an upper end of each one of said side edges of said windshield to an associated lateral side end of said upper edge of said windshield;

said second engagement piece extends along both of said side edges and said windshield and ends at said corner portions of said molding member; and

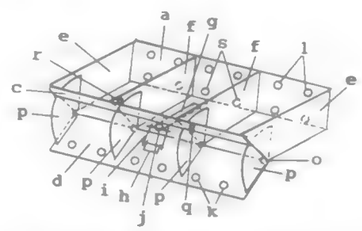
said first engagement piece extends along both of said side edges and said top edge of said windshield and is absent from said corner portions of said molding member.

5,360,252

AIR SCOOP FOR SELECTIVELY INDUCING DRAG ON A VEHICLE

Richard C. Larsen, 1515 E. St. Patrick St. #240, Rapid City, S. Dak. 57701

Filed Aug. 3, 1992, Ser. No. 924,168
Int. Cl.[5] B62D *35/00*
U.S. Cl. 296—180.1 **4 Claims**



1. An air scoop attachable to a vehicle for selectively creating drag on the vehicle as a speed reduction aid, said air scoop comprising:

a generally box like structure having a bottom panel, a top panel, a pair of side panels, and a fixed rear panel attached to each other to form said box like structure and a controlled front panel hingedly attached to either said top panel or to said bottom panel for selective opening and closing of said box like structure,

an actuator attached to said controlled front panel for opening and closing said controlled front panel,

said fixed back panel having a plurality of perforations therein,

wherein said controlled front panel is normally closed to prevent air from the air stream that passes by the vehi-

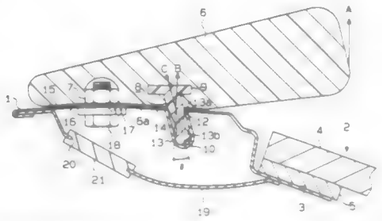
cle from entering said air scoop and when speed reduction is desired, said actuator is activated to open said controlled front panel and allow air into said air scoop which increases the drag on the vehicle as the air impacts said fixed rear wall, said plurality of perforations in said fixed rear wall allow for some air pressure relief as well as moisture to pass through said air scoop.

5,360,253

FITTING ASSEMBLY FOR AN AIR SPOILER

Tsutomu Sasaki, and Junji Asai, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jan. 5, 1993, Ser. No. 653
Claims priority, application Japan, Jan. 6, 1992, 4-000061[U]
Int. Cl.[5] B62D *37/02*
U.S. Cl. 296—180.1 **10 Claims**



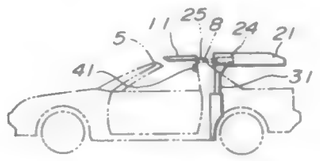
1. An arrangement for securing an air spoiler to a vehicle body, comprising:
an air spoiler including a contact surface corresponding to the shape of the vehicle body on which the spoiler is to be secured;
engaging means embedded within the air spoiler above the contact surface facing in the direction of said contact surface;
first positioning means projecting from said contact surface inclined with respect to the normal to the contact surface;
second positioning means substantially embedded within said vehicle body, for receiving said first positioning means, in order to position the air spoiler; and
fixing means for securing said engaging means to said vehicle body, said engaging means being engageable from a predetermined position on the surface of said vehicle body when said first positioning means is received by said second positioning means.

5,360,254

AUTOMOBILE WITH MOVABLE ROOF STORABLE IN TRUNK LID

Toshihiro Sorimachi, Tokyo; Fumio Furuki, Tochigi; Shoichi Narita, Tochigi; Satoru Azumi, Tochigi, and Mitsuru Hirai, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 24,274
Claims priority, application Japan, Feb. 26, 1992, 4-075453; Feb. 26, 1992, 4-075454; Feb. 26, 1992, 4-075460
Int. Cl.[5] B60J *7/02*
U.S. Cl. 296—218 **4 Claims**



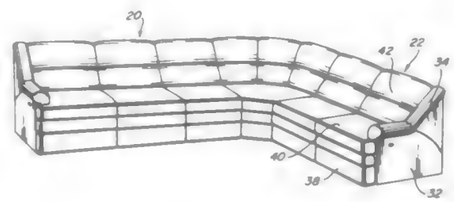
4. In an automobile having an automobile body having a movable roof movable from a normal position above a passenger's compartment, and a roof storage member for storing said movable roof when moved from said normal position, said roof storage member having an axially elongated engaging pin connected therewith and movable substantially coaxially into and out of an axially elongated hole defined in the movable roof at an end thereof, a device for connecting said engaging pin and said movable roof for coincident movement, said device including a receptacle provided in one of said engaging pin and said movable roof, a projection carried by the other of said engaging pin and said movable roof, and means for selectively moving the axis of said engaging pin laterally with respect to the axis of said hole to place said projection in said receptacle, whereby said movable roof is secured to said engaging pin for movement therewith.

5,360,255

THREE-WAY FRAME INCLINER

Robert E. Cook, New Albany; Charles J. Tidwell, Jr.; Donald Shutiok, both of Tupelo; William Tacker, Smithville; Gregory M. Lawson, Tupelo, and Terry Johnson, Mantachie, all of Miss., assignors to Super Sagless Corporation, Tupelo, Miss.

Continuation-in-part of Ser. No. 333,590, Apr. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 60,099, Jun. 9, 1987, abandoned. This application May 1, 1991, Ser. No. 694,147
Int. Cl.[5] A47C *1/035*
U.S. Cl. 297—232 **17 Claims**



1. A modular furniture seating section having a reclining seat and backrest incorporated therein with one side of said seating section intended to be positioned at one end of a grouping of modular furniture sections comprising:
a pair of stationary side base rails disposed on the floor and having inside faces disposed opposite one another,
a pair of reclining mechanisms each having a mounting plate mounted by fastening means on the inside face of one of the separate side base rails,
each of said mechanisms also having a seat mounting link dispose above the fastening means,
a metal seat frame for the reclining seat having sides secured to each of the seat mounting links enabling the seat to move with respect to the base rails from an upright position to intermediate and fully reclined positions, said metal seat frame having front and rear cross tubes with ends that extend outwardly beyond the seat mounting link and the side base rail on the side of the seat to be positioned at the end of the grouping of furniture sections,
ottoman linkages forming part of each mechanism and an ottoman carried by the ottoman linkages for movement between a retracted position beneath the seat when the seat is in the upright position and an extended position when the seat is in the intermediate and fully reclined positions,
a backrest linkage forming part of each mechanism, and a backrest frame for the backrest having sides connected to each of the backrest linkages for moving the backrest frame and seat in fixed relationship to one another when the seat moves between upright and intermediate positions and for moving the backrest frame relative to the seat

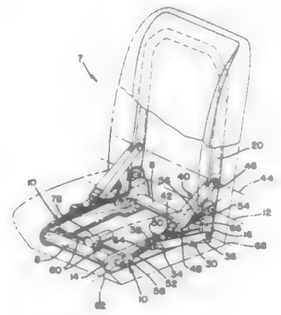
when the seat moves between intermediate and fully reclined positions,
an arm panel secured to the ends of the cross tubes only on the side of the seat to be positioned at the end of the grouping of furniture sections and disposed outside the base rail on that side of the seat, said arm panel moving with and being in a fixed position relative to the seat,
and a backrest side wing secured to the side of the backrest frame on the same side of the section as the arm panel and defining the outside end of the backrest of said seating section.

5,360,256

RECLINER SEAT

Harold J. Miller, Mt. Clemens, and Edward W. Clancy, III, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1993, Ser. No. 51,953
Int. Cl.[5] B60N *2/20*
U.S. Cl. 297—361.1 **13 Claims**



1. A vehicle recliner seat comprising:
a seat pan frame;
a seat back pivotally mounted with respect to the seat pan frame;
an elongated member having at least one end locationally fixed with respect to the seat pan frame;
a first link with a first end pivotally connected with the seat back with a second end pivotally connected with the elongated member;
a second link with a first end pivotally connected with the seat back with a second end pivotally connected with the elongated member; and
means to selectively connect the second ends of the first and second links on the elongated member to set the inclination of the seat back with respect to the seat pan frame.

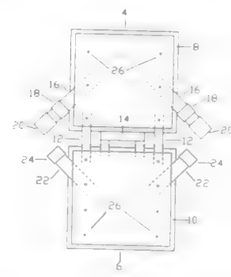
5,360,257

FOLDING LUMBAR SUPPORT SEAT

Edward T. Sciacca, 73 Todd Rd., Valley Stream, N.Y. 11580

Filed Aug. 6, 1993, Ser. No. 102,815
Int. Cl.[5] A47C *1/14. 4/00*
U.S. Cl. 297—380 **3 Claims**

1. An article of furniture for holding a sitting human being, comprising
a) two rectangular cushions of sufficient size to accommodate a human with one representing a back portion and the other a bottom portion
b) said cushions to contain a flexible backing which is distinct from its face surface
c) a plurality of bendable elongated narrow strips having first and second ends d) some said strips having first ends connected to a bottom end of the back portion and second ends connected to a rear end of the bottom portion form a "living" hinge between said cushions
e) two buckles f) other of said strips, equipped with said buckles, having first ends connected below a mid-point of a side edge of the back portion, and second ends connected at a point on a side edge of the bottom portion that is intermediate the ends thereof
g) whereby, upon elevation of said back portion, a vertical angle to said bottom portion is achieved and upon engagement of said buckles, the flexibility of the backing and the



location of the connection points of the strips on the back portion form a flexing means for allowing the back portion to adjust to the contour of the user's back providing flexing in a top to bottom direction
h) whereby, the article is sized such that an occupant is not confined by said strips equipped with said buckles.

5,360,258

PORTABLE SINGLE AND MULTIPLE UNIT BABY SUPPORT SEAT

Margaret A. Alivizatos, Dallas, Tex., assignor to Maurice Adam, Dallas, Tex.

Filed Jan. 7, 1992, Ser. No. 818,068
Int. Cl.[5] A47C *7/16*
U.S. Cl. 297—440.11 **20 Claims**



1. Portable baby support seat comprising:
a frame having a pair of upright spaced apart side members, each side member having a base leg, an intermediate reverse curved front leg and a generally straight support leg supported by the base leg through the reverse curved leg, wherein the generally straight support leg of each side member is angled upwardly with respect to a support surface upon which the base legs may be placed;
the frame including a lower transverse leg having opposite ends and an upper transverse leg having opposite ends;
the base leg of each spaced apart side member having a distal end extending rearwardly away from its intermediate reverse curved front leg, the distal end of each base leg being releasably connected to an opposite end of said lower transverse leg of the frame, the base legs and the lower transverse leg being designed for placement on a surface to provide a sturdy base for the seat;
the generally straight support leg of each upright spaced apart side member being angled gradually upwardly and

rearwardly over its corresponding base leg, to terminate in a distal end;

a fabric support member having an uppermost end and a central baby supporting area below the uppermost end, the fabric support member having elongated side pocket means on either side of the central baby support area for receiving support from a generally straight support leg of one of the upright spaced apart side members on each side, the fabric support member having an upper pocket means at the uppermost end of the fabric support member oriented generally transverse to the side pocket means, for receiving support from said upper transverse leg of the frame;

said distal end of each said generally straight support legs being releasably connected to one of the opposite ends of the upper transverse leg, to complete the frame;

wherein the upper pocket means of the fabric support member is supported by the transverse upper leg of the frame and the side pockets of the fabric support member are each supported by one of the generally straight support legs of the frame to secure the central baby supporting area of the fabric support member on the frame in a gradually upwardly angled inclination;

the frame being formed from flexibly bendable lightweight tubing adapted to flexibly provide a gentle bouncing motion in response to the ordinary movements of a baby when a baby is located on the baby supporting area of the fabric support member mounted on the frame; and

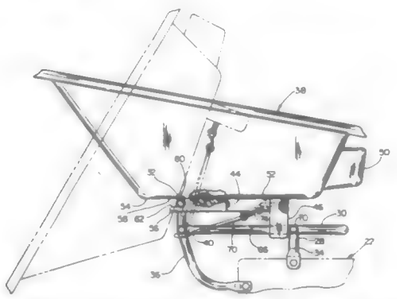
the frame is foldable to a flat orientation by releasing the distal ends of the support legs from the upper transverse leg and releasing the distal ends of the base legs from the lower transverse leg.

5,360,259

CONTAINING AND DUMPING APPARATUS

Donald A. Lemberger, 4215 Sweet Gum Dr., St. Louis, Mo. 63125

Filed Jul. 30, 1993, Ser. No. 100,485
Int. Cl.[5] B60P *01/04*
U.S. Cl. 298—19 V **14 Claims**



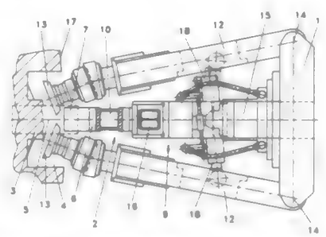
1. Containing and dumping apparatus adapted for releasable connection to a motorized utility vehicle having forward and rearward ends and a rack secured generally at one of said ends, said rack having a generally horizontal rail extending transversely relative to the vehicle, said apparatus comprising a bin and means for releasably and pivotably connecting said bin to said rack for movement of the bin about a generally horizontal axis between a cargo holding position in which the top of the bin faces generally upward for receiving a load of cargo and holding the load as it is transported by the vehicle, and a dumping position in which the top of the bin faces generally rearwardly relative to the vehicle for dumping the load from the bin, the connecting means comprising at least one protrusion extending from the underside of the bin at least partially defining a slot for receiving the rail, said protrusion engaging the rail in the slot to hold the bin on the rack as the bin is pivoted on the rail from its cargo holding position to its dumping position, the slot having an open outer end and a closed inner end, the connecting means further comprising means for urging the inner end of the slot toward the rail to retain the rail within the slot.

5,360,260

TUNNELING MACHINE WITH RADIALLY SWEEPING TOOL CARRIERS

Lothar E. Baumann, Velbert; Hans G. Kappelmann, Mülheim/-Ruhr; Volkmar Mertens, Essen; Bernhard T. Schafeld, Bottrop; Werner W. Vorhoff, Wesel, and Heinz Wallussek, Herdecke, all of Germany, assignors to Bergwerksverband BmbH, Essen, Germany

PCT No. PCT/EP91/02345, § 371 Date May 19, 1993, § 102(e) Date May 19, 1993, PCT Pub. No. WO92/10647, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 6, 1991, Ser. No. 64,079
Claims priority, application Germany, Dec. 12, 1990, 4039646
Int. Cl.[5] F21B *10/04;* **E21D** *9/10*
U.S. Cl. 299—59 **5 Claims**



1. A tunneling machine for use in underground passages having a rotatively driven boring head base body comprising a fixed pilot borer and tool holders, and feed-piston gear members coupled to the boring head base body for sweeping at least one boring tool radially around an axis of rotation of said boring head base body between a working point in a pilot hole and gallery sides of said boring head base body, wherein said fixed pilot borer defines a ring borer that breaks out a drilling core through slits of an annular cavity; said fixed pilot borer comprising two parallel load-bearing tool arms spaced apart from a central axis; said at least one boring tool being coupled to said load-bearing tool arms, and wherein said load-bearing tool arms are coupled to a crossbeam of a support frame; said support frame comprising a forward feed mechanism wherein said support frame surrounds said feed-piston gear members, and wherein said support frame is perpendicular to radially sweeping tool carriers that are coupled to said boring head base body and wherein said support frame extends parallel to said central axis of said rotatively driven boring head base body.

5,360,261

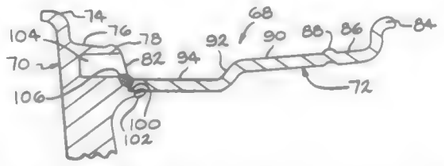
FULL FACE WHEEL ASSEMBLY

Kenneth R. Archibald, Canton, Mich., and Melvin L. Scott, Davao, Philippines, assignors to Hayes Wheels International, Inc., Romulus, Mich.

Continuation of Ser. No. 442,123, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 407,983, Sep. 15, 1989, abandoned. This application May 31, 1991, Ser. No. 711,498
Int. Cl.[5] B60B *3/04*
U.S. Cl. 301—63.1 **4 Claims**

1. A full face wheel comprising, in combination,

a cast outboard disc having an outer face and an inner face and including an outboard tire bead retaining flange, a center portion substantially aligned with and extending generally radially inwardly from said outboard tire bead retaining flange, a plurality of mounting openings disposed in said center portion, a first circumferential wall extending axially inwardly from said inner face for receiving an outer tire bead, an outboard safety hump disposed on said first wall and a second circumferential wall spaced radially inwardly from said first circumferential wall and extending axially inwardly from said inner face and terminating in an inwardly directed edge, said first and said second circumferential walls defining a circumferential channel therebetween,



a formed inboard rim including an inboard tire bead retaining flange, an inboard tire bead seat, an inboard safety hump, a well portion terminating in an outwardly directed edge aligned with and disposed adjacent said inwardly directed edge, and

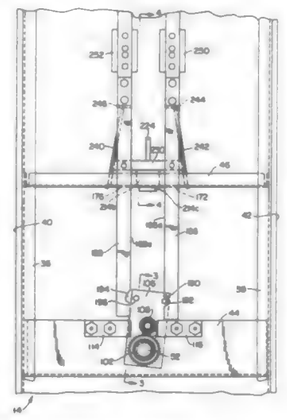
at least one circumferential, circular weldment extending between said edges and securing said outboard disc to said inboard rim.

5,360,262

SAFETY DEVICE FOR MOVABLE STORAGE UNITS

Avner Davidian, Edison, N.J., assignor to White Storage and Retrieval Systems, Inc., Kenilworth, N.J.

Filed Feb. 19, 1993, Ser. No. 19,745
Int. Cl.[5] A47B *87/00, 53/00*
U.S. Cl. 312—201 **33 Claims**



1. A locking mechanism, comprising

a frame,

a shaft rotatably mounted to said frame,

means for rotating said shaft,

a first gear mounted on said shaft for rotation therewith,

a support member mounted on said shaft for movement with respect to said frame in a first path between a first lock position and a free run position,

a second gear mounted on said support member for rotation relative to said support member, said second gear being in mesh with said first gear,

a first arresting member mounted to said frame for engaging said second gear to thereby prevent rotation of said shaft in a first direction when said support member is in said first lock position, said first arresting member being disengaged from said second gear when said support member is in said free run position,

movement means for urging said support member toward said first lock position responsive to rotation of said shaft in said first direction, and

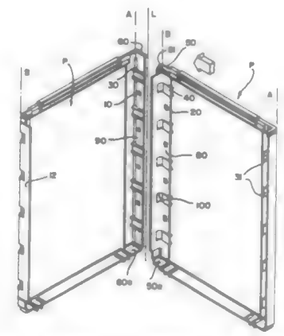
blocking means for selectively blocking the movement of said support member to said first lock position.

5,360,263

MODULAR SELF-LOCKING PANEL

Yoji Nakano, and Amilton F. de Almeida, both of Sao Paulo, Brazil, assignors to Brastemp S.A., Sao Bernardo do Campo-SP, Brazil

Continuation of Ser. No. 670,247, Mar. 15, 1991, abandoned. This application May 19, 1993, Ser. No. 64,341
Claims priority, application Brazil, Mar. 22, 1990, PI9001543
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—257.1 **20 Claims**



1. A polygonal structure comprising:

at least three self-locking panels with pairs of adjacent panels joined together along a respective intersection line and being assembled in a closed polygon, each panel having

an inner face and an outer face,

first and second opposed connecting edges and a pair of opposed end edges;

a flexible flap extending from said first connecting edge;

a plurality of projections provided along said flexible flap;

a plurality of retaining cavities each arranged in a respective external recessed portion extending along said second connecting edge of each said panel and aligned to receive a respective projection of said first connecting edge of an adjacent panel to join and prevent the separation of two adjacent panels in a first and a second direction each generally orthogonal to the intersection line of said two adjacent panels of a pair,

said flexible flap being elastically deformable from a locking position wherein the projections of one panel are fitted into the respective cavities of an adjacent panel, to a release position wherein the projections are released from the respective cavities;

a flexible end projecting means arranged on said second connecting edge of each said panel to underlie said first connecting edge of an adjacent panel to urge the adjacent panel in a direction generally orthogonal to the intersection line therebetween and pushing each panel into a position of separation therebetween from said intersection line, said plurality of retaining cavities arranged in a portion of the respective second connecting edge provided with the flexible end projecting means;

a plurality of backstop elements provided along and projecting from the inner face of each said panel and extending parallel to a face of the adjacent panel;

a plurality of support shoes provided near and along said second connecting edge of each said panel, each support

shoe receiving and holding a respective backstop element of the adjacent panel upon connection of two adjacent panels to prevent the relative displacement of two adjacent panels in a direction generally orthogonal to the intersection line of said two adjacent panels and parallel to the panel with the backstop elements; and

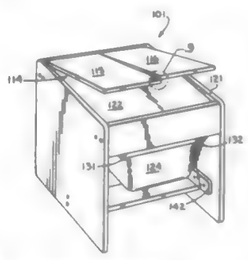
a junction section connecting said first connecting edge of each said panel and the flexible flap into which the second connecting edge of the adjacent panel is fit to prevent, together with said backstop element, the relative rotating movement between the two adjacent panels around the intersection line thereof and in the direction of a decreasing dihedral angle.

5,360,264

VERSATILE CHILDREN'S PLAY TABLE WITH TOY STORAGE

Michael N. Crane, 12932 W. 105th Ter., Overland Park, Kans. 66215

Filed Feb. 11, 1993, Ser. No. 16,295
Int. Cl.[5] A47B *77/18, 85/00*
U.S. Cl. 312—293.1 **23 Claims**



1. A child's play table, comprising:

(a) a two-sided removable and reversible table top with disparate play surfaces on the two sides thereof with one of said play surfaces comprising a modular building block interconnect surface;

(b) a recessed play surface;

(c) support means comprising a plurality of side panels which extend upward past said recessed play surface to form a ledge at least partially surrounding said recessed play surface, said table top being adapted to fit within said ledge formed by said side panels;

(d) a storage means positioned beneath said recessed play surface; and

(e) a pair of storage drawers positioned within said support means and between said recessed play surface and said storage means.

5,360,265

APPARATUS WITH INVERSION LINKAGE MECHANISM

Donald I. Cruse, 9850 - 154 St., Edmondton, Alberta, Canada T5P 2G6

Filed Dec. 15, 1992, Ser. No. 990,740
Int. Cl.[5] B01F *13/00*
U.S. Cl. 366—208 **7 Claims**

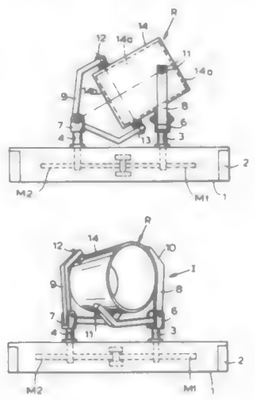
1. An apparatus for imparting rhythmically-modulated movement including rotating, tumbling and shaking movements to material, said apparatus comprising:

a container receiving the material, said container being adapted to be releasably secured to an inversion linkage system,

said inversion linkage system including a multi-link, closed and constrained invertible kinematic link-work, with at least one line of said link-work serving as a receptive link for said container, said receptive link having:

a first end and a second end remote from said first end, and hinge means operatively connectible at each one of said first and second ends of said receptive link and extending along respective axes for respectively hinging each end of said receptive link to a respective horse-shoe shaped link,

each of said horse-shoe shaped links overlapping said receptive link and the axes of said hinge means being at right angles to each other but in different planes, said horse-shoe shaped links being hinged in the middle to two fork-shaped members having respective axes thereof extending at right angles to respective axes of



the adjoining horse-shoe shaped links but in different planes, with said two fork-shaped members being inflexibly prolonged into two parallel and rotatably mounted shafts;

driving means for actuating said shafts, said driving means exerting only thrust and including at least one hydraulic piston/cylinder unit; and

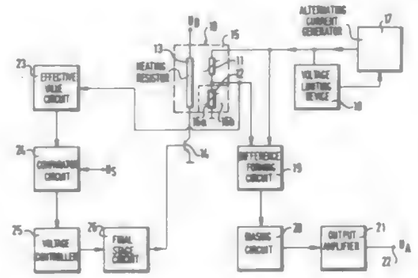
sensor means operatively connectible to said driving means for actuation of said at least one hydraulic piston/cylinder unit at the beginning of a pertaining lifting phase in conformity with the rotation of a respective shaft.

5,360,266

CONTROL AND ANALYSIS CIRCUIT DEVICE FOR MEASURING REACTION HEAT

Martin Lenfers, Vaihingen/Enz, and Johann Riegel, Moeglingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 18, 1993, Ser. No. 79,617
Claims priority, application Germany, Jul. 3, 1992, 4221922
Int. Cl.[5] G01N *25/22, 27/12*
U.S. Cl. 374—36 **11 Claims**



1. Reaction heat sensor and control and analysis means comprising at least two temperature dependent resistors in-

cluding a reference resistor having a reference resistance and a measuring resistor coated with a catalytically active layer, said reference resistor and said measuring resistor being connected to each other to form a voltage divider;

means for exposing said measuring resistor to a medium to generate a reaction heat at said measuring resistor;

means for making said reference resistor inactive to said medium;

controlling means for keeping said reference resistance of said reference resistor constant, said controlling means including heating means for heating said at least two temperature dependent resistors, means for measuring a voltage drop across said reference resistor and means for processing said voltage drop across said measuring resistor to keep said reference resistance constant; and

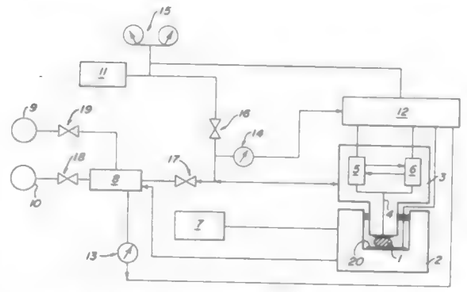
means for analyzing a change in a resistance value of said measuring resistor to determine the reaction heat when said measuring resistor is exposed to said medium.

5,360,267

APPARATUS FOR ANALYZING RELAXATION SPECTRA AND RESONANCES IN MATERIALS BY THERMAL STIMULATED RECOVERY

Jean-Pierre Ibar, P.O. Box 385, New Canaan, Conn. 06804

Division of Ser. No. 902,180, Jun. 22, 1992, Pat. No. 5,255,978, which is a continuation-in-part of Ser. No. 803,791, Dec. 6, 1991, Pat. No. 5,152,607, which is a continuation of Ser. No. 470,782, Jan. 26, 1990, abandoned. This application Jul. 15, 1993, Ser. No. 92,310
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] G01N *25/00, 27/00*
U.S. Cl. 374—45 **19 Claims**



1. An apparatus for analyzing relaxation spectra in materials, said apparatus comprises:

(a) a cell base defining a chamber in which a sample of a material can be confined;

(b) means for controlling the thermal environment of said cell base chamber;

(c) means for applying excitation fields to the sample confined within said cell base chamber; and

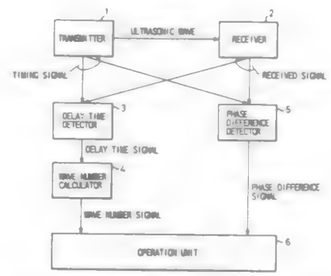
(d) means for monitoring at least one parameter of the sample confined within said cell base chamber, wherein said parameter being monitored is used in analyzing the material's relaxation spectra.

5,360,268

ULTRASONIC TEMPERATURE MEASURING APPARATUS

Yasushi Hayashi, Obu; Koji Numata, Toyokawa, and Kazutoshi Nishizawa, Toyoake, all of Japan, assignors to Nippon Soken Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of Japan

Filed Nov. 1, 1993, Ser. No. 143,883
Claims priority, application Japan, Nov. 2, 1992, 4-294400
Int. Cl.[5] G01K *11/22*
U.S. Cl. 374—117 **3 Claims**



1. A temperature measuring apparatus for measuring the temperature of a medium according to the propagation time of ultrasonic waves propagated for a predetermined distance through the medium, comprising:

transmission means for transmitting ultrasonic waves having a fixed frequency at predetermined timing;

reception means for receiving the ultrasonic waves and providing a received signal;

means for detecting, in response to the received signal, a delay time between the transmission and reception of the ultrasonic waves;

means for calculating an integral wave number according to the delay time and a period of the ultrasonic waves;

means for detecting a phase difference between the transmitted and received ultrasonic waves by modulating the received signal with a frequency sufficiently higher than the frequency of the ultrasonic waves; and

means for calculating the propagation time of the ultrasonic waves according to the wave number and phase difference, and according to the propagation time, the temperature of the medium.

5,360,269

IMMERSION-TYPE TEMPERATURE MEASURING APPARATUS USING THERMOCOUPLE

Koji Ogawa, Kasugai, and Hiroshi Suzuki, Tajimi, both of Japan, assignors to Tokyo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1993, Ser. No. 151,532
Int. Cl.[5] G01K *1/12*
U.S. Cl. 374—140 **4 Claims**

1. In an immersion-type temperature measuring apparatus using a thermocouple for measuring temperature of a melt, which comprises:

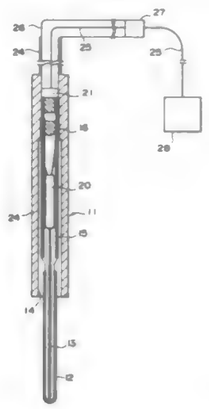
a replaceable cartridge-type temperature sensor (**11**) for detecting a thermoelectromotive force corresponding to a temperature of a melt, said temperature sensor (**11**) comprising a thermocouple (**13**), a protecting tube (**12**) covering at least a lower portion of said thermocouple (**13**), for protecting said thermocouple (**13**) from said melt, and a connector (**16**);

a holder (**26**) for releasably supporting said temperature sensor (**11**);

a measuring instrument (**28**) for processing said thermoelectromotive force detected by said temperature sensor (**11**) to determine the temperature of said melt; and

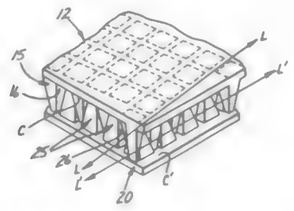
an extension lead wire (**25**), arranged through said holder (**26**), for connecting said temperature sensor (**11**) with said

measuring instrument (28), said extension lead wire (25) being connected with said temperature sensor (11) through said connector (16);
the improvement wherein:
said protecting tube (12) which protects said thermocouple (13) comprises an outer layer and an inner layer,



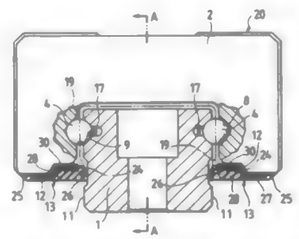
said outer layer is formed of a molybdenum-zirconia ($Mo\text{-}ZrO_2$) refractory which consists essentially of:
molybdenum (Mo): from 20 to 95 wt. %,
and
zirconia (ZrO_2): from 5 to 80 wt. %,
and said inner layer is comprised of an alumina (Al_2O_3) refractory.

5,360,270
REUSABLE SECURITY ENCLOSURE
Roger H. Appeldorn, White Bear Lake, Minn.; Robert J. Johnson, Hudson, Wis.; Forrest J. Rouser, San Rafael, and Robert L. Erwin, Rohnert Park, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 28, 1992, Ser. No. 875,079
Int. Cl.[5] B65D *27/30*
U.S. Cl. 383—5 **1 Claim**



1. A method of closing a container means for enclosing an object and for verifying whether the container has been opened comprising the steps of:
(1) providing a reusable container means for enclosing the object, said container means comprising interior and exterior surfaces, and closure means for closing said container means, said closure means being movable between an open position which provides access to said interior surfaces of said container means so that the object may be enclosed by said container means and a closed position which restricts access to the interior surfaces of said container means,
said closure means comprising:
a first sheet having at least one major surface at least a portion of that surface being a structured surface;
said first sheet's structured surface including a plurality of tapered elements, each element having at least one side inclined relative to a common plane at an angle sufficient to form a taper;
said first sheet's plurality of tapered elements being situated to form a plurality of axes including at least one first sheet longitudinal axis;
a second sheet having at least one major surface at least a portion of that surface being a structured surface;
said second sheet's structured surface including a plurality of tapered elements, each element having at least one side inclined relative to a common plane at an angle sufficient to form a taper;
said second sheet's plurality of tapered elements being situated to form a plurality of axes including at least one second sheet longitudinal axis;
wherein, in said closed position, said first and second sheets are fastened together with the first longitudinal axis situated at an angle relative to the second longitudinal axis such that at least one of said tapered elements of said first or said second sheet is axially bent or torsionally flexed relative to its relaxed, unfastened position, and said inclined sides of one of said first and second sheet's tapered elements being frictionally adhered to at least some of said inclined sides of the other of said first and second sheet's tapered elements, such that said first and second sheet's elements form a generally non-repeatable pattern when the closure means is in said closed position,
(2) enclosing the object within the container means,
(3) moving the closure means from the open to the closed position;
(4) then viewing at least a predetermined portion of the pattern of the first and second sheet's elements;
(5) recording the predetermined portion of the pattern of the first and second sheet's elements just after the closure means moves to the closed position to provide a verification record;
(6) then viewing the pattern of the first and second sheet's elements just prior to opening the closure means; and
(7) comparing the pattern of the first and second sheet's elements just prior to opening the closure means with the verification record to verify whether the closure means has been opened.

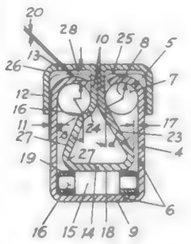
5,360,271
UNDER SEAL DEVICE FOR A LINEAR MOTION GUIDE UNIT
Norimasa Agari, Seki, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 995,413
Claims priority, application Japan, Dec. 18, 1991, 3-353169
Int. Cl.[5] F16C *29/08, 33/72*
U.S. Cl. 384—15 **16 Claims**



1. A linear motion rolling guide unit which consists of:
a track rail having rail raceway grooves formed longitudinally extending on both side walls thereof;
a casing straddling the track rail and being able to slide relative to the track rail, the casing having casing raceway grooves formed therein at positions facing the rail raceway grooves;
an end cap mounted to each longitudinal end of the casing;

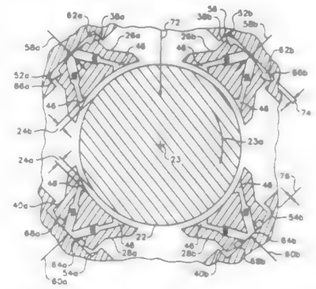
an end seal made of metal and placed in contact with each end cap;
under seals mounted to undersides of the casing and the end caps; and
rolling elements trapped between the rail raceway grooves and the casing raceway grooves and turned to circulate in an endless path;
the under seals each having an underside core member made of metal and a resilient underside member made of non-metallic material and secured to the underside core member, the underside core member having engagement portions at longitudinal ends thereof, and the resilient underside member having a width greater than the width of the underside core member and a first lip portion which makes a hermetical contact with the undersides of the casing and the end caps and a second lip portion which makes a hermetical contact with the side walls of the track rail, said first lip portion being spaced apart from said second lip portion by the underside core member therebetween, said underside core member being enclosed by said resilient underside member against said guide unit; and
the end seals each having an end core member made of metal and a resilient end member made of non-metallic material and secured to the end core member, and the end core member having an engagement hole into which the corresponding engagement portion of the underside core member is fitted;
whereby the engagement portions of the underside core members are fitted into the engagement holes of the end core members to mount the under seals to the end seals.

5,360,272
RUNNING RAILS FOR MOTOR VEHICLE SEATS
Gerhard Schmale, Hückeswagen, and Norbert Sommer, Wermelskirchen, both of Germany, assignors to Naue/Johnson Controls Engineering GmbH & Co., Germany
Filed Mar. 2, 1993, Ser. No. 24,992
Claims priority, application Germany, Mar. 3, 1992, 4206650
Int. Cl.[5] F16C *29/04*
U.S. Cl. 384—48 **14 Claims**



1. Running rails (1) for motor vehicle seats by means of which these can be moved and secured, formed of cooperating profiled rails, characterised in that the lower rail part (2) consists of a U-section (6, 6*a*) of which the limbs (4, 40, 44) continue on both sides of the open top with a radius (8) for fitting contact with balls (7) as inwardly extending part-circular parts (5, 36, 41) and that the upper rail part (3, 32) consists of a profile that surrounds the upper region of the lower rail part (2, 31, 31*a*) through lateral limbs (12, 37, 43) located on the outside which are then formed as upper webs (13, 42) leading to the middle, with respective clearances (11, 20), the latter webs running downwardly in contact or integrally with one another as a middle limb (10) to make tangential contact with the balls (7) and then spreading out at an angle (α, β) of 30° to about 75° as a split web (23) to surround respective limb regions (24) or limbs (44) as counter tracks to the balls (7), in order then to lead downwardly, outwardly and sideways up to a distance (17) from the lower rail part (2, 31), and then by each bending horizontally inwardly to form a region (14, 14*a*) the bottom of which is the track (18) for rollers (15, 35) between and in contact with it and the web (9) of the lower rail part (2).

5,360,273
HYDROSTATIC ROTOR BEARING HAVING A PIVOTED PAD
Paul S. Buckmann, Roseville, Calif., assignor to Aerojet General Corporation, Rancho Cordova, Calif.
Filed Jul. 7, 1992, Ser. No. 909,870
Int. Cl.[5] F16C *32/06*
U.S. Cl. 384—99 **27 Claims**



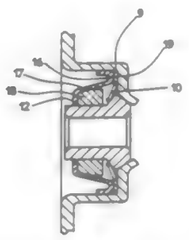
1. Hydrostatic journal bearing apparatus usable for rotatably mounting a shaft within a housing, comprising:
at least first and second bearing pads, each having at least a first surface spaced a first clearance distance from said shaft and a second surface, each of said first and second bearing pads positioned between a portion of said shaft and said housing, each of said first and second bearing pads having at least one conduit for delivering a bearing fluid to a region adjacent said first surface;
said first and second bearing pads being mounted to permit pivoting of each of said first and second bearing pads with respect to said housing;
at least one of said first and second bearing pads mounted to permit movement in a substantially radial direction;
wherein a pressurizable piston region couples at least said one of said first and second bearing pads to said housing and wherein pressurization of said piston region creates a force on said bearing pad in a direction toward said shaft; and
a spring mounted to urge said at least one of said first and second bearing pads towards said shaft when said piston region is substantially unpressurized.

5,360,274
SELF-ALIGNING BEARING
Georg Strobl, Stuttgart, Germany, assignor to Johnson Electric S.A., Switzerland
Filed Nov. 12, 1992, Ser. No. 975,502
Claims priority, application United Kingdom, Nov. 12, 1991, 9124030
Int. Cl.[5] F16C *23/08*
U.S. Cl. 384—192 **11 Claims**

1. A self-aligning bearing comprising:
a bearing member having an inner surface, for receiving a rotatable shaft, and an outer surface in which a first external, part-spherical, surface-of-revolution, is formed around the axis of the bearing member and a second external surface-of-revolution, which is non-coextensive with any imaginary spherical surface having the same center as the first external, part-spherical, surface-of-revolution, has a first portion which extends transversely of the axis of the bearing member and is formed around the axis of the bearing member;
a housing for accommodating the bearing member having a convergent end which defines an internal surface-of-revo-

lution, formed around the axis of the housing, and engaging the first external, part-spherical, surface-of-revolution to provide the bearing member with both radial and axial support;

a retainer having resilient means and supported with the resilient means engaging the bearing member and bearing against the first portion of the second external surface-of-



revolution so as to urge the first external, part-spherical, surface-of-revolution axially into engagement with the convergent end of the housing; and

a support ring supported within the housing and having a radially inner portion surrounding the second external surface-of-revolution with an annular clearance space between the support ring and the bearing member for limiting radial movement of the bearing member.

5,360,275

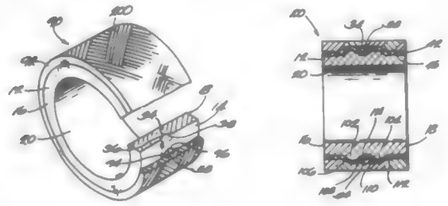
FILAMENT WOUND THRUST BEARING

Bernard Harris, Northbrook, and Deanis E. Bozych, Downers Grove, both of Ill., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Dec. 15, 1992, Ser. No. 990,420

Int. Cl.[5] F16C *33/20*

U.S. Cl. 384—420 **4 Claims**



1. A thrust bearing assembly comprising;

an inner race including an outer peripheral surface having one or more annular axial thrust resisting means;

a bearing liner of self-lubricating material conformed to and rotatably mounted on said outer peripheral surface, said bearing liner having radial irregularities in the area of its conformation to said thrust resisting means that are filled with a hardened low viscosity bonding resin and a hardened high viscosity resin; and

an outer race of filament wound fibers bonded to said bearing liner.

5,360,276

PRINTING DEVICE WITH ADJUSTABLE PRINTING HEAD GAP

Udo Petermann, Altenbeken, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Munich, Germany

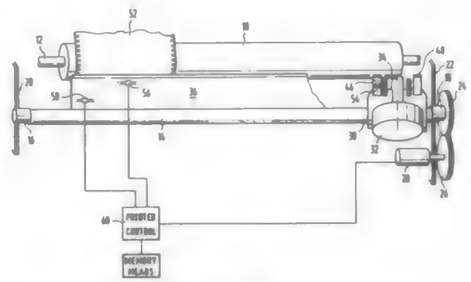
PCT No. PCT/EP91/01484, § 371 Date Feb. 10, 1993, § 102(e) Date Feb. 10, 1993, PCT Pub. No. WO92/02370, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 6, 1991, Ser. No. 971,982

Claims priority, application Germany, Aug. 10, 1990, 4025483

Int. Cl.[5] B41J *25/308*

U.S. Cl. 400—55 **11 Claims**



1. A printing device, comprising:

a frame,

an abutment mounted in said frame for supporting a recording medium to be printed on along print lines,

a print head is mounted on said frame so as to be movable relative to said abutment in a direction of the print lines,

an actuating drive connected to move said print head to various distances relative to said abutment,

a pressing element fixed to said frame, said pressing element pressing the recording medium onto said abutment and being deflected substantially perpendicular to a surface of said abutment in accordance with a thickness of the recording medium, said pressing element extending substantially a full length of the print lines,

a magnet mounted on one of said pressing element and said print head,

at least one Hall probe mounted on a respective other of said print head and said pressing element in such a way that said magnet and said Hall probe can be brought into congruence with one another along the print line corresponding to a measurement position with said print head in a predetermined position laterally remote from said measurement position, and

a circuit arrangement connected to said at least one Hall probe to measure a Hall voltage dependent on the deflection of said pressing element along a full print line by said recording medium and to regulate the Hall voltage to a predetermined value, said circuit arrangement being connected to control said actuating drive of said print head as a function of a difference between a measured Hall voltage and a predetermined Hall voltage so that a maximum distance of said print head from the recording medium is set and maintained for said full print line.

5,360,277

LABEL PRINTER WITH SELECTIVE MEMORY UPDATE

Motoki Matsubara, Takaishi; Kenichi Fujii, Osaka, and Kazuya Bessho, Amagasaki, all of Japan, assignors to New Oji Paper Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1992, Ser. No. 827,769

Claims priority, application Japan, Jan. 29, 1991, 3-102137

Int. Cl.[5] B41J *5/30*

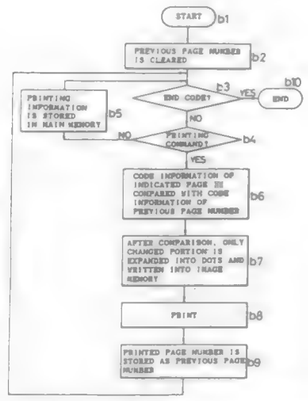
U.S. Cl. 400—68 **3 Claims**

1. In a printer which expands coded printing information for

every page into dot image data which is then stored in an image memory and then outputs the stored contents of the image memory in sequence to a printing head, the improvement comprising:

a main memory for storing printing information of at least one page to be printed in coded form;

a buffer memory for storing printing information in coded form of a previous page which had been read out of said main memory and printed;



a control means for comparing said stored printing information of one page stored in said main memory with printing information of said previous page stored in said buffer memory and determining which portions of the printing information in coded form has been changed and then revising the expanded image data of said previous page stored in the image memory by sending only information corresponding to those changed portions of the printing information in coded form.

5,360,278

COLOR THERMAL PRINTER

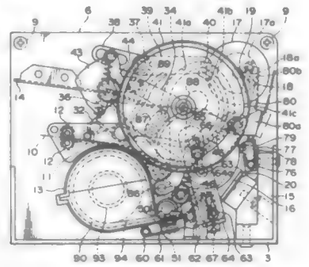
Kenichi Fukahori; Shuji Sato; Masaki Shimoha, all of Kanagawa; Hideki Ito; Shin Iima, both of Tokyo, and Mutsuko Narita, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 10, 1992, Ser. No. 896,617

Claims priority, application Japan, Jun. 21, 1991, 3-150344

Int. Cl.[5] B41J *2/32*

U.S. Cl. 400—120.01 **4 Claims**



1. A thermal printing apparatus comprising:

a housing including a chassis having a bottom wall;

a thermal head fixedly mounted in said housing for thermally printing data or image on a printing medium and at a location where said chassis serves as a heat radiator which releases heat generated in the thermal head;

a platen roller rotatably supported in said chassis and being movable relative to said thermal head;

first platen driving means for rotating said platen roller in said chassis;

second platen driving means for reciprocally driving said platen roller so as to move toward and away from said thermal head;

an ink ribbon receptacle means for defining an ink ribbon space for accommodating an ink ribbon; and

an ink ribbon feeding means cooperating with said first and said second platen driving means for guiding an ink ribbon in said chassis to be passed in said ink ribbon space between said thermal head and said platen roller;

wherein when said platen roller is moved by said second platen driving means into contact with said thermal head with an ink ribbon intervened in said ink ribbon space located therebetween while being rotated by said first platen driving means, said thermal head prints the data or image on the printing medium located between said platen roller and said ink ribbon;

a sub-chassis which is secured to said chassis, and on which said thermal head is mounted; and wherein said sub-chassis is substantially L-shaped in lateral section and positioned so as to extend along a rear bottom corner portion of said chassis.

5,360,279

PRINTER INK RIBBON CONTROL

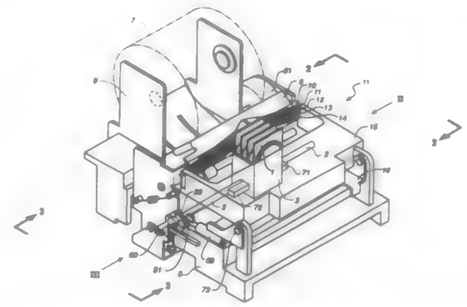
Naoki Asai; Choji Morozumi; Yoshikazu Ito; Kiyoshi Ito, and Akira Koyabu, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,453

Claims priority, application Japan, Dec. 25, 1991, 3-343448; Dec. 2, 1992, 4-323379

Int. Cl.[5] B41J *35/14*

U.S. Cl. 400—216.1 **17 Claims**



1. A method of controlling a printer having a print head that is reciprocated along a predetermined path adjacent to a recording medium in a first direction toward a first end and in a second direction toward a second end, a first space between the first and second ends defining a printing zone, a second space extending beyond the first end in the first direction defining a first non-printing zone and a third space extending beyond the second end in the second direction defining a second non-printing zone, and uses a multi-track ink ribbon having a plurality of color tracks to print images, comprising the steps of:

(a) providing a printing track setting means at the first end;

(b) moving the print head to contact the printing track setting means for positioning the ribbon in a first direction to adjust a height of said ribbon relative to said print head for placing a preselected one of the color tracks on said ink ribbon adjacent said print head for use in printing;

(c) providing a printing track releasing means; and

(d) moving the print head to contact the printing track releasing means for positioning the ribbon in a second direction to release the height of the ribbon.

5,360,280

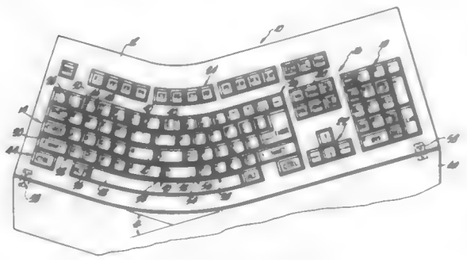
ERGONOMIC KEYBOARD INCLUDING ARCUATE ELONGATED KEYS

Herman Camacho, North Hollywood, and Robert Granadino, Pasadena, both of Calif., assignors to Metamorfyx, Pasadena, Calif.

Continuation-in-part of Ser. No. 886,061, May 19, 1992, and Ser. No. 900,080, Jun. 17, 1992. This application Feb. 12, 1993, Ser. No. 17,106

Int. Cl.[5] B41J *5/10*

U.S. Cl. 400—489 **39 Claims**



1. An ergonomic keyboard, comprising:

a. a mount;

b. a plurality of keys on said mount arranged in a plurality of unbroken adjacent rows, each row comprised of an arcuate portion, a left portion and a right portion, said left and right portions extending tangentially from the left and right sides of the arcuate portion, respectively, and said arcuate portion of each unbroken row being convex to the user side of the keyboard and comprising at least two elongated keys, the elongation of said elongated keys increasing as said plurality of rows approach the user side of the keyboard.

5,360,281

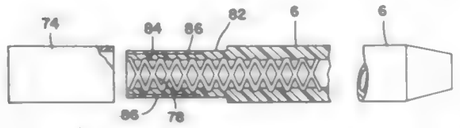
COSMETIC PENCIL AND METHOD FOR MAKING THE SAME

Melvin E. Kamen, Highlands, N.J., and Philip Bernstein, Yardley, Pa., assignors to Revlon Consumer Products Corporation, New York, N.Y.

Continuation of Ser. No. 614,793, Nov. 15, 1990, abandoned. This application Oct. 30, 1992, Ser. No. 968,915

Int. Cl.[5] A45D *40/00, 40/20;* **B43K** *19/14*

U.S. Cl. 401—96 **5 Claims**



1. A cosmetic pencil barrel composition consisting essentially of a thermoplastic material selected from the group consisting of polyvinyl chloride (PVC) in combination with a PVC stabilizer, poly(N-vinylpyrrolidone), cellulose acetate, urethane polymers, synthetic elastomers, natural rubber, polyethylene, polypropylene, polystyrene, and mixtures thereof, a foaming agent, a lubricant, a pigment, a nucleating filling component, and an acrylic impact modifier; wherein the barrel composition exhibits linear cellular formation and the inner surface of the barrel is scored to increase adherence of the cosmetic marking material which is made by a method comprising the steps of:

(a) mixing a molten thermoplastic composition comprising a foamable thermoplastic material selected from the group consisting of polyvinyl chloride (PVC) in combination with a PVC stabilizer, poly(N-vinylpyrrolidone), cellulose acetate, urethane polymers, synthetic elastomers, natural rubber, polyethylene, polypropylene, polystyrene, and mixtures thereof; a foaming agent, a lubricant, a nucleating filler component, and an acrylic impact modifier,

(b) extruding the mixture of step (a) through a crosshead die to form a continuous tubular extrudate,

(c) introducing the tubular extrudate into a cooled water bath within a vacuum chamber through a calibrator designed to control foaming of the tubular extrudate,

(d) cutting the cooled tubular extrudate into the desired pencil length.

5,360,282

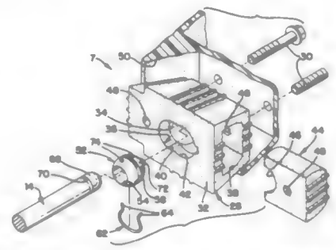
VEHICLE HEADLAMP ADJUSTER BALL AND SOCKET ASSEMBLY

William E. Nagengast; Leslie H. Hallgarth; Brian E. Witte, all of Anderson, and Paul E. Young, Jr., Muncie, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 143,733, Nov. 1, 1993, abandoned. This application Jan. 13, 1994, Ser. No. 181,136

Int. Cl.[5] F21V *3/00;* **F16C** *11/05*

U.S. Cl. 403—131 **7 Claims**



1. A ball and socket joint arrangement comprising:

a body having an interior spheroid aperture intersected by a first aperture;

a spheroid for mounting within the body spheroid aperture having at least pivotal motion along at least two axes, the spheroid having a bore generally aligned with the first aperture and a circumferential groove, the circumferential groove having at least one slot intersecting the first bore;

a rod for insertion into the first bore of the spherical body through the body first aperture, the rod having a circumferential groove for alignment with the circumferential groove of the spherical member; and

a retainer for insertion into the circumferential grooves of the spheroid and the rod via the slot in the circumferential groove of the spheroid, the retainer affixing the rod with the spheroid member after insertion of the rod into the bore of the spheroid member.

5,360,283

PRELOAD-CLAMPNUT DEVICE

David M. Browning, and Thomas J. Garnier, both of Portland, Oreg., assignors to Shredding Systems, Inc., Wilsonville, Oreg.

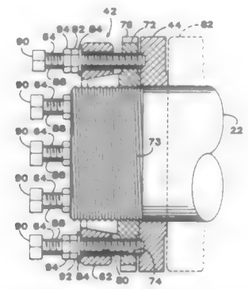
Filed Sep. 24, 1992, Ser. No. 951,171

Int. Cl.[5] F16B *7/00*

U.S. Cl. 403—374 **16 Claims**

1. A preload-clampnut device that securely attaches to an elongate shaft having longitudinal and radial directions and wherein the device provides a load against a tool mounted on said shaft, the device comprising:

(a) a sleeve that defines a bore that receives said shaft; and



(b) loading means for compressing said sleeve in the radial direction against said shaft and for loading said device in the longitudinal direction against said tool.

5,360,284

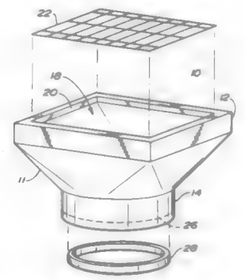
PRECAST CONCRETE DRAIN INLET

Doug Allard, 38 Noonan Ranch Cir., Santa Rosa, Calif. 95403

Filed Dec. 18, 1992, Ser. No. 992,759

Int. Cl.[5] E01C *9/00*

U.S. Cl. 404—2 **1 Claim**



1. A drain inlet comprising:

a hollow precast concrete shell having a cylindrical bottom section with a bottom opening therein, said bottom section having a first lip comprising a first step and a second step each extending around the circumference of an interior wall thereof and recessed from said bottom opening, and a gasket adapted to fit within said bottom opening and abut said first step, said second step providing an abutment to insertion of a drainage riser pipe; and

a square top section with a top opening therein, said top section having a second lip formed on an interior wall of said top section and recessed from said top opening, said second lip extending around the periphery of said interior wall and adapted to support a drainage grate.

5,360,285

SET OF SHAPED STONES AND SHAPED STONE FOR PAVING GROUND AREAS WITH WIDE GAPS THEREBETWEEN

Günther Barth, Bühlertal; Fritz von Lansdorff, and Harald von Langsdorff, both of Rastatt, all of Germany, assignors to F. von Langsdorff Licensing Limited, Mississauga, Canada

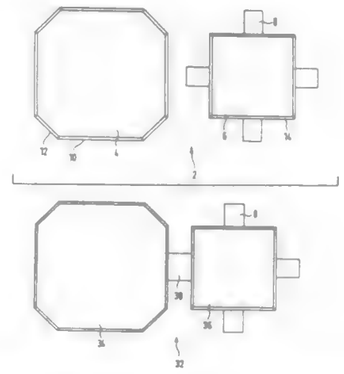
PCT No. PCT/EP90/01919, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO91/06706, PCT Pub. Date May 16, 1991

PCT Filed Oct. 26, 1990, Ser. No. 854,663

Claims priority, application Germany, Nov. 2, 1989, 3936527

Int. Cl.[5] E01C *5/00*

U.S. Cl. 404—37 **27 Claims**



1. A set of shaped stones for paving ground areas with wide gaps between the shaped stones, comprising:

first shaped stones;

second shaped stones having a smaller plan view area than said first shaped stones; and

a plurality of spacing projections provided integrally with only one of said first and second shaped stones for defining the wide gaps in a shaped stone pavement.

5,360,286

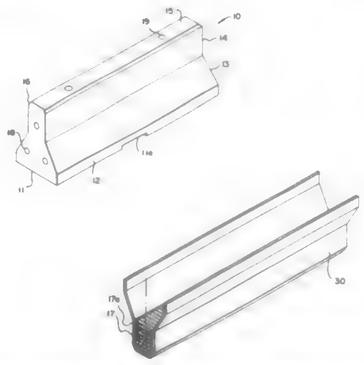
HIGHWAY TRAFFIC BARRIER MADE FROM TIRES

Thomas W. Russell, 7312 Scarborough St., Springfield, Va. 22153

Filed Dec. 3, 1992, Ser. No. 985,257

Int. Cl.[5] E01F *13/00*

U.S. Cl. 404—6 **3 Claims**



1. A highway safety device for use as a barrier on a roadway comprising a plurality of strips cut from the treads of motor

vehicle tires and straightened to define substantially elongated members which are assembled upon each other to define an elongated structure having a predetermined cross-sectional shape, all of said strips being disposed in a linear arrangement and each of said strips has a length equal to the length of the elongated structure, and means bonding said assembled strips together into a solid impact absorbing structure which has high resistance to shear forces to redirect vehicles impacting on said structure, the exterior surface of said barrier being solely defined by tread material of motor vehicle tires.

5,360,287

METHODS AND APPARATUS FOR DISPENSING, MIXING AND APPLYING COATING CONSTITUENTS TO TRAFFIC SURFACES, AND TRAFFIC SURFACES COATED USING SUCH METHODS

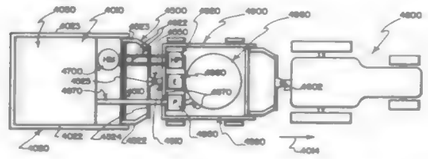
Alexander Laditka, 4741 Dalebridge #C-10, Warrensville Hts., Ohio 44128

Continuation-in-part of Ser. No. 829,956, Feb. 3, 1992, Pat. No. 5,251,998, which is a continuation-in-part of Ser. No. 586,909, Dec. 10, 1991, Pat. No. 5,085,537, which is a continuation-in-part of Ser. No. 368,084, Jun. 19, 1989, Pat. No. 4,958,955, which is a continuation of Ser. No. 213,449, Jun. 28, 1988, abandoned, which is a continuation of Ser. No. 85,253, Aug. 11, 1987, abandoned, which is a continuation of Ser. No. 892,337, Aug. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 532,742, Sep. 16, 1983, Pat. No. 4,603,999, which is a continuation-in-part of Ser. No. 408,484, Aug. 16, 1982, Pat. No. 4,477,203. This application Oct. 12, 1993, Ser. No. 134,371

The portion of the term of this patent subsequent to Feb.-4, 2009, has been disclaimed.

Int. Cl.[5] E01C *7/06, 23/08, 19/22*

U.S. Cl. 404—75 **32 Claims**



1. A method of applying a substantially uniform coating composition to contiguous selected portions of a traffic surface, comprising the following steps that are performed substantially concurrently, including:

a) depositing a plurality of coating composition ingredients upon selected portions of a traffic surface to be coated;

b) operating a wheeled vehicle to which a coating apparatus is connected to move the vehicle-connected coating apparatus at a controlled forward velocity along a forward path of travel to bring a set of rotary tools of the vehicle-connected coating apparatus into contact with deposited coating composition ingredients, with the set of rotary tools including an associated rotary structure 1) having a plurality of associated depending blades that are arranged in an array about an associated center axis that extends substantially normal to the selected portions of the traffic surface, and 2) having connection means movably connecting at least selected ones of the associated blades to the associated rotary structure so that, when the set of rotary tools is rotated about the associated center axis, at least said selected ones of the associated blades are permitted to move a limited amount relative to the associated rotary structure to accommodate the character of said selected portions of the traffic surface to maintain relatively close, substantially parallel contact with such selected portions of the traffic surface as are engaged by the associated blades;

c) rotating the set of rotary tools about its associated center axis at a controlled rate of tool rotation with at least said selected associated blades being urged into substantially continuous contact with said selected portions of the traffic surface and into contact with coating composition ingredients deposited thereon to effect a relatively rapid mixing of the deposited ingredients to achieve a condition of substantially uniform coating consistency;

d) applying to said selected traffic surface portions a coating of substantially uniform consistency that results from said mixing of said deposited ingredients, with the application being effected by continuing to rotate the set of rotary tools about its associated center axis at said controlled rate of tool rotation, with at least said selected associated blades moving relative to their associated rotary structure as is needed to conform to the contour of and to substantially maintain contact with said selected traffic surface portions;

e) with the aforedescribed steps that are performed substantially concurrently including the steps of:

i) mixing within a fluid reservoir at least a fluid portion of the coating composition ingredients that are to be deposited onto the selected traffic surface portions, with said mixing being effected at least in part by operating blender means within the fluid reservoir, and with the operation of the blender means serving to assist in maintaining the homogeneity of the fluid portion of the coating composition ingredients carried within the reservoir;

ii) ducting a regulated flow of said substantially homogenous fluid mixture of ingredients from the reservoir to and through a discharge station of the vehicle-connected coating apparatus so as to deposit the flow of ingredients onto selected traffic surface portions that underlie the discharge station; and,

iii) operating the vehicle to move the vehicle-connected coating apparatus along said forward path of travel at said controlled forward velocity while rotating the set of rotary tools about its associated center axis at said controlled rate of tool rotation to thereby cause said set of rotary tools to engage, mix, spread and apply the deposited ingredients to effect the application of a substantially uniform coating to the contiguous surface area of said selected traffic surface portions during movement of the vehicle-connected coating apparatus along said forward path of travel;

f) wherein the step of ducting a regulated flow of said fluid mixture from said reservoir to said discharge station includes the step of providing pump means communicating with said reservoir and with said discharge station, and operating said pump means to duct a regulated flow of said fluid mixture from said reservoir to said discharge station during operation of the vehicle-connected coating apparatus while the vehicle-connected coating apparatus is being moved by the vehicle along said forward path of travel; and,

g) wherein the step of operating said pump means includes the steps of providing pump drive means for transferring rotary drive energy from the vehicle to said pump means to drive said pump means, and operating said pump drive means to drive said pump means to effect said regulated flow of said fluid mixture from said reservoir to said discharge station during operation of the vehicle-connected coating apparatus while the vehicle-connected coating apparatus is being moved by the vehicle along said forward path of travel.

5,360,288

CLEANER TOOTH FOR COMPACTING MACHINES

William N. O'Neill, East Peoria; John J. Bloom, Jr., St. Charles, and Joe M. Bexson, Jr., Aurora, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 20, 1993, Ser. No. 122,991

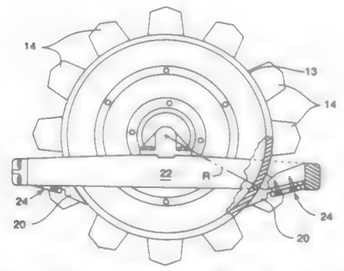
Int. Cl.[5] A01B *29/06;* **E01C** *19/26*

U.S. Cl. 404—129 **5 Claims**

1. A cleaner tooth adapted for use on a compacting machine having a compacting wheel and operative, in use, to clean debris from an area between adjacent rows of compacting tips disposed on the compacting wheel, the cleaner tooth comprising:

a fastening portion having an upper surface substantially parallel to a lower surface, opposed side surfaces, and a slot generally centrally disposed in said fastening portion and substantially parallel to each of the opposed side surfaces; and

a cleaning portion having a forward end portion, opposed spaced apart side surfaces, a trailing lower surface, an arcuate concave upper surface that defines a radius of a



predetermined length and that merges with the trailing lower surface generally at the forward end portion thereof, in use, the concave arcuate upper surface is positioned immediately adjacent the compacting wheel between the rows of compacting tips, the intersection of the trailing lower portion and a plane tangent to the arcuate upper surface generally adjacent the forward end portion thereof forms an angle less than 30 degrees, and the cleaning portion has a rearward end portion and the rearward end portion has a shoulder surface interconnecting the arcuate upper surface of the cleaning portion with the upper surface of the fastening portion.

5,360,289

DRAINAGE WATER PUMPING STATION AND METHOD FOR OPERATING THE SAME

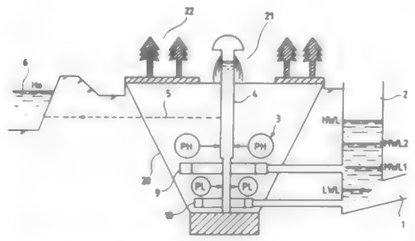
Kunio Takada, Iwawa; Kenji Otani, Tsuchiura, and Sadashi Tanaka, Chiyoda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1992, Ser. No. 900,418

Claims priority, application Japan, Jun. 20, 1991, 3-148557

Int. Cl.[5] E03F *1/00*

U.S. Cl. 405—52 **12 Claims**



1. A drainage water pumping station comprising:

a pump well into which drainage water can flow through an underground inflow main pipe line, and

a plurality of drainage pumps for discharging said drainage water in said pump well into a discharge destination,

wherein said plurality of drainage pumps are installed at a floor gradation state having at least two floors at a different installation level,

said plurality of drainage pumps have a first stage drainage pump group comprising a high pump head and a small capacity and a second drainage pump group having a low pump head and a large capacity,

said first stage drainage pump group having the high pump head and the small capacities installed at a lower floor of said floor gradation state, and

said second stage drainage pump group having the low pump head and the large capacities installed at a higher floor of said floor gradation state.

5,360,290

UNDERGROUND DRAINAGE FACILITY, VERTICAL-SHAFT MULTI-STAGE ADJUSTABLE VANE PUMP, AND METHOD OF RUNNING DRAINAGE PUMP

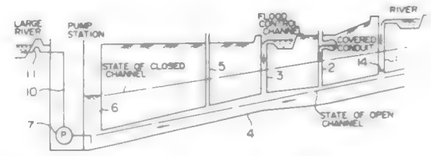
Masayuki Yamada, Tsuchiura; Saburo Maru, and Sumio Sudo, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,755

Claims priority, application Japan, Dec. 13, 1991, 3-330301; Apr. 24, 1992, 4-106673

Int. Cl.[5] E02F *1/00;* **E02B** *11/00*

U.S. Cl. 405—52 **19 Claims**



1. An underground drainage system including a large capacity floodway and small inclination provided at a substantial depth below a surface of the ground into which floodway drainage flows from various drainage water channels on the ground surface and in a vicinity of ground surface through vertical shafts, and from which floodway the drainage is drained from a pump station provided at a part of said floodway, into rivers, a sea or the like, and a pump in the pump station disposed at a location of a larger depth from the ground surface than a rated pressure head of the pump so that an estimated quantity of water can be drained with the floodway in a state of a closed channel.

5,360,291

METHOD FOR LAYING CABLE OR HOSE IN CHANNEL AND CHANNEL THEREFOR

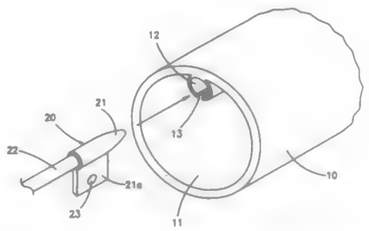
Shohachi Shimizu, Ogaki, Japan, assignor to Miral Industries Co., Ltd., Anpachi, Japan

Filed Apr. 2, 1992, Ser. No. 862,317

Claims priority, application Japan, Jun. 27, 1991, 3-156368; Jul. 12, 1991, 3-172682

Int. Cl.[5] F16L *1/00*

U.S. Cl. 405—154 **2 Claims**



1. A method for laying a cable in a surface through a channel

having a channel route comprising a tube and a chute with a slit longitudinally therethrough, comprising the steps of:

a) introducing a pilot line shuttle device having a head for smooth guidance through said chute, and comprising a line member which is flexible but rigid and stiff enough to be driven forward into and through said chute by hand without collapse thereof at a first opening of the chute, and driving the pilot line shuttle device forward through the chute without pulling until an end of the pilot line shuttle device reaches a second opening of the chute;

b) connecting a dragging line to said pilot line shuttle device at the second opening of said chute;

c) pulling back said pilot line shuttle device to which the dragging line is connected through said chute to drag and lay said dragging line through the channel route of the channel;

d) connecting a cable to said dragging line at either opening of said channel route of the channel; and

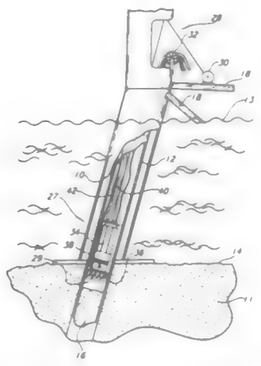
e) pulling said dragging line from the other opening of the channel route to drag and lay the cable through the channel route; whereby the laying of said cable is less strenuous and more efficient.

5,360,292

METHOD AND APPARATUS FOR REMOVING MUD FROM AROUND AND INSIDE OF CASINGS

James R. Allen, and Alton J. LaLande, both of Lafayette, La., assignors to Flow International Corporation, Kent, Wash.

Filed Jul. 8, 1993, Ser. No. 89,258
Int. Cl.[5] E02D *9/00*
U.S. Cl. 405—249 **6 Claims**



6. A method for removing a mud plug from a casing comprising:

lowering a submersible pump provided with a discharge tube through an opening in a side of the casing to a desired location adjacent the mud plug;

forcing a volume of fluid through a plurality of nozzles coupled to the submersible pump toward the mud plug, thereby diluting the mud plug to form a slurry; and

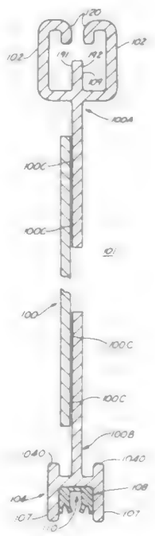
pumping the slurry with the submersible pump out of the casing through the discharge tube.

5,360,293

IN-GROUND BARRIER MEMBER INTERLOCKING JOINT AND SEAL SYSTEM

Louis B. Breaux, Marrero, La., and Leonard F. Sansone, Andover, N.J., assignors to Barrier Member Containment Corporation, Gretna, La.

Continuation-in-part of Ser. No. 831,555, Feb. 5, 1992, Pat. No. 5,240,348, which is a continuation of Ser. No. 398,613, Aug. 25, 1989, Pat. No. 5,106,233. This application Dec. 4, 1992, Ser. No. 986,241
Int. Cl.[5] E02D *5/00;* **B09B** *1/00*
U.S. Cl. 405—267 **25 Claims**



1. An in-ground, barrier containment wall made up of a multiple number of wall members joined together at vertically extended joints, comprising:

first and second in-ground barrier members forming part of a containment wall in the ground, isolating one part of the ground on one side of said wall from a part of the ground on the opposite side of said containment wall, each of said in-ground barrier members having a main body having a top and bottom, first and second sides, and first and second edges, said first and second edges having engaged thereto first and second interlocking members, respectively, said first interlocking member engaged said first edge of said first in-ground barrier member configured to slidingly engage and join in sealing fashion, said second interlocking member engaged to said second edge of said second in-ground barrier member, forming a vertically extended joint between said barrier members;

said vertically extended joint between said barrier members including

two substantially parallel, longitudinally extended leg members forming between them a longitudinally extended female cavity,

a "T" configured member interfacing with said leg members; and

a centrally located, longitudinally extended male member disposed within said longitudinally extended female cavity formed by said longitudinally extended leg members;

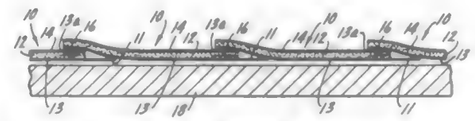
double sealing gasket means located within said female cavity, contacting and separately sealing two spaced areas located on opposite side areas of said male member and said leg member.

5,360,294

BENTONITE LINER WITH DRAINAGE SYSTEM PROTECTION

Richard Carriker, Woodstock, Ga.; Martin Simpson, Lake In The Hills, Ill., and Thomas F. Hauck, Foster City, Calif., assignors to James Clem Corporation, Chicago, Ill.

Continuation of Ser. No. 6,221, Jan. 19, 1993. This application Mar. 11, 1994, Ser. No. 209,686
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—270 **16 Claims**



1. A geosynthetic clay liner for use in forming a continuous clay layer, the geosynthetic clay liner comprising:

a clay layer carried by an upper surface of at least one lower primary carrier sheet, the clay layer and the lower primary carrier sheet generally defining a surface area,

at least one outer edge of the liner including means for forming a sealed overlap with at least one adjacent geosynthetic clay liner upon activation of the clay layer by an activating liquid, the means for forming a sealed overlap including means for containing the clay layer and means for limiting movement of the clay layer to generally lateral movement upon activation thereof,

the means for containing the clay layer includes a non-clay bearing extension of the primary carrier sheet, the non-clay bearing extension is made of material through which clay cannot substantially migrate,

the means for forming a sealed overlap also being characterized as including an activated clay seal disposed between an upper surface of the non-clay bearing extension and an undersurface of a primary carrier sheet of the adjacent geosynthetic clay liner after activation of the clay layer and migration of activated clay laterally outward to provide activated clay between the upper surface of the non-clay bearing extension and the undersurface of the primary carrier sheet of the adjacent geosynthetic clay liner,

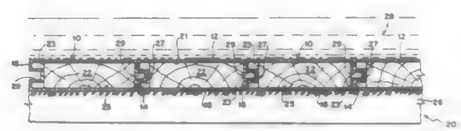
the means for forming a sealed overlap being free of additional mechanical attachment means such as snaps, VELCRO ®, buttons, straps or ties.

5,360,295

PLASTIC SHEATH FOR WOOD BULKHEADS

Jeffrey D. Isacksen, 28 Astor Ave., Brookhaven, N.Y. 11719

Filed Aug. 26, 1993, Ser. No. 111,985
Int. Cl.[5] E02D *29/02;* **E02B** *3/06*
U.S. Cl. 405—284 **6 Claims**



1. A plastic sheath for an in combination with wood bulkheads and the like, comprising:

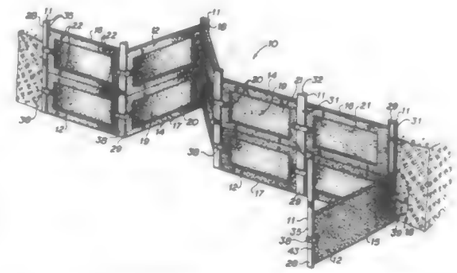
an elongated plastic sleeve configured and dimensioned to cover at least three sides of a generally rectangular wood board having front and rear sides and a pair of side edges and at least the marginal edge of the remaining side thereof, said sleeve having a front panel covering the front side of the wood board, two side panels each joined to said front panel for covering opposite side edges of the wood board and at least two rear flaps each joined to an opposite one of said opposite side panels for covering at least the marginal edge of the rear side of the wood board, one of said side panels having a generally centrally disposed tongue and the other of said side panels having a generally centrally disposed groove for joining a multiplicity of sheathed boards together in a tongue-and-groove manner without forming tongues and grooves within said wood boards.

5,360,296

EARTH RETAINING WALL

A. M. Angelette, 4160 Ewing Rd., Austell, Ga. 30001

Filed Apr. 23, 1992, Ser. No. 872,334
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—285 **9 Claims**



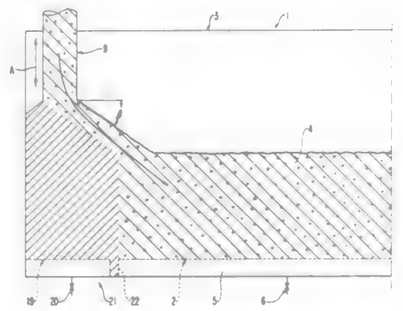
1. An earth retaining wall comprising at least one pile, two panels positioned uprightly with an end of each of said panels positioned closely adjacent said pile and each other, and means for holding said panel ends together for limited relative movement along said pile which comprises a link pivotably mounted to said panel ends spanning said pile.

5,360,297

APPARATUS FOR AUTOMATIC LEVEL CONTROL IN A CLOSED CHANNEL OR CONTAINER FOR TRANSPORT AND/OR DISTRIBUTION OF FLUIDIZABLE MATERIAL

Gisle G. Enstad, Os, and Bernt Nagell, Haugesund, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Mar. 25, 1992, Ser. No. 857,485
Claims priority, application Norway, Mar. 25, 1991, 911178
Int. Cl.[5] B65G *53/18*
U.S. Cl. 406—89 **10 Claims**



1. In an apparatus for the transport and distribution of a fluidizable material, said apparatus including a closed channel or container having an interior, a gas permeable wall arranged within said interior and defining a partition therein between an upper pathway for the fluidizable material and a lower gas flue, an inlet for feeding the fluidizable material into said pathway and onto said wall, means for supplying gas into said flue such that the gas passes upwardly through said gas permeable wall

and fluidizes the fluidizable material thereabove, and at least one outlet means for continuous or intermittent discharge of the fluidizable material from said pathway, the improvement comprising means for automatically controlling the level of the fluidizable material supplied into said pathway and onto said wall upon continuous and intermittent discharge of the fluidizable material therefrom, said level controlling means comprising:

said inlet including a pipe stub extending into said pathway, said pipe stub being movable upwardly and downwardly; and

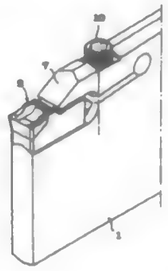
means for preventing the fluidizable material in a portion of said interior located below said pipe stub from being fluidized by said gas supplying means, such that the fluidizable material in said portion of said interior remains stationary and additional fluidizable material supplied thereon flows thereover and onto said wall to be fluidized.

5,360,298

TOOL FOR CUT-OFF OR SIMILAR TURNING OPERATIONS

Thomas Hedlund, Gastrike-Hammarby, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Apr. 28, 1993, Ser. No. 53,425
Claims priority, application Sweden, Apr. 28, 1992, 9201323-4
Int. Cl.[5] B23B *27/08, 29/14*
U.S. Cl. 407—110 **13 Claims**



1. A tool for cut-off or similar turning operations, comprising:

a holder in the form of a comparatively thin plate, the holder plate having, in at least one free end thereof, an outwardly opening recess, the recess being substantially defined by a bottom wall, an inner or rear wall and an upper wall which is part of an elastically movable clamping arm formed in the plate; and

a cutting insert, the cutting insert being receivable in the recess of the holder and retainable by the elastically movable clamping arm, the insert having, at least on its underside, a female groove of substantially V-shaped cross-section, the V-shaped groove corresponding to a V-shaped ridge formed in the bottom wall of the recess, the V-shaped groove having two flank surfaces extending at an obtuse angle to each other and being separated by a concavely rounded central portion having a curvature or diameter which is smaller than a corresponding, convexly rounded central portion which separates two flank sides on the V-shaped ridge so as to form a clearance between the central portions of the V-shaped groove and the V-shaped ridge,

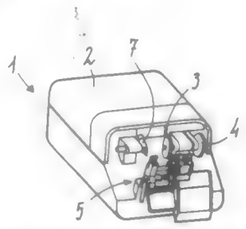
each of the two flank sides on the V-shaped ridge of the bottom wall being provided with a break line so as to form inner and outer part surfaces on each flank side, the two inner part surfaces located closest to the central portion of the V-shaped ridge enclosing an obtuse angle greater than a corresponding obtuse angle between the two outer part surfaces and smaller than the obtuse angle between the flank surfaces of the V-shaped groove.

5,360,299

MACHINE FOR MULTIPLE KEY CODING

Pierluigi Oliana, Conegliano Treviso, Italy, assignor to Orion, S.p.A., Clofosco di Susegana, Italy

Filed Dec. 13, 1991, Ser. No. 806,764
Int. Cl.[5] B23C *3/35*
U.S. Cl. 409—83 **26 Claims**



1. Apparatus for cutting a multiple number of stacked, blank keys one at a time in conformity with a master key, the apparatus having cutting means for cutting a blank key, clamp means for holding the blank key during cutting, and tracer means for following a master key to control the cutting means to cut the blank key, the improvement comprising a pivotal support having a first station for stacking a plurality of blank keys to be cut, a second station at which the blank keys after cutting are received, means at said second station for transporting the lowermost key in said stack to the clamp means for the cutting of said lowermost key and for transporting the key after cutting back to said second station, an insertion element at said first station for the stacking of the plurality of blank keys thereon, said means for transporting the lowermost key in the stack to the clamp means and for transporting the key after cutting back to said second station comprising a loading plate below said insertion element for receiving the lowermost key in said stack, said loading plate being slidable relative to said insertion element to displace said lowermost key to said clamp means for a key cutting operation and to displace said key, after cutting, from said clamp means to said second station, said loading plate having an opening shaped to accommodate the head of the lowermost key in the stack with the blade of the key projecting from the loading plate, the shape of said opening being such as to accommodate various types and sizes of heads of the keys, and means, including an intermediate guide plate slidably supported beneath said loading plate, for blocking passage of the lowermost key in said stack of blank keys and for permitting passage of the now cut key from said loading plate for removal at said second station.

5,360,300

CUTTER SHELL

James B. Sullivan, Tulsa, Okla., assignor to TDW Delaware, Inc., Wilmington, Del.

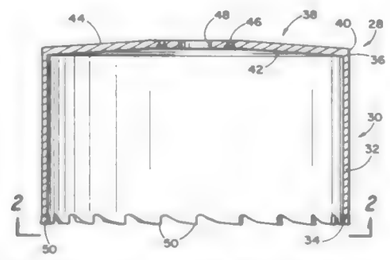
Filed Dec. 13, 1993, Ser. No. 166,503
Int. Cl.[5] B23B *51/04*
U.S. Cl. 408—204 **1 Claim**

1. An improved cutter shell for cutting a circular opening in a metal object by use of a boring machine having a boring bar that rotates about its rotational axis, the boring bar being axially advanceable and the boring bar having means at an operating end to receive the attachment of the cutter shell so that the cutter shell is rotatable about the boring bar rotational axis and is axially advanced as the boring bar is axially advanced, the improved cutter shell comprising:

a unitary metallic member having:

(a) a tubular boring portion having a tubular axis, a tubular sidewall, a circumferential forward end and a circumferential rearward end, the forward end having cutting teeth formed thereon, the teeth being of selected width measured in planes having said cylindrical axis therein, the tubular sidewall being of generally uniform thickness not greater than the width of said teeth; and

(b) an inverted dish shaped head portion having an outer circular perimeter, an inner concave surface and an outer convex surface, the outer circular perimeter being secured to said boring portion rearward circumferential end, the head portion being of generally uniform thickness not substantially greater than said thickness of said boring portion tubular sidewall, the head portion exter-



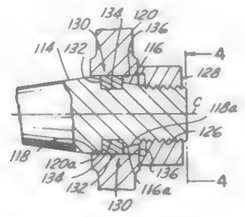
nal surface having means in the center thereof for attachment to a boring bar, the head portion being deflectable in response to force applied by a boring bar as the head portion is rotated to thereby rotate said cylindrical boring portion, the deflection of said head portion being transferred to said boring portion tubular sidewall to stiffen the tubular sidewall during boring action.

5,360,301

TAPERED CUTTER MOUNTING

Joseph P. White, 28655 Kimberly, St. Clair Shores, Mich. 48081

Filed Mar. 11, 1993, Ser. No. 29,829
Int. Cl.[5] B23B *31/10*
U.S. Cl. 409—234 **9 Claims**



1. A tapered mounting structure for mounting a cutter to a holder, the holder being rotatable about a centerline, said tapered mounting structure comprising:

a holder having a frustoconical portion, said frustoconical portion having a predetermined taper angle relative to said centerline, said frustoconical portion having a first surface;

a cutter having a centrally disposed conical bore, said conical bore being reciprocally shaped with respect to said frustoconical portion, said conical bore having substantially said predetermined taper angle, said conical bore having a second surface;

drive transfer means for transferring rotation of said holder to said cutter when said frustoconical portion is seatably received by said conical bore; and

retaining means for selectively retaining said frustoconical portion seatably received by said cutter bore;

wherein said first surface of said frustoconical portion and said second surface of said conical bore are each dimensioned so that when said frustoconical portion is seatably received by said conical bore, said frustoconical portion tightly abuts said conical bore in a precisely defined placement with respect to said holder;

wherein said cutter has a predetermined thickness adjacent said conical bore, said frustoconical portion extending axially with respect to said centerline substantially equal to said predetermined thickness;

wherein said drive transfer means comprises at least one key-keyslot and keyway combination located partly in said frustoconical portion and partly in said conical bore;

wherein said retaining means comprises:

said holder being provided with a threaded structure; and

a threaded fastener removably threaded on said threaded structure;

wherein as said threaded fastener threads with respect to said threaded structure, said threaded fastener abuts said cutter so as to cause said frustoconical portion to be seatably received by said conical bore;

wherein said taper angle is substantially between 8 and 10 degrees; and

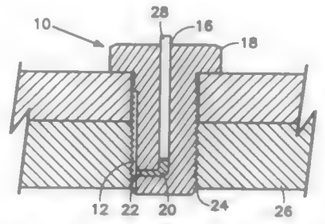
wherein said cutter is provided with a cutter hub adjacent said conical bore, said cutter hub having said predetermined thickness.

5,360,302

INTERNAL IMPACTED SCREW-LOCKING PELLET

Malcolm J. MacMartin, Burbank, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Jul. 26, 1993, Ser. No. 96,227
Int. Cl.[5] F16B *13/04, 39/02, 39/34*
U.S. Cl. 411—23 **12 Claims**



1. An elongate fastener having an engaging surface engageable with an engaging surface of a fastener's mate, comprising:

a hole extending through a portion of said fastener and having a top opening and a bottom floor, said hole being aligned with a longitudinal axis of said elongate fastener;

a pellet of a locking material disposed near said bottom floor;

a thin elongate slot in the engaging surface of said fastener;

a discharge channel through said elongate fastener communicating between near the bottom of said hole and said slot and opening out toward said engaging surface of said fastener's mate; and

an impact pin in said hole having a top portion protruding through said top opening and a bottom portion near said pellet, whereby said pin drives the locking material forming said pellet through said discharge channel, along at least pad of a length of the slot, and against the engaging surface of said fastener's mate whereby to lock said fastener against said fastener's mate.

5,360,303

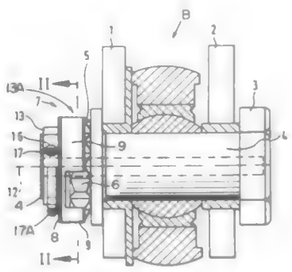
DEVICE FOR LOCKING A NUT ON A BOLT

Guenter Behrens, Stuhr, and Wilfried Ellmers, Achim, both of Germany, assignors to Deutsche Aerospace Airbus GmbH, Hamburg, Germany

Filed Jun. 30, 1993, Ser. No. 85,757
Claims priority, application Germany, Jul. 1, 1992, 4221250
Int. Cl.[5] F16B *39/10*
U.S. Cl. 411—120 **18 Claims**

1. A device for locking a nut on a bolt, comprising a bolt having a threaded end, a threaded nut on said bolt, a safety cap on said nut and bolt for holding said nut in a fixed position on said threaded bolt end, said safety cap comprising a first ring

section at least partly surrounding said threaded bolt end, a second ring section at least partly surrounding said threaded nut, and a flange section connecting said first ring section to said second ring section, said second ring section comprising a radially inwardly facing profiled surface engaging said nut in a form-fitting manner, said first ring section having at least one hole therein, said threaded end of said bolt having a cross-bore therein, said device further comprising a locking pin extending



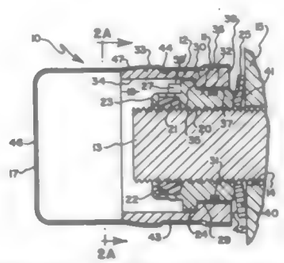
through said hole into said cross-bore of said bolt for securing said safety cap to said bolt against relative rotation between said bolt and said safety cap, and wherein said second ring section comprises a number of locking ring segments circumferentially spaced from each other around said nut, each of said locking ring segments having said radially inwardly facing profiled surface for engaging said nut in a force transmitting manner.

5,360,304

FASTENER CONSTRUCTION

David F. Notaro, Amherst, and David A. Hogrewe, Jr., Grand Island, both of N.Y., assignors to McGard, Inc., New York, N.Y.

Filed May 11, 1993, Ser. No. 60,223
Int. Cl.[5] F16B *37/08, 37/14*
U.S. Cl. 411—432 **13 Claims**



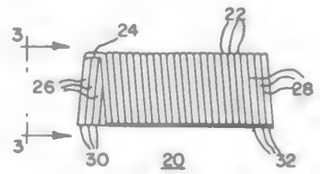
1. A locknut comprising an annular locknut body having an inner surface and an outer surface, first and second ends on said locknut body, means on said inner surface for engaging a stud in mounted relationship, a first ridge extending outwardly from said outer surface of said locknut body between said first and second ends, a first shoulder on said first ridge, an outer cylindrical portion on said outer surface of said locknut body between said first end and said first shoulder on said first ridge, a groove in said outer cylindrical portion, an O-ring in said groove, an annular shroud having an inner surface and an outer surface, first and second ends on said annular shroud, a second ridge on said annular shroud extending inwardly from said inner surface of said shroud proximate said first end of said shroud, a second shoulder on said second ridge for engaging said first shoulder, an axially extending inner portion on said second ridge, said inner cylindrical portion being of larger diameter than said outer cylindrical portion of said locknut body for rotatably receiving said outer cylindrical portion when said first and second shoulders are in engagement, said locknut body having a first axial length between said first end thereof and said first shoulder, said shroud having a second axial length which is less than said first axial length between said second shoulder and said first end of said shroud to thereby permit said first end of said locknut to protrude beyond said first end of said shroud when said first and second shoulders are in engagement, a key-receiving configuration on said second end of said locknut body, said second end of said shroud extending beyond said second end of said locknut body, said O-ring having an outer diameter which is larger than said inner diameter of said inner cylindrical portion of said second ridge to thereby engage said inner cylindrical portion to provide an interference fit therebetween to retain said locknut body and said shroud in assembled relationship when said locknut body is not mounted on said lug and to permit said shroud to be physically rotated relative to said locknut body when said locknut body is mounted on said stud while preventing rotational movement of said shroud relative to said locknut body due to vibration, said groove being located within the axial extent of said inner cylindrical portion thereby being wholly concealed within said shroud when said first and second shoulders are in engagement.

5,360,305

CLINCH STAPLES AND METHOD OF MANUFACTURING AND APPLYING CLINCH STAPLES

James E. Kerrigan, Des Plaines, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Mar. 19, 1993, Ser. No. 34,505
Int. Cl.[5] F16B *15/00;* **B21G** *7/02;* **B21B** *39/00*
U.S. Cl. 411—472 **5 Claims**



1. A clinch staple for securing together first and second workpieces disposed on a support means, said clinch staple comprising:

a base and first and second staple legs extending perpendicularly from said base and lying in planes generally parallel to one another, said first staple leg being offset at an offset angle from said second staple leg; and

bevel means along outside surfaces of distal ends of said first and second staple legs, said bevel means causing said first and second staple legs to deflect inwardly toward each other as said first and second staple legs are being driven through said first and second workpieces, said first and second staple legs crossing with respect to each other while avoiding contacting with each other due to said offset between said first and second staple legs as said first and second staple legs are deflected back into said second workpiece when said distal ends of said first and second legs contact said support means.

5,360,306

DELIVERING APPARATUS USING PARALLEL CONVEYOR SYSTEM AND SHIPPING APPARATUS EMPLOYED BY THE DELIVERING APPARATUS

Susumu Nakayama, and Hiroyuki Nakayama, both of Ishikawa, Japan, assignors to Kabushiki Kaisha Nakayama Egg, Ishikawa, Japan

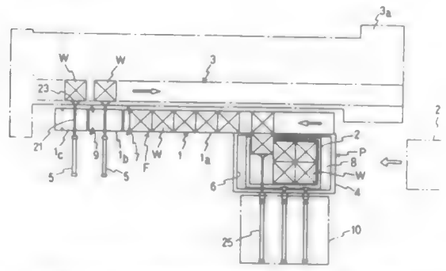
Filed Jul. 13, 1993, Ser. No. 91,224
Int. Cl.[5] B65G *67/24*
U.S. Cl. 414—331 **7 Claims**

1. A delivering apparatus comprising a parallel conveyor system for detecting the positions of works and delivering the necessary amount of works while many works remain standby by automatic control;

said parallel conveyor system comprising:

a one way conveyor composed of a long conveyor to which many works are supplied so as to be standby and a short conveyor which follows the long conveyor;

a pair of closing stoppers disposed between the long and short conveyors which close so as to permit the works to be on standby on the long conveyor and open for



transferring the works from the long conveyor to the short conveyor at need, at which time the long conveyor stops;

an opposite way conveyor which is close to and parallel with the one way conveyor;

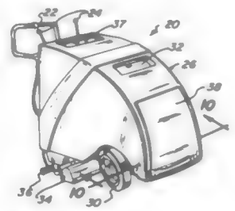
a pushing machine disposed at a side of the short conveyor opposite to the opposite way conveyor for transferring the works from the short conveyor, to the opposite way conveyor when the short conveyor stops and the closing stoppers close.

5,360,307

BATTERY TRANSFER TECHNIQUE FOR VEHICLE

Jerry D. Schemm, Arvada; Bryon L. Kajfosz, Aurora, and Richard T. Krieger, II, Denver, all of Colo., assignors to Windsor Industries, Englewood, Colo.

Filed Dec. 7, 1992, Ser. No. 986,471
Int. Cl.[5] B60K *1/04*
U.S. Cl. 414—343 **25 Claims**



1. Apparatus for transferring a battery pack to and from a battery powered vehicle, comprising:

a tray adapted for supporting the battery pack, the tray including rollers upon which to move the tray;

a support frame located in the vehicle for supporting the tray with the battery pack supported on the tray;

a cart having a structure for supporting the tray with the battery pack supported on the tray, the cart also having wheels upon which to move the cart into a predetermined transfer position relative to the vehicle in which the tray supporting structure of the cart aligns with the tray supporting support frame of the vehicle to accomodate movement of the tray on the rollers between the vehicle and the cart to accomplish transfer of the battery pack between the vehicle and the cart; and

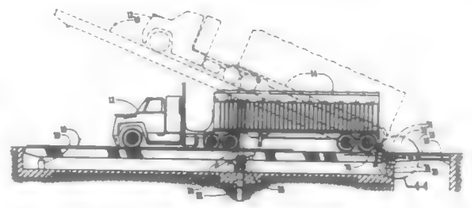
automatic locking means operative between the tray, the cart and the support frame, the locking means automatically locking the tray in a first predetermined fixed position on the cart upon and as a result of movement of the tray on the rollers to the first predetermined position on the cart during transfer of the battery pack to the cart, the locking means further automatically locking the tray in a second predetermined fixed position on the support frame upon and as a result of movement of the tray on the rollers to the second predetermined position on the support frame during transfer of the battery pack to the vehicle.

5,360,308

VEHICLE DUMPING APPARATUS WITH PULSATING PLATFORM AND MOVABLE HINGE

Lyle A. Hansen, 3620 Amick Ave., Des Moines, Iowa 50310

Filed May 28, 1993, Ser. No. 69,164
Int. Cl.[5] B65G *67/40*
U.S. Cl. 414—363 **22 Claims**



1. A vehicle dumping apparatus comprising,

a vehicle platform having front and rear ends,

a hinge means pivotally connecting said rear end to a support,

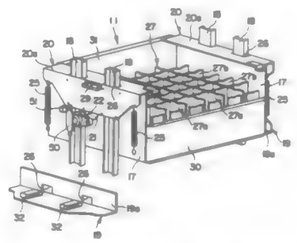
a power means engagable with said platform for pivotably raising and lowering said platform front end, and pulsation means connected to said platform for reciprocating said platform when in said raised position, and said pulsation means moving said platform through a cycle of movement which includes movement in a rearward direction, abrupt deceleration, and a return in a forward direction with the time of movement in the rearward direction being less than the time of movement in the forward direction.

5,360,309

METHOD AND APPARATUS FOR TRANSFERRING GLASSES FROM RACK TO RACK

Fumio Ishiguro, Toyohashi, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 12, 1992, Ser. No. 928,901
Claims priority, application Japan, Aug. 30, 1991, 3-246802
Int. Cl.[5] B65G *65/23*
U.S. Cl. 414—404 **2 Claims**



1. An apparatus for transferring glasses from rack to rack, comprising:

a fixed section disposed in a box-like body;

a pair of vertical braces disposed to said fixed section to

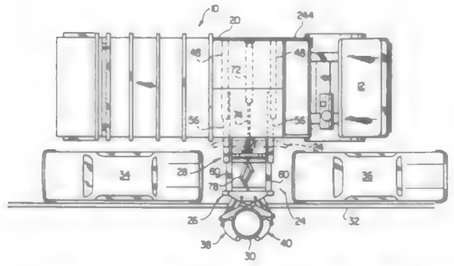
oppose each other with a predetermined distance therebetween;
a rotary section supported at upper portions of said vertical braces so as to be able to rotate horizontally; and
a first motor disposed in said fixed section for turning said rotary section at least by 180°;
wherein said rotary section further comprises:
a partitioning guide consisting of longitudinal partitions and transversal partitions crossing one another at predetermined intervals to form pigeonholes each having dimensions sufficient to allow the glasses to pass therethrough;
an upper rack accommodating space, defined above said partitioning guide, in which the rack with glasses can be accommodated in a horizontal posture with an opening thereof facing downward;
a lower rack accommodating space, defined below said partitioning guide, in which the rack can be accommodated in the horizontal posture with an opening thereof facing upward;
two pairs of first and second guide plates disposed descendably on an outer side of side panels supporting said partitioning guide therebetween, one end of each guide plate being bent to form an L-shaped rack supporting portion, and each pair being normally pulled nearer resiliently to each other;
while said fixed section has mounted thereon a second motor for selectively descending the first guide plates or second guide plates to widen a space defined below the partitioning guide.

5,360,310

CONTAINER HANDLING APPARATUS FOR A REFUSE COLLECTION VEHICLE

Rickie W. Jones, Plainview, Tex., and Gerald F. Martin, Raleigh, N.C., assignors to Rand Automated Compaction System, Inc., Raleigh, N.C.

Continuation of Ser. No. 843,433, Feb. 28, 1992, abandoned, which is a division of Ser. No. 429,199, Oct. 30, 1989, Pat. No. 5,092,731. This application Mar. 31, 1993, Ser. No. 40,665
Int. Cl.[5] B65F *3/06*
U.S. Cl. 414—409 **11 Claims**



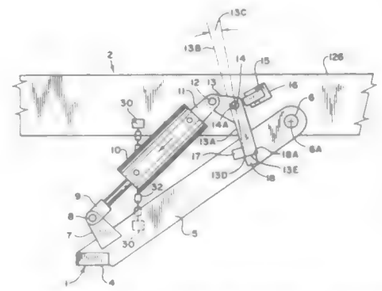
1. Extended reach support structure for supporting a refuse container grasping, elevating and dumping system portion of a refuse collection vehicle for selective inward and outward movement of the system in a first horizontal direction relative to the vehicle, said support structure comprising:
an inner section which can be anchored to a refuse collection vehicle above ground;
an intermediate section carried by said inner section for horizontal extension and retraction relative thereto in said first direction;
an outer section carried by said intermediate section for horizontal movement therewith and horizontal extension and retraction relative thereto, said outer section having an outer end portion which can be secured to the refuse container grasping, elevating and dumping system;
drive means for drivingly extending and retracting said intermediate section relative to said inner section; and
linking means, connected to said inner, intermediate and outer sections, for extending and retracting said outer section relative to said intermediate section, in response to driven extension and retraction of said intermediate section relative to said inner section, respectively, a distance proportional to a horizontal distance and intermediate section is driven relative to said inner section by said drive means.

5,360,311

CAR CATCHER FOR A ROLL-OFF HOIST

Theodore A. Lutz, 2398 Rochester Rd., Sewickley, Pa. 15143, and Frank K. Ludwin, Box 283, South Heights, Pa. 15081

Filed Apr. 16, 1993, Ser. No. 48,796
Int. Cl.[5] B60R *19/24*
U.S. Cl. 414—494 **10 Claims**



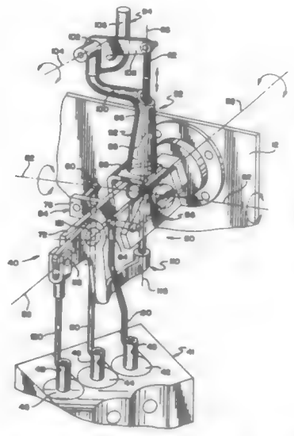
1. The combination of a frame structure having first and second end portions and apparatus for substantially preventing passage of a first vehicle under said second end portion when said frame structure is at a first substantially horizontal position, said frame structure being mounted to a second vehicle and said second end portion protruding rearwardly beyond rear wheels of said second vehicle, said combination comprising:
means mounted to said second vehicle for vertically pivoting said frame structure about a horizontal axis between said first substantially horizontal position and a second position in which said first end portion is upwardly inclined relative to said means for vertically pivoting and said second end portion is downwardly inclined relative to said means for vertically pivoting;
frame means attached to said second end portion for support by the second end portion, said frame means including a jam lock;
means for positioning said frame means into an operative position and an inoperative position, said means for positioning including a pivotal latch lever moveable by an actuator to position said frame means either into said operative position wherein said pivotal latch lever operatively confronts said jam lock or said inoperative position wherein said pivotal latch lever is remote to said jam lock; and
chain means interconnecting said frame structure at said second end thereof and said frame means, said chain means and said pivotal latch lever when operatively confronting said jam lock maintaining said operative position and transmit collision impact energy imparted thereto by said first vehicle into said frame structure of said second vehicle.

5,360,312

THREE FUNCTION CONTROL MECHANISM

Robert E. Mozingo, Burlington, Iowa, assignor to Case Corporation, Racine, Wis.

Filed Jul. 29, 1992, Ser. No. 922,171
Int. Cl.[5] E02F *3/28*
U.S. Cl. 414—685 **14 Claims**



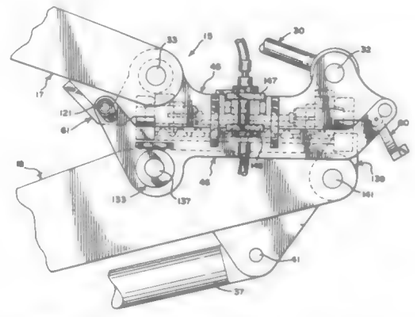
9. An three function control mechanism for a loader having a wheeled frame, a loader mechanism supported from the frame for generally vertical movements relative to the frame, said loader mechanism including a pair of loader arms pivotally attached to the frame at one end thereof for movement about a generally horizontal axis, a loader bucket pivotally attached to the distal end of said loader arms, said loader bucket begin articulated for movement about a transversely extending axis between an open position and a closed position, a loader actuation assembly operably associated with the loader mechanism for effecting movement thereof, said actuation assembly including a power source connected to first, second, and third linear actuators for controlling: the elevational function of the bucket relative to the frame, the pivotal function of the bucket relative to said loader arms, and the articulated bucket function; said control mechanism being interposed between said power source and said linear actuators for selectively controlling operation of said loader mechanism, said control mechanism comprising:
a bracket assembly including a first ball joint with first connecting linkage extending therefrom for translating arcuate movements of said first ball joint about a first axis into operable controls for the first linear actuator;
a control handle including an elongated control lever connected to said bracket assembly to allow movement of said control lever in both longitudinal and transverse directions for operably controlling the first and second linear actuators, said control lever being movable through a first arc centered about said first axis to effect movement of the first ball joint thereby effecting actuation of the first linear actuator and through a second arc centered about a second axis to effect actuation of the second linear actuator, said control handle further including second connecting linkage extending from a second ball joint which is centered on the first axis for translating arcuate movements of the second ball joint about said second axis into operable controls for the second linear actuator;
an operator handle assembly carried at a free end of said control lever, said operator handle assembly including an operator handle arranged to be accessible to the operator of said loader and connected to said control lever for pivotal movements and a third linkage for translating pivotal movements of said operator handle into operable controls for the third linear actuator whereby the operator of said loader requires use of only one hand to control all three functions of the loader mechanism either independently of each other or simultaneously relative to each other.

5,360,313

COUPLING FOR HEAVY-DUTY MACHINE

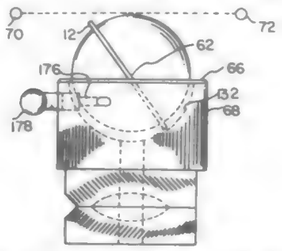
Charles P. Gilmore, Jr., Oto, Iowa, and Dale R. Johnson, Hudson, Wis., assignors to Gilmore Transportation Services, Inc., Missouri Valley, Iowa

Continuation of Ser. No. 919,915, Jul. 27, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 147,169
Int. Cl.[5] E02F *9/00*
U.S. Cl. 414—694 **46 Claims**



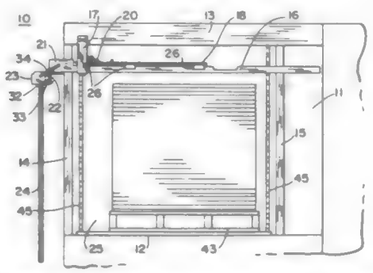
1. In a heavy-duty machine including a ground-supporting base having an operator station, a boom pivotally mounted at one end to the base to swing vertically, a stick cylinder pivotally connected at one end to the boom, a stick pivotally mounted to the free end of the boom to swing vertically relative to the boom, a working tool mounted on the free end of the stick, and a quick-disconnect coupling between the stick and the boom for facilitating the interchangeability of sticks having different tools, whereby the connect and disconnect functions of the coupling are controlled at the operator station, the improvement in the coupling which comprises, a male member on the boom and a female member on the stick, said male member having a pin boss for pivotally connecting one end of the male member to the free end of the boom and a stick cylinder boss at the other end of the male member for pivotally connecting to the other end of said stick cylinder, said bosses being at the backside of the male member, said male and female members having mating faces, intermeshing elements on the mating faces of said male and female members for preventing relative movement along the faces of said members, and locking means operable from the operator station for locking the male and female members together in coupled relation and unlocking the male and female members to allow separation and decoupling, said locking means including a pair of fixed sockets on the female member, the longitudinal axis of each fixed socket being substantially parallel to the longitudinal axis of the female member, a pair of bars on said male member movable longitudinally of the male member and coacting with the mating sockets when the male and female members are together, and means reciprocally driving the bars in opposite directions between locking and unlocking positions and being slidably carried by the male member for longitudinal movement thereon, whereby seating of one bar ahead of seating of the other bar will cause sliding of the driving means until the other bar is seated thereby tightening both bars equally.

5,360,314
METHOD AND APPARATUS FOR REMOVING FLASH AND GATES FROM GOLF BALLS
Richard H. Provost, Brimfield, Mass., and Robert P. Luben, Granby, Conn., assignors to Lisco, Inc., Del.
Filed Aug. 23, 1991, Ser. No. 749,397
Int. Cl.[5] B65G 47/24
U.S. Cl. 414—755 18 Claims



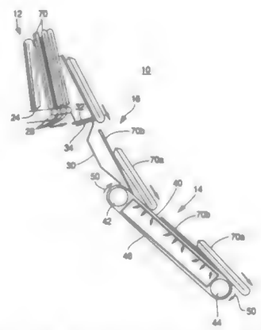
1. Apparatus for seating a ball with excess material around its equator comprising a block with a generally hemispherical walls forming a recess facing upwardly, the recess having a diameter substantially the same as that of the ball and having a height slightly less than the radius of the ball and an aperture extending through one of the walls to provide a blast of air to the recess with a ball thereabove to thereby effect a fluttering of the ball when the air of the blast contacts the excess material in the recess, the apparatus further including control means coupled to the aperture to provide a plurality of blasts of air into the recess, the blasts each being of a duration of between 0.05 and 0.10 seconds.

5,360,315
PRINTED WORK STATION FOR PRINTING PRESS
Ronald J. Kurkowski, Appleton, and Mark S. Mielke, Neenah, both of Wis., assignors to Outlooks Graphics Corp., Neenah, Wis.
Filed Jan. 5, 1993, Ser. No. 941
Int. Cl.[5] B65H 31/32; B65G 57/03
U.S. Cl. 414—790.8 7 Claims



1. A printed work receiving station for a printing press having an outlet from which printed work exits, said station including means for both raising an empty pallet to receive printed work exiting from the outlet and for subsequently lowering the pallet as it becomes loaded with printed work, a single substantially rectangular false pallet top comprising a single substantially rectangular sheet of rigid material coated with a low friction material, the false pallet top hingedly connected to the station for movement between a stored vertical position along a side of the station and an intermediate horizontal position outside the station opposite the outlet, said false pallet top being slidable from the intermediate horizontal position into a horizontal receiving position within the station wherein the false pallet top is completely covering the top of a loaded pallet, and means for supporting the false pallet top in the horizontal receiving position above and over the top of the loaded pallet so that printed work exiting the press collects on the false pallet top and the loaded pallet can be removed and replaced with an empty pallet without stopping the printing press, said false pallet top being subsequently slidable from the horizontal receiving position under the printed work to the intermediate horizontal position outside the station so that the printed work is deposited on the empty pallet.

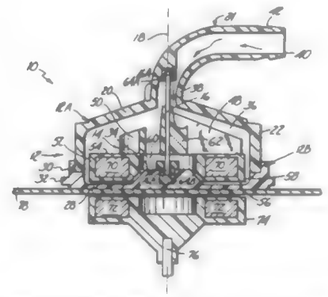
5,360,316
FLATS PIECES SINGULATION APPARATUS
Kerry D. O'Mara, Florence Township, Burlington County; Christopher J. Poux, Hamilton Township, Mercer County; Ross M. Carrell, Cinnaminson Township, Burlington County, and Kurt R. Grice, East Brunswick Township, Middlesex County, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 626,595, Dec. 12, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 812,786
Claims priority, application United Kingdom, Apr. 7, 1990, 9007921.1
Int. Cl.[5] B65H 5/06
U.S. Cl. 414—798.9 21 Claims



1. An apparatus for singulating flats comprising:
a substantially horizontal input buffer section including a ramp for supporting a stack of flats with the flats being seated on one edge, said buffer section including means for moving said stack of flats along said ramp to a front end of the ramp;
a transfer section at one end of the input buffer section, said transfer section including a plurality of parallel edge rollers extending across the front end of the ramp and being arranged along a plane no higher than the level of the top of the ramp, and means for rotating said edge rollers so that when the front flat in the stack reaches the front end of the ramp, the rollers contact the bottom edge of the flat and move the flat away from the stack and over all of the rollers and allow the flat to drop vertically downwardly; and
a separation section below the transfer section and adapted to receive the flats from the transfer section and carry the flats one at a time away.

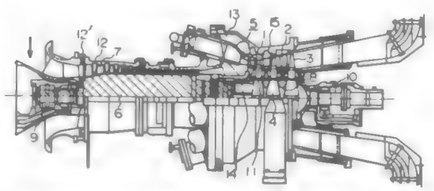
5,360,317
CENTRIFUGAL BLOOD PUMP
Earl W. Clausen, Eden Prairie, and Lloyd C. Hubbard, Excelsior, both of Minn., assignors to Spin Corporation, Excelsior, Minn.
Continuation of Ser. No. 922,198, Jul. 30, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 163,393
Int. Cl.[5] F04D 29/04
U.S. Cl. 415—206 12 Claims

1. A centrifugal pump for pumping biological fluids such as blood, adapted to be coupled with an external source of rotation, comprising:
a housing defining a pumping chamber with an inlet and an outlet;
a spindle enclosed within the pumping chamber for rotation about a spindle axis of rotation, the spindle comprising an inlet end toward the inlet of the pumping chamber and a base end opposite the inlet end;
an impeller enclosed within the pumping chamber and being supported on the spindle in a spaced relationship to the external source of rotation, the impeller comprising coupling means for coupling with the external source of rotation for rotating the impeller about the spindle axis of rotation;



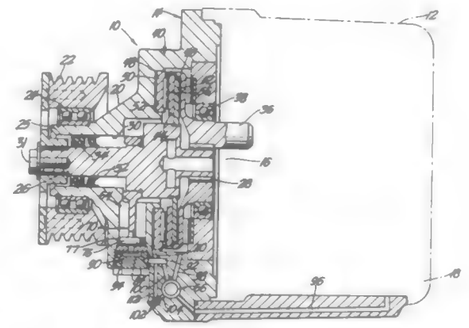
an inlet journal bearing for rotatably supporting and receiving the inlet end of the spindle, the inlet journal bearing having a cylindrical inner side wall and an inner end surface;
a base journal bearing for rotatably supporting and receiving the base end of the spindle, the base journal bearing having a cylindrical inner side wall and an inner end surface; and
wherein the inner end surfaces of the inlet journal bearing and the base journal bearing are spaced a distance which is greater than a length of the spindle to define axial clearance between the spindle and the inner end surfaces of the bearings in order to avoid damaging blood cells.

5,360,318
COMPRESSOR FOR GAS TURBINE AND GAS TURBINE
Masao Siga; Hajime Toriya, and Yutaka Fukui, all of Hitachi, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Aug. 6, 1993, Ser. No. 102,739
Claims priority, application Japan, Aug. 6, 1992, 4-210050
Int. Cl.[5] F04D 29/04
U.S. Cl. 415—216.1 11 Claims



1. A high-temperature gas turbine including a compressor for compressing air, a turbine coupled to said compressor and a combustor for generating a combustion gas, said turbine rotated at a high speed by said combustion gas,
said compressor has a monolithic rotor shaft and blades of at least fifteen stages which are implanted in said monolithic rotor shaft, a temperature of the compressed air is at least 400° C., a compression ratio is between 15 and 20, a temperature of the combustion gas at a combustion outlet is 1400° C. or greater, and a thermal efficiency of the gas turbine is 35% or greater.

5,360,319
COMPRESSOR ASSEMBLY HAVING CONTROL VALVE FOR TRIGGERED PRESSURE ACTUATED CLUTCH
James C. Swain, and Donald L. Cooper, both of Columbus, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 17, 1993, Ser. No. 61,943
Int. Cl.[5] F04B 49/00
U.S. Cl. 417—223 3 Claims

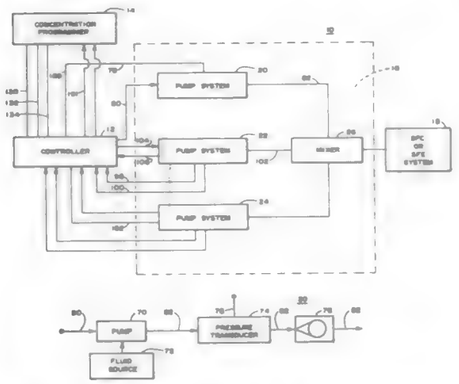


1. A compressor assembly for pumping a recirculating refrigerant, said assembly comprising;
a compressor housing defining a suction chamber for receiving refrigerant at a first predetermined pressure and a discharge chamber for receiving compressed refrigerant at an elevated second predetermined pressure;
an input shaft and an output shaft, said shafts rotatably supported within said housing and a clutch means disposed therebetween for selectively translating torque from said input shaft to said output shaft to drive said compressor to generate a compressor refrigerant discharge pressure;
said clutch means being responsive to refrigerant pressure to translate torque from said input shaft to said output shaft to drive said compressor;
said assembly further including an auxiliary clutch compressor means for generating an auxiliary refrigerant discharge pressure and a control valve means moveable between a first position to route said auxiliary refrigerant discharge pressure to said suction chamber and away from said clutch means and also to block the flow of compressor discharge pressure to said clutch means, and a second position to route said auxiliary refrigerant discharge pressure to bear upon said clutch means so as to translate torque between said input and output shafts to drive the compressor to generate said compressor discharge pressure and also to route said compressor discharge pressure to bear upon said clutch means to cause full torque translation between said input and output shafts.

5,360,320
MULTIPLE SOLVENT DELIVERY SYSTEM
Daniel G. Jameson, and Robert W. Allington, both of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.
Filed Feb. 27, 1992, Ser. No. 843,624
Int. Cl.[5] F04B 41/06
U.S. Cl. 417—4 22 Claims

1. A supercritical fluid extraction system, comprising:
a supercritical fluid extraction means;
multi-solvent delivery means for supplying a gradient of comparable solvents at a controlled pressure and converting to a pressure vessel communicating with said supercritical fluid extraction means;
said multi-solvent delivery means for supplying including:

a source of a first solvent;
first means for pumping the first solvent through a first pump outlet into a first conduit;
a second solvent;
second means for pumping the second solvent through a second outlet into a second conduit;
first transducer means for measuring the pressure in said first conduit and generating a first signal proportional to the pressure and for measuring the pressure in said second conduit and generating a second signal proportional to the pressure;
mixer means communicating with said first and second conduits for mixing said first and second solvents and applying the mixed solvent solution to said supercritical fluid extraction system;
programmed means for generating third and fourth electrical signals representing programmed concentrations of said first and second solvents respectively in said mixed solvent solution applied to said supercritical fluid extraction system;
means for generating a fifth signal representing a programmed pressure;
means for multiplying said first signal by said third signal, wherein a sixth signal proportional to said pressure in said



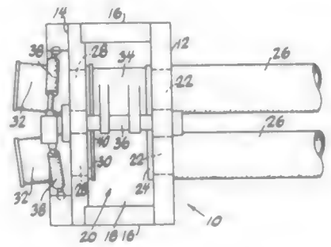
first conduit multiplied by the programmed concentration of the first solvent in the mixed solvent solution is generated;
means for multiplying said second signal by said fourth signal, wherein a seventh signal proportional to the programmed concentration of said second solvent in the mixed solvent solution multiplied by said pressure in said second conduit is generated;
means for adding said sixth and seventh signals;
feedback comparison means for comparing the sum of said sixth and seventh signals with said signal representing the programmed pressure to generate an error signal;
means for multiplying said error signal by said third signal and supplying it to said first means for pumping to control said pumping rate wherein the pumping rate of the said first means is maintained in programmed concentration proportion to the flow rate at a pressure equal to said programmed pressure; and
means for multiplying the error signal by said fourth signal to generate a signal for controlling said second means for pumping, wherein the second means for pumping pumps at a rate of programmed concentration proportion to the flow rate at the programmed pressure, whereby said mixture of solvents is controlled at a programmed concentration of solvents at a programmed pressure.

5,360,321

FEEDING RESERVOIR FOR TWO-CYLINDERS THICK-MATTER PUMPS

Hartmut Benckert, Filderstadt, and Helmut Hurr, Reutlingen, both of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Germany

Continuation of Ser. No. 960,377, Jan. 4, 1993. This application Mar. 3, 1994, Ser. No. 205,813
Claims priority, application Germany, Jul. 3, 1990, 4021069
Int. Cl.[5] F04B *19/00*
U.S. Cl. 417—238 **22 Claims**



1. A feeding reservoir for a two-cylinder pump for the pressurized delivery of thick matter, comprising:
a portion having a material supply port therein;
a front wall having two pump-side ports therein, each pump-side port leading to a respective delivery cylinder of the pump;
a back wall opposite said front wall, the back wall having two outlet-side ports therein leading to a delivery line, each outlet-side port positioned opposite a respective one of the pump-side ports;
a swing pipe positioned in the reservoir capable of swivelling alternately between one of the outlet-side ports and the opposite pump-side port to between the other outlet-side port and the other pump-side port, thereby alternately connecting one of the outlet-side ports to the respective opposite pump-side port, the swing pipe being a straight through-way pipe;
a self-adjusting pump-side sealing and wearing ring secured to the swing pipe and positioned between the swing pipe and the pump-side ports for being pressed against the pump-side ports under delivery pressure; and
a self-adjusting outlet-side sealing and wearing ring secured to the swing pipe and positioned between the swing pipe and the outlet-side ports for being pressed against the outlet-side ports under delivery pressure.

5,360,322

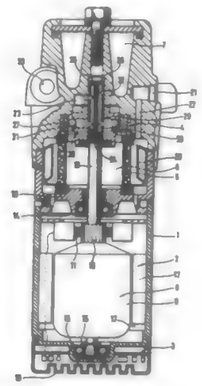
HYDRAULIC PUMP DRIVEN BY AN ELECTRIC MOTOR

Nabil Henein, Darmstadt; Wilhelm Beer, Ruesselsheim, and David Vile, Bad Homberg, all of Germany, assignors to Alfred Teves GmbH, Germany

PCT No. PCT/EP92/01178, § 371 Date Feb. 22, 1993, § 102(e) Date Feb. 22, 1993, PCT Pub. No. WO93/00513, PCT Pub. Date Jan. 7, 1993
PCT Filed May 26, 1992, Ser. No. 969,257
Claims priority, application Germany, Jun. 22, 1991, 4120665
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—313 **10 Claims**

1. A hydraulic pump assembly, comprising:
a housing having side walls defining an inner chamber,
an electric motor disposed in said inner chamber, said motor having an output shaft adapted to rotate about an axis of rotation,

a hydraulic pump section disposed in said inner chamber and coupled to said output shaft,



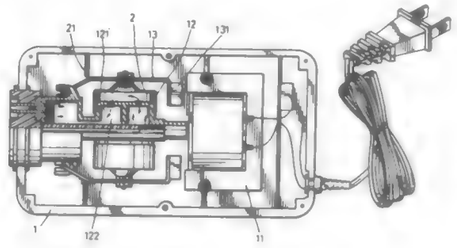
a cylindrical filter disposed in said inner chamber, said cylindrical filter having an axis coincident with said axis of rotation of said output shaft.

5,360,323

AQUARIUM AIR PUMP

Ting-Shin Hsieh, No. 317 Nanking W. Road, Taipei,

Filed May 4, 1993, Ser. No. 57,260
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—413.1 **4 Claims**



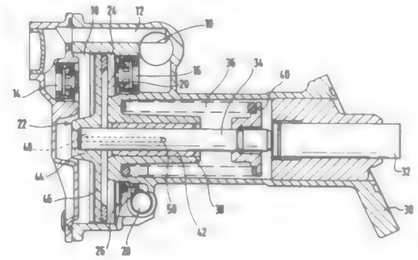
1. An improved aquarium air pump comprising:
a casing equipped with an electromagnetic coil set,
an air intake valve housing seated in front of the electromagnetic coil.
two vibrating levers, one lever placed on a top side of said intake valve housing, and the second lever placed on a bottom side of said intake valve housing, the levers vibrating repetitively when a magnet on a front tip of said vibrating levers is attracted by said electromagnetic coil, and
a diaphragm connected to a middle section of the vibrating levers, characterized by the fact that the diaphragm is slipped directly onto said air intake valve housing, and a flange of the body of said diaphragm does not have any protruding edges.

5,360,324

RECIPROCATING VACUUM PUMPS

Henry J. Levington, Snelland, and Stephen R. Earle, Pudsey, both of United Kingdom, assignors to Wabco Automotive (UK) Limited, Warwickshire, England

PCT No. PCT/GB92/00531, § 371 Date Oct. 28, 1993, § 102(e) Date Oct. 28, 1993, PCT Pub. No. WO92/16749, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 23, 1992, Ser. No. 119,145
Claims priority, application United Kingdom, Mar. 21, 1991, 9106047.5
Int. Cl.[5] F04B *37/14, 39/02, 39/04, 39/12*
U.S. Cl. 417—534 **10 Claims**



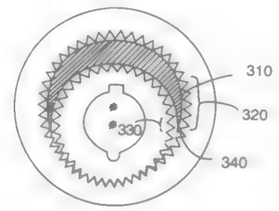
1. A reciprocating vacuum pump having a cylinder (**24,124**), a substantially disc shaped piston (**22,133**) reciprocal in the cylinder (**24,124**) and a suction port (**10,110**) having non-return inlet valves (**14,16;114,116**) located on one side of the cylinder, and a delivery port (**28,128**) having exhaust valves located on an opposite side of the cylinder, said piston (**22,122**) being driven axially by a rod (**34,134**) running in a lubricated bearing (**42,142**), said piston (**22,122**) having a peripheral seal (**52,152**) of resilient material and said seal having peripheral skirt portions (**54,56**) extending radially outwardly and in opposite directions, a lubrication flowpath (**50,48;150,148**) being provided between said bearing (**42,142**) and a space on the side of the piston (**22,122**) opposite thereto.

5,360,325

GEAR PUMP WITH REDUCED FLUID-BORNE NOISE

John W. Henry, IV, Annapolis; William F. Flickinger, Arnold; Joseph F. Dolinar, Jr., Severna Park; Francisco A. Rodriguez, Annapolis; James W. Smith, Sr., Glen Burnie, and Rocco J. Gabriele, Jr., Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1993, Ser. No. 129,501
Int. Cl.[5] F04C *2/10*
U.S. Cl. 418—126 **2 Claims**



1. A crescent internal gear pump including
a pinion gear having teeth on an external circumference thereof,
a ring gear having teeth on an internal surface thereof, said ring gear and said pinion gear being positioned to mesh at a location and to define a crescent-shaped space between

tips of said teeth on said ring and pinion gears opposite said location where said ring gear and said pinion gear are meshed, and

a crescent-shaped member positioned in said crescent-shaped space and extending over an angle greater than 140° around a rotational axis of at least one of said ring gear and said pinion gear, said crescent-shaped member and said teeth of said ring and pinion gears defining discrete volumes;

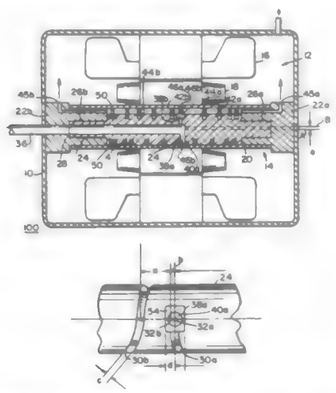
and wherein at least one said crescent-shaped member is out of contact with said ring gear near the end of said member so that said discrete volumes formed by said crescent-shaped member and said teeth of said pinion gear are approximately equal in number to the discrete volumes formed by said crescent-shaped member and said teeth of said ring gear.

5,360,326

TWIN HELICAL BLADE FLUID COMPRESSOR

Masayuki Okuda; Takayoshi Fujiwara, and Takashi Honjo, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1993, Ser. No. 112,367
Claims priority, application Japan, Aug. 28, 1992, 4-229883
Int. Cl.[5] F01C *21/08*
U.S. Cl. 418—220 **3 Claims**



1. A fluid compressor comprising:

a cylinder having first and second discharge ends;

a rotating body located in said cylinder which extends in an axial direction of said cylinder and is eccentric thereto, and is rotatable while a part of said rotating body is in contact with an inner circumference of said cylinder, said rotating body having first and second spiral grooves on an outer circumference thereof, said first groove having a first starting end located substantially in the middle of said rotating body, and extending from said first starting end toward said first discharge end of said cylinder, and said second groove having a second starting end located apart from said first starting end by 180 degrees in the circumferential direction of said rotating body, and extending from said second starting end toward said second discharge end of said cylinder, said first and second grooves being turned in directions opposite to each other and itches thereof being gradually narrowed from said first and second starting ends to said first and second discharge ends of said cylinder, respectively, said rotating body further having first and second recessed grooves on the outer circumference thereof, said first and second recessed grooves are proximate to said first and second starting ends, respectively, said first and second recessed grooves having wall portions substantially perpendicular to the axis of said rotating body, wherein a distance between said wall portion and said first starting end of said first groove satisfies the following formula:

$$a+b-c/2>d$$

wherein:

a denotes a distance between a location of said second starting end to a half-turn of said second groove advanced by 180° from said second starting end;

b denotes an offset between said first starting end and said second starting end being located apart by 180° in the circumferential direction of said rotating body;

c denotes a width of said second groove; and

d denotes a distance between said wall portion of said first recessed groove and said first starting end;

first and second spiral blades fitted into said first and second grooves respectively to be slidable in a radial direction of said rotating body, said first and second spiral blades having outer circumferential surfaces in contact with said inner circumference of said cylinder, and dividing a space between said inner circumference of said cylinder and an outer circumference of said rotating body into a plurality of operating chambers;

engaging means for engaging said first and second spiral blades at respective end portions, said engaging means including first and second tubular members each attached to said cylinder and extending to said first and second recessed grooves for engaging the starting end portions of said first and second spiral blades; respectively;

guide means for guiding operation fluid into an area adjacent to said first and second starting ends of said first and second grooves; and

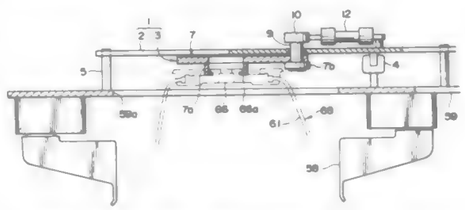
drive means for rotating said cylinder and said rotating body synchronously with each other so as to feed the operating fluid, which is introduced into said area through said guide means, to said first and second discharge ends of said cylinder through said operating chambers and to discharge the operating fluid outside from said first and second discharge ends.

5,360,327

BLADDER CARRYING APPARATUS FOR TIRE VULCANIZING PRESS

Katsumi Ichikawa, Takasago, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 22, 1993, Ser. No. 139,811
Claims priority, application Japan, Oct. 23, 1992, 4-309366
Int. Cl.[5] B29C *35/02*
U.S. Cl. 425—38 **8 Claims**



1. A tire vulcanizing press comprising:

co-operating upper and lower molds onto which a tire may be placed for vulcanizing;

a bladder assembly positioned at the center of one of said upper and lower molds;

a tire loader for loading tires onto and off of one of said upper and lower molds; and

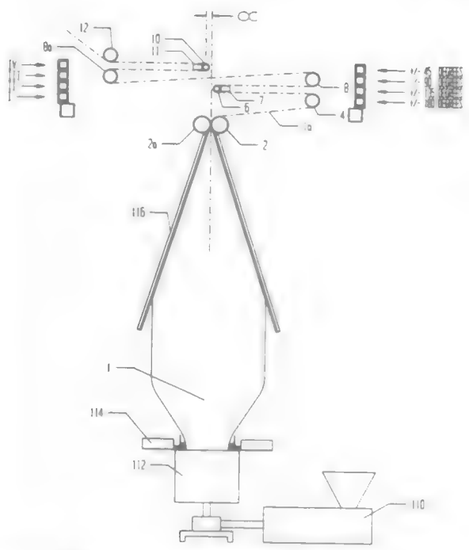
a gripper mounted on said tire loader for gripping said bladder assembly.

5,360,328

GAUGE BAND RANDOMIZER

Robert E. Cree, 127 Bartle Ave., Newark, N.Y. 14513, and Ricardo P. Rodriguez, 1919 Royal Credit Blvd., Mississauga, Ontario L5M4Y1, Canada

Filed Feb. 5, 1992, Ser. No. 831,499
Int. Cl.[5] B29C *53/10*
U.S. Cl. 425—72.1 **20 Claims**



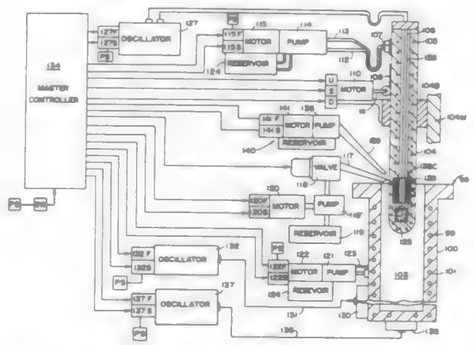
19. In an oscillatory hauloff mechanism for a blown film line wherein an assembly of idler rolls and turning bars rotatably shift their relationship to one another over time in a predetermined manner to enable the film to have gauge variations distributed back and forth across the width of the film, the improvement wherein there reside in the film path between first and second turning bars, first and second idler rolls spaced from each other on opposite sides of the axis of rotation of the mechanism such that the film path extends between said idler rolls across said axis and passes from said first turning bar around said first idler roll and then around said second idler roll in such a manner that the film in said path approaches said second turning bar from the opposite direction from which the film approaches said first turning bar, whereby the wandering effect of the film produced by passing over the fixed surface of said first turning bar is substantially canceled by the opposite wandering effect produced by passing over the fixed surface of said second turning bar.

5,360,329

MOLDING/EXTRUSION APPARATUS WITH TEMPERATURE AND FLOW CONTROL

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation of Ser. No. 576,379, Aug. 31, 1990, Pat. No. 5,264,163, which is a continuation of Ser. No. 27,075, Mar. 17, 1987, abandoned, which is a continuation of Ser. No. 535,545, Sep. 26, 1983, abandoned, which is a continuation of Ser. No. 278,399, Jun. 29, 1981, abandoned, which is a continuation of Ser. No. 663,243, Mar. 3, 1976, Pat. No. 4,288,398, which is a continuation of Ser. No. 372,838, Jun. 22, 1973, abandoned, said Ser. No. 278,399, is a continuation-in-part of Ser. No. 950,017, Oct. 10, 1978, Pat. No. 4,318,874, which is a continuation of Ser. No. 483,037, Jun. 25, 1974, Pat. No. 4,120,922, which is a continuation of Ser. No. 297,452, Oct. 13, 1972, Pat. No. 3,820,928, which is a continuation of Ser. No. 849,014, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495, which is a continuation-in-part of Ser. No. 142,405, Oct. 2, 1961, Pat. No. 3,422,648, which is a continuation-in-part of Ser. No. 691,622, Oct. 22, 1957, Pat. No. 3,002,615, said Ser. No. 721,401, is a continuation-in-part of Ser. No. 421,817, Dec. 29, 1964, Pat. No. 3,462,524, and a continuation-in-part of Ser. No. 421,860, Dec. 29, 1964, abandoned, and a continuation-in-part of Ser. No. 439,549, Mar. 15, 1965, abandoned, which is a continuation-in-part of Ser. No. 734,340, May 9, 1958, Pat. No. 3,173,175, said Ser. No. 483,037, is a continuation-in-part of Ser. No. 416,219, Nov. 15, 1973, abandoned, which is a continuation of Ser. No. 194,630, Nov. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495. This application Oct. 21, 1993, Ser. No. 141,200
Int. Cl.[5] B29C *45/78*
U.S. Cl. 425—143 **40 Claims**



1. A molding apparatus comprising:

(a) a mold capable of defining a cavity of a predetermined shape;

(b) a first reservoir suitable for holding a quantity of fluent molding material;

(c) a first passageway extending from the first reservoir to the cavity;

(d) a first valve controlling the flow of the molding material through the first passageway into the mold cavity;

(e) a temperature sensor that generates an electrical temperature signal indicative of the temperature of the molding material;

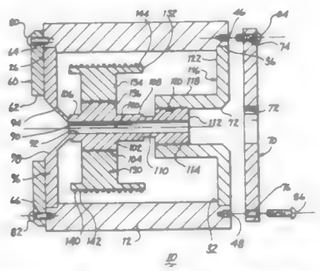
(f) a temperature-control system that can control the temperature of the molding material; and

(g) a controller electrically coupled to the temperature sensor and the temperature-control system and configured to use the temperature signal to control the temperature of the molding material.

5,360,330
RF HEATED MOLD FOR THERMOPLASTIC MATERIALS

Joseph C. Jensen, Tucson, and Junius E. Taylor, Phoenix, both of Ariz., assignors to Engineering & Research Associates, Inc., Tucson, Ariz.

Filed Jan. 31, 1992, Ser. No. 830,368
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B29C *65/02*
U.S. Cl. 425—144 **28 Claims**



1. Apparatus for melting, forming, welding and extruding heat responsive material, said apparatus comprising in combination:

a) a source of RF energy;

b) means for transmitting RF energy from said source;

c) a mold, including a die, for melting, forming, welding and extruding the heat responsive material;

d) a heating element for heating said die of said mold to melt, form, weld and extrude the heat responsive material, said heating element including means for generating heat in response to the RF energy transmitted by said transmitting means;

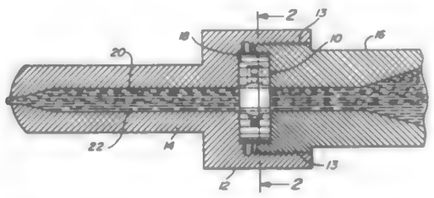
e) means for sensing the temperature of said heating element; and

f) means for regulating the RF energy transmitted in response to said sensing means to maintain the temperature of the heating element at a settable temperature.

5,360,331
INJECTION MOLDING MACHINE PRESSURE TRANSDUCER

William Wareham, Marion, Mass., assignor to Dynisco, Inc., Sharon, Mass.

Filed Jan. 5, 1993, Ser. No. 632
Int. Cl.[5] B29C *45/77, 45/78*
U.S. Cl. 425—144 **22 Claims**



1. A pressure transducer for an injection molding machine, comprising:

a housing coupled to a nozzle of said injection molding machine;

a hollow stress tube, attached to the housing, through which molten material of the injection molding machine flows, the stress tube bellowing in response to pressure from the material;

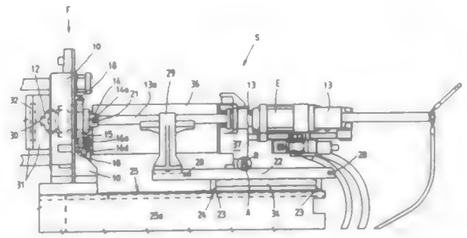
an outer ring having an opening is coupled to the stress tube such that the outer ring expands, causing displacement of the outer ring about the opening, when the stress tube bellows; and

means for determining the displacement of the outer ring about the opening.

5,360,332
INJECTION MOLDING MACHINE FOR PROCESSING SYNTHETIC MATERIALS

Karl Hehl, Arthur-Hehl-Str. 32, D-72290 Lossburg, Germany

Filed Aug. 17, 1993, Ser. No. 107,371
Claims priority, application Germany, Aug. 18, 1992, 4227336
Int. Cl.[5] B29C *45/17*
U.S. Cl. 425—150 **13 Claims**



1. An injection molding machine comprising

(a) an injecting unit defining a horizontal injection axis and having a plasticizing cylinder centered on and movable along said injection axis,

(b) a shifting device coupled to said injecting unit for moving said injecting unit in a horizontal shifting direction transversely to said injection axis to a plurality of injecting position to selectively discharge, in said injecting positions, plastic material from said plasticizing cylinder along said injection axis on a plurality of parallel paths,

(c) first injection molds having central gatings and further injection molds having off-center gatings for receiving said plastic material from said plasticizing cylinder,

(d) a stationary mold carrier facing said injecting unit and being provided with an enlarged opening in said horizontal shifting direction for receiving said plasticizing cylinder in each of said injecting positions; said stationary mold carrier being adapted to selectively carry said first and said further injection molds,

(e) at least one drive unit having ending sections extending to said stationary mold carrier; said drive unit being operable to move said plasticizing cylinder along said injection axis into and out of engagement with a selected said injection mold mounted on said mold carrier for the injection of said synthetic material into the gating of said selected injection mold,

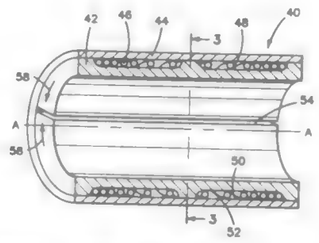
(f) guiding elements mounted on said stationary mold carrier for guiding said ending sections of said drive unit in said shifting direction when displacing the injecting unit by said shifting device, and

(g) at least one seat support mounted on said guiding elements for displacement therealong; said at least one seat support having seats for receiving free ends of said ending sections; said at least one support including a space for allowing a horizontal movement of said plasticizing cylinder onto said gating of said selected injection mold; said shifting device engaging in said mold carrier adjacent said seat support; and said injecting unit being freely displaceable in said shifting direction.

5,360,333
BAND HEATER CLAMP ARRANGEMENT FOR AN INJECTION MOLDING MACHINE

Harald Schmidt, Georgetown, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Sep. 30, 1992, Ser. No. 954,322
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—549 **14 Claims**



1. An injection molding machine including a hot-runner structure having a channel for conveying liquified plastic material to an injection gate of a mold plate, said molding machine comprising:

a tubular body formed from a material having a good thermal conductivity forming a part of said channel;

heater means surrounding a portion of said tubular body for maintaining plastic material in a liquified state within said part of said channel formed by said tubular body;

said heater means comprising a heater sheath formed by an inner sleeve and an outer sleeve and a heater coil;

said inner and outer sleeves having abutting portions and non-abutting portions which define a cavity in which said heater coil is positioned; and

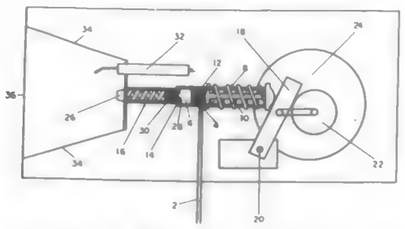
said inner sleeve being formed from a different material than said outer sleeve so that said inner sleeve expands more than said outer sleeve when said sleeves are heated,

whereby said greater expansion of said inner sleeve creates forces which cause said heater sheath to solidly grip said tubular body.

5,360,334
WASTE OIL BURNER WITH PISTON-PUMP FOR FUEL ATOMIZATION AND DELIVERY

Thomas Kagi, Sr., P.O. Box 3637, Moscow, Id. 83843

Filed Aug. 10, 1993, Ser. No. 103,990
Int. Cl.[5] F23C *11/04*
U.S. Cl. 431—1 **2 Claims**



1. An apparatus for the delivery, atomization, and combustion of liquid fuels, including high-viscosity and waste oil, comprising:

a. In combination, a piston contained in a cylinder with a barrier wall at the forward end of the cylinder and a means for engaging said piston in reciprocal motion at the opposite end;

b. said barrier wall having one or more openings;

c. said piston intermittently forming a primary chamber space in the cylinder between the head portion of the piston nearest the barrier wall and said barrier wall when said piston is in a back stroke position while engaged in reciprocal motion;

d. a fuel delivery tube connecting a remote liquid fuel source with the primary chamber space and located in relation to the piston such that fuel is drawn into the primary chamber space by an intermittent low-pressure vacuum caused by the back stroke of said piston and such that, on the forward stroke of said piston, the piston seals off the fuel delivery tube from the primary chamber space while simultaneously pressurizing fuel in the forward portion of the primary chamber;

e. a secondary chamber space inside the cylinder, between the barrier wall and an atomization output nozzle located on the end of the cylinder opposite the primary chamber;

f. a pressure sensitive seal device located inside the secondary chamber, intermittently sealing the openings in the barrier wall, thereby allowing the alternating pressurization of fuel inside the primary chamber by the forward stroke of the piston, and subsequent release of said fuel through the barrier wall openings into the secondary chamber and exiting through an atomization output nozzle upon said fuel reaching a predetermined level of pressurization;

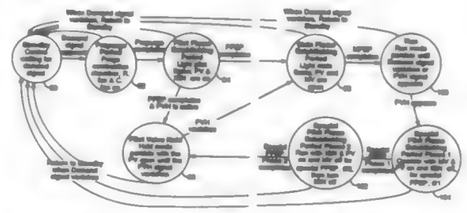
g. an ignition device in close proximity to the output end of the atomization nozzle, capable of igniting the atomized fuel as it exits the nozzle;

h. a conical shaped retention head, enveloping the nozzle and ignition device and having a plurality of rectangular openings angled to a centerline of said retention head and each having a louver extending from a longitudinal side of said opening, an air tube connected to said retention head to supply air to said openings, said louvers being arranged to swirl the air in a common direction to promote complete fuel combustion, control flame spread and dissipate heat.

5,360,335
FUEL BURNER CONTROL SYSTEM WITH SELECTABLE STANDING PILOT MODE

Gregory W. Anderson, Plymouth, Minn.; Christopher B. Fink, Willow Grove, Pa., and Bruce L. Mickelson, Cambridge, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 22, 1992, Ser. No. 965,126
Int. Cl.[5] F23N *5/20*
U.S. Cl. 431—6 **12 Claims**



1. In a system for controlling operation of a burner unit comprising a combustion chamber, a main fuel valve and a pilot fuel valve respectively controlling flow of fuel to main and pilot burners in the combustion chamber, a pilot fuel igniter, and a blower for providing air to the combustion chamber, said main fuel and pilot fuel valves, pilot fuel igniter, and blower each having an operating state wherein each is performing its respective function, and a second inactive state, and entering their respective operating states responsive to main

valve, pilot valve, igniter, and blower control signals respectively, said system including a burner controller receiving an external demand signal and responsive thereto providing a normal sequence of control signals allowing a transition of the burner unit from a standby mode of operation where no control signals are provided to a run mode of operation defined by the burner controller providing to each of the main fuel valve and the blower its respective control signal, said normal sequence of control signals comprising: providing a blower control signal for a predetermined interval defining a purge mode of operation; thereafter maintaining the blower control signal for at least a further predetermined interval and simultaneously providing ignition and pilot valve control signals for a controllable interval defining a pilot ignition mode of operation; thereafter and coincident with a trailing portion of the pilot ignition mode, providing pilot and main valve control signals defining a main ignition mode of operation; and thereafter ending the pilot valve control signal and continuing to provide the main valve control signal to thereby enter the run mode, an improved sequence of control signals for operating the burner unit, said improved sequence allowing transition of the burner to a pilot mode of operation from at least one preselected mode of operation responsive to the presence of an externally supplied pilot valve hold signal, said improved method comprising the steps of

a) responsive to the start of the pilot valve hold signal during the run mode, providing the pilot valve control signal, and after a predetermined interval after the start of the pilot valve control signal during the run mode, ending the main valve control signal and substantially simultaneously, providing the ignition control signal; and thereafter,

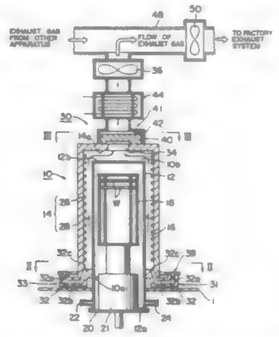
b) providing a main valve control signal responsive to the end of the pilot valve hold signal.

5,360,336

FORCED COOLING APPARATUS FOR HEAT TREATMENT APPARATUS

Osamu Monoe, Sagamihara, Japan, assignor to Tokyo Electron Sagami Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 898,596, Jun. 10, 1992, Pat. No. 5,249,960. This application Oct. 4, 1993, Ser. No. 130,844
Claims priority, application Japan, Jun. 14, 1991, 3-169443
Int. Cl.[5] F27D *5/00, 15/02*
U.S. Cl. 432—5 **5 Claims**



1. A heat treatment process using a heat treatment furnace having a process tube having a lower end open at a bottom portion of a furnace and a closed upper end at a top portion of said furnace, and a furnace heating portion provided about a side wall of said process tube, and wherein cooling of said heat treatment apparatus is performed by flowing cooling gas through a gap formed between said process tube and said furnace portions, said heat treatment process comprising:

closing a gas intake opening which introduces said cooling gas into said gap;

closing an exhaust opening which exhausts said gas from said gap;

introducing an object for processing into said process tube;

heating said process tube to a predescribed heat treatment temperature;

heat treating said object for a predescribed time period;

opening said gas intake opening and said gas exhaust opening;

flowing cooling gas upwardly through said gap so as to cool said process tube to a predescribed temperature; and

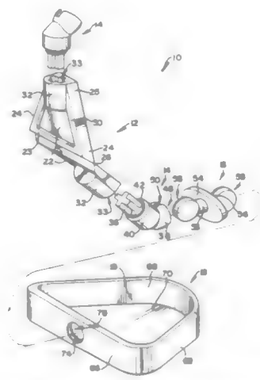
removing said object from said process tube.

5,360,337

DENTAL ARTICULATOR

Alan M. Westdyk, 749 Kendrew Street, Wingate Park, Transvaal Province, South Africa

Filed Jul. 22, 1993, Ser. No. 96,471
Claims priority, application South Africa, Jul. 27, 1992, 92/5630; Apr. 5, 1993, 93/2463
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—64 **15 Claims**



1. An articulator for a dental model comprising two dental casts, the articulator comprising

a pair of connecting members for partial embedding in a settable material, each connecting member comprising a spigot part of a spigot and socket joint, and each including two spigots of spherical shape and a stalk, each spigot being of a resiliently deformable material and being provided on, and spaced apart by, the stalk and each connecting member including an engagement formation on the stalk between the spigots, the engagement formation comprising a plug of planar shade extending transversely to the stalk and being adapted to plug an opening in a mould for a dental case, each spigot of spherical shape being bifurcated and comprising two hemispheres spaced from one another and defining a groove between them,

a pair of connectors each comprising a socket part of a spigot and socket joint, and each having an interlocking formation for interlocking engagement with a hinge element, and

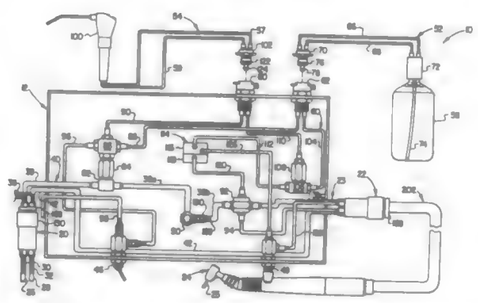
a hinge comprising two hinge elements pivotally linked, each having an interlocking formation complementary to the interlocking formation of the connectors.

5,360,338

PORTABLE STERILIZABLE WATER SUPPLY FOR DENTAL APPLIANCES

Mark B. Waggoner, Plano, Tex., assignor to Waggoner Family Corporation, Plano, Tex.

Filed Sep. 10, 1992, Ser. No. 943,284
Int. Cl.[5] A61G *17/02*
U.S. Cl. 433—80 **37 Claims**



1. A portable heat sterilizable dental apparatus useable at a conventional dental operatory station for delivering sterile operating fluid and operating air to dental appliances, comprising:

a separately heat sterilizable sterile water bottle and tubing harness connected thereto having air and water flow passages;

a compact portable heat sterilizable control box having:

an internal water supply network and an internal air supply network,

said separately heat sterilizable sterile water bottle and tubing harness being detachably connected to the internal water supply network and internal air supply network through air and water flow passages in said tubing harness,

a water supply fitting connected to said internal water supply network, said water supply fitting mounted on said control box being detachably connected to said tubing harness,

means for detachable connection of the internal air supply network with an air supply connector of a conventional dental operatory station to deliver intermittent pressurized air to the internal air supply network by intermittent operation of a standard foot control, and

means for connection to the standard connector of at least one detachable dental appliance, said means for connection being connected to said internal water supply network and said internal air supply network to supply sterile water from said sterile water bottle through said internal water supply network and operating air from said internal air supply network;

said apparatus being specially adapted to withstand heat sterilizing and subsequent application of conventional operating pressure and being suitable for passage of water in conformance with regulations for dental water, said apparatus including said compact control box, said internal air and water supply networks, said water supply fitting, said sterilizable water bottle and tubing harness, said means for connection and said means for detachable connection, all being repeatedly heat sterilizable at a temperature of at least 250° F. and useable for delivering sterile water to a patient during dental operations.

5,360,339

DENTAL PROPHY CUP HAVING A PASTE-DISTRIBUTING CHANNEL ARRANGEMENT

Neil A. Rosenberg, 32 Equator Dr., Nantucket, Mass. 02554

Filed Mar. 1, 1994, Ser. No. 203,586
Int. Cl.[5] A61C *3/06*
U.S. Cl. 433—165 **17 Claims**

1. A dental prophy cup comprising a body having a rear mounting portion adapted to be mounted on a rotary handpiece for rotation about a longitudinal axis of rotation, and a front tooth-engaging portion formed of an elastomeric material and including a cavity for receiving an abrasive paste, said cavity expanding toward a front end of said body, said cavity being defined by a surface having formed therein a channel arrangement comprising a paste-delivery channel extending forwardly from a rear portion of said cavity, and a circumferentially extending paste-distribution channel spaced rearwardly from a front end of said body, said paste-delivery channel intersecting and terminating at said paste-distribution channel such that paste is induced to flow within said channel arrangement under the urging of centrifugal force during rotation of said body.

5,360,340

PROCESS FOR PRODUCING DENTAL RESTORATIONS AND A POSITIVE WORKING MODEL FOR IMPLEMENTING THE PROCESS

Volker Rheinberger, Floraweg 3, FL-9490, Vaduz, Liechtenstein, and Viktor Moldaschl, Dorfstr. 8, CH-9472 Grabs, Switzerland

Filed Dec. 12, 1990, Ser. No. 626,048
Claims priority, application Germany, Dec. 16, 1989, 3941663
Int. Cl.[5] A61C *11/00, 5/08, 5/10*
U.S. Cl. 433—213 **8 Claims**

1. Process for producing dental crown restorations from ceramics with exactly matching coloring comprising the steps of:

(i) producing a crown from ceramics, matching the shape of a tooth, in a known manner,

(ii) producing a positive working model which matches the shape and color of a ground remainder of the tooth, wherein the color of said positive working model is selected from a group of different-colored light-hardening plastic materials, and

(iii) coloring the crown for the dental restoration based on a color chosen with a color key and using the obtained positive working model

wherein said color of said positive working model exactly matches said color of said ground remainder of the tooth.

5,360,341

METHOD AND APPLIANCE FOR PROMOTING THE HEALING OF ORAL TISSUES

Paul N. Abramowitz, 1418 Westwood La., Wynnewood, Pa. 19096

Filed Jul. 30, 1993, Ser. No. 99,413
Int. Cl.[5] A61C *5/00, 5/14*
U.S. Cl. 433—215 **20 Claims**

1. A method of promoting healing of oral tissues of a patient, the method comprising the steps of:

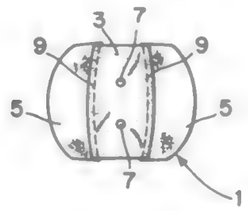
a) providing an appliance comprising an elastic material, the elastic material having at least two edges, the appliance also including a pair of pieces of selectively permeable biocompatible material, said pieces being attached to the at least two edges of the elastic material,

b) punching at least one hole in the elastic material,

c) inserting said appliance over at least one tooth of the patient, the tooth being implanted within bone, the tooth being adjacent to gum tissue, the insertion step being performed by forcing the elastic material over the at least one tooth until the at least one tooth protrudes through

said at least one hole, and until the elastic material abuts the bone,

d) holding said pieces of biocompatible material against the



bone while affixing the gum tissue over the biocompatible material, and

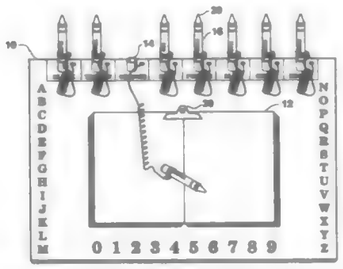
e) allowing the appliance to remain in place for a sufficient time to promote healing of said tissues.

5,360,342

COLORING BOARD WITH ATTACHED CRAYONS

Delores R. Pardner, Box 472122, Aurora, Colo. 80047

Filed Apr. 21, 1993, Ser. No. 49,320
Int. Cl.[5] G09B *11/10;* **B43L** *1/00, 23/00*
U.S. Cl. 434—84 **4 Claims**



1. A coloring or drafting board for use by children on a desk comprising:

a central planar surface on the board upon which a coloring book or a pad of paper may be placed;

a plurality of upstanding tubular receptacles along the upper edge of the board for receiving a plurality of various different colored crayons: and

a plurality of coiled plastic nylon tethers connected between said crayons and said board; thereby permitting their use for drawing and coloring on said board, but precluding improper use elsewhere.

5,360,343

CHINESE CHARACTER CODING METHOD USING FIVE STROKE CODES AND DOUBLE PHONETIC ALPHABETS

Jianmin Tang, No. 13 Beilu, Zengcheng Town, Zengcheng Town, Guangzhou, China

Filed Jan. 13, 1993, Ser. No. 3,788
Claims priority, application China, Jan. 15, 1992, 92106366
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—118 **4 Claims**

1. A method for inputting Chinese characters into a computer system having a standard English keyboard, the keyboard including 26 alphabet keys on which Chinese consonants, vowels and 25 stroke combinations of the characters are allocated wherein each stroke combination represents two strokes or codes of two strokes, the characters being coded primarily according to their consonants and vowels or vowel codes, and secondly according to initial two strokes and last two strokes of the characters by using said stroke combination, said method comprising the steps of:

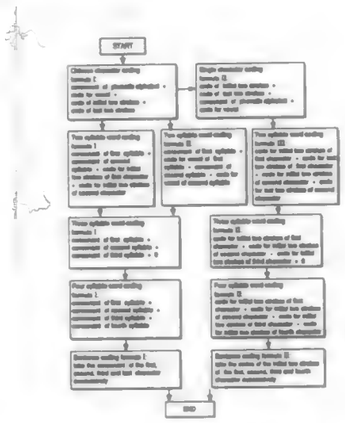
(A) entering single Chinese characters by

a) inputting the consonant of each character,

b) inputting the vowel code of said character,

c) inputting codes of the initial two strokes of said character,

d) inputting codes of the last two strokes of said character; and



(B) entering words or phrases of two Chinese characters by,

a) inputting the consonant of the first character of each word,

b) inputting the consonant of the second character,

c) inputting codes of initial two strokes of the first character,

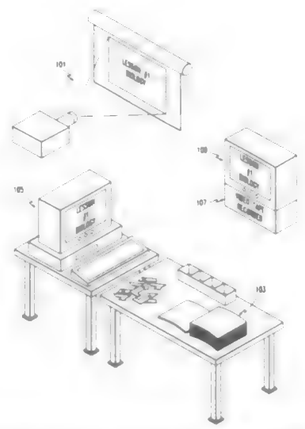
d) inputting codes of last two strokes of the second character.

5,360,344

HANDS-ON LEARNING SYSTEM INCLUDING THREE-DIMENSIONAL ACTION MODEL KIT

Christopher Rishack, R.D. #3, Little Creek Rd., Evans City, Pa. 16033

Filed Dec. 31, 1992, Ser. No. 999,008
Int. Cl.[5] G09B *23/36*
U.S. Cl. 434—295 **1 Claim**



1. A hands-on learning system for a student comprising:

a model kit having a plurality of parts which when assembled form a three-dimensional mechanized action model, said model representing an animal and comprising:

a plurality of flat rigid molded panels, said panels having distinct shapes which resemble the contour of the animal when assembled, each of said panels having a plurality of irregularly spaced openings for assembly;

a plurality of hardware elements for connecting the panels at parallel or at right angles to each other such that a structural skeleton of the model is exclusively formed form the panels;

means for moving some panels of the model relative to other panels of the model;

means for instructing the student in mechanics with respect to the parts of the model kit;

means for instructing the student in electricity with respect to the parts of the model kit;

means for instructing the student on a subject comprising means for instructing the student on biological facts related to the animal;

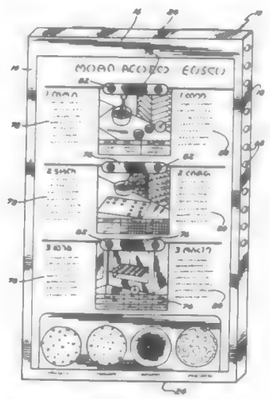
means for instructing the student in applied math skills relating to the parts of the model kit; and an overhead projection system.

5,360,345

AUDIO INSTRUCTION BOARD

Arne H. Brauner, Minnetonka, and James E. Kelley, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Sep. 9, 1992, Ser. No. 942,241
Int. Cl.[5] G09B *5/06*
U.S. Cl. 434—308 **20 Claims**



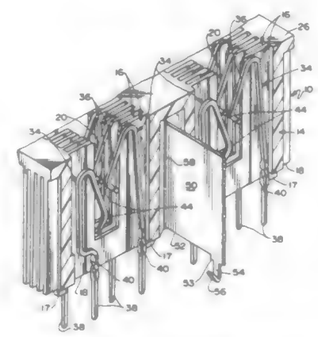
15. Audio instruction board comprising, in combination: a hollow body including a front having outer and inner surfaces; a label secured over the outer surface of the front; and at least first means for providing an audio signal, wherein each of the audio signal providing means comprises, in combination: a voice module having a switch, and a switch opening formed in the front of the hollow body, with the label extending over and closing the switch opening, with the switch of the voice module being a pressure actuated switch, with the label being deflectable inside of the switch opening to actuate the switch which is mounted within the hollow body and aligned with the switch opening.

5,360,346

ELECTRICAL CONNECTOR ASSEMBLY WITH PRINTED CIRCUIT BOARD STIFFENING SYSTEM

Kent E. Regnier, Lombard, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Dec. 22, 1993, Ser. No. 173,597
Int. Cl.[5] H01R *13/658*
U.S. Cl. 439—61 **19 Claims**



1. In an edge card receiving electrical connector assembly for mounting on a printed circuit board, the connector assembly including

an elongated, integrally formed, one-piece insulative housing having a generally planar mother board-mounting face and a daughter board receiving face, the housing including a pair of generally parallel slots extending lengthwise thereof in the board-receiving face for receiving a pair of daughter boards, a plurality of terminal-receiving passages along the housing in proximity to each slot, and

a plurality of terminals received in said passages, each terminal having a contact section for engaging a circuit on the respective daughter board upon insertion of the board in the respective slot,

wherein the improvement comprises a mother board stiffening system including

a generally planar elongated stiffening bar disposed within the elongated housing between the pair of slots therein, the bar extending substantially the entire length of the housing and being rigid in a direction generally perpendicular to the mother board mounting face of the housing, and

means for securing the stiffening bar to the mother board to prevent warping thereof.

5,360,347

LAMINATED SURFACE MOUNT INTERCONNECTION SYSTEM

Robert D. Irlbeck, Greensboro, and Warren A. Bates, Winston-Salem, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 17, 1993, Ser. No. 78,911
Int. Cl.[5] H01R *23/68*
U.S. Cl. 439—66 **8 Claims**

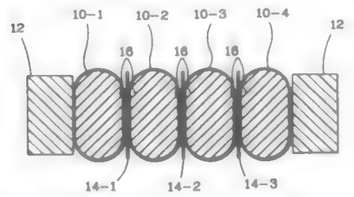
1. A connector assembly for connecting circuit elements of a first electronic device to respective circuit elements of a second electronic device, said connector comprising:

a housing framing a central opening;

a plurality of compressible connectors bonded together and arrayed side-by-side in rows across the central opening of said housing; and

a plurality of non-conductive spacers each adhered between a bonded pair of said compressible connectors for providing electrical insulation therebetween;

whereby said connector assembly may be sandwiched between said first and second electronic devices to complete



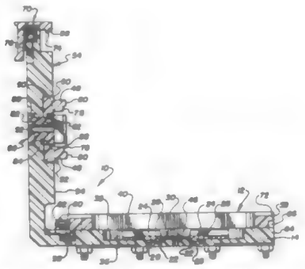
multiple electrical connections therebetween via said compressible connectors.

5,360,348

INTEGRATED CIRCUIT DEVICE TEST SOCKET

David A. Johnson, St. Louis Park, Minn., assignor to JohnsTech International Corporation, Minneapolis, Minn.

Filed Aug. 16, 1993, Ser. No. 107,257
Int. Cl.[5] H01R *4/48*
U.S. Cl. 439—72 **6 Claims**



1. A test socket for electronically interfacing leads of an integrated circuit device to be tested with corresponding terminals on a printed circuit board, comprising:

(a) a socket housing compliantly mounting a plurality of contacts, each contact engagable with a corresponding terminal of the printed circuit board, said housing defining a cavity within which the integrated circuit device to be tested is received with each lead of the device in engagement with a corresponding contact;

(b) a cover closable over said cavity;

(c) a pressure applicator carried by said cover and engagable with an integrated circuit device, received within said cavity, when said cover is closed over said cavity; and

(d) an elastomeric element compliantly holding said pressure applicator to said cover so that, as said cover is closed over an integrated circuit device received within said cavity, said pressure applicator conforms to an orientation of the integrated circuit device, as it engages the integrated circuit device, in order to effect generally equal force application to each of said contacts by a corresponding integrated circuit device lead.

5,360,349

POWER CONNECTOR

Daniel B. Provencher, Weare, N.H., and Luciano Spiridigliozzi, Watertown, Mass., assignors to Teradyne, Inc., Boston, Mass.

Filed Mar. 31, 1993, Ser. No. 40,650
Int. Cl.[5] H01R *13/698*
U.S. Cl. 439—108 **7 Claims**

1. A power connector comprising

a female group comprising

a power conductor and

a housing,

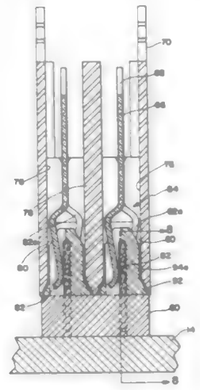
said power conductor including

a first contact portion, and

a second contact portion, and

a body portion therebetween,

the portions being of metal and integral, and in which said first contact portion comprises a plurality of pins and



said second contact portion comprises a receptacle,

said housing including

a male group receptor opening and

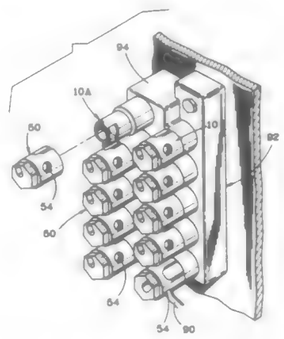
a retention portion adapted to receive and hold said body portion.

5,360,350

SEALANT COMPOSITIONS AND SEALED ELECTRICAL CONNECTORS

Francis F. Koblitz, York; Thomas J. Lynch, Mechanicsburg, and Ricky C. Mellinger, Seven Valleys, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 749,373, Aug. 23, 1991. This application May 5, 1992, Ser. No. 878,807
Int. Cl.[5] H01R *13/52*; H01B *3/44*
U.S. Cl. 439—276 **43 Claims**



1. A moisture and temperature resistant electrical connector for sealingly connecting transmission means comprising:

(a) a connector body comprising a substantially closed container having access means for allowing entry of said transmission means into said connector body and a terminal means for accepting and electrically connecting with said transmission means; and

(b) a sealant composition substantially filling said container and disposed along or adjacent to said terminal means, said sealant composition comprising an elastomeric thermoplastic polymer composite and an extender for said polymer composite, said extender comprising a major proportion by weight of said composition and said polymer composite comprising a minor proportion by weight of said composition,

wherein said polymer composite includes a mixture of

(i) a triblock copolymer and

(ii) a diblock copolymer, the weight ratio of said triblock copolymer to said diblock copolymer being in the range of about 1:20 to about 1:5; and

wherein said extender includes

(i) a primary extender for said polymer, said primary extender being selected from the group consisting essentially of C_1–C_4 polyolefins and

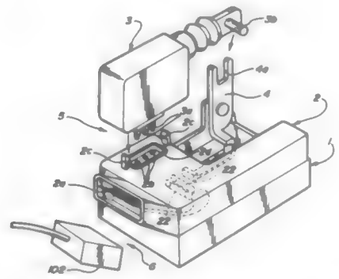
(ii) a secondary extender for said polymer, said secondary extender being selected from the group consisting essentially of mineral oil the weight ratio of said primary extender to said secondary extender being in the range of about 50:50.

5,360,351

HOUSING FOR THE INTERFACE BETWEEN A MOTOR VEHICLE LOCK, ITS ACTUATOR AND THE ELECTRICAL CONNECTION HARNESS OF THE VEHICLE

Pierre Periou, Cergy Pontoise; Richard Grandjean, St Die, and Bruno Laurent, St. Jean Lerlanc, all of France, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 679,387, Apr. 2, 1991, abandoned. This application Jan. 24, 1992, Ser. No. 826,324
Claims priority, application France, Apr. 4, 1990, 90 04330
Int. Cl.[5] H01R *13/639*
U.S. Cl. 439—357 **2 Claims**



1. A modular vehicle lock assembly comprising:

an actuator;

a vehicle lock including position detector contacts;

first means for connecting said lock and said actuator upon engagement therebetween providing structural securance and electrical communication therebetween;

second means for connecting said assembly to a vehicle wiring harness for providing power to said actuator and determining status of said detector contacts; and

wherein said actuator includes a finger which slidingly engages with a fork of said lock simultaneously with engagement of said lock and said actuator by said first means.

5,360,352

WIRE RETAINER FOR CURRENT MODE COUPLER

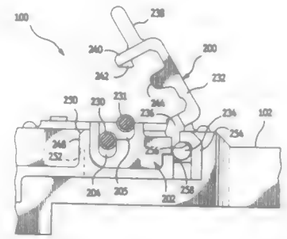
William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Harrisburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Dec. 24, 1992, Ser. No. 996,759
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—469 **13 Claims**

1. A coupler base assembly of the type having a wire nest for receiving into channels thereof respective conductors of a cable extending into cable exits thereof, said coupler base assembly comprising:

a base member and at least one wire retainer to be positioned on said base adjacent an associated said cable exit,

said wire retainer comprising an arm defining a conductor-proximate surface, a strut extending from one end thereof



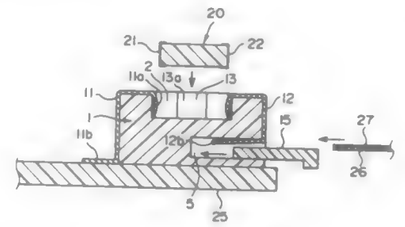
to a cylindrical hinge cooperable with a hinge-receiving pivot region of said base member to permit rotation of said arm between open and closed positions, and a latch at an opposed end thereof to enable latching to said base member when said wire retainer is rotated to said closed position, thus securing said conductors in said channels.

5,360,353

CONNECTOR

Hironobu Kinoshita, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Aug. 2, 1993, Ser. No. 100,150
Claims priority, application Japan, Aug. 28, 1992, 4-229523
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **6 Claims**



1. A connector which is mounted on a printed circuit board, the connector connecting signal lines from outside the printed circuit board to conductive patterns on the printed circuit board, the connector comprising:

a connector body made of an insulating material, the connector body having a concave portion and an opening which receives external signal lines;

a plurality of first terminals provided at the connector body, one end of each first terminal being elastic and led to the concave portion, and the other end of each first terminal being led outside the connector body and connected electrically to a conductive pattern on the printed circuit board;

a plurality of second terminals which are provided at the connector body, one end of each second terminal being elastic and led to the concave portion, and the other end of each second terminal being provided at the opening and connected electrically to one of said external signal lines;

a grounding terminal which is provided at the connector body, one end of the grounding terminal being led to the concave portion, and another end of the grounding terminal being led outside the connector body and connected electrically to a ground line on the printed circuit board; and

a 3-terminal capacitor array including a plurality of capacitor elements, the capacitor array having a first electrode and a second electrode for each capacitor element and a common grounding electrode, the array being press-fitted into the concave portion, the first electrode of each capacitor being connected with one of the first terminals, the second electrode of each capacitor being connected with one of the second terminals and the common grounding electrode being connected with the grounding terminal.

5,360,354

CONTACT PIN WITH CERAMIC INSULATION

Hans Czyperreck; Fritz Meller, both of Lauf, and Helmut Stuhler, Nürnberg, all of Germany, assignors to Hoechst CeramTec Aktiengesellschaft, Selb, Germany

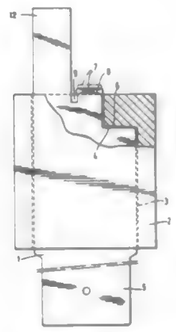
PCT No. PCT/EP91/01827, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/05605, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 25, 1991, Ser. No. 30,026

Claims priority, application Germany, Sep. 26, 1990, 4030408

Int. Cl.[5] H01R *13/415*

U.S. Cl. 439—741 **6 Claims**



1. A contact pin with ceramic insulation which is provided at one end with a tongue for receiving a pole shoe and at the other end has a step which rests against a corresponding step in a flat channel running through the ceramic insulation, wherein the first step is followed by a second step which vertically projects slightly out of the channel and is provided with an upsetting on the top horizontal surface of said second step.

5,360,355

CONTACT APPARATUS

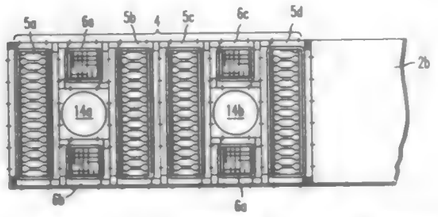
Hans P. Ehrler, Maulburg, Germany; Roger Moll, Raedersdorf, France, and Rudolf Neidecker, Basel, Switzerland, assignors to Multi-Contact AG, Allschwil, Switzerland

Filed May 4, 1993, Ser. No. 56,381

Claims priority, application European Pat. Off., May 8, 1992, 92810340.7

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—816 **7 Claims**



1. A contact apparatus useful for establishing an electrical connection between two, flatly overlapping, current conducting elements, the contact apparatus lying between and compressed by the current carrying elements and including at least one, spring-action compressible contact element as well as at least one support element beside the contact element in order to limit the compression of the at least one contact element, said at least one contact element and said at least one support element are formed as separate contact modules and support modules respectively, which may be combined with each other;

wherein the contact modules and the support modules are constructed so as to be connectable together; and wherein

a) the contact modules and the support modules each have a peripherally running, closed module frame;

b) a contact metal sheet with a plurality of contact lamellae which project to both sides of the plane of the contact metal sheet, is secured to each respective contact module within the module frame; and

c) a support plate is secured to each respective support module within the module frame, the thickness of the plate being smaller than the maximum depth to which the contact lamellae extend on both sides of the plane, the thickness of the plate being greater than the thickness of the contact metal sheet.

5,360,356

SPRING CONTACT RECEPTACLE

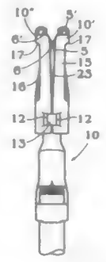
Guntram May, Altdorf, Helmut Steinhardt, Steffen Müller, Jürgen Hitz, all of Nuremberg, Germany, assignors to Framatome Connectors Daut & Rietz GmbH & Co. KG, Nuremberg, Germany

Filed Aug. 17, 1993, Ser. No. 107,923

Claims priority, application Germany, Aug. 18, 1992, 4227287

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—839 **16 Claims**



1. A spring contact receptacle locatable in a chamber of a receiving case and being retained therein by holding members, the spring contact receptacle comprising:

a sheet metal inner spring contact including an inner spring base and inner spring arms having free ends;

a sheet metal outer spring, including an outer spring base, two spaced outer spring arms, and two lateral surfaces extending between said outer spring arms, said outer spring being box-shaped and connected to said inner spring base, with said outer spring arms bent inwardly over said free ends of said inner spring arms to form a V-shaped guide, said outer spring having a bending slot across its entire length formed within one of said lateral surfaces to allow said outer spring to be compressed for insertion and removal from the receiving case; and

said lateral surfaces including recesses across part of their lengths and support surfaces defining edges of the recesses closest to said free ends, said support surfaces extending transversely to said free ends and said support surfaces being axially supported on the holding members of the receiving case.

5,360,357

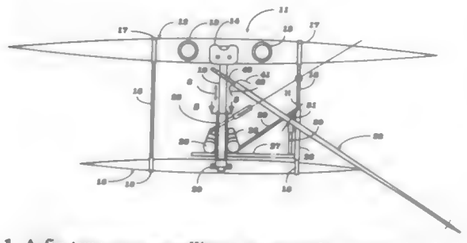
SELF-PROPELLED WATERCRAFT

James R. Drake, Santa Monica, and Kuniyuki Hayashi, Long Beach, both of Calif., assignors to Yamaha Hatsudoko Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 744,362, Aug. 13, 1991, abandoned. This application May 8, 1992, Ser. No. 880,225

Int. Cl.[5] B63H *1/36*

U.S. Cl. 440—14 **61 Claims**



1. A fin type oar propelling a watercraft comprising an oar element having a handle end and a blade end, an oarlock supporting said oar element for pivotal movement between its ends about a first upstanding pivot axis and for pivotal movement relative to said oarlock about a horizontal axis which horizontal axis also pivots about said first upstanding axis with said oar element, a blade type fin supported for pivotal movement about a second upstanding pivotal axis at said blade end of said oar element, means accessible at the handle end of said oar element for limiting the degree of pivotal movement of said blade type fin about said second pivot axis upon stroking motion of said oar and means for limiting the pivotal movement of said oar element relative to the oarlock and said horizontal axis for controlling the degree of submersion of the blade type fin in the body of water in which the watercraft is operating.

5,360,358

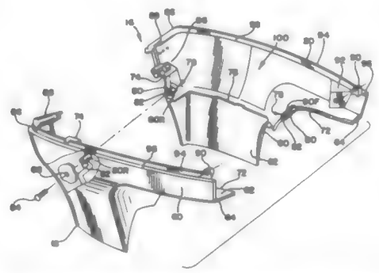
HIDDEN LOWER MOTOR COVER ATTACHMENT MEANS

David F. Haman, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 21, 1993, Ser. No. 65,993

Int. Cl.[5] B63H *21/24*

U.S. Cl. 440—77 **13 Claims**



1. A lower motor cover attachment for an outboard motor, comprising:

a first lower motor cover half having an outer surface, an inner surface and an overboard water indicator opening;

a second lower motor cover half having an outer surface and an inner surface;

attachment means located on said respective inner surfaces of said first and second lower motor cover halves for use in releasably attaching said motor cover halves to the motor;

fastening means for engaging said attachment means and fastening said attachment means of said first and second halves to the motor; and

said overboard water indicator opening being disposed on said first lower motor cover so as to be substantially coaxial with at least one of said attachment means, such that a tool inserted through said opening may engage said fastening means located in said at least one of said attachment means.

5,360,359

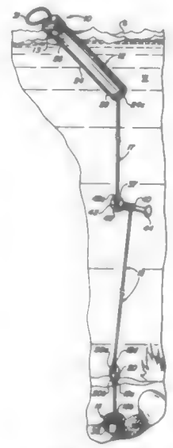
PORTABLE BUOY MARKER ASSEMBLY

Larry W. Reynolds, P.O. Box 178, Clinton, Ill. 61727

Filed Dec. 16, 1993, Ser. No. 168,935

Int. Cl.[5] B63B *22/16*

U.S. Cl. 441—6 **20 Claims**



1. A portable buoy marker assembly, comprising:

(a) an elongated hollow buoy tube having a closed end and an opposite open end and being adapted for flotation in a body of water;

(b) an elongated flexible line substantially longer than said buoy tube and having a pair of opposite ends, said flexible line being attached at one of said ends thereof to said buoy tube and at the other of said ends extendable through said buoy tube and from said open end thereof;

(c) a reel attached to said flexible line nearer to said one end of said flexible line than to said other end thereof, said reel being adapted for winding a substantial portion of the length of said flexible line thereabout and being releasably received in said buoy tube through said open end thereof; and

(d) an end cap releasably attached to said open end of said buoy tube to close said open end and retain said reel with said flexible line wound thereabout in a loosely contained and stored relationship within said buoy tube, said end cap being releasable from said buoy tube to open said open end of said buoy tube and permit said reel and said flexible line to release and fall away from said buoy tube through said open end thereof, said other of said ends of said flexible line being attached to said end cap.

5,360,360

INFLATABLE TOWABLE CHARIOT

Leroy L. Peterson, Omaha, Nebr., assignor to Sportstuff, Inc., Omaha, Nebr.

Filed Jun. 14, 1993, Ser. No. 75,413

Int. Cl.[5] B63C *9/08*

U.S. Cl. 441—130 **14 Claims**

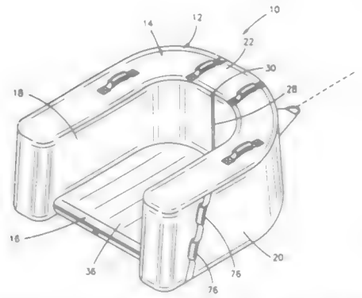
1. An inflatable horseshoe shaped passenger support appara-

tus adapted to be towed behind a towing vehicle, said apparatus comprising,

a generally U-shaped inflatable wall bladder including two rearwardly extended spaced apart side wall portions and a front wall portion connected to and extended between said side wall portions, each of said wall portions, upon inflation, having a height greater than thickness thereof,

an exterior jacket including,

a generally U-shaped pocket of a size and shape to receive



and to be substantially filled by said wall bladder upon inflation of said wall bladder, said pocket having interior, exterior, top and bottom walls,

a floor connected to said pocket and spanning and substantially covering the area partially enclosed by said pocket for supporting a passenger thereon,

handle means adjacent the top of said jacket pocket for passengers to hold on to, and

a towing system secured to said jacket and extendable forwardly therefrom for connection to a towing vehicle.

5,360,361

METHOD OF MANUFACTURING A DISPLAY TUBE

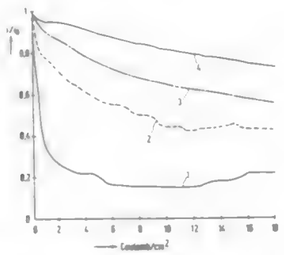
Helmut Bechtel, Roetgen; Wolfram Czarnojan; Stefan Gruhlke, both of Aachen, and Ulrich Kynast, Roetgen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1993, Ser. No. 93,280

Claims priority, application Germany, Jul. 16, 1992, 4223351

Int. Cl.[5] H01J *9/38*

U.S. Cl. 445—40 **14 Claims**



1. A method of manufacturing a cathode ray tube whose inner space is provided with a phosphor coating which can be excited to luminescent emission, said method comprising evacuating said inner space and sealing said inner space in a gastight manner, the improvement comprising introducing at least one hydrolyzable gas into said inner space before and/or during evacuation for a limited time while using a partial pressure that is larger than the eventual final vacuum pressure of the cathode ray tube and subsequently completing said evacuation while introducing no further hydrolyzable gas into said inner space and then sealing said ray tube in a gastight manner.

5,360,362

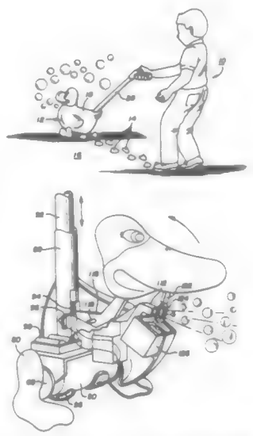
FOOTPRINT GENERATING TOY

Joseph Cernansky, Lomita; George T. Foster, Signal Hill, both of Calif., and Elliot Rudell, 1619 Gramercy Ave., Torrance, Calif. 90501, assignors to Elliot A. Rudell, Torrance, Calif.

Filed Sep. 1, 1992, Ser. No. 939,068

Int. Cl.[5] A63H *33/28, 7/06;* **B41F** *11/00*

U.S. Cl. 446—16 **13 Claims**



1. A toy device that can be moved along a surface, comprising:

a housing adapted to be moved along the surface, said housing being constructed to simulate an animated character; and,

a liquid absorbing member that is operatively connected to said housing such that said liquid absorbing member releases liquid onto the surface when said liquid absorbing material is in contact with the surface, in a manner that corresponds to footprints of said animated character;

a reservoir that is attached to said housing and supplies liquid to said liquid absorbing member.

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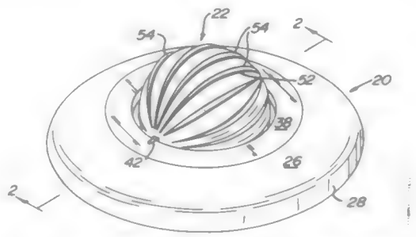
FLYING DISK WITH ROTATABLE MEMBER

John M. Levin, 412 Fairview Rd., Narberth, Pa. 19072

Filed Nov. 29, 1993, Ser. No. 159,067

Int. Cl.[5] A63H *27/00, 1/00*

U.S. Cl. 446—46 **18 Claims**



1. A flying disk device comprising a disk-like upper wall portion having a circular periphery in the form of a downwardly depending skirt, said skirt extending about a central axis which extends through the center of said disk-like upper wall portion, said upper wall and said skirt having an outer surface and an inner surface, said inner surface enclosing a hollow area to trap air therein when said flying disk is thrown with its undersurface directed somewhat downward while said disk is caused to spin about said axis, said upper wall having a central opening extending entirely through said upper wall and a rotatable member located within said opening, said member extending above said upper wall and below said upper wall into said hollow area and supported in said opening by mounting means to enable said rotatable member to spin about a chosen axis while said flying disk spins through the air.

5,360,364

CARDAN JOINT FOR A TOY BUILDING SET

Ole V. Poulsen, and Jan Hatting, both of Vejle, Denmark, assignors to Interlego A.G., Baar, Switzerland

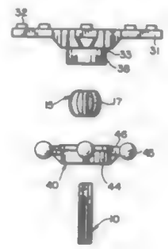
PCT No. PCT/DK91/00374, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/10261, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 3, 1991, Ser. No. 70,403

Claims priority, application Denmark, Dec. 4, 1990, 2876/90

Int. Cl.[5] A63H *33/12, 33/08;* **F16C** *11/00;* **F16D** *3/16*

U.S. Cl. 446—102 **8 Claims**



1. A cardan joint for transmission of rotation between a first and a second rotating part of a toy building set, said cardan joint first rotating part comprising a shaft (10) having a coupler head (15) having radially projecting flaps (17) extending along in axial dimension of the shaft,

said second rotating part comprising surfaces defining an essentially cylindrical cavity (33) receiving the first rotating part in a snap fit connection, wherein the coupler head (15) is shaped so that the contour of the flaps is arcuate in a circular coupling area between the first and the second rotating parts, and the second rotating part is provided with at least one pin (34, 39) projecting radially inwards engaging said flaps and displaceable along the flaps (37) of the first rotating part; and said snap fit connection includes resilient stop means past which said coupler head may be forced.

5,360,365

SPORTS STADIUM MODEL

David P. Evans, 1100 Valley Ridge, Waco, Tex. 76712

Filed Dec. 1, 1993, Ser. No. 159,515

Int. Cl.[5] A63H *33/04, 3/52*

U.S. Cl. 446—110 **7 Claims**

4. An assemblable and disassemblable architectural model kit of a sports stadium, comprising

a base member;

a scaled playing surface member comprising indicia representative of a first sports field, said playing surface member being assemblable above and to said base member;

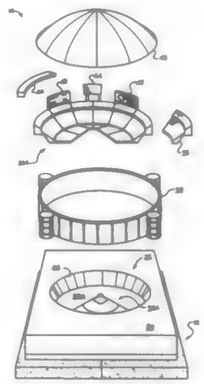
a body member having lateral side walls defining a depressed central area therein, said depressed central area being open at the bottom to reveal said playing surface member therethrough, said body member being assemblable above and to said base member;

a lower structure member fitted within and cooperating with said body member, open at the bottom to reveal said playing surface member therethrough, said lower structure member being assemblable within and to said body member;

a first scaled exterior member;

a second scaled exterior member providing an external appearance different from that of said first scaled exterior member, whereby said architectural model is configurable to reflect architectural conditions of another era;

first accessory members including first scaled seats, and first scaled playing field apparatus, all said first accessory members being related to a first sport;



second accessory members including second scaled seats, and second scaled playing field apparatus, all of said second accessory members being related to a second sport, whereby said architectural model is reconfigurable by assembly and disassembly to simulate conditions relating to a second sports activity substituting said first accessory members with said second accessory members; and

a scaled roof.

5,360,366

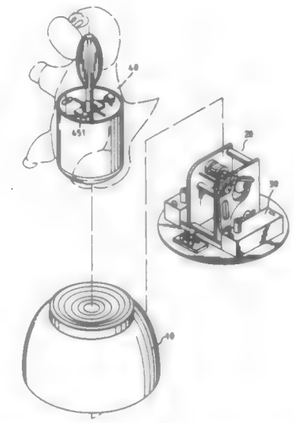
WOBBLING TOY

Ivan Lin, Taipei, , assignor to C.C. Family Overseas Co., Ltd., Taipei,

Filed Dec. 22, 1993, Ser. No. 171,653

Int. Cl.[5] A63H *33/26, 13/18, 11/00*

U.S. Cl. 446—134 **6 Claims**



1. A wobbling toy comprising:

a hollow platform having a top surface and a support unit

disposed inside said platform, said support unit having two spaced upright support plates;

a first magnet unit disposed horizontally and mounted rotatably between said support plates of said support unit adjacent to said top surface of said platform;

a driving mechanism operable so as to drive rotatably said first magnet unit; and

a toy body unit including an upright hollow cylindrical member having a convex bottom wall which rests on said top surface of said platform, said cylindrical member having an inner peripheral wall with two diametrically opposite portions, said toy body unit further including a pivot plate which has two distal ends connected pivotally to said diametrically opposite portions of said inner peripheral wall of said cylindrical member, and a vertically extending swing rod which has an intermediate portion that extends through and that is connected to said pivot plate, said swing rod further having a lower end with a second magnet unit mounted thereon and disposed adjacent to said convex bottom wall of said cylindrical member;

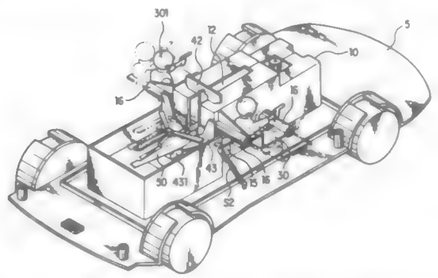
whereby, rotation of said first magnet unit causes said first magnet unit to attract and repel alternatingly said second magnet unit in order to cause wobbling of said toy body unit on said top surface of said platform.

5,360,367

TOY CAR STRUCTURE

Tsai W. Ho, No. 82-1, Chung Jen Rd., Sec. 1 Pei Tou Dist., Taipei City, Taiwan, Prov. of China

Filed Feb. 18, 1993, Ser. No. 19,639
Int. Cl.[5] A63H *17/26*
U.S. Cl. 446—470 **2 Claims**



1. A toy car having a body, a chassis, a pair of displaceable seat members, and a displaceable simulated helicopter, comprising:

(a) a set of drive gears defining a gear train located within a drive gear housing, said drive gear housing secured to said chassis of said toy car and forming an enclosure for said set of drive gears;

(b) a motor coupled to one of said drive gears for rotatively actuating said gear train;

(c) an upper and lower flywheel member, said upper and lower flywheel members being vertically displaced and axially aligned and having a pair of flywheel column members located on opposing sides of an axis of said flywheel members, said flywheel column members extending vertically and fixedly coupled to said flywheel members on opposing ends of a respective one of said flywheel column members, said pair of vertically displaced flywheel members being coupled by a flywheel shaft to one of said gears of said gear train for responsive rotation therewith, said upper flywheel member having an arcuately contoured right-angle triangular tab member secured to an upper surface thereof;

(d) a pair of slide plate members, each of said slide plate members having one end surface in contiguous contact with a respective flywheel column member for linear reversible displacement responsive to a rotative displacement of said flywheel members, each of said slide plate members having a protruding pin insertable within a slot formed through a respective hinge plate member, said respective hinge plate member having a first end coupled to a hinge plate spring and a second end having a hinge plate pin insertable within a slot formed through a respective displaceable seat member, for reversible transverse displacement of said seat member responsive to said rotation of said flywheel members, and,

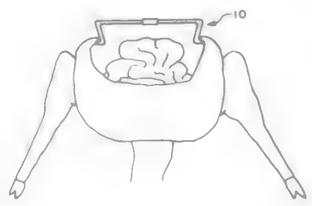
(e) an elevation rod member extending through a vertically directed slot formed through an elevation plate member displaceably mounted to said drive gear housing, said elevation rod member being rotatively coupled on a first end to one of said gears of said gear train and on a second end to a helicopter gear set coupled to a rotor of said helicopter for responsive rotation thereof.

5,360,368

WILD GAME DRESSING TOOL

Michael L. Hajek, 409 NE. 6th St., Staples, Minn. 56479

Filed Feb. 10, 1992, Ser. No. 832,940
Int. Cl.[5] A22B *5/06*
U.S. Cl. 452—197 **3 Claims**



1. A wild game dressing tool comprising:

a first member having an elongated male end portion and a first offset hook portion; said male end portion and first hook portion being interconnected by an intermediate portion having curved opposite ends and extending at an acute angle relative to the male end and first hook portions, whereby said male end and first hook portions extend in parallel planes;

a second member having an elongated female end portion and a second offset hook portion; said female end portion and second hook portion being interconnected by an intermediate portion having curved opposite ends and extending at an acute angle relative to the female end and second hook portions,

whereby said female end and second hook portions extend in parallel planes;

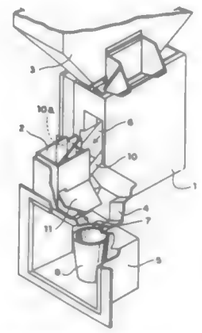
said first and second members being joined by coupling the male and female end portions to form a unitary tool, whereby the first and second hook portions extend in opposite directions for engaging the proximal and distal sides of an opened animal's carcass to force and hold the animal's rib cage apart.

5,360,369

CHANGE MACHINE

Stig B. Larsson, Mosman, and Ian M. Ryan, Double Bay, both of Australia, assignors to Scandic International Pty. Ltd., Alexandria, Australia

PCT No. PCT/AU91/00163, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO91/17526, PCT Pub. Date Nov. 14, 1991
PCT Filed Apr. 26, 1991, Ser. No. 938,258
Claims priority, application Australia, Apr. 27, 1990, PJ 9864
Int. Cl.[5] G07D *1/02, 9/04*
U.S. Cl. 453—19 **15 Claims**



12. An apparatus for dispensing coins for use with a vending machine, said apparatus comprising:

an extension bin including a container for the storage of the coins therein;

a payout hopper located below said storage coin container; said coin storage container having an exit opening located in the lower part thereof;

a payout device located adjacent said payout hopper and operatively associated with said exit opening of said coin storage container;

said payout device including a receptacle for the housing of coins therein;

a coin tray located adjacent said payout hopper and operatively associated with said exit opening of said coin storage container; whereby

the coins in said payout hopper are selectively dispensed and gravity fed via said exit opening of said coin storage container to said payout device and said coin tray; and

a cup holder located below said payout device and said coin tray;

said payout device having an exit opening in its lower part; said coin tray having an opening in its lower part; whereby

the coins are selectively dispensed and gravity fed via said exit opening of said payout device and said coin tray opening to said cup holder.

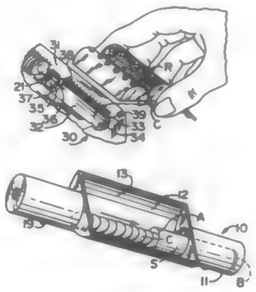
5,360,370

COIN MANAGEMENT DEVICES AND METHOD

Peter Woolrich, 131 Bloor St. West, Toronto, Canada M5S 1R1

Filed Aug. 6, 1992, Ser. No. 925,102
Int. Cl.[5] G07D *9/06*
U.S. Cl. 453—59 **23 Claims**

20. A method for managing coins comprising the steps of placing a predetermined number of coins of the same size and denomination aligned flat surface to flat surface into one end of a tubular coin receiving device through a mouth arranged in said device and placing an empty coin sleeve adapted to receive said predetermined number of coins of said size and denomination into another end of said tubular coin receiving device, and tipping said device so that the end containing the coins is elevated relative to the end containing said sleeve and



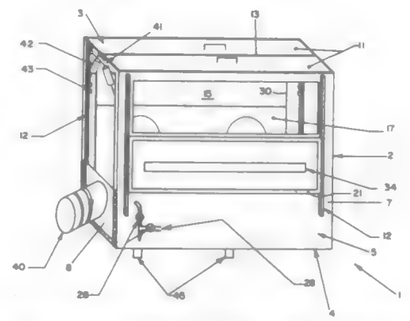
the coins passing past said mouth are moved into and fill said sleeve.

5,360,371

MATERIAL HANDLING APPARATUS AND METHOD

John K. Bartimote, Traralgon, Australia, assignor to Peter James Coffey, Australia

PCT No. PCT/AU90/00305, § 371 Date Feb. 25, 1992, § 102(e) Date Feb. 25, 1992, PCT Pub. No. WO91/01184, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 17, 1990, Ser. No. 820,905
Claims priority, application Australia, Jul. 18, 1989, PJ5318
Int. Cl.[5] B08B *15/02*
U.S. Cl. 454—56 **13 Claims**



1. Apparatus for handling potentially dangerous materials by an operator, comprising:

a work head including a main body (2) having first and second work zones therein, said first and second work zones (15,19) being arranged adjacent one another with a transfer opening (20) therebetween;

a first access opening (17) for providing access to said first work zone by said operator from externally thereof;

a second access opening (21) for providing access to said second work zone (19) by said operator from externally thereof;

an air flow generator (85,86) coupled to said first work zone for withdrawing air therefrom; and

liquid spray means (23) comprising a plurality of spray heads (27) arranged so that liquid spray therefrom forms a plurality of liquid barriers or curtains which at least partially surround said second work zone including liquid barriers or curtains across said transfer opening (20) and said second access opening (21) to prevent the escape of the potentially dangerous materials from said second work zone.

5,360,372

CONTROL SYSTEM FOR DOORS OF A NEGATIVE AIR PRESSURE ENCLOSURE

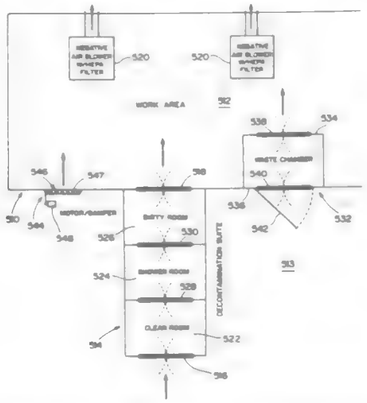
Gene Newman, Palm City, and Anthony Natale, Jensen Beach, both of Fla., assignors to GPAC, Inc., Palm City, Fla.

Continuation of Ser. No. 657,047, Feb. 19, 1991, Pat. No. 5,099,751, which is a continuation-in-part of Ser. No. 519,216, May 7, 1990, Pat. No. 4,993,313, which is a continuation-in-part of Ser. No. 346,621, May 2, 1989, Pat. No. 4,922,806. This application Mar. 30, 1992, Ser. No. 860,035

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] F24F *7/007, 11/00*

U.S. Cl. 454—253 69 Claims



1. A system for controlling access to and allowing air to flow into a sealed work area which is under negative air pressure and from which asbestos-containing material is removed, said system comprising:

wall means for isolating the sealed work area and having at least one access opening therein;

a decontamination chamber in communication with said sealed work area through said one access opening and having at least two additional access openings therein;

a rigid door assembly pivotally mounted in at least two of said access openings along a side edge for swinging movement during entry and exit of personnel to and from the sealed work area; and

said door assembly including means for providing an air flow path for substantial volumes of air to enter into the work area under negative pressure and for sealing said air flow path automatically upon loss of negative air pressure in said work area.

5,360,373

UPWELLING-AIR DISTRIBUTOR FOR AIR-CONDITIONING SYSTEMS

Detlef Makulla, Overath, and Marten Brunk, Odenthal, both of Germany, assignors to H. Krantz-TKT GmbH, Gladbach, Germany

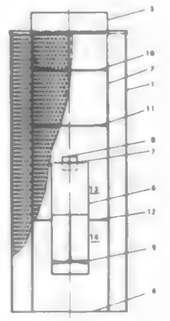
Filed Nov. 19, 1993, Ser. No. 154,845

Claims priority, application Germany, Jan. 8, 1993, 4300300

Int. Cl.[5] F24F *13/06*

U.S. Cl. 454—284 8 Claims

1. An upwelling-air distributor for air-conditioning systems comprising: two concentric air-permeable cylinders, one of said cylinders being an outer cylinder and the other one of said cylinders being an inner cylinder; at least one diaphragm in form of flat rings inside said inner cylinder; an air intake at one end of said distributor for connecting said distributor to a ventilating system; a pipe inside said inner cylinder; a butterfly valve inside said pipe, said pipe being open at an end remote



from said air intake, so that air can flow through said pipe when said valve is not closed.

5,360,374

APPARATUS FOR DESKS

David Wyon, Westmansgatan 68, S-582 46 Linköping, and Stefan Larsson, Sjömansgatan 17 D, S-413 15 Göteborg, both of Sweden

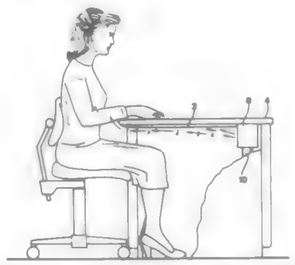
PCT No. PCT/SE91/00481, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/01893, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 8, 1991, Ser. No. 30,229

Claims priority, application Sweden, Jul. 23, 1990, 9002495

Int. Cl.[5] F24F *3/00, 7/06*

U.S. Cl. 454—306 20 Claims



1. An apparatus for desks for influencing the exchange of heat between a person sitting at a desk and the ambient air, said apparatus comprising means (2, 8–10, 12, 13) for causing air with a temperature differing from the main room air to enter into contact with a body of the person, wherein said means comprise air stream generating members (8–10, 12, 13) connected to a source of air with a lower temperature than that of the main room air and arranged to generated air streams having a lower temperature than the main room air from a region located under a top of the desk in front of and at least at a height that knees of the person sitting at the desk would have and towards a trunk of the person while passing above thighs of the person, said means further comprising a heater device (2) arranged to generate heat radiation to propagate from the region directly under the top of the desk and downwardly towards the thighs and calves of the person sitting at the desk.

5,360,375

DEVICE FOR MECHANICALLY TRANSMITTING TORQUE

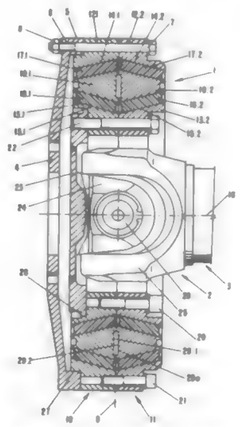
Ulrich Falz, Dortmund; Jürgen Walter, Haltern, and Manfred Lanke, Langenargen, all of Germany, assignors to Hackforth GmbH & Co. KG, Herne, Germany

Filed Jul. 30, 1992, Ser. No. 922,134

Claims priority, application Germany, Aug. 14, 1991, 9110049

Int. Cl.[5] F16D *3/76*

U.S. Cl. 464—091 3 Claims



1. A device for mechanically transmitting torque from a motor to a power transmission, comprising:

a damping member comprising two halves mirror-symmetrical relative to a plane that is perpendicular to an axial direction, each said half being a composite body comprised of:

a first and a second conical rubber ring of opposite conical orientation, with said second conical rubber ring concentrically arranged inside said first conical rubber ring;

a metallic conical center ring vulcanized to mantle surfaces of said first and second conical rubber rings that are facing one another;

a metallic outer ring vulcanized to an outer conical mantle surface of said first conical rubber ring;

a metallic inner ring vulcanized to an inner conical mantle surface of said second conical rubber ring;

further comprising screws for fastening said two halves to one another at said inner and outer rings, with said halves arranged with a respective base portion of said conical center rings facing one another; and

further comprising a shim ring, wherein said base portion of each said conical center ring has annular groove, said annular grooves aligned with one another, with said shim ring inserted into said annular grooves for centering said conical center rings relative to one another.

5,360,376

QUICK RELEASE DISCONNECT COUPLING DEVICE FOR DRIVE SHAFT SEGMENTS

Neil F. Baldino, Ridgefield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 13, 1993, Ser. No. 3,756

Int. Cl.[5] F16D *3/18, 3/10*

U.S. Cl. 464—154 11 Claims

1. In a drive train having input and output drive shaft segments, a coupling device comprising:

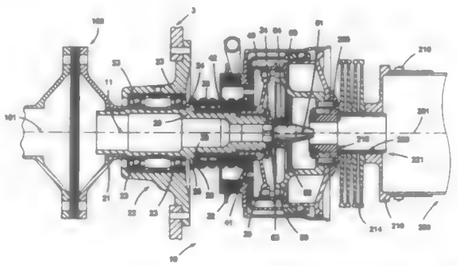
means for transmitting torque from the input drive shaft segment to the output drive shaft segment, said torque transmitting means having a coupled position and a decoupled position, wherein said transmitting means is operative to transmit torque in said coupled position, said torque transmitting means including:

a male input spline operatively interconnected with the input drive shaft segment,

a female spline assembly disposed about and slidably mounted to the input drive shaft segment, said female spline assembly furthermore slidably engaging said male input spline, and

a male output spline mounted to the output drive shaft segment, said male output spline furthermore slidably engaging said female spline assembly in said coupled position; and

means interconnected with said torque transmitting means and operative in a position for locking said female spline assembly to said male output spline in said coupled position to prevent axial displacement of said female spline assembly and said male output spline with respect to one another, said locking means furthermore having a disconnect position wherein said torque transmitting means is in said decoupled position, said locking means additionally being unloaded in a torque-wise direction in said locked position, said locking means including:



a cage segment secured to said female spline assembly, said cage segment having a plurality of apertures formed therethrough,

a plurality of locking balls disposed within said apertures,

an output coupler secured to said male output spline, said output coupler having a plurality of locking detents formed therein for seating said locking balls in said coupled position,

an outer housing slidably disposed about said cage segment, said outer housing having a locking surface for urging said plurality of said locking balls into said locking detents of said output coupler in said locked position thereby securing said female spline assembly to said male output spline, and said outer housing furthermore having a retaining surface for reserving said locking balls within said apertures in said unlocked position, and

means for translating said outer housing between said locked position and an unlocked position, and vice versa, said translating means being further operative in translating said outer housing from said unlocked position to said disconnect position.

5,360,377

EXTRA SHORT TELESCOPIC TRANSMISSION SHAFT WITH SHAFT SECTION DIAMETERS GREATER THAN COUPLING FORK DIAMETERS

Jose G. Fernandez, Sao Paulo, Brazil, assignor to Mercedes-Benz Do Brasil S.A., Sao Paulo, Brazil

PCT No. PCT/BR91/00024, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO92/08905, PCT Pub. Date May 29, 1992

PCT Filed Nov. 8, 1991, Ser. No. 910,101

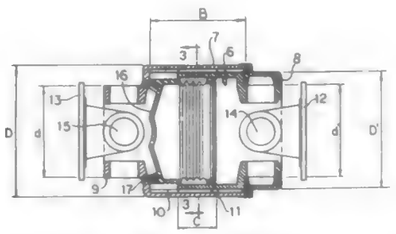
Claims priority, application Brazil, Nov. 8, 1990, PI9005668

Int. Cl.[5] F16C *3/03;* F16D *3/06*

U.S. Cl. 464—162 7 Claims

1. Extra short telescopic transmission shaft comprising two

shaft sections (6,7) displaceable one with respect to the other, each said shaft section having one free end and one coupling fork (8,9) integrally formed with said respective shaft section (6,7), said shaft sections (6,7) being provided along at least part of their lengths with corresponding longitudinal teeth (11,10),



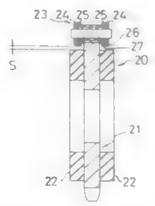
said teeth (11,10) being meshed to permit said relative longitudinal movement between said shaft sections and to ensure transmission of rotation therebetween, each of said shaft sections (6,7) having a diameter (D',D) which is greater than the diameter (d',d) of its respective coupling fork (8,9).

5,360,378

CHAIN DRIVE MECHANISM HAVING IMPROVED NOISE REDUCTION

Tadasu Suzuki, Chicopee, Mass.; Shigekazu Fukuda, Tokorozawa, and Masahiro Satoh, Sakado, all of Japan, assignors to Tsbakimoto Chain Co., Osaka, Japan

Filed Sep. 8, 1993, Ser. No. 118,422
Claims priority, application Japan, Sep. 14, 1992, 4-070028[U]
Int. Cl.[5] F16H *55/30*
U.S. Cl. 474—161 **7 Claims**



1. An improved chain drive mechanism comprising a sprocket having peripheral teeth and a drive chain engaged with said teeth, the improvement comprising:

an elastic body fixedly mounted on at least one side of the sprocket, the elastic body being of a size and weight sufficient to absorb vibration of said sprocket, the outer periphery of said elastic body forming with the inner periphery of said drive chain a radial gap therebetween;

whereby said elastic body cannot contact said drive chain when said drive chain is fully engaged in said sprocket teeth.

5,360,379

PACKAGING MACHINERY BELT WITH NON-DIRECTIONAL SPLICE

Charles E. Carelli, Eagle Bridge, and Linda L. Springer, Buskirk, both of N.Y., assignors to AlliedSignal Inc., Morris Township, N.J.

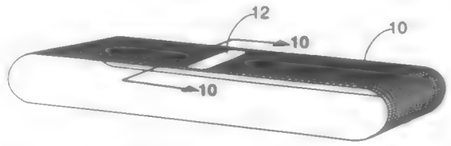
Filed Oct. 25, 1993, Ser. No. 142,538
Int. Cl.[5] F16G *1/00*
U.S. Cl. 474—260 **26 Claims**

1. A non-directional endless belt construction adapted for use in packaging applications, said belt comprising:

a belt material having two edges and two ends, said ends being butted together, said belt material being formed from a coated fabric, said belt material having an outer surface and an inner surface;

a splice formed from a coated fabric, said splice covering said outer surface of said belt material over the butted ends thereof, said splice extending substantially across the width of said belt material;

a first film extending over said splice and substantially encapsulating said splice; and



a second film extending over at least said butted ends of said belt material on said inner surface thereof and extending at least substantially across the width of said belt material;

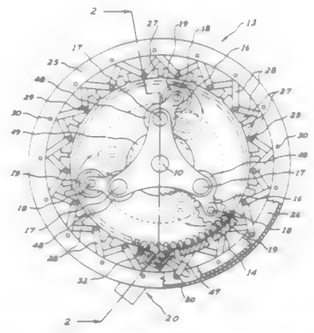
said belt material, splice, first film and second film being laminated together into a unitary construction, whereby when said belt is installed in a packaging apparatus, it is adapted to rotate in either the clockwise or counterclockwise direction.

5,360,380

VARIABLE RATIO EPICYCLIC TRANSMISSION

Murray K. Nottle, 1 kerferd Road, Glen Iris, Victoria 3146, Australia

PCT No. PCT/AU91/00538, § 371 Date Aug. 17, 1993, § 102(e) Date Aug. 17, 1993, PCT Pub. No. WO92/09828, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 22, 1991, Ser. No. 66,003
Claims priority, application Australia, Nov. 23, 1990, PK3499; Jul. 5, 1991, PK7065
Int. Cl.[5] F16H *3/58, 3/76*
U.S. Cl. 475—182 **8 Claims**



1. A variable ratio epicyclic drive transmission, of the kind having a fixed central axis and comprising a rotatable driving element (10) with said fixed axis as its axis of rotation, a rotatable driven element (11) also with said fixed axis as its axis of rotation, a central sun wheel (12) fixed relative to one of said elements so as to rotate in concert with said one element also with said fixed axis as its axis of rotation, a stationary outer ring member co-axial with said elements, a planet carrier (15) fixed relative to the other of said elements so as to rotate in concert with said other element with said fixed axis as its axis of rotation and defining an orbiting axis of rotation parallel to and radially spaced from said fixed axis, and at least one planet wheel (19) mounted on said carrier (15) for rotation about its own axis and for orbital movement in engagement with said ring member, said transmission being characterised;

in that the ring member comprises an almost complete, but broken, substantially circular loop of a pliable positive drive tensile member (14) engagable by said planet wheel and supported by a contractile iris structure (13) permitting the diameter of the loop to be varied while maintaining its circularity;

in that said iris structure includes joint means (20) comprising a tail guide defining a passage (33) extending out of the loop at one end of the break therein, through which said tensile member may be drawn from the loop or taken back into the loop, and bridging means (47) maintaining continuity of engagement between the ring member and the planet wheel (19) as it traverses the break in the loop;

in that the planet wheel (19) is swing mounted on the planet carrier (15);

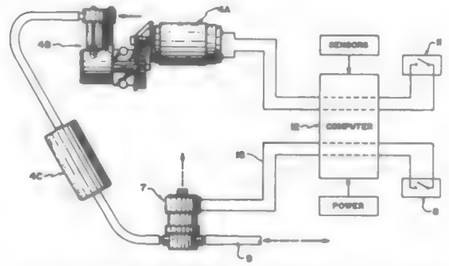
and in that orbiting drive transfer means (53,54,55) mounted on said carrier (15) connect the planet wheel (19) to the sun wheel (12).

5,360,381

AUTOMATIC CLUTCH CONTROL

Jason Swist, 2525 Sun Life Place, 10123 - 99 Street, Edmonton, Alberta, Canada T5J 3H1

PCT No. PCT/CA90/00395, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 11, 1992, PCT Pub. No. WO91/07293, PCT Pub. Date May 30, 1991
PCT Filed Nov. 9, 1990, Ser. No. 856,064
Claims priority, application Canada, Nov. 10, 1989, 2003894
Int. Cl.[5] B60K *41/02*
U.S. Cl. 477—175 **21 Claims**



1. An apparatus for automatically controlling the position of a pressure actuated single plate or multiple plate clutch in a housing between a power source and a drive train of a vehicle which has a manual transmission comprising:

(a) a power source mounted in the vehicle for driving the vehicle;

(b) a drive train with a manual transmission, said drive train associated with the power source for driving the vehicle;

(c) a single plate or multiple plate clutch mounted on the vehicle between the power source and the drive train, the clutch connecting the power source with the drive train;

(d) a clutch engaging means which engages the clutch when positive pressure is applied to the clutch engaging means and disengages the clutch when positive pressure is withdrawn from the clutch engaging means;

(e) pneumatic, hydraulic or electrically activated pressure source means mounted on the vehicle, the pressure source means being driven by the power source;

(f) computer means for sensing a performance variable of the power source;

(g) throttle means for controlling the power output from the power source;

(h) manual transmission means, coupled to the clutch engaging means, for engaging gear shifting when positive pressure is withdrawn from the clutch enabling means;

(i) a control means which regulates pneumatic, hydraulic or electrically activated pressure generated by the pneumatic, hydraulic, or electrically activated positive pressure source means to the clutch engaging means according to the computer means sensed performance variable of the power source; and

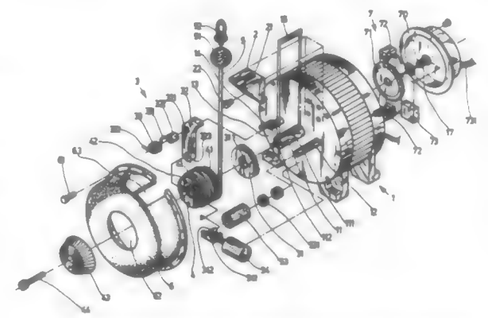
(j) a control valve wherein the pressure to the clutch engaging means is controlled through the control valve between the pneumatic, hydraulic or electrically activated pressure source means and the clutch engaging means, which control valve is opened or closed according to the computer sensed performance variable of the power source.

5,360,382

DIRECT-DRIVE TENSION DEVICE USING D.C. MOTOR

Wu Hong Chi, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 74,382, Jun. 10, 1993, Pat. No. 5,304,104. This application Jan. 13, 1994, Ser. No. 181,222
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—1 **1 Claim**



1. An auto-tension device, includes following components:

a motor having a key slot and a retaining screw hole being provided at an output shaft, a shaft and stationery shaft being disposed at both sides of said output shaft, a stationary post being disposed at said outer side of said stationary shaft;

a stopping bracket having a slot at a center portion, said stopping bracket being attached to the front cover of the motor by means of a screw member, said stopping bracket being located on said upper portion of said output shaft;

a locking device attached to a front portion of said motor, said locking device comprising a ratchet wheel which has a key slot shaft hole being attached to said output shaft by a key member;

a pawl having a sleeve within said shaft hole, said pawl being attached to said stationary shaft, a slot hole being provided at a lower portion of said pawl portion for pivoting;

a spring being placed to an upper portion of said pawl at one end and being attached to a stationary post at other end;

a solenoid member being used to extend or retract said brake bracket, a connecting post being disposed at one side of said brake bracket for pivoting said slot hole of said pawl, said solenoid being disposed at a lower portion of said output shaft

a winch having a spiral slot thereof, said winch having a shaft hole which has a key slot thereof to be attached to said output shaft, a knob being disposed at said outer side of said winch, said knob being attached to said threaded hole of said output shaft by means of a screw member;

a cable being attached to one end of said spiral slot at one end and said other end is connected to a rubber ball, said rubber ball being retained at a slot of said stopping bracket, a connecting ring being disposed at said rubber ball;

a guiding wheel being attached to said shaft by means of a bearing, said guiding wheel being placed against said cable;

a safety cover being attached to said front portion of said

motor, a hole being provided at an upper portion of said safety cover for extending of said knob, a slot being provided to said stopping bracket for pulling out of said cable from said slot of said stopping bracket;

a decoder having a decoding wheel attached to said output shaft of said motor, a photo coupler being disposed at both sides for said decoding wheel, said photo coupler being electrically connected to a decoding circuitry, a safety cover being disposed at said rear portion of said motor, said decoding circuitry being electrically connected to a micro-computer controller by means of bus;

a current controller for sending a controlled current to said motor by converting said signal from the micro-computer, wherein the current is kept at a constant level regardless of rotation by said motor, thereby providing a steady torque and tension.

5,360,383

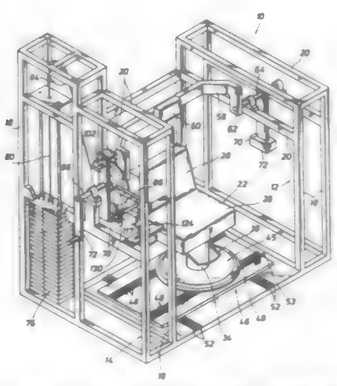
APPARATUS AND METHOD FOR TESTING AND EXERCISING CEVICAL MUSCLES

John P. Boren, 9440 Old Katy Rd., Houston, Tex. 77055

Filed Oct. 16, 1992, Ser. No. 962,530

Int. Cl.[5] A63B *23/025*

U.S. Cl. 482—10 **24 Claims**



19. An exercise machine for exercising cervical muscles of a seated user comprising:

a fixed frame adapted to be supported on a horizontal support surface;

a chair supporting a user in seated position for testing and exercising of the cervical muscles;

a movement arm mounted for pivotal movement about a horizontal axis and having a head pad thereon for contact with the head of the user for pivoting of the movement arm in a rearward direction by the head of the user exerting force against said pad;

means for raising and lowering said chair relative to said movement arm for adjusting the height of said chair;

means to pivot said chair in a horizontal plane about a vertical axis to a selected one of four positions at 90° intervals;

a horizontally extending shaft defining said horizontal axis and secured to the movement arm for rotation therewith upon pivotal movement of the movement arm;

a wheel mounted on said horizontal shaft for rotation relative to said shaft;

means connecting said wheel to a resistance to provide a predetermined resistance against rotative movement of said wheel in a rearward direction;

releasable lock means for releasably connecting said movement arm to said wheel for rotation of said wheel with said movement arm, said releasable lock means having a plurality of predetermined spaced positions for changing the angular position of the movement arm relative to the wheel to allow the movement arm to be positioned selectively at different angular positions relative to the wheel;

releasable means for blocking rotation of said wheel when said wheel is releasably connected to said movement arm; and

a strain gauge operatively connected to said wheel for measuring the strength of the cervical muscles at a selected angular position of the movement arm upon force exerted by the head for the user against the head pad when rotation of said wheel is blocked and said wheel is connected to said movement arm;

said strain gauge having one end thereof secured to said fixed frame and the other end thereof releasably connected to said wheel for blocking rotation of said wheel and defining said releasable means for blocking rotation of said wheel.

5,360,384

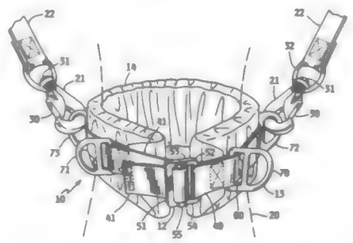
GYMNASTIC SPOTTING BELT APPARATUS

Timothy L. Toensing, 574 Vicki La., Shoreview, Minn. 55126

Continuation-in-part of Ser. No. 889,163, May 27, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 100,033

Int. Cl.[5] A63D *26/00*

U.S. Cl. 482—43 **13 Claims**



1. A gymnastic spotting belt apparatus for engaging the waist of a larger or smaller sized gymnast and for engaging spotting ropes on both sides of the gymnast, the spotting belt comprising:

(a) An elongate pad having an outer layer and a resilient open cell foam interior for engaging the waist of either the larger or smaller gymnast;

(b) a belt affixed to said outer layer of said pad, said belt having a plurality of belt sections defining cavities, said belt further having two opposite ends;

(c) a pair of first D-rings, each of said first D-rings having an upper bar, a lower bar, a curved section extending between said upper bar and said lower bar, a rear bar extending between said upper bar and said lower bar opposite to said curved section, and an interior bar extending between said upper bar and said lower bar between said rear bar and said curved section, said interior bar defining an interior compartment between said rear bar and said interior bar, said rear bar being entrapped within one of said plurality of cavities, said curved sections of said first D-rings adapted for engagement to a spotting rope, said entrapment of said rear bar within one of said plurality of cavities preventing axial twisting of said first D-rings relative to said belt, said first D-rings adapted for positioning proximal to both sides of either the smaller or larger gymnast;

(d) a pair of second D-rings, each of said second D-rings having an upper bar, a lower bar, a curved section extending between said upper bar and said lower bar, a rear bar extending between said upper bar and said lower bar opposite to said curved section, and an interior bar extending between said upper bar and said lower bar between said rear bar and said curved section, said interior bar defining an interior compartment between said rear bar and said interior bar, said rear bar being entrapped within one of said plurality of cavities, said curved sections of said second D-rings adapted for engagement to said spotting rope, said entrapment of said rear bar within one of said plurality of cavities preventing axial twisting of said second D-rings relative to said belt, said position of said second D-rings on said belt being alternatives to said first D-rings, said second D-rings adapted for positioning proximal to both sides of either the smaller or larger gymnast; and

(e) a releasable buckle affixed to said belt, said buckle having a frame having upper and lower frame portions, side frame portions, and a post slidably engaging the upper and lower frame portions between the side frame portions, said buckle adapted for securing said belt around the waist of either the larger or smaller gymnast by engagement of said opposite end of said belt to said buckle.

5,360,385

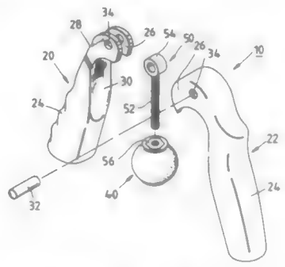
HAND DEVELOPER

Ro-Pin Wang, 5F, No. 1, Lane 85 Kwang Fu North Rd., Taipei City, Taiwan, Prov. of China

Filed Jul. 30, 1993, Ser. No. 99,552

Int. Cl.[5] A63B *23/16*

U.S. Cl. 482—49 **4 Claims**



1. A hand developer comprising:

two handles pivoted together at one end thereof such that said two handles can be moved in the same direction or the opposite directions within a predetermined range of angle; and

one elastic element disposed between said two handles for providing an elastic damping effect;

wherein said two handles have a pivoting point to which one end of a pivoting member of a long rod-shaped construction is pivoted such that the body of said pivoting member is located between said two handles; and wherein said elastic element has an adjusting member fastened thereto for enabling said elastic element to be fastened to said pivoting member in such a manner that the position of said elastic element can be adjusted along the longitudinal axis of said pivoting member, so as to change the distance between said elastic element and the pivoting point of said two handles.

5,360,386

STRENGTH COMPETITION APPARATUS

Robert L. Brumfield, 2822 Twenty-Eighth St., SE., #3, Washington, D.C. 20020

Filed Oct. 1, 1993, Ser. No. 130,457

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—133 **10 Claims**

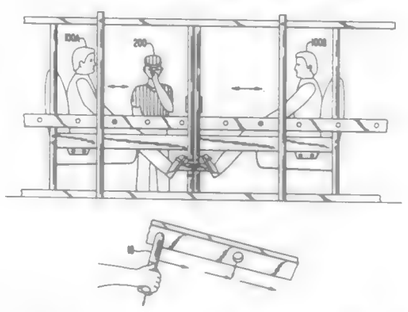
1. A strength competition apparatus for conducting a strength competition, comprising:

a stationary framework;

moveable first seating means for seating a first competitor within said framework;

first seat advancing means, operative by said first competitor, for advancing said first competitor along said framework, in said first seating means, in a first coaxial direction and preventing movement thereof in a second coaxial direction, said first advancing means advancing said first competitor by permitting said first competitor to apply leverage against said framework;

a moveable second seating means for seating a second competitor within said stationary framework; and



second seat advancing means, operative by said second competitor, for advancing said second competitor along said framework, in said second seating means, in said second coaxial direction and preventing movement thereof in said first coaxial direction, said second advancing means advancing said second competitor by permitting said second competitor to apply leverage against said framework.

5,360,387

BAG FOLDING SYSTEM

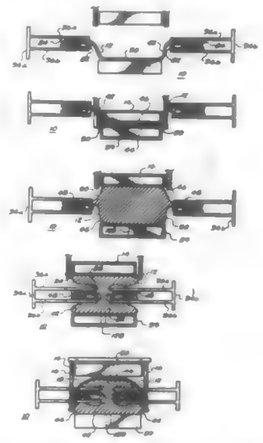
William F. Baker, Glendale, Ariz., assignor to Jamal Saklou and Pierre Metivier, both of Phoenix, Ariz.

Filed Feb. 3, 1993, Ser. No. 13,108

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] B60R *21/16*

U.S. Cl. 493—405 **23 Claims**



1. A method of automatically folding an air bag having top and bottom sections, said folding achieving a folded-bag profile suitable for vehicular installation along with an effective bag deployment upon a crash of said vehicle, said method comprising the steps of:

clamping said top and bottom sections together proximate a

second portion of said bag to substantially restrict separation of said top and bottom sections at said second portion, said clamping step leaving a first portion of said bag unclamped;

pulling said top section at said first portion of said bag from said bottom section at said first portion of said bag; and

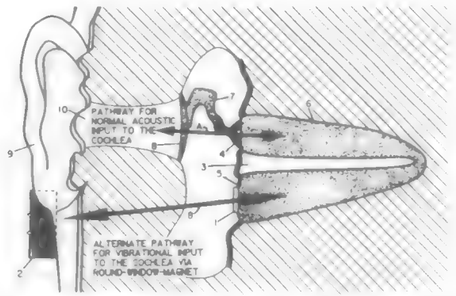
inserting said second portion of said bag into said first portion between said top and bottom sections.

5,360,388

ROUND WINDOW ELECTROMAGNETIC IMPLANTABLE HEARING AID

Jonathan H. Spindel; Paul R. Lambert, and Roger A. Ruth, all of Charlottesville, Va., assignors to The University of Virginia Patents Foundation, Charlottesville, Va.

Filed Oct. 9, 1992, Ser. No. 958,737
Int. Cl.[5] A61N *1/00*
U.S. Cl. 600—25 **9 Claims**



1. A method for enhancing hearing by artificially vibrating inner portions of the ear in order to stimulate the sensory nerves which enable an individual to hear sound, comprising the steps of:

placing a fixed transmitting means at a location remote from a first pathway used for normal acoustic hearing, said first pathway including the individual's ear canal, eardrum, ossicular chain and oval window of the cochlea;

attaching a vibrational means to the round window of the cochlea in the inner ear of the individual; and

vibrating the cochlea through the round window using a second alternate pathway such that the first pathway for normal acoustic hearing is free of any artificial devices and electromagnetic waves are output by said fixed transmitting means and reach said vibrational means via a second alternate pathway to the cochlea located at a location remote from said first pathway, thereby providing two separate pathways for vibrations to be transmitted to the cochlea.

5,360,389

METHODS FOR ENDOMETRIAL IMPLANTATION OF EMBRYOS

Philip E. Chenette, 290 Alhambra St. Apt. 3, San Francisco, Calif. 94123

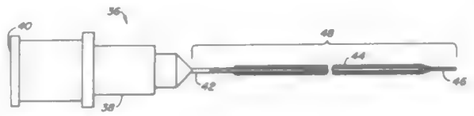
Filed May 25, 1993, Ser. No. 67,447
Int. Cl.[5] A61B *17/43*
U.S. Cl. 600—34 **23 Claims**

1. A method for implantation of an embryo into a mammal comprising:

(a) placing at least one embryo in a catheter having an elongate tubular body and a distal tip;

(b) introducing the distal tip through the mammal's cervical os into the mammal's endometrial cavity;

(c) directing the distal tip into the mammal's uterine tissue; and



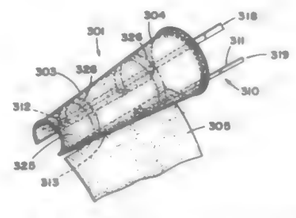
(d) depositing the embryo into the uterine tissue beneath the endometrial surface.

5,360,390

PROSTHETIC DEVICE WITH A RETAINING STRAP

Armand D. Maanum, 2300 Douglas Dr. N., Golden Valley, Minn. 55422

Continuation of Ser. No. 872,629, Apr. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 600,612, Oct. 19, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,878
Int. Cl.[5] A61F *5/00*
U.S. Cl. 600—39 **2 Claims**



2. A prosthesis for use by a human male in supporting his flaccid penis, during sexual activity; said prosthesis comprising:

(a) an elongate, flexible, rubber-like trough member having a C-shaped cross-section and consisting essentially of a flexible, polymeric, high-memory material;

(i) the trough member having a longitudinal dimension of no more than 3.0 inches and being of a longitudinal dimension not greater than about ⅔ of a length of the partially engorged, flaccid, penis of a user; the longitudinal dimension of the trough member being such that it does not extend against a glans of the penis, when the trough member is positioned on the penis and against a pubic area of the user;

(ii) said C-shaped trough member being configured to be operationally positioned over the penis and to have a gap therein of at least 0.75 inches between side edges thereof, when operationally positioned over the penis; said trough member being constructed and arranged so that, in use, the gap in the trough member extends continuously along a side of a user's penis away from the user's belly;

(iii) said trough member having a front end and a rear end, the rear end having a C-shaped edge and being constructed and arranged to be operationally oriented with the C-shaped edge of the rear end oriented proximate the pubic area of the male user; the trough member front end having a C-shaped edge; and, the trough having a central longitudinal section extending continuously therealong from said C-shaped edge of said front end to said C-shaped edge of said rear end; the central longitudinal section generally increasing in thickness from the trough member front end to the trough member rear end; and,

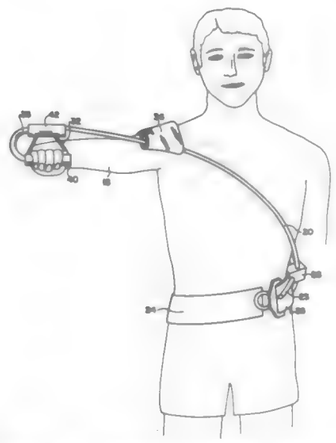
(b) retaining means for maintaining the trough member in operative association over the user's penis, during performance of sexual activity, the retaining means comprising a retaining strap having first and second ends operably attached to the trough member; the retaining strap being sized to extend around a scrotum of the male user.

5,360,391

SHOULDER BRACE

Lanny L. Johnson, 4528 Hagadorn, East Lansing, Mich. 48823

Filed Apr. 26, 1993, Ser. No. 51,833
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—5 **24 Claims**



1. A shoulder brace adapted to be secured to a user's torso and configured to permit the suspension of an arm of the user therefrom, said brace comprising:

first and second substantially rigid elongated support members;

means for securing each of said members at one of its ends, to the user's torso at a location adjacent one side of the torso; said first and second members extending from said ends diagonally upwardly across respective front and back portions of the user's torso to locations at which opposite ends of said substantially rigid members are positioned above and laterally outwardly of the user's torso on the opposite side thereof; and

means joined to said opposite ends of the support members for suspending the user's arm therefrom.

5,360,392

METHOD OF FORMING A SCOLIOSIS BRACE

D. Barry McCoy, Exeter, R.I., assignor to Northeast Orthotics & Prosthetics, Inc., Providence, R.I.

Filed May 14, 1993, Ser. No. 61,672
Int. Cl.[5] A61F *5/02*; A61G *13/00*
U.S. Cl. 602—6 **16 Claims**

1. A method of forming a brace for a scoliosis patient, the patient including a torso portion and a spine having a lateral scoliotic curve, the scoliotic cure having an apex and having opposite ends, said method comprising:

a. determining the location of the apex and ends of the scoliotic curve relative to the exterior of the torso portion of the patient;

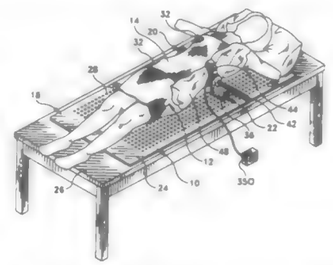
b. positioning the patient in a laying-down treatment position on a casting board;

c. applying pressure to opposite sides of the torso portion of the patient utilizing at least three pressure pads, the pressure pads being positioned on the casting board in pressure applying positions in which the pressure pads are operative for applying desired amounts of pressure to the spine at substantially the ends and apex of the scoliotic curve in directions tending to straighten the scoliotic curve;

d. removing the patient from the casting board;

e. applying an uncured cast to the torso portion of the patient;

f. repositioning the patient in the treatment position on the



casting board with the at least three pressure pads in the pressure applying positions thereof on the casting board;

g. allowing the uncured cast to cure;

h. removing the patient from the casting board;

i. removing the cast from said patient; and

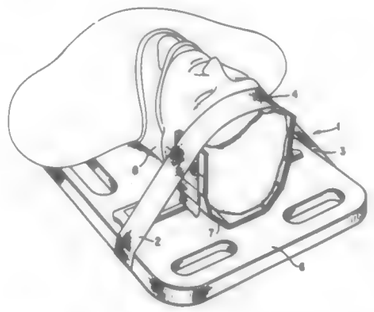
j. forming the brace so that it has an internal configuration which corresponds substantially to that of the cast.

5,360,393

DUAL ADHESIVE STRAP FOR HEAD IMMOBILIZATION

Geoffrey C. Garth, and James R. Traut, both of Long Beach, Calif., assignors to California Medical Products, Inc., Long Beach, Calif.

Filed Oct. 19, 1992, Ser. No. 962,389
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—17 **6 Claims**



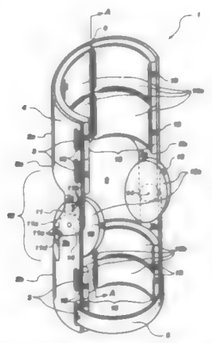
1. An adhesive strap for immobilizing a patient's head when the head of the patient is placed on a surface, said strap comprising a strap substrate, said substrate comprising a top side and a bottom side, said bottom side comprising a central region comprising skin contact adhesive flanked on each side by a region comprising board contact adhesive, wherein said substrate is of sufficient length so when the central region is in contact with the head of a patient, each of the regions comprising board contact adhesive is of sufficient length to extend beyond said patient's head to contact said surface, and wherein the board contact adhesive is stronger than said skin contact adhesive.

5,360,394

RIGID JOINT SUPPORT BRACE SIZING MEANS AND METHOD

Roland J. Christensen, 192 East 1st North, Fayette, Utah 84630

Filed May 21, 1993, Ser. No. 65,658
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—26 **18 Claims**



1. A removable brace for supporting a human limb at a joint thereof, the limb and the joint having contours, the brace comprising:

a rigid sheath member formed from first and second half-sections, having an inner surface and sized so as to extend about and embrace the limb at the joint area to thereby inhibit abnormal movement of the joint and the limb, the sheath member having an open side to enable entry of the limb thereto and further including sides and a central section;

hinging means disposed in the central section of the sheath member to enable the first and second half-sections of said sheath member to move relative to each other in concert with movement of the joint;

a plurality of individually adjustable and inflatable fluid filled chambers mounted upon the inner surface of the sheath member, said chambers being operable to customize a secure and comfortable fit of the brace to the contours of both the limb and the joint area, and further to enable each chamber to exert a selectively adjustable hydrostatic pressure on predetermined portions of the limb to thereby support and align the joint; and

attachment means secured to the sheath member for releasably attaching said sheath member about the joint area of the limb wherein the plurality of fluid filled chambers is an array of fluid filled chambers mounted upon substantially the entire inner surface of the sheath member to form a contained volume with said array for receiving the limb.

5,360,395

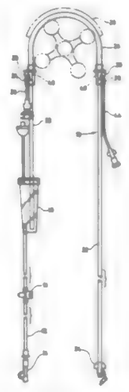
PUMP CONDUIT SEGMENT HAVING CONNECTED, PARALLEL BRANCH LINE

David S. Utterberg, 1080 Chestnut St., San Francisco, Calif. 94109

Filed Dec. 20, 1993, Ser. No. 170,534
Int. Cl.[5] A61B *1/00*
U.S. Cl. 604—4 **15 Claims**

1. A set for conveying blood between a patient and blood treatment apparatus, which comprises:

a blood flow conduit; means for connecting the conduit with a patient's vascular system; means for connecting the conduit with the blood treatment apparatus; a portion of said conduit comprising an enlarged-diameter, tubular pump segment connected at each pump segment end with a connector, said connectors also each connecting in substantially parallel, straight-line relation to other portions of said blood flow conduit, at least one of said connectors also connecting to a branch line in a longitudinal relation to the connected other portion of the blood flow conduit, wherein said set is more capable of being rolled



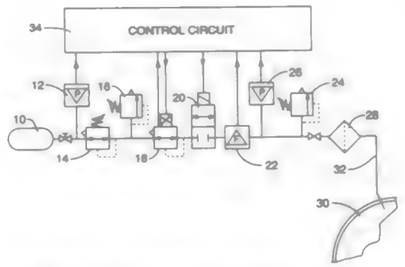
up and packaged in an automated manner than sets having acutely angled or perpendicular connections.

5,360,396

APPARATUS AND METHOD FOR IMPROVED INSUFFLATION

Michael Chan, British Columbia, Canada, assignor to Andronic Devices Ltd., Richmond, Canada

Continuation of Ser. No. 909,625, Jul. 7, 1992, abandoned. This application Jul. 19, 1993, Ser. No. 93,455
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—26 **7 Claims**



1. An insufflating apparatus comprising:

a source of pressurized gas;

an elongated conduit connected to the source for conducting the gas from the source, the conduit having a distal end adaptable for directing the gas into and out of a body cavity;

a regulator connected to the conduit so that the gas from the source flows through the regulator to the distal end, the regulator being responsive to an electronic signal for increasing and decreasing the gas pressure in the conduit for maintaining the gas pressure in the conduit within a pressure range defined by a minimum pressure level and a maximum pressure level, the regulator decreasing the pressure by bleeding gas from the conduit; and

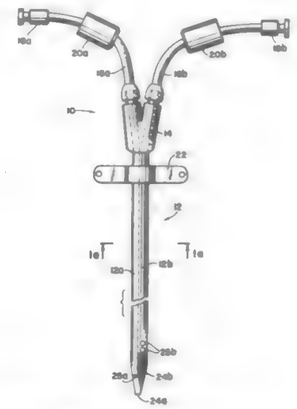
a safety relief valve connected to the conduit between the source and the distal end for relieving gas pressure within the conduit whenever the pressure within the conduit exceeds a second pressure level that is substantially higher than the maximum pressure level of the pressure range.

5,360,397

HEMODIAYLSIS CATHETER AND CATHETER ASSEMBLY

Leonard Pinchuk, Miami, Fla., assignor to Corvita Corporation, Miami, Fla.

Filed Jul. 2, 1993, Ser. No. 87,173
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—27 **37 Claims**



1. A hemodialysis catheter, comprising:

a) a first hollow lumen means of a first diameter and having proximal and distal ends, said first hollow lumen means defining a first flow path from said proximal end to said distal end, said first hollow lumen means for holding fluid flowing in a first direction and having at least one distal opening and a proximal opening;

b) a second hollow lumen means of a second diameter smaller than said first diameter and extending within said first hollow lumen and through said distal end of said first hollow lumen means, and said second hollow lumen means extending outside said first flow path distal of said proximal end, said second hollow lumen means defining a second flow path with said first flow path and said second flow paths being separate from each other, said second hollow means for holding fluid flowing in a second direction opposite said first direction and having at least one distal opening and a proximal opening; and

c) a porous polyurethane mesh located along a portion of an outer surface of said first hollow lumen means which is intended to be in contact with the skin of a patient.

5,360,398

OPHTHALMOLOGICAL ASPIRATION AND IRRIGATION SYSTEM

Hans R. Grieshaber; Rudolf Demmerle, and Urs Vogel, all of Schaffhausen, Switzerland, assignors to Grieshaber & Co. AG Schaffhausen, Switzerland

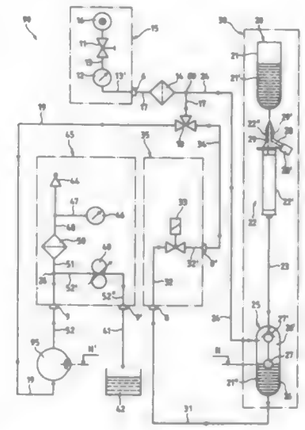
Filed Nov. 4, 1993, Ser. No. 147,926
Claims priority, application Switzerland, Nov. 6, 1992, 03448/92; Sep. 23, 1993, 02872/93
Int. Cl.[5] A61M *1/00, 31/00*
U.S. Cl. 604—30 **15 Claims**

1. An aspiration and irrigation system, in particular for performing surgical operations on an eye of a living being to maintain the intraocular pressure, comprising:

a pressure unit for supplying a gaseous fluid to the eye via a first fluid passageway;

infusion means for providing a liquid fluid, said infusion means including a first infusion bottle containing a liquid fluid at a fluid level in substantial alignment with the eye and a second infusion bottle arranged at a distance above and connected to said first infusion bottle via a dropper for allowing a flow of liquid fluid from said second infusion bottle to said first infusion bottle;

irrigation means communicating with said first infusion bottle for conducting liquid fluid from said first infusion bottle to the eye via a second fluid passageway, said first infusion bottle communicating with said pressure unit via a third fluid passageway for introduction of gaseous fluid above the fluid level;



valve means set in a fluid passageway between said irrigation means and said pressure unit on the one hand, and the eye on the other hand for selectively conducting the flow of fluid from said irrigation means and said pressure unit to the eye through said first and second fluid passageways; and,

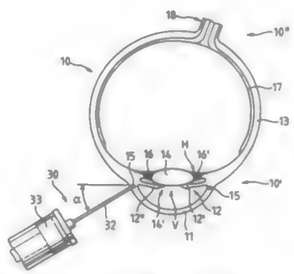
aspiration means for removing fluid and/or tissue from the eye.

5,360,399

METHOD AND APPARATUS FOR MAINTAINING THE NORMAL INTRAOCULAR PRESSURE

Robert Stegmann, 88, Copselaine, Lynnwood Glen, South Africa

Filed Mar. 30, 1992, Ser. No. 860,629
Claims priority, application Switzerland, Jan. 10, 1992, 00062/92
Int. Cl.[5] A61F *9/00*
U.S. Cl. 604—49 **8 Claims**



1. A method for maintaining a constant pressure, which depends on the aqueous humour which circulates from the posterior chamber to the anterior chamber of the eye and is removed via the circular canal of Schlemm and the upstream trabecular tissue, inside the eye of an organism, said method comprising the steps of:

(a) making a lamellar incision of the sclera for exposing a section of Schlemm's canal; and
(b) injecting a highly viscous medium into Schlemm's canal, by means of at least one tube introduced into the canal for opening the trabecular tissue traumatically by a hydraulic expansion at one or more points and which prevents a hemorrhage thereof.

5,360,400

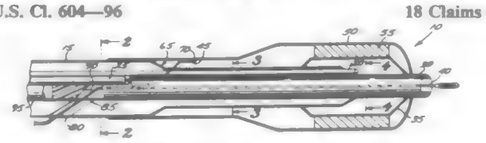
Patent Not Issued For This Number

5,360,401

CATHETER FOR STENT DELIVERY

Todd H. Turnland, Mountain View; Jovito L. Fernando, Modesto, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Feb. 18, 1993, Ser. No. 19,046
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **18 Claims**



1. A protective sheath stent delivery catheter for delivering a stent disposed on said catheter, comprising:
a catheter having a balloon portion;
a protective sheath surrounding said balloon portion;
means in operative relationship with said protective sheath for retracting said protective sheath from over said balloon portion;
and a plurality of lumens inside said catheter, wherein at least one of said lumens houses a portion of said retracting means, and at least one other of said lumens houses a portion of a guidewire for directing said balloon portion to the site at which treatment is to be rendered.

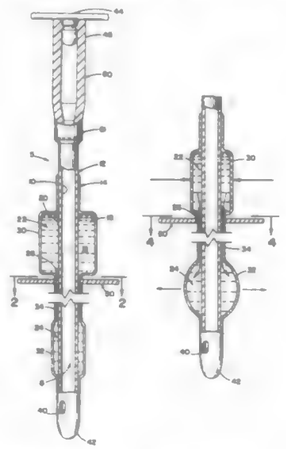
5,360,402

HAND-ACTUATED RETENTION CATHETER

Anthony J. Conway; Philip J. Conway, both of Chatfield, and Richard D. Fryar, Jr., Rochester, all of Minn., assignors to Rochester Medical Corporation, Stewartville, Minn.

Continuation-in-part of Ser. No. 809,281, Dec. 13, 1991, which is a continuation-in-part of Ser. No. 489,462, Mar. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,422, Mar. 1, 1990, Pat. No. 5,098,379, which is a continuation-in-part of Ser. No. 462,832, Jan. 10, 1990, Pat. No. 5,137,671. This application Jan. 29, 1992, Ser. No. 827,936
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—97 **20 Claims**

1. A hand-actuated retention catheter, comprising;
a tube having outer and inner surfaces, the inner surface defining an inner lumen, an overcoat layer encircling the tube, the overcoat layer having interior and exterior surfaces, a cavity interposed between the tube and the overcoat layer, said cavity encircling the tube and being defined by portions of the outer surface of the tube in cooperation with portions of the interior surface of the overcoat layer, and a fluid within the cavity; wherein the overcoat layer includes an expandable balloon section, a fluid reservoir section, and a catheter sleeve section interconnecting said reservoir section and said sleeve section; the overcoat layer being joined to the outer surface of the tube at distal and proximal ends of the cavity; the cavity including an expandable balloon portion, a fluid reservoir portion, and a catheter sleeve portion interconnecting the reservoir portion and the sleeve portion; restriction means disposed on the sleeve section for restricting the passage of fluid between the expandable balloon portion and the fluid reservoir portion via the catheter sleeve portion of the cavity, wherein the restriction by said restriction means does not substantially lower the volume of the fluid reservoir portion; wherein the catheter sleeve section of the overcoat layer defines a narrowing in the cavity



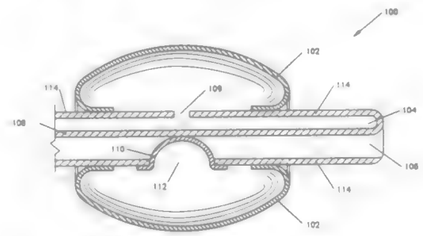
through which fluid passing from the fluid reservoir portion to the expandable balloon portion thereof must pass.

5,360,403

BALLOON CATHETER WITH LUMEN OCCLUDER

Hans A. Mische, St. Cloud, Minn., assignor to Lake Region Manufacturing Co., Inc., Chaska, Minn.

Continuation of Ser. No. 524,015, May 16, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 919,044
Int. Cl.[5] A61M *29/00, 5/00*
U.S. Cl. 604—101 **12 Claims**



9. A catheter comprising:
an outer sheath, the outer sheath having distal and proximal ends and having an inner wall, said sheath having therein:
a first lumen which is open at the distal and proximal ends of the outer sheath,
a second lumen which is open at the proximal end and closed at the distal end of the sheath, the first lumen and second lumens extending from the distal end to the proximal end of the outer sheath and being defined by a septum forming the inner wall of the sheath, and
an outer balloon sealing arranged on said outer sheath and in fluid communication with said second lumen, and
a wall portion in said first lumen defined by said outer sheath and said septum, said wall portion having an aperture with an inner balloon sealed about said aperture, said aperture positioned on said wall portion so as to be in fluid communication with the second lumen and outer balloon whereby fluid injected into said second lumen causes inflation of said inner and outer balloon members, the inner balloon member inflated into and occluding the first lumen.

5,360,404

NEEDLE GUARD AND NEEDLE ASSEMBLY FOR SYRINGE

Laurel A. Novacek; Fraser R. Sharp, and Donald A. McLean, all of Vancouver, Canada, assignors to Inviro Medical Devices Ltd., Bridgetown, Barbados

Continuation-in-part of Ser. No. 909,385, Jul. 9, 1992, Pat. No. 5,263,933, which is a continuation-in-part of Ser. No. 800,849, Nov. 29, 1991, Pat. No. 5,205,827, which is a division of Ser. No. 687,108, Apr. 18, 1991, Pat. No. 5,112,318, which is a continuation-in-part of Ser. No. 607,127, Oct. 3, 1990, Pat. No. 5,122,124, which is a continuation-in-part of Ser. No. 410,318, Sep. 21, 1989, Pat. No. 5,030,208, which is a continuation-in-part of Ser. No. 327,344, Mar. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 285,012, Dec. 14, 1988, abandoned. This application Oct. 15, 1993, Ser. No. 136,201
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **18 Claims**



1. Apparatus for releasably securing a needle to an end portion of a syringe comprising:
a needle hub having a needle projecting from one end thereof and a passage through said needle for transmission of a fluid, said needle hub having a surface for engaging the end portion of the syringe; and
a needle guard including a sleeve closed at one end and open at its opposite end for receiving said needle and a portion of said needle hub within said sleeve;
said needle guard and said needle hub having cooperable surfaces, respectively, configured to transmit a torque applied to said needle guard in a first direction to said needle hub and to enable relative rotation of said needle guard and said needle hub without transmission of substantial torque from said needle guard to said needle hub when a torque is applied to said needle guard in a second direction opposite said first direction.

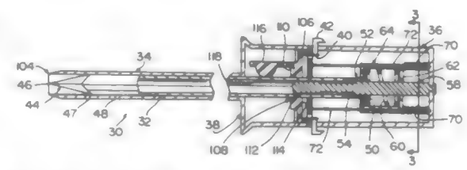
5,360,405

AUTOMATIC RETRACTABLE SAFETY PENETRATING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 800,507, Nov. 27, 1991, and a continuation-in-part of Ser. No. 805,506, Dec. 6, 1991, and a continuation-in-part of Ser. No. 808,325, Dec. 16, 1991, Pat. No. 5,324,260, and a continuation-in-part of Ser. No. 848,838, Mar. 10, 1992, and a continuation-in-part of Ser. No. 868,566, Apr. 15, 1992, Pat. No. 5,320,610, and a continuation-in-part of Ser. No. 868,578, Apr. 15, 1992, Pat. No. 5,336,176. This application Aug. 14, 1992, Ser. No. 929,338
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—165 **39 Claims**

1. An automatic retractable safety penetrating instrument for introducing a sleeve into a cavity in the body comprising
sleeve means for providing a passage through a cavity wall and having a distal end for positioning in the body cavity, a proximal end for positioning externally of the body cavity and a lumen extending between said distal and proximal sleeve means ends;
a penetrating member disposed in said lumen of said sleeve means and having a longitudinal axis and a sharp distal end for penetrating the cavity wall;
retracting means for moving said sharp distal end of said penetrating member proximally relative to said sleeve means from an extended position where said sharp distal end protrudes beyond said sleeve means distal end to a retracted position to prevent contact of said sharp distal end with tissue; and



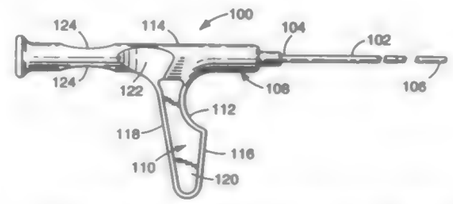
locking and releasing means mounted for axial rotation relative to said penetrating member and about said longitudinal axis for automatically actuating said retracting means to move said sharp distal end of said penetrating member to the retracted position in response to axial rotation of said locking and releasing means automatically upon said sleeve means distal end entering the body cavity.

5,360,406

STYLET FOR RETROGRADE CORONARY SINUS CANNULA

Christopher M. Boykin, Saline, and Thomas T. Vaalburg, Ann Arbor, both of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 979,010, Nov. 19, 1992. This application Jul. 7, 1993, Ser. No. 88,257
Int. Cl.[5] A61M *5/178, 25/00*
U.S. Cl. 604—170 **31 Claims**



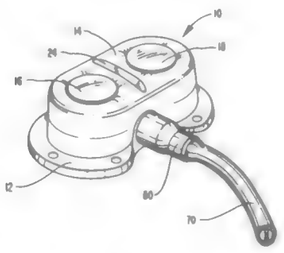
1. A stylet for guiding a retrograde coronary sinus cannula into a coronary sinus, the styler comprising:
an elongate shaft having proximal and distal ends; and
a handle at the proximal end of the shaft, the handle including a lever extending laterally outwardly relative to the shaft, the lever having a notch for receiving a digit of the user generally adjacent the shaft to define a fulcrum generally adjacent the shaft, the lever extending laterally outwardly beyond the notch to facilitate rotation of the stylet around the longitudinal axis of the shaft;
the handle further comprising an elongate, generally cylindrical portion extending proximally along the shaft from the lever.

5,360,407

IMPLANTABLE DUAL ACCESS PORT WITH TACTILE RIDGE FOR POSITION SENSING

Arnie Leonard, Minneapolis, Minn.; Daniel C. Wadsworth, Jr., Sandy, Utah, assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Aug. 29, 1991, Ser. No. 753,179
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 **38 Claims**



1. An implantable device capable of embedment beneath the skin of a patient, the device enabling repeated, non-destructive fluid communication of the distal end of a tubular member, such as a needle or a catheter, piercing the skin of the patient with the proximal end of a selected one of the lumens of a multi-lumen catheter, said device comprising:

a. a housing enclosing a first fluid cavity and a second fluid cavity, said housing defining a first access aperture communicating through said housing with said first fluid cavity and a second access aperture communicating through said housing with said second fluid cavity;

b. first self-sealing means for sealing said first access aperture and for admitting the distal end of the tubular member into said first fluid cavity, thereby to enable the infusion of fluids thereinto through the tubular member;

c. second self-sealing means for sealing said second access aperture and for admitting the distal end of the tubular member into said second fluid cavity, thereby to enable the infusion of fluids thereinto through the tubular member;

d. means for communicating fluid from each of said first fluid cavity and said second fluid cavity to the patient through a respective one of the lumens of the multi-lumen catheter; and

e. tactile means positioned between the first and the second self-sealing means for simultaneously locating the positions of both of said first and said second self-sealing means by palpating the skin of the patient without thereby impeding access by the distal end of the tubular member to either of said first or said second self-sealing means during palpation of said tactile means, the tactile means comprising a raised locating ridge on the surface of the housing, the locating ridge being configured so as to avoid encircling tissue of the patient that contacts said surface of said housing, and said locating ridge being substantially straight and being so disposed on said surface of said housing as to traverse and be oriented substantially orthogonally to a line connecting the centers of said first and said second self-sealing means.

5,360,408

SHIELDED HYPODERMIC NEEDLE ASSEMBLY AND A SHIELD ASSEMBLY FOR A HYPODERMIC NEEDLE

Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039

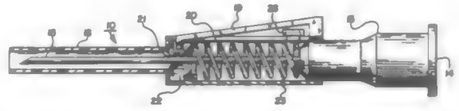
Filed Nov. 16, 1992, Ser. No. 976,470
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **26 Claims**

1. A shielded hypodermic needle assembly comprising

a housing defining a chamber;

a hollow hypodermic needle mounted in and extending from said housing, said needle having a lumen in communication with said chamber;

a shield disposed concentrically about said needle for movement relative to said housing between an extended position completely enclosing said needle therein and a retracted position exposing a distal end of said needle;



locking means mounted on said housing for releasably locking said shield in said extended position; and

manually operated unlocking means for releasing said locking means to allow movement of said shield from said extended position to said retracted position.

5,360,409

SYRINGE HOLDER WITH RETRACTABLE NEEDLE ASSEMBLY

Henry Boyd, III, 3217-H Orange St., Greensboro, N.C. 27406, and Lester Best, Jr., 300-F Edward St., Greensboro, N.C. 27419

Filed Mar. 17, 1993, Ser. No. 32,678
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 **15 Claims**

1. A syringe holder comprising:

(a) a carrier having a chamber sized for receiving and housing a hypodermic syringe including barrel and an extended syringe plunger, said syringe being moveable within said carrier between a loading/unloading position and a use position;

(b) a needle assembly detachably secured at a forward end of the carrier including a retractable needle normally disposed in a retracted position, said needle being moveable to an extended position when the syringe is moved from its loading/unloading position to its use position; and

(c) a lock for locking the hypodermic syringe in its use position during administration of medication to a patient.

5,360,410

SAFETY SYRINGE FOR MIXING TWO-COMPONENT MEDICAMENTS

Jonathan L. Wacks, Forest Hills, N.Y., assignor to Senetek PLC, St. Louis, Mo.

Continuation-in-part of Ser. No. 641,752, Jan. 16, 1991. This application Aug. 6, 1991, Ser. No. 740,843
Int. Cl.[5] A61M *5/00, 5/24*
U.S. Cl. 604—232 **13 Claims**

1. A mixing syringe for two-component medicaments comprising:

(A) a cartridge housing having a first end and a second end, said cartridge housing having a substantially cylindrical cartridge housing bore;

(B) a slidable cartridge disposed in said cartridge housing bore and having a first end, a second end, and a temporary sealing barrier disposed between said first and second ends and separating a cartridge bore of said cartridge into a cylindrical medicament solvent charge chamber and a cylindrical medicament charge chamber,

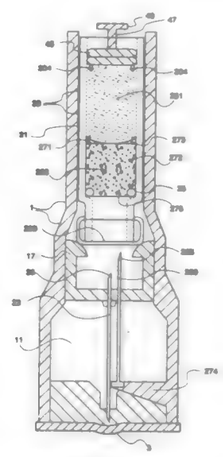
said cartridge housing having means connected thereto, for breaching said temporary sealing barrier,

said cartridge being suitable for separately storing a medicament solvent charge and a medicament charge in said medicament solvent charge chamber and said medicament charge chamber, respectively, said charges to be mixed to form a medicament to be expelled from said cartridge;

(C) a piston disposed within said first end of said cartridge and being slidably seated in said cartridge bore;

(D) a retractable needle housing assembly slidable in said cartridge housing;

(E) a retractable injection needle fixedly attached to said needle housing assembly and extending therethrough for injecting mixed medicament; and



(F) a puncturable cartridge end stopper rigidly attached to and sealing said second end of said cartridge;

said means for breaching the temporary sealing barrier between chambers of said slidable cartridge comprising a pushrod having an anchoring end and a puncturing end wherein said anchoring end is connected to said cartridge housing, said pushrod extending from said cartridge housing toward said cartridge puncturable end stopper;

said needle assembly housing having a pushrod aperture for freely guiding said pushrod therethrough so that said puncturing end of said pushrod resides in close proximity to and in alignment with said puncturable cartridge end stopper.

5,360,411

LIQUID MEDICINE INJECTING DEVICE

Jinko Mimura, Niiza, and Hideya Sato, Tokyo, both of Japan, assignors to Opto Tech Co., Ltd. and Aubex Corporation, both of Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,433
Claims priority, application Japan, Oct. 12, 1992, 4-272815
Int. Cl.[5] A61M *5/152*
U.S. Cl. 604—246 **17 Claims**

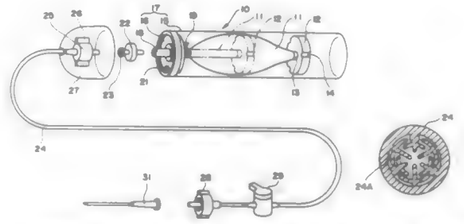
1. A liquid medicine injecting device, comprising:

a liquid medicine receiving portion to store therein a liquid medicine;

a pressure means for pressurizing the liquid medicine;

flow amount control means applied to be connected to said liquid medicine receiving portion at one end thereof and made from a thermoplastic resin having a different sectional configuration opening and a predetermined length for conducting two functions as a capillary tube and a member for controlling flow amount all together; and

a human body fitting tool connecting to the other end of said flow amount control means so that the liquid medicine stored in said liquid medicine receiving portion is fed into



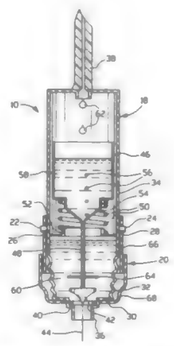
a human body through said flow amount control means and said human body fitting tool.

5,360,412

METHOD AND DEVICE FOR REGULATING INTRAVENOUS FLOW

Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022, and John V. Mizzi, 30 Cramer Rd., RFD #3, Poughkeepsie, N.Y. 12603

Filed Oct. 5, 1992, Ser. No. 956,113
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—247 **23 Claims**



1. A device for use in an intravenous assembly, comprising:

a housing with an inlet port and an outlet port;

accumulator means movably mounted to said housing for receiving intravenous drops from said inlet port, said accumulator means being provided with outflow means for emptying said accumulator means of collected intravenous fluid;

a valve member rigid with said accumulator means and spaced from said accumulator means on a downstream side thereof;

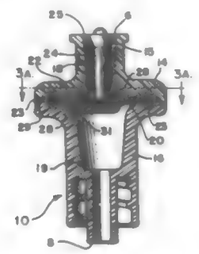
a valve seat movably mounted to said housing and disposed downstream of said accumulator means and upstream of said outlet port, said valve member being aligned with said valve seat to cooperate therewith to form a servo valve;

adjustment means for adjusting the position of said valve seat relative to said housing, whereby a desired flow rate through the device can be manually established;

support means for supporting said accumulator means on said housing so that instantaneous distance of said valve member from said valve seat is variable essentially in accordance with an amount of intravenous fluid held in said accumulator means; and

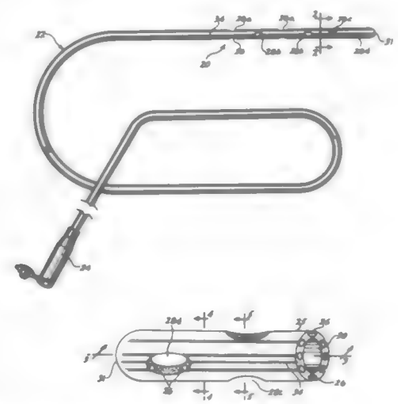
indicator means on said housing for providing a scale to identify different intravenous flow rates.

5,360,413
NEEDLELESS ACCESS DEVICE
Michael H. Lemon, Lake Geneva, Wis.; Rick R. Ruschke, McHenry, Ill., and Ralph L. Davis, Genoa City, Wis., assignors to Filtertek, Inc., Hebron, Ill.
Continuation-in-part of Ser. No. 803,164, Dec. 6, 1991, abandoned. This application May 19, 1993, Ser. No. 65,234
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—249 39 Claims



1. A needleless access device comprising:
a housing having an inlet opening, an outlet opening, and a channel therethrough;
a moveable piston inside said channel having a top surface and a bottom, the piston being adjacent said inlet opening and biased by a biasing member so that the top surface of the piston is normally generally flush with the inlet opening to facilitate aseptic treatment of the top surface of the piston, the piston comprising a wiper seal formed on a top section of said piston for sealing the inlet opening and wiping the surface of the channel surrounding the piston during actuation and release of the piston; and
a valve inside said housing comprising a valve member at the bottom of said piston and a valve seat, the valve member normally being biased against said valve seat by said biasing member.

5,360,414
TUBE FOR DRAINING BODY CAVITIES, VISCERA AND WOUNDS
Richard J. Yarger, 4908 Douglas Dr., Yakima, Wash. 98908
Filed Oct. 8, 1992, Ser. No. 959,162
Int. Cl.[5] A61M *5/00, 25/00*
U.S. Cl. 604—264 29 Claims

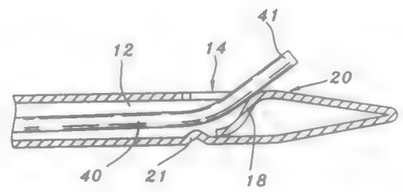


25. A device for removing fluids from the interior of a body, the device comprising:
an elongate tube having a wall of predetermined thickness forming an outer surface and a central bore, a distal end and a proximal end, the elongate tube having a selected length such that when the distal end is located in the interior of the body, the proximal end is located outside of the body;
a plurality of elongate external lumens formed in the wall and extending between the distal and proximal ends of the tube;
a plurality of entrance channels, each associated with a respective one of the plurality of lumens, for coupling the lumen with the outer surface of the tube; and
a plurality of apertures extending transversely through the wall to couple the central bore with the outer surface, each of the apertures being coupled with at least two lumens and channels associated therewith.

5,360,415
ANTI-INFECTIVE CATHETER
Yasunori Yabushita, Kyoto, Japan; Hiroshi Yokoi, Troy, N.Y.; Masanao Koyama, and Munehiro Takatsuka, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan
Filed Dec. 10, 1991, Ser. No. 804,362
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—265 8 Claims

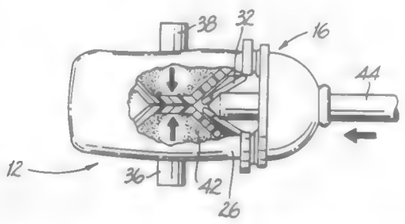
1. An anti-infective catheter which comprises a catheter and a water absorbing polymer selected from the group consisting of chitin, polyacrylic acid, copolymers containing acrylic acid, copolymers containing acrylonitrile, polyvinyl alcohol, copolymers containing vinyl alcohol, copolymers containing maleic anhydride and carboxymethylated cellulose products, and mixtures thereof, wherein a layer of said water absorbing polymer having a thickness of from 0.01 mm to 20 mm and a width of from 1 to 50 mm is formed on the outer surface of at least a portion of said catheter to be maintained in the living body.

5,360,416
THIN-WALLED ANESTHESIA NEEDLES
Ronald Ausherman, Orange City, Fla.; Thomas Heubel, Chesterfield, and Michael H. Snyderman, Ballwin, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Filed Sep. 30, 1993, Ser. No. 129,918
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—272 8 Claims



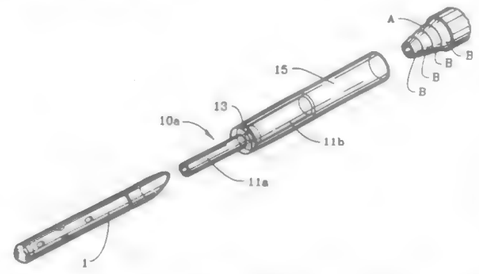
1. A needle comprising:
a tube having a longitudinal axis and forming a lumen therethrough along said longitudinal axis, said tube forming a rotationally symmetrical tip at a distal end thereof and including a generally rectangular side opening adjacent said tip which extends into said lumen,
a generally rectangular tab member integrally formed with said tube and of the same dimensions as said generally rectangular side opening extending from said side opening into said lumen and abutting an interior wall of said lumen at a position opposite said side opening, and
said tube further including a detent formed in said interior wall proximal said tab member where said tab member abuts said side wall.

5,360,417
VALVE ASSEMBLY FOR INTRODUCING INSTRUMENTS INTO BODY CAVITIES
Roy D. Gravener, Fairfield; Alex Lanniruberto, Waterbury, both of Conn., and Michael Ciccolella, Lake Carmel, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.
Continuation of Ser. No. 874,291, Apr. 24, 1992, abandoned. This application Dec. 14, 1993, Ser. No. 167,230
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—278 8 Claims



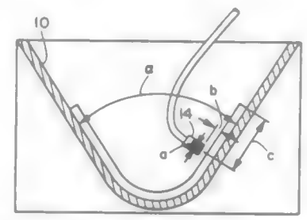
1. A valve assembly for sealing an incision in a patient's body and adapted for introduction of surgical instruments into the patient's body comprising:
a cylindrical valve body having a proximal and distal end, said cylindrical valve body further including an inner wall and an outer wall defining a cavity therebetween, said inner wall forming an aperture passing through said valve body;
means associated with said inner wall of said cylindrical valve body for facilitating passage of an instrument through said aperture, said facilitating means including a plurality of rib members positioned on an inner wall of said valve body radially extending into said aperture adjacent at least said proximal end of said body to engage an instrument inserted into said aperture to substantially prevent contact between said instrument and said inner wall of said valve body; and means to bias at least a portion of said valve body to a configuration whereby said aperture is closed to form a substantially gas tight seal prior to inserting an instrument therethrough.

5,360,418
CONNECTOR FOR A THORACIC CATHETER
Eugene E. Weilbacher, Ellisville, and Carl A. Buck, St. Louis, both of Mo., assignors to Sherwood Medical Company, St. Louis, Mo.
Filed Jul. 15, 1992, Ser. No. 914,663
Int. Cl.[5] A61M *25/00;* F16L *25/00*
U.S. Cl. 604—283 8 Claims



1. In combination, a thoracic catheter and a connector for connecting the thoracic catheter to a source of suction at a source of suction connector protruding from the source of suction, the source of suction connector having a series of annular ridges of increasing diameter, the combination comprising:
a) a thoracic catheter having a proximal end, a distal end and a main lumen having an inner diameter and extending from the distal end to the proximal end;
b) a first tube approximately equal in inner diameter to the inner diameter of said main lumen, said first tube having a constant outer diameter along said first tube's entire length;
c) a second tube connected to and in fluid communication with said first tube along a common longitudinal axis, said second tube having an inner diameter larger than the inner diameter of said first tube; and,
d) a connecting tube having an inner diameter approximately equal to the outer diameter of said second tube, said connecting tube placed over and in binding contact with said second tube, said connecting tube extending beyond the end of said second tube opposite said first tube;
whereby said first tube is placed directly in said main lumen of said thoracic catheter and retained therein, and,
whereby a continuous non-constricted passage is presented through said main lumen of said thoracic catheter and said first and said second tubes.

5,360,419
ABSORBENT STRUCTURE POSSESSING IMPROVED INTEGRITY
Franklin M. C. Chen; David L. LeMahieu, both of Appleton; William S. Pomplun, and Dave A. Soerens, both of Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 8, 1989, Ser. No. 448,177
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—374 29 Claims

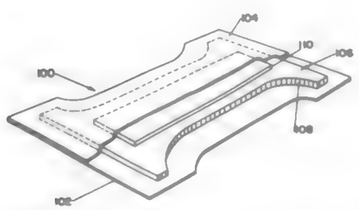


1. An absorbent structure, said absorbent structure comprising:
a) an absorbent fibrous web of material;
b) a first complex forming material present in said web; and
c) a second complex forming material present in said web;
wherein, at least one of said first or second complex forming materials is water-soluble and further wherein in the presence of water, said first and second complex forming materials form a complex.

5,360,420
ABSORBENT STRUCTURES CONTAINING STIFFENED FIBERS AND SUPERABSORBENT MATERIAL
Jeffery T. Cook, Memphis, Tenn.; Glen R. Lash, Cincinnati, Ohio; Danny R. Moore, Germantown, Tenn., and Gerald A. Young, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Continuation-in-part of Ser. No. 468,549, Jan. 23, 1990, abandoned. This application Dec. 17, 1990, Ser. No. 625,776
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—378 32 Claims

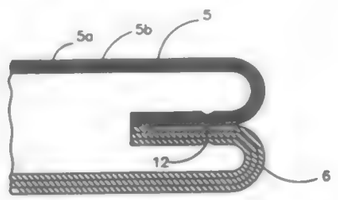
1. An absorbent article for acquisition, distribution, and storage of bodily fluids, said article comprising:

(a) a fluid pervious topsheet;
(b) a fluid impervious backsheet affixed to said topsheet; and
(c) an absorbent core disposed between said topsheet and said backsheet, said absorbent core having:
(i) a fluid acquisition/distribution layer having an average dry density of less than about 0.30 g/cc, an average density upon saturation with 1% NaCl aqueous solution, dry weight basis, of less than about 0.20 g/cc, and an average dry basis weight of from about 0.001 to about 0.10 g/cm^2, said acquisition/distribution layer comprising from about 50% to 100%, dry weight basis, of hydrophilic chemically stiffened cellulosic fibers and from 0% to about 50%, dry weight basis, of a binding means



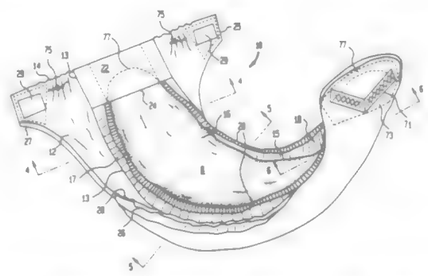
for said fibers; and
(ii) a fluid storage layer, positioned beneath said acquisition/distribution layer relative to said topsheet, comprising at least about 15%, by weight of said storage layer, of superabsorbent material and from 0% to about 85% of a carrier means for said superabsorbent material;
said acquisition/distribution layer having no more than about 6.0% of superabsorbent material and having a top surface area which is from about 15% to about 95% of, and smaller than, the top surface area of said fluid storage layer, said fluid acquisition/distribution layer further being maintained in unimpeded fluid communication with said top surface area of said fluid storage layer.

5,360,421
ABSORBENT TEXTILE GARMENT WITH BICOMPONENT TEXTILE LINER
David W. Revelle, RR1, Box 98B, Chaumont, N.Y. 13622
Filed Aug. 16, 1993, Ser. No. 106,612
Int. Cl.^{5} A61F *13/15, 13/20*
U.S. Cl. 604—378 7 Claims



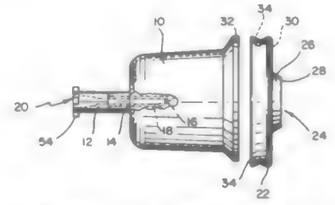
1. A washable and reusable diaper type garment adapted to absorb and retain body fluids and adapted to maintain its structural and functional integrity after repeated washings and wherein said garment comprises: an absorbent body of textile material, a knitted textile liner overlying and adjacent to said absorbent material, with said liner and said absorbent body being substantially coextensive with and forming said garment substantially in its entirety, said liner comprising a bicomponent fabric layer constructed of nylon block copolymer and polyester interknitted together to provide a material layer having a nylon face and an opposite polyester face, said polyester face being brushed and positioned to engage a wearer's skin, said nylon face being positioned to permit moisture transfer from said polyester face to said absorbent material.

5,360,422
WASHABLE DIAPER WITH LIQUID IMPERVIOUS CHANNEL FOR RETAINING DISPOSABLE ABSORBENT INSERT
James R. Brownlee, West Vancouver, and William E. Lasby, White Rock, both of Canada, assignors to Caring Products International, Inc., Vancouver, Canada
Continuation-in-part of Ser. No. 944,279, Sep. 14, 1992, which is a continuation-in-part of Ser. No. 921,579, Jul. 30, 1992, abandoned. This application Nov. 3, 1992, Ser. No. 970,880
Int. Cl.^{5} A61F *13/15*
U.S. Cl. 604—385.2 23 Claims



1. An incontinence garment comprising a pliant body for removable fitting to a wearer, said body having an interior and an exterior surface and a front and back portion and a crotch area, said garment comprising opposed elastically contractible leg cuffs extending between said front and back portions, said garment also comprising a non-absorbent, liquid impervious channel secured to said interior surface in the crotch area of said body extending between said front and back portions and opening to the interior of said body, said channel being adapted for removably receiving an absorbent insert and comprising a liquid impervious central section and two opposed generally upstanding liquid impervious walls along opposed edges of said central section, the garment further comprising an absorbent insert removably contained in the liquid impervious channel.

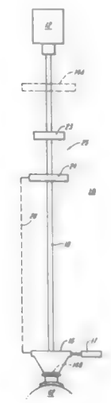
5,360,423
MEANS FOR SAFE COLLECTION AND TRANSFER OF BODY FLUIDS
William McCormick, 65 Hickory La., Carlisle, Mass. 01741
Filed May 25, 1993, Ser. No. 66,221
Int. Cl.^{5} A61B *19/00*
U.S. Cl. 604—403 19 Claims



1. A safe collection and transfer system for body fluids comprising,
a cup-like tubular guide port of relatively large diameter having a substantially full-diameter open distal end and having a proximal end wall having a smaller diameter opening therein, and a tubular extension extending proximally therefrom for receiving a fluid transfer needle assembly,
a removable cap for said guide port distal end having a large peripheral diameter,

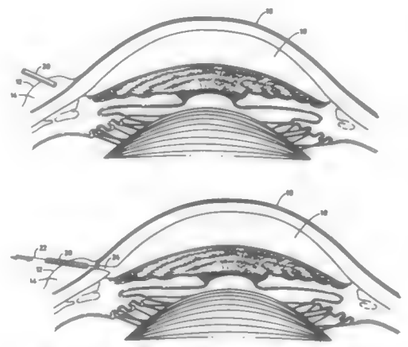
said cap having a smaller diameter central opening therethrough than said guide port and said peripheral diameter for receiving and guiding a transfer receiver therethrough and into said guide port when in use,
said cap and the periphery of said guide port distal end having cooperating elements for detachably securing said cap to said guide port,
whereby when said system is in use, a needle assembly is received in said guide port extension with the needle positioned fully within the guide port, fluids may be received into the needle assembly adjacent its proximal end from a syringe-like source and delivered therefrom into a puncturable transfer receiver extending through said cap opening and positioned within said guide port open distal end, thereby protecting a health care worker from exposure to the contaminated transfer needle.

5,360,424
TRACKING SYSTEM FOR LASER SURGERY
Peter J. Klopotek, Framingham, Mass., assignor to Summit Technology, Inc., Waltham, Mass.
Filed Jun. 4, 1993, Ser. No. 72,528
Int. Cl.^{5} A61N *5/06*
U.S. Cl. 606—4 11 Claims



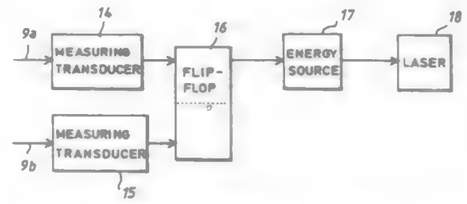
1. A system for tracking target tissue movements during laser surgery comprising:
a laser source for emitting laser radiation;
target securing means for securing target tissue region during surgery; and
optical means for projecting the laser radiation onto said target region, the optical means further comprising:
at least one fixed optical element which is fixed in position during surgery; and
a floating optical element which is mechanically coupled to the target securing means for movement therewith, whereby the fixed optical element and the floating element from an imaging system in which movements of target tissue region are tracked by the floating optical element, such that the laser radiation remains imaged upon the target region.

5,360,425
SCLEROSTOMY METHOD AND APPARATUS
George Cho, Natick, Mass., assignor to Candela Laser Corporation, Wayland, Mass.
Continuation of Ser. No. 568,961, Aug. 17, 1990, abandoned. This application Jan. 5, 1993, Ser. No. 820
Int. Cl.^{5} A61N *5/06*
U.S. Cl. 606—6 26 Claims



1. An ab externo method of sclerostomy, comprising the steps of:
a) creating an opening to a subconjunctival space between a conjunctiva and a sclera o an eye and positioning in said opening a generally tubular member such that said tubular member maintains said opening to said subconjunctival space;
b) subsequently positioning an optical fiber for carrying laser radiation through said tubular member into the subconjunctival space such that the optical fiber is closely positioned relative to the sclera; and
c) ablating the sclera of the eye with laser radiation carried by the optical fiber to create a fistula in the sclera and moving the optical fiber into the fistula while further ablating the sclera with laser radiation to create an outflow channel to decrease intraocular pressure in the eye.

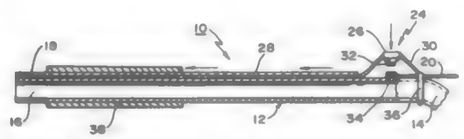
5,360,426
FORCE-CONTROLLED CONTACT APPLICATOR FOR LASER RADIATION
Gerhard Müller, and Norbert Müller-Stolzenburg, both of Berlin, Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany
Filed Oct. 15, 1991, Ser. No. 776,562
Claims priority, application Germany, Oct. 12, 1990, 4032860
Int. Cl.^{5} A61N *5/06*
U.S. Cl. 606—13 16 Claims



1. A contact applicator arrangement for applying laser radiation to an object, the contact applicator arrangement comprising:
a holder having an outer surface and defining a longitudinal axis;

said holder having an outlet formed in said surface for passing the radiation from said holder to the object;
radiation guide means mounted in said holder for guiding the radiation through said outlet;
a pressure sensor mounted on said outer surface of said holder transversely to the direction of said radiation guide means to provide an output signal indicative of contact pressure applied to said sensor when in contact engagement with the object;
laser radiation supply means for supplying radiation to said radiation guide means;
circuit means for switching said radiation supply means on when said output signal reaches a first value and for switching said radiation supply means off when said output signal reaches a second value, and;
said holder having a forward end defining said outlet; and, said pressure sensor being mounted virtually at said forward end proximate to said outlet.

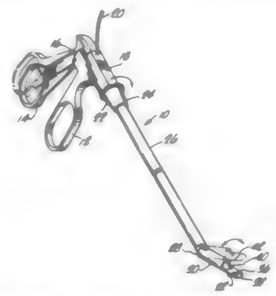
5,360,427
RETRACTABLE ELECTRO-SUCTION DEVICE
Heshmat Majlessi, 233 Purchase St., Rye, N.Y. 10580
Filed Dec. 18, 1992, Ser. No. 999,693
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—41 **13 Claims**



1. An electrocautery device for attachment to a suction pump and to a source of electric current, comprising an elongate tubular member having first and second free ends and being connectable to the suction pump at said first free end and having said second free end dimensioned and configured to be insertable into a cavity of a human torso into proximity with bleeding vessels or tissue to suction blood in a region of the bleeding vessels or tissue thereby improving visibility of the bleeding vessels or tissue requiring cauterization; a cautery element at said second free end and connectable to the source of electric current for cauterizing the bleeding vessels or tissue, said cautery element being movable between a retracted position within said tubular member, wherein the bleeding vessels or tissue are not exposed to said cautery element, and an extended position used during cauterization; actuatable means on said elongate tubular member for selectively moving said cautery element from said retracted to said extended positions; and biassing means on said elongate tubular member and coupled to said cautery element for automatically biassing said actuatable means to normally move said cautery element to said retracted position whereby cauterization can be selectively performed when said cautery element is connected to the source of electric current upon actuation of said actuatable means to move said cautery element to said extended position while said cautery element is normally and automatically retracted when said actuatable means is released.

5,360,428
LAPAROSCOPIC INSTRUMENT WITH ELECTRICAL CUTTING WIRES
William B. Hutchinson, Jr., 1301 20th St. Suite 540, Santa Monica, Calif. 90404
Filed Jul. 22, 1992, Ser. No. 918,287
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—45 **7 Claims**

6. A laparoscopic cutting tool comprising:
a tube having a proximal end and a distal end;
a handle attached substantially perpendicular to the proximal end of the tube;
a pivot segment having a front end and a back end with the back end of the pivot segment pivotally attached to the distal end of the tube;
a pivot linkage mechanism coupled between the handle and the pivot segment for pivoting the pivot segment via the handle;



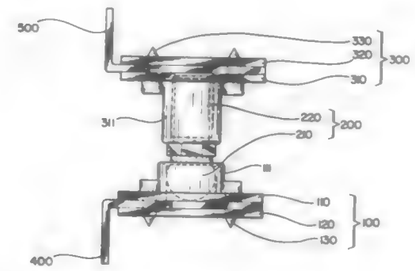
a generally flat lip attached to the front end of the pivot segment;
a pair of spaced apart electrically conducting cutting elements fixed in position relative to the lip and the front end of the pivot segment; and
means for providing electric power to the cutting elements.

5,360,429
DEVICE FOR STRAIGHTENING, FIXING, COMPRESSING, AND ELONGATING CERVICAL VERTEBRAE
Jean-François Jeanson, Assenay; Jean Huppert, Saint Etienne; Alex Autrique, Pau; Joël Remond, Lyons, and Francis Lesoin, Lille, all of France, assignors to JBS Societe Anonyme, France
Filed Feb. 19, 1993, Ser. No. 19,547
Claims priority, application France, Feb. 20, 1992, 92 01913; Sep. 11, 1992, 92 10836
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—61 **5 Claims**



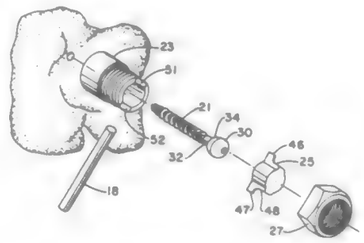
1. A cervical vertebrae straightening, fixation, compression and elongation device comprising:
a first rod and a second rod;
an occipital plate means extending from said first rod, occipital plate means for conforming to a shape and inclination of an occiput;
a connecting plate attached by a fastener to an end of said occipital plate means;
at least one clamp attached to one of said first and second rods, said clamp having a hook formed thereon;
a hook member attached to the other of said first and second rods; and
a screw means received by said occipital plate means, and screw means for attaching said occipital plate means to the occiput.

5,360,430
INTERVERTEBRAL LOCKING DEVICE
Chih-I Lin, 513 S. Golden Pardos Dr., Diamond Bar, Calif. 10765
Filed Jul. 29, 1993, Ser. No. 98,855
Int. Cl.[5] A61B *17/58*
U.S. Cl. 606—61 **3 Claims**



1. An intervertebral locking device comprising:
a bottom base having an upper planar surface with a fastening member attached thereto and having a lower planar surface with one or more protruded bodies;
a bracing member having a lower end united with said fastening member attached to said upper planar surface of said bottom base and an upper end;
a top base having a lower planar surface with a fastening member attached thereto which, in turn, is attached to the upper end of said bracing member, and having an upper planar surface with one or more protruded bodies; and
a pair of adjusting arms each having one end serving as an adjusting end to fasten adjustably with said bottom base and said top base respectively, each of said adjusting arms further having another end acting as a locking end to anchor securely in an appropriate position with one of said locking ends being adapted to be secured to a vertebra adjacent to a deformed vertebra under treatment;
wherein said adjusting ends of said adjusting arms are securely fastened with said bottom base and said top base respectively after said adjusting ends are first adjusted to locate appropriately said locking ends;
wherein said bottom base and said top base are provided respectively with a base plate having a plurality of through holes, a fastening plate having a plurality of threaded holes corresponding in number and location to said through holes, and a plurality of screws which are put through said through holes of said base plate to engage said threaded holes of said fastening plate in such a manner that said screws penetrate said fastening plate to form a plurality of said protruded bodies; and
wherein said adjusting end of each of said adjusting arms is received in a slot centrally locate between said bottom base and said fastening plate.

5,360,431
TRANSPEDICULAR SCREW SYSTEM AND METHOD OF USE
Rolando M. Puno, Prospect, Ky., and Philip A. Mellinger, Worthington, Ohio, assignors to Cross Medical Products, Columbus, Ohio
PCT No. PCT/US90/02286, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/16020, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 26, 1990, Ser. No. 946,319
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—72 **3 Claims**

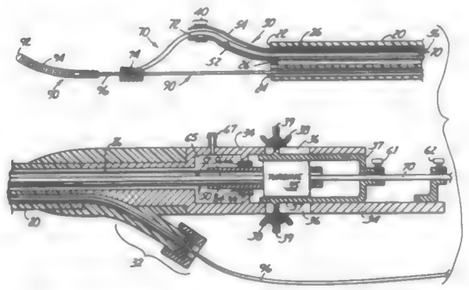


1. A device for the stabilization of one or more bone segments, comprising:
at least two anchors and a rod, said anchors each comprising a screw, an anchor seat, a cap, and a nut, said screw having a shank joined to a head, said head having a rounded profile where it joins said shank; said anchor seat having an internal bore, said screw projecting through said bore to be received by said bone segment and said bore including a shoulder which cooperates with the rounded profile of the screw head and said anchor seat further including external threads and a channel to receive said rod; said cap having a smaller outer diameter portion which is received within said anchor seat bore and a large outer diameter portion forming at one end an arch including opposing rod holding flanges; said larger outer diameter portion mating with said rod receiving channel whereby said rod is captured between said arch and said channel; and said nut including top and bottom surfaces and having threads which mate with the threads of the anchor seat and said nut being posterior to said rod and tightening down toward rod whereby said bottom surface engages said opposing rod holding flanges and causes said cap to apply a compressive force to said rod.

5,360,432
ABRASIVE DRIVE SHAFT DEVICE FOR DIRECTIONAL ROTATIONAL ATHERECTOMY
Leonid Shturman, Minneapolis, Minn., assignor to Shturman Cardiology Systems, Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 967,765, Oct. 28, 1992, and a continuation-in-part of Ser. No. 962,634, Oct. 16, 1992, Pat. No. 5,312,427. This application Dec. 17, 1992, Ser. No. 992,415
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 **47 Claims**

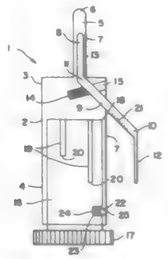
1. An abrasive drive shaft atherectomy device comprising:
a rotational atherectomy apparatus having a flexible, elongated drive shaft with proximal and distal ends, the drive shaft including a segment, near its distal end, coated with an abrasive material to define an abrasive segment of the drive shaft, the drive shaft further including a central lumen for receipt of a guide wire therein, around which the drive shaft may be rotated; and
a guide wire having a flexible, generally straight proximal portion, a flexible distal end portion, each such portion having a longitudinal axis, the longitudinal axis of at least a portion of the flexible distal end portion being normally substantially parallel to the longitudinal axis of the proxi-

mal portion, and a flexible intermediate positioning segment, the positioning segment having a predetermined curved shape so that when the abrasive segment of the



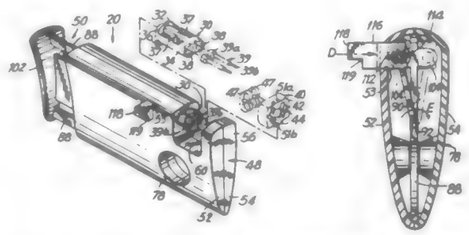
drive shaft is advanced over the guide wire to a position along the curved positioning segment, such curved segment positions the abrasive segment laterally away from one or both of such longitudinal axes.

5,360,433
TEAT KNIFE
Maximilian Medl, Babenhausen, Germany, assignor to Franz Schirling, Baubenhausen, Germany
Continuation of Ser. No. 919,259, Jul. 27, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 193,604
Claims priority, application Germany, Jul. 25, 1991, 9109210[U]; European Pat. Off., Apr. 2, 1992, 92105681.8
Int. Cl.[5] A61D *1/02*
U.S. Cl. 606—159 **24 Claims**



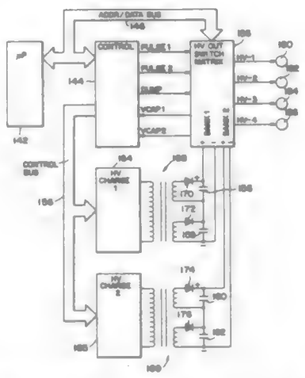
1. A teat knife comprising a base element (2), a spring (14) positioned within said base element (2), a knife sheath (5) fixed to said base element (2) with a longitudinal slot (7) therein, and a knife (9) with an adjustable swivel angle within said sheath slot (7), said knife (9) being constructed as an angle knife having a proximal and a distal portion, the distal portion comprising a cutting arm (8), a manually controllable operating arm (10) disposed at an angle to said cutting arm and connecting the operating arm to the distal portion, the distal portion comprising a pressure plate for moving the knife into an exposed cutting position, said spring (14) biasing the operating arm (10) of said angle knife (9) into a resting position wherein said cutting arm (8) is within said sheath (5).

5,360,434
NON-REMOVABLE EARRING AND CLUTCH EAR PIERCING INSTRUMENT
Samuel J. Mann, Fair Lawn, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.
Filed Aug. 28, 1992, Ser. No. 936,936
Int. Cl.[5] A61B *17/34*
U.S. Cl. 606—188 **19 Claims**



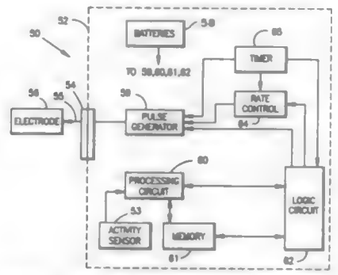
1. An ear piercing assembly comprising a first and second earring stud; stud retaining sub-assembly means for releaseably supporting both said earring studs; a first and second clutch; clutch retaining sub-assembly means for releaseably supporting both of said clutches; housing means for supporting said stud retaining sub-assembly means and said clutch retaining sub-assembly means therein; push rod assembly means disposed within said housing means for ejecting a stud from said stud retaining sub-assembly means; and displacement means for selectively moving said push rod assembly means between a first position for ejecting said first stud from said stud retaining means and a second position for ejecting said second stud from said stud retaining means.

5,360,435
MULTIPLE PULSE CARDIOVERSION OR DEFIBRILLATION
Paul DeGroot, Brooklyn Park, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 19, 1993, Ser. No. 19,509
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—7 **9 Claims**



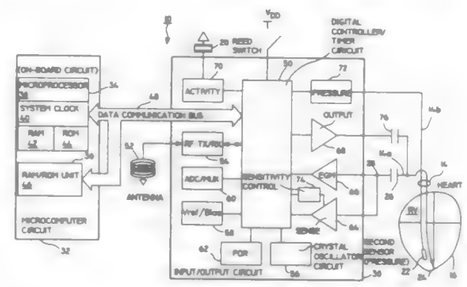
1. Apparatus for cardiac cardioversion or defibrillation, comprising:
a first pair of cardioversion or defibrillation electrodes;
a second pair of cardioversion or defibrillation electrodes;
a first capacitor having positive and negative terminals;
a second capacitor having positive and negative terminals;
means for coupling for said positive and negative terminals of said first and second capacitors, in parallel, to said first electrode pair to discharge said first and second capacitors for a first time interval to deliver a first cardioversion or defibrillation pulse and for subsequently coupling said positive terminal of said second capacitor to said negative terminal of said first capacitor and coupling said positive terminal of said first capacitor and said negative terminal of said second capacitor to said second electrode pair for a second time interval to further discharge said first and second capacitors to deliver a second cardioversion or defibrillation pulse.

5,360,436
CARDIAC PACING RESPONSIVE TO MULTIPLE ACTIVITY TYPES
Eckhard Alt, Ottobrunn; Marcus Matula, and Edgar Mestre, both of Munich, all of Germany, assignors to Intermedics, Inc., Angleton, Tex.
Filed Apr. 3, 1992, Ser. No. 863,093
Int. Cl.[5] A61N *1/365*
U.S. Cl. 607—18 **30 Claims**



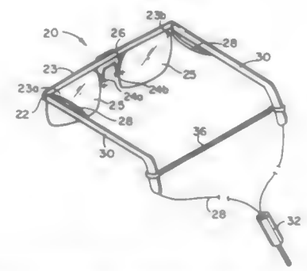
1. A variable rate cardiac pacemaker adapted and configured to be implanted in a human patient, and adaptive in rate to different types of patient exercise such as walking and bicycling, comprising:
sensor means adapted to respond to physical exercise by the patient for producing an electrical signal representative of the specific type of physical exercise being engaged in by the patient,
pulse generator means for controllably generating pacing pulses in a range of rates adapted to stimulate the patient's heart,
memory means for storing different algorithms denoting heart rate as a function of respective ones of the different types of exercise for a healthy person with a normally functioning cardiovascular system, and
control means responsive to signals produced by said sensor means representative of different types of exercise engaged in by the patient for discriminating between specific types of exercise represented by the respective signals produced by said sensor means, including means having access to said different algorithms of said memory means and responsive to the type of exercise determined by the discrimination for selecting the algorithm corresponding to the type of exercise being engaged in by the patient, and including means to control the pacing rate of said pulse generating means according to the selected algorithm.

5,360,437
IMPLANTABLE MEDICAL DEVICE WITH FLEXIBLE HARDWARE PLATFORM
David L. Thompson, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Continuation of Ser. No. 785,841, Oct. 31, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 149,161
Int. Cl.[5] A61N *1/362*
U.S. Cl. 607—30 **9 Claims**



1. An implantable cardiac pacemaker, comprising:
a pulse generator, including a microprocessor, for delivering pacing pulses to a patient's heart according to a predetermined pacing algorithm;
non-volatile, random-access, read/write memory, for storing instructions executed by said microprocessor, said instructions defining said pacing algorithm;
telemetry circuit means for receiving telemetry signals from a programmer external to said patient after implant of said pacemaker in said patient, said telemetry signals comprising commands and instructions for execution by said microprocessor; and
wherein one of said commands causes said instructions stored in said random-access memory to be overwritten with said instructions in said telemetry signals, such that said predetermined pacing algorithm is modified.

5,360,438
METHOD AND DEVICE FOR IMPROVING CRANIAL NERVE FUNCTION TO IMPROVE MUSCLE FUNCTION AND THEREBY OVERCOME VISUAL/PERCEPTUAL DYSFUNCTION
Mary R. Fisher, 508 Walnut St., Green Lane, Pa. 18054
Filed Jan. 26, 1993, Ser. No. 9,495
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—53 **9 Claims**



1. A method for treating a user to improve muscle function to overcome visual/perceptual dysfunction of the user comprising the steps of:
assessing a base line reading rate for the user;
determining the degree of visual/perceptual dysfunction suffered by the user as a result of the base line reading rate;

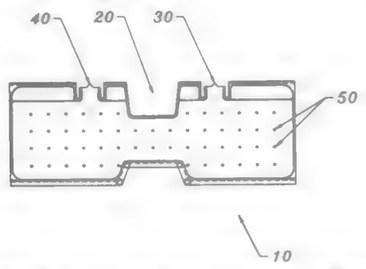
establishing an electrical stimulation treatment plan for the user based upon the determined degree of visual/perceptual dysfunction;
placing electrodes on the user proximate a cranial nerve;
connecting a voltage source to the electrodes;
applying a voltage signal to the electrodes in accordance with the established treatment plan thereby causing the electrodes to transmit an electrical stimulus to the cranial nerve; and
timing the application of the voltage signal in accordance with the established treatment plan such that the electrical stimulus is transmitted to the cranial nerve for a first period of time and is suppressed for a second period of time.

5,360,439

WARMING BLANKET METHOD UTILIZING A WARMING BLANKET HAVING MULTIPLE INLETS

Scott D. Dickerhoff, Manchester; Thomas F. Kappel, St. Louis, and Robert A. Virag, Chesterfield, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 924,269, Jul. 3, 1992. This application Nov. 24, 1992, Ser. No. 979,993
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—104 **18 Claims**



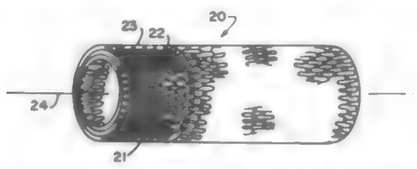
1. A method of preventing hypothermia, said method comprising:
providing a blanket which may be used with a forced air convection system, wherein such blanket includes multiple inlet ports and wherein said multiple inlet ports are initially sealed closed;
providing means to open said multiple inlet ports, wherein said means to open comprises a tear strip;
placing said blanket over or under a patient; connecting at least one of said multiple inlet ports to a supply source of forced air; and
supplying forced air from said supply source to said blanket.

5,360,440

IN SITU APPARATUS FOR GENERATING AN ELECTRICAL CURRENT IN A BIOLOGICAL ENVIRONMENT

Erik Andersen, Roskilde, Denmark, assignor to Boston Scientific Corporation, Watertown, Mass.

Filed Mar. 9, 1992, Ser. No. 847,911
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—116 **35 Claims**



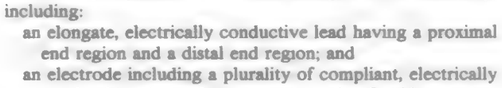
1. Apparatus for the in situ generation of an electrical current in a biological environment including electrically conductive tissue and an electrolyte, said current generation apparatus comprising first and second layers of electrically conductive materials of different electrochemical potentials and an insulating third layer intermediate and contiguous said first and second layers, each of said layers having a passage therethrough into which proximate conductive tissue cells can expand to bridge said first and second layers, whereby said apparatus, when immersed in the electrolyte, generates electrolytically an electrical current through the bridging conductive tissue cells.

5,360,441

LEAD WITH STYLET CAPTURE MEMBER

Lynn M. Otten, Blaine, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 30, 1992, Ser. No. 969,620
Int. Cl.[5] A61N *1/372*
U.S. Cl. 607—122 **8 Claims**



1. An epidural lead having a distal end and a proximal end, the epidural lead comprising:
a flexible tubular outer member substantially concentric to a longitudinal axis of the lead, said outer member extending substantially an entire length of the lead,
a flexible tubular inner member lying within said outer member, said inner member having a distal end located near the distal end of the lead, said inner member extending substantially to the proximal end of the lead and defining a central lumen,
at least one electrode secured to said outer member near the distal end of the lead,
at least one conductor connected to said at least one electrode for transmitting electrical signals from the proximal end of the lead to said at least one electrode,
a stylet for insertion in the central lumen of the lead, said stylet having an enlarged tip of predetermined shape at a distal end and wherein the distal end of said stylet forms an acute angle with the longitudinal axis of said stylet, and
capture means connected to said flexible tubular outer member for releasably receiving the enlarged tip of said styler, such that the lead may be positioned at a desired location by one of advancing and withdrawing said stylet.

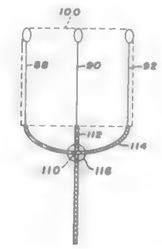
5,360,442

SUBCUTANEOUS DEFIBRILLATION ELECTRODES

Roger W. Dahl, Andover; David K. Swanson; Stephen J. Hahn, both of Roseville; Douglas J. Lang, Arden Hills, and John E. Heil, St. Paul, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation of Ser. No. 533,886, Jun. 6, 1990, Pat. No. 5,203,348. This application Jan. 4, 1993, Ser. No. 967,361
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—129 **3 Claims**

1. A body implantable tissue stimulating electrode assembly, including:
an elongate, electrically conductive lead having a proximal end region and a distal end region; and
an electrode including a plurality of compliant, electrically conductive electrode segments, each of said segments having a nominal width and a length exceeding the nominal width, said electrode segments having respective and opposite first and second ends and being coupled to the distal end region of the lead for substantially simultaneous reception of tissue stimulating electrical pulses from a pulse generating means at the proximal end region of the lead, said electrode segments being arranged in spaced apart and side-by-side relation such that each of the electrode segments, over most of its length, is spaced apart from each one of the other electrode segments by a distance of at least 1.5 cm, each of the electrode segments being free of electrically insulative material at and along



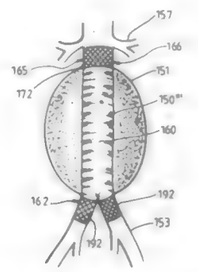
its periphery substantially over its entire length to provide a continuous exposed reactive surface over substantially the entire length and periphery of the electrode segment, said electrode segments when receiving the tissue stimulating pulses cooperating to define an effective electrode area incorporating all of the electrode segments;
electrically conductive means at the respective second ends of the electrode segments for reducing current density.

5,360,443

AORTIC GRAFT FOR REPAIRING AN ABDOMINAL AORTIC ANEURYSM

Hector D. Barone, Maza 1869/73, Buenos Aires, Argentina 1240 ; Julio C. Palmaz, 636 Ivy La., San Antonio, Tex. 78209, and Juan C. Parodi, Mercedes 4255, Buenos Aires, Argentina 1419

Filed Jun. 11, 1990, Ser. No. 535,745
Int. Cl.[5] A61F *2/06;* **A61M** *29/02*
U.S. Cl. 623—1 **18 Claims**



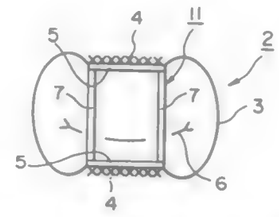
1. An aortic graft for intraluminal delivery to repair an abdominal aortic aneurysm in an aorta having two iliac arteries associated therewith, comprising:
a tube having first and second ends and a wall surface disposed between the two ends, at least a portion of the tube adapted to be disposed within the abdominal aortic aneurysm; and
means for securing the first end of the tube to the aorta, the securing means including a thin-walled tubular member having a longitudinal axis, an interior, first and second ends and a smooth outer tubular member wall surface disposed between the first and second ends, the tubular member wall surface having a substantially uniform thickness and a plurality of slots formed therein, the slots being disposed substantially parallel to the longitudinal axis of the tubular member, the first end of the tube being secured to the second end of the tubular member; the tubular member having a first diameter which permits intraluminal delivery of the tubular member into the aorta and the tubular member having a second, expanded and deformed diameter, upon an application from the interior of the tubular member of a radially, outwardly extending force, which second diameter is variable and dependent upon the force applied to the tubular member, whereby the tubular member may be expanded and deformed to secure the first end of the tubular member to the aorta.

5,360,444

OCCLUDER SUPPORTER AND A METHOD OF ATTACHMENT THEREOF

Kenji Kusuhara, 4, Ogawa-cho, Nara-shi, Nara-ken, Japan

Continuation of Ser. No. 852,650, Mar. 17, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,880
Claims priority, application Japan, Mar. 19, 1991, 3-130847
Int. Cl.[5] A61F *2/24, 2/02, 2/54, 2/76*
U.S. Cl. 623—2 **13 Claims**



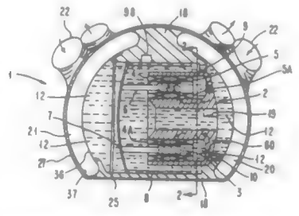
1. On a heart valve of a mammalian heart having an atrium and a ventricle connected to an artery, the heart valve having an annular occluder with edges connected to the heart and a plurality of valve cusps extending inwardly from said edges for forming the outer circumference of a valve aperture, the valve aperture being opened and shut by the cusps and permitting blood flow in one direction and preventing back flow of blood; an occluder supporter comprising:
a plurality of stitched attachments shaped and configured to be sewn on to said edges of said annular occluder at angularly spaced positions, and
support means connecting said stitched attachments for maintaining said edges of said annular occluder in close proximity to each other and facilitating closure of said cusps in such a way that said support means transect the valve aperture.

5,360,445

BLOOD PUMP ACTUATOR

Michael Goldowsky, Valhalla, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1991, Ser. No. 788,574
Int. Cl.[5] A61M *1/10;* **A61N** *1/362*
U.S. Cl. 623—3 **16 Claims**



1. A blood pump for use with a ventricle which receives blood, comprising a direct drive actuator for positioning proximate said ventricle, a magnet positioned inside said actuator, a stationary coil means circumferentially surrounding said magnet and spaced therefrom sufficiently so that wear and contact

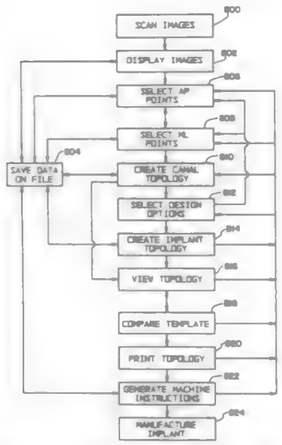
are minimized, a piston means attached to said magnet for pumping said ventricle, a bearing for supporting said piston means, a housing for said actuator filled with hydraulic fluid for providing cooling for said actuator, said piston means having a generally cylindrical surface having two sets of opposed taper means, a first of said sets being separated from a second of said sets by a groove, and communication means for receiving hydraulic fluid in said groove, whereby contact between said piston means and said housing is substantially eliminated.

5,360,446

INTERACTIVE PROSTHESIS DESIGN SYSTEM FOR IMPLANTABLE PROSTHESIS

Patrick W. Kennedy, Columbia City, Ind., assignor to Zimmer, Inc., Warsaw, Ind.

Filed Dec. 18, 1992, Ser. No. 993,288
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **24 Claims**



1. A method of designing a prosthetic implant, said method utilizing first and second two dimensional x-ray radiograph images relating to the location of the implant, said method comprising the steps of:

optically scanning and digitizing the first and second two dimensional x-ray radiograph images to create representation of the first and second two dimensional x-ray radiograph images and electronically storing said representations;

displaying said representations of the first and second two dimensional x-ray radiograph images;

selecting a first and second plurality of points on said first and second representations which correspond to the location for the implant;

storing said first and second plurality of points in association with location information of said first and second plurality of points on said representations; and

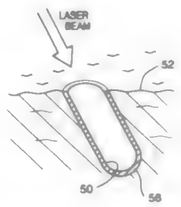
calculating a topology for a prosthetic implant using said first and second plurality of points.

5,360,447

LASER ASSISTED HAIR TRANSPLANT METHOD

Dale E. Koop, Sunnyvale, Calif., assignor to Coherent, Inc., Santa Clara, Calif.

Filed Feb. 3, 1993, Ser. No. 12,895
Int. Cl.[5] A61F *2/10*
U.S. Cl. 623—15 **14 Claims**



1. A method of implanting a hair graft into the scalp of a patient comprising the steps of:

incising a region of scalp tissue using a laser beam; and

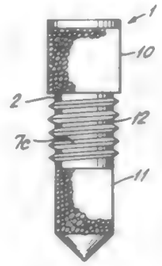
inserting the hair graft into the incised region.

5,360,448

POROUS-COATED BONE SCREW FOR SECURING PROSTHESIS

Jeffrey J. Thramann, 420 E. 70th St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 772,284, Oct. 7, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,653
Int. Cl.[5] A61F *8/28*
U.S. Cl. 623—16 **7 Claims**



1. A bone screw comprising:

a shaft of circular cross section having a driving end provided with a tool engaging means, and an opposite leading end;

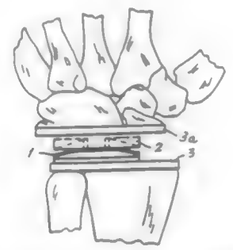
said shaft from said driving end to said leading end being divided into a plurality of adjacent coaxially aligned longitudinal regions, at least two of said regions that are not contiguous having an external bone ingrowth porous circumferentially continuous surface free from threads along their respective lengths, and at least one of said regions located between said two porous surface regions having an externally threaded non-porous surface throughout its length.

5,360,449

ARTIFICIAL JOINT MECHANISM FOR RECONSTRUCTING HUMAN JOINTS

Per-Ingvar Brånemark, Mölndal, Sweden, assignor to Medevelop AB, Sweden

PCT No. PCT/SE91/00586, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/03992, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 5, 1991, Ser. No. 940,961
Claims priority, application Sweden, Sep. 5, 1990, 9002823
Int. Cl.[5] A61F *2/32, 2/42*
U.S. Cl. 623—18 **8 Claims**



1. An artificial joint mechanism for reconstruction of joints intended for mounting between fixtures anchored on each side of the joint, said artificial joint mechanism comprising:

a male joint component comprising a first base plate and first and second joint pins attached to one surface of said first base plate by means of a support element interspaced between each of said joint pins and said first base plate, said joint pins being separated by a central recess, each of said joint pins being provided with a substantially cylindrical arc-shaped first joint surface formed about an individual first axis both of said first axes being located in a first plane disposed generally perpendicular to said one surface of said first base plate;

a female joint component comprising a second base plate provided on one side thereof with first and second joint recesses separated by a shoulder, each of said joint recesses having an individual substantially cylindrical arc-shaped second joint surface formed about an individual second axis, both of said second axes being located in a second plane disposed generally perpendicular to said second base plate;

said first and second joint pins being disposed within said first and second joint recesses, respectively, and said second joint surfaces being engaged with said first joint surfaces for cooperation with each other during relative movement between said male and female joint components;

each of said first and second joint pins being provided with an arc-shaped first joint portion located adjacent to and extending from said central recess, each of said first joint portions being relatively short compared to each of said first joint surfaces, each of said arc-shaped first joint portions having a third axis arranged generally parallel to said one surface of said first base plate;

each of said first axes being inclined slightly with respect to said one surface of said first base plate, and said first axes being inclined with respect to one another.

5,360,450

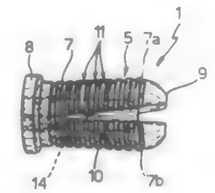
PROSTHESIS FOR THE CORRECTION OF FLATFOOT

Sandro Giannini, Viareggio, Italy, assignor to Howmedica International Div.ne Pfizer Italiana S.p.A., Latina, Italy

Filed Mar. 9, 1993, Ser. No. 28,184
Claims priority, application Italy, Mar. 9, 1992, LU92U/1
Int. Cl.[5] A61F *2/42*
U.S. Cl. 623—21 **9 Claims**

1. A prosthesis for correction of a flatfoot condition, designed for insertion inside a tarsal sinus defined between an astragalus bone and the calcaneous, which comprises:

a first cylindrical body having a deformable wall wherein said body is formed of a bioreabsorbable polymeric material and sized to be axially inserted into said tarsal sinus, said first body having an axial hole defined by said deformable wall, and



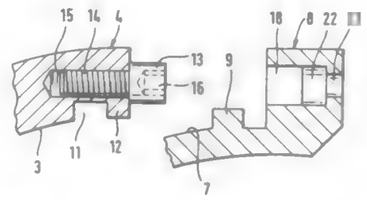
a second substantially cylindrical body formed of said bioreabsorbable polymeric material and sized to be axially inserted into said hole to deform said wall as to increase the outer diameter thereof, such that the prosthesis is adjusted according to the size of said tarsal sinus when the prosthesis is surgically inserted into said tarsal sinus to achieve a given position of a longitudinal axis of the astragalus bone in relation to a longitudinal axis of the calcaneus.

5,360,451

ACETABULAR CUP FOR A HIP JOINT ENDOPROSTHESIS

Arnold Keller, Kayhude, Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Germany

Filed Sep. 9, 1993, Ser. No. 118,941
Claims priority, application Germany, Sep. 15, 1992, 9212419[U]
Int. Cl.[5] A61F *2/32*
U.S. Cl. 623—22 **12 Claims**



1. An acetabular cup for a hip endoprosthesis comprising a socket to be introduced into the hip bone and an insert lockably assemblable on the socket, said insert forming a joint surface of the endoprosthesis, said socket and insert having cooperative bayonet catch means for assembling the insert on the socket and lockable retention means for locking the socket and the insert in their assembled relationship, said retention means comprising an elongated keyway on one of said socket and insert an da projectably adjustable key on the other of said socket and insert, said adjustable key cooperatively engaging said keyway during assembly, one end of said keyway having a key stop for assisting in positioning the key and a key receptor adjacent the stop for receiving said key upon positional adjustment of the key for lockably securing the socket and insert in said assembled relationship.

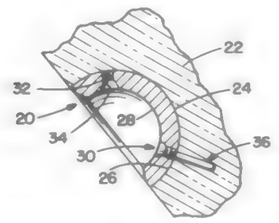
5,360,452
ENHANCED FIXATION SYSTEM FOR A PROSTHETIC IMPLANT

John Engelhardt, and Jon Serbousek, both of Warsaw, Ind., assignors to DePuy Inc., Warsaw, Ind.

Continuation of Ser. No. 954,684, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 702,744, May 20, 1991, abandoned. This application Dec. 6, 1993, Ser. No. 163,597

Int. Cl.[5] **A61F** *2/32, 2/36, 2/30, 2/28*

U.S. Cl. 623—22 **17 Claims**



1. A system for the fixation of a component of an artificial joint for replacing a damaged natural joint comprising:

a cup-shaped socket member generally hemispherical in shape, having an outer curved surface for contiguous mating reception with a similarly shaped cavity in a first bone and an inner curved surface generally parallel to and spaced from said outer surface for supporting reception therein of a mating ball-shaped member attached to a second bone, said socket member having at least one mounting bore extending between said inner and outer surfaces and having a longitudinal axis, one portion of the bore proximate said outer surface being threaded, another portion of the bore proximate said inner surface being uniformly tapered relative to the longitudinal axis and having an included angle of less than six degrees and having a major diameter at said inner surface and a minor diameter intermediate said outer and inner surfaces thereby defining a seating surface; and

a one piece fixation fastener for reception through the mounting bore and into the first bone, said fastener having a longitudinal axis and extending between first and second ends and including:

a head;

an elongated shank integral with and extending away from said head;

mounting threads on said fastener adjacent said head;

said head having an operating end and a locking surface being uniformly tapered relative to the longitudinal axis and having an included angle of less than six degrees, and extending between said operating end and said mounting threads and having a diameter at said operating end greater than at said mounting threads;

said mounting threads on said fastener being threadedly engaged with said threads in the bore and said tapered locking surface on said fastener being matingly engaged with said seating surface in the bore when said fastener is in a final position fixedly mounting said socket member to the first bone, said seating surface of said socket member and said locking surface of said fixation fastener having a mutual angular divergence sufficient to cause a locked condition when engaged whereby both a torsional frictional load is imparted between said locking surface and said seating surface of said socket member and a tensile load is imparted between said mounting threads and said locking surface, said torsional and tensile loads being confined to a region defined by said outer curved surface and Said inner curved surface to prevent loosening of said fastener from said socket member.

5,360,453
PROCESS FOR PICKLING AND PRETANNING RAW HIDES

Alain Lauton, Saint-Louis, France; Markus Hess, Steinen-Hofen; Günter Streicher, Weil am Rhein, both of Germany, and Alois Püntener, Rheinfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 22, 1993, Ser. No. 7,421

Claims priority, application Switzerland, Jan. 28, 1992, 239/92-1

Int. Cl.[5] **C14C** *3/16, 1/08*

U.S. Cl. 8—94.33 **20 Claims**

1. A process for pickling and pretanning raw hides, which comprises

(I) pickling the raw hide in an aqueous liquor A which is devoid of salts and contains

(a) a reaction product of phenol and a sulfonating agent, the molar ratio of (phenol):(SO_3) being (1):(1.1–2.2), and

(II) pretanning the pickled raw hide in the same bath by addition of an aqueous formulation B comprising

(b) a reductive saccharide having a dextrose equivalent of 10 to 100, and

(c) an aliphatic dialdehyde containing 2 to 8 carbon atoms.

5,360,454
TANNING OF LEATHER AND FUR

Norbert Grief, Bobenheim; Knut Oppenlaender; Hermann Birkhofer, both of Ludwigshafen; Brigitte Wegner, Roemerberg, and Johannes P. Dix, Weisenheim, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Germany

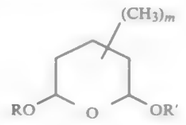
Filed May 25, 1993, Ser. No. 66,233

Claims priority, application Germany, Jun. 13, 1992, 4219419

Int. Cl.[5] **C14C** *3/08;* **C07D** *309/06*

U.S. Cl. 8—94.33 **16 Claims**

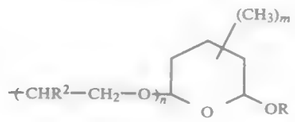
1. A process for tanning leather comprising contacting said leather with a compound of the formula I:



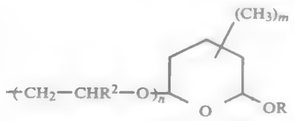
where m is 0 or 1,

R is an unsubstituted or substituted C_{1-18} alkyl group wherein the substituents are hydroxyl; and

R′ is a radical of the formula $-(CHR^2CH_2O)_nR^3$ or $-(CH_2CHR^2O)_nR^3$ where n is 1 to 20 R^2 is hydrogen or a C_{1-4} alkyl and R^3 is hydrogen or a C_{1-8} alkyl or is a radical of the formula:



or



where m, n, R and R^2 are as defined above.

5,360,455
PROCESS FOR PRODUCING MULTICOLOR OR TONE-IN-TONE EFFECTS

Klaus Hannemann, Lörrach, Germany; Alfred Höhener, Magden, Switzerland; Huanzhong Wang, Basel, Switzerland, and Manfred Rembold, Aesch, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 26, 1993, Ser. No. 25,212

Claims priority, application Switzerland, Mar. 3, 1992, 650/92-5

Int. Cl.[5] **D06P** *5/20, 5/12*

U.S. Cl. 8—444 **19 Claims**

1. A process for producing textiles having a multicolor or tone-in-tone effect, which process comprises the steps of (a) partially covering a natural or synthetic polyamide fiber material with an adhesive tape or a screen, (b) subjecting the partially covered material to a plasma or a corona discharge treatment, (c) removing the adhesive tape or screen from the treated material, and (d) subsequently dyeing the treated, uncovered material with an anionic dye in the substantial absence of resist agents.

5,360,456
PROCESS OF TRANSFER PRINTING COMPRISING PRETREATMENT WITH A POLYURETHANE RESIN MIXTURE

Roger Lecomte, 24 résidence des mottes, Froyennes (Tournai); Jacques Lecomte, 131, rue de Tournai, Pecq, both of Belgium, Philippe Honore, 99, rue d'Halluin—59960 Neuville En Ferrian, France

Filed Jun. 26, 1992, Ser. No. 904,995

Claims priority, application France, Jul. 8, 1991, 91 08991

Int. Cl.[5] **D06P** *5/00*

U.S. Cl. 8—471 **7 Claims**

1. A process for printing a textile article by heat transfer of sublimable dyes printed with the aid of a transfer paper, comprising a pre-treatment of said article by a mixture of polyurethane resins, wherein the pre-treatment, prior to the transfer of said sublimable dyes consists in coating at least that face of the article intended to be in contact with the transfer paper, with a mixture of polyurethane ester resins, at least one being aromatic, at least another being aliphatic wherein said mixture is comprised of substantially equal portions of said polyurethane ester resins.

5,360,457
ENHANCED WETTING, LOW-FOAMING, DYE-LEVELING AGENT COMPRISING A PIPERAZINE SUBSTITUTED ORGANOSULFONATE

Murray A. Ruggiero, East Haven; Bruce A. Marien, Woodbridge; Shoaib Arif; Robert P. Roth, both of Cheshire, all of Conn.; Joseph T. Farrell, and A. R. Vanover, both of Brandenburg, Ky., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 31, 1994, Ser. No. 189,369

Int. Cl.[5] **C09B** *67/00*

U.S. Cl. 8—567 **14 Claims**

1. A composition concentrate comprising:

(a) a piperazine-substituted organosulfonate,

(b) an organic or inorganic salt of a polycarboxylated alcohol alkoxylate, and

(c) an alcohol alkoxylate,

wherein the amount of component (a) is between about 20 and about 75 weight percent, component (b) is present in an amount of between about 2.5 and about 25 weight percent, and component (c) being between about 10 weight percent and 75 weight percent, all weight percents being based upon the weight of said composition concentrate.

5,360,458

OIL-WATER EMULSIONS

John W. Forsberg, and Richard W. Jahnke, both of Mentor, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 319,059, Mar. 2, 1989, abandoned. This application Jun. 19, 1991, Ser. No. 717,683

Int. Cl.[5] C10L *1/22, 1/30*

U.S. Cl. 44—301 **41 Claims**

1. An oil-in-water emulsion comprising 30% or less water, a minor emulsifying amount of at least one emulsifier, and a crude oil having a Brookfield Viscosity in the range of about 20,000 to about 250,000 Centipoise at 40° C., said emulsifier comprising the reaction product of:

(A) at least one saturated or unsaturated aliphatic monocarboxylic acid of about 12 to about 24 carbon atoms;

(B) at least one acid of the general formula $C_{19}H_n$COOH, wherein n is a number in the range of about 27 to about 31, and having a phenanthrene nucleus; and

(C) at least one hydroxyamine.

5,360,459

COPPER-CONTAINING ORGANOMETALLIC COMPLEXES AND CONCENTRATES AND DIESEL FUELS CONTAINING SAME

Christopher J. Kolp, Euclid; Daniel T. Daly, Shaker Hts.; Nai Z. Huang, Mayfield Hts.; Scott T. Jolley, Mentor; Frederick W. Koch, Willoughby Hills; Stephen H. Stoldt, Concord Township, Ashtabula County; Reed H. Walsh, Mentor, and Richard A. Denis, Auburn Township, Ashtabula County, all of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio

Filed May 13, 1991, Ser. No. 699,051

The portion of the term of this patent subsequent to May 13, 2008, has been disclaimed.

Int. Cl.[5] C10L *1/30*

U.S. Cl. 44—358 **38 Claims**

1. A composition comprising at least one organometallic complex wherein the metal is Cu or Cu in combination with one or more metals selected from the group consisting of Na, K, Mg, Ca, Sr, Ba, V, Cr, Mo, Fe, Co, Zn, B, Pb, Sb, Ti, Mn and Zr, the metal in said organometallic complex being sufficiently active so that when said organometallic complex is dispersed in a diesel fuel and said diesel fuel is used in a diesel engine equipped with an exhaust system particulate trap the metal from said organometallic complex reduces the ignition temperature of exhaust particles collected in said trap, said complex being derived from

(i) at least one organic compound containing a hydrocarbon linkage and at least two functional groups, each of said functional groups being independently selected from the group consisting of $=X$, $-XR$, $-NR_2$, $-NO_2$, $=NR$, $=NXR$, $=N-R^*-XR$,

$$-N-(R^*N)_a-R,\quad -P(X)XR,\quad -P(X)XR,\quad -N=CR_2,$$

(R, R, R, XR)

$-CN$ and $-N=NR$,

wherein

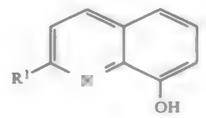
X is O or S,

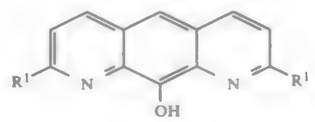
R is H or hydrocarbyl,

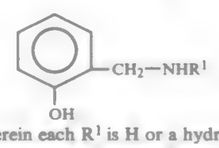
R^* is hydrocarbylene or hydrocarbylidene,

a is a number ranging from zero to about 10; and

said organic compound being selected from the group consisting of: aromatic Mannichs derived from amines other than hydroxyl- and/or thiol-containing amines or other than alkylene polyamines wherein the alkylene is ethylene or propylene; hydroxyaromatic ketoximes; Schiff bases other than hydroxyaromatic Schiff bases; calixarenes; α-substituted phenols wherein the substituent is NR^1_2, SR^1 or NO_2 and R^1 is H or a hydrocarbyl group; β-substituted phenols represented by either of the formulae







wherein each R^1 is H or a hydrocarbyl group, or each R^1 is a group represented by the formula $R^2R^3NR^4$— wherein R^2 and R^3 are independently H or hydrocarbyl groups, and R^4 is a hydrocarbylene or hydrocarbylidene group; carboxylic acid esters characterized by the presence of at least one carboxylic acid ester group and at least one additional functional group, said additional functional group being one of said functional groups or another carboxylic acid ester group; acylated amines characterized by at least one acyl group and at least one amino group and being other than the product made by the reaction of a hydrocarbon-substituted succinic acid compound having at least 50 aliphatic carbon atoms in the hydrocarbon substituent with an alkylene amine; hydroxyazylenes; benzotriazoles; amino acids; hydroxamic acids; linked phenolic compounds wherein the linking group is $—CH_2—$ or $—CH_2OCH_2—$; aromatic difunctional compounds wherein the functional groups are independently —OH, $—NO_2$, $—NH_2$, —COOR, —SH or —C(O)H; xanthates; formazyls; pyridines; borated acylated amines; phosphorous-containing acylated amines; substituted pyrroles wherein the substituent is —OH, $—NH_2$, $—NR_2$, —COOR, —SH or —C(O)H; porphyrins; or ethylene diamine tetraacetic acids or acid esters;

(ii) at least one metal reactant containing said metal.

5,360,460

COMPOSITION AND METHOD RELATING TO DIESEL POWERED VEHICLES

Edward C. Mozdzen, Willoughby; William B. Chamberlin, III, Kirtland, and Barbara A. Saiter, Mentor, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 619,849, Nov. 29, 1990, Pat. No. 5,197,997. This application Oct. 30, 1992, Ser. No. 969,669

Int. Cl.[5] C10L *1/18, 1/22*

U.S. Cl. 44—386 **35 Claims**

1. A fuel additive composition comprising:

(A) an alkylene oxide condensate or the reaction product thereof and an alcohol;

(B) a monocarboxylic fatty acid; and

(C) a hydrocarbyl amine, or the reaction product thereof and an alkylene oxide.

5,360,461

POLYMERIC STORAGE BED FOR HYDROGEN

Richard A. Meinzer, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 23, 1993, Ser. No. 110,469

Int. Cl.[5] B01J *7/00;* **F02B** *43/08*

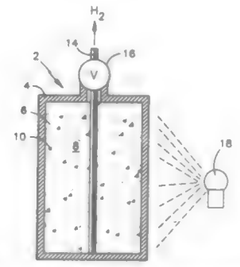
U.S. Cl. 48—61 **14 Claims**

1. A hydrogen storage device comprising:

(a) a vessel,

(b) a hydrogen storage bed disposed in the vessel, wherein the hydrogen storage bed comprises a polymeric material having a plurality of micropores less than about 1 nm in diameter,

(c) at least one hydride forming metal imbedded within the polymeric material,



(d) means for decomposing a metal hydride formed from the hydride forming metal to release hydrogen,

(e) means for conveying hydrogen into and out of the vessel.

5,360,462

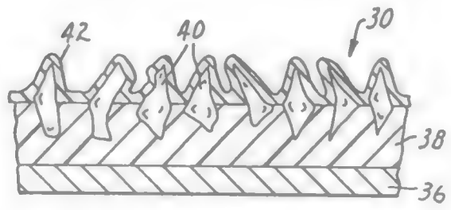
COATED ABRASIVE ARTICLE

Walter L. Harmer, Arden Hills; Robert J. DeVoe, Oakdale; Eric G. Larson, Lake Elmo, all of Minn.; Don H. Kincaid, Hudson, Wis.; Peggy S. Willett, Stillwater, and Jerry W. Williams, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 823,762, Jan. 22, 1992, Pat. No. 5,256,170. This application Jul. 29, 1993, Ser. No. 99,199

Int. Cl.[5] B24D *11/00*

U.S. Cl. 51—295 **13 Claims**



1. A coated abrasive article comprising:

(1) a backing;

(2) a make coat layer, wherein the make coat layer is a pressure sensitive adhesive and comprises the polymerized product of:

(a) at least one ethylenically unsaturated monomer;

(b) at least one cationically polymerizable monomer;

(c) a catalytically effective amount of a curing agent comprising:

(i) at least one organometallic complex salt, and

(ii) at least one thermally decomposable ester reaction product of a tertiary alcohol and an acid that forms a chelation complex with a metal ion of the organometallic complex salt;

(d) optionally, a peroxide; and

(3) a layer of a plurality of abrasive grains; and

(4) a size coat layer.

5,360,463

AIR FILTER ASSEMBLY FOR HEATING OR AIR-CONDITIONING SYSTEM

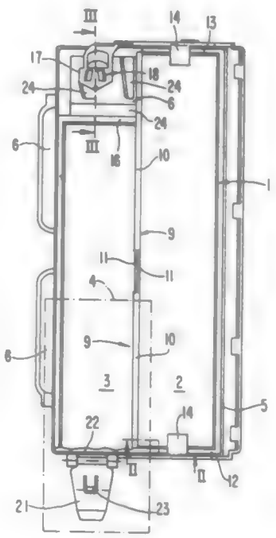
Thomas Dietterle, Simmozheim, and Markus Schöllhorn, Sindelfingen, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Feb. 26, 1993, Ser. No. 23,685

Claims priority, application Germany, Feb. 26, 1992, 4205836

Int. Cl.[5] B60H *3/06*

U.S. Cl. 55—422 **10 Claims**



1. An air filter assembly for a heating or air-conditioning system for the interior of a motor vehicle, comprising:

a filter holding frame having a filter exchange opening and filter section guide devices for guiding insertion movement of filter sections into respective in-use positions in the holding frame,

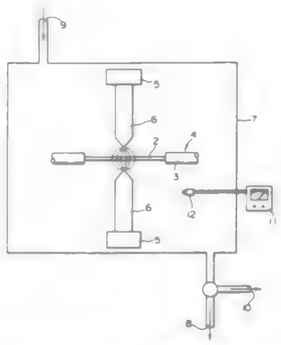
and first and second filter sections configured to be inserted into the holding frame with the first filter section inserted longitudinally into the exchange opening and then laterally displaced to an in-use position followed by the second filter section being inserted longitudinally into the exchange opening with mutual overlapping interengagement of facing lateral edges of the first and second filter sections to thereby reliably hold the first and second filter sections together against relative lateral movement in respective in-use positions,

wherein the first and second filter sections have identical lateral edges which are overlappingly interengaged when the filter sections are in in-use positions at the filter holding frame,

wherein said identical lateral edges each include a tongue section over a predetermined portion thereof and a groove section over a remaining portion thereof, each of said portions extending along only a part of the length of the respective lateral edges,

and wherein the tongue section of the first filter section is overlappingly interengaged with the groove section of the second filter section and the tongue section of the second filter section is overlappingly interengaged with the groove section of the first filter section when the first and second filter sections are in in-use positions in the filter holding frame.

5,360,464
METHOD FOR SPLICING AND REINFORCING CARBON COATED OPTICAL FIBERS
Ryozo Yamauchi; Akira Wada; Keiji Oohashi; Shinji Araki, and Tsuyoshi Shimomichi, all of Sakura, Japan, assignors to Fujikura Ltd., Tokyo, Japan
Division of Ser. No. 717,800, Jun. 19, 1991, Pat. No. 5,223,014. This application Feb. 25, 1993, Ser. No. 22,479
Claims priority, application Japan, Jun. 19, 1990, 2-160711; Mar. 29, 1991, 3-91654
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—410 **5 Claims**



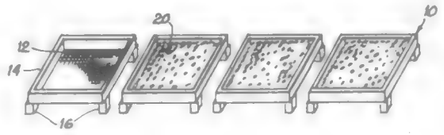
1. A reinforcing method for a fusion spliced part of carbon coated optical fibers, the method comprising the steps of:
(a) fusion splicing the fibers in an inert gas atmosphere without the removal of the carbon coating of a fusion part of the carbon coated optical fibers which are to be spliced; and
(b) re-coating with a carbon in an inert gas atmosphere on the fusion spliced part by means of a CVD method utilizing a radiation-type heating means.

5,360,465
PARTICULATE FERTILIZER DUST CONTROL
Richard F. Buchholz, Shelton, and Dale W. Quinn, Gig Harbor, both of Wash., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Continuation of Ser. No. 414,015, Sep. 29, 1989, abandoned. This application Dec. 29, 1992, Ser. No. 999,657
Int. Cl.[5] C05G *3/10;* **C05C** *9/00*
U.S. Cl. 71—11 **11 Claims**

1. A method for reducing dust emissions from granular inorganic fertilizers which comprises applying to the granular inorganic fertilizer a dust reducing amount of an aqueous solution containing a mixture of urea and lignosulfonate solids, wherein the granular inorganic fertilizer is selected from the group consisting of nitrates, phosphates, sulfates, limestones dolomite and mixtures thereof.

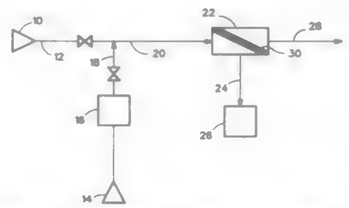
5,360,466
FERTILIZER PRODUCT AND PROCESS FOR MAKING SAME
Arthur L. Witmer, and Noraneen Witmer, both of 5580 Hamill Ave., San Diego, Calif. 92009
Filed Feb. 22, 1993, Ser. No. 20,429
Int. Cl.[5] C05F *3/00*
U.S. Cl. 71—15 **7 Claims**

1. A method of producing organic fertilizer from llama pellets comprising the following steps:
(a) restricting the diet of llamas used to produce the pellets to alfalfa hay with a grain supplement;
(b) waiting at least 24 hours after the pellets are deposited on the ground in the llama area before collecting same, to allow same to solidify adequately to permit their transport to a drying area intact;
(c) collecting said llama pellets;
(d) placing said llama pellets on at least one screen-bottomed



horizontal ventilated tray, to a depth of between two inches and four inches for drying;
(e) periodically turning the pellets over to promote even drying; and,
(f) after said pellets are dry, removing same from said screen and grinding them into a particulate mass.

5,360,467
METHOD OF SEPARATING AND DETECTING IMPURITIES USING A FRACTIONAL CONCENTRATION DETECTOR
Suhas N. Ketkar, Allentown; Robert G. Ridgeway, Quakertown; Peter J. Maroulis, Mertztown, and Timothy C. Golden, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 3, 1993, Ser. No. 101,604
Int. Cl.[5] B01D *53/04, 53/22*
U.S. Cl. 95—25 **16 Claims**

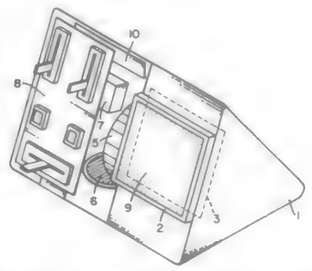


1. A method for detecting impurities in a bulk gas stream in a fractional concentration detector comprising the steps of:
a) taking a slip stream from said bulk gas stream to be subject to detection of contained impurities;
b) mixing said slip stream with a high purity carrier gas stream in an appropriate ratio to produce a gas mixture wherein said carrier gas has a higher ionization potential than any of said impurities;
c) contacting said gas mixture with a separatory medium selective for separating said slip stream from said impurities and said carrier gas;
d) separating said slip stream from any impurities and from said carrier gas by said separatory medium to produce a carrier gas stream containing essentially all of any said impurities;
e) introducing said carrier gas stream containing essentially all of said impurities into said fractional concentration detector to detect the impurities in said carrier gas stream; and
f) detecting the concentration and/or type of impurities in said carrier gas stream.

5,360,468
SULFUR ABSORBENTS
Paul F. Schubert, Campbell, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 808,342, Dec. 16, 1991, Pat. No. 5,177,050. This application Dec. 1, 1992, Ser. No. 984,037
Int. Cl.[5] B01D *53/04*
U.S. Cl. 95—136 **41 Claims**

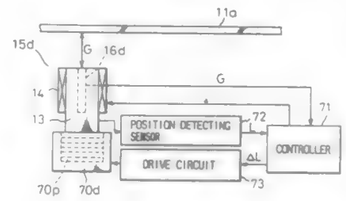
1. A process for removing hydrogen sulfide from a fluid stream containing hydrogen sulfide comprising the step of contacting said fluid stream at a temperature, pressure and flow rate suitable for the absorption of hydrogen sulfide from said fluid stream with a composition prepared by a method comprising the steps of:
(a) treating an alumina material with a phosphating agent to produce a treated alumina;
(b) mixing said treated alumina with zinc oxide to produce a mixture comprising zinc oxide and said treated alumina; and
(c) thereafter, agglomerating said mixture to form an agglomerate.

5,360,469
APPARATUS FOR AIR FILTRATION AND SOUND MASKING
Robert A. Baron, 27 Sunnyside Rd., Scotia, N.Y. 12302, and Frederick Haber, Box 138, Old Chatham, N.Y. 12136
Filed Sep. 9, 1993, Ser. No. 119,349
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] B01D *46/00*
U.S. Cl. 95—273 **10 Claims**



1. An apparatus for enhancing the environmental quality of work and living spaces consisting essentially of:
a) a portable housing;
b) a high efficiency particulate arresting (HEPA) filter mounted in said housing, said HEPA filter having an intake surface and an output surface, said intake surface being accessible to air from the exterior of said housing;
c) means for generating airflow from the exterior of said housing through said HEPA filter and back to the exterior of said housing; and
d) means, disposed in said housing, for generating sound of a frequency and strength such that the combined acoustic output of said sound generating means and said airflow generating means is broad band noise having no outstanding pure tones, said acoustic output comprising sound waves in the range from 80 Hz to 10 KHz in frequency and 10 to 70 dB in strength.

5,360,470
MAGNETIC LEVITATING TRANSPORTING APPARATUS WITH A MOVABLE MAGNETIC UNIT
Yoshinobu Ono; Yoshio Watanabe; Shinjiro Tanida, and Tadayuki Kojima, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation-in-part of Ser. No. 86,033, Jul. 6, 1993. This application Jan. 19, 1994, Ser. No. 183,316
Claims priority, application Japan, Jul. 6, 1992, 4-178636; Jun. 15, 1993, 5-143660; Nov. 22, 1993, 5-292035
Int. Cl.[5] B60L *13/06*
U.S. Cl. 104—284 **9 Claims**



1. A magnetic levitating transportation apparatus comprising:
a rail;
a vehicle capable of travelling along the rail;
a plurality of magnet units arranged on the vehicle for causing the vehicle to magnetically levitate relative to the rail, each of the plurality of magnet units being spaced by a corresponding gap from the rail and comprising at least one electro-magnet and at least one permanent magnet;
mounting means for mounting the plurality of magnet units on the vehicle including movably mounting at least one of the plurality of magnet units relative to the vehicle so that the corresponding gap between each movably mounted magnet unit and the rail is adjustable;
actuating means for adjusting the corresponding gap between each movably mounted magnet unit and the rail;
gap detecting means arranged on or near each of the plurality of magnet units for detecting the corresponding gap between the rail and each magnet unit and producing an output in response thereto;
current calculating means for calculating a current supplied to each of the plurality of magnet units in response to the output of the gap detecting means; and
control means for controlling the actuating means based on the current supplied to the magnet units.

5,360,471
ELECTROLESS SOLDER PLATING BATH
Yoshihiko Takano, and Atsuo Senda, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Aug. 2, 1993, Ser. No. 101,387
Claims priority, application Japan, Aug. 5, 1992, 4-208750
Int. Cl.[5] C23C *18/48, 18/52*
U.S. Cl. 106—1.22 **14 Claims**

1. An electroless solder plating bath containing bivalent ions of tin and of lead, a complexing agent, and a reductant, said reductant containing trivalent titanium ions in an amount sufficient to convert tin and lead ions to the metallic state.

5,360,472

WATERFAST DYE COMPOSITIONS

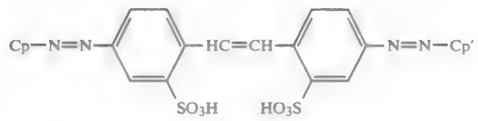
Edward J. Radigan, Jr., Hamlin; Louis V. Isganitis, Rochester, both of N.Y.; Warren E. Solodar, Montgomery Merion Station, Pa., and Kurt B. Gundlach, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 992,353, Dec. 17, 1992, Pat. No. 5,254,159. This application Jul. 26, 1993, Ser. No. 96,912

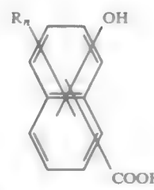
Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 K 20 Claims

1. A dye composition of the formula



wherein Cp and Cp' are each coupler compounds of the formula



wherein the —COOH group and the —OH group can be in any position on either ring, provided that in the naphthalene ring system there is present at least one hydrogen activated through resonance by the —OH group for an electrophilic aromatic substitution coupling reaction, n represents the number of substituents on the rings and is a number of from 0 to 8, and R represents the substituent groups on the ring, wherein each R is independently selected from the group consisting of hydroxyl groups, alkyl groups, substituted alkyl groups, aryl groups, substituted aryl groups, aryl-alkyl groups, substituted aryl-alkyl groups, amine groups, sulfonic acid groups, sulfonate salt groups, halogen atoms, and nitro groups.

5,360,473

THERMOFORMABLE COMPOUNDS, THEIR PROCESS OF PREPARATION AND THEIR USE IN ORDER TO OBTAIN THERMOFORMED ARTICLES

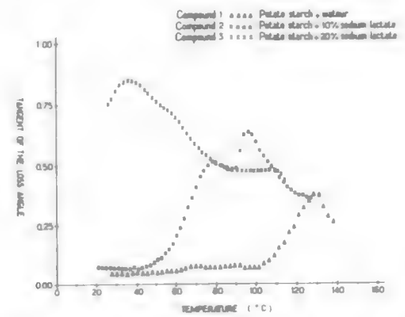
Guy Fleche, Hazebrouck; Serge Gosset, Lestrem, and Morand Lambla, Hoenhein, all of France, assignors to Roquette Freres, Lestrem, France

Filed Jan. 30, 1992, Ser. No. 827,214

Claims priority, application France, Jan. 31, 1991, 91 01120

Int. Cl.[5] C09D *103/02, 103/12*

U.S. Cl. 106—210 23 Claims



1. Thermoformable compound comprising at least one amylaceous component and at least one hydroxycarboxylic acid salt.

5,360,474

COLORED CRYSTALLINE ALUMINOPHOSPHATES AND/OR SILICOALUMINOPHOSPHATES OF THE AEL OR VFI TYPE

Guenter Lauth, Grosskarlbach; Ulrich Mueller, Neustadt; Wolfgang Hoelderich, Frankenthal; Stefan Brode, Karlsruhe, and Gerhard Wagenblast, Weisenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sep. 16, 1992, Ser. No. 946,406

Claims priority, application Germany, Sep. 21, 1991, 4131447

Int. Cl.[5] C09B *67/08;* B01J *31/26;* C01B *25/36;* C08K *5/08*

U.S. Cl. 106—402 6 Claims

1. A colored crystalline material comprising a quinizarin dye occluded and loaded into the pores of at least one microporous crystalline structure selected from the group consisting of one or more aluminophosphates, one or more silicoaluminophosphates and combinations thereof wherein said aluminophosphates, silicoaluminophosphates and combinations thereof are of the AEL or VFI type, said material having a composition defined by the following formula:

$$a\ \text{quinizarin}.b\ Al_2O_3.c\ P_2O_5.d\ SiO_2$$

where a is from 0.05 to 2, b and c are each from 8 to 12 and d is from 0 to 4.

5,360,475

PROCESS FOR PREPARING HYDROXYMETAL PHTHALOCYANINE PIGMENT

Katsumi Nukada; Katsumi Daimon, and Yasuo Sakaguchi, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

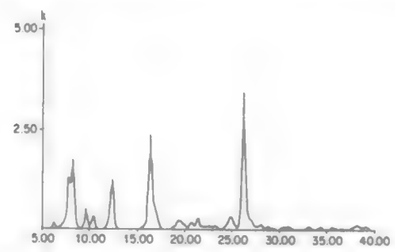
Filed Oct. 5, 1993, Ser. No. 131,747

Claims priority, application Japan, Oct. 9, 1992, 4-296564

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—410 8 Claims

1. A process for preparing a hydroxymetal phthalocyanine pigment comprising treating a precursor of a hydroxymetal phthalocyanine pigment with an acid to precipitate a hydroxymetal phthalocyanine pigment and treating the precipitated



hydroxymetal phthalocyanine pigment with a solvent under an acidic condition.

5,360,476

HIGH IMPACT RESISTANT FOAM PROTECTANT

Burton K. Whatcott, P.O. Box 863, Dolores, Colo. 81323

Filed Aug. 2, 1993, Ser. No. 100,769

Int. Cl.[5] C04B *14/00*

U.S. Cl. 106—719 4 Claims

1. A high impact resistance foam protectant consisting of in parts by weight:

about 90 parts of cement,
about 4 parts of a plasticizer,
about 11 parts of polymer solids,
about 2 parts of reinforcing fibers,
about 125 parts of filler aggregate,
about 0.58 parts of a dispersant,
about 1.20 parts of a defoamer,
about 0.50 parts of a water reducer, and
water as needed to provide a pliable product.

5,360,477

METHOD FOR FORMING DIAMOND AND APPARATUS FOR FORMING THE SAME

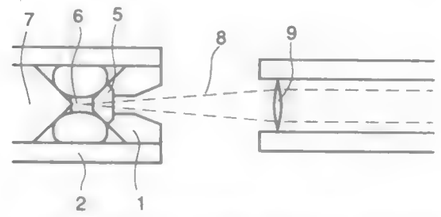
Tohru Inoue; Masaya Kadono, and Akiharu Miyanaga, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 2, 1993, Ser. No. 24,948

Claims priority, application Japan, Mar. 4, 1992, 4-82701; Sep. 12, 1992, 4-269605

Int. Cl.[5] C30B *29/00*

U.S. Cl. 117—4 16 Claims



1. A method for forming diamond comprising the steps of:

placing a starting material comprising carbon in a vessel capable of pressing said starting material where a pressure within said material has a distribution;

pressing said starting material within said vessel; and

irradiating at least a portion of said starting material with a laser beam during pressing, wherein the pressure having said distribution takes a maximum value at said portion.

5,360,478

GAS ANTI-SOLVENT RECRYSTALLIZATION PROCESS

Val J. Krukonis, Lexington; P. M. Gallagher, Lowell, and M. P. Coffey, Leominster, all of Mass., assignors to Phasex Corporation, Lawrence, Mass.

Continuation-in-part of Ser. No. 421,978, Oct. 16, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 723,245

Int. Cl.[5] C30B *7/00*

U.S. Cl. 117—68 8 Claims



1. A process for recrystallizing essentially void-free crystals of cyclotrimethylenetrinitramine comprised of the steps of:

a) adding a gaseous component to a liquid which acts as a solvent for and contains the cyclotrimethylenetrinitramine, said gaseous component being soluble within the solvent, the cyclotrimethylenetrinitramine being insoluble within said gaseous component;

b) said gaseous component being added in an amount suitable for causing the solvent to approach, attain or exceed a supersaturated state;

c) precipitating the cyclotrimethylenetrinitramine from the solvent resulting in recrystallized cyclotrimethylenetrinitramine that is essentially void free.

5,360,479

ISOTOPICALLY PURE SINGLE CRYSTAL EPITAXIAL DIAMOND FILMS AND THEIR PREPARATION

William F. Banholzer, Scotia; Thomas R. Anthony, Schenectady, both of N.Y., and Dennis M. Williams, Dublin, Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Jul. 2, 1990, Ser. No. 547,651

Int. Cl.[5] C30B *29/04*

U.S. Cl. 117—84 12 Claims

1. A method for forming isotopically pure single-crystal diamond films which comprises growing chemical vapor deposition (CVD) single-crystal diamond on a single-crystal substrate directly from isotopically pure carbon-12 or carbon-13.

5,360,480

APPARATUS FOR CONTINUOUSLY FEEDING MATERIAL TO A MELTING CRUCIBLE

Burkhard Altekrüger, Alzenau, Germany, assignor to Leybold AG, Hanau, Germany

Filed Jun. 1, 1993, Ser. No. 70,567

Claims priority, application Germany, Jun. 2, 1992, 4218123

Int. Cl.[5] C30B *29/06*

U.S. Cl. 717—214 11 Claims

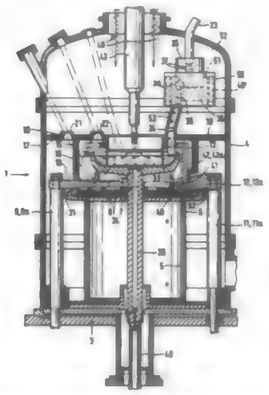
1. Apparatus for the continuous feeding of charge material to a melting crucible in a closed container, said apparatus comprising

a closed container,

a melting crucible in said closed container,

a prefusing crucible for melting charge material to form a molten material having a top surface in said prefusing crucible,

feed means for providing charge material to the prefusing crucible, and



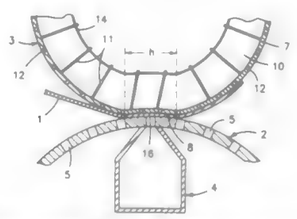
overflow means for drawing said molten material from said top surface in the prefusing crucible and feeding said molten material to the melting crucible.

5,360,481

APPARATUS FOR COATING A SUBSTRATE WITH A SUBSTANCE

Volker Ludwig, Untere Muhlewiesen 10, 7896 Wutoschingen, Germany

Filed Dec. 9, 1992, Ser. No. 988,186
Claims priority, application Germany, Dec. 10, 1991, 4140652
Int. Cl.[5] B05C *5/02*
U.S. Cl. 118—50 **2 Claims**



1. An apparatus for coating a substrate with a substance comprising:

a hollow backing roll having an inner wall and an outer perforated surface spaced from the inner wall and defining therebetween a compartment;

a plurality of radially extending flexible walls between said inner wall and said perforated surface for dividing said compartment into a plurality of chambers;

a vacuum source associated with at least one of said plurality of chambers for drawing air through the perforated surface of the hollow backing roll;

template means arranged adjacent said hollow backing roll and defining therebetween a coating nip, said template having a plurality of perforations;

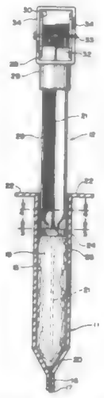
substance feeding means associated with said template for feeding the substance to be applied to the substrate through said plurality of perforations to said coating nip wherein said outer perforated surface of said hollow backing roll yields in the area of the coating nip.

5,360,482

APPARATUS AND METHOD FOR DISPENSING RESIN COATED FIBERS

Paul C. Belvedere, 5824 Creek Valley Rd., Edina, Minn. 55435

Filed Aug. 12, 1992, Ser. No. 929,771
Int. Cl.[5] B05C *3/02*
U.S. Cl. 118—404 **5 Claims**



1. A dental fiber dispenser apparatus for dispensing impregnated fibers comprising:

a dispenser body having a closed impregnating material cavity, said cavity having an impregnated fiber outlet in communication with said cavity and being free of openings except for said fiber outlet,

a fixed supply of impregnating material comprising a polymerizable resin disposed within said cavity, said cavity being free of any impregnating material inlet;

a supply of fiber wherein said fiber is a fiber bundle comprised of a plurality of fibers exposed to said impregnating material within said cavity and having one end extending through said fiber outlet wherein said supply of fiber is disposed entirely within said cavity, the size of said fiber outlet, the size of said fiber and the viscosity of said impregnating material being such as to prevent said impregnating material from flowing through said fiber outlet without the application of external force.

5,360,483

PLASMA CVD APPARATUS AND METHOD THEREFOR

Hideo Kurokawa, Katano; Tsutomu Mitani, Akashi, and Hirokazu Nakaue, Higashiosaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 12, 1993, Ser. No. 30,557
Claims priority, application Japan, Mar. 13, 1992, 4-055144
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—723 E **10 Claims**

1. A plasma CVD apparatus for forming a film on a substrate, said apparatus comprising:

a first vacuum vessel;

a substrate support which positions the substrate within said first vacuum vessel;

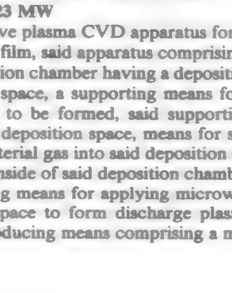
a second vacuum vessel fluid-connected with a source of a raw gaseous medium, said second vacuum vessel having a gas outflow port having a shape conforming to the shape of the surface of at least a portion of the substrate positioned within said first vacuum vessel by said substrate support, at least a portion of said second vacuum vessel being accommodated within said first vacuum vessel with the gas outflow port oriented towards the location at which said at least a portion of the surface of the substrate is positioned in the first vacuum vessel;

plasma generating means for transforming the raw gaseous medium introduced into the second vacuum vessel into plasma within the second vacuum vessels;

a positioning mechanism which supports said second vacuum vessel with the gas outflow port spaced such a distance from the location at which said at least a portion of the surface of the substrate is positioned in the first vacuum vessel that the pressure of plasma discharged from the gas outflow port will be uniform over the entirety of a gap defined between said gas outflow port and said location; and

electric field generating means for directing ions of the plasma, discharged from the gas outflow port into the gap, towards said location at which at least a portion of the surface of the substrate is positioned within the first vacuum vessel.

6. A method of forming, by the use of a plasma CVD technique, a film on a surface of a substrate within a vacuum vessel, which method comprises the steps of:



supplying plasma into the vacuum vessel under a pressure higher than the pressure inside the vacuum vessel;

developing an electric field which will direct ions of the plasma towards the substrate; and

forming the film of elements of the plasma;

said step of supplying plasma comprising passing the plasma through a plasma gas outflow port having a shape conforming to the shape of the surface of the substrate and spaced such a distance from the surface of the substrate that the pressure of the plasma, within the gap defined between the plasma gas outflow port and the surface of the substrate, is substantially uniform and higher than the pressure inside the vacuum vessel;

said step of developing an electric field is carried out in such a manner that the plasma within the gap is subjected to the electric field.

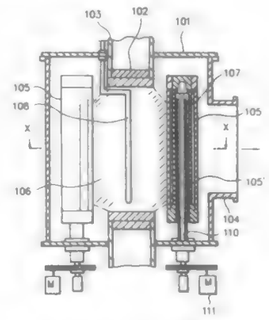
5,360,484

MICROWAVE PLASMA CVD APPARATUS PROVIDED WITH A MICROWAVE TRANSMISSIVE WINDOW MADE OF SPECIFIC CERAMICS FOR THE FORMATION OF A FUNCTIONAL DEPOSITED FILM

Yasuyoshi Takai; Tetsuya Takei; Hirokazu Otoshi, all of Nagahama, and Ryuji Okamura, Shiga, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 915,658, Jul. 21, 1992, abandoned. This application May 19, 1993, Ser. No. 63,048
Claims priority, application Japan, Jul. 26, 1991, 3-187650
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 MW **4 Claims**

1. A microwave plasma CVD apparatus for forming a functional deposited film, said apparatus comprising a substantially enclosed deposition chamber having a deposition space including a discharge space, a supporting means for a substrate on which a film is to be formed, said supporting means being disposed in said deposition space, means for supplying a film-forming raw material gas into said deposition space, means for evacuating the inside of said deposition chamber, and a microwave introducing means for applying microwave energy into said discharge space to form discharge plasma therein, said microwave introducing means comprising a microwave transmissive window to which a waveguide extending from a microwave power source being connected, characterized in that said microwave transmissive window is composed of a sintered alpha-alumina ceramics body containing alpha-alumina as a



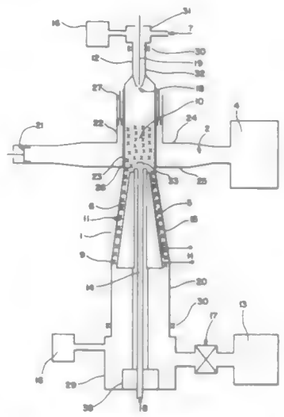
matrix comprised of fine particles with a mean particle size d satisfying the equation 0.5 $\mu m \leqq d \leqq 50\ \mu m$ and with a ratio of ρ_2/ρ_1 between the theoretical density ρ_1 and the bulk density ρ_2 satisfying the equation $0.800 \leqq \rho_2/\rho_1 \leqq 0.995$.

5,360,485

APPARATUS FOR DIAMOND DEPOSITION BY MICROWAVE PLASMA-ASSISTED CVPD

Pierre Bou, Orléans la Source; Lionel Vandenbulcke, Saint Jean Le Blanc; Alain Quilgars, Jouy le Potier; Michel Coulon, Montmorency, all of France, and Michel Moisan, Québec, Canada, assignors to Pechiney Recherche, Courbevoie, France

Filed Jul. 10, 1992, Ser. No. 911,693
Claims priority, application France, Jul. 12, 1991, 91 09552
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 ME **18 Claims**



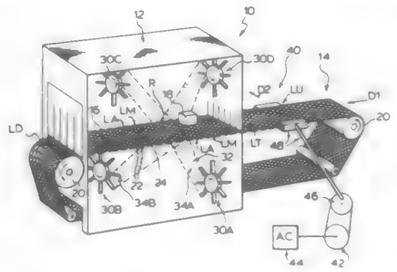
1. Apparatus for deposition of diamond on a substrate by microwave plasma assisted chemical vapor phase deposition, comprising:

a waveguide of defined volume adapted for supply by a microwave generator and including means for formation of a stable plasma outside of the volume of the waveguide, and means for eliminating reflection of power toward the microwave generator;

a deposition chamber comprising an outer wall surrounding two interconnected zones, a plasma formation zone passing through the waveguide, and a diamond deposition

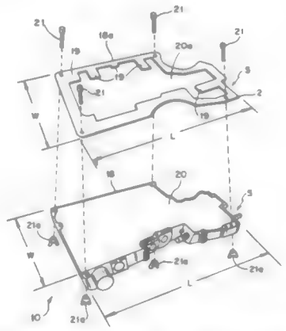
zone located outside of the waveguide and containing a support having a surface for holding the substrate during deposition, said outer wall and said surface being generally parallel and defining therebetween a plasma flow space;
means for heating the substrate;
means for maintaining a regulated, reduced pressure in the deposition chamber;
means for introducing a plasma forming gas into the deposition chamber; and
means for introducing a reactive gaseous mixture into the deposition chamber;
said means for maintaining, means for introducing a plasma forming gas and means for introducing a reactive gaseous mixture cooperating to cause a flow of reactive gaseous mixture in the plasma flow space generally tangential to the surface.

5,360,486
BLAST CLEANING APPARATUS AND METHOD WITH LATERALLY MOVING CONVEYOR
Charles P. Elliott, Acton, Canada, assignor to Blast Cleaning Products Ltd., Oakville, Canada
Filed Sep. 2, 1993, Ser. No. 114,905
Int. Cl.[5] B08B *7/04;* **B24C** *1/00, 3/08*
U.S. Cl. 134—6 **10 Claims**



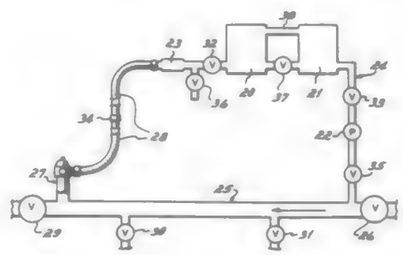
1. A method of blast cleaning a workpiece to be cleaned comprising:
conveying the workpiece to be cleaned through a blast cleaning chamber on a conveying surface, wherein the conveying surface moves horizontally in a first direction through the cleaning chamber and has a plurality of openings therethrough and adjacent openings aligned in a second direction transverse to the first direction of movement of the conveying surface are separated by a separating material having a width;
directing by a directing means abrasive cleaning material upwardly through the openings in the conveying surface so as to clean areas of the workpiece exposed to the cleaning material when the workpiece is in the cleaning chamber;
causing the conveying surface to move laterally when the workpiece is in a region where the workpiece is to be cleaned, said lateral movement being within the cleaning chamber at the region where the cleaning material cleans the workpiece, and wherein the lateral movement is relative to the workpiece in a second direction which is horizontal and transverse to the first direction of movement of the conveying surface so as to expose to cleaning material areas of the workpiece that would otherwise be protected from the cleaning material by the material separating the openings in the conveying surface; and
wherein the lateral movement is a back and forth movement relative to the workpiece and comprises a lateral acceleration of the conveying surface during each of the back and forth movements so as to overcome frictional forces between the workpiece and the conveying surface in each of the back and forth directions and wherein the accelerations in each of the back and forth directions are equal such that the workpiece remains in the same location on the conveying surface after a period of movement.

5,360,487
AUTOMATIC TRANSMISSION VALVE BODY CLEANING ACCESSORY
Patrick Sepe, 22-42 Merrick Rd., Merrick, N.Y. 11566
Filed Feb. 11, 1993, Ser. No. 16,762
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—22.1 **7 Claims**



6. A method of cleaning a valve body assembly of an automatic transmission having hydraulic passageways, spring-loaded valve means and fastening means for said valve means, said method comprising the steps of:
exposing said valve body assembly;
masking selected ones of said valve means and said fastening means of said valve body assembly and permitting said hydraulic passageways to remain exposed; and
applying cleaning material to said valve body assembly whereby said exposed hydraulic passageways are cleaned and said selected masked valve means and fastening means are sheltered from said cleaning material.

5,360,488
METHOD OF CLEANING AND MAINTAINING WATER DISTRIBUTION PIPE SYSTEMS
Allen C. Hieatt, Mesa, and Jerome H. Ludwig, Paradise Valley, both of Ariz., assignors to H.E.R.C. Products Incorporated, Phoenix, Ariz.
Filed Mar. 23, 1993, Ser. No. 36,188
Int. Cl.[5] B08B *9/02, 9/06*
U.S. Cl. 134—22.11 **11 Claims**

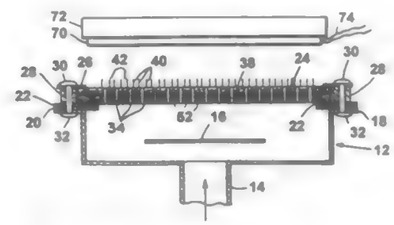


1. A method of cleaning a water distribution pipe system comprising
providing a reservoir for containing an aqueous treatment solution for the removal of scale associated with sulfate-reducing and iron bacteria consisting of primarily iron oxide, biomass and sediment from inside pipe surfaces of a water distribution pipe system, said solution selected from the group consisting of an acidic, neutral and basic solution,
sealing off between two fire hydrants a section of pipe in said system for circulation of said cleaning solution therethrough,
circulating said cleaning solution from said reservoir through said pipe section and returning said solution to said reservoir for the removal of said scale and sediment.

5,360,489
METHOD OF REMOVING CAULK
Kimberley A. Gaul, St. Paul, and Judith M. Jensen, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 25, 1992, Ser. No. 951,159
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—42 **11 Claims**

11. A method of removing a caulk from a substrate comprising the following steps:
a. providing a water-based composition comprising i.) a sufficient amount of an organic solvent or a mixture of two or more organix solvents, said solvent or said mixture comprising a dibasic ester and having a δ_T of at least about 8.4, a δ_P greater than about 3 and a δ_H greater than about 2, the open cup flash point of said solvent or mixture being greater than 100° F. (37.7° C.); ii.) and water wherein said organic solvent or said mixture of organic solvents being present in an amount sufficient for said composition to be effective in removing caulk;
b. applying said composition to said substrate and allowing it to remain in contact therewith for a time sufficient to soften or dissolve said caulk; and
c. removing said caulk from said substrate.

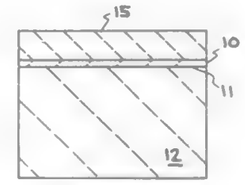
5,360,490
RADIANT EMISSION AND THERMOPHOTOVOLTAIC TECHNOLOGY
Robert E. Nelson, Weston, Mass., assignor to Gas Research Institute, Chicago, Ill.
Filed May 18, 1993, Ser. No. 62,897
Int. Cl.[5] H01L *31/058*
U.S. Cl. 136—253 **33 Claims**



1. A radiant emission system comprising
a support structure having an array of ceramic fibers and a surface,
a multiplicity of elongated emitter fibers, said emitter fibers being in spaced mechanically interlocked array with said array of ceramic fibers and extending outwardly from said surface with end portions of said emitter fibers spaced from one another and from said support structure, and thermal excitation structure for establishing a combustion condition adjacent said surface to heat said emitter fibers to thermally emissive temperature.

9. The system of claim 1 and further including a photocell array in spaced juxtaposition to said support structure to provide a thermophotovoltaic system.

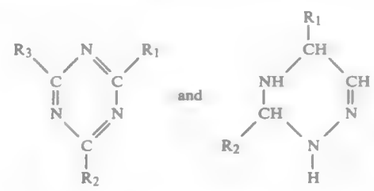
5,360,491
β-SILICON CARBIDE PROTECTIVE COATING AND METHOD FOR FABRICATING SAME
Paul G. Carey, Mountain View, and Jesse B. Thompson, Brentwood, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Apr. 7, 1993, Ser. No. 43,809
Int. Cl.[5] H01L *31/048, 31/18, 31/0216*
U.S. Cl. 136—256 **20 Claims**



1. In a solar cell, the improvement comprising:
an anti-reflective/protective coating of beta-silicon carbide on an outer surface of the solar cell;
said coating having a thickness of 10 nm to 10 μ.

5,360,492
PRETREATING COMPOSITION CONTAINING SUBSTITUTED TRIAZINE COMPOUND
Ralph C. Gray, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 739,579, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 426,355, Oct. 25, 1989, abandoned. This application Apr. 6, 1992, Ser. No. 864,287
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] C23C *22/82*
U.S. Cl. 148—255 **12 Claims**

1. A process for pretreating ferrous or galvanized a metal surface prior to painting comprising contacting said metal surface, to which a crystalline zinc phosphate conversion coating has been previously applied, with an aqueous composition of a substituted triazine compound selected from compounds having the structure:



wherein R_1 and R_2 and, where applicable, R_3 are the same or different and are selected from the group consisting of —OH, —SH, —NH_2, an allyloxy group having 3–8 carbon atoms and a carboxy alkyl group having 2–8 carbon atoms; said aqueous composition having a concentration of at least 0.01 percent by weight of said triazine compound based on total weight of said aqueous composition.

5,360,493

HIGH-STRENGTH COLD-ROLLED STEEL SHEET EXCELLING IN DEEP DRAWABILITY AND METHOD OF PRODUCING THE SAME

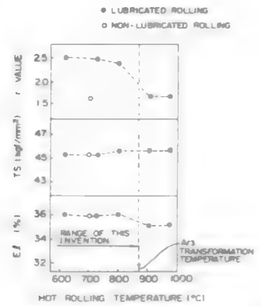
Saiji Matsuoka; Hidetaka Kawabe; Eiko Yasuhara; Kei Sakata, and Toshiyuki Kato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 7, 1993, Ser. No. 72,725

Claims priority, application Japan, Jun. 8, 1992, 4-147488; Jun. 8, 1992, 4-147606; Jun. 8, 1992, 4-147607; Jun. 22, 1992, 4-162912; Aug. 18, 1992, 4-219198; Jan. 8, 1993, 5-001878; Jan. 26, 1993, 5-010858

Int. Cl.[5] C21D *8/04; C22C 38/06, 38/12*

U.S. Cl. 148—320 **20 Claims**



1. A method of producing a high-strength cold-rolled steel sheet which excels in deep drawability by using a steel material consisting of: a basic composition including 0.01% or less of C, 0.1 to 2.0% of Si, 0.5 to 3.0% of Mn, 0.02 to 0.2% of P, 0.05% or less of S, 0.03 to 0.2% of Al, 0.01% or less of N, 0.001 to 0.2% of Nb, and 0.0001 to 0.008% of B in such a way that the respective contents of C, Nb, Al, N, Si, Mn and P satisfy the following formulae:

$5 \leqq Nb/C \leqq 30$, $10 \leqq Al/N \leqq 80$, and $16 \leqq (3 \times Si/28 + 200 \times P/31)/(Mn/55) \leqq 40$; Fe remnant; and inevitable impurities, said method comprising the steps of:

performing rolling on said steel material with a total reduction of 50% or more and 95% or less while effecting lubrication thereon in a temperature range of not higher than an Ar_3 transformation temperature and not lower than 500° C.;

performing a hot-rolled sheet recrystallization treatment on said steel material by a coiling or annealing process;

performing cold rolling on said steel material with a reduction of 50 to 95%; and then

effecting recrystallization annealing on said steel material in a temperature range of 700° to 950° C.

5,360,494

METHOD FOR ALLOYING LITHIUM WITH POWDERED MAGNESIUM

Sanford W. Brown, 11328 Slalion Ave., Norwalk, Calif. 90650

Continuation-in-part of Ser. No. 905,515, Jun. 29, 1992, Pat. No. 5,232,659. This application Jul. 29, 1993, Ser. No. 98,929

The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.

Int. Cl.[5] B22F *1/00, 3/02, 3/16;* **C01D** *15/00*

U.S. Cl. 148—513 **16 Claims**

1. A method for alloying lithium with a powdered magnesium composition, which comprises:

mixing a powdered magnesium composition with lithium dispersed in an inert, non-water absorbent, liquid medium to obtain a substantially homogenous admixture, said liquid medium comprising substantially mutually exclusive fractions of first and second liquid constituents, of differentiating boiling points, said first liquid constituent having a boiling point below the melting point of lithium, said second liquid constituent having a boiling point above the melting point of lithium but below the melting point of the alloy being produced, and

heating said admixture to melt said lithium and vaporize said liquid medium to thereby obtain a decovered powdered alloy comprising magnesium and lithium.

5,360,495

PROCESS FOR HARDENING CUTTING EDGES WITH AN OVAL SHAPED PLASMA BEAM

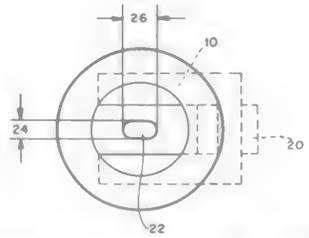
Albert Schuler, Costenobiegasse 2/4/5, A-1130 Vienna, Austria, and Wladimir Tokmakov, Gidrostroitelei No. 4, Irkutsk, Russian Federation

Continuation-in-part of Ser. No. 809,540, Jan. 24, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 138,768

Claims priority, application Austria, Jul. 25, 1989, A1796/89; Oct. 24, 1989, A2451/89

Int. Cl.[5] C21D *9/18*

U.S. Cl. 148—565 **9 Claims**



1. A process for hardening cutting edges having varying widths, each cutting edge consisting of a sequence of teeth on a saw blade, the saw teeth having tips pointing in one direction and a width perpendicular to said direction, which comprises the steps of:

(a) projecting a plasma beam having a power of 1 to 10 kW through an outlet nozzle of a plasma torch, the plasma torch comprising

(1) a cathode having a tip pointing to the outlet nozzle and

(2) the outlet nozzle having a bottom edge facing the cutting edge and a nozzle length parallel to said direction and a nozzle width perpendicular to said direction, said nozzle width being greater than said nozzle length;

(b) altering the configuration of the plasma beam by electromagnetic deflection, at a frequency between 10 and 200 Hertz perpendicularly to said direction, between the cathode tip and the bottom edge of the outlet nozzle to produce a widened beam having an oval shape that is slightly wider than the width of the cutting edge to be hardened, wherein the widened plasma beams have a lower power consumption at a constant gas flow rate than circular plasma beams having a diameter equal to a major axis of the widened plasma beams;

(c) positioning the cutting edge at a distance of 2 to 14 mm from the bottom edge of the outlet nozzle in the path of the plasma beam; and

d) guiding the plasma beam at a relative velocity of 5 to 100 mm/sec relative to the cutting edge, the cutting edge of the saw blade being guided by movement of the cutting edge in said direction.

5,360,496

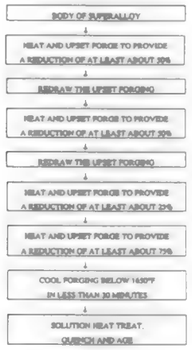
NICKEL BASE ALLOY FORGED PARTS

G. William Kuhlman, Shaker Heights; Richard A. Beaumont, Avon Lake; Daniel F. Carbaugh, Macedonia; David Anderson, Brecksville, all of Ohio; Amiya K. Chakrabarti, and Kenneth P. Kinnear, both of Monroeville, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 750,127, Aug. 26, 1991. This application Apr. 7, 1993, Ser. No. 44,336

Int. Cl.[5] C22F *1/10*

U.S. Cl. 148—677 **15 Claims**



1. A process for fabricating recrystallized large forged parts having fine grain size and improved toughness and tensile properties, the process comprising:

(a) providing a body of an alloy selected from one of a nickel-base alloy, an iron-nickel-chromium-molybdenum alloy, a cobalt-chromium-nickel alloy, a nickel-cobalt alloy and a cobalt-base alloy;

(b) heating said body to a temperature above the recrystallization temperature of the alloy;

(c) subjecting said body to a first upset forging operation to provide a reduction of at least about 50% of the original length of the body:

(d) drawing said body after said first upset forging;

(e) repeating steps (b)-(d) to form a second upset forged body;

(f) reheating said second upset forged body to a temperature above the recrystallization temperature;

(g) subjecting the reheated body to a third upset forging operation to provide a reduction of at least about 25% of the original length of the body;

(h) heating and maintaining said third upset forged body above the recrystallization temperature while subjecting said third upset forged body to a forth upset forging operation to provide a reduction in the length of at least about 75% of the original length of said third upset forged body:

(i) rapidly cooling said forth upset forged body; and

(j) solution heat treating, quenching and aging said forth upset forged body.

5,360,497

METHOD OF FORMING AN OPTICAL WAVEGUIDE WITH A REINFORCED PROTECTIVE COVERING

Reiner Schneider, Ebersdorf; Wilfried Reisseweber, Roedental, both of Germany, and Norbert Niesemeyer, Hickory, N.C., assignors to Siemens Aktiengesellschaft, Munich, Germany

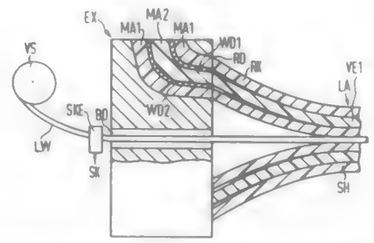
Filed Dec. 18, 1992, Ser. No. 992,785

Claims priority, application Germany, Dec. 19, 1991, 4142047

Int. Cl.[5] B29C *47/02*

U.S. Cl. 156—47 **34 Claims**

1. A method of covering an optical waveguide with a protective covering having embedded reinforcing elements with the covering surrounding the optical waveguide, said method comprising the steps of providing extrudable material and reinforcing elements with said reinforcing elements having an E-modulus which is greater than an E-modulus of said extrudable material, coextruding a composite element comprising a



protective covering formed by said extrudable material with said reinforcing elements embedded therein and simultaneously introducing the optical waveguide into the composite element during the coextrusion process.

5,360,498

APPARATUS FOR SEALING BY SURFACE FUSION OF MUTUALLY FACING SURFACES OF THERMOPLASTIC MATERIALS OR COATINGS, AND THE USE OF A GIANT MAGNETOSTRICTIVE POWDER COMPOSITE FOR THIS PURPOSE

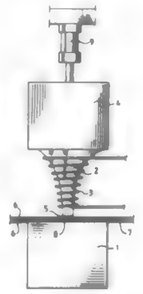
Peter Blomqvist, Lund; Ingmar Andreasson, Eslöv; Magnus Råbe, Lund; Gyula Balla, Malmö, and Tord Cedell, Lund, all of Sweden, assignors to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Filed Apr. 21, 1993, Ser. No. 49,429

Claims priority, application Sweden, Apr. 23, 1992, 9201280-6

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—73.1 **21 Claims**



1. An apparatus for sealing thermoplastic surfaces to one another, comprising:

a body formed of giant magnetostrictive powder composite (GMPC), the body being adapted to be secured to a jaw at an anchorage point of the body, the body having a free working surface at an end of the body opposite the anchorage point, the body having a cross-sectional area that progressively reduces in relation to proximity to the working surface; and

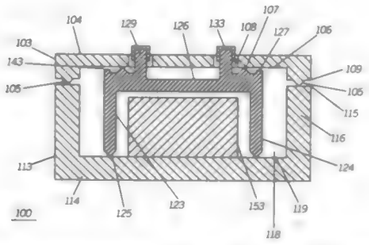
electric coil means for generating a magnetic field, the electric coil means surrounding the body.

5,360,499

METHOD FOR POSITIONING AN OBJECT RELATIVE TO A STRUCTURAL MEMBER

Niko M. Savovic, Sunrise; Willard F. Amero, Jr., Plantation; Raymond J. Kleinert, III, Ft. Lauderdale; Michael M. Austin, Pompano Beach, and Russell E. Gyenes, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1993, Ser. No. 131,237
Int. Cl.[5] B32B *31/16*
U.S. Cl. 156—73.1 17 Claims



1. A method for positioning an object relative to a structural member, comprising the steps of:

A) providing a first and second member, the first member being the structural member relative to which the object is being positioned;

B) providing a positioning member having a first end and a second end, wherein:

i) the first end has at least one energy director formed thereon that has a first characteristic melting rate;

ii) the second end has at least one energy director formed thereon that has a second characteristic melting rate, which second characteristic melting rate is slower than the first characteristic melting rate;

C) positioning the positioning member such that:

i) the at least one energy director of the first end contacts the first member and the first end is also positioned proximal to the object;

ii) the at least one energy director of the second end contacts the second member;

D) imparting energy to cause at least one of the energy directors to begin melting; and

E) discontinuing imparting energy when the at least one energy director of the first end is substantially melted while the at least one energy director of the second end is not substantially melted.

5,360,500

METHOD OF PRODUCING LIGHT-WEIGHT HIGH-STRENGTH STIFF PANELS

Maurice J. Evans, Sutton Coldfield; Sharon L. Faulkner, Coventry; Ronald Fisher, Rugby; Trevor C. Wells, Leamington Spa, and Paul Hadlum, Coventry, all of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 74,985, Jun. 10, 1993, abandoned, which is a continuation of Ser. No. 888,403, May 21, 1992, abandoned, which is a continuation of Ser. No. 725,225, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 390,459, Aug. 4, 1989, abandoned, which is a continuation of Ser. No. 121,119, Nov. 20, 1987, abandoned. This application Feb. 2, 1994, Ser. No. 190,615

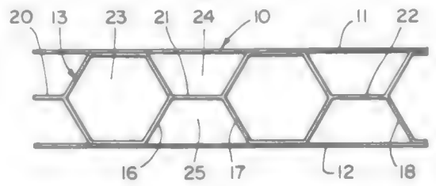
Claims priority, application United Kingdom, Nov. 20, 1986, 8627819

Int. Cl.[5] C23C *16/26, 16/44*
U.S. Cl. 156—74 25 Claims

1. A method for manufacture of a rigidified and densified hollow panel suitable for use at high temperatures, said method comprising the steps of:

selecting reinforcing fibers of a material which provides oxidation resistance at high temperatures;

preparing from said reinforcing fibers a panel preform comprising wall surface members which are structurally interconnected and maintained spaced apart in a superimposed configuration by an intervening core structure, said core structure comprising a plurality of parallel longitudinal tubes arranged with their longitudinal axes parallel to said wall surface members, said tubes having longitudinal passages therethrough defining venting means for the substantially free flow of gas therethrough and the material of at least said tubes containing internal voids into which gas infiltrates from said venting means;



forming a pyrolytic matrix within said internal voids by means of a chemical vapour deposition process, there being a flow of source gas into the panel through the venting means and diffusion of the said gas from the venting means into the internal voids within the tubes of the preform prior to deposition of the matrix material by pyrolysis of said infiltrated gas within the internal voids; and

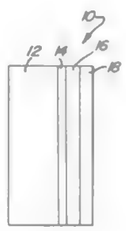
densifying the material of the preform by said deposition process to stiffen said preform panel and thereby form a lightweight panel.

5,360,501

HOLOGRAPHIC TRANSFER LAMINATION MATERIALS AND PROCESS

L. Gordon Bolt, Playa del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 961,042, Oct. 14, 1992, abandoned, which is a continuation of Ser. No. 626,804, Dec. 13, 1990, abandoned. This application Apr. 7, 1993, Ser. No. 46,463
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—101 5 Claims



1. A process of laminating a hologram to a final laminate comprising the steps of:

providing a photosensitive gelatin layer in contact with a thermoplastic layer and providing said thermoplastic layer in contact with a process substrate layer opposite to the gelatin layer to form a hologram laminate;

developing a predetermined hologram image in the photosensitive gelatin layer to form a hologram layer;

adhering the hologram laminate to a first final substrate by an epoxy optical adhesive, wherein the hologram layer is in contact with the first final substrate, said first final substrate being transparent to light;

applying heat to the hologram laminate in order to melt the thermoplastic layer and remove the process substrate layer from the hologram layer;

adhering a second final substate to the hologram layer opposite to the first final substrate by an epoxy optical adhesive, said second final substrate also being transparent to light, wherein the hologram layer is the sole layer between the optical adhesives which adhere the hologram layer to the first and second final substrates; and

wherein said epoxy optical adhesive includes an approximate mixture of 65 WT % acrylated epoxy resin, 31 WT % acrylated epoxy monomer and 4 WT % benzophenone.

5,360,502

METHOD AND APPARATUS FOR SPLICING AT LEAST TWO SINGLE OR MULTIPLE LAYER MATERIALS COMPRISING AIR PERMEABLE SOFT PAPER WEBS

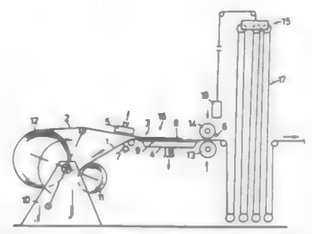
Karl G. B. Andersson, Halmstad, Sweden, assignor to Duni AB, Sweden

PCT No. PCT/SE91/00265, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO91/16256, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 11, 1991, Ser. No. 934,535

Claims priority, application Sweden, Apr. 18, 1990, 9001384-8

Int. Cl.[5] B65H *21/00*
U.S. Cl. 156—159 4 Claims



1. An apparatus for splicing at least two single or multiple layer materials comprising air permeable soft paper webs while substantially maintaining web tension during the splicing operation, the apparatus comprising a first suction chamber for retaining a forward end portion of the new web such as to provide trailing contact against a moving web which is to be spliced, a second suction chamber over which the web to be spliced moves, and over which the forward end portion of the new web also passes before splicing, a regulatable vacuum system for the suction chambers, an embossing nip placed downstream of the second suction chamber for bonding together the webs kept together with the aid of controlled air passage through them, and a cutting means for cutting off the moving web.

5,360,503

SEMI-FINISHED PRODUCT AND THERMOPLASTIC COMPOSITE MATERIAL HAVING LIQUID CRYSTAL POLYMERS AND PROCESS FOR THE PRODUCTION OF THE MATERIAL

René L. Coffy, Rue des Lavrier, France, assignor to Aerospatiale, France

PCT No. PCT/FR91/01031, § 371 Date Jun. 17, 1993, § 102(e) Date Jun. 17, 1993, PCT Pub. No. WO92/11311, PCT Pub. Date Jul. 9, 1992

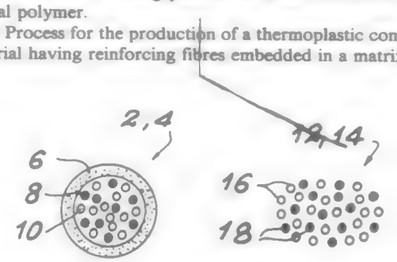
PCT Filed Dec. 18, 1991, Ser. No. 75,479

Claims priority, application France, Dec. 19, 1990, 90 15930

Int. Cl.[5] B29C *51/00;* B32B *31/20;* C09K *19/38;* D02G *3/04*
U.S. Cl. 156—175 12 Claims

1. Thermoplastic composite semi-finished product consisting exclusively of liquid crystal thermoplastic polymers (LCP), whereof at least one first liquid crystal thermoplastic polymer (LCP) is in the form of fibres and has a given melting point and where of at least one second liquid crystal thermoplastic polymer (LCP) has a melting point below that of the first liquid crystal polymer.

11. Process for the production of a thermoplastic composite material having reinforcing fibres embedded in a matrix, consisting of using the semi-finished product according to claim 1 and subjecting it, under pressure, to a temperature at least equal to the melting point of the second liquid crystal polymer, but below the melting point of the first liquid crystal polymer and allowing the material obtained to cool.

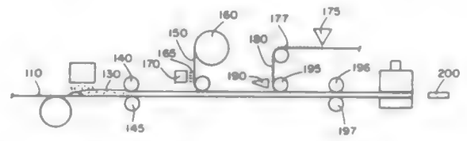


5,360,504

METHOD OF BONDING AN ADHESIVE TO FOAM

Joseph P. Fell; Richard D. Schulz; Mary J. Meyer, all of Neenah; Allan J. Krueger, Winneconne; Franklin M. C. Chen, and Yung H. Huang, both of Appleton, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 28, 1993, Ser. No. 55,052
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—247 23 Claims



1. A method of bonding a garment adhesive to a closed-cell, non-crosslinked, liquid-impermeable, polyolefinic foam layer, said foam having less than about 3% aging modifier, as measured by an amount of extractable oxygen, said method comprising:

(a) applying said garment adhesive to a surface of a substrate; and

(b) bringing said adhesive surface of said substrate into contact with said polyolefinic foam, wherein said adhesive has a viscosity of less than about 8×10^8 centipoise.

5,360,505

DOOR FOR A SINGLE-FACE STATION OF A MACHINE THAT PRODUCES CORRUGATED CARDBOARD

Jens Schulz, Hamburg; Martin Hoffmann, Tangstedt, and Nicolaus Goerrissen, Elmshorn, all of Germany, assignors to Peters Maschinenfabrik, Hamburg, Germany

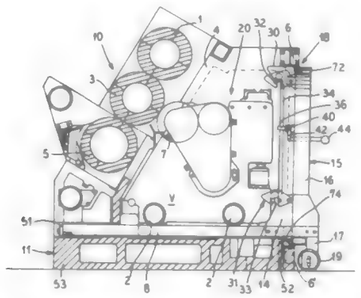
Filed Jun. 18, 1993, Ser. No. 78,047

Claims priority, application Switzerland, Jun. 19, 1992, 01937/92-8

Int. Cl.[5] B31F *1/28*
U.S. Cl. 156—382 6 Claims

1. In a single-face station of a machine for producing corrugated cardboard, said station having a frame having a stand with side members enclosing an inner volume, said frame at one end of the volume supporting a pair of corrugating rollers and a pressure roller and at the opposite end of the volume having a door frame receiving a rear door provided with rails extending on the stand and supporting a gluing unit within the inner volume, the improvements comprising the door being formed by a panel with an outer dimension slightly smaller than the inner dimension of the door frame in which the panel is engaged, the periphery of the panel having a thickness differ-

ent from the thickness of the door frame and being provided with peripheral sealing arrangements pressing on the inner periphery of the door frame, said rails being permanently connected to the inner portion of the panel and being arranged so as to slide on runners arranged on the stand of the frame of the station, said rails being provided at one end with stopping pieces designed to limit an opening motion of the door when the pieces come into contact with stops provided on the stand,

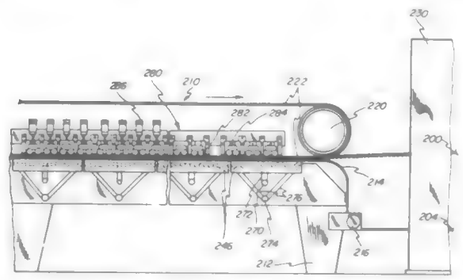


said rails supporting the gluing unit, which rides on wheels on the rails, said door including interlocking means having at least one interlocking axle permanently secured on the door frame and hooks mounted on an inner surface of the panel for pivotable movement and to extend in a vertical plane, means for pivoting each hook in the vertical plane between the position engaging the axle and a position disengaged from the axle, and each hook having an inner notch with a front part having a curvature directed toward the panel.

5,360,506
IDLER ROLL HAVING IMPROVED THERMAL CHARACTERISTICS

Charles E. Thomas, Baltimore, Md., assignor to United Container Machinery Group, Inc., Glen Arm, Md.

Division of Ser. No. 528,298, May 24, 1990, Pat. No. 5,160,400. This application May 2, 1992, Ser. No. 886,345
Int. Cl.[5] B31F *1/28*
U.S. Cl. 156—470 **11 Claims**



1. In an apparatus for manufacturing of double faced corrugated board, including a weight roll wherein the improvement comprises:

said roll made of heat conductive material having an outer surface having a portion thereof in tangential rolling abutment against a heated surface;

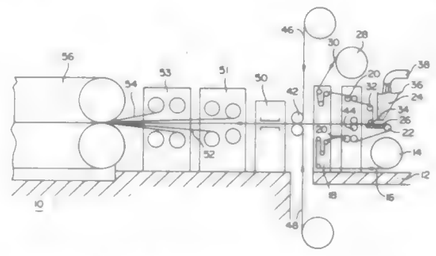
said roll having a cylindrical cross-section and also having a hollow center forming an unobstructed internal void, said roll being at least partially liquid filled, said liquid moving without obstruction in said unobstructed internal void to facilitate convective heat transfer resulting from the fluid motion of said liquid in said unobstructed internal void in order to radially distribute heat experienced by and conducted through said roll outer surface away from said portion of said outer surface;

wherein thermal deformation of said roll is minimized.

5,360,507
FLAME RESISTANT TO NONFLAMMABLE COMPOSITE PANEL

Reinhard Schlatter; Rainer Ehrat, both of Schaffhausen; Peter Müller, Neuhausen; Paul Kübler, Neuhausen, and Otto Hödl, Neuhausen, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Continuation of Ser. No. 890,866, Jun. 1, 1992, abandoned, which is a division of Ser. No. 590,006, Sep. 28, 1990, Pat. No. 5,277,735. This application Aug. 30, 1993, Ser. No. 113,967
Claims priority, application Switzerland, Oct. 10, 1989, 3688/89
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—494 **18 Claims**



1. Apparatus for the continuous production of a flame resistant to nonflammable composite panel having a core of a nonextrudable core mixture of a pourable unflammable filling material and a binder, and cover strips on both sides thereof flexibly bonded to the core, which comprises:

means for feeding a supported flexible lower adhesive strip and a supported flexible upper adhesive strip;

means for pouring the core mixture directly onto the lower adhesive strip to form a core mixture layer extending over the entire width of the lower adhesive strip;

means for forming a layered material comprising the upper and lower adhesive strips with said core mixture therebetween;

said layered material forming means including means for continuously and uniformly drawing the upper and lower adhesive strips and the core material therebetween through surfaces forming a V gap for compacting the layered material and for calibrating the layered material for thickness;

means for continuously feeding cover strips to the compacted and calibrated layered material to adhesively bond the continuously fed cover strips to the adhesive strips and form a composite panel;

said feeding means including one reel for each of the lower and upper adhesive strips;

said feeding means further including one stretching roller and one deflection roller for each of the lower and upper adhesive strips;

said surfaces forming said V-gap being defined by first means for forming a settable running-in angle and an adjustable V gap for the first-time compaction of the layered material;

second means for supporting the lower adhesive strip up to compacting or tensioning rollers;

third means for pressing and heating the layered material;

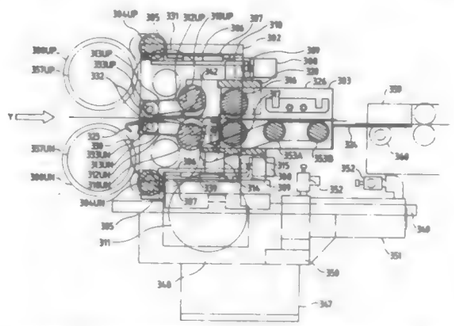
a device for cutting the composite panel to the final length; and

the first means for setting the V-gap being selected from the group consisting of (1) a pivotable, cross sectionally round, oval or triangular to hexagonal doctor knife bar, in the case of angular cross-sections with a different rounding-off radius running on each longitudinal edge and (2) a pivotable doctor knife blade having at least one rounded-off, narrow longitudinal side, plus an approximately horizontally-arranged doctor knife table, the first means and the doctor knife table being adjustable in height and pivotable and capable of being fixed in every position, and all sliding surfaces for the adhesive films of the doctor knife bar, doctor knife blade and doctor knife table being coated with a sliding layer.

5,360,508
APPLYING APPARATUS

Hiroshi Taguchi, Tokyo; Yoji Washizaki, Saitama; Akira Igarashi, Tokyo, and Hiroyoshi Nakano, Saitama, all of Japan, assignors to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 648,458, Jan. 30, 1991, abandoned. This application Dec. 31, 1992, Ser. No. 998,638
Claims priority, application Japan, Jun. 1, 1990, 2-143521
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—521 **30 Claims**



1. An applying apparatus for applying films to a panel, comprising:

film feed means for feeding leading edges of said films to a tentative applying position and tentatively applying said leading edges of said films to said panel;

applying means, movable to said tentative applying position, for applying said films to said panel; and

movable panel conveyance means for moving said panel having said films applied thereon, said movable panel conveyance means being coupled to said applying means and being movable together therewith, said movable panel conveyance means being movable in a direction of conveyance of said panel and in a direction opposite thereto, wherein said movable panel conveyance means includes a support frame, said applying means being coupled to said support frame such that said movable panel conveyance means and said applying means have a fixed positional relationship to each other.

5,360,509
LOW COST METHOD OF FABRICATING EPITAXIAL SEMICONDUCTOR DEVICES

Gregory Zakaluk, Seaford; Deanis Garbis, Huntington Station; Joseph Y. Chan, Kings Park; John Latza, Lindenhurst, and Lawrence LaTerza, Miller Place, all of N.Y., assignors to GI Corporation, Hatboro, Pa.

Filed Mar. 8, 1993, Ser. No. 21,130
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—645 **25 Claims**

1. The method of fabricating epitaxial semiconductor devices on a substrate which comprises:

(1) subjecting the surface of said substrate on which epitaxial growth is to occur to a grinding process which removes material from said surface to a depth of at least 65 microns;

(2) cleaning said surface without polishing it;

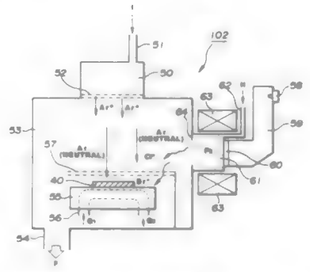
(3) gas etching away said unpolished surface to a depth of about 6–10 microns; and

(4) subjecting said surface to a chemical vapor deposition process, thereby to grow a doped layer on said surface.

5,360,510
DRY ETCHING METHOD

Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 828,743, Jan. 31, 1992, Pat. No. 5,217,570. This application Feb. 16, 1993, Ser. No. 18,257
Claims priority, application Japan, Jan. 31, 1991, 3-021806; Aug. 15, 1991, 3-228580
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—665 **6 Claims**



1. A dry etching method for etching a layer of an aluminum-based material with the aid of a pattern constituted by a layer of a silicon oxide material as a mask, comprising steps of

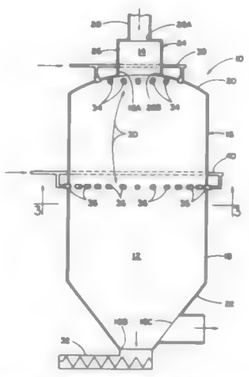
irradiating said wafer with a neutral beam for forming a reduction-resistant layer on at least the surface of said pattern, and

subsequently etching said layer of the aluminum-based material.

5,360,511
APPARATUS AND METHOD FOR SPRAY DRYING SOLIDS-LADEN HIGH TEMPERATURE GASES

Ronald W. Baylis, Glyndon, Md.; Karl D. Libech, and Charles H. Washburn, both of Salt Lake City, Utah, assignors to Aptus, Inc., Pittsburgh, Pa.

Division of Ser. No. 726,422, Jul. 5, 1991, Pat. No. 5,264,078. This application Aug. 27, 1993, Ser. No. 112,297
Int. Cl.[5] B01D *1/18*
U.S. Cl. 159—48.1 **8 Claims**



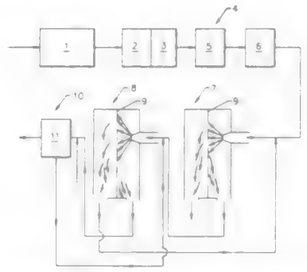
1. A method for spray drying a mixture of a liquid and a gas containing molten solids, said method comprising the steps of;

(a) providing a spray drying main chamber;
(c) connecting a gas flow retarding auxiliary chamber upstream of and communicating with said spray drying main chamber, said auxiliary chamber being connected directly to a top inlet of said main chamber and having open space, without any flow distribution device therein, for unencumbered gas flow without buildup of deposits therein;
(c) supplying a gas flow through said auxiliary chamber into said main chamber and retarding the rate of flow of gas into said main chamber to reduce generation of eddy currents and to distribute the gas flow substantially uniformly in said main chamber;
(d) disposing a pressure nozzle spray atomizing arrangement in said spray drying main chamber, said disposing including locating a first plurality of atomizing spray nozzles adjacent to a top inlet of said main chamber and locating a second plurality of atomizing spray nozzles midway between said top inlet and a bottom outlet of said main chamber; and
(e) injecting an atomized spray of liquid into the gas flow to cause disrupting of the gas flow through said main chamber and thereby achieve a thorough mixing and uniform distribution of the gas flow and sprayed liquid in said main chamber to produce a substantially complete evaporation and drying of solids from the mixture throughout said main chamber.

7. A method for spray drying with gases that contain molten solids comprising the steps of:
providing a spray drying main chamber, said main chamber having an inlet for gas and also having nozzle means;
introducing a liquid through said nozzle means;
supplying a flow of gas containing flyash to the spray drying main chamber from a source, the gas being supplied from the source through a duct to an auxiliary chamber in advance of the main chamber, the auxiliary chamber being free of flow distribution devices and configured to retard and make more uniform the flow of gas to facilitate evaporation and drying of solids throughout the main chamber and lessen the deposit of solids on the walls of the main chamber, without use of flow distribution devices as would be adversely affected by molten solids in the gas, said supplying a flow of gas is performed wherein the auxiliary chamber is adjacent an upper inlet of the main chamber and has a diameter between that of the main chamber and that of the duct; and said introducing a liquid is performed by said nozzle means including downwardly inclined nozzles located on an upper end wall of the main chamber around the upper inlet.

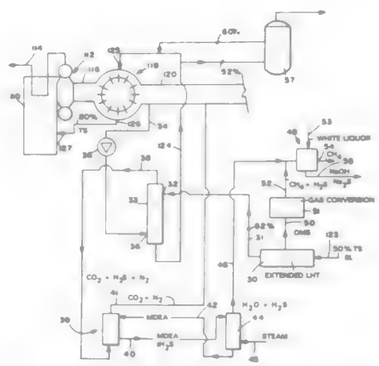
5,360,512
METHOD AND PRODUCT FOR TREATING WASTE PAPER MATERIAL
Stanley Blum, London, England, assignor to Woodfree Limited, Chelmsford, United Kingdom
Continuation-in-part of Ser. No. 761,744, Sep. 18, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 914,210
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—8 **6 Claims**

1. A method of de-inking waste paper material comprising the steps of:
pulping the paper material to form a fibrous stock of a slush-like consistency;
adding an ink dispersing agent having a composition whereby ink particles are dispersed from the fibrous stock; and
removing said dispersed ink particles from the stock;
wherein the composition of said ink dispersing agent is selected from the group consisting of:
(i) a mixture of approximately 92% weight in weight of a sodium phosphate and approximately 8% weight in weight of sodium carbonate;
(ii) a mixture of phosphated and carbonated sodium salts which includes approximately 1 to 2% weight in weight of metasilicates; and



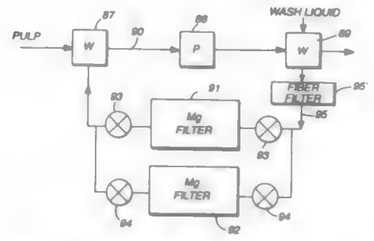
(iii) a mixture of phosphated and carbonated sodium salts which includes approximately 0.5% to 2% weight in weight of caustic soda.

5,360,513
SULPHUR REMOVAL FROM GASES ASSOCIATED WITH BOILERS HAVING CASCADE EVAPORATORS
Rolf C. Ryham, Rosewell, Ga., assignor to A. Ahlstrom Corporation, Noormarkku, Finland
Filed Feb. 13, 1992, Ser. No. 834,107
Int. Cl.[5] D21C *11/04*
U.S. Cl. 162—30.11 **9 Claims**



1. A method of treating black liquor from a cellulose pulp producing facility, using a recovery boiler having a flue gas discharge for discharging hot flue gases and a direct contact evaporator in the flue gas discharge, comprising the steps of:
(a) heating black liquor at a temperature and for a time period sufficient to drive the majority of the sulfur containing organic compound gases from the black liquor;
(b) passing the hot flue gases from the recovery boiler flue gas discharge through the direct contact evaporator; then
(c) removing substantially all the remaining sulfur in the black liquor from step (a) by utilizing the hot flue gases from step (b) to strip the sulfur from the black liquor from step (a); then
(d) after step (c), feeding the black liquor to the direct contact evaporator to increase the solids content thereof; and then
(e) feeding the increased solids content black liquor to the recovery boiler to effect combustion thereof and produce hot flue gases.

5,360,514
TREATMENT OF BLEACH PLANT FILTRATIONS USING A MAGNESIUM FILTER
Kaj Henricson, and Anja Klarin, both of Helsinki, Finland, assignors to Kamyr, Inc., Glens Falls, N.Y.
Continuation-in-part of Ser. No. 861,387, Mar. 31, 1992, which is a continuation-in-part of Ser. No. 839,389, Feb. 21, 1992. This application Mar. 15, 1993, Ser. No. 31,432
Int. Cl.[5] D21C *11/00*
U.S. Cl. 162—31 **10 Claims**

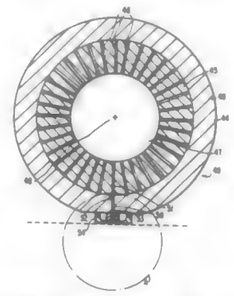


1. A method of treating filtrates from bleach plants of a paper pulp mill for bleaching cellulosic pulp, including utilizing at least one ozone, hydrogen peroxide, or oxygen bleaching stage, comprising the steps of:
(a) washing the pulp in the paper pulp mill in a washer with a wash liquid prior to the ozone, hydrogen peroxide, or oxygen bleaching stage, the wash liquid including filtrate from another washing stage of a bleaching stage;
(b) oxidizing the organic material in the filtrate used as wash liquid in step (a) prior to its use in step (a) in order to make the organic material less attractive to bleaching chemical in the bleaching stage;
(c) ozone, hydrogen peroxide, or oxygen bleaching the washed pulp in said at least one bleaching stage; and
(d) removing metallic ions from the filtrate in the pulp mill so as to minimize the consumption of ozone, hydrogen peroxide, or oxygen in step (c) by passing the filtrate through a magnesium filter.

5,360,515
METHOD FOR REDUCING THERMAL AND LIGHT-INDUCED BRIGHTNESS REVERSION IN LIGNIN-CONTAINING PULPS
Raymond C. Francis, Dewitt, N.Y., and Daniel B. Evans, Bethlehem, Pa., assignors to The Research Foundation of the State University of New York, Albany, N.Y. and Minerals Technology Inc., New York, N.Y.
Filed Aug. 25, 1993, Ser. No. 111,627
Int. Cl.[5] D21H *17/05*
U.S. Cl. 162—135 **28 Claims**

1. A process for inhibiting brightness reversion in a lignin-containing substrate comprising treating said substrate with 2,5-dihydroxydioxane.

5,360,516
APPLICATION OF FLUIDIZED MATERIAL TO A SUBSTRATE USING INTERMITTENT CHARGES OF COMPRESSED AIR
Edwin L. Cutright, Powhatan; G. Robert Scott, Midlothian; Howard W. Vogt, Jr., Providence Forge, and Richard B. Reich, Midlothian, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.
Filed Nov. 12, 1992, Ser. No. 974,977
Int. Cl.[5] D21H *25/00*
U.S. Cl. 162—139 **28 Claims**
MICROFICHE APPENDIX INCLUDED
(071394 Microfiche, Pages)



1. An apparatus for applying a fluidized material to a web in a series of application cycles, comprising:
means for moving said web along a path in a direction of travel;
applicator means for holding said fluidized material adjacent to said web, said applicator means having an open first slot, said slot having an inlet for admitting a charge of compressed air during each of said application cycles, and having an outlet adjacent to said web, said charge of compressed air traveling toward said outlet;
accumulator means associated with said slot for accumulating said fluidized material in an accumulation region between each of said application cycles, said accumulator means including an open supply slot continuously communicating said accumulation region with said open first slot;
said open first slot including a venturi at a location between said inlet and said outlet of said first slot, said venturi creating a region of low pressure in said charge of compressed air adjacent to said accumulation region, thereby withdrawing fluidized material from said accumulation region through said supply slot responsively to said charge of compressed air and entraining said withdrawn fluidized material in said charge of compressed air, said charge of compressed air exiting said slot through said outlet and depositing said fluidized material entrained in said charge on said web during each of said application cycles;
supply means for continuously supplying said applicator means with said fluidized material under pressure; and
charge means for supplying said applicator means with said charge of compressed air during each of said application cycles.

5,360,517
BACTERIAL DISINFECTION OF FLORA-CONTAMINATED PAPERMAKING PROCESS STREAMS
Pierre Guerineau, Biard, France, and Peter Rosli, Mullingen, Switzerland, assignors to Texel, Dange Saint Romain, France
Filed Feb. 24, 1993, Ser. No. 21,668
Claims priority, application France, Feb. 24, 1992, 92 02080
Int. Cl.[5] D21F *1/66;* **B08B** *3/00;* **C02F** *3/34*
U.S. Cl. 162—161 **6 Claims**

1. A process for regulating the growth of the microbial/bac-

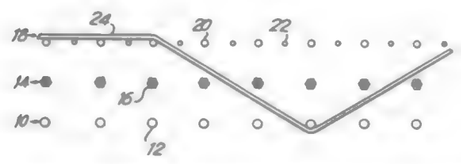
terial flora existing in an aqueous papermaking circuit/process stream, comprising introducing into such circuit/process stream an effective disinfectant amount of bacteria of the species *Staphylococcus carnosus.*

5,360,518

PRESS FABRICS FOR PAPER MACHINES

William M. McCarthy, Rensselaer, N.Y.; Ebo E. Dam, Dieren, Netherlands; Wil F. van Bergen, Dieren, Netherlands, and Keith Fitzpatrick, Dieren, Netherlands, assignors to Albany International Corp., Albany, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,794
Int. Cl.[5] D21F *3/00*
U.S. Cl. 162—358.2 **8 Claims**



1. A press fabric for the press section of a papermachine, said press fabric having a multilayer, compressible, resilient structure, said press fabric comprising:

three layers of weft yarns, one of said three layers including multicomponent yarns, said multicomponent yarns having a plurality of load-bearing members, the remaining weft yarns in all of said three layers being monofilament yarns; and

a first system of warp yarns, said warp yarns being monofilament yarns, said warp yarns of said first system being interwoven with said weft yarns of said three layers of weft yarns in a repeating pattern, so that said press fabric may be provided with an extremely fine paper-contacting surface, an open non-paper-contacting surface, and a structure having adequate void volume to store water pressed from a paper sheet, wherein said three layers of weft yarns are a top layer, a middle layer, and a bottom layer, and

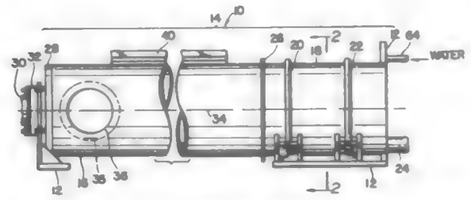
wherein there are two weft yarns in said top layer of weft yarns for every one weft yarn in said middle layer of weft yarns.

5,360,519

SUPPORT APPARATUS FOR PAPERMAKING MACHINE ROTATING FELT SUCTION PIPES

Robert V. Scarano, Glen Falls, N.Y., assignor to Thermo Fibertek Inc., Waltham, Mass.

Filed Jan. 28, 1993, Ser. No. 10,415
Int. Cl.[5] D21F *1/48*
U.S. Cl. 162—363 **14 Claims**



1. A suction pipe assembly for dewatering a web in a papermaking machine comprising:

a frame;

a hollowing pipe extending along a longitudinal axis and having a first end rotatably mounted on said frame, a second end opposite said first end being fixedly mounted on said frame, and suction means for applying suction to said web;

a shaft disposed in said hollow pipe;

support means mounted on said shaft for supporting said pipe on said shaft;

vacuum supply means for applying vacuum to said pipe; and

bearing means for rotatably supporting said pipe on said frame near said first end.

5,360,520

SEPARATION OF 2-BUTANOL FROM T-AMYL ALCOHOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. Third Ave., Bozeman, Mont. 59715, assignor to Lloyd Berg, Bozeman, Mont.

Filed Jan. 18, 1994, Ser. No. 181,785
Int. Cl.[5] B01D *3/40; C07C 29/84*
U.S. Cl. 203—57 **1 Claim**

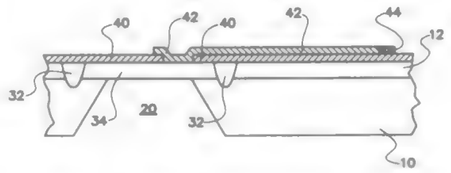
1. A method for recovering 2-butanol from a mixture of 2-butanol and t-amyl alcohol which comprises distilling a mixture of 2-butanol and t-amyl alcohol in the presence of about one part by weight of an extractive agent per part of 2-butanol—t-amyl alcohol mixture, recovering 2-butanol as overhead product and obtaining the t-amyl alcohol and the extractive agent as bottoms product, wherein said extractive agent consists of one material selected from the group consisting of acetophenone, adiponitrile, methyl caproate, ethyl caproate, propyl caproate, hexyl acetate, ethyl butyrate, butyl butyrate, propyl propionate, diethyl carbonate, cyclopentanone, cyclohexanone, 1-nitropropane and 2-nitropropane.

5,360,521

METHOD FOR ETCHING SILICON

Richard A. Davis, Plano; Mark Plagens, Richardson, and Uppili Sridhar, Garland, all of Tex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 12, 1993, Ser. No. 151,334
Int. Cl.[5] C25F *3/12*
U.S. Cl. 204—129.3 **18 Claims**



1. A method of making a micromachined semiconductor component, comprising:

providing a wafer of semiconductive material having a first side and a second side;

defining a plurality of die locations on said first surface of said wafer, said plurality of die locations being arranged in a pattern of rows and columns, each of said rows being separated from an adjacent one of said rows by a row interstice and each of said columns being separated from an adjacent one of said columns by a column interstice;

disposing a plurality of conductors on said first surface, at least one of a first group of said plurality of conductors being disposed in said row interstice, at least one of a second group of said plurality of conductors being disposed in said column interstice;

disposing a plurality of conductive extensions on said first surface, each of said plurality of conductive extensions being disposed in electrical communication with a preselected one of said conductors and in electrical communication with a region of one of said plurality of die locations;

connecting one of said plurality of conductors in electrical communication with a voltage potential; and

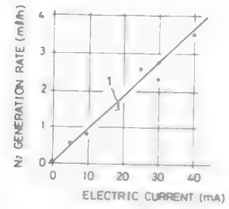
disposing an etchant in contact with preselected locations on said second side of said wafer.

5,360,522

BIOCATALYST-IMMOBILIZED ELECTRODE AND METHOD FOR TREATMENT OF WATER BY USE OF THE ELECTRODE

Masao Kuroda, 15-10 Kotobukicho, Ashikaga-shi, Tochigi-ken, and Yutaka Sakakibara, Gumma, both of Japan, assignors to Masao Kuroda, Ashikaga and Yamato Setubi Construction Co., Ltd., Maebashi, both of Japan

Filed Apr. 30, 1993, Ser. No. 54,197
Claims priority, application Japan, Jun. 1, 1992, 4-163381
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—149 **13 Claims**



1. A method for treating water comprising:

reducing compounds in a water sample by applying a voltage between a first electrode comprising:

(a) an electrical conductor; and

(b) a biocatalyst which reduces organic substances or inorganic ions immobilized on a surface of said electrical conductor, wherein said biocatalyst is selected from the group consisting of *Paracoccus denitrificans, Micrococcus denitrificans,* Alcaligenous, Pseudomonas, *Clostridium aceticum, Acetobacterium woodii,* Methanobacterium, *Enterobacter cloacal,* and sulfuric acid reductases; and

a second electrode comprising an electrical conductor,

wherein said electrodes are immersed in said water sample such that application of said voltage generates hydrogen at the surface of said first electrode.

5,360,523

DNA SEQUENCING

Lyle R. Middendorf; Robert C. Bruce, both of Lincoln, and Robert D. Eckles, Malcolm, all of Nebr., assignors to Li-Cor, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 763,230, Sep. 20, 1991, Pat. No. 5,230,781, and a continuation-in-part of Ser. No. 570,503, Aug. 19, 1990, Pat. No. 5,027,880, which is a continuation-in-part of Ser. No. 78,279, Jul. 27, 1987, abandoned, which is a division of Ser. No. 594,676, Mar. 29, 1984, Pat. No. 4,729,947. This application Feb. 17, 1993, Ser. No. 18,806
Int. Cl.[5] G01N *27/26, 27/447*
U.S. Cl. 204—182.8 **32 Claims**

1. A method for sequencing DNA comprising:

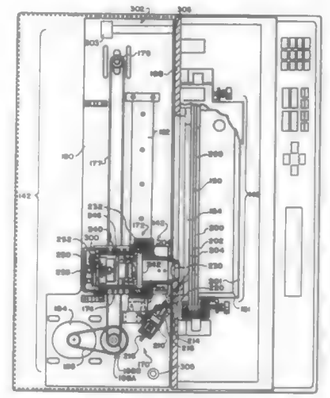
applying fluorescently marked DNA samples at a plurality of locations for electrophoresing in a plurality of channels through a gel electrophoresis slab;

establishing electrical potential across said gel electrophoresis slab wherein DNA samples are resolved in accordance with the size of DNA fragments in said gel electrophoresis slab into fluorescently marked DNA bands;

moving a scanning means with a carriage assembly a direction substantially perpendicular to a direction of the plurality of channels; and

scanning the separated samples photoelectrically with a laser and a sensor mounted to the carriage assembly, wherein the laser scans with scanning light at

a scanning light frequency within an absorbent spectrum of said fluorescently marked DNA samples and sensing light at an emission frequency of the marked DNA;



said step of scanning including the substeps of focusing a microscope on a gel portion of an electrophoresis slab at least at two different locations along a path of a single scan.

5,360,524

METHOD FOR PLANARIZATION OF SUBMICRON VIAS AND THE MANUFACTURE OF SEMICONDUCTOR INTEGRATED CIRCUITS

Rudi Hendel, 26 Ridge Rd., Summit, N.J. 07901, and Hyman Levinstein, 132 Robbins Ave., Berkeley Heights, N.J. 07974

Filed Apr. 13, 1993, Ser. No. 47,265
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—192.25 **13 Claims**



1. A method of filling submicron vias in a substrate comprising:

depositing a layer of a metal conductor having a coefficient of thermal expansion on to said substrate at a first temperature wherein said layer covers said vias and leaves a void space in said vias and wherein said substrate has a lower coefficient of thermal expansion than the metal conductor;

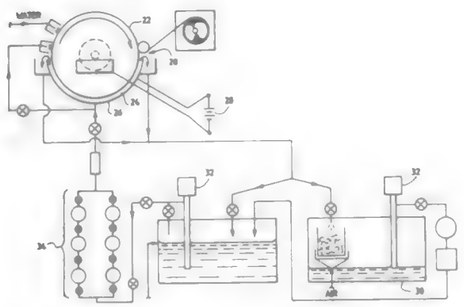
heating the substrate and the deposited conductor to a second temperature wherein the layer of the deposited metal conductor is effectively thick so that thermal stress created by increasing the temperature from the first temperature to the second temperature and the relative coefficient of thermal expansions of the conductor and the substrate causes the conductor to expand and uniformly fill the void in said submicron vias,

wherein said layer of metal conductor is at least about 2,000 Å.

5,360,525
APPARATUS FOR MAKING METAL FOIL

David E. Dyke, Shaker Heights, Ohio, and Wayne Neilson, San Marcos, Calif., assignors to United Foils Inc., San Marcos, Calif.

Filed Mar. 16, 1993, Ser. No. 33,187
Int. Cl.[5] C25C *7/08;* C25D *1/04*
U.S. Cl. 204—216 20 Claims

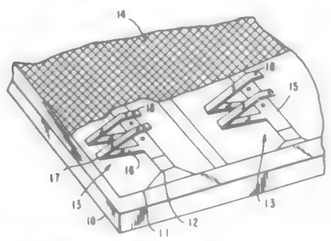


1. An apparatus for continuous electrodeposition of metal foil comprising:
a cylindrical drum;
means for rotating the drum;
a substantially semicylindrical anode shaped to fit under the drum;
means for supplying an electrolyte in contact with the drum and the anode;
means for sealing the anode to the drum to contain the electrolyte;
means for passing an electric current from the anode through the solution to the drum to electrodeposit metal foil on the drum; and
means for removing electrodeposited foil from the drum.

5,360,526
ELECTROLYTIC CELL

Osamu Arimoto, Okayama; Shinji Katayama, Tamano, and Yoshinari Take, Okayama, all of Japan, assignors to Chlorine Engineers Corp. Ltd., Tokyo, Japan

Filed Apr. 30, 1993, Ser. No. 56,432
Claims priority, application Japan, Apr. 30, 1992, 4-111673
Int. Cl.[5] C25B *9/00, 11/02*
U.S. Cl. 204—242 3 Claims

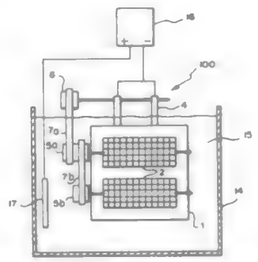


1. An electrolytic cell with a movable electrode attached thereto, comprising an electrode which is spacedly joined to free ends of a plurality of teeth spring means projecting from a strip member which is attached to a partition or rib support member of the electrolytic cell wherein said electrode is adjustably spaced from said partition or rib support member.

5,360,527
RACKLESS RACK FOR ELECTROPLATING

Raymond W. Ribitch, Mount Pleasant, Mich., assignor to Hitachi Magnetics Corp., Endmore, Mich.

Filed Apr. 30, 1993, Ser. No. 55,859
Int. Cl.[5] C25D *17/08*
U.S. Cl. 204—297 R 20 Claims

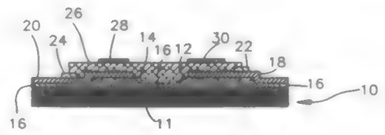


1. An apparatus for supporting an article in an electroplating solution comprising:
a rack;
said rack having at least one window;
said window including at least first and second conductive portions on an inner perimeter thereof;
means for retaining said article within said at least one window;
means for rotating said rack between at least first and second operating positions;
said means for rotating including means for permitting said article to move into contact with a point along said at least first and second conductive portions when said rack is in its first operating position;
said means for rotating including means for permitting said article to move into contact with another point of said at least first and second conductive portions when said rack is in its second operating position; and
means for connecting said at least first and second conductive portions to a cathode.

5,360,528
WIDE RANGE OXYGEN SENSOR

Seajin Oh, Palo Alto; Jose Joseph, Menlo Park, both of Calif., and Earl W. Lankheet, Grand Blanc, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 20, 1992, Ser. No. 916,555
Int. Cl.[5] G01N *27/419*
U.S. Cl. 204—425 16 Claims



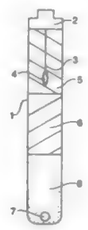
1. An oxygen sensor for sensing an oxygen concentration in a gas, said oxygen sensor comprising:
a substrate;
a storage cell disposed on said substrate, said storage cell having first and second electrodes, an electrolyte layer disposed between said first and second electrodes, and an oxygen storage layer contacting said second electrode, such that when a current flows between said first and second electrodes said storage cell pumps oxygen from an oxygen source through said electrolyte layer and into said oxygen storage layer so as to maintain a first predetermined oxygen partial pressure in said oxygen storage layer;

a pumping cell disposed on said substrate, said pumping cell having third and fourth electrodes and a diffusion layer, said electrolyte layer being disposed between said third and fourth electrodes, said diffusion layer contacting the gas such that the oxygen within the gas diffuses into said diffusion layer so as to establish an oxygen partial pressure in said diffusion layer, such that when a current flows between said third and fourth electrodes said pumping cell pumps and from the gas through said electrolyte layer and out of and into said diffusion layer, respectively, so as to maintain a second predetermined oxygen partial pressure in said diffusion layer;
said electrolyte layer being sufficiently thin so as to enhance ionic flow between said first and second electrodes of said storage cell and between said third and fourth electrodes of said pumping cell while said pumping cell is sufficiently spaced apart from said storage cell so as to inhibit ionic flow therebetween through said electrolyte layer; and
a reference cell formed between said storage and pumping cells so as to produce an output in response to a difference between said first predetermined pressure in said oxygen storage layer and said pressure in said diffusion layer;
whereby said output of said reference cell can be used to regulate said pumping cell such that said pumping cell pumps oxygen into and out of said diffusion layer so as to establish said second predetermined oxygen partial pressure in said diffusion layer, said current flowing through said pumping cell thereby corresponding to the oxygen concentration in the gas.

5,360,529
REFERENCE HALF-CELL ELECTRODE

Stephen J. Edwards, Pinner; John Chapples, Harrow; Kevin J. Parr, Harrow Weald, all of England, and Philippe G. Robert, Givry, France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP92/01884, § 371 Date Apr. 21, 1993, § 102(e) Date Apr. 21, 1993, PCT Pub. No. WO93/04360, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 19, 1992, Ser. No. 39,351
Claims priority, application United Kingdom, Aug. 24, 1991, 9118300
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—435 29 Claims

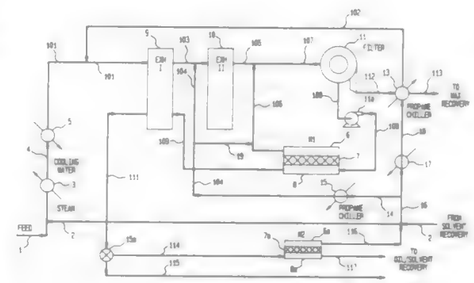


1. A half-cell reference electrode comprising an electrode member in electrochemical contact with a first gelled or viscous electrolyte solution which itself in electrochemical contact with a second gelled electrolyte solution wherein said second gelled electrolyte solution comprises a polymer containing acrylamide units substituted with a group or groups which lower the polymer's tendency to hydrolyse compared to polyacrylamide while providing a polymer that forms a gelled solution of a mixture of 2.21M Potassium Nitrate and 0.39M Sodium Nitrate, wherein a total molar concentration is a 2.6M sodium/potassium nitrate solution wherein the polymer and sodium potassium solution comprises at least 75% by weight sodium/potassium nitrate solution.

5,360,530
LUBRICATING OIL DEWAXING USING MEMBRANE SEPARATION OF COLD SOLVENT FROM DEWAXED OIL AND RECYCLE OF COLD SOLVENT TO FILTER FEED

Ronald M. Gould, Sewell, N.J.; William F. Heaney, Jamison, Pa.; Albert R. Nitsch, Princeton, and Howard E. Spencer, Titusville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 23, 1993, Ser. No. 52,327
Int. Cl.[5] C10G *73/06, 73/32;* B01D *39/00;* C07C *7/144*
U.S. Cl. 208—31 10 Claims



1. A process for solvent dewaxing a waxy oil feed comprising dilution of the waxy oil feed stream with solvent and cooling the waxy oil feed stream to a temperature of 40° to 140° F., and further cooling the waxy oil feed by indirect contact with the cold filtrate, then sequentially indirectly cooling the waxy oil feed in indirect heat exchangers to crystallize and precipitate wax crystals, sequentially directly injecting additional solvent into the waxy oil feed stream to further cool and dilute and to obtain a desired viscosity of the waxy oil feed stream to facilitate handling of the waxy oil feed stream through the process and to facilitate filtering crystallized wax from the waxy oil feed and to obtain the desired pour point of dewaxed oil product, and during the sequential cooling of the waxy oil feed crystallizing and precipitating wax from the waxy oil feed to obtain an oil/solvent/wax mixture at a temperature of −30° to +70° F., feeding the oil/solvent/wax mixture to a filter to remove the wax and obtain an oil/solvent filtrate stream, contacting the oil/solvent filtrate stream at a temperature of −30° to +70° F. with one side of a selective semipermeable membrane in a membrane module to selectively transfer solvent through the membrane to obtain a solvent permeate on the other side of the membrane, the oil/solvent filtrate stream side of the membrane is maintained at a positive pressure relative to a pressure on the solvent permeate side of the membrane, selectively transferring 20 to 75% by volume of the solvent from the filtrate side of the membrane to the solvent permeate side of the membrane, and recycling the solvent permeate at a temperature of −30° to +70° F. to the filter feed, withdrawing a filtrate stream containing the remaining solvent from the filtrate side of the membrane module, contacting the filtrate stream by indirect heat exchange with the warm waxy oil feed, and treating the withdrawn filtrate stream to separate the remaining solvent from the oil, and recovering a dewaxed oil product stream, and a slack wax product stream and recycling the separated solvent to the dewaxing process.

5,360,531

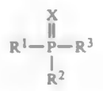
PHOSPHORIC TRIAMIDE COKING INHIBITORS

Youdong Tong, Houston, and Michael K. Poindexter, Sugar Land, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 990,782, Dec. 10, 1992, abandoned. This application Jun. 2, 1993, Ser. No. 71,458
Int. Cl.[5] C10G 9/16
U.S. Cl. 208—48 AA 20 Claims

1. A method for inhibiting coke formation on heat transfer surfaces used to heat or cool a petroleum feedstock at coke-forming conditions, comprising:

contacting the heat transfer surfaces with an effective amount of a phosphoric triamide of the formula:



wherein X is chalcogen and each R^1 through R^3 is an amino moiety of the formula:



wherein R^4 is hydrocarbyl, and R^5 is hydrogen or hydrocarbyl, and

R^4 and R^5 taken together can form a heterocyclic moiety.

5,360,532

GASOLINE UPGRADING PROCESS

David L. Fletcher, Turnersville; Stephen J. McGovern, Mantua, both of N.J., and John E. Sauer, Washington Crossing, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 745,311, Aug. 15, 1991, and Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Apr. 2, 1993, Ser. No. 42,189
The portion of the term of this patent subsequent to Jun. 11, 2011, has been disclaimed.
Int. Cl.[5] C10G 45/00
U.S. Cl. 208—89 36 Claims

1. A process of upgrading a sulfur-containing cracked feed in the gasoline boiling range which comprises:

fractionating the feed to form a first fraction and a second fraction which boils above the first fraction,

desulfurizing the first fraction by a non-hydrogenative mercaptan extraction process to form a first desulfurized product in the gasoline boiling range,

hydrodesulfurizing the second fraction in the presence of a hydrodesulfurization catalyst under conditions of elevated temperature, elevated pressure and in an atmosphere comprising hydrogen, to produce a desulfurized first intermediate product;

contacting the desulfurized first intermediate product with a catalyst of acidic functionality to convert it to a second intermediate product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the desulfurized first intermediate product and containing combined organic sulfur,

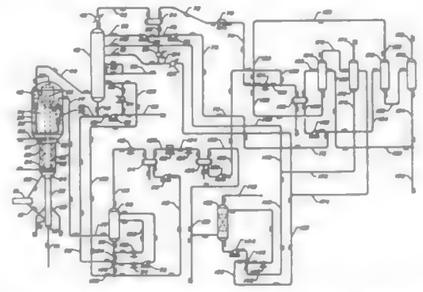
desulfurizing at least a part of the second intermediate product by a non-hydrogenative mercaptan extraction process to form a second desulfurized product in the gasoline boiling range.

5,360,533

DIRECT DRY GAS RECOVERY FROM FCC REACTOR

Constante P. Tagamolila, Arlington Heights; Edward C. Haun, Glendale Heights; David A. Lomas, Barrington, and Joseph E. Zimmermann, Arlington Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Jun. 8, 1993, Ser. No. 73,396
Int. Cl.[5] C10G 51/00, 53/08, 55/06
U.S. Cl. 208—101 21 Claims



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock and the recovery of a riser effluent stream and a reactor effluent stream, said process comprising:

a) passing an FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock through said riser to convert said feedstock;

b) discharging a mixture comprising catalyst particles and gaseous hydrocarbons from a discharge end of said riser directly into a separation zone, separating gaseous hydrocarbons from catalyst containing adsorbed hydrocarbons and recovering a riser effluent stream from said separation zone;

c) passing said catalyst containing adsorbed hydrocarbons from said separation zone into a reaction vessel and withdrawing a reactor effluent stream from said reactor vessel;

d) separating said riser effluent stream in a primary fractionation zone and recovering fractions comprising a heavy hydrocarbon stream, a light cycle oil stream and a gasoline stream;

e) passing said reactor effluent stream to a reactor quench zone and contacting said reactor effluent stream with at least a portion of at least one of said fractions in said quench zone to absorb C_3 and higher hydrocarbons from said reactor effluent stream and produce a quenched overhead stream and a primary recycle stream;

f) returning at least a portion of said primary recycle stream to said primary fractionation zone;

g) passing at least a portion of said quenched overhead stream to a reactor absorber and contacting said at least a portion of said quenched overhead stream with at least a portion of said light cycle oil stream in said reactor absorber to absorb C_3 and higher hydrocarbons from said quenched overhead stream and produce a reactor gas stream comprising C_2 hydrocarbons and lower boiling gases and a C_3 rich light cycle oil stream; and,

h) returning said C_3 rich light cycle oil stream to said primary fractionation zone.

5,360,534

ISOMERIZATION OF SPLIT-FEED BENZENE-CONTAINING PARAFFINIC FEEDSTOCKS

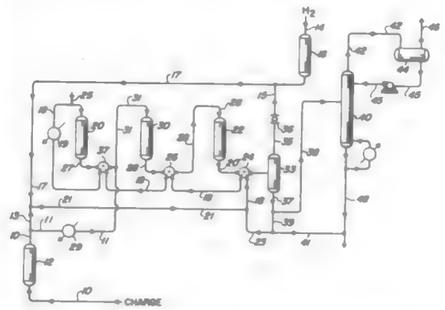
Lynn H. Rice, Palatine; James G. Hagen, Rolling Meadows, and Brian H. Johnson, Long Grove, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed May 24, 1993, Ser. No. 65,209
Int. Cl.[5] C10G 35/085; C07C 5/22
U.S. Cl. 208—139 17 Claims

1. A process for the isomerization of a C_4–C_6 paraffinic feedstock that contains at least 1 wt. % benzene, said process comprising:

a) separating said feedstock into at least two portions comprising C_6 hydrocarbons to provide a first and a second feedstream;

b) contacting said first feedstream, a recycle stream comprising C_6 hydrocarbons and a hydrogen containing gas stream with an isomerization catalyst at isomerization conditions in a first isomerization reactor and recovering a first isomerization zone effluent;



c) contacting said second feedstream and at least a portion of said first isomerization zone effluent comprising C_6 hydrocarbons with an isomerization catalyst at isomerization conditions in a second isomerization reactor and recovering a second isomerization zone effluent; and,

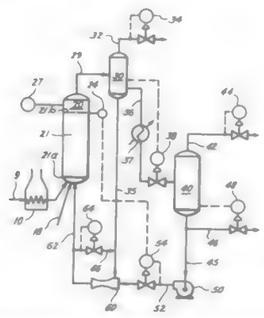
d) recovering at least a portion of said second isomerization zone effluent stream as said recycle stream comprising C_6 hydrocarbons.

5,360,535

EBULLATED BED PROCESS WITH RECYCLE EDUCTOR

Edward K. Liu; Doyun Kim, and Ting Y. Chan, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1993, Ser. No. 115,065
Int. Cl.[5] C10G 49/16, 49/22
U.S. Cl. 208—157 5 Claims



1. An ebullated bed hydroprocessing process comprising:

passing a liquid hydrocarbon feedstock upwardly from a lower end to an upper end of an expanded catalyst bed at reaction temperature and reaction pressure to produce a reactor effluent;

flash separating the reactor effluent at a first separation pressure 0 to 50 psi below the reaction pressure to produce a first separation vapor and a first separation liquid;

dividing the first separation liquid into a major portion and a minor portion;

flash separating the minor portion of first separation liquid at a second separation pressure 250 to 1230 psi below the first separation pressure to produce a second separation vapor and a second separation liquid;

applying a motive pressure 10 to 100 psi above the reaction pressure to the second separation liquid and educting the major portion of first separation liquid therewith to form an ebullation liquid;

passing the ebullation liquid to the lower end of the expanded catalyst bed in an amount to maintain an expanded catalyst bed volume of 110 vol % to 200 vol % of a settled catalyst bed volume.

5,360,536

REMOVAL OF SULFUR COMPOUNDS FROM LIQUID ORGANIC FEEDSTREAMS

Laszlo T. Nemeth, Palatine; Santi Kulprathipanja, Inverness; Blaise J. Arena, Chicago, and Jennifer S. Holmgren, Bloomingdale, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 9, 1993, Ser. No. 103,388
Int. Cl.[5] C10G 29/16
U.S. Cl. 208—248 10 Claims

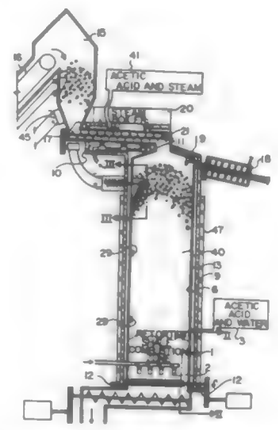
1. A process for removing sulfur containing compounds from a liquid organic feedstream comprising contacting the feedstream with an adsorbent at a temperature of about −20° C. to about 200° C. for a time sufficient to adsorb said sulfur containing compounds onto said adsorbent, the adsorbent characterized in that it is a solid solution of metal oxides having the formula $M_a(II)M_b(III)O_{(a+b)}(OH)_b$ where M(II) is at least one metal having a +2 oxidation state and is selected from the group consisting of magnesium, nickel, zinc, copper, iron, cobalt, calcium and mixtures thereof and M(III) is at least one metal having a +3 oxidation state and is selected from the group consisting of aluminum, chromium, gallium, scandium, iron, lanthanum, cerium, yttrium, boron and mixtures thereof and the ratio of a:b is greater than 1 to about 15.

5,360,537

APPARATUS AND METHOD FOR RETORTING OIL SHALE AND LIKE MATERIALS

Louis Strumskis, New Port Richey, Fla., assignor to Georgia Oil & Gas Co., Inc., Richey, Fla.

Filed Feb. 3, 1993, Ser. No. 14,103
Int. Cl.[5] C10G 1/00; C10B 57/04, 51/00
U.S. Cl. 208—400 13 Claims



1. A process for the continuous processing of a solid particulate, oil-bearing or oil-yielding raw material to form a non-volatile residue and a distillate comprising a hydrocarbonaceous oil, the process comprising feeding the raw material into

the upper end of a vertical retort chamber and successively passing the material through:

a retort zone wherein the material is heated by steam, acetic acid and combustion gases passing upwardly from a combustion zone to cause breakdown of kerogen and volatilization of oil products,

a control zone wherein water and acetic acid are injected to cause a chemical reaction with organic materials contained in the solid materials and to limit the combustion to a combustion zone,

a combustion zone wherein retorted solids are combusted with forced air, and

a spent material removal zone wherein spent materials are removed from the bottom of the retort chamber;

and wherein said process further comprises drawing off volatilized gases.

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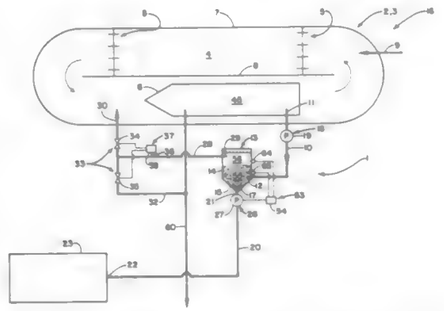
MIXED LIQUOR WASTING SYSTEM

Harold J. Beard, 1111 Colonial Dr., Baton Rouge, La. 70806

Filed Nov. 20, 1991, Ser. No. 796,076

Int. Cl.[5] C02F *3/18*

U.S. Cl. 210—96.1 **15 Claims**



1. In an extended aeration wastewater treatment system including a retention basin, a wastewater inlet fluidly connected to said retention basin and a retention basin exit line fluidly connected to said retention basin, said system having wastewater flowing into said retention basin through said wastewater inlet so as to form mixed liquor within said retention basin, said wastewater being treated in said basin and then flowing out of said basin through said retention basin exit line, a mixed liquor wasting system, comprising:

a. a thickener tank, having a sidewall and a bottom;

b. a waste line having a first end and a second end, said first end fluidly connected to said retention basin, and said second end fluidly connected to said thickener tank;

c. a first flow control means for continuously removing a portion of said mixed liquor from said basin at a desired constant flow rate through said waste line, fluidly connected to said retention basin;

d. a sludge removal line having a first end and a second end, said first end fluidly connected to said bottom of said thickener tank, and said second end fluidly connectable to a sludge disposal system;

e. a second flow control means for removing a concentrated portion of said mixed liquor from said thickener tank, fluidly connected to said thickener tank; and

f. a return line having a first end and a second end, said first end fluidly connected to said thickener tank above said bottom, and said second end fluidly connected to said retention basin.

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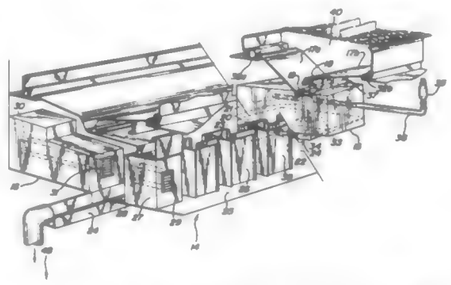
SCRUBBING WATER HANDLING SYSTEM FOR PAINT SPRAY BOOTHS

Leif E. B. Josefsson, Sterling Heights, Mich., assignor to ABB Flakt Aktiebolag, Stockholm, Sweden

Filed Jul. 27, 1992, Ser. No. 919,919

Int. Cl.[5] B01D *47/10, 47/12, 45/02;* **B05B** *15/12*

U.S. Cl. 210—167 **10 Claims**



1. In a paint spray booth having a bottom resting upon a support surface for the booth, a scrubber and a scrubber water handling system located in a bottom zone of the booth for processing paint spray booth scrubber water and paint sludge, the scrubber water handling system including means for removing the paint sludge from the scrubber water, the improvement comprising:

at least one recirculation water receiving tank coupled for receipt of the scrubber water and paint sludge and having a first outlet coupled to the means for removing, said at least one recirculation water receiving tank further comprising a second outlet, said second outlet coupled to means for recirculating water from said tank to said scrubber and means for dewatering air which has passed through the scrubber, the recirculation tank and the means for dewatering located entirely above the support surface on which the paint spray booth rests such that a water level in the recirculation tank is greater than or equal to an elevation in the booth bottom zone below which air is being dewatered.

5,360,540

CHROMATOGRAPHY SYSTEM

Marc D. Andelman, 6 Nadine Rd., Framingham, Mass. 01701

Division of Ser. No. 819,828, Jan. 13, 1992, Pat. No. 5,200,068, which is a continuation-in-part of Ser. No. 792,902, Nov. 15, 1991, Pat. No. 5,192,432, which is a continuation of Ser. No. 512,970, Apr. 23, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 27,699

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **14 Claims**

1. A chromatographic system for the purification of a liquid-containing material, which system comprises:

a) a central, longitudinal, electrically non-conductive support means to provide support for a plurality of washer elements thereon and to permit the longitudinal flow of a liquid toward the one or other end of the support means;

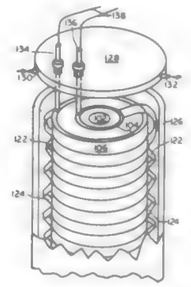
b) a plurality of stacked washer elements arranged as a unit about the support means to form a flow-through capacitor, the washer elements in each unit arranged in a close, contacting, sequential arrangement to include in each washer unit:

i) a non-electrically conductive spacer washer element;

ii) a high surface area, porous, electrically conductive washer element to act as a stationary phase of a chromatographic column, said washer being sized, dimensioned, and positioned to allow for placement into a chromatographic column; and

iii) an electrically conductive backing washer element;

c) means to connect electrically the alternating backing washer elements along the support means to form anode and cathode leads of the connected backing washer elements;



d) cartridge means having an inlet for the introduction of a liquid-containing material to be purified and an outlet means to discharge purified liquid, the flow-through capacitor sealed within the cartridge means and positioned to permit the flow of the liquid-containing material therethrough and to pass purified liquid to the outlet; and

e) means to connect electrically the anode and cathode washer elements to an electrical power source.

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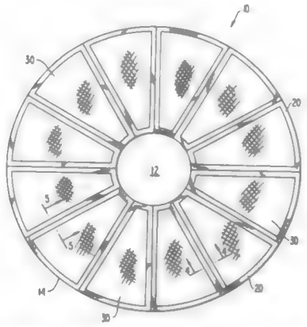
MODULAR DEVICE FOR THE EASE OF USE AND INSTALLATION OF FILTRATION TEXTILES

Michael Gerakios, Wamberal, Australia, assignor to Albany International Corp., Albany, N.Y.

Filed Jun. 24, 1993, Ser. No. 81,990

Int. Cl.[5] B01D *29/54*

U.S. Cl. 210—232 **6 Claims**



1. A modular table filter, said modular table filter having the form of an annulus assembled from a plurality of annular-sector-shaped sections, each of said sections comprising a filtration textile and means for holding said filtration textile tautly thereacross, wherein each of said annular-sector-shaped sections comprises an outer subsection and an inner subsection fitting therewithin, each outer subsection having a first radial member and a second radial member, said first radial member and said second radial member having an inner surface within said annular-sector-shaped section and an outer surface without said annular-sector-shaped section, said inner surface having a ledge, so that said inner subsection may be supported within said outer subsection between said first radial member and said second radial member thereof, said ledge being provided with fastening means to secure said inner subsection within said outer subsection, said inner subsection also having a first radial member and a second radial member, said first radial member and said second radial member having outer surfaces with fastening means engageable with said inner surface of said first and second radial members of said outer subsection, and said outer surfaces of said first radial member and said second radial member of said outer subsection having fastening means for connection with second and first radial members of outer subsections of adjacent annular-sector-shaped sections, respectively, to complete said annulus, and wherein said means for holding said filtration textile tautly across said annular-sector-shaped sections is the fastening of said inner subsection within said outer subsection over said filtration textile.

5,360,542

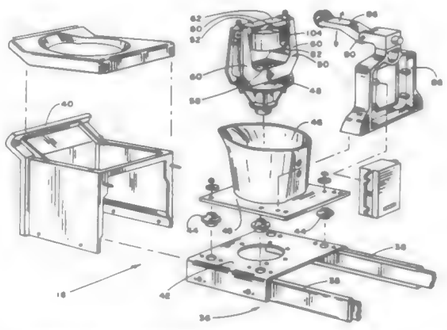
CENTRIFUGE WITH SEPARABLE BOWL AND SPOOL ELEMENTS PROVIDING ACCESS TO THE SEPARATION CHAMBER

Warren P. Williamson, IV, Cincinnati, Ohio, and Richard I. Brown, Northbrook, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 814,403, Dec. 23, 1991, abandoned. This application Nov. 2, 1993, Ser. No. 147,015

Int. Cl.[5] B04B *7/08*

U.S. Cl. 210—232 **18 Claims**



1. A processing chamber for a centrifuge comprising

a bowl element having an interior wall enclosing an interior area,

a spool element having an exterior surface, and

means connected to the spool element and the bowl element for guiding relative movement between the spool element and the bowl element between a mutually cooperating position, in which the exterior surface of the spool element is located within the interior area of the bowl element to define a processing chamber between the interior bowl wall and the exterior spool surface, and a mutually separated position, in which the exterior surface of the spool element is located at least partially out of the interior area of the bowl element for access.

5,360,543

POLYURETHANE COMPOSITIONS

Douglas A. Usifer, Belle Mead, and Carlos Ramirez, Piscataway, both of N.J., assignors to Caschem, Inc., Bayonne, N.J.

Filed Jun. 5, 1992, Ser. No. 893,995

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.8 **21 Claims**

11. A hollow fiber separatory device capable of use in biomedical applications comprising a hollow fiber bundle having a plurality of hollow fibers whose end portions are potted in a tube-sheet and whose open fiber ends terminate in a tube-sheet face, the resulting bundle being sealed within a casing to form

a separatory cell having two or more fluid ports which enable passage of one fluid through the fibers and another fluid around the fibers without mixing of said fluids, said tube-sheet comprising the reaction product of a first component comprising a non-amine hydroxy functional organic material having an equivalent weight of between 60 and 275 and an amine of Formula (I):

[1]



wherein:

R_1=C_1–C_{10} alkyl

R_4=C_8–C_{25} alkyl,

R_2, R_3, and R_5 are independently are C_1–C_{10} alkanol, C_2–C_{10} alkenol,

n=1 or 2 and a second component comprising an organic isocyanate that has at least two (—NCO) groups per molecule of isocyanate.

5,360,544

DEPROTEINIZATION FILLER AND CARTRIDGE CONTAINING SAME

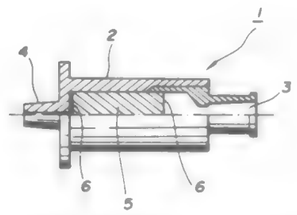
Yasuji Nakaso, Ube; Tsutomu Kawasaki, Tokyo; Wataru Kobayashi, Tsuruoka; Keiko Gondo, and Hiroshi Iwase, both of Kawasaki, all of Japan, assignors to Central Glass Company, Limited, Ube; Kokeu Co., Ltd. and Moritex Corporation, both of Tokyo, all of Japan, a part interest

Filed Nov. 13, 1992, Ser. No. 974,733

Claims priority, application Japan, Nov. 15, 1991, 3-300867

Int. Cl.[5] B01D *24/02, 39/04*

U.S. Cl. 210—483 **7 Claims**



5. A throwaway cartridge containing therein a deproteinization filler, said filler comprising an aggregate of hydroxyapatite fibers having a three dimensional network structure, the mean radius of pores defined by said aggregate being approximately 0.02 μm to approximately 0.08 μm, the specific surface area of said aggregate being approximately 25 m^2/g to approximately 65 m^2/g and the mean diameter of particles defined by said aggregate being approximately 1 μm to approximately 30 μm.

5,360,545

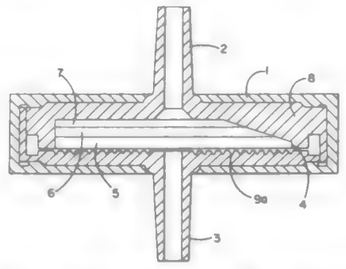
FILTER FOR OBTAINING PLATELETS

David B. Pall, Roslyn Estates, and Thomas C. Gsell, Glen Cove, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Division of Ser. No. 846,587, Mar. 5, 1992, Pat. No. 5,258,126, which is a continuation-in-part of Ser. No. 609,574, Nov. 6, 1990, Pat. No. 5,152,905, which is a continuation-in-part of Ser. No. 405,977, Sep. 12, 1989, abandoned, and a continuation-in-part of Ser. No. 609,654, Nov. 6, 1990, Pat. No. 5,100,564. This application Aug. 3, 1993, Ser. No. 100,919

Int. Cl.[5] B01D *39/00, 39/16*

U.S. Cl. 210—505 **33 Claims**



1. A device for harvesting platelets from a platelet-containing solution comprising a porous medium which blocks red blood cells, but which permits platelets to pass therethrough, said porous medium having zones of different density.

5,360,546

METHOD FOR TREATING ORGANIC SLUDGE

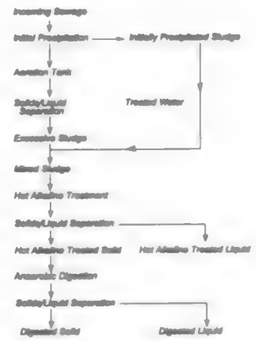
Yoshiho Tomita, Kasugai; Noriaki Inagaki, Handa; Atsushi Miyata, Handa, and Shigehiro Suzuki, Handa, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 31, 1993, Ser. No. 40,609

Claims priority, application Japan, Apr. 1, 1992, 4-079905; Jun. 18, 1992, 4-159258; Aug. 14, 1992, 4-216922; Sep. 22, 1992, 4-252879; Feb. 8, 1993, 5-020160

Int. Cl.[5] C02F *11/04*

U.S. Cl. 210—603 **17 Claims**



1. A method for treating sewage containing organic sludge, comprising:

subjecting the sewage to a solid/liquid precipitation treatment in an initial precipitation pond to obtain an initially precipitated sludge and an initially separated liquid;

aerating the initially separated liquid in an aeration apparatus;

subjecting the aerated initially separated liquid to a solid/liquid separation treatment in a solid/liquid separation apparatus to obtain an excessive sludge;

subjecting the excessive sludge to an alkaline treatment to cause the excessive sludge to become alkaline with a pH of 8.0–9.8 while maintaining the temperature of the excessive sludge at ambient —100° C. to solubilize organic matter in the sludge; and

anaerobically digesting the alkaline treated excessive sludge at a temperature of 20°–60° C. at a pH of 7.8–9.2 to obtain a digested sludge.

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SORBING AGENTS

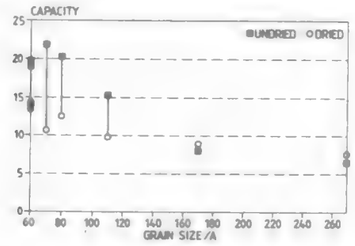
Keith R. Cockett, Cheshire; Martin Concannon, West Kirby; Robert M. Hunter, Cheshire, all of United Kingdom; Anthony L. Lovell, Clwyd, Wales; Anthony Nock; Maurice Webb, both of Cheshire, United Kingdom, and Roderick T. Whalley, Merseyside, United Kingdom, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Mar. 29, 1993, Ser. No. 38,939

Claims priority, application United Kingdom, Mar. 28, 1992, 9206841

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—690 **32 Claims**



1. A method of treating a liquid medium to remove from it matter present therein, which method comprises adding to the liquid medium at least one of an at least partially undried sorbing agent (a), a freshly prepared sorbing agent (b) and an in-situ sorbing agent (c),

which sorbing agent (a) comprises a hydrotalcite-like material resulting from the preparation thereof in a liquid reaction medium, which preparation allows retention, in the hydrotalcite-like material, of at least 10% of free liquid, based on the weight of the hydrotalcite-like material, including the free liquid, and is selected from

$(a)_1$ a sorbing agent (a) which is present in an amount, on a dry weight basis, of the sorbing agent, by volume of the liquid medium to be treated, of ≦0.035% w/v, and

$(a)_2$ a sorbing agent (a) prepared in a manner such that the hydrotalcite-like material has a grain size of ≦130 Å, as measured in the <001> direction by x-ray diffraction on a subsequently dried material;

which sorbing agent (b) comprises a hydrotalcite-like material resulting from the preparation thereof in a liquid reaction medium and present in the reaction medium without substantial removal of the reaction medium; and

which sorbing agent (c) comprises a reaction mixture which forms, in-situ, in the contaminated liquid medium, a hydrotalcite-like material.

5,360,548

PROCESS FOR ABSORBING ORGANIC POLLUTING PRODUCTS

Claude Stein, Gouvieux, and Daniel Duouenne, Clermont, both of France, assignors to Elf Atochem, S.A., Paris, France

Continuation of Ser. No. 582,908, Dec. 14, 1990, abandoned. This application May 3, 1993, Ser. No. 56,825

Claims priority, application France, Feb. 14, 1989, 89 01891

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—693 **12 Claims**

1. A process for removing organic polluting products spread over a liquid or solid surface comprising scattering over the surface a polymer selected from the group consisting of polybicyclo[2.2.1]-2-heptene and poly-5-methylbicyclo[2.2.1.]-2-heptene, wherein said polymer is agglomerated before scattering by at least one agent imparting plasticization thereto.

5,360,549

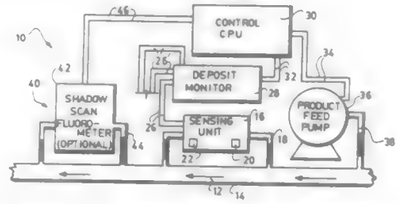
FEED BACK CONTROL DEPOSIT INHIBITOR DOSAGE OPTIMIZATION SYSTEM

Richard J. Mouche, and Thomas F. Droege, both of Batavia, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 27, 1993, Ser. No. 53,105

Int. Cl.[5] C02F *5/08*

U.S. Cl. 210—696 **24 Claims**



1. A method of correcting for scale former which is deposited on the inside walls of a water container through which water is flowing in a circulating water system at a predetermined temperature, the method comprising:

a. providing at least one sensing unit for sensing heat transfer rate or heat transfer resistance through a contact surface which is in contact with the water in said circulating water system;

b. providing a deposit monitor station for monitoring heat transfer rate or heat transfer resistance and further providing an electrical connection between said at least one sensing unit and said deposit monitor station;

c. providing at one area adjacent to said contact surface a first temperature modulator to maintain that area at a temperature which stimulates scale deposit of the scale former on said surface;

d. periodically monitoring said sensing unit by measuring at predetermined time intervals the heat transfer rate or heat transfer resistance being sensed by said sensing unit, generating an electrical signal corresponding to the heat transfer rate or heat transfer resistance being sensed and transmitting said electrical signal to said deposit monitor station, said monitor station including a set of predetermined parameters indicative of scale formation in said circulating water system;

e. recording the signal received by said deposit monitor station to produce an electrical signal record and analyzing said electrical signal record to determine whether said analyzed electrical signal record matches said predetermined parameters indicative of scale formation in said circulating water system;

f. upon matching of said analyzed electrical signal record to the predetermined parameters, said electrical signal record corresponding to the heat transfer rate, and indi-

rectly to the rate of scale formation, calculating a dosage of scale inhibitor determined sufficient to inhibit further formation of scale deposit upon said contact surface; and

g. imparting into the circulating water system the calculated dosage of scale inhibitor deemed sufficient to inhibit further formation of scale deposit on said surface as well as on the inside walls of said water container.

5,360,550

INHIBITION OF SCALE

Brian G. Clubley, Wilmslow, and Jan Rideout, Bolton, both of England, assignors to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 769,990, Sep. 30, 1991, abandoned. This application Nov. 18, 1993, Ser. No. 154,689

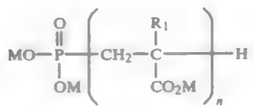
Claims priority, application United Kingdom, Oct. 5, 1990, 9021672.2

Int. Cl.[5] C02F *5/14*

U.S. Cl. 210—699 **8 Claims**

1. A method of inhibiting the precipitation of barium sulphate scale from an aqueous system, comprising adding to the aqueous system a product having the formula I:

I



in which M is hydrogen or an alkali metal ion, an ammonium ion or a quanternised amine radical; R_1 is hydrogen or methyl; and n is an integer having an average value ranging from 4 to 20.

5,360,551

PROCESS FOR COLOR REDUCTION OF DYE WASTEWATER

Oscar W. Weber, Reading, Pa., assignor to Crompton & Knowles Corporation, Stamford, Conn.

Filed Apr. 1, 1993, Ser. No. 40,470

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—719 **40 Claims**

1. A process for reducing a color value of a wastewater containing a soluble organic dye, said process comprises:

adjusting said wastewater to an acidic pH; and

admixing said wastewater with a sufficient quantity of a cationic flocculant from a quaternary ammonium condensation polymer to form a floc with said soluble organic dye,

admixing a reducing agent into said flocculated wastewater in a amount sufficient to attain an oxidation-reduction potential end point of at least −200, said admixing of said reducing agent being performed in one of two conditions, said two condition being as follows:

a first condition wherein said reducing agent is a member selected from the group consisting of an alkali metal hydrosulfite, an alkaline earth hydrosulfite, and mixtures of these; and

a second condition wherein said reducing agent is a combination of:

a member selected from the group consisting of an alkali metal bisulfite, an alkaline earth bisulfite, and mixtures of these; and

an alkali metal borohydride, said alkali metal borohydride being a member selected from the group consisting of lithium borohydride, sodium borohydride, potassium borohydride, and mixtures of these; and

separating said flocculated soluble organic dye from said wastewater.

5,360,552

REMOVAL OF CYANIDE, SULFIDES AND THIOSULFATE FROM AMMONIA-CONTAINING WASTEWATER BY CATALYTIC OXIDATION

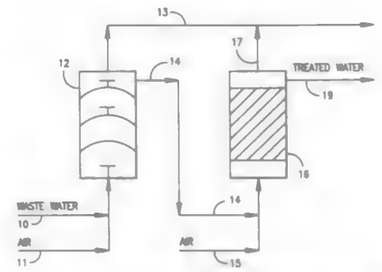
Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 61,127, May 12, 1993. This application Sep. 9, 1993, Ser. No. 118,339

The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

Int. Cl.[5] C02F *1/72*

U.S. Cl. 210—762 **16 Claims**



1. A method for reducing the concentration of offensive substances and the chemical oxygen demand of ammonia-containing waste water comprising the steps of:

(a) feeding said ammonia-containing waste water comprising at least one offensive substance, along with a source of oxygen into a reaction zone containing a catalyst comprising a zeolite substrate containing Cu, said catalyst having been prepared by partially ion exchanging said Cu onto said zeolite under exchange conditions adjusted to limit the Cu exchange to between about 1 to about 90% of the ion exchange capacity of the zeolite, thereby lowering the amount of leaching of Cu into the ammonia-containing waste water relative to the amount of Cu leaching which would occur using a zeolite catalyst fully ion-exchanged with Cu;

(b) contacting said ammonia-containing waste water and said source of oxygen with said catalyst which catalytically oxidizes said offensive substance; and

(c) discharging the waste water from the reaction zone whereby said waste water has a substantially lower concentration of said offensive substance.

5,360,553

PROCESS FOR REFORMING MATERIALS INTO USEFUL PRODUCTS AND APPARATUS

Paul T. Baskis, 1710 W. Fletcher, Chicago, Ill. 60657

Continuation-in-part of Ser. No. 946,939, Sep. 17, 1992, Pat. No. 5,269,947. This application Aug. 20, 1993, Ser. No. 110,290

Int. Cl.[5] B01D *35/18*

U.S. Cl. 210—774 **29 Claims**

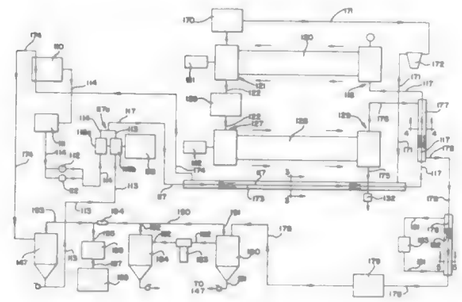
28. A process for converting a process material into other useful products, comprising the steps of:

a) mixing the process material with a process liquid to create a flowable slurry;

b) transporting said slurry to a first reactor;

c) heating said slurry to a first preestablished temperature and applying a first pressure to said slurry while said slurry is in said reactor;

d) reducing said pressure applied to said slurry from said first pressure to a second pressure, heating said slurry from said first preestablished temperature to a second preestablished temperature and reforming said slurry into a first by-product and a second by-product in a second reactor, said second pressure being less than said first pressure;



e) collecting said first by-product; and,

f) collecting said second by-product.

5,360,554

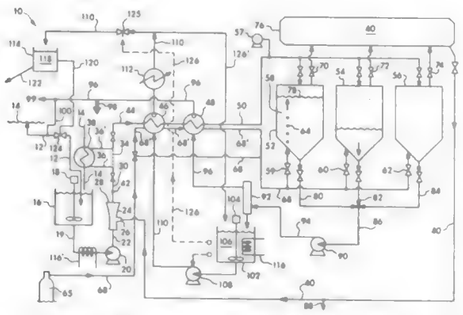
PHASE SEPARATION BY GAS EVOLUTION

Jack C. Sloan; Walter Lurie, both of Denver, Colo., and Adrian C. Ferramosca, Weybridge, United Kingdom, assignors to Parhelion, Inc., Denver, Colo.

Filed Feb. 7, 1994, Ser. No. 192,725

Int. Cl.[5] C02F *1/22*; B01D *9/04*

U.S. Cl. 210—768 **27 Claims**



1. A process for separating a solute from a solvent which together constitute a solute/solvent solution starting material having an initial solute concentration, said process comprising:

(1) dissolving a gas-forming material into the solute/solvent solution to produce a dissolved gas/solute/solvent solution;

(2) lowering the temperature of the dissolved gas/solute/solvent solution to a jumping off temperature to produce a liquid having a solute concentration and temperature that are such that a release of a nominal high pressure on the solution to a nominal low pressure results in evaporation of a major portion of the gas-forming material as well as evaporation of a minor portion of the solvent as vapors that take their heats of vaporization in amounts such that the temperature of an entire mass of the solution is lowered to a temperature that approximates the triple point temperature of said solution;

(3) placing the solution in a pressure vessel;

(4) bringing the solution in the pressure vessel to the nominal high pressure;

(5) rapidly releasing the nominal high pressure and thereby allowing a major portion of the gas-forming material and a minor portion of the solvent to form vapors that undergo a Joule-Thompson free expansion into a closed second vessel having a nominal low pressure and thereby obtaining three phases of resultant materials that each have a temperature approximating the triple point temperature of the solution and wherein said three phases of resultant materials comprise a gas-phase product containing the gas-forming material originally dissolved in the solute/solvent solution starting material and vapors of the solvent, a portion of which flow into the second vessel, a liquid-phase product having a solute concentration greater than the initial concentration of the solute/solvent solution starting material and a solid-phase form of the solvent;

(6) collecting at least one of the three phases of resultant materials as a product of the process;

(7) collecting at least a portion of the gas-phase product for reuse in the process; and

(8) recycling at least one of the three phases of resultant materials back into an earlier stage of the process via a heat exchanger that heat exchanges a relatively cold resultant material with a relatively warm solute/solvent solution.

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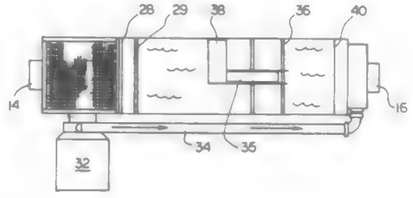
SOLIDS HANDLING IN AN OIL/GREASE SEPARATOR

William C. Batten, Asheboro, N.C., assignor to Clearline Systems, Inc., Asheboro

Filed Sep. 24, 1993, Ser. No. 126,374

Int. Cl.[5] B01D *21/02*; C02F *1/40*

U.S. Cl. 210—803 **22 Claims**



11. An oil/grease separation method comprising

introducing a liquid flow containing water, oil/grease and gross solids into a chamber having an inlet section, a downstream section and an outlet in an outlet section,

permitting the gross solids entering the inlet section to settle,

periodically removing the solids from the inlet section with some water by a grinder/pump,

permitting oil/grease and water to pass from the inlet section to a downstream section,

removing oil/grease from the water in the downstream section, and

permitting the residual water to exit the chamber through the outlet.

5,360,556

METHOD OF FEEDING WASTEWATER EFFLUENT TO FILTER BED THROUGH PARALLEL CONDUITS

Harold L. Ball; Terry R. Bounds; Eric S. Ball, and Jeffrey L. Ball, all of Roseburg, Oreg., assignors to Orenco Systems, Inc., Roseburg, Oreg.

Filed Aug. 7, 1992, Ser. No. 926,463

Int. Cl.[5] B01D *21/00*

U.S. Cl. 210—804 **12 Claims**

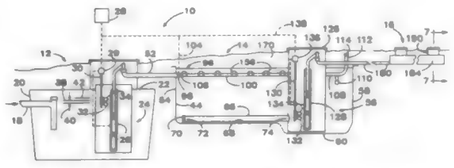
1. A method of treating wastewater effluent comprising:

(a) removing solids from said effluent by gravitational separation;

(b) thereafter feeding said effluent to a filter bed comprised of particulate media;

(c) during step (b), distributing said effluent over said filter bed by conducting said effluent in a parallel manner

through a plurality of elongate conduits from a first end of each conduit toward a second end of each conduit, and distributing said effluent from each of said conduits through a plurality of orifices spaced longitudinally along each conduit; and



(d) flowing said effluent through each of said conduits at a sufficient volumetric flow rate, relative to the cross-sectional area of each conduit, to cause a linear scouring velocity longitudinally of each conduit proximate said first end of each conduit of between about 2.5 and 7 feet per second.

5,360,557

HOLE-TRAP-COMPENSATED SCINTILLATOR FOR COMPUTED TOMOGRAPHY MACHINE

Veneta G. Tsoukala, Clifton Park, and Charles D. Greskovich, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 960,203, Oct. 13, 1992, which is a continuation of Ser. No. 546,824, Jun. 29, 1990, abandoned. This application Feb. 28, 1994, Ser. No. 203,078

Int. Cl.[5] G01T *1/202*

U.S. Cl. 250—361 R **7 Claims**

1. In a computed tomography machine of the type having a solid state scintillator, the improvement comprising:

said solid state scintillator being a crystalline structure solid solution comprising gadolinium gallium garnet having the formula $Gd_3Ga_5O_{12}$, chromium in a concentration in said garnet equivalent to chromium oxide being between 0.05 and 1.0 weight percent of the overall scintillator which is effective to render said scintillator luminescent in response to high energy stimulating radiation consisting of x-rays produced by said machine, and cerium in a concentration in said garnet of less than 0.2 weight percent of the overall scintillator, which is effective to reduce the afterglow level relative to the afterglow level of said scintillator in the absence of cerium said chromium being substituted in said formula for said Ga and said cerium being substituted in said formula for said Gd.

5,360,558

SLURRIED POLYMER FOAM SYSTEM AND METHOD FOR THE USE THEREOF

Marek Pakulski, The Woodlands, and Barry T. Hlidek, Shenandoah, Tex., assignors to The Western Company of North America, Houston, Tex.

Continuation of Ser. No. 660,298, Feb. 22, 1991, abandoned. This application Sep. 28, 1992, Ser. No. 951,946

Int. Cl.[5] E21B *43/26*

U.S. Cl. 252—8.551 **34 Claims**

1. A fracturing gel comprised of polymer, diesel oil and a foamer, said foamer comprised of (a) from about 5% to 20% by weight solvent, said solvent comprised of an alcohol having a molecular weight of 120 or less, a glycol, or mixtures thereof; (b) from about 10% to about 30% by weight betaine; and (c) from about 1% to about 20% by weight alpha-olefin sulfonate.

26. A foamer comprised of a mixture of an alkylether sulfate and lauramide diethanolamine or a mixture of a betaine and an alpha-olefin sulfonate for fracturing gels containing diesel oil and demulsifiers, said foamer and gels producing a 70% quality foam having a half-life of at least one hour at 1,000 psi and 250° F.

5,360,559

MODIFIED LIGNINSULFONATES AS DISPERSING AGENTS FOR BENZOLTRIAZOLE ULTRA-VIOLET ABSORBING AGENTS

Thomas W. Cooke, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 912,069, Jul. 8, 1992, abandoned, which is a continuation of Ser. No. 537,393, Jun. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 515,979, Apr. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 487,564, Mar. 2, 1990, abandoned. This application Dec. 16, 1993, Ser. No. 168,743

Int. Cl.[5] D06M *11/00, 13/00*

U.S. Cl. 252—8.7 **8 Claims**

1. An aqueous dispersion for the treatment of textiles comprising:

(a) from about 10 to 60 percent by weight of a benzotriazole U.V. absorbing agent, wherein said U.V. absorbing agent is a water-insoluble 2-aryl-4,5-benzo-1,2,3-triazole wherein the 2-aryl group is a phenyl radical having a free hydroxyl group in the 2-position relative to the linkage with the triazole ring, and

(b) from about 3 to 24 percent by weight of a formaldehyde condensate of ligninsulfonate, the ratio of (a) to (b) being from about 2:1 to 4:1.

5,360,560

UNIVERSAL LUBRICANT BASED ON A SYNTHETIC OIL SOLUTION

Karl Schmid, Mettmann; Frank Bongardt; Juergen Roeder, both of Duesseldorf, and Reinhold Wuest, Kaarst, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 836,326, Mar. 2, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 135,943

Claims priority, application Germany, Sep. 1, 1989, 3929071

Int. Cl.[5] C10M *169/04, 173/02, 107/34, 129/06*

U.S. Cl. 252—39 **16 Claims**

1. A water-soluble, foam-inhibiting universal lubricant composition, said lubricant composition consisting essentially of from 90 to 99.9% by weight of an ethoxylated dimeric fatty acid having a degree of ethoxylation of at least 10 and up to 30 moles of ethylene oxide, and from 0.1 to 10% by weight of a foam inhibitor consisting of from 90 to 99% by weight of a Guerbet alcohol and 1 to 10% by weight of a metal soap dispersed in said Guerbet alcohol.

5,360,561

COLOR TEMPERATURE INDICATOR FOR LUBRICATING GREASE

Robert S. Hall, Burlington, and Gilles A. Blouin, Calgary, both of Canada, assignors to Shell Oil Company, Houston, Tex.

Filed May 24, 1993, Ser. No. 66,749

Claims priority, application Canada, May 29, 1992, 2070021

Int. Cl.[5] C10M *141/08*

U.S. Cl. 252—42.7 **4 Claims**

1. A lubricating composition comprising a clay-thickened grease, from about 0.5% to about 7% by weight of an extreme pressure agent, an epoxy resin wherein said epoxy is present in about a 0.54 epoxy resin-to-clay weight ratio, a color temperature indicator incorporated into said composition, and from about 100 ppm to about 2000 ppm of a blue dye.

5,360,562

ASHLESS OR LOW-ASH SYNTHETIC BASE COMPOSITIONS AND ADDITIVES THEREFOR

Douglas R. Chrisope, and Rolfe J. Hartley, both of St. Louis, Mo., assignors to Ethyl Petroleum Additives, Inc., Richmond, Va.

Continuation of Ser. No. 817,047, Jan. 6, 1992, abandoned, which is a continuation of Ser. No. 597,493, Oct. 10, 1990, Pat. No. 5,089,156. This application Mar. 15, 1993, Ser. No. 32,821

The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] C10M *107/10, 137/00, 137.02, 137.04*

U.S. Cl. 252—46.6 **16 Claims**

1. An ashless or low-ash, shear stable automatic transmission fluid which comprises each of the following:

a) a base oil composed entirely of

(1) 70 to 99% of hydrogenated poly-α-olefin oligomer fluid having a viscosity in the range of about 2 to about 10 cSt at 100° C., said oligomer fluid being formed by oligomerization of 1-alkene hydrocarbon having 6 to 20 carbon atoms in the molecule, and hydrogenation of the resultant oligomer, and

(2) 30 to 1% of hydrogenated poly-α-olefin oligomer fluid having a viscosity in the range of about 40 to about 120 cSt at 100° C., said oligomer fluid being formed by oligomerization of 1-alkene hydrocarbon having 6 to 20 carbon atoms in the molecule, and hydrogenation of the resultant oligomer;

b) 1 to 15% of antiwear/extreme pressure agent comprising aliphatic hydrocarbyl-substituted succinimide having at least one primary or secondary amino group and/or at least one hydroxyl group, said succinimide being heated (1) with at least one inorganic phosphorus acid or anhydride or a partial or total sulfur analog thereof to form a phosphorus-containing succinimide ashless dispersant, or (2) either concurrently or in any sequence with at least one inorganic phosphorus acid or anhydride or a partial or total sulfur analog thereof and at least one boronating agent to form a phosphorus- and boron-containing succinimide ashless dispersant;

c) up to 30% of seal performance improver;

d) up to 1% of antioxidant;

e) up to 0.5% of corrosion inhibitor;

f) up to 0.01% of foam inhibitor;

g) up to 0.5% of copper corrosion inhibitor;

h) up to 1% of friction modifier; and

i) up to 1.5% of lubricity agent;

the forgoing percentages being by weight based on the total weight of the automatic transmission fluid, said automatic transmission fluid being further characterized by being devoid of high molecular weight viscosity index improver or by containing no more that 10 percent by weight of high molecular weight viscosity index improver; by being devoid of metal-containing components or by containing on a weight basis no more than about 100 parts per million of metal as one or more metal-containing components; and by having (i) a kinematic viscosity of at least 5.5 cSt at 100° C. and a Brookfield viscosity of less than 20,000 cP at −40° C., or (ii) a kinematic viscosity of at least 6.8 cSt at 100° C. and a Brookfield viscosity of less than 50,000 cP at −40° C.

5,360,563

TRISAMIDODITHIONODIPHOSPATES

Horst Zinke, Reichelsheim/Odw., Germany, and Rolf Schumacher, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

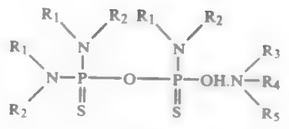
Filed May 27, 1993, Ser. No. 68,369

Claims priority, application Switzerland, Jun. 2, 1992, 1774/92-6

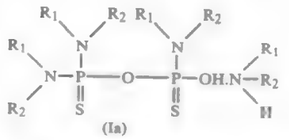
Int. Cl.[5] C10M *137/16*

U.S. Cl. 252—46.7 **12 Claims**

1. A compound of formula I or Ia



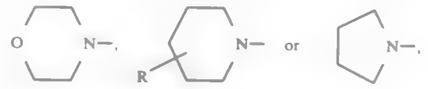
(I)



(Ia)

(Ia)

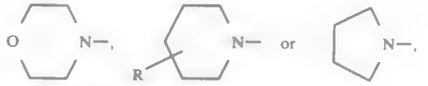
wherein R_1 and R_2 are each independently of the other C_1–C_{13}alkyl which may be interrupted by oxygen, C_5–C_6cycloalkyl or, together with the linking N-atom, are a group of formula



R is hydrogen or methyl,

R_3 is hydrogen or C_1–C_{13}alkyl, and

R_4 and R_5 are each independently of the other hydrogen, C_1–C_{18}alkyl which may be interrupted by oxygen, C_5–C_6cycloalkyl or, together with the linking N-atom, are a group of formula



withe proviso that R_3, R_4 and R_5 are not simultaneously hydrogen and HNR_1R_2 are not identical with $NR_3R_4R_5$.

5,360,564

DISPERSANT VISCOSITY INDEX IMPROVERS

Robert J. Sutherland, and Robert B. Rhodes, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 30, 1993, Ser. No. 100,656

Int. Cl.[5] C10M *149/02*

U.S. Cl. 252—51.5 A **10 Claims**

1. An engine oil formulation having and exhibiting improved dispersancy and rheological properties comprising: a synthetic or mineral based oil or mixture thereof; a modified hydrogenated star polymer of a conjugated diolefin and a modified hydrogenated copolymer of conjugated diolefins and monoalkenyl arenes; wherein said polymer has been modified by grafting with an α,β-ethylenically unsaturated compound containing carboxyl or carboxl derivative functionality and subsequently with a polyamine containing at least one tertiary amine; and a detergent exhibitor package wherein the ashless dispersant content has been reduced by about 10–30 wt% from the normal treatment rate.

5,360,565

HYDRAULIC OIL

Anthony G. Junga, Fraser, Mich., assignor to Petro-Lube, Inc., Whitemore Lake, Mich.

Filed Jan. 22, 1993, Ser. No. 7,435

Int. Cl.[5] C10M *145/22*

U.S. Cl. 252—56 R **18 Claims**

1. An essentially zinc-free and phosphorous-free hydraulic oil composition comprising:

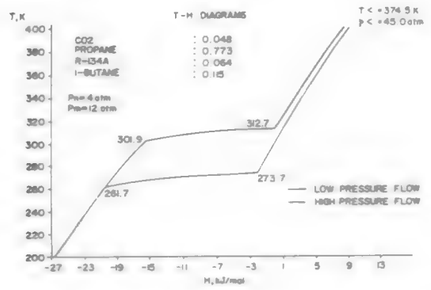
(1) about 70 to 99.9 weight percent petroleum hydrocarbon oil;
(2) about 0.001 to 5.0 weight percent polymeric ester of dibasic and monobasic acids, said polymeric ester having from about 150–250 carbon atoms;
(3) about 0.001 to 5.0 weight percent butylated phenol;
(4) about 0.001 to 5.0 weight percent phenol;
(5) about 0.001 to 5.0 weight percent sulfurized fatty oil;
(6) about 0.001 to 5.0 weight percent fatty acid; and
(7) about 0.001 to 5.0 weight percent sulfur scavenger.

5,360,566

HYDROCARBON REFRIGERANT FOR CLOSED CYCLE REFRIGERANT SYSTEMS

Richard Stevenson, Emmaus, Pa., assignor to Intermagnetics General Corporation, Guilderland, N.Y.

Filed Nov. 6, 1992, Ser. No. 972,819
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 **20 Claims**



1. A non-toxic, non-flammable refrigerant free of halogenated chlorofluorocarbons for use in a closed cycle refrigeration system, consisting of a mixture of:

a major component and a minor component, said major component consisting of at least two and not more than three hydrocarbons in an amount of between 70% and 95% by molar percent of the refrigerant, and said minor component consisting of CO_2 and other constituents serving both as refrigerants and as flame retardants, said minor component being in an amount of between 5% and 30% by molar percent of the refrigerant, said refrigerant having a boiling point temperature at the higher operating pressure of the closed cycle refrigeration system approximating ambient temperature for the operating pressures of the refrigeration systems.

5,360,567

DETERGENT COMPOSITIONS

Alan J. Fry, South Wirral; Michael J. Garvey, Wirral, and Douglas Wraige, Chester, all of England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 729,329, Jul. 12, 1991, abandoned. This application May 10, 1993, Ser. No. 59,526
Claims priority, application United Kingdom, Jul. 13, 1990, 9015503
Int. Cl.[5] C11D *17/00, 3/08*
U.S. Cl. 252—90 **14 Claims**

1. A tablet of compacted particulate detergent composition comprising from 2% to 50% by weight of the composition of a detergent-active compound selected from the group consisting of anionic, cationic, nonionic amphoterie, zwitterionic surface active agents and mixtures thereof, from 20% to 80% by weight of the composition of a detergency builder comprising alkali metal aluminosilicates, and optionally other detergent ingredients, characterized in that the tablet, or a discrete region thereof, consists essentially of a matrix of particles at least 90 wt % of which have a particle size within a range having upper and lower limits each lying within the range of from 200 to 2000 μm and differing from each other by not more than 700 μm wherein not more than 5 wt % of said particles should be larger than the upper limit and not more than 5 wt % of said particles should be smaller than the lower limit.

5,360,568

IMINE QUATERNARY SALTS AS BLEACH CATALYSTS

Stephen A. Madison, New City, N.Y., and Janet L. Coope, Cliffside Park, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,717
Int. Cl.[5] C11D *3/28, 3/395;* **D06L** *1/12, 3/02*
U.S. Cl. 252—102 **13 Claims**

1. A bleaching composition comprising;
(i) from about 1 to about 60% by weight of a peroxygen compound;
(ii) from about 0.01 to about 10% by weight of an oxygen transfer agent which is a 3,4-dihydroisoquinolinium salt; and
(iii) from about 0.5 to 50% by weight of a surfactant.

5,360,569

ACTIVATION OF BLEACH PRECURSORS WITH CATALYTIC IMINE QUATERNARY SALTS

Stephen A. Madison, New City, N.Y., and Janet L. Coope, Cliffside Park, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Nov. 12, 1993, Ser. No. 152,040
Int. Cl.[5] C11D *3/28, 3/395;* **D06L** *1/12, 3/02*
U.S. Cl. 252—102 **13 Claims**

1. A bleaching composition comprising:
(i) from about 1 to about 60% by weight of a peroxygen compound;
(ii) from about 0.01 to about 10% by weight of an oxygen transfer agent which is a 3,4-dihydroisoquinolinium salt; and
(iii) from about 0.1 to 40% by weight of a bleach precursor that reacts with peroxide and forms therewith a percarboxylic acid, percarbonic acid or perimidic acid.

5,360,570

MALEATE POLYMERIZATION PROCESS

Kathleen A. Hughes, and Graham Swift, both of Blue Bell, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 502,100, Mar. 30, 1990, Pat. No. 5,244,988, which is a continuation of Ser. No. 353,376, May 17, 1989, abandoned. This application Jun. 22, 1993, Ser. No. 81,458
Int. Cl.[5] C11D *1/08*
U.S. Cl. 252—135 **9 Claims**

1. A detergent composition comprising a water soluble detergent compound selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic detergent compounds and mixtures thereof; a builder selected from the group consisting of alkali metal salts of carboxy methyloxysuccinic acid and oxydiacetic acid, tetrasodium and tetrapotassium pyrophosphate, pentasodium and pentapotassium tripolyphosphates, ether polycarboxylates, citrates, starch or cellulose derived from polycarboxylates, polyacrylic acids and mixtures thereof;

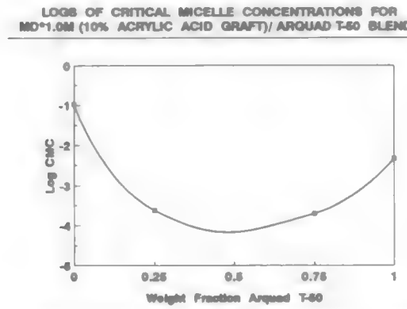
and from 0.1% up to about 35% by weight of a water-soluble copolymer prepared by a process comprising:
(a) establishing an initial charge of water in a reactor;
(b) gradually cofeeding into the reactor monomers (A),(B) and optionally (C), polymerization initiators and neutralizer, where said monomer (A) comprises: from 5 to 65%, by weight based on the total amount of the monomers, of at least one monomer selected from the group consisting of monoethylenically unsaturated dicarboxylic acids containing from 4 to 6 carbon atoms per monomer molecule, the salts of said dicarboxylic acids and the anhydrides of said dicarboxylic acids, and where said monomer (A) is added to said reactor simultaneously with said monomer (B) for at least 25% of the time; where said monomer (B) comprises from 35 to 95% by weight based on the total amount of the monomers of a monoethylenically unsaturated monocarboxylic acid containing from 3 to 6 carbon atoms per monomer molecule; and where said monomer (C) comprises up to 35% by weight based on the total amount of the monomers of an unsaturated carboxyl-free monomer;
(c) adding from 1 to 220 ppm, based on the total weight of said monomers, of a metal salt activator to said reactor wherein the metal salt activator can be contained in the initial charge, adding during the addition of the monomers, added after the addition of one or more of said monomers or a combination thereof;
(d) running said reaction at a temperature of from about 80 to 150° C.; and
(e) recovering said copolymer from said reactor.

5,360,571

SURFACTANT COMPOSITIONS

John A. Kilgour, Putnam Valley, and George A. Policello, Peekskill, both of N.Y., assignors to OSi Specialties, Inc., Danbury, Conn.

Filed Mar. 31, 1992, Ser. No. 861,066
Int. Cl.[5] C11D *1/04;* **C07F** *7/02, 7/18*
U.S. Cl. 252—174.15 **8 Claims**



1. A composition comprising two different surfactants, wherein one surfactant is selected from each of the groups i and ii set forth below:
i) from about 5 to about 95 weight percent of an organic surfactant selected from the group consisting of organic cationic surfactants and organic anionic surfactants; and
ii) from about 95 to about 5 weight percent of a different carboxyl-containing siloxane-polyoxyalkylene copolymer surfactant having the general average formula

$$R_aR'_{3-a}SiO(Me_2SiO)_b(MeRSiO)_cSiR_aR'_{3-a}$$

wherein
Me stands for methyl;
R′ stands for an alkyl group of 1–3 carbon atoms; and
R stands for

$$-(C_dH_{2d}O)(C_eH_{2e}O)_f(R''C_fH_{2f-1}O)_jR'''$$;

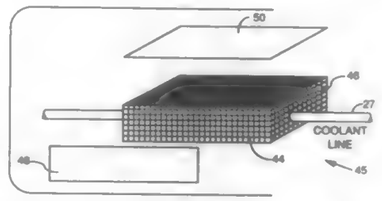
wherein
R″ stands for $-(C_gH_{2g-h}(CO_2Q)_h)_yH$; and
R‴ stands for H, an alkyl group of 1–4 carbon atoms, an acyl group of 1–4 carbon atoms, or R″;
a is an integer 0–2;
b is 0–20;
c is 0–10;
the sum of a and c is 0.1–10;
d is an integer 1–4;
e is 2 or 3 for each unit ($C_eH_{2e}O$);
f is 2 or 3 for each unit ($R''C_fH_{2f-1}O$);
g is 1–8;
h is 1–4;
y is 1–5;
the sum of i and j is 1–25;
j is 0.1–5; and
Q is a cation selected from the group consisting of H^+, alkali metal ions, and quaternary ammonium salts.

5,360,572

AEROGEL MESH GETTER

Steven P. Hotaling, Liverpool, N.Y., and Deidra A. Dykeman, Kent, Wash., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 981,923, Nov. 12, 1992, Pat. No. 5,308,533, which is a continuation-in-part of Ser. No. 800,817, Nov. 29, 1991, abandoned. This application Feb. 15, 1994, Ser. No. 196,929
Int. Cl.[5] H01J *17/18;* **B01D** *49/00, 53/02;* **H01L** *21/306;* **A61L** *9/00;* **G03G** *21/00*
U.S. Cl. 252—181.6 **12 Claims**



1. A decontamination system having a porous, light weight composite getter which collects particulate and molecular contaminates, said getter comprising a three-dimensional metal mesh matrix having a porosity of 5–100 pores per inch, said metal mesh matrix being completely coated on the exterior surfaces thereof with a low-density porous aerogel having a density of 1–500 mg/cc, said getter being mounted in a gas duct for removing contaminants from gas flowing through said duct.

5,360,573

BLEACH PRECURSORS

Richard G. Smith, Wirral, and David W. Thornthwaite, Neston, both of England, assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Aug. 5, 1992, Ser. No. 926,074
Claims priority, application United Kingdom, Aug. 6, 1991, 9116939.1
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—186.39 **7 Claims**

1. A bleaching composition comprising:
(a) from 0.1 to 20% by weight of a peroxyacid bleach precursor having a formula selected from the group consisting of:

$$R^I\text{—}CH(CHOAc)_n(CR^{II}OCOR)O; \quad \text{(I)}$$

and

$$OCH(CH_2OAc)\,(CHOAc)_3CH\text{—} \quad \text{(II)}$$

-continued



wherein:

Ac is



R^I and R^{II} may each independently be $AcOCH_2$ or H; and

R is a quaternary ammonium substituted derivative of a radical selected from the group consisting of

(i) linear or branched chain C_3–C_6 alkyl, alkenyl or alkynyl groups,

(ii) phenyl and substituted phenyl,

(iii) C_1–C_4 alkyl phenyl, CH_2OCOR^{III} and CH_2NHCOR^{III} wherein R^{III} is R; and n is 2 or 3; and

R^{IV} is a quaternary ammonium substituted derivative of a radical selected from the group consisting of

(iv) linear or branched chain C_{3-19} alkyl, alkenyl or alkynyl groups;

(v) phenyl and substituted phenyl;

(vi) C_{1-4} alkyl phenyl, CH_2OCOR^V and CH_2NHCOR^V wherein R^V is R^{IV}; and

(b) from 2 to 40% by weight of a source of hydrogen peroxide.

5,360,574

GEL-FORM DEODORANT COMPOSITION CONTAINING CHLORIDE DIOXIDE

Takashi Iwahashi, Sagamihara, Japan, assignor to Aikoh Co., Ltd., Japan

PCT No. PCT/JP89/01215, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO91/07995, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 4, 1989, Ser. No. 867,228

Int. Cl.[5] A61L *9/01*

U.S. Cl. 252—187.21 **2 Claims**

1. A deodorant composition in the form of gel containing chlorine dioxide, which comprises a gel product obtained by gelling an aqueous solution of stabilized chlorine dioxide with use of 1 to 25% by weight of a polyethylene-imine having a molecular weight of from 10,000 to 100,000 and 0.5 to 15% by weight of an epoxide crosslinking agent.

5,360,575

LACTIC ACID DERIVATIVES HAVING TWO ASYMMETRIC CARBON ATOMS, LIQUID CRYSTAL COMPOSITION CONTAINING SAME AND LIQUID CRYSTAL DEVICE

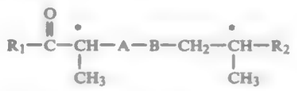
Wen-Liang Tsai, Hsinchu, and Hwei-Long Kuo, Taipei, both of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Nov. 8, 1991, Ser. No. 790,246

Int. Cl.[5] C09K *19/52, 19/20;* **C07C** *69/76;* **G02F** *1/13*

U.S. Cl. 252—299.01 **34 Claims**

18. A liquid crystal composition comprising at least one optically active lactic acid derivative having the formula:



(Ia)

wherein A is O or S; B is $—(CH_2)_m—$ or $—(CH_2)_n—O$; R_1 is an alkoxy group having 1–22 carbon atoms, hydroxyphenyloxy, hydroxybiphenyloxy, or a hydroxy group; R_2 is an alkyl group having 2–8 carbon atoms; m is an integer of 0–4, n is an integer of 2–5, and C* is an asymmetric carbon atom.

5,360,576

CHIRAL ALKENYLARYL 2,3-EPOXYALKYL ETHERS, AND THE USE THEREOF IN LIQUID-CRYSTALLINE MIXTURES

Karsten Blatter, Mainz; Claus Escher, Mühltal, both of Germany; Takamasa Harada, Izumi, Japan; Peter Harnischfeger, Darmstadt, and Wolfgang Hemmerling, Sulzbach, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP91/01365, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO92/01685, PCT Pub. Date Jun. 2, 1992

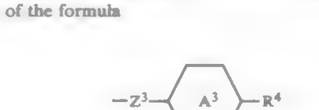
PCT Filed Jul. 19, 1991, Ser. No. 965,366

Claims priority, application Germany, Jul. 20, 1990, 4023027

Int. Cl.[5] C09K *19/34;* **C07D** *405/12, 303/12*

U.S. Cl. 252—299.61 **6 Claims**

1. A chiral compound containing a mesogenic aromatic unit, an alkene group and a chiral unit containing a heterocyclic three-membered ring, wherein, in the formula (I)



(I)

the symbols have the following meanings:

R^1 is straight-chain or branched (C_3–C_{12})alkenyl containing a terminal double bond, it being possible for one or two non-adjacent CH_2 groups to be replaced by O and/or S atoms,

A and B, independently of one another, are 1,4-phenylene, diazine-2,5-diyl or diazine-3,6-diyl, with the proviso that one of the groups A or B is phenyl and the other is diazine,

X is O or S, and

R^2, R^3 and R^4, independently of one another, are straight-chain (C_1–C_{10})alkyl or branched (C_3–C_{10})alkyl, R^2, R^3 and R^4 not simultaneously being H.

5,360,577

OXAXOLINE DERIVATIVES

Richard Buchecker, Zurich, and Stephen Kelly, Möhlin, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

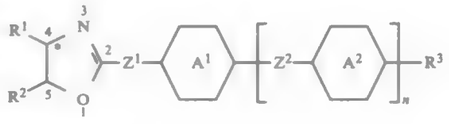
Filed Sep. 17, 1992, Ser. No. 946,987

Claims priority, application Switzerland, Sep. 26, 1991, 2862/91; Oct. 7, 1991, 2951/91; Apr. 7, 1992, 1128/92

Int. Cl.[5] C09K *19/34, 19/30, 19/20;* **C07D** *26/10*

U.S. Cl. 252—299.61 **5 Claims**

5. A liquid crystalline mixture containing a liquid crystalline carrier material and one or more optically active compounds of the formula



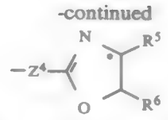
I

wherein n is the number 0 or 1; R^3 is a group R^4 or a group of the formula



II

-continued



III

A^1 and A^2 each independently represent 1,4-phenylene; trans-1,4-cyclohexylene; trans-1,3-dioxane-2,5-diyl or naphthalene-2,6-diyl with the proviso that not both rings A^1 and A^2 are 1,4-phenylene when R^3 is a group R^4; A^3 is trans-1,4-cyclohexylene; Z^1 and Z^4 each independently represent a single covalent bond or $—CH_2CH_2—$; Z^2 and Z^3 each independently denote a single covalent bond, $—CH_2CH_2—$, or the trans form of $—CH=CH—CH_2CH_2$ —, $—CH_2CH_2—CH=CH—$, $—CH=CH—CH_2O—$ or $—OCH_2—CH=CH—$; R^1 and R^5 each independently is alkyl with 1 to 12 carbon atoms, alkoxymethyl with 2 to 12 carbon atoms, p-alkoxyphenyl or p-alkoxybenzyl; R^2 and R^6 each independently is hydrogen, alkyl with 1 to 12 carbon atoms or phenyl; R^4 denotes hydrogen, halogen, cyano, trifluoromethyl, trifluoromethoxy or alkyl with 1 to 12 carbon atoms or alkenyl with 2 to 12 carbon atoms respectively, in which alkyl, alkenyl or one methylene group can be replaced by —O—, —COO— and/or —OOC—; and the oxazoline ring in formula I is present in optically active form, with the proviso that at least one of the groups Z^1 and Z^4 is $—CH_2CH_2—$ when ring A^1 is 1,4-phenylene, n is O and R^3 is a group of formula III.

5,360,578

PREPARATION OF METAL HALIDE PHOSPHOR PARTICLES OF SELECTED PARTICLE SIZE RANGE WITH IMPROVED POWDER FLOWABILITY

Paul Leblans, Berchem, and Paul Lardon, Wijnegem, both of , assignors to AGFA-Gevaert, N.V., Mortsel,

Filed Feb. 18, 1994, Ser. No. 198,344

Claims priority, application European Pat. Off., Mar. 9, 1993, 93200668.7

Int. Cl.[5] C09K *11/61*

U.S. Cl. 252—301.4 H **10 Claims**

1. A method for preparing photostimulable barium and/or strontium containing halide phosphor particles of a selected particle size range wherein said method comprises the steps of:

(1) firing raw mixture materials of said phosphor to produce a sintered phosphor mass that is pulverized,

(2) mixing said pulverized phosphor mass, optionally after one or more further firings, in a liquid mainly containing a water-miscible organic solvent with an organic acid dissolved therein, said acid being capable of forming with barium and/or strontium contained in the phosphor a salt the solubility of which in water at 20° C. is less than 0.5 g per 100 ml, and

(3) subjecting the thus mixed pulverized phosphor mass in wet and/or in dry state to a separation treatment in order to collect phosphor particles having a grain size smaller than 40 μm but larger than 2 μm, said collected phosphor particles exhibiting a higher figure of merit than the phosphor particles prepared as above but where the organic acid is absent from said liquid.

5,360,579

PROCESS FOR THE ABSORPTION OF POLLUTANTS

Daniel Duquenne, Clermont, France, assignor to Elf Atochem, S.A., Paris, France

Division of Ser. No. 18,929, Feb. 6, 1993, which is a continuation of Ser. No. 582,918, Apr. 19, 1991, abandoned. This application Dec. 22, 1993, Ser. No. 171,400

Claims priority, application France, Feb. 17, 1989, 89 02099

Int. Cl.[5] B01D *17/04;* **C02F** *1/28;* **C10G** *33/04*

U.S. Cl. 252—329 **12 Claims**

1. A process for absorbing a water-soluble oil present as an aqueous emulsion in a cutting fluid which comprises contacting said cutting fluid with a composition containing at least one norborene polymer selected from the group consisting of polycyclo [2.2.1]-2-heptene and poly-5-methylbicyclo [2.2.1]-2-heptene, and at least one alkaline earth metal halide as an agent for breaking an aqueous emulsion of water-soluble oil wherein said composition comprises from 5 to 250 parts by weight of said emulsion breaking agent per 100 parts by weight of norborene polymer.

5,360,580

CLEANING COMPOSITION

Vincent A. Dotolo, Clearwater; John R. Schwartz, Largo, and Jaye Kraus-Marchak, Dunedin, all of Fla., assignors to Dotolo Research Corporation, Largo, Fla.

Filed Apr. 8, 1992, Ser. No. 866,793

Int. Cl.[5] A61K *7/047;* **C11D** *7/26, 7/32, 7/50*

U.S. Cl. 252—542 **12 Claims**

1. A non-aqueous cleaning composition consisting essentially of the following ingredients in approximate percent by weight:

Ingredients	% by weight
1. d-limonene	40–70
2. N-methyl pyrrolidone	25–45
3. cetyl acetate	3–10
4. dialkyl (C_1 to C_5) ester of an aliphatic (C_3 to C_{12}) acid	5–40

9. A non-aqueous cleaning composition consisting of about 5 to 75% by weight of d-limonene, about 5 to 95% by weight of N-methyl-2-pyrrolidone, about 5 to 95% by weight of a dialkyl (C_1 to C_5) ester of an aliphatic (C_3 to C_{12}) acid, and about 3 to 10% by weight of cetyl acetate or a mixture of cetyl acetate and acetylated lanolin alcohol wherein said mixture consists of from about 0.5 to 30% by weight of acetylated lanolin alcohol, the balance of said mixture being cetyl acetate.

5,360,581

STABLE CONDITIONING SHAMPOO CONTAINING POLYETHYLENEIMINE AND A FATTY ACID

Riaz Rizvi, Glendale Heights, and Chaitanya Patel, Glen Ellyn, both of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 905,738, Jun. 29, 1992, Pat. No. 5,248,445, which is a continuation-in-part of Ser. No. 828,028, Jan. 30, 1992. This application May 17, 1993, Ser. No. 63,020

Int. Cl.[5] C11D *1/12, 3/26*

U.S. Cl. 252—544 **22 Claims**

1. A hair conditioning shampoo composition comprising an emulsion of water; about 5 to about 65 percent by weight of an anionic cleansing surfactant; from about 0.1 to about 10% by weight of a silicone conditioning agent; from about 0.01% to about 4% of a cationic polyalkyleneimine; and from about 0.5 to about 20 weight percent of a long chain fatty acid, having about 18 to about 36 carbons in the long chain.

5,360,582

NONLINEAR OPTICAL MATERIALS CONTAINING POLAR DISULFONE-FUNCTIONALIZED MOLECULES

Gary T. Boyd, Woodbury; George V. Tiers, St. Paul; Cecil V. Francis, Woodbury; Eugene P. Janulis, Mahtomedi, all of Minn.; Robert J. Koshar, Sun City West, Ariz., and Louis M. Leichter, Mendota Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

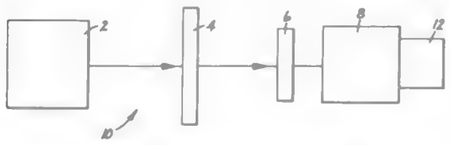
Filed Jul. 15, 1991, Ser. No. 730,225

Int. Cl.[5] F21V *9/00*

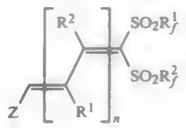
U.S. Cl. 252—582 **7 Claims**

1. A nonlinear optical composition of matter, which comprises: polar disulfone-functionalized molecules incorporated

in and aligned noncentrosymmetrically in an optically clear



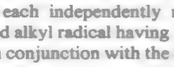
polymeric composition, wherein the polar disulfone-functionalized molecules are of the Formula I



I

where n is 0, 1, or 2; R^1 and R^2 each independently represent hydrogen, an alkyl group of about 1 to 4 carbon atoms, or taken together in conjunction with the catenary carbon atoms therebetween form a 5 or 6-membered carbocyclic or heterocyclic ting, when n is 2, R^1 and R^2, R^1 and R^1, or R^2 and R^2, in conjunction with the catenary carbon atoms therebetween, may form the 5 or 6-membered carbocyclic or heterocyclic ring; R_f^1 and R_f^2 each independently represent fluorine, a saturated fluorinated alkyl radical having 1 to 10 carbon atoms, or taken together in conjunction with the disulfone group form a 5, 6, or 7-membered ring containing 2, 3, or 4 carbon atoms, respectively, that are fluorinated; and Z represents an aryl group substituted with an electron donating group, an activated aromatic heterocyclic group, a group derived from a dye base, or a group derived from a dye olefin, wherein;

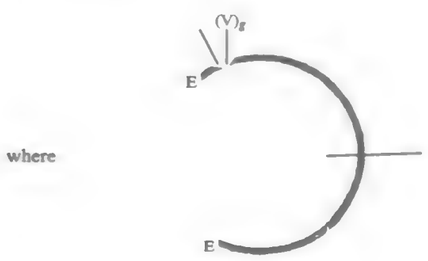
the aryl group substituted with an electron-donating group is represented by the Formula II



II

where Ar- represents a monovalent aryl group having 6 to 10 ring atoms; Y represents an electron-donating substituent group having up to 20 atoms; X represents a monovalent substituent group having 1 to 20 atoms; k is 1 or 2; and m is an integer of 0 to 6;

the activated heterocyclic aromatic group is represented by the Formula III

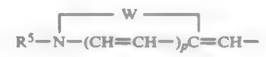


III

where

represents a monovalent heterocyclic aromatic nucleus containing 5 or 6 ring atoms: V represents X, or taken together with atoms in the heterocyclic aromatic nucleus represents the necessary atoms required to complete a 6-membered aromatic nucleus; E is S, O, or NR^5, where R^5 represents a substituent containing up to 20 carbon atoms; and g is an integer of 0 to 4;

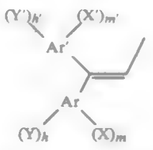
the group derived from a dye base is represented by the Formula IV



IV

where p is 0, or 1; R^5 is as defined above; and W represents the non-metallic atoms required to complete a heterocyclic nucleus containing 5 or 6 atoms in the heterocyclic ring; and

the group derived from the dye olefin is represented by the Formula V



V

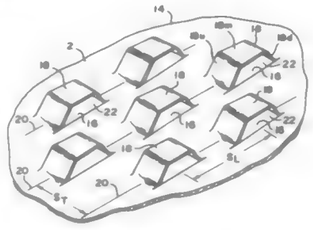
where Ar, Y, X, and m are as defined above; Ar' independently represents Ar; X' and Y' independently represent X and Y, respectively; m' independently represents m; and h and h' independently represents 0, 1, or 2, with the proviso that both h and h' cannot be 0.

5,360,583

HIGH CAPACITY TRAY FOR GAS-LIQUID CONTACT APPARATUS

Dale E. Nutter, P.O. Box 700480, Tulsa, Okla. 74170

Filed Jun. 17, 1993, Ser. No. 77,613
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—114.3 **13 Claims**



8. A fluid contact tray for supporting a body of liquid moving thereacross in a generally horizontal flow direction from an upstream location to a downstream location, comprising,

a deck provided with a group of apertures for introducing ascending vapors under pressure into said liquid, said apertures having longitudinal axes which are parallel to said flow direction, each of said apertures being tapered in the plane of the deck from a maximum dimension transverse to said flow direction at its upstream end to a minimum dimension transverse to said flow direction at its downstream end, each of said apertures having a length measured along its longitudinal axis which is no greater than 1.5 inches, an upstream width which is no greater than about 1.0 inch, and a downstream width which is no greater than 0.75 inch;

said apertures having centers which are spaced apart no more than about 3.0 inches longitudinally of said flow direction and no more than about 2.0 inches transversely of the flow direction;

a plurality of stationary deflector members each overlying and aligned with a respective one of said apertures, each deflector member including an upstream portion, a central portion, and a downstream portion; said central portion being connected to the deck by said upstream and downstream portions;

each said upstream portion extending above the deck at an upstream end of one of said apertures and lying across the entire maximum transverse extent of its respective aperture so that the entirety of the aperture is shielded from liquid which is moving in the flow direction toward the aperture,

each said downstream portion extending above the deck at the downstream end of one of said apertures and lying across the entire transverse extent of the downstream end of the respective aperture to prevent vapors from impelling liquid in a downstream direction,

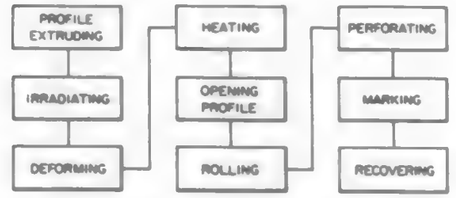
each said deflector member and said deck defining lateral outlet slots which are oriented to direct vapor which passes up through the aperture in a direction which is generally transverse to the flow direction of liquid on the deck, said tray having burrs formed around said outlet slots.

5,360,584

METHOD OF FORMING A WRAP-AROUND HEAT-RECOVERABLE ARTICLE

Erling Hansen, Los Altos, and Steve Wicht, Newark, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 794,823, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 640,565, Jan. 14, 1991, abandoned, which is a continuation of Ser. No. 436,958, Nov. 15, 1989, abandoned, which is a continuation of Ser. No. 262,163, Oct. 19, 1988, abandoned, which is a continuation of Ser. No. 877,620, Jun. 23, 1986, abandoned. This application Oct. 22, 1993, Ser. No. 142,544
Int. Cl.[5] B29C *61/06*
U.S. Cl. 264—22 **6 Claims**



1. A method of forming a heat recoverable article comprising:

profile extruding polymeric material having a modulus of elasticity of at least about 10,000 psi into a tubular configuration having a longitudinal slit providing opposing longitudinal edges which are overlapped to form a coil-shape in cross section;

irradiating the polymeric material; and

uncoiling and opening the tubular configuration to result in the entire material all lying in a plane.

5,360,585

METHOD FOR CORRECTING FOR THRUST FORCE GENERATED WHEN A CUTTER FOR GRANULATING PLASTICS IS ROTATED IN WATER

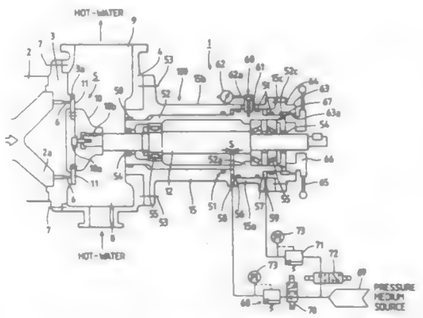
Yasuhiko Ishida; Minoru Yoshida; Hideki Mizuguchi; Takaaki Okita, and Tetsuo Makida, all of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 794,919, Nov. 20, 1991, abandoned, which is a division of Ser. No. 704,148, May 22, 1991, Pat. No. 5,190,768. This application Jun. 30, 1993, Ser. No. 83,568
Claims priority, application Japan, May 22, 1990, 2-130240
Int. Cl.[5] B28B *11/16*
U.S. Cl. 264—40.1 **22 Claims**

1. A plastic granulating method in which melted resin is extruded from a die and cut so as to be formed into plastic particles by cutter knives which are rotating along a die surface of said die while said cutter knives are in contact with said die surface in a water-filled cutter box, said method comprising the steps of:

rotating said cutter knives at a predetermined rotational speed in said water-filled cutter box before said resin is extruded while simultaneously applying a predetermined opposition force, which is in the direction opposite to said die surface and is larger than a thrust force which is expected to be generated by said cutter knives while rotating in water at said predetermined rotational speed, to said cutter knives;

applying and gradually increasing a predetermined first advancing force, which is in the direction of said die surface, to said cutter knives until said cutter knives start advancing toward said die surface, said opposition force and said first advancing force being predetermined based upon said thrust force which was determined before granulation, to generate a resulting predetermined force press-



ing said cutter knives against said die surface when granulating, said predetermined first advancing force being less than said predetermined opposition force;

removing water from said cutter box;

stopping said rotating of said cutter knives and applying said predetermined opposition force and said predetermined first advancing force to said cutter knives, under a condition where there is no water in said cutter box;

rotating said cutter knives at said predetermined rotational speed;

applying a second advancing force to said cutter knives to advance said cutter knives toward said die surface;

subsequently extruding the melted resin from said die and simultaneously introducing water into said cutter box when said cutter knives are brought into contact with said die surface;

decreasing said second advancing force after water has filled said cutter box to cause said cutter knives to be pressed against said die surface by said predetermined force and to granulate continuously.

5,360,586

BIODEGRADABLE CELLULOSIC MATERIAL AND PROCESS FOR MAKING SUCH MATERIAL

Danny R. Wyatt, 925 Ridgecrest, Carthage, Mo. 64836, and Everette L. Wyatt, Carthage, Mo., assignors to Danny R. Wyatt, Carthage, Mo.

Filed Nov. 6, 1992, Ser. No. 972,937
Int. Cl.[5] B29D *31/00*; C08H *1/00*; C09D *101/02*; C08J *9/14*
U.S. Cl. 264—54 **13 Claims**

1. A process for making a shaped biodegradable article from cellulose-containing material, the material having a water content less than about 50 percent by weight, the process comprising:

forming a dry-mix of the cellulose-containing material, a bonding agent and an expander;

feeding the dry mix to an extruder;
pressurizing the dry mix to a pressure above atmospheric pressure in the extruder;
injecting water into the pressurized dry mix; and
extruding the wetted mixture into a shaped article.

5,360,587

PREPARATION OF FRICTION ELEMENTS AND COMPOSITIONS THEREFOR

Ralph T. Brotz, Kohler; Paschal A. Sciarra, Jr., and Phillip A. Waitkus, both of Sheboygan, all of Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 821,091, Jan. 15, 1992, abandoned. This application Mar. 31, 1993, Ser. No. 40,736
Int. Cl.[5] B29C *43/00*
U.S. Cl. 264—123 **7 Claims**

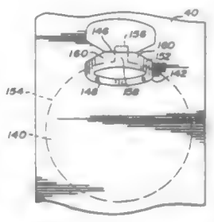
1. A method of preparing a friction element comprising:
a) forming cylindrical, rod-like particles of an uncured mix of friction ingredients, a solid thermosetting resin and an effective amount of liquid phenolic resin which maintains the temperature during rod-like particle formation below the curing temperature of the solid resin, said rod-like particles having a diameter of about 3/32" to about ¼";
b) preheating said rod-like particles; and
c) molding the preheated rod-like particles into a friction element.

5,360,588

METHOD OF MAKING AN INJECTION MOLDED FRAME HAVING A PANEL INSERT

William M. Heyn, New Canaan; Robert W. Fraser, Stamford, and Donald J. Roth, Westport, all of Conn., assignors to Polystar Packaging, Inc., Norwalk, Conn.

Division of Ser. No. 764,546, Sep. 24, 1991, Pat. No. 5,273,416. This application Dec. 28, 1993, Ser. No. 174,059
Int. Cl.[5] B29C *53/00*
U.S. Cl. 264—153 **4 Claims**



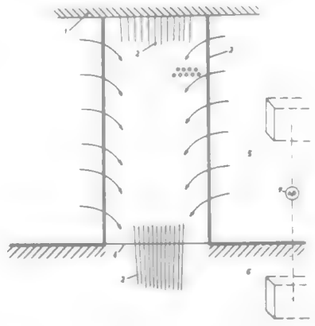
1. A method of forming from sheet material a panel insert having a pull tab, said method comprising the steps of providing the sheet material, predetermining the location of a panel insert, cutting from the sheet material in spaced adjacent relation to the location of such panel insert a pull tab having a connecting portion projecting towards the location of such panel insert but terminating away from the location of such panel insert, folding said pull tab out of said sheet material at an edge of said connecting portion into overlying relation to said sheet material at the location of the panel insert, and cutting from said sheet material substantially at the predetermined location of the panel insert a panel insert and a part only of said connecting portion disposed radially outwardly of said panel insert.

5,360,589

PROCESS FOR PRODUCING SYNTHETIC FILAMENTS

Dietmar Wandel, Hanau, and Gunter Koschinek, Dietzenbach, both of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 7, 1993, Ser. No. 73,575
Claims priority, application Germany, Jul. 15, 1992, 4223198
Int. Cl.[5] B29C *35/16;* **D01D** *5/12*
U.S. Cl. 264—211.12 **1 Claim**



1. A process for producing spin-oriented filaments consisting of
providing a spinning head connecting directly to a cooling shaft having perforated walls immediately adjacent said head and over the entire length of said shaft,
extruding filaments from said head into said shaft,
drawing said filaments from a point downstream of the solidification point at a draw-off speed more than 2,400 m/min,
cooling said filaments in said shaft by air drawn from an intake environment into said shaft through said perforations by the frictional entrainment of the air by said moving filaments,
passing said filaments from said shaft into a chamber separate from said intake environment, and
maintaining the air pressure in said chamber from 2 to 20 Pa lower than the air pressure of said intake environment.

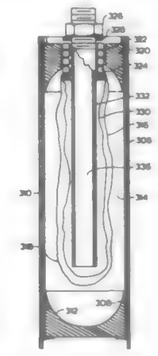
5,360,590

METHOD OF MAKING A CONDOM ARTICLE

Robert G. Wheeler, Greenbank, Wash., assignor to Family Health International, Research Triangle Park, N.C.

Continuation of Ser. No. 726,984, Jul. 18, 1991, abandoned, which is a division of Ser. No. 568,426, Aug. 16, 1990, Pat. No. 5,036,863, which is a division of Ser. No. 271,884, Nov. 15, 1988, Pat. No. 4,964,416. This application Jun. 4, 1993, Ser. No. 71,599
Int. Cl.[5] B29C *49/00*
U.S. Cl. 264—523 **13 Claims**

1. A method of making an elongate tubular elastic film condom article, for retention on a human penis in use, from an elongate tubular element formed of thermoplastic elastic film material, closed at a distal end and having a proximal neck portion open at a proximal end, said method consisting of:
(a) providing as an initially formed article an elongate tubular element formed of thermoplastic elastic film material, closed at a distal end and having a proximal neck portion open at the proximal end;
(b) providing an elongate tubular mandril having gas flow passage means therein, and a distal extremity, and an elongate cylindrical chamber having an interior cylindrical bounding surface of larger diameter than the tubular mandril, wherein the tubular mandril and cylindrical chamber are constructed and arranged so that the tubular mandril may be selectively disposed centrally and coaxially within the cylindrical chamber;
(c) placing the tubular element over the tubular mandril, so that the tubular mandril is substantially completely interiorly disposed within the tubular element with interior surfaces of the tubular element in radially spaced-apart relationship to the tubular mandril along the length of the tubular mandril, and with the distal end of the tubular element in axially spaced-apart relationship to the distal extremity of the tubular mandril, and compressively retaining the proximal neck portion of the tubular element in a fixed cylindrical conformation and in a fixed spatial position in relation to the cylindrical chamber;
(d) expanding the tubular element radially outwardly from the tubular mandril along the length of the tubular mandril



and axially and distally of the distal extremity of the tubular mandril, under sufficient process conditions to expand the tubular element against the interior cylindrical bounding surface of the cylindrical chamber, said process conditions including the imposition of a pressure differential on the tubular element, while compressively retaining the proximal neck portion of the tubular element in a fixed cylindrical conformation and in a fixed spatial position in relation to the cylindrical chamber; and
(e) thereafter discontinuing the expansion process conditions, to contract the tubular element, and removing the expanded and contracted tubular element from the cylindrical chamber and from the tubular mandril to yield the expanded and contracted tubular element as a unitary product article, for subsequent use as said condom.

5,360,591

REDUCED LEAD BISMUTH YELLOW BRASS

Roland L. Ruetz, Kohler; Jan V. Vojta, and Donna L. Day, both of Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed May 17, 1993, Ser. No. 63,377
Int. Cl.[5] C22C *9/04*
U.S. Cl. 420—479 **6 Claims**

1. A brass alloy, comprising:
55% to 70% Cu;
30% to 45% Zn;
0.2% to 1.5% Bi;
0.2% to 1.5% Al;
0% to 1% Pb; and
at least two grain refiners selected from the group consisting of B, In, Ag, Ti, Zr, Nb, Ta, Mo, Tl, and V, wherein at least one of the grain refiners is selected from the group consisting of B, Ti, Zr, Nb, Ta, Mo, Tl and V and is between 0.0001% and 0.003% of the alloy, wherein if Ag or In is selected as a grain refiner it is less than 0.25% of the alloy.

5,360,592

ABRASION AND CORROSION RESISTANT ALLOYS

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, Pevely, Mo.

Filed Jul. 22, 1993, Ser. No. 96,507
Int. Cl.[5] C22C *30/00*
U.S. Cl. 420—582 **11 Claims**



1. An alloy consisting essentially of:

Nickel	28% to 45% by weight
Chromium	20% to 30%
Molybdenum	1.5% to 6.2%
Columbium	2.3% to 12%
Carbon	0.3% to 1.5%
Copper	0.8% to 4%
Titanium	up to 1%
Manganese	up to 1.5%
Silicon	up to 1.5%
Tantalum	up to 2%
Tungsten	up to 2%
Cobalt	up to 1%
Nitrogen	up to 0.11%
Iron	essentially balance.

5,360,593

HEAT STERILIZATION OF LABILE ANTIBIOTICS

Krishna M. Bapatla, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 927,773, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 511,676, Apr. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 139,223, Dec. 29, 1987, abandoned. This application Oct. 22, 1993, Ser. No. 141,904
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—32 **4 Claims**

1. A process for sterilizing antibiotics which are labile to oxidation by oxygen at elevated temperature, comprising, providing a antibiotic which is labile to oxidation at elevated temperature and only heating said antibiotic to sterilize it while said antibiotic is substantially surrounded by a continuous flow of nitrogen substantially devoid of oxygen.

5,360,594

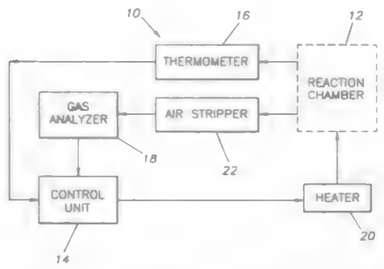
CONTROL SYSTEM FOR MEDICAL WASTE DISPOSAL UNIT

Robert S. Meijer, San Diego, Calif., assignor to Winfield Industries, San Diego, Calif.

Continuation of Ser. No. 941,409, Sep. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 690,116, Apr. 23, 1991, which is a continuation-in-part of Ser. No. 511,275, Apr. 19, 1990, Pat. No. 5,089,228. This application Nov. 15, 1993, Ser. No. 153,267
Int. Cl.[5] A61L *2/16*
U.S. Cl. 422—37 **26 Claims**

22. A method for regulating decontamination of waste in a reaction chamber to maintain a specified rate of kill as the waste passed through the reaction chamber, said reaction chamber having a chamber temperature and a disinfectant concentration, said method comprising the steps of:
monitoring said chamber temperature using a thermometer having an electrical output;
monitoring said disinfectant concentration using as gas analyzer having an electrical output;

calculating a set point temperature as a function of said rate of kill and said disinfectant concentration using a control unit connected to said analyzer, said control unit having as inputs the electrical outputs of said thermometer and said gas analyzer; and



maintaining said rate of kill by heating said reaction chamber when said chamber temperature is below said calculated set point temperature.

5,360,595

PREPARATION OF DIAGNOSTIC TEST STRIPS CONTAINING TETRAZOLIUM SALT INDICATORS

Douglas E. Bell, and Amy H. Chu, both of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Aug. 19, 1993, Ser. No. 108,295
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—56 **17 Claims**

1. In the method of applying an indicator/reagent system to a matrix carrier, said indicator comprising a tetrazolium salt which, in the presence of the reagent system and a predetermined analyte will undergo a redox reaction resulting in its reduction to a colored formazan, the improvement which comprises:

a) contacting the matrix with a solution comprising the tetrazolium salt in an organic solvent and drying the matrix to thereby provide a matrix having the tetrazolium salt uniformly dispersed therein; and

b) contacting the matrix having the tetrazolium salt uniformly dispersed therein with an aqueous solution of the reagent system which solution contains an alkylsulfonate of 5–7 straight chain carbon atoms and drying the matrix to thereby deposit the reagent system onto the matrix without eluting a significant amount of the tetrazolium salt therefrom and provide a matrix having the tetrazolium salt and reagent system uniformly dispersed therein.

5,360,596

PLUNGER HOMING MECHANISM FOR USE IN CHROMATOGRAPHY

Samson L. Pennatto, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 5, 1990, Ser. No. 504,826
Int. Cl.[5] G01N *1/14*
U.S. Cl. 422—63 **14 Claims**

1. A syringe plunger homing apparatus comprising:

a casing having a recess therein;

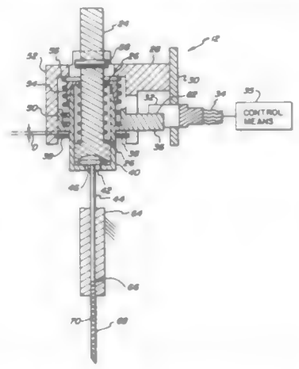
a housing adapted to fit within said recess;

a plunger cap holder adapted to slidably fit within said housing and hold a plunger cap;

holder means for biasing said plunger cap holder into contact with said housing;

an isolation spring biasing said housing away from said casing;

retaining means, associated with said housing and said casing, for retaining said housing within said casing; and



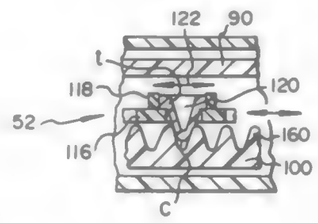
sensor means, associated with said housing and said casing, for detecting relative movement there between.

5,360,597

RIBBED MECHANISM FOR MIXING SAMPLE BY VIBRATION

Raymond F. Jakubowicz, Rush, and Johannes J. Porte, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1993, Ser. No. 34,040
Int. Cl.[5] G01N *35/06*
U.S. Cl. 422—64 **10 Claims**



1. In an analyzer for conducting a wet assay in a liquid in a cuvette, the analyzer comprising first station means for adding a liquid reagent to liquid in a cuvette, second station means for mixing the reagent with the liquid already in the cuvette, and station-to-station means for moving cuvettes from station-to-station along a path,

said means for mixing comprising at least one set of spaced-apart protrusions projecting out into said path traced by the cuvette,

said means for moving cuvettes from station-to-station along a path providing relative motion between said protrusions and at least one of said cuvettes, so that at least one said cuvette is repeatedly disturbed by being placed in direct contact with said projecting protrusions and the liquid content to be mixed;

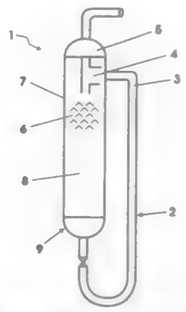
the improvement wherein the total volume of liquid to be mixed is no greater than about 200 μl, and said protrusions create a bump frequency of about 20 to about 165 bumps per second and a bump amplitude, measured as the amount of vertical displacement of the bottom of said cuvettes of between about 0.6 and 3.0 mm.

5,360,598

FLUID CATALYTIC CRACKING SYSTEM

Patrick H. Terry, Middletown, N.J., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed May 19, 1993, Ser. No. 64,567
Int. Cl.[5] B01J *8/18;* **F27B** *15/00, 15/08*
U.S. Cl. 422—144 **5 Claims**



1. A fluid catalytic cracking unit comprising:

an unpartitioned reaction chamber having no structural means for actively forming a dense phase reaction bed;

dilute phase reaction means connected to the unpartitioned reaction chamber for reacting hydrocarbon with a catalytic cracking catalyst to form a dilute phase reaction medium comprising cracked hydrocarbon and catalytic cracking catalyst;

dilute phase collecting and separating means, in fluid connection with the dilute phase reaction means, for collecting the dilute phase reaction medium directly from the dilute phase reaction means and for separating the cracked hydrocarbon from the catalytic cracking catalyst;

product collecting means, in fluid connection with the dilute phase reaction means, for collecting the separated, cracked hydrocarbon from the dilute phase collecting and separating means;

stripping means, within the unpartitioned reaction chamber, for stripping entrained hydrocarbon and cracked hydrocarbon from the separated, catalytic cracking catalyst with a stripping gas;

regenerator means, within the unpartitioned reaction chamber, for removing coke from the stripped, catalytic cracking catalyst, and for producing and sending the stripping gas to the stripping means; and

injecting means for injecting a regenerating gas into the regenerator means.

5,360,599

CRUCIBLE SUPPORT HEATER FOR THE CONTROL OF MELT FLOW PATTERN IN A CRYSTAL GROWTH PROCESS

Michael K. Cueman, Schenectady, and Farzin H. Azad, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

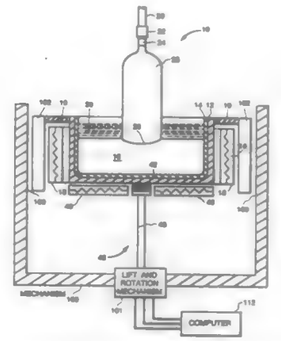
Filed Jun. 21, 1993, Ser. No. 79,495
Int. Cl.[5] B01D *9/04*
U.S. Cl. 117—217 **4 Claims**

1. A crucible support heater for the control of melt flow in a crystal growth apparatus, wherein said heater is comprised of:

a means for containing a melt of material to be grown into a crystal;

a means for lifting said means for containing said melt, said lifting means including a lift rod disposed below said means for containing said melt; and

a means for heating said melt such that said means for heating said melt are in part located adjacent to said means for containing said melt and are in part located on said lift rod of said lifting means whereby an entire bottom of said



means for containing said melt is heated by said heating means.

5,360,600

TREATMENT OF MINERAL AND ALKALI METAL CARBONATE SLURRIES

Bill A. Hancock, and Shane D. Fleming, both of Farmington, Utah, assignors to Cytec Technology Corp., Wilmington, Del.

Filed Sep. 2, 1993, Ser. No. 114,863
Int. Cl.[5] C01D *7/26;* **B03D** *3/06;* **B01D** *21/01*
U.S. Cl. 423—184 **7 Claims**

1. A method of recovering alkali metal carbonates from a slurry having minerals and alkali metal sesquicarbonates therein comprising,

adding a hydroxamated acrylamide polymer to said slurry in an amount sufficient to flocculate said minerals from said slurry to provide a supernatant liquid containing alkali metal sesquicarbonates,

treating said liquid to precipitate said sesquicarbonates, and

treating said sesquicarbonates to yield alkali metal carbonates.

5,360,601

PROCESS FOR THE PREPARATION OF ISOCYANIC ACID BY THE DECOMPOSITION OF N,N-DISUBSTITUTED UREAS

Kurt A. Hackl; Martin Müllner, both of Linz; Erich Schulz, Ansfelden; Gerhard Stern, Sounberg, and Heinz Falk, Linz, all of Austria, assignors to Chemie Linz Gesellschaft m.b.H., Austria

Filed Aug. 13, 1993, Ser. No. 105,672
Claims priority, application Austria, Aug. 13, 1992, 1630/92
Int. Cl.[5] C01B *21/12*
U.S. Cl. 423—364 **6 Claims**

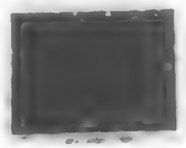
1. A process for the preparation of isocyanic acid, which comprises decomposing an N,N-disubstituted urea in a reaction vessel at elevated temperature to a secondary amine of lower volatility and to isocyanic acid, which is drawn off at the top of said vessel.

5,360,602

SILVER NITRATE PRODUCED BY A CONTINUOUS EVAPORATIVE CRYSTALLIZATION PROCESS

Jeffrey R. Hennenkamp, Rochester; Kevin M. Logsdon, Holley; Brian L. Simpson, Hamlin; Theodore E. Walker, Spencerport, and Paul C. Drake, Brockport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1992, Ser. No. 848,478
Int. Cl.[5] C01B *21/48*
U.S. Cl. 423—395 2 Claims



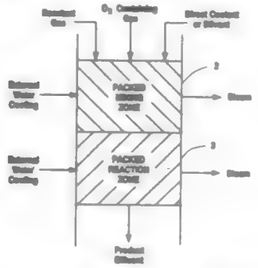
1. Silver nitrate crystals having an aspect ratio in the range of from about 1:2:3 to about 1:1:1, a mean particle size in the range of about 200 μm to about 600 μm and a size distribution of from about 70 μm to about 1000 μm.

5,360,603

PACKED BED ARRANGEMENT USEFUL FOR MIXING AND/OR OXIDATION

Raymond F. Drnevich, Clarence Center, N.Y., and Douglas R. Dreisinger, Oakville, Canada, assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Aug. 23, 1993, Ser. No. 108,469
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] B01J *8/00*; C01B *21/26*; C01C *3/00*; C07D *261/18*
U.S. Cl. 423—403 15 Claims



10. A process for mixing at least one oxidizable reactant selected from the group consisting of methanol, benzene, naphthalene, orthoxylene, cumene, methane, propylene, acrolein, hydrogen and ammonia with oxidant, which comprises mixing said oxidizable reactant and oxidant in a packed bed containing inert packing materials wherein said inert packing materials are spherically shaped particles whose maximum diameter sizes are defined by the equation:

$$D \leq 0.61\ Dt \frac{VSD}{VLB} - .727\ Dt$$

DP=diameter of inert spherical packing material (inch)
VSD=superficial velocity at design inlet conditions (ft/sec)
VLB=laminar burning velocity of mixture (ft/sec)
Dt=diameter of packed tube (inch)
or said inert packing materials are non-spherically shaped particles whose maximum sizes are defined by the equation:

$$DP = 6 \frac{VP}{SP}$$

-continued

$$DP \leq 0.61\ Dt \frac{VSD}{VLB} - .727\ Dt$$

VSD=superficial velocity at design inlet conditions (ft/sec)
VLB=laminar burning velocity of mixture (ft/sec)
Dt=diameter of packed tube (inch)
VP=volume of non-spherical inert packing materials ($inch^3$)
SP=surface area of non-spherical inert packing materials ($inch^2$).

5,360,604

X-RAY CONTRAST COMPOSITIONS CONTAINING AN ORGANIC CRYSTALLINE X-RAY CONTRAST AGENT IN COMBINATION WITH PHARMACEUTICALLY ACCEPTABLE CLAYS

Stephen B. Ruddy, Schwenksville; Mary E. Roberts, Downingtown; Gregory L. McIntire, West Chester; Eugene R. Cooper, Berwyn, and Carl R. Illig, Phoenixville, all of Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 227,423, Apr. 14, 1994. This application May 23, 1994, Ser. No. 247,424
Int. Cl.[5] A61K *49/04*
U.S. Cl. 424—5 20 Claims

1. An x-ray contrast composition for oral or retrograde examination comprising on a % weight per volume basis:
(a) from about 5 to 45% of a crystalline contrast producing agent selected from the group consisting of diatrizoic acid, metrizoic acid, iothalamic acid, trimesic acid, urokonic acid, ioxathalamic acid, tetraiodoterephthalic acid, ioxaglic acid, iodipamide, ethyl-3,5-diacetamido-2,4,6-triiodobenzoate, ethyl-2-(3,5-bis(acetyl amino)-2,4,6-triiodobenzoyloxy)butyrate, and ethyl(3,5-bis(acetylamino)-2,4,6-triiodobenzoyloxy)acetate, said crystalline contrast agent having a surface modifier adsorbed on the surface thereof in an amount sufficient to maintain an effective average particle size of from about 0.5μ to about 100μ; and
said surface modifier is selected from the group consisting of a tetrafunctional block copolymer derived from sequential addition of propylene oxide and ethylene oxide to ethylenediamine;
(b) from about 0.1 to 10% of a pharmaceutically acceptable clay selected from the group consisting of montmorillonite, beidelite, nontronite, hectorite and saponite;
(c) from about 1.0 to 20% of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;
(d) from about 0 to 15% of an excipient; and
(e) water to make 100% by volume.

5,360,605

PRESERVATION OF BLOOD, TISSUES AND BIOLOGICAL FLUIDS

Edward Shanbrom, 2252 Liane La., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 754,752, Sep. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 753,814, Sep. 3, 1991, abandoned, and a continuation-in-part of Ser. No. 753,734, Sep. 3, 1991, and a continuation-in-part of Ser. No. 577,295, Sep. 4, 1990, abandoned, and a continuation-in-part of Ser. No. 577,204, Sep. 4, 1990, abandoned. This application Mar. 3, 1992, Ser. No. 846,129
Int. Cl.[5] A61K *31/74, 33/14*
U.S. Cl. 424—78.08 1 Claim

1. In the method of separation of plasma factors by alcohol fractionation, the improvement comprising the addition of povidone-iodine to the plasma before fractionation in concentrations to provide from about 0.1 w/o to about 10 w/o povidone-iodine in the plasma to give higher yields and sharper differentiation, and thereafter removing oxidizing iodine from the fraction by passing said fraction into intimate contact with cross-linked povidone or adding a physiologically acceptable reducing agent.

5,360,606

BIOLOGICAL INOCULANT EFFECTIVE AGAINST ALTERNARIA

Jennifer L. Parke, and Ann E. Joy, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 989,931, Dec. 10, 1992, Pat. No. 5,244,658, which is a continuation of Ser. No. 861,991, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 387,919, Jul. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 227,810, Aug. 3, 1988, abandoned. This application Mar. 5, 1993, Ser. No. 26,798
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] C12N *1/20*
U.S. Cl. 424—93.47 7 Claims

1. A process for controlling Alternaria fungal foliar diseases in plants comprising inoculating the plants with an Alternaria disease-controlling effective amount of an essentially biologically pure culture of a *Pseudomonas cepacia* bacterial strain in which in an in vitro assay inhibits Alternaria spore germination, the *Pseudomonas cepacia* bacterial strain being selected from the group consisting of strains AMMD (ATCC Accession No. 53795), AMMA (ATCC Accession No. 53796) and ATCC Accession No. 29424.

5,360,607

METHOD FOR PRODUCTION AND USE OF PATHOGENIC FUNGAL PREPARATION FOR PEST CONTROL

Jacob Eyal, Baltimore; James F. Walter, Ashton, both of Md.; Osborne, Lance, Longwood, Fla., and Zdenek Landa, Ceske Budejovice, Czechoslovakia, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 772,983, Oct. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 639,641, Jan. 10, 1991, abandoned. This application Mar. 10, 1992, Ser. No. 850,330
Int. Cl.[5] C12N *1/14*
U.S. Cl. 424—93.5 20 Claims

1. An improved stable, dried, prilled biopesticidal composition comprising an inert carrier which is capable of supporting fungal growth and promoting conidia sporulation, and an entomogenous fungal biomass at least about 80% of which is in the form of mycelium and is prepared by submerged fermentation of the fungus, *Paecilomyces fumosoroeus* isolate ATCC No. 20874.

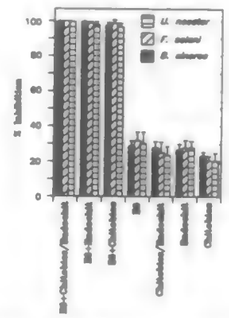
5,360,608

FUNGICIDAL COMPOSITIONS COMPRISING CHITINASE AND *ENTEROBACTER CLOACAE*, AND A METHOD FOR STIMULATION PROLIFERATION OF *E. CLOACASE*

Gary E. Harman; Matteo Lorito, and Christopher K. Hayes, all of Geneva, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 3, 1993, Ser. No. 12,945
Int. Cl.[5] A01N *63/00*; C12N *1/38, 1/20, 9/24*
U.S. Cl. 424—94.61 12 Claims

1. An antifungal composition comprising
(a) purified fungal cell wall degrading enzyme selected from the group consisting of endochitinases, chitin 1,4-β-chitobiosidases, N-acetyl-β-D-glucosaminidases, and combinations thereof, and
(b) these being present in a ratio of (b) to (a) ranging from 200 cells of (b) to 1 μg of (a) to 200,000 cells of (b) to 1 μg of (a),



the combination of (a) and (b) being present in an antifungal effective amount and demonstrating antifungal synergistic interaction in accordance with Limpel's formula.

5,360,609

CHLORINE DIOXIDE GENERATING POLYMER PACKAGING FILMS

Stephen T. Wellinghoff, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Feb. 12, 1993, Ser. No. 17,657
Int. Cl.[5] A01N *25/04*; A61K *7/44*; C08K *3/02*
U.S. Cl. 514—772.3 5 Claims

1. A method for making a composition which liberates a repelling or biocidal agent which comprises the steps of:
dissolving a chlorite salt of a cation into hydrogen bonded matrices to create an amine containing phase; and
mixing said amine containing phase with an incompatible phase having a hydrolyzable arthydride component therein to create a mixture having an ionomeric polymer; and
exposing said mixture to atmospheric moisture at a temperature below which chlorine decomposes such that said ionomeric polymer releases chlorine dioxide when exposed to said atmospheric moisture in order to liberate a repelling or biocidal agent.

5,360,610

METHOD FOR STIMULATING NERVE FIBER GROWTH

Thomas R. Tice, Birmingham; Deborah L. Dillon, Helena; David W. Mason, Birmingham, all of Ala.; Amanda McRae-McFarlane, Vastra Frolunda, and Annica B. Dahlstrom, Askin, both of Sweden, assignors to Southern Research Institute, Birmingham, Ala.

Continuation of Ser. No. 525,383, May 16, 1990, abandoned. This application Mar. 15, 1993, Ser. No. 33,309
Int. Cl.[5] A61F *2/02*; A61K *9/48, 9/16*; B01J *13/02*
U.S. Cl. 424—426 11 Claims

1. A method for eliciting neural fiber growth within the central nervous system which comprises implanting within the central nervous system a neuro-active neural fiber growth eliciting molecule encapsulated within a microsphere comprising the copolymer of poly(lactide-co-glycolide) or a homopolymer of polylactide or polyglycolide.

5,360,611

PHARMACEUTICAL COMPOSITIONS AND METHODS OF TREATMENT OF THE CORNEA FOLLOWING ULTRAVIOLET LASER IRRADIATION

Stella M. Robertson, Arlington, and Herman M. Kunkle, Jr., Mansfield, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 866,730, Apr. 4, 1992, Pat. No. 5,271,939, which is a continuation of Ser. No. 531,179, May 31, 1990, Pat. No. 5,124,392, which is a continuation-in-part of Ser. No. 253,009, Oct. 3, 1988, Pat. No. 4,939,135. This application Aug. 4, 1993, Ser. No. 101,862

The portion of the term of this patent subsequent to Dec. 21, 2007, has been disclaimed.

Int. Cl.[5] A61K *31/56*

U.S. Cl. 424—427 18 Claims

1. A method for treating a cornea following UV laser irradiation and resulting photoablation and volumetric removal of corneal tissue, comprising: applying to the affected eye, a composition containing between about 0.1 and 2.0 wt. % of a non-steroidal antiinflammatory.

5,360,612

PHARMACEUTICAL COMPOSITIONS CONTAINING TRIAZOLE DERIVATIVES FOR RECTAL ADMINISTRATION

Walter F. Fries; Günther F. D. Pfaff; Jörg C. Pfitzner, and Gerhard Simon, all of Illertissen, Germany, assignors to Pfizer Inc., New York, N.Y.

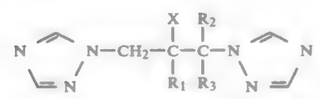
Filed Oct. 13, 1992, Ser. No. 959,869

Int. Cl.[5] A01N *55/02*; A61F *9/02*

U.S. Cl. 424—436 12 Claims

1. A pharmaceutical composition for rectal administration that comprises the following constituents:

a) at least one therapeutically active triazole compound of the formula:



(I)

wherein R_1 is phenyl radical optionally substituted with one to three substituents independently selected from the group consisting of F, Cl, Br, I, CF_3, $(C_1–C_4)$alkyl, $(C_1–C_4)$alkoxy, and 5-chloropyrid-2-yl;

X is OH, F, Cl or Br;

R^2 is H, CH_3 or F;

R^3 is H or F; and

wherein the compound of formula I comprises an amount of 0.1 to 25 percent by weight, relative to the total weight of the composition, and

b) semi-synthetic glycerides produced by interesterification, consisting of saturated fatty acid glycerides having a chain length of C_8 to C_{18} and having a melting range of 32°–44° C., wherein the semi-synthetic glycerides comprise between 80 to 99.9 percent by weight, relative to the total weight of the pharmaceutical composition, and

c) a mixture of solid, purified, saturated hydrocarbons having a solidification point of 40°–70° C., wherein the hydrocarbons comprise between 0 to 8 percent by weight, relative to the total weight of the pharmaceutical composition.

5,360,613

METHOD OF REDUCING BLOOD LEVELS OF TOTAL CHOLESTEROL AND LOW-DENSITY LIPOPROTEIN CHOLESTEROL

Steven L. Nissen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 946,404, Sep. 16, 1992, abandoned. This application Oct. 14, 1993, Ser. No. 136,688

Int. Cl.[5] A61K *47/00*

U.S. Cl. 424—439 6 Claims

1. The method of treating a human patient having elevated blood levels of low-density lipoprotein cholesterol and total cholesterol, comprising orally administering to the human patient an effective amount of an edible form of β-hydroxy-β-methylbutyric acid for reducing the patient's blood level of said lower density cholesterol and total cholesterol, said edible form consisting of (i) its free acid from, or (ii) its sodium, potassium, or calcium salt, or (iii) its methyl or ethyl ester, or (iv) its lactone, said effective amount being within the range of from 0.01 to 0.20 grams of said edible form per kilogram body weight per 24 hours based on said calcium salt.

5,360,614

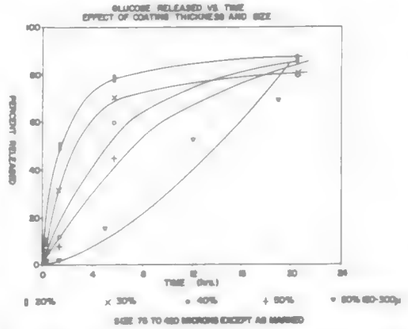
METHOD OF CONTROLLING THE RELEASE OF CARBOHYDRATES BY ENCAPSULATION AND COMPOSITION THEREFOR

J. Gary Fox, Princeton Junction, and Darlene Allen, Berkeley Heights, both of N.J., assignors to The Estee Corporation, Parsippany, N.J.

Filed Apr. 26, 1993, Ser. No. 53,944

Int. Cl.[5] A61K *9/14, 9/28, 9/68, 47/36*

U.S. Cl. 424—439 4 Claims



1. An edible ingredient for use in foods selected from the group consisting of beverages, food bars, candy bars, candy, desert mixes, puddings and yogurts, said ingredient comprising:

a) a core having a metabolizable carbohydrate throughout;

b) said core having a time delay release coating for releasing said metabolizable carbohydrate substantially only into the digestive tract of the body;

c) the size of said coated core being approximately about 30–about 1,000 μm, said coating being evenly distributed on said core; and

d) whereby said coated core is shelf stable.

5,360,615

SOLVENT SYSTEM ENHANCING THE SOLUBILITY OF PHARMACEUTICALS FOR ENCAPSULATION

Man S. Yu, Rochester, N.Y.; Foo S. Hom, Safety Harbor; Sibaprasanna Chakrabarti, Oldsmer, both of Fla.; Chong-Heng Huang, Madison, N.J., and Mahendra Patel, Swindon, England, assignors to R. P. Scherer Corp., Troy, Mich.

Continuation of Ser. No. 642,187, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 104,911, Oct. 9, 1987, Pat. No. 5,071,643, which is a continuation-in-part of Ser. No. 920,577, Oct. 17, 1986, abandoned. This application May 26, 1992, Ser. No. 890,285

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] A61K *9/08, 9/48, 9/20, 47/34*

U.S. Cl. 424—455 19 Claims

1. A pharmaceutically acceptable solution of an acidic pharmaceutical agent suitable for filling softgels and having a pH of 2.5 to 7.5 for subsequent oral administration, comprising the acidic pharmaceutical agent and a solvent system, the solvent system comprising 10% to 80% polyethylene glycol by weight of the solvent system, 1% to 20% water by weight of the solvent system and a hydroxide species, the hydroxide species being capable of dissociating in the solvent system into pharmaceutically acceptable cations and hydroxide ions, the hydroxide species being present in an amount such that between 0.1 and less than one mole of hydroxide ions per mole of acidic groups in the acidic pharmaceutical agent is present in the solution, the hydroxide species partially ionizing the acidic pharmaceutical agent such that the acidic pharmaceutical agent is present in a dissolved state in the solution as both a free acid and a cationic salt, the acidic pharmaceutical agent being present in a dissolved state in the solution in a solubility enhanced amount greater than the maximum amount of the acidic pharmaceutical agent capable of dissolving in the solvent system in the absence of the hydroxide species and less than or equal to 80% by weight of the solution.

5,360,616

INJECTABLE PHARMACEUTICAL COMPOSITION

Josue Garza Flores; Laura P. Laiseca Soto, both of Mexico City, Mexico; Jose Guillen Pichardo, Sto Domingo, Dominican Rep., and Juan Angeles Uribe, Mexico City, Mexico, assignors to Applicaciones Farmaceuticas S.A. De C.V., Mexico City, Mexico

Filed Jun. 13, 1991, Ser. No. 714,583

Claims priority, application France, Jun. 14, 1990, 90 07416

Int. Cl.[5] A61K *9/14, 31/56*

U.S. Cl. 424—489 5 Claims



1. Solid, non-porous microspheres of a diameter between 1 and 300 μm, wherein said microspheres consist of an injectable steroid and wherein said microspheres are obtained by spraying said steroid in the melted state to form droplets and rapidly freezing said droplets in a gas.

5,360,617

METHOD OF MAKING CHEESE USING VIRAL ENZYMES

Michael J. Gasson, Norwich, United Kingdom, assignor to Agricultural and Food Research Council, England

Filed Mar. 13, 1991, Ser. No. 668,523

Claims priority, application United Kingdom, Jul. 13, 1988, 8816693.9

Int. Cl.[5] A23C *9/12*

U.S. Cl. 426—36 4 Claims

1. In a method of making cheese the improvement comprising the step of lysing a bacterial starter culture with a lysin of a Lactococcus bacteriophage or a variant of such a lysin which retains at least 10% of bacterial cell wall degrading activity of said lysin, wherein said lysin is suitable for addition to cheese or to a cheese precursor mixture and is free of active said bacteriophage.

5,360,618

FLAVORING SYSTEM

Sherri A. Walker, Alexandria, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 985,373, Dec. 4, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,201

Int. Cl.[5] A23L *1/30*

U.S. Cl. 426—72 8 Claims

1. A method for producing a food product having enhanced flavor stability said food product containing an oil-based flavoring and aspartame, said food product additionally comprising a combination of ingredients selected from the group consisting of proteins, solid fat, liquid oil, carbohydrates, vitamins, minerals and water, said method comprising the steps of

(a) adding said oil-based flavoring to synthetic amorphous silica to form flavored silica;

(b) combining said flavored silica with the food product liquid oil to yield an oil dispersion containing flavored silica;

(c) mixing together said protein, fat, vitamins, minerals, carbohydrates, water and aspartame with said oil dispersion to form a mixture; and

(d) forming said mixture into said food product.

5,360,619

CEREAL FOOD INGREDIENTS FROM WAXY BARLEY

Donald J. Alexander, Martin, N. Dak., assignor to Alexander - Peterson, Inc., Martin, N. Dak.

Filed Oct. 1, 1993, Ser. No. 131,100

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—242 22 Claims

1. A method for producing a barley food ingredient, comprising the steps of:

(a) pearling barley grain having a waxy phenotype;

(b) contacting the pearled waxy barley grain with water until the moisture content of said waxy barley grain is between about 12 and about 16%, said contact achieving said moisture content of said waxy barley grain in less than about 5 hours at room temperature;

(c) stabilizing the pearled waxy barley grain at a temperature of between about 235 and about 260 degrees Fahrenheit for a time between about 1 and about 7 minutes; and

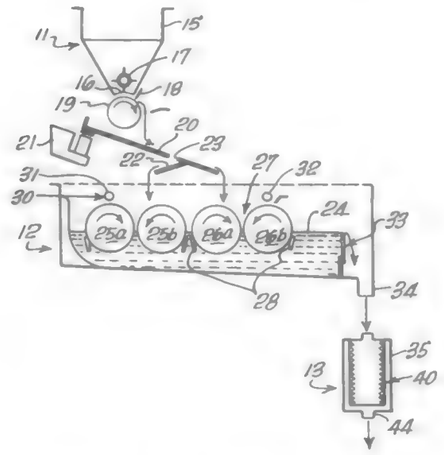
(d) thereafter forming the pearled waxy barley grain into a cereal ingredient.

5,360,620

METHOD FOR WETTING AND DISSOLVING DRY PARTICLES

Sheng H. Hsu, Marysville, Ohio, assignor to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 852,054, Mar. 16, 1992, Pat. No. 5,253,578.
This application Jul. 12, 1993, Ser. No. 88,957
Int. Cl.[5] A23F *51/00*
U.S. Cl. 426—432 5 Claims



1. A method for wetting and dissolving finely divided dry particles in a liquid which comprises,

establishing a body of liquid in a tank,

mounting at least one pair of counter-rotating drums in the tank, with the drums being partially submerged in the body of liquid and the drums in each counter-rotating pair being mounted parallel and in close proximity to one another to define a nip between the counter-rotating drums,

rotating the drums so that both drums in each counter-rotating pair are rotated in a direction toward said nip, with a layer of the liquid adhering to the surface of each drum as it rotates out of said body of liquid,

depositing a layer of dry particles on the liquid layer on the surface of a rotating drum in each counter-rotating pair whereby the particles are wetted and form wet powder lumps on the surface of the drums,

carrying the wetted particles and wet powder lumps on the surface of the drums through said nip, to compress, knead and break up substantially all of the powder lumps, and into the body of liquor to dissolve the wetted particles therein,

rotating each of said drums into a converging gap provided by a stationary bar mounted in the liquid body tangential to an upwardly rotating section of the drums whereby substantially all of the wet powder lumps are abraded and disintegrated during passage through said converging gap and are dissolved in said liquid,

removing the liquid solution containing dissolved particles from the tank,

passing the liquid removed from the tank through a plurality of converging gaps in a cylindrical filter whereby any remaining powder lumps in the liquid are abraded, sheared and disintegrated by passage through the gaps with the particles being dissolved in the liquid, and

discharging from said filter liquid which is free from powder lumps.

5,360,621

LOW-CALORIE CHOCOLATE

Léon Mentink, Estaires, and Michel Serpelloni, Beuvry-les-Bethune, both of France, assignors to Roquette Freres, Lestrem, France

Filed May 1, 1992, Ser. No. 877,962
Claims priority, application France, May 6, 1991, 91 05511
Int. Cl.[5] A23G *1/00*
U.S. Cl. 426—548 24 Claims

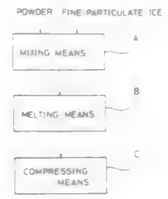
1. A low calorie dark chocolate comprising fat, a sweetening mass, at least one emulsifier, and desiccated cocoa or cocoa paste, wherein the sweetening mass comprises a product selected from the group consisting of maltitol, lactitol, hydrogenated isomaltulose and low-calorie saccharide polymers, and wherein the total fat content of the composition is less than 32% by weight, said chocolate having technical and organoleptic properties comparable to those of traditional sucrose-containing chocolate.

5,360,622

METHOD AND APPARATUS FOR KNEADING POWDER, AND KNEADED MATERIAL

Ryosuke Yokoyama, 12-22, Suehirocho, Tsuruoka-shi, Yamagata, Japan

PCT No. PCT/JP89/00219, § 371 Date Oct. 17, 1990, § 102(e) Date Oct. 17, 1990, PCT Pub. No. WO90/09840, PCT Pub. Date Sep. 7, 1990
PCT Filed Mar. 2, 1989, Ser. No. 598,643
Int. Cl.[5] A21D *2/08, 6/00*
U.S. Cl. 426—549 3 Claims



1. A powder kneading method comprising the steps of:

mixing a vermicelli-forming powder cooled below 0° C. with fine particulate ice in an atmosphere maintained below 0° C. to obtain a dry mixture of fine particulate ice and vermicelli-forming powder;

melting the fine particulate ice; and

compressing the mixture by applying a pressure to the mixture.

5,360,623

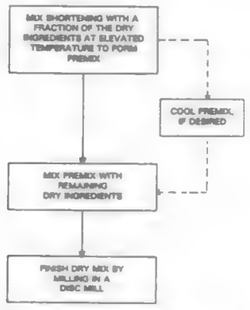
METHOD OF PREPARING A DRY MIX USEFUL IN PREPARING BAKED GOODS

James S. Thorson, Scandia, and Jimmy A. DeMars, Hugo, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Jun. 29, 1992, Ser. No. 905,464
Int. Cl.[5] A21D *10/00;* A23L *1/10*
U.S. Cl. 426—555 11 Claims

1. A method of preparing a dry mix including sugar, flour and shortening for producing baked goods comprising the steps of:

a) mixing sugar, liquid shortening and between about 0% and about 25% of said flour at a temperature of at least about 70° F. to produce a dry, particulate pre-mix and



b) mixing said pre-mix with sugar and flour to yield a flowable dry mix for said baked goods.

5,360,624

EMULSION-TYPE FOOD

Yuji Okura, Yokohama; Toshio Tawada, Minoo, and Yukihiro Nakao, Tondabayashi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Jun. 23, 1992, Ser. No. 902,239
Claims priority, application Japan, Jun. 24, 1991, 3-151791
Int. Cl.[5] A23L *1/054*
U.S. Cl. 426—573 9 Claims

1. A process for producing a food product having curdlan gel as a fat substitute, comprising:

a) preparing a curdlan gel that is convertible from its gel state to a liquid state when heated to a temperature above 40° C., the curdlan gel containing 0.6 to 10% by weight of curdlan; then

b) pulverizing the curdlan gel into particles less than 100 μm in diameter at a temperature less than about 40° C. to limit melting and re-coagulation of the curdlan gel; and then

c) combining the curdlan gel with other food ingredients at temperatures of less than about 40° C. to obtain the food product as an emulsion, the curdlan gel being 0.5% to 3% by weight of the food product and at least 20% by weight of the total amount of fat or fat substitutes in the food product.

5,360,625

BAKERY CUSTARD

Rob Sikking, Gouda; Jeroen J. Brockhus, Breda, and Jacobus L. Scholtes, Rotterdam, all of Netherlands, assignors to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Aug. 10, 1993, Ser. No. 103,695
Claims priority, application European Pat. Off., Aug. 21, 1992, 92202560.6
Int. Cl.[5] A23L *1/05*
U.S. Cl. 426—573 17 Claims

1. Ready-to-use bakery custard with a long shelf-life, comprising;

(i) 65–95 wt %, preferably 70–85 wt % of a water continuous fat emulsion with a fat content of 0.1–10 wt % and containing 0.01–8 wt % of a protein

(ii) 0.01–20 wt % of a sweetener

(iii) 2–10 wt %, preferably 2–5 wt % of a modified starch, suitable for UHT-conditions

(iv) 1–5 wt % of a gelatin relating compound, capable of gel formation at ambient temperature

(v) 0.01–5 wt % of a hydrocolloid, other than gelatin, suitable for UHT-conditions and which has gelling properties at temperatures below 60° C.

(vi) a pH of 6.5–7.5

which bakery custard displays:

(i) a Stevens-hardness at 20° C. without whipping of 50–250 g/cm^2

(ii) a Stevens-hardness at 20° C. after a slight whipping of 20–70 g/cm^2

(iii) an upwards viscosity at room temperature, after a slight whipping, at 50 s^{-1} of 4,000–20,000 mPa.s

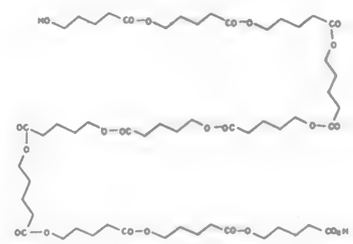
(iv) a downwards viscosity at room temperature, after a slight whipping, at 50 s^{-1} of 3,000–15,000 mPa.s.

5,360,626

FAT SOLUBLE POLYMERS AND THEIR USE IN FOODS

Radha Iyengar, Belmont; Mark L. Shulman, Waltham, and Akiva T. Gross, Newton, all of Mass., assignors to Opta Food Ingredients, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 923,258, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 579,482, Sep. 7, 1990, Pat. No. 5,137,743. This application Apr. 2, 1993, Ser. No. 41,938
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] A23D *7/00, 9/00*
U.S. Cl. 426—601 18 Claims



1. An edible food product containing an oil phase thickened with a texturizing agent present in an amount sufficient to significantly increase the viscosity of the oil phase of said edible food product, said texturizing agent comprising an alkyl-substituted, non-nitrogen containing oil-soluble polymer having a molecular weight of at least about 2000 daltons.

5,360,627

REDUCED FAT SHORTENING SUBSTITUTE FOR BAKERY PRODUCTS

Girish N. Desai, Ellicott City, Md., and Janos Bodor, Rijswijk, Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Nov. 30, 1992, Ser. No. 982,929
Int. Cl.[5] A23D *9/00*
U.S. Cl. 426—606 15 Claims

1. A shortening substitute for the preparation of a bakery product, wherein the shortening substitute is in the form of an emulsion comprising:

from about 10% to about 40% of a fat phase comprising

(a) a triglyceride;

(b) at least 3%, by weight of the emulsion, of an emulsifier, the emulsifier comprising at least 45%, by weight of the emulsifier, of propylene glycol monoester of fats and fatty acids; and

from about 60% to about 90% of an aqueous phase comprising

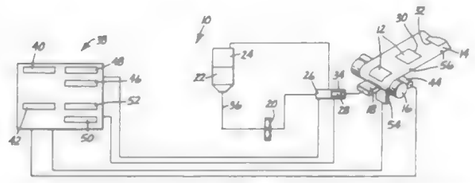
(c) from about 5% to about 30%, by weight of the emulsion, of a viscosifier selected from the group consisting of a starch, a starch derivative, a gum, and mixtures thereof; and

(d) from about 10% to about 50%, by weight of the emulsion, of a polyol humectant.

5,360,628
TECHNIQUE FOR LABELING AN OBJECT FOR ITS IDENTIFICATION AND/OR VERIFICATION
Charles L. Butland, Playa del Rey, Calif., assignor to Butland Trust Organization, Los Angeles, Calif.
Continuation-in-part of Ser. No. 597,859, Oct. 15, 1990, Pat. No. 5,194,289, which is a continuation-in-part of Ser. No. 263,058, Oct. 27, 1988, abandoned, which is a continuation-in-part of Ser. No. 868,955, May 30, 1986, Pat. No. 4,882,195, which is a continuation-in-part of Ser. No. 857,929, Apr. 30, 1986, abandoned. This application Jan. 22, 1993, Ser. No. 8,620
Int. Cl.[5] B44F *1/12*
U.S. Cl. 427—7 **9 Claims**

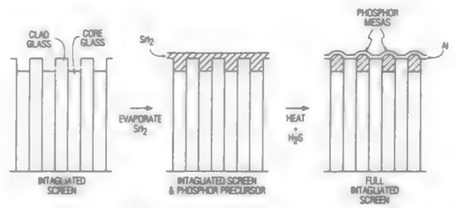
1. Method for labeling an object for identification which comprises the steps of:
(a) applying a first mark comprising a hologram to said object which mark is visible to the naked eye; and
(b) applying a second mark to said object which mark is invisible to the naked eye, said second mark being one or more of an ultraviolet radiation (UV) dye which is visible to the naked eye only in the presence of ultraviolet radiation, an infrared (IR) dye which is visible to the naked eye only in the presence of infrared radiation, an ink which displays a measurable electrical resistivity or magnetic property, or a biologic marker.

5,360,629
METHOD OF APPLYING DISCRETE COATING PATCHES ON A MOVING WEB
Thomas M. Milbourn, Mahtomedi, and Jerry J. Barth, Red Wing, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 786,751, Nov. 1, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 44,150
Int. Cl.[5] B05D *1/26*
U.S. Cl. 427—8 **13 Claims**



1. A method of coating a pattern of a plurality of spaced discrete coating patches on a single web of material, wherein each patch has a length and a width, comprising the steps of:
providing relative movement between the web of material and a coating die, wherein the coating die has a width, at speeds of at least 10 m/min;
delivering coating fluid from a reservoir to the die at intervals corresponding to when coating is desired;
directing coating fluid to either the die or the reservoir depending on whether coating is desired;
providing, at the start of each patch, a controlled excess flow of coating fluid to the die to provide sharp, linear front edges of the coating patches to quickly establish the coating fluid flow from the die while maintaining a constant distance between the coating die and the web;
providing a sharp break in the coating fluid flowing from the die to provide sharp, linear rear edges of the coating patches to quickly end the coating fluid flow from the die while maintaining a constant distance between the coating die and the web;
extruding coating fluid onto the web at a nonexcess flow after the start of the patch while maintaining a constant distance between the coating die and the web, wherein the providing a controlled excess flow, providing a sharp break, and extruding coating steps are performed without obstructing the flow within the die and are performed to create uniform coating patches;
controlling length of and distance between the coated patches on the web; and
coordinating timing of the directing step with respect to the operation of the two providing steps.

5,360,630
THIN FILM INTAGLIATED PHOSPHOR SCREEN STRUCTURE
Nils I. Thomas, and Larry D. Kiser, both of Roanoke, Va., assignors to ITT Corporation, New York, N.Y.
Continuation of Ser. No. 533,074, Jun. 4, 1990, abandoned. This application May 7, 1992, Ser. No. 881,308
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—67 **18 Claims**



1. A method of making a continuous thin film, intagliated phosphor screen structure comprising the steps of:
providing a light-transmitting substrate having a plurality of transmission members arranged in parallel extending between an internal surface and an external, display surface, wherein each of the transmission members includes a core portion disposed within a cladding portion;
etching the core portions at the internal surface of the screen structure to form recesses below the level of the cladding portions, said recesses having bottom surfaces with a concave curved meniscus shape to provide a lens effect which enhances the light output entering said transmission members; and
forming a continuous thin film phosphor layer over the entire internal surface of said transmission members and completely covering all the core recesses and cladding portions of said transmission members at said internal surface, said continuous phosphor layer having a plurality of depressions, each of said depressions corresponding to an associated core recess and with each of said depressions extending into and filling the associated core recess.

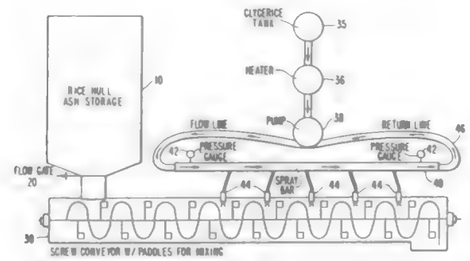
5,360,631
FLEXIBLE WOOD ARTICLE AND METHOD OF ITS PREPARATION
Robert E. Strauss, 2936 Chapel Hill Rd., Orange, Calif. 92667
Filed Jul. 26, 1993, Ser. No. 95,547
Int. Cl.[5] B05D *7/06*
U.S. Cl. 427—154 **19 Claims**

1. A method to produce a wood article which comprises:
a. treating a wood article having exterior surfaces with anhydrous ammonia by immersing said wood article in an ammonia-rich atmosphere to impregnate said wood article with ammonia in sufficient quantities to impart flexibility to said wood article;
b. coating the wood article with a polymeric film impermeable to ammonia to seal said exterior surfaces and thereby retain said ammonia within said wood article;
c. flexing said wood article into a desired final shape; and
d. removing said polymeric film to remove the flexibility therefrom.

5,360,632
REDUCED LEACHING OF ARSENIC AND/OR MERCURY FROM SOLID WASTES
Marvin M. Johnson, Bartlesville, Okla.; Maybin Simfukwe, Houston, Tex.; Gerhard P. Nowack, and Donald H. Kubicek, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 10, 1993, Ser. No. 105,208
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—212 **28 Claims**

1. A process for encapsulating a solid waste material which contains at least one impurity selected from the group consisting of elemental arsenic, arsenic compounds, elemental mercury and mercury compounds which comprises: mixing said solid waste material with at least one liquid polysulfide polymer and at least one oxidative curing agent so as to form a mixture in which said solid waste material is essentially immersed in said at least one liquid polysulfide polymer, and thereafter maintaining said mixture at effective polymer curing conditions so as to harden said at least one liquid polysulfide polymer and to produce a solid encapsulation product; wherein said solid waste material has been extracted with at least one alcohol and thereafter substantially dried before said mixing with said at least one liquid polysulfide polymer and said at least one oxidative curing agent.

5,360,633
RICE HULL ASH
James Dean, Humble, Tex., assignor to Uncle Ben's, Inc., Houston, Tex.
Filed Jan. 14, 1993, Ser. No. 4,527
Int. Cl.[5] B05D *7/00*
U.S. Cl. 427—220 **10 Claims**



1. A method for minimizing airborne particles consisting essentially of rice hull ash comprising applying to said ash an amount of at least one vegetable oil, at least one glyceride, or a combination of at least one vegetable oil and at least one glyceride, sufficient to reduce airborne particles of said ash.

5,360,634
COMPOSITION AND METHODS FOR DENSIFYING REFRACTORY OXIDE COATINGS
Lloyd Kamo, Columbus, Ind., assignor to Adiabatics, Inc., Columbus, Ind.
Continuation of Ser. No. 632,008, Nov. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 279,713, Dec. 3, 1988, which is a continuation-in-part of Ser. No. 422,678, Oct. 17, 1989, abandoned. This application Oct. 15, 1992, Ser. No. 962,018
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—226 **27 Claims**

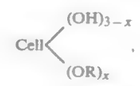
1. A method for densifying a refractory oxide coating, comprising the steps of:
(a) applying a first composition to the refractory oxide coating, the first composition being comprised of a reaction mixture produced by combining 80% formic acid and saturated aqueous chromic acid in a ratio of 80% formic acid:saturated aqueous chromic acid from about 1:1 (weight:weight) to about 2:3 (weight:weight);
(b) applying a second composition to the refractory oxide coating, the second composition being phosphoric acid or monoaluminum phosphate;
(c) heating the refractory oxide coating, having the first and second compositions thereon, to a temperature between about 450° F. and about 600° F., thereby densifying the refractory oxide coating; and
(d) cooling the densified refractory oxide coating.

5,360,635
METHOD FOR MANUFACTURING INORGANIC MEMBRANES BY ORGANOMETALLIC CHEMICAL VAPOR DEPOSITION
Robin E. Richards, Chalfont; Robert L. Iampietro, Emmaus, and Paul N. Dyer, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Jan. 2, 1992, Ser. No. 816,195
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—243 **8 Claims**

1. A method for manufacturing an inorganic membrane comprising a layer of a mixed conducting oxide represented by the formula $La_xA_{1-x}Co_yFe_{1-y}O_{3-z}$ wherein x is between 0 and 1, y is between 0 and 1, z is a number which renders the oxide charge neutral and A is selected from barium or strontium which has been deposited onto a porous substrate, the method comprising:
(a) individually heating organometallic complexes comprising lanthanum, cobalt, iron and A to a temperature sufficient to vaporize the organometallic complexes;
(b) introducing the vaporous organometallic complexes into a reactor containing a porous substrate and mixing the vaporous organometallic complexes with an oxidizing agent; and
(c) depositing a layer of the multicomponent metallic oxide represented by the formula $La_xA_{1-x}Co_yFe_{1-y}O_{3-z}$ onto the porous substrate by reacting the mixture of organometallic complexes and oxidizing agent at a temperature and pressure sufficient to form the inorganic membrane.

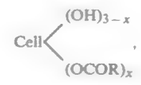
5,360,636
METHOD FOR COATING CELLULOSIC MEMBRANES
Michael Diamantoglou, Erlenbach/Main; Edmund Richter, Wuppertal; Thomas Rintelen, Schwelm; Gustav Düweg, Wuppertal; Angelika Reiche, Cologne, and Ralf Tatas, Wuppertal, all of Germany, assignors to Akzo NV, Arnhem, Netherlands
Filed Jan. 5, 1993, Ser. No. 689
Claims priority, application Germany, Jan. 7, 1992, 4200162
Int. Cl.[5] B05D *5/00*
U.S. Cl. 427—244 **18 Claims**

1. A method for improving the biocompatibility of cellulosic film membranes comprising:
coating the film membranes after their preparation with a coating consisting essentially of a cellulose derivative selected from the group consisting of a cellulose ether, cellulose ester, cellulose carbamate, and combinations thereof,
said cellulose ether having a structure conforming to:



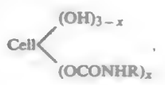
a.

said cellulose ester having a structure conforming to:



b.

said cellulose carbamate having a structure conforming to:



wherein Cell is an unmodified cellulose molecule containing no hydroxyl group; x is degree of modification, said degree of modification being from about 0.002 to about 3; and R is selected from the group consisting of a substituted or unsubstituted alkyl, alkenyl, aryl, arylalkyl group and combinations thereof, said R group having a carbon chain containing 1 to 36 carbon atoms and optionally containing hetero atoms selected from the group consisting of O, S and N, and containing basic, acidic, or both basic and acidic groups.

5,360,637

VAPOR-PHASE DEPOSITION OF FLUORINE GLASS

Charles P. Jacoboni, Saint Jamme, and Brigitte R. J. Boulard, Le Mans, both of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR90/00083, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/08743, PCT Pub. Date Aug. 9, 1990

Continuation of Ser. No. 730,893, Sep. 26, 1991, abandoned. This PCT application Feb. 2, 1990, Ser. No. 158,479

Claims priority, application France, Feb. 2, 1989, 89 01368

Int. Cl.[5] C23C *16/22;* **B32B** *17/00*

U.S. Cl. 427—255 **11 Claims**

1. A process for the vapor phase deposition of a fluoride containing stable glass on a substrate, said fluoride containing glass containing in mole percent with a total of 100%, 30–50 PbF_2, 30–50 GaF_3, 0–30 ZnF_2, 1–5 MF_2 wherein M is Mn or Cd, 1–5 InF_3, 0–10 AlF_3 and 0–10 adjuvant, said process comprising contacting said substrate with vapors emanating from a molten bath of metallic fluorides comprising a reception bath containing in mole % with a total of 100%, 9–26 YF_3, 19–28 BaF_2, 35–40 InF_3, 18–25 $M'F_2$ wherein M' is Mn, Cd or Zn, and 0–10 adjuvant to which said reception bath has been added a sufficient amount of a mixture of PbF_2, GaF_3 and optionally AlF_3 so as to provide said stable glass having the PBF_2, GaF_3 and AlF_3 content defined above.

5,360,638

PROCESS FOR THE PRODUCTION OF A CARBON-CONTAINING COMPOSITE MATERIAL PART PROTECTED AGAINST OXIDATION

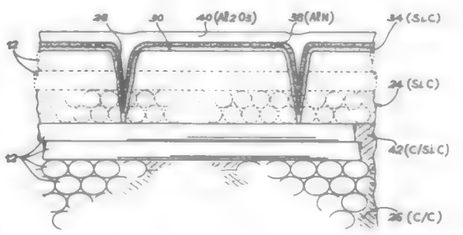
Jean-Michel Lequertier, St Aubin de Médoc, France, assignor to Societe Nationale Industrielle et Aerospatiale, France

Continuation of Ser. No. 776,582, Oct. 11, 1991, abandoned. This application Jul. 8, 1993, Ser. No. 89,409

Claims priority, application France, Oct. 24, 1990, 90 13175

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—257 **36 Claims**



1. In a process for the production of a carbon-containing composite material part, which is protected against oxidation, in which a carbon-fibre containing fibrous preform is densified with the carbon-containing densification material, a refractory material is formed in the outer surface of the densified preform, and cracks in the outer coating filled, the improvement wherein:

(a) the fibrous preform is formed by superimposing layers of carbon-containing fibres, the fibres of each layer being parallel to one another and the N outermost layers of said superimposition, with N being an integral ≧2, being arranged in such a way that their fibres are only oriented in accordance with a first or a second direction (x,y), while the internal layers of said superimposition being arranged in such a way that their fibres are oriented with a third direction, the first and second direction being perpendicular to one another and contained in a same plane, the third direction being also contained in said plane;

(b) the fibrous preform is densified by a carbon-containing material;

(c) an outer stable refractory carbonitride or carbide coating is formed on the surface of the densified preform by chemically reacting, at a temperature above ambient temperature, the N—1 outermost densified layers of the densified preform with at least one chemical compound precursor of said carbide or carbonitride;

(d) the assembly obtained in (c) is allowed to cool in order to form in the outer coating cracks in the thickness direction of said coating and issuing towards to the outside of the part, said cracks being oriented in first and second directions and defining between them parallelepipedic blocks (30) of said carbide or carbonitride; and

(e) filling the cracks with a refractory carbide or carbonitride.

5,360,639

METHOD OF PROVIDING A DECORATIVE PATTERN ON A SCREW HEAD

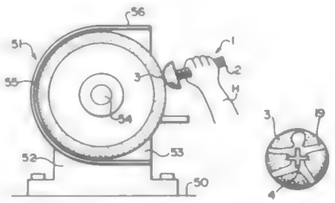
Kenji Kawabata, 4-9-11, Kizuri, Higashi-Osaka, Osaka Prefecture, Japan

Filed Aug. 17, 1993, Ser. No. 107,006

Claims priority, application Japan, Sep. 1, 1992, 4-259131

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—270 **6 Claims**



3. A method of manufacturing a decorative screw which comprises forming a three-dimensional pattern comprising recessed and projecting areas on the whole surface of a screw head, covering the whole of said pattern with a film, grinding said film off of the projecting area or areas of said screw head to provide a screw having a head with a three-dimensional decorative pattern, and then applying a rust inhibitor over the whole screw head.

5,360,640

PROCESS FOR PRINTING BY MARKING A SUBSTRATE BASED ON GLASS FIBERS AND NOVEL SUBSTRATE OBTAINED

Roger G. Forin, Vieugy, France, assignor to Societe Anonyme: Hexcel-Genin, France

Filed Oct. 24, 1991, Ser. No. 780,989

Claims priority, application France, Oct. 24, 1990, 90 13415

Int. Cl.[5] B05D *5/00, 3/12*

U.S. Cl. 427—278 **5 Claims**

1. A process for printing on faces of a textile substrate which includes glass fibers,

comprising the following steps of:

coating at least in part at least one of the faces of said substrate with a film of heat-fusible polymeric material, wherein the film of heat-fusible material is added at a rate of at least 6% by weight of dry extracts with respect to the weight of the substrate, and

making matt imprints on a surface of said film by a process including localized hot creeping of the heat-fusible material, wherein the imprints are made by locally applying a temperature of between 60° to 200° C., and by applying pressure to a marking tool.

5,360,641

STRIPPING LIQUID COATINGS

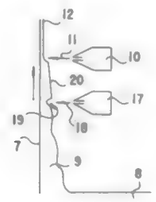
Cat V. Tu, Corrimal East, Australia, assignor to John Lysaght (Australia) Limited, Sydney, Australia

Filed Apr. 2, 1993, Ser. No. 42,495

Claims priority, application Australia, Apr. 6, 1992, PL1739

Int. Cl.[5] B05D *3/04*

U.S. Cl. 427—348 **9 Claims**



1. A jet stripping apparatus comprising a stripping nozzle positioned to direct a stripping gas jet stream against one side of a strip emerging from a coating bath with a layer of bath material thereon, means to supply gas to said stripping nozzle at a pressure sufficient to liberate an effective stripping jet stream therefrom, and surface modifying means spaced above said bath a distance sufficient such that surface irregularities have formed in said coating after said coated strip has emerged from said bath and below said stripping nozzle a distance which is effective to smooth the whole of the surface of said layer prior to it reaching the stripping jet stream.

5,360,642

LOW VOC, MOISTURE CURABLE, ONE-COMPONENT COATING COMPOSITIONS BASED ON ORGANIC POLYISOCYANATE PREPOLYMERS

Kiran B. Chandalia, Cheshire; Michael J. Morgan, Torrington, both of Conn.; Michael M. Martinez, Fairporte, N.Y.; James M. O'Connor, Branford, and Stephen P. Noe, Fairfield, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed May 24, 1993, Ser. No. 65,005

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—385.5 **9 Claims**

1. A process for coating a substrate which comprises contacting said substrate with a low volatile organic compound-containing coating composition having a viscosity as measured by ZAHN cup 2 of less than about 200 seconds and consisting essentially of at least one polyisocyanate prepolymer which is the reaction product of a polyisocyanate with a monoahl or a combination of monoahls a solvent in an amount of between 0% and 45% by weight based upon the amount of said composition, and a tertiary amine catalyst, said composition being essentially free of any volatile mono- and diisocyanates, and said composition being moisture curable upon exposure to atmospheric moisture.

5,360,643

ELECTROSTATIC RECORDING MEDIA

Paul Wacher, Plano, Tex., assignor to International Paper Company, Purchase, N.Y.

Division of Ser. No. 834,020, Feb. 11, 1992, Pat. No. 5,240,777. This application May 7, 1993, Ser. No. 59,059

Int. Cl.[5] B05D *1/36*

U.S. Cl. 427—402 **8 Claims**

1. A process for preparing an electrostatic recording medium which comprises:

(a) providing a support having first and second surfaces;

(b) applying a colloidal dispersion or solution of conductive clay onto the first surface of the paper to form a conductive clay layer;

(c) drying the conductive clay layer formed in step (b);

(d) applying at least one dispersion or solution containing a dielectric material onto the conductive clay layer to form a dielectric layer;

(e) drying the dielectric layer;

(f) applying a dispersion or solution containing a non-clay conductivizing agent to the second surface of the support wherein the non-clay conductivizing agent penetrates the support from the second surface; and

(g) drying the second surface of the support;

wherein said conductive clay is present in an amount of at least 95% by weight of said conductive layer.

5,360,644

CHIP-RESISTANT COMPOSITE COATING

Rodney L. Briggs, Linden; Donald H. Campbell, Milford, and Mark R. Montagne, Southfield, all of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Dec. 15, 1992, Ser. No. 999,385

The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.

Int. Cl.[5] B05D *7/16*

U.S. Cl. 427—410 **13 Claims**

1. A method of coating a substrate with a composite coating comprising the steps of:

(a) applying a coating composition comprising:

(1) a polymer component having active hydrogen-containing groups thereon,

(2) an aminoplast curing agent,

(3) an acid cure catalyst, and

(4) an amine selected from the group consisting of substituted or unsubstituted pyridine and substituted or unsubstituted N-alkyl primary amines,

(b) applying, on top of the coating composition (a), a clear coating composition comprising an epoxy-functional component and an acid-functional or anhydride-functional component.

5,360,645

APPARATUS AND METHOD FOR COATING A MATERIAL ONTO A PLANAR SUBSTRATE

James E. DeVries, North Olmsted, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Filed Dec. 28, 1992, Ser. No. 997,355

Int. Cl.[5] B05D *1/02*

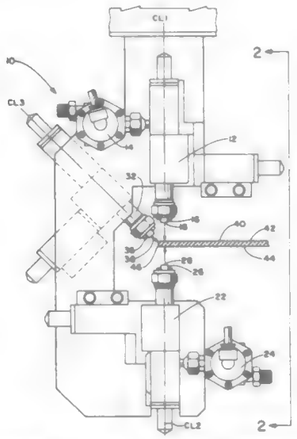
U.S. Cl. 427—421 **9 Claims**

1. A method of simultaneously conformally coating more than one side of a window glass with a coating material, said method comprising:

supplying a first coating material to a first coating gun, said first coating gun being aimed at a first target area on a first side of said window glass;

supplying a second coating material to a second coating gun, said second coating gun being aimed at a second target area on a second side of said window glass, said second side of said window glass being opposite said first side of said window glass, an axis of said first gun being offset from an axis of said second dun a distance "X", "X" being the distance between centerlines of said first and second guns;

supplying a third coating material to a third coating gun, said third coating gun being aimed at a third side of said window glass, said third side of said window glass being between said first and second sides of said window glass,



and forming an edge there between and discharging said third coating material from said third coating gun, such that a continuous film of coating material extends from the first target to the second target areas while encompassing the third side of said vehicle window glass;

controlling a supply pressure of said coating material to said first and second coating guns so that a liquid film emission is discharged from said coating guns, said liquid film emission being substantially free of atomized particles of said coating material; and,

producing relative movement of said window glass between said first and second coating guns so that said coating material dispensed from said first and second coating guns conformally coats said target areas of said first and second sides of said window glass.

5,360,646

CHEMICAL VAPOR DEPOSITION METHOD OF SILICON DIOXIDE FILM

Katsumi Morita, Matsudo, Japan, assignor to Applied Materials, Inc., Santa Clara, Calif.

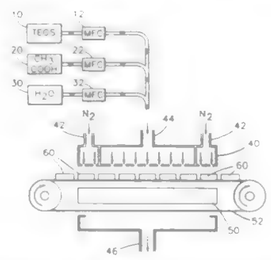
Filed Sep. 1, 1993, Ser. No. 115,387

Claims priority, application Japan, Sep. 10, 1992, 4-242145

Int. Cl.[5] B05D *3/06;* **C23C** *16/00*

U.S. Cl. 427—574 **4 Claims**

1. A method of depositing a silicon dioxide film on a substrate positioned in a chemical vapor deposition chamber comprising the step of flowing a mixture of tetra-ethoxy-ortho-silicate gas and gaseous acetic-acid together with water vapor



into said chamber at a temperature higher than the ambient temperature.

5,360,647

COMPOSITE METAL SHEETS

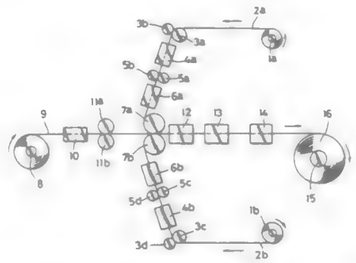
Katsuhiko Sumida, Amagasaki, Japan, assignor to Daicel Chemical Industries, Ltd., Sakai, Japan

PCT No. PCT/JP90/01246, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/05953, PCT Pub. Date Apr. 16, 1992

PCT Filed Sep. 28, 1990, Ser. No. 859,399

Int. Cl.[5] C09K *19/00;* **B32B** *15/04*

U.S. Cl. 428—1 **18 Claims**



1. A composite metal sheet comprising a metal sheet and a liquid crystal polymer layer laminated on at least one surface of said metal sheet, said polymer layer containing a thermotropic liquid crystal polymer layer formed by a film having the following characteristics:

(a) tensile elastic modulus in the longitudinal direction: 6×10^4 kgf/cm^2 or more,

(b) tensile elastic modulus in the cross direction: 0.5 to 1.5 times of the tensile elastic modulus in the longitudinal direction,

(c) tensile strength in the longitudinal direction: 3×10^3 kgf/cm^2 or more, and

(d) tensile strength in the cross direction: 0.75 to 1.25 times of the tensile length in the longitudinal direction.

5,360,648

POUCH FOR PACKAGING FLOWABLE MATERIALS

Daniel J. Falla, and Michael C. Restaino, both of Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 24, 1993, Ser. No. 82,136

The portion of the term of this patent subsequent to Jun. 24, 2010, has been disclaimed.

Int. Cl.[5] B29D *22/00*

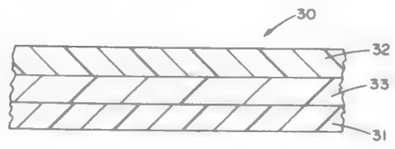
U.S. Cl. 428—35.2 **16 Claims**

1. A pouch made from a film structure in tubular form and having transversely heat sealed ends, the film structure having at least one film layer comprising:

(I) from 10 to 100 percent by weight of at least one homogeneously branched substantially linear ethylene/α-olefin interpolymer characterized as having:

(a) a melt flow ratio, I_{10}/I_2, $\geqq 5.63$, and

(b) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \leqq (I_{10}/I_2) - 4.63$; and



(c) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear ethylene/alpha-olefin interpolymer having about the same I_2 and M_w/M_n

(II) from 0 to 90 percent by weight of at least one polymer selected from the group consisting of a heterogeneously branched linear ethylene/C_3–C_{18} α-olefin copolymer, a high-pressure low density polyethylene, and an ethylene-vinyl acetate copolymer.

5,360,649

THICKNESS-REDUCED DRAW-FORMED CAN

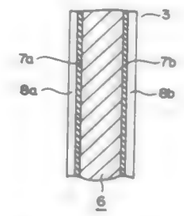
Nobuyuki Sato, Ebina; Ikuo Komatsu, Yokohama; Katsuhiro Imazu, Yokohama, and Tomomi Kobayashi, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,521

Claims priority, application Japan, Nov. 12, 1991, 3-296076

Int. Cl.[5] B21C *37/00, 23/24*

U.S. Cl. 428—35.8 **12 Claims**



1. A thickness-reduced deep-draw-formed can obtained by deep-draw-forming an organic resin-coated structure of a surface-treated steel plate and reducing the thickness of a side wall of the can, said structure comprising, as the substrate, a cold-rolled steel plate having a carbon content in the steel of 0.02 to 0.15% by weight, a manganese content in the steel of 0.2 to 1.0% by weight, a mean diameter of crystal grain of smaller than 6.0 μm, a tensile strength within a range of from 35 to 55 kg/mm^2, and a thickness of 0.17 to 0.30 mm, and as the organic resin a thermoplastic resin selected from the group consisting of polyester and copolyester, said steel plate and thermoplastic resin being so combined together as to satisfy the following formula,

$$S\times t^{1.17} < 0.056\times(Tm-45)$$

wherein S is the tensile strength (kg/mm^2) of the cold-rolled steel plate, t is the thickness (mm) of the cold-rolled steel plate, and Tm is the melting point (°C.) of the thermoplastic resin,

and the degree of reduction of the thickness of the side wall being 5 to 45% of the blank thickness.

5,360,650

CYLINDRICAL FILTERS AND THEIR MANUFACTURE

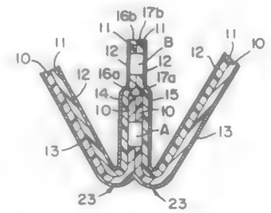
Michael Grimes, Hampshire, England, assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 642,652, Jan. 17, 1991, Pat. No. 5,185,190. This application Dec. 3, 1992, Ser. No. 985,153

Claims priority, application United Kingdom, Jan. 18, 1990, 9001141.2

Int. Cl.[5] B01D *29/07*

U.S. Cl. 428—36.91 **6 Claims**



1. A filter comprising a sheet of filter material including at least first and second layers of filter media, each having first and second edges, wherein a portion of the first layer near the first edge and a portion of the first layer near the second edge are sealed by a first seal spaced inwardly of and extending along the length of the edges, the first and second edges of the first layer extending in the same direction from the first seal, and a portion of the second layer near the first edge and a portion of the second layer near the second edge are sealed by a second seal spaced inwardly of and extending along the length of the edges and spaced from the first seal, the first and second edges of the second layer extending in the same direction from the second seal.

5,360,651

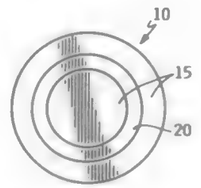
OPTICAL DISK HAVING R/W AND WORM AREA

Duane W. Baxter; Leon E. Gregg, both of Rochester, and William Jaaskelainen, Oronoco, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 21, 1992, Ser. No. 871,436

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **8 Claims**

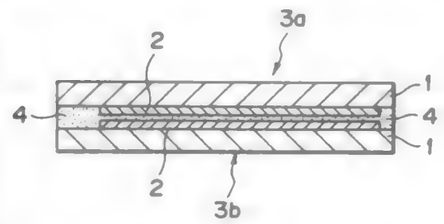


1. An optical record medium on which data is to be recorded comprising:

a first data recording surface having characteristics enabling selective dynamic optical recording of data non-ablatively whereby data can be written dynamically at one time and rewritten dynamically at another time, and

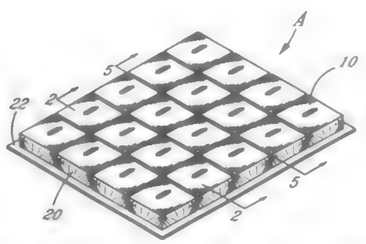
second and third data recording surfaces having characteristics enabling selective dynamic optical recording of data ablatively whereby data can be written once dynamically at selected positions.

5,360,652
OPTICAL RECORDING DISC
Takahiro Kobayashi; Seiro Fujii, and Satoshi Jinno, all of Tsuragashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 15, 1992, Ser. No. 961,359
Claims priority, application Japan, Nov. 18, 1991, 3-301775
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 9 Claims



1. An optical recording disc comprising two disc bases each having a recording layer formed on one surface side of a substrate bonded to each other by the medium of an adhesive layer with the respective recording layers facing each other, wherein said adhesive layer contains an adhesive and a reaction initiator, and said adhesive layer is hardened through polymerization reaction by said reaction initiator and photopolymerization reaction by ultraviolet-ray irradiation, wherein said adhesive layer is formed of a two-liquid type adhesive prepared from an ultraviolet-ray hardenable adhesive containing photodecomposition type photosensitive resin and a reaction initiator added thereto.

5,360,653
ENCAPSULATED FOAM PAD
Robert E. Ackley, 8 Faversham Cir., Greenville, S.C. 29607
Filed Dec. 21, 1992, Ser. No. 993,841
Int. Cl.[5] B32B *3/04, 1/04;* E04B *9/00;* E06B *3/54*
U.S. Cl. 428—71 23 Claims



1. A resilient panel for use as a body support comprising: a first flexible fabric being conformed to include a plurality of juxtaposed expandable pockets each having folds therein and an open peripheral area defined by edges, said pockets being formed of selected sizes arranged longitudinally and transversely of said panel;

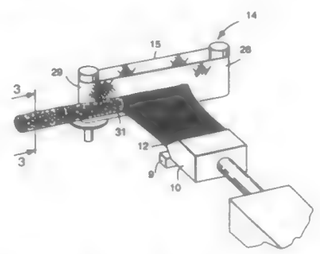
a plurality of resilient foam elements of selected second sizes which substantially conform with said size of said pockets, said resilient foam elements possessing a selected compression range,

and each of said resilient elements being arranged within a respective one of said pockets of substantially conforming size, in a free standing and uncompressed condition thereby maintaining the maximum of their elastic capability;

a second flexible fabric secured to said first sheet along said edges to encapsulate said foam elements within said pockets of said resilient panel; whereby

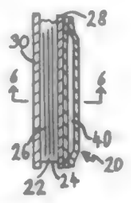
said encapsulated resilient foam elements, which are capable of being compressed independently without affecting adjacent foam elements and of being compressed in an unsupported condition, act to expand respective encapsulating pockets upon being compressed.

5,360,654
SORBENT ARTICLES
Philip A. Anderson, Maplewood, Minn.; Ronald R. Gorke, Houlton, Wis.; Thomas I. Insley, Lake Elmo, Minn.; Daniel E. Meyer, Stillwater, Minn., and David A. Olson, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 28, 1993, Ser. No. 10,565
Int. Cl.[5] B01D *15/00;* B32B *1/00;* C02F *1/28;* E02B *15/06*
U.S. Cl. 428—98 35 Claims



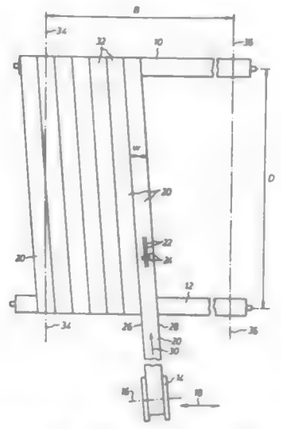
1. A microfibrous sorbent article comprising an elongate boom having a substantially oval cross-section, said boom being formed of multiple adjacent microfibers layers, said layers being bonded to each other by entanglement of fibers between adjacent layers.

5,360,655
FOLDED SHEET ARTICLES
George W. McDonald, Mon Cachet, Rue de la Cache, Castel, Guernsey, Channel Islands, Channel Islands
Filed Feb. 16, 1993, Ser. No. 17,842
Int. Cl.[5] B32B *3/08, 3/04*
U.S. Cl. 428—121 18 Claims



1. A folded sheet article comprising a sheet of material having a first set of concertina folds and, so as to be transverse to these when the sheet is folded with these folds, a second set of concertina folds, the sheet being unfoldable at such folds when folded up, the sheet being provided with two diagonally opposite, defined, stiff portions at segments of the sheet, which segments are at or near diagonally opposite corners of the sheet and defined by at least one fold or at least one edge or both thereof, characterised in that the article has a pocket formed at at least one of said segments.

5,360,656
PRESS FELT AND METHOD OF MANUFACTURING IT
Jan Rexfelt, and Sven-Arne Svensson, both of Halmstad, Sweden, assignors to Albany International Corp., Albany, N.Y.
PCT No. PCT/SE91/00868, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/11411, PCT Pub. Date Jul. 9, 1992
PCT Filed Dec. 17, 1991, Ser. No. 78,216
Claims priority, application Sweden, Dec. 17, 1990, 9004009-8
Int. Cl.[5] B32B *23/02*
U.S. Cl. 428—193 18 Claims



1. A press felt for a papermaking machine, comprising a woven base fabric which is made of yarn material and is endless in a machine direction of the press felt, and at least one layer of fiber material arranged on the base fabric, wherein said base fabric comprises at least one layer composed of a spirally-wound fabric strip made of yarn material and having a width which is smaller than a width of the base fabric, longitudinal threads of the spirally-wound fabric strip of yarn material making an angle with said machine direction of the press felt.

5,360,657
COATED PRINTING PAPER AND PROCESS FOR PRODUCING THE SAME
Isao Kano; Hideki Fujiwara; Katsuhiko Matsunaga, and Kunio Hata, all of Tokyo, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 493,802, Mar. 15, 1990, Pat. No. 5,215,812. This application Nov. 16, 1992, Ser. No. 977,121
Claims priority, application Japan, Nov. 27, 1989, 1-307888
Int. Cl.[5] B32B *3/00, 5/16, 23/08;* D21H *19/44*
U.S. Cl. 428—207 9 Claims



1. A coated printing paper comprising a paper substrate having a pigmented layer on at least one surface thereof, and superposed on said pigmented layer, a surface-layer comprising a thermoplastic polymeric latex having a second order transition of temperature of at least 80° C. and an average particle size of smaller than 100 nm, wherein said coated printing paper is not post-calendared.

5,360,658
ANTISTATIC EXTRUDED POLYCARBONATE SHEETS
Jürgen Schmitz, Dormagen; Hans-Leo Weber, Rommerskirchen; Hans-Josef Fausten, Dormagen; Hans-Wolfgang Schmoranzer, Willich, and Udo Hänsel, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 11, 1993, Ser. No. 29,810
Claims priority, application Germany, Mar. 18, 1992, 4208644
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—215 2 Claims

1. An extruded sheet having a thickness of 0.15 to 0.6 mm., surface resistivity equal to or less than 5×10^5 ohms and an elongation at break equal to or greater than 20%, consisting of:

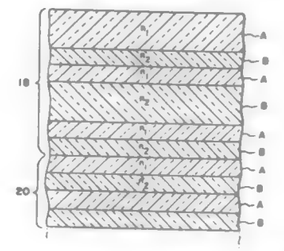
(a) 53 to 71 percent of thermoplastic polycarbonate,

(b) 29 to 16 percent of thermoplastic polyalkylene terephthalate, and

(c) 18 to 13 percent of carbon black,

said percents being based on weight, the sum of the percents of said (a)+(b)+(c) being 100% by weight.

5,360,659
TWO COMPONENT INFRARED REFLECTING FILM
Charles B. Arends; Walter J. Schrenk; Ray A. Lewis; Ravi Ramanathan, and John Wheatley, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 24, 1993, Ser. No. 65,416
Int. Cl.[5] B32B *9/00;* G02B *5/28*
U.S. Cl. 428—216 33 Claims



1. A two component infrared reflecting film comprising alternating layers of first (A) and second (B) diverse polymeric materials, said first and second polymeric materials differing in refractive index by at least about 0.03, wherein said first and second polymeric materials have a six alternating layer repeating unit with relative optical thicknesses of about .778A.111B.111A.778B.111A.111B, wherein at least 50% of visible light of wavelengths of between about 380–770 nm incident on said film is transmitted and at least 50% of infrared light of wavelengths of between about 770–2000 nm is reflected.

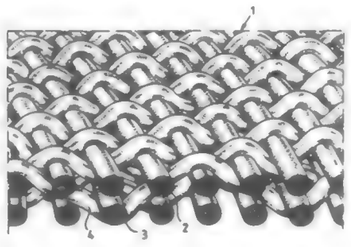
5,360,660
FORMING FABRIC
Göran Nohlgren, Högsjö, Sweden, assignor to Scandiafelt AB, Hogsjo, Sweden
PCT No. PCT/SE92/00115, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993, PCT Pub. No. WO92/15753, PCT Pub. Date Sep. 17, 1992
PCT Filed Nov. 30, 1993, Ser. No. 108,637
Claims priority, application Sweden, Feb. 28, 1991, 9100577-7
Int. Cl.[5] D03D *3/00;* D21F *1/10*
U.S. Cl. 428—229 5 Claims

1. Woven fabric fourdrinier forming belt preferably for cellulose drying machines and having a majority of polyamide threads in the weave, characterized in that

the longitudinal polyamide threads are made from a polyamide where the ratio between the number of methylene groups and amide groups is at least 7;

the belt is round woven, i.e. its longitudinal threads are

weftwise in the weaving machine, and has a weaving pattern where the longitudinal threads extend in two or more layers; and in that



the belt is stabilized by heating, pressing and stretching such that the ratio between the knuckle height b measured on the inside of the knuckle, and the total belt thickness t, is less than 0.15 for all longitudinal threads.

5,360,661

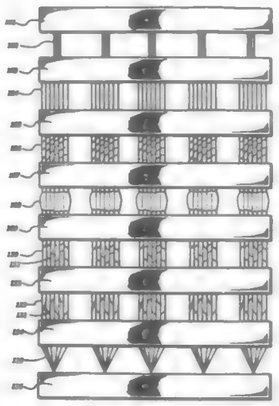
TOWPREGS FROM RECYCLED PLASTICS BY POWDER FUSION COATING

John D. Muzzy, Atlanta, Ga., assignor to Georgia Tech Research Corp., Atlanta, Ga.

Division of Ser. No. 848,119, Mar. 9, 1992, which is a continuation-in-part of Ser. No. 700,559, May 15, 1991, Pat. No. 5,171,630, which is a continuation-in-part of Ser. No. 339,297, Apr. 17, 1989, Pat. No. 5,094,883. This application Oct. 8, 1993, Ser. No. 134,181

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—260 **7 Claims**



1. A composite article comprising a plurality of multiply towpregs, comprising towpreg plies, said towpreg plies comprising reinforcing filaments and matrix forming material comprising recycled plastic; said reinforcing filaments being substantially wetout by said matrix forming material such that said towpreg plies have a lower void content compared to said multiply towpreg.

5,360,662

FABRICATION OF RELIABLE CERAMIC PREFORMS FOR METAL MATRIX COMPOSITE PRODUCTION

Boon Wong, Canoga Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 12, 1992, Ser. No. 850,474

Int. Cl.[5] C04B *35/56;* **B22D** *19/00;* **B32B** *3/26*

U.S. Cl. 428—288 **6 Claims**

1. A sintered ceramic preform for metal matrix composites wherein said sintered ceramic preform consists essentially of a porous mass of silicon-containing fibers/particulates having a thin layer consisting essentially of a coating of a glassy silicate thereon and chemically bonded by said layer of said glassy silicate thereon to form said sintered ceramic preform, wherein said thin layer of sad glassy silicate has substantially uniform thickness of at most about 2 micrometers.

5,360,663

POLYESTER LAMINATES

Yoshihiro Moteki; Nobutaka Fujiwara; Yukiharu Euruichi, all of Kawasaki, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,422

Claims priority, application Japan, May 13, 1992, 4-146461; May 14, 1992, 4-148314

Int. Cl.[5] B32B *29/00;* **C08G** *63/00;* **C07C** *265/00*

U.S. Cl. 428—290 **9 Claims**

1. Polyester laminates formed by melt-extruding an aliphatic polyester having a melt viscosity of 1.0×10^3–1.0×10^5 poises at a temperature of 190° C. and a shear rate of 100 sec^{-1}, and having a melting point of 70°–200° C.,

wherein said alphatic polyester is obtained by adding from 0.1 to 5 parts by weight of diisocyanate to 100 parts by weight of a prepolymer in a molten state,

wherein said prepolymer

is obtained from a reaction of at least an aliphatic glycol and an aliphatic dicarboxylic acid, wherein the reaction includes (a) succinic acid, or its anhydride, reacted with 1,4-butanediol, (b) succinic acid, adipic acid, or their anhydride, reacted with 1,4-butanediol, or (c) succinic acid, or its anhydride, reacted with ethylene glycol, and

has a number-average molecular weight of at least 10,000, onto a base selected from the group consisting of paper and cloth.

5,360,664

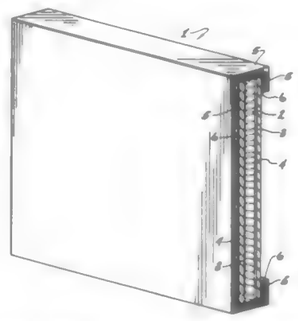
ARTIST'S WORKING SUPPORT

James F. Hamm, P.O. Box 303 5900 Goodrich Rd., Clarence Center, N.Y. 14032

Filed Mar. 1, 1993, Ser. No. 24,479

Int. Cl.[5] B32B *7/00, 15/00, 21/04*

U.S. Cl. 428—246 **8 Claims**



1. An artist's working support comprising a laminate structure adapted to be painted, said laminate structure comprising in combination:

A. a planar core material with a front and a back surface;

B. an adhesive on both of said front and back surfaces;

C. a skin adhered to each of said front and back surfaces;

D. a second adhesive on at least said front surface; and

E. a finishing material bonded to said second adhesive, said finishing material defining the surface to be painted, wherein said finishing material is selected from the group consisting of fabrics, paper, wooden veneers and mixtures thereof; and wherein said skin is selected from the group consisting of a polyester, an epoxy, a fiberglass material and mixtures thereof.

5,360,665

FILM FOR THERMAL STENCIL SHEETS HAVING SPECIFIC THERMAL STRESSES AND SHRINKAGE

Yoshinori Sato, Yamato; Yoshitugu Funada, Yokohama; Yoshitaka Houseki, Hikone, and Koji Nagura, Nagahama, all of Japan, assignors to Diafoil Hoechst Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1992, Ser. No. 932,548

Claims priority, application Japan, Aug. 30, 1991, 3-220075

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—323 **17 Claims**

1. A film for thermal stencil sheets, comprising a biaxially stretched polyester film which contains 0.1–5.0 wt % of fine particles having an average diameter of 0.05–2.0 μm, wherein the polyester film has a melting point of 170°–230° C., an intrinsic viscosity of 0.4 to 1.0, a thickness of 0.5–2.5 μm, wherein the maximum value of an average of longitudinal and transversal thermal constriction stresses at a temperature 100°–160° C. of the polyester film is 550–1500 g/mm^2, and wherein the average of longitudinal and transversal constriction at 150° C. of the polyester film is 30 to 55%.

5,360,666

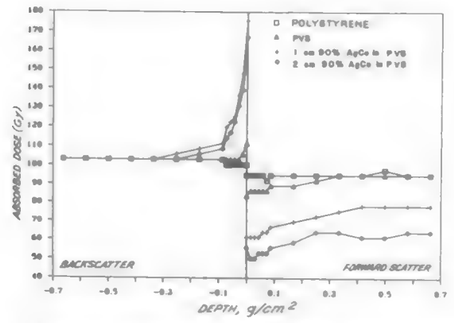
DEVICE AND METHOD FOR SHIELDING HEALTHY TISSUE DURING RADIATION THERAPY

Frederick Eichmiller, Ijamsville, Md., assignor to American Dental Association Health Foundation, Gaithersburg, Md.

Division of Ser. No. 515,827, Apr. 27, 1990, Pat. No. 5,190,990. This application Jan. 11, 1993, Ser. No. 2,653

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—327 **5 Claims**



1. A laminate shield for use during high energy radiation therapy made by applying a first elastomeric material to the head, neck, limbs, intraoral tissues, or other irregular conformations of the body of a patient and allowing the first elastomeric material to set, and then applying a second elastomeric material to the distal surface of the first elastomeric material and allowing the second elastomeric material to set, said second elastomeric material containing spherical particles of non-toxic, non-radioactive high atomic density metal or metal alloy, and forming a radiation treatment window by cutting and removing a section of the laminate shield before radiation treatment.

5,360,667

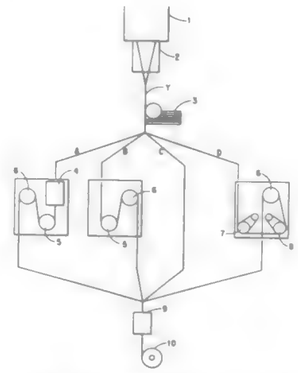
NYLON FLAT YARNS

Raymond L. Boles, Jr., Hixson, Tenn.; Lee W. Keene, Seaford, Del.; Benjamin H. Knox, Wilmington, Del., and Ralph W. Nugent, Seaford, Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Division of Ser. No. 787,661, Nov. 4, 1991, Pat. No. 5,219,503, which is a continuation-in-part of Ser. No. 541,692, Jun. 21, 1990, abandoned. This application Mar. 17, 1993, Ser. No. 33,600

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—364 **6 Claims**



1. A flat multifilament apparel yarn of nylon 66 polyamide polymer, wherein said polymer, having a melting point (T_M) between about 245° C. and about 265° C., is of relative viscosity (RV) between about 50 and about 80 with about 30 to about 70 equivalent NH2-ends per 10^6 grams of polymer, and wherein said multifilament apparel yarn is further characterized by a residual draw ratio $(RDR)_D$ between about 1.25 and about 1.55 with an initial modulus greater than about 15 g/d, a boil-off shrinkage (S) between about 3% and about 10%; a C.I. Acid Blue 122 dye transition temperature (T_{dye}) less than about 65° C., a C.I. Acid Blue 40 apparent dye diffusion coefficient (D_A), measured at 25° C., of at least about 20×10^{-10} cm^2/sec, and an apparent pore mobility (APM) greater than about $[5-0.37\times10^{-4}$ APV], wherein the apparent pore volume (APV) is greater than about 4×10^4 cubic angstroms.

5,360,668

UNITARY FIBER WHITE BLACKOUT FABRIC

Herschel Sternlieb, Brunswick, Me., assignor to Charles Samelson Co., New York, N.Y.

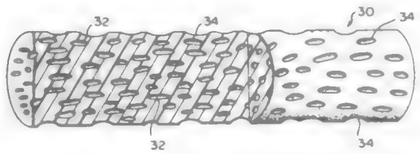
Filed Nov. 19, 1993, Ser. No. 154,569

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—372 **13 Claims**

1. A white blackout fiber consisting essentially of a unitary fiber having a light blocking substance that substantially prevents the transmission of light therethrough and a whitening agent, said whitening agent present in an amount between about 2.5–4% by weight of the fiber, said whitening agent and light blocking substance present in a ratio of between about 1000:1 and 800: 1.

5,360,669
CARBON FIBERS
Robert L. Noland, Carson City, Nev., and Timothy D. O'Brien, Crofton, Md., assignors to Ketema, Inc., Odenton, Md.
Continuation-in-part of Ser. No. 476,050, Jan. 31, 1990, Continuation-in-part of Ser. No. 476,050, Jan. 31, 1990. This application Jun. 6, 1990, Ser. No. 534,075
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—408 **9 Claims**



1. An improved carbon fiber formed from a foamed resinous material and having a microcellular structure and a specific gravity approximately 20–30% less than a carbon fiber formed of the same precursor material and treated in the same way but not foamed.

5,360,670
MULTILAYERED STRUCTURE CONTAINING AN ETHYLENE-VINYL ALCOHOL LAYER
Kiyoshi Yonezu, Kochi; Akimasa Aoyama, Kurashiki; Takuji Okaya, Nagaokakyo; Satoshi Hirofuji, and Yukio Ozeki, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Continuation of Ser. No. 845,189, Mar. 3, 1992, abandoned, which is a division of Ser. No. 239,112, Aug. 31, 1988, Pat. No. 5,118,743. This application Nov. 20, 1992, Ser. No. 979,187
Claims priority, application Japan, Sep. 7, 1987, 62-224296
Int. Cl.[5] B32B *27/36*
U.S. Cl. 428—412 **7 Claims**

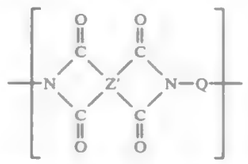
1. A multilayered structure comprising an ethylene-vinyl alcohol layer and a hydrophobic thermoplastic resin layer, said ethylene-vinyl alcohol copolymer exhibiting such flow characteristics that:

in the relationship between the heating time and the extrusion rate at at least one point in temperatures 10 to 80° C. higher than the melting point of said ethylene-vinyl alcohol copolymer measured with a capillary rheometer (Koka Flow Tester), the extrusion rate does not substantially increase for the initial 15 minutes, thereafter the extrusion rate at any heating time after 15 minutes until 2 hours is in a range of from 1/10 to 50 times that after the initial. 15 minutes, and the extrusion rate at any time after 2 hours until 10 hours is at least once in a range of from 2 to 50 times that after the initial 15 minutes.

5,360,671
THERMOPLASTIC POLYMIDES AND COMPOSITES THEREFROM
Frank W. Harris, Akron, Ohio, assignor to The University of Akron, Akron, Ohio
Division of Ser. No. 549,141, Jul. 6, 1990, abandoned. This application Jan. 27, 1993, Ser. No. 9,718
Int. Cl.[5] B32B *27/00, 27/06*
U.S. Cl. 428—473.5 **8 Claims**

1. A composite derived from a polyimide having a T_g from 200°–260° C. and a T_m of from 300°–360° C. and a difference between T_g and T_m from 40°–160° C., and thermoplastic properties comprising:

(a) a polyimide or polyimide precursor, the precursor being characterized by the ability of being imidized to the polyimide, the polyimide being characterized by having from about 1 to 100 mole percent of a repeat unit formula (IV) and from about 99 to 0 mole percent of a repeat unit of formula (V); and


(V)

(b) a reinforcing fiber being selected from the group consisting of carbon fibers, polyamide fibers, polyester fibers, polyimide fibers, cellulose fibers and cellulose derived fibers and wherein Ar^1 is an aromatic group where the ether linkage and amine linkage are in a para arrangement and where Z and Z' are tetravalent organic radicals selected from the group consisting of a carbocyclic-aromatic containing radical and a heterocyclic-aromatic containing radical where each anhydride group is located on an aromatic ring with the carbonyl units in an ortho orientation relative to one another and Q is a divalent organic radical selected from the group consisting of an aliphatic radical having at least two carbon atoms, a carbocyclic aliphatic radical, a carbocyclic aromatic containing radical and a heterocyclic containing radical.

5,360,672
PROCESS FOR TREATING FILM COMPRISING LIQUID CRYSTAL POLYMER
Koichi Saito, Okayama, and Takeichi Tsudaka, Kurashiki, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Filed Apr. 8, 1992, Ser. No. 865,139
Claims priority, application Japan, Apr. 8, 1991, 3-103959
Int. Cl.[5] B32B *27/06, 27/36*
U.S. Cl. 428—480 **16 Claims**

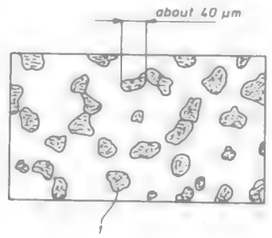
1. A process for improving abrasion resistance of a film comprising a liquid crystal polymer capable of forming an optically anisotropic melt phase, which comprises passing said film having a thickness of 500 μm or less between press rolls at a temperature in a range of from 80° C. below the melting point of the liquid crystal polymer to 5° C. below the same melting point and under a linear pressure of 20 to 400 kg/cm wherein the pressed film maintains at least 98% of its original thickness.

5,360,673
SEMIFINISHED PRODUCT FOR ELECTRIC CONTACTS MADE OF A COMPOSITE MATERIAL BASED ON SILVER-TIN OXIDE AND POWDERMETALLURGICAL PROCESS OF MAKING SAID PRODUCT
Ursula Mayer; Roland Michal, and Karl E. Saeger, all of Pforzheim, Germany, assignors to Doduco GmbH + Co. Dr. Eugen Durrwachter, Pforzheim, Germany
PCT No. PCT/EP89/00316, § 371 Date Sep. 17, 1990, § 102(e) Date Sep. 17, 1990, PCT Pub. No. WO89/09478, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 22, 1989, Ser. No. 549,015
Claims priority, application Germany, Mar. 26, 1988, 3810311
Int. Cl.[5] B22F *3/16*
U.S. Cl. 428—546 **30 Claims**

1. A powder-metallurgical process of making a semifinished product based on silver in combination with tin oxide for electric contacts comprising a composite material having 60 to 95% by weight of a first component with a high electric conductivity, namely, of silver or a silver based alloy, and

a second component, which is insoluble in the first component and reduces the tendency of the contacts to weld and their consumption and which based on the weight of the composite material has 3 to 25% by weight of tin oxide, 0 to 10% by weight of one or more further metal oxides excluding silver oxide which together with the tin oxide comprise the metal oxide component, 0 to 10% by weight of one or more metal carbides and 0 to 10% by weight of one or more additional metals, which are insoluble in the first component,

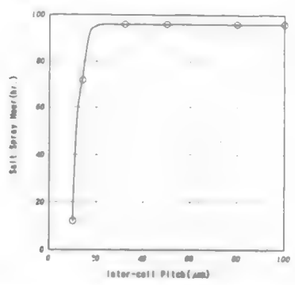
wherein the tin oxide predominates in the second component and the average content of the metal oxide component in the composite material is not in excess of 25% by weight,



in that a composite powder which contains less than one-half of the first component and 60 to 100% based on the metal oxide component of the metal oxide component is mixed with one or more powders which contain the balance of the first component and of the second component, and

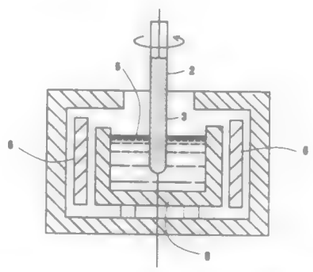
the powder mixture is compacted to form shaped bodies consisting of the composite material, in which low-oxide and high-oxide regions are present in a statistically uniform distribution and the high-oxide regions are formed by the composite powder particles.

5,360,674
PERMANENT MAGNET COATED WITH NI OR NI ALLOY HAVING A SPECIFIC CELL STRUCTURE AND GROWTH PATTERN
Hideki Kawai, Kumagaya; Katsuhiko Kojo, Fukaya; Kiyoshi Eguchi, and Yoshiko Ogawa, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Dec. 16, 1992, Ser. No. 992,823
Claims priority, application Japan, Dec. 17, 1991, 3-353487
Int. Cl.[5] B22F *7/02, 7/04*
U.S. Cl. 428—548 **6 Claims**



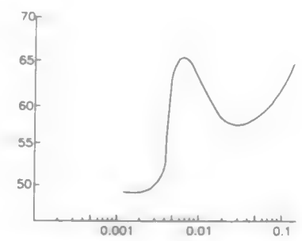
1. A permanent magnet formed by a permanent magnet alloy of R—T—B system chiefly comprising a transition metal T, a rare earth element R including yttrium and boron B, and coated with a protective plating layer of Ni or an Ni alloy, wherein said protective plating layer is 30 μm or less in thickness, and the inter-cell pitch at the surface of said protective plating layer obtained as a mean value of the spaces between peaks of projections of the cell structure is 14 μm or more.

5,360,675
MOLTEN ZINC RESISTANT ALLOY AND ITS MANUFACTURING METHOD
John C. Wood; Shoichi Katoh, and Hideo Nitta, all of Saitama, Japan, assignors to Praxair S.T. Technology, Inc., Danbury, Conn.
Filed May 11, 1993, Ser. No. 59,857
Claims priority, application Japan, May 14, 1992, 4-148211; Aug. 26, 1992, 4-250630
Int. Cl.[5] C03C *27/02;* **B32B** *15/04*
U.S. Cl. 428—631 **4 Claims**



1. An article resistant to attack by molten zinc comprising a substrate having a coated layer on its surface consisting essentially of a Mo-B alloy containing 3 to 9 weight percent boron and the balance molybdenum with impurities.

5,360,676
TIN MILL BLACK PLATE FOR CANMAKING, AND METHOD OF MANUFACTURING
Hideo Kuguminato; Toshikatsu Kato; Chikako Fujinaga, and Kyoko Hamahara, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan
Filed Apr. 6, 1993, Ser. No. 43,189
Claims priority, application Japan, Apr. 6, 1992, 4-084210; Apr. 6, 1992, 4-084212
Int. Cl.[5] C21D *8/00;* **C23C** *18/00*
U.S. Cl. 428—682 **6 Claims**



1. A steel sheet for canmaking comprising about:
C not exceeding 0.004%;
Si not exceeding 0.03%;
Mn 0.05–0.6%;
P not exceeding 0.02%;
S not exceeding 0.02%;
N less than 0.01%;
Al 10.005–0.1%;
Nb 0.001–0.1%;
B 0.0001–0.005%; and
the remainder Fe except incidental impurities;
wherein the recrystallized grain size of said steel sheet does not exceed about 30 μm; and
the area ratio of recrystallized grains which ranges from about 5–25 μm is equal to or more than about 50%, said steel sheet including an Fe—Ni alloy layer having a

weight ratio Ni/(Fe+Ni) of about 0.01–0.3 and a thickness of about 10–4000 Å at the surface part.

5,360,677

MAGNETIC DISK SUBSTRATE

Hideaki Fukai; Hiroyoshi Suenaga; Kuninori Minakawa; Shinichiro Otaka, and Masahiko Naoe, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 480,665, Feb. 15, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 4,190
Claims priority, application Japan, Feb. 23, 1989, 1-44018
Int. Cl.[5] G11B *5/66*; C22C *14/00*
U.S. Cl. 428—694 ST **4 Claims**



1. A magnetic disk substrate consisting essentially of oxygen, nitrogen, carbon, at least one element selected from the group consisting of V, Fe, Cr, Ni and Co, at least one element selected from the group consisting of a rare earth metal, Si, B and W, and the balance of Ti, said substrate in which V≦0.13 wt %, Fe≦0.20 wt. %, Cr≦0.17 wt %, Ni≦0.31% wt % and Co≦0.23 wt %, satisfying the conditions of:

(a) $0.003 \text{ wt \%} \leqq \frac{\text{V wt \%}}{13} + \frac{\text{Fe wt \%}}{20} + \frac{\text{Cr wt \%}}{17} + \frac{\text{Ni wt \%}}{31} + \frac{\text{Co wt \%}}{23} \leqq 0.01 \text{ wt \%}$,

(b) 0.010 wt % ≦ (rare earth metal wt %+Sr wt %+B wt %+W wt %) ≦0.015 wt % and

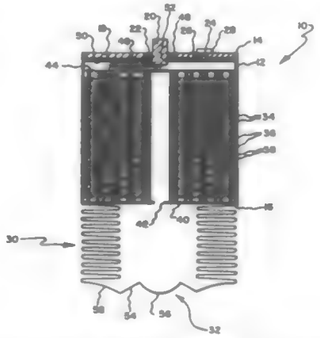
(c) 0.03 wt % ≦ {oxygen wt %+2 (nitrogen wt %)+0.75 (carbon wt %)}≦0.5 wt %.

5,360,678

HIGH ENERGY DENSITY PRESSURE TOLERANT CELL

David M. Spillman, Buffalo; Steve J. Ebel, Tonawanda, and William D. K. Clark, East Amherst, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Oct. 19, 1992, Ser. No. 963,580
Int. Cl.[5] H01M *2/40*
U.S. Cl. 429—6 **14 Claims**



1. In an electrochemical cell comprising an anode, a cathode and an operatively associated electrolyte, the improvement which comprises:

(a) housing means of fluid impervious material and including a surrounding sidewall that extends to an open end with the sidewall enclosing and surrounding at least a portion of the anode and cathode;

(b) compensating means of a fluid impervious material hermetically connected to the open end of the housing means as an integral unit to enclose an internal volume inside the cell at an ambient pressure; and

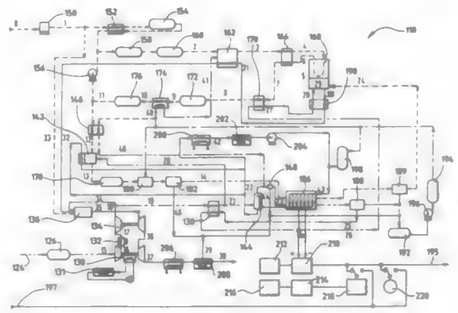
(c) fluid filled in the electrochemical cell and selected from the group consisting of the electrolyte and a catholyte, wherein the compensating means provides for volume compensating movement in response to a change in the ambient pressure to effect a responsive change in the internal volume that acts on the fluid filled in the cell to thereby provide an equilibrating pressure inside the electrochemical cell in response to the ambient pressure change and independent of the spatial orientation of the cell.

5,360,679

HYDROCARBON FUELED SOLID POLYMER FUEL CELL ELECTRIC POWER GENERATION SYSTEM

Richard F. Buswell, Glastonbury; Joseph V. Clausi, Portland, both of Conn.; Ronald Cohen, Boca Raton, Fla.; Craig Louie, Vancouver, Canada, and David S. Watkins, Coquitlam, Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Aug. 20, 1993, Ser. No. 110,076
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—19 **13 Claims**



1. An integrated fuel cell electric power generation system comprising:

a fuel processing subsystem for catalytically converting an inlet fuel stream comprising hydrocarbons to a processed fuel stream comprising hydrogen, said fuel processing subsystem comprising an evaporator for vaporizing water to humidify said inlet fuel stream, and a reformer comprising a reformer burner fed by at least one reactant exhaust stream, said reformer producing said processed fuel stream and said reformer burner producing a burner exhaust stream;

an electric power generation subsystem comprising at least one fuel cell and at least one reactant exhaust stream, said at least one fuel cell comprising a cathode, an anode, and an ion exchange membrane disposed therebetween, said anode having a catalyst associated therewith for producing cations from said processed fuel stream, said cathode having a catalyst associated therewith for promoting the reaction of oxygen from a pressurized oxidant stream to form electricity, water and heat, said at least one reactant exhaust stream comprising unreacted hydrogen or unreacted oxygen or both;

an air pressurization subsystem comprising a compressor operably connected to a turbine, said turbine being powered by a heated gas stream, said compressor pressurizing an oxidant stream for feeding said electric power generation subsystem; and

a water recovery subsystem for recycling the water produced in said fuel cell stack, said water recovery subsystem comprising means for producing a separated water stream by removing water from said reactant exhaust stream, means for supplying a first portion of said separated water stream to said evaporator in said fuel processing subsystem, and means for supplying a second portion of said separated water stream to humidify said pressurized oxidant stream.

5,360,680

MECHANICALLY RECHARGEABLE ELECTRIC BATTERIES AND ANODES FOR USE THEREIN

Arnold J. Goldman, Jerusalem; Eugeny Pecherer, Netanya; Jonathan R. Goldstein, Jerusalem; Joseph Biran, Raanana; Menachem Korall, Jerusalem, and Arye Meitav, Rishon Le'-Zion, all of Israel, assignors to Electric Fuel Limited, Jerusalem, Israel

Continuation-in-part of Ser. No. 636,606, Dec. 31, 1990, Pat. No. 5,196,275. This application Oct. 21, 1992, Ser. No. 964,644
Claims priority, application Israel, Feb. 10, 1992, 100903
Int. Cl.[5] H01M *4/02*
U.S. Cl. 429—27 **6 Claims**

1. A mechanically rechargeable electric battery having at least one electrical cell which comprises:

a pair of planar outer electrode means configured to define therebetween an interior space for containing an electrical power storage medium; and

inner electrode means comprising a current collecting structure removably mounted between said pair of outer electrode means so as to be in electrically conductive contact with said electrical power storage medium and configured to provide mechanical support for said electrical power storage medium and is mechanically removable as a unit therewith from said interior space;

wherein said cell is a zinc-air battery cell and said electrical power storage medium contained in said interior space comprises a power storage slurry containing active porous zinc particles saturated with an electrolyte solution, said pair of outer electrode means defining an opening communicating with said interior space, and said inner electrode means being configured for mechanical withdrawal from said interior space via said opening so as to enable a simultaneous removal of said current collecting structure and of discharged particulate zinc slurry which is supported thereby from said interior space and a replacement of said current collecting structure and said zinc slurry, via said opening, with a freshly charged inner electrode means.

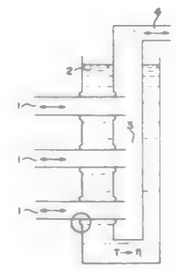
5,360,681

SEALS FOR GAS-CARRYING LINES AND INSTALLATIONS WHICH COMPRISE SUCH SEALS

Blandikus C. Jaspers, and Bernardus A. M. Van Dongen, both of Delft, Netherlands, assignors to Seed Capital Investments (SCT) B.V., Ga Utrecht, Netherlands

PCT No. PCT/NL91/00187, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO92/06517, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 2, 1991, Ser. No. 39,103
Claims priority, application Netherlands, Oct. 5, 1990, 9002169
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—34 **9 Claims**

1. An article which comprises: a member with at least one opening therein; gas-carrying lines having an axial axis communicating with said member and being introduced into said opening; a seal fitted between said lines and member, wherein the seal comprises an inorganic insulation material of a yield stress and viscosity at the operating temperature that are sufficiently high to counteract leakage of the inorganic material through the opening as a consequence of its own weight and the pressure gradient, wherein said line and member are able to move relative to one another, and wherein at operating temperature the seal is constructed to permit movement between said line and member in an axial direction.

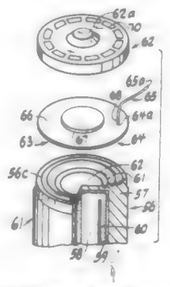


5,360,682

BATTERY CHARGE INDICATOR APPARATUS AND THE METHOD OF OPERATION THEREOF

William Bohmer, Succasunna, N.J., assignor to Display Matrix Corporation, Randolph, N.J.

Filed Aug. 17, 1992, Ser. No. 931,830
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] H01M *10/48*
U.S. Cl. 429—91 **57 Claims**

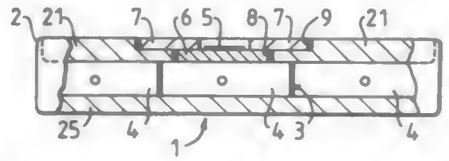


1. A battery charge indicator for a battery including a housing having an internally contained chemical cathode and anode for generating an electrical current when connected through one another through an external load, the cathode expanding in an amount proportional to the amount of electrical energy delivered by the battery, the battery charge indicator comprising:

first means defining a compressible chamber adapted to be inserted as an assembly into the battery, the compressible chamber including structure forming a blister, the gel being disposed in the interior of the blister, the blister having an outlet from the interior of the blister, the blister being adapted to be compressed in the response to the expansion of the cathode, and

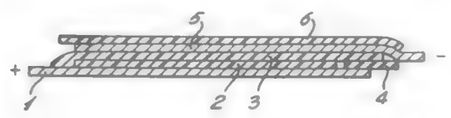
second means defining a viewing channel, the viewing channel being in communication with the outlet of the blister to receive a flow of gel therefrom in an amount corresponding to compression of the blister in response to the expansion of the cathode.

5,360,683
BATTERY PACK
Gary Broadfield, East Twickenham, England, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Nov. 10, 1993, Ser. No. 149,976
Claims priority, application United Kingdom, Dec. 1, 1992, 9225127.1
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—99 9 Claims



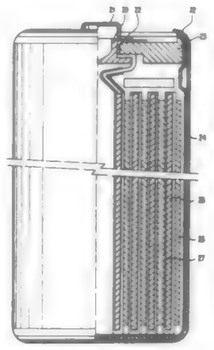
1. A battery pack for use with an electronic apparatus, comprising a housing enclosing a plurality of cells, and a substrate having present thereon at least two electrical terminals coupled to said cells;
characterized in that the housing includes a wall comprising a recess adapted to accommodate the substrate.

5,360,684
ELECTROCHEMICAL CELL FOR POLYMER ELECTROLYTE-LITHIUM BATTERIES (ACEP)
Michel Duval, Montreal, and Yves Gignere, Ste-Julie, both of Canada, assignors to Hydro-Quebec, Montreal, Canada
Filed Oct. 25, 1993, Ser. No. 140,534
Int. Cl.[5] H01M *10/38*
U.S. Cl. 429—162 18 Claims



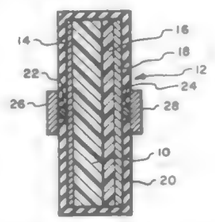
1. Electrochemical cell comprising a superposition of layers of a positive electrode, a solid polymer electrolyte, lithium negative electrode, the positive electrode being in contact with a layer of metallic collector and the negative electrode being covered by an insulating film, the negative electrode and collector layers being offset with respect to each other so as to enable lateral current collection, the collector then having a protected free edge, said cell being protected by incorporating in said electrochemical cell a band of an insulating material which does not react with materials of the electrodes and of the electrolyte and is not deformed at the temperatures where said cell is used, said band of insulating material being placed between layers constituting said cell so that when the various layers including the collector and the insulating film are laminated to constitute the cell, said band prevents the free edge of the collector from cutting through the layer of electrolyte and/or thereby short-circuiting the two electrodes, said insulating band also capable of ensuring insulation between the collector and the negative electrode when the electrolyte is shorter than the collector on its free edge side or when the collector consists of a material which reacts electrochemically with lithium such as metallized polyester.

5,360,685
NONAQUEOUS BATTERY
Mitsutoshi Tanaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 6, 1993, Ser. No. 132,669
Claims priority, application Japan, Oct. 8, 1992, 4-270289
The portion of the term of this patent subsequent to Oct. 6, 2010, has been disclaimed.
Int. Cl.[5] H01M *2/08*
U.S. Cl. 429—185 19 Claims



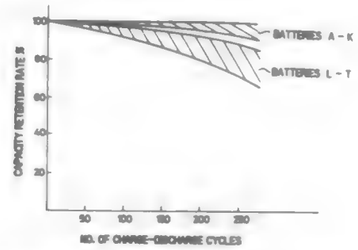
1. A battery comprising a positive electrode, a negative electrode, and an electrolyte, wherein the battery is sealed with a sealant comprising a pitch, at least one polymer and at least one montmorillonite.

5,360,686
THIN COMPOSITE SOLID ELECTROLYTE FILM FOR LITHIUM BATTERIES
Emmanuel Peled, Even Yehuda, Israel; Ganesan Nagasubramanian, La Crescenta; Gerald Halpert, Pasadena, both of Calif., and Alan I. Attia, Needham, Mass., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 20, 1993, Ser. No. 112,483
Int. Cl.[5] H01M *6/18*
U.S. Cl. 429—191 9 Claims



1. A composite solid electrolyte for a lithium battery comprising a film including a dispersion of 4–20 percent by weight of reinforcing, alumina particles in a binder resin, said particles being coated with a layer of lithium salt.

5,360,687
HYDROGEN-OCCULUSION ELECTRODE
Takashi Mizuno, Iwaki, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Kanagawa, Japan
Filed Jun. 10, 1993, Ser. No. 74,452
Claims priority, application Japan, Jun. 12, 1992, 4-179462; Jun. 12, 1992, 4-179463
Int. Cl.[5] H01M *4/62*
U.S. Cl. 429—217 6 Claims



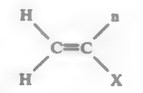
1. A hydrogen-occlusion electrode comprising, based on volume percentage of said electrode, said volume percentage being based on 100%, a mixture of from about 42–84 volume % of a hydrogen-occlusion alloy, from about 3–13 volume % of a bonding material, and from about 3–15 volume % of an electroconductive material having an average particle size of below about 1.3 μm, wherein said mixture is heat treated and said electrode has from about 10–30 volume % of residual pores.

5,360,688
COMPOSITE BLACK AND WHITE SUBSTRATE FOR COLOR PROOFING FILMS
Robert J. von Trebra, Wheeling, Ill., and Dennis J. Belliville, Yorba Linda, Calif., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Division of Ser. No. 929,089, Aug. 12, 1992, Pat. No. 5,288,570, which is a continuation-in-part of Ser. No. 577,949, Sep. 5, 1990, abandoned. This application Nov. 23, 1993, Ser. No. 156,500
Int. Cl.[5] G03C *11/12*; G03F *9/00*
U.S. Cl. 430—22 31 Claims

1. A method of producing a positive color proofing image having reduced dot gain which comprises:
(A) providing a photosensitive element which comprises, in order:
(i) a transparent support optionally having an adhesion promoted surface; and
(ii) a photosensitive composition layer on said surface which photosensitive layer comprises an organic binding resin, a colorant, a photoinitiator, and a free radical polymerizable acrylate or methacrylate component having at least two ethylenically unsaturated groups, wherein said binding resin is present in sufficient amount to bind the composition components into a uniform film, and wherein said colorant is present in sufficient amount to uniformly color the composition, and wherein said photoinitiator is present in sufficient amount to initiate the free radical polymerization of said polymerizable component upon exposure to sufficient actinic radiation, and wherein said polymerizable component is present in sufficient amount to provide image differentiation when the composition is image-wise exposed to actinic radiation; and
(iii) an adhesive layer directly adhered to said colored, photosensitive layer, which adhesive layer comprises a thermoplastic resin which has a T_g in the range of from about 25° C. to about 100° C.; and
(B) providing a receiver base which comprises a composite film article comprising a flexible, heat resistant, polymeric film material having two sides, a first non-opaque, translucent white side, having a visible light opacity of from about 0.90 to about 0.99; and a second non-opaque, black side having a visible light opacity of less than 1.0, a transmission density of less than about 2.0 and a thickness of less than about 5.0 microns; and
(C) either
(i) laminating said adhesive layer to said receiver base an elevated temperature and pressure; and then imagewise exposing said photosensitive composition through the transparent support to actinic radiation; or
(ii) imagewise exposing said photosensitive composition to actinic radiation; and then laminating said adhesive layer to said receiver base at elevated temperature and pressure; and
(D) peeling apart said support and said receiver base, thereby transferring the adhesive layer and the imagewise nonexposed portions of the colored, photosensitive composition to the white side of the receiver base while the imagewise exposed portions remain on the adhesion promoted surface of the support; and
(E) optionally repeating steps (A) through (D) at least once with another photosensitive element produced according to step (A) and having at least one different colorant, whereby said photosensitive element is transferred to the adhesive layer and imagewise nonexposed portions of the previously processed photosensitive element on said receiver base.

5,360,689
COLORED POLYMERIC DIELECTRIC PARTICLES AND METHOD OF MANUFACTURE
Wei-Hsin Hou; Thomas B. Lloyd, both of Bethlehem, Pa., and Frederic E. Schubert, Shoreham, N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.
Filed May 21, 1993, Ser. No. 65,572
Int. Cl.[5] G03G *17/04*
U.S. Cl. 430—34 20 Claims

1. A process for forming an electrophoretic fluid for use in an electrophoretic display, comprising:
(a) providing a dielectric fluid;
(b) preparing dielectric particles by polymerizing a monomer selected from the group consisting of vinyl halide monomers and vinyl monomers having the formula



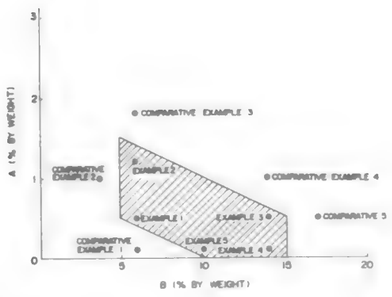
where X is selected from the group consisting of a halide, carboxyl, ether trialkylammonio, acetate, diazoniodialkylsulfonio, cyano, and oxyl imino, using dispersion polymerization and where n is selected as H or X; and
(c) dispersing said dielectric particles in said dielectric fluid.

5,360,690
TWO-COMPONENT DEVELOPER
Tetsuya Nakano, Nabari; Mikiko Tamori, Himeji; Naruo Yabe, Kobe; Masahide Inoue, Taima; Kouichi Tsuyama, Kobe, and Yoshitake Shimizu, Higashi-osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Continuation of Ser. No. 755,117, Sep. 5, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 90,628
Claims priority, application Japan, Sep. 10, 1990, 2-237162
Int. Cl.[5] G03G *9/113*
U.S. Cl. 430—110 5 Claims

1. A two-component developer comprising
a magnetic carrier having a carbon black-containing resin coating layer and
a toner composed of a carbon black-containing resin composition,
wherein each of the carrier-coating resin and the toner-forming resin is a resin selected from the group consisting of a

stryrene resin, an acrylic resin and a styrene-acrylic copolymer resin, and

the carbon black content A (% by weight) in the carrier coating layer and the carbon black content B (% by weight) in the toner, when plotted on Cartesian coordinates with A as ordinate and B as abscissa, must satisfy the requirements represented by the following formulae:



$A < -0.1B + 2$ (1),

$A > -0.1B + 1$ (2),

$5 < B < 15$ (3), and

$A > 0$ (4).

5,360,691

CARRIER FOR DEVELOPING ELECTROSTATIC LATENT IMAGES, DEVELOPER, AND ELECTROPHOTOGRAPHIC DEVELOPING PROCESS

Katsuo Koizumi, Kanagawa; Shigenori Otsuka; Syuuichi Maeda, both of Saitama; Hiromi Horiuchi, Tokyo; Hirofumi Oda, and Toshiyuki Sueyoshi, both of Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed May 7, 1992, Ser. No. 879,292

Claims priority, application Japan, May 8, 1991, 3-102833

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—108 **27 Claims**

1. A developer for an electrostatic latent image comprising a carrier and a positively chargeable toner, wherein said carrier comprises a core material at least a part of which is coated with a resin containing a copolymer comprised of vinylidene chloride and at least one monomer having an unsaturated double bond and being copolymerizable with vinylidene chloride, and wherein said toner contains a quaternary ammonium salt as a charge controlling agent.

5,360,692

POSITIVE TYPE 1,2-NAPHTHOQUINONEDIAZIDE PHOTORESIST COMPOSITION CONTAINING BENZOTRIAZOLE LIGHT ABSORBING AGENT

Yasumasa Kawabe; Kazuya Uenishi, and Tadayoshi Kokubo, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

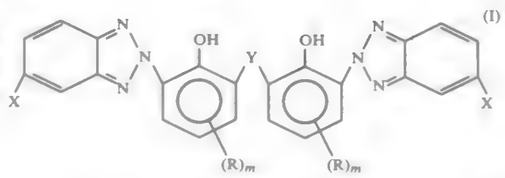
Filed Jun. 3, 1993, Ser. No. 70,795

Claims priority, application Japan, Jun. 4, 1992, 4-144395

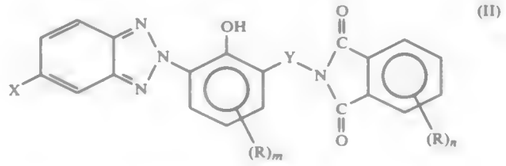
Int. Cl.[5] G03F *7/023;* **G03C** *1/61*

U.S. Cl. 430—191 **9 Claims**

1. A positive type photoresist composition comprising, in admixture, an alkali-soluble resin, a compound having a 1,2-naphthoquinonediazido group, and at least one light absorbing agent selected from the group consisting of the compounds represented by formulae (I) and (II):



(I)



(II)

wherein X represents a hydrogen atom, a halogen atom, an alkyl group, an aralkyl group, an alkoxy group, an acyl group, or an aryl group; Y represents a single bond, an alkylene group, —O—, —S—, $-SO_2-$or



R represents a hydrogen atom, an alkyl group, or an aralkyl group; m represents an integer of from 1 to 3; and n represents an integer of from 1 to 4; and

wherein the amount of said light absorbing agent is in a range of from 0.1 to 10% by weight based on the total solid content of the composition, and the compound having a 1,2-naphthoquinonediazido group is present in a range of from 5 to 100 parts by weight, based on 100 parts by weight of the alkali-soluble resin.

5,360,693

POSITIVE O-QUINONE DIAZIDE PHOTORESIST CONTAINING BASE COPOLYMER UTILIZING MONOMER HAVING ANHYDRIDE FUNCTION AND FURTHER MONOMER THAT INCREASES ETCH RESISTANCE

Michael Sebald, Heusdorf-Hannberg; Recai Sezi, Roettenbach; Rainer Leuschner, Grossenseebach; Seigfried Birkle, Hoechstadt A/Aisch, and Hellmut Ahbe, Roettenbach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

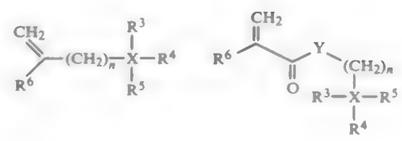
Continuation of Ser. No. 849,802, Mar. 11, 1992, abandoned, which is a continuation of Ser. No. 490,432, Mar. 8, 1990, abandoned. This application May 10, 1993, Ser. No. 59,518

Claims priority, application European Pat. Off., Mar. 20, 1989, 89104950

Int. Cl.[5] 1506 *G03F*

U.S. Cl. 430—192 **7 Claims**

1. An aqueous-alkaline developing positive photoresist for producing structures in the sub-μm range having a base polymer which is a copolymer of a monomer comprising an anhydride function and further monomers and a photoactive constituent that is contained in a proportion of 2 through 25% by weight in the photoresist and which comprises o-quinone diazide, wherein the further monomers are silicon-organic and tin-organic compounds that increase the etching resistance of the photoresist to oxygen-containing etching plasma and contain a compound chosen from the group consisting of silicon and tin and have at least one of the following structures:



wherein:

$0 \leqq n \leqq 3$;

R^3 through R^5 independently of each other are chosen from the group consisting of an alkyl, aryl, alkoxy, aryloxy, or arylalkylradical;

R^6 is H or alkyl;

Y is for O or NH; and

X is Si or Sn,

whereby a layer of the photoresist is exposed image-wise with radiation around the deep ultraviolet light (DUV) range and is then developed with an aqueously-alkaline medium which additionally contains 0.01 through 10% by weight ammonia or a primary or secondary amine, and whereby the resist layer exhibits low dark erosion up to 0.5% of the layer thickness of the resist layer after development.

5,360,694

THERMAL DYE TRANSFER

Tran V. Thien, Harlow, and Ranjan C. Patel, Little Hallingbury, both of Great Britain, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1993, Ser. No. 138,591

Int. Cl.[5] G03C *3/00;* **B41M** *5/035*

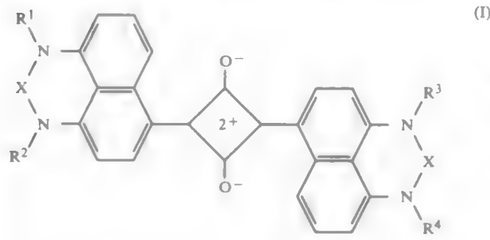
U.S. Cl. 430—200 **12 Claims**

1. A method of forming an image comprising the steps of

(i) providing a colorant donor element comprising a substrate and a layer containing a transferable colorant and a receiving element,

(ii) assembling in intimate contact a face of said donor element having transferable colorant thereon and a face of said receiving element having a receptor surface, and

(iii) exposing the donor element and receiving element of step (ii) while in intimate contact to an imagewise pattern of infrared radiation, wherein the improvement comprises providing at least one of the donor and receptor elements with a layer comprising a near-infrared absorbing dye having a nucleus of the general formula:



(I)

wherein:

R^1 to R^4 are independently members selected from the group consisting of hydrogen, alkyl, cycloalkyl, aralkyl, carboalkoxyalkyl, and carboaryloxyalkyl group,

X is a member selected from the group consisting of $=CR^5R^6$, $=POR^7$ and BOR^7, wherein:

R^5 and R^6 are independently members selected from the group consisting of alkyl, cycloalkyl and aryl groups, or R^5 and R^6 together represents the necessary atoms to complete a 5, 6 or 7-membered ring, and

R^7 represents an alkyl group.

5,360,695

AQUEOUS DEVELOPABLE DYE DIFFUSION TRANSFER ELEMENTS CONTAINING SOLID PARTICLE THERMAL SOLVENT DISPERSIONS

John Texter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1993, Ser. No. 8,914

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—203 **40 Claims**

16. An aqueous developable chromogenic photographic dye-diffusion transfer element of two or more layers comprising a support, radiation sensitive silver halide, a dye-forming compound wherein said compound forms a heat transferable dye upon reaction of said compound with the oxidation product of a primary amine developing agent, a hydrophilic binder, and a solid particle thermal solvent dispersion, wherein said thermal solvent is a water-immiscible phenol derivative, has a melting point of between 50° C. and about 130° C., and is incorporated at 5 to 200% by weight of said hydrophilic binder, and where said thermal solvent dispersion contains a dispersing aid, and wherein said diffusion transfer element further comprises a dye-receiving layer intermediate said support and any layer containing silver halide or dye-forming compound, and wherein said diffusion transfer element is devoid of any developing agent or electron transfer agent.

5,360,696

RESIST COMPOSITION

Yukio Hanamoto, Toyonaka; Hiroshi Takagaki, Higashiosaka, and Ayako Ida, Kobe, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 996,155, Dec. 23, 1992. This application Feb. 7, 1994, Ser. No. 192,817

Claims priority, application Japan, Dec. 27, 1991, 3-346692

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—270 **8 Claims**

1. A resist composition comprising an alkali-soluble resin, a radiation-sensitive compound and a solvent not simultaneously having both acetoxy group and alkoxy group in its molecule, the composition containing undissolved particles having a particle diameter of 0.25 μm or above in a number of 100 particles/ml or below, the undissolved particles being constituted of two particle groups one of which (the first group) has a particle diameter of 0.25–0.3 μm and the other of which (the second group) has a particle diameter larger than 0.3 μm, and the content of the first group having a particle diameter of 0.25–0.3 μm being 50 particles/ml or less.

5,360,697

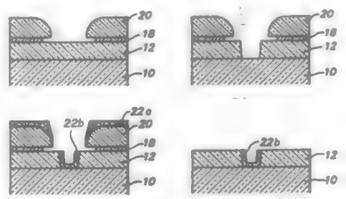
FORMING SELF-ALIGNED DIFFUSION BARRIERS IN SOLID STATE DEVICES USING LIFT-OFF PROCESS

Madhav Mehra, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 842,681, Feb. 27, 1992, abandoned. This application Jun. 11, 1993, Ser. No. 75,659

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—314 **3 Claims**



1. In a method of forming self-aligned diffusion barriers in solid state devices comprising the steps of:

(a) forming a dielectric layer on a silicon substrate;

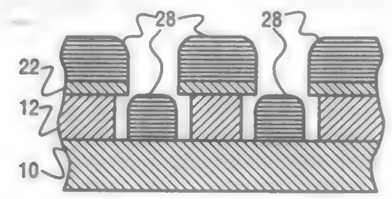
(b) forming an intermediate assisting coating on the dielectric layer;
(c) forming a photoresist layer on the coating;
(d) in a lithographic process exposing the photoresist layer with a desired pattern and developing an opening through the exposed pattern in the photoresist with a developer which attacks the intermediate assisting coating so that it undercuts the photoresist layer;
(e) plasma etching the dielectric layer through the opening in the photoresist layer and intermediate assisting coating to form a contact opening in the dielectric layer to the silicon substrate;
(f) depositing conductive diffusion barrier material in the contact opening in the dielectric layer and on the photoresist layer;
(g) lifting off the photoresist layer and the diffusion barrier material on the photoresist layer by a solvent which dissolves the intermediate assisting coating resulting in the formation of a diffusion barrier layer self-aligned to the contact opening formed in step (e) so that step (d) is used for both defining the contact opening as well as locating the diffusion barrier; and
(h) forming an aluminum contact layer on the diffusion barrier in the contact opening in the dielectric layer.

5,360,698

DEEP UV LIFT-OFF RESIST PROCESS

Michael J. Hanrahan, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1992, Ser. No. 947,589
Int. Cl.[5] G03F *7/30*; G03C *5/00*
U.S. Cl. 430—324 **7 Claims**



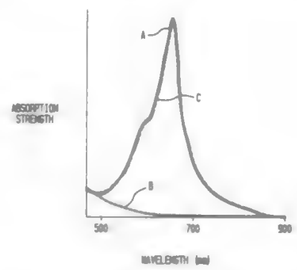
1. A lithographic patterning process which results in an overhang lift-off structure, comprising the steps of:
(a) coating a first layer of a first positive photoresist material on a substrate, the first photoresist material being deep ultraviolet patternable characterized by a decrease in molecular weight;
(b) depositing a second layer of a second photoresist over the first photoresist material, the second photoresist material being patternable at a second layer exposure wavelength that is suitable for exposing the second layer but not suitable for exposing the first layer, the second layer having low optical transmission properties at the wavelength used in a deep ultraviolet exposure step and characterized by decreased solubility and/or increased crosslink density after such deep ultraviolet exposure;
(c) patternwise exposing the second photoresist layer with light at the second layer exposure wavelength;
(d) developing with a liquid developer the exposed portion of the second photoresist layer for a sufficient time to form openings in the second photoresist layer;
(e) deep ultraviolet flood exposing of the remaining second photoresist layer and the first photoresist layer through the openings produced in the second photoresist layer while simultaneously applying heat to the first layer; and
(f) developing of the exposed portions of the photoresist material to form openings in the first photoresist layer wherein the second photoresist layer overhangs the first photoresist layer to provide a lift-off structure.

5,360,699

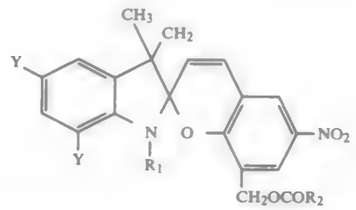
PHOTOCHROMIC MATERIAL AND AN OPTICAL STORAGE MEDIUM USING THE SAME

Junichi Hibino, Hirakata, and Eiji Ando, Katano, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 770,650, Oct. 3, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,867
Claims priority, application Japan, Oct. 5, 1990, 2-269117
Int. Cl.[5] G03C *1/73*
U.S. Cl. 430—345 **7 Claims**



7. A photochromic material capable of forming an aggregate having an absorption maximum of at least 640 nm, comprising a spiropyran compound formula (I):



(I)

wherein R_1 and R_2 are independently alkyl groups each containing 1 to 30 carbon atoms and Y is halogen.

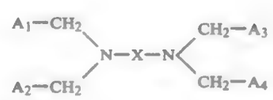
5,360,700

PROCESS FOR TREATING SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tomonori Kawamura, Hachioji, and Shigeharu Koboshi, Hino, both of Japan, assignors to Konica Corporation, Tokyo, Japan

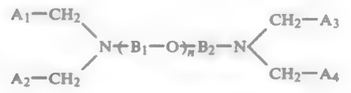
Continuation of Ser. No. 958,599, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 782,712, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 707,277, May 28, 1991, abandoned, which is a continuation of Ser. No. 460,805, Jan. 4, 1990, abandoned. This application Oct. 5, 1993, Ser. No. 131,927
Claims priority, application Japan, Jan. 13, 1989, 1-6664
Int. Cl.[5] G03C *5/39*
U.S. Cl. 430—428 **8 Claims**

1. A process for processing exposed silver halide photographic material comprising the steps of:
(a) a color developing step;
(b) a bleaching step with a solution capable of bleaching;
(c) a fixing step with a solution capable of fixing; and
(d) a stabilizing step without a water washing step intermediate between said fixing and stabilizing steps;
wherein the solution capable of bleaching comprises at least one ferric complex salt of organic acid selected from the group consisting of compounds represented by formula A, B and diethylenetriaminepentaacetic acid;



Formula A

wherein A_1, A_2, A_3 and A_4 independently represent —CH_2OH, —COOM or —$PO_3M_1M_2$, in which M, M_1 and M_2 independently represent hydrogen, sodium, potassium or an ammonium group, X represents an alkylene group with a carbon number of 3 to 6,



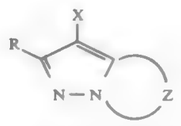
Formula B

wherein A_1, A_2, A_3, and A_4 independently represent —CH_2OH, —COOM or —$PO_3M_1M_2$, in which M, M_1 and M_2 independently represent hydrogen, sodium, potassium or an ammonium group; n represents an integer of 1 to 8; B_1 and B_2 independently represent an alkylene group with a carbon number of 2 to 5;
the solution capable of fixing comprises thiocyanate and thiosulfate; and
a stabilizing solution comprising at least one compound selected from the group consisting of compounds represented by the formula I and hexamethylenetetramine or its derivatives;

Formula I

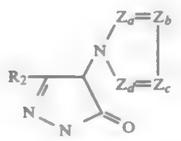
$$R_1—CHO$$

wherein, R_1 represents an alkyl group with a carbon number of 1 to 5 or formyl group; and an amount of formaldehyde in the stabilizing solution being not more than 1.0×10^{-2}mol per liter,
and wherein the silver halide photographic material comprises a magenta coupler selected from the group consisting of compounds represented by formulae M-1 and X-1



Formula M-1

wherein Z represents a group of nonmetallic atoms necessary for formation of a nitrogen-containing heterocyclic ring and X represents a hydrogen atom or a substituent capable of splitting off by reaction with an oxidation product of a color developing agent, R represents hydrogen atom or a substituent,



Formula X-1

wherein R1 represents an aromatic group, an aliphatic group or a heterocyclic group; R_2 represents a substituent; Za, Zb, Zc, and Zd independently represents a methine group, a substituted methine group or —N=.

5,360,701

ANTISTATIC BACKING FOR PHOTOGRAPHIC ROLL FILM

Peter J. Elton; John C. Clarke; John L. Cawse; George Littler, all of Cheshire; Andrew Wigglesworth, and Peter J. Herring, both of Bucks, all of England, assignors to Ilford Limited, Mobberley, England

Continuation of Ser. No. 811,846, Dec. 23, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 49,605
Claims priority, application United Kingdom, Jan. 5, 1991, 9100194.1
Int. Cl.[5] G03C *3/02, 3/00, 1/775, 1/95*
U.S. Cl. 430—501 **9 Claims**

1. A method of preparing an antistatic roll film backing paper for photographic roll film, comprising:
applying a polyethylene layer to a paper substrate;
applying an opaquing layer to said polyethylene layer at a temperature sufficient to melt the polyethylene, said opaquing layer comprising polyethylene and from about 7 to 10% by weight of a mixture of conductive and non-conductive carbon black particles, said mixture containing from 20 to 80% by weight of conductive carbon black particles.

5,360,702

PHOTOGRAPHIC COATING COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS MADE THEREFROM

Paul L. Zengerle; Glenn M. Brown, and John B. Rieger, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1993, Ser. No. 9,906
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—505 **7 Claims**

1. A photographic element comprising a support having thereon at least one silver halide photographic emulsion layer and a layer, which is the same or different from said silver halide layer, comprising a binder having dispersed therein:
a) particles comprising a filter dye; and
b) particles comprising an organic solvent having dispersed therein an oxidized developer scavenger;
wherein the organic solvent and the relative amounts of organic solvent and oxidized developer scavenger are selected such that the following relationship is satisfied:

$$6.65+10.0\,A-1.53\,B+0.11\,B^2-0.99\,AB\leqq4.0$$

wherein A is the weight ratio of organic solvent to oxidized developer scavenger; B is the log P of the organic solvent; and log P is the logarithm of n-octanol/water partition coefficient of the organic solvent.

5,360,703

MULTICOLOR PHOTOGRAPHIC ELEMENTS EXHIBITING AN ENHANCED CHARACTERISTIC CURVE SHAPE

Elizabeth P. Chang, Webster, and James A. Friday, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1993, Ser. No. 10,689
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—506 **12 Claims**

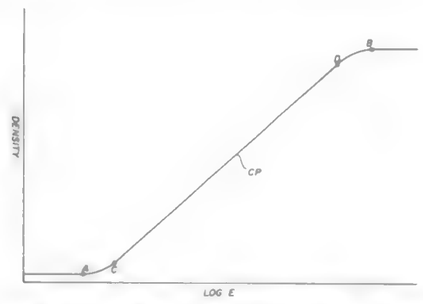
1. A multicolor photographic element capable of satisfying a selected characteristic profile with reduced granularity comprised of a support and at least three dye image forming layer units each containing an image dye or dye precursor capable of forming a dye image of a different hue,
CHARACTERIZED IN THAT at least one of the dye image forming layer units capable of forming a visible dye image contains at least three superimposed radiation sensitive emulsion layers in which
a first emulsion layer located farthest from the support of the

three emulsion layers contains silver bromoiodide grains of from 1 to 20 mole percent iodide, based on silver,

second emulsion layer at least one half stop slower in speed than the first emulsion layer is located between the first emulsion layer and the support and silver bromoiodide tabular grains of the second emulsion have an average iodide content that is up to 60 percent the average iodide content of the first emulsion layer, and

a third emulsion layer at least one half stop slower in speed than the second emulsion layer is located between the second emulsion layer and the support and contains silver bromoiodide grains having an average iodide content that is up to 60 percent the average iodide content of the second emulsion layer,

greater than 50 percent of the total projected area of the



grains of each of the first, second and third emulsion layers being accounted for by tabular grains having a thickness of less than 0.3 μm and average tabularity of greater than 25, tabularity (T) being defined as

$$T=ECD/t^2$$

where

ECD is the average equivalent circular diameter of the tabular grains in μm and

t is the average thickness in μm of the tabular grains, and

tabular grains of at least the first and second emulsion layers when exposed to 325 nm electromagnetic radiation at 6° K. exhibiting a stimulated fluorescent emission at 575 nm that is less than one third the intensity of an identically stimulated fluorescent emission maximum within the wavelength range of from 490 to 560 nm.

5,360,704

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Detlef Brennecke, Leichlingen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 7, 1993, Ser. No. 88,255

Claims priority, application Germany, Jul. 21, 1992, 4224026

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—506 **13 Claims**

1. A camera-sensitive color negative film which comprises a support having thereon:

2 or 3 green-sensitive silver halide emulsion layers differing in sensitivity such that there is at least one less sensitive green sensitive layer;

2 or 3 red-sensitive silver halide emulsion layers differing in sensitivity such that there is at least one less sensitive red sensitive layer; and

2 or 3 blue-sensitive silver halide emulsion layers differing in sensitivity such that there is at least one less sensitive blue sensitive layer; wherein

the blue-sensitive silver halide emulsion layers are arranged further from the support than the green-sensitive and red-sensitive layers;

the less-sensitive blue-sensitive silver halide emulsion layer or layers comprise silver halide emulsions containing at least 50 mol-% AgCl; and

the total silver coating of the material is given by the formula

$$\text{silver coating}=(0.27\cdot S)-X,$$

wherein the silver is measured in g/m$_2$, X has a value of 1.9 to 3.8, and S is the sensitivity in DIN.

5,360,705

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hiroyuki Yoneyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

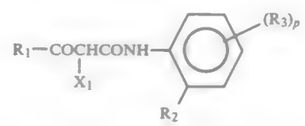
Filed Oct. 22, 1992, Ser. No. 964,960

Claims priority, application Japan, Oct. 23, 1991, 3-302660; Oct. 25, 1991, 3-305571

Int. Cl.[5] G03C *1/46*

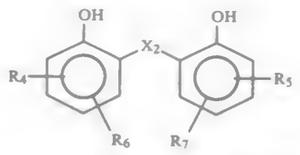
U.S. Cl. 430—507 **20 Claims**

1. A silver halide color photographic material comprising a support having thereon a yellow color forming silver halide emulsion layer, a magenta color forming silver halide emulsion layer and a cyan color forming silver halide emulsion layer, wherein said yellow color forming emulsion layer contains, (i) at least one high silver chloride emulsion having a silver chloride content of not less than 90 mol %, (ii) at least one yellow coupler represented by the following general formula (I) and (iii) at least one compound represented by the following general formula (II), and wherein one or more layers of the photographic material contains at least one ultraviolet light absorber:



(I)

wherein R_1 represents a substituent group; R_2 represents a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a dialkylamino group, an alkylthio group or an arylthio group; R_3 represents a group which can be attached to the benzene ring; X_1 represents a hydrogen atom or a group which can be eliminated by a coupling reaction with the oxidation product of an aromatic primary amine developing agent; and p represents an integer of 0 to 4 and when p is 2 or greater, the two or more R_3 groups may be the same or different;



(II)

wherein R_4, R_5, R_6 and R_7 each represents an alkyl group having 4 to 18 carbon atoms and the total number of carbon atoms in R_4, R_5, R_6 and R_7 is not more than 32; and X_2 represents a simple bond, an oxygen atom, a sulfur atom, a sulfonyl group or a bonding group represented by the following general formula (B):



(B)

wherein R_{21} and R_{22} each represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; and n represents an integer of 1 to 3 and when n is 2 or 3, the two or three R_{21} groups and the two or three R_{22} groups may be the same or different.

5,360,706

IMAGING ELEMENT

Charles C. Anderson, Penfield; Gerald M. Leszyk, Spencerport, and Kenneth L. Tingler, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1993, Ser. No. 156,594

Int. Cl.[5] G03C *1/85*

U.S. Cl. 430—529 **9 Claims**

1. An imaging element comprising a support, at least one imaging layer and an antistat layer, said antistat layer comprising vanadium pentoxide in a binder, said binder being a polyesteranionomer.

5,360,707

PHOTOGRAPHIC PRINTING PAPER SUPPORT

Atsushi Kato; Sei Kawahara, and Yasuo Iwasaki, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 20, 1993, Ser. No. 169,633

Claims priority, application Japan, Dec. 18, 1992, 4-356136

Int. Cl.[5] G03C *1/78;* **B32B** *5/16*

U.S. Cl. 430—538 **19 Claims**

1. A photographic printing paper support comprising a waterproof substrate constituted of raw paper and polyolefin resin coats covering the both surfaces thereof, said support further having on the back side of the substrate a backing layer containing at least (a) colloidal silica, (b) an aqueous dispersion of a styrene-acrylate copolymer prepared by the polymerization in the presence of a water-soluble high-molecular compound, (c) at least one substance selected from a group consisting of carboxyl or sulfo group-containing water-soluble high-molecular compounds, the metal salts thereof and hydrophilic organic high-molecular colloidal substances and (d) an aqueous dispersion of a polyolefin resin having a melting point below 100° C.

5,360,708

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masahito Takada; Eiichi Ueda; Hiromitsu Araki, and Toru Kobayashi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 129,740

Claims priority, application Japan, Oct. 13, 1992, 4-300306

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—496 **17 Claims**

1. A silver halide photographic light-sensitive material comprising a curled polyester film support having a first side and an opposite second side, wherein said first side of said support has a concave curl,

a silver halide emulsion layer provided on said second side of said support, and

a backing layer provided on said first side of said support,

a ratio of the total gelatin content per unit area of said backing layer to the gelatin content of said emulsion layer being 0.05 to 0.7:1.

5,360,709

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A DIR COMPOUND

Atsuhiro Ohkawa; Masuji Motoki, and Keiji Mihayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 642,265, Jan. 16, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,680

Claims priority, application Japan, Jan. 17, 1990, 2-7481; Nov. 27, 1990, 2-324608

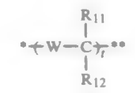
Int. Cl.[5] G03C *7/305*

U.S. Cl. 430—544 **6 Claims**

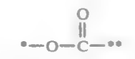
1. A silver halide color photographic material comprising on a support at least a silver halide emulsion layer, comprising a compound represented by general formula (I):

$$A—(L)_2—INH—(CH_2)_n—Q \quad (I)$$

wherein A represents a coupler group excepting 1H-pyrazolo [1,5-b]-1,2,4-triazole and 1H-pyrazolo[5,1-c]-1,2,4-triazole; L represents a timing group selected from the group consisting of



(T-1)

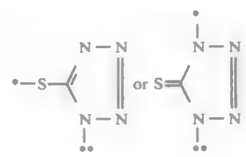


(T-4)

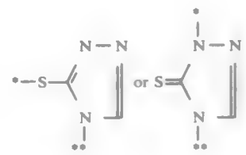
wherein W represents an oxygen atom, a sulfur atom or an



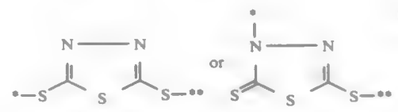
group wherein R_{13} represents substituent group; R_{11} and R_{12} each represents a hydrogen atom or a substituent; t represents an integer of 1 or 2; * represents the position at which it is connected to A or L; and ** represents the position at which it is connected to L or INH; n represents an integer of 0 or 1; Q represents a group having a molecular weight of 90 to 200; wherein when n is 0, Q is an electron donating group-containing aryl group, and when n is 1, Q is an aryl group; and INH represents a development inhibitor group bonded to A—(L)$_2$ via a hereto atom and selected from the group consisting of



(INH-1)

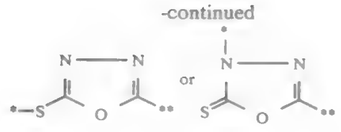


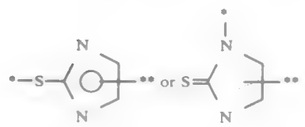
(INH-2)

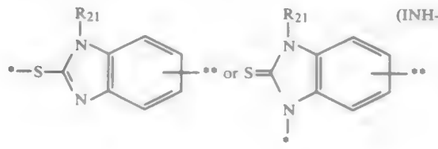


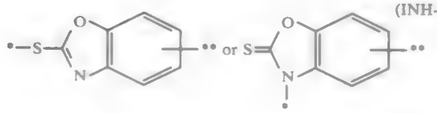
(INH-3)

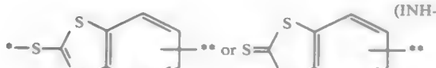
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(INH-4)

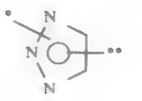

(INH-5)

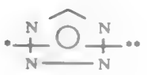

(INH-6)


(INH-7)

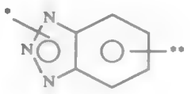


(INH-8)


(INH-9)


(INH-10)


(INH-11)


(INH-12)

wherein R_{21} represents a hydrogen atom or a substituted or unsubstituted hydrocarbon group; * represents the position at which the group is connected to L and ** represents the position at which the group is connected to $—(CH_2)_n—Q$.

5,360,710

COLOR PHOTOGRAPHIC MATERIALS CONTAINING POLYMERIC COUPLERS

Tien-Teh Chen, Penfield; Stanley W. Cowan, Rochester; Edward Schofield, Penfield, and Ping-Wah Tang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1992, Ser. No. 879,044

Int. Cl.[5] G03C *7/327*

U.S. Cl. 430—548 **13 Claims**

1. A color photographic material, comprising a support bearing a silver halide emulsion and at least one polymeric coupler, the polymeric coupler being non-spherical in shape, being directly water dispersed in the color photographic material and being prepared by solution polymerization of a mixture of at least one ethylenically unsaturated coupler monomer containing a dye-forming coupler moiety and at least one ionic monomer containing an ionizable functional group selected from the group consisting of sulfonate, sulfate and phosphate groups, in a water-miscible organic solvent, the polymeric coupler containing less than 10 weight percent of the ionic monomer.

5,360,711

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Masayuki Negoro, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 18, 1993, Ser. No. 62,542

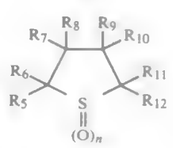
Claims priority, application Japan, May 19, 1992, 4-150121

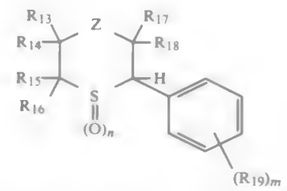
Int. Cl.[5] G03C *1/34, 7/388*

U.S. Cl. 430—551 **19 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one layer containing at least one compound represented by the following formula (I), (II) or (III):


(I)


(II)


(III)

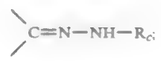
wherein R_1, R_2, R_3, R_4, R_5, R_6, R_{11} and R_{12} may be the same or different and each represents a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; Y represents a group of the following formula:



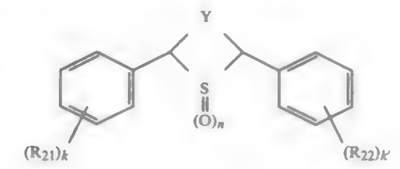
or



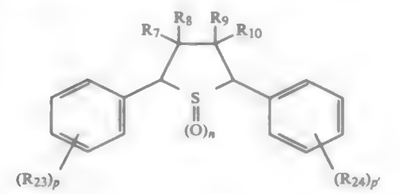
or



R_a, R_b, R_7, R_8, R_9, R_{10}, R_{13}, R_{14}, R_{15}, R_{16}, R_{17} and R_{18} may be the same or different and each represents a hydrogen atom or a substituent group, or R_a and R_b may be combined together to form a five-membered to seven-membered ring; R_c represents an acyl group; R_{19} represents a substituent group; Z represents —S—, —SO—, —SO_2—, —O— or —$N(R_{20})$—; R_{20} has the same meaning as R_{13}; n represents 0 or an integer of 1 to 2; and m represents 0 or an integer of 1 to 5 and when m is 2 to 5, two or more R_{19} groups may be the same or different, wherein said compound of formula (I) is a compound represented by the following formula (I-a):


(I-a)

wherein n and Y are as defined in general formula (I); R_{21} and R_{22} may be the same or different and each represents a substituent group; k and k' each represents 0 or an integer of 1 to 5; when k and k' are each 2 or greater, two or more R_{21} and R_{22} groups may be the same or different, and the R_{21} or R_{22} groups at the ortho-position relative to each other may be combined together to form a five-membered to seven-membered ring, and wherein said compound of formula (II) is a compound represented by the following formula (II-a):


(II-a)

wherein R_7, R_8, R_9, R_{10} and n are the same as defined in general formula (II); R_{23} and R_{24} may be the same or different and each represents a substituent group; and p and p' each represents 0 or an integer of 1 to 5; when p and p' are each 2 or greater, two or more R_{23} and R_{24} groups may be the same or different, and the R_{23} and R_{24} groups at the ortho-position relative to each other may be combined together to a form five-membered to seven-membered ring.

5,360,712

INTERNALLY DOPED SILVER HALIDE EMULSIONS AND PROCESSES FOR THEIR PREPARATION

Myra T. Olm, Webster; Woodrow G. McDugle; Sherrill A. Puckett, both of Rochester; Traci Y. Kuromoto, West Henrietta; Raymond S. Eachus, Rochester; Eric L. Bell, Wesbter, and Robert D. Wilson, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 13, 1993, Ser. No. 91,148

Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—567 **46 Claims**

1. A photographic silver halide emulsion comprised of radiation sensitive silver halide grains exhibiting a face centered cubic crystal lattice structure containing a hexacoordination complex of a metal chosen from groups 8 and 9 of the periodic table of elements in which one or more organic ligands each containing at least one carbon-to-carbon bond, at least one carbon-to-hydrogen bond or at least one carbon-to-nitrogen-to-hydrogen bond sequence occupy up to half the metal coordination sites in the coordination complex and at least half of the metal coordination sites in the coordination complex are provided by halogen or pseudohalogen ligands.

31. A process of preparing a radiation-sensitive silver halide emulsion comprising reacting silver and halide ions in a dispersing medium in the presence of a metal hexacoordination complex having at least one organic ligand containing at least one carbon-to-carbon bond, carbon-to-hydrogen bond, or carbon-to-nitrogen-to-hydrogen bond sequence and at least half of the metal coordination sites occupied by halide or pseudohalide ligands, the metal forming the complex being chosen from periods 4, 5 and 6 and groups 8 and 9 of the periodic table of elements.

5,360,713

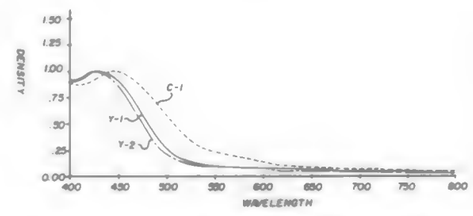
YELLOW DYE-FORMING COUPLERS AND COLOR PHOTOGRAPHIC ELEMENTS CONTAINING THESE COUPLERS

Ping W. Tang; Philip T. S. Lau, and Stanley W. Cowan, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

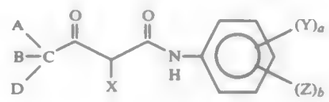
Filed Nov. 12, 1992, Ser. No. 975,200

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—556 **15 Claims**



1. A photographic element comprising a support and a silver halide emulsion layer having associated therewith a coupler of the formula



wherein A, B, and D is are each fluorine atoms,

X is a hydrogen atom or a coupling-off group, and

Y and Z are independently selected from the group consisting of H, Cl, F, Br, CN, carboxy, NO_2, CF_3, substituted or unsubstituted alkoxycarbonyl, substituted or unsubstituted aryloxycarbonyl, $—S(O)N(R^2)_2$, $—S(O)_2N(R^2)_2$, $—S(O)R^3$, $—S(O)_2R^3$, $—NR^2S(O)R^3$, $—NR^2S(O)_2R^3$, $—NHCONHR^3$, $NHCOR^3$, $—NR^2S(O)N(R^2)_2$, $—NR^2S(O)_2N(R^2)_2$, $—OR^3$, $—OCR^1(R^2)_2$, $—O(CH_2)_nR^3$, $—O(CH_2—CH_2—O)_nR^2$, $—O(CH_2—CH_2—O)_nCOOR^2$, $—O(CH_2—CH_2—O)_nCON(R^2)_2$, $—CR^1R^2COOR^2$, $—CR^1R^2CON(R^2)_2$, $—COO(CH_2—CH_2—O)_nR^2$ and a ballast group; where each R^1, R^2, R^3 independently is hydrogen alkyl, alkoxy, aryl, or aryloxy, any of which may be substituted or unsubstituted; and n is an integer and wherein a and b are integers from 1 to 4, inclusive.

5,360,714

HEPADNAVIRUS POLYMERASE GENE PRODUCT HAVING RNA-DEPENDENT DNA PRIMING AND REVERSE TRANSCRIPTASE ACTIVITIES AND METHODS OF MEASURING THE ACTIVITIES THEREOF

Christoph Seeger, Melrose, Pa., assignor to Fox Chase Cancer Center, Philadelphia, Pa.

Continuation-in-part of Ser. No. 937,214, Aug. 28, 1992. This application Aug. 2, 1993, Ser. No. 101,253

Int. Cl.[5] C12Q *1/48, 1/68;* **C08L** *5/00;* **C12N** *9/12*

U.S. Cl. 435—5 **18 Claims**

1. A rapid, in vitro method for measuring the DAN priming

activity of a hepadnavirus polymerase gene product, comprising the steps of:

a) providing a substantially virus-free hepadnavirus polymerase gene product;

b) providing an RNA template for hepadnavirus minus strand DNA synthesis which comprises a sequence capable of forming a stem-loop structure that includes a site for binding and priming of said hepadnavirus polymerase gene product;

c) combining said hepadnavirus polymerase gene product and said RNA template for hepadnavirus minus strand DNA synthesis in an assay buffer with a detectably labeled nucleotide triphosphate comprising the first nucleotide incorporated into said hepadnavirus minus strand DNA, under conditions promoting DNA priming activity of said hepadnavirus polymerase gene product, resulting in the formation of a complex comprising said hepadnavirus polymerase gene product, said RNA template for minus strand DNA synthesis and said detectably labeled nucleotide triphosphate;

d) separating said complex from said assay buffer; and

e) detecting an amount of said detectably labeled nucleotide triphosphate in said separated complex, said amount being determinative of said DNA priming activity of said hepadnavirus polymerase gene product.

5,360,715

PLASTIN ISOFORMS AND THEIR USES

John C. Leavitt, Palo Alto; Ching-Shwun Lin, Redwood City, both of Calif., and Ruedi H. Aebersold, Vancouver, Canada, assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 495,256, Mar. 16, 1990, Pat. No. 5,002,870, which is a continuation-in-part of Ser. No. 203,434, Jun. 7, 1988, abandoned. This application Jan. 10, 1991, Ser. No. 642,983

Int. Cl.[5] C12Q *1/68;* **C07H** *21/04;* **C07K** *13/00;* **G01N** *33/53*

U.S. Cl. 435—6 **16 Claims**

1. A cDNA molecule encoding human plastin having the amino acid sequence specified in Tables 2 and 3.

5,360,716

HUMAN TUMOR NECROSIS FACTOR αSPECIFIC MONOCLONAL ANTIBODY AND METHOD FOR DETECTING HUMAN TUMOR NECROSIS FACTOR α

Yasukazu Ohmoto, Itano; Tsutomu Nishida, Naruto; Keiko Mizuno, Tokushima, and Satoru Nakai, Itano, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 22,428

Claims priority, application Japan, Oct. 24, 1988, 63-267897

Int. Cl.[5] G01N *33/53;* **C12N** *5/18;* **C07K** *15/28*

U.S. Cl. 435—7.2 **3 Claims**

1. Hybridoma KOCO 705 having Fermentation Research Institute Deposit No. FERM BP-2569, which produces monoclonal antibody ANOC 705, wherein said monoclonal antibody:

(1) is an IgG_1 of a molecular weight of about 155 Kilo-daltons, which comprises a heavy chain having a molecular weight of about 53 Kilo-daltons and a light chain having a molecular weight of about 24.5 Kilo-daltons;

(2) specifically reacts with SDS-denatured human tumor necrosis factor alpha; and

(3) has neutralizing activity against human tumor necrosis factor alpha in a human tumor necrosis factor alpha bioassay.

5,360,717

AGENT, FOR IMMUNOCHEMICAL ASSAYS, CONTAINING AMINE OXIDES

Wilhelm Schuy, Obererbach, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Continuation of Ser. No. 807,618, Dec. 13, 1991, abandoned, which is a continuation of Ser. No. 319,206, Mar. 6, 1989, abandoned. This application Sep. 3, 1992, Ser. No. 938,591

Claims priority, application Germany, Mar. 8, 1988, 3807478

Int. Cl.[5] G01N *33/543*

U.S. Cl. 435—7.94 **9 Claims**

1. A process for the immunochemical determination of an analyte contained in a biological material, comprising the steps of

(i) bringing into contact a sample of the biological material with an amine oxide of Formula I



I

where

(a) R_1 is a 1-alkanoyl group or a 1-alkenoyl-amino-propyl group where the alkanoyl radical or alkenoyl radical contains 8 to 18 caron atoms and R_2 and R_3 are methyl groups, ethyl groups or propyl groups, or

(b) R_1 is an alkyl group or an alkenyl group having 8 to 18 carbon atoms and R_2 and R_3 are methyl groups, ethyl groups or propyl groups, or

(c) R_1 is an alkyl group or an alkenyl group having 8 to 18 carbon atoms, R_2 is methyl, ethyl or propyl and R_3 is hydroxyethyl or hydroxypropyl, or

(d) R_1 is an alkyl group or an alkenyl group having 8 to 18 carbon atoms and R_2 and R_3 are hydroxyethyl or hydroxypropyl, or

(e) R_1 is an alkyl group or an alkenyl group having 8 to 18 carbon atoms or oxyethyl or oxypropyl or their polycondensates, R_2 and R_3 are methyl, ethyl, propyl or hydroxyethyl or hydroxypropyl, or

(f) R_1 is an alkanoyl group or an alkenoyl group having 8 to 18 carbon atoms or oxyethyl or oxypropyl or their polycondensates, R_2 and R_3 are methyl, ethyl, propyl or hydroxyethyl or hydroxypropyl where R_1, R_2 and R_3 may contain amide groups or phenol radicals to form a mixture containing 2 to 80 g/l of said amine oxide, and wherein said mixture does not contain a benzidine-type indicator;

(ii) incubating said mixture for a period of time at least necessary to liquefy the biological material, said biological material comprising tissues, blood cells, serum, plasma, secreta or excretions;

(iii) incubating said mixture or an aliquot of said mixture with a specific binding partner of said analyte, said specific binding partner being immobilized on a solid phase; and

(iv) determining the amount of said analyte being bound to said immobilized specific binding partner.

5,360,718

DIAGNOSIS OF CANDIDA VAGINITIS BY DETECTING D-ARABINITOL IN VAGINAL FLUID

Linda Anderson-Mauser, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 839,176, Feb. 20, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 151,318

Int. Cl.[5] C12Q *1/32;* **C12N** *1/00*

U.S. Cl. 435—26 **7 Claims**

1. A method for the diagnosis of Candida vaginitis, comprising the steps of:

(a) combining a sample of vaginal fluid with a test composition comprising an indicator system that produces a chromogenic response in the presence of D-arabinitol, and

(b) observing said chromogenic response for elevated levels of D-arabinitol in said sample.

5,360,719

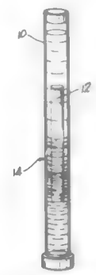
DETERMINATION OF LYMPHOCYTE REACTIVITY TO SPECIFIC

Robert A. Levine, 31 Pilgrim La., Guilford, Conn. 06437, and Stephen C. Wardlaw, 191 N. Cove Rd., Old Saybrook, Conn. 06475

Continuation-in-part of Ser. No. 340,248, Apr. 19, 1989, abandoned. This application Sep. 30, 1992, Ser. No. 954,440

Int. Cl.[5] C12Q *1/04;* **G01N** *33/49*

U.S. Cl. 435—29 **14 Claims**



1. A blood testing method for determining a subject's prior exposure to a suspect antigen to which lymphocytes in the blood may have become presensitized, said method the steps of:

a) forming a mixture of a sample of the subject's anticoagulated whole blood with the suspect antigen and incubating said mixture;

b) adding an optically detectable indicator to the mixture, which indicator has an affinity for lymphocytes in the blood which respond to the suspect antigen or to lymphocytes that have been previously responded to messengers or signals from such presensitized lymphocytes, so as to significantly optically highlight said lymphocytes which respond:

c) centrifuging a portion of the mixture in a transparent tube to concentrate the lymphocyte/monocyte cells in a band in the tube; and

d) determining the presence or absence of optically highlighted lymphocytes and/or lymphoblasts in the centrifuged lymphocyte cell band by examining said cell band under magnification, and comparing any highlighting in said cell band with negative and positive controls which indicate respectively; a non-highlighted cell band; and the patient's lymphocyte responsiveness to an antigen to which the patient is known to have had prior exposure, thereby determining whether the patient has experienced a prior exposure to the suspect antigen to which a portion of the subject's lymphocytes have become sensitized.

5,360,720

METHOD OF PREPARING HUMAN CONJUNCTIVAL MAST CELLS FOR MAST CELL STABILIZATION ASSAYS

Steven T. Miller, Arlington, and John M. Yanni, Burleson, both of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Oct. 8, 1993, Ser. No. 134,148

Int. Cl.[5] C12Q *1/02, 1/00;* **G01N** *33/53, 33/567*

U.S. Cl. 435—29 **10 Claims**

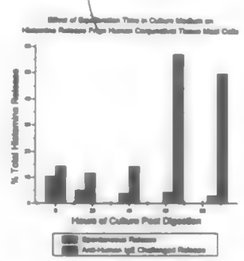
1. A method of preparing human conjunctival mast cells for use in mast cell stabilization assays and evaluation of antiallergic drugs comprising the steps of:

(a) enzymatically digesting human conjunctival tissue;

(b) washing the tissue of step (a) with a buffer over a filter so that the filtrate is collected;

(c) enriching the filtrate of step (b) for mast cells;

(d) forming a mast cell preparation by resuspending the enriched cells in a buffer;



(e) allowing the mast cell preparation to equilibrate at about 30°–37° C. in a supplemented tissue culture medium comprising serum and non-stable essential amino acids for a minimum of about 40 hours;

(f) harvesting the mast cells from the culture medium; and

(g) determining viability and number of mast cells.

5,360,721

MICROBIAL RETRIEVAL AND SAMPLING METHOD

Judd R. Wilkins, 281 Littletown Quarter, Williamsburg, Va. 23185

Division of Ser. No. 791,467, Nov. 13, 1991, Pat. No. 5,272,926. This application Aug. 30, 1993, Ser. No. 112,957

Int. Cl.[5] C12Q *1/24*

U.S. Cl. 435—30 **2 Claims**

1. A method for transfer of colony growth from a petri dish to one or more tubes of nutrient broth comprising the steps of:

providing a petri dish containing a nutrient agar having a bacterial colony growth thereon;

providing a sterilized pipette having a syringe barrel containing a slidable plunger at one end therein and a pipette orifice at the other end thereof;

providing an elongated wire probe movable with and having one end attached to the slidable plunger and the other end disposed within the pipette near the pipette orifice;

providing a removable cover for the pipette orifice;

removing the removable cover from the pipette orifice;

depressing the slidable plunger to extend the elongated wire probe from the pipette orifice to touch and retain thereon a sample of the bacterial colony growth in the petri dish;

employing the slidable plunger to retract the elongated wire probe into the pipette;

placing the pipette orifice into a container of sterile nutrient broth media;

employing the slidable plunger to draw a quantity of the sterile nutrient broth media into the pipette by the pulling action of the slidable plunger;

manually positioning the removable cover again over the pipette orifice;

placing the closed pipette containing the nutrient broth media and the wire probe having the colony sample thereon in an incubator to stimulate growth of the colony sample;

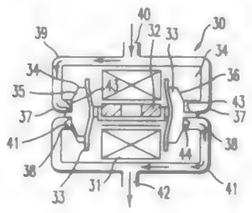
after incubation, removing the incubated pipette and contents from the incubator;

agitating the pipette to uniformally distribute the stimulated growth of the colony sample on the wire probe in the contained nutrient broth;

manually removing the removable cover; and

accurately transferring the pipette contained nutrient broth and the colony growth therein to one or more tubes by the downward action of the syringe plunger.

5,360,722
METHOD AND APPARATUS FOR DETERMINING AIR BORNE BACTERIA
Keido Inoue, Takatsuki; Masaru Kawakashi, Toyonaka; Hisao Kinoshita, Nara, and Kenji Mochida, Ibaragi, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan
Continuation of Ser. No. 674,973, Mar. 26, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 7,004
Claims priority, application Japan, Mar. 27, 1990, 2-32431; Aug. 3, 1990, 2-207254
Int. Cl.[5] C12Q *1/04*; C12M *1/34*
U.S. Cl. 435—34 **7 Claims**



1. A method for determining air borne bacteria which comprises successive steps of passing a volume of air by a suction pump means through a membrane filter at a membrane passing velocity of not more than 15 cm/sec and under a substantially constant transmembrane pressure of not more than 100 mmHg to collect the air borne bacteria on the surface of said membrane filter, said membrane filter being provided on a medium-absorbing pad housed in a holder; injecting a culture medium into said medium-absorbing pad housed in said holder; incubating the bacteria thus collected; and measuring the number of the colonies developed on the surface of said membrane filter.

5,360,723
METHOD FOR LOWERING MOLECULAR WEIGHT OF MICROBIAL CELLULOSES
John A. Hyatt, Kingsport; Robert M. Gardner, Gray, and Scott R. Thatcher, Johnson City, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.
Filed May 7, 1993, Ser. No. 57,922
Int. Cl.[5] C21P *19/04*
U.S. Cl. 435—101 **7 Claims**

1. A method for preparing β-1,4-D-glucan or β-1,4-D-glucan containing up to 5 mole % of 2-deoxy-D-glucose as internal or end group substitutions for D-glucose, which comprises culturing a cellulose-producing microorganism, wherein the cellulose-producing microorganism is selected from *Acetobacter xylinum, Acetobacter aceti, Sarcini ventriculi,* and *Agrobacter tumefaciens,* under aerobic fermentation conditions in the presence of assimilable sources of carbon, hydrogen, and nitrogen, said sources comprised of D-glucose and 2-deoxy-D-glucose.

5,360,724
PROCESS FOR THE PREPARATION OF CHIRAL 1-ARYL-2-AMINOPROPANES
George W. Matcham, Bridgewater, and Seujo Lee, Edison, both of N.J., assignors to Celgene Corporation, Wayne, N.J.
Filed Dec. 18, 1992, Ser. No. 992,575
Int. Cl.[5] C12P *13/00*
U.S. Cl. 435—128 **9 Claims**

1. The process of producing one chiral form of a 1-phenyl-2-aminopropane in preference to its enantiomer which comprises:
(i) allowing a 1-phenylpropan-2-one to react with a 1-amino-1-phenylethane of predominantly one chiral form to produce the corresponding 1-(1-phenylprop-2-ylideneimino)-1-phenylethane;
(ii) reducing the resultant 1-(1-phenylprop-2-ylideneimino)-1-phenylethane to yield phenylethane and a mixture of 1-phenyl-2-aminopropanes in which one chiral form thereof is present in preference to its enantiomer; and
(iii) subjecting the mixture of 1-phenyl-2-aminopropanes, in an aqueous medium and in the presence of an amino acceptor, to the action of an omega-amino acid transaminase operable to enzymatically convert one chiral form of 1-phenyl-2-aminopropane into the corresponding 1-phenylpropanone and thereby increase the relative proportion of the chiral form of the 1-phenyl-2-aminopropane which is not enzymatically converted.

5,360,725
METHOD OF PRODUCING RICE CYBRID CELLS
Hiromori Akagi; Masahiro Sakamoto, both of Yokohama, and Tatsuhito Fujimura, Sagamihara, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
Continuation of Ser. No. 928,656, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 630,777, Dec. 21, 1990, abandoned, which is a continuation of Ser. No. 305,511, Feb. 2, 1989, abandoned. This application May 10, 1993, Ser. No. 58,666
Claims priority, application Japan, Feb. 2, 1988, 63-21273
Int. Cl.[5] C12N *5/14*; A01H *4/00*
U.S. Cl. 435—172.2 **25 Claims**

1. A method of producing rice cybrid cells comprising the steps of:
(a) irradiating with X-rays at a dosage of 90–250 krad first rice protoplasts containing a first useful gene in the cytoplasm thereof to selectively destroy the nuclei only of the protoplasts;
(b) treating second rice protoplasts containing a second useful gene in the nuclei thereof with about 10–30 mM of iodoacetamide, about 0.1–0.5 mM of Rhodamine 6G or about 10–30 mM of iodoacetate to selectively deactivate the cytoplasm thereof; and
(c) fusing the treated first and second protoplasts to form cybrid cells which have only the nuclei containing the first useful gene and have only the cytoplasm containing the second useful gene.

5,360,726
POLYPEPTIDES ENABLING SORTING OF PROTEINS TO VACUOLES IN PLANTS
Natasha V. Raikhel, Okemos, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.
Continuation-in-part of Ser. No. 612,200, Nov. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 406,318, Sep. 12, 1989, abandoned. This application Nov. 12, 1991, Ser. No. 791,930
Int. Cl.[5] C12N *15/00, 15/62, 15/29*
U.S. Cl. 435—172.3 **6 Claims**

1. A method of targeting a foreign protein to the vacuole of plant cells which comprises fusing in frame a sequence encoding a polypeptide Val Phe Ala Xaa_1 Ala Ile Xaa_2 Xaa_3 Asn Ser Thr Leu Xaa_4 Xaa_5 Glu as set forth in SEQ ID NO. 6,
wherein Xaa_1 is selected from the group consisting of Gly and Glu,
Xaa_2 and Xaa_3 are selected from the group consisting of Ala and Thr,
Xaa_4 is selected from the group consisting of Val and Leu, and
Xaa_5 is selected from the group consisting of Ala and Gln to a 3' end of a coding sequence of a foreign protein having an N-terminal signal sequence which mediates translocation to the endoplasmic reticulum and expressing the fused sequence in transgenic plant cells.

5,360,727
C-TERMINAL α-AMIDATING ENZYME AND PROCESS FOR PRODUCTION THEREOF
Hisayuki Matsuo, 6653, Ooaza Kihara, Kiyotake-cho, Miyazaki-gun, Miyazaki 889-16; Kensaku Mizuno, and Masayasu Kojima, both of Miyazaki, all of Japan, assignors to Hisayuki Matsuo, Miyazaki, Japan
Continuation of Ser. No. 322,568, Mar. 13, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 921,600
Claims priority, application Japan, Mar. 14, 1988, 63-58187
Int. Cl.[5] C12N *9/02, 9/00*; C12P *21/00*
U.S. Cl. 435—189 **1 Claim**

1. A substantially purified C-terminal α-amidating enzyme of porcine atria origin having the following properties:
(1) Action and substrate specificity: acting on a peptide or protein represented by the formula:

X-R-Gly

wherein Gly represents a C-terminal glycine residue, R represents an amino acid residue to be α-amidated, and X represents the remaining portion of the peptide or protein to convert it to a peptide or protein represented by the formula

$X\text{-}R\text{-}NH_2$

wherein $R\text{-}NH_2$ represents the C-terminal α-amidated amino acid residue and X represents the remaining portion of the peptide or protein;
(2) optimum pH: 6.5–8.5;
(3) molecular weight: about 92,000 as determined by SDS-polyacrylamide gel electrophoresis; and
(4) containing the following peptide fragment:

. . . Glu-Ala-Pro-Leu-Leu-Ile-Leu-Gly . . . .

5,360,728
MODIFIED APOAEQUORIN HAVING INCREASED BIOLUMINESCENT ACTIVITY
Douglas Prasher, East Falmouth, Mass., assignor to Woods Hole Oceanographic Institution (W.H.O.I.), Woods Hole, Mass.
Filed Dec. 1, 1992, Ser. No. 982,650
Int. Cl.[5] C12N *9/02*; C07K *13/00*
U.S. Cl. 435—189 **9 Claims**

1. A composition comprising an isolated altered apoaequorin peptide, wherein at least the amino acid at amino acid position 124 in the amino acid sequence of natural apoaequorin is changed from aspartic acid to serine, said isolated altered apoaequorin, when combined with a luciferin and a light-triggering cation, having greater bioluminescent activity than natural apoaequorin combined with a luciferin and a light-triggering cation.

5,360,729
METHOD FOR PURIFICATION OF RECOMBINANT COPPER/ZINC (CU-ZN) SUPEROXIDE DISMUTASE FROM BACTERIA OR EUCARYOTIC CELLS
Daniel Bartfeld, North York, Canada; Ruth Lieshitz, Rehovot, Israel, and Dany Hadary, Richmond Hill, Canada, assignors to Bio-Technology General Corp., New York, N.Y.
Continuation of Ser. No. 840,571, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 432,871, Nov. 7, 1989, abandoned. This application Mar. 10, 1993, Ser. No. 29,030
Int. Cl.[5] C12N *9/02*
U.S. Cl. 435—189 **17 Claims**

1. A method for recovering a solution containing purified, enzymatically active Cu-Zn superoxide dismutase or a polypeptide analog thereof having substantially the same amino acid sequence as, and the biological activity of, naturally-occurring Cu-Zn superoxide dismutase from a composition which comprises cells containing Cu-Zn superoxide dismutase or a polypeptide analog thereof comprising:
(a) treating the composition so as to separate soluble proteins present in the cells from whole cells, cellular debris and insoluble proteins so as to obtain a solution containing such soluble proteins and treating the resulting solution containing the soluble proteins including Cu-Zn superoxide dismutase or polypeptide analog thereof comprising a, b and c isomers of Cu-Zn superoxide dismutase or polypeptide analog thereof, so as to increase the concentration of b isoform and reduce the concentration of a isoform and c isoform of said polypeptide analog contained in the solution;
(b) treating the resulting solution containing the soluble proteins with a second solution containing a salt at a concentration such that the soluble proteins other than Cu-Zn superoxide dismutase or the polypeptide analog thereof present in the solution containing the soluble proteins are rendered capable of binding to an appropriate hydrophobic substance;
(c) contacting the then resulting solution containing the soluble proteins with an appropriate hydrophobic substance so as to bind the soluble proteins other than Cu-Zn superoxide dismutase or the polypeptide analog thereof present in such solution to the hydrophobic substance and thus separate such other proteins from the Cu-Zn superoxide dismutase or polypeptide analog thereof; and
(d) recovering the resulting solution containing purified, enzymatically active Cu-Zn superoxide dismutase or polypeptide analog thereof.

5,360,730
ZEAXANTHIN PRODUCING STRAINS OF *NEOSPONGIOCOCCUM EXCENTRICUM*
Steve A. Orndorff, Arvada; Elizabeth A. Campbell, Evans, and Richard D. Medwid, Fort Collins, all of Colo., assignors to Universal Foods Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 524,140, May 15, 1990, abandoned, and a continuation-in-part of Ser. No. 474,248, Feb. 5, 1990, abandoned, which is a continuation of Ser. No. 58,512, Jun. 5, 1987, abandoned. This application Oct. 15, 1991, Ser. No. 776,665
The portion of the term of this patent subsequent to Sep. 27, 2016, has been disclaimed.
Int. Cl.[5] C12N *1/12*; C12P *23/00*
U.S. Cl. 435—257.1 **2 Claims**

1. A zeaxanthin-producing algal microorganism selected from the group consisting of a microorganism having all of the identifying characteristics of *Neospongiococcum excentricum* HZ 1236/274, ATCC No. 74108; HZ 1236/437, ATCC No. 74109: HZ 1236/538, ATCC No. 74107, and a mutant thereof, wherein said mutant is capable of producing at least about 1.75 mg zeaxanthin per gram dry cell weight.

5,360,731
BACTERIA CAPABLE OF STEREOSPECIFICALLY HYDROLYZING R-(−)-2,2-DIMETHYLCYCLOPROPANECARBOXAMIDE
Karen T. Robins, Visp, and Thomas Gilligan, Leuk, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland
Division of Ser. No. 845,034, Mar. 3, 1992, Pat. No. 5,273,903. This application Oct. 28, 1992, Ser. No. 969,713
Claims priority, application Switzerland, Mar. 6, 1991, 678/91; Jun. 24, 1991, 1854/91
Int. Cl.[5] C12N *1/12*; C12P *35/04, 41/00*
U.S. Cl. 435—252.34 **5 Claims**

1. A biologically pure culture of *Comamonas acidovorans* A:18 (DSM 6315), or a descendant thereof or a mutant thereof, which is capable of stereospecifically biotransforming R-(−)-2,2-dimethylcyclopropanecarboxamide in racemic R,S-(±)-2,2-dimethylcyclopropanecarboxamide to yield R-(−)-2,2-dimethylcyclopropanecarboxylic acid and optically active S-(+)-2,2-dimethylcyclopropanecarboxamide.

5,360,732

PRODUCTION OF *ASPERGILLUS NIGER* CATALASE-R

Randy M. Berka, San Mateo; Timothy Fowler, Redwood City, and Michael W. Rey, San Mateo, all of Calif., assignors to Genecor International, Inc., Rochester, N.Y.

Filed Mar. 4, 1992, Ser. No. 846,181
Int. Cl.[5] C12N *15/53, 15/80, 1/21, 9/08*
U.S. Cl. 435—192 **9 Claims**

1. A gene sequence encoding catalase R from *Aspergillus niger* in which the *Aspergillus niger* catR gene region consists essentially of the DNA sequences set forth in nucleotides number 1957 through 4370 in SEQ ID:NO 6 and wherein the native *Aspergillus niger* catR promoter has been deleted and an *Aspergillus glucoamylase* promoter gene has been functionally attached and consists essentially of the DNA sequences set forth nucleotides number 1 through 1956 in SEQ:ID NO 6.

5,360,733

HUMAN β1-6 N-ACETYLGLUCOSAMINYL TRANSFERASE

Minoru Fukuda, and Marti F. A. Bierhuizen, both of San Diego, Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Filed Oct. 1, 1992, Ser. No. 955,041
Int. Cl.[5] C12N *9/10;* C12P *19/18*
U.S. Cl. 435—193 **4 Claims**

1. A purified human protein having β1→6 N-acetylglucosaminyltransferase activity for a core 1-containing acceptor molecule.

5,360,734

METHOD FOR INACTIVATING PATHOGENS IN ERYTHROCYTES USING PHOTOACTIVE COMPOUNDS AND PLASMA PROTEIN REDUCTION

John Chapman, Lake Villa, Ill.; Patricia M. Logan; Herma C. Neyndorff, both of Vancouver British Columbia, Canada, and Janice North, Vancouver British Columbia, Canada, assignors to Baxter International, Inc., Deerfield, Ill. and Quadra Logic Technologies, Inc., Vancouver British Columbia, Canada

Continuation of Ser. No. 718,747, Jun. 21, 1991, abandoned. This application Jan. 28, 1993, Ser. No. 10,469
Int. Cl.[5] C12N *7/06;* A01N *1/02*
U.S. Cl. 435—238 **34 Claims**

1. A method for destroying viral pathogens in a blood component containing red blood cells and plasma proteins using a photoactive agent comprising the steps of:

adding a photoactive agent to the blood component;

treating the blood component to reduce the plasma proteins;

irradiating the resultant blood component with light of an appropriate wavelength to activate the photoactive agent and thereby inactivate viral pathogens;

preventing the resultant blood component from contacting plasma proteins either in vivo or in vitro for a period at least approximately three hours in order to prevent the blood component from exhibiting a positive direct antiglobulin test; and

after the period sufficient, contacting the blood component with plasma proteins either in vivo or in vitro.

5,360,735

DNA ENCODING A HUMAN 5-HT$_{1F}$ RECEPTOR, VECTORS, AND HOST CELLS

Richard L. Weinshank, New York, N.Y.; Theresa Branchek, Teaneck, and Paul R. Hartig, Mahwah, both of N.J., assignors to Synaptic Pharmaceutical Corporation, Paramus, N.J.

Filed Jan. 8, 1992, Ser. No. 817,920
Int. Cl.[5] C12N *5/00, 15/00, 1/20, 1/16*
U.S. Cl. 435—240.2 **13 Claims**

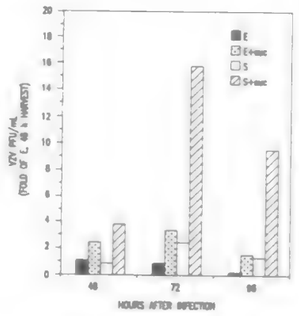
1. An isolated nucleic acid molecule encoding a human 5-HT$_{1F}$ receptor having the coding sequence shown in FIGS. 1A-1C.

5,360,736

PROCESS FOR ATTENUATED VARICELLA ZOSTER VIRUS VACCINE PRODUCTION

Philip J. Provost; David L. Krah, both of Lansdale, and Paul A. Friedman, Rosemont, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 4, 1992, Ser. No. 893,295
Int. Cl.[5] C12N *5/08*
U.S. Cl. 435—240.21 **9 Claims**



1. A process for preparing a live varicella zoster virus (VZV) vaccine which comprises the steps in the following order:

a. Culturing VZV infection-susceptible cells, selected from human diploid cells, to confluency in monolayer culture, under conditions of sufficiently high nutrition to achieve a high degree of cell replication, and supplying a non-metabolizable disaccharide;

b. Infecting the cells cultured according to step (a) at as close to the point of confluency as possible with as high a multiplicity of infection of VZV-infected cells as practical;

c. Maintaining the VZV-infected culture in a state of high nutrition for about 22–96 hours and harvesting at the point of peak infectious VZV production;

d. Washing the VZV-infected culture with a physiologic solution, optionally containing a lysosomotropic agent, such as ammonium chloride or chloroquine, prior to harvesting the VZV infected cells;

e. Harvesting the VZV infected cells into a minimal volume of a stabilizing sqlution and either disrupting the cells immediately or freezing the cells for later disruption;

f. Disrupting the VZV-infected cells to optimally release cell-associated VZV, and removing cellular debris, to provide a cell-free VZV preparation.

5,360,737

ENTEROBACTER CLOACAE FERM BP1529 HAVING PLANT GROWTH ACCELERATORY ACTIVITY

Takafumi Ishii; Takashi Adachi; Toshio Yasumura; Shinji Miyadoh, and Hidemasa Hidaka, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 754,255, Aug. 27, 1987, abandoned, which is a continuation of Ser. No. 109,649, Oct. 19, 1987, abandoned. This application Sep. 2, 1993, Ser. No. 115,667
Claims priority, application Japan, Oct. 17, 1986, 61-245399
Int. Cl.[5] C12M *1/20;* A91C *1/06;* A01N *63/00*
U.S. Cl. 435—252.1 **1 Claim**

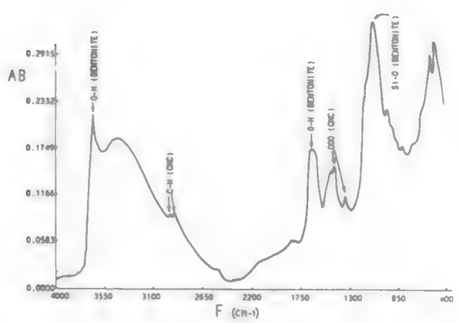
1. A biologically pure culture of *Enterobacter cloacae* having plant growth acceleratory activity and having deposit number FERM BP 1529.

5,360,738

METHOD OF QUANTITATIVE ANALYSIS OF DRILLING FLUID PRODUCTS

Timothy Jones, Cottenham, and Trevor Hughes, Cherry Hinton, both of England, assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 601,471, Oct. 22, 1990, abandoned. This application Apr. 16, 1993, Ser. No. 73,271
Claims priority, application United Kingdom, Oct. 28, 1989, 8924346.3; May 23, 1990, 9011527.0
Int. Cl.[5] G01N *33/24*
U.S. Cl. 436—30 **17 Claims**



1. Method of quantitative analysis of products in a drilling fluid, said method comprising the steps of:

obtaining a sample of said drilling fluid,

determining a sample density,

drying a know weight of said sample to constant weight so as to obtain products in the form of dried solids,

determining a weight fraction of solids in said sample,

preparing a known weight of dried solids to form a powder suitable for infrared analysis,

analysing the powered in a spectrometer to obtain an infrared spectrum including contributions from at least one organic product and at least one inorganic product, and

determining a value characteristic of the concentration of said at least one organic product and said at least one inorganic product in the drilling fluid from said spectrum, said determined sample density and said determined weight fraction of solids in said sample.

5,360,739

METHODS FOR THE IDENTIFICATION AND CHARACTERIZATION OF RETICULOCYTES IN WHOLE BLOOD

Sophie S. Fan, Millwood; Daniel Ben-David, Shrub Oak, both of N.Y.; Gregory M. Colella, Bloomfield, N.J.; Albert Cupo, Scarsdale, N.Y.; Gena Fischer, Harrington Park, N.J., and Leonard Ornstein, White Plains, N.Y., assignors to Miles Inc., Tarrytown and Mount Sinai School of Medicine of the City University of New York, New York, both of N.Y.

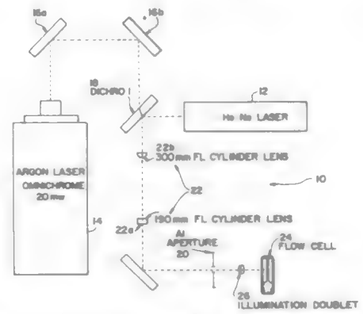
Filed Dec. 5, 1991, Ser. No. 802,585
The portion of the term of this patent subsequent to Sep. 27, 2011, has been disclaimed.
Int. Cl.[5] G01N *33/48*
U.S. Cl. 436—63 **24 Claims**

1. A method for identifying subclasses of cells of interest in a blood sample by flow cytometry which comprises the steps of:

(a) mixing an aliquot of said blood sample with an aqueous reagent composition to form a suspension, wherein the reagent composition comprises a dye compound which stains the ribonucleic acid of cells in the subclass of interest, a buffer for maintaining a pH of about 6 to about 9, and a sphering agent which is a zwitterionic surfactant and which does not precipitate said dye;

(b) passing said suspension of step (a) substantially a cell at a time through an area of focused optical illumination;

(c) detecting the light scattered and light fluoresced by each cell; and



(d) differentiating said cells of said subclass of interest at least in part on the basis of said scattered and fluoresced light.

5,360,740

ASSAY SYSTEM FOR DEGENERATIVE MUSCLE DISEASE

Nancy Y. Ip, Stamford, Conn.; Peter S. DiStefano, Carmel, and Neil Stahl, S. Salem, both of N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Filed Jul. 2, 1992, Ser. No. 907,680
Int. Cl.[5] G01N *33/536, 33/543, 33/566*
U.S. Cl. 436—501 **6 Claims**

1. A method of detecting muscle denervation in a patient afflicted with such muscle denervation comprising:

a) obtaining from said patient a sample of a body fluid;

b) reacting said sample with a material which specifically binds to ciliary neurotrophic factor receptor alpha protein (CNTFRα) which is present in solution in said sample to provide a complex of CNTFRα and said material;

c) determining a level of CNTFRα in said sample based on a measurement of said complex;

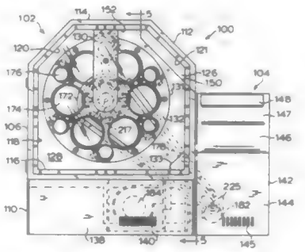
d) comparing the level of CNTFRα determined in said sample to levels of soluble CNTFRα determined in samples of the body fluid of unafflicted individuals, wherein an elevated level of CNTFRα in the sample is indicative of muscle denervation in the patient.

5,360,741

DNA HYBRIDIZATION INCUBATOR

Jack E. Hunnell, Durham, N.C., assignor to Triangle Biomedical Sciences, Inc., Durham, N.C.

Filed Sep. 29, 1992, Ser. No. 953,727
Int. Cl.[5] C12M *1/38;* C12Q *1/68;* B01L *3/00*
U.S. Cl. 435—290 **14 Claims**



1. A hybridization incubator comprising:

a housing including upper and side walls, a floor, a rear wall and a front door swingably openable to provide a front-loading character to the incubator, said housing walls, floor, and front door defining an enclosed incubator chamber of irregular polygonal geometric shape in elevational view, along a cross-section of the incubator chamber parallel to the rear wall, with the front door being parallel to the rear wall;

means for heating gas and circulating heated gas within said enclosed incubator chamber; and

means for mounting hybridization medium containers and rotationally translating same in the enclosed incubator chamber, comprising a rotational carousel mounted in the enclosure incubator chamber on a central shaft member for rotation, said central shaft member (i) being mounted to extend between the rear wall and front door, (ii) being perpendicular to the rear wall and perpendicular to the front door, and (iii) being parallel to said floor, with said hybridization medium containers being front-loadable on and front-loadable from the carousel when the front door is open.

5,360,742

EUKARYOTIC PLASMID VECTOR ENCODING ENZYMES FOR CYSTEINE PRODUCTION

George E. Rogers, Stonyfell, Australia, assignor to Luminis Pty. Ltd., Adelaide, Australia

Continuation of Ser. No. 452,238, Dec. 18, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 814,247
Claims priority, application Australia, Dec. 19, 1988, PJ2024
Int. Cl.[5] C12N *15/85*
U.S. Cl. 435—320.1 **7 Claims**

1. A plasmid including as operably joined components:

(a) a eukaryotic plasmid cloning vector;

(b) a first sequence of DNA encoding the enzyme serine acetyltransferase (SAT) or a functionally active part thereof;

(c) a second sequence of DNA encoding the enzyme O-acetylserine sulphydrylase (OASS) or a functionally active part thereof;

(d) a third sequence of DNA encoding a eukaryotic promoter region; and

(e) a fourth sequence of DNA derived from human growth hormone (hGH) encoding the transcription, termination and polyadenylation signals thereof.

5,360,743

METHOD FOR MEASURING A SAMPLE SORPTION AND A SAMPLE CELL VOID VOLUME AND WALL ADSORPTION USING AN ADSORBATE GAS

Seymour Lowell, Glenhead, N.Y., assignor to Quantachrome Corp., Boynton Beach, Fla.

Division of Ser. No. 850,455, Mar. 10, 1992, abandoned. This application Sep. 1, 1993, Ser. No. 114,370
Int. Cl.[5] G01N *15/08*
U.S. Cl. 436—5 **4 Claims**

1. A method of measuring surface properties of a sample by measuring the volume of absorbate gas adsorbed by the sample contained in a sample cell by using only an adsorbate gas, in an apparatus having a manifold, comprising the steps of:

a. immersing a portion of an empty sample cell in a coolant;

b. determining a plural point, pressure versus volume calibration curve for compensating for the non-ideality of the adsorbate gas and for adsorption of the empty sample cell, by dosing said immersed empty sample cell with a plurality of volumes of the adsorbate gas and measuring corresponding sample cell pressures;

c. removing said empty sample cell and introducing a known volume of the sample into said sample cell;

d. determining a second curve calculated from said calibration curve and said known volume of the sample, wherein said second curve provides the amount of adsorbate gas which would have to be dosed into said sample cell containing the sample to reproduce said calibration curve;

e. determining a plural point, volume versus pressure, experimental curve, wherein said experimental curve provides the amount of gas adsorbed, by reimmersing said sample cell containing the sample in the coolant and dosing said sample cell containing the sample with a plurality of volumes of the adsorbate gas and measuring corresponding sample cell pressures; and

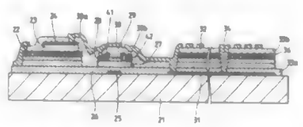
f. determining the amount of adsorbate gas adsorbed by the sample by subtracting said amount of adsorbate gas provided by said second curve from said amount of gas adsorbed provided by said experimental curve, wherein said determined amount of adsorbate gas adsorbed by the sample is compensated for by the amount of gas adsorbate adsorbed by said sample cell, and for non-ideality of the adsorbate gas.

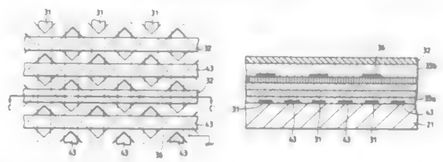
5,360,744

METHOD OF MANUFACTURING IMAGE SENSOR

Yasumoto Shimizu, and Hisao Ito, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 904,896, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 638,982, Jan. 19, 1991, abandoned. This application Apr. 1, 1994, Ser. No. 221,541
Claims priority, application Japan, Jan. 11, 1990, 2-2589
Int. Cl.[5] H01L *21/324*
U.S. Cl. 437—2 **5 Claims**





1. A method of manufacturing an image sensor comprising a light-receiving element having a lower metal electrode portion, a photoconductive layer, and a transparent electrode which are sequentially laminated; a thin film transistor switching element having a gate electrode, a source electrode portion, and a drain electrode portion; and a group of upper and lower wiring layers interposing an upper insulating layer, a ground layer, and a lower insulating layer therebetween, said upper and lower wiring layers being arranged in a matrix form; said light-receiving element, said thin film transistor switching element, and said wiring layer group being formed on an identical substrate, said method comprising the steps of:

simultaneously depositing the lower metal electrode portion of said light-receiving element, the source electrode portion and the drain electrode portion of said thin film transistor switching element, and the ground layer of said wiring layer group using an identical metal; and

thereafter patterning said deposited portions.

5,360,745

THIN-FILM SOLAR CELL PRODUCTION METHOD

Hajime Sasaki, and Hideo Naomoto, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1993, Ser. No. 2,808
Claims priority, application Japan, Sep. 8, 1992, 4-266677
Int. Cl.[5] H01L *31/18, 31/0392, 31/0368*
U.S. Cl. 437—4 **8 Claims**



1. A method making a thin-film solar cell including a semiconductor thin-film active layer with a p-n junction therein formed on a substrate, comprising:

forming said substrate by melting a substrate source material in a high-temperature plasma and spraying the melted source material into a cavity of a mold with a high-speed gas jet to form an ingot;

slicing a said substrate from the ingot;

forming on said substrate said thin-film active semiconductor layer, the active layer comprising a p-n junction including a p-type region and a n-type region; and

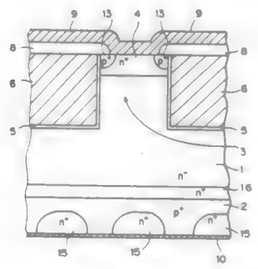
forming first and second electrical contacts to the p-type and n-type regions, respectively.

5,360,746

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Tomohide Terashima, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 21,462, Feb. 23, 1993, Pat. No. 5,309,002. This application Feb. 9, 1994, Ser. No. 193,742
Claims priority, application Japan, Mar. 30, 1992, 4-73709
Int. Cl.[5] H01L *49/00*
U.S. Cl. 437—6 **3 Claims**



1. A method of fabricating a semiconductor device, comprising the steps of:

(a) providing a first semiconductor layer of a first conductivity type having first and second major surfaces to form a second semiconductor layer of a second conductivity type on said first major surface of said first semiconductor layer,

(b) selectively forming a protruding portion on said second major surface of said first semiconductor layer,

(c) selectively forming a first semiconductor region of the first conductivity type having a resistance lower than that of said first semiconductor layer on the upper surface of said protruding portion of said first semiconductor layer,

(d) forming a first insulating film on one side face of said protruding portion of said first semiconductor layer and said first semiconductor region,

(e) forming a first control electrode on said first insulating film,

(f) forming a second insulating film on the other side face of said protruding portion and said first semiconductor region opposed to said one side face,

(g) forming a second electrode on said second insulating film,

(h) selectively forming a second semiconductor region of the second conductivity type on a surface of said first semiconductor region in contact with said first insulating film,

(i) selectively forming a third semiconductor region of the second conductivity type on the surface of said first semiconductor region in contact with said second insulating film,

(j) forming a first main electrode independently of said first and second control electrodes in contact with said first, second and third semiconductor regions, and

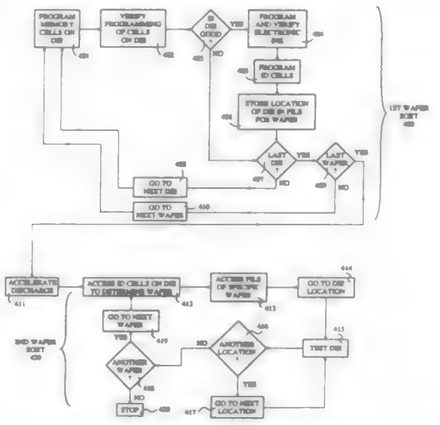
(k) forming a second main electrode in contact with said second semiconductor layer.

5,360,747

METHOD OF REDUCING DICE TESTING WITH ON-CHIP IDENTIFICATION

Sheldon O. Larson, San Jose, and Ronald J. Mack, Gilroy, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jun. 10, 1993, Ser. No. 74,897
Int. Cl.[5] H01L *21/66;* **G01R** *31/26*
U.S. Cl. 437—8 **13 Claims**



1. A method of testing dice on at least one wafer comprising the steps of:

programming a plurality of dice;

programming identification memory cells on each good die to identify the wafer on which said good die is located;

storing the location of each good die in a file;

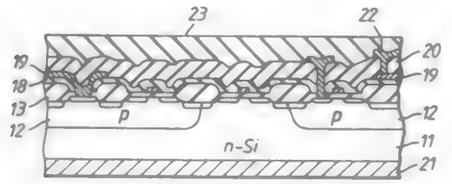
subjecting said plurality of dice to discharge conditions;

accessing the identification memory cells on one die to determine the file associated with said die;

loading said associated file; and

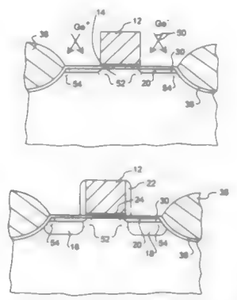
testing only said good dice.

5,360,748
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE
Soichi Nadahara, Tokyo, and Kikuo Yamabe, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jan. 22, 1993, Ser. No. 7,876
Claims priority, application Japan, Jan. 24, 1992, 4-011109
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—11 **11 Claims**



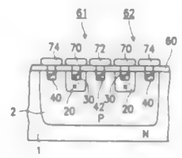
1. A method of manufacturing a semiconductor device, said method comprising the steps of:
providing a semiconductor substrate having a first primary surface on which the semiconductor device is to be formed and a second primary surface opposite from the first primary surface, the substrate receiving contaminants therein during device manufacture;
forming a separate boron-doped layer on the second primary surface of the substrate; and
gettering the contaminants into the boron-doped layer.

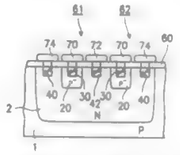
5,360,749
METHOD OF MAKING SEMICONDUCTOR STRUCTURE WITH GERMANIUM IMPLANT FOR REDUCING SHORT CHANNEL EFFECTS AND SUBTHRESHOLD CURRENT NEAR THE SUBSTRATE SURFACE
Mohammed Anjum, Austin; Klaus H. Koop, Elgin, and Maung H. Kyaw, Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Dec. 10, 1993, Ser. No. 166,305
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—24 **14 Claims**



1. A method for producing an NMOS device having reduced Drain Induced Barrier Lowering (DIBL) induced currents of short channel effects, the method comprising the steps of:
placing boron into a surface region of a p-type substrate;
growing a field oxide above said surface region upon said substrate;
growing a gate oxide and patterning a polysilicon gate over said gate oxide a lateral spaced distance from said field oxide;
implanting phosphorous into said substrate and within said lateral spaced distance to a concentration peak density at a first depth relative to the upper surface of said substrate;
implanting at a non-perpendicular angle relative to said substrate at least one electrically neutral impurity into a channel region underlying a portion of said gate oxide and into a field region underlying a portion of said field oxide; and
implanting arsenic into said substrate and within said lateral spaced distance to a concentration peak density at a second depth relative to the upper surface of said substrate, wherein said second depth is greater than said first depth.

5,360,750
METHOD OF FABRICATING LATERAL BIPOLAR TRANSISTORS
Sheng-Hsing Yang, Hsinchu, Taiwan, Prov. of China, assignor to United Microelectronics Corp., Hsinchu City, Taiwan, Prov. of China
Filed Jan. 13, 1994, Ser. No. 180,622
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **4 Claims**

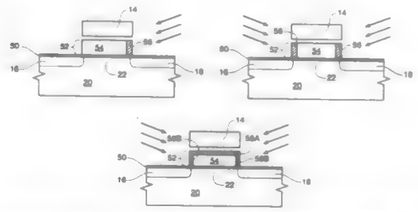




1. A method for fabricating NPN lateral bipolar transistors on an N type substrate, which comprises the following steps of:
(a) implanting P type impurity into a predetermined position of said substrate and driving in, to form a P well in said substrate;
(b) implanting N type impurity into predetermined positions in the P well, to form N^- expanded collector regions of said NPN transistors;
(c) implanting P type impurity into predetermined positions in the P well, to form contact regions of base electrode of said NPN transistors;
(d) implanting N type impurity into predetermined positions in the P well and the N^- expanded collector regions, to form emitter electrodes and collector electrodes of said NPN transistors respectively;
(e) forming a field oxide layer over said NPN transistors; and
(e) forming metal contacts at the contact regions of the base electrodes, the collector electrodes, and the emitter electrodes of said NPN transistors.

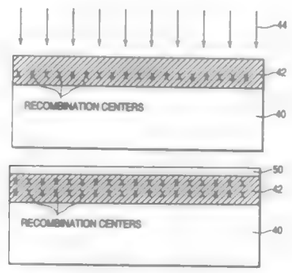
5,360,751
METHOD OF MAKING A CELL STRUCTURE FOR A PROGRAMMABLE READ ONLY MEMORY DEVICE
Roger R. Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 850,740, Mar. 12, 1992, Pat. No. 5,241,202. This application Aug. 30, 1993, Ser. No. 114,263
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—35 **12 Claims**

1. A process for forming a semiconductor device having a substrate and a plurality of cells comprising the following steps;
a) doping a first substrate region to form a transistor source;
b) doping a second substrate region to form a transistor drain;
c) providing a transistor channel interposed between said source and said drain;
d) forming a first insulating layer over said channel;
e) forming a first conductive layer over said channel;
f) lightly doping said first conductive layer with an impurity to form a lightly doped region in said first conductive layer;



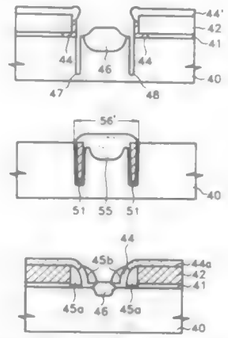
g) forming a second insulating layer over said first conductive layer;
h) forming a second conductive layer over said first conductive layer; and
i) angle doping a side of said first conductive layer to form a heavily doped region in said first conductive layer,
whereby said heavily doped region in said first conductive layer provides a self-aligned tunneling window through said first insulating layer.

5,360,752
METHOD TO RADIATION HARDEN THE BURIED OXIDE IN SILICON-ON-INSULATOR STRUCTURES
Frederick T. Brady, Chantilly, and Nadim F. Haddad, Oakton, both of Va., assignors to Loral Federal Systems Company, Bethesda, Md.
Filed Oct. 28, 1993, Ser. No. 142,030
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—62 **8 Claims**



1. A method of forming a silicon-on-insulator structure that is radiation hardened comprising the steps of:
selecting a first silicon substrate;
forming a oxide layer on the first silicon substrate;
implanting ions to form recombination center generating impurities within the oxide layer;
bonding a second silicon substrate to the implanted oxide layer to form a bonded substrate structure;
annealing the bonded structure at a temperature of less than 850° C.;
etching back the second silicon substrate to a desired thickness to form a silicon-on-insulator structure having radiation hardening.

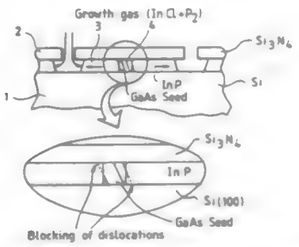
5,360,753
MANUFACTURING METHOD FOR A SEMICONDUCTOR ISOLATION REGION
Tai-seo Park, Seoul; Yun-gi Kim, Wonjoo; Dong-chul Park, Seoul; Sung-tae Ahn, Kwancheon, and Byeong-yeol Kim, Suwon, all of Rep. of Korea, assignors to Samsang Electronics Co., Ltd., Kyungki-do, Rep. of Korea
Filed Sep. 27, 1993, Ser. No. 127,155
Claims priority, application Rep. of Korea, Sep. 25, 1992, 92-17555
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—67 **19 Claims**



1. A method for manufacturing an element isolation region of a semiconductor device, comprising the steps of:
(a) forming an insulating layer having at least one aperture on a semiconductor wafer;
(b) forming an oxidizable material layer over said insulating layer including said at least one aperture;
(c) forming a first spacer on the oxidizable material at the peripheral surface of said at least one aperture;
(d) forming a thermal oxide film by thermally oxidizing said oxidizable material layer excluding a portion thereof masked by said first spacer;
(e) removing said first spacer and the resulting underlying material thereby leaving a portion of said semiconductor wafer exposed; and
(f) forming a trench in said semiconductor wafer by etching said exposed portion of said semiconductor wafer to thereby define an element isolation region.

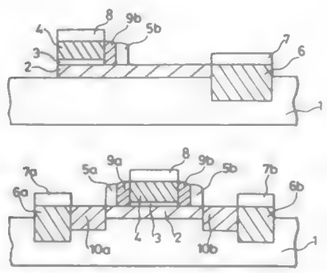
18. A method of manufacturing an element isolation region on a semiconductor wafer, comprising the steps of:
(a) forming a compound material layer having an aperture which exposes a portion of said semiconductor wafer;
(b) forming a first spacer on a sidewall of said aperture;
(c) forming an oxidizable material layer over said compound material layer, said first spacer, and said exposed portion of said semiconductor wafer;
(d) forming a second spacer on a portion of said oxidizable material layer covering said first spacer;
(e) thermally oxidizing said oxidizable material layer using said second spacer as an anti-oxidation mask and a portion of said semiconductor wafer in said aperture below said oxidizable material layer to obtain first and second thermal oxide film portions, respectively;
(f) removing said second spacer;
(g) removing said first thermal oxide film portion;
(h) forming a trench by removing a remaining portion of said oxidizable material layer masked by said second spacer and anisotropically etching said semiconductor wafer therebelow;
(i) forming an insulating film within said trench; and
(j) depositing an insulating material in said trench having said insulating film.

5,360,754
METHOD FOR THE MAKING HETEROEPITAXIAL THIN LAYERS AND ELECTRONIC DEVICES
Didier Pribat, Sevres, and Bruno Gerard, Chelles, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Apr. 2, 1993, Ser. No. 41,455
Claims priority, application France, Apr. 2, 1992, 92 04001
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—89 **15 Claims**



1. A method for the growing of heteroepitaxial thin layers, said method comprising the steps of:
making a seed of monocrystalline material of a first type in a cavity, the walls of which are made of at least one material on which there can be neither nucleation nor growth during the epitaxy step that will follow;
epitaxially growing a second type material in the cavity, from the seed so as to obtain a monocrystalline material of the second type in the cavity.

5,360,755
METHOD OF MANUFACTURING A DUAL FIELD EFFECT TRANSISTOR
Mitsunori Nakatani, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 707,752, May 30, 1991, Pat. No. 5,255,703.
This application Apr. 12, 1993, Ser. No. 45,131
Claims priority, application Japan, Jun. 11, 1990, 2-153395
Int. Cl.[5] H01L *21/335*
U.S. Cl. 437—40 **12 Claims**

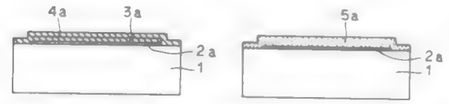


1. A method of manufacturing a field effect transistor comprising:
sequentially epitaxially growing on a semi-insulating first compound semiconductor substrate an active layer of the first compound semiconductor having a first dopant concentration and a source layer of the first compound semiconductor having a second dopant concentration higher than the first dopant concentration;
removing part of the source layer to leave a source region on the substrate;
depositing an electrically insulating film on the active layer and on and covering the source region;
etching the electrically insulating film to remove it from the source region and from part of the active layer, leaving first and second side wall films of the electrically insulating film disposed on the active layer and adjacent to and contacting each of two opposed side walls of the source region;
depositing a gate electrode material layer on the active layer and on and covering the source region and the first and second side wall films;
etching the gate electrode material layer to remove it from the source region and from part of the active layer, leaving first and second side wall gate electrodes disposed on the active layer and adjacent to and contacting the first and second side wall films, respectively;
removing the first side wall gate electrode, leaving the second side wall gate electrode in place as a gate electrode;
forming a drain region in the substrate spaced from the gate electrode, on the opposite side of the gate electrode from the source region, adjacent to and in contact with the active layer and having a dopant concentration intermediate the dopant concentrations of the source region and the active layer; and
forming source and drain electrodes on the source and drain regions, respectively.

5. A method of manufacturing a field effect transistor comprising:
sequentially epitaxially growing on a semi-insulating first compound semiconductor substrate an active layer of the first compound semiconductor having a first dopant concentration and a source layer of the first compound semiconductor having a second dopant concentration higher than the first dopant concentration;
removing part of the source layer to leave a source region on the substrate;
depositing an electrically insulating film on the active layer and on and covering the source region;
etching the electrically insulating film to remove it from the source region and from part of the active layer, leaving first and second side wall films of the electrically insulating film disposed on the active layer and adjacent to and contacting each of two opposed side walls of the source region;
depositing a gate electrode material layer on the active layer and on and covering the source region and the first and second side wall films;
etching the gate electrode material layer to remove it from the source region and from part of the active layer, leaving first and second side wall gate electrodes disposed on the active layer and adjacent to and contacting the first and second side wall films, respectively;
forming first and second drain regions in the substrate adjacent to and in contact with the active layer and respectively spaced from the first and second gate electrodes with the first and second gate electrodes disposed between the source region and the first and second drain regions, respectively, and having dopant concentrations intermediate the dopant concentrations of the source region and the active layer; and
forming a source electrode and first and second drain electrodes on the first and second drain regions, respectively.

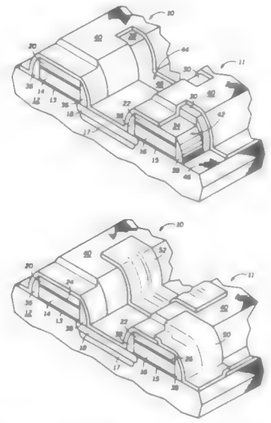
5,360,756
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A MONOCRYSTAL SILICON LAYER
Katsuhiko Tamura, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1993, Ser. No. 160,717
Claims priority, application Japan, Jan. 20, 1993, 5-007796
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **11 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of:
forming an insulating film on a silicon substrate;
forming a first non-monocrystal silicon layer on said insulating film;
patterning said first non-monocrystal silicon layer and said insulating film to expose a portion of a surface of said silicon substrate;
forming a second non-monocrystal silicon layer on said first non-monocrystal silicon layer and the exposed portion of said surface of said silicon substrate, and;



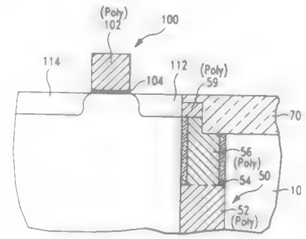
heating and melting said first non-monocrystal silicon layer and said second non-monocrystal silicon layer for monocrystallization of said first non-monocrystal silicon layer and said second non-monocrystal silicon layer.

5,360,757
PROCESS FOR FABRICATING A SELF ALIGNED INTERCONNECT STRUCTURE IN A SEMICONDUCTOR DEVICE
Craig S. Lage, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 3, 1993, Ser. No. 25,459
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **6 Claims**



1. A process for fabricating a semiconductor device comprising the steps of:
providing a semiconductor substrate having a gate oxide layer thereon;
forming a first polysilicon layer overlying the gate oxide layer;
forming a dielectric layer overlying the first polysilicon layer;
forming a second polysilicon layer overlying the dielectric layer;
forming an insulating layer overlying the second polysilicon layer;
etching the insulating layer, the second polysilicon layer, the dielectric layer and the first polysilicon layer to form a stacked gate;
etching away a portion of the insulating layer to expose selected portions of the second polysilicon layer;
depositing a dielectric masking layer overlying the stacked gate;
etching the masking layer to form openings therein exposing the selected portions of the second polysilicon layer and portions of the substrate; and
forming an interconnect layer overlying the masking layer and filling the openings.

5,360,758
SELF-ALIGNED BURIED STRAP FOR TRENCH TYPE DRAM CELLS
Gary B. Bronner, Mt. Kisco, N.Y.; John K. DeBrosse, Burlington, and Donald M. Kenney, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 3, 1993, Ser. No. 161,823
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 **7 Claims**



1. A method of making a DRAM cell having a trench capacitor in a substrate and an access transistor connected thereto comprising the steps of:
preparing the substrate;
forming a trench capacitor having a trench center electrode and a collar insulator in said substrate adjoining an active region of said substrate;
recessing said trench center electrode to a buried strap depth;
removing said collar insulator to said buried strap depth;
depositing a layer of strap material above said trench center electrode, whereby said strap material contacts a portion of said substrate below said active area;
etching a shallow trench having a shallow trench depth greater than said buried strap depth in a trench isolation area about said active area and partially overlapping said trench capacitor along a first axis through said active area, whereby that portion of said layer of strap material in said trench isolation area is removed and a strap, extending from an edge of said active area over a portion of said trench center electrode and formed from said strap material, remains;
forming a transistor in said active area with an electrode extending to make electrical contact with said strap, whereby said trench capacitor, strap and transistor combine to form said DRAM cell.

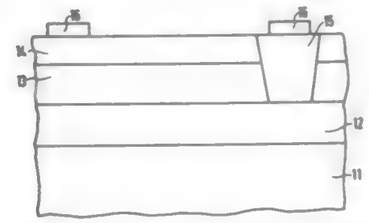
5,360,759
METHOD FOR MANUFACTURING A COMPONENT WITH POROUS SILICON
Reinhard Stengl, Stadtbergen; Wolfgang Hoenlein, Unterhaching; Volker Lehmann, Munich, and Andreas Spitzer, Ottobrunn, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 17, 1993, Ser. No. 123,605
Claims priority, application Germany, Sep. 18, 1992, 4231310
Int. Cl.[5] H01L *21/283, 21/265*
U.S. Cl. 437—20 **9 Claims**

1. A method for manufacturing a component with porous silicon, comprising the steps of:
(a) generating a first layer having a first conductivity type and a dopant concentration in a range between 10^{19} and

10^{21} cm^3 at a surface of a wafer of single-crystal silicon substrate;

(b) generating a second layer having a second opposite conductivity type and a dopant concentration in a range between 10^{15} and 10^{18} cm^{-3} on said first layer by epitaxy;

(c) generating a third layer having said second conductivity type and a dopant concentration of at least 10^{19} cm^{-3} on at least a portion of said second layer;



(d) conducting an anodic etching in a fluoride-containing, acidic electrolyte, contacting a surface of said third layer with said electrolyte for anodic etching, connecting said silicon wafer as n anode in said electrolyte, and thereby converting silicon in said lightly doped region into porous silicon; and

(e) providing electrical contacts for said first layer and said third layer.

5,360,760

VAPOR PHASE EPITAXIAL GROWTH METHOD OF A COMPOUND SEMICONDUCTOR

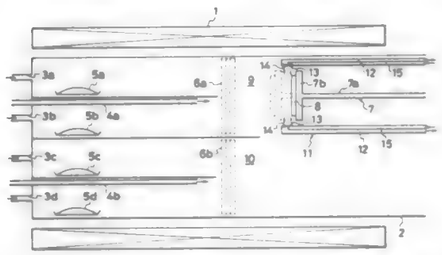
Jun Hayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 30, 1993, Ser. No. 39,749

Claims priority, application Japan, Apr. 2, 1992, 4-080169; Aug. 27, 1992, 4-228182

Int. Cl.^{5} H01L *21/20*

U.S. Cl. 117—93 **9 Claims**



5. A vapor phase method of growing an epitaxial layer on a semiconductor substrate, said method comprising the step of:

providing a reactor in a crystal growing furnace having upstream and downstream ends;

passing a stream of carrier gas in said upstream end through said reactor and out said downstream end;

supporting a component material in an upstream section of said reactor for said carrier gas stream to carry said component material down stream;

mounting a semiconductor substrate in said reactor downstream of said component material whereby said semiconductor substrate is bathed by said component material carried by said carrier gas stream;

two conduits extending to and ending in a vicinity of said semiconductor, one of said conduits expelling a separator gas into said carrier gas stream and the other of said conduits sucking gas from a point upstream of a location where said separator gas is expelled into said carrier gas stream; and

moving said semiconductor between two points upstream and downstream of said location where said separator gas is expelled into and sucked from said carrier gas stream.

5,360,761

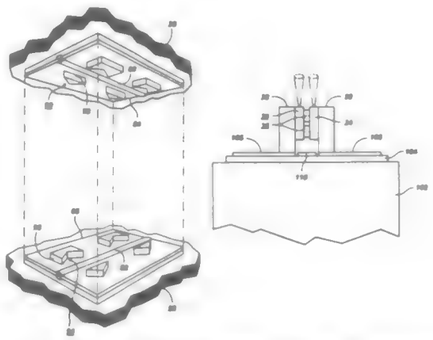
METHOD OF FABRICATING CLOSELY SPACED DUAL DIODE LASERS

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 7, 1993, Ser. No. 57,799

Int. Cl.^{5} H01L *21/20*

U.S. Cl. 437—129 **10 Claims**



1. A method of fabricating a dual beam semiconductor laser, including the steps of:

forming a pair of laser dies with one of the laser dies having an alignment member on a surface thereof and the other of the laser dies having a complementary alignment member on a surface thereof; and

assembling the pair of laser dies with the alignment members on each of the laser dies mating with one another so as to space opposed surfaces of the laser dies from one another and align the dual beam semiconductor laser.

5,360,762

SEMICONDUCTOR LASER DEVICE, AND A METHOD FOR PRODUCING A COMPOUND SEMICONDUCTOR DEVICE INCLUDING THE SEMICONDUCTOR LASER DEVICE

Kosei Takahashi; Masahiro Hosoda, both of Nara; Atsuo Tsunoda; Takahiro Suyama, both of Yamatokoriyama, and Sadayoshi Matsui, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 698,001, May 9, 1991, Pat. No. 5,255,279. This application Jun. 21, 1993, Ser. No. 80,004

Claims priority, application Japan, May 9, 1990, 2-120858; May 18, 1990, 2-129914; May 18, 1990, 2-129916

Int. Cl.^{5} H01L *21/20*

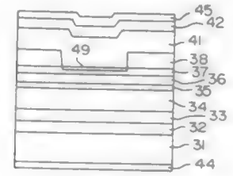
U.S. Cl. 437—129 **9 Claims**

1. A method for producing a compound semiconductor device comprising the steps of:

forming on a GaAs substrate an $(Al_YGa_{1-Y})_{0.5}In_{0.5}P$ crystal layer $(0 \leqq Y \leqq 1)$ which lattice-matches with the GaAs substrate;

radiating As molecular beams on the surface of the crystal layer while heating the layered substrate to a temperature at which In in the crystal layer evaporates so as to change

the surface of the crystal layer to an $Al_YGa_{1-Y}As$ crystal layer $(0 \leqq Y \leqq 1)$ of a thickness of several molecules; and



forming a $AlXGa_{1-X}As$ crystal layer $(0 \leqq X \leqq 1)$ on the $Al_YGa_{1-Y}As$ crystal layer.

5,360,764

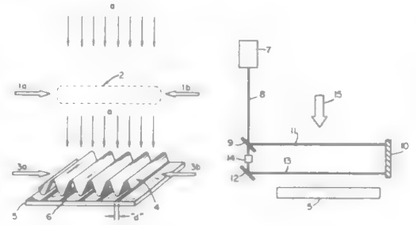
METHOD OF FABRICATING LASER CONTROLLED NANOLITHOGRAPHY

Robert J. Celotta, Darnestown, and Jabez J. McClelland, Bethesda, both of Md., assignors to The United States of America, as represented by the Secretary of Commerce, Washington, D.C.

Filed Feb. 16, 1993, Ser. No. 18,455

Int. Cl.^{5} H01L *21/268, 21/306*

U.S. Cl. 437—173 **46 Claims**



1. In a process of molecular beam epitaxy wherein a flow of atoms is directed toward a surface for deposition thereon, the improvement which comprises, optically focusing and scanning said flow of atoms over said surface.

5,360,763

METHOD FOR FABRICATING AN OPTICAL SEMICONDUCTOR DEVICE

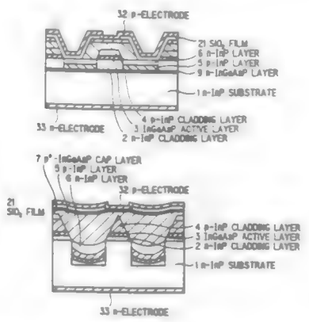
Takahiro Nakamura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 7, 1993, Ser. No. 117,495

Claims priority, application Japan, Sep. 7, 1992, 4-237503; Sep. 7, 1992, 4-237504

Int. Cl.^{5} H01L *21/205*

U.S. Cl. 437—129 **5 Claims**



1. A method for fabricating an optical semiconductor device, comprising the steps of:

forming an etching-stop layer, a current blocking layer, and a first dielectric layer successively on a semiconductor substrate;

removing said first dielectric layer to provide stripes on said current blocking layer;

etching said current blocking layer on said etching-stop layer by using said stripes as masks;

filling a first semiconductor layer into an etched portion of said current blocking layer;

carrying out a selective growth of a multiple layer structure including an active layer on said semiconductor layer; and

proving p- and n-electrodes for injecting current to said active layer.

5,360,765

METHOD OF FORMING ELECTRODES OF SEMICONDUCTOR DEVICE

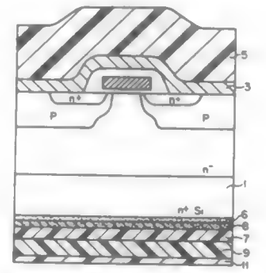
Ichiharu Kondo, Nagoya; Takao Yoneyama, Sunomata, and Masami Yamaoka, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 17, 1992, Ser. No. 914,623

Claims priority, application Japan, Jul. 17, 1991, 3-176870; Nov. 12, 1991, 3-295897

Int. Cl.^{5} H01L *29/08*

U.S. Cl. 437—192 **19 Claims**



1. A method of forming electrodes of a semiconductor device comprising the step of:

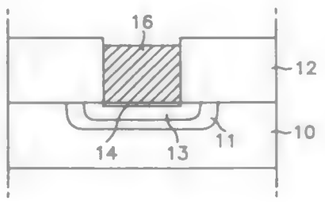
forming a contact metal film on a surface of a silicon substrate after performing a cleaning process using a reverse sputtering of argon ions, and then forming a nickel film as a soldering metal on said contact metal film; and controlling the amount of argon atoms at the interface between said silicon substrate and said contact metal film to be less than 4.0×10^{14} atoms/cm^2.

5,360,766

METHOD FOR GROWING A HIGH-MELTING-POINT METAL FILM

Kwang-Ok Ko, Seoul, and Jong-Ho Park, Goyang, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 575,627, Aug. 31, 1990, Pat. No. 5,180,468. This application Jan. 15, 1993, Ser. No. 5,068
Claims priority, application Rep. of Korea, Jun. 5, 1990, 10173/1990
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—192 24 Claims



1. A method for growing a high-melting-point metal film on a substrate, comprising the steps of:

forming a first ion-implanted layer in a given region of said substrate, and forming in said first ion-implanted layer a second ion-implanted layer;

contacting a surface of said second ion-implanted layer with a high-melting point metal fluoride gas to thereby form a film of high-melting-point metal onto the surface of said second ion-implanted layer;

growing said film of high-melting-point metal to a given thickness by reacting said high-melting-point metal fluoride gas with silane gas; and

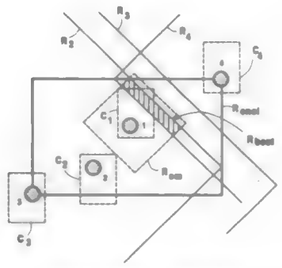
subjecting said substrate to a heat treatment.

5,360,767

METHOD FOR ASSIGNING PINS TO CONNECTION POINTS

Vinod Narayanan, Fishkill; Philip Honsinger, Poughkeepsie, both of N.Y.; Lok T. Lui, Berkeley, Calif., and Shuhui Lin, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1993, Ser. No. 44,659
Int. Cl.[5] H01L *21/18*
U.S. Cl. 437—208 8 Claims



1. A method for assigning pins connecting first and second layers of a multilayer electrical device to connection points located on the first layer and for connecting the connection points to assigned pins which are to be further connected through wiring located on the second layer, comprising the steps of:

a. identifying the location of a first connection point on the first layer that needs to be assigned to a pin and the location of a destination point to be connected to the first connection point through the pin;

b. computing the location of a first area located about the first connection point, the first area including all points on the first layer within a first length limit distance from the first connection point, the first length limit distance being determined by physical characteristics of the first layer that limit the length of wires formed within the first layer;

c. computing the location of a second area located about the destination point, the second area including all points on the second layer within a second length limit distance from the destination point, the second length limit distance being determined by physical characteristics of the second layer that limit the length of wires formed within the second layer;

d. computing an enclosing rectangle for the first connection point and the destination point, the first connection point and the destination point being located on opposite vertices of the enclosing rectangle;

e. determining a best area for selecting the pin to be assigned to the first connection point by calculating the overflapping intersection of the first area, the second area and the enclosing rectangle;

f. assigning a pin located within the best area to the first connection point; and

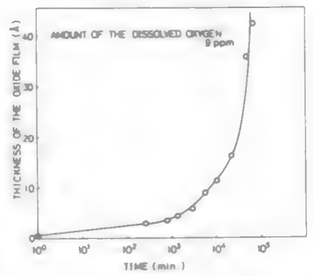
g. connecting the first connection point to the second layer through the assigned pin by forming a wire in the first layer between the first connection point and the assigned pin, the wire having a length that is no longer than the first length limit.

5,360,768

METHOD OF FORMING OXIDE FILM

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aoba-ku, Sendai-shi, Miyagi-ken 980, and Mizuho Morita, Sendai, both of Japan, assignors to Tadahiro Ohmi, Miyagi, Japan

PCT No. PCT/JP90/00581, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO90/13911, PCT Pub. Date Nov. 15, 1990
PCT Filed May 7, 1990, Ser. No. 784,434
Claims priority, application Japan, May 7, 1989, 1-113958
Int. Cl.[5] H01G *21/316*
U.S. Cl. 437—238 15 Claims



1. A method of forming a silicon oxide film comprising:

a first step of forming an oxide film on the surface of a silicon substrate by bringing a solution containing oxygen and/or oxygen-containing molecules, the impurities of which are less than 1 ppm, into contact with the surface of said substrate; and

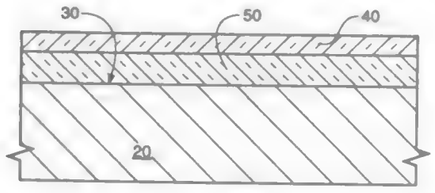
a second step of strengthening the bond between oxygen and silicon atoms constituting the surface of said substrate in said oxide film by the thermal treatment of said oxide film at a temperature between 20° C. and 600° C. in the atmosphere of one of oxygen, oxygen-containing molecule, inert gas alone, and a mixture of two or more of them, which contains impurities of not more than 100 ppb.

5,360,769

METHOD FOR FABRICATING HYBRID OXIDES FOR THINNER GATE DEVICES

Randhir P. S. Thakur; Annette L. Martin, and Ralph E. Kauffman, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Filed Dec. 17, 1992, Ser. No. 991,817
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—239 20 Claims



1. A method for fabricating a semiconductor wafers comprising the steps of:

a) providing a substantially clean substrate in an RTP (Rapid Thermal Processing) chamber, said substrate having a surface, wherein said substrate is cleaned with at least one of NF_3, GeH_4, and H_2 diluted with Ar-H_2;

b) forming a coating having a first thickness superjacent said surface by introducing a first gas and radiant energy in said RTP chamber; and

c) forming a silicon dioxide layer having a second thickness superjacent said surface by introducing a second gas and energy.

5,360,770

FLUORIDE ION-LEACHABLE GLASSES AND DENTAL CEMENT COMPOSITIONS CONTAINING THEM

Thomas C. Chadwick, Nipomo, Calif., assignor to Den-Mat Corporation, Santa Maria, Calif.

Filed Jan. 7, 1992, Ser. No. 817,885
Int. Cl.[5] C03C *8/08*
U.S. Cl. 501—24 20 Claims

1. A glass composition consisting essentially of the following ingredients by molar percent:

SiO_2	17.6–19.7
P_2O_5	0.8–3.5
Al_2O_3	9.0–11.0
Na_2O	0.5–3.0
MO	17.9–19.7
F	42.2–56.1

wherein MO is selected from the group consisting of BaO, BaO—CaO, BaO—SrO, and BaO—CaO—SrO.

5,360,771

LIGHT WEIGHT MINERAL FOAM AND PROCESS FOR PREPARING THE SAME

Pierre Delvaux, Bromptonville; Normand Lesmerises, Rock Forest; Daniel Poisson, Sherbrooke, and Marcel Gouin, Deauville, all of Canada, assignors to Ceram SNA Inc., Sherbrooke, Canada

Filed Feb. 12, 1993, Ser. No. 16,889
Int. Cl.[5] C04B *38/00*
U.S. Cl. 501—80 10 Claims

1. A solid, light weight mineral foam having a density ranging from 10 to 65 lb/pi^3, said foam consisting essentially of:

a) 1 part by weight of solution of phosphoric acid in which is dissolved polyvinyl alcohol in such an amount as to make said solution viscous;

b) from 0.03 to 6 parts by weight of wollastonite containing from 0.5 to 4% by weight of a carbonate salt; and

c) from 0.2 to 10 parts by weight of water, said amount of water depending on the concentration of said solution of phosphoric acid and of the required density of said foam, it being understood that the more concentrated is the solution of phosphoric acid or the lower is the required density, the higher is the amount of water.

5,360,772

CERAMIC MATERIAL REINFORCED BY THE INCORPORATION OF TIC, TICN AND TIN WHISKERS AND PROCESSES FOR PRODUCTION THEREOF

Katsura Hayashi, and Katsushi Sakane, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jul. 24, 1991, Ser. No. 735,371
Claims priority, application Japan, Jul. 25, 1990, 2-196909; Jul. 25, 1990, 2-196910; Aug. 27, 1990, 2-226080; Aug. 27, 1990, 2-226081; May 28, 1991, 3-123862
Int. Cl.[5] C04B *35/36*
U.S. Cl. 501—95 30 Claims

11. In a process of preparing a sintered whisker-reinforced ceramic material, by forming a starting material, molding the starting material into a shape and sintering the molded starting material, the improvement wherein the step of forming a starting material comprises

activating alumina with an average particle size of about 3 microns or less;

mixing the alumina with 5 to 70 volume percent of whiskers selected from the group consisting of titanium carbide, titanium nitride and titanium carbo-nitride; and

mixing the alumina with a metal boride which is 0.02 to 40 weight percent of the matrix.

5,360,773

HIGH DENSITY FUSED SILICA MIXES, REFRACTORY SHAPES MADE THEREFROM, AND METHOD OF MAKING THE SAME

Howard M. Winkelbauer, Boston, Pa., and Harold F. Gallman, Cartersville, Ga., assignors to Indresco Inc., Dallas, Tex.

Filed Jul. 28, 1993, Ser. No. 98,468
Int. Cl.[5] C04B *35/16*
U.S. Cl. 501—133 11 Claims

1. A refractory mix for forming a fused silica based refractory shape consisting essentially of a about 92 to 97 wt. % fused silica containing at least about 98 % wt. % silica and about 3 to 8 wt. % of a binder system consisting essentially of high purity colloidal silica solution and a high purity ammonium lignsulfonate.

5,360,774

METHOD FOR RECHARGING A SPEND FLUID CATALYTIC CRACKING PROCESS CATALYST

Nelson P. Martinez, Los Salias; Juan A. Lujano, Los Teques; Nieves Alvarez; Francisco Machado, both of Caracas, and Carmen M. Lopez, San Antonio de los Altos, all of Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Division of Ser. No. 863,125, Apr. 3, 1992, Pat. No. 5,254,327. This application Aug. 9, 1993, Ser. No. 103,978
Int. Cl.[5] B01J *29/06*
U.S. Cl. 502—67 2 Claims

1. A method for recharging a spend fluid catalytic cracking process catalyst, comprising the steps of:

providing a spent fluid catalytic cracking process catalyst;

providing zeolitic material wherein said zeolitic material is formed from a gel product having a molar ratio of compounds as follows:

$\frac{SiO_2}{Al_2O_3}$: 14–22;

$\frac{OH^-}{SiO_2}$: 0.050–0.065;

$\frac{Na_2O}{SiO_2}$: 0.08–0.11; and

$\frac{H_2O}{SiO_2}$: 14–22;

said zeolitic material having a composition expressed in terms of mole ratios of oxides as follows:

$$XM_{2/n}O:Al_2O_3:YSiO_2:Z\ H_2O$$

wherein M comprises at least one cation selected from Group I of the Periodic System of Elements, wherein X is the molar ratio of alkali cation oxide to alumina and is between 0.9 to 1.2, Y is the molar ratio of silica to alumina and is between 16 to 26, and Z is the molar ratio of water to alumina and is between 0.4 to 2.0, and wherein the zeolitic material is characterized by a d-spacing as follows:

Diffraction angle/2θ	Lattice distance Units (A)	Relative intensity
7.93	11.15	37
8.81	10.03	32
11.89	7.44	3
13.19	6.71	5
14.81	5.98	9
15.57	5.69	11
15.85	5.59	17
16.57	5.35	3
17.76	4.99	7
19.30	4.60	4
20.40	4.35	9
20.79	4.27	14
22.05	4.03	14
23.12	3.84	100
23.74	3.75	59
24.30	3.66	32
24.71	3.60	10
25.70	3.46	22
26.32	3.38	10
26.85	3.32	15
27.31	3.26	8
38.36	3.15	5
29.19	2.99	16
29.97	2.98	18
30.86	2.90	2
32.69	2.73	3

forming a mechanical mixture of the spent catalyst and the zeolitic material having a composition by weight of zeolitic material of about 2.0%.

5,360,775

POROUS CLAY INTERCALATION COMPOUND AND ITS PRODUCTION METHOD

Mitsuru Suda, and Kunio Ohtsuka, both of Saitama, Japan, assignors to Mitsubishi Material Corporation, Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 986,428

Claims priority, application Japan, Dec. 18, 1991, 3-353688

Int. Cl.[5] B01J *21/16*

U.S. Cl. 502—84 **18 Claims**

1. A porous clay intercalation compound comprising a series of layers of a laminar clay, inorganic pillars between said layers forming pore and surface portions, and hydrogen ions adhered in said pore and on said surface portions of said pillars.

5. The compound of claim 1 wherein the inorganic pillar is an inorganic oxide selected from the group consisting of Al_2O_3, ZrO_2, Cr_2O_3, Bi_2O_3, SiO_2, TiO_2, Fe_2O_3, and mixtures thereof.

5,360,776

STEREOSELECTIVE CATALYST FOR THE POLYMERIZATION OF OLEFINS

Eero Iiskola, Porvoo, and Rauha Huurinainen, Hamari, both of Finland, assignors to Neste Oy, Kulloo, Finland

Continuation of Ser. No. 785,571, Oct. 30, 1991, abandoned. This application Sep. 15, 1993, Ser. No. 120,855

Claims priority, application Finland, Nov. 7, 1990, 905523

Int. Cl.[5] C08F *4/654, 10/06*

U.S. Cl. 502—111 **8 Claims**

1. A procatalyst of catalyst system intended for the polymerization of olefins comprising a carrier based on a magnesium compound which is a particulate complex of magnesium chloride and ethanol, titanium tetrachloride and a dialkylester of phthalic acid, characterized in that the dialkylester of the phthalic acid is di-isodecyl phthalate and the molar ratio between the dialkylester of phthalic acid and magnesium is between 0.10 and 0.35.

5,360,777

HIGH PERFORMANCE ALUMINA HEAT TRANSFER SOLIDS FOR HIGH TEMPERATURE FLUIDIZED BED SYNTHESIS GAS REACTIONS

Stephen M. Davis; LeRoy R. Clavenna, both of Baton Rouge, La.; Rocco A. Fiato, Basking Ridge, N.J., and Geoffrey R. Say, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 11, 1993, Ser. No. 60,395

Int. Cl.[5] B01J *20/02, 20/30, 21/02*

U.S. Cl. 502—202 **8 Claims**

1. As a composition of matter, a heat transfer solid resistant to sintering and agglomeration for admixture with a catalyst to form a fluidized bed useful in the conversion of a low molecular weight hydrocarbon to hydrogen and carbon monoxide on contact therewith at high temperature in the presence of steam, or oxygen, or both steam and oxygen which comprises

alumina solids particles

(i) the outer peripheral surface layer of which contains no greater than about 5 atom percent silicon and boron, based on the total number of aluminum cations within said outer peripheral surface layer, while the bulk concentration of silicon in the particles does not exceed about 0.5 percent, based on the weight of the alumina solids, and the bulk concentration of boron in the particles does not exceed about 500 ppm, based on the weight of the alumina solids;

(ii) the outer peripheral surface layer of which contains no more than 20 atom percent impurities based on the sum-total concentration of sodium, iron, calcium, and titanium as impurities;

(iii) the tapped bulk density of the particles ranges from about 1.2 g/cc to about 2.5 g/cc;

(iv) the Davison Attrition Index of the solids particles is no greater than about 12; and the sum-total effect of these relationships between surface purity particle density, and attrition resistance is such as to provide a performance index categorized by the formula

$$\text{Performance Index} = \frac{1}{(i) \times (ii) \times (iii) \times (iv)} > 20.$$

5,360,778

HIGH SURFACE PURITY HEAT TRANSFER SOLIDS FOR HIGH TEMPERATURE FLUIDIZED BED REACTIONS

Stephen M. Davis; LeRoy R. Clavenna; Geoffrey R. Say, all of Baton Rouge, La., and Rocco A. Fiato, Basking Ridge, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 11, 1993, Ser. No. 60,378

Int. Cl.[5] B01J *20/02, 20/30, 21/02*

U.S. Cl. 502—202 **10 Claims**

1. In a process for the preparation of a particulate heat transfer solid characterized as particulate refractory inorganic oxide solids containing silicon, or boron, or both silicon and boron impurities, the steps comprising

contacting, and treating, said particulate refractory inorganic oxide solids containing silicon in concentration no greater than about 0.5 percent, based on the total weight of the solids, and boron in concentration no greater than about 500 parts, per million parts by weight total solids, with an acid sufficient to reduce the concentration of silicon and boron in the outer peripheral surface layer of the particles to no greater than about 5 atom percent silicon and boron, based on the total number of cations within said outer peripheral surface layer.

5,360,779

PREPARATION OF SUPPORTED SULFUR COMPOSITIONS

Tin-Tack P. Cheung, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 14, 1993, Ser. No. 137,249

Int. Cl.[5] B01J *20/08, 20/10, 20/20;* **B01D** *53/14*

U.S. Cl. 502—415 **13 Claims**

1. In a process for preparing a supported elemental sulfur composition which is effective as a trimethylarsine sorbent, the improvement which comprises contacting, for a period of at least 10 minutes, (a) a starting material which is a solid combination of elemental sulfur and alumina, said solid combination consisting essentially of about 1 to about 50 weight-% solid elemental sulfur and alumina which supports said solid elemental sulfur, with (b) a liquid consisting essentially of at least one liquid hydrocarbon containing 5–12 carbon atoms per molecule and being selected from the group consisting of alkanes and cycloalkanes, and thereafter drying the formed mixture of the thus-contacted solid combination and said at least one liquid hydrocarbon thereby removing said at least one liquid hydrocarbon from the thus-contacted solid combination.

5,360,780

IMAGE-RECEIVING SHEET FOR THERMAL TRANSFER PRINTING WITH A LAYER CONTAINING AGGREGATES OF FINE PARTICLES OF THERMOPLASTIC RESIN

Yoshitaka Okumura, Kyoto; Hiromasa Kondo; Hiroshi Iwasaki, both of Ikoma; Soichi Saji, Osaka, and Shinsuke Irii, Kobe, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 992,499

Claims priority, application Japan, Dec. 26, 1991, 3-344835; Mar. 31, 1992, 4-076447; Apr. 24, 1992, 4-107063

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **20 Claims**

1. An image-receiving sheet in combination with a color transfer sheet said image-receiving sheet comprising a substrate and an image-receiving layer disposed on said substrate, wherein said image-receiving layer is formed of a composition comprising thermoplastic resin fine particle aggregates having a dye-receptive property and a binder.

5,360,781

HEAT MODE RECORDING MATERIAL AND METHOD FOR OBTAINING COLOR IMAGES

Luc Leenders, Herentals, and Dirk D'hont, Mortsel, both of , assignors to Agfa-Gevaert, N.V., Mortsel,

Filed Jun. 11, 1993, Ser. No. 75,099

Claims priority, application European Pat. Off., Aug. 3, 1992, 92202391.6

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **9 Claims**

1. A method for obtaining an image comprising the steps of:

image-wise exposing to intense radiation a heat mode recording material comprising on a support (i) a donor layer containing an image forming substance capable of being transferred upon heating to an image receiving material, (ii) a barrier layer being impermeable for said image forming substance and overlaying said donor layer, and (iii) a light-to-heat converting substance, capable of absorbing the light used for exposing said heat mode recording material and releasing the absorbed energy under the form of heat, said light-to-heat converting substance being present in said barrier layer or in a separate layer between said donor layer and barrier layer,

rubbing, under dry conditions or by means of a non-solvent for the barrier layer, the thus obtained image-wise exposed heat mode recording material to remove said barrier layer at the exposed parts, and

overall heating the exposed heat mode recording material while in contact with an image receiving material thereby causing an image-wise transfer of said image forming substance to said image receiving material.

5,360,782

AQUEOUS SOLUTION COMPRISING A THIOCARBONATE, A SULFIDE, AND AN AMMONIACAL COMPOUND

Donald C. Young, Fullerton, Calif., and James A. Green, II, Maipu, Chile, assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 982,155, Nov. 25, 1992, which is a continuation of Ser. No. 663,362, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 262,961, Oct. 28, 1988, Pat. No. 5,041,240, and a continuation-in-part of Ser. No. 262,962, Oct. 28, 1988, abandoned, and a continuation-in-part of Ser. No. 128,146, Dec. 3, 1987, Pat. No. 5,022,912, which is a continuation-in-part of Ser. No. 685,454, Nov. 16, 1984, Pat. No. 4,726,144, which is a continuation-in-part of Ser. No. 315,492, Oct. 27, 1981, Pat. No. 4,476,113. This application Oct. 22, 1993, Ser. No. 141,390

The portion of the term of this patent subsequent to Nov. 24, 2008, has been disclaimed.

Int. Cl.[5] C05G *3/02;* **A01N** *59/02, 59/04, 59/26*

U.S. Cl. 504—101 **16 Claims**

1. An aqueous solution comprising:

(a) a thiocarbonate selected from the group consisting of ammonium, alkali, and alkaline earth metal tri- and tetrathiocarbonates, and combinations thereof, the thiocarbonate being present in the solution in a concentration less than 55 weight percent;

(b) an amount of a sulfide sufficient to increase the chemical stability of the thiocarbonate in the solution, the sulfide being selected from the group consisting of alkali and alkaline earth metal sulfides of the formula M_nS_x, wherein M is selected from alkali and alkaline earth metals and combinations thereof, x is at least 1, n is 2 when M is alkali metal, and n is 1 when M is an alkaline earth metal, and combinations thereof; and

(c) an ammoniacal compound.

5,360,783
WATER-BASED PESTICIDAL COMPOSITION

Shinichi Itoh; Kenji Kuno, and Akio Hoshino, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

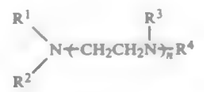
Continuation-in-part of Ser. No. 902,461, Jun. 19, 1992, abandoned, which is a continuation of Ser. No. 557,902, Jul. 25, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 39,519
Claims priority, application Japan, Jul. 26, 1989, 1-193577
Int. Cl.[5] A01N *25/30*
U.S. Cl. 504—305 **8 Claims**

1. A water-based pesticidal composition containing 10～60 weight % of a pesticide with average particle size less than 5 μm in diameter suspended or emulsified in a water-based medium, said composition comprising

100 weight parts of substantially water-insoluble pesticide selected from the group consisting of insecticides, fungicides and herbicides, and

1.7–200 weight parts of a surface active agent containing Component A and Component B at weight ratio of A/B=80/20–20/80,

where Component A is polyalkylene glycol ether derivative of polyethylene polyamine shown by the following general formula and having molecular weight of 20,000–100,000:



where R^1, R^2, R^3 and R^4 are selected from the group consisting of hydrogen and polyoxyalkylene glycol group containing oxyethyne unit and oxypropylene unit at weight ratio of (oxyethyne unit/oxypropylene unit=)100/0–50/50, at least one of R^1, R^2, R^3 and R^4 being said polyoxyalkylene glycol group, and n is an integer 2–250, and

where Component B includes one or more selected from the group consisting of partial esters of polyhydric alcohol selected from sorbitol and sorbitan, and unsaturated aliphatic acid with 16–22 carbon atoms and ethylene oxide adducts of said partial esters.

5,360,784
METHOD FOR MANUFACTURING AN OXIDE SUPERCONDUCTING TAPE

Toshio Kimura; Takuo Takeshita, and Motokazu Suzuki, all of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 923,241
Claims priority, application Japan, Aug. 23, 1991, 3-237376
Int. Cl.[5] H01B *13/00, 12/04*
U.S. Cl. 505—433 **5 Claims**

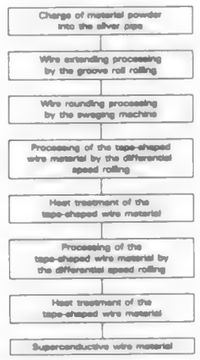
1. A method for manufacturing a superconducting tape comprising:

A. charging an oxide superconducting material into a tube made of silver or an alloy thereof to form a linear body;

B. reducing the diameter of the linear body;

C. pressing the reduced linear body into a tape by passing it into the nip of opposing rolls having different circumferential speed in which the ratio of the different speeds of the rolls is in the range from about 1.1 to 3.0; and

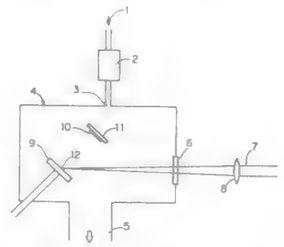
D. heat-treating the tape.



5,360,785
IN-SITU LASER ABLATION METHOD FOR FORMING OXIDE SUPERCONDUCTING FILMS

Noriyuki Yoshida; Satoshi Takano; Shigeru Okuda; Noriki Hayashi, all of Osaka; Tsukushi Hara, Chofu; Kiyoshi Okaniwa, Chofu, and Takahiko Yamamoto, Chofu, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and The Toyko Electric Power Company, Incorporated, Tokyo, both of Japan

Continuation of Ser. No. 832,670, Feb. 6, 1992, abandoned, which is a continuation of Ser. No. 683,938, Apr. 11, 1991, abandoned. This application May 7, 1993, Ser. No. 59,428
Claims priority, application Japan, Mar. 11, 1990, 3-045059; Apr. 11, 1990, 2-95495
Int. Cl.[5] B05D *3/06, 5/12*
U.S. Cl. 505—474 **2 Claims**



1. A method of reducing grain boundaries of a high temperature oxide superconducting film prepared by an in situ laser ablation process at a deposition rate of at least 2000 Å/min., said method comprising the steps of:

a. providing an oxygen gas flow rate during film deposition of at least 50 SCCM;

b. providing an oxygen gas pressure during film deposition of 10 to 1000 mTorr;

c. providing a target-to-substrate distance of 40 to 100 mm;

d. providing a substrate temperature of 600° to 800° C.;

e. providing a laser energy density on the target surface of at least 1 J/cm^2; and

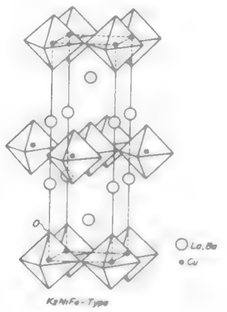
f. providing laser pulse energy of at least 10 mJ;

wherein said high temperature oxide superconducting film so formed maintains a critical current density that is comparable to a critical current density of said high temperature oxide superconducting film formed using laser ablation at a deposition rate of less than 2000 Å/min.

5,360,786
SUPERCONDUCTIVE MATERIAL

Shoji Tanaka; Koichi Kitazawa; Shin-ichi Uchida, and Hidenoir Takagi, all of Tokyo, Japan, assignors to University of Tokyo, Tokyo, Japan

Continuation of Ser. No. 754,199, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 368,893, Jun. 21, 1989, abandoned, which is a continuation of Ser. No. 143,883, Jan. 14, 1988, abandoned. This application Aug. 2, 1993, Ser. No. 100,139
Claims priority, application Japan, Jan. 17, 1987, 62-7413
Int. Cl.[5] H01B *1/00;* **H01L** *39/12*
U.S. Cl. 505—125 **6 Claims**



1. A method of transmitting electrical current in a superconducting manner, comprising:

(a) preparing a superconductive material consisting essentially of a composition having the formula

$$(La_{1-x}M_x)_2CuO_{4-x/2}$$

wherein M=Ba and $0.04 \leqq x < 0.075$, as a main body, wherein the material has a K_2NiF_4 crystal structure and has a zero resistance temperature higher than the boiling point of liquid hydrogen;

(b) cooling said material such that it becomes superconducting; and

(c) passing said electrical current through said material.

5,360,787
DISPERSANT COMPOSITIONS COMPRISING SULFONATED ISOBUTYLENE MALEIC ANHYDRIDE COPOLYMER FOR SUBTERRANEAN WELL DRILLING AND COMPLETION

James B. Bloys; William N. Wilson, both of Plano; Edward Malachosky, Coppell; Roger D. Bradshaw, Allen, all of Tex., and Roger A. Grey, West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 523,630, May 15, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 827,475
Int. Cl.[5] C09K *7/02;* **E21B** *33/13*
U.S. Cl. 507—124 **5 Claims**

1. A drilling fluid comprising:

a polymeric dispersant wherein said dispersant is sulfonated isobutylene maleic anhydride copolymer.

5,360,788
PERSONAL CARE COMPOSITION CONTAINING PYRITHIONE AND A BASIC LIPOPEPTIDE

John D. Nelson, Naugatuck, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Nov. 10, 1992, Ser. No. 974,031
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—9 **5 Claims**

1. A personal care composition comprising a carrier and an antimicrobially effective amount of a combination of sodium pyrithione and polymyxin B sulfate antibiotic wherein said sodium pyrithione and said polymyxin B sulfate are employed in said composition in a weight ratio of sodium pyrithione to polymyxin B sulfate of between 0.05 and 650.

5,360,789
THERAPEUTIC AGENT FOR SKIN OR CORNEAL DISEASE

Hiroshi Nakao; Takao Nagoya, both of Tuchiura, and Yushi Saino, Tokyo, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

PCT No. PCT/JP91/01587, § 371 Date May 20, 1993, § 102(e) Date May 20, 1993, PCT Pub. No. WO92/08475, PCT Pub. Date May 29, 1992
PCT Filed Nov. 19, 1991, Ser. No. 50,330
Claims priority, application Japan, Nov. 20, 1990, 2-314648
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—12 **13 Claims**

1. A therapeutic composition suitable for topical application to the cornea, comprising CPB-I or recombinant CPB-I as the active ingredient, in a pharmaceutically acceptable carrier suitable for ophthalmic application.

5,360,790
METHOD AND FORMULATIONS FOR THE THERAPY OF ACUTE RENAL FAILURE

H. David Humes, Ann Arbor, Mich., assignor to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 978,075, Nov. 18, 1992, abandoned, which is a continuation of Ser. No. 625,411, Dec. 11, 1990, abandoned. This application Aug. 23, 1993, Ser. No. 110,768
Int. Cl.[5] A61K *37/36*
U.S. Cl. 514—12 **12 Claims**

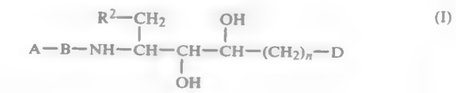
1. A method of treating a human or animal subject with renal failure by therapy or prophylaxis, comprising subcutaneously injecting into said subject a composition comprising (i) an amount, effective for said treatment, of transforming growth factor-α (TGF-α) or TGF-α and epidermal growth factor (EGF) and (ii) a sterile, non-toxic, pharmaceutically acceptable diluent or solvent.

5,360,791
RENIN-INHIBITING AMINODIOL DERIVATIVES

Rainer Henning, Hattersheim am Main; Hansjörg Urbach; Dieter Ruppert, both of Kronberg/Taunus, and Bernward Schölkens, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 899,122, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 440,109, Nov. 22, 1989, abandoned. This application Jan. 6, 1993, Ser. No. 1,221
Claims priority, application Germany, Nov. 24, 1988, 3839559
Int. Cl.[5] A61K *37/02;* **C07K** *5/08*
U.S. Cl. 514—18 **5 Claims**

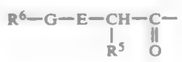
1. A compound of formula I



(I)

in which

A denotes a radical of formula II



II

in which
- R^5 denotes benzyl, 2-naphthylmethyl or benzyl substituted by methoxy;
- E denotes a CH_2 group or a —NH— group;
- G denotes a radical of SO_2 or CO;
- R^6denotes (C_1–C_7)-alkyl, which may be substituted by amino; 4-morpholinyl, 1-piperazinyl;
- B denotes a bivalent radical whose N terminus is a peptide bonded to A and whose C terminus is a peptide bonded to —NH— of formula I, wherein said bivalent radical is histidine, norvaline, or norleucine;
- R^2 denotes isopropyl or cyclohexyl;
- D denotes a 2-pyridine radical; and
- n denotes 2, and the physiologically tolerable salts thereof.

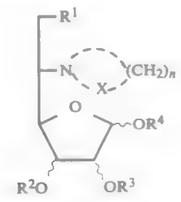
5,360,792

ANTI-PROLIFERATIVE AND ANTI-INFLAMMATORY COMPOUNDS: 5- OR 6-DEOXY HEXOSE MONOSACCHARIDES HAVING A SATURATED NITROGEN-CONTAINING HETEROCYCLE AT THE 5- OR 6-POSITION BOUND THROUGH THE NITROGEN ATOM

Sudershan K. Arora, Lansdale; David S. Thomson, Bluebell, and M. Nayeem Akhtar, Lansdale, all of Pa., assignors to Greenwich Pharmaceuticals Incorporated, Ft. Washington, Pa.

Continuation-in-part of Ser. No. 810,906, Dec. 20, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 905,320
Int. Cl.[5] A01N *43/04;* **C07H** *15/00*
U.S. Cl. 514—23 **45 Claims**

1. A hexofuranose monosaccharide of formula I:



(I)

wherein
- R^1 is H or OR^5 wherein R^5 is C_1–C_{20} alkyl; C_3–C_{20} alkenyl; C_3–C_{20} alkynyl; $(CH_2)_mNR'R''$, wherein m ranges from 1–5, R′ and R″ are each selected from H or a lower alkyl group; or R^5 is alkylaryl;
- R^2 is hydrogen, C_1–C_{20} alkyl; C_3–C_{20} alkenyl; C_3–C_{20} alkynyl; $(CH_2)_mNR'R''$, wherein m ranges from 1–5, R′ and R″ are each selected from H or a lower alkyl group; or R^2 is alkylaryl;
- R^3 and R^4 are each H or together form an acetal protecting group;
- X is CH_2, NH or O;
- n ranges from 3–6;

or a physiologically acceptable salt thereof.

5,360,793

RAFTING ANTACID FORMULATION

William J. Brooks, Gateshead, England, assignor to Sterling Winthrop Inc., New York, N.Y.

Filed May 24, 1993, Ser. No. 66,824
Int. Cl.[5] A61K *31/70, 31/715, 33/08*
U.S. Cl. 514—23 **17 Claims**

1. An antacid composition capable of forming a floating gelatinous mass when contacted with aqueous acid and consisting essentially of, as active ingredients, xanthan gum; an effective acid neutralizing amount of hexitol-stabilized aluminum hydroxide and a gas producing material capable of producing a non-toxic gas when contacted with aqueous acid.

5,360,794

DISUBSTITUTED AND DEOXY DISUBSTITUTED DERIVATIVES OF α-D-MANNOFURANOSIDES AND β-L-GULOFURANOSIDES HAVING ANTI-INFLAMMATORY AND ANTI-PROLIFERATIVE ACTIVITY

Sudershan K. Arora, Lansdale, Pa., assignor to Medicarb Inc., Southampton, Pa.

Filed Aug. 3, 1992, Ser. No. 923,452
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—25 **8 Claims**

1. A compound selected from the group consisting of:
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-6-pyrrolidinyl-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-6-piperidinyl-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-6-morpholinyl-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-6-hexamethyleneimino-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-6-aminoethylpyrrolidinyl-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-5-O-(N,N-dimethylaminopropyl)-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-5-O-hexamethyleneiminoethyl-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-5-O-(N′-ethylpyrrolidinyl)-α-D-mannofuranoside,
- n-Nonyloxypropyl 2,3-O-(1-methylethylidene)-6-deoxy-5-O-(N′-ethylpiperidinyl)-α-D-mannofuranoside,
- n-Nonyloxypropyl 5,6-dideoxy-2,3-O-(1-methylethylidene)-5-pyrrolidinyl-β-L-gulofuranoside,
- Phenylpropyl 6-deoxy-2,3-O-(1-methylethylidene)-6-pyrrolidinyl-α-D-mannofuranoside,
- Phenylpropyl 6-deoxy-2,3-O-(1-methylethylidene)-6-aminopropylpyrrolidinyl-α-D-mannofuranoside,
- Phenylpropyl 5,6-dideoxy-2,3-O-(1-methylethylidene)-5-pyrrolidinyl-β-L-gulofuranoside,
- Phenylpropyl 5,6-dideoxy-2,3-O-(1-methylethylidene)-5-aminoethylpyrrolidinyl-β-L-gulofuranoside,
- Phenylpropyl 6-deoxy-2,3-O-(1-methylethylidene)-5-O-3[1]-(N^1N^1-dimethylamino-n-propyl)-α-D-mannofuranoside,
- Phenylpropyl 6-deoxy-2,3-O-(1-methylethylidene)-5-O-(N′-ethylpyrrolidinyl)-α-D-mannofuranoside,
- 2′-Octyne 2,3-O-(1-methylethylidene)-α-D-mannofuranoside and
- 4′-(1-Pyrrolidinyl)butyl 2,3-O-(1-methylethylidene)-α-D-mannofuranoside.

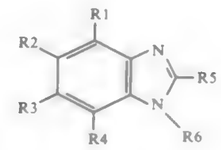
5,360,795

POLYSUBSTITUTED BENZIMIDAZOLES AS ANTIVIRAL AGENTS

Leroy B. Townsend, and John C. Drach, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 607,899, Nov. 1, 1990, Pat. No. 5,248,672. This application Oct. 21, 1992, Ser. No. 964,345
Int. Cl.[5] A61K *31/70;* **C07H** *19/23*
U.S. Cl. 514—43 **8 Claims**

1. An antiviral composition having antiviral activity against cytomegalovirus and herpes simplex virus, comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound selected from the group consisting of compounds having the following formula:



where
- R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is Cl and R_6 is β-D-5′-deoxyribofuranosyl and
- R_1 is H, R_2 is Cl, R_3 is Cl, R_4 is H, R_5 is BR and R_6 is β-D-5′-deoxyribofuranosyl and pharmaceutically acceptable salts thereof.

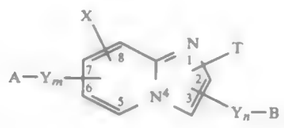
5,360,796

IMIDAZO[1,2-A]PYRIDINYLALKYL PHOSPHONIC ACID COMPOUNDS FOR TREATMENT OF NEUROTOXIC INJURY

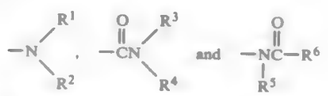
Donald W. Hansen, Jr., Chicago; Gilbert W. Adelstein, Evanston; Karen B. Peterson, Glenview, and Sofya Tsymbalov, Des Plaines, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 445,228, Dec. 4, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 871,995
Int. Cl.[5] A61K *31/44;* **C07D** *471/04*
U.S. Cl. 514—80 **71 Claims**

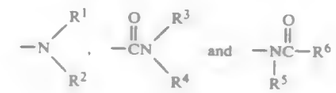
1. A compound of the formula



wherein each of A and B is an acidic moiety selected to contain at least one acidic hydrogen atom and wherein said acidic moiety is independently selected from carboxylic acid, phosphorus oxo acids, sulfur acids, thiophosphorus oxo acids and the amide, ester and salt derivatives of said acids;
wherein each of Y_m and Y_n is a group independently selected from one or more of alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, sulfinyl, sulfonyl, aryl, and aralkyl, any one of which groups may be substituted at any substitutable position with one or more groups selected from alkyl, cycloalkyl, cycloalkylalkyl, oxo, halo, haloalkyl, alkenyl, cycloalkenyl, alkynyl, alkoxycarbonyl, aryl, aralkyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, alkoxyalkyl, aralkoxy, aralkylthio, cyano, cyanoamino, nitro, alkanoyl, aroyl, mercapto, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, and amino and amido radicals of the formula



wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl; wherein R^1 and R^2 taken together, and R^3 and R^4 taken together and R^5 and R^6taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical and which heterocyclic group may be saturated or partially unsaturated;
wherein R^1 and R^2 taken together and R^3 and R^4 taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical; wherein each of m and n is a number independently selected from zero to five, inclusive;
wherein each X and T is one or more groups independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, oxo, halo, haloalkyl, alkenyl, cycloalkenyl, alkynyl, aryl, aralkyl, hydroxy, hydroxyalkyl, alkoxy, aryloxy, alkoxyalkyl, alkoxycarbonyl, aralkoxy, aralkylthio, cyano, cyanoamino, nitro, alkanoyl, mercapto, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkylsulfonyl, arylsulfonyl, and amino and amido radicals of the formula



wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is independently selected from hydrido, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl, and wherein R^1 and R^2 taken together, R^3 and R^4 taken together and R^5 and R^6 taken together may form a heterocyclic group having five to seven ring members including the nitrogen atom of said amino or amido radical and which heterocyclic group may be saturated or partially unsaturated; wherein R^1 and R^2 taken together and R^3 and R^4 taken together may form an aromatic heterocyclic group having five ring members including the nitrogen atom of said amino or amido radical; or a pharmaceutically-acceptable salt thereof.

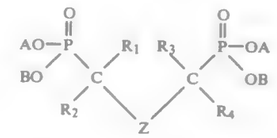
5,360,797

BISPHOSPHONIC ACID DERIVATIVES USEFUL AS ANTI-ARTHRITIC AGENTS

Roy A. Johnson, and Herman W. Smith, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 71,289, Jun. 1, 1993, Pat. No. 5,298,498, which is a continuation-in-part of Ser. No. 624,119, Dec. 7, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 146,685
Int. Cl.[5] A61K *31/66*
U.S. Cl. 514—111 **9 Claims**

1. A method for treating arthritic disease comprising: administering to a human in need thereof an effective amount of a compound of Formula I



I

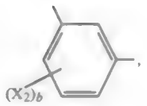
wherein
- R_1, R_2, R_3, and R_4 may be the stone or different, may form a quatemary carbon, and are hydrogen or C_1–C_5 alkyl;
- A and B may be the same or different and are hydrogen, C_1–C_6 alkyl, phenyl, or C_7–C_{10} aralkyl;
- A and B taken together are C_2 cycloalkyl, C_3 cycloalkyl, or the alkyl-substituted derivatives thereof;
- Z is a substituted benzene ring of Formula II



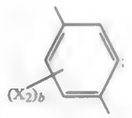
(IIa)

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(IIb)

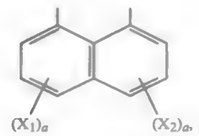


(IIc)

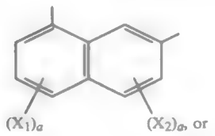


a substituted naphthalene ring of Formula III

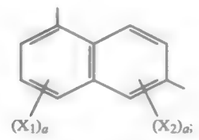
(IIIa)



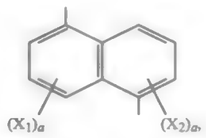
(IIIb)



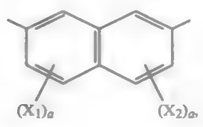
(IIIc)



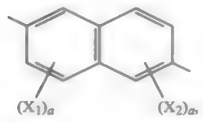
(IIId)



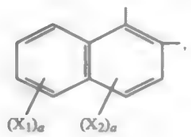
(IIIe)



(IIIf)

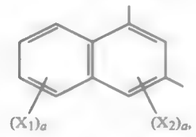


(IIIg)

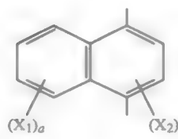


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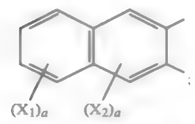
(IIIh)



(IIIi)

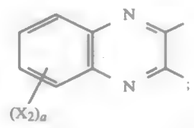


(IIIj)



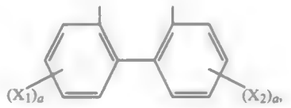
a 2,3 substituted quinoxaline ring of formula IV

(IV)

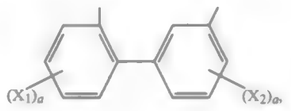


or a substituted biphenyl of formula V

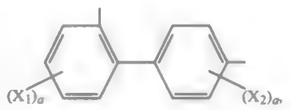
(Va)



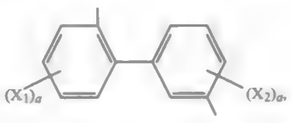
(Vb)



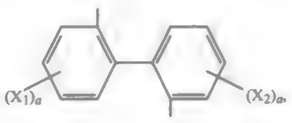
(Vc)



(Vd)

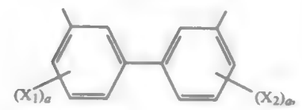


(Ve)

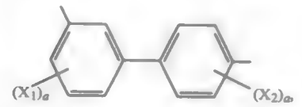


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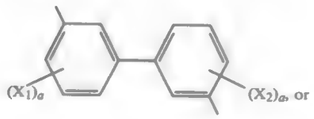
(Vf)



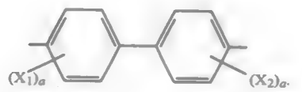
(Vg)



(Vh)



(Vi)



X_1 and X_2 may be the same or different and are hydrogen, —Cl, —Br, —F, C_1–C_3 alkyl, —OR_5, —$(CH_2)_mCO_2A$, —$(CH_2)_mCH_2OR_5$, —NO_2, —NH_2, —SR_6, —CH_2NHR_7, or —$CH_2N(R_7)(R_8)$;

a is one or two, provided that a is one when either X_1 or X_2 is —NO_2;

b is one to four, provided that b is one when X_2 is —NO_2;

R_5 is hydrogen, C_1–C_{10} alkyl, allyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl:

R_6 is hydrogen, C_1–C_6 alkyl, phenyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl;

R_7 and R_8 may be the same or different and are hydrogen, C_1–C_6 alkyl, phenyl, C_1–C_6 acyl, benzoyl, or C_7–C_{10} aralkyl;

m is one to five;

or the pharmacologically acceptable salts thereof.

5,360,798

AMINOOXYPYRROLIDINYLTHIOCARBAPENEM COMPOUNDS

Yuji Sendo, and Kii Makoto, both of Hyogo, Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1992, Ser. No. 896,669

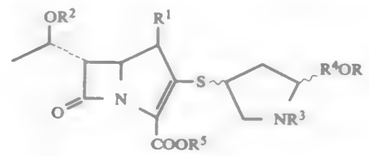
Claims priority, application Japan, Jul. 4, 1991, 164247

Int. Cl.[5] C07D *487/04;* A61F *31/40*

U.S. Cl. 514—210 **17 Claims**

1. An aminooxypyrrolidinylthiocarbapenem compound of Formula I, and pharmaceutically acceptable salts thereof:

I



wherein R is an amino group which is optionally substituted by a 1C to 10C monovalent amino substituent selected from the group consisting of alkyl, acetyl, alkoxycarbonyl, N-methylcarbamoyl, alkylsulfonyl and sulfamoyl; or R is an amino group which is substituted by a 1C to 10C divalent amino substituent selected from the group consisting of alkylidene and phthalyl;

R^1 is hydrogen or a 1C to 5C alkyl;

R^2 is hydrogen or a conventional hydroxy protecting group;

R^3 is hydrogen or an imino protecting group;

R^4 is a 1C to 5C alkylene;

R^5 is hydrogen or a conventional carboxy protecting group; and each wavy line represents a bond in an R or S configuration.

5,360,799

SUBSTITUTED THIENYL- OR PYRROLYLCARBOXYCLIC ACID DERIVATIVES, THEIR PREPARATION AND MEDICINES CONTAINING THEM

And e Bachy, Toulouse; Laurent Fraisse, Jurancon; Peter Keane, Portet Sur Garonne; Etienne Mendes, Toulouse; Jean-Claude Vernieres, and Jacques Simiand, both of Muret, all of France, assignors to Elf Sanofi, Paris, France

Filed Aug. 19, 1993, Ser. No. 109,073

Claims priority, application France, Aug. 27, 1992, 9210329

Int. Cl.[5] C07D *471/04, 413/14;* A61K *31/44, 31/55*

U.S. Cl. 514—212 **10 Claims**

1. A compound of formula

I

in which

R_1 is selected from the group consisting of OH, (C_1–C_{12})alkyl, (C_1–C_{12})alkoxy, benzyloxy, phenyl, benzyl (C_1–C_4)alkyl NZ_1Z_2 and NZ_1Z_2;

R_2 is selected from the group consisting of OH, SH, (C_1–C_4)alkoxy, (C_1–C_4) alkylthio and NZ_1Z_2;

R_3 is selected from the group consisting of H, (C_1–C_4)alkyl, (C_1–C_4)alkylthio, (C_1–C_4)alkoxy, phenyl and benzyl;

A represents N and R is selected from the group consisting of H, (C_1–C_4)alkyl and (C_1–C_4)alkyl substituted by a radical selected from the group consisting of phenyl and NZ_1Z_2;

B is selected from the group consisting of phenyl and phenyl substituted by one or more groups selected from halo, (C_1–C_6)alkyl, (C_1–C_6)alkoxy, CF_3, $CH_2NZ_1Z_2$ and NZ_1Z_2 wherein Z_1 and Z_2 are selected, independently of each other, from the group consisting of H, (C_1–C_6)alkyl, formyl and benzyl; or —NZ_1Z_2 are selected from the group consisting of pyrrolidinyl, piperidinyl, morpholino, hexahydroazepino,

piperazino, or piperazino substituted in position 4 by (C_1–C-8)alkyl, benzyl or diphenylmethyl and its salts with an acid or a base.

5,360,800

TETRAHYDRO-1H-PYRIDO[4,3-B]INDOL-1-ONE DERIVATIVES

Ian H. Coates, Hertford; Peter C. North, and Alexander W. Oxford, both of Royston, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 602,771, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 239,626, Sep. 2, 1988, abandoned. This application Aug. 7, 1991, Ser. No. 741,570

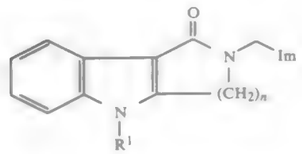
Claims priority, application United Kingdom, Sep. 3, 1987, 8720695; Aug. 15, 1988, 8819382

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] **C07D** *401/06, 471/04;* **A61K** *31/44, 31/55*

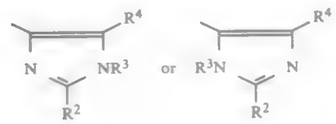
U.S. Cl. 514—215 **35 Claims**

1. A compound of formula (I)



(I)

wherein Im represents an imidazolyl group of the formula:



and R^1 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkyl C_{1-4}alkyl, phenyl, phenylC_{1-3}alkyl, phenylmethoxymethyl, phenoxyethyl phenoxymethyl;

one of the groups represented by R^2, R^3 and R^4 is a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

n represents 2 or 3;

or a physiologically acceptable salt or solvate thereof.

5,360,801

PHARMACOLOGICAL STIMULATION OF EYE GROWTH

Alan M. Laties, Philadelphia, and Richard A. Stone, Havertown, both of Pa., assignors to The Trustees of The University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 856,626, Mar. 24, 1992, which is a division of Ser. No. 522,241, May 11, 1990, Pat. No. 5,122,522, which is a continuation of Ser. No. 369,293, Jun. 21, 1989, abandoned. This application Jan. 14, 1993, Ser. No. 4,685

Int. Cl.[5] **A61K** *31/55, 31/445, 31/415*

U.S. Cl. 514—215 **25 Claims**

1. A method of enhancing axial elongation of an eye of an animal comprising:

a. contacting a first open animal eye with a therapeutically effective amount of a cholinergic agonist,

b. detecting the change in axial growth of said first eye,

c. applying a known control agent in a second open animal eye,

d. observing the results of said control agent on said second eye, and

e. comparing said change in axial growth of said first eye with said change in axial growth of said second eye.

5,360,802

BENZODIAZEPINE DERIVATIVES, COMPOSITIONS CONTAINING THEM AND THEIR USE IN THERAPY

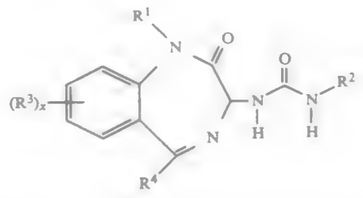
Mark S. Chambers, Watford; Victor G. Matassa, Furneux Pelham, and Stephen R. Fletcher, Bishops Stortford, all of England, assignors to Merck Sharpe & Dohme Ltd., Hoddesdon

Continuation-in-part of Ser. No. 880,864, May 11, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 976,042

Int. Cl.[5] **A61K** *31/55;* **C07D** *243/24, 243/10*

U.S. Cl. 514—221 **15 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt or prodrug thereof:



(I)

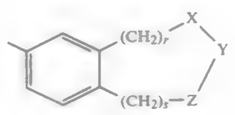
wherein:

R^1 is selected from the group consisting of $(CH_2)_q$ imidazolyl, $(CH_2)_q$ tetrazolyl, $(CH_2)_q$ triazolyl; C_{1-6} alkyl unsubstituted or substituted by one or more groups selected from halo, hydroxy and NR^6R^7; C_{3-7}cycloalkyl; cyclopropylmethyl; $CH_2CO_2R^5$; $CH_2CONR^6R^7$; or $CH_2CH(OH)$-W-$(CH_2)_2NR^6R^7$ where R^5 represents C_{1-4}alkyl, R^6 and R^7 each independently represents a hydrogen atom or a C_{1-4}alkyl group, or taken together with the nitrogen atom to which they are attached form a pyrrolidinyl, or piperidinyl ring, q is 1, 2 or 3, and W is S or NH;

R^2 is selected from the group consisting of:

(i) a phenyl group unsubstituted or substituted by one or more substituents selected from C_{1-6}alkyl unsubstituted or substituted by hydroxy, $CONR^aR^b$, CO_2R^a or $OCONR^aR^bC_{2-6}$alkenyl unsubstituted or substituted by CO_2R^a; C_{2-6}alkynyl; halo; unprotected or protected hydroxy; NHR^8; $NHPO(OC_{1-4}alkyl)$; $(CH_2)_n$tetrazolyl unsubstituted or substituted in the tetrazolyl ring by C_{1-4}alkyl; $(CH_2)_n$imidazolyl; CONH-tetrazolyl; CONH-triazolyl; diazolinone; triazolinone unsubstituted or substituted by methyl; tetrazolinone; oxathiadiazolone; 5-hydroxy-4-pyrone; $CONH_2$; CONHCOR[9]; $SO(C_{1-6}$ alkyl); $SO_2(C_{1-6}$alkyl); $CONHCO_2R^9$; $CONHCONHR^9$; $C(NH_2)NOH$; COC_{1-4}alkyl; $CONHSO^2R^9$; SO^2NH_2; $NHSO^2NH_2$; $SO^2NHCO_2R^9$; $SO_2NHCONHR^9$; $SO^2NHSO^2R^9$; $SO^2NHPO(OR^aR^b)$; SO^2NHR^{10}; cyano; $B(OH)_2$; CO_2H; $CH_2OCH_2O(CH_2)_2OCH_3$, where R^a and R^b each independently represent H or C_{1-6} alkyl, n is 0, 1 or 2, R^8 represents H or COC_{1-6} alkyl, R^9 represents C_{1-6} alkyl, unsubstituted or substituted phenyl, wherein the substitutents are selected from C_{1-4}alkyl, C_{1-4}alkoxy, halo and trifluoromethyl, 2,2-difluorocyclopropane or trifluoromethyl, and R^{10} represents a nitrogen containing heterocycle selected from the group consisting of thiazole, thiadiazole, and pyrazine;

ii) a group



wherein

X and Z each independently represent CH_2, O, SO^2, C═O, NH or N; and

Y represents CH_2, C═O, NR^a or N, where R^a is as above defined:

r and s each independently represent 0 or 1; and the dotted line represents an optional double bond;

provided that: X and Z can only be the same when they are O, and when one of X and Z is O, the other of X and Z must be O;

when X or Z is N, Y is also N and the ring contains one unit of unsaturation;

when X or Z is SO^2, Y is NH and the other of X and Z is C═O:

whichever of r and s is adjacent to SO_2 can be 1; otherwise r and s are the same and O;

(iii) a pyridyl group substituted by C_{1-4}alkoxy or halo:

R^3 represents C_{1-6}alkyl or halo;

R^4 represents C_{3-7} cycloalkyl;

x is 0, 1, 2 or 3.

11. A method for the treatment or prevention of a physiological disorder involving CCK and/or gastrin, which method comprises administration to a patient in need thereof of a CCK and/or gastrin reducing amount of a compound according to claim 1.

5,360,803

COMPOSITION AND METHOD FOR TREATING CANCER

Tadao Shishido, Kanagawa, Japan, and Lan B. Chen, Lexington, Mass., assignors to Dan Farber Cancer Institute, Boston, Mass. and Fuji Photo Film Co., Ltd., Kanagawa, Japan

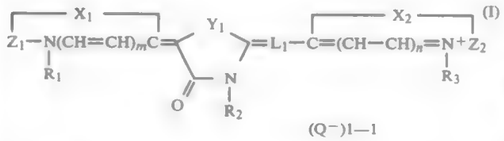
Continuation-in-part of Ser. No. 744,130, Aug. 13, 1991, abandoned. This application Nov. 6, 1992, Ser. No. 972,935

Int. Cl.[5] **A61K** *31/425, 31/44, 31/47, 31/50*

U.S. Cl. 514—224.2 **26 Claims**

1. A pharmaceutical composition for treatment of cancer comprising:

(A) a therapeutically effective amount of at least one compound selected from the group consisting of compounds represented by the General Formula (I)

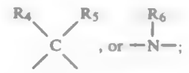


(I)

$(Q^-)1—1$

wherein

X_1 and X_2, which may be same or different, each represents O, S, Se, —CH═CH—,



, or —N—;

Y_1 represents O, S, Se, or

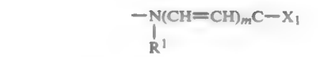


;

R_1 and R_3, which may be the same or different, each represents an alkyl group having 1–15 carbon atoms;

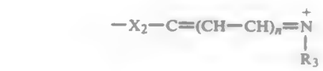
R_2 represents an alkyl group having 1–15 carbon atoms, an aryl group having 6–20 carbon atoms or a heterocyclic group selected from the group consisting of an imidazole ring, a thiazole ring, a pyrrole ring, a pyrazole ring, a furan ring, a thiphene ring, a piperidine ring, a morpholine ring, a piperadine ring, a pyrazine ring, a pyridine ring, and a pyrimidine ring;

Z_1 together with



represents a thiazole ring, a benzothiazole ring, a naphthothiazole ring, an oxazole ring, a benzoxazole ring, a naphthoxazole ring, a selenazole ring, a benzoselenazole ring, a thiazoline ring, a 2-pyridine ring, a 4-pyridine ring, a 2-quinoline ring, a 4-quinoline ring, a 1-isoquinoline ring, a 3,3-dialkylindolenine ring, an imidazole ring, a benzimidazole ring, and a naphthimidazole ring;

Z_2 together with



represents a thiazole a benzothiazole ring, a naphthothiazole ring, an oxazole ring, a benzoxazole ring, a naphthoxazole ring, a selenazole ring, a benzoselenazole ring, a thiazoline ring, a 2-pyridine ring, a 4-pyridine ring, a 2-quinoline ring, a 4-quinoline ring , a 1-isoquinoline ring, a 3,3-dialkylindolenine ring, an imidazole ring, a benzimidazole ring, and a naphthimidazole ring;

L_1 represents a methine group or L_1 and R_3 may combine and form a ring selected from the group consisting of a pyrroline ring, a tetrahydropyridine ring and an oxazine ring;

R_4 and R_5, which may be the same or different, each represents an alkyl group having 1–15 carbon atoms;

R_6 and R_7, which may be the same or different, each represents an alkyl group having 1–15 carbon atoms or an aryl group having 6–20 carbon atoms;

Q represents a pharmaceutically acceptable anion;

l represents 1 or 2;

m and n, which may be the same or different, each represents 0 or 1; and

(B) a pharmaceutically acceptable carrier or diluent.

5,360,804

MULTICOMPONENT AGENT OR KIT FOR PREPARING THE SULPHO-CONJUGATED FORM OF PYRIDINO, PYRIMIDINO OR TRIAZINO N-OXIDE COMPOUNDS AND METHOD OF USE

Quintino Gaetani, Sevran; André Rougier, Le Raincy; Albert Duranton, and Michel Hocquaux, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 12, 1991, Ser. No. 805,943

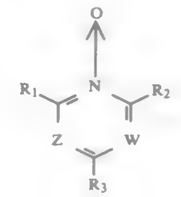
Claims priority, application France, Dec. 28, 1990, 90 16504

Int. Cl.[5] **A61K** *31/53, 31/505, 31/44*

U.S. Cl. 514—245 **13 Claims**

1. A multicomponent agent or "kit" for preparing a ready-to-use composition of the sulpho-conjugated form of pyridino, pyrimidino or triazino N-oxide compounds in a physiologically acceptable medium, said agent or kit comprising:

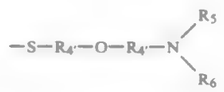
a) a component comprising at least one compound of formula (I):



(I)

in which:

R_1, and R_2 denote a C_1 to C_8 lower alkyl or an amino group;
W and Z each denote a —CH= or —N= group;
R_3 denotes a



or —H group; and
R_4 denotes a linear or branched C_1 to C_{18} alkyl group which is unsubstituted or substituted by one or more halogen atoms, a C_1 to C_{18} alkenyl, C_3 to C_7 cycloalkyl, aryl or aralkyl group;
R_5 and R_6 denote, independently of each other, a hydrogen atom or a group such as defined for R_4; or R_5 and R_6 form with the nitrogen to which they are attached, a heterocyclic residue selected from the group consisting of piperidino, pyrrolidinyl, 2-methylpyrrolidinyl, 3-butylpyrrolidinyl, 2-isohexylpyrrolidinyl, 2,3-dimethylpyrrolidinyl, 2,2-dimethylpyrrolidinyl, 2,5-diethylpyrrolidinyl, 3-tert-butylpyrrolidinyl, 2,3,5-trimethylpyrrolidinyl, 3,4-dioctylpyrrolidinyl, 2-methylpiperidino, 3-methylpiperidino, 4-methylpiperidino, 3-isopropylpiperidino, 4-tert-butylpiperidino, 2- methyl-5-ethylpiperidino, 3,5-dipentylpiperidino, 2,4,6-trimethylpiperidino, 2,6-dimethylpiperidino, 2,6-dimethyl-4-octylpiperidino, 2,3,5-trimethylpiperidono, 2-methylheptamethylene-imino, 5-butylheptamethylene-imino, 2,4-diisopropylheptamethylene-imino, 3,3-diethylheptamethylene-imino, 2,5,8-trimethylheptamethylene-imino, 3-methyloctamethylene-imino, 2,9-diethyloctamethylene-imino, 4-isooctyloctamethylene-imino, 4-methylpiperazinyl, 4-isopropylpiperazinyl, groups; or their addition salts with acids; and
b) a component comprising at least one sulphating agent;
at least one of said components a) and b) further comprising a physiologically acceptable liquid medium selected from the group consisting of aqueous, aqueous-alcoholic and anhydrous mediums;
wherein, components a) and b) are intended to be brought into contact with one another to prepare the ready-to-use composition.

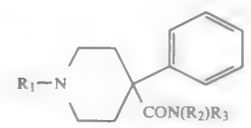
5,360,805

SUBSTITUTED 4-PHENYL-4-PIPERIDINECARBOXAMIDES WITH BOTH LOCAL ANAESTHETIC AND ANALGESIC EFFECT AS WELL AS PROCESSES FOR THEIR PREPARATION

Anna-Lena Ask, Huddinge, and Rune V. Sandberg, Järna, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation of Ser. No. 633,246, Dec. 21, 1990, Pat. No. 5,227,389. This application Jul. 12, 1993, Ser. No. 90,416
Claims priority, application Sweden, Dec. 21, 1989, 8904298-0
Int. Cl.[5] A61K *31/435*
U.S. Cl. 514—316 **7 Claims**

1. A compound of the formula IV



wherein R_1 is an alkyl group with 2–6 carbon atoms or an alkoxyalkyl group $R_4O(CH_2)_m$-, wherein R_4 is an alkyl group with 1–4 carbon atoms and m is 2–4, and R_2 and R_3 form together a chain $(CH_2)_n$ wherein n is 4–6 or a pharmaceutically acceptable salt thereof.

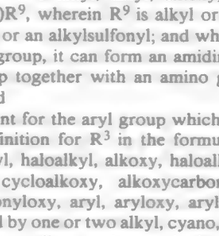
5,360,806

AMIDE COMPOUNDS AND THEIR SALTS AND PESTICIDAL COMPOSITIONS CONTAINING THEM

Tadaaki Toki; Toru Koyanagi; Masayuki Morita; Tetsuo Yoneda; Chiharu Kagimoto, and Hiroshi Okada, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Jul. 23, 1993, Ser. No. 95,192
Claims priority, application Japan, Jul. 23, 1992, 4-238804; Feb. 5, 1993, 5-057668; Mar. 17, 1993, 5-096428
Int. Cl.[5] C07D *401/12, 213/82;* **A01N** *43/40*
U.S. Cl. 514—318 **12 Claims**

7. A pesticidal composition comprising a pesticidally effective amount of an amide compound of the formula (I) or its salt:



(I)

wherein X is an oxygen atom or a sulfur atom, Y is a haloalkyl group, each of R^1 and R^2 which are independent of each other, is a hydrogen atom, an alkyl group which may be substituted, an alkenyl group which may be substituted, an alkynyl group which may be substituted, a cycloalkyl group which may be substituted, $—C(W^1)R^3$, $—S(O)_nR^4$ or —NHR^5, or R^1 and R^2 together form $=C(R^6)R^7$ or together with the adjacent nitrogen atom form a 5- or 6-member heterocyclic group which may contain a nitrogen atom or an oxygen atom, R^3 is an alkyl group which may be substituted, an alkenyl group which may be substituted, an alkynyl group which may be substituted, a cycloalkyl group which may be substituted, an aryl group which may be substituted, an alkoxy group, an alkylthio group or a mono- or di-alkylamino group, R^4 is an alkyl group or a dialkylamino group, R^5 is an alkyl group or an aryl group, each of R^6 and R^7 which are independent of each other, is an alkoxy group or an alkylthio group, W^1 is an oxygen atom or a sulfur atom, m is 0 or 1, and n is 1 or 2,
wherein the substituent for the alkyl group which may be substituted, the alkenyl group which may be substituted, the alkynyl group which may be substituted or the cycloalkyl group which may be substituted in the definition of each of R^1, R^2 and R^3 in the formula (I), is a halogen atom; alkoxy; alkylthio; trialkylsilyl; phenyl; phenyl substituted by halogen, alkyl, alkoxy, nitro or haloalkyl; phenyl substituted by phenoxy which may be substituted by alkoxy or alkylthio; phenoxy; phenylthio; amino; amino substituted by one or two alkyl; cyclic amino; morpholino; morpholino substituted by alkyl; 1-piperazinyl; 1-piperazinyl substituted by alkyl, phenyl, pyridyl or trifluoromethylpyridyl; hydroxy; cyano; cycloalkyl; imino; $—C(W^2)R^8$, wherein W^2 is an oxygen atom or a sulfur atom, and R^8 is a hydroge atom, amino, amino substituted by one or two alkyl, alkyl, alkoxy, alkylthio or aryl; $—OC(W^2)R^9$, wherein R^9 is alkyl or aryl substituted by haloalkyl; or an alkylsulfonyl; and when the substituent is an imino group, it can form an amidino group or an imidate group together with an amino group or an alkoxy group; and
the substituent for the aryl group which may be substituted in the definition for R^3 in the formula (I), is a halogen atom, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, cycloalkyl, cycloalkoxy, alkoxycarbonyl, alkylcarbonyl, alkylcarbonyloxy, aryl, aryloxy, arylthio, amino, amino substituted by one or two alkyl, cyano, nitro or hydroxy as an active ingredient, and an agricultural adjuvant.

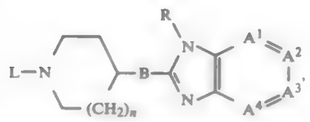
5,360,807

SUBSTITUTED THIAZOLYL AND SUBSTITUTED PYRIDINYL DERIVATIVES

Frans E. Janssens, Bonheiden; Francois M. Sommen, Wortel, and Gaston S. M. Diels, Ravels, all of , assignors to Janssen Pharmaceutica N.V., Beerse,

Continuation of Ser. No. 157,845, Nov. 24, 1993, abandoned, which is a continuation of Ser. No. 17,363, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 723,878, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 554,325, Jul. 19, 1990, abandoned. This application Feb. 17, 1994, Ser. No. 197,579
Int. Cl.[5] A61K *31/445, 31/44;* **C07D** *211/14, 211/40*
U.S. Cl. 514—318 **4 Claims**

1. A compound of the formula:

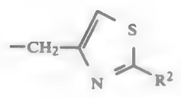


(I)

a pharmaceutically acceptable addition salt or a stereochemically isomeric form thereof, wherein:
$—A^1=A^2=A^3=A^4—$ represents a bivalent radical having the formula:

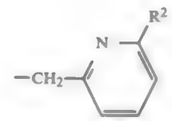
—CH=CH—CH=CH— (a-1),

wherein one or two hydrogen atoms in said radical (a-1) may each independently be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, hydroxy or trifluoromethyl;
B represents NH or CH_2;
R represents a radical of the formula:



(b-1-c)

or



(b-2-b)

wherein R^2 is C_{1-4}alkyl;
n is 1; and
L represents hydrogen, C_{1-4}alkyl or a radical of the formula:

-Alk—R^3 (c-1);

wherein:
each Alk individually represents C_{1-6}alkanediyl; and
R^3 represents phenyl or C_{1-4}alkyloxyphenyl
3. An antiallergic composition comprising a pharmaceutically acceptable carrier and as active ingredient an effective antiallergic amount of a compound as claimed in claim 1.

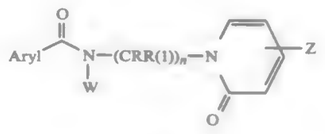
5,360,808

ARYLCARBONYLAMINOALKYL-DIHYDRO-OXO-PYRIDINES, THEIR PRODUCTION AND THEIR USE

Heinrich Englert, Hofheim am Taunus; Dieter Mania, Königstein/Taunus, both of Germany; David Wettlaufer, Phillipsburg, N.J., and Erik Klaus, Kelkheim, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 18, 1993, Ser. No. 19,296
Claims priority, application European Pat. Off., Feb. 20, 1992, 92102828.8
Int. Cl.[5] C07D *213/64;* **A61K** *31/44*
U.S. Cl. 514—335 **4 Claims**

1. An arylcarbonylaminoalkyl-dihydro-oxo-pyridine of Formula I:



I

wherein
aryl is a pyridinyl system unsubstituted or substituted with 1 or 2 identical or different halogen, loweralkyl, alkoxy, or trifluoromethyl radicals;
n is zero, 2 or 3;
R and R(1), independently for each carbon are hydrogen, or loweralkyl;
W is hydrogen or loweralkyl;
Z is hydrogen, (CO)OR(2) or (CO)$NR(2)_2$;
R(2) is independently hydrogen or loweralkyl;
and the geometrical isomers or optical antipodes thereof.

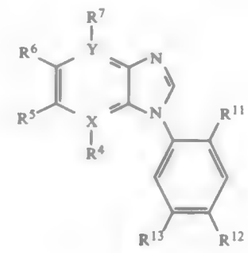
5,360,809

IMIDAZOLE COMPOUNDS AND THEIR USE AS CALCIUM CHANNEL BLOCKERS

Oskar Axelsson; Dan Peters, both of Malmö , Sweden; Elsebet Ø. Nielsen, Copenhagen, and Palle Christophersen, Ballerup, both of Denmark, assignors to NeuroSearch A/S, Denmark

Filed Mar. 24, 1993, Ser. No. 36,425
Claims priority, application Denmark, Mar. 26, 1992, 0401/92
Int. Cl.[5] C07D *235/08*
U.S. Cl. 514—338 **9 Claims**

7. A compound having the formula



wherein
X is C;
Y is C;
R^{11} is hydrogen, hydroxy, or alkoxy;
one of R^{12} or R^{13} is hydrogen; halogen; CF_3; CN; OH; alkyl; cycloalkyl; cycloalkylalkyl; alkenyl; alkynyl; alkoxy; phenylalkyl; amino; nitro; sulphamoyl; piperidyl; pyrrolidinyl; acyl; CO_2H; CO_2-alkyl; CO-amino; NH-CO-alkyl; and the other of R^{12} or R^{13} is phenylsulphonyl which may be substituted with halogen, CF_3, CN, OH, alkyl, alkenyl, alkynyl, alkoxy, amino, or nitro; phenyloxy which may be substituted with halogen, CF_3, CN, OH, alkyl, alkenyl, alkynyl, alkoxy, amino, or nitro; phenyl-

amino which may be substituted with halogen, CF_3, CN, OH, alkyl, alkenyl, alkynyl, alkoxy, amino, or nitro; or aryl which may be substituted one or more times with halogen, CF_3, CN, alkyl, cycloalkyl, cycloalkylalkyl, alkenyl, alkynyl, alkoxy, phenoxy, phenylalkyl, amino, nitro, sulphamoyl, piperidyl, pyrrolidinyl, CO_2H, CO_2-alkyl, CO-amino, or NH-CO-alkyl; and

R^4, R^5, R^6 and R^7 are each independently hydrogen; halogen; amino; nitro; CN; CF_3; COOH; COO-alkyl; alkyl; acyl; alkoxy; $-(CH_2)_n$-OH wherein n is 0, 1,2, or 3; $-(CH_2)_m$-O-alkyl wherein m is 0, 1,2, or 3; $-(CH_2)_o$-O-acyl wherein o is 0, 1,2, or 3; and that R^{12} is different from phenyl when R^{11}, R^{13}, R^4, R^5, and R^7 are each hydrogen or when R^6 is hydrogen or amino (NH_2).

or a pharmaceutically-acceptable addition salt thereof.

5,360,810

PHENYLMETHOXYIMINO COMPOUNDS AND AGRICULTURAL FUNGICIDES CONTAINING THEM

Yoshio Hayase, Kameyama; Hideyuki Takenaka, Nabari; Norihiko Tanimoto; Michio Masuko, both of Koka, and Toshihiko Takahashi, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Japan

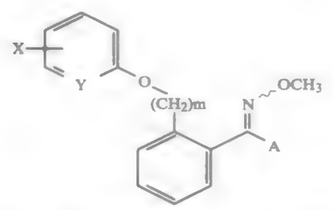
Division of Ser. No. 923,588, Aug. 3, 1992, Pat. No. 5,248,687. This application Mar. 18, 1993, Ser. No. 33,343

Claims priority, application Japan, Aug. 20, 1991, 3-207886

Int. Cl.[5] C07C *257/14;* A61K *31/155*

U.S. Cl. 514—346 **7 Claims**

1. A compound of the formula (I):



(I)

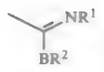
wherein X is a hydrogen atom or 1 to 5 substituents which may be the same or different and are selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl, a heterocyclic group, alkoxy, alkenyloxy, alkynyloxy, phenoxy, mono-di or tri-substituted halogenoalkyl and a halogen atom;

said phenyl being optionally substituted by 1 to 5 substituents selected from the group consisting of the above alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, halogen atom, phenoxy optionally substituted with these substituents, phenyl optionally substituted with these substituents and a heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, pyrazinyl, thiazolyl, oxazolyl, isoxazolyl, pyrazolyl and imidazolyl optionally substituted with these substituents,

said heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl, pyrazinyl, thiazolyl, oxazolyl, isoxazolyl, pyrazolyl and imidazolyl optionally substituted by 1 to 5 substituents selected from the group consisting of the above alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, halogen atom phenoxy optionally substituted with these substituents, phenyl optionally substituted with these substituents and said heterocyclic group optionally substituted with these substituents,

said phenoxy being optionally, substituted by 1 to 5 substituents selected from the group consisting of the above alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, halogen atom, phenoxy optionally substituted with these substituents, phenyloptionally substituted with these substituents and said heterocyclic group optionally substituted with these substituents,

Y is CH or N; m is O or 1; A is a group of the formula:



wherein R^1 is a hydrogen atom or alkyl; B is O, S or NR^3; R^2 and R^3 are the same or different and are a hydrogen atom, alkyl, alkenyl, alkynyl, phenyl, benzyl, acyl or phenacyl, with the proviso that when B is O or S, R^2 is not a hydrogen atom.

5,360,811

1-ALKYL-, 1-ALKENYL-, AND 1-ALKYNYLARYL-2-AMINO-1,3-PROPANEDIOLS AND RELATED COMPOUNDS AS ANTI-INFLAMMATORY AGENTS

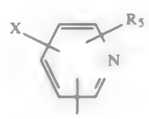
John J. Tegeler, Bridgewater; Barbara S. Rauckman, Flemington; Russell R. L. Hamer, Lebanon; Brian S. Freed, Phillipsburg, all of N.J., and Gregory H. Merriman, Fairfield, Ohio, assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation-in-part of Ser. No. 840,236, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 632,910, Dec. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 596,448, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 492,200, Mar. 13, 1990, abandoned. This application Sep. 10, 1992, Ser. No. 942,908

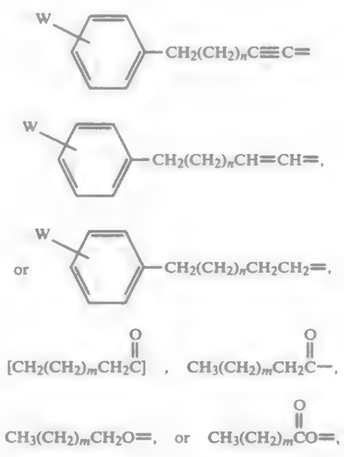
Int. Cl.[5] A61K *31/44;* C07D *213/46, 213/56*

U.S. Cl. 514—357 **66 Claims**

1. A compound of the formula $RCH(OR^1)CH(NR^2R^3)R^4$ or $RCH_2CR^{35}(NR^2R^3)R^4$ wherein R is



wherein R^5 is $CH_3(CH_2)_mC{\equiv}C-$, $CH_3(CH_2)_mCH{=}CH-$, $CH_3(CH_3(CH_2)_mCH_2CH_2-$,



wherein m is 3 to 15, n is 0 to 12, and W and X are independently hydrogen, hydroxy, loweralkyl, loweralkoxy, halogen, or trifluoromethyl, or

wherein R^{23} is loweralkyl; R^1 is hydrogen, loweralkyl,



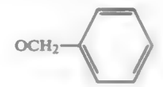
wherein R^{24} is loweralkyl or



wherein R^6 is hydrogen, loweralkyl, loweralkoxy, $N(R^{21})_2$ wherein R^{21} is hydrogen, loweralkyl, or



wherein W is as above, or



R^2 is hydrogen or loweralkyl; R^3 is hydrogen, loweralkyl or

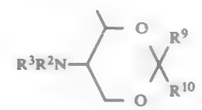
wherein R^6 is as above or NHR^{27} wherein R^{27} is loweralkyl; R^{35} is

wherein R^{36} is loweralkyl; R^4 is



wherein R^7 is hydrogen or loweralkyl, $C(R^{25})_2OR^8$ wherein R^8 is hydrogen, loweralkyl, or

wherein R^6 is as above and R^{25} is hydrogen or loweralkyl; R^1 and R^8 taken together with the oxygen to which they are attached form a group of the formula



wherein R^9 and R^{10} are independently hydrogen or loweralkyl; the optical isomers thereof, or the pharmaceutically acceptable salts thereof.

5,360,812

FUSED 1,2,5-OXADIAZOLE-2-OXIDES AND THEIR USE

Joachim Brendel, Frankfurt am Main; Karl Schönafinger, Alzenau, and Helmut Bohn, Schöneck, all of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Germany

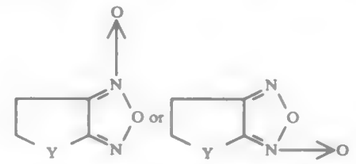
Filed May 25, 1993, Ser. No. 67,520

Claims priority, application Germany, Jun. 10, 1992, 4218977

Int. Cl.[5] C07D *495/04;* A61K *31/41*

U.S. Cl. 514—364 **6 Claims**

1. Fused 1,2,5Oxadiazole-2-oxide of the formula



in which Y denotes —S—, —S(O)—, or —$S(O)_2$—.

5,360,813

SULFONAMIDES AS ANTIFUNGAL AGENTS

Javier Bartroli; Manuel Anguita; Jordi Belloc; Elena Carceller, and Carmen Almansa, all of Barcelona, Spain, assignors to J. Uriach & Cia. S.A., Barcelona, Spain

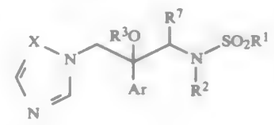
Continuation-in-part of Ser. No. 772,838, Oct. 8, 1991, abandoned. This application Sep. 16, 1992, Ser. No. 945,589

Claims priority, application Spain, Oct. 8, 1990, ES9002712

Int. Cl.[5] A01N *43/653;* C07D *249/08*

U.S. Cl. 514—383 **21 Claims**

1. A compound of formula I:



I

in which:

X represents N;

R^1 represents C_1–C_6 alkyl C_1–C_4 haloalkyl, C_3–C_6 cycloalkyl, phenyl-C_1–C_4-alkyl, a phenyl-C_1–C_4-alkyl group where the phenyl ring carries a substituent (a) as specified below, phenyl, naphthyl, or a phenyl ring substituted with one or more members of group (a);

R^2 represents hydrogen or C_1–C_6 alkyl, C_3–C_7-cycloalkylmethyl, C_3–C_6 cycloalkyl, C_1–C_4 haloalkyl, phenyl-C_1–C_4-alkyl, a phenyl-C_1–C_4-alkyl group where the phenyl ring carries a substituent selected from the group (a), phenyl, naphthyl, a phenyl ring substituted with one or more members of group (a);

R^3 is hydrogen;

R^7 represents hydrogen or C_1–C_6 alkyl;

Ar represents phenyl or a phenyl ring substituted with one or more halogen or trifluoromethyl groups;

wherein group (a) consists of:

C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, halogen, CF_3, NO_2, CN, OH, OCH_2Ph, CH_2OH, a group of the formula —NH—CO—CH_3, a group of formula —CH_2—OCO—R^6, a group of formula —CO—R^6, a group of formula —COO—R^6, a group of formula —SO_2R^6, NH_2, NHR^6, or NR^6;

R^6 represents C_1–C_4 alkyl;

z is 0, 1 or 2;

or an acid-addition salt thereof.

5,360,814

NMDA ANTAGONISTS

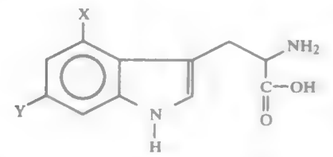
Michael G. Palfreyman, Cincinnati; Ian A. McDonald, Loveland; Francesco G. Salituro, Fairfield, all of Ohio; Robert Schwarcz, Baltimore, Md., and Bruce M. Baron, Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 57,195, May 3, 1993, abandoned, which is a continuation of Ser. No. 827,188, Feb. 3, 1992, abandoned, which is a continuation-in-part of Ser. No. 662,670, Feb. 28, 1991, abandoned. This application Jan. 25, 1994, Ser. No. 187,353

Int. Cl.[5] A61K *31/405*

U.S. Cl. 514—419 **6 Claims**

1. A pharmaceutical formulation suitable for use in treating conditions associated with excessive activity by excitatory amino acids comprising a compound of the formula:



(Ia)

in which X and Y are each independently selected from the group consisting of Cl, Br, F, CH_3, and CH_2CH_3, or a pharmaceutically acceptable salt thereof present in an amount sufficient to antagonize the effects of excitatory amino acids in admixture with a pharmaceutically acceptable carrier.

5,360,815

HETEROARYL CINNAMIC ACIDS AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

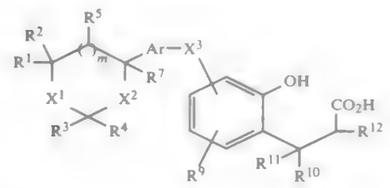
Rejean Fortin, Montreal; Yves Girard, Ile Bizard; Erich Grimm, Baie d'Urfe, all of Canada; John Hutchinson, Philadelphia, Pa., and John Scheigetz, Dollard des Ormeaux, Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Jun. 23, 1993, Ser. No. 81,506

Int. Cl.[5] A61K *31/38, 31/335, 31/385, 31/35*

U.S. Cl. 514—432 **10 Claims**

1. A compound of the Formula I:



I

wherein:

R^1 is H, OH, lower alkyl, or lower alkoxy;

R^2 is H, lower alkyl or together with R^1 forms a double bonded oxygen (=O);

R^3 is H, lower alkyl, hydroxy lower alkyl, or lower alkoxy lower alkyl; or R^1 is joined to R^3 to form a carbon bridge of 2 or 3 carbon atoms, or a mono-oxa carbon bridge of 1 or 2 carbon atoms, said bridge optionally containing a double bond;

R^4 is H or lower alkyl;

R^5 is H, OH, lower alkyl, or lower alkoxy;

R^6 is H or lower alkyl, or two R^6 groups attached to the same carbon may form a saturated ring of 3 to 8 members;

R^7 is H, OH, lower alkyl, lower alkoxy, cycloalkyl lower alkoxy, lower alkylthio, or lower alkylcarbonyloxy;

R^8, R^9, and R^{13} is each independently H, halogen, lower alkyl, hydroxy, lower alkoxy, lower alkylthio, CF_3, CN, or COR^{14};

R^{10} is H, lower alkyl, or aryl-$(R^{13})_2$, wherein aryl is a 5-membered aromatic ring wherein one carbon atom is replaced by O or S and 0–3 carbon atoms are replaced by N; a 5-membered aromatic ring wherein 1–4 carbon atoms are replaced by N; a 6-membered aromatic ring wherein 0–3 carbon atoms are replaced by N; 2- or 4-pyranone; 2- or 4-pyridinone; or a bicyclic 8-, 9-, or 10-membered aromatic ring wherein 0–2 carbon atoms are replaced by either O or S or a combination thereof and 0–3 carbon atoms are replaced by N;

R^{11} and R^{12} is each independently H or lower alkyl, or R^{11} and R^{12} together form a bond;

R^{14} is H or lower alkyl;

X^1 is O, S, S(O), S(O)2, or CH2;

X^2 is O, S, or CHR6;

X^3 is $OC(R^6)_2$ or $C(R^6)_2O$;

Ar is arylene-$(R^8)_2$, wherein arylene is phenyl;

m is 1;

n is 1 or 2;

or a pharmaceutically acceptable salt thereof.

5,360,816

5-METHOXY PSORALEN USED TO TREAT PSORIASIS

Jean-Jacques Goupil, 30 Avenue du Président Wilson, 94230 Cachan, France

Continuation of Ser. No. 749,491, Aug. 15, 1991, abandoned, which is a continuation of Ser. No. 352,705, May 10, 1989, abandoned, which is a continuation of Ser. No. 201,384, May 31, 1988, abandoned, which is a continuation of Ser. No. 825,783, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 724,496, Apr. 18, 1985, abandoned, which is a continuation of Ser. No. 547,947, Nov. 2, 1983, abandoned, which is a division of Ser. No. 195,414, Oct. 9, 1980, abandoned, which is a continuation of Ser. No. 953,118, Oct. 20, 1978, abandoned. This application May 4, 1992, Ser. No. 879,539

Int. Cl.[5] A61K *31/35*

U.S. Cl. 514—455 **8 Claims**

1. A method for treating psoriasis in a patient in need of such treatment, comprising administering to said patient orally, a daily dose between 40 to 300 mg of 5-methoxy-psoralen and thereafter exposing said patient to irradiation with A ultraviolet rays having an energy within the range from about 1 to about 10 Joules/cm^2.

5,360,817

DERIVATIVES AND ANALOGUES OF 2-DEOXY-2,3-DIDEHYDRO-N-ACETYL NEURAMINIC ACID AND THEIR USE AS ANTIVIRAL AGENTS

Laurence M. von Izstein, North Fitzray; Wen-Yang Wu, Mount Waverley; Tho V. Phan, Carnegie; Basil Danylec, Box Hill, and Betty Jin, Mount Waverley, all of Australia, assignors to Biota Scientific Management Pty Ltd, Melbourne, Australia

PCT No. PCT/AU91/00161, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO91/16320, PCT Pub. Date Oct. 31, 1991

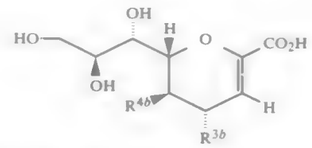
PCT Filed Apr. 24, 1991, Ser. No. 946,327

Claims priority, application Australia, Apr. 24, 1990, PJ9800; Oct. 19, 1990, PK2896; Feb. 11, 1991, PK4537

Int. Cl.[5] C07D *309/20;* **A61K** *31/35*

U.S. Cl. 514—459 **10 Claims**

1. A compound of formula (Ib)



(Ib)

wherein R^{3b} is $(alk)_xNR^{6b}R^{7b}$, CN or N_3;

where alk is an unsubstituted or substituted methylene;

x is 0 or 1;

R^{6b} is hydrogen, $C_{1\text{-}6}$alkyl, aryl, aralkyl, amidine, $NR^{7b}R^{8b}$ or an unsaturated or saturated ring containing one or more heteroatoms selected from the group consisting of nitrogen, oxygen and sulphur;

R^{7b} is hydrogen, $C_{1\text{-}6}$alkyl, or allyl;

R^{8b} is hydrogen or $C_{1\text{-}6}$alkyl; and R^{4b} is $NNHCOR^{9b}$ where R^{9b} is hydrogen, substituted or unsubstituted $C_{1\text{-}4}$alkyl or aryl;

or a pharmaceutically acceptable salt or derivative thereof.

5,360,818

1,3-DIOXANE DERIVATIVES HAVING PROTEIN KINASE C INHIBITORY ACTIVITY

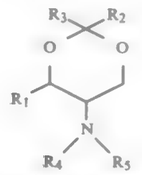
Jack B. Jiang, Chapel Hill; Mary G. Johnson, and Jeffrey Nichols, both of Durham, all of N.C., assignors to Sphinx Pharmaceuticals Corporation, Durham, N.C.

Continuation of Ser. No. 763,622, Sep. 23, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 110,847

Int. Cl.[5] A61K *31/35;* **C07D** *309/14*

U.S. Cl. 514—459 **16 Claims**

1. A compound having the formula



wherein R_1 is alkyl, alkenyl or alkynyl having from 2 to about 20 carbon atoms; R_2, R_3, R_6 are independently H, phenyl or alkyl having from 1 to about 20 carbon atoms; R_4 is H; and R_5 is R_6imino or amidino; or a pharmaceutically acceptable salt thereof.

5,360,819

MOLECULAR ANALYTICAL RELEASE TAGS AND THEIR USE IN CHEMICAL ANALYSIS

Roger W. Giese, Quincy, Mass., assignor to Northeastern University, Boston, Mass.

Continuation-in-part of Ser. No. 344,394, Feb. 1, 1982, Pat. No. 4,709,016. This application Mar. 11, 1985, Ser. No. 710,318

Int. Cl.[5] A01N *37/12*

U.S. Cl. 514—538 **66 Claims**

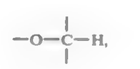
1. A release tag compound for use in chemical analysis, said compound having the generalized formula:

$S—R_c—R_x$

wherein:

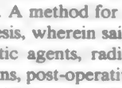
S is a signal group comprising a moiety selected from the group consisting of alkyl radicals of 1–12 carbon atoms, alicyclic radicals of 3–7 carbon atoms, and phenyl radicals, said moiety containing at least one halogen, said signal group having the property that upon cleavage of said release tag compound at the R_c group, signal group S is released in the form of a ketone which is sufficiently volatile for determination in the gas phase;

R_c is a release group capable of undergoing cleavage to release signal group S, and comprises a linkage selected from the group consisting of

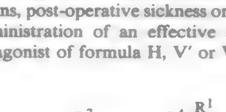


i)

-continued



ii)



iii)

; and

R_x is a reactivity group comprising a reactive functional group capable of bonding said release tag compound to a labelable substance;

and further,

in the release tag compound having the release group ot formula i, the R_x group is bonded to the oxygen atom of the formula and at least one signal group S is bonded to the carbon atom of the formula;

in the release tag compound having the release group of formula ii, the R_x and S groups are both bonded to the carbon atom of the formula, and R_c further comprises a keto, olefinic, alkynyl, or ester functionality located in a beta position relative to the OH group of the formula; and

in the release tag compound having the release group of formula iii, the carbonyl group of the formula bears a moiety comprising the R_x reactivity group, at least one signal group S is bonded to the non-carbonyl carbon atom of the formula, and an alkyl or aryl group is bonded to the non-carbonyl oxygen atom of the formula.

5,360,820

MEDICAL USE FOR TACHYKININ ANTAGONISTS

Russell M. Hagan; Keith T. Bunce; Alan Naylor; Mark Ladlow, all of Ware, Great Britain; Andrew B. McElroy, Research Triangle Park, N.C.; Andrew R. Whittington, and Barry A. Coomber, both of Greenford, Great Britain, assignors to Glaxo Group Limited, London, United Kingdom

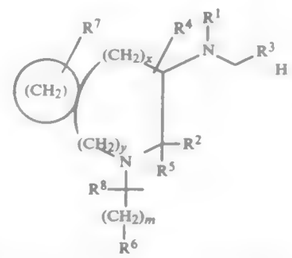
Filed Sep. 18, 1992, Ser. No. 946,635

Claims priority, application United Kingdom, Sep. 20, 1991, 9120172; Feb. 11, 1992, 9202839; Feb. 27, 1992, 9204151

Int. Cl.[5] A61K *31/20, 31/55, 31/135, 31/19*

U.S. Cl. 514—559 **9 Claims**

1. A method for the treatment of a mammal, suffering from emesis, wherein said emesis is induced by cancer chemotherapeutic agents, radiation sickness, radiation therapy, poisons, toxins, post-operative sickness or opioid analgesics, comprising administration of an effective amount of an NK_1 receptor antagonist of formula H, V' or W:



wherein in the antagonist of formula H:

x is an integer from zero to four;

y is an integer from zero to four;

z is an integer from one to six;

the ring containing $(CH_2)_z$ may contain from zero to three double bonds, and one of the carbons of $(CH_2)_z$ may optionally be replaced by oxygen, sulfur or nitrogen;

m is an integer from zero to twelve, and any one of the

carbon-carbon single bonds of $(CH_2)_m$ may optionally be replaced by a carbon-carbon double or triple bond and any one of the carbon atoms of $(CH_2)_m$ may optionally be substituted with R^8;

R^1 is hydrogen or (C_{1-6})alkyl optionally substituted with hydroxy, alkoxy or fluoro;

R^2 is a radical selected from the group consisting of hydrogen, (C_{1-6}) straight or branched alkyl, (C_{3-7})cycloalkyl wherein one of the carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl(C_{2-6})alkyl, benzhydryl and benzyl, wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl(C_{2-6})alkyl and benzhydryl groups may optionally be substituted with one or more substituents independently selected from the group consisting of halo, nitro, (C_{1-6})alkoxy, trifluoromethyl, amino, (C_{1-6})alkylamino, (C_{1-6})alkyl-O—C(O), (C_{1-6})alkyl-O—C(O)(C_{1-6})alkyl-CO_2—, (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-O—, (C_{1-6})alkyl-C(O)—, (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-, di-(C_{1-6})alkylamino, —CONH-(C_{1-6})alkyl, (C_{1-6})alkyl-CONH-(C_{1-6})alkyl, —NHC(O)H and —NHC(O)(C_{1-6})alkyl;

R^5 is hydrogen or (C_{1-6})alkyl; or

R^2 and R^5, together with the carbon to which they are attached, form a saturated carbocyclic ring having from 3 to 7 carbon atoms, wherein one of said carbon atoms may optionally be replaced by oxygen, nitrogen or sulfur;

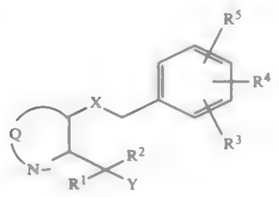
R^3 is aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; or cycloalkyl having from three to seven carbon atoms, wherein one of said carbon atoms may optionally be replaced by nitrogen, oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents and said (C_{3-7})cycloalkyl may optionally be substituted with one or two substituents, said substituents being independently selected from the group consisting of halo, nitro, (C_{1-6})alkyl, (C_{1-6})alkoxy, trifluoromethyl, amino, phenyl, (C_{1-6})alkylamino, —CONH-(C_{1-6})alkyl, (C_{1-6})alkyl-CONH-(C_{1-6})alkyl, —NHC(O)H and —NHC(O)-(C_{1-6})alkyl;

R^4 may be attached to any atom of the nitrogen containing ring having an available bonding site and R^7 may be attached to any atom of the $(CH_2)_z$ containing ring having an available bonding site;

R^4, R^6, R^7 and R^8 are each independently selected from the group consisting of hydrogen, hydroxy, halo, amino, carboxy, carboxyalkyl, (C_{1-6})alkylamino, di-(C_{1-6})alkylamino, (C_{1-6})alkoxy, (C_{1-6})alkyl-O—C(O)—, (C_{1-6})alkyl-O—C(O)-(C_{1-6})alkyl, (C_{1-6})alkyl-CO_2, (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-O-(C_{1-6})alkyl-C(O)—, (C_{1-6})alkyl-C(O)(C_{1-6})alkyl, and the radicals set forth in the definition of R^2, with the proviso that (a) when m is 0, R^8 is absent, (b) neither R^4, R^6, R^7 nor R^8 can form, together with the carbon to which it is attached, a ring with R^5, and (c) R^4 and R^7 can not be attached to the same carbon atom;

or a pharmaceutically acceptable salt thereof;

V'



wherein in the antagonist of formula V':

Q is the residue of an optionally substituted azabicyclic ring system;

X represents oxa or thia;

Y represents H or hydroxy;

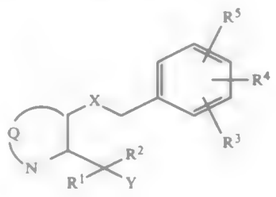
R^1 and R^2 independently represent phenyl or thienyl, either of which groups may be optionally substituted by halo or trifluoromethyl;

R^3, R^4 and R^5 independently represent H, (C_{1-6})alkyl, (C_{2-6})alkenyl, (C_{2-6})alkynyl, halo, cyano, nitro, trifluoromethyl, trimethylsilyl, -OR^a, SCH_3, $SOCH_3$, SO_2CH_3, —NR^aR^b, NR^aCOR^b, $NR^aCO_2R^b$, —CO_2R^a or —CON-R^aR^b; and

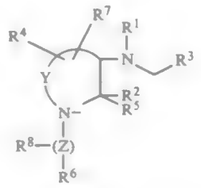
R^a and R^b independently represent H, (C_{1-6})alkyl, phenyl or trifluoromethyl;

or a salt or prodrug thereof;

V



W



wherein in the antagonist of formula W:

Y is $(CH_2)_n$ wherein n is an integer from 1 to 4, and wherein any one of the carbon-carbon single bonds in $(CH_2)_n$ may optionally be replaced by a carbon-carbon double bond, and wherein any one of the carbon atoms of $(CH_2)_n$ may optionally be substituted with R^4 and wherein any one of the carbon atoms of $(CH_2)_n$ may optionally be substituted with R^7;

Z is $(CH_2)_m$, wherein m is an integer from 0 to 6, and wherein any one of the carbon-carbon single bonds of $(CH_2)_m$ may optionally be replaced by a carbon-carbon double bond or carbon-carbon triple bond, and any one of the carbon atoms of $(CH_2)_m$ may optionally be substituted with R^8;

R^1 is hydrogen or (C_{1-8})alkyl optionally substituted with hydroxy, (C_{1-4})alkoxy or fluoro;

R^2 is a radical selected from the group consisting of hydrogen, (C_{1-6}) straight or branched alkyl, (C_{3-7})cycloalkyl wherein one of the CH_2 groups in said cycloalkyl may optionally be replaced by NH, oxygen or sulfur; aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; phenyl-(C_{2-6})-alkyl, benzhydryl and benzyl, wherein each of said aryl and heteroaryl groups and the phenyl moieties of said benzyl, phenyl-(C_{2-6})-alkyl and benzhydryl may optionally be substituted with one or more substituents independently selected from the group consisting of halo, nitro, (C_{1-6})alkyl, (C_{1-6})alkoxy, trifluoromethyl, amino, (C_{1-6})alkylamino, (C_{1-6})alkyl-O—C(O)—, (C_{1-6})alkyl-O—C(O)-(C_{1-6})alkyl, (C_{1-6})alkyl-C(O)—O—, (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-O—, (C_{1-6})alkyl-C(O)—, (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-, di-(C_{1-6})alkylamino, —CONH-(C_{1-6})alkyl, (C_{1-6})alkyl-CONH-(C_{1-6})alkyl, NHC(O)H and —NHC(O)-(C_{1-6})alkyl; and wherein one of the phenyl moieties of said benzhydryl may optionally be replaced by naphthyl, thienyl, furyl or pyridyl;

R^5 is hydrogen, phenyl or (C_{1-6})alkyl; or

R^2 and R^5, together with the carbon to which they are attached, form a saturated ring having from 3 to 7 carbon atoms wherein one of the CH_2 groups in said ring may optionally be replaced by oxygen, NH or sulfur;

R^3 is aryl selected from the group consisting of phenyl and naphthyl; heteroaryl selected from the group consisting of indanyl, thienyl, furyl, pyridyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, tetrazolyl and quinolyl; and cycloalkyl having 3 to 7 carbon atoms wherein one of the (CH_2) groups in said cycloalkyl may optionally be replaced by NH, oxygen or sulfur; wherein each of said aryl and heteroaryl groups may optionally be substituted with one or more substituents, and said (C_{3-7}) cycloalkyl may optionally be substituted with one or two substituents, each of said substituents being independently selected from the group consisting of halo, nitro, (C_{1-6})alkyl, (C_{1-6})alkoxy, trifluoromethyl, amino, (C_{1-6})alkylamino, —CONH-(C_{1-6})alkyl, (C_{1-6})alkyl-C(O)—NH-(C_{1-6})alkyl, —NHC(O)H and —NHC(O)-(C_{1-6})alkyl; and

R^4 and R^7 each independently selected from the group consisting of hydroxy, hydrogen, halo, amino, oxo, cyano, methylene, hydroxymethyl, halomethyl, (C_{1-6})alkylamino, di(C_{1-6})alkylamino, (C_{1-6})alkoxy, (C_{1-6})alkyl-O—C(O)—, (C_{1-6})alkyl-O—C(O)-(C_{1-6})alkyl, (C_{1-6})alkyl-C(O), (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl-O, (C_{1-6})alkyl-C(O), (C_{1-6})alkyl-C(O)-(C_{1-6})alkyl, and the radicals set forth in the definition of R^2;

R^6 is NHC(O)R^9, —$NHCH_2R^9$, SO_2R^9 or one of the radicals set forth in any of the definitions of R^2, R^4 and R^7;

R^8 is oximino (=NOH) or one of the radicals set forth in any of the definitions of R^2, R^4 and R^7;

R^9 is (C_{1-6})alkyl, hydrogen, phenyl or phenyl(C_{1-6})alkyl;

with the proviso that (a) when m is O, R^8 is absent, (b) when R^4, R^6, R^7 or R^8 is defined in R^2, it cannot form, together with the carbon to which it is attached, a ring with R^5, and (c) when R^4 and R^7 are attached to the same carbon atom, then either each of R^4 and R^7 is independently selected from the group consisting of hydrogen, fluoro and (C_{1-6})alkyl, or R^4 and R^7, together with the carbon to which they are attached, form a (C_{3-6}) saturated carbocyclic ring that forms a spiro compound with the nitrogen containing ring to which they are attached;

or a pharmaceutically acceptable acid addition salt thereof.

5,360,821

METHOD OF USE OF PANTOTHENIC ACID TO IMPROVE THE ATHLETIC PERFORMANCE AND SENSE OF WELL BEING OF A HUMAN BEING

Lit-Hung Leung, Room 502, Dragon Seed Building, 39 Queen's Road Central, Hong Kong, Hong Kong

Division of Ser. No. 927,189, Aug. 7, 1992, Pat. No. 5,304,574, which is a continuation of Ser. No. 713,965, Jun. 11, 1991, abandoned. This application Nov. 9, 1993, Ser. No. 149,645

Claims priority, application United Kingdom, Feb. 11, 1991, 9102830

Int. Cl.[5] **A01N** *37/12, 37/44;* **A61K** *31/195*

U.S. Cl. 514—563 **13 Claims**

1. A method for improving the athletic performance and sense of well-being of a human being comprising administering to said human being an effective amount of pantothenic acid or a derivative thereof which is converted to pantothenic acid in the body.

5,360,822

SULFONANILIDE DERIVATIVES AND MEDICINE

Akira Morino; Iwao Morita, both of Kyoto, and Shin-ichi Tada, Shiga, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

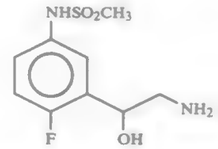
Continuation of Ser. No. 917,097, Aug. 4, 1992, abandoned. This application Dec. 21, 1993, Ser. No. 171,195

Claims priority, application Japan, Feb. 7, 1990, 2-27675; May 25, 1990, 2-136360; Oct. 16, 1990, 2-278041

Int. Cl.[5] **C07C** *311/08;* **A61K** *31/18*

U.S. Cl. 514—605 **3 Claims**

1. A compound



(I)

or a pharmaceutically acceptable salt or isomer thereof.

5,360,823

ANIONIC SALT FORMULATION FOR MILK FEVER

Gilbert W. Griffel, Jr., Fort Dodge, Iowa, and David J. Kirk, Mukwonago, Wis., assignors to Dawe's Inc., Chicago, Ill.

Filed Nov. 2, 1993, Ser. No. 146,983

Int. Cl.[5] **A01N** *31/00, 59/02*

U.S. Cl. 514—706 **15 Claims**

1. A method of preventative treatment for milk fever; comprising:

administering to a dry cow prior to freshening a small but calcium mobilizing effective amount of an anionic salt feed additive to provide a cation-anion difference (DCAD) in the total dry matter diet within the range of from about −8 to about −18, said anionic salt additive being of reduced levels of ammonium salts and containing elemental sulfur.

5,360,824

HUMAN SKIN CLEANSING AND WRINKLE-REDUCING CREAM

Donald E. Barker, 28931 S. Lake Shore Dr., Agoura, Calif. 91301

Filed Feb. 5, 1993, Ser. No. 15,966

Int. Cl.[5] **A61K** *7/44, 7/48, 9/06*

U.S. Cl. 424—680 **9 Claims**

1. In an improved skin cleansing and wrinkle-reducing cream, wherein the improvement comprises:

a) an effective amount of a plurality of water-soluble, skin-abrading, non-irritating granules which are of at least one of a vitamin and a vitamin-yielding salt non-irritating to the skin; and

b) an effective amount of an oleaginous creamy base non-irritating to the skin and in which said granules are substantially uniformly dispersed.

5,360,825

PULP MOLDING

Tsutomu Noguchi, and Mayumi Miyashita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,266

Claims priority, application Japan, Feb. 14, 1992, 4-059130

Int. Cl.[5] **C08J** *9/236, 9/32*

U.S. Cl. 521—54 **11 Claims**

1. A pulp molding composition for forming pulp moldings comprising a uniformly, dispersed slurry including:

pulp fibers;

a pulp plasticizer;

a binder; and

expandable plastic microspheres present in an amount ranging from approximately 5% to 10% by weight, wherein the pulp molding composition is formable upon exposure to heat.

5,360,826

EXPANDABLE COATING COMPOSITION

Scott L. Egolf, Lansdale, and Reginald T. Smart, Horsham, both of Pa., assignors to Rohm and Haas Company, Phiadelphia, Pa.

Division of Ser. No. 144,962, Oct. 28, 1993. This application Feb. 16, 1994, Ser. No. 198,000

Int. Cl.[5] C08J *9/32*

U.S. Cl. 521—54 **16 Claims**

1. An expandable aqueous coating composition, comprising:

an aqueous polymer emulsion binder, said binder comprising latex particles and said latex particles comprising a copolymer having a glass transition temperature of about −20° C. to about +60° C. and a weight average molecular weight of about 20,000 to about 500,000; and

expandable particles, said expandable particles comprising a liquid blowing agent contained within a thermoplastic shell.

5,360,827

PROCESS FOR PREPARATION OF LATEX OF HOLLOW POLYMER

Hideki Toda, Kamakura; Yukio Takagishi, Kawasaki, and Masaru Kaino, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,006

Claims priority, application Japan, Mar. 31, 1992, 4-108770; Feb. 22, 1993, 5-056519

Int. Cl.[5] C08J *9/22;* **C08K** *3/20;* **C08L** *83/00;* **C08F** *265/02*

U.S. Cl. 521—57 **12 Claims**

1. A process for preparation of latex of a hollow polymer which comprises adding an alkali metal hydroxide, in the presence of a monomer, to latex containing carboxy-modified copolymer particles to make the pH of the latex 8 or more; adding a carboxyl group-containing monomer to make the pH of the latex 7 or less; and then polymerizing these monomers.

5,360,828

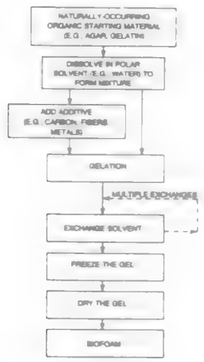
BIOFOAM II

Robert L. Morrison, Modesto, Calif., assignor to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 43,300, Apr. 6, 1993. This application Mar. 21, 1994, Ser. No. 215,159

Int. Cl.[5] C08J *9/26, 9/28*

U.S. Cl. 521—64 **16 Claims**



1. A method for forming a rigid, microcellular biofoam, comprising:

(a) dissolving a naturally occurring organic material in a primary solvent to form a mixture;

(b) forming a gel from the mixture, where the pores in the gel are occupied by the primary solvent;

(c) replacing the primary solvent with a second solvent;

(d) freezing the gel; and

(e) drying the gel to form an organic biofoam.

5,360,829

FOAMED POLYESTER SHEET AND PROCESS FOR THE PRODUCTION THEREOF

Masayuki Kawabe, and Masaki Yamamoto, both of Hofu, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 178,301, Jan. 5, 1994. This application Jan. 21, 1994, Ser. No. 184,256

Int. Cl.[5] C08J *9/04*

U.S. Cl. 521—81 **4 Claims**

1. A process for producing a foamed polyester sheet, which comprises

(1) feeding

(A) a combination of 100 parts by weight of an amorphous copolyester and 0.01 to 5 parts by weight of at least one foaming nucleating agent selected from the group consisting of glass, talc, silica and mica, or

(B) a combination prepared by further combining the above combination (A) and 20 to 100 parts by weight of a polycarbonate resin, or

(C) a combination prepared by further combining the above combination (A) and 15 to 1.00 parts by weight of a polyarylate resin as derived from a bisphenol compound, into a melt extruder to conduct melt-mixing,

(2) incorporating an inert gas into the resulting molten mixture while it exists in the melt extruder, and

(3) extruding the mixture from a sheet-forming die to form the foamed polyester sheet.

5,360,830

EXPANDED ARTICLES OF BIODEGRADABLE PLASTIC MATERIALS

Catia Bastioli; Vittorio Bellotti, both of Novara; Luciano Del Giudice, Milan; Roberto Lombi, and Angelos Rallis, both of Novara, all of Italy, assignors to Novamont S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 972,875, Nov. 4, 1992, Pat. No. 5,288,765, which is a continuation of Ser. No. 663,823, Mar. 27, 1991. This application Feb. 18, 1994, Ser. No. 198,510

Claims priority, application Italy, Aug. 3, 1989, 67667 A/89

The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—84.1 **7 Claims**

1. Expanded articles of biodegradable plastic material comprising a material including starch and a synthetic polymer selected from the group consisting of ethylene-vinyl alcohol, ethylene-acrylic acid, and mixtures thereof, said articles having a closed pore structure and a density of from 0.01 to less than 0.1 g/cm^3.

5,360,831

PREPARATION OF FOAM-IN-FABRIC ARTICLES

Werner A. Lidy, Terneuzen, Netherlands; Gérard Gatouillat, Buchillon, Switzerland, and François M. Casati, Prevessin-Moens, France, assignors to Polyol International B.V., Rotterdam, Netherlands

PCT No. PCT/EP91/02407, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO92/11130, PCT Pub. Date Jul. 9, 1992

PCT Filed Dec. 16, 1991, Ser. No. 78,219

Claims priority, application United Kingdom, Dec. 21, 1990, 9027902.7

Int. Cl.[5] C08G *18/00, 18/08*

U.S. Cl. 521—99 **15 Claims**

1. A process for the preparation of a pour-in-place articles which process comprises pouring a flexible or semi-flexible polyurethane foam formulation onto a pre-shaped composite cover and allowing the foam to rise and cure, characterized in that an inert gas is dissolved or dispersed in the flexible or semi-flexible polyurethane foam formulation such that liquid foam reactants leave a mixing head in a partially frothed state.

5,360,832

HOLLOW PARTICLES OF CROSSLINKED MELAMINE RESIN HAVING A UNIFORM PARTICLE DIAMETER AND A PROCESS FOR PRODUCING THE SAME

Masami Bito, Chigasaki; Satoshi Konishi, and Fumimasa Fukazawa, both of Fujisawa, all of Japan, assignors to Honen Corporation, Tokyo, Japan

Continuation of Ser. No. 986,483, Dec. 7, 1992, abandoned, which is a division of Ser. No. 651,936, Feb. 7, 1991, Pat. No. 5,190,983. This application Mar. 28, 1994, Ser. No. 218,692

Claims priority, application Japan, Feb. 19, 1990, 2-37745

Int. Cl.[5] C08J *9/32;* **B01J** *13/02*

U.S. Cl. 521—187 **6 Claims**

1. Hollow particles of crosslinked melamine formaldehyde resin having a uniform particle diameter which are obtained by a process comprising subjecting a water-soluble melamine formaldehyde methanol precondensate to condensation reaction in the presence of a curing catalyst, said curing catalyst comprised of an organic acid, in an aqueous solution containing a water-soluble polymer with carboxyl groups or a water-soluble copolymer of ethylenically unsaturated carboxylic acid monomer, until the reaction liquid becomes turbid due to the formation of particles; adding to the reaction mixture a solvent or substance which dissolves or swells the melamine resin condensate forming the particles; optionally diluting the mixture with a reactive solvent after the addition of the solvent or substance; and allowing the reaction to go to completion.

5,360,833

CONTROLLED RELEASE COMPOSITIONS FOR UV CURABLE EPOXYSILICONE RELEASE AGENTS

Richard P. Eckberg, Saratoga Springs, and Robert F. Agars, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,589

Int. Cl.[5] C08F *2/50;* **C08G** *77/14, 59/02*

U.S. Cl. 522—31 **12 Claims**

1. An ultraviolet radiation-curable epoxysilicone composition comprising a blend of epoxy-functional silicone resins and epoxy-stopped silicone fluids which in the presence of an efficacious amount of 'onium photocatalyst is curable when exposed to ultraviolet radiation, said blend comprising:

(A) about 60% by weight epoxy-functional silicone resin, said resin containing Q groups, epoxy-functional M groups and at least one member selected from D groups and T groups, wherein said resin comprises at least 5 parts of the sum of M groups and epoxy-functional M groups per 10 parts of the sum of Q groups, D groups and T groups;

(B) about 40% by weight epoxy-stopped silicone fluids containing epoxy-functional M groups; and

said blend having an epoxy equivalent weight of greater than 1000.

5,360,834

PROCESS FOR PHOTOINITIATED CONTROL OF INORGANIC NETWORK FORMATION IN THE SOL-GEL PROCESS

Michael Popall, Würzburg; Jochen Schulz, Veitshöchheim, and Helmut Schmidt, Zellingen, all of Germany, assignors to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e.V., Munich, Germany

Continuation of Ser. No. 893,949, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 553,607, Jul. 18, 1990, abandoned. This application Jan. 31, 1994, Ser. No. 188,746

Claims priority, application Germany, Aug. 1, 1989, 3925462

Int. Cl.[5] C08G *4/00, 77/02;* **C08J** *3/28;* **C08K** *3/18*

U.S. Cl. 522—36 **11 Claims**

1. A process for photoinitiated control of inorganic network formation in the sol-gel process; which consists essentially of:

preparing an anhydrous reaction medium of an alcohol, a photoinitiator, a compound which can liberate water under acid or alkaline catalysis and one or more hydrolytically polycondensable compounds of constituent elements of glass or ceramic; and

subjecting said medium to structured or non-structured irradiation employing radiation of a wavelength range in which the photoinitiator absorbs, thereby liberating water by a photochemical reaction in situ which effects hydrolytic polycondensation of said one or more polycondensable compounds.

5,360,835

RADIATION-CURABLE POLYURETHANE EMULSION COMPOSITIONS

Kazuo Sato, Ohtsu; Tadayuki Sugimoto, Kyoto, and Naofumi Saiuchi, Shiga, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Nov. 30, 1993, Ser. No. 160,045

Claims priority, application Japan, Dec. 1, 1992, 4-321632

Int. Cl.[5] C08F *2/46;* **C08G** *18/63, 18/81*

U.S. Cl. 522—85 **27 Claims**

1. A radiation-curable polyurethane emulsion composition prepared by adding an isocyanate compound having a polymerizable unsaturated group to an emulsion of a polyurethane having active amino groups, and allowing the isocyanate compound and the polyurethane to react in the presence of water.

5,360,836

PROCESS FOR THE PRODUCTION OF COATINGS BY RADIATION CROSS-LINKING

François Chevallier, Bergerac, and Sammy Chevalier, Paris, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Continuation of Ser. No. 772,649, Oct. 9, 1991, abandoned, which is a continuation of Ser. No. 522,453, May 14, 1990, abandoned, which is a continuation of Ser. No. 104,048, Oct. 2, 1987, abandoned. This application Mar. 22, 1993, Ser. No. 35,491

Claims priority, application France, Oct. 2, 1986, 86 13726

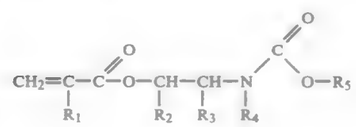
Int. Cl.[5] C08F *2/50, 226/00, 226/06*

U.S. Cl. 522—96 **5 Claims**

1. Process for the production of coatings by radiation cross-linking, comprising:

(a) mixing a mixture consisting of: (i) between 30 and 80% by weight of a linear radiation cross-linkable oligomer or mixture of oligomers having two double bonds $>C{=}CH_2$ and a molecular weight between 600 and 10,000, which can be cured by the polymerization of the double bonds $>C{=}CH_2$, said oligomer being a member selected from the group consisting of polyester/acrylic

oligomers, epoxy/acrylic oligomers, polycarbonate/acrylic oligomers, and unsaturated urethane oligomers resulting from the reaction of a polyhydric alcohol with an unsaturated ester containing an active hydrogen via an aliphatic or aromatic polyisocyanate, said polyhydric alcohol being a member selected from the group consisting of hydroxylated polyepichlorohydrins, hydroxylated polybutadienes, hydroxytelechelic polycarbonates obtained by the phosgenation or the transesterification of aliphatic, alicyclic or aromatic diols or triols, polycaprolactones, hydroxytelechelic polyesters obtained by the reaction of a polyhydric alcohol with a polycarboxylic acid or anhydride thereof or ester thereof, polyether polyols obtained by the addition of ethylene oxide, propylene oxide or tetrahydrofuran with a polyhydric alcohol, polyether esters, and hydroxytelechelic polyurethanes, (ii) between about 70 and 20% by weight of a reactive diluent corresponding to the general formula (I)



in which

R_1 represents a hydrogen atom or a methyl group,

R_2 and R_3 represent a hydrogen atom, or an alkyl chain containing 1 to 4 carbon atoms, or alternatively, R_2 and R_3 form, with the carbon atoms to which they are attached, an alkylene ring containing 5 or 6 carbon atoms,

R_4 represents a hydrogen atom, or an alkyl chain containing 1 to 4 carbon atoms, or an optionally substituted phenyl group,

R_5 represents an isopropyl group,

or alternatively, R_4 and R_5 form, with the carbamate group to which they are attached, an oxazolidone ring, and (iii) a photoinitiator, whereby said oligomer, diluent and photoinitiator total 100% by weight of said mixture;

(b) applying said mixture to a support; and

(c) UV radiation crosslinking said applied mixture.

5,360,837

SEMICONDUCTOR DEVICE-ENCAPSULATING EPOXY RESIN COMPOSITION

Shiro Honda; Yasushi Sawamura; Masayuki Tanaka; Keiji Kayaba, and Toshihiro Teshiba, all of Aichi, Japan, assignors to Toray Industries, Inc., Japan

Continuation of Ser. No. 675,491, Mar. 26, 1991, abandoned. This application Dec. 11, 1992, Ser. No. 990,000

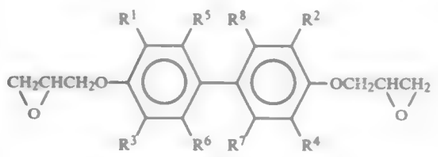
Claims priority, application Japan, Apr. 4, 1990, 2-90018; Jun. 18, 1990, 2-159231; Jun. 18, 1990, 2-159233; Nov. 30, 1990, 2-339721

Int. Cl.[5] C08K *7/08*

U.S. Cl. 523—220 7 Claims

1. A semiconductor device-encapsulating epoxy resin composition comprising

(i) an epoxy resin (A) containing as the essential component thereof a bifunctional epoxy resin (a 1) having a biphenyl skeleton, represented by the following formula (I):



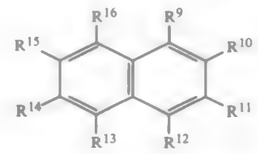
wherein R^1 through R^8 independently represent hydrogen atom, halogen atom or a lower alkyl group having 1 to 4 carbon atoms,

(ii) a curing agent, and

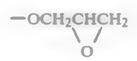
(iii) a filler containing a fused silica (C) consisting of 97 to 50 wt % of crushed fused silica (C1) of a mean particle diameter not more than 10 μm and 3 to 50 wt % of spherical fused silica (C2) of a mean particle diameter not more than 4 μm, wherein the mean particle diameter of the spherical fused silica is smaller than the mean particle diameter of the crushed fused silica, and the amount of the filler being 75 to 90 wt % to the total of the composition.

2. A semiconductor device-encapsulating epoxy resin composition comprising

(i) an epoxy resin (A) containing as the essential component thereof a bifunctional epoxy resin (a2) having a naphthalene skeleton, represented by the following formula (II):



wherein two of R^9 to R^{16} independently represent



and those remaining independently represent hydrogen atom, halogen atom or a lower alkyl group having 1 to 4 carbon atoms,

(ii) a curing agent, and

(iii) a filler containing a fused silica (C) consisting of 97 to 50 wt % of crushed fused silica (C1) of a mean particle diameter not more than 10 μm and 3 to 50 wt % of spherical fused silica (C2) of a mean particle diameter not more than 4 μm, wherein the mean particle diameter of the spherical fused silica is smaller than the mean particle diameter of the crushed fused silica, and the amount of the filler being 75 to 90 wt % to the total of the composition.

5,360,838

CATIONIC, CAPPED ADVANCED EPOXY RESIN COMPOSITIONS FROM GLYCIDYL ETHERS OF OXYALKYLATED AROMATIC OR CYCLOALIPHATIC DIOLS

Kenneth W. Anderson, and Richard A. Hickner, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 977,591, Nov. 17, 1992, Pat. No. 5,248,741, which is a continuation of Ser. No. 575,119, Aug. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 372,065, Jun. 27, 1989, abandoned, which is a division of Ser. No. 128,249, Dec. 3, 1987, Pat. No. 4,863,575. This application Jun. 14, 1993, Ser. No. 77,835

Int. Cl.[5] C08G *59/14;* C08K *3/20;* C08L *63/02*

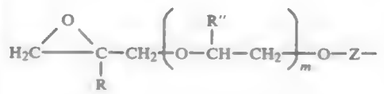
U.S. Cl. 523—404 42 Claims

1. A cationic, advanced epoxy resin having a charge density of from about 0.2 to about 0.9 milliequivalent of cationic charge per gram of resin prepared by reacting in the presence of a suitable catalyst

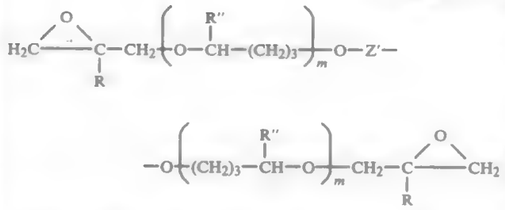
(A) a composition comprising

(1) at least one diglycidyl ether of (a) an oxyalkylated aromatic diol or (b) an oxyalkylated cycloaliphatic diol or (c) an oxyalkylated aliphatic diol represented by the following formulae III or IV:

FORMULA III

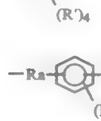


FORMULA IV



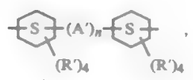
wherein each R is independently hydrogen or an alkyl group having from 1 to about 4 carbon atoms; R'' is hydrogen or an alkyl group having from 1 to 6 carbon atoms; each m is independently an integer from 1 to 25; and Z is a group represented by the following formulas A, B, C, D, E, F, G, H or I:

Formula A

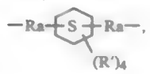


Formula II

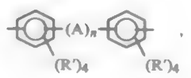
Formula C



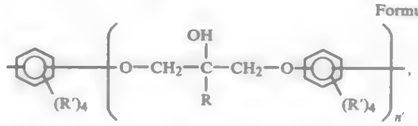
Formula D



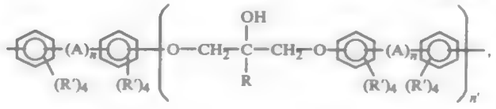
Formula E



Formula F



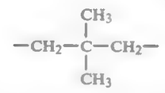
Formula G



or

-continued

Formula I



and Z' is represented by formulas A, B, C, D, E, F, G or I wherein A is a divalent hydrocarbon group having from 1 to 12 carbon atoms, —S—, —S—S—, —SO_2—, —SO—, —CO—, —O—CO—O—, or —O—; A' is a divalent hydrocarbon group having from 1 to about 6 carbon atoms; each R is independently hydrogen or a hydrocarbyl group having from 1 to 4 carbon atoms; each R' is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to 4 carbon atoms, or a halogen; R^a is a divalent hydrocarbon group having from 1 to about 6 carbon atoms; n has a value of zero or 1; n' has a value from zero to 10; and

(2) at least one diglycidyl ether of a dihydric phenol; with

(B) at least one dihydric phenol; and

(C) a capping agent;

wherein components (A-1) and (A-2) are employed in quantities such that from about 10 to about 75 weight percent of the diglycidyl ethers contained in component (A) are contributed by Component (A-1) and from 25 to about 90, weight percent of such glycidyl ethers are contributed by component (A-2) and components (A) and (B) are employed in such quantities that the resultant advanced epoxy resin has an average epoxide equivalent weight of from about 350 to about 10,000, whereby there is formed an advanced epoxy resin having terminal oxirane groups; and

subsequently converting the oxirane groups to cationic groups by reacting the resin with a nucleophile and adding an organic acid and water at at least one point in the process.

5,360,839

CATHODIC ELECTRODEPOSITION PAINT

Motoi Tanimoto; Tatsuo Yoshida, both of Suita; Kenshiro Tobinaga, Kawanishi, and Yuji Toyoda, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 13, 1993, Ser. No. 45,431

Claims priority, application Japan, Apr. 14, 1992, 4-120110

Int. Cl.[5] C08J *3/20;* C08K *3/20;* C08L *63/00*

U.S. Cl. 523—414 12 Claims

1. A cathodic electrodeposition paint comprising an aqueous dispersion of a primary cationic film-forming resin and 1 to 30% by weight of the total resin content of the entire paint of an auxiliary amine-modified acrylic resin in the form of an aqueous emulsion, wherein said amine-modified acrylic resin is a reaction product produced by reacting a secondary amine and an oxirane ring-containing acrylic copolymer to open the oxirane ring with said amine, and wherein the acrylic copolymer has a number average molecular weight from 1,000 to 20,000 and is produced by copolymerizing a monomeric mixture comprising (a) t-butyl acrylate or methacrylate in a proportion sufficient to provide a glass transition temperature in the acrylic copolymer of at least 50° C., (b) a hydroxyl group-containing acrylic monomer in a proportion sufficient to provide a hydroxyl number in the acrylic copolymer of greater than 40, and (c) an oxirane ring-containing acrylic monomer in a proportion sufficient to provide an oxirane ring content in the acrylic copolymer of from 0.5 to 2.5 mmol/g.

5,360,840

EPOXY RESIN COMPOSITIONS WITH IMPROVED STORAGE STABILITY

Anita N. Chan; Brian J. Swetlin; Samuel A. Thompson, III, all of Wilmington, Del.; Chester R. Willis, Kennett Square, Pa., and Andrew B. Woodside, Pickerington, Ohio, assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 29, 1992, Ser. No. 997,803

Int. Cl.[5] C08G *59/50;* **C08L** *63/00, 77/10;* **C08K** *3/20, 3/34, 3/36, 3/40*

U.S. Cl. 523—428 **18 Claims**

1. A composition comprising a mixture of

(1) at least one polyepoxide having an average of more than one epoxide group per molecule selected from the group consisting of polyglycidyl ethers and polyglycidyl amines and

(2) from about 10 to about 100 parts per 100 parts polyepoxide of at least one crystalline aromatic diamine curing agent that is reactive with the polyepoxide and is selected from the group consisting of 3,7-diaminodibenzothiophene-5,5-dioxide; 3,7-diaminophenothiazine sulfone; 3,7-diamino-N-methylphenothiazine sulfone: 2,7-diamino-9-fluorenone and 2,4,6,8-tetramethyl-3,7-diaminothioxanthene sulfone.

5,360,841

USE OF ETHYLENE OXIDE/PROPYLENE OXIDE BLOCK COPOLYMERS IN HYDRAULIC BINDER MATERIALS AND MATERIALS SO OBTAINED

Bernhard Knop, Monheim-Blee; Horst Tamm, Haan, and Gerhard Walter, Erkrath, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP90/00946, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO91/00253, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 15, 1990, Ser. No. 778,969

Claims priority, application Germany, Jun. 23, 1989, 3920662

Int. Cl.[5] C08K *3/00;* **G08G** *65/32;* **C08L** *71/02*

U.S. Cl. 524—4 **20 Claims**

1. Hydraulically setting powder-form mixtures, comprising ethylene oxide/propylene oxide block copolymers formed by addition of ethylene oxide onto polypropylene glycol and having a content of 5 to 35% by weight, based on the total weight of the block copolymers, of ethyleneoxy groups and a number average molecular weight of the polypropylene glycol of 1,500 to 3,000, said block copolymers being present in a sufficient amount to reduce dust emission from the powder-form mixtures.

5,360,842

NON-ASBESTOS FRICTION MATERIAL

Katsuji Seki, Washinomiya, and Truong V. Hung, Hanyu, both of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Hanyu, both of Japan

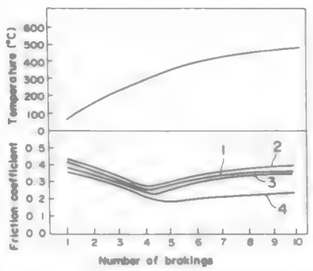
Continuation of Ser. No. 784,583, Oct. 29, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 559

Claims priority, application Japan, Dec. 27, 1990, 2-418883

Int. Cl.[5] C08K *11/00, 3/26, 3/34;* **C08J** *5/14*

U.S. Cl. 524—15 **6 Claims**

1. A non-asbestos friction material, comprising an effective amount of a composite friction dust to result in high-temperature wear-resistance and reduced fading, wherein said composite friction dust is prepared by mixing 5 to 95% by weight of one or more inorganic compounds with 5 to 95% by weight of a polymerization product of cashew nut shell oil, adding an effective amount of a curing agent to the mixture and then curing by heating the mixed product, and then pulverizing the cured product to a desired particle size, and wherein said one or more inorganic compounds are selected from the group consisting of stratified vermiculite, fibrous ceramic wool and calcium carbonate whiskers; and further wherein said compos-



ite dust comprises 3 to 30% by weight of total formulating ingredients.

5,360,843

CELLULOSE ACETOACETATES

Kevin J. Edgar, and William W. Blount, Jr., both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 109,205, Aug. 19, 1993, Pat. No. 5,292,877, which is a continuation of Ser. No. 742,821, Aug. 9, 1991, abandoned. This application Dec. 2, 1993, Ser. No. 160,989

Int. Cl.[5] C08L *1/12;* **C09J** *4/00, 101/00;* **B05D** *3/02*

U.S. Cl. 524—41 **18 Claims**

1. A coating composition comprising:

(A) about 0.5 to about 50 percent, based on the weight of the total coating composition, of a water soluble cellulose acetoacetate having a DS/AGU of 0.01 to about 1.9,

(B) about 25 to about 95 percent, based on the weight of the total coating composition, of water, and

(C) about 0 to about 40 percent, based on the weight of the cellulose acetoacetate, of a crosslinking agent.

5,360,844

ARTICLES MANUFACTURED WITH A COMPOSITION CONTAINING A POLYMER OF UNSATURATED HYDROCARBON, A C_{1-4} ALKYL OR HYDROXYALKYLETHER OF STARCH AND A VINYL OR ACRYL POLYMER AS A COMPATIBILIZING AGENT

Rita M. Delrue, Bergen of Zoom; Anton L. German, Eindhoven; Henricus E. H. Meijer, Veldhoven; Antonius H. Zijderveld, Vaassen, and Jan Bussink, Bergen of Zoom, all of Netherlands, assignors to Cargill, Incorporated, Minneapolis, Minn.

Division of Ser. No. 89,719, Jul. 9, 1993, Pat. No. 5,296,526, which is a division of Ser. No. 744,943, Aug. 14, 1991, Pat. No. 5,234,978. This application Jan. 7, 1994, Ser. No. 178,910

Claims priority, application Netherlands, Aug. 15, 1990, 9001826

Int. Cl.[5] C08L *3/08*

U.S. Cl. 524—50 **2 Claims**

1. Articles produced from a composition containing a polymer of an unsaturated hydrocarbon, a C_{1-4} alkyl or hydroxyalkyl ether of starch having a degree of substitution of at least 0.25 and a compatibilizing agent selected from the group consisting of copolymers of ethylene-vinyl acetate, ethylene-acrylic acid, and terpolymers of ethylene-vinyl acetate-(meth)acrylic acid, wherein the composition also contains a polyhydric aliphatic alcohol having 2–10 carbon atoms and 2–6 hydroxyl groups as a dispersant/plasticizer/lubricant for the starch ether.

5,360,845

STARCH ESTER BASED HOT MELT ADHESIVE

Robert J. Billmers, Stockton; Charles W. Paul, Madison; Stephen F. Hatfield, Somerville, all of N.J., and Thomas F. Kauffman, Easton, Pa., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 995,493, Dec. 23, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,023

Int. Cl.[5] C08L *3/06*

U.S. Cl. 524—51 **36 Claims**

1. A hot melt adhesive composition comprising from about 10 to 80% by weight of a starch ester having from about 2 to 18 carbon atoms in the ester component and a degree of substitution (DS) of from about 0.3 to 3.0, and a diluent which is a non-volatile, polar organic material that is compatible with the starch ester and is present in sufficient amount to allow the composition to melt at an application temperature of 400° F. or less and have a viscosity of 50,000 cPs or less at that temperature.

5,360,846

Patent Not Issued For This Number

5,360,847

DISSIPATIVE CURING AND COATING COMPOSITION FOR CONCRETE

Dennis R. Dewacker, Belle Mead; Leon Rosenberg, Bridgewater, and Nicholas J. Lacamera, Jr., Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corp., Wilmington, Del.

Filed Jan. 19, 1993, Ser. No. 4,880

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—56 **2 Claims**

1. A method for coating and curing concrete and, subsequently, removing the coating that comprises the steps of

(a) preparing a coating composition that comprises by weight of coating solids 95–60% of an acrylic copolymer or a styrene copolymer latex and 5–40% of a polysaccharide in water;

(b) coating the composition onto the surface of concrete and allowing it to form a film;

(c) allowing the concrete to cure;

(d) flooding the surface of the concrete after it has cured with water, waiting a sufficient time for the water to dissolve the coating film;

(e) removing the coating film from the concrete surface.

5,360,848

MODIFIED BITUMENS, PROCESSES FOR THEIR PREPARATION, THEIR USE AND SOLUBILIZING AGENTS FOR PLASTICIZED POLYVINYL BUTYRAL IN BITUMEN

Manfred Knechler, Oberursel, and Bernd Mucha, Neu-Anspach, both of Germany, assignors to Hoechst Aktiengesellschaft AG, Germany

Filed Aug. 4, 1993, Ser. No. 101,994

Claims priority, application Germany, Aug. 6, 1992, 4226000

Int. Cl.[5] C08L *95/00*

U.S. Cl. 524—59 **11 Claims**

1. A modified bitumen having improved elasticity properties and an improved low-temperature flexibility, comprising bitumen and a polymeric elasticizing component in homogeneous distribution, which comprises, as the elasticizing component, plasticized polyvinyl butyral (PVB) and, as the solubilizing agent for the latter, an amount, sufficient for solubilization, of a compound of the formula I or II

$$R^1O-(CH_2-[CH_2]_z-O)_x-R^2 \quad (I)$$

$$R^1O-(CH_2-[CH_2]_zO)_x-(CH_2-\underset{\displaystyle R}{CH}-O)_y-R^2 \quad (II)$$

in which in each case R^1 and R^2, which can be identical or different, are (C_1–C_4)-alkyl,

R is methyl or ethyl,

x is in each case a number from 1 to 5000,

y is a number from 0 to 500, with the proviso that at y values of >0, the value of x is 0 or $\geqq 4y$, and

z is a number from 1 to 8,

or mixtures of compounds of the formulae I and II, optionally in combination with polystyrene or a styrene copolymer as the solubilizing co-component.

5,360,849

MIXTURES OF BITUMEN AND POLYMER COMPOSITIONS SUITABLE FOR THE MODIFICATION OF BITUMENS

Vittorio Braga, Ferrara, and Carlo Giavarini, Rome, both of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Sep. 23, 1993, Ser. No. 125,948

Claims priority, application Italy, Sep. 24, 1992, MI92 A 002198

Int. Cl.[5] C08L *95/00, 23/12, 23/16*

U.S. Cl. 524—68 **12 Claims**

1. A mixture containing bitumen and a polymer composition, characterized in that the polymer composition consists essentially of

A) 10–40 parts by weight of an isotactic propylene homopolymer with an isotactic index greater than 80, or a random copolymer of propylene with ethylene or a C_4–C_{10} α-olefin having the formula CH_2=CHR, wherein R is an alkyl radical with 2–8 carbon atoms, or mixtures of ethylene and C_4–C_{10} α-olefin, said copolymer having a content of ethylene or C_4–C_{10} α-olefin or combinations thereof from 1 to 10% by weight, and an isotactic index in boiling n-heptane greater than 80;

B) 0–20 parts by weight of a copolymer fraction containing over 55 wt. % ethylene, insoluble in xylene at ambient temperature;

C) 50–80 parts by weight of a copolymer fraction of ethylene with propylene or C_4–C_{10} α-olefin having the formula C_2=CHR, wherein R is an alkyl radical with 2–8 carbon atoms, or mixtures thereof, and optionally a minor quantity of diene, said copolymer fraction being soluble in xylene at ambient temperature, having an intrinsic viscosity greater than 1.5 and up to 2.2 dl/g and having 20 to 45 wt. % ethylene.

5,360,850

ASYMMETRICAL BENZOTRIAZOLYLPHENOLS

Semyon Moshchitsky, Old Bride, N.J., and William E. Leistner, Atlantic Beach, N.Y., assignors to Fairmount Chemical Company, Inc., Newark, N.J.

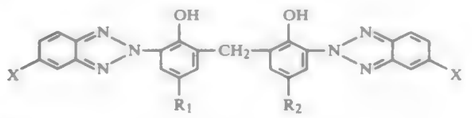
Division of Ser. No. 58,012, May 5, 1993, Pat. No. 5,292,890. This application Nov. 30, 1993, Ser. No. 159,376

Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—91 **11 Claims**

1. A stabilized polymer composition which comprises a polymeric compound and from about 0.1% to about 5% based on the weight of the polymeric composition of an asymmetri-

cal hydroxyphenyl benzotriazolylphenol compound having the formula:



wherein:

R_1 is C_1 to C_{18} alkyl, C_6 to C_{10} aryl, C_7 to C_{16} arylalkyl, C_1 to C_{12} alkoxy, C_6 to C_{10} aryloxy, C_7 to C_{16} arylalkoxy, cyclopentyl, cyclohexyl or cumyl;

R_2 is C_1 to C_{18} alkyl, C_6 to C_{10} aryl, C_7 to C_{16} arylalkyl, C_1 to C_{12} alkoxy, C_6 to C_{10} aryloxy, C_7 to C_{16} arylalkoxy, cyclopentyl, cyclohexyl or cumyl;

R_1 is different from R_2; and

X is selected from the group consisting of hydrogen, halogen, C_1 to C_{12} alkyl, and C_1 to C_{12} alkoxy.

5,360,851

AQUEOUS SILICONE/(CO)POLYMER DISPERSIONS CROSSLINKABLE INTO ELASTOMERIC STATE

Michel Feder, Illfurth; Jean-Pierre Jaubert, Saint-Brice-Sous-Foret, and Jean-Marie Pouchol, Lyons, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jun. 18, 1990, Ser. No. 541,301

Claims priority, application France, Jun. 29, 1989, 89 09004

Int. Cl.[5] C08K *5/42*

U.S. Cl. 524—157 **25 Claims**

1. An aqueous silicone dispersion crosslinkable into an elastomeric state on removal of water therefrom under ambient conditions, comprising (A) an oil-in-water base emulsion of an α,ω-(dihydroxy)polydiorganosiloxane stabilized with at least one anionic or nonionic surface-active agent, or mixture thereof, (B) an aqueous latex of an organic (co)polymer having a particle size ranging from 0.01 to 0.5 μm and a solids content ranging from 20% to 70% by weight, (C) an effective crosslinking amount of at least one crosslinking agent for reacting with the emulsion (A) to produce an elastomeric state, and (D) at least one nonsiliceous filler material in an amount effective for semi-reinforcement or packing, said aqueous dispersion having a solids content of at least 40% by weight.

5,360,852

SILICONE ADHESIVE AND ORGANIC ADHESIVE COMPOSITES

Frank J. Traver, Troy, and Duane F. Merrill, Ballston Spa, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 797,487, Nov. 22, 1991, abandoned, which is a division of Ser. No. 265,192, Oct. 31, 1988, Pat. No. 5,128,394, which is a continuation of Ser. No. 647,369, May 6, 1987, abandoned. This application May 18, 1993, Ser. No. 63,349

The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—268 **15 Claims**

1. A method for controlling the release properties of an organic pressure-sensitive adhesive comprising: adding to the adhesive an additive comprising

(i) a silicone pressure-sensitive adhesive,

(ii) a silicone cross-linking agent, and

(iii) a compatibilizing agent selected from the group consisting of an emulsifying agent compatible with both the silicone pressure-sensitive adhesive and the organic pressure-sensitive adhesive and a solvent capable of dissolving both the silicone pressure-sensitive adhesive and the organic pressure-sensitive adhesive.

5,360,853

POLYVINYL CHLORIDE-BASED RESIN COMPOSITION

Satoshi Nagata, Ibaraki, and Osamu Sodeyama, Chiba, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1992, Ser. No. 895,553

Claims priority, application Japan, Jun. 10, 1991, 3-164967

Int. Cl.[5] C08K *5/24*

U.S. Cl. 524—269 **8 Claims**

1. A polyvinyl chloride resin-based composition which comprises, as a uniform blend:

(a) 100 parts by weight of a polyvinyl chloride resin having an average degree of polymerization in the range from 500 to 2500;

(b) from 4 to 15 parts by weight of a graft copolymeric resin of acrylonitrile, butadiene and styrene or methyl methacrylate, butadiene and styrene, each containing from 40 to 80% by weight of the butadiene;

(c) from 2 to 5 parts by weight per 100 parts by weight of component (a) of styrene-butadiene copolymeric rubber having a linear block molecular structure of styrene-butadiene-styrene, of which the weight ratio of the styrene moiety to the butadiene moiety is in the range from 30:70 to 60:40;

(d) from 1 to 10 parts by weight of a copolymeric resin of acrylonitrile and styrene, the amount of acrylonitrile being from 10 to 30% by weight; and

(e) from 0.1 to 10 parts by weight of a polydimethylsiloxane of which from 30 to 80% by moles of the methyl groups are replaced with alkyl groups having 4 to 16 carbon atoms or 2-phenylpropyl groups.

5,360,854

HOT MELT PRESSURE SENSITIVE ADHESIVE COMPOSITION AND APPLICATIONS

Frank A. Bozich, Jr., Elmhurst, Ill., assignor to Adhesive Technology, Inc., Itasca, Ill.

Continuation of Ser. No. 711,371, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 518,102, May 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 279,837, Dec. 5, 1988, abandoned. This application May 17, 1993, Ser. No. 63,364

Int. Cl.[5] C08L *25/10*

U.S. Cl. 524—274 **8 Claims**

1. A hot melt pressure sensitive adhesive composition consisting essentially of:

(a) from about 15% to about 30% by weight of an A-B-A block or A-B-A-B-A-B-multi-block copolymer, wherein polymer blocks A are styrene blocks and polymer blocks B arc butadiene or hydrogenated butadiene and wherein said polymer block A comprises from about 35 to about 55 parts per 100 parts of said copolymer and said polymer blocks B comprise from about 65 to about 45 parts per 100 parts of said copolymer;

(b) from about 70% to about 85% by weight of one or more compatible tackifying resins having a composite Ring and Ball softening point between about 25° C. to about 50° C.; and

(c) from about 0.1% to about 1.5% by weight of a stabilizer of the anti-oxidant type.

5,360,855

BLOCK POLYMERS AND OIL-CONTAMINATION TOLERANT ADHESIVE COMPOSITIONS

Ramsis Gobran, Roseville, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 885,279, May 18, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 80,691

Int. Cl.[5] C09J *11/08, 153/02*

U.S. Cl. 524—274 **28 Claims**

1. An oil-tolerant pressure-sensitive adhesive composition comprising:

100 parts of an AB type block copolymer elastomeric phase wherein the AB type block copolymer comprises $(A\text{-}B)_n$-X, X-$(A\text{-}B)_n$-A or B-$(A\text{-}B)_n$-X, where n is 1 to 30 and X is an optional coupling agent and with about 10 to about 40 weight percent of an A block portion, comprising block portions predominately, of vinylarene, and about 60 to about 90 weight percent of a B block portion comprised



predominately of 2-alkyl substituted 1,3-butadiene wherein the B block portion has a Tg lower than about minus 65° C.; and

30 to 300 parts of at least one tackifying material at least partially compatible with the 2-alkyl substituted 1,3-butadiene B block portion, wherein said adhesive functionally adheres to surfaces free of oil and surfaces having up to 0.1 mg oil per cm^2.

5,360,856

DISPERSANT POLYMERS

Rodney M. Harris, Chicago; Maqsood S. Ahmed, Homewood, and Thomas A. Renner, Lansing, all of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 28,039, Mar. 8, 1993, Pat. No. 5,288,828. This application Feb. 18, 1994, Ser. No. 198,249

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—315 **5 Claims**

1. A pigment dispersion suitable for dispersing pigments in a film-forming polymer containing composition, wherein the pigment dispersion comprises:

(i) 1 to about 80% by weight pigment;

(ii) 10 to about 60% of a hydroxy-functional polymeric dispersant which is substantially free of acid groups, amine groups and ethylenic unsaturation; and

(iii) the remainder being a liquid carrier;

wherein the dispersant is the free radical addition polymerization reaction product of a mixture of monomers consisting essentially of:

(a) 15–30% by weight styrene; and

(b) 15–30% by weight of at least one alkyl methacrylate monomer having 1 to 16 carbon atoms in the alkyl group; and

(c) 20–60% by weight of at least one alkyl acrylate monomer having 1 to 16 carbon atoms in the alkyl group; and

(d) 7–25% by weight of at least one hydroxy-functional ethylenically unsaturated monomer copolymerizable with monomers (a) (b) and (c);

wherein said polymeric dispersant has a weight average molecular weight of 18,000 to 24,000, a number average molecular weight of 4,500 to 7,400, and a polydispersity of 2.9 to 4.2.

5,360,857

POLYMER SCALE PREVENTIVE AGENT FROM NAPHTHOQUINONE DYE

Hajime Kitamura, Ichihara; Susumu Ueno, Hazaki; Mikio Watanabe, Kamisu; Masahiro Usuki, Kamisu, and Toshihiko Nakano, Kamisu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 750,619, Aug. 27, 1991, abandoned. This application Mar. 17, 1993, Ser. No. 32,692

Claims priority, application Japan, Aug. 28, 1990, 2-225525; Aug. 28, 1990, 2-225526; Aug. 28, 1990, 2-225527

Int. Cl.[5] C08K *5/07*

U.S. Cl. 524—324 **7 Claims**

1. A polymer scale preventive agent for use in polymerization of vinyl chloride monomer or a monomer mixture containing vinyl chloride monomer as a major component, comprising:

(A) a naphthoquinone natural dye selected from the group consisting of naphthazarines and

(B) a polyvinyl alcohol with a saponification degree of at least 50 mol % wherein the component (B) essentially consists of (B-1) a polyvinyl alcohol with a saponification degree of at least 95 mol % and (B-2) a polyvinyl alcohol with a saponification degree of at least 70 mol % but not more than 95 mol %, wherein the weight ratio of component (B-1)/component (B-2) is in the range of 1/50 to 50/1.

5,360,858

SILICONE RUBBER ADHESIVE COMPOSITIONS

Hironao Fujiki; Kaoru Michimata, both of Takasaki, Japan; Atsushi Yaginuma, Torrance, Calif.; Nobuyuki Hasebe, and Clara Y. Kim, both of La Mirada, Calif., assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan and Shin-Etsu Technical Services, Inc., Torrance, Calif.

Continuation of Ser. No. 822,654, Jan. 21, 1992, abandoned. This application Nov. 29, 1993, Ser. No. 158,366

Int. Cl.[5] C08G *77/08;* **C08K** *3/10*

U.S. Cl. 524—434 **14 Claims**

1. A silicone rubber adhesive composition comprising:

(A) 100 parts by weight of a diorganopolysiloxane containing at least two alkenyl groups in its molecule,

(B) a diorganohydrogenpolysiloxane having at least two hydrogen atoms directly attached to silicon atoms in its molecule and a viscosity of about 5 to about 5,000 centistokes at 25° C., in an amount such that silicon bonded hydrogen atoms are present at about 0.4 to about 4.0 equivalents per alkenyl group in component (A),

(C) about 0.1 to about 20 parts by weight per 100 parts by weight of component (A) of a compound containing in its molecule a group represented by $(RO)_3Si$— or $H(RO)_2Si$— wherein R is selected from the group consisting of methyl, ethyl, trifluoroethyl, hexafluoropropyl, and methoxyethyl groups,

(D) a catalytic amount of a platinum catalyst, and

(E) about 0.001 to about 1 part by weight per 100 parts by weight of component (A) of a divalent organic tin compound, said composition being cured at a temperature of from about 60° C. to about 120° C. for about 60 to about 180 minutes.

5,360,859

LITHIUM ALUMINUM COMPLEX HYDROXIDE SALT STABILIZER FOR RESINS

Masahide Ogawa, Shibata; Kunio Goto, Tsuruoka; Shoji Shoji, Tsuruoka; Yoshinobu Komatsu, Tsuruoka, and Akira Tatebe, Tsuruoka, all of Japan, assignors to Mizusawa Industrial Chemicals, Lt.d, Tokyo, Japan

Division of Ser. No. 994,955, Dec. 22, 1992. This application Jan. 27, 1994, Ser. No. 186,913

Claims priority, application Japan, Dec. 27, 1991, 3-358208

Int. Cl.[5] C08K *3/10, 5/09*

U.S. Cl. 524—437 4 Claims

1. A stabilized chlorine-containing polymer composition comprising a chlorine-containing polymer and 0.01 to 10 parts by weight, per 100 parts by weight of the chlorine-containing polymer, of a lithium aluminum complex hydroxide salt represented by the following formula

$$[Al_2Li(OH)_6]_nX.mH_2O \quad (1)$$

wherein X is an inorganic or organic anion, n is a valence number of anion X, and m is a number of not more than 3.

4. An olefin resin composition comprising an olefin resin containing halogen-containing catalyst residues and 0.01 to 10 parts by weight, per 100 parts by weight of the olefin resin, of a lithium aluminum complex hydroxide salt represented by the following formula

$$[Al_2Li(OH)_6]_nX.mH_2O \quad (1)$$

wherein X is an inorganic or organic anion, n is a valence number of anion X, and m is a number of not more than 3.

5,360,860

WATER-SOLUBLE RESIN EMULSION AND PROCESS FOR PREPARATION THEREOF

Hiroshi Itoh; Naoki Isobe, and Tadashi Asazuma, all of Utsunomiya, Japan, assignors to Oji Kako Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 661,497, Feb. 26, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 908,516

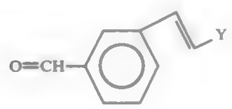
Claims priority, application Japan, Feb. 28, 1990, 2-45751

Int. Cl.[5] C08F *2/16*

U.S. Cl. 524—460 8 Claims

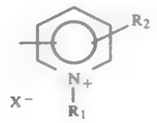
1. A water-soluble resin emulsion comprising at least two incompatible water-soluble polymers, wherein at least one of said water-soluble polymers has a thiol group or a reactive unsaturated group derived from a compound selected from the group consisting of acrylic acid, methacrylic acid, N-methylolacrylamide, N-methylolmethacrylamide, and compounds represented by the following formula (I),

(I)



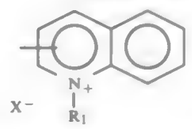
in which Y is represented by the following formulae (II) or (III):

(II)



-continued

(III)



in which R_1 represents a member selected from a hydrogen atom, an alkyl group, aralkyl group, and alkyl and aralkyl groups having a hydroxyl group, a carbamoyl group, an ether group or an unsaturated bond, R_2 represents a member selected from a hydrogen atom and a lower alkyl group, and X^- represents an anion, and wherein said incompatible water-soluble polymers are stably compatibilized with each other by emulsion-polymerizing a compound having at least one reactive unsaturated group in the presence of said incompatible water-soluble polymers as protecting colloid.

5,360,861

POLYESTER-CARBONATE RESIN COMPOSITIONS OF IMPROVED IMPACT-RESISTANCE

Richard W. Campbell, Reinholds, Pa., assignor to General Electric Company, Pittsfield, Mass.

Filed May 28, 1993, Ser. No. 69,908

Int. Cl.[5] C08K *5/04*

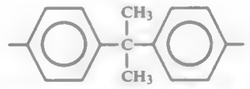
U.S. Cl. 524—494 9 Claims

1. A thermoplastic molding composition which consists essentially of;

(A) a thermoplastic polyester-carbonate resin having recurring carbonate chain units of the formula:



wherein D is a divalent aromatic radical of the formula:



interrupted by recurring carboxylic chain units of the formula:

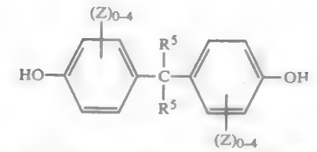
$$-O-R^1-O-D$$

wherein D is as defined above and R^1 is a divalent alkylene radical having 2 to 16 carbon atoms, inclusive;

the proportion of carbonate chain units to carboxylic chain units being within the range of from 10 to 95 mole percent;

(B) from about 0.01 to 20 percent by weight of the composition of a fibrous glass reinforcing agent;

(C) an impact-modifying proportion of an impact-modifier selected from the group consisting of a methacrylate-butadiene-styrene copolymer, a linear low density polyethylene resin, an ethylene-ethyl acrylate copolymer, and a polysiloxane-polycarbonate block copolymer, prepared by reacting (1) a halogen chain-stopped polydiorganosiloxane composed of from about 5 to 200 chemically combined dialkylsiloxy units consisting essentially of diorganosiloxy units which are connected to each other by silicon-oxygen-silicon linkages wherein each of the silicon atoms has two organo radicals attached through a carbon-silicon bond, and (2) a dihydric phenol having the formula:



where Z is a member selected from the class consisting of hydrogen, lower alkyl radicals and halogen radicals and combinations thereof, and R^5 is a member selected from the class consisting of hydrogen, hydrocarbon and halogenated hydrocarbon radicals; and phosgenating the reaction product until the resulting copolymer achieves a maximum intrinsic viscosity; and

(D) a fire-retarding proportion of a fire-retardant.

5,360,862

HIGH CLARITY EMULSIONS CONTAINING HIGH MELT VISCOSITY MALEATED POLYPROPYLENE WAX

Thomas D. Roberts; Thomas W. Smith, both of Longview, Tex., and Charlene A. Galvin, Piney Flats, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Division of Ser. No. 929,934, Aug. 13, 1992, Pat. No. 5,290,954. This application Jan. 21, 1994, Ser. No. 185,096

Int. Cl.[5] C09G *1/10;* B32B *27/30;* C07D *307/60*

U.S. Cl. 524—560 20 Claims

1. A composition comprising a maleated polypropylene wax having a melt viscosity of at least 1000 cP at 190° C., wherein said maleated polypropylene wax has an emulsion light transmittance of at least 10% at 525 nm with a 20 mm light pathlength.

12. An article of manufacture comprising a substrate coated with a 0.1 to 1 mm coating containing the maleated polypropylene wax having of claim 1.

15. An emulsion composition comprising about 10 to 30 wt % of a maleated polypropylene wax having a melt viscosity of at least 2000 cP at 190° C., a minor amount up to about 15 wt % surfactant, and about 60 to 90 wt % water wherein the emulsion has a light transmittance of at least 10% at 525 nm with a 20 mm light pathlength.

5,360,863

RADIATION CURABLE COMPOSITIONS AND THEIR USE

Jürgen Meixner, Krefeld; Wolfgang Fischer, Meerbusch, and Pramod Gupta, Bedburg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 2, 1993, Ser. No. 101,518

Claims priority, application Germany, Aug. 11, 1992, 4226520

Int. Cl.[5] C08L *67/06*

U.S. Cl. 525—28 4 Claims

1. A composition which may be cured by radical polymerization at room temperature and comprises

A) 30 to 80 parts by weight of an unsaturated polyester component consisting essentially of one or more α,β-ethylenically unsaturated polyesters which are the reaction products of

a) an acid component consisting essentially of

i) 40 to 100 carboxyl equivalent % of one or more α,β-ethylenically unsaturated dicarboxylic acids and/or their anhydrides and

ii) 0 to 60 carboxyl equivalent % of one or more dicarboxylic acids and/or their anhydrides other than those set forth in i) with

b) an alcohol component containing

i) 25 to 100 hydroxyl equivalent % of one or more alkoxylated 2-butene-1,4-diols having an average molecular weight 130 to 400 and

ii) 0 to 75 hydroxyl equivalent % of one or more mono- or polyhydric alcohols having a molecular weight of 32 to 400 other than those set forth in i), wherein the amounts of a) and b) are chosen such that the equivalent ratio of carboxyl groups to hydroxyl groups is no more than 1:1,

B) 20 to 70 parts by weight of compounds containing (meth-)acryloyl groups and/or vinyl ether groups,

wherein the sum of the parts by weight of A) and B) is 100, based on the weight of components A) and B).

5,360,864

PROCESS FOR PREPARATION OF PHOTOSENSITIVE COMPOSITION

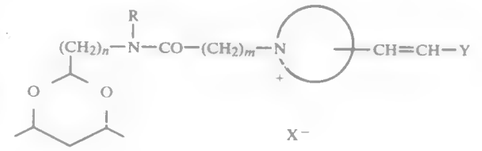
John Curtis, Princeton, N.J., assignor to Ulano Corporation, Brooklyn, N.Y.

Division of Ser. No. 878,239, May 4, 1992, Pat. No. 5,326,669. This application Apr. 8, 1993, Ser. No. 44,055

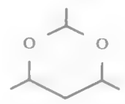
Int. Cl.[5] C08F *8/00;* G03C *1/68*

U.S. Cl. 525—61 9 Claims

1. A process for preparing a compound having the polymer composition of the structure



wherein



is a polyvinyl acetal,

n is an integer from 1 to 6,

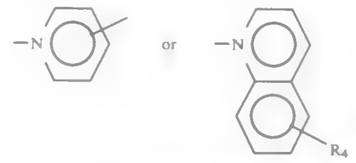
R is hydrogen or alkyl,

m is an integer from 1 to 6,

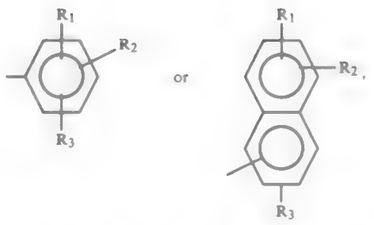
X is an anion,



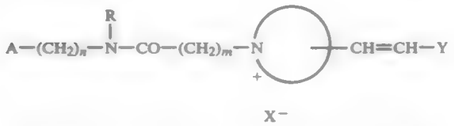
is a divalent radical having the structure



Y is a monovalent radical having the structure



wherein R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkenyl, alkoxy, aralkyl, substituted alkyl, substituted alkoxy, carboxy, carboxy ester, amino, substituted amino, amido, substituted amid, cyano, hydroxy, nitro, isocyanato, sulphonyl halide, sulphonic acid and halide, and may be the same or different, or R_1 taken together with R_2 is methylenedioxy, which process comprises heating under acidic conditions a polyvinyl alcohol and a compound of the structure



wherein A is a formyl or acetal group and n, R, m, X, Y and —N are as previously set forth.

5,360,865

GRAFTED IMPACT MODIFIERS OF C_6–C_{10} ALKYLRYLATE RUBBER FOR POLYCARBONATE

Taizo Aoyama, Takasago; Norio Nagata, Kakogawa; Kenzi Hosokawa, Takasago, and Hideki Hosoi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 765,343, Sep. 25, 1991, abandoned. This application Aug. 13, 1993, Ser. No. 106,195

Claims priority, application Japan, Sep. 26, 1990, 2-258599

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **5 Claims**

1. A resin composition comprising:

(A) 50 to 99% by weight of a polycarbonate resin and

(B) 50 to 1% by weight of a graft-copolymer;

said graft-copolymer (B) consisting of:

(1) 50 to 85 parts by weight of a rubber polymer and

(2) 50 to 15 parts by weight of a monomer mixture, the total amount of the components (1) and (2) being 100 parts by weight,

said rubber polymer (1) being prepared from and consisting of

(i) 60 to 100% by weight of an alkyl acrylate having a C_6 to C_{10} alkyl group,

(ii) 40 to 0% by weight of a copolymerizable monomer therewith, said copolymerizable monomer being at least one member selected from the group consisting of an alkyl acrylate having an alkyl group with 5 or less carbon atoms or 11 or more carbon atoms, an acrylic acid ester other than alkyl acrylates, acrylic acid, a metal salt of acrylic acid, acrylamide, an N-substituted acrylamide, an alkyl methacrylate, methacrylic acid, a metal salt of methacrylic acid, methacrylamide, an N-substituted methacrylamide, acrylonitrile, methacrylonitrile, a vinyl ether compound, a vinyl ester compound, a halogenated vinyl compound, a halogenated vinylidene compound, 1,3-butadiene and isopropene, and

(iii) 0.01 to 3 parts by mole, based on 100 parts by mole of the total of the components (i) and (ii), of a graft-linking monomer having at least two functional groups, at least one of which has a different reactivity from that of the other in the absence of a crosslinking agent having at least two functional groups of the same reactivity, and

said monomer mixture (2) comprising:

(a) 40 to 100% by weight of an alkyl methacrylate having a C_1 to C_6 alkyl group,

(b) 0 to 60% by weight of at least one monomer selected from the group consisting of an aromatic vinyl compound, an alkyl acrylate having a C_1 to C_8 alkyl group and an unsaturated nitrile compound, and

(c) 0 to 30% by weight of a copolymerizable monomer with them;

said graft-copolymer (B) being prepared by graft-polymerizing said monomer mixture (2) onto said rubber polymer (1).

5,360,866

THERMOPLASTIC POLYPHENYLENE ETHER RESIN COMPOSITION

Yusuke Arashiro; Michiharu Kihara; Haruo Ohmura, and Fumiyoshi Yamada, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

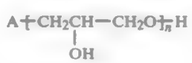
Division of Ser. No. 732,004, Jul. 18, 1991, Pat. No. 5,244,983. This application Apr. 20, 1993, Ser. No. 49,599

Claims priority, application Japan, Jul. 20, 1990, 2-190433; Jul. 20, 1990, 2-190434; Sep. 17, 1990, 2-268289; Oct. 18, 1990, 2-277706

Int. Cl.[5] C08F *255/02;* **C08L** *71/12*

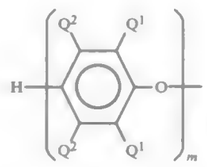
U.S. Cl. 525—68 **3 Claims**

1. A thermoplastic resin composition comprising (A) from about 10 to about 90% by weight of a hydroxyalkylated polyphenylene ether represented by formula (I):



(I)

wherein n represents an integer of from 1 to 10 and A is represented by formula (III):



(III)

wherein Q^1 represents a halogen atom, a primary or secondary alkyl group, a phenyl group, an aminoalkyl group, a hydrocarbon oxy group, or a halo-hydrocarbon oxy group; Q^2 represents a hydrogen atom, a halogen atom, a primary or secondary alkyl group, a phenyl group, a haloalkyl group., a hydrocarbon oxy group, or a halo-hydrocarbon oxy group; and m represents an integer of 10 or greater; and (B) from about 10 to about 90% by weight of an olefin resin selected from the group consisting of a carboxyl-containing olefin resin and an epoxy-containing olefin resin.

5,360,867

PROCESS FOR PREPARING BLOCK OR GRAFT COPOLYMERS USING AMINO OR HYDRAZINO PEROXIDES

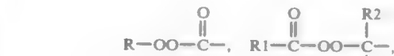
Jose Sanchez, Grand Island, N.Y., assignor to ELF Atochem North America, Inc., Philadelphia, Pa.

Division of Ser. No. 565,822, Aug. 10, 1990, Pat. No. 5,272,219, which is a division of Ser. No. 233,643, Aug. 18, 1988, Pat. No. 4,956,416. This application Dec. 17, 1993, Ser. No. 169,808

Int. Cl.[5] C08L *51/00, 53/00;* **C08F** *2/00*

U.S. Cl. 525—70 **3 Claims**

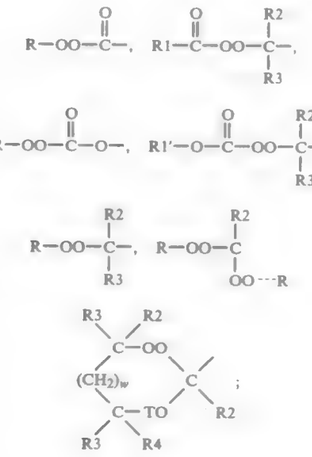
1. A process for preparing a block or graft copolymer by reacting, under conditions effective to form the block or graft copolymer, a polymer or monomer used to form the block or graft copolymer with a polymeric peroxide of Structure A1:



A1

where x is 0 or 1;

P is a peroxide-containing mono-radical having a structure:



where

w is 1 or 2;

R is a substituted or unsubstituted t-alkyl radical of 4 to 12 carbons, a substituted or unsubstituted t-aralkyl radical of 9 to 13 carbons, a t-cycloalkyl radical of 5 to 12 carbons or a substituted or unsubstituted t-alkynyl radical of 5 to 10 carbons;

R1 is a substituted or unsubstituted, branched or unbranched, alkyl radical of 1 to 13 carbons, a substituted or unsubstituted cycloalkyl radical of 5 to 10 carbons, a substituted or unsubstituted, branched or unbranched, aralkyl radical of 7 to 11 carbons or a substituted or unsubstituted aryl radical of 6 to 10 carbons;

R1′ is a substituted or unsubstituted, branched or unbranched, alkyl radical of 1 to 13 carbons, a substituted or unsubstituted cycloalkyl radical of 5 to 10 carbons or a substituted or unsubstituted, branched or unbranched, aralkyl radical of 7 to 11 carbons;

R2 and R3 are the same or different and are substituted or unsubstituted alkyl radicals of 1 to 4 carbons;

the substituents for R, R1, R1′, R2 and R3 being alkyl radicals of 1 to 4 carbons, chloro or bromo;

R4 is hydrogen, a substituted or unsubstituted alkyl radical of 1 to 10 carbons or a substituted or unsubstituted aryl radical of 6 to 10 carbons, the R4 substituents being one or more alkyl radicals of 1 to 8 carbons, chloro, bromo or carboxy;

T is nothing or —O—;

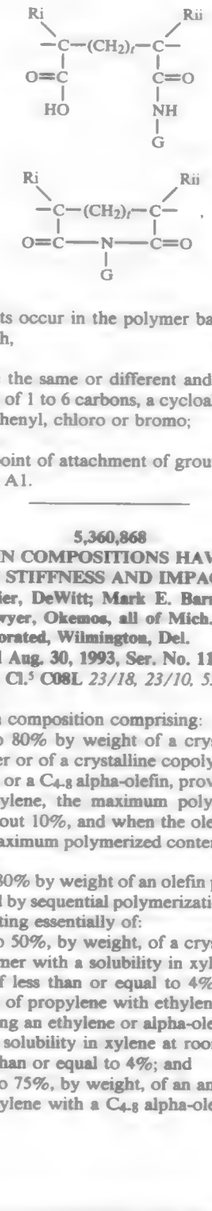
R11 is a substituted or unsubstituted alkylene diradical of 2 to 8 carbons or a substituted or unsubstituted 1, 2-, 1,3- or 1,4-phenylene diradical, the R11 substituents being alkyl radicals of 1 to 4 carbons, chloro or bromo;

X is nothing,



R22 is nothing, a substituted or unsubstituted alkylene diradical of 2 to 10 carbons or a substituted or unsubstituted 1,2-, 1,3- or 1,4-phenylene diradical, the R22 substituents being alkyl radicals of 1 to 3 carbons, chloro or bromo; and

Q is a recurring unit in an addition polymer of ethylenic monomers having a structure



in which the units occur in the polymer backbone or as pendant units or both,

where

Ri and Rii are the same or different and are hydrogen, an alkyl radical of 1 to 6 carbons, a cycloalkyl radical of 5 to 7 carbons, phenyl, chloro or bromo;

t is 0 or 1; and

G shows the point of attachment of group Q to the residue of Structure A1.

5,360,868

POLYOLEFIN COMPOSITIONS HAVING A HIGH BALANCE OF STIFFNESS AND IMPACT STRENGTH

Douglas D. Mosier, DeWitt; Mark E. Barrera, Lansing, and Stephen M. Dwyer, Okemos, all of Mich., assignors to HIMONT Incorporated, Wilmington, Del.

Filed Aug. 30, 1993, Ser. No. 113,939

Int. Cl.[5] C08L *23/18, 23/10, 53/00*

U.S. Cl. 525—89 **15 Claims**

1. A polyolefin composition comprising:

(A) from 10 to 80% by weight of a crystalline propylene homopolymer or of a crystalline copolymer of propylene and ethylene or a C_{4-8} alpha-olefin, provide that when the olefin is ethylene, the maximum polymerized ethylene content is about 10%, and when the olefin is a C_{4-8} alpha olefin, the maximum polymerized content thereof is about 20%, and

(B) from 10 to 80% by weight of an olefin polymer composition prepared by sequential polymerization in two or more stages consisting essentially of:

(i) from 25 to 50%, by weight, of a crystalline propylene homopolymer with a solubility in xylene at room temperature of less than or equal to 4%, or a crystalline copolymer of propylene with ethylene or a C_{4-8} alpha-olefin having an ethylene or alpha-olefin content 0.5 to 3%, and a solubility in xylene at room temperature of from less than or equal to 4%; and

(ii) from 50 to 75%, by weight, of an amorphous copolymer of ethylene with a C_{4-8} alpha-olefin, wherein said

alpha-olefin content is from 10 to 20%, and said copolymer is from 10 to 40% soluble in xylene at room temperature; and optionally,

(C) from 10 to 80% by weight of a propylene polymer composition prepared by sequential polymerization in two or more stages selected from the group consisting of:

(1) a propylene polymer material consisting essentially of:

(a) from 10 to 60%, by weight of a crystalline homopolymer polypropylene with isotactic index greater than 90, or of a crystalline propylene copolymer with ethylene, with a CH_2=CHR olefin where R is a 2-6 carbon alkyl radical, or combinations thereof, containing over 85% by weight of propylene and having an isotactic index greater than 85;

(b) from 8 to 40%, by weight, of a semi-crystalline, essentially linear copolymer fraction containing ethylene and propylene, having an ethylene content of greater than 40%, and insoluble in xylene at room temperature; and

(c) from 30 to 60%, by weight, of an amorphous ethylene-propylene copolymer fraction containing optionally small proportions of a diene, soluble in xylene at room temperature and containing 40 to 70% by weight ethylene, wherein individual components (a), (b), and (c) are present in amounts equal to 100%; or

(2) a propylene polymer composition consisting essentially of:

(a) from 10 to 50% of a propylene homopolymer having an isotactic index of from 80 to 98%, or a copolymer selected from the group consisting of (i) propylene and ethylene, (ii) propylene, ethylene and a CH_2=CHR alpha-olefin, where R is a C_{2-8} straight or branched alkyl, and (iii) propylene and an alpha-olefin, as defined above in (a)(ii), wherein said copolymer contains from 85 to 99%, propylene and having an isotactic index greater than 80 to 98%;

(b) from 5 to 20% of a semi-crystalline, essentially linear copolymer fraction having a crystallinity of about 20 to 60%, by differential scanning calorimetry (DSC), wherein the copolymer is selected from the group consisting of (i) ethylene and propylene containing over 55% ethylene; (ii) ethylene, propylene, and an alpha-olefin, as defined above in (a)(ii), containing from 1 to 10% of the alpha-olefin and over 55% up to 98%, of both ethylene and alpha-olefin; and (iii) ethylene and an alpha-olefin, as defined in (a)(ii), containing over 55% up to 98%, of said alpha-olefin, which copolymer is insoluble in xylene at room temperature; and

(c) from 40 to 80% of a copolymer fraction, selected from the group consisting of a copolymer of (i) ethylene and propylene wherein the copolymer contains from 20% to less than 40%, ethylene; (ii) ethylene, propylene, and an alpha-olefin, as defined in (a)(ii), wherein the alpha-olefin is present in an amount of from 1 to 10%, and the amount of ethylene and alpha-olefin present is from 20% to less than 40%; and (iii) ethylene and an alpha-olefin, as defined in (a)(ii), containing from 20 to less than 40% of the alpha-olefin, and optionally containing 0.5 to 10%, of a diene, said copolymer fraction being soluble in xylene at ambient temperature, and having an intrinsic viscosity of from 1.7 to 3.0 dl/g, wherein the total amount of ethylene units or said alpha-olefin units or of ethylene and said alpha-olefin units when both are present in the composition is from 15 to 35%, the total amount of (b) and (c) fractions, based on the total olefin polymer composition is from about 65% to 80%, the weight ratio of (b)/(c) is from 0.1 to about 0.3 and the total content of ethylene or C_{4-8} alpha-olefin or combination thereof in (b+c) is less than 50%, wherein the individual components (a), (b) and (c) are present in amounts equal to 100%; or

(D) from 5 to 40% by weight of an olefin rubber selected from an ethylene-propylene copolymer rubber having an ethylene content of from 40 to 80%, or an ethylene-propylene-conjugated diene terpolymer rubber having an ethylene content of from 40 to 77%, and a diene content of from 2 to 10%.

5,360,869

METHOD OF MAKING FLUORINATED COPOLYMERS

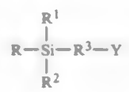
Joseph M. DeSimone, and Michael O. Hunt, Jr., both of Chapel Hill, N.C., assignors to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Continuation-in-part of Ser. No. 969,876, Oct. 30, 1992, abandoned. This application Nov. 5, 1992, Ser. No. 972,045

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—102 **15 Claims**

1. A copolymer having a fluorinated terminal segment thereon comprising a compound according to the formula:



(II)

wherein:

R is selected from the group consisting of poly(vinyl, and poly(diene);

R^1 and R^2 are independently hydrogen, linear or branched C1 to C4 alkyl, or C6 to C8 aryl;

R^3 is linear or branched C1 to C10 alkylene or is a direct bond; and

Y is C1 to C30 perfluoroalkyl.

5,360,870

RESIN, PROCESS FOR PREPARING THE SAME, AND COMPOSITION COMPRISING THE SAME

Masami Enomoto; Hitoshi Yuasa; Fumiaki Oshimi, and Yutaka Otsuki, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

PCT No. PCT/JP90/01666, § 371 Date Aug. 19, 1991, § 102(e) Date Aug. 19, 1991, PCT Pub. No. WO91/09062, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 20, 1990, Ser. No. 743,367

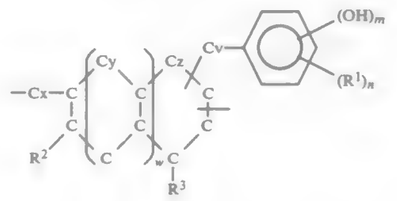
Claims priority, application Japan, Dec. 20, 1989, 1-330090

Int. Cl.[5] C08F *8/00;* **C08L** *61/04*

U.S. Cl. 525—109 **12 Claims**

1. A curable epoxy resin composition comprising, as its essential components:

(A) about 100 parts by weight of a hydroxy (alkyl) phenylated resin having a number average molecular weight of about 500 to 5,000, whose repeating unit is represented by the formula:



wherein R^1 is a hydrogen atom, a halogen atom or an alkyl group having 1 to 4 carbon atoms, R^2 and R^3 are a hydrogen atom, a methyl or ethyl group, m is 1 or 2, n is 0 to 2, x is 1 or 2, y, z and v are individually 0 or 1, w is 0 to 2, and the sum total of carbon numbers except those of the hydroxyphenyl group are the multiples of 4

(B) about 20 to 120 parts by weight of a curable epoxy resin, and

(C) about 0.05 to 5.0 parts by weight of an accelerator.

5,360,871

VINYL CHLORIDE RESIN-BASED COMPOSITION AND PACKINGS MADE THEREFROM

Kentaro Iwanaga; Kiyoshi Sakai, both of Mie, and Noriyoshi Yano, Kanagawa, all of Japan, assignors to Tosoh Corporation, Yamaguchi and Nippon Polyurethane Industry Co., Tokyo, Japan

Continuation of Ser. No. 553,513, Jul. 18, 1990, abandoned. This application Feb. 5, 1993, Ser. No. 14,000

Claims priority, application Japan, Jul. 18, 1989, 1-183796; Feb. 20, 1990, 2-37337; May 29, 1990, 2-137174

Int. Cl.[5] C08L *27/06, 75/04*

U.S. Cl. 525—131 **10 Claims**

1. A vinyl chloride resin-based composition which is prepared from a mixture of (i) a vinyl chloride resin, (ii) a polymeric polyol having two or more hydroxyl groups and a molecular weight of from about 300 to about 10,000 and (iii) a compound having three or more isocyanate groups, by thermally melting and mixing them under shearing forces to react said polymeric polyol and said compound having three or more isocyanate groups, said composition having a content of tetrahydrofuran-insolubles of about 5% to about 55% by weight, wherein the mixture has an NCO/OH ratio in the range of about 0.3–1.3 before said melting and mixing under shearing forces which reacts them.

5,360,872

METHOD FOR ENHANCING THE MISCIBILITY OF HALOGENATED POLYMERS WITH IMMISCIBLE POLYMERS

Murali Rajagopalan, Avon Lake, Ohio, assignor to The Geon Company, Independence, Ohio

Continuation of Ser. No. 867,596, Apr. 13, 1992, abandoned. This application Oct. 22, 1993, Ser. No. 142,881

Int. Cl.[5] C08L *79/08, 71/02*

U.S. Cl. 525—179 **27 Claims**

1. A polymer blend comprising 100 weight parts vinyl halide polymer resin, polyalkylene glycol and from about 12 to 65 parts by weight of polyimide polymer, wherein said blend exhibits a minimum light transmission of about 70% measured according to ASTM D-1003.

5,360,873

ACTINIC RADIATION-REACTIVE PRESSURE-SENSITIVE ADHESIVE COMPOSITION

Kazuo Ohkawa, and Seiichi Saito, both of Tokyo, Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 632,190, Dec. 21, 1990, Pat. No. 5,278,199. This application Aug. 20, 1993, Ser. No. 110,078

Claims priority, application Japan, Jan. 12, 1990, 2-4936

Int. Cl.[5] C09J *133/08, 133/10, 181/02;* **C08F** *2/48*

U.S. Cl. 525—193 **4 Claims**

1. An actinic radiation-reactive pressure-sensitive adhesive composition having as essential components:

a pressure-sensitive adhesive compound comprising an acrylate copolymer, which is optionally mixed with a cross linking agent, and

an actinic radiation-curable resin comprising one or more polythiol compounds and one or more polyene compounds, said polyene compounds each having at least two actinic radiation-reactive carbon-to-carbon double bonds from an acrylate compound and the equivalent ratio of carbon-to-carbon double bonds to the thiol groups being between 0.7:1.0 and 1.5:1.0, said composition having a reduced adhesion strength after curing.

5,360,874

SINTERED FILM

Roland Wolff, Seelze, and Axel Bruder, Burgwedel, both of Germany, assignors to J. H. Benecke AG, Hanover, Germany

Filed Apr. 28, 1993, Ser. No. 54,896

Claims priority, application Germany, Jun. 3, 1992, 4218316

Int. Cl.[5] C08L *23/16, 23/14, 33/08*

U.S. Cl. 525—227 **21 Claims**

1. A sintered film which is prepared by a powder-slush-molding method from a thermoplastic polyolefin composition consisting essentially of (a) about 30 to 70 parts of a propylene copolymer having a melt index MFI 230/2.16 of at least about 3 g./10 min. and (b) about 70 to 30 parts of an ethylene-ethyl acrylate copolymer containing about 7–35 wt. % of ethyl acrylate and having a melt index MFI 230/2.16 of at least 3 g./10 min. and a softening point corresponding to a Vicat number of at least 40, the composition being suitable for preparing a sintered film by a powder-slush molding method.

5,360,875

METHOD FOR PRODUCING COUPLED ASYMMETRIC POLYMERS

Michael A. Masse, Richmond; Steven S. Chin, and Craig A. Stevens, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 10, 1993, Ser. No. 120,116

Int. Cl.[5] C08F *297/04*

U.S. Cl. 525—314 **5 Claims**

1. A process for preparing a coupled asymmetric block copolymer of the formula

$$(A_1—B)_x-Y-(B—A_2)_y$$

wherein A_1 and A_2 are polymer blocks of a vinyl aromatic hydrocarbon having different molecular weights, B is a polymer block of a conjugated diene, Y is a coupling agent and x and y range from 1 to 40 and wherein said copolymer has a vinyl aromatic hydrocarbon content of from 3 to 30 percent by weight which comprises:

(a) adding sufficient anionic polymerization initiator to the vinyl aromatic hydrocarbon monomer to start polymerization of the vinyl aromatic hydrocarbon,

(b) polymerizing the vinyl aromatic hydrocarbon for a time sufficient to form a first set of vinyl aromatic hydrocarbon blocks having a desired molecular weight and leave some unreacted vinyl aromatic hydrocarbon monomer,

(c) adding sufficient anionic polymerization initiator to start polymerization of the unreacted monomer from step (b) to form a second set of vinyl aromatic hydrocarbon blocks without the addition of more vinyl aromatic hydrocarbon monomer,

(d) completing the polymerization of the vinyl aromatic hydrocarbon for a time such that the first set of vinyl aromatic hydrocarbon blocks continues to grow to a desired peak molecular weight as determined by gel permeation chromatography of from 5000 to 25,000 and the second set of vinyl aromatic hydrocarbon blocks grows to a desired smaller peak molecular weight as determined by gel permeation chromatography of from 1000 to 15,000,

(e) adding a conjugated diene and polymerizing it on the ends of the vinyl aromatic hydrocarbon blocks for a time sufficient to form vinyl aromatic hydrocarbon-conjugated diene arms of the desired molecular weight, and

(f) adding a coupling agent and coupling the arms to form the asymmetric block copolymer.

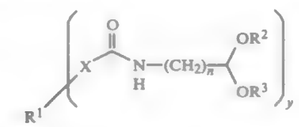
5,360,876

CURATIVE COATING SYSTEM

William F. Burgoyne, Jr., 2610 SW. Arch St., Allentown, Pa. 18103, and Jeremiah P. Casey, 2665 Arbor Cir., Emmaus, Pa. 18049

Division of Ser. No. 77,580, Jun. 15, 1993, Pat. No. 5,336,807. This application Jan. 21, 1994, Ser. No. 184,316
Int. Cl.[5] C08F 8/30
U.S. Cl. 525—374 7 Claims

1. A formaldehyde-free curative coating system which comprises a polymeric material containing active hydrogen and a crosslinking agent represented by the structural formula:



wherein R^1 is a C_4–C_1 aliphatic or an aromatic multiradical; R^2 and R^3 are independently C_1–C_6 linear or branched alkyl, aryl or glycol, or R^2 and R^3 together form a C_2–C_6 alkylene group; X is a single bond, an oxygen atom or NH; n is from 1 to 4; and y is an integer from 2 to 5.

5,360,877

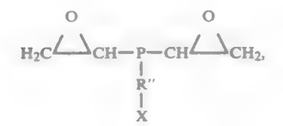
EPOXY INTERPENETRATING POLYMER NETWORKS HAVING INTERNETWORK CHEMICAL BONDS

Jyi-Fan Hwang, Bethlehem, Pa., and John P. Dismukes, Annandale, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 819,046, Jan. 10, 1992, abandoned. This application May 13, 1993, Ser. No. 61,395
Int. Cl.[5] G08G 59/22; C08L 63/00
U.S. Cl. 525—423 9 Claims

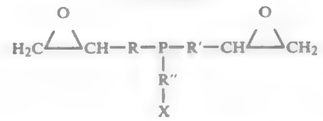
1. A method for preparing an interpenetrating polymer network having internetwork chemical bonds comprising a first and a second polymer network at least one of which contains an EPRXE resin, and having both increased strength and toughness comprising the steps of:

(a) combining, to form a first mixture, a first crosslinker (C1) with an EPRXE resin (E1) having an X group wherein said crosslinker (C1) has a reactivity at least about 5 times higher than said X group of said EPRXE resin (E1) and wherein said EPRXE resin (E1) has a molecular weight between about 325 and about 6000 and wherein said EPRXE resin (E1) is selected from the group consisting of



and

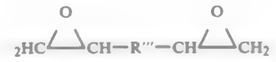
-continued



and wherein X is a pendant non-epoxide functionality anchored on the backbone of said EPRXE resin through carbon or nitrogen atoms represented by P, and spacer groups, R, R′, and R″, where R, R′, and R″ are selected from the group consisting of aliphatic, aromatic and combinations of aliphatic and aromatic hydrocarbons and wherein X is selected from the group consisting of primary, secondary, and tertiary amino, protected amino and protected carboxyl groups;

(b) crosslinking said first mixture without reaching gelation to form a first polymer network;

(c) combining, to form a second mixture, a diepoxy resin (E2) with a crosslinker (C2) wherein said diepoxy resin (E2) has a molecular weight between about 325 and about 6000 and wherein said diepoxy resin (E2) is selected from the group consisting of said EPRXE resins (E1) of step (a) and



wherein R‴ is selected from the group consisting of saturated, unsaturated, and aromatic hydrocarbons and oxygen containing groups wherein said oxygen of said oxygen containing groups is in the form of ether linkages, and mixtures thereof, and wherein when said diepoxy resin (E2) is an EPRXE resin said crosslinker (C2) has a reactivity at least about 5 times higher than said X group of said EPRXE resin;

(d) crosslinking without reaching gelation said second mixture to form a second polymer network;

(e) mixing said first and said second polymer networks to form a polymer mixture;

(f) curing said polymer mixture under a multistage temperature schedule, wherein said multistage temperature schedule is capable of gelling said polymer mixture and forming the interpenetrating polymer network without reacting said X group(s), and when said X group(s) is a protected amino or a protected carboxyl group, an unprotecting agent is added to the polymer mixture, and thereafter increasing the temperature of said multistage temperature schedule to activate said X group(s) of said EPRXE resin(s) to form internetwork chemical bonds between said first and said second polymer networks.

5,360,878

HIGHLY CROSSLINKED SILICON POLYMERS FOR GAS CHROMATOGRAPHY COLUMNS

Thomas C. Shea, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 851,380, Mar. 4, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 106,183
Int. Cl.[5] C08G 77/20; C08F 2/48
U.S. Cl. 525—477 18 Claims

1. Porous, silicon-containing solid organic polymer particles which are formed from crosslinking intermediate polymer chains, wherein the degree of crosslinking is about 30% or greater, said intermediate polymer chains being formed from the polymerization of an alkyl trichlorosilane monomer unit, wherein the alkyl group is selected from dodecyl, hexadecyl or octadecyl, with substituted siloxyl group monomer units selected from CH_2=CH—Si—(O—alkyl)$_3$ or

CH_2=C(CH_3)—(C=O)—O$CH_2CH_2CH_2$Si—(O—alkyl)$_3$.

5,360,879

POLYMERIZATION CATALYSTS AND PROCESSES

William K. Reagen, Stillwater, Minn., and Ted M. Pettijohn, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 23,746, Feb. 26, 1993, which is a continuation of Ser. No. 809,777, Dec. 18, 1991, abandoned. This application Mar. 24, 1994, Ser. No. 217,469
Int. Cl.[5] C08F 4/22
U.S. Cl. 526—129 12 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst system comprising:

a) a waste chromium compound, which has been previously used for another purpose and subsequently recovered, wherein said waste chromium compound comprises a chromium-containing compound, a pyrrole-containing compound, an unsaturated hydrocarbon, and a non-hydrolyzed aluminum alkyl; and

b) a support selected from the group consisting of zeolites, inorganic oxides, and mixtures thereof;

wherein said waste chromium compound is supported on said support; and

wherein at least a portion of the waste chromium compound is in a hexavalent state.

5,360,880

POLYMERIZABLE PORPHYRINS

Richard M. Pashley, Aranda; Timothy J. Senden, Lyneham; Richard A. Morris, Grose Wold, all of Australia; James T. Guthrie, Kippax Leeds, and Wei D. He, Leeds, both of United Kingdom, assignors to The Australian National University, Australian Capital Territory and The Acton and Memtec Ltd., New South Wales, both of Australia

PCT No. PCT/AU91/00298, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO92/01007, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 5, 1991, Ser. No. 961,729
Claims priority, application Australia, Jul. 6, 1990, PK1083
Int. Cl.[5] C08F 2/00, 226/06, 216/34, 220/10
U.S. Cl. 526—213 36 Claims

1. The polymerizable material characterized in that it comprises the reaction product of a pyrrole and an unsaturated polymerizable aldehyde.

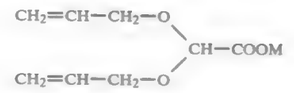
5,360,881

METHOD OF CROSS-LINKING ETHYLENE MONOMERS USING DIALLYLOXYACETIC ACID AND ITS BASIC ADDITION SALTS AS CROSS-LINKING AGENTS

Paul Mallo, Rueil Malmaison; Christian Sidot, Ezanville; Alain Blanc, Saint Denis, and Yani Christidis, Paris, all of France, assignors to Societe Francaise Hoechst, Puteaux, France

Division of Ser. No. 837,706, Feb. 20, 1992, abandoned, which is a continuation of Ser. No. 529,793, May 29, 1990, abandoned. This application May 24, 1993, Ser. No. 65,446
Claims priority, application France, Jun. 14, 1989, 89 07894
Int. Cl.[5] C08F 220/04, 2/16
U.S. Cl. 526—240 6 Claims

1. A method of producing a cross-linked polymer comprising cross-linking an ethylene monomer with a compound of the formula:



wherein M is selected from hydrogen, potassium, lithium or ammonium,

wherein the cross-linking compound is present in an amount of from 0.001% to 0.4%,

wherein the ethylene monomer is selected from the group consisting of acrylic acid, sodium acrylate, potassium acrylate, ammonium acrylate, free, salified or quaternarized dimethylaminoethyl acrylate, acrylamide and similar derivatives corresponding to methacrylic acid, sodium vinylsulphonate, diallydimethyl-ammonium chloride, 2-(meth)acrylamido-2-methyl-1-propanesulphonic acid, 2-hydroxy(meth)acryloyl-3-oxy-1-propanesulphonic acid, itaconic acid, citraconic acid, and maleic acid.

5,360,882

EUTECTIC COMPOSITIONS OF DIVINYL IMIDAZOLIDONE AND VINYL CAPROLACTAM

James A. Dougherty, Pequannock; Donald J. Shugard, Berkeley Heights, and Lowell R. Anderson, Morristown, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Feb. 4, 1994, Ser. No. 192,079
Int. Cl.[5] C08F 22/40
U.S. Cl. 526—262 6 Claims

1. A eutectic composition which is a liquid below 30° C. consisting essentially of 10–60% by weight divinyl imidazolidone and 90–40% by weight vinyl caprolactam.

5,360,883

PROCESS FOR OBTAINING A POLYMERIZABLE REACTION SOLUTION

Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 30, 1993, Ser. No. 40,400
Int. Cl.[5] C08F 226/10
U.S. Cl. 526—264 4 Claims

1. A process for obtaining a polymerizable reaction solution as an organic layer containing 5–30% by weight of the isomeric compound 1-vinyl-3(E)-ethylidene pyrrolidone as crosslinker and 50–80% by weight of vinylpyrrolidone monomer which comprises:

(a) providing a 2-phase reaction mixture comprising an organic phase which is vinylpyrrolidone in an amount of about 25–90% by weight of the mixture, and an aqueous phase which is a solution containing about 2–50 wt. % of a strong base under vigorous agitation, in an inert atmosphere,

(b) heating said reaction mixture at about 120°–170° C. for about 0.5–10 hours to form a reaction product which includes organic and aqueous layers, and

(c) separating the organic layer from the aqueous layer.

5,360,884

MESOGENIC GLYCIDYL AMINE BLENDS

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

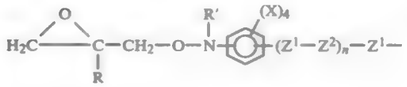
Division of Ser. No. 663,499, Mar. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,289, Aug. 3, 1990, Pat. No. 5,276,184. This application May 28, 1992, Ser. No. 890,735
Int. Cl.[5] C08G 59/14, 59/20
U.S. Cl. 525—526 7 Claims

1. A blend comprising

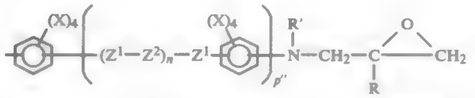
(A) one or more polyglycidyl amines containing an average

of more than one vicinal epoxide group per molecule and one or more mesogenic moieties per molecule represented by the following Formulas I–VI;

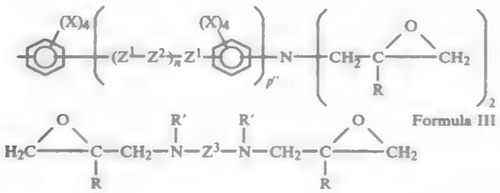
Formula I



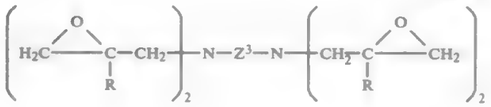
Formula II



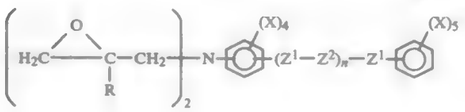
Formula III



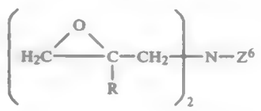
Formula IV



Formula V



Formula VI



wherein at least about 80 percent of the $-(Z^1-Z^2)_n-Z^1-$ linkages and the glycidyl amine groups are in the para position with respect to each other; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each R′ is independently a hydrocarbyl group having from 1 to about 12 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having suitably from 1 to about 12 carbon atoms, a halogen atom, $-NO_2-$ or $-C\equiv N$; X^1 is a divalent hydrocarbyl group having from 1 to about 10 carbon atoms which can contain one or more heteroatoms selected from N, O or S and may be saturated or unsaturated; each Z^1 is independently a direct single bond, $-CR^1=CR^1-$, $-CR^1=CR^1-CR^1=CR^1-$, $-CR^1=N-N=CR^1$, $-(CHR^1)_{p'}-O-CO-CR^1=CR^1-$, $-(CHR^1)_{p'}-CO-O-CR^1=CR^1-$, $-CR^1=CR^1-CO-O-$, $-O-CO-CR^1=CR^1-$, $-CO-NR^1-NR^1-CO-$, $-C\equiv C-$, $-C\equiv C-C\equiv C-$, $-CO-S-$, $-S-CO-$, $-CR^1=CR^1-CO-$, $-CO-CR^1=CR^1-$, $-CR^1=C-R^1-O-CO-$, $-CO-O-CH_2-CH_2-O-CO-$, $-CO-O-CH_2-CH(CH_3)-O-CO-$, $-CO-O-CH_2-C(CH_3)_2-O-CO-$, $-CO-O-CH_2-CH(C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2Cl)-O-CO-$, $-CO-O-CH_2-CH(CH_2OCH_3)-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_2H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_3H_7)-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_4H_9)-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_6H_{13})-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_8H_{17})-O-CO-$, $-CO-O-CH_2-CH(CH_2OC_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_9H_{19})-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-CO-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-CO-C_6H_5)-O-CO-$, $-CO-O-CH_2-CH(CH_2O-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-C_6H_4-O-CO-C_6H_5)-O-CO-$, 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5,360,885

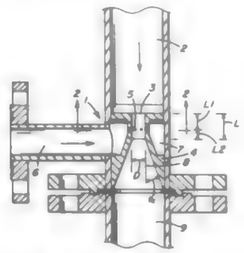
PROCESS FOR THE CONTINUOUS PRODUCTION OF POLYURETHANE AND POLYURETHANE UREA ELASTOMERS

Ernst Orthmann, Dormagen; Klaus Wulff, Krefeld; Peter Hoeltzenbein, Dormagen; Helmut Judat, Langenfeld; Hans Wagner, Dormagen; Gottfried Zaby, Leverkusen, and Herbert Heidingsfeld, Frechen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 9,159, Jan. 26, 1993, abandoned. This application Dec. 7, 1993, Ser. No. 163,059

Int. Cl.[5] C08G *18/08*

U.S. Cl. 528—49 **12 Claims**



1. In a process for the continuous production of polyurethane and polyurethane urea elastomers by reacting

A) one or more organic polyisocyanates,

B) one or more isocyanate reactive compounds having molecular weights of from 400 to 10,000 and being selected from the group consisting of polyhydroxyl compounds, polyamine compounds, and mixtures thereof,

C) one or more chain-extending agents containing at least two active hydrogen atoms and having molecular weights below 400,

D) optionally, one or more monoisocyanates and/or compounds monofunctional to isocyanates, and,

E) optionally one or more activators, stabilizers, lubricants and other additives,

wherein the amounts of reactive components are such that the equivalent ratio of isocyanate groups to isocyanate-reactive groups is from 0.9:1 to 1.15:1, the improvement wherein the isocyanate-containing component and the isocyanate-reactive components are combined in a nozzle by passing one of these two components axially through the constriction of the nozzle and introducing the other component laterally into the stream of the first component in this constriction from one side in the form of several partial streams through a corresponding number of bores distributed over the periphery of the constriction and then introducing the product formed into a twin-screw extruder.

5,360,886

PRECATALYZED CATALYST COMPOSITIONS, PROCESS FOR PREPARING EPOXY RESINS, CURABLE COMPOSITIONS, ARTICLES RESULTING FROM CURING THE RESULTANT COMPOSITIONS

Ha Q. Pham; Michael B. Cavitt, and Pamela A. Hardcastle, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 6,876, Jan. 21, 1993, Pat. No. 5,310,853, which is a division of Ser. No. 825,466, Jan. 24, 1992, Pat. No. 5,202,407. This application Oct. 27, 1993, Ser. No. 144,983

Int. Cl.[5] C08G *59/68*

U.S. Cl. 528—89 **5 Claims**

1. The product or article resulting from curing a curable composition comprising (A) at least one vicinal epoxide-containing compound; (B) at least one phosphonium or phosphine compound; and (C) a suitable curing agent for said epoxy-containing compound, which curing agent contains (1) a plurality of hydrogen atoms reactive with a vicinal epoxide group or (2) one or more acid anhydride groups or (3) a combination of hydrogen atoms reactive with a vicinal epoxide group and acid anhydride groups; wherein the improvement comprises employing as the phosphonium or phosphine catalyst, one having at least three C_1 to C_4 alkyl phenyl groups attached to the phosphorus atom per molecule.

5,360,887

FLAME-RETARDED THERMOSETTING RESIN COMPOSITION, PREPREGS AND ELECTRICAL LAMINATES MADE THEREFROM

Hidenari Tsunemi, Takashima; Toshinobu Nakata, and Koyoyuki Namura, both of Otsu, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 28, 1993, Ser. No. 98,087

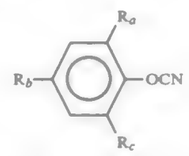
Claims priority, application Japan, Jul. 29, 1992, 4-223499; Jul. 29, 1992, 4-223502; Aug. 26, 1992, 4-252087

Int. Cl.[5] C08G *83/00*

U.S. Cl. 528—97 **16 Claims**

1. A flame-retarded thermosetting resin composition comprising:

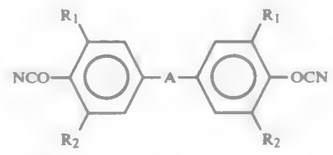
(a) about 5 to about 45 mole % of an aromatic monocyanate of the formula I:



(I)

wherein R_a is hydrogen, and R_b and R_c are alkyl, aryl or halogen, where at least one of R_b and R_c is halogen; and

(b) about 55 to about 95 mole % of a dicyanate of the formula II:



(II)

wherein R_1 and R_2 are same or different and each is hydrogen, alkyl or aryl, and A is a bridge selected from the group consisting of a direct bond, methylene, methylene mono- or disubstituted with alkyl and/or aryl, a five or six membered cycloalkylene, sulfonyl, thio, oxy, carbonyl, xylylene optionally substituted by alkyl at one or both methylene carbon atoms and phenylene.

5,360,888

HYDROLYSIS-STABLE POLYAMIDES

Volker Ullrich, Schriesheim, Germany, assignor to Rhein Chemie Rheinau GmbH, Mannheim, Germany

Filed Apr. 19, 1993, Ser. No. 49,115

Claims priority, application Germany, Apr. 30, 1992, 4214193

Int. Cl.[5] C08G *69/48;* **C08L** *77/06*

U.S. Cl. 528—323 **4 Claims**

1. Polyamide stabilized to hydrolysis in acidic medium which contains 0.1 to 5% by weight, based on polyamide, of a polymeric aromatic carbodiimide which is the reaction product of at least one substituted aromatic isocyanate selected from the group consisting of 2,6-diisopropylphenyl isocyanate, 1,3,5-triisopropyl-2,4-diisocyantobenzene, 2,4diisocyanto-3,5-diethyltoluene, 4,4'-methlyenebis(2,6-diethylphenyl isocyanate), 4,4'-methlyenebis(2-ethyl-6-methylphenyl isocyanate), 4,4'-methlyenebis(2-isopropy-6-methylphenyl isocyanate), 4,4'-methylenebis(2,6-diisopropylphenyl isocyanate), and 4,4'-methylenebis(2-ethyl-6-methylcyclohexyl isocyanate).

5,360,889

SOFT POLYCARBONATE RESIN

Haruo Watanabe, and Tsuyoshi Sato, both of Kanagawa, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

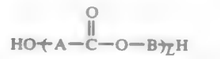
Filed Aug. 18, 1993, Ser. No. 107,620

Claims priority, application Japan, Aug. 21, 1992, 4-244070; Jul. 29, 1993, 5-205616

Int. Cl.[5] C08G *64/00*

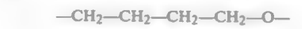
U.S. Cl. 528—371 **6 Claims**

1. A soft polycarbonate resin represented by formula (I):



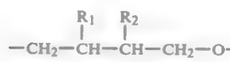
(I)

wherein A represents a polyether block consisting essentially of a structural unit represented by formula (II):



(II)

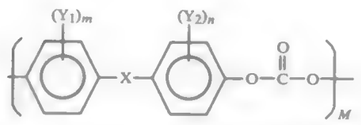
and a structural unit represented by formula (III):



(III)

wherein one of R_1 and R_2 represents a hydrogen atom and the other represents a methyl group;

B represents a carbonate oligomer block represented by formula (IV):



(IV)

wherein X represents at least one linking group selected from



—O—, —S—, $—SO_2—$, —SO—, and



R_3 and R_4 each represents at least one of a hydrogen atom and a hydrocarbon group containing from 1 to 6 carbon atoms; Y_1 and Y_2 each represents at least one of a hydrogen atom, a halogen atom and a hydrocarbon group containing from 1 to 6 carbon atoms; m and n each represents zero or an integer of from 1 to 4; and M represents an integer of from 1 to 10; and

L represents an integer of from 7 to 30, said polyether block A being present in a proportion of from 20 to 50% by weight based on the polycarbonate resin and having a number average molecular weight of from 500 to 3000, and the structural unit represented by formula (III) being present in a proportion of from 5 to 35% by weight based on the polyether block A.

5,360,890

REFINING OF POLYARYLENE SULFIDES

Shinji Tanaka, and Hiroshi Inoue, both of Mie, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 928,024, Aug. 11, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,845

Claims priority, application Japan, Aug. 14, 1991, 3-228669

Int. Cl.[5] C08G *75/16*

U.S. Cl. 528—388 **6 Claims**

1. A method for refining a crude polyarylene sulfide product produced by a polyarylene sulfide synthesis process employing an organic amide as a polymerization medium, said refining method comprising at least the following steps:

(i) heating a polymerization solution or slurry from said polyarylene sulfide synthesis to distill off the polymerization medium; and

washing the residue with water to give a crude polyarylene sulfide product; and subsequently

(ii) combining the crude polyarylene sulfide product with a fractionating solvent and heating the mixture to a temperature of at least 150° C., but below the temperature at which the polyarylene sulfide becomes completely dissolved in the solvent, to dissolve a lower molecular weight fraction of the polyarylene sulfide crude product in the solvent; and

subjecting the hot mixture to solid/liquid separation to recover a solid phase comprising a refined polyarylene sulfide product.

5,360,891

COLORLESS AND TRANSPARENT, AMORPHOUSLY PROCESSABLE POLYAMIDE MOLDING COMPOSITION HAVING GOOD RESISTANCE TO STRESS CRACKING AND GOOD IMPACT STRENGTH

Markus Wenzel, Recklinghausen; Georg Oenbrink, Dülmen, and Eva von der Bey-Dahm, Haltern, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Dec. 21, 1993, Ser. No. 170,747

Claims priority, application Germany, Apr. 3, 1993, 4310970

Int. Cl.[5] C08G *69/26*

U.S. Cl. 528—335 **20 Claims**

1. A colorless and transparent, amorphously processable polyamide molding composition which has good resistance to stress cracking and good impact strength and is resistant to alcohols, esters, ketones, fuels and boiling water, comprising the reaction product of

I. a linear aliphatic dicarboxylic acid;

II.a) 35–60 mol % of trans,trans-bis(4-aminocyclohexyl)-methane; and

II.b) 65–40 mol % of other aliphatic, cycloaliphatic, araliphatic or aromatic diamines

the molar ratio of components I and II varying in the range from 0.95 to 1.05:1.

5,360,892

WATER AND UV DEGRADABLE LACTIC ACID POLYMERS

Patrick V. Bonsignore, Joliet, and Robert D. Coleman, Wheaton, both of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 543,506, Jun. 26, 1990, abandoned. This application Aug. 5, 1993, Ser. No. 102,703

Int. Cl.[5] C08G *63/08;* **A61K** *9/58*

U.S. Cl. 528—354 **22 Claims**

1. A water and UV degradable polylactic acid polymer comprising:

a co-polymer at least partly amorphous allowing modification of degradation properties and comprised of a polylactic acid and a modifying monomer selected from the class consisting of p-dioxanone present in an amount up to about 20% by weight, 1,5 dioxepan-2-one present in an amount up to about 20% by weight, 1,4 oxathialan-2-one,

4,4-dioxide present in an amount up to about 20% by weight, or mixtures thereof, said modifying monomer being present in an amount not greater than about 20% by weight.

5,360,893

DNA SEQUENCES ENCODING PROTEINS USED TO ELICIT AND DETECT PROGRAMMED CELL DEATH

Gregory P. Owens; J. John Cohen, both of Denver, and William E. Hahn, Aurora, all of Colo., assignors to University of Colorado Foundation, Inc., Boulder, Colo.

Filed Jul. 20, 1992, Ser. No. 915,934

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—350 **2 Claims**

1. A polypeptide in substantially pure form and mutants and variants of the polypeptide eliciting programmed mammalian cell death, wherein the amino acid sequence is coded for by the DNA sequence set out in FIG. 5 (SEQ ID NO:1).

5,360,894

C/EBP2 GENE AND RECOMBINANT C/EBP2

Tadamitsu Kishimoto, Tondabayashi; Toshio Hirano, Ibaragi; Shizuo Akira, Minoo; Hiroshi Isshiki, Osaka; Osamu Tanabe, Hiroshima; Shigemi Kinoshita, Ibaragi, and Takuya Shimamoto, Minoo, all of Japan, assignors to Tadamitsu Kishimoto, Osaka, Japan

Division of Ser. No. 601,094, Oct. 22, 1990. This application Feb. 3, 1993, Ser. No. 12,735

Claims priority, application Japan, Dec. 25, 1989, 336868

Int. Cl.[5] C07K *3/00*; C12P *21/02, 19/34*; C12N *15/00*

U.S. Cl. 530—350 **2 Claims**

1. An isolated IL-6 gene expression inducing nuclear factor C/EBP2 protein, obtained by the process comprising:

(1) cultivating a host cell which has been transformed with a plasmid containing an isolated DNA molecule comprising the nucleotide sequence represented by SEQ ID NO. 30 which encodes said C/EBP2 protein, wherein the resulting transformed host cell expresses said C/EBP2 protein; and

(2) isolating the resulting C/EBP2 protein expressed by said transformed host cell.

5,360,895

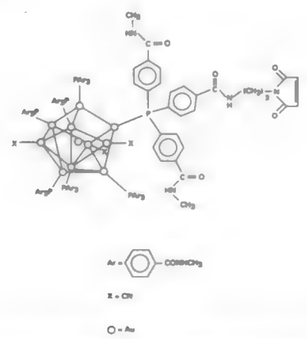
DERIVATIZED GOLD CLUSTERS AND ANTIBODY-GOLD CLUSTER CONJUGATES

James F. Hainfeld, Shoreham, and Frederic R. Furuya, Williston Park, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 661,215, Feb. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 317,388, Mar. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 212,545, Jun. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 41,054, Apr. 22, 1987, abandoned. This application Dec. 9, 1992, Ser. No. 988,338

Int. Cl.[5] C07K *17/02*; A61K *49/02*

U.S. Cl. 530—391.5 **6 Claims**



1. An antibody-gold cluster conjugate wherein the antibody is covalently bound to the cluster and the gold cluster is the monomaleimide undecagold cluster shown in FIG. 3.

5,360,896

GLYCOSYLATED FGF

Masaharu Senoo, Osaka; Reiko Sasada, and Koichi Igarashi, both of Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Juso-honmachi, Japan

Continuation of Ser. No. 511,469, Apr. 20, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 7,089

Claims priority, application Japan, Apr. 26, 1990, 2-108595

Int. Cl.[5] C07K *13/00*

U.S. Cl. 530—399 **16 Claims**

1. A mutein of a naturally occurring fibroblast growth factor (FGF) into which has been artificially introduced at least one glycosylation site which is represented by -Asn-X-Y-, wherein X is Gly, Lys, Val or Ala; Y is Thr, Ser or Cys; subject to the limitation that -X-Y- is not -Gly-Ser-.

5,360,897

IMMUNOGENIC CONJUGATES OF STREPTOCOCCUS PNEUMONIAL CAPSULAR POLYMER AND TOXIN OR IN TOXIAD

Porter W. Anderson, and Ronald J. Eby, both of Rochester, N.Y., assignors to The University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 423,081, Oct. 18, 1989, Pat. No. 5,097,020, which is a continuation of Ser. No. 859,975, May 5, 1986, Pat. No. 4,902,506, which is a continuation-in-part of Ser. No. 511,048, Jul. 5, 1983, Pat. No. 4,673,574, which is a continuation-in-part of Ser. No. 298,102, Aug. 31, 1981, abandoned. This application Jan. 9, 1992, Ser. No. 819,305

The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.

Int. Cl.[5] A61K *39/385*; C07K *17/02*

U.S. Cl. 530—403 **7 Claims**

1. An immunogenic conjugate comprising the reductive amination product of an intact capsular polymer of the bacterial pathogen *Streptococcus pneumoniae* having at least two carbonyl groups and a bacterial toxin or toxoid, said conjugate comprising a cross-linked conjugate in which there is a direct covalent linkage between the capsular polymer and the toxin or toxoid.

5,360,898

PRODUCTION OF AN ORGANIC SALT OF A RARE EARTH METAL

Amor Jordaan, and Petrus J. Stander, both of Sasolburg, South Africa, assignors to Sentrachem Limited, Sandown, South Africa

Filed Feb. 19, 1993, Ser. No. 19,619

Claims priority, application South Africa, Feb. 28, 1992, 92/1518

Int. Cl.[5] C07C *51/41, 61/00, 53/128*

U.S. Cl. 534—16 **13 Claims**

1. A method of making a rare earth metal salt of an organic acid includes the steps of producing a three-phase system comprising an aqueous phase in which is dissolved an inorganic salt which is a salt of a rare earth metal, or of an alkali metal, or of an alkali earth metal, a solid water-insoluble rare earth compound suspended in the aqueous phase, and an organic phase containing an organic acid, allowing the organic acid to distribute between the organic and aqueous phases, react with the dissolved inorganic salt and release an inorganic acid, allowing the inorganic acid to react with at least some of the water-insoluble rare earth compound which becomes dissolved in the aqueous phase and reacts with the organic acid to form a rare earth metal salt of the organic acid, and allowing the rare earth metal salt of the organic acid thus formed to transfer to the organic phase.

6. A method according to claim 1 wherein the organic acid is naphthenic or versatic acid.

7. A method according to claim 1 wherein the rare earth metal is neodymium.

5,360,899

CYCLODEXTRIN POLYMERS AND PROCESS FOR THEIR PREPARATION

Peter Nussstein; Guenther Staudinger, both of Munich; Wolfram Steinert, Burghausen; Franz-Heinrich Kreuzer, Martinsried, and Wolfgang Schmitt-Sody, Wolfratshausen, all of Germany, assignors to Consortium für elektrochemische Industrie GmbH, Munich, Germany

PCT No. PCT/EP91/00561, § 371 Date Sep. 25, 1992, § 102(e) Date Sep. 25, 1992, PCT Pub. No. WO91/14708, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 22, 1991, Ser. No. 927,433

Claims priority, application Germany, Mar. 27, 1990, 4009840

Int. Cl.[5] C08B *37/16*; C08G *65/26, 65/24*; B01D *15/08*

U.S. Cl. 536—4.1 **6 Claims**

1. A crosslinked, water-insoluble hydroxyalkylcyclodextrin polymer substituted by free C_2- to C_4-hydroxyalkyl units.

5,360,900

AROMATIC POLYESTER POLYOL

Alberto DeLeon, Kingwood, and David J. Shieh, Sugar Land, both of Tex., assignors to Oxid, Inc., Houston, Tex.

Filed Aug. 12, 1993, Ser. No. 106,127

Int. Cl.[5] C07H *15/00, 15/08*

U.S. Cl. 536—18.3 **23 Claims**

1. A method for preparing polyester-polyether polyols from polyalkylene terephthalates, said method comprising:

reacting the polyalkylene terephthalate in a solution of a low molecular weight polyol and a mixture of alkoxylated alpha and alkoxylated beta methyl glucoside at a temperature in the range of about 370° to about 450° F. and under vacuum distillation.

5,360,901

GENE SEQUENCE ENCODING *ASPERGILLUS NIGER* CATALASE-R

Randy M. Berka, San Mateo; Timothy Fowler, Redwood City, and Michael W. Rey, San Mateo, all of Calif., assignors to Genencor International, Inc., Rochester, N.Y.

Filed Mar. 4, 1992, Ser. No. 845,989

Int. Cl.[5] C12N *15/53, 15/80, 9/08*

U.S. Cl. 536—23.2 **2 Claims**

1. An isolated and purified gene sequence encoding catalase-R from *Aspergillus niger* having the amino acid sequence consisting essentially of SEQ ID NO:5.

5,360,902

PROCESS FOR PRODUCING METHYL HYDROXYALKYL CELLULOSE ETHERS

Oke Brauer; Bernd Haase; Dieter Herzog; Lutz Riechardt; Gerd Sonnenberg, all of Walsrode, and Dietrich Tegtmeier, Bergisch-Gladbach, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Filed Dec. 15, 1992, Ser. No. 990,867

Claims priority, application Germany, Dec. 23, 1991, 4142761

Int. Cl.[5] C02F *1/44*; C08B *11/08, 11/20, 11/22*

U.S. Cl. 536—84 **9 Claims**

1. In a process for producing methyl hydroxyalkyl cellulose ethers by alkalisation and etherification of celluloses and rinsing the methyl hydroxyalkyl cellulose ethers with water and recovering the short-chain cellulose ethers that are soluble in the wash water, the improvement which consists of passing the wash water containing sodium chloride and organic by-products at temperatures from 30° to 90° C. across a first stage of a membrane filtration apparatus having a molecular cut size of 200 to 150,000 Dalton, thereby concentrating the wash water, mixing the concentrate thereby obtained with 1 to 30 times its quantity of water diluting this concentrate with water add passing it at temperatures from 30° to 95° C. across a second stage of a membrane filtration apparatus having a molecular cut size of 200 to 150,000 Dalton, again concentrating and adding the concentrate which is substantially free from sodium chloride and organic pollutants to the washed methyl hydroxyalkyl cellulose ethers, or alternatively recovering as solid substances the methyl hydroxyalkyl cellulose ethers of low viscosity that are contained in the concentrate.

5,360,903

GLASS-LIKE POLYSACCHARIDE ABRASIVE GRIT

Christopher C. Lane, Laprairie; Ruben P. Lenz, Laval-sur-le-Lac, and Costa Athanassoulias, Montreal, all of Canada, assignors to ADM Agri-Industries, Ltd., Montreal, Canada

Continuation of Ser. No. 658,748, Feb. 21, 1991, abandoned, which is a division of Ser. No. 346,504, May 2, 1989, Pat. No. 5,066,335. This application Nov. 25, 1992, Ser. No. 982,058

Int. Cl.[5] C07G *17/00*; C07H *1/00, 1/06*; C08G *79/00*

U.S. Cl. 536—124 **25 Claims**

1. A product for abrading a surface comprising chemically cross-linked, polysaccharide grit particles having a moisture content of about 10 to 70% by weight, an apparent hardness of up to about 4.0 moh and the particle sizes ranging from about 12 to about 60 US mesh.

5,360,904

PROCESS FOR PREPARING PENEM ESTERS

Angelo Bedeschi; Walter Cabri, both of Milan; Marcello Marchi, Novara, and Ettore Perrone, Boffalora Ticino, all of Italy, assignors to Farmitalia Carlo Erba S r l, Milan, Italy

PCT No. PCT/EP91/00522, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/14691, PCT Pub. Date Oct. 3, 1991

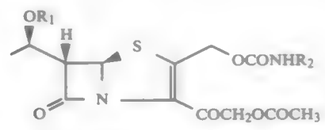
PCT Filed Mar. 18, 1991, Ser. No. 927,511

Claims priority, application United Kingdom, Mar. 19, 1990, 9006114.4

Int. Cl.[5] C07D *499/00*

U.S. Cl. 540—310 17 Claims

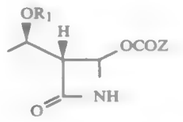
1. A process for preparing a compound of the formula (I):



(I)

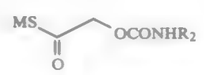
wherein R_1 is a hydrogen atom or a hydroxy protecting group and R_2 is a hydrogen atom or a C_1–C_6 alkyl group, the process comprising the following steps:

a) reacting a compound of the formula (II):



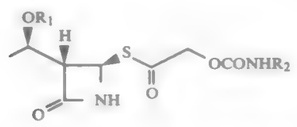
(II)

wherein R_1 is a hydroxy protecting group and Z is a C_1–C_{10} alkyl or an aryl group, with a compound of the formula (III):



(III)

wherein R_2 is as defined above and M is a hydrogen atom or a cation, in the presence of an anhydrous organic solvent, at a temperature of from 20° C. to 100° C. for a period of from a few minutes to a few days, to obtain an azetidinone of the formula (IV):



(IV)

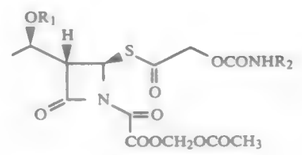
wherein R_1 is a hydroxy protecting group and R_2 is as defined above;

b) condensing the azetidinone of the formula (IV) as defined above, with an acetoxymethyl oxalic acid derivative of the formula (V):



(V)

wherein X is a halogen atom or a —$OCOOR_3$ group wherein R_3 is a C_1–C_{10} alkyl group, to give a compound of the formula (VI):



(VI)

wherein R_1 is a hydroxy protecting group and R_2 is as defined above; and

c) cyclizing and removing the protecting groups of the compound of the formula (VI) as defined above.

5,360,905

RECOVERY OF CAPROLACTAM FROM OLIGOMERS AND/OR POLYMERS OF CAPROLACTAM

Hugo Fuchs; Claus-Ulrich Priester, both of Ludwigshafen; Gerald Neubauer; Erwin Brunner, both of Weinheim; Josef Ritz, Ludwigshafen, and Michael Kopietz, Gruenstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 14, 1993, Ser. No. 60,972

Claims priority, application Germany, May 21, 1992, 4216848

Int. Cl.[5] C07D *201/12*

U.S. Cl. 540—540 9 Claims

1. A process for recovering caprolactam from oligomers and/or polymers of caprolactam, comprising the following steps:

a) treating oligomers and/or polymers of caprolactam with from 1 to 20 parts by weight of water per part by weight of oligomer or polymer at from 200° to 350° C. under superatmospheric pressure with a residence time of from 0.5 to 10 hours in a liquid aqueous phase to form an aqueous reaction mixture comprising polycaprolactam, monomeric caprolactam and oligomers thereof, and

b) passing the aqueous reaction mixture obtained in a) into a fluidized bed of alumina at from 250° to 400° C. to obtain a mixture of steam and caprolactam.

5,360,906

PESTICIDAL COMPOUNDS

David Munro, Maidstone, and Bipin Patel, Sittingbourne, both of England, assignors to Shell Research Limited, London, England

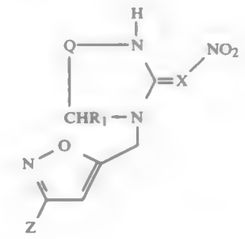
Division of Ser. No. 15,757, Feb. 10, 1993. This application Nov. 23, 1993, Ser. No. 157,788

Claims priority, application European Pat. Off., Feb. 14, 1992, 92301212.4

Int. Cl.[5] C07D *239/06, 239/12, 261/06*

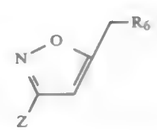
U.S. Cl. 544—331 4 Claims

1. A process for the preparation of a compound having the formula:

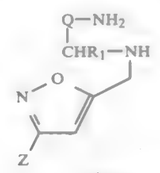


comprising:

reacting a compound of the formula



with a compound of the formula $NH_2CHR_1QNH_2$ to form an intermediary compound of the formula



and reacting said intermediary compound with a compound having a nitromethylene or nitroimino functional group therein; wherein R_1 is hydrogen or alkyl; Q is a linkage group of the formula $-CHR_2-$ or $-CHR_3-CHR_4-$, R_2, R_3, R_4 are independently hydrogen or alkyl; X is nitrogen or =CH—; R_6 is a halogen; and Z is a halogen.

5,360,907

PYRROLO[3,2-B]PYRIDINYLALKYL BENZAMIDE DERIVATIVES

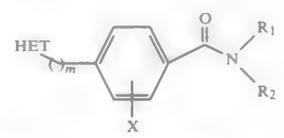
Kirk T. Lentz, Niles, and Richard M. Weier, Lake Bluff, both of Ill., assignors to G.D. Searle & Co., Chicago, Ill.

Filed Jun. 14, 1993, Ser. No. 77,598

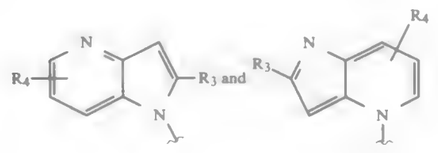
Int. Cl.[5] C07D *471/02, 471/06*

U.S. Cl. 546—113 19 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein HET is selected from the group consisting of

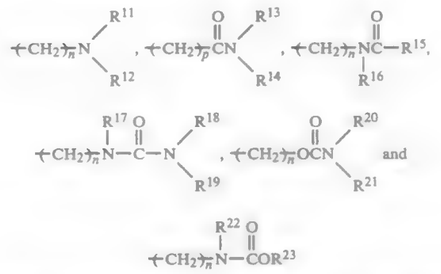


A B

m is an integer from 1 to 4;

R_1 and R_2 are each independently selected from the group consisting of hydrogen; straight or branched alkyl of 1 to 15 carbon atoms, cycloalkyl having 3 to 8 carbon atoms optionally substituted by one or more alkyl group of 1 to 6 carbon atoms, bicycloalkyl having 3 to 8 carbon atoms in each ring, phenyl optionally substituted by one or more groups independently selected from the group consisting of alkyl having 1 to 6 carbon atoms and halogen, straight or branched alkenyl having 3 to 15 carbon atoms, cycloalkenyl having 5 to 8 carbon atoms;

R_3 is selected from hydrogen, alkyl, hydroxyalkyl, formyl, haloalkyl, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkylhaloalkyl, aryloxyalkyl, alkoxyalkyl, alkylcarbonyl, alkylcarbonylalkyl, alkoxycarbonyl, alkenyl, cycloalkenyl, alkynyl, alkylcarbonyloxyalkyl, alkoxycarbonylalkyl, aralkoxycarbonylalkyl, aralkylcarbonyloxyalkyl, alkylsilyloxyalkyl, aryl/alkylsilyloxyalkyl, arylsilyloxyalkyl, mercaptoalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, and may further be an amino or amido radical of the formulae



wherein n is an integer from one to six, inclusive; wherein p is an integer from zero to six; wherein each of R^{11} through R^{23} is independently selected from hydrogen, alkyl, cycloalkyl, hydroxyalkyl, cycloalkylalkyl, alkoxyalkyl, aralkyl and aryl;

X is selected from the group consisting of hydrogen, straight or branched alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkoxyalkyl, alkylthio wherein the alkyl has 1 to 6 carbon atoms, hydroxyalkyl wherein the alkyl has 1 to 6 carbon atoms, alkylthioalkyl wherein the alkyl groups are each 1 to 6 carbon atoms, cyano, hydroxy, amino, alkylamino wherein the alkyl groups have 1 to 6 carbon atoms, dialkylaminoalkyl, dialkylamino wherein the alkyl groups have 1 to 6 carbon atoms and halogen; and

wherein R_4 is selected from the group consisting of alkyl of one to six carbon atoms, halogen, alkoxy of one to six carbon atoms and alkylthio.

5,360,908

ISOQUINOLINE DERIVATIVES

Emil A. Broger, Magden, Switzerland, and Bernd Heiser, Inzlingen, Germany, assignors to Hoffman-LaRoche Inc., Nutley, N.J.

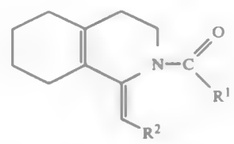
Continuation of Ser. No. 518,581, May 1, 1990, abandoned. This application Sep. 26, 1991, Ser. No. 766,463

Claims priority, application Switzerland, May 10, 1989, 1751/89; Mar. 16, 1990, 864/90

Int. Cl.[5] C07D *217/16, 217/24*

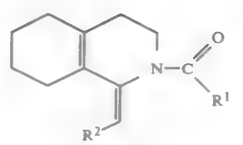
U.S. Cl. 546—146 14 Claims

1. A process for the preparation of an isoquinoline derivative of formula I in the Z-form

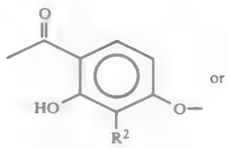


wherein R^1 is lower alkyl, aryl, or aryl-lower alkyl and R^2 is phenyl or p-methoxyphenyl

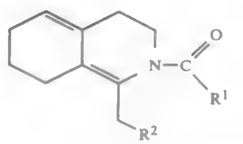
which comprises isomerizing at least one isoquinoline derivative of the formula



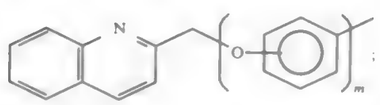
E-form II



or



III



alone or both together in a mixture with the isoquinoline derivative of formula I

wherein R^1 is lower alkyl, aryl, or aryl-lower alkyl and R^2 is phenyl or p-methoxyphenyl

in a solvent selected from the group consisting of aromatic hydrocarbons, alcohols having 1–3 C atoms, ethers or chlorinated hydrocarbons, at a temperature of between room temperature and 200° C., for at least 6 hours, and if desired, recovering the resulting isoquinoline derivative.

5,360,909

PHENOXYACETIC ACID COMPOUNDS AND MEDICAL PREPARATIONS CONTAINING THEM

Azuma Igarashi, Hadano; Sachiko Maeda, Nakai; Katuyoshi Sugizaki, Isehara; Takashi Shizawa, Ninomiya; Atsumi Tajima, Zama; Kenichi Abe, and Shinji Ozawa, both of Hadano, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

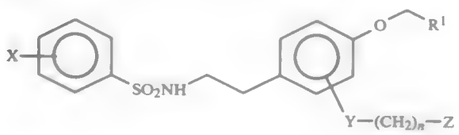
Filed Mar. 22, 1993, Ser. No. 35,178

Claims priority, application Japan, Mar. 23, 1992, 4-064773; Jul. 24, 1992, 4-198541

Int. Cl.[5] C07D *471/04, 471.02;* **A61K** *31/47*

U.S. Cl. 546—172 **18 Claims**

1. Phenoxyacetic acid compounds of the following formula (I) or their physiologically acceptable salts:



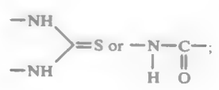
(I)

where

X is a hydrogen atom, a lower alkyl group or a halogen atom;

R1 is a carboxyl group or a lower alkoxycarbonyl group;

Y is an oxygen atom,



n is an integer of from 0 to 5;

Z is

R2 is a hydrogen atom or a lower alkyl group; and m is 0 or 1.

5,360,910

PESTICIDAL 1-ARYL-5-(SUBSTITUTED ALKYLIDENEIMINO)PYRAZOLES

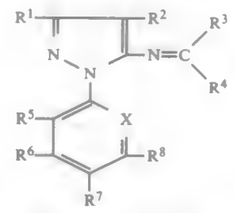
Jamin Huang, Chapel Hill; Hafez M. Ayad, Cary, and Philip R. Timmons, Durham, all of N.C., assignors to Rhone-Poulenc AG Company, Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 790,449, Nov. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 693,580, Apr. 30, 1991, Pat. No. 5,236,938. This application Mar. 4, 1992, Ser. No. 842,431

Int. Cl.[5] C07D *401/14*

U.S. Cl. 546—279 **2 Claims**

1. A pesticidal compound of formula (I)



(I)

wherein:

R^1 is cyano, nitro, halogen, formyl, alkylcarbonyl or cycloalkylcarbonyl; and wherein the alkyl moieties are linear or branched chains of 1–4 carbon atoms and the cycloalkyl moiety contains 3 to 7 carbon atoms;

R^2 is: halogen; alkyl; haloalkyl; alkoxy; haloalkoxy; nitro; thiocyanato; unsubstituted or mono-or dialkyl substituted sulfamoyl; unsubstituted or mono- or dialkyl substituted aminocarbonyl; alkoxycarbonyl; or unsubstituted or substituted $R^9S(O)_n$, in which n is 0, 1 or 2 and R^9 is alkyl, haloalkyl, cycloalkyl, halocycloalkyl, cycloalkylalkyl or halocycloalkylalkyl; and wherein the alkyl moieties are linear or branched chains of 1–4 carbon atoms, the cycloalkyl moiety contains 3 to 7 carbon atoms and the halo substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl and cycloalkyl moieties;

R^3 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio or di-C_{1-4} alkylamino; and wherein the alkyl moieties are linear or branched chains;

R^4 is unsubstituted or substituted 5 membered monocyclic ring containing a nitrogen and 1 and 2 of the same or different of oxygen, sulfur or nitrogen atoms; and wherein substitution is one or more or combinations of: hydroxy or inorganic or organic salt thereof; sulfhydryl or inorganic or organic salt thereof; halogen; cyano; nitro; alkyl; haloalkyl; alkoxy; -O-alkyl-O-; O-haloalkyl-O-; haloalkoxy; alkanoyloxy; phenoxy; trialkylsilyloxy; phenyl; alkyl-$S(O)_n$ or haloalkyl-$S(O)_n$, in which n is 0, 1 or 2; $NR^{10}R^{11}$ in which R^{10} and R^{11} are individually hydrogen, alkyl, alkanoyl or haloalkanoyl; COR^{12} in which R^{12} is $NR^{10}R^{11}$, alkoxy, alkylthio, hydroxy or inorganic or organic salt thereof, hydrogen, alkyl or haloalkyl; or SO_2R^{13} in which R^{13} is $NR^{10}R^{11}$, alkoxy, alkylthio, or hydroxy or inorganic or organic salt thereof; and wherein the alkyl and alkoxy moieties are linear or branched chains of 1–4 carbon atoms and the halo substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl and alkoxy moieties;

R^5 is hydrogen, halogen or linear or branched chain C_{1-4} alkyl;

R^6 and R^8 are each individually hydrogen or fluorine;

R^7 is halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, cyano, nitro, alkylcarbonyl, haloalkylcarbonyl, alkyl-$S(O)_n$ or haloalkyl-$S(O)_n$ in which n is 0,1 or 2; and wherein the alkyl and alkoxy moieties are linear or branched chains of 1–4 carbon atoms and the halo substitution consists of one or more halogen atoms, which are the same or different, up to full substitution of the alkyl and alkoxy moieties; and

X is a nitrogen atom (N) or C-R^{14} in which R^{14} is hydrogen, halogen, cyano, nitro, C_{1-4} alkyl, C_{1-4} alkylthio or C_{1-4} alkoxy; and the alkyl moieties are linear or branched chains.

5,360,911

PROCESS FOR THE PREPARATION OF STILBAZOLIUM SALTS

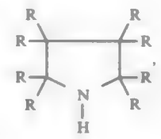
Eugene P. Boden, Scotia; Peter D. Phelps, and Kevin R. Stewart, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 17, 1993, Ser. No. 77,263

Int. Cl.[5] C07D *213/18*

U.S. Cl. 546—347 **19 Claims**

1. A process for producing a stilbazolium salt by combining an alkylated pyridine salt with a substituted benzaldehyde in the presence of about 0.10 to about 0.25 equivalents of a heterocyclic amine catalyst of the formula



wherein each R is independently a hydrogen, aliphatic, alicyclic or aromatic radical.

5,360,912

PROCESS OF PRODUCING IMINOTHIAZOLINE DERIVATIVES

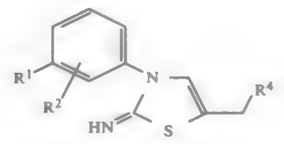
Shinichi Kawamura, Osaka; Junichi Sato, Toyonaka, and Yuzuru Sanemitsu, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 12, 1993, Ser. No. 17,259

Int. Cl.[5] C07D *277/40*

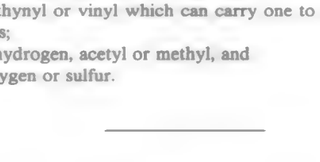
U.S. Cl. 548—199 **7 Claims**

1. A process for producing an iminothiazoline derivative of the formula:



(I)

wherein R^1 is halogen, halo(lower)alkyl, halo(lower)alkoxy or halo(lower)alkylthio; R^2 is hydrogen or halogen; and R^4 is hydrogen or lower alkyl, the process comprising the steps of subjecting a thiourea derivative of the general formula:



(II)

wherein R^1, R^2 and R^4 are each the same as defined above, and R^3 is hydrogen or (lower)alkylcarbonyl optionally substituted with at least one substituent selected from the group consisting of halogen, lower alkyl and lower alkoxy, to cyclization by acid treatment.

5,360,913

SALICYCLIC ACID DERIVATIVES

Joachim Rheinheimer, Ludwigshafen; Karl Eicken, Wachenheim; Uwe J. Vogelbacher, Ludwigshafen; Karl-Otto Westphalen, Speyer; Matthias Gerber, Mutterstadt, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

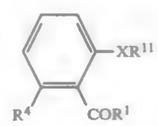
Division of Ser. No. 994,253, Dec. 21, 1992, abandoned, which is a division of Ser. No. 778,318, Oct. 16, 1991, Pat. No. 5,201,937. This application May 24, 1993, Ser. No. 64,917

Claims priority, application Germany, Oct. 26, 1990, 4034045

Int. Cl.[5] C07D *249/04, 249/08*

U.S. Cl. 548—255 **2 Claims**

1. A compound of the formula IV



IV

where

R^1 is succinimidoxy; a 5-membered heteroaromatic radical which contains two or three nitrogen atoms which can carry one or two halogen atoms and/or one or two of the following: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

R^4 is ethynyl or vinyl which can carry one to three halogen atoms;

R^{11} is hydrogen, acetyl or methyl, and

X is oxygen or sulfur.

5,360,914

LONG CHAIN CARBOXYLIC ACID MALEIMIDES

Masayasu Inoue, 49-3, Ikeda 3-chome, Kumamoto-city, Kumamoto; Iwao Ebashi, and Tetsuo Takigawa, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki and Masayasu Inoue, Kumamoto, both of Japan

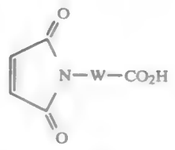
Division of Ser. No. 803,414, Dec. 6, 1991, Pat. No. 5,238,837. This application May 11, 1993, Ser. No. 59,759

Claims priority, application Japan, Feb. 5, 1991, 3-36765

Int. Cl.[5] A61K *37/50;* **C07K** *15/12;* **C07D** *207/452*

U.S. Cl. 548—546 **6 Claims**

1. A long chain carboxylic acid maleimide represented by the following generally formula (II)



(II)

wherein W is a divalent long chain hydrocarbon residue having 17 to 20 carbon atoms which may optionally be interrupted by one or more groups each independently selected from the group consisting of an oxygen atom, a sulfur atom and N(R) wherein R is a lower alkyl group.

5,360,915

MODIFIED HUMINATES AND THEIR PREPARATION

Urs N. Riede, Frieburg, and Bernhard Seubert, Edingen, both of Germany, assignors to Rutgerswerke Aktiengesellschaft AG, Germany

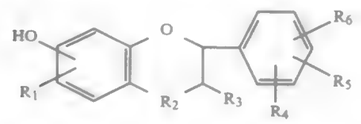
Filed Oct. 14, 1992, Ser. No. 960,895

Claims priority, application Germany, Oct. 17, 1991, 4134384

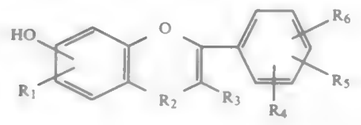
Int. Cl.[5] C07D *493/22, 521/00, 519/00;* **C08G** *83/00*

U.S. Cl. 549—200 **2 Claims**

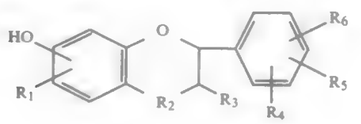
1. A modified alkali metal or ammonium huminate being made from molecules of the group consisting of



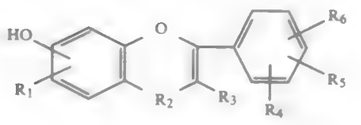
and



wherein R_1, R_3 and R_4 are individually hydrogen or —OH, R_2 is C═O or $—CH_2$ and R_5 and R_6 are individually selected from the group consisting of hydrogen, —OH and $—OCH_2$, with the proviso that R_4, R_5 and R_6 are not all hydrogen at the same time prepared by oxidizing an aqueous alkaline solution of at least one compound of the formula



or



wherein R_1, R_2, R_3, R_4, R_5 and R_6 have the above definition at 15 to 40° C., then adjusting the pH to 4.5 to 7.0 and recovering the purified low molecular weight huminate.

5,360,916

TWO STAGE BUTANE HALEIC ANHYDRIDE PROCESS

Ashok S. Padia, Glenrock, N.J., and Gaylon T. Click, Wilson County, Tex., assignors to Scientific Design Company, Inc., Little Ferry, N.J.

Continuation of Ser. No. 681,046, Apr. 5, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,088

Int. Cl.[5] C07D *307/60*

U.S. Cl. 549—259 **26 Claims**

1. A process for the partial oxidation of butane to form maleic anhydride comprising bringing a mixture of vaporized butane and air of controlled butane content into the presence of a contact vanadium-phosphorus-oxygen catalyst in a first oxidation zone under controlled pressure and temperature conditions, cooling the gaseous effluent from the first oxidation zone to a temperature in the range of 50° to 200° C. which is below the cold flame temperature of butane at the pressure at the outlet of the first oxidation zone, introducing a controlled amount of butane into the cooled gaseous effluent from the first oxidation zone, introducing said cooled butane enriched stream into the second oxidation zone, and bringing the thus butane-enriched mixture into contact with a vanadium-phosphorus-oxygen catalyst disposed in the second zone under controlled pressure and temperature.

5,360,917

PROCESS FOR PRODUCING MACROLIDE COMPOUNDS

Robert Thornton, Ulverson; David T. Eastlick, Grange-Over-Sands, and Kenneth Briggs, Ulverston, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 24,665, Mar. 11, 1987, abandoned. This application Jul. 27, 1989, Ser. No. 385,825

Claims priority, application United Kingdom, Mar. 12, 1986, 8606116

Int. Cl.[5] C07D *323/00*

U.S. Cl. 549—264 **3 Claims**

1. In a process for recovering at least one Antibiotics S541 compound or chemical derivative thereof from solution in an organic solvent, wherein the improvement comprises the use of an organic solvent which is petroleum ether or a mixture thereof with up to 10% acetone, followed by contacting the said solution with alumina and absorbing the compound(s) thereon, eluting the compound(s) with an elution solvent which is an alcohol, ketone, nitrile or ester solvent or a mixture thereof with a less polar solvent and collecting the eluate containing the compounds.

5,360,918

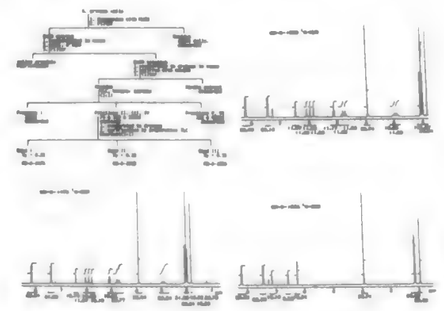
METHOD FOR CONTROLLING INSECTS

Muraleedharan G. Nair, Okemos, Mich., assignor to Board of Trustees operating Michigan State University, East Lansing, Mich.

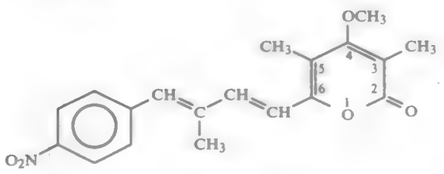
Division of Ser. No. 5,154, Jan. 15, 1993, Pat. No. 5,310,754, which is a division of Ser. No. 811,950, Dec. 23, 1991, Pat. No. 5,250,566, which is a continuation-in-part of Ser. No. 177,311, Apr. 5, 1988, abandoned. This application Nov. 22, 1993, Ser. No. 155,484

Int. Cl.[5] C07D *309/38*

U.S. Cl. 549—294 **1 Claim**



1. A compound



5,360,919

POLYCYCLIC DYES

Michael C. H. Standen, Auchterarder, Scotland, assignor to Zeneca Limited, London, England

Filed Mar. 8, 1993, Ser. No. 28,695

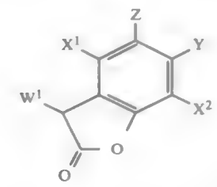
Claims priority, application United Kingdom, Mar. 9, 1992, 9205049.1

Int. Cl.[5] C07D *57/00*

U.S. Cl. 549—299 **7 Claims**

1. A process for the preparation of a compound of Formula (1):

Formula (1)



wherein:

W^1 is aryl;

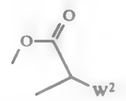
X^1 and X^2 are each independently selected from —H, —CN, halogen, alkyl, phenyl and —COOH;

Y is —H;

Z is —OH; or

Y and Z together form a group, of Formula (2):

Formula (2)

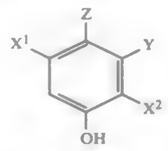


wherein:

W^2 is phenyl or substituted phenyl;

which comprises reacting a compound of Formula (3):

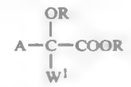
Formula (3)



wherein:

X^1, X^2, Y and Z are as hereinbefore defined with a compound of Formula (4):

Formula (4)



wherein:

R is —H or -alkyl;

A is selected from —H, —COOR, —OR and phenyl in which R is as hereinbefore defined; and

W^1 and W^2 are as hereinbefore defined, in the presence of an acid catalyst characterised in that the catalyst is a long chain alkyl- or long chain alkylaryl-sulphonic, disulphonic or phosphonic acid.

5,360,920

HYDROGENATION IN A PLATE HEAT EXCHANGER

Vicki L. Weber, Cincinnati; Joseph S. Boggs, Springdale, and Richard M. King, Amberley Village, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 7, 1992, Ser. No. 926,611

Int. Cl.[5] C11C *3/12*

U.S. Cl. 554—144 **15 Claims**

1. The process of hydrogenating a fatty material in a plate and frame heat exchanger having a ratio of surface to volume of at least about 75 at a pressure of at least 150 psig, the pressure drop per foot being at least about 0.2 psig.

5,360,921

PROCESS FOR PREPARING CYCLOPENTADIENYL GROUP-CONTAINING SILICON COMPOUND OR CYCLOPENTADIENYL GROUP-CONTAINING GERMANIUM COMPOUND

Yoshihisa Kiso; Koji Kawasi, and Masatoshi Nitabaru, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 11, 1994, Ser. No. 208,590

Claims priority, application Japan, Mar. 22, 1993, 5-062216

Int. Cl.[5] C07F *7/08, 7/30*

U.S. Cl. 556—478 **4 Claims**

1. A process for preparing a cyclopentadienyl group-containing silicon compound or a cyclopentadienyl group-containing germanium compound, comprising reacting:

(i) a lithium, sodium or potassium salt of a cyclopentadiene derivative, with

(ii) a silicon halide compound or a germanium halide compound,

in the presence of a cyanide or a thiocyanate.

5,360,922
PROCESS FOR THE PREPARATION OF DIALKYL CARBONATES

Erich Wolters, Köln; Heinz Landscheidt, Duisburg; Alexander Klausener, Stolberg, and Lothar Puppe, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 26, 1993, Ser. No. 23,302
Claims priority, application Germany, Mar. 2, 1992, 4206526
Int. Cl.[5] C07C *69/96*
U.S. Cl. 558—277 **20 Claims**

1. A process for the preparation of a dialkyl carbonate of the formula

$$O{=}C(OR)_2,$$

in which

represents straight-chain or branched C_1–C_4-alkyl

by reacting carbon monoxide (CO) with an alkyl nitrite of the formula

RONO,

in which

R has the indicated meaning,

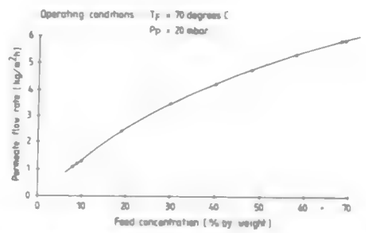
in the presence or absence of an inert gas and in the presence or absence of the alcohol ROH on which compounds are based, and in the presence or absence of NO, on a supported catalyst comprising a platinum group metal, at elevated temperature in a continuous gas phase reaction, wherein, as the support, an alumosilicate zeolite having acidic centres is used, the platinum group metal is present in the form of a halogenide or a halogenide-containing complex compound, where the platinum group metal halogenide or the halogen-containing complex containing the platinum group metal can be formed in situ in the process reactor from the platinum group metal or a halogen-free platinum group metal compound with the aid of hydrogen halogenide under the reaction conditions, the catalyst is further equipped or not equipped with an addition of a compound of antimony, bismuth, aluminium, copper, vanadium, niobium, tantalum, tin, iron, cobalt, nickel or a mixture of a plurality of these, and the process is carried out using a volume ratio of nitrite:CO=0.1–10:1 and at a temperature from 50° to 150° C. and a pressure of from 0.8 to 10 bar, hydrogen halogenide being added intermittently or continuously in at least that amount which is discharged, even if no hydrogen halogenide is added, from the reactor with the reaction mixture.

5,360,923
PROCESS FOR SEPARATING OFF ALKANOLS, MIXTURES OF ALKANOLS AND WATER OR WATER ITSELF FROM OXYGEN-CONTAINING ORGANIC COMPOUNDS OF HIGHER CARBON NUMBER

Andreas Nickel, Wetter; Wolfgang Arlt, Berlin; Ingo Janisch, Kürten; Paul Wagner, Düsseldorf, and Alexander Klausener, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 6, 1993, Ser. No. 132,593
Claims priority, application Germany, Oct. 13, 1992, 4234525
Int. Cl.[5] C07C *27/26, 29/76, 69/96*
U.S. Cl. 558—277 **17 Claims**

1. A process for separating off a first alkanol having 1 to 3 C atoms, or a mixture of this first alkanol with water from oxygen-containing organic compounds having 3 to 7 C atoms from the group comprising a second alkanol and dialkyl carbonates, the first alkanol always having at least 2 C atoms less than each of the oxygen-containing organic compounds, by pervaporation or vapour permeation, wherein the mixture described is fed at 40° to 130° C., to a membrane which has been obtained by plasma polymerization, a pressure of 0.5 to 10 bar being established on the feed side and a pressure of not more than 100 mbar being established on the permeate side and the first alkanol or the mixture of first alkanol and water in concentrated form being obtained as the permeate and the oxygen-containing organic compound in concentrated form being obtained as the retained material.

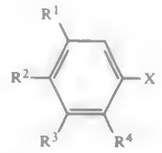


5,360,924
PROCESS FOR PREPARING AROMATIC OLEFINS

Matthias Beller, Niedernhausen; Hartmut Fischer, Hofheim, and Heinz Strutz, Usingen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 6, 1994, Ser. No. 177,945
Claims priority, application Germany, Jan. 7, 1993, 4300194
Int. Cl.[5] C07C *69/76*
U.S. Cl. 560—55 **16 Claims**

1. A process for preparing aromatic olefins of the formula I

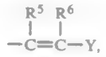


(1)

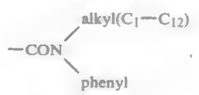
in which R^1, R^2 and R^3 are, independently of one another, hydrogen, alkyl(C_1–C_8) , alkoxy(C_1–C_5) , phenyl, fluorine, chlorine, bromine, —OH, —NO_2, —CN, —CHO, —COalkyl(-C_1–C_4) , —COphenyl, —COOalkyl(C_1–C_4) —OCOalkyl(-C_1–C_4), —NHCO—alkyl(C_1–C_4), —CF_3, NH_2, —NHalkyl(-C_1–C_4) or -N(alkyl-(C_1–C_4))$_2$ and

R^4 is hydrogen, alkyl(C_1–C_8), phenyl, fluorine, chlorine, bromine, —OH, —NO_2, —CN, —CHO or -OCOalkyl (C_1–C_4), where the alkyl and the alkoxy groups are straight-chain or branched, and

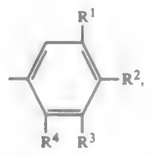
X is alkenyl(C_2–C_2), cycloalkenyl(C_4–C_8) or the group



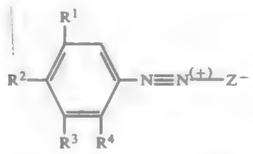
in which R^5 and R^6 are, independently of one another, hydrogen or methyl, and Y is -phenyl, —CN, —COOH, —COOalkyl(C_1–C_{12}), —COOphenyl, —CON(alkyl(-C_1–C_{12}))$_2$,—CONHalkyl(C_1–C_{12}), —CON



—CON(phenyl)$_2$, —COalkyl(C_1–C_{12}), —COphenyl, —Oalkyl(C_1–C_{12}) , —Ophenyl or the radical



in which R^1–R^4 are as defined above, which comprises reacting an aryldiazonium salt of the formula (2)



(2)

in which R^1, R^2, R^3 and R^4 are as defined above and Z is the equivalent of an anion of an organic or inorganic acid having a pK_a of less than 7, with an olefin of the formula (3)

HX (3)

in which X is as defined above, in the presence of catalytic amounts of a heterogeneous palladium catalyst in an organic solvent at temperatures from about 20° C. to about 150° C.

5,360,925
DUAL INHIBITORS OF NO SYNTHASE AND CYCLOOXYGENASE, PROCESS FOR THEIR PREPARATION AND THERAPEUTICAL COMPOSITIONS CONTAINING THEM

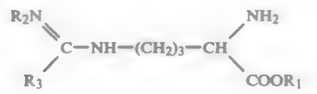
Pierre-Etienne Chabrier de Lassauniere, Paris; Pierre Braquet, Garches; Colette Broquet, Boulogne, and Serge Auvin, Saint-Michel-Sur-Orge, all of France, assignors to Societe de Conseils de Recherches et d'Applications Scientifiques, France

Division of Ser. No. 995,792, Dec. 23, 1992. This application Sep. 29, 1993, Ser. No. 128,908
Claims priority, application United Kingdom, Jan. 4, 1992, 9200114.8
Int. Cl.[5] C07C *229/30*
U.S. Cl. 560—169 **4 Claims**

1. Process for the preparation of amide compounds of the formula AB wherein:

A represents a cyclooxygenase inhibitor having an acidic function, the said cyclooxygenase inhibitor being of the formula RCOOH wherein COOH stands for the acidic function and R stands for a radical which corresponds to the radical of the selected cyclooxygenase inhibitor, and

B represents the L-form of arginine analogues of the formula



wherein R_1 represents a hydrogen atom or a methyl or ethyl group, R_2 represents a hydrogen atom or a nitro group and R_3 represents an amino, methylamino, ethylamino, hydrazino, methyl or ethyl group, with the proviso that if AB is a salt wherein R_2 represents a hydrogen atom, then R_3 does not represent an amino group,

comprising the step of reacting, in substantially equimolar proportions, in the appropriate conditions, a compound A or a precursor of such a compound A wherein A is as above defined, with a compound B or a precursor of such a compound B wherein B is as above defined.

5,360,926
PROCESS FOR PRODUCING METHYL METHACRYLATE

Seiji Kouno, and Minoru Yasuda, both of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 22, 1993, Ser. No. 139,754
Claims priority, application Japan, Oct. 22, 1992, 4-284228; Feb. 18, 1993, 5-028886
Int. Cl.[5] C07C *69/52*
U.S. Cl. 560—205 **9 Claims**

1. A process for producing methyl methacrylate from methacrylic acid and methanol, which comprises feeding methacrylic acid and methanol to an apparatus comprising a reaction zone having plural reaction sections connected in series and containing a strongly acidic ion-exchange resin and a distillation zone, said methacrylic acid being fed to the first reaction section of the reaction zone and said methanol being fed to one or more reaction sections after the first reaction section, sending the reaction mixture formed in each reaction section to a reaction section just thereafter, sending the vapor generated in each reaction section to a reaction section just therebefore, effecting simultaneously reaction and distillation in each reaction section, and distilling the vapor generated in the first reaction section of the reaction zone in the distillation zone to separate the methyl methacrylate produced.

5,360,927
PROCESS FOR THE PREPARATION OF MONOHYDRATED SODIUM PHENYLPYRUVATE

Jin-Tann Chen, Taipei; Same-Ting Chen, Yuanlin, and Hsin Tsai, Taipei, all of , assignors to Development Center for Biotechnology, Taipei,

Filed Jan. 24, 1994, Ser. No. 185,714
Int. Cl.[5] C07C *59/74*
U.S. Cl. 562—459 **6 Claims**

1. A process for the preparation of monohydrated sodium phenylpyruvate comprising the steps of:

(a) reacting benzaldehyde with the stoichiometric quantity of hydantoin in an aqueous medium in the presence of a catalytic quantity of a primary or secondary amine having a boiling point greater than 100° C. at reflux temperature to form a reaction mixture;

(b) treating the reaction mixture with 2 to 5 moles of sodium hydroxide per mole of hydantoin at reflux temperature to form a sodium hydroxide-treated solution;

(c) adding sodium chloride to the sodium hydroxide-treated solution;

(d) acidifying the solution obtained in step (c) to a pH range of 3.0 to 14 with concentrated hydrochloric acid; and

(e) washing the precipitate formed in step (d) with a primary alcohol.

5,360,928
SYNTHESIS AND USE OF AMINO ACID FLUORIDES AS PEPTIDE COUPLING REAGENTS

Louis A. Carpino, Amherst, and Dean Sadat-Aalaee, Sunderland, both of Mass., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Filed Oct. 23, 1989, Ser. No. 426,121
Int. Cl.[5] C07C *229/00*
U.S. Cl. 562—849 **58 Claims**

1. A compound of the formula:



or the acid fluoride salts thereof wherein

BLK is an acid labile N-α-amino protecting group capable of being cleaved by trifluoroacetic acid, a base labile N-α-amino protecting group, an N-α-amino acid protecting group removable by hydrogenation, a nucleophile labile N-α-amino acid protecting group or N-α-amino protecting group derived from a carboxylic acid;

AA is an alpha amino acid residue and

X is — or a protecting group on the side chain of AA.

5,360,929

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ANHYDRIDES

Derrick J. Watson, East Yorkshire; Bruce L. Williams; John G. Sunley, both of North Humberside, and Robert J. Watt, Middlesex, all of England, assignors to BP Chemicals Limited, London, England

Filed Feb. 10, 1994, Ser. No. 196,284

Claims priority, application United Kingdom, Feb. 25, 1993, 9303770

Int. Cl.[5] **C07C** *51/12, 53/12*

U.S. Cl. 562—891 **10 Claims**

1. A process for the production of a carboxylic acid anhydride which process comprises contacting a reaction composition comprising a carboxylic acid ester, a hydrocarbyl halide and/or a hydrocarbyl ether reactant and a hydrocarbyl halide promoter with carbon monoxide in the presence of a catalyst comprising an insoluble polymer support having pendant quaternised N-base or alkylated N–oxide pyridine groups supporting a rhodium species in which process there is maintained throughout the process a finite concentration of carboxylic acid anhydride in the reaction composition.

5,360,930

DIRECT DYES HAVING A QUATERNARY CENTER WITH A LONG ALIPHATIC CHAIN

Alexander Chan, Mineola, N.Y., and Yub-Guo Pan, Stamford, Conn., assignors to Clairol Inc., New York, N.Y.

Division of Ser. No. 939,202, Sep. 1, 1992, Pat. No. 5,314,505, which is a division of Ser. No. 786,860, Nov. 1, 9991, Pat. No. 5,169,403. This application Jan. 10, 1994, Ser. No. 179,289

Int. Cl.[5] **C07C** *211/63*

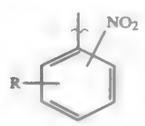
U.S. Cl. 564—284 **8 Claims**

1. A nitronaniline dye compound of the formula (I):

$$Q—NR_6(CH_2)_n—N^+R_1R_2R_3X^-$$

or a cosmetically acceptable salt thereof, wherein

Q is a nitrobenzene of the formula (II):



(II)

n is 2 to 12;

R is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, C_{1-6} polyhydroxyalkyl, halogen, C_{1-6} alkoxy, halogenated C_{1-3} alkyl, polyhalogenated C_{1-3} alkyl, CN, $CONH_2$, SO_3H, or COOH;

R_1 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl;

R_2 is C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or c_{1-6} polyhydroxyalkyl;

R_3 is a C_{8-22} aliphatic chain;

R_6 is hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} polyhydroxyalkyl; and

X^- is a monovalent or divalent anion.

5,360,931

CONTINUOUS MULTI-STAGE PROCESS FOR THE PREPARATION OF (CYCLO) ALIPHATIC DIISOCYANATES

Gerd Bohmholdt, Marl; Wilhelm Heitmann, Herne; Peter Kirchner, Bochum, and Hans-Werner Michalczak, Herne, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Apr. 2, 1993, Ser. No. 42,282

Claims priority, application Germany, May 5, 1992, 4214236; Sep. 19, 1992, 4231417

Int. Cl.[5] **C07C** *263/00*

U.S. Cl. 560—344 **25 Claims**

1. A continuous multi-stage process for the preparation of (cyclo)aliphatic diisocyanates of the formula

$$OCN—R^1—NCO$$

wherein R^1 represents a substituted or unsubstituted linear or branched aliphatic hydrocarbon radical having a total of 6 to 12 carbon atoms or a cycloaliphatic hydrocarbon radical having a total of 6 to 13 carbon atoms, which may have a substituent, comprising the steps of:

(a) condensing urea with a (cyclo)aliphatic diamine of the formula

$$H_2N—R^1—NH_2$$

in the presence of an alcohol solvent of the formula

$$R^2—OH$$

to give a (cyclo)alkylenebisurea of the formula

$$H_2N—CO—NH—R^1—NH—CO—NH_2$$

wherein R^1 is as described above and R^2 represents a primary aliphatic hydrocarbon radical having 3 to 5 carbon atoms, wherein said condensing step is performed at 100° to 130° C. under a pressure of 0.7 to 1.5 bar (absolute) in a distillation reactor having at least 4 trays, with said urea, said alcohol and said (cyclo)aliphatic diamine being introduced continuously onto the top tray of said distillation reactor, and wherein an additional amount of said alcohol is introduced to the bottom of said distillation re,crop, with removal of ammonia formed during said condensing step, to form a reaction mixture containing a crude (cyclo)alkylenebisurea,

(b) reacting said crude (cyclo)alkylenebisurea with said alcohol solvent in (a) to give a (cyclo)alkylene biscarbamate of the formula

$$R^2—O—CO—NH—R^1—NH—CO—O—R^2$$

wherein said reaction is performed in a pressurized distillation reactor at temperatures of 160° to 210° C. at the top of said pressurized distillation reactor and at 180° to 250° C. at the bottom of said pressurized distillation reactor, under a pressure of 7 to 13 bar, wherein said reaction mixture containing crude (cyclo)alkylenebisurea from condensing step (a) is introduced onto a top tray of said pressurized distillation reactor, together with a recycling mixture from process step (e), and an additional amount of said alcohol is introduced into the bottom of said pressurized distillation reactor, with removal of ammonia formed during said reacting step (b), to give said (cyclo) alkylene biscarbamate,

(c) removing said ammonia from the vapors obtained at the top of the pressurized distillation reactor of step (b), and from the alcohol obtained by partial condensation of the vapors from step (a), in an alcohol recovery column, wherein ammonia-free alcohol obtained at the bottom of said alcohol recovery column is recycled to provide said additional amount of alcohol which is introduced to the bottom of said distillation reactor of step (a) and to the bottom of said pressurized distillation reactor of step (b),

(d) cleaving said (cyclo)alkylene biscarbamate obtained in step (b) in the absence of solvent and in the presence of a catalyst, in a combined cleavage and rectifying column, wherein cleavage occurs in a lower part of said cleavage and rectifying column to provide cleavage products, with a portion of the cleavage products being diverted, and wherein rectification of said cleavage products occurs in an upper part of said cleavage and rectifying column to obtain pure alcohol at the top of said cleavage and rectifying column and crude (cyclo)alkylene diisocyanate is obtained in a lateral takeoff from a mid-portion of said cleavage and rectifying column,

(e) reacting said diverted portion of cleavage products from the bottom of said combined cleavage and rectifying column of step (d) with the alcohol from the top of the combined cleavage and rectifying column of step (d) to form a recycling mixture and recycling the recycling mixture into said pressurized distillation reactor of step (b), and

(f) distilling said crude (cyclo)alkylene diisocyanate from step (d).

5,360,932

PROCESS FOR REDUCING AROMATIC HALO-DINITRO-DIOLS IN THE PRESENCE OF HYDROGEN HALIDE

Patrick J. McGrath, Martinez, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 855,284, Mar. 23, 1992, abandoned. This application Jan. 11, 1993, Ser. No. 2,578

Int. Cl.[5] **C07C** *209/36*

U.S. Cl. 564—418 **14 Claims**

1. A process for synthesizing an aromatic diamino-diol compound, said process comprising the step of contacting an aromatic halo-dinitro-diol compound with an excess of hydrogen in the presence of:

(1) a noble metal hydrogenation catalyst;

(2) an aqueous solvent; and

(3) about 2 moles of hydrogen halide per mole of aromatic halo-dinitro-diol plus an additional amount sufficient to provide about a 0.75 to 4 molar solution of hydrogen halide in the aqueous solvent,

under mixing under conditions such that an aromatic diamino-diol is formed.

5,360,933

TETRAMETHYLXYLYLENE CARBODIIMIDE

Yasuo Imashiro, and Ikuo Takahashi, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

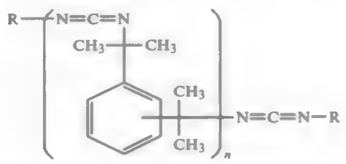
Filed Dec. 17, 1992, Ser. No. 992,029

Claims priority, application Japan, Dec. 26, 1991, 3-359449

Int. Cl.[5] **C08G** *18/70;* **C07C** *267/00*

U.S. Cl. 564—252 **12 Claims**

1. A tetramethylxylylene carbodiimide of the formula



where R is the residue of a monoisocyanate and n is an integer of 1 or more.

5,360,934

HYDROGENATION OF AROMATIC AMINES TO PRODUCE THEIR RING HYDROGENATED COUNTERPARTS

Gamini A. Vedage, Bethlehem, and John N. Armor, Orefield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 25, 1993, Ser. No. 83,843

Int. Cl.[5] **C07C** *209/72, 211/26;* **B01J** *23/40, 21/04*

U.S. Cl. 564—451 **23 Claims**

1. In a process for the catalytic hydrogenation of aromatic amines to their ring hydrogenated counterparts, by contacting the aromatic amine with hydrogen in the presence of a catalyst, the improvement which comprises effecting said hydrogenation in the presence of a catalyst comprising rhodium carried on an alumina support, said alumina support being kappa.

5,360,935

PROCESS FOR THE PREPARATION OF 3-PHENYL-2-PROPENONES

Shinzo Kagabu, Gifu, and Katsuaki Wada, Tochigi, both of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

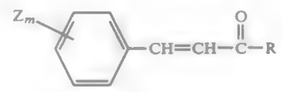
Filed Sep. 14, 1992, Ser. No. 944,556

Claims priority, application Japan, Sep. 24, 1991, 3-270465

Int. Cl.[5] **C07C** *49/683, 79/798*

U.S. Cl. 568—316 **4 Claims**

1. A process for the preparation of a 3-phenyl-2-propenone of the formula



(I)

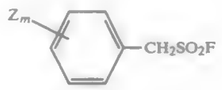
in which

Z is fluorine, chlorine, bromine, nitro, alkyl with 1 to 4 carbon atoms, halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, or is cycloalkyl with 5 to 7 carbon atoms, alkoxy with 1 to 4 carbon atoms, halogenoalkoxy with 1 or 2 carbon atoms and 1 to 5 halogen atoms, or is straight-chain or branched alkylthio with 1 to 4 carbon atoms, or halogenoalkylthio with 1 to 2 carbon atoms and 1 to 5 halogen atoms,

R is alkyl with 1 to 4 carbon atoms, cycloalkyl with 3 to 7 carbon atoms optionally substituted by 1 to 3 identical or different radicals selected from the group consisting of alkyl with 1 or 2 carbon atoms, or is phenyl which is optionally substituted by 1 to 3 identical or different radicals selected from the group consisting of halogen, nitro, alkyl with 1 to 4 carbon atoms and halogenoalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, and

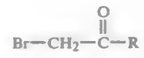
m is 0, 1, 2, 3 or 4,

which comprises reacting a phenylmethanesulphonyl fluoride of the formula



(II)

with a ketone of the formula



(III)

in the presence of a phase transfer-catalyst selected from the group consisting of a tetraalkyl ammonium halide, benzylalkyl ammonium halide, benzylammonium halide, tetraalkyl phosphonium halide, crown ether and cryptand,

and in the presence of an acid binder selected from the group consisting of a hydroxide, carbonate, bicarbonate or alcoholate of an alkali metal or alkaline earth metal, a hydride, tertiary amine, N,N-dialkylamine and cyclic amino compound, and in the presence of an inert solvent selected from the group consisting of an optionally halogenated aliphatic, alicyclic or aromatic hydrocarbon, ether, ketone, nitrile, ester, acid amide, sulfone, sulfoxide, sulfolane and pyridine.

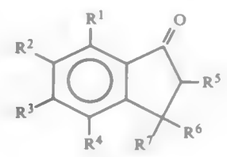
5,360,936

PROCESS FOR THE PREPARATION OF SUBSTITUTED INDANONES

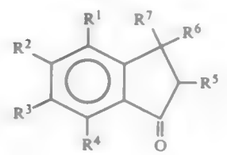
Laurent Weisse, Oberursel, and Heinz Strutz, Usingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 10, 1993, Ser. No. 120,104
Claims priority, application Germany, Sep. 11, 1992, 4230373
Int. Cl.[5] C07C *45/45*
U.S. Cl. 568—319 **6 Claims**

1. A process for the preparation of a compound of the formula IV or the isomer thereof of the formula IV*a*



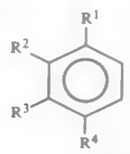
(IV)



(IVa)

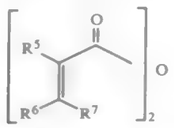
in which

R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are identical or different and are hydrogen, (C_1–C_{20})-alkyl, (C_6–C_{14})aryl, (C_1–C_{10})alkoxy, (C_2–C_{10})alkenyl, (C_7–C_{20})arylalkyl, (C_7–C_{20}) alkylaryl, (C_6–C_{10})aryloxy, (C_1–C_{10}) fluoroalkyl (C_6–C_{10}) haloaryl, (C_2–C_{10})alkynyl, an $-SIR^8_3$ radical where R^8 is (C_1–C_{10})alkyl, or are a halogen atom or a heteroaromatic radical having 5 or 6 ring members which may contain one or more heteroatoms, or adjacent radicals R^1–R^4, together with the atoms connecting them, form one or more substituted or unsubstituted rings, which comprises reacting a compound of the formula I



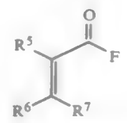
(I)

with a compound of the formula II



(II)

or with a compound of the formula (III)



(III)

in which R^1–R^7 are as defined above, in liquid, anhydrous hydrogen fluoride and with boron trifluoride.

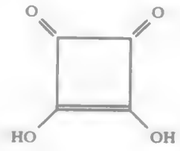
5,360,937

1,3-CYCLOBUTANEDIONE-BISKETALS, PROCESS FOR THEIR PRODUCTION AND THEIR USE

Barry Jackson, Brig-Glis, Switzerland, assignor to Louza Ltd., Gampel/Valais, Switzerland

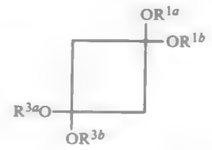
Filed Mar. 22, 1993, Ser. No. 35,089
Claims priority, application Switzerland, Mar. 24, 1992, 929/92
Int. Cl.[5] C07C *45/43*
U.S. Cl. 568—348 **13 Claims**

1. A process for the production of squaric acid of formula:



VII

comprising halogenating a 1,3-cyclobutanedione-bisketal of formula I:



I

wherein either R^{1a}, R^{1b}, R^{3a} and R^{3b} are the same and respectively each represents a linear or branched lower alkyl group, or respectively R^{1a} and R^{1b} as well as R^{3a} and R^{3b} together mean the same and with the ketal oxygen atoms and the intermediate carbon atom respectively form a five-membered or six-membered spiro-linked ring with the cyclobutane ring optionally substituted by one or more lower alkyl groups and then hydrolyzing said halogenated 1,3-cyclobutanedione-bisketal of formula I to squaric acid.

5,360,938

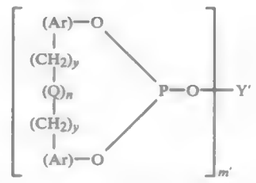
ASYMMETRIC SYNTHESES

James E. Babin, Hurricane, and Gregory T. Whiteker, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 748,112, Aug. 21, 1991, and Ser. No. 748,111, Aug. 21, 1991, abandoned. This application Jul. 16, 1992, Ser. No. 911,518
Int. Cl.[5] C07C *45/00*
U.S. Cl. 568—449 **12 Claims**

1. A hydrogenation process which comprises reacting a prochiral compound (which is a compound having the potential to be converted to a chiral product in the hydrogenation process) or chiral compound (which is a compound which has one or more centers of asymmetry) in the presence of an optically active metal-ligand complex catalyst to produce an optically active product (which is a mixture of stereoisomers which rotates the plane polarized light due to an excess of one

of the steroisomers over the others), said optically metal-ligand complex catalyst comprising a metal complexed with an optically active ligand having the formula



wherein each Ar group is the same or different and is a substituted or unsubstituted aryl radical; Y is an m-valent substituted or unsubstituted hydrocarbon radical selected form alkylene, alkylene-oxy-alkylene, arylene, and arylene-$(CH_2)_y$—$(Q)_n$—$(CH_2)_y$-arylene; each Ar contains from 6 to 18 carbon atoms Y′ contains from 2 to 30 carbon atoms; each y is the same or different and is a value of 0 to 1; each n is the same or different and is a value of 0 or 1; each Q is the same or different and is a substituted or unsubstituted divalent bridging group selected from —C^1R^2, —O—, —S—, —NR^3—, SiR^4R^5—, and —CO—, wherein R^1 and R^2 are the same or different and are hydrogen or a substituted or unsubstituted radical selected from alkyl or 1 to 12 carbon atoms, phenyl, tolyl and anisyl, and R^3, R^4 and R^5 are the same or different and are a radical selected from hydrogen or methyl; and m is a value of from 2 to 6.

5,360,939

HOMOGENEOUS BIMETALLIC HYDROFORMYLATION CATALYSTS, AND PROCESSES UTILIZING THESE CATALYSTS FOR CONDUCTING HYDROFORMYLATION REACTIONS

George G. Stanley, Baton Rouge, La., and Scott A. Laneman, Vernon Hills, Ill., assignors to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation of Ser. No. 28,415, Mar. 9, 1993, which is a division of Ser. No. 573,355, Aug. 27, 1990, Pat. No. 5,200,539. This application Jan. 12, 1994, Ser. No. 180,537
Int. Cl.[5] C07C *45/50*; C07F *15/00*
U.S. Cl. 568—454 **9 Claims**

1. A process for converting an alkene or substituted alkene to a product rich in aldehydes at a high linear:branched chain aldehyde ratio, which comprises contacting the alkene or substituted alkene, in the presence of carbon monoxide and hydrogen at conditions conducive to hydroformylation, with a composition comprising:



(I)

wherein

M is a Group VIII metal or Group IB metal;

M′ is a Group VIII metal or Group IB metal;

X is selected from the group consisting of methylene; substituted methylene CSS′ where S and S′ can be the same or different, and each of S and S′ is a hydrocarbon moiety which can be saturated or unsaturated and which contains up to 20 carbon atoms; oxygen; and NQ where Q is a hydrocarbon moiety which can be saturated or unsaturated and which contains up to 20 carbon atoms;

each Y is selected from the group consisting of ethyl; propyl; and meta-substituted aryl having hydrogen, F, or methyl substituents; where the Ys may be the same or different;

each R is a hydrocarbon moiety which can be saturated or unsaturated and which contains up to 20 carbon atoms; where the Rs may be the same or different;

each R′ is selected from the group consisting of methyl, ethyl, n-propyl, n-butyl, methoxy, ethoxy, propoxy, and butoxy; where the R′s may be the same or different;

each L and L′ is a substituent ligand selected from the group consisting of H, CO, alkenyl, alkyl, substituted alkenyl, and substituted alkyl; where the Ls may be the same or different; and where the L′s may be the same or different;

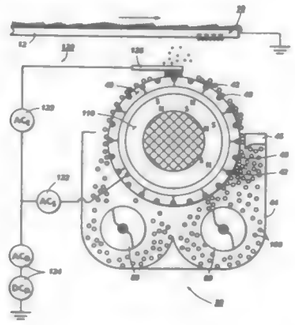
and the values of the numbers w, x, y, and z for the ligands L and L′ depend on the metal centers M and M′ and are selected such that each metal center M and M′ has 14, 16, or 18 valence electrons.

5,360,940

SCAVENGELESS TWO COMPONENT DEVELOPMENT WITH AN ELECTRODED DEVELOPMENT ROLL

Dan A. Hays, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1993, Ser. No. 91,858
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—654 **10 Claims**



9. An apparatus for developing a latent image recorded on a surface, comprising:

a donor roll spaced from the surface, for transporting developer to a development zone adjacent the surface;

a plurality of selectively-actuable electrodes disposed around the circumference of the donor roll;

an AC bias source; and

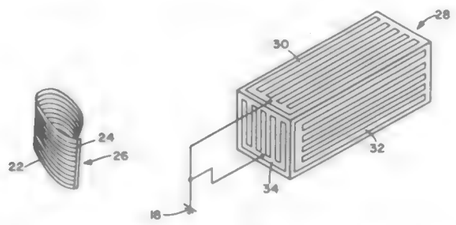
a commutating means connecting the AC bias source to at least a subset of the electrodes along a portion of the circumference of the donor roll adjacent the development zone, so that an electrode is biased in a substantially opposite phase to an adjacent electrode along the circumference of the donor roll.

5,360,941

MAGNETICALLY PERMEABLE ELECTROSTATIC SHIELD

John B. Roes, San Diego, Calif., assignor to Cubic Automatic Revenue Collection Group, San Diego, Calif.

Filed Oct. 28, 1991, Ser. No. 784,457
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **14 Claims**



1. A magnetically permeable, electrostatically shielded device, comprising:

an electronic device;

a pouch-like container enclosing said electronic device;

the container comprising a non-conductive supporting surface of flexible material having a conductive shielding layer, said layer consisting essentially of at least one plurality of parallel conductive strips, each said strip having a first and a second end, with said first ends conductively joined to a conductive termination; and

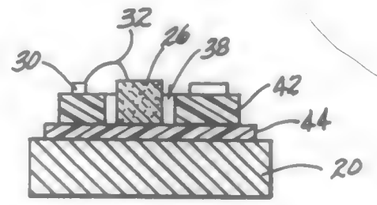
said supporting surface being folded over upon itself and joined at the edges to form a pouch-like container.

5,360,942

MULTI-CHIP ELECTRONIC PACKAGE MODULE UTILIZING AN ADHESIVE SHEET

Paul R. Hoffman, and Dexin Liang, both of Modesto, Calif., assignors to Olin Corporation, Manteca, Calif.

Filed Nov. 16, 1993, Ser. No. 153,240
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 **23 Claims**



1. A module for an electronic package, comprising:

a support substrate;

an apertured substrate adjacent said support substrate, said apertured substrate containing at least one aperture;

a polymer adhesive disposed between and bonded to both said support substrate and to said apertured substrate; and

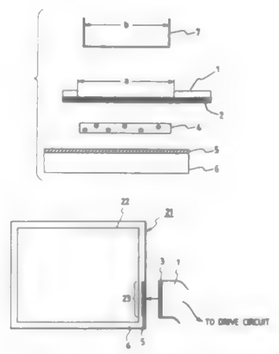
at least one semiconductor device disposed within said at least one aperture and bonded to said support substrate by said polymer adhesive.

5,360,943

ELECTRICAL CONNECTION STRUCTURE

Hideo Mori, Fujisawa; Hiroshi Takabayashi, Kawasaki, and Masanori Takahashi, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,935
Claims priority, application Japan, Oct. 2, 1991, 3-280378; Sep. 25, 1992, 4-279299
Int. Cl.[5] H01B *7/00;* **H01R** *43/00*
U.S. Cl. 174—84 R **5 Claims**



1. An electrical connection structure comprising:

a first set of electrodes formed on a device side;

a second set of electrodes formed on a flexible film carrier having an electrode pattern and connected to a drive circuit; and

an anisotropic conductive film having metal particles or metal plated particles dispersed therein, interposed between said first set of electrodes and said second set of

electrodes, for electrically connecting said electrodes facing each other through thermocompression bonding,
wherein said second set of electrodes is exposed at an electrical connection area where the flexible film is removed,
with said electrodes at said exposed area having a width b, a thickness h, a length l, and an electrode bending stress σ having values such that the following equation is satisfied:
$P \leqq (4bh^2/1^2)^* \sigma$, and 1.5 mm $\leqq l \leqq$ 2.5 mm,

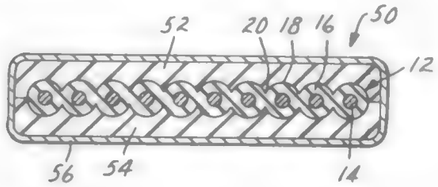
wherein P is the force caused by a flow of resin of said anisotropic conductive film,
and the thickness of said anisotropic film before the electrode connection is set to such a value that the volume of said anisotropic film can fill at least a gap between said first and second sets of electrodes and/or between said first and second sets of electrodes and their respective support.

5,360,944

HIGH IMPEDANCE, STRIPPABLE ELECTRICAL CABLE

Denis D. Springer, Austin, Tex.; Randall L. Alberg, Woodbury, and Mark W. Breault, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 8, 1992, Ser. No. 986,769
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—117 F 9 Claims



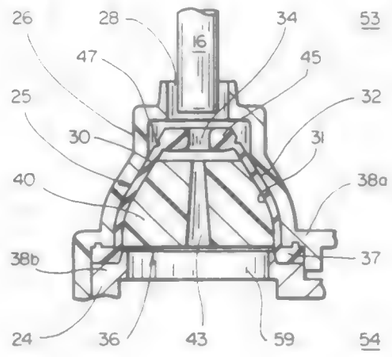
7. A high impedance, strippable electrical cable comprising:
at least one conductor;
a first layer of insulation surrounding said conductor;
a second layer of insulation of the same material as said first layer of insulation overlying said first layer and retained in contact with said first layer;
said contact between said first layer of insulation and said second layer of insulation being sufficient to substantially exclude air from between said first layer of insulation and said second layer of insulation but permitting said second layer of insulation to be stripped from said first layer of insulation without materially damaging said first layer of insulation.

5,360,945

CABLE SEAL

Robert G. Truesdale, Jr., Cary, and John E. Francis, Raleigh, both of N.C., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 1, 1991, Ser. No. 693,903
Int. Cl.[5] H02G *15/013*
U.S. Cl. 174—151 28 Claims



1. In combination, a cable and re-enterable cable seal. comprising:
a) an invertible enclosing member having an inside surface and an outside surface,
b) invertible O-ring gripping means on said member for defining a resilient opening connecting through said surfaces and for gripping said cable and causing said member to invert when said cable is moved in a predetermined direction through said member while said cable is positioned through said gripping means,
c) said enclosing member being tapered outwardly away from said gripping means to cause said outside surface to avoid contact with itself during inversion of said member from inside-out to inside-in,
d) folding means defining a region of reduced thickness on said enclosing member for connecting said gripping means to said member with less resistance to inversion than the inversion resistance of said enclosing member to cause said folding means to invert before said enclosing member inverts,
e) said gripping means being configured to invert with said folding means before said enclosing member inverts when said cable applies an inverting force to said gripping means,
f) boss means on said enclosing member substantially opposite said gripping means and forming a stabilizing boss extending circumferentially outwardly around said enclosing member for influencing said member to invert with circumferential symmetry, and for securing said member during such inversion, and
g) a plug of gel sealant on said inside surface for sealing engagement with said cable, means defining a tapered open core in said plug substantially coaxial with said O-ring gripping means and said opening, said plug otherwise substantially filling said enclosing member when in an inside-in condition, said gel having a cone penetration substantially between 100 and 350 (10^{-1} mm) and an ultimate elongation of at least 200% and being sufficiently compliant to remain on said inside surface when said member is inverted inside-out, such that said gel sealant is substantially inside said enclosing member when said member is in the inside-in condition and substantially outside said member when inverted in an inside-out condition, said gel sealant being configured to form such a sealing engagement with said cable when said cable is located in said opening and said member is inside-in, and said enclosing member being configured to place said gel in sealing compression against said cable when said member is inside-in, whereby said cable, when inserted through said opening, can pass through said member free from substantial contact with said gel as said member supports said gel outside itself, and said cable can then invert said enclosing member to turn said member inside-in to position said gel sealant in sealing compression against said cable to effect a seal between said member and said cable while permitting said cable to pass therethrough.

5,360,947

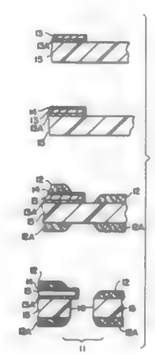
Patent Not Issued For This Number

5,360,946

FLEX TAPE PROTECTIVE COATING

Claudius Feger, Hopewell Junction; Teresita O. Graham, Irvington; Kurt R. Grebe, Beacon; Alphonso P. Lanzetta, Marlboro; John J. Liutkus, Yorktown Heights; Linda C. Matthew, Peekskill; Michael J. Palmer, Walden; Nelson R. Tanner, Harpursville; Ho-Ming Tong, Yorktown Heights, all of N.Y.; Charles H. Wilson, Beckley, W. Va., and Helen L. Yeh, Katonah, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 17, 1991, Ser. No. 761,182
Int. Cl.[5] H01R *9/09*
U.S. Cl. 174—261 16 Claims



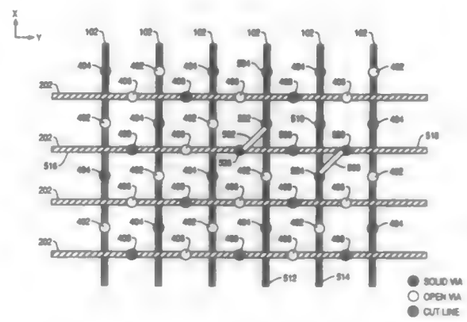
1. A flex product structure comprising: a substrate containing at least one window therethrough and having at least one metal coated metal lead thereon aligned with said window, said lead extending on said substrate from an inner lead area on one edge thereof, to an outer lead area at the opposite edge thereof, said lead at either the inner/outer lead area extending in cantilevered fashion over said window in said substrate;
a free standing, rigid dielectric polymer coating disposed on at least one side of said flex product structure, said dielectric coating being self-aligned to the vertical edges of said window.

5,360,948

VIA PROGRAMMING FOR MULTICHIP MODULES

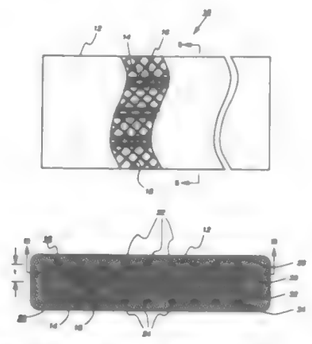
Gary R. Thornberg, Colorado Springs, Colo., assignor to NCR Corporation, Dayton, Ohio

Filed Aug. 14, 1992, Ser. No. 929,551
Int. Cl.[5] H05K *1/02*
U.S. Cl. 174—263 8 Claims



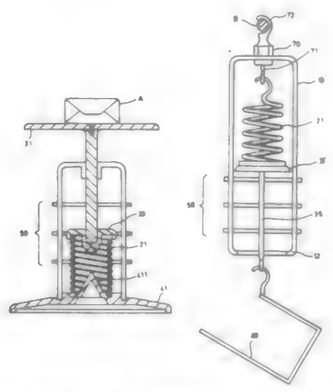
1. A programmable base substrate for a multichip module (MCM), comprising:
a first patterned signal layer within said substrate;
a second patterned signal layer within said substrate, said second signal layer being electrically insulated from said first signal layer;
a first plurality of via openings, each one of said first plurality of via openings providing an opening in said substrate to said first signal layer; and
a second plurality of via openings, each one of said second plurality of via openings providing an opening in said substrate to said second signal layer;
whereby said base substrate is programmed by depositing an electrically conductive material within selected via openings and on the surface of said base substrate to electrically connect selected sections of said first and second signal layers, and by cutting open selected sections of said first and second signal layers which are exposed by said via openings.

5,360,949
PRINTED CIRCUIT BOARD
Guy M. Duxbury, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 3, 1994, Ser. No. 190,933
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—250 8 Claims



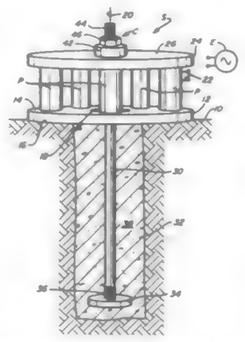
1. A printed circuit board for electrically interconnecting electronic components, comprising:
a non-conductive supporting member;
a conductive mesh supported by the supporting member, the conductive mesh defining an array of intersecting conductors; and
at least one pair of parallel conductive wires supported by the supporting member equidistant from the conductive mesh,
wherein the longitudinal axes of the pair of conductive wires are oriented at an angle relative to intersections of the conductors of the conductive mesh, so that the offset of the intersections from the conductive wires incrementally changes along the longitudinal axes of the pair of conductive wires so that the capacitances between the conductive wires and the conductive mesh are substantially balanced regardless of the lateral position of the wires.

5,360,950
SET POINT POSTAL SCALE
Chung-Pu Cheng, Suite 1, 11F, 95-8 Chung Ping Road, Sec. 1, Taichung,
Filed May 18, 1992, Ser. No. 884,416
Int. Cl.[5] G01G *3/02*
U.S. Cl. 177—232 5 Claims



1. A set point weighing scale comprising a transparent generally tubular holder, a weighing pan, a plunger depending from said weighing pan and slidingly engaged within said holder, a spring element resisting the downward displacement of said plunger within said holder, a broadened base provided below said holder, and a plurality of annular rings slidingly positionable along said holder; the improvement wherein;
said spring element comprising a compression type coil spring and said plunger carrying an indicator disk on a lower portion thereof, said indicator being in abutment with an upper portion of said spring element.

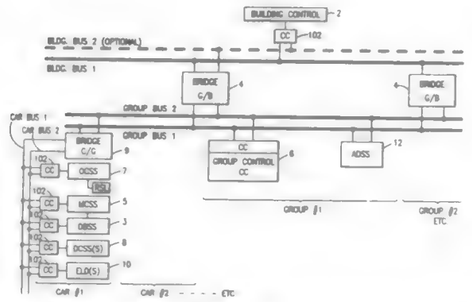
5,360,951
EARTH REACTION SEISMIC SOURCE
Walter R. Turpening, 11606 Brooks Meadows, Meadows, Tex. 77477
Filed Oct. 13, 1993, Ser. No. 135,806
Int. Cl.[5] G01V *1/02*
U.S. Cl. 181—113 20 Claims



1. A seismic energy source for imparting seismic energy into earth formations, comprising:
a first plate member adapted to rest on an earthen surface;
transducer means mounted on said first plate member for converting electrical energy into mechanical vibrating energy;
a second plate member resting above said transducer means; and
earth clamping means for anchoring said second plate member to the earth.

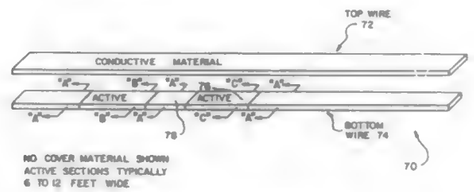
5,360,952
LOCAL AREA NETWORK ELEVEATOR COMMUNICATIONS NETWORK
David C. Brajczewski, Vernon; Bertram F. Kupersmith, Avon, and James P. Towey, Jr., Bristol, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Jun. 1, 1993, Ser. No. 70,128
Int. Cl.[5] B66B *3/00*
U.S. Cl. 187—246 1 Claim

1. An elevator communications unit for use in an elevator communication system which includes a plurality of said communication units distributed among a building bus, a group bus, and a car bus, comprising:
A transceiver machine responsive to a data signal in parallel form provided from an applications layer for converting said data signal from parallel form to serial form and providing a serial data signal onto a dual bus of said elevator communications system wherein said data signal is precede on said dual bus by a control byte signal for identifying whether communications of the data signal are local to the dual bus or directed to a remote bus (group or building), a message identifier signal, and a preamble signal, and a bus jam signal if said data signal is being provided onto an idle dual bus;
a receive machine responsive to said serial data signal on said dual bus for converting said data signal from serial form to parallel form, for selecting only one data signal from one bus based on said preamble, for identifying said data signal as associated with the bus of said receive machine by means of said control byte, and providing said data signal



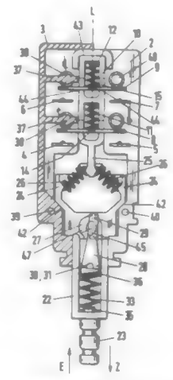
to said applications layer when the message identifier signal of the received data signal for matches with a message identifier signal associated with said applications layer;
a slot timer for timing the transmission and reception of said data signals by said communication unit.

5,360,953
LANE DISCRIMINATING TRAFFIC COUNTING DEVICE
John W. Reed, Baltimore, Md., assignor to Progressive Engineering Technologies Corp., Baltimore, Md.
Division of Ser. No. 700,428, May 15, 1991, Pat. No. 5,239,148.
This application Jul. 12, 1993, Ser. No. 89,341
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—86 A 2 Claims



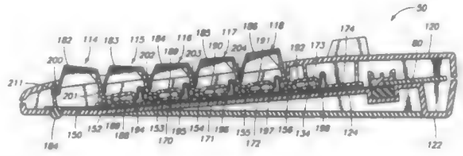
1. A traffic counting cord comprising: a)
a resilient top portion having at least one resilient conductive member;
a resilient lower portion having a plurality of active and passive sections and a plurality of resilient lower portion conductive members channeled and interconnected through the lower portion, the lower portion conductive members being separated by non-conductive material;
each passive section further comprising resilient non-conductive material arranged over the conductive members to insulate the lower portion conductive members from the top portion;
each active section further comprising a layer of resilient conductive material at a top of the lower portion, resilient non-conductive material arranged over the lower portion conductive members to insulate the lower portion conductive members from the conductive layer, and a communicating conductive material passing through the non-conducting material to connect one of the conductive members to the resilient conducting material on top of the active section.

5,360,954
PUSH BUTTON SWITCH
Ulrich Brüggeman, Heustreu; Hans-Karl Heil, Wildflecken, and Gerhard Hochgesang, Bad Neustadt/Saale, all of Germany, assignors to Preh-Werke GmbH & Co. KG, Saale, Germany
Filed Jan. 19, 1994, Ser. No. 183,426
Claims priority, application Germany, Jan. 19, 1993, 4301192
Int. Cl.[5] H01H *3/42*
U.S. Cl. 200—524 12 Claims



1. A push button switch having housing-affixed contacts, at least one contact bridge for bridging the contacts that is movable by means of a spring plunger, an over-center spring-switching mechanism that is operatively coupled between the spring plunger and a manually-movable sliding switch, and a locking linkage for interconnecting the sliding switch with said spring switching mechanism for alternately locking the sliding switch in the "on" and "off" positions;
wherein a pair of interacting rubbing surfaces is provided between the spring plunger and a housing-affixed part, with the interacting rubbing surfaces being positioned and arranged so that an increase in interactive rubbing friction occurs between the spring plunger and the housing-affixed part shortly before a snapping of the spring-switching mechanism caused by a shoving of the sliding switch occurs so that a snapping movement of the spring plunger is retarded.

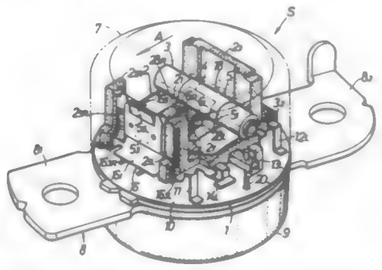
5,360,955
COMPUTER KEYBOARD WITH CANTILEVER SWITCH DESIGN AND IMPROVED PCB/SWITCH MEMBRANE INTERFACE
George P. English, Coeur d'Alene, Id.; Stephen S. Damitio, Veradale, Wash.; Theodore D. Clark, Spokane, Wash., and Joseph A. Benefield, Spokane, Wash., assignors to Key Tronic Corporation, Spokane, Wash.
Filed Aug. 18, 1992, Ser. No. 931,691
The portion of the term of this patent subsequent to Jul. 12, 2011, has been disclaimed.
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—5 A 31 Claims



1. A computer keyboard comprising:

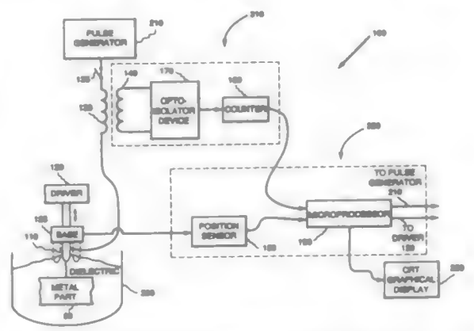
a support plate;
a first mounting strip secured to the support plate, the first mounting strip having apertures formed therein;
a first row of first cantilevered keys, individual first cantilevered keys having at least one elongated member with one end flexibly attached to the first mounting strip and the other end coupled to a key cap, the individual first cantilevered keys being movable from a rest position to a depressed activated position;
a second mounting strip secured to the support plate;
a second row of second cantilevered keys adjacent to, and partially overlapping, the first row of first cantilevered keys, individual second cantilevered keys having at least one elongated member with one end flexibly attached to the second mounting strip and the other end coupled to a key cap, the individual second cantilevered keys being movable from a rest position to a depressed activated position;
a switch membrane positioned intermediate of the mounting strips and the support plate, the switch membrane having a row of switch contacts aligned beneath corresponding apertures of the first mounting strip;
a dome sheet positioned intermediate of the mounting strips and the support plate, the dome sheet having a row of resilient domes extending upward through corresponding apertures of the first mounting strip; and
the elongated members of the second cantilevered keys extending above corresponding domes that extend through the apertures in the first mounting strip and corresponding switch contacts, the second cantilevered keys actuating the corresponding switch contacts when the second cantilevered keys are depressed to their activated positions.

5,360,956
ACCELERATION SENSOR FOR VEHICLE
Kazuaki Shitanoki, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1992, Ser. No. 945,699
Claims priority, application Japan, Sep. 18, 1991, 238040
Int. Cl.[5] H01N *35/14, 1/12*
U.S. Cl. 200—61.45 R **6 Claims**



1. An acceleration sensor for a vehicle, comprising:
a resinous frame;
a roller capable of rolling along a guide surface of said resinous frame;
a roll spring wound around said roller, said roll spring having opposite ends in a direction of rolling movement said roller fixed to said resinous frame, said roll spring further having two arm portions distanced laterally from each other and a single movable contact forming portion for forming a movable contact, said arm portions being connected commonly at one end thereof to said movable contact forming portion; and
stationary contacts mounted on said resinous frame to lie in a path of rolling movement of said roller and disposed at locations inwardly of said two arm portions of the roll spring,
wherein said roller is rolled against a biasing force of said roll spring by an inertia due to a shock to thereby cause said stationary contacts to be electrically connected with said movable contact,
wherein said movable contact forming portion has a width capable of coming into contact with the stationary contacts simultaneously, and
wherein the guide surface of said resinous frame is provided with two recesses divided by a partition, and said stationary contacts are disposed in said recesses, respectively, so as to be distanced from each other by said partition and from said movable contact and said two arm portions on the guide surface with spacings therebetween.

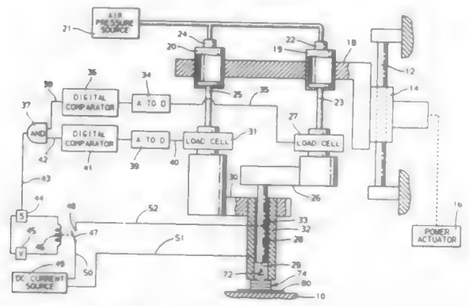
5,360,957
CONTROLLED APPARATUS FOR ELECTRICAL DISCHARGE MACHINING
Kenneth B. Haefner, Schenectady, N.Y.; James R. Bischoff, Wilmington, Mass.; Mark D. Ehresman, Haverhill, Mass., and Steven F. Comeau, No. Reading, Mass., assignors to General Electric Company, Schenectady, N.Y.
Filed Jun. 11, 1992, Ser. No. 896,933
Int. Cl.[5] B23H *1/02, 7/18, 9/14*
U.S. Cl. 219—69.16 **38 Claims**



29. A method for machining an electrically conductive part with an electrical discharge apparatus comprising at least two electrodes mounted in a base, said method comprising the steps of:
positioning said base relative to said part;
energizing said electrodes to produce a plurality of electrical discharges between said electrodes and said part when said electrodes are positioned adjacent said part;
measuring rises in the electrical discharge frequency of said electrodes; and
controlling the position of said base in accordance with the rises in electrical discharge frequency measured for said electrodes.

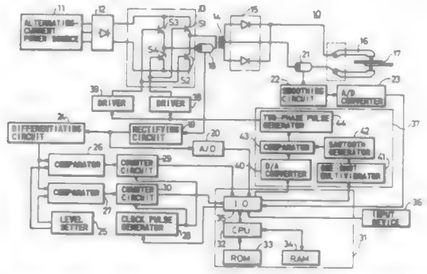
5,360,958
WELDING APPARATUS HAVING COAXIAL WELDING ELECTRODES
Terry L. Bogue, Windfall, and Hollis D. Osborne, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed May 17, 1993, Ser. No. 61,469
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—86.51 **3 Claims**

3. A resistance welding apparatus for welding a wire to a metallic pad comprising, a first metallic welding electrode for engaging and forcing said wire into engagement with a surface of said pad, a second metallic welding electrode coaxial with and disposed about said first welding electrode for directly engaging said surface of said pad and having a pair of opposed slots for receiving and positioning said wire for engagement with said first electrode, a first electrode force sensor associated with said first electrode for sensing the force of said first electrode, a second electrode force sensor associated with said second electrode for sensing the force of said second electrode, a source of welding current, means electrically connecting said source of welding current to said electrodes including at least



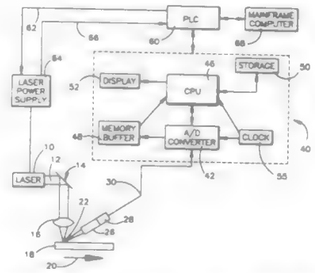
one switching means, and means for causing said switching means to apply welding current to said electrodes when the force of said first electrode has a first predetermined value and when the force of said second electrode has a second predetermined value.

5,360,959
DIRECT CURRENT RESISTANCE WELDING MACHINE AND METHOD OF CONTROLLING THE SAME
Fumitomo Takano; Hitoshi Saito; Yuko Suzuki; Kenji Miyanaga, and Gen Tujii, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 14, 1993, Ser. No. 76,146
Claims priority, application Japan, Jun. 15, 1992, 4-155011; Sep. 17, 1992, 4-247818
Int. Cl.[5] B23K *11/24*
U.S. Cl. 219—110 **12 Claims**



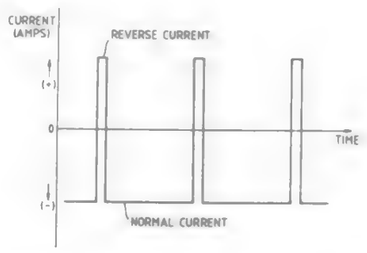
1. A method of controlling a direct current resistance welding machine, comprising:
a first step of detecting a primary current of a welding transformer coupled to an inverter having a plurality of switching devices controlled by corresponding pulses having a predetermined frequency and a time width corresponding to a value of a desired secondary current;
a second step of detecting rise and fall times of the detected primary current; and
a third step of computing an upper limit frequency of the primary current based on said time width and said rise and fall times,
whereby the primary current of said welding transformer is controlled by controlling said switching devices based on pulses having a frequency falling within said upper limit frequency.

5,360,960
LIGHT INTENSITY WELD MONITOR
Bryan W. Shirk, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio
Continuation-in-part of Ser. No. 904,976, Jun. 26, 1992. This application Aug. 6, 1993, Ser. No. 103,448
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **17 Claims**



1. An apparatus for monitoring a weld process which delivers energy from a laser source to a workpiece along a process path while producing light emitting plasma at a beam delivery point along said path, comprising:
light detecting means for receiving light from said plasma and providing a light signal having a value which varies with changes in the intensity of the received light over a predetermined test interval;
means for providing a plurality of light intensity limits with each limit having a different value;
means for comparing said light signal with each of said limits and providing a violation indication each time said light signal violates one of said limits;
means for counting the number of said violation indications for each limit during said predetermined test interval;
means for evaluating the weld process as a function of the number of violation indications for said limits during said test interval; and
means for providing an output indication of said evaluation.

5,360,961
METHOD OF WELDING
Robert C. Ingall, Leicestershire, and Julie Waumsley, Derby, both of England, assignors to Rolls-Royce plc, London, England
PCT No. PCT/GB91/01311, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO92/05908, PCT Pub. Date Apr. 16, 1992
PCT Filed Aug. 1, 1991, Ser. No. 975,567
Claims priority, application United Kingdom, Sep. 29, 1990, 9021237.4
Int. Cl.[5] B23K *9/073*
U.S. Cl. 219—137 PS **25 Claims**



1. A method of welding comprising forming an alternating current electric arc between an electrode and a metallic sub-

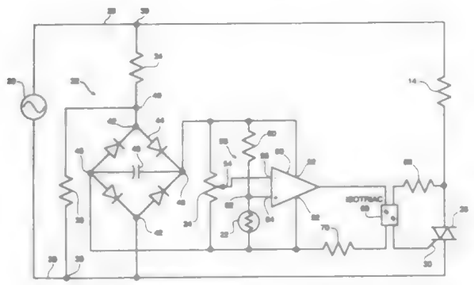
strate, the alternating current having a square wave form, supplying metal into the electric arc for depositing a weld deposit on the metallic substrate, characterized in that the square wave alternating current electric arc is self supporting and is free of intercycle high frequency support, the square wave alternating current has a wave bias ratio greater than 96% normal current to 4% reverse current.

5,360,962

HEATING APPLIANCE WITH TRANSFORMERLESS POWER SUPPLY USING LOW-LOSS PASSIVE DIVIDER TO REDUCE AC LINE VOLTAGES

Frederick B. Pettit, 1514 House Road, Ridgeway, Ontario, Canada L0S 1N0

Filed May 13, 1993, Ser. No. 60,068
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 **3 Claims**



1. An appliance comprising an electrical heating element and a power cord adapted to conduct a heating current to the heating element from an AC electrical main operating at a predetermined AC line voltage, the appliance being adapted to control flow of the heating current in response to temperature and a settable temperature threshold, the appliance comprising:

a semiconductor switch in series with the heating element, the semiconductor switch comprising a control terminal which controls the conductive state of the semiconductor switch in response to signals applied to the control terminal;

control circuit means for controlling the conductive state of the semiconductor switch, the control circuit means comprising a sensor positioned to sense temperature within the appliance, means connected to the sensor for producing a temperature signal corresponding to the sensed temperature, adjustable reference means for producing a temperature threshold signal, and comparator means for comparing the temperature signal with the temperature threshold signal and applying signals to the control terminal of the semiconductor switch corresponding to differences between the temperature and threshold signals;

transformerless power supply means for rectifying and reducing the AC line voltage to produce a power supply voltage acceptable to the circuit means, the power supply means being connected to the power cord to receive the AC line voltage and connected to the control circuit means to apply the power supply voltage to the control circuit means for operation thereof, the power supply means comprising a rectifier bridge and means defining a passive voltage-reducing circuit;

the control circuit means requiring a predetermined minimum operating voltage and drawing an operating current from the power supply means which has a maximum average current value when the semiconductor switch is in a conductive state and a minimum average current value when the semiconductor switch is in a non-conductive state;

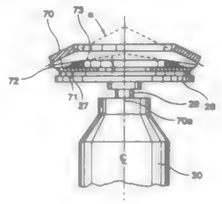
the passive voltage-reducing circuit comprising a resistive element which produces a voltage drop that reduces the magnitude of the power supply voltage and which conducts the operating current of the control circuit means such that the power supply voltage has a maximum average voltage value when the semiconductor switch is in its non-conductive state and a minimum average voltage value when the semiconductor switch is in its conductive state, the resistance of the resistive element being selected such that the maximum average voltage value is at least 25% greater than the minimum average voltage value and such that the minimum average voltage value is above the predetermined minimum operating voltage required by the control circuit means.

5,360,963

APPARATUS FOR AND METHOD OF INDUCTION-HARDENING MACHINE COMPONENTS

John M. Storm, Danville, and Michael R. Chaplin, Speedway, both of Ind., assignors to Contour Hardening, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 839,333, Feb. 20, 1992, Pat. No. 5,247,150, and a continuation-in-part of Ser. No. 839,332, Feb. 20, 1992, Pat. No. 5,247,145, which is a continuation of Ser. No. 708,896, May 31, 1991, Pat. No. 5,124,517, said Ser. No. 839,333, is a division of Ser. No. 708,896, May 31, 1991. This application Feb. 8, 1993, Ser. No. 14,667
Int. Cl.[5] H05B *6/40, 6/14*
U.S. Cl. 219—640 **2 Claims**



1. In combination:

a bevel gear to be induction hardened having a substantially flat rear face, a plurality of gear teeth, each gear tooth having a heel portion and a toe portion and an upper gear tooth surface defining a cone angle, said bevel gear having an axial centerline; and

an induction-hardening machine for the contour hardening of said bevel gear comprises:

a work station support having support means receiving said bevel gear and further including a rotatable drive spindle secured to said support means, spindle drive means connected to said rotatable drive spindle for rotating said drive spindle, said drive spindle having a geometric axis of rotation;

an induction coil having a generally conical, gear-facing surface and a conical centerline axis, said induction coil being positioned above said work station support and oriented such that said conical centerline axis is generally coincident with the axial centerline of said bevel gear, wherein the gear-facing surface of said induction coil and the gear tooth surface of said bevel gear define therebetween an acute angle; and

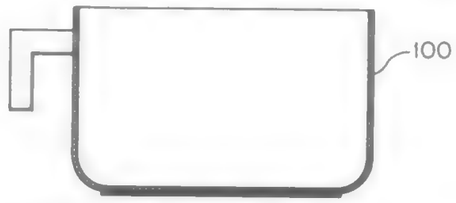
energizing means electrically connected to said induction coil for energizing said induction coil.

5,360,964

MICROWAVE COFFEE MAKER HAVING A HOT PLATE HEATED BY MICROWAVES

Hwa S. Park, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation-in-part of Ser. No. 15,357, Feb. 9, 1993, Pat. No. 5,300,743. This application Oct. 14, 1993, Ser. No. 136,042
Claims priority, application Rep. of Korea, Feb. 17, 1992, 9202264[U]
Int. Cl.[5] H05B *6/80*; A47J *31/00*
U.S. Cl. 219—689 **9 Claims**



1. A microwave coffee maker comprising:

a heating chamber including a heating pipe for receiving and conducting water;

microwave generating means for generating microwaves to heat water in said heating pipe;

a siphon pipe connected to said heating pipe for siphoning the heated water to a water outlet situated outside of said heating chamber and isolated from microwaves generated by said microwave generating means;

a coffee filtering vessel removably positionable beneath said water outlet for receiving water therefrom;

a support plate disposed beneath said coffee filtering vessel and including an upper side for supporting thereon a coffee container to collect coffee from said coffee filtering vessel, said upper side situated outside of said heating chamber and being isolated from microwaves generated by said microwave generating means, said support plate including an underside situated beneath said upper side; and

a microwave absorbing material disposed on said underside of said support plate and exposed to microwaves from said microwave generating means for being heated thereby and conducting heat to said upper side for keeping the coffee warm.

5,360,965

MICROWAVE OVEN WITH AUTOMATIC COOKING MODE SELECTING FUNCTION

Kazunori Ishii, Tajimi; Hisao Kano, Aichi; Nobuichi Nishimura, Ichinomiya; Masayuki Aoki, Inuyama; Yukio Suzuki, Aichi; Takamichi Sujaku, Nagoya; Yoshio Okamura, Nagoya; Masahiko Wada, Nagoya; Takumi Ohno, Nagoya, and Ryuho Narita, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 9, 1993, Ser. No. 28,258
Claims priority, application Japan, Mar. 13, 1992, 4-055460
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—705 **15 Claims**

1. A microwave oven comprising:

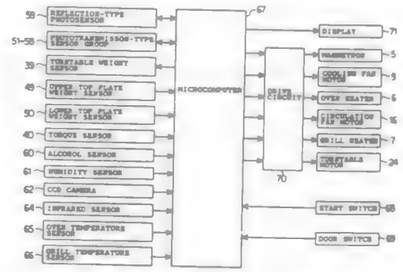
a) a heating chamber;

b) a plurality of cooking utensils detachably disposed in the heating chamber selectively in accordance with cooking contents, the cooking utensils including at least an upper top plate and a lower top plate disposed up and down in the heating chamber respectively and a food holder placed on the upper top plate;

c) a plurality of heat sources for heating food placed on or contained in at least one of the cooking utensils, the heat sources including a magnetron, an oven heater and a grill heater;

d) cooking utensil detecting means for detecting the cooking utensil disposed in the heating chamber;

e) cooking mode selecting means connected to the cooking utensil detecting means for selecting one of a plurality of cooking modes in accordance with a result of detection by the cooking utensil detecting means, the cooking mode selecting means selecting a microwave cooking mode when the result of detection by the cooking utensil detecting means indicates that neither the upper nor the lower top plate is present in the heating chamber, the cooking mode selecting means selecting a heater cooking mode



when the result of detection by the cooking utensil detecting means indicates that either the upper or the lower top plate is present in the heating chamber, the cooking mode selecting means further selecting either an oven mode or a grill mode on the basis of presence or absence of the food holder on the upper top plate when the heater cooking mode is selected; and

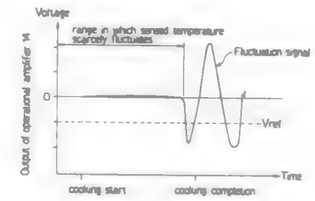
f) control means connected to the cooking mode selecting means for controlling any one of the magnetron, the oven heater and the grill heater in accordance with the cooking mode selected by the cooking mode selecting means on the basis of a cooking program according to the selected cooking mode.

5,360,966

MICROWAVE OVEN WITH TEMPERATURE FLUCTUATION DETECTION

Tomimitsu Noda, Gifu; Hisao Karino, Aichi, and Shinsuke Sato, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 672,854, Mar. 20, 1991, abandoned. This application Jul. 21, 1993, Ser. No. 95,265
Claims priority, application Japan, Mar. 30, 1990, 2-85727; Apr. 27, 1990, 2-111988; Apr. 27, 1990, 2-111989; Apr. 27, 1990, 2-111990; Apr. 27, 1990, 2-114909
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—710 **8 Claims**



1. A microwave oven comprising:

a) a heating chamber in which food to be cooked is contained;

b) a magnetron for range-heating the food contained in the heating chamber;

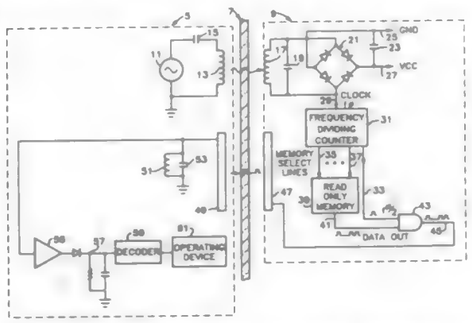
c) temperature sensing means for sensing the temperature of an atmosphere containing hot air emanating from the food being range-heated in the heating chamber, thereby generating a first temperature signal;
d) temperature fluctuation detecting means connected to the temperature sensing means for receiving the temperature signal from the temperature sensing means, the temperature fluctuation detecting means generating a temperature fluctuation signal when detecting a temperature fluctuation in which the temperature sensed by the temperature sensing means rises and falls for a short period of time;
e) control means connected to the temperature fluctuation detecting means for controlling an operation of the magnetron in response to the temperature fluctuation signal; and
f) wherein the temperature sensing means comprises a first temperature sensing element sensing the temperature of the atmosphere containing hot air emanating from the food being range-heated and a second temperature sensing element sensing the temperature of an atmosphere outside the appliance and the temperature fluctuation detecting means detects the temperature fluctuation on the basis of the difference between levels of temperature signals generated by the first and second temperature sensing elements respectively.

5,360,967

OILFIELD EQUIPMENT IDENTIFICATION APPARATUS

Gregg S. Perkin, 2218 North Park Dr., Kingwood, Tex. 77339, and Lawrence A. Denny, 2200 Jamie Dr., Oklahoma City, Okla. 73170

Continuation of Ser. No. 902,070, Jun. 22, 1992, abandoned, which is a continuation of Ser. No. 518,973, May 4, 1990, Pat. No. 5,142,128. This application Aug. 25, 1993, Ser. No. 111,781 The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] G06K *7/00*
U.S. Cl. 235—375 **5 Claims**



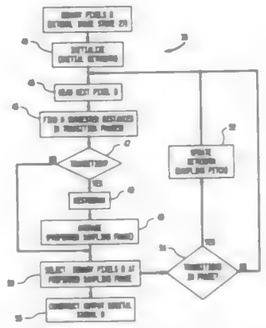
1. An interactive apparatus for identifying equipment and maintaining usage histories for a plurality of items, the apparatus comprising:
(a) a portable passive circuit for storing and transmitting a unique identification code corresponding to an item, said circuit comprising
a first coupling means for receiving an electromagnetic signal of a predetermined frequency,
a power means electrically connected to said first coupling means for providing power to said circuit,
means for generating a unique identification code in response to activation of said power means, said unique identification code corresponding to said item, and
a second coupling means for transmitting said identification code by means of an electromagnetic signal;
(b) means for encapsulating said passive circuit;
(c) means for affixing said encapsulated circuit to said item;
(d) a central computer, said computer adapted for interactively receiving and processing item identification and usage data, comprising:
means for transmitting data to and receiving data from a reader means, said data including said unique identification code generated by said encapsulated passive circuit, said identification code corresponding to the item,
means for storing and retrieving a plurality of usage records for a plurality of items, each of said usage records corresponding to an individual item and said unique identification code, and
means for updating said usage records with said item current usage information;
(e) a portable reader means for identifying said items, said reader means comprising:
means for transmitting an electromagnetic signal of a predetermined frequency, said signal being tuned to said passive circuit first coupling means,
means for receiving and decoding said electromagnetic signal generated by said passive circuit, said receiving means being tuned to said passive circuit second coupling means,
means for entering current usage information for said item into said central computer,
means for transmitting data to and retrieving data from said central computer, said data including said unique identification code, said means corresponding to said central computer transmitting and receiving means,
means for displaying said usage information entered in said reader or retrieved from said central computer,
said central computer further including:
means for storing and retrieving predetermined recommended usage criteria for said equipment;
means for updating said usage records with said current usage information:
means for determining whether said updated usage record exceeds said predetermined recommended usage criteria for said equipment; and
means for notifying said reader means where said temporarily updated usage record exceeds said recommended usage criteria.

5,360,968

"CONSENSUS SYNC" DATA-SAMPLING SYSTEMS AND METHODS

Kevin C. Scott, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1992, Ser. No. 822,237
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—454 **36 Claims**



1. Apparatus for retrieving data from a data storage medium having a plurality of data cells in which discrete values are stored said apparatus comprising:

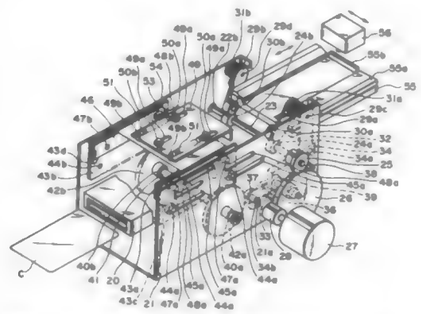
sample means for sampling said data at a plurality of sampling points in each of said data cells and for generating a stream of data samples;
transition-detector means for detecting transistions in said stream of data samples;
data-pitch means for estimating a current pitch of said data cells based on the distance between two of said transitions;
transition-phase means responsive to said current pitch for determining a transition phases of said transitions;
sampling-phase means, responsive to said transition-phase means, for finding a preferred sampling phase; and
output means for constructing a data output signal from said data samples occurring at said preferred sampling phase.

5,360,969

INFORMATION RECORDING AND REPRODUCING APPARATUS INCLUDING A FEED ROLLER AND FEED PLATE FOR FEEDING A RECORDING MEDIUM TO A SETTING POSITION ON A MOUNT TABLE

Kazunori Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1991, Ser. No. 764,197
Claims priority, application Japan, Sep. 28, 1990, 2-257500
Int. Cl.[5] G01K *13/04*
U.S. Cl. 235—479 **3 Claims**



1. An information recording/reproducing apparatus for recording/reproducing information by holding a card-like information recording medium in a setting position on a mount table and reciprocating the mount table relative to a recording-/reproducing head, said apparatus comprising:
a feed roller for feeding the recording medium in a feeding direction nearly up to the setting position on the mount table in a feeding operation;
a driving source for driving the feed roller and a feed plate; and
a feed plate, being driven by said driving source and being operated in association with the feeding operation of said feed roller, for feeding the recording medium from the feed roller to the setting position on the mount table, said feed plate pressing the recording medium at an end thereof relative to the feeding direction of the recording medium.

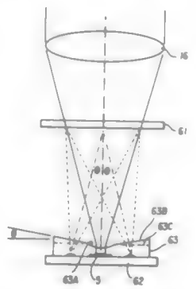
5,360,970

APPARATUS AND METHOD FOR A SINGLE RETURN PATH SIGNAL SENSOR SYSTEM

David B. Kay, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1992, Ser. No. 998,107
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.5 **34 Claims**

1. Apparatus for providing tracking and focusing signals and data signals for resulting radiation resulting from interaction with a data track of an optical storage media, said apparatus comprising:
dual grating elements having said resulting radiation applied thereto, each grating element transmitting an undiffracted radiation component and at least one first order diffraction radiation component, said dual grating having a division between component gratings which is generally perpendicular to said data track;
a first, a second, and a third dual sensor units, each dual sensor unit having two radiation sensitive elements for providing electrical signals when radiation is applied thereto wherein said third dual sensor unit has a division



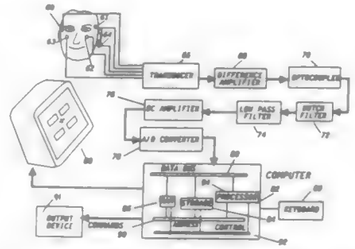
between said radiation sensitive elements perpendicular to said grating unit division; and
a focusing lens focusing said diffraction radiation component from said dual grating elements on said first and said second dual sensor units, said focusing lens applying said undiffracted radiation component transmitted by said dual grating element on said third dual sensor unit, said tracking and said data signals being generated by said third dual sensor unit, said focusing signal being generated by said first and said second dual sensor units.

5,360,971

APPARATUS AND METHOD FOR EYE TRACKING INTERFACE

Arie A. Kaufman, Plainview; Amit Bandopadhay, Smithtown, both of N.Y., and George J. Piligian, Englewood Cliffs, N.J., assignors to The Research Foundation State University of New York, Albany, N.Y.

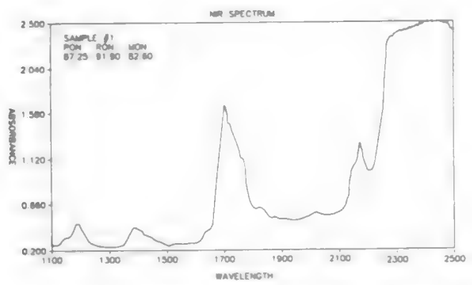
Continuation of Ser. No. 861,094, Mar. 31, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 6,199
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **70 Claims**



1. An eye tracking interface system for controlling task-performing functions comprising:
a detecting device adapted to detect bio-electromagnetic signals generated by eye movements;
a first processor adapted to receive said detected bio-electromagnetic signals and, in response thereto, assigning tokens from a set of symbolic tokens corresponding to eye movement classifications, thereby producing a plurality of tokens representative of said bio-electromagnetic signals;
a second processor adapted to receive said plurality of to-

kens, recognize patterns of tokens, and generate command signals based on said recognized patterns;
where said command signals control task-performing functions.

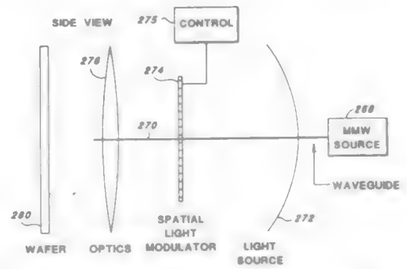
5,360,972
METHOD FOR IMPROVING CHEMOMETRIC ESTIMATIONS OF PROPERTIES OF MATERIALS
Rocco DiFoggio, Houston; Maya Sadhukhan, Katy, and Martha L. Rane, Houston, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Aug. 17, 1993, Ser. No. 107,953
Int. Cl.[5] G01J *3/42*
U.S. Cl. 250—339.12 14 Claims



1. A method for improving the estimation of a property of interest in a random sample of a material, comprising the steps of:
a) quantifying the property of interest for a calibration set of samples of the material using a primary reference method to form a primary reference database;
b) generating infrared spectra for the calibration set of samples to form a calibration set of spectra;
c) obtaining data sensitive to trace compounds in the calibration set of samples;
d) concatenating the trace-compound-sensitive data from step c to the calibration set of spectra from step b to produce an augmented calibration set of spectra;
e) correlating the augmented calibration set of spectra from step d with the primary reference database from step a;
f) producing an infrared spectrum for the random sample;
g) obtaining data sensitive to trace compounds in the random sample;
h) concatenating the trace-compound-sensitive data from step g to the infrared spectrum from step f to produce an augmented spectrum for the random sample; and
i) estimating the property of interest in the random sample by applying the correlation from step e to the augmented spectrum for the random sample from step h.

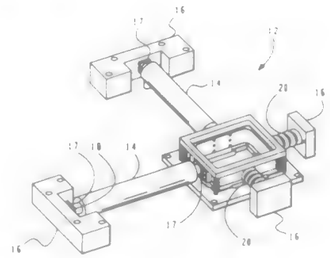
5,360,973
MILLIMETER WAVE BEAM DEFLECTOR
George W. Webb, Del Mar, Calif., assignor to Innova Laboratories, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 484,028, Feb. 22, 1990, Pat. No. 5,159,486. This application Jun. 17, 1992, Ser. No. 899,756
Int. Cl.[5] G01T *1/24*; H01L *27/14*; H01Q *15/00*
U.S. Cl. 250—370.01 19 Claims

1. A millimeter wave (MMW) beam deflector comprising:
a semiconductor body;
means for selectively injecting a spatially varying distribution of charge carriers in said semiconductor body; and
means for directing MMW radiation from a MMW source through said semiconductor body, said MMW radiation having a wavelength of from 1 cm to 30 μm, the transmission of said MMW radiation through said semiconductor body being selectively attenuated by the spatial distribution of charge carriers in said semiconductor body so as to form a beam of MMW radiation that is scannable in space



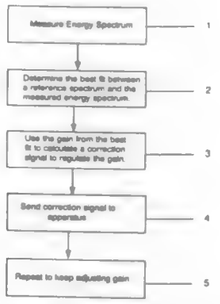
as a function of the spatially varying distribution of charge carriers.

5,360,974
DUAL QUAD FLEXURE SCANNER
James M. Hammond; Martin A. Klos, both of Boca Raton, Fla.; Yves Martin, Ossining, N.Y.; Kenneth G. Roessler, Boca Raton, and Robert M. Stowell, Delray Beach, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Oct. 20, 1992, Ser. No. 963,886
Int. Cl.[5] G21K *5/10*
U.S. Cl. 250—442.11 5 Claims



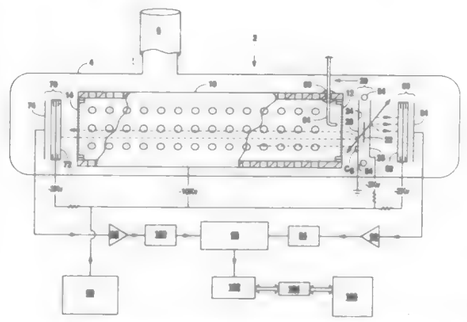
1. A flexure carriage comprising:
a base;
an intermediate carriage;
an inner carriage;
a plurality of first flexures, each having a lower and upper end, the lower end of each said first flexure integrally formed on the top of said base and extending vertically above said base, the upper end of each said first flexure integrally formed on the bottom of said intermediate carriage, and
a plurality of second flexures, each having a lower and upper end, the upper end of each said second flexure integrally formed on the bottom of said intermediate carriage and extending vertically below said intermediate carriage, the lower end of each said second flexure integrally formed on the top of said inner carriage.

5,360,975
METHOD OF GAIN REGULATION FOR DOWNHOLE SPECTROSCOPY TOOLS WITHOUT USING A CALIBRATION SOURCE
Christian Stoller, Kingwood, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.
Filed Apr. 23, 1993, Ser. No. 52,321
Int. Cl.[5] G01U *5/04, 5/06, 5/10*
U.S. Cl. 250—262 29 Claims



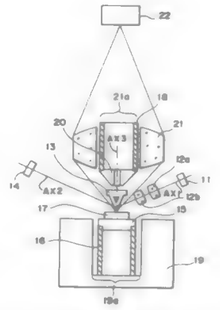
1. A method for regulating the gain of a nuclear well logging apparatus positioned in a wellbore traversing an earth formation, by using a measured particle or gamma ray energy spectrum of said wellbore and formation comprising the steps of:
a) detecting energetic particles from the wellbore and formation and measuring, by means of an energy scale, the energies of the particles deposited in a detector, and thereby generating the energy spectrum of said particles;
b) determining from a comparison of the energy spectrum and a standard composite energy spectrum, a gain correction factor; and
c) regulating the gain of the apparatus using a gain correction signal derived from the gain correction factor.

5,360,976
TIME OF FLIGHT MASS SPECTROMETER, ION SOURCE, AND METHODS OF PREPARING A SAMPLE FOR MASS ANALYSIS AND OF MASS ANALYZING A SAMPLE
David T. Young; Jill A. Marshall, both of San Antonio; Emile A. Schweikert, Bryan, all of Tex., and Melvin A. Park, Alexandria, Va., assignors to Southwest Research Institute, San Antonio, Tex.
Filed Aug. 25, 1992, Ser. No. 935,039
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—287 29 Claims



1. In a mass spectrometer wherein a quantity of sample to be mass analyzed is deposited onto a surface of a sample foil, an ion source comprising:
a sample inlet tube for directing a gaseous sample toward the surface of the sample foil;
means for cooling the surface of the sample foil to low enough temperature to condense molecules of the gaseous sample onto the surface of the sample foil; and
an assembly for mounting a fission material and the sample foil.

5,360,977
COMPOUND TYPE MICROSCOPE
Tetsuji Onuki; Masatoshi Suzuki, both of Yokohama, and Hiroyuki Matsushiro, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jul. 29, 1992, Ser. No. 921,129
Claims priority, application Japan, Aug. 8, 1991, 3-199465
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 35 Claims

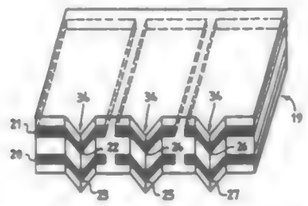


1. A compound type microscope comprising:
an optical microscope having an objective and an observation optical system;
a sample stage for placing a sample thereon;
a cantilever for disposition near the sample, said cantilever having a reflecting surface and being displaceable for detecting an atomic force;
an irradiating optical system for applying a spotlight to said reflecting surface of said cantilever; and
detection means for receiving said spotlight reflected from said reflecting surface to detect an amount of displacement of said cantilever; and
wherein said irradiating optical system and said detection means are arranged such that an optical axis of said spotlight applied to said reflecting surface and an optical axis of said spotlight reflected from said reflecting surface for detection by said detection means are transverse to each other, and said detection means and said optical microscope are arranged such that said optical axis of said spotlight reflected from said reflecting surface and an optical axis of said objective of said optical microscope for observation of an image coming from a surface of the sample by said observation optical system are transverse to each other.

5,360,978
MULTIPLE-TIP SCANNING TUNNELING MICROSCOPY
Pierre L. Gueret, Thalwil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 8, 1992, Ser. No. 941,482
Claims priority, application European Pat. Off., Sep. 5, 1991, 91810717.8
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—306 8 Claims

1. Multiple STM-tip unit comprising a plurality of individually connectable, electrically separated tunnel tips CHARACTERIZED in that the tunnel tips are designed as pointed

portions (34) of sandwich structures comprising, in a common sandwiched block (5, 19), a plurality of conducting layers (1 . . . 4; 20, 21; 41, 46, 50) each associated with at least one of said tunnel tips (11 . . . 14; 22 . . . 27; 52 . . . 54) with insulating layers (6 . . . 8; 40, 44, 48) intercalated between said conducting layers (1 . . . 4; 20, 21; 41, 46, 50), the latter each having a contact pad (16; 36, 43, 49) for connection to appertaining electronics, the thickness, area and material characteristics of said insulating



layers (6 . . . 8; 40, 44, 48) being chosen such that the tunnel current through an insulating layer (6, 7, 8; 44, 48) which is intercalated between any two adjacent conducting layers (1, 2; 2, 3; 3, 4; 20, 21; 41, 46; 46, 50) is negligible with respect to the tunnel current flowing across the gap between each of the two respectively involved tunnel tips (11 . . . 14; 22 . . . 27; 52 . . . 54) and the surface with which said tips (11 . . . 14; 22 . . . 27; 52 . . . 54) cooperate.

5,360,979

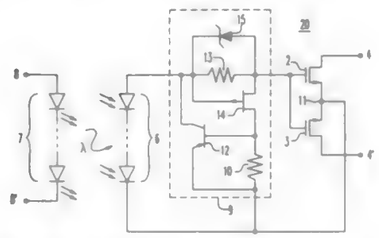
FAST TURN-OFF CIRCUIT FOR SOLID-STATE RELAYS OR THE LIKE

Jerome J. Joseph, North Whitehall Township, Lehigh County; Michael F. Petras, Ruscombmanor Township, Berks County, and Steven B. Witmer, Spring Township, Berks County, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 5, 1993, Ser. No. 102,431

Int. Cl.[5] G02B *27/00;* **H03K** *3/42*

U.S. Cl. 250—551 **8 Claims**



1. A solid state relay having:

a control signal generator;

at least one output transistor having an input terminal and two output terminals, the output terminals coupling to the output of the relay, the input terminal coupling to the control signal generator;

a first switch for shunting the input terminal of the output transistor to a first one of the two output terminals of the output transistor upon substantial removal of the control signal, thereby discharging the input terminal;

characterized by:

a second switch, responsive to the first switch, for discharging the control signal generator while the first switch discharges the input terminal of the output transistor;

wherein the control signal determines whether the relay is conducting or non-conducting.

5,360,980

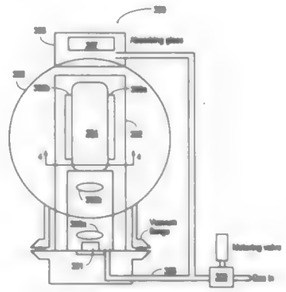
STRUCTURE AND METHOD FOR PROVIDING A GAS PURGE FOR A VACUUM PARTICLE SENSOR INSTALLED IN A CORROSIVE OR COATING ENVIRONMENT

Peter G. Borden, San Mateo, Calif.; Hoang K. Nguyen, Austin, Tex., and Earl J. Carrasco, Fremont, Calif., assignors to High Yield Technology, Sunnyvale, Calif.

Filed Feb. 26, 1993, Ser. No. 23,502

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—573 **10 Claims**



1. An apparatus for use in conjunction with a process chamber, said process chamber receiving gas from one or more supply lines and removing gas through an exhaust line, said apparatus comprising:

a particle sensor having optical components, said particle sensor having a portion exposed to said exhaust line; and

a gas purge line allowing a flow of gas purging said optical components, said flow of gas emerging out of said portion of said particle sensor into said exhaust line and flowing at a flux not less than the flux of gas being removed from said process chamber in said exhaust line.

5,360,981

AMORPHOUS SILICON MEMORY

Alan E. Owen, Edinburgh; Anthony J. Snell, Penicuik; Janos Hajto, Edinburgh; Peter G. Lecomber, Dundee, and Mervyn J. Rose, Forfar, all of Scotland, assignors to British Telecommunications public limited company, London, England

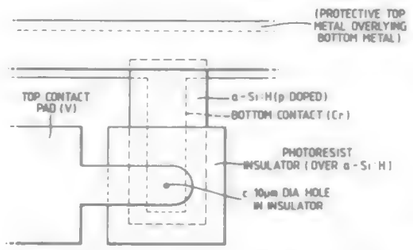
PCT No. PCT/GB90/00692, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 25, 1991, PCT Pub. No. WO90/13921, PCT Pub. Date Nov. 15, 1990

Continuation of Ser. No. 761,907, Sep. 25, 1991, abandoned. This PCT application May 4, 1990, Ser. No. 194,628

Claims priority, application United Kingdom, May 11, 1989, 8910854

Int. Cl.[5] H01L *45/00*

U.S. Cl. 257—4 **11 Claims**



1. An analog memory device capable of being set and reset to a resistance value over a continuous range of resistance values which is a measure of a voltage applied to it over a corresponding range of voltage values, said analog memory device comprising:

a first conducting layer (a);

a single thin layer (b) in direct electrical contact with layer (a);

a metal top contact (c) in electrical contact with layer (b) without interposition of an intermediate conductive layer, the metal being one of V, Co, Ni, Pd, Fe or Mn;

wherein layer (b) exhibits said range of resistance values and is located between layer (a) and layer (c), said layer (b) being formed by one of (i) pure or doped amorphous silicon, (ii) pure or doped amorphous hydrogenated silicon or (iii) a hydrogenated silicon alloy; and

wherein layer (b) has been subjected to a voltage sufficiently high to convert it into an analog memory device exhibiting said range of settable resistance values.

5,360,982

OPTOELECTRONIC SEMICONDUCTOR HAVING A GROOVE-SHAPED WAVEGUIDE

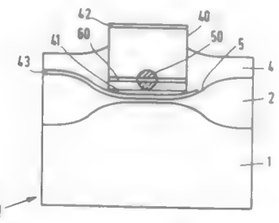
Antonius H. J. Venhuizen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 957,299, Oct. 6, 1992. This application Dec. 1, 1993, Ser. No. 161,043

Claims priority, application European Pat. Off., Oct. 8, 1991, 91202606.9

Int. Cl.[5] G02B *5/08, 7/18;* **H01L** *27/14, 31/00*

U.S. Cl. 385—14 **8 Claims**



1. An optoelectronic semiconductor device with a waveguide, comprising a semiconductor body with a silicon substrate on which are present in that order a first layer of a material comprising silicon oxide and having a groove in the oxide and a second layer of a radiation-guiding material which forms the waveguide at an area of the groove, characterized in that the groove and a portion of the first layer are formed by means of local oxidation of the silicon substrate such that the groove is formed with substantially smooth walls and bottom, and in that said silicon oxide is thinned at both its upper and lower surfaces at the area of the groove.

5,360,983

INSULATED GATE BIPOLAR TRANSISTOR HAVING A SPECIFIC BUFFER LAYER RESISTANCE

Noriyuki Iwamuro, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1993, Ser. No. 46,956

Claims priority, application Japan, Sep. 29, 1992, 4-258717

Int. Cl.[5] H01L *27/082, 29/70, 27/088*

U.S. Cl. 257—139 **3 Claims**

1. An insulated gate bipolar transistor comprising in a semiconductor base:

a first region of a first conduction type;

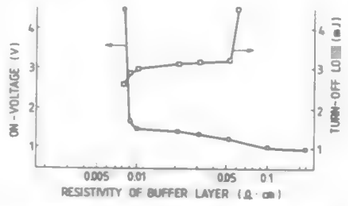
a second region of a second conduction type formed on the first region;

a third region of the second conduction type formed on the second region and having a low impurity concentration;

a fourth region of the first conduction type selectively formed in a surface layer of the third region; and

a fifth region of the second conduction type selectively formed in a surface layer of the fourth region and having a high impurity concentration; said insulated gate bipolar transistor further comprising:

a gate electrode formed, via a gate insulating film, on a surface portion of the fourth region which portion is interposed between the third and fifth regions and serves as a channel region;



a source electrode being commonly in contact with the fourth and fifth regions; and

a drain electrode being in contact with the first region;

wherein the second region has a resistivity in a range of 0.005 to 0.03 Ωcm and a thickness not more than 10 μm.

5,360,984

IGBT WITH FREEWHEELING DIODE

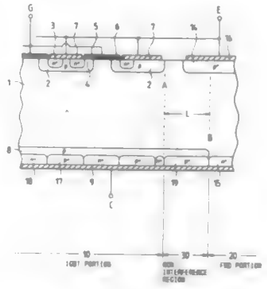
Fumiaki Kirihata, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 953,268

Claims priority, application Japan, Nov. 29, 1991, 3-315691

Int. Cl.[5] H01L *27/02, 27/102, 29/91*

U.S. Cl. 257—143 **8 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate of a first conductive type with a low impurity density;

a first region of a second conductive type formed on one surface of said semiconductor substrate;

a second region of said first conductive type with a high impurity density formed on the surface of said first region;

a third region of said second conductive type with a high impurity density formed on one surface of said semiconductor substrate;

a gate insulating film formed on the surface of said first region intervening between an exposed surface of said semiconductor substrate and said second region;

a gate electrode formed on said gate insulating film;

a fourth region of said second conductive type formed on the other surface of said semiconductor substrate opposite to said first region;

a fifth region of said first conductive type with a high impurity density which is opposite to said third region and adjacent to said fourth region;

a first electrode commonly brought into contact with said first and second regions;

a second electrode brought into contact with said third region and connected to said first electrode; and

a third electrode commonly brought into contact with said fourth and fifth regions;

wherein a plane perpendicular to a surface of said semiconductor substrate and including an edge of said first region nearest to said third region, and another plane perpendicular to a surface of said semiconductor substrate including an edge of said fifth region brought into contact with said fourth region are spaced by a distance equal to or more than 40 $\tau^{\frac{1}{2}}$ in μm wherein τ is in μs and is a life time of minority carriers in said semiconductor substrate.

5,360,985

PRESS-CONTACT TYPE SEMICONDUCTOR DEVICE

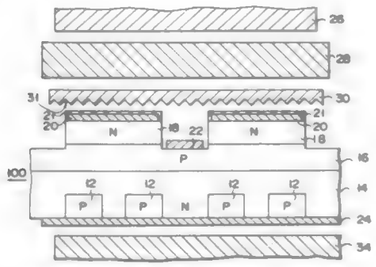
Michiaki Hiyoshi; Takashi Fujiwara; Hisashi Suzuki, and Hideo Matsuda, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 762,460, Sep. 19, 1991, abandoned. This application Jan. 1, 1993, Ser. No. 70,040

Claims priority, application Japan, Sep. 20, 1990, 2-251549; Sep. 6, 1991, 3-227109

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—181 **14 Claims**



1. A press-contact type semiconductor device comprising:

a pellet having first and second major surfaces, said pellet having a mesa portion provided on said first major surface, said second major surface being flat;

a package enclosing said pellet;

a first pellet electrode provided on said mesa portion of said pellet;

a second pellet electrode provided on said second major surface of said pellet;

a semiconductor element provided in said pellet and having a current path, said first pellet electrode being connected to one end of said current path, said second pellet electrode being connected to another end of said current path;

a first electrode post which is provided in said package so as to be located above said first pellet electrode, and to which pressure is applied;

a second electrode post which is provided in said package so as to be located above said second pellet electrode, and to which pressure is applied;

an electrode plate arranged between said first pellet electrode and said first electrode post;

a soft-metal plate arranged between said first pellet electrode and said electrode plate, and having a ragged surface; and

a protecting layer provided on said ragged surface of said soft-metal plate, for protecting said ragged surface from oxidization.

5,360,986

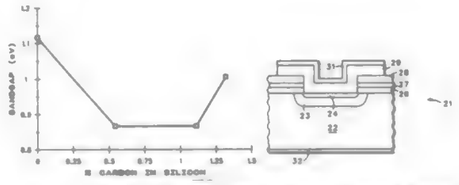
CARBON DOPED SILICON SEMICONDUCTOR DEVICE HAVING A NARROWED BANDGAP CHARACTERISTIC AND METHOD

Jon J. Candelaria, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1993, Ser. No. 131,541

Int. Cl.[5] H01L *29/161, 29/205*

U.S. Cl. 257—183 **12 Claims**



1. A carbon doped silicon semiconductor device having a narrowed bandgap characteristic comprising:

a first crystalline semiconductor layer made substantially of silicon; and

a second crystalline semiconductor layer made substantially of silicon and a dopant to provide the narrowed bandgap wherein the dopant that narrows the bandgap consists essentially of carbon, and wherein the first crystalline semiconductor layer and the second semiconductor layer form a first heterojunction, and wherein the carbon is present in the second crystalline semiconductor layer at a substitutional concentration of between 0.5% and 1.1%.

5,360,987

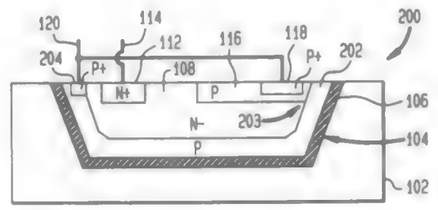
SEMICONDUCTOR PHOTODIODE DEVICE WITH ISOLATION REGION

Muhammed A. Shibib, Wyomissing Hills, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 17, 1993, Ser. No. 155,610

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—446 **12 Claims**



1. A photodiode in an isolation region of a substrate, the isolation region having a bottom and walls, the photodiode comprising:

a first layer of semiconductor material formed on the bottom and the walls of the isolation region, said first layer having a first conductivity type;

a second layer of semiconductor material formed on said first layer, said second layer having a second conductivity type opposite to said first conductivity type and forming a first p-n junction with said first layer; and

a third layer of semiconductor material formed on said second layer and electrically coupled to said first layer, said third layer of semiconductor having said first conductivity type and forming a second p-n junction with said second layer;

wherein during operation, said first p-n junction functions to collect photo-generated carriers that extend to the bottom and walls of the isolation region, thereby increasing collecting p-n junction area per isolation region area to improve efficiency of the photodiode.

5,360,988

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHODS FOR PRODUCTION THEREOF

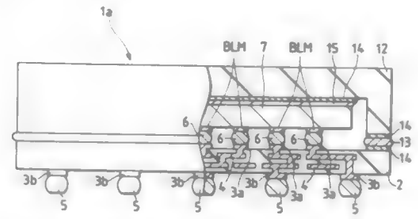
Takayuki Uda; Toshiro Hiramoto; Nobuo Tamba, all of Ohme; Hisashi Ishida, Higashiyamato; Kazuhiro Akimoto, Akishima; Masanori Odaka, Kodaira; Tasuku Tanaka, Hamura; Jun Hirokawa, Ohme, and Masayuki Ohayashi, Hamura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1992, Ser. No. 903,202

Claims priority, application Japan, Jun. 27, 1991, 3-157019; Apr. 21, 1992, 4-100809; May 1, 1992, 4-139821

Int. Cl.[5] H01L *23/48, 21/285;* **F42C** *19/12;* **G06F** *15/60*

U.S. Cl. 257—529 **14 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor substrate having a main surface;

a plurality of memory cells formed on said main surface of semiconductor substrate, said plurality of memory cells being arranged in a row direction and a column direction;

redundancy memory cells formed on said main surface of semiconductor substrate, being adjacent to said plurality of memory cells;

a peripheral circuit formed on said main surface of semiconductor substrate;

wirings formed over said peripheral circuit;

a protective insulation film formed over said wirings;

a barrier metal layer formed on said protective insulation film, said barrier metal layer being connected to one of said wirings via a first contact hole formed in said protective insulation film, said barrier metal layer comprising laminated metal layers;

a bump electrode formed on said barrier metal layer; and

a fuse element formed on said protective insulation film, said fuse element being used for substituting a fault memory cell for said redundancy memory cells,

wherein said fuse element is comprised of the same layer as at least one of said laminated metal layers of said barrier metal layer.

5,360,989

MIS TYPE CAPACITOR HAVING REDUCED CHANGE IN CAPACITANCE WHEN BIASED IN FORWARD AND REVERSE DIRECTIONS

Koichi Endo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 716,996, Jun. 18, 1991, abandoned. This application Apr. 20, 1993, Ser. No. 60,066

Claims priority, application Japan, Jun. 18, 1990, 2-159364

Int. Cl.[5] H01L *27/02*

U.S. Cl. 257—532 **2 Claims**

1. A MIS capacitor in a semiconductor integrated circuit device, comprising:

a semiconductor substrate including an island region;

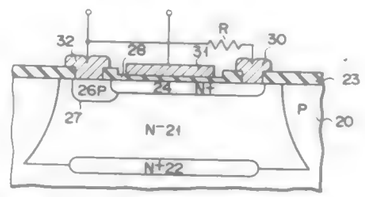
a first semiconductor layer of one conductivity type, provided in said island region, having first and second ends opposed to each other;

an insulating layer provided over said first semiconductor layer;

a first electrode provided on said insulating layer;

a second semiconductor layer of an opposite conductivity type formed in said island region to provide a PN junction with said first end of said first semiconductor layer;

said PN junction intersecting an upper surface of said island region to be spaced apart from an edge of said first electrode;



a second electrode being in contact with said second semiconductor layer;

a third electrode attached to said second end of said first semiconductor layer; and

means for producing a voltage drop across said PN junction when a reverse voltage is applied between said first and second electrodes;

wherein said voltage drop is given by electrically connecting said second electrode to said third electrode through an external resistor.

5,360,990

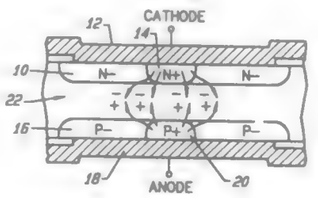
P/N JUNCTION DEVICE HAVING POROUS EMITTER

Richard M. Swanson, Los Altos, Calif., assignor to Sunpower Corporation, Sunnyvale, Calif.

Filed Mar. 29, 1993, Ser. No. 38,401

Int. Cl.[5] H01L *29/12*

U.S. Cl. 257—656 **3 Claims**



1. A semiconductor device comprising

a semiconductor body comprising monocrystalline silicon having first and second mayor opposing surfaces,

a first region in said semiconductor body abutting said first major surface and having phosphorous dopant therein of a first conductivity type and of a first concentration of approximately 1×10^{18} atoms cm^{-3},

a second region in said first region, said second region abutting said first major surface and having phosphorous dopant therein of said first conductivity type and of a second concentration greater than said first concentration,

a contact on said first major surface and abutting said first region and said second region, said second region providing low contact resistance and said first region regulating minority carrier injection when forward biased and shielding said first contact from any stand-off field when said device is not conducting,

a third region in said semiconductor body abutting said second major surface and having boron dopant therein of a second conductivity type and of a third concentration of approximately 1×10^{17} atoms cm^{-3},

a fourth region in said third region, said fourth region abut-

ting said second major surface and having boron dopant therein of said second conductivity type and of a fourth concentration type greater than said third concentration, and

a second contact on said second major surface and abutting said third region and said fourth region, said fourth region providing low contact resistance and said third region regulating minority carrier injection when forward bias and shielding said second contact from any stand-off field when said device is not conducting.

5,360,991

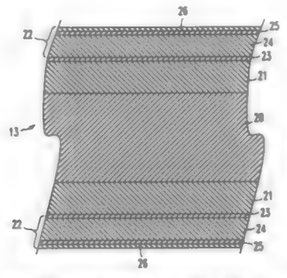
INTEGRATED CIRCUIT DEVICES WITH SOLDERABLE LEAD FRAME

Joseph A. Abys, Warren; Igor V. Kadija, Ridgewood; Edward J. Kudrak, Jr., Clifton, and Joseph J. Maisano, Jr., Denville, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1993, Ser. No. 99,118

Int. Cl.[5] H01L *23/48, 29/40, 29/44, 29/46*

U.S. Cl. 257—666 **24 Claims**



1. An IC package comprising at least one IC unit, and leads sealed within a protective package, in which said leads comprise a base metal, a layer of nickel on the base metal, and a composite of metal layers on top of nickel, said composite including, in succession from nickel, a palladium or soft gold strike layer, a palladium-nickel alloy layer having 10 to 90 weight percent nickel, by weight, a palladium layer, and a gold layer, in which said palladium or soft gold strike layer is deposited in a thickness sufficient to bond palladium-nickel alloy layer to the nickel layer, said palladium-nickel alloy layer is deposited in a thickness sufficient to at least slow down diffusion of base metal to the surface of the leads, said palladium layer is deposited in a thickness sufficient to at least slow down diffusion of nickel to the surface of the lead, and said outer gold layer is deposited in a thickness sufficient to further bar diffusion of any nickel to the surface of the lead.

5,360,992

TWO PIECE ASSEMBLY FOR THE SELECTION OF PINOUTS AND BOND OPTIONS ON A SEMICONDUCTOR DEVICE

Tyler A. Lowrey, Boise, Id.; Alan R. Reinberg, Westport, Conn., and Kevin D. Martin, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 811,768, Dec. 20, 1991, abandoned. This application Apr. 1, 1994, Ser. No. 221,974

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—666 **20 Claims**

1. A semiconductor device, comprising:

a) a first assembly comprising:

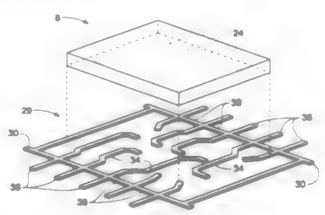
i) a wafer section with bond pads for the passage of signals therethrough;

ii) a first assembly frame supporting said wafer section, said first assembly frame having conductive pads;

iii) means for electrically connecting said bond pads with said first frame assembly;

wherein said wafer section, said means for electrically connecting, and a portion of said first assembly frame are hermetically sealed within a protective encasement, said conductive pads having portions exterior to said encasement, wherein said first assembly frame is electrically connected to said exterior pad portions;

b) a second assembly comprising a second assembly frame, said second assembly frame comprising:



i) outputs for connecting with an electronic device into which said semiconductor device is installed;

ii) a plurality of conductive paths, each of said conductive paths routing one of said signals between one of said external pad portions and one of said outputs,

wherein a design of said conductive paths determines which one of said signals passes through each of said outputs.

5,360,993

COOLING UNIT CAPABLE OF SPEEDILY COOLING AN INTEGRATED CIRCUIT CHIP

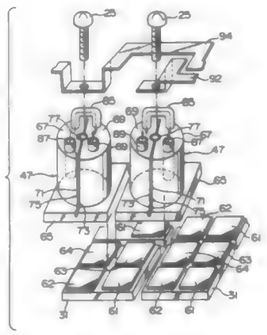
Shinji Mine, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,740

Claims priority, application Japan, Oct. 21, 1991, 3-272917

Int. Cl.[5] H01L *25/04*

U.S. Cl. 257—714 **2 Claims**



1. A cooling unit for use in combination with a cooling medium supplying unit for supplying a cooling medium to said cooling unit,

said cooling unit being for use with an integrated circuit chip mounted on a substrate,

said integrated circuit chip having a first principal surface on which a first and a second electric conductor bump is attached,

said cooling unit comprising:

a first heat transfer tube having a first tube inlet and a first tube outlet for passing said cooling medium from said first tube inlet to said first tube outlet, said first heat transfer tube being electrically conductive;

a second heat transfer tube having a second tube inlet and a second tube outlet for passing said cooling medium from said second tube inlet to said second tube outlet, said second heat transfer tube being electrically conductive; and

tube supporting means for supporting said first heat transfer tube put in contact with said first electric conductor bump and said second heat transfer tube put in contact with said second electric conductor bump, said first electric conductor bump being for receiving a first voltage through said first heat transfer tube, said second electric conductor bump being for receiving a second voltage through said second heat transfer tube.

5,360,994

SEMICONDUCTOR DEVICE HAVING A SURFACE WITH A BARRIER LAYER OF Ti_xW_{1-x}

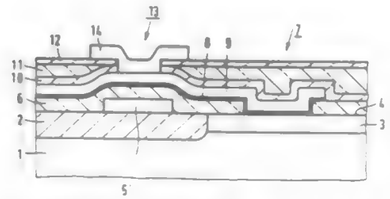
Robertus A. M. Wolters; Edwin T. Swart, and Albertus G. Dirks, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1993, Ser. No. 53,993

Claims priority, application European Pat. Off., Apr. 28, 1992, 92201178.8

Int. Cl.[5] H01L *23/48*

U.S. Cl. 257—751 **2 Claims**



1. A semiconductor device with a semiconductor body of which a surface is provided with a barrier layer of Ti_xW_{1-x}, with $0.1<x<0.3$, characterized in that the distance between the (100) lattice faces of W is greater than 2.25Å in the barrier layer.

5,360,995

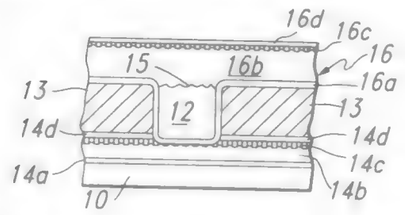
BUFFERED CAPPED INTERCONNECT FOR A SEMICONDUCTOR DEVICE

Carole D. Graas, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 14, 1993, Ser. No. 121,325

Int. Cl.[5] H01L *23/48, 29/46, 29/54*

U.S. Cl. 257—751 **4 Claims**



1. A buffered capped interconnect for a semiconductor device, comprising:

a first barrier layer;

a first aluminum lead overlying the first barrier layer;

a first intermetallic layer overlying the first aluminum lead;

a first antireflection capping layer overlying the first intermetallic layer;

an insulator overlying the first antireflection capping layer, the insulator having an opening including a top and a bottom, the bottom extending through the first antireflection layer and into the first intermetallic layer;

a second barrier layer overlying the insulator and lining the opening in the insulator;

a second aluminum lead overlying the second barrier layer;

a second intermetallic layer overlying the second aluminum lead;

a second antireflection capping layer overlying the second intermetallic layer; and

a conductive plug in the opening of the insulator.

5,360,996

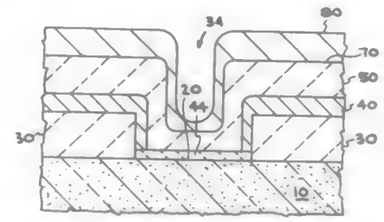
TITANIUM NITRIDE/TITANIUM SILICIDE MULTIPLE LAYER BARRIER WITH PREFERENTIAL (111) CRYSTALLOGRAPHIC ORIENTATION ON TITANIUM NITRIDE SURFACE

Jaim Nulman, Palo Alto, and Kenny K. Ngan, Fremont, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 735,397, Jul. 24, 1991, Pat. No. 5,242,860. This application May 21, 1993, Ser. No. 65,309

Int. Cl.[5] H01L *29/34*

U.S. Cl. 257—767 **18 Claims**



1. A titanium nitride/titanium silicide multiple layer barrier over a silicon surface, said multiple layer barrier having an outer surface of (111) crystallographic orientation and comprising:

a) a layer of titanium silicide formed over a silicon surface by depositing from about 50 to about 1000 Angstroms of a first layer of titanium over said silicon surface and subsequently annealing said first titanium layer to form said titanium silicide;

b) a first layer of titanium nitride, of from about 700 to about 1500 Angstroms in thickness, having a non-(111) crystallographic orientation and formed over said first titanium layer;

c) a second titanium nitride layer formed over said first titanium nitride layer by depositing from about 300 to about 400 Angstroms of a second titanium layer over said first titanium nitride layer and then annealing said layer in the presence of a nitrogen-bearing gas, and in the absence of an oxygen-bearing gas to form, from said second titanium layer, said second layer of titanium nitride having an exposed surface of (111) crystallographic orientation;

whereby said resulting titanium nitride/titanium silicide multiple layer barrier has an outer surface of (111) crystallographic orientation and a total thickness of titanium nitride which will provide protection of the underlying silicon against spiking by aluminum subsequently formed over said multiple layer barrier.

5,360,997

AUTOMOBILE ANTI-THEFT SWITCH

Toy F. Watson, 113 Thomas Rd., Seaford, Va. 23696

Filed Jun. 28, 1993, Ser. No. 82,394

Int. Cl.[5] B60R *25/10*

U.S. Cl. 307—10.1 **6 Claims**

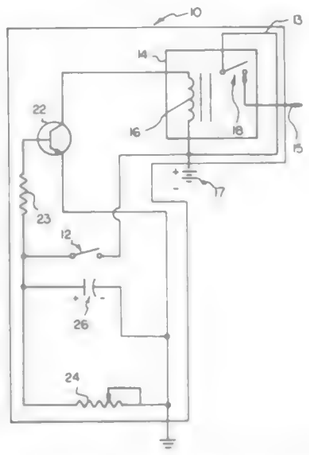
1. A new and improved automobile anti-theft switch apparatus installed in series with ignition circuitry for the automobile, said apparatus comprising:

a relay assembly which includes a coil and a relay-controlled switch, said relay-controlled switch being in series with

the ignition circuitry for the automobile, said relay-controlled switch including a closed switch state and an open switch state,

a relay driver assembly, connected to said relay coil, for controlling whether said relay-controlled switch is in the closed switch state or the open switch state,

a timer assembly, connected to said relay driver assembly, for controlling operation of said relay driver assembly and



said relay assembly, wherein said timer assembly maintains said relay-controlled switch in a closed switch state for a predetermined period of time permitting automobile operation for a predetermined of time, and

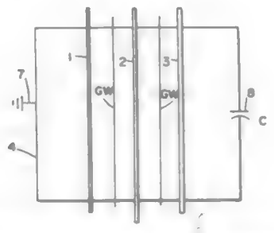
a disguised first switch assembly including a closed switch state and an open switch state, said disguised first switch assembly connected to said timer assembly for controlling initialization of said timer assembly and permitting discharge of said timer assembly.

5,360,998

MAGNETIC FIELD MINIMIZATION IN POWER TRANSMISSION

Reigh A. Walling, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1991, Ser. No. 677,090
Int. Cl.[5] H04B *3/30*
U.S. Cl. 307—91 **23 Claims**



1. A shielding circuit for mitigating electric and electromagnetic fields produced by power transmission lines along longitudinal edges of a transmission line right-of-way, said shielding circuit comprising:

wire conductor means located adjacent and substantially parallel to said power transmission lines along each said edge of the right-of-way, said wire conductor means being electrically insulated from said transmission lines and positioned above ground between said transmission lines and the edges of said right-of-way;

said conductor means including wire means connected to said wire conductor means for forming a loop extending along at least a portion of said power transmission lines along their length;

means for connecting said wire conductor means to ground;

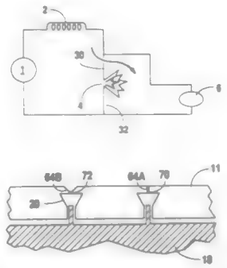
reactive compensating means connected in circuit with said wire conductor means for compensating for the self-impedance of said shielding circuit such that the magnitude and phase of the current induced in said shield circuit creates cancelling fields thereby substantially reducing the net electric and electromagnetic fields along at least a portion of each of the right-of-way edges.

5,360,999

EXPLOSIVELY ACTUATED THERMAL OPENING SWITCH

Jim L. Upshaw; Jonathan J. Hahne; Richard J. Hayes; Raymond C. Zowarka, Jr.; John P. Kajs, and Robert L. Sledge, II, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Feb. 25, 1993, Ser. No. 23,808
Int. Cl.[5] H01H *39/00*
U.S. Cl. 307—112 **17 Claims**



10. An inductive energy storage system, comprising:

a primary energy source for supplying an electrical current,

an inductor connected in series to said primary energy source for storing energy;

an explosive switch connected in series to said primary energy source and said inductor, said explosive switch comprising,

an electrical conductor, and

an explosive proximate the conductor for selectively applying an explosive force to a portion of the conductor so that a residual conductive path remains after the explosive force has been applied to the conductor; and

a load connected in parallel across said explosive switch such that when said switch is opened said electric current is diverted into said load.

5,361,000

REFERENCE POTENTIAL GENERATING CIRCUIT

Yasuji Koshikawa, and Tadahiko Sugibayashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1992, Ser. No. 935,209
Claims priority, application Japan, Aug. 26, 1991, 3-212543
Int. Cl.[5] H03K *3/01*
U.S. Cl. 327—530 **2 Claims**

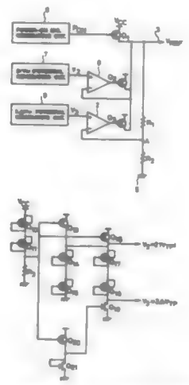
1. A reference potential generating circuit comprising:

a reference potential output terminal;

a first driver circuit for producing a reference potential at said reference potential output terminal, said first driver circuit including a difference potential generating circuit for generating a difference potential between threshold voltages of a plurality of MOS field effect transistors having different threshold voltages, and a comparator

amplifier for differently amplifying said difference potential generated by said difference potential generating circuit and a potential produced by a division of said reference potential; and

a second driver circuit for producing at said reference potential output terminal a potential equaling an increasing power supply voltage during a transient period in which a



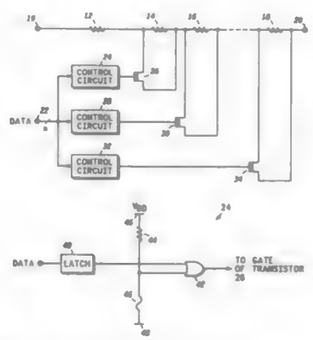
power supply voltage externally supplied is lower than said reference potential after switching-n of said power supply, said second driver circuit including a sum threshold potential generating circuit for producing a potential of a sum of threshold voltages of a plurality of MOS field effect transistors and a comparator for comparing said potential of the sum of threshold voltages with said reference potential.

5,361,001

CIRCUIT AND METHOD OF PREVIEWING ANALOG TRIMMING

David L. Stolfa, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 3, 1993, Ser. No. 160,762
Int. Cl.[5] H03K *3/01;* **H03B** *1/04*
U.S. Cl. 327—530 **7 Claims**



1. An analog trim circuit, comprising:

a passive element having first and second conduction terminals;

first means coupled across said passive element and operating in response to a control signal for enabling and disabling conduction through said passive element, said first means includes a transistor having a gate, a drain and a source, said drain being coupled to said first conduction terminal, said source being coupled to said second conduction terminal, said gate being coupled for receiving said control signal; and

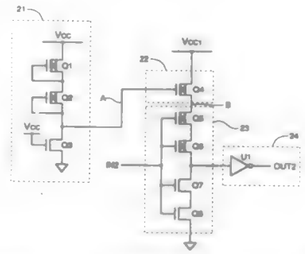
second means responsive to a data signal for providing said control signal to said first means to enable and disable said conduction through said passive element, said second means setting said control signal to a fixed value after removal of said data signal.

5,361,002

VOLTAGE COMPENSATING CMOS INPUT BUFFER

Stephen L. Casper, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 864,701, Apr. 7, 1992, Pat. No. 5,278,460. This application Oct. 12, 1993, Ser. No. 135,214
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] H03K *3/01*
U.S. Cl. 327—530 **22 Claims**



1. A memory device comprising a voltage compensating CMOS input buffer circuit, said voltage compensating CMOS input buffer circuit comprising:

first, second and third voltage potentials;

a voltage adjusting circuit providing a voltage adjusting output node, said voltage adjusting circuit comprising a plurality of voltage adjusting transistors connected serially and coupled between said first and third voltage potentials, said plurality of voltage adjusting transistors providing said voltage adjusting output node by a common connection between two transistors;

a voltage compensating circuit providing a voltage compensating drive node, said voltage compensating circuit coupled to said voltage adjusting output node and said second voltage potential; and

an input buffer circuit providing an output node, said input buffer circuit comprising a plurality of input transistors connected serially between said second and third potential sources, each transistor having an input terminal for receiving input signals, said plurality of input transistors providing said output node by a common connection between at least two of the input transistors.

5,361,003

ADJUSTABLE BUFFER DRIVER

Gregory N. Roberts, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jan. 14, 1993, Ser. No. 4,363
Int. Cl.[5] H03K *17/16*
U.S. Cl. 326—21 **8 Claims**

1. An adjustable output driver/output buffer structure for a semiconductor device constructed on a substrate, said adjustable driver structure comprising:

a first and second potential;

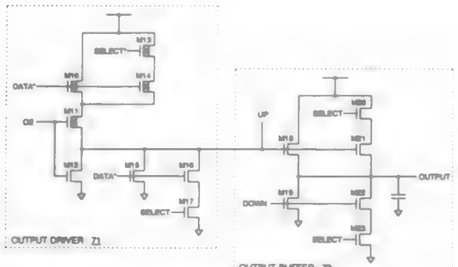
a first set of electrical devices comprising a pair of serially connected p-channel adjusting devices connected in parallel with a p-channel pullup device, said first set of electrical devices connected serially between said first potential and a first CMOS inverter, said first set of electrical de-

vices having control means for activating and deactivating said first set;

a second set of electrical devices comprising said first CMOS inverter electrically connected to a common drive node, said second set of electrical devices serially connected between said first set of electrical devices and said second potential;

a third set of electrical devices comprising a pair of serially connected n-channel adjusting devices connected in parallel with an n-channel pulldown device, said third set of electrical devices connected between said common drive node and said second potential, said third set of electrical devices having control means for activating and deactivating said third set;

a fourth set of electrical devices comprising a second CMOS



inverter having its input terminals electrically connected together at said common drive node and its output terminals electrically connected together to form a common output node;

a fifth set of electrical devices comprising an n-channel transistor series stack electrically connected to said common ouptut node and a p-channel transistor series stack electrically connected to said common output node, said fifth set of electrical devices having control means for activating and deactivating said fifth set, said fourth and fifth sets of electrical devices performing an inverting function;

e) means for providing control signals to said control means; and

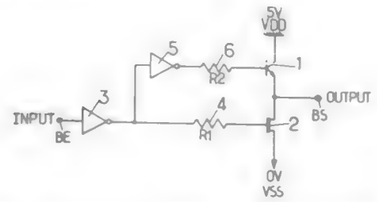
f) control signal adjusting means to determine the states of said control signals.

5,361,004

TTL-CMOS OUTPUT STAGE FOR AN INTEGRATED CIRCUIT

Pierre Hirschauer, Montesson, France, assignor to Matra MHS, France

Filed Jan. 21, 1993, Ser. No. 7,135
Claims priority, application France, Jan. 20, 1992, 92 00542
Int. Cl.[5] H03K *19/02, 19/092*
U.S. Cl. 326—70 **9 Claims**



1. TTL-CMOS output, having an input and an output terminal, for an integrated circuit, comprising:

a bipolar transistor and a MOS transistor connected in series between a power supply voltage and a reference voltage, the common point of said bipolar transistor and of said MOS transistor forming said output terminal of said TTL-CMOS output stage;

a first switching control input channel comprising a first inverter, whose input constitutes the input terminal of said TTL-CMOS stage and whose output is linked to the gate of said MOS transistor by means of a first resistor; and

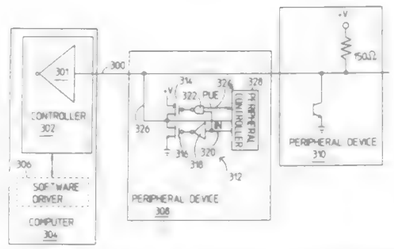
a second switching control input channel comprising a second inverter, whose input is linked to the output of said first inverter and whose output is linked to the base of said bipolar transistor by means of a second resistor, said first and second resistors having a value determined so as to limit, on the one hand, the transient current on switching and, on the other hand, the mean current supplied by said bipolar transistor.

5,361,005

CONFIGURABLE DRIVER CIRCUIT AND TERMINATION FOR A COMPUTER INPUT/OUTPUT BUS

John W. Slattery, Loveland; Mark J. Jedrzejewski, Fort Collins, and Terry W. Norton, Longmont, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1993, Ser. No. 40,815
Int. Cl.[5] H03K *19/0185*
U.S. Cl. 326—56 **3 Claims**



1. A circuit for driving and terminating a digital signal line on a data bus, the circuit comprising:

a signal input having first and second signal logical states;

a pull-up enable input having first and second pull-up logical states;

a current source connected to the digital signal line, having a first source control input connected to the signal input and a second source control input connected to the pull-up enable input;

a current sink connected to the digital signal line, having a sink control input connected to the signal input;

wherein when the pull-up enable input is in the first pull-up logical state, the current source is off, the current sink is on if the signal input is in the first signal logical state, and the current sink is off if the signal input is in the second signal logical state; and

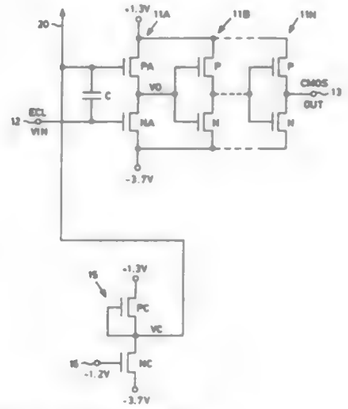
wherein when the pull-up enable input is in the second pull-up logical state, the current sink is on and the current source is off if the signal input is in the first signal logical state, and the current source is on and the current sink is off if the signal input is in the second signal logical state.

5,361,006

ELECTRICAL CIRCUITRY WITH THRESHOLD CONTROL

Michael Cooperman, Framingham, and Richard Sieber, Attleboro, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 19, 1993, Ser. No. 35,138
Int. Cl.[5] H03K *19/0175, 19/0948*
U.S. Cl. 326—73 **9 Claims**



1. Electrical circuitry including

inverter circuit means comprising

a complementary pair of MOS transistors connected in series between a first voltage source and a second voltage source,

an input connection connected to the gate of one of said MOS transistors,

a control connection connected to the gate of the other of said MOS transistors; and

control means coupled to said control connection for producing a control signal controlling the current flow through said other of the MOS transistors;

said inverter circuit means being operable to produce a first output signal at its output in response to a first voltage condition at said input connection causing the current flow through said one of the MOS transistors to be greater than the current flow through said other of the MOS transistors, and being operable to produce a second output signal at its output in response to a second voltage condition at said input connection causing the current flow through said one of the MOS transistors to be less than the current flow through said other of the MOS transistors; and

said control means being operable when current flow through said one of the MOS transistors changes to produce a control signal changing current flow through said other of the MOS transistors so that current flow through said other of the MOS transistors is less than the current flow through said one of the MOS transistors when said first voltage condition is present at said input connection, and is greater than the current flow through said one of the MOS transistor when said second voltage condition is present at said input connection;

wherein

said one of the MOS transistors is N-type; and

said other of the MOS transistors is P-type; and

including

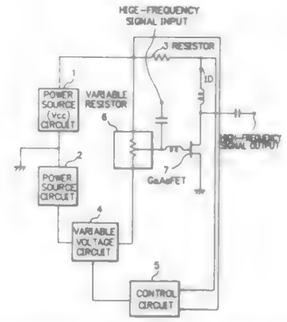
speed-up capacitance means connected between the gate of the N-type transistor and the gate of the P-type transistor.

5,361,007

APPARATUS FOR CONTROLLING CONSUMPTION POWER FOR GAAS FET

Kiyoshi Ohta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,341
Claims priority, application Japan, Aug. 30, 1991, 3-220504
Int. Cl.[5] H03K *17/687*
U.S. Cl. 327—427 **3 Claims**



1. A consumption power controlling apparatus for an amplifier using a GaAs FET comprising:

first power source means for supplying a positive direct-current voltage to a drain region of said FET;

second power source means for supplying a negative direct-current voltage to a gate region of said FET;

variable voltage means connected to an output terminal of said second power source means for variably controlling an output voltage from said second power source means;

resistor means having a terminal connected to an output terminal of said first power source means and another terminal connected to said drain region of said FET;

variable resistor means having an adjusting member, a terminal connected to said output terminal of said first power source means, and another terminal connected to an output terminal of said variable voltage means, said adjusting member being connected to said gate region of said FET; and

control means for detecting a voltage developed across said resistor means for supplying a control signal to said variable voltage means, thereby setting said voltage to be substantially equal to a preset reference value,

said variable voltage means controlling, in response to said control signal from said control means, said voltage supplied from said second power source means to said gate region of said FET, thereby keeping a drain current of said FET at a constant value.

5,361,008

SWITCHING CIRCUIT OF LOW POWER CONSUMPTION

Ryuichi Saijo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,751
Claims priority, application Japan, Mar. 3, 1992, 4-045109
Int. Cl.[5] H03K *17/10*
U.S. Cl. 327—427 **6 Claims**

1. A switching circuit comprising:

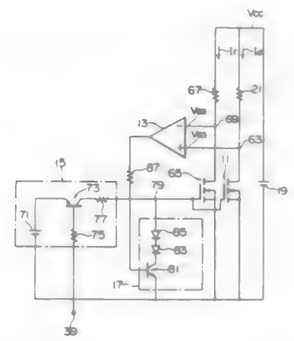
a signal input terminal for receiving an input voltage having a first level portion and a second level portion;

an output field effect transistor having an output source electrode, an output drain electrode, and an output gate electrode, said output drain electrode being connected to a positive electrode of a power supply through a load resistor, said output source electrode being coupled to a negative electrode of said power supply, said output field

effect transistor being made of a metal oxide semiconductor, said output field effect transistor becoming on when an output gate electrode thereof is supplied with a bias voltage;

a reference field effect transistor having a reference source electrode, a reference drain electrode, and a reference gate electrode, said reference drain electrode being positive electrode of said power supply through a reference resistor, said reference source electrode being coupled to said negative electrode of said power supply, said reference field effect transistor being made of a metal oxide semiconductor, said reference field effect transistor becoming on when a reference gate electrode thereof is supplied with said bias voltage;

a comparator having a load input terminal, a reference input terminal, and a compare output terminal, said load input terminal being connected to a load node of said output drain electrode and said load resistor, said reference input terminal being connected to a reference node of said reference drain electrode and said reference resistor, said



load node having a load sensing voltage, said reference node having a reference voltage, said comparator comparing said load sensing voltage with said reference voltage to produce a compare output voltage when said load sensing voltage is higher than said reference voltage;

a bias power circuit connected to said output gate electrode, said reference gate electrode, and said signal input terminal for producing said bias voltage when said bias power circuit is supplied with said first level portion of said input voltage and for supplying said bias voltage to said output gate electrode and said reference gate electrode; and

a limiting circuit connected to said compare output terminal, said output gate electrode, and said reference gate electrode for producing and supplying a limiting voltage to said output gate electrode and said reference gate electrode when said limiting circuit is supplied with said compare output voltage, said limiting voltage being lower than said bias voltage, said output and said reference field effect transistors becoming off when said output and said reference gate electrodes are supplied with said limiting voltage.

5,361,009

THYRISTOR CONTROLLER

Chao C. Lu, 4-4 Alley 27, Lane 143, Chung Kung Rd., Taipei,

Filed Jun. 29, 1992, Ser. No. 905,881

The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.

Int. Cl.[5] H03K *17/22*

U.S. Cl. 327—470 **2 Claims**

1. A thyristor controller for connecting and disconnecting a source from a circuit, the thyristor controller comprising:

an input circuit for receiving a positive pulse charge, said input circuit comprising:

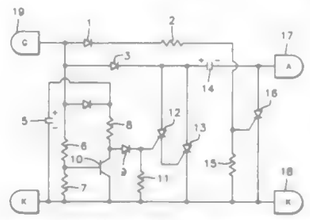
first, second and third input diodes;

an input terminal connected to said first, second and third input diodes, said input terminal receiving said positive pulse charge as an input signal; and

a current limiting resistor connected in series with said first input diode;

a thyristor having a gate connected to said current limiting resistor and capable of being in an ON state or an OFF state under control of said positive pulse charge;

a commutation capacitor connected between said second input diode and an anode of said thyristor, said commutation capacitor charging in response to receipt of said positive pulse charge by said input circuit which turns on



said thyristor in accordance with an appropriate turn-on voltage of the thyristor; and

a discharge circuit connected to said third input diode and coupled to receive said positive pulse charge applied to said input circuit for discharging said commutation capacitor in response to the positive pulse charge going to zero to place said thyristor in the OFF state, wherein said discharge circuit comprises:

an inverter circuit having a collector, an emitter and a base;

a diode connected to said collector of said inverter circuit; and

a Darlington circuit coupled to said inverter circuit through said diode, said Darlington circuit comprising a plurality of thyristors.

5,361,010

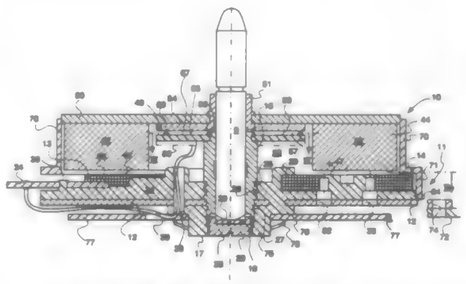
TACHOGENERATOR FOR SPEED CONTROL OF ELECTRIC MOTORS

Rolf Müller, Georgen, Germany, assignor to Papst Licensing GmbH, Spaichingen, Germany

Continuation of Ser. No. 680,327, Feb. 26, 1985, Pat. No. 4,667,122, which is a continuation of Ser. No. 478,701, Mar. 25, 1983, Pat. No. 4,517,480, which is a continuation of Ser. No. 166,806, Jul. 9, 1980, abandoned. This application May 19, 1987, Ser. No. 51,904

Int. Cl.[5] H02K *21/12*

U.S. Cl. 310—156 **1 Claim**



1. A tachogenerator for speed control of an electrical motor having a rotor and an axial bearing for compensating axial forces acting on the rotor, the tachogenerator comprising

a tachogenerator stator and a tachogenerator rotor mounted for rotation relative to each other,

a flat multipole permanent magnet solidly connected to the rotor of the motor and having a number p of pairs of magnetic poles on its surface, the magnetic poles having pole centers and being uniformly arranged on a circle of diameter d for the pole centers, and

a circular wave winding solidly connected to the stator and separated from the permanent magnet by a flat air gap of a width g and having angular substantially U-shaped repeat units of the wave winding equal in number also to p, wherein p is equal to from about 0.5 to 1.5 times a ratio of the diameter d divided by the width g, with the diameter d and the width g being measured in like units.

5,361,011

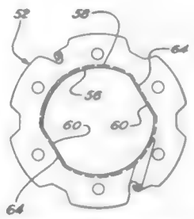
MECHANICALLY INTERLOCKING ROTOR ASSEMBLY

Michael T. York, Whitmore Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1993, Ser. No. 161,561

Int. Cl.[5] H02K *3/32*

U.S. Cl. 310—194 **8 Claims**



1. A rotor for an electrical machine, said rotor comprising:

a pole piece, said pole piece being generally cylindrical with a center and having an axis of rotation perpendicular to said center of said pole piece, said pole piece further comprising a generally cylindrical hub concentric with said axis of rotation;

a bobbin, said bobbin being generally annular in shape and having an inner surface and an outer surface; said inner surface having a diameter such that said bobbin can be placed concentrically over said hub; said outer surface comprising at least one flat portion; said bobbin located concentrically on said hub of said pole piece; and

a coil, said coil comprising wire wound around said outer surface of said bobbin, whereby said coil has acquired at least one flat portion corresponding in number and location to said at least one flat portion on the outer surface of said bobbin.

5,361,012

METHOD AND APPARATUS FOR INCREASING THE EFFICIENCY OF ELECTRICAL ROTARY MACHINES

James J. Hildebrandt, 415½ Heliotrope Ave., Corona Del Mar, Calif. 92625

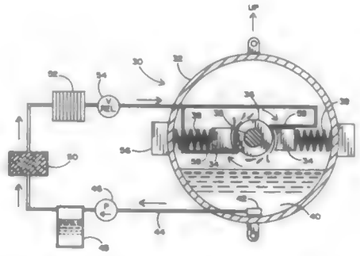
Filed Dec. 24, 1992, Ser. No. 996,709

Int. Cl.[5] H02K *9/00*

U.S. Cl. 310—228 **11 Claims**

1. In an electric rotary machine of the type having a commutator and brushes; an improvement comprising:

methyl chloroform; and



means for applying said methyl chloroform continuously to said brushes adjacent said commutator while said machine is running.

5,361,013

DEVICE COMPRISING A PIEZOELECTRIC TRANSDUCER

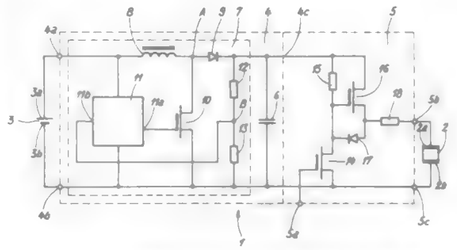
Fridolin Wiget, Neuchâtel, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jan. 26, 1993, Ser. No. 9,053

Claims priority, application France, Feb. 6, 1992, 92 01437

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—316 **4 Claims**



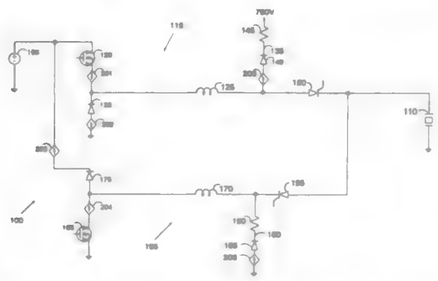
1. A device comprising a piezoelectric transducer, an electrical power supply source for producing a first voltage and control means responsive to a first state of a control signal for applying to said transducer a control voltage and to a second state of said control signal for short-circuiting said transducer, said control means including voltage increasing means which is responsive to said first voltage to produce said control voltage and comprises a series circuit including a coil, a diode and said transducer which forms a capacitor, connected in that order, across the terminals of said power supply source, and means for selectively producing and cancelling a short circuit across the portion of said series circuit formed by said diode and said capacitor, and said voltage increasing means also being responsive to said first state of said control signal to produce said control voltage terminals of said power supply source, and means for selectively producing and cancelling a short circuit across the terminals of circuit formed by said diode and said

capacitor, said capacitor being provided by said transducer and said voltage increasing means so being responsive to said first state of said control signal to produce said control voltage.

5,361,014
APPARATUS FOR DRIVING A PIEZOELECTRIC ACTUATOR

James A. Antone, Peoria, Ill.; Fred C. Lee, Blacksburg, Va., and Wojciech A. Tabisz, Vancouver, Wash., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 10, 1993, Ser. No. 150,706
Int. Cl.[5] H01L *41/08*; F02M *51/00*
U.S. Cl. 310—316 **18 Claims**

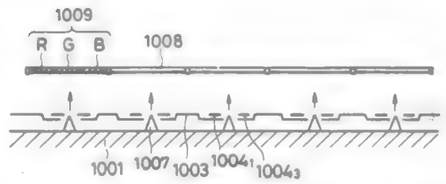


1. An apparatus for driving a piezoelectric actuator in response to charging and discharging command signals, comprising:
an energy source for supplying electrical energy to the piezoelectric actuator;
a charging circuit, including:
a charging transistor connected to the energy source and adapted to control the amount energy supplied to the piezoelectric actuator; and
a charging inductor connected to the charging transistor and adapted to limit the rate of change of energy supplied to the piezoelectric actuator;
a charging thyristor disposed between the charging circuit and the piezoelectric actuator;
means for receiving the charging command signal and responsively biasing the charging thyristor ON to connect the piezoelectric actuator to the charging circuit;
means for determining the magnitude of voltage applied to the piezoelectric actuator;
means for receiving the charging command signal, and responsively biasing the charging transistor alternately ON and OFF to control the amount of energy supplied to the piezoelectric actuator in response to the piezoelectric actuator voltage being less than an upper desired voltage value; and
means for biasing the charging thyristor OFF to disconnect the piezoelectric actuator from the charging circuit in response to the piezoelectric actuator voltage being greater than or equal to the upper desired voltage value.

5,361,015
ELECTRON EMISSION ELEMENT

Masahiko Okunuki, Itsukaichi; Akira Suzuki, Yokohama; Isamu Shimoda, Zama; Tetsuya Kaneko, Yokohama; Takeo Tsukamoto, Atsugi; Toshihiko Takeda, Tokyo; Takao Yonehara, Atsugi, and Takeshi Ichikawa, Sendai, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 848,727, Mar. 9, 1992, Pat. No. 5,201,681, which is a division of Ser. No. 746,154, Aug. 14, 1991, Pat. No. 5,176,557, which is a continuation of Ser. No. 463,783, Jan. 8, 1990, abandoned, which is a division of Ser. No. 151,961, Feb. 3, 1988, abandoned. This application Jan. 29, 1993, Ser. No. 11,006
Claims priority, application Japan, Feb. 6, 1987, 63-024872; Feb. 6, 1987, 63-024873; Feb. 23, 1987, 63-038075; Feb. 23, 1987, 63-038076; Mar. 4, 1987, 63-047816; Mar. 6, 1987, 63-050344; Mar. 9, 1987, 63-052113; Mar. 24, 1987, 63-067892; Mar. 26, 1987, 63-070467; Mar. 27, 1987, 63-073601
Int. Cl.[5] H01J *7/06*; H01L *21/02*
U.S. Cl. 313—309 **26 Claims**

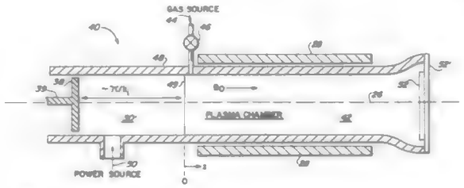


1. A multi type electron emission element comprising a plurality of electrodes formed on a deposition surface of a material having a factor critical to nucleation and each having a conical portion of a single crystal on a nucleus, an insulating layer formed on said deposition surface and having openings respectively centered on said conical portions, and a deriving electrode part of which is formed near at least said conical portions, said deriving electrode being formed on said insulating layer.

5,361,016
HIGH DENSITY PLASMA FORMATION USING WHISTLER MODE EXCITATION IN A REDUCED CROSS-SECTIONAL AREA FORMATION TUBE

Tihiro Ohkawa, La Jolla; Stanley I. Tsunoda, Encinitas, and Robert L. Miller, San Diego, all of Calif., assignors to General Atomics, San Diego, Calif.

Continuation-in-part of Ser. No. 857,981, Mar. 26, 1992, Pat. No. 5,225,740. This application Jan. 28, 1993, Ser. No. 10,553
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.41 **20 Claims**

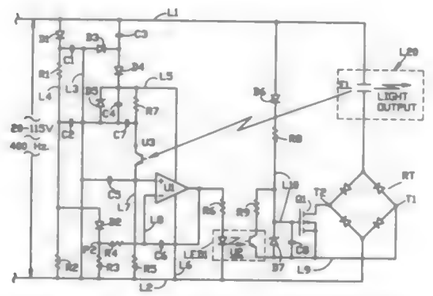


1. Plasma production apparatus comprising:
a conductive cylindrical chamber having a first cross-sectional area and a first longitudinal axis;
power input means for injecting microwave power into said cylindrical chamber;
resonating means for causing said microwave power to resonate within said cylindrical chamber, said resonating means comprising a resonant cavity positioned within the cylindrical chamber, said resonant cavity having a conductive end plate at one end thereof and a conductive plunger at the other end thereof;
a non-conducting plasma formation tube filled with a prescribed gas having a second cross sectional area less than said first cross-sectional area, said plasma formation tube having a second longitudinal axis and being positioned within said cylindrical chamber so that said second longitudinal axis is substantially coincident with said first longitudinal axis;
concentrating means for concentrating the resonating microwave power, which initially fills the first cross-sectional area, down to the second cross-sectional area of said plasma formation tube, thereby providing an increased power density in said second cross-sectional area;
means for drawing said microwave power at said increased power density into said plasma formation tube as a whistler wave, said whistler wave ionizing said prescribed gas, thereby forming a plasma within said plasma formation tube; and
means for preventing the formation of plasma in the cylindrical chamber outside of said plasma formation tube.

5,361,017
INSTRUMENT PANEL AND EL LAMP THEREOF

Daniel J. Krause, East Aurora, N.Y., assignor to Astronics Corporation, Orchard Park, N.Y.

Filed Feb. 1, 1993, Ser. No. 12,016
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—151 **16 Claims**

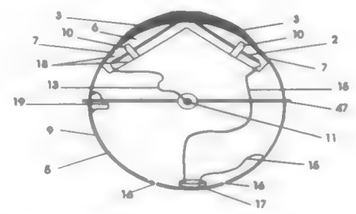


5. In an instrument panel having a light transmissive shell with nomenclature printed on the face thereof,
an EL lamp mounted on said shell rearwardly of said face thereof and operative, when illuminated, to direct its light toward said face of said shell to illuminate said nomenclature,
a control circuit on said shell for connecting said EL lamp to an AC voltage source to be energized thereby,
said control circuit including light sensing means positioned to sense the intensity of the light emitted by said lamp when said lamp is energized, and
means in said circuit connected to said light sensing means and operative, when said lamp is connected by said control circuit to said voltage source, to increase the AC voltage across said lamp when the intensity of said light falls below a predetermined value, and to decrease the AC voltage across said lamp when the intensity of said light rises above said predetermined value.

5,361,018
INTERMEDIATE VOLTAGE CABLE MARKER WITH ENHANCED CONSPICUITY

Richard M. Milton, 6809 Falcata Cove, Austin, Tex. 78750

Filed Aug. 9, 1993, Ser. No. 103,216
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—248 **10 Claims**

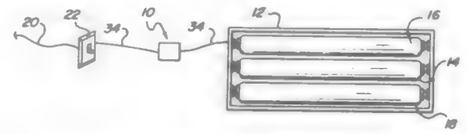


1. An intermediate voltage cable marker with enhanced conspicuity comprising:
a) a capacitor and an insulating shell; said insulating shell being attachable to said intermediate voltage cable; and said shell having a conductive member inside said shell whereby said shell forms said capacitor;
b) reflector and prism means and a minimum of one gas filled lamp located in a depression in said shell with said lamp electrically connected on a first end to said intermediate voltage cable and electrically connected on a second end to a first of a dual induction coil with a first one of said dual induction coils connected in series with a second of said dual induction coils and with said second dual induction coil electrically connected with said conductive member forming said capacitor; said reflector means being located on the sides and below said lamp in said depression to reflect light through said prism means; said prism means being located on a transparent covering for said depression and acting to diffuse light from the periphery of said prism means to increase both vertical and lateral conspicuity.

5,361,019
LAMP DIMMING DEVICE

Paul G. Angott, Troy, and Thomas G. Xydis, Ann Arbor, both of Mich., assignors to Dimango Products Corporation, Brighton, Mich.

Filed Mar. 1, 1993, Ser. No. 24,338
Int. Cl.[5] H05B *41/38*
U.S. Cl. 315—324 **12 Claims**



1. An illumination level control device (10) for controlling the level of illumination in a lamp (12) having at least three bulbs (14,16,18) connected to an electrical power line (20) and controlled by a toggle power switch (22) having on and off positions, said illumination level control device (10) comprising:
switching means (24) for switching the bulbs (14,16,18) off and on;
connecting means (34) for connecting said switching means (24) to at least two of the bulbs (14,16,18) and to the

electrical power line (20) supplying electrical power, said illumination level control device (10) characterized by

controlling means (36) responsive to successive toggling between the on position and the off position of the toggle power switch (22) across the electrical power line (20) for controlling said switching means (24) such that said controlling means (36) operates said switching means (24) to sequentially change the number of the bulbs (14,16,18) being illuminated at any one time through at least three different levels of illuminations using symmetrical combinations of the bulbs (14,16,18) to maximize illumination symmetry of the lamp (12).

5,361,020

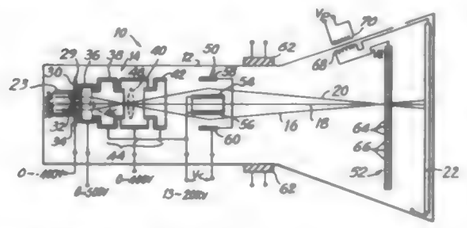
METHODS AND APPARATUS FOR IMPROVING CATHODE RAY TUBE IMAGE QUALITY

Geoffrey S. M. Hedrick, Malverne, Pa., assignor to Innovative Solutions & Support, Incorporated A Corporation of Pennsylvania, Malverne, Pa.

Continuation of Ser. No. 917,520, Jul. 17, 1992, abandoned, which is a continuation of Ser. No. 782,870, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 664,486, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 561,284, Aug. 1, 1990, abandoned, which is a continuation of Ser. No. 432,347, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 286,895, Dec. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 231,770, Aug. 12, 1988, abandoned. This application Apr. 15, 1993, Ser. No. 47,776

Int. Cl.[5] H01J *29/74, 29/76*

U.S. Cl. 315—369 **10 Claims**



1. In combination:

a cathode ray imaging tube comprising:

means for generating an electron beam;

an imaging screen spaced from said generating means; and

a screen grid having a plurality of apertures and disposed in said tube within the path of the scanning electron beam so that, as the beam is operatively swept across the imaging screen to produce an image on the screen, the beam successively passes through said apertures to impinge and thereby create an image on said imaging screen, and so that the beam is at least partly intercepted by the screen grid and thereby at least partly prevented from impinging on the imaging screen as it is swept across screen grid locations intermediate successive apertures;

current sensing means connecting said screen grid and said imaging screen to define a time-varying current flow through said sensing means as the electron beam is swept across the screen grid;

means for sampling a video information signal at a substantially constant frequency to provide a plurality of video signal samples;

means for storing said plural video signal samples; and

means for applying said stored video signal samples to the electron beam operating means at a time-varying rate derived from said current flow through the current sensing means so that the information content of said signal sample is impressed on and carried by the electron beam toward said imaging screen in timed relation for passage of the beam through one of said grid apertures and onto the screen for generating an image on the screen with enhanced linearity of the cathode ray imaging tube;

wherein said storage means comprises an analog shift register having a data input for receiving the video information signal, a data output, and a clock input for defining the rate at which data is shifted in said shift register;

wherein said sampling means comprises means for applying to said shift register clock input a first clock signal at said substantially constant frequency to define said plural video signal samples and cause said shift register to serially store said samples at a substantially constant rate; and

wherein said stored signal applying means comprises means for applying to said shift register clock input a second clock signal at a time-varying frequency which is derived from said current flow through the current sensing means so as to cause said shift register to output said stored signal samples in timed relation to the coincidence of the electron beam position with said apertures in said screen grid.

5,361,021

METHOD FOR SUPPRESSING CURRENT PEAKS DURING COMMUTATION OF A BRUSHLESS DIRECT-CURRENT MOTOR

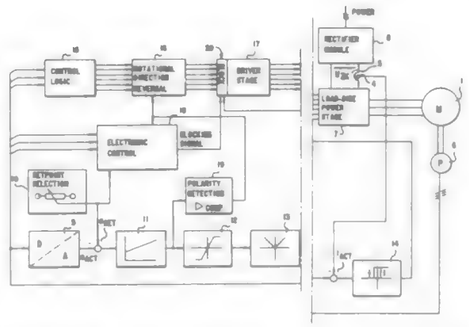
Helmut Meyer, Weinheim; Kai Albrecht, Heidelberg, and Jürgen Seeberger, Walldorf, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Continuation of Ser. No. 674,507, Mar. 22, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 912,051

Claims priority, application Germany, Mar. 22, 1990, 4009184

Int. Cl.[5] H02P *6/02;* **H02K** *29/06*

U.S. Cl. 318—254 **10 Claims**



1. Method for suppressing current peaks occurring during commutation in phase windings of a brushless direct-current motor having a motor shaft, a rotor-position sensor connected to the motor shaft, the method which comprises the steps of supplying the phase windings with rectangular current via a direct current link to a direct-current converter having a power stage including a multi-phase bridge with a plurality of power switches, measuring with a current measuring device an actual value of the current exclusively in the direct-current link to the direct-current converter, and delaying current buildup with respect to current decay in the phase windings for a time period t_v during which time period said plurality of power switches are switched off.

5,361,022

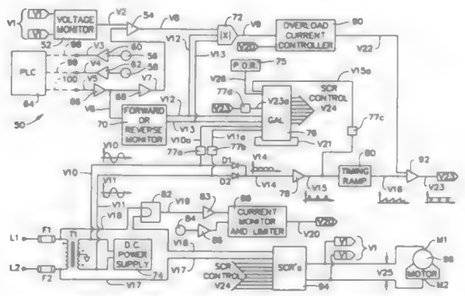
METHOD AND APPARATUS FOR ELECTRICAL DYNAMIC BRAKING

Michael E. Brown, Mason, Ohio, assignor to E. F. Bavis & Associates, Inc., Maineville, Ohio

Filed Mar. 23, 1993, Ser. No. 35,946

Int. Cl.[5] H02P *3/12*

U.S. Cl. 318—375 **16 Claims**



1. A control and dynamic braking circuit for movable equipment comprising:

(a) a plurality of semiconductor switching devices for switching electrical current arriving from an alternating current electrical power source, said alternating current approximating a sine wave, said semiconductor switching devices each containing a gating input, a load-current input, and a load-current output, said semiconductor switching devices directly switching said electrical current to the equipment, wherein the load-current inputs of said semiconductor switching devices are directly connected to said alternating current electrical power source, and the load-current outputs of said semiconductor switching devices are directly connected to said equipment;

(b) a first controller for determining one of a plurality of operating modes of the equipment, said operating modes comprising running, braking, and stop modes; and

(c) a second controller for individually selecting the gating input of each of the plurality of semiconductor switching devices at time intervals consistent with placing said semiconductor switching devices in one of a conducting and non-conducting mode, so as to operate said equipment in one of said operating modes, said second controller, during a running mode, selecting the gating inputs of only a first group of the plurality of semiconductor switching devices to conduct electrical current to the equipment during each positive half-cycle of the sine wave of the alternating current, and selecting the gating inputs of only a second group of the plurality of semiconductor switching devices to conduct electrical current to the movable equipment during each negative half-cycle of the sine wave of the alternating current.

5,361,023

MOVABLE ROBOT

Sang-Gwon Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 25, 1993, Ser. No. 140,419

Claims priority, application Rep. of Korea, Oct. 26, 1992, 92-19767

Int. Cl.[5] H02J *7/00*

U.S. Cl. 318—568.16 **8 Claims**

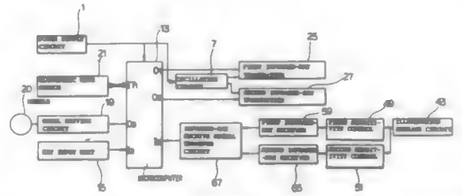
1. A movable robot comprising: oscillating means for receiving a DC voltage from power supply means and for oscillating to output an oscillating frequency signal;

system control means for receiving the DC voltage from said power supply means and for outputting a first, second and third operating signals and a drive control signal;

ultrasonic wave sensing means for sensing obstacles, said ultrasonic wave sensing means being responsive to the first operating signal from said system control means to emit an ultrasonic wave and receive a return ultrasonic wave reflected by the obstacles;

infrared-ray transmission means for emitting infrared-rays in response to the second and third operating signals from said system control means and the oscillating frequency signal from said oscillating means;

infrared-ray reception means for receiving return infrared-rays which, after the infrared-rays are emitted by said infrared-ray transmission means, are reflected by the obstacles, and for outputting a resultant infrared-ray receive signal;



illumination sensing means for sensing an illumination around the movable robot and for outputting a resultant illumination sense signal;

sensitivity control means for outputting a sensitivity control signal in response to the illumination sense signal from said illumination sensing means to control a sensitivity of said infrared-ray reception means;

infrared-ray receive signal transfer means for transferring the infrared-ray receive signal from said infrared-ray reception means to said system control means; and

wheel driving means for driving wheels of the movable robot in response to the drive control signal from said system control means said system control means regulating the drive control signal in accordance with the transferred infrared-ray receive signal.

5,361,024

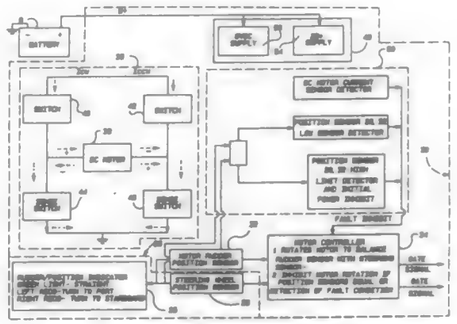
REMOTE, ELECTRICAL STEERING SYSTEM WITH FAULT PROTECTION

Gary E. Wisner, Boaz, Ala.; James W. McClellan, and Charles W. Harrington, both of Jackson, Tenn., assignors to Syncro Corp., Arab, Ala. and Babcock Industries, Inc., Milan, Tenn.

Continuation of Ser. No. 602,430, Oct. 22, 1990, Pat. No. 5,214,363. This application May 20, 1993, Ser. No. 65,125

Int. Cl.[5] G05D *1/00*

U.S. Cl. 318—588 **21 Claims**



1. A remote, electrical steering system for marine vehicles

having a motor-rudder mounted for pivotal steering movement about a pivot axis, said system comprising:

motor-rudder position sensing means for providing a motor-rudder signal indicative of the angular position of the motor-rudder relative to a neutral motor-rudder angular position about the pivot axis,

steering unit means remote from the motor-rudder and actuable by an operator to selected positions relative to a neutral steering angular position related to desired angular steering positions of the motor-rudder about the pivot axis,

steering position sensing means operatively connected with said steering unit means for providing a steering position signal indicative of the position of said steering unit means relative to said neutral steering angular position,

first circuit means responsive to said motor-rudder signal and said steering position signal for providing a control signal indicative of preselected differences between said motor-rudder angular position and said selected positions of said steering unit means,

electric motor drive means operatively connected to the motor-rudder and responsive to an electrical drive signal to pivot the motor-rudder to determinable angular positions about the pivot axis,

power circuit means operatively connected with said first circuit means and to said electric motor drive means and responsive to said control signal for providing said drive signal to said electric motor drive means,

said electric motor drive means comprising a direct current motor having a rotor winding having two ends each adapted to be alternately connected to opposite polarities for driving said direct current motor in opposite directions,

said power circuit means providing drive current to said rotor winding in response to said drive signal,

condition sensing means for sensing a preselected fault condition and for providing a brake signal, said power circuit means in response to said brake signal generally connecting said ends of said rotor winding together to brake said electric motor drive means in response to the fault condition and to inhibit involuntary steering movement of the motor.

5,361,025

INTERFACE CIRCUIT FOR GENERATING AND ANALOGUE SIGNAL TO CONTROL THE SPEED OF ROTATION OF A DIRECT-CURRENT ELECTRIC MOTOR

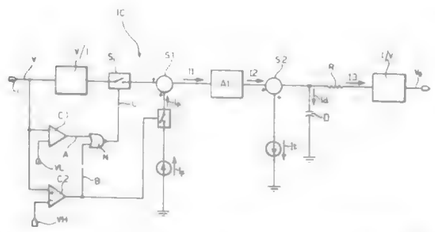
Pietro De Filippis, Milan; Franco Salerno, Alpignano, and Paolo Mastella, Camino, all of Italy, assignors to Industrie Magneti Marelli SPA, Milan, Italy

Filed Mar. 26, 1993, Ser. No. 37,286

Claims priority, application Italy, Mar. 26, 1992, T092A000267

Int. Cl.[5] G05B *1/01*

U.S. Cl. 318—599 **4 Claims**



1. An interface circuit for generating an analog signal to control a speed of rotation of a direct-current brushless electric motor which does not have sensors for detecting an angular position of its rotor, the interface circuit comprising:

an input terminal for receiving a control input signal indicative of the required speed of rotation;

an analog signal conditioning means for receiving an analog signal at an signal input thereof and for outputting an analog signal having an amplitude substantially proportional to an amplitude of said analog signal received at said signal input;

comparator circuitry coupled to receive the control input signal via said input terminal and configured to compare the control input signal with a maximum threshold and a minimum threshold;

the comparator circuitry providing a comparator output signal having a first state when an amplitude of the control input signal is between said thresholds, said comparator output signal having a second state when the amplitude of the control input signal is outside said thresholds;

pulse width modulation (PWM) conversion circuitry coupled to receive a PWM signal having a duty cycle and to convert said PWM signal into an analog signal having an amplitude which varies in accordance with the duty cycle of the PWM signal;

said PWM conversion circuitry having an output coupled to said signal input of said analog signal conditioning means;

said comparator circuitry being effective so that when said comparator output signal is in the first state, the comparator circuitry causes the control input signal to be provided to said signal input of said analog-signal conditioning means; and

when said comparator output signal is in the second state, the comparator circuitry

(i) prevents the control input signal from being sent to the analog-signal conditioning means,

(ii) applies to the PWM conversion circuitry a PWM signal having a predetermined phase relationship with threshold crossings by the control input signal, and

(iii) connects the output of the PWM conversion circuitry to the signal input of the analog signal conditioning means.

5,361,026

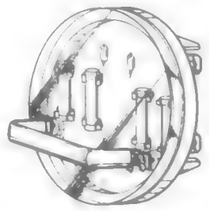
LOAD INDICATING SOCKET TESTER

Allen V. Pruehs, Howell, and Darrell A. Robinson, Highland, both of Mich., assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Sep. 2, 1992, Ser. No. 939,611

Int. Cl.[5] G01R *1/04*

U.S. Cl. 324—74 **18 Claims**



1. In combination with an electrical watthour meter socket having a pair of line jaw terminals normally connected to an external source of electrical power and a pair of load jaw terminals normally connected to a building power distribution circuit, a tester comprising:

a housing having a base, and a cover spaced from one surface of the base and affixed to the base to form an interior cavity between the one surface of the base and the cover;

line and load pairs of terminals mounted in and extending outward from an opposite surface of the base for releasable insertion into electrical contact with the pairs of line and load jaw terminals, respectively, in the watthour meter socket;

a pair of lamps mounted on the cover;

a pair of fuses accessible through the cover, each fuse electrically connected between one line terminal and one load terminal of each pair of line and load terminals in the base; and

switch means, mounted on the cover and switchable between two positions, for selectively switching electrical contacts connected thereto between a first electrically conductive position connecting each of the pair of lamps between one of the line terminals and one of the load terminals on the base is parallel with one of the fuses such that the lamps provide an indication of the continuity of the fuses and safe wiring of the watthour meter socket for mounting of a watthour meter therein by non-illumination of the lamps when electric current flows from the external power source connected to the line terminals through the fuses to the load terminals, and a second electrically conductive position connecting each lamp between the respective one of the line terminals and the other of the load terminals in the base to provide an indication of the operability of the lamps and the presence of electrical voltage through illumination of the lamps.

5,361,027

APPARATUS FOR NON-CONTACT DYNAMIC INSPECTIONS OF A PLURALITY OF PIECES

Narciso Selleri, Montevegllo, Italy, assignor to Marposs Societa' Per Azioni, S. Marino di Bentivoglio, Italy

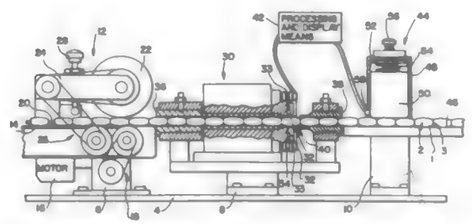
PCT No. PCT/EP91/01637, § 371 Date Mar. 1, 1993, § 102(e) Date Mar. 1, 1993, PCT Pub. No. WO92/05398, PCT Pub. Date Apr. 2, 1992

PCT Filed Aug. 29, 1991, Ser. No. 974,594

Claims priority, application Italy, Sep. 14, 1990, 3651 A/90

Int. Cl.[5] G01N *27/90;* **B65G** *47/26;* **B07C** *5/00*

U.S. Cl. 324—226 **6 Claims**



1. Apparatus for checking features of a plurality of pieces (1) featuring rotational symmetry about a longitudinal geometric axis, comprising

support means (4 to 10);

centering means (20, 22, 36, 38), coupled to the support means (4 to 10), for arranging the pieces (1) to be checked in a row, the centering means defining a longitudinal feed direction;

thrust means (14, 22), coupled to the support means (4 to 10), for urging the pieces (1) along said feed direction;

braking means (48) for applying to the pieces (1) a braking action opposing the thrust action applied by the thrust means (14, 22), the thrust action prevailing over the braking action; and

checking means (32, 58) of non-contact type arranged, near said centering means (36, 38), in a position longitudinally lying between the thrust means (14, 22), and the braking means (48), whereby pieces (1) having convex lateral surface and plane end surfaces can be checked while continuously passing before the checking means, with the ends of adjacent pieces in stable contact with one another and the geometric axes aligned along the longitudinal feed direction.

5,361,028

METHOD AND APPARATUS FOR HIGH SPEED MAGNETIC RESONANCE IMAGING WITH IMPROVED IMAGE QUALITY

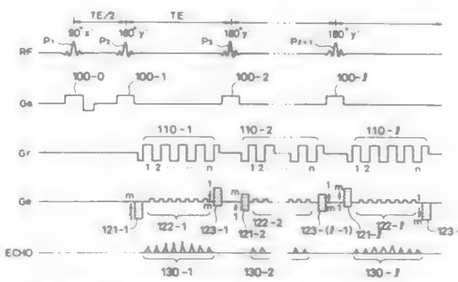
Shoichi Kanayama, Saitama; Shigehide Kuhara, Tochigi, and Kozo Sato, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1992, Ser. No. 933,231

Claims priority, application Japan, Aug. 23, 1991, 3-211918

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **28 Claims**



1. A method of magnetic resonance imaging, comprising the steps of:

(a) placing an object to be examined in a static magnetic field;

(b) carrying out a pulse sequence, including:

(b1) applying RF pulses and a slicing gradient magnetic field for exciting a desired imaging region in the object to be examined;

(b2) applying a reading gradient magnetic field which regularly fluctuates between a negative value and a positive value onto the object to be examined;

(b3) applying an initial phase encoding gradient magnetic field for specifying a partial region in a k-space onto the object to be examined before the reading gradient magnetic field is applied in step (b2);

(b4) applying a predetermined pulse shaped phase encoding gradient magnetic field onto the object to be examined, every time the reading gradient magnetic field changes polarity;

(b5) collecting echo signals for the partial region in the k-space emitted from the desired imaging region, every time the reading gradient magnetic field changes polarity;

(c) repeating the pulse sequence of step (b) a plurality of times while sequentially changing a setting of the initial phase encoding gradient magnetic field applied in step (b3), such that the echo signals are collected for an entire region of the k-space; and

(d) reconstructing MR images from the echo signals for the entire region of the k-space collected in step (b5) by a repeated application of the pulse sequence of step (b).

5,361,029

SYSTEM FOR LOCATING MULTIPLE CONCEALED UNDERGROUND OBJECTS

Alan J. Rider, and Lester R. Querry, both of Reston, Va., assignors to The Charles Machine Works, Inc., Perry, Okla.

Continuation of Ser. No. 539,616, Jun. 18, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,525

Int. Cl.[5] G01V *3/11, 3/165;* **G01R** *19/00;* **H04B** *1/02*

U.S. Cl. 324—326 **16 Claims**

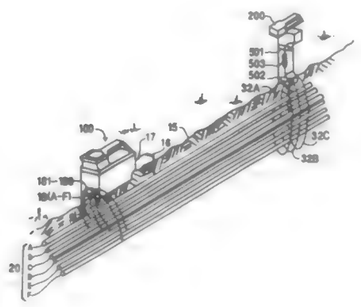
10. A locator system for use in locating a plurality of underground objects, said system comprising:

a transmitter including,

at least one frequency synthesizer for generating a subset of different frequencies from a plurality of precisely defined available frequencies;

transmitting means for transmitting the subset of frequencies to said plurality of underground objects such that each said underground object radiates a respective frequency of the subset; and

a receiver including,



a frequency synthesizer programmable to produce different and precise frequencies for tuning the receiver to a narrow band pass to process any one of the radiated frequencies and reject the other radiated frequencies.

5,361,030

LEAK DETECTOR FOR ELECTRO-MAGNETIC INDUCTION-TYPE CONDUCTIVITY METER

Shigeyuki Akiyama, and Hiroo Matsumoto, both of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 781,712, Oct. 22, 1991, Pat. No. 5,252,925. This application Aug. 12, 1992, Ser. No. 928,987

Claims priority, application Japan, Aug. 14, 1991, 3-072271[U]

Int. Cl.[5] G01N *27/28, 27/02*

U.S. Cl. 324—445 **6 Claims**

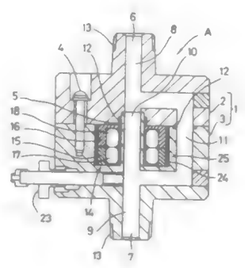
1. An improved detector assembly of an electro-magnetic induction-type conductivity meter comprising;

a housing member having a liquid sample flow path extending therethrough;

an excitation coil mounted in the housing member and extending about and separated from the liquid sample flow path;

a detection coil mounted in the housing member and extending about and separated from the liquid sample flow path;

means for providing a second liquid sample flow path that interconnects with the first liquid sample flow path both upstream and downstream of the respective coils, the second liquid sample flow path being adjacent the coils and substantially surrounding the coils, whereby the excitation coil enables an induction current to be generated in the liquid sample and the detection coil measures the induction current as representative of the liquid sample; and



means for detecting any entrance of the liquid sample into the housing member that would directly contact one of the coils.

5,361,031

Patent Not Issued For This Number

5,361,032

METHOD OF TROUBLESHOOTING ELECTRONIC CIRCUIT BOARD ASSEMBLIES USING TEMPERATURE ISOLATION

David A. Waterbly, Peoria, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 27, 1992, Ser. No. 826,552

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—537 **20 Claims**

1. A method for troubleshooting, without the need to de-solder, an electronic circuit board assembly which comprises a plurality of electrical conductors, a plurality of nodes each comprising an interconnected group of said electrical conductors, a plurality of integrated circuit components coupled to each of said nodes, and an electrical terminal, said method comprising the steps in sequence of:

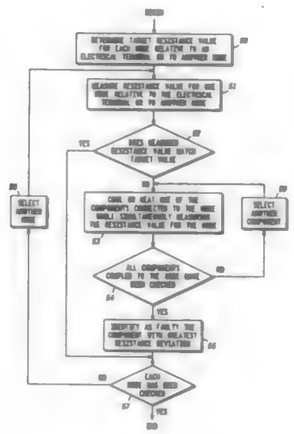
(a) determining a target resistance value for each of said plurality of nodes relative to said electrical terminal;

(b) measuring the resistance value for one of said plurality of nodes relative to said terminal, and, if said measured resistance value matches said target value, proceeding to step (f), otherwise proceeding to step (c);

(c) cooling or heating a single one of the components connected to said node while simultaneously measuring the deviation of said resistance value for said one node from said target resistance value;

(d) repeating step (c) until all components coupled to said one node have been checked;

(e) identifying as faulty the component having the greatest deviation of said measured resistance value from said target resistance value; and



(f) repeating step (b) until each of said plurality of nodes has been checked.

5,361,033

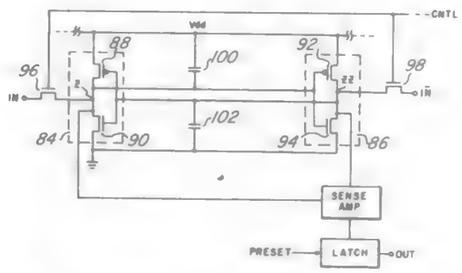
ON CHIP BI-STABLE POWER-SPIKE DETECTION CIRCUIT

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 737,584, Jul. 25, 1991, Pat. No. 5,157,335. This application Jun. 22, 1992, Ser. No. 901,743

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—537 **5 Claims**



1. An error detection circuit comprising:

a detection bi-stable circuit having a pair of cross-coupled inverters which is operable to store a first logic state;

a pair of terminals for connecting power to the error detection circuit; and

circuitry operable for producing a second logic state in said detection bi-stable circuit in connection with the occurrence of a spike in power which is delivered to the circuit, said circuitry comprising a pair of capacitors wherein each capacitor is connected between an output of one inverter and one of said power terminals.

5,361,034

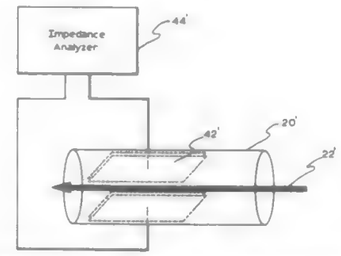
APPARATUS FOR MEASURING THE CONDUCTIVITY OF A FLUID

Brian M. Pierce, Moreno Valley; David B. Chang, Tustin, and Kean S. Bates, Long Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 447,333, Dec. 7, 1989, Pat. No. 5,072,188. This application Jul. 18, 1991, Ser. No. 732,512

Int. Cl.[5] G01R *29/12;* **G01N** *27/60*

U.S. Cl. 324—663 **4 Claims**



1. An apparatus for measuring alternating current dielectric properties of a charged fluid comprising:

a nozzle for spraying said charged fluid;

a capacitor disposed in said nozzle and a having first and second capacitive plates wherein an alternating current voltage signal is applied to said capacitor; and

analyzer means coupled to said first and second plates for measuring a characteristic of said capacitor when said charged fluid is sprayed through said nozzle to thereby indicate said alternating current dielectric properties of said charged fluid.

5,361,035

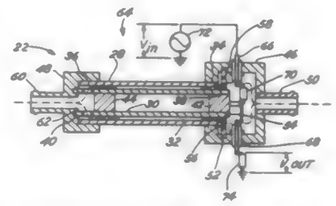
RESONANT CAVITY FLEXIBLE FUEL SENSOR AND SYSTEM

Allen H. Meitzler, Ann Arbor, and George S. Saloka, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 833,691, Feb. 11, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,756

Int. Cl.[5] F02B *75/12*

U.S. Cl. 324—663 **7 Claims**



1. A flexible fuel sensor for use in determining a fuel mixture of at least two liquid fuels comprising, in combination:

a first conductor having a first inlet end and a first outlet end;

a second conductor within said first conductor and having a second inlet end and a second outlet end, said liquid fuels flowing between said first and second conductors;

shorting means for electrically shorting said second outlet end of said second conductor to said first conductor;

an inlet housing for receiving said liquid fuels and for maintaining said second inlet end at a displaced position with respect to said first inlet end; and

an outlet housing, providing said shorting means, for passing said liquid fuels and for shorting said first and second outlet ends;

said inlet and outlet housings retaining said first and second

conductors in a substantially coaxial arrangement to define a flowpath between said first and second conductors and between said inlet and outlet housings, said liquid fuels flowing through said flowpath;

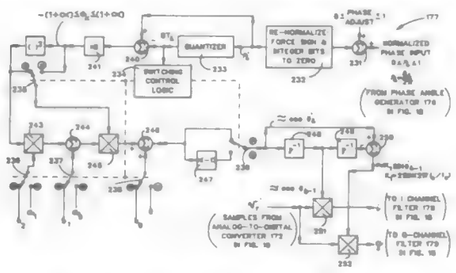
said flexible fuel sensor defining a resonant electromagnetic cavity having a resonant frequency dependent upon said fuel mixture.

5,361,036

COMPLEX DIGITAL DEMODULATOR EMPLOYING CHEBYCHEV-APPROXIMATION DERIVED SYNTHETIC SINUSOID GENERATION

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Aug. 12, 1993, Ser. No. 105,326
Int. Cl.[5] H03D *1/00;* **G01P** *15/09*
U.S. Cl. 329—361 **28 Claims**



1. A method of demodulating a digital signal by a reference frequency signal, said digital signal including a series of digital values, said reference frequency signal including a series of phase angle values, each of said digital values having a corresponding one of said phase angle values, said method comprising the steps of:

a) computing, with computing means, a numerical approximation of a sinusoidal function of each phase angle value;

b) multiplying, with a multiplier, each digital sample by the numerical approximation of the sinusoidal function of the phase angle corresponding to said each digital value, to produce a series of products of said sinusoidal function; and

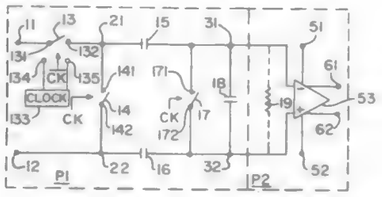
c) digitally filtering, with a filter, the series of products.

5,361,037

ISOLATION AMPLIFIER WITH CAPACITIVE COUPLING

Xueuing Qui, c/o Paul Chiu 172-06 73rd Ave., Flushing, N.Y. 11366

Filed May 24, 1993, Ser. No. 65,480
Claims priority, application China, May 16, 1992, 92104282
Int. Cl.[5] H03F *1/14*
U.S. Cl. 330—9 **4 Claims**



1. An isolation amplifier with capacitive coupling comprises:

a) a voltage-to-charge converter means having first and second voltage inputs and first and second charge outputs for converting input differential voltage to output charge; and

b) a charge detector means having first and second charge inputs connected to the first and second charge outputs of said voltage-to-charge converter and first and second outputs for detecting the charge thereon;

wherein the voltage-to-charge converter means further comprises:

c) a capacitive divider means for providing a charging path through which input differential voltage charges and for establishing an isolation barrier between said voltage inputs and charge outputs;

d) a reset switching means for providing the capacitive divider means with a controllable discharging path to clear charges induced by said differential voltage during a short period;

e) a protective switch means having two contacts and driving inputs being connected in series between said first voltage input and said capacitive divider means by said contacts for providing a short circuit protection to said voltage inputs when said capacitive divider means is discharging, and establishing an isolation barrier between said contacts; and

f) a clock means having a set phase and a reset phase for driving said reset switching means and said protective switch means respectively;

wherein said capacitive divider means further comprises:

i) a first coupling capacitor having a first plate connected to said protective switch means for receiving a voltage from said first voltage input, a second plate connected to first charge output of said voltage-to-charge converter means, and an isolation barrier between the plates;

ii) a second coupling capacitor having a first plate connected to said second voltage input, a second plate connected to the second charge output of said voltage-to-charge converter means, and an isolation barrier between the plates; and

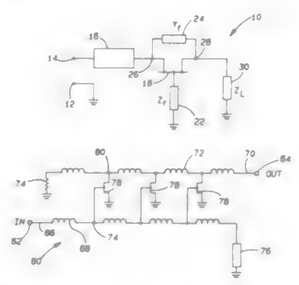
iii) an output capacitor connected between said two second plates of both said first and second coupling capacitors for storing said output charge proportional to said input differential voltage.

5,361,038

ACTIVE LOAD APPLICATIONS FOR DISTRIBUTED CIRCUITS

Barry R. Allen, Redondo Beach; Rahul Dixit, Cerritos; Bradford L. Nelson, Hermosa Beach; Juan C. Carillo, Gardena, and William L. Jones, Inglewood, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 11, 1993, Ser. No. 31,256
Int. Cl.[5] H03F *3/60, 3/68*
U.S. Cl. 330—54 **15 Claims**



1. A distribute circuit comprising:

an input transmission line having a plurality of impedances connected in electrical series, an input terminal at one end of said input transmission line and an active load connected between the opposite end of the transmission line and ground, said active load including at least one active device;

an output transmission line having a plurality of impedances connected in electrical series, an output terminal at one end of said output transmission line and an output impedance connected between the opposite end of the output transmission line and ground;

a plurality of active devices, each active device of said plurality having an input terminal being connected to junction points between said impedances of said input transmission line and an output terminal connected to junction points between said impedances of said output transmission lines; and

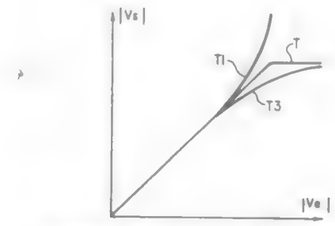
wherein a gate terminal of said active load active device is connected to ground through a first impedance, a source terminal is connected to a matching network and to a admittance, and a drain terminal is connected to said admittance and through a second impedance to ground, said admittance being connected across said source and drain terminals.

5,361,039

POWER AMPLIFIER DEVICE FOR A COMPOSITE SIGNAL

Jean Michel, Trappes, France, assignor to Thomson-LGT Laboratoire General Des Telecommunications, Conflans Sainte Honorine, France

Filed Jun. 21, 1993, Ser. No. 78,826
Claims priority, application France, Jun. 26, 1992, 92 07890
Int. Cl.[5] H03F *19/00;* **H03G** *9/00*
U.S. Cl. 330—149 **1 Claim**



1. A linear power amplification device for linearly amplifying a composite input signal formed of first and second independent signals, a maximum level of said second independent signal being less than or equal to a maximum level of said first independent signal, said linear power amplification device comprising:

correction means for receiving said composite input signal;

preamplifier means coupled to said correction means to thereby force an input unit, said preamplifier means receiving an output of said correction means; and

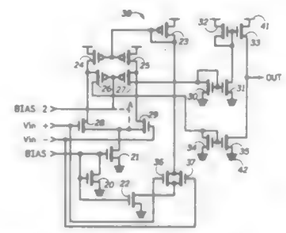
saturated amplifier means coupled to said preamplifier means and receiving an output thereof, said saturated amplifier means exhibiting a first saturation level representing a lowest positive input voltage level for which a corresponding output voltage level is not linear, and a second saturation level representing a greatest negative input voltage level for which a corresponding output voltage level is not linear, wherein a transfer characteristic of said linear power amplification device is substantially linear for levels of said composite input signal between said first saturation level and said second saturation level and is substantially constant for levels of said composite input signal not between said first saturation level and said second saturation level and wherein a transfer characteristic of said input unit exhibits a given slope for levels of said composite input signal between said first saturation level and said second saturation level and exhibits a slope substantially three times as great as said given slope for levels of said composite input signal not between said first saturation level and said second saturation level so that a peak-to-peak amplitude of said first independent signal upon linear amplification by said linear power amplification device is equal to a difference in voltage between said first saturation level and said second saturation level.

5,361,040

SELF LIMITING AND SELF BIASING OPERATIONAL TRANSCONDUCTANCE AMPLIFIER

Raymond L. Barrett, Jr., Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 20, 1993, Ser. No. 138,117
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **11 Claims**



1. An operational amplifier, comprising:

a first folded cascode input amplifier stage coupled with a second folded cascode input amplifier stage forming a folded cascode differential input amplifier adapted for receiving first and second differential input signals, the folded cascode differential input amplifier establishing a self-biasing point from the first and second differential input signals at a common source thereof for providing an internally generated bias for self-biasing the first and second folded cascode input amplifier stages;

a current deflector circuit coupled to said first and second folded cascode input amplifier stages and adapted for receiving the first and second differential input signals; and

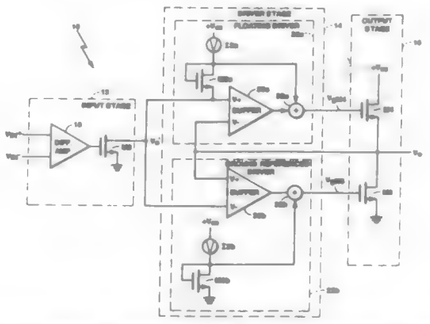
an output circuit coupled to said first and second folded cascode input amplifier stages for providing an output signal indicative of a difference between the first and second differential input signals.

5,361,041

PUSH-PULL AMPLIFIER

Charles A. Lish, Nashua, N.H., assignor to Unitrode Corporation, Billerica, Mass.

Filed Jun. 17, 1993, Ser. No. 79,336
Int. Cl.[5] H03F *3/45, 3/30*
U.S. Cl. 330—255 **18 Claims**



14. A driver circuit for driving a source follower output

transistor of a push-pull amplifier, said transistor being coupled to a positive supply voltage, said amplifier having an input stage for receiving an input signal and for providing an intermediate amplified signal, and an output stage, including said source follower output transistor, for providing an amplifier output signal in response to said input signal, said driver circuit comprising:

a replicating device having electrical characteristics substantially similar to those of said source follower output transistor;

a buffer amplifier having a first input coupled to said intermediate amplified signal, a second input coupled to said amplifier output signal, and an output providing a buffer signal; and

a summing circuit, coupled to said output of said buffer amplifier and said replicating transistor, for summing the voltage across said replicating device with said buffer signal to provide a gate signal to a gate electrode of said source follower output transistor.

5,361,042

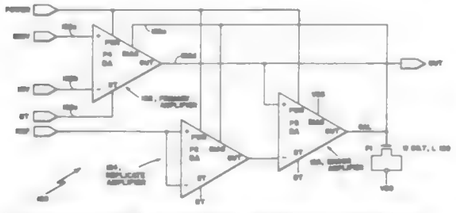
COMPENSATED OFFSET VOLTAGE, LOW GAIN, HIGH BANDWIDTH, FULL SWING, WIDE COMMON MODE RANGE, CMOS DIFFERENTIAL VOLTAGE AMPLIFIER

William B. Gist, Chelmsford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 18, 1993, Ser. No. 79,723

Int. Cl.[5] H03F *1/26, 3/45;* **H03H** *11/28*

U.S. Cl. 330—261 **10 Claims**



1. A compensated operational amplifier, comprising:

means for amplifying a differential input signal to provide an amplified output signal;

means for replicating a offset voltage characteristic of the means for amplifying;

means, coupled to an output from said amplifying means and an output from said replicating means, for producing a compensation output signal corresponding to a difference in voltage between the output of the replicating means and the output of the amplifying means; and

means, disposed in each of said means for replicating and amplifying, for changing a bias operation point of each of said means in response to said compensation signal to provide said signal from said replicating means equal to said signal from said amplifying means.

5,361,043

DELAY CIRCUIT FOR CHANGEABLY DELAYING AN ANALOG SIGNAL

Masafumi Shimotashiro; Kouiti Hayashi; Yoshio Higashida, and Kiyokazu Hashimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 19, 1993, Ser. No. 47,519

Claims priority, application Japan, Apr. 30, 1992, 4-111077

Int. Cl.[5] H03F *3/54*

U.S. Cl. 330—302 **32 Claims**

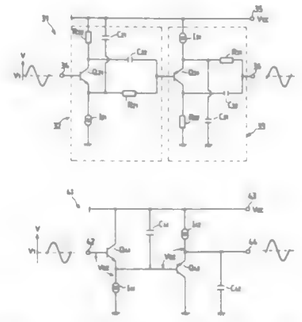
1. A delay circuit, comprising:

a transistor of which a base is connected to an input terminal;

a changeable current source through which an electric current changeably flows between an emitter of the transistor and a first reference potential point, an emitter resistance r_e of the transistor being changed in dependence on the electric current;

a first resistor of which one end is connected to the emitter of the transistor and another end is connected to an output terminal;

a second resistor of which one end is connected to a collector of the transistor and another end is connected to a second reference potential point;



a first capacitor of which one end is connected to the emitter of the transistor and another end is connected to one of the first or second reference potential point; and

a second capacitor of which one end is connected to the collector of the transistor and another end is connected to the output terminal.

5,361,044

PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

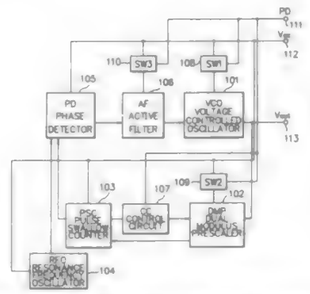
Hidehiko Norimatu, and Osamu Yamashita, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,861

Claims priority, application Japan, Jan. 23, 1992, 4-032680

Int. Cl.[5] H03L *7/08, 7/18*

U.S. Cl. 331—1 A **6 Claims**



1. A phase-locked loop frequency synthesizer comprising:

voltage-controlled oscillator means for producing an output voltage signal having a controlled frequency in accordance with a control voltage input thereto;

dual modulus prescaler means, electrically coupled to said voltage-controlled oscillator means, for receiving and dividing the output voltage signal from said voltage-controlled oscillator means to produce a divided signal;

pulse swallow counter means, electrically coupled to said dual modulus prescaler means, for receiving and dividing the divided signal provided by said dual modulus prescaler means according to a division number specified by a supplied signal to produce a second divided output signal;

phase detector means, electrically coupled to said pulse swallow counter means, for comparing a phase of the second divided output signal provided by said pulse swallow counter means with a phase of a reference signal provided by a reference frequency oscillator and generating a voltage signal according to a phase difference therebetween;

active filter means, electrically coupled to said phase detector means, for receiving and smoothing the voltage signal provided by said phase detector means and supplying the smoothed voltage signal as said control voltage to said voltage controlled oscillator means; and

power-saving control means, electrically coupled to said pulse swallow counter means and said dual modulus prescaler means, for setting, during a power saving operation, a modulus control input terminal of said dual modulus prescaler means to an inactive state by electrically disconnecting said pulse swallow counter means from said dual modulus prescaler means.

5,361,045

HIGH-STABILITY RESONATORS OF SOLID ELASTIC MATERIAL AND OSCILLATORS USING THEM

Jacques Beaussier, Wissous; Michel Breuzet, La Garenne Colombes; Michel Gay, Fresnes, and Jean Uebersfeld, Paris, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales styled O.N.E.R.A., Chatillon, France

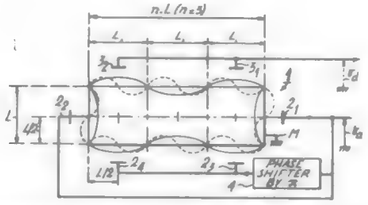
Filed Mar. 23, 1989, Ser. No. 327,839

Claims priority, application France, Mar. 24, 1988, 88 03864

The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.

Int. Cl.[5] H01L *41/00;* **H03B** *5/30*

U.S. Cl. 331—154 **14 Claims**



1. A resonator comprising a supporting base, a resonating solid elastic plate attached to said supporting base, at least one first electrode and at least one second electrode for respectively exciting said plate and for detecting plate vibrations, wherein said plate is excited in a contour vibration mode, said plate having a length which is an integral multiple of the width of said plate, wherein said electrodes do not adhere to said plate, said electrodes being located at the periphery of said plate at a short predetermined distance from said plate, said electrodes being opposite narrow edges of said plate and opposite vibration loops of the plate, and wherein said plate is attached to said supporting base at points corresponding to vibration nodes of said plate.

11. An oscillator comprising a resonator, phase shifting means and amplifying means connected in a loop, and wherein said resonator includes: a supporting base, a resonating solid elastic plate attached to said supporting base, at least one first electrode and at least one second electrode for respectively exciting said plate and for detecting plate vibrations, wherein said plate is excited in a contour vibration mode, said plate having a length which is an integral multiple of the width of said plate, wherein said electrodes do not adhere to said plate, said electrodes being located at the periphery of said plate at a short predetermined distance from said plate, said electrodes being opposite narrow edges of said plate and opposite vibration loops of the plate, and wherein said plate is attached to said supporting base at points corresponding to vibration nodes of said plate.

5,361,046

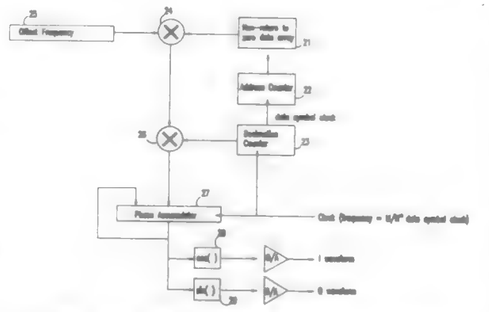
MODULATOR HAVING FRACTIONAL SAMPLE/SYMBOL TIME

John D. Kaewell, Jr., Bensalem, and David M. Cooley, Upper Darby, both of Pa., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 22, 1992, Ser. No. 995,486

Int. Cl.[5] H03C *3/00;* **H04L** *27/00, 27/12, 27/18*

U.S. Cl. 332—100 **12 Claims**



1. A data symbol modulator comprising:

a decimation counter clocked at a first clock rate to produce a second clock output at a second clock rate and to determine a weighting factor;

a data symbol memory coupled to the decimation counter for storing a plurality of addressable data symbols and for providing a sequence of data symbols from the memory at a rate corresponding to the second clock output;

a multiplier coupled to the memory and the counter for receiving the sequence of data symbols provided by the memory and multiplying each data symbol provided by the memory with a weighting factor from the counter; and

a phase accumulator coupled to the multiplier for accumulating the products produced by the multiplier and providing accumulated samples at the first clock rate.

5,361,047

PI/4 SHIFT QPSK MODULATOR AND COMMUNICATION APPARATUS USED THEREWITH

Yasuaki Takahara; Tomohiro Esaki, both of Yokohama; Shigeyuki Sudo, and Teiji Okamoto, both of Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 653,895, Feb. 12, 1991, Pat. No. 5,210,775. This application May 5, 1993, Ser. No. 56,899

Claims priority, application Japan, Feb. 13, 1990, 2-29579

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] H04L *27/20*

U.S. Cl. 332—103 **15 Claims**

1. A $\pi/4$ shift QPSK modulator which receives a digital input signal and outputs a modulated signal based on the input signal, comprising:

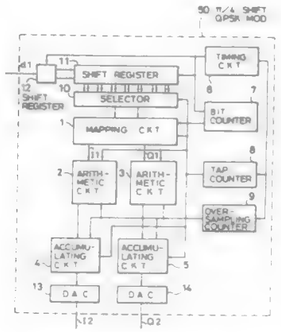
counting means for counting the number of the input signals and providing an output indicative thereof;

phase information arithmetic means for receiving the output from said counting means and a value of the input signal and for producing phase information based upon the output of said counting means and said value of said input signal;

arithmetic means for computing the impulse response of said phase information;

accumulating means for accumulating the impulse response

values produced by said arithmetic means and providing an output signal thereof; and



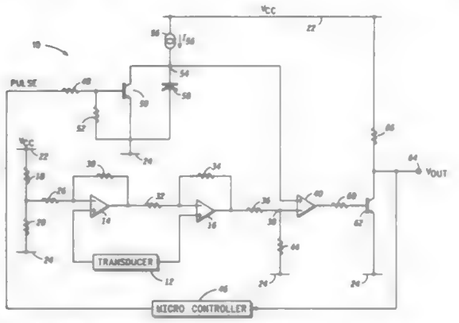
output control means for controlling the output signal of the accumulating means.

5,361,048

PULSE WIDTH MODULATOR HAVING A DUTY CYCLE PROPORTIONAL TO THE AMPLITUDE OF AN INPUT SIGNAL FROM A DIFFERENTIAL TRANSDUCER AMPLIFIER

Jeffery I. Baum, Scottsdale, and Eric S. Jacobsen, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1993, Ser. No. 113,007
Int. Cl.[5] H03C *3/00;* **G08C** *19/00, 19/16;* **H03K** *7/08*
U.S. Cl. 332—109 **7 Claims**



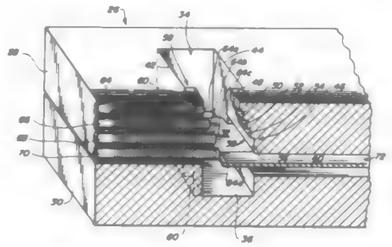
1. A pulse width modulator, comprising:
first means coupled for receiving a pulse signal and for generating a linear ramp waveform in response to said pulse signal;
a first amplifier having first and second inputs and an output, said first input being coupled for receiving a reference potential, said second input being coupled for receiving a first differential transducer signal;
a first resistor coupled between said output of said first amplifier and said first input of said first amplifier;
a second amplifier having first and second inputs and an output, said first input being coupled to said output of said first amplifier, said second input being coupled for receiving a second differential transducer signal;
a second resistor coupled between said output of said second amplifier and said first input of said second amplifier;
a comparator having first and second inputs and an output, said first input being coupled for receiving said linear ramp waveform, said second input being coupled to said output of said second amplifier, said output being coupled for providing a pulse width modulated output signal having a duty cycle proportional to said first and second differential transducer signals.

5,361,049

TRANSITION FROM DOUBLE-RIDGE WAVEGUIDE TO SUSPENDED SUBSTRATE

David Rubin, and Kurt Reinke, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1986, Ser. No. 855,209
Int. Cl.[5] A01P *5/107*
U.S. Cl. 333—26 **10 Claims**



1. A transition from double ridge waveguide to suspended substrate comprising:
a suspended substrate circuit board having a substrate circuit formed thereon;
a metallic housing enclosing said suspended substrate circuit board, having a channel therein, said suspended substrate circuit board being positioned within said metallic housing such that said substrate circuit is suspended in air;
said metallic housing including at least one double ridge waveguide input/output port aligned with respect to said suspended substrate circuit board such that at least a portion of said substrate circuit lies within the region encompassed by said waveguide input/output port, said double ridge waveguide input/output port further comprising a waveguide positioned generally orthogonally to the plane of said suspended substrate circuit board and extending from the exterior of said metallic housing to an edge of said metallic housing channel, said waveguide having first and second broadwalls and first and second narrow walls, said double-ridge waveguide input/output port further comprising a first set of stepped ridges extending from said first broadwall and a second set of stepped ridges extending from said second broadwall, neither of said sets of stepped ridges contacting said suspended substrate circuit.

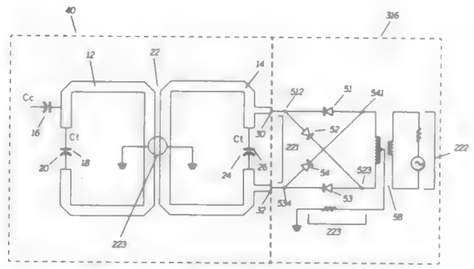
5,361,050

BALANCED SPLIT RING RESONATOR

Stephen B. Einbinder, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1993, Ser. No. 85,810
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—204 **8 Claims**

1. A balanced output filter, comprising:
a first port;
a first transmission-line split-ring resonator, having at least a first edge and a second edge, the first edge having a gap therein, and the first edge being coupled to the first port;
a second transmission-line split-ring resonator, having at least a first edge and a second edge, the first edge being coupled to the second edge of the first split-ring resonator, and the second edge of the second split-ring resonator comprising a gap therein;
a second port coupled to the second edge of the second split-ring resonator, the second port having a balanced output, the second port comprising a first terminal located at one side of the gap in the second edge of the second split-ring resonator, and a second terminal symmetrically located at the other side of the gap in the second edge of the second split-ring resonator; and



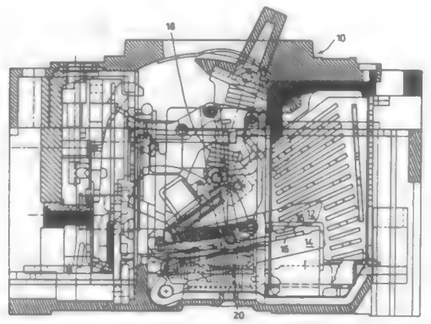
grounding means, electrically coupling the center of the first edge of the second split-ring resonator and the center of the second edge of the first split-ring resonator to ground, for improving the balanced output of the second port.

5,361,051

PIVOTING CIRCUIT BREAKER CONTACT ARM ASSEMBLY

Bernard DiMarco, Lilburn, and Steven A. Kaufman, Decatur, both of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Dec. 16, 1988, Ser. No. 285,479
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **13 Claims**



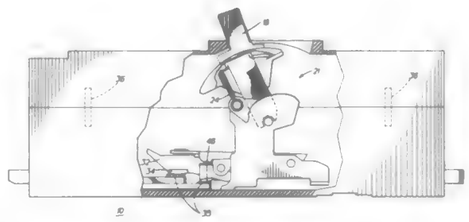
1. A pivoting circuit breaker contact arm assembly comprising:
an electrical contact;
an arm for supporting the electrical contact, wherein the electrical contact is mounted to the arm;
a pivot pin for pivotally mounting the arm, the arm being pivotable about the longitudinal axis of the pivot pin, wherein at least two contact locations occur between the arm and the pivot pin;
a base for supporting the pivot pin, wherein the base includes at least four contact surfaces, the surfaces being disposed such that the repulsion forces generated between the pivot pin and the contact surfaces substantially offset one another; and
means for urging the pivot pin into contact with the contact surfaces.

5,361,052

INDUSTRIAL-RATED CIRCUIT BREAKER HAVING UNIVERSAL APPLICATION

David A. Ferullo, Farmington; Roger J. Morgan, Simsbury; James L. Rosen, West Hartford; Donna DeRosier, Bristol, and Roger N. Castonguay, Terryville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jul. 2, 1993, Ser. No. 85,496
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—172 **4 Claims**



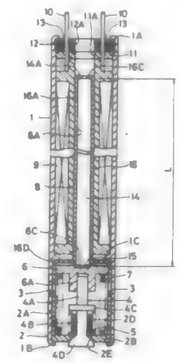
1. A universal circuit breaker comprising:
a molded plastic case and cover;
a pair of separable contacts within said case;
an operating mechanism within the case arranged for separating said contacts and interrupting circuit current upon the occurrence of an overcurrent condition within a protected electric circuit;
a handle operator extending through said cover for manual operation of said operating mechanism to reset said operating mechanism after cessation of said overcurrent condition, said handle operator comprising a handle post extending upward external from said cover and a handle skirt extending downward within said cover; and
means interacting between said operating mechanism and said handle operator for preventing said operating mechanism from being reset upon occurrence of welding between said separable contacts said interacting means comprises a spring attached to said handle skirt at one end and to said operating mechanism at an opposite end.

5,361,053

SUPER MAGNETOSTRICTION TYPE ACTUATOR

Yuichi Hosokawa; Kazumitsu Kobayashi, and Tomoichi Misawa, all of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Oct. 7, 1993, Ser. No. 132,867
Int. Cl.[5] H01L *41/12;* **H02K** *35/00;* **H02N** *2/00*
U.S. Cl. 335—215 **5 Claims**



1. A super magnetostriction type actuator comprising:

a cylindrical casing,

a super magnetostriction rod for driving a drive object which is provided at one end of said casing, said super magnetostriction rod being housed inside said casing and extending in an axial direction thereof with one end engaged with said drive object,

a solenoid coil disposed inside said casing around said super magnetostriction rod, for applying a magnetic field to said super magnetostriction rod to cause an expansion or contraction thereof, and

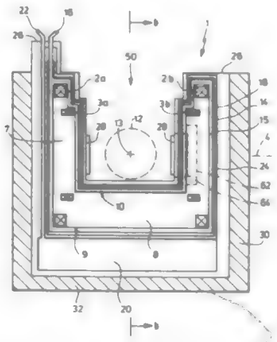
a locating member for locating an other end of said super magnetostriction rod, which thermally deforms in correspondence with a thermal expansion of said super magnetostriction rod in a direction to permit expansion of said super magnetostriction rod towards said other end, said locating member being made in hollow cylindrical form from a material having a coefficient of thermal expansion corresponding to that of said super magnetostriction rod and having an opposite magnetostriction characteristic to that of said super magnetostriction rod, said locating member having a sufficient length to accommodate an axial length of said rod, the construction being such that an open end of said locating member is fixed to said casing while an other end of said locating member is engaged with said other end of said super magnetostriction rod so that said super magnetostriction rod is located thereby.

5,361,054

MAGNET SYSTEM

Bertold Knüttel, Rheinstetten, Germany, assignor to Bruker Analytische Messtechnik GmbH, Germany

Continuation of Ser. No. 675,454, Mar. 26, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,717
Claims priority, application Germany, Mar. 29, 1990, 4010032
Int. Cl.[5] H01F *7/22;* **G01V** *3/00*
U.S. Cl. 335—216 **15 Claims**



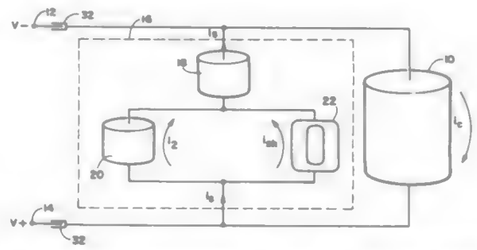
1. Magnet system for nuclear spin resonance spectroscopy suitable for in-vivo spectroscopy and tomography on a limb or a shoulder of a human body (partial-body tomography) comprising superconductive magnet coil means, having coil sets (*2a*, *3a*; *2b*, *3b*) arranged at an axial spacing, one from the other, for generating a static homogeneous magnetic field in an examination volume, and a coil frame (6) carrying the coil sets, said examination volume being disposed between said coil sets, said coil frame and coil sets being configured, without structural support between the coil sets over an angle of at least 180° in a circumferential direction, related to the axis (4) of the magnet coil arrangement, for enabling room temperature access (50) to said examination volume in a direction transverse to the axis of the coil sets, for placement of the human limb or shoulder therein, said coil frame (6) having an axial central portion (8) extending not more than 180° in a circumferential direction, related to the axis (4) of the magnet coil arrangement, said magnet system further comprising cryostat means for cooling the coil sets, said cryostat means comprising a first coolant tank (15) for a first coolant having a low temperature, said coolant tank surrounding the coil frame and the coil sets on all sides, said coil sets being rigidly supported by the coil frame (6) and maintained at a cryogenic temperature by the cryostat means, said transverse room temperature access (50) to the examination volume extending at least over approximately 180° in circumferential direction, related to the axis (4) of the magnet coil arrangement, the coil sets having a radially inner and a radially outer winding with a current through the radially inner winding being directed opposite to a current through the radially outer winding.

5,361,055

PERSISTENT PROTECTIVE SWITCH FOR SUPERCONDUCTIVE MAGNETS

Scott D. Peck, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Dec. 17, 1993, Ser. No. 169,092
Int. Cl.[5] H01F *1/00;* **H02H** *7/00;* **H01H** *47/00*
U.S. Cl. 335—216 **16 Claims**



1. A persistent switch system for use with a main high-field superconducting magnet coil which comprises:

a first switch coil formed from superconducting material connected to a first of two charge/discharge terminals of a high-field superconducting magnet coil;

a first quench heater in physical contact with said first switch coil;

a second switch coil formed from superconducting material connected in series with said first switch coil and connected in series with the second of said two charge/discharge terminals;

a second quench heater in physical contact with said second switch coil;

a shunt coil wound with resistive wire, connected in parallel with said second switch coil and in physical contact with said main high-field superconducting magnet coil to heat a selected area of the main high-field superconducting magnet coil to a normal state; and

means for refrigerating said first and second switch coils to temperatures at which said first and second switch coils are in a superconducting state.

5,361,056

CORRECTION COIL CABLE

Sou-Tien Wang, Danville, Calif., assignor to United States Department of Energy, Washington, D.C.

Filed Apr. 9, 1991, Ser. No. 682,833
Int. Cl.[5] H01F *5/00;* **H01B** *12/00, 7/00, 5/02*
U.S. Cl. 335—299 **3 Claims**

1. A wire cable assembly, including:

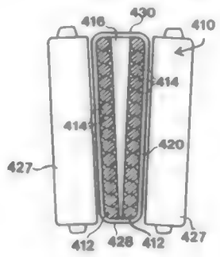
a flexible center rib positioned between a plurality of wire arrays, each of said wire arrays including a plurality of individual wires;

an assembly housing which surrounds the wire arrays and the flexible center rib such that said wire arrays and said flexible center rib are held in position relative to each other, wherein;

said individual wires are arranged to lie parallel to each other along a length of the cable assembly, and;

said assembled wire cable assembly is reformed such that it has a cross-section in the shape of a trapezoid, and;

said assembled wire cable assembly is formed by the action of rolling said wire cable assembly between two rollers, said roller being other than parallel such that said wire cable assembly is generally in the form of an irregular



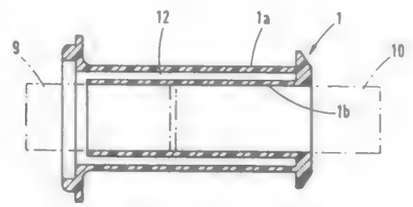
ribbon having a first narrow edge and a first wider edge, said first narrow edge and said first wider edge being the parallel sides of said trapezoidal shape and such that said flexible center rib has a second narrow edge and a second wider edge with said second narrow edge of said flexible center rib disposed adjacent and parallel to said first narrow edge and said second wider edge of said flexible center rib disposed adjacent to said first wider edge.

5,361,057

IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

Takashi Ito, Katsuta, and Hiroshi Watanabe, Takahagi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 493,991, Mar. 15, 1990, abandoned. This application Dec. 2, 1992, Ser. No. 984,361
Claims priority, application Japan, Mar. 15, 1989, 1-060994
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—198 **5 Claims**



1. An ignition coil for an internal combustion engine comprising:

a core, which is partially exposed to open air and made of corrodable metallic material;

a primary coil, circumferentially formed around said core;

a primary former on which said primary coil is wound, said primary former comprising a deformable inner cylindrical member and a substantially rigid outer cylindrical member whereby an annular space is formed between the inner cylindrical member and the outer cylindrical member;

a secondary coil circumferentially formed around said primary coil so as to be magnetically associated with said primary coil; and

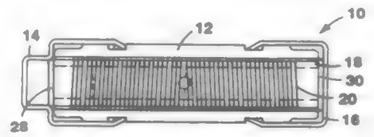
stress absorbing means, disposed between said core and said primary coil for preventing stress due to corrosive expansion of said core being exerted on said primary coil.

5,361,058

TIME DELAY FUSE

Jerry L. Mosesian, Newburyport, Mass., and Clyde D. Reid, South Hampton, N.H., assignors to Gould Electronics Inc., Eastlake, Ohio

Filed Nov. 2, 1993, Ser. No. 146,319
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—163 **13 Claims**



1. A time delay fuse comprising: an elongated fuse casing defining an interior chamber and having a longitudinal axis,

first and second terminals located along said axis on the exterior of said casing at opposite ends of said casing,

a hollow, elongated, electrically non-conductive core located within said interior chamber, said core extending along said longitudinal axis and having approximately the same shape as said interior chamber, said core having an inner region therein, said fuse having an outer region around said core and inside of said fuse casing all of the way around said core,

a fusible element making electrical connection at one end to said first terminal and electrical connection at the other end to said second terminal, said fusible element being disposed on the surface of said insulated core in said outer region such that the length of said element is greater than the distance between said first and second terminals, said fusible element having a portion disposed within said inner region within said hollow core, and

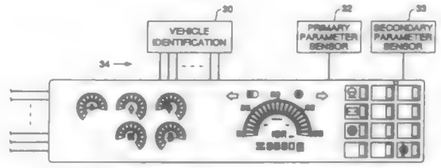
a material deposited on said portion of said fusible element within said inner region within said core for lowering the melting temperature of that portion, said material not contacting and being spaced from said non-conductive core.

5,361,059

METHOD AND APPARATUS FOR MODIFYING THE FUNCTIONALITY OF A GAUGE

John P. Hoffman, Peoria; Ricky D. Vance, Washington; Dennis A. Barney, Morton, and Joseph G. Kozlevcar, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 945,469, Sep. 16, 1992, abandoned. This application Nov. 12, 1993, Ser. No. 150,754
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **10 Claims**



1. An apparatus for indicating a warning level on a machine having an instrument panel, comprising:

gauge means for indicating levels of a primary sensed parameter, said primary sensed parameter having a normal operating range;

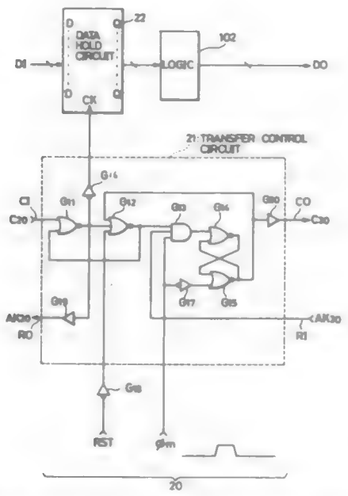
means for sensing a level of a secondary sensed parameter; and

means for modifying the levels of the primary sensed parameter associated with the normal operating range in response to the level of said secondary sensed parameter.

5,361,060
DATA TRANSMISSION APPARATUS AND METHOD OF OPERATING THE SAME

Masabu Onozaki, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 16, 1992, Ser. No. 821,065
Claims priority, application Japan, Jan. 18, 1991, 3-004113
Int. Cl.[5] H01H *63/36;* H04Q *11/04;* H04J *3/06;* G06F *13/00*
U.S. Cl. 340—825.02 25 Claims



1. A data transmission apparatus for transmitting data packets applied from a preceding transmission stage to a succeeding transmission stage, comprising:

holding means for holding a data packet applied from said preceding transmission stage; and

controlling means for controlling transfer of the data packet held by said holding means,

said controlling means performing control such that the data packet held by said holding means is transferred to said succeeding transmission stage in response to existence of a data packet to be transferred in said holding means, non-existence of a data packet in said succeeding transmission stage and an application of an externally provided predetermined timing signal,

said controlling means comprising,

first storing means being set in response to receipt of a first transmission signal, from said preceding transmission stage indicative that the data packet has been transferred to said holding means from said preceding transmission stage,

logic means for receiving an output of said first storing means, a signal indicative of existence or non-existence of a data packet in said succeeding transmission stage and said predetermined timing signal and for supplying a predetermined output in response to a setting of said first storing means, non-existence of a data packet in said succeeding transmission stage and an application of said predetermined timing signal, and

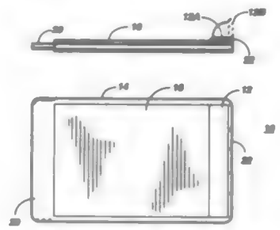
second storing means being set in response to said predetermined output of said logic means and being reset in response to a low signal level of said predetermined timing signal,

the data packet held by said holding means being transferred to said succeeding transmission stage and said first storing means being reset in response to the setting of said second storing means.

5,361,061
COMPUTER CARD DATA RECEIVER HAVING A FOLDABLE ANTENNA

Kevin R. Mays; Tony Y. Maroun, and Vernon L. Diehl, all of Boynton Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 963,343
Int. Cl.[5] H01Q *1/24*
U.S. Cl. 340—825.44 20 Claims



1. A computer card data receiver, comprising:

a housing having a top planar surface and a bottom planar surface and a thin profile suited to fit within a recessed data interface port of an external computer;

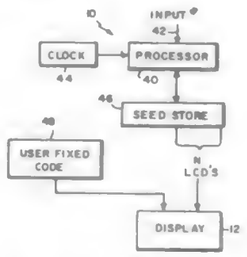
an antenna for intercepting transmitted selective call address signals and data associated therewith, said antenna being enclosed within a hinged planar housing member which is coupled to said top surface of said housing and which is selectably rotatable between a first position to provide a first operative orientation of said antenna and a second position to provide a second operative orientation of said antenna, said first position being selected when said housing is removed from said recessed data interface port, and said second position being selected when said housing is inserted into said recessed data interface port; and

receiver means, enclosed within said housing and coupled to said antenna, for receiving and detecting the intercepted selective call address signals and data associated therewith.

5,361,062
PERSONAL SECURITY SYSTEM

Kenneth P. Weiss, Newton, Mass., and Sheldon Howard, Canoga Park, Calif., assignors to Security Dynamics Technologies, Inc., Cambridge, Mass.

Filed Nov. 25, 1992, Ser. No. 981,808
Int. Cl.[5] H04Q *1/00*
U.S. Cl. 340—825.330 14 Claims



1. A security system for verifying the identify of a user comprising:

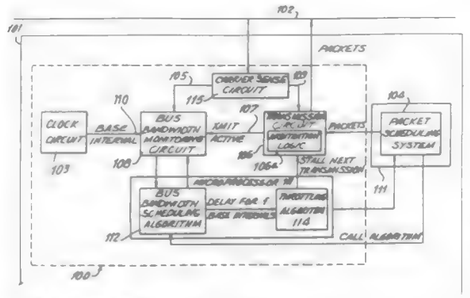
a token associated with each user, said token having means for receiving a selected input value, means for processing said input value to generate a pseudo-random seed, means for storing the generated pseudo-random seed, means for generating a trigger signal at selected times, means responsive to each trigger signal for utilizing a value which is a predetermined first function of the stored pseudo-random seed as an input to said means for processing to cause the means for processing to generate a new pseudo-random seed which is stored in the means for storing in place of the seed previously stored therein, and means for providing an output which is a second function of at least a portion of the stored seed; and

a verification unit having means for receiving a user identification and the token output, means responsive to the user identification for generating the second function for the seed which should be stored in the token for the user, and means for comparing the received outputting function of the stored seed with the corresponding generated function of the seed to verify the identify of the user.

5,361,063
METHOD AND APPARATUS FOR SCHEDULING ACCESS TO A CSMA COMMUNICATION MEDIUM

David H. Jaffe, Belmont; Hoke S. Johnson III, Monte Sereno, and Chris W. Eidler, Morgan Hill, all of Calif., assignors to MTI Technology Corporation, Anaheim, Calif.

Continuation of Ser. No. 617,218, Nov. 23, 1990, Pat. No. 5,175,537, which is a division of Ser. No. 501,663, Mar. 29, 1990, abandoned. This application Oct. 21, 1992, Ser. No. 964,204
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] H04Q *5/00*
U.S. Cl. 340—825.5 12 Claims



1. In a network including a plurality of nodes, a method implemented within a first network node for limiting the rate at which the first network node transmits sequential transmissions to a second node in the network which also receives transmissions from other network nodes, the method comprising the steps of:

determining a dynamic estimate of the data handling capability of the second node from past transmissions between the first and second nodes, independently of any source of information directly indicative of the total data handling load on the second node caused by transmissions from the first and other network nodes;

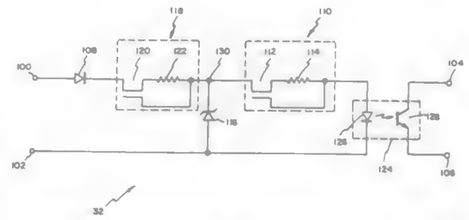
defining a minimum delay period for sequential transmissions to the second node as a function of the determined estimate of the data handling capability of the second node; and

delaying a scheduled transmission to the second node if the minimum delay period has not elapsed since a prior transmission from the first node to the second node.

5,361,064
VEHICLE DETECTOR WITH POWER MAIN NOISE COMPENSATION

Steven M. Hamer, Willernie, and Earl B. Hoekman, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 17, 1991, Ser. No. 716,299
Int. Cl.[5] G08G *1/01*
U.S. Cl. 340—939 20 Claims



1. A method of detecting the presence of an object with an inductive sensor included in an oscillator circuit in which the inductive sensor is varied by the presence of the object, and in which variations in the inductance in turn produce an oscillator signal having a variable frequency which is a function of variations in the inductance of the inductive sensor, the method comprising the steps of:

measuring, in the presence of periodic noise, the frequency of the oscillator signal during an initialization period over a plurality of sample periods to produce a plurality of sample values;

characterizing fluctuations of the frequency of the oscillator signal induced by the periodic noise based upon the sample values to produce a time varying compensation signal;

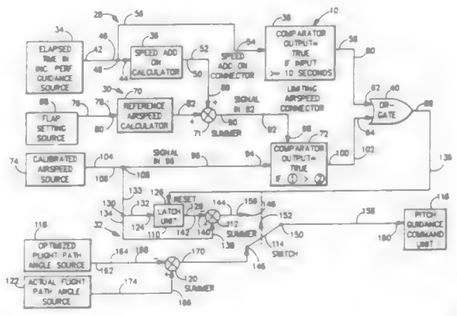
measuring the frequency of the oscillator signal during a measurement period; and

providing an output indicative of the presence of a said object, based upon the frequency measured during the measurement period and the time varying compensation signal.

5,361,065
WINDSHEAR GUIDANCE SYSTEM

David A. Johnson, Glendale; Terry L. Zweifel, and J. Rene Barrios, both of Phoenix, all of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 11, 1990, Ser. No. 521,878
The portion of the term of this patent subsequent to Jan. 1, 2011, has been disclaimed.
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—968 4 Claims



1. A windshear guidance system for an aircraft for adjusting the performance of an aircraft during an initial increasing

performance windshear encounter such that the kinetic energy of the aircraft is increased and this increase in kinetic energy will help to prevent a crash during a subsequent decreasing performance windshear, comprising:

a logical OR gate having a first input and a second input and an output;

a time comparison means for measuring a level of elapsed time in an increasing performance windshear;

said time comparison means having a time comparator having an input and having an output connecting to the OR gate first input;

an airspeed comparison means for comparing a limiting airspeed signal to an actual calibrated airspeed signal;

said airspeed comparison means having an airspeed comparator having a first input and a second input and an output connecting to the OR gate second input for comparing an actual calibrated airspeed signal at the airspeed comparator first input to a limiting airspeed signal at the airspeed comparator second input;

wherein the level of elapsed time in increasing performance windshear is used as a signal to calculate a variable add on airspeed signal which is added to a reference airspeed signal that is a function of a flap setting signal to form the limiting airspeed signal and is also used as a signal to the time comparator input;

wherein if said actual calibrated airspeed signal at the airspeed comparator first input is greater than or equal to the limiting airspeed signal at the airspeed comparator second input then the signal at the output of the OR gate is true;

wherein if the elapsed time in increasing performance windshear at the time comparator input is greater than or equal to a selected number of seconds then the signal at the output of the OR gate is true;

a pitch command means for adjusting the angle of pitch of the aircraft;

said pitch command means including:

an actual calibrated airspeed source having an output for providing a calibrated airspeed signal;

airspeed latch means having an output and having a first input connecting to the output of the calibrated airspeed source and having a second reset input connecting to the output of the OR gate for control of the latch means by the OR gate;

wherein if the signal at the output of the OR gate is false then airspeed latch means will output the actual calibrated airspeed signal at the airspeed latch means output;

wherein if the signal at the output of OR gate is true then airspeed latch means will output a latched airspeed signal at the airspeed latch means output as the last calibrated airspeed signal at airspeed comparator first input before OR gate became true;

summer means having a positive first input connecting to the calibrated airspeed source output and a negative second input connecting to the airspeed latch means output and an output;

wherein the latched airspeed signal at negative second input is subtracted from the calibrated airspeed signal at the positive first input to form an airspeed error signal at summer means output;

a flight path angle error means;

a switch means having a first input at a first switch position connecting to the flight path angle error means and having a second input at a second switch position connecting to the summer means output for receiving alternately the airspeed error signal and having an output;

said switch means having a switch actuator for connecting either the first input or the second input to the output;

said switch actuator receiving and being responsive to the signal at the OR gate output;

wherein if the output signal at the OR gate output is true then the switch means will switch to use the airspeed error signal at the second input at a second switch position;

wherein if the output signal at the OR gate output is false then the switch means will switch to use the flight path angle error signal at the first input at a first switch position; and

pitch guidance command means having an input connecting to the switch means output for receiving either the airspeed error signal or the flight path angle error signal;

whereby if an increasing performance shear is detected then the aircraft is guided to the same optimal flight path as used for decreasing performance shear and as the aircraft accelerates its speed is limited to precluding exceeding flight placard speeds and an add on airspeed is computed and added to the reference takeoff/goaround speed that is a function of the time that windshear guidance has been active.

5,361,066

DATA PROCESSING DEVICE USING DATA CORRELATION

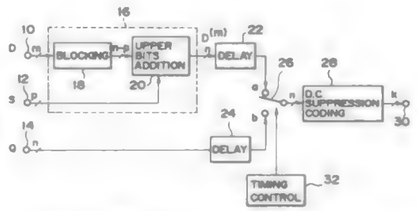
Yoshiki Ishii, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,077, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 691,494, Apr. 25, 1991, abandoned. This application Feb. 2, 1994, Ser. No. 190,577

Claims priority, application Japan, Apr. 27, 1990, 2-113956; Apr. 27, 1990, 2-113957

Int. Cl.[5] H03M *7/36*

U.S. Cl. 341—58 **17 Claims**



1. A data processing device, comprising:

(a) input means for inputting a plurality of non-correlation data having no correlation between data, said plurality of non-correlation data each being constructed of an (n−p) bit where n is an integer equal to or more than 2 and p is an integer smaller than n;

(b) means for adding a common p-bit data to each of said plurality of non-correlation data; and

(c) means for processing a plurality of n-bit data outputted from said adding means, using correlation between said plurality of n-bit data.

5,361,067

DIGITAL LINEARIZATION CALIBRATION FOR ANALOG TO DIGITAL CONVERTER

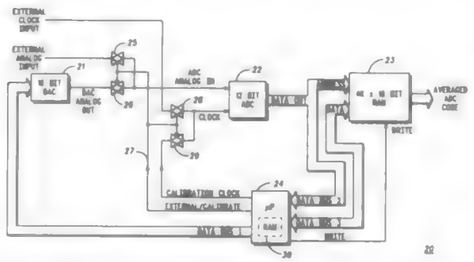
Danny T. Pinckley, Arlington, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 30, 1992, Ser. No. 983,493

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **30 Claims**

1. A method of providing a calibrated output of an analog to digital converter, such method comprising the steps of: generating a calibration table relating a calibrated output of the analog to digital converter and a detected output; interconnecting an output of a reference digital to analog converter to an input to the analog to digital converter; incrementally applying an input to the reference digital to analog converter from a minimum input value to a maximum input value; storing an average input value of the reference digital to analog converter, measured between changes in the detected output, as a calibrated output value of the analog to digital converter and corresponding detected output of the analog to digital converter in the calibration table; and, in response to an external analog signal input to the analog to digital converter being converted to a signal approximately equal to the stored detected output, providing, by reference to the calibration table,



the stored calibrated output corresponding to the detected output as a calibrated digital output representation of the external analog signal.

5,361,068

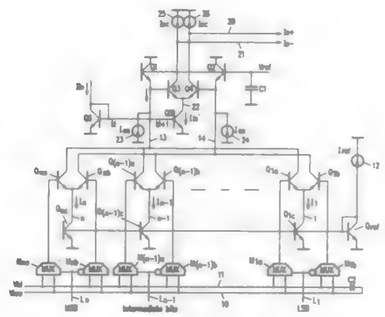
LOW-CURRENT DIGITAL-TO-ANALOG CONVERTER

Willism D. Llewellyn, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 2, 1993, Ser. No. 42,305

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—144 **39 Claims**



1. A digital-to-analog converter for providing an output current in response to a digital input, said converter comprising:

a plurality of parallel conduction paths, each of said conduction paths being associated with a digit of a binary input to said digital-to-analog converter;

a common node conduction path connected to each of said parallel conduction paths;

a first transistor connected in said common node conduction path, said first transistor defining a reference voltage point in said common node conduction path; and

an output line having a second transistor connected therein, a control terminal of said second transistor being connected to said reference voltage point, the voltage at said reference voltage point operative to determine the magnitude of an output current in said output line.

5,361,069

AIRBORNE RADAR WARNING RECEIVER

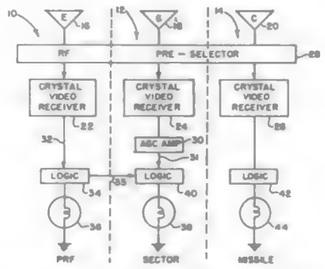
Robert A. Klimek, Jr., Shalimar; Elias A. McCormac, III, and Ronald R. Schambeau, both of Ft. Walton Beach, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 18, 1969, Ser. No. 844,736

The portion of the term of this patent subsequent to Nov. 1, 2008, has been disclaimed.

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—20 **7 Claims**



1. An airborne radar warning receiver comprising in combination: a circuit means for determining an increase in received pulse rate frequency including an antenna, a frequency filter connected to the antenna, a receiver means connected to the filter, logic circuit means connected to the receiver and visual indicating means connected to the logic circuit means; a circuit means for determining the center of a search scan sector including an antenna, a frequency filter, a receiver means and automatic gain controlled amplifier connected in series, and a logic circuit means for receiving a signal from the gain controlled amplifier and a signal from the pulse rate frequency logic and a visual indicating means connected to the logic means; and a circuit means for indicating the presence of a particular radar frequency including a frequency filter, a signal receiving means and logic circuit means connected in series and a visual indicating means connected to the logic circuit.

5,361,070

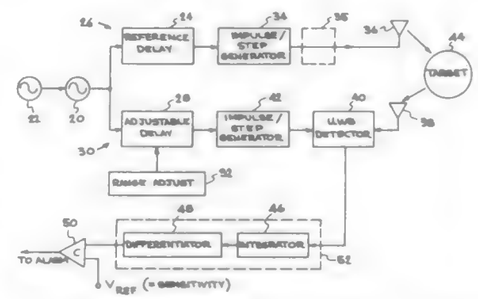
ULTRA-WIDEBAND RADAR MOTION SENSOR

Thomas E. McEwan, Livermore, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Apr. 12, 1993, Ser. No. 44,717

Int. Cl.[5] G01S *13/00*

U.S. Cl. 342—21 **20 Claims**



1. An ultra-wideband (UWB) radar motion sensor, comprising:

a pulse repetition interval generator;

a fixed reference delay means connected to the pulse repetition interval generator;

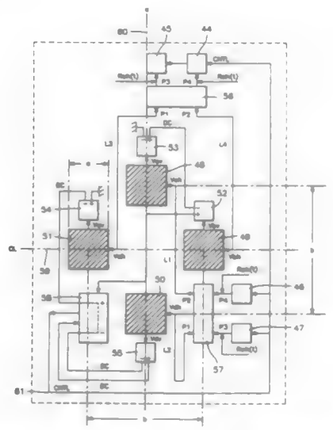
a transmit pulse generator connected to the reference delay means;
a transmit antenna connected to the transmit pulse generator;
an adjustable delay means connected to the pulse repetition interval generator;
a gating pulse generator connected to the adjustable delay means;
an UWB radar receiver connected to the gating pulse generator;
a receiver antenna connected to the UWB receiver;
signal processing means connected to the UWB receiver.

5,361,071

MICROWAVE IDENTIFICATION SYSTEM

Bernardus C. van Zon, Hengelo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

PCT No. PCT/NL91/00254, § 371 Date Aug. 6, 1992, § 102(e) Date Aug. 6, 1992, PCT Pub. No. WO92/10765, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 6, 1991, Ser. No. 910,034
Claims priority, application Netherlands, Dec. 6, 1990, 9002683
Int. Cl.[5] G01S *13/80*
U.S. Cl. 342—42 **14 Claims**



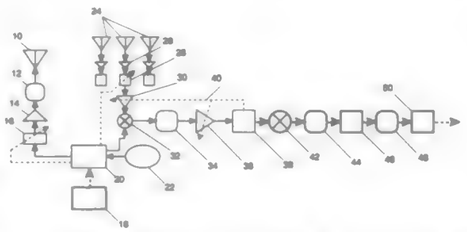
1. A microwave identification system comprising:
interrogation transmitter/receiver means and an interrogation antenna system for transmitting an interrogation electromagnetic field and receiving responsive electromagnetic waves;
a plurality of responders each including a responder antenna system for communicating with the interrogation transmitter/receiver means, each of said responders being responsive to the interrogation electromagnetic field to generate responsive electromagnetic waves, the responder antenna system comprising an antenna array having at least first and second transmitting/receiving antenna elements and modulation means interconnecting the first and second transmitting/receiving antenna elements, the first and second transmitting/receiving antenna elements being responsive to the interrogation electromagnetic field to generate at least first and second antenna output signals, respectively, the modulation means responsive to the first and second antenna output signals for generating at least first and second modulated output signals which are encoded with a responder code that is particular to the associated responder, and the modulation means applying the first and second modulated output signals to the second and first antenna elements, respectively.

5,361,072

GATED FMCW DF RADAR AND SIGNAL PROCESSING FOR RANGE/DOPPLER/ANGLE DETERMINATION

Donald E. Barrick, Redwood City; Belinda J. Lipa, Portola Valley; Peter M. Lilleboe, Los Altos, and Jimmy Isaacson, Mountain View, all of Calif., assignors to Codar Ocean Sensors, Ltd., Los Altos, Calif.

Filed Feb. 28, 1992, Ser. No. 843,183
Int. Cl.[5] G01S *13/08;* **H01Q** *9/16*
U.S. Cl. 342—133 **26 Claims**



1. A compact antenna for reception of radar signals, the antenna being part of a radar signal receiving system which includes a receiver and a transmission line, the antenna having an electrical efficiency which is a function of frequency and which causes an external source to contribute an external noise signal during detection of a desired signal, the antenna comprising:
two magnetic dipoles with each dipole having a phase center, the magnetic dipoles being contained in orthogonal planes and having co-linear phase centers; and
an electric dipole having a phase center, the electric dipole being contained in a plane which is mutually orthogonal to the planes of the magnetic dipoles, the phase center of the electric dipole being co-linear with the phase centers of the magnetic dipoles, wherein the antenna has a desired electrical efficiency which results in the external noise signal being substantially equivalent to but of greater magnitude than an internal noise signal resulting from sources internal to the receiver, transmission line, and antenna.

5,361,073

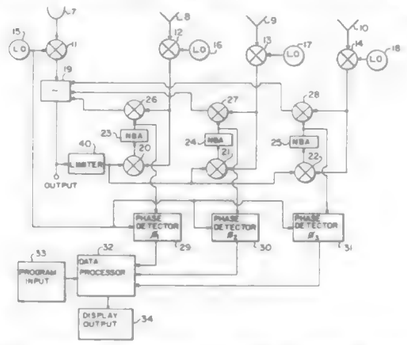
DETERMINATION OF JAMMER RANGE AND AZIMUTH BY USE OF A COHERENT SIDE LOBE CANCELLER SYSTEM

James P. Hansen, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 26, 1975, Ser. No. 589,951
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—381 **4 Claims**

1. An interference cancellation and position detection apparatus comprising:
a directional antenna for receiving an interference signal and providing a main channel output;
a plurality of auxiliary channels, spaced in azimuth in the same horizontal plane, for receiving the interference signal and providing auxiliary channel outputs;
subtractor means coupled to subtract a plurality of inputs from said main channel output and provide a subtractor output;
a plurality of canceller means coupled to said subtractor output and each of said auxiliary channel outputs for developing weighting signals which phase shift and amplitude weight each auxiliary output to correlate the main and auxiliary channel outputs, each of said weighted auxiliary channel outputs being coupled to form one of said plurality of subtractor inputs for cancelling interference in said main channel output;

means for inserting a limiter in series with the output of said subtractor such that the canceller means only respond to main lobe interference signals;
means coupled to receive at least two of said weighting signals for detecting the phase of the interference signal at



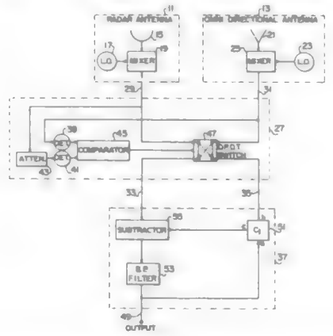
the corresponding auxiliary channel relative to the interference signal at the directional antenna; and
means responsive to said detecting means for calculating the range and azimuth of the source providing said interference signal.

5,361,074

MAINLOBE CANCELLER SYSTEM

James P. Hansen, Waldorf, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1980, Ser. No. 153,819
Int. Cl.[5] G01S *3/16, 3/28, 5/04;* **H04B** *1/18*
U.S. Cl. 342—381 **6 Claims**



1. An interference-suppression system for cancelling undesired signals received through the mainlobe of an antenna as well as its sidelobes comprising:
main channel means having high gain for receiving desired signals and undesired signals and forming a main channel waveform;
auxiliary channel means having low gain for receiving desired signals and undersized signals and forming an auxiliary channel waveform;
interference-reducing means, having first and second inputs to receive respective input waveforms, for correcting the waveform at the first input in amplitude and phase and combining the corrected waveform with the waveform at the second input to form an output waveform such that undesired signals in the two input waveforms substantially cancel one another while a desired signal is not cancelled; and
control means responsive to the relative undesired signal power at the outputs of the main channel means and the auxiliary channel means for providing a selectively closable electrical conduction path between the main channel means and either of the first and second inputs of the interference-reducing means and for providing a selectively closable electrical conduction path between the auxiliary channel means and the other of the first and second inputs of the interference reducing means.

5,361,075

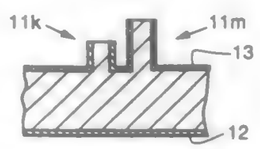
Patent Not Issued For This Number

5,361,076

CONTINUOUS TRANSVERSE STUB ELEMENT DEVICES AND METHODS OF MAKING SAME

William W. Milroy, Playa del Rey, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 751,282, Aug. 29, 1991, Pat. No. 5,266,961. This application Aug. 10, 1993, Ser. No. 104,468
Int. Cl.[5] H01Q *13/00*
U.S. Cl. 343—772 **12 Claims**



1. An antenna array employing continuous transverse stubs as radiating elements, said antenna array comprising:
a planar sheet of dielectric material having two parallel broad surfaces separated by a predetermined distance;
a plurality of elongated raised relatively thin rectangular dielectric members integral with said sheet of dielectric material and extending transversely across one of the broad surfaces of said sheet of dielectric material, said plurality of thin rectangular dielectric members being evenly spaced from each other and regularly disposed along said sheet of dielectric material; and
a conductive coating disposed on the exterior of said sheet of dielectric material and on the exterior of said plurality of thin rectangular dielectric members to define a parallel plate waveguide having a plurality of narrow orthogonal quasi-continuous, multi-stage paired element transverse stubs in a common parallel plane region, wherein said transverse stubs are radiating and non-radiating element pairs, disposed on one plate thereof, the surfaces of said plurality of thin rectangular dielectric members distal from said sheet of dielectric material Wing free from said conductive coating so as to define a plurality of radiating elements, one narrow side of said sheet of dielectric material being free from said conductive coating so as to define a feed for the antenna array.

5,361,077

ACOUSTICALLY COUPLED ANTENNA UTILIZING AN OVERMODED CONFIGURATION

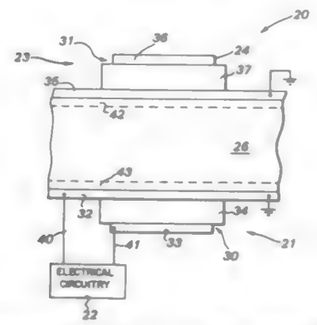
Robert J. Weber, Boone, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 29, 1992, Ser. No. 891,935
Int. Cl.[5] H01Q *1/48;* **H03H** *9/00*
U.S. Cl. 343—846 **14 Claims**

1. An antenna utilizing an overmoded configuration for coupling energy in a predetermined frequency band between an electrical circuit and a propagating medium, the antenna including an antenna interface structure and comprising, in combination:
a first thin film resonator having a first pair of electrodes and

a first thin film piezoelectric element interposed between the first pair of electrodes, the first thin film resonator coupled to the electrical circuit;

a second thin film resonator having a second pair of electrodes and a second thin film piezoelectric element interposed between the second pair of electrodes, the second thin film resonator comprising an integral part of the antenna interface structure and operable for interfacing with the propagating medium; and



a substrate formed of a non-magnetic material interposed between the first and second thin film resonators, the substrate having a thickness substantially equal to a multiple of one-half wavelength of a desired frequency in the predetermined frequency band and supporting acoustic waves with a substantially constant resonant frequency to allow coupling of acoustic energy in the predetermined frequency band between the first and second thin film resonators of the antenna.

5,361,078

MULTIPLE SCREEN GRAPHICS DISPLAY

Lester S. Caine, Broadway, United Kingdom, assignor to Nadimelia Limited, Limassol, Cyprus

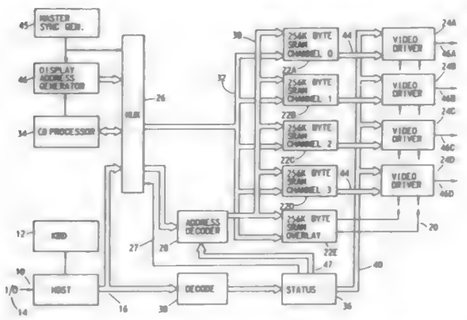
PCT No. PCT/GB90/01729, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/13518, PCT Pub. Date Sep. 5, 1991

PCT Filed Nov. 9, 1990, Ser. No. 917,020

Claims priority, application United Kingdom, Feb. 16, 1990, 9003599; May 8, 1990, 9010287

Int. Cl.[5] G09G *5/12*

U.S. Cl. 345—1 **4 Claims**



1. A display system comprising a host computer having a computer bus connected to a status register and to one input of a multiplexer, a coprocessor being connected to another input of the multiplexer, a random access memory mapped into a plurality of memory slots addressable by the host computer and each corresponding to a channel for a respective screen, each channel including a screen driver connected to the memory and operative to provide a video signal to the corresponding screen, wherein the host computer is capable of writing image data into any selected one of the memory slots and the screen drivers read image data out of the memory slots in parallel to provide simultaneous video signals for display on corresponding screens, wherein the multiplexer is controlled from the status register to select which of the host computer and coprocessor accessed the memory, and wherein the resolution of each screen is independent of the number of screen comprising the display.

5,361,079

CONNECTOR FOR INTERCONNECTING A GRID TO A GRID DRIVE IN A CHIP-IN FLUORESCENT DISPLAY PANEL

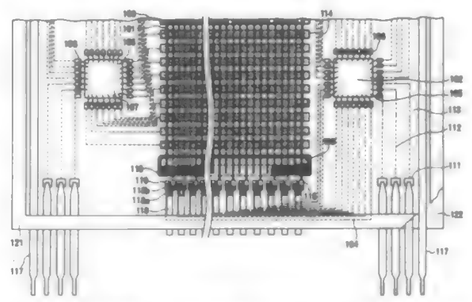
Jiro Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 25, 1993, Ser. No. 23,068

Claims priority, application Japan, Mar. 4, 1992, 4-046504; Mar. 18, 1992, 4-061599; Mar. 18, 1992, 4-061600

Int. Cl.[5] G09G *3/22*

U.S. Cl. 345—75 **12 Claims**



1. A chip-in glass fluorescent display panel, comprising:

a glass substrate on which a predetermined display pattern is formed by using thin aluminum film wires;

phosphor layers formed on said thin aluminum film wires;

a plurality of grid elements formed at a predetermined pitch on said phosphor layers through a predetermined space to extend parallel to each other, and having rectangular flat portions formed at end portions, said rectangular flat portions being in surface contact with a surface of said glass substrate and fixed thereto;

a plurality of grid electrode terminals composed of aluminum terminals formed on said glass substrate to be respectively located adjacent to the flat portions of said grid elements;

a grid driving semiconductor element mounted on said glass substrate and electrically connected to said grid electrode terminals;

an anode driving semiconductor element mounted on said glass substrate and electrically connected to said thin aluminum film wires;

a plurality of metal strips, each having first and second L-shaped pawls at a distal end thereof, the second pawl of each of said metal strips being longer than the first pawl thereof, and further the first and second pawls of said metal strips being clamped between said glass substrate and a cover glass and being fixed with low-melting glass, said first and second pawls being respectively in contact with and fixed to the flat portion of a corresponding one of said grid elements and said adjacent grid electrode terminal.

5,361,080

LIQUID CRYSTAL DISPLAY USING A PLASMA ADDRESSING MODE AND A DRIVING METHOD THEREOF

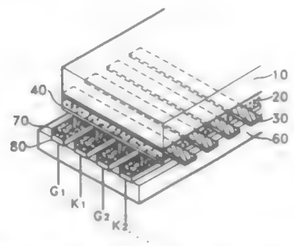
Ki-duck Kwon, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 14, 1993, Ser. No. 4,739

Claims priority, application Rep. of Korea, Apr. 30, 1992, 92-7405

Int. Cl.[5] G09G *3/28*

U.S. Cl. 345—87 **9 Claims**



1. A liquid crystal display using a plasma addressing mode comprising:

a transparent faceplate, intermediary plate and rear plate, sequentially arranged and spaced apart from one another;

first electrodes arranged in parallel on said faceplate;

second electrodes arranged in parallel on said rear plate and being spaced apart from one another by a predetermined distance, being perpendicular to said first electrodes;

insulating lines overlappingly arranged on said second electrodes, for insulating said intermediary plate from said second electrodes;

liquid crystal contained between said intermediary plate and said first electrodes; and

discharge gas layers injected between each of said second electrodes,

wherein each of said second electrodes has two adjacent discharge gas layers, thereby creating discharge in said discharge gas layers in accordance with a voltage applied to two adjacent second electrodes.

5,361,081

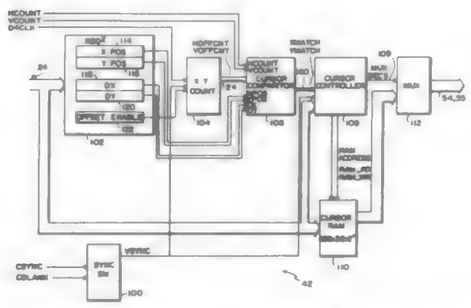
PROGRAMMABLE PIXEL AND SCAN-LINE OFFSETS FOR A HARDWARE CURSOR

Michael J. Barnaby, West Boylston, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 29, 1993, Ser. No. 55,000

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—145 **5 Claims**



1. Apparatus for positioning a cursor on a video display having an active region for displaying an image, the active region being surrounded by a blank region, the blank region resulting from signals providing a horizontal blank time and a vertical blank time, the image being formed of successively refreshed pixels, the cursor being displayed as a pixel matrix and having a cursor origin in a corner of the matrix and a cursor hot point located within the matrix, comprising:

an X position register for storing an X cursor position coordinate;

a Y position register for storing a Y cursor position coordinate;

an X counter for counting the number of horizontal pixels in the horizontal blank time to provide a horizontal offset value;

an X adder coupled to the X counter and to the X position register for adding the horizontal offset value to the contents of the X position register to provide a horizontal offset position;

a Y counter for counting the number of scan lines in the vertical blank time to provide a vertical offset value;

a Y adder coupled to the Y counter and to the Y position register for adding the vertical offset value to the contents of the Y position register to provide a vertical offset position;

a first subtracting circuit for subtracting from the horizontal offset position a horizontal match position representing the difference between the horizontal position of the hot point and the horizontal position of the origin to provide a horizontal adjusted position;

a second subtracting circuit for subtracting from the vertical offset position a vertical match position representing the difference between the vertical position of the hot point and the vertical position of the origin to provide a vertical adjusted position; and

means for displaying the cursor at the position corresponding to the horizontal adjusted position and the vertical adjusted position.

5,361,082

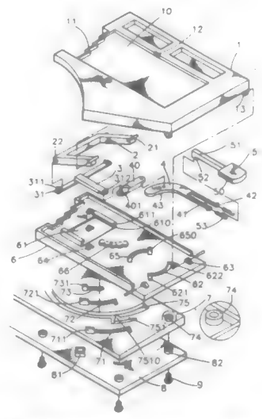
STRUCTURE OF COMPUTER KEYBOARD (II)

Stephen Chung, Taipei Hsien, Taiwan, Prov. of China, assignor to Silitek Corporation, Taipei, Taiwan, Prov. of China

Filed Jan. 24, 1994, Ser. No. 185,266

Int. Cl.[5] G09G *3/02*

U.S. Cl. 345—168 **3 Claims**



1. A computer keyboard comprising a bottom plate, a base plate affixed to said bottom plate at the top, a bottom shell supported on said base plate, and a top shell supported on said bottom shell to hold a set of key switches, wherein said base plate comprises a plurality of arched slots, each arched slot having one end terminated to an expanded hole, an arched

guide groove, and a spring stop plate having one end terminated to a projecting portion; said bottom shell comprises two opposite mounting lugs spaced at one lateral outer side thereof pivoted to respective mounting lugs on said top shell for permitting said top shell to be turned above the mounting lugs on said bottom shell, a plurality of inverted T-rods made to slide in the arched slots on said base plate, and an arched locating block having a serrated side wall engaged with the projection portion of said spring stop plate; moving said top shell horizontally causes said inverted T-rods of said bottom shell to slide in the arched slots on said base plate, and therefore the horizontal position of said top and bottom shells relative to said base plate is changed.

5,361,083

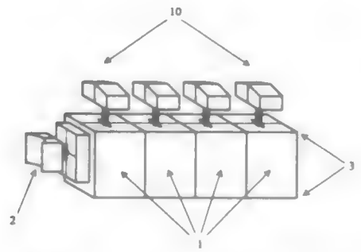
DATA INPUT DEVICE AND METHOD

Jordan Pollack, Columbus, Ohio, assignor to Robicon Systems, N.J.

Continuation of Ser. No. 686,900, Apr. 16, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 46,467

Int. Cl.[5] H01H *25/00*

U.S. Cl. 345—169 **30 Claims**



1. A data input device for producing signals corresponding to symbols, comprising:

at least two manually actuatable switches, each manually actuatable switch having a plurality of discrete states and manually actuatable along a first path from a given state to a first state selected from a set of first states at one state transition from the given state, and manually actuatable along a second path from the first state to a second state selected from a set of second states at one state transition from the first state;

means for producing a first signal corresponding to the first path from the given state to the first state, means for storing the first signal, means for producing a second signal corresponding to the second path from the first state to the second state

output means for producing an output signal representing one symbol in response to at least the sequence in time of the stored first signal and second signal and based upon said first and second paths associated with two consecutive state transitions of a switch between the three states consisting of the given state, the first state and the second state, said output means having reservation queuing means for effecting the production of output signals in an order based on the order of production of the first signals from each switch, said reservation queuing means comprising means for receiving the first and second signals from the switches in the order produced, a storage queue, means for reserving a location in the storage queue based solely on the order of receipt of a first signal from a switch, means for receiving the second signal from each switch with its associated first signal and storing said one symbol in the corresponding reserved storage queue location, and means for producing the output signals by sequentially accessing symbols stored in the storage queue.

5,361,084

METHOD OF MULTI-TONE PRINTING

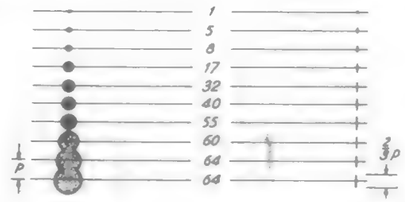
Anthony D. Paton, Cambridge, England; Walter S. Bartky, Chicago, and Alan J. Michaelis, Glen Ellyn, both of Ill., assignors to XAAR Limited, Cambridge, England

Filed Oct. 9, 1990, Ser. No. 594,772

Claims priority, application United Kingdom, Oct. 10, 1989, 8922821; Jan. 23, 1990, 9001493

Int. Cl.[5] B41J *2/205, 2/045*

U.S. Cl. 347—15 **25 Claims**



1. A method of multi-tone printing employing drop-on-demand printing apparatus comprising an array of like uniformly spaced parallel ink channels, respective ink ejection nozzles provided for and forming part of the channels, each of the channels having an identically high longitudinal acoustic resonant frequency, an ink supply common to the channels, electrically actuatable means for applying pulses of energy to ink in the channels to effect ejection of droplets of ink therefrom and a substrate movable relative to the channels and having printing element areas on which the droplets are deposited, said method comprising the steps of:

identifying selected ones of the channels for actuation in successive periods;

determining a desired tone of printing for each of said selected channels;

applying to ink in each of the selected channels, a respective sequence of pulses of energy of amplitude and frequency to cause ink droplet ejection therefrom at or near the resonant frequency of the channels, each of said sequences of pulses containing a number of pulses to eject a corresponding number up to sixty four of discrete droplets in a corresponding sequence of droplets for effecting the printing tone determined for a respective one of said selected channels; and

moving said substrate continuously relative to the printing apparatus, wherein each of said sequences of droplets is deposited symmetrically within a length of the printing element areas traversing a channel from which deposition of the respective sequence of droplets takes place.

5,361,085

METHOD AND APPARATUS FOR PRINTING MEDICAL INFORMATION SIGNALS

Gary C. Vance, Fox Island, Wash., assignor to SpaceLabs Medical, Inc., Redmond, Wash.

Filed Mar. 5, 1992, Ser. No. 846,088

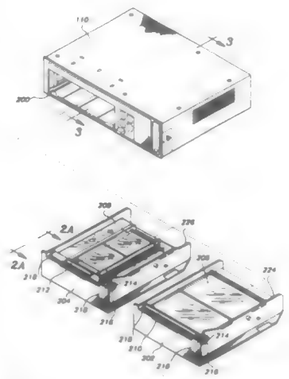
Int. Cl.[5] G01D *15/10*

U.S. Cl. 347—101 **18 Claims**

15. Apparatus for printing medical information signals from a medical monitor wherein the medical information signals are indicative of a medical status of a patient, said monitor being constructed to provide the medical information signals in a first format and a second format, said apparatus comprising:

paper tray means for dispensing paper of a predetermined width upon which the information indicating the status of the patient will be printed, said paper tray means including indicator means for indicating the predetermined width of paper dispensed thereby; and

printer means for receiving said paper tray means, said printer means including sensor means responsive to said indicator means for sensing the predetermined width of paper dispensed by said paper tray means, said printer means being responsive to said sensor means for requesting the medical information signals in a predetermined format and being responsive to medical information signals provided in the predetermined format for printing on



the paper of the predetermined width, said paper tray means further including engagement means constructed to mate with the paper of the predetermined width to apply a force to the paper so that the paper engages said printer means and so that a predetermined amount of pressure is created between the paper and said printer means.

5,361,086

DIVISIONAL-TYPE THERMAL PRINTHEAD

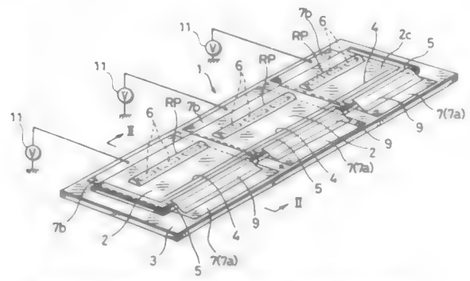
Fumiaki Tagashira, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 22, 1993, Ser. No. 40,469

Claims priority, application Japan, Mar. 27, 1992, 4-070984

Int. Cl.[5] B41J *2/335*

U.S. Cl. 346—76 PH **7 Claims**



1. A divisional-type thermal printhead comprising:

an insulating base board; and

a plurality of unit substrates arranged in series on the base board, each unit substrate having a linear heating resistor extending straight along an edge of said each unit substrate and a common electrode extending between the heating resistor and said edge;

wherein each common electrode of the unit substrates is electrically independent of every other common electrode; and

wherein the base board is formed with a plurality of conductor film extending under the unit substrates in corresponding relation thereto, each of the plurality of conductor film being electrically independent of the other conductor film but electrically connected to the common electrode of a respective one of said unit substrates.

5,361,087

LIQUID JET UNIT WITH ORIFICES AND RECORDING APPARATUS USING THE SAME

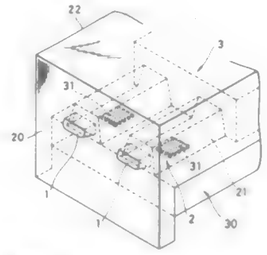
Hiroki Tajima, Yokohama; Kazuaki Masuda, Kawasaki; Takashi Watanabe, and Akira Goto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 822,219, Jan. 17, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,562

Claims priority, application Japan, Jan. 18, 1991, 3-004448

Int. Cl.[5] G01D *15/18*

U.S. Cl. 347—44 **25 Claims**



1. A liquid jet unit comprising:

a plurality of discharging portions, said discharging portions each including an orifice, having an outer and an inner opening, and a liquid passage communicating with said inner opening of said orifice, each said orifice being substantially polygonal in cross-section, said plurality of discharging portions further including an orifice defining member which defines at least two sides of each said polygonal orifice; and

ejection elements for supplying ejection energy to liquid contained in said liquid passages to eject liquid through said polygonal orifices,

wherein said orifice defining member includes a curved portion at a position corresponding to a corner of an outer opening of at least one polygonal orifice, said corner defining an area which is closest to an adjacent polygonal orifice.

5,361,088

ELECTROPHOTOGRAPHIC PRINTER AND METHOD FOR CONTROLLING THE SAME

Katsuyuki Ito; Shinichi Katakura, and Takehiko Okubo, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 28,747

Claims priority, application Japan, Mar. 11, 1992, 4-052194

Int. Cl.[5] G01D *15/06, 15/14*

U.S. Cl. 346—153.1 **15 Claims**

1. An electrophotographic printer for printing an image on a recording medium, comprising:

a photosensitive body capable of rotating;

a drum motor for rotating the photosensitive body at a plurality of rotating speeds;

charging means for charging a surface of said photosensitive body;

light emitting means for emitting light for forming an electrostatic latent image on said surface;

developing means for developing said electrostatic latent image to form a developed image on said surface;

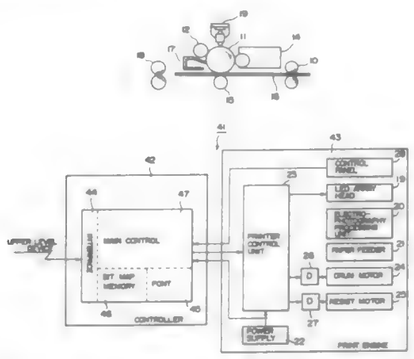
transfer means for transferring said developed image to said recording medium;

fixing means for fixing the image transferred by said transfer means on to said recording medium;

a printer control unit having an output for outputing a speed change signal, the speed change signal being indicative of a printing speed; and

a drum motor driver having an input for receiving the speed change signal and an output for providing a motor control

signal to the drum motor, the motor control signal for controlling the rotating speed of the photosensitive body in response to the speed change signal,



the light emitting means including an input for receiving the speed change signal and circuitry for setting a cycle time for a scan line of the light emitting means in accordance with the rotating speed of the photosensitive body and in response to the speed change signal.

5,361,089

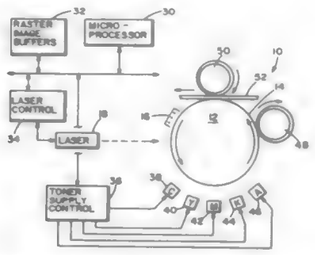
METHOD AND APPARATUS FOR APPLYING AN ADHESIVE LAYER FOR IMPROVED IMAGE TRANSFER IN ELECTROPHOTOGRAPHY

James G. Bearss, and Dale D. Russell, both of Boise, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 26, 1993, Ser. No. 97,815

Int. Cl.[5] B41J *2/435*

U.S. Cl. 346—160 **7 Claims**



1. An electrophotographic imaging system comprising:

a movable photoconductive surface;

electrostatic means for repetitively charging said photoconductive surface to a first charge potential as said photoconductive surface is moved passed said electrostatic means;

laser means for selectively discharging said photoconductive surface to a second charge potential in accordance with applied image signals;

color toner supply means for providing color toner to said photoconductive surface, said color toner exhibiting a charge state that is attracted by said second charge potential and repelled by said first said charge potential;

adhesive toner supply means for providing adhesive toner to said photoconductive surface, said adhesive toner exhibiting an opposite sense charge state to said color toner, said adhesive toner attracted by said first charge potential and repelled by said second charge potential; and

control means for causing said color toner to tone said photoconductive surface in accordance with an image produced thereon by action of said laser means, and for thereafter causing said laser means to alter a charge state of non-imaged area of said photoconductive surface to a charge potential that repels said adhesive toner and to control said adhesive toner supply means to apply said adhesive toner to the imaged areas which remain at said first charge potential.

5,361,090

IMAGE RECORDING APPARATUS AND METHOD FOR MAINTAINING IMAGE QUALITY AFTER RECORDING INTERRUPTION

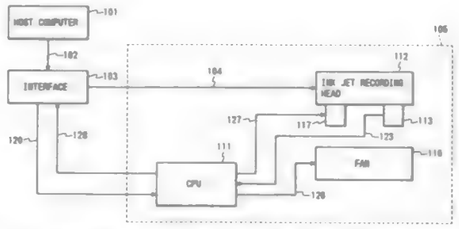
Akio Suzuki, Yokohama; Yasushi Miura, Kawasaki, and Masami Izumizaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 112,232, Aug. 27, 1993, abandoned, which is a continuation of Ser. No. 770,534, Oct. 3, 1991, abandoned. This application Jan. 26, 1994, Ser. No. 186,886

Claims priority, application Japan, Oct. 4, 1990, 2-265064; Nov. 28, 1990, 2-322444; Nov. 29, 1990, 2-325999; Nov. 30, 1990, 2-329516

Int. Cl.[5] B41J *29/377, 2/01*

U.S. Cl. 347—17 **19 Claims**



8. A method of recording an image using a recording head for performing a recording operation, the method comprising the steps of:

temporarily interrupting a normal recording operation;

detecting a temperature of said recording head when the recording operation is interrupted;

controlling a temperature of said recording head in preparation of resumption of said recording operation so that temperature of the recording head on resumption of the recording operation will be substantially equal to the temperature detected in said detecting step; and

thereafter transmitting an image signal to said recording head and resuming the recording operation.

5,361,091

INTERACTIVE HOME INFORMATION SYSTEM FOR DISTRIBUTING VIDEO PICTURE INFORMATION TO TELEVISION VIEWERS OVER A FIBER OPTIC TELEPHONE SYSTEM

W. Leo Hoarty, Santa Clara, Calif., and Gary M. Lauder, New York, N.Y., assignors to Inteletext Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 754,932, Sep. 10, 1991, Pat. No. 5,220,420, which is a continuation-in-part of Ser. No. 589,205, Sep. 28, 1990, Pat. No. 5,093,718. This application Dec. 23, 1992, Ser. No. 966,184

Int. Cl.[5] H04N *7/173, 7/22;* **H04H** *1/08*

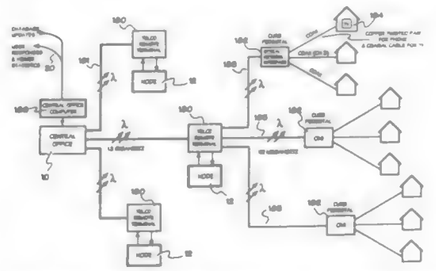
U.S. Cl. 348—7 **8 Claims**

1. A system for transmitting video picture information to home televisions over a fiber optic telephone system, comprising:

means for distributing said video picture information over said fiber optic telephone system; and

a plurality of nodes, each associated with a plurality of subscribers viewing said home televisions, each of said nodes being coupled to said fiber optic telephone system for capturing and storing said video picture information

transmitted over said fiber optic telephone system and for distributing said video picture information, upon demand, to said subscribers associated therewith, wherein said subscribers viewing said home televisions can display and interact with said video picture information stored in said associated node by communicating to said associated



node, said associated node containing a substantially complete copy of said video picture information which said subscribers can display and interact with, such that said subscribers interact directly with said video picture information stored in said associated node, said video picture information including full-motion video information.

5,361,092

METHOD OF AND APPARATUS FOR SCANNING CINEMATOGRAPHIC FILM WHILE AVOIDING BLEMISHES IN THE PHOSPHOR FACE OF A CRT SCANNER

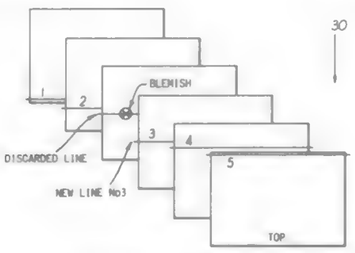
Terence W. Mead, Herts, United Kingdom, assignor to Rank Cintel Limited, United Kingdom

Filed Nov. 16, 1992, Ser. No. 977,229

Claims priority, application United Kingdom, May 20, 1992, 9210758

Int. Cl.[5] H04N *3/38*

U.S. Cl. 348—100 **13 Claims**



1. A method of scanning film with a cathode ray tube (CRT) film scanner having a phosphor face and operable to produce a scan for scanning said film, the scanner having an associated film drive for moving the film past said scanner during scanning, the method comprising the steps of:

identifying areas of the CRT phosphor face containing blemishes;

scanning the film with a series of line scans transversing respective portions of the CRT phosphor face;

discarding line scans which traverse areas of the CRT phosphor face identified as blemished; and

rescanning the area of film previously scanned by a discarded line scan with a new line scan which is moved relative to the discarded line scan.

5,361,093

AUTOMATIC WHITE BALANCE SETTING DEVICE

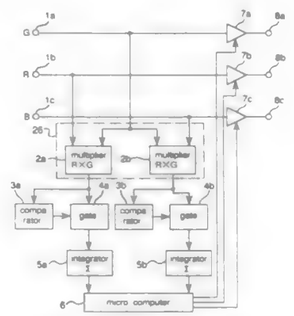
Yasutoshi Yamamoto, Katano; Masayuki Noneyama, Takatsuki, and Norio Suzuki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 1, 1992, Ser. No. 938,953

Claims priority, application Japan, Sep. 2, 1991, 3-221501; Sep. 2, 1991, 3-221502; Sep. 2, 1991, 3-221503; Apr. 10, 1992, 4-090503; Apr. 10, 1992, 4-090504

Int. Cl.[5] H04N *9/73, 9/04*

U.S. Cl. 348—223 **5 Claims**



1. An automatic white balance device of a video camera comprising:

comparison circuit means for comparing an R signal, a G signal and a B signal expressing a color signal with respective predetermined levels and for outputting a control signal, when each of the R signal, G signal and B signal is larger than one-half a dynamic range of each signal,

selection means for selecting the R signal, G signal and B signal in response to the control signal and for producing an output,

integrator means for integrating the selection means output and for producing an output,

micro-computer means for calculating an amplification rate of the white balance from the integrator means output and for producing an output, and

amplifier means for amplifying the R, G and B signals to produce video output signals in response to the output of micro-computer means,

whereby the amplification rate of the amplifier means is adjusted to obtain the white balance.

5,361,094

CCD-TYPE COLOR VIDEO CAMERA WITH GAMMA CORRECTION

Ji-hoon Jang, Bucheon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Sep. 14, 1993, Ser. No. 120,534

Claims priority, application Rep. of Korea, Sep. 14, 1992, 92-16671

Int. Cl.[5] H04N *5/202, 9/69*

U.S. Cl. 348—254 **6 Claims**

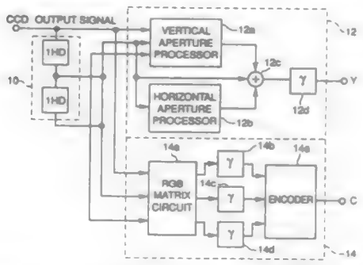
1. A video signal processing circuit for a single charge-coupled device (CCD) color video camera, said circuit receiving a CCD output signal and outputting television luminance and chrominance signals, and said CCD output signal having two different chrominance signals S1 and S2 alternately arranged, wherein said S1 is R+G+2B and said S2 is R+2G at an odd line and said S1 is 2G+B and said S2 is 2R+G+B at an even line, said circuit comprising:

gamma correction means for receiving said CCD output signal and outputting a gamma-corrected signal:

delay means for receiving said gamma-corrected signal and outputting 1H- and 2H-line-delayed signals:

a chrominance signal processor for receiving said gamma-

corrected signal and said 1H- and 2H-line-delayed signals and outputting said television chrominance signal and a DC-fluctuation detection signal obtained by said gamma correction means and generated as a difference signal between S2 and S1 of said gamma-corrected signal: and



a luminance signal processor for receiving said gamma-corrected signal and said 1H- and 2H-line-delayed signals, and outputting said television luminance signal which is compensated for DC fluctuation due to said gamma-correction in response to said DC-fluctuation detection signal.

5,361,095

AUTOMATIC FOCUSING APPARATUS FOR AUTOMATICALLY MATCHING FOCUS IN RESPONSE TO VIDEO SIGNAL

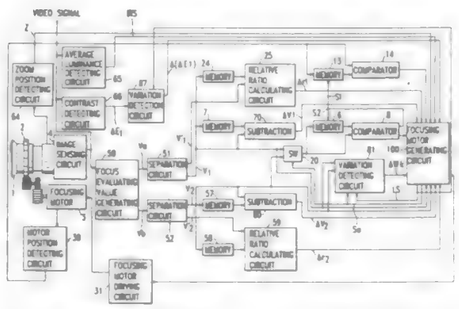
Haruki Toshinobu, Shijonawate, and Kikuchi Kenichi, Daito, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 928,533, Aug. 13, 1992, which is a continuation of Ser. No. 660,357, Feb. 22, 1991, abandoned. This application Dec. 28, 1993, Ser. No. 173,998

Claims priority, application Japan, Feb. 28, 1990, 2-47916; Mar. 16, 1990, 2-67521

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—354 **2 Claims**



1. An automatic focusing apparatus for automatically matching a focus relative to an object in response to a video signal obtained from image sensing means, said image sensing means having a focusing lens (1) and an image sensor, said apparatus comprising:

relative position changing means (2, 3) for changing a relative position of said focusing lens, so as to move the lens, relative to said image sensor and along an optical axis of said focusing lens;

focus evaluating value detecting means (50) for detecting a level of a high frequency component of the video signal obtained from said image sensing means and for supplying the detected level as a focus evaluating value, said focus evaluating value reaching a maximum value when the relative position of the focusing lens is at an in-focus position;

object change detecting means (11, 12) for detecting a change in the focus evaluating value after the relative position of the focusing lens has stopped at the in-focus position so as to detect a change in the object; and

means (66), responsive to said video signal, for detecting contrast in a predetermined area of an image sensed by said image sensor;

means (87), responsive to said contrast detecting means, for calculating a variation in the contrast from a contrast value that occurs when the relative position of the focusing lens has stopped at the in-focus position; and

control means (100), connected to said relative position changing means and responsive to said focus evaluating value and to said contrast variation, for controlling said relative position changing means so as to stop relative movement of the focusing lens in the in-focus position and to restart relative movement of the lens in response to the detected change in the object, wherein

the control means determines a weighted mean value by evaluating a fuzzy inference wherein the contrast variation is applied as input to a plurality of pre-defined rules, with each of the rules providing a pre-defined output value so as to define, for all of said rules, a plurality of pre-defined output values, the fuzzy inference being evaluated by:

associating, for each of said rules, a pre-defined membership value with the contrast variation so as to form a plurality of membership values for all of said rules; and

determining the weighted mean value as a weighted mean value of all of said output values each weighted by a corresponding one of the membership values; and

the control means ascertains, in response to the determined weighted mean value, when relative movement of the focusing lens is to restart after the object change has been detected.

5,361,096

METHOD AND APPARATUS FOR MULTIPLEX TRANSMISSION OF VIDEO SIGNALS IN A PLURALITY OF CHANNELS WITH REFRESH CONTROL UTILIZING INTRAFRAME CODING

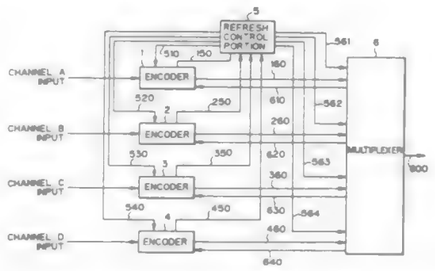
Junichi Ohki, and Toshio Koga, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 839,102, Feb. 19, 1992, abandoned. This application Oct. 4, 1993, Ser. No. 131,439

Claims priority, application Japan, Feb. 27, 1991, 3-031268

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—387 **6 Claims**



1. A method of transmitting time-varying picture signals for a plurality of channels via a multiplex transmission line of constant speed, comprising the steps of:

at a transmitting side,

normally coding said time-varying picture signals by an encoder of each channel utilizing an interframe predictive coding technique;

multiplexing said time-varying picture signals of the plurality of channels and transmitting multiplexed time-varying picture signals to a receiving side;

while at the receiving side,

demultiplexing said transmitted time-varying signals of the plurality of channels and selecting a desired channel;

decoding the time-varying signals of a selected channel by a decoder of said channel utilizing an interframe predictive decoding technique;

and while said time-varying picture signals are being transmitted,

coding and decoding said time-varying signals by the encoder and the decoder utilizing an intraframe predictive coding technique and an intraframe predictive decoding technique, respectively, in a short period of time repeatedly at specified time intervals per predetermined number of pixels in a frame so that a predetermined number of pixels in said frame are refreshed for said channel during a time-varying picture transmission through said multiplex transmission line; and

decreasing, during said intraframe predictive coding by the encoder, the amount of transmitted information for part or all of the channels other than the channel executing the coding by intraframe predictive coding technique while increasing the amount of transmitted information for said channel, wherein said specified time intervals are non-constant.

5,361,097

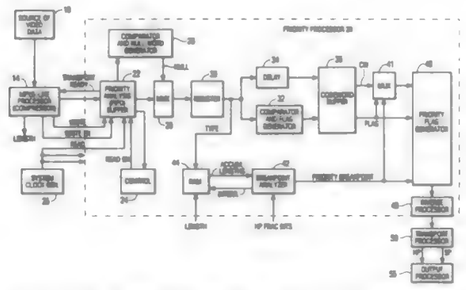
PRIORITY PROCESSING OF ENCODED VIDEO SIGNAL INCLUDING INSERTION OF DATASTREAM NULL WORDS DURING PRIORITY ANALYSIS INTERVALS

Ronald J. Kolczynski, Hamilton, N.J., assignor to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Apr. 2, 1993, Ser. No. 42,173

Int. Cl.[5] H04N *7/12*

U.S. Cl. 348—390 **4 Claims**



1. In a video signal processing system, apparatus for facilitating the segmentation of a codeword datastream into first and second prioritized codeword sequences, said apparatus comprising:

means for providing a video signal codeword datastream comprising a succession of data groups;

codeword processing means including analyzing means responsive to said codeword datastream and operative during an analysis interval for determining a priority breakpoint between codewords within a data group;

means for generating null codewords during said analysis intervals; and

transport processor means for receiving an output codeword datastream from said codeword processor means, including said null codewords, for formatting said datastream into said first and second prioritized codeword sequences for transmission via first and second prioritized data channels.

5,361,098

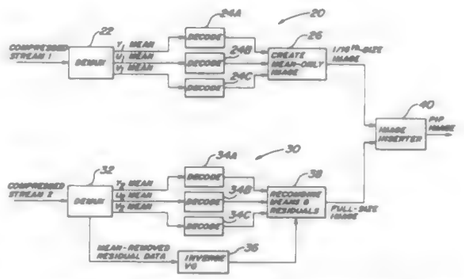
METHODS AND APPARATUS FOR GENERATING A PICTURE-IN-PICTURE DIGITAL TELEVISION FRAME BY INSERTING A MEAN-ONLY FRAME INTO A FULL-SIZE FRAME

Keith Lucas, New Market, Canada, assignor to Scientific Atlanta, Inc., Atlanta, Ga.

Filed Nov. 30, 1992, Ser. No. 983,396

Int. Cl.[5] H04N *5/272, 5/262*

U.S. Cl. 348—565 **12 Claims**



1. An encoding/decoding method for generating a picture-in-picture digital television frame, comprising the steps of:

(a) converting a first analog television signal into a first digital frame comprising a first prescribed number of pixels;

(b) deriving a mean-only frame from said first digital frame, said mean-only frame comprising a second prescribed number of pixels, wherein each of said second prescribed number of pixels represents an average of a corresponding group of pixels in said first digital frame;

(c) subtracting said mean-only frame from said first digital frame and performing Vector Quantization:of the first digital frame having said mean-only frame subtracted therefrom, said first digital frame having said mean-only frame subtracted therefrom, in combination with said mean-only frame, being convertible to a full-size frame;

(d) creating an insertion frame on the basis of said mean-only frame;

(e) performing digitalization, mean removal and Vector Quantization or statistical coding on a second analog television signal to convert said second analog television signal into a second digital frame comprising a third prescribed number of pixels; and

(f) inserting said insertion frame into said second digital frame, thereby generating a picture-in-picture digital television frame.

5,361,099

NTSC/HDTV COMMUNITY RECEIVING SYSTEM

Kyeong S. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 8, 1993, Ser. No. 133,244

Claims priority, application Rep. of Korea, Oct. 29, 1992, 20047/1992

Int. Cl.[5] H04N *5/46*

U.S. Cl. 348—555 **14 Claims**

1. A NTSC/HDTV community receiving system comprising:

system control means for generating a control signal corresponding to one of an HDTV system and a NTSC system;

first tuning means for tuning an HDTV signal to a desired channel;

second tuning means for tuning a NTSC signal to a desired channel;

first intermediate frequency detecting means for detecting an HDTV intermediate frequency signal from the tuned HDTV signal from the first tuning means;

second intermediate frequency detecting means for detect-

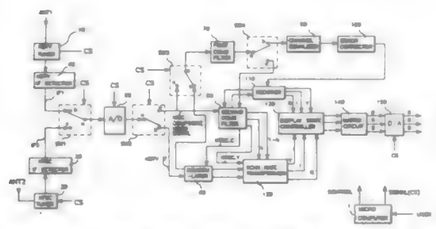
ing a NTSC intermediate frequency signal from the tuned NTSC signal from the second tuning means;

analog to digital converting means responsive to the control signal from the system control means for converting the HDTV intermediate frequency signal from said first intermediate frequency detecting means and the NTSC intermediate frequency signal from said second intermediate frequency detecting means to digital signals at different sampling rates;

demodulating means for demodulating a NTSC frame color signal into an original state and demodulating the resultant digital HDTV signal from said analog to digital converting means into a base band level state;

first comb filtering means for removing a NTSC interference signal from the demodulated HDTV signal from said demodulating means and extracting a NTSC line color signal from the resultant digital NTSC signal from the analog to digital converting means;

second comb filtering means for extracting a first motion



coefficient, the NTSC frame color signal and a NTSC frame luminance signal from the resultant digital NTSC signal from the analog to digital converting means and the NTSC line color signal from the first comb filtering means and outputting the extracted NTSC frame color signal to the demodulating means;

decoding means for decoding the resultant HDTV signal from said first comb filtering means to extract original HDTV color and luminance signals;

scan rate transforming means for line and pixel-interpolating resultant NTSCI and NTSCQ color signals from said demodulating means and the NTSC frame luminance signal from said second comb filtering means to match a scan rate of the NTSC signal to a scan rate of the HDTV signal; and

display state control means for controlling display states of the resultant original HDTV color and luminance signals from said decoding means and the resultant original NTSC color and luminance signals from the scan rate transforming means.

5,361,100

APPARATUS AND METHOD FOR TRANSFORMING A VIDEO IMAGE INTO A THREE DIMENSIONAL VIDEO IMAGE WITH SHADOWS

Howard J. Teece, Basingstoke, United Kingdom, assignor to Sony United Kingdom Limited, Staines, United Kingdom

Filed Apr. 6, 1993, Ser. No. 42,770

Claims priority, application United Kingdom, Apr. 24, 1992, 9208929

Int. Cl.[5] H04N *5/262; G06F 15/62, 15/72*

U.S. Cl. 348—578 **10 Claims**

1. Apparatus for transforming a video image into a three dimensional video image with shadows, comprising:

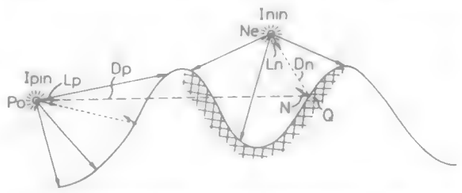
means for receiving said video image;

means for mapping the video image onto a three-dimensional surface to form a transformed image;

means for calculating positive luminance levels at points of the transformed image having incident thereon a positive light from an imaginary positive light source;

means for calculating negative luminance levels at points of the transformed image having incident thereon a negative light from an imaginary negative light source; and

means for controlling final luminance levels at all points of the transformed image in accordance with luminance



levels at the respective points as determined by said video image increased by values of said positive luminance levels at the respective points and reduced by values of said negative luminance levels at the respective points.

5,361,101

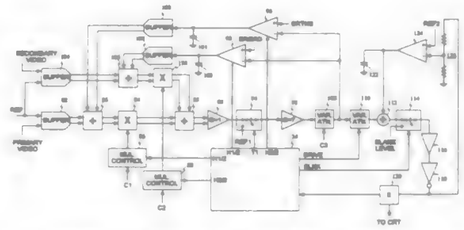
PREAMPLIFIER FOR MULTIMEDIA DISPLAY

Khosro M. Rabii, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 19, 1993, Ser. No. 155,983

Int. Cl.[5] H04N *9/76, 9/74, 5/57, 5/265*

U.S. Cl. 348—599 **10 Claims**



5,361,102

SYSTEM TO CANCEL GHOSTS IN NTSC TELEVISION TRANSMISSION

Sumit Roy, Philadelphia, Pa.; Chandrakant B. Patel, Hopewell, N.J., and Jian Yang, Philadelphia, Pa., assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 4, 1991, Ser. No. 754,895

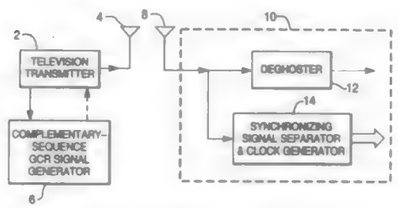
Int. Cl.[5] H04N *5/213*

U.S. Cl. 348—611 **6 Claims**

4. In a television transmitter, the improvement comprising:

source means for providing complementary sequence ghost cancelling reference signals each based from a respective one of a pair of equi-length digital sequences, the respective linear autocorrelation functions of which pair of equi-length digital sequences for all shifts except a specified one combine to zero; and

means for superposing said ghost cancelling reference signals each upon a respective selected scan line as cyclically



occurs in vertical blanking intervals of television signals to be transmitted.

5,361,103

LUMINANCE SIGNAL AND CHROMINANCE SIGNAL SEPARATING CIRCUIT

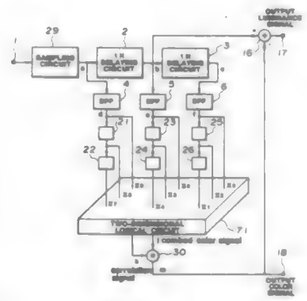
Hideyuki Naka, and Hisakazu Hitomi, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 19, 1992, Ser. No. 836,856

Claims priority, application Japan, Feb. 19, 1991, 3-024827

Int. Cl.[5] H04N *9/78*

U.S. Cl. 348—663 **7 Claims**



1. A luminance signal-color signal separating circuit comprising:

means for sampling an input composite video signal at a predetermined sampling frequency to generate a first composite image signal, where said predetermined sampling frequency is synchronized with a color subcarrier;

filter and delay means, including horizontal and vertical filters, for generating more than one second composite image signal based on said first composite image signal, and for generating a color signal component corresponding to said input composite video signal, where said color signal component is generated based on a plurality of second composite image signals;

operating means for determining a degree of color correlation within said input composite video signal based on said second composite image signals, and for producing an output color signal based on said color signal component and said degree of color correlation; and

means for obtaining a luminance signal as a function of said output color signal.

5,361,104

MOTION VECTOR DETECTION DEVICE

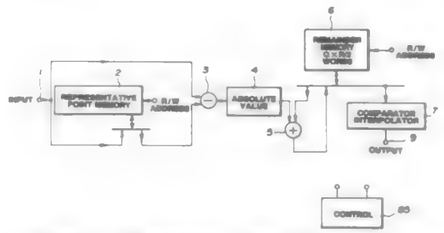
Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,579

Claims priority, application Japan, Jun. 28, 1991, 3-184061

Int. Cl.[5] H04N *7/13*

U.S. Cl. 348—699 **12 Claims**



1. A motion vector detection device comprising:

a representative point memory for storing a plurality of sets of representative points selected at intervals smaller than Q×R pixels of a picture of a field preceding a current field by one or more fields;

calculating means for calculating an absolute value corresponding to vector data from one of said representative points to a position of a pixel in said current field by using a difference between data of a selected representative point from said representative point memory and said pixel in said current field at a time when data of said current field are supplied, the current field pixel data being separated from said one of said representative points at a selected interval of q×r pixels in a search area consisting of Q×R pixels corresponding to said one of said representative points;

cumulative addition means for cumulatively adding the absolute value of successive vector data from said calculating means to find a remainder;

a comparator interpolator circuit for comparing successive vector data of the remainder from said cumulative addition means to find a motion vector at said interval of q×r pixels and for selectively interpolating from the motion vector and the positions distant to a motion vector found at said interval of q×r pixels and a remainder of adjacent ones of said positions to calculate motion vectors at interval smaller than said interval of q×r pixels; and wherein

said values of q and r are determined so as to calculate a difference absolute value between only one of a first representative point and a second representative point and data of one pixel, the first and second representative points having an overlapped area between search areas of each representative point and said pixel in the current field in said overlapped area of said search areas.

5,361,105

NOISE REDUCTION SYSTEM USING MULTI-FRAME MOTION ESTIMATION, OUTLIER REJECTION AND TRAJECTORY CORRECTION

Siu-Leong Iu, Bensalem, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 5, 1993, Ser. No. 26,977

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—699 **18 Claims**

1. Apparatus for reducing noise in a video signal which includes a plurality of video frames, the apparatus comprising:

motion estimator means for identifying a motion block in one video frame of said plurality of video frames and for determining an approximate motion vector for the motion block across the plurality of video frames, wherein the motion vector indicates an approximate trajectory of the motion block across the plurality of video frames;

trajectory correction means for receiving the approximate motion vector from the motion estimator means and for determining a revised trajectory for the motion block across the plurality of video frames by determining a difference in position of respective components the motion block between each pair of the plurality of video frames; and

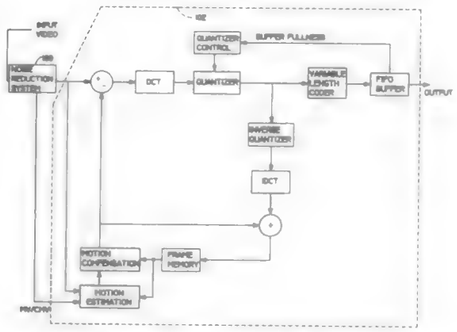


image averaging means for obtaining a plurality of the components of the motion block along the revised trajectory and for calculating a single averaged component from the plurality of components.

5,361,106

CINEMATOGRAPHIC OPTICAL SYSTEM

James A. Ashbey, London, United Kingdom, assignor to Delta System Designs Limited, London, United Kingdom

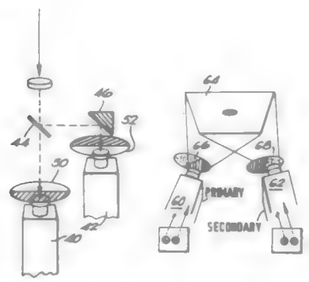
PCT No. PCT/GB90/01045, § 371 Date Mar. 13, 1992, § 102(e) Date Mar. 13, 1992, PCT Pub. No. WO91/01018, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 6, 1990, Ser. No. 838,274

Claims priority, application United Kingdom, Jul. 6, 1989, 89 15468.6

Int. Cl.[5] G03B *35/00, 35/08*

U.S. Cl. 352—57 **9 Claims**



1. A camera assembly comprising:

first and second cameras for recording image frames on an image-recording medium, successive frames being displayed, in use, at a predetermined frame rate defining a predetermined frame period;

each of the first and second cameras being provided with filter means having a plurality of filter planes each capable of transmitting light in a different wavelength band, the filter planes of said filter means being interposed sequentially between an object, the image of which is to be recorded, and the image recording medium so that a complete sequence of filter planes is repeated once in each frame period;

the filter means of said first camera being such that, at any given time, light transmitted by the filter plane of that said filter means is in an inverse wavelength band to light being transmitted by the filter plane of the filter means of said second camera.

5,361,107

PROJECTION OPTICAL APPARATUS

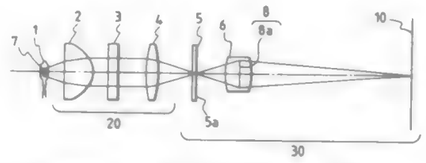
Yoshihiro Ishibe, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,429

Claims priority, application Japan, Oct. 16, 1991, 3-298446

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—101 **12 Claims**



1. A projection optical apparatus comprising:

illuminating means for illuminating an image; and

projecting means for projecting the image illuminated by said illuminating means onto a predetermined plane,

wherein said projecting means has an NA on a side of said predetermined plane changed depending upon a projection magnification of the image onto said predetermined plane, wherein

the NA on the side of said predetermined plane at a low projection magnification is made greater than the NA on the side of said predetermined plane at a high projection magnification by said projection means.

5,361,108

LENS-FITTED PHOTOGRAPHIC FILM UNIT WITH PLURAL TAKING LENSES

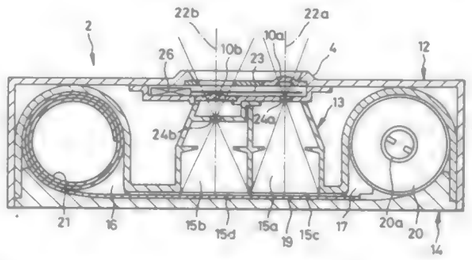
Kazuo Kamata, and Katsuji Muramatsu, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 14, 1993, Ser. No. 92,440

Claims priority, application Japan, Jul. 14, 1992, 4-187071; Oct. 15, 1992, 4-277459

Int. Cl.[5] G03B *1/00*

U.S. Cl. 354—120 **28 Claims**



1. A lens-fitted photographic film unit having a film housing having a film take-up chamber and a film supply chamber on opposite lateral ends thereof, said film take-up chamber containing a photographic film cassette and said film supply chamber containing a roll of unexposed photographic film that has been drawn out of said photographic film cassette, said film unit comprising:

a first exposure chamber between said film take-up chamber and said film supply chamber and having a first exposure opening in opposition to a portion of said photographic film to form on said film a first original sub-frame;

a second exposure chamber between said film take-up chamber and said film supply chamber and side by side with said first exposure chamber, and having a second exposure opening in opposition to a portion of said photographic film to form on said film a second original sub-frame;

a first taking lens in front of said first exposure chamber;

a second taking lens in front of said second exposure chamber and having a focal length shorter than that of said first taking lens;

shutter means for exposing said photographic film to form said first and second original sub-frames simultaneously; and

a viewfinder having a first visual field frame for observing the taking field of said first taking lens.

5,361,109

DISPLAY ARRANGEMENT FOR CHARGING CONDITION IN STROBING CIRCUIT OF PHOTOGRAPHIC CAMERA WITH BUILT-IN STROBE-FLASH DEVICE

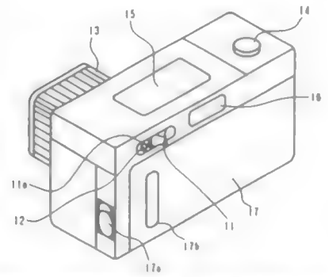
Takashi Kamoda, and Haruo Onozuka, both of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Jul. 12, 1993, Ser. No. 89,883

Claims priority, application Japan, Jul. 13, 1992, 4-208505

Int. Cl.[5] G03B *7/26, 15/02, 17/00*

U.S. Cl. 354—145.1 **5 Claims**



1. A display arrangement for charging condition in a strobing circuit of a photographic camera with a built-in strobe-flash device characterized by:

control means movably provided on an outer wall of the camera for controlling a main switch to switch the camera between a state ready for photographing and a state unready for photographing, said control means for the main switch being slidably movable along the camera wall; and

a display lamp for the charging condition in the strobing circuit, said display lamp being provided within a movement range of the control means so that said display lamp is visible through the outer wall of the camera, said display lamp being located within the movement range such that it is covered by a part of said control means when said control means has been moved to a position at which the camera is unready for photographing and uncovered when said control means has been moved to a position at which the camera is ready for photographing, said display lamp being covered or uncovered by said control means as said control means is slidably moved.

5,361,110

CAMERA

Shosuke Haraguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1992, Ser. No. 862,510

Claims priority, application Japan, Apr. 4, 1991, 3-071698

Int. Cl.[5] G03B *9/08*

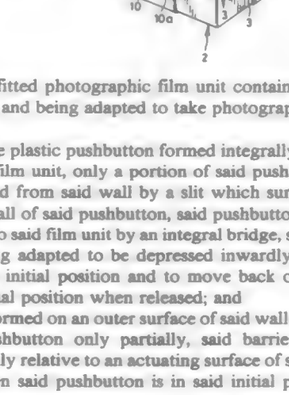
U.S. Cl. 354—234.1 **23 Claims**

1. A camera comprising:

a) a camera mechanism including a charging member operable in a reciprocating motion between a charging position and a charging-cancelling position;

b) a motor for driving said charging member from the charging-cancelling position to the charging position;

c) a first driving mechanism for driving said charging member from the charging position to the charging-cancelling position; and



d) a second driving mechanism for driving said charging member only in an initial stage of a process of moving said charging member from the charging position to the charging-cancelling position.

5,361,111

LENS-FITTED PHOTOGRAPHIC FILM UNIT WITH MEANS PREVENTING UNINTENDED ACTUATION OF PUSHBUTTONS

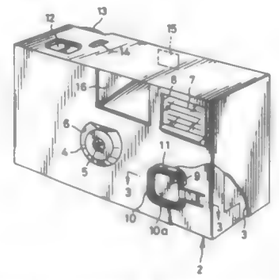
Yasuhiro Yamashina; Takuya Arai, both of Kanagawa, and Junichi Takagi, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 8, 1992, Ser. No. 958,171

Claims priority, application Japan, Oct. 8, 1991, 3-289316

Int. Cl.[5] G03B *17/38*

U.S. Cl. 354—266 **11 Claims**



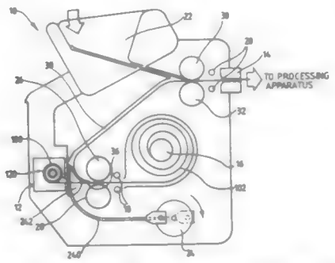
1. A lens-fitted photographic film unit containing a photographic film and being adapted to take photographs, comprising:

at least one plastic pushbutton formed integrally with a wall of said film unit, only a portion of said pushbutton being separated from said wall by a slit which surrounds most but not all of said pushbutton, said pushbutton being connected to said film unit by an integral bridge, said pushbutton being adapted to be depressed inwardly of the wall from an initial position and to move back outwardly to said initial position when released; and

a barrier formed on an outer surface of said wall surrounding said pushbutton only partially, said barrier projecting outwardly relative to an actuating surface of said pushbutton when said pushbutton is in said initial position, said

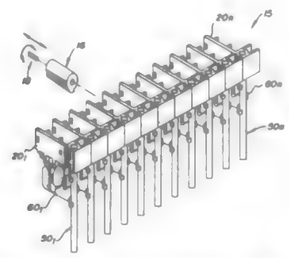
barrier terminating in two ends disposed on opposite sides of said bridge.

5,361,112
FILM LENGTH CHECKING APPARATUS
Leslie J. H. Pummell, Rickmansworth; Paul C. Ward, Oxbey; Stephen J. Kingdon, St. Albans, and James A. Oldfield, Great Missenden, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 24, 1993, Ser. No. 36,313
Claims priority, application United Kingdom, Mar. 24, 1992, 9206392.6
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—298 10 Claims



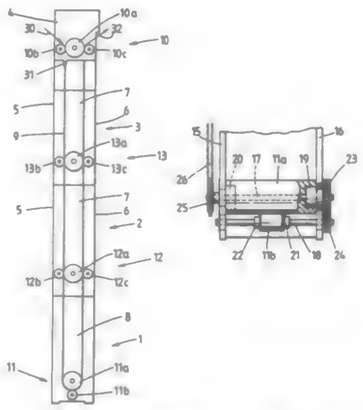
1. A loading device for a photographic processing apparatus comprising:
a film unloading station in which film to be processed is unloaded from its cassette, and
a film transfer station in which the film is transferred to the photographic processing apparatus,
characterized in that the loading device includes a film checking station for checking the length of the film as it is unloaded from its cassette and prior to its transfer to the film transfer station.

5,361,113
PHOTOGRAPHIC FILM PROCESSING ASSEMBLY
Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 5, 1993, Ser. No. 57,025
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—319 17 Claims



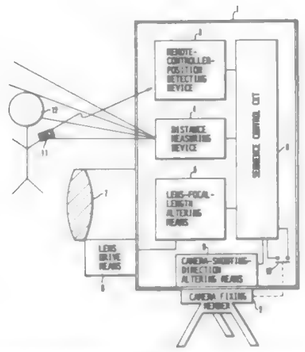
1. A processing rack for holding a plurality of film cartridges from which the respective filmstrips of each cartridge may be unwound to provide full extension thereof to facilitate processing and wound back into the cartridges by selective operation of a reversible drive mechanism, the processing rack comprising:
a plurality of cartridge engaging means for receiving the respective plurality of cartridges in driven relation with said drive mechanism for unwinding the filmstrip from and winding the filmstrip into each such cartridge, each cartridge engaging means having first guide means for directing the leading end of each such filmstrip as it is unwound from the cartridge into an engagement position and second guide means for guiding movement of the filmstrip as it is unwound from the cartridge to full extension thereof and wound into the cartridge; and
a like plurality of leading end engaging means coupled to said second guide means for attachment to the leading end of each such filmstrip when the leading end thereof is directed into the engagement position and for restraining lateral movement and contact of the elongated filmstrips during extension thereof.

5,361,114
PHOTOGRAPHIC PROCESSING TANK
Anthony Earle, Middlesex, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.
PCT No. PCT/EP91/01005, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/19226, PCT Pub. Date Dec. 12, 1991
PCT Filed May 30, 1991, Ser. No. 956,017
Claims priority, application United Kingdom, Jun. 8, 1990, 9012860
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—320 12 Claims



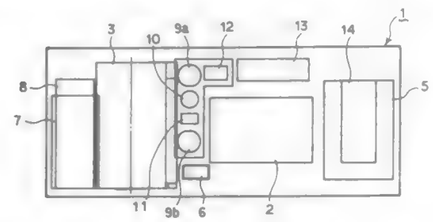
1. A photographic processing tank for use in a photographic processing apparatus of the kind in which imagewise photographic material is processed by passing it serially through a plurality of tanks containing photographic processing solutions at least one of the tanks being of the low volume type, each low volume tank comprising at least two separable modular sections and being configured to define a low volume path along which the material to be treated can pass and transporting means for moving the material along said path characterized in that the transporting means comprises rollers carried between opposite walls of the tank and disposed so that they extend into the low volume path to contact the material to move it along said path, said rollers including shaft means extending in a sealing tight manner through said walls so that they can be coupled to drive means external to the tank.

5,361,115
CAMERA
Masanori Ohtsuka, and Kazunari Kitani, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 941,870, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 510,551, Apr. 18, 1990, abandoned. This application Sep. 22, 1993, Ser. No. 125,345
Claims priority, application Japan, Apr. 21, 1989, 1-102047; Apr. 21, 1989, 1-102048
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 65 Claims



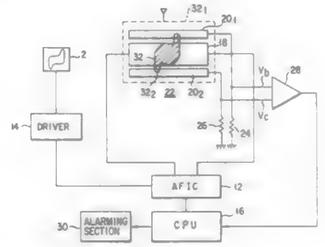
1. A camera system comprising:
(A) direction finding means for determining a direction in which an object to be photographed is present; and
(B) detection means operable for detecting a distance to said object and processing the detected distance, said detection means being prohibited from operating until the direction is determined by said direction finding means and, said detection means detecting the distance to said object in a direction determined by said direction finding means after completion of the direction finding operation.

5,361,116
CAMERA HAVING DEVICE FOR WRITING INFORMATION ONTO FILM
Akira Funahashi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 23, 1993, Ser. No. 51,368
Claims priority, application Japan, Apr. 27, 1992, 4-136162
Int. Cl.[5] G03B *13/36, 15/03, 17/24, 17/38*
U.S. Cl. 354—403 16 Claims



1. A camera having a frame which delineates an exposure aperture through which optical flux from an object to be photographed is projected onto a film, comprising:
means for writing information onto a surface of the film, provided beside the frame; and
a device for performing a camera operation, provided in a space located directly in front of said writing means, with respect to a plan view of the camera, and beside said frame along a side face of the frame.

5,361,117
DISTANCE-MEASURING DEVICE WHICH DETECTS WHICH DETECTS AND CORRECTS PROJECTION ERRORS OF DISTANCE-MEASURING LIGHT BEAMS
Osamu Nonaka, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 988,833, Dec. 10, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 97,728
Claims priority, application Japan, Dec. 16, 1991, 3-332093
Int. Cl.[5] G03B *13/36;* G01C *3/08;* G01J *1/20*
U.S. Cl. 354—403 51 Claims



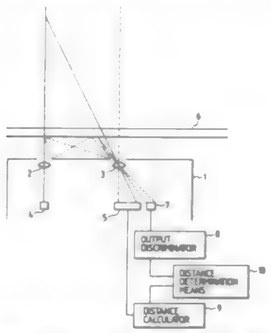
1. A distance-measuring device comprising:
light-projecting means for projecting light onto a subject, a projection pattern of said light-projecting means having a central area along a base length, and two protruding areas perpendicular and asymmetrical to said base length;
light-receiving means for receiving the reflected portion of said projected light from said subject, which includes a first light-receiving section that receives the reflected light associated with the light projected from said central area and produces a first photoelectric conversion signal, a second light-receiving section that receives the reflected light associated with the light projected from one of said two protruding areas and produces a second photoelectric conversion signal, and a third light-receiving section that receives the reflected light associated with the light projected from the other of said two protruding areas and produces a third photoelectric conversion signal;
computing means for calculating the distance to said subject based on said first photoelectric conversion signal; and
comparator means for comparing said second and third photoelectric conversion signals and supplying the comparison result, from which it is judged that said light-projecting means has projected light uniformly onto said subject when the compared second and third photoelectric conversion signals are almost equal, while part of said projected light is missing when one of the compared second and third photoelectric conversion signals is larger than the other.

5,361,118
DISTANCE MEASURING APPARATUS
Hideo Taka, and Kazuyuki Maeda, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 920,914, Jul. 28, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,756
Claims priority, application Japan, Jul. 30, 1991, 3-190313; Jul. 31, 1991, 3-191995; Jul. 31, 1991, 3-191996; Jul. 31, 1991, 3-191997
Int. Cl.[5] G03B *7/00;* G01J *1/20*
U.S. Cl. 354—403 25 Claims

1. A distance measuring apparatus comprising:
light projecting means for projecting a light toward an object;
first light receiving means for receiving reflected light from the object;
second light receiving means for receiving light which is reflected by glass positioned between said distance measuring apparatus and the object;

distance calculator means for evaluating an output from said first light receiving means to calculate a distance to the object; and

distance information evaluator means for detecting a presence of glass based on an output from said second light receiving means, and for setting predetermined distance information, irrespective of the distance to the object calculated by said distance calculator means, when the presence of glass is detected.



5,361,119

FOCUS STATE DISPLAY DEVICE FOR CAMERA

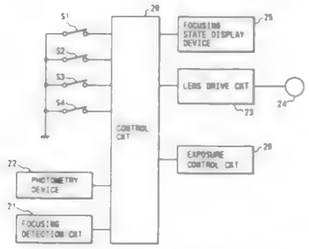
Masaru Shida, Yokohama; Akira Ezawa, Tokyo; Tsutomu Wakabayashi, Yokohama; Kimio Uematsu, Tokyo; Keiji Ohsawa, Yokohama; Shinichi Tsukada, Toride, and Toshihiro Sato, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 813,927, Dec. 27, 1991, abandoned. This application Nov. 3, 1993, Ser. No. 145,312

Claims priority, application Japan, Jan. 8, 1991, 3-18217; Mar. 20, 1991, 3-24852

Int. Cl.[5] G03B *13/18*

U.S. Cl. 354—409 **4 Claims**



1. A focus state display device for use in a camera provided with focus detection means for detecting the focus state in each of plural focus detection areas in a phototaking image field and generating focus detection information; and focusing means for selecting one of said plural focus detection areas as the focusing area, and focusing a phototaking lens to an object in said focusing area, based on said focus detection information relating to said focusing area, comprising:

display means for displaying the focus state of each of said plural focus detection areas in at least three different display modes;

calculation means for calculating information relating to the depth of object field, based on object distance information in said focusing area and a selected diaphragm aperture value of the phototaking lens;

discrimination means for judging whether an object present in at least one non-focusing area, other than said focusing area among said plural focus detection areas, is positioned within the depth of object field, by comparing said information relating to the depth of object field and focus detection information in said at least one non-focusing area; and

display control means for controlling said display means in such a manner that said focusing area, at least one non-focusing area of which an object is identified within the depth of object field, and at least one non-focusing area of which an object is identified outside the depth of object field are displayed by respectively different display modes.

5,361,120

STROBE CONTROL APPARATUS OF CAMERA

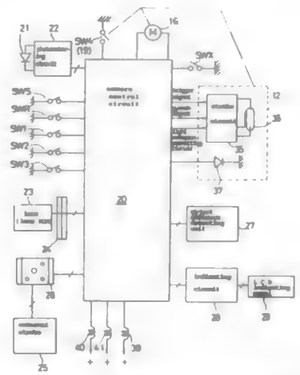
Satoshi Takami, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 593,970, Oct. 9, 1990, abandoned. This application Nov. 24, 1992, Ser. No. 982,009

Claims priority, application Japan, Oct. 6, 1989, 1-261809; Oct. 11, 1989, 1-264534; Oct. 16, 1989, 1-268671; Oct. 16, 1989, 1-268672

Int. Cl.[5] G03B *7/00, 15/03*

U.S. Cl. 354—419 **14 Claims**



1. A strobe control apparatus for a strobe camera having a light emitter that is movable between a retracted position and an operative position, said strobe control apparatus comprising:

a photometering switch;

a photometering circuit, connected to said photometering switch, for determining the brightness of an object to be photographed when said photometering switch is turned ON;

a release operation switch for initiating a release operation of said camera when said switch is turned ON;

a shutter release button comprising means for turning said photometering switch ON when said shutter release button is in a first position and means for turning said release operation switch ON when said shutter release button is in a second position;

means for moving said light emitter between said retracted position and said operative position;

means for executing an automatic light emitting mode, in which said light emitter is moved to said operative position by said moving means and emits light based on the brightness of said object to be photographed, in response to actuation of said shutter button; and

means for executing a compulsive light emitting mode, in which said light emitter emits light regardless of the brightness of said object to be photographed, in response to plural consecutive actuations of said photometering switch when said light emitter is located at said operative position.

5,361,121

PERIPHERY EXPOSING METHOD AND APPARATUS THEREFOR

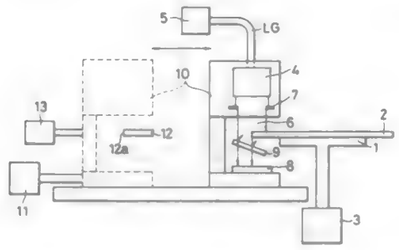
Ken Hattori; Kesayoshi Amano, both of Tokyo; Masao Nakajima, Kawasaki, and Masayoshi Naito, Sendai, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 2, 1991, Ser. No. 694,759

Claims priority, application Japan, May 16, 1990, 2-126447

Int. Cl.[5] G03B *27/42, 27/48, 27/50*

U.S. Cl. 355—50 **4 Claims**



1. A periphery exposure apparatus for exposing a peripheral part of a substrate coated thereon with photoresist, comprising:

irradiating means for emitting a light beam actinic to the photoresist on said substrate;

light receiving means so positioned as to receive said light beam;

a light shield member having a reference edge corresponding to a periphery of said substrate;

switch means for switching a relative positional relationship of said light beam, said light shield member and said substrate between a first state in which the reference edge of said light shield member and said light beam are so aligned that said light shield member intercepts said light beam by a predetermined proportion, and a second state in which the periphery of said substrate and said light beam are so aligned that said substrate intercepts a part of said light beam;

memory means for storing, as a reference signal, a signal based on an output of said light receiving means in said first state; and

regulation means for regulating the positional relationship between said light beam and said substrate in said second state such that a signal based on an output of said light receiving means in said second state is constantly maintained in a predetermined relationship with said reference signal.

5,361,122

AUTOFOCUSING DEVICE AND PROJECTION EXPOSURE APPARATUS WITH THE SAME

Yoshiharu Kataoka, Yokohama; Akiyoshi Suzuki, Tokyo, and Yuichi Yamada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 919,385, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 851,108, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 755,481, Sep. 5, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 11,097

Claims priority, application Japan, Sep. 6, 1990, 2-237900

Int. Cl.[5] G03B *27/42*

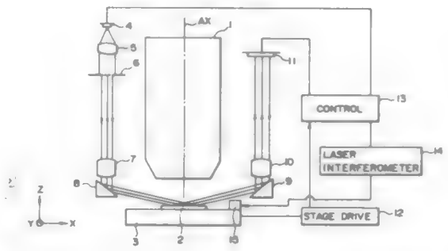
U.S. Cl. 355—53 **17 Claims**

1. An autofocusing device for bringing a surface of a substrate, placed at a predetermined station, into focus with a focal plane of a projection optical system, said device comprising:

a holder for holding the substrate and being movable substantially along the focal plane of said projection optical system so as to move the substrate to said predetermined station, wherein said holder displaces the substrate along an optical axis of said projection optical system;

a detecting system for detecting a deviation of the surface of the substrate with respect to the focal plane, said detecting system detecting the position of the surface of the substrate during movement of said holder substantially along the focal plane of said projection optical system and before the substrate, being moved by said holder, is moved up to said predetermined station; and

an adjusting system for adjusting a positional relationship between the focal plane of the substrate on the basis of the detection by said detecting system, so as to bring the focal plane of said projection optical system and the surface of the substrate into substantial coincidence with each other,



wherein said adjusting system comprises driving means for actuating said holder to cause displacement of the substrate along the optical axis of said projection optical system, and said driving means (i) actuates said holder to start the displacement of the substrate along the optical axis of said projection optical system, during the movement of said holder and before the substrate, being moved by said holder substantially along the focal plane of said projection optical system, is moved up to said predetermined station, and (ii) completes the displacement of the substrate along the optical axis of said projection optical system for substantial coincidence of the surface of the substrate with the focal plane of said projection optical system, during movement of said holder for moving the substrate to said predetermined station.

5,361,123

MICROCONTROLLER BASED XEROGRAPHIC CHARGE DEVICE POWER SUPPLY

Thomas I. Yeh, Penfield; Clifford K. Friend, Pittsford; Timothy A. Cole, Henrietta, and Leo R. Farnand, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1993, Ser. No. 110,749

Int. Cl.[5] G03G *15/28*

U.S. Cl. 355—208 **4 Claims**

1. In an electronic image processing apparatus having a plurality of image processing resources including an image receptor, a charging device for providing a potential on the image receptor, and a controller for directing the operation of the image processing resources to provide an image on a copy sheet, the charging device including:

a corona generator including a pin scorotron for charging a portion of the image receptor to a substantially uniform potential;

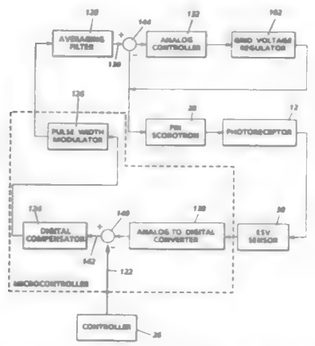
a corona generating potential source electrically connected to the corona generator;

a sensor for determining the potential on the image receptor;

a microprocessor including a pulse width modulator responsive to an error signal and electrically connected to the pin scorotron interconnected to the corona generating potential source, the sensor, and the controller for regulation of the potential on the image receptor, the microprocessor comprising a comparator providing the error signal, the

error signal being a function of a signal from the sensor and a reference signal from the controller and

a second comparator and a grid voltage regulator, the sec-



ond comparator being external to the microprocessor, the second comparator being responsive to the pulse width modulator and the grid voltage regulator to drive the pin scorotron.

5,361,124

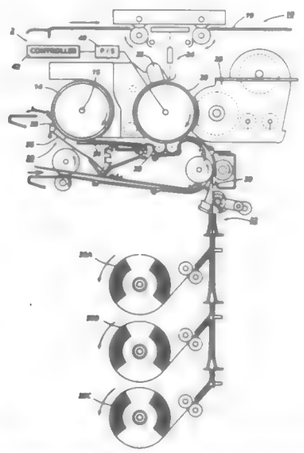
TEMPERATURE CONTROL SYSTEM FOR A FUSER

Paul J. Rowe, Williamson; Paul M. Achtziger, Ontario; David C. Malecki, Rochester, and Nicholas Kladias, Woodside, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 888,947, May 26, 1992, abandoned. This application Sep. 23, 1993, Ser. No. 126,442

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **2 Claims**



1. In a document copier wherein documents are imaged onto a photosensitive medium to form a latent image and wherein said latent image is developed and transferred to a copy media having a width W and a length L wherein said developed and transferred image is subjected to a fusing process,

an improved fusing system for fusing said transferred image including: a fuser roll which is internally heated,

means for moving said copy media into pressure contact with said fuser roll so as to fuse said image, said copy media width W being less than a width of the fuser roll,

means for generating electrical signals representing the width W of the copy media being fused, and

control means for recognizing said electrical signals while monitoring a copy media feed time and for predicting a media feed time which will result in an overheated condition and for automatically suspending copier operation prior to said predicted overheated condition and when fusing is still occurring along the length L of the copy media.

5,361,125

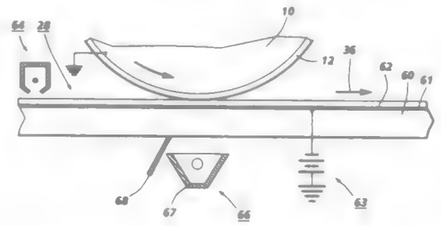
INTERMEDIATE TRANSFER MEMBER

Gerald M. Fletcher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1991, Ser. No. 805,743

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—271 **17 Claims**



15. An apparatus for transferring charged toner particles from an image support surface to a sheet, comprising an intermediate transfer member positioned to have at least a portion thereof adjacent the image support surface, said intermediate transfer member being adapted to receive toner particles from the image support surface and to transfer the toner particles therefrom to the sheet, wherein said intermediate transfer member includes:

a conductive substrate;

biasing means, coupled to said conductive substrate, for providing an applied potential difference between said intermediate transfer member and the image support surface; and

a photoconductive layer deposited on said conductive substrate.

5,361,126

TONER IMAGE TRANSFER APPARATUS INCLUDING INTERMEDIATE TRANSFER MEDIUM

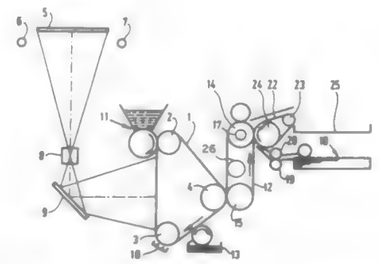
Hubertus A. M. Loonen, Haps; Mark Miedema, Velden; Bauke Schoustra, Velden; Joannes A. Verbunt, Velden, and Eduardus H. A. M. Smit, Venlo, all of Netherlands, assignors to OCE-Nederland, B.V., Venlo, Netherlands

Filed Jul. 20, 1993, Ser. No. 93,639

Claims priority, application Netherlands, Jul. 27, 1992, 9201347

Int. Cl.[5] G03G *15/12, 15/14*

U.S. Cl. 355—279 **15 Claims**



1. An electrostatic imaging apparatus comprising:

an image-forming medium having a toner image developed thereon,

an endless movable intermediate transfer medium comprising a support provided with a top layer which is secured via its back to said support, which intermediate transfer medium in a first transfer zone is in contact with said image-forming medium,

means for transferring said toner image from said image-forming medium to said intermediate transfer medium,

heating means for heating said toner image on said top layer of said intermediate transfer medium,

a pressure applying means which, in a second transfer zone, is brought into contact with said intermediate transfer medium, to transfer said toner image from said intermediate transfer medium to a toner image receiving material, and

transport means for transporting said toner image receiving material through said second transfer zone, said intermediate transfer medium comprising an impurity-absorbent material of removing from said top layer of said intermediate transfer medium via a back thereof impurities which have been transferred to said top layer of said intermediate transfer medium from said toner image receiving material.

5,361,127

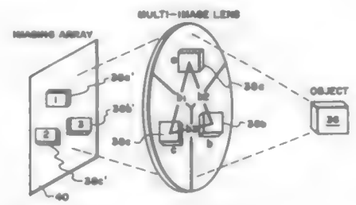
MULTI-IMAGE SINGLE SENSOR DEPTH RECOVERY SYSTEM

Michael J. Daily, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 7, 1992, Ser. No. 926,801

Int. Cl.[5] G01C *3/00;* G01B *11/24*

U.S. Cl. 356—1 **18 Claims**



1. A multi-image single sensor depth recovery system, comprising:

a sensing device for imaging radiation from an object in a scene at a sensor plane and for producing a data stream suitable for processing using multi-image stereo analysis for depth recovery;

a single multi-faceted lens having a multiplicity of refractive facets for directing radiation directly from said object to said sensor plane of said sensing device and for forming a multiplicity of images of said object thereon, each of said images corresponding to a refractive facet of said lens, said lens being calibrated so that the baseline separation between the images from the center of projection for each facet of said lens is predetermined, and

multi-image stereo depth analysis means for analyzing the data stream from said sensing device and determining the depth of said object.

5,361,128

METHOD FOR ANALYZING IRREGULAR SHAPED CHUNKED SILICON FOR CONTAMINATES

Michael Bourbina; Lydia L. Hwang, both of Midland; Joaquin E. Luna, Saginaw, and Scott A. Wheelock, Freeland, all of Mich., assignors to Hemlock Semiconductor Corporation, Hemlock, Mich.

Filed Sep. 10, 1992, Ser. No. 942,907

Int. Cl.[5] G01N *1/00*

U.S. Cl. 356—36 **6 Claims**

1. A method for analyzing irregular-shaped chunked silicon for contaminates, the method comprising:

(A) selecting an irregular-shaped zonable-chunk of silicon,

(B) float-zoning the irregular-shaped zonable-chunk of silicon to effect distribution of surface contamination of the irregular shaped zonable-chunk of silicon into a monocrystal of silicon,

(C) preparing a monocrystalline silicon wafer from the monocrystal of silicon, and

(D) determining concentrations of contaminates present in the monocrystalline silicon wafer.

5,361,129

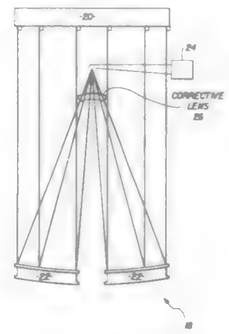
METHOD OF ASSESSING A SURFACE FIGURE OF AN OPTICAL ELEMENT

Thomas W. Dey, Springwater, and Jennifer A. LeBaron, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 853,478, Mar. 18, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,388

Int. Cl.[5] G01B *9/00*

U.S. Cl. 356—124 **5 Claims**



1. A method for assessing a surface configuration of a concave conacoid optical element having a conic constant closer to the conic constant of a paraboloid than to the conic constant of a sphere, comprising the steps of:

a. generating a correcting lens designed to correct spherical aberration associated with aparaboloidal departure of said optical element relative to a parabaloid mathematically best fit to the surface of said element;

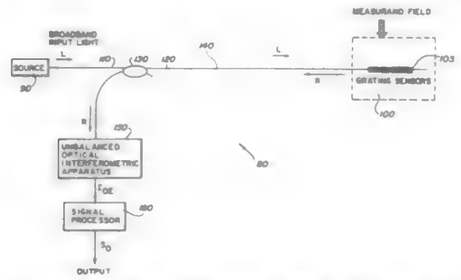
b. interposing said correcting lens between the surface of said concave conacoid optical element and a focal point of said element; and

c. subjecting the optical element with correcting lens to a classical collimation testing procedure for ascertaining its surface configuration relative to said paraboloid.

5,361,130
FIBER GRATING-BASED SENSING SYSTEM WITH INTERFEROMETRIC WAVELENGTH-SHIFT DETECTION

Alan D. Kersey, Fairfax Station, and Timothy A. Berkoff, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1992, Ser. No. 971,117
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 26 Claims

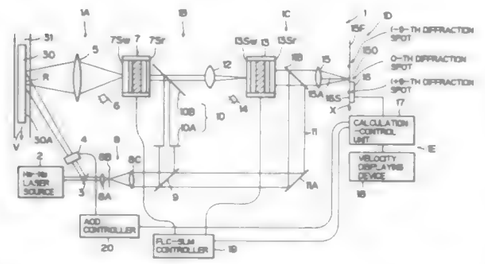


1. A system for sensing a measurand field, the system comprising:
(a) source means for providing broadband light;
(b) sensing means responsive to the broadband light for producing an optical return signal having a wavelength functionally dependent on the measurand field and having a coherence length;
(c) unbalanced optical interferometric means responsive to the return signal for producing an electrical interference output signal having a phase shift functionally dependent on the wavelength of the return signal said interferometric means having optical path difference less than the coherence length of the return signal; and
(d) processing means functionally dependent on the phase shift of the electrical interference output signal for developing a processing signal indicative of the measurand field value.

5,361,131
OPTICAL DISPLACEMENT MEASURING APPARATUS UTILIZING FOURIER TRANSFORM METHOD

Tamiki Tekemori, and Yuji Kobayashi, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Aug. 12, 1992, Ser. No. 928,303
Claims priority, application Japan, Aug. 12, 1991, 3-226459
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—355 35 Claims

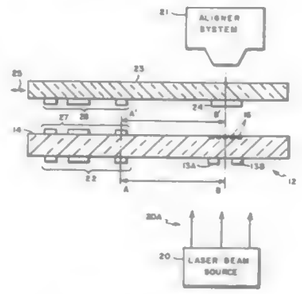


1. An optical displacement measuring apparatus for optically measuring a displacement amount of an object, comprising:
image forming means for forming at least a first image indicative of a position of an object at a first time instant and a second image indicative of a position of the object at a second time instant;
first modulating means for receiving at least the first and second images and for modulating coherent light in accordance with the first and second images, a relative position between the first image and the second image representing a displacement amount of the object achieved between the first time instant and the second time instant;
first Fourier transform means for subjecting the coherent light modulated by said first modulating means to Fourier transformation to thereby form a first Fourier image;
second modulating means for receiving the first Fourier image and for modulating coherent light in accordance with the first Fourier image;
second Fourier transform means for subjecting the coherent light modulated by said second modulating means to Fourier transformation to thereby form a second Fourier image;
detecting means for detecting a position of the second Fourier image which is indicative of the displacement amount of the object attained between the first and second time instants, said detecting means including a position sensitive light detector for receiving the second Fourier image and for directly detecting the position of the second Fourier image; and
time interval adjusting means for adjusting a time interval defined between the first and second time instants, said time interval adjusting means adjusting the value of the time interval so as to cause the second Fourier image to be received by the position sensitive light detector.

5,361,132
BACK TO FRONT ALIGNMENT OF ELEMENTS ON A SUBSTRATE

Michael W. Farn, Burlington, Mass., assignor to Massachussetts Institute of Technology, Cambridge, Mass.

Filed Nov. 24, 1992, Ser. No. 980,679
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—356 10 Claims

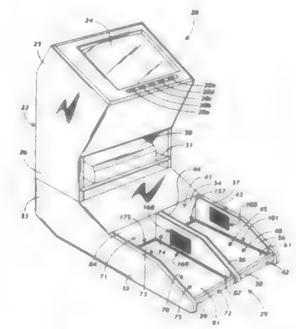


1. A method for aligning corresponding features on opposite surfaces of a substrate which is transparent to electromagnetic energy, said method comprising the steps of
providing at least one set of elements on one surface of said substrate, a reference line of said at least one set of elements being at a known distance from the positions of features on said one surface;
applying a beam of electromagnetic energy to said at least one set of elements to generate at least one interference fringe pattern on the opposite surface of said substrate having a center reference location thereon which corresponds to the reference line of said at least one set of elements on said one surface;
determining the position of the center reference location of said at least one fringe pattern of said opposite surface;
providing a movable reference member having at least one reference mark thereon and having identifiable feature locations thereon, the positions of which relative to each other correspond to the positions of the features relative to each other on the surface of said substrate, the at least one reference mark being at the same known distance from said feature locations as the distance said at least one reference line is from the positions of features on said one surface; and
moving said reference member until said at least one reference mark is aligned with the center reference location of said at least one fringe pattern, whereby the identifiable feature locations on said reference member can be used to position features on the opposite surface of said substrate which are aligned with corresponding features on said one surface of said substrate.

5,361,133
METHOD AND APPARATUS FOR ANALYZING FEET

Algie C. Brown, Atlanta; Carl T. Welty, Chamblee; Henry G. Williams, Roswell; David M. Williams, Dunwoody, and James M. Dabbs, III, Duluth, all of Ga., assignors to Footmark, Inc., Atlanta, Ga.

Filed Jun. 23, 1992, Ser. No. 903,017
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—376 8 Claims

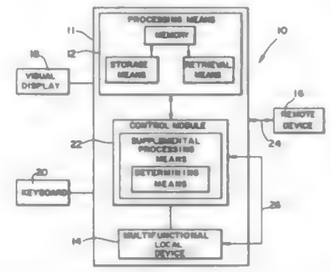


1. A shoe fitting apparatus comprising:
a pressure means for the generating a plurality of foot pressure signals, wherein said pressure means includes, at least, a pressure sensitive pad means for supporting a customer, said pressure sensitive pad means including, at least, a matrix of pressure sensors;
an optical means for generating foot dimension signals including, at least, foot length, foot width, and foot height signals, wherein said optical means includes, at least,
a first plurality of optical emitters arranged in a first linear pattern,
a first plurality of optical receivers arranged to receive optical signals from said first plurality of optical emitters,
a second plurality of optical emitters arranged in a second linear pattern perpendicular to said first linear pattern,
a second plurality of optical receivers arranged to receive optical signals from said second plurality of optical emitters,
a third plurality of optical emitters arranged in a matrix pattern located above said first and second linear patterns, and
a third plurality of optical receivers arranged to receive optical signals from said third plurality of optical emitters; and
a controller means for receiving said foot pressure signals and said foot dimension signals and for generating and displaying show size information.

5,361,134
INTEGRATED MULTIFUNCTIONAL DOCUMENT PROCESSING SYSTEM FOR FAXING, COPYING, PRINTING, AND SCANNING DOCUMENT INFORMATION

Darwin Hu, San Jose, Calif., and John J. Ring, Cherry Hill, N.J., assignors to Oki America, Inc., Hackensack, N.J.

Continuation of Ser. No. 857,215, Mar. 25, 1992, abandoned, Continuation-in-part of Ser. No. 746,831, Aug. 19, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 72,364
Int. Cl.[5] H04N *1/21;* G03G *21/00*
U.S. Cl. 358—296 10 Claims



1. An integrated multifunctional document processing system for faxing, copying, printing or scanning document information and for transmitting and receiving document signals to and from a remote device, the multifunctional document processing system comprising:
a housing;
main processing means located within the housing for processing all electrical document signals;
a multifunctional local device physically separate from but electrically connected to said main processing means, said multifunctional device located within the housing, said multifunctional local device including scanning means for optically scanning document information and for converting the scanned document information into electrical document signals, transmitting means for transmitting document signals to the main processing means, receiving means for receiving document signals from the main processing means, and recording means for producing a recorded form of document information based on received document signals;
a control means located within the housing, interfaced between the main processing means and the multifunctional local device, and having supplemental processing means for processing electrical document signals, the control means, under the control of the supplemental processing means, for receiving all incoming document signals from the multifunctional local device and from the remote device over a communication medium and for sending the received incoming document signal to the main processing means, the main processing means for processing the incoming document signals received from the control means and for processing and transmitting outgoing document signals, the control means also for receiving all outgoing processed document signals from the main processing means and sending received outgoing processed document signals to the multifunctional local device or the remote device over the communication medium, the control means functioning to require that all document signals from the local and remote devices be transmitted to the main processing means and that all processed document signals from the main processing means be transmitted to the local or remote devices, the control means further functioning, under the control of the supplemental processing means, to generate and transmit control signals to the multifunctional local device;
storing means for storing document signals received from

said local device or said remote device in a memory within said main processing means;

determining means within the supplemental processing means for determining a destination for the stored document signals based on the received document signals; and

retrieving means for retrieving stored document signals from the memory and transmitting the retrieved document signals to a destination established by the determining means.

5,361,135

MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS FOR DIGITAL SIGNALS OF STILL PICTURES IN THE PAL SYSTEM

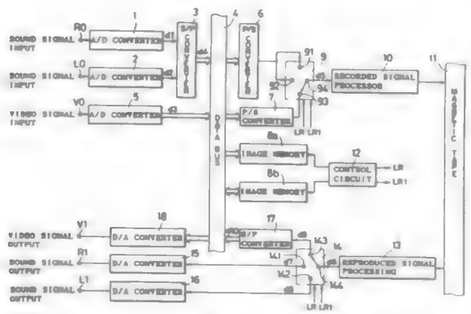
Hirotoshi Yamamoto, and Yukihiko Haikawa, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 6, 1992, Ser. No. 909,201

Claims priority, application Japan, Jul. 12, 1991, 3-172743

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **6 Claims**



1. A magnetic tape recording and reproducing apparatus for recording and reproducing digital signals of still picture data by using a magnetic tape as a recording medium, comprising:

a memory possessing a capacity for storing a portion of either one field or two fields of received video signals in which two fields compose one screen,

means for recording by storing the video signals of a still picture of a PAL system for said portion of either one field or two fields in said memory, and then recording in the magnetic tape the stored signals by reading out sequentially from said memory, and

means for reproducing by reading out the recorded still picture data of either the one field or two fields from the magnetic tape when reproducing and storing said data in the memory, and means for repeatedly reading out from said memory in a sequential manner the still picture data of said one field, along with the still picture data of one false field of said one field which excludes the data of a specific scanning line section of said one field out of the still picture data, if the recorded still picture data are from one field or, if the recorded still picture data are for said two fields, repeatedly reading out from the memory in a sequential manner the still picture data of said two fields, and the still picture data of two false fields of said two fields which exclude the data of specific scanning line sections expression of said two fields out of the still picture data, if the recorded still picture data are for said two fields and producing as reproduction signals the still picture data in which the number of scanning lines in a scanning line period that are in phase and occur on either side of a vertical synchronizing signal portion of said still picture data is an even number.

5,361,136

APPARATUS FOR DETECTING CROSSTALK IN REPRODUCED HIGH-VISION SIGNAL

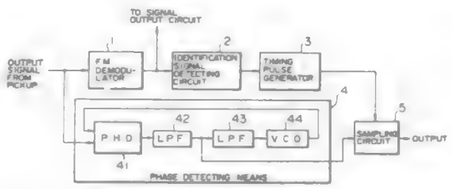
Yoshiyuki Okuda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 24,956

Claims priority, application Japan, Mar. 5, 1992, 4-048672

Int. Cl.[5] H04N *5/76, 5/21*

U.S. Cl. 358—340 **2 Claims**



1. A crosstalk detecting apparatus for detecting an amount of crosstalk which occurs when an image signal and identification signals are read from a medium on which said image signal and said identification signals are FM-modulated and sequentially recorded on three tracks adjacent to one another, wherein said FM-modulated identification signals are of respective different frequencies and are recorded on respective ones of said three tracks such that initial phases thereof on said three tracks are all made equal, said apparatus comprising:

timing pulse generating means for generating a timing pulse at a predetermined time after start of reading said FM-modulated identification signal from the central track and within a time period during which said identification signals are being read;

phase detecting means for detecting a phase difference between said FM-modulated identification signal read from the central track and said FM-modulated identification signal read from said central track with any crosstalk from adjacent ones of said three tracks removed therefrom; and

sampling means for sampling an output from said phase detecting means with said timing pulse produced by said timing pulse generating means to thereby produce a signal indicative of an amount of crosstalk contained in signals read from said central track.

5,361,137

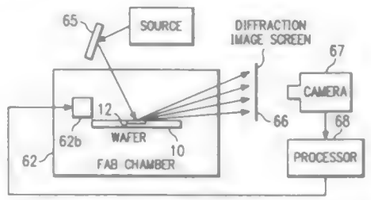
PROCESS CONTROL FOR SUBMICRON LINEWIDTH MEASUREMENT

Thomas J. Aton, Dallas; Phillip Chapados, Jr., Plano; Jimmy W. Hosch, and Ajit P. Paranjpe, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1992, Ser. No. 938,078

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—354 **8 Claims**



1. A method of determining an unknown linewidth on a surface having lines and spaces of different transmissivity or reflectivity, or other diffraction producing characteristic, comprising the steps of:

making a set of at least two test gratings on said surface, each of said gratings having the same unknown linewidth but a different known pitchwidth;

illuminating each of said gratings with incident light;

detecting the second order intensity values of the diffraction pattern from each of said gratings;

calculating the minimum of a curve, which represents each of said intensity values plotted against the pitchwidth of the corresponding grating;

determining the pitchwidth at said minimum; and

dividing said pitchwidth by two to determine said unknown linewidth.

5,361,138

METHOD OF COMMUNICATION BETWEEN FACSIMILE APPARATUSES IN OPTIMUM COMMUNICATION MODE AND FACSIMILE APPARATUS FOR REALIZING THE SAME

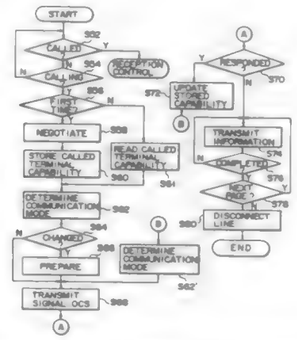
Chiaki Motegi, and Kiyoshi Kobayashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 950,722, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 829,524, Feb. 3, 1992, abandoned, which is a continuation of Ser. No. 701,001, May 13, 1991, abandoned, which is a continuation of Ser. No. 554,987, Jul. 17, 1990, abandoned, which is a continuation of Ser. No. 244,069, Sep. 14, 1988, abandoned. This application Mar. 25, 1993, Ser. No. 37,694

Claims priority, application Japan, Sep. 14, 1987, 62-230014

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—400 **3 Claims**



1. A facsimile apparatus capable of communicating image data with a destination facsimile apparatus, comprising:

storage means for storing communication mode information;

checking means for checking in response to an input transmission start instruction, whether communication with a destination facsimile apparatus is for the first time;

means for setting a communication mode based upon communication mode information transmitted from the destination facsimile apparatus when the communication with the destination facsimile apparatus is for the first time;

means for setting a communication mode based on a readout of a communication mode stored in said storage means when the communication with the destination facsimile apparatus is not for the first time said communication mode information being transmitted to the destination facsimile apparatus to be compared with a communication mode information of said destination facsimile apparatus;

means contained within said destination facsimile apparatus for returning a result of a comparison between the transmitted communication mode information and the actual communication mode information of said destination facsimile;

means for updating the communication mode information stored in said storage means based on communication mode information transmitted from the destination facsimile apparatus when the result of a comparison from said destination facsimile denotes a noncoincidence;

asking means for asking the destination facsimile apparatus when the communication with the destination facsimile apparatus is for the first time; and

wherein said asking means further comprises means for transmitting communication mode information between the destination and transmitting facsimile apparatus using a non-standard set up signal and a digital command signal, timer means for counting a predetermined period of time; and

second setting means for causing said timer means to start in response to a transmission start instruction and setting the optimum communication mode in accordance with communication mode information stored in said storage means when the new communication mode information is not received from the destination facsimile apparatus until after a predetermined period of time has elapsed.

5,361,139

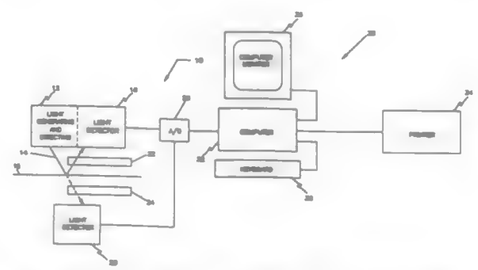
METHOD FOR PRODUCING A MULTITONE IMAGE

Michael Speciner, Acton, Mass., assignor to Camex, Inc., Culver City, Calif.

Continuation of Ser. No. 715,527, Jun. 14, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 182,378

Int. Cl.[5] H04N *1/46;* **G06K** *9/42*

U.S. Cl. 358—445 **13 Claims**



11. A system for producing a multitone reproduction image comprised of N discrete multiple tones representative of an original continuous tone image, comprising:

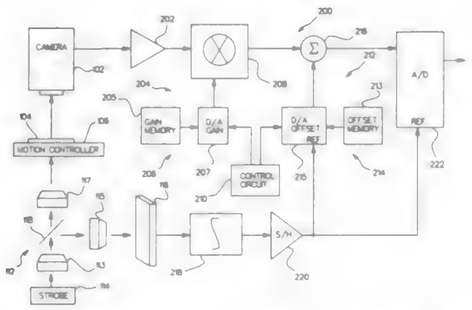
means for scanning an array of (s,t) picture elements of said original image to produce an original image density analog signal Vo(s,t) representative of the darkness value Vo of each picture element (s,t) in said original image;

means for converting said original image density analog signal into a digital representation;

means for digitally processing said digital representation of said original image density signal to produce a reproduction image density signal representative of one of N reproduction darkness values Vr for each picture element (i,j) in an array of reproduction picture elements where Vo(s,t) and Vr(i,j) are related by $U(i,j)=\lfloor(N-1)\ Vo)s,t)+Ein(i,j)+\frac{1}{2}\rfloor$ in which U represents a darkness level defined by U=(N−1) Vr and Ein represents an input error given by Ein(i,j)=aEout(i,j−1)+bEout(i−1, j+1)+cEout(i−1, j)+dEout(i−1, j−1) where a, b, c and d are constants and the output error Eout(i,j)=(N−1) Vo(s,t-)+Ein(i,j)−U(i,j); and

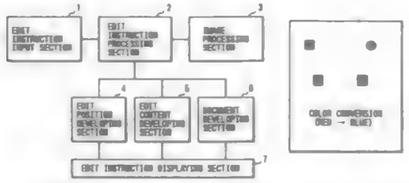
means for controlling an image reproduction apparatus, in response to said reproduction image density signal to produce said multitone reproduction image.

5,361,140
METHOD AND APPARATUS FOR DYNAMIC CORRECTION OF MICROSCOPIC IMAGE SIGNALS
Jon W. Hayenga, Kent, and Robert C. Schmidt, Redmond, both of Wash., assignors to NeoPath, Inc., Bellevue, Wash.
Filed Feb. 18, 1992, Ser. No. 838,065
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—446 22 Claims



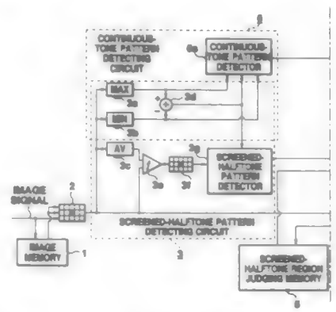
1. Apparatus for dynamically correcting an image signal comprising:
camera means for providing an image signal, wherein the image signal represents a tranmissivity of an object;
light means for providing light to illuminate the object and for providing a light signal indicative of the intensity of said light; and
data processing means responsive to said light signal for dynamically correcting said image signal so that said image signal is corrected for variations in the intensity of said light.

5,361,141
IMAGE PROCESSOR
Teruyuki Aoyama, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Mar. 27, 1992, Ser. No. 858,577
Claims priority, application Japan, Mar. 28, 1991, 3-064440
Int. Cl.[5] H04N *1/387*
U.S. Cl. 358—452 7 Claims



1. An image processor having an edit function and outputting image data obtained by reading a document after subjecting the image data to an edit process, said image processor comprising:
image processing means for subjecting image data obtained by reading a document to an edit process and outputting edited image data;
input means for inputting edit instructions to said image processing means;
position developing means for developing positions corresponding to edit-instructed areas of said image data to be edited according to each of the respective edit instructions inputted by said input means; and
first display means for displaying said image data and for displaying the positions developed by said position developing means with marks at positions corresponding to said edit-instructed areas of said image data, the developed positions being displayed in an overlapping manner with said image data.

5,361,142
IMAGE PROCESSING APPARATUS AND METHOD FOR MULTI-LEVEL IMAGE SIGNAL
Takayoshi Semasa, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 825,973, Jan. 27, 1992, Pat. No. 5,291,309. This application Dec. 3, 1993, Ser. No. 162,580
Claims priority, application Japan, Jan. 30, 1991, 3-029636
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 47 Claims

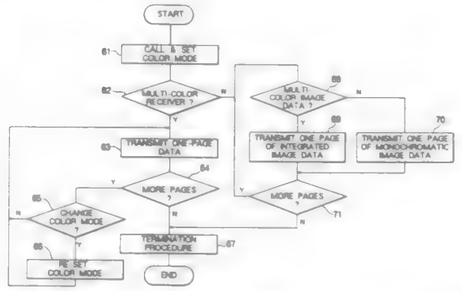


1. An image processing apparatus for inputting a multi-level image signal including a succession of pixels obtained by electrically scanning an image which contains letters, figures, photographs and screened-halftone in the form of a mixture and outputting the multi-level image signal, the image processing apparatus comprising:
A) a screened-halftone pattern detecting circuit for detecting the screened-halftone pattern by using an image signal which represents a first vicinity of the image which contains a target pixel in the succession of pixels;
B) a screened-halftone smoothing circuit responsive to the screened-halftone pattern detection state on each pixel in the succession of pixels;
C) a continuous-tone pattern detecting circuit for judging whether or not the target pixel is in the continuous-tone region by using an image signal which represents a second vicinity of the image which contains the target pixel;
D) a continuous-tone smoothing circuit responsive to the continuous-tone pattern detection state on each pixel in the succession of pixels; and
E) a filter for filtering the image signal of the target pixel on the basis of characteristics in accordance with either or both of the outputs of the two smoothing circuits.

5,361,143
FACSIMILE APPARATUS
Tsutomu Nakayama, Yokohama; Kunio Shijo, Chigasaki, and Takashi Murahashi, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Sep. 14, 1992, Ser. No. 944,311
Claims priority, application Japan, Oct. 2, 1991, 3-255508
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—500 3 Claims

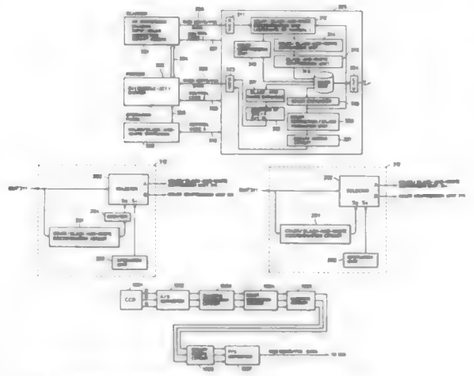
1. A facsimile apparatus comprising:
image reading means for obtaining a set of integrated image data and a plural sets of color image data by scanning a multi-color image on an original sheet, each set of the color image data representing an image of a color in the multi-color image and the integrated image data being monochromatic image data to represent a total image formed by all colors of the multi-color image;

memory means for separately storing each set of the color image data and the integrated image data set; and
transmitting means for selectively transmitting the image data stored in the memory means to a receiving station, wherein



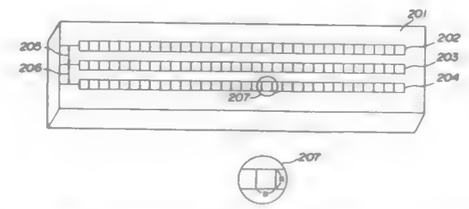
the transmitting means transmits the integrated image data and prohibits each set of the color image data from being transmitted when the receiving station is not provided with multi-color printing capability.

5,361,144
IMAGE PROCESSING APPARATUS AND METHOD
Susumu Sugiura, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 607,651, Oct. 31, 1990, Pat. No. 5,220,417.
This application Mar. 12, 1993, Ser. No. 31,198
Claims priority, application Japan, Oct. 31, 1989, 1-285894
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—500 28 Claims



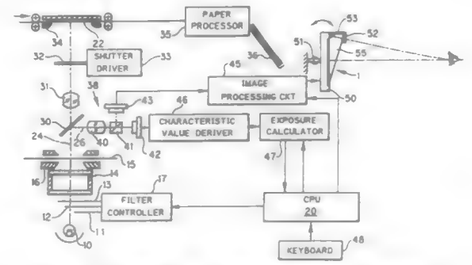
1. An image processing apparatus comprising:
a) input means for inputting image data;
b) first compression means for subjecting the image data by said input means to color image compression;
c) second compression means for subjecting the image data input by said input means to black-and-white image compression;
d) selection means for manually selecting between said first and second compression means regardless of whether the image data input by said input means represents a color image or a black-and-white image; and
e) transmission means for transmitting compressed data from said first or second compression means selected by said selection means,
wherein said input means comprises a plurality of photoelectric conversion means, each of which generates a different color component signal.

5,361,145
COLOR IMAGE READING APPARATUS HAVING CORRECTION MEANS TO CORRECT FOR RELATIVE VARIATIONS AMONG IMAGE SIGNALS
Shizuo Hasegawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1992, Ser. No. 973,951
Claims priority, application Japan, Nov. 12, 1991, 3-295683
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—514 15 Claims



1. A color image reading apparatus, comprising:
an optical device for diffracting light from a color image and sending out in different directions a plurality of beams of light, each beam representing at least one of a plurality of different colors;
a plurality of line sensors for respectively receiving at least one of the plurality of beams of light and for converting received beams into electrical image signals; and
correction means for correcting relative variations among the image signals from said plurality of line sensors caused by said optical device for diffracting light, and for outputting corrected image signals.

5,361,146
LIQUID CRYSTAL DISPLAY PANEL MONITOR
Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jul. 16, 1993, Ser. No. 91,986
Claims priority, application Japan, Jul. 16, 1992, 4-189728
Int. Cl.[5] H04N *1/40*; G03F *3/10*
U.S. Cl. 358—527 8 Claims



1. A liquid crystal display panel monitor for displaying a video image simulating a photographic print to be made by a photographic printer, said liquid crystal display panel monitor comprising:
a liquid crystal display panel for displaying said video image thereon;
a panel frame on which said liquid crystal display panel is mounted; and
positioning means connected to said liquid crystal display panel for determining a desired eye position of a viewer relative to said liquid crystal display panel said positioning

means comprises a sight member having a sighting hole and disposed in front of said liquid crystal display panel, and a target mark disposed on a front portion of said panel, said target mark and sighting hole are relatively positioned so that when the viewer can see said target mark through said sighting hole, the viewer is in said desired eye position.

5,361,147

METHOD AND APPARATUS FOR ENCODING AND DECODING COLOR IMAGES

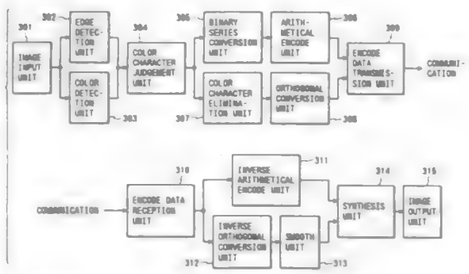
Akihiro Katayama, Kawasaki; Yasuhiko Yasuda, Musashino; Shigeo Kato, Saitama, and Hirokazu Uchio, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 651,030, Feb. 5, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 173,863

Claims priority, application Japan, Feb. 6, 1990, 2-27658; Jun. 5, 1990, 2-147035; Jun. 5, 1990, 2-147036; Sep. 30, 1990, 2-262798; Sep. 30, 1990, 2-262799

Int. Cl.[5] H04N *1/41, 1/46*

U.S. Cl. 358—532 **31 Claims**



1. An image encoding apparatus comprising:

a) input means for inputting color image data representing a color image;

b) first detection means for detecting an edge portion in the color image;

c) second detection means for detecting a portion having a specific color;

d) discrimination means for discriminating the edge portion having the specific color based on the detection result of said first and second detection means;

e) first encoding means for encoding the edge portion of the specific color discriminated by said discrimination means by using a first encoding method; and

f) second encoding means for encoding the color image data of at least a portion of the color image other than the edge portion of the specific color by using a second encoding method different from the first encoding method.

29. An image processing apparatus comprising:

first extracting means for extracting a line image portion having a predetermined color from a color image represented by input color image data;

second extracting means for extracting an image portion around the line image portion having a color substantially similar to the predetermined color; and

processing means for changing the input image date in the image portion extracted by said second extracting means.

5,361,148

APPARATUS FOR PHOTOREFRACTIVE TWO BEAM COUPLING

Gary C. Bjorklund, Los Altos; Donald M. Burland, San Jose, both of Calif.; Marcus C. J. M. Donckers, ES Leiden, Netherlands; Robert D. Miller; William E. Moerner, both of San Jose, Calif.; Scott M. Silence, Fremont, Calif.; Robert J. Twieg, and Cecilia A. Walsh, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1993, Ser. No. 6,450

Int. Cl.[5] G03H *1/02*

U.S. Cl. 359—4 **4 Claims**

1. A holographic storage device comprising:

a. a photographic polymeric optical article having a change in index of refraction per unit of applied external electric field of greater than 0.1 pm/V and comprising at least 50% by weight of a charge transporting polymer having an absorption coefficient at wavelengths greater than 700 nm of less than 0.1 cm^{-1}, a nonlinear chromophore and a sensitizer, which provides at least about 70% of the total absorption of radiation by the optical article at wavelengths greater than 700 nm;

b. means for forming two intersecting beams of coherent electromagnetic radiation having wavelengths greater than 700 nm in the article;

c. means for applying an external electric field to the article; and

d. means for impressing spatial information on one of the beams.

5,361,149

OPTIMIZED DESIGN METHOD FOR HOLOGRAPHIC OPTICAL ELEMENT AND APPARATUS USING SUCH HOLOGRAPHIC OPTICAL ELEMENT

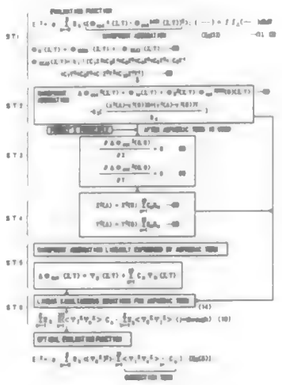
Shinya Hasegawa, and Shigeo Kayashima, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 19, 1992, Ser. No. 853,624

Claims priority, application Japan, Mar. 20, 1991, 3-056707

Int. Cl.[5] G02B *5/32*; G03H *1/08*

U.S. Cl. 359—9 **20 Claims**



1. An optimized design method of a holographic optical element by calculating a correction coefficient so that an evaluating amount of a reconstructed light reconstructed by the holographic optical element can be minimized, the correction coefficient determining an aspheric term included in a phase transfer function, and the phase transfer function representing a shape of an interference fringe recorded on the holographic optical element, said method comprising the steps of:

expressing a wavefront aberration via a linear function of the correction coefficient by positioning a main axis point on a characteristic evaluating surface onto which the reconstructed light is projected, so that the wavefront aberration of the reconstructed light can be minimized; and

calculating the correction coefficient based on said linear function so that the evaluating amount can minimized.

5,361,150

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY WITH IDENTIFICATION MARK IN THE LOWER OPAQUE CONDUCTIVE FILM

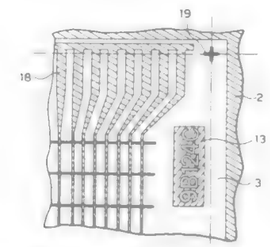
Kesao Noguchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Division of Ser. No. 731,421, Jul. 17, 1991, abandoned. This application Jul. 14, 1993, Ser. No. 92,669

Claims priority, application Japan, Jul. 19, 1990, 2-192326

Int. Cl.[5] G02F *1/1343, 1/1335, 1/1333*

U.S. Cl. 359—62 **3 Claims**



1. A method for producing a liquid crystal display panel, comprising the steps of:

preparing a glass substrate having a device pattern portion and a peripheral portion surrounding said device pattern portion, said device pattern portion including a matrix array area portion and a blank portion, said blank portion containing an identification marking portion;

forming a lower opaque conductive film on said matrix array area portion and on said identification marking portion of said blank portion;

patterning the lower opaque conductive film formed on said matrix array area portion to form gates for active devices to be provided on said matrix array area portion;

selectively removing the lower opaque conductive film formed on said identification marking portion of said blank portion to form an identification number on said identification marking portion;

selectively forming in sequence at least an insulating film, a semiconductor layer and an upper opaque conductive film on said matrix array area portion to form said active devices on said matrix array area portion, said insulating film being formed at least in part over said identification marking portion in order to cover said identification number, said semiconductor layer and said upper opaque conductive film being positioned away from said identification marking portion so that said identification number if free from being covered with said semiconductor layer and said upper opaque conductive film; and

cutting said glass substrate to separate said device pattern portion and said peripheral portion.

5,361,151

REFLECTION-TYPE LIQUID CRYSTAL DEVICE WITH POLARIZATION OF OUTPUT LIGHT PERPENDICULAR TO THAT OF INPUT LIGHT

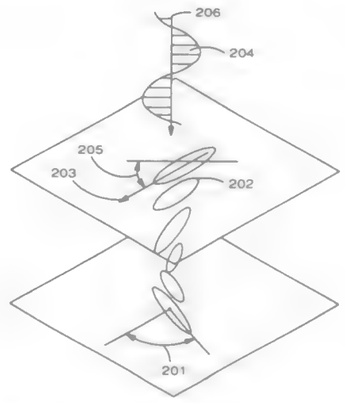
Tomio Sonehara, and Osamu Okumura, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 739,961, Aug. 5, 1991, abandoned. This application Oct. 7, 1993, Ser. No. 133,827

Claims priority, application Japan, Aug. 9, 1990, 2-210813; Sep. 6, 1990, 2-236455

Int. Cl.[5] G02F *1/1335, 1/13*

U.S. Cl. 359—65 **15 Claims**



1. A reflection-type liquid crystal device comprising:

a liquid crystal cell including a pair of spaced apart opposed transparent substrates,

a polarizing means disposed at a first side said liquid crystal cell,

a reflecting means disposed at a second side of said liquid crystal cell,

said liquid crystal cell comprising a twisted nematic liquid crystal layer having a twist angle and having a birefringence property, Δn, and having a thickness, d, for transforming the character of first linearly polarized light or first circularly polarized light propagating therethrough, respectively, into substantially circularly polarized light or substantially linearly polarized light incident at said reflecting means and transforming said substantially circularly polarized light or substantially linearly polarized light reflected from said reflecting means, respectively, into substantially second linearly polarized light or substantially second circularly polarized light having a polarization direction orthogonal with respect to a polarization direction of said first linearly polarized light or first circularly polarized light, respectively,

said polarizing means characterized by having a polarization angle greater than zero wherein said polarization angle is an angle formed between a polarization axis of said polarizer and liquid crystal molecular director of said liquid crystal layer at a surface of said liquid crystal cell at said first side, and

first and second optimized conditions for said twist angle relative to a given polarization angle and a product of Δnd, the first optimized condition comprising a twist angle range between about 0° and 65° with a Δnd in a range between about 0.13 and 0.40, the second optimized condition comprising a twist angle range between about 0° and 200° with Δnd in a range between about 0.53 and 0.97,

said optimized conditions applicable for said given polarization angle plus or minus multiples of approximately 90°.

5,361,152
PROCESS FOR PRODUCING FERROELECTRIC LIQUID-CRYSTAL CELLS

Takamasa Harada, Inba, Japan; Claus Escher, Mühltal, Germany; Gerhard Illian, Tokyo, Japan; Dieter Ohlendorf, Lieferbach, Germany; Heinz Rieger, Hofheim am Taunus, Germany, and Norbert Rösch, Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

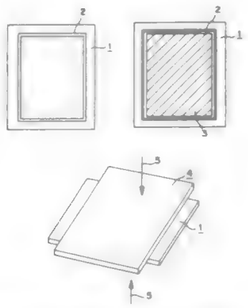
PCT No. PCT/JP91/00805, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO91/20011, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 14, 1991, Ser. No. 949,839

Claims priority, application Japan, Jun. 14, 1990, 2-156387; Apr. 8, 1991, 3-075341

Int. Cl.[5] G02F *1/1341*

U.S. Cl. 359—80 2 Claims



1. A process for producing a liquid-crystal cell which comprises the steps of:

(a) providing a curable sealant portion in the periphey of the side of an electrode plate that has an electrode or electrodes;

(b)

(i) coating a ferroelectric liquid-crystal composition on the portion surrounded by said sealant portion, with a spacer being preliminarily provided in said portion; or

(ii) coating a spacer-containing ferroelectric liquid-crystal composition on the portion surrounded by said sealant portion; or

(iii) coating a ferroelectric liquid-crystal composition on the portion surrounded by said sealant portion and thereafter providing a spacer over said composition;

(c) defoaming the coated layer of the liquid-crystal composition by heating the coated plate during or after evacuation up to the temperature at which the liquid-crystal composition exhibits an isotropic liquid or nematic phase;

(d) placing the other electrode plate in such a way that the side of said other electrode plate which has an electrode or electrodes faces the side of said one electrode plate containing the thermally defoamed coated layer of the liquid-crystal composition and compressing the two electrode plates together; and

(e) curing said sealant.

5,361,153
ELECTRODE PLATE AND PROCESS FOR PRODUCTION THEREOF

Masayuki Shimamune, Tokyo; Takashi Enomoto, Sagamihara, and Toshifumi Yoshioka, Hadano, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

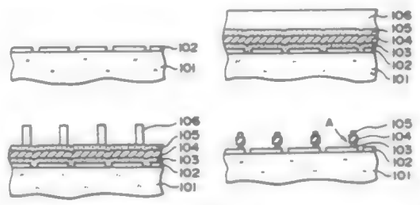
Filed Jun. 9, 1992, Ser. No. 895,609

Claims priority, application Japan, Jun. 12, 1991, 3-140107

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—87 13 Claims

1. An electrode plate, comprising: a substrate, and a first layer of a transparent conductor film, a second layer of molybdenum or a molybdenum alloy, a third layer of aluminum or an



aluminum alloy, and a fourth layer of molybdenum or a molybdenum alloy disposed in the named order on the substrate.

5,361,154
METHOD AND APPARATUS FOR PERFORMING WAVELENGTH-TUNING AND CLOCK-SYNCHRONIZATION IN A WAVELENGTH DIVISION MULTIPLEXING OPTICAL COMMUNICATION NETWORK

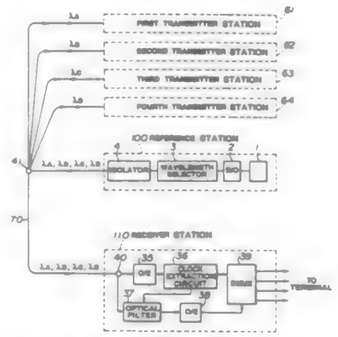
Toru Nakata, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,237

Claims priority, application Japan, Jun. 6, 1992, 4-171833

Int. Cl.[5] H04J *4/00, 14/02;* H04B *10/00*

U.S. Cl. 359—123 20 Claims



15. A wavelength division multiplexing optical communication network, said network comprising:

a reference station for transmitting a reference signal comprising superposed reference wavelength and reference clock signals;

a transmitter station for transmitting a signal therefrom, wherein said transmitter station is tuned to a wavelength, based on a reference wavelength of the reference wavelength signal so that said transmitter station transmits a signal at the wavelength to which said transmitter station is tuned, wherein said transmitter station extracts the reference clock signal from the reference signal and synchronizes the signal transmitted from said transmitter station with a clock signal, based on the reference clock signal extracted from the reference signal; and

a receiver station for receiving wavelength-division-multiplexed signals as time-division-demultiplexed parallel data by using a clock signal extracted from the reference signal.

5,361,155
OPTICAL FILTER TUNED BY ROTATION AND COMPRISING A FABRY-PEROT INTERFEROMETER

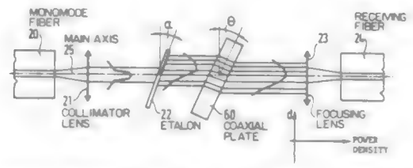
Dominique Chiaroni, Antony, and Paulette Morin, Saint Michel sur Orge, both of France, assignors to Alcatel Cit, Paris, France

Filed Mar. 23, 1993, Ser. No. 35,793

Claims priority, application France, Mar. 26, 1992, 92 03680

Int. Cl.[5] H04J *14/02*

U.S. Cl. 359—131 8 Claims



1. Rotation tuned optical filter comprising a Fabry-Perot type interferometer disposed between an optical source and an optical receiver wherein said interferometer filters an input optical signal from said optical source, said input optical signal propagates substantially in a single mode, said interferometer supplies a filtered optical signal to said optical receiver which comprises a receiving surface which integrates the power density of said filtered optical signal, and said filter comprises means for modifying the position of said filtered optical signal relative to said receiving surface of said optical receiver.

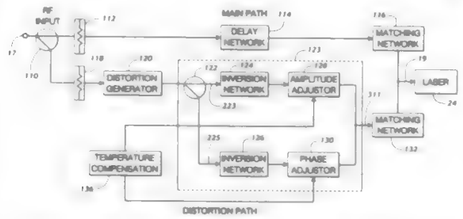
5,361,156
METHOD AND APPARATUS FOR PREDISTORTION

Rezin E. Pidgeon, Atlanta, Ga., assignor to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Dec. 9, 1991, Ser. No. 805,259

Int. Cl.[5] H04B *10/18*

U.S. Cl. 359—161 44 Claims



1. A predistortion apparatus for a nonlinear optical transmission system including a laser and an optional link having a main signal path and a distortion signal path which are applied to the laser to modulate the optical intensity of its output and provide a modulated optical signal, said circuit comprising:

a coupler dividing an RF input signal into the main path and the distortion path;

a distortion generator located in the distortion path, operative to provide a distortion signal from said RF input signal;

a first adjustment network coupled to said distortion generator operative to correct the amplitude of the distortion signal by modulating the laser with the RF input signal over the optical link; and

a second adjustment network coupled to said distortion generator in parallel with the first adjustment network to adjust the phase of the distortion signal to substantially match phase distortion generated by modulating the laser with the RF input.

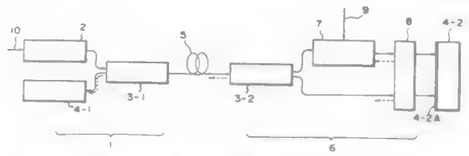
5,361,157
BIDIRECTIONAL LIGHT TRANSMISSION SYSTEM AND OPTICAL DEVICE THEREFOR

Tadasu Ishikawa, Mikio Maeda; Kimiyuki Oyamada; Shuichi Fujisawa; Yozo Utsumi; Kuniharu Takizawa, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Aug. 25, 1992, Ser. No. 934,959

Int. Cl.[5] G02B *6/12*

U.S. Cl. 359—168 18 Claims



1. A bidirectional light transmission system for bidirectionally transmitting light of single wavelength comprising:

a transmitting station having;

a light source for emitting light of a single wavelength and intensity-modulating a transmission signal,

a first light branching portion for branching the intensity-modulated light of said light source in a predetermined ratio and outputting one of the branched intensity-modulated light into a single optical fiber transmission line, and further for branching return light inputted from said transmission line, and

a first light receiving portion for receiving the branched return light from said first light branching portion; and

a receiving station having;

a second light branching portion, for receiving the intensity-modulated light from said transmission line and for branching said intensity-modulated light into a first branched light and a second branched light,

a light phase-modulating portion optically connected to said second light branching portion and for phase-modulating at least one of said first branched light and second branched light,

a light reflecting portion for transmitting part of said first branched light and part of said second branched light and for reflecting part of said first branched light and part of said second branched light, respective said reflected parts of said first branched light and second branched light being simultaneously intensity-modulated as a return signal in said light phase-modulating portion and said second light branching portion, and said return signal being returned to said transmitting station via said single optical fiber transmission line, and

a second light receiving portion for receiving the parts of said first branched light and said second branched light transmitted through said light reflecting portion.

5,361,158
MULTIPLE SOURCE OPTICAL SCANNER

Hong Tang, Duluth, Ga., assignor to AT&T Global Information Solutions (FKA NCR Corporation), Dayton, Ohio

Division of Ser. No. 944,576, Sep. 14, 1992. This application May 20, 1993, Ser. No. 63,808

Int. Cl.[5] G02B *26/08;* G06K *7/10*

U.S. Cl. 359—204 5 Claims

1. An optical scanner comprising:

a plurality of scanning light sources;

means for focusing and collimating the light from each light source into a beam, each beam having a characteristic depth of field;

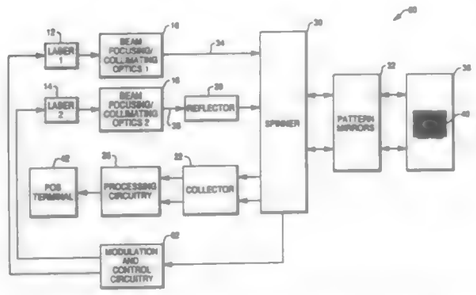
means for directing the light beams along a predetermined direction;

means for collecting light reflected from an article having a bar code label to be scanned;

a motor-driven mirrored spinner for reflecting each beam

into a plurality of directions and for directing light reflected from the article to the collecting means;

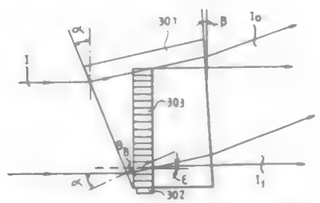
modulation means for selectively turning one light source on at a time including sensor means for sensing the orientation of the mirrored spinner, and switching means for coupling one of the laser sources to a power source and



decoupling all the others from the power source at the same time for a predetermined position of the mirrored spinner; and

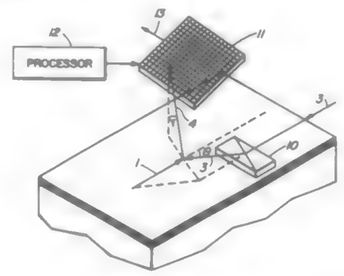
means for converting the reflected light into electrical signals, having information about the items, based upon the intensity of the reflected light.

5,361,159
ANGULAR ACOUSTO-OPTICAL DEFLECTION DEVICE AND SPECTRUM ANALYZER USING SUCH A DEVICE
Jean-Claude Poncot, Valbonne, and Carlo Rosolen, Vauhallan, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Feb. 26, 1993, Ser. No. 22,915
Claims priority, application France, Feb. 28, 1992, 92 02363
Int. Cl.[5] G02F *1/34*
U.S. Cl. 359—305 **10 Claims**



1. Acousto-optical angular deflection device of the type consisting of a block (301) made of active acousto-optical material consisting of a lower face equipped with an electro-acoustic transducer (302) designed to transmit a beam of ultrasonic waves (303) in a material perpendicularly to this lower face, an entry face designed to receive an incident optical beam (I) at an angle such that it is subject to an anisotropic type of acousto-optical interaction inside the block with the ultrasonic beam under "Bragg tangential" phase matching conditions, and an exit face designed to allow a first optical beam (I_1) to pass, transposed in frequency under the action of the interaction with the ultrasonic beam by presenting a low angle with a normal to the direction of propagation of the ultrasonic beam, this angle depending on the frequency variation of this optical beam, and a second optical beam (I_0) with the same characteristics as the incident beam and inclined with respect to the first beam, wherein the block entry face (301) is inclined with respect to the direction of propagation of the ultrasonic beam by an angle α such that an optical entry beam (I) is perpendicular to the direction of propagation of the ultrasonic waves (303) while respecting Bragg tangential conditions.

5,361,160
LARGE ANGLE BROADBAND MULTILAYER DEFLECTORS
Richard J. F. Normandin; Francoise Chatenoud, both of Ottawa, and Michael Cada, Halifax, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada
Filed Mar. 20, 1992, Ser. No. 854,900
Int. Cl.[5] H03F *7/00*
U.S. Cl. 359—328 **16 Claims**



1. An optical signal deflector comprising:

(a) an optical signal waveguide formed of plural layers of optically non-linear semiconductor material,

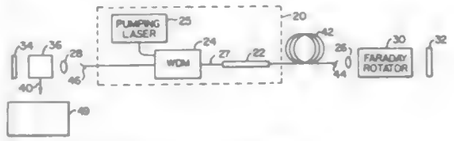
(b) means for launching a first optical signal in said waveguide in a first direction which is parallel to said layers,

(c) means for applying a second optical signal to said waveguide in a second direction parallel to said layers but at an angle to said first direction,

(d) the thickness and indexes of refraction of said layers being predetermined to cause non-linear field contributions of said signals to add in phase in the far field,

whereby a third optical signal is obtained having an angle of emission which is the three dimensional vector addition, at a harmonic sum frequency, of said first and second signals.

5,361,161
VARIABLE SPECTRAL WIDTH OPTICAL NOISE SOURCE
Douglas M. Baney, Menlo Park, and Wayne V. Sorin, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 860,636, Mar. 30, 1992, Pat. No. 5,272,560. This application Aug. 24, 1993, Ser. No. 111,093
Int. Cl.[5] H01S *3/10, 3/30;* **G02B** *27/28*
U.S. Cl. 359—337 **9 Claims**



1. An optical noise source comprising:

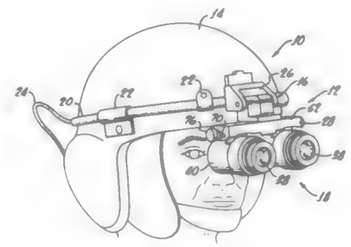
an optical amplifier that produces optical noise by spontaneous emission and emits the optical noise through a first side;

a bandpass filter adjacent the first side of the amplifier;

reflecting means adjacent the bandpass filter, operative to receive optical noise emitted by the amplifier and filtered by the filter and to reflect said filtered optical noise back into the first side of the amplifier, the amplifier operative to amplify said filtered optical noise and to emit the amplified filtered noise through a second side; and

output means adjacent the second side of the amplifier for preventing any optical noise emitted through the second side of the amplifier from returning to the amplifier.

5,361,162
NIGHT VISION DEVICE
Timothy R. Goebel, Tempe, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.
Filed May 11, 1993, Ser. No. 59,539
Int. Cl.[5] G02B *27/02*
U.S. Cl. 359—411 **27 Claims**



1. A viewing apparatus comprising:

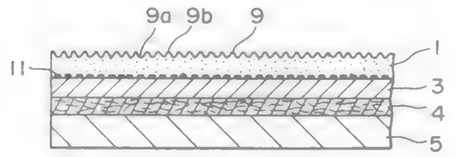
a frame for being supported relative to a user's head and eyes;

said frame supporting a pair of night vision monocular scope mounts for lateral relative movement;

said pair of scope mounts carrying a respective left-eye and right-eye night vision monocular scope disposed in front of said user's eyes for cooperatively providing binocular vision, and defining therebetween an interpupillary distance;

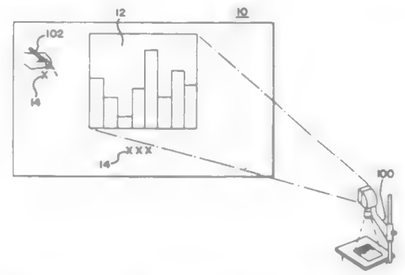
said frame carrying means for laterally moving and positioning said monocular scope mounts relative to said frame to adjust said interpupillary distance, said moving and positioning means including a pair of respective laterally-extending threaded shaft members journaled by said frame and each threadably associated with a respective one of said pair of scope mounts to move the latter laterally of said frame in response to rotation of said shaft member, and said pair of shaft members being substantially identical with one another.

5,361,163
REFLECTION TYPE PROJECTION SCREEN, PRODUCTION PROCESS THEREOF, AND PRODUCTION APPARATUS THEREOF
Noriaki Matsuda, and Keiji Hanamoto, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan
PCT No. PCT/JP92/00715, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/22009, PCT Pub. Date Oct. 12, 1992
Continuation of Ser. No. 972,451, Apr. 2, 1993, abandoned. This PCT application Jun. 3, 1992, Ser. No. 155,660
Claims priority, application Japan, Jun. 3, 1991, 3-131398; Jun. 14, 1991, 3-143480; Aug. 6, 1991, 3-196763; Feb. 10, 1992, 4-24094; Apr. 16, 1992, 4-96376
Int. Cl.[5] G03B *21/56*
U.S. Cl. 359—452 **38 Claims**



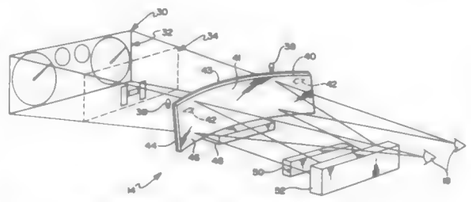
1. A reflection type projection screen provided in order with a light absorbing layer (5) of a dark plastic sheet, a fibrous sheet (4) of glass fibers, a base material sheet (3) of a white, opaque, flexible plastic, and a light diffusing layer (1) of a translucent, flexible plastic into which a lustrous pigment or calcite powder is incorporated, wherein a convexo-concave emboss (9) is formed on the outer surface of the light diffusing layer (1).

5,361,164
PROJECTION MARKERBOARD
Gregg A. Steliga, Barrington, Ill., assignor to Walltalkers, Barrington, Ill.
Filed Jun. 17, 1992, Ser. No. 900,942
Int. Cl.[5] G03B *21/56*
U.S. Cl. 359—455 **17 Claims**



1. A combination projection screen and dry erasable markerboard comprising a substantially opaque, dry erasable, reflective, bi-directional lenticular surface.

5,361,165
REFLECTIVE CLUSTER DISPLAY WITH STOWABLE VIEWING SCREEN
Steven A. Stringfellow, Oakland, and John M. Zelenak, West Bloomfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 816,919, Jan. 3, 1992, Pat. No. 5,198,936. This application Dec. 9, 1992, Ser. No. 987,889
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] G02B *27/10*
U.S. Cl. 359—631 **14 Claims**



1. A vehicle display device comprising:

an image source displaying information;

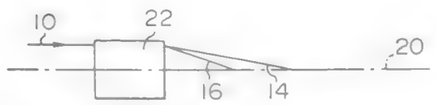
a spherical concave mirror, mounted near the image source, reflecting the displayed information to project a virtual image thereof viewable by an operator, the spherical concave mirror comprising (i) a partially transparent mirror with a first surface facing the display source and a second surface opposite the display source and (ii) a mask layer on the second surface of the partially transparent mirror defining display data normally not visible to the operator;

means, positioned proximate to the partially transparent mirror opposite the image source, for sourcing light onto the defined display data, so that when the defined display data receives the light, the display data becomes visible to the operator; and

means for pivoting the partially transparent mirror, with respect to an axis, between a first position characterized as

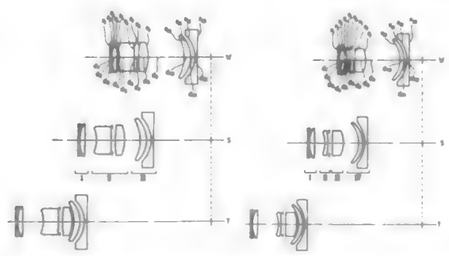
a stowed position and a second position characterized as an unstowed operational position.

5,361,166
NEGATIVE ABBE NUMBER RADIAL GRADIENT INDEX RELAY AND USE OF SAME
Leland G. Atkinson, Rochester; Douglas S. Kindred, Springwater; Duncan T. Moore, Fairport, and J. Robert Zinter, Rochester, all of N.Y., assignors to Gradient Lens Corporation, Rochester, N.Y.
Filed Jan. 28, 1993, Ser. No. 17,034
Int. Cl.[5] G01B *3/02*
U.S. Cl. 359—654 23 Claims



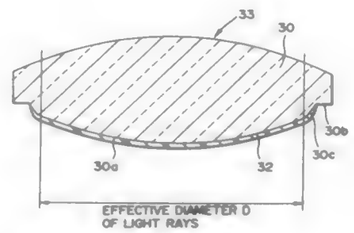
1. An optical relay for propagating an image along an optical axis comprising:
at least one radial GRIN component having a negative Abbe number, for reducing undercorrected axial chromatic aberration.

5,361,167
VARI-FOCAL LENS SYSTEM
Norihiko Aoki, Tokyo, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 726,999, Jul. 8, 1991, Pat. No. 5,196,962. This application Nov. 6, 1992, Ser. No. 972,538
Claims priority, application Japan, Jul. 9, 1990, 2-179583
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 24 Claims



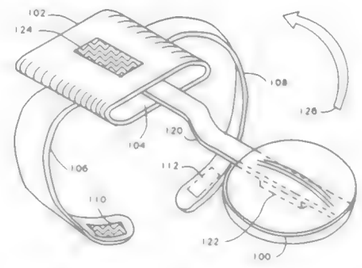
1. A vari-focal lens system comprising, in order from an object side:
a first lens unit having a positive refractive power;
a second lens unit having a positive refractive power disposed so as to be separated from said first lens unit by only an airspace; and
a third lens unit having negative refractive power and disposed at an image side of said second lens unit;
wherein said first lens unit consists of two lens elements disposed with an airspace reserved therebetween; and
wherein focal length of said vari-focal lens system is varied by moving each of said lens units along an optical axis of said vari-focal lens system.

5,361,168
LENS ELEMENT AND LENS BARREL
Takashi Arai, Tokyo; Yukihisa Baba, Yokohama, and Sachio Umetsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 27, 1992, Ser. No. 874,097
Claims priority, application Japan, Apr. 30, 1991, 3-099181; Apr. 30, 1991, 3-099182; Jun. 24, 1991, 3-151268; Jun. 24, 1991, 3-151269; Jun. 24, 1991, 3-151270; Apr. 20, 1992, 4-099331
Int. Cl.[5] G02B *9/00*
U.S. Cl. 359—796 1 Claim



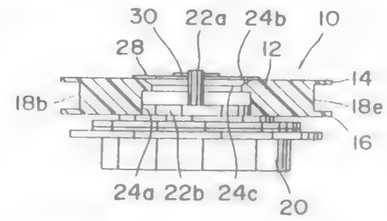
1. A lens element in which a resin material is integally molded on a glass member, wherein a flow relief portion for impeding adhesion of the resin material to an outer circumferential portion of said glass member is provided between the outer circumferential portion and an optical surface of said glass member, and wherein said flow relief portion is shaped so as to impede resin adhesion in a direction in which said glass member is cut away with respect to an extension of the surface of said glass member.

5,361,169
DIVER'S MIRROR
Jerry L. Deal, 1228 Paloma Ave., Burlingame, Calif. 94010
Continuation-in-part of Ser. No. 54,726, Apr. 29, 1993. This application Sep. 7, 1993, Ser. No. 116,655
Int. Cl.[5] G02B *5/08*
U.S. Cl. 359—838 7 Claims



1. A diver's mirror comprising:
a reflective surface;
a flexible strap having first and second ends, said first end being connected to said reflective surface;
a pouch for housing said reflective surface when not in use, said pouch being connected to said second end of said strap; and
means for attaching said pouch to said diver's wrist;
whereby said diver can easily remove said reflective surface from said pouch and hold said reflective surface in the palm of a hand and view his upper torso, head, or surroundings by adjusting the inclination of said reflective surface and viewing the reflected image of said reflective surface.

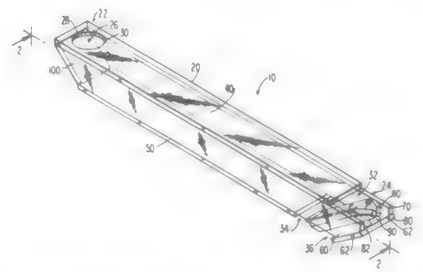
5,361,170
POLYGONAL MIRROR
Hatsuichi Takeyasu, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1993, Ser. No. 74,459
Claims priority, application Japan, Jun. 11, 1992, 4-046669; Dec. 18, 1992, 4-091989; Dec. 18, 1992, 4-091990
Int. Cl.[5] B29L *11/00;* G02B *26/10*
U.S. Cl. 359—850 13 Claims



1. A combination of a polygonal mirror and a drive motor for driving the polygonal mirror,
said polygonal mirror comprising:
a mirror body; and
at least one reflection face formed on a side surface of said mirror body, and
said drive motor comprising:
a motor body; and
a drive shaft extending from said motor body and being rotated by said motor body,
wherein
said mirror body includes a through hole which is formed to pass through said mirror body in an axial direction of said mirror body, said drive shaft being inserted through said through hole,
said through hole comprising:
a mounting hole portion having an inner periphery in driving contact with an outer periphery of said drive shaft and located concentrically with a central axis of said mirror body, and
an inserting hole portion into which said drive shaft is loosely inserted, and
said drive shaft includes:
a shaft body; and
a mounting portion provided around an outer periphery of said shaft body for rotation together with said shaft body,
the inner periphery of said mounting hole portion being in driving contact with an outer periphery of said mounting portion of said drive shaft and the inner periphery of said inserting hole portion being spaced from an outer periphery of said shaft body, and
a pressing plate coupled to an end portion of said shaft body extending from said polygonal mirror for pressing an end surface of said mirror body.

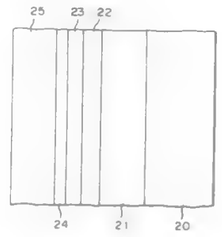
5,361,171
LATERAL TRANSFER RETROREFLECTOR ASSEMBLY
Zvi Bleier, Comack, N.Y., assignor to PLX Inc., Deer Park, N.Y.
Filed Mar. 4, 1993, Ser. No. 26,472
Int. Cl.[5] G02B *5/08, 5/12, 7/18*
U.S. Cl. 359—855 27 Claims

1. A lateral transfer retroreflector assembly comprising:
a tubular member having a top side, a bottom side and first and second length defining sides, each of said top and bottom sides having first edge surfaces at a first end of said tubular member and second edge surfaces proximate a second end of said tubular member opposite said first end;
a mirror member mounted to said tubular member at said first end; and
a roof mirror mounted to said tubular member at said second end;
wherein each of said first and second length defining sides of said tubular member extends from said first end of said



tubular member beyond said second edge surfaces of said top and bottom sides to form a channel through said second end of said tubular member to receive said roof mirror.

5,361,172
DURABLE METALLIZED POLYMER MIRROR
Paul O. Schissel, Golden; Cheryl E. Kennedy, Lafayette; Gary J. Jorgensen, Pine; Yvonne D. Shinton, Northglenn, and Rita M. Goggin, Englewood, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.
Filed Jan. 21, 1993, Ser. No. 7,286
Int. Cl.[5] G02B *1/00, 5/08*
U.S. Cl. 359—883 8 Claims



1. A metallized polymer mirror construction having improved durability against delamination and tunneling, consisting essentially of:
an outer layer of a polymeric material:
a metal oxide layer underlying said outer layer of polymeric material;
a silver reflective layer of between about 700 to about 1000 angstroms thickness underneath said metal oxide layer;
an adhesive layer attaching said silver reflective layer to a substrate; and
a copper layer disposed between said adhesive layer and said silver reflective layer.

5,361,173

DEVICES FOR CONTROLLING RECORDING AND/OR REPRODUCING APPARATUS UTILIZING RECORDED MANAGEMENT DATA AND INTERACTIVE INFORMATION INPUT APPARATUS FOR AN ELECTRONIC DEVICE

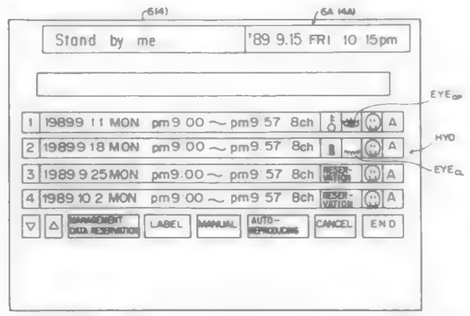
Toshiyuki Ishii; Kousuki Misono, both of Kanagawa; Miwako Tsuneki; Kiyoshi Ota, both of Tokyo, and Tetsuo Nishigaki, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 18, 1991, Ser. No. 642,995

Claims priority, application Japan, Jan. 21, 1990, 2-10866; Mar. 31, 1990, 2-85700

Int. Cl.[5] G11B *5/02, 15/04, 19/04, 31/00*

U.S. Cl. 360—27 **11 Claims**



1. A device for controlling a program reproducing apparatus comprising:

a recording medium;

a recording track formed in said recording medium and including a management database recording region and a program recording region in which programs are recorded,

management data recorded in said management database recording region and being in a form which is reproducible by the program reproducing apparatus for controlling the management by the program reproducing apparatus of said programs recorded on said recording medium,

said management data recorded in said recording region including, for each of said programs, reproduction data representing information indicating whether the respective one of said programs has been reproduced previously from said recording medium; and

means for displaying to a user the information represented by said reproduction data.

5,361,174

MAGNETIC REPRODUCING APPARATUS

Takahito Seki, Kanagawa; Hajime Inoue, Chiba, and Chihoko Takizawa, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,229

Claims priority, application Japan, Aug. 3, 1991, 3-217811

Int. Cl.[5] G11B *5/09, 5/035*

U.S. Cl. 360—46 **8 Claims**

1. A magnetic reproducing apparatus having a pluralify of rotary magnetic heads for reproducing magnetic data recorded on a magnetic recording medium, comprising:

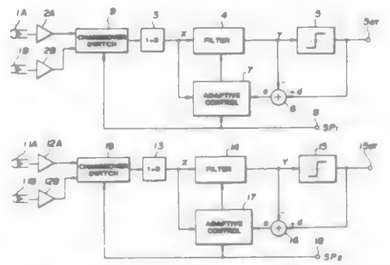
equalizing filter means having adjustable equalizing characteristics for compensating regenerative signals reproduced by said rotary magnetic heads,

combining means for combining the regenerative signals reproduced by said plurality of rotary magnetic heads to supply the regenerative signals to said equalizing filter means in multiplexed form,

a decoder for decoding the compensated regenerative signals produced by the equalizing filter means to provide a decoded signal,

error detecting means coupled to said decoder for producing an error indication between the compensated regenerative signal and the decoded signal, and

an adaptive control unit for adaptively adjusting the equalizing characteristics of the filter means as a function of the



regenerative signal supplied to the filter means and said error indication.

8. A magnetic reproducing apparatus as set forth in claim 1, further comprising detection characteristic means coupled to said combining means to receive said multiplexed regenerative signals for carrying out a partial response detection on the regenerative signals and to produce an output which is supplied to said equalizing filter means.

5,361,175

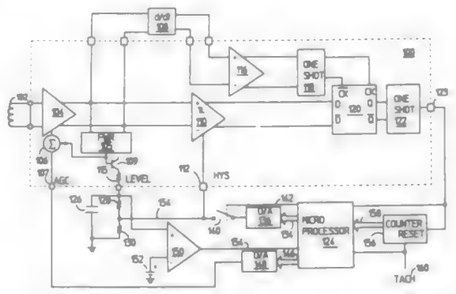
CALIBRATION OF CIRCUITRY FOR MEDIA VERIFICATION IN A MAGNETIC DATA RECORDING DEVICE

Kenneth G. Richardson, Fort Collins, and Mark A. Young, Loveland, both of Colo., assignors to Hwelett-Packard Company, Palo Alto, Calif.

Filed Mar. 31, 1993, Ser. No. 40,760

Int. Cl.[5] G11B *5/09, 5/035*

U.S. Cl. 360—46 **12 Claims**



1. In a magnetic dam storage device comprising; an amplifier having an amplifier signal input, an amplifier output, an amplifier gain which is adjustable and a gain control input, wherein the amplifier signal input is connected to a data signal; an analog comparator having a comparator signal input, a comparator output, a comparator threshold which is adjustable and a threshold control input, wherein the comparator signal input is connected to the amplifier output; a reference voltage; a method for calibrating the amplifier gain and the comparator threshold, the method comprising the following steps:

a. reading the data signal with the amplifier;

b. adjusting the amplifier gain control input until a peak voltage at the amplifier output equals the reference voltage, thereby calibrating the amplifier gain;

c. adjusting the threshold control input until the comparator output indicates that the comparator threshold equals the peak voltage at the amplifier output, thereby calibrating the comparator threshold to be equal to the reference voltage; and

d. reducing the threshold control input by a predetermined fraction, thereby setting the comparator threshold to the predetermined fraction of the reference voltage.

5,361,176

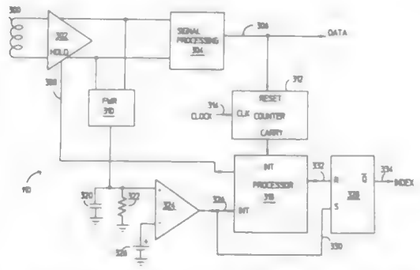
INDEX PULSE GENERATION IN A DATA STORAGE TAPE DRIVE

Jeffrey D. Schwartz, Loveland, and Mark E. Nash, Lyons, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 1, 1993, Ser. No. 41,080

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—46 **14 Claims**



1. In a tape drive having a tape with data areas separated by erased areas, wherein each data area has a beginning, wherein there is an analog signal from the tape which stops in each erased area and restarts at the beginning of each data area, and wherein the analog signal is amplified by an amplifier to provide an amplified analog signal and is then converted by a signal processor to a digitally encoded data signal, an apparatus for generating a pulse at the beginning of each data area, the apparatus comprising:

timer means, which receives the digitally encoded data signal and which has a timer output, for determining when the digitally encoded data signal has stopped;

monitor means, which receives the amplified analog signal and which has a monitor output, for continuously determining when the amplified analog signal has restarted; and

pulse generating means, connected to the monitor output and to the timer output, for generating the pulse instantaneously whenever the monitor output indicates that the amplified analog signal has restarted after the timer output has indicated that the digitally encoded data signal has stopped.

5,361,177

DATA RECORDING APPARATUS HAVING SUB-CODE RECORDING FUNCTION

Susumu Kozuki, Tokyo; Katsuji Yoshimura, and Toshiyuki Masui, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,651, Oct. 21, 1991, which is a continuation of Ser. No. 657,873, Feb. 15, 1991, Pat. No. 5,194,997, which is a continuation of Ser. No. 253,065, Oct. 3, 1988, abandoned. This application Dec. 8, 1993, Ser. No. 163,599

Claims priority, application Japan, Oct. 6, 1987, 62-252824; Oct. 6, 1987, 62-252825; Oct. 6, 1987, 62-252826; Oct. 6, 1987, 62-252827

Int. Cl.[5] G06F *11/00*

U.S. Cl. 360—48 **9 Claims**

1. An information signal recording apparatus, comprising

(a) transport means for transporting a tape-shaped recording medium in the lengthwise direction thereof;

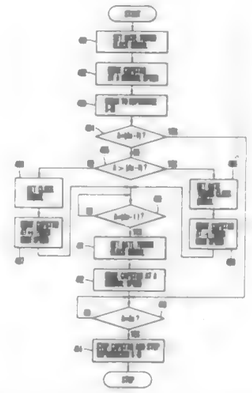
(b) main recording means for recording a main information signal in a first area extending in the lengthwise direction of the tape-shaped recording medium;

(c) sub-recording means for recording a sub-information signal in a second area extending int he lengthwise direction of the tape-shaped recording medium and in parallel to said first area;

(d) sub-reproducing means for reproducing the sub-information signal from the second area;

(e) mode changeover means for changing over said apparatus between a plurality of modes thereof, said plurality of modes including:

a first recording mode in which the main information signal is recorded by said first recording means, and said



transport means transports the tape-shaped recording medium at a first speed; and

a second recording mode, being able to be set before setting of said first recording mode, in which the sub-information signal is recorded by said second recording means, and said transport means transports the tape-shaped recording medium at a second speed which is faster than said first speed; and

(f) control means for controlling recording positions of the main information signal to be recorded in said first recording mode according to the sub-information signal which is recorded in said second recording mode and reproduced by said sub-reproducing means.

5,361,178

DIGITAL DATA RECORDING APPARATUS

Minoru Tanaka, Oume, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Aug. 30, 1993, Ser. No. 114,209

Claims priority, application Japan, Mar. 8, 1993, 5-047000

Int. Cl.[5] G11B *15/14, 5/09*

U.S. Cl. 360—64 **10 Claims**

1. An apparatus for recording digital audio signals in different areas of a magnetic tape and for reproducing the digital audio signals from the magnetic tape, said apparatus comprising:

a recording head for recording digital audio signals in a magnetic tape;

a recording amplifier for supplying recording signals to said recording head so that digital audio signals are recorded in the magnetic tape in accordance with the recording signals;

a rotary drum on which the magnetic tape is running in contact with the rotary drum within a prescribed range of rotational angle around a rotating center of the rotary drum;

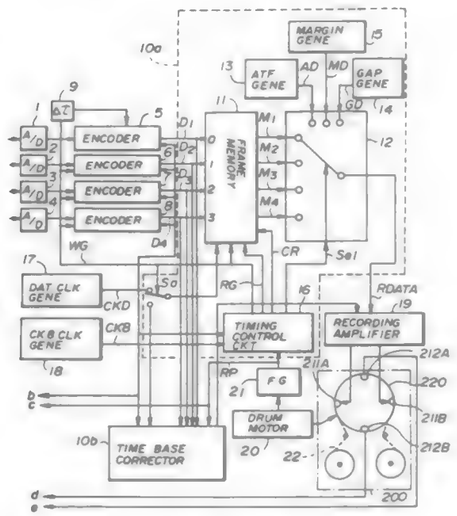
a drive motor for rotating said rotary drum around the

rotating center such that digital audio signals are recorded by said recording head in a plurality of tracks of the magnetic tape when said rotary drum is rotated, said tracks extending obliquely to a longitudinal direction of the magnetic tape;

a plurality of encoding means for subjecting digital signals to a prescribed signal processing operation for compressing the digital signals, and for outputting a plurality of digital data signals corresponding to the compressed digital signals, in response to a writing gate signal;

memory means for temporarily storing the plurality of digital data signals supplied from said plurality of encoding means, said memory means being responsive to a writing gate signal to store the plurality of digital data signals from said encoding means and being responsive to a reading gate signal to output the plurality of the stored digital data signals;

selection means responsive to a sequence of selecting signals for selectively outputting the plurality of digital data signals supplied from said memory means to said recording amplifier in accordance with the sequence of selecting



signals, so that the digital audio signals are recorded in one of the plurality of tracks of the magnetic tape by the recording head; and

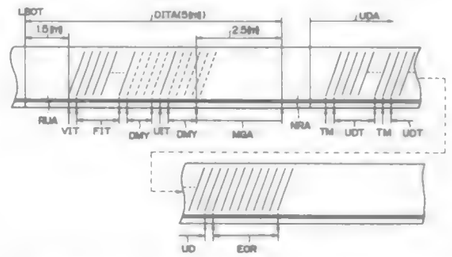
timing control means for supplying the writing gate signal to said encoding means and to said memory means within a first portion of a time period of one revolution of the rotary drum during which the recording head is not in contact with the magnetic tape, so that the plurality of digital data signals from said encoding means is stored in said memory means at a first frequency, and for supplying the reading gate signal to said memory means and simultaneously supplying the respective selecting signals to said selection means within a second portion of the time period of one revolution of the rotary drum during which the recording head is brought in contact with the magnetic tape, so that the plurality of the stored digital data signals from said memory means is output to said selection means at a second, higher frequency and simultaneously said digital data signals of said selection means are selectively supplied to said recording amplifier in accordance with the sequence of the selecting signals.

5,361,179

DATA RECORDING AND/OR REPRODUCING APPARATUS AND METHOD

Hideto Suzuki; Yukio Taniyama, and Yoshikazu Nakamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,805
Claims priority, application Japan, Mar. 17, 1991, 3-076790; Mar. 17, 1991, 3-076791; Apr. 30, 1991, 3-126927
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—72.2 **16 Claims**



1. Apparatus for recording file data on helical recording tracks of a record tape comprising:

input means for receiving at least one block of file data;

means for recording said file data in respective helical tracks;

management information means for providing management information identifying contents of said helical tracks in which said file data is recorded; and

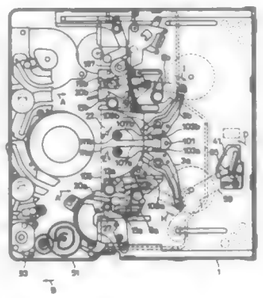
means for recording said management information in respective helical tracks which are separate from said helical tracks in which said file data is recorded, said tracks in which said management information and said file data are respectively recorded being in assigned management information and data regions, respectively, of said tape.

5,361,180

SIMPLIFIED CASSETTE LOADING MECHANISM FOR A MAGNETIC RECORDING AND REPRODUCING APPARATUS

Koji Yamabuchi; Hideshi Ohtsuka; Takashi Koyama, all of Nara; Yoshiyuki Yokomachi, Mie; Kazutaka Abe, Nara, and Akio Tanaka, Tochigi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1992, Ser. No. 846,197
Claims priority, application Japan, Mar. 14, 1991, 3-049320; Nov. 26, 1991, 3-310834
Int. Cl.[5] G11B *15/665, 15/61*
U.S. Cl. 360—85 **15 Claims**



1. A magnetic recording reproducing apparatus for recording information onto and reproducing information from a magnetic tape contained in a cassette removably inserted in the apparatus, comprising:

a first chassis having a rotary head drum;

a second chassis movable relative to said first chassis between a cassette removal position and a cassette recording/reproducing position;

a tape taking up arm rotatably attached to said second chassis; and

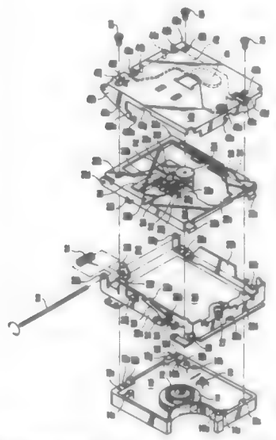
a tape taking up lever fixed to said first chassis for contacting said tape taking up arm during cassette loading movement of said second chassis and linked to a guide base having a guide member for taking up the magnetic tape; wherein said tape taking up arm and said tape taking up lever are arranged on and operatively connected to said second chassis and said first chassis, respectively, such that movement of said second chassis brings said tape taking up arm into contact with said tape taking up lever and rotates said tape taking up arm as said second chassis moves to take up and wind said magnetic tape around said rotary head drum.

5,361,181

DISK HOLDING DEVICE WITH ATTACHED PHASE DETECTING DEVICE AND ADJUSTING MECHANISM

Tetsuji Kurata, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 795,230, Nov. 15, 1991, abandoned, which is a continuation of Ser. No. 371,535, Jun. 23, 1989, abandoned. This application Mar. 29, 1993, Ser. No. 39,512
Claims priority, application Japan, Jun. 29, 1988, 63-161539
Int. Cl.[5] G11B *5/06*
U.S. Cl. 360—99.02 **17 Claims**



1. A loading apparatus for a recording apparatus comprising:

a) loading means having a holder member for holding a recording medium and moving said holder member for loading said recording medium to a predetermined loading position;

b) a head for performing recording on said recording medium;

c) phase detecting means mounted at a position on said holder member opposite to said recording medium, said phase detecting means detecting phase of said recording medium by detecting an indicating portion of said recording medium; and

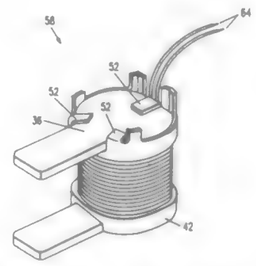
d) adjusting means for adjusting said position of said phase detecting means relative to said indicating portion of said recording medium, said adjusting means holding said phase detecting means on said holder member and capable of moving said phase detecting means on said holder member by moving said adjusting means.

5,361,182

MAGNETIC CARRIAGE LATCH FOR A DISC DRIVE

Joseph M. Sampietro, Tarzana; Hossein M. Moghadam, Camarillo; Anoush M. Fard, Agoura Hills, and Richard G. Krum, Thousand Oaks, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 12, 1992, Ser. No. 975,349
Int. Cl.[5] G11B *5/54*; H01H *9/00*
U.S. Cl. 360—105 **6 Claims**



5. In a disc drive having a base member and an actuator, including a moving portion of said actuator for moving an array of heads in cooperative arrangement with at least one disc, an improvement comprising:

a latching system for latching the moving portion of the actuator comprising:

a magnetically permeable shorting plate carried on the moving portion of the actuator; and

a magnetic latch assembly, the magnetic latch assembly comprising;

a magnet;

a pair of upper and lower pole pieces magnetically coupled with said magnet;

a bucking coil mounted about said magnet; and

a housing mounting said magnet, said pole pieces and said bucking coil wherein said housing comprises a generally circular magnet retainer having a plurality of inwardly extending fingers defining an inner diameter smaller than said magnet; said magnet being mounted in said retainer and held by interference fit with said fingers; and

wherein said bucking coil comprises a coil of wire defining an inner diameter slightly larger than said magnet; said coil supported at one end by said retainer; said housing includes a plurality of upper and lower vertically extending fingers; and said pole pieces comprise contact surfaces which extend beyond said housing between adjacent ones of said fingers thereby locking the pole pieces against radial movement in a plane transverse to the fingers.

5,361,183

GROUND FAULT PROTECTION FOR ELECTROTHERMAL DE-ICING APPLICATIONS

Earl G. Wiese, Oakville, Canada, assignor to AlliedSignal Inc., Morris Township, N.J.

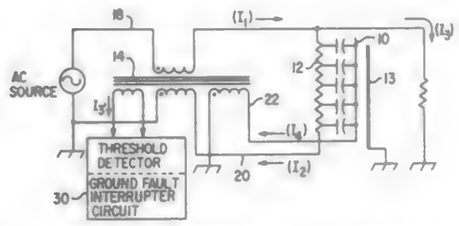
Filed Jun. 30, 1993, Ser. No. 85,574
Int. Cl.[5] H02H *9/02*
U.S. Cl. 361—42 **5 Claims**

1. An apparatus for providing ground fault interruption in an electrical circuit comprising an insulated distributed resistive load in an overlapping relationship with a grounded conductive surface, where said resistive load forms a first plate of a parallel capacitor and said conductive surface forms a second plate of said capacitor and insulation of the insulated distributed resistive load is the dielectric of said capacitor, said apparatus comprising:

a. an electrical power source means for providing a load current to said resistive load;

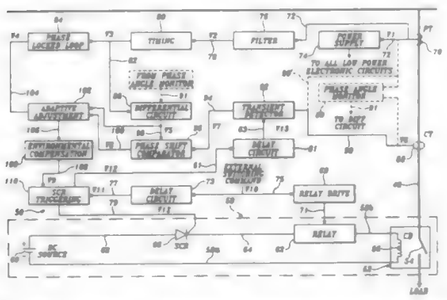
b. a first sensing means for sensing said load current;

c. a second sensing means for sensing return current from said resistive load back to said electrical power source means;
d. a third sensing means for sensing capacitive leakage current between said resistive load and said conductive surface;
e. a conducting means for directing the flow of said capacitive leakage current to said third sensing means;
f. a first comparing means for comparing the value of said load current with the summation of the values of said return current and said leakage current;



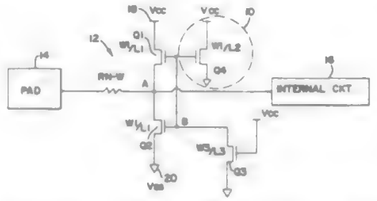
g. a second comparing means for comparing the results of the first comparing means with a threshold current limit value; and
h. control means for interrupting said load current if said results of said second comparing means exceeds said threshold current limit value;
whereby said load current is interrupted when a shock current exceeds said threshold current limit due to a ground fault condition.

5,361,184
ADAPTIVE SEQUENTIAL CONTROLLER
Mohamed A. El-Sharkawi, Renton; Jian Xing, Seattle, both of Wash.; Nicholas G. Butler, Newberg, Oreg., and Alonso Rodriguez, Pasadena, Calif., assignors to Board of Regents of the University of Washington, Seattle, Wash.
Filed Oct. 20, 1992, Ser. No. 963,692
Int. Cl.[5] H02H *3/00*
U.S. Cl. 361—93 **40 Claims**



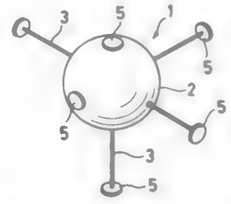
27. A method for controlling a switching device disposed on a power line to suppress arcing and minimize transients on the power line that can otherwise occur when the switching device switches electrical current flow through the power line, comprising the steps of:
(a) producing a timing signal synchronized to zero crossings of at least one of a periodic electrical current flowing in the power line and a periodic voltage on the power line;
(b) detecting any transients on the power line that occur when the switching device opens and closes and producing a transient signal indicative of a time when said transients occur;
(c) producing a phase angle signal indicating a phase angle between the current flowing in the power line and its voltage;
(d) producing an error signal indicating a time interval between the transient signal and the timing signal;
(e) producing an adjusted delay signal as a function of both a previous delay used in operating the switching device and the error signal; and
(f) initiating operation of the switching device in response to an externally produced switching command, at a time adaptively determined as a function of the adjusted delay signal and the phase angle signal, said time being determined so as to ensure that the switching device enables the flow of electrical current through the power line when the voltage on the power line is at a zero crossing and interrupts the flow of electrical current through the power line when the electrical current is at a zero crossing in order to substantially eliminate transients caused by operation of the switching device, any changes in a response time of the switching device being compensated by varying said time at which operation of the switching device is initiated after receipt of the externally produced switching command.

5,361,185
DISTRIBUTED VCC/VSS ESD CLAMP STRUCTURE
James Yu, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Feb. 19, 1993, Ser. No. 19,937
Int. Cl.[5] H02H *3/20, 9/00*
U.S. Cl. 361—111 **3 Claims**



1. A distributed VCC/VSS clamp structure for preventing inadvertent damage to internal circuits of semiconductor integrated circuit packages caused by an electrostatic discharge event occurring between any two external pins thereof, said external pins being formed of either an input pin, an output pin, a VCC power supply pin, or a VSS power supply pin, comprising:
a VCC power supply bus (18);
a VSS power supply bus (20);
a plurality of ESD protection circuitry interconnected between said VCC power supply bus and said VSS power supply bus, each one of said plurality of ESD protection circuitry being operatively connected to a corresponding one of external pins of the semiconductor integrated circuit so as to provide primary discharging paths when an electrostatic discharge is applied to one of the external pins defining a zapped pin and another remaining one of the external pins is referenced to ground;
a plurality of clamp transistors (Q4) each being connected in parallel to and disposed in close proximity to a corresponding one of said plurality of ESD protection circuitry associated with each input and output pin of the semiconductor integrated circuit;
each of said plurality of clamp transistors being formed of an N-channel MOS transistor, said N-channel MOS transistor having its drain connected to the VCC power supply bus, its source connected to the VSS power supply bus, and its gate connected to a first internal node coupled to the corresponding one of said plurality of ESD protection circuitry;
each of said plurality of ESD protection circuitry including a first N-channel MOS transistor (Q1) having its drain connected to the VCC power supply bus, its source connected to a second internal node to which the internal circuit to be protected is connected, and its gate connected to the first internal node;
each of said plurality of ESD protection circuitry further including a second N-channel MOS transistor (Q2) having its drain connected to the second internal node, its source connected to the VSS power supply bus, and its gate connected to the first internal node; and
each of said plurality of clamp transistors being activated only when the corresponding one of said plurality of ESD protection circuitry is unable to supply the primary discharging path in order to produce a secondary discharging path from the zapped pin through its source/drain conduction path to the external pin referenced to ground, thereby protecting the internal circuits of the semiconductor integrated circuit.

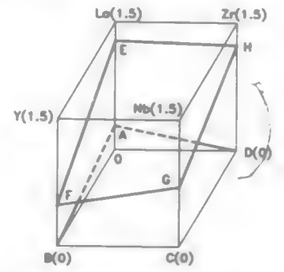
5,361,186
SELF RECONFIGURABLE CELLULAR ROBOTIC SYSTEM
Kazuo Tanie, Ushiku, and Hitoshi Maekawa, Tsukuba, both of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, Tokyo, Japan
Continuation-in-part of Ser. No. 763,426, Sep. 20, 1991, abandoned. This application Feb. 24, 1993, Ser. No. 21,869
Claims priority, application Japan, Sep. 20, 1990, 2-251384
Int. Cl.[5] H01H *47/00*
U.S. Cl. 361—191 **4 Claims**



1. A self reconfigurable cellular robotic system comprising a plurality of cells each comprising a cell body, six arms extensible and retractable relative to the cell body along three orthogonal axes, coupling members provided one at the distal end of each arm for coupling with the coupling members of arms of adjacent cells, an actuator for selectively driving each arm into a retracted state and an extended state, and a control section for controlling coupling and uncoupling of the coupling members, the coupling member of at least one arm of each cell being coupled with a coupling member of an adjacent cell.

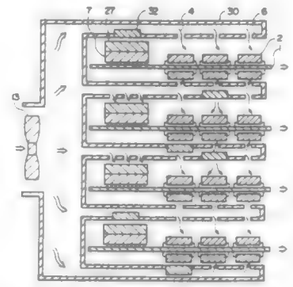
5,361,187
CERAMIC DIELECTRIC COMPOSITIONS AND CAPACITORS PRODUCED THEREFROM
Thallam T. Srinivasan, Victor, N.Y., assignor to Ferro Corporation, Cleveland, Ohio
Filed Mar. 11, 1993, Ser. No. 29,559
Int. Cl.[5] H01G *4/10, 4/12*
U.S. Cl. 361—321.1 **12 Claims**

1. A dielectric ceramic composition in powder form capable of producing high fired multilayer capacitors having insulating resistance capacitance (RC) above about 10,000 ohm/farads at 25° C. and above about 1,000 ohm/farads at 85° C., and meeting the Z5U and Y5V dissipation factor and temperature coefficient of capacitance (TCC) characteristics specifications of the EIA, consisting of a host material produced in accordance with the formula $(Ba_{1-x}\ Ca_x)\ (Ti_{1-y-z}Sn_y\ Zr_z)\ O_3$ where $x=0.10–0.14$, $y=0.03–0.12$, $z=0.04–0.10$, and doped with one or more of the oxides of Y, La, Zr, Nb and Mn in an amount



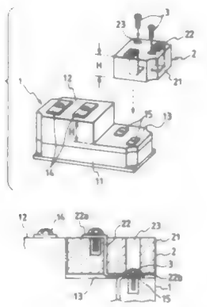
not exceeding approximately 2–3% by weight of the total weight of said host material.

5,361,188
COOLING APPARATUS OF ELECTRONIC EQUIPMENT
Yoshihiro Kondou, Ibaraki; Hitoshi Matsushima, Ryugasaki; Toshio Hatada, Tsuchiura; Hiroshi Inouye; Toshihiro Komatsu, both of Ibaraki; Takao Ohba, and Akira Yamagiwa, both of Hadano, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Continuation of Ser. No. 782,094, Oct. 24, 1991, abandoned. This application Sep. 2, 1993, Ser. No. 115,669
Claims priority, application Japan, Oct. 24, 1990, 2-284263
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—695 **3 Claims**



1. In combination, an electronic equipment and a jet stream cooling apparatus for the electronic equipment, said electronic equipment including a plurality of substrates, each of said substrates having a plurality of IC chips and LSI packages mounted thereto; said cooling apparatus including first fan means provided at one end of said substrates for supplying a fresh cooling fluid to said IC chips and LSI packages; a duct provided between said first fan means and said IC ships and LSI packages, said duct having comb-tooth shaped projections, said comb-tooth shaped projections forming flow paths along the substrates; and one or more second fan means provided on a part of said projections and opposite to said IC chips or LSI packages provided on said substrates for cooling said IC chips or said LSI packages, said first fan means and said second fan means cooperating to impinge said fresh cooling fluid as a jet stream on said IC chips or LSI packages for cooling.

5,361,189
EXTERNAL LEAD TERMINAL ADAPTOR AND SEMICONDUCTOR DEVICE
Shuji Miyashita, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan
Filed Nov. 2, 1992, Ser. No. 970,373
Claims priority, application Japan, Nov. 13, 1991, 3-296975
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—807 **2 Claims**

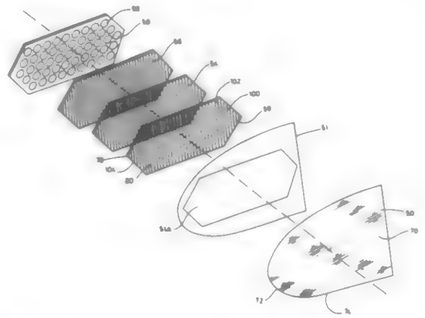


1. A combination of an external lead terminal adaptor and a semiconductor device, wherein said external lead terminal adapter comprises:
- a block body formed of resin and having upper and lower end faces; and
- at least one terminal conductor integrally formed embedded in said block body and extending through said block body, said terminal conductor having a connecting section at each end, said connecting sections being disposed on the respective end faces of said block body; and

wherein said semiconductor device comprises:
- a package and a top cover for said package, said cover having a stepped formation to provide an upper level surface portion and a lower level surface portion, at least one external lead terminal being disposed on each of said upper and lower surface portions;
- said external lead terminal adaptor being stacked on said lower level surface portion to compensate the level difference between said upper and lower level surface portions, the connecting section disposed on the lower end face of said block body being electrically connected with the at least one external lead terminal disposed on said lower level surface portion.

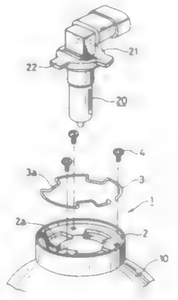
5,361,190
MIRROR ASSEMBLY
John K. Roberts, and Keith R. Spencer, both of Sheboygan, Wis., assignors to K. W. Muth Co. Inc., Sheboygan, Wis.
Continuation-in-part of Ser. No. 694,884, May 2, 1991, Pat. No. 5,207,492, which is a continuation-in-part of Ser. No. 482,254, Feb. 20, 1990, Pat. No. 5,014,167. This application Dec. 2, 1992, Ser. No. 985,133
The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.
Int. Cl.[5] F21V *3/04, 9/00*
U.S. Cl. 362—61 **20 Claims**

1. A mirror assembly comprising:
- (a) a dichroic mirror having a first, forwardly facing surface and a second, rearwardly facing surface, the dichroic mirror allowing a predetermined narrow spectral band of light to pass from the second surface through the first surface, and reflecting a broad spectral band of visible light which strikes the first surface and which originates from a location forward of the first surface;
- (b) a light source positioned rearwardly of the second surface and emitting light in the predetermined narrow spectral band of light passed by the dichroic mirror; and



- (c) an electrical circuit for adjusting the light output of the light source in response to the ambient light level.

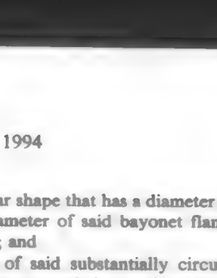
5,361,191
DEVICE FOR FITTING HEADLIGHT WITH A LAMP
Makio Matsuzaki, Tokyo; Koichi Kato, and Shigeru Furuya, both of Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1993, Ser. No. 75,108
Claims priority, application Japan, Jun. 12, 1992, 4-046819[U]; May 20, 1993, 5-031255[U]
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **20 Claims**



1. A device for fitting a vehicle headlight with a lamp, wherein said lamp includes a bayonet flange having a plurality of outer pawls that extend radially away from a central portion of said bayonet flange so as to enable said lamp to be firmly held at a turned predetermined position that is different from an initial insertion position of the lamp, the device comprising:
- a bayonet flange receiving portion for receiving therein said outer pawls of said bayonet flange of said lamp;
- a plurality of recesses formed in said flange receiving portion, a respective one of said plurality of recesses receiving therein a respective one of said outer pawls of said bayonet flange, each recess having a width dimension that is larger than a respective width dimension of said respective one of said outer pawls received therein, and said respective one of said plurality of recesses having a depth that is substantially equal to a thickness of said respective one of the outer pawls received therein;
- a resilient wire-shaped retainer spring means positioned over said plurality of recesses of said flange receiving portion for firmly holding said plurality of outer pawls in said plurality of recesses;

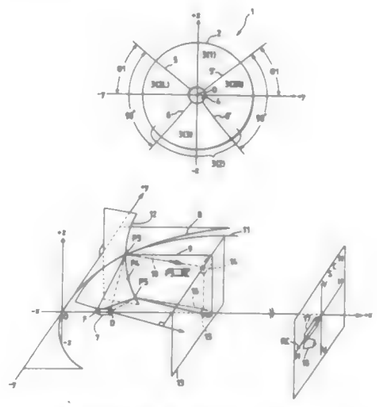
said retainer spring means being formed to have a substantially circular shape that has a diameter that is larger than an outer diameter of said bayonet flange including said outer pawls; and
- said diameter of said substantially circular shape of said retainer spring means being smaller than an outer diameter of said flange receiving portion;
- retainer means including at least one indented retaining portion formed in said retainer spring means, said at least one indented retaining portion being indented toward a central portion of said substantially circular shape of said retainer spring means;
- said at least one indented retaining portion being positioned over at least one of said plurality of recesses for firmly holding in a clamped position, a respective one of said outer pawls received in said respective one of said recesses, said respective one of said outer pawls being held between a bottom surface of said respective one of said plurality of recesses and said at least one indented retaining portion, when said lamp is at said turned predetermined position;
- wherein said plurality of outer pawls are initially received in said plurality of recesses of said flange receiving portion; and
- holding means for holding said retainer spring means on said flange receiving portion.

5,361,192
DECORATIVE LAMP SHADE AND CHRISTMAS LAMP ASSEMBLY
Chi-Shih Lai, 8F-6, No. 100, Sec. 2, Hoping E. Rd., Taipei, Taiwan, Prov. of China
Filed Dec. 15, 1993, Ser. No. 166,633
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—123 **3 Claims**



1. A decorative lamp shade and Christmas lamp assembly, comprising:
- a Christmas lamp having electric wires connected to an electric circuit of a Christmas light set;
- a mounting socket made of cylindrical shape having an inside annular groove around a top opening thereof and an outward bottom flange around a bottom opening thereof;
- a lamp shade made from glass of spherical shape and placed around said Christmas lamp, said lamp shade having an open neck at one end fitted into said bottom opening of said mounting socket; and
- a lamp holder received inside said mounting socket to hold said lamp shade and said mounting socket together, said lamp holder comprising a top ring received within said mounting socket and engaged into said inside annular groove and defining a circular center hole, two hooks raised from said top ring at the top at two opposite locations and respectively hung on the electric wires of said Christmas lamp, a plurality of vertical bottom plates extended downward from said top ring and equally spaced around said circular center hole and respectively stopped against the inside surface of said lamp shade to hold said mounting socket and said lamp shade together.

5,361,193
VEHICULAR HEADLIGHT REFLECTOR SUITABLE FOR USE WITH A DISCHARGE LAMP
Naohi Nino, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1993, Ser. No. 115,120
Claims priority, application Japan, Oct. 6, 1992, 4-290907
Int. Cl.[5] F21V *7/14;* **B60Q** *1/04*
U.S. Cl. 362—346 **4 Claims**



1. A vehicular headlight for forming a low beam, comprising:
- a reflecting surface having first, second and third reflecting sectors arranged around an optical axis of the reflecting surface, and
- a discharge lamp producing light in the form of an arc disposed generally along the optical axis of the reflecting surface, wherein:

the first reflecting sector is part of a paraboloid revolution having a focus at a first point, and the first reflecting sector is located above a horizontal plane including the optical axis,

the second reflecting sector is defined with reference to:
- a reference parabola which has a focus at a second point at the same position as the first point and which is included in a plane inclined from the horizontal plane by a predetermined angle,
- a reference point located on the optical axis on a front side of the second point,
- a parabola which is an orthogonal projection of the reference parabola onto the horizontal plane, and
- a set of paraboloids of revolution, each of the paraboloids of revolution of the set having an axis which extends parallel to ray vector direction taken by a reflected ray after being emitted from the reference point and then reflected at a respective reflecting point on the parabola which is an orthogonal projection of the reference parabola, each of the paraboloids of revolution of the set having a focus at the reference point, and each of the paraboloids of revolution of the set passing through the respective reflecting point,

and the second reflecting sector is defined by a collection of intersecting lines, each of the intersecting lines being obtained by cutting a respective one of the paraboloids of revolution of the set by a respective vertical plane including the ray vector direction parallel to the axis of the respective one of the paraboloids of revolution of the set, and the second reflecting sector comprises two subsectors located on right and left sides of a vertical plane including the optical axis,

the third reflecting sector is a part of a paraboloid of revolution having a focus at the reference point of the second reflecting sector, the third reflecting sector is located below the horizontal plane, and the third reflecting sector

has a focal length greater than that of the first reflecting sector, and

an orthogonal projection of the arc of the discharge lamp onto the optical axis is shorter than a distance between the second focus and the reference point.

5,361,194

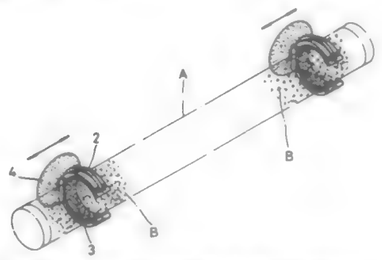
Patent Not Issued For This Number

5,361,195

HANGER FOR TUBULAR LAMP IN AN AQUARIUM

Shan-Hu Chen, 483, Hsin Shin Road, Tainan, Taiwan, Prov. of China

Filed May 2, 1994, Ser. No. 237,251
Int. Cl.[5] F21V *21/08*
U.S. Cl. 362—397 **1 Claim**



1. A hanger for a tubular lamp in an aquarium comprising:

a hanger body shaped as almost circular with an opening, having an intermediate vertical square flat portion bored with a center round engaging hole, a curved long elastic hook extending to a right side and a left side of the square flat portion to form the opening;

a brush made of cloth and shaped as said hanger body and having an opening to correspond to said opening of said hanger body, fitted and adhered around an inner surface of said hanger body;

a sucker shaped round anti having one side sloping inward from an outer edge to the center so as to be attached on a wall by sucking, and a round post provided to extend sidewise from the center of the other side and having an annular groove to engage with said center hole of said hanger body; and

a pair of said hangers being used to fit around both ends of a tubular lamp, said suckers of said hangers being attached on an inner wall of an aquarium by sucking or being taken off the wall for cleaning and washing moss or dirt off the tubular lamp by means of said brush.

5,361,196

POWER CONVERTER FOR CONVERTING DC VOLTAGE INTO AC PHASE VOLTAGE HAVING THREE LEVELS OF POSITIVE, ZERO AND NEGATIVE VOLTAGE

Tokunosuke Tanamachi, Katsuta; Kiyoshi Nakata, Iwase, and Kiyoshi Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

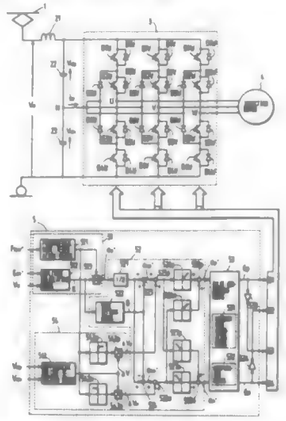
Filed Apr. 20, 1993, Ser. No. 49,858
Claims priority, application Japan, Apr. 24, 1992, 4-106413
Int. Cl.[5] H02M *7/515*
U.S. Cl. 363—41 **18 Claims**

1. A power converter comprising:

capacitors connected in series so as to divide a DC voltage;

a DC/AC converter for converting said DC voltage charged on said capacitors into an AC output phase voltage having positive, zero and negative levels, which said output phase voltage is supplied to a load; and

a modulation means for supplying said DC/AC converter with a signal so as to generate a sequence of alternating output pulses with interleaving zero-level pulses between a half cycle of a fundamental wave of said output phase voltage of said DC/AC converter and adjusting a width of only either one of the positive and negative output pulses in said half cycle of the fundamental wave of said



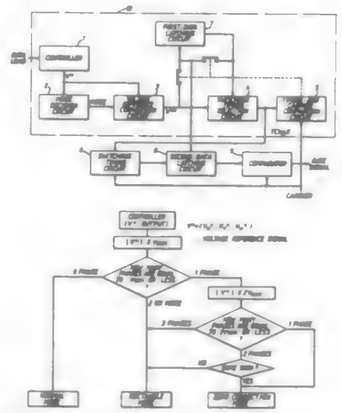
output phase voltage depending upon a DC component of a difference between voltages on said capacitors.

5,361,197

METHOD AND APPARATUS FOR CONTROLLING AN INVERTER GENERATING A PLURALITY OF PHASE VOLTAGES

Satoshi Miyazaki, Kanagawa; Lazhar Ben-Brahim, and Ryoichi Kurosawa, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 21, 1993, Ser. No. 4,899
Claims priority, application Japan, Jan. 24, 1992, 4-011110; Jun. 2, 1992, 4-141233; Sep. 14, 1992, 4-244428
Int. Cl.[5] H02M *3/24*
U.S. Cl. 363—98 **11 Claims**



1. A method of controlling an inverter generating a plurality of phase voltages and a corresponding plurality of line voltages defined as the differences between said phase voltages, said method comprising the steps of:

generating voltage reference signals having waveforms with three phases;

determining one of (1) a normal mode, (2) a rectangle mode and (3) a zero correction mode of operation of said inverter in response to values and polarities of said voltage reference signals; wherein:

the normal mode is determined when the amplitude of the waveform of all three phases of the voltage reference signals are over a preset value;

the rectangular mode is determined when at least one of the following conditions exist: (1) the amplitudes of the waveforms of at least two phases of the voltage reference signals are less than or equal to the preset value, and (2) the amplitudes of the waveforms of at least two phases of the voltage reference signals are less than or equal to twice the preset value and the signs of said at least two phases of the voltage reference signals are of different polarities with respect to each other; and

the zero correction mode is determined when the amplitude of the waveform of one phase or the voltage reference signals is less than or equal to the preset value, and the amplitudes of the waveforms of the other two phases of the voltage reference signals are less than or equal to twice the present value and the other two phases have the same polarity;

using the voltage reference signals during the normal mode as a reference value for controlling said inverter; and

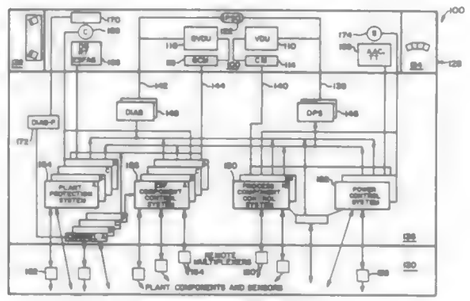
in at least one of said determined rectangle and zero correction modes, converting the voltage reference signals to converted voltage reference signals in accordance with a preset algorithm such that each phase voltage based on said converted voltage reference signals has a controlled pulse width greater than or equal to a predetermined minimum width and such that the resulting line voltages do not change when compared to said line voltages generated using said voltage reference signals.

5,361,198

COMPACT WORK STATION CONTROL ROOM

Daryl L. Harmon, Enfield; David S. Jamison, and Kenneth Scarola, both of Windsor, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 3, 1992, Ser. No. 863,706
Int. Cl.[5] G05B *19/42; G21C 7/36*
U.S. Cl. 364—188 **19 Claims**



1. A compact workstation control room for monitoring, alarming, and controlling the operation of safety qualified and non-qualified components in a nuclear power plant, comprising:

a plurality of physically adjacent operator work stations each having at least;

two video display units (VDU) driven by a first digital computer network and having a touch access color-graphic screen through which a structured, paginated first monitoring display heirarchy of the qualified and non-qualified components can be accessed by the operator;

a safety qualified video display unit (QVDU) driven by a second digital computer network and having a touch access flat panel display screen through which a structured, paginated second monitoring display heirarchy of qualified components can be accessed by the operator;

two control modules, (CM) located adjacent a respective VDU and driven by a third digital computer network, and having a touch access flat panel display screen through which a structured, paginated first control heirarchy can be accessed by the operator for controlling the non-qualified components of the plant;

a qualified control module (QCM), driven by a fourth digital computer network, and having a touch access flat panel display screen through which a structured, paginated second control heirarchy can be accessed by the operator for controlling the qualified components of the plant;

wherein the control module (CM) and qualified control module (QCM) screens permit the operator to control particular components in the plant upon touching control images on said screens;

means for linking the VDU to the CM such that the VDU displays control options to the operator and, in response to the option selected by the operator at the VDU, the VDU sends a control display page request signal to the CM, whereupon the CM displays a particular one of a plurality of available touch sensitive non-qualified component control images to the operator;

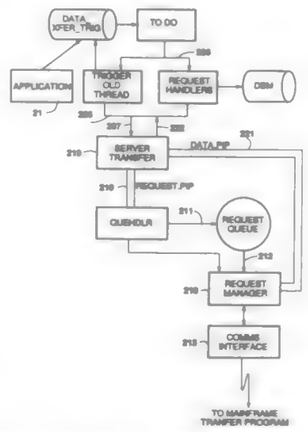
means for linking the QVDU to the QCM such that the QVDU displays control options to the operator and, in response to the option selected by the operator at the QVDU, the QVDU sends a control display page request signal to the QCM, whereupon the QCM displays a particular one of a plurality of available touch sensitive qualified component control images to the operator.

5,361,199

AUTOMATED PROCUREMENT SYSTEM WITH MULTI-SYSTEM DATA ACCESS

Kenneth M. Shoquist, Plano; Gary C. Young, Dallas; Amy L. Mathis, Plano, and Bob W. Withers, Allen, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1990, Ser. No. 560,942
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—401 **8 Claims**



1. A method performed by a computer system implementing an automated procurement system including a mainframe computer, a global database, a local database and a server computer, comprising the computer performed steps of:

storing global data in said global database of said mainframe computer, said mainframe computer being programmed with mainframe transfer software;

storing local data in said local database of said server computer, said server computer being programmed with

server transfer software so that said server computer is in communication with said mainframe computer;

controlling by said server computer a workstation for interactive input and output with a buyer, said workstation being programmed with a buyer interface, and said workstation being in communication with said server computer;

accessing said buyer interface to permit said buyer to process procurement documents;

determining by said server computer whether process data corresponding to said process of said procurement documents is located in said global data in said global database or in said local data in said local database;

controlling by said computer system a manager system to approve said procurement documents after said procurement documents are processed; and

providing, by said mainframe transfer software and said server transfer software, said process data to said buyer so that a location of said process data is determined without interaction of said buyer; and

wherein the method further comprises the step of supplying said global data from said global database for use by said buyer for decision-making; and

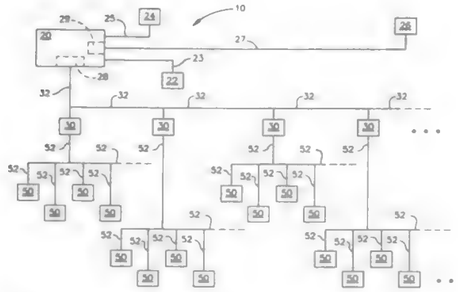
wherein said global data includes supplier rankings including criteria data to rank each supplier with respect to other suppliers, and the method further comprises the steps of determining by the computer system said supplier rankings, displaying said supplier rankings on said workstation, and receiving input from said buyer responsive to said supplier rankings.

5,361,200

REAL TIME DATA COLLECTION SYSTEM

Kenneth N. Weybright; Thomas M. Forde, Jr., both of Cincinnati, and Lawrence H. Mitchell, Athens, all of Ohio, assignors to Parker Marketing Research, Inc., Milford, Ohio

Filed Sep. 2, 1992, Ser. No. 939,450
Int. Cl.[5] G06F *3/00, 15/00;* **G06K** *7/10*
U.S. Cl. 364—401 **12 Claims**



1. A data collection system, comprising:

(a) a central computing apparatus, said central computing apparatus including a first processing circuit, and including a first communications circuit for communicating data to and from said central computing apparatus;

(b) at least one intelligent junction box, each of said at least one intelligent junction box including:

(i) first physical communications wiring between said at least one intelligent junction box and said central computing apparatus, and a second communications circuit which communicates with the first communications circuit of said central computing apparatus over said first physical communications wiring;

(ii) a second processing circuit that selects an identifying address which is distinct as compared to the identifying address of another intelligent junction box within said data collection system;

(c) a plurality of smart keypads, each of said plurality of smart keypads including:

(i) second physical communications wiring between each of said smart keypads and said at least one intelligent junction box, and a third communications circuit which communicates with the second communications circuit of one of said at least one intelligent junction box over said second physical communications wiring;

(ii) an alpha-numeric display;

(iii) a plurality of switches having numeric values and an additional switch used to enter data;

(iv) a third processing circuit that selects an identifying address which is distinct as compared to the identifying address of any other smart keypad within said data collection system;

(d) said first, second, and third processing circuits configured to control, while setting up the data collection system, said plurality of smart keypads and at least one intelligent junction box by individually programming the identifying address of each smart keypad in a sequence determined by a systems operator, said programming being accomplished by interaction between said central computing apparatus and each smart keypad, and any of the plurality of smart keypads in the data collection system being programmable to contain any one of said identifying addresses available to smart keypads, without regard to the physical location of any individual smart keypad or to the particular second physical communications wiring attached to any individual smart keypad;

(e) said first, second, and third processing circuits configured to control, while conducting a data collection session, said plurality of smart keypads and at least one intelligent junction box, comprising:

(i) said alpha-numeric display configured to display, in real time, the same question to human respondents located at said plurality of smart keypads and for entering an appropriate answer into said plurality of smart keypads in real time, by use of said plurality of switches;

(ii) said third communications circuit configured to transmit, in real time, information corresponding to said appropriate answer entered at each of said plurality of smart keypads to their associated intelligent junction boxes; and

(iii) said second communications circuit configured to transmit, in real time, said information to said central computing apparatus.

5,361,201

REAL ESTATE APPRAISAL USING PREDICTIVE MODELING

Allen Jost; Jennifer Nelson; Krishna Gopinathan, all of San Diego, Calif., and Craig Smith, Seattle, Wash., assignors to HNC, Inc., San Diego, Calif.

Filed Oct. 19, 1992, Ser. No. 963,908
Int. Cl.[5] G06F *15/18, 15/40*
U.S. Cl. 364—401 **20 Claims**

1. A computer-implemented process for appraising a real estate property, comprising the steps of:

collecting training data;

developing a predictive model from the training data;

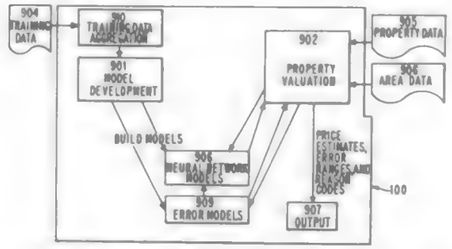
storing the predictive model;

obtaining individual property data for the real estate property;

generating a signal indicative of an appraised value for the real estate property responsive to application of the obtained individual property data to the stored predictive model;

developing an error model from the training data;

storing the error model; and



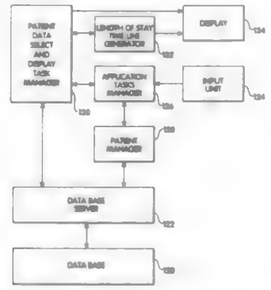
generating a signal indicative of an error range for the appraised value responsive to application of the individual property data to the stored error model.

5,361,202

COMPUTER DISPLAY SYSTEM AND METHOD FOR FACILITATING ACCESS TO PATIENT DATA RECORDS IN A MEDICAL INFORMATION SYSTEM

John C. Doue, Manchester, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 18, 1993, Ser. No. 79,667
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.01 **22 Claims**



1. A computer-implemented method for facilitating access to patient information in a medical information system for a health care facility, the medical information system including a computer with an input unit, a video display and a database containing a data file of a plurality of data records for at least one patient staying in the health care facility, the method comprising the steps of:

receiving a first input from the input unit which identifies a patient for which a data file is to be accessed;

determining, on the basis of data records in the data file for the identified patient, a duration of the stay in the health care facility of the identified patient;

displaying on the video display a line having a length and being representative of the determined duration of the stay of the identified patient in the health care facility;

receiving a second input from the input unit, which indicates a position on the displayed line; and

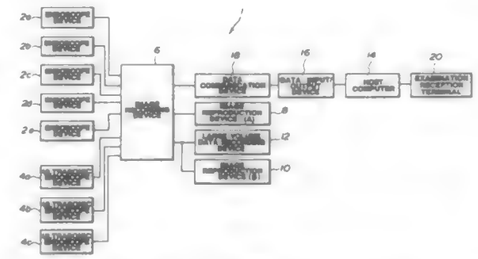
accessing and displaying one of said data records from the data file for the identified patient according to the position on the displayed line indicated by the second input.

5,361,203

ENDOSCOPE IMAGE DATA FILING SYSTEM AND AN ENDOSCOPE IMAGE DATA MANAGING METHOD FOR MANAGING A LARGE NUMBER OF IMAGE DATA IN VARIOUS MODE

Keiichi Hiyama; Masahide Kanno; Masakazu Nakamura, and Kenichiro Nimoda, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 44,169
Claims priority, application Japan, Apr. 14, 1992, 4-94461
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.13 **13 Claims**



1. An endoscope image data filing system comprising:

a plurality of endoscope devices for observing the inside of a coelom;

a compression means for compressing endoscope image signals received from said plurality of said endoscope devices by at least one reversible compression method for reversibly compressing said endoscope image signals and at least one irreversible compression method for irreversibly compressing said endoscope image signals;

a first recording means for recording compressed image information produced in said compression means by both said reversible compression method and said irreversible compression method; and

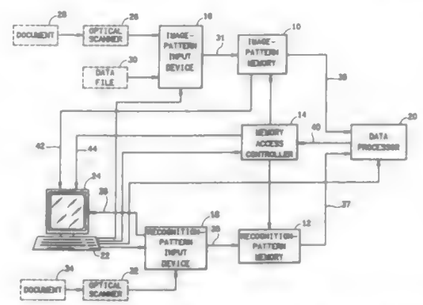
a second recording means for re-recording compressed image information recorded by said first recording means, said compressed image information produced by said irreversible compression method of said compression means.

5,361,204

SEARCHING FOR KEY BIT-MAPPED IMAGE PATTERNS

William J. McCollough, Alexandria, and David B. Kelly, McLean, both of Va., assignors to The Titan Corporation, San Diego, Calif.

Filed Mar. 19, 1992, Ser. No. 854,463
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.07 **10 Claims**



9. A system for searching for keywords and/or keyphrases

and/or keysymbols in a data memory containing bit-mapped image patterns for words and/or symbols, comprising

means for constructing an n-bit recognition pattern of the keyword, the keyphrase or the keysymbol to be searched for;

means for scanning the data memory to access the bit-mapped image patterns; and

means for correlation processing the constructed recognition pattern with the accessed bit-mapped image patterns to determine the presence in the data memory of said bit-mapped image pattern for the keyword/phrase/symbol;

wherein the correlation processing means comprise

means for respectively comparing each of the bits of the recognition pattern with a bit in a corresponding bit position of a sequence of n consecutive bits of the accessed image patterns;

means for providing a summation value representative of the result of said n comparisons; and

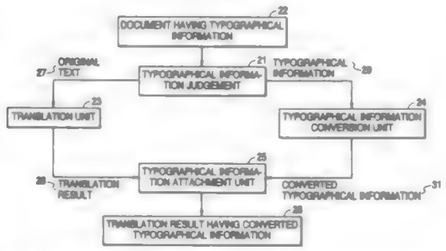
means for determining that the image pattern of the keyword/phrase/symbol is present in the data memory when the summation value meets or surpasses a given threshold.

5,361,205

APPARATUS FOR TRANSLATING LINGUAL MORPHEMES AS WELL AS THE TYPOGRAPHICAL MORPHEMES ATTACHED THERETO

Fumihito Nishino; Jun Ibuki, and Naohito Nakamura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 3, 1992, Ser. No. 923,513
Claims priority, application Japan, Aug. 1, 1991, 3-192897
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.02 15 Claims



13. An apparatus for translating a document having various kinds of typographical information, comprising:

typographical information judgment means for receiving a character string having typographical information and for separating said character string into said typographical information and an original text;

translation means for outputting said original text and for outputting its translation result;

typographical information conversion means for converting said typographical information to another type of typographical information as necessary; and

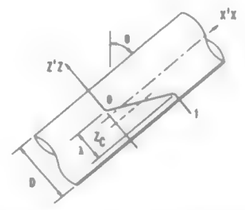
typographical information attachment means for attaching to said translation result supplied from said translation means said converted typographical information supplied from said typographical information conversion means.

5,361,206

METHOD OF ANALYZING A TWO-PHASE FLOW IN A HYDROCARBON WELL

Patrick J. R. Tabeling, L'Hay les Roses, France, and Bernard E. Theron, Sevres, both of, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 3, 1992, Ser. No. 892,901
Claims priority, application France, Jun. 18, 1991, 91 07454
Int. Cl.[5] G01V *3/18*
U.S. Cl. 364—422 19 Claims



1. A method of analyzing the flow in an inclined well, which flow comprises both oil and water, comprising the steps of:

a) measuring at least one parameter of the flow at a location in the well so as to determine a value representative thereof;

b) determining values of a depth z, an inclination θ, and diameter D of the well at said location;

c) establishing a profile for variation of said parameter along an axis defined by a diameter of the well cross-section at said location which lies in a vertical plane, by using a model that assumes a layer comprising a turbulent mixture of water and oil and values of z, θ and D; and

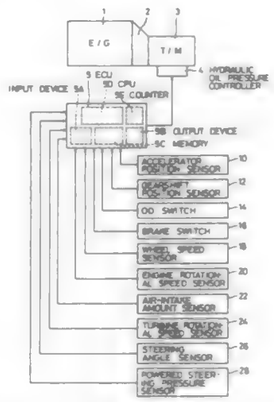
d) using the profile to analyze the flow.

5,361,207

SPEED CHANGE CONTROL METHOD FOR AN AUTOMATIC TRANSMISSION FOR VEHICLES

Kazuya Hayafune, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 851,690
Claims priority, application Japan, Mar. 13, 1991, 3-48335; Feb. 19, 1992, 4-32352
Int. Cl.[5] B60K *41/18*
U.S. Cl. 364—424.1 12 Claims



1. A speed change control method for setting a gearshift position of an automatic transmission of a vehicle, the automatic transmission having a plurality of gearshift positions, to a position selected on the basis of vehicle speed and engine load, in accordance with a preset shift pattern for a first control mode, comprising the steps of:

detecting at least one of parameter values which represent operating conditions of the vehicle, parameter values which represent a driver's driving intention, and parameter values which represent road conditions;

selecting one of said gearshift positions by fuzzy inference in accordance with said detected at least one of the parameter values;

comparing the gearshift position selected by the fuzzy inference with a gearshift position selected in accordance with the preset shift pattern for said first control mode; and

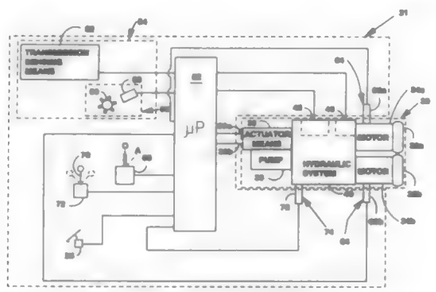
setting the gearshift position of the automatic transmission to the position selected by the fuzzy inference only if the gearshift position selected by said fuzzy inference provides a lower vehicle speed than the vehicle speed provided by the gearshift position selected in accordance with the preset shift pattern for said first control mode.

5,361,208

SUPPLEMENTAL FRONT WHEEL DRIVE CONTROL SYSTEM AND METHOD

Stephen R. Olson; William J. Tate, both of Peoria, and Giles K. Sorrells, Dunlap, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 6, 1990, Ser. No. 623,155
Int. Cl.[5] B60K *25/00, 23/08*
U.S. Cl. 364—424.05 3 Claims



1. A work vehicle (10) having a main drive, a fluid pump (36) for providing pressurized fluid, and a supplemental drive (30) driven by said pressurized fluid, said main and supplemental drives each being rotatable at a desired speed, comprising:

main drive sensor means (54) for sensing the speed of the main drive (14) and responsively producing a main drive signal;

supplemental drive sensor means (64) for sensing the speed of said supplemental drive (13) and responsively producing a supplemental drive speed signal;

a mode switch means for selectively producing "off" and "Automatic" mode signals;

a microprocessor (52) for receiving said mode, main drive speed and supplemental drive speed signals, modifying said main drive signal by a preselected amount and responsively producing a modified main drive speed signal, producing an error signal responsive to a difference between said supplemental and modified main drive speed signals, and processing said error signal to produce a control signal, said microprocessor delivering said control signal in response to said mode signal being "Automatic" and inhibiting the delivery of said control signal in response said mode signal being "off"; and

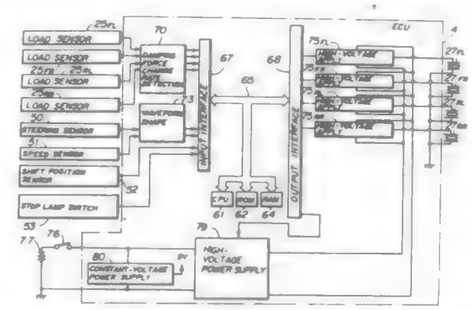
actuator means (38) for receiving said control signal and responsively adjusting said pump (36) so as to vary the rate of flow of pressurized produced by said pump (36) in response to said control signal.

5,361,209

SUSPENSION CONTROL SYSTEM HAVING DAMPING COEFFICIENT DISCRETELY VARIED RESPONSIVE TO ROAD CONDITIONS

Yasuhiro Tsutsumi, Susono, Japan, assignor to Toyota Jidoshi Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 622,534, Dec. 5, 1990, abandoned. This application Jan. 22, 1993, Ser. No. 7,917
Claims priority, application Japan, Dec. 8, 1989, 1-319682; Dec. 11, 1989, 1-321225; Dec. 28, 1989, 1-343151
Int. Cl.[5] B60G *17/015*
U.S. Cl. 364—424.05 26 Claims



1. A suspension control system for controlling a suspension having a shock absorber provided for a wheel of a vehicle, said suspension control system comprising:

damping force change rate detecting means for detecting a damping coefficient change rate indicating a rate of change of a damping force of said shock absorber;

damping coefficient controlling means, coupled to said shock absorber and said damping force change rate detecting means, for setting a damping coefficient of said shock absorber to a first level from a second level less than the first level when the damping force change rate has exceeded an adjustment reference value;

damping coefficient alteration holding means, coupled to said shock absorber and said damping coefficient controlling means, for continuously maintaining the setting of the damping coefficient at the first level for a holding period after said damping coefficient controlling means alters the setting of the damping coefficient from the second level to said first level, said holding period being a first period starting from a time when said adjustment reference value becomes greater than said damping force change rate after said damping coefficient controlling means alters the setting of the damping coefficient from the second level to the first level;

road surface condition judgement means for judging whether or not a road surface on which said vehicle has traveled for said holding period is rough; and

holding period correction means, coupled to said damping coefficient alteration holding means and said road surface condition judgement means, for elongating said holding period so that said holding period is a second period which is longer than said first period and which starts from said time when said adjustment reference value becomes greater than said damping force change rate after said damping coefficient controlling means alters the setting of the damping coefficient from the second level to the first level.

5,361,210

CURRENT CONTROL FOR ELECTRIC POWER STEERING APPARATUS MOTOR

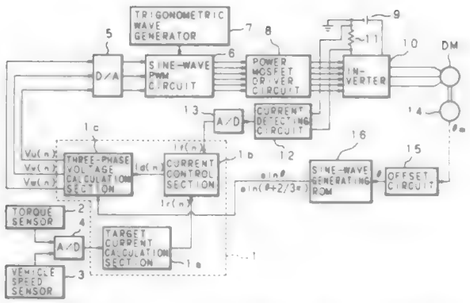
Jian-Guo Fu, Yamatokooriyama, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Sep. 9, 1992, Ser. No. 942,636

Claims priority, application Japan, Sep. 28, 1991, 3-086907[U]

Int. Cl.[5] B62D *5/04*

U.S. Cl. 364—424.05 **2 Claims**



1. An electric power steering apparatus for a vehicle comprising:

an electric direct drive motor which rotates for assisting steering force of the steering apparatus;

an inverter adapted to be connected to a direct current power supply for producing three-phase alternating current to operate said motor;

means for detecting the direct current supplied to the inverter including

a resistor in circuit with the direct-current supply for the inverter across which a voltage is produced corresponding to the current supplied to the inverter, and

a detecting circuit connected to said resistor for detecting the direct current from the voltage detected across said resistor;

means for controlling the three-phase alternating current on the basis of the detection result by said detecting means including

means for calculating a target current for the operation of the electric motor on the basis of the detection results of vehicle speed and steering torque,

means for determining the difference between the current detected by said detecting means and the target current, and

means for controlling the three-phase alternating current on the basis of the determined difference;

a sensor for detecting the rotational position of the electric motor; and

output means for supplying to said control means sinusoidal wave data for at least two phases based on the rotational position detected by said sensor.

5,361,211

CONTROL SYSTEM FOR AUTOMATICALLY CONTROLLING ACTUATORS OF AN EXCAVATOR

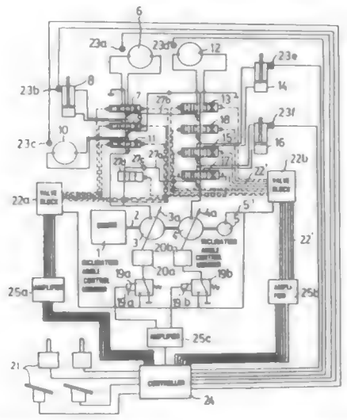
Jin H. Lee, Yeongi; Sang C. Heo, Suseong; Jang U. Jo, Chungmu; Jin T. Kim; Keun T. Lee, both of Changweon; Ju K. Kim, Buk; Sang T. Jeong, Seoul; Bong D. Hoang, Chanweon, and Chan H. Lee, Hoaseong, all of Rep. of Korea, assignors to Samsung Heavy Industries Co., Ltd., Changwon, Rep. of Korea

Filed Oct. 28, 1991, Ser. No. 783,559

Claims priority, application Rep. of Korea, Oct. 31, 1990, 90-17524; Nov. 27, 1990, 90-19240; Dec. 29, 1990, 90-22379; Dec. 29, 1990, 90-22380; Dec. 29, 1990, 90-22381; Dec. 29, 1990, 90-22384

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—424.07 **16 Claims**



14. In an excavator including a boom cylinder actuator for actuating a boom cylinder associated with a boom, a dipper cylinder actuator for actuating a dipper cylinder associated with a dipper stick, a bucket cylinder actuator for actuating a bucket cylinder associated with a bucket, a swing motor actuator for actuating a swing motor swinging an upper frame of the excavator with respect to a lower frame thereof, and travelling motor actuators actuating travelling motor for running said excavator, a process for automatically controlling an apparatus controlling the operation of said actuators, said apparatus comprising an electronic controller controlling the operation of said actuators, main hydraulic pumps for supplying hydraulic fluid to said actuators, a sub-hydraulic pump supplying pilot hydraulic fluid, a plurality of directional control valves connected to said main hydraulic pumps and said electronic controller for controlling operation direction of said actuators and also amounts of said hydraulic fluid flow, pilot valve blocks adapted to controllably move spools of said directional control valves in accordance with electric control signals outputted from said electronic controller, inclination angle control valves disposed between the controller and the main pumps for controlling inclination angles of the main hydraulic pumps in order to control the amount of hydraulic fluid discharged, positional sensors associated with respective actuators in order to sense positional displacement values of said respective actuators, control levers/pedals for outputting respective electric signals, corresponding to handling values for said actuators, to the controller, and a plurality of amplifiers amplifying electric signals outputted from said controller to said pilot valve blocks and said inclination angle control valves, the process comprising the steps of:

receiving respective manipulation amounts from the control levers/pedals and respective values corresponding to positions of the actuators sensed by the positional sensors;

operating respective predetermined velocities of said actuators based on said manipulation amounts and respective operation velocities of said actuators based on said position values;

determining whether piston rods of said actuators are positioned at an end of their respective cylinders;

if each piston rod is not positioned at the end of their respective cylinder, determining whether each of said actuators is reduced in its operation velocity;

if each of said actuators is reduced in its operation velocity, operating a reduction velocity and determining whether the reduction velocity is higher than said corresponding predetermined velocity;

if the reduction velocity is higher than the predetermined velocity, said predetermined velocity is set as an output velocity; if the reduction velocity is lower than or equal to the corresponding predetermined velocity, the reduction velocity is set as the output velocity; and

calculating respective output values corresponding to amounts of hydraulic fluid discharged from the main hydraulic pumps on the basis of the output velocity and sending the output values to the main hydraulic pumps, respectively, thereby enabling the actuators to be controlled without being subjected to impact.

5,361,212

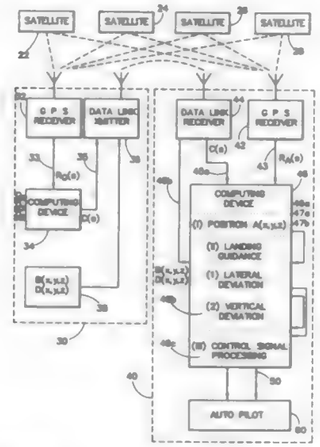
DIFFERENTIAL GPS LANDING ASSISTANCE SYSTEM

Kim A. Class, Coon Rapids; Randolph G. Hartman, Plymouth, and Brett J. Helgeson, Shorewood, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 2, 1992, Ser. No. 970,320

Int. Cl.[5] G06F *15/48*

U.S. Cl. 364—428 **23 Claims**



1. A landing assistance system utilizing a global positioning system which employs a plurality of satellites, where each of said satellites transmits signals containing satellite data, and which said global positioning system employs a global positioning system receiver means for receiving said satellite signals and retrieving said satellite data therefrom, and which said satellite data is sufficient to determine the range between each satellite and said global positioning receiver, and which said satellite data from a plurality of satellites to determine the global position of said receiver, the landing assistance system comprising:

a ground station located in the vicinity of at least a first aircraft landing strip, and said ground station having a known reference global position, said ground station including,

(i) a differential global positioning system ground station including a global positioning system receiver for retrieving satellite data from selected ones of said satellites, and correction means for deriving global positioning system differential correction data as a function of said reference global position and said satellite data, and

(ii) data link transmitter means for transmitting data signals containing at least (1) said correction data, and (2) data representative of the actual global position of at least first and second glide path points which define a selected aircraft landing glide path for an aircraft landing on said first landing strip; and

a mobile station on board an aircraft including,

(i) data link receiver means for receiving said data signals containing said correction data and said data representative of said actual global position of said first and second glide path points, and

(ii) a global positioning system receiver means for selectively receiving selected ones of said satellite signals, and retrieving said satellite data therefrom.

5,361,213

CONTROL DEVICE FOR AN AUTOMOBILE

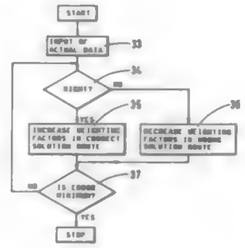
Mamoru Fujieda; Minoru Ohsuga; Toshiharu Nogi, and Yoshishige Ooyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 649,014, Jan. 31, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,732

Claims priority, application Japan, Feb. 9, 1990, 2-028291

Int. Cl.[5] F02P *5/15*

U.S. Cl. 364—431.08 **22 Claims**



1. A control device for an automobile having an engine knock sensor for detecting engine knock of said automobile engine, and an actuator for controlling said engine knock, said control device including transformation means for transforming signals from said knock sensor into a spatial multi-variable signal consisting of plural bits and to apply said spatial multivariable signal to a hierarchical group of neural elements, each element providing an output O_1 where

$$O_i = f\left(\sum_j W_{ij} O_j\right) - \theta$$

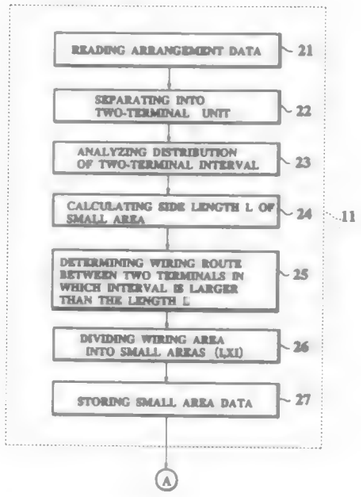
where O_j are inputs, W_{ij} are weighting factors and θ is a threshold,

and further including modifying means for adaptively controlling the internal parameters of the neural elements by comparison with actual knock data, and a control means for receiving an output signal from said group of neural elements for controlling said actuator.

5,361,214
METHOD FOR AUTOMATICALLY DETERMINING WIRING ROUTES

Takahiro Aoki, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 9, 1991, Ser. No. 727,431
Claims priority, application Japan, Jul. 9, 1990, 2-179510; Nov. 27, 1990, 2-320997
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **13 Claims**



1. A method for automatically determining wiring routes among terminals which are arranged on a routing area and have the same electric potential, the method comprising the steps of:

separating the terminals to a group of two-terminal units in which length between two terminals in a unit is statistically shortened to minimum on condition that all the terminals are electrically connected through wiring routes connecting each two-terminal unit;

calculating a specific length L between the two terminals, the length L corresponding to a prescribed cumulative value in a statistical distribution of the distance between two terminals in the unit and being equal to the larger of an interval Δx between the two terminals in a first direction X and another interval Δy between the two terminals in a second direction Y perpendicular to the first direction X;

globally determining all the wiring routes connecting each two-terminal unit in which the distance between the two terminals is larger than the specific length L;

dividing the routing area into a group of small areas, each small area having a specific width and length which are identical to the specific length L;

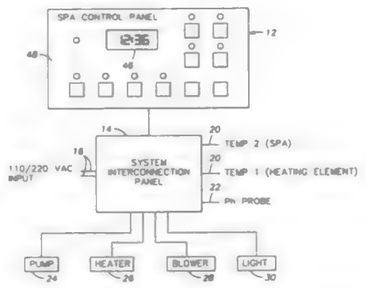
composing a group of medium areas which are respectively formed by combining four small areas in close proximity, each medium area being a square and the side length of the area being 2L which is twice as large as the specific length L; and

globally and simultaneously determining all wiring routes of the two-terminal units in which the distance between the two terminals is smaller than the specific length L in the medium areas conceivable as the combination of four small areas in close proximity.

5,361,215
SPA CONTROL SYSTEM

Michael E. Tompkins, and Michael J. Green, both of Houston, Tex., assignors to Siege Industries, Inc., Houston, Tex.

Continuation of Ser. No. 224,869, Jul. 26, 1988, which is a continuation-in-part of Ser. No. 54,581, May 27, 1987. This application Jan. 11, 1994, Ser. No. 225,282
Int. Cl.[5] F22B *35/00*
U.S. Cl. 364—505 **51 Claims**



1. A spa control system having a heater for monitoring and control of the temperature of water in a spa, comprising:

a heating element for heating the water;

a first sensor for detecting the temperature of the water at the spa;

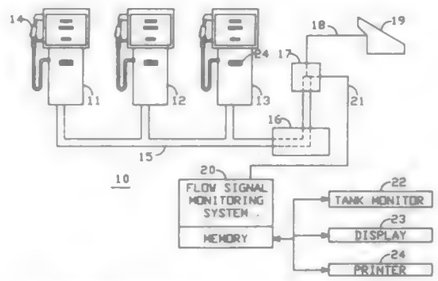
a second sensor for detecting the temperature of the water at said heating element; and

a microcomputer for processing signals generated by said sensors, wherein said microcomputer selectively activates and deactivates said heating element.

5,361,216
FLOW SIGNAL MONITOR FOR A FUEL DISPENSING SYSTEM

Walter E. Warn, Knightdale, and Fred K. Carr, Chapel Hill, both of N.C., assignors to Progressive International Electronics, Raleigh, N.C.

Filed Jul. 2, 1992, Ser. No. 907,548
Int. Cl.[5] G06F *15/46*; B67D *5/08*
U.S. Cl. 364—510 **18 Claims**



1. A flow signal monitoring system having a microprocessor for monitoring a digital data stream in a data wire between at least one fuel dispenser and a dispenser controller, wherein said data stream includes a plurality of data fields including one data field comprising a command code, pump number, pump status, and dispensed fuel volume and a value containing information on the amount of fuel dispensed from each fueling position which is collected and stored for down-loading to a display, a printer, or tank monitor; comprising:

(a) an electronics communication translator means, connected to said data wire between said at least one fuel dispenser and said dispenser controller, for converting said data stream into a computer logic data stream having corresponding data fields including information on the amount of fuel dispensed from each fueling position;

(b) a microprocessor including plural input-output ports, programmable read only memory, programmable read and write variable memory, said microprocessor having bus means connecting said communication translator with at least one of said microprocessor ports for receiving said computer logic data stream;

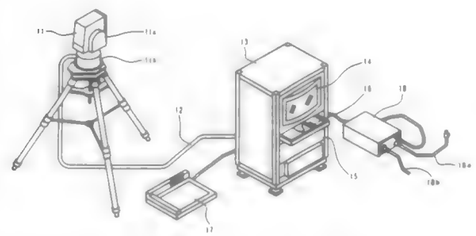
(c) a programmable data field selector means, having bus connection to at least one of said microprocessor ports, for instructing said microprocessor to recognize, select and process said corresponding data fields containing information on the amount of fuel dispensed from each fueling position, and to discard all other data fields; and

(d) a memory means, coupled to said microprocessor, for receiving and storing information on the amount of fuel dispensed from each fueling position.

5,361,217
POSITION MEASURING/PLOTTING APPARATUS

Kazuo Makimura; Shigeru Kojima, and Haruo Kakizawa, all of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed May 5, 1993, Ser. No. 57,996
Claims priority, application Japan, May 7, 1992, 4-142189; Jun. 25, 1992, 4-191668; Jul. 20, 1992, 4-214508; Jul. 20, 1992, 4-214509
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—561 **16 Claims**



13. A position indicator for use in a position measuring/plotting apparatus including a supporting rod having at least one end adapted to be fixed into a road surface, or the like, at a position being measured and targets fixedly mounted on said supporting rod to reflect a light beam projected thereon in a predetermined direction, said position measuring/plotting apparatus comprising:

position detector means having a light emitter to project a light beam on said target and a light receiver adapted to detect the light beam reflected on said target so that a distance, as well as a direction to said target, may be determined to detect spatial coordinated of said target;

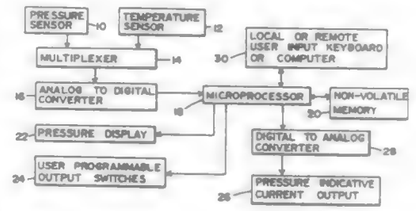
processor means used to process a plurality of spatial coordinates having been detected by said position detector means with respect to positions occupied by said targets and thereby to detect respective plane coordinates of said targets; and

plan view plotter means to plot a plan view based on said plane coordinates having been detected by said processor means.

5,361,218
SELF-CALIBRATING SENSOR

Roger M. Tripp, Newbury Park, and Dennis J. Woods, Reseda, both of Calif., assignors to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 929,032, Aug. 11, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 209,984
Int. Cl.[5] G01K *15/00*
U.S. Cl. 364—571.01 **10 Claims**



1. A self-calibrating sensor with an output electronically corrected for inherent and environmentally induced errors comprising in combination:

sensor means adapted to produce an output value indicative of a measured physical quantity;

an environmental variable sensing means adapted to produce an output signal indicative of a measured independent environmental variable;

said sensor means and said environmental variable sensing means forming a set;

first means to calculate a multiple order sensor behavior characterizing equation for said set that relates the corrected output to said sensor means output, using said sensor means output value and a sensor behavior coefficient for each term of said sensor behavior characterizing equation;

second means to calculate a plurality of multiple order coefficient behavior characterizing equations for said set that relate said sensor behavior coefficients to said independent environmental variable, using said environmental sensing means output signal and an environmental variable effect coefficient for each term of said coefficient behavior characterizing equations, and in which said multiple order sensor behavior characterizing equation comprises a third order, four term equation, using four sensor behavior coefficients;

memory means adapted to store in only 72 bytes of memory said environmental variable effect coefficients comprising twelve temperature effect coefficients for the sensor of said set, and in which each of said multiple order coefficient behavior characterizing equations comprises a second orders, three term equation, using three of said twelve temperature effect coefficients stored in said memory; and

corrected output means connected to receive the corrected output calculated by said first means and produce a corrected output characterized for said set.

5,361,219
DATA CIRCUIT FOR MULTIPLYING DIGITAL DATA WITH ANALOG

Guoliang Shou; Weikang Yang; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

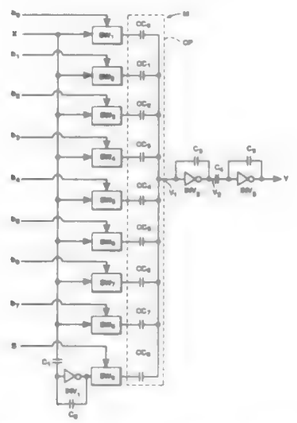
Filed Nov. 29, 1993, Ser. No. 158,295
Claims priority, application Japan, Nov. 27, 1992, 4-341493
Int. Cl.[5] G06J *1/00*
U.S. Cl. 364—606 **7 Claims**

1. A multiplication circuit comprising:

switching circuits, each for receiving analog data and a corresponding bit of digital data and for outputting said analog data in accordance with said corresponding bit of said digital data; and

a capacitive coupling unit for outputting the multiplication

of said analog data nd said digital data, said capacitive coupling unit having a plurality of first capacitances, said first capacitances being connected in parallel with each other, each first capacitance receiving a corresponding



one of said outputs of said switching circuits, and each first capacitance having a capacity which is based upon a preselected weight to be given to said corresponding bit of said digital data.

5,361,220

DISCRETE COSINE TRANSFORMATION WITH REDUCED COMPONENTS

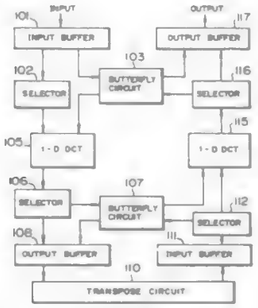
Masanari Asano, Miyagi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1992, Ser. No. 982,623

Claims priority, application Japan, Nov. 29, 1991, 3-316864; Nov. 29, 1991, 3-316865; Feb. 7, 1992, 4-022687

Int. Cl.[5] G06F *15/332*

U.S. Cl. 364—725 **11 Claims**



1. A discrete cosine transformation processor comprising:

a first one-dimensional discrete cosine transformation circuit comprising a first one-dimensional discrete cosine processing circuit, a first pre-processing circuit connected to an input of said first one-dimensional discrete cosine processing circuit, and a first post-processing circuit connected to an output of said first one-dimensional discrete cosine processing circuit;

a transpose circuit;

a second one-dimensional cosine transformation circuit comprising a second one-dimensional discrete cosine processing circuit, a second pre-processing circuit connected to an input of said second one-dimensional discrete cosine processing circuit, and a second post-processing circuit connected to an output of said second one-dimensional discrete cosine processing circuit,

wherein said first pre-processing circuit of said first one-dimensional discrete cosine transformation circuit and said second post-processing circuit of said second one-dimensional discrete cosine transformation circuit comprises a shared first butterfly circuit, and said first post-processing circuit of said first one-dimensional discrete cosine transformation circuit and said second pre-processing circuit of said second one-dimensional discrete cosine transformation circuit comprises a shared second butterfly circuit, and wherein said transpose circuit is coupled to an output of said first one-dimensional discrete cosine transformation circuit and to an output of said second one-dimensional discrete cosine transformation circuit.

5,361,221

RESIDUE CALCULATION CIRCUIT

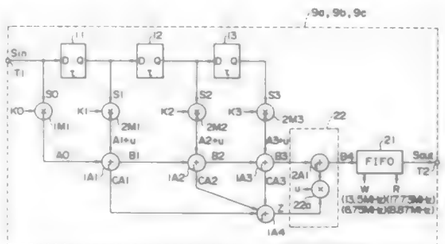
Tadao Fujita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 23,681

Claims priority, application Japan, Mar. 4, 1992, 4-047286

Int. Cl.[5] G06F *7/38*

U.S. Cl. 364—746 **3 Claims**



1. A residue calculation circuit for calculating a residue for input residue data, comprising:

first through nth delay means connected in cascade for delaying input residue data supplied to said first delay means, each of said first through nth delay means delaying data supplied thereto and outputting respective delayed data;

means for multiplying said input residue data by a first coefficient to obtain a first product, for obtaining a residue of said first product with regard to a predetermined residue number and for supplying said residue of said first product as an output;

first through nth multiplication means for multiplying said delayed data of said first through nth delay means, respectively, by n respective coefficients to obtain n respective products, for obtaining a respective residue of each of said n respective products with regard to said predetermined residue number, and for adding a predetermined correction value to each of said respective residues to obtain n respective correction data;

first stage addition means for performing binary non-residue addition of said residue from said means for multiplying and said correction data from said first multiplication means to obtain first stage sum data, and for supplying as an output said first stage sum data and a first stage carry signal representing a presence or absence of a carry of said first stage addition means;

further addition means including second through nth stage addition means for respectively performing binary non-residue addition of said sum data output from a previous stage addition means and said respective correction data output from the second through nth of said multiplication means to obtain respective second through nth stage sum data, and for respectively supplying as an output said second through nth stage sum data and a second through nth stage carry signal representing a presence or absence of a carry of said respective second through nth stage addition means;

means for accumulating inverse values of said first through nth stage carry signals to obtain a cumulative carry value;

carry multiplying means for multiplying said cumulative carry value by said predetermined correction value to obtain a cumulative correction value; and

means for subtracting said cumulative correction value from said nth stage sum data supplied from said nth stage addition means to obtain corrected data and supplying said corrected data as an output.

5,361,222

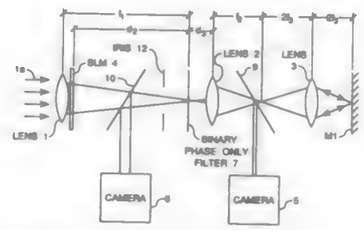
BINARY PHASE ONLY FILTER ASSOCIATIVE MEMORY

Jihad A. Khoury, Somerville; Jonathan S. Kane, Wayland; Philip R. Hemmer, Fitchbury, and Charles L. Woods, Stow, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1992, Ser. No. 906,987

Int. Cl.[5] G06K *9/76;* **G11C** *13/04*

U.S. Cl. 365—49 **20 Claims**



1. An optical associative memory apparatus comprising:

(a) a first optical Fourier transform means for forming a Fourier transform of a first input image signal;

(b) an associative memory means including phase correction filter means providing a second signal including reference image information;

(c) second optical Fourier transform means for taking the inverse Fourier transform of the product of the Fourier transform of the first signal and the second signal and for forming said inverse Fourier transform which includes one or more correlation spots indicative of the correlation function between said first signal and said second signal; and

(d) projection means for projecting images of said correlation spots through said filter means to create an associative memory image.

5,361,223

SEMICONDUCTOR MEMORY DEVICE COMPRISING A PLURALITY OF MEMORY ARRAYS WITH IMPROVED PERIPHERAL CIRCUIT LOCATION AND INTERCONNECTION ARRANGEMENT

Yoshinori Inoue; Masaki Kumanoya; Katsumi Dosaka; Takahiro Komatsu, and Yoshinori Inoue, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 437,867, Nov. 17, 1989, Pat. No. 5,097,440. This application Oct. 31, 1991, Ser. No. 786,320

Claims priority, application Japan, Dec. 6, 1988, 63-309236

The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.

Int. Cl.[5] G11C *5/02, 5/06, 5/14*

U.S. Cl. 365—51 **23 Claims**

1. A semiconductor memory device comprising:

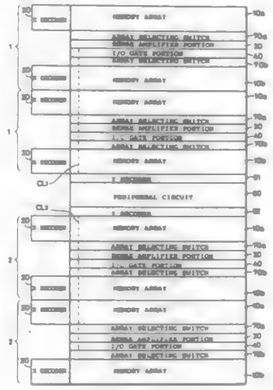
first and second memory arrays each comprising a plurality of memory cells arranged in a plurality of rows and columns,

a plurality of first column selecting lines used for selecting any of said plurality of columns in said first memory array,

a plurality of second column selecting lines used for selecting any of said plurality of columns in said second memory array,

first column selecting means for selecting any of said plurality of first column selecting lines,

second column selecting means for selecting any of said plurality of second column selecting lines,



first and second row selecting means provided corresponding to said first and second memory arrays for each selecting any of said plurality of rows in the corresponding memory array, and

circuit means for driving said first and second column selecting means and said first and second row selecting means,

said first memory array and said second memory array being arranged in a common column, and said first and second column selecting means being arranged between said first memory array and said second memory array, and said circuit means being arranged between said first and second column selecting means.

5,361,224

NONVOLATILE MEMORY DEVICE HAVING FERROELECTRIC FILM

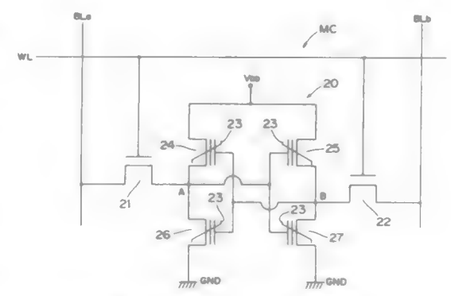
Hidemi Takasu, Kyoto, Japan, assignor to Rohm Co., Ltd., Kiyoto, Japan

Filed Feb. 24, 1993, Ser. No. 21,848

Claims priority, application Japan, Mar. 3, 1992, 45790

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—145 **13 Claims**



1. A nonvolatile memory device comprising

a flip flop circuit which includes (a) a first field effect transistor to which specified supply voltage is applied, (b) a second field effect transistor to which said specified supply voltage is applied, (c) a third field effect transistor having one end connected to the first field effect transistor and having the other end to which specified voltage is applied, and (d) a fourth field effect transistor having one end connected to the second field effect transistor and having the other end to which said specified voltage is applied; a first node between the first field effect transistor and the third field effect transistor being connected to gates of the second and fourth field effect transistors; a second node between the second field effect transistor and the fourth field effect transistor being connected to gates of the first and third field effect transistors; the first and third field effect transistors complementarily operating; the second and fourth field effect transistors complementarily operating; and the first, second, third and fourth field effect transistors having respective ferroelectric gate films;

data writing means, applying writing voltages corresponding to complementary data to said first and second nodes, and developing a polarization in each of said ferroelectric gate films of said first, second, third and fourth field effect transistors in individual specified directions, for writing data in said flip flop circuit;

data reading means detecting a potential difference between said first node and said second node for reading stored data;

a first reading/writing transistor connected to said first node;

a second reading/writing transistor connected to said second node; and

means for turning said first and second reading/writing transistors on in writing or reading data;

said data writing means applying writing voltage to the gates of said first, second, third and fourth field effect transistors through said first and second reading/writing transistors; and

said data reading means detecting a potential difference between said first node and said second node through said first and second reading/writing transistors.

5,361,225

NONVOLATILE MEMORY DEVICE UTILIZING FIELD EFFECT TRANSISTOR HAVING FERROELECTRIC GATE FILM

Takanori Ozawa, Ukyo, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Mar. 19, 1993, Ser. No. 34,699

Claims priority, application Japan, Mar. 23, 1992, 4-65245

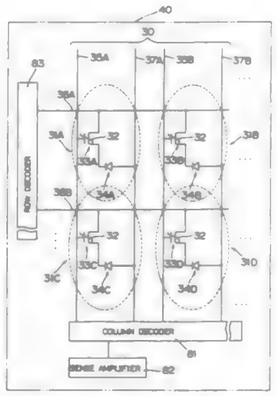
Int. Cl.[5] G11C *11/22*

U.S. Cl. 365—145 **10 Claims**

1. A nonvolatile memory device comprising

a field effect transistor for storing, information having (i) a pair of impurity regions formed at a certain interval in a semiconductor substrate, (ii) a channel region between the pair of the impurity regions, (iii) a ferroelectric gate film formed on the channel region, and (iv) a gate electrode formed on the ferroelectric gate film; and

a Schottky diode which has barrier metal formed so as to come into contact with one of said pair of impurity regions and is connected in series to said field effect transistor.



5,361,226

MAGNETIC THIN FILM MEMORY DEVICE

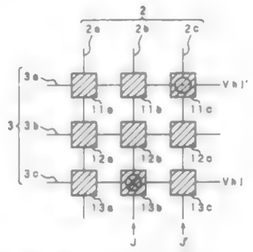
Motohisa Taguchi; Tatsuya Fukami; Kazuhiko Tsutsumi; Hiroshi Shibata; Shinji Tanabe; Hiroshi Kobayashi, and Yuzo Ohdoi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 847,964

Claims priority, application Japan, Mar. 6, 1991, 3-039891; May 22, 1991, 3-116415; May 24, 1991, 3-119780; Jul. 23, 1991, 3-181393; Dec. 9, 1991, 3-324277

Int. Cl.[5] H01L *21/78*

U.S. Cl. 365—171 **35 Claims**



1. A magnetic thin film memory device comprising:

a magnetic thin film memory element having magnetic anisotropy to which information is recorded by the direction of magnetization thereof;

a current line for supplying a current to said magnetic thin film memory element in a direction perpendicular to said direction of magnetization; and

a voltage line for reading out an anomalous Hall voltage generated by the magnetic thin film memory element, said voltage line being in a direction perpendicular to both directions of said current and magnetization of said magnetic thin film memory element,

wherein information is reproduced from said magnetic thin film memory element based on said anomalous Hall voltage of said magnetic thin film memory element.

5,361,227

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE AND MEMORY SYSTEM USING THE SAME

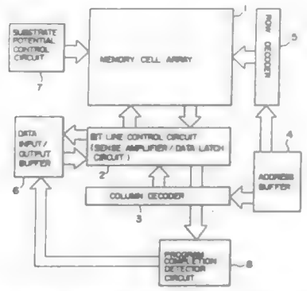
Tomoharu Tanaka; Masaki Momodomi, both of Yokohama; Hideo Kato, Kawasaki; Hiroto Nakai, Yokohama; Yoshiyuki Tanaka, Tokyo; Riichiro Shirota, Kawasaki; Seiichi Aritome, Kawasaki; Yasuo Itoh, Kawasaki; Yoshihisa Iwata; Hiroshi Nakamura, both of Yokohama; Hideko Odaira, Machida; Yutaka Okamoto, Kawasaki; Masamichi Asano, Tokyo, and Kaoru Tokushige, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 18, 1992, Ser. No. 992,653

Claims priority, application Japan, Dec. 19, 1991, 3-354871; Dec. 25, 1991, 3-343200; Mar. 10, 1992, 4-086082; Mar. 31, 1992, 4-077946; Mar. 31, 1992, 4-105831; Jul. 2, 1992, 4-175693

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—189.01 **130 Claims**



47. A non-volatile semiconductor memory device, comprising:

a plurality of data input lines through each of which first and second external logic level write data are transmitted;

a plurality of memory cells each composed of transistors, to and from each of which data is written and read, each of said memory cells being set to a data erasure state when a threshold value of the transistor is in a first range and to a data write state when the threshold value thereof is in a second range, prior to the data write operation, each of said memory cells being erased and the threshold value of the transistors being set in the first range, and in the data write operation, the transistor threshold value of each of said memory cells being changed to the second range when each corresponding data latch means holds the first logic level data, but being maintained without change when holding the second logic level data;

a plurality of bit lines through each of which write data is transmitted to and from each of said memory cells;

a plurality of data latch means each composed of two inverters connected inversely in parallel to each other and interposed between each of said bit lines and each of said data input lines, for temporarily storing the first and second logic level write data given through each of said data input lines from the outside;

a plurality of rewritten data setting means each provided for each corresponding data latch means, in verify operation following the write operation, said plural rewritten data setting means being connected to said plural data latch means respectively, in each of which the second logic level write data is held, retaining the held second logic level data as it is, respectively, and when the preceding write operation has been effected correctly and thereby the transistor threshold value of each of said memory cells is changed from the first range to the second range respectively, said plural rewritten data setting means being connected to said plural data latch means respectively, in each of which the first logic level write data is held, changing the held first logic level data to the second logic level data respectively, and when the preceding write operation has not been effected correctly and thereby the transistor threshold value of each of said memory cells is not changed from the first range to the second range, respectively, said plural rewritten data setting means being connected to said plural latch means respectively, in each of which the first logic level write data is held, retaining the held first logic level data as it is respectively;

simultaneous detecting means for outputting a write completion signal only when all data in said plural data latch means have been set to the second logic level data; and write data control means for transferring new write data to said data latch means, after said simultaneous detecting means has outputted the write completion signal.

5,361,228

IC MEMORY CARD SYSTEM HAVING A COMMON DATA AND ADDRESS BUS

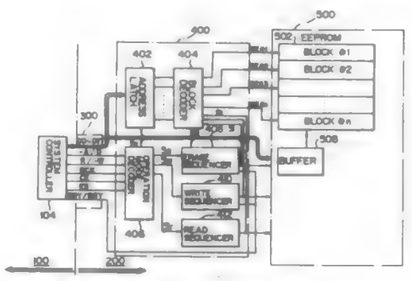
Kaoru Adachi, and Katsuya Makioka, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 30, 1993, Ser. No. 54,575

Claims priority, application Japan, Apr. 30, 1992, 4-111328; May 15, 1992, 4-123270

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—189.03 **15 Claims**



1. An IC memory card system comprising:

a host for processing data; and

an IC memory card removably connected to said host and incorporating a data recording medium implemented by an electrically erasable programmable semiconductor memory;

said host comprising system control means for sending to said IC memory card an address/data signal for distinguishing an address and data by a logical bilevel state, a read/write signal for distinguishing reading of data and writing of data in said semiconductor memory by a logical bilevel state, and an erase signal for erasing data stored in said semiconductor memory by a logical bilevel state as control signals, and bus clock pulses each being synchronous to a particular address and particular data;

said IC memory card comprising internal control means responsive to said address/data signal, said read/write signal, said erase signal and said bus clock pulses for distinguishing an address and data, for distinguishing reading and writing, and for determining whether or not to erase existing data, and for then reading or writing data in said semiconductor memory or for erasing said existing data.

5,361,229

PRECHARGING BITLINES FOR ROBUST READING OF LATCH DATA

David Chiang, Saratoga, and Wei-Yi Ku, Cupertino, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Apr. 8, 1993, Ser. No. 55,808

Int. Cl.[5] G11C *8/00, 7/00*

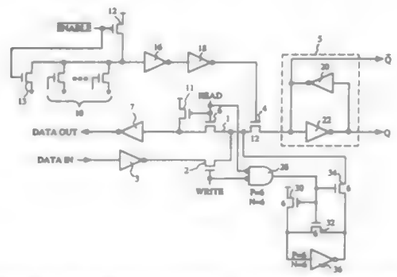
U.S. Cl. 365—189.05 **7 Claims**

1. A data storage circuit comprising:

a latch;

a write circuit for writing data into said latch on a conductor connected to said latch;

a read circuit for reading the data from said conductor; and



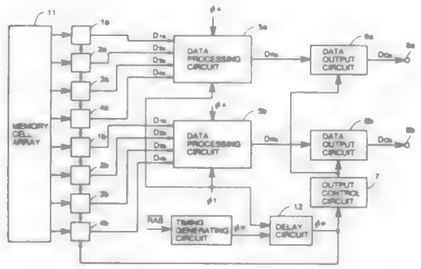
a precharge circuit connected to said conductor for charging said conductor to a trip point voltage of said latch.

5,361,230

MEMORY DEVICE DELAYING TIMING OF OUTPUTTING DATA IN A TEST MODE AS COMPARED WITH A NORMAL OPERATING MODE

Yuto Ikeda, and Yoshinori Inoue, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,709
Claims priority, application Japan, Jun. 5, 1992, 4-145749
Int. Cl.[5] G11C *17/00*
U.S. Cl. 365—194 **8 Claims**



8. A memory device having a test function, comprising:

a memory cell array including a plurality of memory cells;

data reading means for reading data from respective ones of memory cells selected from said memory cell array;

means for applying a mode designating signal designating either a normal operation mode or a test mode;

data processing means for selecting at least one data from said data read from said selected memory cells to provide the selected data when said mode designating signal indicates the normal operation mode, and for applying a predetermined logical operation processing to said data read from said selected memory cells with a certain delay time period to convert said read data into data the number of which is less than that of said read data to provide the converted data when said mode designating signal indicates the test mode; and

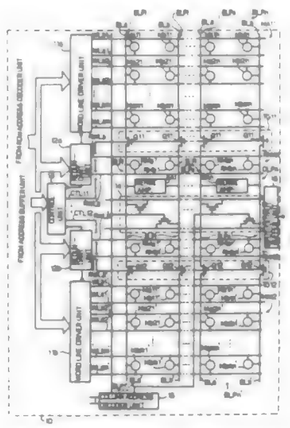
control means for providing an output data from said data processing means at a predetermined timing when said mode designating signal indicates said normal operation mode, and providing an output data from said data processing means at a timing delayed by said certain delay time period from said predetermined timing when said mode designating signal indicates the test mode.

5,361,231

DYNAMIC RANDOM ACCESS MEMORY DEVICE WITH REDUNDANT WORD LINES SHARED BETWEEN MEMORY CELL ARRAYS

Kiminori Hayano, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 833,029, Feb. 10, 1992, abandoned.
This application Nov. 26, 1993, Ser. No. 157,439
Claims priority, application Japan, Feb. 8, 1991, 3-37803
Int. Cl.[5] G11C *7/00, 13/00*
U.S. Cl. 365—200 **4 Claims**



1. A dynamic random access memory device fabricated on a single semiconductor chip, comprising:

a) a plurality of regular memory cell arrays each implemented by a plurality of regular memory cells arranged in rows and columns;

b) a plurality of regular word line groups respectively associated with said plurality of regular memory cell arrays, and each regular word line group having a plurality of regular word lines respectively coupled with the rows of said regular memory cells of said associated regular memory cell array;

c) a plurality of redundant memory cell arrays provided in association with said plurality of regular memory cell arrays, and each redundant memory cell array having a plurality of redundant memory cells arranged in rows and columns, the rows of said regular memory cells incorporated in one of said plurality of regular memory cell arrays and another of said plurality of regular memory cell arrays being respectively replaceable with the rows of said redundant memory cells in one of said plurality of redundant memory cell arrays and another of said plurality of redundant memory cell arrays;

d) a plurality of redundant word line groups respectively associated with said plurality of redundant memory cell arrays, and each redundant word line group having a plurality of redundant word lines respectively coupled with the rows of said redundant memory cells of said associated redundant memory cell array;

e) a plurality of first bit line pairs associated with said one of said plurality of regular memory cell arrays, and respectively coupled with the columns of said regular memory cells of said one of said plurality of regular memory cell arrays;

f) a plurality of second bit line pairs associated with said another regular memory cell array, and respectively coupled with the columns of said regular memory cells of said another regular memory cell array;

g) a plurality of data line pairs having first end portions respectively coupled with the columns of said redundant memory cells of said one of said redundant memory cell

arrays and second end portions respectively coupled with the columns of said redundant memory cells of said another redundant memory cell array;

h) a first transfer gate array coupled between said one regular memory cell array and said one redundant memory cell array;

i) a second transfer gate array coupled between said another regular memory cell array and said another redundant memory cell array;

j) sense amplifier circuits respectively coupled with said plurality of data line pairs between said first end positions and said second end portions; and

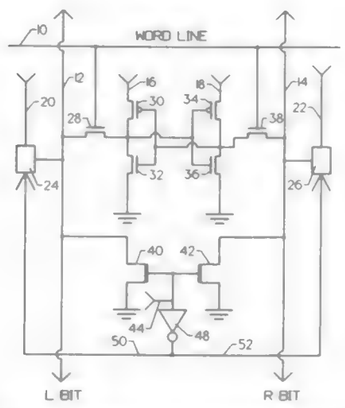
k) a control unit operative to shift said first transfer gate array to an on-state for interconnecting said plurality of first bit line pairs and said plurality of data line pairs and to shift said second transfer gate array to an off-state for isolating said plurality of data line pairs from said plurality of second bit line pairs when said regular word lines associated with said one of said plurality of regular memory cell arrays are selectively driven to an active level, said control unit being further operative to shift said first transfer gate array to the off-state for isolating said plurality of first bit line pairs from said plurality of data line pairs and to shift said second transfer gate array to the on-state for interconnecting said plurality of second bit line pairs and said plurality of data line pairs when said regular word lines associated with said another regular memory cell array are selectively driven to said active level, said control unit being further operative to simultaneously shift said first transfer gate array and said second transfer gate array to the off-state when the redundant word lines associated with said one redundant memory cell array and said another redundant memory cell array are selectively driven to the active level.

5,361,232

CMOS STATIC RAM TESTABILITY

Richard J. Petschauer, Edina, and Paul G. Johnson, Brooklyn Park, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 18, 1992, Ser. No. 978,128
Int. Cl.[5] G01R *31/28*
U.S. Cl. 365—201 **21 Claims**



1. A digital memory having a test mode comprising:

a. a bi-stable circuit having the capability to be switched from a first data state to a second data state;

b. providing means coupled to said bi-stable circuit for providing a pull up current to said bi-stable circuit when switching from said first data state to said second data state;

c. precharging means coupled to said bi-stable circuit for precharging said bi-stable circuit; and

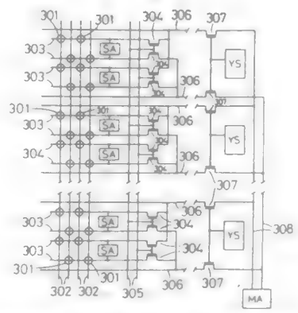
d. disabling means coupled to said precharging means for selectively disabling said precharging means when a test mode signal is applied to said disabling means.

5,361,233

SEMICONDUCTOR MEMORY APPARATUS

Hisakazu Kotani, Takarazuka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 704,971, May 23, 1991, abandoned.
This application Aug. 12, 1993, Ser. No. 104,936
Claims priority, application Japan, May 25, 1990, 2-136039
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—207 **21 Claims**



1. A semiconductor memory apparatus comprising:

plural first bit lines each connected directly with memory cells and adapted to read and write data,

a sense amplifier connected with a pair of said first bit lines,

plural second bit line pairs connected through first switch elements, which are equal in number to the first bit lines, with end portions of a pair or a plurality of pairs of said first bit lines,

a common data line pair connected through second switch elements, which are controlled by a column selecting signal, with end portions of a plurality of the second bit line pairs, and

a main amplifier connected with end portions of the common data line pair, said common data line pair being electrically connected between said main amplifier and said second switch elements.

5,361,234

SEMICONDUCTOR MEMORY CELL DEVICE HAVING DUMMY CAPACITORS REDUCING BOUNDARY LEVEL CHANGES BETWEEN A MEMORY CELL ARRAY AREA AND A PERIPHERAL CIRCUIT AREA

Shinya Iwasa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 26, 1993, Ser. No. 37,375
Claims priority, application Japan, Mar. 26, 1992, 4-67809
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—210 **5 Claims**

1. A semiconductor memory device comprising:

a plurality of word lines;

a plurality of digit lines;

a peripheral circuit area; and

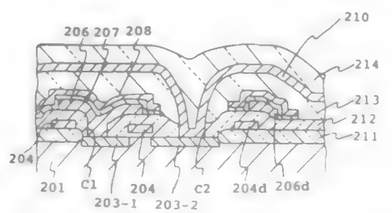
a memory cell array area comprising:

a semiconductor substrate having a surface in which field oxide films are selectively formed;

a plurality of operational memory cells arrayed on active regions within said memory cell array area, each of said memory cells including a stacked capacitor and a switching transistor; and

a plurality of dummy capacitors arranged in a boundary area

between said memory cell array area and said peripheral circuit area, said dummy capacitors each comprising a pair of electrode layers and an intermediate insulation layer, each of said pair of electrode layers and said intermediate insulation layers comprising side portions proxi-



mate said peripheral circuit area and opposite side portions proximate said memory cell array area,

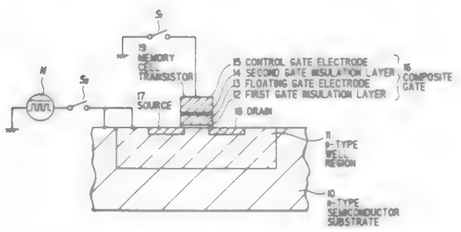
wherein at least said side portions of said electrode layers and insulation layers proximate said peripheral circuit area overlie said field oxide films without overlying any of said word lines.

5,361,235

METHOD FOR ERASING DATA STORED IN A NON-VOLATILE SEMICONDUCTOR MEMORY BY USING A PREDETERMINED SERIES OF PULSES

Noriaki Kodama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 9, 1992, Ser. No. 865,442
Claims priority, application Japan, Apr. 10, 1991, 3-076636
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **6 Claims**



1. A method for erasing data stored in a non-volatile semiconductor memory, comprising the steps of:

providing a memory cell transistor comprising a p-type well region, a source and a drain formed within said p-type well region, a composite gate consisting of a first gate insulation layer, a floating gate electrode, a second grate insulation layer and a control gate electrode formed on said p-type well region; and

applying a predetermined number (N) of serial pulses each having a high positive voltage and a pulse interval (I) relative to an adjacent pulse, to said p-type well region when said control gate electrode is fixed to the ground level and said source and drain are kept at a floating state, the product (I×N) being not smaller than a predetermined time,

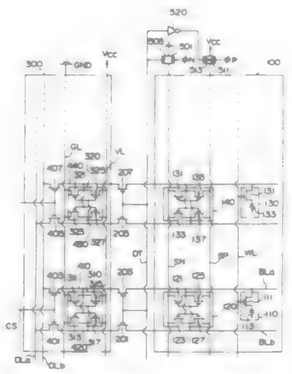
wherein said pulse interval (I) is not smaller than 1 ms.

5,361,236

SERIAL ACCESS MEMORY

Itsuro Iwakiri, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1992, Ser. No. 985,595
Claims priority, application Japan, Dec. 19, 1991, 3-336441
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—221 **15 Claims**



5. A memory circuit having a pair of bit lines for reading data from a plurality of memory cells and a pair of data lines for outputting the read data therefrom, the memory circuit comprising:

a sense amplifier coupled to the bit lines for amplifying a difference of electrical potentials on the bit lines, said sense amplifier receiving a sense amplifier drive signal having a first drive capability;

a data latch circuit coupled to the bit lines and the data lines for latching the electrical potentials amplified by said sense amplifier as data, said data latch circuit receiving a latch drive signal having a second drive capability;

a data transfer circuit coupled between the bit lines and said data latch circuit for controlling an electrical connection between said bit lines and said data latch circuit in response to a data transfer control signal; and

a drive circuit coupled to said sense amplifier for generating the sense amplifier drive signal, said drive circuit setting the first drive capability larger than the second drive capability when the bit lines are coupled to said data latch circuit in response to the data transfer control signal, said drive circuit including a potential source and a first transistor coupled between the potential source and said sense amplifier for controlling an electrical connection between the potential source and said sense amplifier in response to the data transfer control signal controlling the first transistor.

5,361,237

SEMICONDUCTOR MEMORY DEVICE PROVIDED WITH A WORD-LINE DRIVER CIRCUIT USING BOOSTED VOLTAGE-SOURCE DIVIDED DECODING

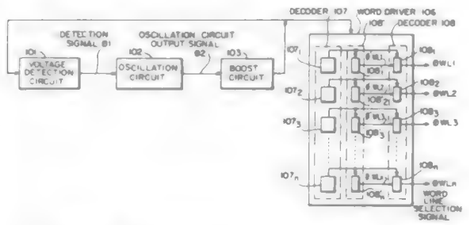
Shigeo Chishiki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 959,559
Claims priority, application Japan, Jan. 7, 1992, 4-001015
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **5 Claims**

1. A semiconductor memory device having a plurality of divided word lines, and a plurality of decoders and a plurality of drivers provided in each of said divided word lines for supplying an electric current, comprising:

boosting means for boosting and then supplying an external voltage to said plurality of decoders and to said plurality of drivers; and

a voltage detection circuit for outputting detection signals which show the results of a comparison made between



outputs of said boosting means and a reference voltage; wherein,

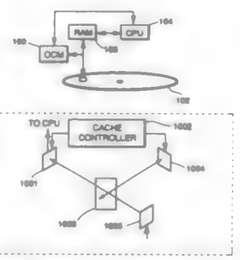
said boosting means boosts said external voltage according to said results of said comparison shown by said detection signals.

5,361,238

OPTICAL CACHE MEMORY FOR MAGNETIC AND OPTICAL DISK STORAGE

Yuri Owechko, Newbury Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 12, 1993, Ser. No. 60,602
Int. Cl.[5] G11C *13/04*
U.S. Cl. 365—234 **13 Claims**



1. An optical cache memory architecture for use with a computer comprising:

a cache controller for receiving and controlling address information from the computer;

means for receiving data information from the computer;

means for receiving address information from the cache controller;

holographic means for recording the address information and data information with beam fanning as a cascaded series of spatially and angularly distributed gratings to allow for multiple 1-D and 2-D phase codes; and

means for converting the recorded holographic data and address information into digital data information.

5,361,239

COMPENSATION METHOD USING A SINGLE TRANSMITTER MEASUREMENT TOOL

William A. Zoeller, Portland, Conn., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 426,581, Oct. 25, 1989, abandoned.
This application Oct. 25, 1990, Ser. No. 551,636
Int. Cl.[5] G01V *1/40, 3/30*
U.S. Cl. 367—30 **21 Claims**

1. A method for borehole compensation at a measurement depth in a formation surrounding a borehole using a single transmitter measurement tool, said tool including a housing, a transmitter for generating a wave form, said transmitter secured within the housing, a first receiver, responsive to the wave form, secured within the housing at an axial distance, d_1, from the transmitter, and a second receiver, responsive to the wave form, secured within the housing at an axial distance, d_2 from the transmitter wherein $d_2 > d_1$, comprising:

(a) placing the tool in a first position within the borehole so that the measurement depth is between the first and second receivers, and

propagating a first wave from the transmitter through the formation,

sensing a signal indicative of the phase shift P_{a1}, of the first wave between the transmitter and the first receiver and the amplitude, A_{a1}, of the first wave at the first receiver,

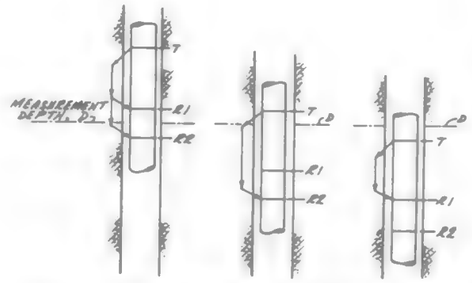
recording P_{a1} and A_{a1},

sensing a signal indicative of the phase shift, P_{a2}, of the first wave between the transmitter and the second receiver, and the amplitude, A_{a2}, of the first wave at the second receiver,

and recording P_{a2} and A_{a2};

(b) placing the tool in a second position within the borehole so that the tool is axially displaced by the distance d_1 relative to the first position and the measurement depth is between the transmitter and the first receiver, and

propagating a second wave from the transmitter through the formation,



sensing a signal indicative of the phase shift, P_{b2}, of the second wave between the transmitter and the second receiver, and of the amplitude, A_{b2} of the second wave at the second receiver,

recording P_{b2} and Ab_2;

(c) placing the tool in a third position within the borehole so that the tool is axially displaced by the distance d_2 relative to the first position and the measurement depth is above the transmitter, and

propagating a third wave from the transmitter through the formation,

sensing a signal indicative of the phase shift, P_{c1}, of the third wave between the transmitter and the first receiver, and of the amplitude, A_{c1}, of the third wave at the first receiver,

recording P_{c1} and A_{c1}; calculating a borehole compensated phase shift, BCPS, where:

$$BCPS=((P_{a2}-P_{a1})+(P_{b2}-P_{c1}))/2;$$

and

calculating a borehole compensated attenuation, BCAT, where:

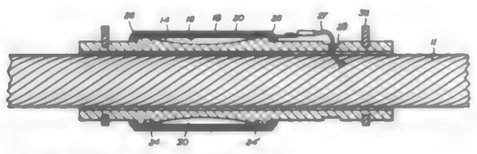
$$BCAT=20 \log (A_{a2}/A_{a1})/2+20 \log (A_{b2}/A_{c1})/2.$$

5,361,240

ACOUSTIC SENSOR

Richard E. Pearce, Azle, Tex., assignor to Innovative Transducers Inc., Halton City, Tex.

Filed Jul. 10, 1990, Ser. No. 550,520
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—157 **13 Claims**



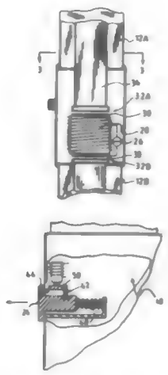
1. A hydrophone assembly, comprising:
a hollow mandrel having a concave outer surface;
a flexible piezoelectric element, including inactive opposite edge portions wrapped a plurality of times in successive superimposed wraps around the outer surface of said mandrel, there being at least an inner wrap and an outer wrap;
means for insulating each wrap one from the other; and
means for hermetically sealing the inactive edge portions of said piezoelectric element to the outer surface of said mandrel.

5,361,241

VIB-A-WAKE

Salvator Ferrara, 20-04 Clintonville St., Whitestone, N.Y. 11357; Michael Sferrazza, 67-84 150th St., Flushing, N.Y. 11367, and Pietro Oppedisano, 7-32 A Point Crescent, Whitestone, N.Y. 11357

Filed Apr. 14, 1993, Ser. No. 45,723
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—281 **12 Claims**



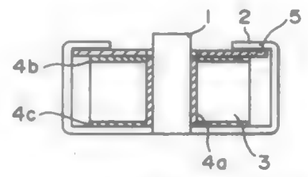
1. A Vib-A-Wake comprising in combination:
a) a conventional electric wrist watch with vibrating means functioning to vibrate both watch and wrist band at pre-set alarm times;
b) an energy transmitting watch band functioning to transmit vibrating energy from said watch at pre-set alarm times through said wrist band to a person's wrist waking up said person; and
c) a spring loaded button which returns to its original position after suppression, and functions to extend said pre-set alarm time by a preset snooze time allowing said person to sleep longer before said pre-set alarm is reactivated.

5,361,242

EXTERNAL MAGNETIC FIELD APPLICATION DEVICE INCLUDING A HEAT DISSIPATION MEMBER AND A METAL PLATE FOR DISSIPATING HEAT

Masahiko Chaya, Yokohama, and Toru Takahashi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 651,421, Feb. 6, 1991, abandoned. This application May 11, 1993, Ser. No. 59,729
Claims priority, application Japan, Feb. 7, 1990, 2-029301; Jun. 4, 1990, 2-144530; Jun. 4, 1990, 2-144531; Feb. 4, 1991, 3-013394
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 **18 Claims**



1. An external magnetic field application device for applying a bias magnetic field to a recording medium, said device comprising:
a magnetic pole piece;
a magnetic plate coupled to an edge portion of said magnetic pole piece and being substantially open channel-shaped to surround both sides of the magnetic pole piece, wherein both edge portions of said magnetic plate are each bent in a direction towards said magnetic pole piece;
a winding wound on said magnetic pole piece;
a first heat dissipation member, provided between said winding and said magnetic pole piece, a second heat dissipation member provided between said winding and the bottom of said magnetic plate and a third heat dissipation member provided between said winding and the bent edge portions of said magnetic plate, for conducting heat generated in said winding, when said winding is energized, to said magnetic plate; and
a metal plate, positioned near an edge portion of the magnetic pole piece opposite to the edge portion to which the magnetic plate is coupled and in a gap formed between said third heat dissipation member and the bent edge portions of said magnetic plate, for covering said winding and said heat dissipation members and for thermally coupling said third heat dissipation member to the bent edge portions of said magnetic plate, said metal plate having a higher thermal conductivity than that of said magnetic plate.

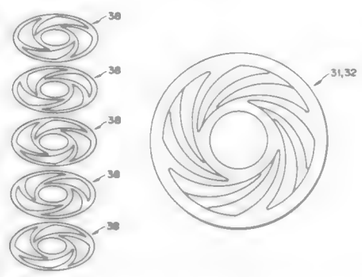
10. An optical information recording and reproducing apparatus for effecting at least one of recording of information on and reproducing of information from a recording medium by irradiating a light beam on the recording medium while applying a magnetic field in a predetermined direction, said apparatus comprising:
recording and reproducing means for effecting recording and reproducing of information by irradiating the recording medium with the light beam; and
external magnetic field application means for generating the magnetic field, said external magnetic field application means comprising:
a magnetic pole piece,
a magnetic plate coupled to an edge portion of said magnetic pole piece and being substantially open channel-shaped to surround both sides of said magnetic pole piece, wherein both edge portions of said magnetic plate are each bent in a direction towards said magnetic pole piece,
a winding wound on said magnetic pole piece,
a first heat dissipation member, provided between said winding and said magnetic pole piece, a second heat dissipation member provided between said winding and the bottom of said magnetic plate and a third heat dissipation member provided between said winding and the bent edge portions of said magnetic plate, for conducting heat generated in the winding, when the winding is energized, to said magnetic plate, and
a metal plate positioned near an edge portion of said magnetic pole piece opposite to the edge portion to which said magnetic plate is coupled and in a gap formed between said third heat dissipation member and the bent edge portions of said magnetic plate, for covering said winding and said heat dissipation members and for thermally coupling said third heat dissipation member to the bent edge portions of said magnetic plate, said metal plate having a higher thermal conductivity than that of said magnetic plate.

5,361,243

OPTICAL DISK APPARATUS HAVING LAMINATED DIAPHRAGM SPRINGS STRUCTURE

Akihiro Kasahara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 751,083, Aug. 28, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 163,728
Claims priority, application Japan, Aug. 29, 1990, 2-225360
Int. Cl.[5] G11B *7/12*
U.S. Cl. 369—44.15 **3 Claims**



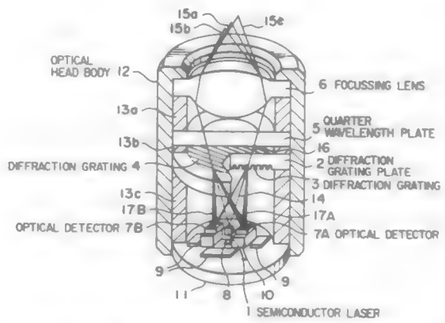
1. An apparatus for moving an object linearly along a certain axis of an optical head, comprising:
a lamination structure, including a plurality of metal diaphragm springs of the same shape and size, for supporting an object, each diaphragm spring comprising an inner frame section defining a center hole in which the object is situated with the axis of the object passing through the center of the center hole, an outer peripheral frame section for fixing the lamination structure, and deformable spring segments coupled to said inner frame section and the outer peripheral frame section in a predetermined phase, said lamination structure being constructed such that inner frame portions, outer peripheral portions and center axes of the respective diaphragm springs cooperate with one another and the diaphragm springs are rotated about the center axes to prevent the deformable spring segments from contacting one another; and
moving force generating means for generating a moving force for moving the object on the lamination structure along said axis.

5,361,244

OPTICAL HEAD AND INFORMATION RECORDING APPARATUS

Shigeru Nakamura, Tachikawa; Akira Arimoto, Kodaira; Takeshi Nakao, Sagamihara, and Mariko Umeda, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 772,443, Oct. 7, 1991. This application Apr. 8, 1992, Ser. No. 865,114
Claims priority, application Japan, Apr. 10, 1991, 3-077567; Jul. 12, 1991, 3-172174
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.23 **17 Claims**



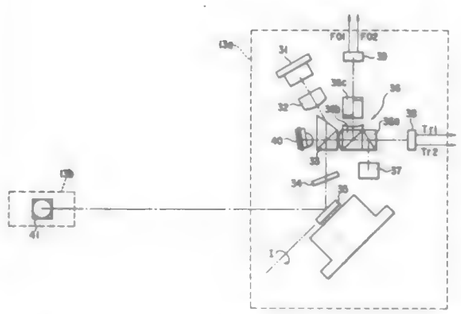
1. An information recording apparatus including an optical head, said optical head comprising:
a semiconductor laser;
a focusing optical system for forming spots of outgoing beams from said semiconductor laser on the surface of an information medium;
a beam separation optical system for separating reflected beams reflected by said information medium from said outgoing beams;
optical detectors for receiving detection beams separated by said beam separation optical system; and
an optical head body for fixing said semiconductor laser, said focusing optical system, said beam separation optical system and said optical detectors;
said semiconductor laser being sealed by said focusing optical system or said beam separation optical system and said optical head body;
wherein said beam separation optical system comprises a first beam separation optical system for separating said outgoing beams outgoing from said semiconductor laser into a main beam and two sub-beams, and a second beam separation optical system for separating a plurality of reflected beams reflected by said information medium in a direction different from said outgoing beams;
wherein said first beam separation optical system further comprises a first diffraction grating or holographic device for providing positive and negative astigmatisms to said two sub-beams;
wherein marks are in advance recorded on the surface of said information medium so as to modulate reflected light power of said sub-beams;
wherein said optical detectors each have two optical detection devices for receiving said sub-beams; and
wherein said information recording apparatus further comprises two amplitude detection circuits for detecting magnitudes of amplitudes modulated by said marks from said light power signals outputted from said two optical detection devices, and a focus error detection circuit comprising a subtraction circuit for subtracting said two amplitude detection signals outputted from said amplitude detection circuits.

5,361,245

OPTICAL SIGNAL PROCESSING APPARATUS FOR DETECTING THE DIRECTION OF MOVEMENT OF AN OPTICAL READING DEVICE RELATIVE TO AN OPTICAL DISK

Takaharu Yoshida, and Naobumi Seo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 13, 1993, Ser. No. 90,238
Claims priority, application Japan, Jul. 13, 1992, 4-185081
Int. Cl.[5] G11B *7/085*
U.S. Cl. 369—44.28 **6 Claims**



1. An optical disk apparatus for accessing a target track of an optical disk on which tracks are formed and information is recorded along the track, comprising.

means for radiating a polarized light beam onto the optical disk, the polarized light beam having a first direction of polarization aligned along a predetermined angular orientation with respect to an optical axis of the radiating means, the radiating means being movable toward the target track along a radial direction of the optical disk;

a non-polarizing beam splitter for splitting a light beam reflected off of the optical disk into a first reflected light beam and a second reflected light beam, wherein the light beam reflected off of the disc has a second direction of polarization that is different from the first direction of polarization, the first reflected light beam and the second reflected light beam both being polarized in the second direction of polarization;

a polarizing beam splitter for splitting the first reflected light beam into a third reflected light beam, wherein the third reflected light beam has a third direction of polarization;

first receiving means for receiving the second reflected light beam split by the non-polarizing beam splitter to generate an electrical signal corresponding to the second reflected light beam;

second receiving means for receiving the third reflected light beam split by the polarizing beam splitter to generate a deviation signal corresponding to the third reflected light beam, the deviation signal representing a deviation between the light beam radiated onto the optical disk and the location of the track on the optical disk;

means for detecting a relative direction of radial movement the radiating means over the disk based on the electrical signal from the first receiving means and the deviation signal from the second receiving means while the radiating means is being moved and for providing a detecting result; and

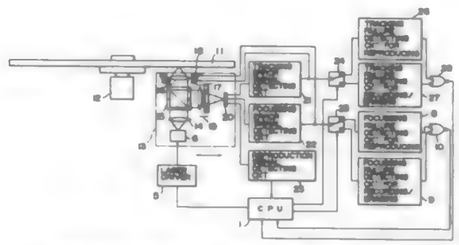
means for driving the radiating means in response to the detecting result of the detecting means.

5,361,246

OPTICAL INFORMATION PROCESSING APPARATUS PROVIDED WITH MEANS FOR DETECTING ABNORMALITY OF FOCUSING SERVO WITH A PREDETERMINED SENSITIVITY

Hidekazu Tominaga, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 330,265, Mar. 29, 1989, abandoned.
This application Jan. 6, 1994, Ser. No. 178,434
Claims priority, application Japan, Mar. 31, 1988, 63-076393
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.32 **17 Claims**



1. An optical information processing apparatus comprising:

recording-reproducing means for selectively effecting at least one of recording and reproducing of information by scanning an optical recording medium with a condensed light beam said recording-reproducing means comprising scanning means for scanning the recording medium with the light beam;

focusing error detecting means for receiving light from the recording medium to detect a focusing error of the light beam, and for outputting a focusing error signal;

focusing servo means for receiving the focusing error signal and for controlling said scanning means to correct a focusing state of the light beam on the basis of the focusing error signal;

abnormality detection means for receiving from the recording medium to detect an abnormality of said focusing servo means by comparing the received light quantity with a reference value, said abnormality detection means having a predetermined detection sensitivity and producing an abnormality detection output; and

switching means for switching the detection sensitivity of said abnormality detection means, said switching means comprising means for switching the detection sensitivity to a higher level during recording of information than during reproducing of information.

5,361,247

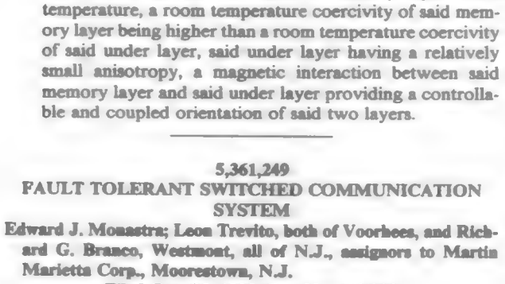
INFORMATION RECORDING AND REPRODUCING DEVICE WITH REPRODUCTION AND AUTOMATIC GAIN CONTROL CIRCUIT

Hiroshi Fuji; Toshihisa Deguchi, both of Nara; Shigeo Terashima, Tenri, and Takeshi Yamaguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1990, Ser. No. 581,218
Claims priority, application Japan, Sep. 12, 1989, 1-236655; Sep. 14, 1989, 1-239010; Sep. 14, 1989, 1-239011; Sep. 14, 1989, 1-239012; Sep. 14, 1989, 1-239013
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—48 **29 Claims**

1. An information recording and reproducing device which records, erases, and reproduces on or from an optical memory, comprising:

automatic gain control means, including reproduced signal output means for amplifying and releasing a reproduced signal according to an amplification degree based on a control voltage and control signal output means for releasing the control voltage varying in response to an amplitude of the reproduced signal, the automatic gain control means being arranged such that the amplification degree of the reproduced signal output means is adjusted based



on the control voltage varying in response to the amplitude of the reproduced signal; and

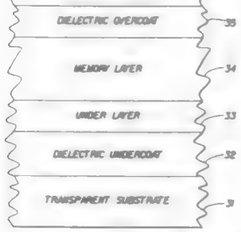
first control means for controlling the amplification degree of the automatic gain control means by holding the control voltage during recording and erasing.

5,361,248

DIRECT OVERWRITE MAGNETO-OPTICAL STORAGE MEDIUM NOT REQUIRING AN INITIALIZATION MAGNET

Tukaram K. Hatwar, Penfield; David J. Genova, and Randall H. Victora, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,130
Int. Cl.[5] G11B *7/26*
U.S. Cl. 369—275.2 **23 Claims**



12. A magneto-optical storage structure comprising:

a magnetically orientable memory layer; and

a magnetically orientable under layer, said under layer having a Curie temperature above a memory layer Curie temperature, a room temperature coercivity of said memory layer being higher than a room temperature coercivity of said under layer, said under layer having a relatively small anisotropy, a magnetic interaction between said memory layer and said under layer providing a controllable and coupled orientation of said two layers.

5,361,249

FAULT TOLERANT SWITCHED COMMUNICATION SYSTEM

Edward J. Monastra; Leon Trevito, both of Voorhees, and Richard G. Branco, Westmont, all of N.J., assignors to Martin Marietta Corp., Moorestown, N.J.

Filed Oct. 26, 1993, Ser. No. 140,993
Int. Cl.[5] H04L *1/22*
U.S. Cl. 370—16 **7 Claims**

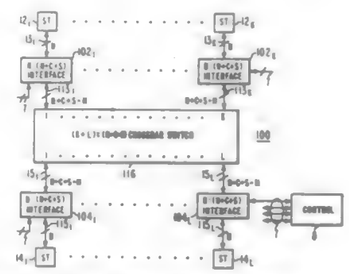
5. A method for communicating N-bit signals among N-bit stations, comprising the steps of:

applying said N-bit signals from a transmitting station to an N-bit portion of an M-bit switching system including M bit paths extending through said switching system, where M is greater than N by a number S of supernumerary bit paths;

in the event of a failure in one of said N bit paths of said switching system, routing that one bit of particular significance, of said. N bits transmitted by one of said stations, which may, as a result of said failure, arrive at a receiving station as a defective bit, to one of said supernumerary paths extending through said switching system, to thereby form a rerouted bit;

at a receiving station of said communication system, routing all of said N bits received from said N-bit portion of said M bit paths extending through said switching system, except said one bit of said particular significance, to the corresponding bit positions of said N-bit receiving station;

at said receiving station of said communication system, routing said rerouted bit from said supernumerary path extending through said switching system to a bit position corresponding to said particular significance;



generating C error coding bits from said N-bit signal at said transmitting station;

applying said error coding bits from said transmitting station to a C-bit portion of said M-bit switching system, where C is less than S;

in the event of a failure in an additional one of said N bit paths of said switching system, to create an additional defective bit of another significance at a time when a number equal to S−C of said supernumerary bit paths are in use carrying defective bits, reducing the number of said error coding bits to less than C, thereby freeing at least one of said supernumerary bit paths, and routing said additional defective bit to said one of said supernumerary paths freed by said reduction in the number of error coding bits, to thereby form an additional rerouted bit;

at a receiving station of said communication system, routing said additional rerouted bit from said one of said supernumerary bit paths freed by reduction of said error coding to a bit position corresponding to said other significance.

5,361,250

APPARATUS AND METHOD OF TOKEN RING BEACON STATION REMOVAL FOR A COMMUNICATION NETWORK

Truong Q. Nguyen, and Isaac P. Choi, both of San Jose, Calif., assignors to Synoptics Communications, Inc., Santa Clara, Calif.

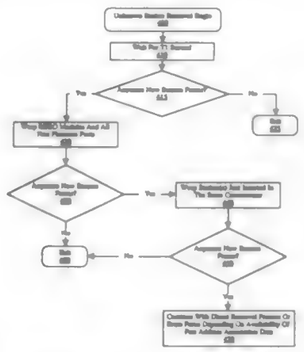
Continuation of Ser. No. 11,176, Jan. 28, 1993, Pat. No. 5,283,783. This application Nov. 3, 1993, Ser. No. 146,948
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[5] H04L *12/42*
U.S. Cl. 370—16.1 **29 Claims**

1. In a token ring network having a plurality of stations coupled in a ring topology, said stations generating and repeating beacon dataframes to indicate a communication fault within said token ring network, an apparatus for isolating faulty stations comprising:

first isolating means for isolating from said network recently inserted stations of said plurality of stations in response to

said beacon dataframes, said first isolating means communicatively coupled to said token ring network;

second isolating means for directly isolating from said network particular stations of said plurality of stations that are identified by a port address association database that is indexed by said beacon dataframes, said second isolating



means communicatively coupled to said token ring network; and

third isolating means for sequentially isolating from said network individual stations of said plurality of stations, said third isolating means communicatively coupled to said token ring network.

5,361,251

PASSING CELL MONITORING DEVICE OPERATED USING AN ATM SWITCHING UNIT

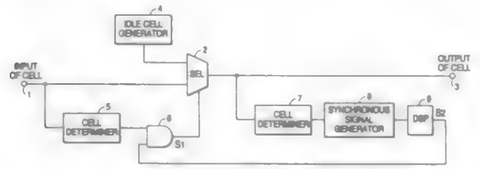
Naoki Aihara; Shuji Yoshimura, both of Kawasaki; Naoki Fukuda, Fukuoka, and Tadashi Hoshino, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 17, 1992, Ser. No. 854,476

Claims priority, application Japan, Mar. 20, 1991, 3-056447

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60 **10 Claims**



1. A passing cell monitoring device, comprising:

cell determining means for receiving a plurality of passing cells and determining whether or not ones of said plurality of passing cells are to be observed and outputting a first pulse for each ones of said plurality of passing cells if said ones of said plurality of passing cells are to be observed;

dividing means for receiving said first pulse and for outputting a second pulse when a predetermined number of first pulses are received; and

detecting means for performing Fourier transformation based on the cycle time between successive occurrences of said second pulse and calculating a coefficient of each frequency obtained from the Fourier transformation to obtain data related to observed ones of said plurality of passing cells.

5,361,252

METHOD AND A DEVICE FOR MONITORING CHANNEL SPLIT DATA PACKET TRANSMISSION

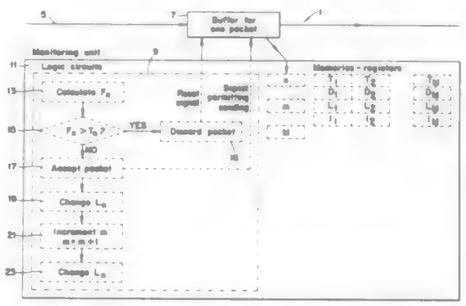
Hans K. M. Sällberg, Trollebergsvägen, and Leif M. Larsson, Telebruksgatan, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 12, 1993, Ser. No. 30,724

Claims priority, application Sweden, Mar. 13, 1992, 9200775

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—17 **33 Claims**



33. A method of controlling data packet transmission on a transmission line comprising the steps of:

providing a plurality of channels, each channel having a maximal packet transmission frequency, a channel number, a count value, and a threshold value;

changing the count value of each of the channels in succession, one count value being changed during each successive first time interval;

determining, for each data packet arriving on the transmission line, the channel number of an arriving channel which is carrying the arriving data packet;

generating, for each arriving channel, a frequency value based on the arriving channel's count value and channel number and on the channel number corresponding to the count value most recently changed in the changing step; and

comparing, for each arriving channel, the frequency value with the respective arriving channel's threshold value and, based on the comparison, performing one of the steps of:

permitting transmission of the respective arriving data packet;

discarding the respective arriving data packet; and

marking the respective arriving data packet.

5,361,253

ATM POLICING FUNCTION WITH AUTONOMOUS REFERENCE TIME INSTANTS

Maurice M. Feijen, Rijswijk, and Jacob C. van der Wal, Ve Delft, both of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Feb. 9, 1993, Ser. No. 15,638

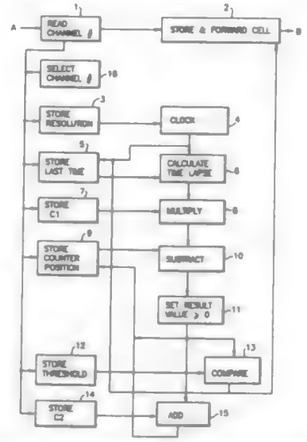
Claims priority, application Netherlands, Feb. 12, 1992, 9200253

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—17 **3 Claims**

1. Method of transferring, via a transmission medium comprising a plurality of virtual, asynchronously time-division-multiplexed transmission channels, a data stream fed to said transmission medium and comprised of data cells which are each transferred via one of said transmission channels and which each contain a channel designation indicating transmission channel via which said data cell has to be transferred, in which method a monitoring apparatus at the beginning of the transmission medium stores, for each transmission channel, a

variable value which, when a data cell arrives at said monitoring apparatus, is amended as a function of the time which has elapsed from a reference time instant known at the monitoring apparatus, which amended variable value is then compared with a threshold value and, depending on the amended vari-



able value and said threshold value, access to the downstream transmission medium is granted or refused to said data cell,

wherein said reference time instant is set by the monitoring apparatus in a complete or at least partial independence of the instants of time of the appearance of the data cells.

5,361,254

SWITCH MECHANISM FOR SWITCHING SIGNALS AT INPUTS ONTO OUTPUTS AND SWITCHING NETWORKS FOR INTERLINKING FIRST AND SECOND TRANSMISSION MEDIA

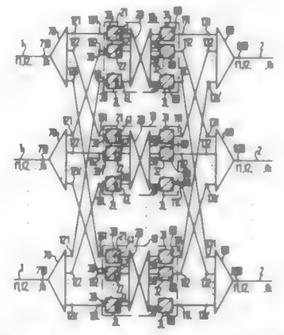
Eckhard Storck, and Hans-Hermann Witte, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 30, 1992, Ser. No. 983,040

Claims priority, application Germany, Dec. 20, 1991, 4142337; European Pat. Off., May 26, 1992, 92108865.4

Int. Cl.[5] H04J *1/00, 14/02;* **H04Q** *11/02*

U.S. Cl. 370—57 **29 Claims**



7. A switching network for interlinking a plurality of first transmission media to an identical plurality of second transmission media, every first transmission medium and every second transmission medium being provided for transmitting signals on a plurality of predetermined, different second frequencies, comprising:

a plurality of switch mechanism connected between said plurality of first transmission media and said plurality of second transmission media;

a plurality of input means equal in number to the plurality of first transmission media, each input means having an input connected to one of said first transmission media and having a plurality of outputs that are equal in number to the plurality of switch mechanisms, said plurality of outputs connected respectively to said plurality of switch mechanisms, each of said input means providing power-associated distribution of a signal on its input to each of its outputs;

each of the switch mechanisms having a plurality of inputs equal to the plurality of transmission media and having the same plurality of outputs,

first frequencies being a subset of said second frequencies and being distributed onto the inputs of the switch mechanism in a same, predetermined distribution in all switch mechanisms;

a plurality of output means equal in number to the plurality of second transmission media, each output means having an output connected to one of said second transmission media and having a plurality of inputs that are equal in number to the plurality of switch mechanisms, said plurality of inputs connected respectively to said plurality of switch mechanisms;

the outputs of every input means connected to all switch mechanisms such that every output of a respective input means of the input side is connected to an input of a switch mechanism and every input of every switch mechanism is connected to an output of a respective input means of the input side; and

the inputs of every output means connected to all switch mechanisms such that every input of a respective output means of the output side is connected to an output of a switch mechanism and every output of every switch mechanism is connected to an input of a respective output means to the output side.

5,361,255

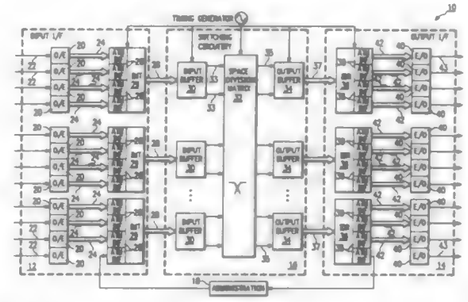
METHOD AND APPARATUS FOR A HIGH SPEED ASYNCHRONOUS TRANSFER MODE SWITCH

Felix V. Diaz, and Jack H. Stanley, both of Plano, Tex., assignors to DSC Communications Corporation, Plano, Tex.

Filed Apr. 29, 1991, Ser. No. 693,553

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—58.1 **36 Claims**



26. A method of switching packets between a plurality of inputs and a plurality of outputs comprising the steps of:

queuing the packets in a plurality of input buffer circuits;

assigning an age to the first queued packets;

transferring the first queued packets simultaneously from the input buffer circuits through a switch having one or more planes in response to the age and addresses associated with the packets;

sending an acknowledge signal to a sending input buffer

circuit responsive to a packet being received at one of said outputs;

updating the age of packets responsive to not receiving a corresponding acknowledge signal; and

retransmitting packets for which an acknowledge signal is not received within a predetermined time.

5,361,256

INTER-DOMAIN MULTICAST ROUTING

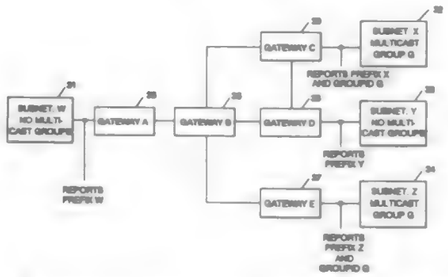
Willibald Doeringer, Langnau am Albis; Douglas Dykeman, Rueschlikon, both of Switzerland; Allan K. Edwards, Raleigh, N.C.; Diane P. Pozefsky, Chapel Hill, N.C.; Soumitra Sarkar, and Roger D. Turner, both of Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1993, Ser. No. 68,351

Claims priority, application European Pat. Off., Nov. 27, 1992, 92810927.1

Int. Cl.[5] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—60 **16 Claims**



1. A method for multicasting a message from a sending station to a plurality of receiving stations within a conventional unicast message transmission network using existing protocols, said network containing a plurality of subnetworks and a plurality of gateway nodes connecting, and acting as entry ports to, said subnetworks, said method comprising:

distributing multicast group information by each subnetwork to each connected gateway node, said group information identifying each group of receiving stations reachable in said subnetwork;

building and maintaining a multicast routing table in each gateway node, said routing table containing said group information to enable the routing of multicast messages to each said group of receiving stations, said multicast routing table having a single entry for each said group;

transmitting said multicast message with a group identifier carried in a header part of said multicast message defining an addressed group of receiving stations; and

in each gateway node, reading and interpreting said group identifier transmitted in said multicast message to direct forwarding of said multicast message to said addressed group of receiving stations.

5,361,257

CONTROLLED ACCESS ATM SWITCH

Lars-Göran Petersen, Tumba, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 29, 1993, Ser. No. 11,378

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **38 Claims**

31. A data transfer switch comprising:

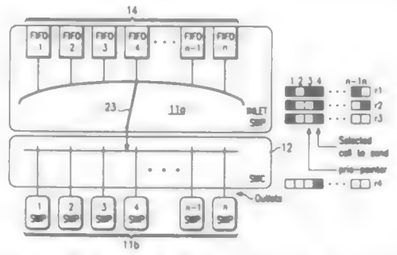
means for providing selectable routing paths for the routing of said information cells from input points to output points of a switchcore matrix having a plurality of rows, columns, and crosspoints thereof;

means for electronically connecting a plurality of input switchports to the input points of said switchcore matrix, each of said input switchports including at least one input buffer and being associated with one of said matrix rows;

means for electronically connecting a plurality of output switchports to the output points of said switchcore matrix, each of said output switchports being associated with one of said matrix columns;

means for connecting each of said switchports to an external information cell communications device;

means for asynchronously transmitting and receiving said stream of information cells from said switchcore matrix:



a plurality of single-cell buffers, each of said single-cell buffers being mounted at a different one of said crosspoints of said switchcore matrix;

means for reporting to each of said input switchports whether each of said single-cell crosspoint buffers on said input switchport's associated row contains an information cell; and

means for controlling access by said information cells to said switchcore matrix by holding said information cells in said input buffer until one of said single-cell crosspoint buffers is empty.

5,361,258

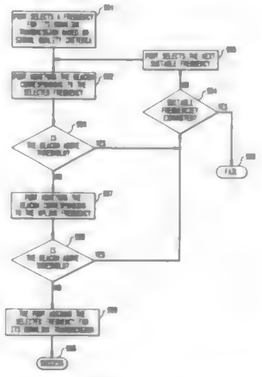
BEACON DETECTION SYSTEM FOR SHARING SPECTRUM BETWEEN WIRELESS COMMUNICATIONS SYSTEMS AND FIXED MICROWAVE SYSTEMS

Hamilton W. Arnold, Neptune; Daniel M. Devasirvathan, Lakewood; Nelson R. Sollenberger, Tinton Falls, all of N.J.; Larrie G. Sutliff, Briarcliff Manor, N.Y., and Vijay K. Varma, Holmdel, N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 22, 1993, Ser. No. 142,533

Int. Cl.[5] H04Q *7/00;* **H04B** *7/26, 15/00*

U.S. Cl. 370—69.1 **16 Claims**



1. In a geographical area commonly comprising a plurality of point-to-point microwave transmitter/receivers transmitting and receiving information signals at fixed frequencies within a predetermined spectrum to associated transmitter/-

receivers, and a frequency-reusing radio communications system having a plurality of fixed base units and a plurality of mobile transceivers, each fixed base unit having a transmitter for transmitting at an assigned downlink frequency within said predetermined spectrum to at least one mobile transceiver and a receiver for receiving at an associated uplink frequency within said predetermined spectrum from at least one mobile transceiver and for receiving signals transmitted by other sources within said predetermined spectrum, each mobile transceiver having a transmitter for transmitting signals at any one of a plurality of uplink frequencies to any one of said plurality of fixed base units and a receiver for receiving signals at any one of a plurality of associated downlink frequencies from any one of said plurality of fixed base units and for receiving signals transmitted by other sources within said predetermined spectrum, wherein at least some of the point-to-point microwave transmitter/receivers transmit and receive at at least some of the same frequencies used as downlink and uplink frequencies of the frequency-reusing radio communications system, a spectrum sharing system for preventing a transmission from any fixed base unit or from any mobile transceiver from interfering with the signals received at any point-to-point receiver at a receive frequency that is the same as the downlink or uplink frequency used by a fixed base unit or a mobile transceiver, comprising:

means associated with each point-to-point transmitter/-receiver for transmitting a beacon uniquely identified with that point-to-point receiver's receive frequency, the beacon transmitted by the transmitter in that transmitter/-receiver being within said predetermined spectrum at a frequency different than the frequency of the information signal transmitted by that transmitter;

base beacon means associated with each fixed base unit for detecting the beacon transmitted by at least one transmitter/receiver and for assigning at that fixed base unit as a downlink frequency or as an associated uplink frequency a frequency other than any point-to-point receiver's receive frequency whose associated detected beacon exceeds a first predetermined threshold; and

mobile beacon means associated with each mobile transceiver for detecting the beacon transmitted by at least one transmitter/receiver and for accessing the radio communications system by that mobile transceiver on an uplink frequency other than any point-to-point receiver's receive frequency whose associated detected beacon exceeds a second predetermined threshold.

5,361,259

WIDE AREA NETWORK (WAN)-ARRANGEMENT

Steven D. Hunt, Freehold, and Edward W. Landis, Holmdel, both of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,974

Int. Cl.[5] H04L *12/48*

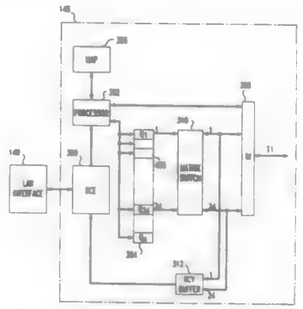
U.S. Cl. 370—84 **23 Claims**

1. A communication system between LANs comprising:

LAN interface means for providing a plurality of data packets containing information from a source LAN, each of said data packets having an address field with an address;

a communication network that provides a communication path to a destination LAN; and

network interface means for communicating each of said data packets to one of a plurality of variable bandwidth channels between said LAN interface means and said communication network, based on said address obtained



from each of said packets received from said LAN interface means.

5,361,260

COMMUNICATION SYSTEM

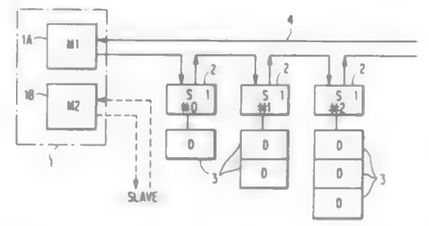
Jun-ichi Mito, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1992, Ser. No. 855,660

Claims priority, application Japan, Mar. 22, 1991, 3-059000

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.1 **26 Claims**



1. A communications system comprising:

a master station, a plurality of slave stations each for performing a specified function and transmission line means, said master and slave stations being connected by said transmission line means in a loop or a daisy-chain for serial communication among said stations, said master station being operative to generate control data for each of said slave stations so that said master station controls the way each slave station performs its specified function and to addressably transmit said control data in predetermined ones of serial time slots for each respective slave station such that each slave station receives said control data in a predetermined time slot which is unique to that slave station, each said slave station being operative to addressably receive and respond to said data, and

synchronization means operative to control the transmission timing of addressable transmission of data in predetermined time slots and, in response to addressable reception of said data at each respective slave station, to delayably control the response timing of each such slave station to said data by a respective predetermined period of time,

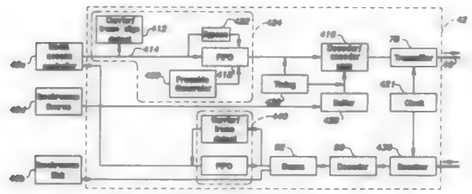
whereby the response timing of all said slave stations to the addressable transmission of data by said master station is synchronized.

5,361,261

FRAME-BASED TRANSMISSION OF DATA

Brian C. Edem, San Jose, and Debra J. Worsley, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 2, 1992, Ser. No. 970,329
Int. Cl.[5] H03M *7/00*; H04J *3/02*
U.S. Cl. 370—85.3 **23 Claims**



14. Apparatus for conveying data from a data source, over physical media, to a data sink, said data source including a media access controller which outputs first data in a packet form, the apparatus comprising:

a first buffer, coupled to said media access controller for receiving said first data in packet form and outputting at least said first data as a first plurality of groups of bits of said first data;

a first encoder for receiving and encoding at least said first data and outputting encoded data;

a clock-responsive transmitter coupled to said first encoder for receiving said encoded data and coupled to said physical media for transmitting said encoded data onto said physical media,

a reference clock, coupled to said transmitter, for establishing the beginning times of a plurality of contiguous time frames, each time frame having a plurality of time slots,

wherein each of said first plurality of groups of bits is transmitted by said transmitter during a first set of predetermined ones of said time slots, at least some of said first set of predetermined ones of said time slots being non-contiguous;

wherein said first encoder outputs said encoded data in a first encoded form according to a 4/5 encoding scheme wherein 4 bits of data are encoded into a 5-bit group;

wherein said data sink includes a repeater for said first data, configured to receive said first data in a second encoded form and further comprising:

a second encoder, different from said first encoder, in said data sink for encoding said first data in said second encoded form.

5,361,262

ESTIMATED-QUEUE, EXPANDED-BUS COMMUNICATION NETWORK

Kwok-wai Cheung, Austin, Tex., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 16, 1993, Ser. No. 49,465
Int. Cl.[5] H04J *3/02, 3/16*
U.S. Cl. 370—85.7 **11 Claims**

5. A communication network comprising

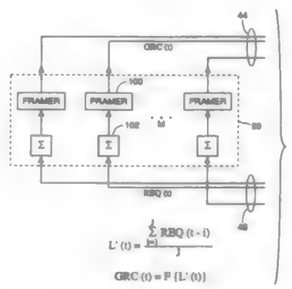
a first and a second station;

a bus extending between said first and second stations and including a plurality of first communication channels propagating from said first station to said second station and a plurality of second communication channels propagating from said second station to said first station, said first and said second communication channels being arranged in paired channels of one first communication channel and one second communication channel, wherein said first and said second stations impress upon said first and said second communication channels repetitive formatted slots including a one-bit request portion, a two-bit counter portion, and a data portion;

a plurality of nodes arranged along said bus and connected to said first and second communication channels;

wherein each of said nodes having a data segment to transmit on a first one of one said paired channels changes the request portion in one slot impressed upon a second one of said paired channels;

wherein the one of said first and second stations receiving a slot from a second one of said one paired channel accumulates information from the request portions in a plurality of slots impressed upon said one of said second paired channels, calculates therefrom a global request counter, and transmits said global request counter in the counter portion in one of said slots on said first one of said one paired channel;



wherein each said node receives said global request counter from said first one of said said one paired channel, delays transmitting for an access time period derived from said global request counter, and thereafter transmits the data segment in the data portion of one said slots carried by said first one of said one paired channel;

wherein each said node comprises means for delaying changing a request portion of said one slot for a request time period derived from said received global request counter; and

wherein each said node comprises a first and a second fairness register each containing factor at least a derived from the relative position of each said node along said first and second communications channels respectively from said first and second stations respectively, and wherein said access time period and said request time period are additionally derived from said fairness factors contained in said first and second fairness registers respectively.

5,361,263

TRANSMISSION SYSTEM FOR THE SYNCHRONOUS DIGITAL HIERARCHY

Ralph Urbansky, Schwaig, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 848,613, Mar. 9, 1992, abandoned. This application Nov. 5, 1993, Ser. No. 148,016
Claims priority, application Germany, Mar. 15, 1991, 4108429
Int. Cl.[5] H04J *3/06*; H04L *7/04*
U.S. Cl. 370—102 **20 Claims**

1. An apparatus for transmitting synchronous digital data in a Synchronous Transport Module (STM-N) format in which said data are grouped in containers, wherein said containers include at least a first plurality of said containers each having a respective positive justification location at a predetermined positive location or a respective negative justification location at a predetermined negative location, comprising means for receiving an STM-N signal containing said data in one of said first plurality of containers, means for receiving an output clock signal, and an adaptation circuit for compensating for phase variations of said STM-N signal with respect to said output clock signal,

characterized in that said adaptation circuit comprises:

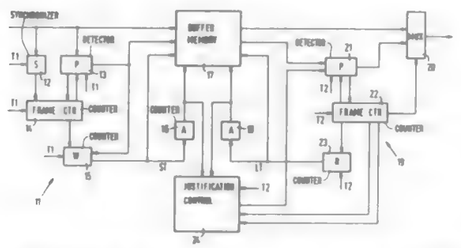
detecting means for determining whether said one of said first plurality of containers has a positive or has a negative justification location at the corresponding location,

a buffer for storing portions of said data of said one of said first plurality of containers at a plurality of addresses,

a write address generator, connected to said buffer and synchronized to the received STM-N signal, for forming write addresses at which respective portions of said data of said one of said first plurality of containers are written in said buffer,

a read address generator, connected to said buffer and synchronized to said output clock signal, for forming read addresses at which respective portions of said data of said one of said first plurality of containers are read from said buffer,

a justification decision circuit, including means for determining differences between said write addresses and said read addresses over a given period of time, and means for



determining the mean value of said differences; said justification decision circuit providing a justification signal responsive to said mean value, said justification signal being indicative of whether or not positive or negative justification is required, and

an output circuit for receiving said respective portions read from said buffer, and for providing an output signal based on said respective portions; responsive to said justification signal being a positive justification signal and said detecting means determining that said first plurality of containers has a positive justification location, for filling said positive location in the one container with at least one justification byte; and, responsive to said justification signal being a negative justification signal and said detecting means determining that said one of said first plurality of containers has a negative justification location, for filling said negative location in the one container with at least a part of one of said respective portions read from said buffer.

5,361,264

MODE PROGRAMMABLE VLSI DATA REGISTERS

Edward T. Lewis, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

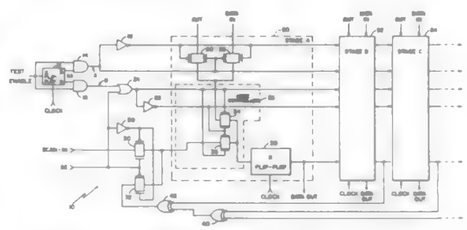
Continuation of Ser. No. 847,416, Mar. 5, 1992, abandoned, which is a continuation of Ser. No. 375,076, Jul. 3, 1989, abandoned. This application Feb. 22, 1993, Ser. No. 20,900
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.5 **2 Claims**

1. A mode programmable data register having a plurality of stages comprising:

means having a scan input, a parallel data input and a parallel initialization input for storing data;

means coupled to said storing means for automatically initializing said mode programmable data register to one of a plurality of predetermined states in accordance with said parallel initialization input to each stage, said initializing being performed during a first clock period of a pseudo-random number generator mode of operation following the assertion of a test enable control signal;

means coupled to outputs of predetermined stages of said data register for enabling said register to generate pseudo-random numbers; and



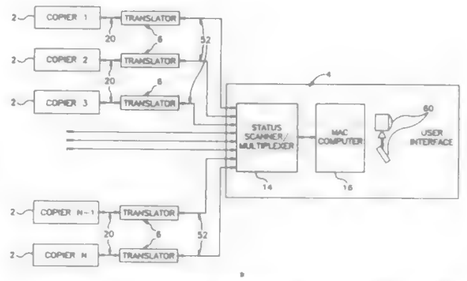
means coupled to said storing means for operating said data register in a scan mode.

5,361,265

SYSTEM FOR AUTOMATICALLY MONITORING COPIERS FROM A REMOTE LOCATION

Joseph Weinberger, 13 Guernsey La., East Brunswick, N.J. 08816; Gary Bricault, and James Laird, both of Rochester, N.Y., assignors to Joseph Weinberger, East Brunswick, N.J.

Continuation of Ser. No. 778,386, Oct. 16, 1991, abandoned, which is a continuation of Ser. No. 450,605, Dec. 13, 1989, Pat. No. 5,084,875. This application May 3, 1993, Ser. No. 56,609
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—29.1 **6 Claims**



1. A system for monitoring the current operational status of a plurality of copier machines from a remote location, each copier machine monitored by the system having its own copier control computer for determining copier operational status, said system comprising

a number of interfaces equal in number to the plurality of copier machines utilizing the system, each copier machine in the system having an interface associated therewith for intercepting and passing current copier operational status information from the copier control computer

means for capturing and automatically communicating the current copier operational status information from the interface to the remote location,

means for transmitting the information between the means for capturing and communicating said information and the remote location,

means to receive and process the information at the remote location and

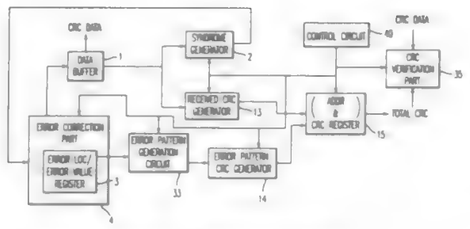
means to obtain current operational status information of the copier machines monitored by the system wherein the means to obtain current operational status information includes means to selectively provide real-time monitoring of information from a particular copier machine monitored by the system.

5,361,266

ERROR CORRECTION CIRCUIT

Yukio Kodama; Kazuo Murakami, both of Itami, and Hideo Yoshida, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 138,037
Claims priority, application Japan, Nov. 4, 1992, 4-294853
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.7 **15 Claims**



1. An error correction circuit comprising:

(a) a data buffer for storing a data stream in which a plurality of RS codes for correcting an error in data and CRC codes for detecting an error in said data are interleaved, said data stream being formed by a first to an n-th partial data streams each processed by RS coding, said data streams including CRC data preliminarily generated by CRC coding;

(b) syndrome generation means for generating syndromes of RS codes in accordance with said partial data streams which have not been corrected yet;

(c) first CRC coding means for performing CRC coding on said partial data streams which have not been corrected yet to thereby obtain first CRCs;

(d) error correction means for calculating error locations and error values of said partial data streams in accordance with said syndromes and for correcting errors in said partial data streams in accordance with said error locations and said error values;

(e) second CRC coding means for generating error patterns of said partial data streams in accordance with said error locations and said error values, coding CRCs of said error patterns and for obtaining second CRCs;

(f) adding means for receiving said first or said second CRCs and calculating a total CRC which is a sum of said first or said second CRCs of said partial data streams;

(g) CRC verification means for comparing said total CRC with said CRC data of said data stream and for verifying whether said means (d) has performed error correction accurately; and

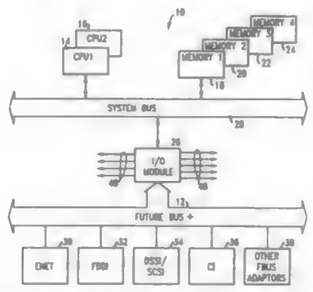
(h) control means for controlling said means (b) to (g) so that the said first to said n-th partial data streams are serially processed and generation of a syndrome performed by said means (b) based on a j-th partial data stream ($2 \leqq j \leqq n$), CRC coding on said j-th partial data stream performed by said means (c) and CRC coding on an error pattern of a (j-1)-th partial data stream performed by said means (e) are carried out simultaneously, and so that said means (g) performs verification after said means (e) has finished CRC coding on an error pattern of said n-th partial data stream.

5,361,267

SCHEME FOR ERROR HANDLING IN A COMPUTER SYSTEM

Nitin D. Godiwala, Boylston; Barry A. Maakas, Sterling; Kurt M. Thaller, Acton, and Jeffrey A. Metzger, Leominster, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 24, 1992, Ser. No. 874,321
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 **3 Claims**



1. A control flow logic device for handling data received from a bus by a bus interface, in response to a bus read transaction, and transferred to a processor, the control flow logic comprising:

bus interface means for providing error checking and notification within a time cycle defined by an error free bus transaction, said bus interface means further comprising:

an error checker to check data received from the bus for hard errors and parity errors;

an ECC generator to generate an ECC for the received data, the ECC being forced to a bad ECC when a hard error is detected by the error checker and to a good ECC in the absence of a hard error;

an error signal generator to generate and transmit an error signal to the processor when there is a hard error or a parity error in the received data; and

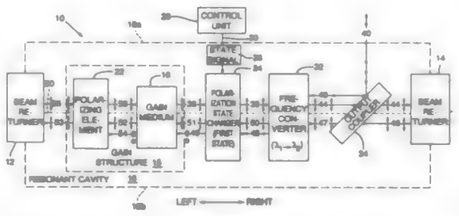
a data mover to transmit the received data and the ECC to the processor.

5,361,268

SWITCHABLE TWO-WAVELENGTH FREQUENCY-CONVERTING LASER SYSTEM AND POWER CONTROL THEREFOR

Michael E. Fossey, Beaverton, and Yunlong Sun, Aloha, both of Oreg., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed May 18, 1993, Ser. No. 64,515
Int. Cl.[5] H01S *3/107*
U.S. Cl. 372—23 **43 Claims**



1. A laser system for selectively producing one of a first output beam at a first wavelength and a second output beam at a second wavelength different from the first wavelength, the laser system comprising:

a first beam returner;

a second beam returner;

a gain structure, the first beam returner, the second beam returner, and the gain structure defining a resonant cavity characterized by a Q factor and a lasing path, the gain structure responsive to a source of pumping energy to produce in the cavity and along the path an incident beam at a first wavelength and in a selected polarization state of a set of orthogonal polarization states;

a polarization state changer located in the cavity and on the path, the polarization state changer responsive to a control signal to assume selectively one of a first state, a second state, and a third state, the polarization state changer in the first state responsive to the incident beam to produce an intermediate beam without change of polarization state, the polarization state changer in the second state reducing the Q factor sufficiently to prevent lasing in the cavity, the polarization state changer in the third state responsive to the incident beam to produce a polarization-state-changed beam in a polarization state orthogonal to the selected polarization state;

a frequency converter located in the cavity and on the path, the frequency converter responsive to the intermediate beam to produce a frequency-converted beam at the second wavelength, the frequency converter responsive to the polarization-state-changed beam to pass that beam as a passed beam;

first means for coupling a portion of the passed beam out of the cavity as the first output beam; and

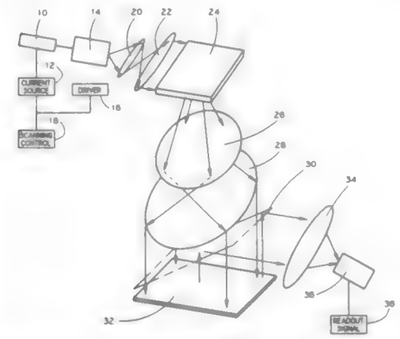
second means for coupling a portion of the frequency-converted beam out of the cavity as the second output beam, whereby the laser system selectively produces under control of the state signal one of the first output beam, the second output beam, and no output beam.

5,361,269

NON-MECHANICAL LASER BEAM SCANNING DEVICE EMPLOYING A DIFFRACTION GRATING AND AN ACOUSTO-OPTIC DEFLECTOR FOR OPTICAL RECORDING AND READOUT

Yasuo Kamatani, 2-12-2 Yokoyama, Sagamihara-shi, Kanagawa 229, Japan

Filed Jun. 28, 1993, Ser. No. 82,493
Int. Cl.[5] H01S *3/101, 3/106;* **G02B** *26/10;* **G02F** *1/335*
U.S. Cl. 372—24 **3 Claims**



1. An optical apparatus for scanning a semiconductor laser beam comprising in combination

a semiconductor laser beam source which generates and emits a laser beam;

a diffraction grating positioned to intercept said beam;

electronic control means for varying the power applied to said laser beam source in a selected manner for altering the wavelength of said beam produced by said laser whereby the angular position of the beam emanating from said grating is varied by said electronic control means;

acoustoptic deflecting means disposed in the path of said laser beam between said laser and said grating;

Electronic driving means operatively connected to said deflecting means to form a frequency dependent diffraction grating; and

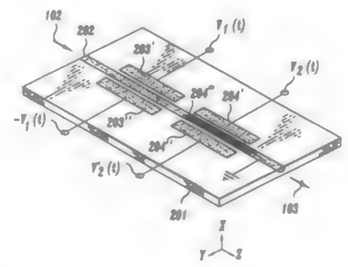
second electronic control means operatively connected to said driving means to alter said frequency in a selected manner to vary the angular position of the beam emanating from said deflecting means by said second electronic control means.

5,361,270

APPARATUS AND METHOD EMPLOYING POLARIZATION MODULATION TO REDUCE EFFECTS OF POLARIZATION HOLE BURNING AND/OR POLARIZATION DEPENDENT LOSS

Fred L. Heismann, Freehold, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 18, 1993, Ser. No. 107,872
Int. Cl.[5] H01S *3/10;* **G02B** *6/12, 5/30*
U.S. Cl. 372—27 **34 Claims**



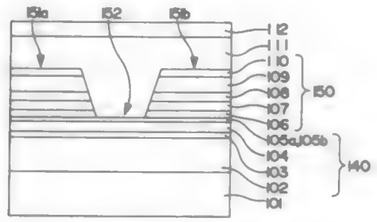
1. Apparatus intended for use in reducing the effects of polarization dependent hole-burning in an optical transmission system employing optical fiber amplifiers, the apparatus comprising:

means for generating an arbitrarily polarized optical signal;

means for modulating the state of polarization of said arbitrarily polarized optical signal periodically through a predetermined sequence of polarization states such that averaged over a predetermined modulation period substantially all possible output polarization states are excited with substantially equal probability, said means for modulating including first means for modulating the state of polarization of a particularly polarized optical signal periodically between first and second states of polarization in at least one pair of orthogonal polarization states such that substantially equal time is spent in each of the first and second states of polarization and second means for modulating the state of polarization of a particularly polarized optical signal periodically between first and second states of polarization, where said state of polarization of the optical signal is a symmetric combination of the input state of polarization of said first means for modulating and its orthogonal polarization state, and

means for supplying said polarized optical signal to said means for modulating.

5,361,271
SEMICONDUCTOR LASER
Haruhisa Takiguchi; Kazuhiko Inoguchi; Hiroaki Kudo; Satoshi Sugahara, and Mototaka Taneya, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Japan
Filed Sep. 13, 1993, Ser. No. 120,277
Claims priority, application Japan, Sep. 14, 1992, 4-245079
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **24 Claims**



1. A semiconductor laser comprising a semiconductor substrate, a multi-layered structure formed on the semiconductor substrate and a current and light confining means formed on the multi-layered structure,

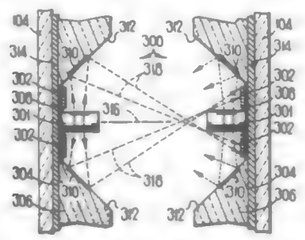
wherein the current and light confining means includes at least two multi-layered current and light confining portions each having a laser beam transmission layer and a laser beam absorption layer formed on the laser beam transmission layer, and at least one stripe groove which spatially separates the at least two current and light confining portions;

wherein an equivalent refractive index in the multi-layered current and light confining portions with respect to a laser beam in a fundamental transverse mode is made smaller than that within the stripe groove;

wherein the multi-layered structure includes an active layer, and the active layer has a region positioned below the stripe groove of the current and light confining means and regions positioned below a respective one of the multi-layered current and light confining portions; and

wherein an optical confinement factor Γ of the active layer outside the stripe groove with respect to a laser beam in a guide mode is larger than that outside the stripe groove with respect to a laser beam in an anti-guide mode.

5,361,272
SEMICONDUCTOR ARCHITECTURE AND APPLICATION THEREOF
Vladimir Gorelik and Stephen Krissman, both of Savannah, Ga., assignors to Integrated Data Systems, Inc. Savannah, Ga.
Filed Sep. 18, 1992, Ser. No. 947,410
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **65 Claims**



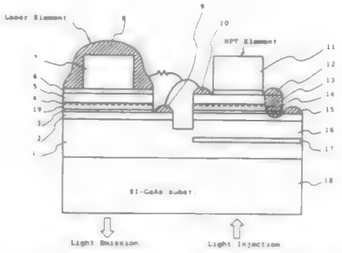
34. A semiconductor element assembly comprising

(a) a first non-planar substrate, wherein said first non-planar substrate includes a cavity within its interior,

(b) a cooling means located within said cavity for cooling said first non-planar substrate, and

(c) a first semiconductor material coupled to said first non-planar substrate, wherein said first semiconductor material has a curved exterior surface.

5,361,273
SEMICONDUCTOR OPTICAL SURFACE TRANSMISSION DEVICE
Hideo Kosaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 4, 1993, Ser. No. 145,505
Claims priority, application Japan, Nov. 4, 1992, 4-295035
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—50 **7 Claims**



1. A semiconductor optical surface transmission device comprising:

a semiconductor substrate;

an element provided on said semiconductor substrate for emitting a light through said semiconductor substrate, said light emission element having first and second reflective mirror elements and a first intermediate layer sandwiched between said first and second reflective mirror elements and said first intermediate layer including an active layer and having a thickness of approximately integer times of a wavelength of an emission light;

an element provided on said semiconductor substrate for detecting a light injected through said semiconductor substrate, said detecting element having third and fourth reflective mirror elements with the same structures as structures of said first and second reflective mirror elements and a second intermediate layer with the same structure as a structure of said first intermediate layer, said second intermediate layer being sandwiched between said third and fourth reflective mirror elements and said second intermediate layer including an absorption layer and having a thickness of approximately integer times of the wavelength of the emission light; and

means provided in said fourth reflective mirror element for inverting a phase of a light confined between said third and fourth reflective mirror elements to form a double resonator in said light detecting element.

5,361,274
MICROWAVE DISCHARGE DEVICE WITH TM*NMO* CAVITY
James E. Simpson, Gaithersburg; Mohammed Kamarehi, Rockville; Brian Turner, Myersville, and Michael G. Ury, Bethesda, all of Md., assignors to Fusion Systems Corp., Rockville, Md.
Filed Mar. 12, 1992, Ser. No. 849,719
Int. Cl.[5] H01S *3/093*
U.S. Cl. 372—72 **14 Claims**

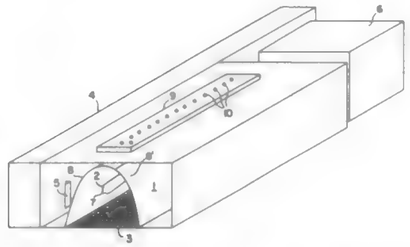
1. A microwave powered electrodeless lamp comprising,

a discharge envelope,

means for generating microwave energy,

a microwave cavity including microwave coupling means

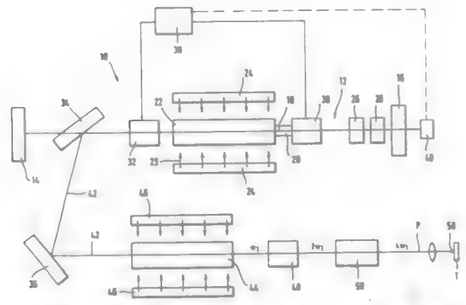
situated at a wall of the cavity for coupling said microwave energy to said cavity, said coupling means comprising means for coupling both an oscillating microwave field having a mode of oscillation which has a null in microwave field strength in said cavity at a particular position in front of said coupling means, and a direct microwave field, to said cavity,



a conductive body located in said cavity at said particular position in front of said coupling means where said null occurs so as to short said direct microwave field while not affecting said oscillating microwave field,

said discharge envelope being located on the opposite side of said conductive body from said coupling means.

5,361,275
APPARATUS FOR REMOVING MATERIAL FROM A TARGET
Hans Opower, Krailling, Germany, assignor to Deutsche Forschungsanstalt fuer Luftund Raumfahrt e.V., Bonn, Germany
Filed Aug. 26, 1993, Ser. No. 112,710
Claims priority, application Germany, Sep. 3, 1992, 4229397
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—108 **28 Claims**



1. An apparatus for removing material from a target, comprising:

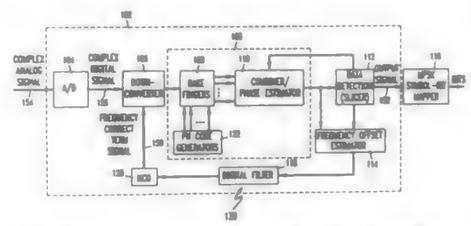
a high-power laser for generating laser pulses with a pulse duration in the picosecond range and comprising a resonator having a mode-locking device and a Q-switch arranged therein,

a frequency multiplier following the high-power laser, and

a beam guide for focusing the laser beam coming from the frequency multiplier onto the target,

said resonator having fully reflecting end mirrors for generating single high-energy laser pulses, a system for the controlled coupling out of single pulses being arranged in the resonator, and a control being provided for coupling out a single pulse following release of the laser activity by the Q-switch and the build up of the single pulse after repeated round trips through the resonator.

5,361,276
ALL DIGITAL MAXIMUM LIKELIHOOD BASED SPREAD SPECTRUM RECEIVER
Ravi Subramanian, East Brunswick, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Sep. 13, 1993, Ser. No. 119,682
Int. Cl.[5] H04L *27/30*
U.S. Cl. 375—1 **10 Claims**



1. A spread spectrum receiver for use in a spread spectrum communication system, said spread spectrum receiver comprising:

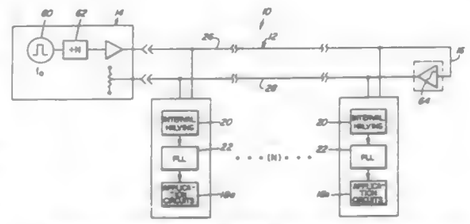
an analog-to-digital converter for receiving an analog spread spectrum signal, and for converting said received analog signal to a digital signal, said received analog signal having a plurality of both main and multipath return signals of varying signal strengths;

a frequency offset correction device, electrically connected to said analog-to-digital converter, for modifying said digital signal in accordance with a frequency correction term signal to thereby correct for frequency offset in said received analog signal;

searching means for receiving said modified digital signal, and for searching through said modified digital signal to identify M of said main and multipath return signals having the strongest signal strengths; and

processing means, electrically connected to said searching means and said frequency offset correction device, for processing said identified main and multipath return signals in accordance with predetermined maximum likelihood techniques to thereby generate said frequency correction term signal.

5,361,277
METHOD AND APPARATUS FOR CLOCK DISTRIBUTION AND FOR DISTRIBUTED CLOCK SYNCHRONIZATION
Wayne D. Grover, Edmonton, Canada, assignor to Alberta Telecommunications Research Centre, Canada
Filed Mar. 30, 1989, Ser. No. 331,635
Claims priority, application Canada, Apr. 27, 1988, 565,292
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—107 **54 Claims**



1. A clock distribution apparatus for use in providing a common absolute time reference to spatially distributed application modules requiring synchronized clocks, said apparatus comprising:

means for transmitting an outgoing reference signal from a

first site to a second site and a return reference signal from said second site to said first site upon arrival of said outgoing reference signal at said second site; and

means at each said application module for detecting an outgoing reference signal and a corresponding return reference signal and producing a local phase reference signal approximately midway through the time interval required for said outgoing reference signal to travel from a signal detecting site at said application module to said second site and said return reference signal to travel from said second site to said signal detecting site.

5,361,278

PROCESS FOR TRANSMITTING A SIGNAL

Thomas Vaupel, Essen, and Detlef, Krahé Kempen, both of Germany, assignors to Telefunken Fernseh und Rundfunk GmbH, Hanover, Germany

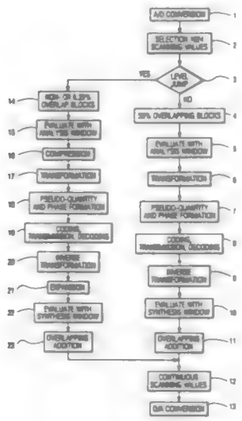
PCT No. PCT/EP90/01661, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/05411, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 4, 1990, Ser. No. 853,752

Claims priority, application Germany, Oct. 6, 1989, 3933470

Int. Cl.[5] H04B *1/66*; G10L *3/02, 5/00*

U.S. Cl. 375—122 **12 Claims**



1. In a method of transmitting an analog signal including the steps of converting said analog signal into a digital signal, subdividing said digital signal into successive blocks using windows and converting said blocks into spectra using transformation, coding said spectra and transmitting said spectra, decoding and reconverting said spectra into signal segments using inverse transformation, and joining together said blocks containing said signal segments, an improvement comprising the steps of:

a) evaluating said blocks for level changes, and when said level is below a predetermined level;

b) subdividing said signal into blocks and overlapping said blocks by 50%;

c) assessing the signal segments within said blocks using analysis windows;

d) transforming said signal segments using subsampling and time domain aliasing cancellation to compensate for aliasing components;

e) inverse transforming said signal segments;

f) assessing said signal segments using synthesis windows;

g) rejoining said blocks in overlapping fashion; and when said level change is above said predetermined level

h) subdividing said signal into blocks and overlapping by between 0% and n%, where n<50%.

i) fully scanning said signal segments;

j) compressing said signal segments;

k) transforming said signal segments;

l) inverse transforming said signal segments;

m) expanding said signal segments.

5,361,279

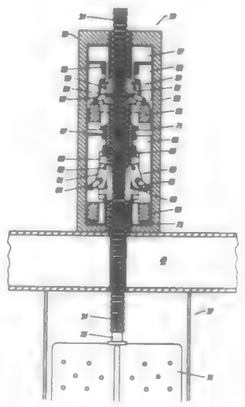
INTERNAL CONTROL ROD DRIVE FOR A BWR

Irvin R. Kobsa, San Jose; Charles W. Relf, Sunnyvale, and John C. Carruth, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 14, 1993, Ser. No. 76,229

Int. Cl.[5] G21C *7/16*

U.S. Cl. 376—230 **21 Claims**



4. A control rod drive system for vertically positioning a plurality of control rods relative to a plurality of fuel rod bundles arranged in a fuel core of a nuclear reactor having a pressure vessel that contains said fuel core, comprising:

an open grid mounted with said pressure vessel at a position above said fuel core, said grid comprising a plurality of mounting surfaces;

a plurality of jack rods, each one of said jack rods being coupled to a corresponding one of said plurality of control rods; and

a plurality of hydraulic jacks, each one of said hydraulic jacks being attached to said grid on a corresponding one of said plurality of mounting surfaces and comprising a hydraulically operated means for holding, lifting and lowering a corresponding one of said plurality of jack rods relative to said grid, wherein each hydraulic jack comprises:

a hydraulically operated holding mechanism having holders arranged to selectively engage said jack rod to hold said jack rod in place; and

a hydraulically operated lifting mechanism having lifters arranged to selectively engage said jack rod and a lift cylinder arranged to lift said lifters and said jack rod therewith when said holders are disengaged and said lifters are engaged.

5,361,280

METHOD FOR READING A NUCLEAR FUEL ASSEMBLY IDENTIFICATION CODE

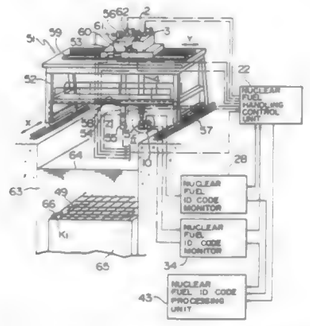
Tatsuyuki Omote, Hitachi; Tomiharu Yoshida; Hideo Maki, both of Katsuta; Makoto Senoh, Naka; Fuminobu Takahashi, Katsuta, and Kenji Tsuchita, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 771,119, Oct. 4, 1991, Pat. No. 5,167,910, which is a division of Ser. No. 346,226, May 12, 1989, Pat. No. 5,089,213. This application Sep. 18, 1992, Ser. No. 947,298

Claims priority, application Japan, May 2, 1988, 63-107628; May 2, 1988, 63-107629

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—248 **8 Claims**



1. A method for reading a nuclear fuel identification code marked on a fuel assembly, comprising the steps of:

providing an optical sensor and an ultrasonic wave sensor;

at least initially detecting the nuclear fuel identification code by the optical sensor;

terminating recognition for the nuclear fuel identification code when the nuclear fuel identification code can be recognized based on information derived from the optical sensor as the reading of the nuclear fuel identification code;

detecting the nuclear fuel identification code by the ultrasonic wave sensor when the nuclear fuel identification code can not be recognized based on the information derived from the optical sensor; and

recognizing the nuclear fuel identification code based on the information derived from said ultrasonic wave sensor as the reading of the nuclear fuel identification code.

5,361,281

STORAGE RACK FOR SPENT NUCLEAR FUEL ASSEMBLIES

Jan S. Porowski, Pittsburgh, Pa., assignor to AEA O'Donnell, Inc., Pittsburgh, Pa.

Filed Jul. 30, 1993, Ser. No. 99,323

Int. Cl.[5] G21C *19/00*

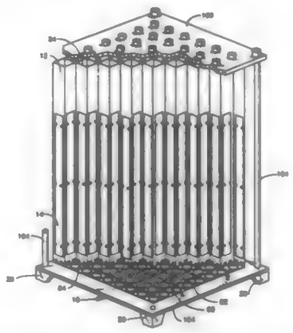
U.S. Cl. 376—272 **13 Claims**

1. A storage rack for storing spent nuclear fuel assemblies, comprising:

a plurality of vertical tubular cells with rectangular cross-sections for receiving spent nuclear fuel assemblies therein, each of said cells having four side portions and four corners constructed from a plurality of vertically extending prebent panels coupled together, at least one of said panels being prebent about three vertically extending axes so that its top profile includes at least two diagonally arranged L-shaped portions forming at least two of said side portions of at least two of said cells diagonally arranged relative to each other within said storage rack;

a coupling member for attaching said panels together to form said cells;

a plurality of moderating members constructed of neutron-absorbing material being coupled to at least some of said side portions of said cells, said moderating members being arranged between the nuclear fuel assemblies to be positioned in said cells; and



a base member rigidly coupled to said panels for supporting said cells substantially perpendicular to said base member.

5,361,282

DIMENSIONALLY STABLE AND CORROSION-RESISTANT FUEL CHANNELS AND RELATED METHOD OF MANUFACTURE

Ronald B. Adamson, Fremont, Calif.; Donald C. Bartosik, Wilmington, N.C.; Eric B. Johansson, Wrightsville Beach, N.C., and Cedric D. Williams, Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed May 13, 1993, Ser. No. 60,669

Int. Cl.[5] G21C *3/32*

U.S. Cl. 376—443 **20 Claims**

1. A method for manufacturing a dimensionally stable and corrosion-resistant fuel channel, comprising the steps of:

forming first and second strips of material comprising metal alloy in a hexagonal close-packed crystallographic phase having a uniform texture;

subjecting said first and second strips to heat treatment by heating to a first temperature which initiates transformation from said hexagonal close-packed crystallographic phase to a body-centered cubic crystallographic phase and then quenching to a second temperature at a rate which initiates transformation to a hexagonal close-packed crystallographic phase having a texture factor f_L=0.28–0.38;

forming each of said heat-treated first and second strips into first and second fuel channel components respectively;

seam welding said first and second fuel channel components to assemble a fuel channel; and

subjecting said fuel channel to thermal sizing by heating to a third temperature less than said second temperature and sufficient to anneal said material and then cooling.

5,361,283

GUIDE TUBE RETAINER

Douglas J. Attix, Lynchburg, Va., assignor to B&W Fuel Company, Lynchburg, Va.

Filed Mar. 15, 1994, Ser. No. 214,713

Int. Cl.[5] G21C *3/30*

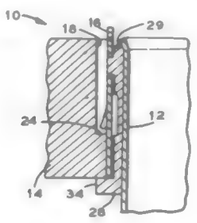
U.S. Cl. 376—446 **3 Claims**

1. In a reconstitutable fuel assembly having an upper end fitting with a plurality of bores therethrough each sized to receive a guide tube assembly and at least one control rod guide tube assembly with the guide tube assembly including an upper end sleeve having a radially extending first shoulder at the lower end for engagement with the lower surface of said upper end fitting, an integral reusable locking arrangement

between the guide tube assembly and upper end fitting comprising:

a. said upper end sleeve having at least two rigid tabs that extend radially outward;

b. said upper end fitting having a plurality of vertical slots that extend downwardly along a portion of the wall of each bore from the upper end thereof so as to define a second shoulder at the lower end of each of said slots;



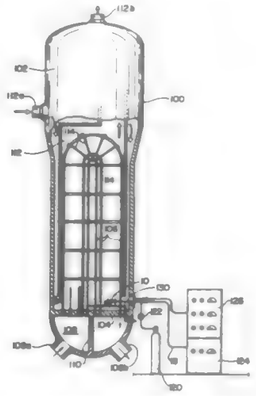
c. a cylindrical tube concentric with said upper end sleeve, said cylindrical tube having at least two slots sized to receive said tabs on said upper end sleeve and a plurality of flexible tabs extending outwardly and circumferentially spaced apart substantially at the mid section of said tube such that the tabs at the mid section of said tube are received in said vertical slots in the upper end fitting for engagement with said second shoulders, the lower end surface of said tube being engaged with said first shoulder.

5,361,284

TUBE CORROSION ACCELERATOR

Allen J. Baum, Pittsburgh, Pa., and William M. Cox, Cheshire, England, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 4, 1993, Ser. No. 26,047
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—245 **21 Claims**



12. A method of predicting corrosion of exterior surfaces of heat exchange tubes within an active pressurized water reactor heat exchanger with an apparatus adapted for removable insertion within the heat exchanger comprising an elongated sealed tube, first means for heating the tube at a first axial position within the tube and for pressurizing the interior of the tube with a gas, second means for retaining a corrosive sludge in contact with the exterior surface proximate to the first axial position, and a probe for providing a first signal indicative of a first corrosion condition of the exterior surface proximate to the first axial position, comprising the steps of:

inserting a portion of the sealed tube comprising the second means within the heat exchanger;

pressurizing the interior of the tube to a first pressure;

heating the exterior surface of the tube proximate to the first axial position to a first temperature;

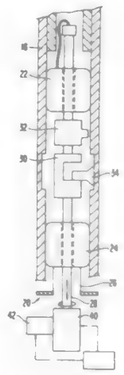
providing the first signal indicative of the first corrosion condition with the probe after the pressuring and heating steps.

5,361,285

EDM CRACK REMOVAL TOOLING

Frank J. Formanek, West Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Division of Ser. No. 54,269, Apr. 30, 1993, Pat. No. 5,317,607.
This application Jan. 11, 1994, Ser. No. 179,819
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **3 Claims**



1. A method of repairing cracks in a nozzle in which a sleeve is fixedly disposed, comprising the steps of:

inserting a sleeve cutting tool into the sleeve;

activating support means which engages the inner wall of said sleeve and which maintains the sleeve cutting tool in a predetermined position within said sleeve;

cutting through said sleeve using said sleeve cutting tool in a manner which allows a portion of said sleeve to be removed;

removing the portion of said sleeve;

inserting a crack removing tool into the portion of said nozzle wherein said sleeve has been removed;

activating support means on said crack removing tool to support said crack removing tool in said nozzle;

using a crack detecting sensor to locate the position of a crack in said nozzle;

moving said crack detecting sensor away from the location at which the crack is detected and moving a crack removal head into position opposite the location whereat the crack was detected; and

removing portion of the inner wall of said nozzle using said crack removal head.

5,361,286

METHOD FOR IN SITU CLEANING OF INLET MIXERS

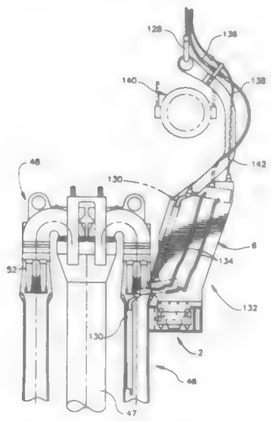
David O. Monserud, Seattle; David H. Bothell, Puyallup; Paul H. Tacheron, Kent; Michael C. McDonald, Sumner; David E. Steele, Seattle, all of Wash.; James E. Charnley, Gilroy, and Gunnar V. Vatvedt, Los Gatos, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 19, 1993, Ser. No. 63,595
Int. Cl.[5] G21C *19/00*; B08B *3/00*
U.S. Cl. 376—316 **16 Claims**

1. A method for removing scale from an internal surface of

a tubular component submerged in liquid, comprising the steps of:

installing a tool inside said tubular component, said tool being capable of outputting a jet of liquid having an ultra-high pressure sufficient to remove scale buildup from said internal surface when said jet impinges thereon;



supplying ultra-high-pressure liquid to said tool; and

operating said tool to scan said liquid jet over said internal surface,

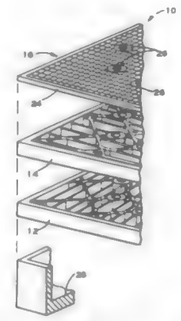
wherein said ultra-high pressure is equal to at least 20,000 psi, said tubular component is a nozzle of an inlet mixer of a boiling water reactor and said liquid is water.

5,361,287

NUCLEAR FUEL ASSEMBLY LOWER END FITTING

Rick D. Williamson, Forest, Va., assignor to B&W Fuel Company, Lynchburg, Va.

Filed Mar. 29, 1994, Ser. No. 219,679
Int. Cl.[5] G21C *3/32, 15/06, 19/30*
U.S. Cl. 376—352 **4 Claims**



1. In a nuclear fuel assembly having a plurality of fuel rods held in a spaced array by grid assemblies, guide tubes extending through the grid assemblies and attached at their upper and lower ends to an upper end fitting and a lower end fitting, the lower end fitting comprising:

a. a first rigid substantially square plate, said first plate being formed from a network of diagonal and lateral ribs in conjunction with guide tube hubs, with the pitch between ribs corresponding to one-half of the fuel rod pitch;

b. a second rigid substantially square plate being formed from the same configuration of ribs and guide tube hubs as said first plate, said second plate being rotated horizontally ninety degrees relative to said first plate and rigidly attached to said first plate such that the lateral ribs of said first and second plates are at right angles; and

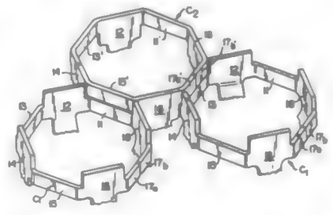
c. a screen rigidly attached to said second plate, said screen being formed from approximately 0.03 inch diameter wire with 0.100 inch pitch and having guide tube bosses at positions that correspond to the guide tube hubs in said first and second plates.

5,361,288

SPACER WITH INTEGRAL ZIRCALOY SPRINGS

Eric B. Johansson, Wrightsville Beach, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Aug. 16, 1993, Ser. No. 106,740
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—441 **10 Claims**



1. In a spacer having a matrix of individual cells, each cell for surrounding a fuel rod in a corresponding matrix of fuel rods, said spacer comprising:

a plurality of spacer cells;

said cells each including stop means for centering said fuel rods with respect to said cells and spring means for biasing said fuel rods into said stop means of said cells;

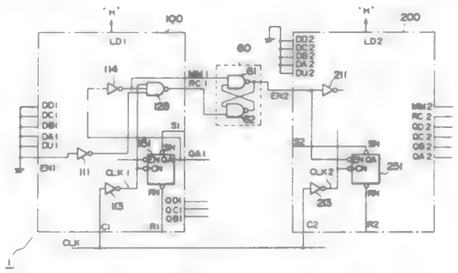
each said spacer cell including upper and lower octagonal crowns, said octagonal crowns panel heights adjoining adjacent cells including means for adjoining like panels from adjacent panel cells in a single thickness along horizontal edges such that said like panels are in substantially vertical, co-planar alignment.

5,361,289

SYNCHRONOUS COUNTER CIRCUIT HAVING A PLURALITY OF CASCADE-CONNECTED COUNTERS

Harumi Kawano, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 14, 1993, Ser. No. 61,046
Claims priority, application Japan, May 18, 1992, 4-123988
Int. Cl.[5] H03K *21/16*
U.S. Cl. 377—44 **20 Claims**



1. A synchronous counter circuit comprising:

(a) first and second counting circuits, each including

(1) a clock terminal for receiving a clock signal,

(2) an enable terminal for receiving an enable signal,

(3) a counter, coupled to the clock terminal, for counting pulses of the clock signal,

(4) a carry signal generating circuit, coupled to the counter for generating a carry signal in response to a finish of the counting of the counter, and

(5) a ripple carry signal generating circuit, coupled to the clock terminal and the carry signal generating circuit, for generating a ripple carry signal in response to the clock signal and the carry signal; and

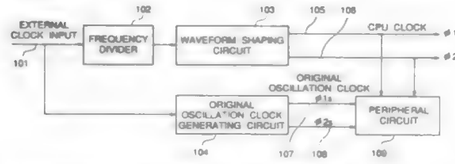
(b) a latch circuit, coupled to the carry signal generating circuit and the ripple carry signal generating circuit of said first counting circuit, for generating another enable signal in response to the carry signal and the ripple carry signal which are output from the carry signal generating circuit and the ripple carry signal generating circuit of said first counting circuit, said latch circuit having an output terminal coupled to the enable terminal of the second counting circuit.

5,361,290

CLOCK GENERATING CIRCUIT FOR USE IN SINGLE CHIP MICROCOMPUTER

Shin-ichiro Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,222
Claims priority, application Japan, May 13, 1991, 3-107262
Int. Cl.[5] H03K *21/00, 3/017*
U.S. Cl. 377—47 **4 Claims**



1. A basic clock signal generating circuit for use in a single chip microcomputer, comprising:

a frequency divider receiving an external clock signal for generating a frequency-divided clock signal as a basic clock of the single chip microcomputer;

an original oscillation clock generation circuit receiving the external clock signal for generating an original oscillation clock having a frequency which is double that of the basic clock; and

a pulse width modulation output circuit receiving the basic clock and the original oscillation clock, the pulse width modulation output circuit comprising:

an N-bit modulo register (where "N" is a positive integer) coupled to a data bus for latching N most significant bits of data on said data bus in response to an N-bit modulo register latch signal, said N most significant bits determining a clock width;

an M-bit modulo register (where "M" is a positive integer) coupled to said data bus for latching M least significant bits of data on said data bus in response to an M-bit modulo register latch signal, said M least significant bits determining which of a plurality of phases should be added with one clock in order to realize a precision (N+M) bits;

a control data latch circuit coupled to said data bus for latching data on said data bus in response to a control data latch signal;

a clock data latch circuit coupled to said data bus for latching a clock data on said data bus in response to a clock data latch signal, so as to generate a clock data select signal;

a down counter coupled to an output of said N-bit modulo register;

a one-clock addition circuit coupled to an output of said M-bit modulo register;

an output control circuit coupled to an output of said control data latch circuit;

a clock switching circuit receiving a first pair of clocks composed of a first CPU clock and a second CPU clock, and a second pair of clocks composed of a first original oscillation clock and a second original oscillation clock from said basic clock signal generating circuit, said clock switching circuit being controlled by said clock data select signal supplied from said clock data latch circuit, so as to select one pair of clocks from said first and second pairs of clocks, said selected pair of clocks being used for operation of the PWM output circuit, and to supply said selected pair of clocks to said down counter, said one-clock addition circuit, and said output control circuit; and

a reload timing generating circuit receiving said selected pair of clocks and generating a reload signal to said down counter and said one-clock addition circuit, said reload signal causing contents of said N-bit modulo register and said M-bit modulo register to be written to said down counter and said one-clock addition circuit, respectively;

whereby said down counter operates to decrement its contents in response to said selected pair of clocks supplied from said clock switching circuit, and when the contents of said down counter become zero, said down counter provides a coincidence signal to said one-clock addition circuit; and

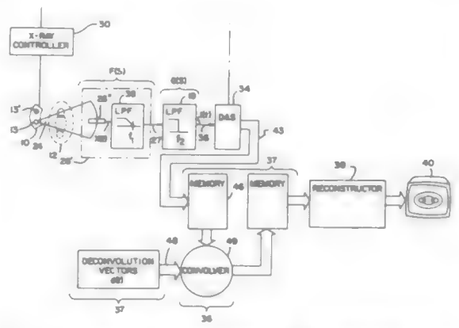
said one-clock addition circuit responds to said coincidence signal to generate a PWM signal supplied to said output control circuit, said output control circuit generating a PWM output signal.

5,361,291

DECONVOLUTION FILTER FOR CT SYSTEM

Thomas L. Toth, Brookfield; Carl R. Crawford, Milwaukee, and Kevin F. King, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 20, 1991, Ser. No. 796,113
Int. Cl.[5] G01N *23/083*
U.S. Cl. 378—12 **6 Claims**



1. A CT apparatus for imaging a body comprising:

a gantry rotatable about a center within a plane of rotation;

an x-ray source mounted on said gantry for producing x-ray radiation emanating from a first and second location with respect to the gantry, the locations generally within the plane of rotation of the gantry and along a tangent of the gantry rotation;

an x-ray control means for causing the x-rays from the x-ray source to shift at a transition time between the two different locations to produce first and second projection data;

a detector attached to the gantry for receiving the x-ray radiation from the first and second location and comprised of at least one detector element having a transfer function

F(s) for producing an intensity signal which is responsive to the transition time; and

a convolution means receiving the intensity signal and responsive to the transition time for convolving the intensity signal with a deconvolution vector d(t) referenced to the transition time wherein the signal d(t) is the inverse Laplace transform of a function of 1/F(s).

4. A CT apparatus for imaging a body comprising:

a gantry rotatable about a center within a plane of rotation;

an x-ray source mounted on said gantry for producing x-ray radiation emanating from a first and second location with respect to the gantry, the locations generally within the plane of rotation of the gantry and along a tangent to the gantry rotation;

an x-ray control means for causing the x-rays from the x-ray source to shift between the two different locations at a wobble frequency ω to produce first and second projection data;

a detector attached to the gantry for receiving the x-ray radiation from the first and second location and comprised of at least one detector element having a transfer function F(s) for producing an intensity signal having a group delay ϕ; and

a sampling means for sampling the intensity signal at time τ after the x-ray source has shifted between locations where τ equals

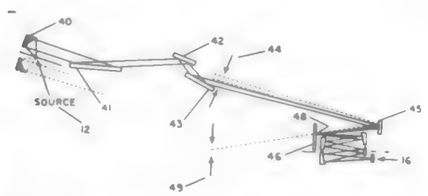
$$\phi + \frac{1}{4\omega}.$$

5,361,292

CONDENSER FOR ILLUMINATING A RING FIELD

William C. Sweatt, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed May 11, 1993, Ser. No. 60,335
Int. Cl.[5] G21K *1/06*
U.S. Cl. 378—34 **18 Claims**



1. A condenser system for use with a ring field camera comprising:

a small diameter source of radiation;

at least three substantially equal radial segments of a parent aspheric mirror, each having one focus at the radiation source and the other focus at the radius of a ring field and each producing a beam of radiation;

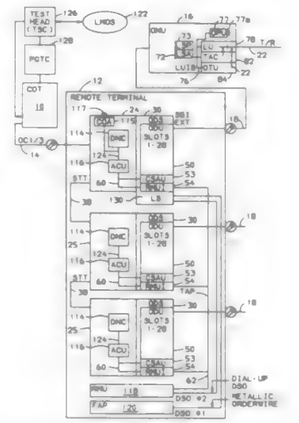
a number of sets of correcting mirror means, each correcting mirror means comprising correcting mirrors which both translate and rotate, which is one less than the number of aspheric mirror segments, such that one of the beams, an unrotated beam of radiation passes through the real entrance pupil of the camera without interaction with a set of correcting mirrors to form a first segment of a ring image at the ring field radius and the other beams individually interact with one each of the respective sets of correcting mirrors wherein each of the other beams is individually rotated and translated into substantial coincidence with the first segment at the ring field radius.

5,361,293

LINE/DROP TESTING FROM A CRAFT TERMINAL USING TEST UNIT

Richard M. Czerwiec, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Apr. 16, 1992, Ser. No. 869,618
Int. Cl.[5] H04M *1/24, 3/22;* **H04J** *1/16, 3/14*
U.S. Cl. 379—27 **5 Claims**



3. A test unit, comprising:

a card for insertion in a line card slot of a line card shelf in a structure having a number of associated line card shelves, wherein the shelf recognizes the card as a test unit and provides a selected test configuration for the structure via a line unit interface bus in the shelf;

means on the card, responsive to a drop test request from the line unit interface buss in the shelf, for providing a drop test sequence on an output thereof via a test-out bus in the line card shelf;

means on the card, responsive to a line test request from the line unit interface bus, for providing a selected line test sequence on the line unit interface bus and wherein the card provides report signals for reporting results of the line and drop test sequences via the line unit interface bus to a craft interface in the structure.

5,361,294

METHOD AND APPARATUS FOR NOISE QUIETING DURING RESYNCHRONIZATION OF A DIGITAL COMMUNICATION SYSTEM

Craig A. Lee, Boynton Beach, and Thomas A. Oberle, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1992, Ser. No. 993,881
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 **14 Claims**

12. A telepoint base station for communicating with a portable communication unit, the telepoint base station comprising:

a radio transceiver for establishing a radio link with the portable communication unit;

a processor coupled to the transceiver for controlling the telepoint base station;

a memory coupled to the processor for storing system software and operating variables;

a telephone interface coupled to the radio transceiver for providing communications between the portable communication unit and a telephone system;

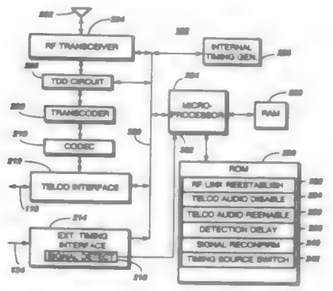
an external timing port coupled to the processor for receiving an external timing signal;

an internal timing signal generator coupled to the processor for generating an internal timing signal; and

an apparatus for eliminating an audible noise burst after reestablishment of the external timing signal when the telepoint base station is temporarily operating from the internal timing signal to provide digital communications with the portable communication unit, the apparatus comprising:

an external timing signal detector for detecting the reestablishment of the external timing signal, the external timing signal detector comprising:

a logic signal input element for receiving an indication that the external timing signal is present;



a delay element coupled to the logic signal input element for delaying response for a first predetermined time delay after receiving the indication; and

a reconfirmation element coupled to the delay element for reconfirming that the external timing signal is still present after the first predetermined time delay; and

a first processor element coupled to the external timing signal detector for controlling the portable communication unit to execute a radio link reestablishment procedure in response to reconfirming that the external timing signal is still present after the first predetermined time delay.

5,361,295

ANONYMOUS INTERACTIVE TELEPHONE SYSTEM

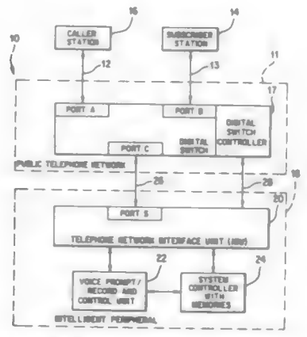
Merrill Solomon, Washington, D.C.; John Kimball, Germantown, and Dana L. Goldstein, Rockville, both of Md., assignors to The Telephone Connection, Arlington, Va.

Continuation-in-part of Ser. No. 448,110, Dec. 12, 1989, Pat. No. 5,058,152. This application Oct. 11, 1991, Ser. No. 774,963

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] H04M *1/64, 1/66, 3/42*

U.S. Cl. 379—67 **25 Claims**



15. A call screening telephone communication method for connecting a subscriber with a caller over the public telephone lines, the method including the steps of:

storing data at a system controller station that is received from a plurality of subscribers at a plurality of subscriber stations, such data including the telephone number of each subscriber station and corresponding subscriber identifier information;

receiving a call from a caller at a caller station to said system controller station and receiving subscriber identifier information for identifying a particular subscriber with whom communication is desired;

recognizing the telephone number of the caller;

matching the subscriber identifier information with the telephone number of the particular subscriber;

calling said particular subscriber;

playing a message to said particular subscriber which includes announcing the telephone number of the caller; and

connecting the caller to said particular subscriber upon authorization of said particular subscriber.

5,361,296

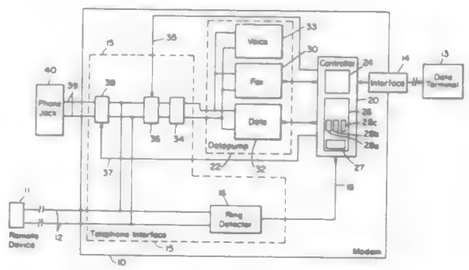
MODEM WITH RING DETECTION/MODEM PROCESSING CAPABILITY

Jason A. Reyes, Quincy; Frank B. Manning, Boston; Terence J. Manning, Milton; Eric L. McDonald, Revere, and Michael T. Gilbride, Hanson, all of Mass., assignors to Zoom Telephonics, Inc., Boston, Mass.

Filed Nov. 25, 1991, Ser. No. 797,540

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—96 **62 Claims**



1. A modem comprising:

a ring detector;

a datapump unit capable of processing an incoming telephone call of one of a plurality of communication modes, each communication mode being associated with a ring type; and

a controller coupled to the datapump unit and responsive to the ring detector for;

determining the ring type of the incoming telephone call,

setting a group of user-controllable registers based on the ring type, and

accessing the user-controllable registers to configure the datapump unit to process the incoming telephone call in accordance with the communication mode associated with the ring type.

5,361,297

METHOD AND APPARATUS FOR PROVIDING ANSWER SUPERVISION AND AN AUTONOMOUS PAY TELEPHONE INCORPORATING THE SAME

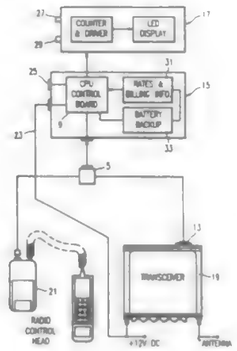
Luis R. Ortiz, San Juan; Alexis Torres, and Angel Encarnacion, both of Carolina, all of Puerto Rico, assignors to Telular Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 687,310, Apr. 18, 1991, Pat. No. 5,134,651. This application Jul. 28, 1992, Ser. No. 921,042

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

Int. Cl.[5] H04M *1/00, 15/00*

U.S. Cl. 379—130 **14 Claims**



1. An arrangement for connection to a mobile full duplex radio including handset means for placing and receiving a telephone call and transceiver means coupled to said handset means via a communicaiton line for transceiver calls placed and received by said handset means, for providing a mobile autonomous pay telephone, comprising:

a memory for storing charge information including at least outgoing call rate information for setting a rate to be charged, per unit of time, for an outgoing call to a given telephone number;

charging determining means coupled to said communication line for receiving the telephone given number and for determining a charge for the call based on at least the rate to be charged for the outgoing call placed to the given number from at least the outgoing call rate information stored in the memory;

metering means for accessing, in real-time, as a call progresses, the charge for the call as determined by the charge determining means utilizing at least the outgoing call rate information;

display means for displaying, in real-time as the call progresses, charges accessed by the metering means for the call placed to the given telephone number;

call answer supervision means for determining when a call has been answered by a called party;

said call answer supervision means comprising:

tone generating means for transmitting a tone of a given frequency on a transmit line of a mobile full duplex radio;

tone detection means for monitoring a receive line of a mobile full duplex radio and the determining if the tone is received back on the receive line;

audio activity detection means for simultaneously monitoring the transmit and receive lines for the presence of audio activity;

cadence determining means for determining if the audio activity, present on at least one of the transmit and receive lines, has a repetitive cadence; and

answer confirmation means for determining that the placed call has been answered if at least one of the following conditions occurs;

1) the tone of the given frequency is detected as received back on the receive line by the tone detecting means; and

2) audio activity having an irregular pattern is detected both on the transmit and receive lines of a mobile full duplex radio by the cadence determining means.

5,361,298

TELECOMMUNICATIONS SERVICE PROVISION EQUIPMENT TRANSFER

Bernard G. Ruel; Gilbert M. Stewart, both of Naperville; Aruna Thirunagari, Warrenville, and James L. Turner, Lemont, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 829,783, Jan. 31, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 210,096

Int. Cl.[5] H04M *7/12*

U.S. Cl. 379—242 **26 Claims**

1. A method for making a transfer of a telecommunications customer station connected to a switching system, said customer station originally connected to said system via a first port of said system, by disconnecting said customer station from said first port and connecting said customer station to a second port of said switching system, said method comprising the steps of:

entering translation data into said switching system indicating availability for assignment of said second port;

testing whether a first means for transmission of telecommunications signals is identified by said switching a system with an identification of said customer station;

if said first means is identified with an identification of said customer station, testing whether a second means for transmission of telecommunications signals is identified by said switching system as being connected to a port available for assignment to a customer station;

responsive to said testing of said second means indicating availability, signaling to said switching system to assign translation data from said first port to said second port, and connecting a third means for transmission, presently connected to said first means for transmission, to said second means for transmission;

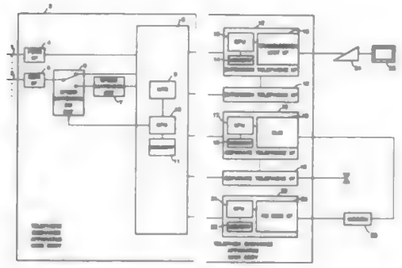
wherein customer stations are identified by translation data of said switching system.

5,361,299

EXCHANGE APPARATUS ENCLOSING A PLURALITY OF EXTENSION TERMINALS AND CONNECTING AN EXTENSION TERMINAL TO A LINE WIRE

Michihiro Izumi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 142,067, Oct. 20, 1993, abandoned, which is a continuation of Ser. No. 589,265, Sep. 28, 1990, abandoned. This application Feb. 16, 1994, Ser. No. 197,531
Claims priority, application Japan, Sep. 28, 1989, 1-254607
Int. Cl.[5] H04M *3/64*
U.S. Cl. 379—252 **11 Claims**



1. An exchange apparatus which encloses a plurality of extension terminals and connects the extension terminal designated by a signal from a line wire, comprising:

memory means for storing a first attribute of the plurality of extension terminals; and

control means for allowing a second attribute designated by the signal from the line wire to be displayed by one of the plurality of extension terminals,

wherein said control means connects the line wire to the one of the plurality of extension terminals after waiting for a predetermined key operation performed at the one of the plurality of extension terminals, if the first attribute of the one of the plurality of extension terminals and the second attribute designated by the signal from the line wire are different from each other, and

wherein said control means connects the line wire to the one of the plurality of extension terminals without waiting for the predetermined key operation performed at the one of the plurality of extension terminals, if the first attribute of the one of the plurality of extension terminals and the second attribute designated by the signal from the line wire are not different from each other.

5,361,300

BALANCING RESISTOR AND THERMISTOR NETWORK FOR TELEPHONE CIRCUITS, AND COMBINATION THEREOF WITH RELAY

Richard E. Caddock, Jr., Winchester, Oreg., assignor to Caddock Electronics, Inc., Riverside, Calif.

Continuation-in-part of Ser. No. 5,589, Jan. 19, 1993, abandoned. This application Mar. 26, 1993, Ser. No. 37,927
Int. Cl.[5] H01C *1/12*
U.S. Cl. 379—412 **12 Claims**

1. A telephone balancing and cut-off resistor network and combination, which comprises:

a thin substrate having front and back surfaces parallel to each other,

said front surface having left and right sides,

said back surface having left and right sides, first and second thick-film resistive films screen-printed onto said front surface of said substrate, third and fourth thick-film resistive films screen-printed onto said back surface of said substrate,

said first and second resistive films being respectively on said left and right sides of said front surface and being separated from each other by a gap,

said third and fourth resistive films being respectively on said left and right sides of said back surface and being separated from each other,

said first and third resistive films being opposite each other, and

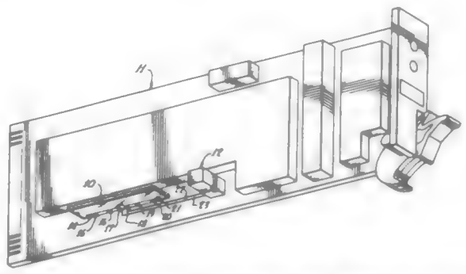
said second and fourth resistive films being opposite each other,

said first and third resistive films being electrically connected with each other and forming one resistor,

said second and fourth resistive films being electrically connected with each other and forming another resistor,

said one resistor and said other resistor having such resistances as to be balanced with each other,

a thermistor film screen-printed onto said front surface of said substrate in said gap,



first termination means to connect said one resistor and said other resistor to a telephone circuit board,

second termination means to connect said thermistor film to said board,

a relay mounted on said board and electrically connected to said second termination means,

said relay and said thermistor film and said resistive films being so related to each other that said thermistor film will cause operation of said relay when said substrate begins to be heated excessively in response to a misconnection of a type that markedly increases current flow,

said substrate and said resistive films having such physical size that said films will not be damaged by lightning transients, and

environmentally protective and arc-minimizing coating means provided over said films.

5,361,301

INTERDICTION METHOD AND APPARATUS WITH DIRECT MEMORY CONTROL OF VARIABLE FREQUENCY ELEMENTS

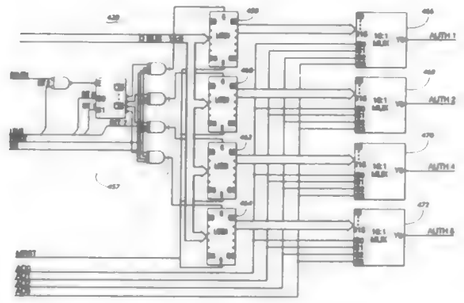
Neil C. Robertson, Norcross, and Mark E. Schutte, Sugar Hill, both of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 896,516, Jun. 10, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,359
The portion of the term of this patent subsequent to Aug. 23, 2011, has been disclaimed.
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—7 **26 Claims**

1. An interdiction apparatus for selectively interdicting unauthorized channel signals in a broadband CATV signal with jamming signals, said apparatus comprising:

means for storing frequency control words, each of said frequency control words representing a particular jamming frequency, and means for selectively outputting said stored frequency control words in a predetermined sequence;

a plurality of jamming frequency generators comprising a plurality of digital to analog converters, each digital to analog converter having an associated input latch, the plurality of digital to analog converters for receiving said predetermined sequence of frequency control words from said associated input latches and for outputting analog voltage levels representative of said predetermined sequence, and a plurality of voltage controlled oscillators, each having a switched output, for receiving said analog voltage levels and for generating a plurality of jamming frequencies representative of said predetermined sequence;



means for selectively controlling each frequency generator by blanking the voltage controlled oscillator while changing the frequency control word in said digital to analog converter input latch, unblanking the oscillator after a settling time, and dwelling on the generated frequency for a predetermined period of time; and

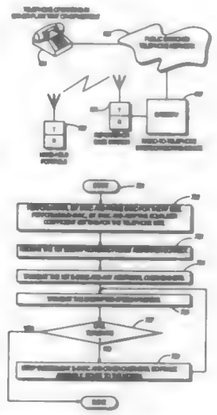
means for combining said jamming signals with said broadband CATV signal to interdict the unauthorized channels.

5,361,302

METHOD FOR ENCRYPTION SYNC COMPRESSION IN AN ENCRYPTED RADIO TELEPHONE INTERCONNECT SYSTEM

Charles J. Malek, Crystal Lake, and Robert W. Furtaw, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 662,144, Feb. 28, 1991, abandoned. This application May 7, 1993, Ser. No. 65,693
Int. Cl.[5] H04L *9/02;* **H04J** *3/06;* **H04M** *11/00*
U.S. Cl. 380—48 **4 Claims**



1. A method for transparently coupling an encrypted two-way radio frequency (RF) communication unit with an encrypted landline telephone communication unit, the method comprising the steps of:

(a) transmitting, from the RF communication unit, an RF message comprised of a plurality of data frames wherein a plurality of the data frames include encrypted voice information and E-sync frames from said RF communication unit;

(a-1) receiving, at a gateway between said RF communication unit and said landline telephone communication unit, said RF message comprised of a plurality of data frames;

(b) discarding E-sync frames from said plurality of data frames to form reduced bit data frames; and

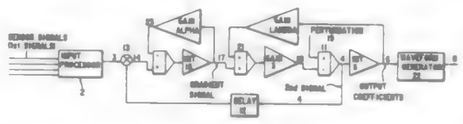
(c) transmitting the reduced bit data frames via a public switched telephone network to the landline communication unit.

5,361,303

FREQUENCY DOMAIN ADAPTIVE CONTROL SYSTEM

Graham P. Eatwell, Cambridge, United Kingdom, assignor to Noise Cancellation Technologies, Inc., Linthicum, Md.

Filed Apr. 1, 1993, Ser. No. 41,384
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **24 Claims**



1. An adaptive control system for reducing unwanted disturbances in a system with unknown or non-linear response, said control system comprising

output waveform generator responsive to a timing or phase signal and output coefficient signals and adapted to produce output control signals configured to cause control disturbances,

input sensing means adapted to respond to a combination of said control disturbances and said unwanted disturbances to thereby produce input signals,

input processing means adapted to respond to said input signals to thereby produce first signals,

timing signal generation means adapted to produce said timing or phase signals,

gradient signal generating means adapted to respond to said first signals to produce a gradient signal,

first integration means which has as input a second signal and produces an output coefficient signal, said second signal being a weighted combination of said perturbation signal, a gradient signal and said output coefficient signal and produces an output coefficient signal,

perturbation generating means adapted to produce perturbation signals which perturb said output coefficient signals to thereby modify said control disturbances,

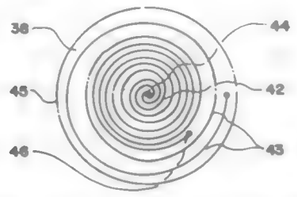
said system characterized in that said gradient signal generator comprises

delay means responsive to said second signal and producing a delayed signal,

multiplier means for multiplying said first signals with said delayed signal, and

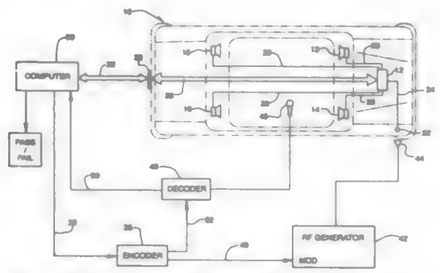
second integration means which has as input a weighted combination of the output from said multiplying means and said gradient signal and produces as output said gradient signal.

5,361,304
HEADPHONE ASSEMBLIES
Owen Jones, and Michael C. J. Trinder, both of Colchester, England, assignors to University of Essex, England
Continuation-in-part of Ser. No. 323,586, Mar. 14, 1989, abandoned. This application Aug. 10, 1990, Ser. No. 565,434
Int. Cl.[5] A61F *11/02;* **G10K** *11/16*
U.S. Cl. 381—72 **11 Claims**



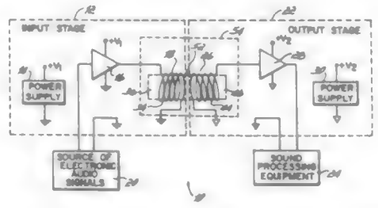
1. A headphone unit for use in an active ear defender system, which headphone unit comprises a shell having a mouth configured to fit over the ear of a user, sealing means disposed around the mouth of the shell for sealing against the head of a user to minimize air leakage when in use between the ambient and the interior of the shell, a headphone transducer mounted within the shell, and a microphone disposed within the shell to sense the acoustic output from the headphone transducer to detect the instantaneous sound pressure level within the shell, said headphone transducer having a single diaphragm, two independently fed coils being provided on said diaphragm to define at least two effective sound radiating surfaces of different sizes said coils being arranged to be independently fed with drive current and the microphone being positioned to sense the acoustic outputs from both sound radiating surfaces of the transducer.

5,361,305
AUTOMATED SYSTEM AND METHOD FOR AUTOMOTIVE AUDIO TEST
J. Alexander Easley, Kokomo, Ind.; Randall R. Herkness, Livonia, Mich.; Paul J. Dobosz, McAllen, Tex.; Lisa A. Stacey, Royal Oak, Mich., and Larry W. Soutar, Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Nov. 12, 1993, Ser. No. 150,292
Int. Cl.[5] H04R *29/00;* **H04B** *1/00*
U.S. Cl. 381—58 **10 Claims**



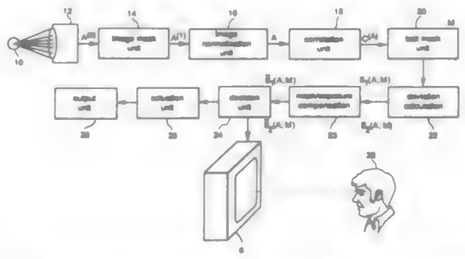
1. In a system for testing a vehicle audio system having a radio coupled to speakers, the testing system including a data bus connected to the radio for setting parameters, a microphone in the vehicle responsive to sound from the speakers, a transmitting antenna, and an external computer coupled to the data bus, the microphone and the antenna; a method of testing the audio system comprising the steps of:
transmitting modulated radio signals to the vehicle under computer control;
setting the radio under computer control for response to the signals;
detecting the speaker response; and
evaluating the audio operation by analyzing the detected speaker response.

5,361,306
APPARATUS AND METHODS FOR ENHANCING AN ELECTRONIC AUDIO SIGNAL
Arturo J. Garcia, Miami, Fla., assignor to True Dimensional Sound, Inc., Coral Gables, Fla.
Filed Feb. 23, 1993, Ser. No. 21,209
Int. Cl.[5] H03G *5/00*
U.S. Cl. 381—98 **22 Claims**



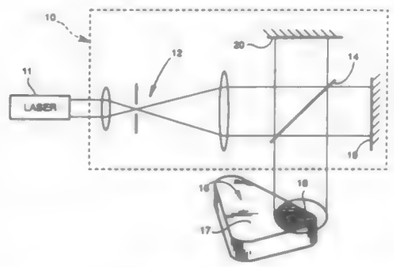
1. An apparatus for enhancing the quality of electronic audio signals comprising:
an input stage having a field inducing coil through which input electronic audio signals are to be transmitted to set-up an electromagnetic field; and
an output stage having an electromagnetic field receptor and an output, said field inducing coil and said electromagnetic field receptor being weakly coupled such that when an input electronic audio signal is transmitted through said field inducing coil, only a small portion of the electromagnetic field set up by said inducing coil cuts or passes through said field receptor and an enhanced electronic audio signal is available at said output having an accentuated higher harmonic content compared to that of the input electronic audio signal.

5,361,307
CORRELATION METHODS OF IDENTIFYING DEFECTS IN IMAGING DEVICES
Richard I. Hartley, Schenectady; A. Nadeem Ishaque, Clifton Park, and Aiman A. Abdel-Malek, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Mar. 25, 1993, Ser. No. 37,191
Int. Cl.[5] G06K *9/64*
U.S. Cl. 382—1 **5 Claims**



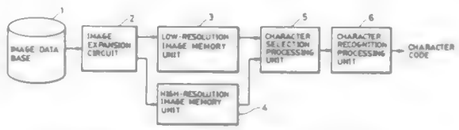
1. An automated system for identifying and compensating for defects in an imaging device comprising:
a) a radiation source for providing radiation of spatially uniform intensity to said imaging device to allow said device to create a D-dimensional image ($A^{(0)}$) comprised of a plurality of intensity values over a region of interest (ROI) within a field of view of said imaging device and a background region outside the field of view of said imaging device;
b) a region of interest (ROI) mask unit for receiving the image $A^{(0)}$ and for employing a mask R setting values of the background region of image ($A^{(0)}$) to zero while leaving the intensity values of the ROI unaffected thereby producing a flood image ($A^{(1)}$);
c) image normalization unit coupled to the ROI mask unit for calculating a means intensity (μ) over flood image ($A^{(1)}$) and subtracting the means intensity (μ) from each intensity value of flood image ($A^{(1)}$) so as to result in a normalized flood image A having intensity values with a means intensity (μ) of zero over the ROI;
d) a correlation unit for receiving the normalized intensity values of normalized flood image (A) from the image normalization unit and determining a D-dimensional correlation field C(A);
e) test mask unit coupled to the correlation unit for employing a test mask (M) that blocks out non-desired regions of the correlation field C(A) and selected desired regions of the correlation field;
f) deviation calculation unit coupled to the correlation unit for determining a correlation sum $S_1(A,M)$, and a correlation squared sum $S_2(A,M)$ being a sum of the correlation values and a sum of the squares of the correlation values, respectively, for the selected regions of correlation field C(A);
g) decision unit adapted for comparing the correlation value sum $S_1(A,M)$ and the correlation squared sum $S_2(A,M)$ produced by the deviation calculation unit to predetermined maximum thresholds, for determining if any of the thresholds have been exceeded; and
h) unit for indicating if either of said thresholds has been exceeded; and
i) an actuation unit responsive to the decision unit for adjusting the imaging device accordingly when at least one of the predetermined thresholds has been exceeded.

5,361,308
3-D MEASUREMENT OF CUTTING TOOL WEAR
Yong H. Lee; Raghunath P. Khetan, both of Troy, and Don R. Sutherland, Romeo, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 10, 1992, Ser. No. 818,940
Int. Cl.[5] G06K *9/00;* **G01B** *11/02;* **G06F** *15/46;* **G06G** *7/64*
U.S. Cl. 382—8 **12 Claims**



1. The method of measuring wear of a cutting tool comprising the steps of:
projecting stripes of light having uniform slope and spacing onto the surface of the cutting tool at a first angle to illuminate a worn portion as well as an unworn planar portion, wherein the stripes of light on the unworn planar portion viewed from a second angle are straight and uniform;
sensing an image of the stripes of light projected on the surface of the tool from the second angle whereby due to noise the image comprises unconnected line segments,
constructing from the unconnected line segments complete lines extending across the worn and unworn portions, whereby in the image the lines on the worn portion are offset as a function of the depth of wear and the said angles;
calculating straight reference lines in the worn portion that are extensions of the completed lines on the unworn portion; and
measuring an offset distance of the completed lines in the worn portion from the calculated straight reference lines to extract depth of wear information.

5,361,309
CHARACTER RECOGNITION APPARATUS AND METHOD WITH LOW-RESOLUTION STORAGE FOR CHARACTER EXTRACTION
Mitsumasa Sugiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 882,764, May 11, 1992, abandoned, which is a continuation of Ser. No. 575,679, Aug. 31, 1990, abandoned. This application Dec. 23, 1993, Ser. No. 173,861
Claims priority, application Japan, Sep. 7, 1989, 1-230415
Int. Cl.[5] G06K *9/20*
U.S. Cl. 382—9 **12 Claims**



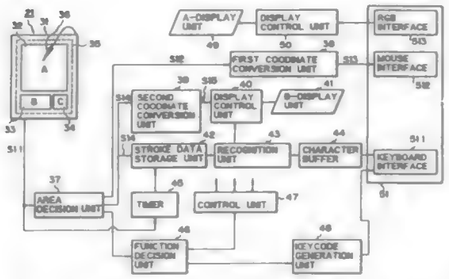
1. A character recognition apparatus, comprising:
first memory means for storing low-resolution image data expanding already stored compressed image data;
second memory means for storing high-resolution data expanding the already stored compressed image data;
extraction means for extracting an area in which one character exists from the data in said first memory means by detecting a frequency of dot-information of the image data in said first memory means representing black dots;
selecting means for converting coordinate data of the extracted area in the first memory means to coordinate data in the second memory means and selecting from said second memory means the high-resolution data corresponding to the converted coordinate data; and
recognition means for recognizing the selected high-resolution data of an image of the selected area in said second memory means corresponding to the area extracted by said extracting means.

5,361,310
HANDWRITING ENTRY PROCESSING SYSTEM USING KEYBOARD AND MOUSE INTERFACES REQUIRING NO MODIFICATION OF AN APPLICATION PROGRAM
Kazushi Ishigaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 944,034, Sep. 11, 1992, abandoned, which is a continuation of Ser. No. 643,043, Jan. 18, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 31,282
Claims priority, application Japan, Jan. 19, 1990, 2-11121
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—13 **10 Claims**

1. A handwriting entry processing system used in a tablet type handwriting entry/display device, said handwriting entry processing system comprising:
a display including
a planar display portion displaying an output signal, and
an entry tablet portion with one plane having a first entry portion superimposed on the planar display portion and a second entry portion located outside of the planar display portion, said first and second entry portion receiving a designation signal and outputting coordinate data;

area decision means, coupled to said display, for detecting the coordinate data from the entry tablet portion, and for transferring coordinate data;

an input/output processing unit, coupled to said area decision means and having keyboard and mouse interfaces using an application program of a personal computer, for receiving at the mouse interface a signal responsive to coordinate data transferred by said area decision means from the first entry portion, receiving character data at the keyboard interface from the second entry portion, and generating the output signal based on at least one of the



signal responsive to the coordinate data from the first entry portion and the character data, without requiring modification of the application program; and

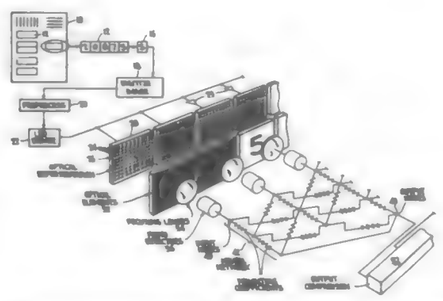
recognition processing means, coupled between said area decision means and said input/output processing unit, for receiving from said area decision means a signal responsive to the coordinate data from the second entry portion, performing a recognition operation of a handwriting character based on the signal responsive to the coordinate data from the second entry portion, and outputting corresponding character data to said input/output processing unit.

5,361,311

AUTOMATED RECONGITION OF CHARACTERS USING OPTICAL FILTERING WITH POSITIVE AND NEGATIVE FUNCTIONS ENCODING PATTERN AND RELEVANCE INFORMATION

Charles L. Wilson, Darnestown, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jul. 14, 1992, Ser. No. 913,010
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—32 **21 Claims**



1. Method for recognizing characters, comprising the steps of:

generating a set of optical elements corresponding to a limited set of pairs of positive and negative correlative functions (PNCFs), according to the following method:

selecting a set of test characters representative of the characters to be recognized;

digitizing the image of each of the test characters;

performing positive and negative correlations of each character as to pattern and relevance with each of a set of stored interim PNCFs, and obtaining a set of at least four correlation values responsive to said correlations of each character with each of the interim PNCFs;

evaluating said correlation values for each of said characters to determine whether said character resembles character images represented by said interim PNCFs to within a given degree of accuracy;

if so, updating said interim PNCFs according to said performed positive and negative correlations; and

if not, storing at least one and up to four additional interim PNCFs responsive to said character for comparison with subsequent characters of said set of test characters; and

when each of said set of test characters have been thus correlated with the set of interim PNCFs, employing the finally-updated set of interim PNCFs to generate a set of optical elements, each optical element exhibiting variations in optical density responsive to a corresponding PNCF;

optically comparing a character to be recognized with each of said set of optical elements, wherein each said comparison is performed by transmitting a pattern of light corresponding to an image of the character to be recognized through an optical element and detecting the total amount of light transmitted through the optical element, to yield a set of transmission coefficients equal in number to said optical elements;

supplying said set of transmission coefficients to a neural network; and

employing said neural network to compute weighted sums of the transmission coefficients,

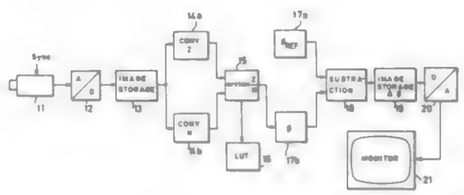
wherein weights applied to said transmission coefficients in computation of said weighted sums were determined in accordance with previous comparison of known characters with said set of optical elements.

5,361,312

METHOD AND APPARATUS FOR PHASE EVALUATION OF PATTERN IMAGES USED IN OPTICAL MEASUREMENT

Michael Kuchel, Oberkochen, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim

Continuation of Ser. No. 694,656, May 2, 1991, abandoned. This application Apr. 8, 1993, Ser. No. 44,105
Claims priority, application Germany, May 2, 1990, 4014019
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—44 **10 Claims**



1. An apparatus for phase evaluation of a pattern image used for optical measurement, the intensities of the pattern image being represented by a signal that is phase modulated on a carrier wave, said apparatus comprising:

an array of individual detectors arranged for producing respective individual signals corresponding to the intensities of said pattern image along a minimum of five different phase steps corresponding to five different nominal phase angles of said carrier wave;

first and second sets of amplifier circuits for respectively amplifying each individual intensity signal received from said detectors;

a first adder circuit for receiving and accumulating the amplified individual intensity signals from said first set of amplifier circuits;

a second adder circuit for receiving and accumulating the amplified individual intensity signals from said second set of amplifier circuits;

said first and second sets of amplifier circuits being adapted to apply respective amplification factors to said intensity signals as a function of said five nominal phase angles of said carrier wave so that a phase error, which is the amplitude of error that results when phase steps deviate from said nominal phase steps, as a function of said phase steps, has at least three zero positions; and,

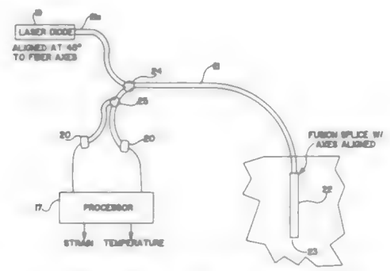
an evaluation unit connected to said first and second adder circuits for determining the phase value from said phase angles.

5,361,313

TWO-MODE REMOTE FIBER OPTIC SENSOR

Christian V. O'Keefe, Linthicum, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed May 11, 1993, Ser. No. 60,778
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—11 **8 Claims**



1. A multiple parameter remote fiber optic sensing device comprising:

(a) a first length of non-elliptical optical fiber, which is polarization preserving and single mode having a first and a second end; and

(b) a second gauged length of non-elliptical optical fiber, which is polarization preserving and two mode, having a first and a second end, the first end of said second gauge length of non-elliptical optical fiber connected to the second end of said first length of non-elliptical optical fiber, and wherein the second end of said gauged length of non-elliptical optical fiber is reflective.

5,361,314

MICRO OPTICAL FIBER LIGHT SOURCE AND SENSOR AND METHOD OF FABRICATION THEREOF

Raoul Kopelman; Weihong Tan, and Zhong-You Shi, all of Ann Arbor, Mich., assignors to The Regents Of The University of Michigan, Ann Arbor, Mich.

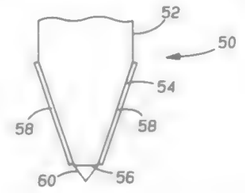
Filed Sep. 4, 1992, Ser. No. 941,879
Int. Cl.[5] G02B *6/00;* **H01J** *5/16;* **B05D** *5/06*
U.S. Cl. 385—12 **12 Claims**

1. An optical fiber light source comprising an optical fiber having one end of said fiber substantially uniformly tapered to define a tapered portion of said optical fiber, said tapered portion being less than 10 micrometers in diameter and having an end face to further define an optical fiber tip, aid tapered portion also having sides coated with an opaque material to prevent the escape of light from said tapered portion, and an optically active material photo-chemically attached to said optical fiber tip, said optically active material inwardly tapering away from said optical fiber tip and having a size and shape in accordance with a duration and an intensity of light applied during said photo-chemical attachment process, and said optically active material being responsive to excitation by light.

8. A method of fabricating an optical fiber light source comprising:

pulling one terminal end of an optical fiber to form a taper having a diameter less than 10 micrometers at said terminal end of the optical fiber and an end surface of the tapered portion of said optical fiber to define a tip;

coating the tapered portion of said optical fiber with an opaque material which substantially prevents escape of light from the tapered portion of said optical fiber and directing said light toward the tip of said tapered end;



chemically activating the tip of said optical fiber to improve chemical attachment between said tip and an optically active material to be attached thereto;

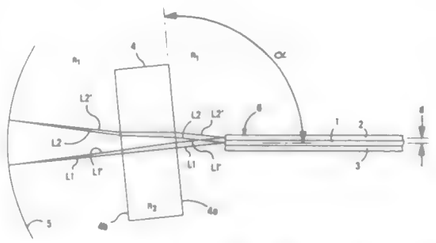
photo-chemically attaching said optically active material to the chemically activated tip of said optical fiber to form an inwardly tapering probe tip of said optical fiber sensor, said inwardly tapering probe tip having a size and shape controlled by varying a duration and an intensity of light applied during said photo-chemical attachment process, and said optically active material being responsive to excitation by light.

5,361,315

REFRACTIVE ELEMENT OPTICAL TRANSMISSION SWITCH

Warren H. Lewis, Elizabethtown, Pa., and Gregory B. Powers, Maple Valley, Wash., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 31, 1993, Ser. No. 41,434
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—16 **7 Claims**



1. An optical switch for altering the path of an optical signal, comprising:

a fixed-position concave reflector;

a fixed array of optical waveguides facing the concave reflector, said array including an input waveguide for transmitting the optical signal into the switch, a first output waveguide and at least a second output waveguide, said output waveguides adapted to receive the optical signal;

a refractive element having parallel planar major surfaces and an axis parallel to said major surfaces, said refractive element located between the reflector and the array of optical waveguides and having a first angular position

where the optical signal transmitted into the switch passes through the switch into the first output waveguide and a second angular position where the optical signal transmitted into the switch passes through the switch into the second output waveguide; and

an actuator connected to the refractive element for pivoting the refractive element about the axis between the first angular position and the second angular position.

5,361,316

OPTICAL FIBER LASER DEVICE FOR TRANSMITTING A PULSE LASER BEAM

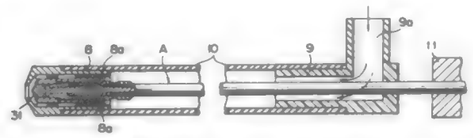
Akio Tanaka, Chiba; Toru Hirano, Hamamatsu, and Masami Ohsawa, Higi, all of Japan, assignors to Lederle (Japan) Ltd., Tokyo; Hamamatsu Photonics K.K., Shizuoka and Moritex Corporation, Tokyo, all of Japan

Continuation-in-part of Ser. No. 26,305, Mar. 4, 1993, abandoned. This application Nov. 23, 1993, Ser. No. 155,918

Claims priority, application Japan, Mar. 5, 1992, 4-024623[U]

Int. Cl.[5] G02B *6/32*

U.S. Cl. 385—35 **5 Claims**



1. An optical fiber laser device for transmitting a pulse laser beam comprising a spherical lens made of optical glass having a refractive index of 2 or less provided at an extreme end portion of an optical fiber which guides a pulse laser beam, wherein an object side of said spherical lens projects externally of a base housing the spherical lens therein.

5,361,317

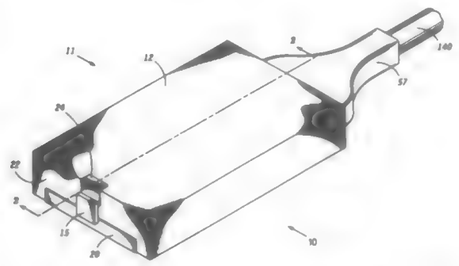
ASSEMBLY WITH FIXTURE ALIGNING AND AFFIXING AN OPTICAL FIBER TO AN OPTICAL DEVICE

Davis H. Hartman, Phoenix, and Michael S. Lebby, Apache Junction, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 14, 1993, Ser. No. 75,430

Int. Cl.[5] G02B *6/30, 6/12*

U.S. Cl. 385—43 **9 Claims**



1. A fixture for aligning and affixing an optical fiber, including a central core surrounded by a cladding layer and having an end with a predetermined taper, to an active area of an optical device, the fixture comprising:

a base;

a fiber receptacle defined in the base and extending through the base from a first side to a second side, the receptacle at the first side defining an opening larger than a cross-section of the optical fiber to be affixed and the receptacle at the second side defining an opening smaller than the cross-section of the optical fiber and at least as large as a cross-section of the core of the optical fiber; and

the base further defining a tapered area in the receptacle between the receptacle openings at the first and second sides of the base with a taper equal to the predetermined taper of the end of the optical fiber.

5,361,318

OPTICAL MODULE HAVING DIMENSIONAL ACCURACY

Hisao Go, and Yutaka Matsumura, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

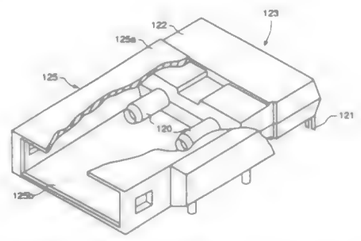
Division of Ser. No. 779,527, Oct. 18, 1991, abandoned, which is a division of Ser. No. 588,990, Sep. 27, 1990, Pat. No. 5,099,307.

This application Feb. 1, 1993, Ser. No. 11,699

Claims priority, application Japan, Mar. 13, 1990, 2-61919

Int. Cl.[5] G02B *6/40*

U.S. Cl. 385—89 **11 Claims**



1. An optical module, comprising:

at least one optical connector for receiving an end of an optical fiber at one end portion of said connector;

a molding resin member made of a molding resin and molded in such a manner that said molding resin member integrally holds the other end portions of said optical connector; and

a molded receptacle having a first fitting portion into which said at least one optical connector is inserted so that said first fitting portion is fitted to said molding resin member, and a second fitting portion to which an optical plug holding the end of said optical fiber to be inserted in said optical connector, is fitted, said second fitting portion being communicated with said first fitting portion.

5,361,319

DISPERSION COMPENSATING DEVICES AND SYSTEMS

A. Joseph Antos, Elmira; Michael G. Blankenship; Douglas W. Hall, both of Corning; Edward F. Murphy, and David K. Smith, both of Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

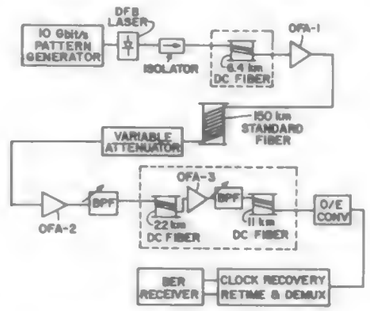
Filed Feb. 4, 1992, Ser. No. 830,692

Int. Cl.[5] G02B *6/22, 6/36*

U.S. Cl. 385—123 **24 Claims**

1. A silica based dispersion compensating optical waveguide fiber having a material dispersion, and having a refractive index profile preselected to generate negative waveguide dispersion such that the total dispersion of said fiber, equal to the sum of said material dispersion and said waveguide dispersion,

is less than −20 ps/nm-km at a given wavelength within the range from 1520 nm to 1565 nm, said fiber attenuatinq liqht



transmitted along its lenqth, the attenuation of said fiber at said given wavelength being less than 1 dB/km.

5,361,320

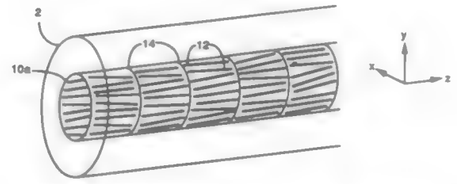
LIQUID CRYSTAL FIBER WAVEGUIDE

Jian-Yu Liu, and Kristina M. Johnson, both of Boulder, Colo., assignors to University of Colorado Foundation, Boulder, Colo.

Filed Feb. 19, 1993, Ser. No. 19,856

Int. Cl.[5] G02B *6/00*

U.S. Cl. 385—143 **34 Claims**



1. A smectic liquid crystal fiber waveguide comprising:

an optical fiber cladding characterized by a fiber axis layer; and

a nonpolymeric smectic liquid crystal core within said cladding layer;

said liquid crystal oriented with the molecular directors within a smectic layer of said liquid crystal approximately parallel to each other.

5,361,321

PORTABLE ELECTRIC HEATER DEENERGIZED BY A TIP-OVER RESPONSIVE ACTUATOR

Frank Marino, Upton, Mass., assignor to Duracraft Corporation, Whitinsville, Mass.

Filed Aug. 13, 1992, Ser. No. 928,574

Int. Cl.[5] F24C *7/08;* **H05B** *1/02;* **H01H** *9/20;* **F24H** *3/00*

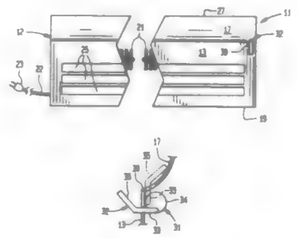
U.S. Cl. 392—373 **17 Claims**

1. A portable electric heater comprising:

a housing having a rear wall, a substantially planar front wall, a bottom support means and an top wall; said housing defining an air inlet and an air outlet and resting on said bottom support means during use of said heater;

a resistive heating element retained in said housing and adapted to be heated be electrical current; and

circuit means for connecting said heating element to an electrical power source, said circuit means comprising a switch adapted in a closed condition to connect said heating element to said electrical power source and in an open condition to disconnect said heating element from said electrical power source, said switch including a manually operable actuator projecting from said front wall and movable in a single motion between a first stable position producing said closed condition and a second stable posi-



tion producing said open condition, and wherein said actuator is shaped and arranged to be moved into said second stable position in response to contact of said actuator with a substantially planar surface.

5,361,322

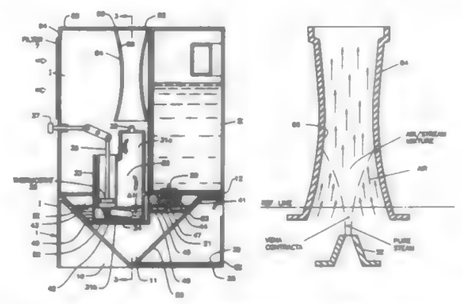
EJECTOR TUBE HUMIDIFIER FOR BLOWERLESS MIXING OF AIR AND STEAM

Dov Z Glucksman, 137 Larch Row, Wenham, Mass. 01984

Continuation-in-part of Ser. No. 606,938, Oct. 31, 1990, Pat. No. 5,111,529, which is a continuation-in-part of Ser. No. 287,330, Dec. 21, 1988, Pat. No. 5,014,338. This application Feb. 28, 1992, Ser. No. 843,542

Int. Cl.[5] H05B *1/02;* **F22B** *1/28;* **F24F** *1/02;* **B01F** *3/04*

U.S. Cl. 392—405 **12 Claims**



1. A portable warm air humidifier comprising, a water supply compartment,

an evaporation chamber having an upper portion with an upper closed end and a lower portion with a lower end in communication with the water supply compartment for receiving water therefrom,

means for heating the water in the evaporation chamber to create a body of steam within the upper portion of said chamber above the body of water in the lower portion of said chamber,

a steam nozzle disposed in the closed upper end of the evaporation chamber permitting the escape of steam from said evaporation chamber,

the level of the water in the water supply compartment being maintained higher than the level of the water in the evaporation chamber during the operation of the humidifier to maintain a constant pressure within the evaporation chamber on the body of steam therein to assist in the flow of steam through said steam nozzle,

a housing having an inlet for receiving air from outside the humidifier and an outlet for discharging a mixture of steam and air from said housing, and

a steam ejector tube within said housing and in juxtaposition

with but spaced from the steam nozzle to receive the flow of steam issuing through said steam nozzle,

said steam ejector tube having a restricted throat portion which upon passage of air there through causes a region of low pressure therein to draw air from outside the tube in admixture with the steam to thereby emit therefrom a steam-air mixture which exits the housing through said housing outlet,

wherein the rate of steam flow out of said steam nozzle is maintained below 0.5 grams/sec cm^2, and

said steam nozzle and said throat portion are circular in transverse cross section and the ratio between the throat diameter of said steam ejector tube and the diameter of the steam nozzle is in the range of 0.1 to 0.25, and

the ratio between the throat diameter of said steam ejector tube and the distance of the throat from the steam nozzle is in the range of 0.5 to 0.75 to effect a temperature in the range of 42° C. to 65° C. of the steam air mixture at the outlet of the housing.

5,361,323

SIGNAL ENCODING DEVICE

Yasumoto Murata; Shuichi Yoshikawa; Yuji Nishiwaki, all of Nara; Shuichi Kawama, Kyoto; Tomokazu Morio, Nara, and Atsunori Kitoh, Yamatotakada, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

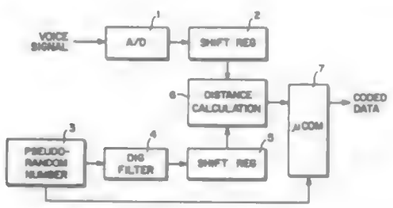
Filed Nov. 29, 1991, Ser. No. 800,938

Claims priority, application Japan, Nov. 29, 1990, 2-335265; Mar. 11, 1991, 3-045199

The portion of the term of this patent subsequent to Jun. 28, 2011, has been disclaimed.

Int. Cl.[5] G10L *9/18*

U.S. Cl. 395—2.1 **9 Claims**



1. A signal encoding device comprising:

signal dividing means for dividing a signal into subsignals each comprising a predetermined number of successive samples;

pseudo-random data train generating means for generating pseudo-random data trains by giving initial values to a recurrence equation;

pattern dividing means connected to the pseudo-random data train generating means for dividing the generated pseudo-random data trains into patterns each comprising the same number of samples as said predetermined number;

distance calculating means connected to receive the patterns from the pattern dividing means and to receive the subsignals for calculating a distance between each pattern produced by said pattern dividing means and each of said subsignals; and

minimum value identifying means connected to the distance calculating means for identifying, individually with respect to each subsignal, a pattern that provides a smallest distance and for outputting, as coded data representing the respective subsignal, an initial value set in the recurrence equation for generation by said pseudo-random data train generating means of the pseudo-random data train that constitutes said pattern.

5,361,324

LOMBARD EFFECT COMPENSATION USING A FREQUENCY SHIFT

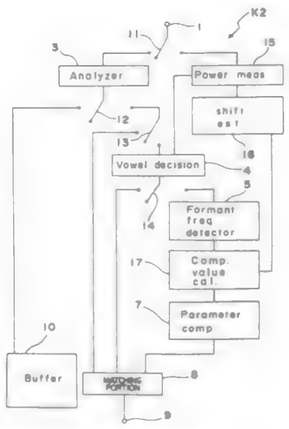
Yumi Takizawa, Neyagawa, and Masahiro Hamada, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 592,542, Oct. 2, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,246

Claims priority, application Japan, Oct. 4, 1989, 1-259034; Aug. 10, 1990, 2-212831

Int. Cl.[5] G10L *3/02, 9/04*

U.S. Cl. 395—2.42 **9 Claims**



1. A speech recognition apparatus comprising:

an analyzer for receiving an input voice signal and for calculating, as a recognition parameter, an orthogonal expansion of a spectrum of a characteristic parameter of said input voice signal per unit time;

a formant frequency detector for detecting a formant frequency of said input voice signal;

a compensation value calculator for calculating, by using a value of the formant frequency detected formant frequency detector, a compensation value for compensating variations of the input voice signal caused by a Lombard effect;

a parameter compensator for compensating, by using the compensation value calculated by said compensation value calculator, the recognition parameter so to obtain a compensated recognition parameter;

a matching portion for comparing said compensated recognition parameter with a plurality of predetermined reference parameters and for generating a recognition result corresponding to one of said predetermined reference parameters.

5,361,325

FUZZY SYLLOGISTIC SYSTEM

Kousuke Takahashi, Yokohama, Japan, assignor to NEC Research Institute, Inc., Princeton, N.J.

Continuation of Ser. No. 858,557, Mar. 27, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 144,488

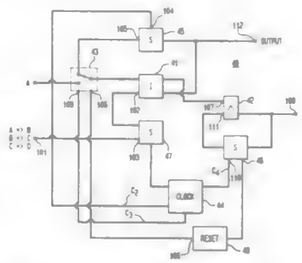
Int. Cl.[5] G06C *7/12*

U.S. Cl. 395—3 **2 Claims**

1. Fuzzy logic circuitry for deriving the confidence measure and fidelity measure of the consequent of a chain of implications that include a minor premise antecedent and a plurality of interrelated major premises, each premise having a confidence measure, comprising:

inference means for receiving at a first input terminal an electrical signal corresponding to the confidence measure of the antecedent of an implication being evaluated and at a second input terminal an electrical signal corresponding to the confidence measure of the major premise of the implication being evaluated and for providing at a first output terminal a signal corresponding to the confidence measure of the consequent of the implication being evaluated and at a second output terminal the fidelity of the consequent,

switching means for receiving signals corresponding to the confidence measures of the minor and major premises of implications in the chain and for supplying to said inference means said electrical signal corresponding to the confidence measure of the antecedents in the links in the chain of implications to said first input terminal and the electrical signal corresponding to the confidence measure of the major premises of the links in the chain of implications to said second input terminal,



first means for receiving and storing electrical signals from said first output terminal corresponding to consequents in the chain of implications and supplying the stored electrical signals to the switching means as signals corresponding to the antecedents in links of the chain of implications subsequent to the first link, except for the consequent in the last link, which consequent serves as the output of the chain, and

second means for receiving the electrical signals supplied at said second output terminal corresponding to the fidelity of the consequent and for storing the electrical signal corresponding of the fidelity of the consequent in the chain of implications having the lowest value and providing said electrical signal corresponding to the fidelity having the lowest value as the fidelity measure of the consequent in the last link of the chain of implications.

5,361,326

ENHANCED INTERFACE FOR A NEURAL NETWORK ENGINE

Manuel Aparicio, IV, Arlington; Patrice C. Miller, and Wade A. Miller, both of Keller, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,460

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—21 **18 Claims**

14. An interface arrangement between a data processing application and a neural network including

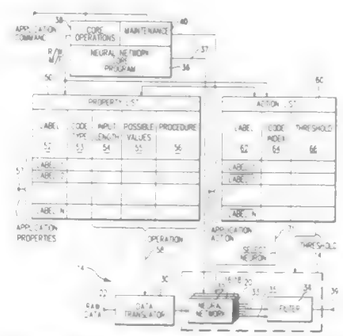
means for providing at least one label by said data processing application to said interface arrangement,

at least one list accessible in accordance with said label, said label corresponding to an object in said application on which an action may be taken, said list containing at least an index of a neuron in said neural network corresponding to said action,

means for selecting a confidence threshold and at least one of a procedure and an action, said procedure including at least one of a translation, truncation and mapping of at least a value corresponding to said at least one label provided by said application,

means for performing said at least one of an action based on at least one value corresponding to said at least one label and a translation, truncation and mapping of at least a value corresponding to said at least one label,

means for applying said at least one value corresponding to said label to predetermined inputs of said neural network, and



means for filtering an output of said neural network in accordance with said certainty threshold corresponding to said label.

5,361,327

WAVEFORM EQUALIZER APPARATUS FORMED OF NEURAL NETWORK, AND METHOD OF DESIGNING SAME

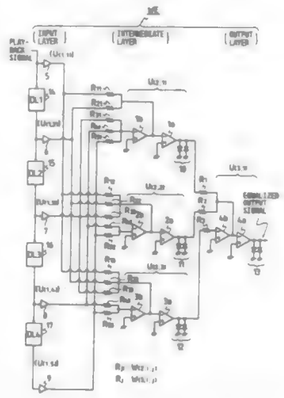
Susumu Takahashi, Tokyo, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 31, 1992, Ser. No. 828,825

Claims priority, application Japan, Jan. 31, 1991, 3-31952

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—22 **10 Claims**



1. A method of designing a waveform equalizer for waveform equalization of a distorted digital signal produced from a digital signal recording and playback apparatus, said waveform equalizer being formed as a neural network comprising a plurality of neuron units which are interconnected by linking elements providing respective fixed weighting coefficients, wherein respective values for said fixed weighting coefficients are mutually independently established by:

generating a set of original data, and storing said original data in a first memory means;

recording said original data as digital data values on a recording medium, and subsequently executing playback of

said recorded original data, to obtain a playback digital signal;

periodically sampling said playback digital signal with a sampling period that is less than or equal to a data period of said digital data values, to obtain successive digital sample values to be used as learning input values, and storing said learning input values in a second memory means;

generating a simulated neural network having variable weighting coefficients, by using a computer, said simulated neural network being an equivalent circuit of said waveform equalizer neural network;

supplying successive ones of said learning input values from said second memory means to said computer to be sequentially inputted to said simulated neural network;

supplying successive data values of said original data, respectively corresponding to said learning input values, from said first memory means to said computer to be used as teaching signal values for comparison with respective output values produced from said simulated neural network;

repetitively executing a learning algorithm utilizing results obtained from said comparison, to successively alter said variable weighting coefficients of the simulated neural network, until a predetermined degree of convergence is obtained for values of said variable weighting coefficients; and

establishing respective values for said fixed weighting coefficients of the waveform equalizer neural network, based upon final values obtained for corresponding ones of said variable weighting coefficients of the simulated neural network.

5,361,328

DATA PROCESSING SYSTEM USING A NEURAL NETWORK

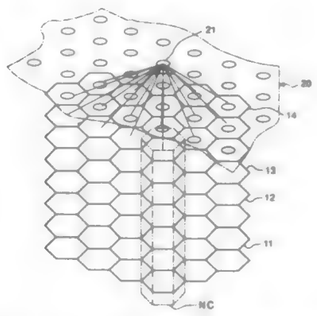
Sunao Takatori; Ryobei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Ezel, Inc., Tokyo, Japan

Continuation of Ser. No. 814,230, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 590,010, Sep. 28, 1990, abandoned. This application May 7, 1993, Ser. No. 58,035

Claims priority, application Japan, Sep. 28, 1989, 1-253248

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—22 **6 Claims**



1. A data processing system comprising:

a plurality of neural layers each including a plurality of neurons from a first layer to at least one intermediate layer and a last neural layer, said first layer receiving an input data and processing said input data to transmit a processed result to the at least one intermediate layer, each intermediate layer receiving data processed by a previous layer to process said data and to output a data as a processed result, said last neural layer connected to receive data processed by previous layer so as to process said data and to output an output data,

wherein a plurality of groups of neurons are defined for each neural layer and a plurality of hexagonal-shaped neural cells including and plurality of neural layers are defined by said groups, and

wherein said input data is image data which is divided into a plurality of local areas of a hexagonal shape; and

means for performing hexagonal convolution image processing between said hexagonal shape input data and said plurality of hexagonal-shaped neural cells, further comprising a neural network connected to said last neural layer for receiving said output data so as to extract a resultant data from said output data.

5,361,329

DATA PROCESSING APPARATUS

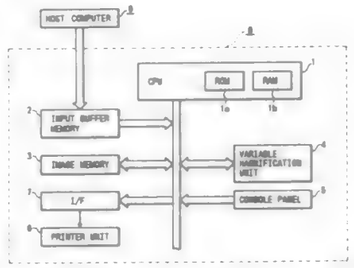
Tetsuya Morita, Kawasaki; Hiroshi Yamano; Yukio Isaka, both of Yokohama; Haruo Ishizuka, Tokyo; Masahiko Murata, Tama; Masahiko Sakai, Kawasaki, and Tsutomu Kubota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 749,520, Aug. 19, 1991, abandoned, which is a continuation of Ser. No. 392,036, Aug. 9, 1989, abandoned. This application Jun. 9, 1993, Ser. No. 74,013

Claims priority, application Japan, Aug. 11, 1988, 63-198921; Sep. 16, 1988, 63-229725; Dec. 1, 1988, 63-304661; Dec. 16, 1988, 63-316500; Jan. 9, 1989, 1-001230; Jan. 10, 1989, 1-002141; Jan. 24, 1989, 1-013095

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—102 **8 Claims**



1. A data processing apparatus for controlling a printer unit, the printing unit including scanning means for scanning a photosensitive body with modulated light, comprising:

code data input means for entering code data;

process means for processing the code data entered from said code data input means to generate dot image data;

sending means for sending the generated dot image data to the printer unit in order to generate modulated light for the scanning means;

signalling means for outputting a signal for instructing a scanning speed of the modulated light,

wherein said sending means sends the generated dot image data at a sending speed determined in accordance with size data of a printing medium in the printer unit, and

wherein said signalling means outputs the signal for instructing a scanning speed in accordance with the size data of the printing medium.

5,361,330

IMAGE PROCESSING APPARATUS

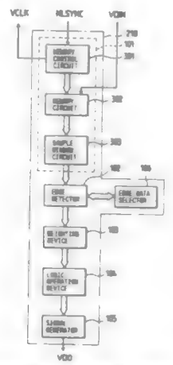
Shigehisa Fujisaki, Fukuoka; Tadayuki Kajiwara, Chikushino; Yasuhiko Isobe, Kasuga; Takumi Shimokawa, Tosu; Yoshinori Senju, Saga; Masanobu Narazaki, Fukuoka; Tatsuya Yoshida, Fukuoka, and Atsushi Wakiyama, Karatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 7, 1992, Ser. No. 864,769

Claims priority, application Japan, Apr. 8, 1991, 3-075020; Apr. 9, 1991, 3-076229; Apr. 9, 1991, 3-076230; Apr. 11, 1991, 3-079183; Apr. 12, 1991, 3-079729; Apr. 23, 1991, 3-092011; Apr. 24, 1991, 3-094016

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—107 **14 Claims**



1. An image processing apparatus comprising:

window setting means for setting a portion of a written region of an image composed of dots in an orthogonal matrix as a window, and for moving the set portion within the written region;

first edge detecting means for detecting differences between image data of a given dot in the window set by the window setting means and image data of dots neighboring said given dot, and for detecting directions of said detected differences;

second edge detecting means for detecting edges between neighboring dots other than said given dot, said detected edges relating to image data differences and image data difference directions respectively equal to the image data differences and the image data difference directions detected by said first edge detecting means;

calculating means for providing said edges, detected by said second edge detecting means, with predetermined coefficients respectively, and for adding said predetermined coefficients for said edges detected by said second edge detecting means to calculate a sum of said predetermined coefficients; and

signal generating means for generating an image signal which varies a size of said given dot in accordance with the sum of the predetermined coefficients which is calculated by said calculating means.

5,361,331

IMAGE ANALYZER

Detlev Schmerler, Gupfenbuhel 513, FL-9493 Mauren, Liechtenstein, and Gerhard Brugger, Norliche Hauptstrasse 30, 8183 Rottach-Egern, Germany, assignors to bbs AG international; Detlev Schmerler, both of Liechtenstein and Gerhard Brugger, Rottach-Egern, Germany

Filed Aug. 16, 1991, Ser. No. 746,428

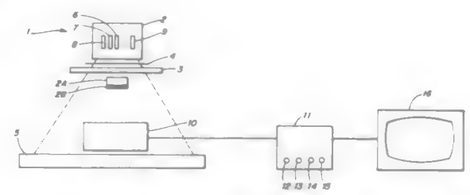
Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—109 **7 Claims**

1. An image analyzer (10) for adjusting a printer (1), which is used for producing photographic prints, with regard to a colour composition of the exposure light which is to be emitted by an exposure means (2) of said printer (1) and, if necessary, a sharp focus as well as, if necessary, an f-number and/or an exposure time, comprising

a video image converter device (19) for recording an original (4) exposed by the exposure means (2) of the printer (1),

a means (21) for adapting the spectral sensitivity curve of the video image converter device (19) to the spectral sensitivity curve of the photographic material used in said printer (1), and



a white balance control circuit, which is connected to said video image converter device (19) and which is used for producing colour component signals for at least two colour components of the exposure light emitted by the exposure means (2) of said printer (1),

wherein the colour component signals are supplied to a control circuit by means of which adjustment devices for at least two colour filters (at 6, at 7 at 8), which are associated with the colour components, can be adjusted such that the colour component signal for both colour components will assume a white balance condition.

5,361,332

METHOD OF COMMONLY USING FONT INFORMATION FOR OUTPUTTING INFORMATION IN A SYSTEM HAVING A PLURALITY OF INFORMATION PROCESSING DEVICES

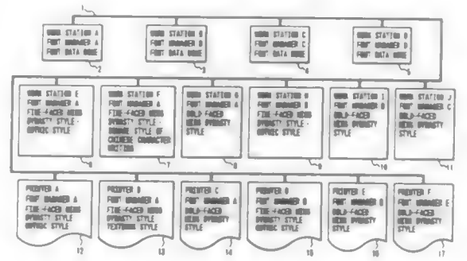
Masayuki Yoshida, Yokohama, and Keiko Nakanishi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 772,953

Claims priority, application Japan, Oct. 9, 1990, 2-272605

Int. Cl.[5] G06K *15/00*

U.S. Cl. 395—114 **40 Claims**



1. An information outputting method for a first information processing device connected to at least one second information processing device, wherein each of the first and second information processing devices can output information visually, said information outputting method comprising the steps of:

specifying a type of font information for outputting information;

discriminating, when font information of the specified type is not stored in the first information processing device, whether font information of the specified type is stored in

any of the at least one second information processing device;

selecting, when a discrimination is made as a result of said discriminating step that at least one second information processing device stores font information of the specified type, one information processing device from the at least one second information processing device discriminated to be storing the font information of the specified type;

loading font information of the specified type from the selected information processing device to the first information processing device; and

outputting information in accordance with the loaded font information.

5,361,333

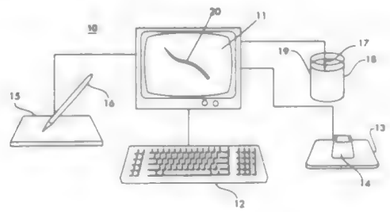
SYSTEM AND METHOD FOR GENERATING SELF-OVERLAPPING CALLIGRAPHIC IMAGES

John B. Ahlquist, Jr., Garland; James R. Von Ehr, II, and Samantha Seals-Mason, both of Plano, all of Tex., assignors to Altsys Corporation, Richardson, Tex.

Filed Jun. 4, 1992, Ser. No. 893,840

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—142 **42 Claims**



1. A method of creating a complex calligraphic image of a line with self-overlapping segments, said method comprising the steps of:

accepting data representative of the width of the line to be created, and an input pen angle for said calligraphic line;

accepting data representative of a direction of the line to be created; and

constructing said calligraphic image of said line concurrently as said line direction is accepted, said constructed image line moving at a constant constructed pen angle in accordance with said accepted input pen angle data.

5,361,334

DATA PROCESSING AND COMMUNICATION

Robin A. Cawley, Burghclere, England, assignor to Quantel Limited, Newbury, Great Britain

Continuation of Ser. No. 297,698, Jan. 17, 1989, abandoned. This application Mar. 15, 1993, Ser. No. 31,930

Claims priority, application United Kingdom, Jan. 15, 1988, 88 00943; Aug. 12, 1988, 88 19207

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—200 **31 Claims**

1. Data processing apparatus comprising:

a processing unit;

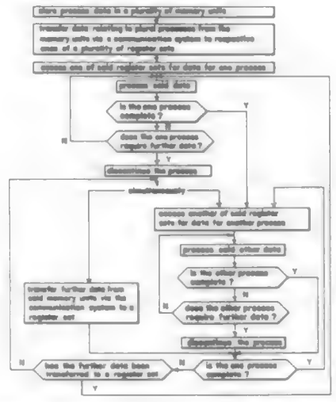
a plurality of memory units separate from each other and from the processing unit;

a communication system connected to said processing unit and said memory units to provide communication therebetween,

wherein said processing unit includes:

a plurality of register sets each for holding data relating to a respective process received from said memory units via said communication system; and

processing means for processing a first process by accessing a first of said register sets until said first process requires first further data to be supplied via said communication system, requesting via said communication system said first further data to be supplied from one of said memory units via said communication system and discontinuing the processing of said first process pending the receipt of said first further data and processing a second process by



accessing a second register set until second further data is required by said second process or said second process is complete.

5,361,335

INPUT-OUTPUT CHANNEL UNIT CAPABLE OF PREDICTING AN OVERRUN IN A DATA PROCESSING DEVICE

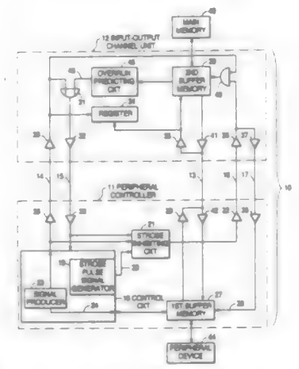
Hajime Oyadomari, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 477,063, Feb. 8, 1990, abandoned. This application Jul. 12, 1993, Ser. No. 89,625

Claims priority, application Japan, Feb. 8, 1989, 1-27575

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—250 **9 Claims**



1. In a data transferring system for use in carrying out data transfer between a peripheral controller and an input-output channel unit in a data processing device comprising a data line, a start informing signal line, a start informing acknowledgement signal line, a strobe pulse signal line, and a strobe pulse acknowledgement signal line, said peripheral controller comprising: a strobe pulse generating means for producing a strobe pulse signal and for delivering said strobe pulse signal to said strobe pulse signal line; signal producing means for producing, during a preselected time interval, a start code signal having a start code representative of a start of said data transfer and for producing, during production of said start code signal, a start informing signal for use in informing said input-output channel

unit of production of said code signal, said signal producing means delivering said start informing signal to said start informing signal line; and first storing means connected to said signal producing means and said data line for periodically storing said start code signal as a stored code signal at a first period determined by a strobe pulse acknowledgement signal and for delivering said stored code signal to said data line; said input-output channel unit comprising: first receiving means connected to said start informing signal line for receiving said start informing signal as a received informing signal; first transmitting means connected to said first receiving means and said start informing acknowledgement signal line for transmitting said received informing signal to said start informing acknowledgement signal line as a start informing acknowledgement signal; registering means connected to said data line and said first receiving means and enabled by said received informing signal for registering said stored code signal as a registered code signal; second receiving means connected to said strobe pulse signal line for receiving said strobe pulse signal as a received pulse signal; second transmitting means connected to said second receiving means and said strobe pulse acknowledgement signal line for transmitting said received pulse signal to said strobe pulse acknowledgement signal line as said strobe pulse acknowledgement signal line as said strobe pulse acknowledgement signal; and second storing means connected to said data line, said second receiving means, and a main memory; said first storing means being connected to a peripheral device; said first and said second storing means being for use in transferring transfer data between said main memory and said peripheral device through said data line after said registering means registers said stored code signal, said first and said second storing means being for storing said transfer data as first and second stored data at said first period and a second period determined by said received pulse signal; wherein:

said input-output channel unit comprises:

overrun storage capacity predicting means connected to said second storage means for predicting an occurrence of an overrun on the basis of an amount of said second stored data to produce an overrun prediction signal;

said first transmitting means being connected to said overrun predicting means for transmitting said overrun prediction signal to said start informing acknowledgement signal line; and

said peripheral controller comprising:

strobe inhibiting means connected to said start informing acknowledgement signal line, said strobe pulse signal generating means, and said strobe pulse signal line and responsive to said overrun prediction signal for inhibiting delivery of said strobe pulse signal to said strobe pulse signal line during a predetermined time interval.

5,361,336

METHOD FOR CONTROLLING AN INSTRUMENT THROUGH A COMMON INSTRUMENT PROGRAMMING INTERFACE

Lee A. Atchison, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 21, 1991, Ser. No. 796,094

Int. Cl.[5] G06F *3/00*

U.S. Cl. 395—275 **14 Claims**

1. A method of performing input and output operations between an electronic instrument and a computer system, said computer system comprising a plurality of types of interfaces, wherein said method is independent of the type of interfaces used to connect said instrument to said computer system, said method comprising the steps of:

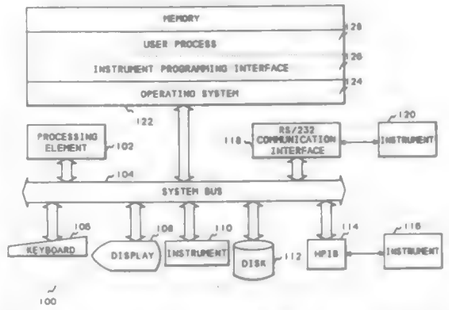
(a) retrieving an interface type and interface address of said instrument from a configuration means, wherein said configuration means is separate and independent from said instrument;

(b) using information from said configuration means to create an instrument identification data structure;

(c) receiving all input and output operation subroutine calls from a user program through an instrument programming interface means;

(d) creating a plurality of interface module means, one of said plurality of interface module means being created for each of said types of interfaces;

(e) using said instrument identification data structure to select one of said plurality of interface module means;



(f) performing said input and output operations using said selected interface module means; and

(g) performing said input and output operations through a commander interface means and through a second computer system acting as a commander.

5,361,337

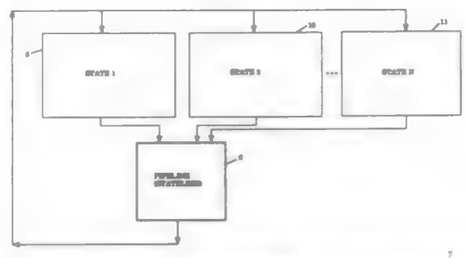
METHOD AND APPARATUS FOR RAPIDLY SWITCHING PROCESSES IN A COMPUTER SYSTEM

Kenneth Okin, Saratoga, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 389,570, Aug. 3, 1989. This application May 8, 1992, Ser. No. 883,059

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **13 Claims**



1. In a computer system comprising a pipelined processor coupled to a memory subsystem having a cache memory and a main memory, a method for executing a plurality of processes, said method comprising the steps of:

executing a first process by a plurality of stateless elements of said pipelined processor, execution results and state information of said first process being stored by said stainless elements into a first plurality of state elements of said pipelined processor coupled to said stateless elements, said first process being an instance of a first program stored in said memory subsystem;

suspending execution of said first process by said stateless elements when encountering a first cache miss while executing said first process; and

switching to execute a second process by said stateless elements upon suspending execution of said first process, execution results and state information of said second process being stored by said stateless elements into a sec-

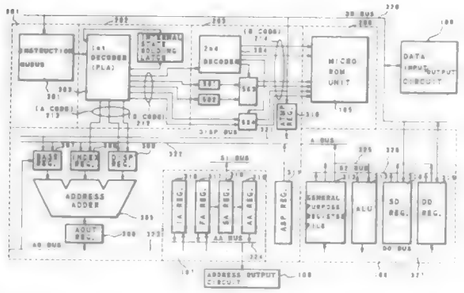
ond plurality of state elements of said pipelined processor coupled to said stateless elements, said second process being an instance of a second program Stored in said memory subsystem, said suspension and switching being accomplished in a first time period that is shorter than a second time period required on average by said memory subsystem to handle a cache miss.

5,361,338

PIPELINED SYSTEM FOR DECOMPOSING INSTRUCTION INTO TWO DECODING PARTS AND EITHER CONCURRENTLY GENERATING TWO OPERANDS ADDRESSES OF MERGING DECOMPOSING DECODING CODES BASED UPON THE SECOND OPERAND

Souichi Kobayashi, and Masahito Matsuo, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 420,084, Oct. 11, 1989, abandoned. This application Nov. 9, 1992, Ser. No. 973,926
Claims priority, application Japan, Oct. 14, 1988, 63-259723
Int. Cl.[5] G06F *9/30, 9/34*
U.S. Cl. 395—375 **7 Claims**



1. A data processor that includes internal registers and executes an instruction having a format which includes an operation code field specifying a first operand and the operation to be performed on the first operand, and an operand address field specifying a location of a second operand, said data processor comprising:

a pipeline for executing the instruction in a plurality of stages which comprises:

a first stage for decomposing the instruction, including decode means for decoding the instruction to generate a first unit decoding processing code during a first given time period and to generate a second unit decoding processing code during a second given time following said first given time period, with said first unit decoding processing code relating to the second operand, and said second unit processing code relating to the first operand;

a second stage, coupled to said first stage, said second stage including means for terminating processing said first unit decoding processing code at said second stage by merging said first unit decoding processing code into said second unit decoding processing code when the specified location of the second operand is in one of said internal registers so that only said second unit processing code is output, and for concurrently processing said first and second unit decoding processing codes when the specified location of the second operand is not in one of said internal registers; and

a third stage, coupled to an output of said second stage, for completing the execution of the instruction and storing a result,

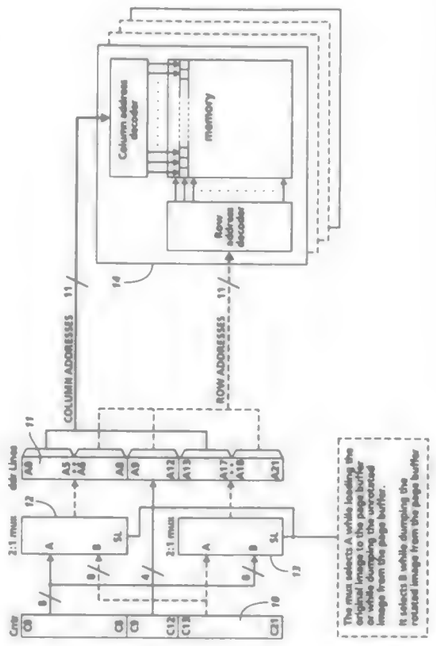
wherein said internal registers are general purpose registers.

5,361,339

CIRCUIT FOR FAST PAGE MODE ADDRESSING OF A RAM WITH MULTIPLEXED ROW AND COLUMN ADDRESS LINES

Vinod K. Kadakia, Rancho Palos Verdes, and Christine H. Kang, Los Angeles, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 4, 1992, Ser. No. 878,192
Int. Cl.[5] G06F *12/00;* **G11C** *8/00;* **G09G** *5/38*
U.S. Cl. 395—400 **1 Claim**



1. A circuit for addressing a random access memory (RAM) device having x address lines divided into two sets of address lines, column address lines and row address lines, comprising:

an x bit counter having y least significant bits, z most significant bits, and n intermediate bits, where $y+z+n=x$, said y and z bits being further divided into least significant bits and most significant bits, where x, y, z and n are positive integers,

a first multiplexer having A and B inputs and an output, the A input coupled to said y bits, the B input coupled to said z bits,

a second multiplexer having A and B inputs and an output the A input of said second multiplexer coupled to said z bits and the B input of said second multiplexer coupled to said y bits, and

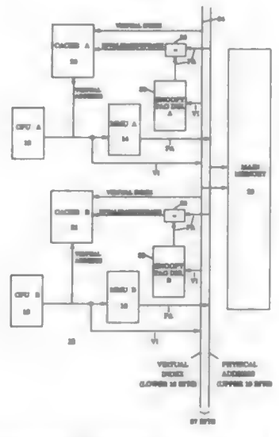
a register having $y+n+z$ input lines and output lines, the y least significant of said input lines of said register coupled to said output of said first multiplexer, the n intermediate input lines of said register coupled to said n intermediate bits of said counter and the z most significant of said input lines of said register coupled to said output of said second multiplexer, and having the least significant bits of said first and second multiplexer outputs coupled to said column address lines and having the most significant bits of said first and second multiplexer outputs coupled to said row address lines.

5,361,340

APPARATUS FOR MAINTAINING CONSISTENCY IN A MULTIPROCESSOR COMPUTER SYSTEM USING VIRTUAL CACHING

Edmund Kelly, San Jose; Michel Cekleov, Mountain View, and Michel Dubois, Los Angeles, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 461,225, Jan. 5, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 28,766
Int. Cl.[5] G06F *13/00, 12/08*
U.S. Cl. 395—400 **2 Claims**



1. A multiprocessor computer system, said multiprocessor computer system comprising the elements of:

a bus structure, said bus structure carrying information within said multiprocessor computer system;

a) a first processor subsystem, said first processor subsystem comprising

i) a first processing unit, said first processing unit generating a first plurality of virtual addresses, said virtual addresses comprising a plurality of bits wherein a subset of said bits comprise a first virtual index, said first virtual index broadcast on said bus structure;

ii) a first cache memory unit, said first cache memory unit coupled to said first processing unit, said first cache memory unit addressed using said first plurality of virtual addresses, said first cache memory unit comprising a plurality of cache entries, said cache entries indexed using said first virtual index;

iii) a first memory management unit, said first memory management unit coupled to said first processing unit, said first memory management unit translating said first plurality of virtual addresses into a correspond plurality of physical addresses, said physical addresses broadcast on said bus structure;

b) a second processor subsystem, said second processor subsystem comprising

i) a second processing unit, said second processing unit generating a second plurality of virtual addresses, said second plurality of virtual addresses comprising a plurality of bits wherein a subset of said bits comprise a second virtual index, said second virtual index broadcast on said bus structure;

ii) a second cache memory unit, said second cache memory unit coupled to said second processing unit, said second cache memory unit addressed using said second plurality of virtual addresses, said second cache memory unit comprising a plurality of cache entries, said cache entries indexed using said second virtual index;

iii) a second memory management unit, said second memory management unit coupled to said second processing unit, said second memory management unit translating said second plurality of virtual addresses into a correspond plurality of physical addresses, said physical addresses broadcast on said bus structure; and

a main memory, said main memory coupled to said bus structure, said main memory addressed by said physical addresses;

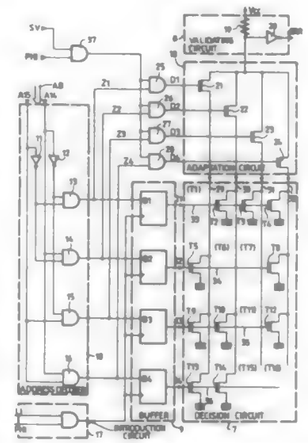
wherein if a first unit of information in said first cache memory having a first virtual index value from a first virtual address value has the same physical address value as a second unit of information in said second cache memory having a second virtual index value from a second virtual address value then said first virtual index value and said second virtual index value are equal.

5,361,341

DEVICE FOR ENABLING THE USE OF THE CONTENTS OF MEMORY AREAS OF AN ELECTRONIC MICROPROCESSOR SYSTEM

Laurent Sourgen, and Rodolphe Uhlmann, both of Aix en Provence, France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly, France

Continuation of Ser. No. 490,615, Mar. 22, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 16,012
Claims priority, application France, Oct. 2, 1987, 87 13936
Int. Cl.[5] G06F *12/14*
U.S. Cl. 395—425 **26 Claims**



1. An integrated circuit memory address protection device, comprising:

a plurality of flip-flops connected to receive a respective plurality of decoded address lines, and having a clock input connected to receive a first signal;

a corresponding plurality of static gates which are also connected, in parallel to said flip-flops, to receive said respective plurality of decoded address lines, and connected to receive a second signal at an enable input, and configured and connected to drive a respective plurality of output lines in accordance with the state of said address lines and said second signal;

an validation circuit having an input connection, and configured to output an error signal whenever said input connection is driven toward a predetermined first voltage;

a plurality of pass transistors each connected to receive a respective one of said output lines of said static gates at a respective control terminal thereof, and each connected between said error-detection circuit and a respective one of a plurality of first connections; and

a programmed array, including a plurality of first lines each connected to a respective output of one of said flip-flops, and a plurality of second lines each connected to a respec-

tive one of said first connections, and a plurality of transistors, at some BUT NOT ALL intersections of said first and second lines, each having a respective control terminal connected to a respective one of said first lines, and each having respective current-conducting terminals connected to drive a respective one of said second lines toward said first voltage;

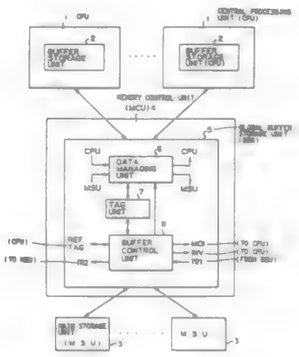
whereby the locations of transistors in said array determine which combinations of addresses will cause said validation circuit to produce an error signal.

5,361,342

TAG CONTROL SYSTEM IN A HIERARCHICAL MEMORY CONTROL SYSTEM

Hirosada Tone, Fuchu, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 29, 1991, Ser. No. 737,333
Claims priority, application Japan, Jul. 27, 1990, 2-199729
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **42 Claims**



1. A hierarchical memory control system comprising:

N central processing units each including a store-in type buffer storage unit having a plurality of buffer entries, each buffer entry having a data block and a block size and storing part of main memory data, where N is a first positive integer;

a main storage unit, storing main memory data commonly used by said N central processing units; and

a store-in type global buffer storage unit coupled to said N central processing units and to said main storage unit, said N central processing units being able to commonly access said store-in type global buffer storage unit;

said store-in type global buffer storage unit comprising:

data managing means, operatively connected to said N central processing units and to said main storage unit, and having entries each for keeping a data block transferred from said main storage unit, each of said entries having an M times large block size in comparison with the block size of said buffer entries, the data block in each being divided into M divided blocks, where M is a second positive integer;

tag means, operatively connected to said data managing means, for managing the entries of said data managing means; and

buffer control means, operatively connected to said tag means and to said data managing means, for controlling said store-in type global buffer storage unit;

said tag means comprising:

a valid bit indicating whether a corresponding entry of said data managing means is valid;

an exclude bit indicating whether the corresponding entry of said data managing means is accessed by one of said N central processing units with an exclusive right;

M modify bits respectively corresponding to said M divided blocks, each of said M modify bits indicating whether the divided data in the corresponding divided block has been modified after the divided data was transferred from said main storage unit;

copy bits, each corresponding to one of said M divided blocks and one of said N central processing units, for indicating whether the divided data in the corresponding divided block is copied to the buffer storage unit in the one of said N central processing units; and

address bits indicating an address of the data block being transferred from said main storage unit;

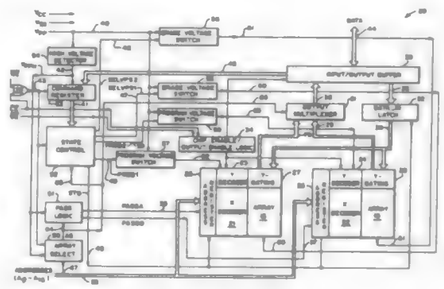
said buffer control means controlling said tag means and said data managing means such that, when the data block stored in said buffer storage unit is modified, the modified data block is copied to said store-in type global buffer storage unit and when the data block stored in said store-in type global buffer storage is modified, the modified data block is copied to said main storage unit.

5,361,343

MICROPROCESSOR SYSTEM INCLUDING FIRST AND SECOND NONVOLATILE MEMORY ARRAYS WHICH MAY BE SIMULTANEOUSLY READ AND REPROGRAMMED

George A. Kosonocky, Placerville, and Mark D. Winston, El Dorado Hills, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 738,179, Jul. 30, 1991, Pat. No. 5,245,572. This application May 10, 1993, Ser. No. 60,828
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] G06F *12/00;* **G11C** *16/06*
U.S. Cl. 395—425 **6 Claims**



1. A microprocessor system, comprising:

a central processing unit (CPU);

a communication port;

a bus connected to the CPU and the communication port;

a floating gate nonvolatile memory coupled to the CPU and the communication port via the bus, wherein the nonvolatile memory resides on a single silicon substrate, wherein the nonvolatile memory further comprises

(a) a first memory array;

(b) a first address register for storing a first address for the first memory array;

(c) a second memory array;

(d) a second address register for storing a second address for the second memory array;

(e) a multiplexer having inputs coupled to the first memory array and the second memory array for selectively coupling one of the first memory array and the second memory array to an output of the memory;

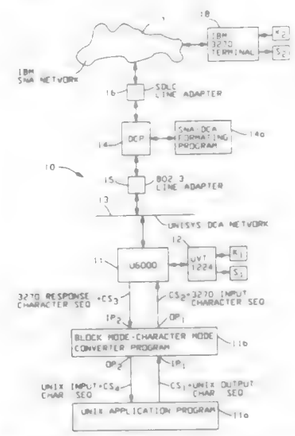
(f) array select circuitry responsive to (1) incoming array select information associated with the first address and (2) memory operation control information for selecting the first memory array for a reprogramming operation and for allowing a read operation with respect to the second memory array during the reprogramming operation of the first memory array, wherein the array select circuitry is coupled to the CPU via the bus for receiving the array select information and the memory operation control information from the CPU, wherein the array select circuitry directs the first address to the first address register for the reprogramming operation in response to the incoming array select information and the memory operation control information received and directs the second address to the second address register for the read operation during the reprogramming operation of the first memory array, wherein the array select circuitry controls the multiplexer for coupling the second memory array to the output of the memory during the reprogramming operation of the first memory array and the read operation of the second memory array such that the second memory array can be read by the CPU while the first memory array is undergoing the reprogramming operation.

5,361,344

METHOD OF OPERATING, VIA A BLOCK MODE TERMINAL, UNIX PROGRAMS FOR A CHARACTER MODE TERMINAL

Gregg B. Beardsley, Sandy, and Fredrick M. Wilhelmsen, Salt Lake City, both of Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 29, 1993, Ser. No. 10,911
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—500 **16 Claims**



1. For use in an emulator, a method of enabling a UNIX program to operate with a block mode terminal when said UNIX program is designed to operate with a character mode terminal; said method including the steps of:

receiving from said UNIX program, a UNIX output sequence of characters which produces a display on a video screen in said character mode terminal;

identifying in said UNIX output sequence of characters, first type control characters that define a predetermined visual attribute at various regions within said display in said character mode terminal;

generating, after said identifying step, an input sequence of characters for said block mode terminal, which differs from said UNIX output sequence of characters, and which produces an emulated display on a video screen within said block mode terminal that mimics said display in said character mode terminal; and,

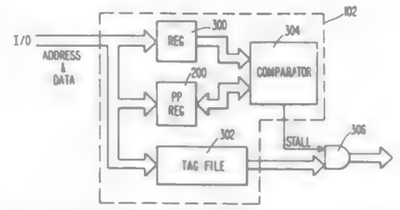
including in said input sequence of characters, in response to said identifying step, second type control characters which—a) protect all of said emulated display from operator alteration except for certain fields that correspond to said regions in said character mode terminal display with said predetermined visual attribute, and b) prevent said block mode terminal from transmitting, to said emulator, a response character sequence with characters from any protected portion of said emulated display.

5,361,345

CRITICAL LINE FIRST PAGING SYSTEM

Robert English, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 19, 1991, Ser. No. 762,839
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—575 **8 Claims**



5. A computer system for operating upon a process, comprising:

an operating memory for storing at least one page of data;

a secondary storage device for storing a plurality of pages of data;

a microprocessor for running said process, said microprocessor accessing said operating memory for each data line requested by said process and receiving a page fault when a page containing a requested data line is not present in said operating memory, wherein when a page fault is received said microprocessor determines the address of the requested data line which caused the page fault and instructs said secondary storage device to transfer said requested data line from said secondary storage device into said operating memory before transferring other data lines in a page containing the requested data line from said secondary storage device into said operating memory; and

a memory controller for detecting whether the requested data line has arrived in said operating memory from said secondary storage device and for stalling processing of said process by said microprocessor until the requested data line has arrived in said operating memory from said secondary storage device, whereby said microprocessor continues processing of said process as soon as said requested data line arrives, without waiting for all data lines within the page to be transferred from said secondary storage device.

5,361,346

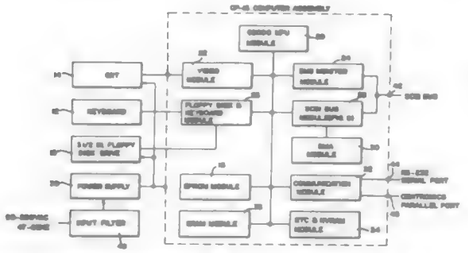
PORTABLE TESTER (QUALIFIER) FOR EVALUATING AND TESTING SCSI INTERFACE MAGNETIC DISC DRIVES IN ACCORDANCE WITH ANSI SCSI-A AND SCSI-2 DEFINITIONS

Param Panesar, and James K. Berger, both of Santa Monica, Calif., assignors to Santa Monica Pioneer Research Inc., Santa Monica, Calif.

Filed Jan. 15, 1992, Ser. No. 820,912
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **9 Claims**

1. A programmable qualifier for testing and evaluating SCSI magnetic disc drives, and the like, connected to the qualifier by an SCSI bus, said testing and evaluation being in accordance with American National Standards Institutes (ANSI) standardized small computer system interface (SCSI) protocols, said qualifier comprising: a microprocessor; a cathode ray tube, a keyboard, first circuitry connecting the microprocessor to the cathode ray tube; second circuitry connecting the keyboard to

the microprocessor to cause the microprocessor to introduce signals to the cathode ray tube through said first circuitry; third circuitry connecting the microprocessor to the SCSI bus to cause binary information to flow back and forth on the bus



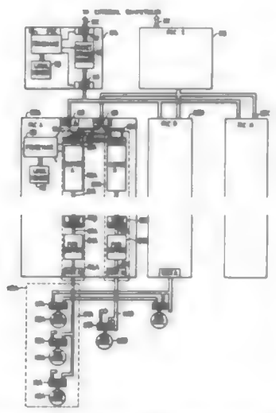
between the qualifier and the disc drive selected by the qualifier, said binary information being interpreted by the microprocessor and caused thereby to be displayed by the cathode ray tube in a predetermined format which includes ANSI defined names, labels, error messages, and the like.

5,361,347

RESOURCE MANAGEMENT IN A MULTIPLE RESOURCE SYSTEM WHERE EACH RESOURCE INCLUDES AN AVAILABILITY STATE STORED IN A MEMORY OF THE RESOURCE

Joseph S. Glider, Palo Alto, and David H. Jaffe, Belmont, both of Calif., assignors to MTI Technology Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 505,854, Apr. 6, 1990, Pat. No. 5,214,778. This application Oct. 22, 1992, Ser. No. 965,135
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] G06F *11/00, 13/00*
U.S. Cl. 395—575 **10 Claims**



1. A method for determining the availability of resources in a computing subsystem coupled to a host computer, each resource having an availability state, comprising the steps of:

storing information in a memory coupled to one of said resources regarding the operational relationship between said one resource and at least one other resource in the computing subsystem;

determining whether a resource is operable;

changing the availability state of a resource in response to a determination of a fault management subsystem that a resource is inoperable; and

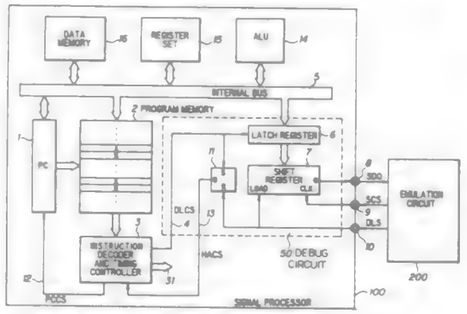
determining, internally to each resource, how a change in the availability state of a resource affects the availability of other resources in the computing subsystem.

5,361,348

DEBUG CIRCUIT OF A SIGNAL PROCESSOR

Takashi Nakamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 638,639, Jan. 8, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 97,311
Claims priority, application Japan, Jan. 8, 1990, 2-001884
Int. Cl.[5] G06F *11/34, 11/00, 7/22*
U.S. Cl. 395—575 **6 Claims**



1. A debug circuit of a signal processor, comprising:

a program memory for storing a signal processing program and a debug program;

means for decoding said signal processing program and said debug program to provide commands in a signal processing mode and a debug mode, respectively;

means for transferring a program running state of an internal circuit of said signal processor to an external circuit, said transferring means receiving a data load signal and a clock signal from said external circuit to control a speed of transferring said program running state;

wherein said debug program is decoded in said decoding means to drive said transferring means, providing said debug mode, and to halt said signal processing mode, and said signal processing mode is resumed in response to said data load signal, when said transferring means starts providing said program running state to said external circuit.

5,361,349

VIRTUAL OBJECT MANAGEMENT SYSTEM FOR MANAGING VIRTUAL OBJECTS WHICH CORRESPOND TO REAL OBJECTS UNDER A USER DEFINED HIERARCHY

Yumiko Sugita, Musashino; Hisashi Hashimoto; Masaki Tsuruki, both of Yokohama, and Seiichi Domyo, Tanashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,575
Claims priority, application Japan, Nov. 27, 1990, 2-323802
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **6 Claims**

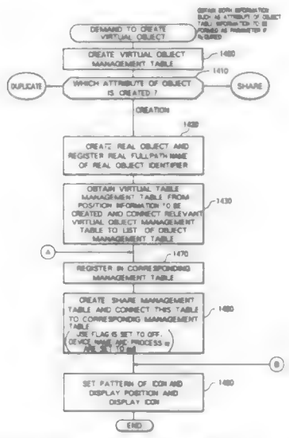
1. An object management system comprising:

a single real object management system wherein at least one real life object containing data or a program is managed by at least one real directory object in a hierarchical structure; and

at least a single virtual object management system wherein at least one virtual file object corresponding to said real file object is managed by at least one virtual directory object in a hierarchical structure, said one virtual directory object being independent of said real directory object, wherein said virtual object management system includes:

(a) means, responsive to a demand for newly creating another virtual object including a virtual file object or a virtual directory object, for newly creating a real object including a real file object or a real directory object by utilizing said real object management system, and for producing a virtual object corresponding to said real object;

(b) means, responsive to a demand for duplicating a previously provided virtual object including a virtual file object or a virtual directory object, for duplicating that



real object including a real file object or a real directory object which corresponds to said previously provided virtual object by utilizing said real object management system, and for producing a virtual object corresponding to said duplicated real object; and

(c) means, responsive to a demand for sharing with a plurality of virtual objects, that real object including a real file object or a real directory object which corresponds to a previously provided virtual object including a virtual file object or a virtual directory object, for creating at least one virtual object corresponding to said real object.

5,361,350

OBJECT ORIENTED METHOD MANAGEMENT SYSTEM AND SOFTWARE FOR MANAGING CLASS METHOD NAMES IN A COMPUTER SYSTEM

Mike H. Conner; Andrew R. Martin, and Larry K. Raper, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

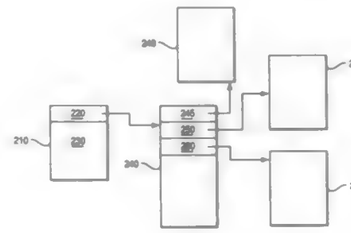
Filed Dec. 12, 1991, Ser. No. 805,779
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—600 **5 Claims**

1. An apparatus for organizing a set of classes, wherein each class in the set of classes has a plurality of methods, each method having a method name and being implemented by a function in a computer memory, comprising:

(a) means for initializing a method procedure area in storage to hold method procedure data for each of said plurality of methods for each class in the set of classes, said method procedure area having an identified starting location in said storage;

(b) means for defining the function for each of the plurality of methods, the means for defining placing method procedure data at identifiable locations in the method procedure area statically for each class;

(c) means for collecting in a specified order an offset value from the starting location of said method procedure area for each of said identifiable locations into a class data structure for each class, wherein collection of the offset values occurs only when said class is initialized by an executing process;



(d) means for permitting external access to the class data structure; and

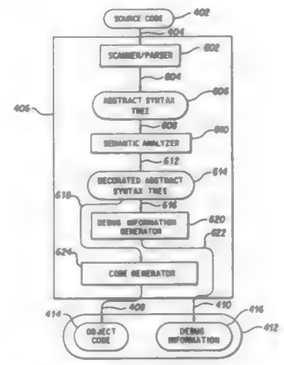
(e) external program means for accessing said data structure to obtain offsets for a particular method procedures at said identifiable locations in said method procedure area.

5,361,351

SYSTEM AND METHOD FOR SUPPORTING RUN-TIME DATA TYPE IDENTIFICATION OF OBJECTS WITHIN A COMPUTER PROGRAM

Dmitry Lenkov; Shankar Unni; Michey Mehta, all of San Jose, Calif.; Mark W. McDowell, Fort Collins, Colo.; Manoj Dadoo, San Jose, Calif., and Bruno Melli, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 21, 1990, Ser. No. 586,778
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—700 **23 Claims**



1. A computer implemented software compilation and debugging system, for use with a source code, wherein the source code is written in an object-oriented computer programming language which uses virtual tables to support polymorphism by storing virtual member function addresses, and wherein the source code includes objects having object data types, object contents, and addresses to the virtual tables, wherein the virtual table addresses are used to access, during run-time, the virtual member function addresses stored in the virtual tables such that dynamic binding of function code to the objects is achieved, the system comprising:

(1) first means for generating an object code and debug information of the source code, said debug information comprising said virtual table addresses and virtual table address locations; and

(2) second means, operating under the direction of a user, for

locating and correcting errors in the source code by using said debug information, said second means comprising:

(a) means for accurately determining said object data types in response to a request to do so from the user; and

(b) means for accurately and completely determining said object contents in response to a request to do so from the user;

wherein said second means also comprises means for generating a debug lookup table, said debug lookup table comprising entries for said virtual tables, said entries comprising object data type identification fields, object offset fields, and virtual table address fields;

wherein said means for accurately determining said object data types comprises:

(i) means for reading said virtual table addresses in said objects by using pointers which address said objects;

(ii) means for accessing said debug lookup table and reading data type identification information in said data type identification fields by matching said virtual table addresses read from said objects to said virtual table addresses stored in said debug lookup table, wherein said data type identification information identifies said object data types; and

(iii) means for using said data type identification information to process user requests.

5,361,352

METHOD FOR DEBUGGING IN A PARALLEL COMPUTER SYSTEM AND SYSTEM FOR THE SAME

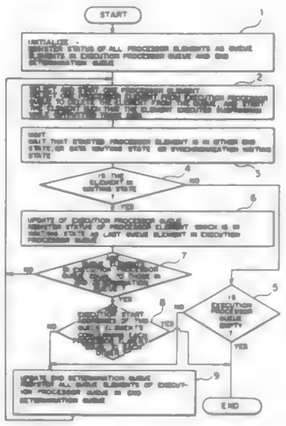
Kyoko Iwasawa, Tokyo, and Yoshikazu Tanaka, Omiya, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1990, Ser. No. 617,782

Claims priority, application Japan, Nov. 27, 1989, 1-304608

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—700 **16 Claims**



9. In a parallel computer system including a main processor and a plurality of processors each having an identifier, a method for debugging a plurality of parallel programs of a user program, each parallel program including code for outputting a variable array, an accessed part thereof and definition or reference of the part by sequentially executing the parallel programs for identification of bugs, said method being executed by the computer system and comprising the steps of:

(a) allocating the parallel programs to said processors, respectively;

(b) registering the identifiers of said plurality of processors in a table in accordance with a predetermined rule;

(c) controlling said processors to execute the allocated parallel programs in an order of numbers such that only one processor is active at a time, until each processor is brought into one of an end state and a waiting state for either data or synchronization, while outputting trace data;

(d) registering the identifier of the processor brought into the waiting state in the table;

(e) repeating said steps (c) and (d) until an end condition is satisfied; and

(f) repeating said steps (b) to (e), wherein said step (b) is executed such that serial numbers are assigned to the processors in a different order.

5,361,353

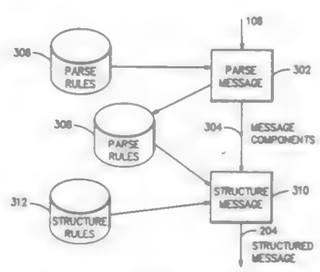
SYSTEM FOR PARSING MESSAGE UNITS FROM AN UNSTRUCTURED MESSAGE STREAM OF INTERLEAVED MESSAGE UNITS TO FORM STRUCTURED MESSAGES

Brian P. Carr, Jefferson Valley, N.Y.; David A. Glowny, Naugatuck, Conn.; Colette A. Mastrangelo, Danbury, Conn.; Paul M. Mayer, Middlebury, Conn.; Arthur Seltzer, Richboro, Pa., and Peter D. Shier, Danbury, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1991, Ser. No. 771,061

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—700 **8 Claims**



1. In a data processing system in which an unstructured message stream is generated comprising an interleaved sequence of message units from two or more messages, whereby said unstructured message stream contains discontious message units that are part of the same message, a method of transforming said unstructured message stream into a structured message stream associating message units that are part of the same message, comprising the steps of:

identifying successive message units in said unstructured stream of interleaved message units;

parsing each of said successive message units into message components in accordance with a set of parsing rules;

storing the results of said parsing step for each of said message units for use in analyzing subsequent message units;

analyzing the message components of the current message unit and the results of said parsing step stored for previous message units in accordance with a set of structure rules to determine whether the current message unit is part of the same message as a previous message unit; and

generating a structured message stream associating discontiguous message units of said unstructured message stream that are determined to be part of the same message.

5,361,354

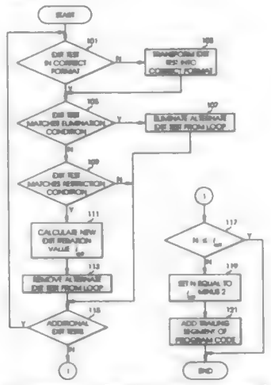
OPTIMIZATION OF ALTERNATE LOOP EXITS

Terry Greyzck, Eagan, Minn., assignor to Cray Research, Inc., Eagan, Minn.

Filed Dec. 17, 1991, Ser. No. 809,390

Int. Cl.[5] G06F *9/45*

U.S. Cl. 395—700 **21 Claims**



1. A digital computer [under programmed control] for eliminating, *under programmed control, alternate exit tests* from a loop body [alternate exit tests substantially of the form $\alpha i\ \beta cond\phi$, where α, β and ϕ are loop invariant expressions, *i* is the innermost loop index variable, and *cond* is one of the relational operators $(=,\neq,>,\geq,<,\leq)$], the programmed computer comprising:

(a) transformation means for transforming an alternate exit test into a [correct format if required] *transformed alternate exit test of the form* $\alpha i+\beta cond\phi$, *where* α, β *and* ϕ *are loop invariant expressions, i is the innermost loop index variable, and cond is one of the relational operators* $(=,\neq,>,\geq,<,\leq)$;

(b) comparison means for comparing the *transformed* alternate exit test to a list of elimination conditions; and

(c) elimination means for eliminating the alternate exit test from the loop body if it matches one of the elimination conditions; whereby [the produced altered] *an optimized* loop body is [optimized] *produced*.

5,361,355

SOFTWARE ASSET SYSTEMIZER

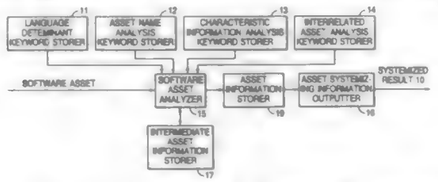
Syuji Kondo, Kawasaki, and Kenji Ohkushi, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1992, Ser. No. 833,119

Claims priority, application Japan, Feb. 8, 1991, 3-039076; May 16, 1991, 3-111283

Int. Cl.[5] G06F *11/30, 9/44*

U.S. Cl. 395—700 **20 Claims**



1. A software asset systemizing apparatus for systemizing existing software assets, comprising:

language determinant keyword storing means for storing keywords used to determine descriptive language names of software assets;

asset name analysis keyword storing means for storing keywords used to analyze asset names of said software assets;

characteristic information analysis keyword storing means for storing keywords used to analyze characteristics of said software assets;

interrelated asset analysis keyword storing means for storing keywords used to analyze interrelations among said software assets;

software asset analyzing means for analyzing said software assets using the contents stored in said language determinant keyword storing means, asset name analysis key word storing means, characteristic information analysis keyword storing means and interrelation asset analysis key word storing means;

intermediate asset information storing means for storing intermediate results obtained while said software assets are analyzed by said software asset analyzing means;

asset information storing means for storing, as asset information for said software assets, finalized results of said software assets analyzed by said software asset analyzing means; and

asset systemizing information outputting means for outputting a systemized result obtained by systemizing said asset information stored in said asset information storing means.

5,361,356

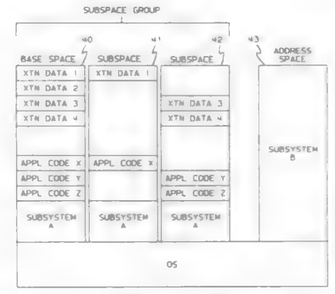
STORAGE ISOLATION WITH SUBSPACE-GROUP FACILITY

Carl E. Clark, Poughkeepsie; Jeffrey A. Frey, Fishkill; Kenneth E. Plambeck; Casper A. Scalzi, both of Poughkeepsie, and Bhaskar Sinha, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1992, Ser. No. 847,521

Int. Cl.[5] G06F *9/40*

U.S. Cl. 395—700 **15 Claims**



1. A method for quickly branching to target instructions in a sequence of programs located in multiple virtual address spaces, the programs executing in a CPU of a computer system having a system memory and an operating system (OS), the branching method performed by the CPU comprising the steps of:

locating in system memory a subspace control block associated with the sequence of programs,

storing an address (BASTEO) in the subspace control block for identifying a base address space (base space), and also storing in the subspace control block a list address (DUALD) for identifying a subspace list for identifying any number of subordinate address spaces (subspaces) associated with the base space identified in the subspace control block, the basespace and the subspaces together comprising a subspace group of address spaces,

fetching and executing instructions located in multiple address spaces in the subspace group, including fetching a branch-in-subspace-group (BSG) instruction in a portion of the sequence of programs in the base space, or in an associated subspace, the BSG instruction containing a subspace operand having a subspace virtual address and an associated subspace representation,

branching by the BSG instruction, including the steps of locating a subspace identifier by indexing a component of the subspace representation in the subspace list, and using the subspace identifier to locate an associated subspace address translation table,

translating the subspace virtual address in the subspace

address translation table to obtain an address of a target instruction in a target subspace for the BSG instruction, and fetching the target instruction in system memory,

terminating execution for the BSG instruction if the target instruction is not located in any address space of the subspace group from which the BSG instruction is fetched, and

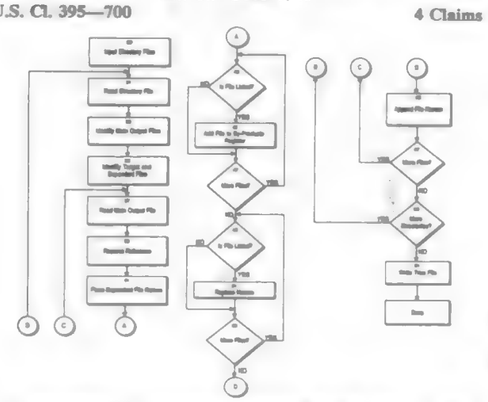
continuing execution of the BSG instruction only if the terminating step finds the target instruction is within any address space of the subspace group.

5,361,357

METHOD AND APPARATUS FOR OPTIMIZING COMPUTER FILE COMPILATION

Daniel P. Kionka, San Jose, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Apr. 2, 1992, Ser. No. 861,939
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **4 Claims**



1. In a computer system having at least one directory and a plurality of files therein, each file having a name, an apparatus for generating an abstracted dependency file for said directory, comprising:

means for obtaining dependency information specifying dependency relationships between the files in said directory;

means for identifying in said directory a main output file;

means for determining which files said main output file is dependent upon and designating these files as input files;

means for determining for each of said input files whether the input file is dependent upon another file;

means for designating all input files which do not depend on any other file as leaf dependency files, and designating all input files which do depend on one or more other files as by-product files; and

means for writing the names of said leaf dependency files, the name of said main output file, and the names of said by-product files into an abstracted dependency file, said abstracted dependency file indicating said main output file as being dependent upon said leaf dependency files, and indicating said by-product files as being dependent upon said main output file.

5,361,358

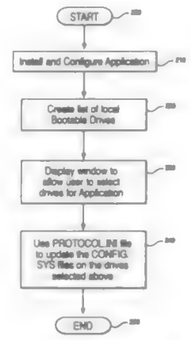
SYSTEM AND METHOD FOR INSTALLING PROGRAM CODE FOR OPERATION FROM MULTIPLE BOOTABLE OPERATING SYSTEMS

Clifford A. Cox, Austin; Steven G. Nacamuli, Round Rock; Laurie B. Turner, and Amy L. Wilson, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1992, Ser. No. 926,875
Int. Cl.[5] G06F *9/445*
U.S. Cl. 395—700 **8 Claims**

5. A method for installing computer program code on a computer system having a processor and one or more persistent storage means, said one or more persistent storage means having two or more bootable operating systems for operating said computer system, the method comprising the steps of:

copying said computer program code to a first persistent storage means;



building a list of all storage means having a bootable operating system, each of said bootable operating systems having system control data; and

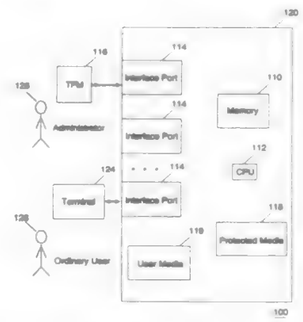
modifying said system control data for each of said bootable operating systems to incorporate configuration data for said program code.

5,361,359

SYSTEM AND METHOD FOR CONTROLLING THE USE OF A COMPUTER

Homayoon Tajalli, Ellicott City; Mark L. Badger; David I. Dalva, both of Rockville, and Stephen T. Walker, Glenwood, all of Md., assignors to Trusted Information Systems, Inc., Glenwood, Md.

Filed Aug. 31, 1992, Ser. No. 937,424
Int. Cl.[5] H04L *9/00*
U.S. Cl. 395—700 **33 Claims**



1. A computer-based method for controlling modification of an operating system and an approved application set of zero or more approved applications on a computer comprising a protected media, the protected media comprising a non-volatile storage device, the operating system and the approved application set being stored in the protected media, the method comprising the steps of:

(1) loading the operating system from the protected media into a volatile memory of the computer and executing the operation system, the operating system having a trusted path mode and a general purpose mode;

(2) establishing a reliable communication path between an administrator and the operating system by entering the trusted path mode of the operating system;

(3) while said operating system is in said trusted path mode, carrying out a request by an administrator to modify the approved application set which resides on said protected media, wherein said operating system exits said trusted path mode and enters said general purpose mode upon detecting a request to do so by the administrator;

(4) while said operating system is in said general purpose mode,

(a) denying any request by an application program or an ordinary user to modify the approved application set which resides on said protected media; and

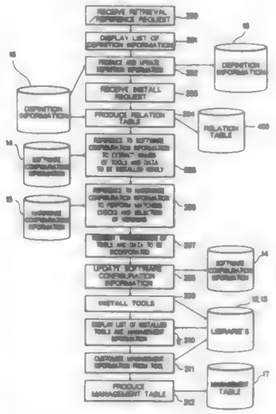
(b) denying any request by said application program or said ordinary user to modify the operating system which resides on said protected media.

5,361,360

METHOD FOR GENERATING SOFTWARE DEVELOPMENT ENVIRONMENT

Takayuki Ishigami, Yokohama, and Hisanori Sugihara, Musashimurayama, both of Japan, assignors to Hitachi, Ltd. and Hitachi Information Systems, Ltd., Tokyo, Japan

Filed Dec. 7, 1992, Ser. No. 986,511
Claims priority, application Japan, Dec. 13, 1991, 3-330235
Int. Cl.[5] G06F *15/00, 13/00, 13/14*
U.S. Cl. 395—700 **7 Claims**



1. In a software development supporting system including a plurality of stations connected through a network, a method for generating a software development environment, comprising the steps of:

(a) storing at a first one of said plurality of stations, information on a development procedure which defines a series of work items to be performed in the course of a software development, and software tools to be used with and corresponding to each of the work items;

(b) determining one or more software tools to be used with the work item as requested tools by making a reference to said information at a first station;

(c) transmitting a request including names of said requested tools from the first station to a second station within said plurality of stations through said network;

(d) transmitting, in response to said request, said requested tools and data corresponding thereto, from said second station to said first station through said network; and

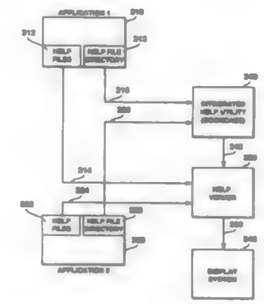
(e) storing said requested tools and said data into a program library and a data library respectively in said first station.

5,361,361

HIERARCHICAL INTEGRATED HELP UTILITY FOR A COMPUTER SYSTEM

D. Anne Hickman, Aloha; Peter Kaufman, Banks; Adam Trent, Aloha, and Deborah A. Bouchette, Hillsboro, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 30, 1993, Ser. No. 130,116
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—700 **12 Claims**



1. In a computer system having a first application program including a first set of help files and a second application program including a second set of help files, an integrated help utility for displaying said first and second help files, said integrated help utility comprising:

a first help directory associated with said first set of help files, said first help directory including a first plurality of topic items corresponding to information provided in said first set of help files;

a second help directory associated with said second set of help files, said second help directory including a second plurality of topic items corresponding to information provided in said second set of help files;

means for displaying said first plurality of topic items concurrently with said second plurality of topic items;

means for selecting a selected one of said topic items from either said first plurality of topic items or said second plurality of topic items;

means for accessing an individual help file of either said first set of help files or said second set of help files, said accessed individual help file corresponding to said selected one of said topic items; and

means for displaying information contained in said individual help file.

5,361,362

ADAPTIVE JOB SCHEDULING FOR MULTIPROCESSING SYSTEMS WITH MASTER AND SLAVE PROCESSORS EXECUTING TASKS WITH OPPOSITE ANTICIPATED EXECUTION TIMES RESPECTIVELY

Donald E. Benkeser, Naperville; Joseph B. Cyr, Aurora, both of Ill.; Albert G. Greenberg, Millburn, and Paul E. Wright, Basking Ridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

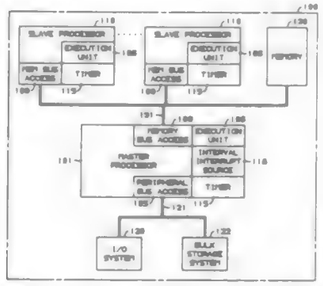
Continuation of Ser. No. 315,006, Feb. 24, 1989, abandoned.
This application Nov. 4, 1992, Ser. No. 971,710
Int. Cl.[5] G06F *15/16, 9/46*
U.S. Cl. 395—725 **4 Claims**

1. In a multiprocessor arrangement having a master processor and a slave processor, a method of allocating work to said slave processor and said master processor comprising the steps of:

assigning an anticipated holding time value of a next segment to program processes to be executed, said program pro-

cesses executable by either of said master processor or said slave processor;

ordering said program processes in a double ended queue in a monotonically increasing order of anticipated holding time values;



selecting processes for execution by said slave processor from the end of said queue having higher anticipated holding time values; and

selecting processes for execution by said master processor from the end of said queue having lower anticipated holding time values.

5,361,363

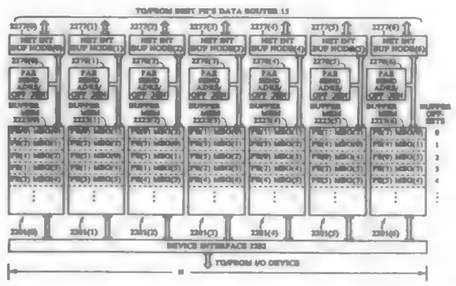
INPUT/OUTPUT SYSTEM FOR PARALLEL COMPUTER FOR PERFORMING PARALLEL FILE TRANSFERS BETWEEN SELECTED NUMBER OF INPUT/OUTPUT DEVICES AND ANOTHER SELECTED NUMBER OF PROCESSING NODES

David Wells, Bolton; James P. Tardiff, Framingham; David L. Satterfield, Everett; Eric L. Rowe, Natick, and Marshall Isman, Newton, all of Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 592,029, Oct. 3, 1990, abandoned. This application Aug. 16, 1991, Ser. No. 746,038

Int. Cl.[5] G06F *13/00, 15/16*

U.S. Cl. 395—800 **38 Claims**



1. A computer comprising a series of processing elements and an input/output system interconnected by a routing network,

A. each said processing element being connected to receive messages from said routing network during an input/output operation, each processing element including a memory including a plurality of storage locations each identified by an address, the processing element on receipt of each message using a destination offset value in the message to generate an address to identify a storage location in which the message's data item is to be stored; and

B. The input/output system including a series of input/output buffers for generating messages for transmission over said routing network concurrently during said input/output operation, each input/output buffer including:

i. a transmit buffer for buffering a plurality of data items to be transmitted in messages to a processing element, each transmit buffer including a plurality of storage locations at a series of source offsets, each storage location storing a data item, the data items defining a series of frames of storage locations in the transmit buffers of said input/output buffers, each frame being organized first in order of successive input/output buffers in storage locations having the same source offset and second in order of storage locations in each input/output buffer having successive source offsets so as to include data items to be received by the series of processing elements during an input/output operation for storage in their respective processing element memories at the same address;

ii. a destination processing element address and offset generator for generating for each data item in the transmit buffer a destination processing element address value and a destination offset value reflecting a position of the frame containing the data item in the series of frames and a position of the data item in the series of data items within the frame; and

iii. a message generator for iteratively generating messages for transmission over the routing network, the messages including data items from successive storage locations of the respective input/output buffer's transmit buffer, each message including a destination processing element address value and a destination offset value generated by said destination processing element address and offset generator for the data item; and

C. the routing network transferring messages generated by the input/output buffers to the processing elements in accordance with the destination processing element address values of the respective messages.

5,361,364

PERIPHERAL EQUIPMENT CONTROL DEVICE

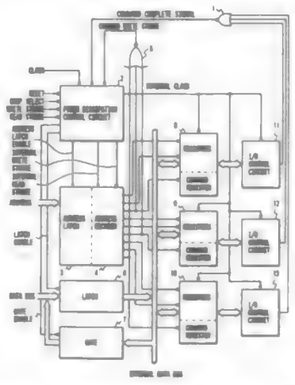
Yukari Nagashige; Shoichi Miyazawa; Kunio Watanabe, all of Yokohama; Kouji Shida, and Shinichi Kojima, both of Takasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1991, Ser. No. 795,697

Claims priority, application Japan, Nov. 22, 1990, 2-318450; Nov. 30, 1990, 2-328903

Int. Cl.[5] G06F *1/32*

U.S. Cl. 395—750 **33 Claims**



1. A peripheral equipment control device connected to an interface bus which is connected to a plurality of processing means including a processor and a plurality of other peripheral equipment control devices, said peripheral equipment control device comprising:

access start detecting means for detecting a start of any access operation from said plurality of other peripheral equipment control devices independently of said processor;

access end detecting means for detecting an end of said access operation;

power dissipation controlling means, in data communication with the access start detecting means and the access end detecting means, for controlling power dissipation of said peripheral equipment control device in response to an output from at least one of said access start detecting means and said access end detecting means; and

means for controlling an associated peripheral device, said means being supplied power from said power dissipation controlling means.

5,361,365

MICROPROCESSOR FOR SELECTIVELY PERFORMING COLD AND WARM STARTS

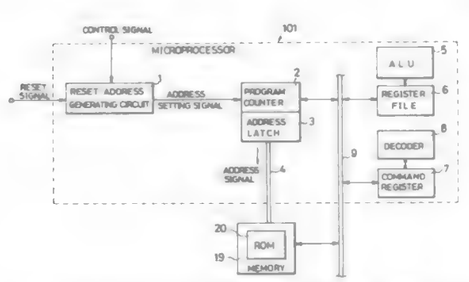
Takaaki Hirano, Shiki, and Yoshinori Hashimoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 604,891, Oct. 30, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 24,104

Claims priority, application Japan, Nov. 6, 1989, 1-289081; Nov. 6, 1989, 1-289082

Int. Cl.[5] G06F *9/06*

U.S. Cl. 395—775 **12 Claims**



1. A microprocessor for selectively executing different initialization programs, comprising:

a memory for storing at least first and second initialization programs, the first initialization program corresponding to a first resetting operation occurring simultaneously with power-on of the microprocessor and having a first starting address, and the second initialization program corresponding to a second resetting operation of the microprocessor subsequent to power on and having a second starting address;

a program counter for providing one of the first and second addresses to the memory to access a corresponding first or second initialization program to be executed;

an address generator providing signals corresponding to the first starting address based on a power-on reset signal supplied thereto to set the contents of the program counter to the first starting address and signals corresponding to the second starting address based on received reset and control signals supplied thereto to set the contents of the program counter to the second starting address, the control signals being externally actuated by a user; and

a logic unit for executing one of the first and second initialization programs based on the starting address generated by the program counter.

5,361,366

COMPUTER EQUIPPED WITH SERIAL BUS-CONNECTED PLURAL PROCESSOR UNITS PROVIDING INTERNAL COMMUNICATIONS

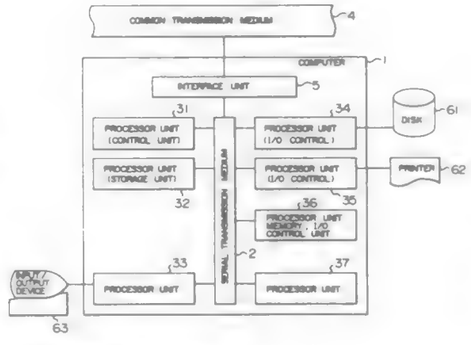
Katsumi Kawano, Kawasaki; Kinji Mori, Machida; Masayuki Orimo, Kawasaki; Hiroshi Fujise, Yokohama; Masuyuki Takeuchi, Fujisawa; Shoji Iwamoto, and Hitoshi Suzuki, both of Owariasahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 628,578

Claims priority, application Japan, Dec. 26, 1989, 1-336965

Int. Cl.[5] G06F *13/36, 13/00*

U.S. Cl. 395—800 **7 Claims**



1. A computer comprising:

(a) transmission medium;

(b) a storage unit connected with said transmission medium for storing therein a program and data, said storage unit including:

storage means for storing therein said program and said data,

first transmission control means for communicating information with said transmission medium, and

first unit processing means for controlling said first transmission control means to selectively store the program and data transmitted on said transmission medium into said storage means and to transmit the program and data from said storage onto said transmission medium;

(c) a processing unit connected with said transmission medium for executing a data processing based on said program stored in said storage unit, said processing unit including second transmission control means for transmitting information with said transmission medium;

(d) an input unit connected with said transmission medium for inputting data therefrom, said input unit including:

input means for inputting said data,

third transmission control means for sending out data inputted by said input means, and

second unit processing means for controlling said input means and said transmission control means; and

(e) an outputting unit connected with said transmission medium for outputting a result of said data processing executed in said processing unit, said outputting unit including:

fourth transmission control means for receiving said result of said data processing from said transmission medium,

outputting means for outputting said result of said data processing received by said transmission control means, and

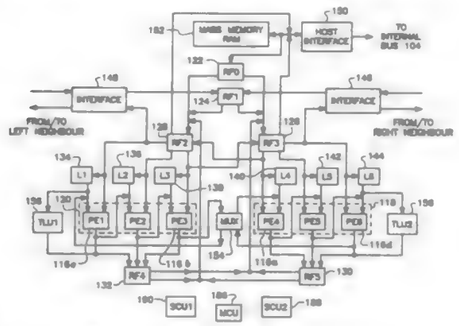
third unit processing means for controlling said outputting means and said transmission control means of said outputting unit.

5,361,367

HIGHLY PARALLEL RECONFIGURABLE COMPUTER ARCHITECTURE FOR ROBOTIC COMPUTATION HAVING PLURAL PROCESSOR CELLS EACH HAVING RIGHT AND LEFT ENSEMBLES OF PLURAL PROCESSORS

Amir Fijany, Sherman Oaks, and Antal K. Bejczy, Pasadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 10, 1991, Ser. No. 712,796
Int. Cl.[5] G06F *9/00, 15/16*
U.S. Cl. 395—800 **23 Claims**



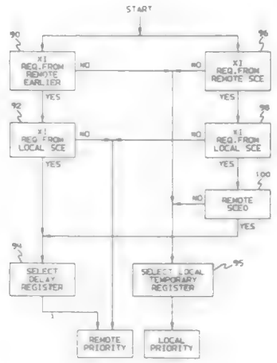
1. A reconfigurable multi-processor computer, comprising:
(I) a host computer;
(II) a system bus connected to said host computer;
(III) a plurality of single-instruction-multiple data (SIMD) processor cells connected to said system bus, each of said SIMD processor cells comprising:
(A) a left processing ensemble and a right processing ensemble, each of said left and right processing ensembles comprising:
(1) a plurality of n individual processors, each of said processors having plural operand inputs and a result output and being adapted to perform an operation upon plural operands received at said operand inputs to produce a result at said result output in accordance with an instruction received by said processor,
(2) primary register file means having plural primary register file inputs and outputs, respective plural ones of said primary register file outputs connected to the first and second operand inputs of each of said individual processors for controlling data flow from primary register file inputs to said operand inputs,
(3) input means for coupling one of said primary register file inputs to one of: (a) an adjacent one of said SIMD processor cells and (b) said system bus,
(4) output means for coupling another one of said primary register file outputs to one of: (a) an adjacent one of said SIMD processor cells and (b) said System bus,
(5) secondary register file means having plural secondary register file inputs connected to respective ones of said result outputs and a pair of secondary register file outputs connected to a primary register file input in a respective one of said left and right processing ensembles,
(6) slave controller means for controlling connections between inputs and outputs in each one of said primary and secondary register file means;
(B) multiplexer means having left and right multiplexer inputs and left and right multiplexer outputs, said left and right multiplexer inputs being connected to result outputs of an inboard and an outboard one the individual processors of said left and right processing ensembles, respectively, said left and right multiplexer outputs being connected to an operand input of an outboard and an inboard one of said individual processors of said left and right processing ensembles, respectively; and
(C) master controller means for controlling each slave controller means, transmitting individual instructions to each of said individual processor means specifying an operation to be performed thereby with respect to plural operand inputs thereof and controlling connections between said multiplexer inputs and outputs.

5,361,368

CROSS INTERROGATE SYNCHRONIZATION MECHANISM INCLUDING LOGIC MEANS AND DELAY REGISTER

Robert D. Herzl, Lake Katrine; Linda L. Quinn, Red Hook, and Russell E. Schroter, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 5, 1991, Ser. No. 755,236
Int. Cl.[5] G06F *13/40, 13/18*
U.S. Cl. 395—800 **6 Claims**



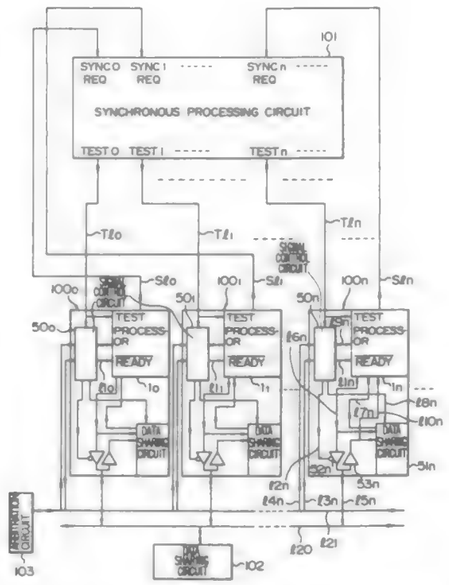
4. An apparatus for prioritization of cross interrogate requests in a multi-processor system, said multi-processor system containing a plurality of storage control elements interconnected by a communication link over which a cross interrogate request is delayed by at least one machine cycle, said apparatus comprising:
a local register, at least one remote register and at least one delay register within each storage control element of said plurality of storage control elements;
means, operatively coupled to said local register and said at least one remote register, for latching local and remote cross interrogate requests in said local and remote registers, respectively;
means, operatively coupled to said local register and said delay register, for latching contents of said local register into said delay register;
logic means, operatively coupled to said local register and said remote register, for selecting contents of said local register when said remote register is empty and for selecting contents of said remote register and the contents of said delay register when a remote request is issued at least one machine cycle prior to the local request, thereby giving priority to said remote request,
said logic means including means for determining when to bypass contents of said delay register when to use contents of said delay register, thereby selectively employing said delay register, and wherein all of said cross interrogate requests are prioritized in said multi-processor system.

5,361,369

SYNCHRONOUS METHOD OF, AND APPARATUS FOR, ALLOWING A PROCESSOR TO PROCESS A NEXT TASK BEFORE SYNCHRONIZATION BETWEEN A PREDETERMINED GROUP OF PROCESSORS

Masatsugu Kametani, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 759,529
Claims priority, application Japan, Sep. 14, 1990, 2-245208
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—800 **6 Claims**



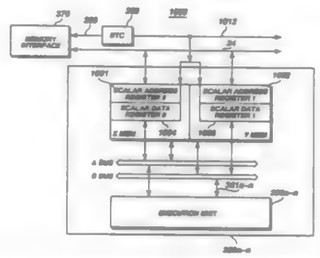
1. A synchronous apparatus for processors comprising:
a plurality of processors for sharing a plurality of tasks and parallelly processing shared tasks;
a data sharing circuit for holding shared data which is shared by said plurality of processors;
a synchronous processing circuit for generating, when processors of said plurality of processors belonging to a predetermined group in which synchronization should be established have terminated all task processings, a status signal indicative of the termination of all task processings in said predetermined group; and
a local synchronization circuit provided for each of said processors, and coupled to said synchronous processing circuit and said data sharing circuit, for monitoring an accessing operation to said shared data by an associated processor corresponding to the local synchronization circuit and allowing the associated processor in said predetermined group which has terminated task processing before generation of said status signal to execute a next task until said associated processor executing said next task requires an accessing of said shared data in said data sharing circuit, and when said associated processor issues a request of said accessing of said shared data before said status signal becomes active, said local synchronization circuit corresponding to said associated processor causes the accessing operation to be suspended and stopped automatically until said status signal becomes active, and said pending accessing operation to be restarted after said status signal becomes active.

5,361,370

SINGLE-INSTRUCTION MULTIPLE-DATA PROCESSOR HAVING DUAL-PORTED LOCAL MEMORY ARCHITECTURE FOR SIMULTANEOUS DATA TRANSMISSION ON LOCAL MEMORY PORTS AND GLOBAL PORT

David L. Sprague, Trenton, N.J.; Kevin Harney, Brooklyn, N.Y.; Eiichi Kowashi, Lawrenceville, N.J.; Michael Keith, Holland, Pa.; Allen H. Simon, Belle Meade, N.J.; Michael Papadopoulos, Burlinton, Mass.; Walter P. Haya, Brookline, Mass.; George F. Salem, Cambridge, Mass.; Shih-Wei Shiue, Lexington, Mass.; Anthony P. Bertapellil, Ayer, Mass., and Vitaly H. Shilman, Brookline, Mass., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 24, 1991, Ser. No. 782,332
Int. Cl.[5] G06F *15/16, 15/66, 15/80*
U.S. Cl. 395—800 **8 Claims**



1. A single-instruction multiple-data architecture having an external memory and at least first and second datapath processors connected thereto, comprising:
respective first and second execution means within said first and second datapath processors respectively for parallel processing of data within said first and second datapath processors;
respective first and second datapath processor local memories within said first and second datapath processors respectively; and,
respective first and second local memory ports for coupling each of said first and second local memories directly to said external memory and to respective said first and second execution means;
wherein said first and second local memory ports comprise local ports for coupling said respective datapath local memories respectively to said respective execution means and a global port on each of said first and second local memories for coupling said respective datapath local memory to said external memory, and
whereby said first and second local memory ports transmit data simultaneously with transmission of data using said global port.

5,361,371

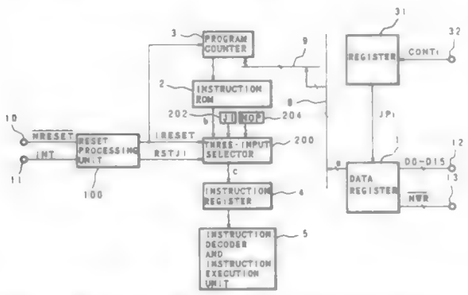
MICROPROCESSOR WITH RESET EXECUTION FROM AN ARBITRARY ADDRESS

Kohji Kawamoto; Yukihiko Shimazu, and Toshiki Fujiyama, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 450,358, Dec. 13, 1989, abandoned.
This application Oct. 22, 1992, Ser. No. 966,123
Claims priority, application Japan, Dec. 21, 1988, 63-324234
Int. Cl.[5] G06F *9/22, 9/26, 9/312, 9/445*
U.S. Cl. 395—800 **1 Claim**

1. In a computer with a processor having a reset state, the computer having
a processing unit for receiving a first control signal and a first select signal and outputting an internal reset signal and a second select signal
an instruction execution device,
a first instruction source,

a predetermined instruction source,
a selecting device coupling said instruction sources to said instruction execution device for selecting an instruction from said first instruction source or said predetermined instruction source, in response to said second select signal,
a program counter for indicating the next instruction to be executed,
a data register for receiving data in response to
a write signal, a method for performing a reset comprising:
setting said write signal active;
setting said first control signal active to initiate a reset of said processor and placing said processor in said reset state;
receiving in said data register an indication of an address after the first control signal is set active;
setting said internal reset signal active, in response to said setting of said first control signal;



setting said second select signal inactive in response to said setting of said first control signal;
setting said first select signal active, after said step of setting said second select signal inactive;
setting said first control signal inactive after said step of setting said first select signal active;
setting said internal reset signal inactive in response to said setting of said first control signal inactive;
setting said second select signal active, in response to said setting of said first control signal inactive, wherein said selecting device selects said predetermined instruction;
executing said instruction selected by said selecting device in said instruction execution device, wherein execution of said instruction causes transfer of said address to said program counter; and
executing an instruction indicated by the contents of said program counter, following said step of executing the instruction selected by said selecting device.

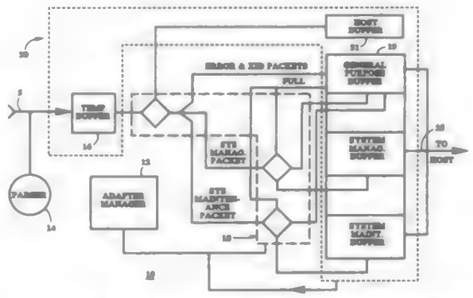
5,361,372

MEMORY MANAGEMENT FOR DATA TRANSMISSION NETWORKS

Satish L. Rege, Groton, Mass., and Ronald M. Edgar, Raymond, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Dec. 27, 1991, Ser. No. 815,093
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—800 **5 Claims**

1. Memory management apparatus comprising:
input means for receiving a plurality packets from a network, wherein said plurality of packets comprises a plurality of different types of packets and wherein each packet of said plurality of packets comprises a group of data bits, wherein said input means further comprises:
means for determining a type of said received packet from said plurality of different types of packets;
a first memory, coupled to said input means, dedicated to storing packets of a first predetermined type, said first memory having a predetermined storage capacity;
a second memory, coupled to said input means, dedicated to storing packets of said first predetermined type;
memory selection means, coupled to said input means and said first and second memory, for transferring packets having said first predetermined type from said input means to said first memory until said predetermined storage capacity is full; and responsive to a full condition of said first memory for transferring packets of the first predetermined type, from said input means to said second memory;
a third memory for temporarily storing said received packets until said type of said received packet is determined from said plurality of different types of packets; and wherein said memory selection means further comprises:



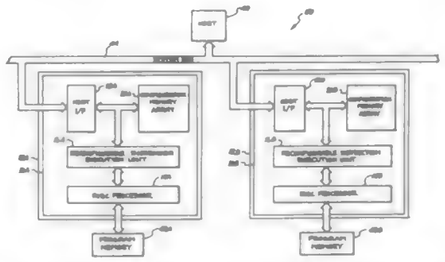
first pointer buffer means for storing a plurality of pointers corresponding to packet locations in said first memory;
second pointer buffer means for storing a plurality of pointers corresponding to packet locations in said second memory; and
third pointer buffer means for storing a plurality of pointers corresponding to packet locations in said third memory, wherein said received packets are transferred from said third memory to said first and second memories by transferring a pointer contained in said third pointer buffer means to said first pointer buffer means and second pointer buffer means respectively.

5,361,373

INTEGRATED CIRCUIT COMPUTING DEVICE COMPRISING A DYNAMICALLY CONFIGURABLE GATE ARRAY HAVING A MICROPROCESSOR AND RECONFIGURABLE INSTRUCTION EXECUTION MEANS AND METHOD THEREFOR

Kent L. Gilson, 255 N. Main St., Apt. 210, Salt Lake City, Utah 84115

Filed Dec. 11, 1992, Ser. No. 989,236
Int. Cl.[5] G06F *15/31*
U.S. Cl. 395—800 **1 Claim**



1. A method of high-speed computing comprising the steps of:

providing a plurality of dynamically configurable gate arrays each having a plurality of input/output (I/O) pads, a plurality of I/O blocks, a plurality of programmable logic blocks, a plurality of programmable routing resources for interconnecting said I/O pads, said I/O blocks and said logic blocks, and programming means for programming said I/O blocks, said logic blocks and said routing resources, said programming means defining an appropriate mode of operation for said gate array;
providing microprocessor means coupled to an external source and implemented within each of said gate arrays by programming said programming means for processing instructions received from said external source;
implementing reconfigurable instruction execution means within each of said gate arrays by programming said programming means, said reconfigurable instruction execution means being coupled to said microprocessor means for receiving and processing information received from at least one of said microprocessor means and said external source and for performing manipulation and computation of data contained within said logic blocks of said gate arrays according to said information received;
reconfiguring said reconfigurable instruction execution means by programming said programming means to change said reconfigurable execution means so an operation on data within said reconfigurable execution means is carried out by circuits within said gate arrays after said reconfiguring is complete; and
programming a first of said plurality of dynamically configurable gate arrays to perform computations while said external source dynamically reconfigures a second of said plurality of dynamically configurable gate arrays.

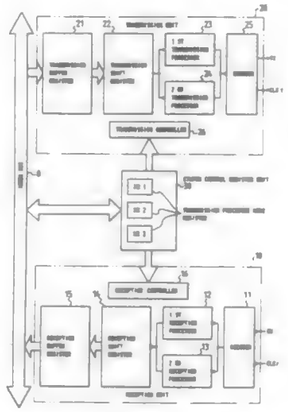
5,361,374

INTEGRATED DATA PROCESSOR HAVING MODE CONTROL REGISTER FOR CONTROLLING OPERATION MODE OF SERIAL COMMUNICATION UNIT

Hisao Sasaki, Tachikawa; Takeshi Miyazaki, Kokubunji; Shiro Baba, Tokorozawa; Kunihiko Nakada, Kodaira, and Yasushi Akao, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 850,856, Mar. 13, 1992, Pat. No. 5,226,173, which is a continuation of Ser. No. 347,659, May 5, 1989, abandoned. This application Apr. 21, 1993, Ser. No. 49,347
Claims priority, application Japan, May 6, 1988, 63-109962
The portion of the term of this patent subsequent to Jul. 6, 2010, has been disclaimed.
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 **3 Claims**

1. A data processor formed on one semiconductor substrate, comprising:
a bus;
a central processing unit coupled to the bus;
a mode control register coupled to the bus, the mode control register being for storing mode control data indicating an operation mode selected from a first operation mode for a high level data link control procedure, a second operation mode for a binary synchronous communication procedure, and a third operation mode for a start-stop synchronous procedure, the mode control data being written in the mode control register by the central processing unit via the bus; and
a serial communication unit including a reception unit coupled to the bus, the reception unit being for converting externally generated serial data into parallel data to be fed to the bus, the reception unit including
a first reception processor for processing the externally generated serial data in the third operation mode,
a second reception processor for processing the externally generated serial data in the first operation mode and the second operation mode, and
reception control means coupled to the first reception processor and the second reception processor, the reception control means being for receiving the mode control data from the mode control register, and for operating one of the first reception processor and the second reception processor in response to the mode control data,
the serial communication unit further including a transmission unit coupled to the bus, the transmission unit being for converting parallel data fed from the bus into serial data to be fed out of the data processor, the transmission unit including
a first transmission processor for processing the parallel data fed from the bus in the third operation mode,



a second transmission processor for processing the parallel data fed from the bus in the first operation mode and the second operation mode, and
transmission control means coupled to the first transmission processor and the second transmission processor, the transmission control means being for receiving the mode control data from the mode control register, and for operating one of the first transmission processor and the second transmission processor in response to the mode control data.

5,361,375

VIRTUAL COMPUTER SYSTEM HAVING INPUT/OUTPUT INTERRUPT CONTROL OF VIRTUAL MACHINES

Yoshifumi Ogi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 477,547, Feb. 9, 1990, abandoned. This application May 24, 1993, Ser. No. 65,685
Claims priority, application Japan, Feb. 9, 1989, 1-30415
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—800 **11 Claims**

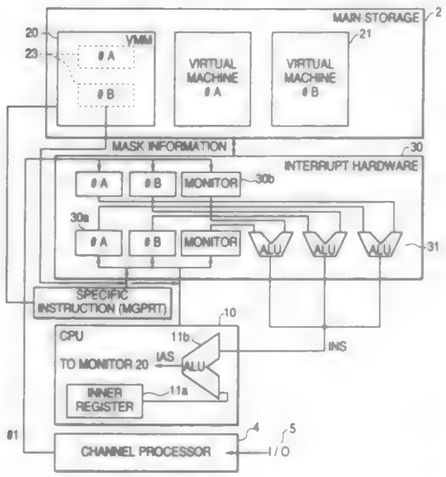
1. A virtual computer system, comprising:
at least one central processing unit executing at least one of a plurality of virtual machines on a time shared basis;
input/output means for generating an input/output interrupt request addressed to one of the virtual machines;
specific instruction generating means for setting an interrupt priority of a currently unexecuting virtual machine over each currently executing virtual machine and for generating a specific instruction indicating the interrupt priority to dynamically change interrupt priorities of the virtual machines;
decision means, operatively connected to said input/output means and said specific instruction generating means, for determining whether the input/output interrupt request

addressed to the one of the virtual machines is addressed to the currently unexecuting virtual machine, said decision means including;

an interrupt pending register having areas individually provided for each of the virtual machines, at least one of the areas including an identifier indicating the one of the virtual machines to which the input/output interrupt request will be output;

a mask register having areas individually provided for each of the virtual machines and storing mask information indicating whether each of the virtual machines will accept the input/output interrupt request in a corresponding one of the areas for each of the virtual machines, the specific instruction being written into a corresponding one of the areas related to the priority indicated by the specific instruction;

first logic means, operatively connected to said interrupt pending register and said mask register, for determining the one of the virtual machines requested by the input-/output interrupt request by comparing the identifier stored in said interrupt pending register and the mask



information stored in said mask register in each of the corresponding areas for each of the virtual machines and for outputting the identifier corresponding to the one of the virtual machines requested;

an inner register storing an identifier for each of the currently executing virtual machines; and

second logic means, operatively connected to said first logic means and said inner register, for determining whether the identifier supplied from said first logic means coincides with the identifier supplied from said inner register and for generating an interrupt accepting signal when it is determined that the identifier supplied from said first logic means does not coincide with the identifier supplied from said inner register; and

monitor means, operatively connected to said decision means and said at least one central processing unit executing the virtual machines, for causing said at least one central processing unit to initiate the currently unexecuting virtual machine when said decision means determines that said input/output interrupt request is addressed to the currently unexecuting virtual machine.

5,361,376

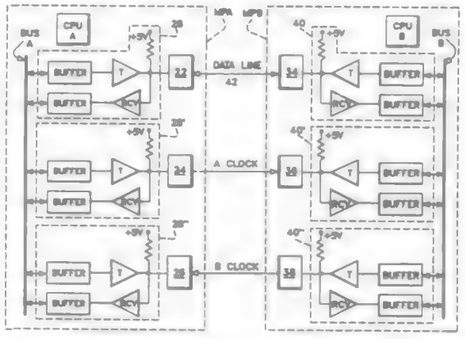
KEYBOARD AND CONTROLLER WITH A THREE WIRE HALF DUPLEX ASYNCHRONOUS AND BIDIRECTIONAL COMMUNICATIONS ARCHITECTURE

Dennis A. Cummins, and Wayne R. Hucaby, both of Raleigh, N.C., assignors to International Business Machine Corporation, Armonk, N.Y.

Continuation of Ser. No. 667,857, Mar. 12, 1991, abandoned. This application Feb. 28, 1994, Ser. No. 203,831

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—800 **8 Claims**



1. A keyboard interface controller for coupling a multi-key electronic keyboard to a terminal comprising:

a first microprocessor operatively coupled to scan keys on the multi-key electronic keyboard and to generate a coded signal representative of depressed keys; said first microprocessor further including

a first bidirectional data port, a first unidirectional signal port and a second unidirectional signal port with each port of said first microprocessor being independent and all ports being operated simultaneously;

a second microprocessor having a second bidirectional data port, a third unidirectional signal port and a fourth unidirectional signal port with each port of said second microprocessor being independent and all ports being operated simultaneously;

a transmission data line for transmitting data bidirectionally interconnecting the first bidirectional data port and the second bidirectional data port;

a first clock line for transmitting control signals unidirectionally interconnecting the first unidirectional signal port and the third unidirectional signal port;

a second clock line for transmitting control signals unidirectionally interconnecting the second unidirectional signal port and the fourth unidirectional signal port;

said first clock line and said second clock line being independent of each other and being operated simultaneously;

a circuit means disposed in each microprocessor; said circuit means operatively tying interprocessor interconnecting lines to predetermined voltage signal levels;

means disposed in each microprocessor and operatively coupled to each of the clock lines; said means causing a transmitting processor to sample electrical states on the transmission control clock line of receiving processor and if said electrical state is one of a predetermined range of voltage signal levels, transmit data bits on the transmission data line; and

an interface means for coupling the keyboard interface controller to the terminal; said interface means providing bidirectional data transfer between the keyboard interface controller and the terminal.

5,361,377

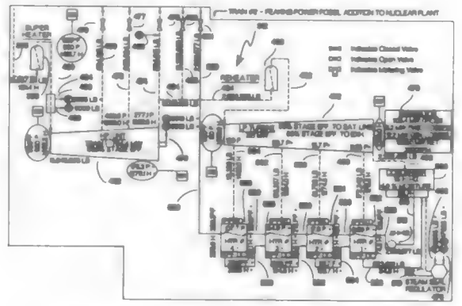
APPARATUS AND METHOD FOR PRODUCING ELECTRICAL POWER

John A. Miller, 804 N. 2nd St., Burlington, Kans. 66839

Filed Apr. 14, 1992, Ser. No. 868,183

Int. Cl.[5] G21C *7/32*

U.S. Cl. 376—211 **8 Claims**



1. A method for producing electrical power from steam generated by a nuclear reactor comprising the steps of:

(a) providing a nuclear reactor engaged to a steam generator for generating steam when heated aqueous product is passed therethrough;

(b) passing heated aqueous product through the steam generator of step (a) to produce steam;

(c) passing the produced steam of step (b) through a superheater to superheat the produced steam to a temperature where the produced steam has an enthalpy above about 1450 BTU per lb.;

(d) passing the superheated produced steam of step (c) through a first turbine to expand the superheated produced steam and produce steam having an enthalpy above about 1250 BTU per lb;

(e) reheating the produced steam of step (d) to obtain a reheated steam having an enthalpy above about 1470 BTU per lb.;

(f) passing the obtained reheated steam of step (e) through a second turbine coupled to a generator in order to expand the obtained reheated steam and generate electrical power with the generator;

(g) discontinuing the passing step (c) and subsequently bifurcating the produced steam of step (b) into a first steam stream and a second steam stream; passing the first steam stream through a heat exchanger; passing the second steam stream through a third turbine to expand the second steam stream and produce an expanded second steam stream; dividing the expanded second steam stream into a first expanded second steam stream, a second expanded second steam stream; and a third expanded second steam stream; passing the first expanded second steam stream through said heat exchanger; passing the second expanded second steam stream into said heat exchanger to heat the same through a heat exchange relationship with the first steam stream and the first expanded second steam stream and produce a heated second expanded second steam stream; passing the third expanded second steam stream through a third heater; passing the reheated second expanded second steam stream through a fourth turbine coupled to a second generator to expand the heated second expanded second steam stream, causing the second generator to generate electricity and produce an expanded heated second expanded second steam stream.

5,361,378

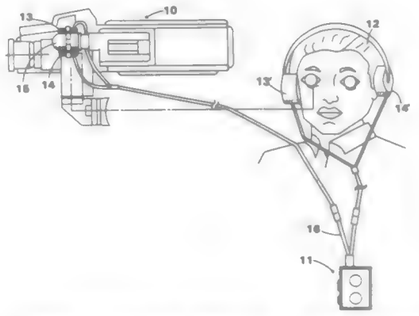
CAMCORDER STEREO MIC/PHONES

Vespucci B. Traini, Jr., #133 Aluminum City Ter., New Kensington, Pa. 15068

Filed Feb. 26, 1991, Ser. No. 661,066

Int. Cl.[5] H04R *5/02*

U.S. Cl. 381—25 **19 Claims**



1. A stereo camcorder background sound apparatus for connecting an audio source to a microphone on a portable camcorder, which microphone has an exposed exterior surface, said apparatus comprising:

first wire means;

said first wire means terminating at a first end to receive an audio-equivalent electrical signal from the audio source;

said first wire means terminating at a second end and a third end in stereo speakers;

said stereo speakers comprising:

a first speaker unit and a second speaker unit;

said microphone on the portable camcorder being very substantially smaller than a width dimension of a human head;

attachment means being configured for attaching said stereo speakers to the exterior surface of the microphone of the portable camcorder so as to direct sound preferentially into the microphone of the portable camcorder;

said attachment means comprising:

means for connecting said first speaker unit of said stereo speakers to said second speaker unit of said stereo speakers;

said means for connecting having a first portion, a second portion and a third portion;

said third portion comprising:

means for permitting pivoting of said first and said second speaker units of said stereo speakers with respect to one another;

said means for permitting pivoting comprising pin means;

said first speaker unit of said stereo speakers being disposed along said first portion;

said second speaker unit of said stereo speakers being disposed along said second portion;

at least a portion of said third portion being disposed between said first portion and said second portion;

biasing means;

said biasing means being configured to act upon said means for connecting to pivot said first and said second speaker units of said stereo speakers towards one another to grasp the microphone of the portable camcorder;

means for receiving force to pivot said first and said second speaker units of said stereo speakers away from one another to create a distance between said stereo speakers and to permit said stereo speakers to grasp the microphone of the portable camcorder;

said means for receiving force being disposed on said first portion and said second portion;

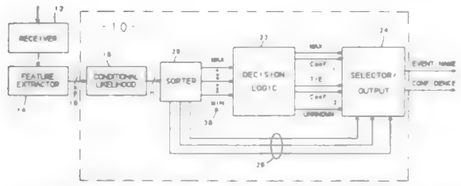
said means for receiving force being disposed adjacent to said third portion;
said means for receiving force comprising:
a first means for receiving force and a second means for receiving force;
said first means for receiving force being disposed at a first end of said first portion;
said second means for receiving force being disposed at a first end of said second portion;
said pin means being disposed between said first and said second means for receiving force;
said first means for receiving force extending away from said third portion;
said second means for receiving force extending away from said third portion;
said apparatus further comprising:
an open position for attaching said apparatus to the microphone of the portable camcorder;
an unopen position;
a height;
a width when said apparatus is in said open position;
a length for being disposed along the longitudinal dimension of the microphone of the portable camcorder;
said width of said apparatus both in said open position and said closed position being very substantially smaller than a width dimension of a human head;
said height of said apparatus being very substantially smaller than a height dimension of a human head.

5,361,379

SOFT-DECISION CLASSIFIER

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation of Ser. No. 770,381, Oct. 3, 1991, abandoned. This application Dec. 9, 1992, Ser. No. 988,364
Int. Cl.[5] G06F *15/36*
U.S. Cl. 382—36 **15 Claims**



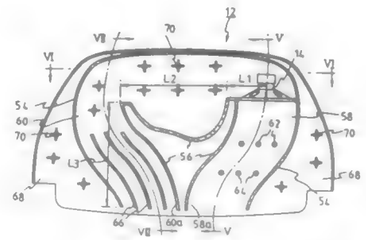
8. Apparatus for classifying a moving vehicle as falling within one of at least three preselected categories, the apparatus comprising:
(a) means, comprising at least one motion sensor, for sensing a plurality of signals from the vehicle;
(b) means for extracting a plurality of feature values from the sensed signals;
(c) means for determining, for each feature value and for each preselected category, a conditional likelihood that the feature value was extracted from a signal from a vehicle in that category;
(d) means for, for each category, multiplying together the conditional likelihoods for all feature values to provide a category likelihood;
(e) means for sorting the category likelihoods into a maximum category likelihood, a next maximum category likelihood, and a lower maximum category likelihood;
(f) means for providing, as an output, a designation for the category which corresponds to the maximum category likelihood when that category likelihood exceeds a preselected first threshold and exceeds the next maximum category likelihood by a second preselected threshold;
(g) means for providing, as outputs, multiple designations for categories which correspond to the maximum and next maximum category likelihoods when all three of the following conditions obtain:
(1) the maximum category likelihood exceeds the first threshold;
(2) the maximum category likelihood does not exceed the next maximum category likelihood by the second threshold; and
(3) the next maximum category likelihood does exceed the lower maximum category likelihood by the second threshold; and
(h) means for providing, as an output, no designation for a category when either of the following condition obtains:
(1) the maximum category likelihood does not exceed the first threshold; or
(2) the maximum category likelihood does not exceed the next maximum category likelihood by the second preselected threshold, and the next maximum category likelihood does exceed the lower maximum category likelihood by the second preselected threshold.

5,361,380

WOOFER MODULE FOR USE IN A TELEVISION SET

Shi-Ryoung You; Byoung-Chul Ann; Nak-Seong Jeong, all of Seoul; Kyoung-Chul Oh, Inchon, and Jeong-Geun Lee, Seoul, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 10, 1992, Ser. No. 896,387
Claims priority, application Rep. of Korea, Jun. 19, 1991, 91-9087; Mar. 18, 1992, 92-4460
Int. Cl.[5] H04R *5/00, 25/00;* **H05K** *5/00*
U.S. Cl. 381—24 **3 Claims**



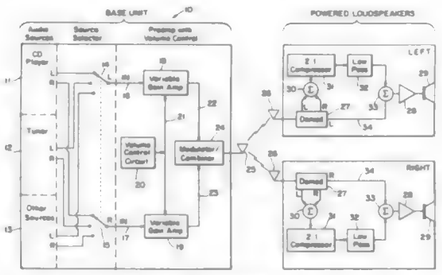
3. A television set comprising a housing with a roof panel, a cathode ray tube held within the housing and a woofer module mounted on the roof panel of the housing, wherein said woofer module comprises a hollow enclosure and a woofer accommodated within the enclosure for reproducing a sound of low audible frequency band, said enclosure including a bottom wall shaped to conform to the roof panel of the housing, said enclosure having a first sound wave passageway extending from a front side of the woofer toward a first open end and a second sound wave passageway divided into an upstream region, a middle expansion region and a downstream region, said upstream region being contiguous to the rear side of the woofer and having a cross-sectional area smaller than that of the expansion region, said downstream region being smaller in its cross-sectional area and volume than the expansion region, said enclosure comprising a plurality of poles distributed within the second passageway for preventing the enclosure from being subjected to an unwanted mechanical vibration.

5,361,381

DYNAMIC EQUALIZING OF POWERED LOUDSPEAKER SYSTEMS

William R. Short, Ashland, Mass., assignor to Bose Corporation, Framingham, Mass.

Continuation of Ser. No. 601,461, Oct. 23, 1990, abandoned.
This application Dec. 17, 1993, Ser. No. 169,713
Int. Cl.[5] H04R *5/00*
U.S. Cl. 381—24 **17 Claims**



1. A loudspeaker system comprising
a base unit having a volume control circuit and comprising means for transmitting an audio channel signal of level controlled by said volume control circuit, and
a powered speaker having a cabinet with said powered speaker including said cabinet being remote from said base unit with at least an electroacoustical transducer and power amplifier supported by said cabinet and further comprising,
means supported by said cabinet for receiving said transmitted audio channel signal,
a direct signal processing path supported by said cabinet producing a direct path output signal and a side signal processing path supported by said cabinet producing a side path output signal,
said side signal processing path comprising a variable attenuator responsive to said received audio channel signal to produce a variably attenuated signal, and a low-pass filter responsive to said variably attenuated signal to produce said side path output signal,
means supported by said cabinet for combining said direct and side path output signals to produce a processed audio signal, and
said electroacoustical transducer responsive to said processed audio signal to generate audible sound,
whereby the low frequency components of said audio channel signal are boosted such that, when said processed audio signal is generated at low audible sound levels, listeners have improved perception of the bass spectral components of said audio channel signal.

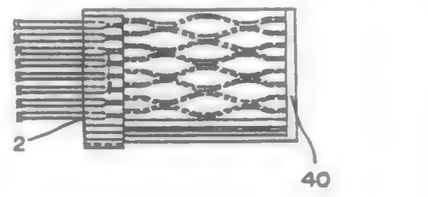
5,361,382

METHOD OF CONNECTING OPTICAL WAVEGUIDE AND OPTICAL FIBER

Shirou Nakamura; Takeo Shimizu; Hisaharu Yanagawa; Toshihiko Ohta; Takashi Shigematsu; Toshihiro Ochiai, and Koichi Kobayashi, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00643, § 371 Date Jan. 7, 1993, § 102(e) Date Jan. 7, 1993, PCT Pub. No. WO92/21047, PCT Pub. Date Nov. 26, 1992
PCT Filed May 20, 1992, Ser. No. 966,147
Claims priority, application Japan, May 20, 1991, 3-115034; Mar. 18, 1992, 4-62031; Mar. 18, 1992, 4-62545
Int. Cl.[5] G02B *6/30*
U.S. Cl. 385—49 **10 Claims**

1. A method of connecting optical fibers and waveguides with each other, comprising the steps of:
coating a lower clad layer formed on a first substrate with a waveguide material;
patterning said waveguide material by a photolithography method so as to form:
a plurality of parallel waveguides with a predetermined interval between adjacent waveguides; and
a marker located at a predetermined distance away from a particular one of said waveguides;
forming an upper clad layer on a region except where the marker is located so as to manufacture a light wave circuit;
forming a first fitting pin groove having a V-shaped cross section for receiving a first fitting pin, therein, said fitting



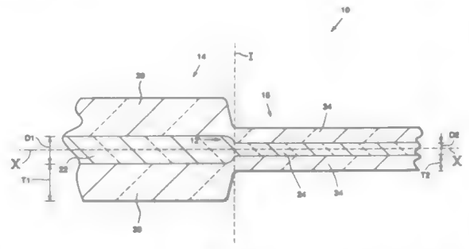
pin groove and said marker, thereby manufacturing a waveguide module;
forming a plurality of optical fiber grooves on a second substrate for fixing a plurality of optical fibers therein;
forming a second fitting pin groove or hole that is usable for alignment with said marker on said first substrate;
fixing each of said plurality of optical fibers into respective ones of said plurality of optical fiber grooves, thereby manufacturing an optical fiber connector; and
inserting the first fitting pin into the first fitting pin groove of said waveguide, and into the second fitting pin groove or hole so as to align the first and second substrates with each other, thereby connecting each of the optical fibers and each of the light wave circuits.

5,361,383

OPTICAL FIBER HAVING INTERNAL PARTIAL MIRRORS AND INTERFEROMETER USING SAME

David B. Chang, Tustin, and Victor Vali, Laguna Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 30, 1991, Ser. No. 783,798
Int. Cl.[5] G02B *6/26;* **G01B** *9/02*
U.S. Cl. 385—27 **10 Claims**



1. An optical fiber disposed to partially transmit and to partially reflect optical energy incident thereon, said fiber comprising:
a continuous, uninterrupted length of cladded optical fiber, having a first core region which circumscribes a longitudinal axis, said first core region being of a first cross-sectional area perpendicular to said longitudinal axis, and a first cladding layer surrounding said first core region;

a fiber segment, said fiber segment formed from said continuous, uninterrupted length of cladded optical fiber, said fiber segment having a second core region which circumscribes said axis wherein said second core region is of a second cross-sectional area perpendicular to said axis, and a second cladding layer surrounding said second core region wherein said first core region is in optical communication with said second core region and said second cross-sectional area is less than said first cross-sectional area; and

a partially reflecting mirror, said partially reflecting mirror optically formed between and separating said first and said second core regions of differing cross-sectional area.

5,361,384

STRIPPING APPARATUS FOR FIBRE-OPTICAL CABLES

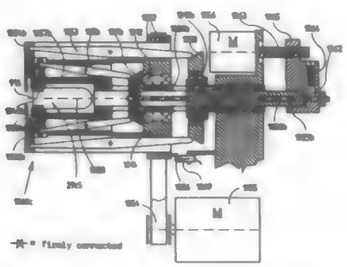
Jiri Stepan, St. Gallerstrasse 76, CH-7320 Sargans, Switzerland

Filed Nov. 12, 1992, Ser. No. 975,263

Claims priority, application Switzerland, Nov. 12, 1991, 3296/91-0

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—134 **13 Claims**



1. Stripping apparatus for fibre-optical cables, said stripping apparatus comprising a working station that includes:

at least one radially acting, rotatable stripping knife;

a centering apparatus which is located in close proximity to said at least one stripping knife and having an operating position in which said centering apparatus is disposed between the at least one stripping knife and a free end of a cable that is to be stripped by said at least one stripping knife;

said centering apparatus being fixed against rotation and when in its operating position, said centering apparatus gripping the cable to hold same against rotation; and

said at least one stripping knife being radially adjustable independently of the centering apparatus;

wherein the at least one stripping knife and the centering apparatus are operatively constructed, arranged and controlled to receive the cable by insertion of the latter radially with respect to an axis of rotation of the at least one stripping knife, which axis of rotation coincides with a centering axis along which the centering apparatus locates said free end of said cable, and by insertion of a cable laterally into position for being centered by the centering apparatus and stripped by the at least one stripping knife.

5,361,385

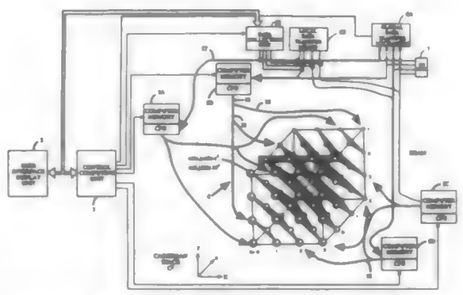
PARALLEL COMPUTING SYSTEM FOR VOLUMETRIC MODELING, DATA PROCESSING AND VISUALIZATION

Reuven Bakalash, 18 Ashuah Street, Omer, Israel 84965

Filed Aug. 26, 1992, Ser. No. 936,178

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—124 **66 Claims**



1. A parallel computing system for producing, storing, and processing voxel data elements in parallel within a three-dimensional memory storage array, and producing and buffering pixel data elements in parallel for use in visualization of voxel data elements stored within said three-dimensional memory storage array, said parallel computing system comprising:

a system bus for transferring parameters and local programs;

a plurality of local computing units indexable as k=0,1,2, . . . , N−1, each said local computing unit being connected to said system bus and having

means for storing one or more local programs capable of producing, storing and processing voxel data elements within said three dimensional memory storage array, and

means for executing said one or more local programs using said parameters so as to locally produce, store and process voxel data elements within said three-dimensional memory storage array, and produce one or more pixel data elements from one or more voxel data elements stored within said three-dimensional memory storage array;

a plurality of local memory storage modules indexable as k=0,1,2, . . . , N−1, each said local memory storage module having a set of memory storage elements and each said memory storage element being capable of storing one or more voxel data elements, wherein a plurality of said memory storage elements in said plurality of local memory storage modules are indexed so as to represent said three-dimensional memory storage array in 3-D space characterized by three coordinate directions;

a plurality of local buses indexable as k=0,1,2, . . . N−1, each said local bus being operably connected to one said local computing unit and one said local memory storage module, for transferring voxel data elements therebetween;

a control computing unit, operably connected to said plurality of local computing units by way of said system bus, for coordinating parallel execution of said one or more local programs by said plurality of local computing units;

voxel data element transfer means operably connected to said plurality of local buses, for transferring voxel data elements between each said k-th local computing unit and said (k+Δk)th local computing unit, where Δk equals a module distance defined between said local memory storage modules in memory space; and

pixel data element buffering means, operably connected to said plurality of local buses and said system bus and controlled by said control computing unit, for buffering pixel data elements produced from said plurality of local computing units and transferred over said plurality of local buses, wherein pixel data elements buffered in said pixel data element buffering means are transferable over said system bus to a user interface computing unit operably connected to said system bus, for use in visualization of voxel data elements stored within said three-dimensional memory storage array.

5,361,386

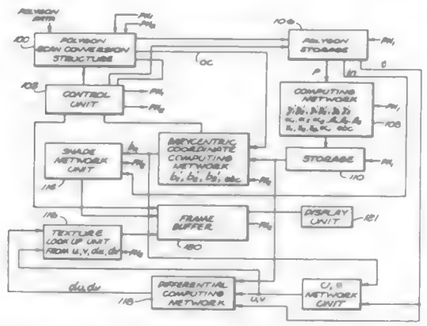
SYSTEM FOR POLYGON INTERPOLATION USING INSTANTANEOUS VALUES IN A VARIABLE

Gary S. Watkins, and Russell A. Brown, both of Salt Lake City, Utah, assignors to Evans & Sutherland Computer Corp., Salt Lake City, Utah

Continuation of Ser. No. 758,992, Sep. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 506,749, Apr. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 129,036, Dec. 4, 1987, abandoned. This application Aug. 17, 1993, Ser. No. 108,942

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—130 **52 Claims**



1. A process for producing a computer graphics image in accordance with a defined characteristic in screen space based on primitive data defining primitives in space coordinates not subject to nonlinear distortion, said process comprising the steps of:

processing select of said primitive data to provide processed data representing certain specific of said primitives for said graphics image in space coordinates subject to nonlinear distortion;

from said processed data determining pixel image areas of said certain specific primitives for said graphics image, said pixel image areas being represented by pixel image area data;

transforming said pixel image area data to representative area data in said space coordinates not subject to nonlinear distortion;

determining at least one differential value for at least one variable specified in said space coordinates not subject to nonlinear distortion with respect to said primitive data, said differential value for selecting a scale for said defined characteristic from storage;

generating display data using said selected scale for said graphics image based on said representative area data and said differential value; and

displaying said graphics images in said space coordinates subject to nonlinear distortion.

5,361,387

VIDEO ACCELERATOR AND METHOD USING SYSTEM RAM

Gregory M. Millar, Pleasanton; Tung-Faing Ko, San Jose; Nicolas N. Moss, Sunnyvale, all of Calif., and Jon F. Hueras, Chelmsford, Mass., assignors to Radius Inc., San Jose, Calif.

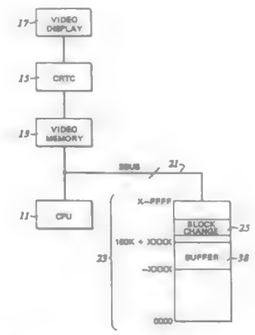
Filed Oct. 9, 1990, Ser. No. 595,212

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—164 **6 Claims**

1. A method for storing and accessing information within a computing environment having a first central processing unit (CPU) which is subordinate to a second CPU in accessing a first memory, for which data read and data write operations are required for modifying data stored therein and in which the first CPU has priority access to a second memory, the first CPU being directly connected to the first memory and the second memory by a system bus, and the second CPU being directly connected to the first memory by a video bus, the method comprising the steps of:

allocating a portion of the second memory for operation as a buffer to the first memory, the portion storing a plurality of blocks of data;



selectively modifying a subset of the plurality of blocks stored in the portion of the second memory responsive to change requirements of the first CPU; and

transferring the modified subset of the plurality of blocks in said portion of the second memory to the first memory directly over the system bus during intervals in which the first memory is available for access by the first CPU.

5,361,388

MESSAGE RELAYING SYSTEM FOR A DISTRIBUTED PROCESSING SYSTEM

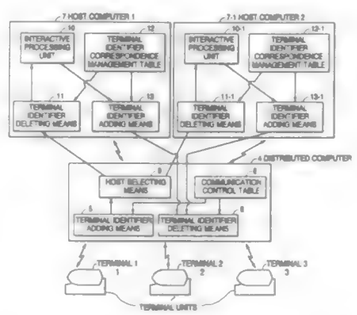
Toshimasa Kutsuna, Aichi, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 864,785

Claims priority, application Japan, Apr. 9, 1991, 3-075502

Int. Cl.[5] H04L *12/28;* **G06F** *3/00*

U.S. Cl. 395—275 **7 Claims**



1. An apparatus for relaying messages in a distributed processing system containing a plurality of terminals, a distributed computer connected to said terminals by a first set of communication lines, a plurality of host computers connected to said distributed computer by a second set of communication lines, wherein said terminals relay messages to and from said distributed computer to perform interactive processing with said host computers, said apparatus comprising:

an interactive processing unit operating in each of said host computers;

a terminal identifier correspondence management table in each of said host computers, for managing logical terminal identifiers and corresponding terminal identifiers, said

logical terminal identifiers for use by said interactive processing unit;

a communication control table in said distributed computer containing terminal identifiers corresponding to each of said terminals;

first terminal identifier adding means in said distributed computer, connected to said communication control table and communicatively connected to each of said terminals, for adding said terminal identifier corresponding to said terminal found in said communication control table into a message received by said distributed computer from one of said terminals, and sending said message to one of said host computers, said first terminal identifier adding means extracting a logical terminal identifier contained in said message and determining said terminal identifier by finding said terminal identifier corresponding to said logical terminal identifier from said communication control table;

first terminal identifier deleting means in each of said host computers, connected to said interactive processing unit and said terminal identifier correspondence management table and communicatively connected to said distributed computer, for deleting said terminal identifier from a message received by one of said host computers from said distributed computer, and providing said message to said interactive processing unit as if the message were received from the logical terminal indicated by the logical terminal identifier corresponding to the terminal identifier found in said terminal identifier correspondence management table;

second terminal identifier adding means in each of said host computers, connected to said interactive processing unit and said terminal identifier correspondence management table and used in transmit requests sent to said distributed computer, for determining the terminal identifier of a destination terminal for a message, from said terminal identifier correspondence management table, using said logical terminal identifier from said interactive processing unit, and adding said terminal identifier into said message; and

second terminal identifier deleting means in said distributed computer, connected to said communication control table and communicatively connected to each of said host computers and communicatively connected to each of said terminals, for finding, on the basis of a terminal identifier in a message received by said distributed computer from one of said host computers, said destination terminal from said communication control table and deleting said terminal identifier from said message and sending said message to said destination terminal.

5,361,389

APPARATUS AND METHOD FOR EMULATION ROUTINE INSTRUCTION ISSUE

Jonathan Fitch, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

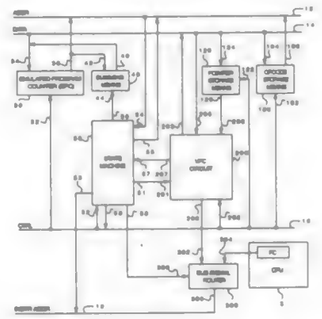
Filed Sep. 27, 1993, Ser. No. 127,254
Int. Cl.[5] G06F *9/38, 9/455*
U.S. Cl. 395—375 **26 Claims**

1. An apparatus for issuing instructions during emulation routines to a central processing unit (CPU) of a host computer system, the host computer system also having a memory, a control bus, a data bus, an address bus, and an address instruction bus, said apparatus comprising:

an emulated program counter having a control input, a load input, and an output, for storing an address of a next emulation routine to be executed from the data bus in response to a first control signal on the control input of the emulated program counter, the control input of the emulated program counter coupled to the control bus, the load input of the emulated program counter coupled to the data bus, and the output of the emulated program counter coupled to the address bus;

a pointer storage means having a control input, a data input, and an output, for storing a pointer to the next emulation routine in response to a second control signal on the control input of the pointer storage means, the control input of the pointer storage means coupled to the control bus, the data input of the pointer storage means coupled to the data bus;

a virtual counter generation circuit having a first control input, a second control input, a first data input, a second data input, an address output, and a data output for generating and storing a virtual program counter value, the first control input of the virtual counter generation circuit coupled to the control bus, the first data input of the virtual counter generation circuit coupled to the data bus, the second data input of the virtual counter generation circuit coupled to the output of the pointer storage means,



the address output of the virtual counter generation circuit coupled to the instruction address bus, and the data output of the virtual counter generation circuit coupled to the data bus; and

a state machine having a control input, an increment input, and a first control output, for detecting when the emulated program counter has been updated, for controlling the retrieval of a pointer to the next emulation routine to be executed from memory, and for issuing the virtual program counter value to the instruction address bus, the control input and the first control output of the state machine coupled to the control bus, and the increment input coupled to the address bus.

5,361,390

METHOD FOR DISPLAYING AND CONFIRMING THE STATUS OF DEFERRED SYSTEM REQUESTS

John G. Heyen, Carrollton; Chander Kasiraj, Grapevine, and Timothy J. Wolf, Bedford, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1988, Ser. No. 277,583
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **9 Claims**

1. A method in a data processing system for confirming the status of a plurality of deferred requests made by an end user of said data processing system, said method comprising the steps of:

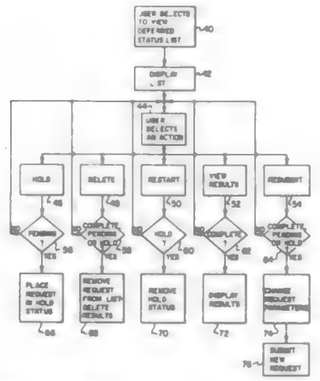
monitoring within said data processing system each request made of said data processing system by an end user;

determining if each request made of said data processing system by said end user has been deferred within said data processing system;

recording an indication of each deferred request in a user viewable deferred status request list within said data processing system;

automatically monitoring within said data processing system the status of each deferred request recorded in said user viewable deferred status request list; and

periodically recording within said user viewable deferred status request list an indication of the status of each deferred request recorded therein wherein a user may efficiently determine the status of all deferred requests upon a reference to said user viewable deferred status request list.

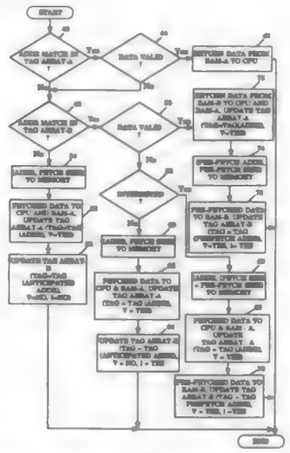


5,361,391

INTELLIGENT CACHE MEMORY AND PREFETCH METHOD BASED ON CPU DATA FETCHING CHARACTERISTICS

Thomas E. Westberg, Sudbury, Mass., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 22, 1992, Ser. No. 901,803
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **12 Claims**



1. In a computer system comprising a central processing unit (CPU) coupled to a main memory, a method for reducing CPU idle time and improving system performance based on data fetching characteristics of said CPU, said method comprising the steps of:

a) detecting read cycles provided by said CPU to access data stored in said main memory, said read cycles include source addresses indicating memory locations of data to be fetched for said read cycles;

b) fetching data for each of the detected read cycles from a selected one of a first level cache memory, a second level cache memory and said main memory, as each of the read cycles is detected: wherein

said first level cache memory comprises a plurality of cache lines having corresponding cache tags and valid bits, said second level cache memory comprises a plurality of cache lines having corresponding cache tags, valid bits and interest bits;

said source addresses are cached in said first level cache memory if said source addresses match said cache tags of said cache lines of said first level cache memory and said valid bits of said cache lines of said first level cache memory are set to valid, said source addresses are cached in said second level cache memory if said source addresses match said cache tags of said cache lines of said second level cache memory and said valid bits of said matching cache lines of said second level cache memory are set to valid;

said data to be fetched for said detected read cycles are fetched from said first level cache memory if said source addresses are cached in said first level cache memory at the time said read are detected said data to be fetched for said detected read cycles are fetched from said second level cache memory if said source addresses of said detected read cycles are not cached in said first level cache memory but are cached in said second level cache memory at the time said read cycles are detected, said data to be fetched for said detected read cycles are fetched from said main memory if said source addresses of said detected read cycles are not cached in said first level cache memory or said second level cache memory at the time said read cycles are detected;

the fetched data for said detected read cycles being stored into said first level cache memory if said fetched data for said detected read cycles are fetched from either said second level cache memory or said main memory:

c) prefetching data anticipated to be fetched by said CPU subsequent to each of said detected read cycles from said main memory if said data to be fetched for said detected read cycles are fetched from either said second level cache memory or said main memory, and a predetermined prefetch threshold is met at the time;

said predetermined threshold being met if said source addresses match said cache tags of said cache lines of said second level cache memory and said interest bits of said matching cache lines of said second level cache memory are set to interested;

the prefetched data for said detected read cycles being stored in said second level cache memory as the data is prefetched;

d) updating said cache tags, valid bits and interest bits of said matching cache lines of said second level cache memory as the data to be fetched for each of said detected read cycles is fetched if said data to be fetched for said detected read cycles are fetched from either said second level cache memory or said main memory;

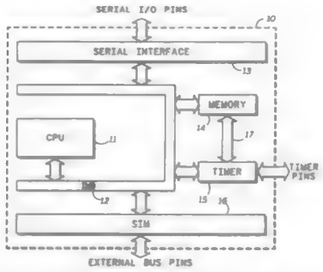
e) returning the fetched data for each of said detected read cycles to said CPU as the data is fetched:

f) detecting write cycles provided by said CPU to store data in said main memory;

g) performing standard write operations for data to be written for each of said detected write cycles as said write cycles are detected; and

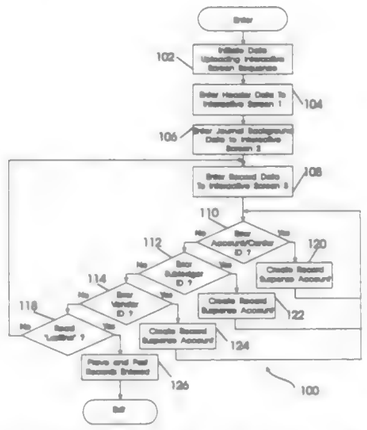
h) resetting said cache tags valid bits. and interest bits of said matching cache lines of said second level cache memory conditionally as said standard write operations are performed for each of said detected write cycles the resettings being conditioned on whether the data is to be written in said first level cache memory, said second level cache memory or said main memory.

5,361,392
DIGITAL COMPUTING SYSTEM WITH LOW POWER MODE AND SPECIAL BUS CYCLE THEREFOR
Antone L. Fourcroy; Mark W. McDermott; John P. Dunn, and Bradley G. Burgess, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 269,344, Nov. 10, 1988, abandoned. This application Mar. 19, 1993, Ser. No. 33,992
Int. Cl.[5] G06F *9/30, 9/46, 13/24, 11/20*
U.S. Cl. 395—800 **4 Claims**



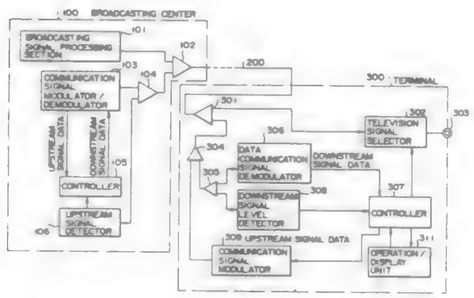
1. An integrated circuit computing system comprising:
a central processing unit further comprising:
a clock signal input terminal;
an interrupt signal input terminal;
first register means for storing an interrupt mask value;
first comparator means coupled to receive a regular, periodic clock signal from the clock signal input terminal for comparing a priority level of an interrupt signal received at the interrupt signal input terminal to the interrupt mask value, the first comparator means functions only while a regular, periodic clock signal is being received at the clock signal input terminal;
execution means for executing instructions only while a regular, periodic clock signal is received at the clock signal input terminal and for executing no instructions at all while no regular, .periodic dock signal is received at the clock signal input terminal, the execution means further comprises means for executing a first instruction and for generating a first control signal only when the first instruction is executed; and
a bus interface means having a plurality of bus interface terminals including address terminals and data terminals, the bus interface is coupled to receive the first control signal from the execution means, the bus interface means is for placing signals indicative of the interrupt mask value onto a portion of the plurality of bus interface terminals only when the first control signal is received from the execution means;
an internal bus having address lines coupled to the address terminals of the bus interface of the central processing unit and having data lines coupled to the data terminals of the bus interface of the central processing unit;
an integration module having a first plurality of bus interface terminals including internal address terminals and internal data terminals coupled, respectively, to the address lines and data lines of the internal bus and having a plurality of external interface terminals for coupling the integrated circuit computing system to devices external to the integrated circuit computing system, the integration module further comprising:
a clock signal generator means coupled to a first clock signal output terminal of the integration module, the first clock signal output terminal of the integration module is coupled to the clock signal input terminal of the central processing unit, the clock signal generator further comprises means for providing a regular, periodic clock signal to the first clock signal output terminal of the integration module and, thereby, to the clock signal input terminal of the central processing unit and for ceasing to provide the regular, periodic clock signal to the first clock signal output terminal of the integration module when the bus interface means of the central processing unit has placed the signals indicative of the interrupt mask value onto the portion of the plurality of bus interface terminals and for resuming providing the clock signal to the first clock signal output terminal of the integration module when a second control signal is received;
second register means coupled to the first plurality of bus interface terminals of the integration module for receiving, only in response to the first control signal, the signals indicative of the interrupt mask value from the first plurality of bus interface terminals and for thereafter storing the signals indicative of the interrupt mask value;
second comparator means for comparing a priority level of an interrupt signal to the signals stored in the second register means and for conditionally providing the second control signal to the clock signal generator based upon the outcome of comparing a priority level of an interrupt signal to the signals stored in the second register means, the second comparator means is active only after the bus interface means of the central processing unit has placed the signal indicative of the interrupt mask value onto the portion of the plurality of bus interface terminals of the central processing unit and until the second control signal has been produced.

5,361,393
METHOD FOR IMPROVING INTERACTIVE-SCREEN UPLOADING OF ACCOUNTING DATA
Michael Rossillo, Brewster, N.Y., assignor to Prodigy Services Company, White Plains
Filed Jan. 28, 1992, Ser. No. 827,072
Int. Cl.[5] G06F *15/21*
U.S. Cl. 395—650 **15 Claims**



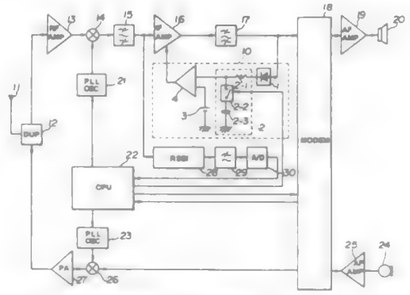
1. In a method for uploading data from a terminal computer to a host computer with the use of one or more interactive screens supported at the terminal computer by the host computer, the improvement comprising:
a. generating source file means including data elements to be uploaded from the terminal computer to the host computer;
b. formatting the source file means such that the data elements are arranged on individual file lines;
c. providing uploading program means including instructions for entering data representing prescribed keystrokes to predetermined fields of the interactive screens, the program means further including instructions for reading the source file means so that predetermined source file data elements may be entered to predetermined fields of the interactive screens, the uploading means being operable to facilitate the uploading of data elements from the terminal computer to the host computer.

5,361,394
UPSTREAM SIGNAL CONTROL APPARATUS FOR CABLE TELEVISION SYSTEM
Hideo Shigihara, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 630,059, Dec. 19, 1990, abandoned. This application Apr. 15, 1992, Ser. No. 869,113
Claims priority, application Japan, Dec. 19, 1989, 1-327236
Int. Cl.[5] H04H *1/00*
U.S. Cl. 455—5.1 **3 Claims**



1. An upstream signal control apparatus for a cable television system having a two-way communication function wherein a downstream signal is transmitted from a broadcasting center to at least one terminal, an upstream signal is transmitted from the at least one terminal to the broadcasting center, and the broadcasting center and the at least one terminal receive and demodulate the upstream signal and the downstream signal, respectively, comprising:
level detecting means, in each of the at least one terminal, for generating a level detection signal in accordance with a level of the downstream signal transmitted from the broadcasting center;
level setting signal storing means, in each of the at least one terminal, for storing a level setting signal to be read from the level setting signal storing means in accordance with the level detection signal, the level setting signal indicating that a transmission level of the upstream signal is to be at a first level when the level of the downstream signal is at a second level, and indicating that the transmission level of the upstream signal is to be at a third level when the level of the downstream signal is at a fourth level, wherein said first level is higher than said second level and said third level is lower than said fourth level;
level setting means, in each of the at least one terminal, for setting the transmission level of the upstream signal in accordance with the level setting signal;
obtaining means for obtaining a correction signal for correcting the level setting signal, wherein the correction signal is obtained from the downstream signal transmitted from the broadcasting center; and
means for correcting the level setting signal in accordance with the correction signal obtained by the obtaining means to form a new level setting signal, and replacing the level setting signal stored in the level setting signal storing means with the new level setting signal.

5,361,395
GAIN CONTROL CIRCUIT
Toshihisa Yamamoto, Kokubunji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 27, 1992, Ser. No. 842,495
Claims priority, application Japan, Feb. 28, 1991, 3-010029[U]
Int. Cl.[5] H04Q *7/02;* **H04B** *7/00, 1/06*
U.S. Cl. 455—33.2 **17 Claims**



1. A gain control circuit comprising:
level adjusting means having gain, for adjusting a level of a desired input signal being inputted intermittently and for outputting a level-adjusted signal, wherein the level of the level-adjusted signal outputted from the level adjusting means is kept constant by controlling the gain of the level adjusting means;
detecting means for detecting the level of the level-adjusted signal outputted from the level adjusting means;
gain controlling means for comparing the level detected by the detecting means and a predetermined reference level and for controlling the gain of the level adjusting means based on a result of the comparison;
holding means for holding the level detected by the detecting means;
switching means for switching to connect the holding means to or to disconnect the holding means from the gain controlling means;
determining means for determining whether a signal to be inputted to the gain control circuit is the desired input signal; and
switch controlling means, responsive to the determination by the determining means, for controlling the switching means to connect the holding means to the gain controlling means at least while the desired input signal exists and to disconnect the holding means from the gain controlling means when the desired input signal does not exist, so as to hold in the holding means a level of an end portion of the level-adjusted signal corresponding to the desired input signal.

5,361,396
LOCATION REGISTRATION SYSTEM IN MOBILE COMMUNICATION
Seizo Onoe; Narumi Umeda; Hidemi Yamaguti, and Syuji Yasuda, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corp. and NTT Mobile Communications Network Inc., both of Tokyo, Japan
Continuation of Ser. No. 757,729, Sep. 11, 1991, abandoned. This application Sep. 7, 1993, Ser. No. 117,879
Claims priority, application Japan, Sep. 14, 1990, 2-244575
Int. Cl.[5] H04Q *7/04*
U.S. Cl. 455—33.4 **8 Claims**

1. A location registration system in a mobile communication system comprising:
a service area for mobile communication comprising a plurality of location registration areas each having a plurality of cells, the area for each cell being related to a respective base station,

a fixed home location register storing a location identifier of each mobile station showing which location registration area each mobile station is currently registered in,

a fixed mobile control center coupled with said home location register, a fixed telephone network, and a plurality of base stations each of which transmits radio wave to mobile stations which are currently registered in a related cell,

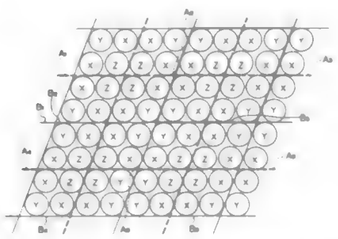
a plurality of mobile stations coupled with one of the base stations through radio link, and having a location identifier corresponding to the same in said home location register,

said location identifier in said home location register and in said mobile station being updated when the mobile station moves beyond the border of location registration areas, to the location identifier of the location registration area in which the mobile station is currently registered,

a call from a fixed network to a mobile station being transmitted from the base stations which belong to the location registration area in which the mobile station is currently registered, to the mobile stations,

CHARACTERIZED IN THAT

the mobile stations are divided into a plurality of groups, each mobile station being associated with only one group,



each location registration area has associated with it a plurality of base stations,

each said group is associated with a plurality of location registration areas, and the location registration areas of one group partially overlap with the areas of the groups, wherein some base stations belong to a plurality of location registration areas, but each base station is associated with only one location registration area per group,

the base stations broadcast location updating information to a plurality of groups of mobile stations, including location identifiers for each respective group,

means for updating location identifiers is provided so that when a location identifier in a mobile station does not coincide with any one of the broadcast information location identifiers for the group to which the mobile station belongs, location identifiers are updated in said home location register and the mobile station, and

a fixed network stores a paging table which lists a plurality of cells for each group for each location identifier, and paging information for a call to a mobile station is transmitted by the base stations listed in the related group of the location registration area in said table.

5,361,397

COMMUNICATION DEVICE AND SYSTEM CAPABLE OF AUTOMATIC PROGRAMMABLE ENERGIZING

James A. Wright, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 749,811, Aug. 26, 1991, abandoned. This application Sep. 20, 1993, Ser. No. 123,600

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—38.2 **12 Claims**

1. A communication device operating in a communication system having a control station which periodically transmits an information message having a system time code appended thereto to the communication device, the communication device utilizing a battery saving system having a fully active mode for receiving the information message, and a battery saver mode for saving battery life, the communication device comprising:

receiver means for receiving the information message from the control station;

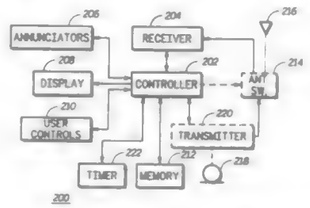
decoder means responsive to the receiver means for decoding the system time code from the information message;

storage means for storing the system time code;

timer means coupled to the storage means,

wherein the timer means measures an interval of time determined by the system time code, and

wherein the timer means remains operable during both the fully active mode and the battery saver mode, and



further even after the communication device has been turned off by a user; and

controller means responsive to the timer means,

wherein the controller means effects temporary operation of the communication device in the fully active mode for a period sufficient to receive a further information message in response to a determination at a time by the timer means that said interval of time has expired, and

wherein said temporary operation in the fully active mode is effected regardless of the mode of the battery saving system at the time of said determination, and further even after the communication device has been turned off by the user.

5,361,398

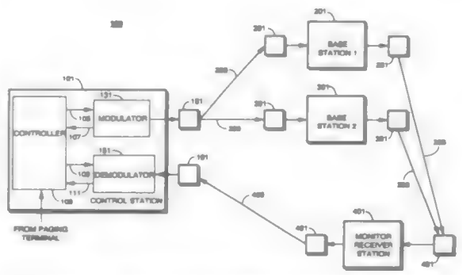
METHOD AND APPARATUS FOR TRANSMISSION PATH DELAY MEASUREMENTS USING ADAPTIVE DEMODULATION

Paul R. Christian, Schaumburg, and Casimir Karczewski, Lake Villa, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1993, Ser. No. 10,910

Int. Cl.[5] H04B *7/00*

U.S. Cl. 455—51.2 **35 Claims**



1. A method for measuring transmission path delays within a simulcast communication system comprising a control station and a plurality of remote transmission stations, said method comprising the steps of:

transmitting, from the control station, a delay equalization measurement signal including at least a correction bit pattern signal followed by a synchronization pattern signal;

receiving, at a selected one of the plurality of remote transmission stations, the delay equalization measurement signal and re-transmitting the same;

receiving the re-transmitted delay equalization measurement signal at the control station;

correlating the received synchronization pattern signal to obtain a coarse time of reception at the control station;

analyzing the received correction bit pattern signal to derive a fine reception time correction factor; and

correcting the coarse time of reception with the fine reception time correction factor to obtain a corrected time of reception of the delay equalization measurement signal at the control station.

5,361,399

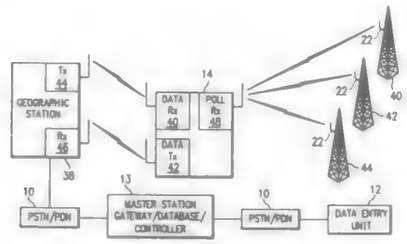
ADAPTIVE COMMUNICATION SYSTEM FOR TRANSMITTING BETWEEN BASE STATIONS AND PORTABLE TRANSCEIVERS VIA DIFFERENT DATA RATE COMMUNICATION LINKS

Roger D. Linquist, and Malcolm M. Lorang, both of Dallas, Tex., assignors to Pagemart, Inc., Dallas, Tex.

Filed Jun. 2, 1992, Ser. No. 892,194

Int. Cl.[5] H04B *7/26*

U.S. Cl. 455—56.1 **26 Claims**



1. A communication system comprising:

a plurality of fixed location base stations, each having a unique set of RF communication parameters and select ones of said base stations having a common polling channel;

a non-fixed location communication transceiver having a unique ID number for communicating with said base station on said polling channel and operable to communicate with each of said base stations with the respective unique RF communication parameters;

the select ones of said base stations operable to generate and output a location request on said polling channel, said location request having associated therewith the unique ID number of said communication transceiver and information relating to the unique RF communication parameters associated with the generating one of said base stations and containing message information regarding the data to be transferred to said communication transceiver;

said message information including information regarding the length of the message data and the type of message data;

said communication transceiver operable to receive on said polling channel said location request and to initiate a communication link with one of said base stations in accordance with the received unique RF communication parameters, to allow said communication transceiver to communicate with the one of said base stations, said unique RF communication parameters operable to allow transmission at a high data rate and at a low data rate and said communication transceiver operable to initiate said communication link at a high data rate in accordance with message information in said received location request, indicating that the data can be transmitted over a high data rate communication link; and

each of said base stations including a memory for storing message data destined to be delivered to said communication transceiver, said base station with which said communication transceiver establishes said communication link operable to transfer said stored message data to said communication transceiver upon establishment of said communication link.

5,361,400

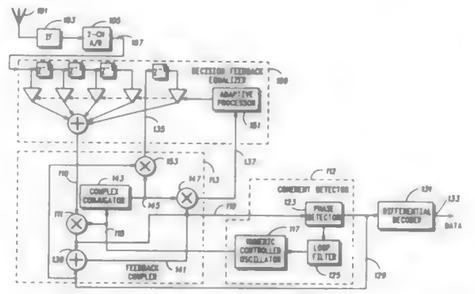
APPARATUS AND METHOD FOR REMOVING DISTORTION IN A RECEIVED SIGNAL

Henry L. Kazecki, Arlington Heights; Steven H. Goode, Barrington, and Donald W. Dennis, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 609,335, Nov. 5, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 104,303

Int. Cl.[5] H04B *15/00, 1/10;* **H03H** *7/30*

U.S. Cl. 455—63 **6 Claims**



1. In a receiver that receives an input signal to produce a received signal, an apparatus for substantially reducing distortion in the received signal comprising:

an equalizer, including taps having gain coefficients, for producing an equalized signal responsive to the received signal and an adaptive process signal, wherein the gain coefficients are adjusted responsive to the adaptive process signal;

a first mixer for mixing the equalized signal and a reference carrier signal to produce a recovered modulated signal;

a detector for detecting an estimate signal responsive to the recovered modulated signal;

an error signal generator for generating an error signal responsive to a difference between the recovered modulated signal and the estimate signal; and

a second mixer for mixing the error signal and the reference carrier signal to produce the adaptive process signal.

5,361,401

CHANNEL HOPPING RADIO COMMUNICATION SYSTEM AND METHOD

Paul M. Pirillo, Sugar Hill, Ga., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 17, 1991, Ser. No. 808,830

Int. Cl.[5] H04B *15/00*

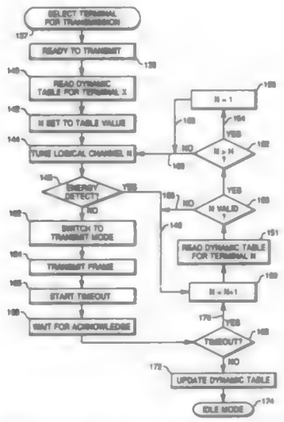
U.S. Cl. 455—62 **13 Claims**

1. A method for transmitting a packet of digital data over a communication channel from a first computer terminal to a second computer terminal in a computer network including the steps of:

storing in a first table communication channels for the second computer terminal which were open during a last transmission of a first set of data to the second computer terminal;

selecting from the first table a last communication channel

which was successful in transmitting the first set of digital data from the first computer terminal to the second computer terminal; and



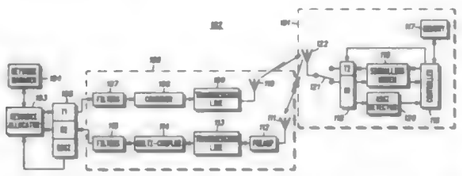
transmitting a second set of digital data over the last communication channel from the first computer terminal to the second computer terminal.

5,361,402

TEST DEVICE FOR ANALYZING COMMUNICATION CHANNELS IN A TRUNKED RADIO SYSTEM

Gary W. Grube, Palatine, Ill.; Carl B. Olson, San Carlos, Calif., and Paul J. Cizek, Palatine, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1992, Ser. No. 860,334
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—67.1 **12 Claims**



1. A test device for use in a trunked radio system providing communications services within a coverage area, the device comprising:

A) transceiver means for transmitting and receiving radio signals;

B) channel control means, operably coupled to the transceiver means, for controlling which channels the transceiver means transmits and receives on;

C) memory means for storing data;

D) test control means, operably coupled to the channel control means and the memory means, for:

i) automatically occasionally causing the channel control means to cause the transceiver means to receive, on communication channels in use in the trunked communication system, outbound signals that each includes an indicia of a transmission parameter;

ii) automatically analyzing the outbound signals using the indicia of the transmission parameters to produce a test result; and

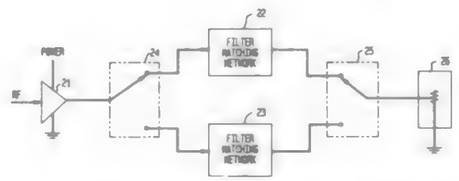
iii) automatically storing the test result in the memory means.

5,361,403

AM-FM TRANSMITTER POWER AMPLIFIER

Paul W. Dent, Stehag, Sweden, assignor to Ericsson GE Mobile Communication Holding, Inc., Paramus, N.J.

Continuation of Ser. No. 612,495, Nov. 14, 1990, abandoned. This application May 17, 1993, Ser. No. 61,345
Int. Cl.[5] H04B *1/40, 1/04;* **H03G** *3/20;* **H03F** *1/30*
U.S. Cl. 455—74 **14 Claims**



1. A power amplifier circuit for efficiently generating radio frequency output power to a load at plural output power levels comprising:

a power amplifier for amplifying a modulated, radio frequency carrier and generating an amplified signal;

first matching means for matching an impedance of said circuit to an impedance of said load at a first transmission power level;

second matching means for matching the impedance of said circuit to the impedance of said load at a second transmission power level;

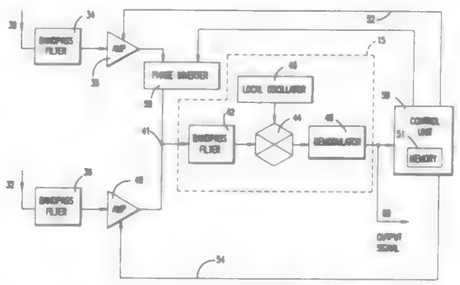
switching means for selectively connecting said amplified signal to said load through said first matching means in a first mode to operate said power amplifier means in a linear mode at a first preferred efficiency at said first transmission power level, and connecting said second matching means to said load through said second matching means in a second mode to operate said power amplifier means in a linear mode at a second preferred efficiency at said second power transmission level.

5,361,404

DIVERSITY RECEIVING SYSTEM

Paul W. Dent, Stehag, Sweden, assignor to Ericsson-GE Mobile Communications Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 585,910, Sep. 2, 1990, abandoned. This application May 14, 1993, Ser. No. 61,038
Int. Cl.[5] H04B *17/02*
U.S. Cl. 455—135 **25 Claims**



1. A radio receiver for receiving a radio frequency signal and generating a desired output signal, comprising:

plural signal paths for receiving said radio frequency signal;

combining means, connected to said Signal paths, for combining a plurality of signals from said signal paths to form a combined signal; and

control means, connected to said signal paths and combining means, for alternatively selecting the combined signal or a signal from one of said plurality of signal paths,

wherein each signal path includes:

filtering means for filtering said received signal; and

amplifier means for amplifying said filtered signal and generating an amplified signal;

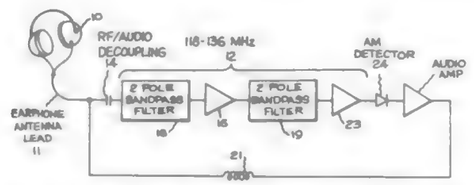
and wherein the combining means is connected to each of said amplifier means and combines a plurality of said amplified signals to form the combined signal, and the control means is connected to each of said amplifier means and to the combining means and alternatively selects the combined signal or one of the plurality of said amplified signals to increase sensitivity to desired information in said radio frequency signal.

5,361,405

AIRCRAFT BAND RADIO RECEIVER WHICH DOES NOT RADIATE INTERFERING SIGNALS

John G. Ramsey, Pittsford, N.Y., assignor to Ramsey Electronics, Inc., Victor, N.Y.

Continuation of Ser. No. 407,005, Sep. 14, 1989, abandoned. This application Nov. 30, 1990, Ser. No. 619,830
Int. Cl.[5] A04B *1/22;* **H04B** *7/00*
U.S. Cl. 455—150.1 **2 Claims**



1. A radio system for receiving AM transmissions over a predetermined broadband of RF frequencies such as broadcast over an aircraft communications band (118–136 MHz) which comprises a broadband input circuit having circuits which pass or are tuned to pass the predetermined frequencies, a demodulator circuit connected to an output of said input circuit for producing an audio signal in response to any such transmissions, an earphone having two leads, means for AC coupling one of said leads to said input circuit which passes said RF frequencies and blocks said audio signal, first means for coupling said audio signal to said earphone via said one lead which passes said audio signal while blocking said RF frequencies, and second means for coupling a return circuit for said audio signal to the other of said leads which passes said audio signal while blocking said RF frequencies.

5,361,406

AUDIO LEVEL EQUALIZATION OF BROADCAST AND NATIONAL WEATHER SERVICE FM RADIO SIGNALS

Leroy S. Wignot, and Dal F. Griepentrog, both of Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 613,034, Nov. 15, 1990, abandoned. This application Aug. 23, 1993, Ser. No. 110,476
The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.
Int. Cl.[5] H04N *5/44;* **H04B** *1/16*
U.S. Cl. 455—200.1 **4 Claims**

1. An FM radio receiver, comprising:

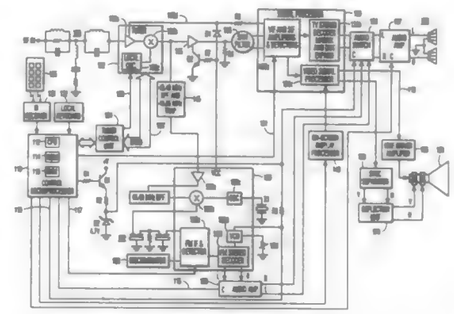
tuner means for receiving wideband FM radio RF signals in a first band of frequencies, and narrowband FM radio signals in a second band of frequencies, said tuner means selecting a particular FM radio RF signal from a plurality of FM radio RF signals in response to a first control signal, converting the frequency of said selected signal to an intermediate frequency and developing said selected intermediate frequency signal at an output;

intermediate frequency (IF) amplifier means for amplifying said selected intermediate frequency signal;

control means for generating said first control signal for causing said tuner means to select said particular FM radio RF signal;

means for demodulating audio signals from said FM radio RF signals at said intermediate frequency; and

audio amplifier means for receiving said demodulated audio signals from said means for demodulating, and amplifying said demodulated audio signals, said audio amplifier means being controlled to amplify signals in one of a low gain mode and a high gain mode of operation in response to a



second control signal, said audio amplifier means producing audio signals exhibiting substantially the same dynamic range in both of said low gain and high gain modes of operation;

said control means generating said second control signal for causing said audio amplifier means to switch from said low gain mode of operation to said high gain mode of operation when said tuner means is controlled to tune one of said narrowband FM radio RF signals in said second band of frequencies;

said audio amplifier means including an emitter circuit and said audio amplifier means being changed from said low gain mode to said high gain mode by lowering the impedance to AC signals in said emitter circuit of said audio amplifier means.

5,361,407

DOUBLE SUPERHETERODYNE RECEIVER WITH INDEPENDENT FREQUENCY CALIBRATION OF TWO LOCAL OSCILLATORS

Takeshi Sawada, Tokyo, and Tadashi Sakai, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 23, 1992, Ser. No. 980,549
Claims priority, application Japan, Dec. 2, 1991, 3-344024
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—209 **2 Claims**

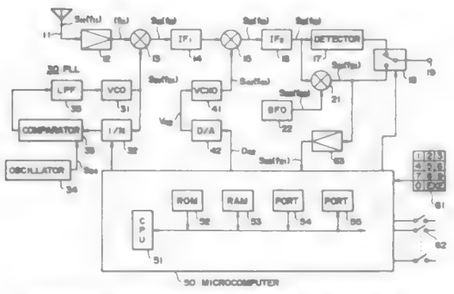
1. A superheterodyne receiver performing a plurality of frequency converting operations and having at least a first mixer connected to receive a signal having a desired frequency and to a first local oscillator to produce a first intermediate-frequency signal, and a second mixer connected to an output of the first mixer and to a second local oscillator to produce a second intermediate-frequency signal, said receiver comprising:

a phase-locked loop for implementing said first local oscillator; and

means excluding a phase-locked loop and including a variable frequency oscillator for implementing said second local oscillator; control means connected to control said first and said second local oscillators;

wherein said received signal is supplied to said first mixer the

output of which is varied by varying at least a frequency generated by said first local oscillator in response to a control signal from said control means, a frequency of said first oscillator is frequency calibrated by said control means to a frequency of the first intermediate-frequency signal, the second intermediate-frequency signal supplied



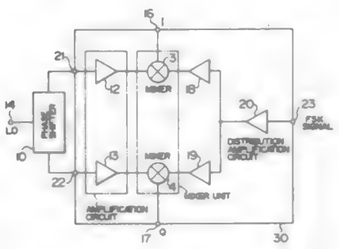
by said second mixer is frequency-converted by a beat-frequency oscillator signal to a signal having a frequency of voice band, and a frequency of said second local oscillator is frequency calibrated independently of said first local oscillator by said control means, whereby a signal resulting from the frequency conversion in said second mixer is set to a specified frequency.

5,361,408

DIRECT CONVERSION RECEIVER ESPECIALLY SUITABLE FOR FREQUENCY SHIFT KEYING (FSK) MODULATED SIGNALS

Kazunori Watanabe; Yasumi Imagawa, both of Yokohama; Makoto Hasegawa, Tokyo, and Kazuaki Takahashi, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 23, 1991, Ser. No. 734,447
Claims priority, application Japan, Jul. 30, 1990, 2-202115
Int. Cl.[5] H04B *1/16, 1/00*
U.S. Cl. 455—324 **3 Claims**



1. A direct conversion receiver especially suitable for providing direct conversion of an input FSK-modulated radio--frequency signal of a predetermined carrier frequency, and for separating the input radio-frequency signal into two signals by using signals with a phase difference of $\pi/2$ of the carrier frequency, the direct conversion receiver comprising:

a) local oscillator means for generating a local oscillation signal having a frequency substantially equal to the carrier frequency and a magnitude small enough not to cause substantial electromagnetic interference with adjacent receivers; and

b) a semiconductor integrated circuit including:

1) amplification circuit means for amplifying the small-magnitude local oscillation signal provided through at least one lead from outside the semiconductor integrated circuit, and for providing an amplified oscillation signal; and

2) mixer unit means for mixing (i) the amplified oscillation signal and (ii) a radio frequency signal corresponding to the input radio-frequency signal, and for outputting from the semiconductor integrated circuit an integrated circuit mixed output signal;

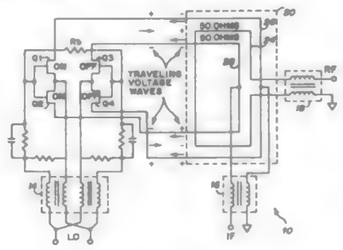
wherein the amplification circuit means within the semiconductor integrated circuit allows the local oscillation signal to be small enough so as not to cause substantial electromagnetic interference with the adjacent receivers, without the necessity of providing substantial additional shielding for the local oscillator means or the at least one lead.

5,361,409

FET MIXER HAVING TRANSMISSION LINE TRANSFORMER

Michael W. Vice, El Granada, Calif., assignor to Watkins Johnson Company, Palo Alto, Calif.

Continuation of Ser. No. 668,248, Mar. 12, 1991, abandoned.
This application Jan. 14, 1993, Ser. No. 4,234
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—326 **11 Claims**



1. A mixer comprising:

a first and a second FET transistor each having a gate and a drain and a source, the first and second FET transistors having their gates tied to one another and said sources connected together such that the first and second FET transistors are in series;

a third and a fourth FET transistor each having a gate and a drain and a source the third and fourth FET transistors having their gates tied to one another and said sources connected together such that the third and fourth FET transistors are in series and isolated from the first and second FET transistors;

a bias resistor connected between said gates of the first and second FET transistors and said gates of the third and fourth FET transistors;

a local oscillator (LO) balun having a first and a second output port for connection to said gates and sources of the first through fourth FET transistors such that the first and second FET transistors are driven on and off opposite to the third and fourth FET transistors and an unbalanced input port for connection to an external local oscillator source;

a first capacitor connected in series with said first output port of the LO balun and with said gates belonging to the first and second FET transistors;

a second capacitor connected in series with said second output port of the LO balun and with said gates belonging to the third and fourth FET transistors; and

a reflection transformer coupled to said drains of said first, second, third and fourth FET transistors, said reflection transformer comprising a transmission line transformer having at least two ports, said ports connected such that nearly complete coupling of a signal between said ports relies on substantially complete reflection of energy at a reference plane of the transformer, said reference plane being defined by said first, second, third and fourth FET transistors.

DESIGN PATENTS

GRANTED NOV. 1, 1994

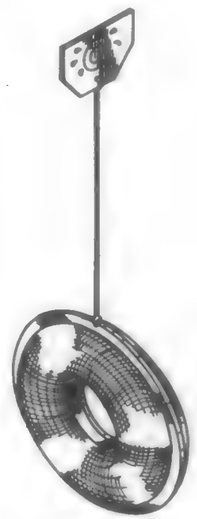
ERRATA

For CLASS	See PATENT NO.
D23-364	D 351,932
D15-126	D 352,048
D15-199	D 352,050
D32-024	D 352,146

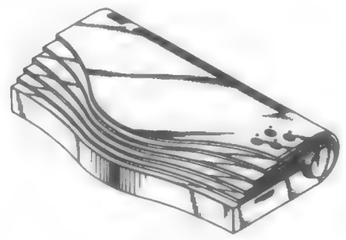
DESIGNS

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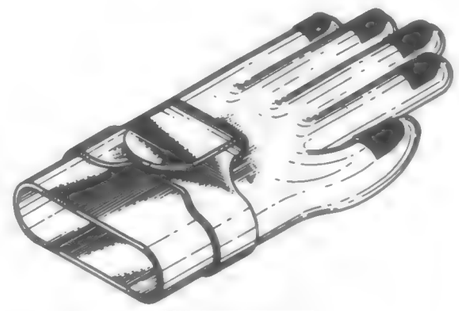
351,931
INSTANT FLOW THROUGH COFFEE BAG
Angelina Russo, 8 Jacaranda La., Port St. Lucie, Fla. 34952-8508
Filed Dec. 22, 1992, Ser. No. 2,892
Term of patent 14 years
U.S. Cl. D1—199



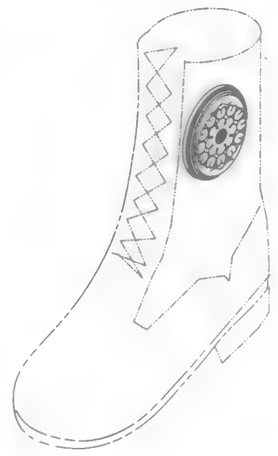
351,932
AIR CLEANER
Masafumi Ito, Tokyo; Minoru Sube, Hachioji; Haruki Takita, Tokyo, and Hiroyuki Watanabe, Oume, all of Japan, assignors to Teac Corporation, Tokyo, Japan
Filed May 28, 1993, Ser. No. 8,896
Claims priority, application Japan, Dec. 2, 1992, 4-35431
Term of patent 14 years
U.S. Cl. D23—364



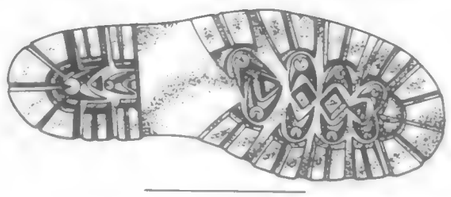
351,933
GLOVE WITH HOOK FOR HOLDING SHOPPING BAGS
Paul Stoneman, 2939 Grant St Basement Suite, Vancouver, Canada V5K-3H6
Filed Jan. 29, 1993, Ser. No. 4,197
Term of patent 14 years
U.S. Cl. D2—612



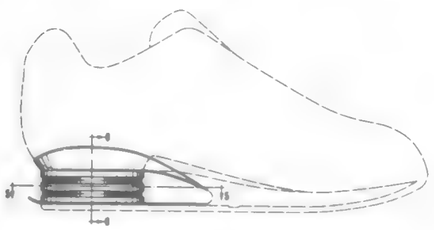
351,934
DISPOSABLE SCENT PAD
Gary D. Devoe, P.O. Box 845, Charles Town, W. Va. 25414
Filed Jul. 2, 1992, Ser. No. 908,028
Term of patent 14 years
U.S. Cl. D2—946



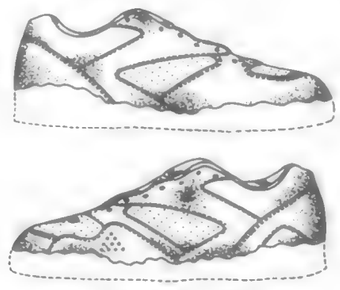
351,935
SHOE SOLE
Nicolas O'Rorke, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Feb. 2, 1994, Ser. No. 18,266
Term of patent 14 years
U.S. Cl. D2—959



351,936
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,933, Nov. 1, 1991, Pat. No. D 344,401.
This application Jan. 19, 1994, Ser. No. 17,637
Term of patent 14 years
U.S. Cl. D2—965



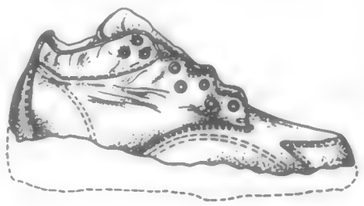
351,937
SHOE UPPER
Scott Hewett, Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Mar. 14, 1994, Ser. No. 19,860
Term of patent 14 years
U.S. Cl. D2—969



351,938
SHOE
Fiona J. Adams, North Quincy, and Christopher J. Kittle, Cohasset, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 881,246, May 11, 1992, Pat. No. D. 342,147.
This application Oct. 21, 1993, Ser. No. 14,441
Term of patent 14 years
U.S. Cl. D2—970



351,939
SHOE UPPER
Susan B. Ryder, Wilmett, Ill., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Feb. 17, 1994, Ser. No. 18,925
Term of patent 14 years
U.S. Cl. D2—970



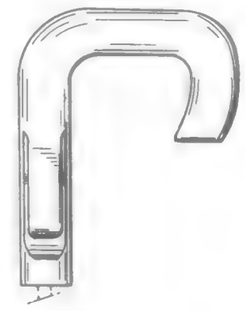
351,940
SHOE UPPER
E. Scott Morris, East Providence, R.I., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Mar. 9, 1994, Ser. No. 19,693
Term of patent 14 years
U.S. Cl. D2—970



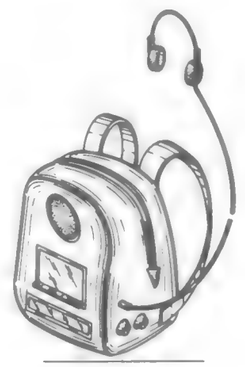
351,941
SHOE UPPER
Eric P. Avar, Hillsboro, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Mar. 31, 1994, Ser. No. 20,687
Term of patent 14 years
U.S. Cl. D2—970



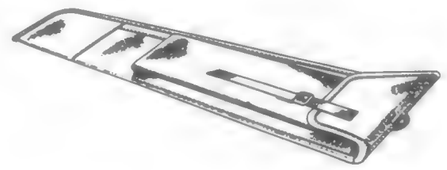
351,942
COMBINED HANDLE AND SIDE CLIP FOR UMBRELLA
Lawrence H. Shaw, 87 Deer Run, Roslyn Heights, N.Y. 11577
Filed Sep. 30, 1992, Ser. No. 954,245
Term of patent 14 years
U.S. Cl. D3—16



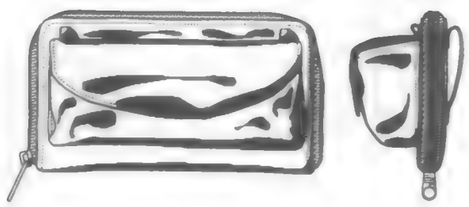
351,943
COMBINED BACKPACK AND STEREO
Patricia A. Young, 919 Clymar Ave., Compton, Calif. 90220
Filed Mar. 23, 1993, Ser. No. 6,240
Term of patent 14 years
U.S. Cl. D3—216



351,944
SAW BAG
Thomas J. Faichney, and Brian M. Andres, both of Ontario, Canada, assignors to Saw Saver Incorporated, Guelph, Ontario, Canada
Filed Jan. 13, 1993, Ser. No. 3,522
Claims priority, application Canada, Jul. 17, 1992, 1707929
Term of patent 14 years
U.S. Cl. D3—228



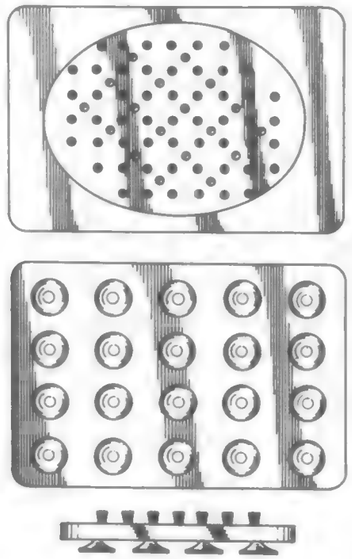
351,945
COMBINED EYEGLASS CASE AND WALLET
David Kopel, Chatsworth, Calif., assignor to Koltov, Inc., Agoura Hills, Calif.
Filed Aug. 6, 1993, Ser. No. 11,534
Term of patent 14 years
U.S. Cl. D3—265



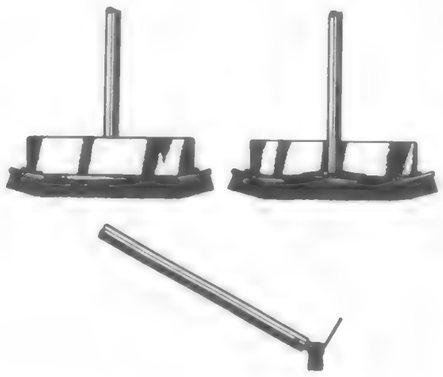
351,946
DENTAL PLAQUE BRUSH FOR BRIDGES
Hamed H. Al-Bargi, 7901 Henry Ave., Apt. 105, Philadelphia, Pa. 19128
Filed Aug. 5, 1993, Ser. No. 11,415
Term of patent 14 years
U.S. Cl. D4—101



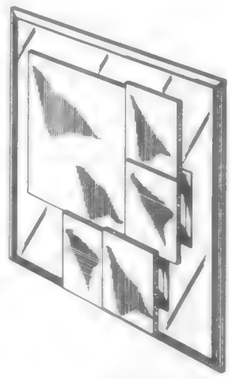
351,947
BACK WASHING BRUSH
Gregory B. Fitzgerald, 19415 Kings Hwy., Warrensville, Ohio 44122
Filed Jun. 10, 1993, Ser. No. 9,306
Term of patent 14 years
U.S. Cl. D4—121



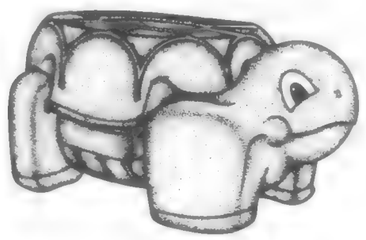
351,948
POOL CLEANING BRUSH
William W. Getchell, Carversville, Pa., assignor to Commonwealth Design and Marketing, Doylestown, Pa.
Filed Sep. 1, 1993, Ser. No. 12,357
Term of patent 14 years
U.S. Cl. D4—132



351,949
MULTIPLE IMAGE DISPLAY FRAME
Tibor Tamas, 4 Villa Rosa Ter., Milford, Conn. 06460
Filed Jun. 1, 1993, Ser. No. 8,935
Term of patent 14 years
U.S. Cl. D6—302



351,950
STEP STOOL WITH STORAGE COMPARTMENT
David A. Bird, and Mitchell L. Wilgus, both of Akron, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 30, 1993, Ser. No. 10,181
Term of patent 14 years
U.S. Cl. D6—351



351,951
PATIO LOVESEAT
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 372
Term of patent 14 years
U.S. Cl. D6—376



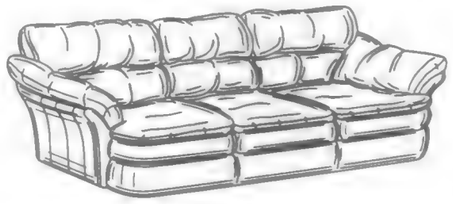
351,952
PATIO CHAIR
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 398
Term of patent 14 years
U.S. Cl. D6—376



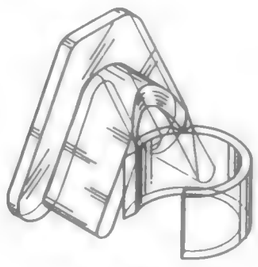
351,953
CHAIR
Richard S. Klein, Los Angeles, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 29, 1993, Ser. No. 7,713
Term of patent 14 years
U.S. Cl. D6—380



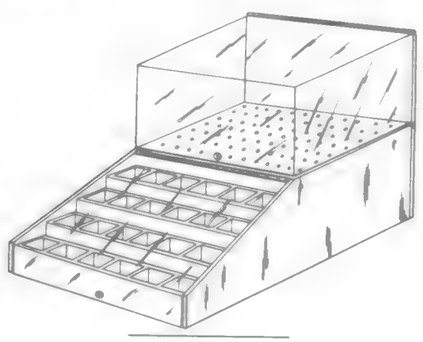
351,954
SEAT
Robert J. Gera, Glencoe, Ill., assignor to Robinson & Robinson, Chula Vista, Calif.
Filed Mar. 21, 1994, Ser. No. 20,145
Term of patent 14 years
U.S. Cl. D6—381



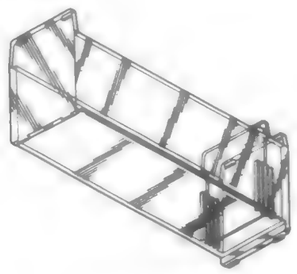
351,955
SPECTACLE DISPLAY SYSTEM
Jan S. Eanis, 16709 NE. 41st St., Redmond, Wash. 98052
Filed Mar. 8, 1993, Ser. No. 5,674
Term of patent 14 years
U.S. Cl. D6—466



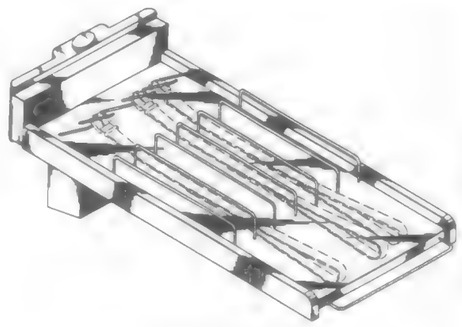
351,956
COUNTER PRODUCT DISPLAY DEVICE
Burton Kozak, 1300 North Lake Shore Dr., Apt. 28C, Chicago, Ill. 60610
Filed Aug. 3, 1993, Ser. No. 11,388
Term of patent 14 years
U.S. Cl. D6—470



351,957
DISPLAY RACK
Joseph M. Bumb, San Jose, Calif., assignor to Ageless Tangible Assets, Inc., San Jose, Calif.
Continuation-in-part of Ser. No. 703,142, May 17, 1991, Pat. No. Des. 333,052. This application Oct. 9, 1992, Ser. No. 250
Term of patent 14 years
U.S. Cl. D6—475



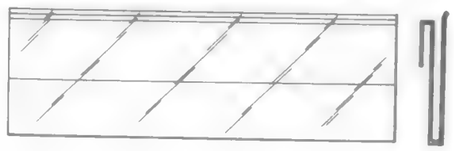
351,958
BELT DISPLAY DEVICE
Leonard Ostroff, Montreal, Canada, assignor to Arrow Manufacturing Incorporated, Montreal, Canada
Filed Aug. 27, 1992, Ser. No. 935,106
Claims priority, application Canada, Aug. 14, 1992, 1408921
Term of patent 14 years
U.S. Cl. D6—476



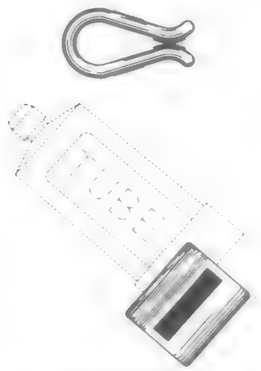
351,959
TABLE
Richard Klein, Hollywood, Calif., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Apr. 19, 1993, Ser. No. 7,309
Term of patent 14 years
U.S. Cl. D6—487



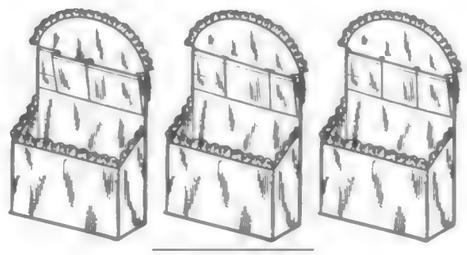
351,960
HOLDER FOR MUSICAL SCORES AND THE LIKE
A. Richard Golub, 42 East 64 St., New York, N.Y. 10021
Division of Ser. No. 835,269, Feb. 13, 1992, Pat. No. 345,662.
This application Dec. 20, 1993, Ser. No. 16,553
Term of patent 14 years
U.S. Cl. D6—513



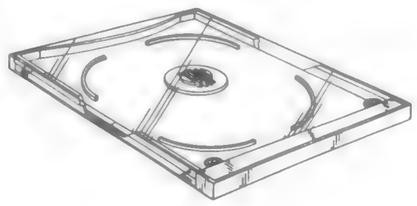
351,961
TUBE CLIP
Pietro Bergamo, 38840 Windmill Pte South, Clinton Twp. Macomb County, Mich. 48038
Filed Apr. 15, 1993, Ser. No. 7,034
Term of patent 14 years
U.S. Cl. D6—541



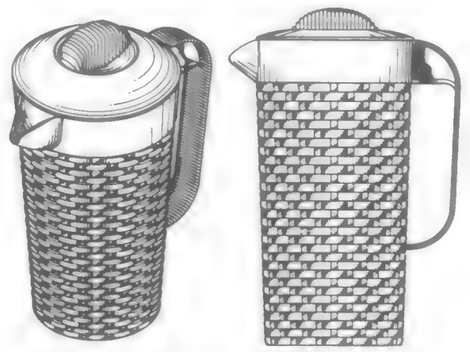
351,962
NURSERY ORGANIZER
Christopher J. Miller, and Judy Miller, both of 28300 White Rd., Perrysburg, Ohio 43551
Filed Apr. 20, 1993, Ser. No. 7,368
Term of patent 14 years
U.S. Cl. D6—571



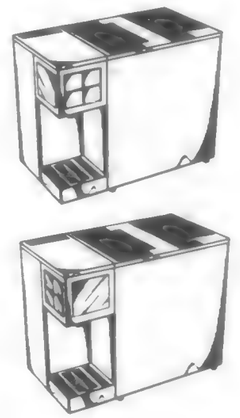
351,963
COMPACT DISC CASE
Jin-Kyu Lim, Room 9 1503, Sampung Apartment, Sucho-dong, Sucho-ku, Seoul, Rep. of Korea
Filed Aug. 5, 1992, Ser. No. 927,356
The portion of the term of this patent subsequent to Sep. 27, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—631



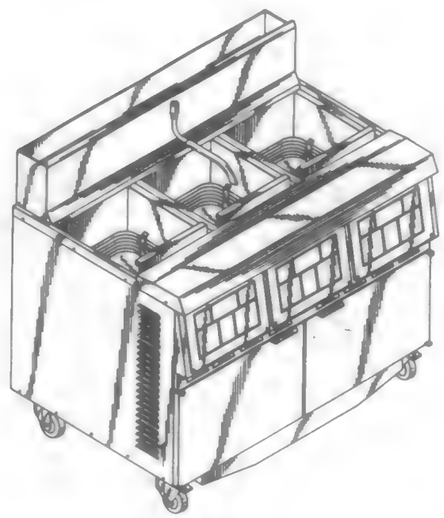
351,964
PITCHER AND LID THEREFOR
Elliott N. Zivin, 60 Cherry St., Bridgeport, Conn. 06605
Filed Jan. 14, 1994, Ser. No. 17,560
Term of patent 14 years
U.S. Cl. D7—303



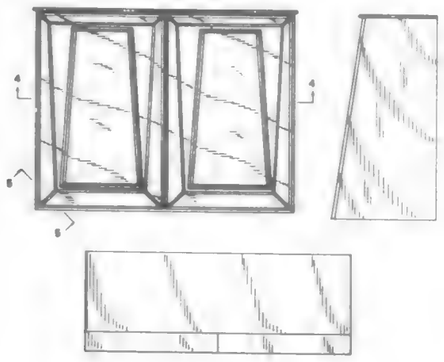
351,965
BEVERAGE DISPENSER
William S. Credle, Jr., Stone Mountain, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 2, 1989, Ser. No. 361,010
Term of patent 14 years
U.S. Cl. D7—311



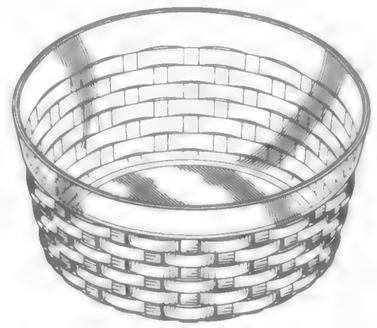
351,966
OPEN FRYER
James D. King, c/o Henny Penny Corporation, 1219 U.S. Rte. 35 West, P.O. Box 60, Eaton, Ohio 45320
Filed Dec. 30, 1992, Ser. No. 4,608
Term of patent 14 years
U.S. Cl. D7—339



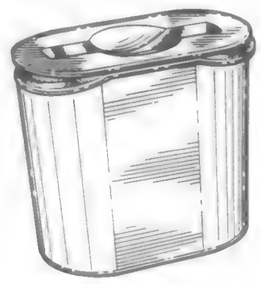
351,967
HOOD ABOVE A COOKING SURFACE
John B. Brandon, Attica, N.Y., assignor to Harrow Products, Inc., Grand Rapids, Mich.
Filed Feb. 5, 1991, Ser. No. 650,672
Term of patent 14 years
U.S. Cl. D7—372



351,968
BOWL
Elliott N. Zivin, 60 Cherry St., Bridgeport, Conn. 06605
Filed Jan. 14, 1994, Ser. No. 17,561
Term of patent 14 years
U.S. Cl. D7—564



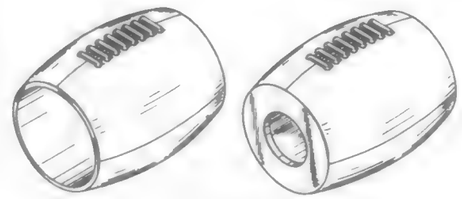
351,969
ICE BUCKET
Robert H. C. M. Daenen, Essene, Belgium; Stig Lillelund, Gentofte, Denmark, assignors to Dart Industries, Inc., Deerfield, Ill.
Filed Dec. 23, 1992, Ser. No. 2,923
Term of patent 14 years
U.S. Cl. D7—603



351,970
BABY FOOD JAR HOLDER
Robert Barrio, 8532 Masters Dr., Huntington Beach, Calif. 92646
Filed May 3, 1993, Ser. No. 7,775
Term of patent 14 years
U.S. Cl. D7—619



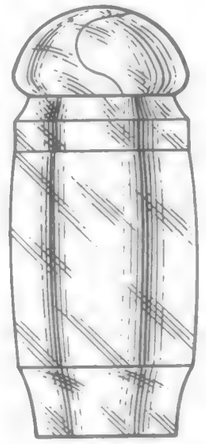
351,971
FOOTBALL COASTER
Frank T. Cappola, 155 Smith Dr., Pt. Pleasant, N.J. 08742
Filed Jun. 22, 1993, Ser. No. 9,838
Term of patent 14 years
U.S. Cl. D7—625



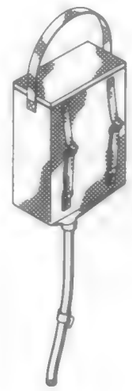
351,972
GARLIC PRESS
Dennis C. L. Wong, Kowloon, Hong Kong, assignor to Maxpat Trading & Marketing (Far East) Limited, Hong Kong, Hong Kong
Filed Jul. 14, 1992, Ser. No. 913,077
Claims priority, application United Kingdom, Jan. 31, 1992, 2020640
The portion of the term of this patent subsequent to Apr. 19, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—665



351,973
CHEESE GRATER
Golf C. K. Chak, Kowloon, Hong Kong, assignor to Forexim (Hong Kong) Limited, Kowloon, Hong Kong
Filed May 12, 1993, Ser. No. 8,238
Claims priority, application United Kingdom, Feb. 11, 1993, 2,029,062
Term of patent 14 years
U.S. Cl. D7—678



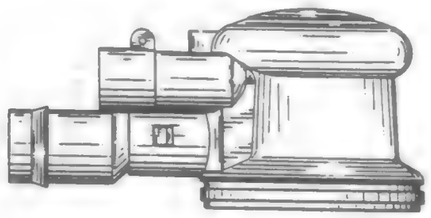
351,974
BODY MOUNTABLE FERTILIZER DISPENSER
Darrin G. Ward, Rte. 2, Box 48, Perry, Fla. 32347
Filed Jun. 14, 1993, Ser. No. 9,435
Term of patent 14 years
U.S. Cl. D8—2



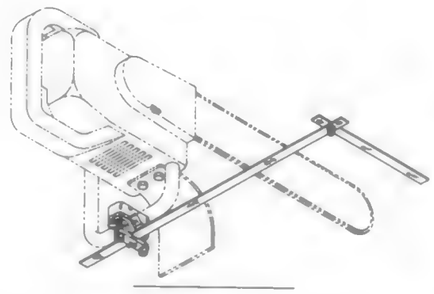
351,975
WRENCH
Hubert W. Brunner, National City, Calif., assignor to Severino L. Pancaro, Chula Vista, Calif.
Filed Mar. 2, 1993, Ser. No. 5,374
Term of patent 14 years
U.S. Cl. D8—21



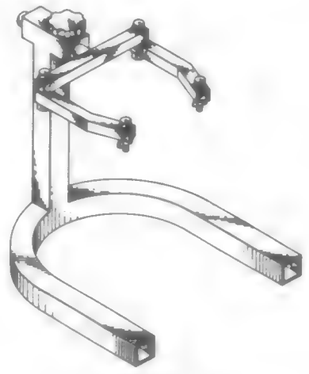
351,976
COMBINED PALM SANDER WITH VACUUM CONNECTION
Kevin R. Morey, Laurinberg, and Hector A. Haget, Jr., So. Pines, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed May 13, 1993, Ser. No. 8,462
Term of patent 14 years
U.S. Cl. D8—62



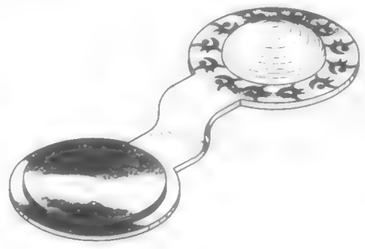
351,977
CUTTING GAUGE FOR A CHAINSAW
Herbert Snoop, 71 Struyk Ave., Prospect Park, N.J. 07508
Filed Oct. 25, 1993, Ser. No. 14,518
Term of patent 14 years
U.S. Cl. D8—70



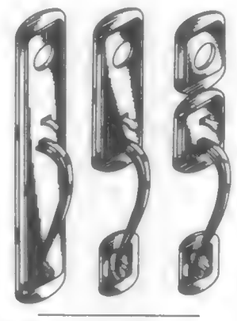
351,978
UNIVERSAL CARBURETOR REPAIR STAND
Andrew E. Tanzer, 320 Lions Hed Dr., Monument, Colo. 80132
Filed Sep. 10, 1992, Ser. No. 943,451
Term of patent 14 years
U.S. Cl. D8—71



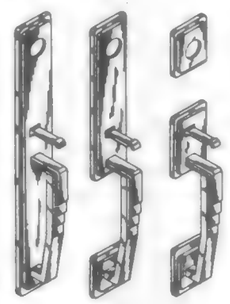
351,979
LIFT HANDLE FOR TOILET SEATS
Terri M. Sykes, and Kenneth C. Sykes, both of Jack Frost La., Conway, N.H. 03818
Filed Sep. 8, 1992, Ser. No. 939,871
Term of patent 14 years
U.S. Cl. D8—307



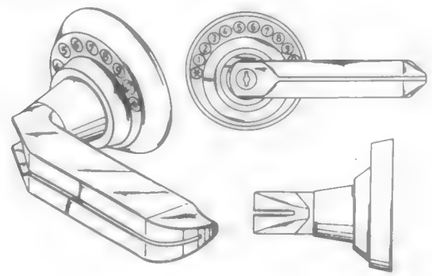
351,980
DOOR HANDLE UNIT
Aurelio Molteni, Cantu', Italy, assignor to Valli & Colombo, S.P.A., Renate, Italy
Filed Oct. 16, 1992, Ser. No. 574
Term of patent 14 years
U.S. Cl. D8—302



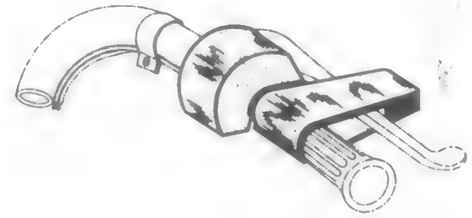
351,981
DOOR HANDLE UNIT
Marco L. Susani, Cusano, and Marco Zanini, Mezzocorona, both of Italy, assignors to Fusital S.P.A., Asso, Italy
Filed Oct. 16, 1992, Ser. No. 575
Term of patent 14 years
U.S. Cl. D8—302



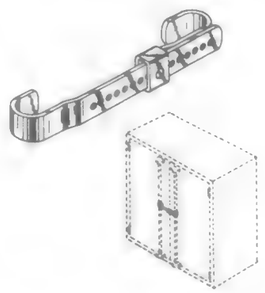
351,982
DIGITAL OR KEY CARD OPERATED ELECTRONIC DOOR LOCK
Tsun-Hsing Chen, Suite 1, 11F, 95-8 Chang Ping Road Sec. 1, Taichung, Taiwan
Filed Aug. 6, 1993, Ser. No. 11,494
Term of patent 14 years
U.S. Cl. D8—330



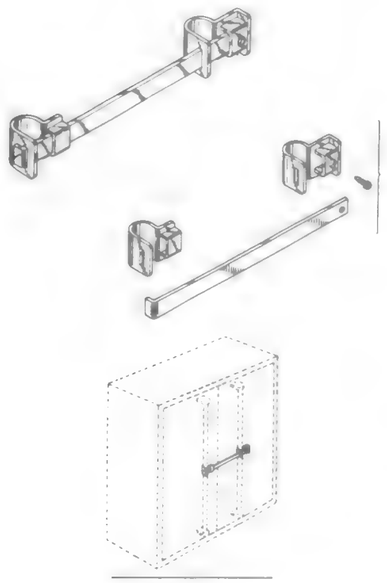
351,983
SHROUD LOCK FOR MOTORCYCLE HANDLEBAR CONTROLS
Billy E. Young, 2809 Hickory St., Abilene, Tex. 79601, and William G. Krupa, 1834 B Potosi Rd., Abilene, Tex. 79602
Filed Feb. 16, 1993, Ser. No. 4,894
Term of patent 14 years
U.S. Cl. D8—331



351,984
DOOR LOCK
Navarsky Victor, 10-9, Yamamoto-dori 3-chome, Chuo-ku, Kobe-shi, Hyogo, Japan
Filed Nov. 12, 1993, Ser. No. 15,208
Term of patent 14 years
U.S. Cl. D8—331



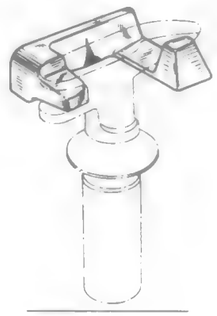
351,985
DOOR LOCK
Navarsky Victor, 10-9, Yamamoto-dori 3-chome, Chuo-ku, Kobe-shi, Hyogo, Japan
Filed Nov. 12, 1993, Ser. No. 15,209
Term of patent 14 years
U.S. Cl. D8—331



351,986
POST ATTACHABLE TO THE UNDERSIDE OF A TRUCK CHASSIS ALLOWING FOR THE SECURING OF A CHAIN TO A SPARE TIRE
Joseph Schotthoefer, 7827 S. Rueas Rd., Owosso, Mich. 48867
Filed Jun. 3, 1992, Ser. No. 892,011
Term of patent 14 years
U.S. Cl. D8—343



351,987
KEEPER FOR A LOCKING CONTAINER DOOR
Sang I. Lee, Seoul, Rep. of Korea, assignor to Bloxwich Korea Co., Ltd., Kyongju, Rep. of Korea
Filed Nov. 4, 1993, Ser. No. 15,048
Claims priority, application Rep. of Korea, Aug. 3, 1993, 1993-15636
Term of patent 14 years
U.S. Cl. D8—343



351,988
CORNER BEAD
Michael L. Gotcher, 41416 Mission Dr., Palmdale, Calif. 93551
Filed Dec. 31, 1992, Ser. No. 3,185
Term of patent 14 years
U.S. Cl. D8—403



351,989
SNOW STOP
Roger M. Cline, Bluemont, and Lawrence W. Boehly, Vienna, both of Va., assignors to Real Tool, Inc., Purcellville, Va.
Filed May 7, 1992, Ser. No. 879,268
Term of patent 14 years
U.S. Cl. D8—499



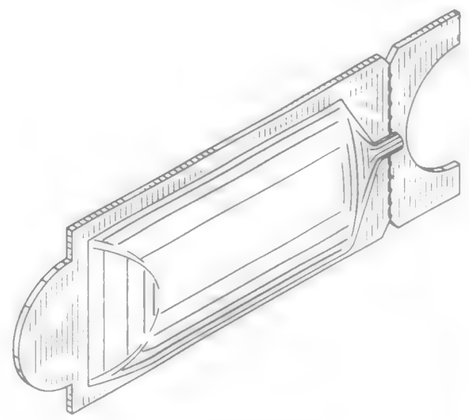
351,990
COMBINED BOTTLE AND CAP
Minoru Shiokawa, Yokohama, Japan, assignor to Shiseido Company, Ltd., Tokyo, Japan
Filed May 19, 1992, Ser. No. 885,397
Claims priority, application Japan, Jan. 30, 1992, 4-2115
Term of patent 14 years
U.S. Cl. D9—300



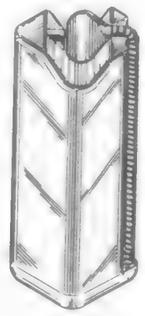
351,991
LOTION DISPENSING BOTTLE
Peter Bertolini, Shelton; William Valls, Harwinton, and Kenneth D. Harris, Jr., Hartford, all of Conn., assignors to Chesebrough-PondUSA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Jun. 1, 1993, Ser. No. 9,005
Term of patent 14 years
U.S. Cl. D9—300



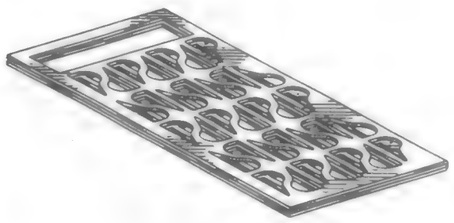
351,992
DISPOSABLE DISPENSING POUCH
William Jacques, 9180 Joy La., Granite Bay, Calif. 95746
Filed Dec. 16, 1992, Ser. No. 2,686
Term of patent 14 years
U.S. Cl. D9—306



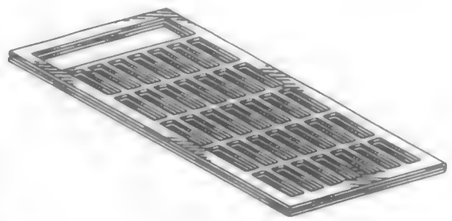
351,993
BEVERAGE CONTAINER
Richard H. Kaufman, Chappaqua; Theodore J. Kovacic, Bedford, both of N.Y.; Hideyoshi Okita, Huntington Beach, Calif.; Martin M. Bostwick, Norwalk, Conn.; Andrew T. Kostanecki, Darien, Conn.; Robert H. Brainard, Danbury, Conn., and Patrick B. Nolan, Norwalk, Conn., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Oct. 17, 1991, Ser. No. 776,439
Term of patent 14 years
U.S. Cl. D9—337



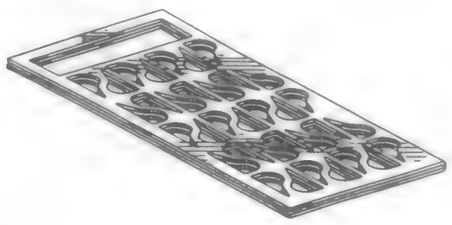
351,994
DISPENSING CONTAINER FOR PHARMACEUTICAL MEDICATION
John D. Kalvelage, Lynchburg, Va., assignor to Multi-Comp, Inc., Lynchburg, Va.
Filed Jun. 23, 1992, Ser. No. 903,552
Term of patent 14 years
U.S. Cl. D9—341



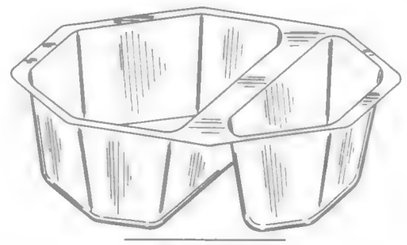
351,995
DISPENSING CONTAINER FOR PHARMACEUTICAL MEDICATION
John D. Kalvelage, Lynchburg, Va., assignor to Multi-Comp, Inc., Lynchburg, Va.
Filed Jun. 23, 1992, Ser. No. 903,818
Term of patent 14 years
U.S. Cl. D9—341



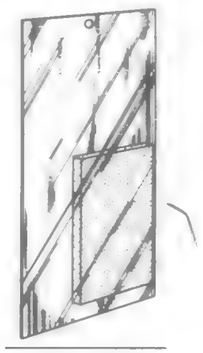
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DISPENSING CONTAINER FOR PHARMACEUTICAL MEDICATION
John D. Kalvelage, Lynchburg, Va., assignor to Multi-Comp, Inc., Lynchburg, Va.
Filed Jun. 23, 1992, Ser. No. 903,820
Term of patent 14 years
U.S. Cl. D9—341



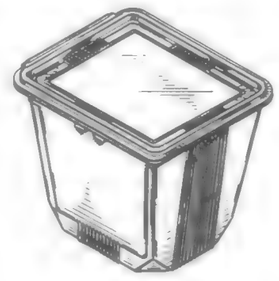
351,997
PACKAGING CUP
Josef Finnah, Ahaus, Germany, assignor to GEA Finnah GmbH, Ahaus, Germany
Filed Jul. 19, 1993, Ser. No. 10,764
Claims priority, application Germany, Jan. 27, 1993, M 93 00 640.3
Term of patent 14 years
U.S. Cl. D9—347



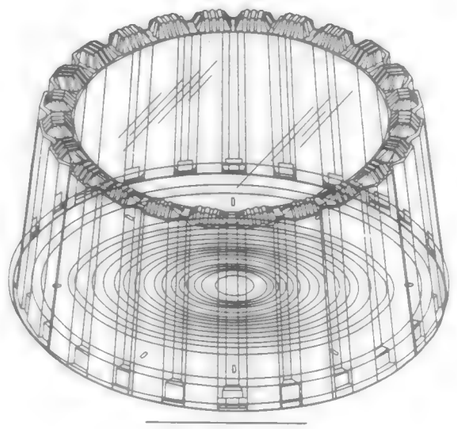
351,998
SPONGE PACKAGE
Stephen Schultz, Canton, Mass., assignor to The Gonzo Corporation, Canton, Mass.
Filed Mar. 3, 1993, Ser. No. 5,406
Term of patent 14 years
U.S. Cl. D9—415



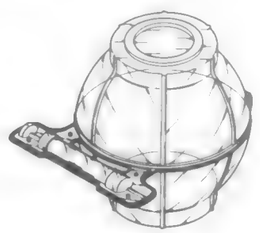
351,999
FOOD PACKAGE WITH HINGED LID
Calvin S. Krupa, Medina, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Oct. 12, 1993, Ser. No. 14,051
Term of patent 14 years
U.S. Cl. D9—423



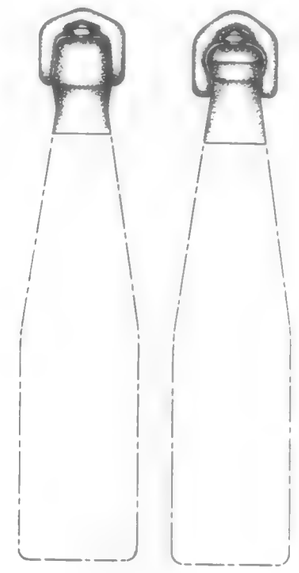
352,000
CONTAINER WITH RELEASABLE LOCK
Darryl P. Hansen, Shortsville; Raj K. Mangla, Pittsford; Raul Matos, Rochester; Dennis Oberdorf, Canandaigua, and Chris Olenski, Walworth, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.
Continuation of Ser. No. 56,641, May 3, 1993, Pat. No. 5,287,959. This application Aug. 6, 1993, Ser. No. 11,496
Term of patent 14 years
U.S. Cl. D9—429



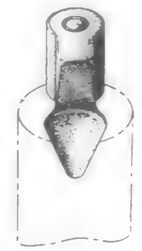
352,001
BALL CASE
Jung-Tung Hsieh, 8th Fl.-2, No. 333, Sec. 4, Chungsiao E. Rd., Taipei,
Filed Aug. 27, 1993, Ser. No. 12,307
Term of patent 14 years
U.S. Cl. D9—429



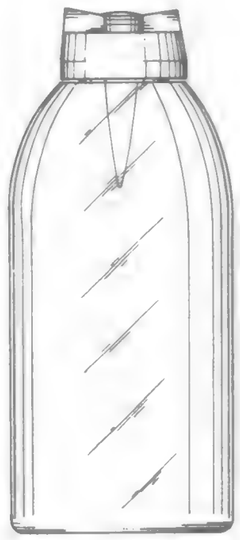
352,002
BOTTLE CLOSURE
John D. Culter, Edina; David V. Harmann, Delano; H. Eugene Hite, Jr., Long Lake; John P. Rebhorn, Maple Grove, all of Minn., and Wade J. Groetsch, Troy, Ohio, assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jan. 17, 1992, Ser. No. 821,537
Term of patent 14 years
U.S. Cl. D9—435



352,003
COMBINATION CAULKING TUBE CAP AND APPLICATOR
David E. Groene, Centerville, Ohio, and Earl E. Hoyt, Franklin Lakes, N.J., assignors to DAP Products, Inc., Tipp City, Ohio
Continuation-in-part of Ser. No. 6,707, Apr. 5, 1993. This application Aug. 13, 1993, Ser. No. 11,810
Term of patent 14 years
U.S. Cl. D9—436



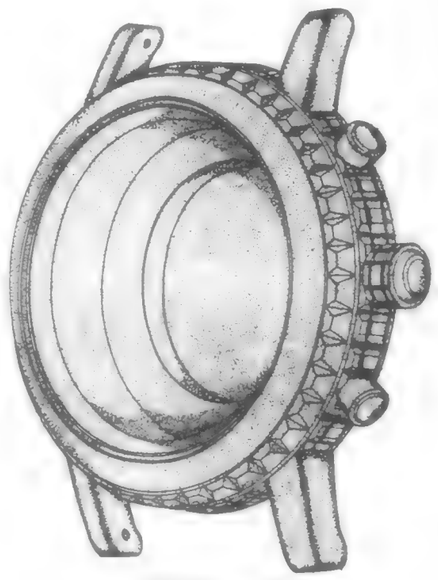
352,004
BOTTLE AND CAP
J. Darius Bikoff, Sousa Dr., Sands Point, N.Y. 11050, and Philippe Starck, 3 Rue de la Roquette, 75011, Paris, France
Filed Nov. 1, 1990, Ser. No. 607,873
Term of patent 14 years
U.S. Cl. D9—503



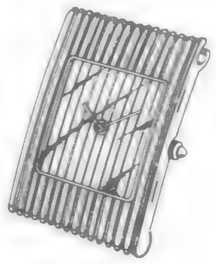
352,005
BOTTLE AND CAP
Stephen W. D'Amico, Cincinnati, Ohio; Jim F. Warner, New York, N.Y.; Thomas B. Aldrich, Chestnut Ridge, N.Y., and Alexander Dinota, Bronxville, N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 1, 1993, Ser. No. 15,906
Term of patent 14 years
U.S. Cl. D9—528



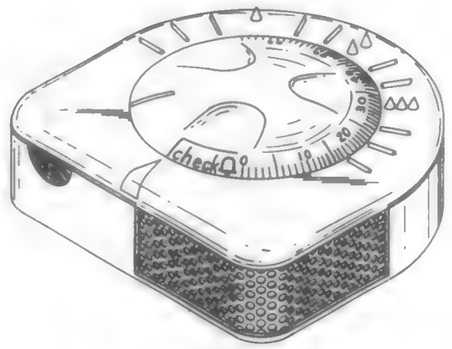
352,006
WATCH CASE
Barbara Giardiello, Naples, Italy, assignor to Lucien Rochat SA, Bienne, Switzerland
Filed Mar. 10, 1992, Ser. No. 849,132
Claims priority, application 09111991, Sep. 11, 1991, DMA/001586
Term of patent 14 years
U.S. Cl. D10—30



352,007
WRISTWATCH
Alain Boucheron, Paris, France, assignor to Boucheron (Societe Anonyme), Paris, France
Filed Jun. 4, 1992, Ser. No. 894,796
Claims priority, application France, Dec. 6, 1991, 917.721
Term of patent 14 years
U.S. Cl. D10—39



352,008
HOUSING FOR AN ADJUSTABLE TIMER
Wolfgang Drews, Zarpen, Germany, assignor to Draegerwerk AG, Luebeck, Germany
Filed Oct. 9, 1991, Ser. No. 774,116
Claims priority, application Germany, Apr. 13, 1991, M9102833.7
Term of patent 14 years
U.S. Cl. D10—40



352,009
CIRCUIT ANALYZER
Kenneth D. Elkins, 2306 Hill Ave., Gadsden, Ala. 35904
Filed Aug. 27, 1990, Ser. No. 572,376
Term of patent 14 years
U.S. Cl. D10—75



352,010
LIQUID LEVEL SENSOR
Charles Curbbun, Leucadia, Calif., assignor to Flowline Inc., Seal Beach, Calif.
Filed Oct. 2, 1992, Ser. No. 55
Term of patent 14 years
U.S. Cl. D10—101



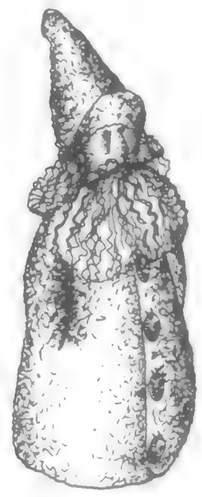
352,011
DINNER BELL
Bruce W. Birtciel, 425 W. Siesta Way, Phoenix, Ariz. 85041
Filed Mar. 25, 1994, Ser. No. 20,495
Term of patent 14 years
U.S. Cl. D10—116



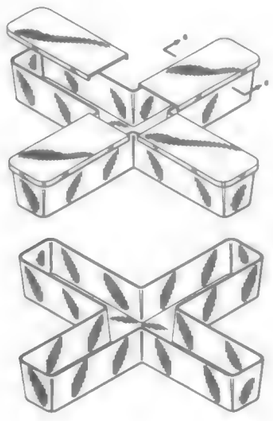
352,012
BADGE
John Ondracek, 800 Pennsylvania St., Apt. 1201, Denver, Colo. 80203
Filed Sep. 22, 1993, Ser. No. 13,240
Term of patent 14 years
U.S. Cl. D11—101



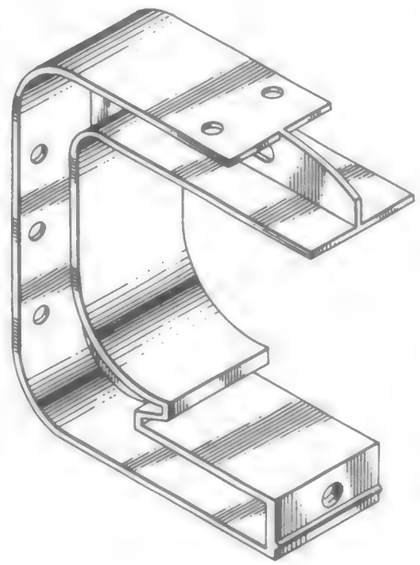
352,013
SANTA SOFT SCULPTURE
Inger Corson, Box 339A, Yarmouth, Me. 04096, and Linda White, Box 367F, Chebeague Island, Me. 04017
Filed Jun. 21, 1993, Ser. No. 9,731
Term of patent 14 years
U.S. Cl. D11—125



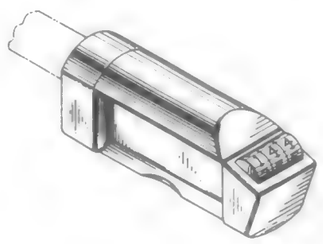
352,014
TREE STAND CONTAINER
Phyllis C. O'Leary, 79 Seward St., San Francisco, Calif. 94104
Continuation of Ser. No. 900,979, Jun. 18, 1992, abandoned.
This application Nov. 23, 1993, Ser. No. 15,681
Term of patent 14 years
U.S. Cl. D11—1301



352,015
SUPPORT BRACKET FOR ELECTRIC RAIL COVERBOARD
S. James Esworthy, 17425 Chatsworth St., #206, Granada Hills, Calif. 91344
Filed Jun. 21, 1993, Ser. No. 9,647
Term of patent 14 years
U.S. Cl. D12—51



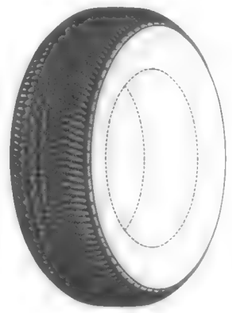
352,016
FIXED VEHICLE HAND BRAKE LOCK
Nicolas R. Lugo, 1521 Bellevue Ave. #105, Seattle, Wash. 98122
Filed Jun. 25, 1992, Ser. No. 903,864
Term of patent 14 years
U.S. Cl. D12—114



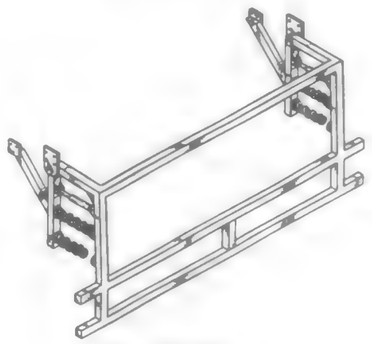
352,017
BABY STROLLER
Tomihiro Kaneko, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 6,810
Claims priority, application Japan, Oct. 8, 1992, 4-29220
Term of patent 14 years
U.S. Cl. D12—129



352,018
TIRE TREAD
Michel Pierre C. Robert, Fauvillers, Belgium, Hermanus Joannes A. Vereecken, Junglinster, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 14, 1993, Ser. No. 8,325
Term of patent 14 years
U.S. Cl. D12—147



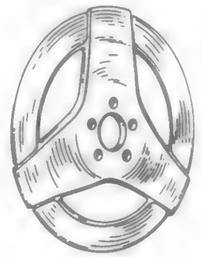
352,019
IMPACT ABSORBING VEHICLE BUMPER
Jose Rivero, and Juan Matturro, both of 401 Memory La., Houston, Tex. 77037
Filed Jun. 10, 1993, Ser. No. 9,265
Term of patent 14 years
U.S. Cl. D12—169



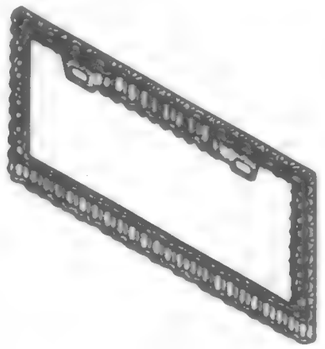
352,020
BRAKE DISK
Ronald H. Powers, Costa Mesa, Calif., assignor to Powers Design International, Newport Beach, Calif.
Filed Aug. 9, 1993, Ser. No. 11,643
Term of patent 14 years
U.S. Cl. D12—180



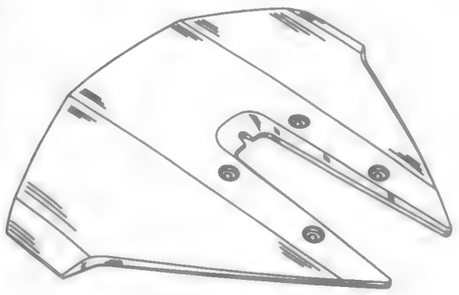
352,021
BRAKE DISK
Ronald H. Powers, Costa Mesa, Calif., assignor to Powers Design International, Newport Beach, Calif.
Filed Aug. 9, 1993, Ser. No. 11,644
Term of patent 14 years
U.S. Cl. D12—180



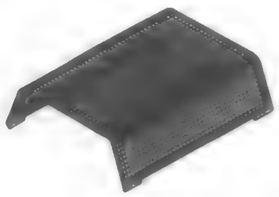
352,022
LICENSE PLATE FRAME
Bruce Liu, P.O. Box 1032, Tainan, Taipei,
Filed Dec. 6, 1993, Ser. No. 15,983
Term of patent 14 years
U.S. Cl. D12—193



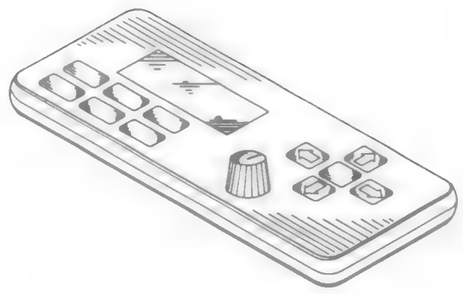
352,023
BOAT STABILIZER
James F. Corn, Kearney, Mo., assignor to Sport Marine Technologies, Denton, Tex.
Filed Feb. 1, 1993, Ser. No. 4,301
Term of patent 14 years
U.S. Cl. D12—317



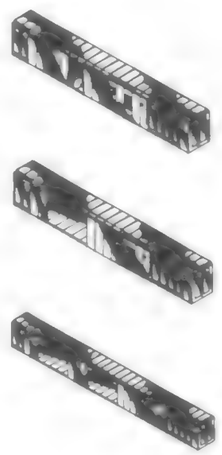
352,024
TRUCK BED COVER
Jeffrey D. Hebets, Phoenix, Ariz., assignor to John W. Heaser, Tucson, Ariz., a part interest
Filed Jul. 7, 1993, Ser. No. 10,471
Term of patent 14 years
U.S. Cl. D12—401



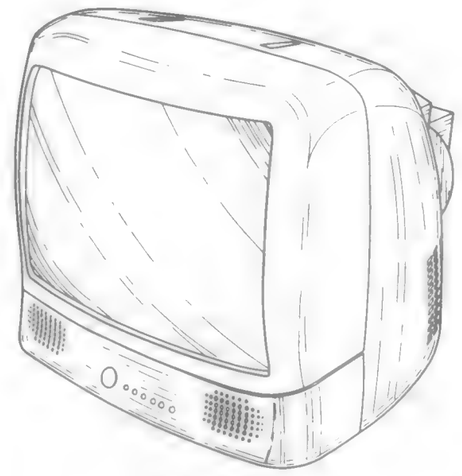
352,025
ELECTRONIC RELAY PROGRAMMER
Daniel J. Dellavecchia, Cheshire; David C. Etherton, Monroe, and Brian J. Rolnick, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Aug. 25, 1993, Ser. No. 12,154
Term of patent 14 years
U.S. Cl. D13—164



352,026
TAPE AUTOMATION SYSTEM
Martin J. Marotti, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1992, Ser. No. 871,257
Term of patent 14 years
U.S. Cl. D14—108



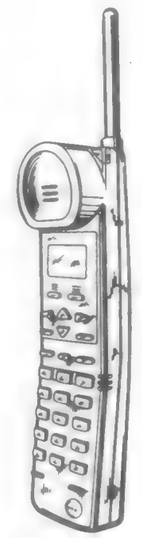
352,027
PORTABLE STEREO TELEVISION
Thomas E. Renk, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Nov. 18, 1993, Ser. No. 15,497
Term of patent 14 years
U.S. Cl. D14—126



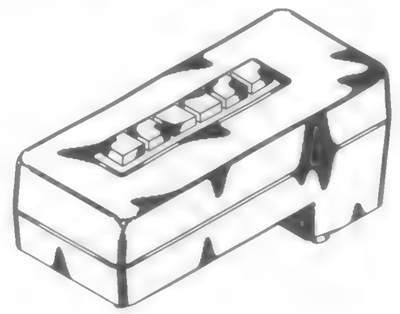
352,028
CORDLESS TELEPHONE
Craig F. Siddoway, Davie, Fla., and Bee L. Khoo, Johor Bahru, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 3, 1993, Ser. No. 7,814
Term of patent 14 years
U.S. Cl. D14—138



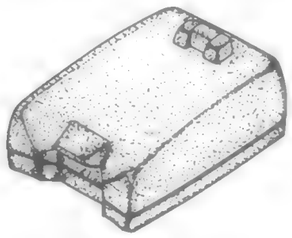
352,029
TELEPHONE HANDSET
Neal T. Cowan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 29, 1993, Ser. No. 15,779
Term of patent 14 years
U.S. Cl. D14—138



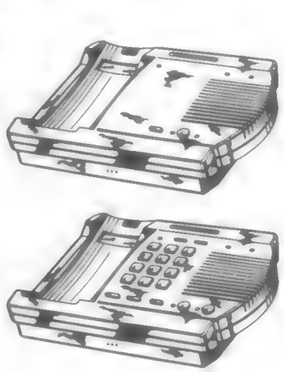
352,030
TELEPHONE MODULE
Jim J. Johnson, Scottsdale; David T. Gustafson, Gilbert, and Theodore Harp, III, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 20, 1993, Ser. No. 8,541
Term of patent 14 years
U.S. Cl. D14—140



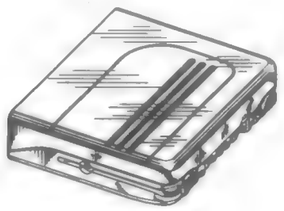
352,031
HOLDER FOR A RADIO TELEPHONE
Jouko Tattari, Salo, Finland; Frank Nuovo, Los Angeles, and Andy Vong, Venice, both of Calif., assignors to Nokia Mobile Phones Ltd., Salo, Finland
Filed Dec. 20, 1991, Ser. No. 812,372
Claims priority, application Finland, Jun. 26, 1991, 541/91
Term of patent 14 years
U.S. Cl. D14—149



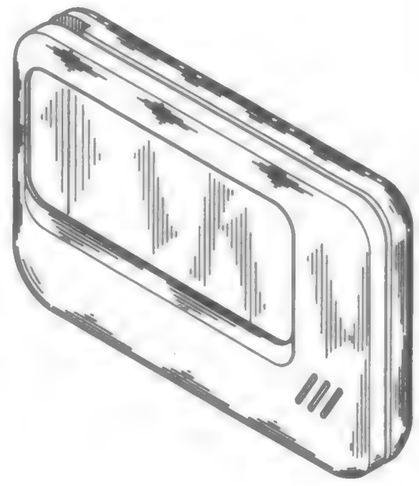
352,032
TELEPHONE BASE
Neal T. Cowan, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 29, 1993, Ser. No. 15,799
Term of patent 14 years
U.S. Cl. D14—151



352,033
RADIO BODY
William H. Robertson, Jr., Plantation; Masaru Tokiyama; Michael H. Bartlett, both of Coral Springs, and William C. Phelps, III, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 15, 1993, Ser. No. 5,861
Term of patent 14 years
U.S. Cl. D14—188



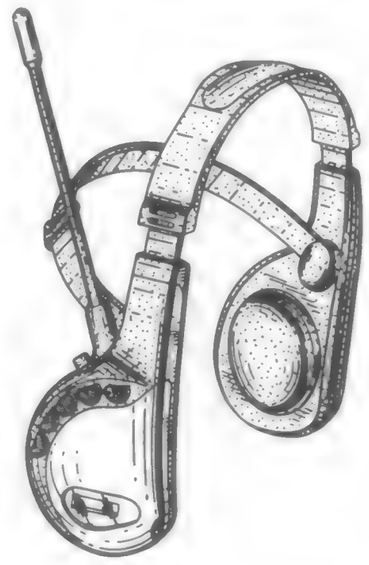
352,034
COVER FOR A SELECTIVE CALL RECEIVER
William J. Scheid, Coral Springs; Jeffrey S. King; Philip M. Walker, both of Boynton Beach, and Carol DiMaggio, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 21, 1992, Ser. No. 948,803
Term of patent 14 years
U.S. Cl. D14—191



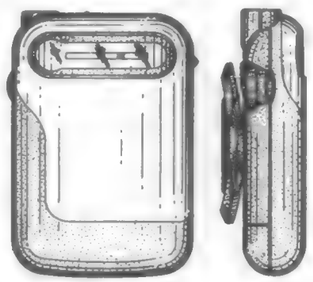
352,035
SELECTIVE CALL RECEIVER
David P. Townsend, Hypoluxo Island, and William J. Scheid, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 22, 1993, Ser. No. 5,086
Term of patent 14 years
U.S. Cl. D14—191



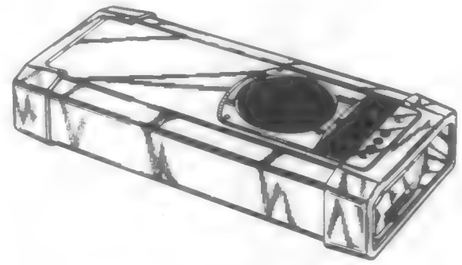
352,036
RADIO RECEIVER
Mie Sekita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 4, 1992, Ser. No. 924,502
Term of patent 14 years
U.S. Cl. D14—192



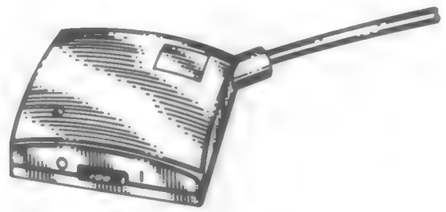
352,037
RADIO RECEIVER
Kouichi Maeyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Aug. 4, 1992, Ser. No. 924,542
Term of patent 14 years
U.S. Cl. D14—192



352,038
LOUDSPEAKER FOR USE WITH AMPLIFIER
Tomohiko Kobayashi, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 27, 1993, Ser. No. 7,560
Claims priority, application Japan, Oct. 27, 1992, 4-31461
Term of patent 14 years
U.S. Cl. D14—215



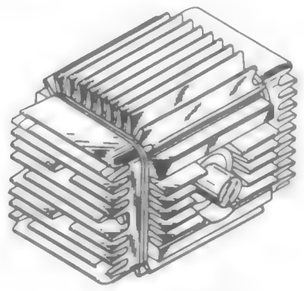
352,039
MICROPHONE FOR COMPUTER
Philip Yurkonis, Campbell, and Alison Armstrong, San Francisco, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.
Filed May 19, 1992, Ser. No. 885,568
Term of patent 14 years
U.S. Cl. D14—225



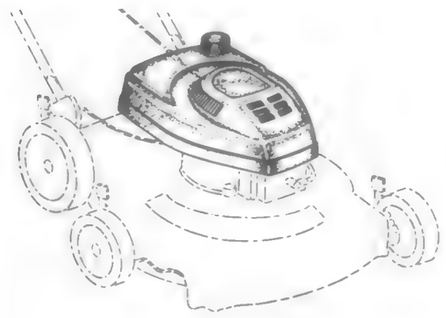
352,040
ADAPTER ACCESSORY FOR RADIO PACKET MODEM
Roman P. Rak, Delta, and William E. Fenton, Surrey, both of Canada, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 6, 1993, Ser. No. 16,037
Term of patent 14 years
U.S. Cl. D14—240



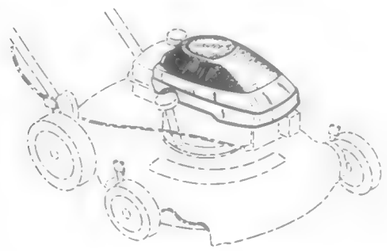
352,041
AIR COMPRESSOR
Craig N. Hansen, Minnetonka, Minn., assignor to Hansen Engine Corporation, Minnetonka, Minn.
Filed Feb. 5, 1993, Ser. No. 4,478
Term of patent 14 years
U.S. Cl. D15—9



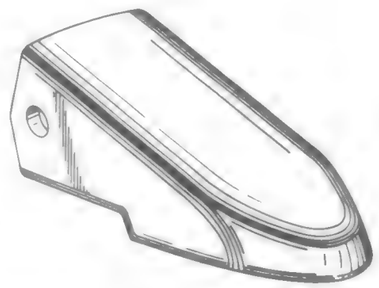
352,042
LAWN MOWER ENGINE SHROUD
John W. Davies, III, Plymouth, Wis., assignor to The Toro Company, Bloomington, Minn.
Filed May 6, 1993, Ser. No. 7,985
Term of patent 14 years
U.S. Cl. D15—17



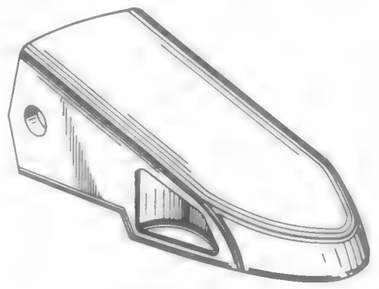
352,043
LAWN MOWER ENGINE SHROUD
John W. Davies, III, Plymouth, Wis., assignor to The Toro Company, Bloomington, Minn.
Filed May 6, 1993, Ser. No. 8,018
Term of patent 14 years
U.S. Cl. D15—17

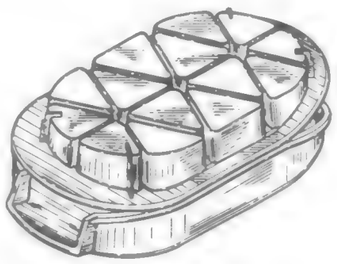


352,044
BUCKET TOOTH
Frederick C. Hahn, Aloha, Oreg., assignor to Bucyrus Blades, Inc., Bucyrus, Ohio
Filed Mar. 26, 1993, Ser. No. 6,324
Term of patent 14 years
U.S. Cl. D15—29

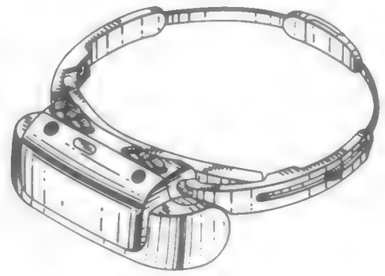


352,045
ICE CUBE TRAY AND DISPENSER
Robert H. C. M. Daenen, Essene, Belgium; Stig Lillelund, Gentofte, Denmark; Jakob Neiberg, Kobenhavn, Denmark, assignors to Dart Industries, Inc., Deerfield, Ill.
Filed May 19, 1993, Ser. No. 8,587
Term of patent 14 years
U.S. Cl. D15—90

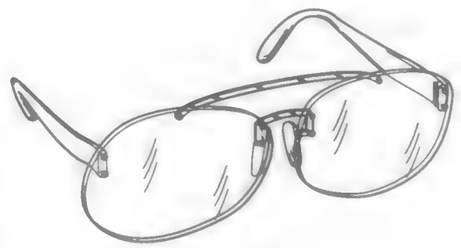




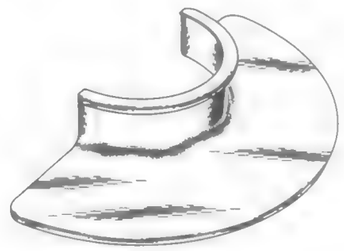
352,046
GOGGLE WITH BUILT IN MONITORS AND EARPHONES
Tetsu Katsoka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 6,770
Claims priority, application Japan, Oct. 30, 1992, 4-32004
Term of patent 14 years
U.S. Cl. D16—309



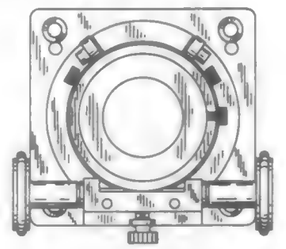
352,047
EYEGLASSES
Clarence R. Dombrosky, Sr., Levittown, Pa., assignor to Kaleeb, Inc., Levittown, Pa.
Filed Oct. 28, 1993, Ser. No. 14,621
Term of patent 14 years
U.S. Cl. D16—316



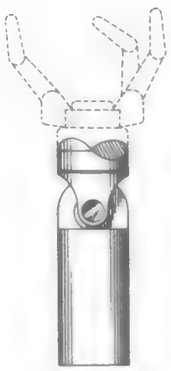
352,048
FINGER GUARD FOR GRINDER
Joseph P. Goebel, Auburn, Calif., assignor to Foothill Industrial and Mechanical, Inc., Auburn, Calif.
Filed Jul. 14, 1993, Ser. No. 10,699
Term of patent 14 years
U.S. Cl. D15—126



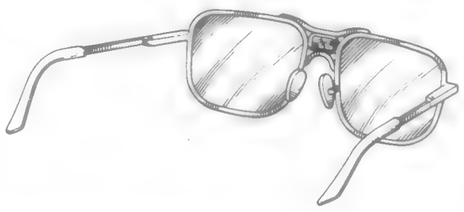
352,049
OPTICAL FOCUSER
James D. Burr, 1960 Jefferson Co. Rd. 23, Evergreen, Colo. 80439, and Rick McWilliams, Mountain View, Calif., assignors to James D. Burr, Evergreen, Colo.
Filed Oct. 16, 1992, Ser. No. 528
Term of patent 14 years
U.S. Cl. D16—130



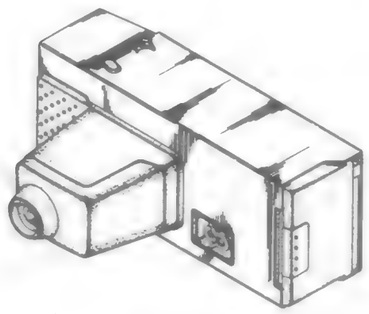
352,050
ROBOTIC WRIST
Nathan Ulrich, Woods Hole, and William T. Townsend, Weston, both of Mass., assignors to Barrett Technology Inc., Cambridge, Mass.
Filed Jul. 9, 1993, Ser. No. 10,603
Term of patent 14 years
U.S. Cl. D15—199

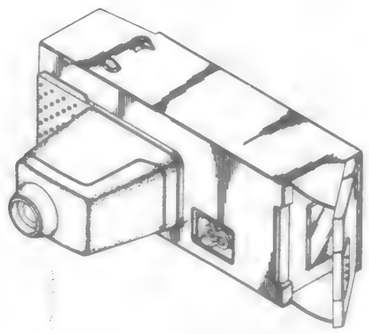


352,051
EYEGLASSES WITH BUILT-IN WATCH
Reuben Rodriguez, 10720 Avenue J, Chicago, Ill. 60617
Filed Apr. 12, 1993, Ser. No. 6,985
Term of patent 14 years
U.S. Cl. D16—309

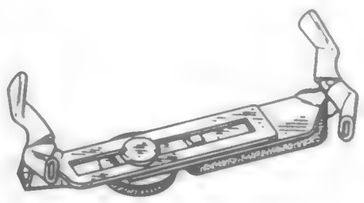


352,052
CAMERA WITH FOLDING FLASH REFLECTOR
William H. Goddard, Hilton, and William E. Thomas, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 19, 1993, Ser. No. 3,847
Term of patent 14 years
U.S. Cl. D16—209

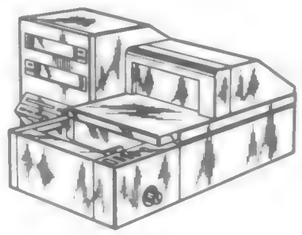




352,053
ADJUSTABLE SHOULDER REST FOR VIOLIN/VIOLA
Donovan L. Murray, 5055 Valley Farm Rd., Central City, Iowa 52214
Filed Mar. 9, 1993, Ser. No. 5,660
Term of patent 14 years
U.S. Cl. D17—20



352,054
MICROFILM RECORDING DEVICE
Takashi Yomo, Kawasaki, and Yoshihiro Miyazawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1993, Ser. No. 5,633
Claims priority, application Japan, Sep. 10, 1992, 4-26994
Term of patent 14 years
U.S. Cl. D18—36

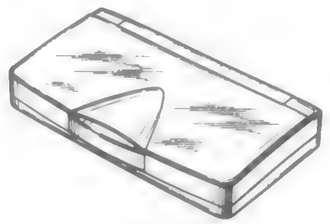


352,055
COMBINED PORTABLE PRINTER, SHEET FEEDER AND BASE
James J. Girard, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 11, 1992, Ser. No. 882,101
Term of patent 14 years
U.S. Cl. D18—50

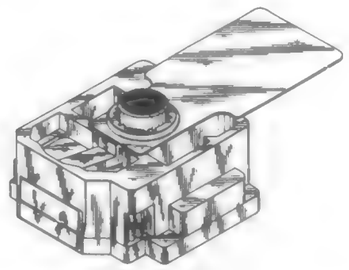
352,056
PRINTER FOR ELECTRONIC COMPUTER
Shosaku Kawashima, Kawasaki, and Manabu Inoue, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1993, Ser. No. 6,024
Claims priority, application Japan, Sep. 17, 1992, 4-27538
Term of patent 14 years
U.S. Cl. D18—50



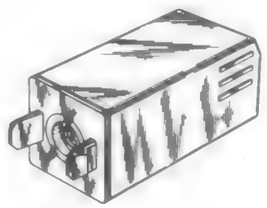
352,057
PRINTER FOR COMPUTER
Naoki Tashiro, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1993, Ser. No. 10,942
Claims priority, application Japan, Jan. 25, 1993, 5-1764
Term of patent 14 years
U.S. Cl. D18—50



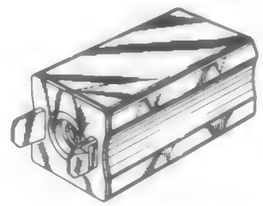
352,058
PRINTING HEAD BODY FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama; Koji Yamakawa, Komae; Kazuhiro Nakajima, Yokohama; Keiichiro Tsukuda, Kawasaki; Yasuo Kotaki, Yokohama; Yohei Sato, Yokohama, and Masanori Takenouchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,006
Claims priority, application Japan, Dec. 29, 1992, 4-38901
Term of patent 14 years
U.S. Cl. D18—56



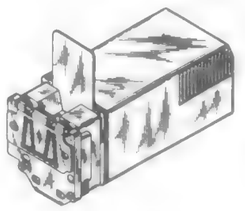
352,059
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,020
Claims priority, application Japan, Dec. 29, 1992, 4-38983
Term of patent 14 years
U.S. Cl. D18—56



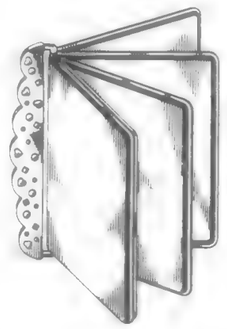
352,060
INK CARTRIDGE FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujtia, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,092
Claims priority, application Japan, Dec. 29, 1992, 4-38902
Term of patent 14 years
U.S. Cl. D18—56



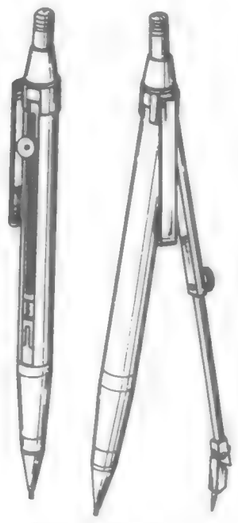
352,061
PRINTING HEAD FOR PRINTER
Hidemi Kubota, Komae; Toshihiko Ujita, Yamato; Kenjiro Watanabe, Tokyo; Torachika Osada, Yokohama, and Kayomi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 28, 1993, Ser. No. 10,095
Claims priority, application Japan, Dec. 29, 1992, 4-38904
Term of patent 14 years
U.S. Cl. D18—56



352,062
INFANT TEETHER BOOK
Khipra J. Nichols, Rumford, R.I., assignor to Playskool Baby, Inc., Pawtucket, R.I.
Filed May 3, 1993, Ser. No. 7,803
Term of patent 14 years
U.S. Cl. D19—26



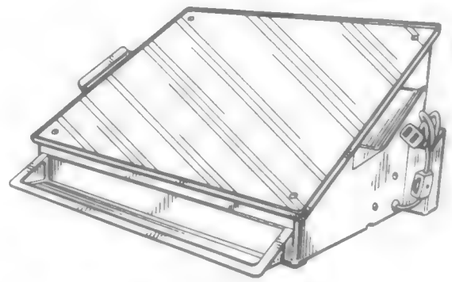
352,063
COMBINATION WRITING INSTRUMENT AND COMPASS
Jose A. de Haro Egea, and Andres de Haro Egea, both of C/ Jose Camprecios, 27, 08950 Esplugues de Llobregat, Barcelona, Spain
Filed Jun. 9, 1993, Ser. No. 9,294
Term of patent 14 years
U.S. Cl. D19—36



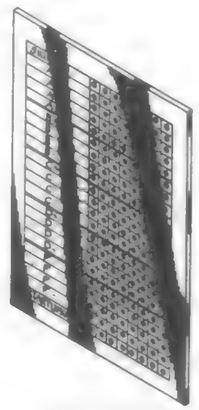
352,064
PEN
Giustino Zappacosta, 36A Broad Street, Cabramatta, New South Wales 2166, Australia
Filed Jun. 29, 1993, Ser. No. 10,076
Claims priority, application Australia, Feb. 17, 1993, 384/93
Term of patent 14 years
U.S. Cl. D19—50



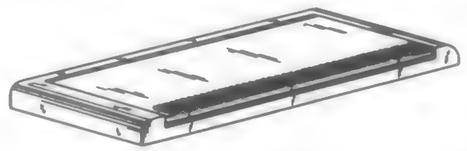
352,065
LIGHT BOX
Pete Kobzeff, 601 N. Ridgeway La., #H, La Habra, Calif. 90631
Filed Aug. 10, 1992, Ser. No. 926,959
Term of patent 14 years
U.S. Cl. D19—52



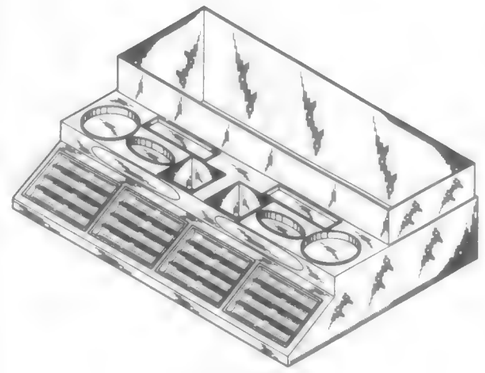
352,066
EDUCATIONAL BOARD GAME
Richard E. Vanina, 6343 Dorchester Ct., Carmichael, Calif. 95608
Filed Apr. 2, 1993, Ser. No. 6,616
Term of patent 14 years
U.S. Cl. D19—64



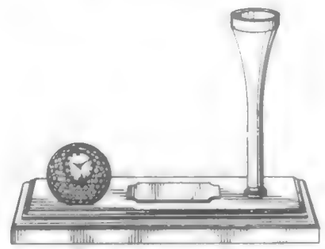
352,067
ORGANIZER TRAY
John W. Mund, Fox Lake, Wis.; Cari Burns; Robert Chieda, both of Wheaton; Leon C. Clouser, Jr., Lombard, and Robert A. O'Neil, Glen Ellyn, all of Ill., assignors to Sterling Plastics Co., Madison, Wis.
Filed Jun. 22, 1993, Ser. No. 9,830
Term of patent 14 years
U.S. Cl. D19—75



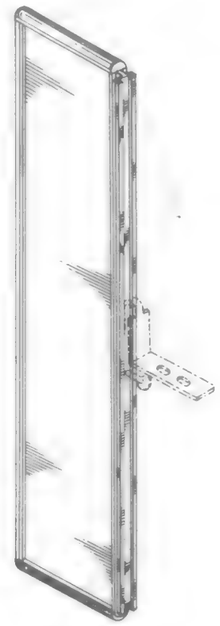
352,068
ORGANIZER FOR ASSORTED DESK ARTICLES
Glenda C. Adams, 1206 Golden Hill Dr., Indianapolis, Ind. 46208
Filed Apr. 7, 1993, Ser. No. 6,858
Term of patent 14 years
U.S. Cl. D19—78



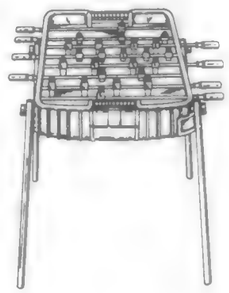
352,069
COMBINED CLOCK, WRITING INSTRUMENT AND HOLDER THEREFOR
Patrick R. Doolin, c/o PRD Group - Enterprises Division 9059 Highway 20, Suite B, Madison, Ala. 35758
Filed Dec. 29, 1992, Ser. No. 3,136
Term of patent 14 years
U.S. Cl. D19—82



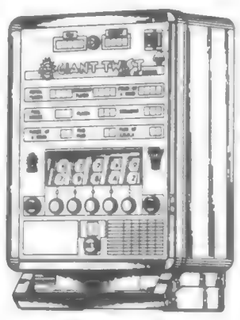
352,070
DISPLAY HOLDER
Scott S. Gibson, 6901 93rd SE., Mercer Island, Wash. 98040
Filed Feb. 26, 1993, Ser. No. 5,201
Term of patent 14 years
U.S. Cl. D20—40



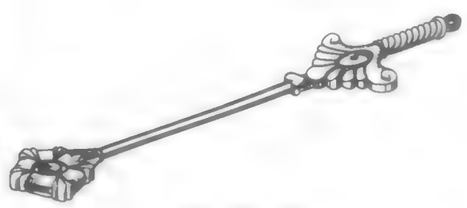
352,071
TABLE SOCCER GAME
Alain Monneret, Voiteur, France, assignor to Monneret Jouets, Lons-le-Saunier, France
Filed Jul. 12, 1993, Ser. No. 11,012
Claims priority, application Hague Agreement, Jan. 18, 1993, DM/024 947
Term of patent 14 years
U.S. Cl. D21—11



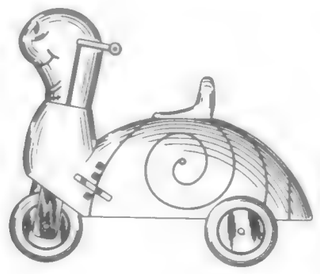
352,072
GAMING MACHINE
Lutz Hesker, Lübbecke, Germany, assignor to adp-Gauselmann GmbH, Lübbecke, Germany
Filed Mar. 16, 1993, Ser. No. 5,983
Claims priority, application Germany, Sep. 16, 1992, 9206749
Term of patent 14 years
U.S. Cl. D21—37



352,073
TOY WAND
Randy O. Rissman, Northbrook, and Tamara Lebovitz, Chicago, both of Ill., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 20, 1993, Ser. No. 13,186
Term of patent 14 years
U.S. Cl. D21—61



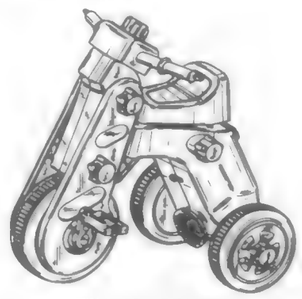
352,074
SIMULATIVE RIDING TOY
George E. Bunn, Jr., 2989 O'Brien St. SW., Walker, Mich. 49504
Filed Mar. 8, 1993, Ser. No. 5,645
Term of patent 14 years
U.S. Cl. D21—74



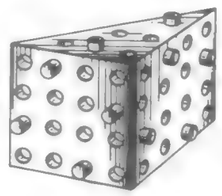
352,075
DRIVABLE TOY TRUCK
Okot A. Washington, 74 Bray Tower, Adelaide RD, London, England NW3-3JU
Filed Oct. 20, 1993, Ser. No. 14,301
Term of patent 14 years
U.S. Cl. D21—78



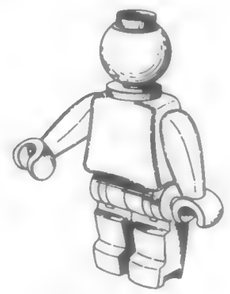
352,076
TOY TRICYCLE
Wing K. Cheung, Kowloon, Hong Kong, assignor to Wang Shing Plastic Factory Limited, Kowloon, Hong Kong
Filed Jun. 15, 1993, Ser. No. 9,493
Claims priority, application United Kingdom, Feb. 17, 1993, 2029189
Term of patent 14 years
U.S. Cl. D21—80



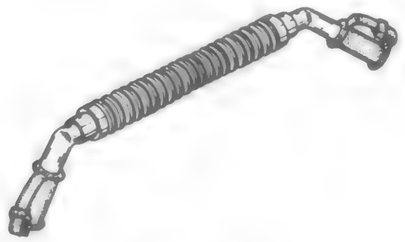
352,077
TOY BUILDING BLOCK
Louis Y. Sher, 504 Copper Ridge, Richardson, Tex. 75080
Division of Ser. No. 819,935, Jan. 13, 1992, Pat. No. Des. 343,427. This application Jan. 18, 1994, Ser. No. 17,621
Term of patent 14 years
U.S. Cl. D21—108



352,078
TOY FIGURINE
Victor J. Bertrand, Ile Bizard, Canada, assignor to The Ritvik Group Inc., Dorval, Canada
Filed Apr. 28, 1993, Ser. No. 7,633
Claims priority, application Canada, Mar. 19, 1993, 1903932
Term of patent 14 years
U.S. Cl. D21—150



352,079
BACK AND CHEST MUSCLE EXERCISER
Chiwon Kang, 159-6 Haengdang-Dong, Sungdong-Ku, Seoul, Rep. of Korea
Filed Dec. 22, 1992, Ser. No. 2,805
Claims priority, application Rep. of Korea, Jun. 25, 1992, 92-10654
Term of patent 14 years
U.S. Cl. D21—198



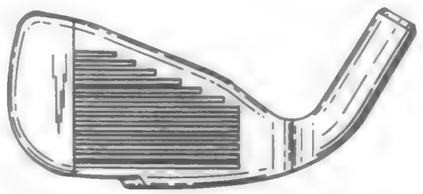
352,080
CALIBRATED GOLF TEE
Amy J. Boyer, 2036 Greenview Rd., Montoursville, Pa. 17754
Filed Jul. 9, 1992, Ser. No. 910,992
Term of patent 14 years
U.S. Cl. D21—208



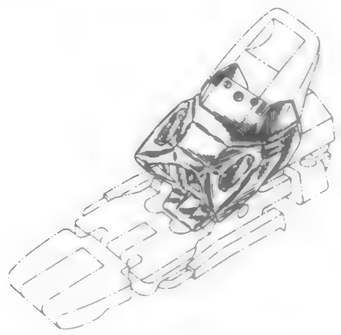
352,081
TRAINING RACKET FOR BASEBALL
Patrick Shelley, 33 Highwater Ave., Massapequa, N.Y. 11758
Filed Apr. 9, 1993, Ser. No. 6,923
Term of patent 14 years
U.S. Cl. D21—212



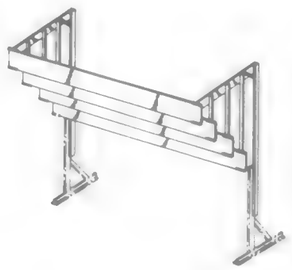
352,082
GOLF CLUB IRON HEAD
Edward W. Schroder, Livonia, Mich., assignor to EWS Enterprises, West Bloomfield, Mich.
Filed Oct. 26, 1992, Ser. No. 853
Term of patent 14 years
U.S. Cl. D21—220



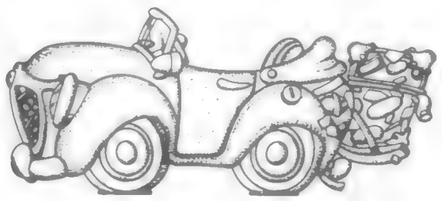
352,083
HEEL ELEMENT FOR SKI BINDING
Hans-Georg Kasten, Seefeld, and Johann Geiger, Hechendorf, both of Germany, assignors to Marker Deutschland GmbH, Eschenlohe, Germany
Filed Jan. 22, 1993, Ser. No. 3,976
Term of patent 14 years
U.S. Cl. D21—230



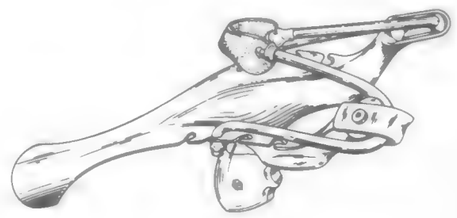
352,084
PANEL ASSEMBLY FOR BOWLING LANES
Michael J. Katje, Spring Lake; William C. Murphy, Fremont, and Michael F. Stirling, Spring Lake, all of Mich., assignors to Brunswick Bowling & Billiards Corp., Muskegon, Mich.
Filed Jan. 11, 1993, Ser. No. 3,412
Term of patent 14 years
U.S. Cl. D21—233



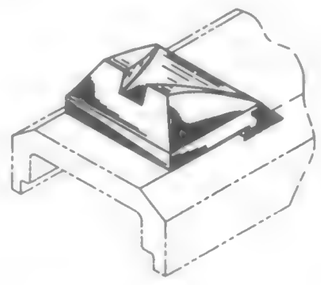
352,085
AMUSEMENT CAR
Charles S. Ballew, and Joseph A. Lanzisero, both of Burbank, Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Feb. 1, 1993, Ser. No. 4,327
Term of patent 14 years
U.S. Cl. D21—250



352,086
SLINGSHOT
Peter P. Ott, 237 Canyon Acres Dr., Laguna Beach, Calif. 92651
Filed Jan. 12, 1994, Ser. No. 17,369
Term of patent 14 years
U.S. Cl. D22—106



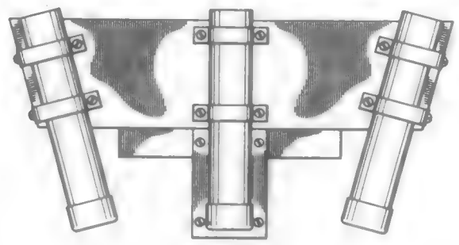
352,087
REAR SIGHT FOR A HANDGUN
Philip H. Stevens, Skaneateles, N.Y.; Gary G. Lantaigne, Springfield, and Lee M. Lenkarski, Ware, both of Mass., assignors to Smith & Wesson Corp., Springfield, Mass.
Filed Jul. 8, 1993, Ser. No. 10,458
Term of patent 14 years
U.S. Cl. D22—109



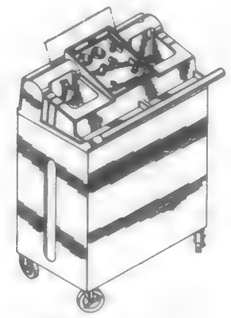
352,088
ILLUMINATED FISHING POLE
Louise B. Dillon, 85 Poplar St., Fieldale, Va. 24089
Filed Apr. 5, 1993, Ser. No. 6,695
Term of patent 14 years
U.S. Cl. D22—139



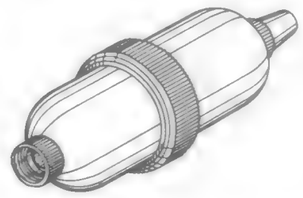
352,089
PORTABLE MOUNT FOR FISHING POLES
Kerry R. Barber, 2012 Golfview Ct., and Debbie K. Morris, 465 Fernanetina St., both of Fort Pierce, Fla. 34982
Filed Jul. 12, 1993, Ser. No. 10,571
Term of patent 14 years
U.S. Cl. D22—147



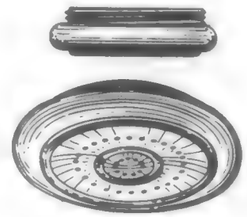
352,090
CONSOLE FOR FLUID RECYCLING
William S. Dea, Bloomington; Curt A. Deiner, Prior Lake, both of Minn., and William G. Alford, Cincinnati, Ohio, assignors to Century Mfg. Co., Minneapolis, Minn.
Filed Jan. 28, 1993, Ser. No. 4,174
Term of patent 14 years
U.S. Cl. D23—207



352,091
WATER PURIFICATION UNIT
George J. LeMire, 57 South St., Plainville, Mass. 02762, and Nathan A. Rihani, 52 Foxglove Dr., Cranston, R.I. 02920
Filed Oct. 8, 1993, Ser. No. 13,970
Term of patent 14 years
U.S. Cl. D23—209



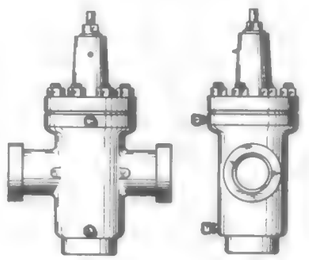
352,092
SHOWER HEAD FACE
Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to I.W. Industries, Inc., Melville, N.Y.
Filed Nov. 27, 1992, Ser. No. 1,989
Term of patent 14 years
U.S. Cl. D23—213



352,093
HAND OPERATED AIR PUMP FOR USE IN COMPOSTING OPERATIONS
Joseph A. Knycha, R.R. #1, Jerseyville, ON, Canada L0R 1R0
Filed Sep. 23, 1993, Ser. No. 13,370
Term of patent 14 years
U.S. Cl. D23—231



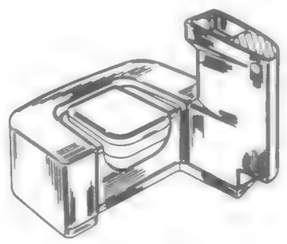
352,094
GATE VALVE
Dwight E. Baker, P.O. Box 249, Rush Springs, Okla. 73082
Filed May 26, 1992, Ser. No. 888,094
Term of patent 14 years
U.S. Cl. D23—244



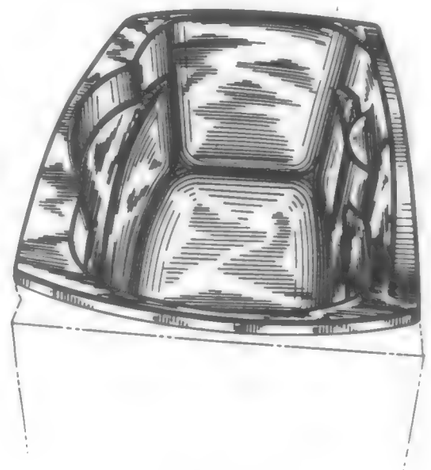
352,095
SPOUT
John E. Bolleabacher, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Division of Ser. No. 3,783, Jan. 14, 1993. This application Apr. 15, 1994, Ser. No. 21,543
Term of patent 14 years
U.S. Cl. D23—255



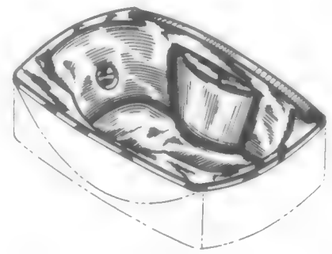
352,096
COMBINED WATER CLOSET AND WASH BASIN
Richard L. Tagg, Sandhutton, England, assignor to Portasilo Limited, Huntington, England
Filed Oct. 21, 1992, Ser. No. 708
Term of patent 14 years
U.S. Cl. D23—274



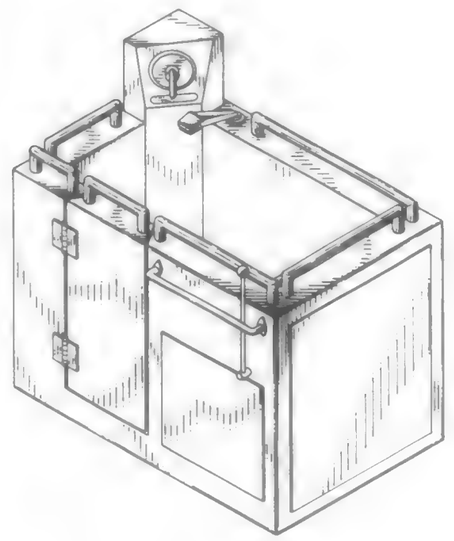
352,097
TUB OR THE LIKE
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France
Division of Ser. No. 973,587, Nov. 6, 1992, which is a continuation of Ser. No. 789,479, Nov. 8, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 22,035
Term of patent 14 years
U.S. Cl. D23—277



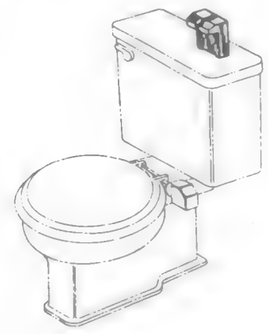
352,098
TUB FOR BATHING
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France
Division of Ser. No. 973,587, Nov. 6, 1992, which is a continuation-in-part of Ser. No. 789,479, Nov. 8, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 22,073
Term of patent 14 years
U.S. Cl. D23—277



352,099
BATHTUB FOR INVALIDS
Ib V. Andersen, 116 - 8434 - 120th St., Surrey, British Columbia, Canada V8R 5T9
Filed Jan. 28, 1993, Ser. No. 4,215
Term of patent 14 years
U.S. Cl. D23—279



352,100
CONTROL BOX FOR A TOILET
Bennie N. Veal, 27336 Aberdeen, Southfield, Mich. 48076
Filed Apr. 29, 1993, Ser. No. 7,711
Term of patent 14 years
U.S. Cl. D23—309



352,101
HOUSING FOR A TOILET SEAT MOTOR
Bennie N. Veal, 27336 Aberdeen, Southfield, Mich. 48076
Filed Apr. 29, 1993, Ser. No. 7,714
Term of patent 14 years
U.S. Cl. D23—309



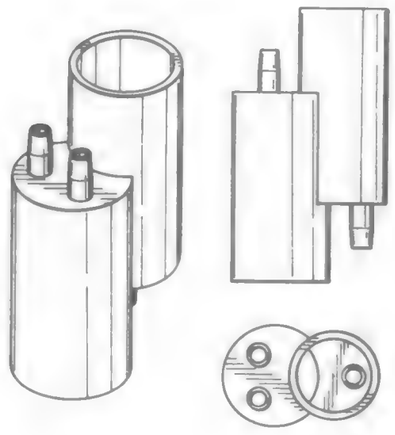
352,102
COMBINED TOILET SEAT AND LOCKING COVER
Penny Barnette, and William Barnette, both of 8770 Homewood Dr., Riverdale, Ga. 30274
Filed Oct. 19, 1992, Ser. No. 567
Term of patent 14 years
U.S. Cl. D23—311



352,103
TOILET SEAT
Gary L. Waldren, Jr., 7593 Paddon Rd., Vacaville, Calif. 95688
Filed May 27, 1993, Ser. No. 8,826
Term of patent 14 years
U.S. Cl. D23—311



352,104
HUMIDIFIER MANIFOLD FOR A VENTILATOR BREATHING CIRCUIT
Burrell E. Clawson, 2425 Sunset Dr., and James Weigl, 18815 Hermosa St., both of Riverside, Calif. 92506
Filed Jun. 29, 1993, Ser. No. 10,119
Term of patent 14 years
U.S. Cl. D23—358



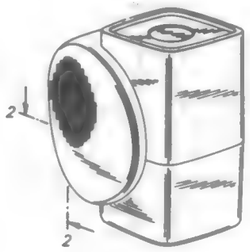
352,105
AIR FAN
Jou H. Chen, c/o Collins co. Ltd., 6th Floor 201 Tung Hwa North Rd., Taipei 105, Taiwan, Prov. of China
Filed Jun. 25, 1993, Ser. No. 10,038
Term of patent 14 years
U.S. Cl. D23—380



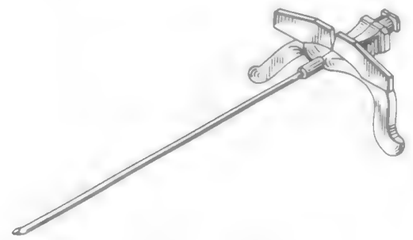
352,106
SURGICAL CONSOLE FOR OPHTHALMIC SURGERY
Douglas M. Feaney, Oceanside; Long O. Nguyen, Corona; Robert Peterson, Marguerita; Paul C. Pynckel, Santa Ana; Miles A. Conklin, Costa Mesa; Kenneth Mori, Tustin, and Douglas M. Patton, Irvine, all of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.
Filed Sep. 2, 1992, Ser. No. 939,625
Term of patent 14 years
U.S. Cl. D24—185



352,107
INHALER
Chris Meier, Witterswil; Daniel Altermatt, Münchenstein, both of Switzerland; Hanspeter Hilpert, Rheinfelden/Nollingen, Germany; Satish C. Khanna, Bottmingen; Werner F. Dubach, Maur, both of Switzerland, and Anton Spaltenstein, Bassersdorf, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Dec. 10, 1992, Ser. No. 2,441
Term of patent 14 years
U.S. Cl. D24—110

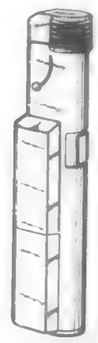


352,108
SPLITTABLE EPIDURAL NEEDLE
Mahmood Mohiuddin, Franklin, Mass., assignor to The Kendall Company, Mansfield, Mass.
Filed May 7, 1993, Ser. No. 7,980
Term of patent 14 years
U.S. Cl. D24—112

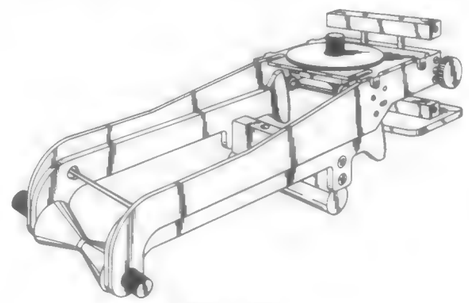


352,109
COSMETIC HAIR EXTRACTOR
Kanan Saib, 200 W. Hyde Park 8C, Myrtle Beach, S.C. 29752
Filed Oct. 23, 1991, Ser. No. 781,295
Term of patent 14 years
U.S. Cl. D24—133

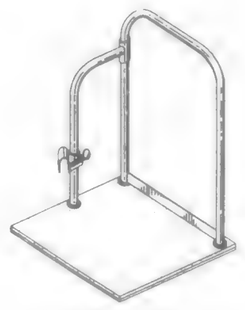
352,110
DEPILATOR
Peter Schneider, Königstein, and Peter Eckart, Frankfurt am Main, both of Germany, assignors to Braun Aktiengesellschaft, Germany
Filed Jan. 26, 1993, Ser. No. 4,041
Claims priority, application Hague Agreement, Jul. 30, 1992, DMA/001 858
Term of patent 14 years
U.S. Cl. D24—133



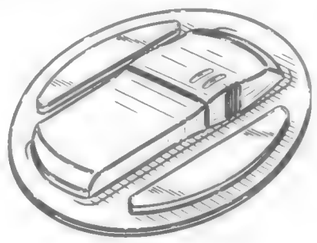
352,111
INTEROPERATIVE KNEE LIGAMENT ARTHROMETER FOR ORTHOPEDIC SURGERY
K. Richard Watkins, San Diego, Calif., assignor to MedMetric Corporation, San Diego, Calif.
Filed Mar. 8, 1993, Ser. No. 5,604
Term of patent 14 years
U.S. Cl. D24—140



352,112
PATIENT ASSIST
Betty J. Coonrod, 8317 Spring Valley Rd., Belton, Mo. 64012
Filed Jan. 19, 1993, Ser. No. 3,728
Term of patent 14 years
U.S. Cl. D24—183



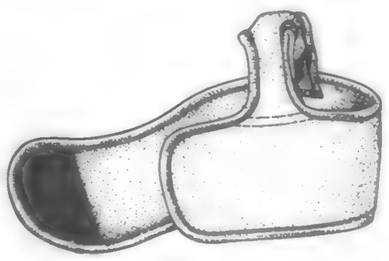
352,113
IONTOPHORETIC DRUG DELIVERY SYSTEM
Charles R. Ashley, Clinton, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Aug. 5, 1993, Ser. No. 11,477
Term of patent 14 years
U.S. Cl. D24—189



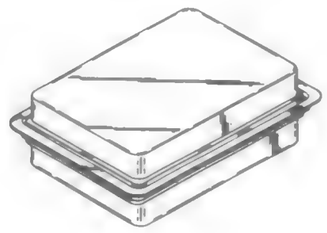
352,114
LUMBAR SUPPORT BELT
Robert S. Nicholson, 10606 Dutchtown Rd., Knoxville, Tenn. 37922
Filed Jun. 7, 1993, Ser. No. 9,192
Term of patent 14 years
U.S. Cl. D24—190



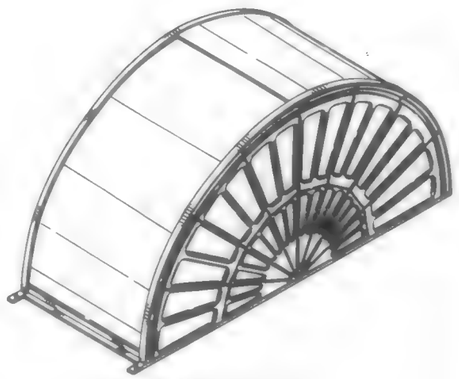
352,115
VALGUS BIG TOE RECTIFYING SUPPORTER
Iwao Kasahara, 3734-6, Totsukacho, Totsuka-ku, Yokohama-shi, Kanagawa, Japan
Filed Jan. 11, 1993, Ser. No. 3,635
Term of patent 14 years
U.S. Cl. D24—192



352,116
SHIPPING CONTAINER FOR MEDICAL SPECIMEN
Charles A. Kienholz, Erie, Pa., assignor to Erie Steel Products Company, Erie, Pa.
Filed Dec. 30, 1992, Ser. No. 3,223
Term of patent 14 years
U.S. Cl. D24—227



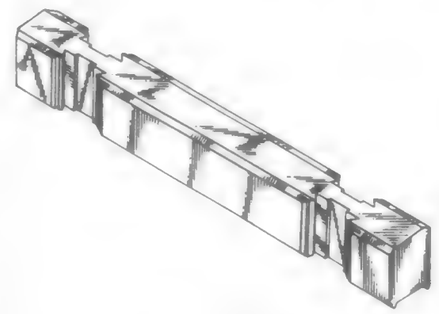
352,117
MOTORCYCLE GARAGE
Gary L. Taylor, 715 S. Upas St., Escondido, Calif. 92025
Filed Oct. 21, 1993, Ser. No. 14,417
Term of patent 14 years
U.S. Cl. D25—18



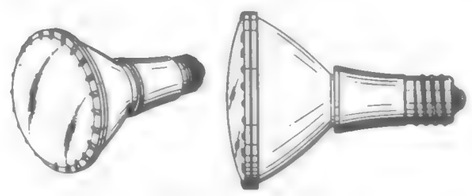
352,118
PILLAR
Max H. Kipfmueller, Lakeville, Minn., assignor to Andrew Berton Creative Designs Inc., Minneapolis, Minn.
Filed Aug. 14, 1992, Ser. No. 930,827
Term of patent 14 years
U.S. Cl. D25—126



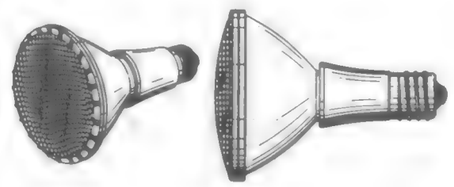
352,119
LOG
Kauko K. Kallioniemi, KP 11, 39700 Parkano, Finland
Filed Feb. 21, 1992, Ser. No. 839,502
Claims priority, application Finland, Aug. 21, 1991, 673/91
Term of patent 14 years
U.S. Cl. D25—150



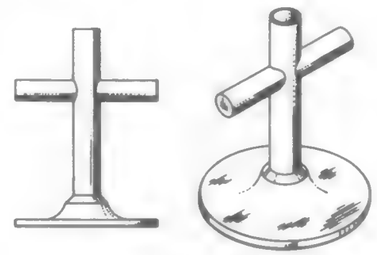
352,120
REFLECTOR LAMP WITH NECK EXTENDER
Thomas Haraden, Hamilton; Harold L. Hough, Beverly; Peter Gagnon, Topsfield, all of Mass.; Joseph Gallant, Lexington, and Arnold Westlund, Winchester, both of Ky., assignors to GTE Products Corporation, Danvers, Mass.
Filed Dec. 16, 1992, Ser. No. 2,700
Term of patent 14 years
U.S. Cl. D26—2



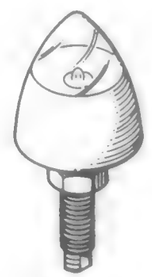
352,121
REFLECTOR LAMP WITH NECK EXTENDER
Thomas Haraden, Hamilton; Harold L. Hough, Beverly; Peter Gagnon, Topsfield, all of Mass.; Joseph Gallant, Lexington, and Arnold Westlund, Winchester, both of Ky., assignors to GTE Products Corporation, Danvers, Mass.
Filed Dec. 17, 1992, Ser. No. 2,726
Term of patent 14 years
U.S. Cl. D26—2



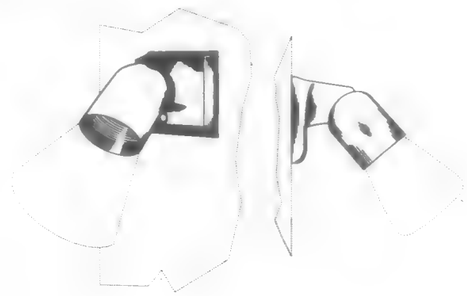
352,122
CANDLE HOLDER
Gerald E. Rough, 1600 Chestnut Ave., Winona Lake, Ind. 46590
Filed Dec. 3, 1993, Ser. No. 15,969
Term of patent 14 years
U.S. Cl. D26—9



352,123
WARNING LIGHT FOR A VEHICLE
Kuo-Liang Huang, 2F., No. 27, 51 Lane, Shin Ton St., Taipei,
Filed Oct. 21, 1993, Ser. No. 14,442
Term of patent 14 years
U.S. Cl. D26—28



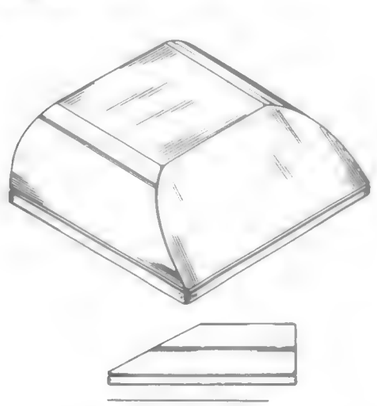
352,124
ADJUSTABLE WALL LIGHTING FIXTURE
Thomas Russello, Howell, and Richard Sangiamo, Linden, both of N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Apr. 27, 1993, Ser. No. 7,608
Term of patent 14 years
U.S. Cl. D26—63



352,125
ADJUSTABLE DESK LAMP
Ken Hayashibara, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan
Filed Apr. 20, 1993, Ser. No. 7,398
Claims priority, application Japan, Oct. 21, 1992, 4-30967; Oct. 21, 1992, 4-30968; Oct. 21, 1992, 4-30969; Feb. 19, 1993, 5-4400
Term of patent 14 years
U.S. Cl. D26—65



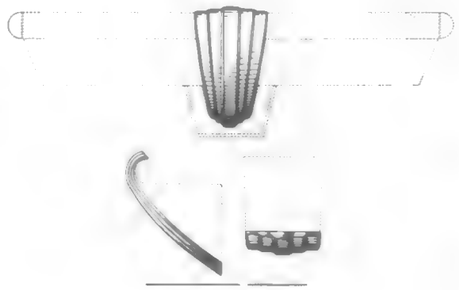
352,126
OUTDOOR LIGHTING FIXTURE
Alan J. Ruud, and Kent A. Solberg, both of Racine, Wis., assignors to Ruud Lighting, Inc., Racine, Wis.
Filed Jun. 14, 1993, Ser. No. 9,464
Term of patent 14 years
U.S. Cl. D26—67



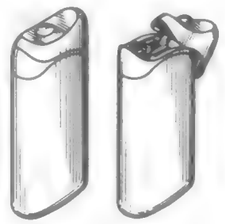
352,127
ORNAMENTAL COLLAR FOR STRING LIGHT
Anthony R. Young, 5717 Newcut Rd., Louisville, Ky. 40214-5605
Filed Feb. 18, 1993, Ser. No. 4,993
Term of patent 14 years
U.S. Cl. D26—118



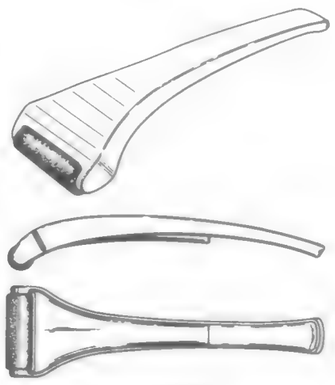
352,128
OUTER SURFACE OF ELEMENT FOR LIGHTING FIXTURE
Ken Nicholas, Cleveland, Ohio, assignor to Hinkley Lighting, Inc., Cleveland, Ohio
Filed Jul. 9, 1993, Ser. No. 10,597
Term of patent 14 years
U.S. Cl. D26—152



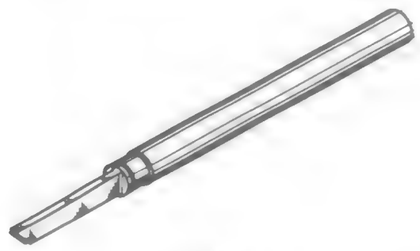
352,129
CIGARETTE LIGHTER
Takaaki Segawa, 3-57-14, Wakamiya, ichikawa-shi chiba-ken, 272, Japan
Filed Mar. 3, 1993, Ser. No. 5,416
Claims priority, application Japan, Jan. 26, 1993, 5-1768
Term of patent 14 years
U.S. Cl. D27—154



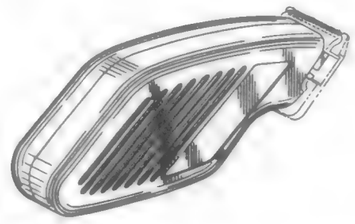
352,130
ROLLER LIQUID APPLICATOR
Clarence D. Zierhut, Richardson, Tex., assignor to The Perfect Solution, Inc., Dallas, Tex.
Filed Oct. 21, 1992, Ser. No. 699
Term of patent 14 years
U.S. Cl. D28—7



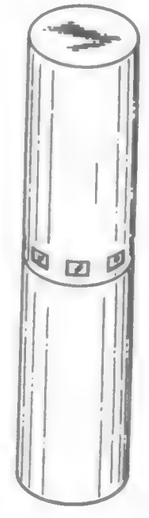
352,131
COSMETIC CRAYON
Joachim R. Wolters, 64 Beatty Pl., Newbury Park, Calif. 91320, and Andre Perdreau, 17547 Tuba St., Northridge, Calif. 91325
Filed Oct. 23, 1992, Ser. No. 762
Term of patent 14 years
U.S. Cl. D28—7



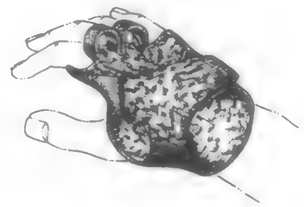
352,132
HAIR TRIMMER
Christine M. Wagenknecht, Milledgeville, and Aaron L. Henson, Sterling, both of Ill., assignors to Wahl Clipper Corporation, Sterling, Ill.
Filed Mar. 16, 1993, Ser. No. 5,877
Term of patent 14 years
U.S. Cl. D28—54



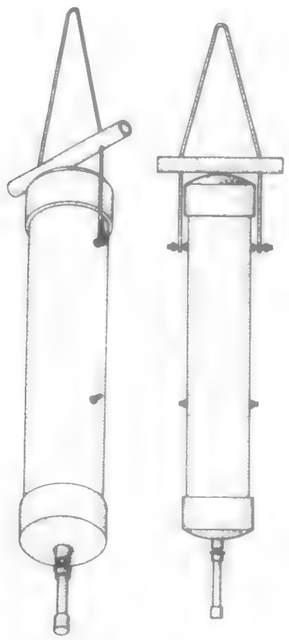
352,133
LIPSTICK CASE
Susan R. Wacker, New York, N.Y., assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Sep. 22, 1992, Ser. No. 948,805
Term of patent 14 years
U.S. Cl. D28—88



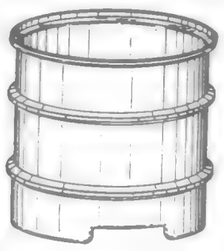
352,134
SPORTS GLOVE
Max R. Crowder, 943 S. Claudina, Anaheim, Calif. 92805
Continuation of Ser. No. 517,529, Apr. 26, 1990, abandoned, which is a continuation of Ser. No. 56,521, May 29, 1987, abandoned. This application Feb. 19, 1991, Ser. No. 658,423
The portion of the term of this patent subsequent to Jul. 1, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D29—113



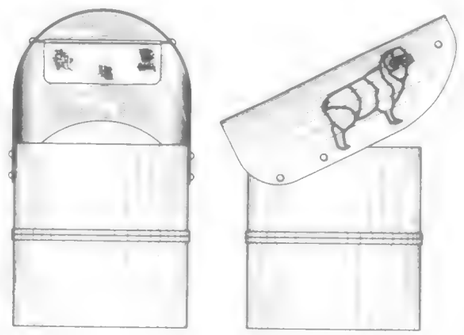
352,135
ANIMAL FEEDER
Ronald E. Jones, Sr., P.O. Box 317, Spanish Fort, Ala. 36527
Filed Aug. 24, 1992, Ser. No. 933,515
Term of patent 14 years
U.S. Cl. D30—121



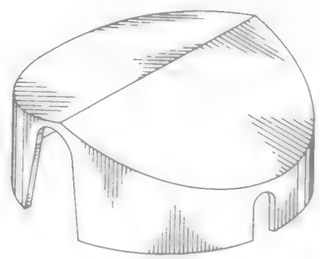
352,136
FEED BARREL
Robert Thornberg, Walhalla, N. Dak., assignor to Harvest Fuel, Inc., Walhalla, N. Dak.
Continuation of Ser. No. 822,298, Jan. 17, 1992, abandoned. This application May 13, 1993, Ser. No. 8,292
Term of patent 14 years
U.S. Cl. D30—121



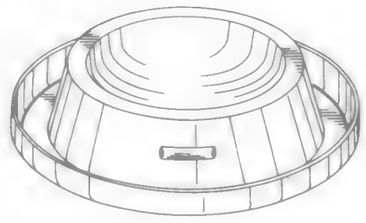
352,137
COMBINATION SALT AND MINERAL FEEDER
Billy J. Dove, Rte. 2, Box 264-B, and Jack N. Wimer, Jr., Rte. 2, Box 457, both of Harrisonburg, Va. 22801
Filed Jun. 10, 1993, Ser. No. 9,229
Term of patent 14 years
U.S. Cl. D30—121



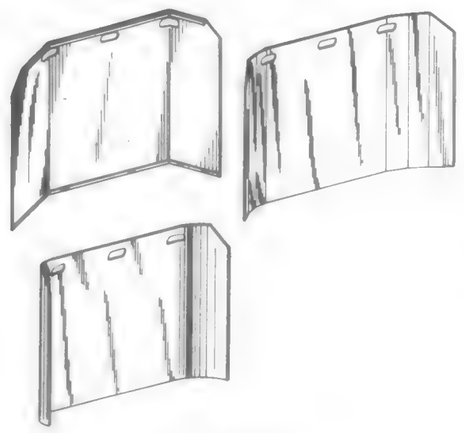
352,138
BIRD FEEDER SEED BAFFLE
John D. Tucker, and Betsy P. Colwell, both of Foster, R.I., assignors to Droll Yankees, Inc., Foster, R.I.
Filed Jun. 28, 1993, Ser. No. 9,966
Term of patent 14 years
U.S. Cl. D30—124



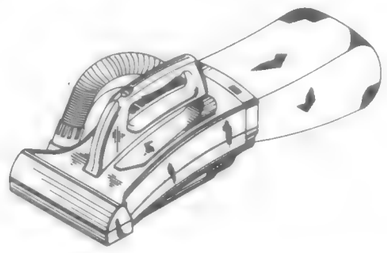
352,139
SPLASH RESISTANT PET DISH
James J. King, 5523 N. Austin, Chicago, Ill. 60630
Filed May 17, 1993, Ser. No. 8,421
Term of patent 14 years
U.S. Cl. D30—130



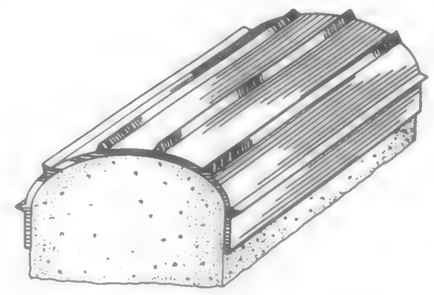
352,140
PANEL FOR SORTING HOGS
Harlan J. Easton, and Duane A. Masching, both of Blooming Prairie, Minn., assignors to Easton Products Inc., Blooming Prairie, Minn.
Filed Apr. 13, 1993, Ser. No. 7,061
Term of patent 14 years
U.S. Cl. D30—156



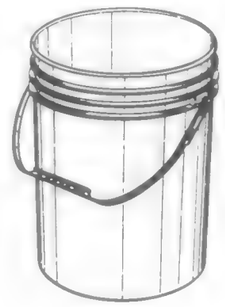
352,141
HAND-HELD VACUUM CLEANER
Alvaro Correa, Bridgman, Mich.; David W. Kaiser, North Haven, Conn.; Richard Carbone, Southbury, Conn., and Stuart Naft, Fairfield, Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jan. 8, 1993, Ser. No. 3,475
Term of patent 14 years
U.S. Cl. D32—18



352,142
SPONGE AND SQUEEGEE COMBINATION
Arthur J. Fahy, 2 Warren Rd., Double Bay, Sydney, New South Wales, Australia
Filed Oct. 30, 1992, Ser. No. 1,081
Claims priority, application Australia, Aug. 17, 1992, 2199/92
Term of patent 14 years
U.S. Cl. D32—42

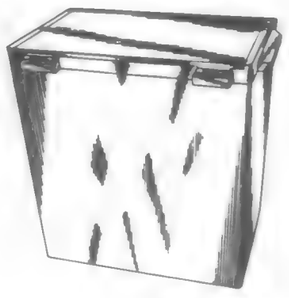


352,143
BUCKET
Stephen Arshinoff, Willowdale, Canada, assignor to Industrial Containers Ltd., Toronto, Canada
Filed Sep. 22, 1993, Ser. No. 13,244
Term of patent 14 years
U.S. Cl. D32—53

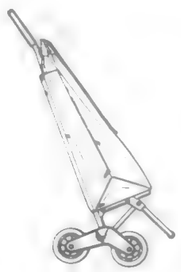


352,144
WASTE CAN
Phillip L. Brookshire, and David L. Hamann, both of Cincinnati, Ohio, assignors to The Witt Company, Cincinnati, Ohio
Filed Aug. 9, 1993, Ser. No. 11,571
Term of patent 14 years
U.S. Cl. D34—9

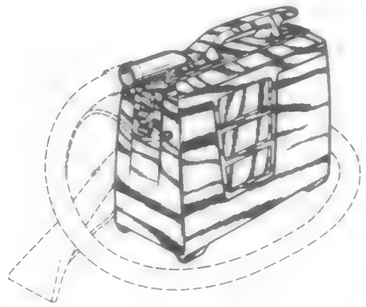




352,145
SHOPPING CART
Juan Server Perez, Pedreguer, Spain, assignor to Germans Server, S.L., Pedreguer, Spain
Filed Jan. 13, 1993, Ser. No. 3,564
Claims priority, application Spain, Oct. 15, 1992, 128.621
Term of patent 14 years
U.S. Cl. D34—19



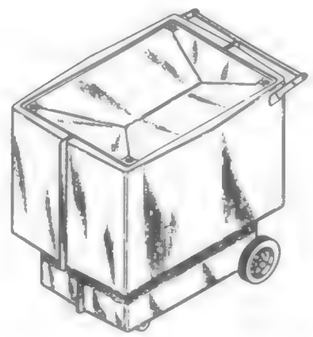
352,146
COMPACT CARPET EXTRACTOR
Richard F. Wulff, Maple Plain, Minn., assignor to Castex Incorporated, Holland, Mich.
Filed Nov. 3, 1992, Ser. No. 1,113
Term of patent 14 years
U.S. Cl. D32—24



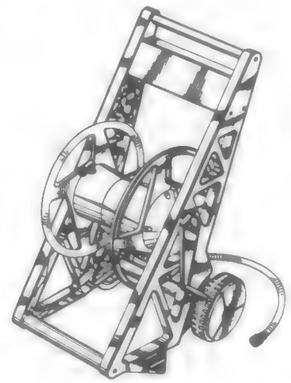
352,147
PORTABLE DISPLAY CART
James A. Dyment, and Michael S. Kerth, both of Cincinnati, Ohio, assignors to Dyment Limited, Ontario, Canada
Filed Mar. 9, 1993, Ser. No. 5,680
Term of patent 14 years
U.S. Cl. D34—24



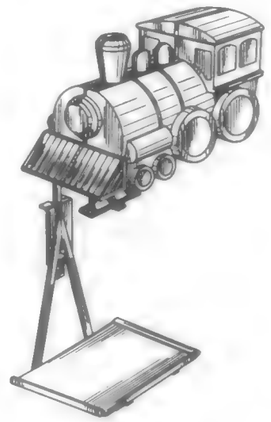
352,148
BALL CART
Robert L. Shively, 919 Lincoln St., and John Sherman, 903 Clark Ave., both of Piqua, Ohio 45356
Filed Nov. 25, 1992, Ser. No. 1,953
Term of patent 14 years
U.S. Cl. D34—25



352,149
PORTABLE HOSE REEL CADDY
Terry N. Nelson, Shoreview, and Will Stageberg, Minneapolis, both of Minn., assignors to The Specialty Mfg. Co., St. Paul, Minn.
Filed May 20, 1993, Ser. No. 8,608
Term of patent 14 years
U.S. Cl. D34—26



352,150
TRAIN-SHAPED CONVEYER-TRAY FOR A RESTAURANT FOOD DELIVERY SYSTEM
Frederic F. Kropf, 2419 N. 72nd Pl., Kansas-City, Kans. 66109
Filed Jul. 30, 1993, Ser. No. 11,254
Term of patent 14 years
U.S. Cl. D34—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Ryham, Rolf C., 5,360,513, Cl. 162-30.110.

Abass, Hazim H.: *See*—
Venditto, James J.; Abass, Hazim H.; McMechan, David E.; and Blauch, Matthew E., 5,360,066, Cl. 166-250.000.

ABB Flakt Aktiebolag: *See*—
Josefsson, Leif E. B., 5,360,539, Cl. 210-167.000.

ABB Power T & D Company, Inc.: *See*—
Buckley, Richard D.; Linsenbardt, Thomas L.; Younger, Harold; Harris, Darrell D.; and Struemph, Dennis J., 5,359,874, Cl. 72-256.000.

ABB Vetco Gray Inc.: *See*—
Henderson, Herman O., Jr., 5,360,063, Cl. 166-208.000.

Abbey, Harold G. Fluidic metering system. 5,359,977, Cl. 123-452.000.

Abbott Laboratories: *See*—
Walker, Sherri A., 5,360,618, Cl. 426-72.000.

Abdel-Malek, Aiman A.: *See*—
Hartley, Richard I.; Ishaque, A. Nadeem; and Abdel-Malek, Aiman A., 5,361,307, Cl. 382-1.000.

Abe, Kazutaka: *See*—
Yamabuchi, Koji; Ohtsuka, Hideshi; Koyama, Takashi; Yokomachi, Yoshiyuki; Abe, Kazutaka; and Tanaka, Akio, 5,361,180, Cl. 360-85.000.

Abe, Kenichi: *See*—
Igarashi, Azuma; Maeda, Sachiko; Sugizaki, Katuyoshi; Shizawa, Takashi; Tajima, Atsumi; Abe, Kenichi; and Ozawa, Shinji, 5,360,909, Cl. 546-172.000.

Abramowitz, Paul N. Method and appliance for promoting the healing of oral tissues. 5,360,341, Cl. 433-215.000.

Abya, Joseph A.; Kadija, Igor V.; Kudrak, Edward J., Jr.; and Maisano, Jr. Joseph J., to AT&T Bell Laboratories. Integrated circuit devices with solderable lead frame. 5,360,991, Cl. 257-666.000.

Achtziger, Paul M.: *See*—
Rowe, Paul J.; Achtziger, Paul M.; Malecki, David C.; and Kladias, Nicholas, 5,361,124, Cl. 355-208.000.

Acker, Loren C.: *See*—
Jensen, Joseph C.; Taylor, Junius E.; and Acker, Loren C., 5,360,330, Cl. 425-144.000.

Ackley, Robert E. Encapsulated foam pad. 5,360,653, Cl. 428-71.000.

Acton and Memtec Ltd., The: *See*—
Pashley, Richard M.; Senden, Timothy J.; Morris, Richard A.; Guthrie, James T.; and He, Wei D., 5,360,880, Cl. 526-213.000.

Adachi, Kaoru; and Makioka, Katsuya, to Fuji Photo Film Co., Ltd. IC memory card system having a common data and address bus. 5,361,228, Cl. 365-189.030.

Adachi, Takakatsu, to Chugai Ro Co., Ltd.; and Nisshin Steel Co., Ltd. Blackening Treating furnace for treating stainless steel strip surface. 5,360,202, Cl. 266-103.000.

Adachi, Takashi: *See*—
Ishii, Takafumi; Adachi, Takashi; Yasumura, Toshio; Miyadoh, Shinji; and Hidaka, Hidemasa, 5,360,737, Cl. 435-252.100.

Adam, Maurice: *See*—
Alivizatos, Margaret A., 5,360,258, Cl. 297-440.110.

Adams, Bryan Adin, to Milliken Research Corporation. Rotatable occupant restraint. 5,360,231, Cl. 280-728.00A.

Adams, John; and Decker, Mel, to Decker, Mel. Collection, storage and dispensing system for shopping carts. 5,360,094, Cl. 194-212.000.

Adamson, Ronald B.; Bartosik, Donald C.; Johansson, Eric B.; and Christenson, Donald J., to General Electric Company. Dimensionally stable and corrosion-resistant fuel channels and related method of manufacture. 5,361,282, Cl. 376-443.000.

Adelstein, Gilbert W.: *See*—
Hansen, Donald W., Jr.; Adelstein, Gilbert W.; Peterson, Karen B.; and Tsymbalov, Sofya, 5,360,796, Cl. 514-80.000.

Adhesive Technology, Inc.: *See*—
Bozich, Frank A., Jr., 5,360,854, Cl. 524-274.000.

Adiabatics, Inc.: *See*—
Kamo, Lloyd, 5,360,634, Cl. 427-226.000.

ADM Agri-Industries, Ltd.: *See*—
Lane, Christopher C.; Lenz, Ruben P.; and Athanassoulias, Costa, 5,360,903, Cl. 536-124.000.

Advanced Cardiovascular Systems, Inc.: *See*—
Turnland, Todd H., 5,360,401, Cl. 604-96.000.

Advanced Micro Devices, Inc.: *See*—
Anjum, Mohammed; Koop, Klaus H.; and Kyaw, Maung H., 5,360,749, Cl. 437-24.000.
Yu, James, 5,361,185, Cl. 361-111.000.

AEA O'Donnell, Inc.: *See*—
Porowski, Jan S., 5,361,281, Cl. 376-272.000.

Aebersold, Ruedi H.: *See*—
Leavitt, John C.; Lin, Ching-Shwun; and Aebersold, Ruedi H., 5,360,715, Cl. 435-6.000.

Aerojet General Corporation: *See*—
Buckmann, Paul S., 5,360,273, Cl. 384-99.000.

Aerospatiale: *See*—
Coffy, Rene L., 5,360,503, Cl. 156-175.000.

Agari, Norimasa, to Nippon Thompson Co., Ltd. Under seal device for a linear motion guide unit. 5,360,271, Cl. 384-15.000.

Agars, Robert F.: *See*—
Eckberg, Richard P.; and Agars, Robert F., 5,360,833, Cl. 522-31.000.

Agency of Industrial Science and Technology: *See*—
Tanie, Kazuo; and Maekawa, Hitoshi, 5,361,186, Cl. 361-191.000.

Agfa - Gevaert AG: *See*—
Schaller, Wolfgang; and Unger, Rolf, 5,360,161, Cl. 234-42.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Brennecke, Detlef, 5,360,704, Cl. 430-506.000.

AGFA-Gevaert, N.V.: *See*—
Leblans, Paul; and Lardon, Paul, 5,360,578, Cl. 252-301.40H.
Leenders, Luc; and D'hont, Dirk, 5,360,781, Cl. 503-227.000.

Agricultural and Food Research Council: *See*—
Gasson, Michael J., 5,360,617, Cl. 426-36.000.

Ahhe, Hellmut: *See*—
Sebald, Michael; Sezi, Recai; Leuschner, Rainer; Birkle, Seigfried; and Ahhe, Hellmut, 5,360,693, Cl. 430-192.000.

Ahlquist, John B., Jr.; Von Ehr, James R., II; and Seals-Mason, Samantha, to Altsys Corporation. System and method for generating self-overlapping calligraphic images. 5,361,333, Cl. 395-142.000.

Ahmed, Maqsood S.: *See*—
Harris, Rodney M.; Ahmed, Maqsood S.; and Renner, Thomas A., 5,360,856, Cl. 524-315.000.

Ahn, Sung-tae: *See*—
Park, Tai-seo; Kim, Yun-gi; Park, Dong-chul; Ahn, Sung-tae; and Kim, Byeong-yeol, 5,360,753, Cl. 437-67.000.

Aihara, Naoki; Yoshimura, Shuji; Fukuda, Naoki; and Hoshino, Tadashi, to Fujitsu Limited. Passing cell monitoring device operated using an ATM switching unit. 5,361,251, Cl. 370-60.000.

Aikoh Co., Ltd.: *See*—
Iwahashi, Takashi, 5,360,574, Cl. 252-187.210.

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Mostowy, Lewis J., Jr.; and Chowdhury, Naser M., 5,359,787, Cl. 34-343.000.
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McCarthy, William M.; Dam, Ebo E.; van Bergen, Wil F.; and Fitzpatrick, Keith, 5,360,518, Cl. 162-358.200.
Rexfelt, Jan; and Svensson, Sven-Arne, 5,360,656, Cl. 428-193.000.

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Springer, Denis D.; Alberg, Randall L.; and Breault, Mark W., 5,360,944, Cl. 174-117.00F.

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Mentus, Slavko, 5,360,162, Cl. 239-2.100.

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Grover, Wayne D., 5,361,277, Cl. 375-107.000.

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Meyer, Helmut; Albrecht, Kai; and Seeberger, Jurgen, 5,361,021, Cl. 318-254.000.

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Czerwiec, Richard M., 5,361,293, Cl. 379-27.000.

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Bapatla, Krishna M., 5,360,593, Cl. 422-32.000.
Miller, Steven T.; and Yanni, John M., 5,360,720, Cl. 435-29.000.
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Henein, Nabil; Beer, Wilhelm; and Vile, David, 5,360,322, Cl. 417-313.000.
Wagner, Wilfried; and Schiel, Lothar, 5,359,854, Cl. 60-535.000.

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Carelli, Charles E.; and Springer, Linda L., 5,360,379, Cl. 474-260.000.
Charmat, Djamel, 5,360,086, Cl. 188-79.540.
Wiese, Earl G., 5,361,183, Cl. 361-42.000.

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Jameson, Daniel G.; and Allington, Robert W., 5,360,320, Cl. 417-4.000.

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Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, 5,360,813, Cl. 514-383.000.

Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, to Intermedics, Inc. Cardiac pacing responsive to multiple activity types. 5,360,436, Cl. 607-18.000.

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Althaus, Wolfgang, to Warner-Lambert Company. Razor head of a wet razor. 5,359,774, Cl. 30-50.000.

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Alusuisse-Lonza Services Ltd.: *See—*
Schlatter, Reinhard; Ehrat, Rainer; Muller, Peter; Kubler, Paul; and Hodl, Otto, 5,360,507, Cl. 156-494.000.
Schmiletzky, Dieter, 5,360,116, Cl. 206-531.000.

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Eichmiller, Frederick, 5,360,666, Cl. 428-327.000.

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Hunt, Steven D.; and Landis, Edward W., 5,361,259, Cl. 370-84.000.

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Savovic, Niko M.; Amero, Willard F., Jr.; Kleinert, Raymond J., III; Austin, Michael M.; and Gyenes, Russell E., 5,360,499, Cl. 156-73.100.

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Sova, Lester J., 5,359,875, Cl. 72-336.000.

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Hibino, Junichi; and Ando, Eiji, 5,360,699, Cl. 430-345.000.

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Blomqvist, Peter; Andreasson, Ingmar; Rabe, Magnus; Balla, Gyula; and Cedell, Tord, 5,360,498, Cl. 156-73.100.

Andrews, John R., to Xerox Corporation. Method of fabricating closely spaced dual diode lasers. 5,360,761, Cl. 437-129.000.

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Anfinson, Mike; and Chavarria, Ron, to Environments 2000. Magnetic fuel conditioner. 5,359,979, Cl. 123-538.000.

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Angelette, A. M. Earth retaining wall. 5,360,296, Cl. 405-285.000.

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You, Shi-Ryoung; Ann, Byoung-Chul; Jeong, Nak-Seong; Oh, Kyoung-Chul; and Lee, Jeong-Geun, 5,361,380, Cl. 381-24.000.

Antares Marketing, S.A.: *See—*
Klementich, Erich F., 5,360,239, Cl. 285-94.000.

Anthony, Thomas R.: *See—*
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Antone, James A.; Lee, Fred C.; and Tabisz, Wojciech A., to Caterpillar Inc. Apparatus for driving a piezoelectric actuator. 5,361,014, Cl. 310-316.000.

Antos, A. Joseph; Blankenship, Michael G.; Hall, Douglas W.; Murphy, Edward F.; and Smith, David K., to Corning Incorporated. Dispersion compensating devices and systems. 5,361,319, Cl. 385-123.000.

Aoki, Masayuki: *See—*
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.

Aoki, Norihiko, to Olympus Optical Co. Ltd. Vari-focal lens system. 5,361,167, Cl. 359-689.000.

Aoki, Takafumi; Ito, Masumi; and Naruse, Noriyoshi, to Tokyo Yogyo Kabushiki Kaisha; and Akechi Ceramics Co., Ltd. Sliding nozzle for molten steel receiving vessel. 5,360,147, Cl. 222-600.000.

Aoki, Takahiro, to Kabushiki Kaisha Toshiba. Method for automatically determining wiring routes. 5,361,214, Cl. 364-490.000.

Aoyama, Akimasa: *See—*
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Aoyama, Taizo; Nagata, Norio; Hosokawa, Kenzi; and Hosoi, Hideki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Grafted impact modifiers of C_6–C_{10} alkylrylate rubber for polycarbonate. 5,360,865, Cl. 525-67.000.

Aoyama, Teruyuki, to Fuji Xerox Co., Ltd. Image processor. 5,361,141, Cl. 358-452.000.

Aparicio, Manuel, IV; Miller, Patrice C.; and Miller, Wade A., to International Business Machines Corporation. Enhanced interface for a neural network engine. 5,361,326, Cl. 395-21.000.

Appeldorn, Roger H.; Johnson, Robert J.; Rouser, Forrest J.; and Erwin, Robert L., to Minnesota Mining and Manufacturing Company. Reusable security enclosure. 5,360,270, Cl. 383-5.000.

Apple Computer, Inc.: *See—*
Fitch, Jonathan, 5,361,389, Cl. 395-375.000.

Applegate, Raymond A., to Board of Regents, The University of Texas System. Vascular entoptoscope. 5,360,010, Cl. 128-745.000.

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Applied Energetic Systems, Inc.: *See—*
Willett, John D., 5,359,935, Cl. 102-307.000.

Applied Materials, Inc.: *See—*
Morita, Katsumi, 5,360,646, Cl. 427-574.000.
Nulman, Jaim; and Ngan, Kenny K., 5,360,996, Cl. 257-767.000.

Aptus, Inc.: *See—*
Bayliss, Ronald W.; Libech, Karl D.; and Washburn, Charles H., 5,360,511, Cl. 159-48.100.

Arai, Takashi; Baba, Yukihisa; and Umetsu, Sachio, to Canon Kabushiki Kaisha. Lens element and lens barrel. 5,361,168, Cl. 359-796.000.

Arai, Takuya: *See—*
Yamashina, Yasuhiro; Arai, Takuya; and Takagi, Junichi, 5,361,111, Cl. 354-266.000.

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Takada, Masahito; Ueda, Eiichi; Araki, Hiromitsu; and Kobayashi, Toru, 5,360,708, Cl. 430-496.000.

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Yamauchi, Ryozo; Wada, Akira; Oohashi, Keiji; Araki, Shinji; and Shimomichi, Tsuyoshi, 5,360,464, Cl. 65-410.000.

Arashiro, Yusuke; Kihara, Michiharu; Ohmura, Haruo; Yamada, Fumiyoshi; Aritomi, Mitsutoshi; Nakano, Hiroshi; and Yamauchi, Shinichi, to Mitsubishi Petrochemical Co., Ltd. Thermoplastic polyphenylene ether resin composition. 5,360,866, Cl. 525-68.000.

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Bonsignore, Patrick V.; and Coleman, Robert D., 5,360,892, Cl. 528-354.000.

Archibald, Kenneth R.; and Scott, Melvin L., to Hayes Wheels International, Inc. Full face wheel assembly. 5,360,261, Cl. 301-63.100.

Arduin, Joel; and Renaud-Goud, Gilles, to Salomon S.A. Interface device designed to modify the natural pressure distribution of a ski on its sliding surface. 5,360,229, Cl. 280-617.000.

Arena, Blaise J.: *See—*
Nemeth, Laszlo T.; Kulprathipanja, Santi; Arena, Blaise J.; and Holmgren, Jennifer S., 5,360,536, Cl. 208-248.000.

Arends, Charles B.; Schrenk, Walter J.; Lewis, Ray A.; Ramanathan, Ravi; and Wheatley, John, to Dow Chemical Company, The. Two component infrared reflecting film. 5,360,659, Cl. 428-216.000.

Argent, Michael F. Pipe connecting assembly and method for joining two lengths of steel pipe by a press-fit connection. 5,360,242, Cl. 285-330.000.

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Ruggiero, Murray A.; Marien, Bruce A.; Arif, Shoaib; Roth, Robert P.; Farrell, Joseph T.; and Vanover, A. R., 5,360,457, Cl. 8-567.000.

Arimoto, Akira: *See—*
Nakamura, Shigeru; Arimoto, Akira; Nakao, Takeshi; and Umeda, Mariko, 5,361,244, Cl. 369-44.230.

Arimoto, Osamu; Katayama, Shinji; and Take, Yoshinari, to Chlorine Engineers Corp. Ltd. Electrolytic cell. 5,360,526, Cl. 204-242.000.

Arispe, Steven E. Compact lotion applicator. 5,360,111, Cl. 206-361.000.

Aritome, Seiichi: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

Aritomi, Mitsutoshi: *See—*
Arashiro, Yusuke; Kihara, Michiharu; Ohmura, Haruo; Yamada, Fumiyoshi; Aritomi, Mitsutoshi; Nakano, Hiroshi; and Yamauchi, Shinichi, 5,360,866, Cl. 525-68.000.

Arlt, Wolfgang: *See—*
Nickel, Andreas; Arlt, Wolfgang; Janisch, Ingo; Wagner, Paul; and Klausener, Alexander, 5,360,923, Cl. 558-277.000.

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Vedage, Gamini A.; and Armor, John N., 5,360,934, Cl. 564-451.000.

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Arora, Sudershan K.; Thomson, David S.; and Akhtar, M. Nayeem, to Greenwich Pharmaceuticals Incorporated. Anti-proliferative and anti-inflammatory compounds: 5- or 6-deoxy hexose monosaccharides having a saturated nitrogen-containing heterocycle at the 5- or 6-position bound through the nitrogen atom. 5,360,792, Cl. 514-23.000.

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Hori, Koichiro; and Arsenault, Dennis, 5,359,992, Cl. 128-4.000.

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Ohkawa, Kazuo; and Saito, Seiichi, 5,360,873, Cl. 525-193.000.

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Takahashi, Nagashige; Ouchi, Teruo; and Shibuya, Hiromichi, 5,359,991, Cl. 128-4.000.
Takami, Satoshi, 5,361,120, Cl. 354-419.000.
Takeyasu, Hatsuichi, 5,361,170, Cl. 359-850.000.

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Miyajima, Hidenobu, 5,360,050, Cl. 164-45.000.

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Sasaki, Tsutomu; and Asai, Junji, 5,360,253, Cl. 296-180.100.

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Asano, Fumiaki, to Brother Kogyo Kabushiki Kaisha. Sewing system having function to store operation-state data upon detection of abnormality. 5,359,949, Cl. 112-121.120.

Asano, Kazuo: *See—*
Saito, Kenji; Kajikawa, Akira; and Asano, Kazuo, 5,360,044, Cl. 152-209.00R.

Asano, Masamichi: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

Asano, Masanari, to Fuji Photo Film Co., Ltd. Discrete cosine transformation with reduced components. 5,361,220, Cl. 364-725.000.

Asazuma, Tadashi: *See—*
Itoh, Hiroshi; Isobe, Naoki; and Asazuma, Tadashi, 5,360,860, Cl. 524-460.000.

Ashbey, James A., to Delta System Designs Limited. Cinematographic optical system. 5,361,106, Cl. 352-57.000.

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Kwi-Ju, Kim, 5,359,981, Cl. 123-633.000.

Ask, Anna-Lena; and Sandberg, Rune V., to Aktiebolaget Astra. Substituted 4-phenyl-4-piperidinecarboxamides with both local anaesthetic and analgesic effect as well as processes for their preparation. 5,360,805, Cl. 514-316.000.

Askestad, Sigmund, to Norsk Hydro a.s. Turret for drilling or production ship. 5,359,957, Cl. 114-230.000.

Asoh, Keisuke; and Nagai, Akihiro, to Kabushiki Kaisha Daito. Combustion gas purifying method, acid gas remover including calcium compound to remove acid gases, and incinerator equipped with such acid gas remover. 5,359,946, Cl. 110-345.000.

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Hainfeld, James F.; and Furuya, Frederic R., 5,360,895, Cl. 530-391.500.

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Krause, Daniel J., 5,361,017, Cl. 315-151.000.

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Wiget, Fridolin, 5,361,013, Cl. 310-316.000.

AT&T Bell Laboratories: *See—*
Abys, Joseph A.; Kadija, Igor V.; Kudrak, Edward J., Jr.; and Maisano, Jr. Joseph J., 5,360,991, Cl. 257-666.000.
Benkeser, Donald E.; Cyr, Joseph B.; Greenberg, Albert G.; and Wright, Paul E., 5,361,362, Cl. 395-725.000.
Heismann, Fred L., 5,361,270, Cl. 372-27.000.
Joseph, Jerome J.; Petras, Michael F.; and Witmer, Steven B., 5,360,979, Cl. 250-551.000.
Ruel, Bernard G.; Stewart, Gilbert M.; Thirunagari, Aruna; and Turner, James L., 5,361,298, Cl. 379-242.000.
Shibib, Muhammed A., 5,360,987, Cl. 257-446.000.
Subramanian, Ravi, 5,361,276, Cl. 375-1.000.

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Tang, Hong, 5,361,158, Cl. 359-204.000.

Atchison, Lee A., to Hewlett-Packard Company. Method for controlling an instrument through a common instrument programming interface. 5,361,336, Cl. 395-275.000.

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Lane, Christopher C.; Lenz, Ruben P.; and Athanassoulias, Costa, 5,360,903, Cl. 536-124.000.

Atkinson, Leland G.; Kindred, Douglas S.; Moore, Duncan T.; and Zinter, J. Robert, to Gradient Lens Corporation. Negative abbe number radial gradient index relay and use of same. 5,361,166, Cl. 359-654.000.

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Bloys, James B.; Wilson, William N.; Malachosky, Edward; Bradshaw, Roger D.; and Grey, Roger A., 5,360,787, Cl. 507-124.000.

Aton, Thomas J.; Chapados, Phillip, Jr.; Hosch, Jimmy W.; and Paranjpe, Ajit P., to Texas Instruments Incorporated. Process control for submicron linewidth measurement. 5,361,137, Cl. 356-354.000.

Attia, Alan I.: *See—*
Peled, Emmanuel; Nagasubramanian, Ganesan; Halpert, Gerald; and Attia, Alan I., 5,360,686, Cl. 429-191.000.

Attix, Douglas J., to B&W Fuel Company. Guide tube retainer. 5,361,283, Cl. 376-446.000.

Aubex Corporation: *See—*
Mimura, Jinko; and Sato, Hideya, 5,360,411, Cl. 604-246.000.

Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., to Societe National D'Etude et de Construction de Moteurs D'Aviation. Afterburner assembly for a gas turbine engine. 5,359,849, Cl. 60-261.000.

Aul, Debbie J. Protective shroud for nursery stock. 5,359,810, Cl. 47-84.000.

Auriol, Jean-Marc; and Bornes, Philippe, to STE Ateliers de la Haute-Garonne-Ets Auriol et Cie. Rivet for composite material and composite material assembly process. 5,359,765, Cl. 29-525.200.

Ausherman, Ronald; Heubel, Thomas; and Snyderman, Michael H., to Sherwood Medical Company. Thin-walled anesthesia needles. 5,360,416, Cl. 604-272.000.

Austin, David G. Adjustable therapeutic pillow. 5,360,017, Cl. 128-845.000.

Austin, Michael M.: *See—*
Savovic, Niko M.; Amero, Willard F., Jr.; Kleinert, Raymond J., III; Austin, Michael M.; and Gyenes, Russell E., 5,360,499, Cl. 156-73.100.

Australian National University, The: *See—*
Pashley, Richard M.; Senden, Timothy J.; Morris, Richard A.; Guthrie, James T.; and He, Wei D., 5,360,880, Cl. 526-213.000.

Autrique, Alex: *See—*
Jeanson, Jean-Francois; Huppert, Jean; Autrique, Alex; Remond, Joel; and Lesoin, Francis, 5,360,429, Cl. 606-61.000.

Auvin, Serge: *See—*
Chabrier de Lassauniere, Pierre-Etienne; Braquet, Pierre; Broquet, Colette; and Auvin, Serge, 5,360,925, Cl. 560-169.000.

Avery Dennison Corporation: *See—*
Cooper, William J., 5,360,153, Cl. 227-67.000.

Axelsson, Oskar; Peters, Dan; Nielsen, Elsebet O.; and Christophersen, Palle, to NeuroSearch A/S. Imidazole compounds and their use as calcium channel blockers. 5,360,809, Cl. 514-338.000.

Axis USA, Inc.: *See—*
Lombardi, Massimo; and Pisani, Gianluigi, 5,360,177, Cl. 242-7.05B.

Ayad, Hafez M.: *See—*
Huang, Jamin; Ayad, Hafez M.; and Timmons, Philip R., 5,360,910, Cl. 546-279.000.

Azad, Farzin H.: *See—*
Cueman, Michael K.; and Azad, Farzin H., 5,360,599, Cl. 117-217.000.

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Sorimachi, Toshihiro; Furuki, Fumio; Narita, Shoichi; Azumi, Satoru; and Hirai, Mitsuru, 5,360,254, Cl. 296-218.000.

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Danielson, Libert K.; and McBurnett, Ray, 5,360,186, Cl. 244-137.200.

B&W Fuel Company: *See—*
Attix, Douglas J., 5,361,283, Cl. 376-446.000.
Williamson, Rick D., 5,361,287, Cl. 376-352.000.

Baba, Shiro: *See—*
Sasaki, Hisao; Miyazaki, Takeshi; Baba, Shiro; Nakada, Kunihiko; and Akao, Yasushi, 5,361,374, Cl. 395-800.000.

Baba, Yukihisa: *See—*
Arai, Takashi; Baba, Yukihisa; and Umetsu, Sachio, 5,361,168, Cl. 359-796.000.

Babcock Industries, Inc.: *See—*
Wisner, Gary E.; McClellan, James W.; and Harrington, Charles W., 5,361,024, Cl. 318-588.000.

Babcock & Wilcox Company, The: *See—*
Kidaloski, Raymond G.; and Detzel, Roger A., 5,359,823, Cl. 52-506.010.
Latimer, Paul J., 5,359,898, Cl. 73-600.000.

Babin, James E.; and Whiteker, Gregory T., to Union Carbide Chemicals & Plastics Technology Corporation. Asymmetric syntheses. 5,360,938, Cl. 568-449.000.

Bachy, Andre; Fraisse, Laurent; Keane, Peter; Mendes, Etienne; Vernieres, Jean-Claude; and Simiand, Jacques, to Elf Sanofi. Substituted thienyl- or pyrrolylcarboxyclic acid derivatives, their preparation and medicines containing them. 5,360,799, Cl. 514-212.000.

Badger, Mark L.: *See—*
Tajalli, Homayoon; Badger, Mark L.; Dalva, David I.; and Walker, Stephen T., 5,361,359, Cl. 395-700.000.

Badiou, Jean-Claude, to Clecim. Expandable cylindrical chuck for coiler or uncoiler. 5,360,182, Cl. 242-573.700.

Baer, Scott D., to Kaspar Wire Works, Inc. Method and apparatus for the control of a multiple of door accessible newspaper vending cabinets with a single vend control mechanism operating remote door latches. 5,360,093, Cl. 194-206.000.

Baerenwald, Philip M.: *See—*
Bro, Jay M.; and Baerenwald, Philip M., 5,360,222, Cl. 280-87.021.

Bakalash, Reuven. Parallel computing system for volumetric modeling, data processing and visualization. 5,361,385, Cl. 395-124.000.

Baker Hughes, Incorporated: *See—*
Collee, Pierre E.; Mallow, William A.; and Radford, Steven R., 5,360,074, Cl. 175-58.000.
Schmuck, Phillip W.; Hayter, Steven R.; Zachman, James R.; and Salerni, John V., 5,360,069, Cl. 166-383.000.
Zoeller, William A., 5,361,239, Cl. 367-30.000.

Baker, Jeffrey P.; Mott, Steven C.; and Wright, Craig A., to Horiba Instruments, Inc. Method and apparatus for dry particle analysis. 5,359,907, Cl. 73-865.500.

Baker, William F., to Saklou, Jamal; and Metivier, Pierre. Bag folding system. 5,360,387, Cl. 493-405.000.

Baldino, Neil F., to United Technologies Corporation. Quick release disconnect coupling device for drive shaft segments. 5,360,376, Cl. 464-154.000.

Baldwin, Darryl D.; and Doan, Tien D., to Caterpillar Inc. Apparatus and method for analyzing events for an internal combustion engine. 5,359,883, Cl. 73-117.300.

Balentine, Darrell G. Hole and circle torch cutting attachment. 5,360,201, Cl. 266-70.000.

Bales, Thomas O.: *See—*
Slater, Charles R.; Bales, Thomas O.; Kortenbach, Jurgen A.; Nunez, George; and Turkel, David, 5,359,993, Cl. 128-4.000.

Balestrazzi, Duilio: *See—*
Belvederi, Bruno; Balestrazzi, Duilio; and Lanzarini, Luigi, 5,360,021, Cl. 131-84.100.

Ball, Eric S.: *See—*
Ball, Harold L.; Bounds, Terry R.; Ball, Eric S.; and Ball, Jeffrey L., 5,360,556, Cl. 210-804.000.

Ball, Harold L.; Bounds, Terry R.; Ball, Eric S.; and Ball, Jeffrey L., to Orenco Systems, Inc. Method of feeding wastewater effluent to filter bed through parallel conduits. 5,360,556, Cl. 210-804.000.

Ball, Jeffrey L.: *See—*
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Balla, Gyula: *See—*
Blomqvist, Peter; Andreasson, Ingmar; Rabe, Magnus; Balla, Gyula; and Cedell, Tord, 5,360,498, Cl. 156-73.100.

Ballard Power Systems Inc.: *See—*
Buswell, Richard F.; Clausi, Joseph V.; Cohen, Ronald; Louie, Craig; and Watkins, David S., 5,360,679, Cl. 429-19.000.

Baltazar, Lawrence C.; Buck, Robert J.; and Davis, David W., to Constant Velocity Systems, Inc. System for grinding a workpiece. 5,359,814, Cl. 451-5.000.

Bandopadhay, Amit: *See—*
Kaufman, Arie A.; Bandopadhay, Amit; and Piligian, George J., 5,360,971, Cl. 250-221.000.

Baney, Douglas M.; and Sorin, Wayne V., to Hewlett-Packard Company. Variable spectral width optical noise source. 5,361,161, Cl. 359-337.000.

Banholzer, William F.; Anthony, Thomas R.; and Williams, Dennis M., to General Electric Company. Isotopically pure single crystal epitaxial diamond films and their preparation. 5,360,479, Cl. 117-84.000.

Bannerot, Pierre A. L. M.; Lapergue, Guy J.; Maingre, Eric F. M.; Pasquali, Xavier J.; and Reghezza, Jean-Claude H., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.). Variable geometry exhaust nozzle for a turbojet engine. 5,359,851, Cl. 60-271.000.

Banschbach, Michael: *See—*
Stern, Gary M.; and Banschbach, Michael, 5,360,142, Cl. 222-79.000.

Bapatla, Krishna M., to Alcon Laboratories, Inc. Heat sterilization of labile antibiotics. 5,360,593, Cl. 422-32.000.

Barauke, Norbert: *See—*
Stahlecker, Hans; and Barauke, Norbert, 5,359,943, Cl. 108-90.000.

Barber, Michael J.: *See—*
Brown, Lawrence E.; Clingman, David L.; Barber, Michael J.; Kroemer, John F.; and Cross, Kenneth R., 5,359,770, Cl. 29-889.100.

Barger, James E.; and Madden, Richard, to Bolt Beranek and Newman Inc. Load cell. 5,359,902, Cl. 73-862.626.

Barker, Donald E. Human skin cleansing and wrinkle-reducing cream. 5,360,824, Cl. 424-680.000.

Barnaby, Michael J., to Digital Equipment Corporation. Programmable pixel and scan-line offsets for a hardware cursor. 5,361,081, Cl. 345-145.000.

Barney, Dennis A.: *See—*
Hoffman, John P.; Vance, Ricky D.; Barney, Dennis A.; and Kozlevcar, Joseph G., 5,361,059, Cl. 340-438.000.

Baron, Bruce M.: *See—*
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; Schwarcz, Robert; and Baron, Bruce M., 5,360,814, Cl. 514-419.000.

Baron, Robert A.; and Haber, Frederick. Apparatus for air filtration and sound masking. 5,360,469, Cl. 95-273.000.

Barone, Hector D.; Palmaz, Julio C.; and Parodi, Juan C. Aortic graft for repairing an abdominal aortic aneurysm. 5,360,443, Cl. 623-1.000.

Barrera, Mark E.: *See—*
Mosier, Douglas D.; Barrera, Mark E.; and Dwyer, Stephen M., 5,360,868, Cl. 525-89.000.

Barrett, Raymond L., Jr., to Motorola, Inc. Self limiting and self biasing operational transconductance amplifier. 5,361,040, Cl. 330-253.000.

Barriac, Jacques J.; and Harriman, Ron E., to Calmar Inc. Non-removable container closure. 5,360,127, Cl. 215-263.000.

Barrick, Donald E.; Lipa, Belinda J.; Lilleboe, Peter M.; and Isaacson, Jimmy, to Codar Ocean Sensors, Ltd. Gated FMCW DF radar and signal processing for range/doppler/angle determination. 5,361,072, Cl. 342-133.000.

Barrier Member Containment Corporation: *See—*
Breaux, Louis B.; and Sansone, Leonard F., 5,360,293, Cl. 405-267.000.

Barrios, J. Rene: *See—*
Johnson, David A.; Zweifel, Terry L.; and Barrios, J. Rene, 5,361,065, Cl. 340-968.000.

Barry, Steven P.: *See—*
Sachtschale, Timothy G.; and Barry, Steven P., 5,360,092, Cl. 193-2.00R.

Bartfeld, Daniel; Lieshitz, Ruth; and Hadary, Dany, to Bio-Technology General Corp. Method for purification of recombinant copper/zinc (CU-ZN) superoxide dismutase from bacteria or eucaryotic cells. 5,360,729, Cl. 435-189.000.

Barth, Gunther; von Lansdorff, Fritz; and von Langsdorff, Harald, to F. von Langsdorff Licensing Limited. Set of shaped stones and shaped stone for paving ground areas with wide gaps therebetween. 5,360,285, Cl. 404-37.000.

Barth, Jerry J.: *See—*
Milbourn, Thomas M.; and Barth, Jerry J., 5,360,629, Cl. 427-8.000.

Bartimote, John K., to Coffey, Peter James. Material handling apparatus and method. 5,360,371, Cl. 454-56.000.

Bartky, Walter S.: *See—*
Paton, Anthony D.; Bartky, Walter S.; and Michaelis, Alan J., 5,361,084, Cl. 347-15.000.

Barto International, Inc.: *See—*
Klundt, Victor J.; and Williams, Donn L., 5,359,952, Cl. 114-72.000.

Bartosik, Donald C.: *See—*
Adamson, Ronald B.; Bartosik, Donald C.; Johansson, Eric B.; and Christenson, Donald J., 5,361,282, Cl. 376-443.000.

Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, to J. Uriach & Cia. S.A. Sulfonamides as antifungal agents. 5,360,813, Cl. 514-383.000.

BASF Aktiengesellschaft: *See—*
Fuchs, Hugo; Priester, Claus-Ulrich; Neubauer, Gerald; Brunner, Erwin; Ritz, Josef; and Kopietz, Michael, 5,360,905, Cl. 540-540.000.
Grief, Norbert; Oppenlaender, Knut; Birkhofer, Hermann; Wegner, Brigitte; and Dix, Johannes P., 5,360,454, Cl. 8-94.330.
Lauth, Guenter; Mueller, Ulrich; Hoelderich, Wolfgang; Brode, Stefan; and Wagenblast, Gerhard, 5,360,474, Cl. 106-402.000.
Rheinheimer, Joachim; Eicken, Karl; Vogelbacher, Uwe J.; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,360,913, Cl. 548-255.000.

BASF Corporation: *See—*
Briggs, Rodney L.; Campbell, Donald H.; and Montagne, Mark R., 5,360,644, Cl. 427-410.000.

Baskis, Paul T. Process for reforming materials into useful products and apparatus. 5,360,553, Cl. 210-774.000.

Bassett, David: *See—*
Godfrey, Geoffrey C.; and Bassett, David, 5,360,238, Cl. 285-93.000.

Bastioli, Catia; Bellotti, Vittorio; Del Giudice, Luciano; Lombi, Roberto; and Rallis, Angelos, to Novamont S.p.A. Expanded articles of biodegradable plastic materials. 5,360,830, Cl. 521-84.100.

Bates, Kenn S.: *See—*
Pierce, Brian M.; Chang, David B.; and Bates, Kenn S., 5,361,034, Cl. 324-663.000.

Bates, Warren A.: *See—*
Irlbeck, Robert D.; and Bates, Warren A., 5,360,347, Cl. 439-66.000.

Bates, William R., Jr.: *See—*
Seber, Brett P.; Morton, Randolph J.; Keys, William H.; Kraft, Patrick W.; Bates, William R., Jr.; and Hussey, Marlow D., 5,359,778, Cl. 30-294.000.

Batten, William C., to Clearline Systems, Inc. Solids handling in an oil/grease separator. 5,360,555, Cl. 210-803.000.

Bauer, Peter; Eckhardt, Horst; Schierling, Roland; and Hoffmann, Joachim, to Stihl, Andreas. Cutterhead for a string trimmer. 5,359,777, Cl. 30-276.000.

Baum, Allen J.; and Cox, William M., to Westinghouse Electric Corporation. Tube corrosion accelerator. 5,361,284, Cl. 376-245.000.

Baum, Jeffery I.; and Jacobsen, Eric S., to Motorola, Inc. Pulse width modulator having a duty cycle proportional to the amplitude of an input signal from a differential transducer amplifier. 5,361,048, Cl. 332-109.000.

Baumann, Lothar E.; Kappelmann, Hans G.; Mertens, Volkmar; Schafeld, Bernhard T.; Vorhoff, Werner W.; and Wallussek, Heinz, to Bergwerksverband BmbH. Tunneling machine with radially sweeping tool carriers. 5,360,260, Cl. 299-59.000.

Baxter, Duane W.; Gregg, Leon E.; and Jaaskelainen, William, to International Business Machines Corporation. Optical disk having R/W and worm area. 5,360,651, Cl. 428-64.000.

Baxter International, Inc.: *See—*
Chapman, John; Logan, Patricia M.; Neyndorff, Herma C.; and North, Janice, 5,360,734, Cl. 435-238.000.
Williamson, Warren P., IV; and Brown, Richard I., 5,360,542, Cl. 210-232.000.

Bayer Aktiengesellschaft: *See—*
Meixner, Jurgen; Fischer, Wolfgang; and Gupta, Pramod, 5,360,863, Cl. 525-28.000.
Nickel, Andreas; Arlt, Wolfgang; Janisch, Ingo; Wagner, Paul; and Klausener, Alexander, 5,360,923, Cl. 558-277.000.

Orthmann, Ernst; Wulff, Klaus; Hoeltzenbein, Peter; Judat, Helmut; Wagner, Hans; Zaby, Gottfried; and Heidingsfeld, Herbert, 5,360,885, Cl. 528-49.000.
Schmitz, Jurgen; Weber, Hans-Leo; Fausten, Hans-Josef; Schmoranzer, Hans-Wolfgang; and Hansel, Udo, 5,360,658, Cl. 428-215.000.
Wolters, Erich; Landscheidt, Heinz; Klausener, Alexander; and Puppe, Lothar, 5,360,922, Cl. 558-277.000.

Bayliss, Ronald W.; Libach, Karl D.; and Washburn, Charles H., to Aptus, Inc. Apparatus and method for spray drying solids-laden high temperature gases. 5,360,511, Cl. 159-48.100.

bbs AG international: *See—*
Schmerler, Detlev; and Brugger, Gerhard, 5,361,331, Cl. 395-109.000.

Beard, Harold J. Mixed liquor wasting system. 5,360,538, Cl. 210-96.100.

Beardsley, Gregg B.; and Wilhelmsen, Fredrick M., to Unisys Corporation. Method of operating, via a block mode terminal, UNIX programs for a character mode terminal. 5,361,344, Cl. 395-500.000.

Bearss, James G.; and Russell, Dale D., to Hewlett-Packard Company. Method and apparatus for applying an adhesive layer for improved image transfer in electrophotography. 5,361,089, Cl. 346-160.000.

Beauchamp, Maurice, to IPL Inc. Device for use with pallets supporting stacked bottles. 5,360,112, Cl. 206-427.000.

Beaumont, Richard A.: *See—*
Kuhlman, G. William; Beaumont, Richard A.; Carbaugh, Daniel F.; Anderson, David; Chakrabarti, Amiya K.; and Kinnear, Kenneth P., 5,360,496, Cl. 148-677.000.

Beaussier, Jacques; Breuzet, Michel; Gay, Michel; and Uebersfeld, Jean, to Office National d'Etudes et de Recherches Aerospatiales styled O.N.E.R.A. High-stability resonators of solid elastic material and oscillators using them. 5,361,045, Cl. 331-154.000.

Bechtel, Helmut; Czarnojan, Wolfram; Gruhlke, Stefan; and Kynast, Ulrich, to U.S. Philips Corporation. Method of manufacturing a display tube. 5,360,361, Cl. 445-40.000.

Becky, Andreas: *See—*
Maier-Laxhuber, Peter; Becky, Andreas; Richter, Gert; and Worz, Reiner, 5,359,861, Cl. 62-100.000.

Bedeschi, Angelo; Cabri, Walter; Marchi, Marcello; and Perrone, Ettore, to Farmitalia Carlo Erba S r l. Process for preparing penem esters. 5,360,904, Cl. 540-310.000.

Beer, Wilhelm: *See—*
Henein, Nabil; Beer, Wilhelm; and Vile, David, 5,360,322, Cl. 417-313.000.

Behrens, Guenter; and Ellmers, Wilfried, to Deutsche Aerospace Airbus GmbH. Device for locking a nut on a bolt. 5,360,303, Cl. 411-120.000.

Behringwerke Aktiengesellschaft: *See—*
Schuy, Wilhelm, 5,360,717, Cl. 435-7.940.

Bejczy, Antal K.: *See—*
Fijany, Amir; and Bejczy, Antal K., 5,361,367, Cl. 395-800.000.

Bell Communications Research, Inc.: *See—*
Arnold, Hamilton W.; Devasirvathan, Daniel M.; Sollenberger, Nelson R.; Sutliff, Larrie G.; and Varma, Vijay K., 5,361,258, Cl. 370-69.100.
Cheung, Kwok-wai, 5,361,262, Cl. 370-85.700.

Bell, Douglas E.; and Chu, Amy H., to Miles Inc. Preparation of diagnostic test strips containing tetrazolium salt indicators. 5,360,595, Cl. 422-56.000.

Bell, Eric L.: *See—*
Olm, Myra T.; McDugle, Woodrow G.; Puckett, Sherrill A.; Kuromoto, Traci Y.; Eachus, Raymond S.; Bell, Eric L.; and Wilson, Robert D., 5,360,712, Cl. 430-567.000.

Bell, Michael. Ice gripping sandal for use on other footwear. 5,359,789, Cl. 36-7.600.

Bell, Michael. Fall prevention and lowering system, methods of use and body engagement means utilizable therewith. 5,360,082, Cl. 182-3.000.

Bell, Ronald S.: *See—*
Sauter, Joseph A.; and Bell, Ronald S., 5,360,014, Cl. 128-774.000.

Bellardini, Tullio L. Vacuum attachment for cleaning elongate slats such as ceiling fan blades. 5,359,751, Cl. 15-394.000.

Beller, Matthias; Fischer, Hartmut; and Strutz, Heinz, to Hoechst Aktiengesellschaft. Process for preparing aromatic olefins. 5,360,924, Cl. 560-55.000.

Belloc, Jordi: *See—*
Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, 5,360,813, Cl. 514-383.000.

Bellotti, Vittorio: *See—*
Bastioli, Catia; Bellotti, Vittorio; Del Giudice, Luciano; Lombi, Roberto; and Rallis, Angelos, 5,360,830, Cl. 521-84.100.

Bellville, Dennis J.: *See—*
von Trebra, Robert J.; and Bellville, Dennis J., 5,360,688, Cl. 430-22.000.

Belvedere, Paul C. Apparatus and method for dispensing resin coated fibers. 5,360,482, Cl. 118-404.000.

Belvederi, Bruno; Balestrazzi, Duilio; and Lanzarini, Luigi, to G.D. S.p.A. Cigarette manufacturing machine of the double tobacco rod type. 5,360,021, Cl. 131-84.100.

Ben-Brahim, Lazhar: *See—*
Miyazaki, Satoshi; Ben-Brahim, Lazhar; and Kurosawa, Ryoichi, 5,361,197, Cl. 363-98.000.

Ben-David, Daniel: *See—*
Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.

Bench, Donald J.: *See*—
Bench, William J.; Bench, Donald J.; and Molenaar, Gary L., 5,359,859, Cl. 62-85.000.

Bench, William J.; Bench, Donald J.; and Molenaar, Gary L., to Russell Technical Products. Method and apparatus for recovering refrigerants. 5,359,859, Cl. 62-85.000.

Benckert, Hartmut; and Hurr, Helmut, to Putzmeister-Werk Maschinenfabrik GmbH. Feeding reservoir for two-cylinders thick-matter pumps. 5,360,321, Cl. 417-238.000.

Benefield, Joseph A.: *See*—
English, George P.; Damitio, Stephen S.; Clark, Theodore D.; and Benefield, Joseph A., 5,360,955, Cl. 200-5.00A.

Benkeser, Donald E.; Cyr, Joseph B.; Greenberg, Albert G.; and Wright, Paul E., to AT&T Bell Laboratories. Adaptive job scheduling for multiprocessing systems with master and slave processors executing tasks with opposite anticipated execution times respectively. 5,361,362, Cl. 395-725.000.

Benton, Richard E., to UNR Industries, Inc. Storage rack with readily accessible wire track beam. 5,360,122, Cl. 211-151.000.

Benz, Bernhard: *See*—
Von Harten, Gunter; Keller, Walter; Kutz, Johannes; Benz, Bernhard; Meyer, Christian; and Kurschatke, Wolfgang, 5,359,743, Cl. 8-151.000.

Berg, Lloyd, to Berg, Lloyd. Separation of 2-butanol from t-amyl alcohol by extractive distillation. 5,360,520, Cl. 203-57.000.

Bergendorf, Frank H. Gardening tool having diverging prongs and straight prongs. 5,360,071, Cl. 172-378.000.

Berger, Gerard C. L.: *See*—
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.

Berger, James K.: *See*—
Panesar, Param; and Berger, James K., 5,361,346, Cl. 395-575.000.

Bergische Stahl-Industrie: *See*—
Wiebelhaus, Wolfgang; Groneмann, Manfred; Lehmann, Wolfgang; Schneider, Jurgen; and Rocholl, Hans, 5,360,087, Cl. 188-218.0XL.

Bergwerksverband BmbH: *See*—
Baumann, Lothar E.; Kappelmann, Hans G.; Mertens, Volkmar; Schafeld, Bernhard T.; Vorhoff, Werner W.; and Wallussek, Heinz, 5,360,260, Cl. 299-59.000.

Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., to Genecor International, Inc. Production of *Aspergillus niger* catalase-R. 5,360,732, Cl. 435-192.000.

Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., to Genencor International, Inc. Gene sequence encoding *Aspergillus niger* catalase-R. 5,360,901, Cl. 536-23.200.

Berkoff, Timothy A.: *See*—
Kersey, Alan D.; and Berkoff, Timothy A., 5,361,130, Cl. 356-345.000.

Bernstein, Philip: *See*—
Kamen, Melvin E.; and Bernstein, Philip, 5,360,281, Cl. 401-96.000.

Berraud, Patrick: *See*—
Percebois, Alain; Renard, Philippe; and Berraud, Patrick, 5,360,218, Cl. 277-181.000.

Bertapellil, Anthony P.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.

Bertolacci, Enzo: *See*—
Rigo, Giuseppe; and Bertolacci, Enzo, 5,359,997, Cl. 128-202.160.

Bessho, Kazuya: *See*—
Matsubara, Motoki; Fujii, Kenichi; and Bessho, Kazuya, 5,360,277, Cl. 400-68.000.

Best, Lester, Jr.: *See*—
Boyd, Henry, III; and Best, Lester, Jr., 5,360,409, Cl. 604-198.000.

Bettis Corporation: *See*—
Chang, Wu-Sung; and Huang, Huan-Yang, 5,359,910, Cl. 74-551.200.

Bexson, Joe M., Jr.: *See*—
O'Neill, William N.; Bloom, John J., Jr.; and Bexson, Joe M., Jr., 5,360,288, Cl. 404-129.000.

Beyer, Richard A., to United States of America, Army. Method of confinement of propellants for ignition. 5,359,919, Cl. 89-7.000.

Beyler, Roland. Sound and vibration damping device based on tires. 5,359,819, Cl. 52-144.000.

BF Goodrich Company, The: *See*—
Hagen, Floyd W., 5,359,888, Cl. 73-178.00R.

Bierhuizen, Marti F. A.: *See*—
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Biota Scientific Management Pty Ltd: *See*—
von Izstein, Laurence M.; Wu, Wen-Yang; Phan, Tho V.; Danylec, Basil; and Jin, Betty, 5,360,817, Cl. 514-459.000.

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Goldman, Arnold J.; Pecherer, Eugeny; Goldstein, Jonathan R.; Biran, Joseph; Korall, Menachem; and Meitav, Arye, 5,360,680, Cl. 429-27.000.

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Grief, Norbert; Oppenlaender, Knut; Birkhofer, Hermann; Wegner, Brigitte; and Dix, Johannes P., 5,360,454, Cl. 8-94.330.

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Sebald, Michael; Sezi, Recai; Leuschner, Rainer; Birkle, Seigfried; and Ahhe, Hellmut, 5,360,693, Cl. 430-192.000.

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Bito, Masami; Konishi, Satoshi; and Fukazawa, Fumimasa, to Honen Corporation. Hollow particles of crosslinked melamine resin having a uniform particle diameter and a process for producing the same. 5,360,832, Cl. 521-187.000.

Bjorklund, Gary C.; Burland, Donald M.; Donckers, Marcus C. J. M.; Miller, Robert D.; Moerner, William E.; Silence, Scott M.; Twieg, Robert J.; and Walsh, Cecilia A., to International Business Machines Corporation. Apparatus for photorefractive two beam coupling. 5,361,148, Cl. 359-4.000.

Bladea, Frederick K. Method and apparatus for detecting arcing in alternating-current power systems by monitoring high frequency noise. 5,361,031, Cl. 324-536.000.

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Elliott, Charles P., 5,360,486, Cl. 134-6.000.

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Oliver, Warren C.; and Blau, Peter J., 5,359,879, Cl. 73-7.000.

Blauch, Matthew E.: *See*—
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Bleier, Zvi, to PLX Inc. Lateral transfer retroreflector assembly. 5,361,171, Cl. 359-855.000.

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O'Neill, William N.; Bloom, John J., Jr.; and Bexson, Joe M., Jr., 5,360,288, Cl. 404-129.000.

Blouin, Gilles A.: *See*—
Hall, Robert S.; and Blouin, Gilles A., 5,360,561, Cl. 252-42.700.

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Edgar, Kevin J.; and Blount, William W., Jr., 5,360,843, Cl. 524-41.000.

Bloys, James B.; Wilson, William N.; Malachosky, Edward; Bradshaw, Roger D.; and Grey, Roger A., to Atlantic Richfield Company. Dispersant compositions comprising sulfonated isobutylene maleic anhydride copolymer for subterranean well drilling and completion. 5,360,787, Cl. 507-124.000.

Blum, Stanley, to Woodfree Limited. Method and product for treating waste paper material. 5,360,512, Cl. 162-8.000.

Board of Regents, The University of Texas System: *See*—
Applegate, Raymond A., 5,360,010, Cl. 128-745.000.
Upshaw, Jim L.; Hahne, Jonathan J.; Hayes, Richard J.; Zowarka, Raymond C., Jr.; Kajs, John P.; and Sledge, Robert L., II, 5,360,999, Cl. 307-112.000.

Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See*—
Stanley, George G.; and Laneman, Scott A., 5,360,939, Cl. 568-454.000.

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Nair, Muraleedharan G., 5,360,918, Cl. 549-294.000.

BOC Group, Inc., The: *See*—
Yap, Loo T., 5,360,171, Cl. 239-553.500.

Boddy, Roy N. Latching holder. 5,359,866, Cl. 70-18.000.

Boden, Eugene P.; Phelps, Peter D.; and Stewart, Kevin R., to General Electric Company. Process for the preparation of stilbazolium salts. 5,360,911, Cl. 546-347.000.

Bodor, Janos: *See*—
Desai, Girish N.; and Bodor, Janos, 5,360,627, Cl. 426-606.000.

Boggs, Joseph S.: *See*—
Weber, Vicki L.; Boggs, Joseph S.; and King, Richard M., 5,360,920, Cl. 554-144.000.

Bogue, Terry L.; and Osborne, Hollis D., to Delco Electronics Corporation. Welding apparatus having coaxial welding electrodes. 5,360,958, Cl. 219-86.510.

Bohman, Carl E.: *See*—
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., 5,359,836, Cl. 56-10.20E.

Bohmer, William, to Display Matrix Corporation. Battery charge indicator apparatus and the method of operation thereof. 5,360,682, Cl. 429-91.000.

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Bohn, Helmut: *See*—
Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, 5,360,812, Cl. 514-364.000.

Boles, Raymond L., Jr.; Keene, Lee W.; Knox, Benjamin H.; and Nugent, Ralph W., to Du Pont de Nemours, E. I., and Company. Nylon flat yarns. 5,360,667, Cl. 428-364.000.

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Barger, James E.; and Madden, Richard, 5,359,902, Cl. 73-862.626.

Bolt, L. Gordon, to Hughes Aircraft Company. Holographic transfer lamination materials and process. 5,360,501, Cl. 156-101.000.

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Schmid, Karl; Bongardt, Frank; Roeder, Juergen; and Wuest, Reinhold, 5,360,560, Cl. 252-39.000.

Bonnet, Werner. Perforator. 5,359,916, Cl. 83-482.000.

Bonsignore, Patrick V.; and Coleman, Robert D., to Arch Development Corporation. Water and UV degradable lactic acid polymers. 5,360,892, Cl. 528-354.000.

Borden, Peter G.; Nguyen, Hoang K.; and Carrasco, Earl J., to High Yield Technology. Structure and method for providing a gas purge for a vacuum particle sensor installed in a corrosive or coating environment. 5,360,980, Cl. 250-573.000.

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Auriol, Jean-Marc; and Bornes, Philippe, 5,359,765, Cl. 29-525.200.

Bose Corporation: *See*—
Short, William R., 5,361,381, Cl. 381-24.000.

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Andersen, Erik, 5,360,440, Cl. 607-116.000.

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Jacoboni, Charles P.; and Boulard, Brigitte R. J., 5,360,637, Cl. 427-255.000.

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Bourbina, Michael; Hwang, Lydia L.; Luna, Joaquin E.; and Wheelock, Scott A., to Hemlock Semiconductor Corporation. Method for analyzing irregular shaped chunked silicon for contaminates. 5,361,128, Cl. 356-36.000.

Bourgeois, Ronald D. Roller conveyor. 5,360,100, Cl. 198-790.000.

Boyd, Gary T.; Tiers, George V.; Francis, Cecil V.; Janulis, Eugene P.; Koshar, Robert J.; and Leichter, Louis M., to Minnesota Mining and Manufacturing Company. Nonlinear optical materials containing polar disulfone-functionalized molecules. 5,360,582, Cl. 252-582.000.

Boyd, Henry, III; and Best, Lester, Jr. Syringe holder with retractable needle assembly. 5,360,409, Cl. 604-198.000.

Boykin, Christopher M.; and Vaalburg, Thomas T., to Minnesota Mining and Manufacturing Company. Stylet for retrograde coronary sinus cannula. 5,360,406, Cl. 604-170.000.

Bozeman, Richard J., Jr., to United States of America, National Aeronautics and Space Administration. Acceleration recorder and playback module. 5,359,896, Cl. 73-590.000.

Bozich, Frank A., Jr., to Adhesive Technology, Inc. Hot melt pressure sensitive adhesive composition and applications. 5,360,854, Cl. 524-274.000.

Bozych, Dennis E.: *See*—
Harris, Bernard; and Bozych, Dennis E., 5,360,275, Cl. 384-420.000.

BP Chemicals Limited: *See*—
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Bloys, James B.; Wilson, William N.; Malachosky, Edward; Bradshaw, Roger D.; and Grey, Roger A., 5,360,787, Cl. 507-124.000.

Brady, Frederick T.; and Haddad, Nadim F., to Loral Federal Systems Company. Method to radiation harden the buried oxide in silicon-on-insulator structures. 5,360,752, Cl. 437-62.000.

Braga, Vittorio; and Giavarini, Carlo, to Himont Incorporated. Mixtures of bitumen and polymer compositions suitable for the modification of bitumens. 5,360,849, Cl. 524-68.000.

Brajczewski, David C.; Kupersmith, Bertram F.; and Towey, James P., Jr., to Otis Elevator Company. Local area network eleveator communications network. 5,360,952, Cl. 187-246.000.

Branchek, Theresa: *See*—
Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., 5,360,735, Cl. 435-240.200.

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Monastra, Edward J.; Trevito, Leon; and Branco, Richard G., 5,361,249, Cl. 370-16.000.

Branemark, Per-Ingvar, to Medevelop AB. Artificial joint mechanism for reconstructing human joints. 5,360,449, Cl. 623-18.000.

Brannon, Garry A.; and Jacobson, Michael S. Patch attachments for hats. 5,359,733, Cl. 2-195.100.

Braquet, Pierre: *See*—
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Brastemp S.A.: *See*—
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Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, to Wolff Walsrode AG. Process for producing methyl hydroxyalkyl cellulose ethers. 5,360,902, Cl. 536-84.000.

Brauner, Arne H.; and Kelley, James E., to General Mills, Inc. Audio instruction board. 5,360,345, Cl. 434-308.000.

Braxmeier, Hans; and Stahlecker, Gerd, to Stahlecker, Fritz; and Stahlecker, Hans. Spinning or twisting shaft bearing assembly with vibration isolation connection arrangement. 5,359,842, Cl. 57-132.000.

Brayer, Randall R.: *See*—
Croyle, Warren L.; and Brayer, Randall R., 5,360,043, Cl. 152-209.00A.

Breault, Mark W.: *See*—
Springer, Denis D.; Alberg, Randall L.; and Breault, Mark W., 5,360,944, Cl. 174-117.00F.

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Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, to Cassella Aktiengesellschaft. Fused 1,2,5-oxadiazole-2-oxides and their use. 5,360,812, Cl. 514-364.000.

Brennecke, Detlef, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material. 5,360,704, Cl. 430-506.000.

Breuzet, Michel: *See*—
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Bricault, Gary: *See*—
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Briggs, Rodney L.; Campbell, Donald H.; and Montagne, Mark R., to BASF Corporation. Chip-resistant composite coating. 5,360,644, Cl. 427-410.000.

Brill, Lance; and Gamow, R. Igor. Hyperbaric chamber closure means. 5,360,001, Cl. 128-205.260.

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Owen, Alan E.; Snell, Anthony J.; Hajto, Janos; Lecomber, Peter G.; and Rose, Mervyn J., 5,360,981, Cl. 257-4.000.

Bro, Jay M.; and Baerenwald, Philip M., to Today'Kids, Inc. Toy wagon. 5,360,222, Cl. 280-87.021.

Broadfield, Gary, to Nokia Mobile Phones Ltd. Battery pack. 5,360,683, Cl. 429-99.000.

Brockhus, Jeroen J.: *See*—
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Brodbeck, Robert M. Fuel checker for use with pet cock or ball and spring drain valves. 5,359,905, Cl. 73-863.860.

Brode, Stefan: *See*—
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Broger, Emil A.; and Heiser, Bernd, to Hoffman-LaRoche Inc. Isoquinoline derivatives. 5,360,908, Cl. 546-146.000.

Bronner, Gary B.; DeBrosse, John K.; and Kenney, Donald M., to International Business Machines Corporation. Self-aligned buried strap for trench type DRAM cells. 5,360,758, Cl. 437-52.000.

Brooks, William J., to Sterling Winthrop Inc. Rafting antacid formulation. 5,360,793, Cl. 514-23.000.

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Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft: *See*—
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Asano, Fumiaki, 5,359,949, Cl. 112-121.120.

Brotz, Ralph T.; Sciarra, Paschal A., Jr.; and Waitkus, Phillip A., to Plastics Engineering Company. Preparation of friction elements and compositions therefor. 5,360,587, Cl. 264-123.000.

Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., III, to Footmark, Inc. Method and apparatus for analyzing feet. 5,361,133, Cl. 356-376.000.

Brown, David L.; and Holzwarth, Henry A., to United States Surgical Corporation. Molded suture retainer. 5,359,831, Cl. 53-430.000.

Brown, Garrett W.: *See*—
DiGiulio, Arnold; DiGiulio, Edmund; and Brown, Garrett W., 5,360,196, Cl. 248-576.000.

Brown, Glenn M.: *See*—
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Brown, Grayson: *See*—
Jackson, David M.; Brown, Grayson; and Nordin, Gerald L., 5,359,807, Cl. 43-131.000.

Brown, Harry R., to Honeywell Inc. Apparatus and methods for mounting an inertial sensor chassis to an aircraft support frame. 5,360,236, Cl. 248-672.000.

Brown, Lawrence E.; Clingman, David L.; Barber, Michael J.; Kroemer, John F.; and Cross, Kenneth R., to General Motors Corporation. Method for bonding abrasive blade tips to the tip of a gas turbine blade. 5,359,770, Cl. 29-889.100.

Brown, Michael E., to E. F. Bavis & Associates, Inc. Method and apparatus for electrical dynamic braking. 5,361,022, Cl. 318-375.000.

Brown, Richard H. Two part urethane punch stripper. 5,359,914, Cl. 83-139.000.

Brown, Richard I.: *See*—
Williamson, Warren P., IV; and Brown, Richard I., 5,360,542, Cl. 210-232.000.

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Brown, Russell A.: *See*—
Watkins, Gary S.; and Brown, Russell A., 5,361,386, Cl. 395-130.000.

Brown, Sanford W. Method for alloying lithium with powdered magnesium. 5,360,494, Cl. 148-513.000.

Browning, David M.; and Garnier, Thomas J., to Shredding Systems, Inc. Preload-clampnut device. 5,360,283, Cl. 403-374.000.

Brownlee, James R.; and Lasby, William E., to Caring Products International, Inc. Washable diaper with liquid impervious channel for retaining disposable absorbent insert. 5,360,422, Cl. 604-385.200.

Bruce, Robert C.: *See*—
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Bruggeman, Ulrich; Heil, Hans-Karl; and Hochgesang, Gerhard, to Preh-Werke GmbH & Co. KG. Push button switch. 5,360,954, Cl. 200-524.000.

Brugger, Gerhard: *See*—
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Bruker Analytische Messtechnik GmbH: *See*—
Knuttel, Bertold, 5,361,054, Cl. 335-216.000.

Brumfield, Robert L. Strength competition apparatus. 5,360,386, Cl. 482-133.000.

Brunk, Marten: *See*—
Makulla, Detlef; and Brunk, Marten, 5,360,373, Cl. 454-284.000.

Brunner, Erwin: *See*—
Fuchs, Hugo; Priester, Claus-Ulrich; Neubauer, Gerald; Brunner, Erwin; Ritz, Josef; and Kopietz, Michael, 5,360,905, Cl. 540-540.000.

Bryn Mawr Rehabilitation Hospital: *See*—
Markley, David; Lawler, Margaret; Erdman, Jane; and Pierson, Timothy, 5,359,740, Cl. 5-425.000.

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Buchholz, Richard F.; and Quinn, Dale W., to Georgia-Pacific Corporation. Particulate fertilizer dust control. 5,360,465, Cl. 71-11.000.

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Weilbacher, Eugene E.; and Buck, Carl A., 5,360,418, Cl. 604-283.000.

Buck Knives, Inc.: *See*—
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Baltazar, Lawrence C.; Buck, Robert J.; and Davis, David W., 5,359,814, Cl. 451-5.000.

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Buckmann, Paul S., to Aerojet General Corporation. Hydrostatic rotor bearing having a pivoted pad. 5,360,273, Cl. 384-99.000.

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Buckner, Carrol E.; and Buckner, Carrol D., 5,359,945, Cl. 110-233.000.

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Bunce, Keith T.: *See*—
Hagan, Russell M.; Bunce, Keith T.; Naylor, Alan; Ladlow, Mark; McElroy, Andrew B.; Whittington, Andrew R.; and Coomber, Barry A., 5,360,820, Cl. 514-559.000.

Burgess, Bradley G.: *See*—
Fourcroy, Antone L.; McDermott, Mark W.; Dunn, John P.; and Burgess, Bradley G., 5,361,392, Cl. 395-800.000.

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Bjorklund, Gary C.; Burland, Donald M.; Donckers, Marcus C. J. M.; Miller, Robert D.; Moerner, William E.; Silence, Scott M.; Twieg, Robert J.; and Walsh, Cecilia A., 5,361,148, Cl. 359-4.000.

Burns, Thomas P. Fishing bobber. 5,359,804, Cl. 43-43.140.

Busse, Lawrence J.; Stevenson, Jeffry W.; and Huebner, Wayne, to University of Missouri on behalf of the University of Missouri-Rolla, The Curators of the. Method of manufacture of multiple-element piezoelectric transducer. 5,359,760, Cl. 29-25.350.

Bussink, Jan: *See*—
Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, 5,360,844, Cl. 524-50.000.

Buswell, Richard F.; Clausi, Joseph V.; Cohen, Ronald; Louie, Craig; and Watkins, David S., to Ballard Power Systems Inc. Hydrocarbon fueled solid polymer fuel cell electric power generation system. 5,360,679, Cl. 429-19.000.

Butland, Charles L., to Butland Trust Organization. Technique for labeling an object for its identification and/or verification. 5,360,628, Cl. 427-7.000.

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Butland, Charles L., 5,360,628, Cl. 427-7.000.

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C.C. Family Overseas Co., Ltd.: *See*—
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C. R. Bard, Inc.: *See*—
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Cabri, Walter: *See*—
Bedeschi, Angelo; Cabri, Walter; Marchi, Marcello; and Perrone, Ettore, 5,360,904, Cl. 540-310.000.

Cada, Michael: *See*—
Normandin, Richard J. F.; Chatenoud, Francoise; and Cada, Michael, 5,361,160, Cl. 359-328.000.

Caddock Electronics, Inc.: *See*—
Caddock, Richard E., Jr., 5,361,300, Cl. 379-412.000.

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Kionka, Daniel P., 5,361,357, Cl. 395-700.000.

Caine, Lester S., to Nadimelia Limited. Multiple screen graphics display. 5,361,078, Cl. 345-1.000.

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Leavitt, John C.; Lin, Ching-Shwun; and Aebersold, Ruedi H., 5,360,715, Cl. 435-6.000.
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Garth, Geoffrey C.; and Traut, James R., 5,360,393, Cl. 602-17.000.

Calmar Inc.: *See*—
Barriac, Jacques J.; and Harriman, Ron E., 5,360,127, Cl. 215-263.000.

Camacho, Herman; and Granadino, Robert, to Metamorfyx. Ergonomic keyboard including arcuate elongated keys. 5,360,280, Cl. 400-489.000.

Camex, Inc.: *See*—
Speciner, Michael, 5,361,139, Cl. 358-445.000.

Campbell, Donald H.: *See*—
Briggs, Rodney L.; Campbell, Donald H.; and Montagne, Mark R., 5,360,644, Cl. 427-410.000.

Campbell, Donald R. Wheel traction log assembly. 5,360,045, Cl. 152-225.00C.

Campbell, Elizabeth A.: *See*—
Orndorff, Steve A.; Campbell, Elizabeth A.; and Medwid, Richard D., 5,360,730, Cl. 435-257.100.

Campbell, Richard W., to General Electric Company. Polyester-carbonate resin compositions of improved impact-resistance. 5,360,861, Cl. 524-494.000.

Campbell, William G., Jr. Respiratory and cardiac monitor. 5,360,008, Cl. 128-671.000.

Campoli, Ralph P.; and Steiner, Edwin G., to Olin Corporation. Ultra light weight sabot. 5,359,938, Cl. 102-521.000.

Candela Laser Corporation: *See*—
Cho, George, 5,360,425, Cl. 606-6.000.

Candelaria, Jon J., to Motorola, Inc. Carbon doped silicon semiconductor device having a narrowed bandgap characteristic and method. 5,360,986, Cl. 257-183.000.

Canon Kabushiki Kaisha: *See*—
Arai, Takashi; Baba, Yukihisa; and Umetsu, Sachio, 5,361,168, Cl. 359-796.000.
Chaya, Masahiko; and Takahashi, Toru, 5,361,242, Cl. 369-13.000.
Haraguchi, Shosuke, 5,361,110, Cl. 354-234.100.
Hasegawa, Shizuo, 5,361,145, Cl. 358-514.000.
Ishibe, Yoshihiro, 5,361,107, Cl. 353-101.000.
Ishii, Yoshiki, 5,361,066, Cl. 341-58.000.
Izumi, Michihiro, 5,361,299, Cl. 379-252.000.

Katsoka, Yoshiharu; Suzuki, Akiyoshi; and Yamada, Yuichi, 5,361,122, Cl. 355-53.000.

Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, 5,361,147, Cl. 358-532.000.

Kozuki, Susumu; Yoshimura, Katsuji; and Masui, Toshiyuki, 5,361,177, Cl. 360-48.000.

Kurata, Tetsuji, 5,361,181, Cl. 360-99.020.

Mori, Hideo; Takabayashi, Hiroshi; and Takahashi, Masanori, 5,360,943, Cl. 174-84.00R.

Morita, Tetsuya; Yamano, Hiroshi; Isaka, Yukio; Ishizuka, Haruo; Murata, Masahiko; Sakai, Masahiko; and Kubota, Tsutomu, 5,361,329, Cl. 395-102.000.

Nakata, Toru, 5,361,154, Cl. 359-123.000.

Ohtsuka, Masanori; and Kitani, Kazunari, 5,361,115, Cl. 354-400.000.

Okunuki, Masahiko; Suzuki, Akira; Shimoda, Isamu; Kaneko, Tetsuya; Tsukamoto, Takeo; Takeda, Toshihiko; Yonehara, Takao; and Ichikawa, Takeshi, 5,361,015, Cl. 313-309.000.

Sasaki, Nobuki; and Negataki, Shigeo, 5,359,764, Cl. 29-426.600.

Shimamune, Masayuki; Enomoto, Takashi; and Yoshioka, Toshifumi, 5,361,153, Cl. 359-87.000.

Sugiura, Susumu, 5,361,144, Cl. 358-500.000.

Sugiyama, Mitsumasa, 5,361,309, Cl. 382-9.000.

Suzuki, Akio; Miura, Yasushi; and Izumizaki, Masami, 5,361,090, Cl. 347-17.000.

Suzuki, Kazunori, 5,360,969, Cl. 235-479.000.

Tajima, Hiroki; Masuda, Kazuaki; Watanabe, Takashi; and Goto, Akira, 5,361,087, Cl. 347-44.000.

Taka, Hideo; and Maeda, Kazuyuki, 5,361,118, Cl. 354-403.000.

Takai, Yasuyoshi; Takei, Tetsuya; Otoshi, Hirokazu; and Okamura, Ryuji, 5,360,484, Cl. 118-723.0MW.

Tominaga, Hidekazu, 5,361,246, Cl. 369-44.320.

Yoshida, Masayuki; and Nakanishi, Keiko, 5,361,332, Cl. 395-114.000.

Cantex Inc.: *See*—
Lehmann, Martin; Davies, John; and Fochler, Helmut, deceased, 5,360,130, Cl. 220-3.800.

Capistrano, Cecilio L. Intubation assembly and method of inserting same having a balloon to indicate the position of tube inside of the patient. 5,360,003, Cl. 128-207.150.

Carbaugh, Daniel F.: *See*—
Kuhlman, G. William; Beaumont, Richard A.; Carbaugh, Daniel F.; Anderson, David; Chakrabarti, Amiya K.; and Kinnear, Kenneth P., 5,360,496, Cl. 148-677.000.

Carbomedics, Inc.: *See*—
Sauter, Joseph A.; and Bell, Ronald S., 5,360,014, Cl. 128-774.000.

Carceller, Elena: *See*—
Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, 5,360,813, Cl. 514-383.000.

Cardiac Pacemakers, Inc.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,360,442, Cl. 607-129.000.

Cardoso Mendes, Jose A.: *See*—
Martins Leites, Jose M.; Cardoso Mendes, Jose A.; Lippai, Andre; and Dellanoce, Paulo T., 5,359,922, Cl. 92-189.000.

Carelli, Charles E.; and Springer, Linda L., to AlliedSignal Inc. Packaging machinery belt with non-directional splice. 5,360,379, Cl. 474-260.000.

Carey, Paul G.; and Thompson, Jesse B., to United States of America, Energy. β-silicon carbide protective coating and method for fabricating same. 5,360,491, Cl. 136-256.000.

Cargill, Incorporated: *See*—
Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, 5,360,844, Cl. 524-50.000.

Carillo, Juan C.: *See*—
Allen, Barry R.; Dixit, Rahul; Nelson, Bradford L.; Carillo, Juan C.; and Jones, William L., 5,361,038, Cl. 330-54.000.

Caring Products International, Inc.: *See*—
Brownlee, James R.; and Lasby, William E., 5,360,422, Cl. 604-385.200.

Carl-Zeiss-Stiftung: *See*—
Kuchel, Michael, 5,361,312, Cl. 382-44.000.
Muller, Gerhard; and Muller-Stolzenburg, Norbert, 5,360,426, Cl. 606-13.000.

Carlen, Bo, to Idab Wamac AB. Gripper conveyor. 5,360,101, Cl. 198-803.700.

Carlsson, Jan-Erik; and Sundstedt, Gert, to Sandvik AB. Method for manufacture of a roll ring comprising cemented carbide and cast iron. 5,359,772, Cl. 29-895.320.

Carman, Anthony K.; and Pontbriand, Duane J., to ITT Corporation. Quick connector. 5,360,237, Cl. 285-81.000.

CarnaudMetalbox plc: *See*—
Pavely, Andrew P.; Marr, Roy J.; Foskett, Peter S.; and White, David M., 5,359,766, Cl. 29-564.600.

Carondelet Foundry Company: *See*—
Culling, John H., 5,360,592, Cl. 420-582.000.

Carpino, Louis A.; and Sadat-Aalaee, Dean, to Research Corporation Technologies, Inc. Synthesis and use of amino acid fluorides as peptide coupling reagents. 5,360,928, Cl. 562-849.000.

Carr, Brian P.; Glowny, David A.; Mastrangelo, Colette A.; Mayer, Paul M.; Seltzer, Arthur; and Shier, Peter D., to International Business Machines Corporation. System for parsing message units from an unstructured message stream of interleaved message units to form structured messages. 5,361,353, Cl. 395-700.000.

Carr, Fred K.: *See*—
Warn, Walter E.; and Carr, Fred K., 5,361,216, Cl. 364-510.000.

Carrasco, Earl J.: *See*—
Borden, Peter G.; Nguyen, Hoang K.; and Carrasco, Earl J., 5,360,980, Cl. 250-573.000.

Carrell, Ross M.: *See*—
O'Mara, Kerry D.; Poux, Christopher J.; Carrell, Ross M.; and Grice, Kurt R., 5,360,316, Cl. 414-798.900.

Carriker, Richard; Simpson, Martin; and Hauck, Thomas F., to James Clem Corporation. Bentonite liner with drainage system protection. 5,360,294, Cl. 405-270.000.

Carruth, John C.: *See*—
Kobsa, Irvin R.; Relf, Charles W.; and Carruth, John C., 5,361,279, Cl. 376-230.000.

Carson, Marion E.: *See*—
Carson, Randy N.; and Carson, Marion E., 5,360,191, Cl. 248-218.400.

Carson, Randy N.; and Carson, Marion E. Bannister attachment especially adapted for facilitating the mounting of a child safety gate. 5,360,191, Cl. 248-218.400.

Cartellone, Mark, to Mr. Coffee, Inc. Chopping attachment for hand held blender. 5,360,170, Cl. 241-169.100.

Carter, Hudson R.; and Huston, John T. Combined thermal and fuel NO_x control utilizing furnace cleanliness and stoichiometric burner combustion. 5,359,967, Cl. 122-379.000.

Carter, William, to Puritan-Bennett Corporation. Pneumatic demand oxygen valve. 5,360,000, Cl. 128-204.260.

Casati, Francois M.: *See*—
Lidy, Werner A.; Gatouillat, Gerard; and Casati, Francois M., 5,360,831, Cl. 521-99.000.

Caschem, Inc.: *See*—
Usifer, Douglas A.; and Ramirez, Carlos, 5,360,543, Cl. 210-321.800.

Case Corporation: *See*—
Mozingo, Robert E., 5,360,312, Cl. 414-685.000.

Casey, Jeremiah P.: *See*—
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Casper, Stephen L., to Micron Technology, Inc. Voltage compensating CMOS input buffer. 5,361,002, Cl. 327-530.000.

Cassella Aktiengesellschaft: *See*—
Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, 5,360,812, Cl. 514-364.000.

Castonguay, Roger N.: *See*—
Ferullo, David A.; Morgan, Roger J.; Rosen, James L.; DeRosier, Donna; and Castonguay, Roger N., 5,361,052, Cl. 335-172.000.

Castro, Paul: *See*—
Purdy, David L.; Wiggins, Richard L.; and Castro, Paul, 5,360,004, Cl. 128-633.000.

Caterpillar Inc.: *See*—
Antone, James A.; Lee, Fred C.; and Tabisz, Wojciech A., 5,361,014, Cl. 310-316.000.
Baldwin, Darryl D.; and Doan, Tien D., 5,359,883, Cl. 73-117.300.
Dickrell, David L.; Scholl, Kyle W.; and Sinn, Scott G., 5,359,969, Cl. 123-41.120.
Hoffman, John P.; Vance, Ricky D.; Barney, Dennis A.; and Kozlevcar, Joseph G., 5,361,059, Cl. 340-438.000.
Olson, Stephen R.; Tate, William J.; and Sorrells, Giles K., 5,361,208, Cl. 364-424.050.
O'Neill, William N.; Bloom, John J., Jr.; and Bexson, Joe M., Jr., 5,360,288, Cl. 404-129.000.

Cavalier, Earl J. Protective garment. 5,359,731, Cl. 2-46.000.

Cavitt, Michael B.: *See*—
Pham, Ha Q.; Cavitt, Michael B.; and Hardcastle, Pamela A., 5,360,886, Cl. 528-89.000.

Cawley, Robin A., to Quantel Limited. Data processing and communication. 5,361,334, Cl. 395-200.000.

Cawse, John L.: *See*—
Elton, Peter J.; Clarke, John C.; Cawse, John L.; Littler, George; Wigglesworth, Andrew; and Herring, Peter J., 5,360,701, Cl. 430-501.000.

Cedell, Tord: *See*—
Blomqvist, Peter; Andreasson, Ingmar; Rabe, Magnus; Balla, Gyula; and Cedell, Tord, 5,360,498, Cl. 156-73.100.

Cekleov, Michel: *See*—
Kelly, Edmund; Cekleov, Michel; and Dubois, Michel, 5,361,340, Cl. 395-400.000.

Celgene Corporation: *See*—
Matcham, George W.; and Lee, Seujo, 5,360,724, Cl. 435-128.000.

Celotta, Robert J.; and McClelland, Jabez J., to United States of America, Commerce. Method of fabricating laser controlled nanolithography. 5,360,764, Cl. 437-173.000.

Central Glass Company, Limited: *See*—
Nakaso, Yasuji; Kawasaki, Tsutomu; Kobayashi, Wataru; Gondo, Keiko; and Iwase, Hiroshi, 5,360,544, Cl. 210-483.000.

Centre National de la Recherche Scientifique (CNRS): *See*—
Jacoboni, Charles P.; and Boulard, Brigitte R. J., 5,360,637, Cl. 427-255.000.

Ceram SNA Inc.: *See*—
Delvaux, Pierre; Lesmerises, Normand; Poisson, Daniel; and Gouin, Marcel, 5,360,771, Cl. 501-80.000.

Cernansky, Joseph; Foster, George T.; and Rudell, Elliot, to Rudell, Elliot A. Footprint generating toy. 5,360,362, Cl. 446-16.000.

Chabrier de Lassauniere, Pierre-Etienne; Braquet, Pierre; Broquet, Colette; and Auvin, Serge, to Societe de Conseils de Recherches et d'Applications Scientifiques. Dual inhibitors of no synthase and cyclooxygenase, process for their preparation and therapeutical compositions containing them. 5,360,925, Cl. 560-169.000.

Chadwick, Thomas C., to Den-Mat Corporation. Fluoride ion-leachable glasses and dental cement compositions containing them. 5,360,770, Cl. 501-24.000.
Chai, Yoon Sick, to Kim, Ok J. Baby carriage convertible to a safety car seat. 5,360,221, Cl. 280-30.000.
Chakrabarti, Amiya K.: *See*—
Kuhlman, G. William; Beaumont, Richard A.; Carbaugh, Daniel F.; Anderson, David; Chakrabarti, Amiya K.; and Kinnear, Kenneth P., 5,360,496, Cl. 148-677.000.
Chakrabarti, Sibaprasanna: *See*—
Yu, Man S.; Hom, Foo S.; Chakrabarti, Sibaprasanna; Huang, Chong-Heng; and Patel, Mahendra, 5,360,615, Cl. 424-455.000.
Chamberlin, William B., III: *See*—
Mozdzen, Edward C.; Chamberlin, William B., III; and Saiter, Barbara A., 5,360,460, Cl. 44-386.000.
Chambers, Mark S.; Matassa, Victor G.; and Fletcher, Stephen R., to Merck Sharpe & Dohme Ltd. Benzodiazepine derivatives, compositions containing them and their use in therapy. 5,360,802, Cl. 514-221.000.
Chan, Alexander; and Pan, Yuh-Guo, to Clairol Inc. Direct dyes having a quaternary center with a long aliphatic chain. 5,360,930, Cl. 564-284.000.
Chan, Anita N.; Swetlin, Brian J.; Thompson, Samuel A., III; Willis, Chester R.; and Woodside, Andrew B., to Hercules Incorporated. Epoxy resin compositions with improved storage stability. 5,360,840, Cl. 523-428.000.
Chan, Joseph Y.: *See*—
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, 5,360,509, Cl. 156-645.000.
Chan, Michael, to Andronic Devices Ltd. Apparatus and method for improved insufflation. 5,360,396, Cl. 604-26.000.
Chan, Ting Y.: *See*—
Liu, Edward K.; Kim, Doyun; and Chan, Ting Y., 5,360,535, Cl. 208-157.000.
Chandalia, Kiran B.; Morgan, Michael J.; Martinez, Michael M.; O'Connor, James M.; and Noe, Stephen P., to Olin Corporation. Low VOC, moisture curable, one-component coating compositions based on organic polyisocyanate prepolymers. 5,360,642, Cl. 427-385.500.
Chang, David B.; and Vali, Victor, to Hughes Aircraft Company. Optical fiber having internal partial mirrors and interferometer using same. 5,361,383, Cl. 385-27.000.
Chang, David B.: *See*—
Pierce, Brian M.; Chang, David B.; and Bates, Kenn S., 5,361,034, Cl. 324-663.000.
Chang, Elizabeth P.; and Friday, James A., to Eastman Kodak Company. Multicolor photographic elements exhibiting an enhanced characteristic curve shape. 5,360,703, Cl. 430-506.000.
Chang, Wu-Sung; and Huang, Huan-Yang, to Bettis Corporation. Bicycle front fork shock absorbing mechanism. 5,359,910, Cl. 74-551.200.
Chapados, Phillip, Jr.: *See*—
Aton, Thomas J.; Chapados, Phillip, Jr.; Hosch, Jimmy W.; and Paranjpe, Ajit P., 5,361,137, Cl. 356-354.000.
Chaplin, Michael R.: *See*—
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Chapman, John; Logan, Patricia M.; Neyndorff, Herma C.; and North, Janice, to Baxter International, Inc.; and Quadra Logic Technologies, Inc. Method for inactivating pathogens in erythrocytes using photoactive compounds and plasma protein reduction. 5,360,734, Cl. 435-238.000.
Chapples, John: *See*—
Edwards, Stephen J.; Chapples, John; Parr, Kevin J.; and Robert, Philippe G., 5,360,529, Cl. 204-435.000.
Charles Machine Works, Inc., The: *See*—
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Charles Samelson Co.: *See*—
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Charles Stark Draper Laboratory, Inc., The: *See*—
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Charmat, Djamel, to AlliedSignal Inc. Drum brake with cam operated parking brake lever. 5,360,086, Cl. 188-79.540.
Charnley, James E.: *See*—
Monserud, David O.; Bothell, David H.; Tacheron, Paul H.; McDonald, Michael C.; Steele, David E.; Charnley, James E.; and Vatvedt, Gunnar V., 5,361,286, Cl. 376-316.000.
Chase, Thomas; and Zimmerman, Alan, to Evcon Industries, Inc. Furnace with heat exchanger. 5,359,989, Cl. 126-110.00R.
Chasin, Lawrence C.; and Cherdak, Erik B. Compact disc box and means for interconnecting. 5,360,107, Cl. 206-313.000.
Chatenoud, Francoise: *See*—
Normandin, Richard J. F.; Chatenoud, Francoise; and Cada, Michael, 5,361,160, Cl. 359-328.000.
Chavarria, Ron: *See*—
Anfinson, Mike; and Chavarria, Ron, 5,359,979, Cl. 123-538.000.
Chaya, Masahiko; and Takahashi, Toru, to Canon Kabushiki Kaisha. External magnetic field application device including a heat dissipation member and a metal plate for dissipating heat. 5,361,242, Cl. 369-13.000.
Chemie Linz Gesellschaft m.b.H.: *See*—
Hackl, Kurt A.; Mullner, Martin; Schulz, Erich; Stern, Gerhard; and Falk, Heinz, 5,360,601, Cl. 423-364.000.
Chen, Franklin M. C.; LeMahieu, David L.; Pomplun, William S.; and Soerens, Dave A., to Kimberly-Clark Corporation. Absorbent structure possessing improved integrity. 5,360,419, Cl. 604-374.000.
Chen, Franklin M. C.: *See*—
Fell, Joseph P.; Schulz, Richard D.; Meyer, Mary J.; Krueger, Allan J.; Chen, Franklin M. C.; and Huang, Yung H., 5,360,504, Cl. 156-247.000.
Chen, Jin-Tann; Chen, Same-Ting; and Tsai, Hsin, to Development Center for Biotechnology. Process for the preparation of monohydrated sodium phenylpyruvate. 5,360,927, Cl. 562-459.000.
Chen, Lan B.: *See*—
Shishido, Tadao; and Chen, Lan B., 5,360,803, Cl. 514-224.200.
Chen, Robert W. P. Foldable bicycle frame. 5,360,225, Cl. 280-278.000.
Chen, Same-Ting: *See*—
Chen, Jin-Tann; Chen, Same-Ting; and Tsai, Hsin, 5,360,927, Cl. 562-459.000.
Chen, Shan-Hu. Hanger for tubular lamp in an aquarium. 5,361,195, Cl. 362-397.000.
Chen, Sutton. Positionable viewing shield with disposable transparent medium. 5,360,018, Cl. 128-849.000.
Chen, Tian-Yuan. Configuration of automobile steering wheel locking devices. 5,359,869, Cl. 70-209.000.
Chen, Tien-Teh; Cowan, Stanley W.; Schofield, Edward; and Tang, Ping-Wah, to Eastman Kodak Company. Color photographic materials containing polymeric couplers. 5,360,710, Cl. 430-548.000.
Chen, William T.; Gall, Thomas P.; Wilcox, James R.; and Wu, Tien Y., to International Business Machines Corporation. Method of making multilayered circuit board. 5,359,767, Cl. 29-830.000.
Chenette, Philip E. Methods for endometrial implantation of embryos. 5,360,389, Cl. 600-34.000.
Cheng, Chung-Pu. Set point postal scale. 5,360,950, Cl. 177-232.000.
Cherdak, Erik B.: *See*—
Chasin, Lawrence C.; and Cherdak, Erik B., 5,360,107, Cl. 206-313.000.
Cheung, Kwok-wai, to Bell Communications Research, Inc. Estimated-queue, expanded-bus communication network. 5,361,262, Cl. 370-85.700.
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Chevallier, Francois; and Chevalier, Sammy, 5,360,836, Cl. 522-96.000.
Chevallier, Francois; and Chevalier, Sammy, to Societe Nationale des Poudres et Explosifs. Process for the production of coatings by radiation cross-linking. 5,360,836, Cl. 522-96.000.
Chi, Wu Hong. Direct-drive tension device using D.C. motor. 5,360,382, Cl. 482-1.000.
Chiang, David; and Ku, Wei-Yi, to Xilinx, Inc. Precharging bitlines for robust reading of latch data. 5,361,229, Cl. 365-189.050.
Chiaroni, Dominique; and Morin, Paulette, to Alcatel Cit. Optical filter tuned by rotation and comprising a Fabry-Perot interferometer. 5,361,155, Cl. 359-131.000.
Chin, Steven S.: *See*—
Masse, Michael A.; Chin, Steven S.; and Stevens, Craig A., 5,360,875, Cl. 525-314.000.
Chinchillo, A. Robert: *See*—
Ivanov, Alex J.; Driscoll, James A.; Linnehan, Richard P.; Crawford, Malcolm F.; Chinchillo, A. Robert; and Goldberg, Ernest, 5,359,934, Cl. 102-214.000.
Chishiki, Shigeo, to NEC Corporation. Semiconductor memory device provided with a word-line driver circuit using boosted voltage-source divided decoding. 5,361,237, Cl. 365-230.060.
Chlorine Engineers Corp. Ltd.: *See*—
Arimoto, Osamu; Katayama, Shinji; and Take, Yoshinari, 5,360,526, Cl. 204-242.000.
Chmielewski, Thomas A., Jr.: *See*—
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., 5,359,836, Cl. 56-10.20E.
Cho, George, to Candela Laser Corporation. Sclerostomy method and apparatus. 5,360,425, Cl. 606-6.000.
Choi, Isaac P.: *See*—
Nguyen, Truong Q.; and Choi, Isaac P., 5,361,250, Cl. 370-16.100.
Chowdhury, Naser M.: *See*—
Mostowy, Lewis J., Jr.; and Chowdhury, Naser M., 5,359,787, Cl. 34-343.000.
Chrisope, Douglas R.; and Hartley, Rolfe J., to Ethyl Petroleum Additives, Inc. Ashless or low-ash synthetic base compositions and additives therefor. 5,360,562, Cl. 252-46.600.
Christensen, Roland J. Rigid joint support brace sizing means and method. 5,360,394, Cl. 602-26.000.
Christensen, Stephen M., to Reinforced Earth Company, The. Spring biased apparatus for maintaining precast panels in a stable removable position in a vertical slot. 5,359,822, Cl. 52-459.000.
Christenson, Donald J.: *See*—
Adamson, Ronald B.; Bartosik, Donald C.; Johansson, Eric B.; and Christenson, Donald J., 5,361,282, Cl. 376-443.000.
Christian, Paul R.; and Karczewski, Casimir, to Motorola, Inc. Method and apparatus for transmission path delay measurements using adaptive demodulation. 5,361,398, Cl. 455-51.200.
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Mallo, Paul; Sidot, Christian; Blanc, Alain; and Christidis, Yani, 5,360,881, Cl. 526-240.000.
Christophersen, Palle: *See*—
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Chu, Alan C. Paint brush with replaceable head. 5,359,749, Cl. 15-176.100.

Chu, Amy H.: *See*—
Bell, Douglas E.; and Chu, Amy H., 5,360,595, Cl. 422-56.000.
Chugai Ro Co., Ltd.: *See*—
Adachi, Takakatsu, 5,360,202, Cl. 266-103.000.
Yamamoto, Tadashi; Seno, Takao; and Sakaguchi, Yoshito, 5,360,203, Cl. 266-110.000.
Chung, Stephen, to Silitek Corporation. Structure of computer keyboard (II). 5,361,082, Cl. 345-168.000.
Ciba-Geigy Corporation: *See*—
Cooke, Thomas W., 5,360,559, Cl. 252-8.700.
Hannemann, Klaus; Hohener, Alfred; Wang, Huanzhong; and Rembold, Manfred, 5,360,455, Cl. 8-444.000.
Lauton, Alain; Hess, Markus; Streicher, Gunter; and Puntener, Alois, 5,360,453, Cl. 8-94.330.
Zinke, Horst; and Schumacher, Rolf, 5,360,563, Cl. 252-46.700.
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Cizek, Paul J.: *See*—
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Clairol Inc.: *See*—
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Clancy, Edward W., III: *See*—
Miller, Harold J.; and Clancy, Edward W., III, 5,360,256, Cl. 297-361.100.
Clark, Carl E.; Frey, Jeffrey A.; Plambeck, Kenneth E.; Scalzi, Casper A.; and Sinha, Bhaskar, to International Business Machines Corporation. Storage isolation with subspace-group facility. 5,361,356, Cl. 395-700.000.
Clark, J. Bennett: *See*—
Jenneman, Gary E.; and Clark, J. Bennett, 5,360,064, Cl. 166-246.000.
Clark, Theodore D.: *See*—
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Clark, William D. K.: *See*—
Spillman, David M.; Ebel, Steve J.; and Clark, William D. K., 5,360,678, Cl. 429-6.000.
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Clausen, Earl W.; and Hubbard, Lloyd C., to Spin Corporation. Centrifugal blood pump. 5,360,317, Cl. 415-206.000.
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Clavenna, LeRoy R.: *See*—
Davis, Stephen M.; Clavenna, LeRoy R.; Fiato, Rocco A.; and Say, Geoffrey R., 5,360,777, Cl. 502-202.000.
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Clayton, Daniel R.: *See*—
Thorn, John E.; and Clayton, Daniel R., 5,360,040, Cl. 141-98.000.
Clearline Systems, Inc.: *See*—
Batten, William C., 5,360,555, Cl. 210-803.000.
Clecim: *See*—
Badiou, Jean-Claude, 5,360,182, Cl. 242-573.700.
Click, Gaylon T.: *See*—
Padia, Ashok S.; and Click, Gaylon T., 5,360,916, Cl. 549-259.000.
Clingman, David L.: *See*—
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Cloud Corporation: *See*—
Hartman, Donn A.; and Pearson, William N., 5,359,832, Cl. 53-435.000.
Clubley, Brian G.; and Rideout, Jan, to FMC Corporation. Inhibition of scale. 5,360,550, Cl. 210-699.000.
Coates, Ian H.; North, Peter C.; and Oxford, Alexander W., to Glaxo Group Limited. Tetrahydro-1H-pyrido[4,3-b]indol-1-one derivatives. 5,360,800, Cl. 514-215.000.
Cobb, David E. Detachable hanging plant support. 5,360,193, Cl. 248-318.000.
Cockett, Keith R.; Concannon, Martin; Hunter, Robert M.; Lovell, Anthony L.; Nock, Anthony; Webb, Maurice; and Whalley, Roderick T., to Unilever Patent Holdings B.V. Sorbing agents. 5,360,547, Cl. 210-690.000.
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Barrick, Donald E.; Lipa, Belinda J.; Lilleboe, Peter M.; and Isaacson, Jimmy, 5,361,072, Cl. 342-133.000.
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Werling, John M., 5,359,796, Cl. 40-514.000.
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Krukonis, Val J.; Gallagher, P. M.; and Coffey, M. P., 5,360,478, Cl. 117-68.000.
Coffey, Peter James: *See*—
Bartimote, John K., 5,360,371, Cl. 454-56.000.
Coffy, Rene L., to Aerospatiale. Semi-finished product and thermoplastic composite material having liquid crystal polymers and process for the production of the material. 5,360,503, Cl. 156-175.000.
Cohen, J. John: *See*—
Owens, Gregory P.; Cohen, J. John; and Hahn, William E., 5,360,893, Cl. 530-350.000.
Cohen, Ronald: *See*—
Buswell, Richard F.; Clausi, Joseph V.; Cohen, Ronald; Louie, Craig; and Watkins, David S., 5,360,679, Cl. 429-19.000.
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Koop, Dale E., 5,360,447, Cl. 623-15.000.
Cole, Timothy A.: *See*—
Yeh, Thomas I.; Friend, Clifford K.; Cole, Timothy A.; and Farnand, Leo R., 5,361,123, Cl. 355-208.000.
Colella, Gregory M.: *See*—
Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.
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Bonsignore, Patrick V.; and Coleman, Robert D., 5,360,892, Cl. 528-354.000.
Colivier Pty Ltd.: *See*—
Olivier, Gerard J., 5,359,736, Cl. 4-448.000.
Collee, Pierre E.; Mallow, William A.; and Radford, Steven R., to Baker Hughes, Incorporated. Method and composition for preserving core sample integrity using an encapsulating material. 5,360,074, Cl. 175-58.000.
Combustion Engineering, Inc.: *See*—
Formanek, Frank J., 5,361,285, Cl. 376-260.000.
Harmon, Daryl L.; Jamison, David S.; and Scarola, Kenneth, 5,361,198, Cl. 364-188.000.
Tenerowicz, Ronald J., 5,359,965, Cl. 122-6.500.
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Haefner, Kenneth B.; Bischoff, James R.; Ehresman, Mark D.; and Comeau, Steven F., 5,360,957, Cl. 219-69.160.
Commerical and Architectural Products, Inc.: *See*—
Sothman, Donald J., 5,360,121, Cl. 211-87.000.
Compagnie Generale Des Etablissements Michelin - Michelin & Cie: *See*—
Pradelle, Antoine, 5,359,886, Cl. 73-146.200.
Comtesse, Jean P.: *See*—
Prahl, Jan; and Comtesse, Jean P., 5,359,791, Cl. 36-145.000.
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Lewis, Gordon A. C., 5,359,863, Cl. 62-149.000.
Concannon, Martin: *See*—
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Concast Standard AG: *See*—
Kawa, Franciszek; and Stilli, Adrian, 5,360,053, Cl. 164-418.000.
Concrete Concepts, Inc.: *See*—
Makarov, George D., 5,359,825, Cl. 52-602.000.
Condon, Duane R., to Oatey Co. Threaded insulator clamp. 5,360,188, Cl. 248-56.000.
Conete, Eric: *See*—
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.
Conn, Paul J.; and Schrameck, William J., to S.A. Day Mfg. Co., Inc., The. Method for joining aluminum alloy tubes. 5,360,158, Cl. 228-56.300.
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., to International Business Machines Corporation. Object oriented method management system and software for managing class method names in a computer system. 5,361,350, Cl. 395-600.000.
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Nussstein, Peter; Staudinger, Guenther; Steinert, Wolfram; Kreuzer, Franz-Heinrich; and Schmitt-Sody, Wolfgang, 5,360,899, Cl. 536-4.100.
Constant Velocity Systems, Inc.: *See*—
Baltazar, Lawrence C.; Buck, Robert J.; and Davis, David W., 5,359,814, Cl. 451-5.000.
Contour Hardening, Inc.: *See*—
Storm, John M.; and Chaplin, Michael R., 5,360,963, Cl. 219-640.000.
Control Concepts, Inc.: *See*—
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., 5,359,836, Cl. 56-10.20E.
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., to Rochester Medical Corporation. Hand-actuated retention catheter. 5,360,402, Cl. 604-97.000.
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Cook, Jeffery T.; Lash, Glen R.; Moore, Danny R.; and Young, Gerald A., to Procter & Gamble Company, The. Absorbent structures containing stiffened fibers and superabsorbent material. 5,360,420, Cl. 604-378.000.
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, to Super Sagless Corporation. Three-way frame incliner. 5,360,255, Cl. 297-232.000.
Cooke, Thomas W., to Ciba-Geigy Corporation. Modified ligninsulfonates as dispersing agents for benzoltriazole ultra-violet absorbing agents. 5,360,559, Cl. 252-8.700.
Cooley, David M.: *See*—
Kaewell, John D., Jr.; and Cooley, David M., 5,361,046, Cl. 332-100.000.

Coomber, Barry A.: *See—*
Hagan, Russell M.; Bunce, Keith T.; Naylor, Alan; Ladlow, Mark; McElroy, Andrew B.; Whittington, Andrew R.; and Coomber, Barry A., 5,360,820, Cl. 514-559.000.

Coope, Janet L.: *See—*
Madison, Stephen A.; and Coope, Janet L., 5,360,568, Cl. 252-102.000.
Madison, Stephen A.; and Coope, Janet L., 5,360,569, Cl. 252-102.000.

Cooper, David A.: *See—*
Dalton, Paul W.; and Cooper, David A., 5,359,755, Cl. 24-515.000.

Cooper, Donald L.: *See—*
Swain, James C.; and Cooper, Donald L., 5,360,319, Cl. 417-223.000.

Cooper, Eugene R.: *See—*
Ruddy, Stephen B.; Roberts, Mary E.; McIntire, Gregory L.; Cooper, Eugene R.; and Illig, Carl R., 5,360,604, Cl. 424-5.000.

Cooper, William J., to Avery Dennison Corporation. Electric powered apparatus for dispensing individual plastic fasteners from fastener stock. 5,360,153, Cl. 227-67.000.

Cooperman, Michael; and Sieber, Richard, to GTE Laboratories Incorporated. Electrical circuitry with threshold control. 5,361,006, Cl. 326-73.000.

Copperstone, Janice A. Greeting card with bookmark. 5,359,793, Cl. 40-124.100.

Copytele, Inc.: *See—*
Hou, Wei-Hsin; Lloyd, Thomas B.; and Schubert, Frederic E., 5,360,689, Cl. 430-34.000.

Corby, Kenneth D.; and Elder, Andrew W., to Eastman Kodak Company. Bulk material container with a support stand therefor. 5,360,133, Cl. 220-630.000.

Cornelius Company, The: *See—*
Senghass, Karl A., 5,360,140, Cl. 222-52.000.

Cornell Research Foundation, Inc.: *See—*
Harman, Gary E.; Lorito, Matteo; and Hayes, Christopher K., 5,360,608, Cl. 424-94.610.

Corning Incorporated: *See—*
Antos, A. Joseph; Blankenship, Michael G.; Hall, Douglas W.; Murphy, Edward F.; and Smith, David K., 5,361,319, Cl. 385-123.000.

Corvita Corporation: *See—*
Pinchuk, Leonard, 5,360,397, Cl. 604-27.000.

Costa, Jean L., to Covil Products, Inc. Hand tool and methods of constructing and utilizing same. 5,359,818, Cl. 451-492.000.

Costar, Donald G. Combination handrake, scoop, grasping tool and method of use. 5,359,840, Cl. 56-400.120.

Coulon, Michel: *See—*
Bou, Pierre; Vandenbulcke, Lionel; Quilgars, Alain; Coulon, Michel; and Moisan, Michel, 5,360,485, Cl. 118-723.0ME.

Counterman, Christopher S. Time board game. 5,360,216, Cl. 273-243.000.

Covil Products, Inc.: *See—*
Costa, Jean L., 5,359,818, Cl. 451-492.000.

Cowan, Stanley W.: *See—*
Chen, Tien-Teh; Cowan, Stanley W.; Schofield, Edward; and Tang, Ping-Wah, 5,360,710, Cl. 430-548.000.
Tang, Ping W.; Lau, Philip T. S.; and Cowan, Stanley W., 5,360,713, Cl. 430-556.000.

Cox, Clifford A.; Nacamuli, Steven G.; Turner, Laurie B.; and Wilson, Amy L., to International Business Machines Corporation. System and method for installing program code for operation from multiple bootable operating systems. 5,361,358, Cl. 395-700.000.

Cox, William M.: *See—*
Baum, Allen J.; and Cox, William M., 5,361,284, Cl. 376-245.000.

Crane, Michael N. Versatile children's play table with toy storage. 5,360,264, Cl. 312-293.100.

Crary Company: *See—*
Majkrzak, David S., 5,359,835, Cl. 56-8.000.

Crawford, Carl R.: *See—*
Toth, Thomas L.; Crawford, Carl R.; and King, Kevin F., 5,361,291, Cl. 378-12.000.

Crawford, Malcolm F.: *See—*
Ivanov, Alex J.; Driscoll, James A.; Linnehan, Richard P.; Crawford, Malcolm F.; Chinchillo, A. Robert; and Goldberg, Ernest, 5,359,934, Cl. 102-214.000.

Cray Research, Inc.: *See—*
Greyzck, Terry, 5,361,354, Cl. 395-700.000.

Cree, Robert E.; and Rodriguez, Ricardo P. Gauge band randomizer. 5,360,328, Cl. 425-72.100.

Crompton & Knowles Corporation: *See—*
Weber, Oscar W., 5,360,551, Cl. 210-719.000.

Cross, Kenneth R.: *See—*
Brown, Lawrence E.; Clingman, David L.; Barber, Michael J.; Kroemer, John F.; and Cross, Kenneth R., 5,359,770, Cl. 29-889.100.

Cross Medical Products: *See—*
Puno, Rolando M.; and Mellinger, Philip A., 5,360,431, Cl. 606-72.000.

Crowley, H. W.; and Bilinski, Joseph R., to Roll Systems, Inc. Apparatus for separating folded web. 5,360,213, Cl. 270-39.000.

Croyle, Warren L.; and Brayer, Randall R., to Goodyear Tire & Rubber Company, The. Asymmetric tread for a tire. 5,360,043, Cl. 152-209.00A.

Cruse, Donald I. Apparatus with inversion linkage mechanism. 5,360,265, Cl. 366-208.000.

Cubic Automatic Revenue Collection Group: *See—*
Roes, John B., 5,360,941, Cl. 174-35.00R.

Cueman, Michael K.; and Azad, Farzin H., to General Electric Company. Crucible support heater for the control of melt flow pattern in a crystal growth process. 5,360,599, Cl. 117-217.000.

Culbertson, Thomas R.: *See—*
Curran, Judith M.; Culbertson, Thomas R.; and Hamburg, Douglas R., 5,359,852, Cl. 60-274.000.

Culling, John H., to Carondelet Foundry Company. Abrasion and corrosion resistant alloys. 5,360,592, Cl. 420-582.000.

Culpepper, Will L.; and Robinson, Glenn, to Mead Corporation, The. Adjustable flight bar system. 5,360,099, Cl. 198-473.100.

Cummins, Dennis A.; and Hucaby, Wayne R., to International Business Machine Corporation. Keyboard and controller with a three wire half duplex asynchronous and bidirectional communications architecture. 5,361,376, Cl. 395-800.000.

Cupo, Albert: *See—*
Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.

Curran, Judith M.; Culbertson, Thomas R.; and Hamburg, Douglas R., to Ford Motor Company. Air fuel ratio feedback control. 5,359,852, Cl. 60-274.000.

Curtis, John, to Ulano Corporation. Process for preparation of photosensitive composition. 5,360,864, Cl. 525-61.000.

Curtis, Kent M.: *See—*
Stretch, Dale A.; and Curtis, Kent M., 5,360,090, Cl. 192-3.290.

Cutright, Edwin L.; Scott, G. Robert; Vogt, Howard W., Jr.; and Reich, Richard B., to Philip Morris Incorporated. Application of fluidized material to a substrate using intermittent charges of compressed air. 5,360,516, Cl. 162-139.000.

Cyr, Joseph B.: *See—*
Benkeser, Donald E.; Cyr, Joseph B.; Greenberg, Albert G.; and Wright, Paul E., 5,361,362, Cl. 395-725.000.

Cytec Technology Corp.: *See—*
Hancock, Bill A.; and Fleming, Shane D., 5,360,600, Cl. 423-184.000.

Czarnojan, Wolfram: *See—*
Bechtel, Helmut; Czarnojan, Wolfram; Gruhlke, Stefan; and Kynast, Ulrich, 5,360,361, Cl. 445-40.000.

Czerwiec, Richard M., to Alcatel Network Systems, Inc. Line/drop testing from a craft terminal using test unit. 5,361,293, Cl. 379-27.000.

Czyperreck, Hans; Meiler, Fritz; and Stuhler, Helmut, to Hoechst CeramTec Aktiengesellschaft. Contact pin with ceramic insulation. 5,360,354, Cl. 439-741.000.

Dabbs, James M., III: *See—*
Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., III, 5,361,133, Cl. 356-376.000.

Dadoo, Manoj: *See—*
Lenkov, Dmitry; Unni, Shankar; Mehta, Michey; McDowell, Mark W.; Dadoo, Manoj; and Melli, Bruno, 5,361,351, Cl. 395-700.000.

Daewoo Electronics Co., Ltd.: *See—*
You, Shi-Ryoung; Ann, Byoung-Chul; Jeong, Nak-Seong; Oh, Kyoung-Chul; and Lee, Jeong-Geun, 5,361,380, Cl. 381-24.000.

Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., to Cardiac Pacemakers, Inc. Subcutaneous defibrillation electrodes. 5,360,442, Cl. 607-129.000.

Dahlstrom, Annica B.: *See—*
Tice, Thomas R.; Dillon, Deborah L.; Mason, David W.; McRae-McFarlane, Amanda; and Dahlstrom, Annica B., 5,360,610, Cl. 424-426.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See—*
Sato, Kazuo; Sugimoto, Tadayuki; and Saiuchi, Naofumi, 5,360,835, Cl. 522-85.000.

Dai Nippon Printing Co., Ltd.: *See—*
Matsuda, Noriaki; and Hanamoto, Keiji, 5,361,163, Cl. 359-452.000.

Daicel Chemical Industries, Ltd.: *See—*
Sumida, Katsuhiko, 5,360,647, Cl. 428-1.000.

Daily, Michael J., to Hughes Aircraft Company. Multi-image single sensor depth recovery system. 5,361,127, Cl. 356-1.000.

Daimon, Katsumi: *See—*
Nukada, Katsumi; Daimon, Katsumi; and Sakaguchi, Yasuo, 5,360,475, Cl. 106-410.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Fukutomi, Yoshiteru; Ohtani, Masami; and Okamoto, Takeo, 5,359,785, Cl. 34-60.000.

Dallaire, Guy. Bow sight assembly. 5,359,780, Cl. 33-265.000.

Dalton, Paul W.; and Cooper, David A., to Volumatic Ltd. Garment security clip. 5,359,755, Cl. 24-515.000.

Dalva, David I.: *See—*
Tajalli, Homayoon; Badger, Mark L.; Dalva, David I.; and Walker, Stephen T., 5,361,359, Cl. 395-700.000.

Daly, Daniel T.: *See—*
Kolp, Christopher J.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Koch, Frederick W.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,360,459, Cl. 44-358.000.

Dam, Ebo E.: *See—*
McCarthy, William M.; Dam, Ebo E.; van Bergen, Wil F.; and Fitzpatrick, Keith, 5,360,518, Cl. 162-358.200.

Damitio, Stephen S.: *See—*
English, George P.; Damitio, Stephen S.; Clark, Theodore D.; and Benefield, Joseph A., 5,360,955, Cl. 200-5.00A.

Dan Farber Cancer Institute: *See—*
Shishido, Tadao; and Chen, Lan B., 5,360,803, Cl. 514-224.200.

Danielson, Libert K.; and McBurnett, Ray, to B. F. Goodrich Company, The. Inflatable slide raft assembly. 5,360,186, Cl. 244-137.200.

Danippon Printing Co., Ltd.: *See—*
Makino, Kuniji, 5,360,115, Cl. 206-523.000.

Danylec, Basil: *See—*
von Izstein, Laurence M.; Wu, Wen-Yang; Phan, Tho V.; Danylec, Basil; and Jin, Betty, 5,360,817, Cl. 514-459.000.

Datametrics Corporation: *See—*
Hitz, Mark A., 5,359,915, Cl. 83-342.000.

David, Johnnie; and David, Melanise. Removable door lock for hotels and the like. 5,360,245, Cl. 292-289.000.

David, Melanise: *See—*
David, Johnnie; and David, Melanise, 5,360,245, Cl. 292-289.000.

David Sarnoff Research Center, Inc.: *See—*
O'Mara, Kerry D.; Poux, Christopher J.; Carrell, Ross M.; and Grice, Kurt R., 5,360,316, Cl. 414-798.900.

Davidian, Avner, to White Storage and Retrieval Systems, Inc. Safety device for movable storage units. 5,360,262, Cl. 312-201.000.

Davies, John: *See—*
Lehmann, Martin; Davies, John; and Fochler, Helmut, deceased, 5,360,130, Cl. 220-3.800.

Davies, Stephen H., to Lucas Industries public limited company. Device for operation of a gas turbine engine thrust reverser system. 5,359,848, Cl. 60-226.200.

Davis, David W.: *See—*
Baltazar, Lawrence C.; Buck, Robert J.; and Davis, David W., 5,359,814, Cl. 451-5.000.

Davis, Ralph L.: *See—*
Leason, Michael H.; Ruschke, Rick R.; and Davis, Ralph L., 5,360,413, Cl. 604-249.000.

Davis, Richard A.; Plagens, Mark; and Sridhar, Uppili, to Honeywell Inc. Method for etching silicon. 5,360,521, Cl. 204-129.300.

Davis, Stephen M.; Clavenna, LeRoy R.; Fiato, Rocco A.; and Say, Geoffrey R., to Exxon Research and Engineering Company. High performance alumina heat transfer solids for high temperature fluidized bed synthesis gas reactions. 5,360,777, Cl. 502-202.000.

Davis, Stephen M.; Clavenna, LeRoy R.; Say, Geoffrey R.; and Fiato, Rocco A., to Exxon Research and Engineering Company. High surface purity heat transfer solids for high temperature fluidized bed reactions. 5,360,778, Cl. 502-202.000.

Dawe's Inc.: *See—*
Griffel, Gilbert W., Jr.; and Kirk, David J., 5,360,823, Cl. 514-706.000.

Dawson, Richard W.; Sellberg, Ronald P.; and Yeates, Richard P., to TTX Company. Draw bar connection having a relatively rigid filling member to allow about one half inch of travel. 5,360,125, Cl. 213-62.00R.

Day, Donna L.: *See—*
Ruetz, Roland L.; Vojta, Jan V.; and Day, Donna L., 5,360,591, Cl. 420-479.000.

Day, John E. Post assembly. 5,359,828, Cl. 52-665.000.

Deal, Jerry L. Diver's mirror. 5,361,169, Cl. 359-838.000.

de Almeida, Amilton F.: *See—*
Nakano, Yoji; and de Almeida, Amilton F., 5,360,263, Cl. 312-257.100.

Dean, James, to Uncle Ben's, Inc. Rice hull ash. 5,360,633, Cl. 427-220.000.

DeBrosse, John K.: *See—*
Bronner, Gary B.; DeBrosse, John K.; and Kenney, Donald M., 5,360,758, Cl. 437-52.000.

Decker, Mel: *See—*
Adams, John; and Decker, Mel, 5,360,094, Cl. 194-212.000.

Deere & Company: *See—*
Parsons, Stephen K.; and Richardson, Craig A., 5,359,839, Cl. 56-130.000.

De Filippis, Pietro; Salerno, Franco; and Mastella, Paolo, to Industrie Magneti Marelli SPA. Interface circuit for generating and analogue signal to control the speed of rotation of a direct-current electric motor. 5,361,025, Cl. 318-599.000.

DeGroot, Paul, to Medtronic, Inc. Multiple pulse cardioversion or defibrillation. 5,360,435, Cl. 607-7.000.

Deguchi, Toshihisa: *See—*
Fuji, Hiroshi; Deguchi, Toshihisa; Terashima, Shigeo; and Yamaguchi, Takeshi, 5,361,247, Cl. 369-48.000.

de Haan, Hendrik A., to Hadewe B.V. Apparatus for delivering flat articles comprising one or more layers. 5,360,206, Cl. 271-125.000.

Delage, Frederic: *See—*
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.

Delco Electronics Corporation: *See—*
Bogue, Terry L.; and Osborne, Hollis D., 5,360,958, Cl. 219-86.510.
Easley, J. Alexander; Herkness, Randall R.; Dobosz, Paul J.; Stacey, Lisa A.; and Soutar, Larry W., 5,361,305, Cl. 381-58.000.
Whitson, Duane E.; and Lawlyes, Daniel A., 5,359,761, Cl. 29-883.000.

DeLeon, Alberto; and Shieh, David J., to Oxid, Inc. Aromatic polyester polyol. 5,360,900, Cl. 536-18.300.

Del Giudice, Luciano: *See—*
Bastioli, Catia; Bellotti, Vittorio; Del Giudice, Luciano; Lombi, Roberto; and Rallis, Angelos, 5,360,830, Cl. 521-84.100.

Dellanoce, Paulo T.: *See—*
Martins Leites, Jose M.; Cardoso Mendes, Jose A.; Lippai, Andre; and Dellanoce, Paulo T., 5,359,922, Cl. 92-189.000.

DeLorean, John Z., to Genesis III, LLC. Transportation system, vehicle and method. 5,359,941, Cl. 105-73.000.

Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, to Cargill, Incorporated. Articles manufactured with a composition containing a polymer of unsaturated hydrocarbon, a C_{1-4} alkyl or hydroxyalkylether of starch and a vinyl or acryl polymer as a compatibilizing agent. 5,360,844, Cl. 524-50.000.

Delta System Designs Limited: *See—*
Ashbey, James A., 5,361,106, Cl. 352-57.000.

De Lucia, Stephen A.: *See—*
Blessington, Daniel R., deceased; Marks, Gary T.; Sergent, Jerry E.; Sline, Judy A.; and De Lucia, Stephen A., 5,359,928, Cl. 101-128.400.

Delvaux, Pierre; Lesmerises, Normand; Poisson, Daniel; and Gouin, Marcel, to Ceram SNA Inc. Light weight mineral foam and process for preparing the same. 5,360,771, Cl. 501-80.000.

DeMar Technologies, Inc.: *See—*
Rains, Thersa J.; and Pempsell, Mark, 5,359,739, Cl. 5-81.100.

DeMars, Jimmy A.: *See—*
Thorson, James S.; and DeMars, Jimmy A., 5,360,623, Cl. 426-555.000.

Demeyer, Richard G. Wire striper. 5,359,927, Cl. 101-35.000.

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Grieshaber, Hans R.; Demmerle, Rudolf; and Vogel, Urs, 5,360,398, Cl. 604-30.000.

Den-Mat Corporation: *See—*
Chadwick, Thomas C., 5,360,770, Cl. 501-24.000.

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Kolp, Christopher J.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Koch, Frederick W.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,360,459, Cl. 44-358.000.

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Kazecki, Henry L.; Goode, Steven H.; and Dennis, Donald W., 5,361,400, Cl. 455-63.000.

Denny, Lawrence A.: *See—*
Perkin, Gregg S.; and Denny, Lawrence A., 5,360,967, Cl. 235-375.000.

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Engelhardt, John; and Serbousek, Jon, 5,360,452, Cl. 623-22.000.

Der Manuelian, Raffi, to General Motors Corporation. Dual fuel tank system. 5,360,034, Cl. 137-571.000.

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Derrien, Michel, to Messier-Bugatti. Linear actuator, in particular for driving an aircraft landing gear leg. 5,360,185, Cl. 244-102.00R.

Desai, Girish N.; and Bodor, Janos, to Van den Bergh Foods Co., Division of Conopco, Inc. Reduced fat shortening substitute for bakery products. 5,360,627, Cl. 426-606.000.

DeSimone, Joseph M.; and Hunt, Michael O., Jr., to University of North Carolina at Chapel Hill. Method of making fluorinated copolymers. 5,360,869, Cl. 525-102.000.

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Behrens, Guenter; and Ellmers, Wilfried, 5,360,303, Cl. 411-120.000.

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Opower, Hans, 5,361,275, Cl. 372-108.000.

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Chen, Jin-Tann; Chen, Same-Ting; and Tsai, Hsin, 5,360,927, Cl. 562-459.000.

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Leenders, Luc; and D'hont, Dirk, 5,360,781, Cl. 503-227.000.

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Sato, Yoshinori; Funada, Yoshitugu; Houseki, Yoshitaka; and Nagura, Koji, 5,360,665, Cl. 428-323.000.

Diamantoglou, Michael; Richter, Edmund; Rintelen, Thomas; Duweg, Gustav; Reiche, Angelika; and Tatas, Ralf, to Akzo NV. Method for coating cellulosic membranes. 5,360,636, Cl. 427-244.000.

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Purdy, David L.; Wiggins, Richard L.; and Castro, Paul, 5,360,004, Cl. 128-633.000.

Diaz, Felix V.; and Stanley, Jack H., to DSC Communications Corporation. Method and apparatus for a high speed asynchronous transfer mode switch. 5,361,255, Cl. 370-58.100.

Dickerhoff, Scott D.; Kappel, Thomas F.; and Virag, Robert A., to Mallinckrodt Medical, Inc. Warming blanket method utilizing a warming blanket having multiple inlets. 5,360,439, Cl. 607-104.000.

Dickrell, David L.; Scholl, Kyle W.; and Sinn, Scott G., to Caterpillar Inc. Intermittent cooling fan control. 5,359,969, Cl. 123-41.120.

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Mays, Kevin R.; Maroun, Tony Y.; and Diehl, Vernon L., 5,361,061, Cl. 340-825.440.

Diels, Gaston S. M.: *See—*
Janssens, Frans E.; Sommen, Francois M.; and Diels, Gaston S. M., 5,360,807, Cl. 514-318.000.

Dietterle, Thomas; and Schollhorn, Markus, to Mercedes-Benz AG. Air filter assembly for heating or air-conditioning system. 5,360,463, Cl. 55-422.000.

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Ward, Robert J., 5,359,942, Cl. 105-240.000.

DiFoggio, Rocco; Sadhukhan, Maya; and Ranc, Martha L., to Western Atlas International, Inc. Method for improving chemometric estimations of properties of materials. 5,360,972, Cl. 250-339.120.

Digital Equipment Corporation: *See—*
Barnaby, Michael J., 5,361,081, Cl. 345-145.000.
Gist, William B., 5,361,042, Cl. 330-261.000.
Godiwala, Nitin D.; Maskas, Barry A.; Thaller, Kurt M.; and Metzger, Jeffrey A., 5,361,267, Cl. 371-40.100.
Rege, Satish L.; and Edgar, Ronald M., 5,361,372, Cl. 395-800.000.

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Dimango Products Corporation: *See—*
Angott, Paul G.; and Xydis, Thomas G., 5,361,019, Cl. 315-324.000.

DiMarco, Bernard; and Kaufman, Steven A., to Siemens Energy & Automation, Inc. Pivoting circuit breaker contact arm assembly. 5,361,051, Cl. 335-16.000.

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Wolters, Robertus A. M.; Swart, Edwin T.; and Dirks, Albertus G., 5,360,994, Cl. 257-751.000.

Dismukes, John P.: *See—*
Hwang, Jyi-Faa; and Dismukes, John P., 5,360,877, Cl. 525-423.000.

Display Matrix Corporation: *See—*
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DiStefano, Peter S.: *See—*
Ip, Nancy Y.; DiStefano, Peter S.; and Stahl, Neil, 5,360,740, Cl. 436-501.000.

DiStefano, Thomas H.; Grube, Gary W.; Khandros, Igor Y.; and Mathiew, Gaetan, to Tessera, Inc. Semiconductor connection components having lead connection sections with ends detachably secured to support structures. 5,360,947, Cl. 174-261.000.

Dittrich, William A., to SNC Industrial Technologies Inc./Les Technologies Industrielles SNC Inc. Reduced energy cartridge. 5,359,937, Cl. 102-430.000.

Dix, Johannes P.: *See—*
Grief, Norbert; Oppenlaender, Knut; Birkhofer, Hermann; Wegner, Brigitte; and Dix, Johannes P., 5,360,454, Cl. 8-94.330.

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Allen, Barry R.; Dixit, Rahul; Nelson, Bradford L.; Carillo, Juan C.; and Jones, William L., 5,361,038, Cl. 330-54.000.

Doan, Tien D.: *See—*
Baldwin, Darryl D.; and Doan, Tien D., 5,359,883, Cl. 73-117.300.

Dobosz, Paul J.: *See—*
Easley, J. Alexander; Herkness, Randall R.; Dobosz, Paul J.; Stacey, Lisa A.; and Soutar, Larry W., 5,361,305, Cl. 381-58.000.

Dr. Ing. h.c.F. Porsche AG: *See—*
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Doduco GmbH + Co. Dr. Eugen Durrwachter: *See—*
Mayer, Ursula; Michal, Roland; and Saeger, Karl E., 5,360,673, Cl. 428-546.000.

Doeringer, Willibald; Dykeman, Douglas; Edwards, Allan K.; Pozefsky, Diane P.; Sarkar, Soumitra; and Turner, Roger D., to International Business Machines Corporation. Inter-domain multicast routing. 5,361,256, Cl. 370-60.000.

Dolinar, Joseph F., Jr.: *See—*
Henry, John W., IV; Flickinger, William F.; Dolinar, Joseph F., Jr.; Rodriguez, Francisco A.; Smith, James W., Sr.; and Gabriele, Rocco J., Jr., 5,360,325, Cl. 418-126.000.

Domenig, Georg. Laterally adjustable mounting bracket for use on a drawer and with a tongueless drawer guide in connection with a desk or cabinet. 5,359,752, Cl. 16-94.00R.

Domyo, Seiichi: *See—*
Sugita, Yumiko; Hashimoto, Hisashi; Tsuruki, Masaki; and Domyo, Seiichi, 5,361,349, Cl. 395-600.000.

Donaghy, David J.: *See—*
Mawby, Harold S.; Donaghy, David J.; Gunderson, Rick L.; Frost, Thomas; Fairchild, Ace; and Spohn, Marvin L., 5,359,795, Cl. 40-405.000.

Donckers, Marcus C. J. M.: *See—*
Bjorklund, Gary C.; Burland, Donald M.; Donckers, Marcus C. J. M.; Miller, Robert D.; Moerner, William E.; Silence, Scott M.; Twieg, Robert J.; and Walsh, Cecilia A., 5,361,148, Cl. 359-4.000.

Dosaka, Katsumi: *See—*
Inoue, Yoshinori; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,361,223, Cl. 365-51.000.

Dosch, Daniel E.: *See—*
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Dotolo Research Corporation: *See—*
Dotolo, Vincent A.; Schwartz, John R.; and Kraus-Marchak, Jaye, 5,360,580, Cl. 252-542.000.

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Doue, John C., to Hewlett-Packard Company. Computer display system and method for facilitating access to patient data records in a medical information system. 5,361,202, Cl. 364-413.010.

Dougherty, James A.; Shugard, Donald J.; and Anderson, Lowell R., to ISP Investments Inc. Eutectic compositions of divinyl imidazolidone and vinyl caprolactam. 5,360,882, Cl. 526-262.000.

Dovetech, Inc.: *See—*
Buckner, Carrol E.; and Buckner, Carrol D., 5,359,945, Cl. 110-233.000.

Dow Chemical Company, The: *See—*
Anderson, Kenneth W.; and Hickner, Richard A., 5,360,838, Cl. 523-404.000.
Arends, Charles B.; Schrenk, Walter J.; Lewis, Ray A.; Ramanathan, Ravi; and Wheatley, John, 5,360,659, Cl. 428-216.000.
Falla, Daniel J.; and Restaino, Michael C., 5,360,648, Cl. 428-35.200.
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,360,884, Cl. 525-526.000.
McGrath, Patrick J., 5,360,932, Cl. 564-418.000.
Pham, Ha Q.; Cavitt, Michael B.; and Hardcastle, Pamela A., 5,360,886, Cl. 528-89.000.
Stultz, Jeffrey H., 5,360,143, Cl. 222-94.000.

Drach, John C.: *See—*
Townsend, Leroy B.; and Drach, John C., 5,360,795, Cl. 514-43.000.

Drake, James R.; and Hayashi, Kuniyuki, to Yamaha Hatsudoko Kabushiki Kaisha. Self-propelled watercraft. 5,360,357, Cl. 440-14.000.

Drake, Paul C.: *See—*
Hennenkamp, Jeffrey R.; Logsdon, Kevin M.; Simpson, Brian L.; Walker, Theodore E.; and Drake, Paul C., 5,360,602, Cl. 423-395.000.

Dreisinger, Douglas R.: *See—*
Drnevich, Raymond F.; and Dreisinger, Douglas R., 5,360,603, Cl. 423-403.000.

Dreyfus, Edward D.: *See—*
Monforte, Mathew L.; and Dreyfus, Edward D., 5,360,249, Cl. 294-119.100.

Driscoll, James A.: *See—*
Ivanov, Alex J.; Driscoll, James A.; Linnehan, Richard P.; Crawford, Malcolm F.; Chinchillo, A. Robert; and Goldberg, Ernest, 5,359,934, Cl. 102-214.000.

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Droege, Thomas F.: *See—*
Mouche, Richard J.; and Droege, Thomas F., 5,360,549, Cl. 210-696.000.

Drummeter, Louis F.; Stamm, Gordon L.; Rohl, Gerald E.; and Rockman, Alfred G., to United States of America, Navy. Secret optical marking. 5,360,235, Cl. 283-89.000.

DSC Communications Corporation: *See—*
Diaz, Felix V.; and Stanley, Jack H., 5,361,255, Cl. 370-58.100.

Dubois, Michel: *See—*
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Duni AB: *See—*
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Dunlop Limited: *See—*
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Dunn, John P.: *See—*
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Dunn, William C., to Motorola, Inc. Multi-axes gyroscope. 5,359,893, Cl. 73-505.000.

Duo-Fast Corporation: *See—*
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Duouenne, Daniel: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
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Dupre, Herman K. Adjustable snow making tower. 5,360,163, Cl. 239-14.200.

Duquenne, Daniel, to Elf Atochem, S.A. Process for the absorption of pollutants. 5,360,579, Cl. 252-329.000.

Duracraft Corporation: *See—*
Marino, Frank, 5,361,321, Cl. 392-373.000.

Duranton, Albert: *See—*
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Duval, Michel; and Giguere, Yves, to Hydro-Quebec. Electrochemical cell for polymer electrolyte-lithium batteries (ACEP). 5,360,684, Cl. 429-162.000.

Duweg, Gustav: *See—*
Diamantoglou, Michael; Richter, Edmund; Rintelen, Thomas; Duweg, Gustav; Reiche, Angelika; and Tatas, Ralf, 5,360,636, Cl. 427-244.000.

Duxbury, Guy M., to Northern Telecom Limited. Printed circuit board. 5,360,949, Cl. 174-250.000.

Dwyer, Stephen M.: *See—*
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DXL International, Inc.: *See—*
Mudd, Daniel T., 5,359,878, Cl. 73-3.000.

Dyer, Paul N.: *See—*
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Dyke, David E.; and Neilson, Wayne, to United Foils Inc. Apparatus for making metal foil. 5,360,525, Cl. 204-216.000.

Dykeman, Deidra A.: *See—*
Hotaling, Steven P.; and Dykeman, Deidra A., 5,360,572, Cl. 252-181.600.

Dykeman, Douglas: *See—*
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Dynisco, Inc.: *See—*
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E. F. Bavis & Associates, Inc.: *See—*
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E-Z Trail, Inc.: *See—*
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Eachus, Raymond S.: *See—*
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Earle, Anthony, to Eastman Kodak Company. Photographic processing tank. 5,361,114, Cl. 354-320.000.

Earle, Stephen R.: *See—*
Levington, Henry J.; and Earle, Stephen R., 5,360,324, Cl. 417-534.000.

Earls, Jimmy D.: *See—*
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,360,884, Cl. 525-526.000.

Easley, J. Alexander; Herkness, Randall R.; Dobosz, Paul J.; Stacey, Lisa A.; and Soutar, Larry W., to Delco Electronics Corporation. Automated system and method for automotive audio test. 5,361,305, Cl. 381-58.000.

Eastlick, David T.: *See—*
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Hyatt, John A.; Gardner, Robert M.; and Thatcher, Scott R., 5,360,723, Cl. 435-101.000.
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Eastman Kodak Company: *See—*
Anderson, Charles C.; Leszyk, Gerald M.; and Tingler, Kenneth L., 5,360,706, Cl. 430-529.000.
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Chen, Tien-Teh; Cowan, Stanley W.; Schofield, Edward; and Tang, Ping-Wah, 5,360,710, Cl. 430-548.000.
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Olm, Myra T.; McDugle, Woodrow G.; Puckett, Sherrill A.; Kuromoto, Traci Y.; Eachus, Raymond S.; Bell, Eric L.; and Wilson, Robert D., 5,360,712, Cl. 430-567.000.
Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,361,112, Cl. 354-298.000.
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Eaton Corporation: *See—*
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Eatwell, Graham P., to Noise Cancellation Technologies, Inc. Frequency domain adaptive control system. 5,361,303, Cl. 381-71.000.

Ebara, Yukinori; and Kusakawa, Tomoyo, to Nissho Corporation. Blood sampler and an amplifier for use therewith. 5,360,012, Cl. 128-764.000.

Ebashi, Iwao: *See—*
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Ebel, Steve J.: *See—*
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Eby, Ronald J.: *See—*
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Eckberg, Richard P.; and Agars, Robert F., to General Electric Company. Controlled release compositions for UV curable epoxysilicone release agents. 5,360,833, Cl. 522-31.000.

Eckhardt, Horst: *See—*
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Eckles, Robert D.: *See—*
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Ecologic Waste Systems Corporation: *See—*
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Edem, Brian C.; and Worsley, Debra J., to National Semiconductor Corporation. Frame-based transmission of data. 5,361,261, Cl. 370-85.300.

Edgar, Kevin J.; and Blount, William W., Jr., to Eastman Chemical Company. Cellulose acetoacetates. 5,360,843, Cl. 524-41.000.

Edgar, Ronald M.: *See—*
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Eduard Kusters Maschinenfabrik GmbH: *See—*
Von Harten, Gunter; Keller, Walter; Kutz, Johannes; Benz, Bernhard; Meyer, Christian; and Kurschatke, Wolfgang, 5,359,743, Cl. 8-151.000.

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Egolf, Scott L.; and Smart, Reginald T., to Rohm and Haas Company. Expandable coating composition. 5,360,826, Cl. 521-54.000.

Eguchi, Kiyoshi: *See—*
Kawai, Hideki; Kojo, Katsuhiko; Eguchi, Kiyoshi; and Ogawa, Yoshiko, 5,360,674, Cl. 428-548.000.

Ehrat, Rainer: *See—*
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Ehresman, Mark D.: *See—*
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Ehrler, Hans P.; Moll, Roger; and Neidecker, Rudolf, to Multi-Contact AG. Contact apparatus. 5,360,355, Cl. 439-816.000.

Eichmiller, Frederick, to American Dental Association Health Foundation. Device and method for shielding healthy tissue during radiation therapy. 5,360,666, Cl. 428-327.000.

Eicken, Karl: *See—*
Rheinheimer, Joachim; Eicken, Karl; Vogelbacher, Uwe J.; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,360,913, Cl. 548-255.000.

Eidler, Chris W.: *See—*
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Einbinder, Stephen B., to Motorola, Inc. Balanced split ring resonator. 5,361,050, Cl. 333-204.000.

Ekstrom Industries, Inc.: *See—*
Pruehs, Allen V.; and Robinson, Darrell A., 5,361,026, Cl. 324-74.000.

Elam, Francis E.; and Teague, Larry E., to Motion Control, Inc. Fiber micronaire measuring apparatus and method. 5,359,880, Cl. 73-38.000.

Elder, Andrew W.: *See—*
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Electric Fuel Limited: *See—*
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Electro Scientific Industries, Inc.: *See—*
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Elektriciteit Voor Goederenbehandeling Marine En Industrie in het verkort Egemin, naamloze vennootschap: *See—*
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ELF Atochem North America, Inc.: *See—*
Sanchez, Jose, 5,360,867, Cl. 525-70.000.

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Duquenne, Daniel, 5,360,579, Cl. 252-329.000.
Stein, Claude; and Duouenne, Daniel, 5,360,548, Cl. 210-693.000.

Elf Sanofi: *See—*
Bachy, Andre; Fraisse, Laurent; Keane, Peter; Mendes, Etienne; Vernieres, Jean-Claude; and Simiand, Jacques, 5,360,799, Cl. 514-212.000.

Ellend, Walter, to Stopinc Aktiengesellschaft. Driving assembly for slide gate on a metallurgical vessel. 5,360,205, Cl. 266-236.000.

Elliott, Brian D. Guide bar for stone slab saw. 5,359,987, Cl. 125-21.000.

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Behrens, Guenter; and Ellmers, Wilfried, 5,360,303, Cl. 411-120.000.

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Olson, Allen L.; and Emerson, James W., 5,359,830, Cl. 53-398.000.

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Ortiz, Luis R.; Torres, Alexis; and Encarnacion, Angel, 5,361,297, Cl. 379-130.000.

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Jensen, Joseph C.; Taylor, Junius E.; and Acker, Loren C., 5,360,330, Cl. 425-144.000.

Englert, Heinrich; Mania, Dieter; Wettlaufer, David; and Klaus, Erik, to Hoechst Aktiengesellschaft. Arylcarbonylaminoalkyl-dihydro-oxo-pyridines, their production and their use. 5,360,808, Cl. 514-335.000.

English, George P.; Damitio, Stephen S.; Clark, Theodore D.; and Benefield, Joseph A., to Key Tronic Corporation. Computer keyboard with cantilever switch design and improved PCB/switch membrane interface. 5,360,955, Cl. 200-5.00A.

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Enomoto, Takashi: *See—*
Shimamune, Masayuki; Enomoto, Takashi; and Yoshioka, Toshifumi, 5,361,153, Cl. 359-87.000.

Enpac Corporation: *See—*
Grebenyuk, Alexander, 5,359,955, Cl. 108-51.100.

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Environmental Solvents Corporation: *See—*
Harman, Jonathan W., 5,360,027, Cl. 134-102.300.

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Anfinson, Mike; and Chavarria, Ron, 5,359,979, Cl. 123-538.000.

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Markley, David; Lawler, Margaret; Erdman, Jane; and Pierson, Timothy, 5,359,740, Cl. 5-425.000.

Ericsson GE Mobile Communication Holding, Inc.: *See—*
Dent, Paul W., 5,361,403, Cl. 455-74.000.

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Dent, Paul W., 5,361,404, Cl. 455-135.000.

ERNO Raumfahrttechnik GmbH: *See—*
Koeppl, Alois; and Mueller, Robert, 5,360,058, Cl. 165-104.260.

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Appeldorn, Roger H.; Johnson, Robert J.; Rouser, Forrest J.; and Erwin, Robert L., 5,360,270, Cl. 383-5.000.

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Takahara, Yasuaki; Esaki, Tomohiro; Sudo, Shigeyuki; and Okamoto, Teiji, 5,361,047, Cl. 332-103.000.

Escher, Claus: *See—*
Blatter, Karsten; Escher, Claus; Harada, Takamasa; Harnischfeger, Peter; and Hemmerling, Wolfgang, 5,360,576, Cl. 252-299.610.
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Fox, J. Gary; and Allen, Darlene, 5,360,614, Cl. 424-439.000.

Etheridge, Thomas J., to Pipeline Rehab, Inc. Apparatus for cleaning the exterior of a pipe. 5,359,748, Cl. 15-93.100.

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Chrisope, Douglas R.; and Hartley, Rolfe J., 5,360,562, Cl. 252-46.600.

Euruichi, Yukiharu: *See—*
Moteki, Yoshihiro; Fujiwara, Nobutaka; Euruichi, Yukiharu; and Takiyama, Eiichiro, 5,360,663, Cl. 428-290.000.

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Francis, Raymond C.; and Evans, Daniel B., 5,360,515, Cl. 162-135.000.

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Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, to Dunlop Limited. Method of producing light-weight high-strength stiff panels. 5,360,500, Cl. 156-74.000.

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Watkins, Gary S.; and Brown, Russell A., 5,361,386, Cl. 395-130.000.

Evcon Industries, Inc.: *See—*
Chase, Thomas; and Zimmerman, Alan, 5,359,989, Cl. 126-110.00R.

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Steiger, Ronald P.; Leung, Peter K.; and Stankovich, Rudolf J., 5,359,903, Cl. 73-862.627.

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Davis, Stephen M.; Clavenna, LeRoy R.; Fiato, Rocco A.; and Say, Geoffrey R., 5,360,777, Cl. 502-202.000.
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Hwang, Jyi-Fas; and Dismukes, John P., 5,360,877, Cl. 525-423.000.
Terry, Patrick H., 5,360,598, Cl. 422-144.000.

Eyal, Jacob; Walter, James F.; Osborne, Lance; and Landa, Zdenek, to W. R. Grace & Co.-Conn. Method for production and use of pathogenic fungal preparation for pest control. 5,360,607, Cl. 424-93.500.

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Ezel, Inc.: *See—*
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, 5,361,328, Cl. 395-22.000.

F. von Langsdorff Licensing Limited: *See—*
Barth, Gunther; von Lansdorff, Fritz; and von Langsdorff, Harald, 5,360,285, Cl. 404-37.000.

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Mawby, Harold S.; Donaghy, David J.; Gunderson, Rick L.; Frost, Thomas; Fairchild, Ace; and Spohn, Marvin L., 5,359,795, Cl. 40-405.000.

Fairchild, Timothy J.: *See—*
Milton, Duane R., 5,360,070, Cl. 172-6.000.

Fairmount Chemical Company, Inc.: *See—*
Moshchitsky, Semyon; and Leistner, William E., 5,360,850, Cl. 524-91.000.

Falk, David O., to Marathon Oil Company. Scale inhibitor and process for using. 5,360,065, Cl. 166-250.000.

Falk, Heinz: *See—*
Hackl, Kurt A.; Mullner, Martin; Schulz, Erich; Stern, Gerhard; and Falk, Heinz, 5,360,601, Cl. 423-364.000.

Falk, Leonard P.; and Griner, Paul K., to Unidynamics Corporation. Multiple-product merchandising machine. 5,360,134, Cl. 221-2.000.

Falla, Daniel J.; and Restaino, Michael C., to Dow Chemical Company, The. Pouch for packaging flowable materials. 5,360,648, Cl. 428-35.200.

Falz, Ulrich; Walter, Jurgen; and Lunke, Manfred, to Hackforth GmbH & Co. KG. Device for mechanically transmitting torque. 5,360,375, Cl. 464-091.000.

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Wheeler, Robert G., 5,360,590, Cl. 264-523.000.

Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, to Miles Inc ; and Mount Sinai School of Medicine of the City University of New York. Methods for the identification and characterization of reticulocytes in whole blood. 5,360,739, Cl. 436-63.000.

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Fard, Anoush M.: *See—*
Sampietro, Joseph M.; Moghadam, Hossein M.; Fard, Anoush M.; and Krum, Richard G., 5,361,182, Cl. 360-105.000.

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Bedeschi, Angelo; Cabri, Walter; Marchi, Marcello; and Perrone, Ettore, 5,360,904, Cl. 540-310.000.

Farn, Michael W., to Massachussetts Institute of Technology. Back to front alignment of elements on a substrate. 5,361,132, Cl. 356-356.000.

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Yeh, Thomas I.; Friend, Clifford K.; Cole, Timothy A.; and Farnand, Leo R., 5,361,123, Cl. 355-208.000.

Farrell, Joseph T.: *See—*
Ruggiero, Murray A.; Marien, Bruce A.; Arif, Shoaib; Roth, Robert P.; Farrell, Joseph T.; and Vanover, A. R., 5,360,457, Cl. 8-567.000.

Faulkner, Sharon L.: *See—*
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,360,500, Cl. 156-74.000.

Fausten, Hans-Josef: *See—*
Schmitz, Jurgen; Weber, Hans-Leo; Fausten, Hans-Josef; Schmoranzer, Hans-Wolfgang; and Hansel, Udo, 5,360,658, Cl. 428-215.000.

Feder, Michel; Jaubert, Jean-Pierre; and Pouchol, Jean-Marie, to Rhone-Poulenc Chimie. Aqueous silicone/(co)polymer dispersions crosslinkable into elastomeric state. 5,360,851, Cl. 524-157.000.

Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., to International Business Machines Corporation. Flex tape protective coating. 5,360,946, Cl. 174-261.000.

Feijen, Maurice M.; and van der Wal, Jacob C., to Koninklijke PTT Nederland N.V. ATM policing function with autonomous reference time instants. 5,361,253, Cl. 370-17.000.

Fell, Joseph P.; Schulz, Richard D.; Meyer, Mary J.; Krueger, Allan J.; Chen, Franklin M. C.; and Huang, Yung H., to Kimberly-Clark Corporation. Method of bonding an adhesive to foam. 5,360,504, Cl. 156-247.000.

Felt, Thomas W. Flowmeter measuring chamber. 5,359,892, Cl. 73-257.000.

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Sloan, Jack C.; Lurie, Walter; and Ferramosca, Adrian C., 5,360,554, Cl. 210-768.000.

Ferrara, Salvator; Sferrazza, Michael; and Oppedisano, Pietro. Vib-a-wake. 5,361,241, Cl. 368-281.000.

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Srinivasan, Thallam T., 5,361,187, Cl. 361-321.100.

Ferullo, David A.; Morgan, Roger J.; Rosen, James L.; DeRosier, Donna; and Castonguay, Roger N., to General Electric Company. Industrial-rated circuit breaker having universal application. 5,361,052, Cl. 335-172.000.

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Fiato, Rocco A.: *See—*
Davis, Stephen M.; Clavenna, LeRoy R.; Fiato, Rocco A.; and Say, Geoffrey R., 5,360,777, Cl. 502-202.000.
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Leason, Michael H.; Ruschke, Rick R.; and Davis, Ralph L., 5,360,413, Cl. 604-249.000.

Fine, Richard A. Easy to load vehicle-top carrier for bicycles. 5,360,151, Cl. 224-310.000.

Fink, Christopher B.: *See—*
Anderson, Gregory W.; Fink, Christopher B.; and Mickelson, Bruce L., 5,360,335, Cl. 431-6.000.

Fischer, Gena: *See—*
Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.

Fischer, Hartmut: *See—*
Beller, Matthias; Fischer, Hartmut; and Strutz, Heinz, 5,360,924, Cl. 560-55.000.

Fischer, Wolfgang: *See—*
Meixner, Jurgen; Fischer, Wolfgang; and Gupta, Pramod, 5,360,863, Cl. 525-28.000.

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Fisher, Mary R. Method and device for improving cranial nerve function to improve muscle function and thereby overcome visual/perceptual dysfunction. 5,360,438, Cl. 607-53.000.

Fisher, Ronald: *See—*
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,360,500, Cl. 156-74.000.

Fitch, Jonathan, to Apple Computer, Inc. Apparatus and method for emulation routine instruction issue. 5,361,389, Cl. 395-375.000.

Fitsakis, Thomas. Trap bag for the extermination of insects with an insecticide soaked surface and a liquid solution content with insect attracting substances. 5,359,808, Cl. 43-132.100.

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McCarthy, William M.; Dam, Ebo E.; van Bergen, Wil F.; and Fitzpatrick, Keith, 5,360,518, Cl. 162-358.200.

Fleche, Guy; Gosset, Serge; and Lambla, Morand, to Roquette Freres. Thermoformable compounds, their process of preparation and their use in order to obtain thermoformed articles. 5,360,473, Cl. 106-210.000.

Fleming, Shane D.: *See—*
Hancock, Bill A.; and Fleming, Shane D., 5,360,600, Cl. 423-184.000.

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Fletcher, Gerald M., to Xerox Corporation. Intermediate transfer member. 5,361,125, Cl. 355-271.000.

Fletcher, Stephen R.: *See—*
Chambers, Mark S.; Matassa, Victor G.; and Fletcher, Stephen R., 5,360,802, Cl. 514-221.000.

Flickinger, William F.: *See—*
Henry, John W., IV; Flickinger, William F.; Dolinar, Joseph F., Jr.; Rodriguez, Francisco A.; Smith, James W., Sr.; and Gabriele, Rocco J., Jr., 5,360,325, Cl. 418-126.000.

Flow International Corporation: *See—*
Allen, James R.; and LaLande, Alton J., 5,360,292, Cl. 405-249.000.

FMC Corporation: *See—*
Clubley, Brian G.; and Rideout, Jan, 5,360,550, Cl. 210-699.000.

Fochler, Helga S., legal representative: *See—*
Lehmann, Martin; Davies, John; and Fochler, Helmut, deceased, 5,360,130, Cl. 220-3.800.

Fochler, Helmut, deceased: *See—*
Lehmann, Martin; Davies, John; and Fochler, Helmut, deceased, 5,360,130, Cl. 220-3.800.

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Kloth, Heinz; and Friede, Klaus, 5,360,200, Cl. 266-44.000.

Footmark, Inc.: *See—*
Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., III, 5,361,133, Cl. 356-376.000.

Ford Motor Company: *See—*
Curran, Judith M.; Culbertson, Thomas R.; and Hamburg, Douglas R., 5,359,852, Cl. 60-274.000.
Meitzler, Allen H.; and Saloka, George S., 5,361,035, Cl. 324-663.000.
Thorn, John E.; and Clayton, Daniel R., 5,360,040, Cl. 141-98.000.
York, Michael T., 5,361,011, Cl. 310-194.000.

Forde, Thomas M., Jr.: *See—*
Weybright, Kenneth N.; Forde, Thomas M., Jr.; and Mitchell, Lawrence H., 5,361,200, Cl. 364-401.000.

Forin, Roger G., to Societe Anonyme: Hexcel-Genin. Process for printing by marking a substrate based on glass fibers and novel substrate obtained. 5,360,640, Cl. 427-278.000.

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Formanek, Frank J., to Combustion Engineering, Inc. EDM crack removal tooling. 5,361,285, Cl. 376-260.000.

Forsberg, Charles W., to Martin Marietta Energy Systems, Inc. Temperature initiated passive cooling system. 5,360,056, Cl. 165-32.000.

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Fortin, Rejean; Girard, Yves; Grimm, Erich; Hutchinson, John; and Scheigetz, John, to Merck Frosst Canada, Inc. Heteroraryl cinnamic acids as inhibitors of leukotriene biosynthesis. 5,360,815, Cl. 514-432.000.

Foskett, Peter S.: *See—*
Pavely, Andrew P.; Marr, Roy J.; Foskett, Peter S.; and White, David M., 5,359,766, Cl. 29-564.600.

Foss, David T.: *See—*
Pillsbury, Paul W.; and Foss, David T., 5,359,847, Cl. 60-39.060.

Fossey, Michael E.; and Sun, Yunlong, to Electro Scientific Industries, Inc. Switchable two-wavelength frequency-converting laser system and power control therefor. 5,361,268, Cl. 372-23.000.

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Cernansky, Joseph; Foster, George T.; and Rudell, Elliot, 5,360,362, Cl. 446-16.000.

Fourcroy, Antone L.; McDermott, Mark W.; Dunn, John P.; and Burgess, Bradley G., to Motorola, Inc. Digital computing system with low power mode and special bus cycle therefor. 5,361,392, Cl. 395-800.000.

Fowler, Timothy: *See—*
Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., 5,360,732, Cl. 435-192.000.
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Fraisse, Laurent: *See—*
Bachy, Andre; Fraisse, Laurent; Keane, Peter; Mendes, Etienne; Vernieres, Jean-Claude; and Simiand, Jacques, 5,360,799, Cl. 514-212.000.

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May, Guntram; and Steinhardt, Helmut, 5,360,356, Cl. 439-839.000.

Francis, Cecil V.: *See—*
Boyd, Gary T.; Tiers, George V.; Francis, Cecil V.; Janulis, Eugene P.; Koshar, Robert J.; and Leichter, Louis M., 5,360,582, Cl. 252-582.000.

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Truesdale, Robert G., Jr.; and Francis, John E., 5,360,945, Cl. 174-151.000.

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Heyn, William M.; Fraser, Robert W.; and Roth, Donald J., 5,360,588, Cl. 264-153.000.

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Popall, Michael; Schulz, Jochen; and Schmidt, Helmut, 5,360,834, Cl. 522-36.000.

Freed, Brian S.: *See—*
Tegeler, John J.; Rauckman, Barbara S.; Hamer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,360,811, Cl. 514-357.000.

Frey, Jeffrey A.: *See—*
Clark, Carl E.; Frey, Jeffrey A.; Plambeck, Kenneth E.; Scalzi, Casper A.; and Sinha, Bhaskar, 5,361,356, Cl. 395-700.000.

Friday, James A.: *See—*
Chang, Elizabeth P.; and Friday, James A., 5,360,703, Cl. 430-506.000.

Friede, Klaus: *See—*
Kloth, Heinz; and Friede, Klaus, 5,360,200, Cl. 266-44.000.

Friedman, Paul A.: *See*—
Provost, Philip J.; Krah, David L.; and Friedman, Paul A., 5,360,736, Cl. 435-240.210.

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Yeh, Thomas I.; Friend, Clifford K.; Cole, Timothy A.; and Farnand, Leo R., 5,361,123, Cl. 355-208.000.

Fries, Walter F.; Pfaff, Gunther F. D.; Pfitzner, Jorg C.; and Simon, Gerhard, to Pfizer Inc. Pharmaceutical compositions containing triazole derivatives for rectal administration. 5,360,612, Cl. 424-436.000.

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Hup, Gerhard; and Huizing, Warmold, 5,360,055, Cl. 165-2.000.

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Weidt, Adolf, 5,360,114, Cl. 206-506.000.

Front Engineering Ltd.: *See*—
Hamstead, Peter J.; and Smith, Alan C., 5,359,897, Cl. 73-597.000.

Frost, Thomas: *See*—
Mawby, Harold S.; Donaghy, David J.; Gundersoa, Rick L.; Frost, Thomas; Fairchild, Ace; and Spohn, Marvin L., 5,359,795, Cl. 40-405.000.

Fry, Alan J.; Garvey, Michael J.; and Wraige, Douglas, to Lever Brothers Company, Division of Conopco, Inc. Detergent compositions. 5,360,567, Cl. 252-90.000.

Fryar, Richard D., Jr.: *See*—
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,360,402, Cl. 604-97.000.

Fu, Jian-Guo, to Koyo Seiko Co., Ltd. Current control for electric power steering apparatus motor. 5,361,210, Cl. 364-424.050.

Fuchigami, Wataru: *See*—
Nonogawa, Kenichi; Shimamoto, Makoto; and Fuchigami, Wataru, 5,359,974, Cl. 123-432.000.

Fuchs, Hugo; Priester, Claus-Ulrich; Neubauer, Gerald; Brunner, Erwin; Ritz, Josef; and Kopietz, Michael, to BASF Aktiengesellschaft. Recovery of caprolactam from oligomers and/or polymers of caprolactam. 5,360,905, Cl. 540-540.000.

Fuji Electric Co., Ltd.: *See*—
Iwamuro, Noriyuki, 5,360,983, Cl. 257-139.000.
Kirihata, Fumiaki, 5,360,984, Cl. 257-143.000.
Miyashita, Shuji, 5,361,189, Cl. 361-807.000.

Fuji, Hiroshi; Deguchi, Toshihisa; Terashima, Shigeo; and Yamaguchi, Takashi, to Sharp Kabushiki Kaisha. Information recording and reproducing device with reproduction and automatic gain control circuit. 5,361,247, Cl. 369-48.000.

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Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, 5,359,909, Cl. 74-502.600.

Fuji Photo Film Co., Ltd.: *See*—
Adachi, Kaoru; and Makioka, Katsuya, 5,361,228, Cl. 365-189.030.
Asano, Masanari, 5,361,220, Cl. 364-725.000.
Kamata, Kazuo; and Muramatsu, Katsuji, 5,361,108, Cl. 354-120.000.
Kato, Atsushi; Kawahara, Sei; and Iwasaki, Yasuo, 5,360,707, Cl. 430-538.000.
Kawabe, Yasumasa; Uenishi, Kazuya; and Kokubo, Tadayoshi, 5,360,692, Cl. 430-191.000.
Morita, Kiyoo, 5,360,105, Cl. 206-232.000.
Negoro, Masayuki; and Morigaki, Masakazu, 5,360,711, Cl. 430-551.000.
Ohkawa, Atsuhiro; Motoki, Masuji; and Mihayashi, Keiji, 5,360,709, Cl. 430-544.000.
Shishido, Tadao; and Chen, Lan B., 5,360,803, Cl. 514-224.200.
Suzuki, Kenji, 5,361,146, Cl. 358-527.000.
Takahashi, Koichi; and Tanaka, Katsuhiko, 5,360,183, Cl. 242-587.300.
Tanaka, Mitsutoshi, 5,360,685, Cl. 429-185.000.
Yamashina, Yasuhiro; Arai, Takuya; and Takagi, Junichi, 5,361,111, Cl. 354-266.000.
Yoneyama, Hiroyuki, 5,360,705, Cl. 430-507.000.

Fuji Photo Optical Co., Ltd.: *See*—
Kamoda, Takashi; and Onozuka, Haruo, 5,361,109, Cl. 354-145.100.
Makimura, Kazuo; Kojima, Shigeru; and Kakizawa, Haruo, 5,361,217, Cl. 364-561.000.

Fuji Xerox Co., Ltd.: *See*—
Aoyama, Teruyuki, 5,361,141, Cl. 358-452.000.
Nukada, Katsumi; Daimon, Katsumi; and Sakaguchi, Yasuo, 5,360,475, Cl. 106-410.000.
Shimizu, Yasumoto; and Ito, Hisao, 5,360,744, Cl. 437-2.000.

Fujieda, Mamoru; Ohsuga, Minoru; Nogi, Toshiharu; and Ooyama, Yoshishige, to Hitachi, Ltd. Control device for an automobile. 5,361,213, Cl. 364-431.080.

Fujieda, Mamoru: *See*—
Nogi, Toshiharu; Ohsuga, Minoru; Ohyama, Yoshishige; and Fujieda, Mamoru, 5,360,166, Cl. 239-404.000.

Fujii, Kenichi: *See*—
Matsubara, Motoki; Fujii, Kenichi; and Besabo, Kazuya, 5,360,277, Cl. 400-68.000.

Fujii, Seiro: *See*—
Kobayashi, Takahiro; Fujii, Seiro; and Jinno, Satoshi, 5,360,652, Cl. 428-64.000.

Fujiki, Hironao; Michimata, Kaoru; Yaginuma, Atsushi; Hasebe, Nobuyuki; and Kim, Clara Y., to Shin-Etsu Chemical Co., Ltd.; and Shin-Etsu Technical Services, Inc. Silicone rubber adhesive compositions. 5,360,858, Cl. 524-434.000.

Fujikura Ltd.: *See*—
Yamauchi, Ryozo; Wada, Akira; Oohashi, Keiji; Araki, Shinji; and Shimomichi, Tsuyoshi, 5,360,464, Cl. 65-410.000.

Fujimura, Tatsuhito: *See*—
Akagi, Hiromori; Sakamoto, Masahiro; and Fujimura, Tatsuhito, 5,360,725, Cl. 435-172.200.

Fujinaga, Chikako: *See*—
Kuguminato, Hideo; Kato, Toshikatsu; Fujinaga, Chikako; and Hamahara, Kyoko, 5,360,676, Cl. 428-682.000.

Fujisaki, Shigehisa; Kajiwara, Tadayuki; Isobe, Yasuhiko; Shimokawa, Takumi; Senju, Yoshinori; Narazaki, Masanobu; Yoshida, Tatsuya; and Wakiyama, Atsushi, to Matsushita Electric Industrial Co., Ltd. Image processing apparatus. 5,361,330, Cl. 395-107.000.

Fujisaki, Yoshinori: *See*—
Kondo, Naoki; and Fujisaki, Yoshinori, 5,359,754, Cl. 24-436.000.

Fujise, Hiroshi: *See*—
Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.

Fujita, Tadao, to Sony Corporation. Residue calculation circuit. 5,361,221, Cl. 364-746.000.

Fujitsu Limited: *See*—
Aihara, Naoki; Yoshimura, Shuji; Fukuda, Naoki; and Hoshino, Tadashi, 5,361,251, Cl. 370-60.000.
Hasegawa, Shinya; and Kayashima, Shigeo, 5,361,149, Cl. 359-9.000.
Ishigaki, Kazushi, 5,361,310, Cl. 382-13.000.
Kondo, Syuji; and Ohkushi, Kenji, 5,361,355, Cl. 395-700.000.
Nishino, Fumihito; Ibuki, Jun; and Nakamura, Naohito, 5,361,205, Cl. 364-419.020.
Ogi, Yoshifumi, 5,361,375, Cl. 395-800.000.
Ono, Yoshinobu; Watanabe, Yoshio; Tanida, Shinjiro; and Kojima, Tadayuki, 5,360,470, Cl. 104-284.000.
Tone, Hirosada, 5,361,342, Cl. 395-425.000.

Fujiwara, Hideki: *See*—
Kano, Isao; Fujiwara, Hideki; Matsunaga, Katsuhiko; and Hata, Kunio, 5,360,657, Cl. 428-207.000.

Fujiwara, Kenichi, to Sumitomo Rubber Industries, Ltd. Heavy duty radial tire with specified belt radius. 5,360,047, Cl. 152-454.000.

Fujiwara, Nobutaka: *See*—
Moteki, Yoshihiro; Fujiwara, Nobutaka; Euruichi, Yukiharu; and Takiyama, Eiichiro, 5,360,663, Cl. 428-290.000.

Fujiwara, Takashi: *See*—
Hiyoshi, Michiaki; Fujiwara, Takashi; Suzuki, Hisashi; and Matsuda, Hideo, 5,360,985, Cl. 257-181.000.

Fujiwara, Takayoshi: *See*—
Okuda, Masayuki; Fujiwara, Takayoshi; and Honjo, Takashi, 5,360,326, Cl. 418-220.000.

Fujiyama, Toshiki: *See*—
Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, 5,361,371, Cl. 395-800.000.

Fukahori, Kenichi; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, to Sony Corporation. Color thermal printer. 5,360,278, Cl. 400-120.010.

Fukai, Hideaki; Suenaga, Hiroyoshi; Minakawa, Kuninori; Otaka, Shinichiro; and Naoe, Masahiko, to NKK Corporation. Magnetic disk substrate. 5,360,677, Cl. 428-694.0ST.

Fukami, Tatsuya: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, 5,361,226, Cl. 365-171.000.

Fukazawa, Fumimasa: *See*—
Bito, Masami; Konishi, Satoshi; and Fukazawa, Fumimasa, 5,360,832, Cl. 521-187.000.

Fukuda, Minoru; and Bierhuizen, Marti F. A., to La Jolla Cancer Research Foundation. Human β1-6 n-acetylglucosaminyl transferase. 5,360,733, Cl. 435-193.000.

Fukuda, Naoki: *See*—
Aihara, Naoki; Yoshimura, Shuji; Fukuda, Naoki; and Hoshino, Tadashi, 5,361,251, Cl. 370-60.000.

Fukuda, Shigekazu: *See*—
Suzuki, Tadasu; Fukuda, Shigekazu; and Satoh, Masahiro, 5,360,378, Cl. 474-161.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detection and decision of occurrence of misfire in internal combustion engine. 5,359,882, Cl. 73-117.300.

Fukui, Yutaka: *See*—
Siga, Masao; Toriya, Hajime; and Fukui, Yutaka, 5,360,318, Cl. 415-216.100.

Fukutomi, Yoshiteru; Ohtani, Masami; and Okamoto, Takeo, to Dainippon Screen Mfg. Co., Ltd. Substrate transport apparatus. 5,359,785, Cl. 34-60.000.

Fulton, Fred D., to Transfer Flow International, Inc. Architectural moldings of rigid thermoset polymer based material. 5,359,817, Cl. 52-288.100.

Fulton, Stephen D.; and Leard, Thomas M., to Honeywell Inc. Integrated electronic primary flight display. 5,359,890, Cl. 73-178.00R.

Funada, Yoshitugu: *See*—
Sato, Yoshinori; Funada, Yoshitugu; Houseki, Yoshitaka; and Nagura, Koji, 5,360,665, Cl. 428-323.000.

Funahashi, Akira, to Minolta Camera Kabushiki Kaisha. Camera having device for writing information onto film. 5,361,116, Cl. 354-403.000.

Furtaw, Robert W.: *See*—
Malek, Charles J.; and Furtaw, Robert W., 5,361,302, Cl. 380-48.000.

Furukawa Denchi Kabushiki Kaisha: *See*—
Mizuno, Takashi, 5,360,687, Cl. 429-217.000.

Furukawa Electric Co., Ltd., The: *See*—
Nakamura, Shirou; Shimizu, Takeo; Yanagawa, Hisaharu; Ohta, Toshihiko; Shigematsu, Takashi; Ochiai, Toshihiro; and Kobayashi, Koichi, 5,361,382, Cl. 385-49.000.

Furuki, Fumio: *See*—
Sorimachi, Toshihiro; Furuki, Fumio; Narita, Shoichi; Azumi, Satoru; and Hirai, Mitsuru, 5,360,254, Cl. 296-218.000.

Furuya, Frederic R.: *See*—
Hainfeld, James F.; and Furuya, Frederic R., 5,360,895, Cl. 530-391.500.

Furuya, Shigeru: *See*—
Matsuzaki, Makio; Kato, Koichi; and Furuya, Shigeru, 5,361,191, Cl. 362-61.000.

Fusegawa, Izumi; and Yamagishi, Hirotoshi, to Shin-Etsu Handotai Co., Ltd. Method for pulling up semi-conductor single crystal. 5,359,959, Cl. 117-13.000.

Fusion Systems Corp.: *See*—
Simpson, James E.; Kamarehi, Mohammed; Turner, Brian; and Ury, Michael G., 5,361,274, Cl. 372-72.000.

Futurex Industries, Inc.: *See*—
Wood, Stephen R.; and Kremer, Richard J., 5,360,250, Cl. 296-39.200.

Fyson, John R.; and Glover, Edward C., to Eastman Kodak Company. Dispensing apparatus. 5,360,136, Cl. 221-85.000.

G. D. Searle & Co.: *See*—
Hansen, Donald W., Jr.; Adelstein, Gilbert W.; Peterson, Karen B.; and Tsymbalov, Sofya, 5,360,796, Cl. 514-80.000.
Lentz, Kirk T.; and Weier, Richard M., 5,360,907, Cl. 546-113.000.

G.D. S.p.A.: *See*—
Belvederi, Bruno; Balestrazzi, Duilio; and Lanzarini, Luigi, 5,360,021, Cl. 131-84.100.

Gabalda, Carlos M.; and Mirabel, Pierre, to ICBT Roanne. Process and apparatus for cooling a heated yarn. 5,359,845, Cl. 57-290.000.

Gabriele, Rocco J., Jr.: *See*—
Henry, John W., IV; Flickinger, William F.; Dolinar, Joseph F., Jr.; Rodriguez, Francisco A.; Smith, James W., Sr.; and Gabriele, Rocco J., Jr., 5,360,325, Cl. 418-126.000.

Gaetani, Quintino; Rougier, Andre ; Duranton, Albert; and Hocquaux, Michel, to L'Oreal. Multicomponent agent or kit for preparing the sulpho-conjugated form of pyridino, pyrimidino or triazino N-oxide compounds and method of use. 5,360,804, Cl. 514-245.000.

Gall, Thomas P.: *See*—
Chen, William T.; Gall, Thomas P.; Wilcox, James R.; and Wu, Tien Y., 5,359,767, Cl. 29-830.000.

Gallagher, P. M.: *See*—
Krukonis, Val J.; Gallagher, P. M.; and Coffey, M. P., 5,360,478, Cl. 117-68.000.

Gallman, Harold F.: *See*—
Winkelbauer, Howard M.; and Gallman, Harold F., 5,360,773, Cl. 501-133.000.

Galvin, Charlene A.: *See*—
Roberts, Thomas D.; Smith, Thomas W.; and Galvin, Charlene A., 5,360,862, Cl. 524-560.000.

Gamer Corporation: *See*—
Iverson, Donald D.; and Strobel, Thomas A., 5,359,790, Cl. 36-136.000.

Gamow, R. Igor: *See*—
Brill, Lance; and Gamow, R. Igor, 5,360,001, Cl. 128-205.260.

Garbis, Dennis: *See*—
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, 5,360,509, Cl. 156-645.000.

Garcia, Arturo J., to True Dimensional Sound, Inc. Apparatus and methods for enhancing an electronic audio signal. 5,361,306, Cl. 381-98.000.

Gardner, Robert M.: *See*—
Hyatt, John A.; Gardner, Robert M.; and Thatcher, Scott R., 5,360,723, Cl. 435-101.000.

Garnier, Thomas J.: *See*—
Browning, David M.; and Garnier, Thomas J., 5,360,283, Cl. 403-374.000.

Garth, Geoffrey C.; and Traut, James R., to California Medical Products, Inc. Dual adhesive strap for head immobilization. 5,360,393, Cl. 602-17.000.

Garvey, Michael J.: *See*—
Fry, Alan J.; Garvey, Michael J.; and Wraige, Douglas, 5,360,567, Cl. 252-90.000.

Garza Flores, Josue; Laiseca Soto, Laura P.; Guillen Pichardo, Jose; and Angeles Uribe, Juan, to Applicaciones Farmaceuticas S.A. De C.V. Injectable pharmaceutical composition. 5,360,616, Cl. 424-489.000.

Gas Research Institute: *See*—
Nelson, Robert E., 5,360,490, Cl. 136-253.000.

Gasson, Michael J., to Agricultural and Food Research Council. Method of making cheese using viral enzymes. 5,360,617, Cl. 426-36.000.

Gatouillat, Gerard: *See*—
Lidy, Werner A.; Gatouillat, Gerard; and Casati, Francois M., 5,360,831, Cl. 521-99.000.

Gaul, Kimberley A.; and Jensen, Judith M., to Minnesota Mining and Manufacturing Company. Method of removing caulk. 5,360,489, Cl. 134-42.000.

Gay, Michel: *See*—
Beaussier, Jacques; Breuzet, Michel; Gay, Michel; and Uebersfeld, Jean, 5,361,045, Cl. 331-154.000.

Gehman, M. Dorothy: *See*—
Gehman, N. James, 5,359,827, Cl. 52-698.000.

Gehman, N. James, to Gehman, M. Dorothy; and Gehman, N. James. Hollow fence post attachment fixture. 5,359,827, Cl. 52-698.000.

Geiger, Richard; Robertson, A. Scott; and Page, Neville, to Medical Composite Technology, Inc. Wheelchair frame assembly and components for use thereon. 5,360,224, Cl. 280-250.100.

Geirhos, Josef: *See*—
Jacob, Ingolf; and Geirhos, Josef, 5,359,759, Cl. 28-271.000.

Geiser, Edward A.; Wilson, David C.; and Gibby, Gordon L., to University of Florida Research Foundation, Inc. Automated method for digital image quantitation. 5,360,006, Cl. 128-653.100.

Gell, Harold A., Jr. Coffee roaster. 5,359,788, Cl. 34-360.000.

Genecor International, Inc.: *See*—
Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., 5,360,732, Cl. 435-192.000.

Genencor International, Inc.: *See*—
Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., 5,360,901, Cl. 536-23.200.

General Atomics: *See*—
Ohkawa, Tihiro; Tsunoda, Stanley I.; and Miller, Robert L., 5,361,016, Cl. 315-111.410.

General Dynamics Corporation: *See*—
Peck, Scott D., 5,361,055, Cl. 335-216.000.

General Electric Company: *See*—
Adamson, Ronald B.; Bartosik, Donald C.; Johansson, Eric B.; and Christenson, Donald J., 5,361,282, Cl. 376-443.000.
Banholzer, William F.; Anthony, Thomas R.; and Williams, Dennis M., 5,360,479, Cl. 117-84.000.
Boden, Eugene P.; Phelps, Peter D.; and Stewart, Kevin R., 5,360,911, Cl. 546-347.000.
Campbell, Richard W., 5,360,861, Cl. 524-494.000.
Cueman, Michael K.; and Azad, Farzin H., 5,360,599, Cl. 117-217.000.
Eckberg, Richard P.; and Agars, Robert F., 5,360,833, Cl. 522-31.000.
Ferullo, David A.; Morgan, Roger J.; Rosen, James L.; DeRosier, Donna; and Castonguay, Roger N., 5,361,052, Cl. 335-172.000.
Haefner, Kenneth B.; Bischoff, James R.; Ehresman, Mark D.; and Comeau, Steven F., 5,360,957, Cl. 219-69.160.
Hartley, Richard I.; Ishaque, A. Nadeem; and Abdel-Malek, Aiman A., 5,361,307, Cl. 382-1.000.
Johansson, Eric B., 5,361,288, Cl. 376-441.000.
Kobsa, Irvin R.; Relf, Charles W.; and Carruth, John C., 5,361,279, Cl. 376-230.000.
Monserud, David O.; Bothell, David H.; Tacheron, Paul H.; McDonald, Michael C.; Steele, David E.; Charnley, James E.; and Vatvedt, Gunnar V., 5,361,286, Cl. 376-316.000.
Toth, Thomas L.; Crawford, Carl R.; and King, Kevin F., 5,361,291, Cl. 378-12.000.
Traver, Frank J.; and Merrill, Duane F., 5,360,852, Cl. 524-268.000.
Tsoukala, Veneta G.; and Greskovich, Charles D., 5,360,557, Cl. 250-361.00R.
Walling, Reigh A., 5,360,998, Cl. 307-91.000.

General Mills, Inc.: *See*—
Brauner, Arne H.; and Kelley, James E., 5,360,345, Cl. 434-308.000.

General Motors Corporation: *See*—
Brown, Lawrence E.; Clingman, David L.; Barber, Michael J.; Kroemer, John F.; and Cross, Kenneth R., 5,359,770, Cl. 29-889.100.
Der Manuelian, Raffi, 5,360,034, Cl. 137-571.000.
Lee, Yong H.; Khetan, Raghunath P.; and Sutherland, Don R., 5,361,308, Cl. 382-8.000.
Miller, Harold J.; and Clancy, Edward W., III, 5,360,256, Cl. 297-361.100.
Nagengast, William E.; Hallgarth, Leslie H.; Witte, Brian E.; and Young, Paul E., Jr., 5,360,282, Cl. 403-131.000.
Oh, Seajin; Joseph, Jose; and Lankheet, Earl W., 5,360,528, Cl. 204-425.000.
Stringfellow, Steven A.; and Zelenak, John M., 5,361,165, Cl. 359-631.000.
Swain, James C.; and Cooper, Donald L., 5,360,319, Cl. 417-223.000.

Genesis III, LLC: *See*—
DeLorean, John Z., 5,359,941, Cl. 105-73.000.

Genova, David J.: *See*—
Hatwar, Tukaram K.; Genova, David J.; and Victora, Randall H., 5,361,248, Cl. 369-275.200.

Gentry, Jeffery S.: *See*—
Blakley, Richard L.; Shelar, Gary R.; Gentry, Jeffery S.; Worrell, Gary W.; and Perfetti, Thomas A., 5,360,023, Cl. 131-331.000.

Geon Company, The: *See*—
Rajagopalan, Murali, 5,360,872, Cl. 525-179.000.

Georgia Oil & Gas Co., Inc.: *See*—
Strumskis, Louis, 5,360,537, Cl. 208-400.000.

Georgia-Pacific Corporation: *See*—
Buchholz, Richard F.; and Quinn, Dale W., 5,360,465, Cl. 71-11.000.

Georgia Tech Research Corp.: *See*—
Muzzy, John D., 5,360,661, Cl. 428-260.000.

Gerakios, Michael, to Albany International Corp. Modular device for the ease of use and installation of filtration textiles. 5,360,541, Cl. 210-232.000.

Gerard, Bruno: *See*—
Pribat, Didier; and Gerard, Bruno, 5,360,754, Cl. 437-89.000.

Gerber, Matthias: *See—*
Rheinheimer, Joachim; Eicken, Karl; Vogelbacher, Uwe J.; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,360,913, Cl. 548-255.000.

German, Anton L.: *See—*
Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, 5,360,844, Cl. 524-50.000.

Gerstenberg & Agger, A/S: *See—*
Gronskov, Per, 5,359,833, Cl. 53-435.000.

Geraz, Tadeusz: *See—*
Tolpa, Stanislaw; Geraz, Tadeusz; Ritter, Stanislawa; Kukla, Ryszard; Skrzyszewska, Malgorzata; and Tomkow, Stanislaw, 5,360,117, Cl. 209-158.000.

GI Corporation: *See—*
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, 5,360,509, Cl. 156-645.000.

Giannini, Sandro, to Howmedica International Div.ne Pfizer Italiana S.p.A. Prosthesis for the correction of flatfoot. 5,360,450, Cl. 623-21.000.

Giavarini, Carlo: *See—*
Braga, Vittorio; and Giavarini, Carlo, 5,360,849, Cl. 524-68.000.

Gibby, Gordon L.: *See—*
Geiser, Edward A.; Wilson, David C.; and Gibby, Gordon L., 5,360,006, Cl. 128-653.100.

Giese, Roger W., to Northeastern University. Molecular analytical release tags and their use in chemical analysis. 5,360,819, Cl. 514-538.000.

Giguere, Yves: *See—*
Duval, Michel; and Giguere, Yves, 5,360,684, Cl. 429-162.000.

Gilbert, Edward C. Method and device for qualitative detection of blood in urine. 5,360,013, Cl. 128-771.000.

Gilbert, Jeffrey L.; and Gutow, David A., to United States of America, National Aeronautics and Space Administration. Welding nozzle position manipulator. 5,360,157, Cl. 228-45.000.

Gilbert, Michael B.: *See—*
Schrunk, Robert R., III; Madison, Harry; and Gilbert, Michael B., 5,359,815, Cl. 451-347.000.

Gilbride, Michael T.: *See—*
Reyes, Jason A.; Manning, Frank B.; Manning, Terence J.; McDonald, Eric L.; and Gilbride, Michael T., 5,361,296, Cl. 379-96.000.

Gilligan, Thomas: *See—*
Robins, Karen T.; and Gilligan, Thomas, 5,360,731, Cl. 435-252.340.

Gilmore, Charles P., Jr.; and Johnson, Dale R., to Gilmore Transportation Services, Inc. Coupling for heavy-duty machine. 5,360,313, Cl. 414-694.000.

Gilmore Transportation Services, Inc.: *See—*
Gilmore, Charles P., Jr.; and Johnson, Dale R., 5,360,313, Cl. 414-694.000.

Gilson, Kent L. Integrated circuit computing device comprising a dynamically configurable gate array having a microprocessor and reconfigurable instruction execution means and method therefor. 5,361,373, Cl. 395-800.000.

Girard, Yves: *See—*
Fortin, Rejean; Girard, Yves; Grimm, Erich; Hutchinson, John; and Scheigetz, John, 5,360,815, Cl. 514-432.000.

Gist, William B., to Digital Equipment Corporation. Compensated offset voltage, low gain, high bandwidth, full swing, wide common mode range, CMOS differential voltage amplifier. 5,361,042, Cl. 330-261.000.

Glaxo Group Limited: *See—*
Coates, Ian H.; North, Peter C.; and Oxford, Alexander W., 5,360,800, Cl. 514-215.000.
Hagan, Russell M.; Bunce, Keith T.; Naylor, Alan; Ladlow, Mark; McElroy, Andrew B.; Whittington, Andrew R.; and Coomber, Barry A., 5,360,820, Cl. 514-559.000.
Thornton, Robert; Eastlick, David T.; and Briggs, Kenneth, 5,360,917, Cl. 549-264.000.

Glazar, Arthur J. Windshield wiper sharpening device. 5,359,776, Cl. 30-169.000.

Gleason, Stephen J.; and Larsen, Marvin L., to Tri/Mark Corporation. Lock assembly. 5,360,244, Cl. 292-167.000.

Glider, Joseph S.; and Jaffe, David H., to MTI Technology Corporation. Resource management in a multiple resource system where each resource includes an availability state stored in a memory of the resource. 5,361,347, Cl. 395-575.000.

Glover, Edward C.: *See—*
Fyson, John R.; and Glover, Edward C., 5,360,136, Cl. 221-85.000.

Glowny, David A.: *See—*
Carr, Brian P.; Glowny, David A.; Mastrangelo, Colette A.; Mayer, Paul M.; Seltzer, Arthur; and Shier, Peter D., 5,361,353, Cl. 395-700.000.

Glucksman, Dov Z. Ejector tube humidifier for blowerless mixing of air and steam. 5,361,322, Cl. 392-405.000.

Go, Hisao; and Matsumura, Yutaka, to Sumitomo Electric Industries, Ltd. Optical module having dimensional accuracy. 5,361,318, Cl. 385-89.000.

Gobran, Ramsis, to Minnesota Mining & Manufacturing Company. Block polymers and oil-contamination tolerant adhesive compositions. 5,360,855, Cl. 524-274.000.

Godfrey, Geoffrey C.; and Bassett, David, to Underpressure Engineering Co., Limited. Pipe couplings. 5,360,238, Cl. 285-93.000.

Godiwala, Nitin D.; Maskas, Barry A.; Thaller, Kurt M.; and Metzger, Jeffrey A., to Digital Equipment Corporation. Scheme for error handling in a computer system. 5,361,267, Cl. 371-40.100.

Goebel, Timothy R., to Litton Systems, Inc. Night vision device. 5,361,162, Cl. 359-411.000.

Goerrissen, Nicolaus: *See—*
Schulz, Jens; Hoffmann, Martin; and Goerrissen, Nicolaus, 5,360,505, Cl. 156-382.000.

Goertzen, Larry: *See—*
Williams, Tom; and Goertzen, Larry, 5,360,033, Cl. 137-565.000.

Goggin, Rita M.: *See—*
Schissel, Paul O.; Kennedy, Cheryl E.; Jorgensen, Gary J.; Shinton, Yvonne D.; and Goggin, Rita M., 5,361,172, Cl. 359-883.000.

Goldberg, Ernest: *See—*
Ivanov, Alex J.; Driscoll, James A.; Linnehan, Richard P.; Crawford, Malcolm F.; Chinchillo, A. Robert; and Goldberg, Ernest, 5,359,934, Cl. 102-214.000.

Golden, Timothy C.: *See—*
Ketkar, Suhas N.; Ridgeway, Robert G.; Maroulis, Peter J.; and Golden, Timothy C., 5,360,467, Cl. 95-25.000.

Goldman, Arnold J.; Pecherer, Eugeny; Goldstein, Jonathan R.; Biran, Joseph; Korall, Menachem; and Meitav, Arye, to Electric Fuel Limited. Mechanically rechargeable electric batteries and anodes for use therein. 5,360,680, Cl. 429-27.000.

Goldowsky, Michael, to International Business Machines Corporation. Blood pump actuator. 5,360,445, Cl. 623-3.000.

Goldstar Co., Ltd.: *See—*
Kim, Kyeong S., 5,361,099, Cl. 348-555.000.
Oh, Sa Yoon, 5,359,860, Cl. 62-97.000.

Goldstein, Dana L.: *See—*
Solomon, Merrill; Kimball, John; and Goldstein, Dana L., 5,361,295, Cl. 379-67.000.

Goldstein, Jonathan R.: *See—*
Goldman, Arnold J.; Pecherer, Eugeny; Goldstein, Jonathan R.; Biran, Joseph; Korall, Menachem; and Meitav, Arye, 5,360,680, Cl. 429-27.000.

Golf Players Inc.: *See—*
Magrath, Earl K., III; Magrath, Earl K., Jr.; and London, W. Edward, 5,359,986, Cl. 124-78.000.

Gondo, Keiko: *See—*
Nakaso, Yasuji; Kawasaki, Tsutomu; Kobayashi, Wataru; Gondo, Keiko; and Iwase, Hiroshi, 5,360,544, Cl. 210-483.000.

Goode, John E., to Hydra Rig, Inc. Liquified natural gas fueling facility. 5,360,139, Cl. 222-40.000.

Goode, Steven H.: *See—*
Kazecki, Henry L.; Goode, Steven H.; and Dennis, Donald W., 5,361,400, Cl. 455-63.000.

Goodyear Tire & Rubber Company, The: *See—*
Croyle, Warren L.; and Brayer, Randall R., 5,360,043, Cl. 152-209.00A.

Gopinathan, Krishna: *See—*
Jost, Allen; Nelson, Jennifer; Gopinsthan, Krishna; and Smith, Craig, 5,361,201, Cl. 364-401.000.

Gorelik, Vladimir, to Stephen Krissman, Integrated Data Systems, Inc. Semiconductor architecture and application thereof. 5,361,272, Cl. 372-50.000.

Gorke, Ronald R.: *See—*
Anderson, Philip A.; Gorke, Ronald R.; Insley, Thomas I.; Meyer, Daniel E.; and Olson, David A., 5,360,654, Cl. 428-98.000.

Goscin, David K.: *See—*
Goscin, Edmund J.; and Goscin, David K., 5,360,148, Cl. 223-88.000.

Goscin, Edmund J.; and Goscin, David K. Hangered shirt collar protector. 5,360,148, Cl. 223-88.000.

Goss, G. Robert; Spaldon, Olga I.; and Nolan, Nancy L., to Oil-Dri Corporation of America. Animal litter with galactomannan gum clumping agent and carrageenan gum extender. 5,359,961, Cl. 119-173.000.

Gosset, Serge: *See—*
Fleche, Guy; Gosset, Serge; and Lambla, Morand, 5,360,473, Cl. 106-210.000.

Goto, Akira: *See—*
Tajima, Hiroki; Masuda, Kazuaki; Watanabe, Takashi; and Goto, Akira, 5,361,087, Cl. 347-44.000.

Goto, Atsuhiro: *See—*
Takahashi, Makoto; Temma, Masami; and Goto, Atsuhiro, 5,360,051, Cl. 164-155.300.

Goto, Kunio: *See—*
Ogawa, Masahide; Goto, Kunio; Shoji, Shoji; Komatsu, Yoshinobu; and Tatebe, Akira, 5,360,859, Cl. 524-437.000.

Goughneour, Richard J., to T & S Brass and Bronze Works, Inc. Vacuum breaker. 5,360,029, Cl. 137-218.000.

Gouin, Marcel: *See—*
Delvaux, Pierre; Lesmerises, Normand; Poisson, Daniel; and Gouin, Marcel, 5,360,771, Cl. 501-80.000.

Gould Electronics Inc.: *See—*
Mosesian, Jerry L.; and Reid, Clyde D., 5,361,058, Cl. 337-163.000.

Gould, Ronald M.; Heaney, William F.; Nitsch, Albert R.; and Spencer, Howard E., to Mobil Oil Corporation. Lubricating oil dewaxing using membrane separation of cold solvent from dewaxed oil and recycle of cold solvent to filter feed. 5,360,530, Cl. 208-31.000.

Goupil, Jean-Jacques. 5-methoxy psoralen used to treat psoriasis. 5,360,816, Cl. 514-455.000.

GPAC, Inc.: *See—*
Newman, Gene; and Natale, Anthony, 5,360,372, Cl. 454-253.000.

Graas, Carole D., to Texas Instruments Incorporated. Buffered capped interconnect for a semiconductor device. 5,360,995, Cl. 257-751.000.

Gradient Lens Corporation: *See—*
Atkinson, Leland G.; Kindred, Douglas S.; Moore, Duncan T.; and Zinter, J. Robert, 5,361,166, Cl. 359-654.000.

Graf, Walter, to Satzinger GmbH & Co. Apparatus for the lubrication and cleaning of elongated articles, especially rails and chains. 5,360,084, Cl. 184-3.200.

Graham, Teresita O.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.

Granadino, Robert: *See—*
Camacho, Herman; and Granadino, Robert, 5,360,280, Cl. 400-489.000.

Grandjean, Richard: *See—*
Periou, Pierre; Grandjean, Richard; and Laurent, Bruno, 5,360,351, Cl. 439-357.000.

Granite Rock Company: *See—*
Hibbs, J. C., 5,360,097, Cl. 198-313.000.

Gravener, Roy D.; Lanniruberto, Alex; and Ciccolella, Michael, to United States Surgical Corporation. Valve assembly for introducing instruments into body cavities. 5,360,417, Cl. 604-278.000.

Gray, Benjamin, to Kidco Resources Ltd. Steering drill bit while drilling a bore hole. 5,360,075, Cl. 175-61.000.

Gray, Ralph C., to PPG Industries, Inc. Pretreating composition containing substituted triazine compound. 5,360,492, Cl. 148-255.000.

Grearson, Kenneth R., to Multuloc International Systems Corporation. Structural framing member and prefabricated panel structure. 5,359,826, Cl. 52-650.100.

Grebe, Kurt R.: *See—*
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.

Grebenyuk, Alexander, to Enpac Corporation. Spill pallet with improved load bearing capability. 5,359,955, Cl. 108-51.100.

Green, David T., to United States Surgical Corporation. Apparatus for creating partial anastomoses. 5,360,154, Cl. 227-179.000.

Green, James A., II: *See—*
Young, Donald C.; and Green, James A., II, 5,360,782, Cl. 504-101.000.

Green, Michael J.: *See—*
Tompkins, Michael E.; and Green, Michael J., 5,361,215, Cl. 364-505.000.

Greenberg, Albert G.: *See—*
Benkeser, Donald E.; Cyr, Joseph B.; Greenberg, Albert G.; and Wright, Paul E., 5,361,362, Cl. 395-725.000.

Greenwald Industries Inc.: *See—*
Lier, Pierre; and Zirkiev, Arkady, 5,360,096, Cl. 194-235.000.

Greenwich Pharmaceuticals Incorporated: *See—*
Arora, Sudershan K.; Thomson, David S.; and Akhtar, M. Nayeem, 5,360,792, Cl. 514-23.000.

Gregg, Leon E.: *See—*
Baxter, Duane W.; Gregg, Leon E.; and Jaaskelainen, William, 5,360,651, Cl. 428-64.000.

Greig, Colin C., to British-American Tobacco Company Limited. Relating to polymer viscosity and application of such polymers. 5,360,024, Cl. 131-370.000.

Greskovich, Charles D.: *See—*
Tsoukala, Veneta G.; and Greskovich, Charles D., 5,360,557, Cl. 250-361.00R.

Grey, Roger A.: *See—*
Bloys, James B.; Wilson, William N.; Malachosky, Edward; Bradshaw, Roger D.; and Grey, Roger A., 5,360,787, Cl. 507-124.000.

Greyzck, Terry, to Cray Research, Inc. Optimization of alternate loop exits. 5,361,354, Cl. 395-700.000.

Grice, Kurt R.: *See—*
O'Mara, Kerry D.; Poux, Christopher J.; Carrell, Ross M.; and Grice, Kurt R., 5,360,316, Cl. 414-798.900.

Grief, Norbert; Oppenlaender, Knut; Birkhofer, Hermann; Wegner, Brigitte; and Dix, Johannes P., to Basf Aktiengesellschaft. Tanning of leather and fur. 5,360,454, Cl. 8-94.330.

Griepentrog, Dal F.: *See—*
Wignot, Leroy S.; and Griepentrog, Dal F., 5,361,406, Cl. 455-200.100.

Grieshaber & Co. AG Schaffhausen: *See—*
Grieshaber, Hans R.; Demmerle, Rudolf; and Vogel, Urs, 5,360,398, Cl. 604-30.000.

Grieshaber, Hans R.; Demmerle, Rudolf; and Vogel, Urs, to Grieshaber & Co. AG Schaffhausen. Ophthalmological aspiration and irrigation system. 5,360,398, Cl. 604-30.000.

Griffel, Gilbert W., Jr.; and Kirk, David J., to Dawe's Inc. Anionic salt formulation for milk fever. 5,360,823, Cl. 514-706.000.

Grimes, Michael, to Pall Corporation. Cylindrical filters and their manufacture. 5,360,650, Cl. 428-36.910.

Grimm, Erich: *See—*
Fortin, Rejean; Girard, Yves; Grimm, Erich; Hutchinson, John; and Scheigetz, John, 5,360,815, Cl. 514-432.000.

Griner, Paul K.: *See—*
Falk, Leonard P.; and Griner, Paul K., 5,360,134, Cl. 221-2.000.

Grondziel, Marian, to Vulkan Harex Stahlfasertechnik GmbH & Co. KG. Fiber for reinforcing concrete or similar materials made of wire of a flat material strip and device for manufacturing such fibers. 5,359,873, Cl. 72-186.000.

Gronemann, Manfred: *See—*
Wiebelhaus, Wolfgang; Gronemann, Manfred; Lehmann, Wolfgang; Schneider, Jurgen; and Rocholl, Hans, 5,360,087, Cl. 188-218.0XL.

Gronskov, Per, to Gerstenberg & Agger, A/S. Method of depositing extruded pieces of substances onto individual wrapping sheets and apparatus for carrying out the method. 5,359,833, Cl. 53-435.000.

Gross, Akiva T.: *See—*
Iyengar, Radha; Shulman, Mark L.; and Gross, Akiva T., 5,360,626, Cl. 426-601.000.

Grover, Wayne D., to Alberta Telecommunications Research Centre. Method and apparatus for clock distribution and for distributed clock synchronization. 5,361,277, Cl. 375-107.000.

Grube, Gary W.; Olson, Carl B.; and Cizek, Paul J., to Motorola, Inc. Test device for analyzing communication channels in a trunked radio system. 5,361,402, Cl. 455-67.100.

Grube, Gary W.: *See—*
DiStefano, Thomas H.; Grube, Gary W.; Khandros, Igor Y.; and Mathiew, Gaetan, 5,360,947, Cl. 174-261.000.

Gruhlke, Stefan: *See—*
Bechtel, Helmut; Czarnojan, Wolfram; Gruhlke, Stefan; and Kynast, Ulrich, 5,360,361, Cl. 445-40.000.

Grundy, Michael J.; McKenzie, Jeff B.; and Reade, Rebecca R., to Toro Company, The. Adjustable radius sprinkler nozzle. 5,360,167, Cl. 239-460.000.

Gruver, Morris E., III: *See—*
Amorese, Franklyn J.; and Gruver, Morris E., III, 5,360,198, Cl. 251-144.000.

GS Metals Corp.: *See—*
Koberstein, Michael L., 5,359,824, Cl. 52-507.000.

Gsell, Thomas C.: *See—*
Pall, David B.; and Gsell, Thomas C., 5,360,545, Cl. 210-505.000.

GTE Laboratories Incorporated: *See—*
Cooperman, Michael; and Sieber, Richard, 5,361,006, Cl. 326-73.000.

Gueret, Jean-Louis H., to L'Oreal. Dispenser for at least one liquid or pasty product comprising a closure system that allows no ingress of air, and preservation process using the said dispenser. 5,360,145, Cl. 222-190.000.

Gueret, Pierre L., to International Business Machines Corporation. Multiple-tip scanning tunneling microscopy. 5,360,978, Cl. 250-306.000.

Guerineau, Pierre; and Rosli, Peter, to Texel. Bacterial disinfection of flora-contaminated papermaking process streams. 5,360,517, Cl. 162-161.000.

Guild, Johnithan R. High-speed watercraft. 5,359,958, Cl. 114-272.000.

Guillen Pichardo, Jose: *See—*
Garza Flores, Josue; Laiseca Soto, Laura P.; Guillen Pichardo, Jose; and Angeles Uribe, Juan, 5,360,616, Cl. 424-489.000.

Gunderson, Rick L.: *See—*
Mawby, Harold S.; Donaghy, David J.; Gunderson, Rick L.; Frost, Thomas; Fairchild, Ace; and Spohn, Marvin L., 5,359,795, Cl. 40-405.000.

Gundlach, Kurt B.: *See—*
Radigan, Edward J., Jr.; Isganitis, Louis V.; Solodar, Warren E.; and Gundlach, Kurt B., 5,360,472, Cl. 106-22.00K.

Gundy, William P., to NPC, Inc. Universal saddle tee for pipes. 5,360,241, Cl. 285-197.000.

Gupta, Pramod: *See—*
Meixner, Jurgen; Fischer, Wolfgang; and Gupta, Pramod, 5,360,863, Cl. 525-28.000.

Gurubatham, Vincent P.: *See—*
Kimball, Vance A.; Gurubatham, Vincent P.; and Roy, Phalguni S., 5,359,744, Cl. 8-158.000.

Gussler, Ova L., Jr.; and Gussler, Ova L., III. Grab and center guide system for boat loading. 5,360,226, Cl. 280-414.100.

Gussler, Ova L., III: *See—*
Gussler, Ova L., Jr.; and Gussler, Ova L., III, 5,360,226, Cl. 280-414.100.

Guthrie, James T.: *See—*
Pashley, Richard M.; Senden, Timothy J.; Morris, Richard A.; Guthrie, James T.; and He, Wei D., 5,360,880, Cl. 526-213.000.

Gutierrez, Manuel. Fishing rod holder. 5,359,802, Cl. 43-16.000.

Gutow, David A.: *See—*
Gilbert, Jeffrey L.; and Gutow, David A., 5,360,157, Cl. 228-45.000.

Gyenes, Russell E.: *See—*
Savovic, Niko M.; Amero, Willard F., Jr.; Kleinert, Raymond J., III; Austin, Michael M.; and Gyenes, Russell E., 5,360,499, Cl. 156-73.100.

H.E.R.C. Products Incorporated: *See—*
Hieatt, Allen C.; and Ludwig, Jerome H., 5,360,488, Cl. 134-22.110.

H. Krantz-TKT GmbH: *See—*
Makulla, Detlef; and Brunk, Marten, 5,360,373, Cl. 454-284.000.

Haase, Bernd: *See—*
Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, 5,360,902, Cl. 536-84.000.

Haber, Frederick: *See—*
Baron, Robert A.; and Haber, Frederick, 5,360,469, Cl. 95-273.000.

Hackforth GmbH & Co. KG: *See—*
Falz, Ulrich; Walter, Jurgen; and Lunke, Manfred, 5,360,375, Cl. 464-091.000.

Hackl, Kurt A.; Mullner, Martin; Schulz, Erich; Stern, Gerhard; and Falk, Heinz, to Chemie Linz Gesellschaft m.b.H. Process for the

preparation of isocyanic acid by the decomposition of N,N-disubstituted ureas. 5,360,601, Cl. 423-364.000.

Hadary, Dany: *See*—
Bartfeld, Daniel; Lieshitz, Ruth; and Hadary, Dany, 5,360,729, Cl. 435-189.000.

Haddad, Nadim F.: *See*—
Brady, Frederick T.; and Haddad, Nadim F., 5,360,752, Cl. 437-62.000.

Hadewe B.V.: *See*—
de Haan, Hendrik A., 5,360,206, Cl. 271-125.000.

Hadlum, Paul: *See*—
Evans, Maurice J.; Faulkner, Sharon L.; Fisher, Ronald; Wells, Trevor C.; and Hadlum, Paul, 5,360,500, Cl. 156-74.000.

Haefner, Kenneth B.; Bischoff, James R.; Ehresman, Mark D.; and Comeau, Steven F., to General Electric Company. Controlled apparatus for electrical discharge machining. 5,360,957, Cl. 219-69.160.

Hafner, Hans W., to Pfister GmbH. Apparatus for measuring the mass throughput of a flow of pourable material according to the coriolis principle. 5,359,900, Cl. 73-861.370.

Hagan, Russell M.; Bunce, Keith T.; Naylor, Alan; Ladlow, Mark; McElroy, Andrew B.; Whittington, Andrew R.; and Coomber, Barry A., to Glaxo Group Limited. Medical use for tachykinin antagonists. 5,360,820, Cl. 514-559.000.

Hagen, Floyd W., to BF Goodrich Company, The. Air turbulence and wind shear sensor. 5,359,888, Cl. 73-178.00R.

Hagen, James G.: *See*—
Rice, Lynn H.; Hagen, James G.; and Johnson, Brian H., 5,360,534, Cl. 208-139.000.

Hahn, Stephen J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,360,442, Cl. 607-129.000.

Hahn, William E.: *See*—
Owens, Gregory P.; Cohen, J. John; and Hahn, William E., 5,360,893, Cl. 530-350.000.

Hahne, Jonathan J.: *See*—
Upshaw, Jim L.; Hahne, Jonathan J.; Hayes, Richard J.; Zowarka, Raymond C., Jr.; Kajs, John P.; and Sledge, Robert L., II, 5,360,999, Cl. 307-112.000.

Haikawa, Yukihiko: *See*—
Yamamoto, Hirotoshi; and Haikawa, Yukihiko, 5,361,135, Cl. 358-335.000.

Hainfeld, James F.; and Furuya, Frederic R., to Associated Universities, Inc. Derivatized gold clusters and antibody-gold cluster conjugates. 5,360,895, Cl. 530-391.500.

Hait, Paul W., to Pyromid, Inc. Spherical cooking unit. 5,359,988, Cl. 126-25.00R.

Hajek, Michael L. Wild game dressing tool. 5,360,368, Cl. 452-197.000.

Hajto, Janos: *See*—
Owen, Alan E.; Snell, Anthony J.; Hajto, Janos; Lecomber, Peter G.; and Rose, Mervyn J., 5,360,981, Cl. 257-4.000.

Haley, Kevin J., to Intel Corporation. Method for mounting very small integrated circuit package on PCB. 5,359,768, Cl. 29-840.000.

Hall, Douglas W.: *See*—
Antos, A. Joseph; Blankenship, Michael G.; Hall, Douglas W.; Murphy, Edward F.; and Smith, David K., 5,361,319, Cl. 385-123.000.

Hall, Robert S.; and Blouin, Gilles A., to Shell Oil Company. Color temperature indicator for lubricating grease. 5,360,561, Cl. 252-42.700.

Hallgarth, Leslie H.: *See*—
Nagengast, William E.; Hallgarth, Leslie H.; Witte, Brian E.; and Young, Paul E., Jr., 5,360,282, Cl. 403-131.000.

Halliburton Company: *See*—
Venditto, James J.; Abass, Hazim H.; McMechan, David E.; and Blauch, Matthew E., 5,360,066, Cl. 166-250.000.

Halpert, Gerald: *See*—
Peled, Emmanuel; Nagasubramanian, Ganesan; Halpert, Gerald; and Attia, Alan I., 5,360,686, Cl. 429-191.000.

Hamada, Masahiro: *See*—
Takizawa, Yumi; and Hamada, Masahiro, 5,361,324, Cl. 395-2.420.

Hamahara, Kyoko: *See*—
Kuguminato, Hideo; Kato, Toshikatsu; Fujinaga, Chikako; and Hamahara, Kyoko, 5,360,676, Cl. 428-682.000.

Hamamatsu Photonics K.K.: *See*—
Tanaka, Akio; Hirano, Toru; and Ohsawa, Masami, 5,361,316, Cl. 385-35.000.
Tekemori, Tamiki; and Kobayashi, Yuji, 5,361,131, Cl. 356-355.000.

Haman, David F., to Outboard Marine Corporation. Hidden lower motor cover attachment means. 5,360,358, Cl. 440-77.000.

Hamaue, Tetsuya: *See*—
Miyauchi, Kiyotaka; and Hamaue, Tetsuya, 5,359,756, Cl. 24-603.000.

Hamburg, Douglas R.: *See*—
Curran, Judith M.; Culbertson, Thomas R.; and Hamburg, Douglas R., 5,359,852, Cl. 60-274.000.

Hamer, Russell R. L.: *See*—
Tegeler, John J.; Rauckman, Barbara S.; Hamer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., 5,360,811, Cl. 514-357.000.

Hamer, Steven M.; and Hoekman, Earl B., to Minnesota Mining and Manufacturing Company. Vehicle detector with power main noise compensation. 5,361,064, Cl. 340-939.000.

Hamm, James F. Artist's working support. 5,360,664, Cl. 428-246.000.

Hammond, James M.; Klos, Martin A.; Martin, Yves; Roessler, Kenneth G.; and Stowell, Robert M., to International Business Machines Corp. Dual quad flexure scanner. 5,360,974, Cl. 250-442.110.

Hamstead, Peter J.; and Smith, Alan C., to Front Engineering Ltd. Apparatus for determining the time taken for sound energy to cross a body of fluid in a pipe. 5,359,897, Cl. 73-597.000.

Hanada, Toru; Matsuo, Atsushi; and Iwami, Kenichi, to Matsushita Electric Industrial Co., Ltd. Free standing, upright clothes press. 5,359,792, Cl. 38-72.000.

Hanamoto, Keiji: *See*—
Matsuda, Noriaki; and Hanamoto, Keiji, 5,361,163, Cl. 359-452.000.

Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, to Sumitomo Chemical Co., Ltd. Resist composition. 5,360,696, Cl. 430-270.000.

Hancock, Bill A.; and Fleming, Shane D., to Cytec Technology Corp. Treatment of mineral and alkali metal carbonate slurries. 5,360,600, Cl. 423-184.000.

Handley, Christopher J.: *See*—
Rifenburg, Byron P.; Handley, Christopher J.; and Stark, Randy R., 5,360,078, Cl. 180-227.000.

Hannemann, Klaus; Hohener, Alfred; Wang, Huanzhong; and Rembold, Manfred, to Ciba-Geigy Corporation. Process for producing multicolor or tone-in-tone effects. 5,360,455, Cl. 8-444.000.

Hanrahan, Michael J., to Eastman Kodak Company. Deep UV lift-off resist process. 5,360,698, Cl. 430-324.000.

Hansel, Udo: *See*—
Schmitz, Jurgen; Weber, Hans-Leo; Fausten, Hans-Josef; Schmoranzer, Hans-Wolfgang; and Hansel, Udo, 5,360,658, Cl. 428-215.000.

Hansen, Donald W., Jr.; Adelstein, Gilbert W.; Peterson, Karen B.; and Tsymbalov, Sofya, to G. D. Searle & Co. Imidazo[1,2-a]pyridinylalkyl phosphonic acid compounds for treatment of neurotoxic injury. 5,360,796, Cl. 514-80.000.

Hansen, Erling; and Wicht, Steve, to Raychem Corporation. Method of forming a wrap-around heat-recoverable article. 5,360,584, Cl. 264-22.000.

Hansen, James P., to United States of America, Navy. Determination of jammer range and azimuth by use of a coherent side lobe canceller system. 5,361,073, Cl. 342-381.000.

Hansen, James P., to United States of America, Navy. Mainlobe canceller system. 5,361,074, Cl. 342-381.000.

Hansen, Lyle A. Vehicle dumping apparatus with pulsating platform and movable hinge. 5,360,308, Cl. 414-363.000.

Hansen, Robert E., to Rockwell International Corporation. Device for delivering signatures in a printing press. 5,359,929, Cl. 101-232.000.

Hansen, Robert E., to Rockwell International Corporation. Device for aligning flies for a printing press. 5,359,930, Cl. 101-232.000.

Hara, James H.: *See*—
Skaarup, Ole; and Hara, James H., 5,359,953, Cl. 114-74.00A.

Hara, Tsukushi: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,360,785, Cl. 505-474.000.

Harada, Takamasa; Escher, Claus; Illian, Gerhard; Ohlendorf, Dieter; Rieger, Heinz; and Rosch, Norbert, to Hoechst Aktiengesellschaft. Process for producing ferroelectric liquid-crystal cells. 5,361,152, Cl. 359-80.000.

Harada, Takamasa: *See*—
Blatter, Karsten; Escher, Claus; Harada, Takamasa; Harnischfeger, Peter; and Hemmerling, Wolfgang, 5,360,576, Cl. 252-299.610.

Haraguchi, Shosuke, to Canon Kabushiki Kaisha. Camera. 5,361,110, Cl. 354-234.100.

Hardcastle, Pamela A.: *See*—
Pham, Ha Q.; Cavitt, Michael B.; and Hardcastle, Pamela A., 5,360,886, Cl. 528-89.000.

Harman, Gary E.; Lorito, Matteo; and Hayes, Christopher K., to Cornell Research Foundation, Inc. Fungicidal compositions comprising chitinase and *enterobacter cloacae*, and a method for stimulation proliferation of *E. Cloacase*. 5,360,608, Cl. 424-94.610.

Harman, Jonathan W., to Environmental Solvents Corporation. Pneumatic cleaning system. 5,360,027, Cl. 134-102.300.

Harmen, Larry V. Spoke-wheel random object selector gaming apparatus. 5,360,214, Cl. 273-144.00B.

Harmer, Walter L.; DeVoe, Robert J.; Larson, Eric G.; Kincaid, Don H.; Willett, Peggy S.; and Williams, Jerry W., to Minnesota Mining and Manufacturing Company. Coated abrasive article. 5,360,462, Cl. 51-295.000.

Harmon, Daryl L.; Jamison, David S.; and Scarola, Kenneth, to Combustion Engineering, Inc. Compact work station control room. 5,361,198, Cl. 364-188.000.

Harney, Kevin: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.

Harnischfeger, Peter: *See*—
Blatter, Karsten; Escher, Claus; Harada, Takamasa; Harnischfeger, Peter; and Hemmerling, Wolfgang, 5,360,576, Cl. 252-299.610.

Harriman, Ron E.: *See*—
Barriac, Jacques J.; and Harriman, Ron E., 5,360,127, Cl. 215-263.000.

Harrington, Charles W.: *See*—
Wisner, Gary E.; McClellan, James W.; and Harrington, Charles W., 5,361,024, Cl. 318-588.000.

Harris, Bernard; and Bozych, Dennis E., to Rexnord Corporation. Filament wound thrust bearing. 5,360,275, Cl. 384-420.000.

Harris, Darrell D.: *See*—
Buckley, Richard D.; Linsenbardt, Thomas L.; Younger, Harold; Harris, Darrell D.; and Struemph, Dennis J., 5,359,874, Cl. 72-256.000.

Harris, Frank W., to University of Akron, The. Thermoplastic polymides and composites therefrom. 5,360,671, Cl. 428-473.500.

Harris, Randall L., to Riverwood International Corporation. Enclosed sleeve-type carrier. 5,360,113, Cl. 206-427.000.

Harris, Rodney M.; Ahmed, Maqsood S.; and Renner, Thomas A., to Sherwin-Williams Company, The. Dispersant polymers. 5,360,856, Cl. 524-315.000.

Harris, Wayne A.: *See*—
Phillippa, Guy M.; and Harris, Wayne A., 5,360,131, Cl. 220-8.000.

Harsco Corporation: *See*—
Schrunk, Robert R., III; Madison, Harry; and Gilbert, Michael B., 5,359,815, Cl. 451-347.000.

Hart, Casey. Outdoor bag holder. 5,360,189, Cl. 248-97.000.

Hartig, Paul R.: *See*—
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Hartley, Richard I.; Ishaque, A. Nadeem; and Abdel-Malek, Aiman A., to General Electric Company. Correlation methods of identifying defects in imaging devices. 5,361,307, Cl. 382-1.000.

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Chrisope, Douglas R.; and Hartley, Rolfe J., 5,360,562, Cl. 252-46.600.

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Fujiki, Hironao; Michimata, Kaoru; Yaginuma, Atsushi; Hasebe, Nobuyuki; and Kim, Clara Y., 5,360,858, Cl. 524-434.000.

Hasegawa, Makoto: *See*—
Watanabe, Kazunori; Imagawa, Yasumi; Hasegawa, Makoto; and Takahashi, Kazuaki, 5,361,408, Cl. 455-324.000.

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Hashimoto, Kiyokazu: *See*—
Shimotashiro, Masafumi; Hayashi, Kouiti; Higashida, Yoshio; and Hashimoto, Kiyokazu, 5,361,043, Cl. 330-302.000.

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Hirano, Takaaki; and Hashimoto, Yoshinori, 5,361,365, Cl. 395-775.000.

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Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.
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Billmers, Robert J.; Paul, Charles W.; Hatfield, Stephen F.; and Kauffman, Thomas F., 5,360,845, Cl. 524-51.000.

Hatting, Jan: *See*—
Poulsen, Ole V.; and Hatting, Jan, 5,360,364, Cl. 446-102.000.

Hattori, Ken; Amano, Kesayoshi; Nakajima, Masao; and Naito, Masayoshi, to Nikon Corporation. Periphery exposing method and apparatus therefor. 5,361,121, Cl. 355-50.000.

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Carriker, Richard; Simpson, Martin; and Hauck, Thomas F., 5,360,294, Cl. 405-270.000.

Haun, Edward C.: *See*—
Tagamolila, Constante P.; Haun, Edward C.; Lomas, David A.; and Zimmermann, Joseph E., 5,360,533, Cl. 208-101.000.

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Hayashi, Jun, to NEC Corporation. Vapor phase epitaxial growth method of a compound semiconductor. 5,360,760, Cl. 117-93.000.

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Hayashi, Mamoru; and Okeyoshi, Tsuyoshi, to Tokyo Kikai Seisakusho, Ltd. Auto-paster for pasting a paper web which prevents bouncing of pressing members. 5,360,181, Cl. 242-555.600.

Hayashi, Noriki: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,360,785, Cl. 505-474.000.

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Harman, Gary E.; Lorito, Matteo; and Hayes, Christopher K., 5,360,608, Cl. 424-94.610.

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Wolff, Peter C.; Bullis, Stephen J.; and Hayes, Larry W., 5,359,921, Cl. 89-169.000.

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Hayes Wheels International, Inc.: *See*—
Archibald, Kenneth R.; and Scott, Melvin L., 5,360,261, Cl. 301-63.100.

Hays, Dan A., to Xerox Corporation. Scavengeless two component development with an electroded development roll. 5,360,940, Cl. 118-654.000.

Hays, Denis G.: *See*—
Mattucci, Raymond S.; Hays, Denis G.; and Oplinger, Chris A., 5,359,801, Cl. 43-1.000.

Hays, Walter P.: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.

Hayter, Steven R.: *See*—
Schmuck, Phillip W.; Hayter, Steven R.; Zachman, James R.; and Salerni, John V., 5,360,069, Cl. 166-383.000.

He, Wei D.: *See*—
Pashley, Richard M.; Senden, Timothy J.; Morris, Richard A.; Guthrie, James T.; and He, Wei D., 5,360,880, Cl. 526-213.000.

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Gould, Ronald M.; Heaney, William F.; Nitsch, Albert R.; and Spencer, Howard E., 5,360,530, Cl. 208-31.000.

Hede, Jean-Marc, to Zedel. Safety descender for a rope. 5,360,083, Cl. 182-5.000.

Hedlund, Thomas, to Sandvik AB. Tool for cut-off or similar turning operations. 5,360,298, Cl. 407-110.000.

Hedrick, Geoffrey S. M., to Innovative Solutions & Support, Incorporated A Corporation of Pennsylvania. Methods and apparatus for improving cathode ray tube image quality. 5,361,020, Cl. 315-369.000.

Hefner, Robert E., Jr.; and Earls, Jimmy D., to Dow Chemical Company, The. Mesogenic glycidyl amine blends. 5,360,884, Cl. 525-526.000.

Hehl, Karl. Injection molding machine for processing synthetic materials. 5,360,332, Cl. 425-150.000.

Hehner, Reinhard: *See*—
Welp, Ewald G.; Milke, Erhard; and Hehner, Reinhard, 5,360,180, Cl. 242-530.400.

Heidelberger Druckmaschinen AG: *See*—
Blaser, Peter T.; Miltner, Karl-Hermann; and Rodi, Anton, 5,359,933, Cl. 101-415.100.
Meyer, Helmut; Albrecht, Kai; and Seeberger, Jurgen, 5,361,021, Cl. 318-254.000.

Heidingsfeld, Herbert: *See*—
Orthmann, Ernst; Wulff, Klaus; Hoeltzenbein, Peter; Judat, Helmut; Wagner, Hans; Zaby, Gottfried; and Heidingsfeld, Herbert, 5,360,885, Cl. 528-49.000.

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Bruggeman, Ulrich; Heil, Hans-Karl; and Hochgesang, Gerhard, 5,360,954, Cl. 200-524.000.

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Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,360,442, Cl. 607-129.000.

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Broger, Emil A.; and Heiser, Bernd, 5,360,908, Cl. 546-146.000.

Heisig, Charles P.: *See*—
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., 5,359,836, Cl. 56-10.20E.

Heismann, Fred L., to AT&T Bell Laboratories. Apparatus and method employing polarization modulation to reduce effects of polarization

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Heitmann, Wilhelm: *See—*
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Helene Curtis, Inc.: *See—*
Rizvi, Riaz; and Patel, Chaitanya, 5,360,581, Cl. 252-544.000.

Helgeson, Brett J.: *See—*
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Bourbina, Michael; Hwang, Lydia L.; Luna, Joaquin E.; and Wheelock, Scott A., 5,361,128, Cl. 356-36.000.

Hemmer, Philip R.: *See—*
Khoury, Jihad A.; Kane, Jonathan S.; Hemmer, Philip R.; and Woods, Charles L., 5,361,222, Cl. 365-49.000.

Hemmerling, Wolfgang: *See—*
Blatter, Karsten; Escher, Claus; Harada, Takamasa; Harnischfeger, Peter; and Hemmerling, Wolfgang, 5,360,576, Cl. 252-299.610.

Hendel, Rudi; and Levinstein, Hyman. Method for planarization of submicron vias and the manufacture of semiconductor integrated circuits. 5,360,524, Cl. 204-192.250.

Henderson, Herman O., Jr., to ABB Vetco Gray Inc. Wear bushing with locking collet. 5,360,063, Cl. 166-208.000.

Henein, Nabil; Beer, Wilhelm; and Vile, David, to Alfred Teves GmbH. Hydraulic pump driven by an electric motor. 5,360,322, Cl. 417-313.000.

Hengel, John E., to United States of America, National Aeronautics and Space Administration. Parachute having improved vent line stacking. 5,360,187, Cl. 244-145.000.

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Knop, Bernhard; Tamm, Horst; and Walter, Gerhard, 5,360,841, Cl. 524-4.000.
Schmid, Karl; Bongardt, Frank; Roeder, Juergen; and Wuest, Reinhold, 5,360,560, Cl. 252-39.000.

Hennenkamp, Jeffrey R.; Logadon, Kevin M.; Simpson, Brian L.; Walker, Theodore E.; and Drake, Paul C., to Eastman Kodak Company. Silver nitrate produced by a continuous evaporative crystallization process. 5,360,602, Cl. 423-395.000.

Henning, Rainer; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, to Hoechst Aktiengesellschaft. Renin-inhibiting aminodiol derivatives. 5,360,791, Cl. 514-18.000.

Henricson, Kaj; and Klarin, Anja, to Kamyr, Inc. Treatment of bleach plant filtrations using a magnesium filter. 5,360,514, Cl. 162-31.000.

Henry, John W., IV; Flickinger, William F.; Dolinar, Joseph F., Jr.; Rodriguez, Francisco A.; Smith, James W., Sr.; and Gabriele, Rocco J., Jr., to United States of America, Navy. Gear pump with reduced fluid-borne noise. 5,360,325, Cl. 418-126.000.

Heo, Sang C.: *See—*
Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

Hercules Incorporated: *See—*
Chan, Anita N.; Swetlin, Brian J.; Thompson, Samuel A., III; Willis, Chester R.; and Woodside, Andrew B., 5,360,840, Cl. 523-428.000.

Herkness, Randall R.: *See—*
Easley, J. Alexander; Herkness, Randall R.; Dobosz, Paul J.; Stacey, Lisa A.; and Soutar, Larry W., 5,361,305, Cl. 381-58.000.

Herold, Hans-Jorg; Rascher, Gerald; Schneider, Joachim; and Wurlitzer, Holger, to Innovatex Automatisierungstechnik GmbH. Method and apparatus for supplying empty bobbins to and removing yarn packages from textile machines. 5,359,843, Cl. 57-267.000.

Herring, Peter J.: *See—*
Elton, Peter J.; Clarke, John C.; Cawse, John L.; Littler, George; Wigglesworth, Andrew; and Herring, Peter J., 5,360,701, Cl. 430-501.000.

Herskovitz, Stuart, to Qosina Corp. Spirometer mouthpiece. 5,360,009, Cl. 128-725.000.

Herzl, Robert D.; Quinn, Linda L.; and Schroter, Russell E., to International Business Machines Corporation. Cross interrogate synchronization mechanism including logic means and delay register. 5,361,368, Cl. 395-800.000.

Herzog, Dieter: *See—*
Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, 5,360,902, Cl. 536-84.000.

Hess, Markus: *See—*
Lauton, Alain; Hess, Markus; Streicher, Gunter; and Puntener, Alois, 5,360,453, Cl. 8-94.330.

Hessenthaler, George D. Jewelry case and components. 5,360,128, Cl. 217-13.000.

Heubel, Thomas: *See—*
Ausherman, Ronald; Heubel, Thomas; and Snyderman, Michael H., 5,360,416, Cl. 604-272.000.

Heurte, Alain. Apparatus for study and reeducation of the ankle. 5,360,015, Cl. 128-779.000.

Hewlett-Packard Company: *See—*
Atchison, Lee A., 5,361,336, Cl. 395-275.000.
Baney, Douglas M.; and Sorin, Wayne V., 5,361,161, Cl. 359-337.000.
Bearss, James G.; and Russell, Dale D., 5,361,089, Cl. 346-160.000.
Doue, John C., 5,361,202, Cl. 364-413.010.
English, Robert, 5,361,345, Cl. 395-575.000.
Lenkov, Dmitry; Unni, Shankar; Mehta, Michey; McDowell, Mark W.; Dadoo, Manoj; and Melli, Bruno, 5,361,351, Cl. 395-700.000.
Schwartz, Jeffrey D.; and Nash, Mark E., 5,361,176, Cl. 360-46.000.
Slattery, John W.; Jedrzejewski, Mark J.; and Norton, Terry W., 5,361,005, Cl. 326-56.000.

Heyen, John G.; Kasiraj, Chander; and Wolf, Timothy J., to International Business Machines Corporation. Method for displaying and confirming the status of deferred system requests. 5,361,390, Cl. 395-200.000.

Heyn, William M.; Fraser, Robert W.; and Roth, Donald J., to Polystar Packaging, Inc. Method of making an injection molded frame having a panel insert. 5,360,588, Cl. 264-153.000.

Hibbs, J. C., to Granite Rock Company. Mobile conveyor system. 5,360,097, Cl. 198-313.000.

Hibino, Junichi; and Ando, Eiji, to Matsushita Electric Industrial Co. Ltd. Photochromic material and an optical storage medium using the same. 5,360,699, Cl. 430-345.000.

Hickman, D. Anne; Kaufman, Peter; Trent, Adam; and Bouchette, Deborah A., to Intel Corporation. Hierarchical integrated help utility for a computer system. 5,361,361, Cl. 395-700.000.

Hickner, Richard A.: *See—*
Anderson, Kenneth W.; and Hickner, Richard A., 5,360,838, Cl. 523-404.000.

Hidaka, Hidemasa: *See—*
Ishii, Takafumi; Adachi, Takashi; Yasumura, Toshio; Miyadoh, Shinji; and Hidaka, Hidemasa, 5,360,737, Cl. 435-252.100.

Hieatt, Allen C.; and Ludwig, Jerome H., to H.E.R.C. Products Incorporated. Method of cleaning and maintaining water distribution pipe systems. 5,360,488, Cl. 134-22.110.

Higashida, Yoshio: *See—*
Shimotashiro, Masafumi; Hayashi, Kouiti; Higashida, Yoshio; and Hashimoto, Kiyokazu, 5,361,043, Cl. 330-302.000.

High Yield Technology: *See—*
Borden, Peter G.; Nguyen, Hoang K.; and Carrasco, Earl J., 5,360,980, Cl. 250-573.000.

Hildebrandt, James J. Method and apparatus for increasing the efficiency of electrical rotary machines. 5,361,012, Cl. 310-228.000.

Himont Incorporated: *See—*
Braga, Vittorio; and Giavarini, Carlo, 5,360,849, Cl. 524-68.000.
Mosier, Douglas D.; Barrera, Mark E.; and Dwyer, Stephen M., 5,360,868, Cl. 525-89.000.

Hirai, Hiroyuki; and Takezawa, Kuninori, to Matsushita Electric Industrial Co., Ltd. Component container. 5,360,110, Cl. 206-330.000.

Hirai, Mitsuru: *See—*
Sorimachi, Toshihiro; Furuki, Fumio; Narita, Shoichi; Azumi, Satoru; and Hirai, Mitsuru, 5,360,254, Cl. 296-218.000.

Hirano, Takaaki; and Hashimoto, Yoshinori, to Sharp Kabushiki Kaisha. Microprocessor for selectively performing cold and warm starts. 5,361,365, Cl. 395-775.000.

Hirano, Toru: *See—*
Tanaka, Akio; Hirano, Toru; and Ohsawa, Masami, 5,361,316, Cl. 385-35.000.

Hirano, Toshio: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akira, Shizuo; Isshiki, Hiroshi; Tanabe, Osamu; Kinoshita, Shigemi; and Shimamoto, Takuya, 5,360,894, Cl. 530-350.000.

Hirofuji, Satoshi: *See—*
Yonezu, Kiyoshi; Aoyama, Akimasa; Okaya, Takuji; Hirofuji, Satoshi; and Ozeki, Yukio, 5,360,670, Cl. 428-412.000.

Hirokawa, Jun: *See—*
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.

Hiromoto, Toshiro: *See—*
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Hirose, Isao: *See—*
Nishimura, Asao; Tanaka, Naotaka; and Hirose, Isao, 5,359,899, Cl. 73-842.000.

Hirschauer, Pierre, to Matra MHS. TTL-CMOS output stage for an integrated circuit. 5,361,004, Cl. 326-70.000.

Hirsh, Sydney. Child safety lock apparatus. 5,360,243, Cl. 292-144.000.

Hitachi Information Systems, Ltd.: *See—*
Ishigami, Takayuki; and Sugihara, Hisanori, 5,361,360, Cl. 395-700.000.

Hitachi, Ltd.: *See—*
Fujieda, Mamoru; Ohsuga, Minoru; Nogi, Toshiharu; and Ooyama, Yoshishige, 5,361,213, Cl. 364-431.080.
Ishigami, Takayuki; and Sugihara, Hisanori, 5,361,360, Cl. 395-700.000.
Ito, Takashi; and Watanabe, Hiroshi, 5,361,057, Cl. 336-198.000.
Iwasawa, Kyoko; and Tanaka, Yoshikazu, 5,361,352, Cl. 395-700.000.
Kametani, Masatsugu, 5,361,369, Cl. 395-800.000.
Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.
Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.
Nagashige, Yukari; Miyazawa, Shoichi; Watanabe, Kunio; Shida, Kouji; and Kojima, Shinichi, 5,361,364, Cl. 395-750.000.
Nakamura, Shigeru; Arimoto, Akira; Nakao, Takeshi; and Umeda, Mariko, 5,361,244, Cl. 369-44.230.

Nishimura, Asao; Tanaka, Naotaka; and Hirose, Isao, 5,359,899, Cl. 73-842.000.

Nogi, Toshiharu; Ohsuga, Minoru; Ohyama, Yoshishige; and Fujieda, Mamoru, 5,360,166, Cl. 239-404.000.

Omote, Tatsuyuki; Yoshida, Tomiharu; Maki, Hideo; Senoh, Makoto; Takahashi, Fuminobu; and Tsuchita, Kenji, 5,361,280, Cl. 376-248.000.

Sasaki, Hisao; Miyazaki, Takeshi; Baba, Shiro; Nakada, Kunihiko; and Akao, Yasushi, 5,361,374, Cl. 395-800.000.

Shinomura, Ryuuichi; and Katakura, Kageyoshi, 5,360,007, Cl. 128-661.010.

Siga, Masao; Toriya, Hajime; and Fukui, Yutaka, 5,360,318, Cl. 415-216.100.

Sugita, Yumiko; Hashimoto, Hisashi; Tsuruki, Masaki; and Domyo, Seiichi, 5,361,349, Cl. 395-600.000.

Takada, Kunio; Otani, Kenji; and Tanaka, Sadashi, 5,360,289, Cl. 405-52.000.

Takahara, Yasuaki; Esaki, Tomohiro; Sudo, Shigeyuki; and Okamoto, Teiji, 5,361,047, Cl. 332-103.000.

Tanaka, Takeo; Hatada, Toshio; Itoh, Masaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

Tanamachi, Tokunosuke; Nakata, Kiyoshi; and Nakamura, Kiyoshi, 5,361,196, Cl. 363-41.000.

Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.

Yamada, Masayuki; Maru, Saburo; and Sudo, Sumio, 5,360,290, Cl. 405-52.000.

Hitachi Magnetics Corp.: *See—*
Ribitch, Raymond W., 5,360,527, Cl. 204-297.00R.

Hitachi Metals, Ltd.: *See—*
Kawai, Hideki; Kojo, Katsuhiko; Eguchi, Kiyoshi; and Ogawa, Yoshiko, 5,360,674, Cl. 428-548.000.

Hitomi, Hisakazu: *See—*
Naka, Hideyuki; and Hitomi, Hisakazu, 5,361,103, Cl. 348-663.000.

Hitz, Mark A., to Datametrics Corporation. Web cutter. 5,359,915, Cl. 83-342.000.

Hiyama, Keiichi; Kanno, Masahide; Nakamura, Masakazu; and Nimoda, Kenichiro, to Olympus Optical Co., Ltd. Endoscope image data filing system and an endoscope image data managing method for managing a large number of image data in various mode. 5,361,203, Cl. 364-413.130.

Hiyoshi, Michiaki; Fujiwara, Takashi; Suzuki, Hisashi; and Matsuda, Hideo, to Kabushiki Kaisha Toshiba. Press-contact type semiconductor device. 5,360,985, Cl. 257-181.000.

Hlidek, Barry T.: *See—*
Pakulski, Marek; and Hlidek, Barry T., 5,360,558, Cl. 252-8.551.

HNC, Inc.: *See—*
Jost, Allen; Nelson, Jennifer; Gopinathan, Krishna; and Smith, Craig, 5,361,201, Cl. 364-401.000.

Ho, Tsai W. Toy car structure. 5,360,367, Cl. 446-470.000.

Hoang, Bong D.: *See—*
Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

Hoarty, W. Leo; and Lauder, Gary M., to Inteletext Systems, Inc. Interactive home information system for distributing video picture information to television viewers over a fiber optic telephone system. 5,361,091, Cl. 348-7.000.

Hochgesang, Gerhard: *See—*
Bruggeman, Ulrich; Heil, Hans-Karl; and Hochgesang, Gerhard, 5,360,954, Cl. 200-524.000.

Hocquaux, Michel: *See—*
Gaetani, Quintino; Rougier, Andre ; Duranton, Albert; and Hocquaux, Michel, 5,360,804, Cl. 514-245.000.

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Johnson, David A.; Zweifel, Terry L.; and Barrios, J. Rene, 5,361,065, Cl. 340-968.000.

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Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.

Insley, Thomas I.: *See—*
Anderson, Philip A.; Gorke, Ronald R.; Insley, Thomas I.; Meyer, Daniel E.; and Olson, David A., 5,360,654, Cl. 428-98.000.

Intel Corporation: *See—*
Haley, Kevin J., 5,359,768, Cl. 29-840.000.
Hickman, D. Anne; Kaufman, Peter; Trent, Adam; and Bouchette, Deborah A., 5,361,361, Cl. 395-700.000.
Kosonocky, George A.; and Winston, Mark D., 5,361,343, Cl. 395-425.000.
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.

Inteletext Systems, Inc.: *See—*
Hoarty, W. Leo; and Lauder, Gary M., 5,361,091, Cl. 348-7.000.

Interlego A.G.: *See—*
Poulsen, Ole V.; and Hatting, Jan, 5,360,364, Cl. 446-102.000.

Intermagnetics General Corporation: *See—*
Stevenson, Richard, 5,360,566, Cl. 252-67.000.

Intermedics, Inc.: *See—*
Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, 5,360,436, Cl. 607-18.000.

International Business Machine Corporation: *See—*
Cummins, Dennis A.; and Hucaby, Wayne R., 5,361,376, Cl. 395-800.000.

International Business Machines Corporation: *See—*
Aparicio, Manuel, IV; Miller, Patrice C.; and Miller, Wade A., 5,361,326, Cl. 395-21.000.
Baxter, Duane W.; Gregg, Leon E.; and Jaaskelainen, William, 5,360,651, Cl. 428-64.000.
Bjorklund, Gary C.; Burland, Donald M.; Donckers, Marcus C. J. M.; Miller, Robert D.; Moerner, William E.; Silence, Scott M.; Twieg, Robert J.; and Walsh, Cecilia A., 5,361,148, Cl. 359-4.000.
Bronner, Gary B.; DeBrosse, John K.; and Kenney, Donald M., 5,360,758, Cl. 437-52.000.
Carr, Brian P.; Glowny, David A.; Mastrangelo, Colette A.; Mayer, Paul M.; Seltzer, Arthur; and Shier, Peter D., 5,361,353, Cl. 395-700.000.
Chen, William T.; Gall, Thomas P.; Wilcox, James R.; and Wu, Tien Y., 5,359,767, Cl. 29-830.000.
Clark, Carl E.; Frey, Jeffrey A.; Plambeck, Kenneth E.; Scalzi, Casper A.; and Sinha, Bhaskar, 5,361,356, Cl. 395-700.000.
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., 5,361,350, Cl. 395-600.000.
Cox, Clifford A.; Nacamuli, Steven G.; Turner, Laurie B.; and Wilson, Amy L., 5,361,358, Cl. 395-700.000.
Doeringer, Willibald; Dykeman, Douglas; Edwards, Allan K.; Pozefsky, Diane P.; Sarkar, Soumitra; and Turner, Roger D., 5,361,256, Cl. 370-60.000.
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.
Goldowsky, Michael, 5,360,445, Cl. 623-3.000.
Gueret, Pierre L., 5,360,978, Cl. 250-306.000.
Hammond, James M.; Klos, Martin A.; Martin, Yves; Roessler, Kenneth G.; and Stowell, Robert M., 5,360,974, Cl. 250-442.110.
Herzl, Robert D.; Quinn, Linda L.; and Schroter, Russell E., 5,361,368, Cl. 395-800.000.
Heyen, John G.; Kasiraj, Chander; and Wolf, Timothy J., 5,361,390, Cl. 395-200.000.
Narayanan, Vinod; Honsinger, Philip; Lui, Lok T.; and Lin, Shu-hui, 5,360,767, Cl. 437-208.000.

International Paper Company: *See—*
Wacher, Paul, 5,360,643, Cl. 427-402.000.

Intevep, S.A.: *See—*
Martinez, Nelson P.; Lujano, Juan A.; Alvarez, Nieves; Machado, Francisco; and Lopez, Carmen M., 5,360,774, Cl. 502-67.000.

Inverness Corporation: *See—*
Mann, Samuel J., 5,360,434, Cl. 606-188.000.

Inviro Medical Devices Ltd.: *See—*
Novacek, Laurel A.; Sharp, Fraser R.; and McLean, Donald A., 5,360,404, Cl. 604-110.000.

Iowa State University Research Foundation, Inc.: *See—*
Nissen, Steven L., 5,360,613, Cl. 424-439.000.
Weber, Robert J., 5,361,077, Cl. 343-846.000.

Ip, Nancy Y.; DiStefano, Peter S.; and Stahl, Neil, to Regeneron Pharmaceuticals, Inc. Assay system for degenerative muscle disease. 5,360,740, Cl. 436-501.000.

IPL Inc.: *See—*
Beauchamp, Maurice, 5,360,112, Cl. 206-427.000.

IPOS GmbH & Co. KG: *See—*
Prahl, Jan; and Comtesse, Jean P., 5,359,791, Cl. 36-145.000.

Irii, Shinsuke: *See—*
Okumura, Yoshitaka; Kondo, Hiromasa; Iwasaki, Hiroshi; Saji, Soichi; and Irii, Shinsuke, 5,360,780, Cl. 503-227.000.

Irlbeck, Robert D.; and Bates, Warren A., to Whitaker Corporation, The. Laminated surface mount interconnection system. 5,360,347, Cl. 439-66.000.

Isaacson, Jimmy: *See—*
Barrick, Donald E.; Lipa, Belinda J.; Lilleboe, Peter M.; and Isaacson, Jimmy, 5,361,072, Cl. 342-133.000.

Isacksen, Jeffrey D. Plastic sheath for wood bulkheads. 5,360,295, Cl. 405-284.000.

Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kasha. Tumble control valve for intake port. 5,359,972, Cl. 123-308.000.

Isaka, Yukio: *See—*
Morita, Tetsuya; Yamano, Hiroshi; Isaka, Yukio; Ishizuka, Haruo; Murata, Masahiko; Sakai, Masahiko; and Kubota, Tsutomu, 5,361,329, Cl. 395-102.000.

Isco, Inc.: *See—*
Jameson, Daniel G.; and Allington, Robert W., 5,360,320, Cl. 417-4.000.

Isenberg, Heinz H.; Vogt, Goran; and Althaus, P. Gerhard, to Schmalbach-Lubeca AG; and MPV MEB-und Pruftechnik Vogt GmbH, a part interest. Process and device for the ultrasonic testing for wells between plastics packaging and cover foils. 5,359,895, Cl. 73-582.000.

Isganitis, Louis V.: *See—*
Radigan, Edward J., Jr.; Isganitis, Louis V.; Solodar, Warren E.; and Gundlach, Kurt B., 5,360,472, Cl. 106-22.00K.

Ishaque, A. Nadeem: *See—*
Hartley, Richard I.; Ishaque, A. Nadeem; and Abdel-Malek, Aiman A., 5,361,307, Cl. 382-1.000.

Ishibe, Yoshihiro, to Canon Kabushiki Kaisha. Projection optical apparatus. 5,361,107, Cl. 353-101.000.

Ishida, Hisashi: *See—*
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.

Ishida, Yasuhiko; Yoshida, Minoru; Mizuguchi, Hideki; Okita, Takaaki; and Makida, Tetsuo, to Japan Steel Works, Ltd., The. Method for correcting for thrust force generated when a cutter for granulating plastics is rotated in water. 5,360,585, Cl. 264-40.100.

Ishigaki, Kazushi, to Fujitsu Limited. Handwriting entry processing system using keyboard and mouse interfaces requiring no modification of an application program. 5,361,310, Cl. 382-13.000.

Ishigami, Takayuki; and Sugihara, Hisanori, to Hitachi, Ltd.; and Hitachi Information Systems, Ltd. Method for generating software development environment. 5,361,360, Cl. 395-700.000.

Ishiguro, Fumio, to Hoshizaki Denki Kabushiki Kaisha. Method and apparatus for transferring glasses from rack to rack. 5,360,309, Cl. 414-404.000.

Ishihara Sangyo Kaisha Ltd.: *See—*
Toki, Tadaaki; Koyanagi, Toru; Morita, Masayuki; Yoneda, Tetsuo; Kagimoto, Chiharu; and Okada, Hiroshi, 5,360,806, Cl. 514-318.000.

Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, to Kabushiki Kaisha Toshiba. Microwave oven with automatic cooking mode selecting function. 5,360,965, Cl. 219-705.000.

Ishii, Takafumi; Adachi, Takashi; Yasumura, Toshio; Miyadoh, Shinji; and Hidaka, Hidemasa, to Meiji Seika Kaisha, Ltd. *Enterobacter cloacae* ferm BP1529 having plant growth acceleratory activity. 5,360,737, Cl. 435-252.100.

Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, to Sony Corporation. Devices for controlling recording and/or reproducing apparatus utilizing recorded management data and interactive information input apparatus for an electronic device. 5,361,173, Cl. 360-27.000.

Ishii, Yoshiki, to Canon Kabushiki Kaisha. Data processing device using data correlation. 5,361,066, Cl. 341-58.000.

Ishikawa, Tadasu; and Maeda, Mikio, to Nippon Hoso Kyokai. Bidirectional light transmission system and optical device therefor. 5,361,157, Cl. 359-168.000.

Ishizaka, Yuji; Katanosaka, Takashi; Masuda, Osamu; and Kimura, Hiroyasu, to Kabushiki Kaisha Meidensha. Welding management apparatus. 5,360,156, Cl. 228-17.500.

Ishizuka, Haruo: *See—*
Morita, Tetsuya; Yamano, Hiroshi; Isaka, Yukio; Ishizuka, Haruo; Murata, Masahiko; Sakai, Masahiko; and Kubota, Tsutomu, 5,361,329, Cl. 395-102.000.

Isman, Marshall: *See—*
Wells, David; Tardiff, James P.; Satterfield, David L.; Rowe, Eric L.; and Isman, Marshall, 5,361,363, Cl. 395-800.000.

Isobe, Naoki: *See—*
Itoh, Hiroshi; Isobe, Naoki; and Asazuma, Tadashi, 5,360,860, Cl. 524-460.000.

Isobe, Yasuhiko: *See—*
Fujisaki, Shigehisa; Kajiwara, Tadayuki; Isobe, Yasuhiko; Shimokawa, Takumi; Senju, Yoshinori; Narazaki, Masanobu; Yoshida, Tatsuya; and Wakiyama, Atsushi, 5,361,330, Cl. 395-107.000.

Isomura, Sadao: *See—*
Okuda, Hiroaki; Nomoto, Kazuhiro; Kubouchi, Kenji; Itani, Shizuo; Isomura, Sadao; and Suekuni, Einosuke, 5,360,219, Cl. 277-235.00B.

ISP Investments Inc.: *See—*
Dougherty, James A.; Shugard, Donald J.; and Anderson, Lowell R., 5,360,882, Cl. 526-262.000.
Tseng, Susan Y.; and Wolf, Philip F., 5,360,883, Cl. 526-264.000.

Isshiki, Hiroshi: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akira, Shizuo; Isshiki, Hiroshi; Tanabe, Osamu; Kinoshita, Shigemi; and Shimamoto, Takuya, 5,360,894, Cl. 530-350.000.

Itani, Shizuo: *See—*
Okuda, Hiroaki; Nomoto, Kazuhiro; Kubouchi, Kenji; Itani, Shizuo; Isomura, Sadao; and Suekuni, Einosuke, 5,360,219, Cl. 277-235.00B.

Ito, Hideki: *See—*
Fukahori, Kenichi; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,360,278, Cl. 400-120.010.

Ito, Hisao: *See—*
Shimizu, Yasumoto; and Ito, Hisao, 5,360,744, Cl. 437-2.000.

Ito, Katsuyuki; Katakura, Shinichi; and Okubo, Takehiko, to Oki Electric Industry Co., Ltd. Electrophotographic printer and method for controlling the same. 5,361,088, Cl. 346-153.100.

Ito, Kenji: *See—*
Miyamoto, Noriaki; Kaneko, Masashi; Ito, Kenji; and Kawai, Yasuyuki, 5,359,846, Cl. 57-417.000.

Ito, Kiyoshi: *See—*
Asai, Naoki; Morozumi, Choji; Ito, Yoshikazu; Ito, Kiyoshi; and Koyabu, Akira, 5,360,279, Cl. 400-216.100.

Ito, Masumi: *See—*
Aoki, Takafumi; Ito, Masumi; and Naruse, Noriyoshi, 5,360,147, Cl. 222-600.000.

Ito, Takaaki: *See—*
Kidokoro, Toru; Ito, Takaaki; Hyodo, Yoshihiko; and Osanai, Akinori, 5,359,978, Cl. 123-520.000.

Ito, Takashi; and Watanabe, Hiroshi, to Hitachi, Ltd. Ignition coil for internal combustion engine. 5,361,057, Cl. 336-198.000.

Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, to Nissan Motor Co., Ltd.; Nippon Cable System Inc.; Ohi Seisakusho Co., Ltd.; and Fuji Kiko Co. Ltd. Control cable adjusting arrangement. 5,359,909, Cl. 74-502.600.

Ito, Yoshikazu: *See—*
Asai, Naoki; Morozumi, Choji; Ito, Yoshikazu; Ito, Kiyoshi; and Koyabu, Akira, 5,360,279, Cl. 400-216.100.

Itoh, Hiroshi; Isobe, Naoki; and Asazuma, Tadashi, to Oji Kako Co., Ltd. Water-soluble resin emulsion and process for preparation thereof. 5,360,860, Cl. 524-460.000.

Itoh, Masaaki: *See—*
Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

Itoh, Shinichi; Kuno, Kenji; and Hoshino, Akio, to Takemoto Yushi Kabushiki Kaisha. Water-based pesticidal composition. 5,360,783, Cl. 504-305.000.

Itoh, Yasuo: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

ITT Corporation: *See—*
Carman, Anthony K.; and Pontbriand, Duane J., 5,360,237, Cl. 285-81.000.
Thomas, Nils I.; and Kiser, Larry D., 5,360,630, Cl. 427-67.000.
Tripp, Roger M.; and Woods, Dennis J., 5,361,218, Cl. 364-571.010.

Iu, Siu-Leong, to Matsushita Electric Corporation of America. Noise reduction system using multi-frame motion estimation, outlier rejection and trajectory correction. 5,361,105, Cl. 348-699.000.

Ivanov, Alex J.; Driscoll, James A.; Linnehan, Richard P.; Crawford, Malcolm F.; Chinchillo, A. Robert; and Goldberg, Ernest, to Raytheon Company. Directional warhead fuze. 5,359,934, Cl. 102-214.000.

Iverson, Donald D.; and Strobel, Thomas A., to Gamer Corporation. Shoe having individualized display areas. 5,359,790, Cl. 36-136.000.

Iwahashi, Takashi, to Aikoh Co., Ltd. Gel-form deodorant composition containing chloride dioxide. 5,360,574, Cl. 252-187.210.

Iwakiri, Itsuro, to Oki Electric Industry Co., Ltd. Serial access memory. 5,361,236, Cl. 365-221.000.

Iwami, Kenichi: *See—*
Hanada, Toru; Matsuo, Atsushi; and Iwami, Kenichi, 5,359,792, Cl. 38-72.000.

Iwamoto, Shinichi: *See—*
Nakashima, Kazushi; and Iwamoto, Shinichi, 5,359,976, Cl. 123-516.000.

Iwamoto, Shoji: *See—*
Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.

Iwamuro, Noriyuki, to Fuji Electric Co., Ltd. Insulated gate bipolar transistor having a specific buffer layer resistance. 5,360,983, Cl. 257-139.000.

Iwanaga, Kentaro; Sakai, Kiyoshi; and Yano, Noriyoshi, to Tosoh Corporation; and Nippon Polyurethane Industry Co. Vinyl chloride resin-based composition and packings made therefrom. 5,360,871, Cl. 525-131.000.

Iwasa, Shinya, to NEC Corporation. Semiconductor memory cell device having dummy capacitors reducing boundary level changes between a memory cell array area and a peripheral circuit area. 5,361,234, Cl. 365-210.000.

Iwasaki, Hiroshi: *See—*
Okumura, Yoshitaka; Kondo, Hiromasa; Iwasaki, Hiroshi; Saji, Soichi; and Irii, Shinsuke, 5,360,780, Cl. 503-227.000.

Iwasaki, Yasuo: *See—*
Kato, Atsushi; Kawahara, Sei; and Iwasaki, Yasuo, 5,360,707, Cl. 430-538.000.

Iwasawa, Kyoko; and Tanaka, Yoshikazu, to Hitachi, Ltd. Method for debugging in a parallel computer system and system for the same. 5,361,352, Cl. 395-700.000.

Iwase, Hiroshi: *See—*
Nakano, Yasuji; Kawasaki, Tsutomu; Kobayashi, Wataru; Gondo, Keiko; and Iwase, Hiroshi, 5,360,544, Cl. 210-483.000.

Iwata, Yoshihisa: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

Iyengar, Radha; Shulman, Mark L.; and Gross, Akiva T., to Opta Food Ingredients, Inc. Fat soluble polymers and their use in foods. 5,360,626, Cl. 426-601.000.

Izumi, Michihiro, to Canon Kabushiki Kaisha. Exchange apparatus enclosing a plurality of extension terminals and connecting an extension terminal to a line wire. 5,361,299, Cl. 379-252.000.

Izumizaki, Masami: *See—*
Suzuki, Akio; Miura, Yasushi; and Izumizaki, Masami, 5,361,090, Cl. 347-17.000.

Izushi, Minetoshi: *See—*
Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

J. H. Benecke AG: *See—*
Wolff, Roland; and Bruder, Axel, 5,360,874, Cl. 525-227.000.

J&R Engineering Company, Inc.: *See—*
Johnston, Roger L., 5,360,123, Cl. 212-140.000.

J. Uriach & Cia. S.A.: *See—*
Bartroli, Javier; Anguita, Manuel; Belloc, Jordi; Carceller, Elena; and Almansa, Carmen, 5,360,813, Cl. 514-383.000.

Jaakkelainen, William: *See—*
Baxter, Duane W.; Gregg, Leon E.; and Jaakkelainen, William, 5,360,651, Cl. 428-64.000.

Jackson, Barry, to Lonza Ltd. 1,3-cyclobutanedione-biaketals, process for their production and their use. 5,360,937, Cl. 568-348.000.

Jackson, David M.; Brown, Grayson; and Nordin, Gerald L., to United States of America, Agriculture. Method and apparatus for autodissemination of insect pathogens. 5,359,807, Cl. 43-131.000.

Jacob, Ingolf; and Geirhos, Josef, to Hoechst Aktiengesellschaft. Two-component loop sewing yarn and manufacture thereof. 5,359,759, Cl. 28-271.000.

Jacoboni, Charles P.; and Boulard, Brigitte R. J., to Centre National de la Recherche Scientifique (CNRS). Vapor-phase deposition of fluorine glass. 5,360,637, Cl. 427-255.000.

Jacobsen, Eric S.: *See—*
Baum, Jeffery I.; and Jacobsen, Eric S., 5,361,048, Cl. 332-109.000.

Jacobson, Kenneth R. Support assembly for optical equipment. 5,360,194, Cl. 248-431.000.

Jacobson, Michael S.: *See—*
Brannon, Garry A.; and Jacobson, Michael S., 5,359,733, Cl. 2-195.100.

Jaffe, David H.; Johnson III, Hoke S.; and Eidler, Chris W., to MTI Technology Corporation. Method and apparatus for scheduling access to a CSMA communication medium. 5,361,063, Cl. 340-825.500.

Jaffe, David H.: *See—*
Glider, Joseph S.; and Jaffe, David H., 5,361,347, Cl. 395-575.000.

Jagenberg Aktiengesellschaft: *See—*
Welp, Ewald G.; Milke, Erhard; and Hehner, Reinhard, 5,360,180, Cl. 242-530.400.

Jahnke, Richard W.: *See—*
Porsberg, John W.; and Jahnke, Richard W., 5,360,458, Cl. 44-301.000.

Jakubowicz, Raymond F.; and Porte, Johannes J., to Eastman Kodak Company. Ribbed mechanism for mixing sample by vibration. 5,360,597, Cl. 422-64.000.

James Clem Corporation: *See—*
Carriker, Richard; Simpson, Martin; and Hauck, Thomas F., 5,360,294, Cl. 405-270.000.

Jameson, Daniel G.; and Allington, Robert W., to Isco, Inc. Multiple solvent delivery system. 5,360,320, Cl. 417-4.000.

Jamison, David S.: *See—*
Harmon, Daryl L.; Jamison, David S.; and Scarola, Kenneth, 5,361,198, Cl. 364-188.000.

Jang, Ji-hoon, to Samsung Electronics Co., Ltd. CCD-type color video camera with gamma correction. 5,361,094, Cl. 348-254.000.

Janisch, Ingo: *See—*
Nickel, Andreas; Arlt, Wolfgang; Janisch, Ingo; Wagner, Paul; and Klausener, Alexander, 5,360,923, Cl. 558-277.000.

Janota, Kenneth F., to Molex Incorporated. Packaging tray for electrical connectors. 5,360,109, Cl. 206-328.000.

Janssen Pharmaceutica N.V.: *See—*
Janssens, Frans E.; Sommen, Francois M.; and Diels, Gaston S. M., 5,360,807, Cl. 514-318.000.
Janssens, Frans E.; Sommen, Francois M.; and Diels, Gaston S. M., to Janssen Pharmaceutica N.V. Substituted thiazolyl and substituted pyridinyl derivatives. 5,360,807, Cl. 514-318.000.

Janulis, Eugene P.: *See—*
Boyd, Gary T.; Tiers, George V.; Francia, Cecil V.; Janulis, Eugene P.; Kosbar, Robert J.; and Leichter, Louis M., 5,360,582, Cl. 252-582.000.

Japan Steel Works, Ltd., The: *See—*
Ishida, Yasuhiko; Yoshida, Minoru; Mizuguchi, Hideki; Okita, Takaaki; and Makida, Tetsuo, 5,360,585, Cl. 264-40.100.

Jasin, Mark S. Self-erecting tent on folding base. 5,360,028, Cl. 135-137.000.

Jaspers, Blandikus C.; and Van Dongen, Bernardus A. M., to Seed Capital Investments (SCT) B.V. Seals for gas-carrying lines and installations which comprise such seals. 5,360,681, Cl. 429-34.000.

Jaubert, Jean-Pierre: *See—*
Feder, Michel; Jaubert, Jean-Pierre; and Pouchol, Jean-Marie, 5,360,851, Cl. 524-157.000.

JBS Societe Anonyme: *See—*
Jeanson, Jean-Francois; Huppert, Jean; Autrique, Alex; Remond, Joel; and Lesoin, Francis, 5,360,429, Cl. 606-61.000.
Jeanson, Jean-Francois; Huppert, Jean; Autrique, Alex; Remond, Joel; and Lesoin, Francis, to JBS Societe Anonyme. Device for straightening, fixing, compressing, and elongating cervical vertebrae. 5,360,429, Cl. 606-61.000.

Jedrzejewski, Mark J.: *See—*
Slattery, John W.; Jedrzejewski, Mark J.; and Norton, Terry W., 5,361,005, Cl. 326-56.000.

Jeffery, Andrew B.; and Skelton, John, to Albany International Corp. Rechargeable termite barrier for buildings. 5,359,806, Cl. 43-131.000.

Jenkins, Janice R.: *See—*
Miller, William R.; Sarandon, Mary; and Jenkins, Janice R., 5,360,234, Cl. 281-31.000.

Jenkins, Richard A.: *See—*
Sauerwine, Dean N.; and Jenkins, Richard A., 5,360,160, Cl. 229-304.000.

Jenneman, Gary E.; and Clark, J. Bennett, to Phillips Petroleum Company. Injection of organic phosphates for subterranean microbial processes. 5,360,064, Cl. 166-246.000.

Jenninga, Alfred R.: *See—*
Sprunt, Eve S.; Jennings, Alfred R.; and Timmer, Robert S., 5,360,068, Cl. 166-259.000.

Jensen, Donald C. Energy converter using imploding plasma vortex heating. 5,359,966, Cl. 122-14.000.

Jensen, Joseph C.; Taylor, Junius E.; and Acker, Loren C., to Engineering & Research Associates, Inc. RF heated mold for thermoplastic materials. 5,360,330, Cl. 425-144.000.

Jensen, Judith M.: *See—*
Gaul, Kimberley A.; and Jensen, Judith M., 5,360,489, Cl. 134-42.000.

Jeong, Nak-Seong: *See—*
You, Shi-Ryoung; Ann, Byoung-Chul; Jeong, Nak-Seong; Oh, Kyoung-Chul; and Lee, Jeong-Geun, 5,361,380, Cl. 381-24.000.

Jeong, Sang T.: *See—*
Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

Jesse, Darlene L.: *See—*
Jesse, Ronald C., Jr.; and Jesse, Darlene L., 5,359,963, Cl. 119-850.000.

Jesse, Ronald C., Jr.; and Jesse, Darlene L. Dog sweater. 5,359,963, Cl. 119-850.000.

Jiang, Jack B.; Johnson, Mary G.; and Nichols, Jeffrey, to Sphinx Pharmaceuticals Corporation. 1,3-dioxane derivatives having protein kinase C inhibitory activity. 5,360,818, Cl. 514-459.000.

Jin, Betty: *See—*
von Itzstein, Laurence M.; Wu, Wen-Yang; Phan, Tho V.; Danylec, Basil; and Jin, Betty, 5,360,817, Cl. 514-459.000.

Jinno, Satoshi: *See—*
Kobayashi, Takahiro; Fujii, Seiro; and Jinno, Satoshi, 5,360,652, Cl. 428-64.000.

Jircitano, Albert; and Dosch, Daniel E., to Textron Inc. Vertical position aided inertial navigation system. 5,359,889, Cl. 73-178.00R.

Jo, Jang U.: *See—*
Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

Johansson, Eric B., to General Electric Company. Spacer with integral zircaloy springs. 5,361,288, Cl. 376-441.000.

Johansson, Eric B.: *See—*
Adamson, Ronald B.; Bartosik, Donald C.; Johansson, Eric B.; and Christenson, Donald J., 5,361,282, Cl. 376-443.000.

John Lysaght (Australia) Limited: *See—*
Tu, Cat V., 5,360,641, Cl. 427-348.000.

Johnson, Brian H.: *See—*
Rice, Lynn H.; Hagen, James G.; and Johnson, Brian H., 5,360,534, Cl. 208-139.000.

Johnson, Dale R.: *See—*
Gilmore, Charles P., Jr.; and Johnson, Dale R., 5,360,313, Cl. 414-694.000.

Johnson, David A., to JohnsTech International Corporation. Integrated circuit device test socket. 5,360,348, Cl. 439-72.000.

Johnson, David A.; Zweifel, Terry L.; and Barrios, J. Rene, to Honeywell Inc. Windshear guidance system. 5,361,065, Cl. 340-968.000.

Johnson Electric S.A.: *See—*
Strobl, Georg, 5,360,274, Cl. 384-192.000.

Johnson, Floyd L. Reusable pot for receiving a tree root ball and facilitating transport, handling and planting thereof. 5,359,809, Cl. 47-73.000.

Johnson III, Hoke S.: *See—*
Jaffe, David H.; Johnson III, Hoke S.; and Eidler, Chris W., 5,361,063, Cl. 340-825.500.

Johnson, Kristina M.: *See—*
Liu, Jian-Yu; and Johnson, Kristina M., 5,361,320, Cl. 385-143.000.

Johnson, Lanny L. Shoulder brace. 5,360,391, Cl. 602-5.000.

Johnson, Marvin M.; Simfukwe, Maybin; Nowack, Gerhard P.; and Kubicek, Donald H., to Phillips Petroleum Company. Reduced leaching or arsenic and/or mercury from solid wastes. 5,360,632, Cl. 427-212.000.

Johnson, Marvin M.: *See—*
Cheung, Tin-Tack P.; and Johnson, Marvin M., 5,360,779, Cl. 502-415.000.

Johnson, Mary G.: *See—*
Jiang, Jack B.; Johnson, Mary G.; and Nichols, Jeffrey, 5,360,818, Cl. 514-459.000.

Johnson, Paul G.: *See—*
Petschauer, Richard J.; and Johnson, Paul G., 5,361,232, Cl. 365-201.000.

Johnson, Robert J.: *See—*
Appeldorn, Roger H.; Johnson, Robert J.; Rouser, Forrest J.; and Erwin, Robert L., 5,360,270, Cl. 383-5.000.

Johnson, Roy A.; and Smith, Herman W., to Upjohn Company, The. Bisphosphonic acid derivatives useful as anti-arthritic agents. 5,360,797, Cl. 514-111.000.

Johnson, Terry: *See—*
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, 5,360,255, Cl. 297-232.000.

Johnson, William M., to Charles Stark Draper Laboratory, Inc., The. High-performance, low-cost inertial guidance system. 5,360,184, Cl. 244-3.200.

JohnsTech International Corporation: *See—*
Johnson, David A., 5,360,348, Cl. 439-72.000.

Johnston, Roger L., to J&R Engineering Company, Inc. Gantry stabilizer. 5,360,123, Cl. 212-140.000.

Jolley, Scott T.: *See—*
Kolp, Christopher J.; Daly, Daniel T.; Huang, Nai Z.; Jolley, Scott T.; Koch, Frederick W.; Stoldt, Stephen H.; Walsh, Reed H.; and Denis, Richard A., 5,360,459, Cl. 44-358.000.

Jones, Joel W., to Tri-Way Machine Ltd. Bearing cap spreader. 5,360,248, Cl. 294-87.100.

Jones, Owen; and Trinder, Michael C. J., to University of Essex. Headphone assemblies. 5,361,304, Cl. 381-72.000.

Jones, Rickie W.; and Martin, Gerald F., to Rand Automated Compaction System, Inc. Container handling apparatus for a refuse collection vehicle. 5,360,310, Cl. 414-409.000.

Jones, Timothy; and Hughes, Trevor, to Schlumberger Technology Corporation. Method of quantitative analysis of drilling fluid products. 5,360,738, Cl. 436-30.000.

Jones, William L.: *See—*
Allen, Barry R.; Dixit, Rahul; Nelson, Bradford L.; Carillo, Juan C.; and Jones, William L., 5,361,038, Cl. 330-54.000.

Jordaan, Amor; and Stander, Petrus J., to Sentrachem Limited. Production of an organic salt of a rare earth metal. 5,360,898, Cl. 534-16.000.

Jorgensen, Gary J.: *See—*
Schissel, Paul O.; Kennedy, Cheryl E.; Jorgensen, Gary J.; Shinton, Yvonne D.; and Goggin, Rita M., 5,361,172, Cl. 359-883.000.

Josefsson, Leif E. B., to ABB Flakt Aktiebolag. Scrubbing water handling system for paint spray booths. 5,360,539, Cl. 210-167.000.

Joseph, Jerome J.; Petras, Michael F.; and Witmer, Steven B., to AT&T Bell Laboratories. Fast turn-off circuit for solid-state relays or the like. 5,360,979, Cl. 250-551.000.

Joseph, Jose: *See—*
Oh, Seajin; Joseph, Jose; and Lankheet, Earl W., 5,360,528, Cl. 204-425.000.

Joseph, Thomas A.: *See—*
Leiter, Earl; and Joseph, Thomas A., 5,360,246, Cl. 292-302.000.

Jost, Allen; Nelson, Jennifer; Gopinathan, Krishna; and Smith, Craig, to HNC, Inc. Real estate appraisal using predictive modeling. 5,361,201, Cl. 364-401.000.

Jourdain, Gerard E. A.: *See—*
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.

Joy, Ann E.: *See—*
Parke, Jennifer L.; and Joy, Ann E., 5,360,606, Cl. 424-93.470.

Judat, Helmut: *See—*
Orthmann, Ernst; Wulff, Klaus; Hoeltzenbein, Peter; Judat, Helmut; Wagner, Hans; Zaby, Gottfried; and Heidingsfeld, Herbert, 5,360,885, Cl. 528-49.000.

Jujo Paper Co., Ltd.: *See—*
Kano, Isao; Fujiwara, Hideki; Matsunaga, Katsuhiko; and Hata, Kunio, 5,360,657, Cl. 428-207.000.

Junga, Anthony G., to Petro-Lube, Inc. Hydraulic oil. 5,360,565, Cl. 252-56.00R.

K. W. Muth Co. Inc.: *See—*
Roberts, John K.; and Spencer, Keith R., 5,361,190, Cl. 362-61.000.

Kabushiki Kaisha Daito: *See—*
Asoh, Keisuke; and Nagai, Akihiro, 5,359,946, Cl. 110-345.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Ichikawa, Katsumi, 5,360,327, Cl. 425-38.000.

Kabushiki Kaisha Meidensha: *See—*
Ishizaka, Yuji; Katanosaka, Takashi; Masuda, Osamu; and Kimura, Hiroyasu, 5,360,156, Cl. 228-17.500.

Kabushiki Kaisha Nakayama Egg: *See—*
Nakayama, Susumu; and Nakayama, Hiroyuki, 5,360,306, Cl. 414-331.000.

Kabushiki Kaisha Okanishi: *See—*
Kadokura, Iwao, 5,359,805, Cl. 43-124.000.

Kabushiki Kaisha Shinkawa: *See—*
Ooki, Toyokazu; and Takahashi, Kuniyuki, 5,360,155, Cl. 228-1.100.

Kabushiki Kaisha Toshiba: *See—*
Aoki, Takahiro, 5,361,214, Cl. 364-490.000.
Endo, Koichi, 5,360,989, Cl. 257-532.000.
Hiyoshi, Michiaki; Fujiwara, Takashi; Suzuki, Hisashi; and Matsuda, Hideo, 5,360,985, Cl. 257-181.000.
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.
Kanayama, Shoichi; Kuhara, Shigehide; and Sato, Kozo, 5,361,028, Cl. 324-309.000.
Kasahara, Akihiro, 5,361,243, Cl. 369-44.150.
Miyazaki, Satoshi; Ben-Brahim, Lazhar; and Kurosawa, Ryoichi, 5,361,197, Cl. 363-98.000.
Motegi, Chiaki; and Kobayashi, Kiyoshi, 5,361,138, Cl. 358-400.000.
Nadahara, Soichi; and Yamabe, Kikuo, 5,360,748, Cl. 437-11.000.
Naka, Hideyuki; and Hitomi, Hisakazu, 5,361,103, Cl. 348-663.000.
Noda, Tomimitsu; Karino, Hisao; and Sato, Shinsuke, 5,360,966, Cl. 219-710.000.
Okuda, Masayuki; Fujiwara, Takayoshi; and Honjo, Takashi, 5,360,326, Cl. 418-220.000.
Shigihara, Hideo, 5,361,394, Cl. 455-5.100.
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.
Yamamoto, Toshihisa, 5,361,395, Cl. 455-33.200.
Yoshida, Takaharu; and Seo, Naobumi, 5,361,245, Cl. 369-44.280.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Miyamoto, Noriaki; Kaneko, Masashi; Ito, Kenji; and Kawai, Yasuyuki, 5,359,846, Cl. 57-417.000.
Sasaki, Tsutomu; and Asai, Junji, 5,360,253, Cl. 296-180.100.

Kadakia, Vinod K.; and Kang, Christine H., to Xerox Corporation. Circuit for fast page mode addressing of a RAM with multiplexed row and column address lines. 5,361,339, Cl. 395-400.000.

Kadija, Igor V.: *See—*
Abya, Joseph A.; Kadija, Igor V.; Kudrak, Edward J., Jr.; and Maisano, Jr. Joseph J., 5,360,991, Cl. 257-666.000.

Kadokura, Iwao, to Kabushiki Kaisha Okanishi. Rat guard method. 5,359,805, Cl. 43-124.000.

Kadokura, Masaki: *See—*
Shiraishi, Noriaki; Mizushima, Yoshio; Takamuku, Kenji; and Kadokura, Masaki, 5,359,968, Cl. 123-3.000.

Kadomura, Shingo, to Sony Corporation. Dry etching method. 5,360,510, Cl. 156-665.000.

Kadono, Masaya: *See—*
Inoue, Tohru; Kadono, Masaya; and Miyanaga, Akiharu, 5,360,477, Cl. 117-4.000.

Kaewell, John D., Jr.; and Cooley, David M., to Hughes Aircraft Company. Modulator having fractional sample/symbol time. 5,361,046, Cl. 332-100.000.

Kagabu, Shinzo; and Wada, Katsuaki, to Nihon Bayer Agrochem K.K. Process for the preparation of 3-phenyl-2-propenones. 5,360,935, Cl. 568-316.000.

Kagi, Thomas, Sr. Waste oil burner with piston-pump for fuel atomization and delivery. 5,360,334, Cl. 431-1.000.

Kagimoto, Chiharu: *See—*
Toki, Tadaaki; Koyanagi, Toru; Morita, Masayuki; Yoneda, Tetsuo; Kagimoto, Chiharu; and Okada, Hiroshi, 5,360,806, Cl. 514-318.000.

Kaino, Masaru: *See—*
Toda, Hideki; Takagishi, Yukio; and Kaino, Masaru, 5,360,827, Cl. 521-57.000.

Kaiser, Russell E., Jr.; and Lueckeman, Steven G., to Western Atlas Inc. Locking mechanism for contouring head assembly for multiple belt grinding machine. 5,359,813, Cl. 451-285.000.

Kajfosz, Bryon L.: *See—*
Schemm, Jerry D.; Kajfosz, Bryon L.; and Krieger, Richard T., II, 5,360,307, Cl. 414-343.000.

Kajikawa, Akira: *See—*
Saito, Kenji; Kajikawa, Akira; and Asano, Kazuo, 5,360,044, Cl. 152-209.00R.

Kajiwara, Tadayuki: *See—*
Fujisaki, Shigehisa; Kajiwara, Tadayuki; Isobe, Yasuhiko; Shimokawa, Takumi; Senju, Yoshinori; Narazaki, Masanobu; Yoshida, Tatsuya; and Wakiyama, Atsushi, 5,361,330, Cl. 395-107.000.

Kajs, John P.: *See—*
Upshaw, Jim L.; Hahne, Jonathan J.; Hayes, Richard J.; Zowarka, Raymond C., Jr.; Kajs, John P.; and Sledge, Robert L., II, 5,360,999, Cl. 307-112.000.

Kakizaki, Shinobu: *See—*
Nakamura, Michiya; and Kakizaki, Shinobu, 5,360,089, Cl. 188-299.000.

Kakizawa, Haruo: *See—*
Makimura, Kazuo; Kojima, Shigeru; and Kakizawa, Haruo, 5,361,217, Cl. 364-561.000.

Kaku, Junichi: *See—*
Ichikawa, Ryuichi; Kaku, Junichi; and Suzuki, Takahiro, 5,360,079, Cl. 180-297.000.

Kalotay, Paul Z.; and Van Cleve, Craig B., to Micro Motion, Incorporated. Viscometer for sanitary applications. 5,359,881, Cl. 73-54.060.

Kamarehi, Mohammed: *See—*
Simpson, James E.; Kamarehi, Mohammed; Turner, Brian; and Ury, Michael G., 5,361,274, Cl. 372-72.000.

Kamata, Kazuo; and Muramatsu, Katsuji, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit with plural taking lenses. 5,361,108, Cl. 354-120.000.

Kamatani, Yasuo. Non-mechanical laser beam scanning device employing a diffraction grating and an acousto-optic deflector for optical recording and readout. 5,361,269, Cl. 372-24.000.

Kamen, Melvin E.; and Bernstein, Philip, to Revlon Consumer Products Corporation. Cosmetic pencil and method for making the same. 5,360,281, Cl. 401-96.000.

Kametani, Masatsugu, to Hitachi, Ltd. Synchronous method of, and apparatus for, allowing a processor to process a next task before synchronization between a predetermined group of processors. 5,361,369, Cl. 395-800.000.

Kamo, Lloyd, to Adiabatics, Inc. Composition and methods for densifying refractory oxide coatings. 5,360,634, Cl. 427-226.000.

Kamoda, Takashi; and Onozuka, Haruo, to Fuji Photo Optical Co., Ltd. Display arrangement for charging condition in strobing circuit of photographic camera with built-in strobe-flash device. 5,361,109, Cl. 354-145.100.

Kamyr, Inc.: *See—*
Henricson, Kaj; and Klarin, Anja, 5,360,514, Cl. 162-31.000.

Kanai, Kazuyuki, to Toa Medical Electronics Company, Limited. Method of partitioning particle size distrubution datum. 5,359,906, Cl. 73-865.500.

Kanayama, Shoichi; Kuhara, Shigehide; and Sato, Kozo, to Kabushiki Kaisha Toshiba. Method and apparatus for high speed magnetic resonance imaging with improved image quality. 5,361,028, Cl. 324-309.000.

Kane, Jonathan S.: *See—*
Khoury, Jihad A.; Kane, Jonathan S.; Hemmer, Philip R.; and Woods, Charles L., 5,361,222, Cl. 365-49.000.

Kane, Patrick R.; Karrh, Billie R.; Mack, Kit; and Oppedisano, Samuel J., to United States of America, Navy. Ramp junction. 5,359,746, Cl. 14-711.000.

Kanebo, Ltd.: *See—*
Kawabe, Masayuki; and Yamamoto, Masaki, 5,360,829, Cl. 521-81.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoyama, Taizo; Nagata, Norio; Hosokawa, Kenzi; and Hosoi, Hideki, 5,360,865, Cl. 525-67.000.
Tsunemi, Hidenari; Nakata, Toshinobu; and Namura, Koyoyuki, 5,360,887, Cl. 528-97.000.

Kaneko, Hideo; and Kumashiro, Hatsuyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Method and apparatus for performing horizontal continuous casting. 5,360,054, Cl. 164-476.000.

Kaneko, Masashi: *See—*
Miyamoto, Noriaki; Kaneko, Masashi; Ito, Kenji; and Kawai, Yasuyuki, 5,359,846, Cl. 57-417.000.

Kaneko, Tetsuya: *See—*
Okunuki, Masahiko; Suzuki, Akira; Shimoda, Isamu; Kaneko, Tetsuya; Tsukamoto, Takeo; Takeda, Toshihiko; Yonehara, Takao; and Ichikawa, Takeshi, 5,361,015, Cl. 313-309.000.

Kang, Christine H.: *See—*
Kadakia, Vinod K.; and Kang, Christine H., 5,361,339, Cl. 395-400.000.

Kanno, Masahide: *See—*
Hiyama, Keiichi; Kanno, Masahide; Nakamura, Masakazu; and Nimoda, Kenichiro, 5,361,203, Cl. 364-413.130.

Kano, Hisao: *See—*
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.

Kano, Isao; Fujiwara, Hideki; Matsunaga, Katsuhiko; and Hata, Kunio, to Jujo Paper Co., Ltd. Coated printing paper and process for producing the same. 5,360,657, Cl. 428-207.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See—*
Okumura, Yoshitaka; Kondo, Hiromasa; Iwasaki, Hiroshi; Saji, Soichi; and Irii, Shinsuke, 5,360,780, Cl. 503-227.000.

Kappel, Thomas F.: *See—*
Dickerhoff, Scott D.; Kappel, Thomas F.; and Virag, Robert A., 5,360,439, Cl. 607-104.000.

Kappelmann, Hans G.: *See—*
Baumann, Lothar E.; Kappelmann, Hans G.; Mertens, Volkmar; Schafeld, Bernhard T.; Vorhoff, Werner W.; and Wallussek, Heinz, 5,360,260, Cl. 299-59.000.

Karczewski, Casimir: *See—*
Christian, Paul R.; and Karczewski, Casimir, 5,361,398, Cl. 455-51.200.

Karino, Hisao: *See—*
Noda, Tomimitsu; Karino, Hisao; and Sato, Shinsuke, 5,360,966, Cl. 219-710.000.

Karrh, Billie R.: *See—*
Kane, Patrick R.; Karrh, Billie R.; Mack, Kit; and Oppedisano, Samuel J., 5,359,746, Cl. 14-711.000.

Kasahara, Akihiro, to Kabushiki Kaisha Toshiba. Optical disk apparatus having laminated diaphragm springs structure. 5,361,243, Cl. 369-44.150.

Kasiraj, Chander: *See—*
Heyen, John G.; Kasiraj, Chander; and Wolf, Timothy J., 5,361,390, Cl. 395-200.000.

Kaspar Wire Works, Inc.: *See—*
Baer, Scott D., 5,360,093, Cl. 194-206.000.

Katakura, Kageyoshi: *See—*
Shinomura, Ryuuichi; and Katakura, Kageyoshi, 5,360,007, Cl. 128-661.010.

Katakura, Shinichi: *See—*
Ito, Katsuyuki; Katakura, Shinichi; and Okubo, Takehiko, 5,361,088, Cl. 346-153.100.

Katanosaka, Takashi: *See—*
Ishizaka, Yuji; Katanosaka, Takashi; Masuda, Osamu; and Kimura, Hiroyasu, 5,360,156, Cl. 228-17.500.

Kataoka, Yoshiharu; Suzuki, Akiyoshi; and Yamada, Yuichi, to Canon Kabushiki Kaisha. Autofocusing device and projection exposure apparatus with the same. 5,361,122, Cl. 355-53.000.

Katashiba, Hideaki; Nishiyama, Ryoji; and Inoue, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Control system for internal combustion engine. 5,359,975, Cl. 123-435.000.

Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, to Canon Kabushiki Kaisha. Method and apparatus for encoding and decoding color images. 5,361,147, Cl. 358-532.000.

Katayama, Shinji: *See—*
Arimoto, Osamu; Katayama, Shinji; and Take, Yoshinari, 5,360,526, Cl. 204-242.000.

Kato, Atsushi; Kawahara, Sei; and Iwasaki, Yasuo, to Fuji Photo Film Co., Ltd. Photographic printing paper support. 5,360,707, Cl. 430-538.000.

Kato, Hideo: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

Kato, Koichi: *See—*
Matsuzaki, Makio; Kato, Koichi; and Furuya, Shigeru, 5,361,191, Cl. 362-61.000.

Kato, Shigeo: *See—*
Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, 5,361,147, Cl. 358-532.000.

Kato, Toshikatsu: *See—*
Kuguminato, Hideo; Kato, Toshikatsu; Fujinaga, Chikako; and Hamahara, Kyoko, 5,360,676, Cl. 428-682.000.

Kato, Toshiyuki: *See—*
Matsuoka, Saiji; Kawabe, Hidetaka; Yasuhara, Eiko; Sakata, Kei; and Kato, Toshiyuki, 5,360,493, Cl. 148-320.000.

Katoh, Shoichi: *See—*
Wood, John C.; Katoh, Shoichi; and Nitta, Hideo, 5,360,675, Cl. 428-631.000.

Katsumata, Naoto: *See—*
Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

Kauffman, Ralph E.: *See—*
Thakur, Randhir P. S.; Martin, Annette L.; and Kauffman, Ralph E., 5,360,769, Cl. 437-239.000.

Kauffman, Thomas F.: *See—*
Billmers, Robert J.; Paul, Charles W.; Hatfield, Stephen F.; and Kauffman, Thomas F., 5,360,845, Cl. 524-51.000.

Kaufman, Arie A.; Bandopadhay, Amit; and Piligian, George J., to Research Foundation State University of New York, The. Apparatus and method for eye tracking interface. 5,360,971, Cl. 250-221.000.

Kaufman, Peter: *See—*
Hickman, D. Anne; Kaufman, Peter; Trent, Adam; and Bouchette, Deborah A., 5,361,361, Cl. 395-700.000.

Kaufman, Steven A.: *See*—
DiMarco, Bernard; and Kaufman, Steven A., 5,361,051, Cl. 335-16.000.

Kawa, Franciszek; and Stilli, Adrian, to Concast Standard AG. Continuous casting mold for steel. 5,360,053, Cl. 164-418.000.

Kawai, Koji: *See*—
Kiso, Yoshihisa; Kawaai, Koji; and Nitabaru, Masatoshi, 5,360,921, Cl. 556-478.000.

Kawabata, Kenji. Method of providing a decorative pattern on a screw head. 5,360,639, Cl. 427-270.000.

Kawabe, Hidetaka: *See*—
Matsuoka, Saiji; Kawabe, Hidetaka; Yasuhara, Eiko; Sakata, Kei; and Kato, Toshiyuki, 5,360,493, Cl. 148-320.000.

Kawabe, Masayuki; and Yamamoto, Masaki, to Kanebo, Ltd. Foamed polyester sheet and process for the production thereof. 5,360,829, Cl. 521-81.000.

Kawabe, Yasumasa; Uenishi, Kazuya; and Kokubo, Tadayoshi, to Fuji Photo Film Co., Ltd. Positive type 1,2-naphthoquinonediazide photoresist composition containing benzotriazole light absorbing agent. 5,360,692, Cl. 430-191.000.

Kawahara, Sei: *See*—
Kato, Atsushi; Kawahara, Sei; and Iwasaki, Yasuo, 5,360,707, Cl. 430-538.000.

Kawahashi, Masaru: *See*—
Inoue, Keido; Kawahashi, Masaru; Kinoshita, Hisao; and Mochida, Kenji, 5,360,722, Cl. 435-34.000.

Kawai, Hideki; Kojo, Katsuhiko; Eguchi, Kiyoshi; and Ogawa, Yoshiko, to Hitachi Metals, Ltd. Permanent magnet coated with Ni or Ni alloy having a specific cell structure and growth pattern. 5,360,674, Cl. 428-548.000.

Kawai, Yasuyuki: *See*—
Miyamoto, Noriaki; Kaneko, Masashi; Ito, Kenji; and Kawai, Yasuyuki, 5,359,846, Cl. 57-417.000.

Kawama, Shuichi: *See*—
Murata, Yasumoto; Yoshikawa, Shuichi; Nishiwaki, Yuji; Kawama, Shuichi; Morio, Tomokazu; and Kitoh, Atsunori, 5,361,323, Cl. 395-2.100.

Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, to Mitsubishi Denki Kabushiki Kaisha. Microprocessor with reset execution from an arbitrary address. 5,361,371, Cl. 395-800.000.

Kawamura, Shinichi; Sato, Junichi; and Sanemitsu, Yuzuru, to Sumitomo Chemical Company, Limited. Process of producing iminothiazoline derivatives. 5,360,912, Cl. 548-199.000.

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Brauner, Arne H.; and Kelley, James E., 5,360,345, Cl. 434-308.000.

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DiStefano, Thomas H.; Grube, Gary W.; Khandros, Igor Y.; and Mathiew, Gaetan, 5,360,947, Cl. 174-261.000.

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Atkinson, Leland G.; Kindred, Douglas S.; Moore, Duncan T.; and Zinter, J. Robert, 5,361,166, Cl. 359-654.000.

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Toth, Thomas L.; Crawford, Carl R.; and King, Kevin F., 5,361,291, Cl. 378-12.000.

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Weber, Vicki L.; Boggs, Joseph S.; and King, Richard M., 5,360,920, Cl. 554-144.000.

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Rockenfeller, Uwe; and Kirol, Lance D., 5,360,057, Cl. 165-104.120.

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Thomas, Nils I.; and Kiser, Larry D., 5,360,630, Cl. 427-67.000.

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Ohtsuka, Masanori; and Kitani, Kazunari, 5,361,115, Cl. 354-400.000.

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Klarin, Anja: *See*—
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Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, 5,361,226, Cl. 365-171.000.

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Takada, Masahito; Ueda, Eiichi; Araki, Hiromitsu; and Kobayashi, Toru, 5,360,708, Cl. 430-496.000.

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Nino, Naohi, 5,361,193, Cl. 362-346.000.

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Nakaso, Yasuji; Kawasaki, Tsutomu; Kobayashi, Wataru; Gondo, Keiko; and Iwase, Hiroshi, 5,360,544, Cl. 210-483.000.

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Inoue, Yoshinori; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,361,223, Cl. 365-51.000.

Komatsu, Toshihiro: *See*—
Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.

Komatsu, Yoshinobu: *See*—
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Yabushita, Yasunori; Yokoi, Hiroshi; Koyama, Masanao; and Takatsuka, Munehiro, 5,360,415, Cl. 604-265.000.

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Fu, Jian-Guo, 5,361,210, Cl. 364-424.050.
Nishimoto, Mitsuhiko; Matsuoka, Hirofumi; and Tabuse, Hidetoshi, 5,360,077, Cl. 180-79.100.

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Seber, Brett P.; Morton, Randolph J.; Keys, William H.; Kraft, Patrick W.; Bates, William R., Jr.; and Hussey, Marlow D., 5,359,778, Cl. 30-294.000.

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Schemm, Jerry D.; Kajfosz, Bryon L.; and Krieger, Richard T., II, 5,360,307, Cl. 414-343.000.

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Brown, Lawrence E.; Clingman, David L.; Barber, Michael J.; Kroemer, John F.; and Cross, Kenneth R., 5,359,770, Cl. 29-889.100.

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Kubota, Tsutomu: *See*—
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Kubouchi, Kenji: *See*—
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Kuchel, Michael, to Carl-Zeiss-Stiftung. Method and apparatus for phase evaluation of pattern images used in optical measurement. 5,361,312, Cl. 382-44.000.

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Takiguchi, Haruhisa; Inoguchi, Kazuhiko; Kudo, Hiroaki; Sugahara, Satoshi; and Taneya, Mototaka, 5,361,271, Cl. 372-46.000.

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Kuhlman, G. William; Beaumont, Richard A.; Carbaugh, Daniel F.; Anderson, David; Chakrabarti, Amiya K.; and Kinnear, Kenneth P., to Aluminum Company of America. Nickel base alloy forged parts. 5,360,496, Cl. 148-677.000.

Kuhns, Abe B., to E-Z Trail, Inc. Capped wheel spindle assembly. 5,360,223, Cl. 280-96.100.

Kukla, Ryszard: *See*—
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Kulprathipanja, Santi: *See*—
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Kumagai, Ryohei: *See*—
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Kumanoya, Masaki: *See*—
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Kumashiro, Hatsuyoshi: *See*—
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Kume, Masahiro: *See*—
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Kunkle, Herman M., Jr.: *See*—
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Kuno, Kenji: *See*—
Itoh, Shinichi; Kuno, Kenji; and Hoshino, Akio, 5,360,783, Cl. 504-305.000.

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Kupersmith, Bertram F.: *See*—
Brajczewski, David C.; Kupersmith, Bertram F.; and Towey, James P., Jr., 5,360,952, Cl. 187-246.000.

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Inoue, Keido; Kawahashi, Masaru; Kinoshita, Hisao; and Mochida, Kenji, 5,360,722, Cl. 435-34.000.
Inoue, Masayasu; Ebashi, Iwao; and Takigawa, Tetsuo, 5,360,914, Cl. 548-546.000.
Saito, Koichi; and Tsudaka, Takeichi, 5,360,672, Cl. 428-480.000.
Yonezu, Kiyoshi; Aoyama, Akimasa; Okaya, Takuji; Hirofuji, Satoshi; and Ozeki, Yukio, 5,360,670, Cl. 428-412.000.

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Kuromoto, Traci Y.: *See*—
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Kurtz, John G. Toilet tissue wetting device. 5,359,738, Cl. 4-661.000.

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Ebara, Yukinori; and Kusakawa, Tomoyo, 5,360,012, Cl. 128-764.000.

Kusuhara, Kenji. Occluder supporter and a method of attachment thereof. 5,360,444, Cl. 623-2.000.

Kutsuna, Toshimasa, to NEC Corporation. Message relaying system for a distributed processing system. 5,361,388, Cl. 395-275.000.

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Kynast, Ulrich: *See*—
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Kyocera Corporation: *See*—
Hayashi, Katsura; and Sakaue, Katsushi, 5,360,772, Cl. 501-95.000.

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Nakamura, Teruyuki; and Nitta, Yasunori, 5,360,119, Cl. 209-618.000.

L. H. Carbide Corporation: *See*—
Neuenschwander, Thomas R., 5,359,763, Cl. 29-738.000.

La Jolla Cancer Research Foundation: *See*—
Fukuda, Minoru; and Bierhuizen, Marti F. A., 5,360,733, Cl. 435-193.000.

Lacamera, Nicholas J., Jr.: *See*—
Dewacker, Dennis R.; Rosenberg, Leon; and Lacamera, Nicholas J., Jr., 5,360,847, Cl. 524-56.000.

Laditka, Alexander. Methods and apparatus for dispensing, mixing and applying coating constituents to traffic surfaces, and traffic surfaces coated using such methods. 5,360,287, Cl. 404-75.000.

Ladlow, Mark: *See*—
Hagan, Russell M.; Bunce, Keith T.; Naylor, Alan; Ladlow, Mark; McElroy, Andrew B.; Whittington, Andrew R.; and Coomber, Barry A., 5,360,820, Cl. 514-559.000.

Lage, Craig S., to Motorola, Inc. Process for fabricating a self aligned interconnect structure in a semiconductor device. 5,360,757, Cl. 437-52.000.

Lai, Chi-Shih. Decorative lamp shade and Christmas lamp assembly. 5,361,192, Cl. 362-123.000.

Laird, James: *See*—
Weinberger, Joseph; Bricault, Gary; and Laird, James, 5,361,265, Cl. 371-29.100.

Laiseca Soto, Laura P.: *See*—
Garza Flores, Josue; Laiseca Soto, Laura P.; Guillen Pichardo, Jose; and Angeles Uribe, Juan, 5,360,616, Cl. 424-489.000.

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LaLande, Alton J.: *See*—
Allen, James R.; and LaLande, Alton J., 5,360,292, Cl. 405-249.000.

Lambert, Paul R.: *See*—
Spindel, Jonathan H.; Lambert, Paul R.; and Ruth, Roger A., 5,360,388, Cl. 600-25.000.

Lambla, Morand: *See*—
Fleche, Guy; Gosset, Serge; and Lambla, Morand, 5,360,473, Cl. 106-210.000.

Landa, Zdenek: *See*—
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Landis, Edward W.: *See*—
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Landscheidt, Heinz: *See*—
Wolters, Erich; Landscheidt, Heinz; Klausener, Alexander; and Puppe, Lothar, 5,360,922, Cl. 558-277.000.

Lane, Christopher C.; Lenz, Ruben P.; and Athanassoulias, Costa, to ADM Agri-Industries, Ltd. Glass-like polysaccharide abrasive grit. 5,360,903, Cl. 536-124.000.

Laneman, Scott A.: *See*—
Stanley, George G.; and Laneman, Scott A., 5,360,939, Cl. 568-454.000.

Lang, Brian. Rotatable and removable bed tray. 5,359,741, Cl. 5-507.100.

Lang, Douglas J.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,360,442, Cl. 607-129.000.

Lang, Timothy R.: *See*—
Newton, Donald A.; and Lang, Timothy R., 5,360,022, Cl. 131-297.000.

Lange, James E. Drill rig having automatic spindle stop. 5,360,072, Cl. 173-2.000.

Langmaid, Jonathan C. Compound sliding bevel square. 5,359,782, Cl. 33-415.000.

Lankheet, Earl W.: *See*—
Oh, Seajin; Joseph, Jose; and Lankheet, Earl W., 5,360,528, Cl. 204-425.000.

Lanniruberto, Alex: *See*—
Gravener, Roy D.; Lanniruberto, Alex; and Ciccolella, Michael, 5,360,417, Cl. 604-278.000.

Lanzarini, Luigi: *See*—
Belvederi, Bruno; Balestrazzi, Duilio; and Lanzarini, Luigi, 5,360,021, Cl. 131-84.100.

Lanzetta, Alphonso P.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.

Lapergue, Guy J.: *See*—
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Lardon, Paul: *See*—
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Larsen, Marvin L.: *See*—
Gleason, Stephen J.; and Larsen, Marvin L., 5,360,244, Cl. 292-167.000.

Larsen, Richard C. Air scoop for selectively inducing drag on a vehicle. 5,360,252, Cl. 296-180.100.

Larson, Eric G.: *See*—
Harmer, Walter L.; DeVoe, Robert J.; Larson, Eric G.; Kincaid, Don H.; Willett, Peggy S.; and Williams, Jerry W., 5,360,462, Cl. 51-295.000.

Larson, Sheldon O.; and Mack, Ronald J., to Xilinx, Inc. Method of reducing dice testing with on-chip identification. 5,360,747, Cl. 437-8.000.

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Larsson, Stefan: *See*—
Wyon, David; and Larsson, Stefan, 5,360,374, Cl. 454-306.000.

Larsson, Stig B.; and Ryan, Ian M., to Scandic International Pty. Ltd. Change machine. 5,360,369, Cl. 453-19.000.

Lasby, William E.: *See*—
Brownlee, James R.; and Lasby, William E., 5,360,422, Cl. 604-385.200.

Lash, Glen R.: *See*—
Cook, Jeffery T.; Lash, Glen R.; Moore, Danny R.; and Young, Gerald A., 5,360,420, Cl. 604-378.000.

LaTerza, Lawrence: *See*—
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, 5,360,509, Cl. 156-645.000.

Laties, Alan M.; and Stone, Richard A., to University of Pennsylvania, The Trustees of The. Pharmacological stimulation of eye growth. 5,360,801, Cl. 514-215.000.

Latimer, Paul J., to Babcock & Wilcox Company, The. Hydrogen damage confirmation with EMATs. 5,359,898, Cl. 73-600.000.

Latza, John: *See*—
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, 5,360,509, Cl. 156-645.000.

Lau, Philip T. S.: *See*—
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Lauder, Gary M.: *See*—
Hoarty, W. Leo; and Lauder, Gary M., 5,361,091, Cl. 348-7.000.

Lauer, Eduardo, to NMC of North America, Inc. Surface coated, easily mountable cushioning member and method of manufacture. 5,360,048, Cl. 156-86.000.

Laurent, Bruno: *See*—
Periou, Pierre; Grandjean, Richard; and Laurent, Bruno, 5,360,351, Cl. 439-357.000.

Lauth, Guenter; Mueller, Ulrich; Hoelderich, Wolfgang; Brode, Stefan; and Wagenblast, Gerhard, to BASF Aktiengesellschaft. Colored crystalline aluminophosphates and/or silicoaluminophosphates of the AEL or VFI type. 5,360,474, Cl. 106-402.000.

Lauton, Alain; Hess, Markus; Streicher, Gunter; and Puntener, Alois, to Ciba-Geigy Corporation. Process for pickling and pretanning raw hides. 5,360,453, Cl. 8-94.330.

Lawler, Margaret: *See*—
Markley, David; Lawler, Margaret; Erdman, Jane; and Pierson, Timothy, 5,359,740, Cl. 5-425.000.

Lawlyes, Daniel A.: *See*—
Whitson, Duane E.; and Lawlyes, Daniel A., 5,359,761, Cl. 29-883.000.

Lawson, Gregory M.: *See*—
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, 5,360,255, Cl. 297-232.000.

Leard, Thomas M.: *See*—
Fulton, Stephen D.; and Leard, Thomas M., 5,359,890, Cl. 73-178.00R.

Leason, Michael H.; Ruschke, Rick R.; and Davis, Ralph L., to Filtertek, Inc. Needleless access device. 5,360,413, Cl. 604-249.000.

Leavitt, John C.; Lin, Ching-Shwun; and Aebersold, Ruedi H., to California Institute of Technology. Plastin isoforms and their uses. 5,360,715, Cl. 435-6.000.

LeBaron, Jennifer A.: *See*—
Dey, Thomas W.; and LeBaron, Jennifer A., 5,361,129, Cl. 356-124.000.

Lebby, Michael S.: *See*—
Hartman, Davis H.; and Lebby, Michael S., 5,361,317, Cl. 385-43.000.

Leblans, Paul; and Lardon, Paul, to AGFA-Gevaert, N.V. Preparation of metal halide phosphor particles of selected particle size range with improved powder flow ability. 5,360,578, Cl. 252-301.40H.

Lecomber, Peter G.: *See*—
Owen, Alan E.; Snell, Anthony J.; Hajto, Janos; Lecomber, Peter G.; and Rose, Mervyn J., 5,360,981, Cl. 257-4.000.

Lecomte, Jacques: *See*—
Lecomte, Roger; Lecomte, Jacques; and Honore, Philippe, 5,360,456, Cl. 8-471.000.

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Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

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Matsushita Electric Corporation of America: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
Fujisaki, Shigehisa; Kajiwara, Tadayuki; Isobe, Yasuhiko; Shimokawa, Takumi; Senju, Yoshinori; Narazaki, Masanobu; Yoshida, Tatsuya; and Wakiyama, Atsushi, 5,361,330, Cl. 395-107.000.
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Matthew, Linda C.: *See*—
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Mattucci, Raymond S.; Hays, Denis G.; and Oplinger, Chris A. Scent dispenser. 5,359,801, Cl. 43-1.000.

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Mawby, Harold S.; Donaghy, David J.; Gunderson, Rick L.; Frost, Thomas; Fairchild, Ace; and Spohn, Marvin L., to White Consolidated Industries, Inc. Refrigerator door construction. 5,359,795, Cl. 40-405.000.

May, Guntram; and Steinhardt, Helmut, to Framatome Connectors Daut & Rietz GmbH & Co. KG. Spring contact receptacle. 5,360,356, Cl. 439-839.000.

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Mayfield, Charles D. Finger guard. 5,359,812, Cl. 49-383.000.

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McBurnett, Ray: *See*—
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McCallister, Teresa D. Blood sample collection. 5,360,011, Cl. 128-763.000.

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McCarthy, William M.; Dam, Ebo E.; van Bergen, Wil F.; and Fitzpatrick, Keith, to Albany International Corp. Press fabrics for paper machines. 5,360,518, Cl. 162-358.200.

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McCormac, Elias A., III: *See*—
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McCormick, William. Means for safe collection and transfer of body fluids. 5,360,423, Cl. 604-403.000.

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McCue, David N. Fire hose support. 5,360,168, Cl. 239-525.000.

McDermott, Mark W.: *See*—
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McDonald, Eric L.: *See*—
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McDonald, George W. Folded sheet articles. 5,360,655, Cl. 428-121.000.

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McDonald, Michael C.: *See*—
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McElroy, Andrew B.: *See*—
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McEwan, Thomas E., to University of California, Regents of the. Ultra-wideband radar motion sensor. 5,361,070, Cl. 342-21.000.

McGard, Inc.: *See*—
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McGovern, Stephen J.: *See*—
Fletcher, David L.; McGovern, Stephen J.; and Sauer, John E., 5,360,532, Cl. 208-89.000.

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McRae-McFarlane, Amanda: *See*—
Tice, Thomas R.; Dillon, Deborah L.; Mason, David W.; McRae-McFarlane, Amanda; and Dahlstrom, Annica B., 5,360,610, Cl. 424-426.000.

Mead Corporation, The: *See*—
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Mead, Terence W., to Rank Cintel Limited. Method of and apparatus for scanning cinematographic film while avoiding blemishes in the phosphor face of a CRT scanner. 5,361,092, Cl. 348-100.000.

Medevelop AB: *See*—
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Medical Composite Technology, Inc.: *See*—
Geiger, Richard; Robertson, A. Scott; and Page, Neville, 5,360,224, Cl. 280-250.100.

Medicarb Inc.: *See*—
Arora, Sudershan K., 5,360,794, Cl. 514-25.000.

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Medtronic, Inc.: *See*—
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Otten, Lynn M., 5,360,441, Cl. 607-122.000.
Thompson, David L., 5,360,437, Cl. 607-30.000.

Medwid, Richard D.: *See*—
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Meijer, Henricus E. H.: *See*—
Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, 5,360,844, Cl. 524-50.000.

Meijer, Robert S., to Winfield Industries. Control system for medical waste disposal unit. 5,360,594, Cl. 422-37.000.

Meiji Seika Kaisha, Ltd.: *See*—
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Meiler, Fritz: *See*—
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Meili, Gerard; and Pinchot, Jean-Luc, to Societe Nationale des Poudres et Explosifs. Multi-receptacle pyrotechnic cartridges and corresponding ammunition. 5,359,918, Cl. 89-1.816.

Meinzer, Richard A., to United Technologies Corporation. Polymeric storage bed for hydrogen. 5,360,461, Cl. 48-61.000.

Meitav, Arye: *See*—
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Meitzler, Allen H.; and Saloka, George S., to Ford Motor Company. Resonant cavity flexible fuel sensor and system. 5,361,035, Cl. 324-663.000.

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Melli, Bruno: *See*—
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Koblitz, Francis F.; Lynch, Thomas J.; and Mellinger, Ricky C., 5,360,350, Cl. 439-276.000.

Melville, Kenneth B. Self centering pipe axis laser guide and saddle. 5,359,781, Cl. 33-286.000.

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Mendes, Etienne: *See*—
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Mentink, Leon; and Serpelloni, Michel, to Roquette Freres. Low-calorie chocolate. 5,360,621, Cl. 426-548.000.

Mentus, Slavko, to Alberta Ltd. Method and composition for precipitation of atmospheric water. 5,360,162, Cl. 239-2.100.

Meo, Dominic, III. Vapor-extraction system for removing hydrocarbons from soil. 5,360,067, Cl. 166-256.000.

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Mercedes-Benz Do Brasil S.A.: *See*—
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Merrill, Duane F.: *See*—
Traver, Frank J.; and Merrill, Duane F., 5,360,852, Cl. 524-268.000.

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Mertens, Volkmar: *See*—
Baumann, Lothar E.; Kappelmann, Hans G.; Mertens, Volkmar; Schafeld, Bernhard T.; Vorhoff, Werner W.; and Wallussek, Heinz, 5,360,260, Cl. 299-59.000.

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Alt, Eckhard; Matula, Marcus; and Mestre, Edgar, 5,360,436, Cl. 607-18.000.

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Martins Leites, Jose M.; Cardoso Mendes, Jose A.; Lippai, Andre; and Dellanoce, Paulo T., 5,359,922, Cl. 92-189.000.

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Camacho, Herman; and Granadino, Robert, 5,360,280, Cl. 400-489.000.

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Arnold, Ernst, 5,360,178, Cl. 242-7.090.

Metivier, Pierre: *See*—
Baker, William F., 5,360,387, Cl. 493-405.000.

Metro International S.R.L.: *See*—
Sassi, Carlo, 5,359,926, Cl. 99-510.000.

Metzger, Jeffrey A.: *See*—
Godiwala, Nitin D.; Maskas, Barry A.; Thaller, Kurt M.; and Metzger, Jeffrey A., 5,361,267, Cl. 371-40.100.

Meyer, Christian: *See*—
Von Harten, Gunter; Keller, Walter; Kutz, Johannes; Benz, Bernhard; Meyer, Christian; and Kurschatke, Wolfgang, 5,359,743, Cl. 8-151.000.

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Paton, Anthony D.; Bartky, Walter S.; and Michaelis, Alan J., 5,361,084, Cl. 347-15.000.

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Mayer, Ursula; Michal, Roland; and Saeger, Karl E., 5,360,673, Cl. 428-546.000.

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Anderson, Gregory W.; Fink, Christopher B.; and Mickelson, Bruce L., 5,360,335, Cl. 431-6.000.

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Kalotay, Paul Z.; and Van Cleve, Craig B., 5,359,881, Cl. 73-54.060.

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Roberts, Gregory N., 5,361,003, Cl. 326-21.000.
Thakur, Randhir P. S.; Martin, Annette L.; and Kauffman, Ralph E., 5,360,769, Cl. 437-239.000.

Micron Technology, Inc.: *See*—
Casper, Stephen L., 5,361,002, Cl. 327-530.000.
Lee, Roger R., 5,360,751, Cl. 437-35.000.
Lowrey, Tyler A.; Reinberg, Alan R.; and Martin, Kevin D., 5,360,992, Cl. 257-666.000.

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Sommer, Gordon M., 5,360,091, Cl. 192-18.00B.
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Mighty Metal, Inc.: *See—*
Stanton, Gerald J., Jr., 5,360,120, Cl. 211-60.100.
Mihayashi, Keiji: *See—*
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Anderson-Mauser, Linda, 5,360,718, Cl. 435-26.000.
Bell, Douglas E.; and Chu, Amy H., 5,360,595, Cl. 422-56.000.
Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.
Milke, Erhard: *See—*
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Millar, Gregory M.; Ko, Tung-Faing; Moss, Nicolas N.; and Hueras, Jon F., to Radius Inc. Video accelerator and method using system RAM. 5,361,387, Cl. 395-164.000.
Miller, Harold J.; and Clancy, Edward W., III, to General Motors Corporation. Recliner seat. 5,360,256, Cl. 297-361.100.
Miller, Jeremy P.; and Monroe, Charles M. Method and apparatus for freezing aqueous liquid. 5,359,858, Cl. 62-71.000.
Miller, John A. Apparatus and method for producing electrical power. 5,361,377, Cl. 376-211.000.
Miller, Patrice C.: *See—*
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Bjorklund, Gary C.; Burland, Donald M.; Donckers, Marcus C. J. M.; Miller, Robert D.; Moerner, William E.; Silence, Scott M.; Twieg, Robert J.; and Walsh, Cecilia A., 5,361,148, Cl. 359-4.000.
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Miller, Steven T.; and Yanni, John M., to Alcon Laboratories, Inc. Method of preparing human conjunctival mast cells for mast cell stabilization assays. 5,360,720, Cl. 435-29.000.
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Adams, Bryan Adin, 5,360,231, Cl. 280-728.00A.
Milroy, William W., to Hughes Aircraft Company. Continuous transverse stub element devices and methods of making same. 5,361,076, Cl. 343-772.000.
Miltner, Karl-Hermann: *See—*
Blaser, Peter T.; Miltner, Karl-Hermann; and Rodi, Anton, 5,359,933, Cl. 101-415.100.
Milton, Duane R., to Fairchild, Timothy J. Mounting bracket for implement guide system. 5,360,070, Cl. 172-6.000.
Milton, Richard M. Intermediate voltage cable marker with enhanced conspicuity. 5,361,018, Cl. 315-248.000.
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Minakawa, Kuninori: *See—*
Fukai, Hideaki; Suenaga, Hiroyoshi; Minakawa, Kuninori; Otaka, Shinichiro; and Naoe, Masahiko, 5,360,677, Cl. 428-694.0ST.
Mine, Shinji, to NEC Corporation. Cooling unit capable of speedily cooling an integrated circuit chip. 5,360,993, Cl. 257-714.000.
Minerals Technology Inc.: *See—*
Francis, Raymond C.; and Evans, Daniel B., 5,360,515, Cl. 162-135.000.
Ministry of International Trade and Industry: *See—*
Tanie, Kazuo; and Maekawa, Hitoshi, 5,361,186, Cl. 361-191.000.
Minnesota Mining and Manufacturing Company: *See—*
Anderson, Philip A.; Gorke, Ronald R.; Insley, Thomas I.; Meyer, Daniel E.; and Olson, David A., 5,360,654, Cl. 428-98.000.
Appeldorn, Roger H.; Johnson, Robert J.; Rouser, Forrest J.; and Erwin, Robert L., 5,360,270, Cl. 383-5.000.
Boyd, Gary T.; Tiers, George V.; Francis, Cecil V.; Janulis, Eugene P.; Koshar, Robert J.; and Leichter, Louis M., 5,360,582, Cl. 252-582.000.
Boykin, Christopher M.; and Vaalburg, Thomas T., 5,360,406, Cl. 604-170.000.
Gaul, Kimberley A.; and Jensen, Judith M., 5,360,489, Cl. 134-42.000.
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Hamer, Steven M.; and Hoekman, Earl B., 5,361,064, Cl. 340-939.000.
Harmer, Walter L.; DeVoe, Robert J.; Larson, Eric G.; Kincaid, Don H.; Willett, Peggy S.; and Williams, Jerry W., 5,360,462, Cl. 51-295.000.
Milbourn, Thomas M.; and Barth, Jerry J., 5,360,629, Cl. 427-8.000.
Springer, Denis D.; Alberg, Randall L.; and Breault, Mark W., 5,360,944, Cl. 174-117.00F.
Thien, Tran V.; and Patel, Ranjan C., 5,360,694, Cl. 430-200.000.
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Miral Industries Co., Ltd.: *See—*
Shimizu, Shohachi, 5,360,291, Cl. 405-154.000.
Misawa, Tomoichi: *See—*
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Mische, Hans A., to Lake Region Manufacturing Co., Inc. Balloon catheter with lumen occluder. 5,360,403, Cl. 604-101.000.
Misono, Kousuki: *See—*
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,361,173, Cl. 360-27.000.
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Mita Industrial Co., Ltd.: *See—*
Nakano, Tetsuya; Tamori, Mikiko; Yabe, Naruo; Inoue, Masahide; Tsuyama, Kouichi; and Shimizu, Yoshitake, 5,360,690, Cl. 430-110.000.
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Mitchell, Lawrence H.: *See—*
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Mito, Jun-ichi, to Mitsubishi Denki Kabushiki Kaisha. Communication system. 5,361,260, Cl. 370-85.100.
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Ikeda, Yuto; and Inoue, Yoshinori, 5,361,230, Cl. 365-194.000.
Inoue, Yoshinori; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,361,223, Cl. 365-51.000.
Katashiba, Hideaki; Nishiyama, Ryoji; and Inoue, Hitoshi, 5,359,975, Cl. 123-435.000.
Kawamoto, Kohji; Shimazu, Yukihiko; and Fujiyama, Toshiki, 5,361,371, Cl. 395-800.000.
Kobayashi, Souichi; and Matsuo, Masahito, 5,361,338, Cl. 395-375.000.
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Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, 5,361,226, Cl. 365-171.000.
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsubishi Kasei Corporation: *See—*
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Mitsubishi Material Corporation: *See—*
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Mitsubishi Materials Corporation: *See—*
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Mitsubishi Petrochemical Co., Ltd.: *See—*
Arashiro, Yusuke; Kihara, Michiharu; Ohmura, Haruo; Yamada, Fumiyoshi; Aritomi, Mitsutoshi; Nakano, Hiroshi; and Yamauchi, Shinichi, 5,360,866, Cl. 525-68.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Kiso, Yoshihisa; Kawaai, Koji; and Nitabaru, Masatoshi, 5,360,921, Cl. 556-478.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Akagi, Hiromori; Sakamoto, Masahiro; and Fujimura, Tatsuhito, 5,360,725, Cl. 435-172.200.
Miura, Yasushi: *See—*
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Miyadoh, Shinji: *See—*
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Miyajima, Hidenobu, to Asahi Tec Corporation. Method of preparing disappearing model. 5,360,050, Cl. 164-45.000.
Miyamoto, Noriaki; Kaneko, Masashi; Ito, Kenji; and Kawai, Yasuyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Spinning apparatus of rotor type open-end spinning unit and rotor driving method. 5,359,846, Cl. 57-417.000.
Miyanaga, Akiharu: *See—*
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Miyanaga, Kenji: *See—*
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Miyashita, Mayumi: *See—*
Noguchi, Tsutomu; and Miyashita, Mayumi, 5,360,825, Cl. 521-54.000.
Miyashita, Shuji, to Fuji Electric Co., Ltd. External lead terminal adaptor and semiconductor device. 5,361,189, Cl. 361-807.000.
Miyata, Atsushi: *See—*
Tomita, Yoshiho; Inagaki, Noriaki; Miyata, Atsushi; and Suzuki, Shigehiro, 5,360,546, Cl. 210-603.000.
Miyauchi, Kiyotaka; and Hamaue, Tetsuya, to Takata Corporation. Automatic buckling device. 5,359,756, Cl. 24-603.000.
Miyazaki, Satoshi; Ben-Brahim, Lazhar; and Kurosawa, Ryoichi, to Kabushiki Kaisha Toshiba. Method and apparatus for controlling an inverter generating a plurality of phase voltages. 5,361,197, Cl. 363-98.000.
Miyazaki, Takeshi: *See—*
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Miyazawa, Shoichi: *See—*
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Mizuguchi, Hideki: *See—*
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Mizuno, Kensaku: *See—*
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Mizuno, Takashi, to Furukawa Denchi Kabushiki Kaisha. Hydrogen-occulusion electrode. 5,360,687, Cl. 429-217.000.
Mizusawa Industrial Chemicals, Ltd.: *See—*
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Mizushima, Yoshio: *See—*
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Mizzi, John V.: *See—*
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Mobil Oil Corporation: *See—*
Fletcher, David L.; McGovern, Stephen J.; and Sauer, John E., 5,360,532, Cl. 208-89.000.
Gould, Ronald M.; Heaney, William F.; Nitsch, Albert R.; and Spencer, Howard E., 5,360,530, Cl. 208-31.000.
Sprunt, Eve S.; Jennings, Alfred R.; and Timmer, Robert S., 5,360,068, Cl. 166-259.000.
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Mochida, Kenji: *See—*
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Mochizuki, Yoshihiko: *See—*
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Modine Manufacturing Company: *See—*
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Moghadam, Hossein M.: *See—*
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Moldaschl, Viktor: *See—*
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Ehrler, Hans P.; Moll, Roger; and Neidecker, Rudolf, 5,360,355, Cl. 439-816.000.
Mollica, Robert D. Batting training device. 5,360,209, Cl. 273-26.00R.
Momodomi, Masaki: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.
Monastra, Edward J.; Trevito, Leon; and Branco, Richard G., to Martin Marietta Corp. Fault tolerant switched communication system. 5,361,249, Cl. 370-16.000.
Monforte, Mathew L.; and Dreyfus, Edward D., to Refac Technology Development, Corporation. Multifunctional end effectors. 5,360,249, Cl. 294-119.100.
Monoe, Osamu, to Tokyo Electron Sagami Kabushiki Kaisha. Forced cooling apparatus for heat treatment apparatus. 5,360,336, Cl. 432-5.000.
Monroe, Charles M.: *See—*
Miller, Jeremy P.; and Monroe, Charles M., 5,359,858, Cl. 62-71.000.
Monserud, David O.; Bothell, David H.; Tacheron, Paul H.; McDonald, Michael C.; Steele, David E.; Charnley, James E.; and Vatvedt, Gunnar V., to General Electric Company. Method for in situ cleaning of inlet mixers. 5,361,286, Cl. 376-316.000.
Montagne, Mark R.: *See—*
Briggs, Rodney L.; Campbell, Donald H.; and Montagne, Mark R., 5,360,644, Cl. 427-410.000.
Moon, Kook-Jin. Firearm trigger bar attachment. 5,359,799, Cl. 42-69.020.
Moore Business Forms, Inc.: *See—*
Perriman, Victor H., 5,360,159, Cl. 229-92.300.
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Moore, Danny R.: *See—*
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Moore, Duncan T.: *See—*
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Moore, Walter A.: *See—*
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Morakis, Karen P.: *See—*
Mugge, Jan; and Morakis, Karen P., 5,360,176, Cl. 241-282.100.
Morello, Frederick, to M.I.C. Industries, Inc. Microprocessor controlled apparatus and method for forming metal building panels. 5,359,871, Cl. 72-7.000.
Morgan, Michael J.: *See—*
Chandalia, Kiran B.; Morgan, Michael J.; Martinez, Michael M.; O'Connor, James M.; and Noe, Stephen P., 5,360,642, Cl. 427-385.500.
Morgan Moulds, Ltd.: *See—*
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Mori, Hideo; Takabayashi, Hiroshi; and Takahashi, Masanori, to Canon Kabushiki Kaisha. Electrical connection structure. 5,360,943, Cl. 174-84.00R.
Mori, Kazuhiro: *See—*
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Morigaki, Masakazu: *See—*
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Morino, Akira; Morita, Iwao; and Tada, Shin-ichi, to Nippon Shinyaku Co. Ltd. Sulfonanilide derivatives and medicine. 5,360,822, Cl. 514-605.000.
Morio, Tomokazu: *See—*
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Morita, Iwao: *See—*
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Morita, Katsumi, to Applied Materials, Inc. Chemical vapor deposition method of silicon dioxide film. 5,360,646, Cl. 427-574.000.
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Noguchi, Kesao, 5,361,150, Cl. 359-62.000.
Norimatu, Hidehiko; and Yamashita, Osamu, 5,361,044, Cl. 331-1.00A.
Ohki, Junichi; and Koga, Toshio, 5,361,096, Cl. 348-387.000.
Ohta, Kiyoshi, 5,361,007, Cl. 327-427.000.
Oyadomari, Hajime, 5,361,335, Cl. 395-250.000.
Saijo, Ryuichi, 5,361,008, Cl. 327-427.000.
Yamamoto, Jiro, 5,361,079, Cl. 345-75.000.
NEC Research Institute, Inc.: *See—*
Takahashi, Kousuke, 5,361,325, Cl. 395-3.000.
Nechushtan, Aharon: *See—*
Fisher, Bradley; and Nechushtan, Aharon, 5,359,800, Cl. 42-103.000.
Negataki, Shigeo: *See—*
Sasaki, Nobuki; and Negataki, Shigeo, 5,359,764, Cl. 29-426.600.
Negoro, Masayuki; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,360,711, Cl. 430-551.000.
Neidecker, Rudolf: *See—*
Ehrler, Hans P.; Moll, Roger; and Neidecker, Rudolf, 5,360,355, Cl. 439-816.000.
Neilson, Wayne: *See—*
Dyke, David E.; and Neilson, Wayne, 5,360,525, Cl. 204-216.000.
Nelson, Bradford L.: *See—*
Allen, Barry R.; Dixit, Rahul; Nelson, Bradford L.; Carillo, Juan C.; and Jones, William L., 5,361,038, Cl. 330-54.000.
Nelson, Jennifer: *See—*
Jost, Allen; Nelson, Jennifer; Gopinathan, Krishna; and Smith, Craig, 5,361,201, Cl. 364-401.000.
Nelson, John D., to Olin Corporation. Personal care composition containing pyrithione and a basic lipopeptide. 5,360,788, Cl. 514-9.000.
Nelson, Robert E., to Gas Research Institute. Radiant emission and thermophotovoltaic technology. 5,360,490, Cl. 136-253.000.
Nemeth, Laszlo T.; Kulprathipanja, Santi; Arena, Blaise J.; and Holmgren, Jennifer S., to UOP. Removal of sulfur compounds from liquid organic feedstreams. 5,360,536, Cl. 208-248.000.
NeoPath, Inc.: *See—*
Hayenga, Jon W.; and Schmidt, Robert C., 5,361,140, Cl. 358-446.000.
Neste Oy: *See—*
Iiskola, Eero; and Huurinainen, Rauha, 5,360,776, Cl. 502-111.000.
Nestec S.A.: *See—*
Hsu, Sheng H., 5,360,620, Cl. 426-432.000.
Nestle, S.A.: *See—*
Hood, Larry L., 5,359,996, Cl. 604-22.000.
Neubauer, Gerald: *See—*
Fuchs, Hugo; Priester, Claus-Ulrich; Neubauer, Gerald; Brunner, Erwin; Ritz, Josef; and Kopietz, Michael, 5,360,905, Cl. 540-540.000.
Neuenschwander, Thomas R., to L. H. Carbide Corporation. Progressive die assembly apparatus with rotation and interlock for the manufacture of laminated parts. 5,359,763, Cl. 29-738.000.
NeuroSearch A/S: *See—*
Axelsson, Oskar; Peters, Dan; Nielsen, Elsebet O.; and Christophersen, Palle, 5,360,809, Cl. 514-338.000.
New Oji Paper Co., Ltd.: *See—*
Matsubara, Motoki; Fujii, Kenichi; and Bessho, Kazuya, 5,360,277, Cl. 400-68.000.
Newman, Gene; and Natale, Anthony, to GPAC, Inc. Control system for doors of a negative air pressure enclosure. 5,360,372, Cl. 454-253.000.
Newton, Donald A.; and Lang, Timothy R., to R. J. Reynolds Tobacco Company. Tobacco processing. 5,360,022, Cl. 131-297.000.
Neyndorff, Herma C.: *See—*
Chapman, John; Logan, Patricia M.; Neyndorff, Herma C.; and North, Janice, 5,360,734, Cl. 435-238.000.
Ngan, Kenny K.: *See—*
Nulman, Jaim; and Ngan, Kenny K., 5,360,996, Cl. 257-767.000.
NGK Insulators, Ltd.: *See—*
Tomita, Yoshiho; Inagaki, Noriaki; Miyata, Atsushi; and Suzuki, Shigehiro, 5,360,546, Cl. 210-603.000.
Nguyen, Charles C.; and Tupper, D. Eric, to Penford Products Company. Cationic starch/vinyl acetate containing board coating binders. 5,360,846, Cl. 524-53.000.
Nguyen, Hoang K.: *See—*
Borden, Peter G.; Nguyen, Hoang K.; and Carrasco, Earl J., 5,360,980, Cl. 250-573.000.
Nguyen, Truong Q.; and Choi, Isaac P., to Synoptics Communications, Inc. Apparatus and method of token ring beacon station removal for a communication network. 5,361,250, Cl. 370-16.100.
Nibco, Inc.: *See—*
Kieper, Douglas A., 5,360,036, Cl. 137-625.220.
Nichols, Daniel L.: *See—*
Walker, James C.; Nichols, Daniel L.; and Rawley, Claude O., 5,360,190, Cl. 248-201.000.
Nichols, Jeffrey: *See—*
Jiang, Jack B.; Johnson, Mary G.; and Nichols, Jeffrey, 5,360,818, Cl. 514-459.000.
Nickel, Andreas; Arlt, Wolfgang; Janisch, Ingo; Wagner, Paul; and Klausener, Alexander, to Bayer Aktiengesellschaft. Process for separating off alkanols, mixtures of alkanols and water or water itself from oxygen-containing organic compounds of higher carbon number. 5,360,923, Cl. 558-277.000.
Nielsen, Elsebet O.: *See—*
Axelsson, Oskar; Peters, Dan; Nielsen, Elsebet O.; and Christophersen, Palle, 5,360,809, Cl. 514-338.000.
Niesemeyer, Norbert: *See—*
Schneider, Reiner; Reissenweber, Wilfried; and Niesemeyer, Norbert, 5,360,497, Cl. 156-47.000.
NIFCO, Inc.: *See—*
Watanabe, Koji; and Sugita, Toru, 5,360,251, Cl. 296-93.000.
Nihon Bayer Agrochem K.K.: *See—*
Kagabu, Shinzo; and Wada, Katsuaki, 5,360,935, Cl. 568-316.000.
Nikon Corporation: *See—*
Hattori, Ken; Amano, Kesayoshi; Nakajima, Masao; and Naito, Masayoshi, 5,361,121, Cl. 355-50.000.
Onuki, Tetsuji; Suzuki, Masatoshi; and Matsushiro, Hiroyuki, 5,360,977, Cl. 250-306.000.
Shida, Masaru; Ezawa, Akira; Wakabayashi, Tsutomu; Uematsu, Kimio; Ohsawa, Keiji; Tsukada, Shinichi; and Sato, Toshihiro, 5,361,119, Cl. 354-409.000.
Nimoda, Kenichiro: *See—*
Hiyama, Keiichi; Kanno, Masahide; Nakamura, Masakazu; and Nimoda, Kenichiro, 5,361,203, Cl. 364-413.130.
Nino, Naohi, to Koito Manufacturing Co., Ltd. Vehicular headlight reflector suitable for use with a discharge lamp. 5,361,193, Cl. 362-346.000.
Nippon Cable System Inc.: *See—*
Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, 5,359,909, Cl. 74-502.600.
Nippon Filcon Co., Ltd.: *See—*
Sano, Seiji, 5,360,038, Cl. 139-383.0AA.
Nippon Gasket Co., Ltd.: *See—*
Okuda, Hiroaki; Nomoto, Kazuhiro; Kubouchi, Kenji; Itani, Shizuo; Isomura, Sadao; and Suekuni, Einosuke, 5,360,219, Cl. 277-235.00B.
Nippon Hoso Kyokai: *See—*
Ishikawa, Tadasu; and Maeda, Mikio, 5,361,157, Cl. 359-168.000.
Nippon Oil Co., Ltd.: *See—*
Enomoto, Masami; Yuasa, Hitoshi; Oshimi, Fumiaki; and Otsuki, Yutaka, 5,360,870, Cl. 525-109.000.
Nippon Paint Co., Ltd.: *See—*
Tanimoto, Motoi; Yoshida, Tatsuo; Tobinaga, Kenshiro; and Toyoda, Yuji, 5,360,839, Cl. 523-414.000.
Nippon Polyurethane Industry Co.: *See—*
Iwanaga, Kentaro; Sakai, Kiyoshi; and Yano, Noriyoshi, 5,360,871, Cl. 525-131.000.
Nippon Sanso Corporation: *See—*
Honda, Hideyuki, 5,359,857, Cl. 62-24.000.
Nippon Shinyaku Co. Ltd.: *See—*
Morino, Akira; Morita, Iwao; and Tada, Shin-ichi, 5,360,822, Cl. 514-605.000.
Nippon Soken Inc.: *See—*
Hayashi, Yasushi; Numata, Koji; and Nishizawa, Kazutoshi, 5,360,268, Cl. 374-117.000.
Nippon Steel Corporation: *See—*
Takahashi, Makoto; Temma, Masami; and Goto, Atsuhiro, 5,360,051, Cl. 164-155.300.
Nippon Telegraph and Telephone Corp.: *See—*
Onoe, Seizo; Umeda, Narumi; Yamaguti, Hidemi; and Yasuda, Syuji, 5,361,396, Cl. 455-33.400.
Nippon Thompson Co., Ltd.: *See—*
Agari, Norimasa, 5,360,271, Cl. 384-15.000.
Nippon Zeon Co., Ltd.: *See—*
Toda, Hideki; Takagishi, Yukio; and Kaino, Masaru, 5,360,827, Cl. 521-57.000.
Nippondenso Co., Ltd.: *See—*
Hayashi, Yasushi; Numata, Koji; and Nishizawa, Kazutoshi, 5,360,268, Cl. 374-117.000.
Kondo, Ichiharu; Yoneyama, Takao; and Yamaoka, Masami, 5,360,765, Cl. 437-192.000.
Nagashima, Hisao; Sato, Hideaki; Honda, Shin; and Kitamura, Keiichi, 5,359,862, Cl. 62-129.000.
Nakashima, Kazushi; and Iwamoto, Shinichi, 5,359,976, Cl. 123-516.000.
Yamamoto, Noboru; and Sugiura, Yasushi, 5,359,891, Cl. 73-204.150.

Nishida, Tsutomu: *See—*
Ohmoto, Yasukazu; Nishida, Tsutomu; Mizuno, Keiko; and Nakai, Satoru, 5,360,716, Cl. 435-7.200.
Nishigaki, Tetsuo: *See—*
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,361,173, Cl. 360-27.000.
Nishikawa, Hisao, to Murata Kikai Kabushiki Kaisha. Yarn package conveying system. 5,360,098, Cl. 198-346.100.
Nishimoto, Mitsuhiko; Matsuoka, Hirofumi; and Tabuse, Hidetoshi, to Koyo Seiko Co., Ltd. Electric power steering apparatus. 5,360,077, Cl. 180-79.100.
Nishimura, Asao; Tanaka, Naotaka; and Hirose, Isao, to Hitachi Ltd. Method for measuring adhesion strength of resin material. 5,359,899, Cl. 73-842.000.
Nishimura, Nobuichi: *See—*
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.
Nishino, Fumihito; Ibuki, Jun; and Nakamura, Naohito, to Fujitsu Limited. Apparatus for translating lingual morphemes as well as the typographical morphemes attached thereto. 5,361,205, Cl. 364-419.020.
Nishiwaki, Yuji: *See—*
Murata, Yasumoto; Yoshikawa, Shuichi; Nishiwaki, Yuji; Kawama, Shuichi; Morio, Tomokazu; and Kitoh, Atsunori, 5,361,323, Cl. 395-2.100.
Nishiyama, Ryoji: *See—*
Katashiba, Hideaki; Nishiyama, Ryoji; and Inoue, Hitoshi, 5,359,975, Cl. 123-435.000.
Nishizawa, Kazutoshi: *See—*
Hayashi, Yasushi; Numata, Koji; and Nishizawa, Kazutoshi, 5,360,268, Cl. 374-117.000.
Nissan Motor Co., Ltd.: *See—*
Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, 5,359,909, Cl. 74-502.600.
Yamazaki, Ichiro, 5,360,080, Cl. 180-300.000.
Nissen, Steven L., to Iowa State University Research Foundation, Inc. Method of reducing blood levels of total cholesterol and low-density lipoprotein cholesterol. 5,360,613, Cl. 424-439.000.
Nisshin Steel Co., Ltd.: *See—*
Adachi, Takakatsu, 5,360,202, Cl. 266-103.000.
Nisshinbo Industries, Inc.: *See—*
Imashiro, Yasuo; and Takahashi, Ikuo, 5,360,933, Cl. 564-252.000.
Nissho Corporation: *See—*
Ebara, Yukinori; and Kusakawa, Tomoyo, 5,360,012, Cl. 128-764.000.
Nitabaru, Masatoshi: *See—*
Kiso, Yoshihisa; Kawaai, Koji; and Nitabaru, Masatoshi, 5,360,921, Cl. 556-478.000.
Nitsch, Albert R.: *See—*
Gould, Ronald M.; Heaney, William F.; Nitsch, Albert R.; and Spencer, Howard E., 5,360,530, Cl. 208-31.000.
Nitta, Hideo: *See—*
Wood, John C.; Katoh, Shoichi; and Nitta, Hideo, 5,360,675, Cl. 428-631.000.
Nitta, Yasunori: *See—*
Nakamura, Teruyuki; and Nitta, Yasunori, 5,360,119, Cl. 209-618.000.
NKK Corporation: *See—*
Fukai, Hideaki; Suenaga, Hiroyoshi; Minakawa, Kuninori; Otaka, Shinichiro; and Naoe, Masahiko, 5,360,677, Cl. 428-694.0ST.
NMC of North America, Inc.: *See—*
Lauer, Eduardo, 5,360,048, Cl. 156-86.000.
Nock, Anthony: *See—*
Cockett, Keith R.; Concannon, Martin; Hunter, Robert M.; Lovell, Anthony L.; Nock, Anthony; Webb, Maurice; and Whalley, Roderick T., 5,360,547, Cl. 210-690.000.
Noda, Tomimitsu; Karino, Hisao; and Sato, Shinsuke, to Kabushiki Kaisha Toshiba. Microwave oven with temperature fluctuation detection. 5,360,966, Cl. 219-710.000.
Noe, Stephen P.: *See—*
Chandalia, Kiran B.; Morgan, Michael J.; Martinez, Michael M.; O'Connor, James M.; and Noe, Stephen P., 5,360,642, Cl. 427-385.500.
Nogi, Toshiharu; Ohsuga, Minoru; Ohyama, Yoshishige; and Fujieda, Mamoru, to Hitachi, Ltd. Fuel injection valve. 5,360,166, Cl. 239-404.000.
Nogi, Toshiharu: *See—*
Fujieda, Mamoru; Ohsuga, Minoru; Nogi, Toshiharu; and Ooyama, Yoshishige, 5,361,213, Cl. 364-431.080.
Noguchi, Kesao, to NEC Corporation. Active matrix liquid crystal display with identification mark in the lower opaque conductive film. 5,361,150, Cl. 359-62.000.
Noguchi, Tsutomu; and Miyashita, Mayumi, to Sony Corporation. Pulp molding. 5,360,825, Cl. 521-54.000.
Nohlgren, Goran, to Scandiafelt AB. Forming fabric. 5,360,660, Cl. 428-229.000.
Noise Cancellation Technologies, Inc.: *See—*
Eatwell, Graham P., 5,361,303, Cl. 381-71.000.
Nokia Mobile Phones Ltd.: *See—*
Broadfield, Gary, 5,360,683, Cl. 429-99.000.
Nolan, Nancy L.: *See—*
Goss, G. Robert; Spaldon, Olga I.; and Nolan, Nancy L., 5,359,961, Cl. 119-173.000.
Noland, Robert L.; and O'Brien, Timothy D., to Ketema, Inc. Carbon fibers. 5,360,669, Cl. 428-408.000.
Nomoto, Kazuhiro: *See—*
Okuda, Hiroaki; Nomoto, Kazuhiro; Kubouchi, Kenji; Itani, Shizuo; Isomura, Sadao; and Suekuni, Einosuke, 5,360,219, Cl. 277-235.00B.
Nonaka, Osamu, to Olympus Optical Co., Ltd. Distance-measuring device which detects which detects and corrects projection errors of distance-measuring light beams. 5,361,117, Cl. 354-403.000.
Noneyama, Masayuki: *See—*
Yamamoto, Yasutoshi; Noneyama, Masayuki; and Suzuki, Norio, 5,361,093, Cl. 348-223.000.
Nonogawa, Kenichi; Shimamoto, Makoto; and Fuchigami, Wataru, to Yamaha Hatsudoki Kabushiki Kaisha. Single overhead cam multi-valve engine. 5,359,974, Cl. 123-432.000.
Nordin, Gerald L.: *See—*
Jackson, David M.; Brown, Grayson; and Nordin, Gerald L., 5,359,807, Cl. 43-131.000.
Nordson Corporation: *See—*
DeVries, James E., 5,360,645, Cl. 427-421.000.
Nor'Eastern Trawl Systems, Inc.: *See—*
Loverich, Gary F., 5,359,962, Cl. 119-223.000.
Norimatu, Hidehiko; and Yamashita, Osamu, to NEC Corporation. Phase locked loop frequency synthesizer. 5,361,044, Cl. 331-1.00A.
Normandin, Richard J. F.; Chatenoud, Francoise; and Cada, Michael, to National Research Council of Canada. Large angle broadband multilayer deflectors. 5,361,160, Cl. 359-328.000.
Norsk Hydro a.s.: *See—*
Askestad, Sigmund, 5,359,957, Cl. 114-230.000.
Enstad, Gisle G.; and Nagell, Bernt, 5,360,297, Cl. 406-89.000.
North, Janice: *See—*
Chapman, John; Logan, Patricia M.; Neyndorff, Herma C.; and North, Janice, 5,360,734, Cl. 435-238.000.
North, Peter C.: *See—*
Coates, Ian H.; North, Peter C.; and Oxford, Alexander W., 5,360,800, Cl. 514-215.000.
Northeast Orthotics & Prosthetics, Inc.: *See—*
McCoy, D. Barry, 5,360,392, Cl. 602-6.000.
Northeastern University: *See—*
Giese, Roger W., 5,360,819, Cl. 514-538.000.
Northern Telecom Limited: *See—*
Duxbury, Guy M., 5,360,949, Cl. 174-250.000.
Norton, Terry W.: *See—*
Slattery, John W.; Jedrzejewski, Mark J.; and Norton, Terry W., 5,361,005, Cl. 326-56.000.
Notaro, David F.; and Hogrewe, David A., Jr., to McGard, Inc. Fastener construction. 5,360,304, Cl. 411-432.000.
Nottle, Murray K. Variable ratio epicyclic transmission. 5,360,380, Cl. 475-182.000.
Novacek, Laurel A.; Sharp, Fraser R.; and McLean, Donald A., to Inviro Medical Devices Ltd. Needle guard and needle assembly for syringe. 5,360,404, Cl. 604-110.000.
Novamont S.p.A.: *See—*
Bastioli, Catia; Bellotti, Vittorio; Del Giudice, Luciano; Lombi, Roberto; and Rallis, Angelos, 5,360,830, Cl. 521-84.100.
Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; Simfukwe, Maybin; Nowack, Gerhard P.; and Kubicek, Donald H., 5,360,632, Cl. 427-212.000.
NPC, Inc.: *See—*
Gundy, William P., 5,360,241, Cl. 285-197.000.
NTT Mobile Communications Network Inc.: *See—*
Onoe, Seizo; Umeda, Narumi; Yamaguti, Hidemi; and Yasuda, Syuji, 5,361,396, Cl. 455-33.400.
Nugent, Ralph W.: *See—*
Boles, Raymond L., Jr.; Keene, Lee W.; Knox, Benjamin H.; and Nugent, Ralph W., 5,360,667, Cl. 428-364.000.
Nukada, Katsumi; Daimon, Katsumi; and Sakaguchi, Yasuo, to Fuji Xerox Co., Ltd. Process for preparing hydroxymetal phthalocyanine pigment. 5,360,475, Cl. 106-410.000.
Nulman, Jaim; and Ngan, Kenny K., to Applied Materials, Inc. Titanium nitride/titanium silicide multiple layer barrier with preferential (111) crystallographic orientation on titanium nitride surface. 5,360,996, Cl. 257-767.000.
Numata, Koji: *See—*
Hayashi, Yasushi; Numata, Koji; and Nishizawa, Kazutoshi, 5,360,268, Cl. 374-117.000.
Nunez, George: *See—*
Slater, Charles R.; Bales, Thomas O.; Kortenbach, Jurgen A.; Nunez, George; and Turkel, David, 5,359,993, Cl. 128-4.000.
Nussstein, Peter; Staudinger, Guenther; Steinert, Wolfram; Kreuzer, Franz-Heinrich; and Schmitt-Sody, Wolfgang, to Consortium fur elektrochemische Industrie GmbH. Cyclodextrin polymers and process for their preparation. 5,360,899, Cl. 536-4.100.
Nutter, Dale E. High capacity tray for gas-liquid contact apparatus. 5,360,583, Cl. 261-114.300.
N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
van Zon, Bernardus C., 5,361,071, Cl. 342-42.000.
O.G. Hoyer A/S: *See—*
Holdensgaard, Preben H.; and Spencer, Lloyd M., Sr., 5,359,834, Cl. 53-566.000.
Oat, Henry C. Method of stone washing fabric with a synthetic abrasive stone. 5,359,745, Cl. 8-159.000.
Oatey Co.: *See—*
Condon, Duane R., 5,360,188, Cl. 248-56.000.
Oberle, Thomas A.: *See—*
Lee, Craig A.; and Oberle, Thomas A., 5,361,294, Cl. 379-58.000.

O'Brien, Timothy D.: *See—*
Noland, Robert L.; and O'Brien, Timothy D., 5,360,669, Cl. 428-408.000.
OCE-Nederland, B.V.: *See—*
Loonen, Hubertus A. M.; Miedema, Mark; Schoustra, Bauke; Verbunt, Joannes A.; and Smit, Eduardus H. A. M., 5,361,126, Cl. 355-279.000.
Ochiai, Toshihiro: *See—*
Nakamura, Shirou; Shimizu, Takeo; Yanagawa, Hisaharu; Ohta, Toshihiko; Shigematsu, Takashi; Ochiai, Toshihiro; and Kobayashi, Koichi, 5,361,382, Cl. 385-49.000.
O'Connor, James M.: *See—*
Chandalia, Kiran B.; Morgan, Michael J.; Martinez, Michael M.; O'Connor, James M.; and Noe, Stephen P., 5,360,642, Cl. 427-385.500.
Oda, Hirofumi: *See—*
Koizumi, Katsuo; Otsuka, Shigenori; Maeda, Syuuichi; Horiuchi, Hiromi; Oda, Hirofumi; and Sueyoshi, Toshiyuki, 5,360,691, Cl. 430-108.000.
Odaira, Hideko: *See—*
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.
Odaka, Masanori: *See—*
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.
Oenbrink, Georg: *See—*
Wenzel, Markus; Oenbrink, Georg; and von der Bey-Dahm, Eva, 5,360,891, Cl. 528-335.000.
Office National d'Etudes et de Recherches Aerospatiales styled O.N.E.R.A.: *See—*
Beaussier, Jacques; Breuzet, Michel; Gay, Michel; and Uebersfeld, Jean, 5,361,045, Cl. 331-154.000.
Ogawa, Koji; and Suzuki, Hiroshi, to Tokyo Kogyo Kabushiki Kaisha. Immersion-type temperature measuring apparatus using thermocouple. 5,360,269, Cl. 374-140.000.
Ogawa, Masahide; Goto, Kunio; Shoji, Shoji; Komatsu, Yoshinobu; and Tatebe, Akira, to Mizusawa Industrial Chemicals, Ltd. Lithium aluminum complex hydroxide salt stabilizer for resins. 5,360,859, Cl. 524-437.000.
Ogawa, Yoshiko: *See—*
Kawai, Hideki; Kojo, Katsuhiko; Eguchi, Kiyoshi; and Ogawa, Yoshiko, 5,360,674, Cl. 428-548.000.
Ogi, Yoshifumi, to Fujitsu Limited. Virtual computer system having input/output interrupt control of virtual machines. 5,361,375, Cl. 395-800.000.
Oh, Kyoung-Chul: *See—*
You, Shi-Ryoung; Ann, Byoung-Chul; Jeong, Nak-Seong; Oh, Kyoung-Chul; and Lee, Jeong-Geun, 5,361,380, Cl. 381-24.000.
Oh, Sa Yoon, to Goldstar Co. Ltd. Method and apparatus for controlling a temperature in a refrigerating chamber of a refrigerator. 5,359,860, Cl. 62-97.000.
Oh, Seajin; Joseph, Jose; and Lankheet, Earl W., to General Motors Corporation. Wide range oxygen sensor. 5,360,528, Cl. 204-425.000.
Ohayashi, Masayuki: *See—*
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.
Ohba, Takao: *See—*
Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.
Ohdoi, Yuzo: *See—*
Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, 5,361,226, Cl. 365-171.000.
Ohi Seisakusho Co., Ltd.: *See—*
Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, 5,359,909, Cl. 74-502.600.
Ohkawa, Atsuhiro; Motoki, Masuji; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing a DIR compound. 5,360,709, Cl. 430-544.000.
Ohkawa, Kazuo; and Saito, Seiichi, to Asahi Denka Kogyo K.K. Actinic radiation-reactive pressure-sensitive adhesive composition. 5,360,873, Cl. 525-193.000.
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Suda, Mitsuru; and Ohtsuka, Kunio, 5,360,775, Cl. 502-84.000.
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Morikawa, Sumio; and Satone, Hiroyuki, 5,359,775, Cl. 30-134.000.
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Itoh, Hiroshi; Isobe, Naoki; and Asazuma, Tadashi, 5,360,860, Cl. 524-460.000.
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Toki, Tadaaki; Koyanagi, Toru; Morita, Masayuki; Yoneda, Tetsuo; Kagimoto, Chiharu; and Okada, Hiroshi, 5,360,806, Cl. 514-318.000.
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Oki America, Inc.: *See—*
Hu, Darwin; and Ring, John J., 5,361,134, Cl. 358-296.000.
Oki Electric Industry Co., Ltd.: *See—*
Ito, Katsuyuki; Katakura, Shinichi; and Okubo, Takehiko, 5,361,088, Cl. 346-153.100.
Iwakiri, Itsuro, 5,361,236, Cl. 365-221.000.
Kawano, Harumi, 5,361,289, Cl. 377-44.000.
Okin, Kenneth, to Sun Microsystems, Inc. Method and apparatus for rapidly switching processes in a computer system. 5,361,337, Cl. 395-375.000.
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Nashiki, Masayuki, 5,359,872, Cl. 72-9.000.
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Sonehara, Tomio; and Okumura, Osamu, 5,361,151, Cl. 359-65.000.
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Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., 5,361,112, Cl. 354-298.000.
Oliana, Pierluigi, to Orion, S.p.A. Machine for multiple key coding. 5,360,299, Cl. 409-83.000.
Olin Corporation: *See—*
Campoli, Ralph F.; and Steiner, Edwin G., 5,359,938, Cl. 102-521.000.
Chandalia, Kiran B.; Morgan, Michael J.; Martinez, Michael M.; O'Connor, James M.; and Noe, Stephen P., 5,360,642, Cl. 427-385.500.
Hoffman, Paul R.; and Liang, Dexin, 5,360,942, Cl. 174-52.400.
Nelson, John D., 5,360,788, Cl. 514-9.000.
Ruggiero, Murray A.; Marien, Bruce A.; Arif, Shoaib; Roth, Robert P.; Farrell, Joseph T.; and Vanover, A. R., 5,360,457, Cl. 8-567.000.
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Olivier, Gerard J., to Colivier Pty Ltd. Spray means for a toilet pedestal. 5,359,736, Cl. 4-448.000.
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Grube, Gary W.; Olson, Carl B.; and Cizek, Paul J., 5,361,402, Cl. 455-67.100.
Olson, David A.: *See—*
Anderson, Philip A.; Gorke, Ronald R.; Insley, Thomas I.; Meyer, Daniel E.; and Olson, David A., 5,360,654, Cl. 428-98.000.
Olson, Gregg D., to Modine Manufacturing Company. Frame for a vehicular radiator. 5,360,059, Cl. 165-149.000.
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Olympus Optical Co. Ltd.: *See—*
Aoki, Norihiko, 5,361,167, Cl. 359-689.000.
Hiyama, Keiichi; Kanno, Masahide; Nakamura, Masakazu; and Nimoda, Kenichiro, 5,361,203, Cl. 364-413.130.
Nonaka, Osamu, 5,361,117, Cl. 354-403.000.
O'Mara, Kerry D.; Poux, Christopher J.; Carrell, Ross M.; and Grice, Kurt R., to David Sarnoff Research Center, Inc. Flats pieces singulation apparatus. 5,360,316, Cl. 414-798.900.
Omote, Tatsuyuki; Yoshida, Tomiharu; Maki, Hideo; Senoh, Makoto; Takahashi, Fuminobu; and Tsuchita, Kenji, to Hitachi, Ltd. Method for reading a nuclear fuel assembly identification code. 5,361,280, Cl. 376-248.000.
O'Neill, William N.; Bloom, John J., Jr.; and Bexson, Joe M., Jr., to Caterpillar Inc. Cleaner tooth for compacting machines. 5,360,288, Cl. 404-129.000.
Ono, Yoshinobu; Watanabe, Yoshio; Tanida, Shinjiro; and Kojima, Tadayuki, to Fujitsu Limited. Magnetic levitating transporting apparatus with a movable magnetic unit. 5,360,470, Cl. 104-284.000.
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Onozaki, Manabu, to Sharp Kabushiki Kaisha. Data transmission apparatus and method of operating the same. 5,361,060, Cl. 340-825.020.
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Kamoda, Takashi; and Onozuka, Haruo, 5,361,109, Cl. 354-145.100.
Onuki, Tetsuji; Suzuki, Masatoshi; and Matsushiro, Hiroyuki, to Nikon Corporation. Compound type microscope. 5,360,977, Cl. 250-306.000.
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Oplinger, Chris A.: *See—*
Mattucci, Raymond S.; Hays, Denis G.; and Oplinger, Chris A., 5,359,801, Cl. 43-1.000.
Opower, Hans, to Deutsche Forschungsanstalt fuer Luftund Raumfahrt e.V. Apparatus for removing material from a target. 5,361,275, Cl. 372-108.000.
Oppedisano, Pietro: *See—*
Ferrara, Salvator; Sferrazza, Michael; and Oppedisano, Pietro, 5,361,241, Cl. 368-281.000.
Oppedisano, Samuel J.: *See—*
Kane, Patrick R.; Karrh, Billie R.; Mack, Kit; and Oppedisano, Samuel J., 5,359,746, Cl. 14-711.000.
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Grief, Norbert; Oppenlaender, Knut; Birkhofer, Hermann; Wegner, Brigitte; and Dix, Johannes P., 5,360,454, Cl. 8-94.330.
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Iyengar, Radha; Shulman, Mark L.; and Gross, Akiva T., 5,360,626, Cl. 426-601.000.
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Mimura, Jinko; and Sato, Hideya, 5,360,411, Cl. 604-246.000.
Oral Logic, Inc.: *See—*
Klinkhammer, Ronald W., 5,360,025, Cl. 132-308.000.
Klinkhammer, Ronald W., 5,360,026, Cl. 132-308.000.
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Ball, Harold L.; Bounds, Terry R.; Ball, Eric S.; and Ball, Jeffrey L., 5,360,556, Cl. 210-804.000.
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Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.
Orion, S.p.A.: *See—*
Oliana, Pierluigi, 5,360,299, Cl. 409-83.000.
Orndorff, Steve A.; Campbell, Elizabeth A.; and Medwid, Richard D., to Universal Foods Corporation. Zeaxanthin producing strains of *Neospongiococcum Excentricum*. 5,360,730, Cl. 435-257.100.
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Fan, Sophie S.; Ben-David, Daniel; Colella, Gregory M.; Cupo, Albert; Fischer, Gena; and Ornstein, Leonard, 5,360,739, Cl. 436-63.000.
Orthmann, Ernst; Wulff, Klaus; Hoeltzenbein, Peter; Judat, Helmut; Wagner, Hans; Zaby, Gottfried; and Heidingsfeld, Herbert, to Bayer Aktiengesellschaft. Process for the continuous production of polyurethane and polyurethane urea elastomers. 5,360,885, Cl. 528-49.000.
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Bogue, Terry L.; and Osborne, Hollis D., 5,360,958, Cl. 219-86.510.
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Eyal, Jacob; Walter, James F.; Osborne, Lance; and Landa, Zdenek, 5,360,607, Cl. 424-93.500.
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OSi Specialties, Inc.: *See—*
Kilgour, John A.; and Policello, George A., 5,360,571, Cl. 252-174.150.
Ota, Kiyoshi: *See—*
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,361,173, Cl. 360-27.000.
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Fukai, Hideaki; Suenaga, Hiroyoshi; Minakawa, Kuninori; Otaka, Shinichiro; and Naoe, Masahiko, 5,360,677, Cl. 428-694.0ST.
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Brajczewski, David C.; Kupersmith, Bertram F.; and Towey, James P., Jr., 5,360,952, Cl. 187-246.000.
Yoo, Young S.; and McCarthy, Richard C., 5,360,085, Cl. 187-406.000.
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Takai, Yasuyoshi; Takei, Tetsuya; Otoshi, Hirokazu; and Okamura, Ryuji, 5,360,484, Cl. 118-723.0MW.
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Ohmoto, Yasukazu; Nishida, Tsutomu; Mizuno, Keiko; and Nakai, Satoru, 5,360,716, Cl. 435-7.200.
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Otten, Lynn M., to Medtronic, Inc. Lead with stylet capture member. 5,360,441, Cl. 607-122.000.
Ouchi, Teruo: *See*—
Takahashi, Nagashige; Ouchi, Teruo; and Shibuya, Hiromichi, 5,359,991, Cl. 128-4.000.
Outboard Marine Corporation: *See*—
Haman, David F., 5,360,358, Cl. 440-77.000.
Outlooks Graphics Corp.: *See*—
Kurkowski, Ronald J.; and Mielke, Mark S., 5,360,315, Cl. 414-790.800.
Owechko, Yuri, to Hughes Aircraft Company. Optical cache memory for magnetic and optical disk storage. 5,361,238, Cl. 365-234.000.
Owen, Alan E.; Snell, Anthony J.; Hajto, Janos; Lecomber, Peter G.; and Rose, Mervyn J., to British Telecommunications public limited company. Amorphous silicon memory. 5,360,981, Cl. 257-4.000.
Owens, Gregory P.; Cohen, J. John; and Hahn, William E., to University of Colorado Foundation, Inc. DNA sequences encoding proteins used to elicit and detect programmed cell death. 5,360,893, Cl. 530-350.000.
Oxford, Alexander W.: *See*—
Coates, Ian H.; North, Peter C.; and Oxford, Alexander W., 5,360,800, Cl. 514-215.000.
Oxid, Inc.: *See*—
DeLeon, Alberto; and Shieh, David J., 5,360,900, Cl. 536-18.300.
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Luotsinen, Osmo; and Stenbacka, Marko, 5,359,877, Cl. 73-1.00R.
Oyadomari, Hajime, to NEC Corporation. Input-output channel unit capable of predicting an overrun in a data processing device. 5,361,335, Cl. 395-250.000.
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Igarashi, Azuma; Maeda, Sachiko; Sugizaki, Katuyoshi; Shizawa, Takashi; Tajima, Atsumi; Abe, Kenichi; and Ozawa, Shinji, 5,360,909, Cl. 546-172.000.
Ozawa, Takanori, to Rohm Co., Ltd. Nonvolatile memory device utilizing field effect transistor having ferroelectric gate film. 5,361,225, Cl. 365-145.000.
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Padia, Ashok S.; and Click, Gaylon T., to Scientific Design Company, Inc. Two stage butane haleic anhydride process. 5,360,916, Cl. 549-259.000.
Page, Neville: *See*—
Geiger, Richard; Robertson, A. Scott; and Page, Neville, 5,360,224, Cl. 280-250.100.
Pagemart, Inc.: *See*—
Linquist, Roger D.; and Lorang, Malcolm M., 5,361,399, Cl. 455-56.100.
Pakulski, Marek; and Hlidek, Barry T., to Western Company of North America, The. Slurried polymer foam system and method for the use thereof. 5,360,558, Cl. 252-8.551.
Palau, Marie-Claude, to Salomon S.A. Removable spatula tip. 5,360,228, Cl. 280-609.000.
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; Schwarcz, Robert; and Baron, Bruce M., to Merrell Dow Pharmaceuticals Inc. NMDA antagonists. 5,360,814, Cl. 514-419.000.
Pall Corporation: *See*—
Grimes, Michael, 5,360,650, Cl. 428-36.910.
Pall, David B.; and Gsell, Thomas C., 5,360,545, Cl. 210-505.000.
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Palmaz, Julio C.: *See*—
Barone, Hector D.; Palmaz, Julio C.; and Parodi, Juan C., 5,360,443, Cl. 623-1.000.
Palmer, Michael J.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.
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Chan, Alexander; and Pan, Yuh-Guo, 5,360,930, Cl. 564-284.000.
Panesar, Param; and Berger, James K., to Santa Monica Pioneer Research Inc. Portable tester (qualifier) for evaluating and testing SCSI interface magnetic disc drives in accordance with ANSI SCSI-A and SCSI-2 definitions. 5,361,346, Cl. 395-575.000.
Papadopoulos, Michael: *See*—
Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.
Pape, Werner; and Rossignol, Francois, to Robert Bosch GmbH. Fuel filter in a fuel injection apparatus for internal combustion engines. 5,360,164, Cl. 239-88.000.
Papst Licensing GmbH: *See*—
Muller, Rolf, 5,361,010, Cl. 310-156.000.
Paranjpe, Ajit P.: *See*—
Aton, Thomas J.; Chapados, Phillip, Jr.; Hosch, Jimmy W.; and Paranjpe, Ajit P., 5,361,137, Cl. 356-354.000.
Pardner, Delores R. Coloring board with attached crayons. 5,360,342, Cl. 434-84.000.
Parhelion, Inc.: *See*—
Sloan, Jack C.; Lurie, Walter; and Ferramosca, Adrian C., 5,360,554, Cl. 210-768.000.
Park, Dong-chul: *See*—
Park, Tai-seo; Kim, Yun-gi; Park, Dong-chul; Ahn, Sung-tae; and Kim, Byeong-yeol, 5,360,753, Cl. 437-67.000.
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Krukonis, Val J.; Gallagher, P. M.; and Coffey, M. P., 5,360,478, Cl. 117-68.000.
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Jenneman, Gary E.; and Clark, J. Bennett, 5,360,064, Cl. 166-246.000.
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Kaufman, Arie A.; Bandopadhay, Amit; and Piligian, George J., 5,360,971, Cl. 250-221.000.
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Kempf, Thomas P.; and Usgaard, Dennis B., 5,360,118, Cl. 209-172.500.
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Meili, Gerard; and Pinchot, Jean-Luc, 5,359,918, Cl. 89-1.816.
Pinchuk, Leonard, to Corvita Corporation. Hemodiaylsis catheter and catheter assembly. 5,360,397, Cl. 604-27.000.
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Okuda, Yoshiyuki, 5,361,136, Cl. 358-340.000.
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Lombardi, Massimo; and Pisani, Gianluigi, 5,360,177, Cl. 242-7.05B.
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Clark, Carl E.; Frey, Jeffrey A.; Plambeck, Kenneth E.; Scalzi, Casper A.; and Sinha, Bhaskar, 5,361,356, Cl. 395-700.000.
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PLX Inc.: *See*—
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Tong, Youdong; and Poindexter, Michael K., 5,360,531, Cl. 208-48.0AA.
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Lidy, Werner A.; Gatouillat, Gerard; and Casati, Francois M., 5,360,831, Cl. 521-99.000.
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Heyn, William M.; Fraser, Robert W.; and Roth, Donald J., 5,360,588, Cl. 264-153.000.
POM Incorporated: *See*—
Speas, Gary W., 5,360,095, Cl. 194-217.000.
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Chen, Franklin M. C.; LeMahieu, David L.; Pomplun, William S.; and Soerens, Dave A., 5,360,419, Cl. 604-374.000.
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Percebois, Alain; Renard, Philippe; and Berraud, Patrick, 5,360,218, Cl. 277-181.000.

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Carman, Anthony K.; and Pontbriand, Duane J., 5,360,237, Cl. 285-81.000.

Popall, Michael; Schulz, Jochen; and Schmidt, Helmut, to Fraunhofer-Gesellschaft Zur Forderung Der Angewandten Forschung e.V. Process for photoinitiated control of inorganic network formation in the sol-gel process. 5,360,834, Cl. 522-36.000.

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Feder, Michel; Jaubert, Jean-Pierre; and Pouchol, Jean-Marie, 5,360,851, Cl. 524-157.000.

Poulsen, Ole V.; and Hatting, Jan, to Interlego A.G. Cardan joint for a toy building set. 5,360,364, Cl. 446-102.000.

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Powers, Gregory B.: *See*—
Lewis, Warren H.; and Powers, Gregory B., 5,361,315, Cl. 385-16.000.

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PPG Industries, Inc.: *See*—
Gray, Ralph C., 5,360,492, Cl. 148-255.000.

Pradelle, Antoine, to Compagnie Generale Des Etablissements Michelin - Michelin & Cie. Device for warning of tire underinflation by creating imbalance. 5,359,886, Cl. 73-146.200.

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Praz, Jean-Luc. Roof rack for vehicles. 5,360,150, Cl. 224-310.000.

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So, Hidetoshi, 5,359,865, Cl. 66-19.000.

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Fuchs, Hugo; Priester, Claus-Ulrich; Neubauer, Gerald; Brunner, Erwin; Ritz, Josef; and Kopietz, Michael, 5,360,905, Cl. 540-540.000.

Procter & Gamble Company, The: *See*—
Cook, Jeffery T.; Lash, Glen R.; Moore, Danny R.; and Young, Gerald A., 5,360,420, Cl. 604-378.000.
Weber, Vicki L.; Boggs, Joseph S.; and King, Richard M., 5,360,920, Cl. 554-144.000.

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Rossillo, Michael, 5,361,393, Cl. 395-650.000.

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Reed, John W., 5,360,953, Cl. 200-86.00A.

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Warn, Walter E.; and Carr, Fred K., 5,361,216, Cl. 364-510.000.

Provencher, Daniel B.; and Spiridigliozzi, Luciano, to Teradyne, Inc. Power connector. 5,360,349, Cl. 439-108.000.

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Pruehs, Allen V.; and Robinson, Darrell A., to Ekstrom Industries, Inc. Load indicating socket tester. 5,361,026, Cl. 324-74.000.

Pruneda, Cesar O.: *See*—
Simpson, Randall L.; and Pruneda, Cesar O., 5,359,936, Cl. 102-355.000.

Puckett, Sherrill A.: *See*—
Olm, Myra T.; McDugle, Woodrow G.; Puckett, Sherrill A.; Kuromoto, Traci Y.; Eschus, Raymond S.; Bell, Eric L.; and Wilson, Robert D., 5,360,712, Cl. 430-567.000.

Pummell, Leslie J. H.; Ward, Paul C.; Kingdon, Stephen J.; and Oldfield, James A., to Eastman Kodak Company. Film length checking apparatus. 5,361,112, Cl. 354-298.000.

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Puppe, Lothar: *See*—
Wolters, Erich; Landscheidt, Heinz; Klausener, Alexander; and Puppe, Lothar, 5,360,922, Cl. 558-277.000.

Purdy, David L.; Wiggins, Richard L.; and Castro, Paul, to Diasense, Inc. Non-invasive determination of analyte concentration using non-continuous radiation. 5,360,004, Cl. 128-633.000.

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Carter, William, 5,360,000, Cl. 128-204.260.

Putzmeister-Werk Maschinenfabrik GmbH: *See*—
Benckert, Hartmut; and Hurr, Helmut, 5,360,321, Cl. 417-238.000.

Pyromid, Inc.: *See*—
Hait, Paul W., 5,359,988, Cl. 126-25.00R.

Qosina Corp.: *See*—
Herskovitz, Stuart, 5,360,009, Cl. 128-725.000.

Quadra Logic Technologies, Inc.: *See*—
Chapman, John; Logan, Patricia M.; Neyndorff, Herma C.; and North, Janice, 5,360,734, Cl. 435-238.000.

Qualex Financial Corporation: *See*—
Miller, William R.; Sarandon, Mary; and Jenkins, Janice R., 5,360,234, Cl. 281-31.000.

Quantachrome Corp.: *See*—
Lowell, Seymour, 5,360,743, Cl. 436-5.000.

Quantel Limited: *See*—
Cawley, Robin A., 5,361,334, Cl. 395-200.000.

Querry, Lester R.: *See*—
Rider, Alan J.; and Querry, Lester R., 5,361,029, Cl. 324-326.000.

Qui, Xueuing. Isolation amplifier with capacitive coupling. 5,361,037, Cl. 330-9.000.

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Bou, Pierre; Vandenbulcke, Lionel; Quilgars, Alain; Coulon, Michel; and Moisan, Michel, 5,360,485, Cl. 118-723.0ME.

Quinn, Dale W.: *See*—
Buchholz, Richard F.; and Quinn, Dale W., 5,360,465, Cl. 71-11.000.

Quinn, Linda L.: *See*—
Herzl, Robert D.; Quinn, Linda L.; and Schroter, Russell E., 5,361,368, Cl. 395-800.000.

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Blakley, Richard L.; Shelar, Gary R.; Gentry, Jeffery S.; Worrell, Gary W.; and Perfetti, Thomas A., 5,360,023, Cl. 131-331.000.
Newton, Donald A.; and Lang, Timothy R., 5,360,022, Cl. 131-297.000.

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Yu, Man S.; Hom, Foo S.; Chakrabarti, Sibaprasanna; Huang, Chong-Heng; and Patel, Mahendra, 5,360,615, Cl. 424-455.000.

Rabe, Magnus: *See*—
Blomqvist, Peter; Andreasson, Ingmar; Rabe, Magnus; Balla, Gyula; and Cedell, Tord, 5,360,498, Cl. 156-73.100.

Rabii, Khosro M., to Zenith Electronics Corporation. Preamplifier for multimedia display. 5,361,101, Cl. 348-599.000.

Radford, Steven R.: *See*—
Collee, Pierre E.; Mallow, William A.; and Radford, Steven R., 5,360,074, Cl. 175-58.000.

Radigan, Edward J., Jr.; Isganitis, Louis V.; Solodar, Warren E.; and Gundlach, Kurt B., to Xerox Corporation. Waterfast dye compositions. 5,360,472, Cl. 106-22.00K.

Radius Inc.: *See*—
Millar, Gregory M.; Ko, Tung-Faing; Moss, Nicolas N.; and Hueras, Jon F., 5,361,387, Cl. 395-164.000.

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Rains, Thersa J.; and Pempsell, Mark, to DeMar Technologies, Inc. Patient repositioning and position maintenance device. 5,359,739, Cl. 5-81.100.

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Ramanathan, Ravi: *See*—
Arends, Charles B.; Schrenk, Walter J.; Lewis, Ray A.; Ramanathan, Ravi; and Wheatley, John, 5,360,659, Cl. 428-216.000.

Ramirez, Carlos: *See*—
Usifer, Douglas A.; and Ramirez, Carlos, 5,360,543, Cl. 210-321.800.

Ramsey Electronics, Inc.: *See*—
Ramsey, John G., 5,361,405, Cl. 455-150.100.

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Ranc, Martha L.: *See*—
DiFoggio, Rocco; Sadhukhan, Maya; and Ranc, Martha L., 5,360,972, Cl. 250-339.120.

Rand Automated Compaction System, Inc.: *See*—
Jones, Rickie W.; and Martin, Gerald F., 5,360,310, Cl. 414-409.000.

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Mead, Terence W., 5,361,092, Cl. 348-100.000.

Raper, Larry K.: *See*—
Conner, Mike H.; Martin, Andrew R.; and Raper, Larry K., 5,361,350, Cl. 395-600.000.

Rascher, Gerald: *See*—
Herold, Hans-Jorg; Rascher, Gerald; Schneider, Joachim; and Wurlitzer, Holger, 5,359,843, Cl. 57-267.000.

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Hansen, Erling; and Wicht, Steve, 5,360,584, Cl. 264-22.000.
Truesdale, Robert G., Jr.; and Francis, John E., 5,360,945, Cl. 174-151.000.

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Lewis, Edward T., 5,361,264, Cl. 371-22.500.

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Kolczynski, Ronald J., 5,361,097, Cl. 348-390.000.

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Reagen, William K.; and Pettijohn, Ted M., to Phillips Petroleum Company. Polymerization catalysts and processes. 5,360,879, Cl. 526-129.000.

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Monforte, Mathew L.; and Dreyfus, Edward D., 5,360,249, Cl. 294-119.100.

Rege, Satish L.; and Edgar, Ronald M., to Digital Equipment Corporation. Memory management for data transmission networks. 5,361,372, Cl. 395-800.000.

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Ip, Nancy Y.; DiStefano, Peter S.; and Stahl, Neil, 5,360,740, Cl. 436-501.000.

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Bannerot, Pierre A. L. M.; Lapergue, Guy J.; Maingre, Eric F. M.; Pasquali, Xavier J.; and Reghezza, Jean-Claude H., 5,359,851, Cl. 60-271.000.

Regnier, Kent E., to Molex Incorporated. Electrical connector assembly with printed circuit board stiffening system. 5,360,346, Cl. 439-61.000.

Reich, Richard B.: *See*—
Cutright, Edwin L.; Scott, G. Robert; Vogt, Howard W., Jr.; and Reich, Richard B., 5,360,516, Cl. 162-139.000.

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Diamantoglou, Michael; Richter, Edmund; Rintelen, Thomas; Duweg, Gustav; Reiche, Angelika; and Tatas, Ralf, 5,360,636, Cl. 427-244.000.

Reid, Clyde D.: *See*—
Mosesian, Jerry L.; and Reid, Clyde D., 5,361,058, Cl. 337-163.000.

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Christensen, Stephen M., 5,359,822, Cl. 52-459.000.

Reinke, Kurt: *See*—
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Reissenweber, Wilfried: *See*—
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Reiter, Ferdinand; and Maier, Martin, to Robert Bosch GmbH. Electromagnetically operated injection valve. 5,360,197, Cl. 251-129.210.

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Hannemann, Klaus; Hohener, Alfred; Wang, Huanzhong; and Rembold, Manfred, 5,360,455, Cl. 8-444.000.

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Miller, William R.; Sarandon, Mary; and Jenkins, Janice R., 5,360,234, Cl. 281-31.000.

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Jeanson, Jean-Francois; Huppert, Jean; Autrique, Alex; Remond, Joel; and Lesoin, Francis, 5,360,429, Cl. 606-61.000.

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Percebois, Alain; Renard, Philippe; and Berraud, Patrick, 5,360,218, Cl. 277-181.000.

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Arduin, Joel; and Renaud-Goud, Gilles, 5,360,229, Cl. 280-617.000.

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Harris, Rodney M.; Ahmed, Maqsood S.; and Renner, Thomas A., 5,360,856, Cl. 524-315.000.

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Leiter, Earl; and Joseph, Thomas A., 5,360,246, Cl. 292-302.000.

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Carpino, Louis A.; and Sadat-Aalaee, Dean, 5,360,928, Cl. 562-849.000.

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Francis, Raymond C.; and Evans, Daniel B., 5,360,515, Cl. 162-135.000.

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Kaufman, Arie A.; Bandopadhay, Amit; and Piligian, George J., 5,360,971, Cl. 250-221.000.

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Falla, Daniel J.; and Restaino, Michael C., 5,360,648, Cl. 428-35.200.

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Revelle, David W. Absorbent textile garment with bicomponent textile liner. 5,360,421, Cl. 604-378.000.

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Harris, Bernard; and Bozych, Dennis E., 5,360,275, Cl. 384-420.000.

Rey, Michael W.: *See*—
Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., 5,360,732, Cl. 435-192.000.
Berka, Randy M.; Fowler, Timothy; and Rey, Michael W., 5,360,901, Cl. 536-23.200.

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Reynolds, Larry W. Portable buoy marker assembly. 5,360,359, Cl. 441-6.000.

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Ullrich, Volker, 5,360,888, Cl. 528-323.000.

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Sutherland, Robert J.; and Rhodes, Robert B., 5,360,564, Cl. 252-51.50A.

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Huang, Jamin; Ayad, Hafez M.; and Timmons, Philip R., 5,360,910, Cl. 546-279.000.

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Richards, Robin E.; Iampietro, Robert L.; and Dyer, Paul N., to Air Products and Chemicals, Inc. Method for manufacturing inorganic membranes by organometallic chemical vapor deposition. 5,360,635, Cl. 427-243.000.

Richardson, Craig A.: *See*—
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Richter, Gert: *See*—
Maier-Laxhuber, Peter; Becky, Andreas; Richter, Gert; and Worz, Reiner, 5,359,861, Cl. 62-100.000.

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Ridgeway, Robert G.: *See*—
Ketkar, Suhas N.; Ridgeway, Robert G.; Maroulis, Peter J.; and Golden, Timothy C., 5,360,467, Cl. 95-25.000.

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Harada, Takamasa; Escher, Claus; Illian, Gerhard; Ohlendorf, Dieter; Rieger, Heinz; and Rosch, Norbert, 5,361,152, Cl. 359-80.000.

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Zengerle, Paul L.; Brown, Glenn M.; and Rieger, John B., 5,360,702, Cl. 430-505.000.

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Rigo, Giuseppe; and Bertolacci, Enzo. Apparatus for controllably treating hair by temperature and time using a nebulized mixture of air, steam and ozone. 5,359,997, Cl. 128-202.160.

Ring, John J.: *See—*
Hu, Darwin; and Ring, John J., 5,361,134, Cl. 358-296.000.

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Lowe, William G.; Moore, Walter A.; and Rink, Linda M., 5,360,232, Cl. 280-741.000.

Rintelen, Thomas: *See—*
Diamantoglou, Michael; Richter, Edmund; Rintelen, Thomas; Duweg, Gustav; Reiche, Angelika; and Tatas, Ralf, 5,360,636, Cl. 427-244.000.

Rishack, Christopher. Hands-on learning system including three-dimensional action model kit. 5,360,344, Cl. 434-295.000.

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Tolpa, Stanislaw; Gersz, Tadeusz; Ritter, Stanislawa; Kukla, Ryszard; Skrzyszewska, Malgorzata; and Tomkow, Stanislaw, 5,360,117, Cl. 209-158.000.

Ritz, Josef: *See—*
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Olson, Allen L.; and Emerson, James W., 5,359,830, Cl. 53-398.000.
Sutherland, Robert L., 5,360,104, Cl. 206-147.000.

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Robert Boach GmbH: *See—*
Lenfers, Martin; and Riegel, Johann, 5,360,266, Cl. 374-36.000.
Maier, Stefan; and Hommel, Jochen, 5,359,876, Cl. 72-412.000.
Pape, Werner; and Rossignol, Francois, 5,360,164, Cl. 239-88.000.
Reiter, Ferdinand; and Maier, Martin, 5,360,197, Cl. 251-129.210.

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Roberts, Gordon E.: *See—*
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Roberts, Gordon G.; and Roberts, Gordon E. Cooking appliance for cooking a batter wrapped meat product on a stick. 5,359,924, Cl. 99-416.000.

Roberts, Gregory N., to Micron Semiconductor, Inc. Adjustable buffer driver. 5,361,003, Cl. 326-21.000.

Roberts, John K.; and Spencer, Keith R., to K. W. Muth Co. Inc. Mirror assembly. 5,361,190, Cl. 362-61.000.

Roberts, Mary E.: *See—*
Ruddy, Stephen B.; Roberts, Mary E.; McIntire, Gregory L.; Cooper, Eugene R.; and Illig, Carl R., 5,360,604, Cl. 424-5.000.

Roberts, Thomas D.; Smith, Thomas W.; and Galvin, Charlene A., to Eastman Chemical Company. High clarity emulsions containing high melt viscosity maleated polypropylene wax. 5,360,862, Cl. 524-560.000.

Robertson, A. Scott: *See—*
Geiger, Richard; Robertson, A. Scott; and Page, Neville, 5,360,224, Cl. 280-250.100.

Robertson, Neil C.; and Schutte, Mark E., to Scientific-Atlanta, Inc. Interdiction method and apparatus with direct memory control of variable frequency elements. 5,361,301, Cl. 380-7.000.

Robertson, Stella M.; and Kunkle, Herman M., Jr., to Alcon Laboratories, Inc. Pharmaceutical compositions and methods of treatment of the cornea following ultraviolet laser irradiation. 5,360,611, Cl. 424-427.000.

Robicon Systems: *See—*
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Robins, Karen T.; and Gilligan, Thomas, to Lonza Ltd. Bacteria capable of stereospecifically hydrolyzing R-(−)-2,2-dimethylcyclopropanecarboxamide. 5,360,731, Cl. 435-252.340.

Robinson, Darrell A.: *See—*
Pruehs, Allen V.; and Robinson, Darrell A., 5,361,026, Cl. 324-74.000.

Robinson, Glenn: *See—*
Culpepper, Will L.; and Robinson, Glenn, 5,360,099, Cl. 198-473.100.

Rochester Medical Corporation: *See—*
Conway, Anthony J.; Conway, Philip J.; and Fryar, Richard D., Jr., 5,360,402, Cl. 604-97.000.

Rocholl, Hans: *See—*
Wiebelhaus, Wolfgang; Gronemann, Manfred; Lehmann, Wolfgang; Schneider, Jurgen; and Rocholl, Hans, 5,360,087, Cl. 188-218.0XL.

Rockenfeiler, Uwe; and Kirol, Lance D., to Rocky Research. Dual-temperature heat pump apparatus and system. 5,360,057, Cl. 165-104.120.

Rockman, Alfred G.: *See—*
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Rockwell International Corporation: *See—*
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Hansen, Robert E., 5,359,930, Cl. 101-232.000.
Periou, Pierre; Grandjean, Richard; and Laurent, Bruno, 5,360,351, Cl. 439-357.000.
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Rocky Research: *See—*
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Rodi, Anton: *See—*
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Rodriguez, Alonso: *See—*
El-Sharkawi, Mohamed A.; Xing, Jian; Butler, Nicholas G.; and Rodriguez, Alonso, 5,361,184, Cl. 361-93.000.

Rodriguez, Francisco A.: *See—*
Henry, John W., IV; Flickinger, William F.; Dolinar, Joseph F., Jr.; Rodriguez, Francisco A.; Smith, James W., Sr.; and Gabriele, Rocco J., Jr., 5,360,325, Cl. 418-126.000.

Rodriguez, Ricardo P.: *See—*
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Roeder, Juergen: *See—*
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Roes, John B., to Cubic Automatic Revenue Collection Group. Magnetically permeable electrostatic shield. 5,360,941, Cl. 174-35.00R.

Roesaler, Kenneth G.: *See—*
Hammond, James M.; Klos, Martin A.; Martin, Yves; Roessler, Kenneth G.; and Stowell, Robert M., 5,360,974, Cl. 250-442.110.

Rogers, George E., to Luminis Pty. Ltd. Eukaryotic plasmid vector encoding enzymes for cysteine production. 5,360,742, Cl. 435-320.100.

Rohl, Gerald E.: *See—*
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Rohm Co., Ltd.: *See—*
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Tagashira, Fumiaki, 5,361,086, Cl. 346-76.0PH.
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Hughes, Kathleen A.; and Swift, Graham, 5,360,570, Cl. 252-135.000.

Roll Systems, Inc.: *See—*
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Rolls-Royce plc: *See—*
Ingall, Robert C.; and Waumsley, Julie, 5,360,961, Cl. 219-137.0PS.

Roquette Freres: *See—*
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Mentink, Leon; and Serpelloni, Michel, 5,360,621, Cl. 426-548.000.

Rosch, Norbert: *See—*
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Rose, Mervyn J.: *See—*
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Rosen, James L.: *See—*
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Rosenberg, Leon: *See—*
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Rosenberg, Neil A. Dental prophy cup having a paste-distributing channel arrangement. 5,360,339, Cl. 433-165.000.

Rosli, Peter: *See—*
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Rosolen, Carlo: *See—*
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Rossignol, Francois: *See—*
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Rossillo, Michael, to Prodigy Services Company. Method for improving interactive-screen uploading of accounting data. 5,361,393, Cl. 395-650.000.

Roth, Donald J.: *See—*
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Roth, Robert P.: *See—*
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Rouser, Forrest J.: *See—*
Appeldorn, Roger H.; Johnson, Robert J.; Rouser, Forrest J.; and Erwin, Robert L., 5,360,270, Cl. 383-5.000.

Rowe, Eric L.: *See—*
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Rowe, Melvin L. Core box vent construction. 5,360,049, Cl. 164-16.000.

Rowe, Paul J.; Achtziger, Paul M.; Malecki, David C.; and Kladias, Nicholas, to Xerox Corporation. Temperature control system for a fuser. 5,361,124, Cl. 355-208.000.

Roy, Phalguni S.: *See—*
Kimball, Vance A.; Gurubatham, Vincent P.; and Roy, Phalguni S., 5,359,744, Cl. 8-158.000.

Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, to SamSung Electronics Co., Ltd. System to cancel ghosts in NTSC television transmission. 5,361,102, Cl. 348-611.000.

Royal Ordnance plc: *See—*
Lee, Peter R., 5,360,129, Cl. 220-1.500.

Ruben, Janet. Puzzle storage device with identifying indicia. 5,360,215, Cl. 273-157.00R.

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Ruddy, Stephen B.; Roberts, Mary E.; McIntire, Gregory L.; Cooper, Eugene R.; and Illig, Carl R., to Sterling Winthrop Inc. X-ray contrast compositions containing an organic crystalline X-ray contrast agent in combination with pharmaceutically acceptable clays. 5,360,604, Cl. 424-5.000.

Rudell, Elliot: *See—*
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Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to Whitaker Corporation, The. Wire retainer for current mode coupler. 5,360,352, Cl. 439-469.000.

Ruel, Bernard G.; Stewart, Gilbert M.; Thirunagari, Aruna; and Turner, James L., to AT&T Bell Laboratories. Telecommunications service provision equipment transfer. 5,361,298, Cl. 379-242.000.

Ruetz, Roland L.; Vojta, Jan V.; and Day, Donna L., to Kohler Co. Reduced lead bismuth yellow brass. 5,360,591, Cl. 420-479.000.

Ruggiero, Murray A.; Marien, Bruce A.; Arif, Shoaib; Roth, Robert P.; Farrell, Joseph T.; and Vanover, A. R., to Olin Corporation. Enhanced wetting, low-foaming, dye-leveling agent comprising a piperazine substituted organosulfonate. 5,360,457, Cl. 8-567.000.

Ruppert, Dieter: *See—*
Henning, Rainer; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,360,791, Cl. 514-18.000.

Ruschke, Rick R.: *See—*
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Russell, Dale D.: *See—*
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Russell Technical Products: *See—*
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Russell, Thomas W. Highway traffic barrier made from tires. 5,360,286, Cl. 404-6.000.

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Ruth, Roger A.: *See—*
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Ryan, Ian M.: *See—*
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Sadat-Aalaee, Dean: *See—*
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Sadhukhan, Maya: *See—*
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Saeger, Karl E.: *See—*
Mayer, Ursula; Michal, Roland; and Saeger, Karl E., 5,360,673, Cl. 428-546.000.

Saijo, Ryuichi, to NEC Corporation. Switching circuit of low power consumption. 5,361,008, Cl. 327-427.000.

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Mozdzen, Edward C.; Chamberlin, William B., III; and Saiter, Barbara A., 5,360,460, Cl. 44-386.000.

Saito, Hidetoshi; and Kume, Masahiro, to Sumitomo Electric Industries, Ltd. Acceleration detector having highly accurate gaps in magnetic circuit including a differential transformer. 5,359,894, Cl. 73-517.00R.

Saito, Hitoshi: *See—*
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Sato, Kazuo; Sugimoto, Tadayuki; and Saiuchi, Naofumi, 5,360,835, Cl. 522-85.000.

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Yamamoto, Tadashi; Seno, Takao; and Sakaguchi, Yoshito, 5,360,203, Cl. 266-110.000.

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Morita, Tetsuya; Yamano, Hiroshi; Isaka, Yukio; Ishizuka, Haruo; Murata, Masahiko; Sakai, Masahiko; and Kubota, Tsutomu, 5,361,329, Cl. 395-102.000.

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Kuroda, Masao; and Sakakibara, Yutaka, 5,360,522, Cl. 204-149.000.

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Hayashi, Katsura; and Sakaue, Katsushi, 5,360,772, Cl. 501-95.000.

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Baker, William F., 5,360,387, Cl. 493-405.000.

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Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapellil, Anthony P.; and Shilman, Vitaly H., 5,361,370, Cl. 395-800.000.

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Schmuck, Phillip W.; Hayter, Steven R.; Zachman, James R.; and Salerni, John V., 5,360,069, Cl. 166-383.000.

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Palau, Marie-Claude, 5,360,228, Cl. 280-609.000.

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Kwon, Ki-duck, 5,361,080, Cl. 345-87.000.

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Jang, Ji-hoon, 5,361,094, Cl. 348-254.000.
Kim, Sang-Gwon, 5,361,023, Cl. 318-568.160.
Ko, Kwang-Ok; and Park, Jong-Ho, 5,360,766, Cl. 437-192.000.
Park, Hwa S., 5,360,964, Cl. 219-689.000.
Park, Tai-seo; Kim, Yun-gi; Park, Dong-chul; Ahn, Sung-tae; and Kim, Byeong-yeol, 5,360,753, Cl. 437-67.000.
Roy, Sumit; Patel, Chandrakant B.; and Yang, Jian, 5,361,102, Cl. 348-611.000.

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Lee, Jin H.; Heo, Sang C.; Jo, Jang U.; Kim, Jin T.; Lee, Keun T.; Kim, Ju K.; Jeong, Sang T.; Hoang, Bong D.; and Lee, Chan H., 5,361,211, Cl. 364-424.070.

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Ask, Anna-Lena; and Sandberg, Rune V., 5,360,805, Cl. 514-316.000.

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Yamada, Yasuo, 5,359,864, Cl. 62-480.000.

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Carlsson, Jan-Erik; and Sundstedt, Gert, 5,359,772, Cl. 29-895.320.
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Breaux, Louis B.; and Sansone, Leonard F., 5,360,293, Cl. 405-267.000.

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Panesar, Param; and Berger, James K., 5,361,346, Cl. 395-575.000.

Sanyo Electric Co., Ltd.: *See*—
Toshinobu, Haruki; and Kenichi, Kikuchi, 5,361,095, Cl. 348-354.000.

Sarandon, Mary: *See*—
Miller, William R.; Sarandon, Mary; and Jenkins, Janice R., 5,360,234, Cl. 281-31.000.

Sarkar, Soumitra: *See*—
Doeringer, Willibald; Dykeman, Douglas; Edwards, Allan K.; Pozefsky, Diane P.; Sarkar, Soumitra; and Turner, Roger D., 5,361,256, Cl. 370-60.000.

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Senoo, Masaharu; Sasada, Reiko; and Igarashi, Koichi, 5,360,896, Cl. 530-399.000.

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Sassi, Carlo, to Metro International S.R.L. Rotary pulping machine for extracting fruit and vegetable juices. 5,359,926, Cl. 99-510.000.

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Mimura, Jinko; and Sato, Hideya, 5,360,411, Cl. 604-246.000.

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Sato, Minoru: *See*—
Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

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Fukahori, Kenichi; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,360,278, Cl. 400-120.010.

Sato, Toshihiro: *See*—
Shida, Masaru; Ezawa, Akira; Wakabayashi, Tsutomu; Uematsu, Kimio; Ohsawa, Keiji; Tsukada, Shinichi; and Sato, Toshihiro, 5,361,119, Cl. 354-409.000.

Sato, Tsuyoshi: *See*—
Watanabe, Haruo; and Sato, Tsuyoshi, 5,360,889, Cl. 528-371.000.

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Satoh, Masahiro: *See*—
Suzuki, Tadasu; Fukuda, Shigekazu; and Satoh, Masahiro, 5,360,378, Cl. 474-161.000.

Satone, Hiroyuki: *See*—
Morikawa, Sumio; and Satone, Hiroyuki, 5,359,775, Cl. 30-134.000.

Satterfield, David L.: *See*—
Wells, David; Tardiff, James P.; Satterfield, David L.; Rowe, Eric L.; and Isman, Marshall, 5,361,363, Cl. 395-800.000.

Satzinger GmbH & Co.: *See*—
Graf, Walter, 5,360,084, Cl. 184-3.200.

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Fletcher, David L.; McGovern, Stephen J.; and Sauer, John E., 5,360,532, Cl. 208-89.000.

Sauerwine, Dean N.; and Jenkins, Richard A., to Moore Business Forms, Inc. Eccentric C-fold mailer with a plurality of reply envelopes. 5,360,160, Cl. 229-304.000.

Sauter, Joseph A.; and Bell, Ronald S., to Carbomedics, Inc. Sizing apparatus for heart valve with supra annular suture ring. 5,360,014, Cl. 128-774.000.

Savovic, Niko M.; Amero, Willard F., Jr.; Kleinert, Raymond J., III; Austin, Michael M.; and Gyenes, Russell E., to Motorola, Inc. Method for positioning an object relative to a structural member. 5,360,499, Cl. 156-73.100.

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Honda, Shiro; Sawamura, Yasushi; Tanaka, Masayuki; Kayaba, Keiji; and Teshiba, Toshihiro, 5,360,837, Cl. 523-220.000.

Say, Geoffrey R.: *See*—
Davis, Stephen M.; Clavenna, LeRoy R.; Fiato, Rocco A.; and Say, Geoffrey R., 5,360,777, Cl. 502-202.000.
Davis, Stephen M.; Clavenna, LeRoy R.; Say, Geoffrey R.; and Fiato, Rocco A., 5,360,778, Cl. 502-202.000.

Scalzi, Casper A.: *See*—
Clark, Carl E.; Frey, Jeffrey A.; Plambeck, Kenneth E.; Scalzi, Casper A.; and Sinha, Bhaskar, 5,361,356, Cl. 395-700.000.

Scandiafelt AB: *See*—
Nohlgren, Goran, 5,360,660, Cl. 428-229.000.

Scandic International Pty. Ltd.: *See*—
Larsson, Stig B.; and Ryan, Ian M., 5,360,369, Cl. 453-19.000.

Scarano, Robert V., to Thermo Fibertek Inc. Support apparatus for papermaking machine rotating felt suction pipes. 5,360,519, Cl. 162-363.000.

Scarola, Kenneth: *See*—
Harmon, Daryl L.; Jamison, David S.; and Scarola, Kenneth, 5,361,198, Cl. 364-188.000.

Scatizzi, Mario, to Tecnorama S.R.L. Device for metering powder, grained or micropearl dyeing materials. 5,360,141, Cl. 222-55.000.

Schafeld, Bernhard T.: *See*—
Baumann, Lothar E.; Kappelmann, Hans G.; Mertens, Volkmar; Schafeld, Bernhard T.; Vorhoff, Werner W.; and Wallussek, Heinz, 5,360,260, Cl. 299-59.000.

Schaller, Wolfgang; and Unger, Rolf, to Agfa - Gevaert AG. Apparatus for cutting photographic paper. 5,360,161, Cl. 234-42.000.

Schambeau, Ronald R.: *See*—
Klimek, Robert A., Jr.; McCormac, Elias A., III; and Schambeau, Ronald R., 5,361,069, Cl. 342-20.000.

Schauman Wood Oy: *See*—
Kordelin, Tapio, 5,359,954, Cl. 114-85.000.

Scheigetz, John: *See*—
Fortin, Rejean; Girard, Yves; Grimm, Erich; Hutchinson, John; and Scheigetz, John, 5,360,815, Cl. 514-432.000.

Schellas, Patricia. Tear-resistant seams including multiple and overlapping stitches for clothing. 5,359,950, Cl. 112-417.000.

Schemm, Jerry D.; Kajfosz, Bryon L.; and Krieger, Richard T., II, to Windsor Industries. Battery transfer technique for vehicle. 5,360,307, Cl. 414-343.000.

Schenk, Rudolf. Control valve assembly. 5,360,032, Cl. 137-454.500.

Schiel, Lothar: *See*—
Wagner, Wilfried; and Schiel, Lothar, 5,359,854, Cl. 60-535.000.

Schierling, Roland: *See*—
Bauer, Peter; Eckhardt, Horst; Schierling, Roland; and Hoffmann, Joachim, 5,359,777, Cl. 30-276.000.

Schirling, Franz: *See*—
Medl, Maximilian, 5,360,433, Cl. 606-159.000.

Schissel, Paul O.; Kennedy, Cheryl E.; Jorgensen, Gary J.; Shinton, Yvonne D.; and Goggin, Rita M., to Midwest Research Institute. Durable metallized polymer mirror. 5,361,172, Cl. 359-883.000.

Schlatter, Reinhard; Ehrat, Rainer; Muller, Peter; Kubler, Paul; and Hodl, Otto, to Alusuisse-Lonza Services Ltd. Flame resistant to nonflammable composite panel. 5,360,507, Cl. 156-494.000.

Schlumberger Technology Corporation: *See*—
Jones, Timothy; and Hughes, Trevor, 5,360,738, Cl. 436-30.000.
Stoller, Christian, 5,360,975, Cl. 250-262.000.
Tabeling, Patrick J. R.; and Theron, Bernard E., 5,361,206, Cl. 364-422.000.

Schmalbach-Lubeca AG: *See*—
Isenberg, Heinz H.; Vogt, Goran; and Althaus, P. Gerhard, 5,359,895, Cl. 73-582.000.

Schmale, Gerhard; and Sommer, Norbert, to Naue/Johnson Controls Engineering GmbH & Co. Running rails for motor vehicle seats. 5,360,272, Cl. 384-48.000.

Schmerler, Detlev; and Brugger, Gerhard, to bbs AG international; Schmerler, Detlev; and Brugger, Gerhard. Image analyzer. 5,361,331, Cl. 395-109.000.

Schmid, Karl; Bongardt, Frank; Roeder, Juergen; and Wuest, Reinhold, to Henkel Kommanditgesellschaft auf Aktien. Universal lubricant based on a synthetic oil solution. 5,360,560, Cl. 252-39.000.

Schmidt, Harald, to Husky Injection Molding Systems Ltd. Band heater clamp arrangement for an injection molding machine. 5,360,333, Cl. 425-549.000.

Schmidt, Helmut: *See*—
Popall, Michael; Schulz, Jochen; and Schmidt, Helmut, 5,360,834, Cl. 522-36.000.

Schmidt, Robert C.: *See*—
Hayenga, Jon W.; and Schmidt, Robert C., 5,361,140, Cl. 358-446.000.

Schmiletzky, Dieter, to Alusuisse-Lonza Services Ltd. Blister pack with a tear-off aid. 5,360,116, Cl. 206-531.000.

Schmitt-Sody, Wolfgang: *See*—
Nusstein, Peter; Staudinger, Guenther; Steinert, Wolfram; Kreuzer, Franz-Heinrich; and Schmitt-Sody, Wolfgang, 5,360,899, Cl. 536-4.100.

Schmitz, Jurgen; Weber, Hans-Leo; Fausten, Hans-Josef; Schmoranzer, Hans-Wolfgang; and Hansel, Udo, to Bayer Aktiengesellschaft. Antistatic extruded polycarbonate sheets. 5,360,658, Cl. 428-215.000.

Schmoranzer, Hans-Wolfgang: *See*—
Schmitz, Jurgen; Weber, Hans-Leo; Fausten, Hans-Josef; Schmoranzer, Hans-Wolfgang; and Hansel, Udo, 5,360,658, Cl. 428-215.000.

Schmuck, Phillip W.; Hayter, Steven R.; Zachman, James R.; and Salerni, John V., to Baker Hughes Incorporated. Failsafe liner installation assembly and method. 5,360,069, Cl. 166-383.000.

Schneider, Joachim: *See*—
Herold, Hans-Jorg; Rascher, Gerald; Schneider, Joachim; and Wurlitzer, Holger, 5,359,843, Cl. 57-267.000.

Schneider, Jurgen: *See*—
Wiebelhaus, Wolfgang; Gronemann, Manfred; Lehmann, Wolfgang; Schneider, Jurgen; and Rocholl, Hans, 5,360,087, Cl. 188-218.0XL.

Schneider, Reiner; Reissenweber, Wilfried; and Niesemeyer, Norbert, to Siemens Aktiengesellschaft. Method of forming an optical waveguide with a reinforced protective covering. 5,360,497, Cl. 156-47.000.

Schofield, Edward: *See*—
Chen, Tien-Teh; Cowan, Stanley W.; Schofield, Edward; and Tang, Ping-Wah, 5,360,710, Cl. 430-548.000.

Scholkens, Bernward: *See*—
Henning, Rainer; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,360,791, Cl. 514-18.000.

Scholl, Kyle W.: *See*—
Dickrell, David L.; Scholl, Kyle W.; and Sinn, Scott G., 5,359,969, Cl. 123-41.120.

Schollhorn, Markus: *See*—
Dietterle, Thomas; and Schollhorn, Markus, 5,360,463, Cl. 55-422.000.

Scholtes, Jacobus L.: *See*—
Sikking, Rob; Brockhus, Jeroen J.; and Scholtes, Jacobus L., 5,360,625, Cl. 426-573.000.

Schonafinger, Karl: *See*—
Brendel, Joachim; Schonafinger, Karl; and Bohn, Helmut, 5,360,812, Cl. 514-364.000.

Schoning, Uwe, to Transnorm System GmbH. Belt conveyor with rotary guides for marginal portions of the belt. 5,360,102, Cl. 198-831.000.

Schoustra, Bauke: *See*—
Loonen, Hubertus A. M.; Miedema, Mark; Schoustra, Bauke; Verbunt, Joannes A.; and Smit, Eduardus H. A. M., 5,361,126, Cl. 355-279.000.

Schrameck, William J.: *See*—
Conn, Paul J.; and Schrameck, William J., 5,360,158, Cl. 228-56.300.

Schrenk, Walter J.: *See*—
Arends, Charles B.; Schrenk, Walter J.; Lewis, Ray A.; Ramanathan, Ravi; and Wheatley, John, 5,360,659, Cl. 428-216.000.

Schroter, Russell E.: *See*—
Herzl, Robert D.; Quinn, Linda L.; and Schroter, Russell E., 5,361,368, Cl. 395-800.000.

Schrunk, Robert R., III; Madison, Harry; and Gilbert, Michael B., to Harsco Corporation. Profile grinder. 5,359,815, Cl. 451-347.000.

Schubert, Frederic E.: *See*—
Hou, Wei-Hsin; Lloyd, Thomas B.; and Schubert, Frederic E., 5,360,689, Cl. 430-34.000.

Schubert, Paul F., to Phillips Petroleum Company. Sulfur absorbents. 5,360,468, Cl. 95-136.000.

Schuler, Albert; and Tokmakov, Wladimir. Process for hardening cutting edges with an oval shaped plasma beam. 5,360,495, Cl. 148-565.000.

Schulz, Erich: *See*—
Hackl, Kurt A.; Mullner, Martin; Schulz, Erich; Stern, Gerhard; and Falk, Heinz, 5,360,601, Cl. 423-364.000.

Schulz, Jens; Hoffmann, Martin; and Goerrissen, Nicolaus, to Peters Maschinenfabrik. Door for a single-face station of a machine that produces corrugated cardboard. 5,360,505, Cl. 156-382.000.

Schulz, Jochen: *See*—
Popall, Michael; Schulz, Jochen; and Schmidt, Helmut, 5,360,834, Cl. 522-36.000.

Schulz, Richard D.: *See*—
Fell, Joseph P.; Schulz, Richard D.; Meyer, Mary J.; Krueger, Allan J.; Chen, Franklin M. C.; and Huang, Yung H., 5,360,504, Cl. 156-247.000.

Schumacher, Dean. Projectile discharge apparatus. 5,359,985, Cl. 124-66.000.

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Schumacher, Gustav; and Schumacher, Guenter, 5,359,837, Cl. 56-10.400.

Schumacher, Gustav; and Schumacher, Guenter. Hydraulic elevating mechanism for structural assemblies on agricultural machines. 5,359,837, Cl. 56-10.400.

Schumacher, Rolf: *See*—
Zinke, Horst; and Schumacher, Rolf, 5,360,563, Cl. 252-46.700.

Schutte, Mark E.: *See*—
Robertson, Neil C.; and Schutte, Mark E., 5,361,301, Cl. 380-7.000.

Schuy, Wilhelm, to Behringwerke Aktiengesellschaft. Agent, for immunochemical assays, containing amine oxides. 5,360,717, Cl. 435-7.940.

Schwab, Scott D.; and Levy, Ram L. Pressure sensitive paint formulations and methods. 5,359,887, Cl. 73-147.000.

Schwaebische Huettenwerke GmbH: *See*—
Krehl, Michael; Schwarze, Rolf; and Subek, Gerhard, 5,359,771, Cl. 29-893.000.

Schwalm, Hans-Werner, to W. Schlafhorst AG & Co. Sliver can exchange apparatus with can transport carriage having a rotatable platform with three can supports. 5,359,844, Cl. 57-281.000.

Schwarcz, Robert: *See*—
Palfreyman, Michael G.; McDonald, Ian A.; Salituro, Francesco G.; Schwarcz, Robert; and Baron, Bruce M., 5,360,814, Cl. 514-419.000.

Schwartz, Jeffrey D.; and Nash, Mark E., to Hewlett-Packard Company. Index pulse generation in a data storage tape drive. 5,361,176, Cl. 360-46.000.

Schwartz, John R.: *See*—
Dotolo, Vincent A.; Schwartz, John R.; and Kraus-Marchak, Jaye, 5,360,580, Cl. 252-542.000.

Schwarze, Rolf: *See*—
Krehl, Michael; Schwarze, Rolf; and Subek, Gerhard, 5,359,771, Cl. 29-893.000.

Schweikert, Emile A.: *See*—
Young, David T.; Marshall, Jill A.; Schweikert, Emile A.; and Park, Melvin A., 5,360,976, Cl. 250-287.000.

Sciacca, Edward T. Folding lumbar support seat. 5,360,257, Cl. 297-380.000.

Sciarra, Paschal A., Jr.: *See*—
Brotz, Ralph T.; Sciarra, Paschal A., Jr.; and Waitkus, Phillip A., 5,360,587, Cl. 264-123.000.

Scientific Atlanta, Inc.: *See*—
Lucas, Keith, 5,361,098, Cl. 348-565.000.
Pidgeon, Rezin E., 5,361,156, Cl. 359-161.000.
Robertson, Neil C.; and Schutte, Mark E., 5,361,301, Cl. 380-7.000.
Sachtschale, Timothy G.; and Barry, Steven P., 5,360,092, Cl. 193-2.00R.

Scientific Design Company, Inc.: *See*—
Padia, Ashok S.; and Click, Gaylon T., 5,360,916, Cl. 549-259.000.

Scopus Light (1990) Ltd.: *See*—
Fisher, Bradley; and Nechushtan, Aharon, 5,359,800, Cl. 42-103.000.

Scott, G. Robert: *See*—
Cutright, Edwin L.; Scott, G. Robert; Vogt, Howard W., Jr.; and Reich, Richard B., 5,360,516, Cl. 162-139.000.

Scott, Kevin C., to Eastman Kodak Company. "Consensus sync" data-sampling systems and methods. 5,360,968, Cl. 235-454.000.

Scott, Melvin L.: *See*—
Archibald, Kenneth R.; and Scott, Melvin L., 5,360,261, Cl. 301-63.100.

Seagate Technology, Inc.: *See*—
Sampietro, Joseph M.; Moghadam, Hossein M.; Fard, Anoush M.; and Krum, Richard G., 5,361,182, Cl. 360-105.000.

Seals-Mason, Samantha: *See*—
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Sourgen, Laurent; and Uhlmann, Rodolphe, 5,361,341, Cl. 395-425.000.
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Masse, Michael A.; Chin, Steven S.; and Stevens, Craig A., 5,360,875, Cl. 525-314.000.
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Egolf, Scott L.; and Smart, Reginald T., 5,360,826, Cl. 521-54.000.

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Dittrich, William A., 5,359,937, Cl. 102-430.000.

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Conn, Paul J.; and Schrameck, William J., 5,360,158, Cl. 228-56.300.

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Mallo, Paul; Sidot, Christian; Blanc, Alain; and Christidis, Yani, 5,360,881, Cl. 526-240.000.

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Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.

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Chevallier, Francois; and Chevalier, Sammy, 5,360,836, Cl. 522-96.000.
Meili, Gerard; and Pinchot, Jean-Luc, 5,359,918, Cl. 89-1.816.

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Bannerot, Pierre A. L. M.; Lapergue, Guy J.; Maingre, Eric F. M.; Pasquali, Xavier J.; and Reghezza, Jean-Claude H., 5,359,851, Cl. 60-271.000.

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Lequertier, Jean-Michel, 5,360,638, Cl. 427-257.000.

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Nagata, Satoshi; and Sodeyama, Osamu, 5,360,853, Cl. 524-269.000.

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Arnold, Hamilton W.; Devasirvathan, Daniel M.; Sollenberger, Nelson R.; Sutliff, Larrie G.; and Varma, Vijay K., 5,361,258, Cl. 370-69.100.

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Sommen, Francois M.: *See—*
Janssens, Frans E.; Sommen, Francois M.; and Diels, Gaston S. M., 5,360,807, Cl. 514-318.000.

Sommer, Gordon M., to Midwest Brake Bond Co. Electrically actuated clutch brake apparatus. 5,360,091, Cl. 192-18.00B.

Sommer, Norbert: *See—*
Schmale, Gerhard; and Sommer, Norbert, 5,360,272, Cl. 384-48.000.

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Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, 5,360,902, Cl. 536-84.000.

Sony Corporation: *See—*
Fujita, Tadao, 5,361,221, Cl. 364-746.000.
Fukahori, Kenichi; Sato, Shuji; Shimoha, Masaki; Ito, Hideki; Iima, Shin; and Narita, Mutsuko, 5,360,278, Cl. 400-120.010.
Ishii, Toshiyuki; Misono, Kousuki; Tsuneki, Miwako; Ota, Kiyoshi; and Nishigaki, Tetsuo, 5,361,173, Cl. 360-27.000.
Kadomura, Shingo, 5,360,510, Cl. 156-665.000.
Noguchi, Tsutomu; and Miyashita, Mayumi, 5,360,825, Cl. 521-54.000.
Ohki, Mitsuharu, 5,361,104, Cl. 348-699.000.
Sawada, Takeshi; and Sakai, Tadashi, 5,361,407, Cl. 455-209.000.
Seki, Takahito; Inoue, Hajime; and Takizawa, Chihoko, 5,361,174, Cl. 360-46.000.
Suzuki, Hideto; Taniyama, Yukio; and Nakamura, Yoshikazu, 5,361,179, Cl. 360-72.200.

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Teece, Howard J., 5,361,100, Cl. 348-578.000.

Sorimachi, Toshihiro; Furuki, Fumio; Narita, Shoichi; Azumi, Satoru; and Hirai, Mitsuru, to Honda Giken Kogyo Kabushiki Kaisha. Automobile with movable roof storable in trunk lid. 5,360,254, Cl. 296-218.000.

Sorin, Wayne V.: *See—*
Baney, Douglas M.; and Sorin, Wayne V., 5,361,161, Cl. 359-337.000.

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Olson, Stephen R.; Tate, William J.; and Sorrells, Giles K., 5,361,208, Cl. 364-424.050.

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Soundek Oy: *See—*
Luukkala, Mauri, 5,359,904, Cl. 73-862.391.

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Tice, Thomas R.; Dillon, Deborah L.; Mason, David W.; McRae-McFarlane, Amanda; and Dahlstrom, Annica B., 5,360,610, Cl. 424-426.000.

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Wellinghoff, Stephen T., 5,360,609, Cl. 514-772.300.
Young, David T.; Marshall, Jill A.; Schweikert, Emile A.; and Park, Melvin A., 5,360,976, Cl. 250-287.000.

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Vance, Gary C., 5,361,085, Cl. 347-101.000.

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Goss, G. Robert; Spaldon, Olga I.; and Nolan, Nancy L., 5,359,961, Cl. 119-173.000.

Speas, Gary W., to POM Incorporated. Power conserving electronic parking meter. 5,360,095, Cl. 194-217.000.

Speciner, Michael, to Camex, Inc. Method for producing a multitone image. 5,361,139, Cl. 358-445.000.

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Roberts, John K.; and Spencer, Keith R., 5,361,190, Cl. 362-61.000.

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Holdensgaard, Preben H.; and Spencer, Lloyd M., Sr., 5,359,834, Cl. 53-566.000.

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Jiang, Jack B.; Johnson, Mary G.; and Nichols, Jeffrey, 5,360,818, Cl. 514-459.000.

Spillman, David M.; Ebel, Steve J.; and Clark, William D. K., to Wilson Greatbatch Ltd. High energy density pressure tolerant cell. 5,360,678, Cl. 429-6.000.

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Clausen, Earl W.; and Hubbard, Lloyd C., 5,360,317, Cl. 415-206.000.

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Stahlecker, Hans; and Barauke, Norbert, 5,359,943, Cl. 108-90.000.

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Sprague, David L.; Harney, Kevin; Kowashi, Eiichi; Keith, Michael; Simon, Allen H.; Papadopoulos, Michael; Hays, Walter P.; Salem, George F.; Shiue, Shih-Wei; Bertapelli, Anthony P.; and Shilman, Vitaly H., to Intel Corporation. Single-instruction multiple-data processor having dual-ported local memory architecture for simultaneous data transmission on local memory ports and global port. 5,361,370, Cl. 395-800.000.

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Carelli, Charles E.; and Springer, Linda L., 5,360,379, Cl. 474-260.000.

Sprunt, Eve S.; Jennings, Alfred R.; and Timmer, Robert S., to Mobil Oil Corporation. Formation fracturing. 5,360,068, Cl. 166-259.000.

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Davis, Richard A.; Plagens, Mark; and Sridhar, Uppili, 5,360,521, Cl. 204-129.300.

Srinivasan, Thallam T., to Ferro Corporation. Ceramic dielectric compositions and capacitors produced therefrom. 5,361,187, Cl. 361-321.100.

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Stahl, Daniel E.: *See—*
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Stahl, Neil: *See—*
Ip, Nancy Y.; DiStefano, Peter S.; and Stahl, Neil, 5,360,740, Cl. 436-501.000.

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Stamm, Gordon L.: *See—*
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Standen, Michael C. H., to Zeneca Limited. Polycyclic dyes. 5,360,919, Cl. 549-299.000.

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Jordaan, Amor; and Stander, Petrus J., 5,360,898, Cl. 534-16.000.

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Matsuzaki, Makio; Kato, Koichi; and Furuya, Shigeru, 5,361,191, Cl. 362-61.000.

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Stanton, Gerald J., Jr., to Mighty Metal, Inc. Rack system. 5,360,120, Cl. 211-60.100.

Stark, Randy R.: *See—*
Rifenburg, Byron P.; Handley, Christopher J.; and Stark, Randy R., 5,360,078, Cl. 180-227.000.

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Auriol, Jean-Marc; and Bornes, Philippe, 5,359,765, Cl. 29-525.200.

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Steen, Ronald A.: *See—*
Muirhead, James O.; and Steen, Ronald A., 5,359,920, Cl. 89-41.070.

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Steiner, Edwin G.: *See—*
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Stengl, Reinhard; Hoenlein, Wolfgang; Lehmann, Volker; and Spitzer, Andreas, to Siemens Aktiengesellschaft. Method for manufacturing a component with porous silicon. 5,360,759, Cl. 437-20.000.

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Stephen Krissman, Integrated Data Systems, Inc.: *See—*
Gorelik, Vladimir, 5,361,272, Cl. 372-50.000.

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Brooks, William J., 5,360,793, Cl. 514-23.000.
Ruddy, Stephen B.; Roberts, Mary E.; McIntire, Gregory L.; Cooper, Eugene R.; and Illig, Carl R., 5,360,604, Cl. 424-5.000.

Stern, Gary M.; and Banschbach, Michael. Supply assembly for water propelling device. 5,360,142, Cl. 222-79.000.

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Rauen, David F.; and Stevens, Mark, 5,360,207, Cl. 271-265.000.

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Stevenson, Richard, to Intermagnetics General Corporation. Hydrocarbon refrigerant for closed cycle refrigerant systems. 5,360,566, Cl. 252-67.000.

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Ruel, Bernard G.; Stewart, Gilbert M.; Thirunagari, Aruna; and Turner, James L., 5,361,298, Cl. 379-242.000.

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Boden, Eugene P.; Phelps, Peter D.; and Stewart, Kevin R., 5,360,911, Cl. 546-347.000.

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Bauer, Peter; Eckhardt, Horst; Schierling, Roland; and Hoffmann, Joachim, 5,359,777, Cl. 30-276.000.

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Kawa, Franciszek; and Stilli, Adrian, 5,360,053, Cl. 164-418.000.

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Laties, Alan M.; and Stone, Richard A., 5,360,801, Cl. 514-215.000.

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Iverson, Donald D.; and Strobel, Thomas A., 5,359,790, Cl. 36-136.000.

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Buckley, Richard D.; Linsenbardt, Thomas L.; Younger, Harold; Harris, Darrell D.; and Struemph, Dennis J., 5,359,874, Cl. 72-256.000.

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Czyperreck, Hans; Meiler, Fritz; and Stuhler, Helmut, 5,360,354, Cl. 439-741.000.

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Krehl, Michael; Schwarze, Rolf; and Subek, Gerhard, 5,359,771, Cl. 29-893.000.

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Fukai, Hideaki; Suenaga, Hiroyoshi; Minakawa, Kuninori; Otaka, Shinichiro; and Naoe, Masahiko, 5,360,677, Cl. 428-694.0ST.

Sueyoshi, Toshiyuki: *See*—
Koizumi, Katsuo; Otsuka, Shigenori; Maeda, Syuuichi; Horiuchi, Hiromi; Oda, Hirofumi; and Sueyoshi, Toshiyuki, 5,360,691, Cl. 430-108.000.

Sugahara, Satoshi: *See*—
Takiguchi, Haruhisa; Inoguchi, Kazuhiko; Kudo, Hiroaki; Sugahara, Satoshi; and Taneya, Mototaka, 5,361,271, Cl. 372-46.000.

Sugibayashi, Tadahiko: *See*—
Koshikawa, Yasuji; and Sugibayashi, Tadahiko, 5,361,000, Cl. 327-530.000.

Sugihara, Hisanori: *See*—
Ishigami, Takayuki; and Sugihara, Hisanori, 5,361,360, Cl. 395-700.000.

Sugimoto, Tadayuki: *See*—
Sato, Kazuo; Sugimoto, Tadayuki; and Saiuchi, Naofumi, 5,360,835, Cl. 522-85.000.

Sugita, Toru: *See*—
Watanabe, Koji; and Sugita, Toru, 5,360,251, Cl. 296-93.000.

Sugita, Yumiko; Hashimoto, Hisashi; Tsuruki, Masaki; and Domyo, Seiichi, to Hitachi, Ltd. Virtual object management system for managing virtual objects which correspond to real objects under a user defined hierarchy. 5,361,349, Cl. 395-600.000.

Sugiura, Susumu, to Canon Kabushiki Kaisha. Image processing apparatus and method. 5,361,144, Cl. 358-500.000.

Sugiura, Yasushi: *See*—
Yamamoto, Noboru; and Sugiura, Yasushi, 5,359,891, Cl. 73-204.150.

Sugiyama, Mitsumasa, to Canon Kabushiki Kaisha. Character recognition apparatus and method with low-resolution storage for character extraction. 5,361,309, Cl. 382-9.000.

Sugizaki, Katuyoshi: *See*—
Igarashi, Azuma; Maeda, Sachiko; Sugizaki, Katuyoshi; Shizawa, Takashi; Tajima, Atsumi; Abe, Kenichi; and Ozawa, Shinji, 5,360,909, Cl. 546-172.000.

Sujaku, Takamichi: *See*—
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.

Sullivan, James B., to TDW Delaware, Inc. Cutter shell. 5,360,300, Cl. 408-204.000.

Sumida, Katsuhiko, to Daicel Chemical Industries, Ltd. Composite metal sheets. 5,360,647, Cl. 428-1.000.

Sumitomo Chemical Co., Ltd.: *See*—
Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, 5,360,696, Cl. 430-270.000.
Kawamura, Shinichi; Sato, Junichi; and Sanemitsu, Yuzuru, 5,360,912, Cl. 548-199.000.
Kouno, Seiji; and Yasuda, Minoru, 5,360,926, Cl. 560-205.000.

Sumitomo Electric Industries, Ltd.: *See*—
Go, Hisao; and Matsumura, Yutaka, 5,361,318, Cl. 385-89.000.
Saito, Hidetoshi; and Kume, Masahiro, 5,359,894, Cl. 73-517.00R.
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,360,785, Cl. 505-474.000.

Sumitomo Metal Industries, Ltd.: *See*—
Nagai, Masayuki, 5,359,773, Cl. 29-895.212.

Sumitomo Rubber Industries, Ltd.: *See*—
Fujiwara, Kenichi, 5,360,047, Cl. 152-454.000.
Saito, Kenji; Kajikawa, Akira; and Asano, Kazuo, 5,360,044, Cl. 152-209.00R.
Takada, Yoshiyuki; and Yamahira, Atsushi, 5,360,046, Cl. 152-454.000.

Summit Technology, Inc.: *See*—
Klopotek, Peter J., 5,360,424, Cl. 606-4.000.

Sun Microsystems, Inc.: *See*—
Kelly, Edmund; Cekleov, Michel; and Dubois, Michel, 5,361,340, Cl. 395-400.000.
Okin, Kenneth, 5,361,337, Cl. 395-375.000.
Westberg, Thomas E., 5,361,391, Cl. 395-425.000.

Sun, Yunlong: *See*—
Fossey, Michael E.; and Sun, Yunlong, 5,361,268, Cl. 372-23.000.

Sunds Defibrator Industries Aktiebolag: *See*—
Kjellqvist, Olof G., 5,360,175, Cl. 241-261.200.

Sundstedt, Gert: *See*—
Carlsson, Jan-Erik; and Sundstedt, Gert, 5,359,772, Cl. 29-895.320.

Sunley, John G.: *See*—
Watson, Derrick J.; Williams, Bruce L.; Sunley, John G.; and Watt, Robert J., 5,360,929, Cl. 562-891.000.

Sunpower Corporation: *See*—
Swanson, Richard M., 5,360,990, Cl. 257-656.000.

Super Sagless Corporation: *See*—
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, 5,360,255, Cl. 297-232.000.

Sutherland, Don R.: *See*—
Lee, Yong H.; Khetan, Raghunath P.; and Sutherland, Don R., 5,361,308, Cl. 382-8.000.

Sutherland, Robert J.; and Rhodes, Robert B., to Shell Oil Company. Dispersant viscosity index improvers. 5,360,564, Cl. 252-51.50A.

Sutherland, Robert L., to Riverwood International Corporation. Wrap-around carrier with flexible end panels. 5,360,104, Cl. 206-147.000.

Sutliff, Larrie G.: *See*—
Arnold, Hamilton W.; Devasirvathan, Daniel M.; Sollenberger, Nelson R.; Sutliff, Larrie G.; and Varma, Vijay K., 5,361,258, Cl. 370-69.100.

Suyama, Takahiro: *See*—
Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Suyama, Takahiro; and Matsui, Sadayoshi, 5,360,762, Cl. 437-129.000.

Suzuki, Akio; Miura, Yasushi; and Izumizaki, Masami, to Canon Kabushiki Kaisha. Image recording apparatus and method for maintaining image quality after recording interruption. 5,361,090, Cl. 347-17.000.

Suzuki, Akira: *See*—
Okunuki, Masahiko; Suzuki, Akira; Shimoda, Isamu; Kaneko, Tetsuya; Tsukamoto, Takeo; Takeda, Toshihiko; Yonehara, Takao; and Ichikawa, Takeshi, 5,361,015, Cl. 313-309.000.

Suzuki, Akiyoshi: *See*—
Katsoka, Yoshiharu; Suzuki, Akiyoshi; and Yamada, Yuichi, 5,361,122, Cl. 355-53.000.

Suzuki, Hideto; Taniyama, Yukio; and Nakamura, Yoshikazu, to Sony Corporation. Data recording and/or reproducing apparatus and method. 5,361,179, Cl. 360-72.200.

Suzuki, Hiroshi: *See*—
Ogawa, Koji; and Suzuki, Hiroshi, 5,360,269, Cl. 374-140.000.

Suzuki, Hisashi: *See*—
Hiyoshi, Michiaki; Fujiwara, Takashi; Suzuki, Hisashi; and Matsuda, Hideo, 5,360,985, Cl. 257-181.000.

Suzuki, Hitoshi: *See*—
Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.

Suzuki, Kazunori, to Canon Kabushiki Kaisha. Information recording and reproducing apparatus including a feed roller and feed plate for feeding a recording medium to a setting position on a mount table. 5,360,969, Cl. 235-479.000.

Suzuki, Kenji, to Fuji Photo Film Co., Ltd. Liquid crystal display panel monitor. 5,361,146, Cl. 358-527.000.

Suzuki, Masatoshi: *See*—
Onuki, Tetsuji; Suzuki, Masatoshi; and Matsushiro, Hiroyuki, 5,360,977, Cl. 250-306.000.

Suzuki, Motokazu: *See*—
Kimura, Toshio; Takeshita, Takuo; and Suzuki, Motokazu, 5,360,784, Cl. 505-433.000.

Suzuki, Norio: *See*—
Yamamoto, Yasutoshi; Noneyama, Masayuki; and Suzuki, Norio, 5,361,093, Cl. 348-223.000.

Suzuki, Shigehiro: *See*—
Tomita, Yoshiho; Inagaki, Noriaki; Miyata, Atsushi; and Suzuki, Shigehiro, 5,360,546, Cl. 210-603.000.

Suzuki, Tadasu; Fukuda, Shigekazu; and Satoh, Masahiro, to Tsbakimoto Chain Co. Chain drive mechanism having improved noise reduction. 5,360,378, Cl. 474-161.000.

Suzuki, Takahiro: *See*—
Ichikawa, Ryuichi; Kaku, Junichi; and Suzuki, Takahiro, 5,360,079, Cl. 180-297.000.

Suzuki, Yukio: *See*—
Ishii, Kazunori; Kano, Hisao; Nishimura, Nobuichi; Aoki, Masayuki; Suzuki, Yukio; Sujaku, Takamichi; Okamura, Yoshio; Wada, Masahiko; Ohno, Takumi; and Narita, Ryuho, 5,360,965, Cl. 219-705.000.

Suzuki, Yuko: *See*—
Takano, Fumitomo; Saito, Hitoshi; Suzuki, Yuko; Miyanaga, Kenji; and Tujii, Gen, 5,360,959, Cl. 219-110.000.

Svensson, Sven-Arne: *See*—
Rexfelt, Jan; and Svensson, Sven-Arne, 5,360,656, Cl. 428-193.000.

Swain, James C.; and Cooper, Donald L., to General Motors Corporation. Compressor assembly having control valve for triggered pressure actuated clutch. 5,360,319, Cl. 417-223.000.

Swanson, David K.: *See*—
Dahl, Roger W.; Swanson, David K.; Hahn, Stephen J.; Lang, Douglas J.; and Heil, John E., 5,360,442, Cl. 607-129.000.

Swanson, Richard M., to Sunpower Corporation. P/N junction device having porous emitter. 5,360,990, Cl. 257-656.000.

Swart, Edwin T.: *See*—
Wolters, Robertus A. M.; Swart, Edwin T.; and Dirks, Albertus G., 5,360,994, Cl. 257-751.000.

Sweatt, William C., to United States of America, Energy. Condenser for illuminating a ring field. 5,361,292, Cl. 378-34.000.

Swetlin, Brian J.: *See*—
Chan, Anita N.; Swetlin, Brian J.; Thompson, Samuel A., III; Willis, Chester R.; and Woodside, Andrew B., 5,360,840, Cl. 523-428.000.

Swift, Graham: *See*—
Hughes, Kathleen A.; and Swift, Graham, 5,360,570, Cl. 252-135.000.

Swist, Jason. Automatic clutch control. 5,360,381, Cl. 477-175.000.

Symbiosis Corporation: *See*—
Slater, Charles R.; Bales, Thomas O.; Kortenbach, Jurgen A.; Nunez, George; and Turkel, David, 5,359,993, Cl. 128-4.000.

Synaptic Pharmaceutical Corporation: *See*—
Weinshank, Richard L.; Branchek, Theresa; and Hartig, Paul R., 5,360,735, Cl. 435-240.200.

Syncro Corp.: *See*—
Wisner, Gary E.; McClellan, James W.; and Harrington, Charles W., 5,361,024, Cl. 318-588.000.

Synoptics Communications, Inc.: *See*—
Nguyen, Truong Q.; and Choi, Isaac P., 5,361,250, Cl. 370-16.100.

T & S Brass and Bronze Works, Inc.: *See*—
Goughneour, Richard J., 5,360,029, Cl. 137-218.000.

Tabeling, Patrick J. R.; and Theron, Bernard E., to Schlumberger Technology Corporation. Method of analyzing a two-phase flow in a hydrocarbon well. 5,361,206, Cl. 364-422.000.

Tabisz, Wojciech A.: *See*—
Antone, James A.; Lee, Fred C.; and Tabisz, Wojciech A., 5,361,014, Cl. 310-316.000.

Tabuse, Hidetoshi: *See*—
Nishimoto, Mitsuhiko; Matsuoka, Hirofumi; and Tabuse, Hidetoshi, 5,360,077, Cl. 180-79.100.

Tacheron, Paul H.: *See*—
Monserud, David O.; Bothell, David H.; Tacheron, Paul H.; McDonald, Michael C.; Steele, David E.; Charnley, James E.; and Vatvedt, Gunnar V., 5,361,286, Cl. 376-316.000.

Tacker, William: *See*—
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, 5,360,255, Cl. 297-232.000.

Tada, Shin-ichi: *See*—
Morino, Akira; Morita, Iwao; and Tada, Shin-ichi, 5,360,822, Cl. 514-605.000.

Tadamitsu Kishimoto: *See*—
Kishimoto, Tadamitsu; Hirano, Toshio; Akira, Shizuo; Isshiki, Hiroshi; Tanabe, Osamu; Kinoshita, Shigemi; and Shimamoto, Takuya, 5,360,894, Cl. 530-350.000.

Tagamolila, Constante P.; Haun, Edward C.; Lomas, David A.; and Zimmermann, Joseph E., to UOP. Direct dry gas recovery from FCC reactor. 5,360,533, Cl. 208-101.000.

Tagashira, Fumiaki, to Rohm Co., Ltd. Divisional-type thermal printhead. 5,361,086, Cl. 346-76.0PH.

Taguchi, Hiroshi; Washizaki, Yoji; Igarashi, Akira; and Nakano, Hiroyoshi, to Somar Corporation. Applying apparatus. 5,360,508, Cl. 156-521.000.

Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, to Mitsubishi Denki Kabushiki Kaisha. Magnetic thin film memory device. 5,361,226, Cl. 365-171.000.

Tajalli, Homayoon; Badger, Mark L.; Dalva, David I.; and Walker, Stephen T., to Trusted Information Systems, Inc. System and method for controlling the use of a computer. 5,361,359, Cl. 395-700.000.

Tajima, Atsumi: *See*—
Igarashi, Azuma; Maeda, Sachiko; Sugizaki, Katuyoshi; Shizawa, Takashi; Tajima, Atsumi; Abe, Kenichi; and Ozawa, Shinji, 5,360,909, Cl. 546-172.000.

Tajima, Hiroki; Masuda, Kazuaki; Watanabe, Takashi; and Goto, Akira, to Canon Kabushiki Kaisha. Liquid jet unit with orifices and recording apparatus using the same. 5,361,087, Cl. 347-44.000.

Taka, Hideo; and Maeda, Kazuyuki, to Canon Kabushiki Kaisha. Distance measuring apparatus. 5,361,118, Cl. 354-403.000.

Takabayashi, Hiroshi: *See*—
Mori, Hideo; Takabayashi, Hiroshi; and Takahashi, Masanori, 5,360,943, Cl. 174-84.00R.

Takada, Kunio; Otani, Kenji; and Tanaka, Sadashi, to Hitachi, Ltd. Drainage water pumping station and method for operating the same. 5,360,289, Cl. 405-52.000.

Takada, Masahito; Ueda, Eiichi; Araki, Hiromitsu; and Kobayashi, Toru, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,360,708, Cl. 430-496.000.

Takada, Yoshiyuki; and Yamahira, Atsushi, to Sumitomo Rubber Industries, Ltd. Heavy duty tire with reduced shoulder wear and improved wandering performance. 5,360,046, Cl. 152-454.000.

Takagaki, Hiroshi: *See*—
Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, 5,360,696, Cl. 430-270.000.

Takagi, Hidenoir: *See*—
Tanaka, Shoji; Kitazawa, Koichi; Uchida, Shin-ichi; and Takagi, Hidenoir, 5,360,786, Cl. 505-125.000.

Takagi, Junichi: *See*—
Yamashina, Yasuhiro; Arai, Takuya; and Takagi, Junichi, 5,361,111, Cl. 354-266.000.

Takagishi, Yukio: *See*—
Toda, Hideki; Takagishi, Yukio; and Kaino, Masaru, 5,360,827, Cl. 521-57.000.

Takahara, Yasuaki; Esaki, Tomohiro; Sudo, Shigeyuki; and Okamoto, Teiji, to Hitachi, Ltd. PI/4 shift QPSK modulator and communication apparatus used therewith. 5,361,047, Cl. 332-103.000.

Takahashi, Fuminobu: *See*—
Omote, Tatsuyuki; Yoshida, Tomiharu; Maki, Hideo; Senoh, Makoto; Takahashi, Fuminobu; and Tsuchita, Kenji, 5,361,280, Cl. 376-248.000.

Takahashi, Ikuo: *See*—
Imashiro, Yasuo; and Takahashi, Ikuo, 5,360,933, Cl. 564-252.000.

Takahashi, Kazuaki: *See*—
Watanabe, Kazunori; Imagawa, Yasumi; Hasegawa, Makoto; and Takahashi, Kazuaki, 5,361,408, Cl. 455-324.000.

Takahashi, Koichi; and Tanaka, Katsuhiko, to Fuji Photo Film Co., Ltd. Photographic film cassette having a film anchor. 5,360,183, Cl. 242-587.300.

Takahashi, Kosei; Hosoda, Masahiro; Tsunoda, Atsuo; Suyama, Takahiro; and Matsui, Sadayoshi, to Sharp Kabushiki Kaisha. Semiconductor laser device, and a method for producing a compound semiconductor device including the semiconductor laser device. 5,360,762, Cl. 437-129.000.

Takahashi, Kousuke, to NEC Research Institute, Inc. Fuzzy syllogistic system. 5,361,325, Cl. 395-3.000.

Takahashi, Kuniyuki: *See*—
Ooki, Toyokazu; and Takahashi, Kuniyuki, 5,360,155, Cl. 228-1.100.

Takahashi, Makoto; Temma, Masami; and Goto, Atsuhiro, to Nippon Steel Corporation. Continuous casting method and apparatus for implementing same method. 5,360,051, Cl. 164-155.300.

Takahashi, Masanori: *See*—
Mori, Hideo; Takabayashi, Hiroshi; and Takahashi, Masanori, 5,360,943, Cl. 174-84.00R.

Takahashi, Nagashige; Ouchi, Teruo; and Shibuya, Hiromichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Cover device for endoscope. 5,359,991, Cl. 128-4.000.

Takahashi, Susumu, to Victor Company of Japan, Ltd. Waveform equalizer apparatus formed of neural network, and method of designing same. 5,361,327, Cl. 395-22.000.

Takahashi, Toru: *See*—
Chaya, Masahiko; and Takahashi, Toru, 5,361,242, Cl. 369-13.000.

Takahashi, Toshihiko: *See*—
Hayase, Yoshio; Takenaka, Hideyuki; Tanimoto, Norihiko; Masuko, Michio; and Takahashi, Toshihiko, 5,360,810, Cl. 514-346.000.

Takai, Yasuyoshi; Takei, Tetsuya; Otoshi, Hirokazu; and Okamura, Ryuji, to Canon Kabushiki Kaisha. Microwave plasma CVD apparatus provided with a microwave transmissive window made of specific ceramics for the formation of a functional deposited film. 5,360,484, Cl. 118-723.0MW.

Takami, Satoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Strobe control apparatus of camera. 5,361,120, Cl. 354-419.000.

Takamiya, Toshio, to Takata Corporation. Air bag in an air bag unit. 5,360,233, Cl. 280-743.00R.

Takamuku, Kenji: *See*—
Shiraishi, Noriaki; Mizushima, Yoshio; Takamuku, Kenji; and Kadokura, Masaki, 5,359,968, Cl. 123-3.000.

Takano, Fumitomo; Saito, Hitoshi; Suzuki, Yuko; Miyanaga, Kenji; and Tujii, Gen, to Honda Giken Kogyo Kabushiki Kaisha. Direct current resistance welding machine and method of controlling the same. 5,360,959, Cl. 219-110.000.

Takano, Satoshi: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,360,785, Cl. 505-474.000.

Takano, Yoshihiko; and Senda, Atsuo, to Murata Manufacturing Co., Ltd. Electroless solder plating bath. 5,360,471, Cl. 106-1.220.

Takasu, Hidemi, to Rohm Co., Ltd. Nonvolatile memory device having ferroelectric film. 5,361,224, Cl. 365-145.000.

Takata Corporation: *See*—
Miyauchi, Kiyotaka; and Hamaue, Tetsuya, 5,359,756, Cl. 24-603.000.
Takamiya, Toshio, 5,360,233, Cl. 280-743.00R.

Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, to Ezel, Inc. Data processing system using a neural network. 5,361,328, Cl. 395-22.000.

Takatori, Sunao: *See*—
Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,361,219, Cl. 364-606.000.

Takatsuka, Munehiro: *See*—
Yabushita, Yasunori; Yokoi, Hiroshi; Koyama, Masanao; and Takatsuka, Munehiro, 5,360,415, Cl. 604-265.000.

Take, Yoshinari: *See*—
Arimoto, Osamu; Katayama, Shinji; and Take, Yoshinari, 5,360,526, Cl. 204-242.000.

Takeda, Arata: *See*—
Shinjo, Hiroshi; and Takeda, Arata, 5,360,137, Cl. 221-238.000.

Takeda Chemical Industries, Ltd.: *See*—
Okura, Yuji; Tawada, Toshio; and Nakao, Yukihiro, 5,360,624, Cl. 426-573.000.
Senoo, Masaharu; Sasada, Reiko; and Igarashi, Koichi, 5,360,896, Cl. 530-399.000.

Takeda, Toshihiko: *See*—
Okunuki, Masahiko; Suzuki, Akira; Shimoda, Isamu; Kaneko, Tetsuya; Tsukamoto, Takeo; Takeda, Toshihiko; Yonehara, Takao; and Ichikawa, Takeshi, 5,361,015, Cl. 313-309.000.

Takegami, Masaki, to Yamaha Hatsudoki Kabushiki Kaisha. Device for protecting oxygen sensor of motorcycle. 5,360,081, Cl. 180-309.000.

Takei, Tetsuya: *See*—
Takai, Yasuyoshi; Takei, Tetsuya; Otoshi, Hirokazu; and Okamura, Ryuji, 5,360,484, Cl. 118-723.0MW.

Takemoto Yushi Kabushiki Kaisha: *See*—
Itoh, Shinichi; Kuno, Kenji; and Hoshino, Akio, 5,360,783, Cl. 504-305.000.

Takenaka, Hideyuki: *See*—
Hayase, Yoshio; Takenaka, Hideyuki; Tanimoto, Norihiko; Masuko, Michio; and Takahashi, Toshihiko, 5,360,810, Cl. 514-346.000.

Takeshita, Takuo: *See*—
Kimura, Toshio; Takeshita, Takuo; and Suzuki, Motokazu, 5,360,784, Cl. 505-433.000.

Takeuchi, Masuyuki: *See*—
Kawano, Katsumi; Mori, Kinji; Orimo, Masayuki; Fujise, Hiroshi; Takeuchi, Masuyuki; Iwamoto, Shoji; and Suzuki, Hitoshi, 5,361,366, Cl. 395-800.000.

Takeyasu, Hatsuichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Polygonal mirror. 5,361,170, Cl. 359-850.000.

Takezawa, Kuninori: *See*—
Hirai, Hiroyuki; and Takezawa, Kuninori, 5,360,110, Cl. 206-330.000.

Takigawa, Tetsuo: *See*—
Inoue, Masayasu; Ebashi, Iwao; and Takigawa, Tetsuo, 5,360,914, Cl. 548-546.000.

Takiguchi, Haruhisa; Inoguchi, Kazuhiko; Kudo, Hiroaki; Sugahara, Satoshi; and Taneya, Mototaka, to Sharp Kabushiki Kaisha. Semiconductor laser. 5,361,271, Cl. 372-46.000.

Takiyama, Eiichiro: *See*—
Moteki, Yoshihiro; Fujiwara, Nobutaka; Euruichi, Yukiharu; and Takiyama, Eiichiro, 5,360,663, Cl. 428-290.000.

Takizawa, Chihoko: *See*—
Seki, Takahito; Inoue, Hajime; and Takizawa, Chihoko, 5,361,174, Cl. 360-46.000.

Takizawa, Yumi; and Hamada, Masahiro, to Matsushita Electric Industrial Co., Ltd. Lombard effect compensation using a frequency shift. 5,361,324, Cl. 395-2.420.

Tamba, Nobuo: *See*—
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.

Tamm, Horst: *See*—
Knop, Bernhard; Tamm, Horst; and Walter, Gerhard, 5,360,841, Cl. 524-4.000.

Tamori, Mikiko: *See*—
Nakano, Tetsuya; Tamori, Mikiko; Yabe, Naruo; Inoue, Masahide; Tsuyama, Kouichi; and Shimizu, Yoshitake, 5,360,690, Cl. 430-110.000.

Tamura, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing a semiconductor device having a monocrystal silicon layer. 5,360,756, Cl. 437-43.000.

Tan, Weihong: *See*—
Kopelman, Raoul; Tan, Weihong; and Shi, Zhong-You, 5,361,314, Cl. 385-12.000.

Tanabe, Osamu: *See*—
Kishimoto, Tadamitsu; Hirano, Toshio; Akira, Shizuo; Isshiki, Hiroshi; Tanabe, Osamu; Kinoshita, Shigemi; and Shimamoto, Takuya, 5,360,894, Cl. 530-350.000.

Tanabe, Shinji: *See*—
Taguchi, Motohisa; Fukami, Tatsuya; Tsutsumi, Kazuhiko; Shibata, Hiroshi; Tanabe, Shinji; Kobayashi, Hiroshi; and Ohdoi, Yuzo, 5,361,226, Cl. 365-171.000.

Tanaka, Akio; Hirano, Toru; and Ohsawa, Masami, to Lederle (Japan) Ltd.; Hamamatsu Photonics K.K.; and Moritex Corporation. Optical fiber laser device for transmitting a pulse laser beam. 5,361,316, Cl. 385-35.000.

Tanaka, Akio: *See*—
Yamabuchi, Koji; Ohtsuka, Hideshi; Koyama, Takashi; Yokomachi, Yoshiyuki; Abe, Kazutaka; and Tanaka, Akio, 5,361,180, Cl. 360-85.000.

Tanaka, Katsuhiko: *See*—
Takahashi, Koichi; and Tanaka, Katsuhiko, 5,360,183, Cl. 242-587.300.

Tanaka, Masayuki: *See*—
Honda, Shiro; Sawamura, Yasushi; Tanaka, Masayuki; Kayaba, Keiji; and Teshiba, Toshihiro, 5,360,837, Cl. 523-220.000.

Tanaka, Minoru, to Teac Corporation. Digital data recording apparatus. 5,361,178, Cl. 360-64.000.

Tanaka, Mitsutoshi, to Fuji Photo Film Co., Ltd. Nonaqueous battery. 5,360,685, Cl. 429-185.000.

Tanaka, Naotaka: *See*—
Nishimura, Asao; Tanaka, Naotaka; and Hirose, Isao, 5,359,899, Cl. 73-842.000.

Tanaka, Sadashi: *See*—
Takada, Kunio; Otani, Kenji; and Tanaka, Sadashi, 5,360,289, Cl. 405-52.000.

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Tanaka, Shoji; Kitazawa, Koichi; Uchida, Shin-ichi; and Takagi, Hidenoir, to University of Tokyo. Superconductive material. 5,360,786, Cl. 505-125.000.

Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, to Hitachi, Ltd. Fin-tube type heat exchanger. 5,360,060, Cl. 165-151.000.

Tanaka, Tasuku: *See*—
Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, 5,360,988, Cl. 257-529.000.

Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory device and memory system using the same. 5,361,227, Cl. 365-189.010.

Tanaka, Yoshikazu: *See*—
Iwasawa, Kyoko; and Tanaka, Yoshikazu, 5,361,352, Cl. 395-700.000.

Tanaka, Yoshiyuki: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

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Taneya, Mototaka: *See*—
Takiguchi, Haruhisa; Inoguchi, Kazuhiko; Kudo, Hiroaki; Sugahara, Satoshi; and Taneya, Mototaka, 5,361,271, Cl. 372-46.000.

Tang, Hong, to AT&T Global Information Solutions (FKA NCR Corporation). Multiple source optical scanner. 5,361,158, Cl. 359-204.000.

Tang, Jianmin. Chinese character coding method using five stroke codes and double phonetic alphabets. 5,360,343, Cl. 434-118.000.

Tang, Ping W.; Lau, Philip T. S.; and Cowan, Stanley W., to Eastman Kodak Company. Yellow dye-forming couplers and color photographic elements containing these couplers. 5,360,713, Cl. 430-556.000.

Tang, Ping-Wah: *See*—
Chen, Tien-Teh; Cowan, Stanley W.; Schofield, Edward; and Tang, Ping-Wah, 5,360,710, Cl. 430-548.000.

Tanida, Shinjiro: *See*—
Ono, Yoshinobu; Watanabe, Yoshio; Tanida, Shinjiro; and Kojima, Tadayuki, 5,360,470, Cl. 104-284.000.

Tanie, Kazuo; and Maekawa, Hitoshi, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Self reconfigurable cellular robotic system. 5,361,186, Cl. 361-191.000.

Tanimoto, Motoi; Yoshida, Tatsuo; Tobinaga, Kenshiro; and Toyoda, Yuji, to Nippon Paint Co., Ltd. Cathodic electrodeposition paint. 5,360,839, Cl. 523-414.000.

Tanimoto, Norihiko: *See*—
Hayase, Yoshio; Takenaka, Hideyuki; Tanimoto, Norihiko; Masuko, Michio; and Takahashi, Toshihiko, 5,360,810, Cl. 514-346.000.

Taniyama, Yukio: *See*—
Suzuki, Hideto; Taniyama, Yukio; and Nakamura, Yoshikazu, 5,361,179, Cl. 360-72.200.

Tanner, Nelson R.: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.

Tanno, Masuo: *See*—
Nakayama, Ichiro; Tanno, Masuo; and Mori, Kazuhiro, 5,360,106, Cl. 206-309.000.

Tardiff, James P.: *See*—
Wells, David; Tardiff, James P.; Satterfield, David L.; Rowe, Eric L.; and Isman, Marshall, 5,361,363, Cl. 395-800.000.

Taruya, Masaaki, to Mitsubishi Denki Kabushiki Kaisha. Ignitor for an internal combustion engine. 5,359,982, Cl. 123-634.000.

Tatas, Ralf: *See*—
Diamantoglou, Michael; Richter, Edmund; Rintelen, Thomas; Duweg, Gustav; Reiche, Angelika; and Tatas, Ralf, 5,360,636, Cl. 427-244.000.

Tate, William J.: *See*—
Olson, Stephen R.; Tate, William J.; and Sorrells, Giles K., 5,361,208, Cl. 364-424.050.

Tatebe, Akira: *See*—
Ogawa, Masahide; Goto, Kunio; Shoji, Shoji; Komatsu, Yoshinobu; and Tatebe, Akira, 5,360,859, Cl. 524-437.000.

Tawada, Toshio: *See*—
Okura, Yuji; Tawada, Toshio; and Nakao, Yukihiro, 5,360,624, Cl. 426-573.000.

Taylor, H. LeBaron. Collectible factspak card board game. 5,360,217, Cl. 273-459.000.

Taylor, Junius E.: *See*—
Jensen, Joseph C.; Taylor, Junius E.; and Acker, Loren C., 5,360,330, Cl. 425-144.000.

TDW Delaware, Inc.: *See*—
Sullivan, James B., 5,360,300, Cl. 408-204.000.

Teac Corporation: *See*—
Tanaka, Minoru, 5,361,178, Cl. 360-64.000.

Teague, Larry E.: *See*—
Elam, Francis E.; and Teague, Larry E., 5,359,880, Cl. 73-38.000.

Tecnorama S.R.L.: *See*—
Scatizzi, Mario, 5,360,141, Cl. 222-55.000.

Teece, Howard J., to Sony United Kingdom Limited. Apparatus and method for transforming a video image into a three dimensional video image with shadows. 5,361,100, Cl. 348-578.000.

Tegeler, John J.; Rauckman, Barbara S.; Hamer, Russell R. L.; Freed, Brian S.; and Merriman, Gregory H., to Hoechst-Roussel Pharmaceuticals Incorporated. 1-alkyl-, 1-alkenyl-, and 1-alkynylaryl-2-amino-1,3-propanediols and related compounds as anti-inflammatory agents. 5,360,811, Cl. 514-357.000.

Tegtmeier, Dietrich: *See*—
Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, 5,360,902, Cl. 536-84.000.

Teh, Tai Y. Veneer manufacturing process. 5,360,042, Cl. 144-365.000.

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Telefonaktiebolaget L M Ericsson: *See*—
Petersen, Lars-Goran, 5,361,257, Cl. 370-60.100.
Sallberg, Hans K. M.; and Larsson, Leif M., 5,361,252, Cl. 370-17.000.

Telefunken Fernseh und Rundfunk GmbH: *See*—
Vaupel, Thomas; and Krahe Detlef, 5,361,278, Cl. 375-122.000.

Telephone Connection, The: *See*—
Solomon, Merrill; Kimball, John; and Goldstein, Dana L., 5,361,295, Cl. 379-67.000.

Telular Corporation: *See*—
Ortiz, Luis R.; Torres, Alexis; and Encarnacion, Angel, 5,361,297, Cl. 379-130.000.

Temburg, Josef: *See*—
Leifeld, Ferdinand; and Temburg, Josef, 5,359,753, Cl. 19-97.500.

Temma, Masami: *See*—
Takahashi, Makoto; Temma, Masami; and Goto, Atsuhiro, 5,360,051, Cl. 164-155.300.

Tenerowicz, Ronald J., to Combustion Engineering, Inc. Furnace windbox/water wall seal. 5,359,965, Cl. 122-6.500.

Terada, Hirokiyo: *See*—
Tanaka, Takeo; Hatada, Toshio; Itoh, Masaaki; Senshu, Takao; Katsumata, Naoto; Mochizuki, Yoshihiko; Terada, Hirokiyo; Izushi, Minetoshi; Sato, Minoru; Tsuji, Hiromi; and Nagai, Makoto, 5,360,060, Cl. 165-151.000.

Teradyne, Inc.: *See*—
Provencher, Daniel B.; and Spiridigliozzi, Luciano, 5,360,349, Cl. 439-108.000.

Terashima, Shigeo: *See*—
Fuji, Hiroshi; Deguchi, Toshihisa; Terashima, Shigeo; and Yamaguchi, Takeshi, 5,361,247, Cl. 369-48.000.

Terashima, Tomohide, to Mitsubishi Denki Kabushiki Kaisha. Method of fabricating a semiconductor device. 5,360,746, Cl. 437-6.000.

Terry, Patrick H., to Exxon Research & Engineering Company. Fluid catalytic cracking system. 5,360,598, Cl. 422-144.000.

Terumo Kabushiki Kaisha: *See*—
Igarashi, Azuma; Maeda, Sachiko; Sugizaki, Katuyoshi; Shizawa, Takashi; Tajima, Atsumi; Abe, Kenichi; and Ozawa, Shinji, 5,360,909, Cl. 546-172.000.

Teshiba, Toshihiro: *See*—
Honda, Shiro; Sawamura, Yasushi; Tanaka, Masayuki; Kayaba, Keiji; and Teshiba, Toshihiro, 5,360,837, Cl. 523-220.000.

Tessera, Inc.: *See*—
DiStefano, Thomas H.; Grube, Gary W.; Khandros, Igor Y.; and Mathiew, Gaetan, 5,360,947, Cl. 174-261.000.

Tetra Laval Holdings & Finance SA: *See*—
Blomqvist, Peter; Andreasson, Ingmar; Rabe, Magnus; Balla, Gyula; and Cedell, Tord, 5,360,498, Cl. 156-73.100.

Texaco Inc.: *See*—
Liu, Edward K.; Kim, Doyun; and Chan, Ting Y., 5,360,535, Cl. 208-157.000.

Texas Instruments Incorporated: *See*—
Aton, Thomas J.; Chapados, Phillip, Jr.; Hosch, Jimmy W.; and Paranjpe, Ajit P., 5,361,137, Cl. 356-354.000.
Graas, Carole D., 5,360,995, Cl. 257-751.000.
Houston, Theodore W., 5,361,033, Cl. 324-537.000.
Shoquist, Kenneth M.; Young, Gary C.; Mathis, Amy L.; and Withers, Bob W., 5,361,199, Cl. 364-401.000.

Texel: *See*—
Guerineau, Pierre; and Rosli, Peter, 5,360,517, Cl. 162-161.000.

Texter, John, to Eastman Kodak Company. Aqueous developable dye diffusion transfer elements containing solid particle thermal solvent dispersions. 5,360,695, Cl. 430-203.000.

Textron Inc.: *See*—
Jircitano, Albert; and Dosch, Daniel E., 5,359,889, Cl. 73-178.00R.

Thakur, Randhir P. S.; Martin, Annette L.; and Kauffman, Ralph E., to Micron Semiconductor, Inc. Method for fabricating hybrid oxides for thinner gate devices. 5,360,769, Cl. 437-239.000.

Thaller, Kurt M.: *See*—
Godiwala, Nitin D.; Maskas, Barry A.; Thaller, Kurt M.; and Metzger, Jeffrey A., 5,361,267, Cl. 371-40.100.

Thatcher, Scott R.: *See*—
Hyatt, John A.; Gardner, Robert M.; and Thatcher, Scott R., 5,360,723, Cl. 435-101.000.

Thein, Albert: *See*—
Fey, Rainer; and Thein, Albert, 5,359,884, Cl. 73-118.100.

Thermo Fibertek Inc.: *See*—
Scarano, Robert V., 5,360,519, Cl. 162-363.000.

Theron, Bernard E.: *See*—
Tabeling, Patrick J. R.; and Theron, Bernard E., 5,361,206, Cl. 364-422.000.

Thien, Tran V.; and Patel, Ranjan C., to Minnesota Mining and Manufacturing Company. Thermal dye transfer. 5,360,694, Cl. 430-200.000.

Thinking Machines Corporation: *See*—
Wells, David; Tardiff, James P.; Satterfield, David L.; Rowe, Eric L.; and Isman, Marshall, 5,361,363, Cl. 395-800.000.

Thiokol Corporation: *See*—
Prescott, Billy H., 5,359,850, Cl. 60-271.000.

Thirunagari, Aruna: *See*—
Ruel, Bernard G.; Stewart, Gilbert M.; Thirunagari, Aruna; and Turner, James L., 5,361,298, Cl. 379-242.000.

Thomas, Charles E., to United Container Machinery Group, Inc. Idler roll having improved thermal characteristics. 5,360,506, Cl. 156-470.000.

Thomas, Nils I.; and Kiser, Larry D., to ITT Corporation. Thin film intagliated phosphor screen structure. 5,360,630, Cl. 427-67.000.

Thompson, David L., to Medtronic, Inc. Implantable medical device with flexible hardware platform. 5,360,437, Cl. 607-30.000.

Thompson, Jesse B.: *See*—
Carey, Paul G.; and Thompson, Jesse B., 5,360,491, Cl. 136-256.000.

Thompson, Samuel A., III: *See*—
Chan, Anita N.; Swetlin, Brian J.; Thompson, Samuel A., III; Willis, Chester R.; and Woodside, Andrew B., 5,360,840, Cl. 523-428.000.

Thomson Consumer Electronics, Inc.: *See*—
Wignot, Leroy S.; and Griepentrog, Dal F., 5,361,406, Cl. 455-200.100.

Thomson-CSF: *See*—
Poncot, Jean-Claude; and Rosolen, Carlo, 5,361,159, Cl. 359-305.000.
Pribat, Didier; and Gerard, Bruno, 5,360,754, Cl. 437-89.000.

Thomson, David S.: *See*—
Arora, Sudershan K.; Thomson, David S.; and Akhtar, M. Nayeem, 5,360,792, Cl. 514-23.000.

Thomson-LGT Laboratoire General Des Telecommunications: *See*—
Michel, Jean, 5,361,039, Cl. 330-149.000.

Thorel, Christophe J. F.: *See*—
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,359,849, Cl. 60-261.000.

Thorn, John E.; and Clayton, Daniel R., to Ford Motor Company. Fuel tank fill control device. 5,360,040, Cl. 141-98.000.

Thornberg, Gary R., to NCR Corporation. Via programming for multichip modules. 5,360,948, Cl. 174-263.000.

Thornthwaite, David W.: *See*—
Smith, Richard G.; and Thornthwaite, David W., 5,360,573, Cl. 252-186.390.

Thornton, Robert; Eastlick, David T.; and Briggs, Kenneth, to Glaxo Group Limited. Process for producing macrolide compounds. 5,360,917, Cl. 549-264.000.

Thorson, James S.; and DeMars, Jimmy A., to Pillsbury Company, The. Method of preparing a dry mix useful in preparing baked goods. 5,360,623, Cl. 426-555.000.

Thramann, Jeffrey J. Porous-coated bone screw for securing prosthesis. 5,360,448, Cl. 623-16.000.

Tice, Thomas R.; Dillon, Deborah L.; Mason, David W.; McRae-McFarlane, Amanda; and Dahlstrom, Annica B., to Southern Re-

search Institute. Method for stimulating nerve fiber growth. 5,360,610, Cl. 424-426.000.

Tickers, Inc.: *See*—
Wood, Harold W., 5,359,794, Cl. 40-155.000.

Tidwell, Charles J., Jr.: *See*—
Cook, Robert E.; Tidwell, Charles J., Jr.; Shutiok, Donald; Tacker, William; Lawson, Gregory M.; and Johnson, Terry, 5,360,255, Cl. 297-232.000.

Tiers, George V.: *See*—
Boyd, Gary T.; Tiers, George V.; Francis, Cecil V.; Janulis, Eugene P.; Koshar, Robert J.; and Leichter, Louis M., 5,360,582, Cl. 252-582.000.

Timmer, Robert S.: *See*—
Sprunt, Eve S.; Jennings, Alfred R.; and Timmer, Robert S., 5,360,068, Cl. 166-259.000.

Timmons, Philip R.: *See*—
Huang, Jamin; Ayad, Hafez M.; and Timmons, Philip R., 5,360,910, Cl. 546-279.000.

Tingler, Kenneth L.: *See*—
Anderson, Charles C.; Leazyk, Gerald M.; and Tingler, Kenneth L., 5,360,706, Cl. 430-529.000.

Titan Corporation, The: *See*—
McCollough, William J.; and Kelly, David B., 5,361,204, Cl. 364-419.070.

Toa Medical Electronics Company, Limited: *See*—
Kanai, Kazuyuki, 5,359,906, Cl. 73-865.500.

Tobinaga, Kenshiro: *See*—
Tanimoto, Motoi; Yoshida, Tatsuo; Tobinaga, Kenshiro; and Toyoda, Yuji, 5,360,839, Cl. 523-414.000.

Toda, Hideki; Takagishi, Yukio; and Kaino, Masaru, to Nippon Zeon Co., Ltd. Process for preparation of latex of hollow polymer. 5,360,827, Cl. 521-57.000.

Today'Kids, Inc.: *See*—
Bro, Jay M.; and Baerenwald, Philip M., 5,360,222, Cl. 280-87.021.

Toensing, Timothy L. Gymnastic spotting belt apparatus. 5,360,384, Cl. 482-43.000.

Togano, Norio: *See*—
Ito, Yasuhiko; Shiota, Makoto; Yokote, Hiroshi; Watanabe, Takumi; and Togano, Norio, 5,359,909, Cl. 74-502.600.

Toki, Tadaaki; Koyanagi, Toru; Morita, Masayuki; Yoneda, Tetsuo; Kagimoto, Chiharu; and Okada, Hiroshi, to Ishihara Sangyo Kaisha Ltd. Amide compounds and their salts and pesticidal compositions containing them. 5,360,806, Cl. 514-318.000.

Tokmakov, Wladimir: *See*—
Schuler, Albert; and Tokmakov, Wladimir, 5,360,495, Cl. 148-565.000.

Tokushige, Kaoru: *See*—
Tanaka, Tomoharu; Momodomi, Masaki; Kato, Hideo; Nakai, Hiroto; Tanaka, Yoshiyuki; Shirota, Riichiro; Aritome, Seiichi; Itoh, Yasuo; Iwata, Yoshihisa; Nakamura, Hiroshi; Odaira, Hideko; Okamoto, Yutaka; Asano, Masamichi; and Tokushige, Kaoru, 5,361,227, Cl. 365-189.010.

Tokyo Electron Sagami Kabushiki Kaisha: *See*—
Monoe, Osamu, 5,360,336, Cl. 432-5.000.

Tokyo Kikai Seisakusho, Ltd.: *See*—
Hayashi, Mamoru; and Okeyoshi, Tsuyoshi, 5,360,181, Cl. 242-555.600.

Tokyo Kogyo Kabushiki Kaisha: *See*—
Ogawa, Koji; and Suzuki, Hiroshi, 5,360,269, Cl. 374-140.000.

Tokyo Seimitsu Co., Ltd.: *See*—
Tomida, Miyoshi; and Matsumoto, Asao, 5,359,784, Cl. 33-550.000.

Tokyo Yogyo Kabushiki Kaisha: *See*—
Aoki, Takafumi; Ito, Masumi; and Naruse, Noriyoshi, 5,360,147, Cl. 222-600.000.

Tolpa, Stanislaw; Geraz, Tadeusz; Ritter, Stanislawa; Kukla, Ryszard; Skrzyszewska, Malgorzata; and Tomkow, Stanislaw, to Torf Establishment. Process for the extraction of peat and apparatus for carrying out the process. 5,360,117, Cl. 209-158.000.

Tomic, Aleksander; and Zaiaznik, Stefan. Casting ring formers. 5,360,052, Cl. 164-412.000.

Tomida, Miyoshi; and Matsumoto, Asao, to Tokyo Seimitsu Co., Ltd. Method of centering in roundness measuring instrument and system therefor. 5,359,784, Cl. 33-550.000.

Tominaga, Hidekazu, to Canon Kabushiki Kaisha. Optical information processing apparatus provided with means for detecting abnormality of focusing servo with a predetermined sensitivity. 5,361,246, Cl. 369-44.320.

Tomisawa, Naoki, to Unisia Jecs Corporation. Apparatus for controlling fuel delivery to engine associated with evaporated fuel purging unit. 5,359,980, Cl. 123-520.000.

Tomita, Yoshibo; Inagaki, Noriaki; Miyata, Atsushi; and Suzuki, Shigehiro, to NGK Insulators, Ltd. Method for treating organic sludge. 5,360,546, Cl. 210-603.000.

Tomkow, Stanislaw: *See*—
Tolpa, Stanislaw; Geraz, Tadeusz; Ritter, Stanislawa; Kukla, Ryszard; Skrzyszewska, Malgorzata; and Tomkow, Stanislaw, 5,360,117, Cl. 209-158.000.

Tompkins, Michael E.; and Green, Michael J., to Siege Industries, Inc. Spa control system. 5,361,215, Cl. 364-505.000.

Tone, Hirosada, to Fujitsu Limited. Tag control system in a hierarchical memory control system. 5,361,342, Cl. 395-425.000.

Tong, Ho-Ming: *See*—
Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.

Tong, Youdong; and Poindexter, Michael K., to Nalco Chemical Company. Phosphoric triamide coking inhibitors. 5,360,531, Cl. 208-48.0AA.

Toray Industries, Inc.: *See*—
Honda, Shiro; Sawamura, Yasushi; Tanaka, Masayuki; Kayaba, Keiji; and Teshiba, Toshihiro, 5,360,837, Cl. 523-220.000.

Torbett, Mark K.: *See*—
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., 5,359,836, Cl. 56-10.20E.

Torf Establishment: *See*—
Tolpa, Stanislaw; Geraz, Tadeusz; Ritter, Stanislawa; Kukla, Ryszard; Skrzyszewska, Malgorzata; and Tomkow, Stanislaw, 5,360,117, Cl. 209-158.000.

Toriya, Hajime: *See*—
Siga, Masao; Toriya, Hajime; and Fukui, Yutaka, 5,360,318, Cl. 415-216.100.

Toro Company, The: *See*—
Grundy, Michael J.; McKenzie, Jeff B.; and Reade, Rebecca R., 5,360,167, Cl. 239-460.000.

Torres, Alexis: *See*—
Ortiz, Luis R.; Torres, Alexis; and Encarnacion, Angel, 5,361,297, Cl. 379-130.000.

Toshinobu, Haruki; and Kenichi, Kikuchi, to Sanyo Electric Co., Ltd. Automatic focusing apparatus for automatically matching focus in response to video signal. 5,361,095, Cl. 348-354.000.

Tosoh Corporation: *See*—
Iwanaga, Kentaro; Sakai, Kiyoshi; and Yano, Noriyoshi, 5,360,871, Cl. 525-131.000.
Tanaka, Shinji; and Inoue, Hiroshi, 5,360,890, Cl. 528-388.000.

Toth, Thomas L.; Crawford, Carl R.; and King, Kevin F., to General Electric Company. Deconvolution filter for CT system. 5,361,291, Cl. 378-12.000.

Towey, James P., Jr.: *See*—
Brajczewski, David C.; Kupersmith, Bertram F.; and Towey, James P., Jr., 5,360,952, Cl. 187-246.000.

Townsend, Leroy B.; and Drach, John C., to University of Michigan, The Regents of the. Polysubstituted benzimidazoles as antiviral agents. 5,360,795, Cl. 514-43.000.

Toyko Electric Power Company, Incorporated, The: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,360,785, Cl. 505-474.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Sato, Nobuyuki; Komatsu, Ikuo; Imazu, Katsuhiro; and Kobayashi, Tomomi, 5,360,649, Cl. 428-35.800.

Toyoda, Yuji: *See*—
Tanimoto, Motoi; Yoshida, Tatsuo; Tobinaga, Kenshiro; and Toyoda, Yuji, 5,360,839, Cl. 523-414.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Kidokoro, Toru; Ito, Takaaki; Hyodo, Yoshihiko; and Osanai, Akinori, 5,359,978, Cl. 123-520.000.
Shimizu, Yasuhiro, 5,359,853, Cl. 60-276.000.

Toyota Jidoshi Kabushiki Kaisha: *See*—
Tsutsumi, Yasuhiro, 5,361,209, Cl. 364-424.050.

Traini, Vespucci B., Jr. Camcorder stereo mic/phones. 5,361,378, Cl. 381-25.000.

Transfer Flow International, Inc.: *See*—
Fulton, Fred D., 5,359,817, Cl. 52-288.100.

Transnorm System GmbH: *See*—
Schoning, Uwe, 5,360,102, Cl. 198-831.000.

Traut, James R.: *See*—
Garth, Geoffrey C.; and Traut, James R., 5,360,393, Cl. 602-17.000.

Traver, Frank J.; and Merrill, Duane F., to General Electric Company. Silicone adhesive and organic adhesive composites. 5,360,852, Cl. 524-268.000.

Travor, Bruce W., to United States of America, Navy. Simplified reusable sonobuoy launcher. 5,359,917, Cl. 89-1.510.

Trelleborg Industri AB: *See*—
Lindstrom, Peter J., 5,360,037, Cl. 138-138.000.

Trent, Adam: *See*—
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Leifeld, Ferdinand; and Temburg, Josef, 5,359,753, Cl. 19-97.500.

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Tsymbalov, Sofya: *See*—
Hansen, Donald W., Jr.; Adelstein, Gilbert W.; Peterson, Karen B.; and Tsymbalov, Sofya, 5,360,796, Cl. 514-80.000.

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Tu, Cat V., to John Lysaght (Australia) Limited. Stripping liquid coatings. 5,360,641, Cl. 427-348.000.

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Takano, Fumitomo; Saito, Hitoshi; Suzuki, Yuko; Miyanaga, Kenji; and Tujii, Gen, 5,360,959, Cl. 219-110.000.

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Slater, Charles R.; Bales, Thomas O.; Kortenbach, Jurgen A.; Nunez, George; and Turkel, David, 5,359,993, Cl. 128-4.000.

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Cox, Clifford A.; Nacamuli, Steven G.; Turner, Laurie B.; and Wilson, Amy L., 5,361,358, Cl. 395-700.000.

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Tanaka, Shoji; Kitazawa, Koichi; Uchida, Shin-ichi; and Takagi, Hidenoir, 5,360,786, Cl. 505-125.000.

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Katayama, Akihiro; Yasuda, Yasuhiko; Kato, Shigeo; and Uchio, Hirokazu, 5,361,147, Cl. 358-532.000.

Uda, Takayuki; Hiromoto, Toshiro; Tamba, Nobuo; Ishida, Hisashi; Akimoto, Kazuhiro; Odaka, Masanori; Tanaka, Tasuku; Hirokawa, Jun; and Ohayashi, Masayuki, to Hitachi, Ltd. Semiconductor integrated circuit device and methods for production thereof. 5,360,988, Cl. 257-529.000.

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Arai, Takashi; Baba, Yukihisa; and Umetsu, Sachio, 5,361,168, Cl. 359-796.000.

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Schaller, Wolfgang; and Unger, Rolf, 5,360,161, Cl. 234-42.000.

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Cockett, Keith R.; Concannon, Martin; Hunter, Robert M.; Lovell, Anthony L.; Nock, Anthony; Webb, Maurice; and Whalley, Roderick T., 5,360,547, Cl. 210-690.000.
Sikking, Rob; Brockhus, Jeroen J.; and Scholtes, Jacobus L., 5,360,625, Cl. 426-573.000.
Slade, Brian P., 5,360,144, Cl. 222-134.000.

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Young, Donald C.; and Green, James A., II, 5,360,782, Cl. 504-101.000.

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Hosokawa, Yuichi; Kobayashi, Kazumitsu; and Misawa, Tomoichi, 5,361,053, Cl. 335-215.000.
Nakamura, Michiya; and Kakizaki, Shinobu, 5,360,089, Cl. 188-299.000.
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Petschauer, Richard J.; and Johnson, Paul G., 5,361,232, Cl. 365-201.000.
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Dyke, David E.; and Neilson, Wayne, 5,360,525, Cl. 204-216.000.
United Microelectronics Corp.: *See—*
Yang, Sheng-Hsing, 5,360,750, Cl. 437-31.000.
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Celotta, Robert J.; and McClelland, Jabez J., 5,360,764, Cl. 437-173.000.
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Gilbert, Jeffrey L.; and Gutow, David A., 5,360,157, Cl. 228-45.000.
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Mugge, Jan; and Morakis, Karen P., 5,360,176, Cl. 241-282.100.
Urbansky, Ralph, 5,361,263, Cl. 370-102.000.
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Wolters, Robertus A. M.; Swart, Edwin T.; and Dirks, Albertus G., 5,360,994, Cl. 257-751.000.
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Brown, David L.; and Holzwarth, Henry A., 5,359,831, Cl. 53-430.000.
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Harris, Frank W., 5,360,671, Cl. 428-473.500.
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McEwan, Thomas E., 5,361,070, Cl. 342-21.000.
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Simpson, Randall L.; and Pruneda, Cesar O., 5,359,936, Cl. 102-355.000.
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Liu, Jian-Yu; and Johnson, Kristina M., 5,361,320, Cl. 385-143.000.
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Owens, Gregory P.; Cohen, J. John; and Hahn, William E., 5,360,893, Cl. 530-350.000.
University of Essex: *See—*
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Geiser, Edward A.; Wilson, David C.; and Gibby, Gordon L., 5,360,006, Cl. 128-653.100.
University of Michigan, The Regents of the: *See—*
Humes, H. David, 5,360,790, Cl. 514-12.000.
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Townsend, Leroy B.; and Drach, John C., 5,360,795, Cl. 514-43.000.
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Busse, Lawrence J.; Stevenson, Jeffry W.; and Huebner, Wayne, 5,359,760, Cl. 29-25.350.
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Spindel, Jonathan H.; Lambert, Paul R.; and Ruth, Roger A., 5,360,388, Cl. 600-25.000.
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El-Sharkawi, Mohamed A.; Xing, Jian; Butler, Nicholas G.; and Rodriguez, Alonso, 5,361,184, Cl. 361-93.000.
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Lenkov, Dmitry; Unni, Shankar; Mehta, Michey; McDowell, Mark W.; Dadoo, Manoj; and Melli, Bruno, 5,361,351, Cl. 395-700.000.
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Wilkins, Judd R. Microbial retrieval and sampling method. 5,360,721, Cl. 435-30.000.
Willett, John D., to Applied Energetic Systems, Inc. Detonator device and method for making same. 5,359,935, Cl. 102-307.000.
Willett, Peggy S.: *See—*
Harmer, Walter L.; DeVoe, Robert J.; Larson, Eric G.; Kincaid, Don H.; Willett, Peggy S.; and Williams, Jerry W., 5,360,462, Cl. 51-295.000.
Williams, Bruce L.: *See—*
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Williams, David M.: *See—*
Brown, Algie C.; Welty, Carl T.; Williams, Henry G.; Williams, David M.; and Dabbs, James M., III, 5,361,133, Cl. 356-376.000.
Williams, Dennis M.: *See—*
Banholzer, William F.; Anthony, Thomas R.; and Williams, Dennis M., 5,360,479, Cl. 117-84.000.
Williams, Donn L.: *See—*
Klundt, Victor J.; and Williams, Donn L., 5,359,952, Cl. 114-72.000.
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Williams, Tom; and Goertzen, Larry, to Ecologic Waste Systems Corporation. Oil transfer system. 5,360,033, Cl. 137-565.000.
Williamson, Rick D., to B&W Fuel Company. Nuclear fuel assembly lower end fitting. 5,361,287, Cl. 376-352.000.
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Willis, Chester R.: *See—*
Chan, Anita N.; Swetlin, Brian J.; Thompson, Samuel A., III; Willis, Chester R.; and Woodside, Andrew B., 5,360,840, Cl. 523-428.000.
Wilson, Amy L.: *See—*
Cox, Clifford A.; Nacamuli, Steven G.; Turner, Laurie B.; and Wilson, Amy L., 5,361,358, Cl. 395-700.000.
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Feger, Claudius; Graham, Teresita O.; Grebe, Kurt R.; Lanzetta, Alphonso P.; Liutkus, John J.; Matthew, Linda C.; Palmer, Michael J.; Tanner, Nelson R.; Tong, Ho-Ming; Wilson, Charles H.; and Yeh, Helen L., 5,360,946, Cl. 174-261.000.
Wilson, Charles L., to United States of America, Commerce. Automated recongition of characters using optical filtering with positive and negative functions encoding pattern and relevance information. 5,361,311, Cl. 382-32.000.
Wilson, David C.: *See—*
Geiser, Edward A.; Wilson, David C.; and Gibby, Gordon L., 5,360,006, Cl. 128-653.100.
Wilson Greatbatch Ltd.: *See—*
Spillman, David M.; Ebel, Steve J.; and Clark, William D. K., 5,360,678, Cl. 429-6.000.
Wilson, Robert D.: *See—*
Olm, Myra T.; McDugle, Woodrow G.; Puckett, Sherrill A.; Kuromoto, Traci Y.; Eachus, Raymond S.; Bell, Eric L.; and Wilson, Robert D., 5,360,712, Cl. 430-567.000.
Wilson, William N.: *See—*
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Windsor Industries: *See—*
Schemm, Jerry D.; Kajfosz, Bryon L.; and Krieger, Richard T., II, 5,360,307, Cl. 414-343.000.
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Meijer, Robert S., 5,360,594, Cl. 422-37.000.
Winkelbauer, Howard M.; and Gallman, Harold F., to Indresco Inc. High density fused silica mixes, refractory shapes made therefrom, and method of making the same. 5,360,773, Cl. 501-133.000.
Winston, Mark D.: *See—*
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Parke, Jennifer L.; and Joy, Ann E., 5,360,606, Cl. 424-93.470.
Wisner, Gary E.; McClellan, James W.; and Harrington, Charles W., to Syncro Corp.; and Babcock Industries, Inc. Remote, electrical steering system with fault protection. 5,361,024, Cl. 318-588.000.

Withers, Bob W.: *See—*
Shoquist, Kenneth M.; Young, Gary C.; Mathis, Amy L.; and Withers, Bob W., 5,361,199, Cl. 364-401.000.
Witmer, Arthur L.; and Witmer, Noraneen. Fertilizer product and process for making same. 5,360,466, Cl. 71-15.000.
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Witmer, Steven B.: *See—*
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Witzel, Marshall: *See—*
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Witzel, Steven M.; and Witzel, Marshall. Adjustable limb holder apparatus. 5,360,019, Cl. 128-878.000.
Wolf, Philip F.: *See—*
Tseng, Susan Y.; and Wolf, Philip F., 5,360,883, Cl. 526-264.000.
Wolf, Timothy J.: *See—*
Heyen, John G.; Kasiraj, Chander; and Wolf, Timothy J., 5,361,390, Cl. 395-200.000.
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Wolff, Roland; and Bruder, Axel, to J. H. Benecke AG. Sintered film. 5,360,874, Cl. 525-227.000.
Wolff Walsrode AG: *See—*
Brauer, Oke; Haase, Bernd; Herzog, Dieter; Riechardt, Lutz; Sonnenberg, Gerd; and Tegtmeier, Dietrich, 5,360,902, Cl. 536-84.000.
Wolters, Erich; Landscheidt, Heinz; Klausener, Alexander; and Puppe, Lothar, to Bayer Aktiengesellschaft. Process for the preparation of dialkyl carbonates. 5,360,922, Cl. 558-277.000.
Wolters, Robertus A. M.; Swart, Edwin T.; and Dirks, Albertus G., to U.S. Philips Corporation. Semiconductor device having a surface with a barrier layer of Ti_xW_{1-x}. 5,360,994, Cl. 257-751.000.
Womble, Lee M. Blowout preventer with tubing shear rams. 5,360,061, Cl. 166-55.000.
Wong, Boon, to Hughes Aircraft Company. Fabrication of reliable ceramic preforms for metal matrix composite production. 5,360,662, Cl. 428-288.000.
Wood, Harold W., to Tickers, Inc. Picture frame and sheet blank therefor. 5,359,794, Cl. 40-155.000.
Wood, John C.; Katoh, Shoichi; and Nitta, Hideo, to Praxair S.T. Technology, Inc. Molten zinc resistant alloy and its manufacturing method. 5,360,675, Cl. 428-631.000.
Wood, Stephen R.; and Kremer, Richard J., to Futurex Industries, Inc. Truck bed liner with rail protection. 5,360,250, Cl. 296-39.200.
Woodfree Limited: *See—*
Blum, Stanley, 5,360,512, Cl. 162-8.000.
Woods, Charles L.: *See—*
Khoury, Jihad A.; Kane, Jonathan S.; Hemmer, Philip R.; and Woods, Charles L., 5,361,222, Cl. 365-49.000.
Woods, Dennis J.: *See—*
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Woods Hole Oceanographic Institution (W.H.O.I.): *See—*
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Woodside, Andrew B.: *See—*
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Woolrich, Peter. Coin management devices and method. 5,360,370, Cl. 453-59.000.
Worrell, Gary W.: *See—*
Blakley, Richard L.; Shelar, Gary R.; Gentry, Jeffery S.; Worrell, Gary W.; and Perfetti, Thomas A., 5,360,023, Cl. 131-331.000.
Worsley, Debra J.: *See—*
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Worz, Reiner: *See—*
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Wraige, Douglas: *See—*
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Wright, Craig A.: *See—*
Baker, Jeffrey P.; Mott, Steven C.; and Wright, Craig A., 5,359,907, Cl. 73-865.500.
Wright, James A., to Motorola, Inc. Communication device and system capable of automatic programmable energizing. 5,361,397, Cl. 455-38.200.
Wright, Paul E.: *See—*
Benkeser, Donald E.; Cyr, Joseph B.; Greenberg, Albert G.; and Wright, Paul E., 5,361,362, Cl. 395-725.000.
Wu, Tien Y.: *See—*
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Wu, Wen-Yang: *See—*
von Izstein, Laurence M.; Wu, Wen-Yang; Phan, Tho V.; Danylec, Basil; and Jin, Betty, 5,360,817, Cl. 514-459.000.
Wuest, Reinhold: *See—*
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Wurlitzer, Holger: *See—*
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Wurzer, Jeffrey D.; and Mautino, Peter S., to McConway & Torley Corporation. Slackless buff gear connection system with sliding yoke casting. 5,360,124, Cl. 213-62.00R.
Wyatt, Danny R.; and Wyatt, Everette L., to Wyatt, Danny R. Biodegradable cellulosic material and process for making such material. 5,360,586, Cl. 264-54.000.
Wyatt, Everette L.: *See—*
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Wyon, David; and Larsson, Stefan. Apparatus for desks. 5,360,374, Cl. 454-306.000.
XAAR Limited: *See—*
Paton, Anthony D.; Bartky, Walter S.; and Michaelis, Alan J., 5,361,084, Cl. 347-15.000.
Xerox Corporation: *See—*
Andrews, John R., 5,360,761, Cl. 437-129.000.
Fletcher, Gerald M., 5,361,125, Cl. 355-271.000.
Hays, Dan A., 5,360,940, Cl. 118-654.000.
Kadakia, Vinod K.; and Kang, Christine H., 5,361,339, Cl. 395-400.000.
Radigan, Edward J., Jr.; Isganitis, Louis V.; Solodar, Warren E.; and Gundlach, Kurt B., 5,360,472, Cl. 106-22.00K.
Rauen, David F.; and Stevens, Mark, 5,360,207, Cl. 271-265.000.
Rowe, Paul J.; Achtziger, Paul M.; Malecki, David C.; and Kladias, Nicholas, 5,361,124, Cl. 355-208.000.
Yeh, Thomas I.; Friend, Clifford K.; Cole, Timothy A.; and Farnand, Leo R., 5,361,123, Cl. 355-208.000.
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Xing, Jian: *See—*
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Yabe, Naruo: *See—*
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Yabushita, Yasunori; Yokoi, Hiroshi; Koyama, Masanao; and Takatsuka, Munehiro, to Unitika Ltd. Anti-infective catheter. 5,360,415, Cl. 604-265.000.
Yaginuma, Atsushi: *See—*
Fujiki, Hironao; Michimata, Kaoru; Yaginuma, Atsushi; Hasebe, Nobuyuki; and Kim, Clara Y., 5,360,858, Cl. 524-434.000.
Yamabe, Kikuo: *See—*
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Yamabuchi, Koji; Ohtsuka, Hideshi; Koyama, Takashi; Yokomachi, Yoshiyuki; Abe, Kazutaka; and Tanaka, Akio, to Sharp Kabushiki Kaisha. Simplified cassette loading mechanism for a magnetic recording and reproducing apparatus. 5,361,180, Cl. 360-85.000.
Yamada, Fumiyoshi: *See—*
Arashiro, Yusuke; Kihara, Michiharu; Ohmura, Haruo; Yamada, Fumiyoshi; Aritomi, Mitsutoshi; Nakano, Hiroshi; and Yamauchi, Shinichi, 5,360,866, Cl. 525-68.000.
Yamada, Masayuki; Maru, Saburo; and Sudo, Sumio, to Hitachi, Ltd. Underground drainage facility, vertical-shaft multi-stage adjustable vane pump, and method of running drainage pump. 5,360,290, Cl. 405-52.000.
Yamada, Naoki; and Yamamoto, Junji, to Aisin Seiki Kabushiki Kaisha. Damping force control device for suspension system. 5,360,230, Cl. 280-707.000.
Yamada, Yasuo, to Sanden Corp. Cooling apparatus. 5,359,864, Cl. 62-480.000.
Yamada, Yuichi: *See—*
Kataoka, Yoshiharu; Suzuki, Akiyoshi; and Yamada, Yuichi, 5,361,122, Cl. 355-53.000.
Yamagishi, Hirotoshi: *See—*
Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,359,959, Cl. 117-13.000.
Yamagiwa, Akira: *See—*
Kondou, Yoshihiro; Matsushima, Hitoshi; Hatada, Toshio; Inouye, Hiroshi; Komatsu, Toshihiro; Ohba, Takao; and Yamagiwa, Akira, 5,361,188, Cl. 361-695.000.
Yamaguchi, Takeshi: *See—*
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Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Nonogawa, Kenichi; Shimamoto, Makoto; and Fuchigami, Wataru, 5,359,974, Cl. 123-432.000.
Takegami, Masaki, 5,360,081, Cl. 180-309.000.

Yamaha Hatsudoki Kabushiki Kasha: *See—*
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Yamaha Hatsudoko Kabushiki Kaisha: *See—*
Drake, James R.; and Hayashi, Kuniyuki, 5,360,357, Cl. 440-14.000.
Yamahira, Atsushi: *See—*
Takada, Yoshiyuki; and Yamahira, Atsushi, 5,360,046, Cl. 152-454.000.
Yamakita, Yoshimichi, to Yoshida Kogyo K.K. Method and apparatus for treating a belt-like article. 5,359,757, Cl. 28-167.000.
Yamamoto, Hirotoshi; and Haikawa, Yukihiko, to Sharp Kabushiki Kaisha. Magnetic tape recording and reproducing apparatus for digital signals of still pictures in the pal system. 5,361,135, Cl. 358-335.000.
Yamamoto, Jiro, to NEC Corporation. Connector for interconnecting a grid to a grid drive in a chip-in fluorescent display panel. 5,361,079, Cl. 345-75.000.
Yamamoto, Junji: *See—*
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Yamamoto, Makoto: *See—*
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Yamamoto, Noboru; and Sugiura, Yasushi, to Nippondenso Co., Ltd. Thermal type flowmeter. 5,359,891, Cl. 73-204.150.
Yamamoto, Tadashi; Seno, Takao; and Sakaguchi, Yoshito, to Chugai Ro Co., Ltd. Floatation pressure pad for metal strips. 5,360,203, Cl. 266-110.000.
Yamamoto, Takahiko: *See—*
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Yamamoto, Toshihisa, to Kabushiki Kaisha Toshiba. Gain control circuit. 5,361,395, Cl. 455-33.200.
Yamamoto, Yasutoshi; Noneyama, Masayuki; and Suzuki, Norio, to Matsushita Electric Industrial Co., Ltd. Automatic white balance setting device. 5,361,093, Cl. 348-223.000.
Yamano, Hiroshi: *See—*
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Yamaoka, Masami: *See—*
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Yamashina, Yasuhiro; Arai, Takuya; and Takagi, Junichi, to Fuji Photo Film Co., Ltd. Lens-fitted photographic film unit with means preventing unintended actuation of pushbuttons. 5,361,111, Cl. 354-266.000.
Yamashita, Osamu: *See—*
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Yamato Setubi Construction Co., Ltd.: *See—*
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Yamauchi, Ryozo; Wada, Akira; Oohashi, Keiji; Araki, Shinji; and Shimomichi, Tsuyoshi, to Fujikura Ltd. Method for splicing and reinforcing carbon coated optical fibers. 5,360,464, Cl. 65-410.000.
Yamauchi, Shinichi: *See—*
Arashiro, Yusuke; Kihara, Michiharu; Ohmura, Haruo; Yamada, Fumiyoshi; Aritomi, Mitsutoshi; Nakano, Hiroshi; and Yamauchi, Shinichi, 5,360,866, Cl. 525-68.000.
Yamazaki, Ichiro, to Nissan Motor Company, Ltd. Vehicle vibration control system. 5,360,080, Cl. 180-300.000.
Yan, Tsoung Y., to Mobil Oil Corporation. Removal of cyanide, sulfides and thiosulfate from ammonia-containing wastewater by catalytic oxidation. 5,360,552, Cl. 210-762.000.
Yanagawa, Hisaharu: *See—*
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Yananton, Patrick. Diagnostic system for use with small animals. 5,359,960, Cl. 119-165.000.
Yang, Jian: *See—*
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Yang, Sheng-Hsing, to United Microelectronics Corp. Method of fabricating lateral bipolar transistors. 5,360,750, Cl. 437-31.000.
Yang, Weikang: *See—*
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Yanni, John M.: *See—*
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Yano, Noriyoshi: *See—*
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Yap, Loo T., to BOC Group, Inc., The. Fuel burner apparatus and method employing divergent flow nozzle. 5,360,171, Cl. 239-553.500.
Yarger, Richard J. Tube for draining body cavities, viscera and wounds. 5,360,414, Cl. 604-264.000.
Yasuda, Minoru: *See—*
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Yasuda, Syuji: *See—*
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Yeh, Thomas I.; Friend, Clifford K.; Cole, Timothy A.; and Farnand, Leo R., to Xerox Corporation. Microcontroller based xerographic charge device power supply. 5,361,123, Cl. 355-208.000.
Yokoi, Hiroshi: *See—*
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Yokoyama, Ryosuke. Method and apparatus for kneading powder, and kneaded material. 5,360,622, Cl. 426-549.000.
Yoneda, Tetsuo: *See—*
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Yonehara, Takao: *See—*
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Yoneyama, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,360,705, Cl. 430-507.000.
Yoneyama, Takao: *See—*
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Yonezu, Kiyoshi; Aoyama, Akimasa; Okaya, Takuji; Hirofuji, Satoshi; and Ozeki, Yukio, to Kuraray Co., Ltd. Multilayered structure containing an ethylene-vinyl alcohol layer. 5,360,670, Cl. 428-412.000.
Yoo, Young S.; and McCarthy, Richard C., to Otis Elevator Company. Elevator cab position sensing with reduced operating noise. 5,360,085, Cl. 187-406.000.
Yoon, InBae. Automatic retractable safety penetrating instrument. 5,360,405, Cl. 604-165.000.
York, Michael T., to Ford Motor Company. Mechanically interlocking rotor assembly. 5,361,011, Cl. 310-194.000.
Yoshida, Hideo: *See—*
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Kondo, Naoki; and Fujisaki, Yoshinori, 5,359,754, Cl. 24-436.000.
Yamakita, Yoshimichi, 5,359,757, Cl. 28-167.000.
Yoshida, Masayuki; and Nakanishi, Keiko, to Canon Kabushiki Kaisha. Method of commonly using font information for outputting information in a system having a plurality of information processing devices. 5,361,332, Cl. 395-114.000.
Yoshida, Minoru: *See—*
Ishida, Yasuhiko; Yoshida, Minoru; Mizuguchi, Hideki; Okita, Takaaki; and Makida, Tetsuo, 5,360,585, Cl. 264-40.100.
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, to Sumitomo Electric Industries, Ltd.; and Toyko Electric Power Company, Incorporated, The. In-situ laser ablation method for forming oxide superconducting films. 5,360,785, Cl. 505-474.000.
Yoshida, Takaharu; and Seo, Naobumi, to Kabushiki Kaisha Toshiba. Optical signal processing apparatus for detecting the direction of movement of an optical reading device relative to an optical disk. 5,361,245, Cl. 369-44.280.
Yoshida, Tatsuo: *See—*
Tanimoto, Motoi; Yoshida, Tatsuo; Tobinaga, Kenshiro; and Toyoda, Yuji, 5,360,839, Cl. 523-414.000.
Yoshida, Tatsuya: *See—*
Fujisaki, Shigehisa; Kajiwara, Tadayuki; Isobe, Yasuhiko; Shimokawa, Takumi; Senju, Yoshinori; Narazaki, Masanobu; Yoshida, Tatsuya; and Wakiyama, Atsushi, 5,361,330, Cl. 395-107.000.
Yoshida, Tomiharu: *See—*
Omote, Tatsuyuki; Yoshida, Tomiharu; Maki, Hideo; Senoh, Makoto; Takahashi, Fuminobu; and Tsuchita, Kenji, 5,361,280, Cl. 376-248.000.
Yoshikawa, Shuichi: *See—*
Murata, Yasumoto; Yoshikawa, Shuichi; Nishiwaki, Yuji; Kawama, Shuichi; Morio, Tomokazu; and Kitoh, Atsunori, 5,361,323, Cl. 395-2.100.

Yoshimura, Katsuji: *See*—
Kozuki, Susumu; Yoshimura, Katsuji; and Masui, Toshiyuki, 5,361,177, Cl. 360-48.000.
Yoshimura, Shuji: *See*—
Aihara, Naoki; Yoshimura, Shuji; Fukuda, Naoki; and Hoshino, Tadashi, 5,361,251, Cl. 370-60.000.
Yoshioka, Toshifumi: *See*—
Shimamune, Masayuki; Enomoto, Takashi; and Yoshioka, Toshifumi, 5,361,153, Cl. 359-87.000.
You, Shi-Ryoung; Ann, Byoung-Chul; Jeong, Nak-Seong; Oh, Kyoung-Chul; and Lee, Jeong-Geun, to Daewoo Electronics Co., Ltd. Woofer module for use in a television set. 5,361,380, Cl. 381-24.000.
Young, David T.; Marshall, Jill A.; Schweikert, Emile A.; and Park, Melvin A., to Southwest Research Institute. Time of flight mass spectrometer, ion source, and methods of preparing a sample for mass analysis and of mass analyzing a sample. 5,360,976, Cl. 250-287.000.
Young, Donald C.; and Green, James A., II, to Union Oil Company of California. Aqueous solution comprising a thiocarbonate, a sulfide, and an ammoniacal compound. 5,360,782, Cl. 504-101.000.
Young, Gary C.: *See*—
Shoquist, Kenneth M.; Young, Gary C.; Mathis, Amy L.; and Withers, Bob W., 5,361,199, Cl. 364-401.000.
Young, Gerald A.: *See*—
Cook, Jeffery T.; Lash, Glen R.; Moore, Danny R.; and Young, Gerald A., 5,360,420, Cl. 604-378.000.
Young, Mark A.: *See*—
Richardson, Kenneth G.; and Young, Mark A., 5,361,175, Cl. 360-46.000.
Young, Paul E., Jr.: *See*—
Nagengast, William E.; Hallgarth, Leslie H.; Witte, Brian E.; and Young, Paul E., Jr., 5,360,282, Cl. 403-131.000.
Young, Sheldon E. Power assisted adjustment system. 5,360,195, Cl. 248-550.000.
Younger, Harold: *See*—
Buckley, Richard D.; Linsenbardt, Thomas L.; Younger, Harold; Harris, Darrell D.; and Struemph, Dennis J., 5,359,874, Cl. 72-256.000.
Yozan, Inc.: *See*—
Shou, Guoliang; Yang, Weikang; Takatori, Sunao; and Yamamoto, Makoto, 5,361,219, Cl. 364-606.000.
Yu, James, to Advanced Micro Devices, Inc. Distributed VCC/VSS ESD clamp structure. 5,361,185, Cl. 361-111.000.
Yu, Man S.; Hom, Foo S.; Chakrabarti, Sibaprasanna; Huang, Chong-Heng; and Patel, Mahendra, to R. P. Scherer Corp. Solvent system enhancing the solubility of pharmaceuticals for encapsulation. 5,360,615, Cl. 424-455.000.
Yuan Mei Corp.: *See*—
Wang, King Y., 5,360,172, Cl. 239-586.000.
Yuasa, Hitoshi: *See*—
Enomoto, Masami; Yuasa, Hitoshi; Oshimi, Fumiaki; and Otsuki, Yutaka, 5,360,870, Cl. 525-109.000.
Yugenkaisha Shinjo Seisakusho: *See*—
Shinjo, Hiroshi; and Takeda, Arata, 5,360,137, Cl. 221-238.000.
Zaby, Gottfried: *See*—
Orthmann, Ernst; Wulff, Klaus; Hoeltzenbein, Peter; Judat, Helmut; Wagner, Hans; Zaby, Gottfried; and Heidingsfeld, Herbert, 5,360,885, Cl. 528-49.000.
Zachman, James R.: *See*—
Schmuck, Phillip W.; Hayter, Steven R.; Zachman, James R.; and Salerni, John V., 5,360,069, Cl. 166-383.000.
Zaiaznik, Stefan: *See*—
Tomic, Aleksander; and Zaiaznik, Stefan, 5,360,052, Cl. 164-412.000.
Zakaluk, Gregory; Garbis, Dennis; Chan, Joseph Y.; Latza, John; and LaTerza, Lawrence, to GI Corporation. Low cost method of fabricating epitaxial semiconductor devices. 5,360,509, Cl. 156-645.000.
Zander, Dennis R., to Eastman Kodak Company. Photographic film processing assembly. 5,361,113, Cl. 354-319.000.
Zapata Industries, Inc.: *See*—
Snyder, William J.; and Walker, Rocco D., 5,360,126, Cl. 215-252.000.
Zedel: *See*—
Hede, Jean-Marc, 5,360,083, Cl. 182-5.000.
Zelenak, John M.: *See*—
Stringfellow, Steven A.; and Zelenak, John M., 5,361,165, Cl. 359-631.000.
Zeller, Charles W. Dispensing system suitable for use in dispensing food for human consumption and method of use. 5,360,138, Cl. 222-1.000.
Zeneca Limited: *See*—
Standen, Michael C. H., 5,360,919, Cl. 549-299.000.
Zengerle, Paul L.; Brown, Glenn M.; and Rieger, John B., to Eastman Kodak Company. Photographic coating compositions and photographic elements made therefrom. 5,360,702, Cl. 430-505.000.
Zenith Electronics Corporation: *See*—
Rabii, Khosro M., 5,361,101, Cl. 348-599.000.
Zeo-Tech GmbH: *See*—
Maier-Laxhuber, Peter; Becky, Andreas; Richter, Gert; and Worz, Reiner, 5,359,861, Cl. 62-100.000.
Zeuner, Kenneth W.; Chmielewski, Thomas A., Jr.; Torbett, Mark K.; Bohman, Carl E.; and Heisig, Charles P., to Control Concepts, Inc. Agricultural harvester with closed loop header control. 5,359,836, Cl. 56-10.20E.
Zijderveld, Antonius H.: *See*—
Delrue, Rita M.; German, Anton L.; Meijer, Henricus E. H.; Zijderveld, Antonius H.; and Bussink, Jan, 5,360,844, Cl. 524-50.000.
Zimmer Aktiengesellschaft: *See*—
Wandel, Dietmar; and Koschinek, Gunter, 5,360,589, Cl. 264-211.120.
Zimmer, Inc.: *See*—
Kennedy, Patrick W., 5,360,446, Cl. 623-16.000.
Zimmerman, Alan: *See*—
Chase, Thomas; and Zimmerman, Alan, 5,359,989, Cl. 126-110.00R.
Zimmermann, Joseph E.: *See*—
Tagamolila, Constante P.; Haun, Edward C.; Lomas, David A.; and Zimmermann, Joseph E., 5,360,533, Cl. 208-101.000.
Zinke, Horst; and Schumacher, Rolf, to Ciba-Geigy Corporation. Trisamidodithionodiphospates. 5,360,563, Cl. 252-46.700.
Zinter, J. Robert: *See*—
Atkinson, Leland G.; Kindred, Douglas S.; Moore, Duncan T.; and Zinter, J. Robert, 5,361,166, Cl. 359-654.000.
Zirkiev, Arkady: *See*—
Lier, Pierre; and Zirkiev, Arkady, 5,360,096, Cl. 194-235.000.
Zoeller, William A., to Baker Hughes Incorporated. Compensation method using a single transmitter measurement tool. 5,361,239, Cl. 367-30.000.
Zoom Telephonics, Inc.: *See*—
Reyes, Jason A.; Manning, Frank B.; Manning, Terence J.; McDonald, Eric L.; and Gilbride, Michael T., 5,361,296, Cl. 379-96.000.
Zowarka, Raymond C., Jr.: *See*—
Upshaw, Jim L.; Hahne, Jonathan J.; Hayes, Richard J.; Zowarka, Raymond C., Jr.; Kaja, John P.; and Sledge, Robert L., II, 5,360,999, Cl. 307-112.000.
Zweifel, Terry L.: *See*—
Johnson, David A.; Zweifel, Terry L.; and Barrios, J. Rene, 5,361,065, Cl. 340-968.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amemiya, Kouji: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Arika, Tadashi: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Bernard, Patrick; and Magnier, Christophe, to SGS-Thomson Microelectronics, S.A. Voltage generator for generating a stable voltage independent of variations in the ambient temperature and of variations in the supply voltage. Re. 34,772, Cl. 323-313.000.
Dombrowski, Anthony E. Driver alerting device. Re. 34,773, Cl. 340-904.000.
Hashimoto, Rieko: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Heian, Glenn A.: *See*—
Nechvatal, Timothy M.; and Heian, Glenn A., Re. 34,775, Cl. 432-14.000.
Itou, Yuuzi; and Tutida, Syuniti, to Kabushiki Kaisha Toshiba. Voltage follower circuit having improved dynamic range. Re. 34,771, Cl. 327-333.000.
Kabushiki Kaisha Toshiba: *See*—
Itou, Yuuzi; and Tutida, Syuniti, Re. 34,771, Cl. 327-333.000.
Kaken Pharmaceutical Co., Ltd.: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Kamimura, Akihiko, to Nippon Thompson Co., Ltd. Linear motion guide unit having a reduced height. Re. 34,774, Cl. 384-49.000.
Koshikawa, Sakae: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, to Kaken Pharmaceutical Co., Ltd. Amine derivatives, processes for preparing the same and fungicides containing the same. Re. 34,770, Cl. 514-443.000.
Magnier, Christophe: *See*—
Bernard, Patrick; and Magnier, Christophe, Re. 34,772, Cl. 323-313.000.
Minergy Corp.: *See*—
Nechvatal, Timothy M.; and Heian, Glenn A., Re. 34,775, Cl. 432-14.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Yoshimoto, Kyosuke; and Shimoda, Kyouji, Re. 34,769, Cl. 250-201.500.
Nechvatal, Timothy M.; and Heian, Glenn A., to Minergy Corp. Lightweight aggregate from flyash and sewage sludge. Re. 34,775, Cl. 432-14.000.
Nippon Thompson Co., Ltd.: *See*—
Kamimura, Akihiko, Re. 34,774, Cl. 384-49.000.
Sasaki, Kazuya: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
SGS-Thomson Microelectronics, S.A.: *See*—
Bernard, Patrick; and Magnier, Christophe, Re. 34,772, Cl. 323-313.000.
Shimoda, Kyouji: *See*—
Yoshimoto, Kyosuke; and Shimoda, Kyouji, Re. 34,769, Cl. 250-201.500.
Takase, Mituo: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Tutida, Syuniti: *See*—
Itou, Yuuzi; and Tutida, Syuniti, Re. 34,771, Cl. 327-333.000.
Yamamoto, Toshiyuki: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Yokoo, Mamoru: *See*—
Maeda, Tetsuya; Yamamoto, Toshiyuki; Takase, Mituo; Sasaki, Kazuya; Arika, Tadashi; Yokoo, Mamoru; Hashimoto, Rieko; Amemiya, Kouji; and Koshikawa, Sakae, Re. 34,770, Cl. 514-443.000.
Yoshimoto, Kyosuke; and Shimoda, Kyouji, to Mitsubishi Denki Kabushiki Kaisha. Current mirror amplifier for use in an optical data medium driving apparatus and servo-circuit. Re. 34,769, Cl. 250-201.500.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Adams, Theodore P., to Angeion Corp. Dual battery system for implantable defibrillator. B1 5,235,979, 11-1-94, Cl. 607-5.000.
Angeion Corp.: *See*—
Adams, Theodore P., B1 5,235,979, Cl. 607-5.000.
Carpenter, Herbert L., Jr.; and Hale, James A., to Greif Bros. End construction with hollow beam construction for a drum. B1 4,951,833, 11-1-94, Cl. 229-5.600.
Greif Bros.: *See*—
Carpenter, Herbert L., Jr.; and Hale, James A., B1 4,951,833, Cl. 229-5.600.
Hale, James A.: *See*—
Carpenter, Herbert L., Jr.; and Hale, James A., B1 4,951,833, Cl. 229-5.600.
Jacuzzi, Remo C., to Jason International, Inc. Whirlpool bathtub. B1 8,310,566, 11-1-94, Cl. D24-205.000.
Jason International, Inc.: *See*—
Jacuzzi, Remo C., B1 8,310,566, Cl. D24-205.000.
Kinetico, Inc.: *See*—
Kirman, Lyle E.; and Seufer, Kenneth C., Jr., B1 4,863,612, Cl. 210-662.000.
Kirman, Lyle E.; and Seufer, Kenneth C., Jr., to Kinetico, Inc. Apparatus and method for recovering materials from process baths. B1 4,863,612, 11-1-94, Cl. 210-662.000.
Laudal, Dennis L.: *See*—
Miller, Stanley J.; and Laudal, Dennis L., B1 4,931,073, Cl. 95-280.000.
Lawton, Peter A., to W & G Precision Instruments Pty, Ltd. Root control bag. B1 4,884,367, 11-1-94, Cl. 47-78.000.
Lindsay, Deborah J., to Surface Technology Inc. Process for electroless metal deposition. B1 4,701,350, 11-1-94, Cl. 427-97.000.
Miller, Stanley J.; and Laudal, Dennis L., to University of North Dakota School of Engineering & Mines Foundation (UNDSEM Foundation), The. Process of flue gas conditioning applied to fabric filtration. B1 4,931,073, 11-1-94, Cl. 95-280.000.
Seufer, Kenneth C., Jr.: *See*—
Kirman, Lyle E.; and Seufer, Kenneth C., Jr., B1 4,863,612, Cl. 210-662.000.
Surface Technology Inc.: *See*—
Lindsay, Deborah J., B1 4,701,350, Cl. 427-97.000.
University of North Dakota School of Engineering & Mines Foundation (UNDSEM Foundation), The: *See*—
Miller, Stanley J.; and Laudal, Dennis L., B1 4,931,073, Cl. 95-280.000.
W & G Precision Instruments Pty, Ltd.: *See*—
Lawton, Peter A., B1 4,884,367, Cl. 47-78.000.
Wiener, Patricia P. Addressing and integrated circuit read-only memory. B1 3,771,145, 11-1-94, Cl. 365-240.000.

LIST OF DESIGN PATENTEES

Adams, Fiona J.; and Kittle, Christopher J., to Reebok International Ltd. Shoe. 351,938, 11-1-94, Cl. D2-970.000.
Adams, Glenda C. Organizer for assorted desk articles. 352,068, 11-1-94, Cl. D19-78.000.
adp-Gauselmann GmbH: *See—*
Hesker, Lutz, 352,072, Cl. D21-37.000.
Ageless Tangible Assets, Inc.: *See—*
Bumb, Joseph M., 351,957, Cl. D6-475.000.
Al-Bargi, Hamed H. Dental plaque brush for bridges. 351,946, 11-1-94, Cl. D4-101.000.
Alcon Laboratories, Inc.: *See—*
Fanney, Douglas M.; Nguyen, Long O.; Peterson, Robert; Pynckel, Paul C.; Conklin, Miles A.; Mori, Kenneth; and Patton, Douglas M., 352,106, Cl. D24-185.000.
Aldrich, Thomas B.: *See—*
D'Amico, Stephen W.; Warner, Jim F.; Aldrich, Thomas B.; and Dinota, Alexander, 352,005, Cl. D9-528.000.
Alford, William G.: *See—*
Dea, William S.; Deiner, Curt A.; and Alford, William G., 352,090, Cl. D23-207.000.
Altermatt, Daniel: *See—*
Meier, Chris; Altermatt, Daniel; Hilpert, Hanspeter; Khanna, Satish C.; Dubach, Werner F.; and Spaltenstein, Anton, 352,107, Cl. D24-110.000.
Andersen, Ib V. Bathtub for invalids. 352,099, 11-1-94, Cl. D23-279.000.
Andres, Brian M.: *See—*
Faichney, Thomas J.; and Andres, Brian M., 351,944, Cl. D3-228.000.
Andrew Berton Creative Designs Inc.: *See—*
Kipfmueller, Max H., 352,118, Cl. D25-126.000.
Armstrong, Alison: *See—*
Yurkonis, Philip; and Armstrong, Alison, 352,039, Cl. D14-225.000.
Arrow Manufacturing Incorporated: *See—*
Ostroff, Leonard, 351,958, Cl. D6-476.000.
Arshinoff, Stephen, to Industrial Containers Ltd. Bucket. 352,143, 11-1-94, Cl. D32-53.000.
Ashley, Charles R., to Becton Dickinson and Company. Iontophoretic drug delivery system. 352,113, 11-1-94, Cl. D24-189.000.
Avar, Eric P., to Nike, Inc. Shoe upper. 351,941, 11-1-94, Cl. D2-970.000.
Baker, Dwight E. Gate valve. 352,094, 11-1-94, Cl. D23-244.000.
Ballew, Charles S.; and Lanzisero, Joseph A., to Walt Disney Company, The. Amusement car. 352,085, 11-1-94, Cl. D21-250.000.
Barber, Kerry R.; and Morris, Debbie K. Portable mount for fishing poles. 352,089, 11-1-94, Cl. D22-147.000.
Barnette, Penny; and Barnette, William. Combined toilet seat and locking cover. 352,102, 11-1-94, Cl. D23-311.000.
Barnette, William: *See—*
Barnette, Penny; and Barnette, William, 352,102, Cl. D23-311.000.
Barrett Technology Inc.: *See—*
Ulrich, Nathan; and Townsend, William T., 352,050, Cl. D15-199.000.
Barrio, Robert. Baby food jar holder. 351,970, 11-1-94, Cl. D7-619.000.
Bartlett, Michael H.: *See—*
Robertson, William H., Jr.; Tokiyama, Masaru; Bartlett, Michael H.; and Phelps, William C., III, 352,033, Cl. D14-188.000.
Becton Dickinson and Company: *See—*
Ashley, Charles R., 352,113, Cl. D24-189.000.
Bergamo, Pietro. Tube clip. 351,961, 11-1-94, Cl. D6-541.000.
Bertolini, Peter; Valls, William; and Harris, Kenneth D., Jr., to Chesebrough-PondUSA Co., Division of Conopco, Inc. Lotion dispensing bottle. 351,991, 11-1-94, Cl. D9-300.000.
Bertrand, Victor J., to Ritvik Group Inc., The. Toy figurine. 352,078, 11-1-94, Cl. D21-150.000.
Bikoff, J. Darius; and Starck, Philippe. Bottle and cap. 352,004, 11-1-94, Cl. D9-503.000.
Bird, David A.; and Wilgus, Mitchell L., to Rubbermaid Incorporated. Step stool with storage compartment. 351,950, 11-1-94, Cl. D6-351.000.
Birtciel, Bruce W. Dinner bell. 352,011, 11-1-94, Cl. D10-116.000.
Black & Decker Inc.: *See—*
Correa, Alvaro; Kaiser, David W.; Carbone, Richard; and Naft, Stuart, 352,141, Cl. D32-18.000.
Bloxwich Korea Co., Ltd.: *See—*
Lee, Sang I., 351,987, Cl. D8-343.000.
Boehly, Lawrence W.: *See—*
Cline, Roger M.; and Boehly, Lawrence W., 351,989, Cl. D8-499.000.
Bollenbacher, John E., to Kohler Co. Spout. 352,095, 11-1-94, Cl. D23-255.000.
Bostwick, Martin M.: *See—*
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 351,993, Cl. D9-337.000.
Boucheron, Alain, to Boucheron (Societe Anonyme). Wristwatch. 352,007, 11-1-94, Cl. D10-39.000.
Boucheron (Societe Anonyme): *See—*
Boucheron, Alain, 352,007, Cl. D10-39.000.
Boyer, Amy J. Calibrated golf tee. 352,080, 11-1-94, Cl. D21-208.000.
Brainard, Robert H.: *See—*
Kaufman, Richard H.; Kovacic, Theodore J.; Okita, Hideyoshi; Bostwick, Martin M.; Kostanecki, Andrew T.; Brainard, Robert H.; and Nolan, Patrick B., 351,993, Cl. D9-337.000.
Brandon, John B., to Harrow Products, Inc. Hood above a cooking surface. 351,967, 11-1-94, Cl. D7-372.000.
Braun Aktiengesellschaft: *See—*
Schneider, Peter; and Eckart, Peter, 352,110, Cl. D24-133.000.
Brookshire, Phillip L.; and Hamann, David L., to Witt Company, The. Waste can. 352,144, 11-1-94, Cl. D34-9.000.
Brunner, Hubert W., to Pancaro, Severino L. Wrench. 351,975, 11-1-94, Cl. D8-21.000.
Brunswick Bowling & Billiards Corp.: *See—*
Katje, Michael J.; Murphy, William C.; and Stirling, Michael F., 352,084, Cl. D21-233.000.
Bucyrus Blades, Inc.: *See—*
Hahn, Frederick C., 352,044, Cl. D15-29.000.
Bumb, Joseph M., to Ageless Tangible Assets, Inc. Display rack. 351,957, 11-1-94, Cl. D6-475.000.
Bunn, George E., Jr. Simulative riding toy. 352,074, 11-1-94, Cl. D21-74.000.
Burns, Cari: *See—*
Mund, John W.; Burns, Cari; Chieda, Robert; Clouser, Leon C., Jr.; and O'Neil, Robert A., 352,067, Cl. D19-75.000.
Burr, James D.; and McWilliams, Rick, to Burr, James D. Optical focuser. 352,049, 11-1-94, Cl. D16-130.000.
Cal-Style Furniture Mfg. Co.: *See—*
Klein, Richard, 351,959, Cl. D6-487.000.
Klein, Richard S., 351,953, Cl. D6-380.000.
Canon Kabushiki Kaisha: *See—*
Kawashima, Shosaku; and Inoue, Manabu, 352,056, Cl. D18-50.000.
Kubota, Hidemi; Ujita, Toshihiko; Watanabe, Kenjiro; Osada, Torachika; Yamakawa, Koji; Nakajima, Kazuhiro; Tsukuda, Keiichiro; Kotaki, Yasuo; Sato, Yohei; and Takenouchi, Masanori, 352,058, Cl. D18-56.000.
Kubota, Hidemi; Ujita, Toshihiko; Watanabe, Kenjiro; Osada, Torachika; and Sato, Kayomi, 352,059, Cl. D18-56.000.
Kubota, Hidemi; Ujita, Toshihiko; Watanabe, Kenjiro; Osada, Torachika; and Sato, Kayomi, 352,060, Cl. D18-56.000.
Kubota, Hidemi; Ujita, Toshihiko; Watanabe, Kenjiro; Osada, Torachika; and Sato, Kayomi, 352,061, Cl. D18-56.000.
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LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 1ST DAY OF NOVEMBER, 1994

Adam, Herve; Riess, Henri G.; and Nicaud, Claude G. S., to Imperial Chemical Industries plc. Particles of hydrophobic polymers containing voids. H1374, 11-1-94, Cl. 428-315.700.
Allen, Louie A., Jr.; and Yee, Tucker T., to United States of America, Navy. Wire assault weapon warhead. H1367, 11-1-94, Cl. 102-493.000.
American Telephone and Telegraph Company: *See*—
Durham, Christopher E.; Malriat, William J.; Melcher, Allen R.; and Penn, Randy J., H1373, Cl. 414-786.000.
Amspacker, Michael R.; Zummo, Nunzio; and Finello, Duane, to United States of America, Air Force. Hybrid gun barrel. H1365, 11-1-94, Cl. 42-78.000.
Bickes, Robert W., Jr.; Renlund, Anita M.; and Stanton, Philip L., to United States of America, Energy. SCB initiator. H1366, 11-1-94, Cl. 102-202.500.
Bucker, Homer P.; Morrison, Michael F.; Williams, R. Bruce; Olson, Jack R.; and Shockley, Richard C., to United States of America, Navy. Submerged sensing system using line array segments. H1371, 11-1-94, Cl. 367-134.000.
Crane, Randolph W.; and Marts, Donna J., to United States of America, Energy. Electromagnetic fasteners. H1378, 11-1-94, Cl. 414-737.000.
Durham, Christopher E.; Malriat, William J.; Melcher, Allen R.; and Penn, Randy J., to American Telephone and Telegraph Company. Wafer handling apparatus and method. H1373, 11-1-94, Cl. 414-786.000.
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Melcher, Allen R.: *See*—
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Morrison, Michael F.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 1, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

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13 5,359,959
68 5,360,478
84 5,360,479
93 5,360,760
217 5,360,599

CLASS 118
50 5,360,481
404 5,360,482
654 5,360,940
723 E 5,360,483
723 ME 5,360,485
723 MW 5,360,484

CLASS 119
165 5,359,960
173 5,359,961
223 5,359,962
850 5,359,963
864 5,359,964

CLASS 122
6.5 5,359,965
14 5,359,966
379 5,359,967

CLASS 123
3 5,359,968
41.12 5,359,969
90.17 5,359,970
200 5,359,971
308 5,359,972
432 5,359,974
435 5,359,975
452 5,359,977
516 5,359,976
520 5,359,978
5,359,980
538 5,359,979
633 5,359,981
634 5,359,982

CLASS 124
35.2 5,359,983
44.5 5,359,984
66 5,359,985
78 5,359,986

CLASS 125
21 5,359,987

CLASS 126
25 R 5,359,988
110 R 5,359,989
299 E 5,359,990

CLASS 128
4 5,359,991
5,359,992
5,359,993
5,359,994
20 5,359,995
202.16 5,359,997
203.11 5,359,998
204.21 5,359,999
204.26 5,360,000
205.26 5,360,001
205.28 5,360,002
207.15 5,360,003
633 5,360,004
653.1 5,360,005
5,360,006
661.01 5,360,007
671 5,360,008
725 5,360,009
745 5,360,010
763 5,360,011
764 5,360,012
771 5,360,013
774 5,360,014
779 5,360,015
782 5,360,016
845 5,360,017
849 5,360,018
878 5,360,019
888 5,360,020

CLASS 131
84.1 5,360,021
297 5,360,022
331 5,360,023
370 5,360,024

CLASS 132
308 5,360,025
5,360,026

CLASS 134
6 5,360,486
22.1 5,360,487
22.11 5,360,488
42 5,360,489
102.3 5,360,027

CLASS 135
137 5,360,028

CLASS 136
253 5,360,490
256 5,360,491

CLASS 137
218 5,360,029
375 5,360,030
5,360,031
454.5 5,360,032
565 5,360,033
571 5,360,034
614.04 5,360,035
625.22 5,360,036

CLASS 138
138 5,360,037

CLASS 139
383 AA 5,360,038

CLASS 141
98 5,360,039
5,360,040

CLASS 144
2 N 5,360,041
365 5,360,042

CLASS 148
255 5,360,492
320 5,360,493
513 5,360,494
565 5,360,495
677 5,360,496

CLASS 152
209 A 5,360,043
209 R 5,360,044
225 C 5,360,045
454 5,360,046
5,360,047

CLASS 156
47 5,360,497
73.1 5,360,498
5,360,499
74 5,360,500
86 5,360,048
101 5,360,501
159 5,360,502
175 5,360,503
247 5,360,504
382 5,360,505
470 5,360,506
494 5,360,507
521 5,360,508
645 5,360,509
665 5,360,510

CLASS 159
48.1 5,360,511

CLASS 162
8 5,360,512
30.11 5,360,513
31 5,360,514
135 5,360,515
139 5,360,516
161 5,360,517
358.2 5,360,518
363 5,360,519

CLASS 164
16 5,360,049
45 5,360,050
155.3 5,360,051
412 5,360,052
418 5,360,053
476 5,360,054

CLASS 165
2 5,360,055
32 5,360,056
104.12 5,360,057
104.26 5,360,058
149 5,360,059
151 5,360,060

CLASS 166
55 5,360,061
105 5,360,062
208 5,360,063
246 5,360,064
250 5,360,065
5,360,066
256 5,360,067
259 5,360,068

383 5,360,069

CLASS 172

6 5,360,070
378 5,360,071

CLASS 173

2 5,360,072
15 5,360,073

CLASS 174

35 R 5,360,941
52.4 5,360,942
84 R 5,360,943
117 F 5,360,944
151 5,360,945
250 5,360,949
261 5,360,946
5,360,947
263 5,360,948

CLASS 175

58 5,360,074
61 5,360,075
371 5,360,076

CLASS 177

232 5,360,950

CLASS 180

79.1 5,360,077
227 5,360,078
297 5,360,079
300 5,360,080
309 5,360,081

CLASS 181

113 5,360,951

CLASS 182

3 5,360,082
5 5,360,083

CLASS 184

3.2 5,360,084

CLASS 187

246 5,360,952
406 5,360,085

CLASS 188

79.54 5,360,086
218 XL 5,360,087
250 B 5,360,088
299 5,360,089

CLASS 192

3.29 5,360,090
18 B 5,360,091

CLASS 193

2 R 5,360,092

CLASS 194

206 5,360,093
212 5,360,094
217 5,360,095
235 5,360,096

CLASS 198

313 5,360,097
346.1 5,360,098
473.1 5,360,099
790 5,360,100
803.7 5,360,101
831 5,360,102
844.2 5,360,103

CLASS 200

5 A 5,360,955
61.45 R 5,360,956
86 A 5,360,953
524 5,360,954

CLASS 203

57 5,360,520

CLASS 204

129.3 5,360,521
149 5,360,522
182.8 5,360,523
192.25 5,360,524
216 5,360,525
242 5,360,526
297 R 5,360,527
425 5,360,528
435 5,360,529

CLASS 206

147 5,360,104
232 5,360,105
309 5,360,106
313 5,360,107
320 5,360,108
328 5,360,109
330 5,360,110
361 5,360,111
427 5,360,112
5,360,113
506 5,360,114

523 5,360,115
531 5,360,116

CLASS 208

31 5,360,530
48 AA 5,360,531
89 5,360,532
101 5,360,533
139 5,360,534
157 5,360,535
248 5,360,536
400 5,360,537

CLASS 209

158 5,360,117
172.5 5,360,118
618 5,360,119

CLASS 210

96.1 5,360,538
167 5,360,539
198.2 5,360,540
232 5,360,541
5,360,542
321.8 5,360,543
483 5,360,544
505 5,360,545
603 5,360,546
662 B1 4,863,612
690 5,360,547
693 5,360,548
696 5,360,549
699 5,360,550
719 5,360,551
762 5,360,552
768 5,360,554
774 5,360,553
803 5,360,555
804 5,360,556

CLASS 211

60.1 5,360,120
87 5,360,121
151 5,360,122

CLASS 212

140 5,360,123

CLASS 213

62 R 5,360,124
5,360,125

CLASS 215

252 5,360,126
263 5,360,127

CLASS 217

13 5,360,128

CLASS 219

69.16 5,360,957
86.51 5,360,958
110 5,360,959
121.83 5,360,960
137 PS 5,360,961
497 5,360,962
640 5,360,963
689 5,360,964
705 5,360,965
710 5,360,966

CLASS 220

1.5 5,360,129
3.8 5,360,130
8 5,360,131
334 5,360,132
630 5,360,133

CLASS 221

2 5,360,134
85 5,360,136
238 5,360,137

CLASS 222

1 5,360,138
40 5,360,139
52 5,360,140
55 5,360,141
79 5,360,142
94 5,360,143
134 5,360,144
190 5,360,145
386 5,360,146
600 5,360,147

CLASS 223

88 5,360,148

CLASS 224

257 5,360,149
310 5,360,150
5,360,151

CLASS 226

199 5,360,152

CLASS 227

67 5,360,153

179 5,360,154

CLASS 228

1.1 5,360,155
17.5 5,360,156
45 5,360,157
56.3 5,360,158

CLASS 229

5.6 B1 4,951,833
92.3 5,360,159
304 5,360,160

CLASS 234

42 5,360,161

CLASS 235

375 5,360,967
454 5,360,968
479 5,360,969

CLASS 239

2.1 5,360,162
14.2 5,360,163
88 5,360,164
122 5,360,165
404 5,360,166
460 5,360,167
525 5,360,168
553.5 5,360,171
586 5,360,172

CLASS 241

24 5,360,169
169.1 5,360,170
183 5,360,174
261.2 5,360,175
282.1 5,360,176

CLASS 242

7.05 B 5,360,177
7.09 5,360,178
526.3 5,360,179
530.4 5,360,180
555.6 5,360,181
573.7 5,360,182
587.3 5,360,183

CLASS 244

3.2 5,360,184
102 R 5,360,185
137.2 5,360,186
145 5,360,187

CLASS 248

56 5,360,188
97 5,360,189
201 5,360,190
218.4 5,360,191
250 5,360,192
318 5,360,193
431 5,360,194
550 5,360,195
576 5,360,196
672 5,360,236

CLASS 250

201.5 Re.34,769
5,360,970
221 5,360,971
262 5,360,975
287 5,360,976
306 5,360,977
5,360,978
339.12 5,360,972
361 R 5,360,557
370.01 5,360,973
442.11 5,360,974
551 5,360,979
573 5,360,980

CLASS 251

129.21 5,360,197
144 5,360,198

CLASS 252

8.551 5,360,558
8.7 5,360,559
39 5,360,560
42.7 5,360,561
46.6 5,360,562
46.7 5,360,563
51.5 A 5,360,564
56 R 5,360,565
67 5,360,566
90 5,360,567
102 5,360,568
5,360,569
135 5,360,570
174.15 5,360,571
181.6 5,360,572
186.39 5,360,573
187.21 5,360,574
299.01 5,360,575
299.61 5,360,576
5,360,577
301.4 H 5,360,578
329 5,360,579

542 5,360,580
544 5,360,581
582 5,360,582

CLASS 254

129 5,360,199

CLASS 257

4 5,360,981
139 5,360,983
143 5,360,984
181 5,360,985
183 5,360,986
446 5,360,987
529 5,360,988
532 5,360,989
656 5,360,990
666 5,360,991
5,360,992
714 5,360,993
751 5,360,994
5,360,995
767 5,360,996

CLASS 261

114.3 5,360,583

CLASS 264

22 5,360,584
40.1 5,360,585
54 5,360,586
123 5,360,587
153 5,360,588
211.12 5,360,589
523 5,360,590

CLASS 266

44 5,360,200
70 5,360,201
103 5,360,202
110 5,360,203
226 5,360,204
236 5,360,205

CLASS 267

136 5,360,210
180 5,360,211

CLASS 269

40 5,360,212

CLASS 270

39 5,360,213

CLASS 271

125 5,360,206
265 5,360,207

CLASS 273

1.5 R 5,360,208
26 R 5,360,209
144 B 5,360,214
157 R 5,360,215
243 5,360,216
459 5,360,217

CLASS 277

181 5,360,218
235 B 5,360,219

CLASS 280

28 5,360,220
30 5,360,221
87.021 5,360,222
96.1 5,360,223
250.1 5,360,224
278 5,360,225
414.1 5,360,226
608 5,360,227
609 5,360,228
617 5,360,229
707 5,360,230
728A 5,360,231
741 5,360,232
743 R 5,360,233
816 5,359,797

CLASS 281

31 5,360,234

CLASS 283

89 5,360,235

CLASS 285

81 5,360,237
93 5,360,238
94 5,360,239
95 5,360,240
197 5,360,241
330 5,360,242

CLASS 292

144 5,360,243
167 5,360,244
289 5,360,245
302 5,360,246

CLASS 294

1.4 5,360,247

87.1 5,360,248
119.1 5,360,249

CLASS 296

39.2 5,360,250
93 5,360,251
180.1 5,360,252
5,360,253
218 5,360,254

CLASS 297

232 5,360,255
361.1 5,360,256
380 5,360,257
440.11 5,360,258

CLASS 298

19 V 5,360,259

CLASS 299

59 5,360,260

CLASS 301

63.1 5,360,261

CLASS 307

10.1 5,360,997
91 5,360,998
112 5,360,999

CLASS 310

156 5,361,010
194 5,361,011
228 5,361,012
316 5,361,013
5,361,014

CLASS 312

201 5,360,262
257.1 5,360,263
293.1 5,360,264

CLASS 313

309 5,361,015

CLASS 315

111.41 5,361,016
151 5,361,017
248 5,361,018
324 5,361,019
369 5,361,020

CLASS 318

254 5,361,021
375 5,361,022
568.16 5,361,023
588 5,361,024
599 5,361,025

CLASS 323

313 Re.34,772

CLASS 324

74 5,361,026
226 5,361,027
309 5,361,028
326 5,361,029
445 5,361,030
536 5,361,031
537 5,361,032
5,361,033
663 5,361,034
5,361,035

CLASS 326

21 5,361,003
56 5,361,005
70 5,361,004
73 5,361,006

CLASS 327

333 Re.34,771
427 5,361,007
5,361,008
5,361,009
470 5,361,000
530 5,361,001
5,361,002

CLASS 329

361 5,361,036

CLASS 330

9 5,361,037
54 5,361,038
149 5,361,039
253 5,361,040
255 5,361,041
261 5,361,042
302 5,361,043

CLASS 331

1 A 5,361,044
154 5,361,045

CLASS 332

100 5,361,046
103 5,361,047

109 5,361,048

CLASS 333

26 5,361,049
204 5,361,050

CLASS 335

16 5,361,051
172 5,361,052
215 5,361,053
216 5,361,054
5,361,055
299 5,361,056

CLASS 336

198 5,361,057

CLASS 337

163 5,361,058

CLASS 340

438 5,361,059
825.02 5,361,060
825.330 5,361,062
825.44 5,361,061
825.5 5,361,063
904 Re.34,773
939 5,361,064
968 5,361,065

CLASS 341

58 5,361,066
120 5,361,067
144 5,361,068

CLASS 342

20 5,361,069
21 5,361,070
42 5,361,071
133 5,361,072
381 5,361,073
5,361,074

CLASS 343

772 5,361,076
846 5,361,077

CLASS 345

1 5,361,078
75 5,361,079
87 5,361,080
145 5,361,081
168 5,361,082
169 5,361,083

CLASS 346

76 PH 5,361,086
153.1 5,361,088
160 5,361,089

CLASS 347

15 5,361,084
17 5,361,090
44 5,361,087
101 5,361,085

CLASS 348

7 5,361,091
100 5,361,092
223 5,361,093
254 5,361,094
354 5,361,095
387 5,361,096
390 5,361,097
555 5,361,099
565 5,361,098
578 5,361,100
599 5,361,101
611 5,361,102
663 5,361,103
699 5,361,104
5,361,105

CLASS 352

57 5,361,106

CLASS 353

101 5,361,107

CLASS 354

120 5,361,108
145.1 5,361,109
234.1 5,361,110
266 5,361,111
298 5,361,112
319 5,361,113
320 5,361,114
400 5,361,115
403 5,361,116
5,361,117
5,361,118
409 5,361,119
419 5,361,120

CLASS 355

50 5,361,121
53 5,361,122
208 5,361,123

5,361,124
271 5,361,125
279 5,361,126

CLASS 356

1 5,361,127
36 5,361,128
124 5,361,129
345 5,361,130
354 5,361,137
355 5,361,131
356 5,361,132
376 5,361,133

CLASS 358

296 5,361,134
335 5,361,135
340 5,361,136
400 5,361,138
445 5,361,139
446 5,361,140
452 5,361,141
455 5,361,142
500 5,361,143
5,361,144
514 5,361,145
527 5,361,146
532 5,361,147

CLASS 359

4 5,361,148
9 5,361,149
62 5,361,150
65 5,361,151
80 5,361,152
87 5,361,153
123 5,361,154
131 5,361,155
161 5,361,156
168 5,361,157
204 5,361,158
305 5,361,159
328 5,361,160
337 5,361,161
411 5,361,162
452 5,361,163
455 5,361,164
631 5,361,165
654 5,361,166
689 5,361,167
796 5,361,168
838 5,361,169
850 5,361,170
855 5,361,171
883 5,361,172

CLASS 360

27 5,361,173
46 5,361,174
5,361,175
5,361,176
48 5,361,177
64 5,361,178
72.2 5,361,179
85 5,361,180
99.02 5,361,181
105 5,361,182

CLASS 361

42 5,361,183
93 5,361,184
111 5,361,185
191 5,361,186
321.1 5,361,187
695 5,361,188
807 5,361,189

CLASS 362

61 5,361,190
5,361,191
123 5,361,192
346 5,361,193
397 5,361,195

CLASS 363

41 5,361,196
98 5,361,197

CLASS 364

188 5,361,198
401 5,361,199
5,361,200
5,361,201
413.01 5,361,202
413.13 5,361,203
419.02 5,361,205
419.07 5,361,204
422 5,361,206
424.05 5,361,208
5,361,209
5,361,210
424.07 5,361,211
424.1 5,361,207
428 5,361,212
431.08 5,361,213
490 5,361,214
505 5,361,215
510 5,361,216

561 5,361,217
571.01 5,361,218
606 5,361,219
725 5,361,220
746 5,361,221

CLASS 365

49 5,361,222
51 5,361,223
145 5,361,224
5,361,225
171 5,361,226
189.01 5,361,227
189.03 5,361,228
189.05 5,361,229
194 5,361,230
200 5,361,231
201 5,361,232
207 5,361,233
210 5,361,234
218 5,361,235
221 5,361,236
230.06 5,361,237
234 5,361,238
240 B1 3,771,145

CLASS 366

208 5,360,265

CLASS 367

30 5,361,239
157 5,361,240

CLASS 368

281 5,361,241

CLASS 369

13 5,361,242
44.15 5,361,243
44.23 5,361,244
44.28 5,361,245
44.32 5,361,246
48 5,361,247
275.2 5,361,248

CLASS 370

16 5,361,249
16.1 5,361,250
17 5,361,252
5,361,253
57 5,361,254
58.1 5,361,255
60 5,361,251
5,361,256
60.1 5,361,257
69.1 5,361,258
84 5,361,259
85.1 5,361,260
85.3 5,361,261
85.7 5,361,262
102 5,361,263

CLASS 371

22.5 5,361,264
29.1 5,361,265
37.7 5,361,266
40.1 5,361,267

CLASS 372

23 5,361,268
24 5,361,269
27 5,361,270
46 5,361,271
50 5,361,272
5,361,273
72 5,361,274
108 5,361,275

CLASS 374

36 5,360,266
45 5,360,267
117 5,360,268
140 5,360,269

CLASS 375

1 5,361,276
107 5,361,277
122 5,361,278

CLASS 376

211 5,361,377
230 5,361,279
245 5,361,284
248 5,361,280
260 5,361,285
272 5,361,281
316 5,361,286
352 5,361,287
441 5,361,288
443 5,361,282
446 5,361,283

CLASS 377

44 5,361,289
47 5,361,290

CLASS 378

12 5,361,291

34 5,361,292

CLASS 379

27 5,361,293
58 5,361,294
67 5,361,295
96 5,361,296
130 5,361,297
242 5,361,298
252 5,361,299
412 5,361,300

CLASS 380

7 5,361,301
48 5,361,302

CLASS 381

24 5,361,380
5,361,381
25 5,361,378
58 5,361,305
71 5,361,303
72 5,361,304
98 5,361,306

CLASS 382

1 5,361,307
8 5,361,308
9 5,361,309
13 5,361,310
32 5,361,311
36 5,361,379
44 5,361,312

CLASS 383

5 5,360,270

CLASS 384

15 5,360,271
48 5,360,272
49 Re.34,774
99 5,360,273
192 5,360,274
420 5,360,275

CLASS 385

11 5,361,313
12 5,361,314
14 5,360,982
16 5,361,315
27 5,361,383
35 5,361,316
43 5,361,317
49 5,361,382
89 5,361,318
123 5,361,319
134 5,361,384
143 5,361,320

CLASS 392

373 5,361,321
405 5,361,322

CLASS 395

2.1 5,361,323
2.42 5,361,324
3 5,361,325
21 5,361,326
22 5,361,327
5,361,328
102 5,361,329
107 5,361,330
109 5,361,331
114 5,361,332
124 5,361,385
130 5,361,386
142 5,361,333
164 5,361,387
200 5,361,334
5,361,390
250 5,361,335
275 5,361,336
5,361,388
375 5,361,337
5,361,338
5,361,389
400 5,361,339
5,361,340
425 5,361,341
5,361,342
5,361,343
5,361,391
500 5,361,344
575 5,361,345
5,361,346
5,361,347
5,361,348
600 5,361,349
5,361,350
650 5,361,393
700 5,361,351
5,361,352
5,361,353
5,361,354
5,361,355
5,361,356
5,361,357

5,361,358
5,361,359
5,361,360
5,361,361
725 5,361,362
750 5,361,364
775 5,361,365
800 5,361,363
5,361,366
5,361,367
5,361,368
5,361,369
5,361,370
5,361,371
5,361,372
5,361,373
5,361,374
5,361,375
5,361,376
5,361,392

CLASS 400

55 5,360,276
68 5,360,277
120.01 5,360,278
216.1 5,360,279
489 5,360,280

CLASS 401

96 5,360,281

CLASS 403

131 5,360,282
294 5,359,944
374 5,360,283

CLASS 404

2 5,360,284
6 5,360,286
37 5,360,285
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

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Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation)	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 5, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,062,156 through 5,063,312
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 3, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,703,521 through 4,704,741
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 1, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,412,357 through 4,413,356
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$480.00
By other than a small entity	$960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$965.00
By other than a small entity	$1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,450.00
By other than a small entity	$2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$640.00
(2) unintentional	$1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED August 31, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,346,482	06/227,255	08/31/82
4,346,527	06/237,993	08/31/82
4,346,562	06/217,585	08/31/82
4,346,638	06/235,711	08/31/82
4,346,652	06/256,612	08/31/82
4,346,667	06/218,324	08/31/82
4,346,694	06/235,076	08/31/82
4,346,700	06/273,973	08/31/82
4,346,776	06/254,827	08/31/82
4,346,838	06/233,874	08/31/82
4,346,873	06/235,524	08/31/82
4,346,977	06/258,784	08/31/82
4,347,050	06/218,103	08/31/82
4,347,073	06/242,879	08/31/82
4,347,079	06/243,019	08/31/82
4,347,089	06/288,125	08/31/82
4,347,093	06/293,312	08/31/82
4,347,096	06/273,181	08/31/82
4,347,100	06/265,811	08/31/82
4,347,107	06/250,373	08/31/82
4,347,108	06/268,645	08/31/82
4,347,126	06/230,058	08/31/82
4,347,127	06/230,059	08/31/82
4,347,128	06/252,067	08/31/82
4,347,140	06/224,761	08/31/82
4,347,179	06/233,611	08/31/82
4,347,183	06/230,774	08/31/82
4,347,184	06/247,501	08/31/82
4,347,195	06/248,300	08/31/82
4,347,207	06/244,810	08/31/82
4,347,208	06/253,345	08/31/82
4,347,215	06/222,047	08/31/82
4,347,228	06/236,657	08/31/82
4,347,235	06/299,122	08/31/82
4,347,248	06/246,347	08/31/82
4,347,251	06/282,827	08/31/82
4,347,252	06/262,521	08/31/82
4,347,255	06/290,906	08/31/82
4,347,256	06/239,745	08/31/82
4,347,269	06/250,294	08/31/82
4,347,271	06/255,587	08/31/82
4,347,273	06/267,544	08/31/82
4,347,283	06/240,828	08/31/82
4,347,286	06/238,283	08/31/82
4,347,289	06/289,562	08/31/82
4,347,298	06/258,228	08/31/82
4,347,309	06/237,853	08/31/82
4,347,310	06/258,859	08/31/82
4,347,316	06/266,155	08/31/82
4,347,331	06/281,726	08/31/82
4,347,334	06/231,377	08/31/82
4,347,335	06/226,339	08/31/82
4,347,336	06/310,025	08/31/82
4,347,337	06/250,844	08/31/82
4,347,341	06/295,642	08/31/82
4,347,352	06/254,501	08/31/82
4,347,357	06/259,307	08/31/82
4,347,362	06/309,630	08/31/82
4,347,376	06/219,938	08/31/82
4,347,378	06/308,350	08/31/82
4,347,384	06/246,669	08/31/82
4,347,385	06/254,230	08/31/82
4,347,415	06/229,476	08/31/82
4,347,435	06/228,320	08/31/82
4,347,470	06/236,623	08/31/82
4,347,491	06/230,338	08/31/82
4,347,499	06/222,002	08/31/82
4,347,517	06/228,429	08/31/82
4,347,528	06/244,422	08/31/82
4,347,541	06/225,067	08/31/82
4,347,542	06/245,769	08/31/82
4,347,559	06/239,856	08/31/82
4,347,560	06/245,988	08/31/82
4,607,396	06/631,608	08/26/86
4,607,397	06/655,392	08/26/86
4,607,402	06/723,109	08/26/86
4,607,403	06/650,800	08/26/86
4,607,408	06/663,695	08/26/86
4,607,419	06/688,392	08/26/86
4,607,423	06/673,680	08/26/86
4,607,424	06/710,840	08/26/86
4,607,428	06/742,949	08/26/86
4,607,430	06/670,526	08/26/86
4,607,433	06/723,336	08/26/86
4,607,435	06/701,995	08/26/86
4,607,441	06/729,033	08/26/86
4,607,442	06/765,441	08/26/86
4,607,444	06/681,812	08/26/86
4,607,446	06/713,154	08/26/86
4,607,447	06/701,155	08/26/86
4,607,448	06/761,161	08/26/86
4,607,450	06/673,494	08/26/86
4,607,452	06/623,399	08/26/86
4,607,458	06/720,936	08/26/86
4,607,460	06/767,411	08/26/86
4,607,463	06/759,746	08/26/86
4,607,466	06/614,653	08/26/86
4,607,467	06/458,329	08/26/86
4,607,470	06/695,393	08/26/86
4,607,471	06/669,582	08/26/86
4,607,472	06/742,283	08/26/86
4,607,475	06/678,213	08/26/86
4,607,476	06/754,211	08/26/86
4,607,479	06/674,507	08/26/86
4,607,480	06/723,870	08/26/86
4,607,483	06/718,586	08/26/86
4,607,487	06/686,384	08/26/86
4,607,488	06/738,384	08/26/86
4,607,492	06/673,044	08/26/86
4,607,493	06/650,860	08/26/86
4,607,494	06/735,875	08/26/86
4,607,495	06/721,813	08/26/86
4,607,502	06/616,558	08/26/86
4,607,504	06/611,092	08/26/86
4,607,507	06/815,300	08/26/86
4,607,512	06/755,716	08/26/86
4,607,515	06/562,305	08/26/86
4,607,519	06/614,525	08/26/86
4,607,521	06/673,456	08/26/86
4,607,524	06/721,197	08/26/86
4,607,526	06/684,833	08/26/86
4,607,527	06/562,423	08/26/86
4,607,528	06/710,055	08/26/86
4,607,532	06/726,814	08/26/86
4,607,535	06/726,857	08/26/86
4,607,537	06/569,506	08/26/86
4,607,538	06/638,744	08/26/86
4,607,539	06/640,138	08/26/86
4,607,544	06/730,548	08/26/86
4,607,545	06/784,026	08/26/86
4,607,550	06/537,409	08/26/86
4,607,553	06/635,510	08/26/86
4,607,554	06/704,797	08/26/86
4,607,555	06/700,544	08/26/86
4,607,556	06/702,741	08/26/86
4,607,558	06/720,630	08/26/86
4,607,559	06/572,813	08/26/86
4,607,560	06/627,346	08/26/86
4,607,563	06/603,184	08/26/86
4,607,564	06/662,556	08/26/86
4,607,566	06/690,663	08/26/86
4,607,572	06/765,163	08/26/86
4,607,576	06/813,349	08/26/86
4,607,580	06/702,956	08/26/86
4,607,584	06/658,511	08/26/86
4,607,589	06/645,440	08/26/86
4,607,592	06/649,014	08/26/86
4,607,598	06/680,916	08/26/86
4,607,600	06/779,678	08/26/86
4,607,605	06/457,963	08/26/86
4,607,606	06/526,661	08/26/86
4,607,608	06/739,850	08/26/86
4,607,609	06/783,169	08/26/86
4,607,613	06/632,296	08/26/86
4,607,614	06/636,476	08/26/86
4,607,616	06/548,853	08/26/86
4,607,619	06/705,761	08/26/86
4,607,622	06/722,839	08/26/86
4,607,623	06/669,473	08/26/86
4,607,629	06/715,061	08/26/86
4,607,630	06/617,975	08/26/86
4,607,632	06/605,249	08/26/86
4,607,640	06/799,091	08/26/86
4,607,646	06/577,458	08/26/86
4,607,649	06/563,804	08/26/86
4,607,651	06/744,699	08/26/86
4,607,655	06/598,484	08/26/86
4,607,657	06/791,830	08/26/86
4,607,658	06/793,903	08/26/86
4,607,661	06/725,373	08/26/86
4,607,664	06/787,152	08/26/86
4,607,665	06/735,681	08/26/86
4,607,666	06/786,107	08/26/86
4,607,674	06/677,395	08/26/86
4,607,678	06/660,693	08/26/86
4,607,686	06/624,620	08/26/86
4,607,691	06/628,671	08/26/86
4,607,695	06/580,926	08/26/86
4,607,696	06/771,504	08/26/86
4,607,699	06/740,613	08/26/86
4,607,701	06/667,317	08/26/86
4,607,703	06/774,007	08/26/86
4,607,706	06/623,346	08/26/86
4,607,710	06/646,578	08/26/86
4,607,713	06/744,745	08/26/86
4,607,717	06/694,975	08/26/86
4,607,718	06/644,916	08/26/86
4,607,720	06/760,154	08/26/86
4,607,724	06/785,677	08/26/86
4,607,725	06/790,963	08/26/86
4,607,726	06/674,650	08/26/86
4,607,730	06/559,662	08/26/86
4,607,732	06/463,969	08/26/86
4,607,739	06/601,056	08/26/86
4,607,740	06/652,090	08/26/86
4,607,743	06/610,027	08/26/86
4,607,745	06/593,625	08/26/86
4,607,747	06/698,372	08/26/86
4,607,750	06/706,172	08/26/86
4,607,751	06/721,860	08/26/86
4,607,752	06/519,961	08/26/86
4,607,755	06/672,088	08/26/86
4,607,758	06/699,081	08/26/86
4,607,760	06/759,028	08/26/86
4,607,762	06/462,933	08/26/86
4,607,769	06/769,495	08/26/86
4,607,774	06/705,232	08/26/86
4,607,777	06/772,741	08/26/86
4,607,780	06/669,521	08/26/86
4,607,781	06/694,601	08/26/86
4,607,782	06/737,538	08/26/86
4,607,785	06/724,868	08/26/86
4,607,788	06/655,543	08/26/86
4,607,789	06/502,555	08/26/86
4,607,790	06/706,299	08/26/86

Patent Number	Serial Number	Issue Date
4,607,791	06/678,293	08/26/86
4,607,792	06/566,350	08/26/86
4,607,793	06/598,362	08/26/86
4,607,794	06/585,775	08/26/86
4,607,796	06/676,550	08/26/86
4,607,804	06/701,932	08/26/86
4,607,806	06/811,369	08/26/86
4,607,810	06/689,351	08/26/86
4,607,811	06/655,204	08/26/86
4,607,812	06/541,105	08/26/86
4,607,813	06/474,243	08/26/86
4,607,814	06/541,787	08/26/86
4,607,822	06/607,687	08/26/86
4,607,830	06/693,802	08/26/86
4,607,831	06/706,973	08/26/86
4,607,837	06/719,887	08/26/86
4,607,838	06/749,418	08/26/86
4,607,840	06/565,332	08/26/86
4,607,841	06/450,269	08/26/86
4,607,842	06/638,241	08/26/86
4,607,846	06/730,194	08/26/86
4,607,847	06/683,855	08/26/86
4,607,852	06/702,540	08/26/86
4,607,856	06/826,631	08/26/86
4,607,860	06/660,810	08/26/86
4,607,880	06/590,972	08/26/86
4,607,881	06/680,159	08/26/86
4,607,888	06/563,184	08/26/86
4,607,891	06/739,945	08/26/86
4,607,895	06/673,489	08/26/86
4,607,897	06/752,629	08/26/86
4,607,900	06/607,434	08/26/86
4,607,904	06/644,406	08/26/86
4,607,910	06/740,266	08/26/86
4,607,911	06/538,191	08/26/86
4,607,912	06/558,744	08/26/86
4,607,922	06/598,143	08/26/86
4,607,923	06/690,214	08/26/86
4,607,933	06/628,329	08/26/86
4,607,935	06/601,480	08/26/86
4,607,942	06/650,605	08/26/86
4,607,950	06/726,874	08/26/86
4,607,958	06/678,451	08/26/86
4,607,960	06/714,640	08/26/86
4,607,961	06/557,327	08/26/86
4,607,962	06/758,852	08/26/86
4,607,963	06/473,179	08/26/86
4,607,965	06/709,956	08/26/86
4,607,967	06/694,815	08/26/86
4,607,968	06/582,776	08/26/86
4,607,969	06/666,705	08/26/86
4,607,972	06/591,208	08/26/86
4,607,977	06/762,232	08/26/86
4,607,978	06/521,731	08/26/86
4,607,979	06/685,244	08/26/86
4,607,980	06/678,991	08/26/86
4,607,981	06/464,960	08/26/86
4,607,990	06/664,449	08/26/86
4,607,991	06/647,688	08/26/86
4,607,994	06/492,960	08/26/86
4,607,995	06/743,725	08/26/86
4,607,996	06/685,629	08/26/86
4,607,998	06/466,606	08/26/86
4,608,001	06/713,192	08/26/86
4,608,003	06/657,684	08/26/86
4,608,004	06/794,978	08/26/86
4,608,007	06/754,657	08/26/86
4,608,009	06/613,864	08/26/86
4,608,010	06/675,365	08/26/86
4,608,014	06/742,034	08/26/86
4,608,018	06/703,729	08/26/86
4,608,020	06/611,989	08/26/86
4,608,022	06/613,294	08/26/86
4,608,031	06/737,288	08/26/86
4,608,032	06/667,657	08/26/86
4,608,035	06/557,462	08/26/86
4,608,037	06/603,262	08/26/86
4,608,038	06/666,500	08/26/86
4,608,042	06/779,897	08/26/86
4,608,043	06/623,066	08/26/86
4,608,057	06/740,159	08/26/86
4,608,064	06/688,572	08/26/86
4,608,068	06/709,742	08/26/86
4,608,069	06/710,808	08/26/86
4,608,073	06/752,306	08/26/86
4,608,074	06/673,776	08/26/86
4,608,076	06/593,272	08/26/86
4,608,078	06/560,965	08/26/86
4,608,081	06/623,519	08/26/86
4,608,083	06/775,403	08/26/86
4,608,086	06/644,856	08/26/86
4,608,105	06/512,166	08/26/86
4,608,113	06/302,169	08/26/86
4,608,120	06/587,133	08/26/86
4,608,122	06/662,802	08/26/86
4,608,126	06/593,713	08/26/86
4,608,135	06/725,623	08/26/86
4,608,137	06/653,660	08/26/86
4,608,139	06/747,251	08/26/86
4,608,142	06/763,789	08/26/86
4,608,144	06/710,293	08/26/86
4,608,147	06/637,922	08/26/86
4,608,150	06/710,021	08/26/86
4,608,151	06/806,079	08/26/86
4,608,153	06/760,961	08/26/86
4,608,158	06/722,033	08/26/86
4,608,159	06/602,818	08/26/86
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4,952,616	07/271,499	08/28/90
4,952,624	07/389,267	08/28/90
4,952,629	07/281,202	08/28/90
4,952,631	07/228,401	08/28/90
4,952,632	07/165,820	08/28/90
4,952,654	07/324,015	08/28/90
4,952,660	07/384,945	08/28/90
4,952,661	07/449,381	08/28/90
4,952,662	07/302,616	08/28/90
4,952,669	07/252,630	08/28/90
4,952,675	07/291,516	08/28/90
4,952,676	07/193,097	08/28/90
4,952,678	07/113,910	08/28/90
4,952,679	07/233,782	08/28/90
4,952,683	07/137,957	08/28/90
4,952,684	07/201,438	08/28/90
4,952,685	07/043,668	08/28/90
4,952,688	07/233,161	08/28/90
4,952,689	07/419,206	08/28/90
4,952,693	07/132,386	08/28/90
4,952,697	07/238,968	08/28/90
4,952,702	07/376,398	08/28/90
4,952,719	07/303,862	08/28/90
4,952,725	07/165,648	08/28/90
4,952,741	07/465,712	08/28/90
4,952,742	07/349,833	08/28/90
4,952,745	07/190,114	08/28/90
4,952,747	07/358,759	08/28/90
4,952,749	07/358,760	08/28/90
4,952,754	07/325,515	08/28/90
4,952,759	07/320,653	08/28/90
4,952,760	07/298,045	08/28/90
4,952,764	07/343,680	08/28/90
4,952,776	07/373,161	08/28/90
4,952,784	07/388,276	08/28/90
4,952,814	07/366,000	08/28/90
4,952,816	07/358,387	08/28/90
4,952,819	07/178,705	08/28/90
4,952,827	07/438,342	08/28/90
4,952,835	07/289,884	08/28/90
4,952,874	07/374,656	08/28/90
4,952,879	07/339,031	08/28/90
4,952,881	07/325,401	08/28/90
4,952,887	07/295,087	08/28/90
4,952,897	07/244,478	08/28/90
4,952,898	07/434,860	08/28/90
4,952,906	07/303,887	08/28/90
4,952,908	07/209,152	08/28/90
4,952,912	07/336,584	08/28/90
4,952,915	07/193,868	08/28/90
4,952,923	07/191,246	08/28/90
4,952,924	07/221,087	08/28/90
4,952,931	07/161,462	08/28/90
4,952,940	07/298,440	08/28/90
4,952,945	07/246,197	08/28/90
4,952,972	07/426,046	08/28/90
4,952,982	07/329,449	08/28/90
4,952,983	07/400,004	08/28/90
4,952,985	07/274,506	08/28/90
4,953,001	06/928,706	08/28/90
4,953,003	07/193,989	08/28/90
4,953,004	07/284,360	08/28/90
4,953,005	07/182,098	08/28/90
4,953,009	07/288,870	08/28/90
4,953,018	07/339,548	08/28/90
4,953,029	07/125,390	08/28/90
4,953,033	07/204,049	08/28/90
4,953,038	07/236,575	08/28/90
4,953,040	07/462,874	08/28/90
4,953,051	07/247,518	08/28/90
4,953,065	07/393,478	08/28/90
4,953,066	07/399,221	08/28/90
4,953,067	07/437,729	08/28/90
4,953,093	07/261,860	08/28/90
4,953,099	07/203,417	08/28/90
4,953,111	07/154,720	08/28/90
4,953,138	07/372,975	08/28/90
4,953,148	07/347,869	08/28/90
4,953,161	07/263,304	08/28/90
4,953,162	07/089,549	08/28/90
4,953,165	07/202,537	08/28/90
4,953,172	06/944,987	08/28/90
4,953,188	07/361,558	08/28/90
4,953,194	07/410,975	08/28/90
4,953,205	07/360,150	08/28/90
4,953,211	07/375,575	08/28/90
4,953,220	07/175,796	08/28/90
4,953,221	07/367,301	08/28/90
4,953,228	07/202,282	08/28/90
4,953,230	07/396,828	08/28/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,498,238	06/429,949	02/12/85	09/30/82	09/20/94
4,505,254	06/479,994	03/19/85	03/29/83	07/20/94
4,519,305	06/576,627	05/28/85	02/03/84	06/27/94
4,522,455	06/540,679	06/11/85	10/11/83	09/15/94
4,543,395	06/621,314	09/24/85	06/15/84	09/02/94
4,553,551	06/466,919	11/19/85	02/16/83	05/09/94
4,563,166	06/592,865	01/07/86	01/07/86	09/20/94
4,563,391	06/552,267	01/07/86	11/16/83	09/20/94
4,564,747	06/537,995	01/14/86	09/30/83	03/14/94
4,573,336	06/615,344	03/04/86	05/30/84	08/15/94
4,579,381	06/576,744	04/01/86	02/03/84	06/28/94
4,603,439	06/679,620	08/05/86	12/10/84	09/16/94
4,819,009	07/068,420	04/04/89	07/01/87	09/16/94
4,820,290	07/096,488	04/11/89	09/15/87	09/16/94
4,854,657	07/177,924	08/08/89	04/05/88	09/16/94
4,858,704	07/094,937	08/22/89	09/09/87	06/30/94
4,871,189	07/090,571	10/03/89	08/28/87	09/15/94
4,882,141	07/118,237	11/21/89	11/06/87	09/15/94
4,887,038	07/257,399	12/12/89	10/13/88	08/25/94
4,893,409	07/104,939	01/16/90	10/06/87	09/15/94
4,895,199	07/138,647	01/23/90	12/28/87	09/15/94
4,896,079	07/197,027	01/23/90	05/20/88	09/20/94
4,916,450	07/193,393	04/10/90	05/12/88	09/20/94
4,924,222	06/788,206	05/08/90	10/16/85	09/02/94
4,934,057	07/186,593	06/19/90	04/27/88	09/20/94
4,936,996	07/418,269	06/26/90	10/06/89	09/20/94
4,937,068	07/264,698	06/26/90	10/31/88	09/16/94
4,939,148	07/008,198	07/03/90	01/29/87	08/31/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,228,470, Re. S.N. 08/292,909, Aug. 19, 1994, Cl. 360/12, ELECTRONIC REMINDER SYSTEM, Raphael Rahamim, et. al., Owner of Record: *Inventor*, Attorney or Agent: Benjamin J. Barish, Ex. Gp.: 2513

4,770,803, Re. S.N. 08/306,862, Sept. 15, 1994, Cl. 252, AQUEOUS COMPOSITIONS CONTAINING NITROGEN-CONTAINING SALTS, John W. Forsberg, Owner of Record: *The Lubrizol Corporation, Wickliffe, Ohio*, Attorney or Agent: Neil A. DuChez, Ex. Gp.: 1105

4,897,205, Re. S.N. 08/296,533, Aug. 26, 1994, Cl. 210/766, METHOD FOR TREATING WASTE MATERIAL, Kenneth C. Landry, Owner of Record: *Landry Service Co., Inc., League City, Tex.*, Attorney or Agent: Jennings B. Thompson, Ex. Gp.: 1306

4,934,329, Re. S.N. 08/261,882, June 17, 1994, Cl. 123/531, FUEL INJECTION SYSTEM FOR A MULTI-CYLINDER ENGINE, Mark Lear, et. al., Owner of Record: *Orbital Engines Company Proprietary Ltd., Western Australia, Australia*, Attorney or Agent: Robert B. Murray, Ex. Gp.: 3402

4,938,178, Re. S.N. 08/255,791, June 7, 1994, Cl. 123/65.OPE, TWO STROKE CYCLE INTERNAL COMBUSTION ENGINES, Christopher K. Schlunke, et. al., Owner of Record: *Orbital Engine Company Proprietary Limited, Western Australia, Australia*, Attorney or Agent: Robert B. Murray, Ex. Gp.: 3402

4,972,059, Re. S.N. 07/953,992, Sept. 29, 1992, Cl. 219/010, METHOD AND APPARATUS FOR ADJUSTING THE TEMPERATURE PROFILE OF FOOD PRODUCTS DURING MICROWAVE HEATING, Dan J. Wendt, et. al., Owner of Record: *The Pillsbury Company, Minneapolis, Minn.*, Attorney or Agent: Sydney Leach, Ex. Gp.: 2104

5,067,189, Re. S.N. 08/157,890, Nov. 24, 1993, Cl. 5/81, AIR CHAMBER-TYPE PATIENT MOVER AIR PALLET WITH MULTIPLE CONTROL FEATURES, Robert E. Weedling, et. al., Owner of Record: *Robert E. Weedling, Stockertown, Pa.*, Attorney or Agent: Sanford J. Piltch, Ex. Gp.: 3508

5,115,240, Re. S.N. 08/245,451, May 18, 1994, Cl. 341/51, METHOD AND APPARATUS FOR ENCODING VOICE SIGNALS DIVIDED INTO A PLURALITY OF FREQUENCY BANDS, Yoshihito Fujiwara, et. al., Owner of Record: *Sony Corporation, Tokyo, Japan*, Attorney or Agent: Ian Hardcastle, Ex. Gp.: 2104

5,122,786, Re. S.N. 08/261,286, June 16, 1994, Cl. 340/711, ERGONOMIC KEYPADS FOR DESKTOP AND ARMREST APPLICATIONS, Freeman Rader, Owner of Record: *Inventor*, Attorney or Agent: Phillip A. Rein, Ex. Gp.: 2609

5,132,270, Re. S.N. 08/297,499, Aug. 29, 1994, Cl. 439/532, WIRING BLOCK HAVING DETACHABLE LEG ASSEMBLIES, John A. Siemon, et. al., Owner of Record: *The Siemon Company, Watertown, Conn.*, Attorney or Agent: Philmore H. Colburn, II, Ex. Gp.: 3202

5,136,643, Re. S.N. 08/200,771, Feb. 22, 1993, Cl. 380/23, PUBLIC/KEY DATE-TIME NOTARY FACILITY, Addison M. Fischer, Owner of Record: *Inventor*, Attorney or Agent: Mary J. Wilson, Ex. Gp.: 2202

5,140,023, Re. S.N. 08/292,894, Aug. 18, 1994, Cl. 514/214, AZATETRACYCLE COMPOUNDS, Daniel P. Becker, et. al., Owner of Record: *G. D. Searle & Co., Chicago, Ill.*, Attorney or Agent: Cynthia S. Kovacevic, Ex. Gp.: 1205

5,140,626, Re. S.N. 08/293,344, Aug. 18, 1994, Cl. 379/57, PAGING SYSTEM FOR ESTABLISHING TELEPHONE CONNECTION BETWEEN CALLING PARTY AND PAGED PARTY, Andrew D. Ory, et. al., Owner of Record: *Andrew D. Ory, Somerville, Mass.*, Attorney or Agent: David J. Larwood, Ex. Gp.: 2608

5,142,602, Re. S.N. 08/293,760, Aug. 22, 1994, Cl. 385/87, FIBER OPTIC CONNECTORS, Nellie L. Cabato, et. al., Owner of Record: *Labinal Components & Systems, Inc., Elk Grove Village, Ill.*, Attorney or Agent: Noel I. Smith, Ex. Gp.: 2501

5,145,218, Re. S.N. 08/291,796, Aug. 16, 1994, Cl. 285/243, HOSE CONSTRUCTION AND METHOD OF MAKING THE SAME WITH ADHESIVELY BONDED CLAMP, Joe C. Worley, et. al., Owner of Record: *Dayco Products, Inc., Dayton, Ohio*, Attorney or Agent: Joseph V. Tassone, Ex. Gp.: 3501

5,146,514, Re. S.N. 08/301,951, Sept. 7, 1994, Cl. 385/24, EFFICIENT SINGLE-HOP DIRECTIONAL MULTI-CHANNEL SYSTEM, Yitzhak Birk, Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Terrance A. Meador, Ex. Gp.: 2501

5,150,819, Re. S.N. 08/296,438, Aug. 26, 1994, Cl. 222/79, DOUBLE TANK PINCH TRIGGER PUMP WATER GUN, Lonnie H. Johnson, et. al., Owner of Record: *Larami Corporation*, Attorney or Agent: Dorian B. Kennedy, Ex. Gp.: 3104

5,163,276, Re. S.N. 08/301,065, Sept. 6, 1994, Cl. 56/255, MULTI-PURPOSE ATTACHMENTS FOR POWER LAWN MOWER BLADE, John H. Mohrman, Owner of Record: *Inventor*, Attorney or Agent: A. R. Eglington, Esq., Ex. Gp.: 3506

5,171,077, Re. S.N. 08/282,049, July 28, 1994, Cl. 312/249.3, ROTATABLE FOOD SERVING HOUSING, Kenneth A. Jondahl, et. al., Owner of Record: *Inventors*, Attorney or Agent: Alan Kamrath, Ex. Gp.: 3507

5,186,327, Re. S.N. 08/298,923, Aug. 31,1994, Cl. 206/313, COMPACT DISC RETAINING SHEET, Daniel K. McCafferty, et. al., Owner of Record: *Inventor*, Attorney or Agent: Frank J. De Rosa, Ex. Gp.: 2404

5,206,041, Re. S.N. 08/299,695, Sept. 1, 1994, Cl. 426/2, RUMINANT ANIMAL FEED SUPPLEMENT, Fred H. Wellors, Owner of Record: *Nations Bank of North Carolina, Greensboro, N.C.*, Attorney or Agent: C. Robert Rhodes, Ex. Gp.: 1302

5,246,455, Re. S.N. 08/301,354, Sept. 6, 1994, Cl. 623/010, MIDDLE MEATAL ANTROSTOMY VENTILATION TUBE, Alain H. Shikani, Owner of Record: *Micromedics, Inc., St. Paul, Minn.*, Attorney or Agent: David R. Fairbairn, Ex. Gp.: 3308

5,250,126, Re. S.N. 08/289,955, Aug. 11, 1994, Cl. 148/569, METHOD FOR MANUFACTURING A RAIL FOR USE IN A LINEAR MOTION ROLLING CONTACT GUIDE UNIT, Yasumasa Ohya, et. al., Owner of Record: *Nippon Thomson Co., Ltd., Tokyo, Japan*, Attorney or Agent: Thomas S. MacDonald, Ex. Gp.: 1101

5,255,543, Re. S.N. 08/208,688, Mar. 11, 1994, Cl. 29/898.080, APPARATUS AND METHOD FOR REMOVING BEARINGS, William E. Shultz, Owner of Record: *Inventor*, Attorney or Agent: Richard H. Anderson, Ex. Gp.: 3206

5,294,212, Re. S.N. 08/296,669, Aug. 26, 1994, Cl. 405/36, IRRIGATION SYSTEMS, Raphael Mehoudar, Owner of Record: *Hydroplan Engineering Ltd., Tel-Aviv, Israel*, Attorney or Agent: Aaron B. Karas, Ex. Gp.: 3501

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,860,952, Reexam. No. 90/003,435, May 10, 1994, Cl. 348/498, VIDEO TIME BASE CORRECTOR, Michael W. Tallent, et. al., Owner of Record: *J. Carl Cooper, Los Gatos, Calif.*, Attorney or Agent: Warren Kujawa, Townsend & Townsend, Khourie & Crew, San Francisco, Calif., Ex. Gp.: 2602, Requester: Pioneer Electronic Corp., Tokyo, Japan

3,985,830, Reexam. No. 90/003,437, May 17, 1994, Cl. 525/271, STAR POLYMERS AND PROCESS FOR THEIR PREPARATION THEREOF, Lewis J. Fetters, et. al., Owner of Record: *The University of Akron, Akron, Ohio*, Attorney or Agent: Donald J. Bobak, Renner, Kenner, Greive, Bobak, Taylor & Weber, Akron, Ohio, Ex. Gp.: 1512, Requester: Shell Oil Co., Houston, Tex.

4,448,426, Reexam. No. 90/003,436, May 17, 1994, Cl. 277/037, UNITIZED OIL SEALS, Ronald A. Jackowski, et. al., Owner of Record: *SKF USA, Inc., Elgin, Ill.*, Attorney or Agent: James T. Fitzgibbon, Lockwood, Alex, Fitzgibbon & Cummings, Chicago, Ill., Ex. Gp.: 2406, Requester: Owner

4,893,107, Reexam. No. 90/003,428, May 10, 1994, Cl. 337/186, AXIAL MINIATURE FUSE WITH PLASTIC MOLDED BODY, John A. Monter, Owner of Record: *Cooper Industries, Inc., Houston, Tex.*, Attorney or Agent: Nelson A. Blish, c/o Cooper Industries, Inc., Houston, Tex., Ex. Gp.: 2103, Requester: Daniel N. Christus, Wallenstein, Wagner & Hattis, Chicago, Ill.

5,141,509, Reexam. No. 90/003,438, May 17, 1994, Cl. 623/011, PENILE PROSTHESIS HAVING MEANS FOR PREVENTING SPONTANEOUS INFLATION, John H. Burton, et. al., Owner of Record: *American Medical Systems, Inc., Minnetonka, Minn.*, Attorney or Agent: Peter C. Richardson, Pfizer, Inc., New York, N.Y., Ex. Gp.: 3308, Requester: Richard A. Arrett, Minneapolis, Minn.

5,284,029, Reexam. No. 90/003,442, May 25, 1994, Cl. 062/476, TRIPLE EFFECT ABSORPTION HEAT EXCHANGER COMBINING SECOND CYCLE GENERATOR AND FIRST CYCLE ABSORBER, Edward F. Keuper, et. al., Owner of Record: *Gas Research Inst., Chicago, Ill.*, Attorney or Agent: George Wheeler, McAndrews, Held & Malloy, Ltd., Chicago, Ill., Ex. Gp.: 3404, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED SEPTEMBER 12, 1994 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
41,631	70/041,631	12/08/1903
94,421	71/071,437	12/09/1913
94,480	71/072,822	12/09/1913
94,497	71/071,388	12/09/1913
94,503	71/072,365	12/09/1913
308,358	71/340,969	12/05/1933
308,379	71/339,910	12/05/1933
308,380	71/339,909	12/05/1933
308,384	71/339,851	12/05/1933
308,388	71/339,715	12/05/1933
308,389	71/339,709	12/05/1933
308,397	71/339,911	12/05/1933
308,421	71/340,299	12/05/1933
308,428	71/340,473	12/05/1933
308,432	71/340,542	12/05/1933
308,492	71/339,567	12/05/1933
308,549	71/306,712	12/05/1933
583,252	71/556,044	12/08/1953
583,254	71/572,887	12/08/1953
583,259	71/588,068	12/08/1953
583,260	71/588,301	12/08/1953
583,279	71/615,261	12/08/1953
583,295	71/621,886	12/08/1953
583,296	71/621,958	12/08/1953
583,299	71/622,044	12/08/1953
583,305	71/624,129	12/08/1953
583,309	71/625,845	12/08/1953
583,310	71/625,956	12/08/1953
583,311	71/626,527	12/08/1953
583,320	71/628,019	12/08/1953
583,323	71/628,714	12/08/1953
583,325	71/629,135	12/08/1953
583,346	71/632,073	12/08/1953
583,348	71/632,156	12/08/1953
583,349	71/632,181	12/08/1953
583,352	71/632,281	12/08/1953
583,354	71/632,624	12/08/1953
583,361	71/633,302	12/08/1953
583,362	71/633,630	12/08/1953
583,376	71/635,132	12/08/1953
583,377	71/635,650	12/08/1953
583,382	71/636,536	12/08/1953
583,384	71/636,773	12/08/1953
583,385	71/636,793	12/08/1953
583,392	71/637,378	12/08/1953
583,398	71/637,930	12/08/1953
583,405	71/638,887	12/08/1953
583,409	71/639,381	12/08/1953
583,416	71/640,465	12/08/1953
583,417	71/640,469	12/08/1953
583,419	71/640,511	12/08/1953
583,425	71/640,946	12/08/1953
583,430	71/641,325	12/08/1953
583,435	71/641,702	12/08/1953
583,436	71/641,853	12/08/1953
583,452	71/643,187	12/08/1953
583,470	71/643,782	12/08/1953
583,471	71/643,785	12/08/1953
583,479	71/644,325	12/08/1953
583,482	71/644,587	12/08/1953
583,491	71/645,395	12/08/1953
583,493	71/645,462	12/08/1953
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583,503	71/648,043	12/08/1953
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974,272	72/434,890	12/04/1973
974,274	72/435,720	12/04/1973
974,276	72/439,401	12/04/1973
974,280	72/402,296	12/04/1973
974,286	72/394,913	12/04/1973
974,291	72/412,095	12/04/1973
974,292	72/412,774	12/04/1973
974,294	72/417,939	12/04/1973
974,295	72/421,849	12/04/1973
974,298	72/425,391	12/04/1973
974,299	72/426,338	12/04/1973
974,307	72/430,491	12/04/1973
974,312	72/385,245	12/04/1973
974,315	72/403,470	12/04/1973
974,316	72/405,655	12/04/1973
974,318	72/407,650	12/04/1973
974,320	72/410,228	12/04/1973
974,322	72/415,412	12/04/1973
974,324	72/418,046	12/04/1973
974,328	72/426,347	12/04/1973
974,337	72/406,613	12/04/1973
974,342	72/403,636	12/04/1973
974,344	72/408,774	12/04/1973
974,347	72/423,164	12/04/1973
974,348	72/444,462	12/04/1973
974,350	72/408,158	12/04/1973
974,353	72/413,561	12/04/1973
974,357	72/433,292	12/04/1973
974,359	72/439,939	12/04/1973
974,360	72/410,002	12/04/1973
974,362	72/430,809	12/04/1973
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Notice of Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. 4,655,770, Amitava Gupta, Robert L. Van Osdel, SURFACE PASSIVATED INTRAOCULAR LENS, Interference No. 102,877, final judgment adverse to the patentee rendered Sept. 19, 1994, as to claims 1-45.

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Patent No. 4,730,030, Stephen F. Hahn, Robert A. Kirchhoff, ARYLCYCLOBUTANE/DIENOPHILE COPOLYMER, Interference No. 102,349, final judgment adverse to the patentee rendered Apr. 28, 1994, as to claims 1-33 and 36.

Patent No. 4,825,073, Harry D. Smith, Jr., Larry L. Gadeken, METHOD FOR DETERMINING DEPTH OF PENETRATION OF RADIOACTIVE TRACERS IN FORMATION FRACTURES, Interference No. 102,537, final judgment adverse to the patentee rendered May 27, 1994, as to claims 1-5.

Patent No. 4,843,060, Howard Lessoff, Richard F. Greene, METHOD FOR GROWING PATTERNED THIN FILMS OF SUPERCONDUCTORS, Interference No. 102,573, final judgment adverse to the patentee rendered June 13, 1994, as to claims 1-27.

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Patent No. 5,000,257, Toshiharu Shinmura, HEAT EXCHANGER HAVING A RADIATOR AND A CONDENSER, Interference No. 102,873, final judgment adverse to the patentee rendered Sept. 30, 1994, as to claims 3 and 5.

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Patent No. 5,035,833, Motosuke Ogawa, Hiromitsu Fukazawa, Yasumasa Ogawa, BLOWING AGENT COMPOSITION FOR PREPARING A RIGID POLYURETHANE FOAM, Interference No. 103,334, final judgment adverse to the patentee rendered Aug. 26, 1994, as to claims 1 and 2.

Patent No. 5,081,079, Yoshio Ukyo, Shigetaka Wada, SINTERED BODY OF SILICON NITRIDE AND PROCESS FOR MAKING THE SAME, Interference No. 103,226, final judgment adverse to the patentee rendered Sept. 2, 1994, as to claims 1-16.

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Office of Information Products Development
Director, Jane Myers CP2-9D30 308-0322
Secretary, Carolyn Johnson CP2-9D30 308-0322

Office of Planning and Evaluation
Director, Frances Michalkewicz PK1-507 305-8510
Office Manager, Dawana Penn PK1-507 305-8510
Assistant Director, Robert Kopson PK1-507 305-8405
Assistant Director, Kay Adams PK1-507 305-8345

OFFICE OF THE ASSISTANT COMMISSIONER FOR PATENTS

Assistant Commissioner for Patents
Lawrence J. Goffney, Jr. PK2-919 305-8800
Secretary, Patricia R. Appelle PK2-917 305-8800
Patent Policy and Resources
Director, Trudy O. Ketler PK2-917 305-8800
Management & Program Analyst
Diane Wimberly PK2-923 305-9142

Deputy Assistant Commissioner for Patents
Stephen G. Kunin PK2-919 305-8850
Automation Assistant, Beverly Green
PK2-919 305-8850
Program Specialist, Judith Knoblock
PK2-919 305-8612
Patent Programs Administrator, Howard Goldberg
PK2-917 305-8800

Office of Patent Programs Control
Director, Richard H. Rouck PK2-925 305-9222
Program Assistant, Leonay Wynn PK2-925 . 305-9213
Budget Coordinator, Joe Aiello PK2-925 305-9184
Program Analysis Officer, John Mielcarek
PK2-925 305-9214
Patent Academy Director, Richard J. McGarr
PK1-501 305-8086

Chemical Examining Groups

1100 General, Metallurgical, Inorganic, Petroleum and Electrical
Chemistry and Engineering CP3-9C17 308-0662
Director, John E. Kittle CP3-8D19 308-1495
Secretary, Carol A. LaRoda CP3-9D19 308-1495
Deputy Director, John J. Doll CP3-8D19 308-1495
Secretary, Brenda L. Gray CP3-8D19 308-1495
General Information/Receptionist
CP3-8C17 308-0661
SAE, Margaret Stevens CP3-8D27 305-3608
SPRE, Bill Dixon CP3-8D35 308-3824
Team 1, Bernadette Queen CP3-9C23 308-0351
Team 2, Laverne Moss (Acting) CP3-8B23 . 308-3007
Team 3, Mary Hawthorne CP3-7C23 308-2502
Fax CP3-8C17 305-3599
Fax CP3-8C17 305-3600
1101 Metallurgy-alloys, process, and apparatus
Richard Dean CP3-6A01 308-3020
1102 Electrochemical processes, products and apparatus John F. Niebling CP3-7A01 308-3325
1103 Inorganic compounds and non-metallic elements (except radioactive); chemical gas purification processes Michael M. Lewis
CP3-9A15 308-2535
1104 Semiconductor device manufacturing; semiconductor stockmaterials; batteries and battery manufacturing
Brian E. Hearn CP3-7D35 308-2552
1105 Specific chemical compositions, dyeing, electroheologicalfluids, functional fluids, refrigerants and electricalconducting compositions superconductors
Paul Lieberman CP3-9E02 308-2523
1106 Catalytic compositions; chemistry of hydrocarbons Helen M. Sneed CP3-8B36 308-3808
1107 Semiconductor device manufacturing; semiconductor stock materials; single crystal growing; inorganic silicon compounds Olik Chaudhuri CP3-7E02 308-2546
1108 Refractory glass and cement compositions; abrasives; coating compositions and pigments
Mark L. Bell CP3-8A01 308-3823
1109 Mineral oils processes and products; cleaning processes; carbohydrates; coating compositions and sputtering, processes and apparatus Bruce Breneman CP3-7D17 308-3324
1111 Fuel and lubricating compositions, magnetic, descaling and water purifying compositions; miscellaneous chemical compositions; bleaching and dyeing Prince Willis CP3-9D35 308-3050
1112 Coating process; superconductivity technology apparatus and material processes Shrive Beck CP3-8D01 308-2333

1200 Organic Chemistry Drug, Bio-Affecting and Body Treating
Composition CM1-3C11 308-1235
Director, John F. Terapane, Jr. CM1-3D09 .. 308-0193
Secretary, Carolyn Ballard CM1-3D09 308-0193
General Information/Receptionist
CM1-3C11 308-1235
SAE, Helen Childs CM1-3D11 308-4549
Team 1, Rosa Thomas CM1-2C01 308-4993
Team 2, Annette Nixon CM1-4C01 308-4309
Fax 308-4556
1201 Nitrogen heterocyclic organic chemistry, azo chemistry,miscellaneous esters, phosphorus esters, nitriles
Mary C. Lee CM1-3D17 308-4546
1202 Nitrogen containing heterocyclic compounds, seven or more ring members compounds
Mukund J. Shah CM1-4D19 308-4716
1203 Six membered nitrogen containing heterocyclics compounds, oxygen containing heterocyclic compounds (excludingepoxides), sunscreen and anti-perspirant compositions
C. Warren Ivy CM1-2B19 308-4697
1204 Organic carboxylic acids and esters compounds; andorganometallic
Jose G. Dees CM1-2D19 308-4628
1205 Organic pharmaceuticals and dentrifices
Marianne Cintins CM1-2D01 308-4725
1206 Organic sulfonic acid and ester compounds; oxy, aldehyde and ketone compounds; heterooxygen compounds; steroids; synthesis gas; Fisher Tropsch; azo compounds; perfume compositions; carbapenems; vitamin D; taxol
Johann R. Richter CM1-4D01 308-4532
1209 Herbicides and pesticides, in vivo diagnostics, amino nitrogen containing compounds and heterocyclic sulfur

compounds Glen H. Hollrah CM1-3D01 308-4552

1300 Specialized Chemical Industries and Chemical Engineering CP3-5D19 308-1193
Director, Richard V. Fisher CP3-5D19 308-1193
Secretary, Vickie Beach CP3-5D19 308-1193
General Information/Receptionist CP3-5C17 308-0651
SAE, Ola Sims CP3-5D13 308-2349
SPRE, Ken Schor CP3-4D35 308-2758
Team 1, Leland Watkins CP3-6C24 308-2758
Team 2, Palestine Jenkins CP3-5C24 308-3521
Fax 305-3601
1301 Adhesive bonding and miscellaneous chemical manufacture; resilient tires
Michael W. Ball CP3-6E02 308-2058
1302 Food or edible material, processes, compositions and products
Donald E. Czaja CP3-5E02 308-3852
1303 Paper making and fiber liberation, glass manufacture; mineral, oil apparatus, coating apparatus, and thermolytic distillation processes and apparatus
William G. Jones CP3-6D35 308-1152
1304 Adhesive bonding, etching processes, metal reactive coatings, and chemical vapor deposition apparatus
David A. Simmons CP3—6D01 308-1972
1305 General molding or treating apparatus; static molds, gas separation, gas and liquid contact Jay H. Woo CP3-5A01 308-3793
1306 Liquid purification or separation and processes of plastic and nonmetallic article shaping or treating
Robert A. Dawson CP3-5D01 308-2340
1307 Processes of plastic and nonmetallic article shaping or treating
Jan H. Silbaugh CP3-6D17 308-3829
1308 Liquid purification or separation, concentrating apparatus and processes and separating and assorting solids - froth flotation; separatory distillation processes and apparatus
Stanley S. Silverman CP3-5D35 308-3837

1500 High Polymer Chemistry, Plastics, Coating, Photography,
Stock Materials and Compositions CM1-7C11 308-2351
Director, Theodore Morris CM1-7D09 308-2359
Secretary, Theodora Scott-Smith CM1-7D09 308-2359
Deputy Director (Vacant) CM1-7D09 308-2359
Secretary, Durshawn Robinson CM1-7D09 308-2365
General Information/Receptionist CM1-7C11 308-2351
Program Analyst, Lee Thompson CM1-7B01 308-0621
Paralegal, Irene Weaver CM1-6D08 308-2390
SAE, Hilda Grimes CM1-7B11 308-2365
SPRE, Wilbert J. Briggs Sr. CM1-7B01 308-2396
Team Leaders:
Sandra Sewell CM1-8C10 308-0025
Elizabeth Pollard CM1-6C10 308-2306
Mose Montgomery CM1-5C04 308-4337
Fax 305-3596
Fax 305-3612
1501 Polysiloxanes, polysulfides, epoxy polymers and compositions
John Bleutge CM1-5D19 308-2363
1502 Drug, bio-affecting and body treating compositions
Thurman Page CM1-6D19 308-2927
1503 Foams, condensation polymers of cellulose, phenols, isocyanates, polyesters, natural resins, rubbers and lignins
John Kight, III CM1-6D01 308-2453
1504 Stock materials or miscellaneous articles of manufacture comprising of carpets, fabrics, and reinforced composites
George Lesmes CM1-8D01 308-2362
1505 Addition polymers and compositions containing additionspolymers and ion-exchange resins
Joseph L. Schofer CM1-5D01 308-2452
1506 Radiation imagery chemistry - silver halide, diazo and optical-photosensitive compositions and processes
Charles Bowers CM1-7D19 308-2417
1507 Radiation imagery chemistry-photopolymerization, irradiation of polymers and electrophotography
Marion McCamish CM1-7D01 308-3961
1508 Stock materials or miscellaneous articles of manufacture comprising structural features, hollow or container-type articles, and structurally defined webs or sheets
Ellis Robinson CM1-8D19 308-2364
1509 Stock materials or miscellaneous articles comprising polymeric materials, magnetic recording media and coated particles
Paul Thibodeau CM1-8B01 308-2367
1511 Polymer compositions having special utility; stabilizers; fillers; dyes; pigments or condensation polymers
Paul Michl CM1-6B01 308-2451
1512 Mixed synthetic resin compositions, blocks and graft copolymers
James Seidleck CM1-5B01 308-2462
1513 Stock material or miscellaneous articles comprising optical recording media; electrostatic recording media; superconductors, printed circuits and coated and structural fibers
Patrick Ryan CM1-4B01 308-2383

1800 Biotechnology CM1-12D10 308-0196
Director, Barry S. Richman CM1-12A05 308-1123
Secretary, Betty Kaminsky CM1-12A05 308-1123
Deputy Director, Charles F. Warren CM1-12A05 308-1123
Secretary, Deborah Morton CM1-12A05 308-1123
General Information/Receptionist CM1-12C12 308-0196
SAE, Valarie Reid CM1-12B11 308-1175
SPRE, Lynn Kryza CM1-12D01 308-0255
Team Leaders:
Jackie Waldo CM1-11C10 308-3902
Claudia Sullivan CM1-10C10 305-7874
Donna Chapman CM1-9C14 308-3081
Fax CM1-10D08 305-3014
1801 Apparatus drawn to sterilization and deodorizing. Chemical reactors and chemical dispensers. Methods and apparatus drawn to heating and illuminating using gas.
Robert Warden CM1-12B01 308-2920
1802 Immunoassays involving viruses, (NON-AIDS), microorganisms, enzymes, heterogeneous and homogeneous formats and monoclonal antibodies and kits therefor.
Esther Kepplinger CM1-11D01 308-1219
1803 Plant extracts and plant materials of undetermined constitution. Enzyme assays drugs, bio affecting and body treatment compositions where the active ingredient is a carbohydrate. O, S or N-glycoside or derivative thereof; compounds that are carbohydrates; O, S or N-glycosides and derivative thereof.
Johnnie Brown CM1-8B19 308-4618
1804 Multicellular organisms (plant/animal), plant patents molecular biology associated with plants, animals and multicellular hosts therapy associated with genes, DNA, RNA and modified cells
Elizabeth Weimar CM1-10B01 308-0254
1805 New techniques for transformation, electroporation, new techniques for production of recombinant enzymes, enhancement of expression, recombinant production of amino acids and antibiotics, viral vectors, preparing vectors, engineered cells, mammallian cell lines, regulatory genes, which regulate, antisenise RNA and DNA, ribozymes.
Richard Schwartz CM1-10D01 308-1133
1806 Recombinant and monoclonal antibodies, pharmaceutical compositions thereof, methods of preparation and utilities thereof. DNA encoding antibodies and associated vectors and transformed cells. Fused animal cells that produce antibodies and their preparation. T cells, B cells and the preparation and use thereof, neurology (except gene therapy which is in 1804.
David Lacey CM1-9B01 308-3535
1807 Nucleic acid hybridization assays, nucleic acid amplification methods including PCR, nucleic acid probes and methods of preparation thereof.
Margaret Moskowitz Parr CM1-11D19 308-2454
1808 Drug, bio-affecting and body treating uses and compositions wherein the active ingredient is an enzyme, co-enzymes or the active ingredient is an extract, body fluid, cellular material of undetermined constitution derived from animal or whole microorganisms. Microorganism, enzymes, tissue cell culture per se; process of synthesizing chemical compounds using microorganisms, enzymes and tissue cultures, process of utilizing an enzyme, microorganism to liberate, separate, or purify a preexisting compound, or cleaning objects or textiles or compositions thereof.
Douglas Robinson CM1-10D19 308-2897
1809 Analytical chemical and biochemical processes and apparatus, (non-enzymatic, non-immunological, non-microbial); standards and control compositions and kits therefor; blood oxygenation apparatus.
James Housel CM1-12D19 308-4027
1811 Non-recombinant peptides and proteins, their pharmaceutical compositions, methods of preparation and utilities. Including the chemical modification, physical treatment, purification, separation and identification thereof.
Robert Hill CM1-9D01 308-3529
1812 Recombinant hormones, growth factors, lymphokines, cytokines, receptors, recombinant producting, therapeutic compositions and use thereof.
Garnette Draper CM1-10B19 308-4314
1813 Immunoassay including for AIDS, pharmaceutical compositions and utilities of recombinant antigenic peptides and proteins, antigenic, toleragenic or immunosuppressive, peptides and proteins and genes therefore.
Christene Nucker CM1-11B19 308-4028
1814 Recombinant enzymes, blood proteins, toxins and miscellaneous proteins, recombinant production and therapeutic compositions and uses thereof.
Robert Wax CM1-9D19 308-4216
1815 Enzyme and microbial assays; apparatus for microbiology; processes utilizing enzymes or microorganisms; non-recombinant proteins, therapeutic compositions and uses thereof.
Michael Wityshyn CM1-11B01 308-4743

Electrical Examining Groups

2100 Industrial Electronics, Physics and Related Elements CP4-11C17 308-1782
Director, Joseph J. Rolla, Jr. CP4-11D37 308-0658
Secretary, Deborah Perry-Leeper CP4-11D37 308-0658
General Information/Receptionist CP4-11C17 308-3068
SAE, Romaine Bowling CP4-11D21 308-3068
SPRE, Lee T. Hicks CP4-11E14 305-7876
Fax 305-3431
2101 Photography, photocopying, motion pictures, optics, music, mechanical registers and acoustics
Michael L. Gellner CP4-10E02 308-1436
2102 Electrical motor-generator structure, piezoelectric elements and devices, generator systems, battery condenser charging and discharging, power supply regulation conversion systems
Stephen L. Stephan CP4-9A01 308-2826
2103 Conductors, insulators, inductors, electromagnets, magnetic and thermal switches, electrical housings for mounting assemblies with diverse electrical components
Leo P. Picard CP4-11B02 308-0538
2104 Electrical switches and arc suppression, protection of electrical systems and devices, electromagnetic control systems, electric charge systems, prime mover dynamo plants, plural load or supply systems, and code conversion
A. David Pellinen CP4-10D17 308-3301
2105 Electric photocopying and coating apparatus
Arthur T. Grimley CP4-11D17 308-1373
2106 Electric heating, electric resistance heating devices, electric welding, industrial electric furnaces, resistors and capacitors
Bruce A. Reynolds CP4-10B02 308-3305
2107 Motor control systems, electrical music tone generation and horology
William M. Shoop, Jr. CP4-11B40 308-3103
2108 Ink jet, electric, magnetographic and optical recorders, plotters, weighing scales, facsimile and pictorial communication
Benjamin R. Fuller CP4-11D01 308-0079

2200/2900 Special Laws Administration & Designs CP3-11D17 308-0766
Director, Robert E. Garrett CP3-11D17 308-0753
Secretary, Jill Bianco CP3-11D19 308-0653
General Information/Receptionist Group 2200 CP3-11C17 308-0766
General Information/Receptionist Group 2900 CP3-10D18 305-3291
SAE, Joanne Hodge CP3-11D11 308-3518
SPRE, Michael Carone CP3-11D13 308-0496
Team Leaders:
Group 2200, Merilyn Watts CP3-11C23 308-1364
Group 2900, Shanda Ross CP3-10D17 305-3199
Group 2900, Vonda Gale CP3-10D19 305-3244
Fax 305-3603
Licensing and Review:
Theresa Bradshaw CP3-11D08 308-0734
Joyce Brown CP3-10D03 308-3350
2201 Weapons (firearms, ordnance, ammunition, explosive devices), aeronautics and ships as well as all classified mechanical applications
Charles Jordan CP3-11A15 308-0918
2202 Radio, optic, acoustic, wave communications systems and all classified electrical applications
Thomas C. Tarcza CP3-11D35 308-1689
2203 Chemical special use compositional including fire extinguishing and retarding earth boring and well treating, liquid crystals, colloids and dispersants, preservative agents, and microcapsule and body treating radioactive as well as classified chemical applications
Robert L. Stoll CP3-11E02 308-1701
2204 Chemical engineering including radioactive

materials, powder metallurgy rocket fuels, explosives, thermal and photoelectric batteries, and nuclear reactors systems and related technologies, and classified chemical applications
Donald Walsh CP3-11A01 308-1682
2901 Ornamental designs in the area of industrial arts
Wallace R. Burke CP3-10E02 305-3169
2902 Ornamental designs for fine arts
Bernard Ansher CP3-10B02 305-3258
2903 Ornamental designs, industrial/fine arts
Alan Douglas CP3-10D35 305-3255
2904 Ornamental designs, industrial/fine arts
A. Hugo Word CP3-9B02 305-3171
2300 Computer Systems and Computer Applications PK2-4A23 305-9700
Director, Gerald Goldberg PK2-4A23 305-9700
Secretary (Vacant) PK2-4A23 305-9700
Deputy Director, Stewart J. Levy PK2-4A23 305-9700
Secretary, Carol Cleveland PK2-4A23 305-9700
General Information/Receptionist PK2-4th Floor Atrium 305-9600
General Information/Receptionist PK2-6th Floor Atrium 305-3800
Special Program Examiner, Archie E. Williams, Jr. PK2-4A27 305-9720
Paralegal, Brian Harden PK2-4A30 305-9741
SAE, Bernice Gladden PK2-4A19 305-9604
Team Leaders:
Ada W. Rollins PK2-6W30 305-9601
Lucy I. Kinard PK2-4T20 305-9602
Inez R. Johnson PK2-4W30 305-9603
Fax 305-9564
2301 Computer graphics/data presentation
Heather Herndon PK2-4R01 305-9701
2302 Miscellaneous processing architecture
Alyssa Bowler PK2-4Y21 305-9702
2303 Static presentation and operator interface
Mark Powell PK2-4A05 305-9703
2304 Computer applications
Kevin Teska PK2-6A57 305-9704
2305 Computer systems
Jack Harvey PK2-4D46 305-9705
2306 Computer control systems and product manufacturing, hybrid, digital and analog computational computers; and digital data error correction
Roy Envall, Jr. PK2-6Y01 305-9706
2307 Data base and file management systems
Thomas Black PK2-4R21 305-9707
2308 Artificial intelligence systems and speech processing
Allen MacDonald PK2-4A01 305-9708
2311 Computer applications in business practices, life sciences, linguistics, word processing and earth sciences
Gail Hayes PK2-6Y21 305-9711
2312 Computer memory systems
Joseph Dixon PK2-4D02 305-9712
2313 Diagnostic testing, error/fault detection/recovery & reliability systems
Robert W. Beausoliel, Jr. PK2-4D30 305-9713
2314 Special applications of computers including electrical, chemical, mechanical & communication engineering, and logic circuit testing
Emanuel (Todd) Voeltz PK2-6D46 305-9714
2315 Instruction processing, simulation, compatibility and emulation, and buffering functions
Parshotam S. Lall PK2-6A33 305-9715
2316 Computer resource management, system utilities, and timing
Gareth D. Shaw PK2-4Y01 305-9716
2317 Computer systems; information transmission, and i/o processing
Thomas C. Lee PK2-4A51 305-9717
2400 Packages, Cleaning, Textiles and Geometrical Instruments CP4-6C17 308-0771
Director, Carlton R. Croyle CP4-6D37 308-0777
Secretary, Donna P. Magaha CP4-6D37 308-0777
General Information/Receptionist CP4-6C17 308-0771
SAE, Barbara A. Banks CP4-6D15 308-0895
SPRE, Stephen Marcus CP4-6E14 308-3872
Team Leaders:
Team 1, Patience Resper CP4-6C20 305-3404
Team 2, Ebony Smith CP4-6C24 308-1385
Fax 305-3588
2401 Packaging art including glass, fabric, metal, wood, paper and plastic receptacles plus closures
Allen A. Shoap CP4-6B02 308-1082
2402 Fluid treating, presses, food apparatus, cleaning, agitating, centrifuges, and web feeding
David A. Scherbel CP4-7A15 308-1272
2403 Conduits, bathroom facilities, cleaning apparatus, filling apparatus, switches, and article carriers
Henry J. Recla CP4-6B28 308-1382
2404 Special receptacles or packages, shoes and shoe making
Paul T. Sewell CP4-6E02 308-2126
2405 Textiles, winding and reeling, pushing and pulling, bearings, and flexible torque transmitters
Daniel P. Stodola CP4-7E02 308-2686
2406 Measuring and testing, dynamic information storage or retrieval, optical image projectors and joint packing
William A. Cuchlinski CP4-7E16 308-3873
2407 Textile and leather manufacture, apparel and textiles
Clifford D. Crowder CP4-6D01 308-0949
2500 Electronic and Optical Systems and Devices CP2-3A23 308-1563
Director, Janice A. Howell CP2-3A25 308-0530
Secretary, Cathleen K. DeZell CP2-3A25 308-0530
General Information/Receptionist CP2-3C11 308-0956
SAE, JoAnn Davis CP2-3B08 308-4867
SPRE, Stanley Miller CP2-3A15 308-4879
Team Leaders:
Team 1, Ann M. Rehor CP2-3D09 308-4854
Team 2, Linda M. Hodge CP2-4B24 308-4927
Team 3, Sharon Hoppe CP2-5C32 308-4102
Fax 305-3594
2501 Lasers, fiber optic devices
Rodney Bovernick CP2-5D33 308-4886
2502 Demodulators, modulators, oscillators, lamp and discharge device systems, tuners and wave transmission lines and networks, information storage and retrieval/magineto/optical
Robert Pascal CP2-4A04 308-4909
2503 Semiconductor devices
Andrew J. James CP2-4D33 308-4894
2504 Semiconductor and vacuum tube circuits and systems, electronic and electromechanical counting circuits and systems
Timothy Callahan CP2-3B26 308-4876
2505 Optical measuring and testing systems, systems controlled by data hearing records, coded record sensors, record controlled calculators Davis L. Willis CP2-2A15 308-4800
2506 Radiant energy systems and dynamic information storage and retrieval
Paul Dzierzynski CP2-3A11 308-4822
2507 Optical systems and elements, eye examining vision testing and correcting
Loha Ben CP2-5A15 308-4820
2508 Semiconductor devices
Rolf Hille CP2-4A18 308-4917
2509 Digital logic circuits and photoelectric systems
Edward P. Westin CP2-2E02 308-4823
2511 Static information storage and retrieval
Eugene LaRoche CP2-2E16 308-4910
2512 Dynamic information storage and retrieval
Stuart S. Levy CP2-5B08 308-1295
2513 Dynamic magnetic storage devices
Aristotelos Psitos CP2-5B08 308-1598

2514 Registers, antennas and dynamic magnetic storage devices
Donald Hajec CP2-3E16 308-4075
2515 Amplifiers, liquid crystals devices and eye examining vision testing and correcting
William Sikes CP2-5B34 308-4842
2600 Communications, Measuring, Testing and Lamp/Discharge Group PK2-8C21 305-4700
Director, Bobby R. Gray PK2-8A23 305-4800
Secretary, Jackie Peck PK2-8A25 305-4800
Deputy Director, Michael J. Lynch PK2-8A27 305-4800
Secretary, Lisa Malvaso PK2-8A25 305-4800
General Information/Receptionist PK2-8A19 ... 305-4700
Special Program Examiner, Joseph Orsino PK2-8A33 305-4710
Paralegal, Iyone Scales PK2-8A34 305-4740
Program Analyst, Ann Hall PK2-8A36 305-4730
HSAE, Doretha Marcelli PK2-8A19 305-4720
Team 1, Macia Fletcher PK2-8T18 305-4902
Team 2, Earline Green PK2-8W18 305-4901
Team 3, Arthur McCloud PK2-6T18 305-4903
Fax 305-9508
2601 Telephony
James L. Dwyer PK2-8D02 305-4701
2602 Television
James J. Groody PK2-8R01 305-4702
2603 Multiplex and digital communications
Douglas W. Olms PK2-8A01 305-4703
2604 Electrical communications, electric lamp and discharge devices
Donald J. Yusko PK2-6R01 305-4704
2605 Measuring and testing of electrical and non-electrical phenomena, and acoustic wave systems Hezron E. Williams PK2-6A01 305-4705
2606 Image analysis
David K. Moore PK2-6A25 305-4706
2607 Electrical measuring and testing
Kenneth A. Wieder PK2-5D58 305-4707
2608 Audio systems, and telephony
Curt Kuntz PK2-8A57 305-4708
2609 Selective visual displays
Alvin E. Oberley PK2-8D58 305-4709
2611 Telecommunications
Reinhard J. Eisenzopf PK2-8Y01 305-4711
2612 Facsimile
Edward L. Coles, Sr. PK2-8Y21 305-4712
2613 Television camera and image analysis & pattern recognition
Michael Razavi PK2-6D02 305-4713
2614 Digital communications, telegraphy and telephony
Stephen Chin PK2-8R21 305-4714
2615 Television and selective visual display
Tommy Chin PK2-8D42 305-4715
2616 Optical communication, measuring, and testing
Richard Chilcot PK2-6R21 305-4716
2617 Condition responsive communication and electrical indicating systems & code generator or transmitters (e.g., keyboards)
John Peng PK2-6A03 305-4945

Mechanical Examining Groups

3100 Handling and Transporting Media CP4-8D19 308-1113
Director, Frederick R. Schmidt CP4-8D19 308-1134
Secretary, Jeannean Dunn CP4-8D19 308-1136
General Information/Receptionist CP4-8C17 308-1113
Special Program Examiner, Joseph Peters, Jr. CP4-8D19A 308-2561
Paralegal, H. Leon Merritt CP4-8D29 308-0573
SAE, Geneva White CP4-8B14 308-2590
Team Leaders:
Team 1, Juanita Smith CP4-8C24 308-0415
Team 2, Arlean Graham CP4-9C23 308-3233
Fax 305-7687
3101 Conveyors, article dispensing, elevators, and sheet feeding or delivering devices
Robert Olszewski CP4-8A15 308-2588
3102 Motor vehicle wheels and bodies, fluid conveying, fire extinguishers and handling implements
David Mitchell CP4-9E16 308-0361
3103 Brakes, fluid pressure brake systems, spring devices railways, and railway equipment
Robert Oberleitner CP4-9D01 308-2569
3104 Spraying devices and land and motor vehicles Andres Kashnikow CP4-9B40 308-1137
3106 Land and motor vehicles
Margaret Focarino CP4-8E02 308-0885
3107 Article handling, check-controlled apparatus, railway track and switches, coin handling, dumping vehicles, merchandising and freight accommodation
Michael Huppert CP4-8B02 308-1107
3200 Material Shaping, Article Manufacturing, Tools CP2-10A12 308-1078
Director, Nicholas P. Godici CP2-10A12 308-1078
Secretary, Shirley Weedon CP2-10A12 308-1078
General Information/Receptionist CP2-10E20 308-1148
SAE, Earl Williams CP2-10E16 308-1730
SPRE, Hien Phan CP2-10E02 308-1742
Team Leaders:
Team 1, Wilma Gross CP2-10E08 305-3570
Team 2, Jolyn Butler CP2-10E08 305-3582
Fax 305-3579
3201 Metal deforming, packaging machinery, woodworking, and miscellaneous hardware
John Sipos CP2-9D01 308-1882
3202 Electrical connectors, gear cutting, milling and chucks
Larry Schwartz CP2-10D32 308-1412
3203 Abrading, workholders, tools and paper manufactures
Bruce Kisliuk CP2-11E16 308-1358
3204 Cutting, cutlery, tools, comminution and wireworking
Richard Seidel CP2-11D32 308-0331
3205 Metal founding, metal turning, miscellaneous hardware, fishing, vermin trapping and welding
Paula Bradley CP2-10A22 308-2319
3206 Metal working, bookmaking and printed matter Mark Rosenbaum CP2-11B02 308-1788
3300 Surgery, Animal Husbandry, Medical Technology, Amusement and Exercise Devices, Sporting Goods, and Printing CP4-4C17 308-0858
Director, John J. Love CP4-4D19 308-0873
Secretary, Norma L. Watson CP4-4D19 308-0873
General Information/Receptionist CP4-4C17 308-2192
SAE, Carolyn A. Brown CP4-4D21 308-2192
SPRE, Allen Ostranger CP4-4D13 308-3136
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Team 2, Valerie Douglas CP4-5C17 308-1337
Paper Correlating Center CP3/4-3D59 308-1054
Fax 305-3590
3301 Surgical instruments, toys, coating implements Robert Hafer CP4-5B24 308-2674
3302 Therapy and exercising devices, orthopedics and surgical instruments (endoscopes)
Richard Apley CP4-5E02 308-0305
3303 Dentistry, surgical instruments, animal husbandry, educational devices, and toiletries
Gene Mancene CP4-5D01 308-2696
3304 Amusement games, sporting goods; and tobacco
Vincent Millin CP4-5B02 308-1005
3305 Surgery, diagnostics, and treatment
Kyle Howell CP4-4E02 308-3256
3306 Surgery, medicators
C. Fred Rosenbaum CP4-4D01 308-2991
3307 Printing, typewriting, respiratory devices
Edgar Burr CP4-5E16 308-0979

3308 Prosthetic devices, medical apparatus
Randall Green CP4-4B02 308-2912
3309 Surgical instruments
Stephen Pellegrino CP4-4E16 308-0871
3400 Solar, Heat, Power and Fluid Engineering
Devices CP4-3C17 308-0861
Director, Donald G. Kelly CP4-3D19 308-0975
Secretary, Donna Ellis CP4-3D19 308-0975
General Information/Receptionist
CP4-3C17 308-0861
SAE, Verlene D. Green CP4-3C17 308-0861
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Team 2, Thurmond Streater CP4-3C24 305-3460
Fax 305-3463
3401 Expansible chamber motors, fluid power
systems, turbines and combustion
Edward K. Look CP4-3B22 308-1044
3402 Internal combustion engines including
charge forming and ignition systems
E. Rollins Cross CP4-2D01 308-1946
3403 Jet engines of the air-breathing type,
aerospace propulsion systems including solid
and liquid fueled rockets, electric and
electromagnetic types, gas turbine power
plants for vehicles and stationary power
generation; turbocharged, supercharged and
rotary internal combustion engines, rotary
expansible chamber devices, and pumps including
expansible chamber, fluid entrainment, and
motor-driven types
Richard A. Bertsch CP4-3B02 308-0102
3404 Environmental control, including heating,
air conditioning, refrigeration and ventilation
(Vacant)CP4-3D01 308-0101
3406 Devices and methods for illumination,
exhaust gas treatment of internal
combustion engines, power plants of the
type using natural heat,
lubrication, stoves and furnaces including
heating the environment and
extracting heat from the sun, and
apparatus for molecular biology
and microbiology
Ira S. Lazarus CP4-2B02 308-1935
3407 Fluid handling which includes valves, pressure
regulators and flow controllers for liquids and
gases, heat exchange, and methods for transferring
heat from one material to another
Martin P. Schwadron CP4-2B42 308-2597
3500 General Construction, Petroleum and
Mining Engineering CP3-3C17 308-2168
Director, Al Lawrence Smith CP3-3D19 308-1020
Secretary, Antoinette Barnes CP3-3D19 308-1020
General Information/Receptionist
CP3-3C17 308-2168
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SPRE, Paul Sacher CP3-3D01 308-3144
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Team 2, Pauline Hawkins CP3-4C23 308-3295
Fax 305-3597
3501 Joints and connections, pipe couplings,
fences, earth and hydraulic engineering
Randolph A. Reese CP3-4E02 308-2121
3502 Gearing, power transmissions, clutches,
machine elements
Charles A. Marmor CP3-3E02 308-0830
3504 Building structures and components
Carl D. Friedman CP3-3E16 308-0839
3505 Supports, racks, fire escapes, ladders,
scaffolds, flexible partitions
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3506 Petroleum, mining, highway and bridge
engineering, well drilling, endless belts
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3507 Tables, chairs, cabinets, windows, doors,
buckles, buttons, clasps
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3508 Fasteners, safes, locks, closure fasteners,
beds, control levers and linkages
Peter Cuomo CP3-4D01 308-0827

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Temporary Search Room CM2-903 ..... 305- 5159
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Erratum

"In the notice of Certificate of Correction appearing at 1161 OG 315, delete all reference to Patent No. 5,206,251, since no certificate of correction was granted."

Erratum

"In the notice of Certificate of Correction appearing at 1162 OG 106, delete Patent No. 5,235,513, the number was erroneously mentioned and should be deleted."

Certificate of Correction For Week of November 8, 1994

B1 4,828,483	5,205,842	5,280,033	5,312,900
P. 8,654	5,206,205	5,280,849	5,313,448
P. 8,677	5,207,352	5,281,591	5,313,812
P. 8,842	5,208,740	5,282,191	5,314,218
P. 8,864	5,211,815	5,283,666	5,314,957
Re. 34,348	5,211,883	5,285,124	5,315,116
Re. 34,687	5,211,939	5,286,065	5,315,893
D. 331,799	5,214,764	5,287,063	5,315,980
D. 332,137	5,219,934	5,288,125	5,316,095
D. 344,144	5,220,423	5,288,988	5,316,173
D. 345,373	5,220,500	5,289,361	5,316,447
D. 348,493	5,220,764	5,289,908	5,316,472
D. 349,365	5,221,596	5,290,259	5,316,838
D. 349,475	5,224,178	5,290,572	5,316,882
D. 349,616	5,225,322	5,291,882	5,317,332
D. 349,825	5,225,559	5,292,386	5,317,464
4,850,953	5,227,400	5,292,943	5,317,615
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5,108,388	5,254,941	5,301,227	5,322,274
5,109,009	5,255,089	5,301,347	5,322,549
5,110,096	5,255,442	5,301,556	5,322,849
5,110,254	5,255,749	5,301,721	5,322,929
5,117,961	5,255,976	5,302,346	5,323,278
5,118,638	5,258,211	5,303,088	5,323,289
5,125,628	5,259,091	5,303,217	5,323,469
5,126,498	5,260,171	5,304,126	5,323,515
5,134,480	5,260,504	5,304,224	5,324,434
5,140,019	5,260,609	5,304,544	5,324,444
5,141,090	5,261,927	5,304,668	5,324,550
5,141,902	5,262,341	5,305,193	5,324,758
5,142,056	5,262,800	5,305,264	5,324,843
5,142,349	5,264,538	5,305,503	5,325,096
5,143,881	5,264,556	5,306,628	5,325,134
5,144,949	5,266,136	5,307,013	5,325,506
5,151,528	5,266,987	5,307,179	5,325,639
5,152,498	5,268,209	5,307,897	5,325,683
5,159,157	5,268,276	5,307,996	5,325,892
5,159,451	5,268,773	5,308,040	5,326,282
5,166,894	5,269,726	5,308,603	5,326,565
5,177,194	5,269,775	5,309,010	5,326,954
5,177,868	5,269,787	5,309,210	5,327,250
5,178,486	5,270,088	5,309,221	5,327,438
5,181,530	5,270,172	5,309,372	5,327,699
5,182,289	5,270,405	5,309,723	5,328,058
5,182,590	5,271,964	5,310,106	5,328,445
5,184,249	5,272,163	5,310,406	5,328,613
5,184,705	5,272,530	5,310,803	5,328,625
5,189,473	5,274,930	5,311,188	5,328,652
5,191,911	5,275,487	5,311,367	5,328,780
5,192,255	5,275,971	5,311,465	5,328,982
5,194,945	5,276,059	5,311,947	5,328,984
5,196,095	5,276,165	5,312,152	5,329,515
5,196,198	5,276,644	5,312,549	5,329,519
5,196,215	5,277,905	5,312,611	5,329,887
5,198,435	5,278,171	5,312,771	5,329,921

5,330,072 5,333,736 5,335,610 5,337,282 5,339,136 5,340,796 5,344,122 5,346,660
5,330,459 5,333,764 5,335,675 5,337,287 5,339,362 5,340,825 5,344,536 5,346,703
5,330,601 5,333,838 5,335,716 5,337,735 5,339,363 5,341,111 5,344,576 5,346,761
5,330,999 5,334,084 5,336,314 5,337,839 5,339,511 5,341,208 5,344,676 5,347,060
5,331,277 5,334,139 5,336,379 5,337,957 5,339,657 5,341,213 5,344,842 5,347,090
5,331,305 5,334,177 5,336,390 5,338,274 5,339,999 5,341,520 5,344,844 5,347,458
5,331,621 5,334,428 5,336,478 5,338,390 5,340,210 5,341,677 5,344,877 5,347,737
5,331,855 5,334,491 5,336,492 5,338,416 5,340,239 5,342,143 5,345,058 5,348,199
5,332,207 5,334,498 5,336,757 5,338,805 5,340,313 5,342,649 5,345,371 5,348,983
5,332,362 5,334,668 5,336,792 5,338,831 5,340,519 5,343,150 5,345,795 5,348,986
5,332,678 5,334,688 5,336,800 5,338,865 5,340,537 5,343,152 5,345,846
5,332,708 5,335,074 5,336,831 5,338,936 5,340,544 5,343,526 5,345,873
5,332,762 5,335,339 5,336,851 5,338,989 5,340,702 5,343,832 5,345,990
5,333,587 5,335,517 5,336,989 5,339,103 5,340,780 5,343,863 5,346,084

Summary of Final Decisions

Issued by the

Trademark Trial and Appeal Board

September 12-16, 1994

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-13	OPP	88,253	Tetley Inc. v. Europco Imports, Inc.	2(d)	Opposition Sustained	"BROWN GOLD" (in stylized lettering) [coffee]	"BLACK GOLD" [coffee and coffee products]		No
9-13	EX	74/173,531	Uarco Inc.	2(e)(1)	Refusal Affirmed		"FLOWGAUGE" [labels for bottles containing intravenous fluids]		No
9-13	OPP	85,159	Standard Register Co. v. Brown Paper Co., Inc.	de jure functionality; whether matter asserted for registration has become distinctive as a trademark [Section 2(1)]	Opposition Sustained (but only on ground that matter asserted for registration has not become distinctive)		"a design pattern consisting of three-line figures, each oriented essentially perpendicularly to adjacent figures," the design covering the entire surface of the goods [blank paper sheets used in the preparation of negotiable instruments and check vouchers]		No
9-13	EX	74/153,025	Weyerhaeuser-Vicwood Partnership	2(d)	Refusal Affirmed		"MERIDIAN CAMPUS" (and design of a sextant) [real estate development services, planning an industrial, commercial, and residential community for others]	design of a sextant [planning and laying out residential communities for others]	No
9-14	OPP	87,992	Pizzeria Uno Corp. v. Gilbert	2(d)	Opposition Sustained	"UNO" [clothing, namely, jackets, sweatshirts, caps, ties, polo shirts, t-shirts, robes and aprons]	"UNO MAS" [shirts, shorts, pants, and jackets]		No
9-14	EX	74/221,192	Brasserie Nationale D'Haiti S.A.	2(d)	Refusal Affirmed		"PRESTIGE" [beer]	"PRESTIGE" [distilled dry gin and whiskey]	No

(1)EX=EX PARTE APPEAL. OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-15	OPP	83,975	British Telecommunications plc v. IDEAssociates, Inc.	2(d)	Opposition Sustained	"CONCERT" [computer programs for the control of and management of voice and data communications networks; magnetic and optical data carriers comprising discs, tapes, cards and wires]	"IDEA CONCERT" [computer hardware, namely, communication controllers and computer programs used therewith for controlling the operation of the communication controllers]		No
9-15	EX	74/296,618	Mission Pharmacal Co., Inc.	2(d)	Refusal Affirmd		"CRAMP GUARD" [an oral dietary calcium supplement used for the treatment or prevention of hypocalcemic tetany]	"CRAMP-GUARD" [a non-prescription formualtion for use as a muscle relaxant and in relieving and preventing pain]	No
9-15	OPP	84,860	Sunshine Mills, Inc., v. Sunshine Bird Supplies, Inc.	2(d)	Opposition Sustained	"SUNSHINE" [dog food and cat food]	"SUNSHINE BIRD SUPPLIES" (and design) [bird seed]		No
9-15	EX	74/205,676	Hughes Aircraft Co.	2(e)(4) (surname)	Refusal Affirmed		"HITT" [computer hardware, software and user manuals]		No
9-15	EX	74/223,123	Gemini, Inc.	whether the matter asserted for registration functions as a trademark for the goods recited in the application	Refusal Affirmed		"LADY LUCK" [beer, wine, prepared alcoholic cocktails, etc.]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-15	EX	74/238,772	Cryomedical Sciences, Inc.	2(e)(1)	Refusal Affirmed		"SMARTPROBE" [one-time use, disposable cryosurgical probes]		Yes
9-16	OPP	88,999	Nouvelle Sportive, Inc. v. Girgner & Felser GmbH & Co. Alta Moda KG	2(d)	Opposition Sustained	"PIA RUCCI" [women's clothing]	"PIA RUCCI" [dresses, blouses, pants, skirts, etc.]		No
9-16	EX EX	74/287,404 74/287,407	P.T. Nyonya Meneer	2(e)(1)	Refusal Affirmed		"JAMU" [herbal tea for medicinal purposes; hair shampoo]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Box 3	Mail for the Office of Personnel from NFC
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Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
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Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
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Box Pat. Ext.	Applications for patent term extension.
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Box Reexam	Requests for Reexamination for *original* request papers *only*.
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Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

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State	*Name of Library*	*Telephone Contact*
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Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
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Idaho	Moscow: University of Idaho Library	(208) 885-6235
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	Springfield: Illinois State Library	(217) 782-5659
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
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	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/15/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	09/09/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	01/25/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/25/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/10/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/11/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/05/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	10/12/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	10/17/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/08/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	03/25/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	01/19/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	10/25/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	10/05/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	11/11/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	05/21/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/02/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during October 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 4,051,552 to 4,055,851 inclusive
Plant Patents ..... 4,117 to 4,137

161-127 O.G.-94-2

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Oct. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	08/30/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	07/27/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/20/94	07/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/03/94	07/05/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	07/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/94	07/05/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	06/27/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/94	07/13/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/17/94	06/04/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	09/08/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	04/26/94	—0—
Renewals (All Classes)	07/07/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

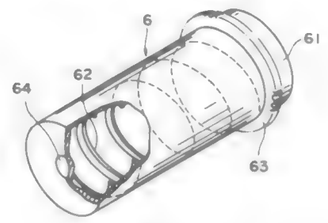
1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

NOVEMBER 8, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,611,730 (2423rd)
TONER REPLENISHING DEVICE
Masumi Ikesue, Tokyo, and Takashi Ikeda, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Reexamination Request No. 90/003,384, Mar. 31, 1994.
Reexamination Certificate for Patent No. 4,611,730, issued Sep. 16, 1986, Ser. No. 598,022, Apr. 9, 1984.
Claims priority, application Japan, Jan. 9, 1984, 59-1729
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—167



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

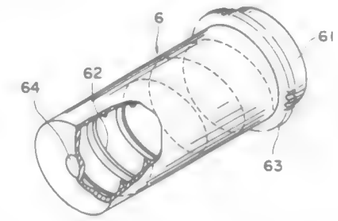
1. A cartridge for use with a toner replenishing device and for detachably, sealingly and rotationally engaging within a cylindrical receptable of the toner replenishing device for the feeding of toner from said cartridge into the toner replenishing device, comprising:

a main portion for containing therein a quantity of toner, said main portion comprising a substantially hollow container having a longitudinal axis and first and second oppositely-disposed ends, said first end being closed, said second end comprising a mouth portion, said mouth portion being integrally formed with said main portion and comprising a substantially annular sidewall having an external circumferential configuration suitable for rotatingly and sealingly engaging within the cylindrical receptacle of the toner replenishing device, said substantially annular sidewall terminating in a plane perpendicular to said longitudinal axis, said main portion being open at said mouth portion for the egress of toner,

said main portion further comprising a spiral guide rib formed on the inner surface thereof and longitudinally extending therein, said guide rib comprising means for moving toner in said cartridge toward said mouth portion and out of said main portion in response to rotation of said cartridge; and

a gear-tooth-bearing member having therein a substantially axially-disposed opening, said gear-tooth-bearing member being removable from and mateable with said main portion by inserting and removing said main portion into and from said axially-disposed opening of said gear-tooth-bearing member, there being gear teeth formed on an outer circumference of said gear-tooth-bearing member, said gear-tooth-bearing member being disposed circumferentially on an external surface of said main portion and in snugly-fitting relation therewith, said snugly-fitting relation being sufficient to render said gear teeth effective to rotate said main portion in response to a driving force applied to said gear teeth.

B1 4,878,603 (2424th)
TONER REPLENISHING DEVICE
Masumi Ikesue, Tokyo, and Takashi Ikeda, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Reexamination Request No. 90/003,383, Mar. 31, 1994.
Reexamination Certificate for Patent No. 4,878,603, issued Nov. 7, 1989, Ser. No. 179,626, Apr. 8, 1988.
Continuation of Ser. No. 866,414, May 23, 1986, Pat. No. 4,744,493, continuation-in-part of Ser. No. 598,022, Apr. 9, 1984, Pat. No. 4,611,730
Claims priority, application Japan, Jan. 9, 1984, 59-1729
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—167



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14** is confirmed.

1. A cartridge for use with a toner replenishing device and for detachable, sealingly and rotationally engaging within a cylindrical portion of a cap-shaped receptacle of the toner replenishing device for the feeding of toner from said cartridge into the toner replenishing device comprising:

a main body containing a quantity of toner, said main body comprising a substantially hollow container having a longitudinal axia and first and second oppositely-disposed ends, said first end being closed, said second end comprising a mouth portion, said mouth portion comprising a substantially annular sidewall terminating in a plane substantially perpendicular to said longitudinal axis, said mouth portion having a configuration suitable for rotational and sealing engagement within and relative to the cap-shaped receptacle of the toner replenishing device, said main body being open at said plane for the egress of toner; and

a gear disposed on and extending circumferentially of said main body for rotatably driving said cartridge.

8. In combination:

a cartridge comprising a main body containing a quantity of toner, said main body comprising a substantially hollow container having a longitudinal axis and first and second oppositely-disposed ends, said first end being closed, said second end comprising a mouth portion, said mouth portion comprising a substantially annular sidewall terminating in a plane substantially perpendicular to said longitudinal axis, said main body being open at said plane for the egress of toner, said cartridge further comprising a gear disposed on said extending circumferentially of said main body; and

a toner replenishing device for releasably holding said cartridge and for receiving toner therefrom, said toner replenishing device comprising driving gear means meshing

with said gear of said cartridge for driving said cartridge in rotation about said longitudinal axis, and a cap-shaped receptacle having a substantially cylindrical portion, said cap-shaped receptacle comprising means for rotationally and sealingly receiving said mouth portion of said cartridge, said cap-shaped receptacle being fixed against rotation about said longitudinal axis whereby said cartridge rotates relative to said cap shaped receptacle.

B1 5,065,258 (2425th)

TRANSMITTING INFORMATION FROM PRODUCER TO END USERS THROUGH SLANT-TRACK TAPE-TO-TAPE COPYING AT HIGHER-THAN-STANDARD SIGNAL TRANSMISSION

Eugene D. Warren, Long Beach; Robert B. Pfannkuch, Manhattan Beach; William C. Lanmeister, San Jose, and Louis L. Pourciau, Portola Valley, all of Calif., assignors to Rank Video Services America, Northbrook, Ill.

Reexamination Request No. 90/003,021, Apr. 6, 1993.
Reexamination Certificate for Patent No. 5,065,258, issued Nov. 12, 1991, Ser. No. 248,401, Sep. 23, 1988.
Continuation-in-part of Ser. No. 906, 822, Sep. 12, 1986, abandoned.
Int. Cl.[5] G11B *5/86*
U.S. Cl. 360—15

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **14–30, 44–60** and **74–87** is confirmed.

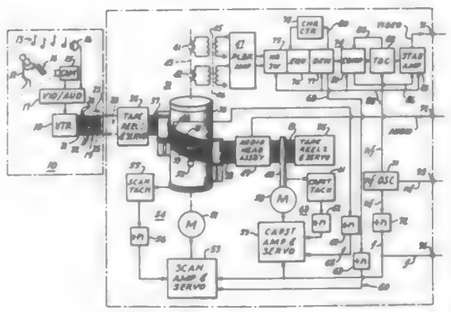
Claims **1, 8, 31, 38, 61** and **68** are determined to be patentable as amended.

Claims **2–7, 9–13, 32–37, 39–43, 62–67** and **69–73**, dependent on an amended claim, are determined to be patentable.

1. In a method of transmitting information from producer to end users without deliberate omission of information tracks, wherein said information is provided on a first recording medium for ultimate playback at a standard speed from a standard format in a series of tracks slanted relative to a direction of movement of the recording medium, with a predetermined standard number of playback heads correlated to said standard format, the improvement comprising in combination the steps of:

reproducing *and demodulating* said information in the form of electric signals seriatim from said first recording medium at increased speed on the order of a multiple, n, of said standard speed; and

simultaneously *remodulating and* rerecording said reproduced information from said electric signals seriatim in said standard format with series of tracks on several sec-



ond recording media at said increased speed with recording heads of only said predetermined standard number for each of said second recording media, said second recording media being moved at a speed being n times a speed standard for said second recording media in said standard format and said heads being rotated at a speed being n times a head speed standard for said standard format, for replay of said rerecorded information by several end users at different times with said predetermined standard number of playback heads from said several recording media at standard speed.

REISSUES

NOVEMBER 8, 1994

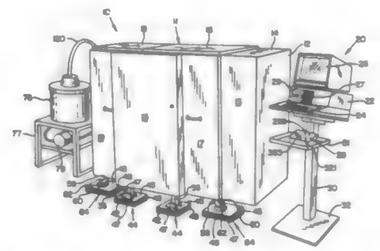
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates additions made by reissue.

Re. 34,776

PROGRAMMABLE APPARATUS AND METHOD FOR DELIVERING MICROINGREDIENT FEED ADDITIVES TO ANIMALS BY WEIGHT

William C. Pratt, P.O. Box 94, Canyon, Tex. 79015

Original No. 4,815,042, dated Mar. 21, 1989, Ser. No. 137,501, Dec. 22, 1987. Continuation-in-part of Ser. No. 833,904, Feb. 26, 1986, Pat. No. 4,733,971. Application for reissue Jun. 26, 1991, Ser. No. 721,685
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—141 **3 Claims**



17. A method of dispensing and delivering microingredient feed additives into a livestock feed ration shortly before delivering the feed ration to the livestock for consumption, comprising the steps:

storing separately multiple said additives in concentrate form, including some said additives in solid particulate-concentrate form and at least [one] *some others* of said multiple additives in liquid concentrate form;

dispensing predetermined amounts of selected said solid particulate concentrates by weight into a liquid carrier *within a mixing vessel;*

dispensing predetermined amounts of selected said liquid additive concentrates *by volume* into [a] *the* liquid carrier [by volume] *within the mixing vessel;*

intermixing the *dispensed* additive concentrates in the liquid carrier *within the mixing vessel*, including both the solid particulate additive concentrates and the liquid additive concentrates, to dilute, disperse, and suspend them and form a liquid carrier-additive slurry *within the mixing vessel;*

after forming the slurry within the mixing vessel, directing the slurry to a receiving station while maintaining the suspension and dispersion of the additives until delivered into a[-]feed ration.

Re. 34,777

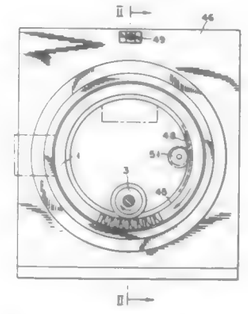
TOOL RING, A METHOD OF MAKING IT, AND A HOLDING TOOL FOR USE IN THE PERFORMANCE OF THE METHOD

Ove Nielsen, Skanderborg, Denmark, assignor to Enkotec A/S, Skanderborg, Denmark

Original No. 5,050,260, dated Sep. 24, 1991, Ser. No. 473,996, Jun. 22, 1990. Application for reissue Sep. 22, 1993, Ser. No. 125,300
Claims priority, application Netherlands, Apr. 24, 1986, 1881/86
Int. Cl.[5] B21G *3/12*
U.S. Cl. 470—129 **20 Claims**

14. A holding tool for use in a tool ring for securing blanks in a machine, of the type comprising a pair of rotating rings where opposite plane side faces of the rings are formed with a plurality of holding tools so adapted that an oblong blank can be secured substantially radially between a pair of holding tools in respective ones of said rings, and where at least one ring has a groove adapted to receive the holding tools

said holding tool having a plane underside and top side which is parallel with said underside and is formed with a track to receive the oblong blank, said track extending radially with respect to a pair of opposite end faces which extend transversely to the top side and the underside, and



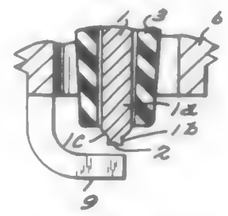
a pair of opposite side faces forming substantially uniform acute angles with a plane defined by said track and the axis common to the end faces, said side faces being oriented so as to act in wedging relationship relative to cooperating wedge faces of adjacent spacer tools arranged in an alternating manner with a plurality of said holding tools in the groove in the tool ring for forcing the holding tools into engagement with an engagement surface of said groove.

Re. 34,778

SPARK PLUG AND METHOD OF MANUFACTURING THE SAME

Ryoji Kondo, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Original No. 4,699,600, dated Oct. 13, 1987, Ser. No. 620,484, Jun. 14, 1984. Division of Ser. No. 372,148, Apr. 27, 1982, abandoned. Application for reissue Jun. 9, 1993, Ser. No. 73,713
Claims priority, application Japan, Apr. 30, 1981, 56-66725; May 7, 1981, 56-68758
Int. Cl.[5] H01T *13/20*
U.S. Cl. 445—7 **15 Claims**



1. A method of making a spark plug for internal combustion engines comprising the steps of:

providing a center electrode made of an electrically conductive base metal;

providing a center electrode made of an electrically conduc-

tive base metal having a uniform diameter, and flat top end surface which faces said ground electrode;

resistance-welding a noble metal tip to said flat top end surface of the center electrode by supplying electric current through said center electrode;

circumferentially cutting the center electrode to provide at and adjacent said flat top end surface thereof a pointed top portion which is smaller in diameter than the other portion of the center electrode; and

providing an insulator securely encasing the center electrode and electrically insulating the center electrode from the ground electrode.

11. A method in accordance with claim 1, wherein said noble metal tip has a thickness less than or equal to 0.5 mm.

Re. 34,779

PYRAZOLE DERIVATIVES AND HERBICIDES CONTAINING THEM

Eiichi Oya; Junichi Watanabe; Yasuo Kondo; Takuya Kakuta, all of Funabashi; Koichi Suzuki, Shiraoka, all of Japan; Tsutomu Nawamaki, Clarence, Mo., and Shigeomi Watanabe, Shiraoka, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

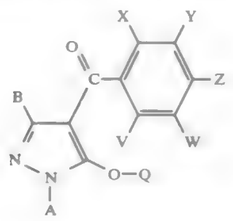
Original No. 4,986,845, dated Jan. 22, 1991, Ser. No. 369,523, Jun. 21, 1989. Application for reissue Sep. 18, 1992, Ser. No. 946,900

Claims priority, application Japan, Jul. 15, 1988, 63-176758; Feb. 3, 1989, 1-26030

Int. Cl.[5] A01N *43/56;* **C07D** *401/12, 413/12, 231/20*

U.S. Cl. 504—282 **10 Claims**

1. A pyrazole derivative of the formula I



(I)

wherein

A is a C_1–C_4 alkyl group, a C_2–C_4 alkenyl group or a C_2–C_4 alkynyl group;

B is a hydrogen atom, a C_1–C_3 alkyl group, a halogen atom, a C_1–C_3 haloalkyl group, a C_1–C_3 alkoxy group, a C_1–C_3 alkylthio group, a C_2–C_4 alkoxyalkyl group, a C_2–C_4 alkylthioalkyl group or a C_2–C_4 alkoxycarbonyl group;

X is a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, a halogen atom, a nitro group, a cyano group, a C_1–C_6 haloalkyl group, a C_2–C_6 alkoxyalkyl group, a C_2–C_6 alkylcarbonyl group, a C_2–C_6 alkoxycarbonyl group, an aminocarbonyl group substituted independently by hydrogen or by a C_1–C_6 alkyl group, a C_1–C_6 haloalkoxy group, a C_1–C_6 alkylthio group or a C_2–C_6 alkylthioalkyl group;

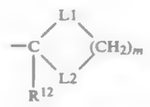
Y is —OR^1 (wherein R^1 is a C_3–C_8 cycloalkyl group, a C_4–C_8 cycloalkylalkyl group, a C_3–C_6 alkenyl group, a C_2–C_6 alkynyl group, a C_1–C_6 haloalkyl group, a C_3–C_8 halocycloalkylalkyl group, a C_3–C_6 haloalkenyl group, a C_2–C_6 haloalkynyl group, *or a C_2–C_6 nitroalkyl group*) [a C_2–C_6 nitroalkyl group or a phenyl group which may be substituted by a C_1–C_3 alkyl group, a halogen atom, a nitro group or a C_1–C_3 alkoxy group)], —O—L—O—R^1 (wherein L is a C_1–C_6 alkylene group which may be substituted by a C_1–C_3 alkyl group, and R^1 is as defined above), —O—L—OH (wherein L is as defined above), —O—L—O—L—O—R^2 (wherein L is as defined above, and R^2 is a hydrogen atom, a C_1–C_6 alkyl group or a phenyl group which may be substituted by a C_1–C_3 alkyl group, a halogen atom, a nitro group or a C_1–C_3 alkoxy group), —O—L—R^3 (wherein L is as defined above, and R^3 is a phenyl group which may be substituted by a C_1–C_3 alkyl group, a halogen atom, a nitro group Or a C_1–C_3 alkoxy group), —O—M (wherein M is a 3- to 6-membered alicyclic group containing not more than two sulfur or oxygen atoms and formed by a linkage of from 1 to 4 carbon atoms), —O—L—M (wherein L and M are as defined above), —O—L—NR^4R^5 (wherein L is as defined above and each of R^4 and R^5 which may be the same or different is a hydrogen atom or a C_1–C_6 alkyl group, or R^4 and R^5 form a 6-membered ring together with the adjacent nitrogen atom), —O—L—$COOR^4$ (wherein L and R^4 are as defined above), —O—CH=CH—$COOR^4$ (wherein R^4 is as defined above), —O—L—CN (wherein L is as defined above), —O—L—C(O)—R^2 (wherein L and R^2 are as defined above), —O—L—$S(O)_n$—R^4 (wherein L and R^4 are as defined above, and n is an integer of from 0 to 2), —O—$COOR^4$ (wherein R^4 are as defined above), —O—$CONR^4R^5$ (wherein R^4 and R^5 are as defined above), *or* —$OP(O)(OR^4)_2$ (wherein R^4 is as defined above), [—$S(O)_nR^1$ (wherein R^1 and n are as defined above), or —$S(O)_n$—L—O—R^1 (wherein L, R^1 and n are as defined above)];

Z is a halogen atom, a nitro group, a C_1–C_3 alkoxy group, a trifluoromethyl group, a trifluoromethoxy group, a cyano group or —$S(O)_nR^6$ (wherein n is as defined above, and R^6 is a C_1–C_3 alkyl group or a C_1–C_3 haloalkyl group);

V is a hydrogen atom, a halogen atom, a C_1–C_4 alkyl group or a C_1–C_4 alkoxy group;

W is a hydrogen atom, a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 haloalkyl group, a C_1–C_4 alkoxy group, a C_2–C_6 alkoxyalkyl group, a C_2–C_5 alkoxycarbonyl group, a C_1–C_3 haloalkoxy group, a nitro group, a cyano group or —$S(O)_n$—R^6 (wherein n and R^6 are as defined above) and

Q is a hydrogen atom, a C_1–C_6 alkyl group which may be substituted by a halogen atom, a C_1–C_6 alkenyl group which may be substituted by a halogen atom, a C_1–C_6 alkynyl group which may be substituted by a halogen atom, a cyanomethyl group, —C(O)—R^7 (wherein R^7 is a phenyl group which may be substituted by the same or different substituents selected from the group consisting of a C_1–C_6 alkyl group, a C_1–C_6 alkenyl group, a C_1–C_6 alkynyl group, a C_1–C_6 haloalkyl group, a C_1–C_6 haloalkenyl group, a C_1–C_6 haloalkynyl group, a halogen atom, a nitro group and a trifluoromethyl group, a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, or a hydroxyl group), —$S(O)_2R^7$ (wherein R^7 is as defined above), —P(O)-$(OR^7)_2$ (wherein R^7 is as defined above), —L—C(O)—R^7 (wherein L and R^7 are as defined above), —L—C-(O)—$N(R^8)(R^9)$ (wherein L is as defined above, and each of R^8 and R^9 which may be the same or different is a hydrogen atom or a C_1–C_6 alkyl group), —L—R^{10} (wherein L is as defined above, and R^{10} is a phenyl group which may be substituted by the same or different substituents selected from the group consisting of a halogen atom, a nitro group and a trifluoromethyl group, a C_1–C_6 alkyl group, a C_1–C_6 alkoxy group, or a hydroxyl group), —L—$N(R^8)(R^9)$ (wherein L, R^8 and R^9 are as defined above), —L—OR^{11} (wherein L is as defined above, and R^{11} is a hydrogen atom, a C_1–C_6 alkyl group, or a C_1–C_6 alkenyl group), —L—OC(O)R^{12} (wherein L is as defined above, and R^{12} is a C_1–C_6 alkyl group or a C_1–C_6 alkoxy group), —L—$S(O)_nR^{11}$ (wherein L, n and R^{11} are as defined above), —L—$SC(O)R^8$ (wherein L and R^8 are as defined above),



(wherein each of L1 and L2 which may be the same or different is a methylene group, an oxygen atom or a sulfur atom, R^{12} is a hydrogen atom or a C_1–C_3 alkyl group, and m is 2 or 3); and a salt thereof.

Re. 34,780

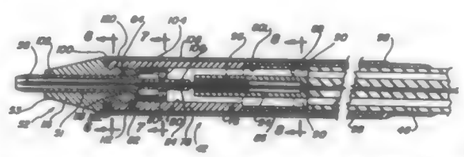
ELECTROSURGICAL CONDUCTIVE GAS STREAM EQUIPMENT

Robert P. Trencansky, Elizabeth, Colo.; Carol A. Bertrand, Cambridge, Mass., and Robert A. Weiss, Waconia, Minn., assignors to Birtcher Medical Systems, Inc., Irvine, Calif.

Original No. 4,901,719, dated Feb. 20, 1990, Ser. No. 224,485, Jul. 26, 1988. Continuation-in-part of Ser. No. 849,950, Apr. 8, 1986, Pat. No. 4,781,175. Application for reissue Feb. 19, 1992, Ser. No. 838,375

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—49 **40 Claims**



1. An electrosurgical unit for creating an eschar in the stroma of a tissue comprising in combination:

means for conducting a preselected gas in a jet stream to the tissue at a predetermined flow rate,

means for transferring electrical energy at a preselected radio frequency range in ionized conductive pathways at a predetermined power level within the gas jet stream in an electrical circuit which includes the tissue to create the eschar,

said means for conducting gas and said means for transferring electrical energy including a flexible hose, connector means having first and second connectable mating portions for connecting the hose to a source of gas and to a source of electrical energy, and nozzle means for delivering the gas jet stream and electrical energy to the tissue,

said hose having at least one hose passageway therethrough for conducting gas and an electrical conductor means for conducting electrical energy therealong,

a rear end of said hose comprising the first mating portion of said connector means, the first mating portion exposing a rear end of the electrical conductor means, the first mating portion including resilient material defining a [circular edge] *sealing surface*, the second mating portion of said connector means including a generally cylindrical element for contacting the [circular edge] *sealing surface* to establish a hermetic seal between said [circular edge] *sealing surface* and the cylindrical element when the first and second mating portions are connected, the second mating portion including an electrical connector means for connecting to said source of electrical energy and operative for contacting the rear end of said electrical conductor means when the first and second mating portions are connected,

a front end of said hose comprising a handle having a front end to which said nozzle means is releasably connected, a nozzle electrical connector means connected to said electrical conductor means at the front end of said handle, a resilient boot on the handle which has a portion that overlaps the front end of the handle where said nozzle means connects, the operative connection of said nozzle means and said handle compressing the overlapping portion of the resilient boot to establish a hermetic seal between the nozzle means and the handle,

said nozzle means including a nozzle passageway therethrough for directing gas from the hose passageway into the jet stream and also including an elongated electrode disposed in the nozzle passageway and having one end contacting the nozzle electrical connector means of the handle when the nozzle means is connected to the handle, and support means for supporting the elongated electrode within the nozzle passageway along a minority of the length of the electrode.

Re. 34,781

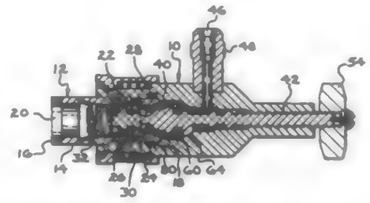
COUPLING ADAPTER

Robert D. Spalink, Grand Rapids, Mich.; Steven M. Knowles, Woodburn, Ind., and John T. Kosztowny, Dearborn, Mich., assignors to Aeroquip Corporation, Maumee, Ohio

Original No. 4,921,013, dated May 1, 1990, Ser. No. 396,323, Aug. 21, 1989. Application for reissue Apr. 10, 1992, Ser. No. 867,263

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.05 **3 Claims**



2. A quick disconnect coupling for an access valve, comprising:

a housing, having a first end, a second end, a central passage having an axis running from said first end of said housing to said second end of said housing, a conduit opening communicating with said central passage, an inlet located in said second end of said housing, and ball bearing cavities spaced about a circumference of said inlet;

a depressor, having a first end and a second end, being mounted for longitudinal movement in said central passage of said housing so that said first end and said second end of said depressor are respectively in coaxial juxtaposition to said first end and said second end of said housing, said depressor being movable between an open position permitting communication through said central passage and a closed position where communication through said central passage is blocked;

a conduit for supplying a fluid in communication with said central passage of said housing; and

quick disconnect means for coupling and uncoupling the quick disconnect coupling to the access valve; and

means for moving said depressor between said open and said closed position, independent of said quick disconnect means.

Re. 34,782

FLUOROMETER

Walter B. Dandliker; Howard S. Barr, both of Escondido; Henry S. Katzenstein, Pacific Palisades, all of Calif., and Keith R. Watson, Baja California, Mexico, assignors to Diatron Corporation, San Diego, Calif.

Original No. 4,877,965, dated Oct. 31, 1989, Ser. No. 751,746, Jul. 1, 1985. Continuation of Ser. No. 611,929, Nov. 13, 1990, abandoned. Application for reissue Oct. 12, 1992, Ser. No. 969,794

Int. Cl.[5] G01N *21/64*

U.S. Cl. 250—458.1 **123 Claims**

1. A fluorometer for measuring *the fluorescence from a specimen having a background fluorescence and* a particular fluorescence emanating from particular fluorophore molecules in [a] *the* specimen *and for distinguishing the measurements of the particular fluorescence from the measurements of the background fluorescence,* including,

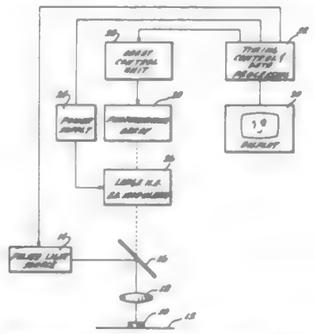
means for producing a burst of concentrated light energy having a pulse time short compared to the decay time of the particular fluorescence and having sufficient energy to excite substantially all of the particular fluorophore molecules,

means responsive to the burst of concentrated light energy

for directing the burst of concentrated light energy toward the specimen to produce a fluorescence from the specimen including the particular fluorescence *and the background fluorescence*,

means responsive to the *particular* fluorescence *and the background fluorescence* from the specimen for detecting [the fluorescence] *such fluorescences* and for producing signals in accordance with such detection,

means coupled to the detecting means for controlling the detecting means within a particular time period, *after the burst of the concentrated light energy,* to optimize the detection of the particular fluorescence and to enhance the detection of the particular fluorescence relative to the [total] *detection of the background* fluorescence, the beginning of the particular time period being defined by a first particular time after the burst of concentrated light energy and during the production of the particular fluorescence *and the background fluorescence* and the end of the particular time period being defined by a second particular time after the first particular time where the second particular time occurs during the production of the particular fluorescence [from the specimen as a result of the burst of the concentrated light energy],



means coupled to the burst producing means, to the detecting means and to the controlling means for timing the operation of [the above] *such* means to sequence the detection of the [fluorescence] *fluorescences* during the particular time period [as a result of] *after* the production of the burst of concentrated light energy,

means [coupled to the detection means for forming] *responsive to the signals produced in accordance with the detection during the particular time period for distinguishing the particular fluorescence produced during the particular time period from the background fluorescence produced during the particular time period and for producing output* signals representative *substantially only* of the particular fluorescence from the specimen *during the particular time period*, and

means responsive to the [detection of] *output signals representing substantially only* the particular fluorescence from the specimen during the particular time period for producing an image of the particular fluorescence.

Re. 34,783

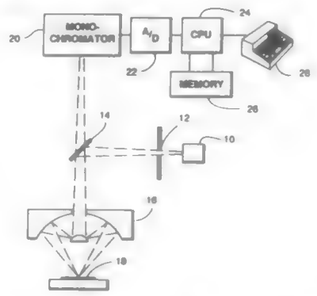
METHOD FOR DETERMINING ABSOLUTE REFLECTANCE OF A MATERIAL IN THE ULTRAVIOLET RANGE

Vincent J. Coates, Palo Alto, Calif., assignor to Nanometrics Incorporated, Sunnyvale

Original No. 5,045,704, dated Sep. 3, 1991, Ser. No. 473,649, Feb. 1, 1990. Application for reissue Aug. 23, 1993, Ser. No. 111,298

Int. Cl.[5] G01J *1/42*

U.S. Cl. 250—372 **5 Claims**



1. A method for determining an absolute reflectance of material from a microscopic measurement of its measured reflectance in the ultraviolet radiation range, said method comprising the steps of:

determining a value of absolute reflectance of a known material at a predetermined wavelength;

measuring the reflectance of said known material to obtain a value of measured reflectance with a microscope illuminated with radiation at said predetermined wavelength;

with said values of absolute reflectance and measured reflectance, calculating an efficiency coefficient representing all absorption and losses caused by the microscope optical system, its reflectance detectors and its illumination system at said predetermined wavelength;

measuring the reflectance of an unknown material to obtain a second value of measured reflectance with said microscope illuminated with said radiation at said predetermined wavelength;

applying said efficiency coefficient to said second value of measured reflectance to obtain a value of absolute reflectance of said unknown material.

PLANT PATENTS

GRANTED NOVEMBER 8, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,968

FLORIBUNDA ROSE PLANT NAMED 'KATELYN ANN'

Pat. T. Henry, Rte. 3, Box 1930, Laurens, S.C. 29360, assignor to Pat. T. Henry, Laurens, S.C.

Filed Oct. 6, 1993, Ser. No. 986,445

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct floribunda rose plant substantially as herein described and illustrated.

8,969

PLUM TREE (BRADPRUNE)

Lowell G. Bradford, 12439 E. Savana Rd., and Norman G. Bradford, 11875 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Feb. 22, 1994, Ser. No. 199,841

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—38.2 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, that is most similar to the Grand Rosa (U.S. Plant Pat. No. 1,756) plum by producing large, semi-freestone, red fruit that matures in early August, but is distinguished therefrom and an improvement thereon by producing fruit that is darker red in skin color, that is smoother in skin texture, that is oblong in shape, that is less susceptible to growth cracking, and that is substantially sweeter in flavor.

8,970

STRAWBERRY PLANT CALLED 'X13'

Thomas M. Sjulin, Watsonville; Amado Q. Amorao, Camarillo, and Joseph I. Espejo, Jr., Watsonville, all of Calif., assignors to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed Dec. 15, 1993, Ser. No. 165,378

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—48 **1 Claim**

1. The new distinct and variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

8,971

CARNATION PLANT NAMED VICTORIA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Chualar, Calif.

Filed Jun. 7, 1993, Ser. No. 72,102

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.2 **1 Claim**

1. A new and distinct carnation plant named Victoria, as described and illustrated.

8,972

MINI-SPRAY CARNATION PLANT NAMED STAVIOLET

Jacob van Andel, Aalsmeer, Netherlands, assignor to Van Staveren, B.V., Aalsmeer, Netherlands

Continuation of Ser. No. 770,403, Oct. 3, 1991, abandoned. This application Jul. 29, 1993, Ser. No. 98,842

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.2 **1 Claim**

1. The new and distinctive mini-spray carnation plant, substantially as herein shown and described, particularly characterized by its small flat cyclamen-purple flowers having petals with a deeply serrated white margins and wide white base and having flowers produced profusely in clusters on strong, upright branches of the main stem of a fast-growing, tall, erect bush.

8,973

CHRYSANTHEMUM PLANT NAMED EMPIRE CHEYENNE

Janet S. Fuess, 22 Country Club Dr., New York Mills, N.Y. 13417

Filed Dec. 7, 1993, Ser. No. 164,403

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Empire Cheyenne, as illustrated and described.

8,974

CHRYSANTHEMUM PLANT NAMED CORAL REAGAN

Martinus Van der Jagt, Langeraar, Netherlands, assignor to Chrysanthemum Breeders Association, N.V., Netherlands Antilles

Continuation of Ser. No. 780,292, Oct. 22, 1991, abandoned. This application Aug. 29, 1993, Ser. No. 101,275

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.3 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Coral Reagan, as described and illustrated.

8,975

AGLAONEMA PLANT NAMED RHAPSODY IN GREEN

B. Frank Brown, Palm Bay, Fla., assignor to Sunshine Foliage World, Zolfo Springs, Fla.

Filed Dec. 27, 1993, Ser. No. 172,893

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named Rhapsody in Green, as illustrated and described.

8,976

AGLAONEMA PLANT NAMED MARY ANN

Richard J. Button, Miami, Fla., assignor to Sunshine Foliage World, Zolfo Springs, Fla.

Filed Dec. 28, 1993, Ser. No. 174,052

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named Mary Ann, as illustrated and described.

8,977

AGLAONEMA PLANT NAMED AMELIA

Richard J. Button, Miami, Fla., assignor to Sunshine Foliage World, Zolfo Springs, Fla.

Filed Dec. 28, 1993, Ser. No. 174,697

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named Amelia, as illustrated and described.

PATENTS

GRANTED NOV. 8, 1994

ERRATA

For CLASS	See PATENT NO.
019-066	5,361,450
019-304	5,361,451
451-165	5,361,543
451-231	5,361,544
451-287	5,361,545
451-310	5,361,546
451-005	5,361,547
451-076	5,361,548
254-292	5,361,565
477-130	5,361,651
119-171	5,361,719
505-329	5,361,720
273-269	5,362,042
494-018	5,362,291
494-074	5,362,292
494-084	5,362,293
600-037	5,362,294
429-192	5,362,493
435-001	5,362,693
435-006	5,362,623
435-007	5,362,624
435-007	5,362,625
437-047	5,362,632
426-656	5,362,869
327-543	5,362,988
327-544	5,362,989
327-538	5,362,990
327-540	5,362,991
327-058	5,362,992
327-094	5,362,993
327-072	5,362,994
327-065	5,362,995
324-207	5,363,033
324-207	5,363,034
315-506	5,363,053
395-600	5,363,121
347-074	5,363,124
361-127	5,363,266

ERRATA—CONTINUED

242-347	5,363,268
363-008	5,363,286
363-020	5,363,287
363-021	5,363,288
363-056	5,363,289
364-145	5,363,290
363-021	5,363,323
117-013	5,363,389

PATENTS

GRANTED NOVEMBER 8, 1994

GENERAL AND MECHANICAL

5,361,410

PADDING DEVICE FOR PROTECTING THE HUMAN BODY AGAINST IMPACT

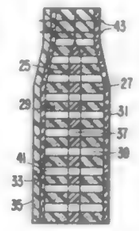
Klaus Sigl, Rosenheimerstrasse 44a, D-8018 Grafing, Germany

Filed Dec. 4, 1991, Ser. No. 802,381

Claims priority, application Germany, Dec. 10, 1990, 9016713[U]

Int. Cl.[5] A41D *13/00*

U.S. Cl. 2—2 **9 Claims**



1. A protective device for use on the human body with a garment comprising a hard material core having at least two sides, one side of which faces the human body, and two padding parts, each of which consists of a foam material with closed pores and in which each of the padding parts is surrounded by a nonperforated lining wherein a padding part is arranged on each side of the hard material core so that one padding is identified as the outer padding and the other padding is identified as the inner padding which is adjacent the human body, and wherein both the hard material core and padding parts have a longitudinal extension, characterized in that both the hard material core and the padding parts excluding the linings have perforations in the direction perpendicular to their longitudinal extension and wherein the outer padding part is provided with a water vapor permeable nonperforated lining at the side facing the human body.

5,361,411

GARMENT FOR THE PROTECTION OF A HEALTH CARE WORKER

William W. Bohn, 6720 Willow La., Mission Hills, Kans. 66208, and Susan M. Koppe, 628 E. 74th St., Kansas City, Mo. 64131

Filed May 8, 1992, Ser. No. 857,922

Int. Cl.[5] A41D *1/00, 10/00*

U.S. Cl. 2—69 **7 Claims**

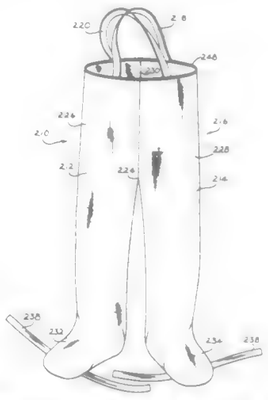
1. A garment for the protection of a wearer thereof and comprising:

a unitary sheath of flexible, substantially fluid-impermeable synthetic resin material having a thickness of from about 1.5–8 mil and presenting an uppermost, tubular, open-top, torso-receiving section and a pair of adjacent depending, tubular leg and foot-receiving sections each presenting a region adjacent a corresponding calf of the wearer and a foot-receiving region, said foot-receiving regions being configured for surrounding the feet and ankles of the wearer and terminating in a closed lowermost end, said leg and foot-receiving sections each having a substantially constant diameter from said calf region and extending throughout a majority of a length of said foot-receiving region,

there being an uppermost margin defining an upper end of said open-top torso-receiving section and which is located, when the garment is worn, above the waist but below the armpits of the wearer and encircling the nipple area of the wearer, the open area defined by said uppermost margin being greater than the torso of the wearer,

each of said leg and foot-receiving sections being of a length to accommodate each corresponding leg and foot of the wearer with the foot-receiving region of each of the leg and foot receiving sections being substantially wider than the wearer's foot;

strap means permanently bonded to each of said foot-receiving regions for binding each of said foot-receiving regions about a corresponding foot and ankle of the wearer; and



suspender means formed of elastic material and secured to said torso-receiving section, said suspender means being oriented for passing over the shoulders of the wearer and resiliently supporting said sheath during movement of the wearer.

5,361,412

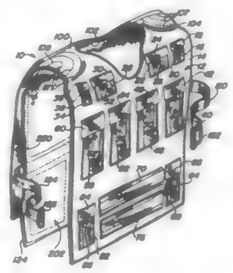
EMERGENCY PREPAREDNESS VEST APPARATUS

Betty J. Perry, 32 W. Rawhide, Gilbert, Ariz. 85234

Filed Apr. 19, 1993, Ser. No. 47,468

Int. Cl.[5] A41D *1/04, 13/00*

U.S. Cl. 2—69 **17 Claims**



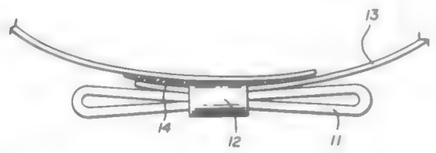
1. Emergency vest apparatus, adapted to be worn by a user and disposed on the user's shoulders, comprising in combination:

outer layer means defining the outside of the vest apparatus, including a front portion and a back portion;

flap means secured to the outer layer means for providing a cover for the back portion of the outer layer means and a rain cover and sunshade for the user, including an outer layer and a generally waterproof layer secured together, and the outer layer includes openings for receiving an infant for converting the flap means into an infant carrier,

with the infant disposed between the outer layer and the generally waterproof layer;
first pocket means, including a first plurality of pockets on the front portion and a second plurality of pockets on the back portion, for receiving and holding items desired by the user;
inner layer means defining the inside of the vest apparatus secured to the outer layer means, and including a front portion and a back portion; and
second pocket means defined between the outer layer means and the inner layer means for receiving and holding items desired by the user.

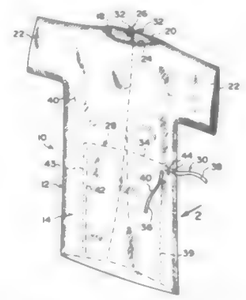
5,361,413
BOW TIE
Aaron M. Schaefer, 1415 N. Brand Blvd., No. H, Glendale, Calif. 91202
Filed Jun. 6, 1991, Ser. No. 711,219
Int. Cl.[5] A41D *25/08, 25/00*
U.S. Cl. 2—144 **4 Claims**



1. A bow tie comprising:
a bow portion comprising a generally rectangular length of fabric folded to define a bow proper of a desired length;
a tubular portion for encircling a central region of said bow portion to define a constricted central region of the bow;
a neck band portion comprising an elongated length of fabric;
said neck band portion including mating hook and pile fabric fastener portions at opposite ends and opposite sides of said neck band portion;
said hook and pile fabric fastener portions being of different lengths at least one of which is greater than the length of said tubular portion, the effective fastening range of said hook and pile fabric fastener portions at least equalling the length of the shorter of said hook and pile fabric fastener portions;
said neck band portion being slidable through said tubular portion to allow said hook and pile portions to engage each other and secure said neck band with said hook and pile portions being fully concealed behind said bow and whereby a portion of one of said hook and pile fastener portions is caused to engage said tubular portion and act as a restraint to movement of said tubular portion with respect to said neck band and effectively lock said tubular member to said neck band.

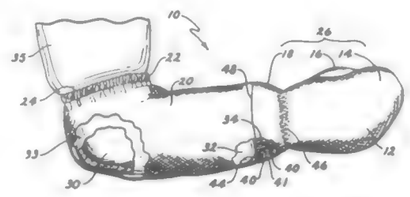
5,361,414
HOSPITAL PRIVACY GOWN
Astor M. Smith, P.O. Box 863, Wheatly Heights, N.Y. 11798
Filed Sep. 29, 1993, Ser. No. 128,093
Int. Cl.[5] A41D *1/00, 10/00*
U.S. Cl. 2—114 **1 Claim**

1. A hospital privacy gown which comprises:
a) a body garment having a front portion, a vertical split rear portion divided into two segments, a pair of sleeves and a neck opening, so that said body garment can be worn by a patient, said front portion, said two segments of said vertically split rear portion and said sleeves of said body garment are integral and fabricated out of a cloth material;
b) means for retaining said two segments of said vertically split rear portion together at said neck opening, said retaining means being a pair of tie strings, each affixed at one end to one side edge of each segment of said vertically split rear portion at said neck opening, so that the free ends of said tie strings can be tied together;
c) means for covering up a lower separation of said two segments of said vertically split rear portion of said body garment, said covering up means is a panel extending upwardly between a bottom edge and a waist location of said two segments of said vertically split rear portion of said body garment, said panel being sewn along a second side under and to one of said segments, so that a first side of said panel will overlap under said second segment of said vertically split rear portion; and



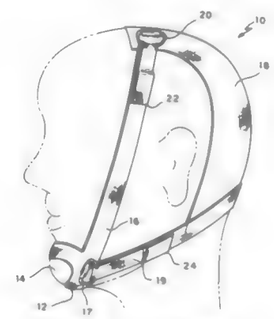
d) means for securing in an adjustable manner, said covering up means at a waist location of said body garment to properly cover the body of the patient for personal modesty and be quickly opened for examination and access thereto, said securing means includes a first strap affixed at one end to one side of said front portion of said body garment at the waist location and a second strap extending outwardly from said first side of said panel at the waist location, so that the free ends of said first and second straps can be tied together, said first strap being fabricated out of said same cloth material, and second strap and said panel being integral and fabricated out of said same cloth material.

5,361,415
CHILD'S MITTEN
Bradley E. Deering, and Diane L. Deering, both of 20795 Linwood Rd., Deephaven, Minn. 55331
Filed Dec. 30, 1992, Ser. No. 998,681
Int. Cl.[5] A41D *19/01*
U.S. Cl. 2—158 **8 Claims**



1. A child's mitten for covering the hand, wrist portion, lower arm and elbow of a child, comprising:
a thermal insulation member, comprising a finger enclosure and a thumb enclosure joined thereto and defining together a hand portion for mounting on a child's hand, said insulation member extending to cover the wearer's hand to the wrist portion thereof; an abrasion resistant pad joined to a shell covering said mitten on normally opposed outer facing portions of said shell of said finger enclosure and said thumb enclosure;
said shell covering the thermal insulation member, said shell including an arm portion comprising a single layer of loose, waterproof or water repellant fabric configured to cover a lower arm portion of an outer garment worn by the child and extending to a cuff end configured to be worn above the wearer's elbow;
an elastic member encircling and joined in said cuff end for compressing the cuff end about the child's arm above the elbow to retain said cuff end above the elbow; and
an elastic band mounted between said shell and said insulation member to compress the insulation member about the child's wrist;
said insulation member has an inner surface, said child's mitten further comprising a liner overcovering the inner surface.

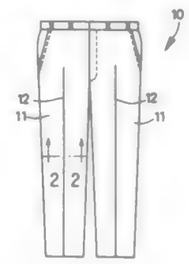
5,361,416
HEADCOVER AND CHIN STRAP FOR TREATING SLEEP APNEA
Steven C. Petrie, 245 Bandra Dr., and Roger C. Petrie, 1925 Melrose #3, both of Walla Walla, Wash. 99362
Filed Nov. 16, 1993, Ser. No. 152,694
Int. Cl.[5] A42B *1/00*
U.S. Cl. 2—171.2 **6 Claims**



1. A headcover and chin strap assembly to aid in the treatment of sleep apnea comprising:
cup means for engaging a chin, said cup means including a first set of D-rings;
headcover means for supporting said cup means, said headcover means including a top, a rear, and a second set of D-rings located proximate to said top, said headcover means being proportioned so that said top covers a crown and said rear covers a nape of a user; and
a first set of straps extending from said cup means for adjustably engaging said second set of D-rings of said headcover means,
a second set of straps extending from the rear of said headcover means for adjustably engaging said first set of D-rings of said cup means.

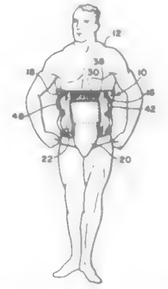
5,361,417
TROUSERS WITH ADHERED CREASES
Tatsuo Watanabe, Nagoya, Japan, assignor to Nikko Wool Textile Co., Ltd., Japan
Filed Dec. 13, 1993, Ser. No. 165,469
Claims priority, application Japan, Sep. 21, 1993, 5-051238[U]
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—227 **6 Claims**

1. A pair of trousers comprising:
two leg coverings adapted to cover two legs of a wearer, respectively, each of said leg coverings including a front and a rear half, at least one of said front and rear halves having a crease line extending over a vertical length thereof, and two side portions extending along said crease line on both sides of the crease line, respectively; and
at least one adhesive tape which connects respective inner surfaces of said side portions to each other over an entire length of the side portions along said crease line, so as to prevent the side portions from opening in a direction in which the side portions become more distant, wherein said at least one adhesive tape comprises a single two-surface adhesive tape having two opposite adhesive surfaces



one of which is adhered to said inner surfaces of said two side portions over the entire length of the side portions, the other adhesive surface of said two-surface adhesive tape consisting of two halves, said two halves being adhered to each other so as to connect said inner surfaces of the two side portions to each other.

5,361,418
SAFETY CARRY GARMENT
Frank J. Luzenske, 9 E. Monroe, Danville, Ill. 61832
Filed Oct. 27, 1993, Ser. No. 143,920
Int. Cl.[5] A41F *3/02*
U.S. Cl. 2—338 **8 Claims**



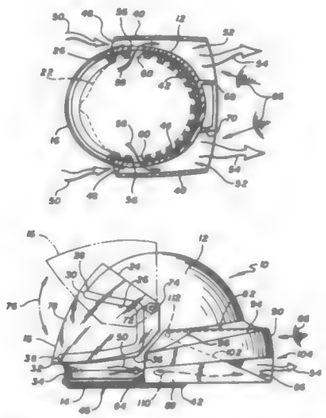
1. A safety device to aid in carrying, stabilizing or moving a person comprising:
a strip of flexible material adapted to be worn about the waist of a wearer and having sufficient width to extend over and embrace the hips,
said strip being provided with a pair of ends and means for releasably securing said ends together to present a band encircling a wearer,
a single connecting element of flexible material cooperating with said band to resist shifting thereof when worn and hold the band on a wearer,
said single connecting element having opposed ends and being adapted to extend front to rear under the crotch of a wearer, one of said ends thereof being joined to said band,
means for releasably attaching the opposite end of said element to said band, and
a plurality of handles on said band at the sides of a wearer for grasping by another person so that the wearer may be easily carried, stabilized or moved.

5,361,419

HELMET WITH SOUND DUCTS

Lawrence A. Bernstein, Malibu, Calif., assignor to Protector Development, Malibu, Calif.

Filed Sep. 12, 1991, Ser. No. 760,527
Int. Cl.[5] A42B *1/08*
U.S. Cl. 2—423 13 Claims



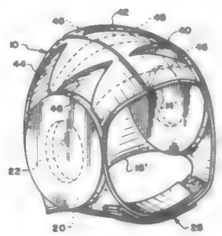
1. A helmet for use with a bicycle, motorcycle or other vehicle, and having a front and a rear, said helmet comprising:
a shell of high strength shock resistant material, and having sides and an opening at the front of said shell allowing a user to see outside said shell, said shell having an inside and an outside., and said sides of said shell extending down over the ears of the user;
a resilient protective layer lining the inside of said shell;
a sound duct on each of said sides of said shell;
each of said sound ducts having an input opening facing to the rear of said helmet from said shell;
means including an opening from each said sound duct through the protective layer, toward the user's ears for directing sounds from behind the helmet to the user's ears;
said input opening being substantially greater in cross-sectional area than the opening through to the user's ears, and the duct being reduced in cross-section from said input opening to said opening to the user's ears.

5,361,420

PROTECTIVE HEAD GEAR FOR WRESTLERS

Patrick E. Dobbs, and Christopher A. Empero, both of Simi Valley, Calif., assignors to C & P Products, Simi Valley, Calif.

Filed Mar. 30, 1993, Ser. No. 39,985
Int. Cl.[5] A42B *7/00*
U.S. Cl. 2—425 6 Claims



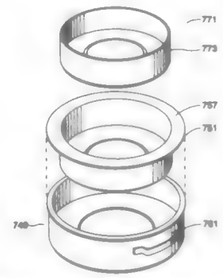
1. Protective headgear for use in the sport of wrestling comprising; a stretchable netting material forming a head covering from the frontal bone to the nape of the neck and covering the ears; a pair of packets formed in the portion of said stretchable netting material covering the ears; resilient foam ring-shaped means secured in said pair of packets; a pair of straps on a front lower portion of said head covering for securing said head cover under the chin; said pair of straps including fastening means for fastening the straps beneath the chin; said fastening means comprising a bifurcated end on one strap forming a pair of fasteners; said bifurcated end receiving and securely clamping the end of the other second strap; said bifurcated ends on said first strap and the end of the second strap having mutually mating fasteners; whereby said bifurcated strap securely clamps the second strap when lateral forces are applied substantially preventing them from coming apart.

5,361,421

ASH PAN FOR INCINERATOR TOILET

Ernest B. Blankenship, Dallas, Tex., assignor to Research Products/Blankenship Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 942,762, Sep. 9, 1992, Pat. No. 5,304,780, which is a division of Ser. No. 659,827, Feb. 22, 1991, Pat. No. 5,153,942, which is a continuation-in-part of Ser. No. 643,784, Jan. 22, 1991, Pat. No. 5,123,122. This application Apr. 8, 1994, Ser. No. 225,048
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—111.5 2 Claims



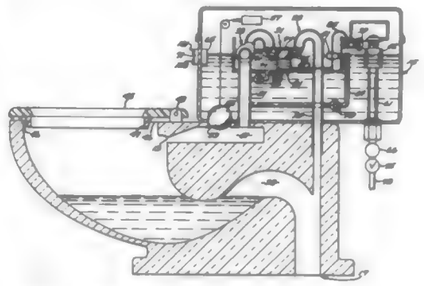
1. An ash pan for use with an incinerator toilet of the type having an incinerator chamber comprising a chamber means with an opening formed therethrough and heating means located in said opening of said chamber means, said ash pan being removably locatable below said chamber means and comprising:
an outer pan formed of stainless steel and comprising an outer annular side wall with an outer bottom wall,
an inner pan formed of stainless steel and comprising an inner annular side wall with an inner bottom wall and a flange extending radially outward from the upper edge of said inner annular side wall of said inner pan,
said inner pan being located in said outer pan with said inner annular side wall and said inner bottom wall being spaced from said outer annular side wall and said outer bottom wall respectively,
the outer edge of said flange being secured to an upper end portion of said outer annular side wall of said outer pan forming an enclosed space,
heat insulation material located in said enclosed space between the exterior surfaces of said annular side wall and said bottom wall of said inner pan and the interior surfaces of said outer annular side wall and said outer bottom wall of said outer pan, and
a removable pan formed of aluminum adapted to be inserted into said inner pan,
said removable pan having an annular side wall and a bottom wall and formed such that the exterior surfaces of said annular side wall and bottom wall of said removable pan engage the interior surfaces of said inner annular side wall and said inner bottom wall respectively of said inner pan when said removable pan is inserted into said inner pan.

5,361,422

TOILET VENTILATING SYSTEM

Cynthia Vincent, Huntington Beach, Calif., and Ray T. Vincent, 504 Terry Ave. #106, Seattle, Wash. 98104, assignors to Ray T. Vincent, Seattle, Wash.

Filed May 21, 1993, Ser. No. 64,217
Int. Cl.[5] E03D *9/052*
U.S. Cl. 4—213 15 Claims



1. A toilet vent system comprising;
a bowl having a sewer connector and formed with at least one vent opening and a water storage tank, including a flush valve;
a vent conduit leading from said opening upwardly in said storage tank and turning to define a cross over, and to then turn downwardly to define an exhaust conduit connecting with said sewer connector to thereby form a vent air flow path from said opening, through said cross over, through said exhaust conduit to said sewer connector;
a water trap valve in said cross over and including a trap chamber to be filled with water to block flow between said conduits;
a trap valve actuator pump connected with said chamber and operative in response to a trap open valve signal to drain water from said chamber and open said trap valve to provide for flow of air therethrough and further responsive to a trap close valve signal to fill said chamber and block flow between said conduits;
an exhaust fan device in said vent conduit to draw air from said bowl to flow through said trap valve and out said exhaust conduit;
a controller connected with said trap valve actuator and said exhaust fan device, including a control switch, and operative to generate said trap open signal to actuate said actuator to drain said chamber and open said trap valve so that actuation of said fan device will draw air out of said bowl to flow it through said valve trap and out said exhaust conduit, said controller further operative to generate said trap close signal to actuate said actuator to fill said chamber, closing said trap valve such that said flush valve may be actuated to flush water from said bowl with said trap valve closed blocking fluid communication from said vent conduit to said exhaust conduit.

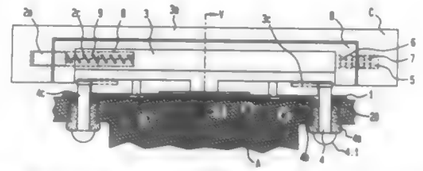
5,361,423

CONNECTING ELEMENT BETWEEN WC SEAT/LID AND WC BOWL

Norbert Nötzold, Felixweg 7, 8130 Starnberg, Germany

Division of Ser. No. 778,932, Feb. 7, 1992, Pat. No. 5,303,429. This application Feb. 9, 1994, Ser. No. 194,033
Claims priority, application Germany, Jun. 14, 1989, 3919408; WIPO, May 23, 1990, EP90/00834
Int. Cl.[5] A47K *13/26*
U.S. Cl. 4—237 11 Claims

1. A connector assembly for detachably securing a toilet seat to a toilet bowl; comprising:
a base plate fixedly securable to the seat and having at least one bore;
clamping means passing through said bore for detachably securing said base plate to said bowl, said clamping means having one end which projects beyond said base plate and another end which is insertable in an aligned mounting hole of the bowl;
actuating means operatively connected to said one end of said clamping means for increasing the shape of said clamping means in a radial direction within said mounting hole to attain a secure attachment of said plate to the bowl; and,



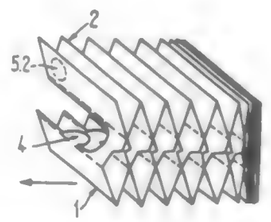
said clamping means includes a tie rod traversing said bore and connected to said actuating means, an elastic cylindrical clamping element supported by said tie rod and bearing with one end thereof which faces said bore upon a disk for preventing said clamping element from being pushed through said bore when said tie rod is actuated by said actuating means.

5,361,424

SPREADABLE PROTECTIVE COVER FOR TOILET SEATS

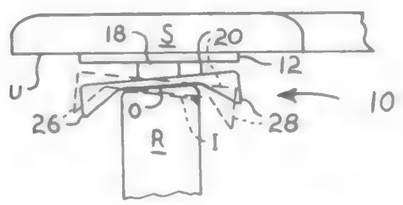
Daniel Grünenfelder, Jurastrasse 15, CH-2544 Bettlach, and Ulrich Rindlisbacher, Seftigen, both of Switzerland, assignors to Daniel Grünenfelder, Bettlach, Switzerland

Filed Aug. 13, 1993, Ser. No. 105,624
Claims priority, application Switzerland, Oct. 27, 1992, 03 341/92-7
Int. Cl.[5] A47K *13/14*
U.S. Cl. 4—245.1 10 Claims



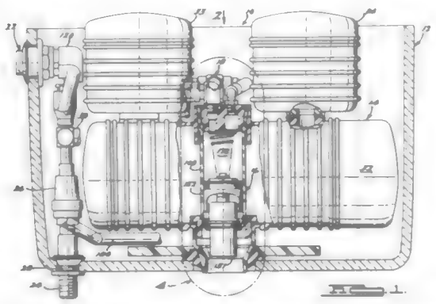
1. A spreadable protective cover for toilet seats comprising, a plurality of substantially identical individual sheets, each sheet having first and second leg portions connected by an intermediate bridge portion, at least one of said leg portions having a length approximately equal to the width of a toilet seat, said plurality of identical sheets overlying each other and being glued along glue seams that are arranged along a plurality of substantially parallel glue lines extending parallel to said leg portions thereby forming honeycomb-like segmented webs when said sheets are spread open in a direction normal to said leg portions, and wherein said plurality of sheets are of sufficient amount such that when said sheets are spread open to form said segmented webs, said web formed by said one of said leg portions will adequately cover a top surface of a toilet seat.

5,361,425
LATERAL RETAINERS FOR TOILET SEAT
Frank Armaano, Sr., 14399 Picea Ct., Ft. Pierce, Fla. 34951
Filed Dec. 13, 1993, Ser. No. 165,593
Int. Cl.[5] A47K *13/04*
U.S. Cl. 4—248 **13 Claims**



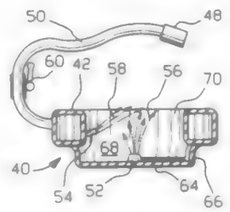
1. A retainer for the prevention of lateral slippage between a toilet seat and an underlying toilet bowl rim, said retainer comprising:
- a planar retainer base portion having a first thickness, a base mounting region and a seat bottom contact surface, and means for securing said contact surface against the bottom surface of a toilet seat;
- a bowl rim engaging portion including a central engaging region, a first end and an oppositely disposed second end, said first end of said bowl rim engaging portion including a first retaining portion, and said second end of said bowl rim engaging portion including a second retaining portion; and
- a resilient member having a second thickness with a first end connected to and extending from said base mounting region and a second end connected to said central engaging region, wherein said resilient member is sandwiched between said retainer base portion and said bowl rim engaging portion thereby defining a spaced relationship between said retainer base portion and said bowl rim engaging portion.

5,361,426
HYDRAULICALLY CONTROLLED PRESSURIZED WATER CLOSET FLUSHING SYSTEM
Raymond B. Martin, Bloomfield Hills, Mich., assignor to W/C Technology Corporation, Troy, Mich.
Filed Apr. 16, 1993, Ser. No. 48,482
Int. Cl.[5] E03D *3/10*
U.S. Cl. 4—361 **7 Claims**



1. A hydraulically controlled pressurized water closet flushing system comprising:
- an accumulator vessel for storing water and air under pressure;
- a water outlet from said vessel;
- a cylinder extending vertically above the water outlet in said vessel and having a lower end in communication with the water outlet thereof;
- a piston in said cylinder defining upper and lower chambers therein;
- means for constantly supplying pressurized water concomitantly to said accumulator vessel and to the upper chamber of said cylinder independently of the position of said piston, said means including a water manifold having a first fluid connection to said accumulator vessel and a second relatively larger fluid connection to the upper chamber of said cylinder;
- an aperture in said cylinder providing communication between the interior of said accumulator vessel and the lower chamber in said cylinder;
- a flush valve on said piston normally closing said water outlet; and
- a normally closed control valve operable to open fluid communication between the upper chamber in said cylinder and ambient air pressure thereby to create a pressure differential across said piston and effect upward movement thereof and opening movement of said flush valve.

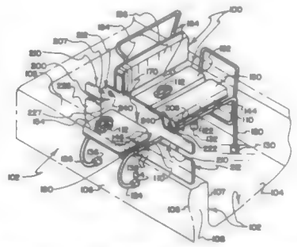
5,361,427
PERSONAL BIDET AND ASSOCIATED METHOD
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Jan. 14, 1994, Ser. No. 181,666
Int. Cl.[5] A47K *3/22, 7/08*
U.S. Cl. 4—420.3 **16 Claims**



1. A bidet device for use with a toilet having a bowl with an annular bowl rim and a toilet seat comprising:
- a substantially annular balloon member sized and adapted to extend over and along one of said rim and said seat, said balloon member being provided with an inlet port for enabling a filling of said balloon member with a fluidic cleaning agent;
- a valve operatively connected to said balloon for closing said inlet port upon a filling of said balloon member with said fluidic cleaning agent; and
- at least one outlet port communicating with said balloon member and connected thereto for dispensing said fluidic cleaning agent from said balloon member upon an application of compressive pressure to said balloon member owing to a person sitting on said balloon member.

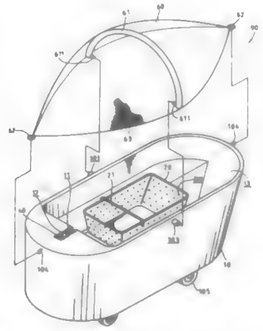
5,361,428
SPLASH GUARD FOR USE WITH TRANSFER BENCH
John P. Nanowsky, 19727 Pioneer Ct., Humble, Tex. 77346, and John H. Kelley, 5751 Sheridan Rd., Youngstown, Ohio 44514
Filed Oct. 7, 1993, Ser. No. 138,647
Int. Cl.[5] A47K *3/12, 3/22*
U.S. Cl. 4—558 **23 Claims**

1. A splash guard for installation about a pair of spaced, substantially horizontally extending rails of a transfer bench for cooperating with a shower curtain that is draped over the rails to prevent water from splashing out of a shower stall or bath tub while the transfer bench is positioned to extend into and out of the stall or tub for supporting an invalid or disabled person, comprising:
- a) flat member means for defining rail receiving formation means configured to enable the flat member means to be removably installed about the pair of spaced, substantially horizontally extending rails for cooperating with a shower curtain that is draped over the rails to prevent water from splashing out of a shower stall or bath tub while the transfer bench is positioned to extend into and out of the stall or tub;
- b) wherein the flat member means includes at least one substantially flat member formed from water resistant material and being of a size and configuration that will permit the flat member means, when removably installed about the pair of spaced rails, to cooperate with a shower curtain that is draped over the rails to close at least a portion of an otherwise "open space" that is not closed by the draped shower curtain at a location between and



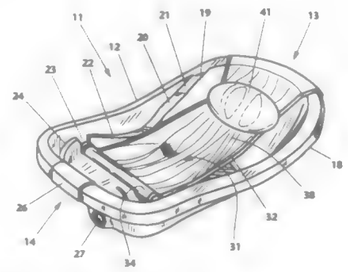
beneath the rails, through which water otherwise can splash on its way toward forming an unwanted puddle on a floor surface outside the shower stall or bath tub;
- c) wherein the rail receiving means includes slot means for extending from a perimeter surface of the at least one substantially flat member toward a central portion thereof for defining an elongate passage through which portions of at least one of the spaced rails can be installed and removed as the flat member means is installed about and removed from the spaced rails; and,
- d) passage closure means for effectively closing at least selected portions of the slot means for preventing water from splashing therethrough when the splash guard is installed about the rails for cooperating with the draped shower curtain.

5,361,429
DOUBLE TUB BATH STRUCTURE
Jung-Fa Lin, 7 Lane Chung, Cheng Kwei, Lin Li Chu Shan Jenn, Nantou,
Filed Nov. 8, 1993, Ser. No. 148,322
Int. Cl.[5] A47K *3/024*
U.S. Cl. 4—572.1 **11 Claims**



1. A double tub bath structure comprising:
primary tub forming therein a water containing recess having a first volumetric dimension;
a secondary tub insertable within and adjustably positionable within said primary tub, said secondary tub having an exterior volumetric dimension less than said first volumetric dimension, said secondary tub having a plurality of through apertures to allow water to flow therethrough;
movable support means for adjustably positioning and supporting said secondary tub within said primary tub to allow said secondary tub to be locationally mounted at different portions within said primary tub, said movable support means including a support plate upon which said secondary tub is removably mounted, said support plate being releasably secured to said primary tub;
control means for releasably holding said movable support means at a desired position within said primary tub so that by releasing said control means, said movable support means is freed to move relative to said primary tub to change the position of said secondary tub.

5,361,430
BABY BATH TUB
Robert D. Wise, Akron, Ohio, assignor to Century Products Company, Macedonia, Ohio
Filed Oct. 1, 1993, Ser. No. 130,559
Int. Cl.[5] A47K *3/024*
U.S. Cl. 4—572.1 **5 Claims**

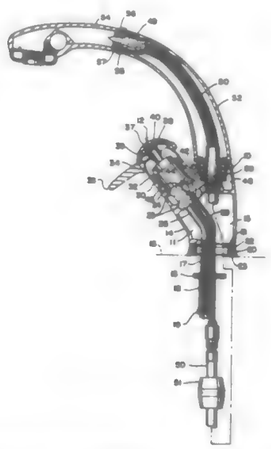


1. A baby bath tub, comprising:
- a tub having a head end and a foot end, and a top and bottom, with a curvilinear overhanging edge surrounding the periphery of said tub and defining said top, and an interior portion for holding water, said tub having formed therein a a pair of slots at said foot end, and curvilinear sidewalls;
- a sling made of a mesh fabric suspended between said two ends, said mesh fabric having two ends each doubled over and joined together to form a loop of fabric at both said two fabric ends, and support rods fitted inside said fabric loops, one of said support rods received by said slots, and the other of said support rods received underneath a portion of said curvilinear overhanging edge at said head end of said tub;
- a pair of ledges each extending below said top of said tub, in said interior portion of said tub, and integral with said tub sidewalls, spanning said tub sidewalls, said slots being formed in said ledge;
- a headrest connected to said mesh sling at said head end;
- wherein said mesh fabric sling may be removably detached from said tub and from said support rods, to allow said fabric sling to be laundered.

5,361,431
VACUUM BREAKER FOR FAUCETS
Donald P. Freier, Sheboygan, and Andrew H. Matznick, New Holstein, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Feb. 2, 1994, Ser. No. 191,244
Int. Cl.[5] E03C *1/10*
U.S. Cl. 4—677 **12 Claims**

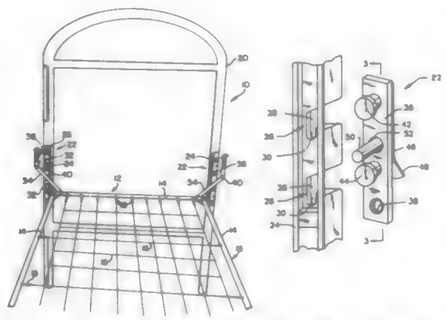
1. A faucet comprising:

a faucet housing having a first bore communicating with a fluid inlet;
a valve unit positioned in the first bore for regulating a flow of fluid from the fluid inlet to an outlet of the valve unit;
a second bore in the housing that is not co-axial to the first bore;



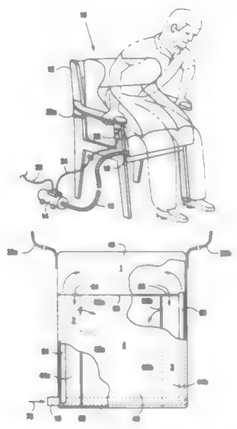
a pull-out spray unit mounted to a tube, the tube extending into the second bore and being axially movable therein;
a conduit operatively connected between the valve unit outlet and the tube; and
a vacuum breaker positioned in the housing, the vacuum breaker including a guide member positioned therein with a portion of the tube passing therethrough.

5,361,432
LOCK BRACKET ASSEMBLY
Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238
Filed Sep. 15, 1993, Ser. No. 121,788
Int. Cl.[5] A47C *19/02*; A47D *7/03*
U.S. Cl. 5—11 **8 Claims**



1. A lock bracket assembly for securing first and second members together, comprising:
an elongated bracket having a plurality of slots therein secured to said first member, each said slot having an enlarged mouth portion and a lower base portion in open communication with the enlarged mouth portion;
a bar connected with said second member;
at least one mounting pin mounted on said bar for insertion within at least one respective said slot so as to mount said second member to said first member; and
lift-prevention means for preventing escape of said at least one mounting pin from said at least one respective slot, said lift-prevention means including:
a lift-prevention opening in said bracket,
an extension opening in said bar, and
extension means, separate from said pin and connected with said bar, for extending through said extension opening and into said lift-prevention opening when said at least one mounting pin is inserted within said at least one respective slot.

5,361,433
PNEUMATIC SIT/STAND ASSISTANCE DEVICE UTILIZING SEQUENTIAL INFLATION FOR STABILIZING EFFECTS
B. W. Vanzant, 7743 Pimlico, Boerne, Tex. 78006
Filed May 21, 1993, Ser. No. 65,561
Int. Cl.[5] A47C *7/00*
U.S. Cl. 5—81.1 **19 Claims**

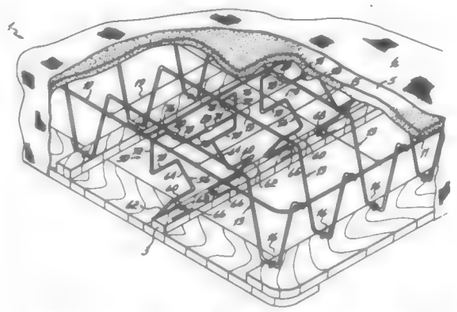


1. An air operated inflatable, cushionlike sit/stand device for assisting physically disadvantaged persons in moving to or from a seated position, comprising:
a center cavity, wherein a person may be seated in the center cavity, and wherein the center cavity is capable of receiving air supplied thereto to lift the person upward a certain distance; and
an outer cavity connected to said center cavity and capable of receiving air supplied thereto to stabilize the person as the person is lifted.

5,361,434
STACKABLE BEDDING FOUNDATION
Robert C. Hagemeister, Boston, Mass.; Steven E. Ogle, and Thomas J. Wells, both of Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.
Continuation of Ser. No. 880,289, May 4, 1992, abandoned, which is a continuation of Ser. No. 767,246, Sep. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 629,160, Dec. 18, 1990, Pat. No. 5,052,064. This application Dec. 9, 1992, Ser. No. 988,030
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] A47C *23/053*
U.S. Cl. 5—247 **8 Claims**

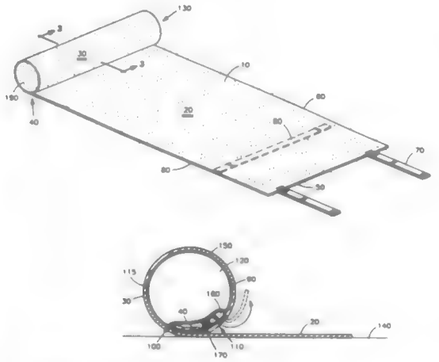
1. A bedding foundation comprising:
a rectangular base,
a nestably stackable wire core assembly fixedly attached atop said base, and

spring means disposed between and connected to said base and said nestably stackable assembly;
said nestably stackable assembly comprising:
a rectangular border wire having two parallel sides and two parallel ends,
transversely-spaced, parallel, and longitudinally-extending support wires parallel to said border wire sides and having ends connected to said border wire ends, said support wires being formed so as to be generally corrugated along their lengths, said corrugatedly formed



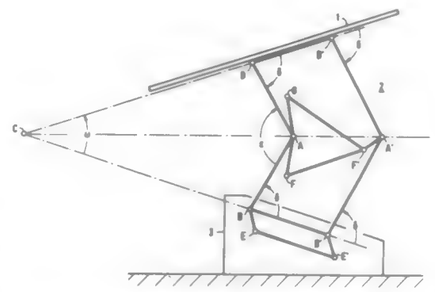
support wires having peaks and valleys, said peaks being flattened at their tops, said flattened peaks being generally coplanar with a plane defined by said border wire, said valleys being vertically displaced beneath and intermediate of said flattened peaks, and
longitudinally-spaced, parallel, and transversely-extending upper connector wires parallel to said border wire ends and having ends connected to said border wire sides, said upper connector wires being connected intermediate of their ends along their lengths to said flattened peaks of said support wires.

5,361,435
PORTABLE BEACH TOWEL WITH SECURITY POCKET
Brian M. Reeves, 28501 La Falda, Laguna Niguel, Calif. 92677
Filed Mar. 28, 1994, Ser. No. 219,132
Int. Cl.[5] A47G *9/06*
U.S. Cl. 5—419 **5 Claims**



1. A beach towel comprising:
an elongated, water-absorbent fabric portion having a top surface and a bottom surface, and defining opposing, substantially parallel, laterally extending top and bottom ends with edges, and in orthogonal juxtaposition thereto, opposing, substantially parallel, laterally extending side edges;
a pair of spaced apart loops of elastic material, each of the loops being fastened to the bottom surface near the bottom end edge and extending therefrom;
a carrying strap fastened to the bottom surface near the bottom end edge and extending between the side edges;
a pocket formed by folding the top end edge over the top surface, the pocket extending between the side edges in such manner as to form an enclosure space within the pocket and further providing an access aperture between the top end edge and the top surface;
a pillow of a soft compliant material shaped as an elongated rod of a size and conformation to fit within the pocket providing a head rest means, the pocket taking the shape of the pillow in such manner as to position the access aperture beneath the pillow so that the access aperture is normally hidden from view when the towel is rested upon a generally flat surface, the pocket further including a pouch for storing belongings, the pouch being fastened such that the aperture opens into the pouch, the top end of the fabric portion forming a movable flap for covering the aperture.

5,361,436
PATIENT SUPPORT APPARATUS FOR MEDICAL EXAMINATIONS
Alfred Hahn, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Aug. 17, 1993, Ser. No. 107,057
Claims priority, application Germany, Sep. 2, 1992, 4229318
Int. Cl.[5] A61G *7/00, 13/00*
U.S. Cl. 5—601 **4 Claims**



1. An apparatus for supporting a patient during an examination, comprising:
a patient support plate having opposite ends; and
lifting and pivoting means attached to said patient support plate for lifting said support plate and pivoting said support plate around a stationary., virtual axis disposed at an end of said patient support plate.

5,361,437
MASSAGE CUSHION FOR PROVIDING A HAMMERING MODE MASSAGE
Li S. Zhu; Wei He; Yu C. Huang, and Wan S. Guo, all of Shanghai, China, assignors to Shanghai Intor Electrical Applicance Factory, Shanghai, China
Filed Dec. 16, 1992, Ser. No. 991,159
Claims priority, application China, Dec. 19, 1991, 91231059.6
Int. Cl.[5] A47C *20/02*
U.S. Cl. 5—639 **3 Claims**

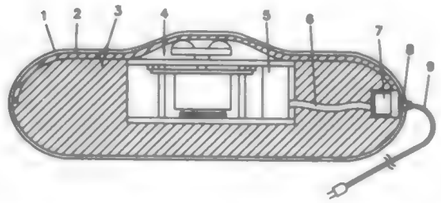
1. A massage cushion for providing hammering mode massage comprising:
an electromagnetic hammering massage device and a layer of padding enveloping said electromagnetic hammering

massage device, said electromagnetic hammering massage device includes:

an electromagnetic hammering mechanism including a hammering head and means for reciprocally moving said hammering head relative to said electromagnetic hammering mechanism;

an electric control unit installed in the cushion for controlling said electromagnetic hammering mechanism; and

a clamping plate frame supporting said electromagnetic hammering mechanism, said clamping plate frame includes:



a rear plate having a hole centrally formed therein, four columns symmetrically distributed around the hole of said rear plate, an end of each column fixed on said rear plate,

a front plate having a hole centrally formed therein, a free end of each of said four columns fixed to said front plate,

said electromagnetic hammering mechanism slideably mounted on said columns to allow reciprocal movement within said frame, and

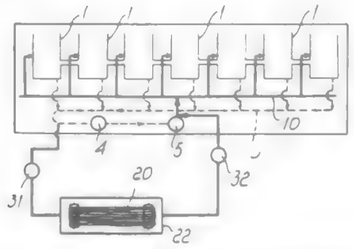
a shock absorbing block fixed to a bottom surface of the front plate and around the hole in said front plate.

5,361,438

PROCESS FOR THE INDIGO DYEING OF YARNS IN SKEINS

Agostino Parati, Brembate Sopra, Italy, assignor to Leglertex S.p.A.

Filed Jul. 13, 1993, Ser. No. 91,212
Claims priority, application Italy, Jul. 14, 1992, NI92A001708
Int. Cl.[5] D06B *3/09*
U.S. Cl. 8—149.1 **5 Claims**



1. Process for the indigo dyeing of yarns in hanks or skeins, comprising the steps of:

placing a skein of yarn on at least two spaced rollers;

at least partially impregnating said skein in an indigo dyeing bath drawn continuously from a main indigo dyeing bath of a plant for the continuous dyeing of yarn in ropes or bands;

exposing said skein in air for oxidation;

alternately repeating the impregnation and oxidation steps for a preset number of times which is a function of the color intensity to be obtained;

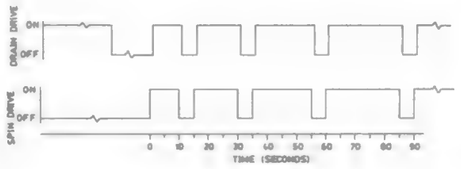
washing the skein to remove the residue of dye which has not been fixed to the yarn of said skein; and drying said skein.

5,361,439

METHOD AND APPARATUS FOR SPINNING AND DRAINING AUTOMATIC CLOTHES WASHER

Gregory L. Malchow, Oshkosh, Wis., assignor to Speed Queen Company, Ripon, Wis.

Filed Oct. 12, 1993, Ser. No. 135,215
Int. Cl.[5] D06F *23/04*
U.S. Cl. 8—158 **12 Claims**



1. In an automatic top-loading clothes washer having a wash tub with a perforated inner spin basket rotatable by a spin drive and a drain pump for pumping water from the wash tub, a method of draining water from the wash tub and spinning the spin basket to extract water from clothes in the spin basket, comprising the steps of:

activating the drain pump to pump down water in the wash tub;

activating the spin drive with a predetermined on and off schedule to prevent the spin basket from reaching a maximum spin speed during an initial period of a spin cycle after pumping down water in the wash tub; and

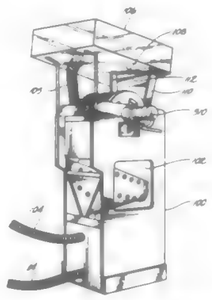
activating the drain pump with said predetermined on and off schedule to turn said spin drive and drain pump on and off together in complete unison during the initial period of the spin cycle to purge the pump of compressible fluid during off time.

5,361,440

PLAY PIT BALL CLEANING DEVICE

Jay Buchbinder, and Paul Molina, both of Huntington Beach, Calif., assignors to Jay Buchbinder Industries, Inc., Long Beach, Calif.

Filed Nov. 24, 1993, Ser. No. 157,955
Int. Cl.[5] A63B *47/04*
U.S. Cl. 15—21.2 **7 Claims**



1. A collection, washing, and dispensing apparatus for lightweight balls comprising:

a first pneumatic transport means having an input for receiving the balls and an output;

an elevated storage hopper connected to the output of the first transport means, the hopper having an angled bottom surface terminating in a downchute for gravity feed of balls from the hopper into the downchute;

a scrubbing element having a rotating drum mounted in a semicylindrical mating rack immersed in a fluid tight wash tub containing washing solution, the semicylindrical rack attached to receive balls from the downchute, the drum mounted with respect to the rack in spaced relation to frictionally engage the received balls between the drum and rack, rotation of the drum urging the balls around the rack to an exit lip of the tub;

a gravity feed race mounted proximate the exit lip, the race carrying balls to a collection funnel;

a sterilization spray means mounted over the race for spraying balls with a sterilizing fluid; and

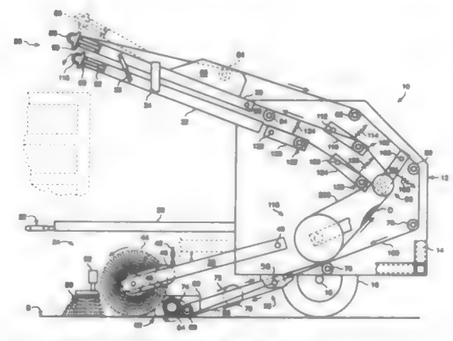
a second pneumatic transport means connected to receive balls at the funnel for dispensing.

5,361,441

ROAD-SWEEPING MACHINE

Harry L. Williamson, Franklin, Ky., assignor to Schwarze Industries, Inc., Huntsville, Ala.

Filed Apr. 8, 1993, Ser. No. 44,177
Int. Cl.[5] E01H *1/04*
U.S. Cl. 15—84 **10 Claims**



1. A machine for sweeping debris from a roadway, comprising:

a wheeled frame for movement along a roadway in an intended direction;

a brush means supported by said frame and engageable with a roadway surface for brushing debris from the roadway;

a means supported by said frame for conveying debris brushed from the roadway surface to a discharge end from which debris swept from the roadway is discharged, said conveying means including a first conveyor belt for receiving debris from said brush means and a second conveyor belt confronting at least a portion of said first conveyor belt for restraining the debris between the confronting portions of the first and second conveyor belts, said first and second conveyor belts in substantially confronting relationship toward and to said discharge end, said discharge end including a first sub-frame structure for supporting said first conveyor belt and a second sub-frame structure for supporting said second conveyor belt in confronting relationship to said first conveyor belt, said first sub-frame structure pivotally mounted relative to said frame above said second sub-frame to move said first conveyor belt towards and away from said second conveyor belt in response to the size of the debris transported therebetween to said discharge end, a distal end of said pivotally mounted sub-frame structure adjacent said discharge end extending beyond a distal end of said second sub-frame structure; and

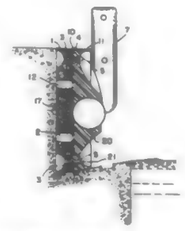
a conveyor belt support means including a plurality of rollers about which said first and second conveyor belts are entrained and including at least one resiliently biased, repositionable roller that tensions said first and second conveyor belts and re-positions in response to the size of the debris constrained between the confronting surfaces of said first and second conveyor belts.

5,361,442

POOL TILE SCRUBBER

Mark Payne, and Amy Payne, both of 75 Akron Rd., Lake Worth, Fla. 33467

Filed Feb. 4, 1994, Ser. No. 151,101
Int. Cl.[5] E04H *4/16;* **B08B** *9/36*
U.S. Cl. 15—97.1 **13 Claims**



1. A rotary scrubber for scrubbing a surface to be cleaned, said scrubber comprising:

A) a handle means having a long axis;

B) a ball attached to said handle means and extending therefrom at an angle transverse to said long axis;

C) a circular disc having a substantially flat broad front face, a perimeter, and a rear face;

D) a socket formed in said rear face, said socket receiving said ball for rotatably mounting said disc on said handle means, thereby providing said disc with an axis of rotation, said axis of rotation being adjustable to suit particular scrubbing situations;

E) said perimeter being provided with a frictional surface to thereby cause said disc to rotate when said perimeter is moved against a surface adjoining said surface to be cleaned;

F) a discoidal scrubbing means; and

G) holding means for holding said discoidal scrubbing means against said front face.

5,361,443

ELASTIC COUPLING FOR A CAR WASH ROTARY WHEEL ASSEMBLY

Michael J. Belanger, Walled Lake, and Robert J. Wentworth, Farmington Hills, both of Mich., assignors to Belanger, Inc., Northville, Mich.

Filed Apr. 27, 1993, Ser. No. 53,715
Int. Cl.[5] B60S *3/06*
U.S. Cl. 15—97.3 **15 Claims**

1. An apparatus for washing the generally vertical exterior surfaces of a vehicle passing relative thereto along a longitudinal path, the apparatus comprising:

a frame oriented outside of the path of the vehicle to be washed;

an arm having a pivotal end attached to the frame and an opposed free end spaced therefrom said free and shiftable between an inboard position above the path of the vehicle and an outboard position adjacent to the outboard edge of the vehicle;

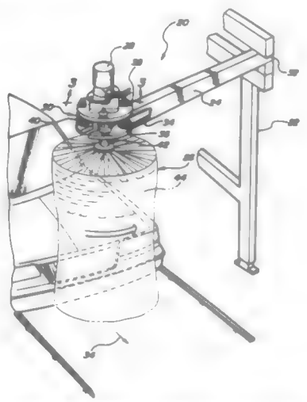
a support member cooperating with said arm and positioned at a location spaced from the pivotable end;

a generally vertical rotatable wheel assembly having a central shaft and a flexible outer periphery for washing the exterior surfaces of a vehicle;

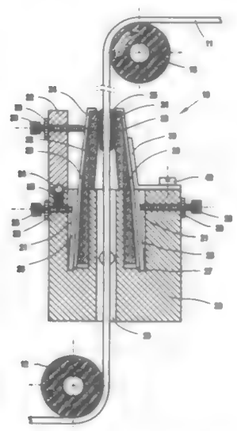
a drive mechanism operably connected to the wheel assembly central shaft for rotating the wheel assembly about a central axis; and

an elastic coupling assembly for freely suspending the drive motor and attached wheel assembly from the frame, said

elastic coupling assembly including a mounting member spaced above the support member by at least one elastic member radially spaced from and circumferentially arranged about the central shaft, said at least one elastic member being loaded in compression between the mounting and support members enabling the wheel assembly and mounting member to move relative to the supporting member through a limited range, facilitating deflection of the wheel assembly in response to engagement with the vehicle enabling the shaft to deviate a limited amount from a vertical orientation.

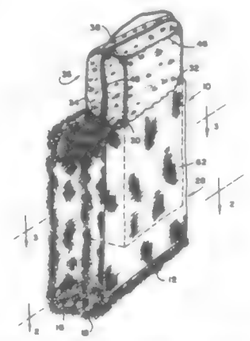


5,361,444
FILM CLEANING APPARATUS
Horst A. Theilemann, Munich, Germany, assignor to Retheto Filmtechnik Theilemann & Co., Munich, Germany
Filed Apr. 11, 1994, Ser. No. 226,063
Int. Cl.[5] G03D *15/00*
U.S. Cl. 15—100 **3 Claims**



1. An apparatus or cleaning soiled films comprising: a transport mechanism for the film, a wet cleaning station including a storage chamber for containing liquid cleaning agent, a pair of wick plates of capillary material received in said storage chamber so as to be wetted by the liquid cleaning agent disposed therein and extending therefrom upwardly in spaced relationship for receiving therebetween said films to be cleaned, pressure plates extending upwardly from said storage chamber adjacent said wick plates and engaging said wick plates and pressing them with an adjustable force toward one another and into contact with the soiled film for wetting the film passing therebetween via a U-shaped cloth strip disposed between said wick plates and said film, a pressure panel disposed in said storage chamber adjacent each wick plate, a compression structure disposed adjacent each pressure panel and extending through the storage chamber wall for forcing said pressure panel into engagement with said wick plate with an adjustable force, said storage chamber having upper edges adjacent said wick plates and said pressure panels engaging said wick plates with said upper storage chamber edges so as to provide a capillary flow passage restriction in said wick plates adjacent said upper storage chamber edges with a restricted cross-section which is adjustable by said compression structure.

5,361,445
SCRUBBER WASHER APPARATUS
Nicholas M. Giallourakis, Tarpon Springs, Fla., assignor to Sponge Fishing Co., Inc., Tarpon Springs, Fla.
Filed Feb. 26, 1993, Ser. No. 23,939
Int. Cl.[5] A47L *13/12, 13/16*
U.S. Cl. 15—118 **10 Claims**



1. Cleaning apparatus, comprising a generally rectangular washing sheet having first and second spaced parallel longitudinal edges and spaced first and second end edges at ends of the longitudinal edges, a generally rectangular scrubbing sheet having first and second spaced parallel longitudinal edges and spaced first and second end edges at opposite ends of the longitudinal edges, stitches joining the sheets together along the first and second spaced longitudinal edges and first end edges of both sheets, an open pocket formed between the sheets within the sewn longitudinal edges and the sewn first end edges of the sheets, an opening formed along the second end edges of the sheets for providing access to the open pocket, a resilient rectangular sponge block for fluid expulsion when being squeezed and fluid absorption when being released, a soft, absorbent, wiping and drying material overlying and surrounding the sponge block and having edges stitched together, forming a closed pocket for receiving and holding the sponge block and forming with the sponge block a wiper and dryer block which readily absorbs and expels water, the wiper and dryer block being placed in the open pocket formed by the washing sheet and scrubbing sheet, the wiper and dryer block being received within the open pocket in a friction fit for holding the wiper and dryer block.

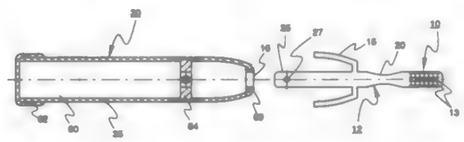
5,361,446
TOOTHBRUSH
Mark Rufo, 21 Woodcrest Dr., Concord, N.H. 03301
Filed May 6, 1993, Ser. No. 58,558
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **6 Claims**

1. A toothbrush with a disposable brush and a permanent handle having a cavity, said handle having a bullet-shaped end with an opening therein for receiving said disposable brush comprising:

detent means, including an insertion end and attached to said disposable brush, for releasably engaging said disposable brush to said permanent handle;

plunger means, attached to said permanent handle, for releasably securing said disposable brush to said permanent handle;

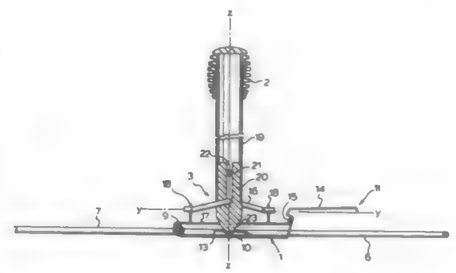
a cup-shaped guard, medially disposed on and along the length of said disposable brush, dimensioned to match and snap over the bullet-shaped end of said permanent handle



such that when said guard is snapped over the bullet-shaped end of said handle, said guard forms a seal between said guard and said permanent handle;

a water-impermeable seal within the opening of said permanent handle, wherein the opening of said permanent handle and its said seal are dimensioned to correspond to the insertion end of said detent means such that when the insertion end of said detent means is inserted into the opening of said permanent handle, said seal forms a water-impermeable connection between said detent means of said disposable brush, adjacent to said guard, and said permanent handle.

5,361,447
FREE STANDING MOP
Heiner Ophardt, Vineland, Canada, assignor to Hygiene-Technik Inc., Beamsville, Canada
Filed Apr. 22, 1993, Ser. No. 51,187
Claims priority, application Canada, Jan. 22, 1993, 2087929
Int. Cl.[5] A47L *13/252;* **B25G** *3/38*
U.S. Cl. 15—229.6 **13 Claims**



1. A free standing implement comprising:

an elongate handle having a longitudinal axis;

a base having means for supporting the implement with the handle in a free standing upright position, said means for supporting comprising a planar bottom;

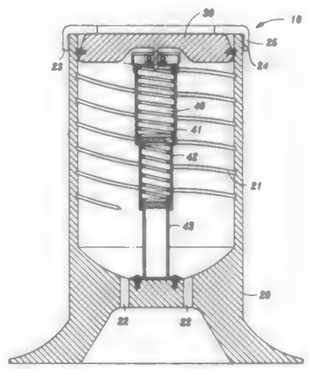
a universal joint coupling, joining the base and handle;

a nib extending longitudinally from the end of said handle beyond the universal joint coupling toward the base;

socket means connected to the base; and

means for resiliently biasing the socket means to engage the nib when said handle is in said upright position whereby said engagement provides lateral resistance to brace the handle in said upright position and said socket means releases said nib so that said handle may coact with the base in a universal manner when said axis is positioned at an acute angle relative to the planar bottom.

5,361,448
DEWATERING DEVICE FOR A SWAB
Shu H. A. Chao, 18F-1, No. 155, Sec. 4, Hsinyi Rd., Taipei,
Filed May 10, 1993, Ser. No. 58,121
Int. Cl.[5] A47L *13/58*
U.S. Cl. 15—263 **12 Claims**



1. A dewatering device for a swab of the type that includes strands which may be twisted to cause the removal of water therefrom comprising:

a body including a hollow upper body portion and an enlarged lower body portion, said upper body portion including inner and outer wall surfaces, said outer wall surface being externally threaded at an uppermost portion thereof, said upper body portion being formed with a spiral groove that extends along said inner wall surface, said body further including a plurality of drain holes opening into said hollow upper body portion and extending through said lower body portion;

an expansion pipe assembly positioned within said hollow upper body portion and secured to said lower body portion, said expansion pipe assembly including first, second and third sleeves, means telescopingly interconnecting said first, second and third sleeves for movement between extended and retracted positions and spring means biasing said first, second and third sleeves to said extended position, each of said first, second and third sleeves including upper and lower ends, the upper end of said second sleeve being formed with an outer lug that engages an inner lug formed at the lower end of said first sleeve and the upper end of said third sleeve being formed with an outer lug that engages an inner lug formed at the lower end of said second sleeve when said first, second and third sleeves are in said extended position, said first sleeve being threaded on an outer surface of its upper end;

a support member including an internally threaded portion threadably secured to the upper end of said first sleeve and an externally threaded portion, said support member further including a centrally located recess;

a bearing unit positioned within the centrally located recess of said support member, said bearing unit including a central bore;

a cover member threadably attached to the externally threaded portion of said support member, said cover member including a centrally located hole aligned with the central bore of said bearing unit;

a guide element secured within the hollow upper body portion of said body, said guide element including opposing lateral sides, each of said lateral sides being formed with a guide hole, said guide element further including a spindle

projecting from a central portion thereof, said spindle extending through the centrally located hole of said cover member and the central bore of said bearing unit;

a pair of guide devices each of which is received within a respective one of the guide holes of said guide element, each of said guide devices including a portion that projects into said spiral groove; and

an internally threaded cover that is threadably attached to the externally threaded uppermost portion of said body,

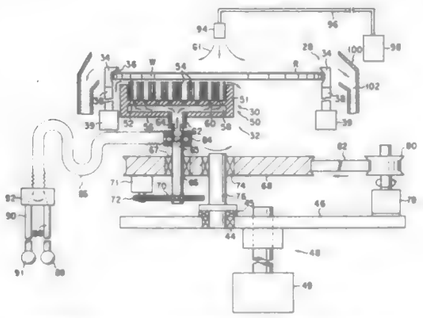
whereby said dewatering device is adapted to receive a swab with strands of the swag extending over said guide element such that, when the swab is pushed into the body of the dewatering device, the guiding element will rotate from a non-use position due to the engagement between the guide devices and the spiral groove so as to cause the expansion pipe to telescope within the hollow upper body portion against the biasing force of said spring means and strands of the swab to be twisted in order to remove water therefrom which exits the body of the dewatering device through the plurality of draining holes and, upon removal of the swab from the dewatering device, the spring means causes the guiding element to be repositioned to its non-use position.

5,361,449

CLEANING APPARATUS FOR CLEANING REVERSE SURFACE OF SEMICONDUCTOR WAFER

Masami Akimoto, Kumamoto, Japan, assignor to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Filed Oct. 1, 1993, Ser. No. 130,464
Claims priority, application Japan, Oct. 2, 1992, 4-289391
Int. Cl.[5] B08B *1/00*; H01L *21/304*
U.S. Cl. 15—302 **20 Claims**



1. A cleaning apparatus for cleaning a reverse surface of a semiconductor wafer reverse to a major surface thereof to be subjected to semiconductor treatments, comprising:

a pair of holders for holding the wafer therebetween such that the wafer is kept substantially horizontal with the major surface directed upward;

holder driving means for moving the holders close to each other and away from each other in a horizontal direction;

first supply means for supplying cleaning liquid to the reverse surface of the wafer held by the holders;

washing means for removing, with the use of the cleaning liquid, a contaminant from the reverse surface of the wafer held by the holders; and

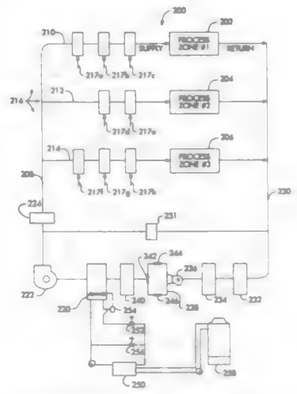
second supply means for supplying a drying gas to the reverse surface of the wafer held by the holders.

5,361,450

DIRECT CONTROL OF FIBER TESTING OR PROCESSING PERFORMANCE PARAMETERS BY APPLICATION OF CONTROLLED, CONDITIONED GAS FLOWS

Frederick M. Shofner, and Mark G. Townes, both of Knoxville, Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Filed Dec. 31, 1992, Ser. No. 999,226
Int. Cl.[5] D01B *3/04*
U.S. Cl. 19—66 R **30 Claims**



1. A method for processing fiber in a machine comprising:

measuring a plurality of processing performance parameters; and

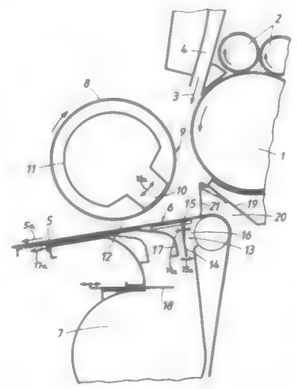
controlling the plurality of processing performance parameters in accordance with a predetermined optimal control strategy by deliberately applying a gas flow conditioned by at least one controlling parameter.

5,361,451

APPARATUS FOR MAKING A NONWOVEN WEB

Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria

Filed Jun. 15, 1993, Ser. No. 78,017
Claims priority, application Austria, Jun. 26, 1992, 1304/92
Int. Cl.[5] D01G *25/00, 27/00*
U.S. Cl. 19—304 **5 Claims**



1. In an apparatus for making a nonwoven web comprising an air-permeable collecting surface member operable to revolve in a direction of movement and having an at least

substantially flat fiber-receiving portion having a width extending transversely to the direction of movement,

a toothed opening roller disposed on one side of said collecting surface member and operable to open a lap of fibers, the opening roller being adapted to be driven to rotate in a predetermined direction at a surface speed which is sufficient to cause the fibers of said lap to be thrown from said opening roller under centrifugal force in a stream of fibers onto the collecting surface member, and

a suction box adjacent to said fiber-receiving portion on a side of said collecting surface member which is remote from said opening roller, which suction box has an opening facing the fiber-receiving portion and is operable to suck through said fiber-receiving portion a stream of air for entraining the stream of fibers thrown from said opening roller,

the improvement comprising

a guide roller disposed on the one side of said collecting surface member and vertically spaced from said fiber-receiving portion, the guide roller being operable to rotate in a direction opposite to that of said opening roller and having a leading circumferential surface portion facing said opening roller and projecting into the stream of fibers to deflect a part of the fibers thrown from said opening roller and a trailing circumferential surface portion facing said fiber-receiving portion and constituting a suction zone, and

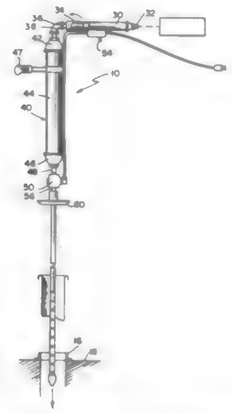
guide means in said suction box opening for distribution of said air stream sucked through said fiber-receiving portion in the direction of movement of the collecting surface member.

5,361,452

REDUCER CANNON CLEANING DEVICE

Roger Horn, 703 Oak St., Buchanan, Mich. 49107

Filed Apr. 29, 1993, Ser. No. 54,740
Int. Cl.[5] B08B *9/06*
U.S. Cl. 15—406 **24 Claims**



1. A device for cleaning debris from a debris collecting unit, comprising:

a handle for allowing a user to hold and control said device;

a generally hollow conduit connected to said handle;

a source of pressurized air, said source including a means of providing said air to said device, such that said air is allowed to enter said conduit adjacent said handle and exit a distill end of said conduit opposite said handle;

said conduit including a bell reducer for directing and focusing the flow of air through said conduit;

a generally circular plate attached to said conduit opposite said handle, said plate being positionable adjacent said collecting unit such that said air entering said conduit passes there through and exits said conduit adjacent said plate and enter said collecting unit to clean said debris therefrom; and

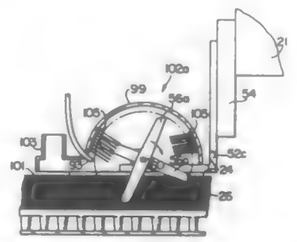
control means for regulating the flow of air through said conduit; and at least one attachment extending within said collecting unit has been added.

5,361,453

BRISTLE BED CLEANER FOR SHEET MATERIAL CUTTING MACHINE

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Sep. 11, 1992, Ser. No. 943,880
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—308 **48 Claims**



1. A sheet material cutting machine having a bristle bed with vertically extending bristles having free ends defining a support surface for supporting sheet material to be cut, and a cleaner means associated with said bristle bed for removing debris therefrom, said cleaner means having a plurality of blades fixed relative to and spaced from one another along a given line, support means for supporting said cleaner means on said cutting machine adjacent said bristle bed; and means for moving said blades of said cleaner means and said bed relative to one another so that each blade moves through said bed in a plane perpendicular to said given line to dislodge debris from said bristle bed, each of said blades having a free outer end and a length dimension extending from said given line to said free outer end, and each of said blades further having a thickness measured parallel to said given line which along most of its length is a number of times smaller than its width so that at said outer end it is relatively easily deflectable laterally out of said plane and is relatively non-deflectable in said plane.

5,361,454

SNAP-ON SWIVEL WHEEL ASSEMBLY

Daniel P. Sumser, North Canton, and Michael P. Green, Youngstown, both of Ohio, assignors to Century Products Company, Macedonia, Ohio

Filed Aug. 2, 1993, Ser. No. 101,511
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—20 **10 Claims**

1. A modular wheel assembly for use with a weight-bearing frame member, including;

a wheel supporting unit, including a sleeve portion, and axle tube, and means for joining said sleeve portion and said axle tube;

mounting means for joining said wheel supporting unit to the frame member in freely pivoting fashion; and

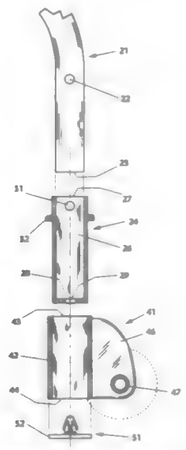
snap-engaging means for securing said wheel supporting unit to said mounting means;

wherein said mounting means includes a tubular member having upper and lower ends, said tubular member being adapted to be secured to the frame member and dimensioned to be inserted within an upper end of said sleeve portion of said wheel supporting unit;

wherein said mounting means further includes annular bear-

ing means extending from said tubular member and disposed to transfer weight from said tubular member to said sleeve portion while maintaining said freely pivoting engagement of said mounting means and said wheel supporting unit;

wherein said annular bearing means includes an annular bearing flange extending outwardly from said tubular



member to engage said upper end of said sleeve portion; and

wherein said annular bearing flange includes an annular bearing surface for impinging on said upper end of said sleeve portion, and an annular drop edge extending integrally from said bearing surface to engage and retain a peripheral surface portion of said sleeve portion.

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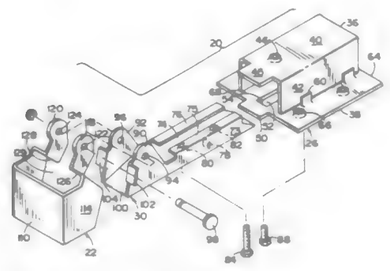
HINGE

James Kiefer, Grand Rapids, Mich., assignor to RAN Enterprises, Inc., Grand Rapids, Mich.

Filed Dec. 29, 1992, Ser. No. 997,906

Int. Cl.[5] E05D *5/08, 7/10, 7/04*

U.S. Cl. 16—235 **25 Claims**



1. A hinge for a vehicle comprising:

a hinge base adapted to attach to one of a vehicle panel and a vehicle;

a panel bracket adapted to attach to the other of a vehicle panel and a vehicle;

a hinge member operably connected to said hinge base and said panel bracket, said panel bracket being slideably attached to said hinge member and movable between an extended position and a retracted final assembly position, said hinge member being pivotally connected to said hinge base and being rotatably movable through an arcuate path including a panel open position, a panel closed position and at least one intermediate position therebetween, said panel bracket when in said extended position being movable to the intermediate position in said arcuate path so that the panel is spaced from the vehicle to facilitate painting of the panel and the vehicle, said panel bracket when in said retracted position locating the panel relative to the vehicle as desired, said panel bracket including a first hole and said hinge member including a second hole which align when in said extended position, and said hinge member including a third hole which aligns with said first hole when in said retracted position;

a fastener system for securing said panel bracket to said hinge member in said extended position and in said retracted position, said fastener system for securing including a bolt engageable with first and second holes when aligned, and with said first and third holes when aligned, whereby the panel can be readily extended to facilitate painting and can be retracted for final panel fit during vehicle assembly without removing the panel from the vehicle; and

a limiting member on one of said panel bracket and said hinge bracket for limiting the sliding movement of said hinge member on said panel bracket to a predetermined stroke.

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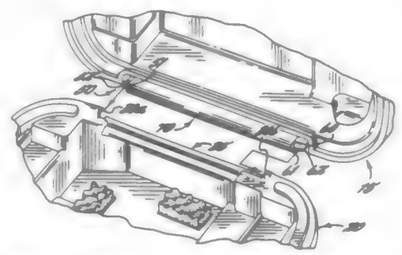
HINGE CONFIGURATION

John P. Newby, Sr., Raleigh, N.C., assignor to Southern Case, Inc., Raleigh, N.C.

Filed Jun. 29, 1992, Ser. No. 906,683

Int. Cl.[5] E05D *7/10*

U.S. Cl. 16—257 **13 Claims**



1. A hinge interconnecting a first member and a second member for pivotal movement about an axis of rotation comprising:

(a) a first rotatable member;

(b) a flexing member having a fixed end attached to said first rotatable member, a free end opposite said fixed end, and a concave arcuate surface, said arcuate surface being disposed above, extending along, and having a longitudinal axis parallel to said axis of rotation;

(c) a shoulder underlying and extending parallel to said axis of rotation and in adjacent relation to said flexing member and having a fixed edge abutting said first rotatable member, and a free edge opposite said abutting edge, and a retaining surface extending between said fixed edge and said free edge, said free end of said shoulder and said free end of said flexing member forming, when viewed from along said axis of rotation, a gap having a specified height when said flexing member is undeflected;

(d) a second rotatable member;

(e) a substantially semicylindrical ridge member fixed to said second rotatable member, said ridge being adapted to abut said retaining surface of said shoulder having a longitudinal axis parallel to the axis of rotation; and

(f) a post member matable with said arcuate surface of said flexing member and having a fixed end attached to said rotatable member, a free end opposite said fixed end, a longitudinal axis extending from said free end to said fixed end, and a cammed surface extending from said free end toward said fixed end, the minimum distance from said cammed surface across said post member to said semicylindrical ridge being greater than the height of said opening of said hinge sleeve, and being oriented such that the longitudinal axis of said post member is parallel to the longitudinal axis of said semicylindrical ridge; and

(g) means for restraining the axial movement of said post member along the axis of rotation;

interconnection of said first rotatable member and said second rotatable member being effected by positioning said post member so that its longitudinal axis is aligned parallel the longitudinal axis of said hinge sleeve within said opening, said angled face contacts said free end, and said ridge contacts said shoulder, then effecting movement of said post member and said semicylindrical ridge toward said first rotatable member so that said free end of said flexing member slides along said cammed surface and deflects away from the axis of rotation, thereby increasing the size of said gap, and effecting further movement of said post member and said semicylindrical ridge to a position wherein said free end returns to its original configuration, thereby permanently capturing said post member within flexing member.

13. A pivotally interconnected enclosure comprising:

(a) a blow-molded first rotatable member having

(i) a pair of flexing members each having a fixed end attached to said first rotatable member, a free end opposite said fixed end, and a concave arcuate surface, said arcuate surface being disposed above, extending along, and having a longitudinal axis parallel to the axis of rotation;

(ii) a shoulder underlying and extending parallel the axis of rotation and in adjacent relation to said flexing member having a fixed edge abutting said first rotatable member, and a free edge opposite said abutting edge, and a retaining surface extending between said fixed edge and said free edge, so that, viewed from along the axis of rotation, said free end of said shoulder and said free end of said flexing member form a gap having a specified height when said flexing member is undeflected; and

(b) a blow-molded second rotatable member comprising:

(i) a substantially semicylindrical ridge fixed to said rotating member and adapted for mating with said retaining surface of said shoulder having a longitudinal axis parallel to the axis of rotation;

(ii) a post member adapted for mating with said arcuate surface of said flexing member having a fixed end attached to said rotatable member, a free end opposite said fixed end, a longitudinal axis extending from said free end to said fixed end, and a cammed surface extending from said free end toward said fixed end, the minimum distance from said cammed surface across said post member to said semicylindrical ridge being greater than the height of said opening of said hinge sleeve, and being oriented such that the longitudinal axis of said post member is parallel to the longitudinal axis of said semicylindrical ridge; and

(iii) a cylindrical post member attached adjacent said semicylindrical ridge having a longitudinal axis parallel to said cammed post member; interconnection of said first rotatable member and said second rotatable member being effected by first axially inserting said cylindrical post member into one of said pair of flexing members, positioning said second rotatable member so that its longitudinal axis is aligned parallel the longitudinal axis of said flexing member sleeve within said opening, said cammed surface contacts said free end, and said ridge contacts said shoulder, then effecting movement of said post member and said semicylindrical ridge toward said first rotatable member so that said free end of said flexing member slides along said cammed surface and deflects away from the axis of rotation, thereby increasing the size of said gap, and effecting further movement of said post member and said semicylindrical ridge to a position wherein said hinge sleeve so that said free end returns to its original configuration, thereby permanently capturing said post member with said flexing member.

5,361,457

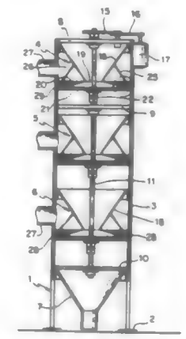
DEVICE FOR DE-LINTING COTTON SEEDS

Wladimir P. Gordo, Rua Macedo Soares, 427, Cidade Universitária, Campinas, São Paulo, and Mario de Souza N. Pitta, Fazenda Ressaca, Santo Antônio de Posse, São Paulo, both of Brazil

Filed Apr. 16, 1993, Ser. No. 47,204

Int. Cl.[5] A01G *7/00*

U.S. Cl. 19—41 **19 Claims**



1. Device for de-linting cotton seeds comprising a unit provided with upper and lower superimposed discs spaced by a distance of the same order as the larger dimension of an at least partially linted cotton seed, rotary drive means associated with at least one of said upper and lower discs for imparting relative rotary movement to said discs about at least one axis of rotation, cotton seed input means associated with said first and second discs for feeding at least partially linted cotton seeds to the space between said discs substantially along said axis of rotation, seed collection means arranged to collect seeds expelled from said space between said discs at the periphery of said discs, and lint extraction suction means in communication with said periphery for extraction of lint removed from said seeds, said upper and lower discs having respective lower and upper facing sides made of rubber-like material, said upper facing side of said lower disc comprising a rough friction producing surface, and said lower facing side of said upper disc being formed with a multiplicity of small protuberances.

5,361,458

APPARATUS FOR CONTROLLING MACHINES FOR CLEANING OF FIBERS

Robert Demuth, Nurensdorf, and Jurg Fana, Dinhard, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Division of Ser. No. 673,418, Mar. 22, 1991, Pat. No. 5,181,295.

This application Nov. 12, 1992, Ser. No. 974,936

Claims priority, application Switzerland, Mar. 22, 1990, 957/90

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] D01G *9/00*

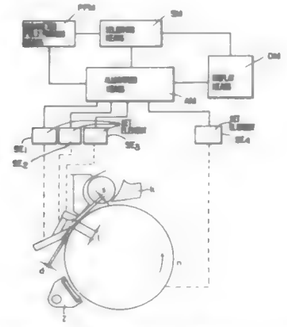
U.S. Cl. 19—65 A **19 Claims**

5. An arrangement for controlling fiber or flock processing functions, said arrangement comprising:

means for allocating machine setting values of a machine or machine group of different machines for cleaning fibers,

into a first machine operating function representative of the intensity of cleaning of the fibers and a second machine operating function representative of the quantity of fiber waste, said machine setting values being representative of predetermined variations of setting possibilities of setting elements of the machine or machine group;

means for forming a parameter field representing a region of useful fiber treatment results derived from a respective table whose contents have been empirically determined for the intensity of cleaning of the fibers and for the quantity of fiber waste, respectively, said parameter field establishing an applicable useful range of the setting possibilities of the setting elements of the machine or the machine



group with regard to the intensity of cleaning of the fibers and the quantity of fiber waste;

means for selecting a working point within the parameter field, upon operation of the machine or the machine group, to derive control signals for setting of the setting elements with regard to the intensity of cleaning of the fibers and the quantity of the fiber waste;

means for employing the derived control signals for setting the setting elements with regard to the intensity of cleaning of the fibers and the quantity of the fiber waste; and

means for operating the machine or the machine group with such setting of the setting elements, in order to control the machine or the machine group of different machines for cleaning of the fibers.

5,361,459

CLIP ASSEMBLY

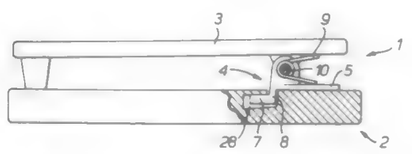
Tapani Hyvonen, Turku, and Tarmo Maenpaa, Salo, both of Finland, assignors to Nokia Mobile Phones Ltd., Finland

Filed Jan. 22, 1993, Ser. No. 7,593

Claims priority, application Finland, Jan. 23, 1992, 920297

Int. Cl.[5] A44B *21/00*; **A45F** *5/00*

U.S. Cl. 24—35 **10 Claims**



1. A clip assembly for releasable attachment to a body, comprising;

an attachment member;

a clip member pivotally mounted on the attachment member, the attachment member being configured for releasable insertion into a complementary recess provided in the body;

and means bearing mutually against said attachment member and said clip member for biasing the clip member towards the body

characterized in that the means for biasing the clip member also biases the attachment member into locking engagement in the recess.

5,361,460

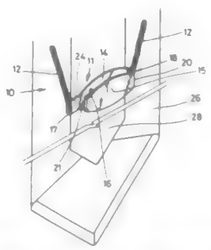
TIE CLIP MOUNTED BEHIND A TIE

Chih-Teng Pan, P.O. Box 96-405, Taipei 10098, Taiwan, Prov. of China

Filed Dec. 27, 1993, Ser. No. 173,617

Int. Cl.[5] A41D *25/00*

U.S. Cl. 24—49 R **6 Claims**



1. A tie clip mounted behind a tie comprising:

a body portion being made of a thin and resilient plate bent into a shape; said body portion including an inner plate, an outer plate, an inner clip arm, a resilient plate and a hook portion; a bent-closed end and a clip opening being furnished between said inner plate and said outer plate; said inner plate and said outer plate being arranged in parallel each other, and connected together on said bent-closed end; said outer plate having an inner clip arm between said inner plate and said outer plate; an inner end of said inner clip arm being in close contact with an inner surface of said inner plate; said inner clip arm further extended into said resilient plate and said hook portion; both ends of said inner plate being provided with two small round holes respectively for connecting two chains respectively;

other end of each said chains being sewed to back side of a tie at a symmetrical position to maintain said tie always in a vertical position upon a user movement.

5,361,461

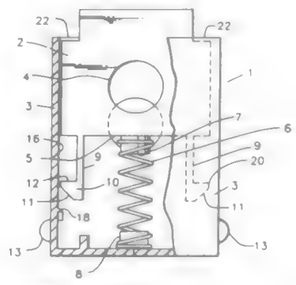
PRELOADABLE CORD LOCK

Joseph Anscher, Port Washington, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed Sep. 16, 1993, Ser. No. 122,111

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—115 G **18 Claims**



1. A preloadable cord lock comprising:

an outer telescoping member having an aperture defined therethrough;

an inner telescoping member having an aperture defined therethrough, the inner member being slidable within the outer member;

a means for retaining the cord lock in a preloaded position where the aperture of the inner member is at least partially aligned with aperture of the outer member such that the cord lock may receive a cord through an area defined by an overlap of both of said apertures in said preloaded position, the means for retaining including cooperating projection means integrally formed to each of the inner and outer telescoping members;

a means for biasing said inner and outer members toward a cord locking position where the aperture of the inner member is out of alignment with the aperture of the outer member to an extent which is sufficient to pinch a cord threaded through the overlap of the apertures; and

a means for disengaging said means for retaining.

5,361,462

MOLDED SURFACE FASTENER

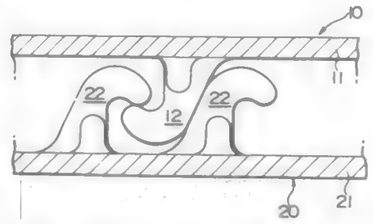
Ryuichi Murasaki, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,656

Claims priority, application Japan, Apr. 24, 1992, 4-027364[U]

Int. Cl.[5] A44B *18/00*

U.S. Cl. 24—452 **4 Claims**



1. A molded surface fastener comprising: first and second engaging parts each including a flat hook bed having on its surface a multiplicity of rows of hooks molded integrally of said flat hook bed;

each of said hooks including a raised portion and a hook-shape engaging portion extending forwardly from a distal end of said raised portion, said raised portion having an inclined back surface smoothly curving upwardly from said hook bed and a vertical front surface, each said hook having a varying cross-sectional area increasing gradually from a distal end of said hook-shape engaging portion to a base of said raised portion; and

said hooks of said first engaging part and said hooks of said second engaging part being arranged mutually in opposite directions, the row direction pitch of said hooks of one of said first and second engaging parts being twice the row direction pitch of said hooks of the other engaging part.

5,361,463

ONE PIECE SPRING CLIP

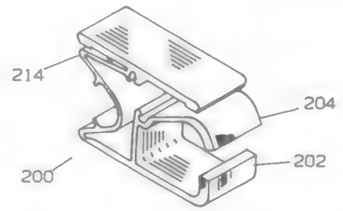
Arthur N. Revis, 1235 D'Amico Dr., Chicago Heights, Ill. 60411

Filed Apr. 21, 1993, Ser. No. 50,899

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—543 **12 Claims**

1. A one piece clip comprising: a lower face beam defined by proximal and distal end portions, side edges and inner and outer side surfaces; a first distal end portion having a substantially right angled lower jaw element extending upwardly from said inner surface of said lower face beam and a pivotal means extending upwardly from the inner surface of said lower face beam to a second distal end portion having a substantially right angled middle jaw element extending downwardly toward said lower jaw element; said proximal end forming a first half portion of a traverse support member biasing said lower face beam with an upper face beam; said upper face beam defined by proximal and third distal end portion, side edges and inner and outer side surfaces; said third distal end portion of said upper face beam forming an upper jaw element extending downwardly from said inner surface of said upper face beam and a locking means engageable with said pivotal means; said proximal end forming a second half portion of said traverse support member biasing said upper face beam to said lower face beam; whereby the pressing of the upper and lower face



beams together engages said means for pivoting with said locking means causing said upper jaw element to close against a back side of said middle jaw element and said middle jaw element closing against said lower jaw elements to lock said elements in a closed position by the biasing of said traverse support member, wherein the pressing of the upper and lower face beams along their proximal end portions compresses said traverse support member allowing said upper face beam to pivot on said pivotal means thereby releasing said locking means allowing said traverse support member to maintain each said jaws in a space apart position.

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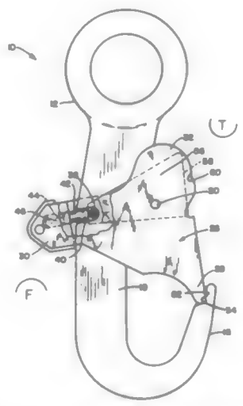
DOUBLE ACTION SNAP HOOK

Edward Bunnell, Bristol, Conn., assignor to Bourdon Forge Company, Inc., Middletown, Conn.

Filed Apr. 20, 1993, Ser. No. 49,997

Int. Cl.[5] A44B *13/00*

U.S. Cl. 24—599.5 **10 Claims**



1. A double action closure mechanism operable with the thumb and forefinger of one hand, comprising:

a rigid body having a first end, a second end forming a curved nose, and a shank extending between the ends, the shank defining a front side facing the nose and a back side facing away from the nose, the back side of the shank including a recess;

a closure frame pivotally connected to the front side of the shank and defining a locking corner at the back side of the

shank, a latching corner adjacent the nose of the rigid body, and an actuating corner at the front side of the shank adjacent the pivotal connection, the latching corner including a latching surface adapted to closed against the nose when the frame is pivoted about the shank into a closed position and to move away from the nose toward the shank when the frame is pivoted about the shank into an open position;

means between the front side of the shank and the frame, for biasing the frame into the closed position;

locking means supported within the locking corner of the frame and engagable with the back side of the shank when the frame is in the closed position, to prevent the frame from pivoting out of the closed position, the locking means including a locking pin slidable into and out of the recess, socket means within the locking corner of the frame for slidingly supporting the locking pin, and means for biasing the locking pin into a locked position partly in the socket and partly in the shank recess;

actuating means accessible at the actuating corner and supported within the frame for movement toward the locking corner, said movement being effective to disengage the locking means from the back side of the shank, independent of the pivotable movement of the frame relative to the shank;

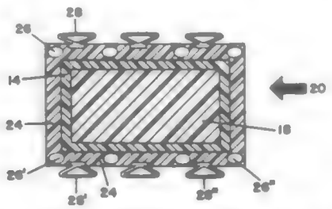
whereby the frame can be pivoted about the shank from the closed to the open position, by first urging the actuating means toward the locking corner with the thumb to disengage the locking means from the shank, and then pulling the locking means from the shank, and then pulling the locking corner toward the shank first end with the forefinger to pivot the frame.

5,361,465

FLUID RETAINING CONTAINER

James H. O'Donnell, 50734 Meadow Green Ct., Granger, Ind. 46530

Filed Feb. 8, 1993, Ser. No. 14,850
Int. Cl.[5] E02D *19/00*
U.S. Cl. 27—29 **8 Claims**



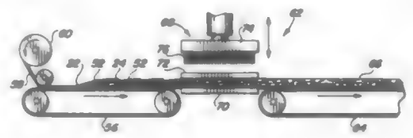
1. A container and fill material for neutralizing any microorganisms in fluids that may be harmful to the health of a person, said container having a base member with four sides extending thereon and a top member for retaining said fill material, said base and four sides being made of a non-water soluble polymer, said fill material consisting of a mixture of super-absorbent material, a biocide, and a fragrance, said top member consisting of a membrane which allows said fluids to be communicated to said fill material, said super absorbent material consisting of a class of materials including polyacralate particles or a combination of a branched chain polyionic carbohydrate, a cross linking agent and a hydrophobic carboxylic acid, said fragrance consisting of particles selected from a class of materials including esters or cinnaminaldehyde which have been microencapsulated or emulsified in a starch and spray dried into a dry powder, said container retaining fluids that have been communicated to said fill mixture of super-absorbent, biocide and fragrance, said biocide terminating substantially all microbial populations of said microorganisms that may be present in the fluids while said super absorbent material retains said fluids in said container and said fragrance is immediately release as a result of a reaction with said fluids to create a masking odor and indicate that a leak has occurred.

5,361,466

METHOD OF FORMING A BLANKET OF UNIFORM THICKNESS

John S. Robertson, and Stephen E. Gross, both of Littleton, Colo., assignors to Schuller International, Inc., Denver, Colo.

Filed Oct. 18, 1993, Ser. No. 138,321
Int. Cl.[5] B32B *31/00*; D04H *18/00*
U.S. Cl. 28—158 **10 Claims**



1. A method of forming a synthetic microfiber blanket having a uniform thickness, comprising:

providing a continuous synthetic microfiber blanket having thin lateral edges; said blanket being thicker in the middle along the central longitudinal axis of said blanket than along the lateral edges of said blanket;

cutting said synthetic microfiber blanket, in a direction transverse to said longitudinal axis of said blanket, into a plurality of discrete pieces of blanket of uniform length;

arranging a plurality of said discrete pieces of blanket with said thin lateral edges in overlapping relationship to form a second blanket of a desired width and thickness; and

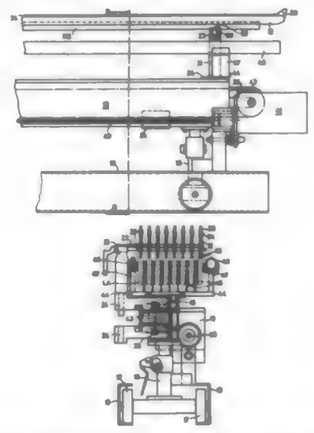
joining said discrete pieces of blanket together into said second blanket.

5,361,467

DROP WIRE HANDLING APPARATUS FOR WARP YARN DRAWING-IN MACHINE

Silvio Jaeger, Maaren, and Hans Wilhelm, Chur, both of Switzerland, assignors to Zellweger Uster AG, Wilstrasse, Switzerland

Filed Jan. 21, 1992, Ser. No. 822,908
Claims priority, application Switzerland, Jan. 22, 1991, 00181/91
Int. Cl.[5] D03J *1/14*
U.S. Cl. 28—205 **15 Claims**



1. A warp yarn drawing-in machine having a support structure and a system for forming an assembly that includes an elongated carrier rail and drop wires which have warp yarns

drawn therein and which have apertured portions disposed in generally surrounding relation to said carrier rail, said system comprising:

said carrier rail including one end portion that is releasably connected to said support structure and an opposite end portion for the positioning thereover one after another of the apertured postions of said drop wires;

drive means for contacting the drop wires on said rail and moving such drop wires along said rail toward said one end portion of said rail;

movable support means for supporting said rail from below said rail; and

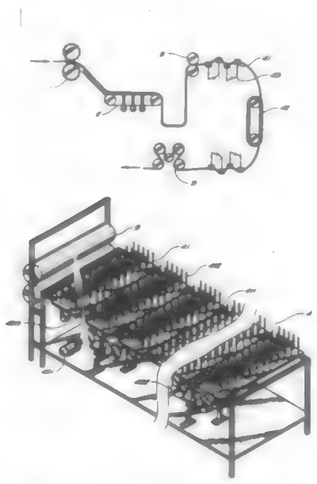
means for moving said support means relative to said rail in the same direction as said drop wires move along said rail to enable support of the rail without interfering with the movement of the drop wires along the rail.

5,361,468

SYSTEM FOR AUTOMATICALLY RIPPLING AND HACKLING WIG YARNS

Kim K. Ho, 3-623 Mia Dong, Dobong Ku, Seoul, Rep. of Korea

Filed Jun. 22, 1993, Ser. No. 81,819
Int. Cl.[5] D02G *1/14*
U.S. Cl. 28—279 **4 Claims**



1. A system for automatically rippling and hackling wig yarns comprising:

means for heating and rippling the wig yarns, said means comprising a pair of rollers engaging with each other such that said rollers heat and ripple the wig yarns, each of said rollers having an outer surface and a heating coil heating said outer surface to a temperature of between 80°–200° C., said outer surface having a plurality of rounded teeth extending axially thereacross, the rounded teeth of the outer surface having a pitch of between 1 mm to 30 mm and a tooth height of between 1 mm to 30 mm;

a cooler arranged after said heating and rippling means and comprising a cooling belt and pneumatic means, said pneumatic means for directing cooling air toward said cooling belt, said pneumatic means comprising a fan, a pipe communicating with said fan, and a diffuser connected to said pipe distal said fan;

means for hackling the wig yarns positioned after said cooler, said means for hackling comprising a plurality of hackling units, each of said hackling units including a hackle bar and drive means for driving said hackling bar, said hackle bar having a plate provided with a plurality of erect hackle pins and vertically reciprocating by a rotational force of said drive means, and said drive means comprising a motor and a power transmission gear transmitting the rotational force of said motor to said hackle bars;

a pair of tension rollers arranged between said cooler and said hackling means, said tension rollers receiving the wig yarns therebetween; and

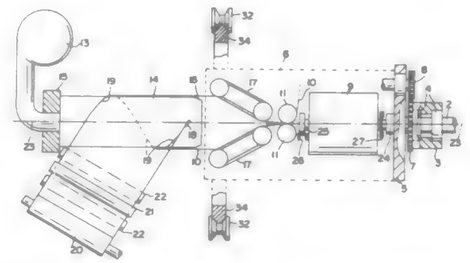
means for pulling said wig yarns from said hackling means, said means for pulling comprising a plurality of pulling rollers, at least one of said plurality of pulling rollers having a different diameter than another of said plurality of pulling rollers.

5,361,469

APPARATUS FOR HELICAL CUTTING OF A FLEXIBLE TUBULAR SHEET OF POLYMERIC MATERIAL

Ole-Bendt Rasmussen, 23 Forchwaldstrasse, CH 6318 Walchwil, Switzerland

Division of Ser. No. 623,990, Jan. 11, 1991, Pat. No. 5,248,366. This application Apr. 2, 1993, Ser. No. 43,465
Claims priority, application United Kingdom, Jun. 24, 1988, 8815083.4
Int. Cl.[5] B32B *31/00*
U.S. Cl. 29—2.14 **7 Claims**

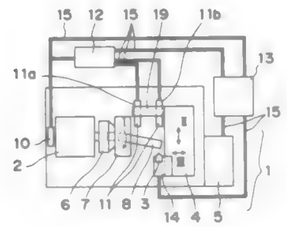


1. In an apparatus for helically cutting a flexible tubular film of substantially predetermined diameter into a flat strip comprising supply means for supplying the tubular film in generally flattened form to a first position, means at said first position for advancing said flattened film at a substantially predetermined velocity from said first position to an expansion zone where it is expanded from said flattened form into tubular form, a cylindrical mandrel over which the expanded tubular film is passed axially thereof, cutting means for helically cutting the tubular film passing along the mandrel into a flat strip, and means for removing the helically cut strip from the mandrel at an angle to the mandrel axis, in combination, the improvement wherein said mandrel is hollow with an external diameter slightly less than the diameter of the expanded tubular film, and comprising means in said expansion zone for supplying air continuously through said hollow mandrel in the direction of said first position under a pressure sufficient to inflate said flattened tubular film into a stiff generally cylindrical tube that makes a sliding fit with said mandrel and resists deformation during the helical cutting thereof, and means for positively controlling the advance and expansion of the flattened tube in said expansion zone comprising moving surfaces defining a diverging expansion zone and means for driving said moving surfaces at a velocity at least substantially as great as the predetermined velocity of advance of said film to said expansion zone.

5,361,470
PROCESSING APPARATUS WITH MOVABLE PROCESSING TOOL

Tutomu Hamada; Takafumi Asada, both of Hirakata; Yoshihiro Ikemoto, Katano, and Toru Nakagawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 3, 1993, Ser. No. 160,947
Claims priority, application Japan, Dec. 3, 1992, 4-323925
Int. Cl.[5] B23B *7/14*; B24B *49/00*; B23C *3/00*; G05B *19/00*
U.S. Cl. 29—27 R 19 Claims

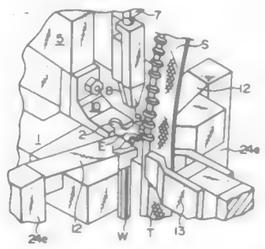


1. A processing apparatus with a movable processing tool, which comprises:
- a deflection detecting device for detecting a plurality of deflection amounts at points which are axially spaced on a processing reference surface of a to-be-processed work which is held by a work holding member mounted to a main shaft of an NC processing apparatus;
- a rotating position detecting sensor for detecting a rotating position of the work;
- an arithmetic unit for calculating a correcting amount of the processing tool at a processing point of the work from a measured value of the rotating position detecting sensor and a plurality of measured values of the deflection amounts of the deflection detecting device;
- an output circuit for outputting the correcting amount synchronously with the rotating position and the processing point of the work;
- a fine adjustment device having the processing tool fixed thereto for finely moving the processing tool in plural processing directions based on an output from the output circuit; and
- an XY table to which the fine adjustment device is secured.

5,361,471
SLIDE FASTENER COUPLING ELEMENT FORMING APPARATUS AND CUTTING PUNCH

Koitsu Morioka, and Yasuhiko Matsuda, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 94,341
Claims priority, application Japan, Jul. 22, 1992, 4-195432
Int. Cl.[5] B21D *53/50*
U.S. Cl. 29—33.2 5 Claims



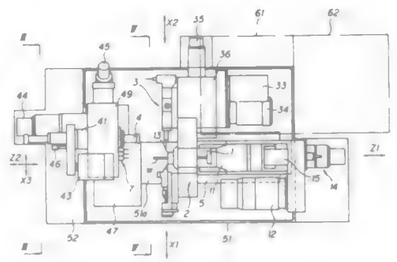
1. An apparatus for successively forming slide fastener coupling elements, comprising supplying means for supplying a blank wire of a generally Y-shape cross section intermittently at a predetermined pitch, a cutting die having an insertion hole for the passage of the blank wire W and movable back and forth in a direction of cutting the blank wire, a bulge forming die connected with a forward end in the stroke direction of said cutting die for forming a bulge for a coupling head portion of the coupling element, a cutting punch fixedly mounted on a frame and slidable on an upper surface of said cutting die, and a bulge forming punch situated upwardly of said bulge forming die and vertically movable toward and away from said bulge forming die,

wherein said apparatus further includes preventing means situated on an upper end portion of a bifurcated blade of said cutting punch for preventing the freshly formed coupling element from jumping up obliquely from said blade during the cutting.

5,361,472
NC COMPLEX AUTOMATIC LATHE

Minoru Kubota, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Sep. 20, 1991, Ser. No. 763,210
Claims priority, application Japan, Sep. 21, 1990, 2-253719; Oct. 1, 1990, 2-263512; Oct. 30, 1990, 2-265383
Int. Cl.[5] B23B *7/04*, *7/06*
U.S. Cl. 29—37 A 14 Claims

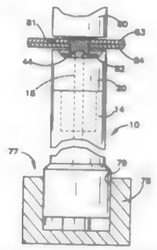


1. An NC complex automatic lathe having a main spindle receptive therein of a workpiece for chucking the same so as to protrude a front end portion of the workpiece, and a main spindle base for supporting the main spindle rotatably around a center axis of the workpiece and displaceably in a lengthwise direction of the workpiece, the lathe comprising:
- a turret tool slide disposed in the vicinity of a front end portion of the workpiece displaceably toward a center of the workpiece;
- a turret rotatably mounted on the turret tool slide to undergo displacement therewith;
- turret displacing means for displacing the turret tool slide transversely toward the center of the workpiece; and
- a plurality of tool slide members arranged around the front end portion of the workpiece radially with respect to the spindle axis in a free space away from a moving area of the turret tool slide so as to undergo displacements transversely toward the center of the workpiece, the tool slide members comprising servo motors for rotationally driving ball screws to effect displacement of the tool slide members.

5,361,473
RIVET SETTING ANVIL

Hugh D. Landes, Huron, Ohio, assignor to Heavy Duty Marketing Corporation, Huron, Ohio

Continuation-in-part of Ser. No. 911,147, Jul. 9, 1992, Pat. No. 5,189,780. This application Feb. 26, 1993, Ser. No. 23,524
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—243.53 24 Claims



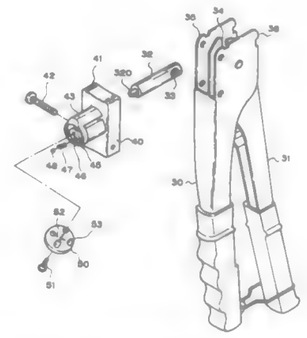
1. A rivet setting anvil removably mountable in a riveting machine, said rivet setting anvil comprising:
- a pedestal having distal and proximal ends, an outside wall at the outer periphery thereof extending to a blunt end surface at the distal end and a longitudinal bore centrally extending between said distal and proximal ends, said pedestal distal end being removably retainable along an adjacent mounting portion of said outside wall thereof and said blunt end surface in a fixed position in a generally closed end bore adapted for receiving and supporting said blunt end surface in said riveting machine, said proximal end extending from said riveting machine a distance greater than the longitudinal extent of said mounting portion to a location adjacent a workpiece to be riveted;
- a clinching head having a clinching portion, an attaching portion and a bore therebetween, said attaching portion being removably attached to said proximal end to rigidly mount said clinching head to said pedestal with said bores being in communication, said clinching portion having an annular rivet rolling surface located about said head bore for engaging rivets and receiving substantially all compressive loads applied by said riveting machine to said clinching head;
- a pilot pin slidably retained in said bores, a portion of said pin being extensible from said clinching portion;
- means for urging said pilot pin to extend from said clinching portion;
- a removable plug for plugging the bore of said pedestal at the distal end thereof;
- said outside wall supporting substantially all of the compressive riveting loads applied by the riveting machine to said clinching head and transmitting said loads to said blunt end surface;
- said clinching head including a radially extending surface for engagement with said pedestal to bear substantially all of the compressive riveting loads transmitted to said outside wall; and
- said blunt end surface engaging said riveting machine and having a size adequate to support and transmit substantially all of the compressive riveting loads to said riveting machine.

5,361,474
RIVETER

Ah-Mi Yang, P.O. Box 65-76, Taichung, Taiwan, Prov. of China

Filed Jan. 25, 1994, Ser. No. 186,318
Int. Cl.[5] B21J *15/34*
U.S. Cl. 29—243.528 2 Claims

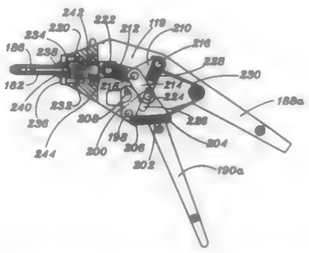
1. A riveter comprising a body including a first end and a second end, a handle including a first end pivotally coupled to said first end of said body and including a second end movable toward or away from said body, a chuck coupled to said first end of said handle, a casing secured to said first end of said body and including a seat extended therefrom, said seat including a chamber formed therein for slidably receiving said chuck and including an annular groove formed therein distal to said casing, said annular groove being intersected and communicating with said chamber, a disc rotatably secured to said seat and including at least two mouths provided therein, said mouths each including one end engaged in said annular groove for aligning with said chuck when said disc is rotated.



5,361,475
SAFETY CABLE TOOL

Michael G. Scruggs, Orlando, Fla., assignor to Daniels Manufacturing Corporation, Orlando, Fla.

Continuation-in-part of Ser. No. 831,186, Feb. 5, 1992, Pat. No. 5,230,129. This application Sep. 5, 1992, Ser. No. 945,095
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—267 10 Claims



1. A tool for tensioning safety cable to a mechanically set predetermined tension limit and for automatically terminating the cable when the predetermined limit is reached, the tool comprising:
- rotatable means mounted for reciprocating rotation about a point on the tool for incrementally advancing the cable during a drive stroke;
- a linkage assembly operatively connected to said rotatable means for affecting reciprocal rotating motion thereof;
- tension setting means operatively coupled to said linkage assembly for inhibiting rotation of the rotatable means when tension on the cable is greater than a mechanically set value; and
- clamping means operative automatically in response to inhibited rotation of the rotatable means for terminating the cable.

5,361,476

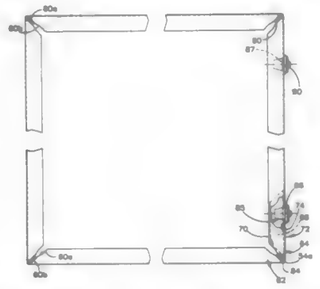
METHOD OF MAKING A SPACER FRAME ASSEMBLY

Edmund A. Leopold, Hudson, Ohio, assignor to Glass Equipment Development, Inc., Twinsburg, Ohio

Continuation of Ser. No. 929,330, Aug. 13, 1992, Pat. No. 5,295,292. This application Mar. 2, 1994, Ser. No. 204,775

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—417 **10 Claims**



1. A method of making a spacer frame assembly comprising:
a) providing a supply of thin relatively narrow sheet metal stock;
b) feeding the stock endwise to a forming station;
c) forming the stock at said forming station to define a rigid linearly extending frame element having opposite side walls and a base wall;
d) severing said frame element to form a spacer frame member having a leading end and a trailing end;
e) altering the size of one spacer frame element end to change the dimension between said opposite side walls sufficiently that said spacer frame element ends can be telescoped together;
f) applying sealant material to external surface areas of said frame element;
g) thereafter bending the frame element and sealant material to form a polygonal shape; and,
h) telescoping said spacer frame ends together.

5,361,477

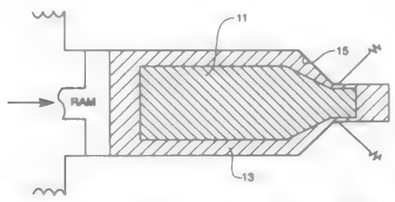
CONTROLLED DWELL EXTRUSION OF DIFFICULT-TO-WORK ALLOYS

Sheldon L. Semiatin, Dayton; Venkat Seetharaman, Beavercreek; Robert L. Goetz, Centerville, and Vinod K. Jain, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 10, 1994, Ser. No. 208,179

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—423 **5 Claims**



1. A method for extruding a metal or alloy material, comprising the steps of:
(a) inserting a billet of metal or alloy material into an extrusion can to provide a canned billet:
(b) heating said canned billet to a temperature in a temperature range in which the ductility of the billet material is substantially maximum;
(c) cooling said canned billet sufficiently to establish a preselected temperature difference between said billet and said can at which the difference between the flow stress of said billet material and the flow stress of the can material is substantially minimum; and
(d) extruding said canned billet to preselected shape.

5,361,478

METHOD OF INSERTING A HOLE FORMING AND SELFTAPPING SCREW

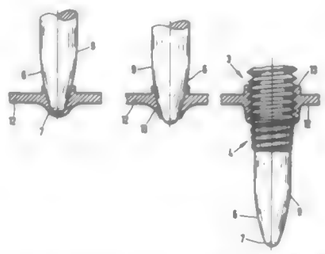
Hermann Grossberndt, Bad Laasphe; Günter Kretschmer, Siegen; Horst Klees, Breidenbach-Achenbach, and Ali Güven, Bad Berleburg, all of Germany, assignors to EJOT Eberhard Jaeger GmbH & Co. KG, Germany

Division of Ser. No. 999,584, Dec. 30, 1992, Pat. No. 5,234,301, which is a continuation of Ser. No. 573,221, Nov. 13, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,523

Claims priority, application Germany, Mar. 23, 1989, 3909725; Jul. 10, 1989, 3922684

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—432.2 **10 Claims**



1. A process of inserting a screw into at least one sheet of metal, said process comprising:
providing a screw having a shank including a threaded portion and a hole forming portion;
positioning said hole forming portion of said screw against a sheet of metal;
rotating said screw under pressure so that the portion of the sheet metal engaged by said hole forming portion is softened and displaced without the creation of metal chips to form a hole in the sheet metal through which the hole forming portion passes; and
rotating said screw in the formed hole such that the threaded portion engages and taps the wall of the formed hole.

5,361,479

METHOD OF ASSEMBLY FOR INFLATABLE PACKER

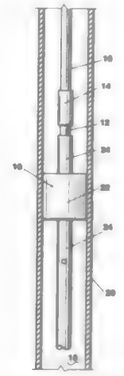
Robert M. Sorem, Tulsa, Okla., assignor to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed Nov. 25, 1992, Ser. No. 981,714

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—454 **2 Claims**

1. In the method of assembly of an inflatable packer including attachment of a plurality of reinforcing slats to an end fitting of said packer, the improvement which comprises the sequential steps of forming slats of an age-hardening material in



annealed condition, welding said slats to said end fitting and age hardening the resultant welded slats and end fitting.

5,361,480

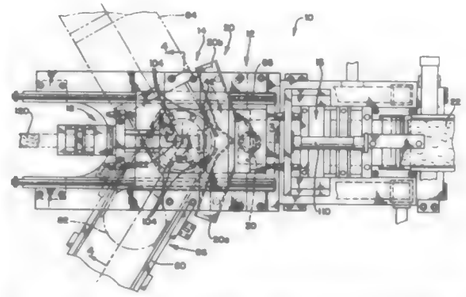
METHOD OF MAKING A TORQUE CONVERTER CLUTCH

Thomas H. Gardner, Englewood, Ohio; Raymond F. Fritz, Fredericksburg, and Patrick J. Roberts, Ruther Glen, both of Va., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1993, Ser. No. 113,784

Int. Cl.[5] B23Q *3/00*; **B25B** *27/14*

U.S. Cl. 29—467 **3 Claims**



1. A method of making a torque converter clutch comprising the steps of:
(a) stamping an arcuate segment of friction, material with interlocking means for connecting adjacent segments formed therein from a sheet of friction material into a position in a holding ring;
(b) indexing the holding ring to present a position into which a subsequent segment is to be placed;
(c) repeating steps (a) and (b) until a full friction annulus formed of arcuate segments interconnected by said interlocking means is completed in the holding ring;
(d) transferring the holding ring with the friction annulus therein to a stripper station;
(e) heating a surface of a clutch plate;
(f) positioning the heated clutch plate under the holding ring in the stripper station;
(g) strip the friction annulus from the holding ring onto the clutch plate to form a torque converter clutch; and
(h) ejecting the torque converter clutch.

5,361,481

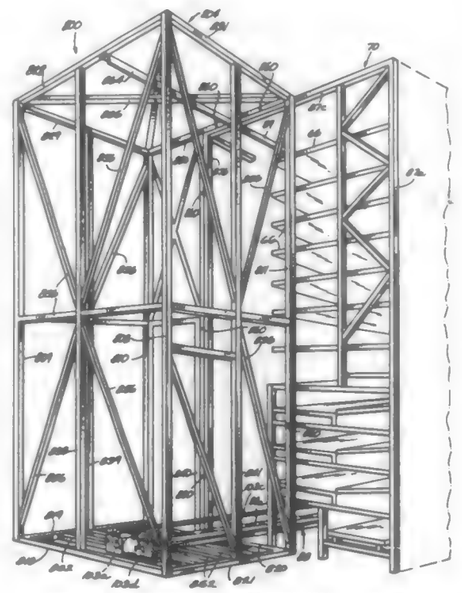
METHOD OF ASSEMBLING AN AUTOMATIC STORAGE AND RETRIEVAL SYSTEM

Kurt M. Lloyd, Pewaukee, Wis.; LaMar A. Jones, Sandy, Utah; David M. White, New Berlin, and Christopher L. Roth, West Allis, both of Wis., assignors to Harnischfeger Engineers, Inc., Brookfield, Wis.

Filed Apr. 2, 1993, Ser. No. 42,243

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—469 **20 Claims**



1. A method of assembling an automatic storage and retrieval system, said method comprising the steps of
assembling a storage rack on site, said rack defining a plurality of storage locations,
assembling a storage and retrieval machine off site,
securing said storage and retrieval machine in a shipping container,
shipping said storage and retrieval machine to the site in said shipping container, and
connecting said shipping container to said storage rack such that said storage rack, said storage and retrieval machine and said container define the automatic storage and retrieval system, wherein said storage and retrieval machine is movable out of said container and is operable to place objects in and remove objects from said storage locations of said storage rack, and such that said storage and retrieval machine is thereafter movable into said container so that said container provides a maintenance area for said storage and retrieval machine.

5,361,482

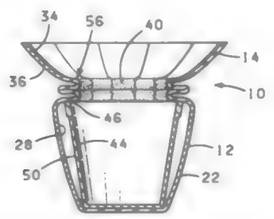
METHOD OF FORMING A FLOWER POT COVER WITH CRIMPED PORTION

Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 926,098, Aug. 5, 1992, and a continuation-in-part of Ser. No. 687,701, Apr. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 649,263, Jan. 30, 1991, abandoned, which is a continuation of Ser. No. 248,960, Sep. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 4,275, Jan. 5, 1987, Pat. No. 4,773,182, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, said Ser. No. 926,098, is a continuation-in-part of Ser. No. 803,318, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Sep. 4, 1992, Ser. No. 940,930

Int. Cl.[5] B65B *25/14, 51/02;* **B32B** *3/30*

U.S. Cl. 29—469.5 **16 Claims**



1. A method for providing a flower pot cover for a flower pot comprising:

providing a preformed flower pot cover comprising a base having an upper end, a lower end, an outer peripheral surface and a pot opening formed through the upper end of the base providing access to a pot receiving space, the pot receiving space forming an inner peripheral surface in the base, a bonding material being disposed on the base near the upper end of the base;

providing a flower pot having an upper end, a lower end and an outer peripheral surface;

disposing the flower pot in the pot receiving space of the base;

forming a crimped portion in the base by crimping together portions of the base near the upper end of the base with the bonding material thereon wherein the bonding material causes the portions of the base which are crimped together to be bonded together, the crimped portion cooperating to hold the base on the flower pot for providing the decorative cover.

5,361,483

COMPOSITE FASTENERS AND METHOD FOR FASTENING STRUCTURAL COMPONENTS THEREWITH

Gilles A. Rainville, Northridge, and Leonardo Israeli, Pacific Palisades, both of Calif., assignors to Rockwell International Corp., Seal Beach, Calif.

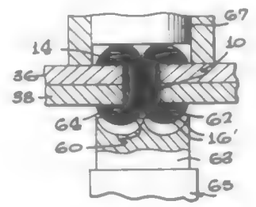
Continuation of Ser. No. 51,543, May 19, 1987, abandoned. This application Nov. 19, 1991, Ser. No. 795,284

Int. Cl.[5] B21D *39/00;* **F16B** *19/06*

U.S. Cl. 29—524.1 **19 Claims**

1. A process for fastening structural components together with a composite fastener, which comprises:

passing a composite fastener through an aperture in said components, said composite fastener comprised of a shank having a first head integrally formed on one end thereof, said first head abutting one of said components, said shank and said head being formed of a high temperature thermoplastic matrix material selected from the group consisting of a polyether ether ketone resin and a polyamide imide resin, and having continuous reinforcing fibers axially oriented in substantially parallel relation throughout the shank, all of said fibers being flared and extending continuously into said first head and substantially evenly swaged therein,



placing a forming tool in contact with the other end of said shank, said forming tool capable of softening said matrix material, and

upsetting and melting the matrix material on the other end of said shank with said tool under controlled conditions to form a second head and flaring the same into contact with another of said components, all of said fibers in said second head being flared and extending continuously into said second head and evenly swaged therein and thereby securely fastening said components.

5,361,484

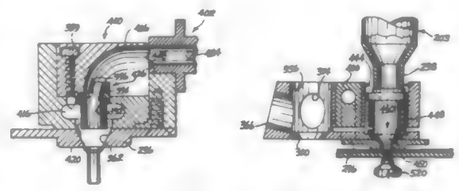
METHOD OF GUIDING A RIVET AROUND A CURVE

Gregory C. Givler, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 632,445, Dec. 21, 1990, Pat. No. 5,231,747. This application Dec. 20, 1991, Ser. No. 811,511

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—525.2 **13 Claims**



1. A method of changing a traveling rivet's direction of travel in a small radius curve, comprising:

sending a rivet into an inlet of a curved chute having an inwardly facing peripheral wall, and propelling said rivet through said chute with sufficient velocity to hold said rivet in contact with said peripheral wall entirely around said peripheral wall;

receiving said rivet at an exit end of said curved chute in a straight guide tube connected to said curved chute at said exit end thereof, and guiding said rivet into said guide tube with an ear of said guide tube which extends into said chute, said ear having an outwardly flaring surface which tapers in to merge smoothly with a passage through said guide tube; and

straightening and stabilizing the travel of said rivet along and approximately aligned with the axis of said guide tube by passing said rivet through said guide tube for a distance at least 90% of the length of said rivet.

5,361,485

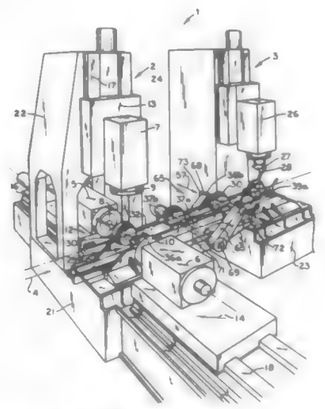
TRANSFER LINE FOR MACHINING WORKPIECES ESPECIALLY FOR MACHINING DIFFERENTIAL HOUSINGS

Adolf Baudermann, Nurtingen, Germany, assignor to Giddings & Lewis GmbH, Am Neckar, Germany

Filed Nov. 23, 1992, Ser. No. 979,148

Int. Cl.[5] B23Q *7/04*

U.S. Cl. 29—563 **13 Claims**



1. A multistation transfer line for machining a series of workpieces each having a round outer surface, the transfer line comprising:

a series of successive workstations, whereat said machining takes place, at least two of said workstations having respective stationary work rests; and

a transfer system for advancing a series of workpieces through each of said work rests by lifting, advancing, and depositing said workpieces in said work rests successively;

each of said work rests including at least two fixed locating surfaces extending at a predetermined angle to each other and adapted to engage said round outer surface of each workpiece at points angularly spaced apart, said transfer system including means for rotating each of said workpieces through said predetermined angle during transfer between successive workstations, said locating surfaces in said successive workstations oriented in a shifted position rotated through said predetermined angle so that each workpiece is contacted at the same points on said round outer surface by said locating surfaces in said successive machining stations.

6. A method of machining bores in a workpiece having a rounded outer surface, said bores extending axially into said workpiece, comprising the steps of establishing a series of successive machining stations whereat said bores are to be machined in successive stages;

providing work rests at each station, each work rest having locating surfaces extending at a fixed angle to each other, but a successive work rest being oriented at a predetermined rotated angle with respect to a previous work rest;

clamping each workpiece with angularly spaced points on said rounded outer surface said locating surfaces of a first one of said work rests and carrying out said first stage of machining;

releasing and transferring said workpiece to said successive work rest, rotating said workpiece through said predetermined angle and depositing said workpiece in said successive work rest so that said same points are against said rotated locating surfaces;

clamping said workpiece against said locating surfaces and carrying out said machining of said axial bores.

5,361,486

SYSTEM OF MACHINING DEVICES

Johannes G. T. Harmsen, Didam, and Willem A. De Boer, Westervoort, both of Netherlands, assignors to ASM-FICO Tooling B.V., Ad Herwen, Netherlands

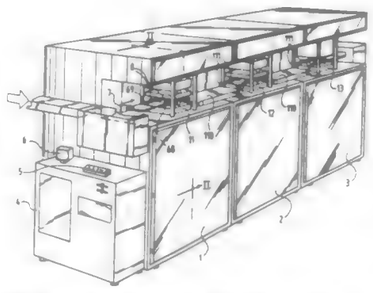
PCT No. PCT/EP91/01668, § 371 Date Aug. 20, 1993, § 102(e) Date Aug. 20, 1993, PCT Pub. No. WO92/04145, PCT Pub. Date Mar. 19, 1992

PCT Filed Sep. 2, 1991, Ser. No. 50,397

Claims priority, application Netherlands, Sep. 11, 1990, 9001999

Int. Cl.[5] B23P *23/00;* **B23Q** *7/14;* **B21D** *43/00*

U.S. Cl. 29—563 **13 Claims**



1. A system of the type which includes machining devices placed in series, particularly for machining lead frames, such as by punching, cutting and bending, and means for transporting the lead frames for machining along a transport path between successive machining devices, wherein each machining device comprises:

a main frame,

a tool carrier carrying a tool and movable substantially perpendicularly to the transport path for performing an active stroke.

a member driving the tool carrier, the member being an eccentric rotatably driven by a motor, mounted in the main frame of the machining device and coupled to a main shaft,

transport means, driven by a cam disc placed on the main shaft, for transporting the lead frames in horizontal and vertical directions in the machining device, and

a control device coupled to the machining devices for controlling the operation of the machining devices.

5,361,487

METHODS FOR CONNECTING INTERMEDIATE STATOR COIL LEADS

Sabatino Luciani; Massimo Ponzio, and Antonio Lumini, all of Florence, Italy, assignors to Axis U.S.A., Inc., Marlborough, Mass.

Division of Ser. No. 809,233, Dec. 17, 1991, Pat. No. 5,233,751, which is a continuation of Ser. No. 529,183, May 25, 1990, abandoned. This application May 25, 1993, Ser. No. 67,297

Int. Cl.[5] H02K *15/085*

U.S. Cl. 29—596 **16 Claims**

1. A method of winding a coil having two successively wound portions onto a stator core and securing an intermediate lead wire extending between said coil portions to terminal means associated with the stator core, said method comprising a series of steps of:

providing a winding shuttle;

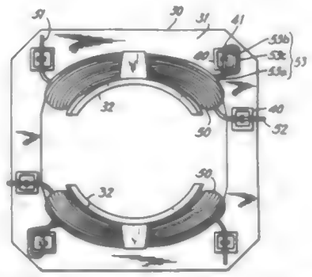
actuating the winding shuttle to wind a first coil portion onto said stator core;

stopping said winding shuttle adjacent said terminal means;

yieldably grasping a strand of wire between said winding shuttle and said first coil portion;

drawing a length of wire from the winding shuttle to define

a strand of wire extending between said winding shuttle and said first coil portion;
engaging said strand of wire at two points of engagement along said strand, said two points of engagement rotatable about a common axis;
rotating said two points of engagement about said common axis to align said strand of wire with said terminal means;



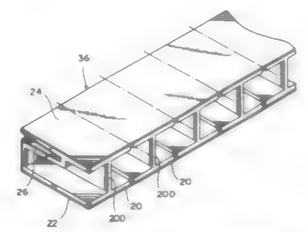
moving said strand of wire into engagement with said terminal means; and
actuating the winding shuttle to wind a next coil portion onto said stator core, said strand of wire being retained by said terminal means.

5,361,488

MANUFACTURING METHOD FOR ANTENNA MODULE

Yutaka Higashiguchi; Mitsuo Inagaki; Hidenori Tanizawa; Takeyasu Maeda, all of Kawasaki; Noriyaki Kohma, Tokyo; Hajime Mochizuki, Tokyo; Kouroh Mekata, Tokyo; Toshiaki Amano, Tokyo, and Yoshikazu Kamei, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 10, 1993, Ser. No. 165,120
Claims priority, application Japan, Dec. 11, 1992, 4-331553
Int. Cl.[5] H01Q *1/12*
U.S. Cl. 29—600 **13 Claims**



1. A manufacturing method for a plurality of antenna modules each having a ground element formed from a planar conductor; an antenna element formed from a planar conductor, said antenna element being arranged in substantially parallel relationship to said ground element; a loop element formed from a tubular conductor, said loop element being arranged between said ground element and said antenna element in predetermined positional relationship with both said ground and antenna elements and connected with said antenna element; and an element support formed from an insulator, for supporting said ground element, said antenna element and said loop element; said manufacturing method comprising the steps of:

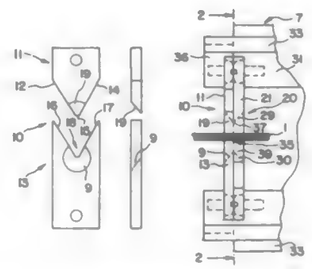
(a) setting in a mold a first conductive base material including a plurality of said ground elements integrally connected together, a second conductive base material including a plurality of said antenna elements integrally connected together, and a third conductive base material including at least a portion of a plurality of said loop elements integrally connected together;
(b) filling a cavity defined in said mold with a curing fluid and then curing said curing fluid to thereby form an element support base material on which said first, second and third conductive base materials are bonded, said element support base material including a plurality of said element supports integrally connected together; and
(c) cutting said element support base material together with said first, second and third conductive base materials to thereby obtain a plurality of said antenna modules.

5,361,489

METHODS OF STRIPPING INSULATION FROM WIRES

Bronislav Vatel, 3730 Countryside La., Glenview, Ill. 60025

Filed Sep. 28, 1993, Ser. No. 127,352
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 **12 Claims**



1. A method of stripping insulation from a wire, including the steps of:

a) providing a wire stripping device including:
i) a first set of blades including an upper Delta-blade and a lower V-shaped blade;
ii) a second set of blades including an upper V-shaped blade and a lower Delta-blade;
iii) first motive means for moving blades in one of said first or second set of blades toward and away from one another;
iv) second motive means for moving blades in the other of said first or second set of blades toward and away from one another as well as toward and away from said one of said first or second set of blades;
b) moving blades in said first and second sets of blades away from one another to form an opening therebetween;
c) inserting a wire including an inner conductor and an outer insulative layer between respective blades of said first and second sets of blades;
d) with said first and second sets of blades adjacent one another, moving respective blades of said first and second sets of blades toward one another until said outer insulative layer is cut;
e) operating said second motive means to move said other of said first or second set of blades away from said one of said first or second set of blades to thereby strip said insulative layer from said inner conductor.

5,361,490

METHOD FOR MAKING TAPE AUTOMATED BONDING (TAB) SEMICONDUCTOR DEVICE

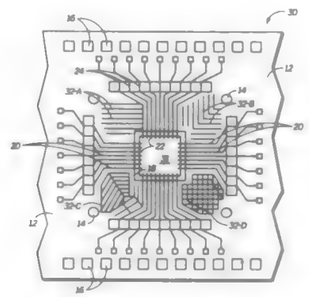
Leo M. Higgins, III, Austin, Tex., and Maurice S. Karpman, Medford, Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 745,655, Aug. 16, 1991, Pat. No. 5,289,032.
This application Nov. 1, 1993, Ser. No. 144,464
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **18 Claims**

1. A method for making a tape automated bonding (TAB) semiconductor device comprising the steps of:

providing an electronic component having a plurality of bonding pads arranged on a face thereof;
providing a TAB tape comprising:

a carrier film;
a component receiving area formed in the carrier film;
a plurality of electrical leads having a predetermined lead pitch supported by the carrier film, each lead having an inner lead portion located within the component receiving area and an outer lead portion which extends outward from the component receiving area, the plurality of electrical leads patterned such that diagonally opposing sections of the carrier film are void of electrical leads; and



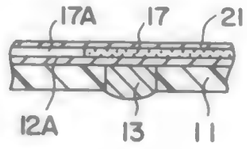
a plurality of thermo-mechanical leads having the predetermined lead pitch and positioned in the diagonally opposing sections of the carrier film, the thermo-mechanical leads providing a substantially uniform distribution of stresses in the carrier film:
positioning the electronic component in the component receiving area; and
electrically coupling the inner lead portion of each of the plurality of electrical leads to a respective one of the plurality of bonding pads.

5,361,491

PROCESS FOR PRODUCING AN IC-MOUNTING FLEXIBLE CIRCUIT BOARD

Chikafumi Oomachi, Chiba, and Yasuyuki Tanaka, Ibaraki, both of Japan, assignors to Nippon Mektron, Ltd., Tokyo, Japan

Division of Ser. No. 689,907, May 30, 1991, abandoned. This application May 26, 1993, Ser. No. 67,231
Int. Cl.[5] H01K *3/10*
U.S. Cl. 29—852 **11 Claims**



1. A process for producing an IC-mounting flexible circuit board, said process comprising the steps of:

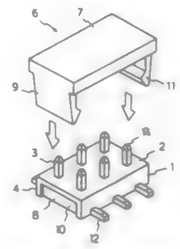
preparing a flexible circuit board laminate by applying conductive layers to the opposite sides of a flexible insulating base without the use of an adhesive,
forming a desired circuit wiring pattern in a first of said conductive layers by the selective removal of the conductive material,
removing portions of the other of said conductive layers to define hole locations, said hole locations being in registration with desired regions of said circuit wiring pattern,
forming holes in said insulating base exposed in said hole locations,
removing the remainder of said second conductive layer, and
forming IC pad junction protrusions by filling the holes in said insulating base with a conductive member by plating, said IC pad junction protrusions having one end tightly joined to a desired region of said circuit wiring pattern and the other protruding from said insulating base.

5,361,492

METHOD OF MOUNTING TERMINALS TO SUBSTRATE

Junichi Miyazawa, Yokohama, Japan, assignor to Molex Incorporated, Lisle, Ill.

Division of Ser. No. 982,210, Nov. 25, 1992, Pat. No. 5,277,601.
This application Sep. 24, 1993, Ser. No. 126,475
Claims priority, application Japan, Dec. 9, 1991, 3-109220
Int. Cl.[5] H01R *43/20*
U.S. Cl. 29—879 **12 Claims**



1. A method of positioning an electrical connector assembly on a mounting surface of an electrical apparatus through the engagement of a vacuum-suction nozzle including the steps of providing an electrical connector assembly including an insulative housing with a first surface adapted to be positioned adjacent said mounting surface, a second surface opposite said first surface and a pair of opposed sidewalls generally perpendicular to said first surface, said housing further including a plurality of conductive terminals mounted therein, each terminal having a tail portion for interconnection to circuitry of the electrical apparatus;

said method including the steps of:
providing a cover on said housing to overlie a central region thereof, said cover having a generally planar, smooth top surface for engagement by the vacuum-suction nozzle;
engaging said smooth top surface of said cover with the vacuum-suction nozzle;
positioning said electrical connector assembly on said mounting surface;
soldering said tail portions of said terminals to said electrical apparatus; and
removing said cover from said assembly.

5,361,493

METHOD OF MANUFACTURING WHEELS FOR MOTOR VEHICLES

Valter Baldi, Bologna, Italy, assignor to Reynolds Wheels S.p.A., Zola Predosa, Italy

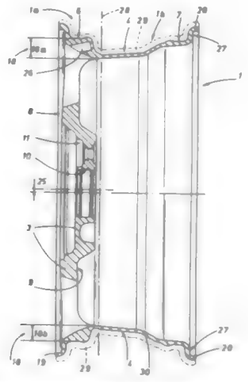
Filed Apr. 9, 1993, Ser. No. 45,577
Claims priority, application European Pat. Off., Jan. 15, 1993, 93830012.6
Int. Cl.[5] B21K *1/32*
U.S. Cl. 29—894.324 **1 Claim**

1. A method of producing wheels for motor vehicles, comprising the steps of;

producing a semifinished wheel casting of which the recognizable components are a rim, having an external surface of revolution and an internal surface of revolution of which the external surface of revolution includes an outer circumferential seating and an inner cirumferential seating to accommodate the beads of a pneumatic tire, and a disc, having an external face and an internal face and including at least one center hole;

performing a first machining operation to remove material at least from the inner circumferential seating, from the internal surface of revolution, from the internal face and from the center hole, effected in relation to a single reference axis coinciding with the axis of rotation of the wheel;

performing a second machining operation in which material is removed to create holes for securing the wheel, effected in such a way that the axes of the holes define a circle concentric with the reference axis of the first machining operation;



performing a third machining operation to remove material at least from the outer circumferential seating in such a way as to define a surface of revolution centered on an axis of rotation offset from the reference axis of the first and second machining operations, with the result that the thickness around the part of the wheel including the outer circumferential seating varies from a predetermined minimum value to a predetermined maximum value in dependence on an offset distance between the reference axis and the axis of rotation for the third machining step.

5,361,494

METHOD OF MAKING A PAIR OF WHEELCHAIR SIDE FRAME ASSEMBLIES

A. Scott Robertson, Pasadena, and Richard Geiger, Santa Cruz, both of Calif., assignors to Medical Composite Technology, Inc., Watsonville, Calif.

Division of Ser. No. 789,173, Nov. 8, 1991, Pat. No. 5,267,745. This application Aug. 17, 1993, Ser. No. 107,073

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—897.2 **20 Claims**

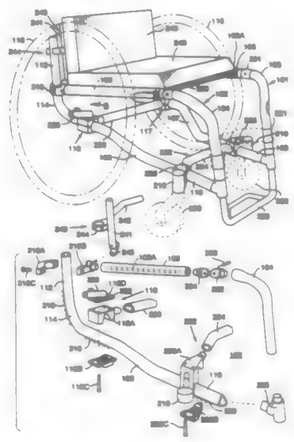
1. A method of making a pair of wheelchair side frame assemblies comprising:

providing a pair of upper tubular members having a desired cross section shape, each of said upper tubular members having a first end and a second end;

providing a pair of lower tubular members having a desired cross section shape;

cutting said lower tubular members to a desired length so that each lower tubular member includes a first end and a second end;

fitting at the first end of the upper tubular members a first lug insert having a clamp element attached thereto which encircles a portion of a respective lower tubular member and is movable along the respective lower tubular member; and



fitting a second lug insert .at the second end of each upper tubular member and at the second end of the respective lower tubular member.

5,361,495

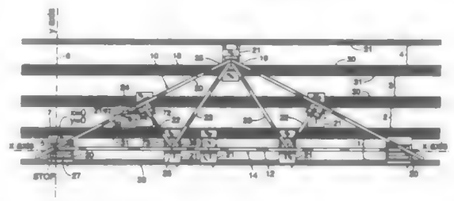
ROOF TRUSS FABRICATION METHOD

Stoddard H. Pyle, 3955 SW. Brooklane Dr., Corvallis, Oreg. 97333, and Frank P. Morris, 13828 209th NE., Woodinville, Wash. 98072

Filed Nov. 5, 1992, Ser. No. 972,123

Int. Cl.[5] B23P *19/04;* **B30B** *1/00*

U.S. Cl. 29—897.31 **9 Claims**



1. A method of fabricating a wooden truss from plural wood members joined together by connector plates pressed into the members at their joints while supported at their joints by multiple movable support members in support positions for positioning the connector plates and wood members to be joined, said method comprising:

designing a truss to be fabricated with reference to an X-Y coordinate system having an X axis intersecting a Y axis at a right angle at a zero reference point, and in designing the truss calculating and assigning to each movable support member its support position defined by an X coordinate and a Y coordinate of the coordinate system as measured from the zero reference point;

superimposing the X-Y coordinate system on a work surface over which the truss is to be fabricated;

mounting each of the multiple movable support members on the work surface having the X-Y coordinate system superimposed thereon for movement on the work surface;

moving each of the multiple movable support members on the work surface to its assigned support position by tracking the movement of the support member with reference to the zero reference point of the X-Y coordinate system and stopping such movement when the support member reaches the X and Y coordinates of its assigned support position;

while maintaining each support member in said assigned support position, positioning the wood members to be joined on the support members to intersect one another in their correct positions for being joined together; and

pressing a pair of connector plates into the wood members while maintaining the support members in their assigned support positions, thereby fabricating the truss.

5,361,496

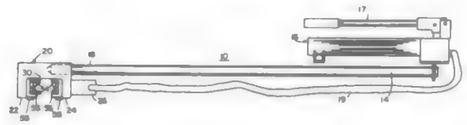
CABLE INSULATION REMOVING TOOL

Robert A. DeBoalt, 15 Lake St., Middleton, Mass. 01949

Filed Mar. 2, 1993, Ser. No. 25,056

Int. Cl.[5] H02G *1/12*

U.S. Cl. 30—90.6 **13 Claims**



1. A cable insulation removing tool for removing thick insulation from a live high voltage power lines comprising:

a pair of opposed jaws arranged on a support head;

a single elongated shaft having a proximal and a distal end, said support head being arranged on the distal end of said shaft;

an empowerment means actuatably arranged on the proximal end of said elongated shaft;

each of said jaws adapted to receive a channel shaped cutter assembly;

each said cutter assembly having a longitudinally extending, radially directed blade arranged therein;

each said cutter assembly having a crescent shaped blade transversely disposed adjacent each end of said cutter assembly, each of said longitudinally extending blades are arranged to create longitudinally opposed cuts and said crescent shaped blades are arranged to place transversely opposed cuts in the insulation of an electric power line placed within said opposed jaws containing said cutter assemblies;

each said channel shaped cutter assembly has a trough which comprises a square configuration when said opposed jaws are empowered together;

one of said jaws being fixed and one of said jaws being movable with respect to said support head; and

wherein a movement means is arranged on said support head, adjacent to said movable jaw, and in communication with said empowerment means as well as said movable jaw, so as to effectuate movement of said movable jaw with respect to said support head.

5,361,497

FOLDING KNIFE HOLDER AND METHOD FOR ONE-HANDED OPENING OF A FOLDING KNIFE

Kenneth R. Crawford, 9009 N. Plaza, No. 109, Austin, Tex. 78753

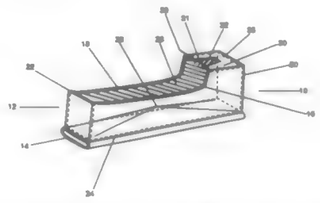
Filed May 12, 1993, Ser. No. 61,587

Int. Cl.[5] B26B *3/06, 29/02*

U.S. Cl. 30—155 **18 Claims**

1. A folding knife holder for use with a folding knife, which knife comprises an elongate knife body, and a knife blade of a first knife blade length and a first knife blade thickness, which knife blade is pivotally attached to said knife body for moving between first and second blade positions relative to said knife body; said knife body having a first knife body end of a first knife body end width that is greater than said first knife blade thickness; a second knife body end; and first and second knife body sides positioned on either side of a knife body recess in which a portion of said knife blade resides when said knife blade is in said first blade position; said folding knife holder comprising:

a housing member having an elongate interior housing member recess, which housing member recess is defined by an elongate base surface substantially lying in and defining a first plane, a first side surface having a first side surface margin, a second side surface having a second side surface margin, a primary end surface having a primary end surface margin and a secondary end surface having a secondary end surface margin, said housing member recess being sized and shaped for substantially receiving therein said knife body, when said knife body is oriented in a first knife body orientation in said housing member recess, with the long axis of said knife body being substantially parallel to said first plane and said knife blade being in said first blade position; said first side surface margin, said second side surface margin, said primary end surface margin, and said secondary end surface margin defining an elongate orifice, opening into said housing member recess; said elongate orifice being sized and shaped to allow said knife body to pass through said elongate orifice, and be received in said



housing member recess in said first orientation, and being further sized and shaped to allow said knife blade to be pivotably rotated from said knife body, from said first blade position to said second blade position, when said knife body is received in said housing member recess in said first orientation;

a strike member attached to said housing member, which strike member is positioned to occlude a portion of said elongate orifice and is sized and shaped to blockingly engage said first knife body end when said knife body is received in said housing member recess in said first orientation, and said knife blade is pulled in an outward first direction, away from said housing member; said strike member having a strike member gap of a first strike member gap width that is an intermediate width between said first knife body end width and said first knife blade thickness, which strike member gap is spatially positioned in said strike member to allow said knife blade to pass through said strike member gap when said elongate knife body is received in said housing member recess in said first orientation, and said knife blade is pivotably rotated from said first blade position to said second blade position.

5,361,498

CUTTING NIPPERS

Bernd Siebenlist, Tönisvorst, Germany, assignor to Josef Bohle Stiftung + Co. KG, Germany

PCT No. PCT/DE91/00399, § 371 Date Sep. 16, 1992, § 102(e) Date Sep. 16, 1992, PCT Pub. No. WO91/17964, PCT Pub. Date Nov. 28, 1991

PCT Filed May 17, 1991, Ser. No. 923,984

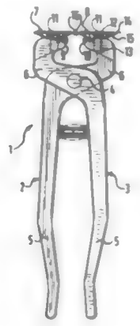
Claims priority, application Germany, May 21, 1990, 4016310

Int. Cl.[5] B25B *7/02*

U.S. Cl. 30—164.95 **17 Claims**

1. Cutting nippers comprising two long operating handles, two shorter pressure levers and detachable cutting wheels (7,8; 21, 22) located on working ends of the pressure levers, each cutting wheel having an axis of rotation, said cutting wheels being provided with cutting edges which are directed towards

each other and can be moved towards and away from each other, and means (11, 13) for adjustably securing each cutting



wheel (7, 8; 21, 22) in any autorotational position relative to its axis of rotation.

5,361,499

WALL PAPER TRIMMER

Alexander D. Janaway, and Christine Janaway, both of Haydon Bungalow, Ashbrittle, Wellington, Somerset TA21 0LG, United Kingdom

PCT No. PCT/GB90/01957, § 371 Date Jul. 7, 1992, § 102(e) Date Jul. 7, 1992, PCT Pub. No. WO91/08872, PCT Pub. Date Jun. 27, 1991

PCT Filed Dec. 14, 1990, Ser. No. 867,677

Claims priority, application United Kingdom, Dec. 15, 1989, 8928423; Nov. 23, 1990, 9025578

Int. Cl.[5] B26B *5/00, 7/00;* B26F *1/00*

U.S. Cl. 30—277.4 7 Claims



1. A method for perforating a surface covering material, such as wallpaper, said method comprising the steps of:

(a) positioning an apparatus including:

(1) a casing;

(2) at least one pair of longitudinally movable perforating elements having tips;

(3) drive means provided in said casing for effecting alternating, reciprocating longitudinal movement of said pair of perforating elements so that the tips thereof, alternately, are capable of penetrating said surface material; and,

(4) means for resiliently mounting said pair of perforating elements to said drive means,

said positioning of said apparatus being carried out with the tips of said perforating elements adjacent said surface covering material; and,

(b) effecting operation of said drive means for causing said perforating elements to perforate said surface covering material.

5,361,500

DE-VIBRATION ELEMENT

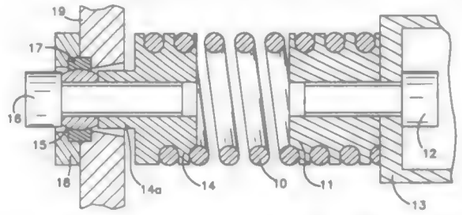
Ulf W. Näslund, and Claes H. Loodahl, both of Huskvarna, Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Jun. 4, 1993, Ser. No. 72,495

Claims priority, application Sweden, Jul. 17, 1992, 9202198-9

Int. Cl.[5] B27B *17/00*

U.S. Cl. 30—381 4 Claims



1. A motor saw comprising a saw body, a handle portion, and a de-vibration element, said de-vibration element comprising a coil spring (10, 30) attached between the saw body (19, 39) and the handle portion (13) by attachment means provided at each end of the spring, wherein said attachment means comprises an articulated connection means (15, 17; 35, 37).

5,361,501

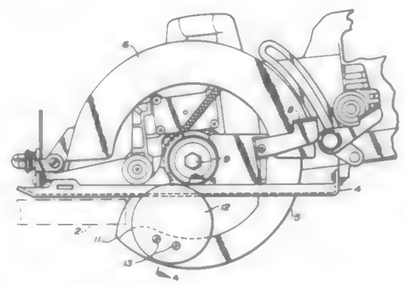
IMPROVED GUARD FOR POWER CIRCULAR SAW

Aleksander Fajnsztajn, P.O. Box 6684, San Rafael, Calif. 94903

Filed Aug. 23, 1993, Ser. No. 120,571

Int. Cl.[5] B23D *45/16*

U.S. Cl. 30—391 6 Claims



1. In a lower guard for a circular, portable saw comprising two upright sections each having a leading edge and a trailing edge in a relaxed state of said saw, and a transverse section surrounding at least a portion of blade teeth of said saw wherein one of said upright sections is rotatable attached to said saw and the other section depends from said one section through said transverse section, a device to prevent the work item being cut from jamming against said trailing edge of said other of said upright sections of said lower guard of said circular saw and preventing rotational motion of said lower guard; comprising a thin circular disc fixedly attached to said other of said upright sections of said lower guard so as aid the circular movement of said lower guard and prevent jamming thereof, said disc having a diameter substantially greater than the total upright extent of said other section of said lower guard so as to substantially increase the vertical extent of the leading edge of said other section of said lower guard in said relaxed state of said saw.

5,361,502

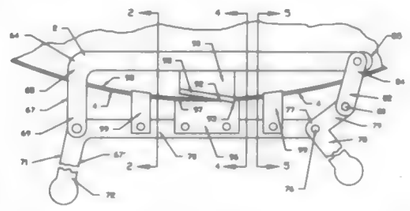
SANITARY DRUM AND CAN OPENING DEVICE

Louis A. Derwin, 4830 E. 82nd St., Newaygo, Mich. 49337

Filed Sep. 14, 1993, Ser. No. 120,734

Int. Cl.[5] B67B *7/50*

U.S. Cl. 30—431 14 Claims



1. A device for severing a can cover from the body of a can comprising:

first and second mounting bars pivotally interconnected at one of their corresponding ends to each other,

operating means comprising a first lever fixed to said first bar for pivotal movement therewith,

link means having one end pivotally connected to a second end of the first bar,

a handle lever arm pivotally mounted intermediate its ends to a second end of said second bar and having one end pivotally connected to an other end of said link means,

a shear blade mounted on the first bar,

an anvil mounted on the second bar in scissor cutting relation with said blade, and guide means mounted on said first bar in overlapping relation to said second bar and engagement therewith to maintain said blade and anvil in shearing relation,

said guide means hanging said device in a position disposing said blade in a horizontal position in engagement with a top edge of a container chime and rising vertically as the blade cuts through a portion of the chime and additionally tearing the chime,

and said blade having a horizontally positioned edge and a wedge surface facing upwardly for sliding over a portion of the chime presently being cut.

5,361,503

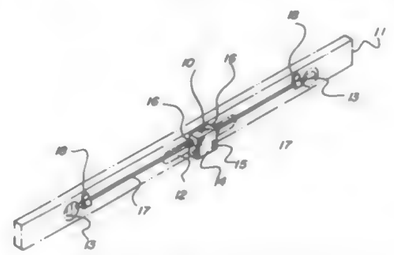
ACCESSORY FOR CARPENTER LEVELS

Carl E. Anderson, 1625 Palo Verde Dr., Rapid City, S. Dak. 57701

Filed May 26, 1993, Ser. No. 72,844

Int. Cl.[5] G01C *9/32*

U.S. Cl. 33—348.2 1 Claim



1. A new accessory for addition to a carpenters level having a finger slot with defining surfaces and bubble vials located on said level, said accessory comprising:

an enclosed light source having a pair of opposed openings;

a pair of elastomeric bushings, one of said bushings being concentrically positioned within each of said openings;

means for mounting said light source to said level, said means including a clip coupled to said light source and having spaced extending flanges for engaging said surfaces defining said finger slot to secure said light source to said level;

and,

a pair of fiber optic tubes each extending outwardly from said light source through one of said bushings to a point adjacent each of said bubble vials to illuminate said bubble vials, each of said fiber optic tubes comprising an external rigid casing encasing a plurality of fiber-optic filaments therein;

wherein said plurality of fiber-optic filaments comprises 25 fiber-optic filaments;

wherein said clip is made of spring steel;

and wherein said light source includes a threaded stud projecting therefrom, and said clip is coupled to said light source by a nut threaded onto said stud to capture said clip between said nut and said light source.

5,361,504

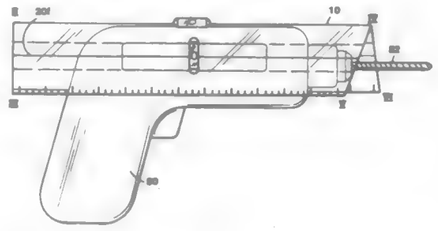
UNIVERSAL GUIDE FOR ELECTRICAL HAND DRILL

Hung C. Huang, 9418 NE. 136th St., Kirkland, Wash. 98034-1815

Filed Aug. 11, 1993, Ser. No. 104,537

Int. Cl.[5] B23B *45/14*

U.S. Cl. 33—371 8 Claims



1. A guide for an electric drill comprising:

a transparent, elongated L-shaped member having two mutually perpendicular faces, each face having two parallel long edges and two short edges, the faces sharing a common long edge, wherein, for each face, one of the two short edges is a perpendicular edge and the other of the two short edges is an angled edge, wherein the perpendicular edges are perpendicular to the long edges, wherein the angled edges are not perpendicular to the long edges and the common long edge is formed such that the perpendicular edges are mutually adjacent to each other and the angled edges are mutually adjacent to each other;

magnetic areas formed on surfaces of each of the faces and located so as to mate with corresponding magnetic areas on a hand-held drill;

mutually perpendicular level indicators disposed on each face perpendicular to the common long edge; and

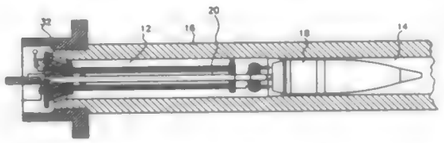
a horizontal level indicator disposed on the common long edge in a direction perpendicular to the perpendicular level indicators.

5,361,505

PROJECTILE RAM DEPTH AND ORIENTATION GAUGE FOR A CANNONTUBE

Jim A. Faughn, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1993, Ser. No. 55,456
Int. Cl.[5] G01B *3/46, 5/18, 5/25*
U.S. Cl. 33—506 **23 Claims**



1. A combination gauge for measuring both the depth of a projectile inside a cannontube bore after it has been rammed and seated in the lands and grooves of the rifling of the cannontube and the angular deviation of orientation of the projectile from its normal position with respect to the centerline of the cannontube, the cannontube comprises an elongated chamber having a forward section for housing the projectile and having a forward open end and a rear section constituting the breech chamber and having a rearward open end;

the gauge comprising in combination:

an elongated body substantially corresponding to the dimensions of the breech chamber when inserted through the rearward open end of the cannontube;

a shaft member mounted centrally within the elongated body and adapted to move axially fore and aft in a radially timed manner for deriving the depth dimension measurement of the rammed/seated projectile in the cannontube bore;

means associated with the shaft member for aligning the shaft member within the breech chamber and positioning with the cannontube or breech face;

additional means associated with the shaft member for deriving the deviation of orientation measurement; and

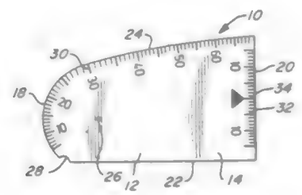
means for electronically recording the derived measurements.

5,361,506

JAW OPENING MEASUREMENT DEVICE

Reinier Beeuwkes, III, Concord, Mass., assignor to Therabite Corporation, Newtown Square, Pa.

Continuation of Ser. No. 810,023, Dec. 19, 1991, abandoned.
This application May 26, 1993, Ser. No. 67,748
Int. Cl.[5] A61B *5/103;* **A61C** *19/04;* **G01B** *3/14, 5/14*
U.S. Cl. 33—512 **6 Claims**



1. A measurement device for measuring the degree of jaw opening and lateral jaw movement of a human subject, comprising:

(a) a measurement body defining a reference depression adjacent one end thereof and having a curved edge said measurement body defining a straight edge at the end thereof opposite said curved edge;

(b) first indicia being present on said measurement body about said curved edge and relating to said reference depression; and

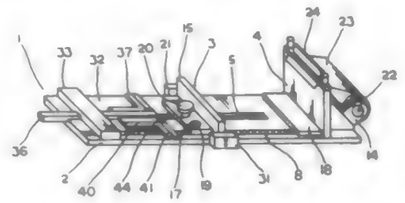
(c) second indicia being provided along said straight edge and defining a reference line from which lateral jaw movement is determined, said reference line being substantially centrally located in reference to said straight edge.

5,361,507

INFANT MEASURING DEVICE WITH PROGRESS CHARTING CAPABILITY

Claudio I. Lopez, 10157 Cedar Dune Dr., Tampa, Fla. 33824

Filed May 3, 1993, Ser. No. 55,279
Int. Cl.[5] A61B *5/107*
U.S. Cl. 33—515 **1 Claim**



1. An infant measuring, and charting device, comprising:

a bottom base, said bottom base being a substantially flat, elongated piece of material, said bottom base having first and second ends, a bottom surface, and a top surface, said bottom base having a length between said first and second ends and a width sufficient to accommodate an infant for recording the infant's length, said bottom base having a ruler inlaid along the length of said top surface, said bottom base having an inverted T-shaped groove formed centrally along said top surface, said groove extending a distance from the first end of said bottom base and terminating before reaching said second end of said bottom base,

a head board affixed onto said bottom base, and located at said second end of said base, and extending perpendicular upward a distance from said bottom base, said head board having a spring loaded paper holding means affixed at its upper end,

a head comfort pad affixed to said bottom base, said head comfort pad being located on one side of said head board, and adjacent thereto,

a foot board, said foot board being substantially L-shaped having an upward extending vertical portion, and a substantially flat horizontal portion, said foot board being slidably affixed onto said bottom base, said foot board having locking means attached thereto, said locking means including a T-shaped block inserted into said inverted T-shaped groove and a locking screw extending through said horizontal portion into said block, said foot board having two guide rails affixed thereto, said guide rails being affixed to opposite sides of said foot board for engaging said bottom base, said foot board including viewing means for viewing said inlaid ruler, said viewing means being a substantially circular hole in said horizontal portion and located over said ruler, said ruler being affixed to said bottom base in a position to present an exact reading of an infant's height in said hole,

said bottom base having a paper holder frame affixed thereto, said frame including a removable spindle, said spindle providing means for unrolling said paper, said paper being inserted between the upper end of said head board and said spring loaded paper holding means, thereby forming a sanitary paper covering for said bottom base,

said bottom base having means for charting an infant's measurements onto a standard growth chart to be located on said base, said charting means including a T-square, said T-square having an elongated portion for insertion into said T-shaped groove in said bottom base, said T-square further having a viewing cursor plate affixed at one end of said T-square, said cursor plate having at least two marking holes extending through its surface, said marking holes being located strategically to allow charting on said growth chart in at least two positions of said growth chart,

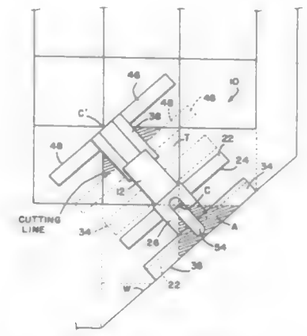
said bottom base also having retaining means for retaining said charting means on said bottom base.

5,361,508

TILE, ANGLE-CUTTING GAUGE

Joseph Ruggiero, 509 E. Broadway, Port Jefferson, N.Y. 11777

Filed Aug. 30, 1993, Ser. No. 113,075
Int. Cl.[5] G01B *5/00*
U.S. Cl. 33—527 **11 Claims**



1. A tile, angle-cutting gauge, comprising:

a body having a longitudinal axis and a straight-edged member extending perpendicular to said axis;

a first slide block coupled to an upper portion of said body, and having a second straight-edged member extending perpendicular to said axis; and

a second slide block coupled to a lower portion of said body, and having a third straight-edged member extending perpendicular to said axis; wherein

said first slide block is slidably engaged with said body, and is (a) slidably extendable outwardly of said body at one axial end of said body, and (b) slidably outwardly of said body at the opposite axial end of said body, for disposition thereof in surmounting relationship with said second slide block;

said straight-edged member of said body defines an abutment; and

said first slide block has an aperture formed therethrough to permit viewing of said abutment therethrough.

5,361,509

ELECTRICAL BOX INSTALLATION TOOL

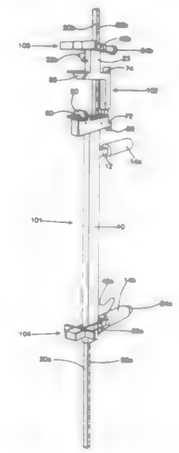
Charles H. Wheeler, Sr., P.O. Box 8584 1112 Lodi, S. Lake Tahoe, Calif. 95731, and Thomas N. Wheeler, 19745 Madison Rd., Nampa, Id. 83687

Filed Aug. 27, 1993, Ser. No. 113,846
Int. Cl.[5] B25H *7/00*
U.S. Cl. 33—528 **26 Claims**

1. A tool for installing electrical boxes, which comprises:

a) a main body made of an elongated tubular support member having a top end and a bottom end;

b) a holding means attached to the main body for releasably holding an electrical box, comprising (1) a clamp body made of rectangular tubing and being generally "C" shaped having a top horizontal portion, a vertical portion and a bottom horizontal portion, the bottom horizontal portion being attached to the main body, (2) an active clamp jaw made of flat bar and being generally "L" shaped having two flat perpendicular surfaces for holding an external surface of an electrical box, the active clamp jaw being attached to the bottom horizontal portion of the clamp body, and (3) a passive clamp jaw made of flat bar and being generally "L" shaped having two flat perpendicular surfaces for holding an external surface of an electrical box, the passive clamp jaw being attached to the top horizontal portion of the clamp body;



c) a height adjustment means connected to the main body for positioning the electrical box at a predetermined distance above a floor;

d) a depth adjustment means attached to the main body for positioning the electrical box at a predetermined depth relative to the face of an upright stud; and

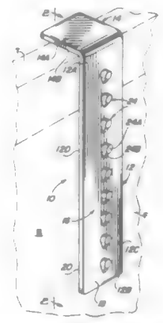
e) an alignment means attached to the main body for positioning the electrical box so that the sides of the electrical box are parallel to the sides of an upright stud.

5,361,510

PICTURE FRAME HANGING WIRE APPLICATOR TOOL

John W. Cox, 1803 Edelweiss Cir., Sandy, Utah 84092

Filed Sep. 16, 1993, Ser. No. 122,150
Int. Cl.[5] G01B *3/00*
U.S. Cl. 33—613 **12 Claims**



1. An applicator tool for stringing a hanging wire on a picture frame with an apex of the wire at a predetermined distance below a top edge of the picture frame, said applicator comprising:

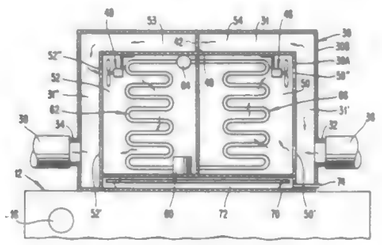
(a) an elongated straight flat body member having a pair of opposite ends and a pair of opposite front and rear flat surfaces;
(b) means for resting said body member against the back of the picture frame including an end member being attached to, and projecting in a transverse relation rearwardly outwardly from, said body member, said end member being adapted to rest on the top edge of the picture frame to suspend said body member downwardly along and against a back side of the picture frame relative to the top edge thereof; and
(c) means for supporting an apex of the hanging wire including a plurality of protuberances spaced apart from one another and being fixedly connected directly to, and projecting forwardly outwardly from, said front flat surface of said body member at different known distances from said end member so as to define a plurality of positions between said opposite ends of said body member to support an apex of the hanging wire along said front flat surface of said body member being spaced apart from one another and from the top edge of the picture frame by the different known distances.

5,361,511

METHODS AND APPARATUS FOR TREATING THE EXHAUST AIR OF A CLOTHES DRYER

John R. Brown, 7800 Chase Ct., Manassas, Va. 22110

Filed Jul. 30, 1993, Ser. No. 99,654
Int. Cl.[5] F26B *21/08*
U.S. Cl. 34—468 **14 Claims**



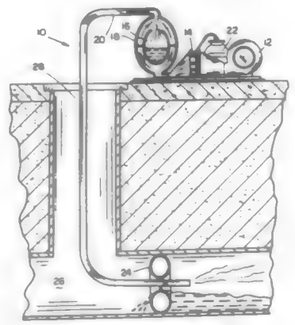
1. In combination:
a clothes dryer having an air inlet port, an air outlet port, and an air-circulating fan, and
a manually portable air treatment unit separate from said dryer for treating exhaust air received therefrom, said air treatment unit comprising:
a housing having an air inlet port connected by a conduit to said air outlet port of said dryer, and an air outlet port connected by a conduit to said air inlet port of said dryer,
a dehumidifying mechanism in said housing including an evaporator section and a condenser section, and
means directing moist air received through said air inlet port of said air treatment unit into contact sequentially with said evaporator section and said condenser section, to cause moisture to be condensed from the air at said evaporator section and then cause the air temperature to be raised at said condenser section before the air is returned to said dryer.

5,361,512

SYSTEM FOR APPLYING HERBICIDES TO FLORA INFESTATIONS WITHIN SEWER LINES

Timothy W. Tobinson, Silver Creek, Nebr., assignor to General Chemical Co., Salem, Oreg.

Filed Jul. 27, 1992, Ser. No. 919,441
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—60 **5 Claims**



1. A portable system for inhibiting the growth of flora within and about sewer lines, comprising:
(a) at least two flow restrictors fiat temporary installation at either end of an area of sewer line so as to define a treatment area, said flow restrictors adapted to limit the passage of both liquids and vapors between said treatment area; and
(b) a portable herbicide injector, including:
(1) a compound which produces a phytocidally effective vapor upon heating;
(2) a vessel for heating said compound, said vessel having a vapor outlet port;
(3) a heater for heating said compound within said vessel; and
(4) a flexible conduit having a first end connected to said vessel vapor outlet and a conduit vapor port for discharging phytocidally effective vapor into said treatment area such that said portable system may be utilized to inhibit the growth of flora within and about sewer lines.

5,361,513

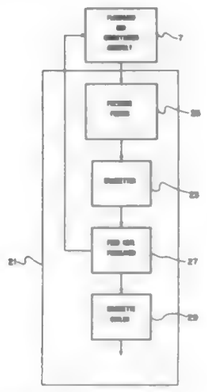
METHOD AND APPARATUS FOR DRYING AND BRIQUETTING COAL

Paul W. Woessner, Evergreen, Colo., assignor to Amax Coal Industries, Inc., Indianapolis, Ind.

Filed Nov. 25, 1992, Ser. No. 981,620
Int. Cl.[5] F26B *3/08, 17/00*
U.S. Cl. 34—363 **41 Claims**

1. A method for conditioning and briquetting coal particles comprising;
(a) identifying a moisture content of dried coal particles to be outputted by a conditioner, said moisture content being dependent upon the composition and structure of said dried coal particles to be outputted by said conditioner, wherein said conditioner comprises a fluidized bed conditioner having a fluidized bed of coal particles and the moisture content of said outputted dried coal particles is a function of the temperature of said fluidized bed of coal particles;
(b) selecting a temperature of coal particles in said conditioner based on said moisture content of said dried coal particles to be outputted by said conditioner;
(c) inputting coal particles having pores into said conditioner to be dried;

(d) contacting said inputted coal particles with steam, said steam supplying heat to said inputted coal particles;
(e) maintaining said inputted coal particle temperature at about said selected temperature;
(f) outputting dried coal particles having steam in their pores from said conditioner;



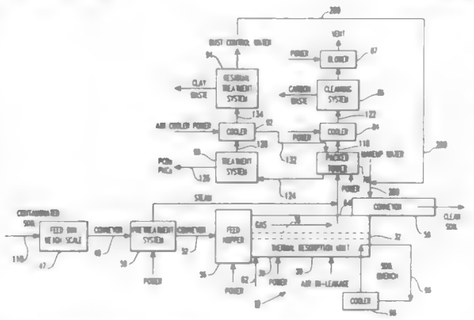
(g) conveying said dried coal particles having steam in their pores from said conditioner to a briquetter; and
(h) briquetting said dried coal particles having steam in their pores.

5,361,514

REMOVAL OF VOLATILE AND SEMI-VOLATILE CONTAMINANTS FROM SOLIDS USING THERMAL DESORPTION AND GAS TRANSPORT AT THE SOLIDS ENTRANCE

Edward J. Lahoda, Edgewood Borough; John A. Paffenbarger, Pittsburgh; C. Keith Paulson, Murrysville, all of Pa.; Jerry C. Seagle, Brandon, Fla., and Donald W. Cash, Murray, Utah, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 785,397, Oct. 30, 1991, Pat. No. 5,230,167. This application May 14, 1993, Ser. No. 62,513
The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—391 **23 Claims**



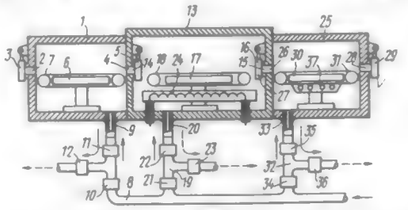
1. A method for removing contaminants from volatile and non-volatile contaminated material, comprising the steps of:
(a) feeding contaminated material into a chamber, and moving the contaminated material on a flat type belt conveyor through the chamber from an inlet end of the chamber to a discharge end of the chamber;
(b) heating the contaminated material on the belt conveyor in the chamber, as the contaminated material moves through the chamber, to a temperature effective for volatilizing the contaminants and for producing a dry processed material that is substantially decontaminated;
(c) providing a transport gas at least at the point of entrance of the contaminated material into the chamber;
(d) flowing the transport gas above the contaminated material on the belt conveyor, to carry volatilized contaminants from the chamber;
(e) maintaining the temperature, oxygen concentrations, and residence time effective to substantially avoid incineration of the contaminants;
(f) passing the transport gas containing the volatilized contaminants from the chamber;
(g) passing the volatilized contaminants discharged from the chamber through a packed tower where a liquid flows countercurrent to gas flow, to produce a gas stream and a liquid;
(h) cooling the processed material;
(i) discharging the processed material from the chamber.

5,361,515

METHOD OF DRYING A PROTECTIVE POLYMER COATING APPLIED ONTO A SURFACE OF AN ARTICLE FROM A SOLUTION, AND DEVICE FOR EFFECTING THEREOF

Vladimir A. Peremyschev, Moscow, Russian Federation assignor to Nauchno-Proizvodstvennaya Firma Aktsionernoe Obschestov Zaknytogo Tika Tcknologia, Obarudovanie Materialy (AO "TOM"), Moscow, Russian Federation

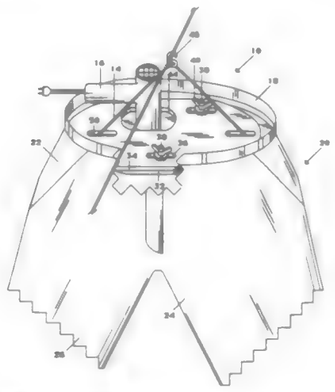
PCT No. PCT/SU91/00088, § 371 Date Mar. 2, 1993, § 102(e) Date Mar. 2, 1993, PCT Pub. No. WO92/19925, PCT Pub. Date Nov. 12, 1992
PCT Filed May 8, 1991, Ser. No. 983,843
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—393 **16 Claims**



1. A method for removal of a solvent from a protective polymer coating, wherein the polymer coating has been applied onto a surface of an article from a solution containing said solvent at an initial temperature within a temperature range of 18° to 28° C., wherein said coating has protective properties which are improved by drying the coating at an elevated temperature, wherein said coating is susceptible to the development of microcracks when subjected to drying at the elevated temperature and wherein the development of microcracks in the coating can be suppressed by subjecting the coating to an excessive pressure sufficient for suppressing the development of the microcracks during drying at said elevated temperature, said method comprising:
a) maintaining the polymer coating at said initial temperature for an initial drying period of about 20 seconds to about 1 hour after the polymer coating has been applied to the surface, and subjecting said coating to a build-up of pressure to said excessive pressure during the initial drying period;
b) heating the coating to said elevated temperature while maintaining the coating at said excessive pressure, said elevated temperature and excessive pressure being maintained for a second drying period sufficient to improve the protective properties of the coating; and
c) cooling the polymer coating to a final temperature which is lower than said elevated temperature for a third drying period sufficient for substantially complete removal of the solvent, said excessive pressure being maintained during

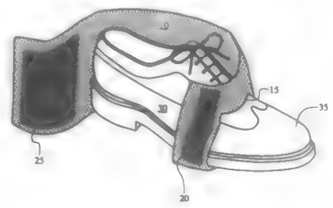
said third drying period until the coating drops to a temperature at which it is no longer susceptible to the development of microcracks.

5,361,516
DEVICE AND METHOD FOR DRYING PANTS WRINKLE-FREE
John A. Dahman, 7309 Reading Rd., Cincinnati, Ohio 45237
Filed Mar. 23, 1993, Ser. No. 36,189
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—440 **10 Claims**



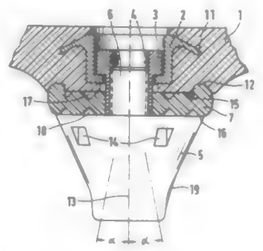
7. A method of drying damp pants, said pants having a waist opening and permeable body and legs, each of said legs having a leg opening, said method comprising the steps of:
a) filling said waist opening of pants with an impermeable member, said impermeable member having at least one opening communicating with the inside of said pants, said at least one opening adapted to receive a pressurized source of air from outside said pants;
b) closing said leg openings of said pants;
c) hanging said impermeable member having said pants suspended therefrom; and
d) blowing pressurized air continuously into said pants through said at least one opening in said impermeable member, said air having sufficient pressure to simultaneously expand said pants to stretch out wrinkles and drive air through said permeable pants body and legs to dry said pants substantially wrinkle-free.

5,361,517
HEEL PROTECTOR
Robert Liener, 6408 Windsong, Dallas, Tex. 75252
Continuation of Ser. No. 819,842, Jan. 13, 1992, abandoned. This application Jun. 10, 1993, Ser. No. 74,982
Int. Cl.[5] A43B *5/00*
U.S. Cl. 36—72 R **10 Claims**



1. A combination for protecting footwear surfaces comprising:
footwear including a toe portion at one end and a heel portion at the opposite end thereof, with opposed side portions extending therebetween;
a single sheet of material having first and second ends;
said sheet being removably wrapped around said footwear and including an unobstructed opening positioned in the first end, the opening sized for allowing only the toe portion of the footwear to extend therethrough, leaving the second end of the sheet for wrapping around the heel and side portions of the footwear; and
attachment means for securing the second end of the sheet wrapped around the heel and side portions of the footwear to the first end of the sheet through which the toe portion of the footwear extends such that material sheet covers and protects the surfaces of the side and heel portions of the footwear.

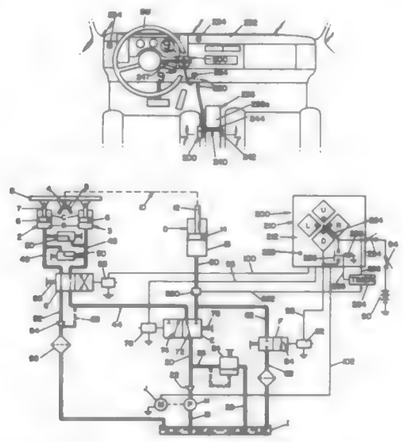
5,361,518
SPORT SHOE WITH AN OUTSOLE WITH HOLDING INSERTS FOR HOLDING GRIPPING ELEMENTS
Reinhold Sussmann, Scheinfeld, and Theo Hofmann, Schlüsselfeld, both of Germany, assignors to Tretorn AB, Helsingborg, Sweden
Filed Sep. 29, 1993, Ser. No. 127,730
Claims priority, application Germany, Oct. 31, 1992, 9214782
Int. Cl.[5] A43C *15/02, 15/16*
U.S. Cl. 36—134 **19 Claims**



1. Sport shoe with an outsole with holding inserts embedded therein for holding replaceable gripping elements provided with a threaded bolt, and a damping element for resiliently supporting the gripping element on the outsole, said damping element being located between the outsole and at least one gripping element; wherein at least one of the holding inserts is embedded in the outsole and has a receiving device for a gripping element; wherein the at least one holding insert forms a receptacle in which an upper end of the receiving device is disposed with a circumferential clearance between the periphery of the receiving device and a surrounding wall of the holding insert in which it is disposed and between an opening in a bottom wall of the receptacle and a lower portion of the receiving device which extends therethrough, and with an axial clearance between a top end of the receptacle and a top surface of said upper end of the receiving device, said clearances forming, together with said damping element, a means for enabling the receiving device to be both axially movable and laterally tiltable relative to said at least one holding insert; and wherein the receiving device is provided with an inside thread for receiving the threaded bolt.

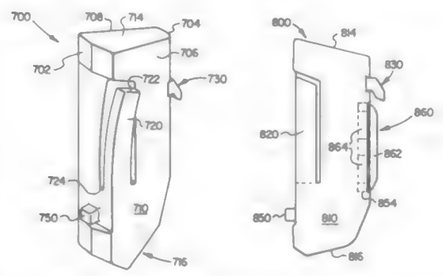
5,361,519
CONTROL PAD FOR A SNOWPLOW
James C. Ciula, Mentor, and Charles J. Smick, Jr., North Ridgeville, both of Ohio, assignors to The Louis Berkman Company, Cleveland, Ohio
Filed Feb. 9, 1993, Ser. No. 15,431
Int. Cl.[5] E01H *5/04*
U.S. Cl. 37—234 **17 Claims**

1. A control device for controlling component parts of a system for positioning a snowplow blade attached to a motor vehicle having a cab for operation of the vehicle, said device being in said cab and comprising housing means, manually operable means supported on said housing means for controlling said component parts of said system, line means extending from said housing means for connecting said manually operable means with said component parts, mounting means on said housing means, means in said cab cooperable with said mounting means to removably support said device in said cab, said



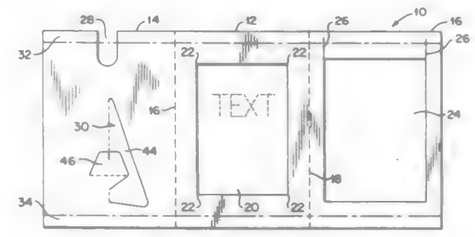
mounting means including bracket means and said vehicle including console means in said cab, said console means providing said means in said cab cooperable with said mounting means, said bracket means being removably supported on said console means, and said console means including a top and opposite sides and said bracket means is U-shaped and includes spaced apart legs and a bridging portion therebetween, said bridging portion extending across said top and said legs extending along said opposite sides.

5,361,520
LOCKING PIN APPARATUS
Howard W. Robinson, Grapevine, Tex., assignor to GH Hensley Industries, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 807,714, Dec. 16, 1991, Pat. No. 5,233,770. This application Jul. 26, 1993, Ser. No. 97,109
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—458 **16 Claims**



1. A locking pin for captively retaining a tooth to an adapter of an excavating tooth and adapter assembly, said locking pin comprising:
(a) a wedge member with a distal end, a proximal end, a first surface, a second surface, and a third surface;
(b) a first stop means extending from the second surface;
(c) an integral spring extending from the third surface, wherein said integral spring means comprises a planar member extending upward from the distal end of the wedge member; and
(d) a frangible guide means extending outwardly from the first surface near the distal end of said wedge member.

5,361,521
DISPLAY FRAME FOR BASEBALL CARDS AND THE LIKE, METHOD OF MAKING, AND BLANK THEREFOR
Ronald O. Burtch, West Hill, Canada, assignor to Ronald P. Burtch & Associates Limited, Scarborough, Canada
Filed Jan. 26, 1993, Ser. No. 8,977
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152.1 **14 Claims**

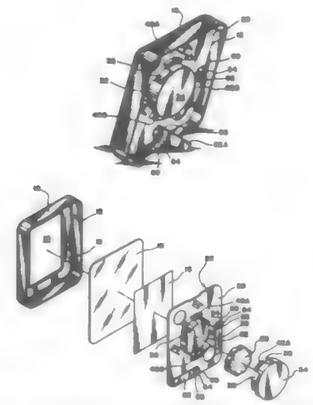


1. A display frame for displaying a card, said display frame comprising:
a planar front section including top, bottom and side framing portions defining a display opening for a card;
a planar rear section defining a plane and being folded over from one edge of said front section having a first fold line, said planar rear section including erectable support means erectable from the plane of the rear section for supporting the display frame so as to enable the display frame to stand up on a support surface; and
an intermediate section having a top and a top edge and having a bottom and including first and second spaced, interconnected side portions which are interconnected by a bottom interconnecting portion at the bottom of said intermediate section and are spaced apart at the top of said intermediate section so that said intermediate section has an opening at the top edge thereof between said side portions, one of said side portions being folded over from the opposite edge of said front section having a second fold line, said intermediate section being disposed between said front and rear sections so as to form a pocket behind said display opening and between said front and rear sections in which a card can be received for display, said pocket being defined by said side portions, said interconnecting bottom portion of said intermediate section and said front and rear sections, and having a top opening formed by said opening at the top edge of said intermediate section.

5,361,522
AIR FRESHENER PICTURE FRAME
Dennis E. Green, 102 Falcon Hills Dr., Highlands Ranch, Colo. 80126
Filed Jan. 28, 1994, Ser. No. 188,483
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152.1 **18 Claims**

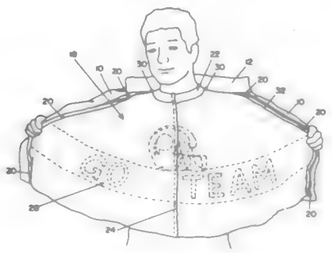
1. A combination air freshener and picture frame comprising:
a front display member having retaining members;
a back panel fitting within said front display member and removably engaged by said retaining members;
air freshener material for emitting a scent;
an enclosure attached to said back panel, said enclosure containing said air freshener material;
means for controlling the release of said scent; and

at least one prop pivotally connected relative to said back panel for selectively supporting said combination air



freshener and picture frame in a plurality of possible orientations.

5,361,523
CONCEALED DISPLAY FOR A GARMENT
Elizabeth M. Robinson, 3801 Brooklyn NE #C130-4, Seattle, Wash. 98105
Continuation of Ser. No. 817,662, Jan. 7, 1992, abandoned. This application Apr. 19, 1993, Ser. No. 49,627
Int. Cl.[5] G09F *21/02*
U.S. Cl. 40—586 **2 Claims**

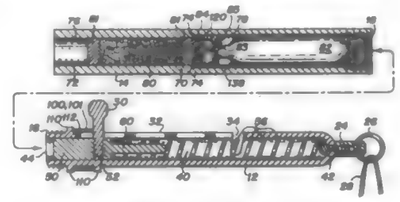


1. A garment for selectively conveying information, comprising:

an exterior shell having an interior and exterior surface and a front and back portion for covering the upper torso of the wearer, including at least one selectively closed vertical opening in the front portion of the garment dividing the front portion into two halves, said shell selectively movable from a fully extended, open position wherein the front halves are substantially in line with the back portion of the shell to a closed position; and

at least one removable separate piece of material forming a display panel having a top, a bottom and opposing edges extending from a position on one side of and adjacent to the opening of the shell to a position on the opposite side of and adjacent to the opening of the shell, said panel being of a size such that it extends substantially the full width of the shell when the shell is held fully open, whereby the panel may be selectively displayed by opening the front of the garment to a fully extended open position or alternatively be hidden from view when the garment is closed.

5,361,524
GAS POWERED WEAPON SYSTEM INCLUDING AN IMPROVED GAS SEAL
Robert R. Karkau, 25030 Loma Prieta Ave., Los Gatos, Calif. 95030; Marc S. Wortz, 307 Western Dr., Santa Cruz, Calif. 95060, and Michael D. Conner, 137 Marina Ave., Aptos, Calif. 95003
Filed Jul. 14, 1993, Ser. No. 92,318
Int. Cl.[5] F41C *9/02*
U.S. Cl. 42—1.16 **5 Claims**



1. A gas powered weapon system comprising:

a housing for holding a pressurized gas cartridge and a projectile therewithin; said gas cartridge being generally cylindrical and including a body portion and a neck portion, said neck portion having a length and having a smaller diameter than the diameter of said body portion;

a gas cartridge firing means, said firing means having a cartridge piercing member and being disposed within said housing and functioning to cause the gaseous discharge of said gas cartridge; said gas cartridge being movable within said housing from a non-firing position wherein said cartridge is not pierced by said cartridge piercing member, to a firing position wherein said cartridge is pierced by said cartridge piercing member;

a gas seal, said gas seal being fixedly disposed within said housing adjacent to said cartridge piercing member and functioning to cause pressurized gas released by said cartridge to propel said projectile outwardly from said housing; and

said gas seal having a bore formed therethrough, said bore having a diameter that is both larger than the diameter of said neck portion of said cartridge and substantially smaller than the diameter of said body portion of said cartridge;

said gas seal being disposed away from said gas cartridge when said gas cartridge is in said non-firing position.

5,361,525
GUN SAFETY LOCK
Kenneth E. Bowes, 2426 Littlebrooke Dr., Dunwoody, Ga. 30338
Filed Dec. 27, 1993, Ser. No. 172,740
Int. Cl.[5] F41A *17/02*
U.S. Cl. 42—70.11 **7 Claims**

1. A safety device for preventing the unauthorized firing of a weapon comprising:

(a) a key further comprising at least two lugs protruding from the key;

(b) a key receiving means for receiving said key, said receiving means further comprising at least two slots for receiving said lugs, said slots allowing full insertion of said key;

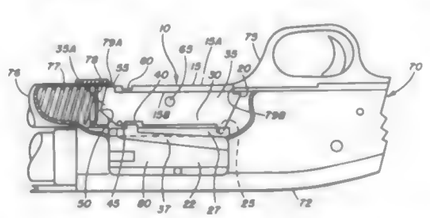
(c) a key retaining means disposed in said key receiving means for engaging said lugs on said key whereby said key is retained in said key receiving means in the fully inserted position until removed by a pulling force exerted on said key; and

(d) a weapon deactivating means for disabling a weapon upon removal of said key from said key receiving means, and enabling said weapon upon only full insertion of said key into said key receiving means without rotation of said key;



whereby the spacing of said lugs on said key and the spacing of said slots in said key receiving means provides a method of unique matching of said key and said key receiving means.

5,361,526
QUICK RELEASE CHILD RESISTANT SAFETY AND SECURITY DEVICE
William J. Campbell, P.O. Box 313, Lolo, Mont. 59847-0313
Continuation of Ser. No. 992,603, Dec. 18, 1992, abandoned. This application Mar. 4, 1994, Ser. No. 207,225
Int. Cl.[5] F41A *17/34, 17/44*
U.S. Cl. 42—70.11 **16 Claims**



1. In combination with a firearm including a receiver, a hollow tubular magazine having a loading port of predetermined length and width with a pair of spaced opposite ends, a loading mechanism within the receiver, and a compressible spring disposed in said tubular magazine adjacent to one of said pair of spaced opposite ends of said loading port, a child resistant safety and security device comprising:

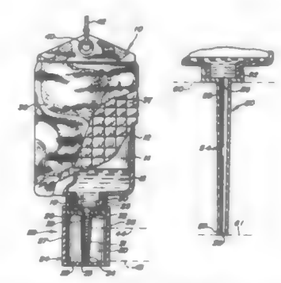
(a) a cover having opposite outside and inside surfaces and being of a length and width adequate to fit with and close the loading port of the hollow tubular magazine of the firearm;

(b) a body attached to and projecting from said inside surface of said cover which faces toward the hollow tubular magazine, said body being adapted to extend within the hollow tubular magazine of the firearm and substantially between said pair of spaced opposite ends of the loading port thereof with said cover substantially fitting and closing the loading port thereof; and

(c) securing means defined on opposite ends of at least one of said body and cover for engaging said spaced opposite ends of the loading port of the hollow tubular magazine and releasably mounting said device thereto so as to retain said body within the loading port in a position which prevents operation of the loading mechanism within the receiver of the firearm;

(d) said securing means including a protruding nose fixedly defined on one of said opposite ends of said body for extending within said hollow magazine beyond said one of said opposite ends of the loading port of the hollow tubular magazine to engage and compress said compressible spring disposed in said hollow tubular magazine adjacent to said one end of said loading port, said securing means also including a recessed catch fixedly defined on the other of said opposite ends of said rigid body and cover and adapted to engage the other of said spaced opposite ends of said loading port of said hollow tubular magazine, said spring being adapted to produce a biasing force against said protruding nose of said body so as to cause said recessed catch to forceably engage said other of said spaced opposite ends of said loading port and thereby retain said body within said hollow magazine and thereby prevent operation of said loading mechanism within said receiver, said compressible spring being yieldable upon forceable movement of said body and cover toward said spring overcoming said biasing force so as to permit said recessed catch to disengage from said other of said spaced opposite ends of said loading port and facilitate release and removal of said cover and body from said hollow magazine and thereby permit operation of said loading mechanism within said receiver.

5,361,527
TEMPERATURE REGULATED SCENT DISPENSER
John R. Burgeson, 4345 157th Ave. NW., Anoka, Minn. 55304
Continuation of Ser. No. 788,820, Nov. 7, 1992, Pat. No. 5,220,741, which is a continuation of Ser. No. 200,582, May 31, 1988, abandoned. This application Feb. 22, 1993, Ser. No. 20,670
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] A01M *31/00*
U.S. Cl. 43—1 **10 Claims**



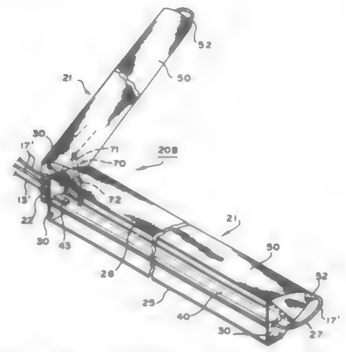
1. A temperature sensitive, self-regulated animal attractant scent dispenser to be mounted above a ground surface for scent dispersion onto the ground surface for use by hunters to take advantage of the mating processes of certain species to be hunted, such as white-tail deer, the dispenser comprising:

(a) a sealed container made of a rigid material so as to resist atmospheric pressure effects that otherwise may distort the container, the container having an interior volume holding a volume of a scent and a volume of air both susceptible to an increase and a decrease of the temperature, a narrowed neck portion whereat is located a single opening to the interior volume of the container, a suspension means opposite the neck portion for suspending the container from a support above the ground surface wherein the neck portion and the opening are directed downwardly; and

(b) a temperature buffering scent reservoir sealably and releasably engagable with the container at the neck portion to cover the opening as to not permit a change of the interior volume, the reservoir having a tube portion having an intake end defining an intake orifice in flow communication with the container opening and a release end defining a scent release orifice wherein temperature buffering occurs in an interior tube portion between the intake orifice and the scent release orifice wherein after the container is suspended above the ground the scent will initially start at the intake orifice and the increase in temperature will cause scent to travel through the intake orifice down the downwardly directed tube toward and

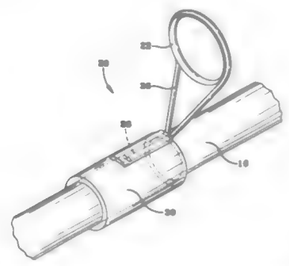
beyond the orifice end if the temperature increase is adequate while the temperature decrease will cause the scent to move up the tube toward the intake orifice.

5,361,528
TRAWLING SYSTEM AND TRAWL DEVICE FOR SHRIMP
Francis E. N. Peacock, 100 Waterford Pl., Alexandria, Va. 22314
Filed May 25, 1993, Ser. No. 66,230
Int. Cl.[5] A01K *73/02*
U.S. Cl. 43—6.5 **40 Claims**



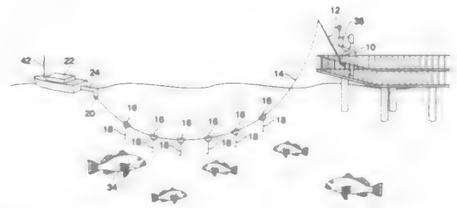
27. A trawling system for shrimp, comprising:
a trawler;
a suction pump onboard said trawler;
at least one trawl device;
said at least one trawl device comprising two trawl beams hingedly connected together at adjacent ends and forming an angle therebetween;
a tow line extending from said trawler to the location whereat said two trawl beams are hingedly connected together;
each trawl beam including a depressor hydrofoil beam and a net for catching shrimp;
each net including a suction pocket for receiving shrimp;
a conduit connected to each suction pocket and extending therefrom to said onboard suction pump for transporting shrimp to said trawler; and
each trawl beam having an open space near the suction pocket of the net thereof for allowing bycatch to escape.

5,361,529
LINE GUIDE FOR FISHING ROD
James M. Lindler, 180 W. Highway 378, Lexington, S.C. 29072
Filed May 18, 1993, Ser. No. 63,910
Int. Cl.[5] A01K *87/04*
U.S. Cl. 43—24 **1 Claim**



1. A method of affixing a line guide to a tapered fishing rod wherein said fishing rod has a reel end and a tip end, said line guide has a housing with a pocket, a reel end, a tip end and a bore there through comprising applying an adhesive to said rod and then positioning and housing on said rod by the steps of:
(a) placing said tip end of said rod into said reel end of said housing;
(b) sliding said housing along said rod toward said reel end of said rod until said bore of said housing wedges against an outer surface of said rod;
(c) affixing said housing to said rod; and,
(d) securing a hoop member in said pocket.

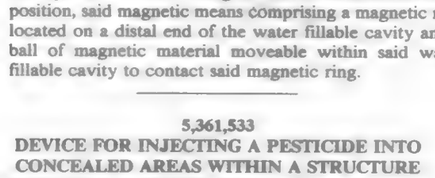
5,361,530
REMOTELY CONTROLLED FISHING LINE CARRIER
David M. Kashani, and Samson M. Kashani, both of 8670 Wilshire Blvd., #100, Beverly Hills, Calif. 90211, assignors to David M. Kashani and Samson M. Kashani, Beverly Hills, Calif.
Continuation-in-part of Ser. No. 843,165, May 13, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,560
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—26.1 **6 Claims**



1. A remotely controlled fishing line carrier for carrying one end of a fishing line over the surface of water in response to control signals transmitted over a control channel comprising:
a miniature floating vessel having a rear portion including a port rear portion and a starboard rear portion, a first electrical motor and a second electrical motor, said first electrical motor connected to a first propeller protruding a first distance from said starboard rear portion, said second electrical motor connected to a second propeller protruding substantially said first distance from said port rear portion, directional control of said miniature floating vessel provided solely by said first electrical motor and said second electrical motor;
a tail extending from the rear of said vessel at a point between said first propeller and said second propeller and having an attachment point adapted to be fixedly attached to a fishing line at substantially the surface of the water, said tail rigidly mounted to the rear of said vessel and said attachment point located a second distance, greater than said first distance, from the rear of said vessel;
a control receiver located on said vessel for receiving control signals over a control channel;
control means on said vessel responsive to said control receiver for controlling the speeds of said first and second electrical motors.

5,361,531
FISHING LURES
John Rodrigues, 730 Doan Dr., Burbank, Calif. 91506
Filed Aug. 20, 1993, Ser. No. 110,071
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.09 **17 Claims**

1. A fishing lure comprising a body having a head portion and a rear portion, a flexible streamer member including an attachment portion attached to said rear portion and a plurality of strands,
characterized in that said rear portion includes a plurality of upstanding bosses,
said streamer member includes cut-outs which fit over said bosses, and



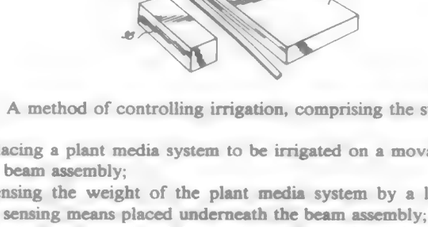
a sleeve member is included encircling said body and movable to cover said attachment portion and said bosses or movable in the opposite direction to uncover said attachment portion to permit removal of said streamer member.

5,361,532
FISHING BOBBER
Frank A. Moff, Latrobe, Pa., assignor to Big 10 Tackle, Inc., Latrobe, Pa.
Filed May 14, 1993, Ser. No. 62,921
Int. Cl.[5] A01K *93/00*
U.S. Cl. 43—44.9 **11 Claims**

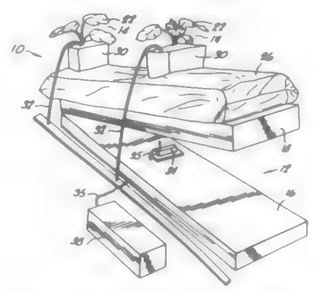
1. A fishing bobber which comprises:
a. an elongate tube having opposing substantially closed ends with flotation means on one end and a water fillable cavity on the other end;
b. a fishing line guide tube on said one end through which a fishing line will freely pass;
c. means for routing a fishing line through said bobber and said guide tube;
d. magnetic means for allowing the fishing line to slide freely through said bobber and guide tube when in a first position and for preventing the fishing line from sliding freely through said bobber and guide tube when in a second position, said magnetic means comprising a magnetic ring located on a distal end of the water fillable cavity and a ball of magnetic material moveable within said water fillable cavity to contact said magnetic ring.

5,361,533
DEVICE FOR INJECTING A PESTICIDE INTO CONCEALED AREAS WITHIN A STRUCTURE
Douglas D. Pepper, 5043 E. Fairmount Ave., Tucson, Ariz. 85712
Filed Aug. 26, 1993, Ser. No. 112,198
Int. Cl.[5] A01M *7/00*
U.S. Cl. 43—124 **13 Claims**

1. A device for injecting a pesticide comprising a liquid or an aerosol from an exposed area to a concealed area behind a wall, said device comprising:
a plug having means to be secured to an opening in the wall, a spray tube fixed to and extending through the plug from an inlet end in the exposed area to an outlet end in the concealed area when said plug is mounted in the wall, said plug and said spray tube being removable from the wall; and
a hose means directly and removably connectable at a first end to said spray tube at said inlet end and connectable at a second end to the outlet of a remote pesticide container, whereby a remote pesticide container can be used to spray pesticide through the hose and plug to the concealed area.

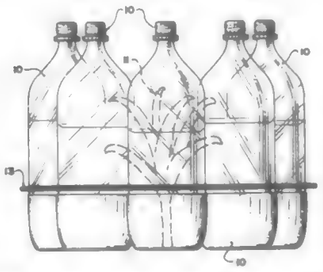


5,361,534
METHOD OF CONTROLLING IRRIGATION
Ivey L. Burns; Eldon R. Muller, and Edward Bell, all of Orlando, Fla., assignors to The Walt Disney Company, Burbank, Calif.
Continuation of Ser. No. 74,777, Jun. 10, 1993, abandoned, which is a division of Ser. No. 677,487, Mar. 29, 1991, Pat. No. 5,241,786. This application Jan. 12, 1994, Ser. No. 180,536
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—79 **5 Claims**



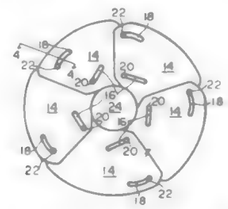
1. A method of controlling irrigation, comprising the steps of:
placing a plant media system to be irrigated on a movable beam assembly;
sensing the weight of the plant media system by a load sensing means placed underneath the beam assembly;
reading the sensed weight at selected intervals of time by control means for controlling the irrigation of the plant media system;
initiating an irrigating event when the weight of the plant media system sensed by the load sensing means is less than a predetermined base weight as calculated by the control means; and
recalculating the predetermined base weight after each irrigation event by subtracting a predetermined weight from the weight of the plant media system sensed following an irrigation event.

5,361,535
PLANT PROTECTION DEVICE
Kathleen Moraniewicz, 678 Burrows Avenue, Winnipeg, Manitoba, Canada R2W 2A8
Filed Feb. 24, 1993, Ser. No. 22,042
Claims priority, application Canada, Mar. 4, 1992, 2062284
Int. Cl.[5] A01B *79/00*
U.S. Cl. 47—58 5 Claims



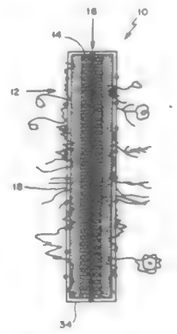
1. A method of protecting a plant for growth in an area of soil comprising providing a plurality of plastics drink bottles, locating the bottles substantially side by side in vertical orientation in a pattern surrounding the area, providing a locating device engaging each of the bottles to hold the bottles in the pattern and defining an opening in the area for growth of the plant therethrough, and at least partly filling the bottles with water.

5,361,536
METHOD TO REDUCE VEGETATION ABOUT BOTANICAL TRUNK OR POST
C. Randolph Myer, P.O. Box 621, Manchester, Mass. 01944
Division of Ser. No. 913,464, Jul. 14, 1992, Pat. No. 5,279,069.
This application Oct. 15, 1993, Ser. No. 137,664
Int. Cl.[5] A01G *17/00*
U.S. Cl. 47—58 15 Claims



1. A method to encircle the base of a post, generally upright in the ground, to eliminate the growth of vegetation about the base of the post, which method comprises:
a) providing a post-collar apparatus which comprises:
i) a plurality of at least three, separate and generally trapezoidal, flat panel sheet elements;
ii) each flat sheet element having a generally arcuate inner edge, a generally arcuate outer edge and first and second side edges;
iii) forming at least one slotted opening adjacent a first side edge of each sheet element and forming at least one opening in each sheet element adjacent a second side edge;
iv) overlapping said trapezoidal sheet elements in such a way that at least one of said openings or at least one slot slotted opening from each flat sheet element is aligned with at least one said opening or slotted opening of an overlapping sheet element; and
v) providing a fastening means between each of the aligned openings such that each sheet element is slidably joined to at least one other sheet element.
b) encircling the base of the post with the post-collar apparatus;
c) adjusting the flat sheet elements to form an open inner circle, with the inner arcuate edges of the overlapping flat-sheet elements closely adjacent the base of the post; and
d) fastening the overlapping flat-sheet elements in position about the base of the post.

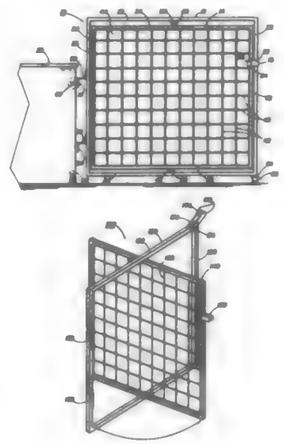
5,361,537
NOISE PROTECTION WALL
Wolfgang Behrens, Trespenmoor 25, W-2833 Gross Ippener, Germany
Filed Jun. 23, 1992, Ser. No. 902,673
Int. Cl.[5] E01F *8/00*; A01G *9/02, 27/00*
U.S. Cl. 47—82 6 Claims



1. Wall elements for use with a noise protection wall having a height with a framework for holding and receiving said wall elements, said noise protection wall having a droplet watering system on the top thereof,
said wall elements comprising cassettes containing a nutrient medium, said cassettes being arranged one on top of the other for forming the height of the wall, each cassette having a total vertical area;
each of said cassettes being precultivated and covered with lower and higher plants and comprising a supporting and protecting rack for a complete structural element having the nutrient medium and watering mats arranged therein;
said watering mats having water-storing properties and water-releasing properties; and
a cement fiber slab extending across the total vertical area of each cassette and arranged in the center of each cassette.

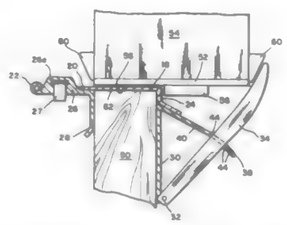
5,361,538
GATE FOR CHECK-OUT LANE
James H. McNabb, Decatur, Ga., assignor to Abrams Fixture Corporation, Atlanta, Ga.
Filed Apr. 20, 1993, Ser. No. 50,871
Int. Cl.[5] E05D *15/52*
U.S. Cl. 49—192 10 Claims

1. A gate for a lane adjacent a store check-out counter, comprising:
a. an outer frame;
b. means for moving the outer frame between a closed position laterally disposed across the lane and an open position adjacent a side of the lane;
c. an inner frame rotably mounted about a vertical axis within the outer frame and having a display face;
d. means for selectively securing the inner frame in a coplanar relationship within the outer frame so as to present the display face to customers in both the closed and open position; and



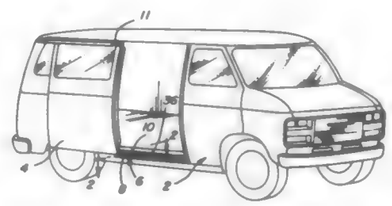
e. the display face comprising at least one horizontal rod for displaying merchandise.

5,361,539
DOOR SECURING MECHANISM
Charles D. Widener, 43-410 Old Harbour Dr., Bermuda Dunes, Calif. 92201
Filed May 12, 1993, Ser. No. 61,171
Int. Cl.[5] E05B *65/06*; E05C *19/18*
U.S. Cl. 49—394 20 Claims



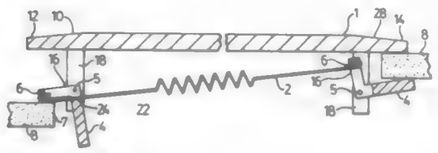
1. A door securing device adapted to maintain, in a closed position, a door hingedly mounted in a door frame including a door stop shoulder, the door including a first face adapted to rest against the door stop shoulder, a second face and a free edge, the securing device comprising:
a. a door edge member adapted to fit between the door edge and the frame and extending away from the door frame with a first hinge at the extended end;
b. a first door face engaging portion extending from said door edge member substantially parallel to the first door face and terminating in a second hinge;
c. a hasp pivotally mounted to said second hinge and extending toward the door frame and adapted to engage the door frame;
d. securing means for releasably maintaining said hasp in engagement with the door frame; and
e. a second door face engaging member pivotally mounted to said first hinge for releasably holding the door in said door edge member, whereby the door cannot be opened when held in the securing device by said door face engaging members with said hasp in engagement with the door frame and whereby the door can be opened by either releasing said hasp from the door frame or by disengaging said second door face engaging member.

5,361,540
DOOR CHECK FOR VEHICLE SLIDING DOOR
Lloyd W. Rogers, Jr., Shelby Township, Macomb County, and Mark M. Berklich, Leonard, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 29, 1993, Ser. No. 128,517
Int. Cl.[5] E05B *55/00*
U.S. Cl. 49—449 11 Claims



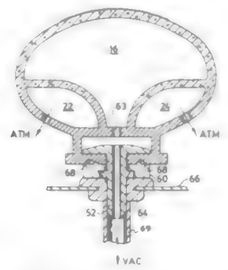
1. A door check arrangement for a sliding door of a vehicle comprising:
an arm generally fixably connected with the door, along a first end of the arm, and the arm being generally translationally connected with the vehicle along a second end of the arm, the arm adjacent the second end having an elongated aperture with first and second ends;
a track mounted with the vehicle for receiving the second end of the arm, the track having a striker plate and an entrapment section;
a rotary detent plate pivotally and slidably mounted in the elongated aperture of the arm, the detent plate having first and second arms and the detent plate also having a locking member;
a spring for biasing rotation of the detent plate in a first angular direction and for translationally biasing the detent plate toward the first end of the elongated aperture;
a contact surface fixed upon the arm, the fixed contact surface interacting with the second arm of the detent plate whereby motion of the door from a closed position to a checked open position causes the detent plate locking member to contact the striker and to pivot the detent plate in a second angular direction opposite the first angular direction and to move the detent plate toward the second end of the elongated aperture and wherein further movement of the door toward a checked open position causes the detent plate to pivot again in the first angular direction to place the locking member in the entrapment section of the track with a low first threshold of force on the door in the opening direction, and wherein the door is thereafter checked open even when the vehicle is on a declining surface toward the first direction of the elongated aperture and wherein pulling the door closed from the open checked position with a second force on the door significantly higher than the first opening force causes the detent plate locking member to contact the striker and for the detent plate second arm to have relative motion with the fixed contact surface, thereby causing the detent plate to rotate in the second angular direction and causing the detent plate locking member to pivot out of the entrapment section and for the detent plate to translate toward the second end of the elongated aperture to allow the detent locking member to release the door from the checked position.

5,361,541
UNIVERSAL, SPRING LOADED ACCESS DOOR
Jerzy Szyjkowski, Brampton, Canada, assignor to Superflex, Inc., St. Charles, Ill.
Filed Dec. 18, 1992, Ser. No. 992,917
Int. Cl.[5] E06B *9/00*
U.S. Cl. 49—465 **16 Claims**



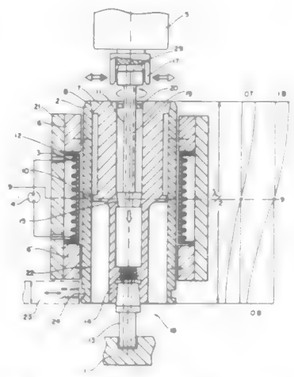
1. A removable access door for covering an opening in a structure comprising a panel member having opposite side edges, attaching means for removably attaching said panel member to said structure in order to cover said opening, said attaching means including clamping members pivotally mounted on one side of said panel member adjacent opposite side edges and engagement members for pivoting said clamping members from a first position that permits said clamping members to be inserted into said opening towards a second position where each clamping member extends behind an edge section of said structure, each engagement member being rigidly connected to a respective clamping member and pivotal therewith and being movable to an initial position to engage and to be actuated by an edge section of said structure as said attaching means is inserted into said opening, and biasing means for biasing the attaching means to swing said clamping members to said second position and releasably clamp edge sections of the structure between said panel member and said clamping members, wherein said access door can be removed from said opening by pulling said door away from said opening and thereby overcoming a force applied to the attaching means by said biasing means.

5,361,542
DEFLATABLE SEAL
Gregory P. Dettloff, Ferndale, Mich., assignor to Schlegel Corporation, Rochester, N.Y.
Filed Jun. 10, 1992, Ser. No. 896,444
Int. Cl.[5] E06B *7/16, 7/22*
U.S. Cl. 49—477.1 **20 Claims**



1. A deflatable seal comprising:
a deflatable chamber;
a sealing surface on the deflatable chamber;
an unpressurized relief chamber adjacent to the deflatable chamber in which the relief chamber comprises a vented chamber for at least partially collapsing when pressure is applied to the sealing surface.

5,361,543
DEVICE FOR ULTRASONIC EROSION OF A WORKPIECE
Michael Bory, Schomattenstrasse 40, 9630 Wattwil, Switzerland
Filed Sep. 9, 1993, Ser. No. 118,318
Claims priority, application Switzerland, Oct. 1, 1992, 3067/92; Oct. 1, 1992, 3068/92
Int. Cl.[5] B24B *35/00*
U.S. Cl. 451—165 **22 Claims**

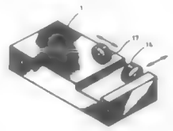


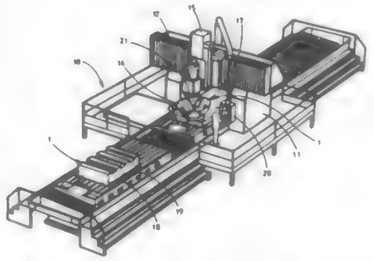
1. Device for ultrasonically eroding a work piece (1), said device comprising
an electroacoustic transducer (2) for generating ultrasonic oscillations,
at least one oscillation amplifier (7) coupled to one end of the transducer for mechanically increasing the amplitude of the transducer and
a rotating, driveable tool spindle for holding a tool (13),
wherein the transducer is formed as a hollow body and the oscillation amplifier is mounted at least partly within the transducer so that the lengths of the transducer and oscillation amplifier overlap, the transducer and the oscillation amplifier together forming a rotor (18), supported by non-contact bearings (6, 6') surrounding the tool spindle.

5,361,544
APPARATUS AND METHOD FOR GRINDING, POLISHING AND BURNISHING OPERATIONS ON A STATIONARY WORKPIECE TO RELIEVE INTERNAL STRESSES OR PRECLUDE MATERIAL FLOW IN THE WORKPIECE DURING OPERATIONS THEREON
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa,
Continuation-in-part of Ser. No. 765,927, Sep. 24, 1991, abandoned. This application May 6, 1993, Ser. No. 58,562
Int. Cl.[5] B24B *7/00*
U.S. Cl. 451—231 **2 Claims**

1. An apparatus for performing working operations on a workpiece, comprised of:
a frame, including a support portion for supporting a workpiece thereon;
a first working tool supported by the frame, the first working tool being disposed for movement along a first axis in a first plane, whereby work is performed on the workpiece along the first axis;
a second working tool supported by the frame, the second working tool being disposed for movement along a second axis in a second plane, whereby work is performed on the workpiece along the second axis; and
the first axis and the second axis being substantially perpendicular to one another, such that a substantially 90° angle is defined therebetween;
wherein the first and the second working tools may be moved at right angles to one another, the working tools

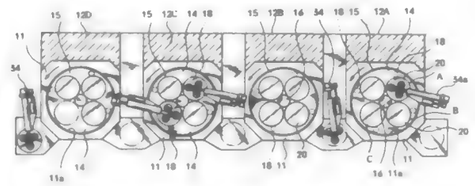
performing work on the workpiece sequentially such that only one of the working tools is in contact with the workpiece at a given time, to prevent the incurrence of interference whereby any residual stresses in the workpiece generated by either one of the working tools will be cancelled out by the other one of the working tools, so that internal stresses in the workpiece are relieved for preventing any





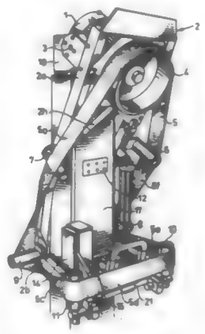
flow or deformation of the material in the workpiece during operations thereon, and
a rotatable carrousel supported by the frame, on an axis substantially perpendicular to the workpiece, the first working tool and the second working tool being mounted on the carrousel wherein the selected working tool may be sequentially directed to the workpiece.

5,361,545
POLISHING MACHINE
Yoshio Nakamura, Nagano, Japan, assignor to Fujikoshi Kikai Kogyo Kabushiki Kaisha, Nagano, Japan
Filed Aug. 11, 1993, Ser. No. 105,534
Claims priority, application Japan, Aug. 22, 1992, 4-245785
Int. Cl.[5] B24B *7/22, 37/04*
U.S. Cl. 451—287 **11 Claims**



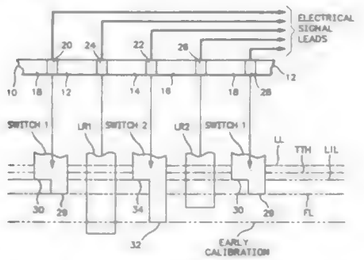
1. A polishing machine for polishing works, comprising:
a revolving circular polishing plate;
a revolving center roller coaxial to said polishing plate;
a plurality of revolving guide rollers arranged around said center roller at regular intervals, wherein each of said works is rotatably held between an outer circumferential face of each said guide roller and an outer circumferential face of said center roller;
an arm shaft provided in the vicinity of said polishing plate, means for moving said arm shaft in the longitudinal direction;
a work head at a front end of said arm shaft for holding and releasing said work;
a driving mechanism moving said arm shaft to move said work head between a discharge position, at which said works are discharged on said polishing plate, and a specified position to which said works are transferred outside of said polishing plate; and
a releasing mechanism slightly moving said arm shaft in the longitudinal direction to slightly move said work, which has been held by said work head and held between said center roller and said guide roller at the discharge position, away from said center roller and said guide roller when said work is discharged from said polishing plate.

5,361,546
APPARATUS FOR GRINDING, POLISHING ECT. OF WORKPIECES
Holger Jönsson, Tylla 4, S-781 94 Borlänge, Sweden
PCT No. PCT/SE91/00537, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO92/03258, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 14, 1991, Ser. No. 969,300
Claims priority, application Sweden, Aug. 15, 1990, 9002666-7
Int. Cl.[5] B24B *21/20*
U.S. Cl. 451—310 **13 Claims**



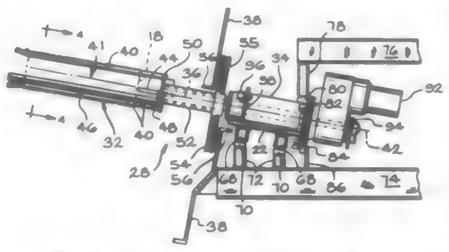
1. An apparatus arranged for at least one of grinding, and polishing, comprising:
a closed loop belt (5) mounted on an output shaft of a motor (1);
at least one drive wheel (4) coupled to said motor output shaft for driving said closed loop belt (5);
said closed loop belt (5) being appliable against a workpiece which is to be machined by means of said closed loop belt (5), said closed loop belt (5) having a plurality of loop portions differing from one another in a respective dimension thereof in a running direction of said closed loop belt;
steering members (8, 9; 10, 11) coupled to said closed loop belt (5) for steering said closed loop belt (5) to adopt an essentially L-shape;
one of said plurality of loop portions (5*d*) of said closed loop belt (5) that is appliable against said workpiece being shorter than other ones of said plurality of loop portions (5*a*, 5*b*, 5*f*, 5*g*);
a foundation (17) on which said apparatus is mounted;
said at least one drive wheel (4) being movable relative to said foundation (17) by a guide means (19) that is steered by said foundation (17);
guide members (3) provided for the guide means (19) for twisting said at least one drive wheel (4); and
resetting means (16) and locking means (14) for respectively resetting and locking an angle ϕ formed between arms of the L of the L-shaped closed loop belt.

5,361,547
ULTIMATE INDUCTIVE HEAD INTEGRATED LAPPING SYSTEM
Mark A. Church, San Jose; Alain M. Desouches, Santa Cruz, and Richard E. Krebs, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 28, 1992, Ser. No. 936,823
Int. Cl.[5] B24B *49/10*
U.S. Cl. 451—5 **17 Claims**



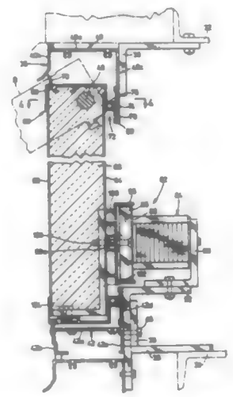
1. A lapping control system for accurately obtaining a desired throat height of each of a plurality of batch fabricated thin film magnetic transducers, said system comprising:
a row of thin film transducers formed on a substrate, said cow comprising a height defining edge and at least four different spaced sensing devices, said sensing devices each disposed between a separate pair of said transducers, and each responsive to a position of said height defining edge for generating a separate distinct signal;
means for mounting said row of thin film magnetic transducers in a position to lap said thin film magnetic transducers and said sensing devices;
control means responsive to said separate distinct signal of at least two of said sensing devices for calibrating throat height characteristics for each of said thin film magnetic transducers in said row; and
means for terminating said lapping process when a predetermined throat height is reached for each of said thin film magnetic transducers.

5,361,548
MULTI-STATION ABRADING APPARATUS
Udo Kuehn, Onsted, Mich., assignor to B&U Corporation, Adrian, Mich.
Filed Jul. 24, 1992, Ser. No. 917,941
Int. Cl.[5] B24C *3/32*
U.S. Cl. 451—76 **13 Claims**



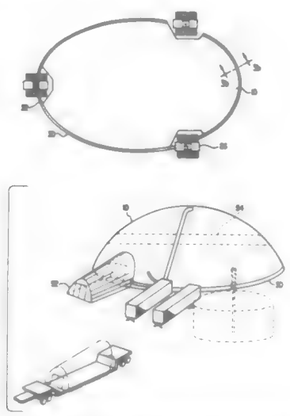
1. A shot blast machine for abrasively cleaning a plurality of articles comprising:
a plurality of shot blast stations adjacently positioned relative to one another, said shot blast stations including abrading means for abrading articles to be cleaned, said abrading means providing shot to shot blast an article at said shot blast stations, endless conveyor means for conveying said articles to said blast stations, a plurality of fixtures mounted on said endless conveyor means for movement therewith, an article carried on each fixture, each fixture including a non-clamping holder, each article being freely and gravitationally contained in said non-clamping holder, and manipulation means operatively connected between said holders and said fixtures for manipulating and rotating said holders and associated freely contained articles to expose substantially all surfaces of said articles to said abrading means including non-exposed surfaces of articles previously contacting portions of said holders.

5,361,549
PRESSURE RELIEF PANELS AND LOUVERS
Kenneth H. Betts, Mississauga, Canada, assignor to C/S Construction Specialties Ltd., Mississauga, Canada
Continuation of Ser. No. 700,893, May 10, 1991, abandoned, which is a continuation of Ser. No. 430,967, Nov. 1, 1989, abandoned, which is a continuation of Ser. No. 370,135, Jun. 22, 1989, abandoned, which is a continuation of Ser. No. 35,841, Apr. 8, 1987, abandoned. This application Apr. 13, 1992, Ser. No. 871,591
Int. Cl.[5] E04H *14/00*; E05C *19/16*
U.S. Cl. 52—1 **24 Claims**



1. A building having an outer wall, and a pressure relief panel assembly installed in said outer wall to relieve pressure above a predetermined blow-out pressure within said building, said assembly comprising: a frame mounted in a vertical plane in said outer wall; a blow-out panel; means pivotally coupling said panel at the top or bottom of said panel to the frame for movement of said panel from a normal closed position in said vertical plane to an open position inclined from said vertical plane in response to an increase in pressure within said building above said predetermined blow-out pressure; and a calibrated panel release means normally holding the panel in its closed position but adapted to release when the panel is subjected to the predetermined blow-out pressure, the panel release means including a magnet and striker set, one of which is carried by the panel and the other of which is carried by the frame, the magnet having a maximum holding force substantially in excess of a known force to which the panel is subjected at the predetermined blow-out pressure, and a non-magnetic shim between the magnet and the striker and being affixed to one of the magnet and striker, the shim having a selected thickness which increases the spacing between the striker and the magnet and thus reduces the effective holding force exerted on the striker by the magnet to said known force.

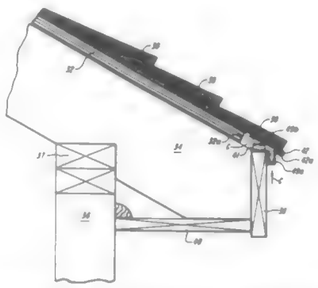
5,361,550
MOVABLE HARDENED AIR FORM DOME-SHAPED STRUCTURE FOR CONTAINING HAZARDOUS, TOXIC, OR RADIOACTIVE AIRBORNE RELEASES
Richard A. Kaden, Walla Walla, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 8, 1993, Ser. No. 162,924
Int. Cl.[5] E04B *1/32*; B09B *1/00*
U.S. Cl. 52—2.15 **8 Claims**



1. A transportable and reusable dome apparatus for working on hazardous waste materials that provides for worker safety and prevents escape of the hazardous waste into the environment comprising:
(a) a dome structure with a ring beam structure that provides mechanical means for transporting the dome structure whereby the dome structure can be moved to a location that encompasses the hazardous waste work site whereby the ring beam structure comprises a reinforced, segmented, concrete ring beam; and
(b) a mechanical means for transporting the dome structure: and
(c) utilities for the dome structure whereby working and environmental conditions can be controlled and maintained within the dome structure at the hazardous waste work site.

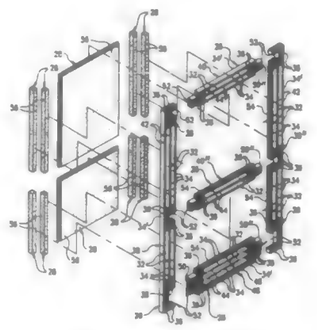
5,361,551
VENTILATION SPACER FOR ROOF CONSTRUCTION
Joseph Post, 5 Rogers Ave., Billerica, Mass. 01821
Continuation-in-part of Ser. No. 461,064, Jan. 4, 1990, abandoned. This application Sep. 7, 1990, Ser. No. 579,478
Int. Cl.[5] E04D *13/16*
U.S. Cl. 52—95 **4 Claims**

1. A roof construction comprising:
a fascia board,
roof shingles,
flashing positioned beneath said roof shingles,
a unitary ventilation spacer positioned between said fascia board and said flashing, said spacer comprising,
a first continuous elongated web;
a second elongated web spaced from said first web;
support means between said first and second webs supporting and securing said first and second webs apart from each other, said support means defining channels transverse said elongated webs; and



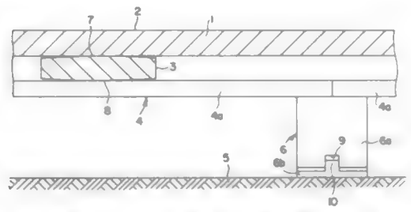
said support means and said second web being discontinuous at a fold line intermediate said elongated webs, whereby said ventilation spacer can be folded.

5,361,552
WOODEN DOOR ASSEMBLY AND DOOR JAMB ASSEMBLY HAVING AN INSULATIVE FOAM CORE
Mark Fulford, P.O. Box 0245, Issaquah, Wash. 98027
Division of Ser. No. 893,760, Jun. 5, 1992, Pat. No. 5,218,807. This application Jun. 4, 1993, Ser. No. 74,028
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] E06B *3/70*
U.S. Cl. 52—455 **42 Claims**



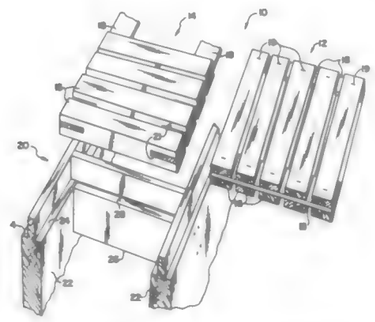
1. A wooden door assembly for attachment to a framed door opening within a residential home or commercial building, said wooden door assembly comprising the combination of:
(a) a composite wooden subframe stile and rail assembly defining an enclosure therebetween, said subframe assembly having a plurality of spaced, elongated members and a plurality of spacers secured thereto, said spacers being generally juxtaposed between said elongated members;
(b) an insulative foam core secured to said subframe assembly between said elongated members; and
(c) an exterior veneered or solid wood stile and rail assembly laminated to said subframe assembly and to said insulative foam core, said exterior assembly and said subframe assembly encapsulating said insulative foam core, said subframe assembly having at least a pair of subframe stiles, said subframe stiles each having at least two generally vertical elongated members, said elongated members being held in spaced relationship to each other by said spacers, said insulative foam core being positioned between said spaced elongated members.

5,361,553
JOIST
Gunnar Andreasson, Landvetter, and Ronny Glemberg, Partille, both of Sweden, assignors to Tarkett AB, Hanasakog, Sweden
PCT No. PCT/SE92/00006, § 371 Date Oct. 29, 1993, § 102(e) Date Oct. 29, 1993, PCT Pub. No. WO92/12306, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 9, 1992, Ser. No. 84,200
Claims priority, application Sweden, Jan. 10, 1991, 9100073-7
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—480 **6 Claims**



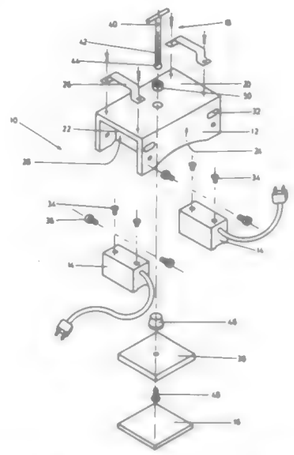
1. Joist for use as a top joist in a resilient floor having a plurality of floor boards which boards rest on a plurality of parallel, spaced-apart top joists which in turn rest on a plurality of parallel, spaced-apart bottom joists that extend substantially perpendicular to the top joists and are supported on a base by means of blocks, said joist comprising a longitudinally extending joist element having a thickness between an upper and lower side thereof and a width, an upper flat surface extending along the length of the upper side of the joist element, said upper flat surface forming a relatively narrow, compared to the width of said joist element, longitudinally extending, strip-shaped contact surface adapted to be engaged with a lower side of the floor boards and a lower flat surface extending along the length of the lower side of the joist element directly opposite from said upper flat surface, said lower flat surface forming a relatively narrow, compared to the width of the joist element, longitudinally extending, strip-shaped contact surface adapted to be engaged with an upper side of the bottom joists, the thickness of said joist element decreasing laterally outward from both longitudinal sides of said upper and lower flat surfaces in a direction perpendicular to the length of said joist element.

5,361,554
PREFABRICATED DECK SYSTEM
Robert Bryan, 4269 Lakeshore Blvd., West, Unit #2206, Etobicoke, Ontario, Canada
Filed Nov. 6, 1992, Ser. No. 972,929
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—480 **11 Claims**



1. A pre-fabricated decking modular block for surfacing a deck, the modular block having a top face and a reverse face and comprising:
a plurality of lateral bars, each said lateral bar having first and second longitudinal ends, each longitudinal end of each said lateral bar having a recess defined therein;
a first tie member splined into said recesses of said first ends of said lateral bars;
a second tie member splined into said recesses of said second ends of said lateral bars; and
at least one fastener member piercing each said end of each said lateral bar and the respective tie member splined into the recess thereof whereby said lateral bars are secured in closely spaced, mutually parallel relation.

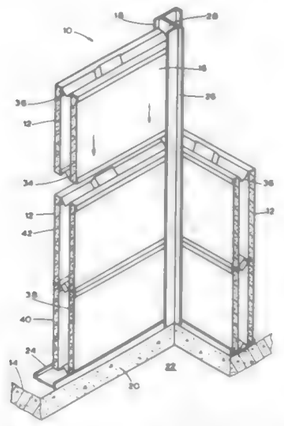
5,361,555
ELECTROMAGNETIC PATCH FOR TANK REPAIR
Jack Walker, 4319 Bramers La., Louisville, Ky. 40216
Filed May 3, 1993, Ser. No. 56,475
Int. Cl.[5] E04G *23/02;* **E02D** *37/00*
U.S. Cl. 52—514 **10 Claims**



1. A temporary electromagnetic patch comprised of
(a) a housing with a generally flat top surface, wherein the housing is generally rectangular in cross section with an open bottom with four walls extending downward from the top surface of the housing to form an open section therein and wherein two of the walls which are opposite each other are perpendicular to the remaining two walls to form a box-like structure with an open bottom;
(b) a pair of electromagnetics secured to two opposite walls of the housing;
(c) an extending pressure system attached to the housing, a portion of which extends through the top surface of the housing;
(d) a base plate secured to the extending pressure system such that the extending pressure system can both withdraw the base plate within the opening section of the housing and also extend the base plate away from the housing; and
(e) a seal secured to the bottom surface of the base plate.

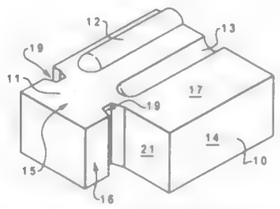
5,361,556
HORIZONTAL UNITIZED PANEL
Robert J. Menchetti, Buffalo, N.Y., assignor to National Gypsum Company, Charlotte, N.C.
Filed Feb. 25, 1993, Ser. No. 22,589
Int. Cl.[5] F04B *2/28;* **F04C** *1/00*
U.S. Cl. 52—561 **19 Claims**

1. A vertical wall comprising a plurality of horizontally elongate, utilized vertically stacked, substantially identical panels including at least one lower panel and at least one upper panel, each of said panels having a horizontal bottom stud, a horizontal top stud and at least two boards, each of said studs comprising two parallel elongate side sections and a central web between and connecting said side sections, said web including offset nesting means, said boards each having a top edge and a bottom edge, said bottom edges of said boards of said upper panel being affixed to a top of a side section of a



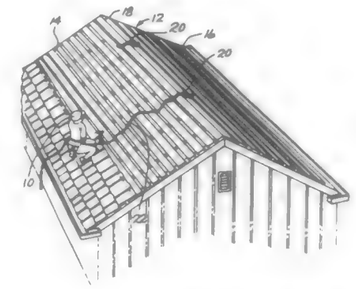
bottom stud and said top edges of said boards of said lower panel being affixed to a bottom of a side section of a top stud, said side sections extending between and being attached to said top edges and said bottom edges, said side sections extending between adjacent edges of said upper and lower panels whereby said boards of said upper panel are supported by said boards of said lower panel and the weight of said boards of said upper panel are transmitted through said side sections to said boards of lower panel.

5,361,557
OFFSETTING INTERLOCKING TIE-BACK ASSEMBLY
John N. Snyder, Bentleyville, and Stanley A. Smith, Pittsburgh, both of Pa., assignors to Indresco Inc., Dallas, Tex.
Filed May 28, 1993, Ser. No. 69,027
Int. Cl.[5] F27D *1/00*
U.S. Cl. 52—608 **8 Claims**



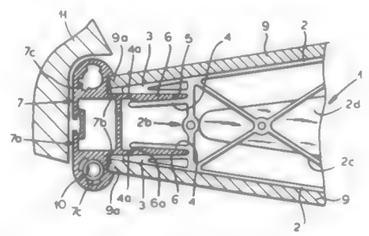
1. A brick for use in a refractory lining in high temperature furnaces, comprising:
a generally rectangular body having top and bottom and side surfaces;
at least one tongue and groove pair in one of said top and bottom surfaces, said pair being offset, being closer to one side of said body than to an opposite side; and
anchor means formed integrally with said body and extending from an end of said body, said anchor means comprising a head and neck with said neck adjacent said body and having a smaller width than said head and body so as to form channels between said head and said body and said head offset with respect to said body portion.

5,361,558
ROOF MOUNTABLE SAFETY LINE ANCHOR
Stacy Thornton, 419 N. 6th, Tumwater, Wash. 98512, and Jon McCown, 2535 70th Ave. SW., Space #2, Tumwater, Wash. 98512
Filed Dec. 11, 1992, Ser. No. 989,216
Int. Cl.[5] A47G *29/02*
U.S. Cl. 52—698 **12 Claims**



1. A roof safety system for securing a safety line to a roof, comprising:
a roof having a peak formed by a first pitch and a second pitch;
an anchor attached to said roof, said anchor comprising first and second legs each extending outwardly to opposite free ends from a central point at which said legs are integrally joined, attachment means on each said leg adjacent said central point, and a safety line connection point at said free end of each of said legs,
said anchor being attached such that said first leg extends along said first pitch of said roof and said second leg extends along said second pitch of said roof and said angle between said first and second legs approximates the angle between the roof pitches on either side of said roof peak.

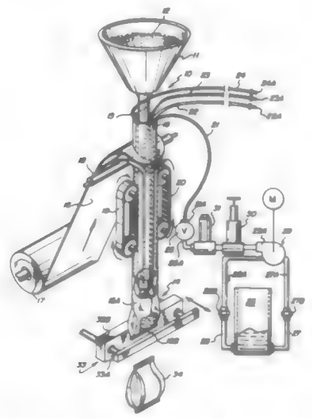
5,361,559
ASSEMBLABLE FRAME FOR DOORS, SLIDING DOORS AND SIMILAR OF VENEERED TYPE WITH PREFABRICATED COMPONENTS AND RELEVANT METHOD
Renzo Fauciglietti, Cantù, Italy, assignor to Fauciglietti Engineering S.r.l., Cantu, Italy
Division of Ser. No. 846,789, Mar. 4, 1992, Pat. No. 5,236,392. This application Jun. 11, 1993, Ser. No. 75,676
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—746 **6 Claims**



1. A method of making a door, comprising the steps of:
(a) disposing a first flat-surface panel in a horizontal plane;
(b) providing a plurality of cross-members each in the form of a pair of curved outer ribs, an internal lattice structure bridging said ribs, and a flat member internally stiffening said lattice structure, said cross-members having connecting formations at opposite ends thereof;

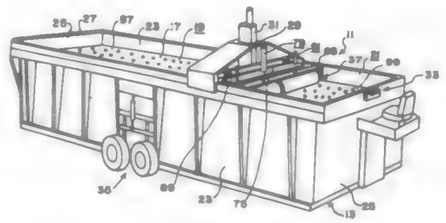
(c) positioning said cross-members at preset intervals on said first flat-surface panel with respective lower ones of said ribs against a surface thereof;
(d) disposing a second flat-surface panel upon said cross-members with respective upper ones of said ribs against a surface thereof;
(e) bending said panels to conform to curvatures of said ribs;
(f) gluing said panels to said cross-members to form an assembly; and
(g) applying longitudinal sections to opposite edges of said assembly by inserting tongues of said sections into said connecting formations and so that said longitudinal sections bridge between the panels at said edges.

5,361,560
APPARATUS FOR FLAVORING AND PACKAGING COFFEE
Ralph Sandolo, 226 Thyar Pond Rd., Wilton, Conn. 06897
Filed Oct. 13, 1992, Ser. No. 959,382
Int. Cl.[5] B65B *9/20, 63/00, 37/00*
U.S. Cl. 53—111 RC **6 Claims**



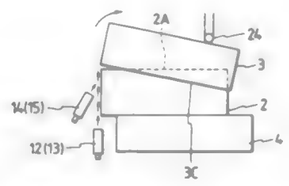
1. An apparatus for automatically flavoring coffee with a selectable flavoring material comprising
a hopper means for containing a supply of unflavored coffee,
a coffee feed tube connected to said hopper means for directing the unflavored coffee from said hopper means to a bag for receiving the unflavored coffee,
at least one flavor feed tube extending along said coffee feed tube,
said flavor feed tube having a discharge end disposed adjacent the bag for ejecting thereinto a predetermined amount of flavoring material,
and a flavoring supply means connected to said flavor feed tube for supplying a predetermined amount of flavoring material to said flavor feed tube whereby the flavoring material is co-mingled with the coffee directly in the bag in which the coffee is packaged,
said flavoring supply means including a reservoir for containing a predetermined amount of a flavoring material,
a circuit means including a circulating pump for supplying the flavoring material to said flavor feed tube,
and said circulating pump including means for recirculating any excess flavoring material back to said reservoir.

5,361,561
APPARATUS FOR AND METHOD OF ROLLING A COVER OVER THE TOP OF A MODULE
Kenneth L. Porter, 4623 Hillsdale, Olive Branch, Miss. 38654
Filed Dec. 2, 1992, Ser. No. 984,905
Int. Cl.[5] B65B *11/02, 27/12, 41/16*
U.S. Cl. 53—397 **11 Claims**



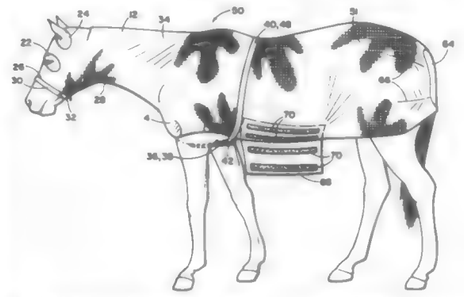
9. A method of rolling a module cover over the top of a module while the module is located within a module builder; said module having a first end and a second end; said method comprising the steps of:
a) mounting a roll of flexible material to said module builder;
b) attaching the end of said flexible material to said first end of said module while said module is located within said module builder;
c) urging said roll of flexible material against the top of said module: and
d) moving said roll of flexible material from said first end of said module to said second end of said module, causing said flexible material to be paid out from said roll of flexible material over the top of said module from said first end of said module to said second end of said module.

5,361,562
METHOD AND APPARATUS FOR OPENING LID OF BOX
Hitoshi Nagaoka, Chiba; Hiroyuki Shimizu, and Keizo Nakashima, both of Kanagawa, all of Japan, assignors to Niigata Engineering Co., Ltd., Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 994,294
Claims priority, application Japan, Feb. 13, 1992, 4-026402; Sep. 17, 1992, 4-248073
Int. Cl.[5] B65B *43/40, 69/00*
U.S. Cl. 53—492 **14 Claims**



1. A method of opening a lid from a freely openable and closable box constructed such that vertical portions of lid are superimposed on the peripheries of side surface portions of a main body of the box, said box having an opening formed in one portion thereof, wherein a gas is blown into said box from a gap formed between inner side surfaces of the vertical portions of said lid and outer side surfaces of said main body to thereby separate said main body and lid of said box from each other.

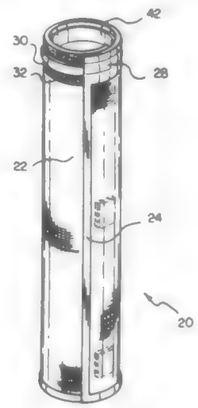
5,361,563
NOVEL HORSE COVERING
Sandra A. Llamas, Rte. 1, Box 233, Subiaco, Ark. 72865
Filed Oct. 29, 1993, Ser. No. 145,077
Int. Cl.[5] B68C *5/00*
U.S. Cl. 54—79.2 **19 Claims**



17. A one-piece covering for a horse comprising:
a chest covering which, when said one-piece covering is placed on the horse, can be placed in a chest covering position wherein said chest covering covers the horse's shoulders and breast and at least partially covers a portion of the horse's withers;
a hood extending from said chest covering which, when said one-piece covering is placed on the horse, can be placed in a hood position such that the hood covers the horse's neck and forehead, said hood having a hood opening through which the horse's muzzle will project when said hood is placed in said hood position;
a hood opening enlargement means for selectively enlarging said hood opening such that the horse's entire head can be received through said hood opening;
first securing means for securing said one-piece covering to the horse, said first securing means including a first portion and a second portion such that, when said chest covering is placed in said chest covering position, said first portion of said securing means is positioned on one side of the horse at a location behind the horse's front leg and said second portion of said securing means is positioned on the other side of the horse at a location behind the horse's other front leg;
connecting means for releasably connecting said first and second portions of said first securing means when said chest covering is placed in said chest covering position; and
a back covering extending from said chest covering such that, when said one-piece covering is placed on the horse, said back covering can be placed in a back covering position wherein said back covering covers the horse's ribs, loins, haunches, and croup and at least partially covers the horse's thighs.

5,361,564
HORSE LEG NET
John Hickman, 1598 Lawhorn Rd., Cassatt, S.C. 29032
Filed Jun. 14, 1993, Ser. No. 75,390
Int. Cl.[5] B68C *5/00*
U.S. Cl. 54—80.4 **3 Claims**

1. A horse leg net comprising:
a substantially rectangular-shaped section of fiberglass mesh netting, said netting having opposed first and second sides, a perimeter, top and bottom edges, and interior and exterior surfaces;
a length of perimeter material secured to and extending about said netting on said sides and said bottom edge thereof;
a band fixed to said top edge of said netting;
a first top hook and loop material secured to said interior surface of said netting along said top edge thereof;
a second top hook and loop material secured to said exterior surface of said netting along said top edge thereof;
a first middle hook and loop material secured to said interior surface of said netting along said first side thereof and positioned medially between said top and bottom edges;
a second middle hook and loop material secured to said interior surface of said netting along said second side thereof and positioned medially between said top and bottom edges;
a first bottom hook and loop material secured to said interior surface of said netting along said first side thereof and positioned proximal to said bottom edge;

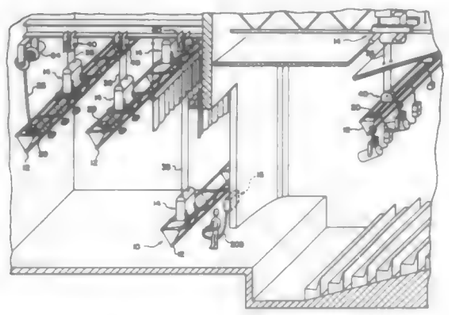


a second bottom hook and loop material secured to said interior surface of said netting along said second side thereof and positioned proximal to said bottom edge, said first hook and loop material being selectively engagable to said second hook and loop material to secure said horse leg net about a leg of a horse; and,
a foam rubber liner secured to said band along said top edge of said netting, said foam rubber liner having a transverse width substantially less than a transverse width of said band, with said liner being transversely centered between a topmost edge of said band and a lowermost edge of said band.

5,361,565
ELEVATING SYSTEM
Robert F. Bayer, 2 Schooners Cove, E. Setauket, N.Y. 11733
Filed Jan. 19, 1993, Ser. No. 2,867
Int. Cl.[5] B66D *1/00*
U.S. Cl. 254—292 **47 Claims**

1. An elevating system for raising and lowering items, comprising:
first support means for supporting an item to be raised and lowered;
at least two winch means, coupled to said support means at spaced locations, for raising and lowering said support means, each of said winch means including
a cable,
a winch housing,
rotatably mounted drum means, coupled to said winch housing, for dispensing and retracting said cable therefrom, and
synchronous motor means for rotating said drum means; and
control means, electrically coupled to each of said motor means, for operating each of said winch means, said control means including
single inverter means, electrically coupling each of said

motor means in parallel, for starting and stopping said motor means by varying input frequency to slowly



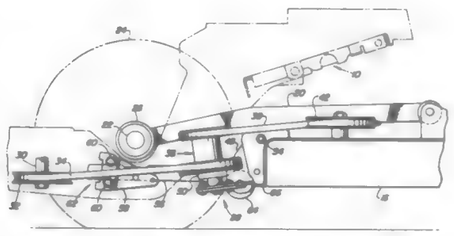
ramp the output of said motor means during starting and stopping of said motor means.

5,361,566

IMPLEMENT BELT DRIVE MECHANISM

Gary D. Hohal, Slinger, Wis., assignor to Deere & Company, Moline, Ill.

Filed May 5, 1993, Ser. No. 57,723
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—11.6 **30 Claims**



17. A belt drive mechanism for transmitting power from a vehicle's power source to a mower deck vertically shiftably coupled with the vehicle, comprising:

a primary belt driven by an output sheave coupled with the vehicle power source,

a jacksheave driven by the primary belt,

a secondary belt driven by the jacksheave and operatively engaged with mower deck sheaves which drive mower blades within the mower deck,

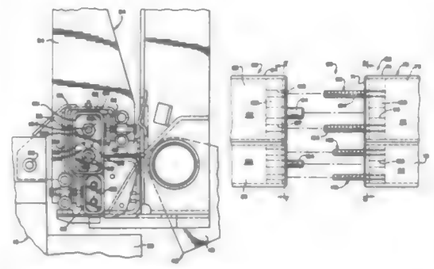
a support member extending between the mower deck and the vehicle for supporting the jacksheave, said support member being pivotal with respect to both the mower deck and the vehicle for shifting the position of the jacksheave to a position vertically between the output sheave and the mower deck sheaves as the mower deck shifts vertically.

5,361,567

MULTI-PIECE TOOL BAR ASSEMBLY FOR AN AGRICULTURAL IMPLEMENT

Timothy G. Ulschmid, Oak Creek, Wis., and Michael J. Covington, LaGrange, Ill., assignors to Case Corporation, Racine, Wis.

Filed Jan. 26, 1993, Ser. No. 9,571
Int. Cl.[5] A01D *46/08, 67/00*
U.S. Cl. 56—13.5 **6 Claims**



1. A tool bar assembly suited for connection to a frame of an agricultural implement and on which a plurality of row units are mounted for lateral movement between opposite ends of the tool bar assembly, said tool bar assembly comprising:

a main support structure connected to said frame in a generally horizontal disposition, said main support structure having first and second ends with a continuous cross-sectional configuration extending therebetween, with the cross-sectional configuration of said main support structure including horizontal and vertical outer support surfaces extending between the ends of the main support structure and along which at least one row unit is moved between lateral locations;

an auxiliary support structure selectively attachable in an end-to-end abutting relationship relative to the main support structure for effectively extending the length of the tool bar assembly along which the row units are laterally moved, said auxiliary support structure having first and second ends with a cross-sectional configuration extending therebetween, and wherein the cross-sectional configuration of the auxiliary support structure is substantially similar to that of the main support structure and includes horizontal and vertical outer support surfaces extending between the ends of the auxiliary support structure and along which at least one row unit is laterally moved; and

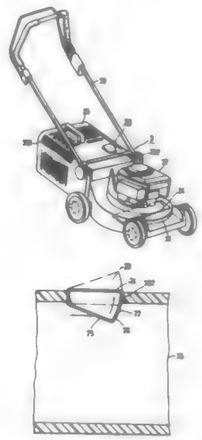
a fastener assembly for releasably fastening the support structures to each other, said fastener assembly comprising a pair of fasteners arranged wholly inwardly of the outer support surfaces for fastening the support structures in end-to-end abutting relation relative to each other and a guide pin located on and axially extending beyond an abutting end of one of said support structures, said guide pin being centered a first predetermined distance from the horizontal outer support surface of the respective support structure from which is extends and a second predetermined distance from the vertical outer support surface of the respective support structure, with an opening being defined toward the abutting end of the other support structure for accommodating said guide pin, said opening being centered said first predetermined distance from the horizontal outer support surface of the respective support structure and said second predetermined distance from the vertical outer support surface of the respective support structure, and wherein said opening is sized to establish a close sliding fit with said guide pin thereby aligning the outer support surfaces on the main and auxiliary support structures relative to each other such that the tool bar assembly is provided with substantially continuous support surfaces between opposite ends thereof and along which the row units are permitted to laterally move.

5,361,568

LAWN MOWER

Yung-Ching Lin, No. 8, Lane 762, Chung-Shan N. Rd., Yung-Kang Hsiang, Tainan Hsien,

Filed Feb. 8, 1994, Ser. No. 193,264
Int. Cl.[5] A01D *34/12*
U.S. Cl. 56—194 **4 Claims**



1. A lawn mower including a blade support with a recess which is formed in a bottom side of said blade support and which has an outlet portion, a blade mounted rotatably within said recess, and a grass collecting unit having an inlet portion communicated with said outlet portion of said recess so as to collect grass that was cut from a lawn with use of said blade, and a plurality of ventilation holes formed through a wall of said grass collecting unit so as to reduce air pressure inside said grass collecting unit;

wherein the improvement comprises:

said grass collecting unit having a top wall and a positioning hole formed through said top wall, said lawn mower further having a grass indicating unit which includes a body member disposed in said positioning hole and capable of being pushed upward relative to said top wall of said grass collecting unit by virtue of said air pressure inside said grass collecting unit, and a positioning assembly mounted securely on said body member so as to prevent removal of said body member from said top wall of said grass indicating unit, whereby, when grass within said grass collecting unit clogs said ventilation holes, said air pressure within said grass collecting unit is increased so as to push upward and protrude said body member from said top wall of said grass collecting unit.

5,361,569

HARVESTER HEADER TRANSPORT APPARATUS

Arlyn L. Schupman, 2006 Eisenhower, and Myron L. Schlegel, 502 W. 37th, both of Hays, Kans. 67601

Filed Jul. 26, 1993, Ser. No. 97,382
Int. Cl.[5] A01D *73/00*
U.S. Cl. 56—228 **20 Claims**

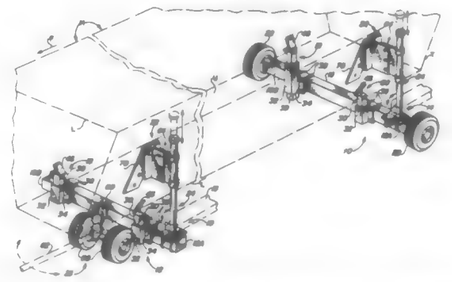
1. A steerable transport dolly for supporting a portion of a harvester header during towing thereof in a predetermined direction over the ground, said dolly comprising:

(a) an elongated transverse frame member having opposite lateral ends and extending in transverse relation to the direction of towing of the header;

(b) support means mounted on said transverse frame member between said opposite lateral ends thereof for underlying and supporting a lower portion of the header in a craddled relation extending across said transverse frame member;

(c) steering means connected to said transverse frame member between said opposite lateral ends thereof for movably and steerably supporting said transverse frame member to undergo movement over the ground in towing the header;

(d) attachment means for mounting to an upper portion of the header spaced above the lower portion thereof being supported by said first means; and



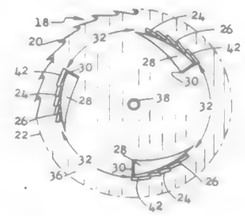
(e) a vertical column mounted upright on one of said lateral ends of said transverse frame member and coupled to said attachment means to undergo selective vertically slidable movement and horizontally rotatable movement relative to said attachment means to convert said dolly between a lowered transport position in which said transverse frame member is disposed under the header and said steering means is engaged on the ground and a raised stored position in which said transverse frame member is disposed alongside the header and said steering means is spaced above and off the ground.

5,361,570

COMPOUND PRUNING AND SHREDDING BLADE

Eckhard Bernardy, 11017 NE. 124 Ave., Vancouver, Wash. 98682

Filed Jul. 24, 1992, Ser. No. 919,713
Int. Cl.[5] A01D *34/82*
U.S. Cl. 56—255 **6 Claims**



1. A cutting and shredding blade for motorized brush cutters comprising:

a disk cutting member having peripheral cutting means thereon, whereby radial cutting is accomplished,

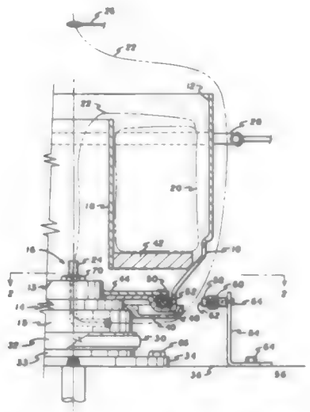
a mounting aperture in the center of said disk for mounting said disk to said brush cutter,

auxiliary cutting means disposed below said disk and projecting perpendicular thereto and

said auxiliary cuttings means including ramp shaped triangular structures with a serrated cutting edge leading up each

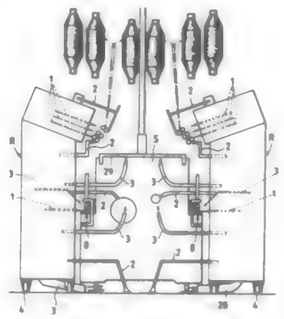
triangular structure, whereby axial cutting is accomplished.

5,361,571
MAGNETIC POT STABILIZER
Michael F. Joyce, 132 Vaughn St., Eden, N.C. 27288
Continuation of Ser. No. 751,540, Aug. 29, 1991, abandoned. This application Jul. 1, 1993, Ser. No. 84,444
Int. Cl.[5] D01H *7/86*
U.S. Cl. 57—58.76 **16 Claims**



1. A magnetic pot stabilizer for multiple twist spindles, comprising:
a rotatable spindle having a unitary construction with integral portions having different diameters, wherein said spindle further includes an integral pot supporting portion, a pot engaging portion having a diameter less than the diameter of said integral pot support portion, and an integral drive pulley portion;
a spindle protecting pot having an interior region defined by an upper portion connected to a base portion, wherein said base portion rests directly on said integral pot supporting portion, and said base portion includes an aperture formed therein, said aperture having a diameter substantially the same as the diameter of said pot engaging portion;
a hollow spool support shaft having an integral traverse bottom flange thereon which rests on said base portion of said pot above and spaced from said spindle;
at least one spool mounted on said hollow spool support shaft;
a hollow pipe centrally located on said rotatable spindle for feeding thread from said at least one spool through said hollow spool shaft and said rotatable spindle to emerge outside said pot in ballooning fashion as said spindle rotates;
a balloon ring surrounding said pot to control the degree of ballooning of said thread;
said rotatable spindle being selectively driven by a drive belt directly engaged with said integral drive pulley portion of said rotatable spindle;
magnetic means for preventing rotation of said pot and the at least one spool; wherein said magnetic means includes a magnetic belt, at least one magnet mounted on said magnet belt, wherein said magnetic means is located in said interior region, and said magnet belt engages said base portion of said pot, and
at least one stationary external bracket means supporting at least one magnet outside of said pot at a location spaced from said pot enabling attractive interaction of said at least one magnet outside of said pot with said at lease one magnet located in said interior region of said pot, whereby said pot and said at least one spool remain stationary during rotation of said spindle.

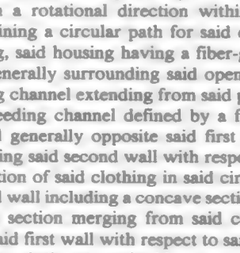
5,361,572
FLUFF CLEANING TRUCK
Ikuzo Uematsu, and Tomoaki Takahashi, both of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Apr. 22, 1993, Ser. No. 52,083
Claims priority, application Japan, Apr. 30, 1992, 4-137891
Int. Cl.[5] D01H *11/00, 13/26*
U.S. Cl. 57—304 **3 Claims**



1. A fluff cleaning truck for traveling along a frame of a textile machine and cleaning the textile machine during operation, the textile machine having at least one fixed shaft, the truck comprising:
a suction pipe for vacuuming fluff adhering to the textile machine,
an air jet pipe for blowing off fluff accumulated on the textile machine, and
stripping means for cleaning the fixed shaft, the stripping means comprising:
a stripping rod comprising a tapered end,
means for rotating the stripping rod,
means for establishing contact between the end of the stripping rod and the fixed shaft,
means for moving the stripping rod relative to the fixed shaft while maintaining contact between the end of the stripping rod and the fixed shaft, and
at least one scraper for removing fluff adhering to the stripping rod.

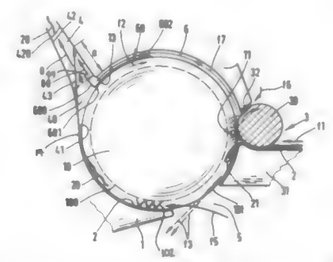
5,361,573
TRAVELER ARRANGEMENT IN RING SPINNING APPARATUS
Ernst Fehrer, Auf der Gugi 28, A-4020 Linz, Austria
Filed May 11, 1993, Ser. No. 60,225
Claims priority, application Germany, May 14, 1992, 4215883; Austria, Jan. 26, 1993, 117/93
Int. Cl.[5] D01H *1/42, 7/18*
U.S. Cl. 57—354 **4 Claims**

1. A ring spinning apparatus comprising
(a) a spindle mounted to be rotatable about an axis extending in a longitudinal direction and adapted to be driven to rotate about the axis,
(b) a bobbin non-rotatably connected to, and carried by, the spindle,
(c) an annular deflecting guide surrounding the spindle and adapted to receive a yarn and to deflect the yarn,
(d) a guide ring centered on the axis and arranged axially adjacent the deflecting guide,
(e) a traveler slidably mounted on the guide ring and adapted to revolve on the guide ring about the axis,
(1) the traveler being adapted to receive an approaching portion of the yarn deflected by the deflecting guide and to deliver a departing portion of the yarn to the bobbin,
(2) the approaching and departing yarn portions projected onto a plane extending through the axis including an angle α that is smaller than 90°, and



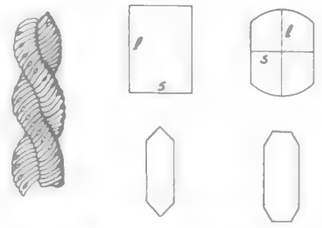
(3) the approaching and departing yarn portions projected onto a plane extending perpendicularly to the axis including an angle β that is larger than 90°.

5,361,574
PROCESS AND DEVICE FOR PNEUMATIC FEEDING OF FIBERS TO THE FIBER COLLECTION SURFACE OF AN OPEN-END SPINNING ELEMENT
Wolfgang Gebhardt, Kosching, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany
Filed Aug. 16, 1993, Ser. No. 107,247
Claims priority, application Germany, Aug. 22, 1992, 4227885
Int. Cl.[5] D01H *4/30, 4/32, 4/36*
U.S. Cl. 57—408 **11 Claims**



1. A device for pneumatic feeding of fibers to a fiber collection surface of an open-end spinning element, comprising:
an opener roller provided with a clothing of predetermined width installed in a housing, said opener roller configured to rotate in a rotational direction within said housing thereby defining a circular path for said clothing within said housing, said housing having a fiber-guiding peripheral wall generally surrounding said opener roller and a fiber feeding channel extending from said peripheral wall, said fiber feeding channel defined by a first wall and a second wall generally opposite said first wall, said first wall preceding said second wall with respect to said rotational direction of said clothing in said circular path;
said peripheral wall including a concave section and a generally convex section merging from said concave section preceding said first wall with respect to said circular path in the rotational direction of said opener roller, said first wall of said fiber feeding channel merging from said convex section so that a tangent drawn from the point where said convex section merges from said concave section intersects said second wall of said feeding channel so that fibers opened by said opener roller and carried to said fiber feeding channel are caused to detach from said fiber guiding peripheral wall due to a transition form said concave section to said convex section and are directed into said fiber feeding channel generally away from said first wall of said fiber feeding channel;
a fiber feeding device for feeding a fiber sliver to said opener roller; and
means for directing an auxiliary air stream to said fiber feeding channel in a direction which is in opposition to said rotational direction of said clothing in said circular path, said auxiliary air stream being defined generally between said fiber feeding channel and said fiber feeding device with respect to said rotational direction of said clothing in said circular path.

5,361,575
FINE JEWELRY ROPE CHAIN
David Rozenwasser, Savion, Israel, assignor to David Rozenvasser, Ltd., Petach, Israel
Filed Mar. 10, 1993, Ser. No. 29,032
Claims priority, application Israel, Feb. 21, 1993, 104811
Int. Cl.[5] B21L *5/02*
U.S. Cl. 59—80 **4 Claims**



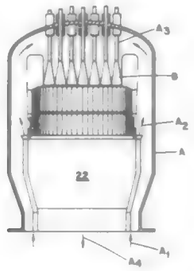
1. A jewelry rope chain having tightly interfitting links made of wire of a given cross-section, each link having a small gap formed therein, so as to enable one of said links to pass through the gap of a second link, said links being intertwined to fit tightly one against the other and form in outward appearance a double helix, the improvement comprising each link having a wire cross-section including a major axis defining a longer dimension and a minor axis defining a shorter dimension, said longer dimension being in the plane of the link and the shorter dimension being perpendicular thereto, the ratio of said longer dimension to said shorter dimension being greater than 1.3:1 but less than 3.1, and wherein the gaps of the chain links are narrower than the longer dimension of the wire cross-section of said links.

5,361,576
METHOD FOR OPERATING A COMBUSTION CHAMBER OF A GAS TURBINE
Gerhard Müller, Wettingen, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland
Filed May 12, 1993, Ser. No. 59,992
Claims priority, application Switzerland, May 27, 1992, 1715/92
Int. Cl.[5] F02C *9/28*
U.S. Cl. 60—39.03 **2 Claims**

1. A method for operating a combustion chamber of a gas turbine to minimize NO_x emissions, the combustion chamber being equipped with a plurality of premixing burners which are arranged as a plurality of separately controllable groups, at least one group being equipped with controllable premixing burners, the method comprising the steps of:
operating one group of burners as piloting burners; and
activating and operating as piloted burners additional burner groups cumulatively to control a load output of the combustion chamber;
wherein, at part load, output is controlled by distributing a fuel supply between said pilot burner group and one of said piloted burner groups responsive to ambient condi-

tions and a load output requirement of the combustion chamber;

wherein, at full load, output is controlled by distributing a fuel supply between said pilot burner group and one of



said piloted burner groups responsive to ambient conditions; and

wherein said piloted burner groups are operated with a richer fuel mixture when the load output is being decreased than when the load output is being increased.

5,361,577

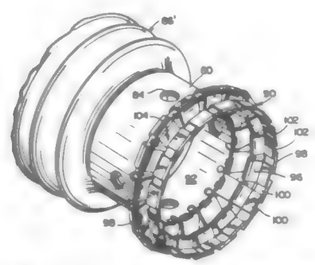
SPRING LOADED CROSS-FIRE TUBE

Robert H. Cromer, Johnstown, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 25,734, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 729,602, Jul. 15, 1991, abandoned. This application Nov. 9, 1993, Ser. No. 149,470

Int. Cl.[5] F02C *7/20*

U.S. Cl. 60—39.32 **2 Claims**



1. A cross-fire tube for attachment to liner collars of adjacent combustors in a combustion apparatus comprising an elongated, axially elastically compressible and substantially cylindrical body having connecting portions at either end thereof, each connecting portion including first spring means comprising first and second sets of annularly arranged spring fingers for exerting radially outwardly directed spring forces at least against inside surfaces of the liner collars; and wherein said first and second sets of spring fingers overlap in radial and circumferential direction.

5,361,578

GAS TURBINE DUAL FUEL NOZZLE ASSEMBLY WITH STEAM INJECTION CAPABILITY

John P. Doulan, Oviedo, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 933,137, Aug. 21, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,217

Int. Cl.[5] F23R *3/36*

U.S. Cl. 60—39.32 **12 Claims**

1. A gas turbine, comprising:

a compressor for producing compressed air;

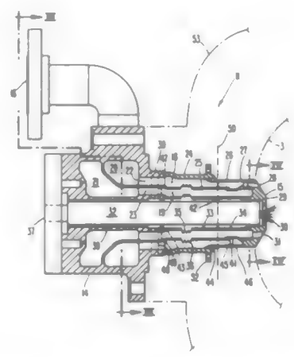
a combustor for heating said compressed air by burning a fuel therein whereby a heated compressed gas is produced;

a turbine for expanding said heated compressed gas produced by said combustor; and

a fuel injecting assembly for introducing said fuel into said combustor, wherein said fuel injecting assembly comprises:

liquid fuel injecting means having a liquid fuel conduit for allowing liquid fuel to be supplied to said combustor;

air injecting means having a substantially annular air conduit for cooperating with said liquid fuel injecting means;



k. means to impart reactive force of said gas jet to said pulsed piston-compressor jet engine, whereby a useful thrust is obtained.

5,361,582

DUAL SENSOR TYPE AIR FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

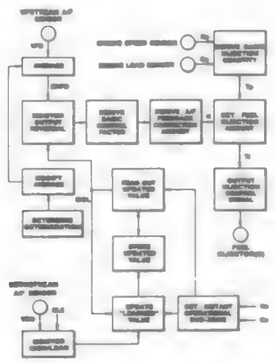
Masaaki Uchida, and Mikio Matsumoto, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Division of Ser. No. 645,975, Jan. 23, 1991. This application Jun. 25, 1993, Ser. No. 81,223

Claims priority, application Japan, Jan. 24, 1990, 2-14632; Jan. 25, 1990, 2-13566; Mar. 7, 1990, 2-55826

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—276 **3 Claims**



1. A dual sensor type air-fuel ratio feedback control apparatus for an internal combustion engine, comprising:

an engine load sensor;

an engine speed sensor;

means for determining a basic fuel injection quantity based on the outputs of the engine load and speed sensors;

a first air-fuel ratio sensor disposed in an exhaust passage, at a location upstream of a catalytic converter, for producing an output indicative of the air-fuel ratio of the exhaust gases prevailing upstream of the catalytic converter;

means for averaging the output of the first air-fuel ratio sensor;

memory means, including a plurality of addresses and corresponding engine operational sub-regions, each address storing first and second slice level values;

means for determining into which of the sub-regions the current engine operation falls;

means for reading out the first slice level value which is stored at the address which corresponds to the determined sub-region;

means for comparing a working slice level value, which is based on the first slice level value which is read out, with the averaged output of the first air-fuel ratio sensor and determining if the output of the first air-fuel ratio sensor traverses the working slice level value;

means for deriving an air-fuel ratio feedback control correction factor for feedback control of the air-fuel ratio, based on a comparison of the averaged output of the first air-fuel ratio sensor and the working slice level; means for deriving a fuel injection amount by correcting the basic fuel injection quantity using the feedback control correction factor;

a second air-fuel ratio sensor disposed in the exhaust passage at a location downstream of the catalytic converter for producing an output indicative of the air-fuel ratio of the exhaust gases prevailing downstream of the catalytic converter;

means for selecting a sub-region based on a timing with which the output of the first air-fuel ratio sensor traverses the first slice level;

means for reading out the first and second slice level values stored at the address of the selected sub-region;

means for comparing the output of the second air-fuel ratio sensor with the second slice level; and

means for updating the values of the first and second slice levels in accordance with the comparison of the output of the second air-fuel ratio sensor with the second slice level.

5,361,583

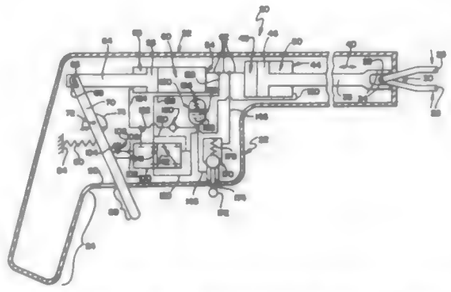
PRESSURIZED FLUID ACTUATION SYSTEM WITH VARIABLE FORCE AND STROKE OUTPUT FOR USE IN A SURGICAL INSTRUMENT

Thomas W. Huitema, Cincinnati, Ohio, assignor to Ethicon, Inc., Cincinnati, Ohio

Filed Sep. 30, 1993, Ser. No. 129,976

Int. Cl.[5] F16D *31/02*; A61B *17/42*

U.S. Cl. 60—413 **13 Claims**



1. A pressurized fluid actuation system suitable for moving an endoscopic or open surgical procedure instrument component, said system comprising:

a double-acting fluid actuator defining an extension chamber and a retraction chamber separated by a piston for engaging said component;

a double-acting fluid pressure piston pump defining a pressurizing chamber and a return chamber separated by a piston, said actuator extension chamber communicating with said pump pressurizing chamber;

an operating member connected to said pump piston;

a two-position, directional valve communicating in a first position between said pump pressurizing chamber and said actuator retraction chamber and communicating in a second position between said pump return chamber and said actuator retraction chamber, said directional valve including a pilot line communicating with said pump pressurizing chamber for switching said valve from said first position to said second position when said pressurizing chamber pressure exceeds a predetermined value, and said operating member located to engage said directional valve and move said valve from said second position to said first position; and

a pressurized fluid reservoir connected to (A) said pump return chamber through a check valve preventing flow through said check valve into said reservoir and (B) said actuator extension chamber through a de-stroking valve having a selectable open position to pass flow through it to said reservoir and having a selectable closed position to occlude said flow.

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HYDROSTATIC DRIVE SYSTEM

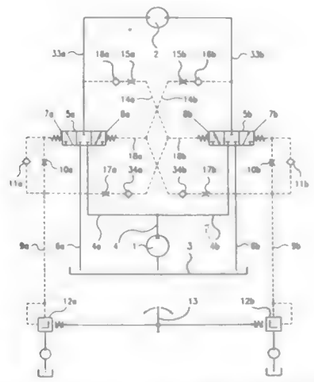
Alfred Langen, Grobostheim, and Wolfgang Kraft, Karlstadt-Muhlbach, both of Germany, assignors to Linde Aktiengesellschaft, Germany

Filed May 19, 1993, Ser. No. 64,485

Claims priority, application Germany, May 22, 1992, 4217074; Oct. 22, 1992, 4235698

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—460 **16 Claims**



1. A hydrostatic drive system including a pump and a reversible hydraulic motor in an open circuit including a feed line for a hydraulic pressure medium, a first valve connected in said feed line on the inflow side of said reversible hydraulic motor to control the flow of hydraulic pressure medium to said reversible hydraulic motor, and a second valve on the outflow side of said reversible hydraulic motor to receive hydraulic pressure medium flowing out of said reversible hydraulic motor, wherein said first valve and said second valve are constructed for independent actuation and are actuated by an actuating pressure whereby each of said first valve and said second valve is reversible to alternately operate as a control valve and brake valve in accordance with the direction of rotation of said reversible hydraulic motor, whereby the actuating pressure on said second valve in the braking phase depends on the inflow pressure to said reversible hydraulic motor.

5,361,585

STEAM TURBINE SPLIT FORWARD FLOW

Bernd A. K. Westphal, Clifton Park, N.Y., and Thane M. Drummond, Roanoke, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 25, 1993, Ser. No. 81,200

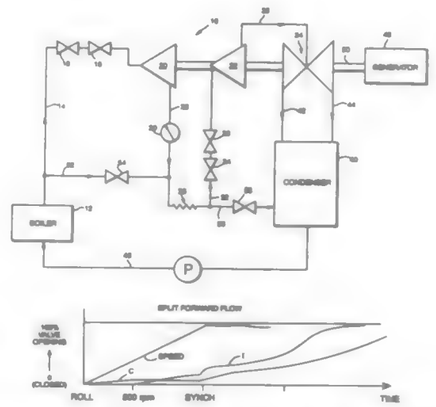
Int. Cl.[5] F01K *13/02*

U.S. Cl. 60—646 **9 Claims**

1. In a steam turbine system comprising a high pressure turbine section, a reheat turbine section and a low pressure turbine section coupled to a generator, and wherein a boiler supplies steam to the high pressure turbine section and wherein a condenser is arranged to receive spent steam from the low pressure turbine section and to return the spent steam to the boiler, the process comprising the steps of:

a) during cold start-up, bypassing a portion of the steam generated by the boiler around the high pressure turbine section, reheat turbine section and low pressure turbine section and feeding the bypass portion directly to the condenser, and accelerating the turbine to a predetermined speed less than approximately 1000 rpm utilizing control valves at an inlet side of the high pressure turbine section while keeping closed a plurality of stop valves and associated intercept valves at an inlet side of the reheat turbine section; and

b) upon reaching said predetermined speed, fixing said control valves at a learned value corresponding substantially to a valve opening required to reach said predetermined speed; and



c) opening said stop valves at the inlet side of said reheat turbine and using said intercept valves alone to control turbine speed until a predetermined synchronization speed is reached.

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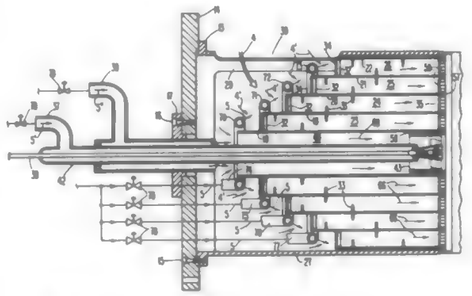
GAS TURBINE ULTRA LOW NOX COMBUSTOR

Anthony McWhirter, Niagara Falls; Eugenio Colautti, Mississauga, both of Canada, and David J. Amos, Orlando, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1993, Ser. No. 46,320

Int. Cl.[5] F23R *3/32*

U.S. Cl. 60—737 **22 Claims**



1. A gas turbine, comprising:

a) a compressor for compressing air;

b) a combustor for producing a hot gas by burning a fuel in said compressed air, said combustor having:

(i) a plurality of annular passages concentrically arranged around a common axis, each of said passages having an inlet end and a discharge end;

(ii) an approximately toroidal manifold for each of said annular passages, each of toroidal manifolds disposed immediately upstream of said inlet end of its respective passage and having means for introducing a fuel therein at an acute angle to said axis; and

(iii) means for separately controlling the introduction of fuel into each of said annular passages via its toroidal manifold; and

c) a turbine for expanding said hot gas produced by said combustor.

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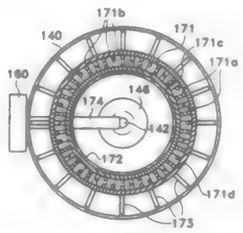
VAPOR-COMPRESSION-CYCLE REFRIGERATION SYSTEM HAVING A THERMOELECTRIC CONDENSER

Douglas V. Hoffman, Pearl River, N.Y., assignor to Paul Georgeades, Palm Harbor, Fla.

Filed May 25, 1993, Ser. No. 65,769

Int. Cl.[5] F25B *21/02, 7/00*

U.S. Cl. 62—3.2 **14 Claims**



1. A vapor-compression-cycle refrigeration system comprising

an evaporator coil,

a compressor,

a Peltier condenser,

an expansion valve,

said evaporator coil, compressor, Peltier condenser and expansion valve being connected in series,

a receiver disposed between said Peltier condenser and said expansion valve, and

condensing temperature control means.

5,361,588

CRYOGENIC REFRIGERATOR

Hiroshi Asami, Yokohama, and Mitsuru Suzuki, Hiratsuka, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP92/01500, § 371 Date Jul. 14, 1993, § 102(e) Date Jul. 14, 1993, PCT Pub. No. WO93/10407, PCT Pub. Date May 27, 1993

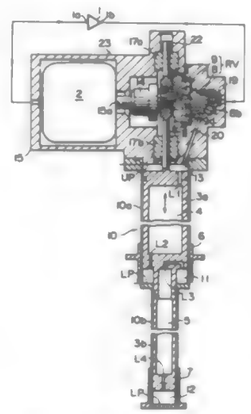
PCT Filed Nov. 17, 1992, Ser. No. 87,710

Claims priority, application Japan, Nov. 18, 1991, 3-328401

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **2 Claims**

1. A cryogenic refrigerator of the Gifford MacMahon cycle-type comprising at least one cylinder; at least one displacer which has a regenerator therein, and is reciprocally movable within said cylinder; empty chambers provided within said cylinder, and disposed exteriorly of opposite ends of said displacer, said empty chambers being communicated with each other via said regenerator within said displacer; a rotary valve device for controlling the flow of refrigerant gas under high pressure into said empty chambers and for controlling the flow of refrigerant gas under low pressure from said empty chambers, said rotary valve device including a fixed valve body and a valve plate rotatably supported in face-to-face contact with said valve body; and a reversible motor for rotating said rotary valve device in normal and reverse directions and for controlling the reciprocal movement of said displacer, said reversible motor driving a crank, wherein when said rotary valve device is rotated in the normal direction, the refrigerant has in the lower empty chamber is subjected to an adiabatic expansion to produce cold, and when the rotary valve device is rotated in the reverse direction, the refrigerant gas in the lower empty chamber is subjected to an adiabatic compression to produce heat; and means by which the timing of opening and closing of said rotary valve device with respect to the reciprocal movement of said displacer during rotation in the normal direction is made different from said timing during rotation in the reverse direction, said means comprising an engagement groove formed in a rear surface of said valve plate and extending



circumferentially over a predetermined angle, and a pin portion provided on said crank driven by said reversible motor and engaged in said engagement groove in said valve plate, whereby during rotation of said crank in a normal or reverse direction, said valve plate does not rotate but idles until said pin portion is brought into engagement with one or the other end of said engagement groove.

5,361,589

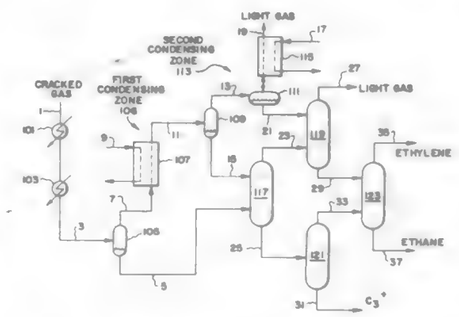
PRECOOLING FOR ETHYLENE RECOVERY IN DUAL DEMETHANIZER FRACTIONATION SYSTEMS

Lee J. Howard, Allentown, and Howard C. Rowles, Center Valley, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 4, 1994, Ser. No. 191,683

Int. Cl.[5] F25J *3/02*

U.S. Cl. 62—24 **10 Claims**



1. In a process for the recovery of ethylene from a pressurized feed gas containing ethylene, hydrogen, and C_1 to C_3 hydrocarbons, wherein said recovery includes the steps of precooling and partially condensing said pressurized feed gas, fractionating the condensed feed gas in a first demethanizer zone to yield an intermediate vapor and a first demethanizer liquid enriched in C_2^+hydrocarbons, fractionating said intermediate vapor in a second demethanizer zone to yield a light overhead product and a second demethanizer liquid enriched

in C_2 hydrocarbons, and fractionating said first and second demethanizer liquids to recover an ethylene product and streams containing ethane and C_3^+ hydrocarbons, an improved method for precooling and condensing said pressurized feed gas which comprises in combination:

(a) cooling and partially condensing said pressurized feed gas in a partial condenser in a first condensing zone which operates at or above a characteristic temperature;

(b) separating the partially condensed feed gas of step (a) into a first vapor stream and a condensed liquid; and

(c) cooling, partially condensing, and rectifying said first vapor stream by dephlegmation in a second condensing zone which operates below said characteristic temperature to yield a light gas product and a dephlegmator liquid;

wherein said condensed liquid provides feed to said first demethanizer zone and said dephlegmator liquid provides feed to said second demethanizer zone.

5,361,590

AIR SEPARATION

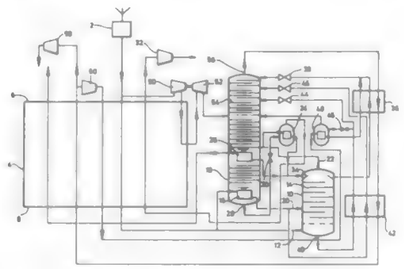
Thomas Rathbone, Farnham, England, assignor to The BOC Group plc, Windlesham, United Kingdom

Filed May 21, 1993, Ser. No. 65,558

Claims priority, application United Kingdom, Jun. 9, 1992, 9212224.1

Int. Cl.[5] F25J *3/02*

U.S. Cl. 62—25 **19 Claims**



1. A method of separating air comprising the steps of:

a) reducing by heat exchange the temperature of a compressed feed air stream to a level suitable for its separation by rectification;

b) introducing a first part of the temperature reduced feed air stream into a higher pressure rectification column;

c) separating feed air in the higher pressure rectification column into oxygen-enriched liquid and nitrogen vapour fractions;

d) condensing nitrogen vapour formed in the higher pressure column, and using one part of the resulting condensate as reflux in the higher pressure column, and another part of the resulting condensate as reflux in a lower pressure rectification column;

e) operating the lower pressure rectification column at a pressure at its top in the range of 2 to 8 bar absolute;

f) introducing a stream of said oxygen-enriched liquid into the lower pressure column and separating from it an impure oxygen product containing at least 3% by volume of impurities;

g) withdrawing nitrogen and impure product oxygen streams from the lower pressure column and employing them in said heat exchange so as to reduce the temperature of the compressed air stream; and

h) boiling said impure liquid oxygen so as to provide reboil for the lower pressure column and to change the phase of the product oxygen stream;

wherein a part of the impure liquid oxygen is boiled by heat exchange with a second part of the temperature reduced feed air stream, at least some of the said second part being thereby condensed, a part of the resulting condensed air is introduced into the higher pressure column, and another part of the impure liquid oxygen is boiled by employing it to condense the nitrogen vapour in the said step (d).

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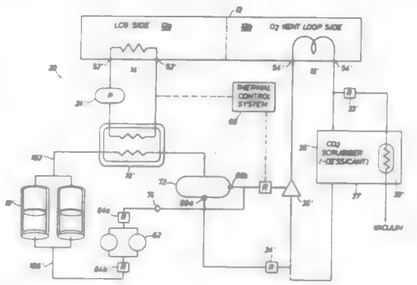
PORTABLE LIFE SUPPORT SYSTEM

Bruce D. Caldwell, Hitchcock, Tex., assignor to Oceaneering International, Inc., Houston, Tex.

Filed Apr. 15, 1992, Ser. No. 869,249

Int. Cl.[5] F17C *9/04*

U.S. Cl. 62—50.4 **24 Claims**



1. A portable life support system, comprising:

a liquid cooled garment;

an orientationally independent dewar for containing liquid cryogen;

means for circulating liquid cryogen from said dewar in heat exchange relation with the cooling liquid so as to cool the wearer of the garment and vaporize the liquid cryogen; and

means for delivering vaporized cryogen to the wearer of said garment for breathing purposes.

5,361,592

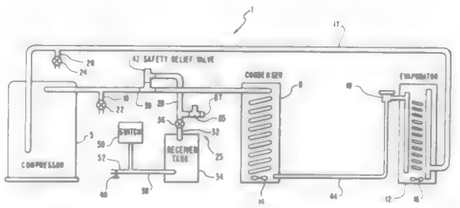
REFRIGERANT CONSERVATION SYSTEM

Gordon A. C. Lewis, Ronkonkoma, N.Y., assignor to Conair Corporation, Garden City Park, N.Y.

Division of Ser. No. 83,304, Jun. 29, 1993. This application Mar. 18, 1994, Ser. No. 214,538

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—86 **5 Claims**



1. A method for preventing the release of refrigerant to the atmosphere from a mechanical refrigeration system during a high pressure safety relief situation comprising:

a) providing a refrigerant receiver tank for receiving refrigerant from the high pressure side of the mechanical refrigeration system,

b) preventing the flow of refrigerant to the receiver tank unless the pressure on the high pressure side exceeds a first predetermined value which is higher than the safe operating pressure of the high pressure side of the mechanical refrigeration system,

c) collecting refrigerant in said receiver tank from said high

pressure side when the pressure on the high pressure side exceeds said first predetermined value, and

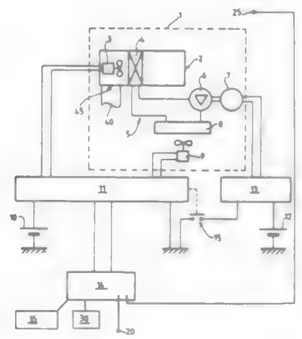
d) preventing further operation of the compressor of the refrigeration system when the pressure in said receiver tank exceeds a second predetermined value which is substantially lower than the safe operating pressure of the high pressure side.

5,361,593

METHOD AND APPARATUS FOR REDUCING THE TEMPERATURE OF AIR IN THE CABIN OF A STATIONARY VEHICLE

Jean Dauvergne, Fosses, France, assignor to Valeo Thermique Habitacle, Le Mesnil-Saint-Denis, France

Filed Apr. 28, 1993, Ser. No. 54,891
Claims priority, application France, Apr. 28, 1992, 92 05243
Int. Cl.[5] F25D *17/00*; F25B *29/00*
U.S. Cl. 62—89 7 Claims



1. A method of reducing cabin air temperature in a vehicle comprising a cabin, and associated with the cabin an air conditioning means comprising a compressor for a refrigerant fluid, a fan for delivering a stream of air into the cabin and an evaporator for transferring heat from said stream of air to said refrigerant fluid, wherein said method includes the steps of: detecting the temperature of the internal air in the cabin; detecting the temperature of the external air outside the cabin; and controlling the apparatus, in response to said detected temperatures, in three successive stages as follows:

in the first stage, driving the fan so as to deliver external air into the cabin when the internal temperature exceeds the external temperature by at least a predetermined limiting amount;

in the second stage, driving the compressor in a first compressor regime when the condition for the first operating stage is absent but the internal temperature is greater than a predetermined threshold value; and

in the third stage, driving the compressor in a second compressor regime such that energy consumption and the heat exchange capacity of the evaporator are reduced as compared with the second stage, when the conditions for the first and second stages are absent, further comprising the step of interrupting the operation of the apparatus when the vehicle remains stationary after a predetermined period of time.

5,361,594

REFRIGERATION RECOVERY AND PURIFICATION

Robert E. Young, 2048 Fallon Dr., Lexington, Ky. 40504

Continuation of Ser. No. 989,266, Dec. 11, 1992, abandoned, which is a continuation of Ser. No. 667,695, Mar. 11, 1991, abandoned. This application Dec. 14, 1993, Ser. No. 166,355
Int. Cl.[5] G01K *13/00*
U.S. Cl. 62—129 8 Claims

1. An improved apparatus for the recovery, purification and recharging of refrigerant from a refrigeration system, said apparatus comprising in combination:

(a) an inlet/outlet conduit means adapted for two-way flow to or from said refrigeration system;

(b) a suction accumulation means;

(c) a compressor means;

(d) a secondary coil means;

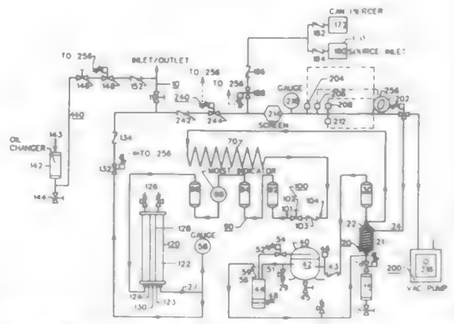
(e) a highside-purifying means;

(f) a storage means adapted for recharging said system with a measured charge of liquid refrigerant;

(g) a vacuum pump means;

(h) conduit means for connecting said inlet/outlet means, said suction accumulator means, said compressor means, said secondary coil means, said highside-purifying means, and said storage means in series and in order, said conduit means including a plurality of solenoid control valves for selectively controlling refrigerant flow therethrough from said inlet/outlet to said storage means;

(i) said conduit means further including a 3-way solenoid valve means for alternately connecting said inlet/outlet means to said vacuum pump means;



(j) a first pressure sensing means for sensing a first internal pressure within said inlet/outlet means substantially equal to atmospheric pressure for controlling start-up of said vacuum pump means;

(k) a second pressure means for sensing a substantially lower pressure in said inlet/outlet means for controlling stoppage of said vacuum pump means;

(l) a multi-position switch means operatively coupled to said plurality of solenoid valves for controlling said solenoid valves and said 3-way solenoid valve to selectively operate said apparatus in one of a refrigerant recovery mode, a refrigerant recirculating mode through the high-side purifying means, and evacuating mode by said vacuum pump in response to operation of said first and second pressure sensing means, and a recharging mode of said refrigeration system, and wherein said suction accumulation means includes an external coil in heat exchange therewith and wherein said secondary coil means and said external coil operate without a fan.

5,361,595

AIR-CONDITIONING APPARATUS

Kazuhiro Shimura; Takeshi Ookubo; Kouji Nagae; Takao Shiina, all of Gunma; Kunie Sekigami, Oota, and Ichiro Kamimura, Gunma, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Feb. 24, 1993, Ser. No. 21,890
Claims priority, application Japan, Feb. 28, 1992, 4-078869; Feb. 28, 1992, 4-078874; Apr. 9, 1992, 4-116835
Int. Cl.[5] F25B *7/00*
U.S. Cl. 62—175 13 Claims

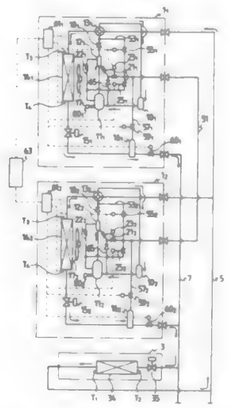
1. An air-conditioning apparatus, including:

at least one indoor side unit having an inter-unit pipe extending therefrom;

plural outdoor side units which are connected in parallel to said inter-unit pipe extending from said indoor side unit;

opening and closing means which is provided to each of said outdoor side units and serves to control refrigerant flow between said indoor side unit and said outdoor side unit through an opening and closing operation thereof;

individual control means which is provided to each of said outdoor side units and serves to control the opening and closing operation of said opening and closing means;



detection means for detecting excess or lack state of refrigerant amount and/or lubricating oil amount in an outdoor side unit, which will obstruct the operation of said outdoor side unit; and

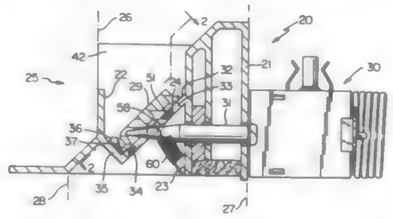
central control means for collectively and concentratively controlling each of said individual control means of said plural outdoor side units to adjust the amount of the refrigerant and/or lubricating oil flowing among said plural outdoor side units, so that the excess or lack state of the refrigerant and/or lubricating oil amount of said outdoor side unit is redressed.

5,361,596

REFRIGERATOR SYSTEM, A CONTROL DEVICE THEREFOR AND METHODS OF MAKING THE SAME

David D. Martin, Dunbar, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 17, 1993, Ser. No. 122,681
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—187 20 Claims



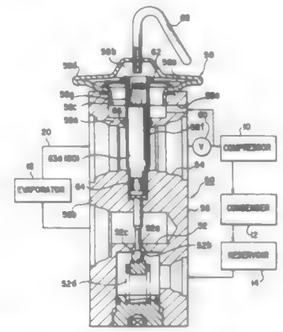
1. In a control device for a refrigerator system having a frozen food compartment and a nonfrozen food compartment interconnected together by an air circulating means that is adapted to direct an air flow from said frozen food compartment to said nonfrozen food compartment when a valve member of said control device is in an open condition thereof, said control device comprising a housing means having a valve seat means and having an inlet means for interconnecting to said frozen food compartment and an outlet means for interconnecting to said nonfrozen food compartment, said valve seat means interconnecting said inlet means and said outlet means together, a movable valve member carried by said housing means and being adapted to open and close said valve seat means by being respectively moved to an open position thereof and a closed position thereof, and actuator means carried by said housing means and being operatively interconnected to said valve member to move said valve member between said positions thereof, said housing means having a substantially straight angled edge means, said valve member having an end edge means that is adapted to pivot on said angled edge means, said end edge means having opposite end means thereof, the improvement wherein said end edge means of said valve member comprises a pair of pivot parts respectively disposed at said opposite end means thereof in spaced apart relation and being the only parts of said end edge means that engage said angled edge means of said housing means to pivot thereon, said valve member having opposite side edge means respectively disposed substantially perpendicular to said end edge means thereof, said pivot parts of said valve member respectively extending inboard and outboard of their respective side edge means, each said pivot part having a longitudinally disposed exterior surface that is arcuate in transverse cross section throughout the longitudinal length thereof.

5,361,597

THERMOSTATIC EXPANSION VALVE

Tanaka Hazime, Yokohama; Masamichi Yano, Tokyo, and Tetsuro Ikoma, Kawasaki, all of Japan, assignors to Fuji Koki Manufacturing Co., Ltd., Tokyo, Japan

Filed Apr. 21, 1994, Ser. No. 230,944
Claims priority, application Japan, Apr. 22, 1993, 5-095856
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—205 6 Claims



1. A thermostatic expansion valve comprising:

a valve housing including a first passage attached to a refrigerant pipe circulating through a compressor, a condenser, and an evaporator, between a refrigerant outlet of the condenser and a refrigerant inlet of the evaporator, and a second passage separated from the first passage and attached to the refrigerant pipe between a refrigerant outlet of the evaporator and a refrigerant inlet of the compressor, the first passage being provided with a valve port having a center line which crosses the second passage, and making refrigerant liquid flowing from the refrigerant outlet of the condenser into the first passage perform an adiabatic expansion;

a valve member arranged in the first passage and being able to be contact and separate from an opening of the valve port, the opening being located away from the second passage and being provided with a valve seat;

means for urging the valve member toward the valve seat of the valve hole;

a valve member driving unit attached to a portion of the valve housing at which the center line passes and which is located in an opposing side of the first passage in relation to the second passage, and having two spaces therein partitioned by a diaphragm which crosses the center line, a space of the valve member driving unit which is positioned near to the second passage being connected through a pressure equalizing opening to the refrigerant passage between a portion of the second passage at which the center line passes and the compressor, and the other space thereof which is positioned away from the second passage being filled with diaphragm driving fluid;

a valve member driving rod extending along the center line from the space of the valve member driving unit which is located near to the second passage to the valve port in the first passage, and crossing the second passage, the valve member driving rod being supported by the valve housing to be freely slidable along the center line, having one end fixed to the diaphragm and the other end inserted into the valve port of the first passage and contacting the valve member, and being provided with a chamber having an opening at the one end, extending in the rod to a portion thereof exposing in the second passage, and closed at its extending end;

means for sealing a clearance between the valve member driving rod and a first supporting portion which is located in the valve housing between the second passage and the space of the valve member driving unit located near to the second passage and supports the valve member driving rod to be freely slidable along the center line and also for sealing a clearance between the valve member driving rod a second supporting portion which is located in the valve housing between the second passage and the first passage and supports the valve member driving rod to be freely slidable along the center line; and

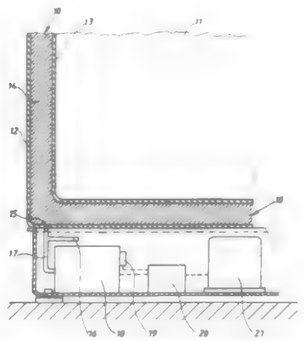
an adsorbent filled in the hole of the valve member driving rod and changing an adsorbing amount of the diaphragm driving fluid in response to change in temperature thereof.

5,361,598

REFRIGERATOR OR FREEZER WALLS

Rutger A. Roseen, Lidingö , Sweden, assignor to Electrolux Research & Innovation Aktiebolag, Sweden

Filed Aug. 31, 1993, Ser. No. 115,895
Claims priority, application Sweden, Sep. 10, 1992, 9202607-9
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—229 **9 Claims**



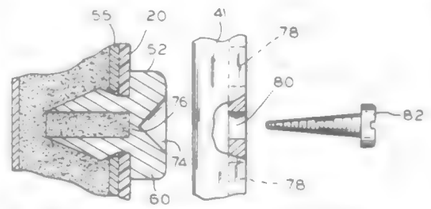
1. Electric refrigerator or freezer cabinet comprising a wall which defines at least one hermetically sealed heat insulated space (14), said space containing a heat insulating material which mechanically stiffens the wall and communicating with a vacuum creating device (18) via an evacuation conduit (17), the vacuum creating device being a permanently installed unit in the cabinet which is activated when the cabinet has been installed for use and, after a long period of running, creates a suitable underatmospheric pressure in the space (14).

5,361,599

REFRIGERATOR SHELF LADDER FASTENER

James F. Dasher, Center Township, Vanderburgh County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 28, 1993, Ser. No. 89,450
Int. Cl.[5] F25D *11/00*
U.S. Cl. 62—298 **19 Claims**



1. A refrigeration apparatus cabinet, comprising:

an outer shell including walls defining a front opening;

a plastic liner in said shell providing an insulation space therebetween and having connected rear and side walls to define a refrigerated space accessible through said shell front opening, said liner including a plurality of openings through one of said walls;

a reinforcement, one for each liner opening, comprising a plate having an opening, similar to the liner opening, said reinforcement being disposed behind the liner in said insulation space aligned with a liner opening;

a plurality of fasteners, one for each liner opening, each said fastener comprising a head larger than the liner opening disposed in said refrigerated space and a tubular locking element extending rearwardly from said head, said locking element having an outer surface having an outer diameter less than said liner opening at its connection to the head and an outer diameter at a select position greater than that of the reinforcement opening, the select position being spaced a distance from said head corresponding to a combined thickness of the liner and the reinforcement, a locking element extending through each liner opening and the associated reinforcement opening so that said finer and reinforcement are sandwiched between the head and the select position to fasten the reinforcement to the liner; and

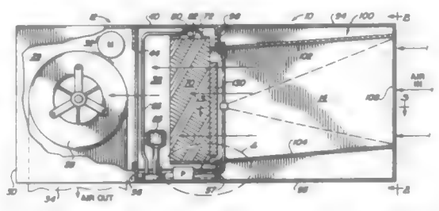
a body of in situ foam insulation disposed in said insulation space, said fasteners preventing insulation from entering said refrigerated space.

5,361,600

EVAPORATIVE COOLER WITH SCRUBBER SYSTEM

Franklyn F. Kelley, 7802 N. 36th Dr., Phoenix, Ariz. 85021

Continuation of Ser. No. 739,659, Aug. 2, 1991, abandoned. This application Jul. 12, 1993, Ser. No. 89,940
Int. Cl.[5] F25D *5/00*
U.S. Cl. 62—310 **10 Claims**



1. An air pretreatment apparatus to effect cooling and reduce contamination for use with an evaporative cooling device of the type having a cabinet with an intake for air to be cooled and a discharge for cooled air, air delivery means having air moving means for inducing air flow from the intake to the discharge, and evaporative treatment means including evaporative cooling media in said air flow path, a sump and a water supply for delivering water to said evaporative media to effect evaporative cooling of air, said pretreatment apparatus comprising:

(a) a generally imperforate housing positionable at the intake to the evaporative cooling device defining an air flow duct substantially free of obstruction having an inlet end through which an air stream enters the duct at the inlet end and flows to the intake of the evaporative cooling device at the discharge end of the duct;

(b) a water collection sump for receiving the moisture collected from within the air flow duct;

(c) at least one spray nozzle in said air flow duct located adjacent the discharge end of the duct connected to a water supply system oriented to spray finely divided water mist and being directed into the incoming air stream flowing to said evaporative cooler intake substantially countercurrently to the direction of flow to subject the air to the mist for a predetermined residence time to remove particulates and enhance evaporization efficiency;

(d) said duct having return means adapted to direct water collected in the duct to the said sump; and

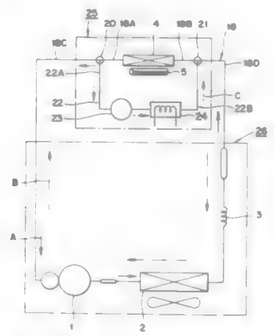
(e) a filter means interposed in the air stream flow between the duct and evaporative cooling media and positioned generally normal to the air stream flow in the duct.

5,361,601

AIR CONDITIONER

Geun P. Han, and Ho Y. Sung, all of Suwon-City, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 15, 1993, Ser. No. 91,360
Claims priority, application Rep. of Korea, Jul. 16, 1992, 92-12740
Int. Cl.[5] F25B *13/00, 29/00*
U.S. Cl. 62—324.6 **4 Claims**



1. An air conditioner selectively operable in cooling and heating modes, comprising:

main heating and cooling means comprising a compressor, an indoor heat exchanger, an expansion tube, and an outdoor heat exchanger all interconnected by a main refrigerant line, so that in a cooling mode, refrigerant is circulated by said compressor through said outdoor heat exchanger, said expansion tube, and said indoor heat exchanger and back to said compressor, and in a main heating mode, operable only when the outside temperature is below a reference temperature, refrigerant is circulated by said compressor through said indoor heat exchanger, said expansion tube, and said outdoor heat exchange and back to said compressor; and

auxiliary heating means operable only when the outside temperature is at or above said reference temperature for defining the sole heating mode, said auxiliary heating means comprising

an auxiliary refrigerant line having inlet and outlet ends communicating with said main refrigerant line at junctions disposed at opposite sides, respectively, of said indoor heat exchanger;

pumping means and heating means disposed in said auxiliary line, and

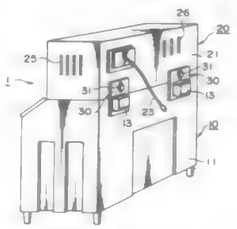
flow directing means selectively actuable in an auxiliary heating mode for directing all refrigerant exiting said indoor heat exchanger into said inlet end of said auxiliary line and for directing all refrigerant exiting said outlet end of said auxiliary line into said indoor heat exchanger, so that refrigerant is circulated by said pumping means through said heater and said indoor heat exchanger and back to said pumping means.

5,361,602

COUPLING STRUCTURE FOR STACK-ON TYPE AUTOMATIC ICE MAKING MACHINE

Yoshio Furukawa, Toyoake, and Kazuhisa Okada, Nagoya, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Nov. 12, 1993, Ser. No. 151,519
Claims priority, application Japan, Nov. 24, 1992, 4-080844[U]
Int. Cl.[5] F25C *5/18*
U.S. Cl. 62—344 **3 Claims**



1. In a stack-on type automatic ice making machine including an ice making unit having a box-like casing, accommodating therein an ice making mechanism, and an ice stocker having an external wall defining a space with an open top and disposed on said ice making unit, a coupling structure for interconnecting said ice making unit and said stocker to each other, said structure comprising:

a plurality of ribs formed integrally with the external wall of said stocker along a top edge portion thereof and extending outwardly; and

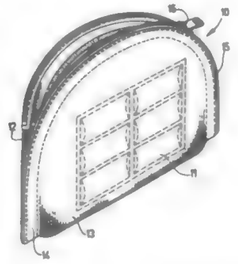
a plurality of coupling plates secured fixedly to the external wall of said casing of said ice making unit, said plates each having a first hole for receiving each of said ribs and a resilient tongue adapted to engage in a recess formed in a bottom of each of said ribs.

5,361,603

INSULATIVE CARRYING CASE

Carolann Merritt-Munson, 4820 Coldwater Canyon, #101, Sherman Oaks, Calif. 91403

Continuation of Ser. No. 886,872, May 22, 1992, Pat. No. 5,237,838. This application Aug. 24, 1993, Ser. No. 111,328
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] B65D *23/08*
U.S. Cl. 62—457.2 **7 Claims**



1. A carrying case adapted to store items at a temperature other than ambient comprising:

an outer layer disposed in a generally U-shaped configuration having a lower curved portion and two oppositely disposed wall portions, the space between the wall portions and the lower curved portion forming a storage compartment and the region opposite the lower curved portion forming an open end;

means connected to the outer layer near said open end for selectively closing the open end;

means positioned in the space between the wall portions and connected thereto adapted to receive a device for affecting temperature; and

wall members adjacent said wall portions including a plurality of layers comprising a first heat insulative layer of neoprene, a second heat insulative layer of micro-fiber, a layer of nylon and a layer of non-absorbent reinforced metallic material.

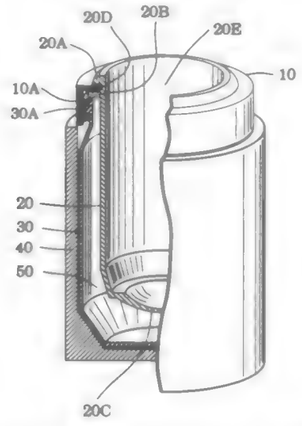
5,361,604

BEVERAGE CHILLING RECEPTACLE

Steven J. Pier, 216 Garnet Ave., Newport Beach, Calif. 92662, and Carl C. Jones, 2212 Verano Pl., Irvine, Calif. 92715

Filed Jul. 9, 1993, Ser. No. 89,767
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.4 **3 Claims**

1. An improved hand-held beverage chilling receptacle, used for the purpose of conducting heat away from a beverage container, including two cylindrical receptacles, or shells, enclosed on one end, of different diameter and height, such that placement of an inner shell inside an outer shell forms a fluid-tight coolant cavity wherein a liquid may be placed that when frozen facilitates refrigeration of said beverage container disposed within a cylindrical cavity enclosed by said inner shell, with said outer shell and said inner shell joined by means of an annular cap affixed to an open end of said inner shell, creating a seal between said inner shell and said outer shell containing said liquid within said coolant cavity, and with an insulation encompassing the exterior of said outer shell; the improvement wherein said coolant cavity is resealable and a means for making said coolant cavity resealable, and said inner shell has an outwardly-formed closed end that is tapered such that the thickness of said end increases with increasing radius such that said end deforms inward upon exposure to forces created by an expanding coolant and shape of said end is restored upon removal of forces created by an expanding coolant.

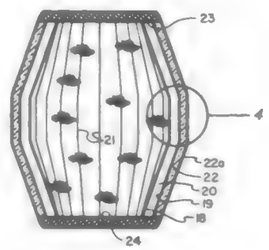


5,361,605

BEVERAGE KEG INSULATED COOLING JACKET

Joseph A. Pizzi, 4620 Greenhill St., Cocoa, Fla. 32927-3522, and Jeffrey G. Snyder, 1712 Orange Hill Way, Brandon, Fla. 33510

Filed Mar. 10, 1994, Ser. No. 208,313
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—530 **2 Claims**



1. A beverage keg cooling arrangement for securement about a beverage keg, wherein the beverage keg includes a keg top wall spaced from a keg bottom wall, and a keg side wall extending therearound, said arrangement comprising:

a flexible wrap, the flexible wrap including a hook and loop fastener first side strip spaced from a hook and loop fastener second side strip, a hook and loop fastener top side strip and a hook and loop fastener bottom side strip, with the flexible wrap including a fibrous fluid absorbent inner layer spaced from a fibrous fluid absorbent outer layer, a flexible polymeric foam insulative layer coextensive with the outer layer, a fluid impermeable exterior layer mounted coextensively with the insulative layer spaced from the outer layer, and a plurality of parallel seams directed through the inner layer, the outer layer, the insulative layer, and the exterior layer to define a plurality of parallel chamber pockets between the inner layer and the outer layer, and,

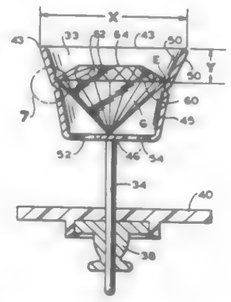
a plurality of flexible refrigerant containers, wherein each of said chamber pockets define means to receive an individual one of said flexible refrigerant containers.

5,361,606

MAGNIFYING GEM HOLDER

Eli Nhaissi, Old Westbury; Chunyu Cui, New York, both of N.Y., and Gevork Nalbandian, Atwater Village, Calif., assignors to Pan American Diamond Corp., New York, N.Y.

Continuation-in-part of Ser. No. 748,426, Aug. 22, 1991. This application Aug. 17, 1992, Ser. No. 927,721
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—26 **11 Claims**



1. In combination, a gem holder and a gem;

said gem comprising a girdle, a table, upper facets, and a minor dimension X defined by the width of the girdle;

said gem holder comprising:

(A) a housing having a top edge and a reflecting sidewall diverging upwardly from the vertical at an angle of 5 to 47 degrees; and

(B) means holding said gem securely and stationary within said housing such that said table of said gem is no higher than said housing top edge and the upper edge of said girdle of said gem is recessed below said housing top edge by a vertical depth Y where the ratio of Y to X is 14 to 45%;

whereby said gem appears larger than its actual size due to reflection of said upper facets of said gem by said reflecting sidewall.

5,361,607

KNITTED FABRIC INTEGRALLY KNITTED WITH AN ADDITIONAL POCKET AND THE METHOD OF INTEGRALLY KNITTING THEM

Shigesobu Mitsumoto, and Masao Okuno, both of Wakayama, Japan, assignors to Shima Seiki Mfg., Ltd., Wakayama, Japan

Continuation of Ser. No. 866,715, Apr. 10, 1992, abandoned. This application Dec. 27, 1993, Ser. No. 173,725
Claims priority, application Japan, Apr. 10, 1991, 3-106682
Int. Cl.[5] D04B *7/00, 9/54*
U.S. Cl. 66—69 **11 Claims**

1. A method of simultaneously knitting a base fabric and a pocket forming fabric on said base fabric by using a flat knitting machine including a front needle bed and a rear needle bed, each of the needle beds has a plurality of knitting needles, said flat knitting machine includes a plurality of carriers, said pocket forming fabric has a left side and a right side, comprising:

knitting the base fabric with alternate knitting needles among the knitting needles of the front needle bed;

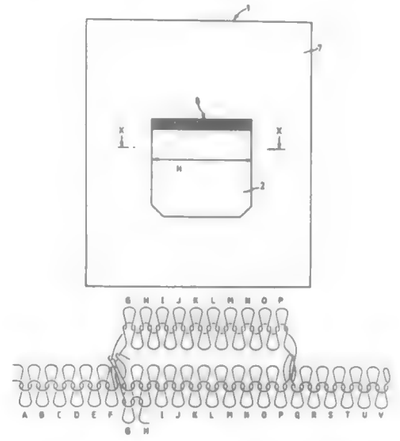
transferring a predetermined number of loops of the base fabric which are held by the alternate knitting needles of the front needle bed to the knitting needles of the rear needle bed, said predetermined number of loops are determined by the width of the pocket forming fabric;

casting-on the pocket forming fabric by holding the predetermined number of loops of the base fabric which are held by the knitting needles of the rear needle bed also by knitting needles of the front needle bed;

forming loops on the knitting needles of the rear needle bed which hold the predetermined number of loops of the base fabric;

transferring the formed loops held by the knitting needles of the rear needle bed to knitting needles of the front needle bed which hold no loops;

knitting the base fabric covered with the pocket forming fabric with the alternate knitting needles of the front needle bed;



transferring loops of the base fabric covered with the pocket forming fabric held by the knitting needles of the front needle bed to the knitting needles of the rear needle bed;

knitting the pocket forming fabric by the knitting needles of the front needle bed; and

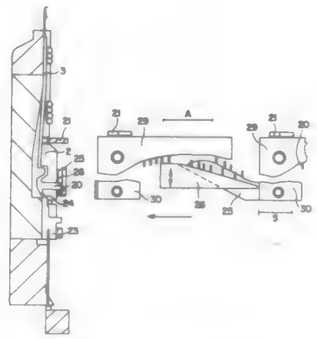
connecting the left side and the right side of said pocket forming fabric to the base fabric simultaneously with knitting the base fabric and knitting the pocket forming fabric.

5,361,608

CIRCULAR KNITTING MACHINE OF ELASTIC NEEDLE TYPE WITH A SLIDER SELECTION DEVICE

Paolo Saiucci, and Jan Ando, both of Scandicci, Italy, assignors to Savio S.p.A., Pordenone, Italy

Filed Mar. 31, 1993, Ser. No. 40,935
Claims priority, application Italy, Apr. 2, 1992, MI.92-A/000796
Int. Cl.[5] D04B *15/78*
U.S. Cl. 66—220 **19 Claims**

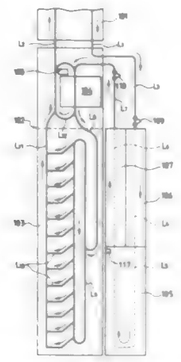


1. Circular knitting machine comprising:

a needle cylinder;

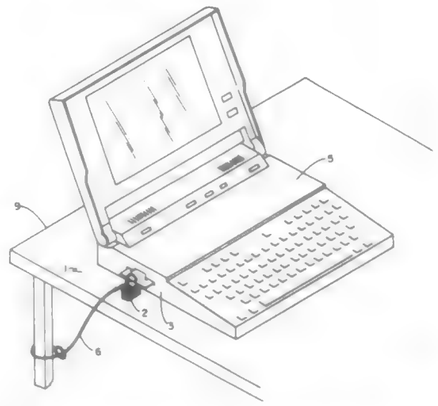
tricks formed in said cylinder;
excavated parts formed in said tricks;
elastic needles having butts and being slidable within said tricks;
a fixed raising cam located at a distance from said cylinder;
a fixed lowering cam located upstream of said raising cam for moving needles to a downward position;
a vertically movable internal spaced cam situated at a lesser distance from said cylinder with respect to said raising cam;
a thrust cam for flexing said needles moved to said downward position by said lowering cam into said excavated parts of said tricks, whereby said butts project a lesser or greater distance from said tricks, with butts of flexed needles thrust into said excavated parts of said tricks being engaged and raised by said vertically movable internal spaced cam, and butts of unflexed needles not engaged by said thrust cam being engaged and raised by said fixed raising cam;
sliders located in said tricks below said needles, each of said sliders being axially movable between a raised position, whereat each said slider retains one of said needles no longer acted on by said thrust cam in a flexed condition thrust into said excavated parts of said tricks, and an unraised position, whereat each of said sliders allows one of said needles no longer acted on by said thrust cam to return to an unflexed condition.

5,361,609
STEAM SETTING APPARATUS
Keini Hasui, Ohtsu; Yasuhiro Inoue, Settu, and Isao Fukuda, Kameoka, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Jun. 7, 1993, Ser. No. 72,715
Claims priority, application Japan, Jun. 10, 1992, 4-176061; Nov. 13, 1992, 4-328685
Int. Cl.[5] D06B *3/09*
U.S. Cl. 68—5 D **10 Claims**



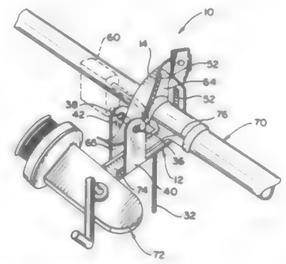
3. In a system including a spinning frame and an automatic winder, an apparatus comprising:
a bobbin transfer line connecting the spinning frame and the automatic winder, the bobbin transfer line defining a midpoint,
a steam setter for steaming bobbins, the steam setter being disposed substantially at the midpoint of the bobbin transfer line,
a preheating apparatus provided substantially between the spinning frame and the steam setter, and
a drying line provided substantially between the steam setter and the automatic winder.

5,361,610
TOTELOCK
Richard Sanders, 29 Harwich Cr., Westwood, Mass. 02090
Filed Sep. 22, 1993, Ser. No. 124,649
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—14 **25 Claims**



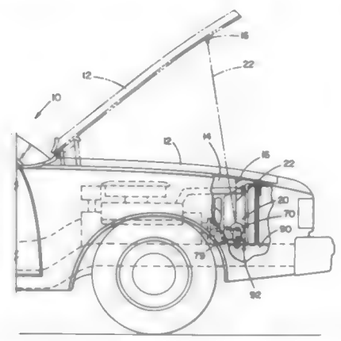
1. A locking mechanism for a computer with a disk drive having an external entry door and internal guide rails with tab holes, comprising:
a rigid first plate adapted for insertion into said disk dive and having a front edge, a back edge, two side edges, top and bottom surface planes, a plate shoulder formed on the front edge, and a plate body between the plate shoulder and the back edge, a pair of tabs extending in the downward direction from the bottom surface plane of the first plate body and adapted for insertion into said guide rail tab holes, and a lock hole formed centrally in the plate shoulder;
a rigid second plate adapted for insertion into said disk drive and having a front edge, a back edge, two side edges, top and bottom surface planes, a plate shoulder formed on the front edge, and a plate body between the plate shoulder and the back edge, a pair of ridges extending in an upward direction away from the top surface plane of the second plate body, and a lock hole formed centrally in the plate shoulder;
wherein said second plate is inserted into said disk onto the top surface plane of the first plate such that the second plate bottom surface plane lies flat against the first plate top surface plane;
wherein said first and second plate lock holes align when both plates are inserted into said disk drive;
a locking means for securing said lock holes of said inserted first and second plates; and
means for tethering said locking means to an object;
wherein the combined height of the first and second plates inserted together into the disk drive together is such that the plates cannot be removed from the disk drive together;
wherein said first and second plate shoulder portions and lock holes are adapted to remain outside the disk drive when inserted into the disk drive;
wherein the second plate ridges extend from the plate shoulder toward the back edge parallel to one another and parallel to the second plate right and left edges; and
wherein said first plate tabs angle away from the first plate bottom surface plane at an angle of approximately seventy degrees from a plane defined by the area between the tabs and the front edge of the first plate.

5,361,611
LOCKING DEVICE FOR A ROD AND REEL
Charles J. Hisler, 4100 Woodland Ave., Drexel Hill, Pa. 19026
Filed Apr. 12, 1993, Ser. No. 45,137
Int. Cl.[5] A01K *87/06;* **E05B** *73/00*
U.S. Cl. 70—18 **13 Claims**



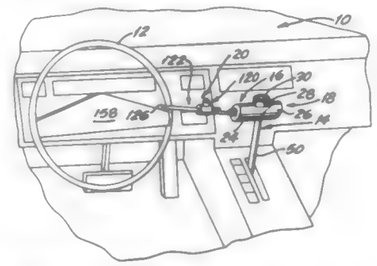
1. A locking device for securing a fishing rod and reel assembly, wherein the fishing reel includes an elongated neck that connects the fishing reel to the fishing rod, said device comprising:
a hasp having a base structure and a locking arm pivotably attached to said base structure, wherein said locking arm can be pivotably rotated between an open position and a closed position, said hasp engaging the fishing rod and the elongated neck of the fishing reel at said closed position in a manner that prevents the fishing reel and the fishing rod from being removed from said hasp;
padding means for padding said hasp where said hasp engages said fishing rod and said fishing reel; and
securing means for securing said hasp to an object, wherein said hasp and said securing means cooperate to prevent the unauthorized removal of said fishing rod and said fishing reel from said object.

5,361,612
HOOD LOCK WITH REEL AND CABLE
Danut Voiculescu, Cleveland; Mark Banez, Youngstown, and Louis D. Carlo, Litchfield, all of Ohio, assignors to Winner International, Sharon, Pa.
Filed Feb. 11, 1993, Ser. No. 16,307
Int. Cl.[5] E05B *65/19*
U.S. Cl. 70—241 **20 Claims**



1. A security device contained in a vehicle compartment for securing a compartment closure in a closed position, said security device comprising:
a) real means mounted in said vehicle compartment and having a reel axis, said reel means including a wind means for rotating said reel means about said reel axis and maintaining a tension on said cable means and wherein said reel means includes a locking reel having at least one sloped surface and abutment face;
b) cable means supported on said reel means for winding and unwinding about said reel axis, said cable means having a free end;
c) attachment means for connecting said free end of said cable means to said compartment closure;
d) releasable lock means for controlling said winding and unwinding of said cable means from said reel means, said releasable lock means including a locking disk biased against said reel means, said locking disk including at least one lock tab; and
e) activation means for controlling said releasable lock means, said activation means including an electrical mechanism which when actuated by an authorized person signals said releasable lock means to control unwinding of said cable means.

5,361,613
VEHICLE ANTI-THEFT DEVICE
Raymond S. Fort, 1195 E. 46th St., Brooklyn, N.Y. 11234, and Joseph L. Paul, 193 Rhododendron Dr., Westbury, N.Y. 11590
Filed Apr. 1, 1993, Ser. No. 42,095
Int. Cl.[5] B60R *25/06;* **E05B** *65/12*
U.S. Cl. 70—247 **20 Claims**



1. A vehicle anti-theft device comprising:
a gear shifter locking device for enclosing a handle mounted on a rod portion of a vehicle gear shifter to prevent a person from pressing a release button on the handle;
said gear shifter locking device including mating first and second housing parts, said first housing part enclosing one portion of the handle disposed on one side of the rod portion, said second housing part enclosing the remaining portion of the handle disposed on an opposite side of the rod portion;
bar means being connected to both said first and second housing parts for permitting said first and second housing parts to be moved relative to each other between a spaced apart opened first position and a matingly locked together second position enclosing the handle and the release button therein;
said bar means connecting said first and second housing parts together as a unitary construction;
said bar means including an elongated bar;
connecting means for permitting said bar to move longitudinally in said first housing part so that said second housing part can be moved between said first and second positions;
securement means for locking said first and second housing parts together in said second position;
unlocking means for engaging said securement means to unlock said first and second housing parts so that said first and second housing parts can be moved apart to said opened first position, said unlocking means including a lock; and
spring means to automatically push said bar to an outwardly extended position from said first housing part when said lock is unlocked so that said second housing part is moved

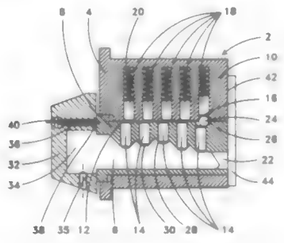
by said bar to said opened first position automatically when said lock is unlocked.

5,361,614

PIN-TUMBLER LOCK WITH RETAINED KEY AND METHOD OF OPERATION THEREOF

Jeff W. Metcalf, Kitchener, Canada, assignor to Steven Elvy, Kitchener and Al Culshaw, Waterloo, both of Canada

Filed Apr. 14, 1993, Ser. No. 45,774
Int. Cl.[5] E05B *11/00*
U.S. Cl. 70—389 **12 Claims**



1. A key operated pin-tumbler lock comprising a pin-tumbler locking cylinder and a thumb turn key said locking cylinder having a cylinder plug located within a cylinder housing, said cylinder plug having a first set of openings and a first set of pins with a pin slidably mounted in each opening, said cylinder housing having a second set of openings and a second set of pins, with a pin being spring-mounted in each opening, said second set of pins being urged toward said cylinder plug, said first set of openings and pins corresponding to said second set of openings and pins so that said corresponding openings and pins are aligned with one another in a first position, said cylinder plug containing a keyway for receiving a said thumb turn key, with means for automatically preventing said thumb turn key from being removed upon insertion by misaligning at least one pin in said first set of openings with a corresponding pin in said second set of openings so that said pins are misaligned with one another are no longer slidable in said openings in which they are located, thereby trapping said thumb turn key in said keyway as soon as said key has been inserted and before said key is turned, said misaligned pins being in a second position, manually operated release means located entirely externally of said locking cylinder for returning said locking cylinder to said first position, thereby permitting said thumb turn key to be removed.

5,361,615

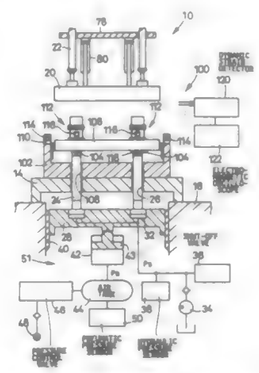
APPARATUS FOR MEASURING BLANK HOLDING FORCE ACTING ON PRESSURE RING OF A PRESS

Kazunari Kirii, Aichi; Masahiro Shinabe, Toyota; Tsutomu Ono, Toyota; Masuo Watanabe, Toyota, and Hideo Koshida, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 7, 1993, Ser. No. 43,864
Claims priority, application Japan, Apr. 7, 1992, 4-114007
Int. Cl.[5] B21D *24/16*
U.S. Cl. 72—19 **15 Claims**

1. An apparatus for measuring a holding force expected to act on a pressure member for holding a blank to be drawn on a pressing machine which includes (a) a stationary bolster on which a lower die is fixed, (b) a movable main slide which carries an upper die fixed thereto and below which said pressure member is disposed, (d) a plurality of cushion pins which extend through said bolster and support at their upper ends said pressure member such that said cushion pins and said pressure member are movable in the longitudinal direction of said cushion pins, (e) a cushion pad associated with the lower ends of said cushion pins to move the cushion pins, (f) force applying means for applying the holding force to said pressure member, said force applying means having a fluid-actuated cylinder with a piston actuated by a fluid pressure for biasing said cushion pad upwards in the longitudinal direction of the cushion pins, wherein when said main slide is lowered towards said bolster, a force is transmitted to said cushion pad via said pressure member and said cushion pins, whereby said cushion pad is forced to be lowered, with a result of a retracting movement of said piston, which causes an increase in the fluid pressure within said fluid-actuated cylinder, thereby said holding force corresponding to the increased fluid pressure is applied to said pressure member, to hold said blank, said apparatus being operated to measure said holding force, before said lower and upper dies and said pressure member are installed on said pressing machine, said apparatus comprising:

a measuring member to be placed on said cushion pins;



at least one sensing element to be disposed on one of said measuring member and said main slide, such that said holding force produced by said force applying means acts on said at least one sensing element, when said measuring member is lowered with said at least one sensing element in pressing contact with said main slide and said measuring member as said main slide is lowered towards said bolster;

load detecting means provided on said at least one sensing element, for detecting said holding force acting on said at least one sensing element, to thereby detect said holding force expected to be applied to said pressure member during an operation of said pressing machine; and

recording means for recording said holding force as detected by said load detecting means.

5,361,616

COATING COMPOSITION AND PROCESS FOR PRODUCING A PRECOATED PLATE

Toshiya Takahashi, Kuroiso; Norio Uriya, Yokohama, and Yoshihisa Nagashima, Tochigi, all of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

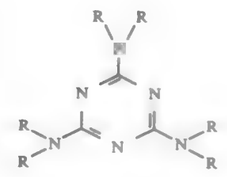
Filed Jun. 9, 1992, Ser. No. 895,677
Int. Cl.[5] B21D *5/00*; G03F *7/027*; B05D *3/02*
U.S. Cl. 72—46 **4 Claims**

1. A process for producing a precoated plate, comprising:

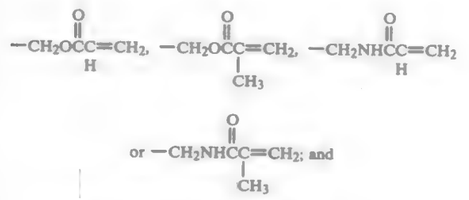
(I-i) coating a metal plate with a coating composition comprising:

(A) a vinyl copolymer having polymerizable double bonds and crosslinkable hydroxyl groups,

(B) a condensation polymerizable compound of Formula (i) or a condensation polymer thereof:



wherein each of the plurality of R groups, which may be the same or different, is —H, —CH_2OH, —CH_2OCH_3, —$CH_2OC_4H_9$,



(C) a photopolymerization initiator;

(ii) laminating a transparent protective film onto the coated surface; and then

(iii) irradiating the coated surface with ultraviolet radiation to form an initially cured coated film;

(II) subjecting the coated metal plate to deformation shaping; and

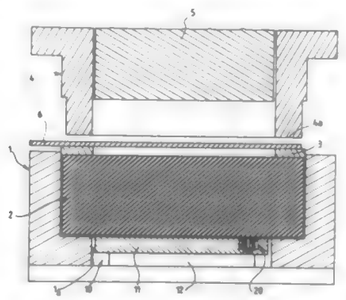
(III) removing the protective film and baking the shaped coated metal plate to completely cure the initially cured coating film.

5,361,617

DEVICE FOR DRAWING SHEET MATERIAL ON A DRAWING DIE COMPOSED OF ELASTICALLY YIELDABLE MATERIAL

Michel Dittlo, Courbevoie, France, assignor to Isoform, Puteaux, France

Filed May 25, 1993, Ser. No. 66,660
Claims priority, application France, May 27, 1992, 92 06502
Int. Cl.[5] B21D *39/08*
U.S. Cl. 72—57 **17 Claims**



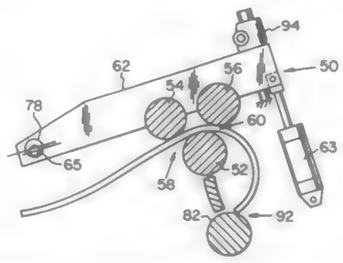
1. A device for drawing sheet material, comprising in combination a die having a retaining box and a cushion composed of an elastically yieldable material disposed in said retaining box, a means for predrawing a sheet blank comprising an outer slide and an upper blank holder carried by said outer slide, a means for finally drawing said sheet blank comprising a plunger, a central slide for acting on said plunger, and a first means for absorbing excess volume of said cushion relative to a volume determined by the surface of the finished drawn part to be obtained in the course of the final drawing of said part, said device further comprising at least one second means for compensating for excess volume of said cushion due to variations in (i) physical characteristics of said material of said cushion in the course of said predrawing and said final drawing of said part.

5,361,618

METHOD AND APPARATUS FOR ADJUSTING BENDING ROLLS

Joseph M. Stefanelli, McKees Rocks, Pa., assignor to Italimpianti of America, Inc., Coraopolis, Pa.

Filed Apr. 1, 1993, Ser. No. 41,160
Int. Cl.[5] B21C *47/08*; B21D *5/14*
U.S. Cl. 72—174 **14 Claims**



1. An adjustable set of bending rolls for forming a free standing coil, comprising:

a plurality of adjustable bending rolls;

a frame rotatably mounting said adjustable bending rolls;

a pivot shaft coupled to said frame having portions of said pivot shaft eccentric relative to an axis of rotation of said pivot shaft;

means for rotating said pivot shaft about said axis of rotation to adjust the position of said plurality of adjustable bending rolls;

a bottom bending roll rotatably mounted in a housing and cooperating with said plurality of said adjustable bending rolls wherein said rotation of said pivot shaft will adjust the position of said plurality of adjustable bending rolls with respect to said bottom bending roll; and

a forming roll positioned to receive a leading edge of the free standing coil to be formed at an impact location on said forming roll to form at least an initial wrap of the free standing coil adjacent to said forming roll, wherein said adjustment of the position of said plurality of adjustable bending rolls relative to said bottom bending roll changes the location of said impact location on said forming roll in a corresponding change in the configuration of the initial wrap of the free standing coil.

5,361,619

PROCESS AND APPARATUS FOR PRESS FORMING

Ichirou Kojima, Ichinomiya; Terumi Nishida, Nukata, and Kunio Yamada, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 1, 1993, Ser. No. 113,791
Claims priority, application Japan, Sep. 2, 1992, 4-234643
Int. Cl.[5] B21D *22/26*
U.S. Cl. 72—348 **10 Claims**



1. A process of press-forming deep-drawn articles in the

form of a vessel having different lengths, from blanks in the form of a sheet, said process comprising the steps of:

a first step of press-forming a blank in the portions corresponding to both ends of a deep-drawn product having a desired length to form a semi-deep-drawn product in the form of a vessel having both ends deep-drawn to a vessel form and an unformed mid-length portion; and

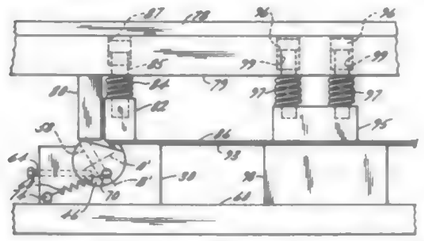
a second step of press-forming said unformed mid-length portion of said semi-deep-drawn product to complete a deep-drawn product in the form of a vessel.

5,361,620

METHOD AND APPARATUS FOR HEMMING SHEETS OF METAL MATERIAL

John L. Meadows, 15 Eluira Dr., Rockfall, Conn. 06481

Filed Jul. 2, 1993, Ser. No. 86,943
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—387 **18 Claims**



1. A device for hemming a sheet of metal having an upset edge in a press comprising:

a housing block disposed in the press, said housing block having a partly cylindrical channel extending longitudinally therein, said partly cylindrical channel having an inner circumference of greater than 180° with reference to vertical and horizontal axes, the vertical and horizontal axes having a point of intersection corresponding to a center of a cross section of a cylindrical area defining said partly cylindrical channel; and

a partly cylindrical member having a cross sectional profile defined by an arcuate outer surface extending from a first position to a second position and a continuous planar outer surface extending from the second position to the first position, said partly cylindrical member disposed in said partly cylindrical channel for rotation therein, said arcuate outer surface having an outer circumference of greater than 180° with reference to said vertical and horizontal axes, wherein the center of the cross section of the cylindrical area defining said partly cylindrical channel corresponds to a center of the cross sectional profile of said partly cylindrical member.

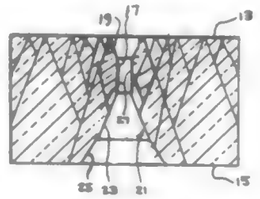
5,361,621

MULTIPLE GRAINED DIAMOND WIRE DIE

Thomas R. Anthony, Schenectady, N.Y., and Bradley E. Williams, Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Oct. 27, 1993, Ser. No. 143,802
Int. Cl.[5] B21C *3/02*
U.S. Cl. 72—467 **31 Claims**

1. A die for drawing wire of a predetermined diameter comprising a CVD diamond body having a first surface in a region of larger diamond grains and a second surface in a region of smaller diamond grains, an opening extending through said body and having a wire bearing portion of substantially circular cross-section determinative of the diameter of the wire positioned more closely adjacent to said second



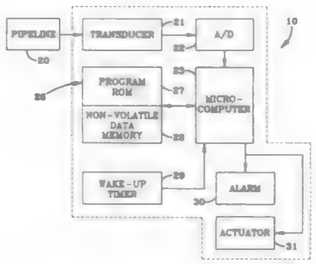
surface in said region of smaller grains than to said first surface in a region of larger diamond grains.

5,361,622

DEVICE AND METHOD FOR DETECTION OF LEAKS IN PRESSURIZED FLUID VESSELS

John T. Wall, Seven Hills, Ohio, assignor to The Shafer Valve Company, Mansfield, Ohio

Filed Sep. 9, 1993, Ser. No. 118,181
Int. Cl.[5] G01M *3/00*; G01F *15/00*
U.S. Cl. 73—49.2 **10 Claims**



1. A device for monitoring and detecting irregularities in a preselected characteristic of a fluid in a vessel, comprising:

transducer means for monitoring the preselected characteristic of the fluid in the vessel and providing an analog transducer output signal proportional thereto;

converter means for receiving said analog transducer output signal, sampling said analog transducer output signal at preselected measurement time intervals within a preselected study time interval, and providing a digital output signal proportional to said analog transducer output signal at each said preselected measurement time interval;

processor means for receiving said digital output signal for each said preselected measurement time interval, calculating a plurality of changes in the preselected characteristic for a like plurality of said preselected measurement time intervals, calculating a total change in the preselected characteristic over said preselected study time interval, comparing said plurality of changes in the preselected characteristic to a preselected maximum rate of change in the preselected characteristic, comparing said total change in the preselected characteristic over said preselected study time interval to a preselected maximum total change in the preselected characteristic, and generating an alarm output signal when a preselected plurality of said plurality of changes in the preselected characteristic exceed said preselected maximum rate of change in the preselected characteristic and said total change in the preselected characteristic over said preselected study time interval exceeds said preselected maximum total change in the preselected characteristic for longer than a first preselected period of time; and,

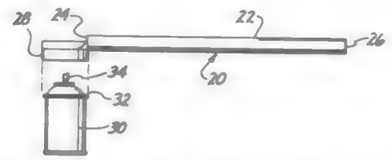
alarm means receiving said alarm output signal and annunciating the existence of an irregularity in the preselected characteristic.

5,361,623

DELIVERY SYSTEM FOR SMOKE DETECTOR TESTING SPRAY FORMULATION

James C. Wantz, Mesa, Ariz., assignor to Leon Cooper and William H. Haines, both of Malibu, Calif.

Continuation of Ser. No. 560,138, Jul. 30, 1990, abandoned. This application Sep. 30, 1992, Ser. No. 954,682
Int. Cl.[5] G08B *29/00*
U.S. Cl. 73—1 G **14 Claims**



1. In combination an aerosol dispenser of the type having a pressurized container and a finger actuated spray nozzle on the container for delivering a directed aerosol spray discharge of a formulation adapted to emulate combustion products to an electronic smoke detector for verifying operation of the detector, said attachment comprising:

a tube having length of at least twelve inches an inlet end and an outlet end; and

mounting means for supporting said tube to the container independently of said spray nozzle but in axial alignment with the direction of the spray discharge from the nozzle and with said inlet end in sufficient proximity to the spray nozzle of the dispenser for receiving substantially all of the spray discharge of said nozzle;

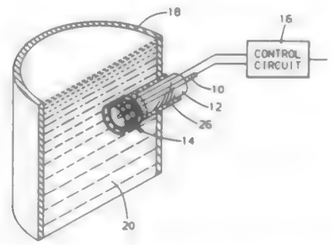
said tube having a diameter and a length selected to admit generally unimpeded flow of the aerosol to the detector for verifying operation of the detector while coarse droplets ejected by the spray nozzle are collected on an interior surface of said tube thereby to minimize wetting of the detector with said formulation.

5,361,624

SENSOR FOR DISSOLVED AIR IN BRAKE FLUID AND METHOD OF USING THE SAME

David K. Lambert, Sterling Height; Mark W. Verbrugge, Troy, and Brian J. Koch, Northville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1993, Ser. No. 144,382
Int. Cl.[5] G01N *27/26*
U.S. Cl. 73—19.1 **4 Claims**



1. A method of in situ monitoring the concentration of oxygen in hydraulic brake fluid comprising:

a) placing a microelectrode and a counterelectrode in contact with brake fluid used in a continuous hydraulic brake fluid filling operation;

b) applying a negative potential to the microelectrode relative to the counterelectrode of an amount sufficient so that the flux of soluble oxygen to the microelectrode is transport limited and thereafter measuring the current;

c) applying a positive potential to the microelectrode of an amount sufficient to retard film development on the microelectrode during periods other than when step (b) is being performed; and

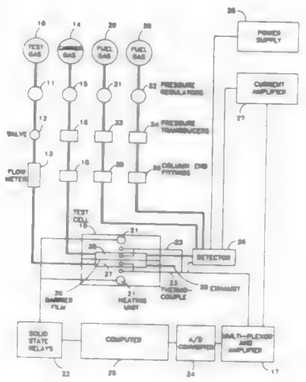
repeating steps (b)–(c).

5,361,625

METHOD AND DEVICE FOR THE MEASUREMENT OF BARRIER PROPERTIES OF FILMS AGAINST GASES

Jon A. Ylvisaker, Rt. 1, Box 109, Zumbro Falls, Minn. 55991

Filed Apr. 29, 1993, Ser. No. 54,691
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **6 Claims**



1. An improvement in the method of detecting the passage of gas through a barrier film comprising the steps of;

a) exposing a first side of a film barrier to a test gas, whereby the test gas can permeate through the barrier film forming thereby a permeant gas;

b) exposing a second side of the barrier film to a carrier gas flow which mixes with the permeant gas;

c) collecting the carrier gas and permeant gas mixture in a detector able to detect the concentration of the permeant gas, whereby the detector can produce an analog signal which is proportional to the permeant gas concentration detected;

d) converting the analog signal from the detector to a digital signal; and

e) averaging a plurality of digital signals, wherein said improvement comprises controlling the carrier gas flow to the detector with a pressure regulator and column end fittings possessing metallic frits.

5,361,626

METHOD AND APPARATUS FOR DETECTING LEAKS IN SEALED PACKAGES

Francis D. Colligan, Waterbury, and Lloyd S. Brown, Guilford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jan. 29, 1992, Ser. No. 827,340
Int. Cl.[5] G01M *3/20*
U.S. Cl. 73—40.7 **33 Claims**

1. A method for evaluating integrity of a sealed package comprising:

depositing a volatile hydrocarbonaceous substance within a package:

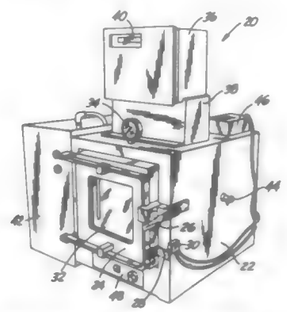
sealing the package:

placing the package in a sealable chamber;

sealing said chamber;

pulling a vacuum in said chamber after said chamber has been sealed:

maintaining the vacuum in said chamber for a predetermined time period and then allowing gas into said chamber to relieve the vacuum;



sealing said chamber after the vacuum has been relieved; and

monitoring said chamber for the presence of said volatile hydrocarbonaceous substance.

5,361,627

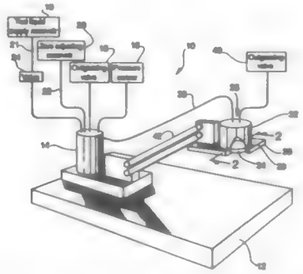
METHOD AND APPARATUS FOR THE MEASURING THE CAPILLARY ATTRACTION DEVELOPED AT A SURFACE OF AN ABSORBENT BODY

Yvon Levesque, Montreal, Canada, assignor to Johnson & Johnson Inc., Montreal, Canada

Filed Dec. 31, 1992, Ser. No. 996,476

Int. Cl.[5] G01N *15/00*

U.S. Cl. 73—73 **24 Claims**



1. A device for measuring the intensity of the capillary attraction developed at a surface of an absorbent body for use in a sanitary article, said device comprising:

a substantially closed cell capable of holding a certain quantity of liquid, said cell having an outer probing surface for contacting the absorbent body, said probing surface being in liquid-communication with an interior of said cell through an array of capillary passageways; and

a pressure sensor mounted to said cell for observing a pressure of liquid in said cell, whereby contact between said probing surface and the absorbent body gives rise to a capillary attraction acting on liquid in said array of capillary passageways, causing a pressure variation in said cell which is observed by said pressure sensor, said substantially closed cell having the capability of restraining liquid from freely egressing said probing surface under the influence of surface tension exerted thereon by the absorbent body, thereby allowing to measure the intensity of the capillary attraction on the surface of the absorbent body without effecting any significant transfer of liquid thereto.

5,361,628

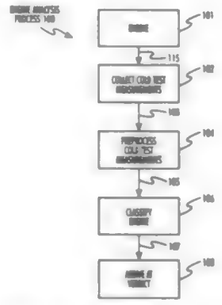
SYSTEM AND METHOD FOR PROCESSING TEST MEASUREMENTS COLLECTED FROM AN INTERNAL COMBUSTION ENGINE FOR DIAGNOSTIC PURPOSES

Kenneth A. Marko, Ann Arbor; Bruce D. Bryant, Royal Oak, and Nathan R. Soderborg, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 2, 1993, Ser. No. 100,794

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **20 Claims**



1. A method for cold testing an internal combustion engine comprising the steps of:

cranking the engine at a predetermined speed for a predetermined number of revolutions;

monitoring an operational parameter of the engine during said predetermined number of revolutions;

producing an electrical signal representing said operational parameter;

preprocessing said electrical signal to produce a principle component value vector signal representing said operational parameter; and

analyzing said principle component value vector signal to produce a classification signal indicating, based on the operational parameter, whether the engine is normal or faulty.

5,361,629

SINGLE SENSOR MISFIRE DETECTION APPARATUS AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Jay C. McCombie, Rochester Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 21, 1992, Ser. No. 934,057

Int. Cl.[5] G01M *15/00;* **F02M** *51/00;* **F02P** *5/145*

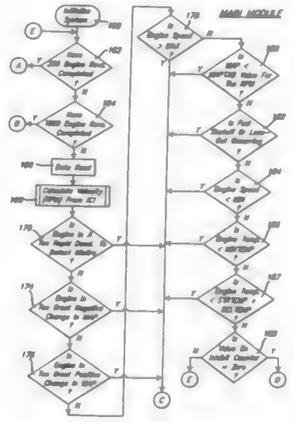
U.S. Cl. 73—117.3 **17 Claims**

1. An apparatus to detect misfire in individual cylinders of an internal combustion engine in a motor vehicle, comprising:

means for sensing rotation of a crankshaft;

means connected to said sensing means for calculating a crankshaft velocity based on the sensed rotation of the crankshaft;

means for adaptively compensating the calculated crankshaft velocity based on a predetermined cylinder by subtracting the calculated crankshaft velocity from a previous calculated crankshaft velocity and determining whether the compensated crankshaft velocity is within a predetermined crankshaft velocity range having an upper limit and a lower limit and counting a misfire if the compensated crankshaft velocity is within the upper limit and



lower limit of the predetermined crankshaft velocity range.

5,361,630

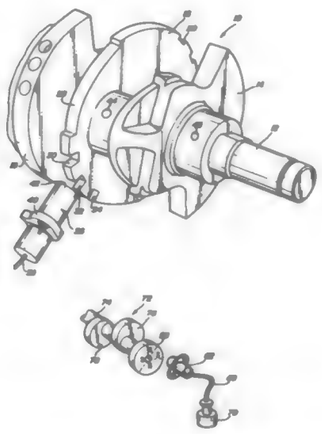
IGNITION SYSTEM SENSOR

James E. Kowalski, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 790,036, Nov. 12, 1991, abandoned. This application Aug. 5, 1993, Ser. No. 103,304

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **22 Claims**



8. A direct ignition system for an internal combustion engine comprising:

a crank shaft including a plurality of counter weights, at least one of said counter weights including two groups of patterned slots, each group including the same number of slots and all but one of the slots of one of the groups has substantially the same dimension, the one slot being a signature slot having a wider dimension than the remaining slots;

a first magnetic sensor positioned adjacent the at least one counter weight including the slots, said first magnetic sensor sending a signal indicative of the pattern of slots;

a cam shaft including a plurality of lobes for positioning predetermined valves of the engine;

a second magnetic sensor positioned relative to said cam shaft, said second magnetic sensor sending a signal indicative of the cam shaft position; and

wherein the first magnetic sensor signal is received by an engine controller to determine engine speed and piston positions and said second magnetic sensor signal is received by the engine controller to determine compression and exhaustion of the cylinders.

15. A direct ignition system for an internal combustion engine comprising:

a cam shaft having a first end and a second end, said cam shaft including means for positioning a plurality of valves;

a magnet rigidly connected to said first end of said cam shaft, said magnet including a series of only four alternating north and south poles, wherein an outer face of the magnet defines an area representation of the alternating north and south poles, said face being substantially perpendicular to the cam shaft, and wherein the area of the face of each of two adjacent north and south poles have substantially a first dimension and the area of the face of each of the other adjacent north and south poles have substantially a second dimension, said second dimension being larger than said first dimension; and

a magnetic sensor positioned adjacent said first end, wherein said magnetic sensor detects changing polarity of the magnet as the cam shaft rotates to determine cam shaft position.

5,361,631

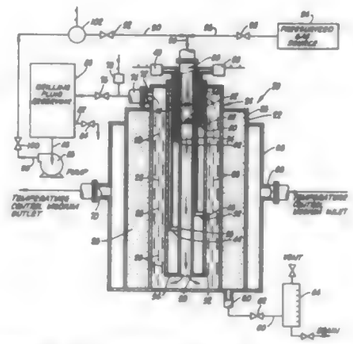
APPARATUS AND METHODS FOR DETERMINING THE SHEAR STRESS REQUIRED FOR REMOVING DRILLING FLUID DEPOSITS

Rick L. Covington; Kris M. Ravi; Shawn A. Heath, and Bryan Waugh, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 65,295, May 21, 1993, Pat. No. 5,309,761, which is a continuation of Ser. No. 939,235, Sep. 2, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 113,867

Int. Cl.[5] E21B *49/00*

U.S. Cl. 73—151 **22 Claims**



1. Apparatus for determining the minimum shear stress required for eroding drilling fluid deposits formed on the walls of a well bore containing a drilling fluid and penetrating one or more permeable formations comprising:

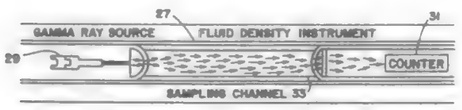
a container simulating a well bore;

means for simulating a permeable subterranean formation disposed within said container;

means for circulating a drilling fluid at selected indicated flow rates through said container and across said means simulating a permeable formation therewithin connected to said container;

means for measuring the pressure drop of said drilling fluid through said container connected thereto;
means for measuring the temperature of said drilling fluid circulating through said container connected thereto;
means for withdrawing samples of said drilling fluid whereby its properties can be determined connected to said container;
means for selectively applying pressure to said drilling fluid contained within said container when said drilling fluid is not being circulated connected to said container; and
means for measuring the thickness of drilling fluid deposits in said container connected thereto.

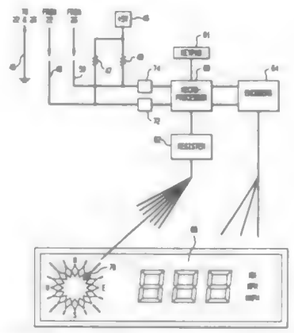
5,361,632
METHOD AND APPARATUS FOR DETERMINING MULTIPHASE HOLDUP FRACTIONS USING A GRADIOMANOMETER AND A DENSITOMETER
Charles F. Magnani, Placentia, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.
Filed Apr. 24, 1992, Ser. No. 874,325
Int. Cl.[5] E21B *49/08*
U.S. Cl. 73—153 **12 Claims**



1. A method for determining three phase holdup fractions for a fluid flowing in a wellbore comprising the steps of:
(a) lowering a logging tool into said wellbore to a selected depth, said logging tool further comprising a gradiomanometer having a differential pressure detector comprising two pressure sensors, and a nuclear densitometer having a beam source and a beam detector;
(b) measuring the differential pressure between said pressure sensors at said selected depth;
(c) determining an average density of the fluid, between said pressure sensors, from said measured differential pressure;
(d) measuring the attenuation of a beam propagating from said beam source through said fluid and to said beam detector at said selected depth; and
(e) calculating said holdup fractions for said fluid at said selected depth from said average density and said measured attenuation.

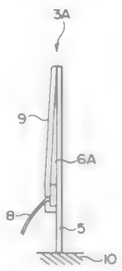
5,361,633
METHOD AND APPARATUS FOR WIND SPEED AND DIRECTION MEASUREMENT
William J. Peet, II, West Allenhurst, N.J., assignor to Peet Bros. Company, Inc., West Allenhurst, N.J.
Continuation-in-part of Ser. No. 701,795, May 17, 1991, Pat. No. 5,231,876. This application May 10, 1993, Ser. No. 59,838
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—170.08 **6 Claims**

1. In apparatus for remotely sensing fluid direction including a fluid direction sensor rotatably mounted on a stationary housing, a method of calibrating and operating the fluid direction sensor comprising the steps of:
(a) mounting the stationary housing on a fixed object;
(b) generating and transmitting a calibration mode signal that causes a data processor to recognize a next received direction indicating signal as a reference direction;
(c) aligning the fluid direction sensor towards the reference direction;
(d) causing the sensor to produce and transmit to the data processor a direction indicating signal having a respective reference value associated with the reference direction;
(e) processing the next received direction indicating signal in the processor, to determine a calibration factor;
(f) storing the calibration factor; and



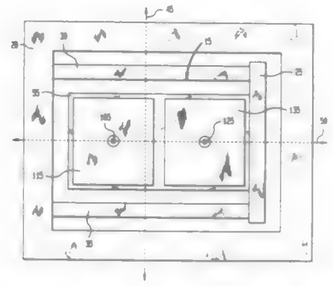
(g) determining the fluid direction based on the calibration factor and the direction indicating signal.

5,361,634
HEAT-SENSITIVE FLOW RATE SENSOR
Hiroyuki Uramachi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 26, 1993, Ser. No. 111,871
Claims priority, application Japan, Aug. 28, 1992, 4-229895
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.26 **4 Claims**



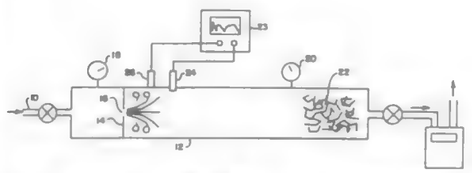
1. A heat-sensitive flow rate sensor, comprising:
a housing which provides a principal path of flow of a fluid;
a detecting tube disposed at a predetermined location inside said housing;
a measuring resistor unit mounted within said detecting tube by a first support means;
a fluid temperature sensor mounted within said detecting tube by a first support means;
resistors connected to said measuring resistor unit and said fluid temperature sensor so as to form a bridge circuit; and
means for reducing an amount of heat loss by conduction from said measuring resistor unit to said detecting tube through said first support means, said reducing means comprising said measuring resistor unit including a supporting substrate mounted on said first support means, a heat-sensitive resistor formed on said supporting substrate and having a current flow path defined by a trimming line pattern formed in said heat-sensitive resistor, the resistance value of said heat-sensitive resistor progressively and continuously decreasing in a direction towards said first support means.

5,361,635
MULTIPLE SERVO LOOP ACCELEROMETER WITH TUNNEL CURRENT SENSORS
James R. Woodruff, Redmond, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Apr. 12, 1993, Ser. No. 46,338
Int. Cl.[5] G01P *15/13*
U.S. Cl. 73—517 B **9 Claims**



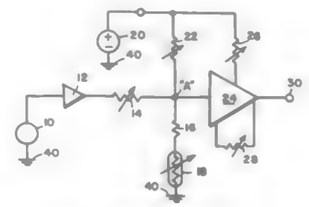
1. An accelerometer having a proof mass coupled to a frame with a highly compliant suspension, said accelerometer comprising:
first and second tunnel current sensors disposed on opposite sides of a normal axis which is normal to an input axis of said accelerometer and aligned on a further axis which is perpendicular to said normal axis and normal to said input axis, each of said first and second tunnel current [sensor]-sensors having a first sensing electrode disposed in substantially fixed relation to said frame and a second sensing electrode disposed on said proof mass in close proximity to said first sensing electrode;
a first pair of drive electrodes disposed proximate said first tunnel current sensor; and
a second pair of drive electrodes disposed proximate said second tunnel current sensor, said first and second pair of drive electrodes disposed on opposite sides of said normal axis to control undesired movement of said proof mass about said normal axis.

5,361,636
APPARATUS AND PROCESS FOR MEASURING THE MAGNITUDE OF LEAKS
Jerry E. Farstad, Columbus, and Stephen P. Cremean, Gahanna, both of Ohio, assignors to Columbia Gas of Ohio, Inc., Columbus, Ohio
Filed Sep. 23, 1992, Ser. No. 948,597
Int. Cl.[5] G01M *3/24*
U.S. Cl. 73—592 **20 Claims**



1. A process for measuring the fluid flow rate of a lead flowing through a valve when closed comprising,
providing a first pipe having fluid flowing in said pipe,
providing a valve which is open connected in fluid communication with said first pipe,
providing a second pipe to receive said fluid flowing from said first pipe through said valve,
closing said valve,
calculating a value of the magnitude of a leak of said fluid flowing into said second pipe through said closed valve solely by measuring one or both of (1) the vibrations of said second pipe caused by acoustic pressure waves in said fluid inside said second pipe or (2) the acoustic pressure waves in the fluid inside said second pipe, as leak measurement data.

5,361,637
TEMPERATURE COMPENSATION CIRCUITRY EMPLOYING A SINGLE TEMPERATURE COMPENSATION ELEMENT
Daniel R. Judd, Burlington, and Robert F. McLoughlin, North Andover, both of Mass., assignors to MKS Instruments, Inc., Andover, Mass.
Filed Nov. 6, 1992, Ser. No. 973,161
Int. Cl.[5] G01B *5/30*
U.S. Cl. 73—766 **17 Claims**

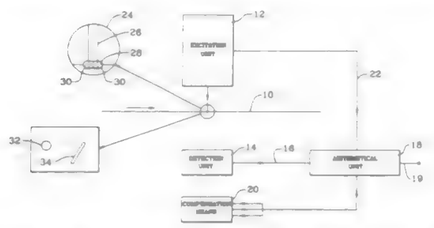


1. A compensation circuit comprising:
sensor means for sensing a measurable physical condition and for providing an output signal as a function of the measured physical condition;
gain control means for adjusting the amplitude of the output signal of said sensor means as a function of a predetermined gain;
offset control means for adjusting the offset of the output signal of said sensor means as a function of a predetermined offset; and
temperature compensation means, comprising a single temperature compensation element means, common to both said gain control means and said offset means, for adjusting both the gain of the gain control means and the offset of the offset control means in accordance with variations in the temperature of said sensor means so as to nullify the effect of temperature on said predetermined gain and the predetermined offset.

5,361,638
ARRANGEMENT FOR MEASURING MECHANICAL PROPERTIES OF A FOIL MATERIAL THROUGH USE OF AN EXCITATION UNIT THAT INCLUDES A LASER
Thorulf Pettersson, and Jorma Anttila, both of Täby, Sweden, assignors to STFI, Stockholm, Sweden
Continuation of Ser. No. 773,951, Jan. 3, 1992, abandoned. This application Nov. 10, 1993, Ser. No. 150,259
Claims priority, application Sweden, Mar. 30, 1990, 9001162-8
Int. Cl.[5] G01L *1/24*
U.S. Cl. 73—800 **20 Claims**

1. An arrangement for measuring mechanical properties of foil material surrounded by a gaseous atmosphere, comprising:
excitation means which includes a laser for influencing the material by generating local transient gas-pressure pulses in the gaseous atmosphere surrounding the material with the aid of electromagnetic radiation delivered by the laser via local plasma generation within at least one geometrically well-defined surface zone of the material, the surface zone being determined by a geometric extension of a surface area irradiated by the laser, the excitation means producing local transient stretching of the material in boundary regions of the surface zone without the material coming into contact with the excitation means, detection means for detecting changes in said at

least one surface zone of the material influenced by the excitation means without coming into contact with the material, said excitation means and said detection means being connected electrically to arithmetical means for registering and converting electrical signals derived from the excitation means and the



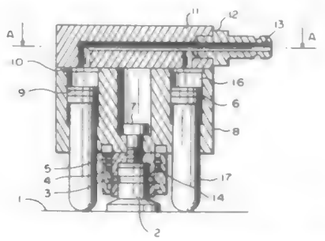
detection means, the electrical signals representing output values of a measuring process for establishing values of signals representative of properties to be measured, the transient stretching of the material being requisite to the measuring process.

5,361,639

TENSILE TESTING DEVICE

Helge Thorsen, Molybdenveien 8, N-4629 Kristiansand, Norway

Filed Sep. 16, 1993, Ser. No. 121,537
Claims priority, application Norway, Sep. 18, 1992, 923639
Int. Cl.[5] G01N *3/08, 19/04*
U.S. Cl. 73—827 **10 Claims**



1. A hydraulically driven, dynamic tensile testing device where a test sample attached to an underlying surface can be secured to the device and subjected to tensile forces in that the device is raised from the underlying surface, characterized in that the dynamic tensile testing device rests against said underlying surface on three or more legs (17) connected to interacting pistons (6).

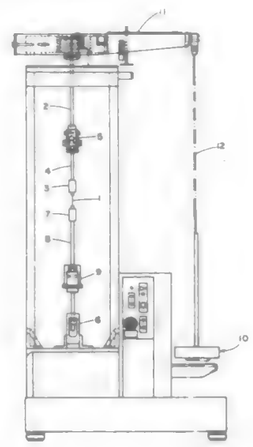
5,361,640

MATERIALS TESTING APPARATUS FOR REDUCED SAMPLE BENDING

Norman L. Carroll, 156 Merritt Dr., Butler, Pa. 16001, and Willard L. Pearce, 2315 Big Rock, Allison Park, Pa. 15101

Filed Sep. 1, 1993, Ser. No. 114,455
Int. Cl.[5] G01N *3/08, 3/20*
U.S. Cl. 73—831 **4 Claims**

1. In a materials testing apparatus wherein:
a first pull rod is removably fixed to a sample and removably fixed to an alignment coupling,
a second pull rod is removably fixed to the sample and removably fixed to a second alignment coupling,
the improvement comprising:
the first alignment coupling having means for free swiveling motion,
the second alignment coupling having means for free swiveling motion, means for changing the alignment and means for fixing alignment,



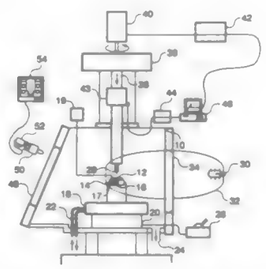
and an alignment checking fixture which is removably attached by a compression fitting means.

5,361,641

APPARATUS FOR PERFORMING HIGH-TEMPERATURE FIBER PUSH-OUT TESTING

Jeffrey I. Eldridge, Rocky River, and Ben T. Ebihara, Strongsville, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1992, Ser. No. 968,187
Int. Cl.[5] G01N *3/42*
U.S. Cl. 73—842 **15 Claims**



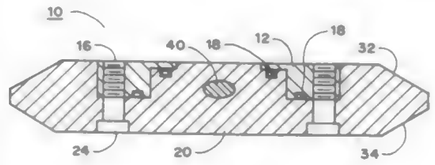
1. Apparatus for testing high temperature interfacial shear behavior of a fiber within a fiber reinforced composite, said apparatus comprising;
a chamber including a first and a second window for housing said fiber reinforced composite,
pumping means for evacuating air from said chamber thereby reducing oxidation of said fiber-reinforced composite,
heat sensing means in contact with said fiber-reinforced composite and connected to an outside display device thereby enabling remote temperature measurement during loading of said fiber-reinforced composite,
a microscope attached through a television camera to a television monitor facing said second window for maintaining magnified line of sight eye contact with said fiber-reinforced composite at a remote location thereby enabling positioning and monitoring of said fiber-reinforced composite before, during and after loading the fiber in said fiber-reinforced composite,
a translational stage supporting a sample support block oriented to allow unincumbered push out of the fiber, said translational stage being connected to a controller outside said chamber whereby remote movement of said translational stage is controlled thereby enabling remote positioning of said fiber-reinforced composite while maintaining said magnified line of sight eye contact,
a plate contiguous with said translational stage thereby retarding heating of said translational stage when heating said fiber-reinforced composite,
a radiant energy heating system including, a reflector bisected by said first window thereby producing a two-piece reflector having a focal point in each piece of said two piece reflector with said first window serving as a barrier to maintain a vacuum inside said chamber, said first window being positioned so that one piece of said two-piece reflector is outside of said chamber, said one piece outside of said chamber including a lamp located at the focal point of said reflector outside of said chamber, said lamp providing heat whereby focused heating is guided onto the focal point of another piece of the reflector inside the chamber thereby heating said fiber in said fiber-reinforced composite,
an indentor mounted above said fiber-reinforced composite for applying a load to said fiber within said fiber-reinforced composite,
a shaft connected to said indentor enabling control of vertical loading of said indentor,
a load cell attached to said shaft for measuring load applied to said fiber by converting load magnitudes to an electrical signal for interpretation by a computer attached outside of said chamber through a data acquisition device, and
a motor driven linear motion feedthrough attached to said load cell for applying constant speed displacement of said indentor thereby enabling push out testing of said fiber within said fiber-reinforced composite.

5,361,642

COLUMN-BASED STRESS GAUGE

Charles R. Welch, Vicksburg, Miss., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1993, Ser. No. 100,948
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.632 **13 Claims**



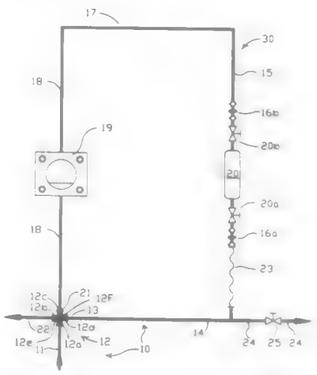
1. A free field stress gauge for use in stress fields in a sensed medium up to and including the ten kilobar range, comprising:
a first disc having a solid central sensing column section in direct contact with the sensed medium, an internal passage for allowing sensing means to connect with strain gauge sensors mounted to the first disc, an annular void space between the central sensing column and an outer annular section whereby the annular void allows for the mating of a complimentary second disc, the sensing column has surfaces for placement of the strain gauge sensors;
the second disc and the first disc have at least two mutual recesses within their structures for placement of a water-tight sealing means, the second disc is fastened to the first disc by fastening means; and
detection means for sensing any stress applied to the free field stress gauge by measuring the strain experienced by the strain gauge sensors.

5,361,643

LPG SAMPLING SYSTEM

Charles R. Boyd, Victoria, and John D. Anderson, Lake Jackson, both of Tex., assignors to Texas Sampling Co., Victoria, Tex.

Filed Jul. 30, 1993, Ser. No. 100,129
Int. Cl.[5] G01N *1/10*
U.S. Cl. 73—863.71 **12 Claims**



1. A sampling system for collecting a sample in a sample cylinder having valves on both ends, comprising:
an inlet line;
a return line;
a four-way valve having a first flow channel and a second flow channel;
level indication means for the direct indication of a level in the sample cylinder;
loop means for providing fluid communication between the four-way valve, the sample cylinder and the level indication means, said loop means having an inlet point and an outlet point;
venting means to vent from the loop means;
wherein the four-way valve is selectively positionable between a first position, wherein the first flow channel provides fluid communication between the inlet line and the return line and the second flow channel provides fluid communication between the inlet point of the loop means and the outlet point of the loop means, and a second position, wherein the first flow channel provides fluid communication between the inlet line and the inlet point of the loop means and the second flow channel provides fluid communication between the outlet point of the loop means and the return line.

5,361,644

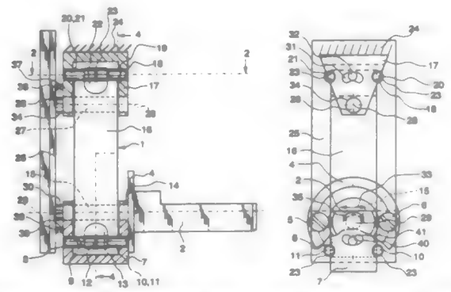
COMBINATION CONTROL GRIP FOR TWO-HAND OPERATION OR GUIDED-SURFACE INDUSTRIAL TRUCKS

Helmut Nedele, Metzingen, and Hartwig Schnabel, Stuttgart, both of Germany, assignors to Wagner Fordertechnik GmbH & Co. KG, Reutlingen, Germany

Continuation-in-part of Ser. No. 866,196, Apr. 9, 1992, abandoned. This application May 5, 1993, Ser. No. 57,325
Claims priority, application Germany, Apr. 10, 1991, 4111675; May 12, 1992, 4215547
Int. Cl.[5] G05G *9/04*
U.S. Cl. 74—491 **18 Claims**

1. A combination control grip for two-handed operation of guided-surface industrial trucks, particularly for aisle forklifts,

comprising: a two-hinge rotary switch including a first jointed end rigidly attached to a housing and an opposite freely hanging second jointed end; a combination control grip member connected to said freely hanging end of said two-hinge rotary switch, said combination control grip member being mounted for movement of said two-hinge rotary switch for a first motion type wherein said two-hinge rotary switch is moved about said first jointed end and a second motion type, wherein said two-hinge rotary switch moves relative to said second jointed



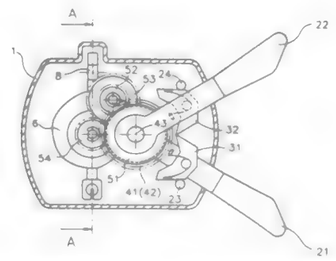
end, said first motion type and said second motion type being superimposable said combination control grip member being connected to spring means for pretensioning said combination control grip member against torsion; first signal-generating means connected to said two-hinge rotary switch for generating a control signal upon detecting said first motion type; and second signal-generation means, connected to said two-hinge rotary switch, for generating a control signal upon detecting said second motion type.

5,361,645

SHIFT LEVER APPARATUS FOR USE IN BICYCLE

Chan-Hua Feng, and Jiann-Chyun Kang, both of Hsinchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Aug. 24, 1993, Ser. No. 110,888
Int. Cl.[5] F16C *1/10*; G05G *11/00*
U.S. Cl. 74—502.2 **4 Claims**



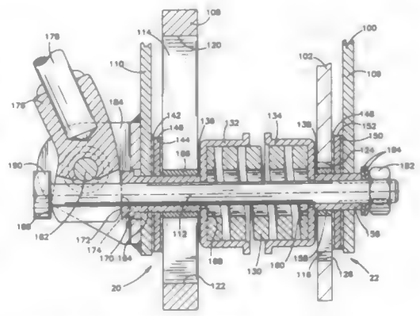
1. A shift lever apparatus for use in bicycle, comprising:
a main shaft;
a first ratchet wheel mounted on said main shaft, said first rachet wheel having a plurality of first bevel ratchets around its inner periphery;
a second ratchet wheel also mounted on said main shaft, said second ratchet wheel having a plurality of second bevel ratchets around its inner periphery said second bevel ratchets having similarly shaped but reversed bevels relative to said first bevel ratchets;
first and second switch levers mounted on said shaft in a reciprocally swinging manner for respectively causing said first and second ratchet wheels to remove said first and second switch levers being initially disposed in a first and second initial switch lever positions, respectively;
first and second return springs for causing said first and second switch levers, respectively, to return to their initial positions;
first and second ratchet pawls mounted on first and second switch levers, receptively, in a swinging manner for engaging with said bevel ratchets of said first and second ratchet wheels respectively;
first and second limiting members for causing said first and second ratchet pawls to be disengaged from said bevel ratchets of first and second ratchet wheels, respectively, when said first and second switch levers being returned to their initial positions;
a cam having an arcuate profile around its periphery;
a follower driven by said cam and connected to a shift cable of the shift lever apparatus, said follower being provided to convert an angular displacement of said cam into a linear displacement of said shift cable; and
a driven gear set connected to both said first and second ratchet wheels and said cam, said driven gear set being driven by said first and second ratchet wheels in order to cause said cam to rotate.

5,361,646

LOCKING MECHANISM

Frederick D. Venable, Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Division of Ser. No. 41,729, Apr. 1, 1993. This application Oct. 20, 1993, Ser. No. 139,427
Int. Cl.[5] G05G *5/06*
U.S. Cl. 74—531 **20 Claims**



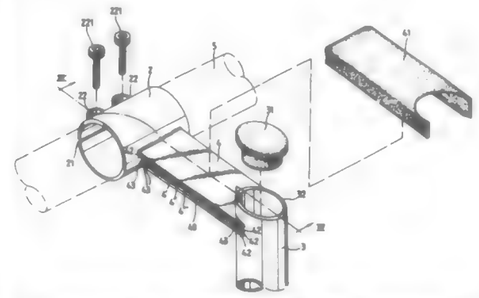
1. A locking mechanism comprising:
means for locking a first member in any one of an infinite number of positions relative to a second member;
resilient means for urging the first and second members toward each other to apply a friction force between the first and second members to thereby prevent relative movement between the first and second members;
a first actuator member for releasing the friction force between the first and second members, said first actuator member having a first position in which the first and second members are prevented from moving relative to each other and a second position in which the first and second members are positionable relative to each other; and
means for moving said first actuator member from its first position to its second position to release the friction force between the first and second members;
said resilient means including means for moving said first actuator member from its second position to its first position to prevent relative movement between the first and second members.

5,361,647

BICYCLE HEAD TUBE ASSEMBLY

Yen-Pin Lai, No. 199, Wu Tung South Road, Pu Hsin Hsiang, Changhwa,

Filed Oct. 4, 1993, Ser. No. 130,695
Int. Cl.[5] B62K *21/14*
U.S. Cl. 74—551.2 **3 Claims**



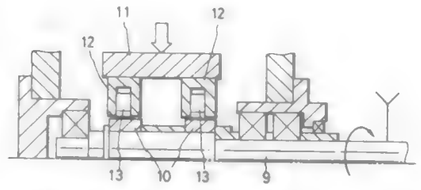
1. A bicycle head tube assembly comprising a horizontal lug for holding a handlebar, a head tube, and a connecting device connected between said horizontal lug and said head tube; said connecting device including a stack of resilient steel plates, said stack of resilient steel plates including a top steel plate and a plurality of suspension steel plates arranged below said top steel plate, said top steel plate having one end welded to said horizontal lug and another end welded to said head tube; said suspension steel plates each having an attached first end and a free second end with said first end welded to one of said horizontal lug and said head tube and said second end unattached to and arranged at a distance from another one of said horizontal lug and said head tube, provided that at least one of said first ends is welded to said horizontal lug and another of said first ends is welded to said head tube.

5,361,648

ROLLING-SLIDING MECHANICAL MEMBER

Yasuo Murakami; Yasuo Utsumi; Shoji Noguchi, all of Kanagawa; Yasuyuki Shimasaki, Gunma; Hiroshi Iwasa, and Satoshi Kadokawa, both of Kanagawa, all of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 43,214
Claims priority, application Japan, Apr. 7, 1992, 4-113196; Oct. 21, 1992, 4-305847
Int. Cl.[5] F16H *53/06*
U.S. Cl. 74—569 **2 Claims**



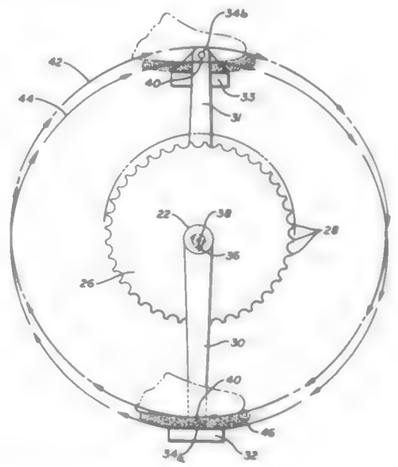
1. A rolling/sliding member for use in at least one of rolling and sliding contacts with other parts, having a surface and a surface layer being 0 to 50 μm deep from the surface, the surface having an average wave length of surface roughness up to 25 μm, and the surface layer having a residual compressive stress of 50 to 110 kgf/mm^2, and a hardness of Hv830 to Hv960, and a microstructure including residual austenite more than 7 volume %.

5,361,649

BICYCLE CRANK AND PEDAL ASSEMBLY

Edwin J. Slocum, Jr., Mammoth Lakes, Calif., assignor to High Sierra Cycle Center, Mammoth Lakes, Calif.

Continuation-in-part of Ser. No. 916,902, Jul. 20, 1992, abandoned. This application Mar. 28, 1994, Ser. No. 219,612
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.2 **17 Claims**

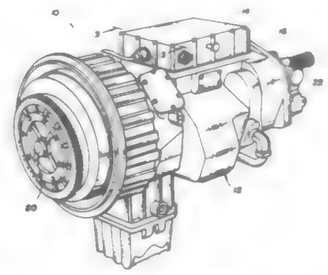


1. A bicycle crank and pedal assembly for a rider having one leg shorter than the other, the assembly comprising:
an axle rotatably mounted on a bicycle frame and common axis extending therethrough;
a first crank arm rotatable about the common axis and having a first end mounted to a first end of the axle and extending generally perpendicularly thereto to a second free end;
a first pedal rotatably mounted to the second free end of the first crank arm by a first pedal spindle which defines a first pedal axis of rotation;
a first upper surface for supporting a first foot of the rider over the first pedal, the first foot-supporting upper surface being vertically offset from the first pedal axis of rotation;
a second crank arm rotatable about the common axis and having a first end mounted to a second end of the axle and extending generally perpendicularly thereto in an opposite direction relative to the first crank arm, to a second free end;
a second pedal rotatably mounted to the second free end of the second crank arm by a second pedal spindle which defines a second pedal axis of rotation;
a second upper surface for supporting a second foot of the rider over the second pedal; and
a chainwheel eccentrically fixed to the drive axle and rotatable about the common axis, the center of the chainwheel being offset from the common axis by a distance equivalent to r'−r, wherein r' is determined by the formula,

$$r' = \frac{r(R + 1/2(O_1 + O_2))}{R}$$

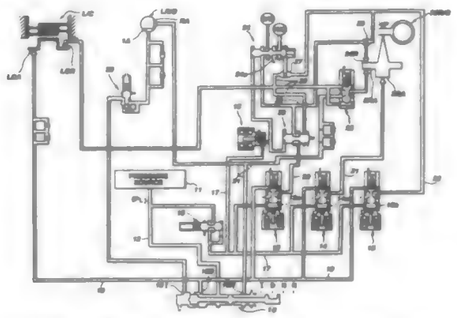
wherein "r"=radius of the chainwheel, "R" crank arm length measured from the common axis to the first pedal axis of rotation, "O_1" a vertical offset of the first foot-supporting upper surface from the first pedal axis of rotation, and "O_2"=a vertical offset of the second foot-supporting upper surface from the second pedal axis of rotation.

5,361,650
TRANSMISSION HAVING EXTERNALLY MOUNTED ELECTRONIC CONTROL UNIT
Donald L. Klecker, Watertown, Wis., and Bruce Vincent, Kalamazoo, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 23, 1993, Ser. No. 21,024
Int. Cl.[5] F16H *57/02*
U.S. Cl. 74—606 R **14 Claims**



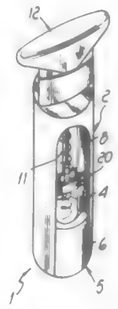
1. A transmission assembly comprising:
a transmission adapted to selectively establish a ratio between the speed of rotation of an input shaft and the speed of rotation of an output shaft;
a cover mounted to the housing of the transmission;
a circuit board for controlling the transmission, the circuit board being substantially encased in a potting material to form a casing around the circuit board; and
fastening means for detachably fastening the casing to the cover.

5,361,651
SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Tatsuo Wakahara, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Aug. 20, 1992, Ser. No. 932,555
Claims priority, application Japan, Sep. 4, 1991, 3-224294
Int. Cl.[5] F16H *61/06*
U.S. Cl. 477—130 **6 Claims**



1. In an automotive vehicle having an automatic transmission:
a pressure source;
a first friction element undergoing a first pressure;
a second friction element undergoing a second pressure;
means for making said first pressure act on said second friction element in such a direction as to disengage said second friction element;
a first passage fluidly connecting said pressure source to said first friction element;
a second passage fluidly connecting said pressure source to said second friction element;
a third passage fluidly connecting said making means to said first passage;
a first control means for controlling said first pressure; and
a second control means for controlling said second pressure;
wherein the automatic transmission undergoes a shift by engaging said first friction element by said first pressure and disengaging said second friction element by a decrease of said second pressure.

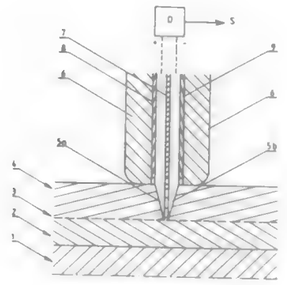
5,361,652
CORKSCREW
Diego Andina, Via Sale, 25064 Gussago Brescia, Italy
Filed Jun. 25, 1993, Ser. No. 81,880
Claims priority, application Italy, Feb. 2, 1993, MI93 U 000077
Int. Cl.[5] B67B *7/18*
U.S. Cl. 81—3.29 **11 Claims**



1. Corkscrew comprising a body (2–5) having a cylindrical outer shell (3), an end part (6) defined by said body (2–5) for engagement with a bottle neck (7), a guiding inlet (10) defined by said outer shell (3) opposite said end part (6), guide means (8) located within said outer shell (3) and extending longitudinally between said guiding inlet (10) and said end part (6), a helical screw (11) extending through said guiding inlet (10) and into said outer shell (3) parallel to said guide means (8), a handle (12) connected to said helical screw (11) and located externally of said guiding inlet (10), a guiding slider (20) located within said outer shell (3), engagement means (21) located peripherally on said guiding slider (20) and slideably engaging said guide means (8), an axial pin (24) provided centrally on said guiding slider (20) and being surrounded by a portion of said helical screw (11), and a guiding hole (23) provided eccentrically on said guiding slider (20) with respect to said axial pin (24) and being penetrated by said helical screw (11).

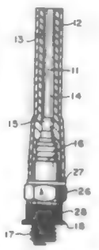
5,361,653
STRIPPER FOR ELEMENTS MADE OF ELECTRIC-CONDUCTING MATERIAL AND COVERED WITH A PROTECTIVE OR INSULATING ELEMENT SUCH AS A FILM, A SHEATH OR SIMILAR
Louis Pradin, Saint Aubin de Médoc, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France
Filed Jul. 17, 1992, Ser. No. 914,349
Claims priority, application France, Jul. 19, 1991, 91 09398
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.51 **20 Claims**

1. A stripper for parts of electrically conductive material with a protective covering, comprising:
a cutting device of electrically conductive material;
a detecting device of electrically conductive material placed side-by-side with and at short distance from said cutting device, said detecting device being configured as a cutting instrument;
device support means, coupled to said cutting device and said detecting device, for electrically insulating said cutting device from said detecting device and for maintaining said devices in relatively fixed and parallel positions;



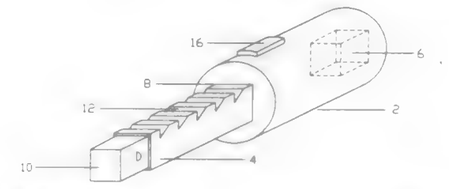
operating means, coupled to said cutting device and said detecting device, for moving said devices as a unit relative to the protective covering simultaneously and in parallel; and
detecting means, coupled to said cutting device and said detecting device, for applying a potential difference to said devices and for detecting a current generated by a micro-contact electrically coupling said devices.

5,361,654
GRIPPING HAND TOOL
Alex Rasipovits, 4008 Providence Dr., St. Charles, Mo. 63304-5545
Filed Sep. 27, 1993, Ser. No. 125,697
Int. Cl.[5] B25B *13/52*
U.S. Cl. 81—64 **6 Claims**



1. A tool for installation and removal of an elongated member having external threads extending from an end through at least a part of its length, said threads engaging a complimentarily internally threaded member, said tool comprising a hollow tube of stiffly resiliently expansible material, open at both ends, and a liner in said tube fixed against movement relative to said tube, said liner being resiliently compressible, said liner having an axially extending passage, said passage opening at both ends of said tube and being of a transversely cross-sectional size sufficiently less than a portion of said elongated threaded member beyond said internally threaded member-engaging external threads to grip said portion when said portion is forced into said passage from either end of said tube, the forcing of said portion into said passage compressing said liner and causing said tube to expand through at least a part of the length of said portion within said tube.

5,361,655
EXTENSIBLE TORQUE ROD
Alex S. Fowlkes, 4637 W. Bushnell Rd., Milton, Fla. 32583
Filed Aug. 30, 1993, Ser. No. 112,963
Int. Cl.[5] B25G *1/04*
U.S. Cl. 81—177.2 **5 Claims**



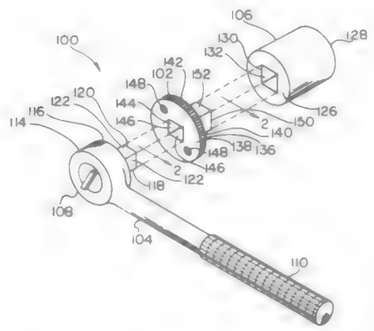
1. In an adjustable extension or torque bar comprising: (a) an elongated sleeve having a multi-sided cross-sectional bore therein, said elongated sleeve having a rear end adapted for communication with a driving tool and a front end for receipt of a multi-sided rod, (b) a multi-sided rod having a cross-sectional area complimentary with the multi-sided bore of said sleeve for slidable and non rotatable engagement within said sleeve, said multi-sided rod having a rear end for communication with the front end of said elongated sleeve and a front end adapted for communication with a driven tool, said multi-sided rod having a plurality of notches, (c) a pawl having at least one tooth configured to conform to the notches on said multi-sided rod and (d) means for engaging and disengaging a tooth of said pawl with a notch on said multi-sided rod thereby permitting one to extend and contract the multi-sided rod within said sleeve, the improvement for facilitating the adjustment of the rod vis-a-vis the elongated sleeve without inadvertent separation of said rod from said sleeve which comprises:
said plurality of notches having a frontal edge and a rear edge along at least one side of said multi-sided rod wherein the rear edge of the notches has an acute angular slope α to the longitudinal axis of the multi-sided rod and the frontal edge has a slope greater than the acute angular slope of the rear edge of said notches but the angle of said frontal edge being not substantially greater than ninety degrees to the longitudinal axis of the multi-sided rod and further wherein said multi-sided rod has at least one notch at a rear section which has a downward and rearward projection on the said at least one notch rear of the notch and said pawl having an indentation at an upper and rear end of said tooth having a forward slope for engagement with the downward and rearward projection of the notch at said rearward section of said multi-sided rod.

5,361,656
STARR SOCKET ADAPTER
Robert W. Starr, 40 Malcolm St., Friday Harbor, Wash. 98250
Filed Mar. 29, 1993, Ser. No. 38,913
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—180.1 **2 Claims**

1. An adapter for a socket wrench wherein the socket wrench includes a wrench arm and a plurality of sockets, the wrench arm including an upright fitting of a predetermined geometry, a first portion of the plurality of sockets each including a socket cavity having a predetermined geometry that is constructed to mate with the upright fitting of the wrench arm and a second portion of the plurality of sockets each including a socket cavity having a predetermined geometry that does not mate with the upright fitting of the wrench arm, said adapter being provided for interfacing the wrench arm with the socket cavities of the first portion of the plurality of sockets, said adapter comprising:
A rim portion, said rim portion being a disk-shaped member having a support seating side, a fitting support side, and a gripping surface intermediate said support seating side and said fitting support side;

An adapter cavity positioned on said support seating side of said rim portion extending through said rim portion and fitting support side, said adapter cavity being constructed with a geometry selected to mate with the upright fitting of the wrench arm so that the upright fitting is received in the adapter cavity;

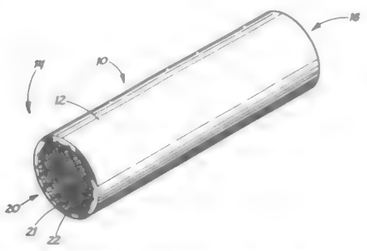
An adapter fitting positioned on said fitting support side and extending outward therefrom, said adapter fitting being constructed with a geometry selected to mate with the



socket cavities of the first portion of the plurality of sockets so that said adapter fitting is received in the socket cavity of the second plurality of sockets to thereby interface the wrench arm with said second plurality of sockets, and

wherein said adapter cavity is constructed to extend through said rim portion of said adapter and through said adapter fitting so that when said socket adapter is positioned intermediate said socket and said wrench arm the displacement of said socket from said wrench arm is minimized.

5,361,657
DRIVE SOCKET
Elliott P. Terry, Rte. 7, Box 192, Danville, Va. 24540
Continuation of Ser. No. 745,322, Aug. 15, 1991, abandoned. This application May 10, 1993, Ser. No. 59,504
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—186 **16 Claims**



1. A drive socket for imparting torque loads to a fastener element, comprising:

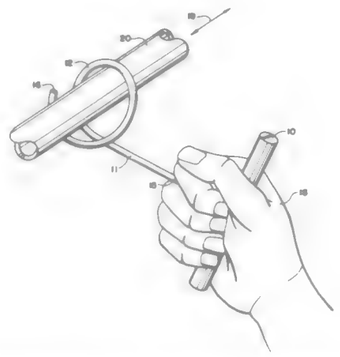
a body;

a cavity within said body having an inner curvilinear working surface and opening to a distal end of said body for receiving said fastener element; and

a plurality of protuberances spaced circumferentially around and longitudinally along said entire curvilinear surface, each protuberance extending obliquely from all points on its periphery toward the central axis of said cavity, for engaging the circumference of said fastener element,

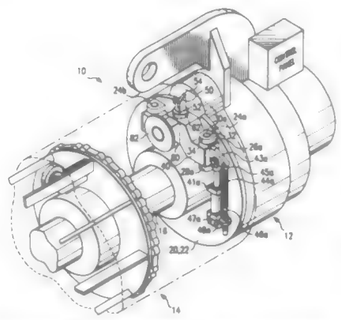
said protuberances defining grooves extending longitudinally along and circumferentially around said curvilinear working surface, said longitudinal and circumferential grooves forming surfaces of adjacent protuberances that extend obliquely inwardly in opposing directions, with each successive circumferential groove having a reduced radius in a direction toward a proximal end of said body, whereby said socket securely grips said fastener element to facilitate rotary displacement.

5,361,658
HOSE GUIDE TOOL
James K. Murphy, 2245 Botany St., Middleburg, Fla. 32068
Filed Oct. 4, 1993, Ser. No. 130,864
Int. Cl.[5] B25B *33/00;* **B65G** *7/12*
U.S. Cl. 81—487 **3 Claims**



1. A stainless steel hand tool adapted to guide a rubber hose being rapidly wound onto a roll, said tool having a general T-shape with the cross bar of the T being a short length of a large diameter rod and functioning as a handle capable of being gripped by the hand of the user, and the stem of the T being a small diameter rod having a proximate end rigidly connected at a right angle to said cross bar and formed into a helix at a distance spaced apart from said handle, said helix having 1¼–1½ turns at a diameter about 1¼ times the diameter of said hose and at a pitch of 1–1½ times the diameter of said hose.

5,361,659
APPARATUS AND METHOD FOR COUNTERBORING A PIPE
Beverley F. Hanson, Sherwood Park, Canada, assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.
Filed Apr. 16, 1993, Ser. No. 48,457
Int. Cl.[5] B23B *3/26, 5/16*
U.S. Cl. 82—113 **21 Claims**



1. An apparatus for machining a counterbore in a pipe, the pipe having an inside surface, a longitudinal axis, an axial end face with a radial extent and an outside surface, the apparatus comprising:

(a) an expander unit adapted for being secured against the inside surface of the pipe;

(b) a shaft extending from the expander unit that has a center axis coaxial with the longitudinal axis of the pipe when the expander unit is secured against the inside surface of the pipe;

(c) a flywheel rotatably and slidably mounted on the shaft, the flywheel having a rotational axis coaxial with the center axis of the shaft, and a front side axially facing the expander unit, the flywheel being slidable in an axial direction along the shaft over a distance at least the length of the counterbore to be machined in the pipe, the flywheel being simultaneously slidable and rotatable on the shaft;

(d) a pair of guide structures mounted on the flywheel parallel to each other and each having a first end and a second end each connected to the flywheel, and a guide rod section extending from the first end to the second end in a plane parallel to the front side of the flywheel and set off axially from the front side of the flywheel such that there is a clearance between the guide rod sections and the front side of the flywheel, each guide structure being located substantially the same distance from the center axis of the flywheel;

(e) a frame defining a pair of guide channels therein that are slidably disposed on the guide rod sections of the pair of guide structures such that said frame is linearly slidable in a radial direction relative to the center axis of the flywheel along the guide rod sections;

(f) a cutting tool having a proximal end adjustably mounted to the frame and a distal end that is radially beyond the pair of guide structures and is extendable radially beyond the radially outermost point of the frame;

(g) a first guide wheel rotatably mounted to the frame and situated between the cutting tool and the expander unit, the guide wheel having an axis of rotation parallel to that of the flywheel, the radially outermost point of the guide wheel being radially outward of the pair of guide structures and radially outward of the frame such that the frame and the pair of guide structures can travel with the guide wheel into the interior of the pipe during counterboring; and

(h) a pair of actuators each having a frame end connected to the frame and a flywheel end connected to the flywheel, the pair of actuators oriented and located such that the actuators can move the frame along the guide rod sections of the pair of guide structures, the pair of actuators located inward of the cutting tool.

5,361,660
METHOD OF AND APPARATUS FOR FEEDING OIL TO A TURRET PUNCH PRESS
Takayoshi Tsubota, Kobe, Japan, assignor to Tsubota Technica Co., Ltd., Kobe, Japan
Filed Mar. 1, 1993, Ser. No. 24,318
Claims priority, application Japan, Apr. 15, 1992, 4-122618
Int. Cl.[5] B26D *7/08;* **B26F** *1/04*
U.S. Cl. 83—55 **19 Claims**

1. A method of feeding oil to a punch press, comprising the steps of:

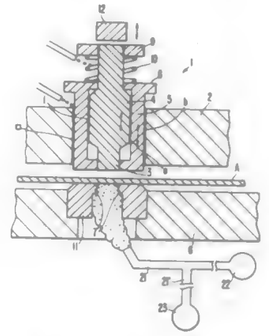
fixing in place a cylindrical lower tool member having a vertical opening formed therethrough;

positioning an upper tool member above said lower tool member;

vertically slidably supporting said upper tool member with a supporting member disposed above said lower tool member in such a manner that said upper tool member can be lowered to fit into said opening formed through said lower tool member;

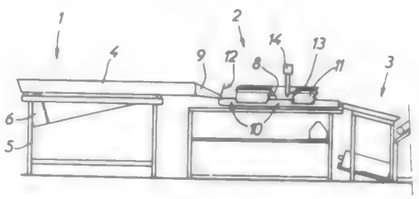
feeding lubricating oil to contact surfaces at which sliding contact occurs between said upper tool member and said supporting member;

positioning a material on an upper face of said lower tool member such that said material closes said opening from above; and



feeding atomized cutting oil upwardly from below into said opening formed through said lower tool member, such that, when said opening is closed from above by the material or the upper tool member, the atomized cutting oil is prevented from escaping upwardly from said opening.

5,361,661
MACHINE FOR CONTINUOUSLY CUTTING OPEN BAGS OF PLASMA
Annick Faucompre; Jean-Pierre Gigout, both of Marcq-en-Baroeul; Jacques Millard, Noyelles les Seclin, and Marc Leprince, Sainghin-en-Weppes, all of France, assignors to Association pour l'Essor de la Transfusion Sanguine Dans la Region du Nord, Lille, France
Filed Dec. 4, 1992, Ser. No. 984,117
Claims priority, application France, Dec. 5, 1991, 91 15077
Int. Cl.[5] B26D *7/06;* **B26F** *1/26*
U.S. Cl. 83—177 **4 Claims**



1. Machine for continuously cutting open bags of deep frozen plasma, each bag having a longitudinal axis, said machine comprising a feed table, a cutting area having a cutting means for cutting the deep frozen bags of plasma on a longitudinal median portion of said bag in the direction of said longitudinal axis into two portions and a collection area for the cut bags to be separated from the plasma, said cutting means including at least one fixed position cutting nozzle emitting a cutting jet of water under very high pressure, said cutting area having a length and further including a conveyor means for continuously travelling said deep frozen bags of plasma one after another under said at least one cutting nozzle, said conveyor means including a chassis, a first horizontal roller rotatably mounted at one end of said chassis, a second horizontal roller mounted on the other end of said chassis, two side-by-side endless belts having a small gap therebetween located vertically in relation to said at least one cutting nozzle mounted around said first and second horizontal rollers, means for trav-

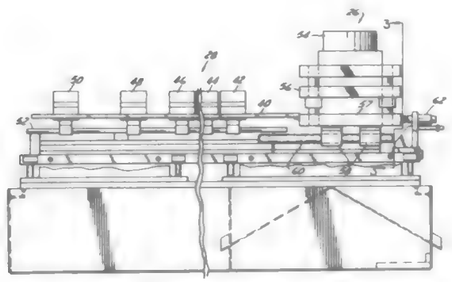
elling said endless belts over said first and second horizontal rollers, and paired inclined rollers on said chassis adjacent said ends, said endless belts being oriented by said inclined rollers to form in relation to one another a very open V-shaped profile having a tip centered on said gap, said very open V-shaped profile being formed over a substantial portion of said length of said cutting area, said feed table comprising at least one shaking table having a downstream end, at least one distribution chute mounted at said downstream end and terminating at said one end of said chassis for feeding said bags to said conveyor means, deflectors mounted at said downstream end of said at least one shaking table adjacent said at least one distribution chute for orienting said bags of deep frozen plasma as said bags leave said at least one shaking table and enter said at least one distribution chute so that said longitudinal axis of each said bag is aligned with said conveyor means, and a feed flap at an exit of said at least one distribution chute for releasing each said bag regularly.

5,361,662

MOVING HYDRAULIC PRESS

Roger Levy, Bloomfield Hills, Mich., assignor to Tishken Products Co., Oak Park, Mich.

Continuation of Ser. No. 974,141, Nov. 10, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 208,260
Int. Cl.[5] B26D *1/60*
U.S. Cl. 83—308 **12 Claims**



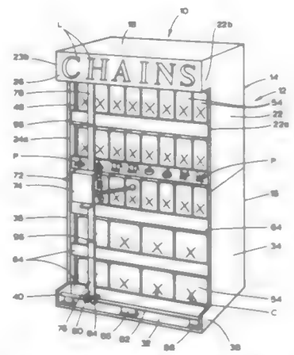
1. A hydraulic press for a moving workpiece comprising:
a die surface movable along an axis normal to a path of movement of a moving workpiece and carrying at least one cutting element, the cutting element having means for cutting an aperture in the moving workpiece;
a base positioned parallel to and aligned with the die surface such that the moving workpiece moves between the base and the die surface;
a plurality of independently selectively actuable pick-ups distributed along the path of movement of the moving workpiece with each pick-up having a piston operably engaging the workpiece by entry into the aperture of the moving workpiece and the pick-ups being slidably mounted for movement with the workpiece when engaged therewith and the die surface being connected to at least one of the pickups for movement therewith;
control means for independently selectively actuating at least two of the pick-ups to engage the workpiece; and
press actuating means for moving the die surface along the axis and toward the base to form the aperture in the moving workpiece when the piston of the at least one of the pick-ups is engaged with the moving workpiece.

5,361,663

CHAIN CUTTER

Richard D. Hayes, Edwardsville; Robert Schroeder; Dale A. Thorstens, both of Rockford, and Larry L. Schumacher, Machesney Park, all of Ill., assignors to Laclede Chain Manufacturing Company, St. Louis, Mo.

Division of Ser. No. 937,520, Aug. 28, 1992, Pat. No. 5,284,078, which is a continuation-in-part of Ser. No. 723,931, Jul. 1, 1991, Pat. No. 5,165,316. This application Nov. 2, 1993, Ser. No. 146,702
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B26D *7/26*
U.S. Cl. 83—522.19 **10 Claims**



1. A chain cutting assembly for attachment to a chain merchandising apparatus; said chain cutting assembly comprising:
a. a cutter head portion;
b. a set of bars upon which said cutter head portion is moveably fixed, at least one of said bars being fixed in relation to the chain merchandising apparatus so that said cutter head portion is selectively adjustable vertically and horizontally in relation to the merchandising apparatus for permitting a user to position said chain cutter head portion substantially adjacent to a preselected chain container on the chain merchandising apparatus;
c. counterbalance means connected to said cutter head portion to facilitate vertical movement thereof for safe, easy selective vertical adjustment of said cutter head portion;
d. brake means to prevent free-fall of said cutter head portion should said counterbalance means become disconnected therefrom;
e. wherein said brake means includes a cam mechanism connected to said cutter head portion in such manner as to be moveable simultaneously therewith and capable of selectively releasable automatic braking interaction with at least one of said bars upon which said cutter head portion is moveably fixed.

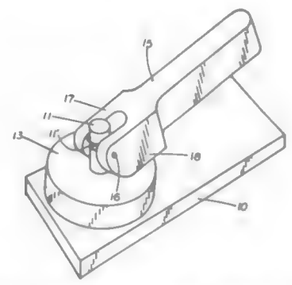
5,361,664

STOMA WAFER CUTTING APPARATUS

Andrew R. Desmarais, 4 Maple St., Kennebunkport, Me. 04046

Filed Mar. 5, 1993, Ser. No. 27,108
Int. Cl.[5] B26D *1/44*
U.S. Cl. 83—628 **6 Claims**

1. A stoma wafer cutting apparatus comprising:
a base,
a stoma wafer centering projection extending upwardly from the top surface of the base for receiving a stoma wafer having a centering aperture therein and requiring a larger diameter aperture to be cut therein, said projection having a side slot extending inwardly from its upper end for receiving a readily removable operating lever,
an operating lever having spaced downwardly-extending eccentric portions and a cross pin extending between the spaced eccentric portions and adapted to be assembled/-disassembled into the side slot of the projection without removing any other part of said apparatus,
a cutting unit having a central opening therethrough slideable onto the upwardly-extending wafer centering projection with said side slot of said projection above an upper surface of said cutting unit,



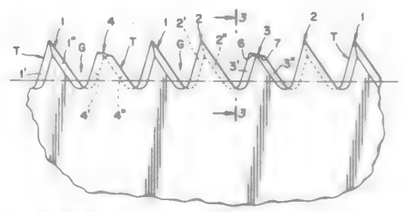
said eccentric portions of said operating lever having rounded, forward and eccentric faces adapted to engage with the upper surface of the cutting unit to effect cutting pressure for cutting of an enlarged aperture in the stoma wafer by lowering of the operating lever,
and said lever being easily disassembled from said side slot in said centering projection upon raising of the operating lever to permit removal of said cutting unit and said wafer from said centering projection.

5,361,665

SAW BLADE

Yngve Sonefors, Bollnäs, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Continuation of Ser. No. 838,883, Feb. 21, 1992, abandoned. This application May 10, 1993, Ser. No. 58,670
Claims priority, application Sweden, Sep. 6, 1990, 9002836-6
Int. Cl.[5] B27B *33/02*
U.S. Cl. 83—848 **5 Claims**



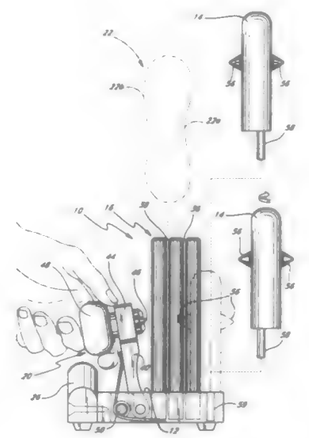
1. Saw blade for sawing wood, said blade having right and left sides and comprising:
a plurality of teeth consisting of scratcher teeth and shaving teeth,
said scratcher teeth arranged in groups, each group comprising an even number of scratcher teeth, each scratcher tooth having a narrow point and leading and trailing lateral edges defined, respectively, by leading and trailing chamfer surfaces which converge toward a side of the blade to form said point, said leading and trailing chamfer surfaces of a given scratcher tooth being chamfered on the same side of the blade, some of said scratcher teeth being chamfered on the left side, others of said scratcher teeth being chamfered on the right side, whereby some of said points are disposed at said left side, and others of said points are disposed at said right side, said scratcher teeth not being set and being of equal height,
said shaving teeth each having leading and trailing lateral edges defined, respectively, by leading and trailing chamfer surfaces which converge toward a side of the blade, said leading and trailing chamfer surfaces of a given shaving tooth being chamfered on the same side of the blade, some of said shaving teeth being chamfered on the left side, others of said shaving teeth being chamfered on the right side, each shaving tooth being truncated to form an oblique top surface intersecting said leading and trailing chamfer surfaces, said shaving teeth being set alternately to the right side and to the left side and being of equal height and shorter than said scratcher teeth,
successive ones of said teeth being separated by gullets and being chamfered alternately on opposite sides of the blade,
said groups of scratcher teeth being separated by a single one of said shaving teeth, the total number of said shaving teeth amounting to no more than substantially one third of the total number of teeth of said saw blade.

5,361,666

BAGEL SLICER

Milo M. Kensrue, Irvine, Calif., assignor to Bagel Trap, Inc., Irvine, Calif.

Filed Mar. 19, 1993, Ser. No. 33,899
Int. Cl.[5] B26D *3/30*
U.S. Cl. 83—870 **10 Claims**



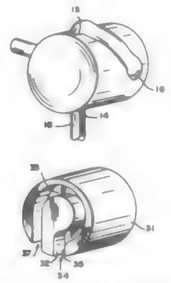
10. A tool used to hold upright a bagel of a given width and having opposed sides, resting on an edge of the bagel, while a user with one hand grasps the tool and with the other hand manually slices the bagel into segments of selected thicknesses by slicing the bagel from edge to edge with a blade of a knife, including
a base having a top surface which supports the bagel by the edge of the bagel,
an upright support removably mounted to the base and having opposed lateral sides and opposed face walls,
a pair of knife blade guide members attached to the base opposite each other, each guide member positioned near one of the opposed sides of the upright support and spaced apart to provide a cutting zone, and
positioning means interactive with the upright support to regulate the thickness of the sliced segments of the bagel, said positioning means interacting with the upright support by removal of said support and reversing the position of said support by remounting in a reverse orientation so that the positions of the face walls are reversed, with one face wall that is next to the cutting zone changing its position and the other face wall being moved next to the cutting zone, and
a movable member adjacent the upright support that is

moved by the user into engagement with the bagel in the cutting zone and bears firmly against the bagel, pressing the bagel between the movable member and the support while the bagel is being sliced, said movable member including a spring element for holding the movable member against the bagel.

5,361,667
TERMINATION FOR STRINGS OF A MUSICAL INSTRUMENT

Eric K. Pritchard, Rte. 1, Box 536, Berkeley Springs, W. Va. 25411

Continuation of Ser. No. 821,068, Jan. 16, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 105,920
Int. Cl.[5] G10D *3/00*
U.S. Cl. 84—297 R **25 Claims**

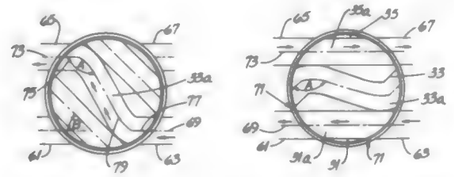


1. A termination to be affixed to a string of a musical instrument comprising:
a body;
a passage having first and second non-coaxial portions in said body and separated by a third portion which defines a bend having an edge prior to receiving a string; and
at least said first portion of said passage being capable of being deformed for securing to said termination an end of a string, which traverses said passage from said first portion to said second portion via said third portion, at said first portion up stream from said edge.

5,361,668
VALVE FOR BRASS INSTRUMENT

James H. Andersen, Kenosha; Gregory C. Hilliard; Lawrence V. Ramirez, II, both of Elkhorn, all of Wis., and Michael W. Suter, Allen Park, Mich., assignors to G. Leblanc Corporation, Kenosha, Wis.

Filed Jan. 25, 1993, Ser. No. 83,839
Int. Cl.[5] G01D *9/04*
U.S. Cl. 84—392 **20 Claims**

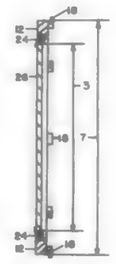


1. In a valve for a brass instrument and having (a) a valve casing, (b) a piston with first and second outer passages and a central passage between the outer passages, (c) a first pair of tubes connected to the casing and flowing air from the handslide, and (d) a second pair of tubes connected to the casing and flowing air to the bell, and wherein the piston is mounted in the casing for movement between (1) an unswitched position providing an air column having a first length and (2) a switched position providing an air column having a second, longer length, the improvement wherein:
the first outer passage and the first pair of tubes extend along a common axis when the piston is in the switched position, thereby substantially reducing resistance to air flow in the switched position.

5,361,669
PASSIVE RADIATOR BAFFLE PANEL FOR DRUM TYPE-PERCUSSION INSTRUMENTS

Robert A. Genna, 4 Talbot La., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 525,200, May 18, 1990, Pat. No. 5,095,796. This application Mar. 16, 1992, Ser. No. 851,740
Int. Cl.[5] G01D *13/02*
U.S. Cl. 84—414 **20 Claims**



1. A baffle panel for a drum instrument having a drum shell and a beater membrane, said beater membrane having a resonant frequency having a peak amplitude, comprising:
a rigid passive radiator piston, said piston being sufficiently thick, and made of sufficiently stiff materials so as to resist flexural movement of said piston;
means for resiliently mounting said piston on the drum instrument opposite the beater membrane of the drum instrument; and
said piston having a mass and an area, said piston mass being selected to provide a tuned sound output from the drum instrument wherein sound waves created by an impact against the beater membrane are transmitted from said beater membrane to said piston to cause said piston to oscillate to create piston sound waves which are in phase with and additive with sound waves radiated from the beater membrane externally of the drum instrument, whereby the drum instrument is provided with a tuned sound output.

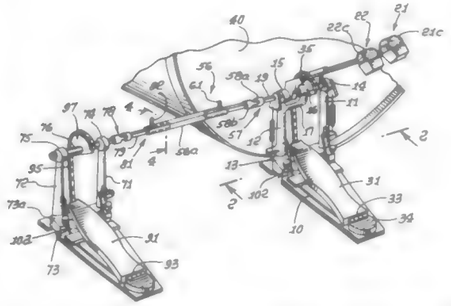
5,361,670
MULTI-AXLE DRUM BEATER AND PEDAL APPARATUS

Donald G. Lombardi, Thousand Oaks, Calif., assignor to Drum Workshop, Inc., Oxnard, Calif.

Continuation of Ser. No. 783,864, Oct. 28, 1991, Pat. No. 5,204,485. This application Mar. 22, 1993, Ser. No. 35,065
Int. Cl.[5] G10D *13/00*
U.S. Cl. 84—422.1 **16 Claims**

1. In a drum beating assembly, the combination comprising
a) a first frame including first pedestal means,
b) first, second and third bearing structures carried by the first pedestal means, in spaced coaxial relation, said third bearing structure including two axially spaced bearing elements, and housing structure for said third bearing structure,
c) a primary axle carried by the first and third bearing structure, and a primary drum beater carried by the said primary axle,
d) a secondary axle carried by the second and third bearing structures, and a secondary drum beater carried by said secondary axle,

e) said primary and secondary axles being independently rotatable, there being a first pedal operatively connected to the primary axle to rotate the primary axle and primary drum beater in response to pedal pivoting, the secondary axle and secondary drum beater being rotatable by auxiliary means, adjustably positioned relative to the first frame,
f) and a first base plate integrally supporting said first pedestal means, the first plate also supporting the first pedal for pivoting relative thereto,
g) said first pedestal means including primary and secondary upright pedestals respectively carrying said first and second bearing structures, said housing structure for said third bearing structure being located between and spaced from said first and second bearing structures, there being an arm having one end connected to the secondary upright pedestal below the second bearing structure, the arm extending sidewardly from said secondary pedestal above the level of said pedal and then upwardly to that housing structure which is mounted on said arm,
h) the primary axle extending to and supported by said first bearing structure, and one of said two axially spaced bearing elements, and the secondary axle supported by the second bearing structure, and the other of said two axially spaced bearing elements.



5,361,671
RESILIENT DRUMSTICK SLEEVE ASSEMBLY

Robert A. Genna, 4 Talbot La., Greenwich, Conn. 06830

Filed Sep. 4, 1991, Ser. No. 754,743
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—422.4 **20 Claims**

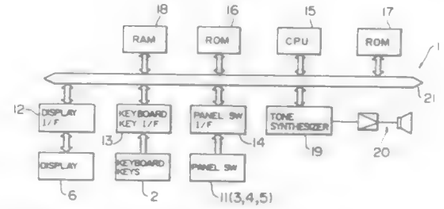


1. A resilient drumstick sleeve assembly comprising:
a conventional wooden drumstick having a cylindrical body at one end of said drumstick, and a neck section connecting said cylindrical body to a tip knob at a second end of said drumstick; and
a resilient tubular sleeve fitted onto and covering at least a portion of said neck section and not at a hand holding section of said drumstick to provide a protective covering for said drumstick and to alter percussion sonics of said drumstick.

5,361,672
ELECTRONIC MUSICAL INSTRUMENT WITH HELP KEY FOR DISPLAYING THE FUNCTION OF DESIGNATED KEYS

Masahiro Koyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 17, 1992, Ser. No. 916,185
Claims priority, application Japan, Jul. 18, 1991, 3-203867
Int. Cl.[5] G10G *7/00*
U.S. Cl. 84—478 **9 Claims**

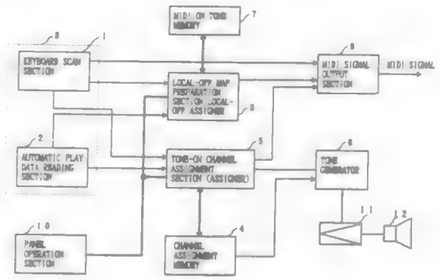


1. An electronic musical instrument comprising:
operation mode designating means for designating an operation mode among a plurality of operation modes, each defining how said electronic musical instrument operates;
a plurality of operation means, each being assigned different functions with respect to said plural operation modes;
display means for displaying information;
help designating means for designating a help operation; and
control means response to activation of said operation means while said help operation is designated, for controlling said display means to display an explanation of a function assigned to said activated operation means in said operation mode, without executing said function.

5,361,673
ELECTRONIC MUSICAL INSTRUMENT

Yoshifumi Kira, and Shinya Konishi, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan

Filed Sep. 16, 1993, Ser. No. 122,723
Claims priority, application Japan, Sep. 18, 1992, 4-273462
Int. Cl.[5] G10H *1/18, 5/00*
U.S. Cl. 84—615 **16 Claims**



1. An electronic musical instrument, which includes internal tone generating means, a local-on play function, which produces musical tones in consonance with tone data generated by said internal tone generating means, and a local-off play function, which externally outputs only an MIDI signal without

performing tone production in consonance with tone data generated by said internal tone generating means, comprising:

first tone information storage means for, when said local-on play function is selected, storing a channel that corresponds to tone data, which are generated by said internal tone generating means, for each of said tone data;

tone-on channel assigning means for employing said tone information, which are stored in said first storage means, to specify a channel that corresponds to said tone data generated by said internal tone generating means;

tone generating means, which is connected to said tone channel assigning means, for producing a musical tone in consonance with said tone data from said tone-on channel assigning means;

second tone information storage means for, when said local-off play function is selected, successively storing the ON/-OFF states of tone data generated by said internal tone generating means for each set of said tone data;

local-off tone data control means for employing said tone information stored in said second tone information storage means to output, as tone data for an MIDI signal, said tone data that is generated by said internal tone generating means without performing either tone channel assignment or tone production for said tone data; and

MIDI signal output means, which is connected to said tone channel assigning means and said local-off tone data control means, for outputting, as MIDI signals, tone data from said tone channel assigning means and tone data from said local-off tone data control means.

5,361,674

BRAIDING APPARATUS FOR A TUBULAR BRAID STRUCTURE

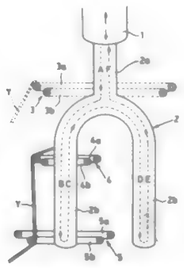
Yasuo Akiyama, Kyoto; Zenichiro Maekawa, Amagasaki; Hiroyuki Hamada, Shiga, and Atsushi Yokoyama, Tsu, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 962,293, Oct. 16, 1992. This application Oct. 21, 1993, Ser. No. 138,985

Claims priority, application Japan, Oct. 18, 1991, 3-299763

Int. Cl.[5] D04C *1/00*

U.S. Cl. 87—9 **13 Claims**



1. A method of forming a tubular braided structure from continuous strands on a mandrel, the mandrel having an end portion and first and second portions defining a junction, the method comprising the steps of:

moving the mandrel linearly relative to a braiding axis with the first portion of the mandrel being substantially coaxial with the braiding axis and braiding the strands on the first portion at a braiding location during said movement;

rotating the mandrel generally about the junction when the braiding approximately reaches the junction to bring the second portion of the mandrel into substantially coaxial alignment with the axis;

moving the mandrel linearly relative to the axis in the same direction as in the first step and braiding the strands on the second portion at a braiding location during said movement;

holding the end portion of the mandrel by a holding body continuously during the steps of moving and rotating the mandrel; and

continuously maintaining the end portion of the mandrel held by the holding body outside the braiding location during the steps of moving and rotating the mandrel.

5,361,675

MAGNETIC MINE DETONATION APPARATUS

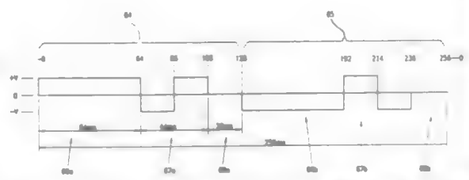
Moshe Spektor; Gil Shalev, both of Beersheva, and Yair Sagie, Rehovot, all of Israel, assignors to Israel Aircraft Industries Ltd, Lod, Israel

Filed Jan. 19, 1993, Ser. No. 6,294

Claims priority, application Israel, Jun. 18, 1992, 102256

Int. Cl.[5] F41H *11/12*

U.S. Cl. 89—1.13 **6 Claims**



1. Apparatus for activating mines having differing activation signatures characterized by different frequencies, said apparatus comprising:

a source of electrical power; and

electromagnetic field generating apparatus receiving electrical power from said source and being operative for repeatedly providing a composite mine activation waveform, said waveform including a plurality of waveform portions, each having a different frequency signature, each of said plurality of waveform portions being matched to a different mine.

5,361,676

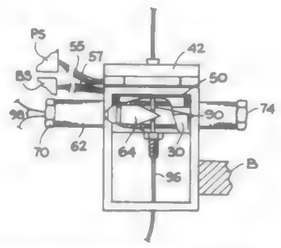
EXPLOSIVELY-SEPARABLE FASTENER WITH UMBILICAL CORD CUTTER

Jerry L. Gibbs, 1201 E. Drachman, No. 113, Tucson, Ariz. 85719

Filed Jul. 19, 1993, Ser. No. 92,908

Int. Cl.[5] B64D *1/00*

U.S. Cl. 89—1.14 **19 Claims**



1. An explosively-separable fastener for providing a severable electrical connection and for housing a severable umbilical line between rocket stages, comprising:

(a) lower compression means slideably mounted within a lower support frame;

(b) spring means for urging said lower compression means downward within said lower support frame;

(c) upper compression means disposed above said lower support frame in vertical alignment with said lower compression means;

(d) separable electrical-connector means for providing electrical connection between said rocket stages, said electrical connector means being adapted to provide electrical connection upon mechanical contact of separable parts electrically connected to said rocket stages and being adapted to interrupt said electrical connection upon separation of said parts;

(e) clamping means for securely sandwiching said separable electrical-connector means between said upper and lower compression means such that said separable parts are in mechanical contact, said lower compression means having been slideably lifted against said spring means in the lower support frame and retained in spring-loaded fashion by said clamping means, and said clamping means containing a hollow passage for housing an umbilical line running between said rocket stages; and

(f) explosively-actuated cutting means adapted to be operable on said the clamping means and responsive to an actuating signal for severing said clamping means and said umbilical line, thereby releasing said spring-loaded lower compression means and separating said parts in mechanical contact in said electrical connector means, thus interrupting the electrical connection between said rocket stages.

5,361,677

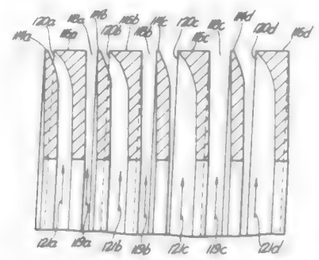
FLASH SUPPRESSOR

Joseph G. Warner, 33828 Stonewood, Sterling Heights, Mich. 48077, and Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Division of Ser. No. 48,594, Apr. 19, 1993, Pat. No. 5,303,634. This application Jan. 10, 1994, Ser. No. 179,086

Int. Cl.[5] F41A *21/34*

U.S. Cl. 89—14.2 **4 Claims**



1. A flash suppressor for a gun, the suppressor acting to partly muffle gun shot sounds, comprising:

mount means for removably attaching the suppressor to the gun at a muzzle of a gun barrel;

an exit end of the suppressor;

two coil springs connected between the mount means and the exit end, a first coil spring disposed inside a second coil spring.

5,361,678

COATED CERAMIC BODIES IN COMPOSITE ARMOR

Brijmohan J. Roopchand; David I. Yun, both of Murrysville; Douglas E. Marinaro, Trafford, and Mary E. Hyland, Oakmont, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 21, 1989, Ser. No. 410,413

Int. Cl.[5] F41H *5/04*

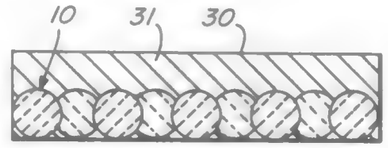
U.S. Cl. 89—36.02 **20 Claims**

1. Lightweight composite armor comprising:

(a) a metal matrix comprising an aluminum or titanium alloy,

(b) a plurality of ceramic bodies in said metal matrix, and said bodies comprising aluminum oxide, boron carbide, titanium diboride, silicon carbide, or mixtures thereof, and

(c) a coating adhered to at least one of said ceramic bodies, said coating comprising:



(1) a binder, and

(2) a plurality of ceramic particles.

5,361,679

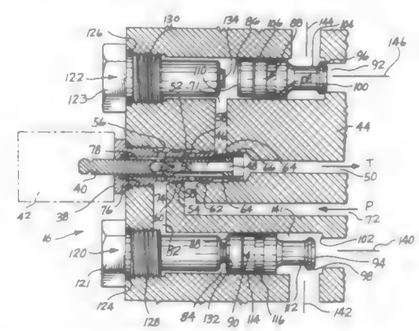
DIRECTIONAL CONTROL VALVE WITH PILOT OPERATED POPPET VALVES

Raymond K. Foster, P.O. Box 1, Madras, Oreg. 97741

Filed Apr. 28, 1993, Ser. No. 54,534

Int. Cl.[5] F15B *11/08, 13/04*

U.S. Cl. 91—448 **8 Claims**



1. In a hydraulic control system having a source of hydraulic pressure and a return passageway, a direction control valve, comprising:

first and second hydraulic flow pathways;

first and second pilot-operated valve means, each operatively positioned to open and close one of said first and second hydraulic flow pathways;

switching means for directing hydraulic pressure selectively to either one of said first and second pilot-operated valve means for providing rapid, pressure-responsive opening and closing of said pilot-operated valve means;

said switching means having connections to the source of hydraulic pressure and the return passageway, and valve means operatively connected to said hydraulic flow pathways such that said hydraulic flow pathways are selectively connectable to the source of hydraulic pressure and the return passageway independently of said connections of said switching means.

5,361,680

PRESSURE-INTENSIFYING TYPE FLUID PRESSURE CYLINDER

Akio Matsui, 5, Nagara Ida, Gifu-shi, Gifu-ken, Japan

Continuation of Ser. No. 980,752, Nov. 24, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,279

Claims priority, application Japan, Dec. 13, 1991, 3-330444; Jul. 20, 1992, 4-192373

Int. Cl.[5] F15B *11/16;* **F01B** *21/00*

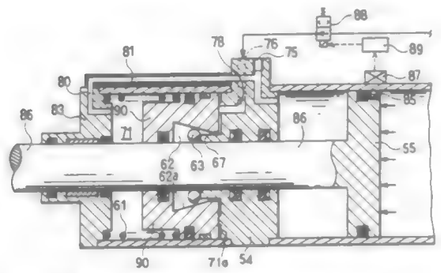
U.S. Cl. 91—519 **10 Claims**

1. A pressure-intensifying type fluid pressure cylinder comprising:

a cylinder tube;

a rod cover fixed at one of it ends to an end portion of said cylinder tube, an auxiliary cylinder tube fixed to the other end of said rod cover and having an auxiliary cylinder chamber therein, said rod cover having a fluid passage for feeding fluid under pressure into said auxiliary cylinder chamber;

a piston in said cylinder tube having a piston rod fixed at one end of said piston rod to said piston and extending through said rod cover, said pressure intensifying piston being



slidable disposed on the outer periphery of said piston rod in said auxiliary cylinder tube; and

locking means disposed in said pressure intensifying piston for locking said pressure intensifying piston to said piston rod in said auxiliary cylinder chamber for intensifying fluid pressure applied to said piston rod when said pressure intensifying piston is locked to said piston rod and fluid pressure is applied to said pressure intensifying piston in said auxiliary cylinder chamber.

5,361,681

PROGRAM CONTROLLED COOKING SYSTEM USING VIDEO DATA COLLECTION

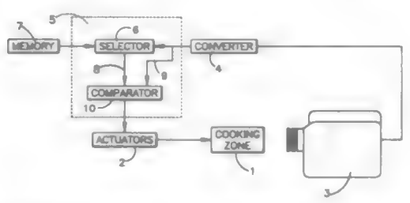
Per G. Hedström, Stockholm, Sweden; Mario Filippetti, and Enzo Zanetti, both of Udine, Italy, assignors to Zeltron S.p.A., Italy

Filed Mar. 29, 1993, Ser. No. 38,455

Claims priority, application Italy, Feb. 4, 1992, PN92 A 000025

Int. Cl.[5] A21B *1/00, 3/00;* **G01K** *11/16;* **F24C** *7/08*

U.S. Cl. 99—331 **4 Claims**



1. Automatically controlled cooking system, comprising at least a cooking zone (1) and a plurality of actuator means (2) associated with the cooking zone that are adjustable so as to vary respective parameters determining a cooking process to handle a food item placed in correspondence of said cooking zone, characterized in that the cooking system further comprises artificial vision means (3) positioned for monitoring said cooking zone (1); processor means (5) driven by said artificial vision means; a control signal from said artificial vision means to said processor means and containing information data relating to actual process conditions prevailing in said cooking zone (1); memory means (7) associated with said processor means; a plurality of typical cooking programs stored in said memory means each program made up by different combinations of said parameters, said processor means (5) acting in response to the information data of the control signal to select the most suitable one among the cooking programs and to compare the parameters thereof with corresponding information data of the control signal to drive said actuator means (2) with relevant error signals associated with said parameters, so as to automatically regulate the cooking process for said food item depending on the information data of the control signal generated by said artificial vision means (3).

5,361,682

APPARATUS FOR RAPIDLY COOKING ALIMENTARY PASTAS

Francesco Crolla, Via Piave, 38, 21018 Sesto Calende VA, Italy

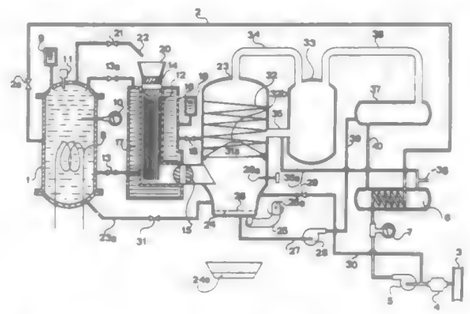
PCT No. PCT/EP91/00573, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/14391, PCT Pub. Date Sep. 3, 1992

PCT Filed Mar. 26, 1991, Ser. No. 930,681

Claims priority, application Italy, Feb. 13, 1991, MI 91A000369

Int. Cl.[5] A47J *27/00*

U.S. Cl. 99—352 **15 Claims**



1. Apparatus for fast cooking, under pressure, alimentary pastas, such as noodles and similar filamentary pastas comprising a pre-cooking chamber and a separate end cooking chamber,

a closable receptacle, heating means for said receptacle, means for supplying water to said receptacle so that the water in said receptacle will be heated to an elevated temperature and an elevated pressure,

said pre-cooking chamber having a vertical axis and temperature stabilizing means, conduit means for supplying heated water from said receptacle to said temperature stabilizing means of said pre-cooking chamber, said pre-cooking chamber having an upper end, a metering hopper for supplying a selectable quantity of raw pasta to said upper end, said pre-cooking chamber having a bottom,

duct means for supplying heated water from said receptacle to said upper end and said bottom of said pre-cooking chamber,

said end cooking chamber having a bottom portion, feed means connecting said bottom of said pre-cooking chamber to said bottom portion of said end cooking chamber, said feed means including a closing member, said end cooking chamber having temperature control means including flow means for selectively supplying water from said receptacle and from an external water source to the interior of said end cooking chamber,

said apparatus further including pressure regulating means associated with said end cooking chamber to control release of any steam pressure from said end cooking chamber and generated in said end cooking chamber, said pressure regulating means including a plurality of expansion chambers connected in series downstream of said end cooking chamber to gradually reduce the pressure of any steam generated in said end cooking chamber and to recover water for return to said receptacle, and

a micro-processor to control the operation of said apparatus.

5,361,683

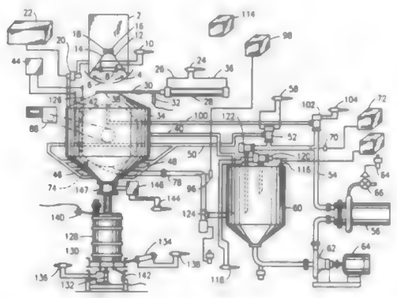
APPARATUS FOR BATCH COOKING AND PACKING FRUIT AND VEGETABLE PIECES

Jesus A. Silvestrini, Ugarte 590, La Puntilla, Lujan de Cuyo Mendoza; Andres H. Parentini, Bolivia 2990, 550 Mendoza Mendoza, and Villa Dolores 530H., Dorrego - Guaymallen Mendoza, all of Argentina

Continuation-in-part of Ser. No. 877,990, May 4, 1992, abandoned. This application Jun. 12, 1992, Ser. No. 897,704

Int. Cl.[5] A47J *27/04, 27/10, 27/16, 37/12*

U.S. Cl. 99—356 **27 Claims**



1. Apparatus for batch process cooking and packing pieces of a food product such as fruits or vegetables, comprising

means for collecting a batch comprising a predetermined quantity of uncooked said food product;

a cooking chamber having a selectively openable and closable entrance port and a selectively openable and closable delivery port and containing a quantity of liquid for use with said food product such that said liquid cushions the fall of said food product pieces that enter said cooking chamber;

means for depositing by gravity flow said quantity of food product into said cooking chamber through said entrance port when said entrance port is open;

heat exchanger means for heating said liquid to a cooking and sterilizing temperature;

means for recirculating said liquid through said heat exchanger means and said cooking cheer to contact said quantity of said food product, whereby the food product contacted by the heated liquid will be heated to a cooking and sterilizing temperature;

means for removing a sufficient quantity of said liquid from said cooking chamber such that the total combined volume of said liquid and said cooked food product remaining substantially equals the quantity of said food product and liquid desired to be deposited into a predetermined shipping container for said food product and liquid;

means for positioning said shipping container subjacent said cooking chamber delivery port to receive said remaining liquid and cooked food product;

means for delivering said food product and said liquid from said cooking chamber into said shipping container; and

means for sealing said shipping container after said reception of said liquid and cooked food product.

5,361,684

APPARATUS FOR HEATING AND/OR COOKING FOODS IN WATER

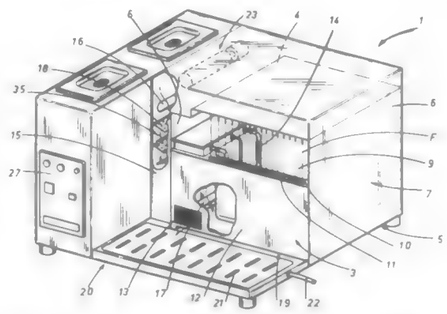
Gilberto Cattaneo, Koenigsbergerstrasse, 53, Moeglingen, Germany 7141

Filed Apr. 26, 1993, Ser. No. 52,773

Claims priority, application Italy, Apr. 28, 1992, B092A000154

Int. Cl.[5] A47J *27/16*

U.S. Cl. 99—410 **17 Claims**



1. An apparatus for at least one of heating and cooking food in water comprising:

at least a first tub for containing water at boiling temperature and generating steam therefrom, the first tub having upper edges and an open interior;

heating means disposed in the open interior of the first tub for heating water contained in the first tub;

at least one perforated container for holding food, the perforated container being positionable in the first tub;

a first box structure having an open top and an open interior and being connected at the open top to the upper edges of the first tub to define a connection zone between the first tub and the first box structure, the first tub being disposed in the first box structure; and

a wall disposed above the first tub for intercepting steam exiting from the first tub, the wall and the first tub defining therebetween a chamber;

wherein a longitudinal aperture is formed in the upper edges of the first tub and disposed along a portion of the connection zone;

a second box structure having an open interior communicating with the open interior of the first box structure; and

aspirating means having an inlet communicating with the chamber defined between the first tub and the wall and having an outlet communicating with the open interior of the second box structure.

5,361,685

COOKING APPARATUS

Renato Riccio, 11350 Pagemill, Dallas, Tex. 75243

Continuation of Ser. No. 684,576, Apr. 12, 1991, Pat. No. 5,184,540. This application Sep. 9, 1992, Ser. No. 942,622

Int. Cl.[5] A47J *37/04*

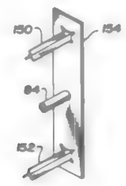
U.S. Cl. 99—421 H **15 Claims**

1. Cooking apparatus, comprising:

a housing including a fireplace to support a fire for cooking food;

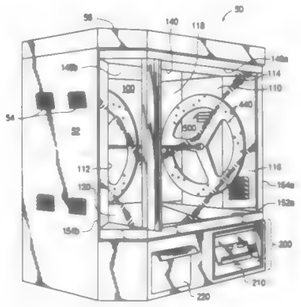
a spit for supporting food to receive heat generated from the fire and including at least three driven shoulders disposed around the periphery of said spit, the three driven shoulders on said spit being formed by radially directed fins extending substantially the entire length of the spit to provide stability along its length and thereby allow substantial amounts of food to be connected to the spit;

driving: means connected to the housing for rotating the spit; and



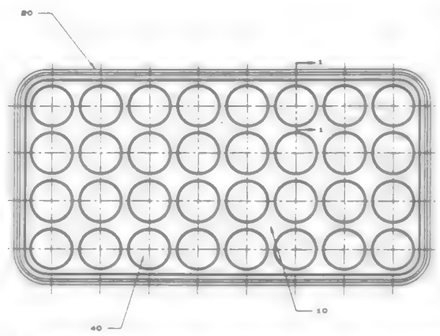
a member connected to said housing and including a shoulder to engage tile driven shoulders on said spit so that said spit is rotated relative to said driving means.

5,361,686
ROTISSERIE OVEN
Peter J. Koopman, Richmond, Ind., assignor to Henny Penny Corporation, Eaton, Ohio
Filed Nov. 10, 1992, Ser. No. 973,037
Int. Cl.[5] A21B *1/06*; A47J *37/04*
U.S. Cl. 99—421 H **11 Claims**



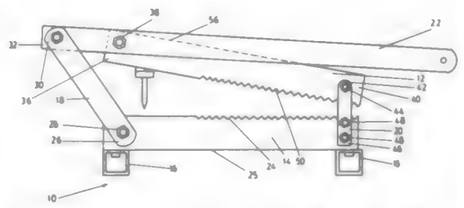
1. An oven comprising:
a cooking chamber defined by a plurality of walls, said plurality of walls comprising a top wall, a bottom wall opposing said top wall, opposing side walls, a front wall and an opposing rear wall;
heating means for providing heat to said cooking chamber; and
an air delivery system at least partially surrounding said cooking chamber, said air delivery system comprising:
a first air plenum section disposed along at least a portion of a first of said plurality of walls of said cooking chamber;
first vent means formed in said first air plenum section for venting air between said first air plenum section and said cooking chamber;
a second air plenum section disposed along at least a portion of a second wall opposing the wall on which said first air plenum section is disposed; and
second vent means formed in said second air plenum section for venting air between said second air plenum section and said cooking chamber; wherein
said first air plenum section is in fluid communication with said second air plenum section such that air flowing through said first and second air plenum sections flows sequentially through said first air plenum section before entering said second air plenum section.

5,361,687
CORRUGATION-ENHANCED BAKING PAN
Jouke deVries, Corapolis, Pa., assignor to Bundy Industries, Inc., Coraopolis, Pa.
Filed Apr. 15, 1993, Ser. No. 46,141
Int. Cl.[5] A47J *37/01*
U.S. Cl. 99—426 **6 Claims**



1. A pan for containing baked goods throughout the baking process comprising:
a. a rectilinear, planar sheet of material having:
i. an edge flange encompassing a circumference of the material sheet, the edge flange rolled upon itself to form a cavity;
ii. a corrugation stamped into the material sheet and extending from the edge flange, the corrugation encompassing a circumference of the material sheet within a circumference of the edge flange;
iii. at least one mold stamped into and extending opposite the corrugation, on a planar side of the material sheet, the mold located within an interior circumference created by the corrugation and having a base located on a horizontal plane with the edge flange; and
b. a wire of a cross-sectional size and shape smaller than that of the edge flange cavity, located throughout an entirety of the edge flange cavity.

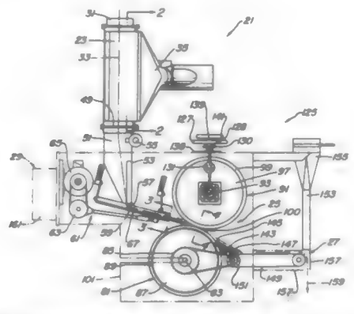
5,361,688
COMBINATION NUT CRACKER AND NIBBLER
Fred E. Blankenship, 1124 Castlerock Dr., Shepherdsville, Ky. 40165
Filed Jun. 25, 1993, Ser. No. 83,645
Int. Cl.[5] A23N *5/00*
U.S. Cl. 99—572 **15 Claims**



1. A combination nut cracker and nibbler for difficult to crack nuts, comprised of
(a) a lower fixed jaw,
(b) a front pivot arm rotatably secured at a first end to a distal end of the lower fixed jaw,
(c) a lever arm with a handle secured to a proximal end of said lever arm, wherein a distal end of the lever arm is pivotally secured to a second end of the front pivot arm,

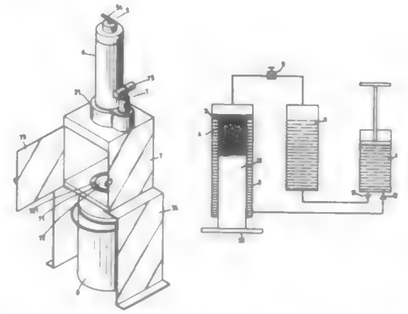
(d) a back arm secured at a first end to a proximal end of the lower fixed jaw,
(e) an upper moveable jaw pivotally secured at its distal end to the lever arm and at its proximal end to a second end, the back arm, and
(f) a nibbler section secured to the upper moveable jaw containing a screw threaded shank projecting downward from the upper moveable jaw.

5,361,689
METHOD AND APPARATUS FOR BLANCHING NUTS
Paul G. Lima, Fort Worth, and John M. Singleton, Trophy Club, both of Tex., assignors to Cantrell International, Fort Worth, Tex.
Filed Oct. 14, 1993, Ser. No. 136,338
Int. Cl.[5] A23N *5/00*, *5/01*, *12/00*
U.S. Cl. 99—575 **21 Claims**



1. In an apparatus for blanching nuts having a nut feeder for receiving the nuts after the nuts are preconditioned for blanching and presenting the nuts to a roller assembly, the roller assembly including a lower and upper cylindrical rollers which are supported within a frame for rotating on substantially parallel shafts, a motive means for rotating the lower and upper rollers to pass the nuts through pinch points defined between the lower and upper cylindrical rollers, and a discharge means for directing the nuts from the roller assembly, an improvement comprising:
a first member having an exterior with a resilient surface which continuously extends around the lower cylindrical roller, the resilient surface having grooves formed therein in a parallel feed alignment to define groove crests and roots which alternate over the resilient surface, the grooves in the resilient surface disposed for accepting nuts from the nut feeder and transporting the nuts through the pinch points between the lower and upper rollers;
a second member continuously extending around the upper cylindrical roller and having resilient ribs extending therefrom to define crests which extend over the second member in the parallel feed alignment of the grooves in the resilient surface, the crests of the resilient ribs disposed for radially aligning with the roots of the grooves in the resilient surface at the pinch points between the lower and upper cylindrical rollers;
wherein the lower cylindrical roller is rotated for moving the resilient surface along the nut feeder to receive the nuts within the roots of the grooves for holding and transporting the nuts through the pinch points between the lower and upper cylindrical rollers; and
wherein the upper cylindrical roller is rotated for passing the resilient ribs radially across the roots of the grooves of the resilient surface to wipe the crests of the resilient ribs across the nuts passing through the pinch points for breaking skins on the nuts.

5,361,690
CAN CRUSHER
Ching-Ho Hsu, 9F, No. 107, Sec. 2, Roosevelt Rd., Taipei City, Taiwan, Prov. of China
Filed Jul. 13, 1993, Ser. No. 90,947
Int. Cl.[5] B30B *9/32*, *15/18*
U.S. Cl. 100—48 **7 Claims**

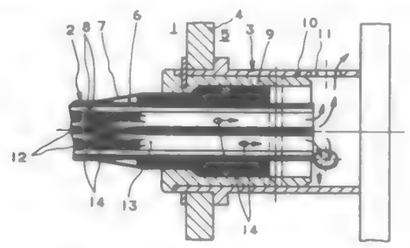


1. A manually operable, hydraulic can crusher comprising:
a support for supporting a can to be crushed;
a hydraulic cylinder having a hydraulic oil inlet and a hydraulic oil outlet;
a tank for holding hydraulic oil;
a manually operable pump having two check valves, one check valve controlling hydraulic oil flow between said hydraulic oil tank and the pump and a second check valve controlling hydraulic oil flow between the pump and the hydraulic oil inlet of the hydraulic cylinder;
a cylinder piston movably received in said hydraulic cylinder, said cylinder piston having a passage therethrough at a center portion for permitting hydraulic oil flow between opposing sides of said cylinder piston within said hydraulic cylinder;
a crushing plate attached to the cylinder piston;
a pressure adjustment valve received within said passage in said cylinder piston for adjusting the hydraulic oil flow through said cylinder piston passage; and
an openable and closeable control valve within the hydraulic oil outlet of said hydraulic cylinder for controlling hydraulic oil flow between said cylinder and said hydraulic oil tank, whereby when said control valve is closed, said manually controlled pump is adapted to pump hydraulic oil into said cylinder and through said pressure adjustment valve to move said cylinder piston to cause said crushing plate to move so as to crush a can located under said crushing plate and when said control valve is opened said manually controlled pump is adapted to pump hydraulic oil out of said cylinder and through said control valve to move said control piston to cause said crushing plate to move away from the crushed can.

5,361,691
DRAINING ELEMENT FOR PRESSES
Eduard Hartmann, Schneisingen, Switzerland, assignor to Bucher-Guyer AG, Maschinenfabrik, Niederweningen, Switzerland
PCT No. PCT/CH92/00170, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO93/06988, PCT Pub. Date Apr. 15, 1993
PCT Filed Aug. 26, 1992, Ser. No. 66,066
Claims priority, application Switzerland, Oct. 2, 1991, 2905/91
Int. Cl.[5] B30B *9/02*
U.S. Cl. 100—107 **7 Claims**

1. Draining element for presses to extract liquids from solid substances comprising a rod-shaped, flexible core with flow channels thereon to discharge extracted liquid from a pressing

space of a press and a liquid-permeable filter cover enclosing the core, said flow channels each having first widths thereof, at least one end of the drainage element being fastened by a drainage lock to one of a juice collecting plate and on a pressing sheath of a press, the flow channels of the draining element



(2) being enlarged in the area of drainage lock (3) such that the enlarged flow channels have second widths which are greater than said first widths and the lengths of said enlarged flow channels correspond substantially to the length of said drainage lock.

5,361,692

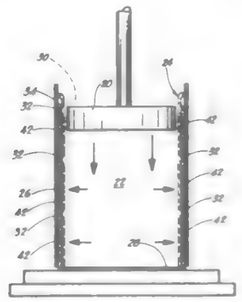
COMPACTION SYSTEM FOR METAL DRUMS

John Zimmer, 2419 Bayou Bend, New Iberia, La. 70119

Continuation of Ser. No. 959,750, Oct. 13, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 228,921

Int. Cl.[5] B30B *15/04*

U.S. Cl. 100—229 A **10 Claims**



1. A system for compacting materials within a metal drum of the type having a series of roll rings along the outer wall of the drum, the system comprising:

a) a cylindrical chamber, having an inner wall, of the dimension to accommodate the metal drum therewithin;

b) a ram member, positioned above the chamber, and moveable to a down position during compaction of the material in the drum;

c) door portions forming a portion of the chamber and each having an inner wall for allowing placement into and removal of the drum from the chamber; and

d) raised means along substantially the entire inner wall of each of the chamber and the door portions for filing all void space otherwise created by the roll rings between the outer wall of the drum and the inner walls of the chamber and the door portions, so that upon being subjected to compaction force, substantially the entire wall of the drum is prevented from expanding into the void space to avoid rupturing any portion of the drum wall.

5,361,693

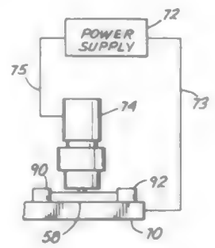
TUNGSTEN CARBIDE WELDED PRINTER TIPS

Norman E. Farb, Villa Park, and James Chou, Pomona, both of Calif., assignors to Printronix, Inc., Irvine, Calif.

Filed Dec. 8, 1992, Ser. No. 987,379

Int. Cl.[5] B41J *2/26*

U.S. Cl. 101—93.04 **3 Claims**



1. The process of making hammersprings for a dot matrix printer wherein said hammersprings are to be attached to a hammerbank frame having a plurality of permanent magnets in said hammerbank frame which retain said hammersprings in adjacent relationship to said permanent magnets until released by means of a current overcoming the force of said permanent magnets wherein the improvement comprises:

forming a plurality of hammersprings from single piece of spring steel wherein said hammersprings are in a continuously connected relationship to each other and formed with a common securement means for attachment thereof to said hammerbank frame;

placing said hammersprings into a fixture in plural relationship;

providing a first electrode in contact with said hammersprings;

providing a tungsten carbide printing tip formed as a rod in adjacent relationship to each of said hammersprings;

holding said tungsten carbide rod in adjacent relationship to said hammersprings;

providing a second electrode in contact with said tungsten carbide rod;

causing a current to flow between said first and second electrodes to cause said tungsten carbide rod to be welded by a flow of cobalt from said rod in an enlarged flow at the interface of said rod and hammerspring and formed as a fillet to said hammersprings;

holding said tungsten carbide rod by means of said second electrode;

providing a chamfer within said second electrode adjacent said tungsten carbide rod and,

flowing cobalt into approximate adjacent relationship to said chamfer to form a fillet to reinforce said tungsten carbide rod on said hammersprings.

5,361,694

INTERCHANGEABLE PRINTHEAD PRINTING MACHINE

Jean-Louis Dubuit, Paris, France, assignor to Societe D'Exploitation des Machines Dubuit, Noisy Le Grand, France

Filed Mar. 8, 1993, Ser. No. 28,931

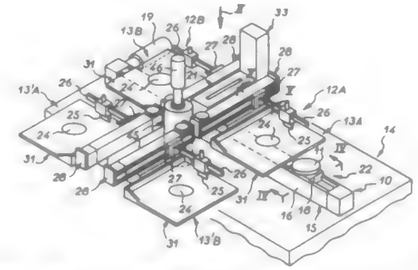
Claims priority, application France, Mar. 26, 1992, 92 03636

Int. Cl.[5] B41F *15/04*

U.S. Cl. 101—115 **16 Claims**

1. Printing machine comprising a print line defined by a path of movement of an object support for supporting an object to be printed, a first printhead including a first printing screen and a first squeegee, a second printhead including a second printing screen and a second squeegee, means for effecting relative displacement of a said squeegee and a said screen for printing objects when the corresponding printhead is in a printing

position on the print line, means for mounting said printheads for movement between the printing position on the print line and a standby position off said print line, and means for alter-



nately, selectively positioning one of said first and second printheads in its printing position and the other of said first and second printheads in its standby position.

5,361,695

SCREEN PRINTING PLATE FOR LIMITING THE SPREAD OF INK ON AN OBJECT

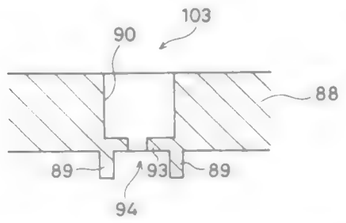
Syunsuke Takagi; Kohzoh Kuroda, and Jiro Ono, all of Kyoto, Japan, assignors to Danippon Screen Mfg. Co., Ltd., Japan

Filed Jul. 8, 1992, Ser. No. 910,767

Claims priority, application Japan, Jul. 8, 1991, 3-195823; May 30, 1992, 4-163594

Int. Cl.[5] B41N *1/24;* **B41C** *1/14*

U.S. Cl. 101—127 **17 Claims**



1. A printing plate for screen printing to form a prescribed pattern on an object with a liquid for pattern formation, comprising:

a plate of a prescribed material having a first surface and a second surface and divided into a first part and a second part, said first part having small apertures allowing the liquid for pattern formation to be pressed out from said first surface to said second surface formed therein, said second part not allowing the liquid for pattern formation to be transferred from said first surface to said second surface; and

limiting means formed along a boundary of said first part and said second part on said second surface, said limiting means being formed in said second part of said plate and protruding by a prescribed uniform height from said second surface, for limiting within the second part the spreading on said object of the liquid for pattern formation pressed out through said small apertures to said second surface,

said limiting means having a first edge facing said first part and a second edge facing away from said first part, and there being a distance between said first edge and said second edge such that said liquid is uniformly introduced from said first edge to said second edge, and said limiting means on the side of said second edge protruding from said second part having the prescribed uniform height and a steepness such that said liquid does not spread from said first edge beyond said second edge into said second part;

cross sectional area limiting means provided in each of said small apertures for reducing the cross sectional area of each of said small apertures at a predetermined portion thereof so that said cross sectional area is smaller only at said predetermined portion so as to create other portions larger than said predetermined portion of each of said small apertures such that said liquid for pattern formation is supplied through said apertures by an amount appropriate for forming sharp pattern edges;

said small apertures being defined by sidewalls, and said cross sectional area limiting means including a pair of protruding members protruding inward from said sidewalls of said small aperture for such a distance that a prescribed opening smaller than the cross sectional area of said predetermined portions of said small aperture is left between said pair of protruding members.

5,361,696

PRESET STATE DISPLAY APPARATUS AND PRESET STATE ADJUSTING APPARATUS

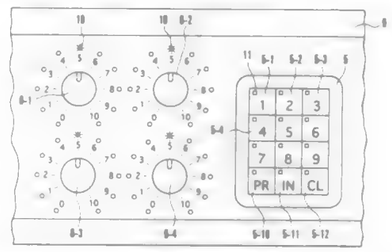
Kazuhiko Kato, and Katsuo Shibasaki, both of Ibaragi, Japan, assignors to Komori Corporation, Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 99,101

Claims priority, application Japan, Aug. 10, 1992, 4-061381

Int. Cl.[5] B41F *13/24*

U.S. Cl. 101—232 **4 Claims**



1. A preset state display apparatus comprising:

set state detecting means for detecting a set state of an adjustment portion adjusted in a change in printed matter in a printing press;

set state storage means for storing a current set state of said adjustment portion which is detected by said set state detecting means in correspondence with a plurality of key number switches corresponding to each key number represented by a storage command generated upon designation of said plurality of key number switches corresponding to each key number; and

preset display means for calling, storing, and erasing, as a preset state, the set state of said adjustment portion which is stored in correspondence with the designated key number, in accordance with a call command generated upon designation of said plurality of key number switches corresponding to each key number, to display the preset state near an operation member corresponding to said adjustment portion.

5,361,697

PLATE CYLINDER OF A ROTARY PRINTING PRESS

Rudi Stellberger, Kronau, Germany, assignor to Heidelberger Druckamschinen AG, Heidelberg, Germany

Filed Mar. 2, 1992, Ser. No. 844,131

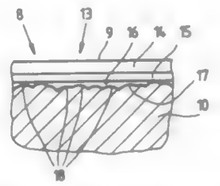
Claims priority, application Germany, Mar. 2, 1991, 4106677

Int. Cl.[5] B41F *13/16*

U.S. Cl. 101—415.1 **13 Claims**

1. In combination, a flexible printing form and a plate cylin-

der of a rotary printing press having a cylinder body and provided with a device for adjusting the flexible printing form by a swivelling motion, comprising a support for the flexible printing form in the form of a foil disposed on the cylinder body and being adjustably movable relative thereto by the adjusting device, said printing-form support having an outer cylindrical surface whereon the flexible printing form is mounted, means defining a cylinder-gap having a leading-edge printing zone and a trailing-edge printing zone, a first strip-shaped holding element disposed in said gap of the plate cylinder in said leading-edge printing zone thereof, and a second



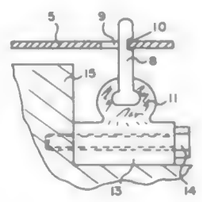
strip-shaped holding element disposed in said gap in said trailing-edge printing zone thereof, for fastening said printing-form support, and clamping means for the printing form disposed on at least one of said holding elements, and including clamping devices on the plate cylinder for clamping said foil, wherein said outer cylindrical surface of said printing-form support is formed of material which does not accept printing ink, and wherein the plate cylinder has a plate-cylinder core, and said printing-form support is formed with an inner surface which is of a material having low friction with respect to the surface of said plate-cylinder core.

5,361,698

DEVICE FOR CLAMPING A PRINTING PLATE ONTO A PLATE CYLINDER

Claus Simeth, Geisenheim, Germany, assignor to MAN Roland Druckmaschinen AG, Germany

Filed Feb. 22, 1993, Ser. No. 20,634
Claims priority, application Germany, Feb. 21, 1992, 4205276
Int. Cl.[5] B41F *1/28*
U.S. Cl. 101—415.1 10 Claims



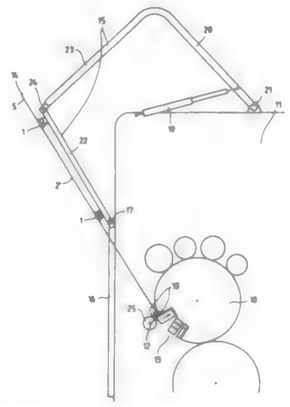
1. An apparatus for clamping a flexible printing plate having leading and rear ends onto a plate cylinder of a rotary printing press having a recessed pit formed within the cylinder comprising front end clamping means disposed in said pit for engaging the leading end of the printing plate, rear end engaging means for releasably engaging the rear end of said printing plate, said rear end engaging means including a plurality of axially spaced resilient spring elements each being engageable with the rear end of the printing plate and being resiliently deflectable in circumferential and axial directions with respect to the printing cylinder.

5,361,699

HOLDING DEVICE FOR A PLATE WHICH IS TO BE DISPLACED

Christian Compera, Dossenheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Apr. 29, 1993, Ser. No. 54,963
Claims priority, application Germany, Apr. 29, 1992, 4214047
Int. Cl.[5] B41F *1/32*
U.S. Cl. 101—477 15 Claims



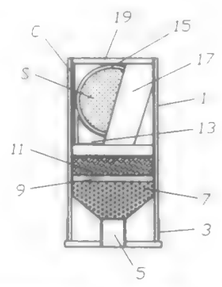
1. In combination, a plate which is to be displaced formed with a hole and a holding device for the plate, the holding device comprising a suction cup formed with an inner Space and having a sealing, elastic suction lip for sealing off said space within said suction cup when the plate is pressed against the suction lip so as to form a partial vacuum in said space in a plate-holding condition of the holding device, said suction lip being formed of a material slidable on the plate and, in said plate-holding condition of the holding device, being disposed relative to the hole formed in the plate so that, upon a sliding displacement of the plate, the hole formed in the plate passes said suction lip thereby releasing the partial vacuum to thereby release the plate from the holding device.

5,361,700

BALL-FIRING CARTRIDGE AND METHOD

Alfred V. Carbone, Hopkinton, N.H., assignor to Academy of Applied Science, Concord, N.H., a part interest

Filed Dec. 10, 1993, Ser. No. 165,776
Int. Cl.[5] F42B *5/02, 14/06*
U.S. Cl. 102—439 5 Claims



1. A substance-containing thin-walled bal projectile contained within a cartridge casins having, in combination with a base powder charge, in seriatim within the cartridge casins, gas seal means, shock absorbing means, and a ball-holding cup mounted upon the shock absorbing means and contained,

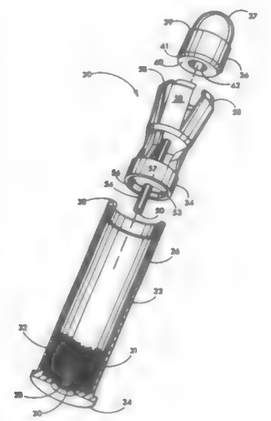
together with said thin-walled ball projectile, within and enveloped by and secured to a thin-walled folded segmented fan with overlapping conical fan segments adapted, upon the firing of the charge and the resulting expulsion of the ball projectile together with the cup and the fan for the folded conical fan segments to open promptly into a flat air resistant disc.

5,361,701

SHOTGUN SLUG TRACER ROUND AND IMPROVED SHOTGUN SLUG

Robert D. Stevens, 600 Kiwanis Ct., No. 2, Freeport, Ill. 61032

Division of Ser. No. 889,065, May 26, 1992, Pat. No. 5,235,915.
This application Aug. 9, 1993, Ser. No. 104,324
Int. Cl.[5] F42B *7/08, 14/06*
U.S. Cl. 102—450 8 Claims



4. A shotgun slug round for use in a rifled shotgun barrel comprising:

a) a cartridge having a base and a cartridge wall, the base having a primer pocket and a primer mounted therein;

b) a quantity of powder contained within the cartridge and engaged with the base adjacent to the primer;

c) a wad having a base portion, a collapsible portion and at least two petals which extend upwardly from the base portion; and

d) a shotgun slug having a cylindrical portion and positioned adjacent the wad base, the slug being surrounded by the petals of the wad such that the wad petals are adapted to engage rifling in a shotgun barrel.

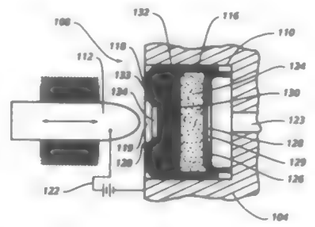
5,361,702

MECHANICAL SHIELDING FOR ELECTRIC PRIMER

Raymond J. Goetz, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1993, Ser. No. 42,924
Int. Cl.[5] F42B *5/08;* F42C *19/12*
U.S. Cl. 102—472 3 Claims

1. In combination with a cartridge case having a base portion with an aft facing recess therein, a primer received in said recess comprising: an electrically conductive housing having an end wall and a side wall extending axially therefrom adapted to be fitted into the recess of the base portion, said end wall having an inner face and an opening therein allowing entry of an electrically activating plunger into the housing, an electrically conductive pyrotechnic charge disposed within the housing in electrical contact with the side wall thereof, a button electrode disposed entirely within the housing in electrical contact with the pyrotechnic charge, said button electrode having an aft facing surface adapted to be contacted by the plunger in response to said entry thereof into the housing, insulating means within the housing for spacing said aft facing surface of the button electrode inwardly from the inner face of the end wall to minimize possible coupling between stray



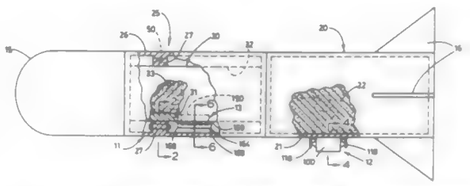
electromagnetic radiation and the button electrode and a cover enclosing the pyrotechnic charge within the housing, the side wall of the housing having a surface tapered to receive the cover therein with a tight fit.

5,361,703

INERT THERMALLY ACTIVATED BURSTER

Moyle L. Braithwaite, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1992, Ser. No. 888,082
Int. Cl.[5] F42B *41/00*
U.S. Cl. 102—481 9 Claims



5. A burster for rupturing a casing for an active material subject to cook-off, the burster rupturing the casing at predetermined venting temperature above a predetermined ambient temperature and comprising:

wall means fixedly connected to said casing for at least partially defining an enclosure separated from said active material;

means for defining a stress riser to promote a rupture extending from said enclosure through said wall means and said casing; and

an inert material secured in said enclosure, said inert material being selected so as to

exert on said wall means a force insufficient to initiate said rupture when said inert material is at said ambient temperature,

tend to expand as the temperature of said inert material increases from said ambient temperature toward said venting temperature, and

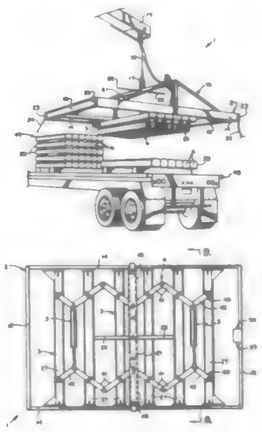
exert on said wall means a force causing said rupture when said inert material is at said venting temperature.

5,361,704

RAILROAD TRACK LAYING SYSTEM WITH MULTIPLE RAILROAD TIE HANDLING

Ivan E. Bounds, St. Joseph, Mo., assignor to Herzog Contracting Corp., St. Joseph, Mo.

Division of Ser. No. 883,586, May 13, 1992, Pat. No. 5,243,918, which is a continuation-in-part of Ser. No. 746,067, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 602,061, Oct. 24, 1990, abandoned, which is a continuation of Ser. No. 331,589, Mar. 30, 1989, abandoned. This application Mar. 8, 1993, Ser. No. 27,332
Int. Cl.[5] E01B *29/00*
U.S. Cl. 104—6 1 Claim



1. An apparatus for handling multiple railroad ties with opposite ends, which comprises:

(a) a frame including:

(1) a pair of opposite side members each forming an inwardly-open channel;

(2) a pair of opposite end members each extending between and interconnecting said side members;

(3) a lifting point generally centered longitudinally and transversely on said frame;

(4) a lifting yoke connected to said side members, said lifting point being located on said lifting yoke; and

(5) a rotatable clevis mounted on said lifting yoke at said lifting point;

(b) a plurality of tie clamp beams each having opposite ends;

(c) a plurality of tie clamp beam roller assemblies each mounted on a respective tie clamp beam end and received in a respective side member channel;

(d) a plurality of tie clamps each including upper and lower ends and each being pivotally mounted on a respective tie clamp beam between said tie clamp upper and lower ends, each said tie clamp having a clamp position with its lower end rotated inwardly and a release position with its lower end rotated outwardly, and each said tie clamp having a resilient pad mounted on its lower end and facing inwardly;

(e) a linkage mechanism including:

(1) a linkage guide track extending transversely across said frame between said side members;

(2) two pairs of links, each pair being located adjacent to a respective frame side member and comprising a pair of links, each said link including an inner end pivotally connected to the inner end of another link of said link pair, an outer end, and a pivotal connection between said link ends whereat said link is pivotally connected to a respective tie clamp beam;

(3) a pair of linkage guide rollers each rollably engaging said linkage guide track at the intersection of a pair of link inner ends;

(4) a pair of spacer piston-and-cylinder units; and

(5) a pair of connector means each connecting a respective spacer piston-and-cylinder unit to the respective outer ends of a transversely-opposed pair of links for rotating said links by extend and retracting said piston-and-cylinder unit whereby a respective tie clamp beam is longitudinally translated with respect to said frame; and

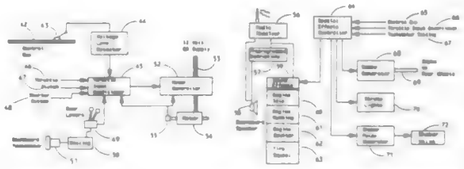
(f) a plurality of tie clamp piston-and-cylinder units each connected to a respective clamp beam and a respective tie clamp upper end.

5,361,705

INTERACTIVE DRAG STRIP AMUSEMENT RIDE

Tyrone E. Powell, 2000 Otter, Anchorage, Ak. 99504

Filed Nov. 1, 1993, Ser. No. 146,535
Int. Cl.[5] A63G *25/00*
U.S. Cl. 104—60 4 Claims



1. An improved interactive drag strip simulation ride with at least two ride race vehicles, each vehicle powered by an onboard electric motor with clutch, throttle, gearshift, and simulated tachometer, and each vehicle containing at least one human occupant as a driver, said vehicles racing side by side along a linear course, the improvement comprising:

throttle input conditioner means coupled to the clutch and throttle for simulating power and speed control, said input conditioner means producing loss of vehicle speed as if caused by wheel slip when a driver fails to modulate the clutch and throttle as in a real race vehicle;

motor controller for controlling power and speed of the onboard electric motor;

means for coupling said throttle input conditioner means to the motor controller; the throttle input conditioner means simulating a power reduction when a driver shifts the gearshift before a predetermined RPM is indicated on said simulated tachometer.

5,361,706

CONVEYING SYSTEM WITH TENSIONING AND DOCKING ASSEMBLY AND METHOD

Jan K. Kunczynski, Glenbrook, Nev., assignor to Yantrak, LLC, Carson City, Nev.

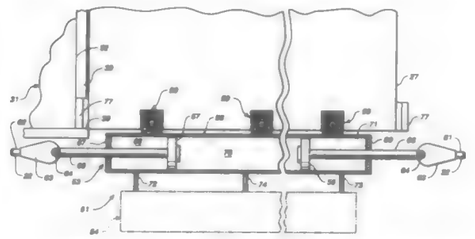
Filed May 28, 1993, Ser. No. 69,082
Int. Cl.[5] B61B *7/00*
U.S. Cl. 104—196 21 Claims

18. A transportation system comprising:

a haul rope mounted for advancement on a plurality of support sheaves;

a load carrier unit mounted to said haul rope for advancement thereby; and

a haul rope tensioning assembly carried by said load carrier unit and formed to create and maintain tension forces in said haul rope sufficient to advance said load carrier unit, said rope tensioning assembly being a piston-cylinder assembly coupled to a fluid circuit connected to pressurize



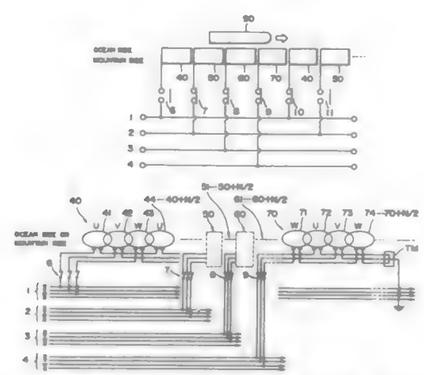
a cylinder and displace a piston to effect tensioning of said haul rope.

5,361,707

MULTIPLE FEEDER SYSTEM OF FEEDER SECTIONS FOR FEEDING GROUND COILS OF SUPERCONDUCTIVE MAGNETICALLY LEVITATED RAILWAY

Junji Fujie, Hino, and Hisamitsu Shibakawa, Toda, both of Japan, assignors to Railway Technical Research Institute, Japan

Filed Mar. 29, 1993, Ser. No. 38,807
Claims priority, application Japan, Apr. 24, 1992, 4-131687
Int. Cl.[5] H01F *5/00*
U.S. Cl. 104—281 5 Claims



1. A multiple feeder system of feeder sections for feeding electricity to ground coils of a superconductive magnetically levitated railway in which a train is equipped with a superconducting magnet, the system comprising:

(a) quadruple unit feeder sections, each unit feeder section having a length shorter than the length of the train; and

(b) quadruple feeder lines connected to the respective unit feeder sections for successively energizing the unit feeder sections so as to drive the train.

5,361,708

APPARATUS AND METHOD FOR PASTEURIZING AND DRYING SLUDGE

Alva D. Barnes, 7815 Forest Briar, San Antonio, Tex. 78233

Filed Feb. 9, 1993, Ser. No. 15,409
Int. Cl.[5] A47J *36/00*
U.S. Cl. 110—246 21 Claims

1. An apparatus for the application of heat to sludge for reduction of the pathogen content thereof, comprising:

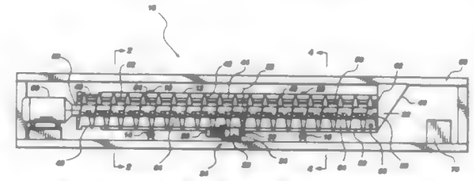
at least one substantially tubular chamber having a central longitudinal axis;

means for supporting said at least one chamber for rotation about said longitudinal axis;

means for driving said at least one chamber rotationally in primarily one direction about said central longitudinal axis;

means located within said at least one chamber throughout substantially the entire longitudinal extent thereof for transporting said sludge longitudinally through said at least one chamber responsive to rotation of said at least one chamber;

means located within said at least one chamber throughout substantially the entire longitudinal extent thereof for



lifting said sludge upwardly responsive to rotation of said at least one chamber and for releasing said sludge to fall in said at least one chamber proximate said longitudinal axis responsive to gravity;

a source of hot gas for introduction into said at least one chamber; and

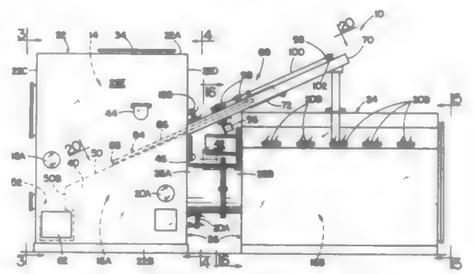
means in communication with said hot gas source for distributing said hot gas substantially axially through substantially the entire longitudinal extent of said at least one chamber for contacting said falling sludge with said hot gas throughout substantially the entire longitudinal extent of said at least one chamber.

5,361,709

MATERIAL TRANSPORT PUSHER MECHANISM IN A MATERIAL PROCESSING APPARATUS

Roger D. Eshleman, 506 Clayton Ave., Waynesboro, Pa. 17268

Filed Sep. 17, 1993, Ser. No. 123,747
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—255 17 Claims



1. A material processing apparatus, comprising:

(a) a casing having a top and bottom and a plurality of sides defining a pyrolysis chamber for receiving and pyrolyzing feed materials therein into fluid materials;

(b) a mass of refractory material contained in said casing upon said bottom thereof and spaced below said top thereof and extending between said sides thereof, said refractory mass including an upper surface defining a bottom of said pyrolysis chamber and having an end being spaced from a first one of said sides of said casing for defining an ash residue collection cavity therebetween; and

(c) a pusher mechanism mounted to and extending through a second one of said sides of said casing being opposite from said first one of said sides thereof, said pusher mechanism

being operable through first and second displaced positions to engage and transport materials received on said upper surface of said refractory mass and being pyrolyzed in said chamber across said upper surface of said refractory mass toward said end thereof;

(d) said pusher mechanism including

(i) an elongated track mounted to said second one of said sides of said casing and extending therefrom;

(ii) a carriage mounted on said track to undergo reciprocal movement therealong between said first and second displaced positions toward and away from said casing;

(iii) an actuator mounted at one end to said casing and coupled at an opposite end to said carriage and being selectively operable to cause reciprocal movement of said carriage between said first and second displaced positions toward and away from said casing; and

(iv) pusher means connected to said carriage and extending into said pyrolysis chamber for engaging and transporting the material received on said upper surface of said refractory mass toward said end thereof as said carriage is reciprocally moved between said first and second displaced positions toward and away from said casing.

5,361,710

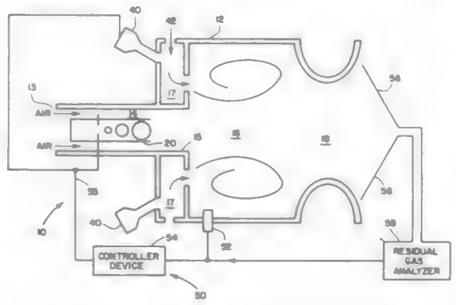
METHOD AND APPARATUS FOR THE ACTIVE CONTROL OF A COMPACT WASTE INCINERATOR

Ephraim Gutmark; Klaus C. Schadow; Timothy P. Parr; Donna M. Hanson-Parr; Kenneth J. Wilson; Robert A. Smith, and Richard A. Stalnaker, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 7, 1993, Ser. No. 138,044

Int. Cl.[5] F23C *11/04*

U.S. Cl. 110—346 **26 Claims**



1. A method for actively controlling a combustion process comprising the following steps:

producing a series of discrete, coherent large scale vortices in a combustion chamber with a vortex generating means;

injecting a fuel supply proximate the vortices with a fuel modulator, the fuel modulator adapted for inducing the pulsed injection of fuel into the vortices at designated locations relative to the formation of the vortices within the combustion chamber thereby affecting the mixing of the fuel with the oxidizer, the efficiency of the burning, and the amount of combustion products formed during the combustion process; and

controlling the timing and location of the pulsed fuel injection relative to the formation of the vortices within the combustion chamber with a controller device, the controller device being operatively connected to the vortex generating means and the fuel modulator in order to synchronize and actively control the phase shift between the formation of the large scale vortices and the pulsed injection of the fuel in response to predetermined inputs.

5,361,711

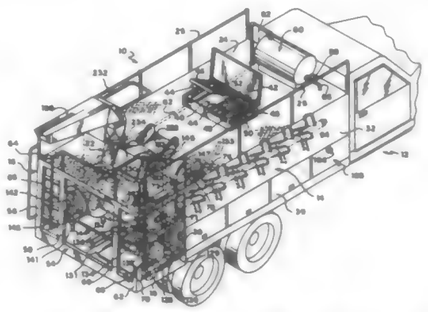
APPARATUS FOR SEEDING, MULCHING, AND FERTILIZING SOIL

Donald R. Beyerl, 4179 Rte. 8, Allison Park, Pa. 15101

Filed Dec. 16, 1992, Ser. No. 991,119

Int. Cl.[5] A01C *23/00*

U.S. Cl. 111—127 **14 Claims**



1. An apparatus for seeding, mulching, and fertilizing soil, comprising:

a tank for containing an aqueous mixture of soil conditioning materials, said tank including a bottom wall having a raised axial ridge running substantially the length of said tank, and an agitator positioned within said tank having a plurality of rotatable shafts running the length of sand tank and substantially parallel to said axial ridge; and a plurality of paddles joined to each said rotatable shaft for mixing the aqueous mixture of soil conditioning materials when said rotatable shaft is rotated,

means in fluid communication with said tank for spraying the aqueous mixture onto the soil surface; and

means affixed to said tank for blowing dried mulch material atop the previously sprayed aqueous mixture on the soil surface, said blowing means includes a flailing chamber positioned adjacent said tank, a drive shaft extending through said chamber, and a plurality of chains with each of said chains having one of its ends affixed to said drive shaft for flailing dried mulch material placed within said chamber.

5,361,712

CULTIVATING APPARATUS FOR LEVELING, CULTIVATING, AND RESOWING LAWNS OR FIELDS

Bruce R. Townsend, 111a New Windsor Road, Avondale, Auckland 7; Derek R. Bird, Avondale, and Norman C. Goldsack, Onehunga, all of New Zealand, assignors to Bruce Robert Townsend, Auckland, New Zealand

Filed Sep. 4, 1992, Ser. No. 940,661

Claims priority, application New Zealand, Sep. 16, 1991, 239821

Int. Cl.[5] A01C *5/06*

U.S. Cl. 111—168 **11 Claims**

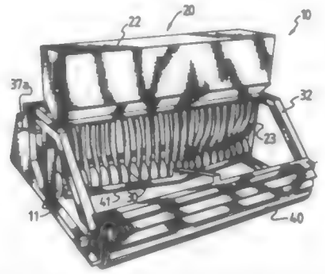
1. Apparatus for levelling, cultivating, and resowing lawns or fields as it moves across a ground surface, comprising:

a support frame;

a row of tines mounted at or near the front of the support frame, and a substantially vertical, transverse plate positioned behind said row of tines, having a substantially horizontal lower edge contacting said ground surface in use, said tines being pivotally mounted on a horizontal shaft, and said shaft being mounted close to said transverse plate so that said transverse plate acts as a barrier to prevent pivotal movement of said tines backwards beyond a working orientation in use;

an elongated rack mounted in said support frame;

a plurality of surface cutting rotatable discs mounted in a substantially horizontal array, extending generally transversely across a direction of travel of the apparatus, each disc arranged to rotate in a substantially vertical plane at an angle across the direction of travel of the apparatus, said discs mounted on said elongated rack by support members extending rearwardly and downwardly from



said rack, to allow a clear space over and about a rearmost part of each said disc; and

a substantially horizontal roller mounted at the rear of the frame behind said plurality of discs; whereby

in use seeds can be poured through said apparatus onto said ground surface at or about the rearmost part of each said disc.

5,361,713

WORK SHEET CUTTING BLADE WITH CONTINUOUS BLADE DISPLACEMENT DETECTION

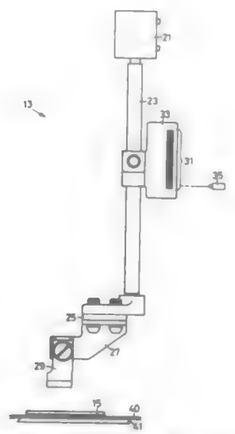
Hiroyuki Suzuki, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 23, 1992, Ser. No. 996,045

Claims priority, application Japan, Feb. 5, 1992, 4-020128; Feb. 5, 1992, 4-020129

Int. Cl.[5] D05B *3/06*

U.S. Cl. 112—68 **16 Claims**



1. A work sheet cutting apparatus for cutting a work sheet, comprising:

a cutting member for cutting said work sheet;

a support member on which said work sheet is to be received when said cutting member is cutting through said work sheet;

actuating means for displacing said cutting member in a reciprocating movement relative to said support member along a predetermined path producing a sheet-cutting stroke between an operative and a retracted position of said cutting member, said sheet-cutting stroke continuously displacing the cutting member from said retracted position until the cutting member is received and stopped by the support member at said operative position;

detecting means for continuously detecting the displacement of said cutting member within a predetermined range included in said predetermined path and including said operative position of the cutting member, and generating continuous signals which change with said displacement of the cutting member and represent that said cutting member is displacing within said predetermined range; and

first identifying means for identifying that said displacement of said cutting member has been stopped at said operative position of the cutting member, when said continuous signals do not change for a predetermined time duration.

5,361,714

SEWING MACHINE WITH ELECTRONIC CONTROL DEVICE

Jürgen Hartwig, Pforzheim, Germany, assignor to Pfaff Haushaltmaschinen GmbH, Karlsruhe, Germany

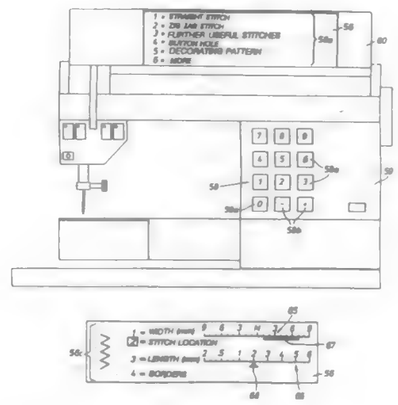
PCT No. PCT/EP90/01506, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO91/03587, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 7, 1990, Ser. No. 838,214

Claims priority, application Germany, Sep. 8, 1989, 3929948

Int. Cl.[5] D05B *3/02*

U.S. Cl. 112—445 **6 Claims**



1. A sewing machine comprising:

fabric transport means for transporting a fabric through the sewing machine;

stitch forming means for forming stitches in the fabric as the fabric is moved through the sewing machine;

read-only memory means for storing a plurality of basic patterns and control programs which drive said fabric transport means and said stitch forming means;

read-write memory means for receiving said basic patterns and control programs from said read-only memory means;

display means for displaying indicia representing said basic patterns and parameters related to said basic patterns, said display means being switchable between formats representing different sets of said basic patterns and switchable to a plurality of sequential formats, each of said sequential formats only displaying necessary sequential information for one of said basic patterns and parameters, said display means displaying a symbol adjacent each of said indicia representing said basic patterns and parameters, a same set of said symbols being displayed in a plurality of said formats;

a keyboard including a plurality of individual keys, a set of said plurality of keys corresponding to said symbols;

microprocessor means for moving said basic patterns and control programs from read-only memory means to said read-write memory means and for modifying said basic patterns and control programs in said read-write memory means, said microprocessor means also reading said keyboard to determine which of said keys have been activated, said microprocessor changing said display means to a next of said sequential formats when a key corresponding to a symbol adjacent said one of said basic patterns and parameters is activated, said microprocessor means also modifying said parameters and activating a control program in said read-write memory means which is related to said symbol adjacent said one of said basic patterns and parameters when said key corresponding to said symbol adjacent said one of said basic patterns and parameters is activated.

5,361,715

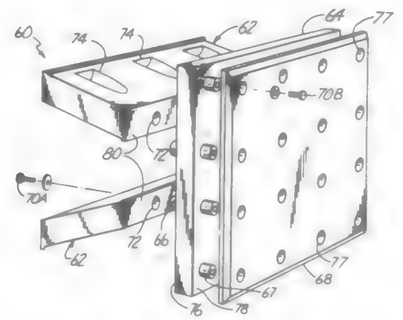
MARINE DOCK FENDER CONTACT SURFACE ATTACHING BOSS

Edward Kiedaisch, Keokuk, and David L. Walljasper, Donnellson, both of Iowa, assignors to Svedala Industries, Inc., Waukesha, Wis.

Filed Jun. 9, 1993, Ser. No. 71,754

Int. Cl.[5] B63B *59/02*

U.S. Cl. 114—219 **20 Claims**



1. A resilient fender comprising:

a back plate having a front surface and a back surface;

a plurality of bosses protruding from the front surface of the back plate at spaced positions;

a bumper having a front surface, a back surface, and a plurality of holes at spaced positions, the bumper being positioned so that the back surface of the bumper contacts the front surface of the back plate and the bosses are positioned in the holes and are surrounded by the bumper;

means for holding the bumper in contact with the back plate;

a plurality of rear bosses protruding from the back surface of the back plate at spaced positions;

an absorption element having a front surface, a back surface and a plurality of holes at spaced positions, the absorption element being positioned so that the front surface of the absorption element contacts the back surface of the back plate and the rear bosses are positioned in the holes of the absorption element and are surrounded by the absorption element so that the absorption element absorbs both horizontal and vertical shear forces; and

means for holding the absorption element in contact with the back plate.

5,361,716

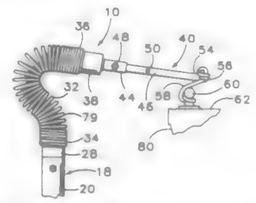
BOAT MOORING DEVICE AND METHOD

Oren L. Cotton, Eastsound, Wash., assignor to Dock Tender, Inc., Eastsound, Wash.

Filed Oct. 18, 1993, Ser. No. 138,831

Int. Cl.[5] B63B *21/00*

U.S. Cl. 114—230 **8 Claims**



1. A method for limiting movement of a moored boat having an attachment fixture, said method comprising: (a) providing a mooring device including an elongate spring resiliently stretchable longitudinally and bendable along its length, said spring having a base end and an upper end;

(b) mounting said spring at a predetermined location on a moorage structure so that said base end is rigidly oriented generally upright relative to said moorage structure;

(c) attaching a proximal end of a substantially rigid, elongate connecting arm rigidly at said upper end of said spring;

(d) elastically bending said spring to a first arcuate configuration by moving said connecting arm to a generally horizontal orientation;

(e) linking a distal end of said connecting arm to said attachment fixture on said boat;

(f) opposing movement of said attachment fixture toward said predetermined location by bending said spring elastically into a gooseneck configuration generating elastic repulsive forces to restore said spring to said first arcuate configuration, and directing said repulsive forces along said connecting arm toward said attachment fixture to push said attachment fixture away from said predetermined location, thereby resisting movement of said boat toward said moorage structure;

(g) opposing movement of said attachment fixture away from said predetermined location by generating elastic tension forces in said spring by longitudinal stretching thereof and transmitting said elastic tension forces through said connecting arm to pull said attachment fixture toward said predetermined location, thereby resisting movement of said boat away from said moorage structure; and

(h) causing the unstretched length of said spring, between said base end and said upper end, to be at least as great as the length of said connecting arm between said proximal end and said distal end.

5,361,717

WATER VEHICLE WITH A SWINGABLE COVER

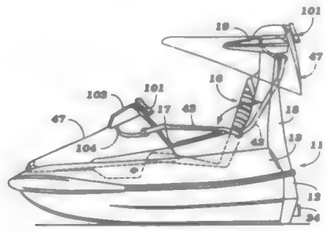
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 26, 1993, Ser. No. 97,560

Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **21 Claims**

1. A watercraft comprised of a hull defining a passengers area, said hull comprising a deck portion forming at least a portion of the peripheral edge of said passenger's area, a cowling portion supported from said hull by a linkage system for relative movement from a first position wherein said cowling portion forms a continuation of said deck portion of said hull and encloses only a front portion of said passenger's area while still accommodating at least a passenger in said passenger's area and a second position elevated and spaced to the rear of said first position wherein said cowling portion forms at least in part a cover above a rear portion of said passengers area not covered when in said first position and exposing the area of said passenger's area enclosed when in said first position while still accommodating the passenger in the same position within said passenger area.



5,361,718

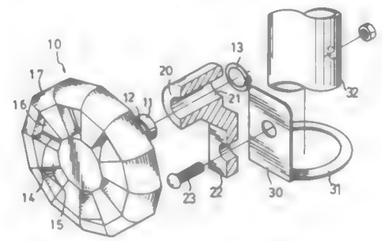
REFLECTIVE WARNING DEVICE FOR WHEELED VEHICLES

Tien-Chu Cheng, No. 65, Shui Gin Street, Shui Yuan Tsuen, Hsin Ser Hsiang, Taichung, Taiwan, Prov. of China

Filed Nov. 3, 1993, Ser. No. 147,324

Int. Cl.[5] B60Q *1/26*; G02B *5/12*

U.S. Cl. 116—28 R **2 Claims**



1. A reflective warning device for a vehicle comprising a body including a rim having a reflective outer peripheral surface facing radially outward so as to be seen from various directions, a plurality of spokes extended radially inwards from said rim to a central hub, and means connected to said central hub for rotatably supporting said body on said vehicle, a space formed between every two adjacent spokes, a tapered element extending from one of said every two adjacent spokes into said space and arranged to leave a gap between the tapered element and a second of said every two adjacent spokes for rotatably driving said body when subject to air currents.

5,361,719

BIODEGRADABLE HYDRATING CAT LITTER

Theodore M. Kiebke, Rt. 1 Box 276A, Detroit Lakes, Minn. 56501

Continuation-in-part of Ser. No. 858,688, Mar. 27, 1992, Pat. No. 5,216,980. This application Jun. 7, 1993, Ser. No. 72,921

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

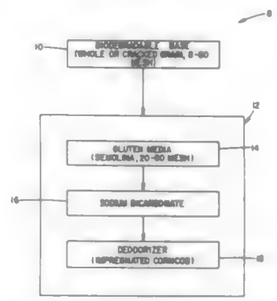
Int. Cl.[5] A01K *1/01*

U.S. Cl. 119—171 **16 Claims**

1. An animal litter composition comprising a non-hydrated admixture of selected quantities of:

a) a base comprising a granular liquid permeable organic particulate; and

b) a substantially starch free, gluten media, wherein the granularity of the gluten media is selected to provide a substantially homogeneous suspension of the gluten media within said base, and wherein said composition reacts in the presence of liquid containing animal waste to bind the animal waste into hardened, biodegradable clumps of animal waste, base and media.



5,361,720

EPITAXIAL DEPOSITION

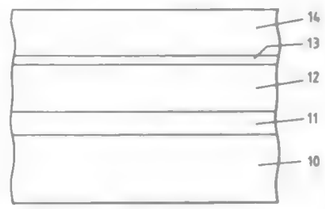
Jan E. Evetts, and Robert E. Somekh, both of Cambridge, England, assignors to British Technology Group Ltd., London, England

Continuation of Ser. No. 726,797, Jul. 8, 1991, abandoned, which is a division of Ser. No. 576,506, Oct. 2, 1990, abandoned. This application Dec. 11, 1992, Ser. No. 996,510

Claims priority, application United Kingdom, Apr. 22, 1988, 8809548

Int. Cl.[5] C30B *25/06*

U.S. Cl. 505—329 **9 Claims**



7. A method of forming a barrier layer in a solid state device characterised in that it comprises depositing an epitaxial layer of a superconductor material on a substrate, depositing a monolayer of a second material including a metal and oxygen on said epitaxial layer and depositing a further epitaxial layer of said superconductor material on said monolayer.

5,361,721

SINGLE CRYSTAL PULLING APPARATUS

Kiyotaka Takano; Izumi Fusegawa, and Hirotoshi Yamagishi, all of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,172

Claims priority, application Japan, Feb. 4, 1992, 4-047606

Int. Cl.[5] C30B *15/14, 15/20*

U.S. Cl. 117—214 **8 Claims**

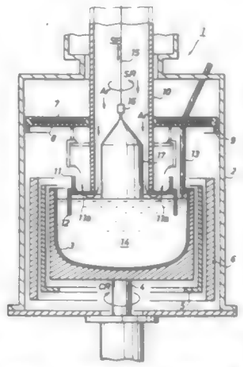
1. A Czochralski single crystal pulling apparatus which comprises:

a generally cylindrical heating chamber containing a crucible, a heater, a thermal insulator, and a conduit for continuously supplying granular polycrystal material to said crucible;

a cylindrical partition which is adapted to divide a surface portion of a polycrystal melt contained in said crucible into an inner portion and an outer portion, said inner

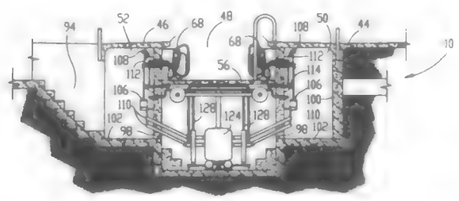
portion being where the single crystal is grown and said outer portion being where granular polycrystal material is supplied to the polycrystal melt;

a ring shield having a heat reflecting and insulating property, a central hole and an outer diameter slightly smaller than an inner diameter of said cylindrical heating chamber, said ring shield being stationarily provided above said crucible; and



a vertically shiftable purge tube which is suspended centrally into said heating chamber from above, said purge tube providing a passage for a purge gas and having an outer diameter which is slightly smaller than an inner diameter of said ring shield, said purge tube being adapted to enter into the central hole of said ring shield.

5,361,722
MILKING FACILITY WITH SERVICE ALLEY
Joe Tecza, Platte City, Mo., assignor to Universal Dairy Equipment Inc., Kansas City, Mo.
Filed Jun. 16, 1993, Ser. No. 78,143
Int. Cl.[5] A01J *5/00*
U.S. Cl. 119—14.03 **15 Claims**



1. A milking facility for servicing dairy animals to be milked comprising:

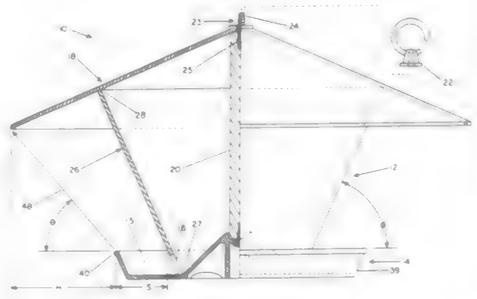
a fixed animal-supporting platform at a first, uppermost level;

a fixed floor adjacent to said animal-supporting platform positioned at a second, relatively lower level, said floor defining an operator area for access to animals supported by said platform;

milking apparatus including at least one conduit means for conveying milk from a dairy animal supported on said platform to a remote milk receptacle; and

structure defining a service alley adjacent to said floor and positioned beneath and below said platform and below said floor, said service alley having interior dimensions sufficient to permit an operator to move therealong; said service alley including a partition for environmentally isolating said floor from said service alley, said partition including means for providing access for passage of milk carried by said conduit means through said partition into said service alley.

5,361,723
SQUIRREL RESISTANT BIRD FEEDER
Joseph H. Burleigh, 50 Lawndale Ave., Franklin, N.H. 03235
Filed Aug. 27, 1993, Ser. No. 112,384
Int. Cl.[5] A01K *39/014*
U.S. Cl. 119—52.3 **25 Claims**



1. An improved bird feeder having,

a feed hopper bounded by a hopper sidewall, the sidewall having a base end and a top end;

a feed tray attaching to the base end of the feed hopper and extending beyond and so configured to provide feeding compartments, the feed tray having perches attached thereto;

feed ports connecting the feed hopper and the feed tray;

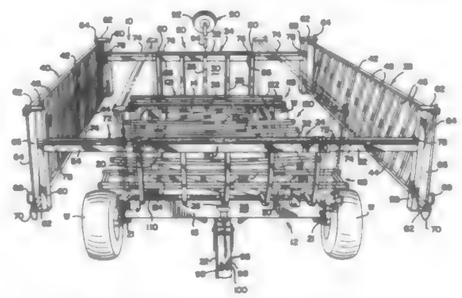
a roof having a roof peripheral edge, the roof attaching to the top end of the hopper wall; and

means for attaching the feed tray, the feed hopper and the roof;

the improvement comprising:

maintaining the hopper sidewall so inclined to form an included angle ϕ between the sidewall and the feed tray greater than about 60° and less than 70° and the perches being spread apart by a perch separation S from the sidewall by not less than about $\frac{3}{4}$ of an inch nor more than about $1\frac{1}{4}$ of an inch.

5,361,724
EXPANDABLE BALE CARRIER AND FEEDER
Abe B. Kuhns, Arthur, Ill., assignor to E-Z Trail, Inc., Arthur, Ill.
Filed May 1, 1992, Ser. No. 877,414
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—60 **28 Claims**



1. A hay bale feeder for livestock comprising:

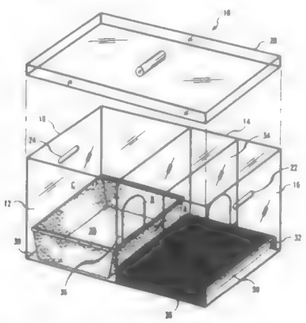
a bed for supporting hay thereon; p1 a pair of spaced end walls adjacent opposite ends of said bed and extending transversely of said bed and upwardly therefrom to retain the hay on said bed;

a pair of spaced side walls extending longitudinally of said bed and upwardly therefrom to also retain the hay on said bed, said side walls having a length substantially equal to the spacing between said end walls;

mounting means mounting said side walls for movement transversely of said bed between a first position transversely spaced from said end walls and a second position adjacent said end walls, said mounting means permitting the movement between said first and second positions of said side walls by the livestock as they feed so that the side walls remain closely adjacent the hay as the hay is consumed by the livestock, whereby said bed, end walls and said walls define a container of varying volume for the hay, said mounting means permitting movement between said first and second positions of one end of a given said side wall independent of the other end of the given side wall; and

said pair of side walls and said pair of end walls having openings therein to permit access to the hay in said container for feeding of the livestock from outside of said container simultaneously through said side walls and said end walls.

5,361,725
LITTER CONTAINMENT APPARATUS FOR KITTENS AND CATS
Robert A. Baillie, and Suzanne M. Baillie, both of 448-B Heather Ct., Lakehurst, N.J. 08733
Filed Jan. 6, 1994, Ser. No. 178,410
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—165 **12 Claims**



1. Apparatus comprising:

a carryable enclosure having a bottom floor panel, and also having front, back and opposing side walls;

a litter box in said enclosure supported by said bottom floor panel;

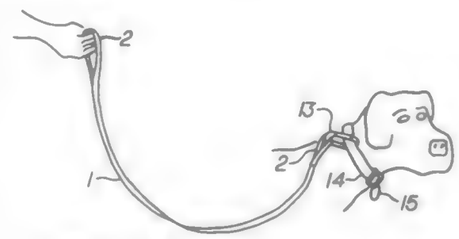
a first entry opening in at least one of said front, back and opposing side walls to admit a kitten or cat into said enclosure;

first and second divider walls in said enclosure between said entry opening and said litter box;

an entry opening in each of said first and second divider walls for guiding the kitten or cat from said first entry opening to, and from, said litter box over a predetermined path; and

means, in said predetermined path, for trapping there any litter accumulations on said kitten or cat resulting from its use of said litter box.

5,361,726
ANIMAL LEASH
James A. Harris, 300 E. 16th St., No. 309, Greeley, Colo. 80631, and Nancy J. Harris, 3550 S. Harlan No. 231, Denver, Colo. 80235
Filed Jul. 12, 1993, Ser. No. 90,284
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—797 **6 Claims**



1. An animal leash, comprising:

a lead of flexible material having a loop formed in each end, said loops being substantially equal in size, said size being appropriate for the comfortable placement of a person's hand through the loop for grasping; and

a carabiner having two straight sides and two curved ends, thereby forming a link, and made of a suitably strong and rigid material, said carabiner comprising

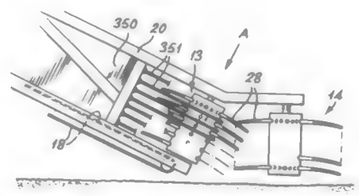
a body which forms one of said straight sides and the two said curved ends of the carabiner; and

a gate which forms the other of said straight sides, said gate being attached to the body by a spring-loaded hinge, whereby the gate is normally held in a closed position such that the carabiner forms a closed link, and further whereby the gate may be opened by hand by pivotting it into the inner portion of the carabiner link, so that one or both of said lead loops, may be admitted into the carabiner,

further wherein said carabiner is of a size sufficient to easily admit and enclose said lead loops;

whereby said carabiner may be used to link said lead to a collar or halter or harness in a multiplicity of ways, thereby giving a person a means of quickly and easily attaching the leash to an animal wearing the collar or halter or harness.

5,361,727
POULTRY HARVESTER
Paul S. Berry, Bedford, England, assignor to British Technology Group Limited, London, England
Filed Jun. 17, 1993, Ser. No. 78,177
Claims priority, application United Kingdom, Oct. 17, 1991, 9122074
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—846 **9 Claims**



1. A poultry harvester comprising: two counter-rotating poultry pick-up rotors arranged side-by-side with a continuous array of flexible bird-engaging guide elements supported by core portions on each rotor abutting and/or intermeshing with similar guide elements on the other rotor; a conveyor for

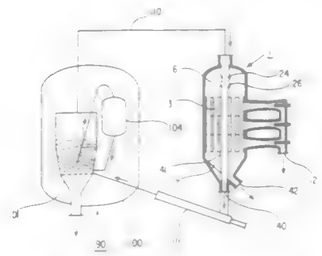
transferring the birds to or from the pick-up rotors; stationary side walls flanking both sides of the conveyor; and barrier means extending away from the side walls to interdigitate with the rotor guide elements and at least in part embrace the core portions of the rotors so as to prevent birds from being pulled between the side walls and said core portions.

5,361,728

PRESSURIZED FLUIDIZED BED COMBUSTION BOILER SYSTEM

Noriyuki Oda; Akira Toriyama, both of Tokyo; Katsumi Higashi; Hiroshi Maeno, both of Kawasaki; Tetsuya Kunitaka, Shin; Junichi Iritani, Chigasaki, and Hideki Goto, Chofu, all of Japan, assignors to Asahi Glass Company Ltd. and Electric Power Development Co., Ltd., both of Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,388
Claims priority, application Japan, Oct. 2, 1992, 4-289322
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D 11 Claims



1. A pressurized fluidized bed combustion boiler system comprising:

a boiler;

a filtration apparatus with ceramics filters in a flue gas system and

a louver separator as a primary stage dust separator disposed between said boiler and said filtration apparatus with ceramics filters.

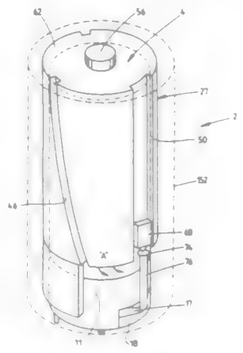
5,361,729

WATER HEATERS

John M. Trihey, Ringwood, Australia, assignor to Aqua Max Pty Ltd., Moorabbin, Australia

PCT No. PCT/AU90/00159, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1992, PCT Pub. No. WO90/12988, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 19, 1990, Ser. No. 775,977
Claims priority, application Australia, Apr. 19, 1989, PJ3790; Dec. 18, 1989, PJ7895
Int. Cl.[5] F22B *5/00*
U.S. Cl. 122—17 25 Claims

1. A hot water heater comprising a vessel for water, heating means for applying heat to one side of the vessel for heat transfer to water in the vessel adjacent to said one side to thereby establish a convection current in the water from said one side towards the top of the vessel, the heating means including a burner located below the vessel which in use produces hot combustion products, the heating means further including a flue structure arranged so that the combustion products from the burner pass through the flue structure and in passing through the flue structure heat water in the vessel, the flue structure including a first exhaust duct adjacent to said one side of the vessel so that hot conbustion products passing through the first exhaust duct heat water in the vessel at said one side, the flue structure further including second and third exhaust ducts which are located at respective opposite sides of the vessel relative to the first exhaust duct, the second and third exhaust ducts also receiving combustion products from the burner so that combustion product passing through the



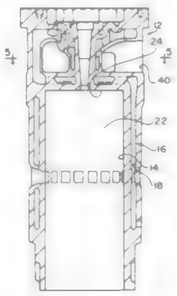
second and third exhaust ducts heat the water in the vessel at said respective opposite sides of the vessel.

5,361,730

ONE PIECE CYLINDER HEAD AND LINER INCLUDING A DRAFTLESS WATER JACKET

Richard J. Clark; Richard K. Clark, both of Gilman, and Dennis E. Clark, Onarge, all of Ill., assignors to Clark Industries, Inc., Gilman, Ill.

Division of Ser. No. 89,109, Jul. 12, 1993, Pat. No. 5,301,423.
This application Jan. 18, 1994, Ser. No. 183,027
Int. Cl.[5] F02F *1/10*
U.S. Cl. 123—41.81 11 Claims



1. A unitary, one piece cylinder head and liner combination, the liner incorporating a draftless water jacket therein, the combination being vertically cast and comprising:

a cylinder head forming portion having a top surface and a bottom surface, a peripheral portion of the bottom surface extending downwardly to form the liner and comprising vertical and concentric inner and outer cylindrical walls;

a lower surface having a ring configuration and joining the walls to one another;

an open area created between the walls serving as the liner water jacket;

the water jacket having an inlet thereto in a bottom area of the outer cylindrical wall, an outlet for the water being provided in the top surface of the cylinder head;

a radial circle of air ports approximately centered along a length of said liner and extending through a full thickness of the liner, said air ports being separated from one another and from the interior open area by walls which are transverse to a center axis of the liner, a plurality of the air ports being significantly enlarged;

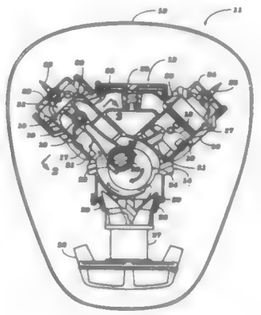
the areas between the air ports being hollow to create a complete, continuous water path extending the length of the liner and into the cylinder head.

5,361,731

SCAVENGING PORT DELIVERY FOR TWO STROKE ENGINE

Seiichi Tanaka, Hamamatsu, Japan, assignor to Sanshi Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 4, 1993, Ser. No. 101,939
Claims priority, application Japan, Aug. 4, 1992, 4-226501
Int. Cl.[5] F02B *33/04*
U.S. Cl. 123—65 P 4 Claims





1. A scavenge passage arrangement for a two cycle engine having a cylinder block with a cylinder liner having a cylinder bore formed therein, a scavenge passage formed in said cylinder block and terminating at said cylinder liner, a scavenge port formed in said cylinder liner and cooperating with said scavenge passage for admitting a charge into said cylinder bore, the side edges of at least said scavenge port being tapered outwardly in a direction towards the cylinder bore.

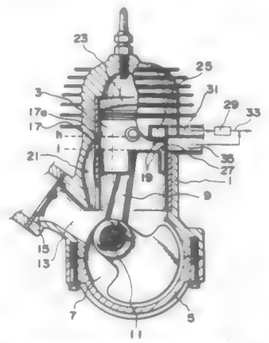
5,361,732

TWO CYCLE INTERNAL COMBUSTION ENGINE

Yoshikiyo Kamata, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Continuation of Ser. No. 969,133, Oct. 30, 1992, abandoned.
This application Dec. 6, 1993, Ser. No. 162,834
Claims priority, application Japan, Nov. 21, 1991, 3-103659[U]
Int. Cl.[5] F02B *27/04*
U.S. Cl. 123—65 PE 1 Claim

1. In a two cycle internal combustion engine having a cylinder piston and a scavenging port and an exhaust port opened to the side of said cylinder and being closed by said piston, said engine being characterized in that said exhaust port is divided into a pair of upper exhaust openings having their lower edges at the same level as the upper edge of said scavenging port and a lower exhaust opening having its upper edge at the same level as said upper edge of said scavenging port, only said upper exhaust openings being connected to an exhaust cleaning device, said upper and lower exhaust openings being radially offset from each other and said upper exhaust openings being



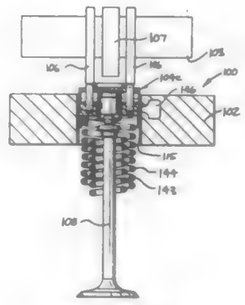
located radially between said scavenging port and said lower exhaust opening.

5,361,733

COMPACT VALVE LIFTERS

Mark J. Spath, Spencerport; Timothy J. Peterson, Weedsport; Ivan R. Samalot, Rochester; Christopher M. De Minco, Honeoye Falls; Timothy W. Kunz, Rochester, and Scott H. Nather, Churchville, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1993, Ser. No. 11,667
Int. Cl.[5] F01L *1/34, 1/24*
U.S. Cl. 123—90.16 7 Claims



1. A two step valve lifter comprising

an outer cam follower including an annular cylindrical body with first and second annular ends and concentric inner and outer cylinder surfaces, the first annular end including a pair of laterally spaced first cam engaging portions comprising a pair of rollers,

an inner cam follower including a hollow piston with at least one closed end, a second end and a cylindrical outer wall reciprocably engaging the inner cylinder surface of said body, the closed end including a second cam engaging portion located generally between said first cam engaging portions,

locking means on the outer and inner cam followers and engageable for selectively locking the followers together for coincident reciprocating motion,

the hollow piston forming a part of hydraulic lash adjusting means including a plunger reciprocable in the piston and carrying check valve means, the plunger defining with the piston a high pressure chamber adjacent the piston closed end and an inner reservoir in the plunger extending from the check valve means toward the piston second end, and

means for delivering oil through the outer and inner follow-

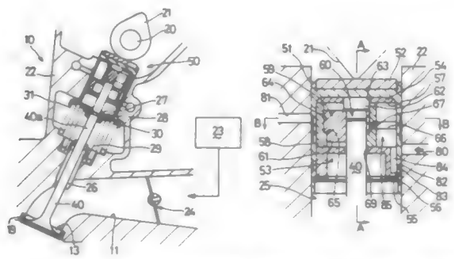
ers to the reservoir distal from the piston closed end and the check valve means.

5,361,734

VALVE CONTROL DEVICE FOR AN ENGINE

Eiji Shirai, Nukata, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 16, 1993, Ser. No. 121,565
Claims priority, application Japan, Sep. 18, 1992, 4-249322
Int. Cl.[5] F01L *1/34*; F02D *13/06*
U.S. Cl. 123—90.16 **1 Claim**



1. A valve control device for an engine, having a fuel supply means arranged in an intake passage, a valve arranged in at least one of the intake and an exhaust passage, and a cam for driving said valve via a lifter,

said lifter comprising:

a body which slidably moves in a bore formed in a cylinder head of said engine;

a cylinder arranged in said body and forming a sliding passage in a direction perpendicular to an axial direction of said valve;

a spool which is transferred between a first position and a second position in said sliding passage by hydraulic pressure;

a slider arranged in said spool and having a driving force transmitting portion and a cavity portion; and

a spring which holds said spool at the first position,

the driving force of said cam being transmitted to said valve via said body and said driving force transmitting portion of said slider, and

a stop valve being arranged between said fuel supply means and said valve in said intake passage in order to close said intake passage when said spool is held at the first position.

5,361,735

BELT DRIVEN VARIABLE CAMSHAFT TIMING SYSTEM

Roger P. Butterfield, Interlaken; Stanley K. Dembosky, Ithaca, and Franklin R. Smith, Slaterville Springs, all of N.Y., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

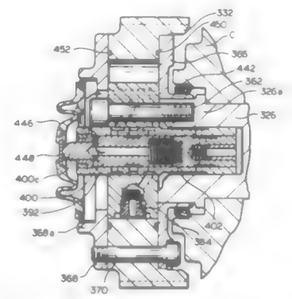
Continuation-in-part of Ser. No. 713,465, Jun. 11, 1991, Pat. No. 5,107,804, which is a continuation-in-part of Ser. No. 584,913, Sep. 19, 1990, Pat. No. 5,046,460, which is a continuation-in-part of Ser. No. 422,353, Oct. 16, 1989, Pat. No. 5,002,023. This application Apr. 16, 1992, Ser. No. 870,437
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **19 Claims**

7. An internal combustion engine comprising:

a crankshaft, said crankshaft being rotatable about an axis;

a camshaft, said camshaft being rotatable about a second axis, said second axis being parallel to said axis, said camshaft being subject to torque reversals during the rotation thereof;

oppositely acting first and second hydraulic means for varying the position of the camshaft relative to the crankshaft, each of said first and second hydraulic means having a first member attached to said camshaft, being rotatable with said camshaft and being non-oscillatable with respect to said camshaft, each of said first and second hydraulic means further having a second member, each of the second members being rotatable with said camshaft and being oscillatable with respect to said camshaft;



timing belt means for transmitting rotary movement from the crankshaft to the second members of the first and second hydraulic means; and

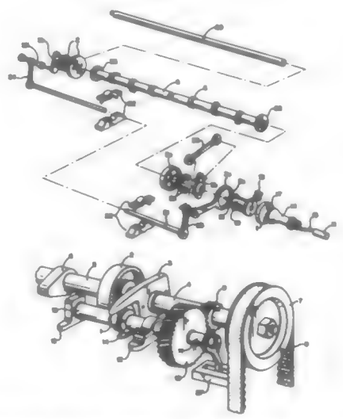
means reactive to torque reversals in the camshaft for varying the positions of the second members of the first and second hydraulic means relative to the camshaft.

5,361,736

VARIABLE VALVE TIMING

Lancelot Phoenix, and John B. Phoenix, both of 92 Leopold Avenue, Handsworth Wood, Birmingham, both of England B20 1ET

PCT No. PCT/GB91/01094, § 371 Date Jan. 5, 1993, § 102(e) Date Jan. 5, 1993, PCT Pub. No. WO92/01144, PCT Pub. Date Jan. 23, 1992
Continuation of Ser. No. 961,671, Jan. 5, 1993, abandoned. This PCT application Jul. 4, 1991, Ser. No. 166,900
Claims priority, application United Kingdom, Jul. 13, 1990, 9015461
Int. Cl.[5] F01L *1/34*; F16D *3/10*
U.S. Cl. 123—90.17 **12 Claims**



1. A system for the opening and closing at least one valve on an internal combustion engine, said engine having an output shaft and at least two cylinders, each of said at least two cylinders having at least one valve, said output shaft having a rotational phase, said system comprising:

a rotating valve operating means for opening and closing said valves associated with said cylinders, the opening and closing of a valve comprising one cycle of valve operation, said operating means having a rotational phase; and

rotational phase control means for variably controlling rotational phase of said valve operating means to advance and retard about a nominal phase said valve operating means rotational phase with respect to the rotational phase of said engine output shaft during each cycle of valve operation, said rotational phase control means comprising a means for dividing said rotating valve operating means into at least two sections, each of said sections operating at least two valves, and for ensuring that there is no valve overlap between any of said valves in a section, where overlap is defined as at least two valves in one section at least partially open at the same time.

11. A system for controlling the opening and closing of at least one of an inlet and an exhaust valve of an internal combustion engine having at least one cylinder, a valve operating means and an engine output shaft, said system including:

means for variably controlling rotational phase or the valve operating means with respect to the phase of the engine output shaft and for changing the instantaneous phase of the valve operating means in a predetermined cycle of advance and retard about a nominal value during any one complete cycle of one valve operation;

means for changing the amplitude of said instantaneous phase change during engine operation and thereby changing at least one of the valve open-time and phase of opening for any given engine speed, said amplitude changing means comprising a means for superimposing a synchronously modulated phase change of positive and negative sign upon the valve operating means, said amplitude changing means comprises a variable eccentric mechanism, said mechanism including:

a disc mounted to the end of a hollow shaft, said disc slidably mounted for movement in a direction substantially radial to the shaft but constrained rotationally so that any rotation of the shaft causes rotation of the disc;

means, at least partially within the shaft, for determining the eccentricity of the disc with respect to the shaft, said eccentricity determining means comprising a member which is able to slide axially within the hollow shaft and has at an end nearest to the disc an attached member projecting at an angle with respect to a longitudinal axis of said shaft, such that this angularly projecting member has the characteristics of a ramp which fits through a hole in the disc such that axial movement of said slidable member produces a radial movement of the disc.

5,361,737

RADIO FREQUENCY COAXIAL CAVITY RESONATOR AS AN IGNITION SOURCE AND ASSOCIATED METHOD

James E. Smith; Robert M. Craven; Kurt L. VanVoorhies, all of Morgan town, and Thomas J. Bonazza, Fairmont, all of W. Va., assignors to West Virginia University, Morgantown, W. Va.

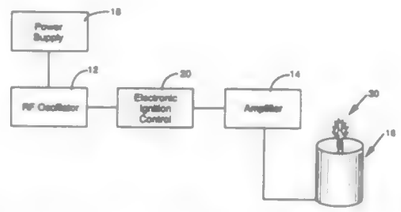
Continuation of Ser. No. 954,445, Sep. 30, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,660
Int. Cl.[5] F02P *23/00*
U.S. Cl. 123—143 B **35 Claims**

1. An apparatus for providing an ignition source for internal combustion engines, said apparatus comprising:

radio frequency oscillator means for providing radio frequency power from the electrical power source of said internal combustion engine;

amplifier means operably coupled with said radio frequency means for amplifying said radio frequency power;

coaxial cavity resonator means having an output end portion terminating in a discharge electrode, said resonator means being operably coupled with said amplifier means for generating an RF corona discharge which ionizes a surrounding gaseous medium to create a plasma at said discharge electrode; and



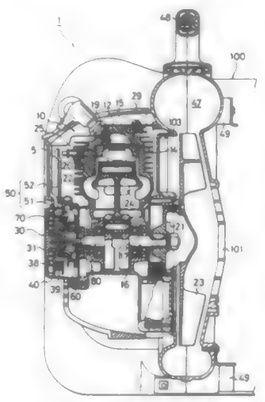
said resonator means being adaptable for communication with a combustion chamber of said internal combustion engine.

5,361,738

DECOMPRESSION DEVICE FOR AN ENGINE

Yoshikazu Iida, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,615
Claims priority, application Japan, May 18, 1992, 4-032562[U]
Int. Cl.[5] F02B *77/08*
U.S. Cl. 123—182.1 **2 Claims**



1. A decompression device for an internal combustion engine with a recoil starter having a starter cover, a recoil drum housed in said recoil starter cover, and a rotation transmission member movable axially of said recoil drum to transmit torque from said recoil drum to a crank shaft of said engine, said decompression device comprising:

a decompression passage through which a combustion chamber defined by the inner wall surface of a cylinder and the top surface of a piston in an engine body communicates with the outside upon start-up operation;

a decompression valve in said decompression passage; and

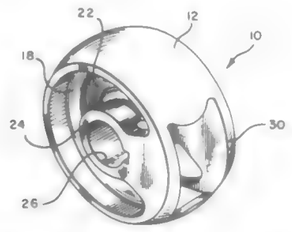
valve operating means supported by a dust sealing bearing extending through said starter cover, thereby maintaining the dust protecting function of the starter cover, and rotated upon axial movement of said rotation transmission member to operate said decompression valve.

5,361,739

SPHERICAL ROTARY VALVE ASSEMBLY FOR USE IN A ROTARY VALVE INTERNAL COMBUSTION ENGINE

George J. Coates, 1811 Murray Dr., Wall Township, Monmouth County, N.J. 07731

Filed May 12, 1993, Ser. No. 60,358
Int. Cl.[5] F01L 7/10
U.S. Cl. 123—190.14 19 Claims



1. An improved spherical rotary valve assembly for use in internal combustion engines of the piston and cylinder type, said spherical rotary valve assembly comprising:

a removable two-piece cylinder head securable to the internal combustion engine, said two-piece removable cylinder head comprising an upper and lower cylinder head section; said upper and lower cylinder head sections, when secured to said internal combustion engine, define two cavities radially aligned with the cylinders of said internal combustion engine, said cavities defining a plurality of first drum accommodating cavities for receipt of radially-aligned rotary intake valves and second radially-aligned cavities defining a plurality of second drum accommodating cavities for receipt of a plurality of radially-aligned rotary exhaust valves, said lower cylinder head section and said plurality of first drum accommodating cavities having an inlet port in communication with said cylinder; said lower cylinder head section and said second drum accommodating cavities having an outlet port in communication with said cylinder;

a sealing means associated with said inlet and said outlet ports;

a first passageway for introduction of a fuel/air mixture into said cylinder head by way of a reservoir cavity adjacent both sides of said first drum accommodating cavity and said rotary intake valve and a second passageway for the evacuation of exhaust gases from said cylinder by way of an evacuation cavity adjacent both sides of said second drum accommodating cavity and said rotary exhaust valve;

a first shaft means journaled on bearing surfaces within said first cavity, radially aligned with said cylinders of said internal combustion engine, said first shaft means having mounted thereon a plurality of said rotary intake valves;

a second shaft means journaled on said bearing surfaces within said second radially-aligned cavity, said second shaft means having positioned thereon a plurality of said rotary exhaust valves;

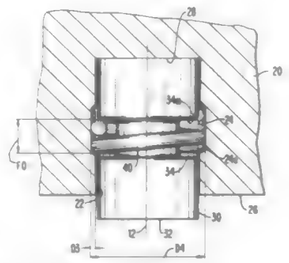
said rotary intake valve and said rotary exhaust valve each having a spherical section defined by two parallel planes of a sphere, said planes being disposed symmetrically about the center of said sphere, defining a spherical periphery and planer side walls, said rotary intake valves mounted on said first shaft means in said plurality of drum accommodating cavities in gas tight sealing contact with said inlet port, each of said rotary exhaust valves mounted on said second shaft means in said plurality of drum accommodating cavities in gas tight sealing contact with said outlet port, said rotary intake valve having a passageway on its spherical periphery for the introduction and interruption of fuel/air mixture into said engine, said passageway in communication with doughnut cavities formed in both of said sidewalls of said rotary intake valves, said doughnut cavities in communication with adjacent reservoir cavities formed in said upper and lower cylinder head sections, said adjacent reservoir cavities in communication with said first passageway for the introduction of said fuel/air mixture into said cylinder from both sides of said rotary intake valve, said rotary exhaust valve having a passageway positioned on its spherical periphery for the evacuation and interruption of evacuation of exhaust gases from said cylinder, said rotary exhaust valve having doughnut-shaped cavities formed in said planer sidewalls in communication with said passageway on said spherical periphery, said doughnut cavities in communication with adjacent evacuation cavities formed in said upper and lower cylinder head sections, said adjacent evacuation cavities in communication with said second passageway for the evacuation of exhaust gases from said cylinder.

5,361,740

MECHANICAL ASSEMBLIES WITH HARDENED BEARING SURFACES

Vincent J. Pitzi, South Windsor, Conn., assignor to Jacobs Brake Technology Corporation, Wilmington, Del.

Filed Mar. 29, 1993, Ser. No. 38,217
Int. Cl.[5] F02D 13/04
U.S. Cl. 123—321 24 Claims



1. A mechanical assembly comprising:

a main body having a recess;

a ceramic insert inserted into recess; and

means for holding said insert in said recess,

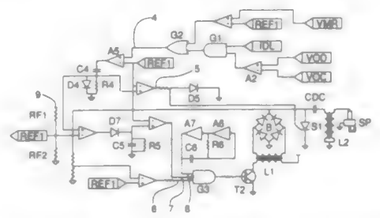
wherein said main body is a piston for use in a hydraulic circuit in an engine brake, and wherein said insert is adapted for contacting a moving part in an internal combustion engine associated with said engine brake for transmitting motion between said moving part and said main body.

5,361,741

ELECTRONIC IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

Duarte M. Cabral, 19553 SW. Lisa Ct., Aloha, Oreg. 97006-1912

Filed May 17, 1993, Ser. No. 62,235
Int. Cl.[5] F02P 5/00
U.S. Cl. 123—427 18 Claims



1. An electronic ignition device for determining an advanced firing angle for an internal combustion engine having a spark plug and a rotating shaft, comprising:

(a) a sensor configured to detect when said shaft rotates past top dead center and to provide a master reference signal in response to said detecting;

(b) a ramp generator that produces a ramp signal, said ramp signal being reset in response to said ramp generator receiving said master reference signal;

(c) a sample and hold circuit that samples said ramp signal in response to receiving said master reference signal, resulting in a peak signal, said sample and hold circuit providing said peak signal as an output;

(d) a divider that receives said peak signal, and provides a fraction of said peak signal as an output; and

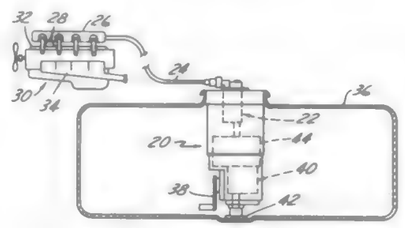
(e) a comparator that compares said ramp signal and said output of said divider, and provides a master firing signal to cause said spark plug to fire when said ramp signal exceeds said output of said divider.

5,361,742

FUEL PUMP MANIFOLD

Paul F. Briggs, Wolcott; George H. Bucci, S. Windsor, and Lawrence E. Egle, E. Hampton, all of Conn., assignors to Walbro Corporation, Cass City, Mich.

Filed Feb. 8, 1993, Ser. No. 14,704
Int. Cl.[5] F02M 37/04
U.S. Cl. 123—506 15 Claims



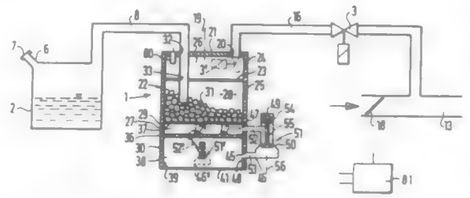
1. A fuel manifold for a no-return fuel system for an automotive engine with at least one fuel injector and a variable pressure fuel pump comprising, a fuel inlet passage in said housing having a fuel inlet constructed and arranged to be connected to the outlet of the fuel pump, a fuel outlet passage in said housing and communicating with said fuel inlet passage downstream of said inlet, a check valve disposed in said outlet passage and constructed and arranged to be closed when the pressure of fuel in said outlet passage exceeds the pressure of fuel in said inlet passage, a vent passage communicating only with said outlet passage downstream of said check valve and said inlet passage downstream of said fuel inlet thereof and upstream of said check valve, and a vent valve disposed in said vent passage and constructed and arranged to be normally closed and to open in response to the fuel pressure in said outlet passage being greater than the fuel pressure in said inlet passage by at least a predetermined minimum value due to a decrease in the fuel pressure produced by the fuel pump.

5,361,743

BREATHER FOR AN INTERNAL COMBUSTION ENGINE FUEL TANK

Helmut Denz, Stuttgart; Hans Neu, Vaihingen-Enz; Guenther Riehl, Buehlertal; Andreas Blumenstock, Ludwigsburg, and Rainer Frank, Sachsenheim, all of Germany, assignors to Robert Boech GmbH, Stuttgart, Germany

PCT No. PCT/DE92/00944, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO93/10991, PCT Pub. Date Jun. 10, 1993
PCT Filed Nov. 13, 1992, Ser. No. 98,330
Claims priority, application Germany, Dec. 6, 1991, 4140256
Int. Cl.[5] F02M 25/08, 21/02
U.S. Cl. 123—519 23 Claims



1. A breather for a fuel tank of an internal combustion engine, said breather including a housing, an adsorption filter in said housing, said housing is linked by means of a suction line to an induction manifold of the internal combustion engine, by means of a filter line to the fuel tank and to a breather line (46) to the atmosphere, said breather line can be shut off by means of a shut-off valve, said shut-off valve having a valve seat and a valve closing body (55), the shut-off valve (51, 51') has a vertical axis (56) and the valve closing body (55) of the shut-off valve (51, 51') is arranged to be movable along said vertical axis (56) so that any condensate which forms can flow off freely downward when the valve closing body (55) has lifted off its valve seat (50), the shut-off valve (51, 51') is provided with a magnetic circuit (54) which when energized moves the valve closing body (55) into a closing position and the magnetic circuit is designed to be only of such power that above a certain pressure in the adsorption filter (1) the force produced thereby is sufficient to move the valve closing body (55) into the opening position.

5,361,744

SUPERCHARGING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masao Teraoka, Tochigi, Japan, assignor to Tochigifujisangyo Kabushiki Kaisha, Japan

Filed Feb. 24, 1993, Ser. No. 22,177
Claims priority, application Japan, Feb. 26, 1992, 4-039457; Mar. 31, 1992, 4-105868
Int. Cl.[5] F02B 39/04; F16H 55/56
U.S. Cl. 123—561 5 Claims

1. A supercharging device for an internal combustion engine, comprising:

a runner compressing air;

a driven pulley rotating said runner;

a drive pulley rotating said driven pulley, said drive pulley having a fixed sheave and a movable sheave movable in an axial direction with respect to said fixed sheave;

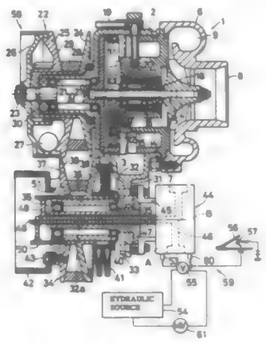
a belt wound around said driven pulley and said drive pulley; and

a control device moving said movable sheave in an axial direction so that said movable sheave is moved away from said fixed sheave under a low load condition and said movable sheave is moved towards said fixed sheave under a high load condition;

said control device including an actuator moving said movable sheave, a fluid source for storing fluid for driving said

actuator, and a valve controlling a fluid pressure supplied from said source to said actuator;

wherein said control device further comprises urging means for urging said movable sheave towards said fixed sheaves, said actuator supplying said fluid pressure against an urging force of said urging means, said valve controlling said fluid pressure so that said movable sheave is



moved away from said fixed sheave under the low load condition and that said movable sheave is moved towards said fixed sheave under the high load condition;

wherein said control device further comprises a manually-operated valve for supplying said fluid pressure from said source to said actuator so as to help said urging force of said urging means.

5,361,745

COMBUSTION STATE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

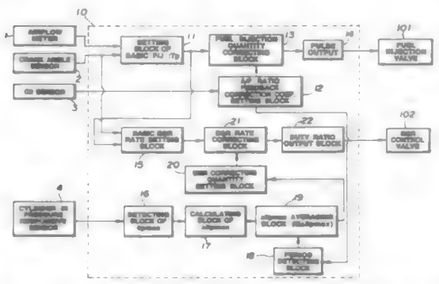
Keisuke Suzuki, and Hiroshi Satoh, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 12, 1993, Ser. No. 89,345

Claims priority, application Japan, Jul. 21, 1992, 4-194178

Int. Cl.[5] F02B *47/08*

U.S. Cl. 123—698 **11 Claims**



1. A control apparatus for an internal combustion engine comprising:

a) first means for detecting an engine operating condition;

b) second means for setting a basic EGR rate on the basis of the detected engine operating condition;

c) third means for detecting an inner cylinder pressure of the engine and outputting a signal waveform representing the inner cylinder pressure variation;

d) fourth means for detecting a combustion state variable on the basis of the inner cylinder pressure variation signal waveform for each combustion of the engine;

e) fifth means for detecting an air/fuel mixture ratio of the engine;

f) sixth means for averaging the combustion state variable for each predetermined period of a rich state and lean state of the air/fuel mixture ratio based on the output signal of said fifth means;

g) seventh means for correcting the basic EGR rate on the basis of an average value of the combustion variable derived by said sixth means to derive a final EGR rate; and,

h) eighth means for controlling an exhaust gas recirculation from an exhaust gas system of the engine to an intake air system thereof on the basis of the final EGR rate.

5,361,746

MAGAZINE FOR COMPRESSED GAS SINGLE-SHOT BOLT-ACTION PELLET SHOULDER GUNS

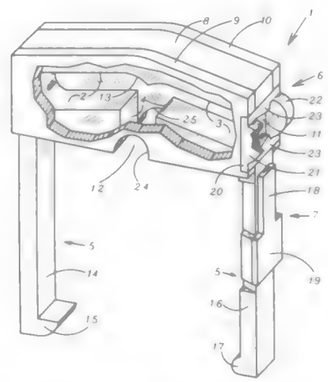
Pedro A. Szente, 80 E. Portola Ave., Los Altos, Calif. 94022

Continuation of Ser. No. 890,845, Jun. 1, 1992, Pat. No. 5,205,270. This application Apr. 26, 1993, Ser. No. 52,771

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] F41B *11/02*

U.S. Cl. 124—50 **10 Claims**



1. A gravity operated magazine for loading pellets into guns of the single-shot type that use cylindrical lead pellets as projectiles and shoot said pellets through an axial bore in said barrel, said guns further having loading mechanisms which include a bolt, said guns having as propellant either compressed air (pre-charged or provided by a pump), or carbon dioxide cartridges, said magazine comprising:

a magazine body including at least one pellet reservoir duct for receiving and storing one or more pellets, said magazine body further including a pellet chute duct having one end communicating with the at least one pellet reservoir duct to receive one pellet at a time from the reservoir duct and a second end for delivering pellets to the breech of the rifle, said reservoir duct and chute duct having a width slightly greater than the length of the pellets and a height slightly greater than the diameter of the pellets so that the pellets are free to roll along the inside of said reservoir duct and chute duct;

an opening in said body for introducing pellets into said at least one reservoir duct; and

means for securing said magazine body to the rifle with said at least one reservoir duct extending laterally outwardly and downwardly so that pellets roll away from the chute duct, and with the second end of the chute duct adjacent the breech so that the axis of pellets is parallel with the axis of the rifle's bore and the second end of said chute duct is closed when the bolt is in a closed position to allow said chute duct to retain a single pellet, whereby when the bolt is retracted, the pellet falls into the breech, whereby when the bolt is closed, it is inserted into the breech and another pellet can be rolled into said chute duct by rotating the rifle about the axis of the bore.

5,361,747

NOCKING SYSTEM FOR ARCHERY

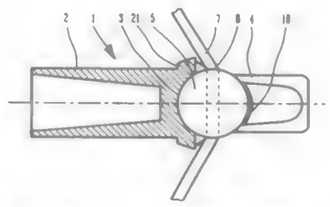
Roberto Laaba, Berlin, Germany, assignor to "Amerika-Bogen" Handelsgesellschaft mbH, Duisburg, Germany

Filed May 27, 1992, Ser. No. 888,816

Claims priority, application Germany, May 28, 1991, 9106655[U]; Dec. 30, 1991, 9116149[U]

Int. Cl.[5] F41B *5/14*; F42B *6/02*

U.S. Cl. 124—91 **19 Claims**



1. An improved nocking system for archery, the nocking system including a nock element fastened to the rear end of an arrow shaft and a nocking member carried by a bowstring, wherein the improvement comprises:

the nocking member has a spherically convex surface and the nock element has a correspondingly spherically concave receptacle for the nocking member, so that the nocking member and the nock element are rotatable relative to one another in any direction.

5,361,748

METHOD AND DEVICE FOR CUTTING UNDERWATER STRUCTURES

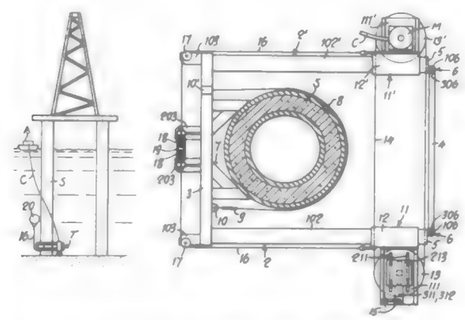
Francesco Mattenucci, 10/4 Via M. Staglieno, Genova, Italy

Continuation of Ser. No. 930,348, Aug. 17, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 213,817

Claims priority, application Italy, Nov. 6, 1991, GE91A000143

Int. Cl.[5] B28D *1/08*

U.S. Cl. 125—21 **14 Claims**



1. A cutting device for cutting underwater structures comprising:

an underwater cutting frame including releasable means for providing anchorage of the device to the structure to be cut and for positioning the device with respect to a predetermined cutting plane;

a powered cutting unit, including a cutting tool and a variable buoyancy means for displacing the cutting tool in a cutting direction parallel to the cutting plane of said cutting frame, so as to move the cutting tool from an initial position of non-interference with the structure to be cut to a final position wherein said cutting tool has moved through the structure by passing therethrough along the predetermined cutting plane, said cutting tool comprising a cutting cable;

an underwater adjustable unit, supported by the underwater cutting frame, for displacing said cutting unit in the cutting direction; and

an above water remote actuation and control means for controlling operation of the cutting unit.

5,361,749

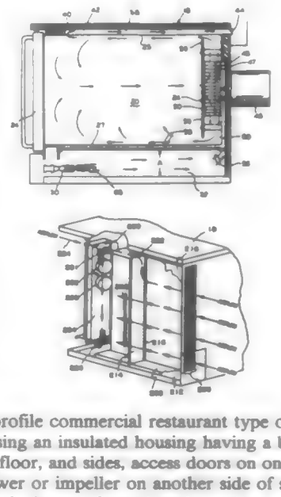
GAS FIRED CONVECTION OVEN

Mark Jr. Smith, Fuquay-Varina, and Gajanan M. Prabhu, Cary, both of N.C., assignors to Southbend, Fuquay-Varina, N.C.

Continuation-in-part of Ser. No. 833,889, Feb. 10, 1982, abandoned, which is a continuation of Ser. No. 145,293, Oct. 29, 1993. This application Nov. 20, 1992, Ser. No. 979,203

Int. Cl.[5] A21B *1/00*

U.S. Cl. 126—21 A **15 Claims**



1. A low profile commercial restaurant type of convection oven comprising an insulated housing having a baking cavity with ceiling, floor, and sides, access doors on one side of said cavity, a blower or impeller on another side of said cavity, a first horizontal channel formed under a floor of said oven cavity, a second horizontal channel formed over a ceiling of said baking cavity, each of said channels having an opening to receive incoming combustion air for drawing air into and expelling air from said oven cavity via a predetermined path, inshot burner means near but outside the front of said oven and at said opening in said first channel, said blower or impeller drawing in combustion air past said inshot burner means and expelling air heated by said burner means into said oven cavity, and oven controls, said combustion air drawn by said blower being cool ambient external air drawn over said oven controls while said combustion air is still cool and before it is heated by said burner means, thereby cooling said controls.

5,361,750

BURNER ASSEMBLY

Timothy P. Seel, Tonawanda, and Richard H. Wojtkowski, Buffalo, both of N.Y., assignors to Roberts-Gordon, Inc., Buffalo, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,452

Int. Cl.[5] F24C *3/00*

U.S. Cl. 126—91 A **17 Claims**

1. A burner assembly for a radiant heater, the radiant heater including an elongated low intensity radiant heating burner tube having an upstream end, a downstream end, and a generally cylindrical inner surface, and the burner assembly after ignition adjusting primary to secondary air ratios in response to environmental conditions in the firing zone within the burner tube; said burner assembly comprising:

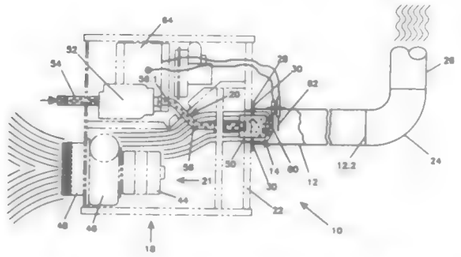
a generally cylindrical mixing cup assembly disposed within the burner tube, said mixing cup assembly including

a generally cylindrical mixer tube having an open up-stream end, a downstream end, and a generally cylindrical outer surface, and

a ceramic block closing the downstream end of the mixer tube, the ceramic block having upstream and downstream faces, the ceramic block being provided with a plurality of relatively small orifices which extend through the block from the upstream face to the downstream face permitting a flow of gas through the block with a relatively small pressure drop;

mounting means for mounting the mixing cup assembly within the burner tube with the mixing cup assembly being spaced away from the generally cylindrical inner surface of the burner tube;

means for providing a source of pressurized air to the burner assembly including primary and secondary air, the primary air flowing through the mixer tube secondary air



flowing about the outer surface of the mixer tube generally parallel to the axis of the mixer tube until it passes the downstream end of the mixer tube where it enters the burner tube without restriction, the primary and secondary air being direct communication with each other;

means for introducing combustible gas into the mixing cup assembly, said means being a gas line, one end of the gas line being provided with apertures in communication with said source of pressurized air, said end of the gas line being connected to a source of gas under pressure via a valve and the other end of the gas line terminating in the mixing cup assembly between the open upstream end of the mixer tube and the ceramic block, the gas thoroughly mixing within the mixing cup assembly with primary air, the gas not spilling out of the mixing cup assembly and the mixed primary air and gas passing through the passageway means to a place of ignition; and

means within the burner tube to ignite the thoroughly mixed gas and primary air downstream of the passageway means.

5,361,751

COMBINATION HOT AIR FURNACE AND HOT WATER HEATER

Robert C. Biggs, 3356 Lake Crest La., Roswell, Ga. 30075

Filed Dec. 15, 1993, Ser. No. 168,057
Int. Cl.[5] F24D *9/00*
U.S. Cl. 126—101 **17 Claims**

1. A combination hot air furnace and hot water heater, comprising:

a hot water tank, including a cold water inlet and a hot water outlet;

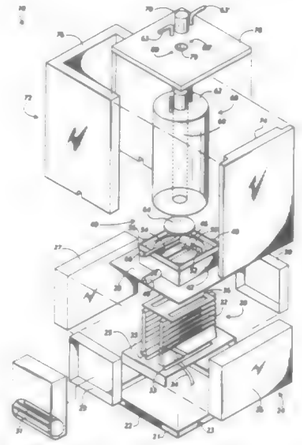
a water tank gas burner positioned below said water tank for emitting a gas flame for heating said water tank:

a furnace heat exchanger having an inlet and an outlet positioned below said water tank gas burner;

conduit means for directing a flow of air across said furnace heat exchanger;

a furnace gas burner positioned below said furnace heat exchanger for emitting a gas flame for heating said furnace heat exchanger; and

gas flow control means positioned between said furnace heat exchanger and said hot water tank for selectively directing the combustion gases and heat of combustion emitted



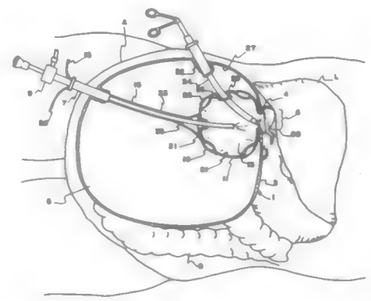
from said furnace heat exchanger to said hot water tank for heating said water tank, and for directing preheated combustion air or outside combustion air to said water tank gas burner in response to the emission of a gas flame from the furnace burner.

5,361,752

RETRACTION APPARATUS AND METHODS FOR ENDOSCOPIC SURGERY

Frederic H. Moll, San Francisco, and Albert K. Chin, Palo Alto, both of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 794,590, Nov. 19, 1991, Pat. No. 5,309,896, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application May 4, 1992, Ser. No. 877,995
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **23 Claims**



1. Apparatus for retracting an organ inside the body to gain access to an adjacent tissue, the apparatus comprising:

a first inflatable means for retracting the organ when the first inflatable means is inflated to an expanded condition, the first inflatable means having a first envelope;

means for selectively inflating the first inflatable means into an expanded condition while in place in the body;

a non-pressurized chamber inside the first inflatable means, the non-pressurized chamber having a second envelope attached to part of the first envelope;

a second inflatable means, operably associated with the non-pressurized chamber, for expanding the non-pressurized chamber into an expanded condition when the second inflatable means is inflated;

means for selectably inflating the second inflatable means; and

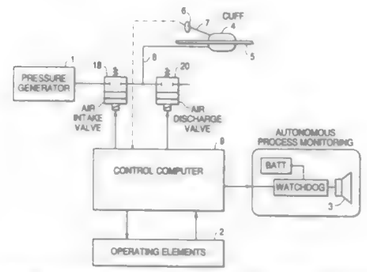
port means for providing a substantially gas-tight passage through which an object can pass into the non-pressurized chamber from the first inflatable means.

5,361,753

METHOD OF MEASURING AND REGULATING THE PRESSURE IN THE SEALING CUFF OF A TRACHEAL TUBE AND APPARATUS FOR IMPLEMENTING THE METHOD

Werner Pothmann; Bastian Steinberg, both of Hamburg; Peter Poock-Haffmans, Wedel, and Dirk Harms, Hamburg, all of Germany, assignors to Deutsche Aerospace AG, Munich, Germany

Filed Jul. 7, 1993, Ser. No. 86,889
Claims priority, application Germany, Jul. 7, 1992, 4222220
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.15 **13 Claims**



7. An apparatus for measuring and regulating tracheal sealing cuff pressure, comprising:

a compressed air pressure generator for providing compressed air;

a first compressed air conduit leading from the compressed air pressure generator to a tracheal sealing cuff;

an electrically actuatable air intake valve coupled to the first compressed air conduit and disposed between the compressed air pressure generator and the tracheal sealing cuff;

an electrically actuatable air discharge valve coupled to the first compressed air conduit and disposed between the tracheal sealing cuff and ambient air;

a pressure sensor integral with the sealing cuff for measuring the pressure in the tracheal sealing cuff; and

processor means coupled to the pressure sensor for receiving measurement signals therefrom, for controlling the electrically actuatable air discharge valve and the electrically actuatable air intake valve.

5,361,754

APPARATUS AND METHOD FOR CONNECTING A TRACHEOSTOMY TUBE TO A NECKPLATE

John M. Stuart, Lake Forest, Calif., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Jan. 25, 1993, Ser. No. 8,022
Int. Cl.[5] A61M *16/04*
U.S. Cl. 128—207.17 **11 Claims**

1. A tracheostomy device comprising:

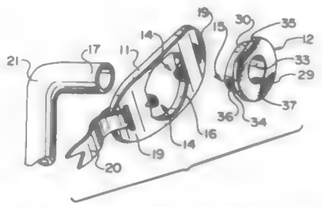
a neckplate having an access opening;

a trach head swivellingly connected to said neckplate at said access opening;

a tube adapted for insertion into a patient's breathing passage, said tube connected to said trach head; and

connection means for swivellingly connecting said trach head to said neckplate without deformation of the trach head or neckplate and without thermal processing;

wherein said connecting means includes a pair of bearing members and a pair of corresponding bearing sockets to receive said bearing members in seating relationship, said



pair of bearing members connected with one of said neckplate or trach head and said pair of bearing sockets formed in the other of said neckplate or trach head:

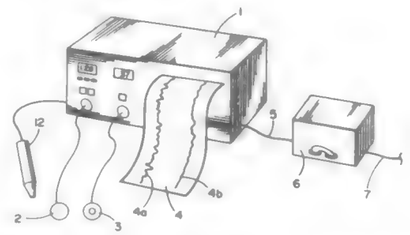
and wherein said connection means further includes a cam surface associated with each of said bearing members for engagement with a portion of the other of said trach head and neckplate when said bearing members are seated within said bearing sockets.

5,361,755

METHOD AND APPARATUS FOR MEDICAL MONITORING

Martin Schraag, Sindelfingen, and Andreas Boos, Bondorf, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 2, 1993, Ser. No. 12,328
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—630 **23 Claims**



1. Method for operating a medical monitoring device including the steps of:

Connecting a code reading device to said monitoring device;

providing a manual with clear text instructions regarding operating functions of said monitoring device and predefined codes representing said operating functions of said monitoring device;

scanning said codes with said code reading device according to the clear text instructions in said manual to cause electrical signals representative of said codes to be transmitted to said monitoring device; and

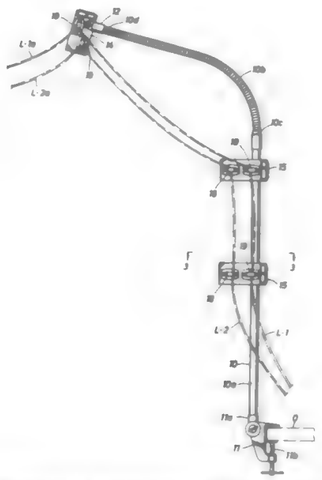
operating said monitoring device according to said electrical signals.

5,361,756

GUIDE AND CONTAINMENT MEMBER FOR LEADS FROM OPERATING ROOM MONITORING UNITS

Constance M. Cernoseck, 1544 Prairie Grove Dr., Houston, Tex. 77077, and Richard M. Blenderman, Houston, Tex., assignors to Constance M. Cernoseck, Houston, Tex.

Filed May 7, 1993, Ser. No. 59,455
Int. Cl.[5] A61M *5/00; F16L 3/00*
U.S. Cl. 128—630 **2 Claims**



1. A containment and guide arm for various leads extending from operating room monitoring devices such as a pulse oxygen metering unit, EKG unit, carbon dioxide, temperature and blood pressure monitors, comprising:

a tubular member, mount means for attachment to said tubular member for mounting said tubular member onto a stationary object;

said tubular member including a bendable section, said bendable section of said tubular member terminating in an outer end;

a plurality of guide assemblies, each of said guide assemblies including means for attachment of said guide assembly to said tubular member anywhere along the length of said tubular member;

each of said guide assemblies having a plurality of guide segments for containing at least one of such operating room leads extending from said monitoring devices to a patient;

said guide segments including first and second containment members being movable between open and closed positions, said first and second containment members forming a contained area in order to receive at least one lead with said first and second containment members in said open position and for containing said at least one lead with said first and second containment members in said closed position;

each of said guide assemblies including attachment means for attaching each of said guide assemblies anywhere along the length of said tubular member, said attachment means being a pivotal clip, said clip including first and second clip members pivotally attached to each other, said first and second clip members having a spring mounted therewith in order to bias said clip members to a closed position for mounting of said guide assemblies anywhere along the length of said tubular member; and

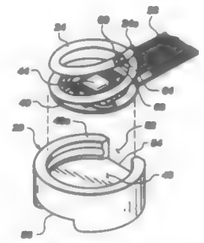
one of said guide assemblies being attached to said outer end of said tubular member.

5,361,757

SUBCUTANEOUS RADIATION REFLECTION PROBE

Roger E. Smith, Bountiful, and Jon Neese, Salt Lake City, both of Utah, assignors to Utah Medical Products, Inc., Midvale, Utah

Filed Feb. 17, 1993, Ser. No. 18,936
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **51 Claims**



1. A subcutaneous reflection probe for measuring E/M radiation from illuminated tissue comprising

a hollow needle having a pointed free end for insertion in the tissue and a base end, with a window formed in a wall of the needle, the window being positioned other than in the pointed free end,

a radiation emitter means disposed in the hollow of the needle for selectively emitting radiation through the window to illuminate the tissue, the radiation emitter means comprising a radiation generating device positioned at the window,

a base element on which the base end of the needle is secured, and

a radiation detector means disposed on the base element so as to face the tissue when the free end of the needle is inserted therein, for measuring the radiation from the illuminated tissue, the window being positioned on the hollow needle so that the radiation detector means is substantially off any optical line-of-sight with the window and so that radiation emitted from the radiation emitter means is directed away from the radiation detector means such that radiation received by the radiation detector means is modulated by the tissue.

5,361,758

METHOD AND DEVICE FOR MEASURING CONCENTRATION LEVELS OF BLOOD CONSTITUENTS NON-INVASIVELY

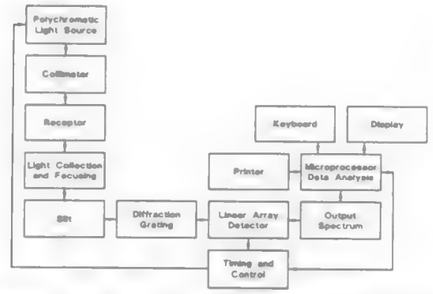
Jeffrey W. Hall, Lindsay, and T. E. Cadell, Waterloo, both of Canada, assignors to CME Telemetrix Inc., Waterloo, Canada

Continuation-in-part of Ser. No. 362,342, Jun. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 345,304, May 1, 1989, abandoned. This application Oct. 9, 1991, Ser. No. 785,430

Claims priority, application United Kingdom, Jun. 9, 1988, 8813658.5

Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **33 Claims**

1. A non-invasive device for measuring concentration levels of constituents of blood and tissue in a living subject such as a human or animal, said device comprising a polychromatic light source that emits a broad spectrum of light in the near infrared range, said light source being coupled to and powered by a stabilized power source, said device having a receptor shaped so that part of said subject can be placed in contact with said receptor, said receptor having means for eliminating extraneous light, said receptor being located relative to said light source so that when part of said subject is placed in contact with said receptor, said light source can be activated and light from said light source at a continuum of wavelengths is directed onto said part, means coupled to the device for collecting simultaneously a continuum of wavelengths over said broad spectrum after said light has been directed onto said part, means coupled to the device for dispersing said collected light over said broad spectrum into a dispersed spectrum of component wavelengths of said collected light, means coupled to the device for taking absorbance measurements from at least one of transmitted and reflected light from said collected light at several different wavelengths simultaneously over said dispersed spectrum, means coupled to the device for transforming said measurements over said dispersed spectrum to enhance measurement of concentration of at least one constituent from other constituents by using a calibration equation for said at least one constituent, means coupled to the device for determining the concentration level of said at least one constituent of said blood and then producing a result for each concentration level determined.



5,361,759

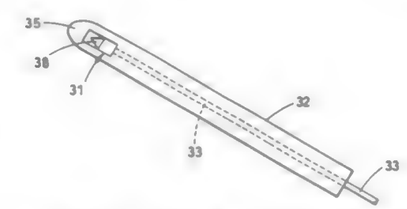
MECONIUM MONITORING SYSTEM

Eric S. G. Genevier, London; Philip J. Steer, Kingdyon upon Thames; Peter J. Danielian, Aberdeen; Nigel J. Randall, London, and Robin W. Smith, Crovdon, all of England, assignors to Charing Cross & Westminster Medical School, London, England

Continuation-in-part of Ser. No. 978,710, Feb. 1, 1993, abandoned. This application Jul. 1, 1993, Ser. No. 84,465

Claims priority, application United Kingdom, Jul. 4, 1990, 9014786.9; Jul. 1, 1992, 9213987.2

Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—634 **14 Claims**



1. A non-invasive system for monitoring the content of amniotic fluid during labor comprising:

a) an optical cell supported in a probe which is capable of insertion into the uterus during labor, said cell having a passageway permitting flow of amniotic fluid therethrough,

b) a source of light of suitable spectral bandwidth optically connected to the cell,

c) photodetecting means optically connected to the cell for detecting light reflected from the amniotic fluid, and

d) processing means for determining the presence of meconium and/or blood in the amniotic fluid by analysis of the spectral content of said reflected light,

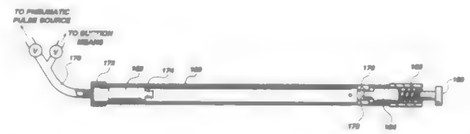
said cell being oriented in the probe in such a way that amniotic fluid in said passageway is illuminated by said light source while avoiding any light reflected from the wall of the uterus reaching the photodetecting means.

5,361,760

IMPACT INSERTER MECHANISM FOR IMPLANTATION OF A BIOMEDICAL DEVICE

Richard A. Normann; Patrick J. Rousche; Kenneth W. Horch, and Susan P. Schmidt, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 432,992, Nov. 7, 1989, Pat. No. 5,215,088. This application Jan. 19, 1993, Ser. No. 6,054
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—642 **15 Claims**



1. An inserter for implanting an electrode array in a biological tissue, comprising:

a casing having first and second ends and enclosing a chamber;

a piston disposed within said casing and slidable between a first and a second position;

piston actuating means operably associated with said piston for urging said piston to said second position;

an impact transfer mass slidably disposed within said casing, having a first end and a second end, said second end extending slidably through said second casing end and configured for placement adjacent and in contact with a rear side of an electrode array to be implanted, and said impact transfer mass being positioned to have said first end contacted by said piston when said piston is urged to said second position; and

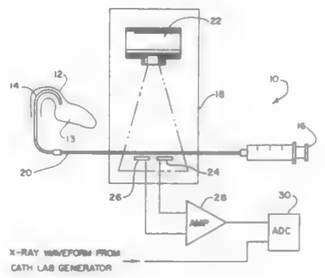
spring means operably associated with said impact transfer mass for returning said impact transfer mass to a ready position following an impact by said piston.

5,361,761

METHOD AND APPARATUS FOR MEASURING BLOOD IODINE CONCENTRATION

Michael S. Van Lysel, and Thomas P. Fuerst, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jun. 17, 1992, Ser. No. 900,143
Int. Cl.[5] A61B *5/14, 6/00;* **G01N** *23/06*
U.S. Cl. 128—653.1 **14 Claims**

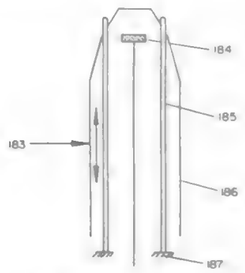


1. An apparatus for measuring blood iodine concentration comprising:

withdrawal means for obtaining a specimen of blood containing iodine,

a source of radiation,
conduit means for passing said specimen through said radiation,
means for detecting a specimen level of radiation passing through said specimen,
means for detecting a source level of radiation emitted by said radiation source,
means for comparing said specimen level to said source level and generating a difference signal representing a measurement of the blood iodine concentration, and
means for correcting said difference signal for effects of dispersion within said withdrawal means.

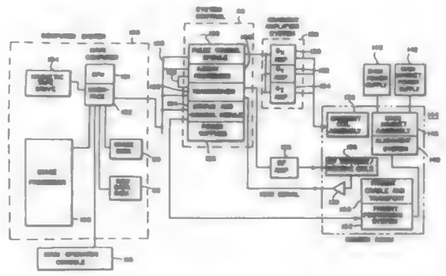
5,361,762
APPARATUS FOR DETECTING PROPERTIES, DIFFERENCES AND CHANGES OF HUMAN OR ANIMAL BODIES
Kirchhoff Günter, Dachau, Germany, assignor to Handelsgesellschaft fur Medizin und Technik mit beschrankter Haftung, Dachau, Germany
Continuation of Ser. No. 872,008, Apr. 22, 1992, abandoned, which is a continuation of Ser. No. 215,398, Jul. 5, 1988, Pat. No. 5,109,855. This application Oct. 4, 1993, Ser. No. 132,154
Claims priority, application Germany, Jul. 6, 1987, 304671
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—653.1 **3 Claims**



1. An apparatus for detecting properties, differences and changes of bodies, comprising:
an a.c. source having two terminals, a first terminal thereof being adapted to be connected to a body to be examined,
a sensing electrode disposed in a housing for moving over the surface of the body,
an electric measuring device coupled between the second terminal of the a.c. source and said sensing electrode,
wherein said sensing electrode is spaced from a surface of the housing which is moved into contact with the body,
at least one grounded layer comprising conductive material serving as a shield for the sensing electrode, said shield having a forward edge adapted to contact the body to be examined and to effect a grounding of the a.c. source, wherein a part of the shield protrudes from the housing.

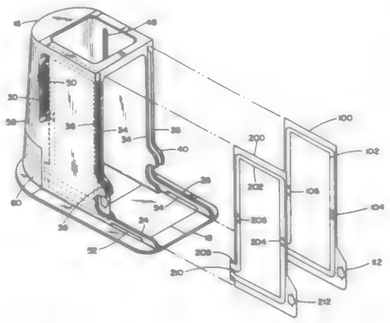
5,361,763
METHOD FOR SEGMENTING FEATURES IN AN IMAGE
Yi-Hsuan Kao; James A. Sorenson, and Mark M. Bahn, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Mar. 2, 1993, Ser. No. 25,004
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **12 Claims**

1. A method for analyzing registered images of an object, steps of which comprise:
(a) acquiring X images of the object where X is a positive integer, greater than one and wherein each image is formed by a two dimensional array of image elements;
(b) creating a X-dimensional feature space histogram of intensity levels of the image elements in the X images;
(c) locating a first centroid in the feature space histogram which centroid corresponds to a first feature in the X images;
(d) locating a second centroid in the feature space histogram which centroid corresponds to a second feature in the X images;
(e) defining a Cartesian coordinate system in the feature space histogram, wherein one axis of the Cartesian coordinate system passes through the first and second centroids;



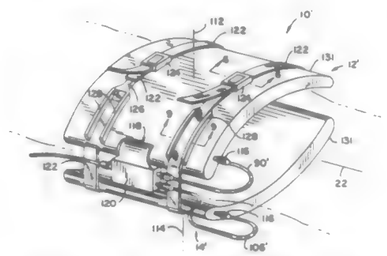
(f) decomposing a vector, that defines the location in the feature space histogram associated with a given image element, into a component vector along the one axis;
(g) determining from the component vector, a fractional quantity of the first feature in the given image element;
(h) repeating steps (f) through (g) for a plurality of image elements in one of the X images; and
(i) deriving a measurement of a physical parameter of the first feature from a plurality of fractional quantities.

5,361,764
MAGNETIC RESONANCE IMAGING FOOT COIL ASSEMBLY
Francis D. Reynolds, Port Jefferson Station; Joseph S. Baran, Holtsville; Robert P. Bisey, Seaford; Terry Button, East Patchogue; Robert E. McGill, Dix Hills; Nathan I. Naiven, Mount Sinai, and Matthew A. Salvitti, Patchogue, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Jul. 9, 1993, Ser. No. 87,905
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.5 **22 Claims**



1. A magnetic resonance imaging receiver system for producing high resolution images of the foot and ankle regions of a human subject, said system comprising:
(a) antenna means for receiving resonance signals produced by a magnetic resonance imaging, radio frequency excitation magnet apparatus, said antenna means comprising at least two antenna coils formed on printed circuit boards on either side of the foot and ankle regions of said human subject;
(b) a foot cradle assembly for supporting and rigidly holding the foot and ankle of said human subject, said foot cradle assembly houses said at least two antenna coils at a predetermined fixed distance from one another and maintains them in a parallel orientation such that the resonance signals are not biased by the orientation of said at least two antenna coils; and
(c) tuning/impedance matching means mounted within said foot cradle assembly, for providing a maximum transfer of radio frequency energy from said antenna means to a receiver of said magnetic resonance imaging, radio frequency excitation magnet apparatus.

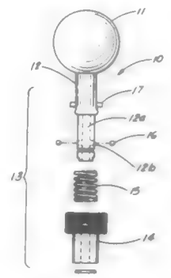
5,361,765
TWO-PART QUADRATURE NMR COIL
David J. Herlihy, New Berlin, and Eddy B. Boskamp, Menomonee Falls, both of Wis., assignors to Medical Advances, Inc., Milwaukee, Wis.
Filed May 7, 1993, Ser. No. 57,939
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.5 **7 Claims**



5. A local coil for use in NMR imaging of a patient comprising:
a first arched support having a first surface concave about a first arch axis and sized to fit against an anterior surface of the patient;
a first coil having a first coil axis and being affixed to the first arched support to conform substantially to the first concave surface;
a second arched support having a second surface concave about a second arch axis sized to fit against a posterior surface of the patient;
a second coil having a second coil axis and being affixed to the second arched support to conform substantially to the second concave surface; and
straps passing between the first and second arched support to draw the arched supports toward each other about the patient to one of a plurality of separation distances determined by a patient size supplying an even force to the patient wherein the first and second concave surfaces serve to support and align the first and second coils against the patient so that the first and second axes are substantially coaxial.

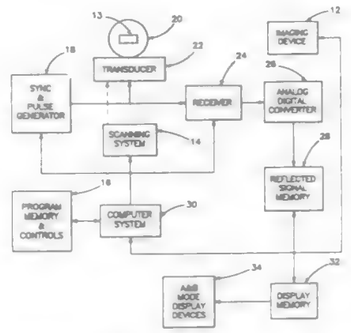
5,361,766
QUICK RELEASE BONE PROBE AND X-RAY MARKER
David Nichols, 675 Watson, Memphis, Tenn. 38111, and David Szalay, 2455 Monroe, Memphis, Tenn. 38112
Filed Feb. 17, 1993, Ser. No. 18,092
Int. Cl.[5] A61B *6/12*
U.S. Cl. 128—654 **8 Claims**

1. A surgical instrument for use in spinal implant procedures to enter the pedicle of a vertebrae, comprising:
a) a probe having a proximal end and a distal end, the probe being generally round in cross-section and tapering from a larger diameter at the proximal end to a smaller diameter at the distal end;
b) the probe including a fastening means on the proximal end;
c) a handle having a gripping means and further including fastening means for selectively engaging the proximal end



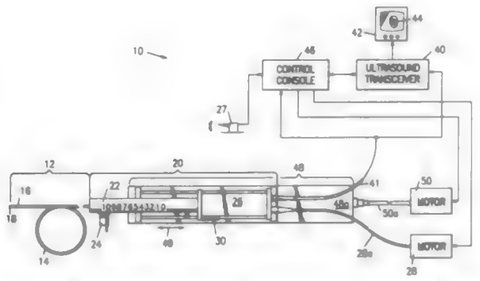
of the probe, said fastening means including spring means which allows for quick release of the probe;
d) the distal end of the probe being shaped to pierce the pedicle of a vertebrae; and
e) the probe further including marking means for determining the depth the distal end projects into a pedicle.

5,361,767
TISSUE CHARACTERIZATION METHOD AND APPARATUS
Igor Yukov, 422 Old Country Rd., Orange, Conn. 06477
Filed Jan. 25, 1993, Ser. No. 8,604
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.06 **36 Claims**



1. A method for non-invasively determining a type of tissue or a state of a tissue in a living entity comprising the steps of:
(a) using an imaging technique to generate an image of the tissue matter to be analyzed;
(b) selecting a region of interest on said image of said tissue matter to be analyzed;
(c) positioning a device for transmitting an ultrasonic signal at a desired frequency in a desired location relative to said tissue matter to be analyzed;
(d) transmitting a first ultrasonic signal at a first frequency through said region of interest using said device;
(e) transmitting a second ultrasonic signal at a second frequency through said region of interest using said device;
(f) detecting echo signals at said first and second frequencies reflected by said tissue matter; and
(g) analyzing said echo signals to determine at least one attenuation coefficient for said tissue matter.

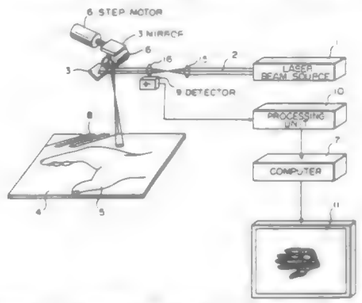
5,361,768
AUTOMATED LONGITUDINAL POSITION TRANSLATOR FOR ULTRASONIC IMAGING PROBES, AND METHODS OF USING SAME
William E. Webler, Costa Mesa, and Mark S. Buhr, Newport Beach, both of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.
Filed Jun. 30, 1992, Ser. No. 906,311
Int. Cl.[5] A61B *8/00, 8/12*
U.S. Cl. 128—660.09 **21 Claims**



1. An automated longitudinal position translator for an ultrasonic imaging probe having a distally located ultrasound transducer subassembly comprising:
a probe drive module adapted to being operatively coupled to the imaging probe so as to allow for longitudinal shifting of the ultrasound transducer subassembly of the probe between spaced-apart positions; and
a motor-driven linear translation module connectable to said probe drive module to effect motor-driven longitudinal translation of said probe drive module to thereby responsively longitudinally shift said ultrasound transducer subassembly; and
mounting structures for mounting said probe drive module to said translation module to allow for relative pivotal movements between an automatically-operable condition wherein said probe drive module is capable of being coupled to said motor-driven translation module to effect said motor-driven longitudinal translation thereof, and a manually-operable condition wherein said probe drive module is capable of being longitudinally shifted manually;
a pair of elongate guide rails;
forward and rearward transverse support arms connected to and spanning the distance between said pair of elongate guide rails; wherein
said probe drive module is slidably coupled to said pair of guide rails so as to be capable of reciprocal longitudinal displacements therealong between said forward and rearward transverse support arms; and wherein
said probe drive module is pivotally movable between said automatically-operable condition and a manually-operable condition by pivotal movement of said forward and rearward transverse support arms about said one guide rail.

5,361,769
METHOD AND A SYSTEM FOR MEASURING FLUID FLOW MOVEMENTS BY A LASER-DOPPLER TECHNIQUE
Gert Nilsson, Lövsbergsvägen 13, 582 69 Linköping, Sweden
PCT No. PCT/SE92/00570, § 371 Date Apr. 21, 1993, § 102(e) Date Apr. 21, 1993, PCT Pub. No. WO93/03667, PCT Pub. Date Mar. 4, 1993
PCT Filed Aug. 21, 1992, Ser. No. 39,410
Claims priority, application Sweden, Aug. 22, 1991, 9102421-6
Int. Cl.[5] A61B *5/026*
U.S. Cl. 128—666 **13 Claims**

1. A method for measuring fluid flow movements, said method comprising the steps of:
directing a laser beam (2) generated by a laser beam source (1) onto a measurement object (5) which scatters and reflects the laser beam (2);
receiving and detecting scattered and reflected light from said measurement object (5) in a detector (9) and detecting a broadening in frequency caused by a Doppler effect;

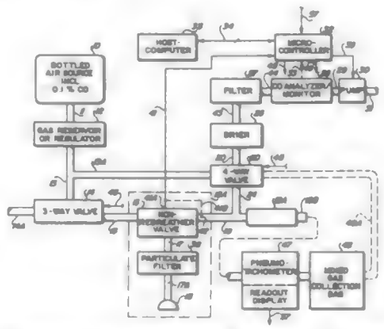


maintaining a number of coherence areas on a detector surface of said detector (9) constant and independent of a distance between said detector (9) and said measurement object (5).

5,361,770

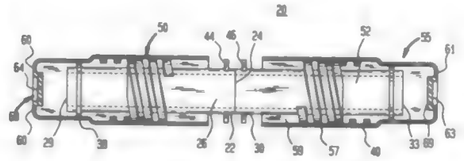
Patent Not Issued For This Number

5,361,771
PORTABLE PULMONARY FUNCTION TESTING DEVICE AND METHOD
Brian L. Craine, Fairfax, Calif., and Eric R. Craine, Tucson, Ariz., assignors to Western Research Company, Inc., Tucson, Ariz.
Filed Mar. 5, 1993, Ser. No. 27,048
Int. Cl.[5] A61B *5/08*
U.S. Cl. 128—719 **23 Claims**



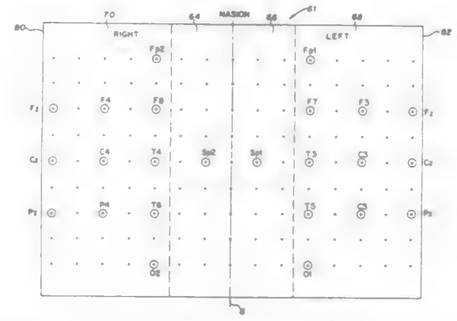
18. An apparatus for measuring lung function, comprising in combination:
(a) a gas source of air containing a particular concentration of CO gas;
(b) a mouthpiece;
(c) a chamber for temporarily storing exhaled air;
(d) a non-rebreather valve device coupled to the gas source, the chamber, and the mouthpiece and including a first valve path to selectively allow air from the gas source to be inhaled through the mouthpiece by a patient and prevent air exhaled by the patient from returning to the gas source, the non-rebreather valve device also including a second valve path to selectively allow air exhaled by the patient to pass into the chamber;
(e) a CO analyzer;
(f) a first conduit coupling the gas source and the CO analyzer to pass air from the gas source into the CO analyzer, the CO analyzer producing a first signal representing the concentration of CO in air from the gas source;
(g) a second conduit coupling the chamber and the CO analyzer to pass some of the exhaled air in the chamber into the CO analyzer, the CO analyzer producing a second signal representing the concentration of CO in the exhaled air;
(h) an analog-to-digital converter coupled to the CO analyzer a operating to convert the first and second signals into first and second digital numbers representing the CO concentrations in the air supplied by the gas source and the air exhaled by the patient, respectively; and
(i) a computing device coupled to the analog-to-digital converter and adapted to compute a fractional uptake of CO from the first and second digital numbers and compare the fractional uptake with a stored baseline value.

5,361,772
BREATH COLLECTION DEVICES
Janet G. Murnick, Bernardsville, and Richard A. Cronenberg, Mahwah, both of N.J., assignors to Diagnostics & Devices, Inc., Bernardsville, N.J.
Filed Jul. 7, 1993, Ser. No. 88,157
Int. Cl.[5] A61B *5/097*
U.S. Cl. 128—730 **18 Claims**



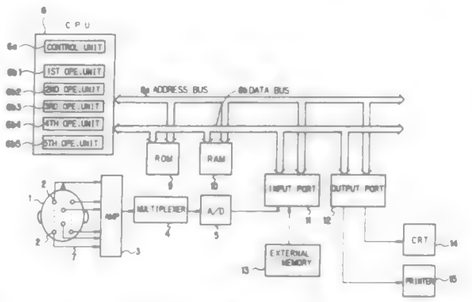
2. A device to segregate and retain a sample of expired breath from a stream of breath comprising:
(a) a body defining an interior space having first and second ends and first and second openings adjacent said ends;
(b) a first closure member mounted to said body for movement from an open position wherein the first closure member does not fully occlude the first opening to a closed position wherein the first closure member occludes the first opening; and
(c) a second closure member mounted to said body for movement from an open position wherein the second closure member does not fully occlude the second opening to a closed position wherein the second closure member occludes the second opening,
at least one of said body and said closure members being adapted to direct a stream of breath exhaled by a patient into said interior space by way of one said opening whereby a sample of expired breath may be captured in said interior space by directing the stream of breath through the interior space while both said closure members are in their open positions and moving both closure members to their closed positions, the device further comprising means for mounting both of said closure members to said body so that both closure members can be moved from their open positions to their closed positions responsive to a single manually applied actuation movement of one said closure member relative to the other said closure member.

5,361,773
BASAL VIEW MAPPING OF BRAIN ACTIVITY
John R. Ives, Lexington, Mass., assignor to Beth Israel Hospital, Boston, Mass.
Filed Dec. 4, 1992, Ser. No. 985,284
Int. Cl.[5] A61B *5/0476*
U.S. Cl. 128—731 **26 Claims**



1. A graphic display of electrical activity of a brain comprising a first set of points representative of electrical activity occurring in a temporal region of a left brain hemisphere and a second set of points representative of electrical activity occurring in a temporal region of a right brain hemisphere displayed adjacent to one another and a third set of points representative of electrical activity occurring in a mid-line region of a left brain hemisphere and a fourth set of points representative of electrical activity occurring in a mid-line region of a right brain hemisphere displayed remote from one another wherein respective locations of the first and third set of points are displayed substantially as a mirror image of respective locations of the second and fourth sets of points; and
a display for displaying the first, second, third, and fourth sets of points.

5,361,774
EQUIVALENT CURRENT DIPOLE LOCALIZATION SYSTEM
Toshimasa Yamazaki, Tokyo, Japan, and Bob W. Van Dijk, Amsterdam, Netherlands, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 4, 1993, Ser. No. 71,257
Claims priority, application Japan, Jun. 5, 1992, 4-145176
Int. Cl.[5] A61B *5/0476*
U.S. Cl. 128—731 **6 Claims**



1. An equivalent dipole localization system comprising:
potential measurement means for simultaneously measuring the potentials on a plurality of electrodes fitted on a living body;
dipole model calculation means for assuming a electric dipole at a given position on the living body having a char-

acter of a medium and calculating positions corresponding to said plurality of electrodes formed by said electric dipole;

correlation function calculation means for calculating a spacial correlation function of the potential on each electrode from the measurement of said potential measurement means;

maximum likelihood estimated error calculation means for calculating an error between a measured value obtained by said potential measurement means and a calculated value obtained by said dipole model calculation means according to calculated values obtained by said correlation function calculation means; and

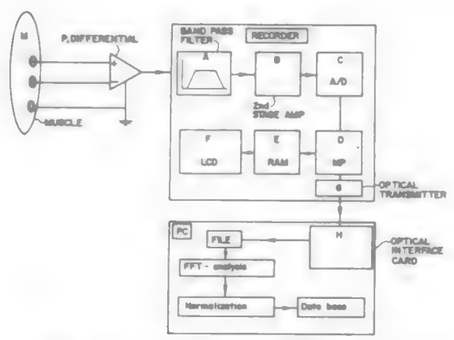
equivalent electric dipole setting means for setting an equivalent electric dipole by obtaining the location, the vector component and the intensity of said electric dipole that can minimize the error obtained by said maximal estimated error calculation means.

5,361,775

METHOD FOR DETERMINING MUSCLE ENDURANCE AND SENSITIVITY TO FATIGUE

Arto J. Remes, and Kari U. Eskelinen, both of Kuopio, Finland, assignors to MEGA ELEKTRONIIKKA OY PL., Kuopio, Finland

Filed Apr. 6, 1993, Ser. No. 42,782
Int. Cl.[5] A61B *5/0488*
U.S. Cl. 128—733 6 Claims



1. A method for a determination of endurance and sensitivity to fatigue of a muscle comprising:

attaching a grounded recording electrode directly on a skin surface on top of said muscle;

connecting a recording amplifier to said grounded recording electrode;

measuring action potentials of muscle cell membranes of said muscle with said recording electrode;

recording said action potential measurements as EMG data in a memory;

transferring said EMG data through an optical data means to a computation means for analysis and normalization;

performing an FFT frequency analysis on said transferred EMG data using three or more calculation parameters for determining a reduction in said conduction rate of said muscle cell membranes;

obtaining a rate of change value of said calculation parameters as a function of time thereby indicating an amount of said endurance and sensitivity to fatigue of a muscle;

comparing said rate of change value with a normalized index; and

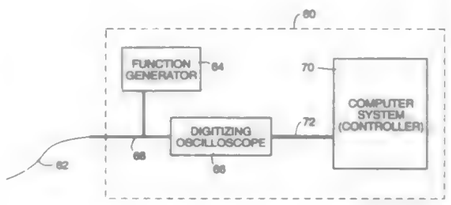
presenting a result of said comparison graphically.

5,361,776

TIME DOMAIN REFLECTOMETER IMPEDANCE SENSOR METHOD OF USE AND IMPLANTABLE CARDIAC STIMULATOR USING SAME

Kent E. Samuelson, Aurora; Robert A. Morris, Palmer Lake; James A. Nolan, Conifer, and Bruce M. Steinhaus, Parker, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Aug. 6, 1993, Ser. No. 104,382
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—734 34 Claims



1. A sensor in a medical device for measuring a patient's internal body impedance, comprising:

a transmission line adapted to be implanted in the patient's body tissue;

means for applying an electrical stimulation to said transmission line to propagate the electrical stimulation through the patient's tissue;

means for measuring a reflected electrical signal in said transmission line that results from reflections of the propagated electrical stimulation due to impedance variations in the patient's tissue, said impedance variations corresponding to a physiological function; and

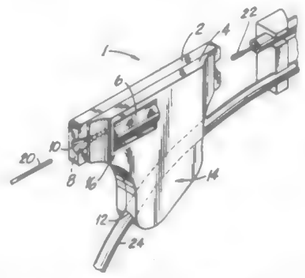
means for deriving an impedance signal as a function of the reflected electrical signal to detect said physiological function.

5,361,777

DEVICE FOR CONNECTING A GUIDEWIRE TO AN EXTENSION GUIDEWIRE

James M. Sellers, Haverhill, Mass., assignor to C.R. Bard, Inc., Murray Hill, N.J.

Continuation of Ser. No. 959,045, Oct. 9, 1992, Pat. No. 5,295,492. This application Sep. 7, 1993, Ser. No. 118,407
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 8 Claims



1. A device for connecting a guidewire and an extension guidewire, comprising:

a body member having a passage extending therethrough, said passage for receiving the guidewire and the extension guidewire; and

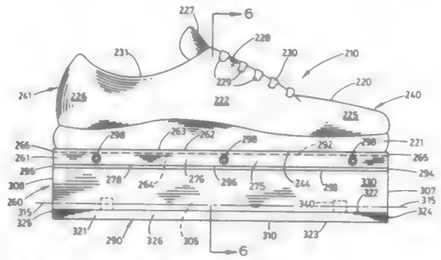
a transparent means positioned on said body member in a position to permit viewing of said passage for positioning and manipulating the wires, to permit an interconnection between said guidewires.

5,361,778

METHOD AND APPARATUS FOR SENSING AND EVALUATING FOOT BORNE MOTION

Ronald H. Seitz, 3202 E. Race St., Visalia, Calif. 93291

Filed Jan. 26, 1993, Ser. No. 9,237
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—779 19 Claims



1. A method for evaluating foot borne motion in an individual comprising:

applying footwear to at least one foot of said individual having means for registering predetermined movement of said foot relative to an axis of reference during foot borne motion;

causing said individual to engage in said foot borne motion; and

detecting said predetermined movement of the foot relative to said axis of reference during said foot borne motion.

5,361,779

TUBULAR SHEATHING ARTICLE COMPRISING KNITTED RETENTION STRUCTURE, AND METHOD OF MAKING THE SAME

Thomas W. Wilson, III, Chapel Hill, N.C., assignor to Family Health International, Research Triangle Park, N.C.

Filed Nov. 18, 1992, Ser. No. 978,348
Int. Cl.[5] A61F *6/02, 6/04*
U.S. Cl. 128—842 14 Claims



1. A sheathing article for protective covering of a sheathable part, comprising:

(i) a generally tubular sheath member having a closed first end and an open second end defining an enclosed interior volume within the sheath member, accessible by the open second end, for introduction of the sheathable part into the interior volume through the open second end;

(ii) a knitted retention structure associated with the sheath member at a proximal portion thereof in the vicinity of its open second end, for exerting a compressive retaining action on the sheathable part at the proximal portion of the sheath member, said knitted retention structure comprising a knitted material band circumscribing the exterior surface of the sheath member at its proximal portion, and

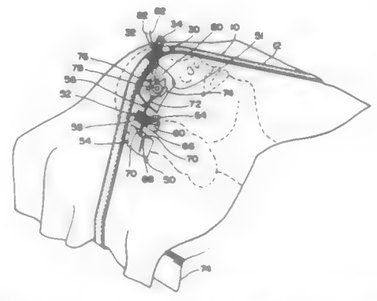
(iii) a circumferentially extending proximal compartment at the proximal portion of the sheath member, wherein the proximal compartment comprises an exteriorly everted skirt segment of the sheath member, secured to the exterior surface of the sheath member to define an internal compartment volume containing the knitted material band.

5,361,780

HEAD STABILIZER AND SUPERIOR RECTUS BRIDLE SUTURE FIXATOR DEVICE AND DRAINAGE DEVICE FOR USE IN EYE SURGERY AND METHODS THEREFOR

Robert E. Kellan, 60 East St., Suite 1100, Methuen, Mass. 01844

Continuation-in-part of Ser. No. 808,724, Dec. 17, 1991. This application Apr. 9, 1992, Ser. No. 865,531
Int. Cl.[5] A61B *19/00, 19/08;* A61F *5/37*
U.S. Cl. 128—849 32 Claims



1. A surgical drape and head stabilizer device for stabilizing a patient's head relative to an operating table supporting the patient's head during eye surgery including

a sterile drape for being positioned over the patient's head;

an opening in said drape for exposing an eye of the patient to be operated;

a head stabilizer on said drape for being positioned, simultaneously with said drape, to extend across the forehead of the patient, said head stabilizer including a strap secured on said drape by stitching and having ends for being arranged in an overlapping configuration beneath the operating table; and

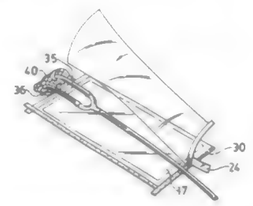
fasteners on said ends for fastening said ends together in said overlapping configuration with the head stabilizer extending around the operating table laterally whereby the head of the patient is stabilized relative to the operating table.

5,361,781

DEVICE FOR REMOVAL AND DISPOSAL OF A CHEST DRAIN

Thomas J. Antonini, 111 Wilshire Rd., Syracuse, N.Y. 13209-2248

Filed Mar. 30, 1993, Ser. No. 40,915
Int. Cl.[5] A61B *19/00;* A61F *5/37*
U.S. Cl. 128—849 3 Claims



1. Apparatus for facilitating the safe and sanitary removal of

a drain implanted in a patient's chest cavity through an incision that includes:

a flaccid rectangular plastic sheet having a front surface and a back surface, a top edge and a bottom edge and two opposed side edges, said sheet being divided along a vertical fold line into first and second half sections whereby the first half section can be placed beneath a portion of a chest implanted drain and the second half-section folded along the fold line over the first half section to create a flaccid pouch that is open along the folded top and bottom edges of the sheet,

a first adhesive strip mounted upon the back surface of the sheet adjacent to the top edge of the first half section whereby the first section can be adheasively attached to the chest of a patient next to an incision through which the drain is implanted,

a second adhesive strip mounted on the front surface of the sheet adjacent to one of the side edges to adhesively close the pouch over a portion of the drain, and

a flap integral with the second half section that depends upwardly from the top edge thereof to cover the incision, whereby the pouch can be pleated along the drain toward the incision and the implanted portion of the drain drawn into the pouch as the drain and the pouch are pulled simultaneously away from the incision.

5,361,782

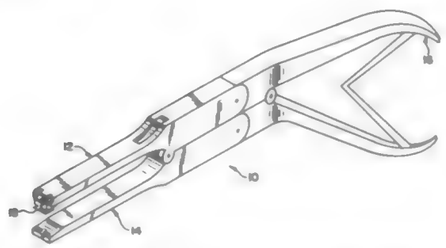
INTRANASAL SEPTAL STAPLING METHOD

William Bauer, 80 Summerhill Pl., Newnan, Ga. 30263

Division of Ser. No. 858,028, Mar. 26, 1992. This application Jun. 21, 1993, Ser. No. 79,272

Int. Cl.[5] A61B *17/00*

U.S. Cl. 128—898 **4 Claims**



1. A method of securing nasal tissue comprising the steps of:

providing a staple driving device including at least one arm member sized and configured to be inserted into a nasal passage;

inserting said at least one arm member into a nasal passage;

driving a staple at least partially through the nasal tissue with said at least one arm member; and

withdrawing said at least one arm member from the nasal passage leaving the staple in securement with the nasal tissue.

5,361,783

APPARATUS FOR FEEDING WEBS OF WRAPPING MATERIAL

Andreas Herburg, Wentorf, Germany, assignor to Korber AG, Hamburg, Germany

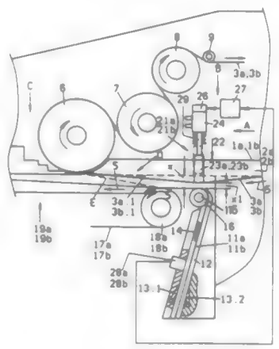
Filed Oct. 15, 1993, Ser. No. 138,484

Claims priority, application Germany, Oct. 30, 1992, 4-236646

Int. Cl.[5] A24C *5/18*

U.S. Cl. 131—84.1 **18 Claims**

1. Apparatus for uniting a running web containing wrapping material and having a leader with a substantially rod-like filler of particulate material of the tobacco processing industry, comprising first conveyor means having means for advancing the filler along a first path in a first direction toward a wrapping station; second conveyor means having means for advancing the web toward said station along a second path including a portion disposed at a first distance from a portion of said first path; and means for at least temporarily reducing the first distance to a lesser second distance, including means for moving at least one of said advancing means toward the other of said advancing means and means for actuating said moving means to reduce said first distance not later than on advancement of the leader of the web into said portion of said second path.



5,361,784

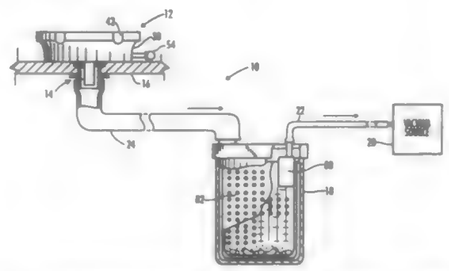
SYSTEM FOR REMOVING AND DISPOSING OF CIGARETTE AND CIGAR SMOKE AND RESIDUES

Larry L. Kinder, 1016 E. El Camino Real, Suite 411, Sunnyvale, Calif. 94087

Filed Mar. 26, 1993, Ser. No. 37,895

Int. Cl.[5] A24F *19/00*

U.S. Cl. 131—231 **15 Claims**



1. A system for removing and disposing of smoke and residue produced by smoking articles, the system comprising:

a vacuum source;

a canister having an interior for receiving said smoke and residues, said interior of said canister being connected to said vacuum source;

an ashtray unit having a portion adapted to hold a smoking article such as a cigarette or cigar, the ashtray unit including a passage in communication with the article holding portion of the ashtray unit;

a valve in the passage, said valve being biased to a normally open position;

means coupled to said valve for closing said valve; and

an exhaust conduit coupling the passage with the interior of the canister, the normally open valve permitting the withdrawal of smoke and residues from the ashtray unit to the canister via the passage and exhaust conduit, closure of the normally open valve increasing the suction in the exhaust conduit to facilitate transport of smoking article stubs inserted into the ashtray unit passage through the exhaust conduit to the canister so as to remove and dispose of said stub.

5,361,785

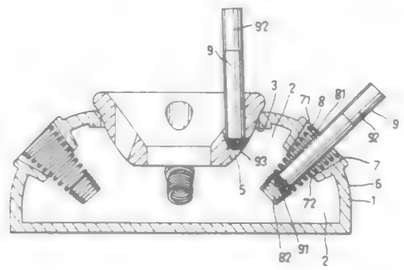
ASH TRAY

Wu-Hsiung Wu, No. 9, Lane 202, Sec. 2, Chung-I Rd., Tainan City, Taiwan, Prov. of China

Filed Sep. 3, 1993, Ser. No. 116,408

Int. Cl.[5] A24F *13/18, 13/22*

U.S. Cl. 131—235.1 **1 Claim**



1. An ash tray comprising a dome-shaped hollow casing including a base with a flat seating plane and a rounded roof portion provided on said base to define an internal space in said hollow casing, said roof portion having at least one tapered through-hole formed therethrough and an apex formed with a central opening, said through-hole oriented inclinedly with respect to said flat seating plane, and at least one spiral coil having a first end engaged in said through-hole and a second end extending into said internal space, said spiral coil being shaped as a truncated cone and having a series of coil turns with diameters that are reduced gradually from said first end to said second end, and a series of pitches that are reduced gradually from said first end to said second end, wherein said rounded roof portion further comprises a funnel member that has a first open end and a second open end which has a diameter smaller than that of said first open end, said funnel member being fixed in said central opening such that said second open end extends into said internal space, said funnel member including a wall body formed as a hollow truncated cone, said wall body having at least one through-hole formed therethrough, said through-hole of said wall body being formed as a truncated cone with a top end and a bottom end.

5,361,786

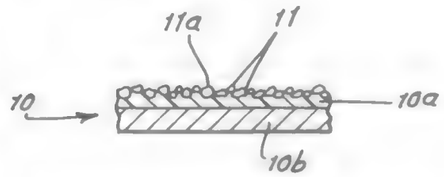
NAIL TREATMENT METHOD

William E. Pangburn, 12171 Loma Rica Dr., Grass Valley, Calif. 95945

Filed Jul. 26, 1993, Ser. No. 96,224

Int. Cl.[5] A45D *24/00*

U.S. Cl. 132—200 **9 Claims**



1. The method of reforming fingernail or toenail surface that includes the steps:

a) providing an undulating multi-bead exclusively glass surface on a substrate,

b) and reciprocating said glass surface against a nail surface while applying pressure thereto via the substrate and the glass surface, thereby to reform said nail surface.

5,361,787

CLEANING APPARATUS

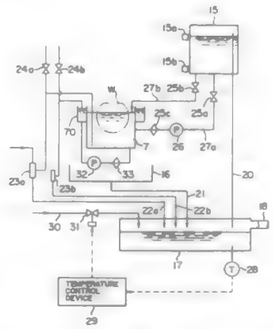
Takanori Miyazaki, and Hiroshi Sakurai, both of Kumamoto, Japan, assignors to Tokyo Electron Kabushiki Kaisha, Tokyo and Tokyo Electron Saga Kabushiki Kaisha, Saga, both of Japan

Filed Feb. 23, 1993, Ser. No. 21,087

Claims priority, application Japan, Feb. 25, 1992, 4-037959; Feb. 25, 1992, 4-037960

Int. Cl.[5] B08B *3/04*

U.S. Cl. 134—57 R **4 Claims**



1. A cleaning apparatus comprising:

a waste liquid sump tank for collecting waste liquid;

a plurality of processing tanks for containing cleaning liquids, said processing tanks being capable of draining processing liquids to said waste liquid sump tank;

at least one chemical tank for storing chemicals to be supplied to said processing tanks, said at least one chemical tank having overflow capture means for collecting excess chemicals from said chemical tank which exceed a predetermined level and draining excess chemicals to said waste liquid sump tank;

an object movement means for conveying an object to be cleaned and for immersing it in said processing tanks;

a dilutant liquid supply means for supplying dilutant liquid to said waste liquid sump tank in order to dilute waste liquid contained therein;

a chemical receptacle provided beneath said processing tanks for collecting chemicals escaping therefrom, said receptacle being in communication with said waste liquid sump tank for draining collected chemicals into said sump tank;

temperature measurement means for monitoring the temperature of chemicals in said waste liquid sump tank; and

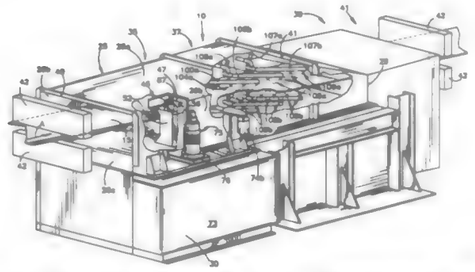
control means for controlling an amount of dilutant liquid supplied to said waste liquid sump tank in response to a temperature measurement signal from said temperature measurement means.

5,361,788

APPARATUS FOR DESCALING METAL STRIP

John M. Cole, West Bloomfield, and Charles M. Bessey, Plymouth Township, Wayne County, both of Mich., assignors to Kolene Corporation, Detroit, Mich.

Division of Ser. No. 926,528, Aug. 5, 1992, Pat. No. 5,272,798.
This application Sep. 10, 1993, Ser. No. 119,496
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—64 R 19 Claims



1. An apparatus for descaling a strip of metal having upper and lower surfaces moving in a metal processing line, comprising:

a chamber for containing a molten descaling product,

means for heating the chamber and for heating the descaling product in said chamber to a consistency in which the descaling product can be applied through a nozzle device, and

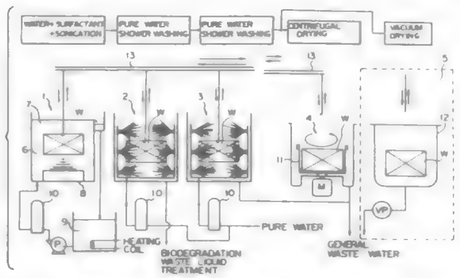
a first nozzle device fluidly connected to and in heat exchange relationship with said chamber, said first nozzle device being heated by the chamber and being oriented to direct the molten descaling product from the chamber against one surface of the metal strip to descale the surface of the metal strip.

5,361,789

WASHING/DRYING METHOD AND APPARATUS

Ichiro Yoshida, and Hiroshi Iida, both of Nagano, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 691,915, Apr. 26, 1991, Pat. No. 5,203,927.
This application Jan. 15, 1993, Ser. No. 5,329
Claims priority, application Japan, May 1, 1990, 2-116439
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—68 8 Claims



1. A washing/drying apparatus for a material to be washed and dried, comprising:

a water vessel which contains an aqueous solution, comprising a surfactant having a water repellency, of a sufficient volume for dipping and thereby washing the material therein and thereby attaching water repellent surfactant on the surface of the material;

at least one shower washing device in which the material, following washing in the water vessel, is received and which removes superfluous water repellent surfactant attached to the material; and

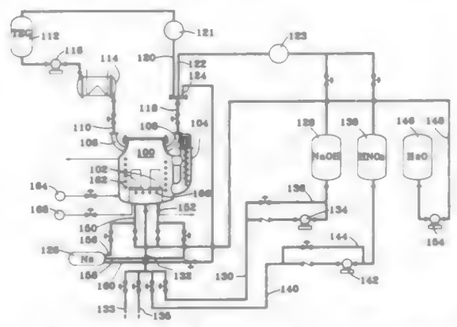
a vacuum chamber in which the material is received after being shower washed in the shower washing device and which dries the material, the vacuum chamber being maintained at a pressure at which the boiling point of water is less than 100° C. and producing jets of steam at a temperature of less than 100° C. and to which the material, as received in the vacuum chamber, is subjected and thereby heated, the vacuum chamber further comprising a gas blowing device which blows water of the aqueous solution from the surface of the material.

5,361,790

APPARATUS AND METHOD FOR CLEANING A FILTER ASSEMBLY

Jong-Mun Park; Chan-Sik Jeong; Uk-Hwan Oh, and Taek-Jong Yu, all of Suwon, Rep. of Korea, assignors to SKC Limited, Suwon, Rep. of Korea

Filed Mar. 15, 1993, Ser. No. 31,692
Claims priority, application Rep. of Korea, Mar. 14, 1992, 92-4205
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—95.3 10 Claims



1. An apparatus for use in cleaning a filter assembly with chemical agents, the filter assembly including an elongate stem and a plurality of porous filter elements stacked one above the other along an axis of the stem, the stem having an axial flow path extending from an end aperture to the filter elements, comprising:

a cleaner vessel for accommodating the filter assembly to clean the latter with a variety of chemical detergents, the cleaner vessel including a platform fixedly mounted in the vicinity of the bottom of the cleaner vessel, the platform having at least one bearing seat adapted to support the filter assembly in a stable manner;

a plurality of reservoirs each communicating with the cleaner vessel and holding therein the chemical detergents which are to be fed into the cleaner vessel;

a water tank communicating with the cleaner vessel and holding water therein, the water tank coupled to the end aperture of the filter assembly to allow the water to flow through the axial flow path into the cleaner vessel;

means for causing the chemical detergents to circulate within the cleaner vessel;

means for controlling the operation of the filter assembly cleaning apparatus; and

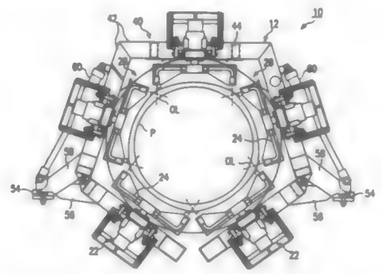
a filter carrying basket for containment of the filter assembly, the basket including a base plate with an underlying surface complementary to the bearing seat of the platform, a cylindrical side wall extending upward from the base plate and terminating at a top opening, an openable lid attached to the top opening of the side wall and a lift bar pivotably mounted on the side wall to extend transversely over the top opening, the side wall having a multiplicity of uniformly distributed fluid communication holes and a mesh layer for covering the fluid communication holes to prevent any discharge of solid particles from the basket.

5,361,791

CLEANING OF THE EXTERIOR SURFACE OF A PIPELINE TO REMOVE COATINGS

Gordon R. Chapman, Houston, Tex.; Charles M. Reid; James B. Seale, both of Edmonton, Canada, and Donald R. Andruik, Houston, Tex., assignors to CRC-Evans Rehabilitation Systems, Inc., Houston, Tex.

Continuation of Ser. No. 801,707, Dec. 2, 1991, Pat. No. 5,265,634, which is a continuation of Ser. No. 592,140, Oct. 3, 1990, Pat. No. 5,092,357, which is a continuation-in-part of Ser. No. 486,093, Feb. 28, 1990, Pat. No. 5,074,323, which is a continuation-in-part of Ser. No. 197,142, May 23, 1988, Pat. No. 5,052,423, which is a continuation-in-part of Ser. No. 55,119, May 28, 1987, abandoned. This application Oct. 15, 1993, Ser. No. 137,589
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—122 R 37 Claims



6. Apparatus for treating an exterior surface of a pipe, wherein said pipe has a longitudinal axis, said apparatus comprising:

a frame suitable or being positioned on said pipe, said frame having a first end and a second end, said frame defining a passage having a longitudinal axis and extending therethrough from said first end to said second end, said passage being of a size sufficient to accommodate said pipe; said frame comprising an upper frame section and at least two lower frame sections pivotally mounted to said upper frame section, whereby each of said at least two lower frame sections can be pivoted with respect to said upper frame section between an open position and a closed position, whereby said frame can be lowered over said pipe so that said pipe is received within said passage when each of said at least two lower frame sections is in its open position and said frame at least substantially encompasses said pipe when each of said at least two lower frame sections is in its closed position and said pipe is within said passage;

a drive assembly for moving said frame along the exterior surface of said pipe so that said pipe effectively moves longitudinally through said passage, said drive assembly comprising at least one front wheel mounted to said upper frame section at a first location and at least one rear wheel mounted to said upper frame section at a second location which is spaced along the length of said pipe from said first location, at least one of said at least one front wheel and said at least one rear wheel being a drive wheel;

a plurality of units mounted on said frame in at least one location intermediate said first location and said second location, at least one of said units being mounted on said upper frame section and at least one of said units being mounted on each said lower frame section, wherein said plurality of units are at least substantially evenly spaced about the circumference of said passage, each said unit comprising at least one nozzle directed inwardly toward the exterior surface of said pipe for directing material at the exterior surface of said pipe to cause material from the nozzles to impinge an annular region of the exterior surface of said pipe as said apparatus moves longitudinally relative to said pipe; and

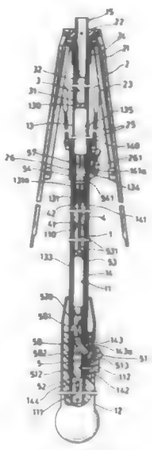
at least two actuators, each of said at least two actuators moving a respective one of the at least two lower frame sections between the open and closed positions and acting to resiliently bias the respective lower frame section toward the closed position during longitudinal movement of said apparatus along the exterior surface of said pipe.

5,361,792

RELIABLY OPERATED AUTOMATIC UMBRELLA WITH UPWARDLY AND DOWNWARDLY THRUSTED PUSH BUTTON

Chung-Kuang Lin, and Jung-Jen Chang, both of No. 16, Chen Tai Road, Sec. 3, Wu Ku Hsiang, Taipei Hsien, Taiwan, Prov. of China

Filed May 3, 1994, Ser. No. 237,873
Int. Cl.[5] A45B *25/14*
U.S. Cl. 135—24 2 Claims



1. An automatic umbrella comprising:

a central shaft means (**1**) including: an inner tube (**11**) secured to a handle (**12**), a middle tube (**13**) slidably externally disposed about the inner tube (**11**), an outer tube (**14**) slidably externally disposed about the middle tube (**13**), and a top sleeve (**15**) slidably held in a top portion of the middle tube (**13**);

an umbrella rib means (**2**) including: a plurality of top ribs (**21**) with an inner end of each top rib (**21**) pivotally secured to an upper runner (**22**) fixed on the top sleeve (**15**), a plurality of intermediate ribs (**23**) with an inner end of each intermediate rib (**23**) pivotally connected with a middle runner (**24**) fixed on an upper portion of the middle tube (**13**) and with an outer end of each intermediate rib (**23**) pivotally connected to each top rib (**21**), a plurality of stretcher rib (**25**) with an inner end of each stretcher rib (**25**) pivotally secured to a lower runner (**26**) slidably externally held on the outer tube (**14**) and with an outer end of each stretcher rib (**25**) pivotally connected to each top rib (**21**), and a hook member (**261**) pivotally mounted in the lower runner (**26**) and engageable with a lower hook hole (**134**) formed in the middle tube (**13**) for closing an umbrella;

an umbrella-opening spring (**3**) having a lower spring end (**31**) retained on an upper portion (**130**) of the middle tube (**13**) and an upper spring end (**32**) retained on a bottom portion of the top sleeve (**15**);

an umbrella-closing spring (4) having a lower spring end (41) retained on an upper end portion (110) of the inner tube (11) and an upper spring end (42) retained on a middle retainer (131) of the middle tube (13); and

a control means (5) including: a push button (51) vertically slidably held in the handle (12) with a resilient pawl (513) pivotally resiliently mounted in the push button (51) by a pawl spring (513a), a lower control sleeve (52) coupled to the inner tube (11) by a spring catch (520), a lateral pin (512) protruding laterally from said push button (51) to be connected to the lower control sleeve (52), a plug (53) having a linking rod (531) protruding upwardly from the plug (13) and slidably held in the inner tube (11), an upper control sleeve (54) connected to the linking rod (531) of the plug (53) and having a convex portion (541) protruding laterally outwardly from the upper control sleeve (54) for outwardly thrusting and disengaging the hook member (261) pivotally mounted on the lower runner (26) for opening an umbrella from its closed state when the push button (51) is upwardly thrusted to raise the lower control sleeve (52) so as to raise the plug (53) and the upper control sleeve (54), a biasing lever (58) pivotally mounted in a lower portion of the inner tube (11), an upper hook portion (581) of said biasing lever (58) passing through the lower control sleeve (52) and the inner tube (11) for engaging a hook hole (133) formed in the middle tube (13) for coupling the middle tube (13) with the inner tube (11) for compressing the umbrella-closing spring (4) retained between the middle tube (13) and the inner tube (11), a lower rod portion (582) of said biasing lever (58) protruding outwardly from said lever (58) opposite to said upper hook portion (581) to be operatively depressed by the resilient pawl (513) when downwardly thrusting the push button (51) for disengaging the upper hook portion (581) of the biasing lever (58) from the hook hole (133) in the middle tube (13) for uncoupling the middle tube (13) from the inner tube (11) for releasing the umbrella-closing spring (4) for closing the umbrella from an opened state thereof, and a resilient retainer (57) protruding laterally from the upper control sleeve (54) to be resiliently held in an inside wall of the middle tube (13) for stably operating the upper control sleeve (54) in the middle tube (13) of the umbrella;

the improvement which comprises:

said control means (5) including a safety bifurcate member (143) retained on a lower portion of said outer tube (14) normally retarding said resilient pawl (513) from depressing the lower rod portion (582) of said biasing lever (58) before the umbrella being opened, said safety bifurcate member (143) operatively raised to allow a depression of said resilient pawl (513) on said lower rod portion (582) of said biasing lever (58) ready for closing an opened umbrella after opening the umbrella; and

said middle tube (13) formed with an upper recess (135) converging inwardly in an upper portion of said middle tube (13) adjacent to the hook member (261) of said lower runner (26) whereby when the umbrella is opened, upon a downwardly moving of said rib means (2) subjected to a downward wind pressure, said hook member (261) will be temporarily engaged into the upper recess (135) in the middle tube for a buffer of the wind pressure.

5,361,793

GOLF BALL WALKING STICK

Richard E. Stahnke, 303 Woodhaven Dr., Havelock, N.C. 28532

Filed May 7, 1993, Ser. No. 60,161

Int. Cl.[5] A45B *1/00*

U.S. Cl. 135—65 **2 Claims**

1. A walking stick comprising:

an elongate natural stick shaft having bark, stump and other natural irregularities retained thereon, having a diameter of approximately ¾ to 1½ inch, and having a lower end and an upper end;

a golf ball releasably attached to said upper end;

a double ended bolt connected to said golf ball, said bolt



being screwable into said upper end for releasable attachment thereto; and

a polyurethane coat on the exterior surface of said shaft.

5,361,794

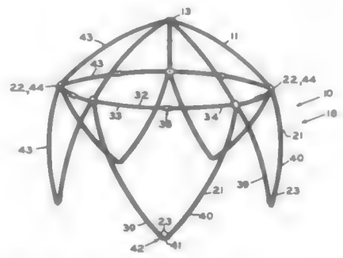
UNITIZED FOLDABLE TENT FRAME

Rex W. Brady, 1829 Russet Dr., Eugene, Oreg. 97401

Filed Aug. 10, 1992, Ser. No. 927,013

Int. Cl.[5] E04H *15/48*

U.S. Cl. 135—147 **19 Claims**



2. A foldable tent framework comprising:

a. a plurality of elongated roof members, each elongated roof member having an upper end and a lower end;

b. a plurality of elongated wall members, each elongated wall member having an upper end and a lower end;

c. means for pivotally connecting the upper ends of the plurality of elongated roof members at a central location;

d. means for pivotally connecting the lower end of each elongated roof member to the upper end of at least one elongated wall member, which include:

(1) a hub member, having a center and a perimeter, which includes a plurality of U-shaped openings about said perimeter which pivotally receive said elongated roof and wall members;

(2) a hub lock member, having a center and a perimeter, which includes:

(a) a plurality of U-shaped openings formed about said perimeter; and

(b) a plurality of projections which extend radially between said U-shaped openings of said hub lock member;

(3) said hub member and said hub lock member being rotatably connected at their respective centers, so as to rotate about a common axis;

(4) said hub member and said hub lock member being formed so that when the U-shaped openings of said hub member are aligned with the U-shaped openings of said hub lock member, said elongated roof and wall members are capable of pivotal movement, and when the hub lock member is rotated relative to said hub member so that the U-shaped openings of said hub member are aligned with said projections of said hub lock member, said elongated roof and wall members engage said projections and are restrained thereby from substantial pivotal movement; and

e. means of perimetric interconnection of said plurality of centrally connected elongated roof members, which means of perimetric interconnection are formed to permit

expansion and contraction of separation between the lower ends of adjacent elongated roof members.

5,361,795

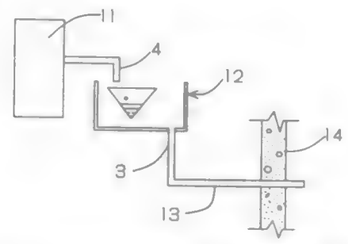
FURNACE WASTE WATER FREEZE PROTECTION METHOD

Albert C. Pollard, P.O. Box 266, Irvington, Va. 22480

Filed Mar. 21, 1994, Ser. No. 210,443

Int. Cl.[5] E03B *7/12;* **F24H** *3/02*

U.S. Cl. 137—1 **3 Claims**



1. A method to prevent freezing of waste water from a heating system in a conduit that carries waste water out of a building from a heating system, said method comprised of the following steps:

a) processing said waste water from said heating system to an accumulator-discharge device comprised of:

an inlet port in communication with said heating system and being disposed above

a container supported on

a horizontal pivot axis in

a housing having

a discharge port and

a stop,

wherein said container, when empty, is maintained in an upright receiving position by action of gravity on a center of gravity of said container, urging said container around said pivot axis against said stop,

said container, in said upright receiving position, accumulates said waste water from said heating system through said inlet port and into said container, the center of gravity of the accumulation of said waste water, being within said container disposed on one side of said pivot axis and said center of gravity of said container being disposed on the other side of said pivot axis, rotates said container about said pivot axis to a discharge position,

said container in said discharge position, discharges substantially all of said accumulated waste water within said container into said housing,

said weight of said container, overcoming the weight of any remaining said accumulated waste water, rotates said container about said pivot axis to said receiving position,

said discharged waste water in said housing, flows out of said discharge port,

b) and carrying said discharged waste water from said discharge port by means of said conduit to outside of said building to prevent freezing of said waste water in said conduit.

5,361,796

INSTALLATION FOR REFUELLING A MOBILE PRESSURE VESSEL WITH A GASEOUS FUEL AND A METHOD OF OPERATION OF AN INSTALLATION OF THAT KIND

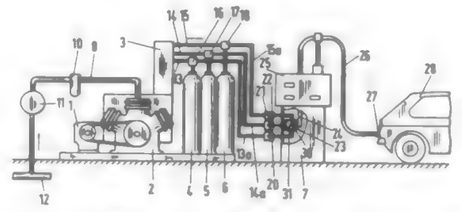
Heinz Mutter, Winterthur, Switzerland, assignor to Maschinenfabrik Sulzer Burckhardt AG, Basel, Switzerland

Filed Dec. 10, 1993, Ser. No. 165,225

Claims priority, application European Pat. Off., Jan. 22, 1993, 93810045.0

Int. Cl.[5] F16K *11/02*

U.S. Cl. 137—14 **9 Claims**



1. In an installation for refuelling a mobile pressure vessel with a gaseous fuel having at least two intermediate stores in which the fuel may be stored at different storage pressures, and a batching device for coupling a refuelling equipment to any one of the intermediate stores in a predetermined sequence, starting with an intermediate store which exhibits the lowest storage pressure, the improvement comprising a loading valve connected with the batching device which includes a housing sealed against the surroundings and has at least two inlets, each connected to one of the intermediate stores, and one outlet connected to the refuelling equipment, a valve body which is adjustable cyclically by a driving mechanism and may be indexed from time to time in a certain direction of rotation past a first blocking position which closes off the inlets into a first position of flow which is associated with the intermediate store at the lowest storage pressure and allows a connection between the corresponding inlet and the outlet, and in the same direction of rotation from time to time past a further blocking position into a further position of flow which is associated with the intermediate store at the next higher storage pressure, and in the same direction of rotation from the position of flow associated with the intermediate store at the highest storage pressure into the first blocking position.

5,361,797

SLUDGE PIPELINE LUBRICATION SYSTEM

Harry Crow, Richfield, Conn.; Thomas M. Anderson, Hugo, Minn.; Scott Kelly, Pleasanton, Calif.; Terry Atherton, Excelsior, Minn., and Larry Schmidt, Lino Lakes, Minn., assignors to Schwing America, Inc., Minneapolis, Minn.

Filed Jun. 1, 1993, Ser. No. 70,516

Int. Cl.[5] F17D *1/16*

U.S. Cl. 137—101.19 **24 Claims**

1. In a pipeline for conveying high viscosity material, a system for lubricating a plug flow of the high viscosity material in the pipeline, the system comprising:

a first pipe through which the plug flow of high viscosity material is pumped, the first pipe having a flange; and

a second pipe through which the plug flow of high viscosity material is pumped, the second pipe being located downstream from the first pipe, the second pipe also having a flange which is positioned adjacent the flange of the first pipe;

a plurality of bolts for connecting the first pipe to the second pipe, the plurality of bolts being attached to the flange of the first pipe and the flange of the second pipe; and

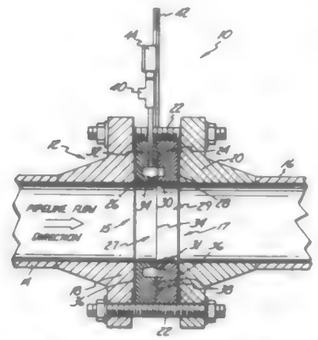
a lubrication spool for lubricating the plug flow of high viscosity material, the lubrication spool being positionable in a first position between the flange of the first pipe and

the flange of the second pipe for lubricating the plug flow of high viscosity material and being removable from the first position without completely disconnecting the first and second pipes, the lubrication spool comprising:

a first spool section, the first spool section being located immediately adjacent the flange of the first pipe while the lubrication spool is in the first position;

a second spool section immediately adjacent the first spool section, the second spool section being located immediately adjacent the flange of the second pipe while the lubrication spool is in the first position;

an aperture in the first and second spool sections for providing a passage for the plug flow of high viscosity material being pumped between the first and second pipes;



an annular reservoir formed between the first and second spool sections for distributing lubricant;

an inlet coupled to a source of lubricant and to the annular reservoir for receiving lubricant from the source of lubricant and for supplying the lubricant to the annular reservoir; and

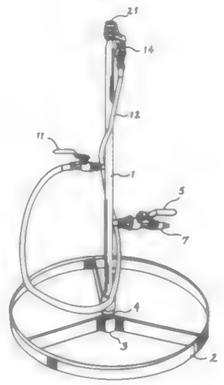
a circumferential lubrication passage formed between the first and second spool sections for applying a uniform ring of lubricant to the plug flow of high viscosity material being pumped between the first and second pipes, the circumferential lubrication passage providing a fluid path between the annular reservoir and the aperture.

5,361,798
REMOTE PROPANE DISTRIBUTION POLE WITH HEIGHT ADJUSTABILITY
Kent A. Beckstrom, 4825 Sharon La., White Bear Lake, Minn. 55110
Filed Jan. 24, 1994, Ser. No. 185,369
Int. Cl.[5] F16L *3/00*
U.S. Cl. 137—343 **3 Claims**

1. A propane distribution pole which allows propane to be distributed to a heating appliance from a propane tank situated at a remote location, said propane distribution pole comprising:

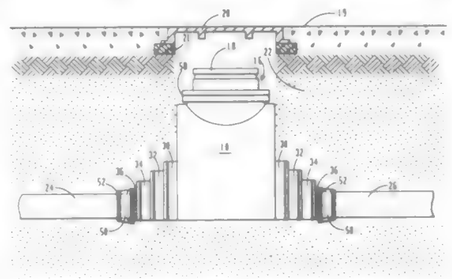
a base having a threaded coupling projecting upward therefrom;

a pipe sealed at its bottom end by a threaded plug which fits into said threaded coupling of said base to hold said pipe in a vertical position, the height of said pipe being adjustable by affixing additional couplings to the bottom end of said pipe;



and means for connecting said pipe to a propane tank and to a heating appliance.

5,361,799
WASTE WATER ACCESS FITTING
Jack L. Chilton, 17288 Earthwind, Dallas, Tex. 75248, and C. Richard Braswell, 13829 Creeside Pl., Dallas, Tex. 75240
Filed May 16, 1994, Ser. No. 243,171
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—363 **4 Claims**



1. A watertight, waste water access fitting that is placed below ground level to mate with a pipe from a waste water source and a pipe to a sanitary sewer system to access waste water from the source to the sewer system, comprising:

a preformed, polyethylene, one piece, hollow body having at least three formed sections that extend from said body, two of said formed sections positioned at the bottom sides of said body, and one positioned at the top of said body, one of the bottom formed sections mates with a pipe to receive waste water from the waste water and the other mates with a pipe to the sanitary sewer system;

each bottom-side section consists of a plurality of connected segments that begin at the bottom side of the body and extend outwardly therefrom, with each connected segment having an outer diameter that is smaller than its preceding segment;

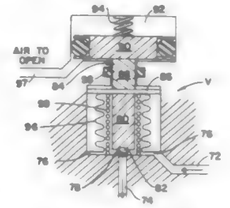
a cutting guide located on each connected segment where a segment may be cut to mate with a waste water source pipe or a sanity sewer system pipe;

said top formed segment having a cap thereon;

a cutting guide below the cap at which point the cap may be severed to open the body of the fitting from the top, and

means for forming watertight seals between said bottom side segments and pipes mated thereto.

5,361,800
LIQUID PUMP AND VAPORIZER
James H. Ewing, Lexington, Mass., assignor to MKS Instruments, Inc., Andover, Mass.
Division of Ser. No. 751,173, Aug. 28, 1991. This application Jul. 23, 1993, Ser. No. 97,271
Int. Cl.[5] F16K *31/365*
U.S. Cl. 137—495 **2 Claims**



1. A valve system adapted to open in response to fluid at its inlet at a predetermined pressure and to stay closed in response to back pressure less than said predetermined pressure exerted by the fluid at its outlet, said system comprising;

means for defining a closed passageway;

means for defining an inlet to said passageway for receiving fluid up to said predetermined pressure;

means for defining a fluid outlet from said passageway through which fluid passes out of said valve system;

means for defining a valve seat within said passageway;

a valve body movable relative to said valve seat between an opened position wherein the body is spaced from the seat when the valve system is opened and a closed position wherein the body is in contact with the seat when the valve system is closed;

biasing means for biasing said valve body into said closed position, wherein the force created by said biasing means on said valve body is such that the force created by said fluid at said predetermined pressure at said inlet causes said valve body to move to the open position when said valve body is in the closed position, while said valve body remains in the closed position when said fluid at said predetermined pressure is provided at said outlet when the valve body is in the closed position;

means for providing a force on said valve body greater than and in the opposite direction from the force provided by the biasing means so that said valve body can be quickly moved from the closed position to the opened position so that fluid is immediately provided at the outlet, wherein said means for providing the force on said valve body includes a piston coupled to the valve body; and

means for sealing said passageway from said piston;

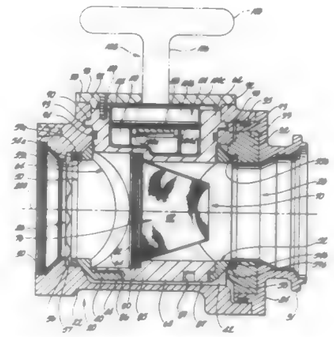
wherein said biasing means includes at least one compression spring for biasing said piston against said valve body so as to bias said valve body in said closed position, and means for receiving an pressurized air for moving said piston against said bias so as to move said valve body to said opened position.

5,361,801
BALL VALVE
Stephen J. Kerpan, La Habra, and Gary F. McKee, Newport Beach, both of Calif., assignors to Whittaker Controls, Inc., North Hollywood, Calif.
Filed May 7, 1993, Ser. No. 59,829
Int. Cl.[5] E03B *3/18*
U.S. Cl. 137—547 **31 Claims**

1. A valve comprising:

a housing having housing inlet and outlet ports;

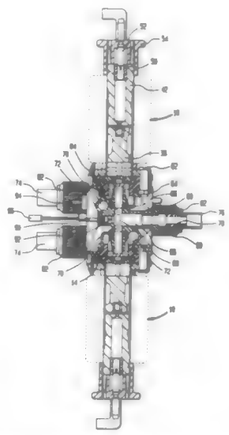
a ball, rotatably carried in the housing for rotation about a ball axis, the ball having a ball inlet port, a ball outlet port and a cartridge compartment communicating with the ball inlet and outlet ports, the ball being rotatable between an open position in which the ball ports establish communication between the housing ports and a closed position in which the ball blocks communication between the housing ports;



a removable cartridge carried in the cartridge compartment so as to rotate with said ball and having cartridge inlet and outlet ports and a flow passage therebetween; and

a strainer mounted in the flow passage.

5,361,802
VALVE BLOCK
Dieter Kroll, Feilbach, and Jürgen Weber, Weinstadt, both of Germany, assignors to Herion-Werke KG, Germany
Filed Sep. 23, 1992, Ser. No. 950,396
Claims priority, application Germany, Sep. 30, 1991, 4132541
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—552 **13 Claims**

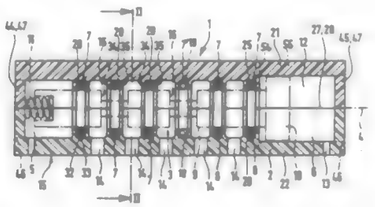


1. A valve block, in particular for aggressive fluids and/or fluids at increased temperature, comprising:

a plurality of valve cartridges, each having a fluid inlet and a fluid outlet; and

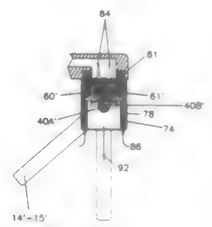
a separate adapter for attachment of and communication with said plurality of valve cartridges, said adapter having an inlet in communication with each said fluid inlet of said valve cartridges, outlet means in communication with each said fluid outlet of said valve cartridges, and fluid passageway means connecting said adapter outlet means with said adapter inlet.

5,361,803
SPOOL VALVE
Kurt Stoll, Esslingen, Germany, assignor to Festo KG, Esslingen, Germany
Filed Jul. 8, 1993, Ser. No. 88,760
Claims priority, application Germany, Jul. 16, 1992, 4223358
Int. Cl.[5] F16K *3/24;* F15B *13/04*
U.S. Cl. 137—625.66 20 Claims



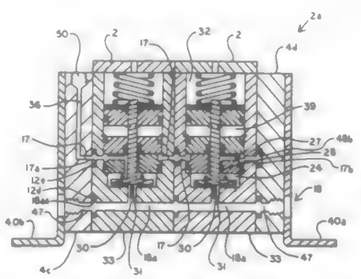
1. A spool valve comprising a valve housing, in the interior of which an axially extending spool receiving space is provided, in which a valve spool is arranged, the valve housing being longitudinally divided in the area of the spool receiving space with the formation or a plurality of longitudinally extending housing parts, and a plurality of sealing rings which are in direct sealing contact with the valve spool so as to define flow paths and which are arranged coaxially in relation to the valve spool in an axial sequence with a spacing in relation to one another, wherein the housing parts, provided by the longitudinal separation, of the valve housing, respectively constitute one wall section, which extends some distance in the peripheral direction of the valve spool, of the valve spool receiving space and the sealing rings provided for direct sealing contact with the valve spool are held in annular holding recesses, formed directly in the longitudinally divided valve housing, in a manner which is fixed in relation to the housing, such recesses being composed of peripheral sections formed on the wall sections of the spool receiving space constituted by the individual housing parts.

5,361,804
WATER CONSERVATION VALVE
Myron C. Keller, 23327-84th Pl. South, Kent, Wash. 98032, and Michael C. McDonald, 2605-210th Ave. East, Sumner, Wash. 98390
Filed Oct. 28, 1992, Ser. No. 967,722
Int. Cl.[5] F16K *31/524*
U.S. Cl. 137—801 4 Claims



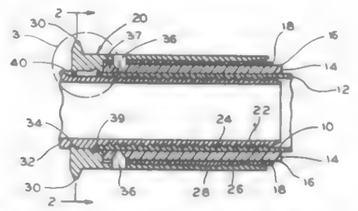
1. A valve assembly comprising:
a valve housing with a liquid entry chamber extending from an entry end and a liquid discharge chamber extending from a discharge end,
said housing having a longitudinal axis and a liquid flow passage between said chambers which is offset from said longitudinal axis;
a valve in said entry chamber having a stem which is slide-mounted in said housing along said longitudinal axis and extends into said discharge chamber, said valve having open and closed positions in which flow through said passage is open and closed, respectively;
a cam follower on said stem;
a shaft extending transversely through said housing and arranged to turn about a transverse axis which intersects said longitudinal axis and extends across said discharge chamber, said shaft having a handle external of said housing and extending below the level of said discharge end when said valve is in its closed position;
a cam on said shaft engaged by said cam follower in said discharge chamber and adapted responsive to turning of the shaft to move said valve between said open and closed position;
biasing means urging said valve into closed position;
aerator means in said discharge chamber for directing air from outside said housing into the path of liquid discharging from said flow passage into said discharge chamber; and
a diffuser mounted on said stem above said shaft and spaced from said aerator means, said diffuser being arranged to be engaged by liquid discharging from said flow passage to assist in mixing such liquid with air incoming through said aerator means.

5,361,805
STREAM SELECTOR FOR PROCESS ANALYZER
Donald P. Mayeux, Prairieville, La., assignor to Whitey Co., Highland Hts., Ohio
Continuation of Ser. No. 928,780, Aug. 13, 1992, Pat. No. 5,305,788. This application Feb. 14, 1994, Ser. No. 195,368
Int. Cl.[5] F16K *31/12*
U.S. Cl. 137—885 16 Claims



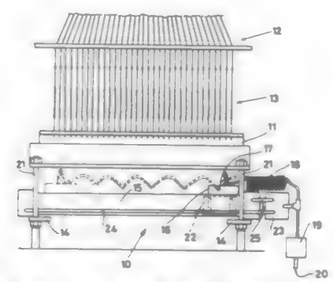
1. A valve module for use with other similar modules to form a variety of different valve manifold assemblies comprising:
a) a valve body having a generally rectangular block configuration including a first pair of spaced lateral exterior side walls;
b) a valve chamber in the body;
c) a first flow passageway extending through the body between the first pair of lateral exterior side walls;
d) a second flow passageway extending between the first pair of lateral exterior side walls in parallel flow relationship with said first flow passageway;
e) separate connecting flow passages joining the first flow passageway and the second flow passageway to respective first and second valve seats in the valve chamber;
f) a valve means in the valve chamber movable along a straight path between a first position wherein the first valve seat is closed to a second position wherein the first valve seat is opened and the second valve seat is closed; and,
g) actuating means for moving the valve means between the first and second positions.

5,361,806
KEVLAR REINFORCED HIGH PRESSURE HOSE ASSEMBLY WITH GRIP AND ENVIRONMENTAL BARRIER
James M. Lalikos, Agawam, Mass., and Norman H. Desilets, Enfield, Conn., assignors to Titeflex Corporation, Springfield, Mass.
Filed Jul. 7, 1992, Ser. No. 909,703
Int. Cl.[5] F16L *11/10*
U.S. Cl. 138—109 25 Claims



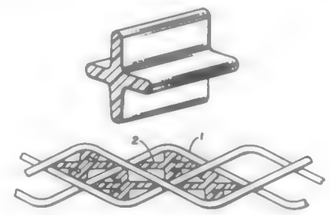
1. A high pressure hose assembly comprising an inner core of material which withstands an attack by media conveyed through the hose, a layer of mechanically strong aramid yarn reinforcing material surrounding said inner core, said aramid yarn reinforcing material being subject to attack by said conveyed media or by media likely to be encountered in the environment in which said hose assembly may be used, an outer layer of attack-resistant material completely surrounding and encasing said aramid yarn reinforcing material, said outer layer being a tape made of a material taken from a group consisting of PTFE, nylon and high-density polyethylene, said tape being wrapped around and encasing said aramid yarn, a chafe sleeve covering said outer layer, and an end fitting, said end fitting having a shoulder stop against which an end of said hose abuts, said shoulder stop cooperating with said inner core and said outer layer to completely encase said aramid yarn to protect the end of said hose from said conveyed media and said media in the environment.

5,361,807
TRAVELING BLOWER TYPE CLEANING DEVICE FOR JACQUARD HARNESSES
Marco Giovenzana, Milan, Italy, assignor to Startes Jacquard S.r.l., Italy
Filed Oct. 28, 1993, Ser. No. 141,984
Claims priority, application Italy, Nov. 4, 1992, 002524 A/92
Int. Cl.[5] D03J *1/00*
U.S. Cl. 139—1 C 6 Claims



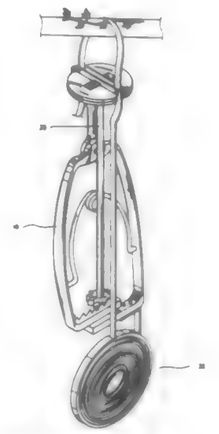
1. In a Jacquard loom of the type having a base, a harness cord support mounted on and extending between apposite sides of said base, an array of harness cords extending above said support, and a plurality of elongate harness cord return elements attached at their upper ends to said harness cords and at their lower ends to said support, the improvement comprising a nozzle slidable by traverse means along the base of the loom between opposite sides thereof, and being connected to a compressed air source for emitting a stream of air toward the harness cord return elements in order to carry out the cleaning of same, wherein said traverse means is positioned below said harness cord support whereby said nozzle is located under the lower ends of the return elements and is directed upwardly so that said stream of air is directed substantially parallel to the return elements adjacent said lower ends thereof.

5,361,808
PAPERMAKER'S FABRIC CONTAINING FINNED WEFT YARNS
David Bowen, Jr, 9349 Old A1A, St. Augustine, Fla. 32086
Filed Dec. 9, 1993, Ser. No. 163,526
Int. Cl.[5] D03D *15/00, 3/04*
U.S. Cl. 139—383 A 3 Claims



1. A woven papermaker's fabric having warp and weft yarns, said fabric being characterized in that at least a portion of the weft yarns consist of a single monofilament larger than 200 denier having between two and six finlike extensions, said monofilament having an overall width to fin thickness ratio of from 5 to 20, said weft yarns being arranged in the fabric to lie substantially straight with the warp yarns bending around them so that said finlike extensions significantly bend and distort only at intersections of the warp and weft yarns, otherwise remaining extended to fill the interstitial voids of the fabric whereby reduced fabric permeability and improved fabric stability are attained.

5,361,809
BINDING APPARATUS
Tz'ang-Chi Chan, Suite 1, 11F, 95-8 Chang Ping Road, Sec 1, Taichung, Taiwan, Prov. of China
Filed Apr. 29, 1993, Ser. No. 54,414
Int. Cl.[5] B21F *15/04*
U.S. Cl. 140—119 2 Claims



1. A binding apparatus, comprising:
a handle which comprises a first caliper, a second caliper and

a resilient spring; said first caliper having an inwardly extended transverse bottom portion which forms a rack with beveled cogs on its upper surface and a first axle aperture proximate the upper portion thereof; said second caliper having an inwardly extended transverse bottom portion which is spacedly beneath said transverse bottom portion of said first caliper and has a second axle aperture on the upper portion thereof; a vertical rod being extended upwardly from the upper end of said second caliper; a first disk being perpendicularly connected to the top end of said rod and having a central aperture; said first and second calipers being pivotedly connected by an axle screw with said first and second axle apertures and elastically connected by said resilient spring on their mid portion;

a rotatable element which comprises a second disk, a blade member adjustably secured on the upper surface of said second disk, and an axle rod having a lower threaded end; the top end of said axle rod being connected to the center of the under side of said second disk; a gear being fixedly screwed to said lower threaded end of said axle rod by a nut; said rotatable element being assembled to said handle by inserting said axle rod through said central aperture of said first disk until the under side of said second disk abuts on the upper surface of said first disk, and keeping said gear engaged with said beveled rack therein; said first and second disks being similar in shape and dimension and each having a pair of slots on their opposite circumferences in radial direction; said blade member comprising a pair of parallelly disposed rectangular blades firmly secured on their central portions on a transverse rectangular plate which has a pair of vertical elongate apertures formed proximate to each end for adjustably secured said blade member by a pair of screws respectively to the upper surface of said disk to define an elongate gap between said pair of parallell[illegible] disposed blades which is aligned with said pair of slots; and

a circular housing which has a circular end wall to define a cylindrical hollow interior to receive a roll of twist tie, a recess formed on the upper portion of said wall and a L-shaped support tangently secured on a vertical portion thereof to the outer periphery of said wall; said circular housing being assembled to said handle by securing said L-shaped support onto the under side of said transverse bottom portion of said second caliper.

5,361,810

FUEL DISPENSING SYSTEM, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Jeffrey M. Berger, Springfield; Randy C. Foster, Strafford; Timothy J. Hampton, Willard; Jack S. Hargus, Marshfield; Richard L. Marsh, Springfield, all of Mo., and David A. Masseth, La Habra, Calif., assignors to Dayco Products, Inc., Dayton, Ohio

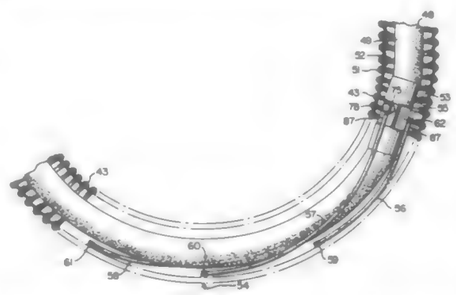
Division of Ser. No. 962,537, Oct. 16, 1992, Pat. No. 5,305,806. This application Nov. 12, 1993, Ser. No. 151,093

The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.

Int. Cl.[5] B65B *3/18;* **B67D** *5/06*

U.S. Cl. 141—59 **14 Claims**

1. In a hose assembly for a system comprising a liquid fuel source, a dispensing nozzle and said hose assembly that has a first fluid passage therein for conveying said liquid fuel in one direction from said source to said nozzle that is adapted to dispense said liquid fuel into a container and a second fluid passage therein for returning the vapors of said liquid fuel from said container, said hose assembly comprising a flexible inner hose having an outer peripheral surface and defining said first fluid passage therein, and a flexible outer hose having an inner peripheral surface and being disposed around said inner hose, said inner peripheral surface of said outer hose and said outer peripheral surface of said inner hose defining said second fluid passage therebetween, said hose assembly having a venturi section therein that tends to remove liquid from a normal drape area of said hose assembly when the same is being utilized to dispense said liquid fuel into said container, said venturi section having opposed ends, said inner hose having two flexible sections respectively provided with inner ends that are respectively interconnected to said opposed ends of said venturi section, the improvement wherein said venturi section has inlet means that is adapted to be positioned in said second fluid



passage generally at the actual drape area of said hose assembly even when said actual drape area is disposed intermediate said normal drape area and said nozzle or is disposed intermediate said normal drape area and said source as well as when said actual drape area is disposed generally at said normal drape area, said inlet means comprising flexible tube means interconnected to said venturi section.

5,361,811

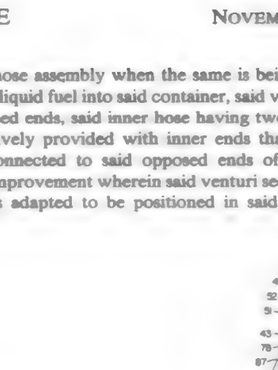
APPARATUS FOR AND METHOD OF DISPENSING GRANULAR MATERIAL

Archie W. Kelley, Milan, Tenn., assignor to Martin Marietta Corporation, Philadelphia, Pa.

Filed Jan. 13, 1993, Ser. No. 3,730

Int. Cl.[5] F42B *33/02*

U.S. Cl. 141—250 **18 Claims**



1. An apparatus for loading granular material, comprising:

means for receiving said granular material, said receiving means having an inlet and an outlet;

a fill tube having one end coupled to said outlet of said receiving means;

means cooperatively arranged with respect to said outlet of said receiving means for regulating flow of said granular material from said receiving means to the fill tube; said flow regulating means including a rod having a structure defining a cavity formed in a side portion thereof for allowing the granular material to flow from said receiving means to said fill tube;

means for causing relative rotation between said receiving means and said regulating means; and

means, including a tip having a substantially spoon-shaped portion, coupled to another end of said fill tube for distributing said granular material into a cartridge.

5,361,812

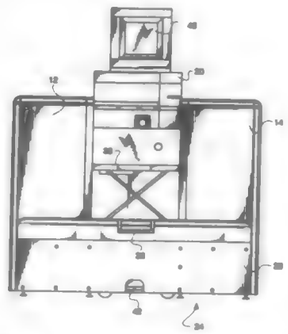
DISPENSING APPARATUS

Theodore R. Arneson, Hawthorne Woods, and William A. Miller, Buffalo Grove, both of Ill., assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Mar. 24, 1993, Ser. No. 36,413

Int. Cl.[5] B65B *3/04, 1/04*

U.S. Cl. 141—275 **6 Claims**



1. Apparatus for dispensing material into a container, comprising:

a supporting frame;

a housing supported by said frame;

dispense means supported by said housing for controlling a flow of material therethrough in response to control commands;

container support means supported by said frame for supporting the container below said dispense means, said container support means including a pair of end portions with an intermediate portion therebetween;

mounting means for movably mounting the intermediate portion for movement toward and away from said dispense means, said mounting means including a plurality of linkages pivotally connected to form a scissors support having an end and which is extendible toward the dispense means and collapsible away from the dispense means so as to cooperate with said end portions to form a generally continuous support surface across which a container can be moved, said mounting means including a base with a pair of slide plates engaging the base so as to be slidable therealong, said slide plates attached to the end of said scissors support; and

locking means including a lock bar attached to one said slide plate and defining a plurality of apertures, and a lock pin supported by said base so as to be selectably movable toward and away from said lock bar, into and out of engagement with said lock bar so as to lock and unlock said one slide plate.

5,361,813

WOOD PATCH CUTTING METHOD AND APPARATUS

James D. Lay, Eugene, Oreg., assignor to Oregon Industrial Machine & Manufacturing, Inc., Eugene, Oreg.

Filed Feb. 1, 1993, Ser. No. 12,298

Int. Cl.[5] B27C *5/00;* **B27F** *1/08*

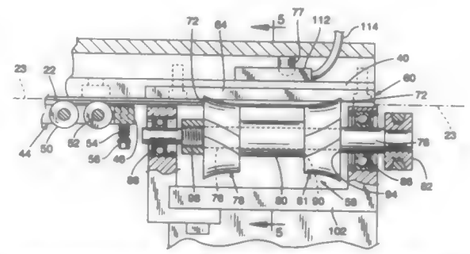
U.S. Cl. 144—363 **29 Claims**

1. An apparatus for forming wood patches from elongated wood patch stock, the wood patch stock having a longitudinal axis, the apparatus comprising:

means for advancing the wood patch stock longitudinally;

a cutter;

means for rotating the cutter about a cutting axis which is not perpendicular to the longitudinal axis of the wood patch;



the cutter having plural cutting edges which generally trace out the surface of a cylinder with enlarged ends as the cutter is rotated about the cutting axis;

means for moving the cutter and wood patch stock transversely relative to one another with the cutter in contact with the wood patch stock to cut a patch from the wood patch stock.

5,361,814

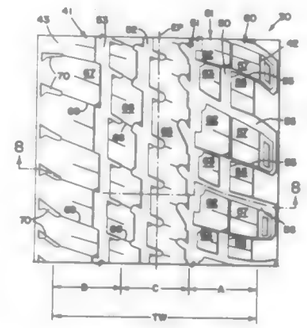
ASYMMETRIC TIRE

Darrell E. Covert, Uniontown; Paul B. Maxwell, Akron; Frederick W. Miller, Akron; Richard L. Galante, Akron; Michael A. Kolowski, Mogadore; William M. Hopkins, Hudson, and Anthony J. Scarpitti, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 15, 1989, Ser. No. 436,580

Int. Cl.[5] B60C *11/01, 11/04*

U.S. Cl. 152—209 A **8 Claims**



1. A pneumatic tire comprising a radial ply carcass structure and a belt structure with an elastomeric tread portion extending circumferentially about the carcass structure and belt structure, said tread portion having first and second axially opposed shoulders, said tread portion having at least two grooves therein which extend circumferentially thereabout and a series of grooves therein which extend from said first shoulder diagonally at least partially across the tread portion, one said circumferentially extending groove and said diagonally extending grooves cooperating to define a circumferentially extending array of block elements which is contiguous to said first shoulder, said tread portion having three axial regions each of which has an axial width equal to one-third of the tread width, said first region having a net-to-gross ratio in the range of 57% to 70% and being adjacent to said first shoulder, said second region being adjacent to said second shoulder, and said third region being axially interposed between said first and second

regions, the tread portion having a net-to-gross ratio in said second region which is at least 110% of the net-to-gross ratio in said first region and the net-to-gross ratio of said third region being at least 90% of the net-to-gross ratio of the first region but less than the net-to-gross ratio of the second region, and

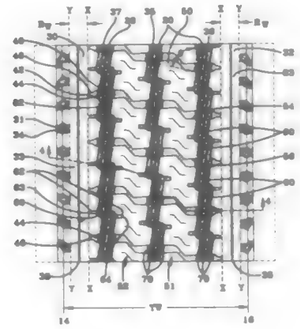
wherein each block element of the circumferentially extending array of block elements contiguous to said first shoulder has a radially outermost surface, the axially outermost extent of the radially outermost surface of each block element of said array differing from that of the block elements circumferentially next adjacent thereto and said first shoulder has axially outermost surfaces which are conical and said second shoulder has an axially outermost surface which is arcuate.

5,361,815

TREAD FOR A TIRE WITH BLOCKS AND RIBS

Robert P. Loser, and Deborah Ebbott, both of Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1992, Ser. No. 976,860
Int. Cl.[5] B60C *11/04*
U.S. Cl. 152—209 R **9 Claims**



1. An elastomeric tread for a pneumatic truck tire, the tread extending circumferentially about an axis of rotation of the tire, the tread comprising:

an inner tread surface;

a pair of shoulders which define the lateral edges of a ground engageable surface, the axial distance between the lateral edges defining the tread width;

a pair of ribs, extending circumferentially about the axis of rotation and radially outwardly from the inner tread surface, one rib being adjacent to each lateral edge, wherein each of the ribs include a circumferentially continuous band devoid of lateral sipes or grooves, the circumferentially continuous band having an axial width of at least 10% of the tread width;

a plurality of lateral grooves, each lateral groove extending generally axially from rib to rib;

three circumferentially extending zigzag grooves, one circumferential groove being centrally located and the second and third circumferential grooves being axially spaced within 30% of the tread width from a lateral edge, the circumferential and lateral grooves cooperating to define block elements arranged in two circumferential rows, each block element having first and second sides defined by the lateral grooves the block elements having a circumferential extent as measured between the first and second sides which is in the range of 75% to 125% of the axial extent of each block element, the circumferential grooves having an average depth of at least 18 mm and the lateral grooves, between the first and second sides of circumferentially adjacent block elements, having an average depth of between 75% and 90% of the average depth of the circumferential grooves; and

wherein the block elements each have a surface area which when measured from a footprint of the tire occupies at least 65% of an area defined by a rectangular boundary having two axial and two circumferentially extending sides, each such side intersecting axial and circumferential extremities of the block element, thereby enveloping the block element.

5,361,816

TREAD FOR PNEUMATIC TIRE AND TIRE COMPRISING SUCH A TREAD

Leo J. Hitzky, Walderdange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 30, 1993, Ser. No. 114,019
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **16 Claims**



1. A pneumatic tire having at least a pair of annular beads, at least one carcass ply wrapped around said beads, a ground contacting tread portion disposed over said carcass plies in a crown area of said tire and sidewalls disposed between said tread and said beads, wherein said ground contacting tread portion comprises five rows of blocks comprising two rows of shoulder blocks, a center row of blocks and two intermediate rows of blocks wherein said center row of said blocks corresponds substantially with the equatorial plane (EP) of the tire and wherein narrow grooves between blocks in said center row have a width of 1% to 5% of the length of said block, wherein narrow grooves separate at least a portion of said blocks in said shoulder rows of blocks, and wherein grooves between blocks in said intermediate row of blocks have a width of 8% to 25% of the block length and contain tie bars.

5,361,817

HEAT-DISSIPATING MEANS OF NEST TIRE STRUCTURE FOR A RUN-FLAT TIRE

Long-Hsiung Chen, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan, Prov. of China

Filed Sep. 15, 1993, Ser. No. 120,806
Int. Cl.[5] B60C *17/06*
U.S. Cl. 152—520 **5 Claims**

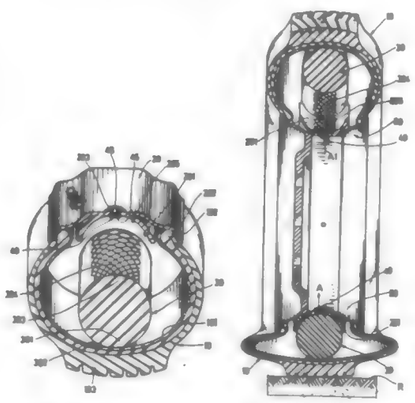
1. A nest tire structure comprising:

an outer tire having two tire beads of said outer tire secured to two opposite rim edges of a steel rim;

a solid inner tire fixedly secured to an inner surface of said outer tire;

said steel rim having a curved inner-tire seat formed on an outer surface of said steel rim for receiving said solid inner tire when said outer tire is punctured to run flat; and

at least one heat-dissipating valve formed in said inner-tire seat of said steel rim operatively opened for releasing a hot air stream from the inside of the tire outwardly through an aperture located between said inner-tire seat and said inner tire when said inner tire is received in said seat and thereby urges the heat-dissipating valve to open.



5,361,818

POLYESTER/POLYEPOXIDE/RUBBER ALLOYS

Deborah A. Tung, Tallmadge, Ohio; Thomas J. Segatta, Lawton, Okla.; John J. A. Verthe, Kent, Ohio; Paul H. Sandstrom, Tallmadge, Ohio; Richard G. Bauer, Kent, Ohio, and Mark A. Marinko, Stow, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1993, Ser. No. 126,866
Int. Cl.[5] B60C *1/00*; C08L *7/00, 9/00*
U.S. Cl. 152—525 **11 Claims**

1. A composition which comprises the reaction product of a mixture of:

(a) from 10 to 30 parts by weight of a polyester resin produced from the precondensation reaction of a diol, a dicarboxylic compound, and a chain branching agent said polyester subsequently condensed and having an intrinsic viscosity from about 0.13 to about 0.35 dl/g, a glass transition temperature of at least 50° C. and an acid number from about 5 to 50; said dicarboxylic compound selected from the group consisting of dicarboxylic acids and dicarboxylic esters, said dicarboxylic acids selected from the group consisting of alkyl dicarboxylic acids having a total of from 2 to 16 carbon atoms, and aryl dicarboxylic acids having a total of from 8 to 16 carbon atoms, said dicarboxylic esters selected from the group consisting of alkyl diesters having from 2 to 20 carbon atoms and alkyl substituted aryl diesters having from 10 to 20 carbon atoms and said diol in a concentration from about 115 to 220 mole percent of the concentration of said dicarboxylic compound and selected from the group consisting of diols having from 2 to 10 carbon atoms,

said chain branching agent in a concentration of from about 2 mole percent to about 8 mole percent of the concentration of said dicarboxylic compound and selected from the group consisting of trimellitic anhydride, pentaerythritol, glycerol, trimethylol propane, triethylol propane, and combinations thereof,

(b) from 1 to 6 parts by weight of at least one polyepoxide having at least two epoxy groups per molecule; and

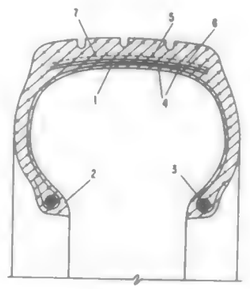
(c) from 50 to 150 parts by weight of an unvulcanized rubber.

5,361,819

PNEUMATIC VEHICLE TIRE HAVING WOUND LAYER INCLUDING WIDE AND NARROW STRIPS COVERING BELT

Michael Glinz, Neustadt, Germany, assignor to Continental Aktiengesellschaft, Hanover, Germany

Division of Ser. No. 822,448, Jan. 17, 1992, Pat. No. 5,252,156.
This application May 28, 1993, Ser. No. 69,203
Claims priority, application Germany, Feb. 2, 1991, 4103232
Int. Cl.[5] B60C *9/18*
U.S. Cl. 152—531 **6 Claims**



1. A pneumatic vehicle tire, comprising:

a radial carcass;

tire beads with pull-resistant bead cores, with said radial carcass being anchored at said bead cores by being looped about said bead cores;

a reinforcement belt connected radially outwardly to said radial carcass; and

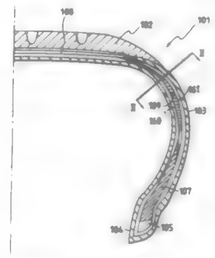
a bandage, arranged radially outwardly of said reinforcement belt, for covering said reinforcement belt, said bandage being comprised of strips of cord material coated with rubber being spirally wound onto said reinforcement belt in a circumferential direction of said vehicle tire to form adjacent windings, with said strips of cord material in areas of edges of said reinforcement belt being narrower than said strips of cord material in a central portion of said reinforcement belt.

5,361,820

PNEUMATIC RADIAL TIRE

Yukishige Adachi, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Sep. 30, 1992, Ser. No. 953,212
Claims priority, application Japan, Sep. 30, 1991, 3-278380; Sep. 30, 1991, 3-278381
Int. Cl.[5] B60C *1/00, 13/00, 15/06*
U.S. Cl. 152—555 **13 Claims**



1. A pneumatic radial tire comprising:

an annular tread member;

a pair of sidewalls extending from opposite ends of the tread portion in the radial direction of the tire;

a pair of bead members provided at the ends of the sidewalls and each of which has a bead core embedded therein and a pair of bead apexes of a gradually reducing thickness toward a maximum tire width;

a carcass layer including carcass cords arranged in the radial direction of the tire, said carcass layer extending through both sidewall portions and said tread member;

breaker layers arranged in the external radial part of the carcass layer,

wherein said carcass layer is formed of a single ply of carcass cords that are folded around said bead core at each end of the carcass in such a way that turned-up ends of the carcass layer extend to a position beneath said breaker layer within a range defined by a width of said breaker layer; and

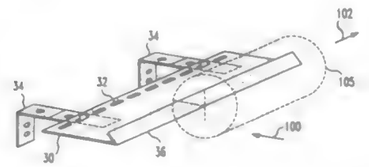
a rubber layer being provided between said carcass layer and the turned-up ends of said carcass layer in such a way that said rubber layer extends from below said breaker layer and terminates at an upper end of a respective bead apex.

5,361,821

NO-SEW WINDOW TREATMENT MOUNTING ASSEMBLY

Dana Barone, 1155 Walter Blvd., Manahawkin, N.J. 08050

Filed Sep. 7, 1993, Ser. No. 116,857
Int. Cl.[5] E06B *9/00*
U.S. Cl. 160—39 **15 Claims**



1. Apparatus comprising:

an elongated semi-soft foam of predetermined shape and dimension;

a straight slit in an exterior surface of said foam running along the length of said foam;

a slot at least at one end of said foam;

a fabric covering wrapped around said foam, having opposing ends fitted into said slit and opposing sides tucked into said slot; and

a mounting assembly for said semi-soft foam, within said slit and extending outwardly thereof, for securing said foam to a vertical wall surface as a window treatment.

5,361,822

SHADE OPERATOR

Frederik Nijs, Calgary, Canada, assignor to Nysan Shading Systems Ltd., Calgary, Canada

Filed Jan. 4, 1994, Ser. No. 177,141
Int. Cl.[5] E06B *9/56*
U.S. Cl. 160—321 **3 Claims**

1. A shade operator comprising:

(a) a support structure and a bushing secured to said structure, said bushing having an inner cylindrical surface defining a longitudinal axis,

(b) a helical spring coaxially located within the bushing and having a substantially cylindrical outer surface of such diameter as to be in contact with the inner surface of the bushing, the spring having a pair of opposite ends circumferentially movable relatively to each other selectively either to decrease or to tend to increase the diameter of the spring,

(c) manually operable means for exerting a torque on the spring about said longitudinal axis and for simultaneously acting on a spring end to decrease the spring diameter and hence avoid frictional resistance by the bushing to rotation of the spring, and

(d) means for connecting a shade roller to the spring to rotate therewith upon operation of the manually operable means, said connecting means further including means responsive to a torque from the roller for acting on a spring end to tend to increase the spring diameter to establish a frictional resistance by the bushing to rotation of the spring and hence of the connecting means,

(e) wherein each spring end has a projection extending inwardly into a generally cylindrical cavity within the spring, the projections overlapping each other circumferentially to define a circumferentially extending space between them that also extends longitudinal of the spring,

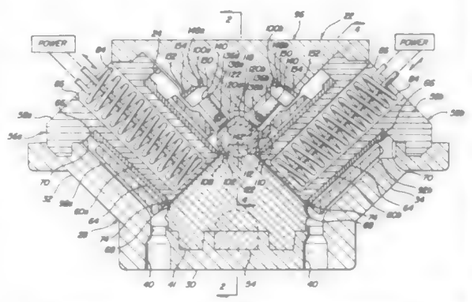
(f) said manually operable means including an operating member that surrounds the bushing and is manually rotatable about the axis of the bushing, and a link having a first arm connected to the operating member and a second arm extending into said space between the projections whereby rotation of the operating member in either direction will cause the second arm to act on one of the projections to move it away from the other projection to decrease the spring diameter and simultaneously transmit torque to the spring from the operating member to rotate the spring and the connecting means.

5,361,823

CASTING CORE AND METHOD FOR CAST-IN-PLACE ATTACHMENT OF A CYLINDER LINER TO A CYLINDER BLOCK

John W. Kuhn, Bristol, Ind., and Thomas E. Prucha, Brighton, Mich., assignors to CMI International, Inc., Southfield, Mich.

Filed Jul. 27, 1992, Ser. No. 920,603
Int. Cl.[5] B22D *19/00*
U.S. Cl. 164—9 **28 Claims**



1. A casting core assembly for use in the manufacture of cast metal cylinder blocks for internal combustion engines, said core assembly comprising:

a casting core (**56***a*, **56***b*) having a base portion **58***a*, **58***b*) and a piston cylinder chamber-forming main body portion (**60***a*, **60***b*) integral with and extending longitudinally from said base portion (**58***a*, **58***b*), said casting core formed of reducible refractory material for accommodation within a mold cavity (**24**) of a cylinder block casting mold (**22**) for forming a piston cylinder chamber (**62***a*, **62***b*) in a cylinder block (**26**) cast within the mold (**22**);

a sleeve-like tubular liner member (**64**) disposed about said main body portion (**60***a*, **60***b*) for support within the mold cavity (**24**) and cast-in-place joinder with the cylinder block (**26**) for lining the piston cylinder chamber (**62***a*, **62***b*) with said liner member (**64**), said liner member (**64**) having opposite ends (**66**, **68**), an inner wall surface, and an outer wall surface, one end (**66**) of said liner member (**64**) disposed in abutting engagement with said base portion (**58***a*, **58***b*) for securing said liner member (**64**) against longitudinal sliding movement on said main body portion (**60***a*, **60***b*) toward said base portion (**58***a*, **58***b*);

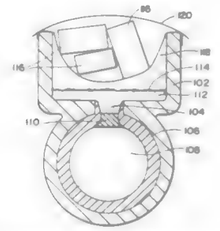
and said casting core having mechanical interlocking means (**74**) integral with said main body portion (**60***a*, **60***b*), said mechanical interlocking means (**74**) extending into said inner wall surface of said liner member (**64**) and spaced radially from said outer wall surface between said ends (**66**, **68**) of said liner member (**64**) for locking said liner member (**64**) against longitudinal sliding movement along said main body portion (**60***a*, **60***b*) away from said base portion (**58***a*, **58***b*).

5,361,824

METHOD FOR MAKING INTERNAL SHAPES IN A METAL MATRIX COMPOSITE BODY

Steven D. Keck, Hockessin, and Kurt J. Becker, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 804,467, Dec. 5, 1991, abandoned, which is a continuation of Ser. No. 521,506, May 10, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 73,996
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—98 **22 Claims**



1. A method of making a metal matrix composite containing at least one cavity or channel therein, comprising:

forming at least one permeable mass of at least one filler or at least one preform of at least one filler, said at least one permeable mass defining at least one cavity or channel therein;

providing at least one bed or mass of particles in at least a portion of said at least one cavity or channel;

providing at least one matrix metal;

spontaneously infiltrating at least a portion of the at least one permeable mass with at least one molten matrix metal up to said at least one bed or mass of particles, wherein said at least one bed or mass of particles comprises a means not capable of being spontaneously infiltrated by said at least one molten matrix metal; and

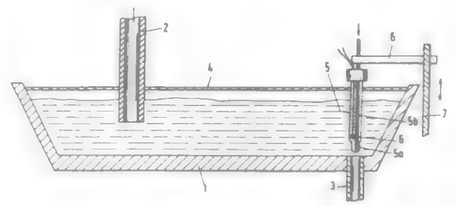
removing said at least one bed or mass of particles from the spontaneously infiltrated at least one permeable mass to form said at least one cavity or channel in said infiltrated mass, wherein said at least one cavity or channel corresponds in shape to said at least one bed or mass of particles, thereby forming said metal matrix composite.

5,361,825

PLUG FOR METALLURGICAL VESSELS

Hermann Lax, Wittgatt 4, D-4000 Düsseldorf 31, and Andreas Au, Am Driesenbusch 22, D-4100 Duisburg 18, both of Germany

Filed Dec. 17, 1992, Ser. No. 991,983
Claims priority, application Germany, Dec. 23, 1991, 4142773
Int. Cl.[5] B22D *41/18*
U.S. Cl. 164—437 **3 Claims**



1. A metallurgical casting vessel, comprising a rod made from a refractory material having a central axis,

said rod including a rib,

said rod terminating in a plug cap,

an eccentrically disposed axial channel in said rod, said eccentric axial channel being enclosed within a wall of said rod without any lateral channels extending from said eccentric axial channel in said wall, said eccentric axial channel being located within said rib, said eccentric axial channel terminating in front of said plug cap, and

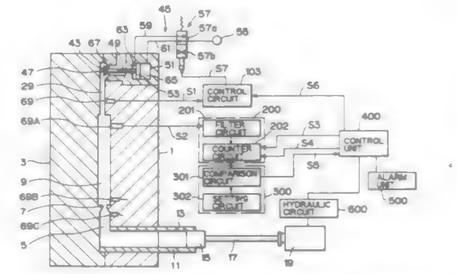
a thermocouple disposed within said eccentric axial channel, said plug further comprising an additional axial channel terminating in an outlet in said rod.

5,361,826

LAMINAR FLOW INJECTION MOLDING APPARATUS AND LAMINAR FLOW INJECTION MOLDING METHOD

Noriyoshi Yamauchi; Hitoshi Ishida, both of Fuchu; Hirotake Usui, Tokyo, and Yoshiaki Egoshi, Fuchu, all of Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Filed Mar. 4, 1993, Ser. No. 34,377
Claims priority, application Japan, Mar. 13, 1992, 4-089651
Int. Cl.[5] B22D *17/32, 17/14*
U.S. Cl. 164—457 **13 Claims**



1. A laminar flow injection molding method for use with a laminar flow injection molding apparatus comprising a casting sleeve, a pair of metal molds forming a runner portion in communication with the casting sleeve, a cavity and a gas vent passage, an injection plunger slidably disposed within the casting sleeve, an injection cylinder connected to the injection plunger for reciprocally moving the injection plunger, a cylin-

der drive means, a molten metal detection means for generating a molten metal detection signal each time a molten metal contacts the molten metal detection means in a single injection, a counting means connected to the molten metal detection means for counting the number of molten metal detection signals generated by the molten metal detection means, judging means connected to the counting means for storing a predetermined value and for comparing a count value of molten metal detecting signals with the predetermined value to determine whether turbulent flow is present, and control means connected to the counting means, judging means and the cylinder drive means for controlling a driving operation of the cylinder drive means based upon a result of the comparison by the judging means, said laminar flow injection molding method comprising the steps of:

disposing said molten metal detection means at least at one of the runner portion, the cavity and the gas vent passage;

inputting the predetermined value into the judging means, the predetermined value being indicative of a turbulent flow of the molten metal;

resetting the counting means in response to a start of an injection;

detecting the molten metal and generating a molten metal detection signal each time the molten metal contacts the molten metal detection means during a single injection;

storing a number of molten metal detection signals as the count value into the counting means; and

comparing the count value with the predetermined value for a judgment of a flowing mode of the molten metal as turbulent flow when the count value is not less than the predetermined value.

3. A laminar flow injection molding apparatus comprising:

a casting sleeve;

a pair of metal molds forming therein a runner portion in communication with the casting sleeve, a cavity and a gas vent passage;

an injection plunger slidably disposed within the casting sleeve for urging a molten metal into the cavity;

an injection cylinder connected to the injection plunger for reciprocally moving the injection plunger;

a cylinder drive means for driving the injection cylinder;

a molten metal detection means disposed at least in one of the runner portion, the cavity and the gas vent passage for generating a molten metal detection signal each time the molten metal contacts the molten metal detection means in a single injection;

a counting means electrically connected to the molten metal detection means for counting the number of molten metal detection signals output by said molten metal detection means as a count value and for storing the count value;

judging means electrically connected to the counting means for storing a predetermined value and for comparing the predetermined value with the count value; and

control means electrically connected to the counting means, the judging means and the cylinder drive means for controlling a driving operation of the cylinder drive means when the count value is not less than the predetermined value and for resetting the counting means in response to a start of injection.

5,361,827

ECONOMIZER SYSTEM FOR VAPOR GENERATION APPARATUS

Richard D. Brown, Newington, and Stephen M. Renals, Vernon, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1992, Ser. No. 998,160
Int. Cl.[5] F28F *27/02*
U.S. Cl. 165—103 **2 Claims**

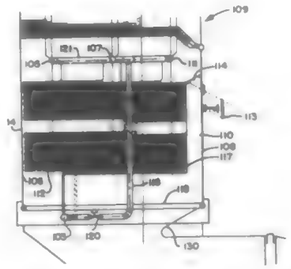
1. An economizer system for a fossil fuel fired vapor generation apparatus which comprises:

a housing having an inlet and an outlet and a wall extending generally between said inlet and said outlet to define first and second flow paths in said housing, said inlet including means for connection to an associated vapor generation apparatus, said apparatus including means for connection to an associated stack;

heat exchange tubing disposed in said first flow path having the interior thereof coupled to associated working fluid of said vapor generation apparatus, said heat exchange tubing having an inlet and an outlet;

means for controlling flow of associated working fluid within said heat exchange tubing being a first valve;

means for selectively bypassing working fluid around said heat exchange tubing, said means for selectively bypassing



working fluid includes a conduit having first and second ends, said first and second ends being disposed respectively in fluid communication with said inlet and said outlet of said heat exchange tubing;

means in said second flow path to control flow in said second flow path which comprises a second valve;

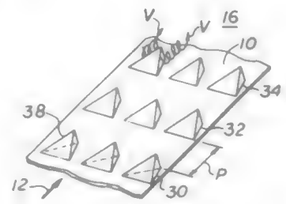
said housing has a nose portion that tapers generally radially inwardly, said second flow path in said housing is disposed to direct flow against said nose port whereby fluid mixing is greater between fluid streams in said first flow path and said second flow path.

5,361,828

SCALED HEAT TRANSFER SURFACE WITH PROTRUDING RAMP SURFACE TURBULATORS

Ching-Pang Lee, Cincinnati; Joseph W. Savage, Maineville, and Melvin Bobo, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 17, 1993, Ser. No. 19,238
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—109.1 **10 Claims**



1. A device for generating vortices which promote turbulence along a heat transfer wall which is operable to transfer heat between a flowpath along the wall, said device comprising:

a scaled heat transfer surface on the wall,

an array of scales on said scaled heat transfer surface,

said array comprising a plurality of longitudinally disposed rows of laterally disposed and spaced apart turbulators,

each of said turbulators having a top ramp surface protruding into the flowpath from said surface,

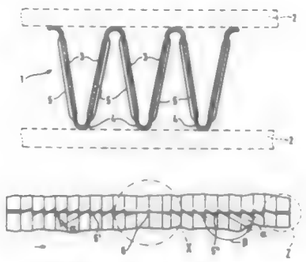
two triangular side surfaces precipitously dropping off from said top ramp surface to a base defined by a projection of said ramp surface on said heat transfer surface of said turbulator.

5,361,829

CORRUGATED FIN FOR FLAT-TUBE HEAT EXCHANGERS

Josef Kreutzer, and Kurt Manch, both of Mühlacker, Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Dec. 7, 1992, Ser. No. 986,473
Claims priority, application Germany, Dec. 19, 1991, 4142019
Int. Cl.[5] F28F *1/22*
U.S. Cl. 165—152 **13 Claims**



1. A heat exchange apparatus comprising:

first and second flat tubes;

a corrugated fin connected to and between said flat tubes, said corrugated fin having

a plurality of gills disposed transverse to a longitudinal direction of said corrugated fin,

a gill-free region in a middle portion of said corrugated fin, said gill-free region including a stiffening bead integrally formed therein transverse to said longitudinal direction and extending over the entire width of said corrugated fin between said flat tubes, said stiffening bead formed as a roof-shape with first and second legs.

5,361,830

FLUID FLOW CONDUIT VIBRATOR AND METHOD

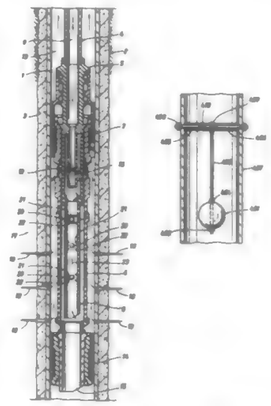
Moye Wicks, III, Houston, Tex.; Gregory S. Lester, Mandeville, La., and Joe O. Esparza, Katy, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1992, Ser. No. 894,667
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—51 **10 Claims**

1. A gravel packing apparatus for placing a gravel pack within a portion of a wellbore comprising:

a) a fluid flow path comprising a work string within which a slurry comprising a carrier fluid and gravel pack solids can be transported to near the portion of the wellbore within which the gravel pack is to be placed, a cross over tool capable of directing slurry flow from the drill string to the portion of the wellbore to be packed, a screen defining a sand free volume within the wellbore through which the carrier fluid but not the gravel pack solids can pass into the same free volume from the portion of the wellbore to be packed, and a means to direct the carrier fluid from the sand free volume to the wellbore above the portion of the wellbore to be gravel packed; and

b) within the fluid flow path, a vibrator constrained within the fluid flow path comprising a movable bluff hammer capable of moving between a plurality of positions wherein fluid flow through the fluid flow path causes the bluff hammer to move between positions and change



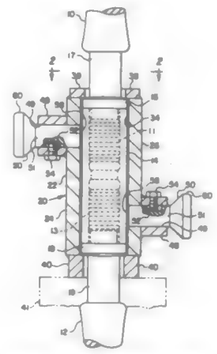
direction of the movement of the bluff hammer after the bluff hammer impacts a wall of the fluid flow path.

5,361,831

ROD COUPLING BREAKOUT DEVICE

Weldon E. Young, Magnolia, Ark., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 26, 1993, Ser. No. 53,123
Int. Cl.[5] E21B *19/16*
U.S. Cl. 166—77.5 **12 Claims**

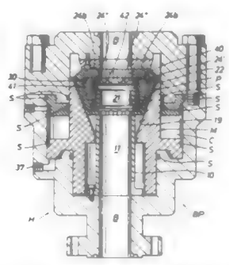


1. A device for delivering impact blows to a coupling interconnecting end-to-end coupled pump rod members and the like, said device comprising:

a housing forming a cavity for receiving said coupling and substantially encircling said coupling; and

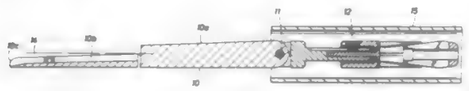
at least one impact blow delivering member supported on said housing and operable to transmit impact blows to said coupling adjacent a threaded connection between said coupling and a rod member for loosening said rod member and for containing said coupling within said housing during breakout of said rod member from said coupling.

5,361,832
ANNULAR PACKER AND INSERT
D. Wayne Van Winkle, Houston, Tex., assignor to Drexel Oilfield Services, Inc., Conroe, Tex.
Filed Jun. 17, 1993, Ser. No. 79,649
Int. Cl.[5] E21B *33/03*
U.S. Cl. 166—84 32 Claims



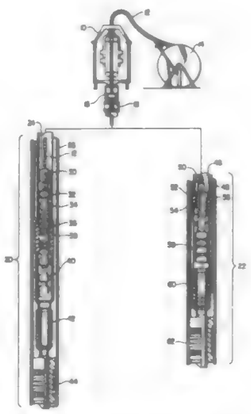
1. An insert for a device having an annular elastomeric body with an axial bore, said insert including a movable element and a support on the insert to enable said movable element to move into the axial bore in said annular elastomeric body upon the application of an external compressive force on the annular elastomeric body.

5,361,833
BOTTOM SET, NON-RETRIEVABLE WHIPSTOCK ASSEMBLY
William H. Schock, and Shannon P. Rogers, both of Lafayette, La., assignors to Triumph*LOR, Inc., Houston, Tex.
Filed Nov. 18, 1993, Ser. No. 154,814
Int. Cl.[5] E21B *7/08*
U.S. Cl. 166—117.6 6 Claims



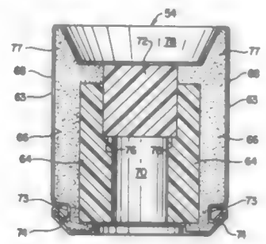
1. A whipstock assembly attachable to a drill string for changing the direction of drilling from a vertical direction within a cased borehole to a direction angled from the longitudinal axis of the cased borehole, comprising:
a whipstock including an elongated body having a concave portion adapted to receive and direct milling apparatus in a direction angled from the longitudinal axis of the cased borehole;
a non-retrievable setting tool attached to said whipstock for setting said whipstock in the borehole, the non-retrievable setting tool including the following:
a terminal body adapted to engage the bottom of the borehole or other obstruction when the whipstock and non-retrievable setting tool are run into the borehole, said terminal body having a central internal bore and a plurality of wedge actuating surfaces circumferentially spaced on the outside of said body;
a plurality of wedge members, each wedge member mounted on a wedge actuating surface for sliding movement outwardly into anchoring engagement with the cased borehole;
a piston member mounted within said terminal body bore for engaging said wedge members and moving said wedge members slidably outwardly along said terminal body wedge actuating surfaces;
an actuating cylinder member mounted within said terminal body bore, said actuating cylinder having a connector portion extending outwardly of said terminal body bore for connection to said whipstock; and,
said actuating cylinder further including a cylindrical section mounted at least partially within said terminal body bore in operative engagement with said piston for moving said piston into engagement with said wedge members for moving said wedge members outwardly into engagement with the cased borehole.

5,361,834
HYDRAULIC RELEASE APPARATUS AND METHOD FOR RETRIEVING A STUCK DOWNHOLE TOOL AND MOVING A DOWNHOLE TOOL LONGITUDINALLY
Don C. Cox, Roanoke, Tex., assignor to Halliburton Company, Houston, Tex.
Continuation-in-part of Ser. No. 940,634, Sep. 4, 1992. This application Sep. 2, 1993, Ser. No. 116,144
Int. Cl.[5] E21B *33/128*
U.S. Cl. 166—120 23 Claims



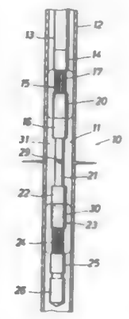
1. A hydraulic release apparatus for moving a downhole tool longitudinally in a well casing, the release apparatus comprising:
a body;
piston means positioned within said body and movable from a first position to a second position relative to said body;
means for communicating fluid to said body to move said piston means from said first position, through an intermediate anchored position, to said second position;
anchor means movable by said piston means from a retracted configuration radially outward to a second anchored configuration in which longitudinal movement of said piston means is restrained within the casing;
releasable means for releasably restraining relative motion between said anchor means and said body until said anchor means is moved to said second anchored configuration, said releasable means then releasing said body for longitudinal motion in said casing relative to said piston means and said anchor means; and
latching means carried by said body and operatively engageable with a downhole tool so that the tool may be longitudinally moved relative to said piston means and said anchor means as said piston moves into said second position.

5,361,835
CEMENTING PLUG
Karl K. LaFleur, Weatherford, Tex., assignor to LaFleur Petroleum Services, Inc., Weatherford, Tex.
Continuation of Ser. No. 38,174, Mar. 29, 1993, Pat. No. 5,311,940, which is a division of Ser. No. 777,645, Oct. 16, 1991, Pat. No. 5,242,018. This application Jan. 6, 1994, Ser. No. 178,030
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—152 27 Claims



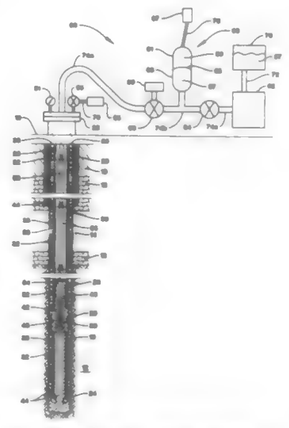
1. A cementing plug comprising:
a cylindrical body having a bore extending therethrough, wherein said bore is divided by a shoulder into a portion having a first diameter and a portion having a second diameter; and
a septum having a first side and a second side disposed within said bore of said cylindrical body for controlling the flow of fluid through said plug, said septum being retained within said bore solely by engagement of said first side with said shoulder.

5,361,836
STRADDLE INFLATABLE PACKER SYSTEM
Robert M. Sorem, Sugar Land, Tex.; David M. Eslinger, Broken Arrow, Okla., and Bart V. Thomeer, Houston, Tex., assignors to Dowell Schlumberger Incorporated, Sugar Land, Tex.
Filed Sep. 28, 1993, Ser. No. 128,379
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—187 5 Claims



1. An inflatable packer system adapted to straddle and pack-off a zone in a well bore, said system comprising: a tubular body; upper and lower inflatable packer assemblies mounted on said body, each of said packer assemblies including an internal elastomer sleeve and expansible armor means covering said sleeve; said upper packer assembly having an external elastomer sleeve covering a lower portion of the armor means therein with an upper portion of said armor means being exposed, and said lower packer assembly having an external elastomer sleeve covering an upper portion of the armor means thereon with lower portions of said armor means being exposed.

5,361,837
METHOD FOR PREVENTING ANNULAR FLUID FLOW USING TUBE WAVES
Graham A. Winbow, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed Nov. 25, 1992, Ser. No. 981,734
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—249 22 Claims



1. A method for cementing a well casing in a well which passes through at least one subterranean formation containing pressurized formation fluids, said well casing being inserted in said well so as to define an annulus between said well casing and the wall of said well, said method comprising the steps of:
a) introducing a cement slurry having a pressure at least equal to the pressure of said pressurized formation fluids into said annulus;
b) introducing a displacement liquid into said well casing;
c) maintaining said pressure of said cement slurry at least equal to the pressure of said pressurized formation fluids until said cement slurry has developed sufficient strength to prevent said pressurized formation fluids from entering said annulus, said pressure of said cement slurry being maintained by causing vibration in said well casing;
d) said vibration being caused by at least one tube wave propagating through at least a portion of said displacement liquid and encountering at least one boundary condition in said well casing.

5,361,838
SLICK LINE CASING AND TUBING JOINT LOCATOR APPARATUS AND ASSOCIATED METHODS
Marion D. Kilgore, Dallas, Tex., assignor to Halliburton Company, Houston, Tex.
Filed Nov. 1, 1993, Ser. No. 146,678
Int. Cl.[5] E21B *47/09*; G01V *3/11, 3/28*
U.S. Cl. 166—255 26 Claims

4. A method of logging a series of joints in a jointed tubular structure, such as a well bore casing or production tubing, in a subterranean well, said method comprising the steps of:
lowering a joint detection structure into the tubular structure on an elongated positioning member;
longitudinally moving the elongated positioning member to correspondingly move the lowered joint detection structure through a series of joints in the jointed tubular structure;
causing a portion of the moving joint detection structure to

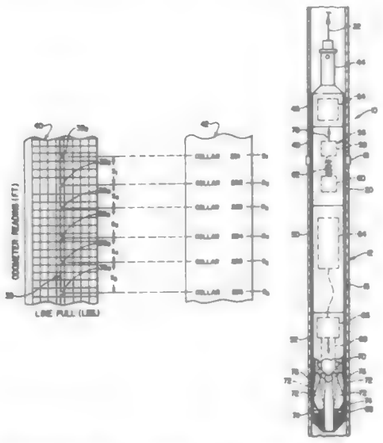
electromagnetically sense each joint through which it passes;

creating a detectable, momentary tension change in said elongated positioning member in response to the electromagnetic sensing of each joint through which said joint detection structure moves;

detecting each momentary tension change in said elongated positioning member; and

determining the downhole length of said elongated positioning member corresponding to each detected tension change therein.

13. A detection structure, movable upwardly through a downhole jointed tubular structure, such as well bore casing or production tubing in a subterranean well, on an end of an elongated positioning member extending into the tubular structure, for detecting the location of a changed mass portion of the tubular structure such as a joint therein, said detection structure comprising:



first means for sensing the changed mass portion as said detection structure passes upwardly therethrough, and responsively generating an electrical output signal; and

second means, responsive to the generation of said electrical output signal, for bringing a portion of said detection structure into forcible contact with the tubular structure in a manner momentarily inhibiting the further movement of said detection structure through the tubular structure and thereby creating in the elongated positioning member a detectable tension increase indicative of the downhole position of the sensed changed mass portion of the tubular structure.

5,361,839

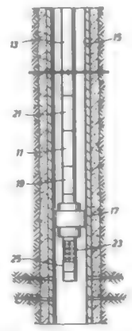
FULL BORE SAMPLER INCLUDING INLET AND OUTLET PORTS FLANKING AN ANNULAR SAMPLE CHAMBER AND PARAMETER SENSOR AND MEMORY APPARATUS DISPOSED IN SAID SAMPLE CHAMBER

Michael J. Griffith, Needville, and Ervin Randermann, Jr., Beasley, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 24, 1993, Ser. No. 36,616
Int. Cl.[5] E21B *49/08*
U.S. Cl. 166—264 **27 Claims**

9. A method of taking a sample of a formation fluid flowing from a formation traversed by a wellbore, comprising the steps of:

receiving said sample in a sample chamber of a fluid sampler, said fluid sampler including a housing defining a full bore, said housing including said sample chamber where said sample chamber includes an annular sample chamber, a first port adapted for fluidly communicating said annular sample chamber with said full bore, and a second port adapted for fluidly communicating said annular sample chamber with said full bore said sample initially flowing in said full bore, the receiving step including the steps of opening said first port and said second pork, receiving said sample from said full bore into said second port and flowing said sample from said second port into said annular sample chamber; and



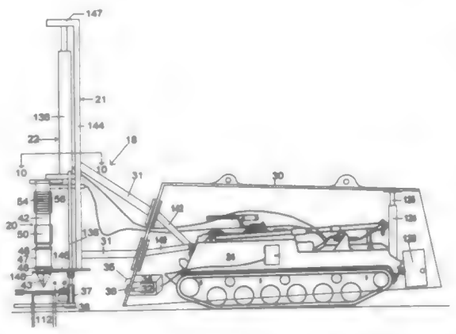
immediately measuring a characteristic of said sample when said sample is received in said sample chamber of said fluid sampler.

5,361,840

WELL PLUGGING APPARATUS AND METHOD

Bruce Matthews, Rte. 2, Box 681, Harpers Ferry, W. Va. 25425

Filed Apr. 26, 1993, Ser. No. 351,854
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—285 **24 Claims**



1. An apparatus for plugging a burning or gushing well, the apparatus comprising:

a tubular plug body sized for insertion into a well casing, the plug body having a peripheral surface and a hollow internal passageway;

a retainer provided on the plug body for retaining the plug within the well casing;

a sealing sleeve provided at least on the peripheral surface of the plug body for forming a seal between the peripheral surface of the plug body and the well casing;

a valve formed in an interior of the plug body for selectively closing the hollow internal passageway of the tubular plug body.

5,361,841

DRILLING AND CEMENTING WITH BLAST FURNACE SLAG/POLYALCOHOL FLUID

Arthur H. Hale, Houston, and Kenneth M. Cowan, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 27, 1993, Ser. No. 68,334
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—293 **22 Claims**

1. A method for drilling and cementing, comprising:

drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, blast furnace slag and a polyalcohol component;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said borehole, thus laying down a filter cake on said walls of said borehole during said drilling and producing a used drilling fluid;

withdrawing said drill string and inserting a pipe, thus creating an annulus between said pipe and said walls of said borehole;

incorporating an activator system into said used drilling fluid to produce a cementitious slurry; and

displacing said cementitious slurry into at least a portion of said annulus between said pipe and said walls of said borehole.

20. A method for drilling comprising

drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, blast furnace slag and a polyalcohol component; and

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said borehole, thus laying down a filter cake on said walls of said borehole during said drilling.

5,361,842

DRILLING AND CEMENTING WITH BLAST FURNACE SLAG/SILICATE FLUID

Arthur H. Hale, Houston, and Kenneth M. Cowan, Sugar Land, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 27, 1993, Ser. No. 68,332
Int. Cl.[5] F21B *33/14*
U.S. Cl. 166—293 **25 Claims**

1. A method for drilling and cementing, comprising:

drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, blast furnace slag, a silicate and a retarder;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said borehole, thus laying down a filter cake on said walls of said borehole during said drilling and producing a used drilling fluid and producing a used drilling fluid;

withdrawing said drill string and inserting a pipe, thus creating an annulus between said pipe and said walls of said borehole;

incorporating an activator system into a portion of said used drilling fluid to produce a cementitious slurry; and

displacing said cementitious slurry into at least a portion of said annulus between said pipe and said walls of said borehole.

25. A method of drilling and cementing, comprising:

drilling a wellbore with a drill string comprising a drill pipe utilizing a drilling fluid comprising water, blast furnace slag, a silicate and a retarder;

circulating said drilling fluid down said drill pipe and up an annulus between said drill pipe and walls of said wellbore thus laying down a filter cake on said walls of said wellbore during said drilling thus producing a used drilling fluid, said wellbore being disposed in a formation having sufficient heat that heat is removed by said circulating of said drilling fluid;

withdrawing said drill string and inserting a pipe, thus creating an annulus between said pipe and said walls of said borehole;

adding additional blast furnace slag to said used drilling fluid to produce a cementitious slurry; and

displacing said cementitious slurry into at least a portion of said annulus; and

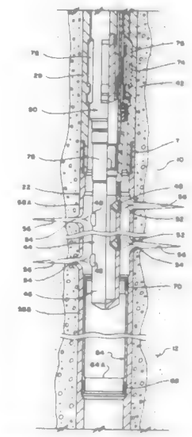
maintaining said cementitious slurry in said at least a portion of said annulus until said heat from said formation activates said cementitious slurry to thus cause said cementitious slurry to set into a cement.

5,361,843

DEDICATED PERFORATABLE NIPPLE WITH INTEGRAL ISOLATION SLEEVE

Perry C. Shy, Arlington, and Christopher A. Dines, Dallas, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Sep. 24, 1992, Ser. No. 950,456
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—297 **1 Claim**



1. A method for completing a well comprising:

suspending a flow conductor and a production nipple having a tubular sidewall section within a well casing;

pumping cement into the annulus between the production nipple and the well bore;

removing residual cement from the bore of the production nipple;

perforating the tubular sidewall section of the production nipple and the annular cement deposit with a perforating gun; and,

isolating the production nipple by covering the perforated sidewall section with a tubular sleeve.

5,361,844

WELL FISHING GRAPPLE ASSEMBLY AND METHOD

ABSTRACT

Robert B. Taylor, College Station; Ken A. Penske, and Clif E. Cook, both of Houston, all of Tex., assignors to Gotco International, Inc., Houston, Tex.

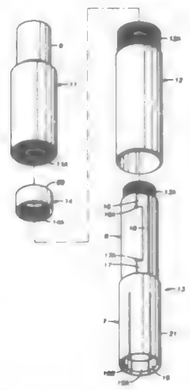
Filed Jun. 15, 1993, Ser. No. 77,783
Int. Cl.[5] E21B *31/00*
U.S. Cl. 166—301 **9 Claims**

1. An apparatus for removing a fish from a well comprising:

a. a top sub with upper and lower ends, said upper end adapted to be connected to a drill string;

b. a grapple sleeve with an upper and lower portion, said

upper portion being adapted to be connected to said lower end of said top sub; and



c. a grapple means adapted to externally engage and grasp a fish in a well, said grapple means being slightably mounted within said grapple sleeve.

5,361,845

PROCESS FOR INCREASING NEAR-WELLBORE PERMEABILITY OF POROUS FORMATIONS

Abul K. M. Jamaluddin, Pointe-Claire, and Taras W. Nazarko, Calgary, both of Canada, assignors to Noranda, Inc., Toronto, Canada

Filed Jun. 3, 1993, Ser. No. 70,812
Claims priority, application Canada, Dec. 22, 1992, 2086040
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—302 **6 Claims**

1. A method off increasing the near-wellbore permeability of porous formations containing hydratable clays, shales, materials which swell when contacted with water or mud filtrate, migratable clays or a formation having a wettability which causes water or fluid blockage, comprising exposing the formation to a temperature of at least 400° C. by using downhole heaters with continuous inert gas injection to cause dehydration of clay lattices, vaporisation of any blocked water, mud filtrate or other fluids, and destruction of the clay structure.

5,361,846

APPARATUS AND METHOD FOR ENHANCING FATIGUE PROPERTIES OF SUBTERRANEAN WELL DRILL PIPE IMMEDIATE THE AREA OF SECUREMENT TO A TOOL JOINT

Frank J. Carlin, Houston, and John F. Price, Navasota, both of Tex., assignors to Grant TFW, Inc.

Filed Nov. 19, 1993, Ser. No. 155,011
Int. Cl.[5] E21B *17/00*
U.S. Cl. 166—380 **4 Claims**

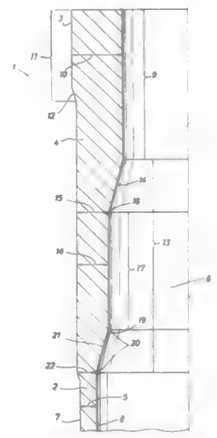
1. Apparatus for enhancing fatigue properties of subterranean well drill pipe immediate the area of securement to a tool joint, comprising:

(a) a drill pipe conduit member having a normal conduit wall thickness thereacross and a fluid passageway extending therethrough;

(b) first outer diameter and first inner diameter surfaces defined through the normal conduit wall thickness on said conduit member;

(c) a first tapered length extending to the area of securement to a tool joint and providing a largest wall thickness thereacross in excess of the normal conduit wall thickness to thereby provide a first ramp upset section and defined by one or more tapered surfaces on the outer diameter surface defined on the conduit member through the first ramp upset section;

(d) a second tapered length immediately adjacent to said first tapered length and including: (1) at least one second tapered surface defined on said inner diameter of said conduit member, said second tapered surface having a smallest wall thickness therethrough less than that of the largest wall thickness of the first tapered length and extending to a first end of; (ii) an elongate transition surface having a continuous conduit wall thickness thereacross equal to



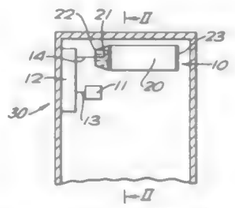
that of the smallest wall thickness of the second tapered surface, said transition surface having a second opposing end extending to; (iii) a second ramp upset section adjoining the second opposing end of the transition surface and defined by one or more third tapered surfaces on the inner diameter of the conduit member to thereby provide a minimum wall thickness through the second ramp upset section on the conduit which is less than the wall thickness across the transition surface, and equal to the normal conduit wall thickness of the drill pipe conduit member.

5,361,847

FAILSAFE PHIAL-TYPE FIRE EXTINGUISHING SYSTEM

Graham B. Phelps, Colchester, United Kingdom, assignor to Pyroguard Limited, London, England

Continuation of Ser. No. 619,885, Nov. 29, 1990, abandoned.
This application Mar. 24, 1993, Ser. No. 37,715
Claims priority, application United Kingdom, Feb. 20, 1990, 9003774.8
Int. Cl.[5] A62C *37/40*
U.S. Cl. 169—58 **7 Claims**



1. A fail-safe phial-type fire extinguisher system that is normally activated when the environment in which at least a first part of said system is situated reaches a first predetermined condition, and that is activated as a fail-safe measure when the environment in which at least a second part of said system is situated reaches a second predetermined condition, said system comprising fire extinguisher means, detection means and extinguisher activation means;

said fire extinguisher means including a sealed phial sealing a fire inhibiting substance in said fire extinguisher means, said phial containing a liquid and being formed to rupture and release said fire inhibiting substance from said fire extinguisher means when said liquid in said phial exceeds a predetermined temperature, said liquid in said phial being said second part of said system and the temperature of said liquid in said phial being above said predetermined temperature being said second predetermined condition,

said extinguisher activation means including heating means, and

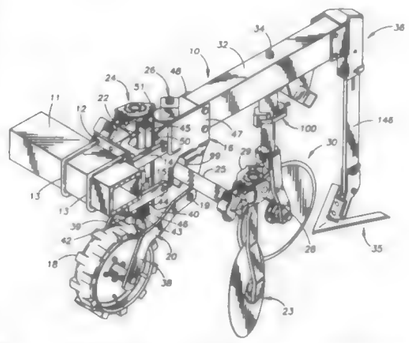
said detection means activating said heating means to raise the temperature of said liquid in said phial above said predetermined temperature in response to predetermined changes in the environment about at least part of said detection means, said part of said detection means being said first part of said system and said predetermined changes in the environment about said part of said detection means being said first predetermined condition, said predetermined changes including an increase in the temperature in the environment about said part of said detection means to a given temperature less than said predetermined temperature.

5,361,848

AGRICULTURAL CULTIVATOR

Mathew W. Fleischer; John C. David; Russell G. Evans, all of Columbus; Robert R. Cutsor, Silver Creek, and Elmer S. Zach, Columbus, all of Nebr., assignors to Fleischer Manufacturing, Inc., Columbus, Nebr.

Filed Sep. 9, 1992, Ser. No. 942,513
Int. Cl.[5] A01B *5/00*
U.S. Cl. 172—140 **24 Claims**



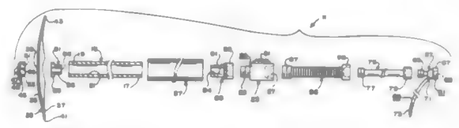
20. In an agricultural cultivator having a toolbar adapted to be pulled by a tractor, a plurality of cultivator units, a four-bar linkage for mounting each cultivator unit to said toolbar, each cultivator unit including a main frame connected to its associated four-bar linkage, a depth gauge wheel supporting said main frame for determining the operating depth of ground-engaging tools on said unit and a sweep carried by said main frame behind said gauge wheel, the improvement in said units comprising: a gauge wheel arm mounting said gauge wheel to said main frame of said unit; an adjustable screw jack having first and second telescoping housing sections and an adjusting member extending through said first housing section for external access; means for pivotally mounting said upper housing section to said main frame of said unit in a generally vertical orientation with said adjusting member accessible from the top of said unit; and means for pivotally mounting said second housing section of said screw jack to said gauge wheel arm at a location displaced from said pivotal mounting of said gauge wheel arm to said main frame, whereby turning said adjusting member of said screw jack will adjust the length of said screw jack and thereby adjust the height of said main frame of said unit relative to the ground.

5,361,849

HAND TOOL FOR USE WITH A WATER SUPPLY

Don L. Moore, P.O. Box 1022, West Plains, Mo. 65775

Filed Jun. 18, 1993, Ser. No. 77,917
Int. Cl.[5] A01C *23/00*
U.S. Cl. 172—380 **9 Claims**



1. A hand tool for use with a water supply, said hand tool comprising:

(a) valve means for attachment to the water supply, said valve means having an opened position for allowing water from the water supply to flow therethrough and having a closed position for preventing water from the water supply from flowing therethrough;

(b) a blade having a first side and second side and having an aperture extending between said first and second sides;

(c) a handle having a cavity extending completely therethrough, having a first end for attachment to said valve means so that water flowing through said valve means will flow through said cavity of said handle, and having a second end for attachment to said second side of said blade with said cavity of said handle in communication with said aperture through said blade so that water flowing through said cavity of said handle will flow through said aperture in said blade; and

(d) baffle means for attachment to said first side of said blade and for deflecting water flowing through said aperture in said blade.

5,361,850

SIDE STRUT FOR THE LOWER STEERING ARM OF A THREE-POINT HITCH

Norbert Müller, Ruppichteroth; Jügen Vollmer, Lohmar, and Paul Herchenbach, Ruppichteroth, all of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Germany

Filed Jun. 5, 1992, Ser. No. 894,106
Claims priority, application Germany, Jun. 7, 1991, 4118683
Int. Cl.[5] A01B *59/041*
U.S. Cl. 172—450 **10 Claims**

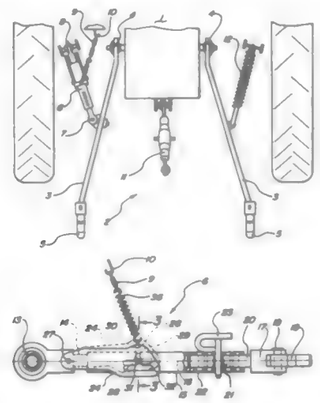
1. A side strut for the lower steering arm of a three-point hitch of a tractor, comprising:

a first telescopic member having a pivot axis and adapted to be pivotably secured to the tractor about the pivot axis;

a second telescopic member adapted to be pivotably secured to the lower steering arm, the telescopic members being suitable for telescopic movement relative to each other along a sliding axis;

a locking mechanism for prohibiting said telescopic movement, said mechanism including a pair of locking catches pivotally coupled with said first telescopic member about a pivot axis distinct from said first telescopic member pivot axis, each locking catch having a locking recess for receiving a locking element, said locking elements extending in opposite directions from the second telescopic member and extending radially relative to the sliding axis, and said locking catches pivot axis, locking recess and locking element, in a locked condition, being located on a line extending through the first telescopic member's pivot axis and parallel to the sliding axis such that the locking catches and strut are substantially prohibited from bend-

ing moments and each said locking recess including at least one locking contour, said locking recesses each run



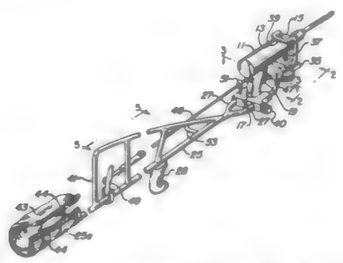
into a longitudinal slot of the locking catches, said slot limits the telescoping movement of the telescopic members relative to each other.

5,361,851

TOOL REACH EXTENDER

Morton H. Fox, Covina, Calif., assignor to Marilyn S. Fox, Covina, Calif.

Filed Feb. 22, 1993, Ser. No. 21,168
Int. Cl.[5] B27C *3/08*; B25F *5/02*
U.S. Cl. 173—170 15 Claims



1. A tool reach extender for a portable tool having a body with a front nose portion, a pistol grip handle and a trigger associated with the handle, said tool reach extender comprising:

cradle means engageable with the tool body front nose portion,

a guide structure rigidly attached to said cradle means and extending from the cradle means for positioning under the tool body,

a saddle member reciprocally slidable on the guide structure and adjustable toward or away from the cradle means, said saddle member having a recessed socket surface engageable with a bottom end surface of the tool handle, whereby the saddle member and cradle means jointly support the tool,

an elongated arm structure extending from said guide structure,

manual handle means on said arm structure remote from said guide structure,

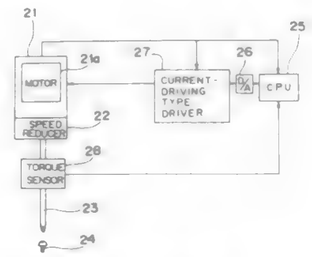
trigger-actuation means extending along the arm structure and having a hook engageable with the tool trigger, and a manual grip element proximate to said handle means, said trigger-actuation means being operable by manual squeezing of said grip element toward said handle means and away from said hook.

5,361,852

SCREWING APPARATUS

Hiroyuki Inoue, Uji; Keiji Fujiwara, Hirakata; Tomomi Ogawa, Kofu, and Masumi Tezuka, Yamanashi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1993, Ser. No. 168,216
Claims priority, application Japan, Dec. 18, 1992, 4-338198
Int. Cl.[5] B25B *23/14*
U.S. Cl. 173—176 5 Claims



1. A screwing apparatus comprising:

a motor for rotating a bit for rotating a screw;

a torque detecting device for detecting torque of the bit; and

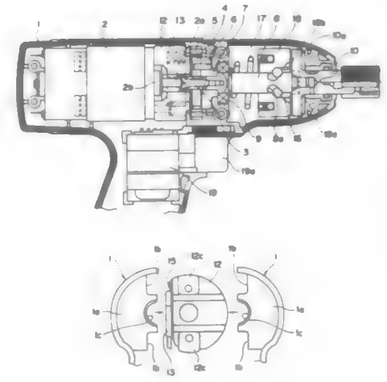
a control device for increasing magnitude of fastening torque by applying slight vibration to a torque instruction to be transmitted to the motor after the screw which is to be fastened at a value of target fastening torque is seated on a workpiece, and turning off electric current to be supplied to the motor by means of the torque instruction when the torque of the bit feedback from the torque detecting device to the control device has attained to the value of the target fastening torque.

5,361,853

POWER TOOL

Akio Takamura; Hideto Yagi, and Takao Yokota, all of Fuchu, Japan, assignors to Ryobi Limited, Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,600
Claims priority, application Japan, Nov. 29, 1991, 3-098701[U]; Nov. 29, 1991, 3-098702[U]; Nov. 29, 1991, 3-098703[U]
Int. Cl.[5] B25D *11/04*; H02K *9/22*
U.S. Cl. 173—217 5 Claims



1. A power tool comprising:

an outer casing;

a rotation drive means disposed in the casing for driving a tool member, said rotation drive means including an electric motor assembly having a housing and a drive shaft extending from the housing to which the tool member is removably attached thereto;

means disposed in the casing for operating the rotation drive means;

a heat radiating block rigidly secured to the electric motor assembly housing, said heat radiating block having a first structure which mates with a complementary second structure on the casing for preventing the motor assembly from rotating relative to the outer casing;

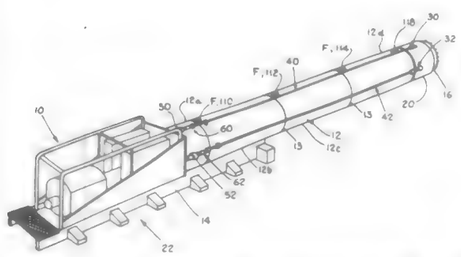
a power control means secured to the heat radiating block for controlling the speed of rotation of the motor drive shaft.

5,361,854

LASER POSITIONING SYSTEM FOR EARTH BORING APPARATUS

Herbert Tull, Ruston, and Frederick Berry, West Monroe, both of La., assignors to Lag Steering Systems, Rocky Mountain, N.C.

Filed Oct. 5, 1993, Ser. No. 131,756
Int. Cl.[5] E21B *47/00*
U.S. Cl. 175—45 33 Claims



1. Earth boring apparatus which includes pipe casing, and means for pushing the casing through the earth and steering the casing as the casing is pushed through the earth to form a bore in a prescribed direction, said apparatus comprising:

an operating platform disposed at a starting point;

a plurality of individual pipe casings joined together to form a casing string;

a plurality of casing joints defined between adjacent pipe casings;

a plurality of measuring units carried by said casings at pre-determined locations along said casing string including at least a first, second, and third measuring unit carried successively on adjacent first, second, and third casings, respectively;

said measuring units including a first beam transmitted in a first direction and a second beam directed in a second, reverse direction;

a pair of targets carried at opposing ends of said measuring units including a first target disposed on one end and a second target disposed on an opposing end;

said first beam of said second measuring unit impinging upon a second target of said third measuring unit;

said second beam of said second measuring unit impinging upon a first target of said first measuring unit;

said second target of said third measuring unit including a detector for providing first and second signals in response to the impingement of said first beam upon said detector representing a positional relationship between said second and third measuring units; and

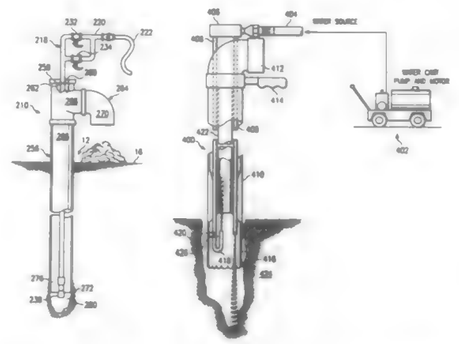
said first target of said first measuring unit including a detector for providing a third signal responsive to the impingement of said second beam upon said detector representing a positional relationship between said first and second measuring units.

5,361,855

METHOD AND CASING FOR EXCAVATING A BOREHOLE

Kenneth W. Schuermann; James E. Franklin, and Arthur D. Deken, all of Perry, Okla., assignors to The Charles Machines Works, Inc., Perry, Okla.

Division of Ser. No. 646,150, Jan. 25, 1991, Pat. No. 5,212,891.
This application May 21, 1993, Ser. No. 65,158
Int. Cl.[5] E21B *7/18, 7/20, 10/62, 17/00*
U.S. Cl. 175—67 12 Claims



1. A casing for use in excavation of a borehole by an apparatus directing a high velocity fluid against the material to be excavated, the borehole having a predetermined diameter, comprising:

a tubular portion of diameter to be moved within the borehole as it is excavated to maintain the diameter of the borehole, the tubular portion moved into the borehole as the borehole is excavated by the apparatus;

a seal portion secured at an end of said tubular portion for passage of the apparatus for excavation within the tubular portion to direct the high velocity fluid at the excavation site, the apparatus moving relative to the casing as excavation is undertaken, a seal provided in said seal portion to seal against said apparatus as the apparatus moves relative to the casing during excavation; and

a discharge portion to discharge material excavated by said apparatus from the site of excavation along the interior of the tubular portion for disposal.

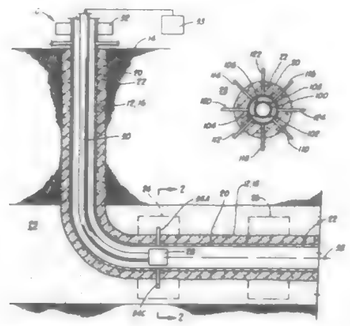
12. A method of excavating a borehole with an apparatus directing a high velocity fluid against the material to be excavated, the borehole having a predetermined diameter, comprising the steps of:

inserting the apparatus through a seal portion of a casing, the casing further having a tubular portion of diameter corresponding to the predetermined diameter of the borehole;

excavating the borehole with the apparatus while pushing the tubular portion of the casing into the borehole to maintain the diameter of the borehole;

discharging the material excavated by the apparatus from the site of excavation along the interior of the tubular portion to a discharge portion of the casing for discharge.

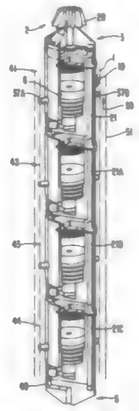
5,361,856
WELL JETTING APPARATUS AND MET OF MODIFYING A WELL THEREWITH
Jim B. Surjaatmadja, Duncan; Steven L. Holden, Fletcher, and David D. Szarka, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.
Continuation-in-part of Ser. No. 953,671, Sep. 29, 1992, Pat. No. 5,249,628. This application Sep. 9, 1993, Ser. No. 119,370
Int. Cl.[5] E21B *7/18*
U.S. Cl. 175—67 **10 Claims**



1. A method of modifying a well having a casing intersecting a subsurface formation, said method comprising the steps of:
inserting a hydraulic jetting tool into said casing;
forming a plurality of openings through said casing; and
with said hydraulic jetting tool, directing a plurality of hydraulic jets therefrom, each of said hydraulic jets being directed through a corresponding one of said openings, and substantially simultaneously cutting a plurality of fan-shaped slots in said subsurface formation in a plane substantially transverse to a longitudinal axis of said casing.

5,361,857
PRESSURE CONVERTER
Knut V. Horvei, Sandnes, Norway, assignor to Den Norske Stats Oljeselskap a.s., Stavanger, Norway
PCT No. PCT/NO91/00134, § 371 Date Sep. 7, 1993, § 102(e) Date Sep. 7, 1993, PCT Pub. No. WO92/08871, PCT Pub. Date May 29, 1992
PCT Filed Nov. 4, 1991, Ser. No. 50,445
Claims priority, application Norway, Nov. 19, 1990, 904989; Nov. 19, 1990, 904990
Int. Cl.[5] E21B *4/02*
U.S. Cl. 175—93 **11 Claims**

1. A pressure converter for mounting above a drill bit at a lower end of a drill pipe comprising:
a valve;
a controlling piston having at one side a relatively large piston area and at an opposite side a relatively small piston area, the controlling piston being positioned in a piston space such that the relatively large piston area is in a low pressure piston space and the relatively small piston area is in a high pressure piston space;
a check valve connected to the high pressure piston space such that in response to movement of the small piston area within the high pressure piston space, the drilling fluid flows through a header channel to the drill bit;
wherein the valve comprises a rotatable valve body having an axis of rotation parallel to an axis of the controlling piston and being positioned in a top cover above the low pressure piston space, the valve body having a diametrical through passage connected via a central opening to the low pressure piston space;
the top cover having two diametrically opposed inlets and two diametrically opposed outlets, each of the inlets being connected to one end of the through passage when the valve body is in a first position, and each of the outlets

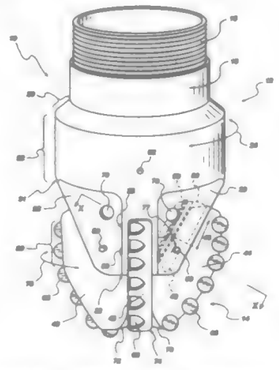


being connected to one end of the through passage when the valve body is in a second position.

5,361,858

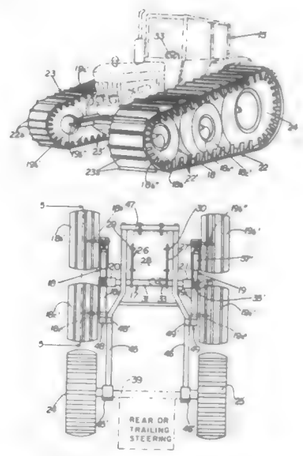
Patent Not Issued For This Number

5,361,859
EXPANDABLE GAGE BIT FOR DRILLING AND METHOD OF DRILLING
Gordon A. Tibbitts, Salt Lake City, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.
Filed Feb. 12, 1993, Ser. No. 17,150
Int. Cl.[5] E21B *10/62*
U.S. Cl. 175—286 **21 Claims**



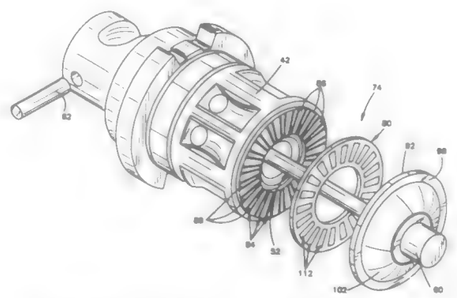
18. A method for drilling a hole within an earth formation comprising: providing a drill bit having:
a body having an outer diameter and a nose positioned therebelow;
movable cutting means slidably associated with said body for cutting said earth formation, said movable cutting means being variably positionable between a first position relatively close to said nose and effecting a first diameter for said cutting means and a second position relatively farther from said nose effecting a second, larger diameter for said cutting means; and
cutting elements associated with said cutting means;
placing said drill bit down a hole formed in said earth formation with said cutting means in said first position;
contacting the bottom of said hole with said cutting means and expanding said cutting means away from said nose and into said second position responsive to said contact;
rotating said drill bit to cut further into said earth formation; and raising said drill bit from the bottom of said hole and retracting said cutting means to said first position.

5,361,860
CONVERSION UNIT FOR WHEEL-DRIVEN TRACTORS
John S. Smith, and Scott V. Smith, both of P.O. Box 859, Jackman, Me. 04945
Filed May 4, 1993, Ser. No. 62,064
Int. Cl.[5] B62D *55/04*
U.S. Cl. 180—9.21 **8 Claims**



1. A tractor conversion kit for converting a wheel-driven tractor having a pair of front steerable wheels on a front axle and a pair of rear-driven wheels on a rear axle, one each of each wheel pair being located on opposite sides of said tractor, with said rear wheels steered by trailing equipment, said conversion kit useful for converting said tractor into a crawler-type track-propelled vehicle in which said pair of front steerable wheels and said front axle of said tractor have been removed, said rear driving wheels of said tractor are driven by the tractor's rear axle, said conversion kit comprising:
a front assembly adapted to be mounted on the front of the tractor after removal of and in replacement of the front axle and the front steerable wheels of the tractor,
said front assembly including a transverse beam,
attachment means for securing the transverse beam to the engine body of the tractor,
a tandem wheel unit journalled at a pivot center connection on each end of said transverse beam,
forwardly-extending side frame thrust members adapted to be respectively attached to the opposite sides of the rear axle housing and extending forwardly for securement to the forward end of the tractor, and
connection means provided respectively on the side frame thrust members with said tandem wheel units for resisting rotational movement of the tandem wheel units about their pivot center connection with the engine body of the tractor, and
crawler track assemblies for extension over the rear wheels of the tractor and the tandem wheel units.

5,361,861
POWER STEERING SYSTEM
Laurence L. Miller, W. Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio
Filed Jan. 29, 1993, Ser. No. 11,399
Int. Cl.[5] G62D *5/06*
U.S. Cl. 180—132 **14 Claims**



1. An apparatus for use in a power steering system, said apparatus comprising:
first and second members which are rotatable relative to each other to control operation of a power steering motor,
a torsion-tension spring interconnecting said first and second members,
means for applying torque to said torsion-tension spring to effect increasing torsional deformation of said torsion-tension spring upon relative rotation between said members in a first direction, and
means for applying tensile force to said torsion-tension spring to effect increasing axial deformation of said torsion-tension spring upon relative rotation between said members in the first direction, said means for applying tensile force to said torsion-tension spring including means for varying the tension applied to the torsion-tension spring by a first amount upon relative rotation between said members in a first direction through a first incremental angular distance and for varying the tension applied to said torsion-tension spring by a second amount which is different than the first amount upon relative rotation between said members in the first direction through a second incremental angular distance which is the same as and is offset from the first incremental angular distance,
said means for applying tensile force to said torsion-tension spring includes cam surface means for transmitting force to effect axial deformation of said torsion-tension spring, said cam surface means having a first portion which has a first slope and a second portion which has a second slope which is less than said first slope, said first portion of said cam surface means being effective to apply tensile force to said torsion-tension spring during relative rotation between said members through the first incremental angular distance, said second portion of said cam surface means being effective to apply tensile force to the torsion-tension spring during relative rotation between said members through the second incremental distance.

5,361,862

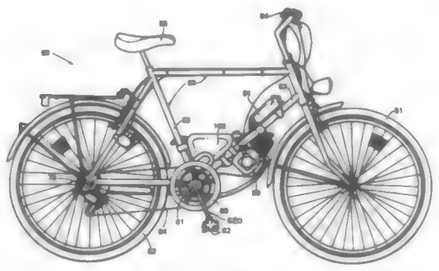
Patent Not Issued For This Number

5,361,863

POWER TRANSMISSION FOR COUPLING A PRIME MOVER TO A VEHICLE

George Goodwin, Sandycove, Ireland, assignor to Wingood Holding Company Limited, Dublin, Ireland

Continuation of Ser. No. 985,236, Dec. 2, 1992, abandoned, which is a continuation of Ser. No. 462,459, Jan. 9, 1990, abandoned. This application Oct. 4, 1993, Ser. No. 131,579
Claims priority, application Ireland, Jan. 11, 1989, 69/89
Int. Cl.[5] B62K *11/00*; B62M *23/02*
U.S. Cl. 180—205 23 Claims



1. A power transmission for coupling a prime mover to a vehicle; said prime mover having an output side corresponding to an input side of said vehicle, which power transmission comprises:

a clutch member including a clutch input side and a clutch output side;

a gear train assembly, the gear train assembly including a housing and a gear train having a gear train input side and a gear train output side;

means for connecting the prime mover output side to the clutch input side;

means for connecting the clutch output side to the gear train input side;

means for connecting the gear train output side to the vehicle input side; and

a first freewheel interposed between the gear train output side and the vehicle input side, whereby there is a unidirectional transmission of power from the prime mover to the vehicle.

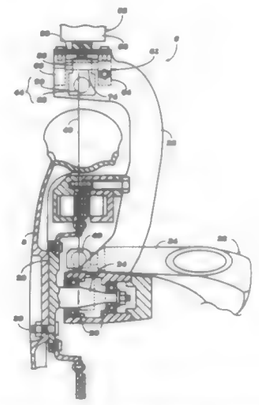
5,361,864

FRONT WHEEL SUSPENSION FOR MOTORCYCLE

Toyoji Tanaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation-in-part of Ser. No. 796,417, Nov. 22, 1991, abandoned. This application Oct. 19, 1992, Ser. No. 963,436
Claims priority, application Japan, Nov. 30, 1990, 2-340847
Int. Cl.[5] B62K *21/02*
U.S. Cl. 180—219 29 Claims

1. A steering and suspension arrangement for a front wheel of a motorcycle comprising: a frame, a steering knuckle extending along one side of said front wheel, a swing arm having first and second ends, a first connection whereat said first end of said swing arm is connected at said frame and a second connection whereat said second end of said swing arm is connected proximate said steering knuckle, said second connection movable through an arc, wherein said arc has upper and lower maximum positions; and further comprising a steering axis which passes through said second connection, said front wheel and said steering knuckle rotatable about said steering axis; wherein a longitudinal line extending through a portion of said swing arm nearest said second connection forms a right angle with respect to said steering axis when said second connection is positioned at a midpoint of said arc, between said upper and lower maximum positions; and further comprising means for



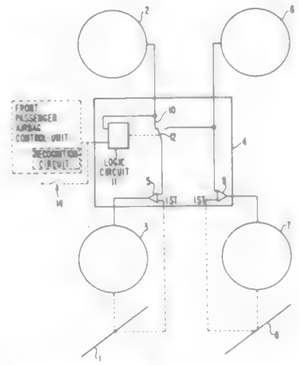
adjusting the relative lateral positioning between said steering knuckle and said swing arm.

5,361,865

MOTOR VEHICLE HAVING EQUIPMENT PARTS IN THE FRONT OCCUPANT AREA WHICH CAN BE ADJUSTED ON SEPARATE SIDES

Thomas Lindner, Munich, Germany, assignor to Bayerische Motoren Werke AG, Germany

Filed Jul. 27, 1993, Ser. No. 99,481
Claims priority, application Germany, Jul. 28, 1992, 4224864
Int. Cl.[5] B60H *1/00*; B60K *28/04*
U.S. Cl. 180—273 10 Claims



7. A motor vehicle comprising:

equipment parts in front occupant area which are separately adjustable on a driver side and on a front passenger side of the motor vehicle;

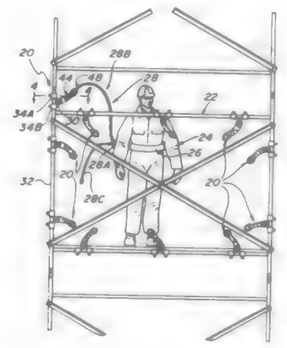
a control unit coupled to the equipment parts, said control unit being operable in a first operating mode in which the equipment parts are separately adjustable and in a second operating mode in which adjustment of the equipment parts on the front passenger side is synchronous with a corresponding adjustment on the driver side, wherein the control unit includes a logic circuit coupled to receive from a signal source an input signal that is indicative of occupancy of the front passenger side, wherein the operating mode of the control unit is automatically determined by the logic circuit in dependence on the input signal such that occupancy of the front passenger side causes the logic circuit to place the control unit in the first operating mode, and no occupancy of the front passenger side causes the logic circuit to place the control unit in the second operating mode, and a switch coupled between the logic circuit and the equipment parts for controlling the equipment parts to be separately adjustable or synchronously adjustable in dependence on the determination by the logic circuit.

5,361,866

CONNECTOR ASSEMBLY FOR USE ON SCAFFOLDING TO PREVENT A WORKER FROM FALLING

Michael Bell, 1704 Triumphe Way, Warrington, Pa. 18976, and Richard Mickelson, Barling, Ark., assignors to Michael Bell, Warrington, Pa.

Filed Sep. 30, 1993, Ser. No. 129,536
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—3 10 Claims



1. A connector assembly for releasable securement to a portion of scaffolding on which a worker wearing a safety restraint will be disposed,

said portion of said scaffolding comprising a cylindrical section having a pair of collars disposed thereon, each of said collars defining a channel between it and said section, wherein each of said collars are releasably securable along said portion of said scaffolding,

said connector assembly comprising insert means, a first connector member, strap means, reinforcing means, and a second connector member,

said insert means having a pair of projections, each of which is releasably located within a respective one of said channels associated with said pair of collars to quickly and releasably secure said connector assembly in place with respect to said scaffolding and to facilitate the replacement of said connector assembly without having to dismantle said scaffolding or remove said collars from said scaffolding,

said first connector member having a slot therein,

said second connector member having a slot therein and a hole for releasably securing said safety restraint member thereto,

said strap means comprising an elongated flexible member having a top and bottom surface and pair of ends, each end being in the form of a loop,

said first connector member being pivotally and releasably connected to said insert means, wherein the releasable connection of said first connector member to said insert means facilitates the separation of said insert means from said connector assembly to permit the replacement of various components of said connector assembly, one of said loops of said strap means extending through said slot in said first connector to fixedly secure said first connector to said strap means, the other one of said loops of said strap means extending through said slot in said second connector to fixedly secure said second connector to said strap means,

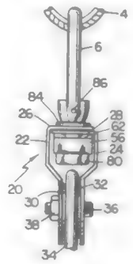
said reinforcing means comprising a pad of a wear resistant material secured to one of said top or bottom surfaces.

5,361,867

LOAD INDICATOR

Wayne L. Olson, Central Point, Oreg., and Gary E. Choate, Lakewood, Colo., assignors to Rose Systems, Inc., Englewood, Colo.

Filed Jul. 27, 1993, Ser. No. 97,672
Int. Cl.[5] A62B *33/00*
U.S. Cl. 182—18 13 Claims



1. A device for indicating that a fall arresting apparatus was used to arrest a fall comprising:

a load supporting member attached to a fall line;

said load supporting member having a base portion having at least one opening formed therein;

a collapsible member having spaced apart portions adapted to contact said base portion;

said collapsible member having a central body portion integral with said spaced apart portions which comprises a pair of integral leg portions projecting from said central body portion, and said central body portion having an opening formed therein;

mounting means for mounting said collapsible member on said load supporting member, so that said spaced apart portions are at least adjacent to said base portion;

another load supporting member attached to said fall line; and

securing means for securing at least a portion of said mounting means to at least a portion of said another load supporting member so that when a predetermined force is applied to said another load supporting member said predetermined force is transmitted to said collapsible member crushing said collapsible member.

5,361,868

STEP LADDER BOOT KIT

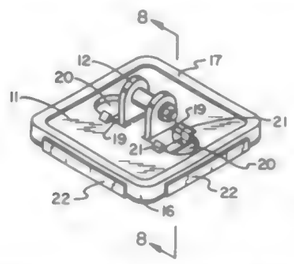
Agnes M. Bartos, R.D. 1 Evergreen Rd., Pulaski, Pa. 16143

Filed Dec. 10, 1993, Ser. No. 164,534
Int. Cl.[5] E06C *7/44*
U.S. Cl. 182—111 1 Claim

1. A stabilizer system for step ladders which comprises: a set of four attachments, one for each leg of such step ladder; each attachment consisting of a large, flat, rigid base plate member; a pair of flange members stamped from the central section, of such base plate member, said flange members being cut free at the sides and one end thereof with the other end remaining attached to said base plate member and with the freed portion thereof bent up at right angles to said base plate member to define two upstanding flanges; said flanges being spaced one from the other to accept therebetween a leg of such step ladder pre-drilled to accept a bolt therethrough; a bolt hole in each of said flanges aligning with the hole in said step ladder leg; a spacer tube positioned between said flanges and rotatably accepting a bolt therein; and a bolt interconnecting said flanges

and the pre-drilled leg of the step ladder to fasten the attachment thereto;

wherein each of said attachments includes a rigid, toothed pad extending across the bottom of said flat base member and secured thereto by spring clips extending through said base member in the portions thereof left open by the bending of said flanges.

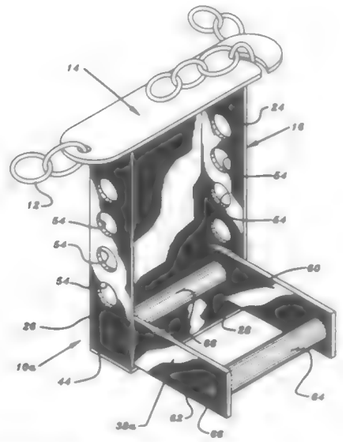


5,361,869

HAND CLIMBER

Elmer W. Ledbetter, Rte. 1, Box 145, Jamestown, Tenn. 38556

Filed Oct. 12, 1993, Ser. No. 134,627
Int. Cl.[5] A63B *27/00*
U.S. Cl. 182—133 3 Claims



1. A hand climber comprising:

a chain having first and second chain ends;

a body anchor having a rectangularly shaped flat face, rectangularly shaped first and second sides, and top and bottom sides, and defining an interior space between said first and second sides thereof;

a top anchor having first and second sides and a perimeter therearound, with a hole extending through said top anchor proximate said first side thereof, and an arcuate-shaped recess extending from said perimeter into said top anchor, said chain being coupled at said first chain end to said top anchor at said hole, with said second chain end being selectively engagable to said arcuate-shaped recess to couple said second chain end to said top anchor about a vertical support pole, thereby securing said top anchor to said vertical support pole, said top anchor being fixedly secured to said top side of said body anchor such that said body anchor hangs downwardly and parallely relative to said vertical support pole;

a flat plate having a central indented recess formed therein, said recess defining a series of protruding gripper teeth terminating in a rectangularly shaped notch which separates said teeth into two laterally spaced sets of teeth, said flat plate being secured to said flat face of said body anchor, with said teeth being operable to engage said vertical support pole to preclude translation of said hand climber along said vertical support pole;

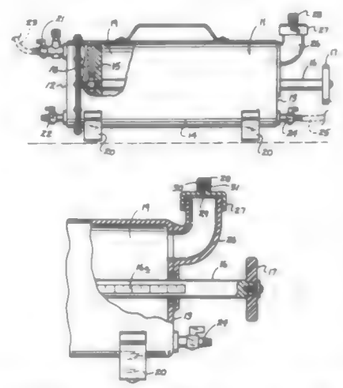
a handle pivotally mounted between said first and second sides of said body anchor such that said handle is pivotable between a first position wherein said handle is stored within said body anchor, and a second position wherein said handle is oriented orthogonal to said body anchor.

5,361,870

TRANSMISSION FLUID EXCHANGE APPARATUS

Richard R. Courcy, 12 Girard Way, Newbury, Mass. 01951

Filed Sep. 13, 1993, Ser. No. 120,056
Int. Cl.[5] F16C *3/14*; F16N *33/00*
U.S. Cl. 184—1.5 5 Claims



1. A transmission fluid exchange apparatus, comprising,

a container tank, having a first end wall spaced from a second end wall, and a side wall coextensive between the first end wall and the second end wall, the container tank including a piston positioned sealingly therewithin extending in a sliding relationship between the first end wall and the second end wall, the piston including a piston rod mounted fixedly and orthogonally relative to the piston, with the piston rod extending slidingly through the second end wall, the rod including a rod handle mounted to the piston rod positioned exteriorly of the container tank and the second end wall, and

a first chamber defined between the piston and the first end wall within the container tank, and a second chamber defined with the container tank between the piston and the second end wall, and

support legs mounted at a lowermost end of the container tank, and

a fill valve directed into the container tank through the first end wall at an uppermost end of the first end wall, with a lowermost end of the first end wall including a drain valve, and

an inlet conduit mounted to the fill valve, the inlet conduit arranged for fluid communication with a transmission pressure conduit, and

the second end wall having an outlet valve, the outlet valve including an outlet conduit in fluid communication to the transmission pressure conduit, and

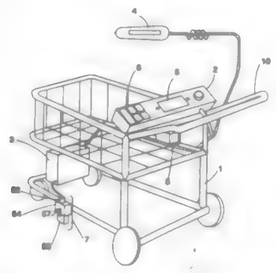
the outlet conduit mounted at a lowermost end of the second end wall, with an uppermost end of the second end wall having a fill tube.

5,361,871

PRODUCT INFORMATION SYSTEM FOR SHOPPERS

Om P. Gupta, Ithaca; Marvin R. Clinch, Oneida, and Robert C. Ricketson, Ithaca, all of N.Y., assignors to Digicomp Research Corporation, Ithaca, N.Y.

Filed Aug. 20, 1991, Ser. No. 747,727
Int. Cl.[5] E04H *3/04*
U.S. Cl. 186—61 37 Claims



27. A checkout counter system to operate in conjunction with a bar code scanner at a cashier's counter in a retail establishment capable of recording information related to products to be purchased by reading bar codes affixed to said products, comprising:

a) a data communications interface system for receiving information from a remote unit such that product information, including pricing information, related to a list of products intended for purchase stored in said remote unit can be retrieved in said checkout counter system;

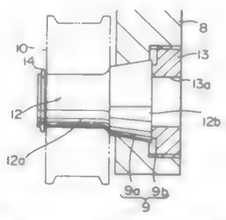
b) means for comparing said information recorded at said bar code scanner at said cashier's counter and said information retrieved from said remote unit so that any discrepancies between said information received from said remote unit and said information recorded at said bar code scanner at said cashier's counter are identified.

5,361,872

CHAIN WHEEL MOUNTING STRUCTURE IN FORKLIFT

Teruyuki Nishimyo, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 12, 1993, Ser. No. 60,637
Claims priority, application Japan, May 18, 1992, 4-151605
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—226 6 Claims



1. In a fork lift having a pair of inner masts connected by a beam, said beam having two opposite ends respectively adjacent to each of said pair of masts, a chain wheel mounting structure for rotatably mounting a chain wheel on each of a pair of wheel brackets through a support pin for each chain wheel, said pair of wheel brackets being attached symmetrically to the respective of said two opposite ends of said beam, each said chain wheel mounting structure comprising:

a taper hole formed in said wheel bracket with the smaller diameter side thereof facing said chain wheel;

said support pin having a taper portion shaped as a complement to said taper hole and a chain wheel supporting portion extending from the taper portion and having a smaller diameter relative to the taper portion; and

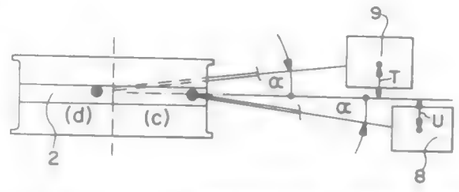
means for bringing the outer peripheral surface of said taper portion of the support pin into pressed contact with the inner peripheral surface of said taper hole when said taper portion of the support pin is inserted into said taper hole so that the chain wheel supporting portion protrudes from said wheel bracket.

5,361,873

ROPE SUSPENSION ARRANGEMENT

Johannes de Jong, Järvenpää, and Pentti Alasentie, Espoo, both of Finland, assignors to Kone Elevator GmbH, Baar, Switzerland

Filed Apr. 14, 1993, Ser. No. 45,713
Claims priority, application Finland, Apr. 14, 1992, 921682
Int. Cl.[5] B66B *11/08*
U.S. Cl. 187—264 12 Claims



1. Traction sheave elevator comprising a drive machine and a traction sheave, the traction sheave being coupled to the drive machine and being provided with a rope groove, a hoisting rope running over the traction sheave, an elevator car and a counterweight, the counterweight being suspended on the hoisting rope and the elevator and counterweight being movable in an elevator shaft, said elevator using at least two diverting pulleys causing the hoisting rope going to the traction sheave and the hoisting rope coming from the traction sheave to run crosswise with respect to each other, the hoisting rope extending between the at least two diverting pulleys, the at least two diverting pulleys and the traction sheave being rotatable and being placed so that planes of rotation of the diverting pulleys lie on different sides of a plane of rotation of the traction sheave, distances between the planes of rotation of the at least two diverting pulleys to the plane of rotation of the traction sheave being equal such that angles of departure (α) of the hoisting rope from the traction sheave to each diverting pulley are equal.

5,361,874

CONFINED, SINGLE SHAFT WALL ELEVATOR LIFTING SYSTEM

Verbern R. Brown, 3390 NE. 17th Ave., Ocala, Fla. 34479

Filed Sep. 28, 1993, Ser. No. 128,589
Int. Cl.[5] B66B *7/02*
U.S. Cl. 187—253 12 Claims

1. An elevator system comprising:

an elevator cab;

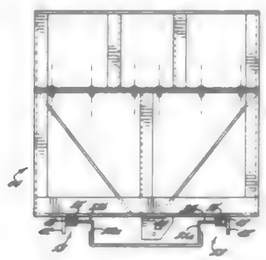
elevator supporting means for supporting said elevator cab;

a pair of fixedly mounted elevator support rails;

a piston-sheave assembly operatively coupled to raise and lower said elevator supporting means on said pair of fixedly mounted elevator support rails;

first engaging means, coupled between said elevator supporting means and said pair of fixedly mounted elevator support rails, for permitting the elevator supporting means to travel on said fixedly mounted elevator support rails; and

second engaging means, coupled between said piston-sheave assembly and said pair of fixedly mounted elevator support rails, for permitting the piston-sheave assembly to travel on said fixedly mounted elevator support rails.



5,361,875

BRAKE FOR BICYCLES

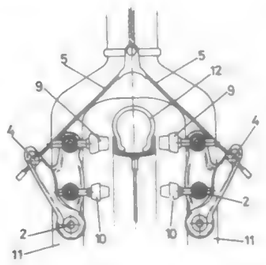
Jose L. Miner Urdampilleta, Ronda 3 y 7, 20001 San Sebastian (Guipuzcoa), Spain

Continuation of Ser. No. 910,566, Jul. 8, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,581

Claims priority, application Spain, Mar. 17, 1992, 9200579

Int. Cl.[5] B62L *1/14*

U.S. Cl. 188—24.21 **6 Claims**



1. A brake for bicycles, for each wheel consisting of two independent levers, right and left, that are linked to a yoke in coincident positions, one on an arm of the yoke, in line with linking shafts that are approximately perpendicular to the axis of an associated wheel, whose levers are carriers, each for a seating hole for a head for securing a brake traction cable and for a brake shoe holder, wherein each said lever has at least two securing points for simultaneously securing at least two brake shoe holders at different distances from the linking shaft of that lever to the arm of the yoke, whose securing points describe arcs of substantially different radii for corresponding to wheels having at least two different radii, when the brake is operated, each securing point being located at a different radial distance from the axis of the associated wheel.

5,361,876

TRUCK MOUNTED BRAKE APPARATUS

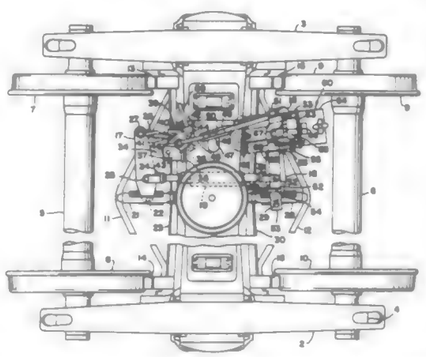
Wallace F. Haverick, Easley, and Paul P. Sopt, Taylors, both of S.C., assignors to Ellcon National, Inc., Greenville, S.C.

Filed May 4, 1993, Ser. No. 59,435

Int. Cl.[5] B61H *13/00*

U.S. Cl. 188—52 **18 Claims**

1. In a vehicle having rotatable wheels and braking apparatus comprising friction means for frictionally engaging said wheels, a pivotable :lever for pressing said friction means against said wheels for resisting rotation of said wheels and a manually operable driving means for operating said pivotable lever, wherein the improvement comprises a force multiplying lever pivotably mounted at one end on said vehicle to provide a predetermined pivot point at said one end, means interconnecting said force multiplying lever at a second point, spaced from said predetermined point in a predetermined direction, with said pivotable lever for moving said pivotable lever with movement of said multiplying lever and means interconnecting said manually operable driving means with said force multiplying lever at a third point on the latter spaced in said predetermined direction and further from said pivot point than said second point whereby the force applied to said pivotable lever, and hence, said friction means, is greater than the force applied to said force multiplying means by said manually operable driving means.



5,361,877

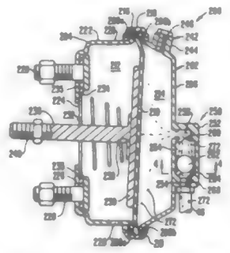
DIAPHRAGM-TYPE PNEUMATIC BRAKE ACTUATOR WITH CLOSING VALVE

John M. Graham, 930 Peninsula Ave. #205, San Mateo, Calif. 94401

Filed Jul. 7, 1993, Ser. No. 88,477

Int. Cl.[5] F16D *65/24*

U.S. Cl. 188—170 **16 Claims**



1. A diaphragm-type vehicle brake actuator comprising:
a housing having an interior and first and second portions, said first portion having an opening formed therethrough;
a diaphragm positioned within said housing and arranged such that it divides the interior of said housing into first and second compartments, said diaphragm being coupled to said housing such that the diaphragm and housing form a fluid seal between said first and second compartments;
an actuator member extending through the opening in said first portion and into said first compartment where the actuator member is coupled to and biased toward said diaphragm;
a valve body defining a valve chamber and first and second ports and being integrally formed with said second portion, said first and second ports being fluidly coupled to one another through said valve chamber, said second port being fluidly coupled to said valve chamber and said second compartment, said first port further being adapted to be coupled to a source of pressurized fluid such that pressurized fluid can be introduced through said valve chamber and into said second compartment to displace the diaphragm and actuator member;
first valve seat arranged adjacent said first port;
second valve seat arranged adjacent said second port; and
a valve element disposed in said valve chamber and being movable between a first position where the element is seated against said first seat and a second position where the valve element is seated against said second seat, said valve element being gravity biased toward said first position, whereby when pressurized fluid is introduced into the second compartment through the valve chamber and the diaphragm ruptures, the resultant increased flow rate of the fluid causes the valve element to move to the second position where it prevents pressurized fluid from entering the second port and being lost through the ruptured diaphragm.

5,361,878

DYNAMIC TWO FREQUENCY VIBRATION DAMPER

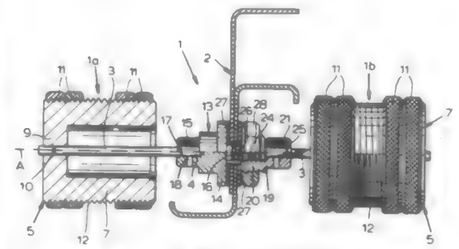
Luciano Borsati, Vico Canavese, Italy, assignor to Alenia Aeritalia & Selenia S.P.A., Rome, Italy

Filed Jan. 21, 1993, Ser. No. 7,138

Claims priority, application Italy, Jan. 21, 1992, TO92A000037

Int. Cl.[5] F16F *15/00*

U.S. Cl. 188—378 **12 Claims**



1. A dynamic vibration damper comprising:
flexible bar;
means for fixing the bar in a cantilever position onto a structural element with vibrations to be attenuated; and
a pendulum connected rigidly to the bar, said pendulum being provided with means including a mass (m) for defining a first eigenfrequency of vibration (f_1), and for imparting to said pendulum a moment of inertia (J_m) around an axis perpendicular to an axis of said bar in a rest position of said bar, selected so as to define a second eigenfrequency of vibration (f_2) of the damper at a pre-fixed value which is an integral multiple of the first eigenfrequency (f_1).

5,361,879

EXTENSION CORD REEL

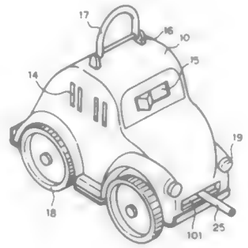
Yeong-hwa Lin, 90-2, sec.3 Jia yen Road, sune lin town, Taipei Shien,

Filed Aug. 11, 1993, Ser. No. 105,814

Int. Cl.[5] H02G *11/02*

U.S. Cl. 191—12.4 **5 Claims**

1. A device for retracting and storing an electric extension cord comprising:
a retracting and storing mount centrally situated in the device, the retracting and storing mount including a reel, an extension cord exit, an extension cord socket hole, and a power switch,
said device mount being further provided with a plurality of casters, a lighting fixture, and a hand grip mounted on handle seats;
a bracket is disposed securely in said retracting and storing mount with a cord winding disk mounted pivotally on said reel in said retracting and storing mount such that said cord winding disk is parallel to said bracket, and that said cord winding disk is provided with a braking wheel rotatable synchronously with said cord winding disk and facing said bracket, said braking wheel being provided on an outer circumference thereof with a plurality of pawls equidistantly spaced and unidirectionally beveled.
said braking wheel being further provided in a circumference thereof with one or more recessed escaping portions;
an extension cord is wound on said cord winding disk and has one end capable of making contact with a conductive spring piece disposed in said extension cord socket hole,



said extension cord having a second end passing through said extension cord exit of said retracting and storing mount, said second end of said extension cord having a plug attached thereto;
a retrievable spring having an inner end fitting over said reel and having an outer end fastened to said cord winding disk;
and a stopping block mounted pivotally on said bracket by means of a shaft such that one end of said stopping block can be stopped and retained obliquely by said pawls of said braking wheel, and that a second end of said stopping block is fastened to one end of a tension spring, the second end of the tension spring being fastened to said bracket.

5,361,880

VISCOUS CONVERTER CLUTCH WITH O-SLIP CAPABILITY

Edward J. Bojas, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

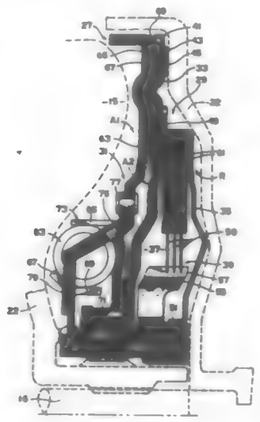
Filed Sep. 22, 1993, Ser. No. 125,603

Int. Cl.[5] F16H *45/02*

U.S. Cl. 192—3.25 **13 Claims**

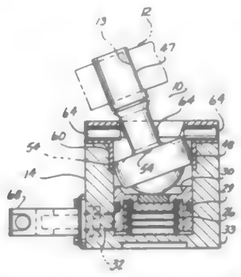
1. A bypass assembly for use in a torque converter including a torque converter housing and an output shaft; said bypass assembly including a fluid coupling of the type including an annular housing assembly adapted to be positioned within the torque converter housing, and defining an annular fluid chamber therein, said annular housing assembly defining a first radially-extending annular clutching surface adapted for clutching coaction with a confronting surface of the torque converter housing; an annular clutch assembly disposed within said fluid chamber and including an axially-extending clutch hub portion adapted to be drivingly associated with the output shaft of the torque converter; said fluid coupling cooperating with the torque converter housing to define a release pressure chamber and cooperating with the torque converter to define an apply pressure chamber; characterized by:
(a) said bypass assembly further comprising a drive plate assembly disposed to separate said apply pressure chamber into a first apply chamber disposed between the torque converter and said drive plate assembly, and a second apply chamber disposed between said drive plate assembly and said fluid coupling;

(b) said drive plate assembly including drive means in operable engagement with said clutch hub portion, and a second radially-extending annular clutching surface adapted for clutching coaction relative to the confronting surface of the torque converter housing;



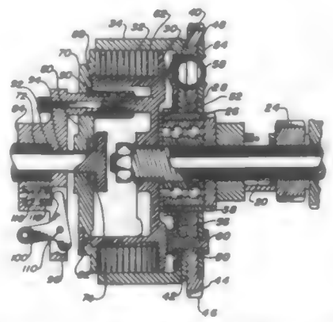
(c) valve means operable in response to a fluid pressure in said first apply chamber, to control the fluid pressure differential between said first and second apply chambers, thereby controlling the net fluid pressure tending to bias said second annular clutching surface into clutching coaction relative to the confronting surface of torque converter housing.

5,361,881
BREAKAWAY CLUTCH
Alfred Simond, Comber, Canada, assignor to W. Tregaskiss, Ltd., Canada
Filed Dec. 10, 1993, Ser. No. 165,383
Int. Cl.[5] F16D *43/20*; B25J *19/00*
U.S. Cl. 192—56 R **9 Claims**



1. A breakaway clutch for an end-of-arm tooling device, said clutch comprising:
a cylindrical housing, having one closed end forming a cavity, said cavity having a rear end wall;
a stud member, comprising:
a rod releasably connected to the end-of-arm tooling device, and a ball end;
a compression spring located in the cavity at the rear end wall;
a piston in the cavity capable of axial movement, said piston encapsulating the spring against the rear end wall, wherein the spring biases the piston to a normal position;
a top plate for restraining the ball end in the cavity against the piston;
a means for aligning the clutch to the end-of-arm tooling device;
a means for connecting the clutch to the end-of-arm tooling device;
a means to translate rotational movement of the stud member to axial movement of the piston; and
a means for sensing axial movement of the piston in other than the normal position.

5,361,882
MULTI-STAGE CLUTCH LOCK-UP SYSTEM
Kenneth L. Tipton, 1031 Fairlawn, Rockledge, Fla. 32955
Filed May 10, 1993, Ser. No. 58,885
Int. Cl.[5] F16D *13/42, 43/12*
U.S. Cl. 192—70.24 **12 Claims**

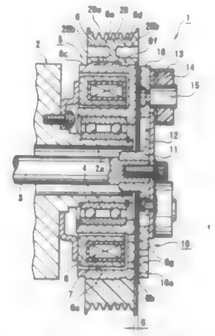


11. A combined mechanical and centrifugal clutch for a motor driven vehicle comprising:
a mechanical clutch having a center hub and a spring loaded outside pressure plate with frictional material and inside pressure plates therebetween for transmitting torque therethrough when spring loaded tension is released.
a lock-up housing attached to the outside pressure plate said housing having a plurality of slots radially disposed therethrough,
a plurality of offset camming fingers pivotally disposed within the slots,
finger retaining means holding the camming fingers within the slots permitting each finger to force the outside pressure plate into intimate contact with the friction material and inside pressure plates by an inward camming force of the fingers induced by rotational centrifugal force causing the plates and friction material to compress together jointly locking-up the inside and outside pressure plates of the mechanical clutch when spring tension is released, and
means to regulate a predetermined engagement speed of rotation and amount of compressive pressure when the camming fingers apply force to the outside pressure plate during rotation.

5,361,883
ELECTROMAGNETIC CLUTCH
Tetsuo Yamamoto, Gunma, Japan, assignor to Ogura Clutch Co., Ltd., Gunma, Japan
Continuation of Ser. No. 125,639, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 851,591, Mar. 16, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,286
Claims priority, application Japan, Mar. 20, 1991, 3-80510
Int. Cl.[5] F16D *27/14*
U.S. Cl. 192—84 C **7 Claims**

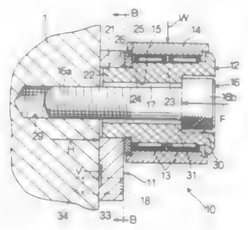
1. In an electromagnetic clutch comprising an armature mounted on a rotatable driven shaft and a rotor assembly mounted for rotation about an axis of said driven shaft, said rotor assembly including a rotor member having an outer

circumferential surface and a pulley member, said pulley member being mounted on a outer circumferential surface of said rotor member and being arranged to be driven by a driving mechanism, said rotor member including a magnet for providing magnetic force coupling with said armature; the improvement wherein said rotor member comprises a cast member having an outer circumferential surface with a first portion having a first diameter and a second portion having a second diameter larger than said first diameter, said outer circumferen-



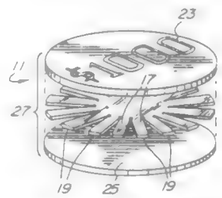
tial surface having an uneven surface shape constituted by a plurality of projections on said second portion of the outer circumferential surface, said projections extending both axially and radially outwardly, and wherein said pulley member comprises a molded member integrally formed on the outer circumferential surface of said rotor member by insert molding with said projections extending into said pulley member to provide engagement therebetween both axially and circumferentially to prevent relative motion between said rotor member and said pulley member.

5,361,884
CONVEYING ROLLER
Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha Kosmek, Kobe, Japan
Filed Oct. 15, 1993, Ser. No. 136,280
Claims priority, application Japan, Oct. 16, 1992, 4-304604
Int. Cl.[5] B65G *13/00*
U.S. Cl. 193—35 R **4 Claims**



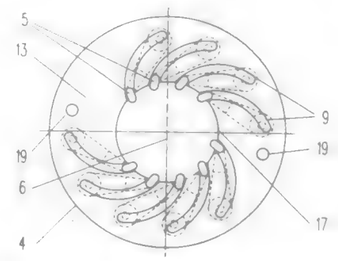
1. A conveying roller comprising:
a support block (**11**) having a support bore (**21**) and a positioning hole (**33**) formed in the upper and lower portions thereof respectively so as to extend in the substantially horizontal direction and facing a vertical wall (**1**) having a threaded hole (**29**) and a receiving hole (**34**) formed in the upper and lower portions thereof respectively so as to extend similarly in the substantially horizontal direction;
a support cylinder (**12**) having a cylindrical bore (**15**) and provided with a supporting portion (**22**) to be fitted into the support bore (**21**) and a bearing portion (**23**) supporting a roller member (**14**);
a bolt (**16**) to be inserted in to the cylindrical bore (**15**) through a predetermined annular clearance (**17**) and screwed into the threaded hole (**29**) so as to press the support cylinder (**12**) to the vertical wall (**1**) by the bolt (**16**); and
a positioning pin (**18**) to be fitted into the positioning hole (**33**) and the receiving hole (**34**).

5,361,885
ANTICOUNTERFEITING DEVICE FOR GAMING CHIPS
Peter Modler, 3359 Wade, Los Angeles, Calif. 90066
Filed Feb. 23, 1993, Ser. No. 21,053
Int. Cl.[5] G07F *7/00*
U.S. Cl. 194—214 **11 Claims**



1. An anticounterfeiting device for implantation within a chip or token comprising:
a generally planar central light-conducting portion; and
a plurality of light-conducting fingers extending from said central light-conducting portion in a generally planar relation to said central portion, each finger terminating in a respective light-receiving face, such that light received by a face of one of said fingers is transmitted through said central portion to the faces of each of the remaining fingers.

5,361,886
METHOD AND APPARATUS FOR EXAMINING COINS
Hartmut Thomas; Jens Hertlein, and Eckhardt Seher, all of Berlin, Germany, assignors to ACT Gesellschaft fuer Soft- und Hardware-systeme GmbH, Berlin, Germany
Filed Mar. 25, 1992, Ser. No. 857,195
Claims priority, application Germany, Apr. 11, 1991, 4112106; Nov. 27, 1991, 4139503
Int. Cl.[5] G07D *5/02, 5/08*
U.S. Cl. 194—317 **15 Claims**



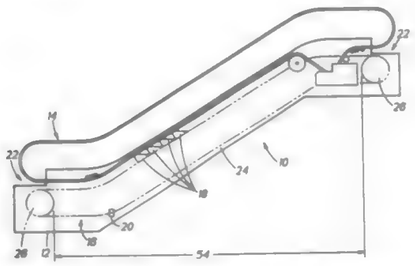
15. A method for positioning and computing a diameter of a coin comprising:
rotating the coin;
centering the coin during the step of rotating;
determining an angle of twist of a twisting means contacting the coin, once the coin is centered; and
computing a diameter of the coin from the angle of twist.

5,361,887

APPARATUS FOR DETECTING AN IRREGULARITY IN THE FREQUENCY OF STEPS PASSING A PARTICULAR POINT WITHIN A PASSENGER CONVEYING DEVICE

Vlad Zaharia, Rocky Hill, Conn., and Arthur McClement, Bloomington, Ind., assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 14, 1994, Ser. No. 213,337
Int. Cl.[5] B65G *43/00*
U.S. Cl. 198—323 15 Claims



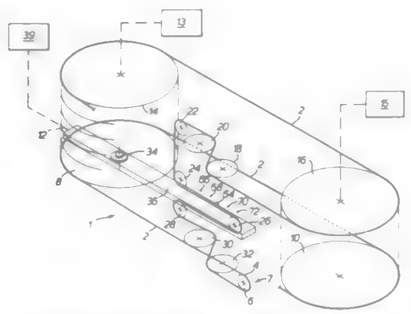
1. An apparatus for detecting a missing step in a passenger conveying device, comprising:
means for sensing the presence of an axle of said step, when said step travels in a return portion of a circuitous path;
means for quantifying the amount of time transpiring between the occurrence of said presences and creating a first time value corresponding to said amount of time;
means for comparing the magnitude of said first time value and the magnitude of a second predetermined time value, wherein said second predetermined time value magnitude is greater than an amount of time it takes a pair of said axles to pass said sensing means in a normal operating mode for said passenger conveying device; and
means for interrupting power to said passenger conveying device if said first time value is greater than said second time value.

5,361,888

CONVEYOR SYSTEM FOR ROD-LIKE ARTICLES

Anthony R. Brown; Allen F. Griffiths, and Robert H. Taylor, all of Bucks, England, assignors to Molins plc, Milton Keynes, United Kingdom

Filed Jan. 28, 1993, Ser. No. 10,395
Claims priority, application United Kingdom, Feb. 1, 1992, 9202189.8
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.3 22 Claims



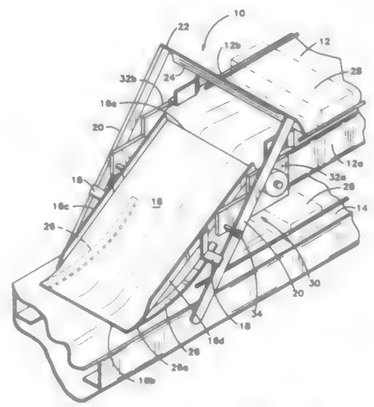
6. A conveyor system for rod-like articles, including means defining a path for said articles in multi-layer stack formation, a first variable capacity reservoir of relatively small capacity, a second variable capacity reservoir of relatively large capacity, said reservoirs being arranged so as to receive articles from or deliver articles to said path, and means for controlling transfer of articles to or from said reservoirs, said controlling means including means for effecting operation of said first reservoir alone, during non-operation of the second reservoir, to deliver articles to or receive articles from said path, whereby demands on operation of the second reservoir may be reduced, wherein the first and second reservoirs are arranged in series and are each of variable length.

5,361,889

APPARATUS FOR MERGING MULTIPLE LANES OF PRODUCT

Kenneth A. Howell; William R. Vowell, and John W. Higgison, all of Macon, Ga., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sep. 17, 1993, Ser. No. 123,423
Int. Cl.[5] B65G *47/10*
U.S. Cl. 198—357 4 Claims



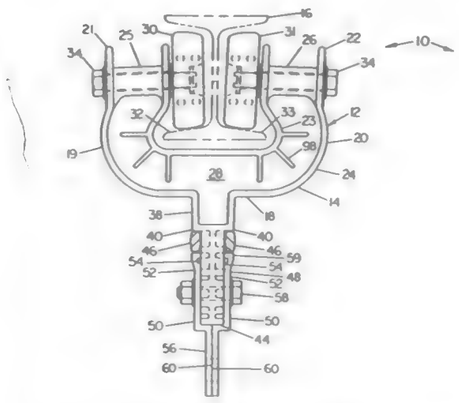
1. An apparatus for merging multiple lanes of products comprising:
a first conveyor and a second conveyor disposed in spaced parallel relationship, said first conveyor being disposed directly above said second conveyor; and,
a product transition zone connecting said first conveyor to said second conveyor, said product transition zone including means to merge product from said first conveyor to said second conveyor including a movable slide between said first conveyor and said second conveyor and means to stop product moving along said first conveyor in response to preselected operating conditions of said second conveyor, said means to stop said first conveyor including an elongated movable timing member positioned to engage product along said second conveyor and simultaneously engage with said slide wherein in one position said timing member is engaged with second conveyor product whereby said slide is in a non-feed position and in a second position, said timing member is disengaged from said second conveyor product and said slide is in a feed position from said first conveyor to said second conveyor.

5,361,890

CONVEYOR TROLLEY ASSEMBLY

Clayton C. McDonald, Howell, and Wendell H. Johnson, West Bloomfield, both of Mich., assignors to Jarvis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 988,463, Dec. 10, 1992, abandoned.
This application Jun. 9, 1993, Ser. No. 74,716
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—465.4 10 Claims



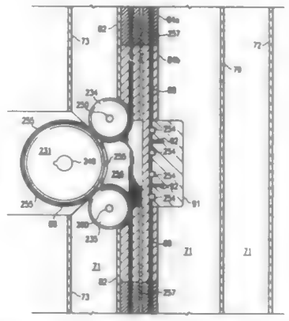
1. A conveyor trolley assembly comprising:
a molded one-piece trolley body including a yoke adapted to be positioned transversely of a longitudinally extending conveyor track, said yoke being defined by a base portion and a pair of arms extending symmetrically from said base portion to a pair of transversely spaced extremities, said base portion and pair of arms having continuous transversely spaced inner and outer flanges extending from the extremity of one arm to the extremity of the other arm, a pair of hubs connecting said inner and outer flanges adjacent said pair of extremities, and a transverse web joined to said inner and outer flanges and to said pair of hubs;
a pair of trolley wheels, and means for connecting said pair of trolley wheels to said pair of hubs in transversely spaced facing relation whereby said pair of wheels is adapted to engage a pair of transversely spaced track surfaces of said conveyor track;
a load supporting stem formed integrally with said yoke and extending from said base portion oppositely to and intermediate said pair of arms, said stem having a pair of transversely spaced longitudinally extending shoulders and a pair of transversely spaced longitudinally extending sides projecting from said shoulders and adapted to extend through a conveyor chain center link mounted on said stem in abutment with said shoulders;
attachment bracket means for retaining said conveyor chain center link on said stem and attaching a load to said trolley;
said bracket means including a pair of transversely spaced stem engaging portions having faces positionable in engagement with said sides of said stem, a load supporting portion depending from said stem engaging portions;
interfitting projection and recess means provided on said faces of said stem engaging portions and on said sides of said stem for transmitting load supporting forces from said attachment bracket means to said stem;
and connector means extending transversely through said stem engaging portions and said stem for maintaining engagement between said interfitting projection and recess means.

5,361,891

TAPE CONVEYOR SYSTEM

Harold R. Greene, Farmers Branch, and Michael J. Foreman, Carrollton, both of Tex., assignors to Comco Systems, Dallas, Tex.

Filed Jun. 16, 1993, Ser. No. 78,606
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—797 53 Claims



1. A tape drive system comprising a flexible plastic drive tape and a drive mechanism for driving said flexible plastic drive tape, said flexible plastic drive tape having a plurality of apertures spaced apart along the longitudinal axis of the flexible plastic drive tape, said drive mechanism comprising:
first and second idler rolls, each of said first and second idler rolls having an at least substantially cylindrical periphery, said first idler roll being rotatably mounted on a first shaft, said second idler roll being rotatably mounted on a second shaft; and
a cog wheel having an at least substantially cylindrical periphery, said cog wheel being rotatably mounted on a third shaft;
said cog wheel being positioned adjacent to and between said first and second idler rolls such that the flexible plastic drive tape passes in contact with the at least substantially cylindrical periphery of one of said first and second idler rolls, then passes in contact with the at least substantially cylindrical periphery of said cog wheel, and then passes in contact with the at least substantially cylindrical periphery of the other of said first and second idler rolls without forming a significant straight section between said cog wheel and said other of said first and second idler rolls;
said cog wheel being provided with a plurality of teeth spaced about its at least substantial cylindrical periphery so that teeth of the cog wheel enter apertures of the flexible plastic drive tape as the flexible plastic drive tape passes in contact with the cog wheel and the resulting curved path of the flexible plastic drive tape around a portion of said cog wheel creates compression of the flexible plastic drive tape along its inner surface and stretching of the flexible plastic drive tape along its outer surface.

5,361,892

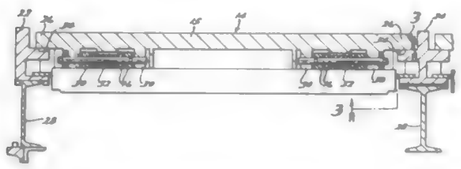
EXTENDED LIFE GRATE BAR

Eugene D. Hamaker, Marshall, and David C. Reschly, Monroe, both of Mich., assignors to Detroit Stoker Company, Monroe, Mich.

Division of Ser. No. 901,905, Jun. 22, 1992, Pat. No. 5,265,543.
This application Oct. 6, 1993, Ser. No. 132,204
Int. Cl.[5] B65G *17/30*
U.S. Cl. 198—841 3 Claims

1. A one-piece wear pad insert for use in a grate bar of a solid-fuel-burning furnace having a traveling grate bar mecha-

nism to alleviate excessive wear in said grate bar, said wear pad insert having a generally trapezoidally-shaped body portion in vertical cross-section and a , conical-shaped stud portion, said



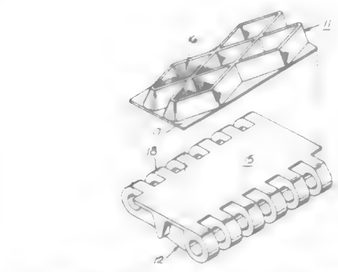
body portion having a lower planar wear surface and drafted side walls, said side walls tapering outwardly from said wear surface.

5,361,893

HIGH FRICTION PLASTIC CONVEYOR BELTS HAVING MODULAR LINKS FORMED BY TWO INTEGRATED PLASTIC MATERIALS

Robert S. Lapeyre, New Orleans, and John J. Carbone, Metairie, both of La., assignors to The Laitram Corporation, New Orleans, La.

Filed Nov. 18, 1993, Ser. No. 153,979
Int. Cl.[5] B65G *17/06*
U.S. Cl. 198—853 **13 Claims**



1. A modular link plastic conveyor belt adapted to convey loads up and down inclined surfaces comprising in combination,

a plurality of plastic modular link bodies coupled end-to-end to form a conveyor belt, each said link body being formed of a hard wear resistant plastic material having a low coefficient of friction shaped to provide a rigid high strength conveyor link base structure, low-friction belt-supporting load-bearing wear strip surfaces positioned on an outer belt surface in frictional engagement with link bodies moving about a conveyor belt path, each said link body forming pivot aperture means near two opposite ends coupling the bodies pivotably together end-to-end with pivot rods extending through the apertures, thereby to establish high longitudinal belt strength when so coupled end-to-end in a belt of a predeterminable fixed length and presenting an outer low friction contact surface in sliding contact with said belt supporting wear strip surfaces during transport of said conveyor belt, said bodies being shaped to present an outer load carrying surface having a load bearing area presented for frictional contact with a load being carried by the conveyor belt; and

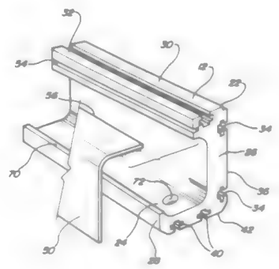
a load transport body of a high friction material for presenting a high friction outermost textured contact surface between said load carrying surface and a load carried by said conveyor belt, said high friction material being thermally bonded with said load carrying surface to substantially cover said load bearing area and provide with at least some of said link bodies a unitary integral modular conveyor belt link with a high friction load carrying surface.

5,361,894

CONVEYOR RAIL

Mike Solcz, Clarkston, Mich., assignor to Valiant Machine & Tool, Inc., Troy, Mich.

Filed Sep. 17, 1993, Ser. No. 122,653
Int. Cl.[5] B65G *21/00*
U.S. Cl. 198—860.1 **6 Claims**



1. A conveyor rail for use with a conveyor system of the type in which two rails are spaced apart and parallel with respect to each other and form a conveyor line therebetween, said rails adapted to support a plurality of axles which extend between the rails and so that a portion of at least one of the axles protrudes laterally outwardly from the rail, said conveyor rail comprising:

a one piece elongated body,

said body being generally L-shaped in cross sectional shape and having a lower and generally horizontal leg and a generally vertical leg said generally horizontal leg further comprising an upwardly extending lip at a free end of said horizontal leg and means on said horizontal leg for trapping and thereafter draining lubricants from an upper surface of said horizontal leg,

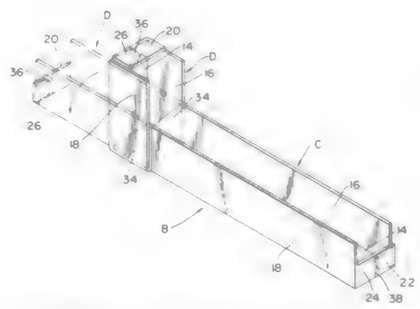
whereby the laterally outwardly protruding portion of the axle is accessible.

5,361,895

COMBINED VARIABLE VOLUME SHIPPING AND DISPLAY TRAY

William P. Wilson, Chappaqua, N.Y., and Beverly A. Bahnken, Stanhope, N.J., assignors to WFR Ribbon, Inc., Phillipsburg, N.J.

Filed Aug. 2, 1993, Ser. No. 100,379
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—44 R **4 Claims**



1. In combination, a plurality of items having a given length and width and a combined shipping and display tray for said items, said tray having a bottom wall of a width corresponding

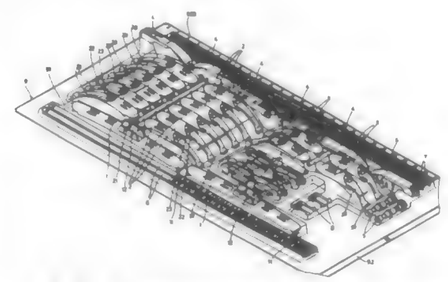
to the width of said items and a length many times greater than said width and corresponding to the combined lengths of a given plurality of said items said tray, having side walls extending up from said bottom wall along substantially the entire length thereof, said tray having a top open over substantially its entire length and width, and said tray having end walls substantially closing the ends of said tray, an end portion of said bottom wall comprising an end section foldably connected to the remainder of said bottom wall and having a length which is only a minor fraction of the length of said bottom wall and corresponding to the length of a number of said items which is less than said given plurality, said end section being foldable between a first position in which it constitutes an extension of said remainder of said bottom wall, said tray then being adapted to receive said given plurality of said items, and a second position in which it extends up from said remainder of said bottom wall, said tray then being adapted to receive and hold for shipping a number of said items less than said given plurality.

5,361,896

SELF-ASSEMBLY TYPE INTERCHANGEABLE WINDSHIELD WIPER

Ming-Tung Yang, No. 4-3, Lane 97, Lung Chuan St., Panchiao, Taipei Hsien, Taiwan, Prov. of China

Filed Jul. 12, 1993, Ser. No. 89,572
Int. Cl.[5] B65D *69/00*
U.S. Cl. 206—223 **3 Claims**



1. A kit for an adjustable length windshield wiper for a vehicle comprising:

a) a package base card;

b) at least one windshield wiper main frame located on the base card, the main frame having opposite ends, first connection means located adjacent to each opposite end and second connection means located between the opposite ends;

c) at least one connector located on the base card and having third connection means configured to engage the second connection means of the main frame;

d) a plurality of branch frame members located on the base card, each branch frame member having fourth connection means configured to engage the first connection means of the main frame, a first end portion having thereon fifth connection means, and a second end portion defining a support claw;

e) a plurality of tail frame members located on the base card, each tail frame member having sixth connection means configured to engage the first and fifth connection means and opposite ends each defining a support claw;

f) at least one windshield wiper reinforcement strip located on the base card configured to engage the support claws and defining means to engage a windshield wiper blade; and,

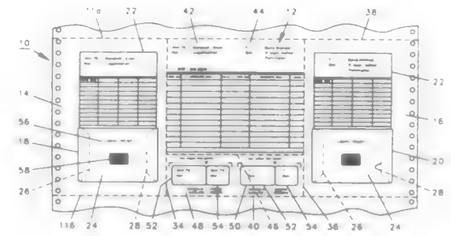
g) at least one windshield wiper blade located on the base card and configured to engage the at least one windshield wiper reinforcement strip.

5,361,897

KIT OF LIBRARY FORMS

Oliver Poehler, 920 W. Elm, Wheaton, Ill. 60187

Filed Oct. 12, 1993, Ser. No. 133,994
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—232 **7 Claims**



1. A kit of forms for use in keeping records of books in libraries, comprising in combination

a first, relatively stiff card section containing a librarian's card which is adapted to receive information to be printed thereon,

said card section having at least one vertical edge portion, and a rear face and a front face adapted to receive printed information thereon,

a first sheet section which is coplanar with said card section and removably attached thereto along one vertical edge portion of said sheet section and said vertical edge portion of said card section,

a library book pocket constructed from a single sheet of paper and including a rear portion having front and rear faces, a front portion extending from the bottom of said rear portion and folded over the lower portion of said front face of said rear portion, and first and second side tab portions extending laterally from one of said rear and front portions and overlying the side edges of the other of said front and rear portions to form a pocket between said front, rear and side tab portions suitable for receiving a library book card, said front face of said rear portion and the front face of said front portion being adapted to receive information to be printed thereon,

said rear portion of said library book pocket having on the rear face thereof a coating of a pressure sensitive adhesive,

said first sheet section having a front face having a surface characteristic to which a pressure adhesive may be removably secured, and

said rear face of said rear portion being positioned against said front face of said sheet section and removably affixed thereto by said pressure sensitive adhesive.

5,361,898

PACKAGE FOR CASSETTE TAPE

Steven Gottlieb, 220 Central Park South, Apt. 2B, New York, N.Y. 10019

Continuation of Ser. No. 934,356, Aug. 24, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 183,297
Int. Cl.[5] B65D *69/00, 85/30, 85/672*
U.S. Cl. 206—232 **17 Claims**

1. A package for an audio or visual recorded material said package comprising:

a. a flip top closure and a container;

b. said container having front, rear, bottom and side walls fixedly secured together;

c. said flip top closure closing said package when moved toward said container,

d. said package having a rear side, said flip top closure hingedly joined to said container along a fold line in said rear side,

e. said flip top closure comprising a front panel, a rear panel, a top panel and side walls;

f. a rear compartment in said container for storing a said recorded material, said rear compartment having a dividing panel as a front wall, said rear compartment also having a back wall and side walls all of suitable dimensions to snugly confine a said recorded material;

g. a separate front compartment for storing written material, said front compartment having a closed front cover panel, said dividing panel extending between the side walls of said container and serving as a rear wall for said front compartment, said rear compartment being separated from said front compartment by said dividing panel; said closed front cover panel being vertically fixed in position and being integrally formed with said package;



h. said flip top closure having means for frictionally maintaining said flip top closure in a closed position, said flip top closure also capable of being maintained in an open position for simultaneously opening said package and providing access to both said rear and said front compartments from a position above the front wall of said rear compartment and the front cover panel of the front compartment thereof;

i. written material held in said front compartment being related to the contents stored on said recorded material and being accessible only from the upper portion of said front compartment; and

j. said side walls of said flip top closure being aligned with the side walls of said container when said flip top closure is closed.

5,361,899

GOLF BAG WITH INTERSECTING CIRCLES CROSS SECTION

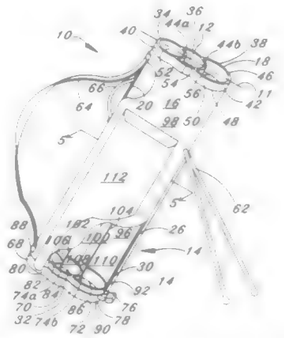
Eric W. Reimers, 1235 Starwood, Missoula, Mont. 59802

Filed Jan. 21, 1994, Ser. No. 184,472
Int. Cl.[5] A63B *55/06*
U.S. Cl. 206—315.6 **20 Claims**

1. A golf bag for transporting and organizing golf clubs comprising:

a unitary collar structure having the shape of three intersecting rings, a first ring having a first center and a smaller diameter than a second ring, the second ring having a second center and a smaller diameter than a third ring having a third center, the second ring having a section missing where the second ring intersects the first ring, the third ring having a section missing where the third ring intersects the second ring, a first divider portion being the section of the first ring that intersects the second ring, a second divider portion being the section of the second ring that intersects the third ring, the centers of the first, second, and third rings being aligned within a common axis plane;

a closed unitary base structure having a bottom portion for providing a closed end to said golf bag; and



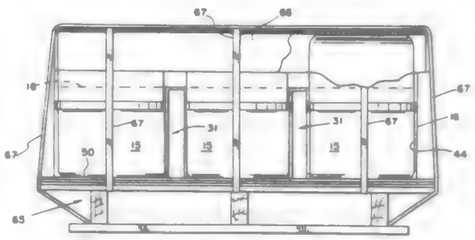
support means for providing structure to the golf bag extending intermediate said collar and said base.

5,361,900

COMPRESSOR SHIPPING CARTON

Hugh C. Stringer, and Phillip S. Leonard, both of Bristol, Va., assignors to Bristol Compressors, Bristol, Va.

Filed May 10, 1993, Ser. No. 59,930
Int. Cl.[5] B65D *85/68*
U.S. Cl. 206—319 **12 Claims**



1. A shipping carton for compressors having at least two mounting feet, said carton comprising:

(a) a substantially flat, corrugated paperboard base pad having a plurality of depressions in the top surface thereof arranged in a close pattern and each adapted to snugly receive the mounting feet of a compressor for preventing lateral movement thereof;

(b) at least two partition structures each having a pair of side walls and a pair of end walls interconnected to provide an elongated, substantially rectangular shell open at the bottom and top as defined by bottom and top edges of said walls and having a longitudinal axis, said plurality of partition structures being mounted side-by-side on said base pad with said bottom edges thereof in contact with said base pad, the upper portions of the side walls of each said shell being provided with a plurality of downwardly oriented, longitudinally spaced notches forming notch pairs each having a lateral axis oriented substantially normal to said longitudinal axis, the lateral axis of each notch pair of each shell being in substantial alignment with a lateral axis of a notch pair of each other shell to provide a plurality of longitudinally spaced connector valleys extending laterally across all of said partition structures; and

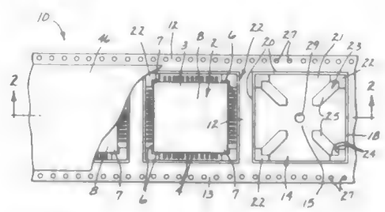
(c) at least two dividers each having side walls, top and bottom walls and end walls forming a relatively thin, rectangular, hollow tube having a longitudinal axis, a plurality of upwardly oriented slots in each said tube longitudinally spaced therealong and extending through the bottom and lower portions of each side wall thereof and each having a lateral axis oriented substantially normal to the longitudinal axis of said dividers, each slot in each said tube being adapted for substantial alignment with a slot in each other tube to provide a plurality of locator troughs extending laterally across all of said dividers, said tubes being interconnected with said shells with said valleys and troughs in nested array wherein each slot receives the lower portion of a side wall of at least one shell, which lower portion is in substantial vertical alignment with the notch in said side wall, thereby providing a multiplicity of transport pockets for containment of said compressors.

5,361,901

CARRIER TAPE

James L. Schenz, Stillwater, Minn., and Tom Skrtic, Eau Claire, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 9,377, Jan. 27, 1993, abandoned, which is a continuation of Ser. No. 860,204, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 654,325, Feb. 12, 1991, abandoned. This application Feb. 25, 1994, Ser. No. 201,714
Int. Cl.[5] B65D *85/38*
U.S. Cl. 206—330 **26 Claims**



1. A unitary flexible carrier tape adapted to transport a plurality of electronic components, each of the components having a body including side walls defining corners, top and bottom walls, and at least one lead projecting from said side walls with the corners being free of the leads,

said carrier tape comprising a strip like portion defining a top surface for said tape, and wall portions defining a plurality of similarly-shaped pockets spaced along said tape and opening through said top surface, said wall portions comprising:

bottom wall portions,

side wall portions extending between said strip like portion and said bottom wall portions,

said bottom wall portions including distal parts spaced from said top surface of said tape and embossed parts projecting above said distal parts and having abutment surfaces spaced above said distal parts, said abutment surfaces being adapted to abut the bottom walls of the electronic components to afford elevation of the electronic components relative to said distal parts, and

said side wall portions including longitudinal parts extending between said top surface of said tape and said distal parts and castellation parts having portions located above said embossed parts and inset from said longitudinal parts,

said castellation parts having engagement surfaces adapted to engage the portions of the side walls of the electronic components which are free of leads to retain the electronic components stationary with respect to said tape and to retain the orientation of the electronic components relative to said carrier tape, and said castellation parts being adapted to prevent rotation of the electronic components with respect to said bottom wall portions during removal of the electronic components from said pockets.

23. A unitary flexible carrier tape adapted to transport an electronic component having a body including side walls defining corners, top and bottom walls, and at least one lead projecting from said side walls with the corners being free of the leads,

said carrier tape comprising a strip like portion defining a top surface for said tape, and wall portions defining a plurality of similarly-shaped pockets spaced along said tape and opening through said top surface, said wall portions comprising:

bottom wall portions including distal parts spaced from said top surface of said tape,

side wall portions extending between said strip like portion and said bottom wall portions, and

each of said pockets including embossed means for elevating said component relative to said distal parts, and

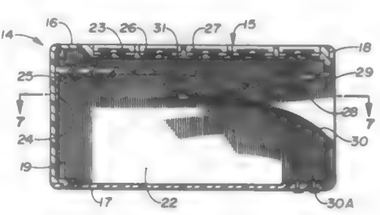
each of said pockets including engagement means inset from said side wall portions, for engaging the component to retain the orientation of the component relative to said pocket until the component is removed from said pocket.

5,361,902

SURGICAL BLADE DISPENSER AND DISPOSAL SYSTEM FOR USE DURING AN OPERATING PROCEDURE AND METHOD THEREOF

Michael R. Abidin, and Steven P. Lehmbeck, both of Baltimore, Md., assignors to Leonard Bloom, Towson, Md., a part interest

Filed Jun. 5, 1992, Ser. No. 894,595
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—370 **12 Claims**



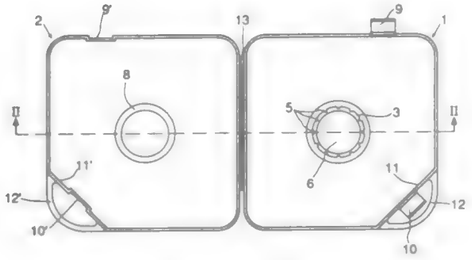
1. A scalpel blade dispenser and disposal system for use during a surgical procedure in an operating room, comprising, in combination, a scalpel blade dispenser which includes a housing having at least one sterile blade therein, and wherein a scalpel has a blade which will be normally replaced during the surgical procedure to maintain good surgical cutting techniques, first means within the housing enabling the blade to be removed from the scalpel upon insertion and withdrawal of the scalpel from the housing, wherein the blade thereby removed from the scalpel is confined within the housing which is subsequently discarded, and second means within the housing enabling the sterile blade to be mounted upon the scalpel upon the subsequent re-insertion of the scalpel into the housing and withdrawal of the scalpel therefrom, wherein the second means comprises a first interior wall Cantilever mounted within the housing, a hook on the first interior wall, the sterile blade having a hole formed therein and receiving the hook on the first interior wall, thereby positioning the sterile blade on the wall, and cam means between the hook on the first interior wall and the hole in the sterile blade, such that as the scalpel with the sterile blade mounted thereon is withdrawn from the housing, the first interior wall deflects and is cammed away from the sterile blade, thereby clearing the hook from the hole in the sterile blade, and thereby allowing the scalpel with the sterile blade mounted thereon to be removed from the housing.

5,361,903

REEL CONTAINER FOR MAGNETIC TAPES

Hartmut Thiele, Munich, Germany, assignor to BASF Maonetics GmbH, Mannheim, Germany

Filed Sep. 7, 1993, Ser. No. 117,312
Claims priority, application Germany, Sep. 11, 1992, 9212275.2[U]
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—403 5 Claims



1. A one-part container, which consists of plastic and can be produced by injection molding, for magnetic tapes which are wound up either on hubs provided with internal bores or on flanged reels, comprising a bottom part (1) and a top part (2), with a hinge strip (13) which connects them and is provided with two bending lines to aid in permitting the rotation of the top part relative to the bottom part, allowing the container to open and close, said top and bottom parts each having an inner and an outer surface viewed with reference to the container in its closed state, said container being in plan view essentially square in shape, but with one of the corners on the side opposite the hinge strip being bevelled off, each part having attached to it a mutually complementary holding grip part (12, 12'), which grip parts serve to complete the essentially square outline of the container in plan view, said grip parts positively engaging in each other when the container is closed, and the container being equipped with a closing mechanism for locking, wherein

the bottom part (1) has in the geometrical center of its inner surface a cylindrical projection (3) for fitting on the reel, the lateral surface (4) of the projection (3) having notches (5) distributed over its circumference and running in the axial direction, and the circular top surface (6) of the projection (3) being curved concavely inward

the top part (2) has projecting in the center of its inner surface a circular ring (8), the inside diameter of which is greater than the outside diameter of the projection (3) of the bottom part

on at least one outer edge of the bottom part there is provided a lug (9), running in the axial direction of the reel holder and bent off at the end, for snapping, with the container in the closed state, into a corresponding depression (9') provided on the outer surface of the top part of the container

a further, correspondingly designed lug (10) is injection-molded in the bevelled-off edge (11) within the holding grip (12) of the bottom part for snapping into a corresponding depression provided in the top part

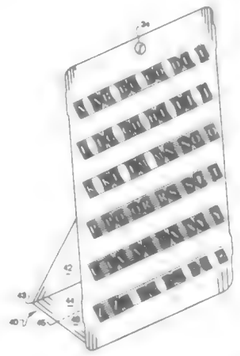
at least one side wall (15) of the bottom or top part is elevated with respect to the other side wall (16), the elevated part entering into a corresponding groove (16') provided on the other container part when the container is closed up.

5,361,904

COLOR CODED LABELING SYSTEM AND DISPENSER THEREFOR

Jeffrey Kapec, Westport, Conn.; Allan Chochinov, New York, and Carl Froelich, Oceanside, both of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Nov. 13, 1992, Ser. No. 976,081
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—460 38 Claims



1. A device for storing and dispensing a plurality of labels comprising:

a substantially planar support;

a plurality of pads arranged on said support, each of said pads comprising a plurality of labels, each label having a front surface and a back surface having an adhesive coating at least partially thereupon, each label retained in the pad by at least temporarily being associated with an adjacent label or the planar support;

wherein each label in a pad has the same indicia formed thereon as other labels in said pad;

wherein at least a first pad has a colored region on each label which designates the indicia thereon, and a second pad has different colored region to designate the indica thereon, wherein the colored region on the first pad is different than the colored region of the second pad; and

wherein the indicia of one pad is not repeated on any other pad on the support with a different colored region.

12. A device for storing and dispensing a plurality of labels comprising:

a substantially planar support;

a plurality of pads arranged on said support, each of said pads comprising a plurality of labels, each label having a front surface and a back surface having an adhesive coating at least partially thereupon, each label retained in the pad by at least temporarily being associated with an adjacent label or the planar support; and

at least some of said pads include labels having indicia formed thereon; and

wherein said labels include first and second side regions separated by a central region, said indicia formed on said first and second side regions, said central region colored in a designated color or pattern which corresponds to said indicia.

23. A device for storing and dispensing a plurality of labels having at least one alpha-numeric character formed thereon comprising:

a planar support;

a plurality of label pads affixed to said support, each of said label pads comprising a plurality of labels affixed to one another wherein each label in said pad includes first and second side regions separated by a central region, and each first and second side regions has the same alpha-numeric character formed thereon, said central region having a predetermined color corresponding to said at least one alpha-numeric character, wherein said label pads are arranged on said support in a selected array of rows and columns such that all label pads are visible to facilitate label location and selection; and

means for mounting the planar support at an angle with respect to a horizontal surface for viewing and selecting said labels.

32. A device for storing and dispensing a plurality of labels comprising:

a substantially planar support;

a plurality of pads arranged on said support, each of said pads comprising a plurality a labels, each label having a front surface and a back surface having an adhesive coating at least partially thereupon, each label retained in the pad by at least temporarily being associated with an adjacent label or the planar support;

wherein each label in a pad has the same indicia formed thereon as other labels in said pad;

wherein at least a first pad has a colored pattern region on each label which designates the indicia thereon, and a second pad has a different colored pattern region to designate the indicia thereon, wherein the colored pattern region of the first pad is different than the colored pattern region of the second pad; and

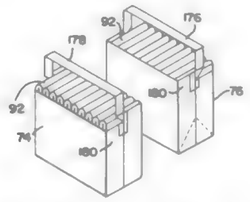
wherein the indicia of one pad is not repeated on any other pad on the support with a different colored pattern region.

5,361,905

FLEXIBLE PACKAGING WITH CENTER OPENING FEATURE

Thomas P. McQueeny, Chicago, Ill.; Steven C. Gehling, Oshkosh, Wis.; William R. Newman, Neenah, Wis.; John E. Theobald, Appleton, Wis., and Paul Y. Yee, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 22, 1993, Ser. No. 125,446
Int. Cl.[5] B65D *75/00*; B65B *63/00*
U.S. Cl. 206—494 22 Claims



1. A package, which is composed of a flexible polymer material and contains a plurality of articles, comprising:

a front face wall defining a top edge region, a bottom edge region and two opposed side edge regions thereof;

a back face wall defining a top edge region, a bottom edge region and two opposed side edge regions thereof;

a top wall which interconnects between the top edge regions of said front and back walls, and includes a pair of oppositely located side edge regions thereof;

a bottom wall which interconnects between the bottom edge regions of said front and back walls and includes a pair of oppositely located side edge regions thereof;

two oppositely located end walls each of which interconnects between a side edge region of said front wall and a side edge region of said back wall, and interconnects between a side edge region of said top wall and a side edge region of said bottom wall;

a plurality of stacks of said articles contained within said package, said article stacks arranged to extend in a generally parallel, side-by-side configuration with each stack including a multiplicity of said articles, each of said stacks aligned along an appointed stacking direction of said package, and each of said stacks having opposed facing ends thereof contacting opposed walls of said package, thereby identifying said contacted opposed walls as appointed abutment walls of said package;

a designated opening means which extends across a selected primary opening wall of said package and extends at least partially across each of a pair of oppositely located, complementary opening walls of said package, said opening means providing for a selected separation of said primary and complementary opening walls, and said opening means positioned along said primary and complementary opening walls at a location which is positioned substantially between separable, immediately adjacent arrays of stacked articles, thereby providing for a separation of said package into at least a pair of subpackages, with each subpackage containing at least a portion of at least one article stack therein while exposing a portion of said at least one article stack for grasping; and

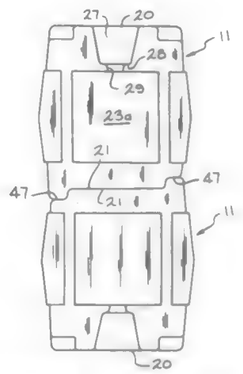
at least one supplemental handle member connected to said package in a substantially inoperable storage condition and activatable to an operable handle condition, said at least one supplemental handle member integrally formed with said front wall or said back wall when said at least one supplemental handle member is in its storage condition and provided by a supplemental frangible line which runs substantially parallel to said designated opening means, said at least one supplemental handle member thereby activatable to bridge over said exposed article stack portion.

5,361,906

FLUID CONTAINER WITH SUMP

Robert A. Sterett, Jackson, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Continuation of Ser. No. 19,614, Feb. 19, 1993, abandoned, which is a division of Ser. No. 780,112, Oct. 21, 1991, Pat. No. 5,197,601. This application Feb. 8, 1994, Ser. No. 193,257
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—509 3 Claims



1. In combination, a first tank and a second tank stacked thereon, said first and second tanks having similar configurations and being capable of containing liquid, each said tank comprising a bottom, first, second, third and fourth side walls extending upwardly from said bottom, said side walls defining a generally rectangular cross-sectional configuration and a top joined to said side walls, said first and second side walls adjoining to form a first corner, said second and third side walls adjoining to form a second corner, said third and fourth side walls adjoining to form a third corner, said fourth and first side walls adjoining to form a fourth corner, a sump at said first corner extending downwardly from said bottom, said bottom contoured to direct the flow of liquid to said sump, an internal raised area at said second corner positioned above said bottom by a distance at least equal to the distance said pump extends

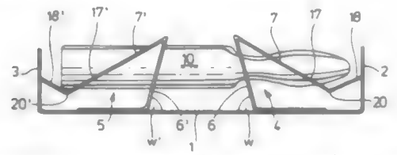
below said bottom, said raised area forming an external ledge when said tank is inverted said first and second tanks being positioned in bottom-to-bottom relationship such that the bottom of said first tank is engaged by the bottom of said second tank with the sump of said second tank engaging said external ledge of said first tank.

5,361,907

BOX FOR STORING AMPULES

Klaus Mohrhäuser, Waldkirch, Germany, assignor to August Faller KG, Waldkirch, Germany

Filed Aug. 20, 1993, Ser. No. 110,077
Claims priority, application Germany, Apr. 5, 1993, 4311145
Int. Cl.[5] B65D *81/02, 73/00*
U.S. Cl. 206—528 **15 Claims**



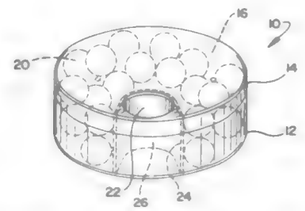
1. A box, adapted for storing an ampule, having two substantially parallel hollow walls lying at a separation from each other, with each hollow wall comprising a reinforcement wall, extending outward from a box bottom, and a support wall, attached to the reinforcement wall and at least partially attached to a neighboring lengthwise sidewall, wherein the two hollow walls comprise cutouts in pairwise alignment and each hollow wall comprises a middle region having a triangular shaped cross-section, and each support wall comprises a first section, extending from an upper end of the reinforcement wall towards the box bottom, and a second section, joined to the first section, extending upwardly to the neighboring lengthwise sidewall, whereby a stored ampule is seated in the middle region with each end free from each support wall.

5,361,908

DISPENSING CONTAINER

David M. Drew, 240 N. Branch, Glenview, Ill. 60025, and Robert E. Drew, 163 Abingdon Ave., Kenilworth, Ill. 60043

Filed Nov. 12, 1993, Ser. No. 150,840
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—536 **11 Claims**



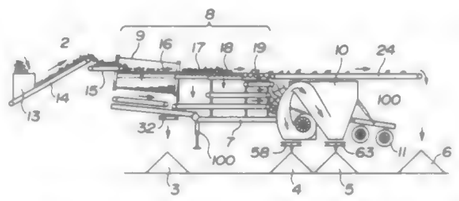
1. A dispensing container for articles comprising:
a lower, generally cylindrical receptacle having a generally circular bottom plate and a wall extending upward from the circumferential edge of said plate;
a cover having a downwardly depending wall rotatably interconnected with said wall of said lower section, said cover and said receptacle forming a chamber for containing the articles, said cover having an upper plate forming an opening, said opening sized for the passage of the articles therethrough;
an interior wall connected to one of said bottom plate and said wall of said lower receptacle and extending upwardly from the bottom plate to form at least a portion of a boundary wall of a blank cell closed to the intrusion of any articles from within the chamber, said opening being positioned to move into and out of registration with said cell wherein upon registration between said cell and said opening, an interior of said cell is accessible through said opening and the articles are prevented from being dispensed from said containing space;
a first pair of downward depending means, attached to said cover, for resisting rotational movement of said cover relative to said lower receptacle when said opening is registered with said blank cell;
a second pair of downwardly depending means attached to said cover, said means adapted to contact the interior wall for substantially limiting the rotational movement of said cover between first and second positions at which positions said opening is registered with said chamber.

5,361,909

WASTE AGGREGATE MASS DENSITY SEPARATOR

Bradley K. Gemmer, 242 - 52249 Range Road 233, Sherwood Park, Alberta, Canada T8B 1C7

Filed Mar. 31, 1993, Ser. No. 41,400
Int. Cl.[5] B07B *9/00.*
U.S. Cl. 209—12.1 **5 Claims**



1. Mechanical screening apparatus for separating three components of a particular aggregate having a fine first component, second and third components of different density having particles of varying size, and oversize, comprising:
a linear array of disc screening means for classifying particles by size, said means having sequential sizing sections, including a first sizing section, for advancing the aggregate therealong and screening it to separate the particles into progressively larger particle fractions and residue aggregate;
a cylindrical, rotatable trommel, extending along and encompassing the first sizing section, for receiving and screening the fraction passed by said section to produce a first product consisting essentially of the first component and a sized stream of oversize;
a plurality of longitudinally staggered and verticalled spaced conveying means, one positioned under each of the remaining sizing sections, for receiving the fraction produced from that sizing section and conveying it for further treatment.

5,361,910

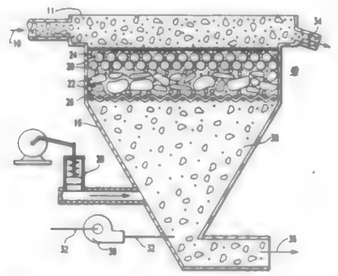
MODIFIED MINERAL JIG

Wen-Ching Yang, Murrysville, and David C. Grant, Gibsonia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1993, Ser. No. 67,190
Int. Cl.[5] B03B *5/12*
U.S. Cl. 209—13 **9 Claims**

1. An improved mineral jig having a hindered settling bed, comprising:
(a) a mineral jig comprising an inlet, an upper outlet and a lower outlet; and
(b) density separation means comprising a hindered settling bed located between the upper outlet and the lower outlet,

the bed comprising two different materials having different densities, including a multiple layer of individual particles of a low density barrier material having a density of



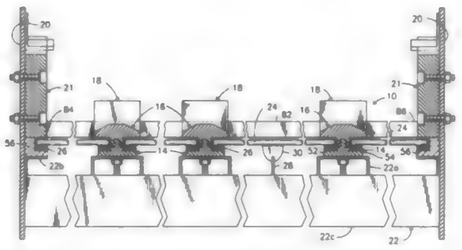
less than 1.8 g/cm^3, and a particle size such that the low density barrier material would be retained on a screening sieve having a nominal sieve opening of about 0.08 inch (2.0 mm).

5,361,911

SCREENING PANEL ATTACHMENT SYSTEM

Robert F. Waites, Sr., Moody, and Robert F. Waites, Jr., Hoover, both of Ala., assignors to Miller Wire Works, Inc., Birmingham, Ala.

Filed Apr. 14, 1994, Ser. No. 227,512
Int. Cl.[5] B07B *1/49*
U.S. Cl. 209—399 **12 Claims**



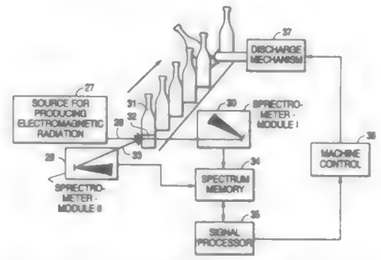
1. A device for attaching portions of the periphery of a screening panel to a frame of a screening mechanism, said device comprising:
an elongate locking strip having a first surface, at least one bolt attached to and extending from said first surface of said locking strip, said bolt being attachable to a frame of a screening mechanism, and an elongate projection extending upwardly from said first surface of said locking strip and extending longitudinally generally the length of said locking strip, said projection having an enlarged first end and a second end; and
an elongate wear pad having a first surface and having a pair of generally parallel, elongate, and flexible elements extending generally the length of said pad, each element having a first end attached to said pad and a second end extending generally outwardly from said first surface of said pad, said second ends of said elements being angled toward one another defining a cavity between said elements, and said elements receiving said enlarged first end of said projection therebetween such that said first end of said projection is received in said cavity, whereby a portion of a periphery of a screening panel adjacent said locking strip is captured intermediate said first surface of said pad and the frame.

5,361,912

APPARATUS AND PROCESS FOR CLASSIFYING THE CONTENTS OF NON-DISPOSABLE BEVERAGE BOTTLES AND CONTAINERS

Gunther Krieg; Karl Koukolitschek, both of Karlsruhe, and Wilfried Maier, Sulzfeld, all of Germany, assignors to Prof. Dr. Ing. Gunther Krieg, Karlsruhe, Germany

Continuation of Ser. No. 21,594, Feb. 24, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 182,349
Claims priority, application Germany, Feb. 25, 1992, 4205722
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—524 **16 Claims**



1. A method for identifying and differentiating between harmful substances and content substances in bottles or containers using absorption, reflection and scattering of electromagnetic waves from UV to a microwave range by evaluating substance-specific spectra, the method comprising the steps of:
analyzing the substance in the bottle or container spectroscopically,
forming a difference between measured intensity values and intensity values of comparison spectra stored in a memory;
forming a sum of a positive function of calculated differences of the measured intensity values and the intensity values of the comparison spectra,
comparing the formed sum with at least one preset threshold value, and
further processing the bottle or container if the formed sum is less than the threshold value or eliminating the bottle or container if the formed sum is less than the at least one preset threshold value or eliminating the bottle or container if the formed sum is above the at least one preset threshold value.

5,361,913

REVERSE BOTTLE VENDING, CRUSHING AND SORTING MACHINE

Carmine M. Melchionna, Watertown, Conn., assignor to New England Redemption of Connecticut, Inc., New Haven, Conn.

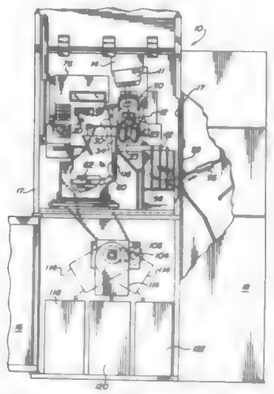
Filed Apr. 6, 1993, Ser. No. 43,443
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—583 **10 Claims**

1. Apparatus for collecting and storing refundable empty glass bottles of two or more individual colors and for issuing predetermined return deposits for the bottles collected, each refundable bottle having a code imprinted thereon to identify the brand and color of the bottle, comprising:
(a) preselection means for determining the brand, color and refundability of a preferred empty glass bottle, the preselection means including a laser scanner for reading the imprinted code on each bottle, a bottle access area configured to accommodate the bottles for exposure to the laser scanner, and a microprocessor capable of receiving and interpreting the read code from the laser scanner;
(b) means for accepting only a bottle identified by the preselection means as being refundable which need not be returned to the manufacturer in one piece including:

(1) means for crushing the refundable bottles into glass cullet, and

(2) means responsive to the code read by said laser scanner for sorting the crushed cullet into two or more colors and depositing the cullet into two or more collection receptacles,

(c) means for rejecting a bottle identified by said preselection



means as being either nonrefundable or to be returned to the manufacturer in one piece, said means including:

(1) means adjacent said bottle access area for collecting said whole bottle in a separate area contiguous to said accepting means, and

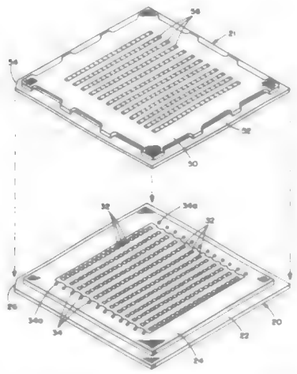
(d) dispensing means responsive to the preselection means for dispensing at least one redeemable coupon or the like in return for the refundable bottles.

5,361,914

DEVICE FOR COMPONENT PROCESSING

Tim Parker, Shrewsbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 5, 1993, Ser. No. 131,836
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—41 **16 Claims**



1. A tray for processing an electronic component comprising:

a core made of a polyolefin material;

a metallic sheath layered over said core; and

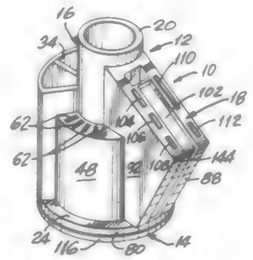
a nest formed in said layered core, said nest being geometrically configured for the admission of a component for processing in the tray.

5,361,915

ROTATABLE STORAGE RECEPTACLE FOR KNIVES AND KITCHEN TOOLS, UTENSILS AND GADGETS

Milton L. Cohen, Hewlett Bay Park, and Jeff Siegel, Great Neck, both of N.Y., assignors to Lifetime Hoan Corporation, Brooklyn, N.Y.

Filed Jul. 12, 1993, Ser. No. 91,241
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—70.7 **20 Claims**



1. A storage receptacle for knives and kitchen tools, utensils and gadgets, comprising:

a receptacle portion disposed on a base portion;

said receptacle portion including first means for receiving kitchen tools, utensils and gadgets therein, second means for receiving knives with short blades having the same length and width, and third means for receiving knives with long blades having different lengths and widths;

said third means including an inclined top wall having slots with different lengths to receive the long blades therethrough; and

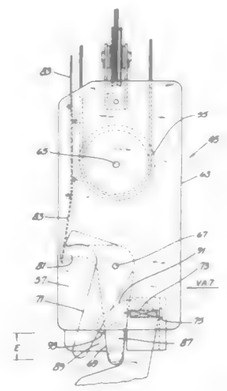
securement means for rotatably securing said receptacle portion to said base portion so that said receptacle portion rotates relative to said base portion.

5,361,916

GATE-HANDLING CRANE

David L. Pischke, Dousman, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Sep. 10, 1993, Ser. No. 118,598
Int. Cl.[5] B66C *1/38*
U.S. Cl. 212—153 **8 Claims**



1. In a crane for moving an object having an underwater device to be engaged by a link and wherein the link is mounted on the crane lifting block for link movement between a first position for engaging the device and a second position for releasing the device, and wherein link movement between positions is controlled by a tag line, the improvement comprising:

a first apparatus including (a) a first encoder emitting first pulses in response to movement of the lifting block, and (b) a controller detecting the first pulses for indicating when the link is within a predetermined location; and

a second apparatus including a second encoder emitting second pulses in response to movement of the tag line,

and wherein:

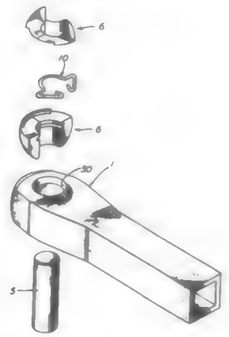
the controller also detects the second pulses and compares the first and second pulses for determining whether the link is in the first position or the second position.

5,361,917

DRAWBAR BEARING BLOCK

Peter S. Mautino, Verona, and Douglas M. Hanes, Pittsburgh, both of Pa., assignors to McConway & Torley Corporation, Pittsburgh, Pa.

Filed Oct. 25, 1993, Ser. No. 142,576
Int. Cl.[5] B61G *9/00*
U.S. Cl. 213—50 **12 Claims**



1. An apparatus including an improved drawbar bearing block for a slackless drawbar system which connects adjacent ends of a pair of adjacent railway cars in a semi-permanent manner, said improved drawbar bearing block comprising:

(a) a top portion supported and retained in a hemispherical recess which extends partially around a pin opening formed in a pin receiving opening formed in a butt end of a drawbar, said top portion of said improved bearing block including;

(i) an outer surface which closely matches a surface of said hemispherical recess,

(ii) an inner surface having a cylindrical shape to receive a pin therein, and

(iii) at least one recessed opening formed adjacent a bottom surface and an outer surface of said top portion; and

(b) a bottom portion supported and retained in said hemispherical recess and which assists in supporting and retaining said top portion in said hemispherical recess, said bottom portion of said improved bearing block including;

(i) an outer surface which closely matches a surface of said hemispherical recess,

(ii) an inner surface having a cylindrical shape to receive a pin therein and in alignment with said inner surface of said top portion, and

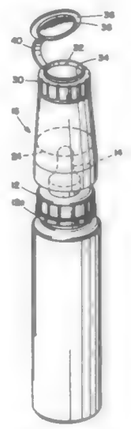
(iii) at least one tab-like member extending upwardly from an upper surface of said bottom portion and adjacent said outer surface of said bottom portion, said tab-like member matingly engaging with said recess opening in said top portion, said tap-like member has an outer surface which closely matches said surface of said hemispherical recess.

5,361,918

CAP FOR NURSING BOTTLE FOR PROVIDING A COMPARTMENTAL DISPENSING RECEPTACLE

Terri L. Mason, 101 Compo Rd. North, Westport, Conn. 06880

Filed May 24, 1993, Ser. No. 66,705
Int. Cl.[5] A61J *9/00*
U.S. Cl. 215—6 **10 Claims**



1. An attachment to a nursing bottle having a nipple removably attached to an open top end thereof with a nipple cap, said attachment comprising:

a tubular body terminating at an upper end in a closable opening and terminating at a lower end in a skirt portion dimensioned for frictional engagement with the nipple cap of said nursing bottle for removably connecting the attachment to the top end of the bottle, said tubular body having a transverse interior partition dividing the interior of said body into an upper storage compartment and a lower cavity for shielding the nipple projecting from said nipple cap, said tubular body when connected to said nipple cap providing a compartmental receptacle adapted to separately store a powdered ingredient in said storage compartment and a liquid ingredient in said nursing bottle to be mixed within and dispensed from said bottle, and

closure means for the closable opening at the upper end of said tubular body adapted to be opened from a normally closed position for receiving through said opening a pre-measured amount of a powdered ingredient into said upper storage compartment or for pouring, when desired, a stored amount of said powdered ingredient from said upper storage compartment into said bottle to be mixed with a pre-measured amount of a liquid ingredient stored in said bottle to form a liquid mixture to be dispensed through said nipple.

5,361,919

COMBINATION BOTTLE CAP AND CONSTRUCTION TOY

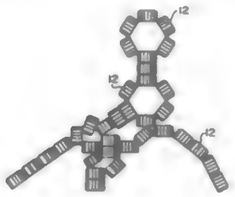
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Jorge Montalva, 8616 Spruce LK. Cir., Las Vegas, Nev. 89117

Filed Apr. 5, 1993, Ser. No. 42,645
Int. Cl.[5] B65D *51/24*
U.S. Cl. 215—228 **2 Claims**

1. A bottle cap which can be affixed with bottle caps of the same construction and used as a stackable toy, said bottle cap comprising; an open end, 3aid open end having an interior circular shaped indent and means to affix said bottle cap to the neck of a bottle to provide a seal;

said cap including a substantially protruding flat top surface opposite said open end, said flat top surface being in the form of a circle and having multiple indents;

said cap being substantially in the shape of a polygon with multiple sides and multiple angles, said sides each having three sets of surfaces, said sets of surfaces being at different angles to each other and having alternating detents and indents; said indents and detents of said sets of surfaces and said indents of said flat top surface being of a size and shape to form a mating friction fit with corresponding



indents and detents of a second cap of the same construction; the protruding flat top surface further being sized to mate with said interior circular shaped indent of said open end of a second cap of the same construction whereby,

when multiples of said bottle caps are affixed to each other by said mating indents and detents, said affixed bottle caps take the form of various shapes of choice.

5,361,920

CAP STRUCTURE WITH ELASTIC TURNOVER COVER

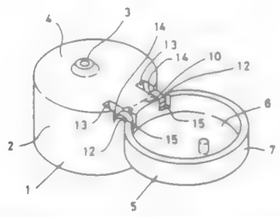
Takamitsu Nozawa, Suginami, and Takaharu Tasaki, Koto, both of Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 828,895, Feb. 3, 1992, abandoned. This application Aug. 17, 1993, Ser. No. 107,164

Claims priority, application Japan, Jun. 16, 1989, 1-70424[U]; Jul. 27, 1990, 2-80392[U]

Int. Cl.[5] B65D *43/14*

U.S. Cl. 215—237 **4 Claims**



1. A snap-type cap structure made of synthetic resin, comprising:

a body having a first circumferential wall;

a cover having a second circumferential wall being placable on said first circumferential wall, said first and second circumferential walls being connected to each other by a first hinge having two sides;

a pair of first recesses provided in the first circumferential wall, one adjacent each of said two sides of said first hinge;

a pair of second recesses provided in the second circumferential wall, said second recesses being aligned with said first recesses;

an elastic band fitted in each aligned set of first and second recesses, and connecting said first and second circumferential walls;

wherein each of said elastic bands is connected to opposite ends of said first and second recesses through a second hinge and a third hinge at respective ends of each of said bands, with said second and third hinges being positioned at outer circumferential edges of said first and second recesses in a closed state,

said elastic bands are curved into said first and second recesses from the outer circumferential edges thereof, so as to have C-shaped sections in the closed state and in a fully open state in which said cover is turned over and,

the elastic bands are adapted to be non-linearly deformed from an original C-shaped section shape in the closed state through a deformed shade at an equilibrium state located between the closed state and the fully open state and then restored to the same original C-shaped section shape by elasticity at the fully open state, said deformation increasing from the closed state to the equilibrium state and decreasing from the equilibrium state to the fully open state.

5,361,921

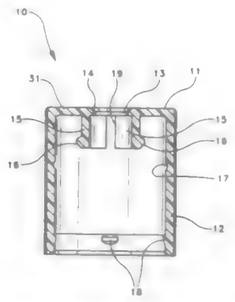
COMBINATION STOPPER-SHIELD CLOSURE

James A. Burns, Elizabeth, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 29, 1993, Ser. No. 84,382

Int. Cl.[5] B65D *41/28*

U.S. Cl. 215—320 **8 Claims**



1. A closure for sealing an open end of a body fluid collection tube comprising:

a shield having a longitudinal axis and a plurality of flexible fingers extending from a top surface to a distal end within said shield, each of said plurality of flexible fingers having a cleat at said distal end extending away from said longitudinal axis; and

a headless stopper for sealing a body fluid collection tube, said headless stopper including a well in a top surface having an undercut located around the bottom of said well that receives and mates with each cleat on said plurality of flexible fingers to securely retain said stopper within said shield.

5,361,922

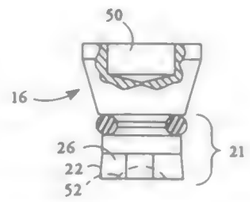
CENTRIFUGE TUBES WITH SNAP PLUGS

Patrick O. Moore, Gilroy, and David L. Schiessler, Palo Alto, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 2, 1993, Ser. No. 42,352

Int. Cl.[5] B65D *39/00*

U.S. Cl. 215—364 **4 Claims**



1. A plug for insertion into a neck of a centrifuge tube comprising:

a top portion,

a bottom portion, and

a conically tapered body between the top and bottom portions having a narrow portion with a lower end that flares outwardly and downwardly defining a flared portion with a plurality of circumferentially spaced tangential flats on a conical section having a first diameter greater than a second diameter as defined by said neck of a centrifuge tube, said flared portion resting beneath said neck when said plug is in a final sealing position forming an interference fit with said neck, said narrow portion having an annular groove and an o-ring received therein, the o-ring sealing the space between the neck and the conically tapered body.

5,361,923

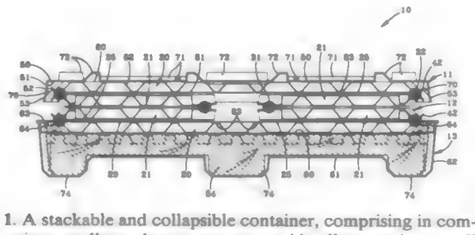
STACKABLE AND COLLAPSIBLE CONTAINER

John W. Knight, IV, New Concord; Paul W. Baker, Cambridge, and Dennis Harding, Senecaville, all of Ohio, assignors to The Fabri-Form Co., Byesville, Ohio

Filed Sep. 13, 1993, Ser. No. 119,376

Int. Cl.[5] B32B *27/00*

U.S. Cl. 280—6 **8 Claims**



1. A stackable and collapsible container, comprising in combination, a pallet and a cover means, said pallet carrying a wall assembly including at least first and second adjacent panels, and hinge means connecting each said first and second panels to each other; wherein said hinge means includes in combination, a hinge pin and a plurality of hinge sleeves, wherein each of said first and second panels are provided with at least one of said hinge such that said at least one hinge sleeve of said first panel is aligned with said at least one hinge sleeve of said second panel, such that said hinge pin is positioned within said aligned hinge sleeves of said adjacent first and second panels defining a collapsed position of said wall assembly when said first and second panels are oriented at an angle of zero degrees to one another; and wherein said at least one said hinge sleeve of said first panel includes an external flange extending therefrom and away from said first panel, such that said flange is engaged with said second panel to limit movement of said first panel on said hinge means in an erected position of said wall assembly; said cover means including a top and a bottom surface and a skirt extending downwardly from said bottom surface; wherein said cover means is removably affixed to said wall assembly by a detent integrally formed in said skirt of said cover means, such that said detent engages said flange when said wall assembly is in the collapsed position.

5,361,924

TANK CLOSURE

Paul W. Muller, Emsworth, England, assignor to Britax Wingard Limited, England

Filed Apr. 1, 1993, Ser. No. 41,270

Claims priority, application United Kingdom, Apr. 8, 1992, 9207683.5

Int. Cl.[5] B65D *41/06*

U.S. Cl. 220—293 **14 Claims**

1. A closure for the filler pipe of a tank, comprising

a gasket mounted in a gasket housing and arranged to engage with a flange on an end of a filler pipe,

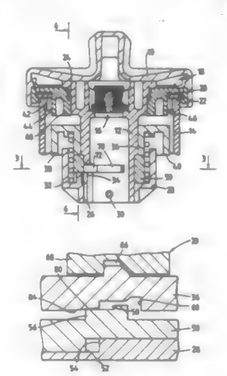
a cap stem coupled to the gasket housing for relative angular movement about the axis of the filler pipe and having a central portion adapted to project into the filler pipe,

a clamp ring carrying a pair of clamping lugs adapted to pass through cut-outs in the flange and, after angular movement, to engage under the flange,

coupling means operating to couple the stem to the clamp ring for simultaneous angular movement,

spring means acting between the stem and the clamp ring for urging the clamping lugs into engagement with the flange,

camming means acting between the clamp ring and the



gasket housing and operative to hold the clamping lugs out of engagement with the flange until the clamp ring is at a predetermined orientation relative to the gasket housing and then to cause the coupling means to disengage the stem from the clamp ring so as to permit relative angular movement, and

a second cam formation on the coupling means arranged to engage with a complementary surface on the clamp ring to wedge the clamping lugs in engagement with the flange when the clamping lugs engage with the flange.

5,361,925

TERMINAL BOX

Rolf Wecke, Bückeburg, and Jürgen Weiss, Lübbecke, both of Germany, assignors to Bernstein Compact Gehäuse Gmbh, Germany

Filed Sep. 17, 1992, Ser. No. 931,293

Claims priority, application Germany, Aug. 19, 1991, 9110236[U]

Int. Cl.[5] B65D *45/16*

U.S. Cl. 220—325 **15 Claims**

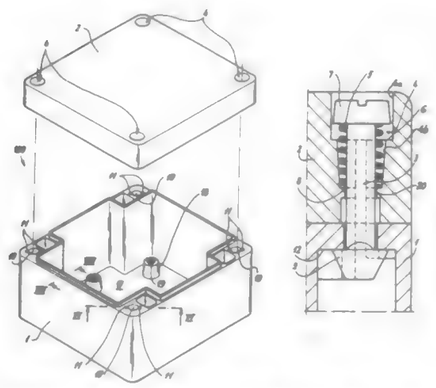
1. A terminal box; comprising:

a base having an upper projecting edge and including a bore provided with radial slots;

a cover detachably securable to said base and including a circumferential groove for engagement by said projecting edge of said base, said cover having a stepped bore in a corner area thereof with radial slots in alignment with said radial slots of said bore of said base; and

a spring-loaded fastener comprising a cylindrical shank having a diameter and a substantially flat blade-like extension of a thickness less than the diameter of said shank formed by flattening said one end of said fastener, said

fastener being insertable in said stepped bore of said cover and displaceable in axial direction to bear upon an abutment of said base for detachably securing said cover to said base.

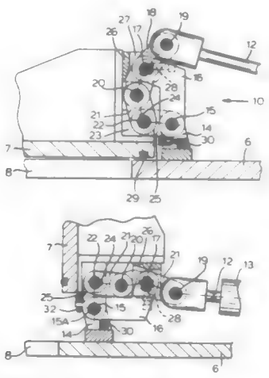


5,361,926

COVER FOR CENTRIFUGE HOUSING

Johann Messner, Pasenbach, Germany, assignor to Krauss Maffei Aktiengesellschaft, Munich, Germany

Filed Oct. 12, 1993, Ser. No. 135,470
Claims priority, application Germany, Nov. 2, 1992, 4237018
Int. Cl.[5] B65D *43/16*; B04B *7/02*
U.S. Cl. 220—331 8 Claims



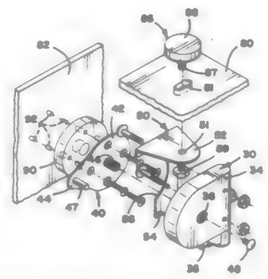
1. In a centrifuge housing having
an upper wall formed with an inspection port having an annular edge,
a cover engageable over the edge and having an annular edge engageable with the port edge, and
an annular seal on the cover edge and compressible against the port edge in a closed position of the cover, a hinge and operating assembly comprising:
a hydraulic cylinder/piston unit having one end pivoted on the housing and an opposite end;
at least one pivot lug on the cover defining a cover axis;
at lest one pivot lug on the housing defining a housing axis parallel to the cover axis;
a support link having one end pivoted on the housing pivot lug at the housing axis and an opposite end defining a support axis;
an operating lever centrally pivoted on the opposite end of the support link at the support axis and having an end portion extending from the support axis and connected to the opposite end of the hydraulic unit and an opposite end portion;
an operating link having one end pivoted on the opposite end portion of the operating lever and an opposite end pivoted on the cover pivot lug at the cover axis;
a retaining link having one end pivoted on the cover pivot lug at the cover axis and an opposite end pivoted on the housing pivot lug at the housing axis;
a formation coupling the support axis loosely to the cover;
an abutment engageable with the operating lever; and
means for pressurizing the unit and thereby pivoting the operating lever and operating link so as initially to displace the cover axis in the closed position of the cover upward toward the support axis until the operating lever, in an intermediate position, engages the abutment and then to pivot the cover about the housing axis away from the port into an open position of the cover and also for oppositely pivoting the operating lever and operating link to initially pivot the cover about the housing axis down through the intermediate position toward the port until the seal engages the cover edge and thereafter to displace the cover axis downward away from the support axis to return the cover to the closed position.

5,361,927

DAMPED HINGE MOUNTING MECHANISM

Max Frei, Oakdale, Minn., assignor to Max Display Fixtures & Woodworks, North Hudson, Wis.

Filed Jun. 28, 1993, Ser. No. 84,539
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—334 8 Claims



1. A damped hinge and mounting mechanism which comprises:
(a) a damped hinge including a housing and a sprocketed support, said sprocketed support freely mobile in an opening direction and damped in a closing direction, said sprocketed support including means for fastening to a supporting wall of a container; and
(b) an angled member having a first Leg and a second leg positioned at a fixed angle apart from said first leg, said first leg including means for fastening to a lid and said second leg including means for fastening to said housing of said damped hinge.

5,361,928

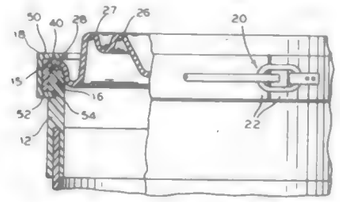
CLOSURE ASSEMBLY

Michael D. Stolzman, 28468 N. Ballard Dr., Lake Forest, Ill. 60045

Continuation of Ser. No. 894,944, Jun. 8, 1992, abandoned. This application Jun. 4, 1993, Ser. No. 73,298
Int. Cl.[5] B65D *53/00, 45/32*
U.S. Cl. 220—378 10 Claims

1. In a container for holding materials, said container including a tubular drum open at a top end, a closure assembly for sealingly closing said drum at the top end comprising:

a cover having a central circular wall of a size corresponding to the drum open end and a peripheral flange defining an annular channel on the cover, said channel having an upper wall and a pair of downwardly extending opposed sidewalls integral therewith, said sidewalls defining a downward opening in the channel;
means for fastening the cover to the drum;
a rib on each of the sidewalls intermediate said upper wall and said channel opening, said ribs extending inwardly of said side walls toward each other, there being a reduced opening in the channel between inner most points of said ribs; and
a gasket supported on the ribs entirely above said reduced opening whereby the drum top end is receivable in said channel opening and said reduced opening for capturing said gasket between the ribs and the upper wall and said gasket is compressed into sealing engagement with said drum top end when said cover is fastened thereto.

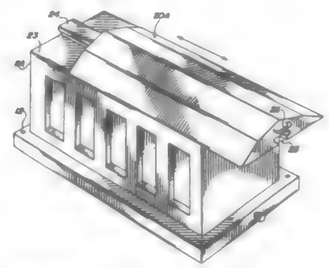


5,361,929

FLUID TANK WITH SADDLE RACK TOP

Mike D. McLain, and Robert W. McLain, both of P.O. Box 1370, Camp Verde, Ariz. 86322

Filed May 21, 1993, Ser. No. 65,885
Int. Cl.[5] B65D *6/00*; B60P *3/04*
U.S. Cl. 220—562 14 Claims



1. The combination comprising:
a liquid storage and transport tank; and
a saddle rack top on said tank slidably coupled to said tank, said saddle rack top having a curvature generally approximating the undercurve of a saddle,
said tank rack top being transportable on a conveyance for transport of livestock.

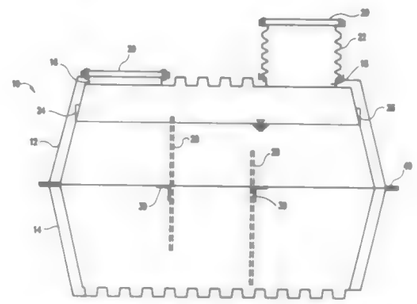
5,361,930

TWO-PIECE NESTABLE SEPTIC TANK WITH INTEGRAL ANTIFLOATATION COLLAR

Carlos Perry, 8012 Centreville Rd., Manassas, Va. 22111

Filed Mar. 11, 1994, Ser. No. 208,815
Int. Cl.[5] B65D *8/04*
U.S. Cl. 220—565 7 Claims

1. A septic tank, comprising:
a hollow housing for holding a volume of liquid, said hollow housing having a top, a bottom, and a plurality of side walls connecting said top and said bottom, said hollow housing having a first perimeter that is the greatest distance around an outside surface of said plurality of side walls;
means for admitting liquid into and withdrawing liquid from said hollow housing; and
an antifloatation collar integral with said hollow housing which projects from said outside surface of said plurality of side walls in a plane that is parallel to said top and said bottom of said hollow housing to a second perimeter which is greater than said first perimeter that is the greatest distance around said outside surface of said plurality of side walls, said antifloatation collar being of sufficient rigidity to resist bending under the influence of buoyancy forces exerted on said bottom of said hollow housing, said second perimeter of said antifloatation collar being of a size sufficient to prevent floatation of said hollow housing in dry and saturated soils.

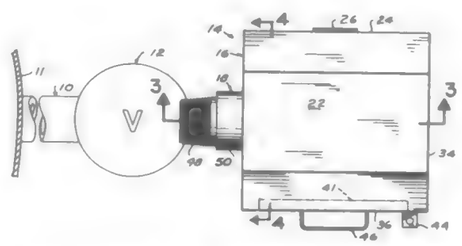


5,361,931

OIL DRAIN LINE DRIP RECEPTACLE

Michael F. VanLandingham, 15701 78th St., Lexington, Okla. 73501

Continuation-in-part of Ser. No. 878,070, May 4, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 103,470
Int. Cl.[5] B65D *90/24*
U.S. Cl. 220—571 9 Claims



1. In a fluid storage tank having a substantially horizontal drain pipe and having a gate valve normally closing the end of the pipe remote from the tank, the improvement comprising:
receptacle means including walls having upper marginal edges defining a fluid container bottom portion having a wall section projecting upwardly above a plane formed by said upper marginal edges of the remaining bottom portion walls for collecting and storing fluid draining from said tank valve when the latter is in closed position;
means including a pipe fitting connected with the gate valve and projecting through the upwardly projecting wall section of the container bottom portion for forming a fluid passageway from the gate valve through the container upwardly projecting wall section above the plane of the upper marginal edges of the remaining bottom portion walls; and,

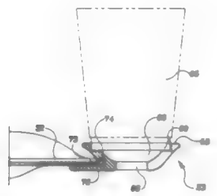
a tank truck hose connected with the fitting.

5,361,932

DRINKING VESSEL SUPPORT MEANS AND PLATE ASSEMBLY

Peter W. Friedrich, 1114 Park Ave., #3L, Hoboken, N.J. 07030

Filed Jun. 12, 1992, Ser. No. 898,016
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—574 6 Claims



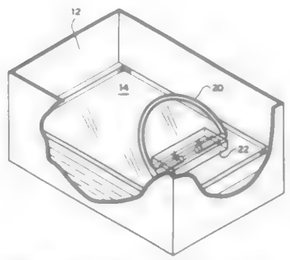
1. A drinking vessel support member for connecting to a plate, comprising:
a generally flat surface outwardly extending from the plate;
a substantially flat annular depression in the generally flat surface for receiving the base of a first drinking vessel;
a concave surface substantially concentric to and extending from the annular depression for supporting a bowl portion of a second stemmed drinking vessel; and
a bight extending from an edge of the vessel support member to an opening substantially concentric to the annular depression for allowing passage of the stem of the second stemmed drinking vessel.

5,361,933

ICE CREAM STORAGE SHIELD

Peter R. Oster, P.O. Box 188, St. Anthony's Dr., Drifton, Pa. 18221

Filed Oct. 15, 1993, Ser. No. 136,756
Int. Cl.[5] B65D *81/24*
U.S. Cl. 220—578 17 Claims



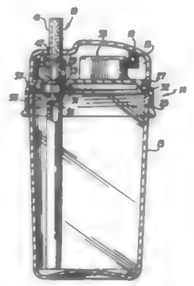
1. A storage shield device for covering an exposed surface of a food product positioned within a partially filled food container comprising:
a planar element adapted for insertion and removal within the partially filled food container; said planar element configured so a surface of said planar element presses against a food product within the partially filled food container; said planar element including a periphery, and means for providing substantial protection for an exposed surface of the food product from exposure to air within the partially filled food container and thereby retarding the deterioration of the food product; and
a handle;
a hinge pivotally connecting said handle to said planar element and located in a position offset from a geometrical center of a top surface of said planar element for facilitating insertion and removal of said storage shield device to and from the partially filled food container, said hinge allowing said handle to alternately occupy a first position and a second position;
wherein said handle is within said periphery when said handle is in said first position, and wherein said handle is sized such that a portion of said handle extends beyond said periphery of said planar element when said handle is in said second position.

5,361,934

POP-UP STRAW FOR JUVENILE DRINKING CUP

Meredith Spence, Jr., Roswell, Ga., assignor to Lisco, Inc., Tampa, Fla.

Filed Apr. 12, 1994, Ser. No. 226,587
Int. Cl.[5] B65D *47/06*
U.S. Cl. 220—707 8 Claims



1. A removable closure for a drinking cup comprising
a lid removably attached to a cylindrical open-mouthed liquid container;
a hollow cylindrical member extending upwardly from said lid;
a circular flange depending downwardly from said lid, said circular flange and said cylindrical member having a common axis, the internal diameter of said circular flange being greater than the internal diameter of said cylindrical member;
a flexible and compressible, one piece straw comprising
an upper section fitting within and extending outwardly from said cylindrical member;
a lower section fitting within and extending below said depending circular flange;
a rib member extending outwardly from said upper section, said rib being adjacent the distal end of said hollow cylindrical member;
a cap rotatably mounted on and covering said lid; and
an elongated opening in said cap adapted to mate with said upper section of said straw;
whereby said upper section of said straw extends outwardly of said cap when mated with said opening and is folded when not mated with said opening.

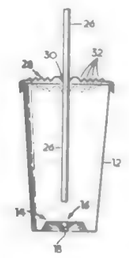
5,361,935

SPILL-RESISTANT CUP FOR SOFT DRINK

Esteban N. Sagucio, 11330 Two Wells, San Antonio, Tex. 78245-2254

Filed Jan. 18, 1994, Ser. No. 182,459
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—709 3 Claims

1. A combination of a cup, a tubular drinking straw and a plastic lid for resisting spilling of beverages comprising:
(a) a cup having an upwardly diverging frusto-conical side wall, a top end, a bottom end and a circular bottom wall sealing off the bottom end; said bottom wall further comprising a cavity portion for receiving an end of a tubular drinking straw, said cavity portion having a closed lower end and an annular side wall diverging upwardly from said closed lower end;
(b) a tubular drinking straw having an end disposed within said cup for orally drawing beverages from the cup; and
(c) a plastic lid detachably capping the top end of said cup, said lid having a round opening for receiving said tubular drinking straw, said lid includes a plurality of concentrically disposed corrugations for providing inward flexibility of the lid when a partial vacuum is present within the cup and outward flexibility of the lid when the cup is toppled over and a surge of beverage from within the cup is present;
(d) wherein the closed end of said cavity portion is of a selected size such that when the end of the drinking straw is inserted into the closed end, the closed end grips and caps the end of the drinking straw thereby preventing any flowing of beverage through the end of the drinking straw.

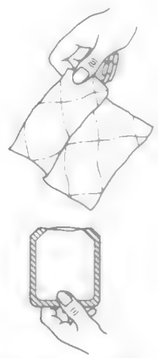


5,361,936

PACKAGES FOR SINGLE-USE FOLDED TOWELS WHICH PROVIDE FOR UNFOLDING OF THE TOWEL UPON REMOVAL FROM THE PACKAGE

Charles D. Cook, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 35,346, Mar. 22, 1993, Pat. No. 5,328,053.
This application Mar. 18, 1994, Ser. No. 210,797
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—63 10 Claims



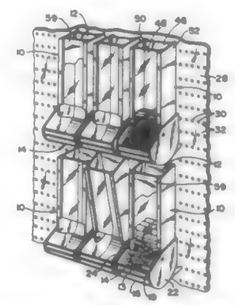
1. A flexible package for dispensing a folded sheet, said package comprising:
(a) at least one folded sheet, said sheet being first folded longitudinally to define a predetermined folded width and a first predetermined folded thickness and then folded laterally to define a predetermined folded length and a second predetermined folded thickness such that said sheet has longitudinal folds generally parallel to its length and lateral folds generally parallel to its width, said longitudinal folds and said lateral folds being generally orthogonal to one another, said second folded thickness being greater than said first folded thickness, said sheet further having a grasping portion for grasping by a consumer, said grasping portion overlying a front surface of said sheet;
(b) a package formed of a thin, flexible material, said package entirely surrounding and containing said sheet, said package further having a front side and a back side, said package further having two opposing side edges, a bottom edge, and a top edge opposing said bottom edge, each of said edges joining said front side and said back side, said package having an elongated opening on said front side, said elongated opening defining a minor dimension parallel to said folded length and a major dimension parallel to said folded width, said front surface of said sheet and said front side of said package being in overlying spaced relation to one another, said elongated opening being releasably sealed by a closure and adapted to be opened by a consumer for access to said sheet, said elongated opening further being disposed on said front side such that said grasping portion of said sheet is registered in underlying spaced relationship to said opening; and
(c) said minor dimension of said elongated opening having a maximum width which is between about 1.0 and about 3.0 times said second folded thickness, said major dimension having a maximum length which is between about 0.8 and about 1.3 times said folded width;
whereby when a consumer opens said closure and exposes said elongated opening, said grasping portion is presented for grasping, and whereby grasping said grasping portion and withdrawing said sheet from said package through said opening automatically causes said longitudinal folds and said lateral folds of said sheet to substantially unfold.

5,361,937

ARTICULATED GRAVITY FEED MODULE

Lee R. Wiese, Upper Nyack, N.Y., assignor to Henschel-Steinau, Inc., Englewood, N.J.

Filed Nov. 8, 1993, Ser. No. 148,565
Int. Cl.[5] G07F *11/48*
U.S. Cl. 221—189 5 Claims



1. An articulated gravity feed module comprising:
chute means for holding items for sale;
mounting means for mounting said chute means to a wall;
hopper means for supplying said items to said chute means, said hopper means including an elongated enclosure having an open upper end through which said items can be supplied for restocking and an open lower end which is always open to said chute means for depositing said items on said chute means; and
pivot means for pivotally securing said hopper means to said chute means at a position above said chute means, such that said hopper means is pivotable between an upright dispensing position in which the open upper end of said hopper means is positioned adjacent said wall and a restocking position in which the open upper end of said hopper means is positioned away from said wall;

said chute means having a curved bottom wall for receiving said items from said hopper means, and side walls connected with said bottom wall for preventing escape of said items deposited on said bottom wall; and

said pivot means including at least one pivot pin for pivotally connecting a front lower portion of said hopper means to upper portions of said side walls;

said curved bottom wall having a front portion and a rear portion including a radius of curvature, said elongated enclosure being formed by a rear wall, a front wall and side walls which interconnect said rear wall and said front wall, and said rear wall having a lower portion with a radius of curvature similar to the radius of curvature of the rear portion of the bottom wall of said chute means so that said lower portion of said rear wall can ride along said rear portion of said bottom wall of said chute means during pivoting movement.

5,361,938

AUTOMATIC VENDING APPARATUS ADAPTABLE TO ACCOMMODATE DIFFERENT-SIZED COMMODITY

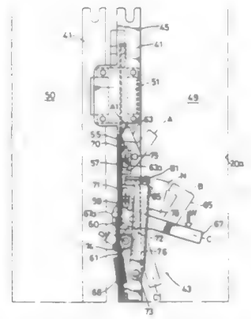
Seizo Ishine, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 21, 1993, Ser. No. 170,749

Claims priority, application Japan, Dec. 21, 1992, 4-340095; May 12, 1993, 5-110712

Int. Cl.[5] B65G *59/06*

U.S. Cl. 221—289 4 Claims



1. An automatic vending apparatus for use with two different-size commodities in which a commodity feed mechanism thereof comprises:

first stopper means for freely switching between an activation position and a no-activation position, the activation position thereof being projected into a commodity passage so as to support a thick commodity and the no-activation position being retreated from the commodity passage;

second stopper means, disposed right under the first stopper means, for freely switching between an activation position and a no-activation position; and

feed stopper means for switching between an activation position interlocked with the first or second stopper means so as to thereon support the commodity, and a feed position for transferring the commodity downward, so that thin commodity or thick commodity is automatically delivered one by one.

5,361,939

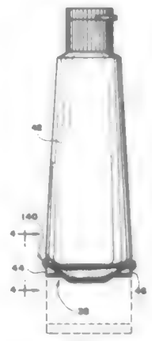
ROLLED TUBE RETAINER

James A. Robertson, Jr., 3108 S. Kiwanis Ave., Sioux Falls, S. Dak. 57105-4207

Filed Dec. 22, 1993, Ser. No. 172,229

Int. Cl.[5] B65D *35/00, 37/00*

U.S. Cl. 222—1 13 Claims



1. A retaining device for use with opposite corners of a rolled portion of a collapsible tube comprising:

an elongated body of flexible and expandable material having predetermined length, height and thickness, said elongated body defining first and second tube corner engagement members engaging the opposite corners of the rolled portion of the collapsible tube, when said device is in use, said elongated body further defining a bridge portion located between said tube corner engagement members, said bridge portion extending substantially the height of said elongated body.

11. A method of using a collapsible tube retainer, comprising the steps of:

surrounding a first corner of the rolled portion of the collapsible tube with the collapsible tube retainer; and

surrounding a second corner of the rolled portion of the collapsible tube with the collapsible tube retainer, whereby the collapsible tube retainer is affixed to the rolled portion of the collapsible tube and prevents the rolled portion of the collapsible tube from unraveling.

5,361,940

PUMP EVACUATION SYSTEM FOR BULK CONTAINERS OF HIGH VISCOSITY FLUIDS

Stanley M. Miller, Chicago, and Martin P. McCormick, Lake Zurich, both of Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed May 28, 1993, Ser. No. 68,974

Int. Cl.[5] B67D *5/00*

U.S. Cl. 222—77 4 Claims

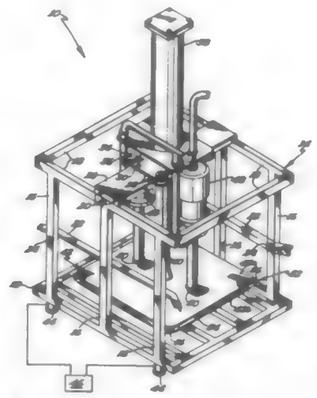
1. A pump evacuation system for a bulk container of high viscosity fluids, said system comprising:

a base;

a frame mounted on said base, said frame having a top and being sized to surround and receive said bulk container;

a ram cylinder having an axis of motion mounted to said frame top, said frame top having a center to which said ram cylinder is mounted, said ram cylinder being attached to said frame with means for allowing at least one degree of freedom relative to said axis;

a ram plate sized to fit into and force evacuation of said bulk container, said ram plate being attached to said ram cylinder so that said ram cylinder can press downwardly into said bulk container causing fluid to be evacuated therefrom, said means for allowing freedom allows said ram plate to rotate about said axis.



5,361,941

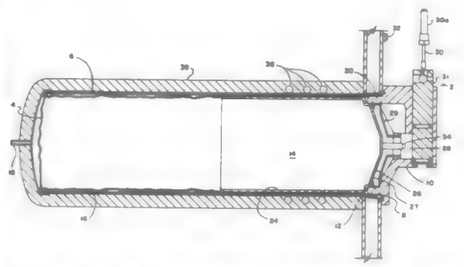
CHILLED PRODUCT DISPENSING SYSTEM

Shafi Parekh, Irving; Bernard M. Geiger, Dallas, and Reginald Fowler, Garland, all of Tex., assignors to Froezert USA Inc., Dallas, Tex.

Filed Mar. 24, 1992, Ser. No. 856,623

Int. Cl.[5] B65D *35/28*

U.S. Cl. 222—95 11 Claims



1. An apparatus for cooling and dispensing uniformly chilled flowable food product through a dispensing tube extrusion head past a thermal conductive extrusion head projection for release of the uniformly chilled flowable food product, comprising:

a cold barrel encased elongated tubular product container tube container, flexible product bag inside the tube, a dispensing tube, extrusion head and projection and dispensing head port;

the barrel and elongated tubular product container having a pressurized gas source valve means at a first end and a dispensing tube extrusion head and product release head assembly at a second end;

the dispensing tube, extrusion head and projection constructed of thermal conductive materials;

the dispensing tube being inserted into an open end of the bag contained in the elongated tubular container, the dispensing tube and the tubular container sharing a common axis and the dispensing tube substantially filling the inside diameter of the tubular container and extending into the open end of the flexible bag and the contained product up to 40 to 60% of the length of the tubular container with both the tubular container and the dispensing tube defining a cylindrical container for chilled food product contained in the flexible bag, the flexible bag being opened at a second end of the tubular container enclosed at a first end:

the dispensing tube and tubular container being pressure sealed against a dispensing head by O-ring means;

said head defining a dispensing passage past the projection and open for release of said product upon opening of valve means; and

valve means for selectively providing pressurizing gas to the barrel and tubular container chamber through activation of valving means which open the dispensing passage for release of uniformly chilled flowable food product.

5,361,942

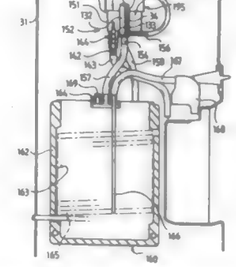
LIQUID DISPENSERS HAVING REMOVABLE COMPONENTS

Paul Salkeld, Redditch; Andrew Gibbs, Leamington Spa, and Robert Tansley, Stratford-Upon-Avon, all of England, assignors to Ebac Limited, Durham, United Kingdom

Filed Jul. 26, 1993, Ser. No. 96,254

Int. Cl.[5] B65D *35/56*

U.S. Cl. 222—105 14 Claims



1. Liquid dispensing apparatus for dispensing liquid from an inverted container having a neck through which the liquid is discharged, the apparatus comprising:

a housing provided with a mounting arrangement for receiving and supporting an inverted container thereon, said mounting arrangement defining an opening for receiving the container neck;

a dischargeable liquid reservoir releasably mounted within said housing;

a body which includes a feed tube for insertion into the neck of the liquid container to conduct liquid therefrom;

mounting means within said housing for releasably holding said body, said mounting means being arranged to positively support said body within said housing and below said opening such that said feed tube projects upwardly to a level adjacent said opening for being received in the neck of the container, said body being releasably held by said mounting means; and

conduit means connected for conducting liquid from said feed tube to said reservoir, said body, conduit means and reservoir thereby being removable for replacement during a maintenance operation.

5,361,943

CONDIMENT DISPENSING DEVICE

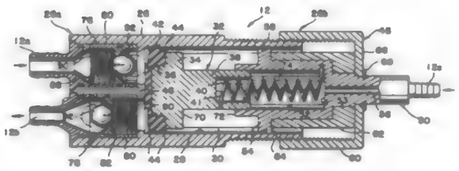
Benjamin R. Du, 32392 Via Antibes, S. Laguna, Calif. 92677

Continuation-in-part of Ser. No. 923,136, Jul. 31, 1992, Pat. No. 5,230,443, which is a continuation of Ser. No. 830,113, Jan. 30, 1992, Pat. No. 5,158,210, which is a continuation of Ser. No. 537,509, Jun. 13, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 12,940

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] B67D *5/60*

U.S. Cl. 222—134 **13 Claims**



1. A fluid-driven pump for use in a condiment dispensing system, comprising:

a housing means having first and second ends and an inner surface defining at least one interior cavity;

a piston slidably positioned within said housing means, said piston being reciprocably movable through intake and exhaust strokes within said interior cavity for selectively drawing a pre-determined quantity of condiment thereinto and dispensing the predetermined quantity therefrom;

a seal assembly engaged to and enclosing the second end of said housing means, said seal assembly defining an inlet-/exhaust port for supplying a pressurized fluid to a portion of the interior cavity intermediate the piston and second end for initiating an exhaust stroke of the piston and venting the pressurized fluid from the interior cavity during the intake stroke of the piston;

a product inlet disposed in the first end of the housing means for placing said interior cavity in fluid communication with a condiment reservoir during the intake stroke of the piston;

a product outlet disposed in the first end of the housing means for placing said interior cavity in fluid communication with a condiment dispensing apparatus during the exhaust stroke of the piston;

a first spring means disposed within said interior cavity, said first spring means being directly engaged to said piston in a manner operable to bias said piston toward the second end of the housing means when the pressurized fluid is vented from the interior cavity via said inlet/exhaust port; and

a wiper member attached to said piston and having a peripheral edge disposed in abutting, sealed contact with the inner surface of the housing means, said wiper member moving concurrently with said piston and being operable to wipe the inner surface of said housing means during the intake and exhaust strokes of the piston so as to prevent any condiment from passing between the inner surface of the housing means and the piston to a location intermediate the piston and the second end of the housing means.

5,361,944

DEVICE FOR THE CONDITIONING AND THE DISTRIBUTION OF PASTY OR LIQUID PRODUCTS

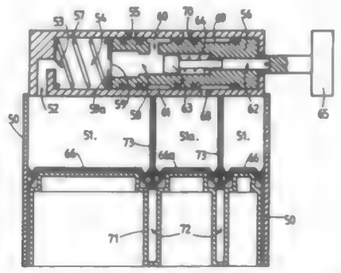
Eric Hauf, Lausanne; Jaime Rossell, Pully, and Michel Gueissaz, L'Auberson, all of Switzerland, assignors to AKA Innovative Developments S.A., Ecublens and Andre Gueissaz & Cie S. A., L'Auberson, both of Switzerland

Filed Jul. 28, 1992, Ser. No. 920,684

Claims priority, application Switzerland, Jul. 29, 1991, 02259/91-0; Jun. 16, 1992, 01894/92-5

Int. Cl.[5] B67D *5/52*

U.S. Cl. 222—136 **7 Claims**



1. In a device for dispensing pasty or liquid products, comprising a rigid casing (**50**) containing a first chamber (**51**) adapted to be filled with a product to be dispensed, a second chamber (**54**) within the casing to receive from the first chamber the product to be dispensed, a first non-return valve (**53**) between the first and second chambers adapted to pass the product to be dispensed only in a direction from the first chamber to the second chamber, a third chamber (**58**) within the casing, a second non-return valve (**59**) disposed between the second and third chambers and adapted to permit passage of the product to be dispensed only in a direction from the second chamber to the third chamber, an output hole (**55**) in the casing adapted to receive said product from said third chamber and to provide an exit from the device for the dispensed material, a piston (**56**) reciprocably slidable in the casing in opposite directions to increase and decrease the volume of the second chamber (**54**), thereby to urge said material from said second chamber (**54**) through said second non-return valve (**59**) into said third chamber (**58**) when said piston moves in a first direction to decrease the size of said second chamber (**54**), means (**65**) for manually urging said piston in said first direction, and a return spring (**57**) urging said piston (**56**) in a second direction opposite said first direction, said second non-return valve (**59**) being carried by said piston (**56**) and said third chamber (**58**) being within said piston (**56**); the improvement comprising a secondary piston (**63**) slidably mounted within the first-mentioned piston (**56**) for movement relative to said first-mentioned piston (**56**) in said first and second directions, and spring means (**64**) acting between said secondary piston (**63**) and said first-mentioned piston (**56**) continuously to urge said secondary piston (**63**) in said first direction, said secondary piston (**63**) having a surface exposed to the interior of said third chamber (**58**).

5,361,945

COMBINATION HOPPER

Jerry R. Johanson, San Luis Obispo, Calif., assignor to J R Johanson, Inc., San Luis Obispo, Calif.

Filed Apr. 29, 1993, Ser. No. 55,672

Int. Cl.[5] B67C *11/00*

U.S. Cl. 222—145 **12 Claims**

1. A combination hopper for particulate material that prevents rat-holing and bin hangups while conserving headroom, comprising in combination:

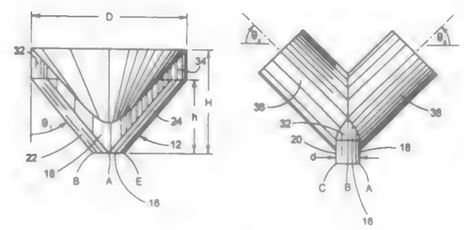
a one-dimensional hopper having a lower end and including an outlet at the lower end, said outlet including four points A, B, C and E successively spaced 90 degrees apart around said outlet,

a pair of parallel planar vertical surfaces containing the points A and C and spaced a distance d apart,

a pair of load-bearing surfaces confined between said pair of parallel planar vertical surfaces, diverging upwardly from the points B and E at angles θ_1 with respect to the vertical, and extending upward until, at a height h above said outlet, the maximum dimension of said one-dimensional hopper in a horizontal plane equals D;

a conical hopper including

a circular top of diameter D located at a height H above said outlet greater than the height h of said one-



dimensional hopper, and concentric with the outlet of said one-dimensional hopper,

a conical surface converging downwardly from said circular top at a semi-apex angle θ_2 with respect to the vertical, said conical surface containing an aperture formed by the upward projection of said one-dimensional hopper;

said one-dimensional hopper joined to the conical surface of said conical hopper with no part of said one-dimensional hopper extending above the conical surface; and,

vertical surfaces extending up from said one-dimensional hopper and connecting said one-dimensional hopper to the conical surface of said conical hopper where the height of the conical surface above said outlet exceeds h.

5,361,946

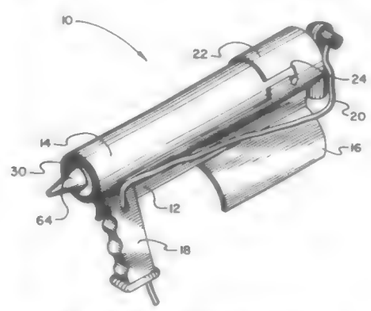
ICING DISPERSING APPARATUS

Pamela J. Ginther, 3004 E. 133RD Cir., Thorton, Colo. 80241; Valerie A. Washburn, 9595 N. Pelos #372, Thorton, Colo. 80221, and Lyle Picraux, P.O. Box 70, Lafayette, Colo. 80026

Filed May 20, 1993, Ser. No. 63,724

Int. Cl.[5] B67D *5/42*

U.S. Cl. 222—175 **2 Claims**



1. A new icing dispensing apparatus comprising:

a container for containing icing material to be dispensed;

a support for receiving and supporting said container;

a handle secured to said support;

a plunger within said container for biasing said material out of said container;

a movement means for moving said plunger through said container; and

a nozzle assembly releasably secured to said support, said nozzle assembly being in fluid communication with said container for directing movement of said icing material,

wherein said movement means comprises a pneumatic means for moving said plunger through said container,

wherein said pneumatic means comprises a valve connected to a hose, said hose being connectable to an air source, a trigger communicating with said valve to selectively operate said valve, a seal for releasably sealing an end of said container, and at least one aperture in said seal to allow passage of pressurized air therethrough whereby said pressurized air may enter said container to bias said plunger axially through said container,

wherein said handle is fixedly secured to said support proximate said nozzle assembly, and

further comprising an arm rest fixedly secured to said support, said support comprising an elongated rectangular support member having first and second opposite ends, said support for receiving and supporting said container being mounted upon said rectangular support member between said first and second ends, said rectangular support further having a passageway therein extending from said first end toward said second end, said trigger comprising an elongate member mounted for pivotal movement in said passageway and extending from said rectangular support member through said first end thereof, said valve being mounted proximal to said support member second end whereby actuation of said trigger at said first end of said support member is effective to cause said elongate trigger member to pivot in said passageway and activate said valve, said handle and said arm rest being fixedly secured to said support between said first and second ends thereof and between said trigger and said valve.

5,361,947

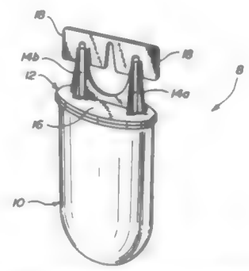
SINGLE USE FLUID DISPENSING DEVICE

Arthur L. Lifshey, East Brunswick, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 8, 1993, Ser. No. 27,966

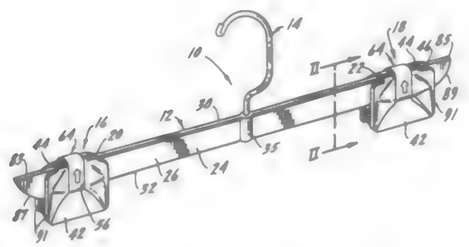
Int. Cl.[5] B65D *37/00*

U.S. Cl. 222—212 **2 Claims**



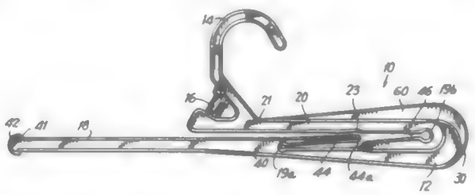
1. A container for storing and dispensing liquid antiparasitic medicine beneath the fur of an animal, comprising a dispensing end and a sealed reservoir end containing the liquid contents; said dispensing end having two parallel coplanar nozzles, each about 0.5 to 5 cm long and spaced about 0.5 to 8 cm apart; each nozzle having an opening of about 0.2 to 1.0 mm for dispensing said liquid contents, said opening being sealed by removable sealing means, said reservoir end having inwardly deformable oppositely arranged side walls, said side walls having sufficient structural stiffness such that inward deflection causes fractional expulsion of said total liquid contents.

5,361,948
INSIDE WAISTBAND GARMENT HANGER
John H. Batts, E. Grand Rapids, Mich., assignor to Batts, Inc., Zeeland, Mich.
Continuation of Ser. No. 955,363, Oct. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 827,051, Jan. 28, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,755
Int. Cl.[5] A47G *25/48*
U.S. Cl. 223—96 9 Claims



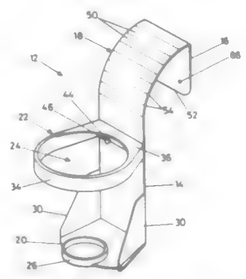
5. A garment hanger for clamping a waistband of a garment, the hanger comprising:
an elongated body terminating in a first end and a second end, the elongated body including an upper edge and front and rear surfaces;
a first and second pair of opposing clamp members;
the first and second pair of claim members integrally and hingedly connected to opposing sides of the upper edge of the body, the first and second pair of clamp members being moveable from an open position to a closed position overlying the front and rear surfaces of the body;
the first end of the body extending beyond the first pair of opposing clamp members to form a first garment position guide;
the second end of the body extending beyond the second pair of opposing clamp members to form a second garment position guide.

5,361,949
PANTS HANGER WITH PIVOTABLE FINGER ON LOWER BAR
Nicoleon Petrou, 1531 W. Tadmar Ave., Anaheim, Calif. 92802
Filed Mar. 17, 1993, Ser. No. 32,934
Int. Cl.[5] A47G *25/48*
U.S. Cl. 223—96 23 Claims



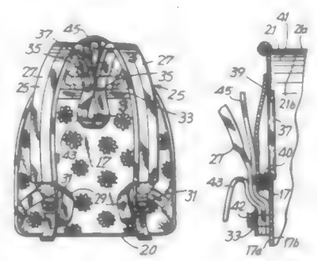
1. A garment hanger comprising a hanger body having an upper bar and a lower bar, and coupling means for joining said lower bar to said upper bar, said upper and lower bars each having upper and lower surfaces, hook means coupled to said upper bar for supporting said hanger body, said lower bar having a free end which extends beyond said hook means, a finger pivotably joined to said upper surface of said lower bar covered by said upper bar and spaced inwardly from the free end of said lower bar, said finger pivoting upwardly towards said lower surface of said upper bar when a garment is supported on said lower bar extends over said finger to capture said garment therebetween.

5,361,950
CARRYING DEVICE
Noel W. Signal, 325 Kapiti Road, Paraparaumu, and James R. M. Darling, 30 Kotari Road, Days Bay, Eastbourne, Wellington, both of New Zealand
Continuation of Ser. No. 973,417, Nov. 9, 1992, abandoned. This application May 10, 1993, Ser. No. 59,624
Claims priority, application New Zealand, Nov. 8, 1991, 240527
Int. Cl.[5] A45F *4/00*
U.S. Cl. 224—151 35 Claims



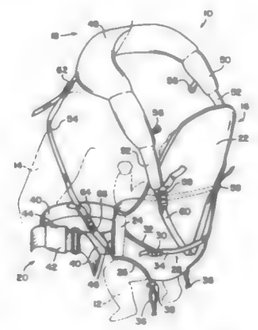
1. In a carrying device comprising a body having carrying means for carrying an article, and a support extending from an upper part of the body, the improvement comprising:
the support including a flexible connector to releasably support the device from a window sill of a window opening in a vehicle door, the flexible connector being configured such that it can be doubled back on itself; and
a fastener for fastening the flexible connector when it is doubled back on itself to form a belt loop for alternatively supporting the device from a user's belt.

5,361,951
REVERSIBLE BACKPACK ASSEMBLY
Joey Chehebar, 1778 E. 9th St., New York, N.Y. 10001
Filed Nov. 23, 1993, Ser. No. 156,467
Int. Cl.[5] A45F *3/00*
U.S. Cl. 224—153 10 Claims



1. A reversible backpack assembly comprising:
a bag having a storage interior, an opening formed therein for access to said interior, and a panel having an outside and an inside;
at least one strap assembly suitable for carrying said bag comprising at least one shoulder strap connected to the outside of said bag panel at a first location, and means for selectively connecting said at least one strap to a second location along the outside of said panel when said assembly is in an unreversed condition;
means for selectively connecting said at least one strap to a location along the inside of said panel;
wherein said panel is formed with an opening adjacent said first location through which said at least one strap is selectively insertible for connection to said inside strap connecting means when said assembly is in a reversed condition.

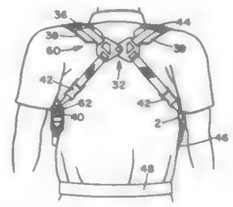
5,361,952
BABY CARRIER
Nancy Gold, 2696 Troy Rd., Schenectady, N.Y. 12309
Filed Mar. 23, 1993, Ser. No. 35,690
Int. Cl.[5] A47D *13/02*
U.S. Cl. 224—159 9 Claims



1. A baby carrier for supporting a baby in a rearwardly facing direction proximate an anterior portion of a wearer's torso comprising:
a baby seat having a pouch for supporting said baby in a rearwardly facing direction, said pouch including first and second upwardly extending support members for supporting rear and front portions of said baby, respectively, said support members forming leg holes for receiving the legs of said baby therethrough;
a waistbelt for adjustably attaching said baby carrier about a waist portion of said wearer's torso, said waistbelt being secured to said pouch proximate a bottom region of said leg holes;
means for supporting said baby carrier about the neck of said wearer, said supporting means including a yoke having a rear portion which is adapted to encircle the rear of the wearer's neck and opposing end portions which are adapted to extend over the front of the wearer's shoulders, said supporting means further including a first pair of straps for adjustably fastening the opposing end sections of said yoke to a front, exterior portion of said first upwardly extending support member, and a second pair of straps having first and second ends, said first ends each independently secured to a disparate section of the rear portion of said yoke and said second ends secured to said waistbelt, for adjustably fastening the rear portion of said yoke to said pouch proximate a bottom region of said leg holes, said second pair of straps passing under the arms of said wearer.

5,361,953
SHOULDER HARNESS WITH CONNECTOR PIECE
Richard E. E. Nichols, San Diego, Calif., assignor to Shooting Systems Group, Inc., Fenton, Mo.
Continuation-in-part of Ser. No. 639,792, Jan. 10, 1991. This application Apr. 10, 1992, Ser. No. 866,433
Int. Cl.[5] F41C *33/02*
U.S. Cl. 224—198 12 Claims

1. A shoulder harness for carrying a weapon, comprising:
right and left hand shoulder straps for encircling the right and left shoulders of a wearer, respectively;
a first flat plate having a fold forming slot threadably receiving one of said straps to form a fold between adjacent portions of the strap at a location beneath one of the arms of a wearer;
a first retainer on the plate for releasably retaining one portion of the strap on one side of the fold flat against the plate;
a second retainer on the plate for releasably retaining a portion of the strap on the opposite side of the fold flat against the plate;
the first and second retainers being at a predetermined angle to one another to form a flattened fold in the strap with adjacent strap portions on opposite sides of the fold at said predetermined angle to one another;
first connecting means parallel to said fold forming slot for connecting said plate to another strap;
a tie down strap secured to said first connecting means for securing said plate to a wearer's belt:
said plate having a center axis of symmetry, said first connecting means lying on said center axis, said fold forming slot extending transversely across said center axis, and said first and second retainers being arranged symmetrically on opposite sides of said center axis;
a second flat plate identical to said first flat plate and threadably receiving the other of said straps at a location beneath



the other arm of a wearer to form a flattened fold in the strap;
each plate having second connecting means adjacent said first connecting means for selectively connecting the plate to a holster;
a holster connected to the second connecting means of said second flat plate;
said first and second connecting means lying on said axis of symmetry between said fold forming slot and the edge of said plate; and
a pivotal connector connecting the right hand shoulder strap to the left hand shoulder strap at a location behind the wearer's back, the pivotal connector comprising a pair of flat connector plates identical to said first and second flat plates and a pivot connection between the plates for pivotally securing said plates together in a flat orientation, each of said shoulder straps extending through the fold forming slot of a respective one of said pair of pivoted plates to form a substantially flat fold in said strap, said retainers of said one plate frictionally resisting sliding movement of said strap through said slot.

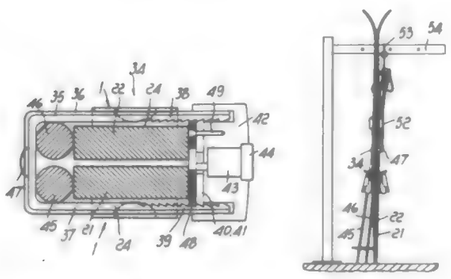
5,361,954
SKI HOLDER DEVICE
Gilberto Tura, Via Pieve, 17, 40054 Budrio (Prov. of Bologna), Italy
Filed Apr. 20, 1993, Ser. No. 48,528
Claims priority, application Italy, Apr. 22, 1992, BO92 U 000082
Int. Cl.[5] A45F *3/04;* E05B *73/00*
U.S. Cl. 224—191 14 Claims

1. A holder device, for holding at least one pair of elongated implements, comprising:
an anti-theft device (**34**) comprising a C-shaped structure (**35**) having a central portion and a pair of open side elements (**36,37**), said side elements extending substantially mutually parallel from said central portion, said side elements being provided with mutually facing sets of teeth (**38,39**) at end portions thereof,
a first plate element (**1**) and a second plate element (**1**), each

of said first and second plate elements comprising receiving means (24) for receiving a respective one of said side elements of said C-shaped structure;

connecting means (5,6,23) for connecting said first plate element to one (21) of said at least one pair of elongated implements and connecting means (5,6,23) for connecting said second plate element to another (22) of said at least one pair of elongated implements; and

said first plate element and said second plate element being positionable in a mutually spaced relationship when said elongated implements are connected thereto such that



both said side elements of said C-shaped structure are simultaneously insertable in said receiving means of both said first and second plate elements so that said sets of teeth extend out of said receiving means and past said elongated implements;

said anti-theft device further comprising:

a lock element (42) having bolt means (40,41) for releasably engaging in said sets of teeth at said end portions of said side elements of said C-shaped structure, thereby to lock said elongated implements in a space defined by said C-shaped structure and said lock element.

5,361,955

MODULAR BACKPACK

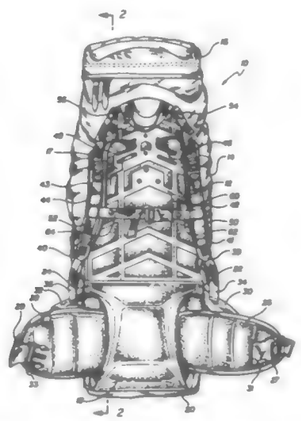
Wayne B. Gregory, Temecula, Calif., assignor to Bianchi International, Temecula, Calif.

Filed Dec. 21, 1992, Ser. No. 994,208

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] A45F *3/04*

U.S. Cl. 224—211 **12 Claims**



1. A backpack having a back panel, a carry bag attached to said back panel having a bottom panel, padded shoulder straps, padded waistband members, and fastening means for fastening said backpack around a wearer;

said back panel being of relatively stiff plastic material, a back pad member adjacent said back panel including poly foam cushion material and a stretch fabric cover, said back panel, polyfoam cushion material and cover being molded together;

a waist support member of relatively stiff plastic material unattached to said back panel including laterally extending arms, waistband members carried on the arms of said waist support member, said waistband members including spaced polyfoam pads and a fabric cover of stretchable fabric molded thereto, a back cover of heavy fabric stitched to said molded pads along its edge, a second layer of heavy fabric stitched over said first layer of heavy fabric and forming a sleeve therewith with each of said waistband members being attached to said arms by means of said sleeves, and

a separate bun pad located between said waistband members stitched at its top to said back pad member and at its lower end to said bottom panel and formed of a plurality of layers of polyfoam of different densities and which has a cover of stretchable fabric molded to said polyfoam.

5,361,956

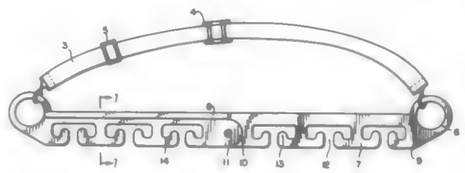
DEVICE FOR CARRYING OBJECTS WITH HANDLES

Maurice-André Recanati, 315 W. 70th St., New York, N.Y., 10023

Filed Nov. 29, 1993, Ser. No. 158,445

Int. Cl.[5] B65D *33/06*

U.S. Cl. 224—257 **14 Claims**



1. A portable device comprising:

(a) a first and a second half-bar, each half-bar having

(1) a substantially rectangular portion of a predetermined length having a top section forming a ledge portion and a bottom section, said bottom section having a plurality of hooks positioned substantially along the length of said rectangular portion,

(2) a pivot end portion, having an aperture extending through said rectangular portion,

(3) a strap end portion, having an opening, positioned on an opposite end of said rectangular portion with respect to the pivot end portion; and

(b) means for connecting the pivot end portion of the first half-bar to the pivot end portion of the second half-bar extending through the apertures of each half-bars such that the half-bars can be rotated with respect to each other from a first position where the ledge portion of the first half-bar is parallel to the ledge portion of the second half-bar and where the ledge portion, of each half-bar is positioned adjacent to the bottom section of the other half-bar, to a second position where the ledge portion of the first half-bar is continuous with and forms a 180 degrees angle to the ledge portion of the second half-bar; and

(c) a carrying means attached through the openings of the strap end portions of the first and second half-bars.

5,361,957

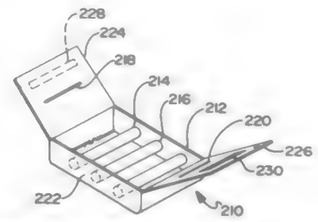
SHOULDER STRAP CUSHION

Marvin H. Weintraub, 5743 Kingsfield Dr., West Bloomfield, Mich. 48322

Filed Aug. 26, 1993, Ser. No. 112,674

Int. Cl.[5] A45F *3/12*

U.S. Cl. 224—264 **4 Claims**



1. In combination with a shoulder strap for a carrying device, means for cushioning the weight borne by a user, comprising:

(a) a pocket, having an open interior;

(b) a pair of spaced apart flaps secured to the pocket, the flaps being overlappable to enclose the pocket, each flap having a slit formed therein to enable the strap to be laced therethrough;

(c) means for securing the flaps to each other when in the overlapped position;

(d) a plurality of cushioning elements disposed in the interior of the pocket; and

(e) a cushioning fluid disposed in each element.

5,361,958

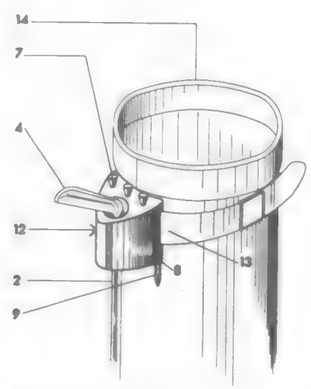
GOLF CLUB CARRIER

Lester J. Fiegel, 5207 Valburn Cir., Austin, Tex. 78731, and Ron B. Helton, 3102 Borden Rd., Austin, Tex. 78731, assignors to Lester J. Fiegel, Austin, Tex.

Filed Sep. 13, 1993, Ser. No. 120,295

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—274 **4 Claims**



1. A golf club carrier adapted to be attached to a strap on a golf cart wherein the carrier comprises:

a body having a vertical central axis, said body having a bottom wall with an outer peripheral edge, an upper wall with an outer peripheral edge and a continuous side wall interconnecting said outer edge of said upper wall with said outer edge of said lower wall and having a portion thereof curved inwardly toward said central axis to complementally fit on said strap;

an aperture sized to receive a shaft of a golf club and extending through said body parallel to said central axis, said upper wall slanting downwardly from said curved portion to hold a head of a golf club stationary; and

a slot extending through said body along said curved portion of said side wall and terminating in openings in opposite portions of said side wall, said slot adapted to receive said strap to thereby mount the carrier on said golf cart.

5,361,959

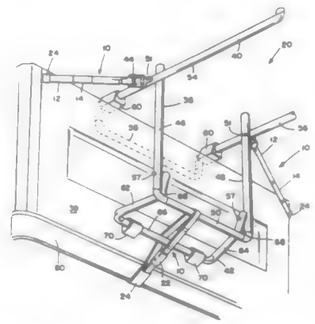
STRAP TENSIONING SYSTEM

Alexander R. Allen, 29 Devens St., Concord, Mass. 01742

Division of Ser. No. 801,439, Dec. 2, 1991, abandoned. This application Jun. 28, 1993, Ser. No. 82,835

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—314 **9 Claims**



1. A system for carrying one or more bicycles on a motor vehicle, said system comprising:

(a) a carrier means for carrying at least one bicycle, said carrier means configured to be mounted on a motor vehicle; and

(b) a strap means for securing said carrier means to the motor vehicle, said strap means including a strap and a stretchable and contractible resilient web, said strap having a first end and a second end, said resilient web having contracted, relaxed and expanded, stretched states, said web having a first length when in said relaxed state and a second length when in said stretched state, said second length being greater than said first length, said resilient web in tension when said carrier means is secured to the motor vehicle by said strap means, said web maintaining tension in said strap means when the tension in said strap is reduced due to jarring of said carrier means, said web having a first end and a second end each connected to one end of said strap such that an open loop is formed in said resilient web when in said relaxed state, the separation between facing surfaces of said loop in said resilient web being an indicator of the tension in said strap means, said facing surfaces are separated when said strap is slack and in substantially surface-to-surface contact when said strap is under tension.

5,361,960

OFF-LINE WEB FINISHING SYSTEM WITH SPLICE AND MISSING MARK STABILITY

Robert Fokos, Wayland; Robert M. Williams, Canton, and Orfeo J Salvucci, Holbrook, all of Mass., assignors to Sequa Corporation, Hackensack, N.J.

Continuation-in-part of Ser. No. 882,832, May 14, 1992, Pat. No. 5,224,640, which is a continuation of Ser. No. 467,941, Jan. 22, 1990, Pat. No. 5,129,568. This application Sep. 20, 1992, Ser. No. 939,020

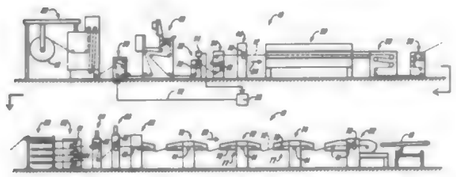
Int. Cl.[5] B65H *23/0, 23/18;* **B41F** *13/24*

U.S. Cl. 226—2 **7 Claims**

1. A system for maintaining the registration between i) a

succession of impressions printed on a web of paper in a regularly repeated pattern extending along the web in a first direction coincident with the direction of movement of the web said web carrying registration marks associated with the impressions where the distance between adjacent marks is correlated with the repeat length of the impression and ii) the location on the web where at least one finishing machine, forming a finishing line, having at least one function cylinder performs an operation on the printed web at a position on the web which must be accurately correlated along the first direction with respect to said repeated pattern, comprising

means for transporting the web through the finishing line with a constant tension in the web, said tension being



sufficient to maintain the web taut to facilitate its handling, but introducing no substantial elongation of the web in said first direction,

means for driving said at least one function cylinder,

means for monitoring the registration and generating a signal corresponding to any misregistration only when the magnitude of said misregistration is less than a predetermined limit, and

means for adjusting the speed of rotation of said at least one function cylinder with respect to said web in response to said signal to correct said misregistration,

said function cylinders making contact with and operating on the web intermittently.

5,361,961

FEEDING DEVICE OF A WIDE SEWING MATERIAL

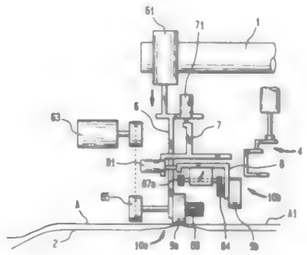
Hideyuki Kobayashi; Masayuki Nozawa, both of Utsunomiya, and Yashuhiro Nagayama, Tochigi, all of Japan, assignors to The Singer Company N.V., Caracao, Netherlands Antilles

Filed Mar. 1, 1993, Ser. No. 24,039

Claims priority, application Japan, May 19, 1992, 4-039544[U]

Int. Cl.[5] B65H *20/00;* **D05B** *35/02*

U.S. Cl. 226—171 **1 Claim**



1. A feeding device for sewing material disposed on a work table projecting from a frame and comprising:

a first elevating unit provided on the frame above the work table;

vertical supporting member vertically driven by the first elevating unit;

a rotary device;

a first belt conveyer unit provided on said vertical/supporting member and rotationally driven by the rotary device;

a second elevating unit provided on said vertical/supporting member;

a first base plate vertically moved by the second elevating unit;

a second base plate slidably supported by the first base plate;

a horizontally driving unit for horizontally driving the second base plate; and

a second belt conveyer unit supported by the second base plate and arranged on a side of the sewing material relative to the first belt conveyer unit in parallel therewith, the second belt conveyer unit being rotationally driven by the rotary device.

5,361,962

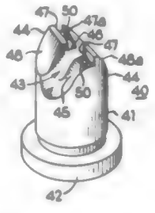
STITCHING MACHINE HEAD AND MAGNETIC WIRE HOLDER THEREFOR

Norman E. Andersen, 1431 Foxtail Dr. Unit 204, and Larry A. Sikora, 6006 Quaker Hill Rd., both of Racine, Wis. 53406

Filed Jul. 23, 1993, Ser. No. 97,089

Int. Cl.[5] B27F *7/23*

U.S. Cl. 227—90 **10 Claims**



1. A wire holder for use in holding a length of wire in a forming region of a stitching machine head for formation into a staple, said holder comprising:

a body having a cylindrical outer surface and a longitudinal axis and a forward end,

a slot formed diametrically across said forward end of said body for receiving a length of wire oriented substantially perpendicular to said axis,

first and second elongated substantially coplanar wire support surfaces on said forward end of said body each extending substantially perpendicular to said slot from said outer surface of said body to said slot,

two sloping cam surfaces respectively disposed on opposite sides of said slot and respectively extending between said slot and said first and second wire support surfaces,

two elongated cylindrical cavities formed in said body respectively on opposite sides of said slot and extending substantially parallel to said axis and respectively communicating with said first and second wire support surfaces,

each of said cavities being spaced from said slot and from said outer surface of said body and having a transverse cross section which does not extend substantially beyond the associated one of said wire support surfaces, and two cylindrical permanent magnets respectively disposed in said cavities and each having an end surface substantially coplanar with the associated one of said wire support surfaces for magnetically holding the associated length of wire thereon.

5,361,963

DISPENSER

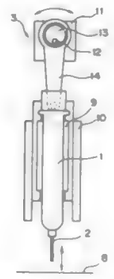
Kazushige Ozawa, and Hiromune Tanaka, both of Shizuoka, Japan, assignors to Tenryu Technics Co., Ltd., Shizuoka, Japan

Filed Sep. 24, 1993, Ser. No. 126,320

Claims priority, application Japan, Sep. 25, 1992, 4-255125

Int. Cl.[5] B05C *5/00;* **H05K** *3/34*

U.S. Cl. 228—33 **9 Claims**



1. A dispenser for applying a material onto an article comprising:

a syringe containing the material to be applied;

a needle formed to have a predetermined inner diameter and provided at a forward end of the syringe, the material being applied from a forward end of the needle onto the article, and

a driving mechanism which comprises:

a linear guide for upwardly and downwardly guiding a syringe holder holding said syringe;

a stepping motor rotatable by a predetermined angle in response to a pulse signal from outside;

a crank eccentrically fixed to a rotary shaft of the stepping motor; and

a connecting rod rotatably supported at one end thereof on said syringe holder and rotatably supported at the other end thereof on said crank,

said crank and said connecting rod being eccentrically rotated in an interlocking relation to rotation of the stepping motor when the motor is rotated, and thereby said syringe being upwardly and downwardly moved within a predetermined range through said connecting rod and said syringe holder.

5,361,964

SOLDERING APPARATUS AND METHOD

Ah T. Sim, Singapore, Singapore, assignor to Sun Industrial Coatings Private Limited, Singapore, Singapore

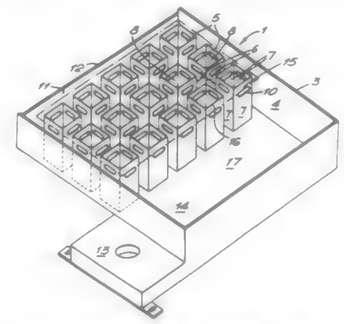
Filed Mar. 17, 1993, Ser. No. 32,482

Claims priority, application United Kingdom, Mar. 17, 1992, 9205844

Int. Cl.[5] B23K *3/06*

U.S. Cl. 228—56.2 **10 Claims**

1. Apparatus for applying solder to the leads of an electrical or electronic component, comprising a holder for holding a component during dipping of the leads thereof into solder, and vibratory means coupled to said holder for generating vibratory motion of said component, said vibratory motion being such that the component is moved at such a speed and to such an extent that solder bridging between adjacent leads is substantially prevented, wherein said vibratory means comprises a drive member arranged to rotate about an axis thereof and a driven member connected to the holder, the driven member being arranged for limited movement about said axis in response to contact between portions of said drive and driven members during rotation of said driven member.



5,361,965

SECONDARY COIL PLATE FOR LINEAR MOTOR AND PRODUCING METHOD OF THE SAME

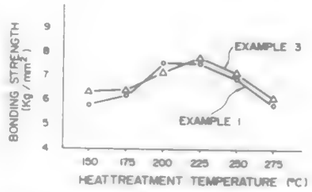
Yukimaro Tsukamoto, Konan; Yasuo Ido, Komaki; Susumu Tuzi, Kani, and Takashi Inaba, Kakamigahara, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Filed Oct. 19, 1993, Ser. No. 137,922

Claims priority, application Japan, Jan. 4, 1993, 5-000063

Int. Cl.[5] B23K *20/04*

U.S. Cl. 228—117 **3 Claims**



1. A secondary coil plate for a linear motor, which is a composite metal plate comprising a backing metal layer, an intermediate bond metal layer and a surface metal layer which are integrally connected, said intermediate bond metal layer being formed of aluminum or aluminum alloy, said surface metal layer being formed of copper or copper alloy having a thickness of 2 to 8 mm.

5,361,966

SOLDER-BONDED STRUCTURE

Masakata Kanbe, Komaki; Hitoshi Iwata, Hashima, and Kenichi Kinoshita, Kuwana, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aishi, Japan

Division of Ser. No. 852,311, Mar. 17, 1992. This application Dec. 16, 1992, Ser. No. 991,314

Int. Cl.[5] H01L *21/60*

U.S. Cl. 228—123.1 **5 Claims**

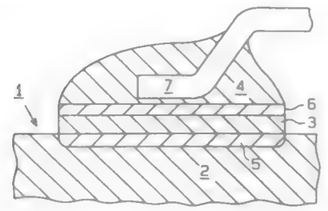
1. A method of fabricating a hybrid IC comprising the steps of:

providing a patterned screen mask on a substrate;

coating a paste comprised of silver on the masked substrate to form a circuit pattern;

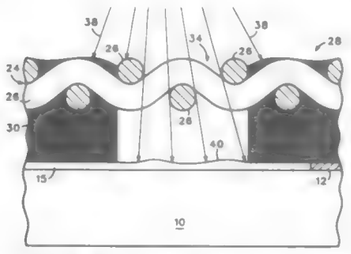
sintering the coated substrate to form a conductor layer on the substrate, there being a connection layer formed between the substrate and the conductor layer during the sintering step;

coating a tin and silver soldering cream on the sintered conductor layer;
placing an electronic part on the soldering cream; and



heating and cooling the resultant structure to form a solder layer that attaches the electronic part to the conductor layer.

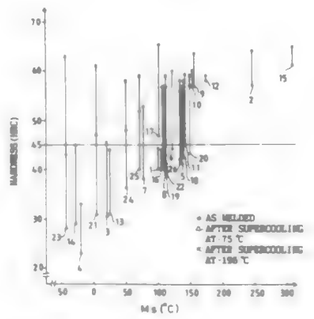
5,361,967
MONOLITHIC CIRCUIT FABRICATION METHOD
Michael J. Anderson, Phoenix; Howard D. Knuth, Tempe, and Wayne D. Pasco, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 10, 1993, Ser. No. 149,900
Int. Cl.[5] H01L *21/52*
U.S. Cl. 228—124.6 **21 Claims**



1. A method for fabricating a pattern on a substrate, said method comprising steps of:
obtaining a sheet-like material having a multiplicity of perforations therethrough;
blocking a first portion of said perforations to correspond to a negative of said pattern so that a second portion of said perforations corresponding to said pattern remains unblocked;
spacing said sheet-like material away from said substrate so that said substrate is prevented from contacting said sheet-like material proximate said second portion of said perforations; and
using a thin film deposition process to deposit a material on said substrate through said second portion of said perforations.

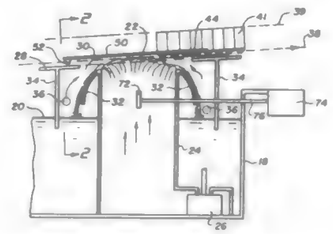
5,361,968
METHOD OF MANUFACTURING METALLIC PRESS DIE
Keizou Tanaka; Noboru Nishikawa, both of Sayama; Tsuyoshi Kawase, Yokohama, and Masami Watanabe, Takatsuki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 1, 1993, Ser. No. 70,716
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—160 **3 Claims**

1. A method of manufacturing a metallic press die having an edge portion or high pressure portion for processing a workpiece therewith, said method comprising the steps of:
overlaying a welding material to that portion of a base material for said metallic press die which forms said edge portion or high pressure portion, said welding material having a hardness after welding of HRC 45 or below;
machining an overlaid portion formed by the preceding step into a predetermined shape of said edge portion or high pressure portion; and



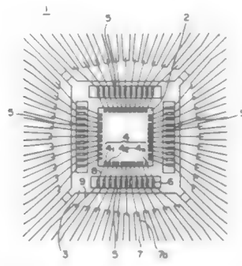
subjecting, after said machining step, said overlaid portion to a sub-zero treatment in the absence of a previous quenching step to increase a hardness of said overlaid portion.

5,361,969
GAS SHROUDED WAVE IMPROVEMENT
John H. Gileta, Chateauguay, Canada, assignor to Electrovert Ltd., LaPrairie, Canada
Continuation of Ser. No. 13,973, Feb. 4, 1993, Pat. No. 5,292,055, which is a continuation-in-part of Ser. No. 961,781, Oct. 15, 1992, Pat. No. 5,240,169, which is a continuation-in-part of Ser. No. 860,316, Mar. 30, 1992, Pat. No. 5,203,489, which is a continuation-in-part of Ser. No. 804,904, Dec. 6, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 164,130
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—180.1 **18 Claims**



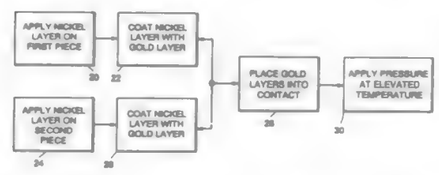
1. An apparatus for wave soldering an element comprising:
a solder reservoir adapted to contain molten solder at a solder level, and having at least one solder wave nozzle projecting therefrom;
pump means for forming a solder wave from the solder wave nozzle;
cover means for covering at least a portion of the solder reservoir, the cover means extending adjacent at least one side of the solder wave;
gas delivery means positioned on both sides of the solder wave nozzle above the solder level, to pass gas upwards on both sides of the solder wave and provide a gas blanket over the solder wave;
conveyor means for supporting the element and moving the element in a predetermined path over the cover means, ensuring at least a portion of the element passes through the solder wave, and
end shroud means over each end of the solder wave to direct gas from the gas delivery means to blanket side edges of the element during the passing of at least a portion of the element through the solder wave.

5,361,970
METHOD OF PRODUCING A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING TERMINAL MEMBERS PROVIDED BETWEEN SEMICONDUCTOR ELEMENT AND LEADS
Junichi Kasai; Michio Sono, and Tosiyuki Honda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Division of Ser. No. 889,954, May 29, 1992, Pat. No. 5,309,016. This application Jan. 28, 1994, Ser. No. 187,733
Claims priority, application Japan, May 30, 1991, 3-127908
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—180.5 **14 Claims**



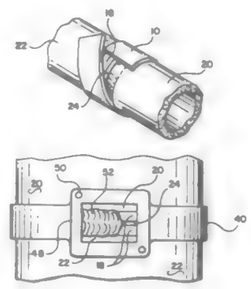
1. A method of producing a semiconductor integrated circuit device, said method comprising the steps of:
(a) bonding, by a first bonder having a first bonding precision, inner leads and electrically conductive patterns formed on terminal members formed on a lead frame stage on which a semiconductor element is formed; and
(b) bonding, by a second bonder having a second bonding precision different from said first precision, said electrically conductive patterns and pads formed on said semiconductor element.

5,361,971
INTERMEDIATE-TEMPERATURE DIFFUSION WELDING
Ronald L. Williams, San Marcos, and Joseph B. Tyra, Carlsbad, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 19, 1993, Ser. No. 6,117
Int. Cl.[5] B23K *35/28, 20/00*
U.S. Cl. 228—193 **8 Claims**



1. A method for joining two pieces together to form a single article, comprising the steps of
providing a gold-coated nickel bonding surface on a first piece to be bonded;
providing a gold-coated nickel bonding surface on a second piece to be bonded; and
pressing the two bonding surfaces together at a temperature of from about 125 C. to about 250 C. for a time sufficient to permit the bonding surfaces to interdiffuse.

5,361,972
PURGE STRAP FOR WELDING
Michael R. Barker, 4229 Barfield St., Concord, N.C. 28027
Filed Dec. 21, 1992, Ser. No. 994,111
Int. Cl.[5] B23K *9/16*
U.S. Cl. 228—219 **21 Claims**



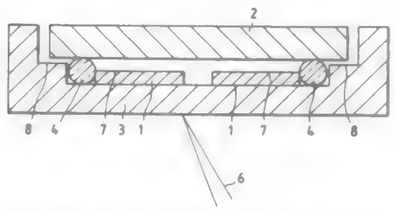
1. Inert gas shield purge strap apparatus comprising:
an elongated reinforcing member conformable to the cross-sectional shape of a pipe;
a high temperature protective coating encasing said reinforcing member; and
said inert gas shield purge strap apparatus being reusable and re-conformable to many shapes and sizes of pipe.

21. A method of welding two pipes end to end, comprising the following steps:
providing inert gas dams;
providing a high temperature-resistant purge strap;
providing a source of inert gas;
inserting dams into each pipe near the end to be welded;
placing a high temperature-resistant purge strap about the pipes covering the end of each so the weld gap is covered;
providing an aperture in the purge straps coverage of the weld gap;
pumping inert gas into the pipes between the dams and the weld strap and displacing air within the pipes with the inert gas;
laying a weld bead into the gap through the aperture in the weld strap; and
moving the purge strap around the circumference of the pipes exposing more of the weld gap while completing the weld.

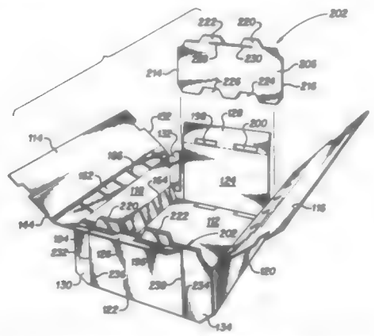
5,361,973
METHOD OF SOLDERING
Tadayoshi Ishii; Katsumi Yamada, and Kazuyuki Makita, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan
Filed May 11, 1993, Ser. No. 59,336
Claims priority, application Japan, May 12, 1992, 4-117807; Dec. 28, 1992, 4-347399
Int. Cl.[5] B23K *31/02, 35/14, 37/04*
U.S. Cl. 228—257 **8 Claims**

7. A method of soldering to join two members, comprising the steps of:
placing surfaces of said members to face each other;
disposing a solder between said members in an area of said surfaces to be joined such that said solder keeps the distance between said members larger than a minimum predetermined distance;
heating said solder to cause said solder to melt and permeate in said area; and

cooling said members and said molten solder after said molten solder permeates said area while supporting said members such that the distance between said members is not less than said minimum predetermined distance.



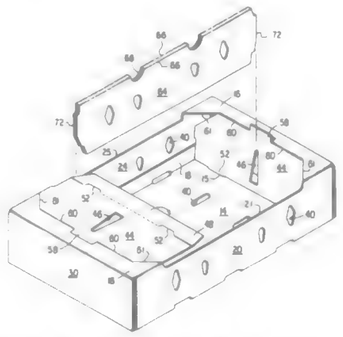
5,361,974
BOX CONSTRUCTION
Gary L. Earl, Hoquian, and William A. Goodwin, Longview, both of Wash., assignors to Anderson & Middleton Company, Hoquiam, Wash.
Filed May 27, 1993, Ser. No. 68,132
Int. Cl.[5] B65D *5/32*
U.S. Cl. 229—23 R **21 Claims**



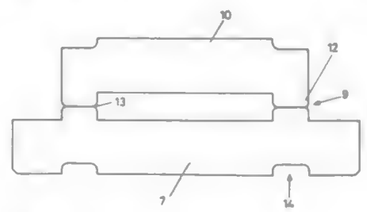
1. A box construction comprising an integral bottom panel, opposite side panels, opposite end panels and a pair of partial top panels, wherein said opposite end panels extend a full depth dimension of the box construction, and wherein each of said opposite end panels is provided with a minor flap portion at an upper end thereof, said minor flap portion adapted to be folded to a substantially horizontal orientation such that said minor flap portion will be engaged by a respective one of said partial top panels when the box is closed; and further wherein a reinforcing end panel is adhered to interior sides of each of said opposite end panels, each of said reinforcing end panels having an upper edge and at least one stacking projection extending from said upper edge.

5,361,975
STRAWBERRY TRAY
Daniel L. Droste, Fremont, and William F. Roozee, Covina, both of Calif., assignors to International Paper Company, Purchase, N.Y.
Filed Oct. 12, 1993, Ser. No. 134,452
Int. Cl.[5] B65D *5/48*
U.S. Cl. 229—120.34 **4 Claims**

1. A tray formed from a unitary blank of stiff, foldable and resilient sheet material, the tray having an interior, the tray having a horizontal bottom wall, two vertical side walls, two vertical plural ply end walls, and end wall abutment panels each spaced from a respective one of said plural ply end walls, each of said end wall abutment panels provided with an opening having two edges, an upper wall at each end of said tray to thereby define two longitudinally spaced upper walls, and a divider extending from one said end abutment panel to the other end wall abutment panel and dividing said tray interior into two portions, said divider including two divider panels integrally joined together along common edges, each of said divider panels having ends, said divider fashioned of stiff, foldable, and resilient sheet material, said divider panels having tongues at their ends which fit into respective said openings of said end abutment panels, the resiliency of said divider urging said divider tongues against respective said edges of said openings in said end wall abutment panels to produce slanted divider sides.



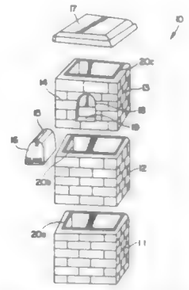
5,361,976
STACKABLE PACKAGE
Gregory T. Blomfield, Auckland, New Zealand, assignor to Printpac-Ueb Limited, Auckland, New Zealand
Continuation of Ser. No. 838,096, Feb. 20, 1992, Pat. No. 5,203,494. This application Apr. 16, 1993, Ser. No. 46,725
Claims priority, application New Zealand, Feb. 20, 1991, 237169
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] B65D *5/04*
U.S. Cl. 229—148 **14 Claims**



1. A stackable container comprising:
a carton formed from a single blank of a sheet material having,
a substantially rectangular base,
first and second end walls extending upwardly from said base,
two side walls extending upwardly from said base, and
two top flaps, each top flap being hinged from the top of one of said side walls to substantially close the carton in a closed position and each top flap being selectively engageable against the outer face of the respective side wall in an open position;
a first end wall reinforcing element engaging against said first end wall;
a second end wall reinforcing element engaging against said second end wall;

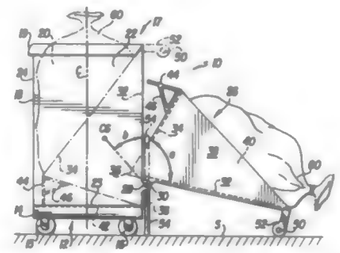
each end wall reinforcing element comprising a paper board of at least one corrugated ply having flutes and having at least a pair of outer plies and being formed from a blank having a first elongate region, a second elongate region shorter in length than said first elongate region so that each reinforcing element has end portions of one ply for minimizing the thickness of said end portions and maximizing the space within said container, at least two bridging regions connecting said elongate regions, and a cut out portion between said bridging regions, said blank being folded transversely through said bridging regions along fold lines substantially parallel to the elongate axis of said elongate regions to define at least two projections extending above said end walls, the flutes of the corrugations of said at least one corrugated ply extending substantially perpendicular to said base;
openings in said base adjacent each end wall reinforcing element and aligned with said at least two projections so that each opening indexes over a projection of an end wall reinforcing element of an adjacent carton in a stack of like stackable cartons; and
at least one aperture in each top flap corresponding to each of said at least two projections for receiving a respective one of said at least two projections upon closing of each top flap over each end wall reinforcing element;
so that said containers are stackable with said at least two projections of each end wall reinforcing element of one container engageable in said openings in said base of an adjacent container, and engageable in said at least one aperture in said top flaps in said closed position, and said top flaps strengthen the stack against racking when said containers are closed.

5,361,977
MODULAR MAILBOX HOUSING ASSEMBLY
Michael Ogrodnick, Jr., 5032 Waxhaw Indian Trail Rd., Matthews, N.C. 28105
Filed Aug. 31, 1993, Ser. No. 114,499
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—39 **7 Claims**



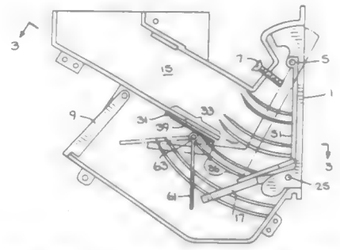
1. A modular mailbox housing assembly, comprising:
(a) at least one hollow unitary base module for being positioned on a supporting surface;
(b) a hollow unitary mailbox-holding module for being positioned on top of said at least one base module, said mailbox-holding module having an opening formed in a sidewall thereof of a size and shape to receive and enclose into the hollow area of the mailbox-holding module the top, bottom and closed end of a standard roadside mailbox with the door of the mailbox exposed on a sidewall of the mailbox-holding module for access by users;
(c) a cap positioned on top of the mailbox-holding module for enclosing the top of the mailbox housing assembly; and
(d) locking means for locking the at least one base module and the mailbox-holding module in vertical registration with each other.

5,361,978
WASTE RECEPTACLE
Thomas L. Monroe, 61 Ponderosa La., Palmyra, Va. 22963
Filed Jan. 19, 1993, Ser. No. 5,615
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—43.1 **18 Claims**



1. A waste receptacle for use with a trash receiving bag comprising:
a housing including at least one side wall forming a trash receiving space, said housing having an opening through which trash is deposited into said space; and
a trash receiving member pivotally secured to said housing along a pivot axis, said member having a trash receiving position in which said trash bag rests upon said member and a trash removal position, said member having first and second walls, the first wall forming an inclined bottom wall of said space and the second wall forming a side wall of said space in the trash receiving position, said second wall connected to said first wall at an acute angle, said first and second walls being arranged to pivot about said pivot axis so that said trash bag is displaced from the first wall so as to rest on said second wall during the pivoting of said member to the trash removal position, the inclination of the first wall being arranged such that the center of gravity of a filled trash bag is shifted toward said pivot axis and toward said second wall in the trash receiving position.

5,361,979
CHANGE RETURN PROTECTION DEVICE
Salvatore Anello, and Nathan Turk, both of Highland, N.Y., assignors to Sandt Technology, Ltd., Highland, N.Y.
Filed Nov. 25, 1992, Ser. No. 981,284
Int. Cl.[5] B65G *11/00*; G07F *3/00*
U.S. Cl. 232—57.5 **7 Claims**



1. A change return protection device for installation on the back side of a door to a coin return box of a coin-operated machine, said box having a top wall and a bottom wall which are joined by a first side wall and a second side wall and being connected to a coin return passage having a slotted lower wall comprising:
a blocking flap shaped to span the full width of said coin return passage and will not block the passage to prevent coins from falling past said blocking flap to be retrieved,

said blocking flap prevents the insertion of obstructing material into said coin return passage;

means for joining said blocking flap to said door;

a reinforcement plate comprising a single strip of metal having a slight obtuse angle between an upper region and a flat lower region wherein said upper region is secured to the back side of said door and said flat lower region is secured to said blocking flap.; and

a flat plate to block said slotted lower wall, said flat plate having a V-shaped notch with sharpened edges and being mounted in said coin return box so that said notch points away from said coin return door.

5,361,980

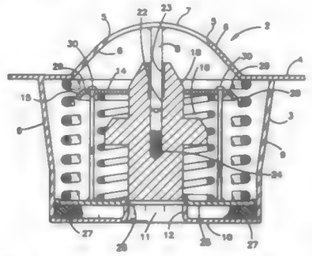
FAIL-SAFE THERMOSTAT VALVE

Fred Stout, 9828 Sunny La., Streetsboro, Ohio 44241

Filed Nov. 24, 1993, Ser. No. 157,834

Int. Cl.[5] F01P *7/16*

U.S. Cl. 236—34.5 **3 Claims**



1. A fail-safe thermostat valve including a frame having a valve seat and a base plate, a movable valve plate engageable with the valve seat, a first spring located between the base plate and the valve plate that urges the valve plate into engagement with the valve seat, an expansion member connected to the valve plate having a chamber, a piston located within the chamber of the expansion member and connected to the frame and a first thermal element located in the chamber that expands at a first threshold temperature to force the expansion member and connected valve plate to move relative to the piston and cause the valve plate to be forced away from the valve seat of the frame, wherein the improvement comprises:

(a) an elevated plate supporting the first spring;

(b) a second thermal element located between the elevated plate and the base plate of the frame, said second thermal element having a melting temperature above the first threshold temperature;

(c) a second spring located between the elevated plate and the valve seat of the frame; and

(d) at least one pin connected to the elevated plate and having a head located on the side of the valve plate opposite from the elevated plate, the head being positioned to pull the valve plate away from the valve seat when the second thermal element melts and allows the elevated plate to be pushed by the second spring away from the valve seat.

5,361,981

AIR CONDITIONING UNIT

David J. Albert, Evanston, and John Spencer, Zion, both of Ill., assignors to Heat Exchangers, Inc., Skokie, Ill.

Filed Apr. 21, 1993, Ser. No. 51,021

Int. Cl.[5] F24F *11/06*

U.S. Cl. 236—42 **24 Claims**

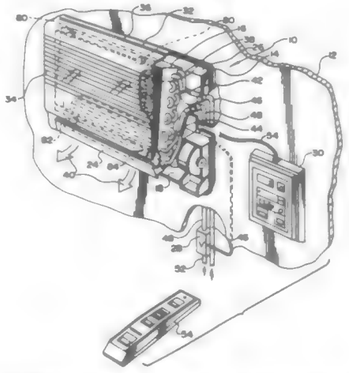
1. An air conditioning unit designed for use with a central thermal unit supply system for conditioning air in a space, wherein thermal units are conveyed from the central thermal unit supply system to said air conditioning unit by a heat transfer fluid, said air conditioning unit comprising,

a wall mounting means, said wall mounting means including at least one first engaging means,

means for securing said wall mounting means on a wall,

at least two conduits extending from said central thermal unit supply system for supplying the heat transfer fluid at said wall mounting means,

a heat exchange unit, said heat exchange unit including at least one second engaging means, such that said at least one first engaging means may be engaged with said at least one second engaging means to support said heat exchanging unit on said wall mounting means, after said wall mounting means is secured on the wall



a heat transfer fluid coil, said heat transfer fluid coil being connected to said at least two conduits,

an air moving assembly for causing air to pass through said heat transfer fluid coil, such that thermal units may be transferred from said heat transfer fluid to the air through said heat transfer fluid coil,

temperature control means responsive to the temperature of the air in the space being conditioned to regulate the transfer of thermal units between said heat transfer coil and the air.

5,361,982

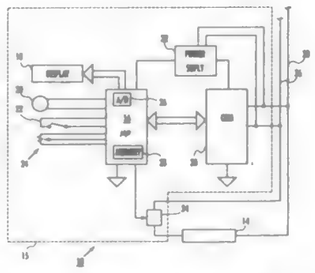
TEMPERATURE CONTROL SYSTEM HAVING CENTRAL CONTROL FOR THERMOSTATS

Ronald J. Liebl, Mukwonago, and Paul W. Madans, Oak Creek, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jul. 12, 1993, Ser. No. 90,405

Int. Cl.[5] F23N *5/20*

U.S. Cl. 236—46 R **22 Claims**



1. A temperature control system for multiple zone temperature control in a building, where each zone is associated with at least one energy transferring unit, the system comprising:

a plurality of thermostats each coupled to a respective energy transferring unit, each thermostat including;

a zone temperature setpoint storage device,

a temperature sensor located in the respective zone and configured to produce a zone temperature signal representative of the temperature in the respective zone,

a thermostat communications interface,

a control signal output, and

a thermostat processor operatively coupled to the storage device, and the sensor, where the processor is configured to compare the value of the zone temperature signal with a zone temperature setpoint value stored in the storage device and output a control signal representative of the comparison, the control signal being output at the control signal output;

a plurality of control circuits each coupled between one of the control signal outputs and the respective energy transferring unit, and configured to control the state of the respective energy transferring unit based upon the respective control signal; and

a central control unit including;

a central storage device configured to store temperature setpoint values in reference to time values,

a user interface operatively coupled to the storage device and configured to permit a user to modify the temperature setpoint and time values,

a central control communications interface coupled to the thermostat communications interface,

a control processor coupled to the central storage device and the central control communications interface, where,

the processor is configured to produce a current time of day value and selectively apply the temperature setpoint values, referenced to the time value equal to the current time of day value, to the control communications interface, and

the central control communications interface is configured to transmit setpoint signals representative of the temperature setpoint values to the thermostats;

the thermostats storing zone temperature setpoint values representative of the setpoint signals in their respective zone temperature setpoint storage devices, where each thermostat processor subsequently compares the value of the temperature signals with the zone temperature setpoint values stored in the respective of the comparison, to the respective control outputs; and

wherein the thermostat and central control communication interfaces are power line communication interfaces which are coupled via power conductors in the building.

5,361,983

METHOD OF MAXIMIZING THE EFFICIENCY OF AN ENVIRONMENTAL CONTROL SYSTEM INCLUDING A PROGRAMMABLE THERMOSTAT

Douglas D. Bird, Dayton, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Sep. 28, 1993, Ser. No. 127,669

Int. Cl.[5] F23N *5/20*

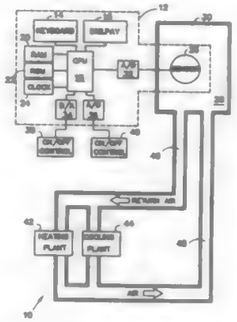
U.S. Cl. 236—46 R **10 Claims**

1. The process by which a programmable thermostat of an environmental control system having a mode of operation for controlling the temperature of an area defined by a structure having a thermal mass and a variable external environment conserves energy, said thermostat having an occupied set point temperature and an occupied set point time, the time at which the occupied set point temperature becomes effective, and an unoccupied set point temperature and an unoccupied set point time, the time at which the unoccupied set point temperature becomes effective; comprising the steps of:

a) determining if the next set point temperature is an unoccupied set point temperature;

b) when step a is true, advancing the unoccupied set point time by an amount Δt, where Δt is a function of the thermal mass of the structure defining said area, and the structure's external environment;

c) calculating a value for Δt each time step b, is executed by determining the time it takes for the temperature of the area defined by the structure to change from the occupied set point temperature to a temperature a given number of degrees closer to the unoccupied set point temperature;



d) using the value of Δt calculated in step c, the next time the process is executed; and

e) periodically repeating steps a through d.

5,361,984

DEVICE FOR SELECTIVE CLIMATE CONTROL IN VEHICLE CABINS

Claes Annerstedt, Askim; Per Frid, Malmo; Bengt Johansson, and Thomas Sahlmen, both of Goteborg, all of Sweden, assignors to AB Volvo, Sweden

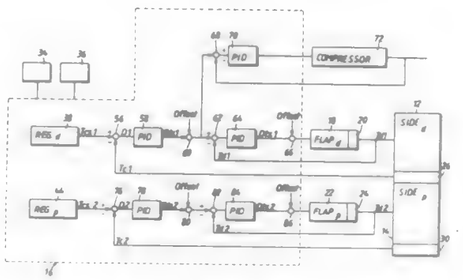
PCT No. PCT/SE91/00493, § 371 Date Mar. 26, 1993, § 102(e) Date Mar. 26, 1993, PCT Pub. No. WO92/01580, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 15, 1991, Ser. No. 966,173

Claims priority, application Sweden, Jul. 26, 1990, 9002506-5

Int. Cl.[5] G05D *23/00*

U.S. Cl. 236—49.3 **9 Claims**



1. A device for selective climate control in vehicle cabins, comprising

a first air-vent duct in a first zone of a vehicle cabin and a second air-vent duct in a second zone of the vehicle cabin;

a first temperature sensor to emit a first duct temperature signal (Td1) corresponding to the temperature in the first air-vent;

a second temperature sensor to emit a second duct temperature signal (Td2) corresponding to the temperature in the second air-vent duct;

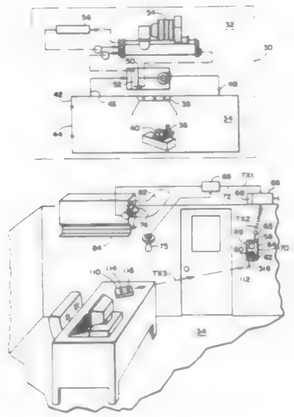
a single air supply means for supplying air to both the first and second air-vent ducts;

first adjustment means for adjustment of a first desired temperature for the first zone;

second adjustment means for adjustment of a second desired temperature for the second zone;

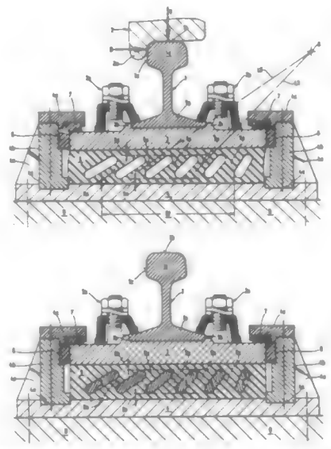
a first feedback inner control circuit for temperature control with help of the first duct;
a first feedback outer control circuit, which has a first main forward connection path, for determining a first desired temperature signal (Tds1) which constitutes a first input signal to the first feedback inner control circuit,
said first feedback inner control circuit being arranged in the first main forward connection path;
a second feedback inner control circuit for temperature control with help of the second duct;
a second feedback outer control circuit, which has a second main forward connection path, for determining a second desired temperature signal (Tds2) which constitutes a second additive input signal to the second feedback inner control circuit,
said second feedback inner control circuit being arranged in the second main forward connection path;
said first adjustment means being connected to said first outer control circuit for generating a first set temperature signal (Tcs1); and
said second adjustment means being connected to said second outer control circuit for generating a second set temperature signal (Tcs2).

5,361,985
SETUP TOOL FOR A WIRELESS COMMUNICATIONS SYSTEM
Alan D. Rein, Shoreview, Minn., and David M. Foye, La Crosse, Wis., assignors to American Standard Inc., New York, N.Y.
Division of Ser. No. 770,055, Oct. 1, 1991. This application May 20, 1993, Ser. No. 64,325
Int. Cl.[5] F24F *7/00*
U.S. Cl. 236—49.3 **40 Claims**



1. A hierarchical control system comprising:
a first central receiver;
a first communications medium operably connecting the first central receiver to at least one controller;
a controller operably connected to the first central receiver by the first communications medium;
first means for sensing conditions;
a second communication medium;
means for transmitting the sensed conditions from the first sensing means to the first central receiver via the second communications medium, the first central receiver including means for receiving transmissions on the second communications medium and means for retransmitting the transmissions on the first communications medium; and
a setup tool for providing programming instructions for the controller, and means for transmitting the programming instructions to the central receiver on the second communications medium.

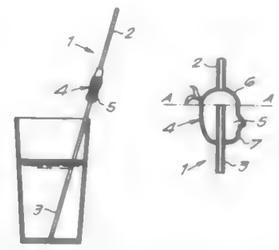
5,361,986
ARRANGEMENT FOR LAYING RAIL
Peter Meier, Sevelen, Switzerland; Klaus Wechselberger, Feldkirch, Austria, and Ralf Ludwig, Sennwald, Switzerland, assignors to Hilti Aktiengesellschaft, Furstentum Liechtenstein, Germany
Filed May 25, 1993, Ser. No. 67,458
Claims priority, application Germany, Jun. 13, 1992, 4219472
Int. Cl.[5] E01B *9/00*
U.S. Cl. 238—283 **11 Claims**



1. An arrangement for laying a rail in a railroad track used for supporting railway cars, the railroad track having a generally horizontal plane over which the railway cars travel, comprising a rail (1) having a long axis, a rail flange (1*a*) forming a rail base and a rail head (1*b*) spaced upwardly from the rail flange, said rail extending generally horizontally, a generally horizontally arranged bearing member (4) for bearing on a sub-soil base, a generally horizontally arranged elastic support member (5, 9) located between said bearing member (4) and said rail flange (1*a*) wherein the improvement comprises that said elastic support member (5,9) includes at least two generally upwardly extending laterally spaced elements each inclined at a different angle to the railroad track plane, extensions of said elements extend to a common intersection (S), and the angles of said elements being different in a plane perpendicular to the long axis of said rail of the railroad track plane and the common intersection (S) located above the rail flange on an outer side of the railroad track.

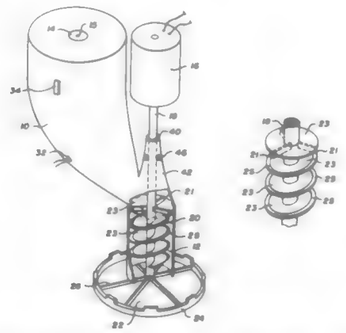
5,361,987
STRAW
Koen Matheussen, Pas 198; Peter Hendrickx, Retiesweg 39; Koen Belmans, Possonsdries 7, and Luc de Bal, Dr. Van de Perrestraat 46, all of 2440 Geel,
Filed Sep. 8, 1993, Ser. No. 118,130
Claims priority, application Belgium, Sep. 11, 1992, 09200799
Int. Cl.[5] A47G *21/18*
U.S. Cl. 239—33 **5 Claims**

1. A straw comprising:
a hollow upper part including first and second ends;
a hollow lower part including first and second ends; and
an enlargement positioned between said hollow upper and lower parts, said enlargement including a top, a bottom and an outer wall interconnecting said top and bottom, said top, bottom and outer wall collectively defining an enclosure, the first end of said hollow lower part extending into said enclosure through said bottom and having an uppermost portion terminating within said enclosure below said top thereby defining, within said enclosure, a space bordered by the first end of said hollow lower part, the outer wall of said enlargement and the bottom of said enlargement, the second end of said hollow upper part being attached to and opening into said enclosure above



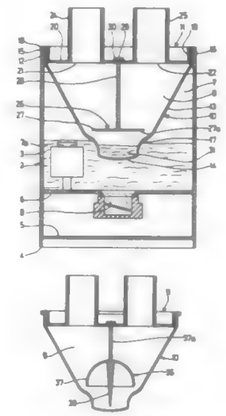
said space such that when the second end of said hollow lower part is placed in a beverage container and a suction force is applied to the first end of said hollow upper part, a beverage from the container will be drawn into the second end of said hollow lower part, fill the enclosure and flow through the hollow upper part and, when the suction force is removed, the space defined within the enclosure will retain some of the beverage.

5,361,988
VEHICLE MOUNTED PARTICULATE MATERIAL SPREADER
Donald F. Nelson, 305 - 4311 - 73rd Street N.W., Calgary, Alberta, Canada T3B 2M2
Filed Nov. 8, 1993, Ser. No. 148,221
Int. Cl.[5] E01C *19/20*
U.S. Cl. 239—71 **6 Claims**



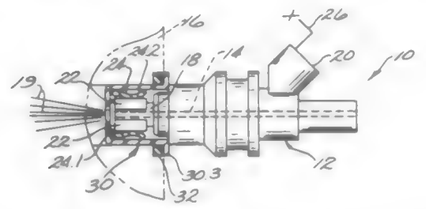
1. A spreader to be mounted on a vehicle and comprising:
a container to hold a particulate material and having an outlet for the particulate material;
means to disperse the particulate material from the outlet;
an electric motor adjacent the container;
a drive shaft extending from the electric motor to the outlet;
a screw conveyor on said drive shaft to force particulate material from the outlet when the shaft rotates, said screw conveyor comprising a plurality of inclined circular bodies mounted on the shaft, at least an upper circular body being less inclined then the remaining circular bodies to act as a seal for the outlet when the shaft does not rotate, said circular bodies having flexible peripheries to facilitate sealing;
at least one flap extending from one circular body to act to seal said conveyor when said shaft does not rotate; and
means to warn when the level of particulate material in the container is too low.

5,361,989
DEVICE FOR GENERATING A MIST FROM A LIQUID, ESPECIALLY A MEDICATION
Serge Merchat; Jose Teixeira, both of Grenoble, and Gérard Cinquin, Villeneuve-sur-Lot, all of France, assignors to D.P. Medical, Meylan, France
Filed Oct. 12, 1993, Ser. No. 134,733
Int. Cl.[5] B05B *17/06*
U.S. Cl. 239—102.2 **15 Claims**



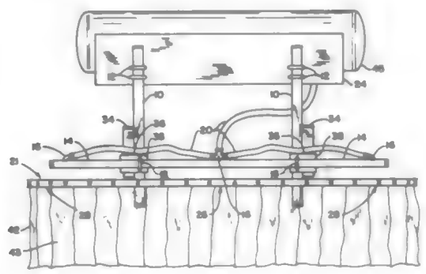
1. Device for generating a mist from a liquid comprising
a chamber for receiving the liquid and having a bottom wall, a side wall and a top wall provided with at least one mist outlet orifice,
a vibrating member which is located a distance below said bottom wall of said chamber and emits a vibration towards the bottom wall of said chamber for generating a jet at a surface of the liquid,
said side wall of said chamber having a narrower lower part surrounding said bottom wall
a deflector disposed in said chamber at a distance from said at least one mist outlet orifice,
means for connecting said deflector to said top wall of the chamber, said deflector being at a level or distance below said top wall of said chamber and having an underside at a distance above and covering substantially the bottom wall of said chamber, at least part of a edge of said deflector being at a small distance from said narrower lower part of said side wall of said chamber,
whereby the jet formed at the surface of the liquid impinges on an underside of said deflector so that there is virtually no splashing of liquid droplets above the level of said deflector towards said top wall, said at least one mist outlet orifice or the part of said side wall located above said narrower lower part thereof and that the mist formed passes between the edge of said deflector and said side wall towards an upper space of said chamber situated over said deflector before being evacuated through said at least one mist outlet orifice, therefore small quantities of liquid can be virtually completely converted into mist.

5,361,990
FUEL INJECTOR HEATER
Daniel R. Pimentel, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 20, 1991, Ser. No. 810,996
Int. Cl.[5] B05B *1/24*
U.S. Cl. 239—133 17 Claims



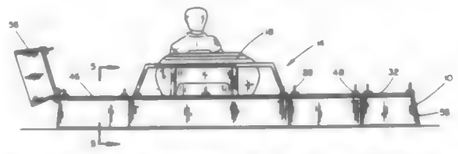
1. A fuel injector system comprising a fuel injector having a nozzle tip of a generally cylindrical outer configuration and having a passage for furnishing a spray of fuel to an internal combustion engine through the nozzle tip, a plurality of self-regulating electrical resistance heater elements of positive temperature coefficient of resistivity each having a configuration to conform to a segment of the outer configuration of the nozzle tip, the elements being secured at the distal end of the nozzle tip in spaced relation to each other conforming to sides of the generally cylindrical nozzle tip to substantially completely surround the nozzle tip, means securing the heater elements to respective segments of the outer configuration of the nozzle tip to cooperate in surrounding the fuel injector passage, and means for electrically connecting the heater elements to a power source in parallel relation to each other to energize the elements to heat the fuel injector nozzle tip around the passage to heat the fuel in the passage at the nozzle tip.

5,361,991
SPRAY UNIT WITH ANTI-DRIFT SHIELD
Walter Baran, Jr., Fayetteville, N.Y., assignor to Margaret O. Baran, Fayetteville, N.Y., Executrix of the Estate of Walter Baran, Jr.
Filed Sep. 14, 1993, Ser. No. 120,978
Int. Cl.[5] B05B *1/20*
U.S. Cl. 239—165 10 Claims



1. A mobile spray unit for connection to a frame member on a motive assembly to move the unit over ground to be sprayed, comprising:
a pair of horizontally spaced vertical support members connectable to said frame member in a manner such that the supports can be vertically adjusted relative to the frame member;
a horizontally extending spray boom secured to and supported by said vertical support members;
a plurality of spray nozzles distributed along said boom and oriented to direct their spray downwardly;
flexible conduit means adapted to convey fluid to said nozzles;
shroud means providing a flexible curtain laterally surrounding the spray from the nozzles to confine the spray within the enclosure provided by the curtain, said shroud means including
a horizontally disposed peripheral tubular frame having a central section and laterally adjustable U-shaped end sections,
the central section including a pair of horizontal, coplanar, laterally spaced parallel tubular members rigidly interconnected by a pair of transverse assemblies extending below the spray boom,
each of said transverse assemblies having secured thereto a vertically extending member positioned adjacent a different one of the vertical support members,
means interconnecting these adjacent members, including a bracket fastened to the vertical support member and connected to the adjacent vertically extending member in a manner permitting vertical adjustment thereof, thereby providing for vertical adjustment of the peripheral frame relative to the spray nozzles,
the end sections of the peripheral frame being interconnected with the central section permitting lateral adjustment therebetween,
means securing these sections in their laterally adjusted positions, and
a flexible curtain supported by and hanging down from said peripheral frame throughout the extent of said frame to thereby laterally enclose the spray from the spray nozzles.

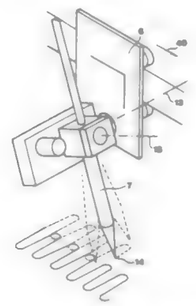
5,361,992
DRIFT CONTROL ENCLOSURE FOR AN AGRICULTURAL SPRAYER
Craig G. Broyhill, Box 68, Dakota City, Nebr. 68731-0068
Continuation of Ser. No. 983,879, Dec. 1, 1992, Pat. No. 5,310,116. This application Nov. 18, 1993, Ser. No. 154,758
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] B05B *1/28, 15/04;* A01G *25/09*
U.S. Cl. 239—172 1 Claim



1. A drift control enclosure for an elongated spray boom having a plurality of spray nozzles mounted thereon which are spaced above the ground and which are adapted to spray liquid chemicals or the like downwardly therefrom towards the ground, the spray boom having rearward and forward ends, comprising,
a plurality of elongated flexible filaments extending downwardly from said spray bar towards the ground in an enclosure fashion so as to enclose the spray nozzles and the spray pattern thereof to prevent spray drift,
said flexible filaments being arranged in an elongated strip which includes a front portion positioned forwardly of said spray boom, a rear portion which is spaced rearwardly of said front portion and which is positioned rearwardly of said spray bar, and end portions which extend around the ends of said spray bar,
said front portion of said elongated strip extending downwardly and forwardly relative to said spray boom,

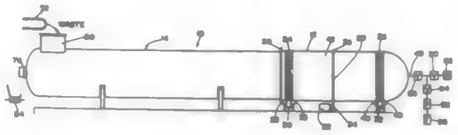
the angle at which said first portion extends forwardly being adjustable,
and a filament stiffener plate positioned rearwardly of the upper ends of said filaments in said front portion of said elongated strip.

5,361,993
DEVICE FOR MATERIAL REMOVING PROCESSING OF A MATERIAL LAYER
Carl-Gustaf Andersson, Slättgrind, Sweden, assignor to Aquajet Systems AB, Gällö, Sweden
PCT No. PCT/SE91/00549, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/03269, PCT Pub. Date Mar. 5, 1992
Continuation of Ser. No. 30,017, Mar. 22, 1993, abandoned. This PCT application Aug. 21, 1991, Ser. No. 162,786
Claims priority, application Sweden, Aug. 24, 1990, 9002724
Int. Cl.[5] B28D *1/22;* E01C *23/12;* E21C *25/60;* B05B *3/14*
U.S. Cl. 239—752 20 Claims



1. A device for material removing processing of a material layer, in particular a concrete layer, said device comprising a carrier (1), a guide (5) arranged on the carrier, a carriage (6) movable to and fro along the guide and carrying a jet tube (7) for directing a high pressure fluid jet towards the material layer, a source for supplying high pressure fluid to the jet tube, at least one first driving means (10) for driving the carrier in a direction making an angle with the guide, at least one second driving means (11) for driving the carriage along the guide, at least one third driving means (12) for pivoting the jet tube about an axis (13) making an angle with the longitudinal direction of the guide between extreme positions in which a nozzle (14) on the jet tube is directed obliquely either in, or opposed to, the direction of movement of the carriage (6), and a control unit (16) arranged to control each of the driving means and, when the carriage has reached an end position along the guide, to control the at least one third driving means (12) to pivot the jet tube (7) selectively between first and second extreme positions, such that the nozzle thereof is directed with substantially the same angle of inclination with respect to the longitudinal direction of the guide when the carriage moves in each of its two directions of movement along the guide, characterized in that the control unit (16) includes means for controlling the at least one third driving means (12) substantially simultaneously as the carriage (6) is stopped in a first end position to initiate pivoting of the jet tube (7) with an angular velocity leading to a velocity of the nozzle (14) along the guide (5) being substantially equal to the velocity of the carriage along the guide, said control unit (16) further including means for controlling the at least one second driving means to initiate carriage movement towards a second end position substantially simultaneously as the pivoting of the jet tube to one of said extreme positions by said at least one third driving means is terminated.

5,361,994
APPARATUS AND METHOD FOR PREPARATION FOR SEPARATION, RECOVERY, AND RECYCLING OF MUNICIPAL SOLID WASTE AND THE LIKE
Clifford C. Holloway, 2121 E. Lakeshore, Baton Rouge, La. 70808
Continuation-in-part of Ser. No. 692,550, Apr. 29, 1991, Pat. No. 5,190,226. This application Feb. 25, 1993, Ser. No. 23,051
Int. Cl.[5] B02C *23/24*
U.S. Cl. 241—23 18 Claims

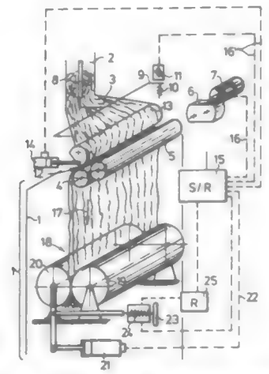


1. A method of processing waste materials for recycling thereof comprising:
introducing a predetermined quantity of waste materials into a process vessel;
pressurizing and heating said waste materials to a predetermined pressure and temperature for a processing period lasting a predetermined period of time, said waste materials being continuously fed into said heated and pressurized process vessel for processing thereof;
applying a first extruding action to said waste materials while subjecting said waste material to said predetermined pressure and temperature, said extruding action applying a shearing force to said waste materials, applying a second extruding action to said waste materials while subjecting said waste materials to said predetermined pressure and temperature, said extruding action and simultaneously applying a second shearing force to said waste materials;
recovering said mixed waste materials from said process vessel for classification; and
separating and recovering the recyclable materials from classified materials.

5,361,995
AUTOMATIC PRODUCT FEED AND METHOD FOR CONTROLLING A MILLING ROLLER MILL
Rene Hostettler, Sirnach, and Ernst Maechler, Uzwil, both of Switzerland, assignors to Buehler AG, Uzwil, Switzerland
PCT No. PCT/CH91/00248, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO92/10295, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 5, 1991, Ser. No. 910,187
Claims priority, application Switzerland, Dec. 12, 1990, 3931/90
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—29 23 Claims

1. In a method for controlling the grinding of an 8-roll roller mill, said roller mill being divided in two halves, each with two roll pairs arranged one above the other, each half having a mechanical sensor for sensing the product feed in that half, the roller mill having adjusting devices and engaging and disengaging arrangements for each pair of grinding rolls and a product feed to the grinding rolls which is regulated using the mechanical product feed sensor, the improvement comprising the steps of:
generating an analog signal using the mechanical sensor, the analog signal being proportional to product flow in the mill;

regulating the product feed independently on each side using the analog signal; and,



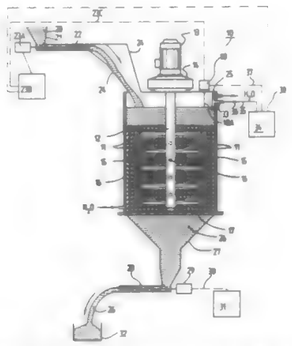
generating an independently adjustable digital signal on each side for controlling the engagement and disengagement of the two pairs of grinding rolls.

5,361,996

METHOD AND ARRANGEMENT FOR FINELY-GRINDING MINERALS

U. Krister Svensson, and Conny L. Rehnvall, both of Sala, Sweden, assignors to Sala International AB, Sala, Sweden

Filed Dec. 17, 1992, Ser. No. 992,071
Claims priority, application Sweden, Dec. 20, 1991, 9103781-2
Int. Cl.[5] B02C *17/16*
U.S. Cl. 241—30 **20 Claims**



1. A method for finely grinding minerals and similar materials in an essentially dry state to particle sizes appropriate for use as a filler, said method comprising:

providing a mill, the mill comprising a cavity for grinding materials therein;

closing the grinding cavity from air surrounding the mill by providing walls enclosing the cavity, said walls being configured to prevent flow of surrounding air through the grinding cavity;

providing means for providing a vacuum and reducing pressure within the closed grinding cavity;

carrying out at least a portion of the fine grinding process in the closed grinding cavity of the mill;

preventing flow of surrounding air through the grinding cavity during said at least a portion of the fine grinding process;

providing a vacuum and reducing a pressure within the closed grinding cavity of the mill to a pressure less than a prevailing ambient pressure during at least said portion of the fine grinding process to reduce clumping of materials during at least said portion of the fine grinding process; and

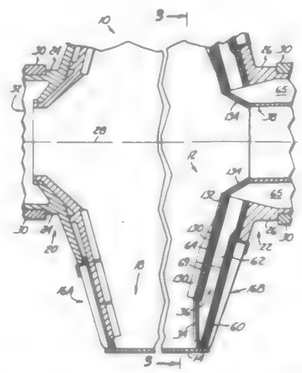
reducing clumping of materials during at least said portion of the fine grinding process by said reducing of pressure within the closed grinding cavity.

5,361,997

DISCHARGE ASSEMBLY FOR GRINDING MILLS

Daniel O. Barkes, Hibbing, Minn., assignor to Industrial Rubber Applicators, Inc., Hibbing, Minn.

Filed Apr. 7, 1993, Ser. No. 44,145
Int. Cl.[5] B02C *17/18*
U.S. Cl. 241—70 **14 Claims**



1. A discharge assembly for use in a mill rotating about a longitudinal axis, the discharge assembly being mounted inside the mill on a mill shell at a discharge end of the mill, the discharge assembly comprising:

a first plurality of ring sections forming a ring assembly covering the mill shell at the discharge end, wherein each ring section has a first end and a second end with a first surface supported on the mill shell and a second surface forming a radially extending discharge passageway, and wherein each ring section connects to an adjacent ring section to form a lapped joint therebetween from the first end to the second end, the lapped joint having a layer of compressible material for sealing the discharge passageway from the mill shell.

5,361,998

PLANT FOR TREATING DRILL CUTTINGS

Gunnar Sirevag, Nokkveien 27, 4300 Sandnes, and Jon-Arne Seeland, Ovrevollveien 4B, 1342 Jar, both of Norway

PCT No. PCT/NO/91/0144, § 371 Date Sep. 14, 1993, § 102(e) Date Sep. 14, 1993, PCT Pub. No. WO92/09379, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 20, 1991, Ser. No. 66,027
Claims priority, application Norway, Nov. 28, 1990, 905157
Int. Cl.[5] B02C *23/12*
U.S. Cl. 241—79.1 **21 Claims**

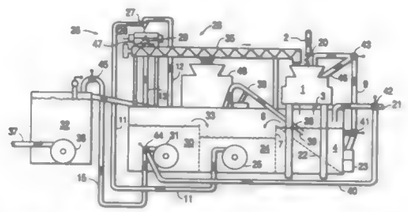
1. Apparatus for treating waste material from drilling operations comprising:

1) a crushing device having a first input port for receiving materials having a relatively high proportion of solids and a second input port for receiving materials having a relatively high proportion of fluid as compared to said first input port, said crushing device further having an outlet port,

2) said crushing device having rotor blades positioned adjacent said first input port for crushing said solids in said waste materials,

3) a mixing chamber having an input port position to receive the crushed solids and fluid from the output port of said crushing device,

4) at least one additional chamber positioned to receive overflow of fluid and solid particles dispersed therein from said mixing chamber,



5) at least one feedback device connected between said mixing chamber and said crushing device, and

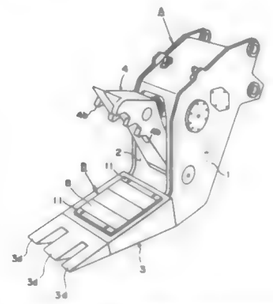
6) at least one injecting device in fluid communication with said additional chamber and arranged to inject said liquid and solid particles dispersed therein from said additional chamber into a subterranean formation.

5,361,999

CRUSHER HAVING A STATIONARY JAW BODY AND A MOVABLE JAW BODY

Seiichi Sakato; Yukio Yamashita; Chikai Fujitaka; Kunihiko Matsui; Isamu Nagayoshi; Tadahiko Nagase; Hiroo Koyanagi, and Yuuji Nagasawa, all of Chiba, Japan, assignors to Kabushiki Kaisha Sakato Kosakusho, Chiba, Japan

Filed Jun. 9, 1993, Ser. No. 74,433
Claims priority, application Japan, Jul. 7, 1992, 4-201876
Int. Cl.[5] B02C *1/04, 1/10*
U.S. Cl. 241—101.7 **16 Claims**



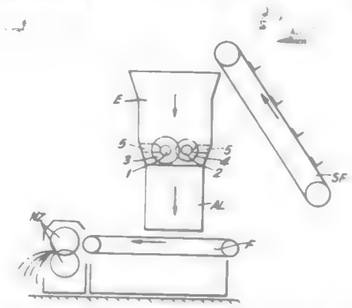
1. A crusher, comprising a stationary jaw body and a movable jaw body disposed at a distal end of an operating boom of a construction vehicle so as to break crushed masses of stone through an opening and closing operation of the movable jaw body with respect to the stationary jaw body; and an auxiliary member disposed on said stationary jaw body in face-to-face relation with said movable jaw body, wherein a surface of said auxiliary member opposing said movable jaw body is formed with a flat surface, said auxiliary member being detachably disposed with respect to said stationary jaw body, and wherein said auxiliary member includes a plurality of flat members arranged in a row on said stationary jaw body.

5,362,000

PRE-COMMINUTING AND METERING APPARATUS FOR PAPER SHREDDERS

Hermann Schwelling, Hartmannweg 5, Salem D-88682, Germany

Filed Oct. 26, 1993, Ser. No. 143,482
Claims priority, application Germany, Oct. 27, 1992, 4236121
Int. Cl.[5] B02C *18/40, 18/06*
U.S. Cl. 241—159 **8 Claims**



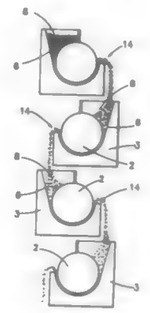
1. A pre-comminuting and metering apparatus for shredding paper and similar waste materials, the apparatus comprising a hopper having a bottom, at least one pair of cutting rollers arranged at the bottom of the hopper, means for driving the cutting rollers in opposite directions of rotation, a plurality of knife disks being mounted on the cutting rollers, each knife disk having at least one tooth, each knife disk having an inclined circumferential surface, each circumferential surface defining an outermost circumferential edge, the knife disks of the two cutting rollers being arranged in pairs, wherein the outermost circumferential edges of each pair of disks are in contact with each other, the pairs of disks being arranged spaced apart from each other in axial direction of the cutting rollers, wherein the undercut portions of the knife disks of one cutting roller have a height which is different from the height of the undercut portions of the knife disks on the other of the cutting rollers.

5,362,001

APPARATUS FOR PULVERIZING RUBBER SCRAP

Hans J. Gohlisch, Hanover, Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Germany

Filed Apr. 23, 1993, Ser. No. 52,336
Claims priority, application Germany, Apr. 25, 1992, 4213607
Int. Cl.[5] B02C *4/34*
U.S. Cl. 241—160 **11 Claims**



1. Apparatus for pulverizing rubber scrap comprising a plurality of units, each of said units comprising:

a shell having therein an upwardly facing recess in the form of a hollow cylinder segment, said recess having a cylindrical surface,

a rotatable cylinder having a cylindrical circumferential outer surface, said cylinder dipping into said recess in said shell to form a gap between said cylindrical circumferential outer surface of said cylinder and said cylindrical surface of said recess,

rubber scrap feeding means comprising a hopper space between an upwardly extending surface of said shell and said circumferential outer surface of said cylinder for feeding rubber scrap into said gap,

means for driving said cylinder reactionally in said recess to pulverize said rubber scrap in said gap,

means for discharging pulverized rubber scrap from said recess in said shell,

a first frame supporting shells of said plurality of said units one above another,

a second frame supporting cylinders of a like plurality of said units in said shells,

with said rubber scrap feeding means of each of said units, except the uppermost unit, positioned to receive pulverized rubber scrap from a superposed unit, and

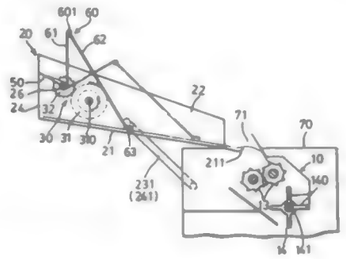
means for supporting said shells for movement at least vertically relative to one another.

5,362,002

PAPER SHREDDER WITH AUTOMATIC PAPER FEEDING DEVICE

Shao-Nong Tsai, 4F, No.208, Sec.1, Wen-Hua Rd., Yung-Ho City, Taiwan, Prov. of China

Filed Jan. 10, 1994, Ser. No. 179,062
Int. Cl.[5] B02C *1/08, 23/02*
U.S. Cl. 241—222 **7 Claims**



1. A paper shredder including a casing and a shredding roller assembly provided in said casing, said shredding roller assembly including a pair of rotatable shredding rollers and a motor driving unit connected to and driving rotatably said shredding rollers, wherein the improvement comprises:

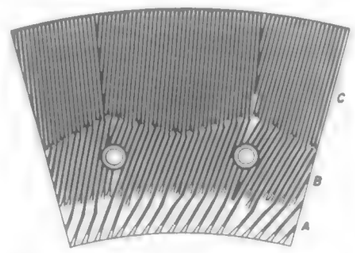
an automatic paper feeding device including: a tray adapted to receive a stack of paper sheets thereon and having a bottom wall with a front end, a rear end and two sides, said tray further having side walls extending respectively from said two sides of said bottom wall and a rear wall extending from said rear end of said bottom wall, said tray being mounted to said casing such that said front end of said bottom wall is disposed adjacent to said shredding roller assembly; a rotary shaft mounted rotatably to and extending between said side walls; at least one push rod, each of which including a first rod section with a first end mounted on said rotary shaft and a second end, and a second rod section with a first end connected pivotally to said second end of said first rod section and a second end provided with a press piece which is adapted to press against the stack of paper sheets on said tray; a tension spring having a first end connected to said rotary shaft and a second end connected to said tray; and a gear set including a pinion mounted securely on one end of said rotary shaft, and a wheel mounted rotatably on one of said side walls and having a sector portion formed with gear teeth, said wheel being connected to and driven rotatably by said motor driving unit so as to drive rotatably and intermittently said pinion to rotate correspondingly said rotary shaft against action of said tension spring to cause movement of said press piece and some of the paper sheets toward said shredding roller assembly.

5,362,003

REFINING SEGMENT

Nils Virving, Hässelby, Sweden, assignor to Sunds Defibrator Industries Aktiebolag, Sweden

Filed Oct. 29, 1993, Ser. No. 140,063
Claims priority, application Sweden, Jan. 22, 1993, 9300078-4
Int. Cl.[5] B02C *7/12*
U.S. Cl. 241—261.3 **5 Claims**



1. A refining segment for use in a disk refiner for the refining of lignocellulose-containing fibrous materials, said refining segment comprising a section of a circle having a predetermined radius and including a refining surface comprising a plurality of raised bars and alternating grooves therebetween covering substantially the entire refining surface of said refining segment, said refining segment including a plurality of radial refining zones including at least an inner refining zone, an intermediate refining zone, and an outer refining zone, said plurality of raised bars in said inner refining zone extending outwardly at an angle with respect to said predetermined radius of said refining segment of between about +20° and +45°, said plurality of raised bars in said outer refining zone extending outwardly at an angle with respect to said predetermined radius of said refining segment of between about −10° and +20°, and said plurality of raised bars in said intermediate refining zone extending outwardly at an angle with respect to said predetermined radius intermediate the angle of said plurality of raised bars in said inner refining zone and said angle of said plurality of raised bars in said outer refining zone with respect to said predetermined radius, said plurality of raised bars in said inner, intermediate and outer refining zones including at least one group of raised bars arranged substantially parallel to each other.

5,362,004

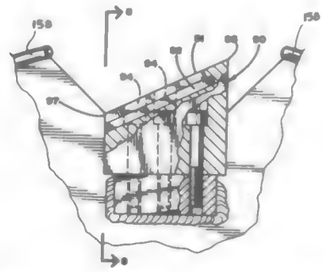
WASTE PROCESSING MACHINE

Ivor Bateman, Mt. Pleasant, Mich., assignor to Tramor, Inc., Remus, Mich.

Division of Ser. No. 874,751, Apr. 27, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 137,848
Int. Cl.[5] B02C *7/02*
U.S. Cl. 241—290 **5 Claims**

1. In an apparatus for comminuting and chipping waste material said apparatus having a housing in which a main shaft is mounted, the main shaft being connected to a drive means for rotating the main shaft within the housing, a first disc being axially mounted to the main shaft to rotate with the main shaft, the first disc having a tool support at the periphery thereof, an improvement in the tool support comprising:

a block recessed from the periphery of the disc and having a leading edge rotationally disposed before a trailing edge, the block further having a mounting surface extending between the leading edge and the trailing edge, said mounting surface being coincident with an imaginary



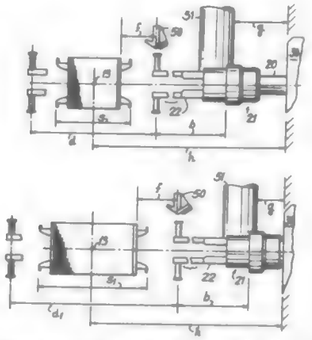
plane sloping from the leading edge toward the trailing edge.

5,362,005

METHODS AND APPARATUS FOR AUTOMATED STATOR WINDING STATION SET UP

Luciano Santandrea, Florence, Italy, assignor to Axis U.S.A., Inc., Marlborough, Mass.

Continuation of Ser. No. 592,221, Oct. 3, 1990, Pat. No. 5,207,745, which is a continuation-in-part of Ser. No. 306,618, Feb. 6, 1989, Pat. No. 4,969,606. This application Feb. 1, 1993, Ser. No. 11,517
The portion of the term of this patent subsequent to May 4, 2010, has been disclaimed.
Int. Cl.[5] H02K *15/02*
U.S. Cl. 242—1.10 R **14 Claims**



1. A method of winding coils onto each one of at least first and second stator cores, said first stator core having a longitudinal axis, a first length and an endface, said second stator core having a longitudinal axis, a second length and an endface, said second length being shorter than said first length, said coils being wound using a winder having a longitudinal axis and a stroke which is adjustable between a longer stroke and a shorter stroke, wherein said longer stroke and said shorter stroke have midpoints that coincide with each other, said method comprising the steps of:

a. positioning said first stator core so that its longitudinal axis is parallel with said longitudinal axis of said winder and its endface is located at a reference plane;

b. adjusting the winder to provide said longer stroke;

c. providing relative motion between said first stator core and said winder so that said midpoint of said first stator core coincides with said midpoint of said longer stroke;

d. operating said winder to dispose coils onto said first stator core;

e. repositioning said first stator core away from said winder;

f. positioning said second stator core so that (1) its longitudinal axis is parallel with said longitudinal axis of said winder and (2) its endface is located at said reference plane;

g. adjusting the winding machine to provide said shorter stroke;

h. providing relative motion between said second stator core and said winder so that said midpoint of said second stator core coincides with said midpoint of said shorter stroke; and

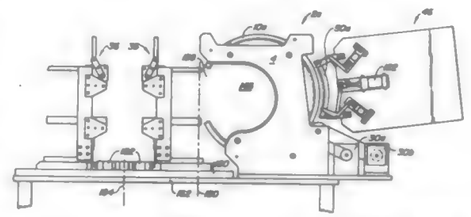
i. operating said winder to dispose coils onto said second stator core.

5,362,006

SEGMENT REMOVAL ASSEMBLY FOR WINDING MACHINE

James D. Richerson, Versailles; Stephen D. Smith, Lawrenceburg, and George W. Springtube, Louisville, all of Ky., assignors to Kuhlman Corporation, Lexington, Ky.

Filed Feb. 26, 1993, Ser. No. 24,236
Int. Cl.[5] B65H *81/02, 1/00*
U.S. Cl. 242—4 BE **17 Claims**



1. In a coil winding machine of the type including a frame supporting independently driven shuttle and magazine rings, the improvement comprising:

the shuttle and magazine rings including shuttle and magazine ring segments removably mounted to remainders of the shuttle and magazine rings;

movable ring latching elements securing the segments to the remainders of the rings, the ring latching elements each being movable between a released position, at which the segments can be removed from the remainders of the rings, and a latched position, at which the segments are secured to the remainders of the rings;

ring segments removal means for:

grasping the ring segments when said segments are at shuttle and magazine ring removal positions;

moving the ring latching elements from the engaged position to the released position;

displacing the ring segments from the remainder of the rings thereby leaving segment gaps in the rings;

reinserting the ring segments into the segment gaps, thereby closing the segment gaps;

returning the ring latching elements from the released position to the engaged position;

releasing the ring segments; and

the ring latching elements including segment grasping elements configured for engagement by the removal means.

5,362,007

APPARATUS FOR FORMING A YARN RESERVE

Hans Raasch, Mönchengladbach, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

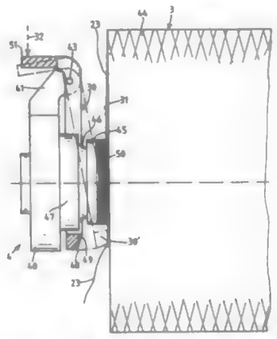
Filed Feb. 1, 1993, Ser. No. 11,964
Claims priority, application Germany, Feb. 1, 1992, 4202962
Int. Cl.[5] B65H *54/02*
U.S. Cl. 242—18 OEW **3 Claims**

1. In a textile machine producing cross-wound bobbins, including a number of work stations having a creel with a

bobbin changing position and means for holding a bobbin, the bobbin comprising a tube having an end and a yarn package formed on the tube, the yarn package having an outer surface and an end face, and a movable servicing device serving the work stations for changing takeup bobbins and having a drive apparatus for a bobbin in the changing position and a yarn suction device for seeking, aspirating and pulling off a yarn end that has run up onto the outer surface of the bobbin,

an apparatus for forming a yarn reserve on a bobbin at a winding station, comprising:

a yarn guide element disposed on the creel and movable



toward and away from the bobbin for clasping the tube over a sector of at least 90° in the circumferential direction of the tube and winding the yarn end on the end of the tube to make a yarn reserve;

said yarn guide element having a yarn guide surface to be placed against the end face of the yarn package, said yarn guide surface having a yarn catching notch formed therein immediately adjacent the end face of the yarn package; and

an actuating element for moving said yarn guide element toward and away from the bobbin so as to deposit the yarn end against the end face of the yarn package.

5,362,008

CASSETTE FOR SUPPLYING WEBS OF PHOTOSENSITIVE MATERIAL TO COPYING MACHINES

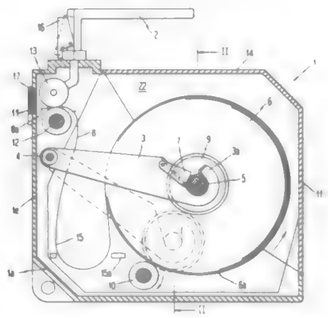
Erich Nagel, Anzing, and Gerhard Benker, Icking, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 7, 1992, Ser. No. 926,921

Claims priority, application Germany, Aug. 13, 1991, 4126752; Jun. 3, 1992, 4218295

Int. Cl.[5] B65H *16/00;* **G03C** *3/00*

U.S. Cl. 242—417 **19 Claims**



1. Cassette for storage of rolls of convoluted web-shaped photosensitive material and for dispensing of such material, comprising a housing having an internal chamber, means for rotatably supporting a roll of convoluted material in said chamber, and an outlet for evacuation of material from said chamber; means for unwinding material from the roll in said chamber; and means for relaxing the material in said chamber between the roll and said outlet so that the material leaving the housing through said outlet to enter a processing unit is substantially free from any pronounced tensional stresses, said relaxing means comprises means for forming at least one loop of photosensitive material in said chamber between the roll and said outlet; the roll, the loop and the outlet being disposed substantially coplanar with respect to each other.

5,362,009

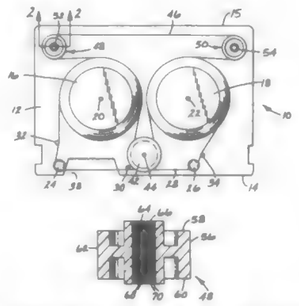
DRIVE BELT CORNER GUIDE ROLLER WITH STRUCTURED INNER SURFACE FOR A DATA CARTRIDGE

William L. Howard, Jr., Hennepin, Minn., and David P. Smith, St. Croix, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 765,954, Sep. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 488,243, Mar. 5, 1990, abandoned. This application Oct. 15, 1993, Ser. No. 138,373

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—342 **14 Claims**



1. A guide roller for rotation around a cylindrical pivot pin comprising:

a cylindrical inner surface for contacting and rotating around the pivot pin, the inner surface comprising means including a controlled surface texture for controlling friction between the guide roller and the pivot pin, wherein the textured inner surface comprises a plurality of axial splines formed on the inner surface, the axial splines being separated from each other by grooves, wherein the axial splines are triangular and are formed of two intersecting flat planar surfaces with the planar surfaces that form a given spline intersecting with the planar surfaces that form the adjacent splines, and wherein the splines contact the pivot pin along an axial line, represented in cross section by a contact point wherein the planar surfaces of the splines are not tangent to the surface of the pivot pin.

5,362,010

CLUTCH DEVICE FOR FISHING REEL

Shingo Takamatsu, Saitama, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,390

Claims priority, application Japan, Feb. 15, 1991, 3-012714[U]

Int. Cl.[5] A01K *89/00*

U.S. Cl. 242—261 **11 Claims**

1. A fishing reel comprising:

a reel body;

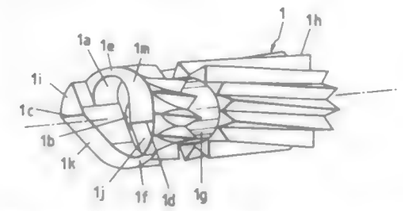
a spool having a spool shaft rotatably supported on said reel body for rotation about an axis;

a handle for inputting rotational torque;

gear means for transmitting the rotational torque from said handle to said spool, said gear means including a drive gear connected to said handle and a pinion slidably fitted on said spool shaft and meshed with drive gear; and

a clutch provided between said spool and gear means for selectively disconnecting said spool from said gear means, said clutch including:

a machine key provided on said spool shaft;



said pinion having a plurality of planar surfaces which are orthogonal to said axis at an axial terminus of said pinion, and a plurality of inclined surfaces which are oblique with respect to said plurality of planar surfaces, said pluralities of planar surfaces and inclined surfaces circumscribe a spline hole engageable with said machine key; and

means for sliding said pinion along said axis so that said spline hole is selectively engaged with and disengaged from said machine key.

5,362,011

BAITCASTING REEL HAVING AN IMPROVED CENTRIFUGAL BRAKE

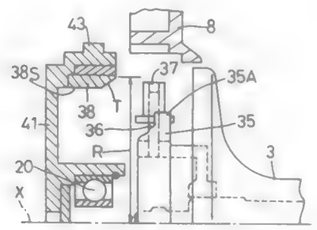
Jun Sato, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Dec. 14, 1992, Ser. No. 989,816

Claims priority, application Japan, Dec. 16, 1991, 3-103201[U]; Jun. 22, 1992, 4-42824[U]

Int. Cl.[5] A01K *89/033*

U.S. Cl. 242—289 **22 Claims**



1. A baitcasting reel comprising:

a frame;

a case covering an outer part of said frame;

a spool rotatable about a spool axis;

a holder carrying a plurality of rods oriented in a direction normal to said spool axis and rotatable with said spool;

a plurality of contact pieces slidably mounted on said rods respectively;

a stopper formed integrally with said holder for preventing detachment of said contact pieces from said holder;

a knob provided to enable said case to be rotatable about said spool axis, said knob being engageable with said frame;

a cylindrical braking member rotatable with said knob and disposed at a position outside a common locus of rotation of said contact pieces and contactable with said contact pieces, said braking member being positioned coaxially to said spool axis;

an inclined surface formed in an inner periphery of said braking member at an end thereof adjacent said spool, said inclined surface having a diameter progressively increasing in the direction toward said spool;

said inclined surface having a maximum diameter greater than radially outermost positions of said contact pieces limited by said stopper;

wherein said entire case is rendered movable by releasing engagement between said knob and said frame so as to expose substantially the entire outer part of said frame, thereby to allow access for adjustment of said contact pieces and replacement of said spool.

5,362,012

SPINNING REEL HAVING AN IMPROVED PINION GEAR SUPPORT STRUCTURE

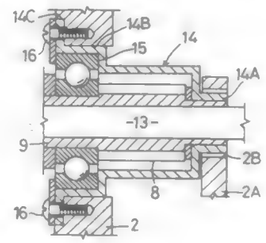
Masuo Ban, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Jul. 20, 1992, Ser. No. 914,733

Claims priority, application Japan, Aug. 1, 1991, 3-060598[U]

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—321 **6 Claims**



1. A spinning reel comprising:

a reel body;

a handle;

a spool supported by said reel body;

a rotor rotatably supported by said reel body and adapted to wind a fishing line onto said spool in response to rotation of said handle;

a sleeve shaft integrally rotatable with said rotor;

transmission means for transmitting rotation of said handle to said rotor, said transmission means including:

a drive gear connected to said handle;

a pinion gear engaged with said drive gear to transmit rotation of said drive gear to said rotor, said pinion gear being coupled to said sleeve shaft;

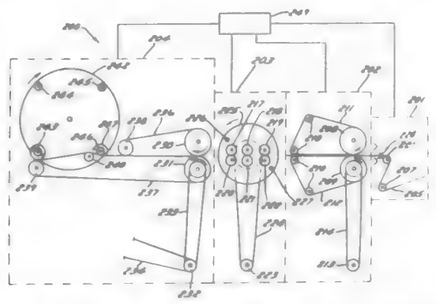
an intermediate member detachably coupled to said reel body to rotatably support said pinion gear, said intermediate member including:

(a) a front cylindrical portion having a front interior surface and a front exterior surface, said front cylindrical portion rotatably supporting said pinion gear at a frontward portion of said pinion gear through said front interior surface, said front cylindrical portion being supported by said reel body through said front exterior surface;

(b) a rear cylindrical portion having a rear interior surface and a rear exterior surface, said rear cylindrical portion rotatably supporting said pinion gear at a rearward portion of said pinion gear through said rear interior surface, said rear cylindrical portion being positioned such that said reel body limits radial displacement of said rear cylindrical portion through said rear exterior surface;

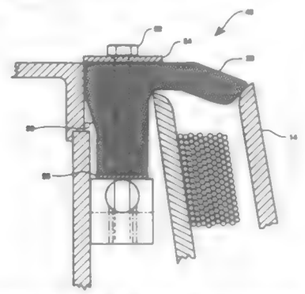
(c) a connecting member to connect said front cylindrical portion with said rear cylindrical portion, said connecting member defining an opening to receive said drive gear.

5,362,013
METHOD AND APPARATUS FOR INTERLEAVING PLASTIC BAGS
Peter J. Gietman, Jr., Combined Locks, and Stephen A. Saindon, Appleton, both of Wis., assignors to Custom Machinery Design, Inc., Appleton, Wis.
Continuation-in-part of Ser. No. 877,629, May 1, 1992. This application Oct. 27, 1992, Ser. No. 967,691
Int. Cl.[5] B65H *18/08, 29/66*
U.S. Cl. 242—521 **22 Claims**



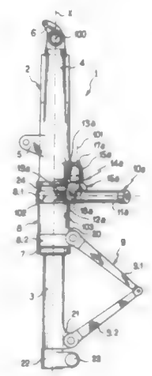
1. An apparatus for winding a roll of bags having a leading and a trailing end from a strip of bags comprising.
a haul-in assembly;
a tumbler assembly disposed to receive the strip from said haul-in assembly, said tumbler assembly including a rotating tumbler, whereby the path length the trailing end of each bag travels is increased when said rotating tumbler rotates;
a perforation sensor disposed upstream of said tumbler assembly, said perforation sensor having an output indicative of the presence or absence of a perforation in said strip; and
a winding assembly disposed to receive the strip from said tumbler assembly;
wherein said rotating tumbler rotates and separates adjacent bags in response to said perforation sensor output.

5,362,014
EJECTABLE LIGHTWEIGHT FOAM PROTECTIVE COVERS FOR FIBER OPTIC DATA LINK SYSTEMS
Warren A. Sandham, Lilburn, Ga., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 31, 1992, Ser. No. 829,993
Int. Cl.[5] F42B *15/10*
U.S. Cl. 244—3.12 **8 Claims**



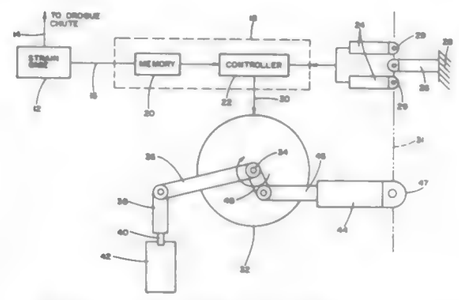
1. A cover assembly for an optical fiber dispensing system having a fiber optic payout canister for holding a spool of optical fiber, comprising:
(a) a plastic foam cover;
(b) one or more plastic bolts for bolting the plastic foam cover to the payout canister;
(c) one or more compression springs mounted between the plastic foam cover and the inside of the payout canister for resiliently biasing the plastic foam cover away from the payout canister; and,
(d) a number equal to the number of plastic bolts of explosively fired means for severing bolts.

5,362,015
DEVICE FOR STEERING THE WHEELS AT THE BOTTOM END OF AN AIRCRAFT LANDING GEAR LEG
Michel Derrien, Versailles, and Philippe Brisedou, Fresnes, both of France, assignors to Messier-Bugatti, Velizy-Villacoublay, France
Filed Oct. 14, 1993, Ser. No. 135,962
Claims priority, application France, Oct. 16, 1992, 92 12417
Int. Cl.[5] B64C *25/50*
U.S. Cl. 244—50 **6 Claims**



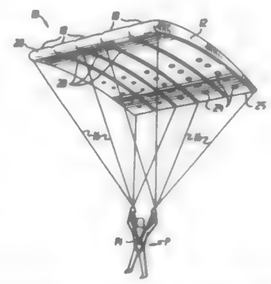
1. A device for steering the wheels fitted to the bottom end of an aircraft landing gear leg, said leg comprising a strut hinged to the structure of the aircraft and a rod axially slidable inside the strut along a longitudinal axis of said leg, and also including a sleeve mounted to rotate on the outside of the strut and connected by a scissor linkage to the bottom end of the sliding rod, said device including at least one steering actuator disposed transversely to the axis of the leg, the cylinder of the actuator being hinged to the strut, and the rod of the actuator being hinged to the rotary sleeve, wherein the strut has a lateral extension on its outside above the rotary sleeve, the cylinder of the steering actuator being suspended from the lateral extension by means of a universal joint, so as to be able to pivot about a first axis and a second axis perpendicular thereto; and the rod of said actuator being hinged at its end to a lateral steering lug of the rotary sleeve and wherein the lateral extension is terminated by an outwardly offset sleeve whose axis is parallel to the axis of the leg and constitutes the first axis of said universal joint, and in which freely swivels a fork having two spaced tines and arranged under said sleeve, the cylinder of the steering actuator being hinged between the tines of the fork to oscillate freely about an axis that remains in a plane perpendicular to the axis of the leg and which constitutes the second axis of said universal joint.

5,362,016
PARACHUTE DEPLOYMENT SYSTEM AS A FUNCTION OF EJECTED PILOT SEAT SPEED
Armand J. Aroune, 328 Riviera Dr., S. Massapequa, N.Y. 11758
Filed Nov. 9, 1992, Ser. No. 973,714
Int. Cl.[5] B64D *17/74*
U.S. Cl. 244—122 AE **2 Claims**



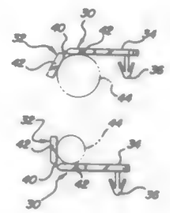
1. An apparatus for deploying a parachute from an ejected pilot's seat comprising:
a strain gauge connected to a deployed drogue chute;
means for matching the strain gauge output with pre-stored corresponding seat speeds;
controller means for detecting the occurrence of an optimum declining seat speed at which a main parachute may be safely deployed;
a device member;
an electromagnetic device connected at its electrical input to an output of the controller means for causing physical displacement of said device member; and
a parachute deployment timer having its actuator connected to said device member, the timer performing a fixed timing interval upon displacement of said device member and the connected actuator.

5,362,017
PARAWING
Lawrence J. Puckett, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 24, 1993, Ser. No. 156,744
Int. Cl.[5] B64D *17/02*
U.S. Cl. 244—146 **7 Claims**



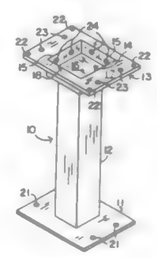
1. In a parawing comprising an inflatable airfoil formed of a flexible sheet material defining a plenum, said airfoil having upper and lower surfaces and leading and trailing edges, a plurality of apertures formed in the lower surface of said airfoil and communicating with said plenum for inflating the same by air flowing over said airfoil, a plurality of flexible chordal ribs spaced across the span of said airfoil and extending between the upper and lower surfaces thereof, an inflatable support frame disposed in said plenum for increasing the stiffness of said airfoil across the span thereof, and means for inflating said support frame, the improvement thereof comprising the positioning of the apertures adjacent the trailing edge of the lower surface of the airfoil in the area of positive air pressure.

5,362,018
REVERSIBLE CLIP FOR WIRING HARNESS
Christopher J. Darr, Livonia, and Yasutaka Suzuki, Northville, both of Mich., assignors to Yazaki Corporation, Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 49,010
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.3 **10 Claims**



6. A molded polymer clip for securing a wiring harness to a support comprising:
a T-shaped member comprising an elongated retainer portion for engagement on either side with the wiring harness and a fastening stem projecting from the retainer portion;
a fastening anchor on one side of the fastening stem for coupling to a support; and
the retainer including at least one longitudinal living hinge for conforming the retainer portion to the curvature of the wire harness by bending the retainer portion toward either side.

5,362,019
POSTAL BOX MOUNTING PEDESTAL
Greg Swanson, P.O. Box 813, Fruitland Park, Fla. 34731
Filed Oct. 13, 1993, Ser. No. 135,717
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 **12 Claims**



1. A mounting pedestal suitable for attachment of various postal boxes having different mounting configurations and shapes, said mounting pedestal comprising:
(A) a generally planar, horizontal base member having a number of bolt receiving apertures adapted to be connected to an installation pad;
(B) a generally vertical support column connecting said base member to a top member; and
(C) a generally horizontal top member having a generally planar upper surface containing a number of bolt receiving apertures corresponding to various apertures in different postal boxes, and a generally rectangular receiving pocket centrally depending from said top member to create a rectangular aperture in said top member, said

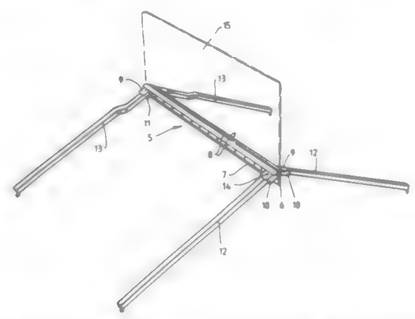
receiving pocket having four side walls depending from said top member, said side walls each containing a number of bolt receiving apertures corresponding to apertures in a postal box having a generally rectangular depending mating structure.

5,362,020

SUPPORT STRUCTURE FOR ROAD SIGNS

Francis C. Brown, Mangalore, Australia, assignor to Doyle & Brown Pipelines Pty. Ltd., Malvern, Australia

PCT No. PCT/AU91/00478, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/07143, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 15, 1991, Ser. No. 39,343
Int. Cl.[5] G09F *15/00*
U.S. Cl. 248—166 **13 Claims**



1. A support structure for a road warning sign comprising
a pair of elongated crossbar members hingedly connected on their undersides for locating a sheet material road sign therebetween,
socket members secured adjacent each end of each of said crossbar members, support legs pivotally mounted in said socket members so as to extend downwardly and outwardly of and substantially normal to the plane of said crossbar members in a ground engaging position and foldable along said crossbar members in a demountable position whereby, when said leg members are swung outwardly to said ground engaging position, said hingedly connected crossbar members close, under the weight of the support structure and the leverage effect of the outwardly extending ground engaging legs, to secure between said crossbar members a lower edge of a sheet material road sign.

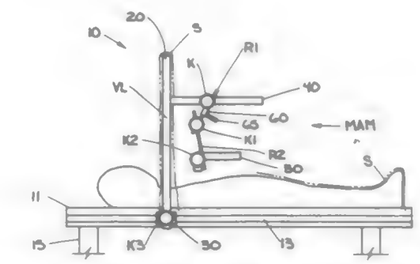
5,362,021

MULTI-ADJUSTABLE SURGICAL TRAY APPARATUS

James L. Phillips, Cary, N.C., assignor to Phillips Medical Group, Inc., Cary, N.C.

Filed May 11, 1992, Ser. No. 881,042
Int. Cl.[5] A61G *13/10*
U.S. Cl. 248—225.31 **12 Claims**

1. A multi-adjustable surgical table comprising the following elements:
a generally U-shaped major frame having essentially vertically-extending legs for releasable securement to a bed rail of an operating table;
a pair of bed rail clamps for adjustably and releasably securing said legs to said bed rail for both vertical and horizontal adjustment thereon;
a first shelf fixed in position between said essentially vertically-extending legs and extending outwardly therefrom in a plane essentially normal thereto so as to be essentially parallel to the plane of said operating table when said table is in place thereon;
a second outwardly-extending shelf pivotally connected by adjustable mounting and adjustment means to said first fixed outwardly-extending shelf;



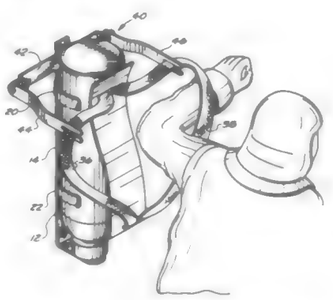
said second shelf being adjustable vertically, horizontally, and rotatively, and being thereby placeable in any desired position with relation to said operating table.

5,362,022

AIR TANK BRACKET WITH STRAP-LIFTING ARMS

John E. McLoughlin, 26 Southern Blvd., Nesconset, N.Y. 11767, and Neocles G. Athanasiades, 6 Maybeck Dr., East Setauket, N.Y. 11733

Filed Jun. 30, 1993, Ser. No. 83,558
Int. Cl.[5] A47K *1/08*
U.S. Cl. 248—313 **7 Claims**



1. A bracket for supporting a body-carried device having a pair of shoulder straps, the bracket comprising:
a) a base member for attachment to a suitable surface;
b) clip means extending from said base member for holding the device in an accessible position; and
c) strap grasping means extending from said base for holding the shoulder straps of the device in a ready-to-wear position, said strap grasping means comprising a pair of arms mounted for pivoting movement from a lowered position generally parallel to said base member to a raised position generally perpendicular to said base member.

5,362,023

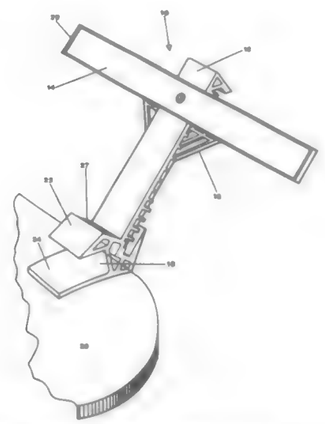
FOLDING BOOK SUPPORT

Christopher Reyes, 14920 Farwell Ct., Saratoga, Calif. 95070

Continuation of Ser. No. 997,297, Dec. 23, 1992, Pat. No. 5,290,003. This application Jan. 11, 1994, Ser. No. 179,906
The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—461 **4 Claims**

1. A device to support a book comprising:
a main support member and a cross-member pivotally attached to the main support member; wherein
the cross-member pivots to a position parallel to the support member for storage when the support is not in use, and

pivots to a position perpendicular to the support member when supporting a book in a position of convenience for a reader, and the cross-member further includes a flat, smooth area to display advertising material; and
the main support member includes an integral, one-piece, flexible jaw structure enabling the device to be attached to



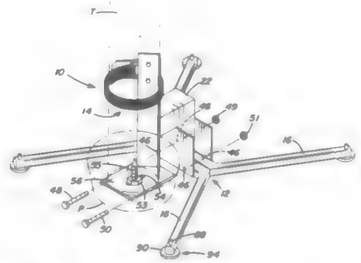
a desk or table, and further includes a base upon which the book rests; and wherein
the relative positions of the main support member and the cross-member are maintained by tensioning means at the point of attachment of the main support member and the cross-member.

5,362,024

CHRISTMAS TREE STAND

James R. Grinnen, R.D. #2 Box 2470A, Wampum, Pa. 16157

Filed Jul. 30, 1993, Ser. No. 99,913
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—524 **19 Claims**



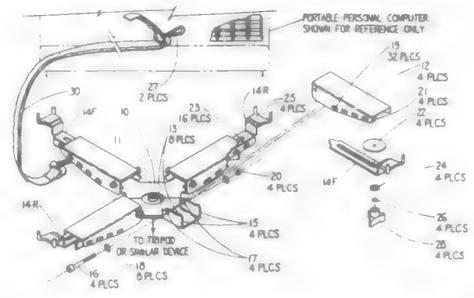
1. A tree stand for vertically supporting a tree above a horizontal surface with a trunk of the tree within an existing water pan, said tree stand comprising:
a base for supporting the stand on the surface;
a tree holder for holding the tree by the trunk;
said holder including means to adapt said holder to trees with different size trunks;
said holder including an upwardly extending element mounted on said base to extend upwardly therefrom and a depending stabilizer element secured to an upper portion of said upwardly extending element;
said upwardly extending element and said depending stabilizer element having a space therebetween;
said depending stabilizer element including a vertical support at a lower end thereof;
said vertical support being disposed above the horizontal surface; and
said vertical support including means for supporting a bottom of the trunk thereon;
whereby said tree stand is for supporting the tree with said lower end of said depending stabilizer element, said vertical support, and the bottom of the trunk disposed within the existing water pan, a bottom of the existing water pan is between said vertical support and the horizontal surface and the wall of the existing water pan is disposed within said space between said upwardly extending element and said depending stabilizer element.

5,362,025

PORTABLE COMPUTER SUPPORT DEVICE AND MEANS OF SUPPORT

Michael Trom, 4073 Beard Ave. N., Robbinsdale, Minn. 84094, and Gregory Trom, Sandy, Utah

Filed Jun. 15, 1992, Ser. No. 898,525
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—670 **7 Claims**



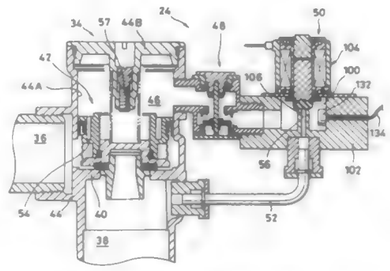
1. An apparatus for supporting portable computers on top of tipods, pedestals, legs and stands comprising a base having a threaded annular aperture fastener element for securing said base to a support surface connecting means, and a plurality of support arm assemblies secured to said connecting means.

5,362,026

WATER FLOW CONTROL SYSTEM

Hiroshi Kobayashi; Ryosuke Hayashi; Shoji Inokuchi, and Yukihiro Muroya, all of Kita-kyushu, Japan, assignors to Toto Ltd., Kita-kyushu, Japan

Division of Ser. No. 76,887, Jun. 15, 1993, Pat. No. 5,341,839.
This application Mar. 31, 1994, Ser. No. 220,624
Claims priority, application Japan, Jun. 15, 1992, 4-180400
Int. Cl.[5] F16K *31/40*
U.S. Cl. 251—30.02 **7 Claims**



1. A water flow control system comprising:
(A) a conduit for water having an inlet and an outlet, said

inlet being adapted to be connected to a source of water under a primary water pressure;

(B) a solenoid valve of a non-latching type disposed in said conduit to control flow of water through said conduit;

(C) a pressure control valve disposed in said conduit upstream of said solenoid valve for reducing the primary pressure and for delivering to said solenoid valve a flow of water under a secondary pressure having a predetermined pressure level generally lower than the primary pressure at said inlet, said control valve comprising:

a housing defining a water passage therethrough;

a valve seat provided in said housing across said passage;

a movable closure member disposed in said housing downstream of said valve seat and cooperating with said valve seat to control flow of water through said passage;...

a pressure receptive member disposed in said housing upstream of said valve seat for receiving and responding to the primary pressure at said inlet, said pressure receptive member being coupled to said closure member; and

spring means for biasing said closure member away from said valve seat;

means for adjustably varying the spring force of said spring means;

said closure member and said pressure receptive member being arranged so as to be subjected to the primary pressure in opposite directions so that the hydraulic forces acting thereon due to the primary pressure are substantially counterbalanced;

said closure member being responsive to the secondary pressure so as to be biased toward said valve seat;

said predetermined pressure level being determined in accordance with the spring force said spring means; and

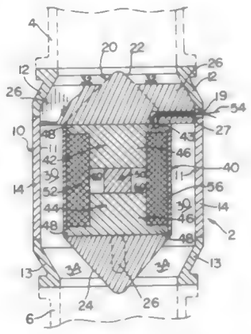
(D) electric control means for controlling said solenoid valve, said electric control means being operable to energize said solenoid valve with an electric current having a first intensity when the opening movement of said solenoid valve is to be initiated and being operable to energize said solenoid valve with an electric current having a second intensity lower than said first intensity when said solenoid valve is to be maintained in its open state.

5,362,027

FLOW REGULATING VALVE FOR MAGNETIC PARTICLES

Jack M. Champaigne, and John J. Wieczorek, both of South Bend, Ind., assignors to Electronics, Incorporated, Mishawaka, Ind.

Filed Nov. 12, 1993, Ser. No. 152,466
Int. Cl.[5] F16K *31/02*
U.S. Cl. 251—129.01 **5 Claims**



1. A valve for regulating the flow of particulate materials, portion of which materials are magnetic, said valve comprising:

a valve housing having an inner wall,

an assembly supported within said valve housing and spaced from said valve housing inner wall to define a flow passage therebetween, said assembly including a permanent magnet, and an electromagnetic coil positioned between said magnet and said flow passage, said coil being spaced from said magnet to define a cavity therebetween, said permanent magnet constituting means for attracting said particulate materials to impede the movement of said particulate materials through said flow passage,

means for energizing said coil whereby said energized coil constitutes means for counteracting influence of said permanent magnet to thereby permit movement of said particulate materials through said flow passage,

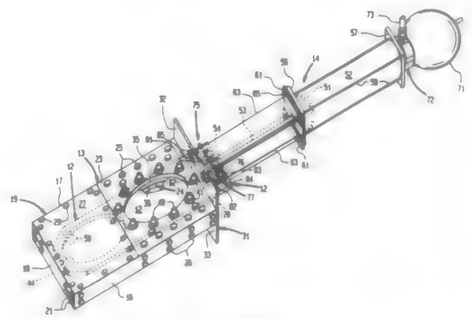
said cavity constituting means for reducing said permanent magnet influence when said coil is energized.

5,362,028

HIGH SPEED GATE VALVE

Jordan N. Jacobs, Randolph, Mass., assignor to Fenwal Safety Systems, Inc., Marlborough, Mass.

Continuation of Ser. No. 59,094, May 10, 1993, abandoned. This application May 13, 1994, Ser. No. 242,657
Int. Cl.[5] F16K *3/30*
U.S. Cl. 251—327 **20 Claims**



1. Gate valve apparatus comprising:

valve housing means defining an inlet and an outlet aligned therewith; said housing means comprising a planar inlet surface surrounding said inlet and a planar outlet surface surrounding said outlet and parallel to, facing and spaced a given distance from said inlet surface;

a gate plate having a uniform thickness substantially equal to said given distance and defining a throughput opening, said gate plate mounted for sliding movement between said inlet and outlet surfaces and between an open position wherein said throughput opening is aligned with said inlet and said outlet and a closed position wherein said throughput opening is transversely displaced from said inlet and said outlet;

actuator means for producing rectilinear movement of said gate plate between said open and closed positions and wherein said throughput opening has a maximum width in said direction of rectilinear movement, and in said closed position of said gate plate said actuator means produces between said throughput opening and said inlet and said outlet a transverse displacement equal to at least 5% of said maximum width; and

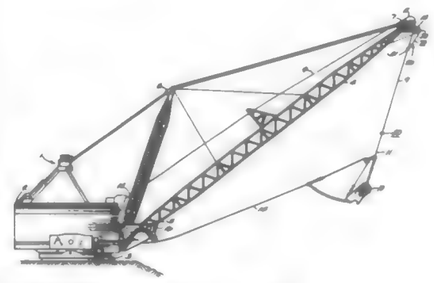
deceleration means operable to induce deceleration of said gate plate only during movement thereof that produces said transverse displacement of said throughput opening.

5,362,029

LIFT LIMIT DEVICE FOR A LOAD LIFTING MECHANISM

Harvey J. Kallenberger, Wind Lake, Wis., assignor to Harnischfeger Corporation, Brookfield, Wis.

Filed Jan. 13, 1993, Ser. No. 4,074
Int. Cl.[5] B66D *1/48;* **B66C** *13/18*
U.S. Cl. 254—269 **18 Claims**



1. A load lifting apparatus comprising

a support,

a hoist which is mounted on said support and which includes a prime mover, and an elongated lifting element for selective load raising and lowering movement upon activation of said prime mover, and

a limit device for deactivating said prime mover to prevent travel of said lifting element above a predetermined lift position, said limit device comprising

a switch means mounted on said support for actuation to place said prime mover in either a raise-permit mode or a raise-prevent mode,

an actuator including a contact and means for supporting said contact relative to said support at a reference position,

a switch actuating means connected between said contact and said switch means for maintaining said prime mover in said raise-permit mode when said contact is in said reference position, said switch actuating means being separate from said means for supporting said contact relative to said support at said reference position, and

a follower mountable at any desired fixed position on said lifting element for travel therewith and into contact with said contact when said lifting element reaches said predetermined lift position to move said contact from said reference position and cause said switch actuating means to actuate said switch means and place said prime mover in said raise-prevent mode.

5,362,030

FENCE POST MODULE

Ralph K. Iler, Jr., and Earl Morford, both of 1105 SE. 5th Ct., Fort Lauderdale, Fla. 33301

Filed Jan. 15, 1993, Ser. No. 5,093
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—65 **12 Claims**

1. A fence post module comprising:

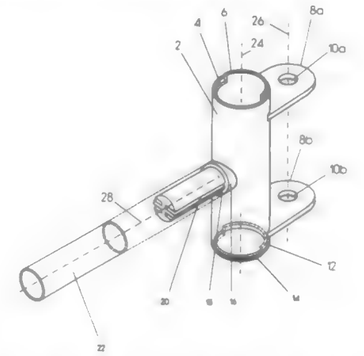
a cylindrical member of a predetermined length having first and second ends;

the first end including a lip extending partially around the perimeter of the first end and a lip recess also extending partially around the perimeter of the first end;

the second end being a mirror image of the first end such that the first end of one cylindrical member can be attached to a second end of another cylindrical member;

a fence connector extending outwardly from the cylindrical member between the first and second ends for attaching a fence rail to the cylindrical member; and

at least two post connectors extending outwardly from the cylindrical member in a direction opposite to the fence connector, the first post connector being positioned inwardly from the first end a first predetermined distance and the second post connector being positioned inwardly from the second end a second predetermined distance, the second predetermined distance being generally equal to the first predetermined distance plus the thickness of the



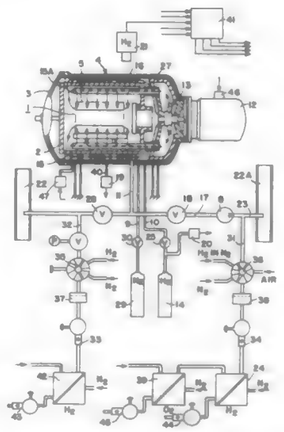
post connector, each fence post connector including a hole such that two adjacent fence post modules can be joined by insertion of a pin when the adjacent fence post modules are positioned with the first end of one being adjacent to the second end of the other.

5,362,031

METHOD AND APPARATUS FOR THE AUTOMATIC MONITORING OF OPERATING SAFETY AND FOR CONTROLLING THE PROGRESS OF THE PROCESS IN A VACUUM HEAT-TREATMENT OVEN

Paul Heilmann, Maintal; Peter Minarski, Rodenbach, and Friedrich Preisser, Buedingen, all of Germany, assignors to Leybold Durfrrit GmbH, Hanau, Germany

Division of Ser. No. 773,363, Oct. 7, 1991, Pat. No. 5,225,142. This application Apr. 7, 1993, Ser. No. 44,300
Claims priority, application Germany, Jun. 27, 1991, 4121277
Int. Cl.[5] C21D *1/773*
U.S. Cl. 266—89 **10 Claims**



1. Apparatus for the independent monitoring of safety of operation and for controlling the progress of a process in a vacuum heat-treating oven operating with cooling gas under pressure, for the hardening of metal workpieces, with a housing enclosing the heating chamber for accommodating the

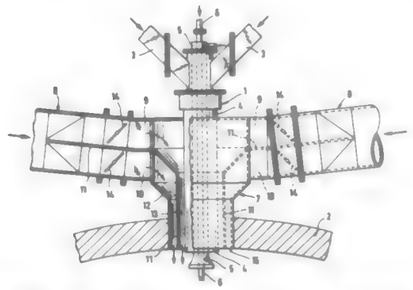
charge of workpieces and connected to a vacuum pump, with gas inlet openings and gas outlet openings leading into the heating chamber, a motor blower unit whose impeller circulates the cooling gas, a cooling gas supply tank, a heating unit and with a heat exchanger in the cooling gas circuit, wherein a pressure sensor measuring the pressure in the housing of the oven, and at least one gas sensor disposed in the immediate environment of the oven are provided, each of which, in conjunction with a processing unit, upon failure to reach a given pressure in the interior of the housing and a gas concentration simultaneously establishing itself in the oven environment, initiates a safety program which produces an immediate closing of the cooling gas inlet valve, an opening of the gas outlet valve and an opening of a flushing gas inlet valve, which is inserted into a line which connects the one flushing gas tank with the interior of the oven housing and thus finally, in accordance with the cooling gas concentration at the gas outlet valve, registered by a gas sensor inserted into a branch line to the gas outlet line, produces the pressure equalization of housing interior and oven environment.

5,362,032

APPARATUS FOR FEEDING GASES INTO A SMELTING FURNACE

Markus K. T. Raaki, Espoo, Finland, assignor to Outokumpu Engineering Contractors OY, Espoo, Finland

Filed May 28, 1993, Ser. No. 69,072
Claims priority, application Finland, Jun. 1, 1992, 922530
Int. Cl.[5] C22B *5/12*
U.S. Cl. 266—182 **4 Claims**



1. Apparatus for feeding a pulverous material and gases into a suspension smelting furnace through an arch of the suspension smelting furnace and for permitting adjustment of the flow of gases to accommodate variation of the quantity and quality of the gases, comprising: a pouring pipe for feeding the pulverous material into the furnace; a generally annular gas distribution chamber surrounding the pouring pipe; an annular partition in the gas distribution chamber dividing the gas distribution chamber into nested, concentric, annular sub-chambers; means for feeding gases separately to each of said sub-chambers; means for adjusting the flow of gases to each sub-chamber; and means for discharging gases to the furnace from said sub-chambers.

5,362,033

HOT PLATE FOR KEEPING MOLTEN METAL IN A MOLTEN STATE

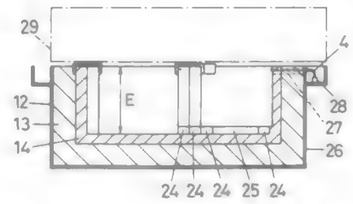
Seiji Sakurai; Junichi Kuchiki; Hideo Tanaka; Syoichi Naruse, all of Yokohama, and Shigeru Fukumaru, Atsugi, all of Japan, assignors to Nichias Corporation, Tokyo and Ariake Ceramic Constructions Co., Ltd., Kanagawa, both of Japan

Filed Oct. 26, 1993, Ser. No. 141,100
Int. Cl.[5] H05B *3/62*; C22B *7/00*
U.S. Cl. 266—275 **20 Claims**

1. An apparatus, comprising:

a heating unit comprising a heat resistant and electrically insulating material having an electric heating wire embedded therein; and

a box unit comprised of a ceramic material, said box unit having interior surfaces defining an interior space, an upper side open to said interior space, and a plurality of lateral sides, one said lateral side having an outlet from said interior space located adjacent to said upper side, said



heating unit being removably disposed in said interior space of said box unit;

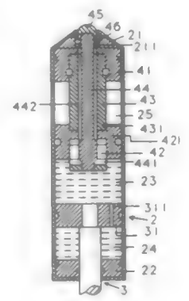
wherein said heating unit has leads extending from said electric heating wire to the exterior of said box unit through said outlet, and wherein gaps are provided between said heating unit and said interior surfaces of said box unit.

5,362,034

HYDRAULIC HEIGHT ADJUSTING DEVICE

John Wang, Chiayi, Taiwan, Prov. of China, assignor to Chia-Hsiung Chen, Taipei, Taiwan, Prov. of China

Filed Aug. 26, 1993, Ser. No. 112,706
Int. Cl.[5] F16F *9/44*; A47B *9/10*
U.S. Cl. 267—64.12 **5 Claims**



1. A hydraulic height adjusting device, comprising:

a sealed upright cylinder body having an upper end and a lower end;

a piston provided inside said cylinder body, said piston and said lower end of said cylinder body cooperatively confining a first volume-variable oil chamber that is filled with hydraulic oil;

a stationary piston rod having a first end connected securely to said piston and a second end extending through said lower end of said cylinder body, said cylinder body being movable vertically relative to said stationary piston rod;

a first positioning member fitted in said cylinder body adjacent to said upper end of said cylinder body;

a second positioning member having an axial hole formed therein and being fitted in said cylinder body between said first positioning member and said piston, said piston and said second positioning member cooperatively confining a second volume-variable oil chamber that is filled with hydraulic oil, said first and second positioning members cooperatively confining a receiving chamber that receives a compressible means therein, said piston having an oil passage formed therethrough so as to communicate said first and second oil chambers;

a hollow tube extending axially in said receiving chamber and having an upper end connected securely to said first positioning member, and a lower end connected securely to said second positioning member, said tube being formed with a radial hole adjacent to said lower end thereof, said axial hole in said second positioning member and said radial hole in said tube intercommunicating said second oil chamber and said receiving chamber;

a movable shaft extending axially into said hollow tube and having an uppermost end and a lowermost end extending into said second oil chamber, said movable shaft defining a clearance with an inner wall surface of said tube;

a valve piece provided on said lowermost end of said shaft to selectively block said axial hole in said second positioning member so as to prevent vertical movement of said cylinder body relative to said piston rod;

a biasing means to bias said valve piece to block normally said axial hole; and

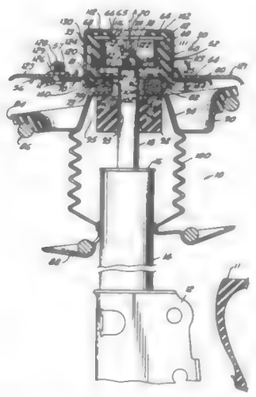
an actuating means provided on said uppermost end of said movable shaft and operable so as to move said movable shaft downward against action of said biasing means to correspondingly remove said valve piece from said axial hole in order to permit vertical movement of said cylinder body relative to said piston rod.

5,362,035

TUNABLE FRONT SUSPENSION STRUT MOUNT

Robert L. Carter, Gibraltar, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 30, 1993, Ser. No. 129,477
Int. Cl.[5] B60G *15/04*
U.S. Cl. 267—220 **1 Claim**



1. In a vehicle telescoping shock absorbing suspension strut operatively connected between sprung and unsprung masses of a vehicle along a principal axis defined by the strut, the strut having an outer support casing operatively connected to said vehicle unsprung mass and an inner cylindrical tube fixed in said support casing having a hydraulic dampening fluid therein, a valved piston mounted for sliding reciprocal movement in said inner cylinder tube, a piston rod operatively connected to said piston with its upper end extending through one upper end of said cylinder tube and support casing, an upper mounting assembly for said piston rod adapted for attachment to said sprung mass, said mounting assembly comprising:

a two piece housing providing upper and lower sheet metal closure members enclosing an inner cylindrical cup, said cup having a bottom wall formed with a central hole the center of which is aligned on said axis receiving therethrough and attached thereto an upper end of the piston rod, said cup formed with a cylindrical side wall having an upper open end thereof terminating in an outturned flanged lip portion defining a jounce stop;

said upper closure member having a cylindrical upstanding outer wall disposed concentrically around said cup side wall defining an annular space therebetween, said outer wall terminating at its lower end in a radially outwardly extending annular flanged brim and terminating at its upper end in a radially inwardly extending annular cap web, said cap web having a central access aperture bordered by a downturned flanged rim which defines, together with a radially opposed portion of said upper closure side wall, a continuous inverted channel defining an annular upper jounce cavity;

said lower closure member comprising a central circular base panel having a central aperture receiving said piston rod therethrough, said base panel provided with a radially outward extending peripheral flange positioned in flatwise engagement with an undersurface of said closure member flanged brim;

said base panel bordered by a continuous annular channel portion bounded on the interior by an inner channel wall and on the exterior by an outer channel wall, said outer channel wall terminating in said flanged brim, said base panel and said channel inner wall defining a downwardly opening annular socket sized to snugly receive therein a circular ball bearing ring assembly;

an elastomeric isolator ring having a cylindrical tubular-shaped body portion fitted in said annular space, said isolator body portion upper end terminating in a radially inwardly extending jounce-collar received in a snug conforming manner in said upper jounce cavity, said jounce collar having a continuously formed annular internal oscillation jounce tuning groove provided therein located axially intermediate said jounce stop and a lower edge of said top ring flanged rim;

said isolator ring body portion having a radially inwardly extending rebound collar formed adjacent its lower end, said rebound collar positioned in a snug conforming manner between said cup bottom wall and said central base panel and having a central circular opening of predetermined diameter, said rebound collar formed with a continuous annular internal oscillation rebound tuning groove provided therein;

said isolator terminating at its lower end in an axially depending annular shaped tubular portion in snug conforming reception in said base panel annular channel portion;

said isolator having a predetermined overall axial dimension slightly greater than the maximum internal axial dimension of said housing such that said isolator is enclosed in said housing in a resilient press-fit manner by virtue of an axial pre-load being applied to said isolator by said upper and lower closure members;

whereby said jounce and rebound grooves may be varied in axial depth such that said mounting assembly spring rate may be selectively tuned to smoothly receive axially imposed suspension loads; and

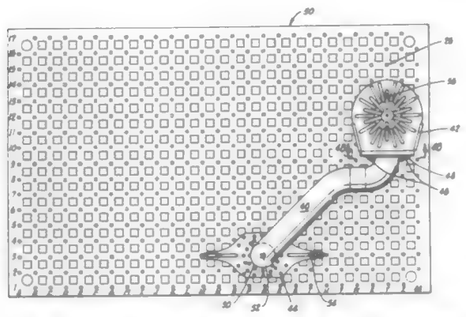
wherein said isolator tubular body portion cylindrical side surface having formed therein a plurality of circumferentially spaced vertically extending side recesses having a predetermined axial dimension so as to be positioned intermediate said upper jounce groove and said lower rebound groove, said recesses providing, with an interior surface of said upper closure member outer wall, a plurality of voids, whereby said mounting assembly spring rate may be tuned to smoothly receive transversely imposed suspension loads.

5,362,036

MODULAR WELDING FIXTURE APPARATUS

Stephen S. Whiteman, Marlow, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jul. 23, 1993, Ser. No. 97,342
Int. Cl.[5] B23Q 3/02
U.S. Cl. 269—51 13 Claims



1. A modular welding fixture apparatus for positioning a workpiece comprising:

a) a base table having a base surface of a predetermined width and length having an array of openings through the surface of a predetermined size and configuration and the surface having an array of locator mounting holes co-located in a spaced relationship with respect to the openings and the holes extending essentially perpendicularly a predetermined distance into the work surface;

b) at least one vertical end locator having a base plate that is removably mountable to the base table at preselected positions and at preselected angles with respect to a preselected datum, and the vertical end locator having a front plate jointed and extending at essentially a right angle from the base plate, the front plate having threaded mounting holes for accomodating threaded member means for locating the holding at least a portion of a workpiece, the base plate further having a plurality of slots extending radially outward from points proximate to a centrally located pin extending perpendicularly from the base plate; and

c) at least one horizontal locator having a base plate that is removably mountable to the base table at preselected positions thereon, and the base plate having means for locating and holding at least a portion of a workpiece, the horizontal locator further having at least one pair of opposing slots extending radially outward from points proximate to a centrally located hole therein.

5,362,037

METHOD OF, AND APPARATUS FOR, DELIVERING FLAT ARTICLES ONE BY ONE FROM A STACK OF SUCH ARTICLES

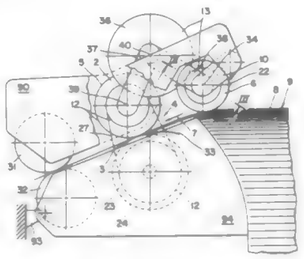
Jeichienus A. van der Werff, Montfoort, and Hendrik A. de Haan, Bergum, both of Netherlands, assignors to Hadewe B.V., Drachten, Netherlands

PCT No. PCT/NL91/00023, § 371 Date Aug. 7, 1992, § 102(e) Date Aug. 7, 1992, PCT Pub. No. WO91/12193, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 11, 1991, Ser. No. 917,055
Claims priority, application Netherlands, Feb. 9, 1990, 9000309
Int. Cl.[5] B65H 5/00
U.S. Cl. 271—10 23 Claims

1. A method of delivering, one by one, flat articles of some stiffness, such as paper or plastic sheets or envelopes, from a stack in a direction of transport, using a feed roller exerting a pressure force on an outer article of the stack, a conveyor roller opposite which a separation surface is arranged, and in which the conveyor roller and the separation surface form a separation area between an outer surface of the conveyor roller and the separation surface, comprising the steps of:

rotating the conveyor roller and the feed roller by driving means,

periodically exerting a frictional force on an outer article of the stack by the feed roller, so that said article is shifted from the stack to the separation area, where the conveyor roller engages said article and carries said article off in the direction of transport, and



reducing the pressure force exerted by the feed roller on said outer article at least while the conveyor roller engages said article,

wherein each time an article is carried off by the conveyor roller, rotating the feed roller by said article, as long as said feed roller is in contact with said article, and

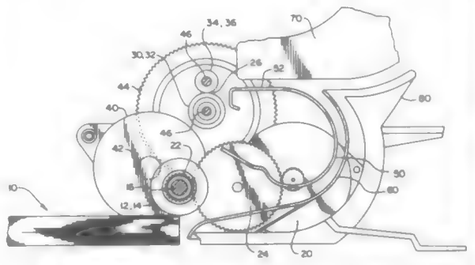
enhancing the force with which the feed roller is pressed against the stack by the action of the frictional force which is exerted by the feed roller on said article in a direction of the separation area and reducing the force when the conveyor roller engages said article.

5,362,038

SHEET FEEDER FOR COMPUTER DRIVEN PRINTER

Robert Giles, Escondido, Calif., and Timothy Zantow, deceased, late of Elm Grove, Wis. by Scott W. Zantow, administrator , assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1993, Ser. No. 55,649
Int. Cl.[5] B65H 5/00
U.S. Cl. 271—10 10 Claims



6. A sheet feeder for a computer-driven printer having a reciprocating print head comprising:

a) a sheet feed roller and means for intermittently rotating said sheet feed roller to feed a sheet of paper along a first portion of a continuous path of paper travel at a first rate of speed from a stack of paper to a holding station;

b) at least one sheet drive roller on each side of and spaced from the centerline of paper travel and means for intermittently rotating said drive rollers to move a sheet of paper at a second rate of speed slower than said first rate of speed along a second portion of said path extending from said holding station to a printing station;

c) a plurality of pinch rollers between said holding station and said printing station, each said pinch roller being opposed to sand biased toward an associated drive roller to define a paper path therebetween;

d) guide means for guiding a sheet of paper from said stack to position the leading edge thereof in bights between said opposed drive rollers and pinch rollers; and

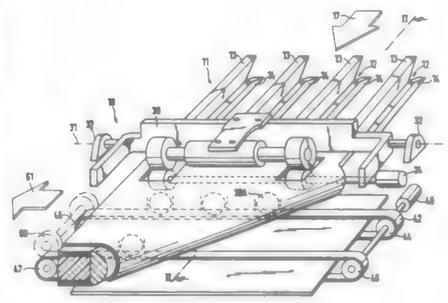
e) roller drive timing means for energizing said means for intermittently rotating said sheet feed roller to move said sheet until the leading edge thereof is engaged with each of said bights and thereafter energizing said means for intermittently rotating said drive rollers to move said sheet through said bights to said printing station.

5,362,039

DEVICE FOR TURNING A SHEET WITH A SIMULTANEOUS CHANGE IN CONVEYING DIRECTION

Johannes J. M. Kusters, Zwanenburg, Netherlands, assignor to Bell & Howell GmbH, Friedberg/Hessen, Germany

PCT No. PCT/EP92/00829, § 371 Date May 4, 1993, § 102(e) Date May 4, 1993, PCT Pub. No. WO93/01115, PCT Pub. Date Jan. 21, 1993
PCT Filed Apr. 13, 1992, Ser. No. 50,235
Claims priority, application Germany, Jul. 4, 1991, 4122214
Int. Cl.[5] B65H 5/00
U.S. Cl. 271—225 7 Claims



1. A device for turning a conveyed sheet and simultaneously changing its conveying direction comprising:

an inlet slot defined by first and second side walls and lying in a first sheet plane;

inlet driving means for driving a leading edge of said sheet into said inlet slot;

first and second curved walls defining a bending slot located diagonally to said inlet slot and having axes of curvature in a plane substantially parallel to said first sheet plane;

an outlet slot defined by third and fourth walls and located adjacent said bending slot and wherein said third wall includes a plurality of openings;

outlet drive means for seizing said sheet from said bending slot and driving said sheet through said outlet slot in a second sheet plane; and,

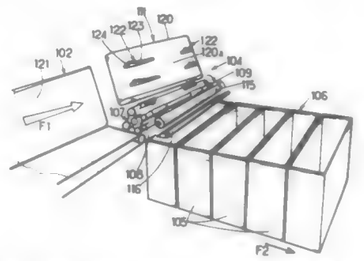
a plurality of spherical roll elements located above said third wall but having portions thereof extending through said openings to contact said sheet as said sheet passes thereunder.

5,362,040

DEVICE FOR TRANSFERRING FLAT OBJECTS USING A CONVEYOR BELT AND DRUM ARRANGEMENT

Pierre Midavaine, Belcodene, and Jean Roch, Simiane-Collongue, both of France, assignors to Bertin & CIE, Plaisir, France

PCT No. PCT/FR92/00532, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/22386, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 12, 1992, Ser. No. 988,119
Claims priority, application France, Jun. 14, 1991, 91 07296
Int. Cl.[5] B65H 5/00
U.S. Cl. 271—225 10 Claims



1. A flat object feeding machine comprising an input conveyor on which flat objects move longitudinally one by one along a substantially horizontal linear path in a plane slightly inclined with respect to vertical, receptacles for said flat objects moving at a right angle to said path, and a device for individually transferring said flat objects fed from said input conveyor into said receptacles, wherein said device comprises (a) a movable transfer member extending above said receptacles and comprising support means extending substantially in prolongation of said linear path for receiving said flat objects one by one lengthwise in a reception position wherein the lower edge of one said flat objects rests on said support means, driving means for moving said support means at a right angle to said path from said reception position to an ejection position wherein said support means releases said lower edge, and ejection means for ejecting said released one flat object downwards into one of said receptacles, said transfer member being shaped so as jointly to allow the arrival of at least one of said flat objects in said reception position and the ejection of another of said flat objects from said ejection position, and (b) a reception conveyor comprising stop means for holding substantially in said plane one of said flat objects received in said reception position on said transfer member and for moving said one object in said slightly inclined position from said reception position to said ejection position in conjunction with said transfer member.

5,362,041

SHEET REGISTERING UNIT FOR AN IMAGE FORMING APPARATUS

Takahiko Ryuzaki; Yoshio Kogure; Hideo Ichikawa; Yasuo Nakamura, and Takuji Miyazawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

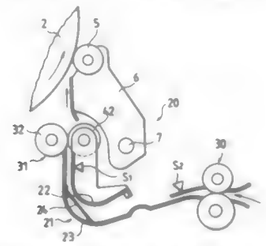
Filed Apr. 13, 1993, Ser. No. 45,428
Claims priority, application Japan, Apr. 16, 1992, 4-122625; Sep. 17, 1992, 4-273626
Int. Cl.[5] B65H 7/00
U.S. Cl. 271—236 20 Claims

1. In a sheet registering unit for an image forming apparatus in which in a location upstream of a transfer stage, a preregistering roller device and a registering roller device are disposed while being separated with a predetermined distance from each other, and a leading edge of a sheet of paper is positioned with the aid of a loop of the sheet formed in a manner that the leading edge is thrust against a nip of paired roller members of the registering roller device, and that the sheet is additionally

pushed by the preregistering roller pair, the improvement comprising:

a pair of shafts, one of the pair supporting each of said paired roller members of said registering roller device;

linear bearing members interposed between at least one of said pair of shafts and a corresponding roller member; and



springs proximate the ends of at least one of said paired roller members, said springs and bearing members allowing at least one of said paired roller members to shift axially when a pressure is applied in an oblique direction to said paired roller members by said sheet of paper.

5,362,042

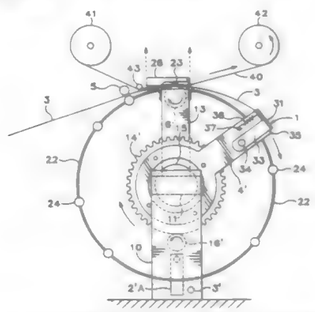
Patent Not Issued For This Number

5,362,043

ROTATING CLAMP ASSEMBLY

H. Erwin Grellman, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Aug. 12, 1993, Ser. No. 105,257
Int. Cl.[5] B65H *9/00*
U.S. Cl. 271—277 **14 Claims**



1. Print media handling means for use in a printer comprising in combination:

(a) frame means for supporting the printer;

(b) stationary media support means for supporting media on which printing is done, the support means being connected to the frame means; and

(c) clamping means rotatably mounted to the frame means and cooperative with the media support means to retain media on the media support means and transport the media along a path past a print station where printing on the print media occurs.

5,362,044

MODIFIED GOLF CUP

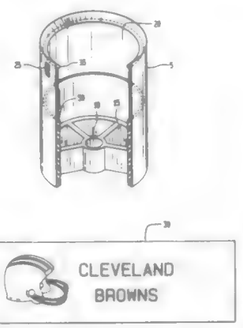
Kent D. Hageman, 204 Brookside Blvd., Hinckley, Ohio 44233

Filed Mar. 29, 1993, Ser. No. 39,930
Int. Cl.[5] A63B *57/00*
U.S. Cl. 273—34 R **17 Claims**

1. A golf cup modified for advertising comprising:

a) a golf cup having a top edge and a bottom surface spanned by a circularly cylindrical inner wall, the inner wall having a circumference and an indentation and the bottom surface of the golf cup having drain holes, the indentation having a top and a bottom;

b) at least one flat flexible insert having a length and a height, on which advertising material is printed, which when flexed can be removably attached to the golf cup such that



the insert is flush with the inner wall and entirely within the indentation; and

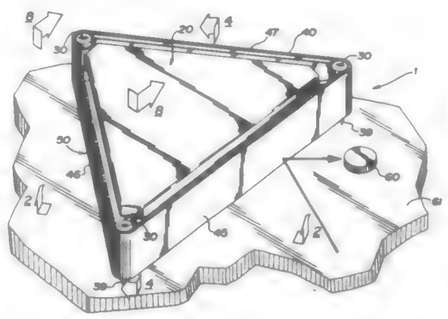
c) a downwardly angled lip around the circumference of the inner wall near the top edge of the golf cup, the lip defining the top of the indentation.

5,362,045

PRACTICE DEVICE FOR THE GAME OF HOCKEY

Brad Hammett, and Joseph C. Morin, both of Edmonton, Canada, assignors to 7th Man Enterprises Inc., Edmonton, Canada

Filed Sep. 15, 1993, Ser. No. 121,348
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—57.2 **16 Claims**



1. A practice device for the game of Hockey, comprising:

a. a body having at least two support members;

b. means for securing the body to an ice surface, such that the at least two support members are immediately adjacent the ice surface; and

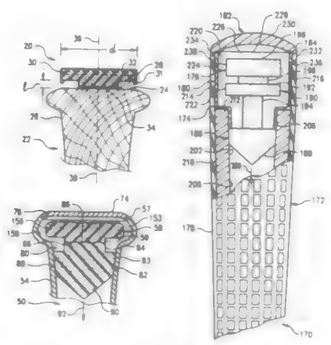
c. a resilient rebound member extending between the at least two support members, the rebound member being an elongate elastic band placed in tension between the support members, such that the rebound member springs back with a resilient force when struck by a hockey puck thereby increasing the resulting rebound of the hockey puck.

5,362,046

VIBRATION DAMPING

Steven C. Sims, Shelton, Wash., assignor to Steven C. Sims, Inc., Renton, Wash.

Filed May 17, 1993, Ser. No. 62,997
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—73 R **13 Claims**



12. The combination of an implement and an accessory which keeps deleterious, impact-generated vibrations from being transmitted to a wielder of the implement:

said accessory being fabricated from an elastomer and having a mushroom-like configuration defined by a stem and an integral head;

said stem being fixed to said implement and being configured for vibration in directions which encompass a 360° arc and are generally normal to the longitudinal axis of the accessory;

said head being free of said implement and configured for vibration of its peripheral edge around the circumference thereof in first and second directions generally paralleling the longitudinal axis of the accessory;

said implement having a component adapted to strike a game object and a handle, the accessory being installed in and protruding from an exposed end of said handle;

and said implement comprising a grip which surrounds said handle and a protruding part of the accessory and a cover which cooperates with said grip to envelope the accessory.

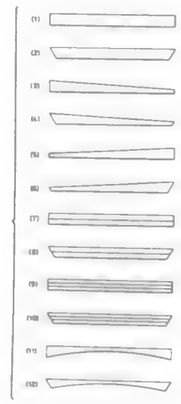
5,362,047

GOLD CLUB HEADS WITH FACE PIECES OF A THICKNESS VARYING IN TOE TO HEEL AND/OR TOP EDGE TO SOLE DIRECTIONS

Michael Shaw, and Brian F. Machin, both of Wakefield, England, assignors to Dunlop Slazenger International, Ltd., Normanton, England

Continuation of Ser. No. 951,450, Sep. 25, 1992, abandoned. This application Jan. 11, 1994, Ser. No. 180,103
Claims priority, application United Kingdom, Sep. 28, 1991, 120600
Int. Cl.[5] A63B *53/08*
U.S. Cl. 273—77 A **14 Claims**

1. In a set of golf iron heads, a plurality of said heads each including a plurality of components, one of said components for each of said heads comprising a face-piece component forming at least a portion of a striking face of said head, said face-piece component being of a material different from the material of the remainder of said head, and the thickness of said face-piece component increasing from the toe to the heel of the



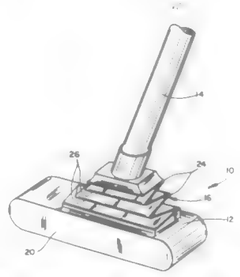
head in at least one iron of said set and increasing from the heel to the toe of the head in at least one other iron of said set.

5,362,048

GOLF CLUB

J. William Haste, 2529 W. Sherman, Peoria, Ill. 61604

Filed Dec. 6, 1993, Ser. No. 162,594
Int. Cl.[5] A63B *53/10*
U.S. Cl. 273—80.2 **14 Claims**



1. A golf club comprising a head having a generally forwardly directed face constructed for striking a golf ball, a shaft extending outwardly from the head and having a grip portion thereon for gripping the shaft to swing the club, and a connector located between and interconnecting the head and the shaft, the connector being relatively more resiliently yieldable than the shaft and the head so that the head flexes relative to the shaft about an axis generally perpendicular to the shaft when striking the golf ball with the head of the club.

5,362,049

GAME SCORE EVALUATION AND GAME CONTROL SYSTEM ON THE BASIS OF PLAYER'S PHYSICAL VALUE

Jürgen Höfer, Heidlohstrasse 2, 2000 Hamburg, Germany

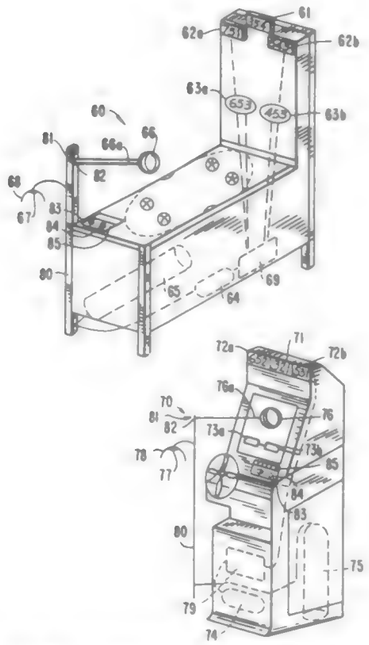
Continuation of Ser. No. 901,243, Jun. 19, 1992, which is a continuation-in-part of Ser. No. 573,033, Aug. 9, 1990, abandoned. This application Nov. 30, 1993, Ser. No. 158,760

Claims priority, application Germany, Feb. 9, 1988, 3803884; Feb. 16, 1988, 3804746; Mar. 28, 1988, 3810530; Apr. 12, 1988, 3812079; Apr. 19, 1988, 3813032; Oct. 4, 1988, 3833630; Oct. 12, 1988, 3834746; Oct. 21, 1988, 3835813; Nov. 2, 1988, 3837164; Nov. 25, 1988, 3839774; WIPO, Jan. 18, 1989, PCT/EP89/00052; Oct. 30, 1989, PCT/EP89/01292

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[5] **A63F** *7/00;* **A61B** *5/08*

U.S. Cl. 273—118 A **14 Claims**



1. A system for evaluation of the normal game score of any game equipment having game scoring means on the basis of players'physical values, said game scoring evaluation system comprising: measuring means for non-invasive measuring of physical values of a player completely painless and bloodless and without the necessity of a surgical treatment, arranged to transmit measured physical values to a computer unit for producing evaluated scores; a computer arranged to receive any physical values of a player measured by said measuring means and to receive the normal game score from the game scoring means of said game equipment, and also to receive any multiplication factors for certain physical values, for the evaluation of said normal game score in dependence on physical values of a player, said evaluation to be effected by multiplication of said normal game score with said multiplication factors; game scoring means arranged to transmit the normal game score to said computer unit; any game equipment designed to enable a player to obtain a certain game score with his playing activities; and display means for displaying said scores evaluated by physical values of a player received from said computer unit.

5,362,050

MOVABLE BODY JUMPING MECHANISM FOR AMUSEMENT DEVICES

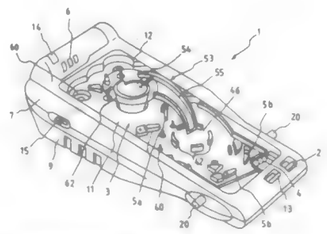
Yasushi Matsuyama, Tokyo, Japan, assignor to Tomy Company, Ltd., Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,546

Claims priority, application Japan, Sep. 25, 1992, 4-072917[U]

Int. Cl.[5] **A63F** *3/00*

U.S. Cl. 273—118 R **6 Claims**



1. An amusement device comprising:

a movable body;

a game board having a surface large enough to accommodate movement of the movable body in a plane of movement, said surface having first and and second play areas;

jumping means for moving the movable body out of the plane of movement and moving the movable body from the first play area to the second play area;

a conical member having upper and lower portions, the conical member being positioned within the first play area with the lower portion being closer to the game board than the upper portion, the conical member having a movable body outlet in the upper portion and a movable body inlet in the lower portion;

a sloped movable body passage having first and second ends, the first end being positioned in the vicinity of the movable body outlet, the second end being positioned in the vicinity of the second play area; and

movement means for moving the movable body from the movable body inlet to the movable body outlet.

5,362,051

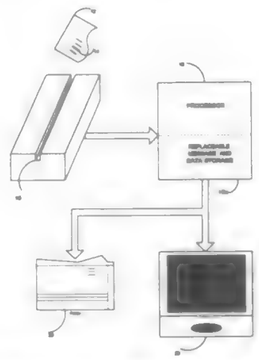
ENTERTAINMENT AND PROMOTIONAL METHOD

John W. Swafford, Jr., Lombard, and William P. Carlson, Aurora, both of Ill., assignors to RTC Industries, Inc., Chicago, Ill.

Filed Aug. 30, 1993, Ser. No. 114,009

Int. Cl.[5] **A63F** *9/00*

U.S. Cl. 273—138 A **10 Claims**



1. A promotional method comprising the steps of:

storing a predetermined number of recognizable data;

storing a plurality of different messages for each of the predetermined number of stored recognizable data;

scanning a document to read machine readable information appearing thereon;

determining whether scanned data represented by the machine readable information on the scanned document represents data corresponding to any of said stored recognizable data;

identifying the stored recognizable data corresponding to the scanned data in response to the determination that the scanned data corresponds to one of the stored recognizable data;

identifying the plurality of stored messages associated with the identified stored recognizable data;

selecting one of the identified messages and producing an output response corresponding thereto.

5,362,052

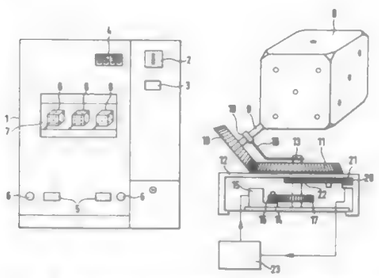
DRIVE MECHANISM FOR A SYMBOL-CARRYING SYMBOL CARRIER

Gunter Kubatsch, Berlin, Germany, assignor to Bally Wulff Automaten GmbH, Berlin, Germany

Continuation-in-part of Ser. No. 846,514, Mar. 4, 1992, abandoned. This application Jun. 25, 1993, Ser. No. 83,018

Int. Cl.[5] **A63F** *9/04, 9/24*

U.S. Cl. 273—145 R **15 Claims**



1. A drive mechanism for a symbol-carrying, rotary symbol carrier having a diagonal axis with a motor which rotates the symbol carrier, characterized in that a motor-gear combination drives the symbol carrier in such a way that it rotates about two rotation axes, a rotatable shaft is firmly connected to an extension of a diagonal axis of the symbol carrier, the shaft is connected by means of a bearing to a crank which is fixed to a rotated drive shaft, and the crank is bent in such a way that the shaft and the drive shaft are disposed at a predetermined angle with respect to each other.

5,362,053

CARD READER FOR BLACKJACK TABLE

Arthur Miller, Las Vegas, Nev., assignor to Tech Art, Inc., Las Vegas, Nev.

Continuation-in-part of Ser. No. 709,363, May 31, 1991, Pat. No. 5,312,104, which is a continuation-in-part of Ser. No. 446,205, Dec. 4, 1989, Pat. No. 5,039,102. This application Jul. 27, 1993, Ser. No. 98,421

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

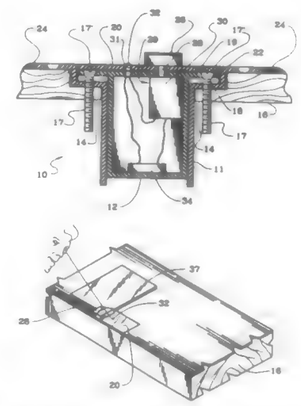
Int. Cl.[5] **A63F** *1/06*

U.S. Cl. 273—148 R **13 Claims**

1. A device for reading a face down card on a blackjack table in a game of blackjack, comprising:

a blackjack table; and

a refractive element positioned beneath a top surface of the blackjack table and beneath the face down card for refracting an image of the face down card towards a dealer to be viewed by the dealer.



5,362,054

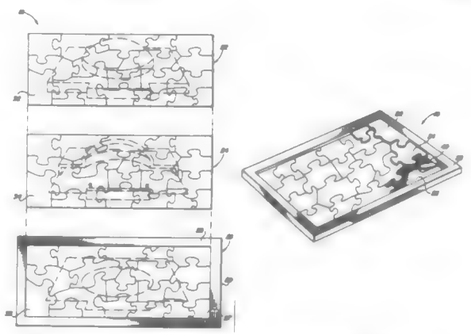
MULTI-LAYERED EDUCATIONAL AND ENTERTAINING DEVICE INCLUDING A PLURALITY OF INDEPENDENT LAYERS

Nasir M. Ashemimry, Miami, Fla., assignor to Businessship International, Inc., Coral Gables, Fla.

Continuation-in-part of Ser. No. 938,792, Sep. 1, 1992, abandoned. This application Sep. 10, 1993, Ser. No. 119,452

Int. Cl.[5] **A63F** *9/10*

U.S. Cl. 273—157 R **6 Claims**



1. A multi-layer educational and entertaining puzzle, comprising:

a top planar comprising a plurality of irregularly-shaped pieces assembled together to form a top educational and entertaining picture, forming a first cut-away section representing an exterior of a building or structure;

at least one intermediate planar layer comprising a plurality of irregularly-shaped pieces assembled together to form at least one intermediate educational and entertaining picture, each of said intermediate layers forming an intermediate cut-away section representing an interior portion of said building or structure; and

a bottom planar layer including a bottom puzzle portion and a raised decorative border extending inward from said bottom layer's outer edges and abutting said bottom puzzle portion, said bottom puzzle portion comprising at least one piece which forms a bottom educational and enter-

taining picture, forming a final cut-away section representing a ground or surface upon which said building or structure is located and illustrating the historical development of said ground or surface culminating in the construction of said building or structure;

said layers appearing as a two-dimensional object when assembled; and said layers further having a dissectional relationship wherein each layer represents a cut-away section to be assembled to form a complete building or structure thereby educating and entertaining a user with the said building's structure and history; and

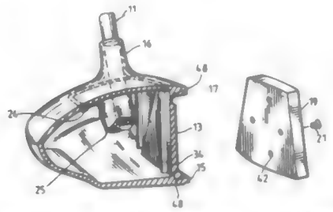
a lever means attached to said bottom puzzle portion for disassembling said layers when said layers are positioned such that the intermediate layers are on top of said bottom puzzle portion and said top layer is on top of said intermediate layers.

5,362,055

HOLLOW HAVING PLATE WELDED IN CROWN AND STRIKING FACE INSERT METAL WOOD

Gordon S. Reanie, Humble, Tex., assignor to Progear, Inc., Houston, Tex.

Continuation of Ser. No. 849,735, Mar. 12, 1992, abandoned.
This application Jul. 8, 1993, Ser. No. 88,917
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **18 Claims**



1. A hollow metal wood golf club head, comprising:

a ball striking face having upper and lower edges;

a sole plate joined to the lower edge of said ball striking face;

a crown joined to the upper edge of said ball striking face and defining an opening;

a crown plate configured to fit within said opening in said crown and seamed to the crown to fill the opening and reinforced the crown; and

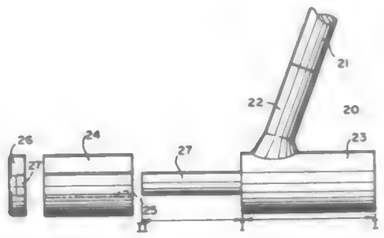
said ball striking face, sole plate, crown and crown plate defining, in part, a hollow interior region adapted for receiving synthetic plastic foam material.

5,362,056

HEADS FOR GOLF CLUBS

Peter Minotti, 2755 Old River Rd., Easton, Pa. 18042

Filed Jun. 11, 1992, Ser. No. 897,301
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—175 **5 Claims**



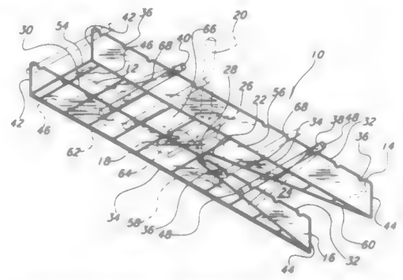
1. A golf clubhead comprising a striking head, a heel portion and a shank portion, said heel portion having a stem of reduced diameter extending therefrom and a cylindrical barrel rotatably carried by said stem forming a freely rotatable striking head.

5,362,057

GULF PUTTING PRACTICE GUIDE

Juichi Arima, 709 Woodmond Beach Dr. South, Kent, Wash. 98032

Filed Sep. 21, 1993, Ser. No. 124,672
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.1 **34 Claims**



1. A golf putting practice apparatus for practicing a putting stroke with or without a golf ball, comprising:

a bottom panel having a notch therein adapted to receive the golf ball;

left and right side panels connected to said bottom side panel and spaced apart a distance at least slightly greater than the length of a head of a golf putter, said left and right side panels having top and bottom edges with a plurality of grooves in said top edges; and

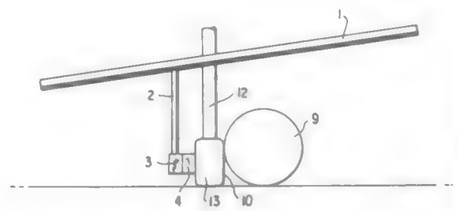
at least one relocatable guide member removeably coupled to said top edges of said left and right side panels and positioned in at least one of said grooves, said guide member having a length greater than said distance between said left and right side panels.

5,362,058

PUTTER TRAINING DEVICE

Daniel A. Honig, Palm Beach Gardens, Fla., assignor to Fairview Products, Inc., Plam Beach, Fla.

Filed Feb. 12, 1993, Ser. No. 16,958
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **10 Claims**



1. A removable training device for use in conjunction with a golf club having a head with a front face for hitting a ball and a rear portion situated opposite of the front face, said device comprising:

an elongated sighting element;

vertically oriented support means for supporting said sighting element on the head of a golf club in such a way that, when the club head is resting on a flat surface in a normal upright golf ball putting position, said support means engages said head, and said sighting element extends above the head of the club at an upward inclination with respect to the support means and the flat surface and with a first portion of said sighting element extending beyond the front face of the head of the club and a second portion of said sighting element extending beyond the rear portion of the head of the club; and

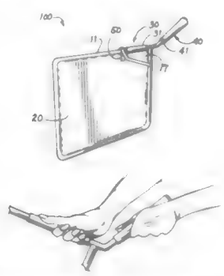
attaching means for attaching said support means to the head of a golf club.

5,362,059

GOLF SWING TRAINING AND EXERCISE APPARATUS

Michael R. Grossman, 8120 E. San Miguel, Scottsdale, Ariz. 85250

Filed Jan. 26, 1994, Ser. No. 187,304
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **19 Claims**



19. A swing training and exercising apparatus used by a swinger for practicing and exercising swing motions during which impact with a ball is simulated comprising:

a framework,

a first elongated handle having an inboard end, the first handle for being gripped by one hand of the swinger when holding the apparatus in a swinging position,

a second elongated handle attached to the inboard end of the first handle and forming an obtuse angle with said first handle for being gripped by the other hand of the swinger when holding the apparatus in a swinging position,

the first and second handles attached to the framework,

an air-resistant material attached to the framework, and

the framework and material providing

a variable amount of drag during movement of the framework in a swing path from one end of a swing motion on one side of a swinger's body to another end of the swing motion on the other side of the swinger's body, and

a strong visual cue to the swinger of the position of the framework relative to the swinger's body as the framework passes through the simulated point of impact with the ball while practicing the swing motion.

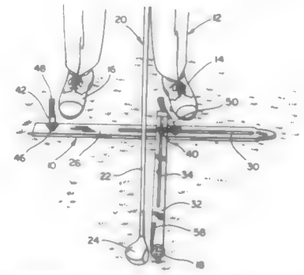
5,362,060

STANCE MINDER FOR GOLFERS

Larry W. Hinson, Rte. 4 Box 397, Douglas, Ga. 31533

Filed Jul. 29, 1993, Ser. No. 99,137
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187 R **6 Claims**

1. A stance minder for golfers comprising an elongated, straight, rigid base member adapted to be positioned on the surface of a golf course along a desired line of flight of a golf ball and in adjacent relation to toe areas of a golfer's feet which are oriented generally laterally of the base member, said base member having a length greater than the distance between the golfer's feet and extending beyond the golfer's feet, said base member having an end termination generally in a point adapted to be positioned in spaced relation to the left foot of a right handed golfer and aimed along a desired flight path of a golf ball toward a target area, an elongated, straight, rigid position reminder member mounted on said base member in perpendicular relation thereto and extending laterally therefrom intermediate the ends of the base member, said position reminder member having an end portion remote from the base member for positioning adjacent a golf ball to be struck by a selected golf club and a pair of elongated foot position indicators each including a concave side mounted on said base member, said foot position indicators being substantially alike in construction and extending laterally therefrom in opposite lateral direction to the position reminder member to indicate the position of the feet of a golfer with respect to the base member, position reminder member and golf ball at the end of the position reminder member, said base member, position reminder member and foot position indicators being configured and dimensioned to enable a golf club head to move in a path to strike a golf ball



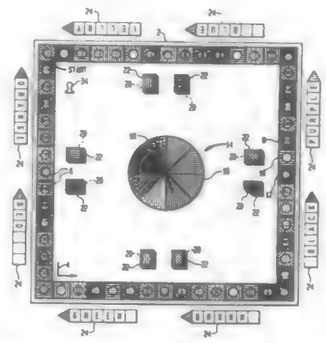
positioned at the end portion of the position reminder member during an optimum swing pattern of the golf club by a golfer, each of said foot indicators adapted to extend a substantial distance along side the feet with the concave side of the foot indicator along side the left foot of a right handed golfer being positioned along and generally conforming to the curvature of the inner side of the left foot and the concave side of the foot indicator positioned along side the right foot of a right handed golfer being positioned along and generally conforming to the curvature of the outer side of the right foot, and means interconnecting the base member and position reminder member to enable adjustment of the position reminder member longitudinally along the base member and to vary the relation of the position reminder member to the foot position indicators.

5,362,061

GAME BOARD APPARATUS

Patricia A. Napolitano, 59 Harwick Rd., Lopatcong, N.J. 08865

Filed Dec. 15, 1993, Ser. No. 167,735
Int. Cl.[5] A63F *3/00*; G09B *1/14*
U.S. Cl. 273—243 **6 Claims**



1. A board game apparatus, comprising:

a flat, multi-sided game board having a course of successive playing spaces generally positioned along the periphery

thereof, successive ones of the spaces being colored with one of a given plurality of colors;

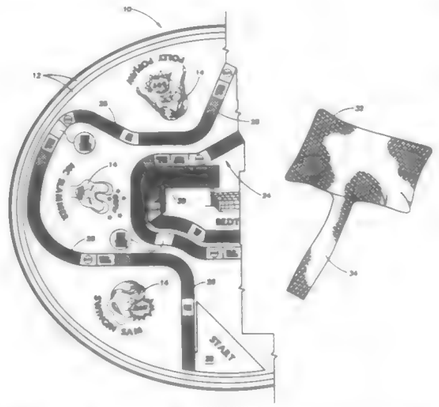
a chance device, operable by a player, for selecting one color of said plurality of colors;

a manually operable playing piece for each player participating in the game, for indicating the current spatial position of each player along the course;

a plurality of groups of color cards, where all the cards of each group of cards are the same color, and each group of cards being a different one of said plurality of colors; and

a plurality of color card folders, at least a portion of each folder being colored a different one of the plurality of colors and having a plurality of compartments formed therein which are dimensioned so as to individually receive the color cards therein.

5,362,062
PILLOW FIGHT STRESS REDUCING GAME
Ted J. Schott, 7425 Bray Rd., Mount Morris, Mich. 48458
Filed Apr. 18, 1994, Ser. No. 229,381
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **10 Claims**



1. A game apparatus comprising: a circular game board including, a series of contiguous markings defining a serpentine path, printed thereon, the path beginning at an area designated as the starting point and ending at an area designated as bedtime; said path containing a plurality of spaces identified by a color; a plurality of spaces containing instructions and a plurality of spaces identified by multiple colors; position indicator means comprising a dial face divided into a plurality of color segments and rotatably disposed thereon a spinning pointer; a plurality of token means, each having a different identifying color, said colors matching the colors on the path and dial face, and pillows shaped to allow players to swing at other players according to the rules of the game.

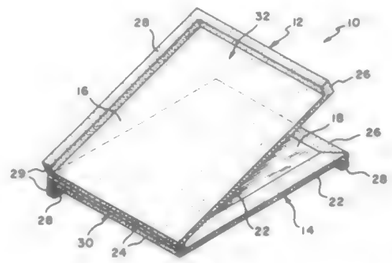
5,362,063
FOLDING LAP BOARD
Clarence L. Cummings, 3437 229th St., Torrance, Calif. 90505
Filed Mar. 28, 1994, Ser. No. 218,437
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—287 **19 Claims**

1. A folding lap table comprising:

a pair of flat, rigid panels each having an upper surface and a lower surface, a forwardly facing front edge, a rearwardly facing back edge, a laterally outwardly facing side edge, and an interior edge,

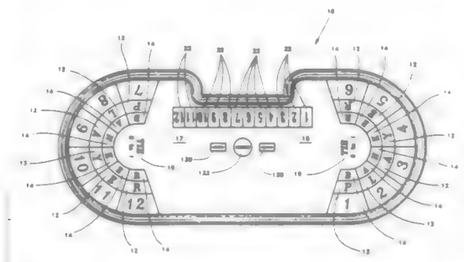
a raised rim on said upper surfaces of both said panels extending along said front edges and said side edges thereof,

a hinge joining said panels at their interior edges so that said lower surfaces of said panels fold together into mutual juxtaposition and apart into mutual coplanar relationship, and



separate fabric coverings on each of said panels extending across the entire expanses of said upper surfaces, over said rims and onto said lower surfaces thereof.

5,362,064
MODIFIED BACCARAT
Richard Lofink, and Kurt Lofink, both of P.O. Box 33388, Las Vegas, Nev. 89133
Filed Sep. 8, 1993, Ser. No. 118,012
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 **63 Claims**



1. An improved method of playing the conventional manner of play of Baccarat in which a bettor makes a wager that either a Bank hand or a Player hand will win, the improvement comprising:

a) preselecting one or more hand combinations of the Bank hand and the Player hand as barred combinations so that a normally winning hand becomes a push hand during a step of paying off;

b) dealing two cards comprising the Bank hand and dealing two cards comprising the Player hand according to the conventional manner of play of Baccarat;

c) dealing an additional card to the Player hand and an additional card to the Bank hand if required according to the conventional manner of play of Baccarat;

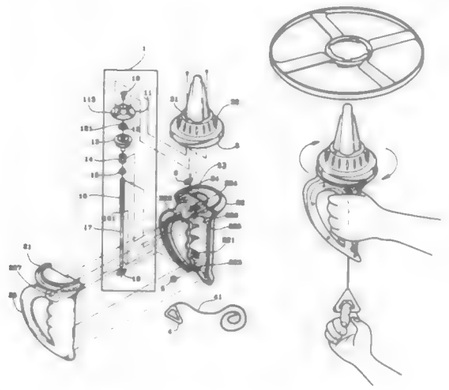
d) determining a winning hand and a losing hand according to the conventional manner of play of Baccarat;

e) determining whether a barred combination of the Bank hand and the Player hand exits by comparing the combination of the Bank hand and the Player hand to the hand combinations of the Bank hand and the Player hand that are preselected as barrel combinations;

f) if a barred combination of the Bank hand and the Player hand exists, treating the winning hand as a push by returning to the bettor the amount wagered on the winning hand without any pay off and collecting the amount wagered on the losing hand;

g) if a barred combination of the Bank hand and the Player hand does not exist, paying off the bettor a predetermined amount if the bettor has wagered on the winning hand and collecting the amount wagered on the losing hand.

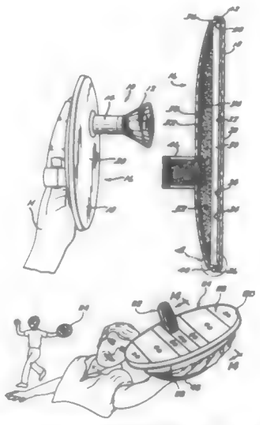
5,362,065
FLYING SAUCER PROJECTING AND CATCHING DEVICE
Frank F. S. Su, 5F. No.80, Sec.1, Chung Jen Road, Pei Tou, Taipei, Taiwan, Prov. of China
Filed Feb. 16, 1994, Ser. No. 197,782
Int. Cl.[5] A63B *67/06*
U.S. Cl. 273—327 **1 Claim**



1. A flying saucer projecting and catching device comprising a holder for holding by hand, a propeller shaft assembly fastened to said holder and consisting of a propeller disk, a connector, a reel, a locating member, a spacer, a spring, and an elongated shaft, a driving shaft driven by said propeller disk to turn a flying saucer causing it to fly into the air, and a traction cable having one end fastened to said reel and an opposite end extended out of said holder and coupled with a handle, said traction cable being pulled to turn said propeller disk through said reel causing said driving shaft to send the flying saucer into the air, wherein said holder is made of horn-like shape gradually smaller toward the bottom, having a hand guard for protecting the hand, a retainer ring through which said traction cable passes, said holder being formed of two symmetrical shells fastened together by screws; said driving shaft is made gradually smaller toward the top, having a plurality of elongated, raised portions spaced around the periphery thereof near the bottom for holding the flying saucer on said driving shaft.

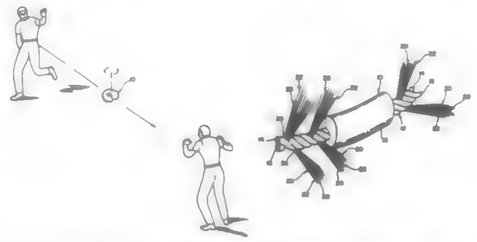
5,362,066
AERIAL THROWING GAME
Mark S. Sassak, 1340 Linden, Plymouth, Mich. 48170
Continuation-in-part of Ser. No. 827,404, Jan. 29, 1992, Pat. No. 5,240,257. This application Feb. 8, 1993, Ser. No. 14,730
Int. Cl.[5] A63B *65/00, 67/00*
U.S. Cl. 273—344 **34 Claims**

1. In an aerial dart throwing game of the type including a dart and a hand-held dart catcher which is sized so that it can be readily held on one hand for effecting manipulation of the catcher to a position intercepting the line of flight of the dart thrown, said dart catcher comprising a backing member including a front wall having a generally planar outer surface, said front wall being comprised of a rigid material and said outer surface defining a first target for a first dart thrown thereagainst, a plate-like member having generally planar first and second surfaces, said plate-like member being comprised of a rigid material and at least one of said first and second surfaces defining a second target for a second dart thrown thereagainst,



and connecting means for removably connecting said plate-like member to said catcher.

5,362,067
THROWABLE TOY HAVING A RING ARRANGEMENT OF MANY EXTENDED FIBERS HAVING ONE END OF EACH FIBER HELD WITH OTHER FIBER ENDS IN A SET OF TWISTED WIRES ARRANGED AND JOINED TOGETHER IN A RING
Webb T. Nelson, 9716 Lakeshore NE., Seattle, Wash. 98115
Filed Feb. 16, 1994, Ser. No. 197,133
Int. Cl.[5] A63B *65/00*
U.S. Cl. 273—425 **6 Claims**



1. A throwable toy, appearing as a fuzzy spinning ring when thrown on an initially directed course, comprising:

a. at least two wires twisted together and arranged as a ring;

b. multiple extended fibers arranged collectively as a ring and held in position, as each extended fiber has a portion thereof gripped between the twisted wires.

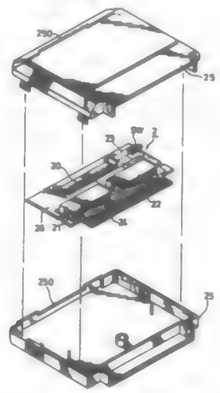
5,362,068
GAME CARTRIDGE FOR A TELEVISION GAME CONSOLE
Houng-Yean Liu, No. 193, Yung-Mei Rd., Yang-Mei Chen, Tao-Yuan Hsien, Taiwan, Prov. of China
Filed Apr. 5, 1993, Ser. No. 42,694
Int. Cl.[5] G06F *9/00*
U.S. Cl. 273—435 **6 Claims**

1. A game cartridge for a television game console, said game cartridge including a main cartridge which has a program memory unit, a primary graphics memory unit and a first edge-board contact means connected electrically to said program memory unit and to said primary graphics memory unit, said first edge-board contact means being connected remov-

ably to said television game console and enabling said television game console to address and receive data from said program memory unit and from different storage locations in said primary graphics memory unit, wherein the improvement comprises:

an edge-board connector provided on said main cartridge and connected electrically to said primary graphics memory unit and said first edge-board contact means;

an auxiliary card having a secondary graphics memory unit and a second edge-board contact means connected electrically to said secondary graphics memory unit, said second edge-board contact means being connected removably to said edge-board connector; and



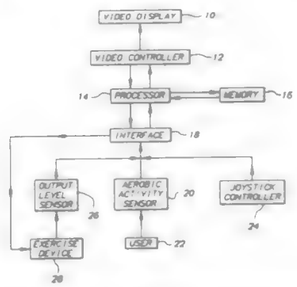
a logic select circuit means for detecting an address input from said television game console corresponding to a predetermined one of said storage locations in said primary graphics memory unit, said logic select circuit means also being operable to disable said primary graphics memory unit and enable said secondary graphics memory unit upon detection of said address input to permit said secondary graphics memory unit to replace said predetermined one of said storage locations in said primary graphics memory unit when said auxiliary card is attached to said main cartridge.

5,362,069

COMBINATION EXERCISE DEVICE/VIDEO GAME

Justin Hall-Tipping, Rowayton, Conn., assignor to Heartbeat Corporation, Washington, D.C.

Filed Dec. 3, 1992, Ser. No. 985,254
Int. Cl.[5] A63B *69/16*
U.S. Cl. 273—438 **18 Claims**



1. An apparatus useable with an exercise device and a video game including display means for displaying the video game, comprising:

a) means for sensing the aerobic activity level of a user, and for outputting an aerobic activity level signal having a characteristic indicative of said aerobic activity level;

b) means for sensing the output level of the exercise device, and for outputting an output level signal having a characteristic indicative of said output level; and

c) regulating means for:

1) adjusting the exercise device according to said aerobic activity level signal;

2) adjusting the play of the video game according to said aerobic activity level signal

3) adjusting the play of the video game according to said output level signal, wherein:

the exercise device comprises a plurality of difficulty levels;

the video game comprises a plurality of levels of difficulty of play and at least one user-operated control for controlling the play of the video game; and

said regulating means:

1) adjusts the level of difficulty of the exercise device according to said aerobic activity level signal, wherein said level of difficulty of the exercise device is increased in response to said aerobic activity level signal falling below a first threshold level;

2) adjusts the level of difficulty of play of the video game according to said aerobic activity level signal, wherein said level of difficulty of play of the video game is increased in response to said aerobic activity level signal falling below a second threshold level;

3) adjusts the play of the video game according to said output level signal; and

4) adjusts the play of the video game and the exercise device according to a specified exercise profile having at least two exercise phases.

5,362,070

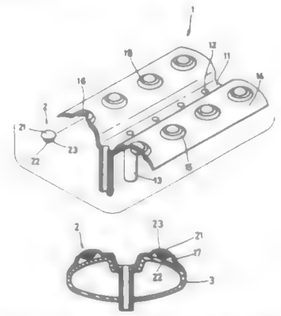
Patent Not Issued For This Number

5,362,071

PROTECTIVE CASING FOR A RACKET FRAME

Leueis Liu, 9F-3, No. 218, Kuo Kuang Rd., Taichung, Taiwan, Prov. of China

Filed Sep. 27, 1993, Ser. No. 127,070
Int. Cl.[5] A63B *49/14*
U.S. Cl. 273—73 D **6 Claims**



1. A protective casing for a game racket comprising:

a groove extending throughout the length of said protective casing; a plurality of string holes formed in a bottom surface of said groove for stringing the racket's striking network; a plurality of string-protection pipes extended from the peripheries of said corresponding string holes and further extended from the groove bottom surface by a predetermined distance from a convex surface of said groove; a pair of protective plates extended from opposing sides of said groove according to the shape of a racket frame's outer wall;

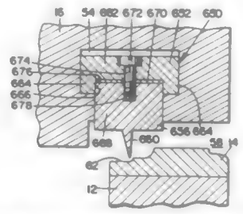
wherein said protective casing is characterized by: said protective plates further comprising a plurality of truncated conical floating portions having a plurality of circular insert holes of predetermined contour located within and passing through the top of said floating portions; and a plurality of insert elements embedded in said insert holes of said floating portions.

5,362,072

TURBINE RADIAL ADJUSTABLE LABYRINTH SEAL

William S. Dalton, Chesterfield, Mass., assignor to IMO Industries, Inc., Quabbin Division, Chicopee, Mass.

Filed Dec. 21, 1992, Ser. No. 993,431
Int. Cl.[5] F16J *15/447*
U.S. Cl. 277—53 **8 Claims**



1. In an elastic fluid turbine employing packing rings and spill strips or tip seals to minimize leakage between rotating and stationary components, an improvement in the packing rings and spill strips utilizing the combination of:

a two-part packing ring and a two-part spill strip each comprising interconnected separate first and second half parts,

the first half parts being disposed in annular grooves formed in stationary components of the turbine,

the second half parts being partially disposed in clearance areas between the stationary components and rotating components,

the second half parts having at least one seal tooth extending therefrom and disposed in close proximity to the rotating components,

means for selectively varying the spacing between the half parts for adjusting the sealing dimensions of the packing ring and spill strip,

and means for interconnecting the half parts to form an integral inseparable unit,

the means for selectively varying the spacing between the half parts being a shim positioned in a groove in a lower face of the first half part, the second half part having an upper face bearing against the shim when the parts are mated.

5,362,073

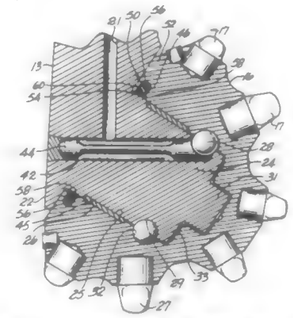
COMPOSITE SEAL FOR ROTARY CONE ROCK BITS

Robert G. Upton, Montgomery; Michael F. Hooper, Spring; Gary Portwood, Katy; Jerry Pyka, Houston; Randy Johnston, and Robert Chambers, both of Conroe, all of Tex., assignors to Smith International, Inc., Houston, Tex.

Filed Oct. 21, 1992, Ser. No. 964,673
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—92 **12 Claims**

1. A composite O-ring seal for a sealed bearing rotary cone rock bit, the seal being confined within a seal cavity formed between a rotary cutter cone and a journal bearing comprising:

a first elastomer integrally bonded to at least a second elastomer, said first elastomer in contact with a dynamic bearing surface being wear resistant, the first elastomer material consists of about 55 percent by wht. of HSN polymer, about 0.8 percent by wht. of an antioxidant, about 3 percent by wht. of an activator, about 22 percent by wht. of carbon black, about 8 percent by wht. of a curative and about 8 percent by wht. of graphite, said second elastomer having properties adapted for precise control of seal



contact force while resisting compression set when the seal is squeezed within said seal cavity, and

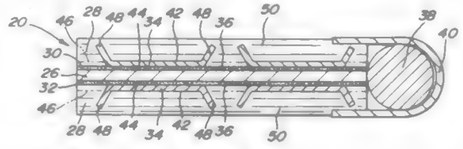
means for applying contact pressure to said composite seal.

5,362,074

REINFORCED CORE HEAVY DUTY GASKET

Paul E. Gallo, Berwyn, and Paul V. Rakauskas, Melrose Park, both of Ill., assignors to Dana Corporation, Toledo, Ohio

Filed Feb. 26, 1993, Ser. No. 23,403
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—233 **7 Claims**



1. A gasket of an internal combustion engine comprising:

a central metal shim;

a pair of outer facing layers positioned on opposite sides of said shim;

a core disposed between each of said facing layers and said shim, said cores including opposing first and second planar faces, said first planar face of said cores positioned against one of said facing layers, wherein said cores include at least one tang extending away from said first planar face into said one of said facing layers to clinch said cores to said one of said facing layers; and

an adhesive bonding said second planar face of said cores to said shim.

5,362,075

METHOD AND APPARATUS FOR PROTECTING WHEEL BEARINGS IN IN-LINE ROLLER SKATES

Adrian J. Szendel, 7656 Broadview Rd., Ste. #308, Parma, Ohio 44134

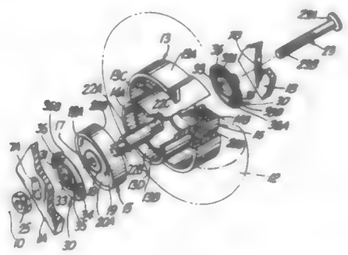
Filed Jan. 11, 1993, Ser. No. 3,011
Int. Cl.[5] A63C *17/06, 17/22*
U.S. Cl. 280—11.22 **8 Claims**

1. An axle aperture plug for installation in an in-line roller skate usable by a skater on a riding surface, said in-line roller skate including at least three wheels, at least three wheel axles, a frame, and clamping means, each said wheel having a central axis of rotation, each said wheel axle having a predetermined length and being positional on said central axis of rotation, said frame carrying said wheel axles so as to rotatably mount said plurality of wheels on said frame and to substantially center all said wheels substantially perpendicular to a common plane, each said wheel including a tire member, a hub, and bearing

means including an inner and outer race, carried by said hub and supported on one of said wheel axles, said tire member being supported on said hub, and said frame including a plurality of axle apertures being arranged in pairs of axle apertures, with the axle apertures of each said pair confronting each other and being positioned on one said wheel axis of rotation, and said clamping means being disposed on each said wheel axle for attaching said wheel axle to said frame and clamping a pair of said axle apertures plugs between said inner race and said frame, each said axle aperture plug comprising:

a spacer portion having an inner bearing surface for engaging said inner race and spacing said outer race from said frame;

a transverse axle bore through said spacer portion for passage of one said axle along one said central axis of rotation



of said wheel, said transverse axle bore having a cross-sectional diameter allowing the entire length of said axle to be slidably insertable through said transverse axle bore; and

a protective flange disposed about said spacer portion and having a surface symmetrically extending away from said transverse axle bore and terminating in an outer bearing surface adapted for proximate positioning with respect to said outer race when said aperture plug is installed in said in-line roller skate, so that said bearing means is protected from exposure to particulate contaminants during use of said in-line roller skate by said skater,

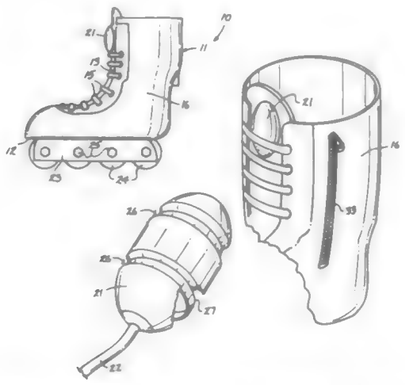
wherein said outer bearing surface is disposed in a first vertical plane and said inner bearing surface is disposed in a second vertical plane, and said first vertical plane is separated from said second vertical plane.

5,362,076

PNEUMATIC PUMP ROLLER BLADES

Michael P. Thomas, and Paul Thomas, both of 31731 Secoya, Coto De Caza, Calif. 92679

Filed Apr. 19, 1993, Ser. No. 48,307
Int. Cl.[5] A63C *17/06, 17/26*
U.S. Cl. 280—11.22 **3 Claims**



1. Pneumatic pump roller blades, comprising, at least one shoe member, the shoe member having a shoe member bottom wall and a front wall, with the front wall having an elongate split defining a gap,

a plurality of laces directed along the gap, with the shoe member having a shoe tongue positioned within the gap within the shoe member and coextensive with the gap,

the shoe member further including a U-shaped side wall extending about the shoe member from the gap, and the side wall having a pneumatic chamber therewithin,

a pump bladder mounted between the laces and the tongue, including a pneumatic conduit in pneumatic communication between the pump bladder and the pneumatic chamber,

a plurality of spaced parallel flanges fixedly and orthogonally mounted to the shoe member bottom wall, wherein the flanges include a row of wheel members, wherein each of the wheel members is rotatable about a respective axle, and

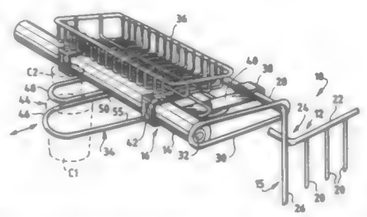
the bladder includes a plurality of annular grooves, wherein each of the grooves is arranged to receive a lace member of said laces, and each of the annular grooves includes a groove resilient ring floor hoop, wherein each hoop is formed of a shape retentent material.

5,362,077

SHOPPING CART HAVING RETRACTABLE CUPHOLDER

Mark Adamson, Broken Arrow, Okla., assignor to UNR Industries, Inc., Chicago, Ill.

Filed Dec. 20, 1993, Ser. No. 170,517
Int. Cl.[5] B62B *5/00*
U.S. Cl. 280—33.992 **3 Claims**



1. A shopping cart comprising a main basket, a transverse handle mounted behind the main basket, two bars mounted fixedly to the handle so as to extend forwardly from the handle, and a cupholder having two end portions and having upper and lower guide members fixedly mounted thereto, the upper guide member extending laterally above the bars and the lower guide member extending laterally below the bars and guide members defining a slide channel at each of the end portions of the cupholder to permit the cupholder to slide forwardly to a storage position and backwardly to a usage position within a limited range of movement of the cupholder relative to the bars, the cupholder being capable of holding at least one cup when in the usage position, wherein each of the bars is wrapped around the handle and has a lower portion, to which at least one of the slide channels is mounted slidably, and an upper portion, on which a coupon tray is mounted fixedly.

5,362,078

COMBINATION SADDLE CARRIER AND RACK

H. Earl Paton, Hudson, Wis., assignor to Paton Limited, Inc., Hudson, Wis.

Filed Apr. 29, 1993, Ser. No. 55,135
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—47.18 **21 Claims**

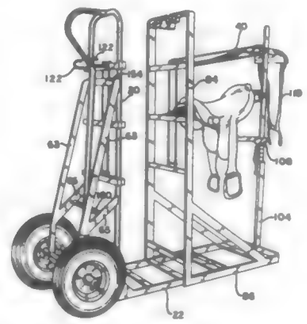
10. A combination saddle carrier and rack, comprising:

a carrier having:

a frame with a vertical portion and a horizontally extending portion attached to said vertical portion,

axle means, attached to the frame, for accepting spaced apart wheels, and

saddle arm support means attached to said vertical portion, said support means for accepting at least one saddle supporting arm,



a saddle rack, having:

a vertical portion,

a horizontally extending portion attached to said vertical portion, and

means for connecting at least one saddle arm to the saddle rack vertical portion, and

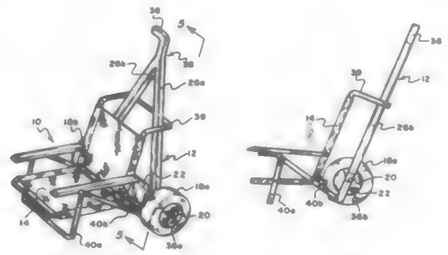
means for interconnecting said saddle carrier and rack.

5,362,079

BEACH CADDY

Gary Graham, 309 E. Monterey Ave., Wildwood Crest, N.J. 08260

Filed Jun. 14, 1993, Ser. No. 75,897
Int. Cl.[5] B62B *1/04, 1/06*
U.S. Cl. 280—47.23 **10 Claims**



1. An apparatus for transporting articles comprising:

a cart including carrying means and an upwardly extending rigid frame means, said carrying means having a pair of wheels rotatably mounted thereto, said rigid frame means having a top end and a bottom end connected to said carrying means;

a folding chair having a front leg means and a rear leg means, said front leg means being pivotally connected to said rear leg means at their opposite free ends, said folding chair further having a seat portion and a back rest portion positioned between said front leg means and said rear leg means, said rear leg means being secured in said carrying means, and

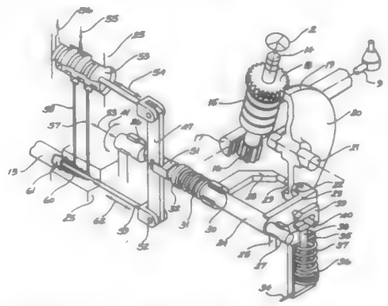
a crossbar extending from the top of said back rest portion of said chair for securing said folding chair to said rigid frame means of said cart, said crossbar being positioned rearwardly of said back rest portion whereby an opening remains between said crossbar and said back rest portion, said rigid frame means extending upwardly through said opening.

5,362,080

FRONT AND REAR WHEEL STEERING SYSTEMS

Arthur E. Bishop, Northwood, and John Baxter, Chatswood, both of Australia, assignors to A. E. Bishop & Associates Pty Limited, North Ryde, Australia

PCT No. PCT/AU91/00433, § 371 Date Mar. 16, 1993, § 102(e) Date Mar. 16, 1993, PCT Pub. No. WO92/05062, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 18, 1991, Ser. No. 987,287
Claims priority, application Australia, Sep. 26, 1990, PK2518
Int. Cl.[5] B62D *7/15*
U.S. Cl. 280—91 **10 Claims**



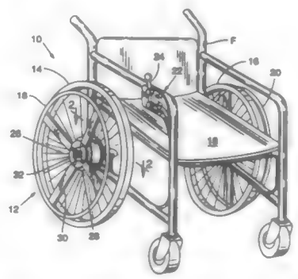
1. A mechanical function generating mechanism for a front and rear wheel steered vehicle, said mechanism being operable to generate a rear steer angle output as a function of front steer angle and vehicle speed inputs, wherein said mechanism comprises a three dimensional cam with a cam surface and a contacting follower, the cam surface being traversed relative to the follower in a first direction in accordance with said front steer angle input and being traversed relative to the follower in a second direction substantially at right angles to said first direction according to said vehicle speed input, the follower being constrained to move in a third direction, determined by the shape of the cam surface, substantially normal to said first and second directions so as to generate said rear steer angle output.

5,362,081

WHEELCHAIR DRIVE SYSTEM

Michael T. Beidler, 12265 NW. Coleman, Portland, Oreg. 97229, and Michael J. Beidler, 123 First St., Halfway, Oreg. 97834

Filed Mar. 10, 1993, Ser. No. 29,153
Int. Cl.[5] B60K *41/26;* **B62M** *1/14;* **F16H** *3/44*
U.S. Cl. 280—250.1 **11 Claims**



1. A multi-speed, rotationally actuable wheelchair hub driv-

ingly connectable to a drive wheel of a wheelchair, comprising:

hand-wheel-rotator structure positioned for rotation by an operator of such wheelchair to deliver a driving force to the drive wheel;

hub-coupling structure;

plural-speed transmission substructure coupled to the wheelchair via hub-coupling structure being fixedly attached thereto, with the transmission substructure being operable to transfer the operator-delivered driving force from the hand-wheel-rotator structure to the drive wheel;

hub substructure interposing the hand-wheel-rotator structure and the drive wheel, and including a hub body fixedly attached to the hand-wheel-rotator structure and the drive wheel, with the body enclosing the plural-speed transmission substructure; and

manually operable shift structure for shifting the transmission substructure from one speed to another.

5,362,082

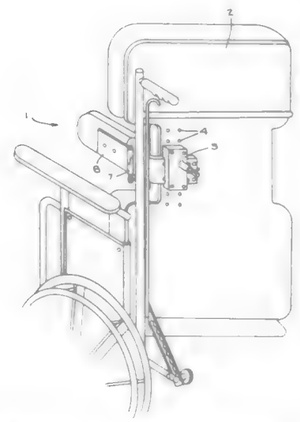
ADJUSTABLE LATERAL THORACIC SUPPORT FOR A SOLID BACK OF A WHEELCHAIR

Gary Kornberg, 19 Kathleen Dr. East, Syosset, N.Y. 11791

Filed May 24, 1993, Ser. No. 65,487

Int. Cl.[5] A61G *5/14*

U.S. Cl. 280—304.1 **20 Claims**



1. An adjustable lateral thoracic support for a wheelchair comprising:

a) a housing member adapted to be secured to a back portion of a wheelchair,

b) an angle bracket movable with respect to said housing member to predetermined selected bracket positions,

c) first locking means on said housing member for locking said angle bracket in any of said predetermined selected bracket positions,

d) said angle bracket having a first leg engageable with said locking means and a second leg disposed at an angle with respect to said first leg,

e) pivot means provided on said angle bracket to permit at least a portion of said second leg to pivot to selected predetermined pivot positions with respect to said first leg, and

f) second locking means cooperable with said pivot means to lock said second leg into any of said selected predetermined pivot positions.

5,362,083

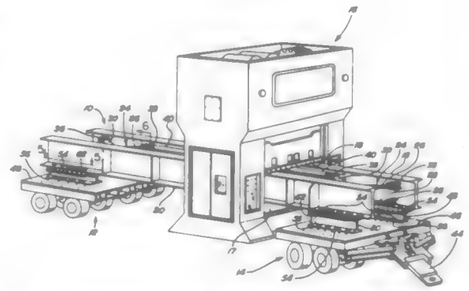
APPARATUS FOR MOVING HEAVY EQUIPMENT

Michael B. Emanuele, Rootstown, and Richard E. Gorby, Ravenna, both of Ohio, assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 2, 1993, Ser. No. 100,404

Int. Cl.[5] B60P *3/40*

U.S. Cl. 280—404 **2 Claims**



1. Apparatus for moving a stamping press having a die opening which has a generally horizontal, downwardly facing upper surface and which is open both at the front and the rear of the press, comprising a beam structure including a pair of elongated, horizontal, laterally spaced, generally parallel upright I-beams, each beam having horizontal top and bottom flanges and a vertical web between and connecting said flanges, each beam having first and second end portions, linkages at opposite end portions of said beams connecting said beams together, each linkage comprising a scissors support having crossing links pivotally connected together at the point of crossing, each link having first and second ends, and pivotal connections between said link ends and the webs of said respective beams, the pivotal connection between each beam and at least one link end of each scissors support being a sliding pivotal connection, whereby said linkages are adjustable to vary the spacing between said beams depending on the width of the die opening, means for adjusting said linkages to vary the spacing between the beams and then maintaining the adjustment until adjusted again, said beam structure being adapted to extend through the die opening with said end portions of said beams projecting beyond the front and rear of the stamping press, and first and second wheeled trucks movable over the floor and disposed beneath said projecting end portions of said beams, each truck having a horizontal top supporting surface, a pair of first beam supports on the top supporting surface of said first truck, a pair of second beam supports on the top supporting surface of said second truck, means for releasably securing the pair of beam supports on the top supporting surface of each truck in adjusted, laterally spaced apart relation to conform generally to the spacing of the beams, a first pallet rigidly mounted on each first beam support, a second pallet rigidly mounted on each second beam support, means for releasably securing the bottom flanges of said beams adjacent the first end portions of said beams to said respective first pallets in adjusted, laterally spaced apart relation, and means for releasably securing the bottom flanges of said beams adjacent the second end portions of said beams to said respective second pallets in adjusted, laterally spaced apart relation, said pallets supporting said beams at an elevation sufficient to engage the upper surface of the die opening and raise the stamping press above the floor.

5,362,084

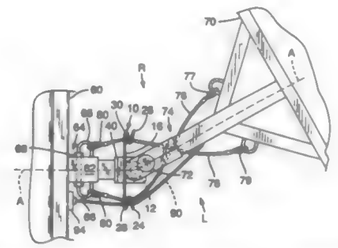
CABLE CARRIER FOR VEHICLE HITCH

Jerry A. Edwards, 140 SE. 99th, Portland, Oreg. 97216

Filed Mar. 8, 1993, Ser. No. 27,457

Int. Cl.[5] B60D *1/28*

U.S. Cl. 280—457 **6 Claims**



1. A carrier mountable on a hitch of a vehicle having front and rear ends and opposed sides, for supporting an elongated flexible coupling having opposite ends connected to a towing and towed vehicle, respectively, said hitch providing pivotal connection between the towing and towed vehicle, and said opposite ends of the flexible coupling crossing from one side of the towing vehicle to an opposite side of the towed vehicle whereby the coupling can cross past the pivotal connection, said carrier comprising:

a base, said base mountable on said hitch at said pivotal connection;

a support member fixedly attached to said base;

an end of said support member laterally extended at a distance from said base and from said pivotal connection of said hitch and not substantially forward or rearward of said pivotal connection; and

a formation formed near said end of said support member for supporting said flexible coupling and retaining said flexible coupling at a lateral distance from the pivotal connection of said hitch whereby the coupling is crossed under or over said hitch and through said formation so that the crossing occurs substantially rearward or forward of the pivotal connection.

5,362,085

SUPPORT PLATE FOR A SKI BINDING

Premek Stepanek, Garmisch-Partenkirchen; Ludwig Wagner; Edwin Lehner, both of Farchant, all of Germany, and Piero G. Ruffinengo, Salt Lake City, Utah, assignors to Marker Deutschland GmbH, Germany

Division of Ser. No. 54,439, Apr. 27, 1993, Pat. No. 5,301,976, which is a division of Ser. No. 715,598, Jun. 14, 1991, Pat. No. 5,251,923. This application Dec. 16, 1993, Ser. No. 168,475

Claims priority, application Germany, Dec. 27, 1990, 9017486[U]

Int. Cl.[5] A63C *5/075*

U.S. Cl. 280—602 **15 Claims**

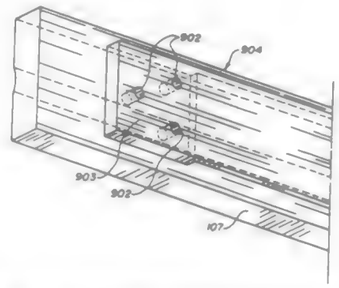
1. A system for controlling the stiffness of a ski, said system comprising:

an elongated member affixable at one end portion to a ski, said member having a free end portion, said free end portion being longitudinally movable relative to the ski as the ski bends;

guide means for guiding said free end portion on the ski as the ski bends;

elastomeric means disposed between a movable portion of said elongated member located between the end of the free end portion and said one end portion, said movable portion being movable relative to the ski when the ski bends, and a portion separate from said elongated member and immovable relative to the ski, to reduce vibrations; and

impedance means fixable to the ski and operatively connectable to said free end portion for limiting the amount of movement between said free portion and the ski once the ski bends a predetermined amount to control the stiffness of the ski.



5,362,086

ALPINE SKI BINDING

Pascal Baron, Seynod, and Pierre Desarmaux, Evires, both of France, assignors to Salomon S.A., Courbevoie, France

Filed Jun. 28, 1993, Ser. No. 82,481

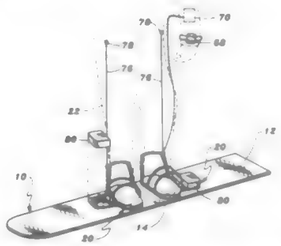
Claims priority, application France, Jun. 30, 1992, 92 08334

Int. Cl.[5] A63C *7/10*

U.S. Cl. 280—605 **5 Claims**

1. Alpine ski binding comprising a generally elongated base plate (2), to which a boot position-retention element (3) and a ski brake (8) are assembled, said base plate (2) being attached to a ski by screws (14, 15) which press it against an upper surface of said ski, said position-retention element (3) comprising a body (4) assembled to said base plate over at least one portion of a length of said body, and a boot position-retention device (5) carried by the body, said brake (8) comprising a seating (10) superposed on said base plate over a portion (6) of its length and assembled to said base plate by means including interlocking means located on front portions of said brake seating and said base plate and locking means (23) movable between a first position in which said locking means holds said base plate against said seating and a second position in which said locking means no longer holds said base plate against said seating, and at least one brake arm (11,12) connected to said seating (10) and movable in relation to said seating between an inactive rest position and an active operative position, said seating (10) of said brake and said base plate (2) of said binding incorporating superposed holes in order to receive at least part of the screws (14) used to attach said base plate to said ski, so that said screws tighten said base plate and said seating of said brake against said ski.

5,362,087
SNOWBOARD BINDING RELEASE APPARATUS
Troy Agid, 8212 Rensselaer Way, Sacramento, Calif. 95826
Filed Aug. 12, 1993, Ser. No. 105,112
Int. Cl.[5] A63C *9/088*
U.S. Cl. 280—611 **9 Claims**



1. Apparatus for use in combination with a snowboard having an upper surface and a bottom surface, said apparatus comprising, in combination:

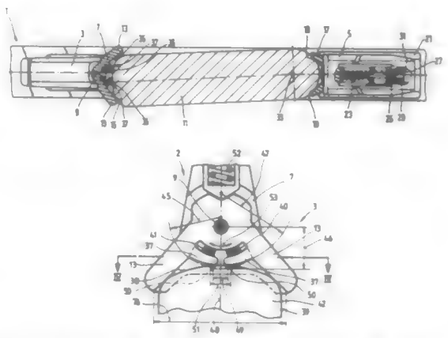
snowboard binding means including at least one strap movable between a first position wherein said at least one strap is in secure binding engagement with the vamp of footwear of a person employing said snowboard and positioned over said footwear vamp and about opposed sides of the footwear to securely retain the footwear between the snowboard and snowboard binding means and in fixed position on the snowboard and a second position wherein the at least one strap is freely movable relative to said snowboard and permits ready movement of the footwear away from the snowboard upper surface and removal of the footwear from the snowboard and from the at least one strap in a direction generally normal to said snowboard upper surface;

latch means including first and second latch members operatively associated with said snowboard binding means to maintain said at least one strap in said first position to securely retain the footwear between the snowboard and the snowboard binding means when said first and second latch members are connected;

release means operatively associated with said latch means for unlatching said first and second latch members to allow said at least one strap to move to said second position from said first position whereby the footwear may be readily removed from said snowboard, said release means including a manually actuatable release element actuatable by a person employing said snowboard to unlatch said first and second latch members and allow complete separation of said first and second latch members by application of force on said at least one strap by said footwear vamp in a direction generally normal to and away from said snowboard upper surface, said manually actuatable release element being at a location spaced from said snowboard; and

support means for supporting said snowboard binding means, said latch means, and at least a portion of said release means, said support means releasably connected to the upper surface of said snowboard whereby said snowboard binding means, said latch means and said release means portion may be selectively positioned relative to, affixed to, or removed from said snowboard, said at least one strap having a distal end, said first latch member being connected to said distal end and said distal end and said first latch member being located alongside a side of said footwear when said at least one strap is in said first position, and said second latch member being fixedly secured to said snowboard upper surface and projecting therefrom, said latch means additionally comprising a lock member movable relative to said snowboard and to said first and second latch members between a lock position wherein said lock member positively locks together said first and second latch members and an unlock position wherein said first and second latch members are unlocked, said first latch member being freely movable relative to and completely separable from said second latch member when said lock member is in said unlock position upon application of a force on said at least one strap by said footwear vamp upon movement of said footwear in a direction generally normal to said snowboard upper surface.

5,362,088
SAFETY SKI BINDING HAVING TOE AND HEEL FORKED CLAMP ASSEMBLIES
Alois Rohrmoser, Wagrain, Austria, assignor to Varpat Patentverwertungs AG, Littau, Switzerland
Continuation of Ser. No. 928,155, Aug. 10, 1992, abandoned, which is a continuation of Ser. No. 474,860, Dec. 10, 1990, abandoned. This application Nov. 10, 1993, Ser. No. 150,590
Claims priority, application Germany, Feb. 21, 1989, 3905293
Int. Cl.[5] A63C *9/085, 9/22*
U.S. Cl. 280—625 **10 Claims**



1. A ski binding for a longitudinally extending ski having a central longitudinal axis comprising:

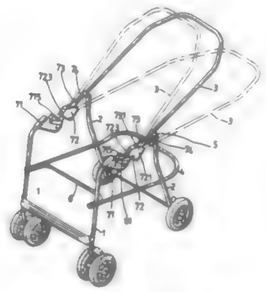
a forked heel clamp for holding a rear part of a ski boot;

a forked toe clamp including two fork prongs, facing said heel clamp, for holding a front part of a ski boot, said toe clamp being rotatable around an axis located on a side of said prongs away from said heel clamp; and

centering means formed as two arcuate spring devices located on said toe clamp on opposite sides of the central longitudinal axis of the ski and having a front side facing said heel clamp including ski boot contact points, said arcuate spring devices being made from a stiff, elastic, synthetic material and being formed as an integral unit with said toe clamp, said arcuate spring devices being flexible in the longitudinal direction and having radii centered on the longitudinal ski axis, said radii of said unflexed arcuate spring devices being larger than a distance between the toe clamp axis and said front side of said centering means; and a distance between said contact points being less than one half of a width of said toe clamp.

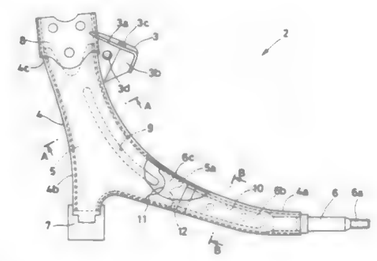
5,362,089
FOLDABLE BABY STROLLER
Guo Jyan-Tsai, 43, Alley 71, Lane 173, Section 2, Dong Dah Road, Shin Jwu City, Taiwan, Prov. of China
Filed Feb. 22, 1994, Ser. No. 199,582
Int. Cl.[5] B62B *9/20*
U.S. Cl. 280—655.1 **1 Claim**

1. A baby stroller comprising a pair of front legs each including an upper end, a pair of support means disposed on said upper ends of said front legs, a handle means including two lower ends engaged with said support means respectively, two couplers secured on said lower ends of said handle means, two rear legs each including an upper end pivotally coupled to said couplers respectively; each of said support means including a member fixed on said upper end of said front leg at a first pin and pivotally coupled to said lower end of said handle means at a second pin, a protrusion extended from said member, a retainer pivotally coupled to said first pin for engaging with said lower end of said handle means, first biasing means biasing said retainer to engage with said lower end of said handle means, a sleeve slidably engaged on said lower end of said handle means and including a lump formed thereon, a knob pivotally secured to said lower end of said handle means for engaging with said



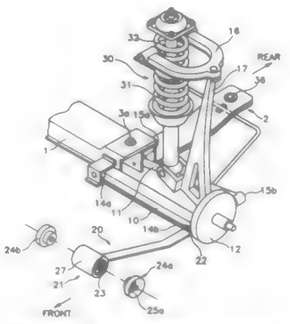
lump of said sleeve and including an opening for engaging with said protrusion of said member, second biasing means for biasing said sleeve toward said knob, said protrusion being retained in said opening of said knob when said sleeve is biased toward said knob by said second biasing means, and said protrusion being disengaged from said knob when said knob is rotated to move said sleeve against said second biasing means such that said handle means is rotatable about said second pin, said retainer being biased to engage with said lower end of said handle means by said first biasing means for retaining said handle means in place relative to said front leg.

5,362,090
SUSPENSION OF MOTOR VEHICLE
Naoyuki Takeuchi, Hamamatsu, Japan, assignor to Suzuki Motor Corporation, Hamamatsu, Japan
Filed Sep. 7, 1993, Ser. No. 116,877
Claims priority, application Japan, Sep. 22, 1992, 4-252375; Sep. 22, 1992, 4-252376
Int. Cl.[5] B60G *7/00*
U.S. Cl. 280—660 **4 Claims**



1. A suspension of a motor vehicle in which a suspension arm is formed by welding an arm pin portion to an arm body, wherein said arm body is formed as a whole in an approximate inverse U shape in cross section, and said arm pin portion is fixed by welding to said arm body, by which a closed cross section is formed by said arm body and said arm pin portion.

5,362,091
REAR SUSPENSION FOR VEHICLE
Unkoo Lee, Kyungki, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Dec. 29, 1992, Ser. No. 997,919
Claims priority, application Rep. of Korea, Dec. 30, 1991, 91-25209
Int. Cl.[5] B60G *3/14*
U.S. Cl. 280—662 **7 Claims**



1. A rear suspension for a vehicle including a car body comprising:

a sub-frame having a projection in a rearward direction of the vehicle and extending from the sub-frame;

front and rear lower links spaced with respect to each other and transversely arranged with respect to the car body, each of said front and rear lower links having a coupling portion close to an outer end of the sub-frame and a coupling portion close to a wheel coupled to a knuckle arm rotatably supporting the wheel, thereby enabling the wheel to move up and down with respect to the car body;

a connecting arm projecting upwardly from the knuckle arm, said connecting arm having an inner-lower end coupled to the car body and an outer-lower end coupled to the knuckle arm;

an upper arm coupled to an upper end of the connecting arm and cooperating therewith for the wheel to move up and down with respect to the car body;

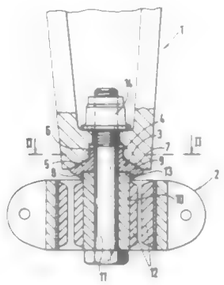
a trailing arm longitudinally arranged with respect to the car body at a front portion of the knuckle arm having a front end coupling portion in which rubber stoppers respectively having front and rear portions having a different spring characteristic from each other are inserted, and coupled to the car body to achieve a toe control of the wheel when a longitudinal force with respect to the car body is applied to the wheel and a rear end coupling portion coupled to the knuckle arm for the wheel to move up and down in response to movement of the front end coupling portion; and

a strut assembly formed by unifying a shock absorber and a coil spring, and having a lower end coupled to the inner-lower end of the connecting arm to absorb an impact caused when the wheel moves up and down.

5,362,092
APPARATUS FOR CONNECTING A CONTROL ARM WITH A BEARING
Norbert Schote, Ammerbuch, and Karl Sommerer, Wiernsheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Jul. 15, 1993, Ser. No. 91,356
Claims priority, application Germany, Jul. 17, 1992, 4223609
Int. Cl.[5] B60G *11/22*
U.S. Cl. 280—673 **6 Claims**

1. An apparatus for connecting a control arm of a wheel suspension link for a motor vehicle by way of an elastic bearing

with the vehicle body by means of a screwed connection, wherein a holding element is arranged between the control arm and the bearing, which holding element is non-rotatably held in a front face recedes of the control arm and is connected with a bearing sleeve of the control arm bearing,



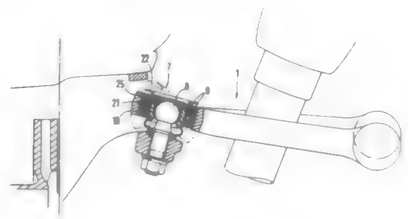
wherein the holding element has a projection of a polygonal cross-section which is followed by a conical section and the projection is arranged to fit in said front face recess, said recess being correspondingly constructed in a polygonal shape to receive said projection in a form-locking manner.

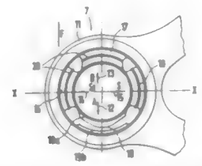
5,362,093

TWIN CONTROL ARM AXLE ASSEMBLY FOR WHEEL SUSPENSION SYSTEMS

Robert Klosterhuber, Stuttgart, and Karl Sommerer, Wiernsheim, both of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany

Filed Jul. 15, 1993, Ser. No. 91,355
Claims priority, application Germany, Jul. 23, 1992, 4224288
Int. Cl.[5] B60G *3/20, 7/02;* **F16C** *11/08*
U.S. Cl. 280—674 **7 Claims**





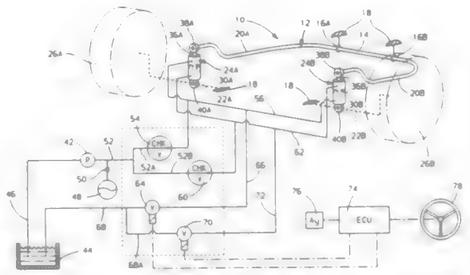
1. A twin control arm axle assembly suspension arrangement for wheels of motor vehicles comprising:
a wheel carrier which supports a vehicle wheel,
a lower control arm unit connecting the wheel carrier to a vehicle body in an articulated manner,
and an upper control arm unit connecting the wheel carrier to the vehicle body in an articulated manner,
wherein the upper control arm unit includes a control arm connected to the wheel carrier by way of an elastic control arm bearing which has defined bearing characteristics with respect to different in use driving forces acting on the wheel carrier with said control arm bearing being stiffer in transverse directions and in the vehicle longitudinal driving direction than in the direction opposite the vehicle longitudinal driving direction.

5,362,094

HYDRAULICALLY CONTROLLED STABILIZER BAR SYSTEM

Eric L. Jensen, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 9, 1993, Ser. No. 74,194
Int. Cl.[5] B60G *21/055*
U.S. Cl. 280—689 **2 Claims**



1. In a motor vehicle, a stabilizer bar system comprising:
(a) a stabilizer bar having a first end located at a first side of the vehicle and a second end located at a second side of the vehicle;
(b) a first hydraulic actuator having a first reciprocating piston rod connected to the first end of the stabilizer bar and a first closed working cylinder connected to a first lower suspension member, the first closed working cylinder including a first piston dividing a first interior volume of the first working cylinder into first upper and first lower fluid chambers;
(c) a hydraulic pump having an intake connected to a fluid reservoir;
(d) a first hydraulic line connected to an outlet of the hydraulic pump;
(e) first and second check valves connected to the first hydraulic line;
(f) a first pressure control line connected to the first check valve, the first upper fluid chamber and a first controllable pressure control valve;
(g) a second pressure control line connected tot he second check valve, the first lower fluid chamber and a second controllable pressure control valve;
(h) a second hydraulic line connected to the first pressure control valve and the reservoir;
(i) a third hydraulic line connected to the second pressure control valve and the reservoir, wherein pressure in the first pressure control lien regulates pressure in the first upper fluid chamber and is responsive to the first controllable pressure control valve and wherein pressure in the second pressure control line regulates pressure in the first lower fluid chamber and is responsive to the second controllable pressure control valve.

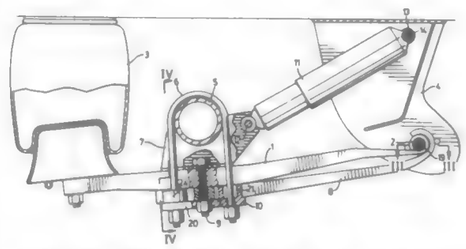
5,362,095

RESILIENTLY MOUNTED CANTILEVER SPRING SUPPORTED AIR SPRING SUSPENSION

Nicholas Eveley, 2814 Barton Street, East Hamilton Ont., Canada L8E 2J9

Continuation-in-part of Ser. No. 735,878, Jul. 25, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 925,467
Int. Cl.[5] B60G *11/46*
U.S. Cl. 280—712 **8 Claims**

1. A suspension for a wheeled vehicle having a chassis and a rigid axle comprising;
a main spring having a forward end and a rear end, pivoted at its forward end by a bushing and supported at its rear end by an air bag mounted on said chassis,
a bracket mounted on said chassis,
said bushing comprising an inner sleeve bonded to a resilient rubbery material which in turn is surrounded by and substantially compressed by an outer sleeve,
means to fixedly mount said inner sleeve in said bracket,



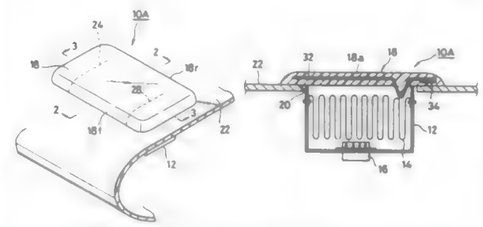
means to force fit said forward end of said main spring on said outer sleeve whereby pivotal motion of said main spring is provided only by the torsional distortion of said rubbery material and
interchangeable seat means to mount said axle a selectable distance above said main spring near the midpoint between said ends of said main spring.

5,362,096

MODULE COVER MOUNTING STRUCTURE FOR AN AIR BAG DEVICE FOR A PASSENGER

Takeshi Satoh, and Takayasu Zushi, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,571
Claims priority, application Japan, Mar. 5, 1992, 4-048510; Mar. 17, 1992, 4-060116
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 B **6 Claims**



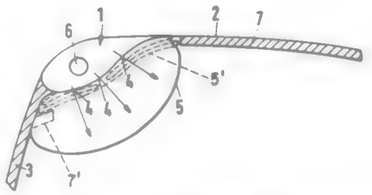
1. A module cover mounting structure for an air bag device for a passenger, comprising:
an instrument panel of an automobile for mounting the air bag device, said instrument panel having an opening therein defined by upper and lower edges and two side edges, and an outer surface facing a cabin of the automobile,
a module cover extending beyond and completely covering said opening at the outer surface of the instrument panel, said module cover having two peripheral edges situated near the upper and lower edges,
tear lines formed in said module cover, said tear lines consisting of first and second tear lines extending along and near the side edges of the opening of the instrument panel from one of the peripheral edges of the module cover to at least a portion near the other of the peripheral edges, and
a reinforcing member attached to the module cover to extend beyond the upper, lower and two side edges of the opening, said reinforcing member having gaps corresponding to the tear lines forming a door-shaped portion extending beyond said lower side of said opening so that when the module cover is pushed toward the cabin of the automobile, the module cover is torn along the tear lines while force applied to the module cover from the cabin is substantially supported by the reinforcing member attached to the instrument panel.

5,362,097

AIRBAG DEVICE MOUNTED IN A ROOF FRAME REGION OF A VEHICLE

Heiko Barske, Wolfsburg, Germany, assignor to Volkswagen AG, Wolfsburg, Germany

Filed Feb. 23, 1993, Ser. No. 21,486
Claims priority, application Germany, Mar. 2, 1992, 4206474
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 R **1 Claim**



1. An airbag device for a vehicle comprising a roof frame including a roof frame member providing support for a roof of a vehicle, an interior roof lining adjacent to the roof of the vehicle, at least one airbag mounted adjacent to a portion of the roof frame member and, while in its deflated state, forming an extension of the roof lining adjacent to the roof frame member, the portion of the roof frame member adjacent to the airbag being hollow and having at least one orifice to permit transfer of gas from the hollow space within the roof frame member to the airbag, and a gas generator disposed within the roof frame member to supply gas to the hollow space therein and through the orifice to the airbag.

5,362,098

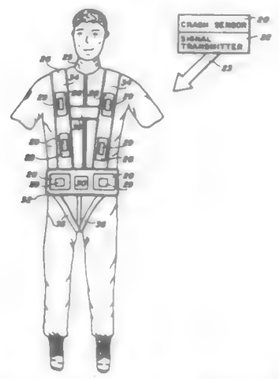
RELEASABLE UNCONSTRAINED INFLATABLE BODY PROTECTOR

Frederick C. Guill, Crownsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 11, 1993, Ser. No. 104,682
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **20 Claims**

1. An inflatable protective device comprising:
releasable inflatable means for providing protection from impacts for randomly located occupants of a vehicle;
said occupants having unconstrained movement about the interior of said vehicle;
said inflatable means releasing from said protective device upon the application of moderate tearing force;
inflation means, coupled to said inflatable means, for inflating said inflatable means;
crash sensing means, capable of being mounted to said vehicle, for detecting an onset of a crash;
wireless communication means for sending information from said crash sensing means to said inflation means, said wireless communication means linking said crash sensing means and said inflation means;
whereby, upon sensing the onset of a crash by said crash sensing means, a wireless communication signal is transmitted by said wireless communication means which

causes said inflation means to inflate said inflatable means, said inflatable means, rapidly deflating after said crash



allowing said occupants rapid egress from said vehicle thus providing protection from injury.

5,362,099

DEVICE FOR THE SUDDEN RELEASE OF A GAS FROM A CONTAINER ADAPTED TO STORE IT FOR A LONG PERIOD OF TIME UNDER A HIGH PRESSURE

Artur Föhl, Schorndorf, Germany, assignor to TRW Repa GmbH, Alfdorf, Germany

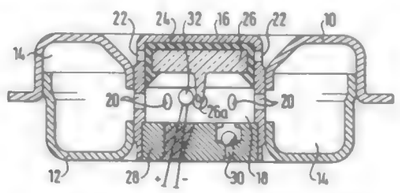
PCT No. PCT/EP92/00849, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/18356, PCT Pub. Date Oct. 29, 1992

PCT Filed Apr. 15, 1992, Ser. No. 955,903

Claims priority, application Germany, Apr. 15, 1991, 9104577[U]

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—737 **14 Claims**



1. A device for sudden release of pressurized gas from a container to inflate a gas bag in a vehicle occupant restraining system, said container having at least one outlet opening and comprising an obstructing member of tempered glass arranged upstream from said outlet opening and a seal cooperating with said obstructing member to block said outlet opening, and said obstructing member having a solid body and a base, an elongated cylindrically pin-shaped extension having a length greater than its width and projecting from said base, and said pin-shaped extension being adapted to be broken by a vehicle-sensitive actuating member to shatter the body of said obstructing member.

5,362,100

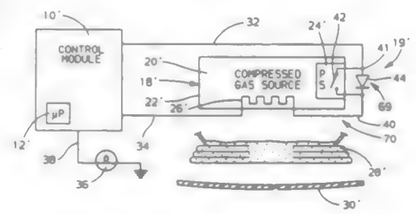
CONTROL CIRCUIT FOR A COMPRESSED GAS INFLATOR DEVICE

Joel M. Werbelow, Vandalia; James K. Conlee, Dayton, and Jeffrey A. Shepherd, Fairborn, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1993, Ser. No. 140,947

Int. Cl.[5] B60R *21/10*

U.S. Cl. 280—741 **2 Claims**



1. An apparatus comprising:

a compressed gas storage unit containing a compressed gas at a pressure;

a two-state pressure switch attached to the compressed gas storage unit and responsive to the pressure of the compressed gas, the two-state pressure switch having a closed state in which current flows through the switch when the pressure of the compressed gas is above a threshold and an open state in which current does not flow through the switch when the pressure of the compressed gas is below the threshold;

a diode connected in parallel with the pressure switch to form a parallel circuit with the pressure switch;

an initiator coupled in series with the parallel circuit of the diode and the pressure switch;

a first electric line connected to a first end of the series circuit; and

a second electric line connected to a second end of the series circuit,

wherein the series circuit has a first impedance when the pressure switch is closed, indicating that the pressure of the compressed gas is above the threshold,

wherein the series circuit has a second impedance when the pressure switch is open, indicating that the pressure of the compressed gas is below the threshold.

wherein, when the switch is closed and a potential is provided across the first and second lines, current flows through the first line, the switch, the initiator and the second line and

wherein, when the switch is opened and the potential is provided across the first and second lines, current flows through the first line, the diode, the initiator and the second line.

5,362,101

AIR BAG DEVICE

Atsushi Sugiura, Toyota, and Masakazu Hashimoto, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 849,590, Mar. 11, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,465

Claims priority, application Japan, Mar. 12, 1991, 3-46829

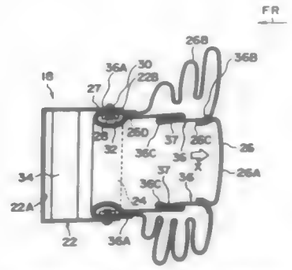
Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—743 A **6 Claims**

1. An air bag device for progressively inflating an air bag body, comprising:

a first restraining means having one end attached to an inside of the air bag body at an inflator side thereof and another end secured to an occupant side of the air bag body for restraining the air bag body from being inflated toward an occupant past a first predetermined amount during inflation of the air bag body, said first restraining means being formed of a first filamentous body, and

a second restraining means for restraining the air bag body from being inflated toward the occupant past a second predetermined amount greater than the first predetermined amount when a tensile force exceeding a predetermined value acts on said first restraining means during inflation of said air bag body, said second restraining means including a second filamentous body that is longer than said first filamentous body, one end of the second filamentous body being attached to the inflator side inside the air bag body and the other end thereof being secured to the occupant side of the air bag body,



whereby, when said first restraining means restrains the air bag body from inflating toward the occupant side, the air bag body inflates in a direction orthogonal to the occupant side and thereafter, when a tensile force larger than the predetermined value acts on said first filamentous body during inflation of said air bag body, said first filamentous body is detached from the occupant side and the air bag body begins to inflate towards the occupant while a shape of the air bag body is maintained in the orthogonal direction, and said second filamentous body controls inflation of the air bag body toward the occupant.

5,362,102

SUPPORT ARRANGEMENT FOR SUPPORTING A TRIM MEMBER FROM A STRUCTURAL MEMBER OF A VEHICLE

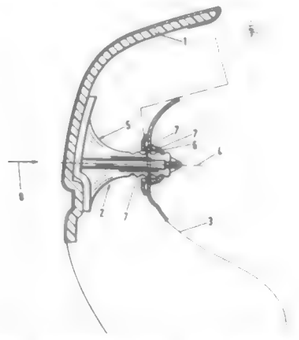
Uwe Hajek, Wolfsburg; Marinus Huisman, Meine, and Rainer Roser, Wolfsburg, all of Germany, assignors to Volkswagen AG, Wolfsburg, Germany

Filed Sep. 14, 1993, Ser. No. 120,948

Claims priority, application Germany, Sep. 14, 1992, 4230746

Int. Cl.[5] B60R *13/02, 21/02*

U.S. Cl. 280—751 **1 Claim**



1. A support arrangement for a trim member facing the interior of a vehicle comprising a structural support member, a trim member, clip means affixed to the trim member and extending in an axial direction between the trim member and the structural support member for supporting the trim member and having an axially-extending clip pin portion with a plurality of axially-spaced projections of substantially the same diameter separated by recesses, and clip mount means on the structural member for receiving the clip pin portion and engaging a recess between adjacent projections in the clip pin portion so as to hold the trim member in normally spaced relation to the structural member to provide an unobstructed spacing between them, but permitting the clip pin portion to be forced into the clip mount means by causing one or more of the projections to enlarge the clip mount means so as to reduce the spacing between the trim member and the structural member while converting kinetic energy into deformation energy upon impact of a passenger with the trim member in the event of a collision.

5,362,103

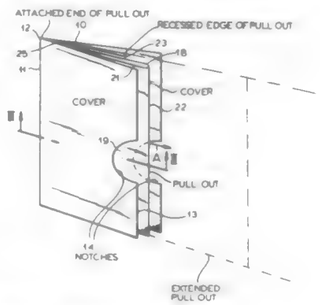
PULL-OUT BOOKLET

Howard M. Bromberg, Riverdale, N.Y., assignor to The Flexi/-Group, Inc., Riverdale, N.Y.

Filed Aug. 13, 1993, Ser. No. 106,226

Int. Cl.[5] B42D *1/00*

U.S. Cl. 281—29 **17 Claims**



1. A pull-out booklet, comprising:

a front cover;

a back cover; and

at least one accordion-folded sheet having a plurality of panels and respective folds between said panels, said folds being staggered with respect to one another, said accordion-folded sheet being received between said covers and secured to said covers at one edge of said accordion-folded sheet and at a joining edge of said covers at which said covers are secured together, said covers having free edges generally opposite said joining edge, one of said covers having an opening along a respective free edge through which a grippable portion of said accordion-folded sheet is exposed when said covers are closed against said accordion-folded sheet, thereby enabling said portion to be engaged by fingers of a user of the booklet for extending said accordion-folded sheet by unfolding same from between said covers.

5,362,104

NON-SCORED BALLOT CARD

Tod A. Rapp, 129 Park Dr., Xenia, Ohio 45385, and John W. Donahue, Dayton, Ohio, assignors to Tod A. Rapp, Xenia, Ohio

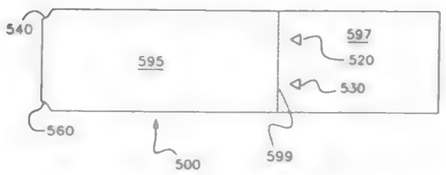
Continuation-in-part of Ser. No. 896,809, Jun. 9, 1992, Pat. No. 5,260,550, which is a continuation of Ser. No. 557,269, Jul. 24, 1990, abandoned. This application Aug. 13, 1993, Ser. No. 106,381

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—5 **6 Claims**

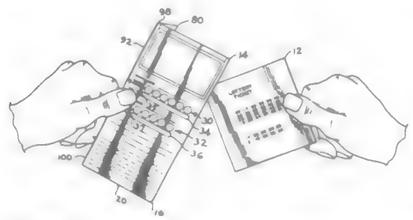
1. A non-scored ballot card of generally rectangular configuration comprising:

a first side edge defining a side boundary for said ballot card.
a second side edge opposite said first side edge and defining a second side boundary for said ballot card,
a foot in the form an end edge extending sidewardly between said first side edge and said second side edge for positional registration of said ballot card inside a vote recorder,



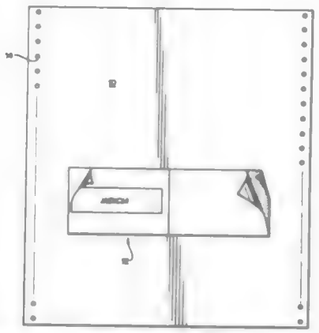
a voting portion situated between said first side edge and said second side edge and adjacent said foot, and
a record portion adjoining said voting portion opposite said foot and provided with a triangular opening having a vertex which points toward said foot.

5,362,105
SCANNER
Arthur C. Scott, 427 Elm St., Deerfield, Ill. 60015
Filed Mar. 18, 1994, Ser. No. 210,022
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—65 **5 Claims**



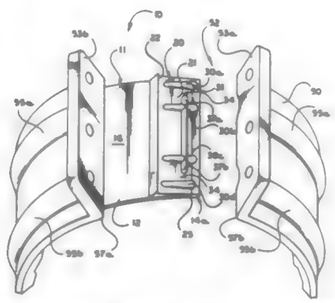
1. A scanner, comprising:
a substantially planar elongated web comprising a substantially rectangular panel with substantially parallel ends, elongated substantially parallel sides, a front and a back, said ends comprising a substantially horizontal upper edge and a substantially horizontal lower edge, said elongated sides comprising a free unattached substantially vertical outside edge and an attached substantially vertical inside edge, said front having a primary display area, a secondary display area, a primary viewing area, a secondary viewing area, and at least one front information area, and said back having at least one back information area;
said primary display area comprising six primary substantially circular displays, said primary circular displays being substantially the same size and aligned in substantial horizontal registration with each other, said primary circular displays providing a primary recording section for recording and displaying six winning numbers of a lottery drawing, each of said primary displays being of a sufficient size to accommodate two digits, and said primary display area having a primary date zone for recording and displaying a date of the lottery drawing for the six winning numbers;
said primary viewing area being positioned between said primary and secondary display areas, said primary viewing area comprising a substantially rectangular primary window for viewing a row of six numbers on a lottery ticket, said primary window extending through said front and back and spanning a horizontal width slightly greater than the six numbers on the lottery ticket, said primary window spanning a horizontal width slightly greater than the maximum horizontal span of said primary display and having a height greater than the height of the six numbers on the lottery ticket, and said primary window being of a size for permitting viewing of only one row of six numbers on the lottery ticket;
said secondary display area being positioned between said primary and secondary viewing areas, said secondary display area comprising five secondary substantially circular displays, said secondary circular displays being substantially the same size and aligned in substantial horizontal registration with each other, said secondary circular displays providing a secondary recording section for recording and displaying five winning numbers of a lottery drawing, each of said secondary displays being of a sufficient size to accommodate two digits, and said secondary display area having a secondary date zone positioned between said secondary circular displays and said primary window for recording and displaying the date of the lottery drawing for the five winning numbers;
said secondary viewing area being positioned below said secondary circular displays of said secondary display area, said secondary viewing area comprising a substantially rectangular secondary window for viewing a row of five numbers on a lottery ticket, said secondary window extending through said front and back and spanning a horizontal width slightly greater than five numbers on the lottery ticket, said secondary window spanning a horizontal width slightly greater than the maximum horizontal span of said secondary displays and having a height greater than the height of the five numbers on the lottery ticket, and said secondary window being of a size for permitting viewing of only one row of five numbers on the lottery ticket;
said front information area comprising a lower front information zone positioned below said secondary window, and said front information area containing indicia providing instructions and information about use of the lottery guide scanner;
said back information area comprising a lower back information zone positioned below said secondary window and located opposite said lower front information zone, said lower back information zone being imprinted with indicia graphically depicting use of the lottery guide scanner; and
a substantially planar elongated flap hingeably connected to and cantilevered from said panel, said flap comprising a substantially rectangular resilient guide member for guiding the lottery ticket, said flap having substantially parallel end portions, elongated substantially parallel side portions, a front surface, and a back surface providing an underside, said end portions comprising a substantially horizontal top edge positioned in coplanar alignment with the upper edge of the panel and a substantially horizontal bottom edge positioned in coplanar alignment with the lower edge of the panel, said elongated side portions comprising a free unattached upright outside flap edge and an upright inside hinge portion pivotally attached to said inside edge of said panel, said flap being moveable from an unfolded storage position disposed in coplanar alignment with said panel, to a compressed bent position for compressively engaging said panel with said back surface contacting said back of said panel, and said flap being normally biased to a cradling position disposed downwardly and inwardly at an angle of inclination ranging from about 30 degrees to about 60 degrees and cooperating with the back of the panel to provide a pocket for slidably supporting, guiding and cradling a lottery ticket so that the numbers on the lottery ticket can be scanned through the windows of said panel in order to slidably detect whether the lottery ticket numbers correspond to the winning numbers in the display area of the panel.

5,362,106
SELF-SEALING CARD ASSEMBLY ON CARRIER AND METHODS OF MANUFACTURE
Andre G. Longtin, Weare, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Mar. 25, 1993, Ser. No. 37,127
Int. Cl.[5] B42D *15/10*
U.S. Cl. 283—109 **10 Claims**



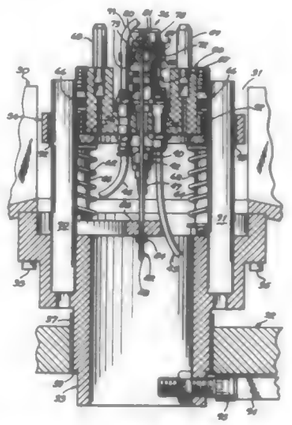
1. A method of manufacturing a self-sealable card assembly and a carrier sheet comprising the steps of:
providing a plastic substrate with first and second adhesive layers on opposite faces thereof, respectively, and a first release liner overlying a portion of the first adhesive layer;
removing said first release liner to expose said portion of said first adhesive layer;
applying a card to said exposed portion of said first adhesive layer to form the card assembly; and
adhering the plastic substrate and the card adhered to the first adhesive layer to the carrier sheet.

5,362,107
PIPE COUPLING WITH SEALING PLATE
Donald Y. Bridges, 3014 Creek Ct., Roswell, Ga. 30075
Continuation of Ser. No. 978,770, Nov. 9, 1992, Pat. No. 5,295,716, which is a continuation-in-part of Ser. No. 861,940, Apr. 2, 1992, Pat. No. 5,286,064. This application Mar. 21, 1994, Ser. No. 215,499
The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.
Int. Cl.[5] F16L *55/18*
U.S. Cl. 285—15 **5 Claims**



1. A sealing plate for use with a pipe coupling surrounding a leak location in a pipeline, comprising:
a plate having a pair of axial edges along opposite ends of said plate and a pair of side edges along opposite sides of said plate;
a pair of axial sealing pads, one adhered to an outer surface of said plate along each of said axial edges, at least one of said axial sealing pads defining a pair of spaced apart circumferential channels therein and a bridging member connecting said channels, said bridging member shaped to be engaged by an inner surface of said pipe coupling when said inner surface is pressed toward the outer surface of said plate; and
circumferential sealing pad material adhered to an inner surface of said plate and positioned to engage said pipeline on both sides of said leak location.

5,362,108
AUTOMATIC PALLET FLUID COUPLER
Scott Hrvatin, Mason, Ohio, assignor to LeBlond Makino Machine Tool Co., Mason, Ohio
Filed Dec. 10, 1992, Ser. No. 988,741
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—24 **13 Claims**

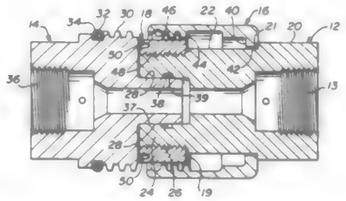


1. An apparatus for connecting and disconnecting a coupling between two machine elements movable with respect to each other in a first direction and a second direction opposite the first direction, the apparatus comprising:
a first block operatively mounted on one of the machine elements and movable in the first and second directions with respect to the one of the machine elements;
a quick disconnect coupling having
a first coupling member having one end operatively mounted on another of the machine elements,
a second coupling member having one end connected to the first block, and
a locking collar slidably mounted on said second coupling member and moving to a locking position in response to the machine elements providing relative motion between said coupling members in the first direction to move said coupling members toward and into engagement with each other and said locking collar in the locking position, thereby connecting and locking together the quick disconnect coupling;
yoke means connected to said locking collar for following the motion of said locking collar; and
yoke stop means operatively mounted on the one of the machine elements and disposed with respect to said yoke means for blocking motion of said yoke means and said locking collar in response to the machine elements providing relative motion between said coupling members to move said coupling members in the second direction, thereby disconnecting the quick disconnect coupling.

5,362,109
QUICK DISCONNECT FOR HIGH PRESSURE FLUID LINE

Amos Pacht, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Filed Mar. 22, 1993, Ser. No. 34,102
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—39 **5 Claims**



1. A quick disconnect for a high pressure coupler comprising:

a first member having a first inside diameter for carrying high pressure fluid and having a first outside diameter;

a second member mating with the first member in fluid transfer relationship and having relatively coarse threads on the external circumference thereof;

a first shoulder formed on the first member by a second smaller outside diameter;

an attaching collar mounted on the second outside diameter and having an inside diameter such that axial movement of the collar in one direction is limited by the first shoulder on the first member, the collar having relatively coarse threads on the inside thereof for mating with the relatively coarse threads on the second member so as to enable the attaching collar to be quickly attached to and detached from the second member;

a third outside diameter on the first member smaller than the second diameter and having relatively fine coupling threads thereon;

a cylindrical stop ring threadedly attached to the relatively fine coupling threads of the third outside diameter of the first member to form a second shoulder such that the attaching collar is free to move axially only between the second shoulder on the stop ring and the first shoulder on the first member; and

a forwardly extending cylindrical projection on the second member for mating with a cylindrical recess in the first member such when the forwardly extending projection of the second member is inserted in the cylindrical recess of the first member, the attaching collar may be moved axially to threadedly engage the second member for attachment of the first and second members.

5,362,110
FLUID COUPLING AND FASTENER CAPTURE DEVICE

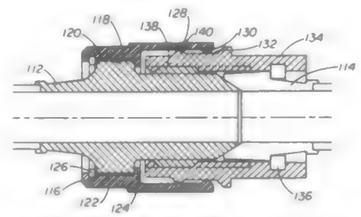
Kurt K. Bynum, Saline, Mich., assignor to Moeller Manufacturing Co., Inc., Wixom, Mich.

Continuation-in-part of Ser. No. 660,645, Feb. 25, 1991, Pat. No. 5,083,819. This application Jan. 27, 1992, Ser. No. 826,005
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—87 **19 Claims**

1. A capture device comprising a plurality of tangs extending from a portion of a first fitting, said tangs radially spaced from the axis of the first fitting and non-rotatable about the first fitting,

surfaces non-rotatably circumferentially encircling a second fitting, the second fitting have means adapted to rotatably engage the first fitting, a circumferential shoulder adjacent the circumferential surfaces,

means on each tang spaced from the first fitting, said means on each tang radially positioned to contact the circumferential shoulder and adapted to tightly engage the circumferential surfaces whereby engagement of the first and second fittings causes the tangs to flex as the means on each tang pass over the circumferential shoulder adjacent

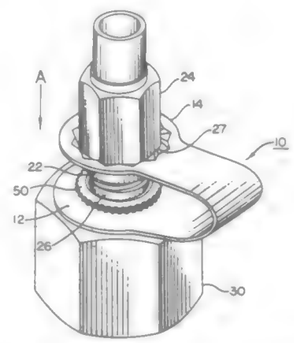


the circumferential surfaces and subsequently to flex back into tight engagement with the circumferential surfaces and disengagement of the first and second fittings causes the tangs to flex in the same manner as the engagement.

5,362,111
ANTI-ROTATION LOCKING DEVICE FOR PREVENTING SEPARATION OF COUPLING NUTS FROM FLUID LINES

Thomas E. Harbin, Westminister, Calif., assignor to VSI Corporation, Chantilly, Va.

Filed Sep. 24, 1993, Ser. No. 125,823
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—92 **10 Claims**

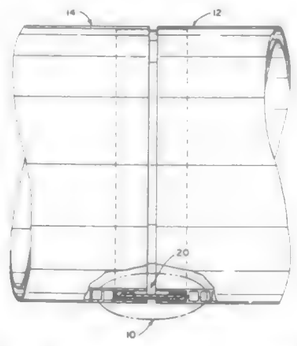


1. A device for preventing first and second joined parts from separating, comprising a resilient U-shaped member, a first arm of the member terminating in a shaped portion with an aperture formed therein defining an apertured end portion, a surface being coined along the internal surface of said aperture to engage a corresponding surface formed on said first joined part, a second arm of said member terminating in a shaped portion with an aperture formed therein defining an apertured end portion, a surface being coined along the internal surface of said aperture in said second arm to engage a corresponding surface formed on said second joined part, said apertured end portion in said first arm member being substantially coaligned with said apertured end portion in said second arm member, the apertured end portions being shaped to engage the joined parts such that the joined parts will not rotate relative to each other.

5,362,112
PIPE JOINT CONSTRUCTION AND COUPLING THEREFOR

Larry J. Hamilton, McLoud, Okla.; Thomas W. Hawkins, Aurora, and Richard P. Shortman, Stow, both of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio

Filed Sep. 16, 1993, Ser. No. 122,773
Int. Cl.[5] F16L *17/06*
U.S. Cl. 285—110 **6 Claims**



1. A pipe joint construction particularly suited for joining large diameter plastic pipe as used in sewer relining, said joint comprising:

first and second sections of cylindrical pipe having axially aligned opposed end walls with an axially inward circumferentially continuous groove formed in each end wall and defined by radially spaced side walls and a bottom wall, the groove in each end wall being axially aligned with the groove in the opposed end wall and cooperating therewith to form a gasket receiving chamber; and

a coupling member mounted in the gasket receiving chamber for sealingly joining the pipe sections, the coupling member comprising a rigid annular core ring mounted in the chamber and extending axially into each of the axially aligned grooves, a resilient compressible elastomeric covering over the core ring and having axially spaced end portions carrying circumferentially continuous radially extending protrusions which are compressed between the core ring and the side walls of the grooves into sealing engagement with the side walls of the grooves on both the radial inner and radial outer sides of the core ring, said covering end portions joined by an intermediate portion and the core ring having a length substantially as great as the combined axial length of the grooves in the opposed end walls and the coupling member has a length at least slightly greater than the combined axial length of the grooves in the opposed ends walls to assure that axial insertion forces applied to the pipe sections during a sewer relining operation are transmitted through the coupling member without direct engagement of the opposed end walls of the pipe sections.

5,362,113
SPOT-WELDED END FITTING FOR FLEXIBLE METAL PIPING

Roy W. Thomas, Attica, Ind., assignor to Tru-Flex Metal Hose Corp., West Lebanon, Ind.

Filed Sep. 2, 1992, Ser. No. 939,135
Int. Cl.[5] F16L *13/02*
U.S. Cl. 285—286 **7 Claims**

1. A spot-welded flexible metal piping and end fitting assembly, which comprises:

(a) a length of flexible metal piping, which includes:

(1) a generally continuous, spiral-wound metal band with interlocked leading and trailing edges;

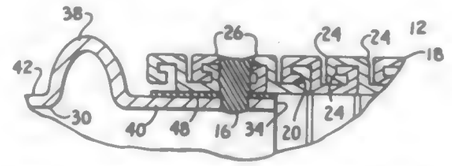
(2) a continuous spiral seam between said band edges, said interlocked leading and trailing band edges forming four layers of said band material at said spiral seam;

(3) an open end;

(4) a bore extending from and open at said end, said bore extending generally axially with respect to said flexible piping;

(5) inside and outside diameters;

(b) an end fitting including an intersection with a generally cylindrical configuration, a throughbore, an inside diameter, an outside diameter, an inner end adjacent to said inner section, an outer section with an outer end adjacent to said outer section, said inner section and said outer section having substantially equal diameters;



(c) said fitting inner section being received in said piping bore;

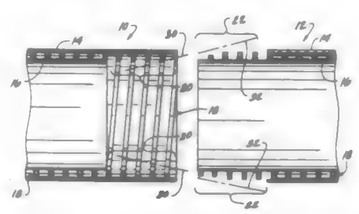
(d) a plurality of resistance spot-welds spaced circumferentially in proximity to said piping open end, each said spot-weld extending through four layers of said band material at said spiral seam and into said fitting section and each said spot-weld being of a width sufficient to bridge said spiral seam and structurally fuse respective band leading and trailing edges and the coupling; and

(e) an annular gasket positioned between said piping adjacent to the end thereof and said end fitting section.

5,362,114
PIPE JOINT AND METHOD FOR FORMING SAME FOR THREADED CONNECTION OF PROFILE PIPE

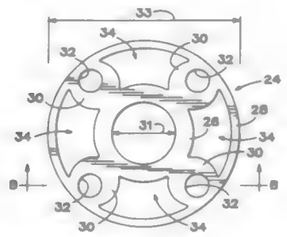
Jerry C. Levingston, P.O. Box 1157, Steelville, Mo. 65565

Filed Nov. 9, 1993, Ser. No. 149,506
Int. Cl.[5] F16L *15/04, 13/10*
U.S. Cl. 285—334 **18 Claims**



8. A pipe joint for first and second profile wall pipes, each profile wall pipe comprising generally concentric, spaced apart inner and outer walls, and rib means connecting the inner wall to the outer wall, the pipe joint comprising a first portion of said rib means of the first pipe which extends axially outwardly from an end of the inner wall and is exposed radially inwardly of the first pipe, and a second portion of said rib means of the second pipe which extends axially outwardly from an end of the outer wall and is exposed radially outwardly of the second pipe, said radially inwardly exposed rib means of the first pipe being threadably interengaged with said radially outwardly exposed rib means of the second pipe.

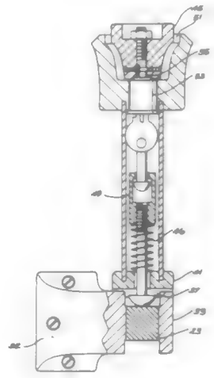
5,362,115
MULTI-RING GASKET
Ronald L. Carr, 73968 Debast Rd., Rainier, Oreg. 97048
Filed Jun. 5, 1992, Ser. No. 893,653
Int. Cl.[5] F16J *15/00*
U.S. Cl. 285—363 **37 Claims**



28. An assembly, comprising:
(a) a first flange;
(b) a second flange disposed substantially adjacent and parallel to said first flange, thereby defining a joint between said first flange and said second flange;
(c) a first strip of sealing material formed in a substantially-continuous loop having a predetermined shape, said first strip having an outer periphery whose size is greater than the inner periphery of said pipe flanges and being disposed between said first flange and said second flange;
(d) a second strip of said sealing material formed in a substantially-continuous loop having a predetermined shape, said second strip having an inner periphery whose size is greater than said outer periphery of said first strip and less than the outer periphery of said flanges and being disposed between said first flange and said second flange;
(e) a plurality of fasteners disposed around said flanges; and
(f) a plurality of spokes of said sealing material, each disposed between and attached to said first strip and said second strip, and extending between said first strip and said second strip, said first strip, said second strip and said spokes comprising a single piece of material.

5,362,116
SELF LATCHING MAGNETIC LATCHING DEVICE
David Doyle, 7130 Young Street, Cremorne, New South Wales 2089, and Neil Dunne, 5/19-23 Cairo Street, Cammeray, New South Wales 2062, both of Australia
PCT No. PCT/AU91/00357, § 371 Date Apr. 27, 1993, § 102(e) Date Apr. 27, 1993, PCT Pub. No. WO92/03631, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 12, 1991, Ser. No. 969,190
Claims priority, application Australia, Aug. 13, 1990, PK 1704; Mar. 15, 1991, PK 5138
Int. Cl.[5] E05C *1/06*
U.S. Cl. 292—144 **8 Claims**

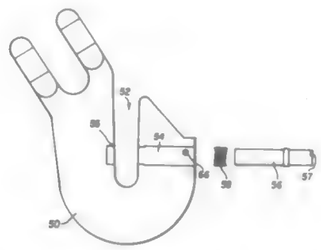
1. A self latching device for latching, in a predetermined position, two members which are otherwise moveable relative to one another, the device comprising a latch arm and a retaining element which in use provides a latching shoulder for the latch arm to prevent relative movement of the members, at least one of the latch arm and the retaining element providing a strong magnetic field and the other having magnetic properties, the latch arm being arranged to be displaceably mounted on a first of said members and the retaining element being arranged to be associated with the second of said members, the latch arm being such that, only when the members are in the predetermined position and the latch arm and retaining element are axially aligned, under the influence of the magnetic field will the latch arm and retaining element undergo relative movement into a latching position wherein any substantial relative movement of the two members is prevented by the latch arm and latching shoulder interengaging, and the latch arm being displaceable under substantial manual force away from the retaining element to a retracted position so that the members may be moved apart, the device comprising a biasing means which biases the latch arm to the retracted position with a force less than an opposing force imparted on the latch arm by the magnetic field, the latch arm being moveable in a vertical direction between the latching position and the retracted position and including a first portion displaceably mounted within a through passage in a housing, a first end of the first portion extending from a first end of the through passage and engaging with the latching shoulder in the latching position, a sleeve connected to a second opposite end of the first portion which extends from a second end of the through passage and a second portion mounted substantially above and in line with the first portion and having a first end connected to the sleeve and a second, opposite end mounting a lift knob, the biasing



means being disposed adjacent the through passage abutting against the housing and extending therebetween and a portion of the latch arm to bias the first portion into the retracted position, the second portion being moveable by way of the lift knob between a lower position and an upper position, one of either the first or second portions being rigidly connected to the sleeve, whereas the other is captured by the sleeve and is capable of limited movement with respect thereto, such that when the second portion is in the lower position the first portion can move independently of the second portion between the retracted position and the latching position, whereby the biasing means need not support the weight of the second portion when the latch arm is in the retracted position, but when the latch arm is in the latched position lifting of the lift knob to the upper position causes movement of the first portion to the retracted position.

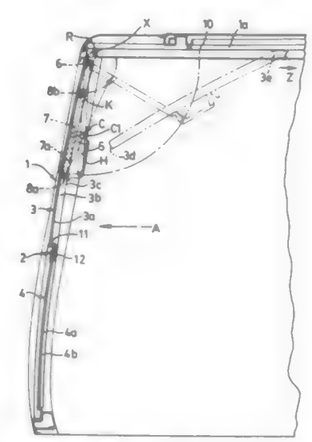
5,362,117
HOOK WITH SPRING LOADED LOCK-PIN
Tom Bennett, Jr., Corsicana, Tex., assignor to James B. Bonham Corp., Corsicana, Tex.
Filed Oct. 8, 1993, Ser. No. 133,321
Int. Cl.[5] B66C *1/36*
U.S. Cl. 294—82.23 **8 Claims**

1. A hook comprising: a hook body including a throat; a movable lock-pin located within a hole provided in the hook body, said lock-pin including a link retainer portion for traversing at least a portion of the throat of the hook body, a spring retainer portion extending from said link retainer portion, and a roll pin locking portion extending from said spring retainer portion; biasing means for biasing the lock-pin in a retracted position within the hole; and locking means for positively locking the lock-pin in a retaining position, said locking means comprising a roll pin which passes into the hole, wherein the roll pin contacts an outside face of the spring retainer portion to hold the lock-pin in a retracted position and contacts a



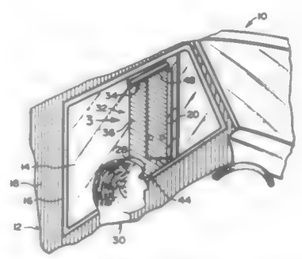
groove provided in an end surface of the roll pin locking portion to hold the lock-pin in a retaining position.

5,362,118
WINDOW ASSEMBLY FOR CAB OF A VEHICLE
Gerard P. A. J. Houriez, Gerpinnes, , assignor to Caterpillar Inc., Peoria, Ill.
Filed Feb. 17, 1993, Ser. No. 18,588
Int. Cl.[5] B60J *1/02*
U.S. Cl. 296—96.21 **16 Claims**



1. A front window assembly for the driver's cab of a vehicle, said cab having a roof portion, comprising:
an upper window section having top and bottom portions, a first pane of glass, and a first frame structure enclosing said first pane, said upper window section being adapted to move from a closed lower position to an open, upper stored position adjacent said roof portion;
first and second upper locking mechanisms associated with the top portion of said upper section;
first and second lower locking mechanism associated with said bottom portion of said upper section;
a first release lever adapted to simultaneously release the first upper and lower locking mechanisms; and
a second release lever adapted to simultaneously release the second upper and lower locking mechanisms.

5,362,119
GLARE SHIELD
Billy F. Rosentratter, 8738 E. Clearview St., Floral City, Fla. 32636
Filed Sep. 29, 1993, Ser. No. 128,094
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.8 **3 Claims**



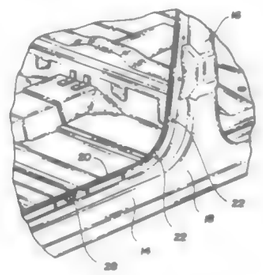
1. A glare shield for a truck having a cab with side window in a frame on a door and an outside rear view mirror, said glare shield comprising:
a) a casing, said casing including a generally elongated cylindrical hollow tube having two open ends and a longitudinal slotted passageway extending between said open ends, so that a sheet can extend through said longitudinal slotted passageway;
b) an opaque flexible glare-block sheet extending from said casing, said sheet being fabricated out of a tinted polarized plastic material;
c) means within said casing for retracting said sheet into said casing, said retracting means including a pair of end caps, each fitting into one open end of said tube, an elongated roller rotatably disposed within said tube on and between said end caps, so that said sheet can be wound on said roller and pass out through said longitudinal slotted passageway, and a spring mounted within said tube for biasing said roller against unwinding;
d) means for securing in a removable manner said casing adjacent to an upper edge of the side window within the cab of the truck, said securing means including an elongated hanger plate integrally formed on one side of said tube and extending upwardly from said longitudinal slotted passageway, a pair of hooks, and a plurality of rivets for attaching said hooks in a spaced apart relationship to a back surface of said hanger plate, so that said hooks can hang onto the upper edge of the side window within the cab of the truck;
e) means for anchoring in a removable manner, a bottom edge of said sheet to a lower portion of the window frame on the door, so as to inhibit the glare of bright headlights reflected by the outside rear view mirror from going through the side window in the cab of the truck and into the eyes of the driver, said anchoring means including a stiffener strip extending along the bottom edge of said sheet, a horizontal tongue projecting downwardly from the center of said stiffener strip, and a bracket having a horizontal groove affixed to the lower portion of the window frame on the door, so that when said sheet is extended said tongue can engage with said groove in said bracket;
f) a pair of channel-shaped felt dust wipers, each affixed along one lower edge at said longitudinal slotted passageway, so that when said sheet is pulled therethrough said dust wipers will sweep clean opposite surfaces of said sheet; and
g) a shock absorber at the back surface of said hanger plate, to prevent said rivets from rubbing and vibrating against the side window.

5,362,120

VEHICLE BODY CONSTRUCTION AND METHOD FOR INSPECTION OF ADHESIVELY SECURED JOINTS THEREIN

Henry J. Coraille, Jr., Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1993, Ser. No. 43,087
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—203 20 Claims



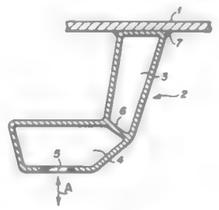
1. A vehicle body construction comprising:
a pair of structural body members having opposed surfaces;
adhesive that forms a substantially concealed joint securing the opposed surfaces to each other to thereby connect the pair of structural body members; and
one of the body members having small inspection openings formed through its opposing surface at spaced intervals to permit visual observation of whether there is adhesive between the opposed surfaces at the spaced intervals to thereby provide an indication of the integrity of the adhesive joint.

5,362,121

SUSPENSION SEATING FOR A VEHICLE BODYWORK

Norbert Enning, Denkendorf; Klaus P. Rinke, Wettstetten; Walter Schmale, Lenting, and Heinrich Timm, Ingolstadt, all of Germany, assignors to Audi A.G., Ingolstadt, Germany

Filed Mar. 25, 1993, Ser. No. 30,190
Claims priority, application Germany, Dec. 20, 1990, 4040976
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—204 13 Claims



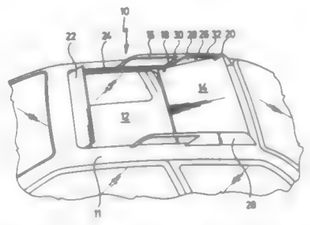
8. A holder for connection to a longitudinal member of a vehicle bodywork for providing a suspension seating for the vehicle bodywork, comprising in operative combination:
a) an extruded light metal section being generally L-shaped when viewed in cross-section, including:
i) a first, generally upright box-like chamber forming a vertical leg of the L-shaped holder, said first box-like chamber having an upper surface;
ii) means for connecting said upper surface of said first box-like chamber to a light metal longitudinal member of the vehicle bodywork;
iii) a second, generally horizontal box-like chamber forming a second leg of the L-shaped holder, said second box-like chamber having a first end connected to said first box-like chamber and a second free end, said second box-like chamber for providing a seating area for receiving an applied load for suspension of the vehicle bodywork; and
iv) an interior ridge member disposed separating said first box-like chamber from said second box-like chamber to define a closed twin-chamber extruded light metal section.

5,362,122

VEHICLE ROOF

Peter Reihl, Starnberg, and Burkhard Reinsch, Neuried, both of Germany, assignors to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

Filed Aug. 18, 1993, Ser. No. 107,575
Claims priority, application Germany, Aug. 19, 1992, 4227402
Int. Cl.[5] B60J *7/00*
U.S. Cl. 296—216 14 Claims



1. A vehicle roof with at least one cover part, which is movable between a closed position, in which the at least one cover part closes a roof opening in a stationary roof panel and is at least approximately flush with parts of the stationary roof panel laterally bordering the roof opening, and an open position, in which the cover part is positioned obliquely rearwardly inclined toward the rear, by having been swung around an axis of rotation lying near a front end of the at least one cover part and has been displaced rearwardly from the closed position to a position above the stationary roof panel; wherein said at least one cover part has front and rear guide elements; wherein a longitudinal guideway is provided running at least approximately parallel to a respective one of the parts of the stationary roof panel bordering each lateral side of the roof opening, and said at least one cover part is guided, in the area of its front end, by said front guide elements in said longitudinal guideway below the lateral side of the roof opening; and wherein a roof rail is provided extending above the stationary roof panel at each lateral side of the roof opening, each roof rail having a guide channel for guiding the at least one cover part, in the area of its rear end, by said rear guide elements when the at least one cover part is displaced rearwardly.

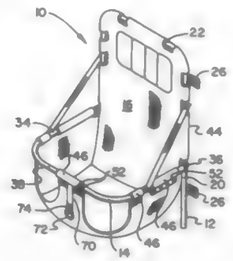
5,362,123

WALL MOUNTED CHILD SEATS WITH FOLD-UP CAPABILITIES

Sharon L. Simmons, 1365 Lawndale, Eldorado, Kans. 67042

Filed Nov. 12, 1993, Ser. No. 151,003
Int. Cl.[5] A47D *1/10*
U.S. Cl. 297—14 4 Claims

1. A new and improved child seat positionable between an operative deployed orientation and an inoperative storage orientation comprising, in combination:
a main support frame in a generally inverted U-shaped configuration having a pair of parallel vertical legs and a single horizontal leg coupled therebetween at the upper extent of the vertical leg;
attachment means secured to each vertical leg at an upper extent thereof and at a lower extent thereof for coupling the main support frame to a surface such as the wall of a bathroom;
a pivotable frame formed with linear parallel legs having inboard ends and outboard ends and with hinge means coupling the inboard end thereof to a central extent of the vertical legs of the main support frame intermediate the attachment means, the pivotable frame also having an elongated cross leg at the outboard ends of the parallel legs;
a flexible fabric cover having inboard ends coupled to the vertical and horizontal legs of the main support frame and outboard ends coupled to the parallel and cross leg of the pivotable frame;
attachment strap coupling intermediate extents of the verti-



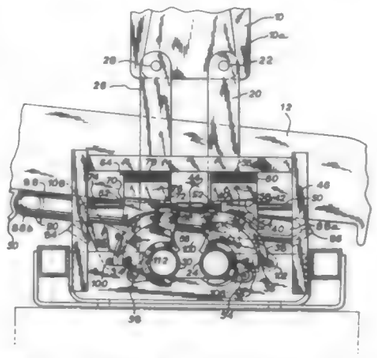
cal legs of the main support frame and the parallel legs of the pivotable frame to limit downward movement thereof;
a fabric support having inboard ends coupled to the vertical and horizontal legs of the main support frame and outboard ends coupled to the parallel and crogs leg of the pivotable frame;
releasable fasteners coupling the fabric support to the main support frame and the pivotable frame; and
an accessory strap secured to the central extent of the cross leg of the pivotable frame for temporary attachment of accessories.

5,362,124

SEAT LOCKING AND ADJUSTMENT MECHANISM

Richard S. Schlidt, W215 N10135 Hickory Dr., Colgate, Wis. 53017

Filed Nov. 13, 1992, Ser. No. 976,370
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—95 18 Claims



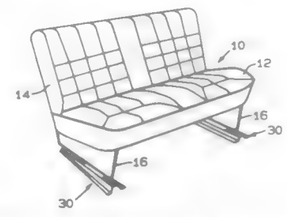
1. A locking mechanism for a vehicle seat, said seat having a frame and a movable seat back, comprising:
a first, rotatable locking member having a first braking surface, said first locking member being interconnected to and movable with said seat back;
a second locking member, having a second braking surface, that moves in a direction toward said first braking surface such that said second braking surface engages said first braking surface upon the rapid deceleration of said vehicle; and
a support means, interconnected with said frame, for supporting said second locking member, said second locking member moving in said direction along said support means upon rapid deceleration of said vehicle to thereby stop the movement of said first locking member and of said seat back.

5,362,125

VAN SEAT AUXILIARY SUPPORT RAILS

Matthew L. Peak, 1150 Grand View Dr., P.O. Box 18, Grass Lake, Mich. 49240

Filed Jul. 6, 1993, Ser. No. 85,780
Int. Cl.[5] A47C *13/00*
U.S. Cl. 297—130 3 Claims



1. An auxiliary portable support for removable automobile seats having releasable front and rear retainers selectively locked to vehicle anchors comprising, in combination, an elongated rail having a lower load bearing surface adapted to rest upon a supporting surface, a longitudinal axis, ends, an upper surface, a pair of seat retainer receiving rail anchors defined on said rail adjacent said upper surface and longitudinally spaced from each other for attachment to the seat retainers whereby attaching the seat retainers to said rail anchors provides a universal support for a seat removed from a vehicle, said rail transverse cross section including a pair of spaced vertically oriented walls, said rail anchors comprising pins extending between and mounted upon said walls, said wall each having an upper end, an upper panel extending between said wall's upper ends, said upper surface being defined upon said panel, openings defined in said panel adjacent said pins providing access to said pins, said anchor pins being tubular, wheel support structure selectively receivable within said pins, and a wheel mounted upon said wheel support structure

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5,362,126

BICYCLE SADDLE

Keith D. Boatrager, 342 Morrissey Blvd., Santa Cruz, Calif. 95062

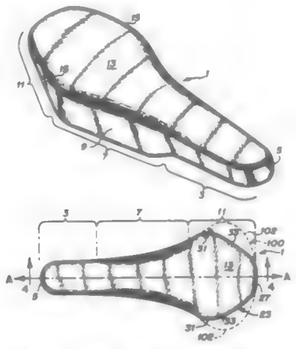
Filed Jul. 13, 1992, Ser. No. 912,831
Int. Cl.[5] B62J *1/00*
U.S. Cl. 297—195.1 16 Claims

1. A bicycle saddle for attachment to a seat post member comprising in operative combination:
a) a generally narrow front end saddle portion including a pommel disposed at a leading end and a pair of spaced apart, opposed side surfaces and a top surface, said side surfaces and said top surface being disposed generally parallel with a longitudinal axis of said saddle;
b) a transitional mid-saddle portion disposed aft of said front end saddle portion having a top surface and a pair of spaced apart, opposed sides surfaces and wherein:
i) said mid-saddle portion top surface having a first forward end disposed flush with said front end portion top surface and a second rear end;
ii) each of said mid-saddle portion side surfaces having a first forward end disposed flush with coordinate side surfaces of said front end saddle portion and a second rear end which flares outward in a direction away from said longitudinal axis;
c) a rear saddle portion of a reduced surface area for provid-

ing a rider with increased freedom of movement when getting off and back on the saddle from a rearward direction, said rear saddle portion having a length in the range of approximately ⅓ to ½ of an overall length of the saddle and which includes:

i) a substantially flat top surface having a forward end disposed flush with said top surface rear end of said transitional mid-saddle portion and a second rear terminal end;

ii) a pair of specially contoured, spaced apart, opposed side edge profiles, each including a first forward side edge profile region and a second rearward side edge profile region and wherein a distance between said



forward side edge profile regions defines a maximum width dimension of said saddle;

iii) each of said first forward side edge profile regions of said specially contoured side portions extending from coordinate rear ends of said outward flaring side surfaces of said mid-saddle portion and are disposed substantially parallel with said longitudinal axis; and

iv) said second rearward side edge profile regions of said specially contoured side portions extending from said first forward side regions to said terminal end and having a gradually inward taper in a direction towards said longitudinal axis

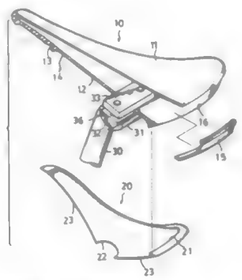
d) and wherein said maximum width dimension of said saddle is approximately 4.6 inches.

5,362,127

BICYCLE SADDLE

Robert Chang, Taichung Hsien, Taiwan, Prov. of China, assignor to Kalloy Industrial Co., Ltd., Taichung Hsien, Taiwan, Prov. of China

Filed Aug. 24, 1993, Ser. No. 111,177
Int. Cl.[5] B62J *1/28*; A47C *7/62*
U.S. Cl. 297—195.1 **4 Claims**



1. A bicycle saddle comprising:

a seat body comprising an upper wall constructed to receive the posterior of a rider and a lower wall;

connecting means connected to the lower wall of the seat body;

means for fixedly attaching the seat body onto a seat post by attaching the lower wall of the seat body to the seat post;

a base having a substantially triangular wall defining a central hole therewithin, said substantially triangular wall connected to said connecting means and said central hole surrounding the seat post; and

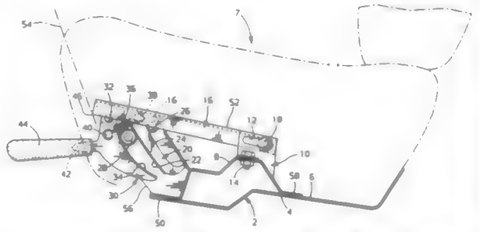
said attaching means being totally enclosed by the seat body and the base so that it is hidden from sight.

5,362,128

MECHANICAL THIGH SUPPORT

William J. Wildern, IV, Farmington Hill, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1993, Ser. No. 103,144
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284.11 **5 Claims**



1. A vehicle seat with an adjustable thigh support comprising:

a vehicle seat frame, the seat frame providing support for a portion of a leg section of a vehicle occupant;

a thigh support pan pivotally mounted with respect to the seat frame providing support for the portion of the leg section at a forward end of the seat frame;

a main gear track projecting generally downwardly from the thigh support pan, the main gear track having a toothed surface;

a gear housing fixed with respect to the seat frame, the gear housing having directly and rotatably mounted thereto a gear for meshing engagement with the main gear track toothed surface, the gear housing also having spaced away from the gear an alignment pin for capturing the main gear track between the gear and the alignment pin; and

a receiving gear track pivotally mounted with respect to the thigh support pan having a toothed surface for engagement with the gear, the receiving gear track also having a handle portion for impartation of pivotal movement and the receiving gear track being pivotally biased into engagement with the gear.

5,362,129

STRUCTURE OF A CASING FOR HEADREST STAY

Yoshikazu Itoh, and Masami Akiyama, both of Akishima, Japan, assignors to Tachi-s Co., Ltd., Akishima, Japan

Filed Sep. 29, 1992, Ser. No. 953,654
Int. Cl.[5] A47C *7/36*
U.S. Cl. 297—391 **5 Claims**

1. A structure of a casing covering a headrest stay in a headrest, in which said headrest includes a headrest body upholstered with a top cover member, said headrest body being cantilevered upon an automotive seat back of an automotive seat by means of said headrest stay wherein,

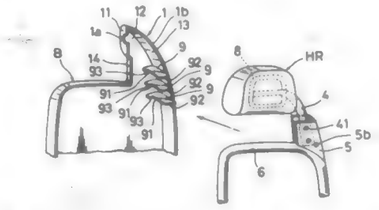
said casing covers said headrest stay in an enclosing manner, said structure comprising a flat abutment surface defined at an end portion of said casing, which is abutted against one lateral wall of said headrest body; and

a cut-away portion which is so formed in said flat abutment surface so as to define an enlarged opening between said

cut-away portion and a periphery of said headrest stay, the dimensions of said opening being enlarged to allow a substantial part of said top cover member of said headrest body to be drawn into the inside of said casing, thereby causing undesired wrinkles in said top cover member to be created only interiorly of said casing and avoiding creation of said undesired wrinkles at an outer surface of said top cover member surrounding said flat abutment surface of said casing;

said casing comprises a frontal casing portion and a rearward casing portion;

wherein said seat back has a seatback frame provided therein, and a bracket is fixed on said seatback frame;



both said frontal and rearward casing portions being so formed as to cover said headrest stay and bracket;

wherein said rearward casing portion is provided with at least one rib means which contacts at least one side of said bracket, said rib means including a projected part which is projected outwardly from said rearward casing portion; and

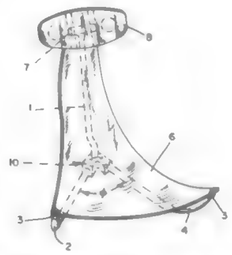
wherein when joining said frontal casing portion to said rearward casing portion, said projected part of said rib means serves as a guide for allowing said frontal casing portion to be easily and precisely joined with said rearward casing portion, and further, both said frontal and rearward casing portions are retained by said rib means against contact with said bracket and headrest stay.

5,362,130

COLLAPSIBLE COMPACT CHAIR WITH BACK SUPPORT FOR BACK-PACKING OUTDOORS USE

Timothy C. Hoffman, 104 44th St., Manhattan Beach, Calif. 90266

Filed Jan. 31, 1994, Ser. No. 188,921
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440.11 **2 Claims**



1. A lightweight, collapsible compact chair for outdoors use by adults, the chair comprising:

(a) a three-part metal support frame; said frame comprising a back support member and two front support members loosely joined together by fit at one end and forming an inverted wye shape; said back support member being angled backwards and upwards at an angle of approximately 105 degrees to a ground plane to provide required sitting posture for a seated person; said front support members having an angle of approximately 90 degrees between them in the ground plane to provide seat support stability and to prevent tipping; said front support members each having a portion of their free end length bent upward and outward at an approximate angle of 125 degrees, providing front projecting ends for supporting a sling;

(b) a triangular sling which is attached at its three corners to the top of said frame back support member and to said frame front projecting ends; said sling being fabricated of canvas material; said sling incorporating means for being temporarily fastened to said back support member and to said frame front projecting ends; and

(c) a backrest which is attached to the top portion of said sling; said backrest being made of aluminum metal sheet, elliptical in shape and of sufficient width to provide support to the back of a human adult; said metal sheet being covered with a padding material for comfort;

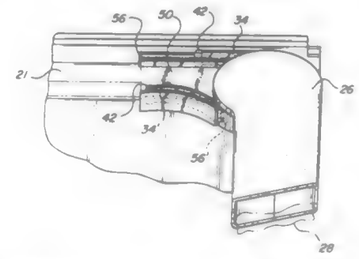
said back support member comprising a long aluminum tubular member having a short metal member welded to one end forming a T shape at its top, and a bracket fastened to the distal end of said tubular member; said bracket being a metal block elbow having flat surfaces on all its sides, said elbow having a first socket hole bored in the axis of one of its 90 degree arms and a second socket hole bored in the axis of its other 90 degree arm, each said first and second socket hole being sized to fit snugly over the end of a front support member when said frame is assembled; said elbow having a third socket hole bored vertically at its center corner, normal to the plane of said 90 degree arms, said third socket hole sized to fit snugly over the inserted fitted free end of said long aluminum tubular member; said elbow including a metal pin which is inserted horizontally through a hole in the side of said elbow and through a hole in said fitted tubular member, firmly fastening said tubular member to said bracket; said collapsible compact chair capable of being disassembled into three separate frame parts and a sling forming a very lightweight package suitable for back packing use.

5,362,131

PROTECTIVE COVER FOR A HINGE JOINT

Thomas Susko, East Point, and Douglas Moore, Grand Rapids, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Mar. 23, 1993, Ser. No. 35,789
Int. Cl.[5] B60N *2/00*
U.S. Cl. 297—463 **8 Claims**



1. A vehicular seating assembly (**10**) including a generally horizontal seat portion (**18**) secured to a generally upright backrest portion (**20**), said assembly (**10**) comprising:

an articulated member (**21**) defining at least a portion of said backrest (**20**);

a support member (**28**);

a hinge joint (**30**) pivotally interconnecting said articulated member (**21**) and said support member (**28**) and providing rotation of said articulated member (**21**) about a pivot axis (B) relative to said support member (**28**);

a cover (**26**) disposed about said hinge joint (**30**); and

said assembly (**10**) characterized by said cover (**26**) including at least one flexible strip (**34**) longitudinally extending

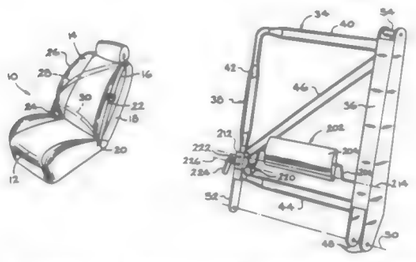
between a first end (36) connected to said cover (26) and a distal end (40) and spaced from said cover (26), said distal end (40) operatively engaged with one of said articulated member (21) and said support member (28) to flex said strip (34) circumferentially about said hinge joint (30) in response to said pivotal rotation of said articulated member (21) relative to said support member (28).

5,362,132

VEHICLE SEAT ASSEMBLY WITH STRUCTURAL SEAT BACK TO ACCOMMODATE SEAT BELT LOADS APPLIED TO SEAT BACK

Les Griswold, Ann Arbor; Mark D. Hewko, Greenwood Canton, both of Mich.; John Krieger, Dublin, Ohio, and Robert D. Elton, Ann Arbor, Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Feb. 22, 1991, Ser. No. 659,500
Int. Cl.[5] B60N *2/12*; A62B *35/00*
U.S. Cl. 297—483 15 Claims



1. A vehicle seat assembly having first and second laterally spaced sides comprising:

first and second fore and aft extending fixed rails with said first fixed rail being disposed along said first side of the seat assembly and said second fixed rail being disposed along said second side of the seat assembly, said fixed rails being adapted to be mounted to a vehicle and each having a first track portion;

first and second slide rails carried by said first and second fixed rails respectively, said slide rails each including a slide track portion slidable coupled with the fixed track portion of said fixed rails for movement fore and aft, and said slide rails each including a riser portion extending upwardly from said slide track portion;

a seat cushion having a rear end coupled to said slide rails and a back frame pivotally mounted to said slide rails and extending generally at the rear end of said seat cushion to an upper end;

recliner means disposed at said first side of said seat assembly for holding said back frame in an upright position relative to said slide rails and for selectively adjusting said upright position;

a seat belt system including seat belt retractor means mounted to said first side of said seat assembly, a seat belt having an end coupled to said retractor means and extending upwardly from said retractor means through a belt loop means at the upper end of said back frame along said first side, and down to said slide rail on said first side of said seat assembly, a clasp mounted on said seat belt, and a belt buckle attached to said second side rail on said second side of said seat assembly for reception of said clasp when said seat belt is extended over the shoulder and around the lap of a user of said seat assembly;

said recliner means including a single support brace disposed at said one side of said seat assembly having a first end pivotally coupled to said back frame above the pivotal mount of said back frame to said slide rail at said first side of said seat assembly, said support brace extending forwardly and downwardly to a second end;

a drive nut pivotally coupled to said support brace near said second end of said support brace; and

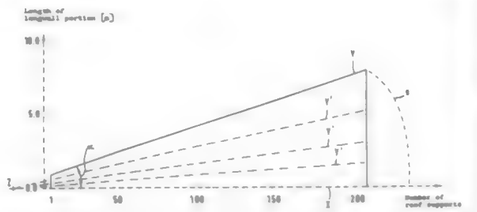
an elongated lead screw mounted to said first slide rail and extending in a fore and aft direction, said drive nut being threadably coupled to said lead screw whereby said nut moves along said lead screw in response to rotation of said lead screw resulting in movement of said support brace second end fore and aft causing said back frame to rotate about the pivotal mount of said back frame to said slide rails.

5,362,133

METHOD OF MINING COAL SEAMS AT A DEFINED PRESET DEPTH OF CUTTING DURING PLOUGHING WITH A CUTTER

Guy Geuns, Wuppertal, Germany, assignor to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Germany

Filed Mar. 29, 1993, Ser. No. 37,839
Claims priority, application Germany, Apr. 4, 1992, 4211340
Int. Cl.[5] E21C *35/14*; E21D *23/14*
U.S. Cl. 299—1.7 8 Claims



1. A method of mining coal seams at a defined preset depth of cutting during ploughing by a cutter, which method comprises positioning a longwall conveyor along a coal face, moving the longwall conveyor forwards through a defined preset cutting depth by extending self-advancing cylinders, pivoting the said cylinders at one end to the longwall conveyor and at the other end to roof supports disposed parallel to the longwall conveyor, controlling the advance of the longwall conveyor in dependence on a piston stroke of a respective self-advancing cylinder, making the advance in individual defined partial strokes using travel-measuring signals generated at each partial stroke, and, after a predetermined maximum total piston stroke has been reached, automatically retracting the roof support connected to the respective self-advancing cylinder, moving the said roof support forwards by the maximum total piston stroke, and then re-setting the roof support, increasing the distance covered by the partial strokes corresponding to the preset depth of cutting by an amount sufficient to compensate an average mechanical clearance at the pivot points of the self-advancing cylinders, fixing a defined face line inside the face in the form of a final value with respect to a centre of rotation on the side of a main or auxiliary drive of the cutter so that the final value forms a straight line through the centre of rotation, and pivoting the straight line through an angle $<90°$ with respect to the respective preceding initial face line which lies on a straight line likewise passing through the centre of rotation so that a circular segment is mined.

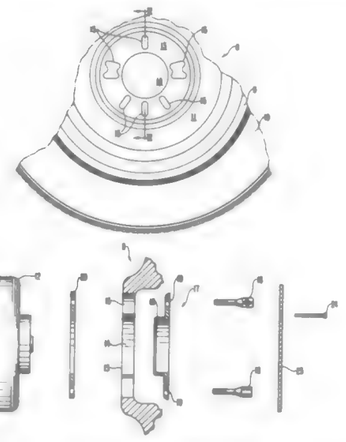
5,362,134

MOTOR-VEHICLE WHEEL

Federico Carmona, Via Cellina 8, 33080 Porcia (Pordenone), Italy

Filed Feb. 1, 1993, Ser. No. 11,768
Claims priority, application Italy, Jan. 31, 1992, PN92 A 000008
Int. Cl.[5] B60B *3/00*
U.S. Cl. 301—35.62 7 Claims

1. Wheel structure for mounting a tire to a hub-supporting drum of a motor vehicle, said wheel structure comprising: a wheel including a rim on which the tire is to be supported, a central hub fixable to the hub-supporting drum, and a disc connecting said rim to said central hub, said central hub having a central hole extending centrally therethrough and which central hole is used to center the wheel on the hub-supporting drum, and a plurality of peripheral holes extending therethrough at locations spaced radially outwardly of said central hole, each of said peripheral holes comprising an elongate slot extending longitudinally in the radial direction of the hub whereby fixing bolts can be received at various radial positions within each of the elongate slots; a spacer flange to be interposed between said hub of the wheel and the hub-supporting drum of the motor vehicle so as to space the wheel from the



hub-supporting drum, said spacer flange having a central hole extending centrally therethrough and a plurality of bolt holes extending therethrough at peripheral locations at which the bolt holes are alignable with respective ones of the elongate slots of said hub of the wheel; and an adapting flange by which said hub of the wheel is to be fixed to the hub-supporting drum of the motor vehicle, said adapting flange having a central hole extending centrally therethrough, and a plurality of bolt holes extending therethrough at locations at which the bolt holes of the adapting flange are alignable with respective ones of the elongate slots of said hub of the wheel, and respective ones of the bolt holes of said adapting flange and said spacer flange being alignable.

5,362,135

BRAKE SYSTEM WITH ADAPTIVE OFFSET COMPENSATION

Bryan P. Riddiford, Spring Valley, and Deron C. Littlejohn, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1994, Ser. No. 195,242
Int. Cl.[5] B60T *13/04*
U.S. Cl. 303—3 4 Claims

1. In a vehicle brake system having braking control responsive to a pressure signal from a pressure transducer in a hydraulic brake line, a method of operation comprising the steps of:

(a) determining whether a brake pedal is depressed;

(b) when the brake pedal is determined to be depressed:

(i) controlling the brake system responsive to the pressure signal and a stored offset value for the pressure transducer, and

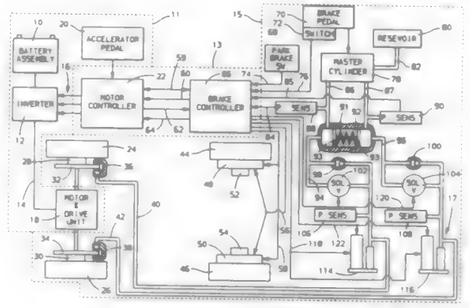
(ii) resetting a timer;

(c) when the brake pedal is determined to be not depressed:

(i) cycling the timer,

(ii) determining whether the timer has timed out, and

(iii) if the timer has timed out, (iii.i) receiving the pressure signal from the pressure transducer, (iii.ii) comparing the pressure signal to a predetermined limit value indicative of an acceptable maximum sensor output when the



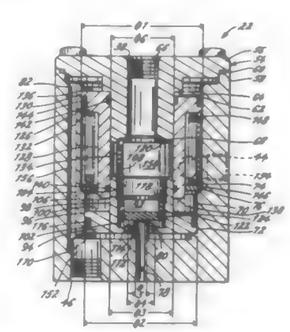
pedal is not depressed, and (iii.iii) updating the stored offset value responsive to the pressure signal.

5,362,136

PROPORTIONING MODULE

Steven D. Wallestad, Kansas City, Mo., assignor to Midland Brake, Inc., Kansas City, Mo.

Filed Mar. 2, 1993, Ser. No. 25,187
Int. Cl.[5] B60T *8/26*
U.S. Cl. 303—9.72 19 Claims



1. A proportioning module for a brake system comprising:

a housing having a service chamber communicating with a service port, a delivery chamber communicating with a delivery port, and a feedback chamber communicating with the delivery chamber, the housing being adapted to receive a service pressure at the service port and to provide delivery pressure at the delivery port,

valve means movable in the housing for proportioning pressure between the service port and the delivery port within a first predetermined service pressure range, the valve means having a valve disk and a proportioning piston, the proportioning piston being disposed downstream of the valve disk and being movable in response to the service pressure and the delivery pressure, the proportioning piston being movable relative to the valve disk to effect a sealing engagement therebetween to control flow between the service chamber and the delivery chamber, and

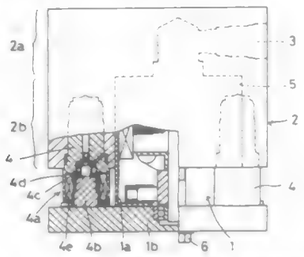
feedback means having a surface area adjacent the feedback chamber, the feedback means being movable in the housing in response to delivery pressures resulting from service pressures within a second predetermined service pressure range, the feedback means being responsive to higher delivery pressures in the feedback chamber to urge the proportioning piston out of sealing engagement with the valve disk.

5,362,137

BRAKE FLUID PRESSURE CONTROL UNIT

Teruhisa Kohno, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 26, 1993, Ser. No. 111,787
Claims priority, application Japan, Aug. 27, 1992, 4-228815; Jul. 15, 1993, 5-175219
Int. Cl.[5] B60T *13/18, 13/88, 17/02*
U.S. Cl. 303—10 15 Claims



1. A brake fluid pressure control unit provided in a fluid passage extending between a master cylinder and wheel cylinders to control the brake fluid pressure in said wheel cylinders, said control unit: comprising a circuit block having a pump, a motor for driving said pump, and a pressure adjusting means including solenoid valves for opening and closing fluid passages,

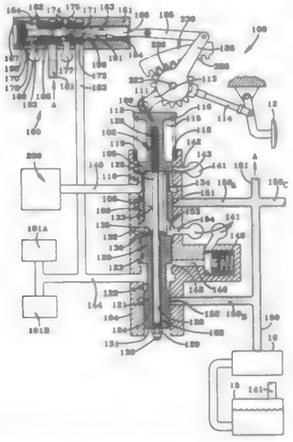
said pump in said circuit block being mounted on one axial end of said motor and said pressure adjusting means being provided so as to surround the outer periphery of said motor, said solenoid valves being provided parallel to the motor, said motor having a case having a portion thereof made of a magnetic material, said portion forming a part of a magnetic circuit through which magnetic fluxes produced in the coils of said solenoid valves pass.

5,362,138

BRAKE FEEDBACK VALVE

Joseph A. Clemens, Brownsburg, and James A. Redelman, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 4, 1993, Ser. No. 13,604
Int. Cl.[5] B60T *15/04*
U.S. Cl. 303—50 6 Claims



1. A brake apply control system comprising:

a selectively operable mechanical brake apply portion including, an operator linkage means including a rotatable input member for connecting the operator with a mechanical brake apply means, and a hydraulic piston and valve means including a linkage arrangement operatively connected with said input member for providing a hydraulic feedback force to the operator;

a selectively operable hydraulic brake apply portion including, a source of hydraulic pressure, brake apply valve means for supplying a selective brake signal of variable intensity in response to an operator input, means connecting said source to said hydraulic piston and valve means, and means connecting said brake signal to said hydraulic piston and valve means; and

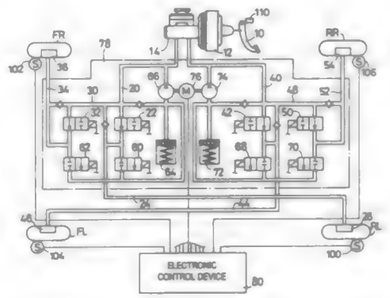
said hydraulic piston and valve means having an operator-actuated piston means responsive to the brake apply valve signal means and a sleeve valve in which is slidably disposed a reaction pin selectively connectible with the source of hydraulic pressure when the brake signal connecting means is operable to supply the brake signal to said hydraulic piston and valve means responding to said source-connecting means to provide a first feedback force to the operator, and responding to said brake signal connecting means for providing a second feedback force to the operator proportional to the intensity of the brake signal.

5,362,139

ANTI-LOCK BRAKE SYSTEM WHEREIN BRAKE PRESSURE FOR HIGHER-SPEED REAR WHEEL IS MADE LOWER THAN THAT FOR LOWER-SPEED REAR WHEEL

Masao Watanabe, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 11, 1994, Ser. No. 209,012
Claims priority, application Japan, Mar. 31, 1993, 5-098923
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—96 36 Claims



1. A hydraulically operated anti-lock brake system for a motor vehicle having a front right wheel, a front left wheel, a rear right wheel and a rear left wheel, said brake system comprising:

wheel speed obtaining means for obtaining rotating speeds of said front right and left wheels and said rear right and left wheels;

hydraulic brakes for braking said front and rear wheels with brake pressures; and

anti-lock pressure regulating means for controlling said brake pressures on the basis of an output of said wheel speed obtaining means, so as to prevent excessive slipping of said front and rear wheels,

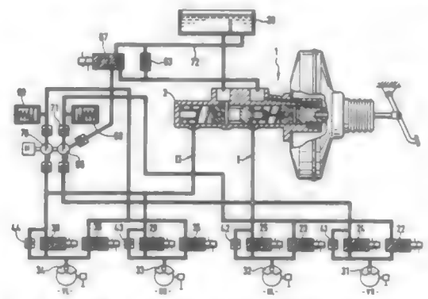
said anti-lock pressure regulating means including pressure-difference generating means for generating a pressure difference between a first rear brake pressure for one of said rear right and left wheels whose rotating speed is higher than the other rear wheel, and a second rear brake pressure for said other rear wheel, such that said first rear brake pressure is lower than said second rear brake pressure.

5,362,140

AUTOMOTIVE VEHICLE BRAKE SYSTEM WITH BRAKE-SLIP-DEPENDENT AND TRACTION-SLIP-DEPENDENT BRAKING PRESSURE CONTROL

Jochen Burgdorf, Offenbach-Rumpenheim, Germany, assignor to Alfred Teves GmbH, Frankfurt, Germany

PCT No. PCT/EP92/00346, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO92/17357, PCT Pub. Date Oct. 15, 1992
PCT Filed Feb. 19, 1992, Ser. No. 949,631
Claims priority, application Germany, Apr. 4, 1991, 4110851
Int. Cl.[5] B60T *8/48*
U.S. Cl. 303—113.2 11 Claims



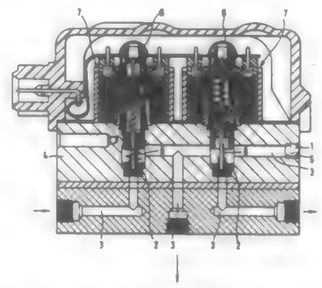
1. An automatic vehicle brake system with brake-slip-dependent and traction-slip-dependent braking pressure control, with a tandem master cylinder having a first and a second pressure chamber, with at least two wheel brake cylinders, including a first wheel brake cylinder belonging to a first driven wheel and a second wheel brake cylinder belonging to a second driven wheel and, via a primary brake circuit, said first wheel brake cylinder being connected to said first pressure chamber and via a secondary brake circuit, said second wheel brake cylinder being connected to said second pressure chamber, which said first and second pressure chambers are separated by a floating piston, upon a pedal-initiated braking operation pressure building up in said first pressure chamber as well as in said primary brake circuit connected thereto via a foot-pressure-controlled actuating device and in said second pressure chamber as well as in said secondary brake circuit connected thereto via said floating piston applied by the pressure of said first pressure chamber, with at least one pressure medium storage reservoir connected with said first pressure chamber by a first connection line and with said second pressure chamber by a second connection line, wherein a first central valve locks said first connection in dependence on pedal travel and a second central valve locks said second connection in dependence on a stroke of said floating piston, with at least one pressure-varying device working independently of foot pressure and contributing to brake-slip-dependent braking pressure control, characterized in that, independently of the allocation of said at least two wheel brake cylinders to said primary and secondary brake circuits, a locking valve is arranged in said first connection line of said pressure medium storage reservoir towards said first pressure chamber of said tandem master cylinder, which locking valve locks said first connection line during a traction slip control operation; in that said second connection line of said pressure medium storage reservoir towards said second pressure chamber has no such valve; and in that said floating piston is displaced towards said second chamber by means of a pressure increase which a device, which operates independently of the foot pressure, has built up in said primary brake circuit and, while being displaced, controls said second central valve in accordance with pressure variation in said primary brake circuit.

5,362,141

VALVE BLOCK AND METHOD OF ASSEMBLING AN ELEMENT THERETO

Erhard Beck, Weilburg, and Albrecht Otto, Hanau-Mittelbuchen, both of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany

PCT No. PCT/EP90/00339, § 371 Date Dec. 11, 1991, § 102(e) Date Dec. 11, 1991, PCT Pub. No. WO91/12107, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 23, 1991, Ser. No. 778,219
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—119.2 1 Claim



1. A method of assembling a valving component in an opening in a housing included in a hydraulic valving assembly, said housing including passageways for receiving a flow of hydraulic fluid so to create tightly fit mating surfaces without abrading the mating surface between the component and the housing opening, comprising the steps of:

forming said valving component of an alloy having a shape memory in which a force fit will exist within said opening;

configuring said valving component in another condition to fit freely into said opening;

assembling said valving component into said opening in said structure; and

heating said valving component into a temperature range restoring said memory shape to establish said tight fit of said valving component in said opening whereby a tight fit can be established without abrading particles into said valving assembly to obviate the need for cleaning of said passageways after assembly of said valving components.

5,362,142

COMBINATION LINKAGE TYPE RUBBER CRAWLER

Yusaku Katoh, Fukuyama, Japan, assignor to Fukuyama Gomu Kogyo Kabushiki Gaisha, Hiroshima, Japan

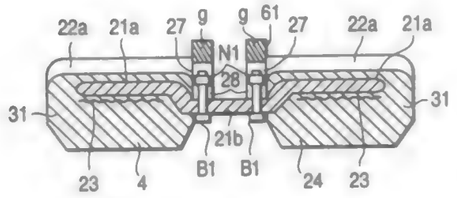
PCT No. PCT/JP91/00494, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/16230, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 15, 1991, Ser. No. 937,861
Claims priority, application Japan, Apr. 17, 1990, 2-101900
Int. Cl.[5] B62D *55/24*
U.S. Cl. 305—38 16 Claims

1. In a rubber crawler having a crawler body and burying members buried in the crawler body at a fixed interval, each burying member having a lengthwise direction at a right angle to the circumferential direction of the crawler body, and the crawler body having a lug provided on and projecting from the outer circumference of the crawler body, the improvement comprising:

each burying member comprises right and left flat-shaped wing portions and a central portion having mounting means to fix track links spaced apart on the central portion;

the crawler body comprises a rubber substance, the right and left wing portions are buried in the rubber substance of the crawler body, and the central portion is either exposed at least to an inner circumferential side of the crawler body or shielded with a thin rubber layer;

the track links have opposite ends and a pin hole adjacent to each of said ends, mounting means for mounting each of said track links on a burying member is provided at an underside of each said link between respective pin holes, the interval between the pin holes of a link is equal to the interval between the centers of the central portions of



adjacent burying members, the track links are mounted on the inner circumferential side of the crawler body in alignment with the respective mounting means coupled with each other in the up and down direction, and the link has an upper side edge positioned at a fixed height above the rubber crawler body;

adjacent pin holes of adjacent links are aligned with each other between adjacent burying members, and a pin is positioned in the aligned adjacent pin holes so that the adjacent links pivot relative to one another;

whereby a track is formed at the central part of the crawler body by a pair of continuous track links.

5,362,143

MULTI-MEDIA FILE

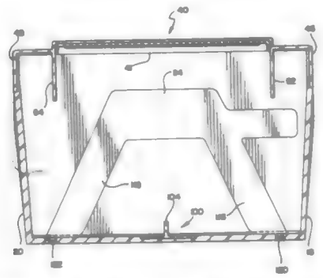
Richard C. Koch, Trabuco Canyon, Calif., assignor to Fellowes Manufacturing Company, Itasca, Ill.

Continuation-in-part of Ser. No. 736,719, Jul. 26, 1991, Pat. No. 5,205,625. This application Mar. 19, 1993, Ser. No. 33,901

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] A47B *81/06;* **B65D** *85/57*

U.S. Cl. 312—9.54 **7 Claims**



1. A multi-media tray comprising:

a. a bottom having a front wall, a rear wall, a first side wall and a second side wall opposite the first side wall, each wall extending upward from the bottom, the front wall being opposite the rear wall and perpendicular to the side walls;

b. a plurality of spaced apart transverse ridges extending upward from the bottom and extending substantially from the first side wall toward the second side wall to a point short of a center of the bottom and from the second side wall toward the first side wall to a point short of the centerline of the bottom, with adjoining ridges defining a plurality of grooves; and,

c. at least one removable center insert having a partition member that extends upward from and longitudinally along the approximate center line of a top surface of the insert, the insert further having a plurality of transverse spaced apart ridges extending upward from the top surface, with adjoining ridges defining a plurality of insert grooves such that when the insert is placed in the tray along the centerline of the bottom, at least a portion of the insert grooves correspond to the plurality of grooves to form a continuous ridge extending substantially from the first side wall to the second side wall.

5,362,144

SYSTEM FOR MOVING A TELEVISION SET MOUNTED ON A MOTOR VEHICLE

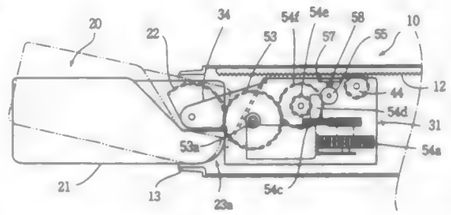
Yuichiro Shioya; Hidenori Kitazawa; Kouichi Miyano; Kouji Takano; Keigo Nagai; Takashi Yamaguchi; Yoshio Minamide; Masashi Kawamoto, and Masaaki Watanabe, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 4, 1993, Ser. No. 40

Claims priority, application Japan, Jan. 8, 1992, 4-019518; Jan. 8, 1992, 4-019519; Jan. 13, 1992, 4-023199; Jan. 13, 1992, 4-023200

Int. Cl.[5] A47B *88/00, 77/08*

U.S. Cl. 312—319.6 **7 Claims**



1. A system for moving a television set mounted on a motor vehicle having an inside wall member, the system comprising:

a casing having an opening and provided in an inside wall member of a motor vehicle;

a carrier, slidably mounted in said casing, to be operatively movable toward said opening;

supporting means, provided on said carrier, for pivotally mounting a television set at a front portion of said carrier;

a television set rotating motor means for pivotally rotating the television set to at least one of a) a standing position for display and operation, and b) a downward position for being retracted and stored in said casing;

a carrier driving motor means for driving said carrier in said casing to at least one of a) a forward position for allowing said standing position of the television set, and b) a retracted position for storing the television set in said downward position in said casing;

first transmitting means, operatively located between said carrier and said carrier driving motor means, for transmitting output power of said carrier driving motor means to said carrier in order to drive said carrier;

second transmitting means, operatively located between the television set and said television set rotating motor means, for transmitting output power of said television set rotating motor means to the television set for pivotally rotating the television set to at least one of the standing or downward positions;

memory means for storing data about said positions of said carrier and about an angular position of the television set;

manual television starting means for producing a start signal for starting operation of the system;

control means, responsive to the start signal, for controlling

said carrier driving motor means and said television set rotating motor means, by using the data about said positions stored in said memory means to move said carrier to at least one of the forward position and the retracted position in the casing, and to rotate the television set to at least one of the downward position and the standing position, such than when the television set is moved, it is moved between the downward position into said casing for storage and the standing position outside said casing during operation.

5,362,145

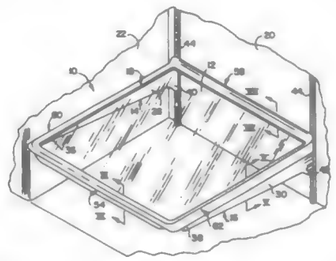
MOLDED REFRIGERATOR SHELF

Kevin C. Bird, Holland; Donald C. Gilbert, Muskegon Heights; Robert S. Herrmann, Grand Haven; Gregory T. Wolters, and Cleon C. Morgan, both of Holland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Mar. 7, 1991, Ser. No. 665,661

Int. Cl.[5] F25D *11/00*

U.S. Cl. 312—408 **37 Claims**



vessel toward a surface of the liquid, until a bottom end of the mixing element projects into the vessel, but does not touch the surface of the liquid,

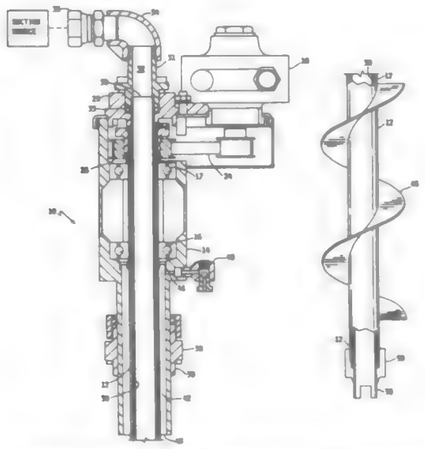
wherein said outlet opening of said mixing element is configured so that the gas jet escaping therefrom asymmetrically lowers a portion of the liquid such that a portion of the surface of the liquid adjacent a vessel wall is lowered to form a depression having a deepest point, and wherein said gas jet includes a rotational component of motion, such that the deepest point of the depression moves laterally along the vessel wall about a longitudinal center line of the vessel.

5,362,148

ROTARY AGITATOR WITH CONCENTRIC SUCTION TUBE

Kenneth E. Lehrke, Maple Grove; Gerard L. Lehman, Champlin, and Scott C. Losey, Minneapolis, all of Minn., assignors to Graco Inc., Golden Valley, Minn.

Filed Feb. 28, 1994, Ser. No. 203,336
Int. Cl.[5] B01F *15/02, 7/24*
U.S. Cl. 366—163 **14 Claims**



1. An agitator and suction tube apparatus for attachment to a container for removing liquid therefrom while agitating said liquid, comprising:

a) a housing having a lower housing end and an upper housing end, and means for attachment to said container located above said lower housing end;

b) a suction tube having an open top end and a predetermined length with an open bottom end, said top end being fixedly attached to said housing and said bottom end being downwardly extendable into said container;

c) an agitator tube concentrically aligned about said suction tube and having a length shorter than said predetermined length, with a top end in said housing and a downwardly positioned bottom end;

d) liquid agitator projections affixed to the exterior surface of the lower portion of said agitator tube, and a drive pulley affixed about said agitator tube proximate said agitator tube top end;

e) at least one bearing in said housing and rotatably guiding said agitator tube in spaced-apart relationship relative to said lower housing end;

f) a rotatable drive motor affixed to said housing and means for rotatably coupling said drive motor to said drive pulley; and

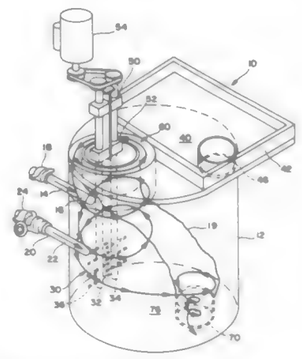
g) means for connecting said suction tube open top end to a suction source.

5,362,149

VORTEX FINDER HIGH SHEAR MUD MIXING SYSTEM

Richard J. Nelson, 1845 Bellaire Dr., Caspar, Wyo. 82604

Continuation-in-part of Ser. No. 743,857, Aug. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,412, Mar. 16, 1990, abandoned. This application Jan. 4, 1993, Ser. No. 203
Int. Cl.[5] B01F *15/02, 5/04, 7/20*
U.S. Cl. 366—165 **2 Claims**



1. A mud mixing system comprising:

a cylindrical hopper having a hopper wall and at least one upper conduit with adjustable means for controlling the flow of at least one first liquid jet into an upper portion of said hopper tangentially into a vortex chamber;

said vortex chamber defined by a first cylinder located within said hopper; said cylinder being located adjacent said hopper wall and being essentially tangent to said hopper wall in the portion of said hopper wall where said first jet enters said hopper; and a second cylinder located within said hopper and positioned within said first cylinder, and being laterally spaced from said hopper wall to define a chamber between said first and second cylinders, whereby when said first jet enters the chamber between said first and second cylinders, said jet is directed into a centrifugal path by said first and second cylinders; said jet following a centrifugal path inwardly and downwardly within said hopper;

at least one second lower conduit in a lower portion of said hopper; said second conduit having adjustable means for controlling the flow of at least one second jet emanating therefrom, said second jet used to introduce fresh water and drilling mud tangentially into said centrifugal path in said hopper, whereby solid and liquid material of said fresh water and drilling mud are located within said hopper; said second jet providing additional centrifugal action in said hopper;

shear means comprising at least a pair of vertical shafts extending into said hopper; said shafts each having attached thereto at their respective distal end portions, adjacent said second jet only, generally horizontally extending pin shear members which are vertically spaced apart, and which at least partially overlap a distance sufficient to obtain effective shear mixing of said solid and liquid material to form thoroughly mixed light ends; and

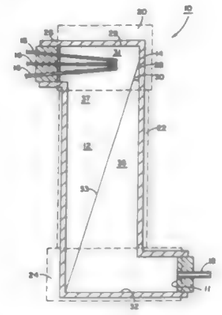
hopper discharge means located in said lower portion of said hopper and spaced radially inwardly from said hopper wall a distance sufficient to prevent unmixed, heavy ends of the fresh water and mud from discharging from the hopper, whereby heavy ends of the unmixed portions of the fresh water and mud go to the outer peripheral region of the hopper adjacent said hopper wall, and said thoroughly mixed light ends go inwardly and are discharged through said hopper discharge means.

5,362,150

FLUID MIXER

William D. Taylor, Sandy Hook, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 8, 1992, Ser. No. 986,650
Int. Cl.[5] B01F *5/04*
U.S. Cl. 366—173 **13 Claims**



1. A fluid mixer comprising a chamber comprising:

(a) a fluid entry section having a plurality of inlet conduits extending into said fluid entry section wherein all of said inlet conduits are directed toward a common location on a first planar surface of said fluid entry section and said fluid enters said fluid entry section through said inlet conduits;

(b) a fluid expansion section contiguous with said fluid entry section wherein said fluid from said fluid entry section expands; and

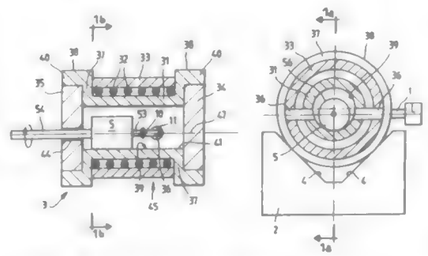
(c) an exit section contiguous with said fluid expansion section having an outlet conduit disposed therein in a second planar surface thereof which is substantially parallel to said first surface of said fluid entry section wherein said fluid from said fluid expansion section enters said exit section and exits therefrom through said outlet conduit.

5,362,151

DEVICE FOR MEASURING THERMAL EXPANSION

Jean-Francois Ollivier, Merdrignac; Said Lalaouna, La Ferte Bernard, and Manuel Penha, Le Mans, all of France, assignors to Framatome Connectors International, Paris La Defense Cedex, France

Filed Mar. 24, 1993, Ser. No. 35,752
Claims priority, application France, Mar. 26, 1992, 92 03659
Int. Cl.[5] G01N *25/16*
U.S. Cl. 374—55 **9 Claims**



1. Device for measuring the thermal expansion of a sample having a measurement contour, said device comprising:

means for generating a curtain of measurement radiation which is useable to measure a diameter of said sample,

a base member incorporating a reference groove,

a furnace having an external reference contour contacting and located by said reference groove, an internal reference contour contacting and locating an external reference profile which is disposed and positioned relative to said measurement contour of said sample, an aperture through which said curtain of measurement radiation passes, and a removable member at one end of said furnace having another aperture therethrough,

a sample-holder having said external reference profile and a reference member to receive said sample, said sample-holder further having an extension extending through said another aperture of said removable member to enable displacement of said sample-holder; and

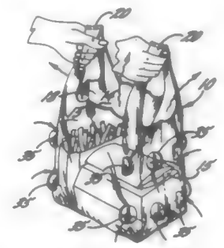
said reference groove, said external reference contour, said internal reference contour, said external reference profile and said measurement contour being disposed relative to one another and to said curtain of measurement radiation such that a surface of said curtain is disposed substantially perpendicular to an axis of said measurement contour.

5,362,152

T-SHIRT TYPE PLASTIC BAG FOR CARRYING HOT FOOD

Wade D. Fletcher, and Harry B. Wilfong, Jr., both of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Sep. 24, 1993, Ser. No. 126,274
Int. Cl.[5] B65D *33/01*
U.S. Cl. 383—8 **10 Claims**



1. A T-shirt type plastic bag particularly adapted for carrying hot food form fast food restaurants and comprising front and rear wall sections; gussetted side wall sections integrally connecting said front and rear wall sections together; means connecting bottoms of said front, rear and gussetted side wall sections together to define a closed bottom; at least a part of said front and rear wall section being open at the tops to define a mouth portion; laterally spaced handles integral with said front, rear and gussetted side wall sections and extending upwardly from opposed sides of said mouth portion; and aperture means extending through at least one of said wall sections for providing a path for a venting air flow from outside of said bag and through the inside of said bag when said bag is carrying hot food, said aperture means comprises a generally semi-circular shaped cut which defines a flap portion which opens up to define a generally half moon-shaped aperture, said generally semi-circular shaped cut comprises a circumference of approximately 210° and extends approximately 20° beyond a 180° longitudinal axis through said bag on a bottom thereof and approximately 10° beyond the 180° longitudinal axis on a top thereof.

5,362,153

LITTER BAG FOR AUTOMOBILES

Shao W. Lu, Fl. 4, No. 22-1, Lane 256, Jui An St., Taipei, Taiwan, Prov. of China

Filed Dec. 31, 1991, Ser. No. 814,838
Int. Cl.[5] B65D *30/22*
U.S. Cl. 383—38 **1 Claim**

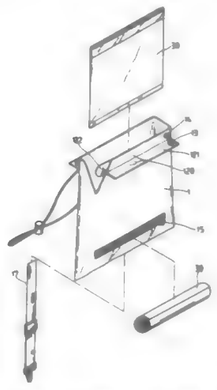
1. A litter bag for automobile comprising:

a body portion having front and rear sides, said body portion

provided at a lower portion with a pocket and a zipper through which a roll of plastic bags can be disposed into said pocket, a top of said pocket having an elongated slit through which successive plastic bags can be drawn out for use;

a bottom of said body portion having a strap for fixing said body portion under an automobile seat,

each side of said body portion including an upper edge having a pocket in which is disposed a resilient member



for biasing a mouth of each plastic bag in a closed condition, said upper edge further including male connectors on each end,

said body portion being provided on each side with a side flap, said side flaps including female connectors opposing and engageable with said male connectors, wherein the male and female connectors maintain the mouth of each plastic bag about the upper edge of the sides of the body portion.

5,362,154

PIVOTING SLIPPER PAD BEARING AND CROSSHEAD MECHANISM

Bernard Wiesen, 15 Beach Rd., Great Neck, N.Y. 11023

Filed Aug. 16, 1993, Ser. No. 107,253
Int. Cl.[5] F16C *17/00*
U.S. Cl. 384—11 **2 Claims**



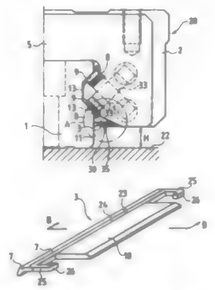
1. A round slipper pad bearing assembly comprising a pivot combined with a round slipper pad bearing, with said round slipper pad bearing constructed to conform with an aligning surface that permits the formation of a wedge-shaped film of lubricant between said slipper pad bearing and said aligning surface that maintains the proper relationship of the moving element to the stationary element, with a circular shroud formed around said round slipper pad bearing, with said circular shroud defining a circular orifice between said round slipper pad bearing and said circular shroud, with means that permit the flow of a lubricant through said pivot into said circular orifice to simulate the environment found in an oil submerged assembly.

5,362,155

LINEAR MOTION ROLLING GUIDE UNIT

Tomohiro Ichida, Gifu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,843
Claims priority, application Japan, Oct. 13, 1992, 4-077177[U]
Int. Cl.[5] F16C *29/06, 33/72*
U.S. Cl. 384—15 **6 Claims**



1. A linear motion rolling guide unit comprising:

a track rail having first raceway surfaces formed on longitudinally extending sidewall surfaces thereof;

a casing slidable relative to the track rail and having second raceway surfaces formed at positions facing the first raceway surfaces, the casing also having return passages formed therein, the underside of the casing on the track rail side being formed as inclined surfaces to provide spaces;

end caps attached to the longitudinal ends of the casing and having direction changing passages formed therein;

raceways formed between the first raceway surfaces and the second raceway surfaces;

rolling elements circulating through the raceways, the direction changing passages and the return passages;

under seals making sealing contact with the side wall surfaces of the track rail and mounted to the end caps;

wherein the under seals each comprise a longitudinally extending core band and an elastic seal portion secured to the core band;

wherein the core band comprises a longitudinally extending core portion and hook portions formed at the ends of the core portion and extending widthwise;

wherein the seal portion comprises a first seal portion sealingly engageable with the side wall surfaces of the track rail and a second seal portion sealingly engageable with the underside of the casing; and

wherein the outer end surface of each of the end caps is formed with engagement holes in which the hook portions of the core band are engaged, and the under seals are mounted to the end caps by fitting the hook portions in the engagement holes.

5,362,156

LINEAR MOTION GUIDE UNIT WITH ROLLING ELEMENTS

Takehiko Hara, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1992, Ser. No. 977,214
Claims priority, application Japan, Nov. 16, 1991, 3-326317
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **6 Claims**

1. A linear motion guide unit comprising:

a base;

a track rail mounted on the base and having rail raceway grooves formed in each of side surfaces thereof, each of the rail raceway grooves having longitudinally extending upper and lower raceway surfaces;

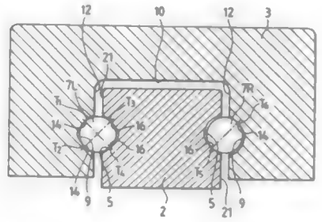
a casing saddling the track rail, capable of sliding relatively to and in the longitudinal direction of the track rail, and having casing raceway grooves in positions facing the rail raceway grooves, each of the casing raceway grooves having upper and lower raceway surfaces;

first and second tracks formed by the rail raceway grooves and the casing raceway grooves opposed to the rail raceway grooves, extending in two rows and in parallel with each other on both sides of the track rail,

a number of rolling elements rolling on said first and second tracks in such a manner that the casing can be moved relatively to the track rail; and

end caps attached to longitudinal ends of the casing;

the rolling elements moving on the first track being in two point contact with each of the raceway surfaces of the rail raceway groove and with each of the raceway surfaces of the casing raceway groove opposed to the rail raceway



groove so that they are totally in four point contacting state;

the rolling elements moving on the second track being in one point contact with one of the raceway surfaces of the rail raceway groove and with one of the raceway surfaces of the casing raceway groove opposed to the rail raceway groove so that they are totally in two-point contacting state;

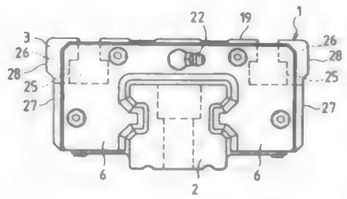
the first track with which the rolling elements are in four point contact being determined as a reference track, a lateral movement of the casing being rendered possible on the second track with which the rolling elements are in two point contact, thereby tolerating machining errors of the raceway surfaces and an uneven load which works on the casing, and ensuring smooth sliding of the casing along the track rail.

5,362,157

LINEAR MOTION ROLLING GUIDE UNIT

Tomohiro Ichida, Gifu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,842
Claims priority, application Japan, Oct. 13, 1992, 4-077176[U]
Int. Cl.[5] F16C *29/06*
U.S. Cl. 384—45 **9 Claims**



1. A linear motion rolling guide unit comprising:

a track rail having first raceway surfaces formed on longitudinally extending sidewall surfaces;

a casing slidable relative to the track rail and having second raceway surfaces formed at positions facing the first raceway surfaces;

end caps each attached to each of the longitudinal ends of the casing;

raceways formed between the first raceway surfaces and the second raceway surfaces;

rolling elements circulating through the raceways, direction changing passages formed in the end caps and return passages formed in the casing;

components mounted on the casing and having insertion holes;

fixing means for fixing the components to the casing;

dovetail grooves formed longitudinally in the upper surface of the casing so that the fixing means can be movably installed in the dovetail grooves;

insert dovetail grooves formed laterally in the upper surface of the casing so that the insert dovetail grooves can receive the fixing means and communicate with the dovetail grooves to allow the fixing means to be installed in the dovetail grooves; and

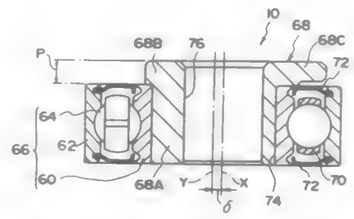
insertion openings formed by opening the insert dovetail grooves at the upper side surfaces of the casing.

5,362,158

BEARING UNIT AND ELECTRIC PUMP USING THE SAME

Kazuyuki Hashimoto, Shizuoka, and Hiroki Jin, Aichi, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Apr. 12, 1993, Ser. No. 46,406
Claims priority, application Japan, Apr. 13, 1992, 4-023349[U]
Int. Cl.[5] F16C *19/50*
U.S. Cl. 384—447 **2 Claims**



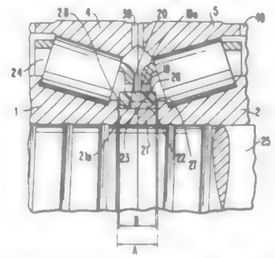
1. An electric pump having a motor, an eccentric cam that makes an eccentric motion by driving said motor, a reciprocating member that reciprocates in a state of being in contact with a circumferential surface of said eccentric cam, and a pump that feeds a fluid by pressure produced by a reciprocating motion of said reciprocating member,

wherein said eccentric cam comprises:

a ball bearing main body including a boss that is fixed to one end of an output shaft provided on a drive source and which has its axis eccentric with respect to an axis of said output shaft, an inner ring press-fitted to a circumferential surface of said boss, an outer ring whose diameter is larger than that of said inner ring, and a plurality of balls interposed between said inner ring and said outer ring; and

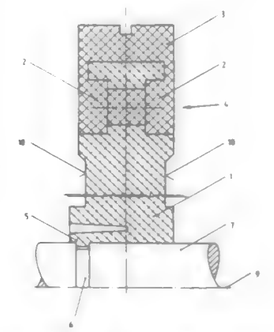
a balancer that is formed integrally with said boss in a direction in which the axis of said output shaft is eccentric with respect to an axis of said boss and which protrudes from one end of said boss in the axial direction thereof and extends within the range from the vicinity of the outer periphery of said inner ring to the outer periphery of said outer ring, said balancer correcting a dynamic unbalance caused by an eccentric movement of said ball bearing main body together with the rotation of said output shaft.

5,362,159
BEARING SEAL
Walter Küfner, deceased, late of Schweinfurt by Emilie Küfner, legal representative , and Lothar Meidl, Schweinfurt, both of Germany, assignors to SKF GmbH, Schweinfurt, Germany
Filed Mar. 1, 1993, Ser. No. 24,620
Claims priority, application Germany, Mar. 4, 1992, 4206764
Int. Cl.[5] F16C *33/78*
U.S. Cl. 384—484 **8 Claims**



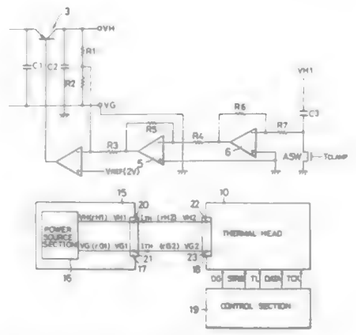
1. A sealed roller bearing comprising inner and outer races and rollers arranged between the bearing races, the separating line between the faces of the inner races being sealed off by a sealing ring which rests on the inner races, said facing inner races being provided with prolongations extending towards each other, said sealing ring having a plurality of continuous ribs defining at least one chamber for holding lubricant, said ring being arranged and centered on surfaces of said inner race prolongations facing one another.

5,362,160
SUPPORTING DISK
Otmar Braun, Frielendorf, and Herbert Schumacher, Gorxheimer Tal, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany
Filed Aug. 24, 1992, Ser. No. 934,141
Claims priority, application Germany, Nov. 8, 1991, 4136793
The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.
Int. Cl.[5] F16C *33/34*
U.S. Cl. 384—549 **14 Claims**



1. A supporting disk for a flywheel rotating about a driveshaft of an open-end spinning machine comprising:
a) a hub ring, said hub ring
i) having an outer radial surface area, and
ii) consisting of a polymer material, said polymer material having a modulus of elasticity of 7000 to 13000N/mm^2, a dimensional stability to heat from 150° to 250° C., and an elongation at break of 1.3 to 3%; and
b) a support ring, said support ring
i) being made of elastomer material, and
ii) having an inner radial surface area, said inner radial surface area being affixed to said outer radial surface area of said hub ring.

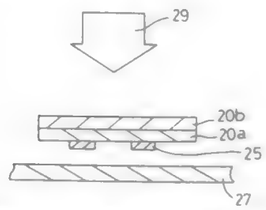
5,362,161
POWER SOURCE COMPENSATION FOR PRINTER
Fumikazu Nagano, Yamato-Koriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 26, 1993, Ser. No. 67,034
Claims priority, application Japan, Jun. 17, 1992, 4-157945
Int. Cl.[5] B41J *2/37*
U.S. Cl. 400—120.12 **2 Claims**



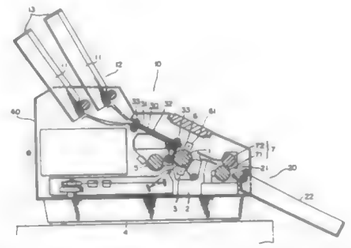
1. A power source for a printer, comprising:
a direct current power source;
an output lead wire and aground lead wire each connecting said direct current power source and a printer to each other;
a compensating circuit having an input connected to a divided voltage output of said direct current power source and an output connected to said output lead wire for compensating a reduction in voltage applied to said printer from said direct current power source in response to a load electric current passing through said output lead wire;
a first differential amplifier having first and second inputs and an output, said first input being connected to ground and said output being connected to an input of said compensating circuit; and
a second differential amplifier having a first input connected to ground and an output connected to said second input of said first differential amplifier, said second differential amplifier further having a second input connected to said output lead wire through a direct current blocking means and being connected to ground through thermal print head synchronizing means.

5,362,162
TAPE CASSETTE WITH IMAGE RECEIVING MEMBER AND PROTECTION SHEET
Toshio Takahashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Feb. 17, 1993, Ser. No. 18,531
Claims priority, application Japan, Feb. 27, 1992, 4-009219[U]
Int. Cl.[5] B41J *32/00*
U.S. Cl. 400—613 **10 Claims**

1. A tape cassette detachably received in a printing device, comprising:
an ink ribbon;
an image receiving member having a substrate and coated thereon a hot-melting type adhesive layer on which an image is formed by transferring ink from the ink ribbon by the printing device; and
a protection sheet having only one layer with which the hot-melting type adhesive layer having the image thereon is covered, wherein the protection sheet separably adheres directly to the hot-melting type adhesive layer so that an adhesive strength between the substrate and the hot-melting type adhesive layer is stronger than an adhesive strength between the hot-melting type adhesive layer and the protection sheet.

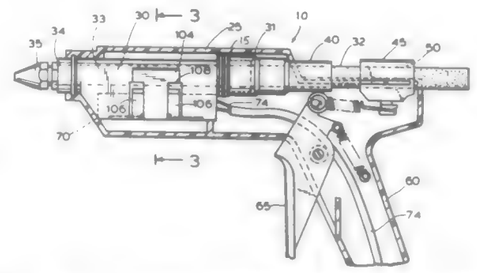


5,362,163
SHEET HOLDING MECHANISM
Masatoshi Takano, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 653,287, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 422,594, Oct. 17, 1989, Pat. No. 5,028,156. This application Oct. 12, 1993, Ser. No. 133,925
Claims priority, application Japan, Oct. 17, 1988, 63-135255
Int. Cl.[5] B41J *13/10*
U.S. Cl. 400—625 **23 Claims**



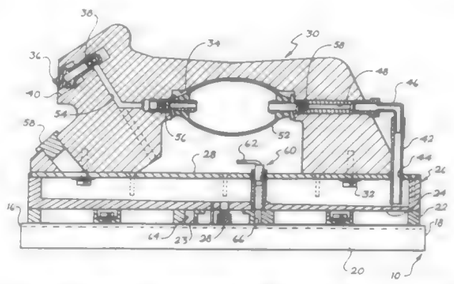
1. A sheet holding mechanism for receiving and stacking, in a predetermined order, sheets ejected from a main apparatus, the sheets being guided along a feeding direction through the main apparatus into the sheet holding mechanism, said sheet holding mechanism comprising:
an ejected sheet tray;
means for mounting said ejected sheet tray for pivotal movement with respect to the main apparatus;
a pair of driving rollers positioned downstream of the main apparatus for feeding ejected sheets toward said ejected sheet tray, said rollers being disposed in rotational contact with one another and forming a nip therebetween;
means for changing the feeding direction of the ejected sheets from the main apparatus towards the nip formed between said driving rollers, said means for changing the feeding direction comprising a predetermined surface for deflecting the ejected sheets toward said driving rollers; and
means for fixedly securing said deflecting surface on said ejected sheet tray so as to be movable with pivotal movement of said ejected sheet tray.

5,362,164
GLUE GUN HEAT HOUSING
Rudolf Wingert, West Milford, N.J., assignor to Electro-Matic Staplers, Inc., Saddle Brook, N.J.
Filed Sep. 23, 1993, Ser. No. 125,227
Int. Cl.[5] B05L *17/00;* **H05B** *3/10*
U.S. Cl. 401—2 **11 Claims**



1. A device for heating a substantially solid heat softenable glue stick comprising, a heating chamber housing having a heating chamber formed therein and a separate elongated passage including a first open end for receiving a substantially solid glue stick and a second opposed open end defining an exit opening for melted glue, said heating chamber being generally U-shaped and having an open side defined between a pair of integral side walls formed in the housing; a positive temperature coefficient resistance cartridge means positioned within said heating chamber between said side walls for heating the housing adjacent said passage to a temperature sufficient to soften a glue stick therein, cam means in said chamber between said side walls engaged with said cartridge adjacent the open side of the chamber, and separate spring means formed independently of said cam means mounted on said housing and engaged with said cam means for urging the cam means into engagement with the cartridge to accommodate expansion and contraction thereof; said cartridge, said side walls of the heating chamber, said spring means and said cam means all having cooperating surfaces which allow relative movement of the cam means with respect to the cartridge and housing in a plurality of directions to accommodate expansion and contraction of the cartridge.

5,362,165
CONCRETE HAND EDGER TOOL WITH WATER SPRAY
Mark L. Kluga, 15605 Idlewood, Libertyville, Ill. 60048, and Robert A. Kluga, Mundelein, Ill., assignors to Mark L. Kluga, Libertyville, Ill.
Filed Sep. 30, 1993, Ser. No. 129,264
Int. Cl.[5] B05L *17/10;* **E01C** *19/12;* **A62C** *8/00*
U.S. Cl. 401—9 **4 Claims**



1. A hand operated tool for the smoothing of concrete surfaces, said tool comprising a downward facing smoothing blade comprising a flat rectangular portion with elongated side

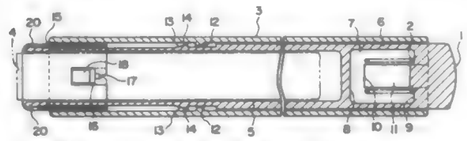
edges, one of said side edges being curved downwardly, and a pair of opposed ends, an upper handle means for manipulating said blade, a water supply tank between the blade and handle means, a spray nozzle on said tool directed downwardly at an angle beyond one of said ends, and conduit between said tank and spray nozzle, and pump means on said conduit for delivering water from said tank to said spray nozzle under pressure.

5,362,166

FLAT STICK-SHAPED MATERIAL PROPELLING CONTAINER

Tadashi Yamamoto, and Shuhei Kageyama, both of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kita, Japan

Filed Jun. 28, 1993, Ser. No. 83,684
Int. Cl.[5] B43K *21/22, 21/02*
U.S. Cl. 401—93 **10 Claims**



1. A stick-shaped material propelling container comprising; a flat-shaped outer sleeve; chuck means in the form of flat-sided long tweezers having a pair of elongated flat-shaped arms inserted in said flat-shaped outer sleeve; said chuck means having a forward grip portion and a rear base portion and a knocking portion on said chuck rear base portion; a chuck ring connected to a forward end of said outer sleeve, said chuck ring connected to a forward end of said outer sleeve, said chuck ring surrounding said forward grip portion; an opening formed in said rear base portion perpendicular to the longitudinal axis of said chuck; at least one retaining surface formed in an inner surface of said flat-shaped outer sleeve; a resilient elastic member positioned in said opening in said base; said resilient elastic member being mounted in said opening in said base between a rear surface of opening and said retaining surface formed in said flat-shaped outer sleeve.

5,362,167

FIBER MARKER INCLUDING AN ERASABLE INK

Rachel M. Loftin, Halifax, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 809,344, Dec. 18, 1991, abandoned. This application Jan. 29, 1993, Ser. No. 12,967
Int. Cl.[5] C08L *9/00*
U.S. Cl. 401—198 **42 Claims**

1. A method of providing an erasable marking on paper comprising

providing a marker comprising an outer body; a porous writing tip at one end of said body; a fiber reservoir included within said body and connected to said porous writing tip; and within said porous writing tip and said fiber reservoir an aqueous-based, non-shear thinning erasable ink having a viscosity of between 10cps and 30cps and comprising water, a water-insoluble colorant, and a latex, said latex having a viscosity of less than about 50cps and including a styrene/butadiene copolymer having a styrene content of less than 35%; and

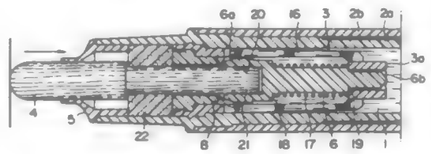
contacting said porous writing tip with a paper substrate to transfer said ink from said porous writing tip to said paper substrate to provide an erasable marking, wherein during said contacting said ink is delivered from said fiber reservoir to said porous writing tip via capillary action.

5,362,168

WRITING DEVICE WITH SPACED WALLS AND SLIDING VALVE

Shinichi Abe, and Mitsuo Ohtani, both of Tokyo, Japan, assignors to Zebra Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1993, Ser. No. 55,668
Claims priority, application Japan, Oct. 21, 1992, 4-283096; Mar. 30, 1993, 5-072202
Int. Cl.[5] B43K *8/02, 8/04*
U.S. Cl. 401—206 **11 Claims**



1. A writing device comprising:

A.) a main body portion filled with an ink;

B.) an ink flow-out control mechanism mounted to said main body portion, said ink flow-out mechanism comprising:

a valve main body mounted to said main body portion;

a valve seat mounted within said valve main body;

a valve element supported within said valve main body so as to be movable between an open valve position with a first end thereof abutted against said valve main body and a closed valve position with a second end thereof abutted against said valve seat, said open valve position opening a path between said valve seat and said valve element thereby allowing said ink to flow-out from within said main body portion, said closed valve position closing said path between said valve seat and said valve element thereby preventing said ink from flowing-out from within said main body; and

a coil spring for biasing said valve element in said closed valve position against said valve seat, wherein said coil spring provides a spring pressure that is approximately identical to a pressure obtained during writing; and

C.) a writing tip mounted to said second end of said valve element substantially directly adjacent to said path between said valve seat and said valve element for directly applying said ink to said writing tip when said path between said valve seat and said valve element is in said open valve position, said writing tip being movable with said valve element with the movement being initiated by exerting said pressure obtained during writing to said writing tip.

5,362,169

APPLICATOR HAVING CAP WHICH PRESSURIZES INNER SPACE

Hirofumi Hamamoto, and Hideshi Okamoto, both of Tokyo, Japan, assignors to Sailor Pen Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 138,352
Claims priority, application Japan, Oct. 30, 1992, 4-081060[U]; Oct. 30, 1992, 4-081061[U]
Int. Cl.[5] B43K *9/00, 7/00*
U.S. Cl. 401—213 **3 Claims**

1. An applicator comprising:

fluid tank means for containing a highly viscous film-forming fluid to be applied;

a neck formed contiguous with said fluid tank means and having an outer circumference;

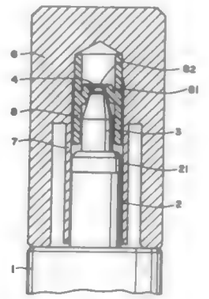
a tip having a caulked front edge and held within said neck;

an application ball rotatably retained in said tip such that said application ball may partly be exposed from the front edge of said tip,

spring means for resiliently forcing said application ball in abutting relation against the caulked front edge of said tip, and

cap means for covering said tip, said cap means having an inner barrel with an inner circumference in intimate contact with the outer circumference of said neck so as to seal said tip, said cap means having a valve member provided with pushing means, disposed in the inner barrel thereof, for:

pushing said application ball against the force of said spring



means so as to retract said application ball from the caulked front edge of said tip during engagement of said cap means with said neck when said cap means is applied in covering relation to said tip, and

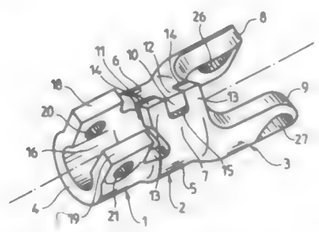
disengaging from the application ball to allow the application ball to resume contact with the caulked front edge of said tip as a result of said spring means when said cap means is fully engaged with said neck.

5,362,170

MONOBLOC COUPLING

Laurent Fevre, Epernon, France, assignor to NACAM, Vendome, France

Filed Mar. 4, 1993, Ser. No. 26,282
Claims priority, application France, Mar. 5, 1992, 90 02670
Int. Cl.[5] F16D *3/00*
U.S. Cl. 403—57 **14 Claims**



1. A coupling for coupling a torque transmitting device to a receiving device, comprising:

a first linking section including a split hub and means for axially securing the torque transmitting device;

an intermediate section including first and second claws, the first and second claws including, at end portions thereof, first and second longitudinal rims, respectively, the end portions of the claws lying in different, intersecting planes such that the end portions of the claws form an angle relative to one another and the first and second longitudinal rims fit into each other; and

a second linking section for linking the coupling to a receiving device, the second linking section including at least one leg,

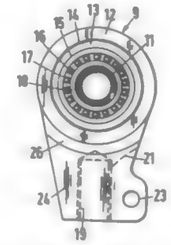
wherein the first linking, intermediate, and second linking sections are connected to one another and axially aligned.

5,362,171

SHACKLE TOGGLE JOINT FOR THE DRIVING OF WARP KNITTING EQUIPMENT

Gerd Ritschel, Heusenstamm, Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany

Filed Oct. 13, 1992, Ser. No. 959,354
Claims priority, application Germany, Oct. 22, 1991, 4134826
Int. Cl.[5] D04B *27/08, 23/00*
U.S. Cl. 403—66 **9 Claims**



1. A shack toggle joint for driving warp knitting elements in a warp knitting machine comprising:

a connecting element (4);

a housing (12) comprising plastic material and having a retaining means (19, 23) for attaching said housing (12) to said connecting element (4);

a metal ring (13) imbedded in said housing and having a transverse opening (15) and a knurled outer circumferential surface (14), said synthetic material of said housing (12) being molded by pouring around said metal ring (13);

a bearing (16) having an outer raceway (17) and an inner raceway (18) mounted in said metal ring (13), said outer raceway (17) being press fitted into said metal ring (13); and

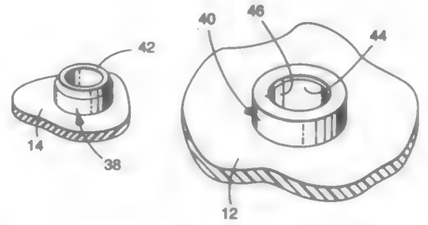
a hinge pin (11) mounted in said bearing (16).

5,362,172

PRESS FIT ASSEMBLY BOSS FOR DISKETTES

David L. Hubbling, Breckenridge, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 31, 1992, Ser. No. 937,143
Int. Cl.[5] F16B *4/00*
U.S. Cl. 403—282 **7 Claims**



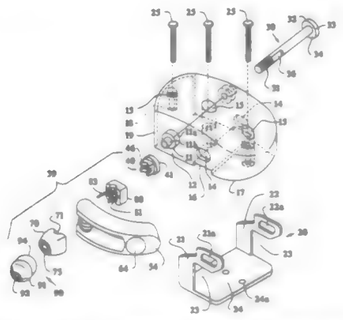
1. A press fit assembly boss for aligning and assembling two components comprising:

a hollow cylindrical post having an outer width formed on an upper component; and

a cylindrical socket formed on a lower component, wherein the socket comprises an inner surface which includes two two-dimensional opposing sections separated by a distance less than the outer width of the post, wherein the two opposing sections on the inner surface of the socket are planar and parallel, wherein insertion of the post in the socket deforms the post to secure the post within the socket without creating any debris during assembly or disassembly and wherein the insertion of the post in the

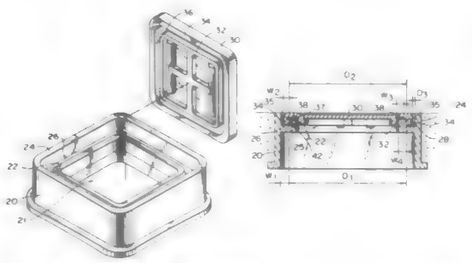
socket does not deform the socket to affect the assembly of the two components.

5,362,173
LOCKABLE QUICK RELEASE MECHANISM
Daniel Ng, Somers, N.Y., assignor to Industri AB Thule, Hillerstorp, Sweden
Filed Sep. 17, 1992, Ser. No. 945,907
Int. Cl.[5] F16B *2/18*
U.S. Cl. 403—320 34 Claims



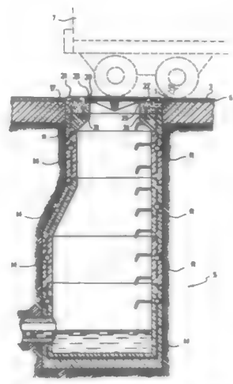
1. A mechanism for retaining a prong, comprising:
a skewer, the skewer being adapted to receive the prong;
a first bearing surface, the skewer extending substantially perpendicularly from the first bearing surface;
means for engaging the prong to clamp the prong to the first bearing surface, the engaging means being mounted on a first end of the skewer and axially movable thereon;
means for adjusting a range of movement of the engaging means between axial positions on the skewer, the adjusting means being mounted on the first end of the skewer: and
the engaging means being axially movable on the skewer relative to and independently of the adjusting means.

5,362,174
MANHOLE COVER
Jeng-Yih Yang, No. 129, Gong-Jenq Rd., Taichung City, Taiwan, Prov. of China
Filed Mar. 18, 1993, Ser. No. 33,796
Claims priority, application China, Mar. 19, 1992, 92205319.7
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—25 1 Claim



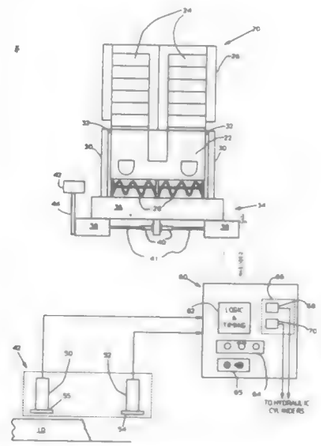
1. A manhole cover comprising:
a base having an axial hole, a first inner rim, a first outer rim, and a first groove located between said first inner rim and said first outer rim; and
a cover having a second inner rim, a second outer rim, and a second groove located between said second inner rim and said second outer rim;
wherein said first inner rim has an outer wall provided thereon with a first bevel inclined downward from the top thereof at an angle to an axis of said manhole cover; wherein said second outer rim has an inner wall provided thereon with a second bevel inclined downward from said cover corresponding to said first bevel at said angle; wherein said first groove has a bottom with an inner diameter that is greater than an outer diameter of a bottom of said second groove; wherein said first groove has a groove width greater than a thickness of said second outer rim while said second groove has a groove width greater than a thickness of said first inner rim; and wherein when said base is joined with said cover, said first inner rim is fitted into said second groove while said second outer rim is fitted into said first groove such that said first bevel and said second bevel make contact with each other to form a water tight seal, and that said first inner rim of said base remains a distance apart respectively from a bottom surface of said second groove and from said second inner rim, and further that said second outer rim of said cover remains a distance apart respectively from a bottom surface of said first groove and from said first outer rim.

5,362,175
MANHOLE HEAD ASSEMBLY HAVING A MANHOLE TOP RING AND METHOD OF USE OF THE SAME
Gaétan Begin, 1360 De Calais, Laval Quebec, Canada H7G 4H5
Filed Oct. 30, 1992, Ser. No. 969,108
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—26 23 Claims



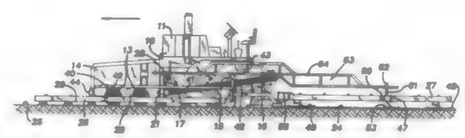
1. A manhole head assembly having a substantially vertical axis and being mounted on a conventional manhole member made of non-elastic material, said head assembly comprising a stack of rings substantially co-axial with said vertical axis, the stack of rings including:
a lower ring made of non-elastic material and provided with a lower part and an upper part, the lower part being shaped to be stacked on an upper part of the conventional manhole member;
at least one upper ring made of resilient elastomeric material and each provided with a lower part and an upper part, the lower part of said upper ring being shaped to be stacked either on the upper part of the lower ring, or on the upper part of a neighboring upper ring positioned underneath;
means for fastening the lower part of the upper ring against the upper part of the lower ring, said fastening means including at least one tie-rod having opposite ends, each end being provided with at least one shoulder, one part of said tie-rod being positioned with its corresponding shoulder in the elastomeric material, the remaining part of said tie-rod being positioned with its corresponding shoulder in the non-elastic material;
means for fastening the lower part of any of another upper ring with the upper part of a neighboring upper ring positioned underneath, when there is more than one upper ring;
a manhole cover provided with a lower part, a lateral part, and an upper part; and
means positioned in the upper part of an uppermost upper ring which is located at the top of the stack for receiving the lower part and the lateral part of the manhole cover while positioning the upper part of said manhole cover substantially flush with the upper part of the uppermost upper ring.

5,362,176
ROAD CONSTRUCTION APPARATUS AND METHODS
Robert A. Sovik, Clifton Park, N.Y., assignor to AW-2R, Inc., Clifton Park, N.Y.
Filed Jan. 11, 1993, Ser. No. 3,003
Int. Cl.[5] E01C *19/00*
U.S. Cl. 404—72 14 Claims



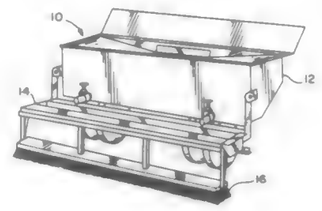
1. The method of forming an improved longitudinal paving joint between first and second mat sections of paving material, comprising:
laying a first mat section of paving material on a selected substrate, said first mat section having an inboard edge;
compacting the paving material of said first mat section to achieve a predetermined density in said first mat section, said compacting resulting also in the squeezing of the unsupported inboard edge of the first mat section to form an edge region which angles downward from an edge line at the top inboard edge of the compacted first mat section to said substrate;
continuously sensing and determining the location of the edge line of said compacted first mat section, and
laying a second mat section of fresh paving material and laterally controlling the laying thereof in accordance with said sensing and determination so that the inboard edge of said second mat section of fresh paving material is laid at a selected location with respect to the edge line of said compacted first mat section.

5,362,177
PAVING METHOD AND APPARATUS WITH FRESH MAT PROFILER
Garry Bowhall, Champaign, and Loren E. Williams, Olney, both of Ill., assignors to Blaw-Knox Construction Equipment Corporation, Matoon, Ill.
Filed Feb. 16, 1993, Ser. No. 17,799
Int. Cl.[5] E01C *23/01*
U.S. Cl. 404—84.1 11 Claims



1. An apparatus for paving a base surface, comprising:
a movable vehicle capable of distributing paving material;
a floating screed disposed to form a substantially level mat of the paving material;
an elongated reference beam towed behind the screed;
ground engaging means for supporting the beam above the mat of paving material; and
means to measure a distance from a reference point on the reference beam to the mat of paving material, said measuring means including:
a potentiometer mounted on the reference beam and having a rotatable shaft;
a lever attached to the potentiometer shaft;
a ground engaging member which can rest on the mat, pivotally attached to the lever so that vertical movement of the ground engaging member rotates the potentiometer shaft; and
a means for indicating the position of the potentiometer as a function of a distance travelled by the paver.

5,362,178
APPARATUS FOR SPREADING SEALANT
John S. Schantz, 10775 Pocahontas Rd., Marine, Ill. 62061
Filed Apr. 28, 1993, Ser. No. 54,394
Int. Cl.[5] E01C *19/12*
U.S. Cl. 404—101 17 Claims



1. An apparatus for spreading a liquid over a surface, said apparatus comprising a storage bin for containing said liquid to be spread, a drainage trough, and spreading means, said drainage trough and spreading means being positioned posteriorly of said storage bin and spanning a width of said apparatus, said storage bin having means for distributing said liquid into said drainage trough, said trough having means for dispersing said liquid onto said surface in a swath anteriorly of said spreading means, said apparatus having means for being towed by a vehicle, whereby said liquid is spread over said surface.

5,362,179

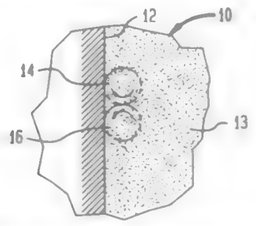
METHOD OF AND APPARATUS FOR CONTROLLING TURBULENCE IN A WALL-BOUNDED FLUID FLOW FIELD

Lawrence Sirovich, 37 Riverside Dr., New York, N.Y. 10023; Eugene Levich, 15 Rav Ashi Street, Apt. 62, Tel Aviv, and Lucien Y. Bronicki, 5 Brosh St., Yavne, both of Israel

Continuation of Ser. No. 978,415, Nov. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 794,875, Nov. 19, 1991, Pat. No. 5,263,793. This application Dec. 29, 1993, Ser. No. 175,180

Int. Cl.[5] E02B *3/02*

U.S. Cl. 405—52 22 Claims



1. A method for controlling turbulence in a wall-bounded fluid flow field having a turbulent wall region characterized by a system of roll pairs or streaks whose diameter is functionally related to the strength of the flow, and which extend in the direction of flow, and by propagating structures of coherent patterns that propagate in the direction of flow at a substantially constant group speed, said method including locally introducing into the turbulent wall region a disturbance field whose amplitude is much smaller than the size of the rolls, and whose wavelength, and direction of propagation are such that the disturbance in strongly coupled to and modifies the propagating structures in a manner that increases or decreases the interaction of the propagation structures with the system of roll pairs thereby locally increasing or decreasing the turbulence in the flow field, and wherein said amplitude is in the range of approximately 10–20 wall units, where a wall unit is $m/(sr)^{0.5}$, m being the viscosity of the fluid, s being the average frictional stress in the fluid at the wall, and r being the density of the fluid.

5,362,180

FLOATATION BOOM WITH COLLAPSIBLE FLOATATION CASING

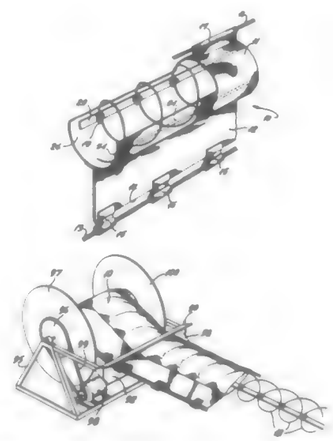
Daniel Canning, and Serge Fraser, both of Montréal, Canada, assignors to 2910683 Canada Inc., Montreal, Canada

Filed Jun. 28, 1993, Ser. No. 82,557

Int. Cl.[5] E02B *15/04*

U.S. Cl. 405—66 22 Claims

1. A containment boom comprising an elongated floatable flexible wall member capable of being wound on a reel and deployed therefrom, said floatable flexible wall member having a vented floatation tubular membrane, a flexible sheet-like skirt member secured along said tubular membrane on a longitudinal axis thereof, ballast means secured to a lower elongated edge of said skirt member, said flotation tubular membrane having a plurality of single spiral coils hingedly secured at opposed free ends to a coil support means, said plurality of single spiral coils being collapsible in the direction of said longitudinal axis and in either opposed directions thereof, said support means being connected to said tubular membrane, and



pulling means secured to a top part of said flexible wall member.

5,362,181

IN PLACE STABILIZATION OF PRE-EXISTING LANDFILLS

Leroy DenBesten, Valatie, N.Y., assignor to Denbesten Enterprises, Inc., South Schodack, N.Y.

Continuation-in-part of Ser. No. 424,068, Oct. 19, 1989, abandoned. This application Apr. 9, 1990, Ser. No. 506,913

Int. Cl.[5] B09B *1/00*

U.S. Cl. 405—129 13 Claims

1. A process for reducing the volume of a pre-existing landfill formed initially by placing decomposable landfill materials at a landfill site and covering said landfill materials with a suitable earth cover, thereafter removing the cover from the landfill materials, mixing the decomposable landfill materials at the landfill site, aerating the decomposable landfill materials at the landfill site, and moistening the decomposable landfill materials at the landfill site, said mixing, aerating, and moistening steps occurring on a periodic basis thereby inducing and accelerating the decomposition of the decomposable landfill materials whereby the volume of the decomposable landfill materials is reduced further comprising the step of reducing the volume of the refuse by mechanical means, the material reduction by mechanical means being accomplished by the use of a material reducer.

5,362,182

WASTE DISPOSAL LANDFILL HAVING SUBSURFACE IMPERMEABLE SHEETS WHICH CAN BE MONITORED WITH RESPECT TO THEIR IMPERMEABILITY

Hans-Günter Hergenröther, Nidda, Germany, assignor to Frank Deponietechnik GmbH, Hungen, Germany

Filed Jul. 28, 1992, Ser. No. 920,870

Claims priority, application Germany, Aug. 1, 1991, 4125430

Int. Cl.[5] B09B *1/00*

U.S. Cl. 405—129 20 Claims

1. A waste disposal landfill-for containing fluid runoff from wastes deposited in the landfill, said waste disposal landfill comprising:

at least one moisture impermeable sheet for being disposed under the landfill, the at least one moisture impermeable sheet comprising:

at least a first and a second layer of a moisture impermeable material;

a sheet of electrically conductive plastic disposed between said at least a first and a second layer;

said sheet of electrically conductive plastic having a longitudinal dimension with at least two areas spaced apart from one another along the longitudinal dimension;

said sheet of electrically conductive plastic having a first conductivity between said two spaced apart areas;

said sheet of electrically conductive plastic having a second conductivity between said two spaced apart areas in the presence of an amount of moisture between said two spaced apart areas;

said second conductivity being greater than said first conductivity; and

means for monitoring the conductivity of said electrically conductive sheet, said means for monitoring being electrically connected directly to said two spaced apart areas of said electrically conducting sheet.

5,362,183

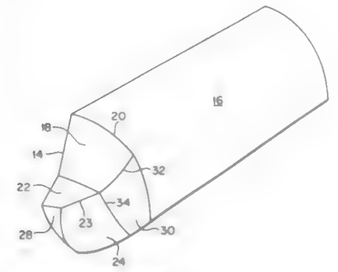
SINGLE POINT CUTTING TOOL

Joseph Alario, 21 Swan La., Hauppauge, N.Y. 11788; Richard A. Bennett, 45 Wildwood La., Smithtown, N.Y. 11787; Ronald S. Dluginski, 9 Dyckman Ave., Garden City Park, N.Y. 11040, and William P. Hermanek, 31 Wildwood La., Smithtown, N.Y. 11787

Filed Oct. 5, 1993, Ser. No. 131,674

Int. Cl.[5] B23B *27/02, 27/06, 27/14*

U.S. Cl. 407—119 6 Claims



1. A cutting tool comprising:

a main cylindrical body;

a longitudinally extending flattened first surface;

a generally circular segment shaped second surface bounded by an arcuate edge and the flattened surface;

a third surface adjacent the segment shaped surface and bounded by an extension of the arcuate edge, the third surface oriented at an acute angle with respect to a transverse plane;

a generally trapezoidal shaped fourth surface extending forwardly from the segment shaped second surface;

a fifth surface intersecting the first, third, and fourth surfaces;

an obtuse angle formed between the third and fifth surfaces;

a sixth surface, defining the forward end of the tool, and bounded by the fourth and fifth surfaces;

a seventh surface defining a fourth edge of the trapezoidal fourth surface and positioned at an acute angle with respect to the fifth surface.

5,362,184

LOCK DEVICE FOR GARBAGE TRUCK CONTAINER

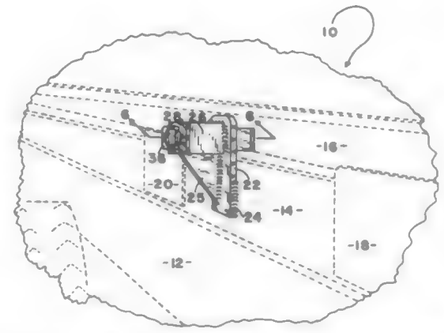
Harold L. Hull, 401 Canyon Way #43, Sparks, Nev. 89434, and Blaine E. Pugh, 3300 Smith Dr., Reno, Nev. 89509

Filed Jun. 15, 1993, Ser. No. 76,775

Int. Cl.[5] B60P *7/13, 7/08;* B62D *24/00;* E05C *5/00*

U.S. Cl. 410—90 4 Claims

1. A locking device cooperating with a prior art container and a prior art truck bed, said container having at least two bottom support I-beams, said truck bed having at least two bed support rails, said rails being in proximity with said two I-beams, said locking device comprising; a first substantially square elongated tubular member having a first end closed and a second end open, said first end having a bore substantially located in its center, said first end having at least one slot opening into said bore, a second substantially square elongated tubular member having a first and second end, said second member being telescopically located within said first member, said first end of said second member being open, said second end of said second member being closed, a rod, said rod having a diameter smaller than said bore of said first end of said first square tubular member, said rod extending through said bore, said rod having a head on one of its ends, a round tubular member, said round tubular member being affixed to an end of said rod distal from said rod end having said head said second end of said second member having means to capture said head of said rod in a rotating relationship, said head being rotatably captured within said second member by said capture means, a compression spring, said spring being engaged between said first end of said first member and said capture means such that said second member is biased away from said first end of said first member, a pin, said rod having a transverse bore substantially in its center section, said rod bore accepting said pin in a friction fit, said pin being of a length longer than said diameter of said rod, a handle, said handle being affixed to said round tubular member, a substantially rectangular mounting plate



having a top half and a bottom half, said mounting plate having a substantially square hole in said top half, said hole accepting said second tubular member in a working sliding relationship, means to affix said first square tubular member to said mounting plate wherein said first member surrounds said square hole in said mounting plate, a support gusset, said gusset being affixed to said first square tubular member and said bottom half of said mounting plate to hold said first square tubular member and said mounting plate at substantially a 90 degree angle relative to each other, means to mount said bottom half of said mounting plate to said bed support rails of said truck bed, said locking device having a first and second position, said first position being in an extended position, said second position being in a closed position,

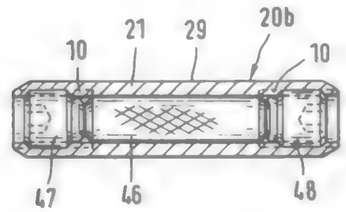
whereby;

when said locking device is in its said first extended position, said compression spring holds said locking device in a tensioned position with said second tubular member being capable of extending over a lip of said I-beam of said container

and

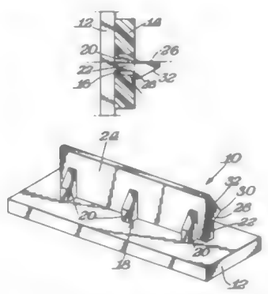
when said locking device is in its said second position, said second tubular member is held within said first square tubular member by said pin engaging said closed end of said first square tubular member when said rod is turned a quarter turn by said handle.

5,362,185
DEVICE FOR POSITIONING COMPONENTS
Johannes Haack, Staden, Switzerland, assignor to Connex AG, Reiden, Switzerland
PCT No. PCT/EP92/00589, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO92/16759, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 18, 1992, Ser. No. 952,630
Claims priority, application Germany, Mar. 23, 1991, 9103621[U]
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—34 5 Claims



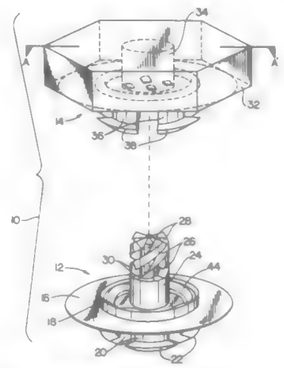
1. An arrangement for positioning components particularly die or mold plates in shaping machinery, comprising: means for insertion in matching bores in said components and having a cylindrical jacket around an axial bore and a continuous through-running slot; an elastic rod having a longitudinal axis and thickness and inserted in said axial bore and subjected to force from at least one end for increasing the thickness of said elastic rod and widening said cylindrical jacket and thereby positioning said components; said axial bore of said jacket threaded at both ends for receiving threaded pins; said components having an elastic connection through said elastic rod and transverse to said longitudinal axis of said rod, said continuous through-running slot providing elasticity by widening an amount dependent on said force.

5,362,186
SINGLE POST STUD WITH LOCKING BLADE
Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 882,671, May 14, 1992, Pat. No. 5,233,870. This application Aug. 9, 1993, Ser. No. 104,321
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] F16B *19/08*
U.S. Cl. 411—508 20 Claims



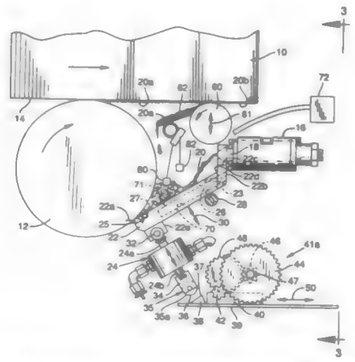
1. A locking assembly for securement through a hole in a support member comprising an abutment member, a locking stud having a post connected to and disposed outwardly from said abutment member, a plane perpendicular to said abutment member and bisecting said post, a single locking blade connected to and disposed outwardly from said post, said locking blade being disposed on one side of and spaced from said bisecting plane, said stud being completely open in the space opposite said locking blade creating an air space over the entire volume of said stud outwardly of said post and inwardly of said single locking blade, said locking blade including an outwardly disposed inclined surface terminating in a crest edge, said outwardly disposed inclined surface comprising wedge lock means for being disposed against an edge of the hole in the support member, an inwardly disposed inclined surface extending from said crest edge, said blade being deflectable at said inwardly disposed inclined surface, said inwardly disposed inclined surface comprising cam means whereby insertion of said blade into the hole causes an edge of the hole to press against said cam means and deflect said blade until said crest edge has passed beyond the hole with said wedge lock means preventing removal of said stud from the hole, and including an indexing member secured to said abutment member on the same side of said abutment member as said locking stud securing said abutment member to the support member at a location remote from said locking stud.

5,362,187
RELEASABLE LOCKING FASTENER
Dane C. Scalise, 223 South St., Apt. 2, Jamaica Plain, Mass. 02130
Filed Nov. 3, 1992, Ser. No. 970,773
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—555 19 Claims



1. A two-piece fastener comprising:
a first fastening piece comprising,
a bolt having a collar, said collar having a first side and a second side;
a plurality of resilient bolt locking prongs integral with said collar and extending longitudinally from said second side of said collar, each of said plurality of resilient bolt locking prongs including an outwardly facing surface having a slope; and
a bolt shank integral with said collar and extending from said first side of said collar, said bolt shank having a plurality of channels therein, each of said plurality of channels having a first end and a second end, and having an opening at said first end and a locking slot at said second end; and
a second fastening piece matable with said first fastening piece comprising,
a nut including a nut body, said nut body having a first side and a second side, and a cavity centrally disposed in said first side for receiving said bolt shank;
a plurality of resilient nut locking prongs integral with said nut and extending longitudinally from said second side of said nut body, each of said plurality of resilient nut locking prongs including an outwardly facing surface having a slope; and
a plurality of engagement lugs disposed within said cavity in said nut body, said plurality of engagement lugs adapted to slide within said plurality of channels of said bolt shank and engage said locking slot.

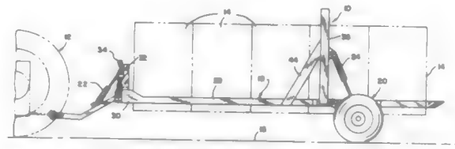
5,362,188
APPARATUS AND METHOD FOR APPLYING ADHESIVE FOR BOOK BINDING AND INDEPENDENT ADHESIVE ROLLER SPEED CONTROL
John C. Tooker, P.O. Box 1165, Medford, Oreg. 97501
Division of Ser. No. 896,138, Jun. 9, 1992, Pat. No. 5,250,318, which is a division of Ser. No. 724,176, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 618,721, Nov. 27, 1990, abandoned. This application Jun. 25, 1993, Ser. No. 83,001
Int. Cl.[5] B42C *9/00*
U.S. Cl. 412—37 14 Claims



1. A book block adhesive applying apparatus mountable to a book binding machine carrying a book block therepast, the block adhesive applying apparatus comprising:
an adhesive delivery system including an adhesive roller delivering adhesive to said book block moving thereacross;
a book speed detection element coupled to said book binding machine and providing a book speed signal corresponding to a magnitude of rectilinear speed of said book block relative to said roller;
a roller spin input device, said input device being user operable for receiving a datum representing a desired deviation in roller rotational speed relative to a rotational speed corresponding to said book block rectilinear speed; and
a roller speed control dictating rotational speed of said adhesive roller and receiving said book speed signal and said datum of said roller spin input device whereby said roller may be operated at selected rotational speed corresponding generally to said book speed signal but deviating therefrom as a function of said datum of said roller spin input.

5,362,189
BALE HANDLING CARRIER
Michael J. Lindahl, Rte. 1, Box 296, Stoddard, Wis. 54658
Filed Jul. 13, 1993, Ser. No. 91,174
Int. Cl.[5] A01D *87/12*; B60P *1/02*
U.S. Cl. 414—24.5 15 Claims

11. A carrier adapted to be drawn over the ground by a towing vehicle for handling and transporting cylindrical bales of hay, said carrier comprising:
a support means having a single pair of elongated, parallel boom members having a fixed spacing therebetween for supporting a series of cylindrical bales cradled on said boom members in end-to-end series relationship substantially along the length thereof;
a cross brace joining said boom members together at a forward end of said support means adapted for attachment to the towing vehicle;
a generally U-shaped inverted frame above a bale receiving area of the carrier having a top member and side members extending downwardly, each side member being connected in an upright attitude to one of said boom members, a support strut extending respectively between each of said side members and each of said boom members;
transport means on each side of said support means spaced a fixed distance from each other and pivotally connected to each of said boom members adjacent the bottom of each of said side members;



connection means for hitching said cross brace to said towing vehicle;
first power means mounted on said connection means for raising and lowering the forward end of the support means including said cross brace;
a second power means extending respectively between each of said side members and each of said transport means for raising and lowering said support means relative to said transport means and the ground, and
a control means accessibly mounted on said cross brace for coordinating the operation of said first power means and said second power means.

5,362,190
METHOD FOR GATHERING CUT TOBACCO STALKS
Jay S. Eaton, Rte. 2, Buladean, Bakersville, N.C. 28705
Filed Dec. 8, 1992, Ser. No. 986,679
Int. Cl.[5] A24B *1/06*
U.S. Cl. 414—26 5 Claims



1. A method for gathering cut burley tobacco stalks, said method comprising the steps of:
arranging the cut tobacco stalks into piles of a predetermined number of stalks;
temporarily positioning a solid steel tobacco stick relatively close to each pile of stalks;
positioning a cradle on the ground in relatively close proximity to the pile of tobacco stalks, the cradle having a concave portion defined therein for supporting the tobacco stalks off the ground;
placing at least the cut butt ends of the tobacco stalks into the concave portion of the cradle so that the stalk ends are at a height at least greater than a worker's knees above the ground;

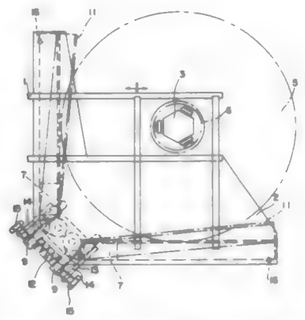
fitting a pointed spear tip onto the tobacco stick;
manually driving the tobacco stick into the ground in close working proximity to the cradle and tobacco stalks; and
in a relatively continuous motion, picking up individual tobacco stalks from the cradle and threading the stalks onto the tobacco stick by impaling the butt ends of the stalks onto the pointed spear tip and sliding the stalk down onto the tobacco stick without the necessity of bending over to retrieve the stalks from the cradle, said manually driving step including ensuring the tobacco stick is forced into the ground a sufficient amount so as to remain substantially vertical under the weight of the tobacco stalks threaded thereon.

5,362,191

BOBBIN TRANSPORT DEVICE

Harald Beckmann, Gevelsberg, Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Germany

Filed Dec. 23, 1992, Ser. No. 995,836
Claims priority, application Germany, Dec. 24, 1991, 4143044
Int. Cl.[5] B65H *1/00, 67/06*
U.S. Cl. 414—225 **19 Claims**



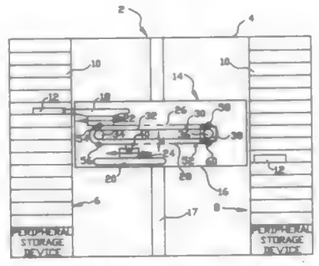
1. In an apparatus for retrieving bobbins containing packaging material in the form of a web from storage for the purpose of conveying the bobbins individually to a work station where the packaging material will be withdrawn from a retrieved bobbin for consumption, the retrieving apparatus including gripping means for internally engaging a tubular wall of a bobbin core, the gripping means defining an axis, a generally axial alignment of the gripping means and the bobbin core permitting insertion of the gripping means into the bobbin core, the retrieving apparatus also including drive means for generating the movements which are transmitted to the gripping means in order to establish said axial alignment, the improvement comprising:
holder means supporting said gripping means, said holder means being coupled to the drive means whereby the position of said holder means may be adjusted in three mutually orthogonal directions;
a pair of contact arms supported from said holder means for pivotal motion, said arms being angularly related and having a normal undeflected position, the axis of said gripping means being located substantially equidistant from each of said arms when said arms are in said normal undeflected position, said arms being independently movable in response to contact thereof with the packaging material on a bobbin;
means for resiliently biasing said contact arms toward said normal undeflected position; and
sensor means mounted on said holder means for cooperation with each of said contact arms, said sensor means being normally out of alignment with said arms, the pivoting of each said arm to a preselected angular position in response to contact with the packaging material on a bobbin causing alignment to be established between said pivoted arm and its cooperating sensor means whereby the sensor means will provide a control signal for said drive means indicating that movement of said holder means in one of said three directions should be terminated, the provision of signals by both of said sensor means indicating a generally coaxial relationship between said gripping means and the bobbin core whereupon said holder means may be caused to move to insert the gripping means into the bobbin core.

5,362,192

AUTOMATED DATA STORAGE LIBRARY WITH SINGLE INPUT DOUBLE GRIPPER MECHANISM

Chi H. Dang, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 24, 1993, Ser. No. 126,275
Int. Cl.[5] B65G *1/00*
U.S. Cl. 414—280 **31 Claims**



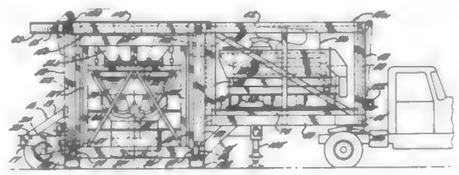
1. An automated data storage library, comprising:
a plurality of storage cells for holding storage media cartridges therein;
a picker mechanism positioned for accessing said storage cells and transporting said storage media cartridges therebetween;
at least two cartridge grippers mounted on said picker mechanism for selective movement along respective gripper paths, said grippers being configured for releasably gripping and supporting said storage media cartridges during transport between said storage cells;
a gripper drive system mounted on said picker mechanism for positioning said grippers along said respective gripper paths;
a gripper engagement element mounted on said gripper drive system for selectively engaging said grippers; and
a power system mounted on said picker mechanism and operatively connected to power said gripper drive system.

5,362,193

SELF ERECTING ASPHALT PRODUCTION PLANT

John Milstead, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Tenn.

Filed Feb. 25, 1993, Ser. No. 23,063
Int. Cl.[5] B65G *1/00*
U.S. Cl. 414—332 **15 Claims**



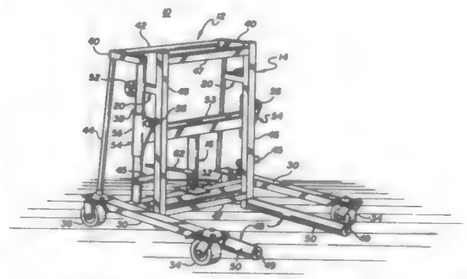
1. A self erecting apparatus adapted for the batch production of asphalt, and comprising
an elongate main frame having front and rear portions, and including a support structure for supporting the main frame upon the ground surface,
an asphalt production plant comprising an upper plant subassembly and a lower plant subassembly, with said upper and lower plant subassemblies collectively comprising, when positioned with said upper plant subassembly immediately above said lower plant subassembly,
(a) an aggregate screen section,
(b) a bin section positioned below said screen section and comprising a plurality of side by side bins,
(c) a weigh hopper positioned below said screen section, and
(d) a mixer positioned below said weigh hopper,
means mounting said lower plant subassembly on said rear portion of said main frame and including plant lifting means for lifting said lower plant subassembly between a lowered transport position and a raised position,
means mounting said upper plant subassembly for movement between a lowered transport position on said front portion of said main frame and a raised intermediate position immediately above said lower plant subassembly when said lower plant subassembly is in its lowered transport position,
whereby the apparatus may be transported with said upper and lower plant subassemblies positioned in their respective lowered transport positions, and at the job site, the upper plant subassembly may be moved to its raised intermediate position to form said asphalt production plant with said upper and lower plant subassemblies disposed in a vertical arrangement, and said asphalt production plant may then be lifted to a raised operative position of said apparatus by said plant lifting means.

5,362,194

LIFT/TILT WHEEL DOLLY

Larry A. Kaschbaum, Grand Terrace, Calif., assignor to Norco Industries, Inc., Compton, Calif.

Filed Oct. 28, 1993, Ser. No. 143,847
Int. Cl.[5] B60B *29/00*
U.S. Cl. 414—427 **11 Claims**



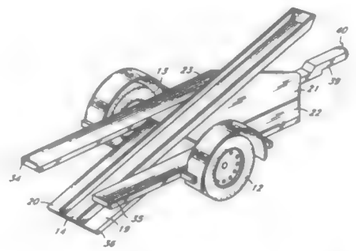
1. A wheel dolly for manipulating a heavy wheel and comprising:
a dolly frame including a kicker rail;
wheels supporting said dolly frame;
a fork carried movably from said frame for vertical rectilinear travel relative to said frame and including horizontally projecting laterally spaced apart wheel support tines;
a kicker carried from said fork and operative upon raising of said fork from a lowered wheel receiving position to a predetermined kicker height to engage said rail and, upon further raising of said fork above said predetermined kicker height, to shift said fork forwardly to an outwardly and upwardly inclined work position;
a jack interposed between said frame and said fork to raise said fork relative to said frame
said dolly frame including at least one vertical post and a sleeve received telescopically over said post for vertical travel thereon; and
said dolly including pivot means mounting said fork from said post, for and when said kicker is operative upon raising of said fork above said predetermined kicker height, to rotate said fork about said pivot means from said receiving position to said work position.

5,362,195

TILTING TRAILER FOR A MOTORCYCLE

Michael D. Wagner, 911 Jade Clr., Placentia, Calif. 92670

Filed Dec. 20, 1993, Ser. No. 169,415
Int. Cl.[5] B60P *3/06*
U.S. Cl. 414—483 **3 Claims**



1. A trailer to be towed behind a motor vehicle, said trailer comprising:
a trailer frame having a front, a right side and a left side and a rear, said frame being supported by at least two wheels;
a tongue held by said frame and extending past the front of the frame and including a trailer hitch at a forward end thereof;
right and left trailer floors supported by said trailer frame adjacent the right and left sides thereof, said right and left trailer floors being separated in a longitudinal center area of said frame;
a tiltable trailer floor positioned on a tiltable trailer frame hingedly supported by said trailer frame and said frame and floor being positioned between said right and left trailer floors, said tiltable trailer floor being at least two feet wide having a front, a back, a right side, and a left side, said tiltable trailer frame including hinge means near a center of gravity of the tiltable trailer floor and frame, said tiltable trailer frame and floor being mounted on said frame by said hinge means so that a back of the floor thereof may be tilted downwardly to touch a ground area upon which the trailer rests;
an elongated guide rail supported by said tiltable trailer floor having a center guide area with two sides and an upwardly directed side rail along each side thereof; and
means for securing the tiltable trailer floor and frame in a position so that its floor is coplanar with the trailer floors whereby a motorcycle rider may ride a motorcycle up the elongated guide rail from the ground when the tiltable trailer floor is tilted downwardly and may support his motorcycle by placing his feet on the tiltable floor adjacent the elongated guide rail until the forward movement of the motorcycle causes the tiltable floor to tilt forward.

5,362,196

LIFT FORKS

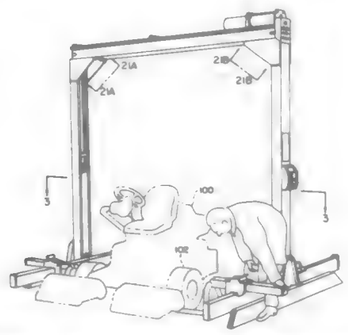
John M. Beattie, and Jimmie D. Sinden, both of Greeley, Colo., assignors to TRLI, Inc., Greeley, Colo.

Filed Dec. 4, 1991, Ser. No. 802,450
Int. Cl.[5] B65G *7/00;* **B66F** *7/00*
U.S. Cl. 414—785 **13 Claims**

1. Lift fork apparatus comprising:
(a) a hanger means; wherein said hanger means comprises a unitary body member comprising (a) first and second opposing arms and (b) a receiver portion having a longitu-

dinal axis which is generally perpendicular to said arms, wherein said body member is adapted to engage a tool bar such that angular rotation of said body member relative to said tool bar is restricted in at least one direction, and

(b) a fork member which included mounting means for mounting said fork member on said hanger means;



wherein said mounting means comprises an elongated shank member;

wherein said receiver portion is adapted to receive and support said shank member against angular rotation relative to said body member in said one direction, and wherein said fork member is laterally adjustable relative to said hanger means and the supporting surface during normal operation.

5,362,197

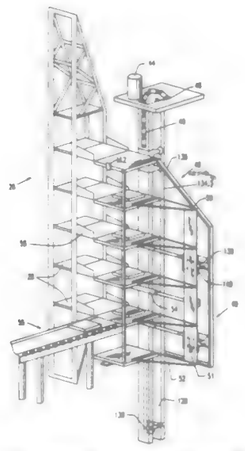
AUTOMATIC STORAGE AND RETRIEVAL SYSTEM

Richard Rigling, Fairfield, Ohio, assignor to Stanley-Vidmar, Inc., Allentown, Pa.

Division of Ser. No. 519,932, May 7, 1990, Pat. No. 5,226,782. This application Jun. 30, 1993, Ser. No. 86,229

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—786 **9 Claims**



1. A method for automatically transferring a plurality of items between a first location and a second location utilizing a system including caddy means for receiving said plurality of items, said caddy means including a plurality of substantially vertically oriented shelves, said caddy means being affixed to dolly means for carrying said caddy means between said first location and said second location, said dolly means including locomotion means and locomotion control means for moving said dolly means, item handler means affixed to said dolly means for transferring said plurality of items between said caddy means and said first location, said item handler means including first elevator means and first elevator control means for positioning said item handler means at a selected elevation, caddy loader means for simultaneously loading said plurality of items on said caddy means, said caddy loading means including a plurality of substantially vertically oriented shelves matching said orientation of said shelves of said caddy means, second elevator means and second elevator control means for adjusting the elevation of said caddy loader means, item pusher means for simultaneously pushing said items off from said caddy loader shelves to said caddy means shelves, and control means for managing and controlling said system, said method comprising the steps of:

A. transferring said plurality of items from said first location to said caddy means;

B. carrying said caddy means on said dolly means proximate to said second location;

C. performing a selectable sequence of transfers of said items between said caddy means and said second location with said item handler means.

5,362,198

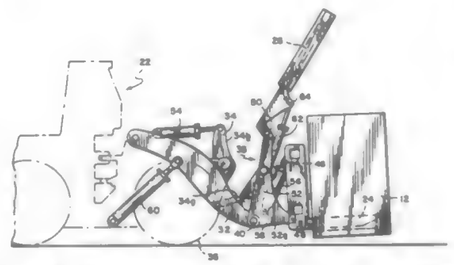
BULK MATERIALS TRANSPORTATION SYSTEM

Kenneth J. Patrick, Medfield, Mass., assignor to Intermodal Technologies, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 757,473, Sep. 10, 1991, Pat. No. 5,256,023, which is a division of Ser. No. 440,314, Nov. 22, 1989, Pat. No. 5,078,560. This application Oct. 6, 1993, Ser. No. 132,536

Int. Cl.[5] B65G *67/00*

U.S. Cl. 414—786 **16 Claims**



1. A lid manipulator for a bulk materials transportation system comprising

a box that holds bulk material, said box having a bottom and four side walls formed of a high strength, rigid structural materials and interconnected with one another to form an open top container, at least one horizontal open-ended box channel formed in said box adjacent said bottom wall and extending between said side walls,

a replaceable lid adapted to seat on and enclose the open top of said box, said lid being formed of a rigid structural material,

a tractor for carrying and dumping said box and including (i) at least one box fork adapted to engage said box channel, (ii) an articulated frame mounted on one end of said tractor that mounts said box fork to articulate about a first axis of rotation, and (iii) actuator means to drive said articulated frame to lift said box fork and rotate the box fork, in coordination with a downward and rearward dumping movement of said box fork toward said tractor, to dump the bulk material from the box while stabilizing the combined weight of the tractor and said box carried on said box fork, and (iv) means for releasably securing said box on said box fork during said rotating,

at least one open-ended lid channel formed in the lid and extending generally parallel to said open-ended channel in said box,

at least one fork mounted on the frame and adapted to engage said lid channel while said box fork and box channel are engaged,

said at least one lid fork operable in coordination with said dumping movement of said articulated frame and box fork to remove the lid from the box and hold it in a spaced relationship over said box during said dumping.

5,362,199

LIGHT-SENSITIVE FILM FEEDING MAGAZINE FOR USE IN A DAY-LIGHT AUTOMATIC FILM HANDLING APPARATUS

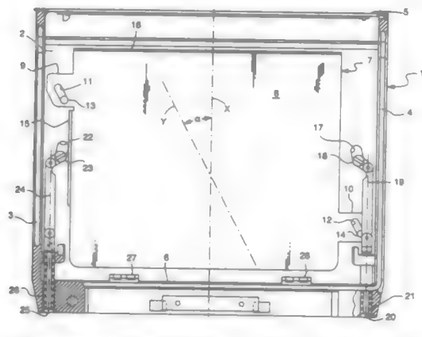
Rino Gandolfo, Roccavignale, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1992, Ser. No. 963,116

Claims priority, application Italy, Oct. 21, 1991, MI91 A 002772

Int. Cl.[5] B65H *9/10*

U.S. Cl. 414—788 **12 Claims**



1. A light-sensitive film feeding magazine (1) having a front wall (5) and an axis (X) perpendicular to said front wall (5), for use in a day-light automatic film handling apparatus, including means for centering the films of a stack of films inserted in the magazine (1), characterized in that such means include a sliding tray (7) guided on a bottom wall (2) of the magazine (1), a side buffer (15) provided on the tray (7) perpendicular to the bottom wall (2) and parallel to the axis (X) of the magazine (1), pushing means comprising a first movable lever (17) acting on the side of the stack of films for pushing the stack of films on the tray (7) against the side buffer (15) and shifting means comprising a second movable lever (22) acting on the side buffer (15) for shifting the tray (7) on the bottom wall (2) toward a position in which films resting against the side buffer (15) have axes coincident with the axis (X) of the magazine (1).

5,362,200

SHEET TRANSPORTING DEVICE FOR A SORTER

Yoshiaki Ushirogata, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 996,139, Dec. 23, 1992, abandoned. This application Apr. 15, 1994, Ser. No. 227,993

Claims priority, application Japan, Dec. 26, 1991, 3-344191; Jan. 9, 1992, 4-001852; Oct. 12, 1992, 4-272585

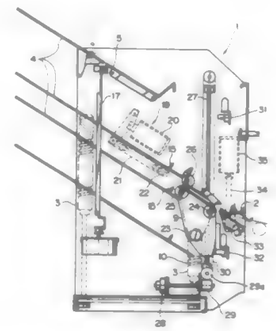
Int. Cl.[5] B65G *57/03*

U.S. Cl. 414—791 **7 Claims**

1. A sheet transporting device for a sorter having a plurality of bins arranged one above another for receiving sheets sequentially driven out of an image forming apparatus and forming said sheets into stacks, said device comprising:

a top tray disposed above an uppermost one of the bins; and

an upward sheet stack discharge unit positioned between an outlet of the image forming apparatus and the bins, the upward sheet stack discharge unit being movable in an up-and-down direction for distributing sheets from the outlet to each of the bins and, on completing distribution of the sheets to the bins, substantially pulling out sheet stacks from each of the bins and then moving the sheet stacks in the up-and-down direction relative to the bins to thereby sequentially discharge the sheet stacks to the top tray.



5,362,201

WATER PUMP LUBRICATING CHAMBER ARRANGEMENT FOR MOTOR VEHICLES

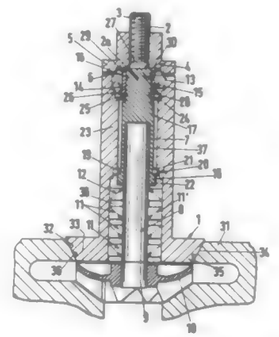
Klaus-Jürgen Uhrner, Leingarten/BR, and Eugen Schlötzer, Rednitzhembach/BR, both of Germany, assignors to Kaco GmbH & Co., Heilbronn, Germany

Filed Jul. 12, 1993, Ser. No. 90,513

Claims priority, application Germany, Jul. 17, 1992, 4223544

Int. Cl.[5] F01D *25/22;* **F04D** *29/06*

U.S. Cl. 415—111 **2 Claims**



1. A water pump having a lubricating chamber arrangement for motor vehicles, with a housing, in which a pump shaft is rotatably journalled, which carries a running wheel at a free end thereof and which in a lower region adjoining the running wheel has at least one seal means, comprising:

means forming an annular chamber filled with a lubricating medium provided in a region above a lower seal between the pump shaft and the housing;

said lower seal engages sealingly against the pump shaft and axially limits pump chamber means in which the running wheel is accommodated as installed therewith, the pump chamber means being sealed off by said at least one seal means relative to said annular chamber for receiving leakage fluid therein, said pump shaft extending through said annular chamber which at an end thereof remote from the running wheel is limited by an upper seal as well as having said annular chamber for receiving leakage fluid which mixes with lubricating medium already in said

annular chamber extending continuously from said lower seal to said upper seal; and

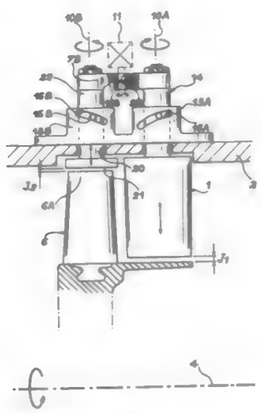
bearing means that rotatably support said pump shaft in said annular chamber for receiving the leakage fluid therein with said lubricating medium that lubricates said bearing means.

5,362,202

TURBOMACHINE EQUIPPED WITH MEANS FOR ADJUSTING THE PLAY BETWEEN THE STATER BLADES AND THE ROTOR OF A COMPRESSOR

Patrick R. J. Derouet, Soignolles en Brie, and Philippe M. Paris, le Mee sur Seine, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Oct. 1, 1993, Ser. No. 130,177
Claims priority, application France, Oct. 7, 1992, 92 11860
Int. Cl.[5] F01D *17/14*
U.S. Cl. 415—148 4 Claims



1. A turbomachine, which comprises:

at least one axial compressor equipped with a plurality of first compression stages formed by a rotor having a plurality of blades which are rotatable about a spin axis and a stator having a plurality of blades which have an orientation which is adjustable by rotation of each of said stator blades around a spin axis perpendicular to and intersecting with the spin axis of the rotor, wherein an extremity of the rotor blades is located so as to be separated from the rotor by a first distance;

a mechanism connected to the stator blades for adjusting the first distance between the stator blades and the rotor in accordance with a phase angle of orientation of the stator blades wherein the mechanism for adjusting the first distance comprises a spindle connected to the stator blades and wherein said spindle is pivotable with respect to the stator by a first bush connected to the stator and a first crank connected to the spindle;

said first bush having a groove formed therein wherein said groove is oblique with respect to a spin axis of the stator blades; and

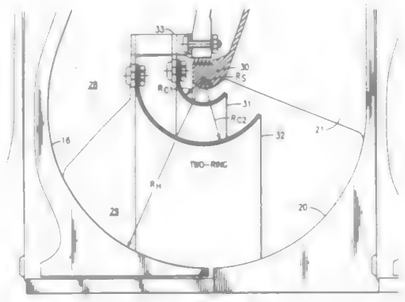
a slug integral with the spindle and which both extends perpendicular to the spin axis of the stator blades and is positioned in the groove of the first bush so that rotation of the first crank causes longitudinal movement of the stator blade along the spin axis of the stator blade.

5,362,203

MULTIPLE STAGE CENTRIFUGAL COMPRESSOR

Joost J. Brasz, Fayetteville, N.Y., assignor to Lamson Corporation, Syracuse, N.Y.

Filed Nov. 1, 1993, Ser. No. 143,620
Int. Cl.[5] F01D *9/04*
U.S. Cl. 415—199.1 5 Claims



1. In a centrifugal compressor having a plurality of successive stages with a common shaft on which are positioned respective impellers, each having a hub and a series of impeller blades, and a stator portion that includes an outer shroud and a series of inner diaphragms, each said stage having a gas flow path defined between said shroud and said diaphragm, including a compression channel in which said impeller blades rotate to drive gas radially outward to a diffusion chamber in which centrifugal motion energy of the gas is converted into pressure, a return flow channel in which the compressed gas is directed radially inward back towards the shaft, and an inlet passage for bending the flow of gas from the return flow channel radially outward into the impeller of the next successive stage; the improvement which comprises N baffle rings disposed in said inlet passage at the entrance to the next successive compression channel for dividing the flow of gas therethrough into N+1 annular subchannels, where N is an integer equal to one or higher, the N baffle rings having their size and spacing arranged such that each of said N+1 subchannels has substantially the same pressure differential there across in the throughflow direction; and wherein said inlet passage is defined between a shroud side curve of radius R_S and a hub side curve or radius R_H taken from a curve center on the shroud side, and wherein said N baffle rings each are spaced from said curve center by a respective radius R_k where k is an integer 1, 2, . . .N:

$$R_k = (R_S^{N-k+1} X R_H^{k})^{\frac{1}{N+1}}.$$

5,362,204

GAS TURBINE WITH FLANGED-ON EXHAUST GAS CASING

Kamil Matyscak, Brenden, Germany, and Traugott Schmid, Wettingen, Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

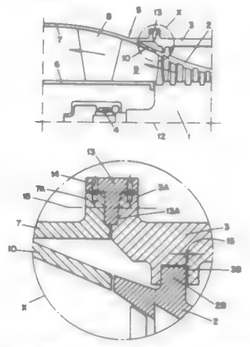
Filed Sep. 1, 1993, Ser. No. 114,180
Claims priority, application Germany, Sep. 26, 1992, 4232385
Int. Cl.[5] F01D *25/24, 25/28*
U.S. Cl. 415—213.1 2 Claims

1. A gas turbine comprising:

a blade carrier for guide blades which is suspended coaxially in a turbine casing, both the turbine casing and the blade carrier provided with a horizontal junction plane in which their respective top and bottom halves are bolted together;

an exhaust gas casing downstream of outlet moving blades,

the exhaust gas casing adjoining the turbine casing, bounding walls of the exhaust gas casing comprising an annular inner part on a hub side and an annular outer part, said parts bounding a diffuser, the outer part gastightly connected by an annular flange with a flange bolt connector to an annular flange of the turbine casing; and,



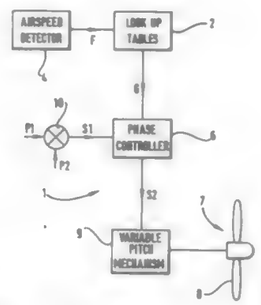
a two-part separating ring disposed between the annular flanges, the two-part separating ring having at least one conically extending face on a vertical part, a transverse bar portion and screw fasteners radially directed to fasten the transverse bar portion to the annular flanges of the turbine casing and the exhaust gas casing to align the annular flanges.

5,362,205

METHOD AND APPARATUS FOR SYNCHRONIZING THE SPEED AND PHASE OF PLURAL PROPELLERS OF AN AIRCRAFT

Gilbert A. Turner, 27 Great Norwood St., Cheltenham, Glos., GL50 2AW, United Kingdom

PCT No. PCT/GB91/00362, § 371 Date May 27, 1992, § 102(e) Date May 27, 1992, PCT Pub. No. WO92/02412, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 9, 1991, Ser. No. 847,006
Claims priority, application United Kingdom, Aug. 10, 1990, 9017599.3
Int. Cl.[5] B64C *11/50*
U.S. Cl. 416—34 5 Claims



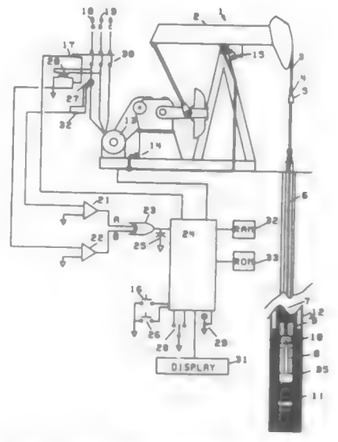
1. A propeller control system for use with an aircraft having at least two propellers comprising a propeller controller comprising means for producing a first control signal corresponding to the motion of said propellers, said controller further comprising means that processes said first control signal using a variable gain to produce a second control signal suitable for adjusting the movement of at least one of the propellers, and an air speed sensor to sense the forward air speed of said aircraft and produce a forward air speed signal, said controller being responsive to said forward air speed signal to vary the gain of the controller in accordance with said forward air speed signal.

5,362,206

PUMP CONTROL RESPONSIVE TO VOLTAGE-CURRENT PHASE ANGLE

G. Wayne Westerman; Richard C. Montgomery, and Gerald W. Pippin, all of Midland, Tex., assignors to Automation Associates, Midland, Tex.

Filed Jul. 21, 1993, Ser. No. 95,693
Int. Cl.[5] F04B *49/02*
U.S. Cl. 417—12 20 Claims



1. A process of controlling an inductive, alternating current, electric motor of a well-pumping unit cyclically operating to reciprocate a subsurface pump by means of a sucker rod string, comprising:

(a) during each reciprocation cycle, repeatedly measuring phase angle between voltage applied to and current drawn by the motor;

(b) producing a control function related to the measured phase angle for a predetermined portion of the reciprocation cycle;

(c) comparing a value of the control function with predetermined limit value; and

(d) if the value of the control function exceeds the limit value, shutting off the motor at least temporarily.

5,362,207

PORTABLE DIESEL-DRIVEN CENTRIFUGAL AIR COMPRESSOR

Daniel T. Martin, Clemmons; William H. Harden, III, Yadkinville; Dale R. Herbstritt, and Dilip K. Mistry, both of Clemmons, all of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 9, 1993, Ser. No. 74,251
Int. Cl.[5] F04B *23/00*
U.S. Cl. 417—243 9 Claims

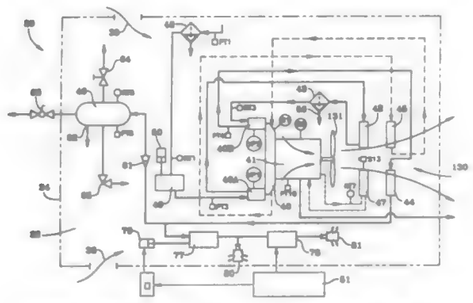
1. A portable compressed air system comprising:

a housing;

a diesel engine having a predetermined torsional inertia, a predetermined cranking speed, and a predetermined idle speed;

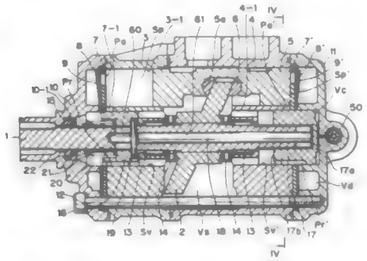
a centrifugal compressor flexibly coupled in motive force receiving relation to the diesel engine, the flexible coupling having a predetermined spring rate to place the torsional inertia of the compressor above a highest predetermined cranking speed and below the predetermined idle speed of the diesel engine;

a microprocessor-based electronic controller for controlling compressor operation;
a receiver for storing compressed air; and
a means for cooling the portable compressed air system, the



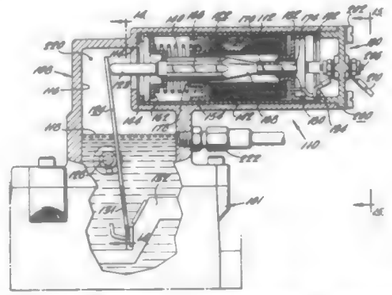
cooling means having a fan, an intercooler, an oil cooler, an engine radiator, and an aftercooler, and wherein the intercooler, the oil cooler, the radiator, and the aftercooler are arranged in two banks, each bank comprising two cooling cores juxtaposed one to each other.

5,362,208
SWASH PLATE TYPE COMPRESSOR
Mitsuo Inagaki; Mikio Matsuda, both of Okazaki; Shinya Ishihara, Anjyo; Motohiko Ueda, Nishio; Hideaki Sasaya, Okazaki, and Takeshi Sakai, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of Japan
Filed Mar. 3, 1993, Ser. No. 26,058
Claims priority, application Japan, Mar. 4, 1992, 4-046974; May 6, 1992, 4-113716; Jan. 13, 1993, 5-003995
Int. Cl.[5] F04B *1/12*
U.S. Cl. 417—269 34 Claims



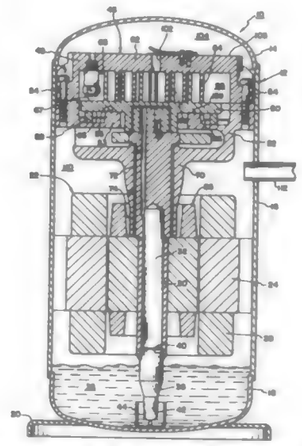
1. A variable capacity swash plate type compressor comprising:
a rotating shaft adapted for connection to a source of a rotating movement;
a cylinder block with which the rotating shaft is rotated, the cylinder block forming a plurality of circumferentially spaced cylinder bores each extending parallel to an axis of the rotating shaft;
a plurality of pistons axially and slidably stored in the respective cylinder bore so that piston chambers are formed on respective sides of the pistons;
a swash plate fixedly connected to the rotating shaft, which is connected to the pistons to obtain an axial reciprocal movement of the piston upon rotation of the shaft;
the piston chambers each having a volume which alternately increases and decreases upon the axial reciprocal movement of the corresponding pistons;
the cylinder block forming therein an intake pressure chamber that is connected to a source of a medium to be compressed, and a outlet pressure chamber for removing the medium as compressed;
an intake means for controlling an introduction of the medium from the intake pressure chamber to the piston chambers; and
a discharge means for controlling a discharge of the medium from the piston chambers to the outlet pressure chamber;
said intake means comprising:
a rotary valve that is axially slidable with respect to the shaft while rotating together with the shaft, and
a control means for controlling an axial position of the rotary valve on the shaft;
the rotary valve being for obtaining successive control of a communication between the intake pressure chamber and the circumferentially spaced piston chambers at respective ranges of a rotating angle upon one complete rotation of the rotary valve for introducing the medium to the respective piston chambers; said angle being controlled in accordance with the axial position of the rotary valve as obtained by said axial position control means.

5,362,209
PROPORTIONAL SOLENOID ACTUATOR AND PUMP SYSTEM INCLUDING SAME
Eric Day, Longmeadow, Mass., assignor to AIL Corporation, Columbia, S.C.
Continuation-in-part of Ser. No. 683,438, Apr. 10, 1991, Pat. No. 5,138,291. This application May 23, 1991, Ser. No. 704,921
Int. Cl.[5] F04B *49/06;* F02M *59/34*
U.S. Cl. 417—293 2 Claims



1. A combination diesel fuel pump and fuel control actuator for said pump comprising:
a fuel pump housing containing said fuel pump and having a cavity at the top thereof, one part of which communicates with the interior of the portion of said housing containing said pump and the remainder of which is air-tight;
a solenoid actuator in said cavity comprising a solenoid and a spring-biased armature movable in said solenoid in response to changes in current in said solenoid;
a fuel-control linkage in said housing for controlling the quantity of fuel delivered by said pump;
connecting means responsive to motion of said armature to operate said fuel-control linkage;
a body of liquid diesel fuel in said housing;
connecting means extending from said armature to said fuel-control linkage and responsive to motion of said armature to move said fuel-control linkage; and
a body of trapped air permeating the interior of said cavity and preventing ferromagnetic particles in said diesel fuel oil from contacting the working parts of said actuator.

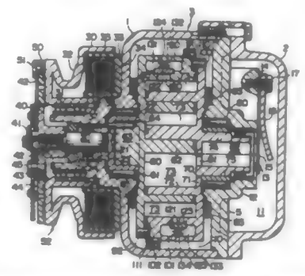
5,362,210
SCROLL COMPRESSOR UNLOADER VALVE
Hubert Richardson, Jr., Brooklyn, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.
Filed Feb. 26, 1993, Ser. No. 23,583
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—307 10 Claims



1. A scroll-type compressor for compressing refrigerant fluid, comprising:
a hermetically sealed housing including therein a discharge chamber containing refrigerant at discharge pressure and a suction chamber containing refrigerant at a suction pressure, said housing pressurized to discharge pressure;
a scroll set including a fixed scroll member in said housing having an involute fixed wrap element and an orbiting scroll member in said housing including a plate portion having a face surface and a back surface, said face surface having an involute orbiting wrap element thereon intermeshed with said fixed wrap element, said orbiting scroll wrap located within said suction pressure chamber;
fluid at substantially discharge pressure acting against the back surface of said orbiting scroll;
drive means for causing said orbiting scroll member to orbit relative to said fixed scroll member; and
a pressure valve connecting from said discharge chamber directly into said scroll set, said pressure valve automatically conducting discharge pressure into said scroll set in response to a high pressure condition, whereby said orbiting scroll member is at least partially unloaded.

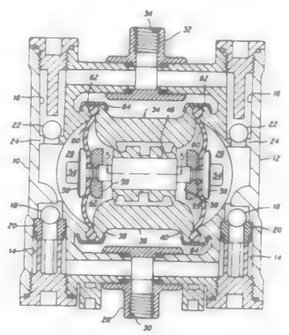
5,362,211
SCROLL TYPE FLUID DISPLACEMENT APPARATUS HAVING A CAPACITY CONTROL MECHANISM
Jiro Iizuka, Takasaki, and Yoshihiro Ochiai, Tomioka, both of Japan, assignors to Sanden Corporation, Isesaki, Japan
Division of Ser. No. 883,382, May 15, 1992, Pat. No. 5,269,661. This application Jul. 6, 1993, Ser. No. 86,036
Claims priority, application Japan, May 15, 1991, 3-138691
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—310 16 Claims

1. In a scroll type fluid displacement apparatus including a housing having therein a suction chamber and a discharge chamber, a first scroll member disposed within said housing and having a first end plate from which a first spiral element axially extends into the interior of said housing, a second scroll member disposed for nonrotatable orbital movement relative to said first scroll member within the interior of said housing and having a second end plate from which a second spiral element axially extends into the interior of said housing, said first and second spiral elements interfitting at an angular and radial offset to make a plurality of line contacts which define at least one pair of sealed off fluid pockets, and a drive mechanism operatively connected to at least one of said first and second scroll members to effect relative orbital motion between said first and second scroll members and said line contacts whereby said fluid pockets move inwardly and change in volume and a fluid is sucked from said suction chamber to said fluid pockets and discharged from said fluid pockets to said discharge chamber, the improvement comprising:



a first bypass hole provided on a wall of at least one of said first and second spiral elements for communicating between at least one of said fluid pockets and said suction chamber; and
a valve mechanism for controlling the opening and closing of said first bypass hole solely in response to the orbital motion of said first and second scroll members relative to each other, wherein said valve mechanism has a spring for urging said valve body in a direction that normally closes said first bypass hole.

5,362,212
AIR DRIVEN DIAPHRAGM PUMP
Robert J. Bowen, Moreno Valley, Calif., and Craig Q. Davis, Evanston, Ill., assignors to Wilden Pump & Engineering Co., Colton, Calif.
Continuation of Ser. No. 54,633, Apr. 29, 1993, abandoned. This application Mar. 9, 1994, Ser. No. 208,492
Int. Cl.[5] F04B *39/10*
U.S. Cl. 417—395 7 Claims



1. An air driven diaphragm pump comprising
a diaphragm;
a pump chamber to one side of said diaphragm;
an air chamber to the other side of said diaphragm;
a controlled inlet passage to said pump chamber;
a controlled outlet passage from said pump chamber;
a bushing having a passageway therethrough and annular channels within said passageway;
a control valve including a cylinder, a piston slidable within

said cylinder, and a passage between said valve and a first said channel;

an inlet communicating with the middle of said cylinder, said piston including restricted flow paths from the middle of said cylinder to the ends of said piston;

a vent passage extending from a second said channel to atmosphere;

a shaft fixed to said diaphragm and including a cylindrical portion slidably extending through said passageway, extending across and longitudinally outwardly of said first and said second channels throughout the full stroke of said diaphragm, and having axial slots mutually angularly spaced, of mutually common axial placement and extent, significantly less restricted to flow than said flow paths and selectively extending between said first said channel and said second said channel.

5,362,213

MICRO-PUMP AND METHOD FOR PRODUCTION THEREOF

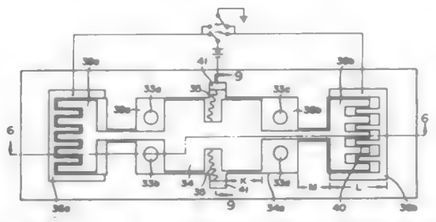
Kiyoshi Komatsu; Takeshi Kudo; Takashi Kitamura, and Ryo Tsukamoto, all of Kanagawa, Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,795

Claims priority, application Japan, Jan. 30, 1992, 4-15164

Int. Cl.[5] F04B *17/04*

U.S. Cl. 417—418 **6 Claims**



1. A micro-pump comprising a cylinder, a piston housed within the cylinder for pressing a fluid, said piston having opposite end faces, an operating chamber formed between each of said end faces and ends of the cylinder, movable electrodes formed integrally with said piston, a conductive film disposed in said cylinder for grounding said piston and said movable electrodes, an inlet and an outlet check valve communicating with each operating chamber in said cylinder, and a drive source operatively associated with at least said piston for moving the piston back and forth so that the opposite end faces of said piston press the fluid and force it through the check valves in order to pump fluid.

5,362,214

MULTI-VACUUM RELEASE FOR PUMP

Theodore C. Neward, P.O. Box 725, Cucamonga, Calif. 91730

Filed Sep. 8, 1993, Ser. No. 118,493

Int. Cl.[5] F04B *41/00*

U.S. Cl. 417—440 **11 Claims**

1. A hand-held vacuum pump, comprising

cylinder means for isolating a certain volume from the atmosphere and equipped with a piston inlet port and an exhaust port,

biased piston means, for drawing a vacuum through said piston inlet port of the cylinder means when said biased piston means is drawn back, and for automatically returning said piston means to the end of said cylinder when said piston means is no longer drawn back,

a first valve coupled with said piston inlet port of the cylinder means,

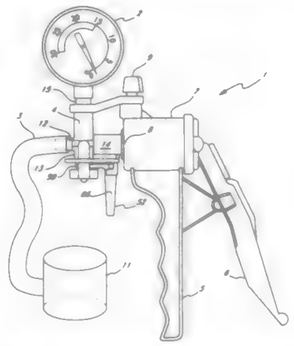
a second valve coupled with said exhaust port of the cylinder means, said second valve being separate from the first valve,

hand-operated piston retractor means for drawing said piston means back within said cylinder means, whereby drawing said piston means back causes air to be drawn into said cylinder means via said piston inlet port of the cylinder means, and whereby releasing said piston retractor means causes the air which was drawn in to be forced out via said exhaust port of said cylinder means, and

a vacuum release valve comprising

a substantially hollow manifold comprising a vacuum source port, a vacuum pump port, and a vacuum release valve port,

a base connectable to said vacuum release valve port, and including a cavity therethrough, through which a trigger can contact said vacuum release valve port,



said trigger being pivotally mounted on the base and having a trigger arm, an actuating arm, and a boss with an o-ring seal for stopping the flow of gas into the vacuum release valve port when in a closed position, and allowing gas to enter when in an open position,

a spring mounted on the side of the actuating arm opposite said boss and aligned substantially coaxial with said boss and providing a force to bias said actuating arm and boss into the closed position when at rest, and requiring pressure on said trigger arm to move said actuating arm and boss to the open position, and

a spring base for mounting said spring.

5,362,215

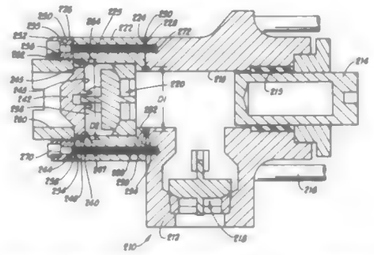
MODULAR PUMP CYLINDER-HEAD HAVING INTEGRAL OVER-PRESSURE PROTECTION

Randall K. King, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 10, 1993, Ser. No. 60,112

Int. Cl.[5] F04B *21/00*

U.S. Cl. 417—455 **14 Claims**



1. A modular fluid end assembly for a reciprocating pump having a cylinder housing secured to a crankcase, the modular fluid end comprising:

a cylinder-head having a cylinder-head to cylinder housing base joint surface and an oppositely positioned end joint surface;

the base joint surface of the cylinder-head having a first bore therethrough and an annular base seal landing having a preselected nominal diameter;

the end joint surface of the cylinder-head having a second bore in communication with the first bore in the base joint surface of the cylinder-head, the second bore having an end seal landing region common to the end joint surface, the end landing region having a nominal preselected diameter that is greater than the preselected nominal diameter of the base seal landing;

a first seal means positioned in the seal landing of the base joint surface;

an end plate having an outer surface, an end joint surface, and a threaded bore extending through the end plate perpendicular to the end joint surface;

a valve cover having an inner face, an outer face, and an outer periphery having a second seal means extending thereabout, the outer periphery and the second seal means sized to be accommodated by the landing region common to the end joint surface of the cylinder-head;

a valve cover retainer having a valve cover engaging face and an outer periphery configured to security engage the bore of the end plate; and

a plurality of cylinder-head bolts located in proximity to the periphery of the end plate, the bolts passing through the end joint surface and the base joint surface of the cylinder-head and being received by the cylinder housing.

5,362,216

COAXIAL VALVE ARRANGEMENT FOR HIGH PRESSURE POSITIVE DISPLACEMENT PUMPS

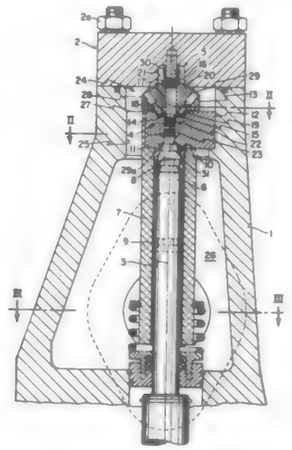
Paul Hammelmann, Zum Sundern 17, D-4740 Oelde, Germany

Filed Jan. 8, 1993, Ser. No. 2,328

Claims priority, application Germany, Jan. 11, 1992, 4200536

Int. Cl.[5] F04B *21/02*

U.S. Cl. 417—567 **18 Claims**



1. A positive displacement pump comprising a housing including a casing and a one-piece head affixed to said casing; an insert installed in said casing adjacent said head and including a first portion and a second portion, said second portion being disposed between said first portion and said head, said first portion being spaced from said head; a fluid admitting suction intake valve including a first mobile valving element being disposed directly adjacent to said first portion and a first seat for said first valving element being disposed at said second portion; a fluid discharging outlet valve coaxial with said intake valve and including a second mobile valving element being disposed directly adjacent to said head and a second seat for said second valving element being disposed at said second portion; and a displacement body movable in said casing to draw a fluid into a chamber of said housing, through said intake valve and to expel the fluid through said outlet valve, said first valving element includes a plate and said intake valve further comprises means for biasing said plate against said first seat, said first portion having a recess for said plate and for said biasing means, a cylinder reciprocably receiving and displacement body, abutting said first portion and disposed in said casing at least partially within said chamber.

5,362,217

HELICAL POSITIVE-DISPLACEMENT MACHINE HAVING A MEANDERING SEALING STRIP GROOVE

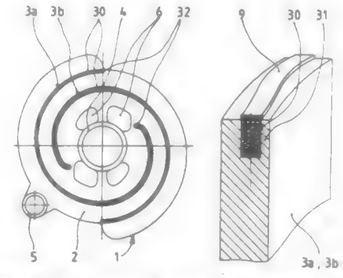
Gregor Jetzer, Nussbaumen; Roland Kolb, Regensdorf, and Fritz Spinnler, Mellingen, all of Switzerland, assignors to Aginfor AG fur industrielle Forschung, Wettingen, Switzerland

Filed Nov. 2, 1993, Ser. No. 144,410

Claims priority, application Germany, Nov. 7, 1992, 4237663

Int. Cl.[5] F04C *18/04, 27/00;* **F16J** *15/16*

U.S. Cl. 418—55.4 **2 Claims**



1. A positive-displacement device for compressible media of the type with at least one helically-shaped conveying chamber disposed in a stationary housing, and with a helically-shaped positive-displacement body associated with the conveying chamber, which body is maintained on a disk-shaped rotor eccentrically driven in relation to the housing so that during operation each point of the positive-displacement body performs a circular orbit which is limited by circumferential walls of the conveying chamber, and a curvature of the positive-displacement body is of such a dimension in relation to that of the conveying chamber, that the positive-displacement body nearly touches interior and exterior circumferential walls of the conveying chamber at respectively one seal line which continuously progresses during operation, wherein front faces of the positive-displacement body adjoining one lateral wall of the conveying chamber are provided with a groove into which a sealing strip, consisting of a resilient material which is capable of gliding, is inserted, the improvement wherein

the groove receiving the sealing strip required for sealing the conveying chamber in an axial direction, formed as parallel to the positive-displacement body in a first part and meandering with a plurality of turns relative to the positive-displacement body in a second part;

an end face of the positive displacement body being wider in a region of the meandering course of the groove than in the region of the parallel course of the groove; and

an elastic sealing strip, formed as a rectilinear, uncurved component, inserted in the groove.

5,362,218

SCROLL TYPE COMPRESSOR WITH COUNTERWEIGHT

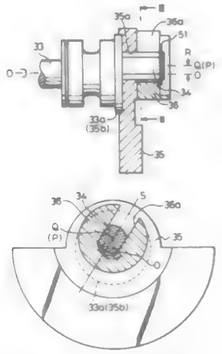
Tetsuhiko Fukanuma; Yasushi Watanabe; Kiyohiro Yamada; Izuru Shimizu; Yuji Izumi; Tetsuo Yoshida, and Tetsuya Yamaguchi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Nov. 15, 1993, Ser. No. 152,985

Claims priority, application Japan, Nov. 13, 1992, 4-303476; Nov. 19, 1992, 4-309999

Int. Cl.[5] F01C *1/04*

U.S. Cl. 418—55.5 **16 Claims**



1. A scroll type compressor comprising:

a housing;

a stationary scroll member arranged in the housing;

a movable scroll member arranged in the housing for engagement with the stationary scroll member to form a compression chamber therebetween;

means for preventing the movable scroll member from rotating about its own axis;

a drive shaft rotatably supported in the housing via a bearing, the drive shaft having a longitudinal axis and a larger diameter inner end portion, the drive shaft being rotated in a predetermined direction;

a drive bush carrying the movable scroll member via a bearing and driven by the drive shaft for causing the movable scroll member to revolve around the longitudinal axis of the drive shaft, for sucking a refrigerating gas into the compression chamber, compressing the gas in the compression chamber and discharging the compressed gas from the compression chamber during the revolution of the movable scroll member; and

a counterweight for counterbalancing the movable scroll member;

wherein a slide key extends axially from the larger diameter inner end portion of the drive shaft, the slide key having a first axis parallel to the longitudinal axis of the drive shaft and a second axis perpendicular to the first axis, the first axis of the slide key being offset from the longitudinal axis of the drive shaft, the second axis of the slide key being inclined relative to a line passing through the first axis of the slide key and the longitudinal axis of the drive shaft to the side reverse from the rotational direction of the drive shaft;

the counterweight being fit on the larger diameter inner end portion of the drive shaft so that the counterweight is immovable relative to the larger diameter inner end portion of the drive shaft and the slide key projects from the counterweight; and

the drive bush being fit on the slide key so that the drive bush is not rotatable relative to the counterweight and movable along the second axis of the slide key.

5,362,219

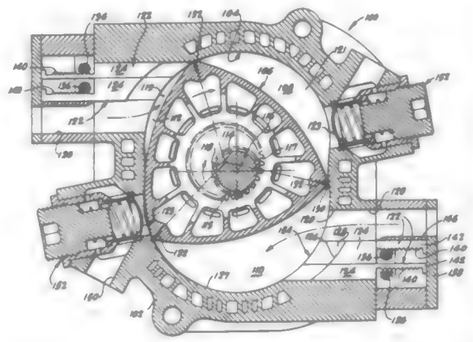
INTERNAL COMBUSTION ENGINE WITH COMPOUND AIR COMPRESSION

Marius A. Paul, and Ana Paul, both of 969 La Pax, Placentia, Calif. 92670

Continuation-in-part of Ser. No. 428,853, Oct. 30, 1989, Pat. No. 5,056,314. This application Oct. 11, 1991, Ser. No. 775,778

Int. Cl.[5] F04C *18/22, 29/08;* **F16K** *21/10*

U.S. Cl. 418—61.2 **4 Claims**



1. A rotary compressor comprising:

a housing forming an epitrochoidal chamber having a central axis with the housing having a circular external gear concentric to the central axis;

a multilobed rotor having an internal ring gear, the rotor eccentrically rotatable in the housing;

a drive shaft connected to the rotor for eccentrically rotating the rotor in the epitrochoidal chamber with the ring gear of the rotor engaging the circular gear of the housing, wherein the rotor divides the chamber into multiple subchambers for compression of gas as the rotor rotates; and,

at least one gas intake port having an opening to the chamber and at least one gas outlet port for gas discharge from the compressor, wherein the intake port has at least one slide block means for expanding the opening of the intake port to the chamber and reducing the quantity of gas compressible in the subchamber formed by the rotor and the housing;

wherein the slide block means comprises a guide slot in the housing and a slide block slidable engaged in the guide slot, the slide block having an end with a surface configuration means for conforming to the interior configuration of the housing chamber when extended and expanding the opening of the gas intake port when retracted.

5,362,220

ROTOR-TYPE OIL PUMP

Yukihisa Amano, and Ikuo Misumi, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 22, 1994, Ser. No. 199,484

Claims priority, application Japan, Feb. 22, 1993, 5-031858

Int. Cl.[5] F04C *2/10*

U.S. Cl. 418—171 **6 Claims**

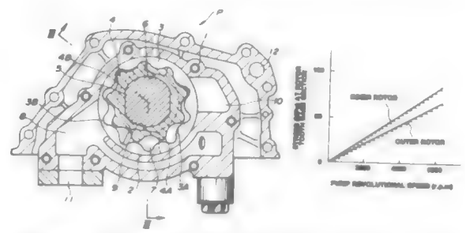
1. A rotor-type oil pump comprising:

a pump casing;

a generally annular outer rotor rotatably disposed in said pump casing and having an internal gear;

a generally annular inner rotor disposed eccentrically inside said outer rotor and having an external gear which is partly in mesh with the internal gear of said outer rotor, said inner rotor being driven to cause said outer rotor to rotate so as to accomplish a pumping action for oil; and

means by which stress at a tooth base section of the internal gear of said outer rotor is generally equal to stress at a



tooth base section of the external gear of said inner rotor in a dynamic condition of said outer and inner rotors.

5,362,221

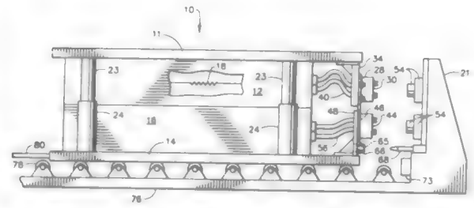
MANUFACTURING DEVICE WITH AN AUTOMATIC SELF-ALIGNING CONNECTOR FOR ATTACHMENT TO A DOCKING STATION

Dennis G. Perkins, Albuquerque, N. Mex., assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 17, 1992, Ser. No. 930,260

Int. Cl.[5] B29C *33/34*

U.S. Cl. 425—62 **5 Claims**



1. A manufacturing device for holding an unfinished workpiece and moving the workpiece to a docking station for performance of a manufacturing operation on the workpiece, said manufacturing device comprising:

a receptacle for receiving and holding the unfinished workpiece;

connector means for coupling said receptacle to at least one process input via the docking station wherein said at least one process input is at least one of electrical energy, pneumatics and hydraulics;

means for automatically aligning said connector means for automatic, self attachment to a mating connector mounted on the docking station when said receptacle is advanced toward the docking station;

a frame, said receptacle being mounted to said frame; and

means for movably attaching said connector means to said frame, said connector means being independently moveable relative to said frame and said receptacle to permit alignment with the mating connector on the docking station for interconnection of said connectors.

5,362,222

INJECTION MOLDING MACHINE HAVING A VECTOR CONTROLLED AC DRIVE SYSTEM

Harold J. Faig, Cincinnati, and Ronald M. Sparer, Madeira, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Aug. 31, 1993, Ser. No. 113,627

Int. Cl.[5] B29C *45/80*

U.S. Cl. 425—145 **12 Claims**

1. An injection molding machine for producing a molded part by injecting a molten material into mold elements forming a mold cavity defining the molded part, the machine comprising:

(a) clamp means for supporting and moving the mold elements between open and closed positions;

(b) injection means for injecting the molten material into the mold cavity, said injection means including a screw member rotatably and translatably carried in a tubular barrel having an end in communication with the mold cavity;

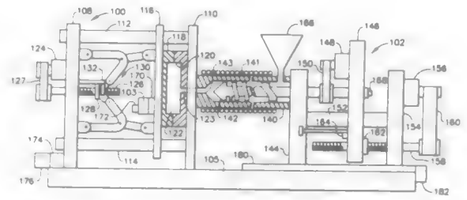
(c) first drive means mechanically coupled to the clamp means for imparting relative motion to the mold elements;

(d) second drive means mechanically coupled to the injection means for rotating the screw member;

(e) third drive means mechanically coupled to the injection means for translating the screw member within the tubular barrel;

(f) wherein at least one of the first drive means, the second drive means, and the third drive means further includes

(1) an AC induction motor having a rotor, a stator comprised of a plurality of sets of three phase windings, and means for detecting angular positions of the rotor, and



(2) vector controller means for controlling the AC induction motor in response to a motor command signal, the vector controller means being connected to the AC induction motor and including

(i) a CPU for calculating torque and flux producing components of current passing through the stator windings,

(ii) current controller means for producing pulse width modulated trigger signals based on the CPU calculations to regulate the current, and

(iii) power amplifier means for receiving the pulse width modulated trigger signals and applying a controlled current to the stator windings to produce a commutation effect thereby creating a controlled torque and speed for the AC induction motor; and

(g) machine control means connected to the vector controller means for producing the motor command signal.

5,362,223

FILTER-CHANGING SYSTEM FOR MOLTEN PLASTIC

Detlef Gneuss, Bad Oeynhausen, Germany, assignor to Gneuss Kunststofftechnik GmbH, Oeynhausen, Germany

Filed May 10, 1993, Ser. No. 60,008

Claims priority, application Germany, May 11, 1992, 4215472; Oct. 21, 1992, 4235523

Int. Cl.[5] B29C *47/68;* **B29B** *13/10*

U.S. Cl. 425—185 **9 Claims**

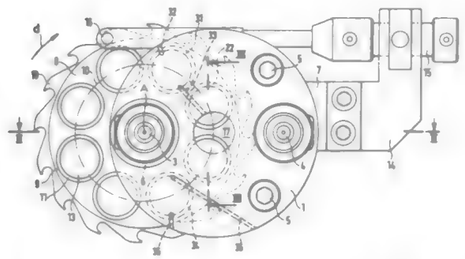
1. In combination with an extruder producing a stream of pressurized molten plastic, a filter assembly comprising:

an inlet plate formed with a Y-shaped inlet passage having a substantially circular-section upstream end adapted to receive the stream of pressurized molten plastic from the extruder, the inlet passage branching downstream of its upstream end and having a pair of downstream ends opening at substantially circular downstream ports;

an outlet plate fixed spacedly downstream of the inlet plate and formed with a Y-shaped outlet passage having a substantially circular-section downstream end, the outlet passage being branched upstream of its downstream end and having a pair of upstream ends opening at substan-

tially circular upstream ports aligned with the downstream ports;

a rotatable filter disk engaged between the plates and formed with a circularly annular array of substantially circular-section throughgoing holes each defining a respective substantially circular seat, the ports and holes being laterally spaced from each other such that in predetermined



positions of the disk the ports open into two adjacent holes;

drive means for displacing the disk between respective angularly offset positions in each of which two of the holes are aligned between the ports for flow through them from the upstream ports to the downstream ports; and

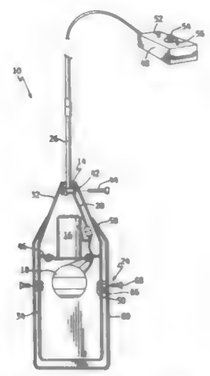
a respective substantially circular filter unit in each of the holes.

5,362,224

CHIMNEY LINING FORMER AND COMPACTOR

George A. Hasti, Eden Prairie, and Gerard D. Dykhoff, Hopkins, both of Minn., assignors to Worldwide Chimney, Inc., Eden Prairie, Minn.

Filed Nov. 1, 1993, Ser. No. 146,593
Int. Cl.[5] B05C *7/06*; B28B *7/28*
U.S. Cl. 425—457 **15 Claims**



1. A device for lining a chimney with masonry mortar comprising:

(a) a bell member having a nose portion, and a box-shaped lower portion, said nose portion having a cable opening, said bell member further having a vertical fastening means proximate to said nose portion and said cable opening, and a supporting cable secured to said vertical fastening means for raising or lowering of said bell member, said bell member further comprising a vibrator attached to said box-shaped lower portion within said bell member proximate to said nose portion, said bell member further having a power cable affixed to said vibrator passing through said cable opening for operation of said vibrator; and

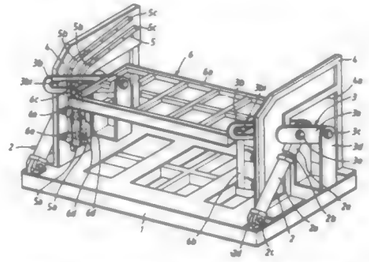
(b) a shell member having a nose engagement section having a bell engagement opening, said nose engagement section telescopically embracing said nose portion of said bell member and supporting said shell member on said bell member, said shell member further comprising a box-shaped bell engagement section having lateral fastening means for attaching said shell member to said bell member such that said supporting cable raises or lowers both of said bell member and said shell member simultaneously during the compaction of mortar and lining of a chimney.

5,362,225

SUPPORT MECHANISM FOR FORMING DIES

Minoru Kitano, Nagoya; Kenji Mitsui, Okazaki; Hozumi Tanaka, and Koji Kazama, both of Toyota, all of Japan, assignors to Kyokuto Seiki Kabushiki Kaisha, Aichi, Japan

Filed Jul. 27, 1993, Ser. No. 97,240
Claims priority, application Japan, Jul. 27, 1992, 4-199681
Int. Cl.[5] B29C *33/26*
U.S. Cl. 425—472 **4 Claims**



1. A support mechanism for supporting thereon a set of upper and lower forming dies to be opened and closed in a forming process, comprising:

a base structure for mounting thereon said lower forming die;

a pair of opposed upright side plates fixedly mounted on said base structure in parallel to one another;

a pair of guide tracks provided on respective inside faces of said upright side plates, said guide tracks each being composed of a pair of parallel guide rails;

a pair of actuators mounted on said base structure at a position adjacent said upright side plates;

a movable support frame arranged between said upright side plates and located above said lower forming die on said base structure for supporting said upper forming die thereon, said support frame having a pair of support shafts secured to opposite sides of said support frame and a pair of guide bars secured to said opposite sides of said support frame and slidably engaged with grooves formed by the respective parallel guide rails of said guide tracks; and

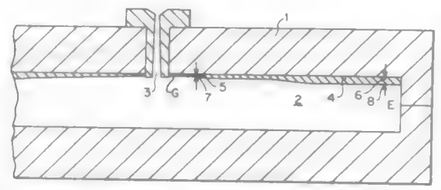
means for supporting said support shafts of said support frame and transmitting the motion of said actuators to said support shafts to move said support frame along said guide tracks under guidance of said guide bars.

5,362,226

MOLD FOR SYNTHETIC RESIN MOLDING

Hiroshi Katsuka, Tokyo, and Yuo Umei, Kanagawa, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP92/01231, § 371 Date May 28, 1993, § 102(e) Date May 28, 1993, PCT Pub. No. WO93/06980, PCT Pub. Date Apr. 15, 1993
PCT Filed Sep. 25, 1992, Ser. No. 66,013
Claims priority, application Japan, Oct. 1, 1991, 3-253522
Int. Cl.[5] B28B *7/36*; B29C *33/56, 45/26*
U.S. Cl. 425—526 **12 Claims**



1. A mold for synthetic resin molding comprising a mold body made of a metal having a heat conductivity of not less than 0.05 cal/cm·sec·°C. At room temperature, said mold having provided on the cavity wall thereof a polyimide layer, wherein said polyimide layer

has a thickness of from 0.02 to 2 mm,

has a heat conductivity of not more than 0.002 cal/cm·sec·°C.,

has a glass transition temperature of not less than 200° C.,

has been formed by coating a solution of a precursor of a linear high-molecular weight polyimide on the cavity wall followed by heating,

has an elongation at break of not less than 10%, and

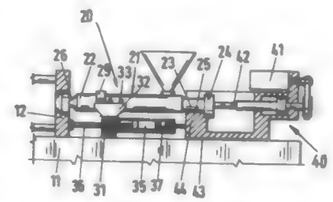
has an adhesive strength of not less than 500 g/10 mm to the cavity wall.

5,362,227

INJECTION MOLDING MACHINE

Ernst Würl, Höttingen, and Helmut Schreiner, Nürnberg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Jul. 19, 1993, Ser. No. 93,388
Claims priority, application Germany, Jul. 17, 1992, 4224195
Int. Cl.[5] B29C *45/00*
U.S. Cl. 425—574 **8 Claims**



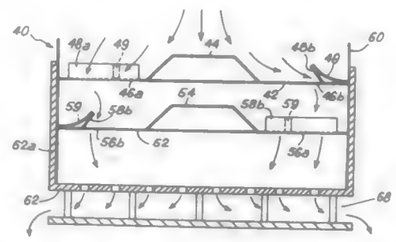
1. An injection molding machine comprising a base frame and a plasticizing unit mounted on the base frame, the plasticizing unit comprising a drive and an opening side housing part and a rear housing part, a tool clamping plate being connectable in a frictionally engaging manner to the plasticizing unit, a carriage having a front carriage portion resting on the base frame for moving the opening side housing part of the plasticizing unit toward and from the tool clamping plate, at least one moving unit fastened on the tool clamping plate for moving the carriage on the base frame, the front carriage portion having at least one recess, a yoke provided on the opening side housing part being engageable in a positively engaging manner in the at least one recess, an undercarriage being slidably mounted on the base frame, and support and centering elements for connecting the rear housing part of the plasticizing unit to the undercarriage, the support and centering elements having lengths and diameters capable of releasably connecting the rear housing part of the plasticizing unit to the undercarriage in a manner compensating various outer diameters of the plasticizing unit housing.

5,362,228

APPARATUS FOR PREHEATING A FLOW OF GAS IN AN INSTALLATION FOR CHEMICAL VAPOR INFILTRATION, AND A DENSIFICATION METHOD USING THE APPARATUS

Serge Vaudel, Teuillac, France, assignor to Societe Europeenne de Propulsion, Suresnes, France

Filed Oct. 28, 1992, Ser. No. 967,817
Claims priority, application France, Nov. 4, 1991, 91 13583
Int. Cl.[5] F27B *9/00*
U.S. Cl. 432—120 **7 Claims**



1. In an installation for chemical vapor infiltration comprising an enclosure, heating means for maintaining the temperature inside the enclosure at a desired value, and means for feeding said enclosure with reactive gas, an improvement in an apparatus for preheating the gas fed into said enclosure, comprising:

(a) a peripheral wall defining a channel for the flow of gas penetrating into the enclosure and passing through the preheating apparatus; and

(b) at least one screen fixed inside said peripheral wall and having a surface extending substantially transversely relative to said flow of gas, said screen being provided with passages for the flow of gas therethrough and with fins that project from its surface, said screen and said fins being made of a refractory sheet material and being at said desired temperature value, whereby the gas flowing through said channel and said screen is preheated by contacting said screen and said fins.

5,362,229

PIPING CONNECTION DEVICE

Kenichi Yamaga, Sagamihara, Japan, assignor to Tokyo Electron Kabushiki Kaisha and Tokyo Electron Tohoku Kabushiki Kaisha, Japan

Filed Jun. 21, 1993, Ser. No. 79,386
Claims priority, application Japan, Jun. 22, 1992, 4-187566
Int. Cl.[5] F27B *9/04*; F16L *27/04*
U.S. Cl. 432—152 **13 Claims**

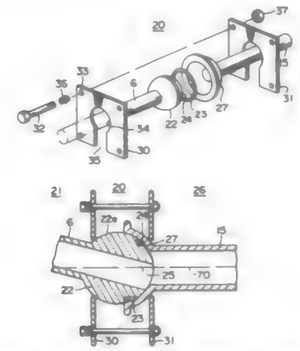
1. A piping connection arrangement for coupling a first quartz glass pipe and a second quartz glass pipe together to form a substantially hemispherical seal, said arrangement comprising:

a convex quartz glass connecting element adaptable for integrally coupling with the first pipe, said convex connecting element having a spherical convex sealing surface remote from a first coupling location where said convex element and the first pipe would integrally couple, said convex connecting element having a substantially spheri-

cal first outer engaging surface located between said convex sealing surface and said first coupling location;

a concave quartz glass connecting element adapted for integral coupling with the second pipe, said concave element having a spherical concave sealing surface which is slidable when in sealing contact with said convex sealing surface to form said hemispherical seal, said concave connecting element having a substantially spherical second outer engaging surface near a second coupling location where said concave element would integrally couple to the second pipe;

a resilient sealing ring disposed between said convex and concave sealing surfaces near an outermost portion of said hemispherical seal and;



presser means for urging said convex and said concave sealing surfaces against each other to establish said sealing contact between said sealing surfaces, said presser means comprising a first presser member locatable about the first pipe to engage said first outer engaging surface, a second presser member locatable about the second pipe to engage said second outer engaging surface, fastening means for fastening said presser members together, and resilient means interposed between at least one of said presser members and a portion of said fastening means, said fastening means and said resilient means urging said first and second presser members toward each other so as to urge said convex and concave sealing surfaces against each other.

5,362,230

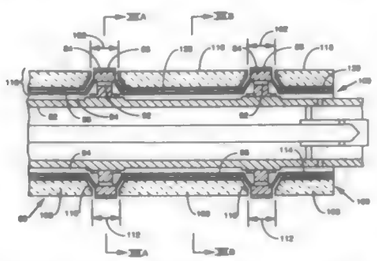
ROLLS FOR HIGH TEMPERATURE ROLLER HEARTH FURNACES

Giuseppe Facco, Pittsburgh, Pa., assignor to Italimpianti of America, Inc., Coraopolis, Pa.

Continuation-in-part of Ser. No. 36,161, Mar. 24, 1993. This application Jan. 19, 1994, Ser. No. 183,267

Int. Cl.[5] F27D *3/00*

U.S. Cl. 432—236 **20 Claims**



1. A roll for a roller hearth furnace, said roll comprising:

a) a rotary mounted main roll body;

b) a plurality of tires positioned at spaced locations along said main roll body for contacting and supporting a charge to be carried by said roll, each said tire including coolant passages therein allowing coolant to flow through said tires;

c) insulation surrounding said main roll body at positions between said tires; and

d) coolant piping means coupled to said tire coolant passages and extending between adjacent said tires for supplying coolant to said tires.

5,362,231

ARTICLE SUPPORT APPARATUS

Bryan Groom, 10 Barwood Avenue, Church Lawton, Stoke-on-Trent, Staffordshire, United Kingdom ST7 3EN

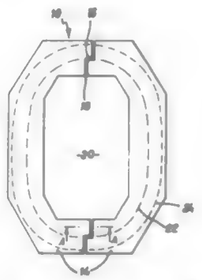
PCT No. PCT/GB91/00848, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/19149, PCT Pub. Date Dec. 12, 1991

PCT Filed May 28, 1991, Ser. No. 952,733

Claims priority, application United Kingdom, Jun. 1, 1990, 9012294

Int. Cl.[5] F27D *5/00*; **C04B** *33/32*

U.S. Cl. 432—258 **23 Claims**



1. Article support apparatus, for supporting a single article of ceramic ware during firing of the article, comprising two components each having an upper planar surface and also having a lower surface, each component having a first engagement means that is detachably engagable with a corresponding engagement means of the other component, so that when the components are engaged, their upper planar surfaces are coplanar and define a planar support surface on which the article rests during firing of the article, said planar support surface comprising a continuous band of material surrounding an open area, and wherein the dimension of the apparatus perpendicular to the coplanar upper surfaces is substantially less than the overall dimensions of the apparatus parallel to the coplanar upper surfaces.

5,362,232

ORTHODONTIC APPLIANCE MOUNTING BASE

Steven A. Franseen, Denver, and Jeffrey A. Peterson, Aurora, both of Colo., assignors to RMO, Inc., Denver, Colo.

Continuation of Ser. No. 649,594, Feb. 1, 1991, Pat. No. 5,158,452. This application Oct. 27, 1992, Ser. No. 967,200

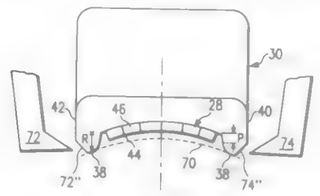
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **3 Claims**

1. An orthodontic appliance attachable to a patient's tooth and having a central, occlusally-gingivally extending axis, comprising:

a base having mesial, distal, occlusal, and gingival edges and a bottom, said mesial and distal edges each comprising a substantially planar debonding surface with each said debonding surface being inclined outwardly from said bottom relative to said central, occlusally-gingivally extending axis to define a space for positioning opposing



portions of a debonding tool under opposing portions of said base prior to exerting a debonding force on said base.

5,362,233

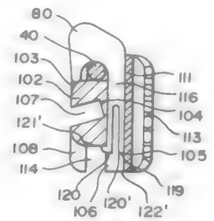
ORTHODONTIC APPLIANCE

William J. Thompson, 6610 Riverview Blvd., West, Bradenton, Fla. 34209

Filed Feb. 22, 1993, Ser. No. 20,754

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—9 **3 Claims**



1. An orthodontic bracket for use with at least one archwire comprising:

a body having a first segment including a rear face for attachment to a tooth surface or a backing plate and a second segment including a front face and an intermediate segment disposed between and spacing said first and second segments apart, said intermediate segment having a peripheral dimension less than the peripheral dimensions of said first and second segments to thereby define a pair of grooves between said first and second segments with each having an inner base surface, at least one of said base surfaces being convexly curved, said first segment having a channel therein for receiving a fastening device, said channel extending generally transversely relative to said base surface of a said groove, a retaining device for holding a wire engaged with said bracket, said retaining device having a first enlarged end and an opposite end having split legs for insertion into said channel of said bracket, said enlarged end having a recess for at least partially surrounding a wire disposed in said groove of said bracket.

5,362,234

SELF-DRILLING ENDOSTEAL HOLLOW-BASKET IMPLANT SYSTEM WITH SHOCK-ABSORBER

Alfred Salazar, 17406 S. 92 E. Ave., Bixby, Okla. 74008, and Ricardo Guerra, 4455 N. Newcastle, Hardwood Heights, Ill. 60656

Filed Sep. 21, 1993, Ser. No. 124,825

Int. Cl.[5] A61C *13/28*

U.S. Cl. 433—169 **5 Claims**

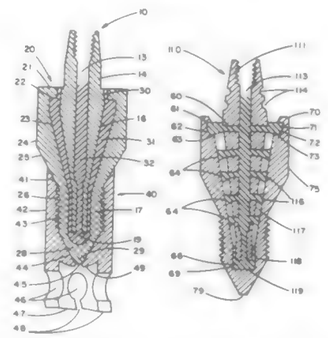
1. A self-drilling endosteal hollow-basket implant system with shock-absorber comprising:

a. an implant fixture having an internal socket for receiving a tissue extension and having collection holes defining spaces between cutting teeth for drilling, and said teeth defining a hollow basket socket at the distal end of the implant; and

b. a tissue extension, telescopically engageable into the internal socket of the implant fixture, said extension having an opening at one end which opens into a hollow interior cavity or socket for receiving a keeper; and

c. a keep member to be inserted within the extension, said keeper member being selected from the group consisting of

i. a keeper comprising a main central shaft extending throughout the length of the keeper and open at each end for receiving, collecting, and dispersing silicone rubber shock-absorbing fluid, and said keeper having an outer shape conforming to the hollow interior of the tissue extension but appreciably narrower than said



hollow interior thus permitting said shock-absorbing fluid to be collected within said shaft and to be dispersed through that portion of the tissue extension hollow interior which remains unoccupied by said keeper; and

ii. a keeper having an outer shape conforming to the hollow interior of the tissue extension except that said keeper further comprises a silicone rubber injection molded core, a network of silicone injection molded internal lateral ribs, and each rib having extended therefrom, at the outer surface of the keeper, silicone rubber injection molded suction cups which are releasably engageable from inside of the tissue extension; said keeper also comprising a seal member for closing the open end of the tissue extension upon insertion of the keeper therein.

5,362,235

ANATOMICAL RESTORATION DENTAL IMPLANT SYSTEM WITH INTERLOCKABLE ANGLED ABUTMENT ASSEMBLY

Fereidoun Daftary, 50 N. La Cienega Blvd., Beverly Hills, Calif. 90211

Continuation-in-part of Ser. No. 61,746, May 17, 1993, Pat. No. 5,297,963. This application Nov. 26, 1993, Ser. No. 157,658

Int. Cl.[5] A61C *13/12, 13/225, 8/00*

U.S. Cl. 433—172 **13 Claims**

1. An anatomical restoration dental implant system implantable in the gingival tissue and the alveolus of the jaw bone, comprising:

a. a dental implant fixture having proximal and distal end portions, the proximal end portion having means for being embedded in opened gingival tissue and the alveolus of the jaw bone, the distal end portion having an exposed end being accessible from the outer surface of the jaw bone, the fixture being made of a substance permitting healing of the opened gingival tissue and growth of the jaw bone about the fixture, the fixture further including a hollow extending along an axis of the fixture from an opening in

the distal end portion towards the proximal end portion, the hollow having threads along at least a portion of its length;

b. means for sealing the hollow of the implant fixture during a period after implantation in which the jaw bone is growing about the proximal portion of the implant fixture;

c. healing cap means for providing a predetermined oval contour to the gingival tissue adjacent the distal end of the implant fixture, such that the gingival tissue re-heals and conforms to the contour of the healing cap means;

d. a tooth analogue;

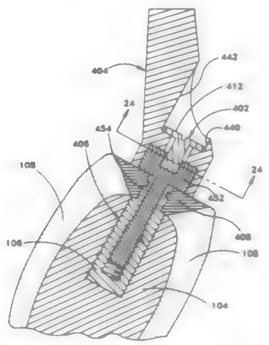
e. angled abutment means for supporting the tooth analogue along a direction offset from said axis of said fixture;

f. means for securing said tooth analogue to said angled abutment means;

g. said angled abutment means including:

(i) a screw member having a widened head segment, a shaft segment and a threaded segment;

(ii) an angled abutment member having a frusto-conical shaped divergent portion and a cylindrical shaped base portion, the divergent portion having a larger proximal end, a smaller circular distal end, and a frusto-conical shaped sidewall, the base portion having a circular proximal end and a distal end, the distal end of the base portion integrally connected to the larger proximal end of the divergent portion, the angled abutment member further having a stepped interior bore extending from



the proximal end of the base portion to the frusto-conical sidewall of the divergent portion, along an axis perpendicular to the proximal end of the base portion and offset from an axis of the divergent portion, the interior bore having a wide cylindrical distal section, a narrow cylindrical middle section, and a wide 12-side polygonal proximal section; and

(iii) a bolt member having a hexagonal head segment, an elongated narrow shaft segment and a widened threaded segment, the head segment having a top screw hole, the bolt member and said healing cap being interlockable before the threaded segment of the bolt member is fully threaded into said implant fixture;

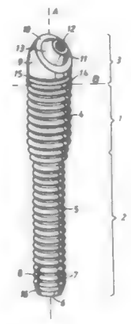
h. whereby said bolt member can be used to secure said healing cap to said implant fixture by threading said threaded segment of said bolt member into said hollow of said implant fixture, said angled abutment member can be mounted on said healing cap by engaging said head segment of said bolt member with said 12-side polygonal proximal section of said interior bore of said angled abutment member, which allows the angular orientation of said angled abutment member to be adjustable in any 30 degree interval, and said screw member can be used to secure said angled abutment member to said bolt member by threading said threaded segment of said screw member into said top screw hole of said head segment of said bolt member, where said head segment of said screw member is concealed within said wide cylindrical distal section of said interior bore of said angled abutment member.

5,362,236

METHOD FOR ATTACHING A DENTAL FIXTURE IN BONE TISSUE

Per-Ingvar Branemark, Mölndal, Sweden, assignor to Medevelop AB, Sweden

Filed Nov. 18, 1993, Ser. No. 154,183
Claims priority, application Sweden, Nov. 26, 1992, 9203563-3
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **4 Claims**



1. A method for attaching a fixture for holding a dental prosthesis or bridge to a jaw bone and a zygomatic bone, said method including steps of:

(a) making a first hole of a first diameter in the jaw bone,

(b) making a second hole of a second diameter in the zygomatic bone in axial alignment with the first hole, with the second diameter being smaller than the first diameter,

(c) inserting a fixture having first and second external threads adapted to the respective first and second diameters, said first external threads being relatively close to one end of the fixture and said second external threads being remote from said one end and said fixture having its other end disposed at a substantial distance from the first external threads,

(d) during inserting of said fixture said other end being moved axially through said first hole and then entering said second hole,

(e) simultaneous screwing-on of the fixture with the first and second external threads being in the respective first and second holes,

(f) orienting the fixture while same is being screwed-on by rotating the fixture around its longitudinal axis, thereby operatively positioning a bore that is in the fixture at said one end thereof, said bore having internal threads for mounting a dental prosthesis or a bridge on the fixture, with internal threads being in a tilt position with respect to the longitudinal axis of the fixture such as to permit anatomically correct positioning of a dental prosthesis or bridge that is mounted on said fixture, and

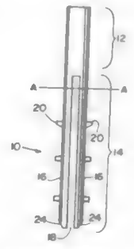
(g) mounting the dental prosthesis or the bridge on the fixture by threadably engaging said internal threads with external threads on the dental prosthesis or the bridge.

5,362,237

DENTAL POST CONSTRUCTION

Paul R. Chalifoux, Wellesley, Mass., assignor to Wellesley Research Associates, Inc., Wellesley, Mass.

Continuation-in-part of Ser. No. 908,366, Jul. 6, 1992, which is a continuation-in-part of Ser. No. 896,388, Jun. 10, 1992, which is a continuation-in-part of Ser. No. 739,670, Aug. 2, 1991, Pat. No. 5,277,583. This application Jun. 11, 1993, Ser. No. 75,329
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—220 **23 Claims**



1. A dental post for insertion into a bore of a tooth which comprises:

a top section,

a stem attached to said top section having at least one slot extending lengthwise through said stem to form a plurality of spaced apart legs, said legs being substantially parallel to each other and being free of prestress force,

at least one of said legs having a wing section extending radially from an outside surface of said legs a distance to fit within an indentation in a wall of said bore in the absence of a force on said legs,

each of said legs having a length such that said top section extends beyond a top surface of a tooth when inserted in said tooth,

and said legs being movable relative to each other when subjected to a compression force at said free ends such that said wings are removed from an indentation in said wall.

5,362,238

METHOD FOR DRIVER EDUCATION THAT MIMICS INTOXICATION

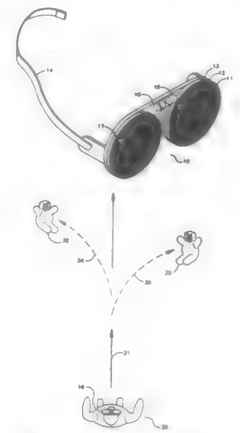
Sidney H. Slavin, 9505 Carterwood Rd., Richmond, Va. 23229

Filed Oct. 12, 1993, Ser. No. 135,052
Int. Cl.[5] G09B *19/16*
U.S. Cl. 434—65 **20 Claims**

1. A method for driver education that harmlessly mimics intoxication in the participants, comprising the steps of:

(a) having a driver education participant perform a task while visually monitoring said participant during performance of said task;

(b) positioning on the head of said participant an optics device adjusted to distort vision to simulate intoxication;



(c) having said participant, wearing said optics device, repeat said task while visually monitoring said participant's repeat performance of said task; and

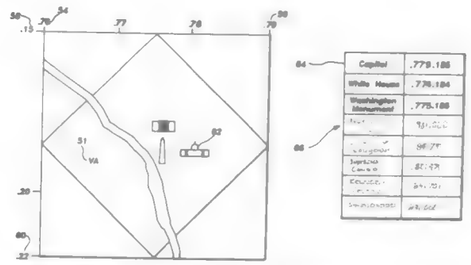
(d) comparing said performances of said participant.

5,362,239

MAPPING AND GEOGRAPHIC LOCATOR SYSTEM

Dave Pfuetze, 101 Rainbow Dr. #1958, Livingston, Tex. 77351-9300

Continuation of Ser. No. 913,621, Jul. 16, 1992, Pat. No. 5,275,568. This application Jul. 27, 1993, Ser. No. 97,431
The portion of the term of this patent subsequent to Jan. 14, 2011, has been disclaimed.
Int. Cl.[5] G09B *29/10*
U.S. Cl. 434—153 **22 Claims**



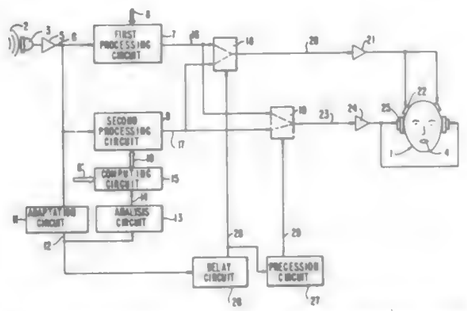
1. A map system in which points within a map for geographic orienteering are uniquely defined by a pair of coordinates and wherein each of said coordinates consists of values between zero and one and including a table listing selected locations within said map and an associated pair of coordinates between and including zero and one.

5,362,240

METHOD AND APPARATUS FOR THE TEACHING OF LANGUAGES

Dominique Cave, Paris, and Marc Bongiorno, Boisettes, both of France, assignors to Tomatis International, Paris, France

PCT No. PCT/FR92/00084, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO92/14229, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 31, 1992, Ser. No. 930,654
Claims priority, application France, Jan. 31, 1991, 91 01074
Int. Cl.[5] G09B *19/06, 19/08, 19/04*
U.S. Cl. 434—157 8 Claims



1. A method of language teaching which includes the steps of

receiving a statement by a person in a language to be learnt in order to create a first signal containing this statement;

subjecting this first signal to a first processing step in order to create a second signal which contains the first signal modified in a predetermined manner according to an envelope curve derived from selected pass bands of the language being learnt;

subjecting the first signal to a second processing step in order to create a third signal which contains the first signal modified according to the harmonic content of the statement and according to the characteristics of the language; and

selectively feeding the second or third signal to the person depending on whether the amplitude of the first signal is respectively above or below a predetermined threshold.

5,362,241

CONTACTOR FOR ELECTRIC PART

Noriyuki Matsuoka, and Toru Takahashi, both of Yokohama, Japan, assignors to Yamaichi Electronics Co., Ltd., Tokyo, Japan

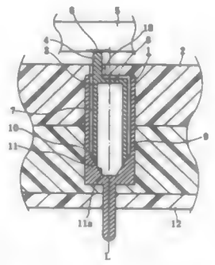
Division of Ser. No. 991,964, Dec. 17, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,262
Claims priority, application Japan, Dec. 26, 1991, 3-359648
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 18 Claims

1. A contactor for an electric part, comprising:

a movable contactor having a press contacting portion for pressure contact with a contact of an electric part and a plurality of facing pressure bearing elements extending opposite to each other and having first ends connected to said press contacting portion and opposite free ends that are resiliently movable toward and away from each other; and

a pressing portion engaging said opposite free ends and having a structure such that movement of said press contacting portion toward said pressing portion causes said facing pressure bearing elements, having said opposite free ends engaging said pressing portion, to be resiliently deformed and give a bias to said press contacting portion in a direction away from said pressing portion such that a pressure contact can be achieved between said press contacting portion and an electric part;

wherein said press contacting portion, said facing pressure bearing elements and said pressing portion are provided



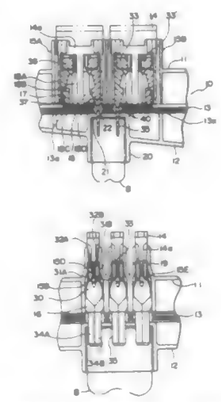
with a structural arrangement that causes said movable contactor to tilt in response to the movement of said press contacting portion toward said pressing portion by a contact of the electric part pressing said press contacting portion so that a wiping action can be generated between said press contacting portion and the contact of the electric part.

5,362,242

JUNCTION BOX AND TERMINAL TO BE USED IN THE JUNCTION BOX

Masayoshi Nakamura, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Dec. 30, 1992, Ser. No. 998,678
Claims priority, application Japan, Jan. 10, 1992, 4-000577
Int. Cl.[5] H05K *5/00*
U.S. Cl. 439—76 3 Claims



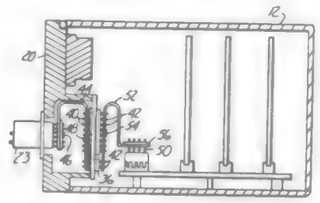
1. A junction box for connecting at least one of a fuse and relay to a connector through bus bars, said junction box comprising: a case, a plurality of bus bars including conductive members mounted on an engaging portion provided on a surface of said case, said bus bars being laminated in an accommodating portion within said case, and a junction terminal including a male tab having a contact portion formed on an end of said junction terminal for connecting to said at least one of a fuse and relay to be mounted on the engaging portion of said case, the male tab of the junction terminal projecting to a male connector engaging portion provided on an opposed surface of the case through an opening portion extending serially into said laminated bus bars, and adapted to directly connect said connector with the male connector of the male tab.

5,362,243

AIR DATA TRANSDUCER

Charles G. Huss, 1022 E. County Rd. 78, Shakopee, Minn. 55379, and Kenneth J. Freeman, 1392 Cosmos La., Eagan, Minn. 55123

Continuation of Ser. No. 938,802, Sep. 1, 1992, abandoned. This application Nov. 30, 1993, Ser. No. 158,733
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 5 Claims



1. An air data module connector and filter package comprising:

a mounting wall for a main housing packaging air data sensors, said mounting wall having an auxiliary housing defined thereon forming a cavity, and having an opening for receiving a standard electrical cable connector;

individual electrical connector means on said electrical cable connector for each of a plurality of lines;

a cover plate for removably covering the cavity of said auxiliary housing on an inner side of the mounting wall, said cover plate having a plurality of single line filter means mounted thereon, said filter means having a first single pin facing on one side of the cover plate, and a second single pin connector on an opposite side of said cover plate;

a flexible circuit board means mountable within said auxiliary housing and having first connectors having receptacles for receiving and connecting to respective electrical connector means of said standard electrical connector, and a second connector having receptacles for receiving the first pins of each of the filter means on said plate, said flexible circuit board folding and fitting within said auxiliary housing cavity when the cover plate is covering the cavity; and

a second flexible circuit board means having receptacles for receiving each of the second pins of said filter means extending from the opposite side of the cover plate from the auxiliary housing cavity, and an opposite end of said second flexible circuit board having means for receiving second electrical connectors for connection to an air sensor.

5,362,244

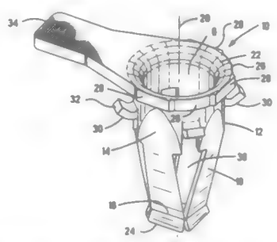
SOCKET HAVING RESILIENT LOCKING TABS

Theodore G. Hanson, Prospect, and John A. Rinaldi, Waterbury, both of Conn., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 19, 1993, Ser. No. 109,231
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—82 5 Claims

1. A socket insertable in a hole in a substrate for receiving a lead of an electronic component, the socket comprising:

a socket body defining a lead receiving axis and having a tubular body portion and a lead gripping portion, the tubular body portion defining a reception zone for receiving the lead, the lead gripping portion defining a constriction for frictionally gripping the lead, the tubular body portion being integrally circumferentially continuous and having angularly spaced apart segments which are bent outwardly to define retention barbs engageable with a



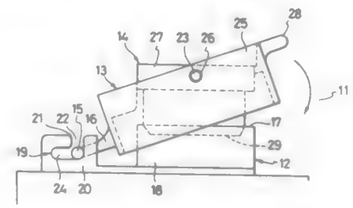
wall of the hole in the substrate to retain the socket in the substrate.

5,362,245

FRAME-COUPLING-TYPE ELECTRICAL CONNECTOR

Masahiro Suguro; Yoshinori Ohumura, and Minoru Imamura, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan

Filed Oct. 13, 1993, Ser. No. 134,667
Claims priority, application Japan, Oct. 14, 1992, 4-275846
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—160 5 Claims



1. A frame-coupling-type electrical connector, comprising:

a) a first electrical connector having electrical contacts;

b) a second electrical connector having electrical contacts, to be engaged with said first electrical connector;

c) a frame pivotably supported at a central portion thereof by said first electrical connector: and

d) a coupling mechanism including a frame-side engaging portion provided at one end of said frame and a connector-side engaging portion provided at one side of said second electrical connector, said frame-side engaging portion and said connector-side engaging portion being pivotably and slidably engaged with each other;

wherein said connector-side engaging portion is a slide groove extending in a first direction crossing a coupling direction of said first and second electrical connectors, and said frame-side engaging portion is a shaft to be engaged in said slide groove, and whereby said first electrical connector is to be engaged with said second electrical connector in a straight line by a lever of said frame and by said coupling mechanism.

5,362,246

CONVERTIBLE FLUORESCENT ADAPTOR WITH COMPACTED INSTALLATION MODE

Kenneth Lau, 2588-D El Camino Real #383, Carlsbad, Calif. 92008

Filed May 12, 1993, Ser. No. 61,599
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—231 15 Claims

1. An adaptor for adapting a fluorescent tube structurally and electrically to an incandescent light socket, comprising:

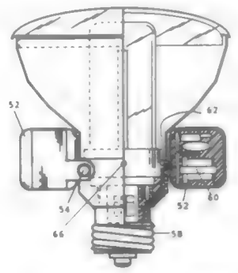
(a) an adaptor body member;

(b) an adaptor base member non-releasibly mounted to said

body member and defining a base connector defining a coaxial longitudinal axis and being adapted to insert into an incandescent light socket;

(c) a ballast housed in at least one of said members, and one of said members defining a tube socket for a fluorescent tube and including circuitry operatively and non-separably interconnecting said ballast, tube mounting and base connector;

(d) one of said members comprising a stationary component, and one of said members defining a movable component movably and non-releasibly mounted to said stationary component; and,



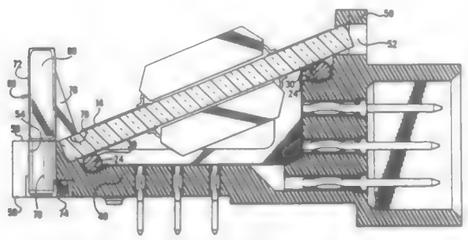
(e) said movable component being movable relative to said stationary component between an operating mode in an operating mode orientation defining a first planform dimension in at least one projected plane, and an installation mode defining a second planform dimension in said projected plane, with said second planform dimension being less than said first planform dimension to facilitate installation of a bulb socket defined in a confined space by permitting re-orientation of said members relative to one another for a minimal installation profile while said members remain continuously integral both electrically and structurally before, during and after installation.

5,362,247

ROTARY BOARD RETAINER SYSTEM FOR ACTIVE ELECTRICAL CONNECTOR ASSEMBLY

Charles J. Rodriguez, Clearwater, Fla., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 21, 1993, Ser. No. 141,154
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—330 9 Claims



1. In a connector assembly which electrically interconnects a first plurality of conductors on a first surface of a dielectric substrate (**14**) with respective ones of a second plurality of conductors on a surface of a dielectric housing (**48**) and which includes

at least one resilient contact element (**30**) including an elongated cylindrical elastomeric body member and a flexible film wrapped around said body member, said film having a third plurality of parallel straight line conductors on the surface of said film facing away said body member so that said third plurality of conductors extends around said body member, there being at least as many of said third plurality of conductors as there are of each of said first and second pluralities of conductors, and

said dielectric housing having elongated open channels (**24**) on its surface associated with said at least one contact element and supporting a respective said contact element therein, said second plurality of conductors on said housing surface extending to end portions within said channel;

an arrangement for securing said substrate to said housing, comprising:

substrate receiving means (**50**) secured to said housing for receiving one end of said substrate, said receiving means being arranged to allow pivoting movement of said substrate about an axis substantially parallel to the direction of elongation of said open channel; and

at lease one retaining means (**68**) mounted to said housing on a side of said channel away from said receiving means for holding the opposed end of said substrate, the housing having a cavity (**54**) associated with each said retaining means, each said cavity being open to said housing surface on the side of said channel away from said receiving means, each retaining means including a post portion (**70**) extending into said cavity so as to allow rotation each said retaining means between first and second positions about an axis substantially orthogonal to the direction of elongation of said channel, each said retaining means further including a head portion (**72**) secured to said post portion and rotatable with said post portion to allow said substrate to be received into said receiving means and pivoted past said head portion, said head portion being thereafter rotatable with said post portion so as to overlie the opposed end of said substrate;

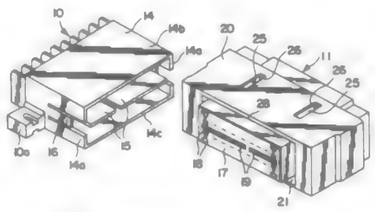
said receiving means and said retaining means being so configured that when said substrate is received by said receiving means and thereafter held by said retaining means, each said contact element is deformably compressed by said substrate within said channels.

5,362,248

CONNECTOR CAPABLE OF AUTOMATICALLY AND RELIABLY INHIBITING DISENGAGEMENT OF MEHANICAL COUPLING BETWEEN CONNECTION MEMBERS

Osamu Hashiguchi, and Minoru Shinmyo, both of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Ltd., Japan

Filed Jan. 29, 1993, Ser. No. 11,295
Claims priority, application Japan, Feb. 3, 1992, 4-3461[U]; Jun. 24, 1992, 4-43852[U]
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 8 Claims



1. A connector comprising a first connection member, a second connection member adapted to make a predetermined connection with said first connection member responsive to motion in a predetermined direction, and mechanical coupling means for mechanically coupling said first connection member with said second connection member in said predetermined direction, said first connection member having a principal surface which is extended in said predetermined direction, wherein said mechanical coupling means comprises:

a first engaging portion connected to said principal surface of the first connection member;

a flexible arm integrally formed of the same material and extending from a side wall of said second connection member and extending in parallel to said principal surface in said predetermined direction when said first connection member is connected to said second connection member, said flexible arm being flexible in a particular plane perpendicular to said principal surface;

a second engaging portion connected to said flexible arm for being brought into engagement with said first engaging portion when said predetermined connection is obtained, said second engaging portion being disengaged from said first engaging portion with said flexible arm bent in said particular plane; a movable member coupled to said first connection member and movable between a first and a second position in said predetermined direction, said movable member allowing said bending of the flexible arm when said movable member is located at said first position, said movable member preventing said bending of the flexible arm when said movable member is located at said second position;

urging means connected to said first connection member and said movable member for urging said movable member towards said second position; and

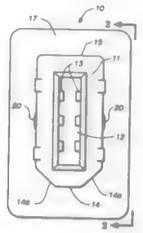
disengagement inhibiting means coupled to said first and said second connection members for detecting whether or not said second engaging portion is engaged with said first engaging portion, said disengagement inhibiting means automatically preventing said flexible arm from bending in said particular plane when said second engaging portion is engaged with said first engaging portion and said disengagement means surrounds said second engaging portion.

5,362,249

SHIELDED ELECTRICAL CONNECTORS

Andrew L. Carter, Saratoga, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 4, 1993, Ser. No. 58,522
Int. Cl.[5] H01R *13/53*
U.S. Cl. 439—357 11 Claims



1. An electrical connector system comprising:

a socket having a front end, at least one first contact and a shell with at least one first detent means;

a plug having a front end, at least one second contact and a shell with at least one second detent means said plug being insertable into said socket to establish an electrical connection between said first and second contacts when said plug and socket are in a locked position;

said first and second detent means being engaged with each other when said plug is in said locked position so as to releasably retain said plug in said locked position; and

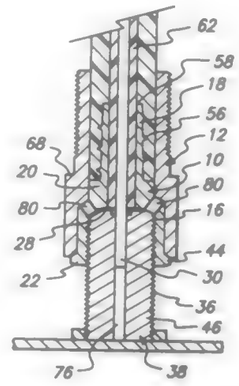
either said first or second detent means having an electrically conductive forward pointing sharp front-end part located near said front end of said socket or said plug and in front of said first or second contacts to attract electrostatic discharge.

5,362,250

COAXIAL CABLE CONNECTION METHOD AND DEVICE USING OXIDE INHIBITING SEALANT

Corey McMills, Los Altos, and John Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 25, 1992, Ser. No. 981,974
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—387 18 Claims



1. A coupling device useful in the connection of a coaxial cable terminus to a standard coaxial cable connection jack, wherein the connection jack comprises (1) a body with a connection jack aperture and (2) an internal electrical conductor disposed within, but insulated from, the body proximate to the connection jack aperture, the device comprising:

a. an electrically conductive connection jack attachment moiety comprising a connection jack attachment moiety and a cable attachment moiety,

the connection jack attachment moiety defining a collet structure having a base, a base aperture, at least one sealant aperture and a plurality of flared fingers separated from one another by a narrow slit, and

the cable attachment moiety having an open ended hollow cylinder which communicates with the collet base aperture,

wherein the connection jack attachment moiety is dimensioned to attach snugly around the body of the connection jack and the cable attachment moiety is dimensioned to attach to the coaxial cable terminus in such a way that, when the connection jack connector is attached to the cable terminus, the cable attachment moiety can be placed in electrical contact with the concentric conductor with the central conductor protruding axially through the collet base aperture, through the connection jack aperture, and into electrical contact with the internal electrical conductor;

b. a hollow, open-ended swagging shell disposed around the connection jack attachment moiety and comprising a compression moiety and a retraction moiety, the compression moiety being dimensioned to tightly surround the flared fingers of the connection jack connector so as to apply hoop stress thereto and so as to urge the flared fingers into tight connection with the body of a connection jack attached to the terminus of the cable;

c. a quantity of oxide abrasive sealant disposed within the collet structure, the quantity of sealant being sufficient to fill at least about 40 percent of the volume defined by the collet structure; and

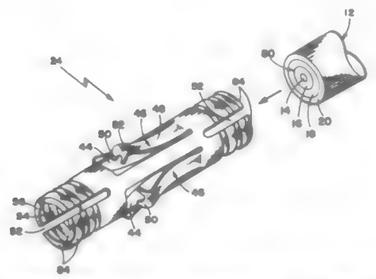
d. removable cover means for cooperating with the collet structure to substantially encapsulate the quantity of sealant.

5,362,251

SOLDERLESS COAXIAL CONNECTOR PLUG

Kenneth J. Bielak, Chicago, Ill., assignor to Switchcraft Inc., Chicago, Ill.

Continuation of Ser. No. 15,113, Feb. 9, 1993, abandoned. This application Nov. 24, 1993, Ser. No. 158,085
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—394 18 Claims



1. A method of attaching a connector plug to an end of a coaxial cable having an outer insulation layer surrounding an outer conductor insulated from an inner conductor, comprising the steps of:

inserting the end of the coaxial cable through a central bore of a conductive handle;

inserting the end of the coaxial cable into a conductive sheath having a plurality of circumferentially spaced flexible fingers flared outwardly and pointing in the direction of the end of the cable, each of said fingers having a free end directed inwardly towards said cable;

forcing said conductive sheath into said bore of said handle to cause a surface portion of said bore to contact said conductive sheath to force said finger inwardly wherein said free end pierces said outer insulation layer of said cable and contacts said outer conductor to provide electrical continuity between said outer conductor and said handle through said free end of said, said sheath further comprising a cylinder having a plurality of windows each aligned to pass a respective one of said free ends of said fingers as said fingers are forced inwardly; and

connecting a conductive plug body insulatingly encasing a tip rod to said handle, said tip rod having a tip end and a point end, said point end being aligned to electrically contact the center conductor of said coaxial cable to provide electrical continuity between said center conductor and said tip end of said tip rod.

5,362,252

MICROPHONE CONNECTOR

Jia S. Lin, Tainan, Taiwan, Prov. of China, assignor to New Tide Enterprises Co., Ltd., Tainan, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 047,953, Apr. 19, 1993. This application Nov. 12, 1993, Ser. No. 151,230
The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.
Int. Cl.[5] H01R *13/59*
U.S. Cl. 439—462 6 Claims

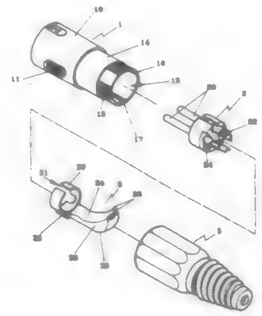
1. A microphone connector comprising:

a connector member shaped cylindrically, having at least a proximal hand holding portion, an intermediate smooth portion, a distal male-threaded portion to engage a female-threaded portion of a connector housing, and an axially extending through hole for depositing a terminal carrier and a cable pincher therein:

a terminal carrier shaped cylindrically to fit in the through hole of said connector member, having a number of terminal holes for terminals to pass through, said terminals having one end soldered with wires of a cable;

a connector housing having a female-threaded portion to engage the male-threaded portion of the connector member and a discrete compact ring on an inner surface of the connector housing;

a cable pincher having a slot for depositing a cable of various sizes through the slot, a pinching block extending lengthwise from the wall and having a recessed and curved surface and two pinching points on an outer end thereof, and upper and bottom surfaces gradually curving up to the outer end; and



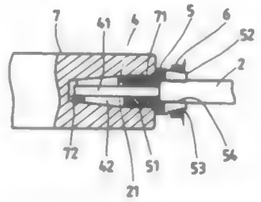
said compact ring in said connector housing compressing the upper surface of said cable pincher after the connector housing is combined with the connector member, said pinching points of the cable pincher then sticking in the surface of said cable and said cable being forced to bend up a little acording to the curvature of said pinching block of the cable pincher so that the cable pincher may sufficiently pinch the cable immovable and inseparable.

5,362,253

DISTRIBUTION CABLE MOUNTING DEVICE

Kuang-Ts'an Lin, and Shih-Tzung Liang, both of No. 360, Sec. 1, Min-Sheng N. Rd., Kuei-Shan Hsiang, Taoyuan County, Taiwan, Prov. of China

Filed Jan. 3, 1994, Ser. No. 176,251
Int. Cl.[5] H01R *9/24*
U.S. Cl. 439—462 1 Claim



1. A distribution cable mounting device comprising:

a junction block mounted inside an electrical box and having a tapered junction hole made gradually smaller from an orifice thereof toward the inside and an inner thread on said junction hole;

a hollow, tapered plug fitted into said tapered junction hole to secure the conductor of a cable permitting the cable to be electrically connected to said junction block, said tapered plug having a longitudinal through hole through the length thereof, and a plurality of equally spaced, longitudinal slits respectively extending from either end thereof;

a hollow screw member having a hollow screw rod at one end threaded into said inner thread on said junction hole and stopped against said tapered plug, and a hollow, split, tapered cone at an opposite end, said tapered cone of said hollow screw member having an outer thread over an outside wall thereof and a plurality of raised serrations around an inside wall thereof; and

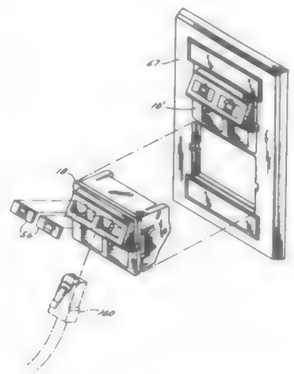
a nut threaded onto the outer thread of said tapered cone of said hollow screw member causing said raised serrations of said tapered cone of said hollow screw member to engage into insulation of the cable to secure the cable.

5,362,254

ELECTRICALLY BALANCED CONNECTOR ASSEMBLY

John Siemon, Woodbury, and Randy Below, Cheshire, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Division of Ser. No. 993,480, Dec. 18, 1992, Pat. No. 5,295,869.
This application Sep. 14, 1993, Ser. No. 121,167
Int. Cl.[5] H01R *13/66, 13/74*
U.S. Cl. 439—536 31 Claims



1. A panel yoke comprising:

plate means having front and back opposing surfaces, a portion of said front surface being angled outwardly from the remainder of said front surface to define an aperture therebetween:

securing means for snaplockedly securing said panel yoke to a panel, said securing means depending from said plate means;

first connector means disposed within said panel yoke and aligned with said aperture for providing a gravity feed thereto, said first connector means being accessible at said front surface of said plate means;

second connector means disposed on said panel yoke and being accessible at said back surface of said plate means; and

a circuit board having said first and second connector means mounted thereto with circuitry on said circuit board interconnecting said first and second connector means.

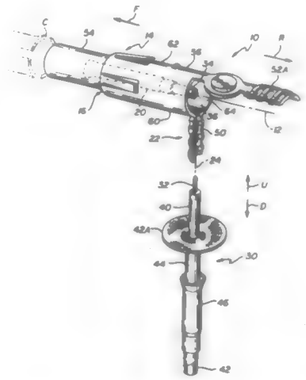
5,362,255

COAXIAL CONNECTOR

John W. Anhalt, Orange, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Sep. 14, 1993, Ser. No. 120,494
Int. Cl.[5] H01R *17/04*
U.S. Cl. 439—582 10 Claims

1. A coaxial connector for termination to a coaxial cable that has an inner conductor surrounded by an inner insulator which is surrounded by a braiding which is surrounded by a jacket, wherein the connector includes a shell which can be changed between an initial configuration prior to termination to the coaxial cable and a final configuration during such termination, said shell having a tubular first portion with upper and lower sides that extends along a mate axis and a second portion which, in its final configuration extends along a termination axis that is substantially perpendicular to said mate axis, said first portion having forward and rearward ends with said rearward end being open in said initial configuration and closed in said final configuration and said second portion including first and second termination parts extending respectively from the lower and upper sides of said rearward end with said first termination part extending substantially parallel to said termination axis and said second termination part extending, in said initial configuration, at an angle of at least about 90° from said first termination part and being bendable to



said final configuration to close the rear of said tubular first portion, wherein at least said first termination part forms part of a substantially tubular ferrule for receiving a cable inner insulation and for being surrounded by the cable braiding in said final configuration, characterized by:

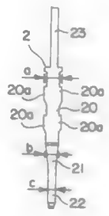
a tubular sleeve which can slide along the cable jacket and which has an inside of a diameter to closely surround the braiding, and which can be crimped to lock the cable braiding between itself and said ferrule.

5,362,256

CONNECTOR

Osamu Hashiguchi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 18, 1992, Ser. No. 993,084
Claims priority, application Japan, Dec. 24, 1991, 3-106249[U]
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—660 2 Claims



1. An electrical connector for use together with a mating electrical connector having a plurality of mating contacts, said electrical connector comprising an insulator (3) and a plurality of leaf contacts (2) assembled to said insulator,

each of said leaf contacts (2) comprising:

a fixed portion (20) having a first width (a) which is fixed in said insulator (3);

a contact portion (22) having a second width (c) which is smaller than said first width (a) for making contact with a corresponding one of said mating contacts when said

electrical connector is connected to said mating electrical connector, said contact portion (22) being offset from a surface of said fixed portion (20) in an offset direction; and

a spring portion (21) having a width (b) which is not larger than said first width (a) and connecting with an end of said fixed portion (20) and an end of said contact portion (22) and being formed integral therewith, said spring portion (21) urging said contact portion (22) to engage said mating contact to insure a contact condition between said contact portion (22) and said mating contact,

said insulator (3) comprising:

a plurality of holding holes (31), each of said holding holes being formed to extend into said insulator (3) with a width corresponding to said first width (a) so that each of said holding holes (31) fixedly holds said fixed portion (20) of each of said leaf contacts and enables said spring portion (21) of each of said leaf contacts (2) to pass therethrough; and

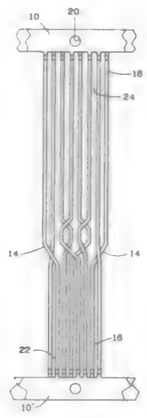
a plurality of passages (30) formed in said insulator to extend in parallel with said holding holes (31), respectively, said passages being contiguous to, and along, respective ones of said holding holes (31), each of said passages (30) having a width which is smaller than said first width (a) but slightly larger than said second width (c) so that said contact portion (22) passes through a corresponding one of said passages (30) when each of said contacts is assembled into said insulator (3) in order to force said fixed portion (20) into the corresponding one of said holding holes (31).

5,362,257

COMMUNICATIONS CONNECTOR TERMINAL ARRAYS HAVING NOISE CANCELLING CAPABILITIES

Donald R. Neal, Jupiter, Fla.; Carl G. Reed, Clemmons, N.C.; Clifford F. Lincoln, Atlanta, Ga., and Julian J. Ferry, Kernersville, N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Jul. 8, 1993, Ser. No. 88,934
Int. Cl.[5] H01R *23/02*
U.S. Cl. 439—676 **9 Claims**



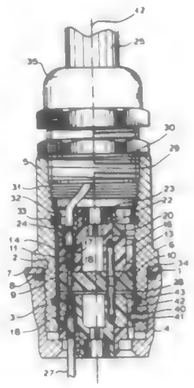
1. Electrical connector terminal arrays consisting of a plurality of metal conductors specifically configured to enhance high frequency transmission performance through reduction of inductive and capacitive coupling and voltage imbalance between selected conductor pairs, said conductors arranged essentially in a parallel fashion where the respective one ends thereof are spaced apart a first uniform distance, and the other respective ends thereof are spaced apart a second uniform distance greater than said first distance, characterized by a central portion for said metal conductors, where said central portion is encapsulated in a plastic material, having a specified dielectric constant, to maintain the relative position of said metal conductors, said relative position being a non-contact overlapping relationship with the respective conductors of each outer pair in single crossover of each other, and the respective conductors of the center pair initially crossing and then continuing outward to cross the adjacent conductors twice, whereby said terminal arrays offer reduced crosstalk loss between adjacent signal paths when used in electrical connectors.

5,362,258

CABLE-ATTACHING DEVICE FOR A PUMP

Kurt-Werner Arnswald, Lohmar, and Manfred Zelder, St. Augustl, both of Germany, assignors to Wilo GmbH, Dortmund, Germany

Filed Aug. 30, 1993, Ser. No. 114,317
Claims priority, application Germany, Sep. 9, 1992, 4230138
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—695 **8 Claims**



1. A flame-proof nonwicking device for connecting a multilead electric cable to a pump motor having a housing, said device comprising:

a tubular connecting casing receivable in an aperture of said housing and secured thereto;

means forming a water-tight transverse wall in said casing;

a plurality of conductive pins cast in place in said wall and projecting axis-parallel on opposite sides of said wall;

respective bushes connected to leads of said cable and fitted over said conductive pins at an outer side of said wall in said casing; and

respective bushes connected to leads of said motor and fitted over said conductive pins at an inner side of said wall in said casing, said casing and said housing being interconnected by screwthreads whereby said casing in threaded into said housing, the bushes on each side of said transverse wall being received in a respective two-part bearing member forming a guide channel for the respective bush said bearing member lying in said casing to a respective side of said transverse wall.

5,362,259

GROUND CONDUCTOR TERMINAL

Roman Bolliger, Allschwil, Switzerland, assignor to Woertz AG, Muttenz, Switzerland

Filed Feb. 11, 1993, Ser. No. 16,257
Claims priority, application Switzerland, Feb. 18, 1992, 479/92-0
Int. Cl.[5] H01R *9/26*
U.S. Cl. 439—716 **3 Claims**

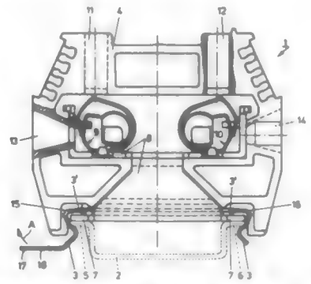
1. A ground conductor terminal which can be removably

mounted by snap-lock connection onto a mounting rail designed as a protective bus bar and having oppositely directed side flanges, said ground conductor terminal comprising;

a terminal body made of a non-conducting material and defining a planar portion and a bottom flange which extends transversely to said planar portion,

terminals which are integrated in said terminal body,

an electrically-conducting plate which is in electrical contact with said terminals and which is connectable with said mounting rail, said electrically-conducting plate defining a planar middle portion which extends in parallel with said planar portion of said terminal body and a bottom flange which extends transversely to said planar middle portion and which, when said planar portion of said terminal body and said planar middle portion of said electrically-conducting plate are vertically oriented, extends beneath said bottom flange of said terminal body, said bottom flange of said electrically-conducting plate defining it upwardly-extending spaced-apart elevations which extends towards said bottom flange of said terminal body, and



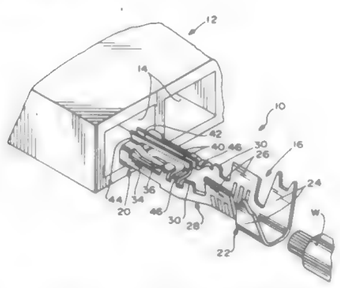
spring means for pressing said bottom flange of said electrically-conducting plate against the mounting rail, said spring means comprising a substantially U-shaped clamp-like bow having a connecting leg which extends horizontally above the bottom flange of the electrically-conducting plate and in contact with and extending steel between said upwardly-extending, spaced-apart elevations, and flexible, downwardly-extending legs which are bent slightly inwardly in order to extend around said oppositely-directed side flanges of the mounting rail, said elevations supporting the clamping action of said spring means.

5,362,260

ELECTRICAL CONNECTOR WITH IMPROVED TERMINAL LATCHING SYSTEM

Kirk B. Peloza, Naperville, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Aug. 3, 1993, Ser. No. 111,822
Int. Cl.[5] H01R *13/432*
U.S. Cl. 439—746 **9 Claims**



1. In an electrical connector which includes a dielectric housing having a plurality of terminal-receiving cavities,

a plurality of female terminals adapted to be inserted into the cavities, each terminal having a longitudinal axis and a mating portion adapted to mate with a male terminal inserted into the cavity, and

latching means to hold the terminals in the terminal-receiving cavities in the housing,

wherein the improvement in said latching means comprises:

at least one latch arm extending generally parallel to the longitudinal axis of each terminal, the latch arm adapted to be biased in generally one direction having opposite ends attached to the mating portion of the female terminal by flexible tabs located in a plane generally perpendicular to said one direction; and

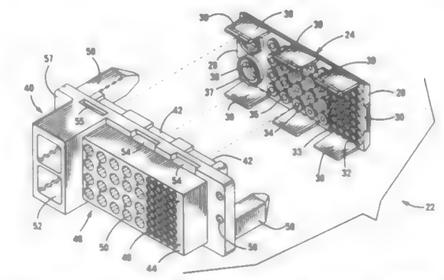
each of said terminal-receiving cavities having a restricted cross-sectional area adapted to engage and bias the latch arm of a respective terminal transverse to the longitudinal axis of the terminal in said one direction during insertion of the terminal into the cavity, and a shoulder adjacent the restricted cross-sectional area behind which one end of the latch arm snaps when the terminal is fully inserted into the cavity to prevent removal of the terminal from the cavity.

5,362,261

HYBRID CONNECTOR

Dean A. Puerner, Maracopa, Ariz., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 30, 1993, Ser. No. 86,077
Int. Cl.[5] H01R *13/506*
U.S. Cl. 439—752 **14 Claims**



1. A forward housing member for an electrical connector of the type having an array of contacts disposed within a dielectric housing assembly, with the contacts having body sections within respective passageways of a discrete rearward housing member, and with the contacts having forward contact sections adapted for male-female type axial mating upon mating of the connector with a complementary connector, the forward housing member comprising:

an integral member molded of dielectric plastic material having a generally plate-like body section with a short axial dimension between a forward face and a rearward face and an array of forward contact receiving passageways extending therethrough from said forward face to said rearward face, each said forward passageway having an annular flange extending rearwardly from said rearward face, said forward passageways being generally aligned with corresponding ones of the passageways of the rearward housing member upon full connector assembly, each said forward passageway being adapted to facilitate the mating of an associated pair of male-female contacts and having a selected transverse dimension only incrementally larger than the outer cross-sectional dimension of a male forward contact section of a corresponding male one of said pair of contacts matable thereat, and having a selected precise location associated with said corresponding male contact;

whereby said male contact section of said male one of said associated pair of contacts extends through a respective one of said annular flanges of said forward passageways in a close fit at least at a particular axial location therealong to mate with said female one of said associated pair of contacts, and said forward housing member defines a mating face of the resultant connector assembly wherein only the forward housing member need be precisely molded for precise positioning of said male contact sections of said male ones of said associated pairs of contacts for electrical connection with socket contact sections of said female contacts at precisely located contact positions across the mating face, whether said forward housing member is assembled to a rearward housing member containing the female contacts or to a rearward housing member containing the male contacts.

5,362,262

VIBRATION PROOF ELECTRICAL RECEPTACLE

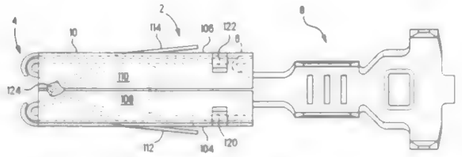
Gheorghe Hotea, Griesheim, Germany, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 10, 1993, Ser. No. 150,670

Claims priority, application United Kingdom, Dec. 11, 1992, 9225885.4

Int. Cl.[5] H01R *13/15*

U.S. Cl. 439—839 **8 Claims**



1. An electrical receptacle contact, comprising:
a body portion having a conductor connecting section extending from one end thereof;
an upper box section longitudinally movably connected to said body portion; and
resilient contact arms reversely bent into said upper box section, having a length no longer than a length of said upper box section, thereby forming a receptacle section.

5,362,263

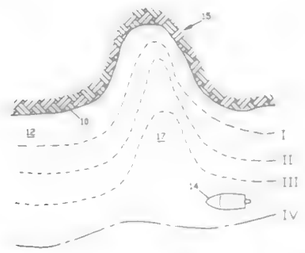
TROLLING AUTOPILOT

Ralph E. Petty, 1625 McDonald, NW., Grand Rapids, Mich. 49504

Filed Mar. 26, 1992, Ser. No. 858,097

Int. Cl.[5] B63H *25/04*

U.S. Cl. 440—1 **16 Claims**



1. A method of automatically controlling a vessel in response to water characteristics, comprising:
selecting a value indicative of a water characteristic to be followed and storing said value in a memory device;
receiving a signal from a sensor measuring the water characteristic to be followed;
comparing the received signal to the stored values indicative of said water characteristic and generating an output in response to a difference between said received signal and said stored value;
actuating at least one servo motor coupled to a means for controlling the vessel in response to said difference between said received signal and said stored value; and
wherein the step of selecting and storing includes selecting a value indicative of water temperature range to be followed.

5,362,264

WATER-BICYCLE

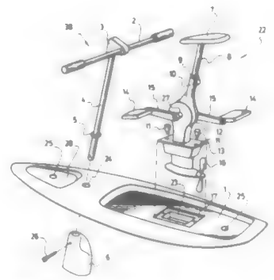
Pierre-Louis Parant, 2573 Lalonde, Ste-Foy, G1W-1M8, Canada

Filed Oct. 1, 1993, Ser. No. 130,382

Claims priority, application Canada, Sep. 10, 1992, 2087736-7

Int. Cl.[5] B63H *16/20*

U.S. Cl. 440—29 **6 Claims**



1. A water bicycle comprising:
an elongated flotation board having a bow and a stern;
a propulsion and seat unit including a mounting flange, a seat, foot pedals, means mounting the foot pedals for use by a person sitting on said seat, propeller means and coupling means connecting said pedals to said propeller means;
means defining an opening in said board through which said propeller means may pass and a surrounding edge surface able to receive said flange;
means for releasably connecting said flange to said edge surface;
means defining a bore in said board with a bushing seat surrounding an upper end of said bore;
a handlebar unit including a shaft and a bushing provided on said shaft above a lower end of said shaft, said bushing engaging said bushing seat and said shaft being supported and rotatable in said bore; and
a rudder unit including means for operatively connecting a rudder to said shaft, whereby a weight of said propulsion and seat unit is supported by said edge surface, and a space on said board between said handlebar unit and said propulsion and seat unit is free for climbing up on when mounting said board in deep water.

5,362,265

MARINE ENGINE FLUSHING APPARATUS AND METHOD

Mark Gervais, 62 Binswood Avenue, Toronto, Ontario, Canada

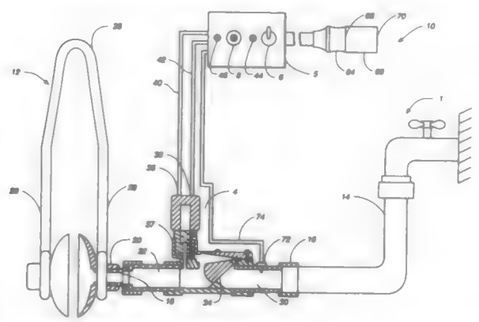
Filed May 12, 1993, Ser. No. 60,806

Int. Cl.[5] B63H *21/10*

U.S. Cl. 440—88 **12 Claims**

1. A flushing apparatus for a marine engine having at least one cooling inlet port, comprising:
conduit means formed at one end for coupling to a fluid supply and formed at another end for coupling to said marine engine to supply fluid to an inlet port of said marine engine;

a valve assembly mounted to said conduit means between the ends for controlling the flow of fluid from said fluid supply to said inlet port, said valve assembly being responsive to an electrical start signal to open said valve assembly for the flow of fluid in said conduit means from said fluid supply to said inlet port; and
a switch assembly electrically coupled to said valve assembly and formed for electrical coupling to said marine engine, said switch assembly being responsive to user input to provide said start signal to said valve assembly to cause said valve assembly to allow fluid to flow from said fluid supply to said marine engine and to provide an engine signal to said marine engine to cause at least one of enabling said marine engine to start and starting of said marine engine.



5,362,266

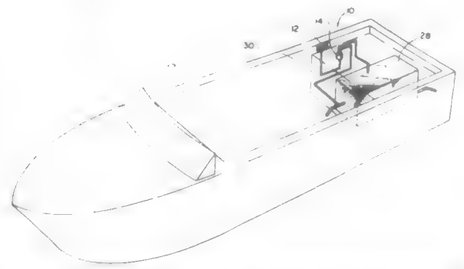
FLUSHMASTER FRESH WATER FLUSHING SYSTEM

Doug Brogdon, P.O. Box 18229, Panama City Beach, Fla. 32417

Filed Jun. 23, 1993, Ser. No. 79,877

Int. Cl.[5] F02B *77/00*

U.S. Cl. 440—88 **13 Claims**



1. A fresh water flushing system for a marine engine in a boat for use whether the boat is in or out of the water comprising in combination:
A control panel mounted interiorly on the boat for housing a fresh water supply connector and a gate valve for regulating the flow of fresh water therethrough;
A fresh water flush valve having a fresh water inlet port for receiving the flow of fresh water and a plurality of axial outlet ports for discharging the flow of fresh water, each axial outlet port being sized for proportional flow of fresh water therethrough;
A first fresh water conduit therebetween adapted for urging fluid communication between the control panel and the fresh water flush valve;
A plurality of tubular interconnection fittings, each interconnection fitting having a "T" shape for urging proportional fluid communication between the fresh water flush valve and a raw sea water cooling conduit of the marine engine; and
A plurality of hoses for urging fluid communication between each axial outlet port and each tubular interconnection fitting.

5,362,267

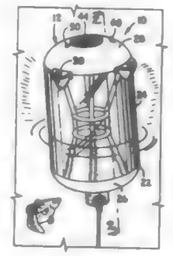
SOLAR POWERED BUOY

Cynthia K. Forrest, 337 S. Weller Ave., Springfield, Mo. 65802

Filed Jul. 19, 1993, Ser. No. 93,337

Int. Cl.[5] B63B *21/52*

U.S. Cl. 441—16 **20 Claims**



1. A self-contained floating buoy with a solar powered lantern, comprising:
(a) a housing, having a bottom portion including a flotation assembly in a lowermost section and an uppermost transparent lens section, and a top portion;
(b) a lighting element for emitting a signal light;
(c) a frame supporting said lighting element inside said housing in spaced relationship to said top portion and said lowermost section of said bottom portion;
(d) a photovoltaic power supply including a solar panel, and a storage battery;
(e) electrical conductor means coupling said power supply with said lighting element; and
(f) reflecting means coupled with said housing for omnidirectional reflecting of said signal light, said reflecting means including a pair of spaced, generally parabolic reflector members, one positioned above and one positioned below said signal light, one of said parabolic reflectors being coupled with said top portion of said housing and the other of said reflector members being attached to said lowermost section of said bottom housing portion.

5,362,268

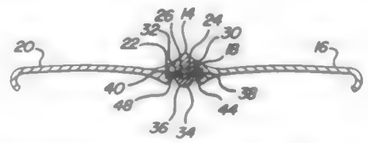
SWIM FIN

Ellis L. Nordbeck, 5130 N. M-52, Owosso, Mich. 48867, and Charles Walker, 2494 Baseline Rd., Stockbridge, Mich. 49285

Filed Aug. 16, 1993, Ser. No. 107,111

Int. Cl.[5] A63B *31/08, 31/11*

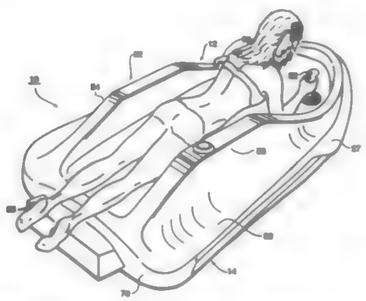
U.S. Cl. 441—64 **14 Claims**



1. A swim fin including an elongated center guide with at least two sides, a first bead slot in one of the sides extending substantially the length of said center guide and a second bead slot in the other said side extending substantially the length of said center guide;
a shoe attached to said center guide for attaching said center guide to the foot of a diver;

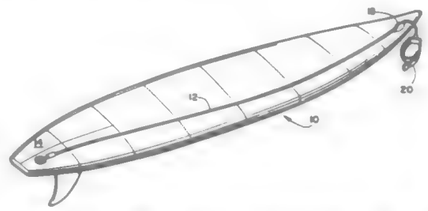
a first wing with an integral bead slot;
a second wing with an integral bead slot;
a first hinge for pivotally connecting the first wing to the elongated center guide, with a pair of beads interconnected to each other by a flexible web and wherein one of the beads is retained in said first bead slot in the center guide and the other bead is retained in the integral bead slot in the first wing;
a second hinge, for pivotally connecting the second wing to the elongated center guide, with a pair of beads interconnected to each other by a flexible web and wherein one of the beads is retained in said second bead slot in the center guide and the other bead is retained in the integral bead slot in the second wing;
a first pair of stop surfaces on said elongated center guide and a pair of stop surfaces on said first wing that contact said first pair of stop surfaces to limit pivotal movement of the first wing relative to said elongated center guide in two directions; and
a second pair of stop surfaces on said elongated center guide and a pair of stop surfaces on said second wing that contact said second pair of stop surfaces to limit pivotal movement of said second wing relative to said elongated center guide in two directions.

5,362,269
PERSONAL WATER VEHICLE
Peter M. Leach, 2705 S. Center St., Santa Ana, Calif. 92704
Filed Oct. 29, 1992, Ser. No. 968,509
Int. Cl.[5] B63H *25/00*
U.S. Cl. 441—65 **23 Claims**



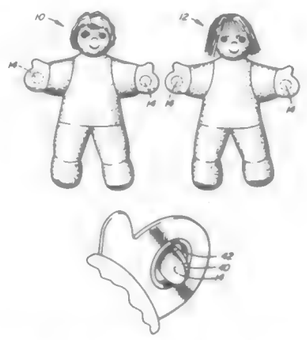
1. A boat, comprising:
a hull including a lower hull portion having a generally V-shaped fore portion in cross-section thereof, said V-shaped fore portion extending generally width of said lower hull portion, said lower hull portion having a flat bottom surface at a mid portion and at an aft portion thereof, said V-shaped fore portion having a pointed portion, entire said pointed portion extending downward to a depth approximately equal to depth of said flat bottom surface, said lower hull portion having an upwardly slanted rear portion, said hull having a transom with generally rounded edge portions thereof, said hull having a cavity;
a motor mounted in the cavity;
a deck mounted on said hull, said deck having a generally flat surface portion dimensioned to allow a person to lie prone thereon while operating the boat;
a shroud mounted on the lower hull portion, said shroud having a generally rectangular shape in cross-section and dimensioned to generally conform to the general shape and dimensions of the flat bottom lower hull portion in order to enable the flat bottom surface of the lower hull portion to extend generally continuously to the rear portion of said hull.

5,362,270
SURFBOARD LEASH RETAINER
Eric Hanson, 4884 Coronodo Ave., and Christopher Dahlen, 5067 Niagara Ave., both of San Diego, Calif. 92107
Filed Aug. 16, 1993, Ser. No. 106,843
Int. Cl.[5] A63C *15/06*
U.S. Cl. 441—75 **9 Claims**



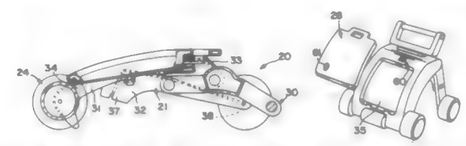
1. A surfboard leash retainer in combination with a surfboard having an upper and lower surface with rear and front ends with a leash attached to the rear end with the opposite distal end extending a selected distance and having a cuff for the attachment to an ankle of a surfer which is attached to said distal end comprising:
said retainer being positioned near to said front end of said surfboard, said retainer having a vertical channel extending substantially parallel with the longitudinal center line of said surfboard, said channel having an opening from the upper exterior thereof of a dimension less than that of said channel; and
said leash having a dimension smaller than said channel and a dimension larger than said opening, when said leash is forced through said opening into said channel the leash is held in said channel until forced from said channel back through said opening whereby said leash can be held within said channel for transport, nonuse and storage of said surfboard and removed from said channel for surfing with said surfboard.

5,362,271
MAGNETIC PLAYTHINGS
Sandra L. Butt, 4374 Patterdale Dr., North Vancouver, British Columbia, Canada V7R 4L7
Filed Oct. 24, 1991, Ser. No. 782,088
Int. Cl.[5] A63H *33/26*
U.S. Cl. 446—139 **23 Claims**



1. A plaything comprising a body, a pair of arms, each terminating in a hand, extending from said body and a magnet on each hand for removably attaching the hands together wherein the magnet on at least one hand is swivelable about an axis to permit said magnet to orientate itself according to the force applied by an external magnetic field.

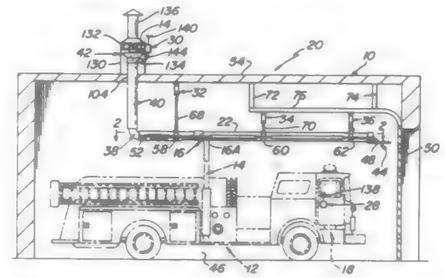
5,362,272
ACTIVITY TOY AND WALKER DEVICE
Chi K. W. Chow, Shatin, and Frederick L. T. Tsang, Sai Ying Pun, both of Hong Kong, assignors to Vtech Industries, Inc., Wheeling, Ill.
Filed Nov. 1, 1993, Ser. No. 146,230
Int. Cl.[5] A63H *11/12, 17/00, 5/00, 33/02*
U.S. Cl. 446—278 **12 Claims**



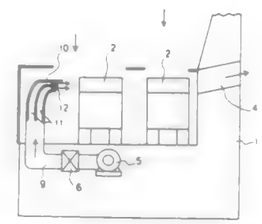
1. An activity toy and walker device for prompting and promoting interactive play, motor skill development and intellectual development of a child, said activity toy and walker device comprising:
a frame having a first portion and a second portion operatively attached to each other wherein each of said first and second portions include a top end region and a bottom end region;
deployment means operatively associated with said first and second portions of said frame for enabling deployable positioning of said frame from a substantially collapsed orientation toward and into a substantially upright orientation,
each of said top end regions of said first and second portions of said frame being positioned proximate to each other when said frame is in said substantially upright orientation,
locking means operatively associated with said first and second portions of said frame for releasably securing said top end regions proximate to each other when said frame is in said substantially upright orientation, said locking means enabling release of said top end regions from their proximate position relative to each other so as to allow pivotal displacement of said top end regions toward said bottom end region of the other frame portion when said frame is manipulated into said substantially collapsed orientation; and
wheel means operatively attached adjacent to said bottom end regions of said first and second portions of said frame for facilitating movement of said activity toy and walker device when said device is in said substantially upright orientation.

5,362,273
VEHICLE EXHAUST DISTRIBUTION SYSTEM FOR BUILDINGS
Edward A. Pfeiffer, Jr., Warminster, and Paul Hamilton, Levittown, both of Pa., assignors to Exhaust Track, Inc., Warminster, Pa.
Filed Jan. 19, 1994, Ser. No. 183,554
Int. Cl.[5] B08B *15/00*
U.S. Cl. 454—63 **19 Claims**

13. An exhaust fumes distribution system for use within a structure adjacent to a space in which a vehicle having an engine coupled to a vertically oriented, open ended, exhaust stack is to be located to discharge exhaust fumes from said vehicle out of said structure, said vehicle having an electrical switch coupled to said engine, said exhaust fume distribution system comprising:
(a) actuatable venting means arranged when actuated to vent fumes out of said structure;
(b) conduit means coupled to said venting means and having a portion including an inlet opening to receive said open end of said stack therein; and
(c) actuating means for actuating said venting means to vent fumes in said stack through said conduit means out of said structure, said actuating means being responsive to the operation of said electrical switch of said engine.



5,362,274
BLOWING PORT FOR CLEAN AIR OF AN APPARATUS FOR WASHING SEMICONDUCTOR MATERIALS
Aigo Seiichiro, 3-15-13, Negishi, Daito-ku, Tokyo, Japan
Filed Oct. 31, 1990, Ser. No. 606,524
Claims priority, application Japan, Nov. 14, 1989, 1-132330[U]
Int. Cl.[5] F24F *9/00*
U.S. Cl. 454—66 **3 Claims**



1. An apparatus for washing semiconductor materials, said apparatus comprising:
a case;
a plurality of washing tanks disposed within said case; and
a blowing port having an upwardly extending duct disposed at a side of said case, said duct having a few passages formed therein, at least the upper portion of each said passage being formed continuously convergently to an outlet in the form of a transverse slit, said transverse slits being vertically stacked so as to form a horizontal laminar flow of clean air over said washing tanks to a suction port located at a side of said case opposite said blowing port.

5,362,275
MOTOR-VEHICLE CONSTANT-VELOCITY JOINT WITH GROOVED RUNNING SURFACE
Sobhy L. Girguis, Magdalenenstrasse 19, 5210-Troisdorf 14, Germany
Filed Jan. 17, 1992, Ser. No. 822,465
Claims priority, application Germany, Jan. 24, 1991, 4102001
Int. Cl.[5] F16D *3/205*
U.S. Cl. 464—111 **7 Claims**

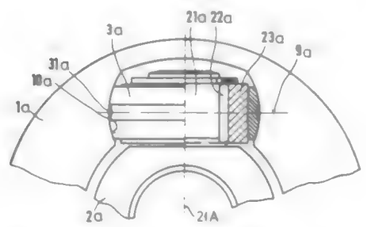
1. A constant-velocity joint comprising:
an outer member formed centered on an axis with three radially inwardly open and axially extending channels each having a pair of confronting and substantially axially extending inner running surfaces that are each concave toward the other inner running surface of the respective pair;
an inner member formed centered on a respective axis gener-

ally coaxial with the outer-member axis with three trunnions projecting radially outwardly of the inner-member axis and each engaged in a respective one of the channels and defining and centered on respective trunnion axes extending substantially radially of the inner-member axis; and

respective annular rollers rotatable on the trunnions about the respective trunnion axes and including

an inner part rotatable and fixed on the respective trunnion against movement thereon along the respective trunnion axis and

an outer part having an outer surface forming a respective outer running surface riding on and pivotal relative to the inner running surface of the respective channels on deflection of the inner-member axis relative to the outer-member axis and radially outwardly convex relative



to the respective trunnion axis and an inner surface engaging and slidable along the trunnion axis on the respective inner part axially relative to the respective trunnion axis,

one of the inner running surfaces and one of the outer running surfaces being formed with a central noncontact strip offset away from the respective running surface, whereby the outer and inner running surfaces only engage each other to either side of the strip, the outer running surfaces being each of a radius of curvature at most equal to a radius of curvature of the respective inner running surfaces, each of the rollers being formed at the respective outer surface as a single unitary piece, the inner surface of each outer part being convex radially inwardly of the respective trunnion axis, whereby the outer parts can rock limitedly on the inner parts.

5,362,276

SELECTIVE TORQUE CLIPPING MECHANISM

Reece R. Fuehrer, Danville, and Roy K. Martin, Plainfield, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 2, 1992, Ser. No. 939,751
Int. Cl.[5] F16D *1/12*
U.S. Cl. 464—160 9 Claims

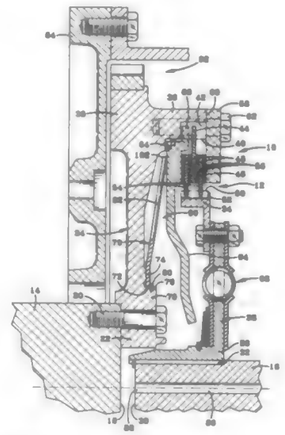
1. A selective torsion clipping mechanism adapted to be interposed between a rotatable power output shaft and a rotatable transmission input shaft, said torsion clipping device comprising:

a torque transfer device having a plurality of interleaved torque plates interposed between the rotatable power output shaft and the rotatable transmission input shaft;

a spring biasingly interposed between said rotatable power output shaft and said torque transfer device to apply an axially compressive force to said interleaved torque plates in order to effect rotation of the transmission input shaft in response to rotation of the power output shaft;

said spring permitting slippage of said interleaved torque plates upon the application of a predetermined torsional force between said power output shaft and said transmission input shaft;

means in conjunction with said spring to preclude said slippage of said torque transfer device in response to rotation



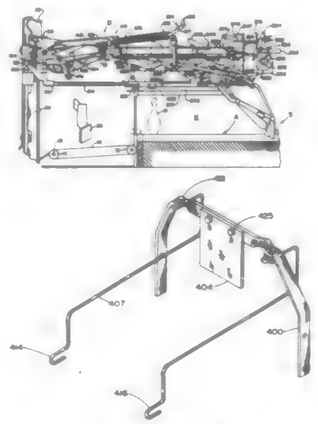
of the power output shaft above a predetermined rate of rotation.

5,362,277

PIN GUIDE AND PINSETTING MACHINE

Richard Meluskey, 1003 Wool Ave., Franklin Sq., N.Y. 11010

Filed Aug. 3, 1993, Ser. No. 100,481
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—94 9 Claims



1. In a bowling pinspotting machine of the type having a distributor mechanism for distributing and feeding pins to a storage area of a shuttle in which the distributor comprises a conveyor belt terminating in a distributor trip lever, said storage area of the shuttle assembly having individual storage area for each bowling pin and the storage area for the #1 or head pin having a head pin roller guide along the sides thereof for guiding the head pin as it moves between the end of the distributor and the individual storage area for the head pin, the head pin roller guide comprising guide rollers at the upper edge of the narrower rearward portion of the headpin pocket or individual storage area keeping the bowling pins in a generally longitudinal direction with respect to the head pin guide assembly, the improvement comprising:

a. side rails or rods extending along the length of the head pin roller guide, said guide rails being adapted to deflect the head pin back into a longitudinal path if the headpin yaws more then a amount determined by the position of side rails as the head pin moves from the distributor into the headpin pocket or storage area of the shuttle assembly; and

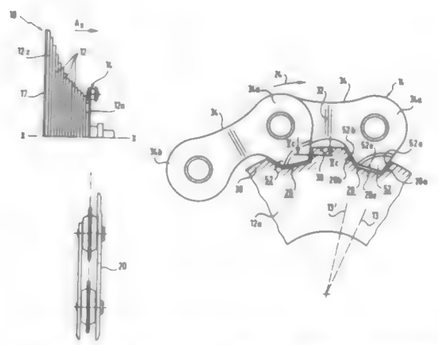
b. resilient means suspended above the head pin roller guides, said resilient means being adopted to contact the top of the head pin as it moves longitudinally along the length of the head pin roller guide assembly so as to prevent the bowling pins from pitching more then a predetermined amount as the head pin moves from the distributor into the headpin pocket or storage area of the shuttle assembly.

5,362,278

CHAIN DRIVING MECHANISM FOR A BICYCLE OR THE LIKE

Eduard Bergles, Graz, Austria; Wolf Waschkuhn, Schweinfurt; Kai-Uwe Rüde, Grafenrheinfeld, both of Netherlands, and Edouard Dumas, St. Etienne de St. Geoirs, France, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Mar. 17, 1993, Ser. No. 32,138
Claims priority, application Germany, Mar. 18, 1992, 4208712; Mar. 18, 1992, 4208713
Int. Cl.[5] F16H *55/30*
U.S. Cl. 474—69 58 Claims



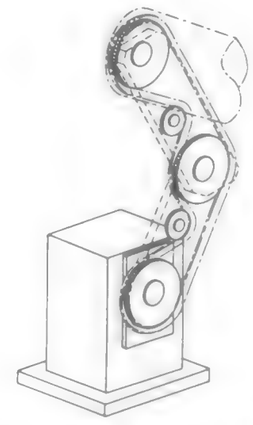
1. A chain driving mechanism for a bicycle comprising a wheel-side sprocket unit, a pedal crank-side sprocket unit, a chain drivingly connecting the sprocket units, at least one of the sprocket units having a plurality of sprockets arranged serially along an axis and each of the sprockets of said one sprocket unit having a different number of sprocket-side engagement means, the number of sprocket-side engagement means of the sprockets of said one sprocket unit decreasing from sprocket to sprocket in an axial direction from a first terminal sprocket to a second terminal sprocket, and the chain having chain-side engagement means engageable with the sprocket-side engagement means of a respective one of the sprockets of said one sprocket unit, chain transferring means for causing the chain to engage a selected one of the sprockets of said one sprocket unit, each of the sprockets of said one sprocket unit having a respective sprocket middle plane perpendicular to said axis and the chain having a first enveloping side plane and a second enveloping side plane spaced apart from said first enveloping side plane along said axial direction, both of the enveloping side planes being substantially orthogonal to said axis, a virtual chain middle plane substantially orthogonal to said axis being located half-way along said axis between said enveloping side planes, said virtual chain middle plane being axially displaced in said axial direction with respect to a respective sprocket middle plane of a sprocket drivingly engaged by said chain, and the chain-side engagement means including force-transmitting surfaces engageable with the sprocket-side engagement means of the respective sprockets of said one sprocket unit, both extremities of the force-transmitting surfaces in the axial direction being closer to the first enveloping side plane and farther from the second enveloping side plane of the chain.

5,362,279

SELF-TENSIONING CHAIN DRIVE

John M. Galchefski, Larkville, Pa., assignor to CMS Gilbreth Packaging Systems, Trevose, Pa.

Filed Aug. 5, 1993, Ser. No. 102,458
Int. Cl.[5] F16H *7/10*
U.S. Cl. 474—112 3 Claims



1. A chain drive comprising a driving sprocket, a driving arm for rotatably supporting said driving sprocket, a driving eccentric idler rotatably mounted on said driving arm for selective offset relative to said driving arm and spaced from said driving sprocket, an idler sprocket rotatably mounted on said driving arm, spaced from said driving sprocket and said driving eccentric idler, a driven arm pivotally joined to said idler sprocket for movement relative to said driving arm in a plane that is parallel with said idler sprocket, a driven eccentric idler rotatably mounted on said driven arm for selective offset relative to said driven arm and spaced from said idler sprocket, a driven sprocket rotatably mounted on said driven arm, spaced from said idler sprocket and said driven eccentric idler, and a chain engaged by each of said sprockets and said eccentric idlers, said eccentric idlers offsets maintaining a predetermined tension in said chain as said driven arm is moved relative to said driving arm.

5,362,280

POWER TRANSMISSION SYSTEM

Hideo Hirai, Hyogo; Kyoichi Mishima, Higashimachi, and Susumu Yamakawa, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Dec. 7, 1992, Ser. No. 986,243
Int. Cl.[5] F16H *7/02*
U.S. Cl. 474—135 22 Claims

1. A power transmission system comprising:

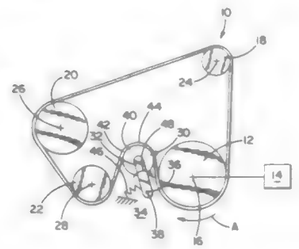
a power transmission belt having a length and width and laterally oppositely facing pulley engaging side drive surfaces and a tensile strength such that a force of at least 17 kgf per 1 mm width is required to effect a 1% elongation of the power transmission belt;

a plurality of pulleys with which the power transmission belt is operatively engaged,

said pulleys having facing surfaces to engage and drive/be driven by the pulley engaging side drive surfaces; and

an auto-tensioner having an element to engage the power transmission belt,

said auto-tensioner having a damping ratio that is not greater than 20% where the damping ratio is defined by the following formula:



damping ratio $=2[(A-B)(A+B)]\times 100$ where: A is the force exerted by the auto-tensioner element during up-stroking of the auto-tensioner element and

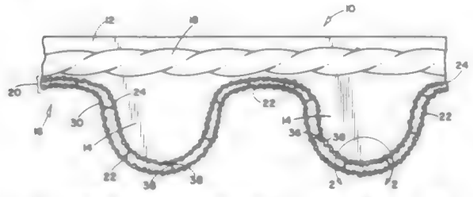
B is the force exerted by the auto-tensioner element during down-stroking of the auto-tensioner element.

5,362,281

TOOTHED POWER TRANSMISSION BELT WITH FABRIC REINFORCEMENT

Roger W. Dutton, Milliken, and Douglas A. Conley, Littleton, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Apr. 8, 1993, Ser. No. 45,008
Int. Cl.[5] F16G *1/28*
U.S. Cl. 474—205 **14 Claims**



1. In a toothed power transmission belt of the type with a polymeric body with a plurality of spaced teeth along at least one surface of the belt, an embedded tensile member and a wear resistant fabric reinforcement disposed at a periphery of the surface including the belt teeth, the improvement comprising:

the wear resistant fabric comprising a multi weave fabric with at least a first woven fabric layer having a first plurality of warp and weft yarns and a second woven fabric layer with a second plurality of warp and weft yarns and wherein tie yarns periodically interlace warp yarns of the adjacent fabric layer tieing the two fabric layers together into a single fabric.

5,362,282

MASTER CHAIN LINK

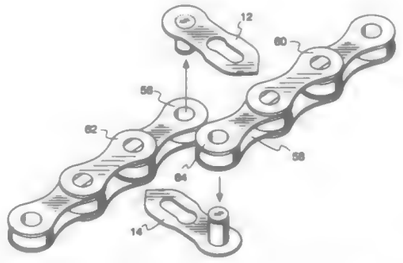
Robert J. Lickton, Elmwood Park, Ill., assignor to R.L.L. Limited, Elmwood Park, Ill.

Filed Sep. 3, 1993, Ser. No. 117,396
Int. Cl.[5] F16G *15/06*
U.S. Cl. 474—220 **19 Claims**

1. A reusable master chain link for a derailleur chain, comprising:

first and second pins positioned substantially parallel to one another, said first pin having first and second peripheral heads at opposite ends thereof and said second pin having first and second peripheral heads at opposite ends thereof; and

first and second elongated plates positioned substantially parallel to one another, said first and second pins extending between said first and second plates, said first and second plates having respective first and second apertures formed therein, said first and second apertures having respective narrow curvilinear portions narrower than said respective first heads of said first and second pins to prevent said respective first heads from passing therethrough, said narrow curvilinear portions having respective countersinks formed therearound for receiving and substantially concealing said respective first heads of said first and second pins, said first and second apertures having respective wide curvilinear portions wider than said respective first heads of said first and second pins to permit said respective first heads to pass therethrough to disassemble the chain link, said respective wide curvilinear portions being connected to said respective narrow curvilinear portions to permit movement of said respective first heads therebetween, said respective second heads of said first and second pins being connected to said respective second and first plates.

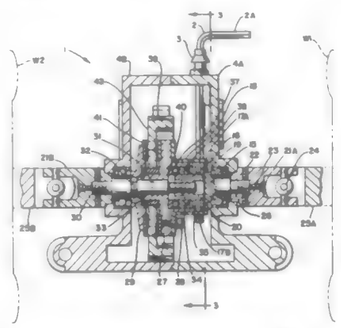


5,362,283

APPARATUS AND METHOD FOR ADJUSTING THE TRACTIVE TORQUE AT THE DRIVEN WHEELS OF A SCALE MODEL VEHICLE

Jimmy R. Jenkins, Garland, Tex., assignor to Traxxas Corporation, Dallas, Tex.

Continuation of Ser. No. 488,971, Mar. 5, 1990, Pat. No. 5,104,361. This application Apr. 14, 1992, Ser. No. 869,086
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] F16H *1/38, 13/10*
U.S. Cl. 475—184 **4 Claims**



1. In a power train of a vehicle having a differential with an enclosure, including a primary power drive gear with a web, friction driving members encased in said web, friction driven plates, a stored energy device, a first stub axle, a second stub axle having a threaded end, each said axle associated respectively with a first and second driven wheel, the improved apparatus comprising in combination:

means for adjusting differential torque, without disassembly of the differential including

a) a locking pin for preventing the first driven wheel from rotating when said second driven wheel is rotated,

b) guide means for directing said locking pin inside said differential enclosure, without disassembly of one of said differential and said enclosure,

c) a locking adjusting nut threaded onto said second stub axle,

d) guide means on said locking adjusting nut to receive and guide said locking pin whereby said pin and nut prevent further rotation of said locking nut while permitting said threaded end and said second stub axle to advance or retract in said locking adjusting nut,

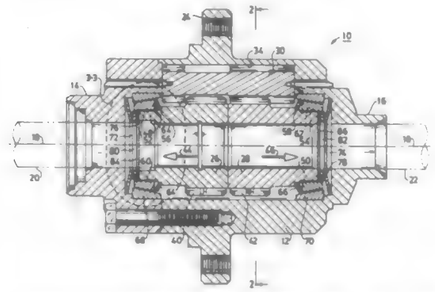
means including said locking adjusting nut and said stored energy device for transmitting adjusting driving torque to and between said driven plates.

5,362,284

THREE-STAGE TORQUE PROPORTIONING DIFFERENTIAL

Mark S. Brewer, North Chili, N.Y., assignor to Zexel-Gleason USA, Inc., Rochester, N.Y.

Filed Sep. 14, 1992, Ser. No. 944,893
Int. Cl.[5] F16H *37/08*
U.S. Cl. 475—249 **39 Claims**



1. A differential for transmitting drive torque from a single input shaft to a pair of relatively rotatable output shafts comprising:

a housing rotatable by the drive torque about a common axis of the pair of output shafts;

an operative connection for permitting the output shafts to rotate in opposite directions with respect to said housing;

a component of said operative connection mounted within said housing for developing a thrust force that varies in magnitude as a function of the drive torque transmitted to the output shafts;

first and second faces of said component oriented at respective inclines to a direction of the thrust force developed by said component;

first and second frictional surfaces for opposing respective movements of said first and second faces in the thrust force direction;

first and second control members for transmitting the thrust force between said first and second faces of the component and said first and second frictional surfaces;

said first control member being arranged for transmitting a first portion of the thrust force between said first face of the component and said first frictional surface up to a first magnitude;

said first and second control members being arranged for jointly transmitting a second portion of the thrust force between the first magnitude and a second magnitude; and

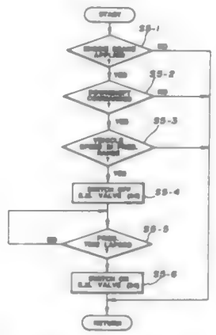
one of said first and second control members being arranged for transmitting a third portion of the thrust force above the second magnitude.

5,362,285

CONTROL SYSTEM FOR VEHICULAR POWER PLANT INCLUDING AUTOMATIC TRANSMISSION AND EXHAUST BRAKE

Eiji Sano, and Shigetsugu Matsumoto, both of Shizuoka, Japan, assignors to Jatco Corporation, Japan

Continuation of Ser. No. 853,067, Mar. 17, 1992, Pat. No. 5,282,399. This application Aug. 6, 1993, Ser. No. 102,889
Claims priority, application Japan, Mar. 25, 1991, 3-84788; Mar. 25, 1991, 3-84789; Mar. 25, 1991, 3-84790; Mar. 25, 1991, 3-84791; Mar. 25, 1991, 3-84792
Int. Cl.[5] B60K *41/10*
U.S. Cl. 477—92 **2 Claims**



1. A control system for a vehicular power plant including an automatic transmission and an exhaust brake, said control system comprising:

means for detecting an engine brake condition and a command for making a downshift of a transmission in a vehicular power plant;

means for temporarily putting an exhaust brake in a vehicular power plant into an inoperative condition in response to both said detected engine brake condition and said detected downshift command;

means for detecting a vehicle speed of a vehicle provided with the vehicular power plant; and

means for putting the exhaust brake in said vehicular power plant into an operative condition when said vehicle speed is within a predetermined range, even upon detecting of said engine brake condition and said downshift command said predetermined range being a relative low vehicle speed range lower than a predetermined vehicle speed.

5,362,286

AUTOMATIC TRANSMISSION WITH UPSHIFT PROHIBIT DEPENDENT ON THROTTLE AND VEHICLE SPEED

Yuji Satoh; Hiromi Kono; Hiroyuki Soda, and Masuhiro Otsuka, all of Saitama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 730,992, Jul. 16, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,811
Claims priority, application Japan, Jul. 16, 1990, 2-187417
Int. Cl.[5] F16H *5/90*
U.S. Cl. 477—115 **7 Claims**

1. An automatic transmission comprising:

a clutch;

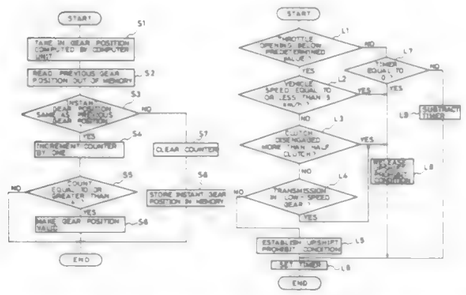
a clutch actuator for detecting and controlling a position of said clutch;

a transmission;

a transmission actuator for driving said transmission;

a vehicle speed detector for detecting a vehicle speed;

a throttle opening detector for detecting a throttle opening;
an automatic shift unit including a gear shift map having a gear shift characteristic which is determined based on said vehicle speed and said throttle opening;
a computer unit for computing a target gear position of said transmission based on said vehicle speed and said throttle opening according to said gear shift map;
a gear position selector for controlling said transmission actuator based on said computed target gear position to upshift or downshift said transmission;
a shift prohibit unit for determining whether said computed target gear position matches a previous gear position for a predetermined number of times and, if said computed target gear position matches said previous gear position, making said computed target gear position valid for shifting but, if said computed target gear position and said



previous gear position do not match for said predetermined number of times, clearing a counter so that said computed target gear position is not made valid for shifting to thereby prohibit any shift operation according to said gear shift map; and
a shift determination unit for establishing an upshift prohibits condition when said throttle opening is less than a predetermined opening and the transmission is not set in one of a first and a second gear position but releasing said upshift prohibit condition when said vehicle speed is lower than a predetermined speed and when said vehicle speed is not lower than a predetermined speed and said clutch is in a position toward disengagement from a half clutch position or said transmission is set in one of a first and a second gear position even if said throttle opening is less than said predetermined opening.

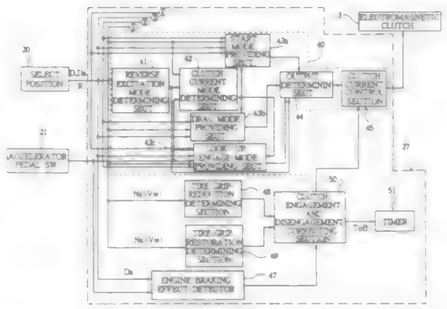
5,362,287

CONTROL SYSTEM FOR AN AUTOMATIC CLUTCH OF A MOTOR VEHICLE

Hiroshi Tanaka, and Maki Okayasu, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,111
Claims priority, application Japan, Sep. 26, 1991, 3-274798
Int. Cl.[5] B60K *41/02*
U.S. Cl. 477—175 **17 Claims**

1. A system for controlling an automatic clutch for transmitting power of an engine to an automatic transmission of a vehicle having a drive wheel connected to the transmission, comprising:
engine braking mode detecting means for detecting if said engine is in an engine braking mode;
tire grip determining means responsive to a function of speed of the drive wheel for determining tire gripping condition of the drive wheel on a road surface and for producing a grip signal;
correcting means responsive to said grip signal when said engine is in the engine braking mode for controlling said clutch in dependency on the tire gripping condition of said road surface; and
said correcting means for disengaging said clutch when the tire gripping condition of the drive wheel on the road surface is poor and to engage said clutch a predetermined



time after said clutch is disengaged before said function of drive wheel speed recovers to a value for causing said correcting means to engage said clutch.

5,362,288

DEVICE FOR ASSISTING RUNNING, WALKING OR JUMPING

Eli Razon, 200 Cherokee Cir., Ambler, Pa. 19002

Filed Mar. 26, 1993, Ser. No. 37,242
Int. Cl.[5] A63B *5/16*
U.S. Cl. 482—51 **19 Claims**



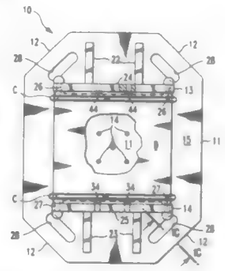
1. A hand held device for assisting a person in walking, running, or jumping comprising:
an elongated biasing means having a top end and a ground end and adapted to be positioned adjacent to the person's leg extending from said top end near the person's hip area to said ground end adjacent to the person's shoe;
a handle fixedly secured to said biasing means; and
a shoe extension having a flexible bridge and means for attaching to the shoe, said flexible bridge having one end swingably attached to said shoe attachment means, and extending to a swingable attachment with said ground end of said biasing means whereby the heel of the shoe can lift off the ground while pressure from the person's body applied to said handle is supported by said biasing means and keeps said shoe extension in a fixed position relative to the ground and causes said biasing means to absorb the impact of landing and to store the energy released as the shoe lands upon the ground.

5,362,289

MARTIAL ARTS FOCUS TRAINING APPARATUS AND WALL MOUNT

Todd Holt, 303 Valleywood Dr., Forest, Va. 24551

Filed Jun. 16, 1993, Ser. No. 76,957
Int. Cl.[5] A63B *69/34*
U.S. Cl. 482—83 **5 Claims**



1. Apparatus useful in martial arts focus training for holding boards to be struck and broken by a practitioner, comprising:
backboard;
board support means including,
first and second elongated board holding members spaced vertically on, secured to and extending from said back board, each member having inward and opposing faces, said inward faces being generally parallel and defining a board holding space there between,
linear elongated members extending from said back board along a portion of said inward faces of said board holding members, for spacing boards from said back board and having outer surfaces against which a board rests, and,
a pair of support gussets secured to said back board and said opposing faces of a respective one of said board holding members;
means to permit holding boards on said board support means in the board holding space against said outer surfaces of said linear spacer members; and,
means to allow said backboard to be grasped by holders assisting the practitioner.

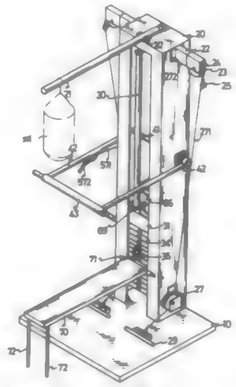
5,362,290

MULTI-PURPOSE EXERCISER HAVING A CLUTCH MEANS

Shih-Pin Huang, 4th Fl., No. 9, Lane 228, An Kang Rd., Taipei, Taiwan, Prov. of China

Filed Jun. 30, 1993, Ser. No. 83,562
Int. Cl.[5] A63B *21/062*
U.S. Cl. 482—100 **8 Claims**

1. A multi-purpose exerciser comprising:
a weighted base;
a frame member mounted on said weighted base two spaced rods extending vertically in said frame member;
a resistance means mounted in said frame member and movable along said rods;
a lifting bar mechanism comprising:
an axle rotatably mounted in said frame member, a gear securely mounted on said axle;
a lifting bar connected to said axle to rotate therewith;
a clutch seat mounted on said axle surrounding and receiving said gear and having a cutout in a periphery thereof;
a rocker arm extending outward from an outer periphery of said clutch seat;
a first cable having a first end attached to said rocker arm and a second end attached to said resistance means and;
a stop member for stopping further motion of the rocker arm and the axle and thus defining a lowermost position of the lifting bar;
and a clutch means comprising:
a guiding block extending outwardly from each of two edges of said cutout;
a pawl member slidably guided between said guiding blocks and having a first pawl end for releasably engaging with said gear and a second end;
a connecting member having a first end connected to said second end of said pawl member and a second end;



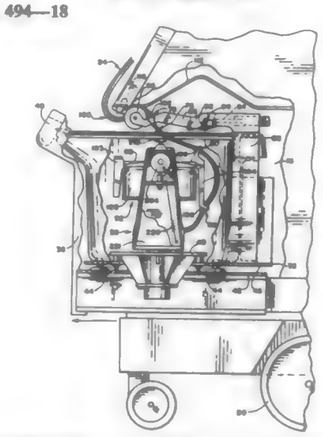
an actuating member having a first end pivotally connected to said second end of said connecting member and a second end pivoted to said rocker arm;
a substantially L-shaped cable block secured to said rocker arm;
a clutch lever and a cable with a first end attached to said actuating member and a second end attached to and controlled by said clutch lever; and
a spring provided between said L-shaped cable block and said actuating member.

5,362,291

CENTRIFUGAL PROCESSING SYSTEM WITH DIRECT ACCESS DRAWER

Warren P. Williamson, IV, Cincinnati, Ohio, assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 70,022, May 28, 1993, abandoned, which is a continuation of Ser. No. 813,157, Dec. 23, 1991, abandoned. This application Feb. 9, 1994, Ser. No. 193,908
Int. Cl.[5] B04B *5/02*
U.S. Cl. 494—18 **16 Claims**



1. A centrifugation system for separating blood into component parts comprising
a frame enclosing an interior area,
a centrifuge having a mass, and
a base including mounts supporting and structurally isolating

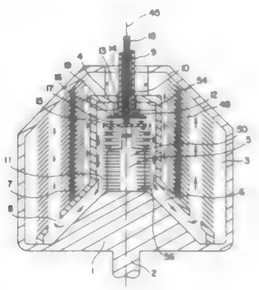
the mass of the centrifuge for rotation relative to the frame about a rotational axis, the base including at least one track and being carried for movement relative to the frame generally perpendicular to the rotational axis on the at least one track between a first position, in which the isolated mass of the centrifuge is located within the interior area of the frame and access to the centrifuge is blocked by the frame, and a second position, in which the isolated mass of the centrifuge is located outside the interior area of the frame and access to the centrifuge is permitted.

5,362,292

CENTRIFUGAL SEPARATOR

Leonard Borgström, Bandhagen; Claes-Göran Carlsson, Tumba; Peter Franzén, Tullinge; Claes Inge, Saltsjö-Duvnäs; Torgny Lagerstedt; Hans Moberg, both of Stockholm, and Olle Näbo, Tullinge, all of Sweden, assignors to Alfa-Laval Separation AB, Tumba, Sweden

PCT No. PCT/SE91/00100, § 371 Date Oct. 10, 1991, § 102(e) Date Oct. 10, 1991, PCT Pub. No. WO91/12082, PCT Pub. Date Aug. 22, 1991
Continuation of Ser. No. 768,767, Oct. 10, 1991, abandoned. This PCT application Feb. 13, 1991, Ser. No. 206,240
Claims priority, application Sweden, Feb. 15, 1990, 9000540-6
Int. Cl.[5] B04B *1/08*
U.S. Cl. 494—74 **15 Claims**



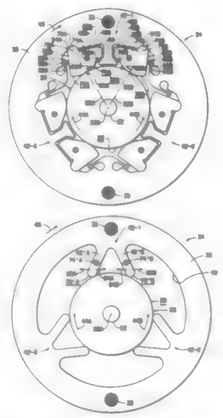
1. A centrifugal separator comprising:
a rotor supported by a driving shaft and rotatable about a rotational axis, the rotor forming a separation chamber and a centrally located inlet chamber, the inlet chamber having a first and a second axially spaced end and communicating with the separation chamber through channels distributed around the rotational axis,
a wall delimiting the inlet chamber at the first end,
an inlet means forming an inlet channel, said inlet channel extending through said wall and having an opening within the inlet chamber at said first end,
a stack of annular acceleration discs mounted in the inlet chamber coaxial with the rotor for rotation therewith and spaced from each other axially, the stack of discs being positioned between said opening of the inlet channel and the second end of said inlet chamber and, further, forming a central space communicating with the interspaces between the discs, the discs being adapted to entrain in rotation liquid flowing into the disc interspaces from said central space, such that a rotating liquid body having a free liquid surface is formed in the inlet chamber during rotation of the rotor,
means forming an evacuation passage connecting said space formed by the disc stack and a space outside the inlet chamber, and
a baffle carried in the inlet chamber and extending substantially from the rotational axis of the rotor radially outward to a radial level such that a radially outer portion of the baffle will be located in said rotating liquid body all around the rotational axis of the rotor during rotation of the rotor, the baffle being positioned between said opening of the inlet channel and the stack of discs, thereby directing liquid supplied through the inlet channel to the inlet chamber to flow from said opening of the inlet channel radially outward into said liquid body before entering central space formed in the disc stack.

5,362,293

DRIVE CLUTCH FOR A CENTRIFUGE ROTOR

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 990,104, Dec. 14, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 165,245
Int. Cl.[5] B04B *9/00;* **F16D** *41/06*
U.S. Cl. 494—84 **1 Claim**



1. A centrifuge rotor mountable to a drive shaft, the rotor having a lower surface thereon, the rotor comprising:
a housing secured to lower surface of the rotor;
a clutch assembly disposed within the housing, the clutch assembly comprising at least one pair of complementary clutch elements each operatively associated with the rotor,
each clutch element being a generally elongated flexible spring member formed integrally with the housing, the clutch elements being arranged in a generally V-shaped configuration, when mounted on the shaft the resiliency of each clutch element in the pair preloaded it into contact with the drive shaft,
application of torque in a respective first or second direction bringing a respective one of the clutch elements into wedged engagement with the drive shaft and with the rotor whereby torque is transmitted to the rotor,
each of the clutch elements flexing in response to body forces imposed thereon to disengage from the shaft when the rotor reaches a predetermined operating speed.

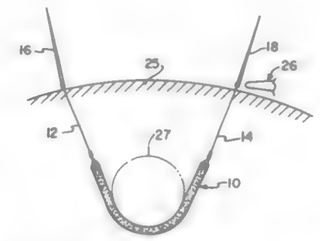
5,362,294

SLING FOR POSITIONING INTERNAL ORGAN DURING LAPAROSCOPIC SURGERY AND METHOD OF USE

Michael R. Seitzinger, Rte. 7, Box 124, Santa Fe, N. Mex. 87505

Filed Sep. 25, 1992, Ser. No. 951,567
Int. Cl.[5] A61F *2/00, 13/00*
U.S. Cl. 600—37 **4 Claims**

1. A sling for use in retracting a body organ within a body cavity, said sling being made of a biologically inert sponge material which expands when moistened and having dimensions such that it is capable of being passed through a cannula into the body cavity and of being expanded, for retracting the body organ, said sling further including lead sutures connected to opposite ends thereof and needles connected to the lead sutures, whereby said sling can be used to retract the body organ with the needles passing through the abdominal wall of



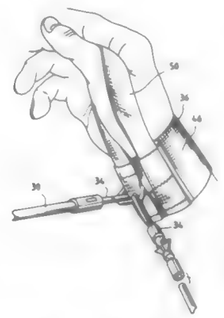
the patient so that the body organ can be held in a desired position during a laparoscopic operation.

5,362,295

EXERCISE BELT SYSTEM

William Nurge, P.O. Box 2468, Ketchum, Id. 83340

Filed Feb. 23, 1993, Ser. No. 21,377
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—124 **20 Claims**



1. An exercise system comprising:
a belt for placement about a user's waist;
means for securing the belt about the user's waist;
a resistance means extendable from the belt for exercising the muscles of a user;
wrist strap means having a portion securable around the user's wrist, fastener means for adjustably securing the wrist strap portion around the wrist of the user and connection means for connecting the wrist strap portion to the resistance means to create a resistance load at or below the wrist joint; and
thumb loop means attached to the wrist strap means for placement around the user's thumb for facilitating the securing of the wrist strap means on the user's wrist and for orienting and holding the wrist strap to inhibit undesired movement and bear part of the load of the wrist strap means.

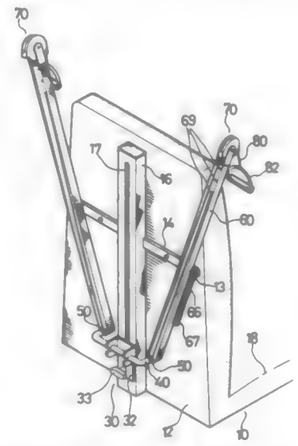
5,362,296

CHAIR MOUNTING EXERCISING UNIT

Leao Wang, and Peter Wu, both of Taichung Hsien, Taiwan, Prov. of China, assignors to Greenmaster Idustrial Corp., Taiping Hsiang, Taiwan, Prov. of China

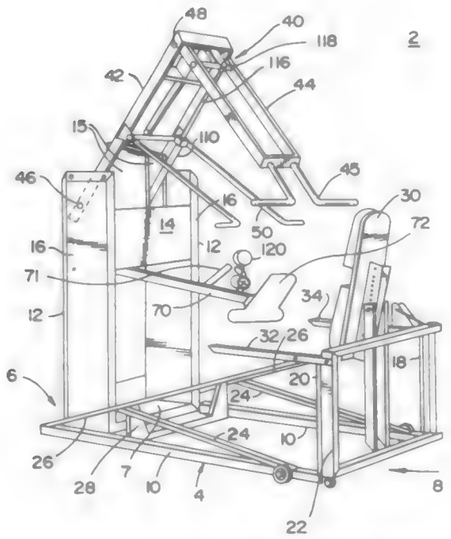
Filed Apr. 5, 1994, Ser. No. 223,466
Int. Cl.[5] H63B *21/00*
U.S. Cl. 482—133 **3 Claims**

1. An exercising unit comprising:
a chair having a horizontal frame and a vertical frame crossed over a back wall thereof, said vertical frame having a longitudinal hole through the longitudinal axis thereof and an elongated sliding slot on a front wall thereof in communication with said longitudinal hole;
a lock knob controlled mounting device fastened to said vertical frame on said seat, said lock knob controlled mounting device comprising a mounting plate inserted into the longitudinal hole inside said vertical frame, a slide block made to slide along the elongated sliding slot on said vertical frame, and a lock knob to fasten said mounting plate and said slide block together and controlled to fix said lock knob controlled mounting device at any elevation within the elongated sliding slot on said vertical frame, said slide block having two opposite lugs at two opposite sides;
a locating rod having a rod body fastened to said lock knob controlled mounting device and supported between the lugs on said slide block in a horizontal position, and two opposite ends perpendicularly extended from said rod body in the same direction;
two locating wheels mounted on the two opposite ends of said locating rod;
two swinging arms having each a bottom end connected to either end of said locating wheel, a top end, a series of longitudinally spaced hanging holes near the top and, a side extension plate with an elongated sliding slot, the side extension plate being hung on a respective headed bolt at either end of said horizontal frame on the back of said chair;



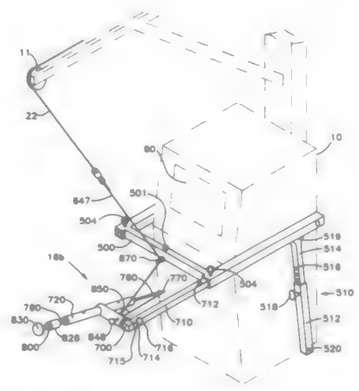
two pulley wheel assemblies respectively mounted on the top end of either swinging arm, each pulley wheel assembly comprising a pulley wheel holder fastened to the top end of either swinging arm, a casing supported on said pulley wheel holder, a suspension bolt inserted through a center hole on said casing and suspended on said pulley wheel holder, and a pulley wheel received inside said pulley wheel holder and turned on said suspension bolt, said casing having a first wire hole and a second wire hole on two opposite locations;
two elastic pull ropes having each one end fastened to either hanging hole on either swinging arm and an opposite end inserted through the first and second wire holes on the casing of either pulley wheel assembly and wound round the respective pulley wheel and then coupled with a respective handle; and
wherein the positions of said swinging arms can be changed relative to the back of said chair by loosening said lock knob and moving said slide block and said mounting plate along the elongated sliding slot on said vertical frame.

5,362,297
EXERCISE MACHINE
Arthur M. Muir, 207 Van Doren Dr., Natrona Heights, Pa. 15065
Filed Apr. 14, 1993, Ser. No. 46,779
Int. Cl.[5] A63B *21/00*
U.S. Cl. 482—134 18 Claims



1. An exercise machine suitable for exercising upper body muscles of an exerciser in a wheelchair using said machine, the machine comprising:
(a) a base frame having a front end and a back end;
(b) two spaced apart columns upwardly extending from the base frame at the front end thereof;
(c) means for restraining backward movement of said exerciser;
(d) an operating arm pivotally mounted between said columns at an upper region thereof, said arm comprising:
(i) an upwardly extending first lever mounted to said columns; and
(ii) a downwardly extending second lever fixedly connected to said upwardly extending first lever, the downwardly extending second lever terminating in a grip bar for said exerciser, said arm extending in the direction of said exerciser;
(e) a lap restraint arm mounted on said machine to restrain lap movement of said exerciser using said machine;
(f) a restraining force attached to said arm to resist movement of said exerciser and
(g) a lock arm pivotally connected to said first lever and operable by said exerciser, said lock arm comprising a bar having one end extending towards said back end and terminating in a handle and having another end pivotally connected to a lock pin bar having a lock pin at each end of said bar, the lock pin bar slidably held in guides on said first lever wherein movement of said handle in one direction fixedly connects said first lever and said second lever and permits upward and downward movement of said grip bar, and wherein opposed movement of said handle fixedly connects said first lever to said columns and permits forward and backward movement of said grip bar.

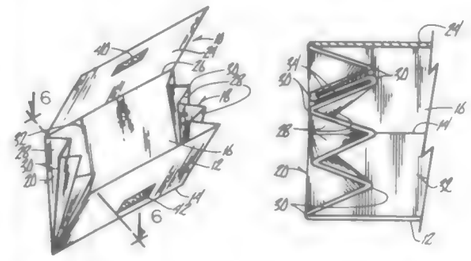
5,362,298
USER FORCE APPLICATION DEVICE FOR AN EXERCISE, PHYSICAL THERAPY, OR REHABILITATION APPARATUS
Michael L. Brown, Jeffersonville, Ind.; Jan W. Miller, Louisville, Ky.; Wilbur W. Spatig, Sellersburg, Ind., and Dean M. Zigoris, Louisville, Ky., assignors to Motivator, Inc., Louisville, Ky.
Continuation-in-part of Ser. No. 765,026, Sep. 24, 1991, Pat. No. 5,254,066, which is a continuation-in-part of Ser. No. 668,588, Mar. 13, 1991, Pat. No. 5,230,672. This application Jul. 26, 1993, Ser. No. 97,762
Int. Cl.[5] A63B *21/00, 103/00*
U.S. Cl. 482—137 16 Claims



1. A user force application device, comprising:
(a) a main support structure;
(b) means for securing said main support structure in an exercise position desired by a user;
(c) a shaft, said shaft having a cable end and a handle end, said shaft being received by said main support structure and moveable therein, said cable end and said handle end extending from said main support structure;
(d) means for controlling movement of said shaft within said main support structure;
(e) a handle detachably connected to said handle end of said shaft; and
(f) means for detachably connecting said cable end of said shaft to a tension transmitting device of an exercise apparatus.

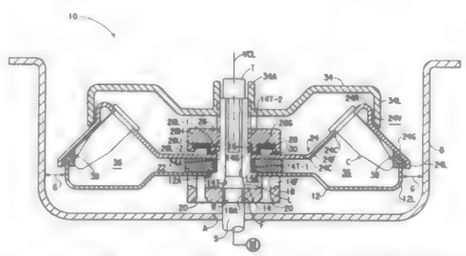
9. In combination with an exercise apparatus having a linearly extendable and retractable tension transmitting device having a first end and a second end, said second end connected to a movement control means which regulates the extension and retraction of the tension transmitting device, said control means being operably connected to a force measuring device which determines the tension applied to said tension transmitting device and provides an electronic signal representing this tension to a control computer, the improvement which comprises a user force application device, comprising:
(a) a main support structure;
(b) means for securing said main support structure in an exercise position desired by a user;
(c) a shaft, said shaft having a cable end and a handle end, said shaft being received by said main support structure and moveable therein, said cable end and said handle end extending from said main support structure;
(d) means for controlling movement of said shaft within said main support structure;
(e) a handle detachably connected to said handle end of said shaft; and
(f) means for detachably connecting said cable end of said shaft to said first end of said tension transmitting device of said exercise apparatus.

5,362,299
STAMP STORAGE ENVELOPE AND METHOD OF MAKING SAME
Diane D. Schou, 2931 Abraham, Cedar Falls, Iowa 50613
Filed Apr. 15, 1991, Ser. No. 684,973
Int. Cl.[5] B31B *1/25*
U.S. Cl. 493—240 4 Claims



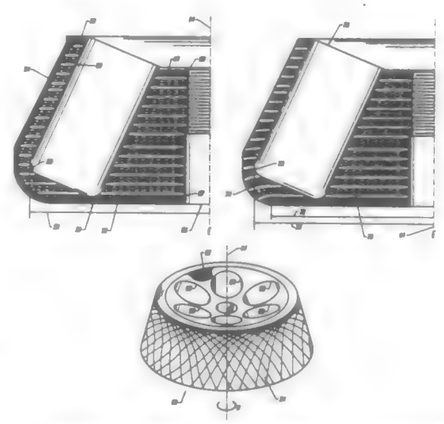
1. The method of making a storage envelope having front and rear walls interconnected by oppositely disposed end walls including a plurality of interconnected panels defining a storage chamber therebetween, comprising the steps of:
providing a single sheet of continuous material,
scoring said sheet of material to provide fold lines between said plurality of interconnected panels and said front and rear walls, and providing an arcuate exterior edge on said plurality of interconnected panels, said arcuate edge extending from said front wall to said rear wall,
folding said sheet of material along said fold lines and shaping said sheet to form said envelope,
determining the maximum desired distance between said front and rear walls when said envelope is in an open condition, and
securing and maintaining at least one of said panels in each end wall in an overlapped contiguous parallel relationship with one of an adjacent panel, front and rear wall.

5,362,300
SHELL-TYPE CENTRIFUGE ROTOR
Dave S. Christensen, Sandy Hook, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 66,733, May 27, 1993, abandoned. This application Jun. 29, 1993, Ser. No. 85,472
Int. Cl.[5] B04B *5/02*
U.S. Cl. 494—16 9 Claims



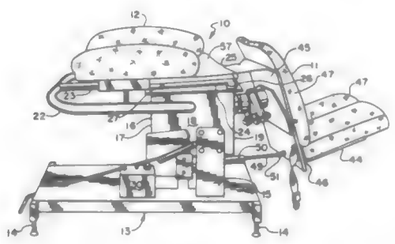
1. A shell-type centrifuge rotor for use in a centrifuge instrument having a bowl, the rotor comprising:
a body member having an upturned lip,
a plate attached to the body, the plate having a skirt portion thereon, the skirt portion overlying the lip on the body, the skirt having an underside with a groove formed therein, the groove defining a relatively high stress region of likely failure of the rotor,
a seal ring disposed in the groove, the seal ring extending between the plate and the lip,
failure of the rotor in the vicinity of the groove in the skirt portion at a first operating speed defining an opening through which a portion of the seal may protrude, the protruding portion of the seal generating a force tending to lower the speed of the rotor below the first operating speed.

5,362,301
FIXED-ANGLE COMPOSITE CENTRIFUGE ROTOR
Mohammad G. Malekmadani, Scotts Valley; Reza M. Sheikhrezai, San Jose, and William J. Cassingham, Grass Valley, all of Calif., assignors to Composite Rotors, Inc., Santa Clara, Calif.
Continuation of Ser. No. 896,162, Jun. 10, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 79,964
Int. Cl.[5] B04B *5/02, 7/08*
U.S. Cl. 494—16 8 Claims



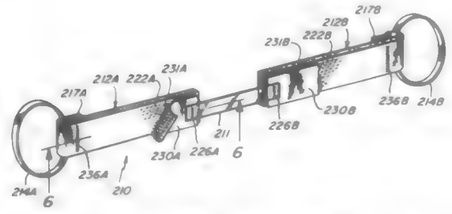
1. A fixed-angle centrifuge rotor having a rotor axis that is a vertical axis of rotation and comprising:
a rotor core having laminated layers of fiber-reinforced composite material with the layers arranged normal to the rotor axis and bound together with resin, the rotor core including at least one cell hole having a top tilted toward the rotor axis at an oblique angle and having a bottom with a radially outer portion thereof located at a first radius from the rotor axis;
means for attaching the rotor to a spindle of a centrifuge; and
reinforcement means for reinforcing the rotor core proximate the radially outer portion of the bottom of said at least one cell hole in a direction parallel to the rotor axis, the reinforcement means including fiber-reinforced composite material having a continuous region of oblique fibers oriented obliquely to the rotor axis, wherein the continuous region of oblique fibers extends above the radially outer portion of the bottom of said at least one cell hole to a radius less than the first radius, and wherein the continuous region of oblique fibers extends below the radially outer portion of the bottom of said at least one cell hole to a radius less than the first radius.

5,362,302
THERAPEUTIC TABLE
Robert J. Jensen, Stewartville; Thomas J. Liebl, and David J. Liebl, both of Donnelly, all of Minn., assignors to Jensen Three In One, Stewartville, Minn.
Continuation of Ser. No. 544,825, Jun. 27, 1990, abandoned. This application Mar. 7, 1994, Ser. No. 207,889
Int. Cl.[5] A61F 5/00
U.S. Cl. 601—24 37 Claims



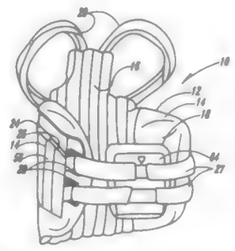
1. A therapeutic table for manipulation of the spine and pelvis of a patient supported thereon, comprising:
a base;
an upper torso/cervical spine support member supported on the base;
an articulated shaft having a first member, mounted to the base for rotation about a fixed axis, and a second member;
a hinge joining the first member and the second member, and adjustment means for adjusting the relative angle between the axis of the first member and the axis of the second member of the shaft;
a pelvic/lumbar spine support member rotatably attached to the second member of the shaft; and
means for rotating the first member of the shaft about a fixed axis so that when the adjustment means is adjusted to a non-zero angle between the axes the second member of the articulated shaft and the associated pelvic/lumbar support member move in a circumductive motion.

5,362,303
NASAL DRESSING HOLDER
Marianne Jasen, Amherst, and Suzanne Lewandowski, DePew, both of N.Y., assignors to Dale Medical Products, Inc., Plainville, Mass.
Continuation-in-part of Ser. No. 790,589, Nov. 8, 1991. This application Apr. 14, 1993, Ser. No. 46,617
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] A61F 5/00, 5/08, 9/00
U.S. Cl. 602—17 15 Claims



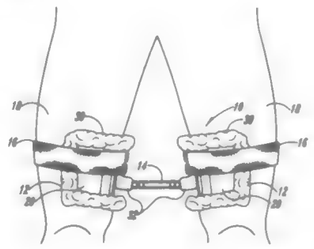
1. A nasal dressing holder for releasable attachment to a patient comprising:
an elongated central band having opposing ends, the band being of a first width sized to fit beneath a patients's nose and hold a dressing against the nostrils without engaging the patient's upper lip;
a pair of support straps having first ends attached to the opposing ends of the central band and adapted to lie against the patient's cheeks, wherein the support straps are releasably attachable to the central band;
a pair of elastic ear loops, one attached to a second end of each support strap and adapted to encircle a different one of the patient's ears for releasably attaching the holder to the patient's head; and
releasable strap-length adjusting means permitting release of the central band to change a dressing and to adjust the length of each support strap to vary the amount of tension applied by the band for holding the nasal dressing in place.

5,362,304
THORACIC LUMBAR SACRAL ORTHOSIS DEVICE
Harold T. Varn, Lawrenceville, Ga., assignor to Restorative Care of America Incorporated, Clearwater, Fla.
Filed Oct. 28, 1992, Ser. No. 967,505
Int. Cl.[5] A61F 5/02
U.S. Cl. 602—19 15 Claims



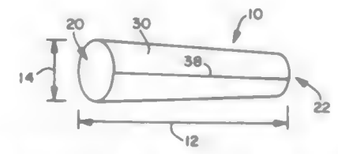
1. A thoracic lumbar sacral orthosis device comprising:
a jacket having opposite side portions, a back portion, the back portion being integrally formed with the side portions, a compartment formed within the side portions and back portions;
padding means removably fit within the compartment;
brace means removably positioned within compartment such that the padding means is between the brace means and a person's torso when the jacket is worn; and
a pair of adjustable straps secured to the jacket and adapted to extend over the person's shoulders and under the arms so as to prevent slumping.

5,362,305
HIP AND KNEE ABDUCTOR
Harold T. Varn, Lawrenceville, Ga., assignor to Restorative Care of America Incorporated, Clearwater, Fla.
Filed Feb. 9, 1993, Ser. No. 15,604
Int. Cl.[5] A61F 5/00
U.S. Cl. 602—24 18 Claims



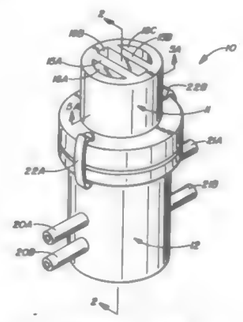
1. A hip and knee abductor device comprising:
a pair of C-shaped cuffs adapted to engage the inner thigh of a patient above the knee;
a single length-adjustable spacer bar extending between the cuffs so as to maintain the patient's legs in a selectively spaced apart orientation;
strap means for securing the cuffs to the patient's legs; and
mounting means for pivotally mounting the spacer bar to each cuff, such that each cuff is adapted to be rotated about a single axis substantially parallel to the patient's legs thereby allowing patient ambulation.

5,362,306
SURGICAL STOCKINETTE
Stacey G. McCarver, Marietta; David C. Strack, Canton; Marsha L. Porter, Roswell, and Peter Mathis, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Jun. 30, 1993, Ser. No. 85,332
Int. Cl.[5] A61F 13/00; A61B 19/08; B32B 3/10
U.S. Cl. 602—60 26 Claims



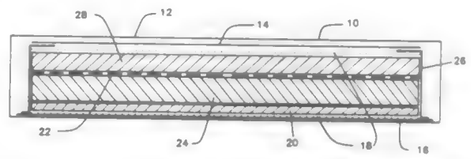
1. An expandable, liquid impervious surgical stockinette having a length, the stockinette comprising:
an exterior layer; and
a fibrous interior layer joined circumferentially to the exterior layer substantially along the entire length of the stockinette; and
wherein the stockinette, when stretched about 300 percent, has an average peak load of less than 10 pounds.

5,362,307
METHOD FOR THE IONTOPHORETIC NON-INVASIVE-DETERMINATION OF THE IN VIVO CONCENTRATION LEVEL OF AN INORGANIC OR ORGANIC SUBSTANCE
Richard Guy, and Girish Rao, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 299,397, Jan. 24, 1989, abandoned. This application Oct. 4, 1991, Ser. No. 771,483
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] A61N 1/30
U.S. Cl. 604—20 23 Claims



1. An iontophoretic diffusion cell device for the in vivo non-invasive removal of at least one charged or non-charged organic substance selected from glucose, a glucose species, a metabolite of glucose or combinations thereof, which organic substance is capable of migrating under the influence of an electrical current and migrates within a membrane surface, underlying tissue and circulating blood and migrates through the surface of intact skin or mucosa of a mammal into collection means for collecting the organic substance at the positive electrode, the negative electrode or a combination thereof, said device comprising:
(a) a positive electrode having an electrode surface which contacts the skin surface,
(b) a negative electrode having an electrode surface which contacts a different portion of the skin surface,
(c) electrically insulating means located between the positive electrode and negative electrode for electrical insulation between the electrodes and for monitoring current leakage between the positive and negative electrode, and
(d) electrically insulating material of construction in the shape of walls and edges to physically separate the positive electrode, the negative electrode and the electrically insulating means from each other,
wherein the positive electrode, negative electrode and insulating means are physically configured such that each present a single common surface of wall edges of the device for contact with the same side of the skin surface or mucosal surface of the mammal, and wherein either the positive electrode or the negative electrode or combinations thereof have reservoir collection means for collecting the removed charged or non-charged organic substance.

5,362,308
DISPOSABLE DOSAGE UNIT FOR IONTOPHORESIS-FACILITATED TRANSDERMAL DELIVERY, RELATED DEVICES AND PROCESSES
Yie W. Chien, North Brunswick, and Li-Lan H. Chen, Edison, both of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.
Continuation-in-part of Ser. No. 587,406, Sep. 25, 1990, Pat. No. 5,250,022. This application Oct. 5, 1993, Ser. No. 132,133
Int. Cl.[5] A61N 1/30
U.S. Cl. 604—20 11 Claims



1. A pharmaceutical dosage unit adapted to be removably assembled with a reservoir electrode of a transdermal periodic iontotherapeutic system, said dosage unit to be used in electrical contact with intact skin to be iontotherapeutically treated to administer transdermally a systemically effective dose amount of an effective and transdermally absorbable amount of an ionized pharmaceutical; said dosage unit comprising solution of said ionized pharmaceutical dispersed therein having an iontotherapeutically effective and physiologically acceptable pH at least about one pH unit lower or higher than the pKa or isoelectric point of said pharmaceutical; said unit dose adapted to permit said pharmaceutical to be released upon application to the reservoir electrode of an effective pulsed DC current; said dosage unit having the following elements:
a. a dimensionally stable hydrophilic gel polymer first layer which comprises a hydrophilic polymer which has dispersed therein an ionic exchange resin which is effective in removing the ions generated by the electrode during the operation of the iontotherapeutic system;
b. a permselective membrane is intimately adhered to the top surface of the hydrophilic polymer layer which has a pores size sufficiently small to prevent any substantial passage of the pharmaceutical through the membrane;
c. a hydrophilic gel polymer second layer intimately adhered to the top surface of the permselective membrane

and having dispersed therein an effective dose amount of an ionized pharmaceutical solution, said solution having a pH at least one pH unit below or above the pKa or isoelectric point of the pharmaceutical;

d. a thin fabric disc intimately adhered to the hydrophilic gel polymer second layer; and

e. an adhesive polymer third layer being in intimate contact with the thin fabric disc and providing intimate contact with the skin of a subject being treated;

said dosage unit adapted to be received by the pharmaceutical reservoir electrode and to make electrical contact with the electrical terminus of said pharmaceutical reservoir electrode.

5,362,309

APPARATUS AND METHOD FOR ENHANCED INTRAVASCULAR PHONOPHORESIS INCLUDING DISSOLUTION OF INTRAVASCULAR BLOCKAGE AND CONCOMITANT INHIBITION OF RESTENOSIS

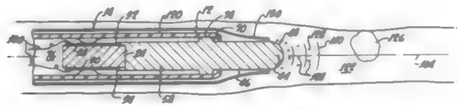
Robert E. Carter, Arlington, Mass., assignor to Coraje, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 945,275, Sep. 14, 1992. This application May 10, 1993, Ser. No. 58,222

The portion of the term of this patent subsequent to Jun. 7, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 604—22 **15 Claims**



1. Ultrasonic apparatus comprising:

radiator means for directing ultrasonic waves into intravascular walls and fluid, said radiation means being sized for intravascular insertion;

means, connected with said radiator means, for the generation of ultrasonic waves; and

separate means for both promoting cavitation of the intravascular fluid proximate the radiator means and for introducing a physiologically active agent proximate the radiator means.

5,362,310

HEATING APPARATUS FOR INSUFFLATOR

Kurt Semm, Kiel, Germany, assignor to Wisap Gesellschaft fur Wissenschaftlichen Apparatebau MbH, Sauerlach, Germany

Filed Apr. 7, 1993, Ser. No. 43,913

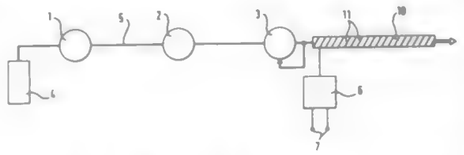
Claims priority, application Germany, Apr. 9, 1992, 4211986

Int. Cl.[5] A61M *13/00*

U.S. Cl. 604—26 **23 Claims**

1. A method for the insufflation of CO_2 gas into a biological body, wherein pressure of the gas is reduced by means of at least one pressure reducing stage and pressure-reduced gas is subsequently insufflated into the biological body, said method comprising:

heating the pressure-reduced gas to be insufflated to approxi-



mately the temperature of the biological body prior to insufflation into the biological body,

wherein the heating step takes place directly before the gas enters into the biological body.

5,362,311

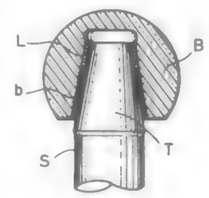
ARTIFICIAL HIP JOINT

Hirokazu Amino; Yoshinori Shiraiwa, both of Kyoto, Japan, and Ian C. Clarke, Santa Monica, Calif., assignors to Kyocera Corporation, Kyoto, Japan

Filed Jan. 5, 1990, Ser. No. 461,385

Int. Cl.[5] A61F *2/30*

U.S. Cl. 623—22 **6 Claims**



1. An artificial hip joint, comprising:

a ceramic head having a tapered bore therein, said tapered bore having an entrance;

a metal stem having a tapered portion formed at one end thereof, the tapered portion configured to be inserted in the tapered bore in the head; and

a truncated conical sleeve having a wall thickness in the range of about 50 μm to 5.0 mm, wherein the sleeve is compressed between the tapered bore in the head and the tapered portion of the stem forming a tapered fit;

wherein the thickness of the wall is varied along a longitudinal axis of the sleeve such that the wall has an upper segment having an increased wall thickness at an upper end of said sleeve, and a lower segment having a reduced wall thickness at a lower end of said sleeve such that when the tapered portion is inserted into the sleeve there is a tight fit between the tapered portion and the upper segment and a loose connection between the tapered portion and the lower segment.

5,362,312

CARRIER FLUID FOR THE SUSPENSION AND DELIVERY OF WATER SOLUBLE POLYMERS

Bryan Skaggs, San Diego; Mike O'Brien, El Cajon, both of Calif.; James M. Scheult, Spring, Tex., and John M. Swazey, San Diego, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 14, 1992, Ser. No. 960,662

Int. Cl.[5] C09D *101/00, 103/00, 105/00*

U.S. Cl. 106—189 **8 Claims**

1. A polymeric fluid composition comprising:

a) 0.2–49% one or more water soluble polysaccharides selected from the group consisting of xanthan gum, algin, carrageenan, guar, carboxymethyl cellulose, polyanionic cellulose and starch;

b) 50–98.8% water soluble, polyethylene glycol or thickened polyethylene glycol having an average molecular weight between about 150 and about 600;

c) 1–6% one or more viscosified polyol fluid components selected from the group consisting of ethylene glycol and glycerin; and

d) 0.1–10%, based on polyol weight, of one or more viscosifying polysaccharides selected from the group consisting of gellan gum, xanthan gum, rhamsan gum, welan gum and iota, lambda and kappa sulfated polysaccharides.

5,362,313

COATING COMPOSITION AND ITS USE

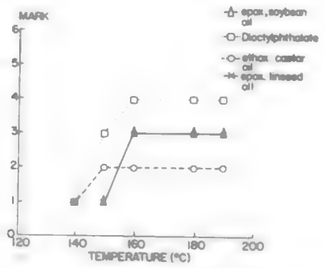
Lutz Hoppe; Burkhard Kressdorf, both of Walsrode; Erhard Lühmann, Bomlitz, and Reinhard Näder, Walsrode, all of Germany, assignors to Wolff Walsrode AG, Walsrode, Germany

Continuation of Ser. No. 911,563, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 746,394, Aug. 16, 1991, abandoned. This application Nov. 15, 1993, Ser. No. 152,954

Claims priority, application Germany, Aug. 24, 1990, 4026701

Int. Cl.[5] C09D *101/18*

U.S. Cl. 106—171 **5 Claims**



1. A solid lacquer binder consisting essentially of cellulose nitrate having a nitrogen content of less than 12.6% by weight and a component selected from the group consisting of epoxidized esters of natural fatty acids, epoxidized triglycerides, and mixtures thereof.

5,362,314

ADDITIVE MODIFIED BITUMINOUS EMULSIONS

Stephen P. Vicenzi, Edgerton, Wis., and Kenneth F. Grzybowski, Temple Terrace, Fla., assignors to Exxon Chemical Patents, Inc.

Continuation-in-part of Ser. No. 898,159, Jun. 15, 1992, Pat. No. 5,224,990. This application Mar. 15, 1993, Ser. No. 31,535

Int. Cl.[5] C08L *95/00*

U.S. Cl. 106—284.06 **25 Claims**

1. In a surface-coating comprising including a clay-stabilizer bituminous emulsion, said clay present in an amount sufficient to emulsify the bitumen, the improvement comprising:

about 90.0–99.95 parts by weight of an aqueous bituminous emulsion; and

about 0.05–10.0 parts by weight of a cohesion promoting additive selected from the group consisting of amines, amidoamines and blends thereof having the structural formula

$$X.\{R(NH\ R'')_nNH_2\}+Y.\{R'''C(O)\ (NH_mR^{IV})_o\}$$

wherein

X and Y are weight percentages, such that X + Y = 100% of the active, nitrogenous components,

R is a lipophile selected from the group consisting of R′- and R′OR″-,

R′ is an alkyl chain having 3–26 carbon atoms,

R″ is a hydrocarbon fragment having 2–6 carbon atoms,

n is an integer from 0–4,

R‴ is selected from the group consisting of an alkyl chain having 3–26 carbon atoms, and an alkenyl chain having 3–44 carbon atoms, and

R^{IV} is selected from the group consisting of

$$+CH_2CH_2NH\}_oH,$$

and, other poly-(ethyleneamine) based products with bottoms,

o is an integer from 1–6

m is integer from 0–1, and

R^V is selected from the group consisting of

$$+CH_2CH_2-NH\}_nH, \text{ and } H$$

such that the resultant coating exhibits increased resistance to trafficking and water and increased cohesion.

5,362,315

PIGMENTS WHOSE COLOR DEPENDS ON THE VIEWING ANGLE, THEIR PREPARATION AND USE

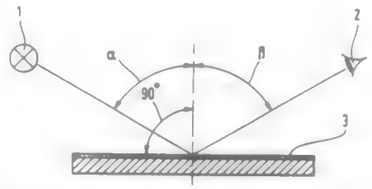
Christoph Müller-Rees, Pullach; Robert Maurer; Jürgen Stohrer, both of München; Franz-Heinrich Kreuzer, Martinsried; Silvia Jung, München, and Franz Csellich, Unterhaching, all of Germany, assignors to Consortium fur elektrochemische Industrie GmbH, Munich, Germany

Filed Nov. 22, 1993, Ser. No. 155,353

Claims priority, application Germany, Dec. 3, 1992, 4240743

Int. Cl.[5] C09K *19/54, 19/02*

U.S. Cl. 106—493 **11 Claims**



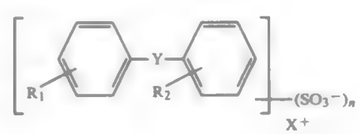
1. A pigment whose color depends on the viewing angle, which comprises oriented three-dimensionally crosslinked support-free substances of liquid-crystalline structure having a chiral phase and, optionally dyes and pigments, wherein said optional dyes and pigments do not serve as a base for the oriented three-dimensionally crosslinked liquid-crystalline substances having a chiral phase.

5,362,316
RESINOUS CUT-BACK COMPOSITIONS AND METHODS OF PREPARING THE SAME
Richard W. Paradise, Shawnee, Kans., assignor to Imperbel America Corporation, Kansas City, Kans.
Filed Feb. 5, 1993, Ser. No. 14,341
Int. Cl.[5] C08L *95/00*
U.S. Cl. 106—278 17 Claims

1. A cut-back composition for ambient temperature application to substrates comprising a resinous component selected from the group consisting of asphalt, coal tar, and mixtures thereof, and a terpene solvent, wherein said terpene solvent is present in said composition in an amount ranging from 5%–70% by weight of the total composition.

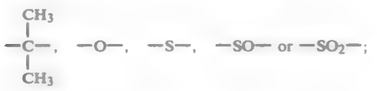
5,362,317
SEALANT COMPOSITIONS AND PROCESS FOR SEALING ALUMINUM OXIDE FILMS
Pinakin Patel, Fort Mill, S.C., and Richard L. Ranieri, Charlotte, N.C., assignors to Sandoz Ltd., Basel, Switzerland
Continuation of Ser. No. 682,757, Apr. 9, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 92,377
Int. Cl.[5] C09D *1/00*; C09K *15/12*
U.S. Cl. 106—287.23 33 Claims

1. An aqueous sealant composition comprising a solution of at least one soluble alkaline earth metal salt and at least one compound of formula I



I

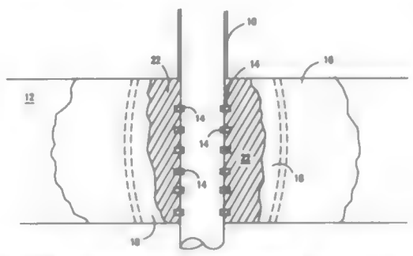
wherein
Y is a direct bond or a group of formula



R_1 and R_2 are each individually selected from H or C_5–C_{25}alkyl, provided that R_1 and
R_2 may not both be H;
n has a value in the range of 1 to 4; and
X^+ is a counterion,
wherein said alkaline earth metal salt and compound of formula I are in a molar ratio of about 2:1 to 20:1.

5,362,318
CONSOLIDATION AGENT AND METHOD
Paul Shu, Cranbury, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.
Division of Ser. No. 810,584, Dec. 19, 1991, Pat. No. 5,211,233, which is a continuation-in-part of Ser. No. 622,586, Dec. 3, 1990, Pat. No. 5,088,555. This application May 18, 1993, Ser. No. 63,198
The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.
Int. Cl.[5] C04B *12/04*; E21B *33/13*
U.S. Cl. 106—634 10 Claims

1. A cement for consolidating an interval of an unconsolidated or loosely consolidated formation obtained by a process comprising the steps of:
a) injecting into said interval an aqueous solution of a silicate selected from a member of the group consisting of an alkali metal silicate, ammonium silicate, or organoammonium silicate which member is contained in said solution in an amount of about 10 to about 60 wt %;
b) injecting next into said interval a spacer volume of a water-immiscible hydrocarbonaceus liquid in an amount sufficient to remove excess silicate therefrom; and
c) injecting thereafter into said interval a water-miscible organic solvent containing an alkylpolysilicate in about 10 to less than about 100 wt % and a member selected from the group consisting of an inorganic salt or chelated calcium in an amount of about 10 to about 40 wt % sufficient



to react with said organoammonium silicate, alkali metal or ammonium silicate so as to form a permeability retentive silicate cement within an interval of an underground formation of a strength sufficient to bind silica-containing particles within a formation and preclude formation sand from being produced from said interval thereby preventing caving.

5,362,319
PROCESS FOR TREATING FLY ASH AND BOTTOM ASH AND THE RESULTING PRODUCT
William B. Johnson, 209 Mississipi Dr., Monticello, Minn. 55362
Continuation-in-part of Ser. No. 967,490, Oct. 23, 1992. This application Oct. 21, 1993, Ser. No. 137,730
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[5] C04B *7/12, 7/24, 7/13*
U.S. Cl. 106—705 23 Claims

1. A method of producing environmentally stabilized formed bodies useful as an unfused building material from an ash produce selected from the group consisting of fly ash and bottom ash, said method comprising,
admixing said fly ash or bottom ash with an oxidant to promote oxidation of at least a portion of the ash to form an admixture,
providing or maintaining in said admixture an effective amount of water to render the admixture plastic,
thereafter forming the plastic admixture into bodies, and
allowing the formed bodies to harden to provide an environmentally stable product.

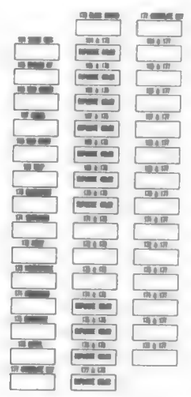
5,362,320
SANDABLE LOW SHRINKAGE MORTAR PATCHING/COATING COMPOUND
Burton K. Whatcott, P.O. Box 863, Dolores, Colo. 81323
Filed Sep. 13, 1993, Ser. No. 120,050
Int. Cl.[5] C04B *14/00*
U.S. Cl. 106—709 8 Claims

1. A cementitious patching and/or coating compound for drywall, plaster, concrete or stucco consisting of:
approximately 94 pounds of cement,
approximately 0.90 pounds of a thickener,
approximately 242.5 pounds of a pozzolanic filler,
approximately 2% to 25% by weight of said cement of polymer solids and an effective amount of water as needed for spreading consistency.

5,362,321
CEMENT COMPOSITION AND METHODS FOR PRODUCING SAME
Søren B. Larsen, Aalborg, Denmark, assignor to Aalborg Portland A/S, Aalborg, Denmark
PCT No. PCT/DK91/00098, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/15435, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 10, 1991, Ser. No. 938,046
Claims priority, application Denmark, Nov. 4, 1990, 936/90
Int. Cl.[5] C04B *22/08*
U.S. Cl. 106—713 36 Claims

1. A cement composition comprising:
1) a cement containing water-soluble chromate; and
2) at least one manganese(II) compound in an amount sufficient to reduce the amount of water-soluble chromate to at most 2 mg of Cr(VI) per kg of the cement, wherein the chromate content is determined by (a) elution of the composition in water for 15 minutes at a water to cement ratio of 1, (b) filtration, and (c) determining the chromate content in the filtrate, and wherein the manganese(II) compound is selected from the group consisting of (i) a salt with a mineral acid selected from the group consisting of sulfates, hydrogen sulfates, carbonates, nitrates, nitrites, sulfites, sulfides, disulfides, dithionates, thiosulfates, thiocyanates, hydroxides, oxides, monohydrogen phosphates, dihydrogen phosphates and silicates, or hydrates thereof; (ii) a double salt with a mineral acid; (iii) a salt with an organic acid selected from the group consisting of alkanoic acids, hydroxycarboxylic acids and sulfonic acids: and (iv) manganese(II) oxide sulfate.

5,362,322
COLOR EPOXY GROUT SYSTEM AND METHOD FOR USE
Charles J. Johansen, Jr., Katy; Robert L. Vecchio, Spring, and Ernest D. Hollas, Kingwood, all of Tex., assignors to C-Cure Chemical Company, Inc., Houston, Tex.
Filed Dec. 17, 1990, Ser. No. 628,402
Int. Cl.[5] C04B *14/36*
U.S. Cl. 106—802 2 Claims



1. A method for the preparation of a color grout and setting material comprising selecting a color from a color grid having axes with preselected colors, determining the component colors from the axes of the grid corresponding to the selected color, thoroughly mixing a prepackaged composition comprising an epoxy hardener, a color pigment additive and a silica filler for each of the component colors selected with an individually prepackaged composition of an epoxy resin and a silica filler.

5,362,323
CEMENT ADMIXTURE COMPOSITION
Hideo Koyata, Kanagawa, and Susumu Honda, Tokyo, both of Japan, assignors to W. R. Grace & Co. Conn., New York, N.Y. and NOF Corporation, Tokyo, Japan
Filed Feb. 9, 1993, Ser. No. 15,710
Claims priority, application Japan, Feb. 14, 1992, 4-028143; Feb. 14, 1992, 4-028144; Feb. 14, 1992, 4-028145
Int. Cl.[5] C04B *24/02, 24/04*
U.S. Cl. 106—810 14 Claims

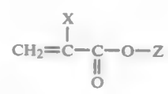
1. A cement additive which comprises at least one copolymer A of an alkenyl ether represented by the formula

$$R^1O(AO)_nR^2 \quad (I)$$

wherein
R^1 represents a $C_{2\text{-}5}$ alkenyl group;
R^2 represents a $C_{1\text{-}4}$ alkyl group;
AO represents a $C_{2\text{-}18}$ oxyalkylene group in which O represents an oxygen atom and A represents an alkylene group; and
n represents an average adduct mol number of said oxyalkylene group having a number of 60 to 95
and maleic anhydride at a mole ratio of said alkenyl ether (I) to said maleic anhydride of 30~70:70~30, said maleic anhydrides hydrolyzed product or a salt of the hydrolyzed product.

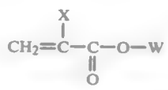
5,362,324
ZERO SLUMP - LOSS SUPERPLASTICIZER
Tiziano Cerulli; Paolo Clemente; Mario Collepardi; Giorgio Ferrari, and Pasquale Zaffaroni, all of Milan, Italy, assignors to MAPEI S.p.A., Milan, Italy
Filed Feb. 24, 1994, Ser. No. 201,377
Claims priority, application Italy, Feb. 25, 1993, MI93A000366
Int. Cl.[5] C04B *40/00*
U.S. Cl. 106—823 6 Claims

1. Superplasticizing additive for concrete and other cementitious mixes with high retention of workability and low air-entraining effect, comprising terpolymers of the following mixture of monomers respectively having formulas IV, V and VI



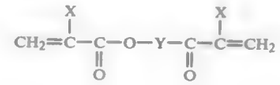
(IV)

where Z=H, Na, Li, ½Ca and X is H or CH_3;



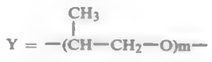
(V)

where W=—(—CH_2—CH_2—O—)$_n$—CH_3, n is an integer from 8 to 50 and X is H or CH_3;



(VI)

where



and m is an integer from 2 and 50.

5,362,325

APPARATUS FOR GROWING CRYSTALS IN AN ENVIRONMENT IN WHICH OPPORTUNITY FOR ACCESSING IS LIMITED

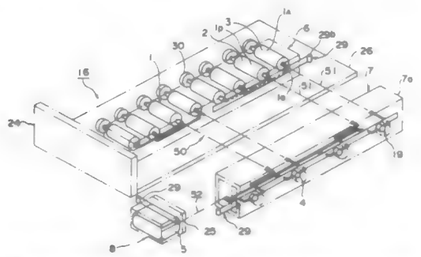
Atsushi Shiraishi; Koji Asano; Makoto Gotoh, and Kotaro Oka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 34,183, Mar. 18, 1993, abandoned, which is a continuation of Ser. No. 782,199, Oct. 24, 1991, abandoned. This application Dec. 23, 1993, Ser. No. 171,971

Claims priority, application Japan, Oct. 25, 1990, 2-285898; Aug. 12, 1991, 3-202040

Int. Cl.[5] B01D *9/00*

U.S. Cl. 117—201 **16 Claims**



1. An apparatus for processing a material, comprising:

a base member;

a syringe block mounted detachably on said base member, said syringe block carrying thereon a plurality of syringes, said plurality of syringes comprising at least a first syringe for holding therein a first fluid and a second syringe for holding therein a second fluid;

a cell block mounted detachably on said base member, said cell block carrying thereon a plurality of processing chambers supplied with said first and second fluids for processing a material as a result of a mixing of said first and second fluids;

interconnection means for connecting said first syringe and said second syringe to said processing chamber that corresponds to said first and second syringes, said interconnection means establishing a communication between said first syringe and said processing chamber for allowing said first fluid to flow from said first syringe to said processing chamber, said interconnection means further establishing a communication between said second syringe and said processing chamber for allowing said second fluid to flow from said second syringe to said processing chamber; and

actuation means provided on said base member for actuating said plurality of syringes wherein said syringe block and cell block are detachable in an environment where said processing is conducted.

5,362,326

APPARATUS FOR FORMING CORROSION PROTECTION COATINGS ON PRESTRESSING STRAND

Takeshi Hasui, Asahikawa, and Takatsugu Fujikawa, Ebetsu, both of Japan, assignors to Kurosawa Construction Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1993, Ser. No. 45,865

Claims priority, application Japan, Nov. 13, 1992, 4-304038

Int. Cl.[5] B05C *13/00*

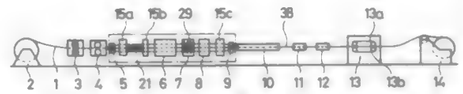
U.S. Cl. 118—44 **4 Claims**

1. Apparatus for forming coatings on a twisted prestressing strand comprising:

means for loosening and untwisting sequentially selected lengths of a twisted prestressing strand having a core steel wire and plural surrounding steel wires wound about the core wire;

means positioned after said loosening and untwisting means for applying pulverized synthetic resin to surfaces of each of the surrounding steel wires and core steel wire;

means positioned after said applying means for heating and melting the synthetic resin applied to the steel wires;



means positioned after said heating and melting means for cooling the resin-coated surrounding and core steel wires; and

means positioned after said heating means and cooling means for tightening and retwisting the resin-coated surrounding steel wires about the resin-coated core steel wire.

5,362,327

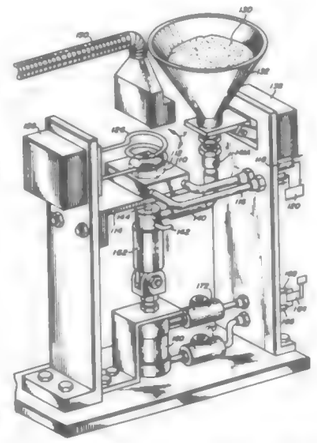
APPARATUS FOR PRODUCING A COATING ON AN INTERNALLY THREADED FASTENER

Eugene Sessa, Mt. Clemens, and Richard Duffy, Shelby Township, both of Mich., assignors to Nylok Fastener Corporation, Macomb, Mich.

Continuation of Ser. No. 814,105, Dec. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 781,102, Oct. 22, 1991, Pat. No. 5,141,771, which is a division of Ser. No. 424,810, Oct. 20, 1989, Pat. No. 5,090,355. This application Sep. 17, 1993, Ser. No. 123,701

Int. Cl.[5] B05C *19/00;* **B05B** *13/06*

U.S. Cl. 118—308 **5 Claims**



1. An apparatus for applying a coating of resin material to the internal threads of a threaded fastener, said fastener having a fastener aperture, said apparatus comprising:

a support for said fastener, said support having a support aperture in substantial axial alignment with said fastener aperture;

an air-powder nozzle for spraying powdered resin material onto the internal threads of said fastener;

a reciprocating actuator having a reciprocal travel cycle to linearly move said nozzle into and then out of said fastener aperture;

a movable carriage mounted to said actuator and carrying said nozzle;

a delay assembly to maintain said nozzle in a generally stationary position within said fastener aperture for a predetermined period of time while said actuator continues said reciprocal travel cycle; and an adjustment mechanism for adjustably controlling the movement and position of said carriage and said nozzle in relation to said fastener and said support.

5,362,328

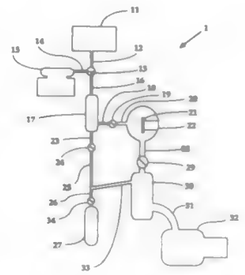
APPARATUS AND METHOD FOR DELIVERING REAGENTS IN VAPOR FORM TO A CVD REACTOR, INCORPORATING A CLEANING SUBSYSTEM

Robin A. Gardiner, Bethel; Peter Van Buskirk, Newtown, and Peter S. Kirlin, Bethel, all of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 927,134, Aug. 7, 1992, which is a continuation-in-part of Ser. No. 807,807, Dec. 13, 1991, Pat. No. 5,204,314, which is a continuation of Ser. No. 549,389, Jul. 6, 1990, abandoned. This application Jan. 7, 1994, Ser. No. 178,933

Int. Cl.[5] C23C *16/00*

U.S. Cl. 118—726 **13 Claims**



1. An apparatus for vaporizing a source reagent of non-vapor character to produce a vapor for transport to a locus of use in a downstream deposition chamber, said apparatus comprising:

a vaporization chamber including a housing defining therewithin an enclosed interior vaporization volume;

means for feeding source reagent to the interior volume of the housing;

vaporization means disposed within the interior volume of said housing and in receiving relationship to the feed means, for receiving source reagent and effecting vaporization thereof;

a deposition chamber to which the vaporization chamber housing is joined in vaporized reagent flow relationship; and

means for selectively feeding to the interior volume, for contact with the vaporization means and interior surfaces of the housing, a cleaning fluid which is cleaningly effect to at least partially remove vaporization deposits from said vaporization means and interior surfaces of the housing;

wherein the flow of cleaning fluid, source reagent, and vaporized reagent are selectively controlled with flow control means of a selectively actuatable character, and wherein the cleaning fluid feeding means and flow control means are constructed and arranged to be operated while the vaporization chamber housing remains connected to the deposition chamber.

5,362,329

PROCESS FOR PRODUCING HEAT-MOISTURE TREATED STARCH

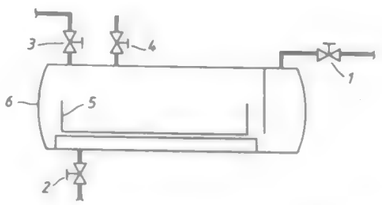
Zenichi Yoshino, Kashihara; Toshiaki Komaki, Nishinomiya, and Yoshiki Kurahashi, Osaka, all of Japan, assignors to Sanwa Kosan Kabushiki Kaisha, Kashihara, Japan

Filed Oct. 16, 1992, Ser. No. 961,981

Int. Cl.[5] C08B *30/00;* **A23L** *1/05*

U.S. Cl. 127—65 **3 Claims**

1. A process for producing heat-moisture treated starch by treating starch in a pressure vessel resistant to both internal and external pressure and equipped with a vacuum line and pressure-steam line, the process comprising treating starch in said pressure vessel under reduced pressure of 200 Torr or less in a first step, and then introducing steam into said pressure vessel in a second step, thereby performing heat treatment on the



starch, whereby the treating of the starch under reduced pressure tends to remove entrained air in spaces between particles of starch.

5,362,330

PROCESS FOR THE EMISSION-FREE, IN PARTICULAR CFC-FREE, CLEANING OF PRECISION OPTICS OR OPTICAL ELEMENT GROUPS

Elke Preussner, Ritterhude; Heinrich Gruenwald, Gomaringen, and Friedrich Scheerer, Solms-Niederbiel, all of Germany, assignors to Leica Mikroskopie und Systeme GmbH, Wetzlar, Germany

Filed Feb. 19, 1993, Ser. No. 971,840

Claims priority, application Germany, Jun. 19, 1991, 4120202

Int. Cl.[5] C03C *23/00*

U.S. Cl. 134—1 **16 Claims**

1. An emission-free process for cleaning precision optics and components of precision optics comprising the steps of:

(a) pretreating a surface of precision optics or a surface of components of precision optics by

(i) cleaning said surface in a cleaning bath comprising buffered tap water to which surfactants have been added as wetting agents, circulating said cleaning bath by means of microfiltration and exposing said surface to ultrasound exposure, said ultrasound having variable frequencies and amplitudes to form a cleaned surface;

(ii) rinsing the cleaned surface of step (a)(i) with buffered water containing no wetting agents to form a rinsed surface, simultaneously rinsing the surface with microfiltered fresh water and exposing the surface to ultrasound exposure, said ultrasound having variable frequencies and amplitudes;

(iii) repeating step (a)(i);

(iv) repeating step (a)(ii);

(v) rinsing the product of step (a)(iv) with buffered, deionized water simultaneously with ultrasound exposure, said ultrasound having variable frequencies and amplitudes; and

(vi) spraying the product of step (v) with deionized water simultaneously with microfiltered fresh water to form a pretreated surface;

(b) degrading or convening organic impurities and surfactant residues present on the surface of the pretreated surface into carbon dioxide by a means selected from the group consisting of short-wave UV radiation, highly accelerated electrons and glow discharge to form a degraded or converted surface; and

(c) treating the degraded or converted surface by:

(i) displacing water present on said degraded or converted surface either by means of organosilicon compounds or perfluorinated compounds that form a film having a thickness of between 10 and 100 nm on the surface under the pretreating and degrading conditions of steps (a) or (b), or by means of non-volatile, hydrophobic substances that are readily degradable under the de-

grading conditions of step (b) to form a displaced surface;

(ii) sealing the displaced surface by forming a metal oxide precursor film in the presence of UV or electron radiation to form a surface having a surface sealing layer; and

(iii) coating the sealed surface whereby the surface sealing layer is either degraded to metal oxide by glowing during coating or the surface sealing layer is activated by glowing during coating.

5,362,331

PROCESS AND APPARATUS FOR PRODUCING NB_3AL SUPER-CONDUCTING WIRE

Naohumi Tada; Yoshihide Wadayama; Kiyoshi Inoue, all of Ibaraki, and Kunihisa Kamata, Tokyo, all of Japan, assignors to Hitachi Ltd.; National Research Institute for Metals and Hitachi Cable Ltd., all of Tokyo, Japan

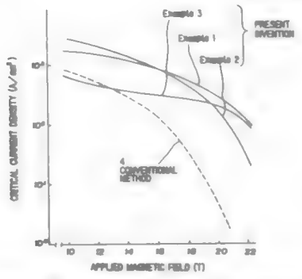
PCT No. PCT/JP91/00627, § 371 Date Jan. 8, 1993, § 102(e) Date Jan. 8, 1993, PCT Pub. No. WO91/18402, PCT Pub. Date Nov. 28, 1991

PCT Filed May 10, 1991, Ser. No. 945,985

Claims priority, application Japan, May 11, 1990, 2-122441

Int. Cl.[5] H01B *12/00*

U.S. Cl. 148—98 **8 Claims**



1. In a process for making a Nb_3Al superconductive wire, comprising the steps of preparing a composite consisting of a large number of Al or Al alloy core wires and Nb matrixes, cold drawing the composite into a composite multicore wire, and heat treating the composite multicore wire, the improvement comprising dipping said cold drawn composite multicore wire, simultaneously with said heat treating step, into a molten metal so as to solidify the molten metal around the composite multicore wire and thus form a stabilized metal layer on an outer periphery of the Nb_3Al superconductive wire.

5,362,332

PROCESS FOR PRODUCING A MAGNET BASE FOR PRINTING HEAD OF A WIRE DOT PRINTER

Yutaka Shimizu, and Yoshihiko Seyama, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 7, 1993, Ser. No. 132,838

Claims priority, application Japan, Mar. 17, 1993, 5-057221

Int. Cl.[5] H01F *1/22*

U.S. Cl. 148—105 **15 Claims**

6. A process for producing a magnet base used as a component of a magnetic circuit of a printing head of a wire dot printer, the magnetic circuit comprising the magnet base, a by-pass and an armature, the process comprising the steps of:

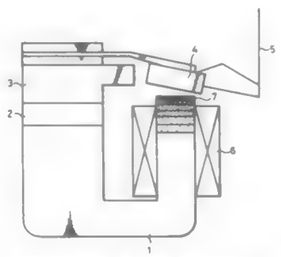
kneading soft magnetic powder comprising an Fe-50% Co alloy and a binder, thereby forming a kneaded mixture;

injection molding the kneaded mixture thereby forming a molded article in accordance with a desired configuration of the magnet base;

heating the molded article in a degreasing furnace to remove the binder and thereby producing a degreased, molded article;

sintering the degreased, molded article, thereby producing a sintered article;

annealing the sintered article, thereby producing the magnet base, the magnet base having a portion aligned with and defining the magnetic flux path of the magnetic circuit and an end face perpendicular to the magnetic flux path; and



prior to or subsequently to the annealing step, forming a layer of a material, selected from the group consisting of metals and metal alloys which increase the specific electrical resistance of the magnet base, on an end face of the magnet base which is perpendicular to the magnetic circuit.

5,362,333

PRETREATMENT FOR ZINC AND ZINC ALLOY PRIOR TO CHROMATING

Noriaki Yoshitake; Kensuke Mizuno, and Hitoshi Ishii, all of Hiratsuka, Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/07586, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993

PCT Filed Oct. 9, 1991, Ser. No. 39,255

Claims priority, application Japan, Oct. 15, 1990, 2-275837

Int. Cl.[5] C23C *22/78*

U.S. Cl. 148—264 **8 Claims**

1. A process for forming a protective coating on a zinc surface, comprising a step of applying a chromate treatment to the zinc surface, wherein, prior to applying the chromate treatment to the zinc surface, the zinc surface is pretreated by a process comprising steps of:

(A) covering the zinc surface with a layer of an aqueous solution that consists of (i) water, (ii) at least one Ni^{2+} or Co^{2+} salt, with one of the anions sulfate, PO_4^{3-}, HPO_4^{2-}, $H_2PO_4^-$, $P_2O_7^{-2}$, $HP_2O_7^-$, PO_3^-, and mixtures thereof and, optionally, (iii) a complexing agent; and, without any intervening water rinse,

(B) drying into place on the zinc surface covered in step (A) the solids content of the layer of aqueous solution applied in step (A) by removing the water therefrom at a temperature within the range of 40°–100° C.

5,362,334

COMPOSITION AND PROCESS FOR TREATMENT OF METALLIC SURFACES

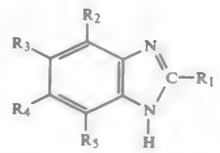
William Adams, Woodbury; Clyde Newcomer, Torrington, and Gary B. Larson, Cheshire, all of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Dec. 23, 1993, Ser. No. 173,908

Int. Cl.[5] C23C *22/06*

U.S. Cl. 148—268 **12 Claims**

1. A process for chemically forming a protective layer on a metallic surface which comprises treating the metallic surface with an aqueous solution comprising a benzimidazole compound which benzimidazole compound has the formula:



wherein R_1 is selected from the group consisting of halogens, substituted or unsubstituted halogenated alkyl groups, and substituted or unsubstituted halogenated aryl groups; and

wherein R_2, R_3, R_4, and R_5 are independently selected from the group consisting of hydrogen, nitro groups, substituted or unsubstituted alkyl groups, substituted or unsubstituted aryl groups and halogens.

5,362,335

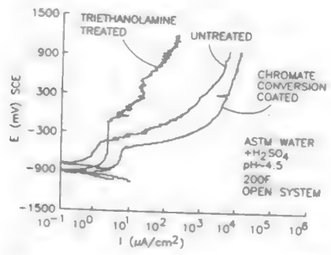
RARE EARTH COATING PROCESS FOR ALUMINUM ALLOYS

Ravi Rungta, East Amherst, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 25, 1993, Ser. No. 37,142

Int. Cl.[5] C23C *22/56*

U.S. Cl. 148—272 **8 Claims**



1. A process for enhancing the corrosion resistance of an aluminum alloy, the process comprising the steps of:

exposing a surface of the aluminum alloy to a hygroscopic solution so as to form a bohmite film on the aluminum alloy;

exposing the aluminum alloy to an aqueous solution consisting essentially of cerous chloride and water at a temperature of about 100° F. to about 200° F. and for a duration of about 10 to about 20 minutes so as to form cerium oxide on the aluminum alloy, such that the cerium oxide is incorporated in the bohmite film, the aqueous solution of cerous chloride comprising about 8000 to about 12,000 ppm cerous chloride and having a pH of about 3 to about 5;

rinsing the aluminum alloy in water; and

drying the aluminum alloy at an elevated temperature of about 200° F. to about 320° F. and for a duration of about 10 to about 30 minutes, so as to form a mixed barrier layer of the cerium oxide in the bohmite film which significantly extends the passivity range of the aluminum alloy.

5,362,336

PERMANENT MAGNET MATERIAL

Tadashi Yamaguchi, Sendai; Naomasa Kimura, Wako, and Akihisa Inoue, Sendai, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

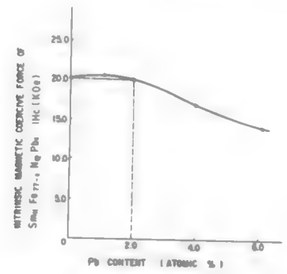
Filed May 28, 1992, Ser. No. 889,852

Claims priority, application Japan, May 28, 1991, 3-124061

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—301 **22 Claims**

11. A permanent magnet material consisting of 6 to 30 atomic % of a rare earth element, 60 to 91 atomic % of a transition element (except for Cu and Ag) 3 to 15 atomic % of nitrogen, and up to 4.5 atomic % of at least one additive element selected from the group consisting of Cu, Ag, Al, Ga, Zn, Sn, In, Bi, and Pb as an inhibitor of thermal decomposition Of



nitrides which has been obtained by nitriding constituent elements in a vapor phase state.

5,362,337

FREE-MACHINING MARTENSITIC STAINLESS STEEL

Theodore Kosa, Reading, Pa., assignor to CRS Holdings, Inc., Wilmington, Del.

Filed Sep. 28, 1993, Ser. No. 127,341

Int. Cl.[5] C22C *38/20*

U.S. Cl. 148—325 **45 Claims**

1. A martensitic, stainless steel alloy having a good combination of machinability, hardness capability, and corrosion resistance consisting essentially of, in weight percent,

Carbon	Up to 0.07
Nitrogen	Up to 0.07
Carbon + Nitrogen	Up to 0.08
Copper	1.0–3.0
Chromium	10.0–14.0
Sulfur	0.15–0.55
Manganese	Up to 1.25
Silicon	Up to 1.0
Phosphorus	Up to 0.06
Nickel	Up to 1.0
Molybdenum	Up to 1.0
Boron	Up to 0.01
Tellurium	Up to 0.10
Selenium	Up to 0.25
Bismuth	Up to 0.15
Niobium	Up to 0.10

the balance essentially iron, wherein said elements are balanced such that in the wrought condition, said alloy contains up to about 11 volume percent delta ferrite.

5,362,338

NON-HEAT TREATING STEEL FOR HOT FORGING

Naoki Iwama, Chita, and Ichie Nomura, Ichinomiya, both of Japan, assignors to Aichi Steel Works Ltd., Tokai, Japan

Continuation of Ser. No. 736,648, Jul. 26, 1991, abandoned. This application Mar. 4, 1993, Ser. No. 26,095

Claims priority, application Japan, Jul. 27, 1990, 2-199673; Sep. 28, 1990, 2-262588

Int. Cl.[5] C22C *38/00*

U.S. Cl. 148—334 **12 Claims**

11. Non-heat-treating steel, consisting essentially of, by weight %,

0.10–0.30%C,
0.05–0.50% Si,
0.80–2.00% Mn,
0.30–1.50% Cr,
0.07–0.50% Mo,
0.015–0.060% Al,
0.07–0.50% V,
0.0108–0.020% N,

and the balance Fe and inevitable impurities, wherein

$$\%Mo+\%V \geqq 0.20(\%),$$

$$1.8X\%Mn+\%Cr+0.5\times\%Mo \leqq 20\times\%C,$$

$$Bs \geqq 550(°C)$$

in which

$$Bs=830-270\times C\%-90\times Mn\%-70\times Cr\%-83\times Mo\%,$$

$$\%Al/27<\%N/14,$$

wherein the steel has been heated, hot-forged and air-cooled.

5,362,339

MAGNETIC REFRIGERANT AND PROCESS FOR PRODUCING THE SAME

Hiroyuki Horimura, Saitama; Tsuyoshi Masumoto, Miyagi; Akihisa Inoue, Miyagi; Kazuhiko Kita, Miyagi, and Hitoshi Yamaguchi, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1992, Ser. No. 850,742
Claims priority, application Japan, Mar. 14, 1991, 3-74680
Int. Cl.[5] C22C *45/00*
U.S. Cl. 148—403 **1 Claim**

1. A magnetic refrigerant, which has a composition represented by

$$Ln_aGa_bM_c$$

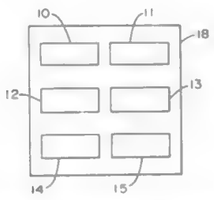
wherein Ln is at least one element selected from the group consisting of Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm and Yb; M is at least one element selected from the group consisting of Fe, Co, Ni, Cu and Ag; and each of a, b and c are atomic percentages, with the proviso that a+b+c=100 atomic %, 20 atomic % $\leqq$a$\leqq$80 atomic %, 5 atomic % $\leqq$b$\leqq$50 atomic %, 5 atomic % $\leqq$c$\leqq$60 atomic %, and wherein said magnetic refrigerant has an amorphous structure with a difference ΔT of 10K or more between a glass transition temperature Tg and a crystallization temperature Tx, with the proviso that Tx>Tg.

5,362,340

METHOD OF PRODUCING ALUMINUM CAN SHEET HAVING LOW EARING CHARACTERISTICS

Marilyn Daly, Allison Park; Scott L. Palmer, Apollo; Robert E. Sanders, Jr., New Kensington, all of Pa.; W. Bryan Steverson, Maryville, and Lyndon Morgan, Knoxville, both of Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 26, 1993, Ser. No. 37,266
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—691 **19 Claims**



1. A method of producing aluminum can sheet having low earing characteristics, said method comprising:

providing an aluminum alloy body;

heating said body to a soaking temperature of between about 527° to 571° C. (980° to 1060° F.);

hot rolling said body, said hot rolling consisting of hot rolling in a single-stand reversible hot mill to produce an intermediate gauge sheet, said intermediate gauge sheet exiting said single-stand reversible hot mill at a temperature between about 249° to 405° C. (408° to 760° F.); and

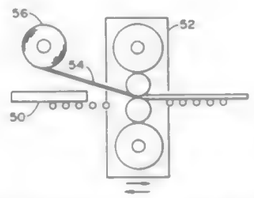
cold rolling said intermediate gauge sheet to produce said aluminum can sheet having low earing characteristics.

5,362,341

METHOD OF PRODUCING ALUMINUM CAN SHEET HAVING HIGH STRENGTH AND LOW EARING CHARACTERISTICS

Scott L. Palmer, Apollo; Robert E. Sanders, New Kensington, both of Pa.; W. Bryan Steverson, Maryville, and Lyndon Morgan, Knoxville, both of Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 13, 1993, Ser. No. 4,104
Int. Cl.[5] C22F *1/04*
U.S. Cl. 148—692 **26 Claims**



1. A method of producing aluminum can sheet having high strength and low earing characteristics, said method comprising:

providing an aluminum alloy ingot;

hot rolling said ingot, said hot rolling step consisting of hot rolling in a single-stand hot reversing mill to produce a first intermediate gauge sheet, said first intermediate gauge sheet exiting said single-stand hot reversing mill at a temperature between about 249° C. to 405° C. (480° F. to 760° F.);

cold rolling said first intermediate gauge sheet to produce a second intermediate gauge sheet;

passing said second intermediate gauge sheet through heating means to continuously anneal said second intermediate gauge sheet;

cooling said second intermediate gauge sheet; and

cold rolling said second intermediate gauge sheet to produce said aluminum can sheet having high strength and low earing characteristics.

5,362,342

METHOD OF BONDING ROOF TILES TO ROOF SUBSTRATE UTILIZING URETHANE FOAM

Pat L. Murray, Spring; E. Richard Huber, Houston, both of Tex., and Thomas C. Hughes, Orlando, Fla., assignors to Polyfoam Products, Inc., Spring, Tex.

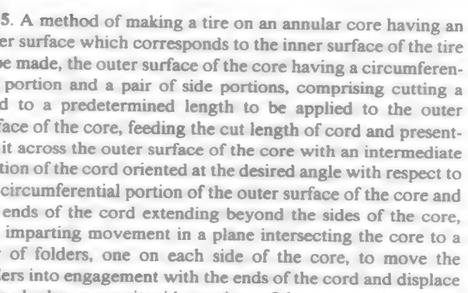
Continuation-in-part of Ser. No. 916,525, Jul. 20, 1992, Pat. No. 5,219,097. This application May 3, 1993, Ser. No. 56,183
Int. Cl.[5] B32B *31/06*
U.S. Cl. 156—71 **16 Claims**

1. A method of installing a plurality of roof tiles to a roof substrate on a pitched roof, the method comprising the steps of:

applying a stream of a two component froth liquid polyurethane foam on the roof substrate from a hand-held foam dispensing apparatus, said stream having a length approximating the length of the roof tile and a width substantially less than the width of the roof tile, said froth liquid polyurethane foam having a density of about one to about four pounds per cubic foot and a reactivity period of about one to about six minutes;

placing a portion of a lower surface of a first roof tile in substantial contact with the stream of froth liquid polyurethane foam during the reactivity period; and

allowing said froth liquid polyurethane foam to bond the first roof tile to the roof substrate,



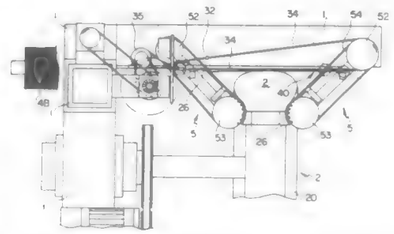
wherein only a portion of the lower surface of the first roof tile is in contact with the polyurethane foam.

5,362,343

PROCESS FOR THE MANUFACTURE OF A TIRE INCLUDING APPLYING INDIVIDUAL CORD LENGTHS AND APPARATUS FOR CARRYING OUT THE PROCESS

Claude Debroche, Cebazat, France, assignor to Sedepro, Paris, France

Continuation of Ser. No. 896,826, Jun. 11, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,197
Claims priority, application France, Jun. 17, 1991, 91 07504
Int. Cl.[5] B29D *30/10*
U.S. Cl. 156—117 **20 Claims**



15. A method of making a tire on an annular core having an outer surface which corresponds to the inner surface of the tire to be made, the outer surface of the core having a circumferential portion and a pair of side portions, comprising cutting a cord to a predetermined length to be applied to the outer surface of the core, feeding the cut length of cord and presenting it across the outer surface of the core with an intermediate portion of the cord oriented at the desired angle with respect to the circumferential portion of the outer surface of the core and the ends of the cord extending beyond the sides of the core, and imparting movement in a plane intersecting the core to a pair of folders, one on each side of the core, to move the folders into engagement with the ends of the cord and displace the ends along opposite side portions of the outer surface of the core to apply the length of the cord at the desired place on the outer surface of the core.

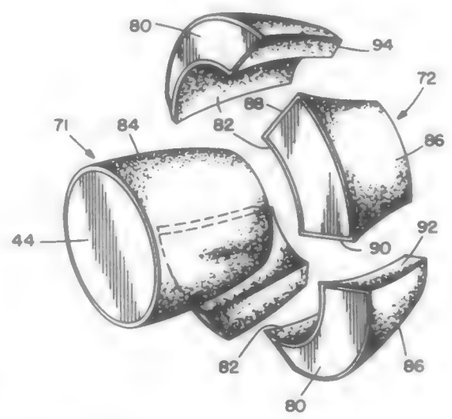
16. A method as set forth in claim 15 in which each individual cord is fed across the circumferential portion of the outer surface of the core in a waiting position for the folders to engage the ends of the cord and apply the cord to the side portions of the outer surface of the core.

5,362,344

DUCTED SUPPORT HOUSING ASSEMBLY

Avi Ben-Porat, Norwalk; George Milo, Huntington; Walter Smith, Hamden, and Theodore Westerman, Easton, all of Conn., assignors to Avco Corporation, Providence, R.I.

Filed Feb. 3, 1993, Ser. No. 12,581
Int. Cl.[5] B32B *5/08*; B65H *81/02*; F01D *5/14*
U.S. Cl. 156—148 **11 Claims**



1. A method of making an integral structure comprised of inner and outer coaxial shells mutually supported so as to define an annular passageway therebetween comprising the steps of:

(a) braiding on a shaped mandrel a plurality of fibers to form an inner shell preform having an outer surface being substantially a surface of revolution;

(b) braiding on a conical mandrel a plurality of fibers to form a duct preform having a conical shape;

(c) removing the duct preform from the conical mandrel;

(d) administering each of a plurality of the duct preforms formed in step (b) onto an outer peripheral surface of a duct mold having a shape different from that of the conical mandrel so as to contiguously conform to the shape of the duct mold and thereby define a modified duct preform including an inner duct surface shaped to congruently mate with the outer surface of the inner shell preform, an outer duct surface spaced from the inner duct surface, and first and second lateral walls having opposed lateral surfaces;

(e) mounting the plurality of the modified duct preforms together with their associated duct molds onto the outer surface of the inner shell preform in side-by-side relationship such that the first and second lateral surfaces on adjacent modified duct preforms are coextensive and engaged, the plurality of the modified duct preforms completely circumscribing the inner shell preform;

(f) braiding a plurality of fibers across the plurality of outer duct surfaces to form an outer shell preform spaced from and coaxial with the inner shell preform and to integrally encapsulate the outer duct surfaces;

(g) applying resin to structure defined by the braided inner shell preform, the braided modified duct preforms, and the braided outer shell preform to fill all voids in the structure; and

(h) curing the resin to thereby form an integral structure comprised of inner and outer shells and a plurality if circumferentially spaced strut members defined by the engaged first and second lateral walls of the adjoining modified duct preforms.

5,362,345

METHOD OF MANUFACTURING INTEGRAL RAILWAY COACH BODIES

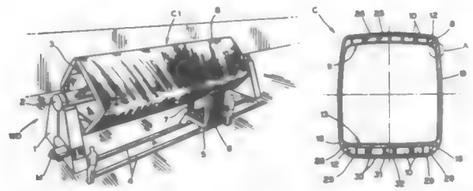
Andreas Stettler, Lutzenberg, and Kurt Anderegg, Rheineck, both of Switzerland, assignors to Inventio AG, Hergiswil NW, Switzerland

Filed Jan. 28, 1993, Ser. No. 11,397

Claims priority, application Switzerland, Jan. 28, 1992, 00 227/92-5

Int. Cl.[5] B65H *81/00*; B61D *17/04*

U.S. Cl. 156—173 **18 Claims**



1. A method for the manufacture of integral coach bodies having a self-supporting lightweight structure comprising the steps of:

a. winding an inner covering layer on a winding core, the winding core having a desired size and shape of a coach body, said inner covering layer having a generally rectangular cross section with a ceiling wall, a floor wall and a pair of spaced apart side walls connected by four curved corner regions;

b. attaching a plurality of channel segments to an outer surface of each of said ceiling wall and said floor wall and attaching insulation segments to outer surfaces of said corner regions;

c. attaching a stiffening framework to outer surfaces of said side walls and to outer surfaces of said channel segments and said insulation segments, said stiffening framework having a plurality of openings formed therein;

d. positioning a plurality of insulation plates in less than all of said openings in said stiffening framework;

e. winding an outer covering layer on the winding core over and in contact with said stiffening framework and said insulation plates to form a partial coach body, at least one of said inner and outer covering layers being formed with a sandwich type construction having a first winding layer, an insulation mat attached to an outer surface of said first winding layer, and a second winding layer wound over said insulation mat; and

f. removing said partial coach body from the winding core.

5,362,346

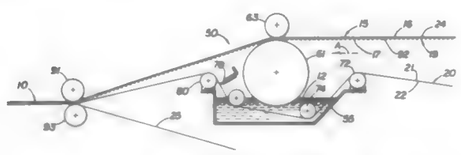
METHOD OF MAKING REINFORCED CORRUGATED BOARD

Bobby T. Bullock, Sr., Marietta, Ga., assignor to MEAD, Smyrna, Ga.

Filed Apr. 22, 1993, Ser. No. 50,815

Int. Cl.[5] B31F *1/28*

U.S. Cl. 156—205 **7 Claims**



1. A method for making reinforced corrugated board, comprising:

a. passing a first corrugated member with a first upper surface and a first lower corrugated surface through a primary adhesive station whereby the first lower corrugated surface is coated with adhesive;

b. moving, simultaneously with the passing step, a reinforcing strip with a top surface and a bottom surface through the primary adhesive station below and in alignment with the first corrugated member, whereby the top surface and the bottom surface of the reinforcing strip are coated with adhesive;

c. directing a facing liner having a top surface and a bottom surface below and in alignment with the bottom surface of the adhesive-coated reinforcing strip exteriorly of the primary adhesive station; and

d. contacting the adhesive-coated first lower surface of the first corrugated member with the adhesive-coated top surface of the reinforcing strip, and the adhesive-coated bottom surface of the reinforcing strip with the top surface of the facing liner.

5,362,347

FUSION BONDED THERMOPLASTIC LEADING EDGE FOR AIRCRAFT AERODYNAMIC SURFACES

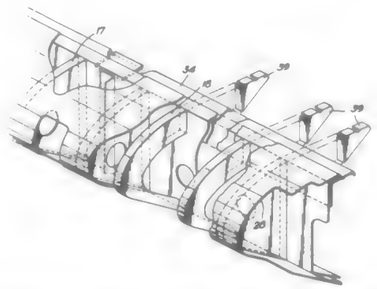
Christophe A. Dominé, Filton, Great Britain, assignor to British Aerospace Public Limited Company, London, England

Filed Aug. 19, 1992, Ser. No. 932,297

Claims priority, application United Kingdom, Aug. 23, 1991, 9118186

Int. Cl.[5] B29C *69/00*; B32B *31/04, 31/20*

U.S. Cl. 156—214 **2 Claims**



1. A method of manufacturing a fusion-bonded thermoplastic fixed leading edge structure for aircraft aerodynamic surfaces including the steps of:

pressure forming at least one stiffening member from preheated low modulus thermoplastic composite material, said stiffening member having a main portion and at least one profile flange;

placing said at least one stiffening member in a forming tool having a predetermined thermal mass;

heating and pressure forming a sheet of thermoplastic composite material so that it conforms in shape to said at least one profile flange;

heating said at least one profile flange so as to fusion bond said sheet of thermoplastic composite material thereto to define a leading edge sub-assembly;

utilizing the thermal mass of said forming tool to protect said main portion of said at least one stiffening member from heat;

forming a sub-spar having spanwise upper and lower attachment booms and a spar web from a low modulus thermoplastic composite material; and

welding said leading edge sub-assembly to said sub-spar at least at said upper and lower attachment booms.

5,362,348

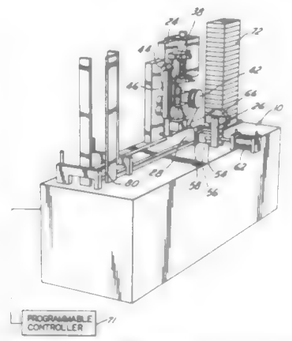
METHOD AND APPARATUS FOR APPLYING FOIL INDICIA ON A VIDEO CASSETTE

William T. Gutherie, 83553 Port Cove, Unit 51, Waterford, Mich. 48326

Continuation of Ser. No. 996,671, Dec. 24, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 145,035

Int. Cl.[5] B41M *5/00*; B32B *3/00*; B65C *1/00*; B44C *1/00*

U.S. Cl. 156—233 **12 Claims**



1. A method for applying foil indicia on a plurality of video cassettes, each one of the video cassettes being box-shaped and including a hinged dust door at one end of the cassette having a first predetermined surface disposed in a first plane, said cassette further including a spine at the opposing other end of said cassette constituting a second predetermined surface disposed in a second plane substantially perpendicular to said first plane, said method comprising the steps of:

a) mounting said plurality of video cassettes stacked one upon the other over a conveyor;

b) intermittently feeding said video cassettes to a stamping station by indexing one said video cassette on said conveyor to a stamping position adjacent a first hot foil stamping means and a second hot foil stamping means;

c) applying a first foil indicia on the dust door upon said first predetermined surface;

d) applying a second foil indicia on said spine simultaneously with application of said first foil indicia on said dust door;

e) providing means for applying said foil indicia on said predetermined surfaces and simultaneously stabilizing said video cassette upon application of said foil indicia;

f) indexing said video cassette on said conveyor to an exit position; and

g) removing said video cassette from said conveyor.

5,362,349

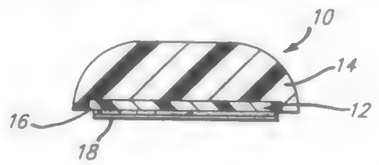
PLASTIC HEAT SET MOLDING

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Jul. 7, 1992, Ser. No. 909,695

Int. Cl.[5] B29C *39/20*

U.S. Cl. 156—242 **8 Claims**



1. A method of manufacturing a trim strip comprising:

providing a mold;

adding a desired amount of a heat settable material into said mold;

heating said mold containing said desired amount of heat settable material;

cooling said mold containing said heat settable material;

heating an exposed surface of said heat settable material in said mold;

bonding a backing member to said exposed surface of said heat settable material;

forming a trim strip from said heat settable material and backing member; and

removing said trim strip from said mold.

5,362,350

METHOD FOR ETCHING IN DRY PROCESS

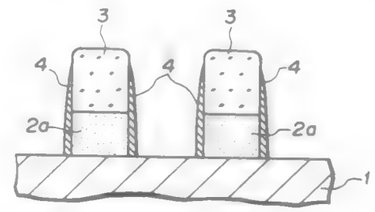
Toshiharu Yanagida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1993, Ser. No. 156,837

Claims priority, application Japan, Nov. 24, 1992, 4-313325

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—643 **14 Claims**



1. A method for etching a copper layer in dry process comprising the steps of:

forming a copper layer on a substrate;

heating said substrate;

etching said copper layer while using an etching gas; and

wherein said etching gas comprises an iodine halide.

5,362,351

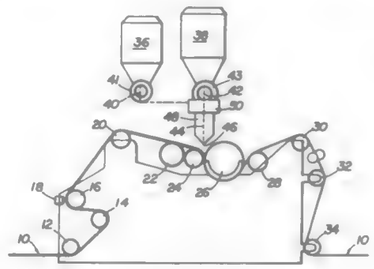
METHOD OF MAKING LENTICULAR PLASTICS AND PRODUCTS THEREFROM

William M. Karszes, 2720 Roxburgh Dr., Roswell, Ga. 30076

Continuation of Ser. No. 820,850, Jan. 15, 1992, abandoned. This application Jul. 9, 1993, Ser. No. 89,898

Int. Cl.[5] B29C *47/06*

U.S. Cl. 156—243 **34 Claims**



1. A process for forming a lenticular-coated substrate comprising the steps of:

a) continuously advancing a plastic substrate film past an extrusion station, wherein the substrate film has an upper side and a lower side;

b) continuously coextruding a molten thermoplastic tie resin and a molten thermoplastic lenticular resin onto the upper side of the substrate film from the extrusion station to form

a composite comprising a substrate layer, a tie layer and a lenticular layer, wherein the tie layer is superposed on the substrate film and the lenticular layer is superposed on the tie layer; and

c) continuously advancing the composite past a chill roll to form the lenticular-coated substrate, wherein the lenticular layer of the composite contacts the chill roll to form a lenticular pattern thereon;

wherein the thickness of the lenticular-coated substrate ranges from about 2.5 mils to about 20 mils and the ratio of the thickness of the substrate layer to the sum of the thickness of the tie layer and the thickness of the lenticular layer ranges from about 0.5:1 to about 1:1 and the ratio of the thickness of the lenticular layer to the thickness of the tie layer ranges from about 9:1 to about 4:1.

5,362,352

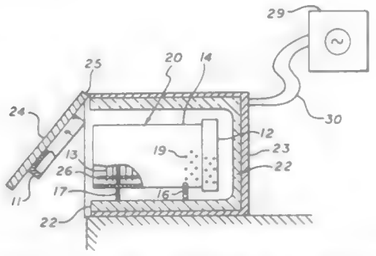
Patent Not Issued For This Number

5,362,353

FARADAY CAGE FOR BARREL-STYLE PLASMA ETCHERS

Thomas G. Mallon, Santa Clara, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 26, 1993, Ser. No. 23,305
Int. Cl.[5] C23F *1/02*
U.S. Cl. 156—345 **16 Claims**



1. An improved Faraday Cage for use in plasma etching of semiconductor wafers in a barrel-style plasma etcher, said plasma etcher having a metal housing and a quartz reactor vessel disposed within said metal housing, said quartz reactor vessel being adapted to receive a gas capable of being excited into a plasma for etching said semiconductor wafers, said improved Faraday cage comprising:

a metallic chamber adapted for being disposed within said quartz reactor vessel and adapted for permitting access of at least one of said semiconductor wafers, said chamber having a surface with a plurality of perforations therethrough at a predetermined distance from one another, said chamber further having one or more open ends;

at least one cap suitable for substantially covering one of said ends of said metallic chamber, said end of said chamber being adapted to receive said cap;

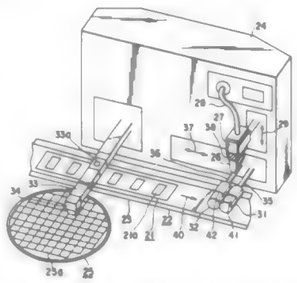
said metal housing of said plasma etcher further comprising an anterior end having a door pivotally attached thereto, said door having an interior surface upon which said cap is disposed such that when said door is pivotally moved towards said metallic chamber, said cap is brought into alignment with one of said open ends of said metallic chamber.

5,362,354

APPARATUS FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Hiroyuki Okura, Tokyo, and Toshimitsu Ishikawa, Kawaguchi, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 6, 1993, Ser. No. 102,758
Claims priority, application Japan, Aug. 12, 1992, 4-214992
Int. Cl.[5] B05C *1/08*
U.S. Cl. 156—356 **6 Claims**



1. An apparatus for manufacturing a semiconductor device, comprising:

a first roller means rotatably mounted to receive a bonding agent;

means for moving a semiconductor element from a wafer onto a lead frame; and

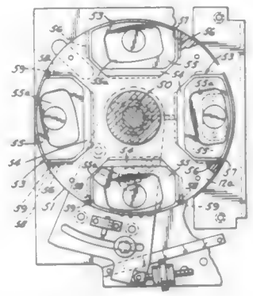
a second roller rotatably mounted adjacent to the first roller means so that the bonding agent is thinly and uniformly spread on the surface of the second roller during rotation thereof, the second roller being movable to apply a coat of the bonding agent on a rear surface of the semiconductor element while the moving means moves the semiconductor element.

5,362,355

APPARATUS FOR APPLYING LABELS TO CONTAINERS

Terrance J. Twele, Sparks, Nev., assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Continuation of Ser. No. 812,386, Dec. 23, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,806
Int. Cl.[5] B65G *29/00*
U.S. Cl. 156—542 **12 Claims**



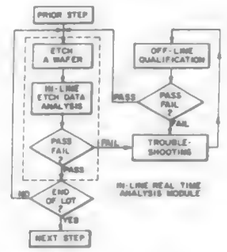
1. An apparatus for applying labels to containers wherein the web on which the labels are provided is moved from a feed reel over a metering mechanism into position for transfer to containers on a turret that is rotatable about a vertical axis, and the web is thereafter stored on a reel, the improvement wherein the turret comprises a plurality of circumferentially spaced replaceable container holders which can be readily removed to accommodate bottles or containers having a wide range of bottle radii, each holder having a recess for receiving the base of a container, each said holder comprising a body and a plastic insert permanently secured to said body, said plastic insert being formed with said recess for receiving the base of the container, and means for guiding said holders and locking said holders in fixed position on said turret.

5,362,356

PLASMA ETCHING PROCESS CONTROL

Philippe Schoenborn, San Jose, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 632,461, Dec. 20, 1990. This application Jan. 14, 1992, Ser. No. 821,727
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—626 **12 Claims**



1. Method of monitoring removal of a film on a product wafer during plasma etching, comprising:

removing a film on a wafer, overlying an underlying material, by a plasma etching process with a plasma having an emission intensity, said film having an initial thickness prior to etching and a remaining thickness during etching;

while etching the film, monitoring the plasma emission intensity at a selected wavelength, said monitoring occurring non-perpendicularly to the wafer; and

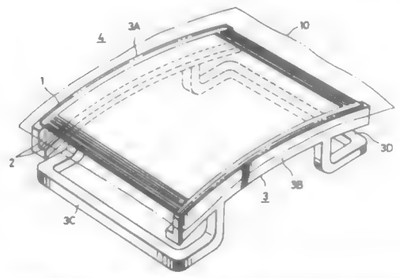
correlating variations in the plasma emission intensity, attributable to reflected light interference phenomena, by observing a cyclic pattern in emission intensity, to the remaining film thickness.

5,362,357

METHOD OF MANUFACTURING COLOR SELECTING MASK

Shinzo Takei, Tokyo, and Hiroyuki Ida, Tochigi, both of Japan, assignors to Sony Corporation and Sony Chemicals Corporation, both of Tokyo, Japan

Filed Jan. 18, 1994, Ser. No. 181,911
Claims priority, application Japan, Jan. 18, 1993, 5-006070
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—634 **13 Claims**



1. A method of manufacturing a color selecting member for use in a color cathode-ray tube, the color selecting member having a plurality of parallel slots defined transversely in a thin metal sheet, comprising the steps of:

(a) applying a peelable pressure-sensitive adhesive sheet to one surface of a thin metal sheet; and

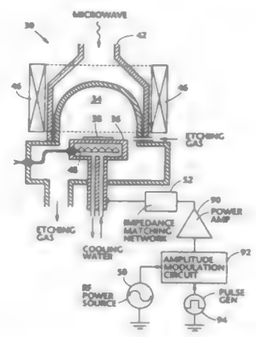
(b) selectively etching the thin metal sheet from an opposite surface thereof.

5,362,358

DRY ETCHING APPARATUS AND METHOD OF FORMING A VIA HOLE IN AN INTERLAYER INSULATOR USING SAME

Yasushi Yamagata, and Fumihide Sato, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 14, 1993, Ser. No. 61,440
Claims priority, application Japan, May 14, 1992, 4-121509
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—643 **2 Claims**



1. A dry etching apparatus for etching an interlayer insulator provided in a semiconductor wafer, comprising:

first means for isotropically etching said interlayer insulator using etching gas which includes Ar and F;

second means for implementing anisotropic etching using said etching gas, when an aluminum layer is exposed during said anisotropic etching, said anisotropic etching inducing aluminum fluoride by sputtering said aluminum layer; and

third means for cyclically inducing said first and second means to be operative, said third means including a first variable capacitor operatively coupled to said first means; a second variable capacitor operatively coupled to said second means; and fourth means operatively coupled to said first and second capacitors, said fourth means controlling said first and second capacitors such that cyclically, as one of said first and second capacitors exhibits a maximum capacitance thereof, the other capacitor exhibits a minimum capacitance thereof.

5,362,359

CIRCUIT BOARD AND PROCESS FOR PRODUCING SAME

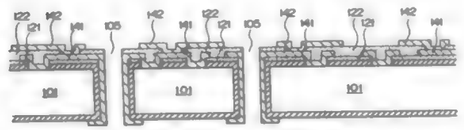
Eiji Horikoshi, Isehara; Motoaki Tani, Atsugi; Isao Watanabe, Sagamihara; Katsuhide Natori, and Takehiko Sato, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 761,646, Sep. 18, 1991, Pat. No. 5,236,772. This application May 10, 1993, Ser. No. 58,246
Claims priority, application Japan, Sep. 18, 1990, 2-246121; Jul. 30, 1991, 3-190094
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—645 **19 Claims**

1. A process for producing a circuit board, comprising the steps of:

(1) forming an electrodeposition-painted coating on a core material selected from a group consisting of magnesium, a

magnesium alloy, and a magnesium-based composite material;
(2) forming a polyimide resin coating on said electrodeposition-painted coating;
(3) forming a via hole extending through said polyimide resin coating to said electrodeposition-painted coating;
(4) etching and removing said electrodeposition-painted



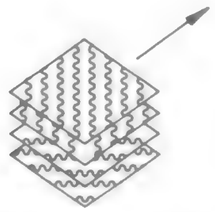
coating in a first region exposed by said via hole, while masking a second region with said polyimide resin coating, to extend the via hole to said core material;
(5) forming a metal film on at least a free surface of said polyimide resin coating and an inner surface of the extended via hole; and
(6) etching said metal film by using a photoresist mask to form a conductor layer having a predetermined pattern.

5,362,360

METHOD AND PRODUCT FOR EXTRUDING MATERIALS THAT EXHIBIT ANISOTROPIC PROPERTIES BY MEANS OF RECIPROCATING DIE SURFACES

Arthur Broes, and Thomas J. Walsh, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 904,742, Jun. 26, 1992, Pat. No. 5,312,238. This application Nov. 24, 1993, Ser. No. 157,810
Int. Cl.[5] B44C *1/22;* **C23F** *1/00;* **B28B** *3/20;* **B32B** *5/12*
U.S. Cl. 156—656 **6 Claims**



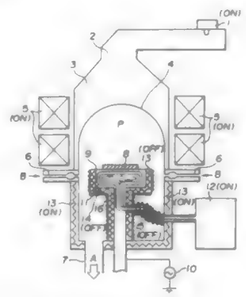
3. A method for making a multilayer circuit substrate, using a polymer, such as a liquid crystal polymer, a ceramic, or composite material that is comprised of molecules or fibrils that exhibit anisotropic properties due to molecular or fibril orientation along a single axis as a result of the extrusion process, comprising the steps of:
forcing the material to be extruded in a liquid state through a die in which an upper planar die surface moves in first direction transverse to the direction of material flow through the die and a lower planar die surface moves in a direction opposite said first direction; and
changing the direction of movement of said upper and said lower surface at determined time intervals;
metallizing the sheet;
patterning a resist on the metallized sheet;
etching the metallized sheet to form a conductive pattern;
forming vias in the metallized sheet;
adding solder to the vias for connectivity; and
blanking the layers.

5,362,361

DRY ETCHING METHOD

Tetsuya Tatsumi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 24, 1992, Ser. No. 874,111
Claims priority, application Japan, Apr. 27, 1991, 3-125465
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—662 **8 Claims**



1. A dry etching method comprising:
(a) a step of heating at least one portion of the wall of an etching chamber to a higher temperature than room temperature, and
(b) a step of cooling a target substrate to a lower temperature than room temperature while plasma etching a target material layer of said target substrate by using etching gas containing at least one compound selected from S_2F_2, SF_2, SF_4, S_2F_{10}, S_3Cl_2, S_2Cl_2, SCl_2, S_3Br_2, S_2Br_2, and SBr_2.

5,362,362

METHODS OF DEINKING CELLULOSIC MATERIALS

H. Wilson Cunningham, Fairfax; Allen M. Cooley, Vienna, and Harshad D. Matalia, Herndon, all of Va., assignors to Newspaper Association of America, Reston, Va.

Filed Jun. 29, 1992, Ser. No. 905,392
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—5 **18 Claims**

1. A method of deinking cellulosic materials comprising:
i) immersing said cellulosic materials into a non-aqueous organic solvent, while agitating said cellulosic materials, said non-aqueous organic solvent selected from those effective for removing ink but not retainable by the cellulosic fibers;
ii) thereafter removing said organic solvent;
iii) thereafter bleaching said cellulosic materials and forming a fiber suspension;
iv) thereafter separating residual ink pigments from the fibers by submitting said fiber suspension to high speed, high shear to an extent effective to dislodge the ink pigments from the fibers; and
v) removing the ink pigments from the suspension of step iv.

5,362,363

AQUEOUS DISPERSIONS CONTAINING ALKALINE EARTH SOAPS AND/OR ALKALINE EARTH RESIN SOAPS FOR DEINKING PRINTED WASTEPAPER

Heinz-Gerd Smolka; Klaus Lehmann, both of Illertissen; Hans Hawel, Voehringen; Dieter Schraml, Illertissen, and Klaus Horafeck, Mettmann, all of Germany, assignors to Chemische Fabrik Gruenau GmbH, Illertissen, Germany

PCT No. PCT/EP90/01697, § 371 Date Apr. 20, 1992, § 102(e) Date Apr. 20, 1992, PCT Pub. No. WO91/05905, PCT Pub. Date May 2, 1991
PCT Filed Oct. 10, 1990, Ser. No. 848,994
Claims priority, application Germany, Oct. 19, 1989, 3934893
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—8 **2 Claims**

1. A process of regenerating wastepaper containing printing ink particles comprising the steps of
(1) fiberizing said waste paper in an aqueous alkaline deinking solution containing no foam inhibitors and containing a deinking effective quantity of an aqueous dispersion of alkaline earth metal soaps alkaline earth metal resin soaps, said dispersion consisting of (a) an alkaline earth metal salt of a C_6–C_{22} carboxylic acid or resinic acid, (b) a C_6–C_{22} oxoalcohol alkoxylated with from about 2 to less than 6 mols of a C_2–C_4 alkylene oxide, and (c) an alkali metal or alkaline earth metal aluminosilicate corresponding to formula J

$$0.7\text{–}1.5\ cat_{2/n}O\ .Al_2O_3\ .0.8\text{–}6\ SiO_2 \qquad (I)$$

wherein cat represents an alkali metal or alkaline earth metal cation and n is the valence o the alkali metal or alkaline earth metal cation, and
(2) removing the detached ink particles from the deinking solution.

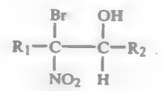
5,362,364

PROCESS FOR PRODUCING ALKALINE PAPER

Toru Katsura, and Hideaki Senoh, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 782,487, Oct. 25, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 120,224
Claims priority, application Japan, Oct. 26, 1990, 2-290331; Mar. 12, 1991, 3-073956
Int. Cl.[5] D21H *21/04*
U.S. Cl. 162—158 **8 Claims**

1. A process for producing an alkaline paper which comprises adding a cationic starch solution consisting essentially of a member selected from the group consisting of an alkyltetrahydro-1,3,5-2H-thiadiazine-2-thione present in the cationic starch solution in amounts ranging from 100 to 3000 ppm based on the cationic starch solid matter and a bromonitroalcohol of the formula (1),



(1)

where R_1 and R_2 are independently selected from the group consisting of hydrogen, methyl and ethyl, wherein said bromonitroalcohol is present in the cationic starch solution in amounts ranging from 5 to 50 ppm based on the cationic starch solid matter, and an alkylketene dimer to an alkaline paper stock making system.

5,362,365

PURIFICATION OF ACETIC ANHYDRIDE OR ACETIC ANHYDRIDE AND ACETIC ACID USING OZONE

Hiroyuki Niijima, and Kazuyuki Akita, both of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Jul. 6, 1993, Ser. No. 88,035
Claims priority, application Japan, Jul. 7, 1992, 4-179903
Int. Cl.[5] B01D *3/34;* **C07C** *51/42, 51/573*
U.S. Cl. 203—31 **17 Claims**

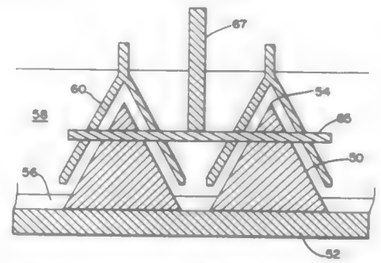
1. A method of purifying acetic anhydride or a mixture of acetic anhydride and acetic acid containing methyl crotonate, vinyl acetate, or both as impurities, wherein said acetic anhydride or said mixture of acetic anhydride and acetic acid is produced by reacting (1) dimethyl ether, (2) methyl acetate, (3) a mixture of dimethyl ether and methanol, (4) a mixture of methyl acetate and methanol, or (5) a mixture of dimethyl ether, methyl acetate, and methanol with carbon monoxide, which comprises contacting said acetic anhydride or said mixture of acetic anhydride and acetic acid with ozone and subjecting said ozone-treated acetic anhydride or said ozone-treated mixture of acetic anhydride and acetic acid to distillation.

5,362,366

ANODE-CATHODE ARRANGEMENT FOR ALUMINUM PRODUCTION CELLS

Vittorio de Nora, Nassau, Bahamas, and Jainagesh A. Sekhar, Cincinnati, Ohio, assignors to Moltech Invent S.A., Luxembourg

Filed Apr. 27, 1992, Ser. No. 874,752
Int. Cl.[5] C25C *3/06, 3/08*
U.S. Cl. 204—67 **48 Claims**



21. A method of operating an anode-cathode double-polar electrode assembly comprising one or more anode-cathode electrode assembly units for the production of aluminum by the electrolysis of alumina dissolved in molten halide electrolyte, wherein the materials forming the anode and cathode are electrically conductive and the surface or coating of said anodes and cathodes is resistant to the electrolyte and to the electrolysis, the anode and cathode are held in a spaced part relationship with a constant gap therebetween, each said unit is removable from and reimmersible into said molten electrolyte during operation of said assembly for the production of aluminum, the method comprising the steps of:
removing any of said units during operation of the multi double-polar cell whenever the anode or the cathode or any part of said unit needs reconditioning for efficient cell operation; and
reimmersing said unit after reconditioning into said assembly to continue normal operating conditions.

5,362,367

PARTIAL ELECTROLYTIC DEHALOGENATION OF DICHLOROACETIC AND TRICHLOROACETIC ACID AND ELECTROLYSIS SOLUTION

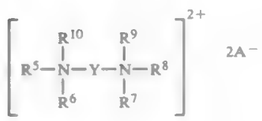
Steffen Dapperheld, Hofheim am Taunus, and Rudolf Rossmeisl, Mertingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Continuation of Ser. No. 701,480, May 16, 1991, abandoned. This application Oct. 19, 1993, Ser. No. 139,337
Claims priority, application Germany, May 18, 1990, 4016063
Int. Cl.[5] C25B *3/00*
U.S. Cl. 204—72 **12 Claims**

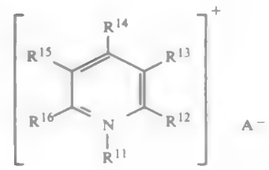
1. A process for the partial dehalogenation of trichloroacetic and dichloroacetic acids to give monochloroacetic acid by the electrolysis of aqueous solutions of these acids in divided cells with one or more metal salts having a hydrogen overvoltage of at least 0.4 volts measured at a current density of 4000 A/m^2, using carbon cathodes, which comprises adding at least one compound selected from the group consisting of compounds of the formula I to V



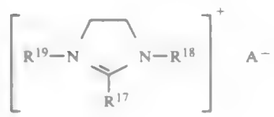
(I)



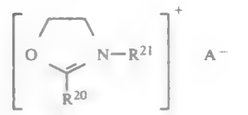
(II)



(III)



(IV)



(V)

in which

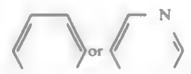
X is nitrogen or phosphorus,

R^1 to R^{21} are identical or different and independently of one another are hydrogen, linear or branched C_1–C_{18}-alkyl, C_3–C_{18}-cycloalkyl or C_1–C_{18}-alkylaryl, the aryl radical having 6 to 12 carbon atoms and the radicals R^2 to R^{16} in addition, independently of one another having the following meaning:

R^2 is a group of the formula $—((CH_2)_n—O)_m—R$ in which the same radicals are used for R as for R^1, but R^1 and R are independent of one another, n being an integer from 1 to 12 and m being also an integer from 1 to 12,

R^3 and R^4 together, R^5 and R^6 together or R^7 and R^8 together are, independently of one another, a chain of 2 to 8 CH_2 groups or a group of the formula $—CH_2(Z)CH_2—$ in which Z is nitrogen, oxygen or sulfur,

R^{12} and R^{13} together, R^{13} and R^{14} together, R^{14} and R^{15} together or R^{15} and R^{16} together are, independently of one another, a group of the formula



Y is a group of the formula $(—CH_2)_p—$ or $—CH_2—(O—(CH_2)_p)_q—O—(CH_2)_2—$ in which p is an integer from 1 to 12 and q is an integer from 0 to 6, and

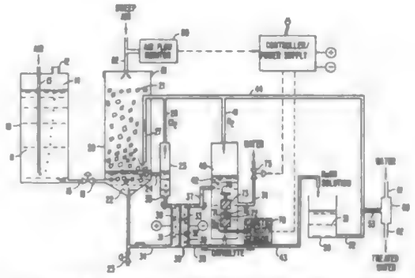
A$^-$ is one of the anions OH^-, F^-, Cl^-, Br^-, I^-, SO_4^{2-}, HSO_4^-, NO_3^-, CH_3COO^-, BF_4^- or $CH_3OSO_3^-$.

5,362,368

CHLORINE GENERATOR

Scott Lynn, 37 Janin Pl., Pleasant Hill, Calif. 94523; Steven F. Sciamanna, 222 Rheem Blvd., Moraga, Calif. 94556, and Aldo F. Sciamanna, 3963 Oakmore Rd., Oakland, Calif 94602

Filed Jun. 3, 1993, Ser. No. 71,917
Int. Cl.[5] C25B *1/16, 1/26, 9/00*
U.S. Cl. 204—98 **37 Claims**



21. A system for introducing water-treatment chemicals into water to be treated, the system comprising:

(a) an electrolytic cell having an anode compartment including an anode and a cathode compartment including a cathode and an outlet, the cathode compartment generating caustic solution, said anode and cathode compartments separated by a cation-exchange membrane;

(b) a source of water treatment chemicals;

(c) a mixing tank fluidly coupled to the outlet of the cathode compartment, the mixing tank receiving water treatment chemicals from the source of water treatment chemicals, wherein the mixing tank receives caustic solution from the cathode compartment and supplied caustic solution to the water to be treated.

5,362,369

FULLY AUTOMATIC CURRENT CONTROL FOR METAL DEPLETION CELLS

Max Mayr, Alzenau; Wolfgang Blatt, Wächtersbach, and Harri Heinke, Erlensee, all of Germany, assignors to Heraeus Elektrochemie GmbH, Hanau, Germany

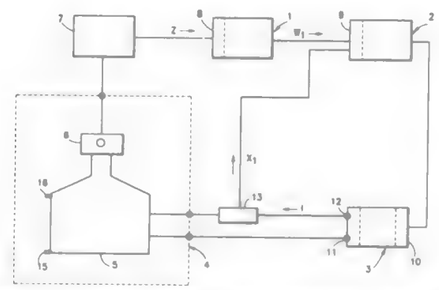
PCT No. PCT/EP91/00044, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO86/06761, PCT Pub. Date Nov. 20, 1986
PCT Filed Jan. 12, 1991, Ser. No. 923,941
Claims priority, application Germany, Mar. 3, 1990, 4006751
Int. Cl.[5] C25C *7/06;* C25D *21/12*
U.S. Cl. 204—105 R **10 Claims**

1. In a system for processing of a metal-ion-containing solution, including an electrolytic cell (4) adapted for holding said solution, an anode and a cathode adapted for immersion in said solution, a control unit (2,3) controlling current applied to said anode and said cathode, and a sensor (6) disposed above said solution for measuring concentration of any hydrogen evolved during said processing of said solution, a process for electrolytic demetallization of said solution,

comprising the steps of

applying an electrical d.c. current between said anode and said cathode;

feeding measurements of said hydrogen concentration above said solution from said sensor (6) to said control unit (2,3); and



making a stepwise reduction, whenever said hydrogen concentration exceeds a respective predetermined percental value, in intensity of said current applied between said anode and said cathode,

incrementing (Z) a stored value in a counter (8) each time such a stepwise current reduction is made, and

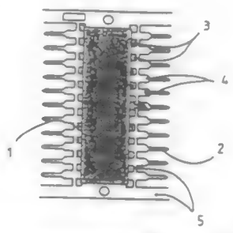
ceasing application of current when a predetermined counter value, indicative of a predetermined remaining concentration of the metal ions, is reached.

5,362,370

METHOD FOR THE ELECTROLYTIC REMOVAL OF PLASTIC MOLD FLASH OR BLEED FROM THE METAL SURFACES OF SEMICONDUCTOR DEVICES OR SIMILAR ELECTRONIC COMPONENTS

Henricus J. van der Heijden, Haarsteeg, Netherlands, assignor to Meco Equipment Engineers B.V., EE's-Hertogenbosch, Netherlands

Filed May 21, 1993, Ser. No. 64,665
Claims priority, application Netherlands, May 21, 1992, 9200898
Int. Cl.[5] C25F *1/00*
U.S. Cl. 204—141.5 **13 Claims**



1. A method for electrolytically removing plastic mold flash or bleed from a metal surface of a semiconductor device comprising:

(i) immersing said device in a water-based solution, comprising one or more organic solvents, one or more conducting salts, and a wetting agent;

(ii) connecting said device to the negative pole of a source of direct current of which the positive pole is connected to an anode in said solution; and

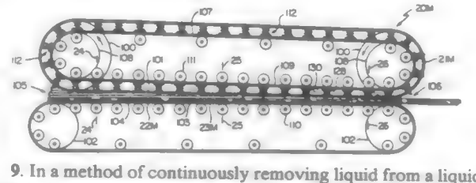
(iii) passing sufficient current through said solution such that hydrogen gas is generated at said metal surface and the pH-value of the liquid film directly adjacent to said metal surface is raised such that said plastic bleed is softened sufficiently to be removed by said hydrogen gas.

5,362,371

APPARATUS AND METHOD FOR REMOVING LIQUID FROM LIQUID BEARING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 31,575, Mar. 15, 1993, which is a continuation-in-part of Ser. No. 842,898, Feb. 27, 1992, Pat. No. 5,259,940, which is a continuation-in-part of Ser. No. 731,791, Jul. 17, 1991, Pat. No. 5,160,593, which is a continuation-in-part of Ser. No. 695,603, May 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 575,416, Aug. 29, 1990, Pat. No. 5,114,553, and Ser. No. 502,506, Mar. 30, 1990, Pat. No. 5,019,230, which is a continuation-in-part of Ser. No. 454,718, Dec. 21, 1989, Pat. No. 4,975,166, said Ser. No. 575,416, is a division of Ser. No. 454,718, Dec. 21, 1989, which is a continuation-in-part of Ser. No. 386,579, Jul. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 284,197, Dec. 14, 1988, Pat. No. 4,877,503, which is a continuation-in-part of Ser. No. 213,709, Jun. 30, 1988, abandoned, which is a continuation-in-part of Ser. No. 189,974, May 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 62,201, Jun. 15, 1987, Pat. No. 4,780,188, which is a continuation-in-part of Ser. No. 32,746, Mar. 31, 1987, Pat. No. 4,767,514. This application Aug. 27, 1993, Ser. No. 113,043
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] B01D *61/42*
U.S. Cl. 204—182.3 **18 Claims**



9. In a method of continuously removing liquid from a liquid bearing material with a crossflow filter apparatus, said apparatus comprising a housing means, a filter disposed within said housing means to form a crossflow chamber in said housing means on one side of said filter and a filtrate chamber in said housing means on the other side of said filter, an electrode means disposed in one of said chambers for creating an electrostatic field arrangement that enhances the flow of liquid from said liquid bearing material in said crossflow chamber through said filter into said filtrate chamber, means for supplying said liquid bearing material into one end of said crossflow chamber, means at the other end of said crossflow chamber for removing said liquid bearing material therefrom that has been depleted of some of the liquid thereof, and means for removing filtrate from said filtrate chamber, the improvement comprising the step of creating with said electrode means a plurality of electrostatic fields that have different intensities that serially act on each section of said liquid bearing material as each section of said liquid bearing material moves from said one end of said crossflow chamber to said other end of said crossflow chamber.

5,362,372

SELF CLEANING COLLIMATOR

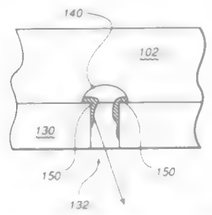
Avi Tepman, Cupertino, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 11, 1993, Ser. No. 75,258
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.12 **25 Claims**

17. A physical vapor deposition device for depositing material onto a semiconductor wafer comprising:

a. a chamber;

b. vacuum means coupled for evacuating the chamber of air;
c. a target of material mounted in the chamber to be deposited onto the wafer;
d. means for sputtering the target material and imparting kinetic energy to particles of the material;
e. a pedestal mounted in the chamber for holding the wafer; and



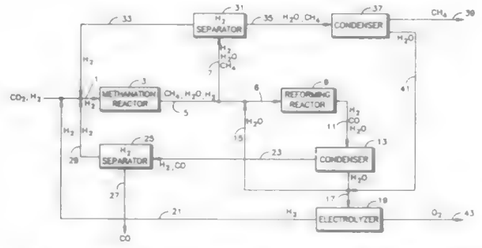
f. a dielectric collimator mounted to the target and positioned between the target and the wafer, the collimator comprising a substantially planar plate of electrically nonconductive material having a finite thickness and a plurality of passages, the passages for allowing the particles of the material to pass therethrough in a direction toward the wafer.

5,362,373

OXYGEN AND METHANE PRODUCTION DEVICE

Karen E. Murdoch, Manchester, and Philip J. Birbara, Windsor Locks, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 837,127, Mar. 13, 1992, abandoned, which is a division of Ser. No. 777,969, Oct. 17, 1991, Pat. No. 5,128,003. This application Jul. 13, 1993, Ser. No. 91,080
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—242 **4 Claims**



1. A device for producing oxygen and methane, which comprises:
a. a methanation reactor constructed and arranged for reacting carbon dioxide and hydrogen to produce methane and water;
b. a reforming reactor in flow communication with said methanation reactor, wherein said reforming reactor contains a reforming catalyst and is constructed and arranged for reforming water and methane to produce hydrogen and carbon monoxide and wherein said reforming reactor is constructed for reaching and maintaining temperatures ranging from about 593° C. to about 1200° C.;
c. a means for separating methane and water in flow communication with said methanation reactor; and
d. an electrolyzer in flow communication with said means for separating, wherein said electrolyzer is constructed and arranged for electrolyzing water to hydrogen and oxygen.

5,362,374

METHOD FOR MAKING DECORATIVE STICKERS

Jung-Ming Chang, No. 27, Lane 125, Sec. 4, San-Ho Rd., San-chung City, Taipei Hsien,

Filed Aug. 27, 1993, Ser. No. 112,414
Int. Cl.[5] C25D *5/00*
U.S. Cl. 205—164 **3 Claims**



1. A method for making a decorative sticker, comprising the steps of:
providing a polyester base film which has a top surface and a bottom surface;
applying a metal coating on said polyester base film by electroplating so that said top and bottom surfaces of said polyester base film sparkle in the presence of bright light;
applying a hot-melt adhesive layer on said bottom surface of said polyester base film;
attaching a release paper to said hot-melt adhesive layer;
applying a binder layer with a figure on a part of said top surface of said polyester base film;
die-cutting said polyester base film on said top surface thereof;
applying an amount of liquid epoxy on said binder layer, said liquid epoxy spreading so as to conform with the figure of said binder layer; and
drying said liquid epoxy so as to form a transparent epoxy layer.

5,362,375

OIL COMPOSITIONS

Junichi Kubo, and Osamu Kato, both of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

PCT No. PCT/JP90/01288, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO91/05032, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 4, 1990, Ser. No. 689,278
Claims priority, application Japan, Oct. 5, 1989, 1-261194
Int. Cl.[5] C10M *105/06*
U.S. Cl. 208—19 **10 Claims**

1. An oil composition comprising:
(a) 100 parts by weight of a base oil selected from the group consisting of a mineral base oil, a synthetic base oil and a mixture thereof; and
(b) 0.1 to 20 parts by weight of an oil fraction having a boiling point ranging from 160° C. to 550° C., said oil fraction being selected from the group consisting of (i) a hydrogenated pitch produced by primarily heat-treating and hydrogenating a heavy oil of petroleum origin, said primarily heat-treating being conducted under a temperature of 350° C. to 480° C. and a pressure of 2 to 50 kg/cm^2 for 15 minutes to 20 hours, and said hydrogenating being conducted in the presence of a hydrogenating catalyst

under a temperature of 120° C. to 450° C. and a pressure of 20 to 180 kg/cm^2-gauge for a period sufficient to attain a hydrogenation rate of the aromatic nuclei of the aromatic hydrocarbons of 10% to 85%, (ii) an oil obtained by secondarily heat-treating said hydrogenated pitch in an atmosphere of gas inert to the hydrogenated pitch at a temperature of 340° C. to 450° C. under an atmospheric or reduced pressure, and (iii) a mixture of (i) and (ii).

5,362,376

GASOLINE UPGRADING PROCESS USING LARGE CRYSTAL INTERMEDIATE PORE SIZE ZEOLITES

Stuart S. Shih, Cherry Hill, and Philip J. Angevine, Woodbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 850,106, Mar. 12, 1992, which is a continuation-in-part of Ser. No. 745,311, Aug. 15, 1991. This application Aug. 13, 1992, Ser. No. 929,542
Int. Cl.[5] C10G *45/00*
U.S. Cl. 208—89 **20 Claims**

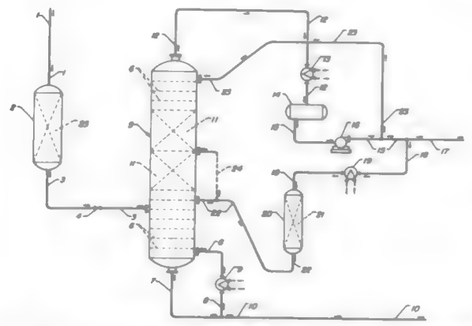
1. A process of upgrading a sulfur-containing feed fraction boiling in the gasoline boiling range having an olefin content of at least 5 percent and a 95 percent point of at least about 325° F. which comprises:
contacting the sulfur-containing feed fraction with a hydrodesulfurization catalyst in a first reaction zone, operating under a combination of elevated temperature, elevated pressure and an atmosphere comprising hydrogen, to produce an intermediate product comprising a normally liquid fraction which has a reduced sulfur content and a reduced octane number as compared to the feed;
contacting at least the gasoline boiling range portion of the intermediate product in a second reaction zone with a catalyst of acidic functionality comprising an intermediate pore size zeolite comprising crystallites having an effective radius of at least 0.25 micron, to convert said portion to a product comprising a fraction boiling in the gasoline boiling range having a higher octane number than the gasoline boiling range fraction of the intermediate product.

5,362,377

CONVERSION OF OLEFINS BY CATALYTIC DISTILLATION

Terry L. Marker, Warrenville, Ill., assignor to UPO, Des Plaines, Ill.

Division of Ser. No. 902,179, Jun. 22, 1992, Pat. No. 5,258,560. This application Sep. 13, 1993, Ser. No. 120,095
The portion of the term of this patent subsequent to Sep. 7, 2010, has been disclaimed.
Int. Cl.[5] C10G *35/00*; C07C *2/64, 2/56, 41/05*
U.S. Cl. 208—133 **5 Claims**



1. A hydrocarbon conversion process which comprises the steps:
(a) passing a first reactant and a second reactant into a catalytic distillation zone maintained at mixed-phase conversion conditions which are effective to promote both the exothermic reaction of the first and second reactants and fractional distillation of the contents of the catalytic distillation zone into an overhead vapor stream comprising the first and second reactants and a bottoms stream which is rich in a product compound which is less volatile than either the first or second reactants;
(b) condensing the overhead vapor stream to produce an overhead liquid, passing a first portion of the overhead liquid into the catalytic distillation zone as reflux and removing a second portion of the overhead liquid as a net overhead product;
(c) passing a third portion of the overhead liquid into an external reaction zone operated at substantially liquid-phase conversion conditions and producing a reaction zone effluent stream, with the external reaction zone being operated in a manner which allows the heat of reaction of the ongoing reaction to heat the reactants present in the external reaction zone;
(d) passing an effluent stream removed from the external reaction zone into the catalytic distillation zone; and,
(e) removing at least a portion of the bottoms stream from the process as a product stream.

5,362,378

CONVERSION OF FISCHER-TROPSCH HEAVY END PRODUCTS WITH PLATINUM/BORON-ZEOLITE BETA CATALYST HAVING A LOW ALPHA VALUE

William S. Borghard, Yardley, Pa.; Robert T. Haaloa, Deptford, N.J., and Suzanne E. Schramm, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 17, 1992, Ser. No. 992,354
Int. Cl.[5] C10G *35/085*
U.S. Cl. 208—138 **28 Claims**

1. A process for upgrading a waxy heavy oil fraction produced by a Fischer-Tropsch synthesis comprising:
contacting said feed and hydrogen gas under isomerization conversion conditions including a temperature of from about 500° F. to about 700° F, a pressure of about 200 psig to about 2,000 psig, and a liquid hourly space velocity (LHSV) of about 0.1 to about 2, with a catalyst comprising zeolite beta having an alpha value less than about 10 modified with a metal selected from a member of the group consisting of boron, tin, lead, or indium composited with a hydrogenation metal for a time sufficient to convert the heavy oil fraction to form a product that contains a hydrocarbon distillate fraction and a heavy hydrocarbon fraction suitable for conversion to a lubricating oil with a substantially improved viscosity index (VI).

5,362,379

OPEN-BOTTOMED CYCLONE WITH GAS INLET TUBE AND METHOD

John J. Helstrom, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 27, 1991, Ser. No. 815,281
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] C10G *11/00*
U.S. Cl. 208—161 **15 Claims**

1. A method for separating solids from a mixture of solids and gases comprising the steps of:
introducing the mixture into a radially symmetric open-ended separation chamber tangential to a chamber wall to impart cyclonic motion to the introduced mixture;
allowing the solids to cyclonically rotate outwardly through a solids-rich chamber region near the chamber wall and out the open chamber end;
collecting a solids-depleted gas from a solids-depleted central region of the chamber; and
directing the process gas into a region of solids-depleted gas within the separator and away from a region of solids-rich gas within the separator.

5,362,380

FLUID CATALYTIC CRACKING PROCESS YIELDING HYDROGEN

Hsu-Hui Hsing, Nederland, and James Mudra, IV, Beaumont, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 16, 1993, Ser. No. 106,675
Int. Cl.[5] C10G *9/32*
U.S. Cl. 208—164 **9 Claims**

1. A fluid catalytic cracking process comprising:

(a) cracking a hydrocarbon feedstock in suspension with a fluidized regenerated catalyst at a catalytic reaction temperature to form a reaction mixture of cracked hydrocarbon and spent catalyst, said spent catalyst comprising 0.5 wt % to 2 wt % deposited carbon thereon;

(b) separating said reaction mixture to form separated cracked hydrocarbon and separated spent catalyst;

(c) contacting said separated spent catalyst with steam in an amount of about 0.5 to 20 moles of steam per atom of carbon at a conversion temperature of 1000° F. (537° C.) to 1200° F. (649° C.) in the absence of oxygen for a period of time sufficient to produce: (i) a steam reformed mixture comprising hydrogen, carbon dioxide, carbon monoxide, and methane and (ii) a partially regenerated catalyst comprising 0.3 wt % to 0.8 wt % deposited carbon thereon;

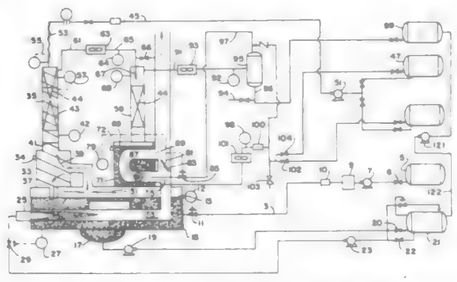
(d) separating said partially regenerated catalyst and regenerating at a regeneration temperature of 1000° F. (537° C.) to 1500° F. (815° F.) in the presence of oxygen in an amount in excess of that required to react with all of the deposited carbon to produce oxides of carbon, thereby yielding regenerated catalyst.

5,362,381

METHOD AND APPARATUS FOR CONVERSION OF WASTE OILS

Stanton D. Brown, Rte. 6, Box 325, Waco, Tex. 76706; Michael M. Wentworth, Waco, Tex.; Ronald D. Marstaller, Waco, Tex., and Jerry A. Bullin, Bryan, Tex., assignors to Stanton D. Brown, Waco, Tex.

Filed Mar. 25, 1993, Ser. No. 36,705
Int. Cl.[5] C10G *7/00*
U.S. Cl. 208—179 **9 Claims**



1. A process for converting waste oil to fuel, comprising flowing waste oil to a primary pool in a thermocracking unit, heating the primary pool with a primary burner by producing a flame in a fire tube within the thermocracking unit, vaporizing a part of the waste oil above the heated pool, flowing the vapor through a primary distillation tower, maintaining heat of the vapor by heating the distillation tower, condensing part of the vapor in the primary tower and returning the condensed part of the primary pool, flowing a remainder of the vapor to a first overhead condenser, cooling and condensing a part of the vapor into a liquid, flowing the liquid downward through a secondary distillation tower into a secondary pool, heating the secondary pool with flue gases from the fire tube, combusting a fuel gas near the secondary pool and further heating the secondary pool, vaporizing a part of the liquid in the secondary pool and passing vapor from the second pool through the secondary distillation tower, condensing a portion of the vapor in the secondary distillation tower and flowing the condensed portion downward to the secondary pool, flowing remaining vapor to a second overhead condenser, cooling the remaining vapor and condensing a part thereof, transferring the vapor and the condensed part to a light ends flash tank, transferring liquid from the light ends flash tank to a light ends liquid storage tank, flowing gases from the light ends flash tank as fuel gases to an auxiliary burner, flowing liquid product from the secondary pool to a product cooler and cooling the liquid product, flowing the cooled liquid product to a sample point and sampling the cooled liquid product, flowing within-specification liquid product from the sample point to a diesel fuel storage tank, flowing off-specification liquid product from the sample point to a reflux storage tank, flowing reflux liquid from the reflux storage tank through a heater and into the upper end of the primary distillation tower and down through the primary distillation tower toward the primary pool, collecting sludge at a bottom of the primary pool and transferring the sludge from the primary pool to a sludge storage tank, flowing the sludge as fuel to the primary burner and burning the sludge in the fire tube for heating the primary pool.

5,362,382

RESID HYDROCRACKING USING DISPERSED METAL CATALYSTS

Roland H. Heck, Pennington, and Frank T. DiGuiseppi, Yardville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 24, 1991, Ser. No. 720,106
Int. Cl.[5] C10G *45/00*
U.S. Cl. 208—210 **21 Claims**

1. A process for hydrotreating a hydrocarbon oil comprising:

a) contacting said hydrocarbon oil with a hydrotreating catalyst under relatively mild first stage hydrotreating conditions in a first reaction zone to provide a preconditioned oil; and then

b) directly transferring substantially the entire amount of said preconditioned oil from said first reaction zone to a second reaction zone;

c) contacting said preconditioned oil with a hydrotreating catalyst in said second reaction zone under second stage hydrotreating conditions which are more severe than said first stage conditions to provide a hydrotreated oil product, the overall amount of coking occurring in said process being significantly less than the amount of coking occurring in a single stage hydrotreating process achieving equivalent overall severity,

wherein said first stage hydrotreating conditions include a temperature of from about 700° F. to about 820° F., a pressure of from about 100 psig to about 5000 psig, and a reaction time of from about 5 minutes to about 200 minutes, and said second stage hydrotreating conditions include a temperature of from about 780° F. to about 900° F., a pressure of from about 100 psig to about 5000 psig and a reaction time of from about 5 minutes to about 700 minutes.

5,362,383

SELF-CONTAINED REVERSE OSMOSIS ELECTRONIC MONITORING SYSTEM

Jeffrey A. Zimmerman, Blaine, and Marlin A. Frank, Minneapolis, both of Minn., assignors to Ecowater Systems, Inc., Woodbury, Minn.

Filed Jan. 13, 1993, Ser. No. 3,758
Int. Cl.[5] B01D *65/10*
U.S. Cl. 210—85 **10 Claims**

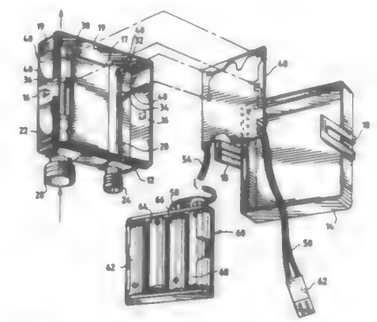
1. A monitoring system for a fluid treatment device comprising:

a housing comprising a base and a mating cover,

a pair of elongated fluid flow passages integrally formed in said base, each of said fluid flow passages having an inlet and an outlet, fluid to be treated by the fluid treatment device flowing through a first one of said pair of elongated fluid flow passages, and the fluid treated by the fluid treatment device flowing said other one of said pair of elongated fluid flow passages,

a first pair of electrodes, each of said electrodes of said first pair of electrodes each having a first portion extending into a first one of said elongated fluid flow passages, and a second portion extending into said housing, said first portions of said electrodes being spaced from each other such that one of said first portions is closer to said inlet and said other first portion is closer to said outlet of said first elongated fluid flow passage,

a second pair of electrodes, each of said electrodes of said second pair of electrodes each having a first portion extending into a second one of said elongated fluid flow passages, and a second portion extending into said housing, said first portions of said electrodes being spaced from each other such that one of said first portions is closer to said inlet and said other first portion is closer to said outlet of said second elongated fluid flow passage,



a printed circuit board located within said housing, a circuit printed on said printed circuit board being electrically connected to said second portions of said first and second pairs of electrodes such that said circuit derives inputs from said first and second pairs of electrodes representing the conductivity of the fluid flowing in the first and second elongated fluid flow passages between the first portions of the two pairs of electrodes,

a power supply being located within said housing, said power supply being electrically connected to said printed circuit board,

said circuit formed on said printed circuit board providing electrical output signals based upon the conductivity of the fluids flowing in the first and second elongated fluid flow passages between the respective first portions of the two pairs of electrodes,

electrical leads connected to said printed circuit board and extending through said housing to provide said electrical output signals indicative of the operating condition of the fluid treatment device.

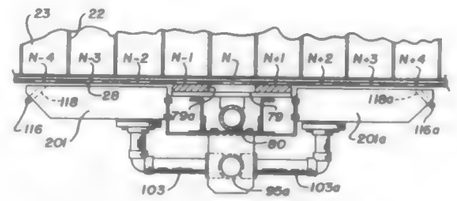
5,362,384

MULTI-CELL FILTER APPARATUS AND TURBIDITY MONITOR

Jackie G. Whetsel, Oregon, Ill., assignor to Aqua-Aerobic Systems, Inc., Rockford, Ill.

Filed Jul. 14, 1993, Ser. No. 92,442
Int. Cl.[5] B01D *24/44*
U.S. Cl. 210—85 **19 Claims**

1. In a filter apparatus of the type including a tank, a filter bed support in the tank for supporting a bed of filter material above the bottom of the tank, carriage means mounted for movement along the tank in a carriage path, a plurality of partitions extending transverse to the carriage path and spaced apart there along separating the bed into a plurality of filter cells each including an upper compartment above the filter bed support and a lower compartment below the filter bed support, influent means for supplying an influent to the tank above the bed, a port plate including a plurality of cell ports having centers uniformly spaced apart a distance d along a port locus paralleling said carriage path with each cell port communicating with the lower compartment of an associated one of the filter cells, a filtered water effluent launder extending along said port locus and communicating with said cell ports, carriage drive means for driving the carriage means along the carriage path in a backwash run, backwash means including a backwash head carried by the carriage means for movement along the port locus, scavenging means including a fluid intake head carried by the carriage means at a position trailing the backwash head during movement along the port locus and having intake opening means disposed adjacent said port plate and out of sliding engagement therewith, means for operating the backwash means during the backwash run to supply backwash fluid to the backwash head, means for operating the scavenging means to draw fluid into the fluid intake head, the backwash head having a face slidably engaging said port plate and backwash port means in said face constructed and arranged for communication with only one cell port at a time, to up-flow backwash only one filter cell at a time, the backwash head having means operative when the backwash port means is centered with respect to one cell port n, for blocking flow



through a cell port spaced the distance d from the cell port n, the fluid intake head having intake opening means constructed and arranged for communication with at least two cell ports at the same time having centers respectively spaced a distance two times d and three times d from the center of said one cell port to downflow scavenge each filter cell a first time when the backwash head is in a portion to backwash one filter cell and at least a second time when the backwash head is in a position to backwash a succeeding filter cell, the improvement comprising monitoring means including a turbidity meter and a monitor intake conduit having an let end mounted for movement with the fluid intake head and arranged for communication with a cell port adjacent an end of the intake head that trails during the backwash run and is spaced at least three times d from the center of said one cell port to monitor turbidity of fluid from a cell port, communicating with a given filter cell which has been scavenged at least once during the backwash run, the backwash means including a backwash pump having an outlet connected to the backwash port means and an inlet connected to the fluid intake opening means to receive at least a portion of the backwash fluid through said intake opening means.

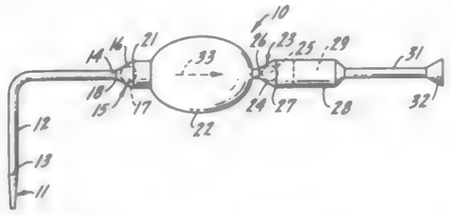
9. A filter apparatus according to claim 1 wherein said monitoring means includes means for producing a signal when the turbidity of the liquid being monitored is above a preselected minimum.

5,362,385

PORTABLE WATER FILTERING DEVICE

Neal A. Klegerman, 130 E. Randolph Dr., Chicago, Ill. 60601, and Richard Fuksa, Park Ridge, Ill., assignors to Neal A. Klegerman, Chicago, Ill.

Filed May 26, 1993, Ser. No. 67,777
Int. Cl.[5] B01D *27/02, 27/08*
U.S. Cl. 210—136 5 Claims



1. A portable water filtering device for personal use, the device comprising:

means for engaging an outlet of a water source,

a first tube connecting the means for engaging an outlet to a first check valve,

a pump means disposed in-line between the first check valve and a second check valve means,

the first check valve permitting flow from the first tube toward the pump only and preventing flow in the reverse direction,

a filter disposed opposite of the second check valve from the pump,

the second check valve permitting flow from the pump toward the filter only and preventing flow in the reverse direction,

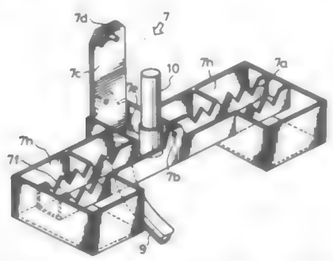
a second tube connecting to mouthpiece.

5,362,386

SUPPORT MECHANISM OF OVERFLOW WEIR IN SEWAGE DISPOSAL TANK

Masataka Takasugi, Ohsaki, Japan, assignor to Yamashou Sangyo Kabushiki Kaisha, Yamanashi, Japan

Filed Dec. 22, 1993, Ser. No. 171,680
Claims priority, application Japan, Mar. 19, 1993, 5-085526
Int. Cl.[5] B01D *21/02*
U.S. Cl. 210—206 2 Claims



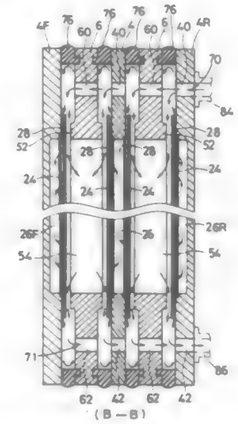
1. In a sewage disposal tank of the type having a plurality of chambers including a settling chamber wherein an overflow weir equipped at the upper edge thereof with a large number of V-shaped notches formed continuously for permitting natural overflowing of water at the time of the rise of a water level is transversely supported by support means, the improvement comprising a support mechanism of an overflow weir wherein said support means of said overflow weir pivotally supports the center portion of said overflow weir via a fulcrum shaft in such a manner that said overflow weir can swing to the right and left, and a swing position fixing member is engaged with said overflow weir.

5,362,387

BEER FILTERING DEVICE

Koji Saito, Kamakura, and Tetsuhisa Makino, Tokoname, both of Japan, assignors to Sapporo Breweries Ltd., Tokyo and Makino Corporation, Tokoname, both of Japan

Continuation of Ser. No. 873,752, Apr. 27, 1992, abandoned.
This application Oct. 1, 1993, Ser. No. 130,431
Int. Cl.[5] B01D *25/32*
U.S. Cl. 210—225 3 Claims



1. A beer filtering device of a filter press type for filtering a beer stock as an intermediate product in producing beer, said beer filtering device comprising:

a plurality of parallel filter plates displaceably arranged at intervals, each of said filter plates supporting a filter element for filtering beer stock, each of said filter plates having a filtrate discharge passage for discharging a filtrate of said beer stock filtered by said filter element to an outer peripheral portion of said filter plate;

said each filter plate having a pair of first guide portions projecting from an outer peripheral surface of said each filter plate in opposite directions parallel to a plane of said each filter plate;

a pair of first guide rollers supported rotatably around horizontal pivot axes supported by said pair of first guide portions of said each filter plate, respectively;

a plurality of filter frames oriented parallel to said filter plates and being displaceably arranged at intervals in alternate relationship to said filter plates so that one of said filter plates is disposed between a pair of said filter frames;

each of said filter frames having an opening extending therethrough to define a filter chamber between said filter elements of said filter plates adjacent said filter chambers, each of said filter frames having a stock introduction passage for introducing said beer stock from an outer peripheral portion of said filter frame to said filter chamber;

said each filter frame having a pair of second guide portions projecting from an outer peripheral surface of said each filter frame in opposite directions parallel to a plane of each filter frame;

first and second passages formed in said filter frames extending from an annular space formed between said filter frames and an adjacent filter plate around a periphery of said filter element and extending to respective points outside of said filter press, whereby a washing liquid may be introduced into said annular passage via said first passage and withdrawn from said annular space via said second passage to wash away any beer stock leaking from the periphery of the filter element into said annular space;

a pair of second guide rollers supported rotatably around horizontal pivot axes supported by said pair of second guide portions of said each filter frame;

a pair of parallel guide rails for guiding said first and second guide rollers, said guide rails horizontally extending in a direction perpendicular to said plane of said each filter plate and said plane of said each filter frame;

a stock line for supplying said beer stock to said stock introduction passages of said filter frames in parallel, said stock line being formed by a plurality of stock line holes extending coaxially through said outer peripheral portions in a direction perpendicular of said filter plates and said filter frames so as to be communicated with each other;

a filtrate line for collecting filtrate from said filtrate discharge passages of said filter plates in parallel, said filtrate line being formed by a plurality of filtrate line holes extending coaxially through said outer peripheral portions in a direction perpendicular of said filter plates and said filter frames independently of said stock line holes so as to be communicated with each other;

a plurality of tubular stock lines seals each having an elasticity and attached to and surrounding a respective stock line hole at said outer peripheral portion of each of one of said filter plate and said filter frame, each said stock line seal including a free end for liquid-tightly engaging a stock line hole seat portion of said outer peripheral portion surrounding an adjacent stock line hole for sealing a communicating portion between the adjacent ones of said stock line holes during a filtering step, each of the free ends of said stock line seals being separated from their respective seat portions during a washing step;

a plurality of tubular filtrate line seals each having an elasticity and attached to and surrounding a respective filtrate line hole at said outer peripheral portion of each of one of said filter plate and said filter frame independently of each said stock line seal, each said filtrate line seal including a free end for liquid-tightly engaging a filtrate line hole seat portion of said outer peripheral portion surrounding an adjacent filtrate line hole for sealing a communicating portion between the adjacent ones of said filtrate line holes in said filtering step, each of the free ends of said filtrate line seals being separated from their respective seat portions in said washing step; and

a plurality of washer liquid seals each having an elasticity and attached to an outermost peripheral portion of one of each of said filter plate and said filter frame to surround said stock line seals and said filtrate line seals and said filter chamber, each washer liquid seal including a free end for liquid-tightly engaging a washer liquid seat portion of said outer peripheral portion of an adjacent one of said filter plates and said filter frames for sealing said narrow spacing between the adjacent ones of said filter plates and filter frames in said filtering step and for liquid-tightly sealing said expanded spacing between the adjacent ones of said filter plates and said filter frames in said washing step;

wherein said stock line seals, said filtrate line seals, and said washer liquid seals are configured so that the free ends of said stock line seals and said filtrate lines seals are spaced from their respective seats while the free ends of said washer liquid line seals sealingly contact their respective seats;

a pressure plate disposed adjacent to an end one of said filter plates so as to abut against said end one;

a hydraulic cylinder for setting a filtering position of said filter plates and said filter frames where a spacing between the adjacent filter plates and filter frames is narrow during said filtering step and for setting a washing position of said filter plates and said filter frames where said spacing is expanded during said washing step;

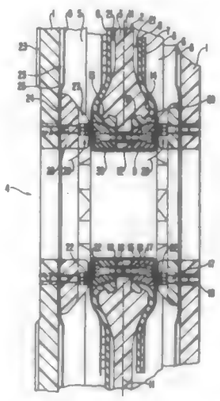
whereby in said washing step, a sealing condition of said washer liquid seals is maintained, and a sealing condition of said stock line seals and said filtrate lines seals is released, so that a washer liquid is introduced into a sealed space defined in said beer filtering device inside said washer liquid seals.

5,362,388

FILTER PLATE FOR A PLATE FILTER PRESS

Heinz Boan, Kreuzau-Winden, Germany, assignor to Eberhard Hoesch & Söhne GmbH Verfahrens-und Anlagentechnik, Düren, Germany

PCT No. PCT/EP91/01594, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO92/06760, PCT Pub. Date Apr. 30, 1992
PCT Filed Aug. 22, 1991, Ser. No. 861,867
Claims priority, application Germany, Oct. 17, 1990, 4032937
Int. Cl.[5] B01D *25/21*
U.S. Cl. 210—230 11 Claims



1. A plate filter press, comprising:

a filter plate having at least one passage opening and a conically shaped region at an edge of the passage opening of the filter plate which tapers toward a center plane of the filter plate, the conically shaped region including a groove for accommodating an edge bead;

at least one press membrane covered by a filter cloth and carried by the conically shaped region of the filter plate, the press membrane having a passage opening in common with the passage opening of the filter plate and an edge bead disposed within the groove of the conically shaped region; and

a fastening element fastened to the filter plate for holding the press membrane to the conical shaped region of the filter plate and the edge bead in sealing contact in the groove.

5,362,389

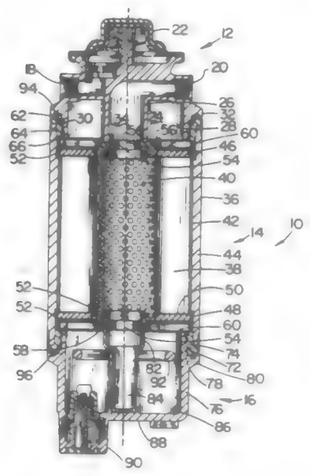
FUEL FILTER ASSEMBLY WITH REVERSIBLE ELEMENT

Steven D. Hardison, and Walter H. Stone, both of Modesto, Calif., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 683,096, Apr. 10, 1991, Pat. No. 5,244,571, which is a continuation of Ser. No. 586,827, Sep. 24, 1990, abandoned, which is a division of Ser. No. 370,097, Jun. 20, 1989, Pat. No. 4,997,555, which is a continuation of Ser. No. 242,791, Sep. 9, 1988, abandoned, which is a continuation of Ser. No. 32,834, Mar. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 784,292, Oct. 7, 1985, Pat. No. 4,692,245, which is a continuation-in-part of Ser. No. 733,808, May 14, 1985, Pat. No. 4,668,393. This application May 22, 1992, Ser. No. 888,688

Int. Cl.[5] B01D *27/08*

U.S. Cl. 210—232 **2 Claims**



1. A filter assembly comprising:

filter head, a filter element and a collection bowl, said element comprising:

cylindrical housing, said housing having an upper turned in edge portion extending circumferentially, said upper turned in edge portion adjacent an upper end of said housing, and a lower turned in edge portion extending circumferentially, said lower turned in edge portion adjacent a lower end of said housing;

an upper ring shaped member, said upper ring shaped member disposed below and in abutting contact with said upper turned in edge portion of said housing, said upper ring shaped member including attaching means for selectively attaching said upper ring shaped member and said filter head, said head including a first peripheral wall having a first shoulder, said upper turned in edge portion of said housing extending between said upper ring shaped member and said shoulder of said head when said head and element are in an attached condition;

a lower ring shaped member in abutting contact with said lower turned in edge portion interiorly of said housing, said lower ring shaped member including bowl attaching means for releasibly attaching said lower ring shaped member and said bowl, said bowl including a second peripheral wall having a second shoulder, said lower turned in edge portion of said housing extending between said lower ring shaped member and said second shoulder of said bowl when said element and bowl are in the attached condition.

5,362,390

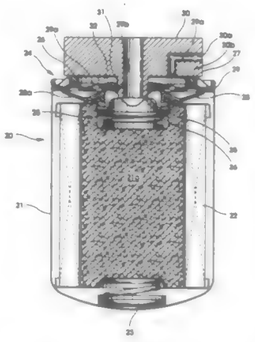
SHUT-OFF VALVE FOR SPIN-ON FILTERS

Ronald H. Widenhoefer, and Roger A. Johnson, both of Albert Lea, Minn., assignors to Fleetguard, Inc., Nashville, Tenn.

Filed Jun. 28, 1993, Ser. No. 83,913

Int. Cl.[5] B01D *35/153*

U.S. Cl. 210—235 **2 Claims**



1. A spin-on filter designed and arranged for threaded engagement onto a mounting pad, said spin-on filter comprising:

a filter enclosure;

a filtering element disposed within said filter enclosure;

an end plate assembly defining a flow inlet and a flow outlet and being cooperatively arranged with said filter enclosure to define an interior chamber and to direct flow through said interior chamber from said flow inlet through said filtering element to said flow outlet; and

a shut-off valve disposed within said interior chamber and being positioned over said flow outlet, said shut-off valve including:

a hollow housing having a spring channel at a first end and an outwardly extending radial flange at a second end;

a spring positioned in said spring channel;

a valve actuator having a sealing flange and being acted upon by said spring, said valve actuator being free of any interior flow aperture;

an annular gasket disposed around said valve actuator adjacent said sealing flange; and

a valve seat having an outwardly-extending radial flange which is joined to the radial flange of said housing so as to encase said spring, valve actuator and gasket, said gasket being positioned between said sealing flange and said valve seat and said valve seat including an abutment surface for sealing engagement with said gasket and a base surface defining a flow-through aperture, such that when in said sealing engagement any fluid flow into said valve is blocked by said valve actuator and said gasket, said gasket being spring-biased against said valve seat via said valve actuator and said gasket being moveable away from said valve seat by compression of said spring via said actuator to permit fluid flow through said valve.

5,362,391

APPARATUS FOR PICKING UP OIL FROM WATER

Leo W. Stephens, Box 268, Sharon Springs, Kans. 67758

Filed Jun. 5, 1992, Ser. No. 894,550

Int. Cl.[5] E02B *15/04*

U.S. Cl. 210—242.3 **14 Claims**

1. An apparatus for picking up oil from water and adapted to be installed on a water craft comprising

a support frame adapted to be supported by a water craft;

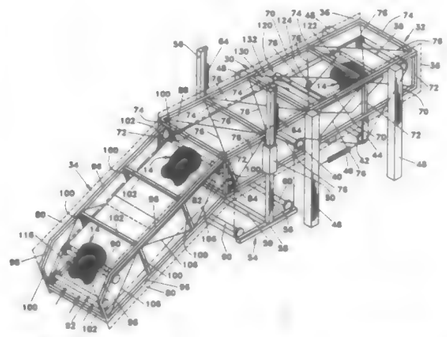
a drive roller means rotatably secured to the support frame for moving a metal wire-like conveyor over a plurality of conveyor rollers;

a plurality of conveyor rollers rotatably supported by the support frame;

a pick-up frame pivotally secured to an end of the support frame, said pick-up frame being adapted to extend into a body of water and having an upper pick-up roller and a lower pick-up roller both rotatably secured thereto;

a guide member means for slidably receiving a biased shaft;

a biased shaft slidably passing through the guide member means;



a roller support frame secured to an end of the biased shaft;

a pair of guide rollers rotatably secured to the roller support frame; and

an endless metal wire-like conveyor entrained over the drive roller means, the conveyor rollers, the upper pick-up roller, the lower pick-up roller, and the pair of guide rollers.

5,362,392

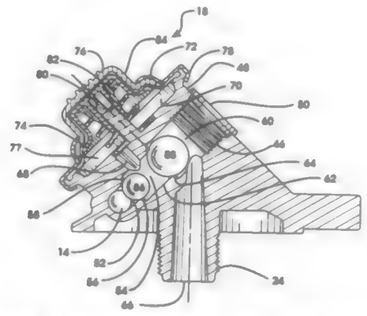
FILTER HEAD WITH INTEGRAL PRIMING PUMP

Russell D. Jensen, Modesto, Calif., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Mar. 8, 1993, Ser. No. 28,101

Int. Cl.[5] B01D *35/01*

U.S. Cl. 210—249 **20 Claims**



20. A filter head for removably mounting a replaceable filter element thereon, said filter element having an inlet and outlet at one end thereof, said filter head comprising:

an inlet admitting liquid to said head;

an outlet passing fluid from said head;

means for removably mounting said filter element on said body, said means for removably mounting including first passage means for connection to the inlet of said filter element and second passage means for connection to the outlet of said filter element;

a stepped bore, said bore including a first area having a first diameter, a second area adjacent said first area and having a second diameter greater than said first diameter, and a third area adjacent said second area and having a third diameter greater than said second diameter and wherein a first opening extends in said bore between said first and second areas, and wherein a second opening extends in said bore between said second and third areas, and wherein said first area is in fluid communication with said inlet through a first fluid passage, and said third area is in fluid connection with said first passage means;

a first movable body in said second area movable between a first position blocking said first opening and a second position disposed from said first opening;

a second movable body in said third area, said second movable body movable between a third position blocking said second opening and a fourth position disposed from said second opening;

a variable volume area wherein a volume is variable by movement of a movable member bounding said variable volume area;

a further fluid passage through said head from said variable volume area to a passage opening in said second area between said first and second openings, said further fluid passage fluidly separated from said bore except though said passage opening; and

wherein said means for removably mounting includes an annular member on said head releasably enagageable with said element, said annular member including a member fluid passage area extending axially therethrough and defining a portion of said first passage means, whereby said member fluid passage is in fluid connection with said element when said element is attached to said head.

5,362,393

PRESSURE FILTER FOR LIQUIDS

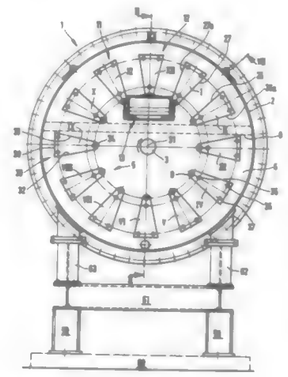
Ernst Kuhme, Bochum, Germany, assignor to Karl Brieden Bau-Und Beteiligungs-KG, Germany

Filed Mar. 15, 1993, Ser. No. 33,312

Claims priority, application Germany, Feb. 10, 1992, 4303847; Mar. 13, 1992, 9203382[U]; May 28, 1992, 4217666

Int. Cl.[5] B01D *33/25*

U.S. Cl. 210—333.01 **13 Claims**



1. A pressure filter comprising:

a pressure vessel having a pressure chamber and a circumferential edge;

a turntable rotatable mounted with the pressure vessel about a horizontal axis;

a plurality of filters non-rotatably mounted to the turntable and spaced apart from each other adjacent to the circumferential edge of the pressure vessel and rotatable with the turntable around the horizontal axis through a center of the pressure vessel such that the plurality of filters continuously dip into and out of a solids suspension in the bottom of the pressure chamber;

a blow-off station positioned above the solids suspension in the pressure chamber for freeing filter cake that has dried on the plurality of filters;

a filter cake conveyor for carrying the blown-off filter cake through a pressure lock in the pressure vessel;

wherein each filter forms a filter element having a filter surface defined by cross section sides extending along a radius of the pressure vessel adjacent to the circumferential edge, and long sides extending parallel to the horizontal axis.

5,362,394

SYSTEM FOR TREATING CONTAMINATED GROUNDWATER

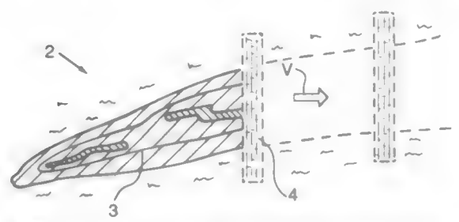
David W. Blowes, and Carol J. Ptacek, both of Waterloo, Canada, assignors to University of Waterloo, Ontario, Canada

Filed Mar. 3, 1992, Ser. No. 845,132

Claims priority, application United Kingdom, Mar. 4, 1991, 9104509

Int. Cl.[5] C02F *1/58, 1/64*

U.S. Cl. 210—617 **17 Claims**



1. Procedure for treating contaminated groundwater in-situ in its native aquifer, wherein:

the procedure includes the step of determining the nature of, the extent of, and the velocity of, a plume of dissolved contaminant within a body of groundwater travelling through an aquifer;

the procedure includes the step of selecting and providing a body of active material;

the procedure includes the step of excavating, into the material of the aquifer, a receptacle which is suitable for receiving the body of active material, and of placing the said body in the receptacle;

the procedure includes the step of so locating the said receptacle that the active material therein lies in the path of the plume;

the arrangement of the receptacle being such that the plume enters the receptacle through an upstream side thereof, and emerges from the receptacle through a downstream side thereof, the arrangement being such that natural gradients of the aquifer in which the receptacle is located cause the plume of contaminated groundwater to pass from the aquifer into the receptacle, pass through the receptacle from side to side thereof, and emerge into the aquifer from the downstream side thereof;

the body of active material in the receptacle is of such porosity and permeability that resistance to the passage of groundwater through the receptacle and through the body of material in the receptacle is substantially no greater than the resistance of the native aquifer to the passage of groundwater through the aquifer;

the body of active material is active in the sense that the presence of the material in substance causes the dissolved contaminant to be removed from the groundwater;

the chemical or biochemical nature of the active material in relation to the chemical or biochemical nature of the contaminant is such that at least prolonged operative contact of the groundwater with the active material is effective to cause the breakdown or transformation by chemical or biochemical reaction of at least a substantial proportion of the dissolved contaminant into a substance which is substantially solid and insoluble in the groundwater, and which is retained in the active material.

5,362,395

METHOD AND APPARATUS FOR BIOLOGICALLY PURIFYING SEWAGE WHICH IS ORGANICALLY LOADED WITH SUBSTANCES DIFFICULT TO DECOMPOSE BIOLOGICALLY OR NOT DECOMPOSABLE BIOLOGICALLY

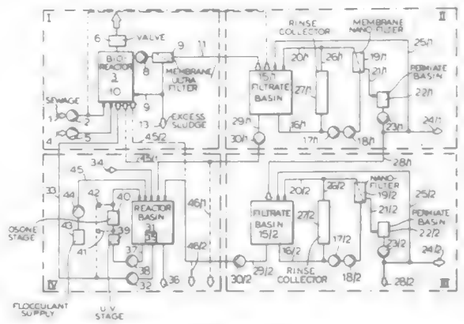
Wolfgang Dorau, Berlin; Friedrich Wagner, Heumeiler; Herbert Wienands, Teningen; Robert Rautenbach, and Rainer Mellis, both of Aachen, all of Germany, assignors to Wehrle-Werk AG, Emmedingen, Germany

Filed Mar. 13, 1992, Ser. No. 851,050

Claims priority, application European Pat. Off., Mar. 13, 1991, 91 103860.2

Int. Cl.[5] C02F *1/44*

U.S. Cl. 210—638 **31 Claims**



1. A method of purifying sewage by separating said sewage into a retention phase concentrated with substances contained in said sewage and a purified liquid phase, by passing said sewage through a membrane-filtering device and subjecting said retention phase to biological decomposition, wherein the improvement comprises recirculating said retention phase through said membrane filtering device in said separation step until a concentrate having a desired degree of concentration of those substances that are difficult to decompose biologically or not decomposable biologically has been reached and processing at least a part of said concentrate in a physical and/or chemical treatment before being subjected to said biological decomposition.

5,362,396

Patent Not Issued For This Number

5,362,397

METHOD FOR THE BIODEGRADATION OF ORGANIC CONTAMINANTS IN A MASS OF PARTICULATE SOLIDS

Benoit Cyr, Neufchatel, Canada, assignor to Biogenie Inc., Quebec, Canada

Continuation of Ser. No. 710,206, Jun. 5, 1991, abandoned. This application May 18, 1993, Ser. No. 71,366

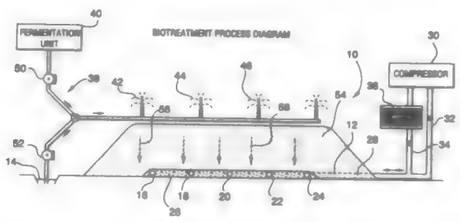
Int. Cl.[5] C02F *3/04*

U.S. Cl. 210—610 **19 Claims**

1. A method for the biodegradation of organic contaminants in a mass of particulate solids, said method comprising:

a) providing a contaminated mass of particulate solids on an impervious surface in fluid communication with an impervious recovery reservoir, said impervious surface having operating thereon an air supply means to provide suitable and continuous oxygenation of said mass;

b) periodically irrigating said mass by applying on its surface a culture medium comprising at least one bacterial strain and co-substrates thereof, said bacterial strain having the ability to degrade said organic contaminants, said medium being drained through said mass and washings recovered in said reservoir to be reused to irrigate said mass; and



c) periodically mixing said mass and controlling the temperature and moisture level of said mass to monitor the biological activity of said bacterial strain and to maintain said activity at levels suitable for said bacterial strain to degrade said contaminants in said mass.

5,362,398

PROCESS FOR THE PREPARATION AND PURIFICATION OF A HYDROXYLAMMONIUM SALT SOLUTION

Carolus H. M. Kamphuis, Born, and Hendrikus J. H. Rouhof, Sittard, both of Netherlands, assignors to D.S.M. N.V., Heerlen, Netherlands

Filed Jul. 1, 1993, Ser. No. 84,171

Claims priority, application Netherlands, Jul. 2, 1992, 9201176

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—651 **12 Claims**

1. The process for the preparation and purification of a hydroxylammonium salt solution comprising separating a hydroxylammonium salt solution from an aqueous reaction mixture which contains catalyst particles having an average size of 0.1 to 25 μm by cross flow filtration with a filter medium to obtain a catalyst-containing residue and a filtrate containing hydroxyl ammonium salt wherein the pore diameter of the filter medium is 0.01 to 10 μm and the filtrate passes through said filter medium.

5,362,399

REMOVAL OF WATER FROM A PHOSGENE RECYCLE STREAM

Hans V. Schwarz, Baton Rouge, La., and Erwin Brunner, Weinheim, Germany, assignors to BASF Corporation, Parsippany, N.J.

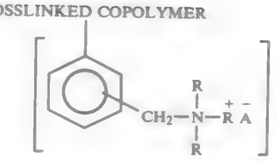
Filed Dec. 30, 1992, Ser. No. 998,491

Int. Cl.[5] B01D *15/04*

U.S. Cl. 210—689 **15 Claims**

1. A process for removing water from a liquid phosgene stream containing 60 weight percent or more of liquid phosgene, comprising manufacturing an isocyanate with phosgene in the presence of a solvent, removing gaseous phosgene from the isocyanate and solvent, liquefying the gaseous phosgene to form said liquid phosgene stream, and contacting the liquid phosgene stream with a macroreticular strongly basic anionic exchange resin having a quartenary ammonium group attached to a crosslinked copolymer through a methylene group according to the formula:

CROSSLINKED COPOLYMER



wherein each of R independently comprise a substituted or unsubstituted C_1 to C_{22} alkyl or alkenyl group, and A^- comprises a halide, hydroxide, or alcoholate.

5,362,400

PROCESS FOR THE PURIFICATION OF WATER

Hakan R. Martinell, Täby, Sweden, assignor to Paref AB, Taby, Sweden

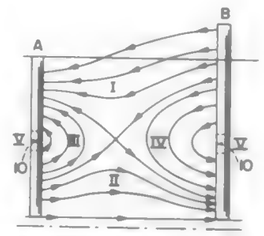
PCT No. PCT/SE91/00464, § 371 Date Mar. 3, 1993, § 102(e) Date Mar. 3, 1993, PCT Pub. No. WO92/00918, PCT Pub. Date Jan. 23, 1992

PCT Filed Jun. 26, 1991, Ser. No. 962,218

Claims priority, application Sweden, Jul. 4, 1990, 9002355-7

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—717 **6 Claims**



1. A process for treating water within an aquifer to purify said water comprising:

(a) establishing within said aquifer at least one extraction well for extracting purified water from said aquifer and at least two spaced-apart injection wells for injecting oxygen, an oxygen-containing gas, an oxygen-releasing substance or oxygen-consuming substance into said aquifer, each of said injection wells having upper and lower water permeable portions;

(b) introducing oxygen, an oxygen-containing gas, an oxygen-releasing substance or oxygen-consuming substance into each of said injection wells in an amount effective to purify said water; and

(c) pumping water from said aquifer into one injection well through its lower permeable portion upwardly into its upper permeable portion and pumping water from said aquifer into the other injection well through its upper permeable portion downwardly into its lower permeable portion to circulate water in the aquifer between said injection wells.

5,362,401

METHOD AND APPARATUS FOR CLEANING A FILTER APPARATUS

Jackie G. Whetsel, Oregon, Ill., assignor to Aqua-Aerobic Systems, Inc., Rockford, Ill.

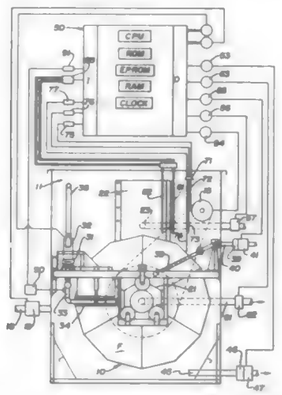
Filed Dec. 14, 1993, Ser. No. 166,102

Int. Cl.[5] B01D *33/48, 37/00*

U.S. Cl. 210—741 **14 Claims**

1. In a method of cleaning a filter apparatus wherein, during a filter time in a filter cycle, liquid influent is passed in a filter direction through filter material on a rotatable filter frame into a filter effluent compartment to an outlet, and wherein the filter material is intermittently backwashed during the filter

time by operating a suction device outside of the filter frame to draw filtered liquid from the filter effluent compartment in a backwash direction through the filter material, and wherein the filter material on the frame is subjected to a wash operation during a wash time in the filter cycle by directing a high pressure liquid spray at one side of the filter material, the improvement comprising: monitoring the pressure in the suction device during backwashing of the filter material, and initiating said wash operation after the pressure in the suction device reaches a preselected sub-atmospheric pressure.



5,362,402

ENHANCED REMEDIATION OF AQUEOUS COMPOSITIONS CONTAMINATED WITH HALOGENATED HYDROCARBONS

Deborah A. Haitko, Schenectady; Sunita S. Baghel, Rensselaer, and Patricia D. Mackenzie, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 25, 1994, Ser. No. 217,832
Int. Cl.[5] C02F *1/70*
U.S. Cl. 210—757 **10 Claims**

1. A method for dehalogenation of aqueous compositions contaminated with halogenated hydrocarbon compounds consisting essentially of admixing the aqueous compositions with an amount of metallic iron effective to dehalogenate the halogenated hydrocarbons in the presence of citric acid in an amount of from about 0.5 to 1.0 percent by weight of the amount of iron in the reaction, said reaction occurring at a pH of from about 5.0 to 9.0 and at a temperature of at least about 17° C.

5,362,403

FILTRATION APPARATUS AND METHOD FOR DISCHARGING FILTER CAKE FROM A FILTRATION APPARATUS

Martin Doscoudil, Kwakelkade 28, NL-1800 AJ Alkmaar, Netherlands

PCT No. PCT/NL90/00184, § 371 Date Aug. 31, 1992, § 102(e) Date Aug. 31, 1992, PCT Pub. No. WO91/09661, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 21, 1990, Ser. No. 861,975
Claims priority, application Netherlands, Dec. 29, 1989, 8903177
Int. Cl.[5] B01D *25/32*
U.S. Cl. 210—744 **6 Claims**

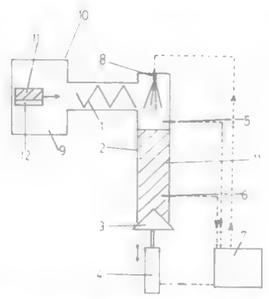
1. A method for discharging filter cake from a filtration vessel of a filtration apparatus, comprising:

a. loosening filter cake from filter elements of a filtration vessel;

b. conveying the loosened filter cake from the filtration vessel towards a discharge shaft, which discharge shaft is in pressure communication with the filtration vessel, is vertically disposed, and includes a bottom end having closure means;

c. sensing height of the filter cake within the discharge shaft by sensing means comprising a maximum height sensor for sensing a selected maximum height of filter cake within the discharge shaft, a minimum height sensor for sensing a selected minimum height of filter cake within the discharge shaft, and a controlling device; and

d. cyclically opening and closing the closure means thereby discharging the filter cake by pressing or blowing out the filter cake due to the pressure within the discharge shaft, the maximum height sensor sensing when the selected maximum height of the filter cake is reached and controlling the opening of the closure means for a selected period of open time whereafter the closure means is closed, and the minimum height sensor sensing when the selected minimum height of filter cake is reached or not reached and continuously controlling an increase or decrease, respectively, of the selected period of open time by a fixed time interval.



5,362,404

DEHALOGENATION OF HALOGENATED HYDROCARBONS IN AQUEOUS COMPOSITIONS

Deborah A. Haitko, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1994, Ser. No. 223,401
Int. Cl.[5] C02F *1/70*
U.S. Cl. 210—757 **10 Claims**

1. A method for dehalogenation of aqueous compositions contaminated with halogenated hydrocarbon compounds without the formation of environmentally harmful byproducts consisting essentially of admixing the aqueous composition with an amount of ferrous oxide effective to dehalogenate the halogenated hydrocarbons in the presence of citric acid in an amount of at least about 0.5 to 1.0 percent by weight of the amount of ferrous oxide added to the aqueous composition, and at a pH between about 3.0 and 9.0 and at a temperature of at least about 17° C.

5,362,405

CATALYTIC OXIDATION OF AQUEOUS ORGANIC CONTAMINANTS

Philip J. Birbara, Windsor Locks, and Joseph E. Genovese, East Granby, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 650,136, Feb. 4, 1991, Pat. No. 5,234,584. This application Apr. 19, 1993, Ser. No. 47,896
Int. Cl.[5] C02F *1/72*
U.S. Cl. 210—763 **6 Claims**

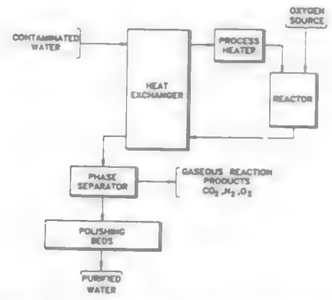
1. A method of removing organic contaminants from a water stream, consisting essentially of:

(a) heating a water stream containing organic contaminants to a temperature of about 300° F. or lower, sufficient to permit the complete oxidation of the organic contaminants;

(b) oxygenating the water stream;

(c) contacting the organic contaminants in the water stream with a catalyst bed providing a liquid residence time of less than about 5 minutes, wherein the catalyst bed includes a catalyst having about 5 wt % to about 20 wt % noble metal crystallites about 100 Å or smaller in size selected from the group consisting of platinum, palladium, ruthenium, iridium, and combinations thereof deposited on a high surface area catalyst support comprising activated carbon support materials having a surface area of at least 500 m^2/g, at a pressure sufficient to keep the water in the liquid phase within the reactor such that the organic contaminants in the water are completely oxidized in that the catalyst bed contacted water stream contains organic contaminants in an amount less than about 1 ppm; and

(d) separating gaseous reaction products and unreacted oxygen from the water stream.

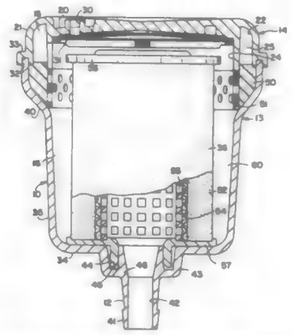


5,362,406

LEUCOCYTE DEPLETING FILTER DEVICE AND METHOD OF USE

Thomas C. Gsell; Vlado I. Matkovich, both of Glen Cove, and Thomas Bormann, Seaford, all of N.Y., assignors to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 827,488, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 558,468, Jul. 27, 1990, abandoned. This application Mar. 9, 1994, Ser. No. 221,983
Int. Cl.[5] B01D *19/00, 35/01, 39/00*
U.S. Cl. 210—767 **11 Claims**



6. A method for removing leucocytes and other deleterious matter from a leucocyte-containing liquid comprising:

directing the liquid through a housing;

passing the liquid through a porous degassing element disposed within the housing;

venting gas from the housing through a vent in communication with the degassing element, wherein the vent includes a liquophobic membrane which allows the gas but not the liquid to flow through the vent; and

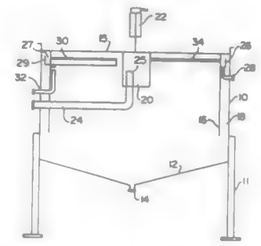
passing the liquid through a hollow, cylindrical filter element positioned within the housing, the filter element comprising a fibrous mass capable of decreasing the leucocyte content of the liquid at a flow rate capacity of six liters per minute at a differential pressure of less than 15 psi, said fibrous mass having a CWST of at least 53 dynes/cm and a graded pore size over at least a substantial radial portion of the fibrous mass.

5,362,407

CIRCULAR GRAVITY CLARIFIER AND METHOD

Hadi Elmi, The Woodlands, Tex., assignor to Modern Welding Company, Inc., Houston, Tex.

Filed Apr. 15, 1993, Ser. No. 47,850
Int. Cl.[5] B01D *21/02*
U.S. Cl. 210—801 **10 Claims**



5. A method of separating first liquid droplets in a second liquid comprising,

flowing the second liquid in a loop flow pattern downwardly in a swirling cone-shaped flow path from a rotating, open bottom stilling well within a cylindrical baffle disposed in a closed cylindrical body, under the cylindrical baffle's lower end and upwardly in an annular flow path formed by the baffle and the body, the first liquid droplets rising by gravity and forming a liquid surface within the baffle,

removing the second liquid clarified of the first liquid droplets from the annular flow path, and

removing the first liquid droplets from the liquid surface within the baffle.

5,362,408

HIGH TEMPERATURE GEL STABILIZER FOR FRACTURING FLUIDS

Marek K. Pakulski, and D. V. Satyanarayana Gupta, both of The Woodlands, Tex., assignors to The Western Company of North America, Houston, Tex.

Filed Jul. 14, 1992, Ser. No. 912,983
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 **10 Claims**

1. A gelled oilfield fluid composition suitable as a high temperature fracturing fluid comprising:

(a) water,

(b) a water thickening amount of a soluble or dispersable polymer,

(c) a crosslinker, and

(d) an effective amount of an oxime gel stabilizer.

5,362,409

GREASE COMPOSITIONS

Gary W. Wiggins, Willowick; Edward J. Kouzman, Eastlake; James N. Vinci, Mayfield Heights, and Patricia R. Todd, Chardon, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 911,833, Jul. 10, 1993, Pat. No. 5,256,321, and a continuation-in-part of Ser. No. 911,443, Jul. 10, 1993, Pat. No. 5,256,320. This application Oct. 25, 1993, Ser. No. 142,583

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] C10M *137/04*

U.S. Cl. 252—32.7 E **53 Claims**

1. An improved grease composition comprising a major amount of an oil-based, metal soap thickened base grease selected from the group consisting of complex grease and failed complex grease and

(B) from about 0.25% to about 5% by weight of a phosphorus and sulfur containing composition selected from the group consisting of

(B-1) a compound represented by the formula



(I)

wherein each X_1, X_2, X_3 and X_4 is independently oxygen or sulfur provided at least one is sulfur; each a and b is independently 0 or 1; and

wherein each R_1, R_2 and R_3 is independently hydrogen, hydrocarbyl, a group of the formula



(II)

wherein each R_4 and R_5 is independently hydrogen or hydrocarbyl, provided at least one of R_4 and R_5 is hydrocarbyl,

R_6 is an alkylene or alkylidene group, each a and b is independently 0 or 1, and

each X_5, X_6, X_7 and X_8 is independently oxygen or sulfur; or a group of the formula $—R_6OH$, wherein R_6 is an alkylene or alkylidene group;

(B-2) an amine or an ammonium salt of (B-1) when at least R_3 is hydrogen;

(B-3) a compound represented by the formula



(III)

or



(IV)

wherein each R_7, R_8 and R_9 is independently hydrogen or a hydrocarbyl group provided at least one is hydrocarbyl and each X_9,

X_{10} and X_{11} is oxygen or sulfur provided at least one is sulfur; and

(B-4) mixtures of two or more of (B-1) to (B-3) thereof; wherein the dropping point of the base grease is increased by at least about 15° C. as measured by ASTM procedure D-2265.

5,362,410

MULTIFUNCTIONAL ASHLESS DISPERSANTS

Abraham O. M. Okoroudu, West Deptford, and Angeline B. Cardis, Florence, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 13, 1993, Ser. No. 119,638

Int. Cl.[5] C10M *159/16*

U.S. Cl. 282—47.5 **28 Claims**

1. An improved lubricant composition comprising a major amount of an oil of lubricating viscosity or a grease prepared therefrom and a minor amount of a non-phosphorus, ashless dispersant multifunctional antioxidant, load-carrying and corrosion inhibiting additive product of reaction prepared by (a) imidation of an anhydride with a polyamine to obtain the corresponding dispersant hydrocarbyl succinimide and (b) reacting in a Mannich-type post reaction said succinimide with saccharin and a carbonyl compound to obtain the desired additive product of reaction.

5,362,411

ANTIRUST/DISPERSANT ADDITIVE FOR LUBRICANTS

Raymond Bergstra, Mt. Laurel; Andreas Logothetis, Collingswood; William F. Olszewski, Cherry Hill, all of N.J., and Shi-Ming Wu, Newtown, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 10, 1993, Ser. No. 59,150

Int. Cl.[5] C10M *133/16, 133/44;* **C07D** *249/16, 403/00*

U.S. Cl. 252—51.5 A **19 Claims**

1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom, and about 0.001 to about 15 wt. % of a multifunctional rust/corrosion inhibiting, thermal stabilizing, cleanliness and dispersant additive product of reaction prepared by reacting (1) a hydrocarbyl succinic anhydride, (2) a polyamine and (3) a triazole and wherein the reaction is carried out in molar ratios of said anhydride/polyamine/triazole varying from about 2/2/3 to about 100/10/1 at temperatures varying from about 50° C. to less than about 85° C. for the initial reaction between the anhydride and the polyamine and up to about 250° C. for subsequent reactions, under autogenous pressure or pressures varying from ambient to about 100 psi with the reaction time varying from about one hour to about 48 hours sufficient to obtain the desired additive product of reaction or (4) optionally reacting said anhydride and polyamine together and thereafter reacting a mixture of said triazole and a boronating agent therewith or post reacting said anhydride/-polyamine/triazole additive product with said boronating agent thereby providing a borated additive product of reaction.

5,362,412

BIODEGRADABLE BLEACH STABILIZERS FOR DETERGENTS

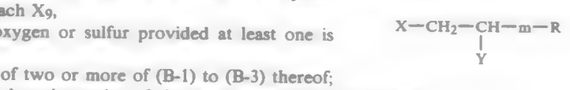
JudithAnn R. Hartman, Columbia, Md., and Richard P. Woodbury, Amherst, N.H., assignors to Hampshire Chemical Corp., Lexington, Mass.

Filed Apr. 17, 1991, Ser. No. 686,643

Int. Cl.[5] C11D *3/395*

U.S. Cl. 252—94 **17 Claims**

1. A process of stabilizing bleaching agents in a detergent composition for textiles and fabrics, said process comprising incorporating into a detergent composition having a bleaching agent incorporated therein, a biodegradable compound of the formula.



in which

m is NR′ or sulfur;

X is SO_3H or COOH;

Y is hydrogen, SO_3H or COOH;

R and R′ are, independently, hydrogen, $—CH(Z)CH_2(Z')$, $—CH(Z)CH(Z')(Z'')$ or $—CH_2COOH$; and

Z, Z′ and Z″ are, independently, hydrogen, OH, SO_3H or a COOH radical; except when m is —NR′, X is —COOH, Y is hydrogen and R is $—CH_2COOH$, R′ is not $—CH_2COOH$; or a sodium, potassium, ammonium or substituted ammonium salt thereof, in an amount sufficient to stabilize the bleaching agent, wherein the bleaching agent is selected from hydrogen peroxide and derivatives thereof which provide hydrogen peroxide is water; peroxyhydrates; and inorganic or organic active chlorine compounds.

5,362,413

LOW-TEMPERATURE-EFFECTIVE DETERGENT COMPOSITIONS AND DELIVERY SYSTEMS THEREFOR

Edward J. Kaufmann, San Ramon; James R. Wiersig, Los Altos, and James F. Wilts, Richmond, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 475,668, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 867,639, May 23, 1986, abandoned, which is a continuation of Ser. No. 592,660, Mar. 23, 1984, abandoned. This application Jan. 14, 1991, Ser. No. 640,741

Int. Cl.[5] C11D *17/08, 10/02, 1/66, 3/04*

U.S. Cl. 252—174 **18 Claims**

1. A detergent composition in the form of a low-temperature wash water dispersible mull consisting essentially of (a) 30–90% of particulate solid builder having an average particle size of greater than about 10 microns and selected from the group consisting of polyphosphates, orthophosphates, metaphosphates, tetraphosphates, tripolyphosphates, phosphates, pyrophosphates, carbonates, bicarbonates, borates, silicates, polysilicates, aluminosilicates, metasilicates, nitrilotriacetic acid (NTA), polycarboxylates, polyhydroxysulfonates, citrates, succinates, oxydisuccinates, polyacrylic acid, ethylenediaminetetraacetic acid (EDTA) and the alkali metal and ammonium salts of the foregoing, (b) 10–70% of at least one nonionic surfactant having a pour point of less than 75° F., thereby rendering said mull readily dispersible in cold wash water, and optionally (c) 0–60% of one or more adjuncts selected from the group consisting of anionic, cationic and amphoteric surfactants and mixtures thereof; fluorescent whitening agents; anti-redeposition agents; anti-corrosion agents; bleaches; dyes; pigments; fabric softeners; enzymes; and fragrances, and wherein said mull is rendered phase stable by the presence therein of (i) a weight percent of said particulate builder which exceeds the weight percent of said liquid nonionic surfactant and (ii) 0.1 to 5% by weight of the mull of added water.

5,362,414

PROTEASES

Helle Outtrup, Ballerup; Claus Dambmann, Soeborg, and Poul Lindegaard, Copenhagen, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK92/00104, § 371 Date Aug. 18, 1993, § 102(e) Date Aug. 18, 1993, PCT Pub. No. WO92/17577, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 3, 1992, Ser. No. 107,689

Claims priority, application Denmark, Apr. 3, 1991, 0584/91

Int. Cl.[5] C11D *3/386;* **C12N** *9/50, 9/56, 9/54*

U.S. Cl. 252—174.12 **9 Claims**

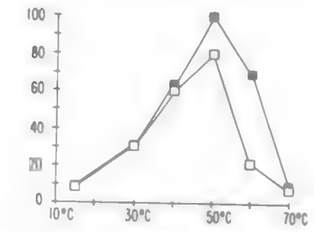
1. A protease obtainable from a strain of Bacillus sp. TY145 characterized by having the following properties:

(a) an apparent molecular weight of 38 kD;

(b) pI around 8.8;

(c) pH optimum in the range of from pH 8 to 11 (at 25° C.);

(d) temperature optimum in the range of from 45° to 55° C. (at pH 9.5);



(e) immunochemical properties identical or partially identical to those of a protease derived from Bacillus sp. TY145, NCIMB No. 40339.

5,362,415

ACRYLIC COPOLYMER WHICH IS WATER-SOLUBLE OR MODERATELY WATER-SOLUBLE AND MAY BE CROSSLINKED; AND ITS USE

Jean-Bernard Egraz, Ecully; Henri Grondin, and Jean-Marc Suau, both of Lyon, all of France, assignors to Coatex S.A., Genay, France

Division of Ser. No. 83,257, Jun. 29, 1993, Pat. No. 5,294,693. This application Oct. 15, 1993, Ser. No. 136,282

Claims priority, application France, Jul. 1, 1992, 92 08399

Int. Cl.[5] C11D *17/00, 3/37;* **C08F** *20/26*

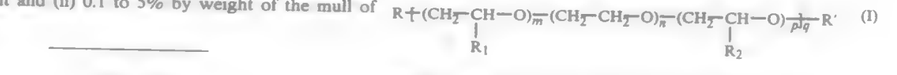
U.S. Cl. 252—174.24 **9 Claims**

1. An aqueous detergent formulation comprising a detergent component and a rheologically modifying effective amount of a water-soluble or moderately water-soluble copolymer which may be crosslinked, comprising:

(a) units of at least one monomer having ethylenic unsaturation and having at least one carboxylic acid group, which monomer is selected from the group consisting of monoacids, diacids, the anhydrides of carboxylic acids, and the hemiesters of diacids;

(b) optionally, unit(s) of at least one monomer having ethylenic unsaturation and not having a carboxylic acid group selected from the group consisting of the esters, amides, and nitriles of (meth)acrylic acid, or selected from the group consisting of vinyl acetate, styrene, methylstyrene, diisobutylene, vinylpyrrolidone, and vinylcaprolactam;

(c) units of at least one monomer having an oxyalkylated moiety, which monomer has ethylenic unsaturation and is terminated by a hydrophobic fatty chain, said monomer having formula I:



(I)

where m and p represent numbers of oxyalkylene groups each $\leqq 100$;

n represents the number of oxyethylene groups $\leqq 100$;

q represents a number at least equal to 1 such that $q(n+m+p) \leqq 100$;

q represents a number at least equal to 10 such that $q(n—m+p) \leqq 100$;

R_1 represents hydrogen or a methyl group;

R_2 represents hydrogen or a methyl group; and

R′ represents a hydrophoic fatty hydrocarbon chain having at least 26 carbon atoms; and

R represents an unsaturated polymerizable group selected from the group consisting of vinyl group containing moieties, methacryloyl, maleoyl, itaconoyl, crotonyl, an unsaturated urethane moiety, hemiester maleoyl, hemiester itaconoyl, $CH_2=CHCH_2—O—$, methacrylamido and substituted methacrylamido; and

(d) optionally, unit(s) of at least one monomer having at least two sites of ethylenic unsaturation selected from the group consisting of ethylene glycol dimethacrylate, 2,2-dihydroxymethylbutanol triacrylate, allyl acrylate, methylenebis(meth)acrylamide, tetraallyloxyethane, triallyl cyanurate, and allyl ethers obtained from polyols.

5,362,416

SUSPENSIONS OF PARTICLES CONTAINING TRANSITION METAL COMPOUNDS IN OILS

Jean-Louis Costa, Grimbergen, , assignor to Solvay & Cie (Société Anonyme), Brussels,

Continuation of Ser. No. 529,358, May 29, 1990, abandoned. This application Nov. 19, 1992, Ser. No. 979,413

Claims priority, application France, May 29, 1989, 89 07141

Int. Cl.[5] B01J *13/00;* **C08F** *4/642, 10/00*

U.S. Cl. 252—309 **14 Claims**

1. A suspension of particles containing titanium trichloride complexed with an electron-donor compound in at least one silicone oil which is a fluid, said particles representing from 25 to 50% of the total weight of the suspension, having a major axis (D), a minor axis (d), and a ratio of D/d which is less than 2 so that said particles are spheroidal, and having a weight-average diameter (D_w), a number-average diameter (D_n), and a ratio of D_w/D_n which is less than 3 so that said particles have a narrow particle size distribution.

5,362,417

METHOD OF PREPARING A STABLE COLLOID OF SUBMICRON PARTICLES

Ronald E. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 9, 1992, Ser. No. 910,803

Int. Cl.[5] B01F *3/12, 3/20;* **B01J** *13/00*

U.S. Cl. 252—314 **16 Claims**

1. A method of forming a colloidal dispersion of fine particles comprising:

providing a submicron ion exchange resin which remains suspended in a fluid medium;

loading said resin with an ion;

treating the resin to cause in-situ formation of submicron particles and form a stable colloid; and

micronizing the resin and particles in said colloid.

5,362,418

GEL-LIKE EMULSION AND O/W EMULSION OBTAINED FROM THE GEL-LIKE EMULSION

Seiji Yamasaki, Funabashi; Toshiyuki Suzuki, Ichikawa, and Chikako Hirata, Kohbe, all of Japan, assignors to Kao Corporation, Tokyo, Japan

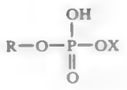
Continuation of Ser. No. 632,629, Dec. 26, 1990, abandoned, which is a division of Ser. No. 437,332, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 939,684, Dec. 9, 1986, abandoned. This application Jul. 12, 1993, Ser. No. 90,634

Claims priority, application Japan, Dec. 23, 1985, 60-289800

Int. Cl.[5] B01J *13/00;* **B01F** *17/14*

U.S. Cl. 252—314 **16 Claims**

1. A process for preparing a gel-like emulsion suitable for use in cosmetic and pharmaceutical applications, comprising adding an oil in an amount of 10 to 85 wt. % to a surfactant continuous phase, said surfactant continuous phase comprising 0.1 to 60% by weight of a monoalkyl phosphate salt of the following general formula (I), dissolved in an aqueous polyhydric alcohol solution, said aqueous polyhydric alcohol solution comprising not less than 60% by weight of a polyhydric alcohol and remainder water:



(I)

in which R represents a hydrocarbon group having from 12 to 24 carbon atoms and X represents an alkali metal, a basic amino acid or an organic base.

5,362,419

DITHIOPHOSPHORIC ACID DERIVATIVES AS LUBRICANT ADDITIVES

Horst Zinke, Reichelsheim/Odw., Germany, and Rolf Schumacher, Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

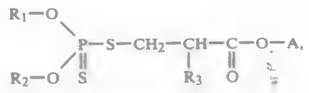
Filed May 27, 1993, Ser. No. 68,375

Claims priority, application Switzerland, Jun. 2, 1992, 1772/92-2

Int. Cl.[5] C10M *137/10*

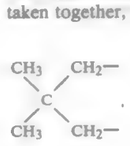
U.S. Cl. 252—46.6 **8 Claims**

1. A compound of formula I

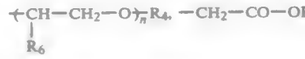


(I)

wherein R_1 and R_2 are each independently of the other C_3–C_{18}alkyl, C_5–C_{12}cycloalkyl, C_5–C_6cycloalkylmethyl, C_9–C_{10}bicycloalkylmethyl, C_9–C_{10}tricycloalkylmethyl, phenyl, C_7–C_{24}alkylphenyl or, taken together, are



R_3 is hydrogen or methyl, A is



R_4 is hydrogen or C_1–C_6alkyl, and

R_5 is a 5- or 6-membered saturated heterocyclic ring,

R_6 is hydrogen or methyl,

n is an integer from 1 to 11 and m is an integer from 0 to 4.

5,362,420

LOW IMPEDANCE PRESSURE SENSITIVE ADHESIVE COMPOSITION AND BIOMEDICAL ELECTRODES USING SAME

Steven K. Itoh, Cottage Grove, Minn.; Timothy M. Dietz, and Rosa Uy, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 792,797, Nov. 15, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 171,203

Int. Cl.[5] C08J *3/28;* **C08K** *5/06*

U.S. Cl. 252—500 **6 Claims**

1. A low impedance, water-absorbing, ionically-conductive, hydrophilic pressure sensitive adhesive composition, consisting essentially of:

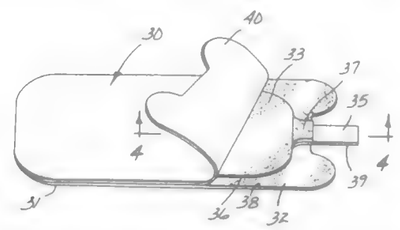
an ionically-conductive, hydrophilic pressure sensitive adhesive hydrogel comprising a polymer, humectant, and water, and

radiation crosslinked poly(N-vinyl lactam) homopolymer dispersed as swellable solids in the hydrogel and present in an amount from about 0.5 to about 3.0 weight percent of the composition to retain low electrical impedance and maintain hydrogel adhesion and cohesion during use of the composition in the presence of mammalian body fluids tending to plasticize said hydrogel;

wherein said hydrogel polymer is selected from the group consisting of

(a) (1) partially neutralized acrylic acid homopolymers, (2) partially neutralized acrylic acid copolymers, (3) copolymers of N-vinyl lactam and a multi-ethylenically unsaturated compound, (4) copolymers of N-vinyl lactam and a carboxylic acid, and (5) an interpenetrating polymer network of hydrophilic crosslinked polymer from a water soluble monomer and a hydrophilic polymer which is not crosslinked; and

wherein said radiation crosslinked poly(N-vinyl lactam) homopolymer swellable solids are crosslinked by ionizing radiation prior to dispersion in the hydrogel in a solid state form.



5,362,421

ELECTRICALLY CONDUCTIVE ADHESIVE COMPOSITIONS

Michael A. Kropp, Cottage Grove, and Wayne S. Mahoney, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 16, 1993, Ser. No. 78,740

Int. Cl.[5] C08F *2/50;* **C07F** *17/02*

U.S. Cl. 252—512 **11 Claims**

1. An anisotropically conductive adhesive curable composition comprising:

(a) at least one cationically curable epoxy resin;

(b) at least one thermoplastic resin essentially free of nucleophilic or metal complexing functional groups;

(c) a multi-component thermal initiator comprising:

(1) at least one salt of an organometallic complex cation wherein the organometallic cation is selected from a class of substituted and unsubstituted aromatic compounds based on a benzene or cyclopentadienyl nucleus, and the anion is tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, hydroxypentafluoroantimonate, trifluoromethanesulfonate, or hexafluoroantimonate; and

(2) at least one stabilizing additive;

(3) at least one cure rate enhancer;

(d) a plurality of conductive particles; and

(e) optionally, at least one silane coupling agent;

wherein the composition are curable at a temperature of about 120°–125° C.

5,362,422

LIQUID HARD SURFACE DETERGENT COMPOSITIONS CONTAINING AMPHOTERIC DETERGENT SURFACTANT AND SPECIFIC ANIONIC SURFACTANT

Ronald A. Masters, Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 3, 1993, Ser. No. 56,110

Int. Cl.[5] C11D *1/92*

U.S. Cl. 252—544 **24 Claims**

1. An aqueous liquid hard surface detergent composition comprising: (a) amphoteric detergent surfactant; (b) specific anionic surfactant herein having the generic formula:

$$R'(C_6H_3SO_3^-)—O—(C_6H_3SO_3^-)R'(nM)++$$

wherein each R′ is an alkyl, or alkylene, group containing from about 6 to about 12 carbon atoms, and M is a compatible cation, with n being selected to provide electrical neutrality; (c) cleaning solvent having a solubility in water of less than about 20%; and (d) the balance being an aqueous solvent system, the composition being unstable, due to the presence of (c), in the absence of (b), and the level of (b) being sufficient to maintain the stability of the composition.

5,362,423

METHOD OF PRODUCING PENTAFLUOROPHENYLMAGNESIUM DERIVATIVES USING PENTAFLUOROBENZENE

Yoshihiko Ikeda, Shinnanyo; Takeo Yamane, Ogori; Eiichi Kaji, and Kenji Ishimaru, both of Shinnanyo, all of Japan, assignors to Tosoh Akzo Corporation, Tokyo, Japan

Filed Dec. 20, 1993, Ser. No. 169,074

Claims priority, application Japan, Dec. 28, 1992, 4-361482

Int. Cl.[5] C07F *3/02*

U.S. Cl. 260—665 R **1 Claim**

1. A method for producing pentafluorophenylmagnesium derivatives employing pentafluorobenzene characterized in that with pentafluorobenzene represented by a following formula [I],

$$C_6HF_5 \qquad [I]$$

0.5 to 1.5 equivalents of organometallic compound represented by a general formula [II]

$$R_{2-n}MgXn \qquad [II]$$

wherein n denotes a real number of 0 or 1, X denotes a halogen atom, R denotes a hydrocarbon group with carbon atoms of 1 to 10, and said hydrocarbon group may contain functional groups unaffecting the reaction are mixed within a temperature range from −40° to 250° C. in an ether type solvent or a mixed nonaqueous solvent of an ether type solvent with a hydrocarbon type solvent and reacted at 25° C. or higher to obtain pentafluorophenylmagnesium derivatives represented by a following general formula [III]

$$(C_6F_5)_{2-5}MgXn \qquad [III]$$

wherein n denotes a real number of 0 or 1 and X denotes a halogen atom.

5,362,424

MICROENCAPSULATION FOR CONTROLLED ORAL DRUG DELIVERY SYSTEM

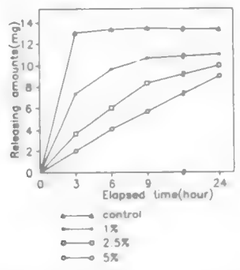
Haibang Lee, and Soonbong Yuk, both of Daejun-si, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Rep. of Korea

Filed Oct. 10, 1991, Ser. No. 775,698

Claims priority, application Rep. of Korea, Oct. 11, 1990, 90-16120; Feb. 7, 1991, 91-2092

Int. Cl.[5] **A61K** *9/52, 9/51, 9/50;* **B01J** *13/02*

U.S. Cl. 264—4.3 **9 Claims**



1. A process for the microencapsulation of oil droplets containing a medical drug for oral administration, comprising the steps of:

(1) mixing the drug with liquid oil by sonication for 5–30 seconds to disperse the drug homogeneously in the oil,

(2) adding the drug-dispersed oil to an aqueous solution to form a two phase system, the aqueous solution containing an aqueous solution mixture for forming a capsule material, the aqueous solution mixture comprising

a polysaccharide which has metal chelating capacity,

a biocompatible and water-soluble polymer for improving the physical properties of the capsule material, and

emulsifying agents,

the ratio of polysaccharide to polymer in the aqueous solution mixture being at least 0.25,

(3) subjecting the two phase system to sonication to produce an oil-in-water emulsion containing the drug-dispersed oil in the form of droplets having a diameter in the range of 1–5 μm,

(4) as soon as possible after formation of the emulsion, adding the emulsion to a multivalent cation-containing solution to harden the capsule material, and

(5) freeze-drying the microencapsulated emulsion to obtain a final product in a powdery state.

5,362,425

ORGANIC OIL SPRAY-DRYING TECHNIQUES

Bruce K. Schrier, Wooster, Ohio, assignor to Technology Unlimited, Inc., Wooster, Ohio

Filed Oct. 22, 1992, Ser. No. 964,894

Int. Cl.[5] **B01J** *13/04;* **A01N** *25/28;* **A23L** *2/26*

U.S. Cl. 264—4.6 **6 Claims**

1. The method comprising microfluidizing hydroxylated lecithin and water, adding organic oil and surfactant a "PLURONIC" non-ionic poloxamer and re-microfluidizing, thereafter adding bulking agents and spray-drying the mixture, whereby a shelf-stable powder is obtained having little oil escape over an extended period of time.

5,362,426

NUCLEAR FUEL PELLETS AND METHOD OF MANUFACTURING THE SAME

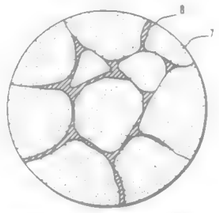
Mutsumi Hirai, Mito; Shinji Ishimoto, Ororai, and Kenichi Ito, Katsuta, all of Japan, assignors to Nippon Nuclear Fuel Development Co., Ltd., Ibaragi, Japan

Continuation of Ser. No. 895,665, Jun. 9, 1992, Pat. No. 5,255,299, which is a division of Ser. No. 674,170, Mar. 25, 1991, Pat. No. 5,180,527. This application Jun. 2, 1993, Ser. No. 70,214

Claims priority, application Japan, Apr. 3, 1990, 2-87579; Nov. 5, 1990, 2-297082

Int. Cl.[5] **G21C** *21/00*

U.S. Cl. 264—0.5 **12 Claims**



1. A method of manufacturing nuclear fuel pellets by sintering at a sintering temperature, said method consisting essentially of the steps of:

preparing a powdered high-thermal conductivity substance, wherein at least a portion of said high-thermal conductivity substance liquifies at a temperature near or below said sintering temperature and wherein said powdered high-thermal conductivity substance is beryllium oxide alone or a mixture of beryllium oxide and at least one member selected from the group consisting of titanium, gadolinium, calcium, barium, magnesium, strontium, lanthanum, yttrium, ytterbium, silicon, aluminum, samarium, tungsten, zirconium, lithium, molybdenum, uranium, and thorium oxides, or an eutectic composition obtained by heating said mixture;

adding said powdered high-thermal conductivity substance to a powdered nuclear fission substance;

mixing said powdered high-thermal conductivity substance with said powdered nuclear fission substance; and

sintering the mixture thereof at a temperature higher than the temperature at which said portion of said powdered high-thermal conductivity substance liquifies.

5,362,427

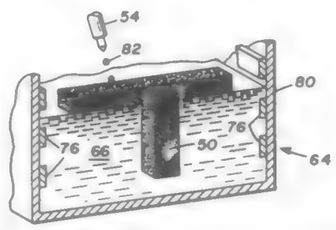
METHOD AND APPARATUS FOR MANUFACTURING AN ARTICLE USING A SUPPORT STRUCTURE FOR SUPPORTING AN ARTICLE DURING MANUFACTURE THEREFOR

Porter H. Mitchell, Jr., 80B Cunningham Hollow, Fayetteville, Tenn. 37334

Filed May 10, 1993, Ser. No. 58,124

Int. Cl.[5] **B29C** *67/00*

U.S. Cl. 264—22 **14 Claims**



1. A method for designing an article in two dimension and then reproducing the article in three dimensions wherein said article requires a support means for support of at least a portion thereof during the reproduction, said method comprising the steps of:

generating a data file of three dimensions on a computer machine representing the three dimensional design of said article in a coordinate system;

providing a controlled environment;

providing a source of mass particles;

directing said particles to the three-dimensional coordinates of said article of said coordinate system;

joining said particles to one other at said coordinates beginning at a predetermined point of origin of said article in said coordinate system;

providing a support material for supporting engagement with at least a portion of said article during the reproduction thereof in three dimensions, said support disposed for withdrawal from said supporting engagement with said article responsive to change of state of said support material subsequent to formation of said article, said change of state being accomplished by application of an electrical stimulus to said support material to change said material from a first phase to a second phase and removing said electrical stimulus to change said state from said second phase back to said first phase.

3. Apparatus for reproducing a physical three-dimensional article from a data file generated on a computer machine on which said article was designed comprising:

a data file of three-dimensional coordinate information which corresponds to the design of said article in a three-dimensional coordinate system and space;

a controlled environment;

a source of mass particles;

directional means for directing said mass particles to said coordinates in said coordinates within said controlled environment;

directional control means for controlling said directional means in response to said coordinate information in said data file;

means for joining said mass particles together at said coordinates to physically construct said article according to the information provided by said data file;

support material means carried in said controlled environment for engaged, supporting relation with at least a portion of said article during the physical construction thereof; and

environment control means for controlling the environment of said controlled environment to effect physical and chemical changes in said support means to cause said support means to withdraw from said engaged, supporting relation with said article subsequent to formation thereof by changing the state of said support material means from a fluid state to a substantially solid state and back to said fluid state.

5,362,428

METHOD OF MAKING A WINDOW PANEL WITH A SYNTHETIC RESIN FRAME

Masaki Tsujino; Noriyuki Yoshihara, and Kazuhiko Kuga, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Apr. 28, 1993, Ser. No. 53,357

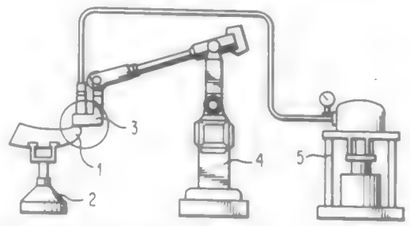
Claims priority, application Japan, Apr. 28, 1992, 4-135793; May 29, 1992, 4-163986

Int. Cl.[5] **B29C** *47/92*

U.S. Cl. 264—40.5 **22 Claims**

1. A method of making a window panel having a synthetic resin frame, comprising:

forming a synthetic resin frame for said window panel by extruding synthetic resin through a die, which is a component of an apparatus, into a specific shape along the peripheral portion of a plate-like material to be used as a window on at least one surface of the plate-like material, said die being moved under control by information previously input into said apparatus in order to trace a locus along the periphery of the plate-like material, with the locus and the angular position of the die being corrected by detecting the position of the end face of the plate-like material, which allows for adjustment in the locus of



deposit of synthetic resin onto said plate-like material, whereby the synthetic resin frame of a specific shape is formed; and

curing the synthetic resin frame which is formed so that the synthetic resin frame is formed integrally with the peripheral portion of the plate-like material.

5,362,429

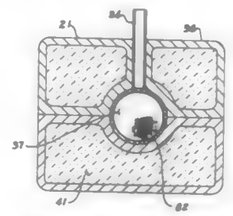
RUBBER MOLDING METHOD USING A FRANGIBLE FOAM CORE

Dennis J. Orlewicz; William P. Orlewicz, both of Plymouth, and Lawrence W. Orlewicz, Milford, all of Mich., assignors to Magnum Manufacturing, Inc., Plymouth, Mich.

Filed Mar. 8, 1993, Ser. No. 28,535

Int. Cl.[5] **B29C** *33/40*

U.S. Cl. 264—46.6 **6 Claims**



1. A method for molding complex parts from rubber materials comprising the steps of coating a surface of a core forming cavity in a core box with a mold release agent; applying a thin coating of a quick set resin over said mold release agent; pouring into said core forming cavity a two component polyurethane foam mixture, comprised of a polyurethane resin and a catalyst; sealing said cavity to form a frangible core by allowing said mixture to foam and expand inside of the core box and adhere to said quick set resin on the surface of said core forming cavity; supporting said core in a mold; injecting a two part synthetic polymer under pressure into said mold to form a synthetic rubber part; removing said synthetic rubber part from said mold; and breaking said frangible core into small pieces and removing said pieces from said part.

5,362,430

AQUEOUS-QUENCH SPINNING OF POLYAMIDES

John H. Herold, II, Hendersonville, Tenn., and Henry Kobsa, Greenville, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 16, 1993, Ser. No. 90,291

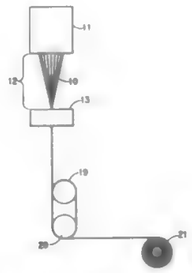
Int. Cl.[5] **D01D** *5/08, 5/088;* **D01F** *6/60*

U.S. Cl. 264—103 **9 Claims**

1. A process for preparing polyamide yarn comprising:

extruding molten polyamide into filaments from spinneret capillaries at a given jet velocity, passing the molten fila-

ments through a gas-filled gap and into a quench bath which contains an aqueous liquid at a temperature of at least 45° C., there being associated with said bath, a nozzle defining a cylindrical passageway disposed in a generally vertical position and with its entrance opening into the bath, converging said filaments into a filament bundle at



the entrance to the nozzle passageway and removing said filament bundle from the bath through the other end of said passageway at a withdrawal speed of greater than about 1500 than about 3000 m/min, the ratio of said withdrawal speed to the jet velocity being from 10 to 50, thereby forming polyamide yarn.

5,362,431

PROCESS FOR PREPARING SHAPED BODIES OF THERMOPLASTIC POLYMERS REINFORCED WITH LONG FIBRES

Gian L. Guerrini, Cernusco Sul Naviglio; Aurelio Savadori, Bellinzago Lombardo; Domingo Catolo, Gessate, and Ernesto Occhiello, Novara, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed Feb. 4, 1993, Ser. No. 13,405

Claims priority, application Italy, Feb. 6, 1992, MI92 A 000226

Int. Cl.[5] B29C *67/14*

U.S. Cl. 264—131 **20 Claims**

1. A method of forming long-fiber composite thermoplastic granules for use in extrusion, injection, or spin molding which comprises:

(a) impregnating, with a thermoplastic polymer powder, an open bundle of continuous, parallel, fibers;

(b) forming a continuous filament of said fibers;

(c) coating said continuous filament with a continuous outer sheath comprising a thermoplastic polymer;

(d) calendering said filament at a temperature sufficient to cause the thermoplastic polymer powder to flow, without melting said continuous outer sheath; and

(e) cutting said calendered filament into granules having a length in the range of from 2 to 100 mm.

5,362,432

PROCESS FOR DRY SPINNING SPANDEX

Nathan E. Houser, Afton; Willem Bakker, and Richard L. Dreibelbis, both of Waynesboro, all of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1993, Ser. No. 42,342

Int. Cl.[5] D01D *5/04;* **D01F** *6/78*

U.S. Cl. 264—205 **5 Claims**

1. A process for dry spinning polyetherbased polyurethaneurea spandex, particularly suited for use in women's knitted hosiery, the process comprising

reacting methylene-bis(4-phenylisocyanate) with a poly(tetramethyleneether) glycol, at a capping ratio in the range of 1.65 to 1.95, the glycol having a number average molecular weight in the range of 1750 to 2250, to form a capped glycol having an isocyanate content in the range of 2.4 to 2.9%,

reacting, in an organic solvent, the capped glycol with a mixture of ethylenediamine and 1,2-diaminopropane chain extenders, the 1,2-diaminopropane amounting to in the range of 8 to 17 mole percent of the mixture of diamine chain extenders, to form a solution of a polyurethaneurea polymer, adjusting the concentration of the polymer in the organic solvent to be in the range of 32 to 38 weight percent of the total solution,

dry-spinning said solution to form filaments of textile decitex , and

winding up the resultant spandex at a speed of at least 550 m/min.

5,362,433

PROCESS OF MAKING POLYURETHANE ELASTOMER THREAD

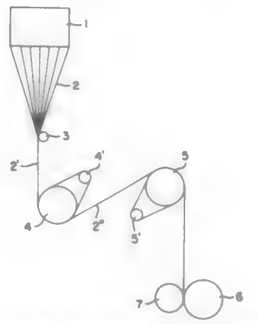
Maria Toscan, Dietwil, and Rémy Humbrecht, Littau, both of Switzerland, assignors to Viscosuisse S.A., Emmenbrucke, Switzerland

Continuation of Ser. No. 571,025, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 246,295, Sep. 9, 1988, abandoned. This application Oct. 28, 1993, Ser. No. 144,217

Claims priority, application Switzerland, Dec. 17, 1986, 5011/86-0

Int. Cl.[5] D01D *5/092, 5/16;* **D01F** *6/70*

U.S. Cl. 264—210.8 **1 Claim**



1. The process for the manufacture of a smooth, non-tacky multifilament elastomer thread, which comprises melt-spinning thermoplastically deformable polyurethane having a hardness of 80° to 95° Shore to form an elastomer thread, cooling the elastomer thread, irreversibly stretching the cooled elastomer thread, and, immediately after stretching, spooling the stretched thread at a rate of at least 600 m/min.

5,362,434

VERTICAL PRESS AND PROCESS FOR OPERATING THE SAME

Hans U. Hauser, Niederwenningen, Switzerland; Jörg Lindemann, Trier, and Martin Mick, Föhren, both of Germany, assignors to Lacis- Bucher GmbH, Trier, Germany

PCT No. PCT/CH92/00182, § 371 Date May 7, 1993, § 102(e) Date May 7, 1993, PCT Pub. No. WO93/04831, PCT Pub. Date Mar. 18, 1993

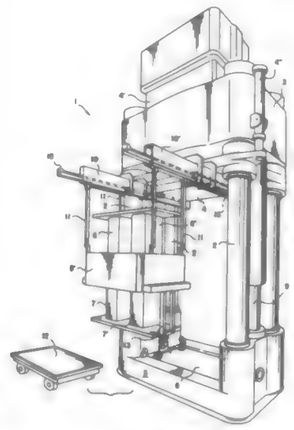
PCT Filed Sep. 7, 1992, Ser. No. 50,284

Claims priority, application Switzerland, Sep. 11, 1991, 2672/91-7

Int. Cl.[5] B29C *33/00*

U.S. Cl. 264—239 **14 Claims**

1. A vertical press comprising at least three vertically disposed mold carrier elements at least two of which are vertically movable, supporting means on an uppermost one of said mold carrier elements for supporting therefrom a second one of said mold carrier elements such that vertical movement of said uppermost mold carrier element lifts or lowers said second mold carrier element, said second mold carrying element comprising replaceable mold components and being movable horizontally on said supporting means.



5,362,435

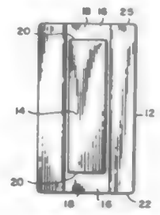
PROCESS OF MOLDING MULTI-DUROMETER SOLES

John F. Volpe, Sturbridge, Mass., assignor to Quabaug Corporation, North Brookfield, Mass.

Filed Aug. 6, 1993, Ser. No. 103,085

Int. Cl.[5] B29B *11/10;* **B29C** *35/02, 43/18*

U.S. Cl. 264—248 **11 Claims**



1. A process for molding an outer sole for an article of footwear, said process comprising:

extruding first and second elongated components respectively from first and second compression moldable compounds, said first compound having a hardness (Shore A) greater than that of said second compound, said first component having a channel extending longitudinally therethrough;

assembling said second component within the channel of said first component, said second component being configured and dimensioned to cooperate with said first component in defining at least one vacant expansion zone within said channel; and

covulcanizing the thus assembled components in a compression mold under conditions of elevated pressure and temperature with an accompanying expansion of said components filling said mold and said at least one expansion zone thereby to produce a sole.

5,362,436

POLYSTYRENE FOAM SHEET USEFUL FOR FORMING DEEP DRAWN ARTICLES, A PROCESS TO PRODUCE THOSE ARTICLES, AND THE DEEP DRAWN ARTICLES

Phillip A. Wagner, Essexville, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 22, 1993, Ser. No. 81,043

Int. Cl.[5] B29C *67/20*

U.S. Cl. 264—321 **10 Claims**

1. A method of thermoforming deep drawn thermoplastic foam articles comprising, in sequence, the steps of:

a. preheating a sheet of thermoplastic foam stock material which contains 1 to 15 wt % of a rubber component having a majority of particle sizes less than about 0.45 microns with the foamed sheet having a density of 0.04 to 0.16 g/cm^3 (2½–10 lb/ft^3) and a thickness of 0.4 to 6.5 mm;

b. clamping said preheated stock material in a fixed position between matched male and female mold members; and

c. relatively moving said male and female mold members into final forming position to stretch said sheet into said cavity;

d. applying a vacuum through both the male and female mold members to both sides of the foamed sheet, while performing step c), to help expand the sheet into conformity with substantially the entire cooperating surfaces of the mold members; and

e. chilling the stock material to set a final shape.

5,362,437

BLOW MOLDING METHOD

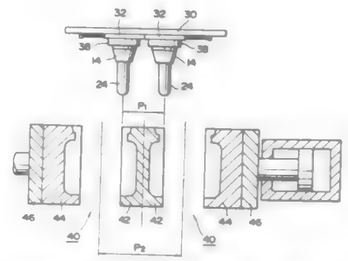
Kouhei Koga, Ueda, Japan, assignor to Nissei ASB Machine Co., Ltd., Nagano, Japan

Division of Ser. No. 634,079, Dec. 26, 1990, Pat. No. 5,169,654. This application Jul. 31, 1992, Ser. No. 922,515

Claims priority, application Japan, Dec. 29, 1989, 1-341140

Int. Cl.[5] B29C *49/06*

U.S. Cl. 264—537 **7 Claims**



1. In a method of conveying preforms from an injection molding stage comprising rows of injection molds to a blow molding stage comprising rows of blowing molds, comprising the steps of:

placing each preform within a corresponding blowing mold in said rows of blowing molds; closing each of the blowing molds to form a hollow product; and opening each of the blowing molds to remove the hollow product, the improvement comprising the steps of:

providing rows of supporting plates which support the preforms and which are variable in row pitch;

injection molding the preforms and supporting the preforms with the rows of supporting plates having a row pitch between said rows set to be the same as the row pitch between the rows of said injection molds;

conveying said preforms to said blow molding stage while maintaining said row pitch between the rows of supporting plates to be the same as the row pitch between rows of the injection molds; and

after said step of conveying, changing the row pitch between the rows of supporting plates from said row pitch

to another larger row pitch, said row pitch being changed when said preforms or hollow products are within said blowing molds or during preform placement into said blowing molds.

5,362,438

POWDER OF DENTAL METAL, A PROCESS FOR THE PREPARATION THEREOF, A PROCESS FOR THE MANUFACTURE OF A SUBSTRUCTURE FOR A DENTAL RESTORATION AND A PROCESS FOR THE MANUFACTURE OF A DENTAL RESTORATION

Joseph M. van der Zel, Zwaag, Netherlands, assignor to Elephant Edelmetaal B.V., Hoorn, Netherlands

Division of Ser. No. 660,020, Feb. 25, 1991, Pat. No. 5,238,751. This application Jan. 10, 1993, Ser. No. 74,448

Int. Cl.[5] B22F *5/00, 7/00;* A61C *13/08*

U.S. Cl. 419—28 2 Claims

1. A process for the manufacture of a dental restoration such as a crown or a bridge, having a substructure of a dental metal and a fired on coating of a dental ceramic material, comprising mixing substantially into a paste-like slurry, a powder comprising a core substantially of a dental metal, which core is coated with at least one layer substantially of metal which protects the dental metal of the core during sintering against oxidation and/or reduces the temperature at which the powder is sintered, placing the resulting paste-like slurry on a refractory model in the form of the restoration to be made, heating the composite thus obtained to a temperature sufficient to sinter the powder of dental metal to a massive metal mass and form a substructure and firing on a coating of a ceramic material on the substructure to form the dental restoration.

5,362,439

AUSTENITIC STAINLESS STEEL HAVING A HIGH MACHINABILITY AND AN IMPROVED COLD DEFORMATION

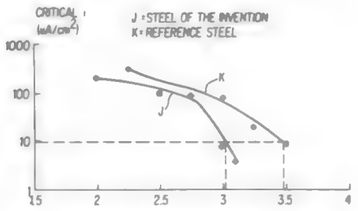
Olivier Bletton, Ugine, and Xavier Cholin, Albertville, both of France, assignors to Ugine Savoie, Ugine, France

Filed Apr. 16, 1993, Ser. No. 46,941

Claims priority, application France, Apr. 17, 1992, 92 04810

Int. Cl.[5] C22C *38/42*

U.S. Cl. 420—41 12 Claims



1. Weldable austenitic stainless steel exhibiting a high machinability and an improved cold deformation and having the following composition by weight:

C less than 0.1%
Si less than 2%
Mn less than 2%
S less than 0.03%
Ni between 8 and 10%
Cr between 15 and 25%
P at the most equal to 0.04%
Mo less than 0.5%
Cu between 1 and 5%
N between 0.02 and 0.07%
Ca more than 30.10^{-4}%
O more than 70.10^{-4}%
Al less than 50.10^{-4}%,
the ratio Ca/O being between 0.3 and 0.6.

5,362,440

FERROPHOSPHORUS REFINING PROCESS

Deepak Madan, Mars; Young Lee, Pittsburgh; Alan FitzGibbon, Wexford, and Roland Gamroth, Bradfordwoods, all of Pa., assignors to Elkem Metals Company, Pittsburgh, Pa.

Filed Mar. 15, 1993, Ser. No. 31,679

Int. Cl.[5] C22C *33/04*

U.S. Cl. 420—88 20 Claims

1. A method for refining and making a ferrophosphorus for use in the manufacture of particulate metal products comprising the steps of:

(a) forming a melt of ferrophosphorus from metallurgical grade ferrophosphorus having a phosphorus content of about 15 to about 30 weight percent, an iron content of about 80 to about 65 weight percent and a remainder of impurities, said impurities comprising silicon, manganese, chromium, carbon, titanium, aluminum and calcium;

(b) mixing into said melt an oxidizing agent to oxidize impurities in said melt, said oxidizing agent added to said melt in an amount equal to about the stoichiometric amount to about 200% in excess of said stoichiometric amount, said stoichiometric amount being calculated based on the amount of said impurities in said melt and the available effective-oxygen content of said oxidizing agent;

(c) maintaining the temperature of said melt at about 100° C. to about 200° C. above the melting point of said ferrophosphorus such that a slag is formed on top of the melt and oxidized impurities migrate in said melt to said slag;

(d) removing the slag from the top of the melt;

(e) recovering a solid, refined ferrophosphorus having substantially reduced impurities;

(f) solidifying said recovered ferrophosphorus to form a solid therefrom; and

(g) crushing and grinding said solid ferrophosphorus in an inert atmosphere to form particulate for use in the manufacture of particulate metal products.

5,362,441

TI-AL-V-MO-O ALLOYS WITH AN IRON GROUP ELEMENT

Atsushi Ogawa; Kuninori Minakawa, and Kazuhide Takahashi, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation of Ser. No. 95,724, Jul. 21, 1993, abandoned, which is a division of Ser. No. 880,743, May 8, 1992, Pat. No. 5,256,369, Continuation of Ser. No. 719,663, Jun. 24, 1991, Pat. No. 5,124,121, which is a continuation of Ser. No. 547,924, Jul. 3, 1990, abandoned. This application Dec. 20, 1993, Ser. No. 170,672

Claims priority, application Japan, Jul. 10, 1989, 1-177759; Feb. 26, 1990, 2-044993

Int. Cl.[5] C22C *14/00*

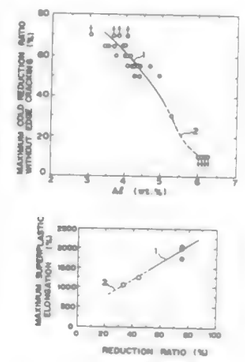
U.S. Cl. 420—420 51 Claims

1. The titanium base alloy consisting essentially of 3.42 to 5.0 wt. % Al, 2.1 to 3.7 wt. % V, 0.85 to 2.37 wt. % Mo, at least 0.01 wt. % O, at least one element selected from the group consisting of Fe, Co, and Cr, and the balance titanium, satisfying the following equations:

0.85 wt. % ≦ × wt. % ≦3.15 wt. %,

7 wt. % ≦ Y wt. % ≦13 wt. %,

X wt. % = Fe wt. % + Co wt. % +0.9 Cr wt. %



Y wt. % =2× Fe wt. % +2× Co wt. % +1.8× Cr wt. % +1.5× V wt. % + Mo wt. %.

5,362,442

METHOD FOR STERILIZING PRODUCTS WITH GAMMA RADIATION

Randall S. Kent, Thousand Oaks, Calif., assignor to 2920913 Canada Inc., Ottawa, Canada

Filed Jul. 22, 1993, Ser. No. 95,698

Int. Cl.[5] A61L *2/08;* A01N *1/02*

U.S. Cl. 422—22 12 Claims

1. A method for sterilizing a product comprising:

a) providing a product to be sterilized in a form having a solid content of less than 20% by weight and

b) irradiating the product with gamma irradiation for a period of time of not less than 10 hours at a rate sufficient to provide a total dose of irradiation of between about 20 to about 32 kGy.

5,362,443

METHOD AND APPARATUS FOR DISPOSAL OF MEDICAL WASTE

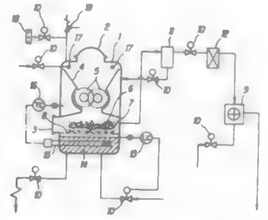
Mitsuyuki Tanaka; Masahiro Michino; Yasutaka Fujihira, all of Sagamihara; Takashi Nakamura, Tokyo; Kisaburo Kohmura, Yatomi; Toshiro Asaoka, Inuyama, and Akio Ohya, Nagoya, all of Japan, assignors to Nippon Metal Industry Co., Ltd., Tokyo and Nissen Corporation, Aichi, both of Japan

Filed Dec. 23, 1992, Ser. No. 996,403

Claims priority, application Japan, Dec. 27, 1991, 3-357941

Int. Cl.[5] A61L *2/06, 2/24*

U.S. Cl. 422—26 12 Claims



1. A method for disposing of medical waste, comprising carrying out the successive steps of:

a. shearing medical waste in a closed container having an internal wall with a device to expose an interior portion of the medical waste to direct contact with a high-pressure steam,

b. exhausting air out of the container and sterilizing the air before releasing it into the atmosphere, and

c. generating and filling the container with the high-pressure steam having a temperature between 110° C. and 150° C. to sterilize the sheared medical waste, the internal wall of the container and the device to expose the interior portion of the medical waste within the container.

5,362,444

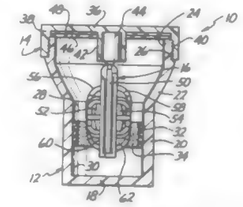
METHOD FOR DISINFECTING A CONTACT LENS AND DETECTING THE PRESENCE OF AN OXIDATIVE DISINFECTANT

Patricia C. Amtower, Dana Point, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 588,085, Sep. 25, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 796,902

Int. Cl.[5] A61L *2/16*

U.S. Cl. 422—30 8 Claims



1. A method for disinfecting a contact lens comprising:

contacting a contact lens to be disinfected with a liquid medium containing hydrogen peroxide disinfectant at conditions to effectively disinfect said contact lens, said contacting occurring in the presence of a redox polymer which is and remains insoluble in said liquid medium at the conditions of said contacting and which contains a repeating unit which has a stable oxidized state and a stable reduced state in an amount effective to provide a first color indication of the presence of hydrogen peroxide in said liquid medium, said redox polymer being present in a separate phase from said liquid medium; and

contacting said liquid medium with catalase present in an amount effective to destroy all the hydrogen peroxide in said liquid medium and to provide said insoluble redox polymer in a reduced state, thereby providing a second color indication of the absence of hydrogen peroxide in said liquid medium.

5,362,445

BIOCHEMICAL ANALYZER AND ATTENUATED TOTAL REFLECTION PRISM CELL USED IN SAID ANALYZER

Yuji Miyahara; Toshiko Fujii, both of Hitachi, Japan; Thomas Bührer, Winterthur, Switzerland, and Yoshio Watanabe, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 735,876, Jul. 25, 1991, abandoned. This application May 17, 1993, Ser. No. 73,640

Claims priority, application Japan, Jul. 27, 1990, 2-197930; Aug. 31, 1990, 2-231356

Int. Cl.[5] G01N *21/00*

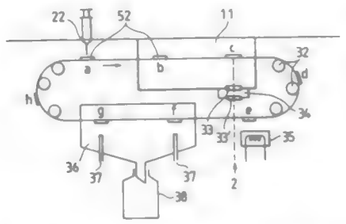
U.S. Cl. 422—82.09 12 Claims

1. A biochemistry analyzer for analyzing an objective substance in a liquid sample, comprising:

a housing including therein:

an attenuated total reflection prism; a sample prism cell disposed on a side surface of the attenuated total reflection prism; a sample supplying means for supplying a liquid sample to the sample prism cell; distributing

means in said sample prism cell for distributing an objective substance in the liquid sample to concentrate the objective substance at the side surface of the prism by solidifying the liquid sample in the sample prism cell with solidifying means external to the sample prism cell; an infrared light source for transmitting infrared light through the objective substance to be reflected from the attenuated total reflection prism; and a detector for



detecting the infrared light which is reflected from the attenuated total reflection prism after the liquid sample is solidified, and for providing absorption spectrum data of the detected infrared light with respect to the objective substance and the liquid sample; and

a computer for receiving the absorption spectrum data from the detector and for calculating the detected absorption spectrum from the absorption spectrum data.

5,362,446

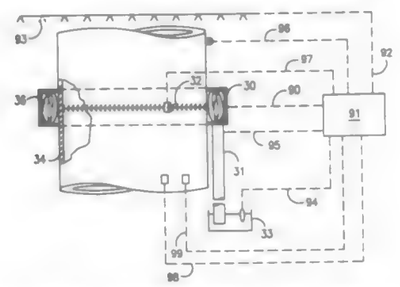
CONTAINMENT OF AN AEROSOLABLE LIQUID JET

Klaus W. Schatz, Lawrenceville, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 950,354, Sep. 24, 1992, Pat. No. 5,286,456. This application Oct. 8, 1993, Ser. No. 133,402

Int. Cl.[5] G05B *9/00*

U.S. Cl. 422—117 **26 Claims**



1. A method of increasing rainout from a liquid jet of an aerosolable corrosive and toxic substance exiting from a pressurized source comprising the steps of:

spacing an impervious impact plate from a pressurized source for deflecting the liquid jet of an aerosolable corrosive and toxic substance exiting from said pressurized source to dissipate forward velocity and energy of said liquid jet;

positioning a mesh pad in abutting engagement with said impact plate and facing said pressurized source for initially reducing the velocity of said liquid jet and for preventing back and radial splash of the liquid jet deflecting off said impervious impact plate to thereby coalesce droplets of said aerosolable corrosive and toxic substance and produce a run-off;

collecting said run-off; and

neutralizing the collected run-off.

5,362,447

AUTOMATED PEPTIDE SYNTHESIZER

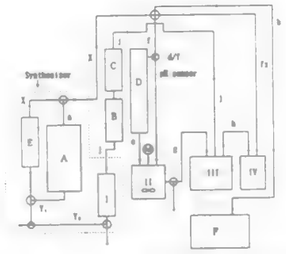
Kiyoshi Nokihara, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 5, 1993, Ser. No. 131,618

Claims priority, application Japan, Oct. 13, 1992, 4-301775

Int. Cl.[5] B01J *8/02*; C07C *103/52*

U.S. Cl. 422—131 **4 Claims**



1. An automated peptide synthesizer comprising an acyl component preparation chamber, one or more reactions chambers or reaction columns, computer means for controlling peptide synthesis, a solvent chamber and recovery lines which lines comprise:

an acyl component recovery line for recovering unreacted acyl components to allow the reuse of the acyl components, and

a solvent recovery line including a solvent recovery chamber, solvent distilling device, and solvent purification column for recovering, distilling, and purifying a reaction solvent to allow the reuse of the reaction solvent, both recovery lines being installed on the flow pathway from one or more reaction chambers or columns to a waste liquid reservoir of the automated peptide synthesizer.

5,362,448

CONTINOUS POLYMERIZATION METHOD OF LAUROLACTAM AND APPARATUS THEREFOR

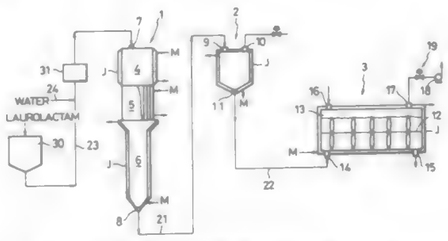
Atsuo Kawakami; Toshiro Shimada; Tatsuo Tsumiyama, and Hisaya Yamaguchi, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Division of Ser. No. 929,404, Aug. 14, 1992, Pat. No. 5,283,315. This application Oct. 12, 1993, Ser. No. 134,694

Claims priority, application Japan, Aug. 22, 1991, 3-235361

Int. Cl.[5] C08F *2/00*; F28D *7/00*; C08G *69/14*

U.S. Cl. 422—137 **4 Claims**



1. A continuous polymerization apparatus for laurolactam comprising

(a) a prepolymerization vertical reaction column comprising an upper zone, an intermediate zone and a lower zone, the upper zone having a laurolactam feed inlet and the lower zone having a product discharge outlet, the intermediate zone having a shell-tube heat exchanging structure and a rectifying mechanism being arranged in the lower zone;

(b) an intermediate vertical reaction vessel having a prepolymerization product feed inlet and an air discharge outlet at an upper part thereof and having a discharge outlet for the intermediate product at a lower part thereof; and

(c) a post polymerization horizontal reaction vessel having a feed inlet of the intermediate product at one end of a lower part and having a discharge outlet a for the polymerization product at the other end thereof, and having a gas feed inlet and a gas discharge outlet at the upper part, and provided therein an agitation mechanism rotatable around a center of a substantially horizontal axis therein, wherein a pipe is arranged between the product discharge outlet of the prepolymerization column and the prepolymerization product feed inlet of the intermediate vessel, and a pipe is arranged between the intermediate product discharge outlet of the intermediate vessel and the intermediate product feed inlet of the post polymerization vessel, and wherein said prepolymerization vertical reaction column further comprises means for maintaining a 10°–30° C. temperature differential between said upper zone and said lower zone, such that said upper zone is maintained at a higher temperature than said lower zone.

5,362,449

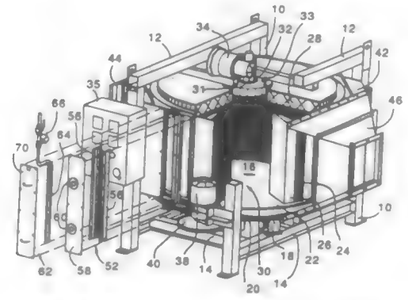
REGENERATIVE GAS TREATMENT

Jorgen G. Hedenhag, Wayne, N.J., assignor to Applied Regenerative Tech. Co., Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 661,498, Feb. 26, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 38,138

Int. Cl.[5] F28D *19/04*; F23G *7/06*

U.S. Cl. 422—175 **42 Claims**



23. A regenerative device for thermally treating gases, comprising:

a housing having a gas inlet and a gas outlet;

a holding cage means having a central interior for rotating in said housing between said inlet and said outlet;

a plurality of gas permeable, refractory blocks mounted peripherally in said holding cage means around said central interior to provide therethrough (a) an incoming flow path from said inlet to said central interior, and (b) an outgoing flow path from said central interior to said gas outlet;

a pair of air seal means each receiving air from a common source and each mounted on opposite sides of said housing, each between said gas inlet and said gas outlet, to extend axially and to peripherally adjoin said holding cage means and to deliver to the opposite sides of said housing air from said common source at a pressure higher than that inside said housing; and

drive means for rotating said holding cage means to move said blocks successively past said inlet and said outlet.

5,362,450

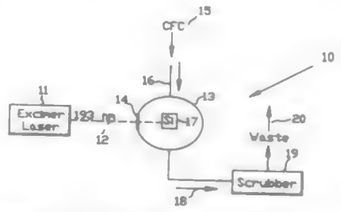
LASER CONTROLLED DECOMPOSITION OF CHLOROFLUOROCARBONS

Stephen D. Russell, and Douglas A. Sexton, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 501,707, Mar. 29, 1990. This application Feb. 21, 1991, Ser. No. 664,046

Int. Cl.[5] B01J *19/12*

U.S. Cl. 422—186.3 **18 Claims**



1. A method of decomposing chlorofluorocarbon gas comprising:

placing said chlorofluorocarbon gas in a reaction chamber;

launching UV light into said reaction chamber;

photo-decomposing or photodissociating said chlorofluorocarbon gas into halocarbon and halogen radicals;

reacting with a silicon-based mediating species in said reaction chamber to form scrubable by-products; and

hydrolyzing said by-products.

5,362,451

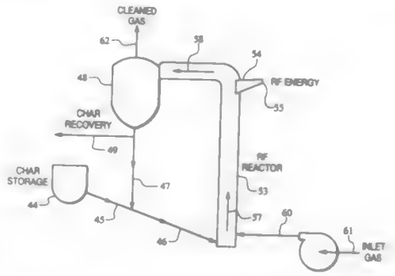
PROCESS AND REACTOR FOR CHAR-GAS OXIDE REACTIONS BY RADIOFREQUENCY CATALYSIS

Chang Y. Cha, 3807 Reynolds St., Laramie, Wyo. 82070

Division of Ser. No. 895,962, Jun. 9, 1992, Pat. No. 5,269,892, which is a continuation-in-part of Ser. No. 670,842, Mar. 18, 1991, Pat. No. 5,246,554. This application Aug. 11, 1993, Ser. No. 105,097

Int. Cl.[5] B01D *53/32*; C02F *1/32*

U.S. Cl. 422—186.3 **8 Claims**



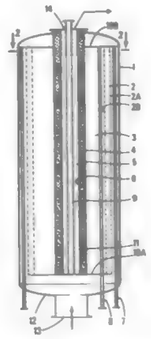
1. A chemical reactor for radiofrequency catalysis comprising:

a supported radiofrequency energy wave guide substantially surrounding a reaction bed comprising pyrolytic carbon;

passing reactants through said bed; and

applying to said wave guide tuned radiofrequency energy comprising the frequency rang of about 915 to 5000 MHz.

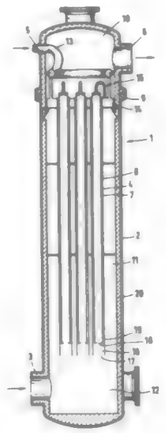
5,362,452
REACTOR FOR CARRYING OUT A SUCCESSION OF HETEROGENEOUS CATALYSIS AND THERMAL REACTIONS
Dang V. Quang, Neuilly Sur Seine, and Charles Cameron, Paris, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France
Filed Sep. 25, 1992, Ser. No. 951,126
Claims priority, application France, Sep. 25, 1991, 91 11890
Int. Cl.[5] B01J *8/06 10/00*
U.S. Cl. 422—192 **15 Claims**



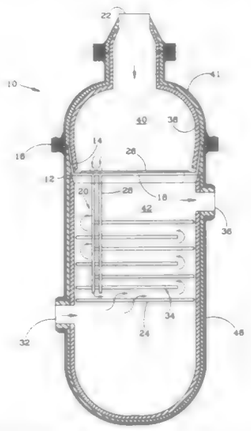
1. A device for carrying out a succession or heterogeneous catalysis and thermal reactions, which comprises an external substantially cylindrical envelope having a longitudinal axis, a co-axial, gas-permeable casing arranged within said envelope, said casing having an internal diameter and an external diameter and containing a catalyst, a central manifold, means for injecting a principal reagent into said gas permeable casing, means for injecting reactive components for a catalytic reaction into said gas permeable casing and means for discharging reaction products from the manifold, wherein the catalyst is arranged in the form of a catalytic bed over a full height of the casing and the internal diameter of the casing exceeds an external diameter of the central manifold in order to create an annular space which permits products of the catalytic reaction to remain for a sufficient time in order to permit a thermal reaction to occur; the central manifold being defined by a wall and a tube of insulating material, said tube being supported and in contact with the wall.

5,362,453
REFORMER FOR THE GENERATION OF SYNTHESIS GAS
Hans-Dieter Marsch, Dortmund, Germany, assignor to Uhde GmbH, Dortumundl, Germany
Filed Jun. 9, 1993, Ser. No. 74,256
Claims priority, application Germany, Jul. 3, 1992, 4221837
Int. Cl.[5] B01J *8/06;* **C10J** *3/00*
U.S. Cl. 422—197 **5 Claims**

1. A reformer for generating synthetic gas, comprising:
a pressure vessel having spaced a lower mixing chamber, a head space, a gas mixture inlet, a heat gas inlet, and a product gas outlet;
a plurality of catalyst-filled reformer tubes suspended in said pressure vessel and extending down to said lower mixing chamber;
a plurality of jacket tubes for covering said plurality of reformer tubes, respectively, and extending up to said head space to form, with said reformer tubes, a plurality of ducts for flowing product gas from said lower mixing chamber to said head space, each of said jacket tubes extending beyond a lower end surface of a respective reformer tube to thereby form an individual mixing chamber for the respective reformer tube.

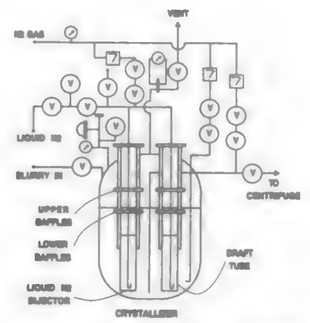


5,362,454
HIGH TEMPERATURE HEAT EXCHANGER
Lloyd E. Cizmer, Missouri City; Jing M. Lee, Stafford, and Thomas M. O'Connor, Houston, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.
Filed Jun. 28, 1993, Ser. No. 84,657
Int. Cl.[5] F28D *7/00;* **B01J** *19/00;* **F28F** *9/02*
U.S. Cl. 422—201 **20 Claims**



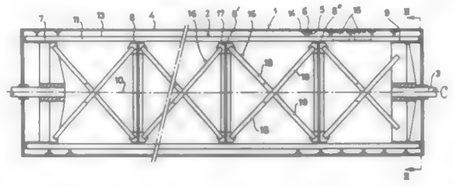
1. A high temperature heat exchanger for transferring heat between shell-side and tube-side fluids comprising
a vessel, including a heat resistant refractory lining affixed to an interior surface of the vessel, having upper and lower ends;
a flange assembly adjacent the upper end of the vessel;
a tube bundle supported in the vessel between the upper and lower ends, said tube bundle including a plurality of tubes depending from a tube sheet secured to a tube sheet support member;
the tube sheet support member comprising an annular lip mounted in the flange assembly and a skirt having upper and lower ends and wherein the skirt depends from and is secured to the lip at the upper end of said skirt and is secured to the tube sheet at the lower end of said skirt;
a first skirt refractory lining on an outer face of the skirt adjacent the interior surface of the vessel and spaced apart from said interior surface and the refractory lining affixed to said interior surface, said first skirt refractory lining extending upwardly from adjacent the tube sheet toward the lip; and
a second skirt refractory lining on an inside face of the skirt extending downwardly from adjacent the lip and the refractory lining affixed to the interior surface of the vessel toward the tube sheet, wherein said first and second skirt refractory linings overlap longitudinally at least a portion of the skirt inner and outer faces.

5,362,455
DRAFT TUBE, DIRECT CONTACT CRYOGENIC CRYSTALLIZER
Alan T. Cheng, Livingston, N.J., assignor to Praxair Technology, Inc., Danbury, Conn.
Continuation-in-part of Ser. No. 789,048, Nov. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 518,521, May 3, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 11,064
Int. Cl.[5] B01D *9/02*
U.S. Cl. 422—253 **10 Claims**



1. A method for producing crystals comprising:
(A) providing a crystal slurry in a crystallizer vessel having a draft tube positioned within said crystallizer vessel with the lower end of said draft tube spaced from the bottom surface of said crystallizer vessel;
(B) injecting cryogenic fluid through an injection nozzle into the crystallizer vessel and contacting the cryogenic fluid with the crystal slurry within the draft tube to produce crystals;
(C) injecting warm gas having a temperature exceeding −109° F. and above the freezing point of the slurry solvent through said injection nozzle into the crystallizer for at least a portion of the time the cryogenic fluid is being injected into the crystallizer vessel; and
(D) withdrawing crystals from the crystallizer vessel.

5,362,456
DEVICE FOR STERILIZING PRODUCTS PACKED IN CYLINDRICAL CONTAINERS
Daniël L. Möllenkamp, Stentorstraat 98, 1035 XJ Amsterdam, Netherlands
Continuation of Ser. No. 194,859, May 17, 1988, Pat. No. 5,057,288. This application Aug. 8, 1991, Ser. No. 743,471
Claims priority, application Netherlands, May 18, 1987, 8701189
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.
Int. Cl.[5] B01J *19/20*
U.S. Cl. 422—310 **2 Claims**



1. A device for sterilizing products packed in cylindrical containers, comprising:
(a) an elongated, essentially cylindrical stationary housing, the housing having a circumferential wall which is provided, on the inside thereof, with a helically running, raised rib disposed thereon:
(b) an essentially cylindrical rotatable rotor located in the housing and which is drivable by a central shaft,
the rotatable rotor having a central axis and defining a cage comprising:
(1) a plurality of rings placed one behind another, the center line of which coincides with the axis of the rotor, and
(2) a plurality of raised ribs fastened to the circumference of the rings parallel to the axis of the rotor, the outer edges of the ribs being located near the inner edge of the helically running rib on the inner wall of the housing, so that spaces are formed between the ribs for receiving the cylindrical containers; and
(c) a plurality of bracing elements which are disposed, at an angle relative to the rotor axis, within the rotor between and connected to the neighboring rings to reinforce the rotor, said bracing elements comprising pipes.

5,362,457
DIRECT SYNTHESIS OF ANION SUBSTITUTED HYDROTALCITE
Donald K. Grubbs, Rector, and Peter E. Valente, III, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Aug. 13, 1992, Ser. No. 928,748
Int. Cl.[5] C01F *5/00, 7/00, 5/24;* **C01B** *31/24*
U.S. Cl. 423—115 **17 Claims**

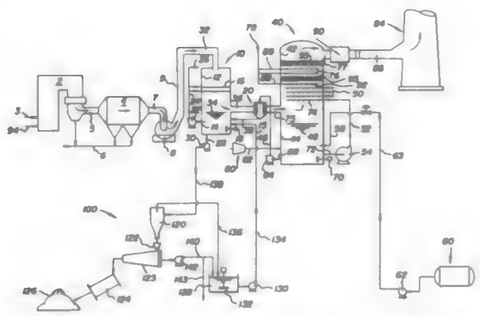
1. A method of producing anion substituted hydrotalcite, comprising:
reacting activated MgO with a substantially carbonate free aqueous solution containing anions of aluminate, hydroxyl, and at least 25 grams per liter of anions selected from the group consisting of bromide, chloride, sulfate, borate and combinations thereof.

5,362,458

PROCESS FOR THE SIMULTANEOUS ABSORPTION OF SULFUR OXIDES AND PRODUCTION OF AMMONIUM SULFATE

Abdus Saleem, Leola; Eli Gal, Lititz; Gregory Brown, Palmyra, and Michael Mengel, Fredericksburg, all of Pa., assignors to General Electric Environmental Services, Incorporated, Lebanon, Pa.

Filed Mar. 22, 1993, Ser. No. 35,284
Int. Cl.[5] C01B *17/00;* C01C *1/24*
U.S. Cl. 423—243.06 13 Claims



1. A process for improving the absorption rate and oxidation rate of sulfur oxide contained in a hot gas, wherein the hot gas containing sulfur oxide first contacts a saturated aqueous ammonium sulfate liquor in a prescrubber vessel to evaporate water by adiabatically cooling the gas, to produce a saturated aqueous ammonium sulfate liquor having ammonium sulfate crystals suspended therein, and to produce a prescrubbed gas containing sulfur oxide and water vapor; wherein the saturated aqueous ammonium sulfate liquor having ammonium sulfate crystals suspended therein collects in a prescrubber reservoir and is recycled from the prescrubber reservoir to the prescrubber vessel crystals suspended therein is removed from the prescrubber reservoir; and wherein the prescrubbed gas containing sulfur oxide and water vapor is passed through a demister to remove entrained aqueous saturated ammonium sulfate liquor containing ammonium sulfate crystals therefrom; the improvement comprising:

(a) contacting the prescrubbed gas containing sulfur oxide and water vapor from the demister with dilute aqueous ammonium sulfate in a sulfur oxide absorber to produce a dilute aqueous ammonium sulfate liquor having sulfur oxide absorbed therein and a scrubbed gas;

(b) collecting in an absorber reservoir the dilute aqueous ammonium sulfate liquor having sulfur oxide gas absorbed therein;

(c) introducing ammonia into the dilute ammonium sulfate liquor having sulfur oxide gas absorbed therein;

(d) introducing an oxygen-containing gas into the dilute aqueous ammonium sulfate liquor having sulfur oxide absorbed therein in the reservoir whereby ammonium sulfate product is formed by rapid oxidation in the dilute aqueous ammonium sulfate liquor in the reservoir by the reaction of the absorbed sulfur oxide gas with the ammonia and the oxygen in the oxygen-containing gas;

(e) contacting the dilute aqueous ammonium sulfate solution recycled from the absorber reservoir with the prescrubbed gas containing sulfur oxide in the sulfur oxide absorber; and

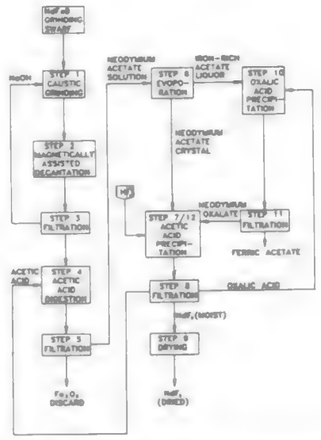
(f) withdrawing scrubbed gas.

5,362,459

NEODYMIUM RECOVERY PROCESS

Bernard Greenberg, Brooklyn, N.Y., assignor to Pure-Etch Co., Woodland Hills, Calif.

Filed May 17, 1993, Ser. No. 61,461
Int. Cl.[5] C01F *17/00*
U.S. Cl. 423—21.1 9 Claims



5. A process for recovering neodymium (Nd) from a grinding swarf containing neodymium (Nd) and massive iron (Fe), comprising the steps of:

a. mixing aqueous sodium hydroxide (NaOH) into said grinding swarf which yields a mixture, and grinding the mixture so that said neodymium (Nd) reacts at a fresh surface of the sodium hydroxide (NaOH) to produce neodymium oxide (Nd_2O_3) contained in a crude that also contains iron powder (Fe), ferric oxide (Fe_2O_3) and aqueous sodium hydroxide (NaOH);

b. applying magnetic restrainers to said crude to remove said iron powder (Fe);

c. filtering said crude and recycling said aqueous sodium hydroxide (NaOH) back to step "a" so that it can be reused;

d. digesting said crude with acetic acid ($HC_2H_3O_2$) to dissolve neodymium oxide (Nd_2O_3) but not ferric oxide (Fe_2O_3), and to produce a digested solution containing undissolved ferric oxide (Fe_2O_3), neodymium acetate ($Nd(C_2H_3O_2)_3$) which has a solubility of approximately 260 grams per liter at ambient temperature and contains approximately 42% metal by weight, and ferric acetate ($Fe_3(CH_3COO)_6(CH_3COO)_3$) which has a solubility higher than that of neodymium acetate ($Nd(C_2H_3O_2)_3$);

e. discharging said undissolved ferric oxide (Fe_2O_3) from said digested solution;

f. evaporating said digested solution to produce neodymium acetate ($Nd(C_2H_3O_2)_3$) crystals, and separating a concentrated liquor which contains ferric acetate ($Fe_3(CH_3COO)_6(CH_3COO)_3$) and residual neodymium acetate ($Nd(C_2H_3O_2)_3$);

g. adding hydrofluoric acid (HF) to said neodymium acetate ($Nd(C_2H_3O_2)_3$) crystals to produce neodymium trifluoride (NdF_3), which also regenerates acetic acid ($HC_2H_3O_2$);

h. separating said neodymium trifluoride (NdF_3) from said acetic acid ($HC_2H_3O_2$), and recycling said acetic acid ($HC_2H_3O_2$) back to step "d" so that it can be reused;

i. drying said neodymium trifluoride (NdF_3) by using microwave radiation to produce dry neodymium trifluoride (NdF_3) which contains less than approximately 3% moisture;

j. precipitating said concentrated liquor from step "f" with oxalic acid ($H_2C_2O_4$) to convert said residual neodymium acetate ($Nd(C_2H_3O_2)_3$) into neodymium oxalate ($Nd_2(C_2O_3)_3$);

k. removing said ferric acetate ($Fe_3(CH_3COO)_6(CH_3COO)_3$);

l. repeating steps "g" through "i" to produce dry neodymium trifluoride (NdF_3) from said neodymium oxalate ($Nd_2(C_2O_3)_3$), and regenerating and recycling said oxalic acid ($H_2C_2O_4$) back to step "j" so that it can be reused; and

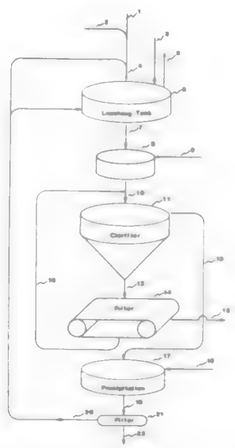
m. repeating steps "a" through "i" until said grinding swarf is completely processed.

5,362,460

MAGNESIUM SEPARATION FROM DOLOMITIC PHOSPHATE BY SULFURIC ACID LEACHING

Douglas H. Laird, and Wendy K. Hanson, both of San Diego, Calif., assignors to Science Ventures Inc., San Diego, Calif.

Filed Sep. 24, 1993, Ser. No. 125,807
Int. Cl.[5] C01F *5/00*
U.S. Cl. 423—157.4 10 Claims



1. A method for leaching magnesium from dolomitic phosphate minerals comprising:

(a) forming a slurry by mixing particulate dolomitic phosphate minerals with a calcium-bearing solution;

(b) maintaining said slurry by agitation so that substantially all of said particulate matter remains suspended in said solution;

(c) mixing sulfuric acid into said slurry at such a rate and in such amount that slurry pH is maintained at a setting in the range from 3.3 to 4.5 controlled automatically by a pH sensing device connected to an electronic feedback loop equipped to control addition of said sulfuric acid to said slurry;

(d) actively removing from said slurry dissolved carbon dioxide gas;

(e) withdrawing said slurry;

(f) separating said withdrawn slurry into a magnesium-bearing solution and a phosphate-bearing solid;

(g) adding calcium-containing alkaline material to said magnesium-bearing solution in amount sufficient to replace magnesium with calcium in said solution to produce a calcium-bearing solution while converting essentially all dissolved magnesium into solid magnesium hydroxide;

(h) separating solid magnesium hydroxide produced in step (g) from calcium-bearing solution produced in step (g);

(i) mixing said calcium-bearing solution separated in step (h) with fresh particulate dolomitic phosphate minerals to form slurry according to step (a);

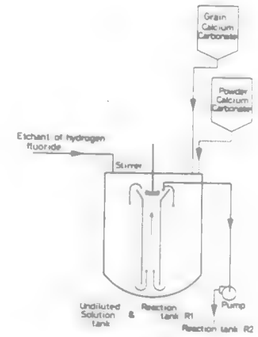
(j) introducing a soluble compound into said slurry containing an anion, the calcium and magnesium salts of which are soluble in water, and maintaining a concentration of said soluble compound in said magnesium-bearing solution that is sufficient to prevent solidification of calcium to form calcium sulfate in mixture with said solid magnesium hydroxide produced in step (g).

5,362,461

METHOD FOR RECOVERING CALCIUM FLUORIDE FROM FLUOROETCHANT

Tadahiro Ohmi, Miyagi; Hiroyuki Harada, Tokyo; Nobuhiro Miki; Toshiro Fukutome, both of Osaka; Matagoro Maeno, Izumi; Norio Terasawa, Tokyo; Yoshihiro Eto, Kanagawa, and Masahiro Sakata, Tokyo, all of Japan, assignors to Kurita Water Industries, Ltd., Tokyo, Japan

Filed Oct. 1, 1992, Ser. No. 953,960
Claims priority, application Japan, Oct. 3, 1991, 283747; Mar. 13, 1992, 89775; May 12, 1992, 146278
Int. Cl.[5] C01F *11/22*
U.S. Cl. 423—163 12 Claims



1. A process for recovering fluorine in a form of calcium fluoride essentially free of silica component from an etchant containing a silica component and composed mainly of hydrogen fluoride or hydrogen fluoride and ammonium fluoride, comprising the step of reacting the etchant with calcium carbonate at a temperature not lower than 50° C. within a composition region in which the mole equivalent ratio for ammonium fluoride/hydrogen fluoride is not more than 1.0, as a result of which calcium fluoride of high purity and essentially free of silica content is obtained having not more than about 3% of unreacted calcium carbonate.

3. A process for recovering fluorine in a form of calcium fluoride essentially free of silica component from an etchant containing a silica component and composed mainly of hydrogen fluoride or hydrogen fluoride and ammonium fluoride, comprising reacting said etchant with calcium carbonate, wherein the direction of transfer of said etchant is in counterflow to the direction of transfer of calcium carbonate and calcium fluoride formed by reaction between the added calcium carbonate and the etchant, as a result of which calcium fluoride of high purity and essentially free of silica content is obtained having not more than about 3% of unreacted calcium carbonate.

5,362,462

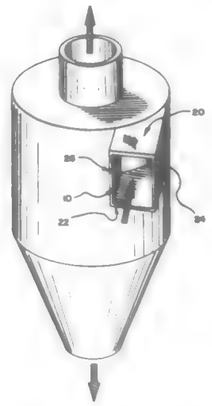
PROCESS FOR NITROGEN OXIDES REDUCTION

Hoanh N. Pham, and Todd A. Shirley, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 26, 1993, Ser. No. 68,725
Int. Cl.[5] B01D *45/16, 53/34*
U.S. Cl. 423—235 4 Claims

1. In a process for reducing the concentration of NO_x in a NO_x-containing flue gas comprising:

(a) withdrawing the NO_x containing flue gas as a portion of the combustion effluent from the combustion of a carbonaceous fuel;
(b) injecting ammonia into the NO_x containing flue gas in order to reduce the concentration of NO_x in the flue gas; and
(c) feeding the ammonia treated flue gas to a cyclone in order to separate entrained particulate matter from the ammonia treated flue gas wherein:
(i) said cyclone includes an inlet duct for introducing the feed into the cyclone in a direction which is substantially tangential to the circular flow within the cyclone;



(ii) said inlet duct consists of four perimeter walls which substantially form a rectangular cross sectional area;
(iii) said four perimeter walls consist of a top wall, a bottom wall opposite the top wall, an outside wall and an inside wall opposite the outside wall;
(iv) said outside wall is that perimeter wall of the inlet duct which is most nearly at a tangential angle to the circular flow within the cyclone;
the improvement for obtaining increased NO_x reductions in the ammonia treated flue gas for a given volume of injected ammonia comprising injecting the ammonia through the inside wall of the cyclone inlet duct.

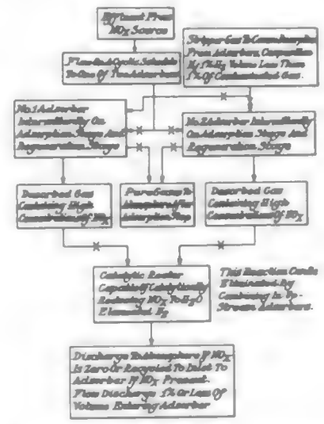
5,362,463

PROGRESS FOR REMOVING NO_x FROM COMBUSTION ZONE GASES BY ADSORPTION

Alvin B. Stiles, Wilmington, Del., and Charles C. Hong, Upper Arlington, Ohio, assignors to University of DE, Newark, Del.

Filed Aug. 26, 1992, Ser. No. 935,207
Int. Cl.[5] C01B *21/00*
U.S. Cl. 423—239.1 **16 Claims**

1. A process for removing NO_x from combustion product gases by adsorption including the steps of feeding the NO_x in a feed gas stream devoid of ammonia to a catalyst-adsorbent at a temperature in the range of 100° C. to 500° C., the catalyst-adsorbent including a mixture of manganese oxide and aluminum oxide wherein the mixture contains from 80% to 20% manganese oxide and from 20% to 80% aluminum oxide, the catalyst-adsorbent being treated with an alkali metal promotor and with a rare earth hardener, desorbing the NO_x when the catalyst-adsorbent is substantially saturated, stopping the flow of NO_x -containing gases, substituting therefore a mixture of N_2 and H_2, increasing the temperature of the catalyst-adsorbent and environment and desorbing the NO_x and simultaneously reducing a large volume of that NO_2 to N_2 and water, such NO_x and H_2, N_2 mixture also containing water vapors and nitrogen but no oxygen, creating a mixture from the desorption effluent and a reducing gas, and passing the mixture over a reduction catalyst to reduce the NO_x to water and elemental



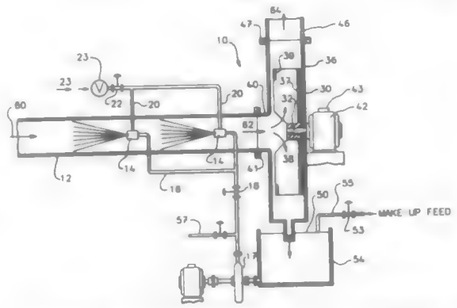
nitrogen, and discharging the resultant harmless gas to the atmosphere.

5,362,464

METHOD FOR REMOVING SULFUR OXIDES

J. Stuart Burgess, London; Donald R. Spink, Waterloo, and Jerry Y. Stein, Thornhill, all of Canada, assignors to Turbotak Inc., Waterloo, Canada

Continuation of Ser. No. 438,047, Nov. 20, 1989, Pat. No. 5,023,064, which is a division of Ser. No. 243,720, Sep. 13, 1988, Pat. No. 4,963,329, which is a continuation-in-part of Ser. No. 20,953, Mar. 2, 1987, Pat. No. 4,865,817. This application Mar. 19, 1991, Ser. No. 672,021
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[5] C01B *17/033*
U.S. Cl. 423—243.08 **19 Claims**



1. A method for wet mass transferring at least one solute gas from a process gas stream into a reacting medium, comprising:
(a) passing a gas stream containing at least one solute gas through an elongate conduit having an inlet thereto and an outlet therefrom and into a vortex of a slowly-turning fan operating at a relatively low speed sufficient to move the gas along the conduit into the fan;
(b) injecting a liquid reacting medium capable of absorbing said at least one solute gas directly into said gas stream under an atomizing gas pressure of about 20 to about 100 psi from a plurality of dual fluid spray nozzles coaxially disposed in series in said conduit and spaced apart by a distance sufficient to form a spray pattern from each of said nozzles filling homogeneously the cross-section of said conduit without substantially overlapping each other and containing liquid droplets ranging in size from about 5 to about 100 microns, thereby to form a plurality of contact spray zones whereby mass transfer of said at least one solute gas into said reacting medium is carried out in a very efficient way due to the large interfacial surface area for mass transfer, turbulent mixing and relatively long residence time generated therein;
(c) simultaneously mass transferring said at least one solute gas to the reacting medium and separating entrained liquid reaction medium containing the solute gas from clean gas stream in said fan, wherein agglomerated liquid reacting medium impinges on and adheres to and coats blades of the fan to form a coalesced layer of liquid that is separated from the blades by the effects of centrifugal forces moving outwards in so doing, so as to form an attendant annular spray zone of relatively larger droplets for continued mass transfer, the droplets upon impingement on the fan casing being coalesced and removed by gravity from the fan;
(d) removing any agglomerated droplets contained in the gas discharge from the fan with an entrainment separator; and
(e) discharging the clean gas stream separated from said liquid reacting medium to atmosphere.

5,362,465

METHOD FOR OXIDIZING HYPOPHOSPHITE ION

Toshikazu Iida, Yokohama, Japan, assignor to Fujikasui Engineering Co. Ltd., Tokyo, Japan

Filed Sep. 13, 1993, Ser. No. 120,082
Claims priority, application Japan, Mar. 4, 1993, 5-044032; Mar. 5, 1993, 5-045431; Mar. 5, 1993, 5-045478
Int. Cl.[5] C01B *25/12*
U.S. Cl. 423—304 **16 Claims**

1. A method for oxidizing a hypophosphite ion, comprising bringing an aqueous containing a hypophosphite ion into contact with at least one catalyst selected from the group consisting of boron-nickel compounds, boron-cobalt compounds, and metallic palladium to oxidize the hypophosphite ion to a phosphite ion.

5,362,466

ALUMINOSILICATES

Abraham Araya, Wirral, Great Britain, assignor to Unilever Patent Holdings B.V., Vlaardingen, Netherlands

Filed Apr. 8, 1993, Ser. No. 46,864
Claims priority, application European Pat. Off., Apr. 9, 1992, 92303147.0
Int. Cl.[5] C01B *33/26*
U.S. Cl. 423—328.1 **1 Claim**

1. A process for the preparation of P zeolite having the oxide formula

$$M_{2/n}O{\cdot}Al_2O_3{\cdot}(1.90\text{–}2.10)SiO_2{\cdot}yH_2O$$

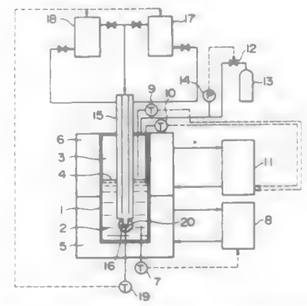
wherein y is the water content and M is an n-valent alkali metal cation, said process comprising the steps of:
i: mixing a sodium aluminate solution having a temperature of at least 60° C. with a sodium silicate solution at a temperature of at least 60° C. in a stirred vessel in the presence of a slurry of P zeolite seed to form a gel having the composition, Al_2O_3: (1.80–2.2)SiO_2:1.5–5)Na_2O:(40 to 150) H_2O,
ii. ageing the gel at a temperature above about 60° C. with stirring to maintain solids in suspension for a period of least about 0.1 hour,
iii. separating the P zeolite product, and washing and drying the thug separated P zeolite product and
wherein the resulting dilute mother liquor obtained in (iii) after separating and washing the P zeolite product, is collected, is further processed as follows:
a first part of the mother liquor is concentrated and used to dissolve aluminium trihydrate to produce concentrated sodium aluminate,
the obtained concentrated sodium aluminate is diluted with a second part of the dilute mother liquor giving a sodium aluminate solution,
a third part of the dilute mother liquor is used to dilute a sodium silicate solution,
the resulting sodium aluminate solution is then mixed with the sodium silicate solution in a stirred vessel containing the remaining part of the dilute mother liquor in the presence of a slurry of P zeolite seed to form the gel having the composition Al_2O_3:(1.80–2.2)SiO_2:(1.5–5)-Na_2O:(40 to 150) H_2O.

5,362,467

PROCESS FOR PRODUCING CARBON DIOXIDE CLATHRATE

Matsushige Sakai; Akira Saji; Hidetomo Noda, all of Nagoya; Takeo Hondoh, Sapporo; Tadaaki Tanii, Takasago; Masaru Ishibashi, Takasago; Masaaki Negoro, Takasago; Yutaka Kawata, Takasago; Takefumi Murakami, Takasago; Hikaru Kitamura, and Toshihiro Kamata, both of Kobe, all of Japan, assignors to Chubu Electric Power Company, Incorporated, Aichi and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Nov. 24, 1992, Ser. No. 981,328
Claims priority, application Japan, Dec. 2, 1991, 3-317735
Int. Cl.[5] C01B *31/22*
U.S. Cl. 423—437 R **6 Claims**



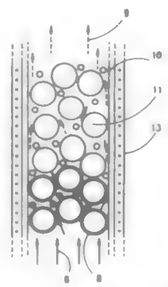
1. A process for producing a carbon dioxide clathrate which comprises:
the step of disposing a water portion comprising an aqueous solution of water or seawater and a carbon dioxide portion comprising carbon dioxide in a reactor so that these portions may come in contact with each other with the interposition of an interface, and positioning, in the water portion, a lug of which the temperature is controllable;
the step of adjusting the pressure in the reactor to 13 atm or more and the temperature of the aqueous solution in the water portion to a level of more than 5° C. and not greater than 10° C., and adjusting an interface temperature between the water portion and the carbon dioxide portion to a level of more than 10° C. and not greater than 15° C.;
the step of maintaining the temperature of the lug at a level of more than 0° C. and not greater than 5° C. to form, away from said interface, crystallized carbon dioxide clathrate on the lug; and
the step of heating the lug to a temperature of more than 10° C. and not greater than 30° C. to separate and drop the crystallized carbon dioxide clathrate from the lug.

5,362,468

PROCESS FOR THE PYROLYSIS OF FLUID EFFLUENTS AND CORRESPONDING APPARATUS

Michel Coulon, Montmorency, and Jacques Boucher, Argenteuil, both of France, assignors to Le Carbone Lorraine, Courbevoie, France

Filed Jan. 14, 1993, Ser. No. 4,615
Claims priority, application France, Jan. 22, 1992, 92 00847
Int. Cl.[5] C01B *31/00*
U.S. Cl. 423—445 R 16 Claims



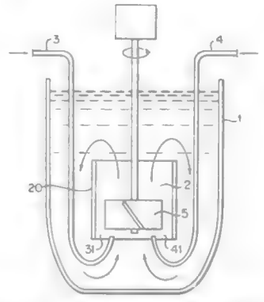
1. Process for the pyrolysis of fluid effluent, comprising:
providing a pyrolysis chamber containing a bed of solid elements having a contact surface of at least 10 m^2/m^3 and at least one electrically conductive portion;
heating said solid elements by induction within said chamber to a temperature sufficient for pyrolysis of said effluent;
passing said effluent through said bed of heated solid elements, thus causing pyrolysis of said effluent and production of a gaseous pyrolysis product and a solid pyrolysis product which is trapped on the contact surface of the solid elements;
removing the trapped solid pyrolysis product from the solid elements to regenerate said elements; and
discharging the solid and gaseous pyrolysis products from the chamber.

5,362,470

ULTRAFINE GOLD AND/OR SILVER CHALCOGENIDE AND PRODUCTION THEREOF

Haruhiko Masutomi, Hino; Naoko Uchida, Tokyo; Hirofumi Ohtani, Hino, and Kazuyoshi Ichikawa, Tokyo, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,636
Claims priority, application Japan, May 30, 1991, 3-127516
Int. Cl.[5] C01B *19/04;* C09K *11/02*
U.S. Cl. 423—509 6 Claims



1. A method of producing a chalcogenide of at least one of gold and silver comprising the steps of:
(a) preparing a first solution of at least one water soluble compound selected from the group consisting of silver nitrate, chloroauric acid, and gold dimethylrhodanine, and a mixture of chloroauric acid, and a second aqueous solution of a compound selected from the group consisting of hydrogen sulfide, alkali sulfide, thiourea, substituted thiourea, polysulfides, selenoureas and dithiacarbaminic acids;
(b) simultaneously injecting the first and second solutions into a third protective colloid solution and rapidly mixing the first, second and third solutions, wherein the mixing is effected to produce a chalcogenide product having an average particle size of not more than 60 Å and a coefficient of variation of less than 0.16; and
(c) recovering particles of the resulting chalcogenide product.

5,362,469

PREPARATION OF ULTRAPURE HYDROGEN FLUORIDE

Ulrich Seseke-Koyro, Vellmar; Andreas Grossmann, Sehnde, and Werner Rudolph, Hanover, all of Germany, assignors to Solvay Fluor und Derivate GmbH, Hanover, Germany

Filed Oct. 28, 1992, Ser. No. 969,712
Claims priority, application Germany, Oct. 31, 1991, 4135918
Int. Cl.[5] C01B *7/19*
U.S. Cl. 423—484 6 Claims

1. A process for preparing ultrapure hydrogen fluoride from hydrogen fluoride contaminated with at least one impurity selected from the group consisting of water, metals, arsenic, boron compounds, phosphorous compounds, sulfur compounds and carbon compounds, said process comprising the steps of contacting said contaminated hydrogen fluoride with elemental fluorine in the presence of metal fluoride to convert said at least one impurity to a product which is separable from hydrogen fluoride by distillation, and distilling ultra pure hydrogen fluoride from said product.

5,362,471

PROCESS FOR PRODUCING GYPSUM FLAKE FROM FLUE GAS DESULFURIZATION

Timothy J. Roth, Allentown, Pa.; Carmine R. Gagliardi, Emmaus, Pa., and William R. Welliver, Ship Bottom, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 27, 1991, Ser. No. 767,283
Int. Cl.[5] C01F *11/46*
U.S. Cl. 423—555 6 Claims

1. In a process for producing gypsum calcium sulfate dihydrate flake, the improvement for producing gypsum calcium sulfate dihydrate from powdered synthetic gypsum calcium sulfate dihydrate obtained by the wet limestone process for the desulfurization of flue gas which comprises:
a) adjusting the surface moisture content of the powdered gypsum calcium sulfate dihydrate to a level of from about 5 to 12% by weight thereby forming a moist powder;
b) compacting the moist powder in a compaction zone comprising a roller press exerting a pressure of from 4 tons force to 15 tons force per linear inch of sheet width;
c) forming the moist powder under compression into a sheet having a thickness of from 0.05 to 0.25 inches;
d) maintaining the sheet under compaction for a period of from 0.2 to 1.2 seconds; and,
e) fracturing the sheet into chips.

5,362,472

METHOD OF MANUFACTURING AQUEOUS CERAMIC SUSPENSIONS AND THE USE OF SAID SUSPENSIONS

Josef Lauter, Aachen; Walter Mayr, Würselen; Joachim Opitz, Aachen, and Gerd Romanowski, Nidderau Heldenbergen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1992, Ser. No. 941,340
Claims priority, application Germany, Sep. 13, 1991, 4130441
Int. Cl.[5] C01G *23/00;* C04B *35/46*
U.S. Cl. 423—598 26 Claims

1. A method of manufacturing aqueous suspensions of deagglomerated finely powdered solid particles of barium titanate in a manner to prevent reagglomeration, said method comprising the steps of
(a) forming an aqueous suspension of solid particles of finely powdered barium titanate and dispersing agents, and
(b) carrying out at least one of the following sub-steps to prevent reagglomeration of said solid particles of finely powdered barium titanate for a given period of time:
(i) washing said solid particles at least once in water before carrying out step (a),
(ii) adding to said aqueous suspension anionic compounds of at least one of sulfates, carbonates, iodates, chromates, oxalates, citrates and tartrates,
(iii) providing said aqueous suspension in a gaseous atmosphere free of CO_2,
(iv) providing said aqueous suspension at a temperature of at most 20° C. and
(v) adding additional dispersing agents to said aqueous suspension at least before reagglomeration of said solid particles begins.

5,362,473

RADIOLABELLED PARTICULATE COMPOSITION

Karel J. Panek, Heiloo, Netherlands, assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

PCT No. PCT/US89/04490, § 371 Date Dec. 18, 1991, § 102(e) Date Dec. 18, 1991
PCT Filed Oct. 6, 1989, Ser. No. 678,252
Claims priority, application Netherlands, Oct. 14, 1988, 8802530
Int. Cl.[5] A61K *49/02*
U.S. Cl. 424—1.13 9 Claims

1. A technetium-99m-labelled particulate composition to be used as a dry aerosol for lung scintigraphy, the composition comprising technetium-99m-labelled particulate base material wherein said base material is selected from the group consisting of a silica gel, a siliceous material, and a non-swelling polymer; wherein organic ligands are bonded covalently to the surface of the base material, the organic ligands including at least one functional moiety selected from the group consisting of thiol-, amino-, alkylamino-, oxime-, dithiocarbamate-, xanthate-, thiosemicarbazone-, or dithiosemicarbazone groups or combinations thereof, said technetium-99m-labelled particulate composition forming a dry aerosol.

5,362,474

METHOD FOR DETECTING AND LOCATING INFLAMMATORY OR TUMOR FOCI IN A PATIENT AND DIAGNOSTIC KIT THEREFOR

Lucien D. D'Hinterland, Castres; Alain Le Pape, Langeais; Gérard Normier, Castres; Anne-Marie Pinel, Castres, and Jacques Durand, Castres, all of France, assignors to Pierre Fabre Medicament, Paris, France

Division of Ser. No. 491,184, Mar. 8, 1990, abandoned. This application Jul. 8, 1992, Ser. No. 910,677
Claims priority, application France, Mar. 8, 1989, 89 03034
Int. Cl.[5] A61K *49/00, 49/02*
U.S. Cl. 424—1.13 8 Claims

1. A method for detecting and locating any inflammatory and/or tumor foci in a patient which comprises administering to said patient, by nebulization for inhalation, a solution comprising a detectable component coupled to a polysaccharide compound, said polysaccharide compound selected from the group consisting of (1) the compound D 25, (2) the compound D 25 oxidized so that the galactofuranose residue therein has been converted to arabinose, (3) the amide, ester or ether derivatives of (1) or (2), (4) the quaternary ammonium derivatives and salts of (1), (2) or (3), and (5) derivatives obtained by grafting of phosphatides onto (1), (2), (3) or (4); and detecting the detectable component.

5,362,475

GADOLINIUM CHELATES FOR MAGNETIC RESONANCE IMAGING

Heinz Gries; Douwe Rosenberg; Hanns-Joachim Weinmann; Ulrich Speck; Wolfgang Mutzel; Georg-Alexander Hoyer, all of Berlin, Germany; Heinrich Pfeiffer, deceased, late of Berlin, Germany by Brigitte Pfeiffer, executrix , and Franz-Josef Reuneke, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 596,932, Oct. 15, 1990, abandoned, Ser. No. 20,992, Mar. 2, 1987, Ser. No. 20,300, Mar. 2, 1987, and Ser. No. 423,594, Oct. 17, 1989, said Ser. No. 596,932, is a division of Ser. No. 370,139, Jun. 23, 1989, Pat. No. 4,963,344, which is a continuation of Ser. No. 20,993, Mar. 2, 1987, abandoned, which is a continuation of Ser. No. 573,184, Jan. 23, 1984, Pat. No. 4,647,447, which is a continuation-in-part of Ser. No. 401,594, Jul. 26, 1982, abandoned, said Ser. No. 20,300, is a division of Ser. No. 573,184, Jul. 26, 1982, said Ser. No. 423,594, is a continuation of Ser. No. 20,301, Mar. 2, 1987, which is a division of Ser. No. 573,184, Mar. 2, 1987, said Ser. No. 20,992, is a division of Ser. No. 573,184, Mar. 2, 1987, and a continuation-in-part of Ser. No. 573,184, Mar. 2, 1987. This application Jul. 10, 1992, Ser. No. 911,800
Claims priority, application Germany, Jul. 24, 1981, 3129906; Jan. 21, 1983, 3302410; Jan. 11, 1984, 3401052
Int. Cl.[5] A61B *5/055*
U.S. Cl. 424—9 10 Claims

1. The di-N-methylglucamine salt of the gadolinium (III) complex of diethylene-triaminepentaacetic acid.

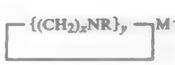
5,362,476

ALKYL PHOSPHONATE POLYAZAMACROCYCLIC CHEATES FOR MRI

A. Dean Sherry, Dallas, Tex., and Garry E. Kiefer, Lake Jackson, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex. and Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 615,619, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 357,193, May 25, 1989, abandoned, and Ser. No. 291,053, Dec. 28, 1988, Pat. No. 4,983,376, which is a continuation-in-part of Ser. No. 7,729, Jan. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 662,075, Oct. 18, 1984, Pat. No. 4,639,365. This application Jul. 31, 1992, Ser. No. 923,715
Int. Cl.[5] A61B *5/055, 31/675;* C07D *225/00, 255/02*
U.S. Cl. 424—9 6 Claims

1. A method for increasing contrast of nuclear magnetic resonance images of a patient, the method comprising
administering to a patient needing nuclear magnetic resonance imaging a diagnostically effective amount of a polyazamacrocyclic compound or a salt thereof, the compound having the formula



where
x is 2, 3 or a combination of p 2(s) and q 3(s) where p+q=y;
y is 4;
R is $(CH_2)_zP(=O)OR^1OR^2$;

R^1 is H or CH_3;
R^2 is C_nH_{1+2n};
n is 4 to 6;
z is 1 to 3;
r is 2 or 3; and
M is a metal ion; and obtaining a magnetic resonance image of the patient.

5,362,477

19F MAGNETIC RESONANCE IMAGING AGENTS WHICH INCLUDE A NITROXIDE MOIETY

Dennis A. Moore, Ferguson; Max D. Adams, St. Charles; William P. Cacheris, Florissant; David H. White, Ballwin; Muthunadar P. Periasamy, Chesterfield; Raghavan Rajagopalan, Maryland Heights; Lynn A. deLearie, University City, and Steven R. Woulfe, Ballwin, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 826,333, Jan. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 782,153, Oct. 25, 1991, Pat. No. 5,318,770. This application Dec. 1, 1992, Ser. No. 950,343

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] **A61B** *5/055*

U.S. Cl. 424—9 **8 Claims**

1. A method for obtaining fluorine-19 magnetic resonance images of body organs and tissues which comprises:
   (a) administering to a patient, a diagnostically effective amount of a fluorine-containing compound having enhanced relaxation properties resulting from direct association with a nitroxide; and
   (b) imaging the patient's organs and tissues.

5,362,478

MAGNETIC RESONANCE IMAGING WITH FLUOROCARBONS ENCAPSULATED IN A CROSS-LINKED POLYMERIC SHELL

Neil P. Desai; Patrick Soon-Shiong; Paul A. Sandford, all of Los Angeles; Mark W. Grinstaff, Pasadena, all of Calif., and Kenneth S. Suslick, Champaign, Ill., assignors to Vivorx Pharmaceuticals, Inc., Santa Monica, Calif.

Filed Mar. 26, 1993, Ser. No. 35,150

Int. Cl.[5] **A61B** *5/055;* **A61K** *31/715*

U.S. Cl. 424—9 **16 Claims**

1. A composition for obtaining in vivo fluorine magnetic resonance images, said composition comprising fluorine-containing magnetic resonance imaging agent(s) substantially completely contained within a polymeric shell; wherein said polymeric shell comprises a biocompatible naturally occurring polymer which is substantially crosslinked by way of disulfide bonds,
   wherein said biocompatible naturally occurring polymer, prior to crosslinking, has covalently attached thereto sulfhydryl groups or disulfide groups.

16. A composition for obtaining in vivo fluorine magnetic resonance images, said composition comprising fluorine-containing magnetic resonance imaging agent(s) substantially completely contained within a polymeric shell; wherein said polymeric shell comprises lipid(s) containing sulfhydryl groups and/or disulfide groups which is substantially crosslinked by way of disulfide bonds,
   wherein said lipid, prior to crosslinking, has covalently attached thereto sulfhydryl groups or disulfide groups.

5,362,479

ETHER SULFATES FOR ORAL HYGIENE AND DENTAL CARE PREPARATIONS

Willi Breitzke; Holger Tesmann, both of Duesseldorf; Karl-Heinz Gantke, Moenchengladbach, and Hans-Christian Raths, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Germany

PCT No. PCT/EP91/02406, § 371 Date Jul. 19, 1993, § 102(e) Date Jul. 19, 1993, PCT Pub. No. WO92/12701, PCT Pub. Date Aug. 6, 1992

PCT Filed Dec. 13, 1991, Ser. No. 90,072

Claims priority, application Germany, Jan. 19, 1991, 4101515

Int. Cl.[5] **A61K** *7/16*

U.S. Cl. 424—49 **19 Claims**

1. In an oral hygiene or dental care composition comprising at least one surfactant, flavoring, and sweetener, the improvement wherein the composition contains a surfactant effective quantity of an alkyl ether sulfate mixture corresponding to formula I

$$R^1—O—(C_2H_4O)_x—SO_3M \quad (I)$$

in which R^1 is a linear alkyl group containing 12 to 18 carbon atoms, M is an alkali metal or magnesium ion, and x has an average value of 2 to 10, and wherein at least 50% by weight of the mixture consists of homologs with x−1 to x+1 glycol ether groups, and the content of alkyl sulfates in which x=0 is below 10% by weight; and wherein the composition is free from any additional quantities of alkyl sulfates.

5,362,480

ORAL HYGIENE COMPOSITIONS CONTAINING AMINO SUGARS AS ANTIPLAQUE AGENTS

Van Au, Peekskill, N.Y.; Robert G. Carson, Rahway, N.J.; Bijan Harirchian, South Orange, N.J., and Kurt M. Schilling, Verona, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,407, Dec. 31, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,973

Int. Cl.[5] **A61K** *7/16, 7/18, 7/22*

U.S. Cl. 424—54 **17 Claims**

1. An oral hygiene non-food composition comprising a suitable carrier and an effective antiplaque amount of at least one compound having a formula:

$$A^1\text{-}NRR^1$$

wherein
   (i) A^1 is a saccharide comprising a sugar moiety recognized by lectins on oral bacteria selected from the group consisting of β-D-galactose, β-D-N-acetyl galactosamine, lactose, L-rhamnose and β-D-fucose;
   (ii) nitrogen (N) is linked to the anomeric carbon at the reducing end of the saccharide A^1; and
   (iii) R and R^1 are the same or different and are selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical, an aromatic radical, and a cycloaliphatic radical.

5,362,481

BENZOFURAN DERIVATIVES AND THE USE THEREOF AS STABILIZERS AGAINST UV RADIATIONS

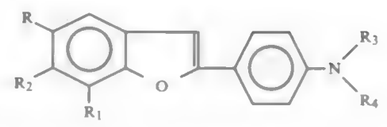
Giuseppe Raspanti, Bergamo, Italy, assignor to 3V Inc., Weehawken, N.J.

Filed Aug. 6, 1993, Ser. No. 102,801

Int. Cl.[5] **C07D** *307/81;* **A61K** *7/42, 7/44*

U.S. Cl. 424—59 **12 Claims**

1. Compounds of the formula (I)



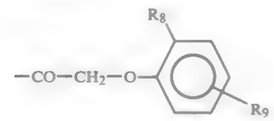
I

wherein R and R_1 are hydrogen or a C_1–C_8 straight or branched alkyl group, R_2 is hydrogen or a C_1–C_4 alkoxy group, R_3 is hydrogen or a C_1–C_{18} straight or branched alkyl group, R_4 is a group of formula (II), (III), (IV) or (V)

$$—CO—R_5, \quad II$$

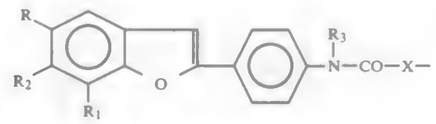
$$—CO—NH—R_6, \quad III$$

$$—COOR_7, \quad IV$$



V

wherein R_5 is a C_2–C_{17} straight or branched alkyl group, C_5–C_8 cycloalkyl or C_6–C_{12} aryl group, optionally substituted with C_1–C_4 alkyl groups, hydroxy, C_1–C_{18} alkoxy, or a group of formula (VI)



VI

wherein R, R_1, R_2, R_3 have the above defined meanings and X can be a carbon-carbon single bond, C_2–C_{10} alkylene, C_5–C_8 cycloalkylene or C_6–C_{12} arylene, R_6 and R_7 are a C_1–C_{18} straight or branched alkyl group or a C_5–C_8 cycloalkyl group, R_8 and R_9, which can be the same or different from each other, are hydrogen, C_1–C_8 straight or branched alkyl group, C_1–C_{18} alkoxy, or a —$COOR_{10}$ group, wherein R_{10} is C_1–C_{18} straight or branched alkyl group.

5,362,482

WATER-IN-OIL EMULSION SOLID COSMETIC COMPOSITION

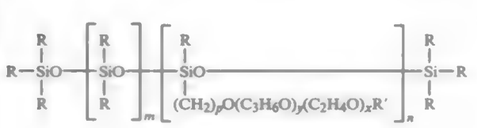
Toshio Yoneyama; Yasuo Matsuoka; Harumi Suzuki; Shigenori Kumagai, and Susumu Takada, all of Yokohama, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Continuation of Ser. No. 442,812, Nov. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 287,784, Dec. 20, 1988, abandoned. This application Feb. 10, 1993, Ser. No. 16,673

Int. Cl.[5] **A61K** *7/021, 7/035*

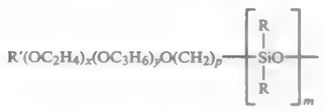
U.S. Cl. 424—69 **9 Claims**

1. A water-in-oil emulsified solid cosmetic composition comprising 5% to 80% by weight of a silicone oil, 3% to 30% by weight of a solid wax, 0.2% to 10% by weight of a polyoxyalkylene modified organopolysiloxane selected from the group consisting of those having the following structures (1), (2), (3), and (4), and 5% to 60% by weight of water, all based on the total amount of the composition:

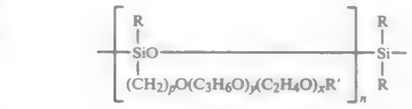


(1)

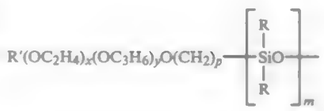
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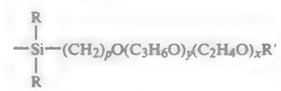
(2)

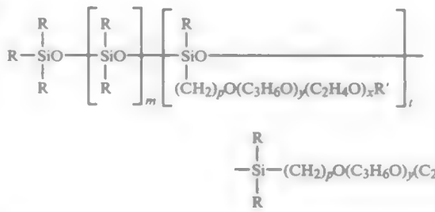


$$—(CH_2)_pO(C_3H_6O)_y(C_2H_4O)_xR'$$

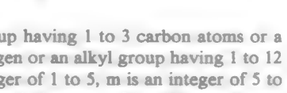


(3)





(4)



wherein R is an alkyl group having 1 to 3 carbon atoms or a phenyl group, R″is hydrogen or an alkyl group having 1 to 12 carbon atoms, p is an integer of 1 to 5, m is an integer of 5 to 100, n and x are independently integers of 1 to 50, t and y are independently integers of 0 to 50, the solid wax having as a main component at least one member selected from the group consisting of linear and branched hydrocarbon waxes having 25 to 52 carbon atoms.

5,362,483

FLAVORING, FRAGRANCE, SKIN TEXTURIZING AND DEODORANT MATERIALS AND METHOD OF MAKING SAME

Robert D. Morgan, and Peter A. Blagdon, both of Paris, Ill., assignors to Morgan Food Products, Inc., Paris, Ill.

Division of Ser. No. 297,402, Jan. 17, 1989, Pat. No. 5,223,260. This application Feb. 26, 1993, Ser. No. 23,605

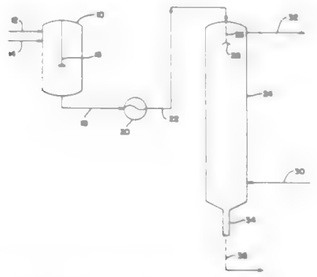
Int. Cl.[5] **A61K** *7/02*

U.S. Cl. 424—69 **10 Claims**

1. A method of manufacturing an encapsulated skin texturizing material consisting essentially of the steps of:
   a. melting a water soluble, nonharmful carrier material selected from the group consisting of polyethylene glycol and polyoxyalkene glycols having an average molecular weight of between about 4,000 and about 15,000, which carrier is solid at room temperature;
   b. dispersing within the melted carrier, formed in step a, a skin texturizer to produce a dispersed melt;
   c. transporting said dispersed melt to a nozzle positioned within a chamber and spraying said dispersed melt through said nozzle, said chamber being cooled by flowing a non-reactive gas therethrough, the temperature of

said gas, as said gas enters said chamber, being less than the melting temperature of said carrier;

d. solidifying said dispersed melt by contacting said dispersed melt with said gas flowing through said chamber; and



e. recovering the solid skin texturizing material formed by step d.

5,362,484

HAIR CARE COMPOSITION FOR CONDITIONING HAIR WITH SILICONE OIL

James L. Wood, Elmhurst, and Andrea Mariahazy, Westchester, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Continuation-in-part of Ser. No. 896,161, Jun. 10, 1992, abandoned. This application Jul. 1, 1993, Ser. No. 86,006

Int. Cl.[5] A61K *7/06, 31/695*

U.S. Cl. 424—70 **11 Claims**

1. A liquid hair care composition for conditioning hair with silicone oil, comprising a stable emulsion of a water-insoluble hair conditioning non-volatile silicone oil dispersed in a liquid carrier consisting of polyoxyalkylene glycol selected from polyoxyethylene and copolymers of polyoxyethylene and polyoxypropylene, from 60 to 98 parts by weight of said glycol carrier being present per 100 parts of said composition, and said composition further containing an emulsifier consisting of a silicone phosphate salt having an anionic moiety comprising a copolymer of dimethylpolysiloxane and polyoxyethylene, said salt having a siloxane chain containing from 20 to 40 dimethylsiloxy units, an oxyethylene chain containing from 3 to 15 oxyethylene units, and terminating in an anionic phosphate group, said salt also having a cationic moiety comprising an aliphatic amine or amido amine containing at least one basic nitrogen group and at least one alkyl or alkylene group containing from 8 to 36 carbons said salt being present in an effective amount for emulsifying said non-volatile silicone oil in said glycol carrier.

5,362,485

HAIR COSMETIC COMPOSITIONS COMPRISING SULFIDE LINKED POLYSILOXANES

Kazuhide Hayama; Kanji Narazaki; Yukio Saitoh; Tomoaki Hiwatashi; Isao Itoh, and Sigeoki Kawaguchi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company, Ltd., Tokyo, Japan

Filed Jul. 26, 1993, Ser. No. 96,257

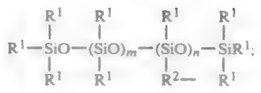
Claims priority, application Japan, Jul. 28, 1992, 4-201373

Int. Cl.[5] A61K *7/06, 7/08, 7/09*

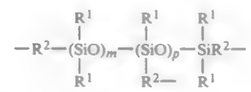
U.S. Cl. 424—70 **15 Claims**

1. A hair cosmetic composition comprising 0.1 weight percent or greater of a graft copolymer and/or an alternating block copolymer, each of which comprises;

a first unit containing a polysiloxane group of the general formula (1) and/or (2):



(1)



(2)

where R^1 represents a hydrogen atom, an alkyl group of C1 to C10, a phenyl group, a hydroxy terminated polyoxyalkylene group, a polyoxyalkylene group substituted with an alkyl ether or a fatty acid ester, a polyalkylene-polyamine group, a fatty acid group, or a polysiloxane group; R^2 represents an alkylene group of C1 to C10; and m, n and p represent the numbers of groups contained in each polysiloxane group, m being an integer within a range of from 10 through 350, n being an integer within a range from 1 through 50, and p being an integer within a range of from 0 through 50; and

a second unit containing a polymer of unsaturated monomers, said first and second units being bonded together at the R^2 group of said first unit through a sulfide linkage.

5,362,486

IN-SITU POLYMERIZATION OF OLIGOMERS ONTO HAIR

Arun Nandagiri, Libertyville; Jacqueline Hutter, Chicago, and Ramiro Galleguillos, Glendale Heights, all of Ill., assignors to Helene Curtis, Inc., Chicago, Ill.

Filed Apr. 10, 1992, Ser. No. 866,844

Int. Cl.[5] A61K *7/11, 31/765;* **C08G** *18/04, 18/10*

U.S. Cl. 424—71 **20 Claims**

1. A method of treating human hair for increased polymer durability comprising:

applying to said hair an oligomeric compound formed by end capping a urethane oligomer with a bisulfite or an acrylate group, wherein the oligomer has a degree of polymerization in the range of about 2 to 200, and contains no free isocyanate; and

polymerizing the oligomer while said oligomer is in contact with said hair to form, in-situ, a polymer adhered to said hair.

5,362,487

CYSTEAMINE PERMANENT WAVE COMPOSITION AND METHOD

Arun Nandagiri, Libertyville; Richard A. Abbott, Westmont; Renee E. Nardone, Chicago, all of Ill., and Edward T. Borish, Mahwah, N.J., assignors to Helene Curtis, Inc., Chicago, Ill.

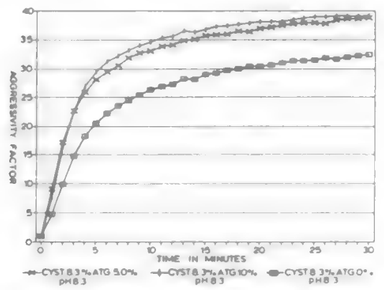
Continuation-in-part of Ser. No. 819,113, Jan. 10, 1992, Pat. No. 5,260,054. This application Aug. 24, 1993, Ser. No. 111,305

The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *7/06, 7/09, 7/11*

U.S. Cl. 424—71 **11 Claims**

1. A permanent wave composition capable of breaking sulfur to sulfur bonds in human hair when in contact with said human hair so that said hair can be reconfigured in a predetermined configuration, comprising an aqueous solution of a cysteamine in an amount of about 7.8% to about 9% by weight of the permanent wave composition; sufficient alkali such that the composition has a pH of about 7.8 to about 8.8, and a second



reducing agent in an amount of about 0.1 to about 18% by weight of the waving composition.

5,362,488

BUFFERED DIAPER RASH CREAM

Murray J. Sibley, Westerville, Ohio; Donald E. Hartung, Arlington Heights, Ill., and Rosalyn Ruland, Bexley, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 965,641, Oct. 23, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 130,113

Int. Cl.[5] A61K *31/74, 9/00*

U.S. Cl. 424—78.05 **1 Claim**

1. A buffered skin cream for use in the prevention and treatment of diaper rash, said skin cream being soluble in soap and water, and having a viscosity of about 250,000 to 1,000,000 centipoise, and having a pH in the range of about 5.0 to 5.5, said skin cream comprising:

(a) a linear polydimethylsiloxane polymer in a concentration by weight of about 15 to 25%;

(b) a non-ionic emulsifier in a concentration by weight of about 7 to 9%, said non-ionic emulsifier comprising a mixture of cetearyl alcohol and its ethoxylate;

(c) sodium citrate in a concentration by weight of about 2 to 4%;

(d) citric acid in a concentration by weight of about 0.2 to 0.5%;

(e) a blend of proplene glycol, diazolidinyl urea, methyl paraben, and propyl paraben in a concentration by weight of about 0.5 to 1.5%;

(f) mineral oil in a concentration by weight of about 5 to 7%, said mineral oil having a specific gravity in the range of about 0.818 to 0.880;

(g) stearic acid in a concentration by weight of about 7 to 9%, said stearic acid having a saponification value of about 197–200 and an iodine value of not more than 1;

(h) nonoxynlhydroxyethylcellulose in a concentration by weight of about 0.4 to 0.5%; and

(i) water in a concentration by weight of about 30 to 50%.

5,362,489

USE OF RECOMBINANT B-CELL DIFFERENTIATION FACTOR FOR AUGMENTING ANTIBODY PRODUCTION AND STIMULATING BONE MARROW PROLIFERATION

Tadamitsu Kishimoto, Tondabayashi; Toshio Hirano, Ibaraki; Hiroshi Matsui, Kawasaki; Yoshiyuki Takahara, Kawasaki; Yukio Akiyama, Kawasaki, and Akira Okano, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Tadamitsu Kishimoto, Tondabayashi, both of Japan

Continuation of Ser. No. 81,746, Aug. 5, 1987, abandoned. This application May 4, 1992, Ser. No. 877,731

Claims priority, application Japan, Aug. 6, 1986, 61-184858; Aug. 27, 1986, 61-200433; Dec. 18, 1986, 61-302699; May 13, 1987, 62-116332

Int. Cl.[5] A61K *37/02*

U.S. Cl. 424—852 **2 Claims**

1. A method for stimulating bone marrow proliferation comprising:

administering to a subject in need thereof an effective amount of a non-glycosylated polypeptide having human B-cell differentiation factor activity, said polypeptide having PRO or ALA PRO as the N-terminal amino acid(s) and MET as the C-terminal amino acid and a formula selected from the group consisting of amino acid formula (I), (II), (III), and (IV).

5,362,490

HUMAN MYELOMONOCYTE INTERFERON-GAMMA, AND PROCESS FOR PREPARATION AND USE THEREOF

Masashi Kurimoto, and Masakazu Mitsuhashi, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 658,740, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 78,005, Jul. 21, 1987, abandoned, and a continuation-in-part of Ser. No. 379,318 Jul. 13, 1989, abandoned.

62,323

Claims priority, application Japan, Jul. 25, 1986, 61-176266; May 25, 1987, 62-125777; Jul. 25, 1988, 63-184069

Int. Cl.[5] A61K *37/66;* **C12P** *21/02;* **C07K** *7/00*

U.S. Cl. 424—85.5 **22 Claims**

1. A prophylactic and therapeutic composition for human interferon-gamma-susceptible diseases comprising an effective amount of human myelomonocyte interferon-gamma for preventing or treating said human interferon-gamma-susceptible diseases and a pharmaceutically acceptable carrier.

5,362,491

MODIFIED BIOLOGICALLY ACTIVE PROTEIN COMPOSITION

Yutaka Mizushima, 4-25-20, Daida, Setagaya-ku, Tokyo, Japan, assignor to Yutaka Mizushima; Asahi Glass Company Ltd. and Seikagaku Kogyo Co., Ltd., all of Tokyo, Japan

Division of Ser. No. 832,585, Feb. 7, 1992, Pat. No. 5,310,958, which is a division of Ser. No. 547,039, Jul. 2, 1990, Pat. No. 5,109,118. This application Feb. 2, 1994, Ser. No. 190,451

Claims priority, application Japan, Jul. 6, 1989, 1-174371; Nov. 29, 1989, 1-310056

Int. Cl.[5] A61K *37/26, 39/00*

U.S. Cl. 424—180.1 **11 Claims**

1. A biologically active protein composition for oral or local administration, which comprises

a modified biologically active protein consisting essentially of a biologically active protein covalently bonded to lecithin and a protease inhibitor which does not inhibit said modified biologically active protein.

5,362,492

METHOD OF INHIBITING MULTIPLE ORGAN FAILURE IN TRAUMA PATIENTS BY ADMINISTRATION OF SUPEROXIDE DISMUTASE

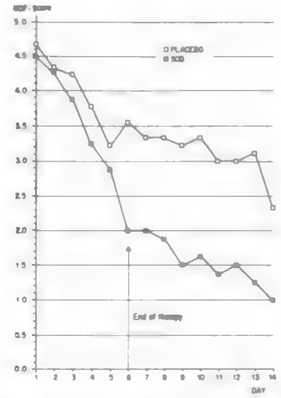
Achim Schuettler, Aachen; Leopold Flohé, Roetgen; Volker Buehren; Ingo Marzi, both of Homburg/Saar, all of Germany, and Otmar Trentz, Zurich, Switzerland, assignors to Gruenenthal GmbH, Stohlberg/Rhld., Germany

Continuation of Ser. No. 797,188, Nov. 25, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 21,722

Claims priority, application Germany, Dec. 4, 1990, 4038563

Int. Cl.[5] A61K *37/50, 37/02*

U.S. Cl. 424—94.4 **10 Claims**



1. A method of inhibiting multiple organ failure in a patient at risk thereof suffering from polytrauma caused by an accident wherein brain trauma as predominant injury is excluded, said method comprising administering to said patient an effective multiple organ failure inhibiting amount of superoxide dismutase.

5,362,493

PREPARATION OF REDOX POLYMER CATHODES FOR THIN FILM RECHARGEABLE BATTERIES

Terje A. Skotheim, Shoreham; Hung S. Lee, Rocky Point, both of N.Y., and Yoshiyuki Okamoto, Fort Lee, N.J., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 723,059, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 519,429, May 4, 1990, abandoned. This application Jul. 15, 1992, Ser. No. 913,412

Int. Cl.[5] H01M *4/04, 4/60*

U.S. Cl. 429—194 **7 Claims**

1. A method for forming a composite polymeric cathode material for use in solid state electrochemical cells, which comprises forming a physical mixture of a branched polysiloxane polymer electrolyte, a branched polysiloxane redox polymer, an ionizable alkali metal salt, and conducting carbon powder, said branched polysiloxane polymer electrolyte and branched polysiloxane redox polymer both containing radiation polymerizable, ethylenically unsaturated groups, and subjecting the physical mixture to actinic radiation to form a crosslinked polymer network.

5,362,494

COSMETIC, DERMO-PHARMACEUTICAL OR VESICLE-CONTAINING COMPOSITION INCLUDING CLYCEROL-DERIVED COMPOUNDS

Alexandre Zysman; Henri Sebag; Alain Ribier, all of Paris; Guy Vanlerberghe, Villevaude; Claude Mahieu, Paris, and Claude Berthelot, Les Pavillons Sous Bois, all of France, assignors to L'Oreal, Paris, France

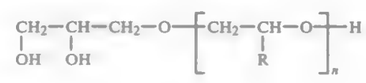
Filed Jul. 14, 1992, Ser. No. 910,174

Claims priority, application France, Nov. 14, 1990, 90 14149; Aug. 8, 1991, 91 10128

Int. Cl.[5] A61K *7/40, 9/10, 9/107, 9/127*

U.S. Cl. 424—401 **18 Claims**

1. A cosmetic or dermopharmaceutical composition comprising as a surfactant, at least one nonionic amphiphilic compound having formula (I):



(I)

wherein

R represents a radical selected from the group consisting of

(i) a linear or branched C_4–C_{28} alkyl or alkenyl, or a mixture thereof, and

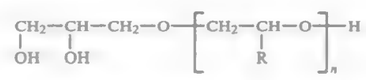
(ii) $—CH_2A$ wherein A represents —OR′, —SR′ or



wherein R′ represents a saturated or unsaturated hydrocarbon, and

n represents an average statistical value $\bar{n}$ greater than 1 and equal to not more than 6 and, when R represents $—CH_2A$, n also represents a value equal to 2.

9. A composition comprising a dispersion in an aqueous medium of vesicles bounded by one or more lamellae of a lipid phase containing at least one nonionic amphiphilic compound having formula (I):



(I)

wherein R represents (i) a linear C_{14}–C_{18} alkyl radical or (ii) $—CH_2A$ wherein A represents OR′ wherein R′ a linear C_{10}–C_{18} alkyl radical, and n represents an average statistical value $\bar{n}$ greater than 1 and equal to not more than 3 and, when R represents $—CH_2A$, n is also equal to 2.

5,362,495

INSERT MATERIAL FOR WIDENING THE GINGIVAL SULCUS

Patrick Lesage, 9, rue Constantine, 35400 Saint-Malo, France

PCT No. PCT/FR90/00417, § 371 Date Dec. 10, 1991, § 102(e) Date Dec. 10, 1991, PCT Pub. No. WO90/15587, PCT Pub. Date Dec. 27, 1990

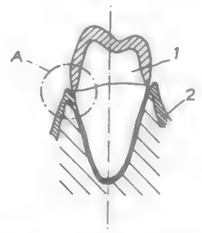
PCT Filed Jun. 13, 1989, Ser. No. 778,229

Claims priority, application France, Jun. 13, 1989, 89 07812

Int. Cl.[5] A61K *9/14, 47/36;* **A61C** *5/02*

U.S. Cl. 424—435 **21 Claims**

1. A method for widening the gingival sulcus, without bleeding or oozing, comprising inserting within the gingival sulcus a material in the form of a biocompatible paste which is injectable for external use, preferably hydrophilic, and having a plastic viscosity measured at 20° C. between about 13,000 and 30,000 Pascals second, wherein said material consisting of a



material selected from the group of white clay, seaweed meal and mixtures thereof.

5,362,496

METHOD AND THERAPEUTIC SYSTEM FOR SMOKING CESSATION

Richard W. Baker, Palo Alto, Calif.; Giancarlo Santus, Milan, Italy, and Susan Vintilla-Friedman, Cupertino, Calif., assignors to Pharmetrix Corporation, Menlo Park, Calif.

Filed Aug. 4, 1993, Ser. No. 103,262

Int. Cl.[5] A61F *13/00;* **A61K** *31/44*

U.S. Cl. 424—435 **12 Claims**

1. A method for treating a condition responsive to nicotine therapy comprising the steps of:

i) a first treatment with nicotine by transdermal administration to obtain nicotine blood levels of between 5 to 35 ng/mL for at least 12 hours; and

ii) a second treatment with nicotine by transmucosal administration to obtain maximum nicotine blood levels from 2 to 20 minutes after the transmucosal administration; and

wherein the transmucosal administration provides transient blood levels of nicotine about 5 ng/ml above that provided by the transdermal administration of nicotine.

5,362,497

TRANSDERMAL THERAPEUTIC COMPOSITION

Masayuki Yamada, Kawanishi; Muneo Nonomura, Suita, and Kohei Nishikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Continuation of Ser. No. 524,870, May 18, 1990, abandoned. This application Jan. 13, 1992, Ser. No. 820,020

Claims priority, application Japan, May 25, 1989, 1-133364

Int. Cl.[5] A61K *9/70;* **A61F** *13/15*

U.S. Cl. 424—449 **13 Claims**

1. A transdermal therapeutic composition which comprises:

(i) 0.1 to 20% of a pharmaceutically effective ingredient;

(ii) 1 to 50% (w/w) water-soluble substance which enhances transdermal absorption of the pharmaceutically effective ingredient;

(iii) 0.1 to 80% (w/w) fat-soluble substance which enhances transdermal absorption of the pharmaceutically effective ingredient; and

(iv) 0.1 to 10% (w/w) vinyl acetate-acrylic acid ester copolymer hydrolyzate capable of absorbing about 50 to 2000 times its own weight of water, whereby upon contact with said water swells to form a hydrogel.

5,362,498

PROCESS FOR PREPARING A BIOADHESIVE PHARMACEUTICAL DOSAGE FORM AND PHARMACEUTICAL DOSAGE FORM THUS PREPARED

Jean-Marc Aische, 17 rue Maréchal Galliéni, 63000 Clermond-Ferrand, France

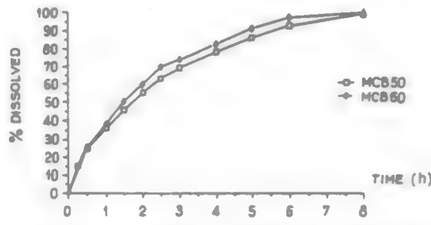
PCT No. PCT/FR91/00630, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/02209, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 30, 1991, Ser. No. 975,585

Claims priority, application France, Jul. 31, 1990, 90 09752

Int. Cl.[5] A61F *13/02;* **A61K** *47/42*

U.S. Cl. 424—435 **9 Claims**



1. Process for preparing a bioadhesive sustained-release pharmaceutical dosage form, comprising:

a) mixing at least a part of the active principles with a quantity of natural proteins representing at least 50% by weight of active principle, and with 0.5 to 10% of a hydrophilic polymer,

b) the mixture obtained at the end of step a is subjected to granulation in the presence of approximately 60% alcohol, followed by drying to bring it to a moisture content of approximately 3%.

c) the granules thereby obtained, after sizing, are mixed with standard formulation excipients, especially ballast materials, lubricants, flavorings and sweeteners,

d) the mixture obtained at the end of step c, is subjected to tabletting for the purpose of obtaining bioadhesive sustained-release tablets.

5,362,499

BURN REMEDIAL COMPOSITION USING NATURAL MATERIALS AND ITS PRODUCTION METHOD

Seung H. Lee, 332-12, Daeseong-Li, Oisuh-Meon, Kapyeong-Kun, Kyungki-Do 477-810, Rep. of Korea

Filed Jun. 24, 1993, Ser. No. 82,095

Claims priority, application Rep. of Korea, Dec. 16, 1992, 92-24472

Int. Cl.[5] A61K *35/12*

U.S. Cl. 424—547 **8 Claims**

1. A burn remedial composition which comprises from 50 to 90% of the total composition of burned abalone shell powder and sesame oil.

5,362,500

METHOD OF STABILIZING CHEWING GUM WITH AN ANTIOXIDANT CONTAINING TISSUE AND PRODUCT THEREOF

Pamela M. Mazurek, Chicago, Ill., and Christian Midon, Turckheim, France, assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 4, 1992, Ser. No. 986,461

Int. Cl.[5] A23L *3/3454*

U.S. Cl. 426—5 **25 Claims**

1. A stabilized, packaged chewing gum stick, comprising:

a chewing gum stick comprising a water soluble bulk portion, a water insoluble chewing gum base portion, and one or more flavoring agents; and

a chewing gum wrapper surrounding the chewing gum stick

consisting essentially of a middle layer of tissue paper, a first outer layer of wax mixed with free antioxidant, and a second outer layer of wax mixed with free antioxidant, the first and second outer layers being coated on both sides of the tissue paper;

whereby the free antioxidant in the chewing gum wrapper is not encapsulated except for being mixed with the wax, and retards oxidation of the one or more flavoring agents in the chewing gum stick, thereby prolonging the shelf life of the chewing gum stick.

5,362,501

METHOD FOR REMOVING OXYGEN FROM SOLUTIONS CONTAINING ACIDS

James C. Gopeland, Ashland, Ohio; Howard I. Adler, Oak Ridge, and Weldon D. Crow, Knoxville, both of Tenn., assignors to Oxyrase, Inc., Mansfield, Ohio

Division of Ser. No. 399,870, Aug. 29, 1989, Pat. No. 4,996,073. This application Feb. 11, 1991, Ser. No. 653,688

The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] A23B *7/10;* **A23K** *1/00;* **A23L** *1/236*

U.S. Cl. 426—12 **13 Claims**

1. A method for removing oxygen from an acidic solution comprising the steps of:

a) providing an acidic solution containing oxygen and a hydrogen donating substance, wherein said acidic solution has a pH of about 2.5 to about 6 and a temperature of about 4° C. to about 45° C.; and,

b) adding to the acidic solution a sufficient amount of isolated oxygen scavenging membrane fragments from an organism of the genus Acetobacter to reduce the oxygen present in the solution to water using the hydrogen supplied by the hydrogen donating substance.

5,362,502

REDUCING CHECKING IN CRACKERS WITH PENTOSANASE

Louise Slade; Harry Levine, both of Morris Plains; Stuart Craig, Morristown, and Henry Arciszewski, Franklin Lakes, all of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Division of Ser. No. 781,646, Oct. 25, 1991, Pat. No. 5,200,215, which is a continuation of Ser. No. 183,927, Apr. 20, 1988, abandoned. This application Feb. 8, 1993, Ser. No. 15,972

Int. Cl.[5] A21D *8/04*

U.S. Cl. 426—20 **14 Claims**

1. A method for reducing checking in crackers comprising forming a cracker dough by admixing cracker ingredients comprising water and flour which contains water-soluble hemicelluloses with an enzyme composition comprising pentosanase which hydrolyzes said water-soluble hemicelluloses to obtain hydrolysis products with reduced water hoiding capacity, holding the dough, machining the dough, and baking the dough to obtain crackers having a moisture content of less than about 5% by weight, the water soluble hemicellulose content of said flour being reduced by at least about 30% by weight in the production of said hydrolysis products, and at least about 30% by weight of said hydrolysis products having a linear degree of polymerization of 3 to less than about 100, wherein the enzymatic treatment and reduction in moisture content and moisture gradients during baking are such so as to reduce checking in the crackers.

5,362,503

PROCESS FOR THE PRODUCTION OF DRIED FRUITS

Josef Burri, Epalinges, and Pierre Nicod, Bottens, both of, assignors to Nestec S.A., Vevey, Switzerland

Filed Nov. 17, 1992, Ser. No. 977,594

Claims priority, application Switzerland, Dec. 13, 1991, 3697/91-6

Int. Cl.[5] A23B *7/10*

U.S. Cl. 426—50 **15 Claims**

1. A process for treating dried fruit comprising:

contacting and incubating dried fruit with a glycerol solution containing a carbohydrase enzyme in an amount of 0.05 to 0.5 parts enzyme by weight per 100 parts fruit, wherein incubation is carried out at a temperature of from 40° C. to 60° C. for a time sufficient so that the fruit absorbs at least 10% by weight glycerol;

inactivating the carbohydrase enzyme; and

drying the incubated fruit so that the fruit has a water activity of from 0.25 to 0.40.

5,362,504

EDIBLE MICROWAVE SUSCEPTOR COMPOSITION

Susan L. Kamper, Waconia, and Mary A. McGauley, Zimmerman, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 23, 1992, Ser. No. 903,112

Int. Cl.[5] A23D *9/00, 1/18;* **A23L** *1/035, 1/0522*

U.S. Cl. 426—89 **30 Claims**

1. An edible microwave susceptor composition for coating a food product to produce rapid surface heating on a food substrate on exposure to microwave energy capable of producing temperatures greater than 300° F., comprising by weight:

A. about 8% to 97% of the composition of an edible fat;

B. about 2% to 90% of the composition of a primary microwave absorbing polyhydric alcohol selected from the group consisting of glycerine, polyethylene glycols (PEG's), propylene glycol and mixtures thereof;

C. about 1% to 90% of a microwave absorbing emulsifier selected from the group consisting of lecithin, polyglycerol esters of oleic acid, sorbitan monoesters, acetylated monoglycerides, sodium stearoyl-2-lactylate, and mixtures thereof; and

D. about 0.10% to 30% of the composition of a supplemental microwave absorbing inorganic material selected from the group consisting of sodium potassium tartrate, trisodium phosphate, aluminum potassium sulfate, sodium hexametaphosphate, sodium aluminum phosphate, titanium dioxide, silicon dioxide, magnesium oxide, elemental iron and mixtures thereof.

5,362,505

COATING UNBLANCHED, RAW NUTS

Yen C. Hsieh, Cincinnati, Ohio; Anthony P. Richards, Gary, Ind.; Jose Alvarado, Chicago, Ill., and Benito Romanach, West Chester, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 973,400, Nov. 10, 1992, abandoned. This application Oct. 5, 1993, Ser. No. 131,810

Int. Cl.[5] A23G *3/00;* **A23L** *1/36, 1/052*

U.S. Cl. 426—93 **9 Claims**

1. A method for producing individual, crunch-confectionery-coated edible nuts, which method comprises the steps of:

a. applying a film-forming polysaccharide to unblanched, raw, edible nuts to provide from about 0.1% to about 5% of a polysaccharide coating thereon by weight of the nuts to thereby maintain the skins adhered to the nuts;

b. providing shear mixing to the polysaccharide-coated nuts in a rotating coating device, and during the shear mixing

i. applying to the polysaccharide-coated nuts a sucrose syrup which has a temperature of from about 120° to about 240° F. and which contains from about 50% to about 85% sucrose and from about 15% to about 50% water;

ii. heating the interior wall of the rotating coating device to a temperature of from about 300° to about 400° F. for a time sufficient to remove moisture from the applied sucrose syrup to form a crystalline sucrose coating on top of the polysaccharide coating on the nuts; and

iii. allowing the wall temperature in step (b)(ii) To rise to between about 350° F. and about 400° F. for a time sufficient to melt from about 5% to about 50% of the crystalline sucrose coating; and then

c. cooling the coated nuts to a temperature of below about 120° to

form individual crunch-confectionery coated edible nuts, wherein the sucrose coating on the individual nuts comprises from about 5% to about 50% amorphous sucrose and from about 50% to about 95% crystalline sucrose.

5,362,506

Patent Not Issued For This Number

5,362,507

METHOD OF PROCESSING FRESHLY SLAUGHTERED FOWL MEAT

Wolfgang Ludwig, Highland, N.Y., assignor to WTI, Inc., Highland, N.Y.

Filed Nov. 19, 1993, Ser. No. 154,951

Int. Cl.[5] A23L *1/315*

U.S. Cl. 426—281 **16 Claims**

1. A method of processing freshly-slaughtered fowl meat to avoid toughness of the meat without employing an aging step, comprising the steps of:

(a) obtaining a piece of freshly-slaughtered fowl meat prior to, during or immediately after onset of substantial rigor mortis;

(b) mechanically working into said piece of fowl meat, prior to, during or immediately after onset of substantial rigor mortis, an aqueous solution consisting essentially of water and a diphosphate at a concentration and for a time period sufficient to bring about a diphosphate level in said piece of fowl meat of substantially 0.05 to substantially 0.5% by weight thereof, thereby eliminating a need for extensive preprocessing or prefreezing aging of the fowl meat; and

(c) thereafter further processing said piece of fowl meat and/or freezing and wrapping the piece of fowl meat.

5,362,508

PROCESS FOR PREPARING SOFT CENTERS IN FOOD PRODUCTS

Edward L. Wheeler, Fairfield, and G. Curtis Busk, Jr., Chester, both of N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 804,140, Dec. 6, 1991, Pat. No. 5,258,197, which is a continuation-in-part of Ser. No. 624,056, Dec. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,161, Sep. 20, 1989, abandoned. This application Aug. 3, 1992, Ser. No. 924,724

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—302 **25 Claims**

1. A process for preparing a food product containing regions of contrasting textures comprising formulating a first fat-containing composition and then coating the composition with a second composition containing a different fat comprising at least 25% a mixture of triglycerides bearing both long, saturated C_{16} to C_{22}fatty acid residues and short C_2 to C_4 acid residues that migrates into the fat in the first composition upon equilibrating, under conditions effective to soften the first composition while retaining the structural integrity of the second composition.

5,362,509

METHOD AND APPARATUS FOR MAKING A FROZEN MASS OF DRINKABLE PRODUCT READY FOR TREATMENT

Johannes C. A. Martens, Oosterhout, Netherlands, assignor to Typhoon-Martens B.V., Raamsdonksveer, Netherlands

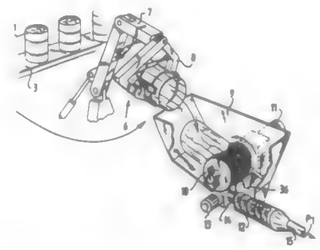
PCT No. PCT/NL92/00201, § 371 Date Jul. 12, 1993, § 102(e) Date Jul. 12, 1993, PCT Pub. No. WO93/09684, PCT Pub. Date May 27, 1993

PCT Filed Nov. 13, 1992, Ser. No. 87,717

Claims priority, application Netherlands, Nov. 13, 1991, 9101890

Int. Cl.[5] F25C *5/00*

U.S. Cl. 426—524 **17 Claims**



1. A method of treating a frozen mass of drinkable product wherein said frozen mass is stored in a frozen state in a container, comprising

heating the container on all sides for a predetermined time so as to thaw an outside layer of said frozen mass,

removing the frozen mass from the container,

mechanically dividing the frozen mass into a plurality of frozen pieces, and

supplying heat to the plurality of frozen pieces such that a maximum temperature of an obtained liquid is from 2° C. to 5° C.

5,362,510

PROCESSED STARCH AND BAKERY FOODS UTILIZING SAME

Naoyuki Mizoguchi, Itami; Yoshifumi Yanetani, Nara, and Naoko Yamashita, Osaka, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo, Japan

Filed Jun. 30, 1992, Ser. No. 906,710

Claims priority, application Japan, Jul. 3, 1991, 3-190656

Int. Cl.[5] A21D *2/18*

U.S. Cl. 426—549 **7 Claims**

1. A processed starch characterized by:

(i) a hot water solubility of not more than 8%,

(ii) the starch being in the form of particles,

(iii) less than 5% of the particles remain on a 60 mesh sieve,

(iv) a ratio of a cold water swelling power (Sc) to a hot water swelling power (Sh) of from 1.2 to 0.8 and,

(v) the cold water swelling power being from 4 to 15.

5,362,511

METHOD OF PRODUCTION OF EXTRUDED PROTEIN-CONTAINING CEREAL GRAIN-BASED FOOD PRODUCTS HAVING IMPROVED QUALITIES

Maria D. Villagran; David A. Lanner; Lori J. Toman, all of Cincinnati; Martin A. Mishkin, Loveland, and Nancy C. Dawes, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 14, 1992, Ser. No. 943,806

Int. Cl.[5] A23L *1/10;* **A23P** *1/12*

U.S. Cl. 426—549 **7 Claims**

1. A process for the production of corn-based extruded fried food product comprising the steps of:

feeding a cereal grain flour and water together with a pro-

tein source to an extruder, said cereal grain being selected from the group consisting of white and yellow corn, and said protein source being selected from the group consisting of soy protein concentrate and isolate, pea protein, corn protein, rice protein, and dairy proteins;

extruding said admixture to form a dough, said dough comprising from about 70 to 95 percent by weight (dry basis) of said cereal grain flour, and from about 4.5 to 25 percent by weight of said protein source (dry basis), said cereal grain flour comprised of non-pregelatinized cereal grain and the remainder from 0 up to about 40% by weight (dry basis) of partially pre-gelatinized cereal grain;

forming said dough into a sheet and cutting said sheet into multiple segments of desired shape; and

deep frying said segments to form said food product.

5,362,512

LIQUID BREAD IMPROVERS

Jorge A. Cabrera, Voorschoten, and Caesar W. Heeren, Schiedam, both of Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Apr. 14, 1993, Ser. No. 48,402

Claims priority, application European Pat. Off., Apr. 29, 1992, 92201189.5

Int. Cl.[5] A21D *2/16, 8/04;* **A23D** *9/00*

U.S. Cl. 426—601 **8 Claims**

1. Liquid bread-improving composition comprising:

75–95 wt. % of a vegetable oil having an $N_{20}<2.0$;

1–5 wt. % of a hydrogenated vegetable oil having a melting point between 60° and 70° C.; 1–5% of a partly hydrogenated vegetable oil having a melting point between 35°–45° C.;

2–20 wt. % of emulsifiers, at least including diacetyl tartaric esters from saturated or unsaturated mono- and/or diglycerides;

0–0.2 wt. % of flavors;

0.1–0.5 wt. % of bread-improving enzymes;

0.1–1.0 wt. % of oxidants,

wherein the oil present in a crystallized form has the crystal size of less than 25 μm and the average particle size of all particles present in the composition is less than 50 μm.

5,362,513

METHOD OF MANUFACTURING A PATTERN OF CONDUCTIVE FINE-LINE FILMS AND SETTING INK USED FOR THE SAME

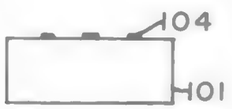
Mikinari Shimada, Yawata; Hirotoshi Watanabe, Osaka; Satoru Fujii, Takatsuki; Masato Hagino, Osaka, and Masahide Tsukamoto, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 10, 1991, Ser. No. 698,563

Claims priority, application Japan, May 10, 1990, 2-120247; May 10, 1990, 2-120248

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—58 **15 Claims**



1. A method of manufacturing a pattern of conductive fine-line films, comprising the steps of:

printing a setting ink on a substrate to form a lower layer pattern so that exposed portions of the substrate separated by the lower pattern remain on the substrate, the setting ink being removable by firing at high temperature;

setting the setting ink of the lower layer pattern;

printing a metalo-organic compound paste layer on said substrate on which the lower pattern has been formed to form an upper layer pattern so that all of the exposed portions of the substrate and at least a part of the lower layer pattern are covered by the upper layer pattern; and

firing at high temperature to remove the lower layer pattern and a portion of the upper layer pattern covering the lower layer pattern leaving the remaining portion of the upper layer pattern as a conductive pattern on a substrate.

5,362,514

PROCESS FOR PRODUCING AN ANODE FOR ELECTROCHEMICAL CELLS

Josef Flatz, Waldmichelbach; Hermann W. Grünling, Hirschberg, and Jörg Sopka, Schwetzingen, all of Germany, assignors to ABB Patent GmbH, Mannheim, Germany

Filed Aug. 3, 1993, Ser. No. 101,575

Claims priority, application Germany, Aug. 3, 1992, 4225575

Int. Cl.[5] B05D *5/12;* **H01M** *6/36*

U.S. Cl. 427—74 **12 Claims**

1. A process for producing an anode for an electrochemical cell, comprising a conductive glass substrate on which a layer of porous metal oxide is applied, which comprises:

(1) preparing, in a dry atmosphere, a paste of highly dispersed said metal oxide with the addition of at least one dyestuff and an alcohol solution acting as a binder;

(2) applying the prepared paste as a thin layer to the glass plate previously coated with a transparent, electrically conducting layer; and

(3) heat treating the electrically conductive glass plate with the pasty metal oxide layer coated thereon at temperatures below 300° C.

5,362,515

POLY(VINYL ALCOHOL)COPOLYMER SIZES HAVING HIGH CAPACITY TO BE DESIZED

Richard A. Hayes, Houston, Tex., and George D. Robinson, Matthews, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1994, Ser. No. 203,136

Int. Cl.[5] D06M *15/333*

U.S. Cl. 427—155 **4 Claims**

1. A process for producing woven textiles, comprising:

a) sizing yarn to be woven, with an aqueous solution of a poly(vinyl alcohol) copolymer containing from about 7 to 15 weight percent units derived from a comonomer selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, a dialkyl fumarate and a dialkyl maleate, wherein the alkyl groups contains from 1 to 8 carbon atoms;

b) weaving the yam to produce woven textile;

c) desizing the resulting woven textile with an aqueous caustic solution having a concentration between 0.001 and 10 weight percent caustic material in water, and

d) optionally washing the caustic desized woven textile with water.

5,362,516

METHOD OF PREPARING AN ADHESIVE ARTICLE

Kenneth D. Wilson, Stillwater, Minn.; Larry A. Meixner, St. Croix Falls; Sharon R. Bemis, Osceola, both of Wis.; Clyde D. Calhoun, and Buren R. Ree, both of Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 959,456, Oct. 9, 1992, Pat. No. 5,296,277. This application Dec. 7, 1993, Ser. No. 163,090

Int. Cl.[5] B05D *5/10*

U.S. Cl. 427—207.1 **5 Claims**

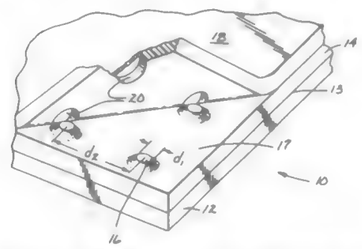
1. A method of preparing an adhesive article comprising the steps:

(a) preparing a slurry of beads;

(b) coating the slurry onto an embossed liner to fill depressions in the embossed liner;

(c) wiping the embossed liner to remove excess slurry;

(d) coating the filled embossed liner with an adhesive solution; and



(e) allowing the adhesive solution to absorb into and around the beads before drying.

5,362,517

METHODS OF MAKING CRYSTALLINE-COATED POLYMERIC MATERIALS

Peter Flesher, Bingley; David Farrar, Bradford; Malcolm Skinner, Bradford, and Brian Dymond, Bradford, all of England, assignors to Allied Colloids Limited, West Yorkshire, United Kingdom

PCT No. PCT/GB92/00868, § 371 Date Jan. 15, 1993, § 102(e) Date Jan. 15, 1993, PCT Pub. No. WO92/20727, PCT Pub. Date Nov. 26, 1992

PCT Filed May 14, 1992, Ser. No. 960,397

Claims priority, application United Kingdom, May 17, 1991, 9110719

Int. Cl.[5] B05D *7/02;* **B32B** *27/06;* **C08K** *9/02, 9/10*

U.S. Cl. 427—222 **14 Claims**

1. A method of forming coated bodies of water-soluble or water-swellable polymeric material coated with substantially uninterrupted continuous coating of water-soluble crystalline material obtained from an aqueous solution of crystallizable material wherein at least 90% by weight of said bodies have a size below 1 mm, the method consisting of mixing a mass of the polymeric material in the form of particles at least 90% by weight of which are below 1 mm with a solution of the crystallizable material that is at least substantially saturated and adsorbing the solution into the particles and thereby crystallizing the crystalline material on to the particles as a coating, and optionally drying the resultant mass, characterized in that the amount and concentration of solution and the mixing conditions are selected such that the total amount of water, including water of hydration, in the mass is below 40% by weight and agglomeration of the particles during the process is restricted to give a particle size in the resultant mass, after the optional drying, wherein at least 50% by weight of the particles are below 1 mm, and if necessary screening the resultant mass to recover a product at least 90% by weight of which has a size below 1 mm.

5,362,518

METHOD FOR WATERCOLOR PAINTING USING ROCK SALT

Rodney J. Johnson, 6400 Hwy. 66, Ashland, Oreg. 97520

Filed Mar. 9, 1994, Ser. No. 208,462

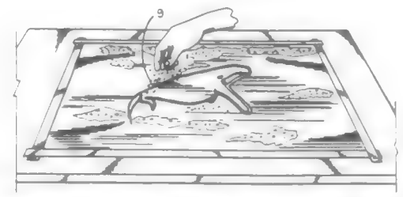
Int. Cl.[5] B05D *1/38*

U.S. Cl. 427—259 **12 Claims**

1. A method for creating a decorative painting, comprising the steps:

a) applying watercolor to a paintable paper surface;

b) applying crystals of rock salt to said watercolor while said watercolor is in a wet state;



c) drying the watercolor onto said paintable paper surface; and

d) removing the crystals of rock salt.

5,362,519

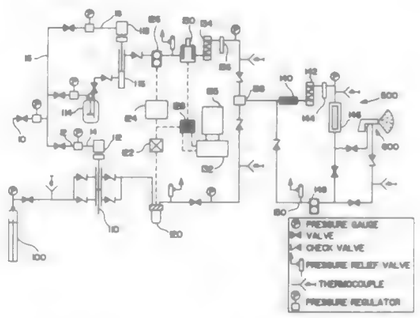
POLYESTERS PARTICULARLY SUITABLE FOR USE IN COATING COMPOSITIONS WHICH ARE SPRAYED WITH COMPRESSED FLUIDS AS VICOSITY REDUCING AGENTS

John N. Argyropoulos, Scott Depot; Cheryl C. Bone, Saint Albans, and Charles W. Glancy, South Charleston, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 790,895, Nov. 12, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,541

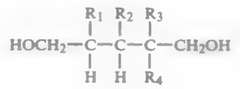
Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—385.5 **14 Claims**



1. A process for reducing the viscosity of a composition containing one or more polyesters comprising forming a liquid mixture in a closed system comprising:

a) a composition containing at least one or more polyesters comprising the reaction product of (i) a liquid hydrocarbon diol comprised of primary hydroxyl groups of 8 or more carbon atoms in which the primary hydroxyl groups are separated by 4 or more carbon atoms linearly arranged and in which at least one of said carbon atoms linearly arranged is a disubstituted carbon atom or at least 2 of said carbon atoms linearly arranged are monosubstituted carbon atoms, said liquid hydrocarbon diol represented by the formula:



wherein R_1 is hydrogen or linear or branched alkyl having from 1 to 3 carbon atoms, and R_2, R_3 and R_4 are the same or different and are hydrogen or linear or branched alkyl having from 1 to 4 carbon atoms, said liquid hydrocarbon

diol existing as a liquid at a temperature of 35° C. or less, and/or a derivative of said liquid hydrocarbon diol, provided when said polyester is an unsaturated polyester, then said liquid hydrocarbon diol is other than 2,4-diethyl-3-propyl-1,5-pentanediol, and (ii) a polyfunctional carboxylic acid and/or an acid anhydride; and

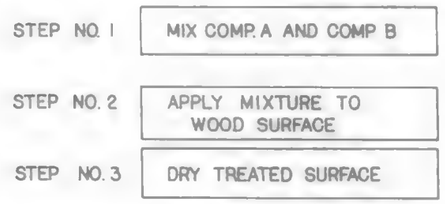
b) at least one compressed fluid in at least an amount which when added to (a) is sufficient to render the viscosity of said mixture less than about 10,000 centipoise, wherein the compressed fluid is a gas at standard conditions of 0° C. and one atmosphere (STP).

5,362,520

BLEACHING AND FINISHING COMPOSITION AND METHOD

Ricardo M. Rodriguez, 24 Broadway, Apt. 7, Jersey City, N.J. 07306

Filed Aug. 23, 1993, Ser. No. 110,012
Int. Cl.[5] B05D *1/00, 7/06*
U.S. Cl. 427—393 **6 Claims**



1. A method of bleaching and finishing a solid substrate, comprising the steps of:

obtaining a first component blend consisting essentially of, a quantity of a latex resin in a range spanning 20–30% by weight of said first component blend and

a quantity of a bleaching solution present in a range spanning 70–80% by weight of said first component blend, obtaining a second component blend consisting essentially of a quantity of a latex resin in a range spanning 20–35% by weight of said second component blend,

a quantity of an alcohol selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol, and propyl alcohol in a range spanning 13–16% by weight of said second component blend, a quantity of water in a range spanning 48–60% by weight of said second component blend,

a quantity of a substrate treating material in range spanning 0.5–1.0% by weight of said second component blend, and

a quantity of an alkalizing agent in a range spanning 2–3% by weight of said second component blend,

mixing the first component blend with the second component blend to form a mixture, applying the mixture to a substrate surface, and drying the substrate surface.

5,362,521

METHOD OF FORMING COATING FILMS

Tohru Ozaki, Aichi; Akira Kasari, Hiratsuka, and Shigeru Nakamura, Owariasahi, all of Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Filed Mar. 24, 1993, Ser. No. 36,407
Claims priority, application Japan, Mar. 27, 1992, 4-101695; Apr. 3, 1992, 4-112257
Int. Cl.[5] B05D *1/36, 7/00*
U.S. Cl. 427—407.1 **6 Claims**

1. A method of forming a coating film by forming in sequence a pigmented base coat and a clear top coat on a substrate followed by finishing with a two-coat one-bake technique, the method being characterized by

(a) using, as a coating composition for the pigmented base coat formation, a composition consisting essentially of:

(1) a resin having an OH group;

(2) an amino resin;

(3) a polyorganosiloxane which has, on average, at least two groups per molecule, each group is selected from the group consisting of a silanol and an alkoxysilane and has an average molecular weight of at least 1,000;

(4) a metal chelate compound;

(5) a flaky metal powder and/or mica powder; and

(6) an organic solvent, and

(b) using, as a coating composition for the clear top coat formation, a composition consisting essentially of:

(1) a resin having an OH and epoxy base and containing at least one group selected from the group consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom;

(2) a curing catalyst; and

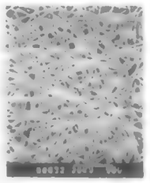
(3) an organic solvent.

5,362,522

PROCESS FOR THE PRODUCTION OF A MEMBRANE

Sami A. I. Barri, Berkshire; Graham J. Bratton, Kent, and Timothy de Villiers Naylor, Egham, all of England, assignors to The British Petroleum Company, p.l.c., London, United Kingdom

Continuation of Ser. No. 776,951, Oct. 15, 1991, abandoned. This application Jan. 27, 1993, Ser. No. 9,425
Claims priority, application United Kingdom, Oct. 19, 1990, 9022836.2
Int. Cl.[5] B05D *1/18*
U.S. Cl. 427—435 **8 Claims**



1. A process for the production of a membrane comprising a film of a crystalline material which is a molecular sieve with a crystal structure made up of tetrahedra joined together through oxygen atoms to produce an extended network with channels of molecular dimensions, said film being over the pores of a porous support, which process comprises immersing at least one surface of said porous support in a mixture including a synthesis gel which is capable of crystallising to produce Said crystalline material; inducing crystallisation of said gel so that said material crystallises on the support; removing the support having a film of Said crystalline material from the remaining mixture: and repeating these steps one or more times to obtain a membrane in which the material is crystallized directly from the support and bonds directly to the support.

5,362,523

METHOD FOR THE PRODUCTION OF COMPOSITIONALLY GRADED COATINGS BY PLASMA SPRAYING POWDERS

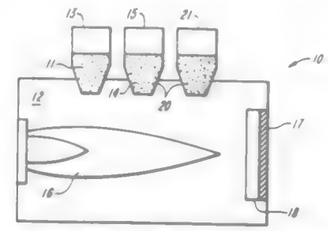
Igor V. Gorynin; Boris V. Farmakovsky; Alexander P. Khinsky; Karina V. Kalogina, all of Leningrad, U.S.S.R.; Alfredo V. Riviere, Caracas, Venezuela; Julian Szekely, Weston, and Navtej S. Saluja, Cambridge, both of Mass., assignors to Technalum Research, Inc., Cambridge, Mass.

Continuation of Ser. No. 755,077, Sep. 5, 1991, abandoned. This application Nov. 23, 1992, Ser. No. 980,132
Int. Cl.[5] C23C *4/12;* **B05D** *1/12*
U.S. Cl. 427—446 **23 Claims**

1. A method for the production of a coating with a compositional gradient, comprising the steps of:

introducing a powder into a plasma torch, said powder comprising a first component of said coating and said powder capable of conversion into a second component of said coating;

applying said powder from said plasma torch onto a substrate under reaction conditions sufficient to convert a portion of said powder into said second component,



whereby a mixture of said first component and said second component results; and

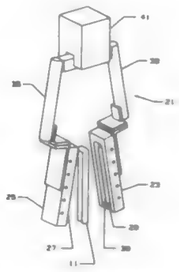
adjusting said reaction conditions during application of said powder from said plasma torch onto said substrate such that an increasing proportion of said powder is converted to said second component as application progresses and a compositionally graded coating is obtained.

5,362,524

METHOD FOR COATING ASYMMETRIC GLASS ENVELOPE FOR LAMP BY ELECTROSTATIC COATING

Arunava Dutta, Chestnut Hill; Mark A. Morrison, Ipswich; Leonard V. Dullea, Peabody; Richard A. Kingston, Beverly, and Joseph A. Olsen, Rockport, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 29, 1992, Ser. No. 998,086
Int. Cl.[5] B05D *1/06, 7/22*
U.S. Cl. 427—476 **29 Claims**



1. A method for coating electrically charged phosphor particles on an interior surface of an asymmetric fluorescent glass envelope by providing an electric field having a desirable configuration and strength while limiting electric current and maintaining the temperature of the glass envelope at a temperature conducive for coating comprising enclosing and contacting at least a portion of a fluorescent glass envelope with at least one electrically conductive charge retaining member, said charge retaining member being maintained at a suitable temperature for coating, issuing a stream of electrically charged phosphor particles into the interior of said glass envelope by transporting said phosphor particles in a carrier gas stream through a high voltage probe generated corona, said electrically conductive charge retaining member being at a different electrical potential than said high voltage probe for attracting said charged phosphor particles to said interior surface of said glass envelope, maintaining contact between said glass envelope and said electrically conductive charge retaining member for dissipating electric charge from said phosphor particles to said charge retaining member, maintaining said electrically conductive charge retaining member substantially electrically isolated wherein electrical charge in or on said member increases during electrostatic coating causing the electric potential of said member to increase whereby electric current associated with the high voltage probe due to said transfer of charge to said charge retaining member is limited, and discharging said electric charge from said member after said coating.

5,362,525

PROCESS FOR MODIFYING FLUORINE RESIN SURFACES

Masanobu Nishii, Kyoto; Yuichi Shimizu, Mino; Shunichi Kawanishi, Neyagawa; Shunichi Sugimoto, Hirakata; Tadaharu Tanaka, Neyagawa, and Yosuke Eguchi, Takatsuki, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Kurashiki; Japan Atomic Energy Research Institute, Tokyo and Radiation Application Development Association, Tokai, all of Japan

Filed Dec. 7, 1993, Ser. No. 162,702
Claims priority, application Japan, Dec. 8, 1992, 4-327822
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—554 **5 Claims**

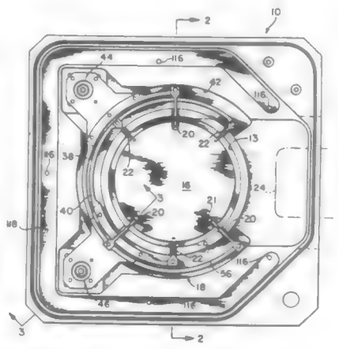
1. A process for modifying surfaces of fluorine resins comprising irradiating an ultraviolet laser beam on said surfaces in the presence of an inorganic silicon compound selected from the group consisting of silicates, silicon oxide silicon nitride and silicon carbide.

5,362,526

PLASMA-ENHANCED CVD PROCESS USING TEOS FOR DEPOSITING SILICON OXIDE

David N. Wang, Cupertino; John M. White, Hayward; Kam S. Law; Cissy Leung, both of Union City; Salvador P. Umotoy, Pittsburg; Kenneth S. Collins, San Jose; John A. Adamik, San Ramon; Ilya Perlov, Mountain View, and Dan Maydan, Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Division of Ser. No. 944,492, Dec. 19, 1986, Pat. No. 5,000,113. This application Jan. 23, 1991, Ser. No. 645,999
The portion of the term of this patent subsequent to Jan. 9, 2007, has been disclaimed.
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—573 **15 Claims**



1. A TEOS based, plasma enhanced, CVD process for depositing a film of a silicon oxide having improved step coverage onto a surface of a semiconductor wafer having small dimension stepped topographies, such wafer being positioned inside a vacuum chamber to receive the silicon oxide, comprising the steps of:

heating the wafer to a temperature in the range of about 200 degrees C. to 500 degrees C.;

pressurizing the chamber to between about 1 to 50 torr;

dispensing toward the wafer a gas mixture which includes an effective amount of tetraethylorthosilicate ("TEOS")

from a generally planar dispensing area which is close to and substantially parallel to the wafer surface, the gas mixture being dispensed uniformly over the wafer surface; and

applying an effective amount of RF power between the dispensing area and the wafer, to excite the gas mixture into a plasma state in a region between the wafer and the dispensing area;

so that a layer of silicon oxide is deposited onto the wafer at a deposition rate greater than 400 angstroms per minute, said deposited silicon oxide layer film quality and step coverage adequate for VLSI semiconductor fabrication.

5,362,527

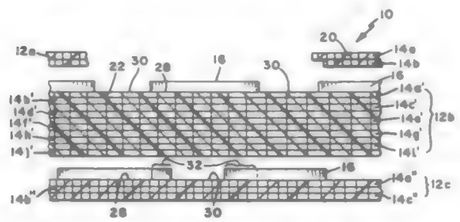
FLEXIBLE COMPOSITES HAVING RIGID ISOLATED PANELS AND ARTICLES FABRICATED FROM SAME

Gary A. Harpell; Dusan C. Prevorsek, both of Morristown, and Max W. Gerlach, Hackettstown, all of N.J., assignors to AlliedSignal Inc., Morristownship, Morris County, N.J.

Continuation of Ser. No. 705,682, May 24, 1991, abandoned. This application Jan. 21, 1993, Ser. No. 6,914

Int. Cl.[5] F16B *2/00*

U.S. Cl. 428—33 **42 Claims**



1. A flexible composite comprising one or more composite layers, at least one of said composite layers comprising at least two flexible layers each of which comprises a plurality of rigid planar bodies positioned on a surface thereof out of contact with each other forming a pattern of covered regions formed from said layers and said bodies and uncovered regions formed from said flexible layers, said flexible layers positioned such that the covered region of one flexible layer is in alignment with said uncovered region of an adjacent flexible layer such that at least about 85 area % of said uncovered of one flexible layer is aligned with said planar bodies of an adjacent flexible layer, and said flexible composite having an amount of drape of at least about 8 inches.

5,362,528

MULTI-LAYER PIPE CONDUIT HAVING COMPONENTS OF PLASTIC MATERIAL, INORGANIC FILLER MATERIAL AND GLASS FIBERS

Börge Carlström, Oberwil, Switzerland, assignor to Hobas Engineering, Basel, Switzerland

Division of Ser. No. 411,562, Sep. 22, 1989, Pat. No. 5,202,076. This application Jan. 6, 1993, Ser. No. 1,090

Claims priority, application Switzerland, Sep. 23, 1988, 3542/88

Int. Cl.[5] A47G *19/22*

U.S. Cl. 428—34.5 **4 Claims**

1. Pipe conduit component made of polyester resin, filler material and glass fibers, wherein the component is produced in accordance with the steps of:

inserting a filler material and polyester resin into a rotating mold in a mixing ratio of filler to resin greater than 1:2 by weight;

separating said filler material and said resin in said mold by rotating said mold at a predetermined speed and for a predetermined time;

inserting glass fibers into said mold;

forcing said glass fibers into said filler material and said resin by rotating said mold at another predetermined speed and for another predetermined time and;

repeating the above process at least once;

wherein the component comprises thin layers of glass fibers alternating with thin layers substantially free of glass fibers, the layers substantially free of glass fibers being arranged to contain at least 50% by weight filler material and the layers with glass fibers at least30% by weight filler material.

5,362,529

THERMOPLASTIC LAMINATES

Joachim Mügge, Haltern; Stefan Röber, Marl; Roland Feinauer, Marl, and Hans Jadamus, Marl, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Feb. 12, 1993, Ser. No. 17,190

Claims priority, application Germany, May 12, 1992, 4215609

Int. Cl.[5] B32B *15/08*

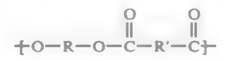
U.S. Cl. 428—35.7 **10 Claims**

1. A thermoplastic laminate comprising

I. at least one layer of a molding composition comprising a polyamide of a molecular weight (number average) of above 5,000 with a relative viscosity in the range of 1.5 to 2.8, and

II. at least one layer of a molding composition comprising a mixture of

a. 60 to 99% by weight of a linear, partially or wholly crystalline thermoplastic polyester of the structure:



where R is a divalent branched or straight-chain aliphatic and/or cycloaliphatic radical having 2 to 12 carbon atoms in the carbon chain, and R' is divalent aromatic radical having 6 to 20 carbon atoms in the carbon skeleton, and

b. 1 to 40% by weight of a compound containing at least two isocyanate groups,

wherein component II contains isocyanate groups originating from component IIb at a concentration of between 0.03 and 3% by weight, wherein said two layers I, and II, are cohesively bonded directly to one another.

5,362,530

GAS-AND-OIL IMPERMEABLE HOSE CONSTRUCTION

Tetsu Kitami, Hadano; Osamu Ozawa, Hiratsuka, and Jun Mito, Kanagawa, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Japan

Continuation of Ser. No. 764,849, Sep. 24, 1991, abandoned. This application Dec. 9, 1993, Ser. No. 163,733

Claims priority, application Japan, Sep. 26, 1990, 2-256719; Oct. 3, 1990, 2-266085

Int. Cl.[5] F16L *11/08*

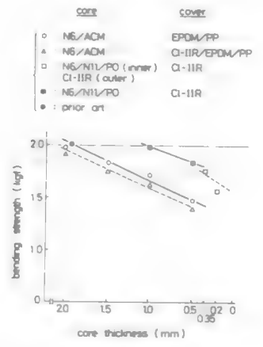
U.S. Cl. 428—36.2 **33 Claims**

1. A highly gas-impermeable, moisture-proof, flexible hose comprising:

(a) an inner tube formed from a first composition comprised of a graft polymer alloy having a continuous phase constituted of at least one polyamide resin, and a disperse phase composed of an acrylic rubber, said one polyamide resin having been grafted with said acrylic rubber;

(b) a reinforcing layer disposed over the inner tube and formed of a synthetic fibrous material or a metallic wiry material; and

(c) an outer cover laminated around the reinforcing layer and formed from a second composition comprised of a thermoplastic elastomer having (a) a continuous phase constituted of a polyolefin resin, and (b) a disperse phase composed of at least one of an ethylene-propylene-diene



rubber and a butyl-based rubber, said one rubber having been subjected to vulcanization.

5,362,531

CONTAINER CLOSURES, SEALED CONTAINERS AND SEALING COMPOSITIONS FOR THEM

David N. Samuel, Nr Sandy, and Richard S. Williams, Impington, both of England, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 711,845, Jun. 7, 1991, Pat. No. 5,183,848, which is a division of Ser. No. 370,546, Jun. 23, 1989, abandoned. This application Oct. 23, 1992, Ser. No. 967,468

Claims priority, application United Kingdom, Jun. 29, 1988, 8815487

Int. Cl.[5] B65D *41/00*

U.S. Cl. 428—36.6 **9 Claims**

1. A container closure having reduced oxygen permeability comprising a plastic closure, the closure having at least one surface coated with a composition comprised of a polymer matrix blend formed of polyethylene, an elastomer selected from the group consisting of ethylene propylene copolymers, ethylene propylene diene copolymers, butyl rubber, styrene butadiene rubber, carboxylated styrene butadiene rubber, polyisoprenes, styrene isoprene styrene block copolymers, styrene butylene styrene block copolymers, styrene ethylene butylene styrene block copolymers and blends thereof; and an ethylene vinyl alcohol polymer and wherein the composition is coated in fluid or molten form and allowed to solidify on the surface.

5,362,532

WATER SOLUBLE MULTILAYER FILM FOR PACKAGING ALKALINE MATERIALS

Amir Famili, Schnecksville; F. Lennart Marten, Macungie, and James F. Nangeroni, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 703,429, May 17, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,060

Int. Cl.[5] B32B *1/08*

U.S. Cl. 428—36.6 **29 Claims**

1. A multilayer structure consisting essentially of a first layer consisting of a water insoluble thermoplastic acid functional polymer which is soluble in aqueous alkaline medium and is selected from the group consisting of a copolymer of an alkyl (meth)acrylate and a (meth)acrylic acid, a copolymer of ethylene and acrylic acid, and a copolymer of styrene and maleic anhydride and a second layer consisting of a partially hydrolyzed, thermoplastic polyvinyl alcohol.

5,362,533

RUBBER COMPOSITION

Hideo Fukuda, Yokohama, and Hideyoshi Shimoda, Kamakura, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,994

Claims priority, application Japan, Feb. 8, 1992, 4-056949

Int. Cl.[5] C08L *9/02, 23/26, 33/04, 19/00*

U.S. Cl. 428—36.8 **15 Claims**

1. A rubber composite comprising (i) a partially hydrogenated unsaturated nitril-conjugated diene copolymer having an iodine value not larger than 120, (ii) an ethylene-propylene copolymer and (iii) at least one material selected from the group consisting of an ethylene-vinyl acetate copolymer, a rubber comprising a copolymer of 30 to 99.9% by weight at least one acrylate selected from the group consisting of an alkyl acrylate and an alkoxyalkyl acrylate, 0.1 to 10% by weight of a crosslinkable monomer and 0 to 70% by weight of at least one copolymerizable ethylenically unsaturated monomer, and a halogenated butyl rubber, wherein the amounts of the components (i), (ii) and (iii) are 40 to 90% by weight, 5 to 40% by weight and 5 to 20% by weight, respectively, based on the total weight of the these components (i), (ii) and (iii).

5,362,534

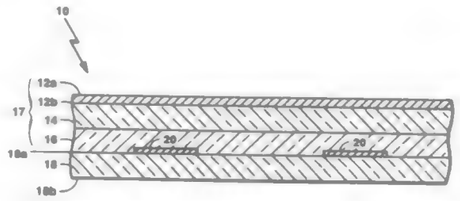
MULTIPLE LAYER PRINTED CIRCUIT BOARDS AND METHOD OF MANUFACTURE

Darryl J. McKenney, Milford, and Robert D. Cyr, Manchester, both of N.H., assignors to Parlex Corporation, Methuen, Mass.

Filed Aug. 23, 1993, Ser. No. 110,437

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—40 **14 Claims**



1. A printed circuit board comprises: a coated conductive foil layer including:

a conductive foil;

a cured adhesive layer disposed on a first surface of said conductive foil wherein said cured adhesive layer corresponds to a dielectric distance control layer; and

a semi-cured adhesive layer disposed over the cured adhesive layer; and

a substrate having a first surface with a strip conductor disposed thereon and having a second opposing surface, wherein the first surface of said substrate is disposed against the semi-cured adhesive layer of said conductive foil layer.

5,362,535

LOCATION BOARD IN A COVERING MEMBER OF AUTOMOTIVE SEAT

Ayaru Sasaki; Youichiro Haraguchi, and Shigeki Kon, all of Akishima, Japan, assignors to Tachi-S Co., Ltd., Akishimo, Japan

Filed Sep. 29, 1992, Ser. No. 953,656

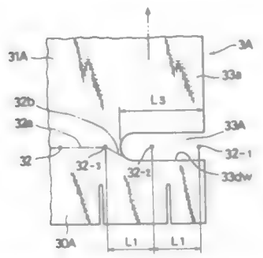
Int. Cl.[5] B68G *7/12, 15/00*

U.S. Cl. 428—43 **1 Claim**

1. A vehicle seat, comprising a cushion member, and at least two sections of a covering member each having a terminal portion, a location board facilitating the assembly of the seat

including a first section, a second section and a generally U-shaped notched portion defined at one forward end of said location board;

said cushion member having a recessed groove formed therein, sewing means holding said terminal portions respectively of said at least two covering member sections so as to be fixed to said first section of said location board along a predetermined sewing line defined between said first and second sections, thereby forming a series of plural sewing holes in said location board along a longitudinal direction thereof, with said sewing holes being rowed so equidistantly as to be disposed a given distance from one other, said series of plural sewing holes forming, in turn, a



tear-off line for permitting separation of said second section from said first section, wherein both said at least two sections of said covering member expose their respective reverse surfaces outwardly of said location board, with a sewn jointed portion being formed in said covering member,

characterized in that:

said generally U-shaped notched portion, which extends from said forward end of said location board, is made longer than said given distance between adjacent sewing holes in a direction along substantially coincident with said tear-off line, thereby facilitating said second section to be torn off from said first section.

5,362,536

RECORDABLE OPTICAL ELEMENT HAVING A LEUCO DYE

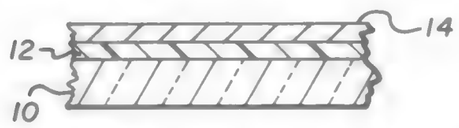
James C. Fleming, Webster; Michael R. Detty, Rochester, and Franklin D. Saeva, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1993, Ser. No. 19,522

The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **5 Claims**



1. A recordable element having a substrate and on the surface of said substrate, a recording layer and a light-reflecting layer, the

improvement wherein said recording layer includes:

a chalcogenapyranyl leuco dye which upon exposure to a thermally-generated acid becomes a near-infrared absorbing chalcogenapyrylium dye;

a sensitizing dye that absorbs near infrared light to produce heat which can be used to activate a thermal acid; and

a thermal acid generator which, upon heating, produces a strong acid which can be used to oxidize a leuco dye.

5,362,537

OPTICAL INFORMATION RECORDING MEDIUM COMPRISING TWO MAGNETO-OPTICAL LAYERS WHICH ARE MADE OF GDFECO AND TBFETI, RESPECTIVELY

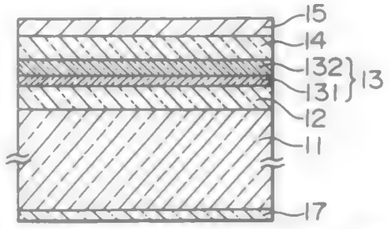
Masaki Itoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 39,795

Claims priority, application Japan, Mar. 30, 1992, 4-071879

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **10 Claims**



1. An optical information recording medium used for recording information by irradiation of a laser beam with a magnetic field, said recording medium comprising:

a substrate transparent to the laser beam;

a first magneto-optical layer of GdFeCo; and

a second magneto-optical layer of TbFeTi, said first magneto-optical layer being disposed between said substrate and said second magneto-optical layer.

5,362,538

OPTICAL RECORDING MEDIUM

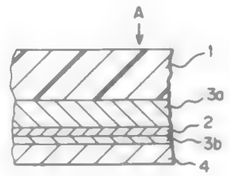
Gentaro Ohbayashi; Kazuo Kakuo; Kusato Hirota, and Naoya Seo, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 8, 1993, Ser. No. 43,923

Claims priority, application Japan, Oct. 21, 1992, 4-283132; Oct. 21, 1992, 4-283134

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **9 Claims**



1. An optical recording medium comprising a substrate, a recording layer formed on said substrate and consisting of a tellurium alloy, at least one dielectric layer, and a reflective layer, the tellurium alloy of said recording layer being phase-changed between a crystalline state and an amorphous state by being irradiated with light, whereby the recording and erasing of information can be done, the tellurium alloy of said recording layer comprising at least a metal M, antimony Sb and germanium Ge added to tellurium Te and having the following composition formula,

$$M_x(Sb_xTe_{1-x})_{1-y-z}(Ge_{0.5}Te_{0.5})_y$$

$$0.35 \leqq x \leqq 0.7$$

$$0.2 \leqq y \leqq 0.5$$

$$0.0001 \leqq z \leqq 0.05$$

wherein the metal M is one kind of metal selected from the group consisting of niobium Nb and platinum Pt; and the subscripts x, y, 1-x and 1-y-z the numbers of atoms of elements (molar number of elements).

5,362,539

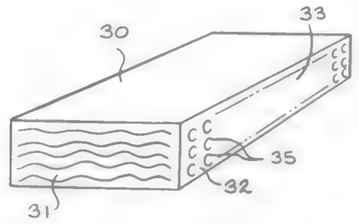
MINERAL FIBER INSULATION ASSEMBLY

Herbert L. Hall, Newark; Clarke Berdan, II, Granville; James W. Scott, Newark; Steven H. Williams, Alexandria, and Jean E. Schelhorn, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Technology Inc., Summit, Ill.

Filed Dec. 30, 1992, Ser. No. 998,692

Int. Cl.[5] E04B *2/00*; B32B *1/04*

U.S. Cl. 428—68 **20 Claims**



1. A mineral fiber insulation assembly comprising, in combination, a longitudinally extending mineral fiber core having opposed major surfaces, opposed side surfaces and opposed end surfaces, a low friction polymer film positioned adjacent said opposed major surfaces and said opposed side surfaces, at least one of said side surfaces being attached to said polymer film and a plurality of openings in said polymer film adjacent at least one of said side surfaces.

5,362,540

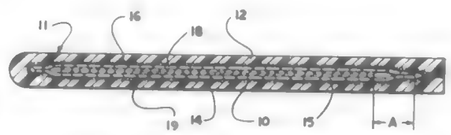
DOCUMENT PROTECTING APPARATUS

Leigh L. Keng, 1091 Cobb Parkway, SE., Marietta, Ga. 30062

Filed May 3, 1993, Ser. No. 55,300

Int. Cl.[5] B32B *3/08*

U.S. Cl. 428—13 **4 Claims**



1. In a laminate comprising a document, a laminating device including a sheet on each side of the document, each said sheet of said laminating device including adhesive holding said sheets together with the document therebetween, at least one sheet of said laminating device being transparent, the combination therewith of shield means between the document and said laminating device so that said adhesive does not contact said document, said shield means including a plurality of transparent sheets, one sheet of said plurality of transparent sheets being disposed on each side of the document and covering the entire document and extending slightly beyond said document, said sheets of said laminating device covering said entire shield means and extending at least slightly beyond said shield means, so that said document is encapsulated within said laminate but is protected from said adhesive by said shield means.

5,362,541

SHAPED ARTICLES FOR HEAT INSULATION

Gerhard Sextl, Rodenbach; Roland Reuter, Darmstadt; Peter Kleinschmit, Hanau; Rudolf Schwarz, Wasserlos, and Ilona Sporys, Maintal, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 652,399, Feb. 7, 1991, abandoned, which is a continuation of Ser. No. 539,364, Jun. 15, 1990, abandoned, which is a continuation of Ser. No. 397,975, Aug. 24, 1989, abandoned. This application Nov. 3, 1993, Ser. No. 147,095

Claims priority, application Germany, Aug. 24, 1988, 3828669

Int. Cl.[5] B32B *1/02, 9/00*

U.S. Cl. 428—69 **1 Claim**

1. A shaped body for use as thermal heat insulation, comprising:

precipitated silica mixed with one or more of the materials selected from the group consisting of:

kaolinite, montmorillonite, mica and calcium sulfate;

wherein the mixed precipitate silica and other materials are enclosed in an evacuated gas and watertight casing.

5,362,542

FIBER REINFORCED PLASTIC REINFORCEMENT FOR CONCRETE

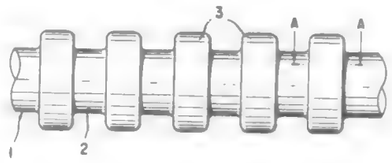
Nobuyuki Ozawa, Tokyo; Junji Hosokawa, Kanagawa; Masao Kikuchi, Tokyo; Tokitaro Hoshijima, Tokyo, and Kensuke Yagi, Tokyo, all of Japan, assignors to Komatsu Plastics Industry Co., Ltd. and Mitsubishi Kasei Corporation, Japan

Filed Mar. 9, 1993, Ser. No. 28,120

Claims priority, application Japan, Mar. 13, 1992, 4-088309; Feb. 23, 1993, 5-033208

Int. Cl.[5] B32B *1/04*

U.S. Cl. 428—70 **14 Claims**



1. A fiber reinforced plastic reinforcement, for a concrete structure comprising:

a core made of a fiber reinforced plastic material composed of a matrix resin and reinforcing fiber;

an uneven profile portion integrally formed on a peripheral surface portion of said core so as to provide alternately arranged first higher portions and second lower portions, wherein said reinforcing fiber extends in series across said core and said uneven profile portion and wherein said first higher portions are positioned radially outside beyond said second lower portions in a distance range of 1/1000 to 1/10 times a diameter of said reinforcement.

5,362,543

PRESSURE-COMPENSATING COMPOSITIONS AND PADS MADE THEREFROM

Lincoln P. Nickerson, Boulder, Colo., assignor to Jay Medical, Ltd., Boulder, Colo.

Filed Feb. 23, 1993, Ser. No. 21,336

Int. Cl.[5] B32B *1/06*

U.S. Cl. 428—76 **53 Claims**

1. A pressure-compensating pad comprising:

a flexible envelope containing a flowable, pressure-compensating composition, said envelope having a structure that allows said composition to flow within said envelope in response to pressure continuously applied to said pad; and

said composition comprising a mixture of a major weight

portion of silicone fluid, and a minor weight portion of amide thickener which is essentially insoluble in said silicone fluid and microballoons uniformly dispersed in said mixture, wherein said composition flows in response to continuously applied pressure, but resists flow and tends to maintain its shape and position in the absence of continuously applied pressure.

5,362,544

FLOOR MAT AND METHOD OF MAKING SAME

Harold Reuben, Akron, Ohio, assignor to The Akro Corporation, Canton, Ohio

Continuation-in-part of Ser. No. 694,966, May 3, 1991, Pat. No. 5,154,961. This application Apr. 23, 1992, Ser. No. 872,456
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] B32B *3/02, 33/00*
U.S. Cl. 428—82 **47 Claims**



1. A floor mat comprising:

a pliable multilayer structure having an upper face layer overlying a base layer wherein said base layer has a relatively thin main body section bordered by a relatively thick edge section with said upper face layer being coextensive with at least said edge section of said base layer;

said edge section having a molded channel extending longitudinally thereof, and having an upper surface disposed at an elevation above the elevation of said main body section of said base layer; and

a plurality of rib members disposed within and extending transversely across said channel.

5,362,545

ALIGNED FIBER REINFORCEMENT PANEL FOR STRUCTURAL WOOD MEMBERS

Daniel A. Tingley, 3310 SW. Willamette Ave., Corvallis, Oreg. 97333

Filed Mar. 24, 1993, Ser. No. 37,580
Int. Cl.[5] B32B *5/08, 5/16;* **E04C** *3/26, 3/29*
U.S. Cl. 428—96 **28 Claims**

1. A panel to be adhered to an elongate wood structural member for increasing a load carrying capacity of the structural member, said panel comprising:

(a) a plurality of reinforcing fibers, a substantial majority of which are continuous along the length of said panel, arranged substantially parallel to one another and aligned so as to comply with a longitudinal direction of said structural member when said panel is adhered to said structural member;

(b) a resin encasement for said plurality of reinforcing fibers maintaining said parallel arrangement and said longitudinal alignment, and

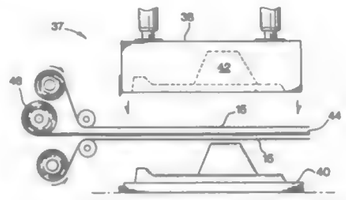
(c) fiber material originating from aligned reinforcing fibers closest to a major surface of the panel protruding from the resin encasement of that surface.

5,362,546

METHOD FOR PRODUCING A NON-WOVEN FABRIC WITH A THERMALLY ACTIVATED ADHESIVE SURFACE, RESULTING PRODUCT AND APPLICATIONS THEREOF

Roger Boulanger, Ste-Julie, Canada, assignor to Johnson & Johnson Inc., Montreal, Canada

Division of Ser. No. 31,760, Mar. 15, 1993, Pat. No. 5,301,400, which is a division of Ser. No. 550,258, Jul. 9, 1990, Pat. No. 5,227,227. This application Jan. 4, 1994, Ser. No. 177,014
Claims priority, application Canada, Mar. 5, 1990, 2011515
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—138 **28 Claims**



1. A method for manufacturing a laminated molded article, said method comprising the steps of:

providing a fibrous mat;

applying on said fibrous mat in a face-to-face relationship a non-woven fabric having a thermally activated adhesive surface which faces said fibrous mat, said non-woven fabric comprising a first fiber layer including bond-forming fibers fusible at a predetermined temperature and a second fiber layer including fibers of a material in a solid phase at said predetermined temperature, said fibers being in mechanical engagement one with another and arranged generally flatwise in bundles interconnected at junctures by protuberant fiber packings disposed in a staggered pattern throughout said fabric, said bond-forming fibers being concentrated along a surface of said non-woven fabric comprising said protuberant fiber packings, said protuberant fiber packings facing said fibrous mat; and

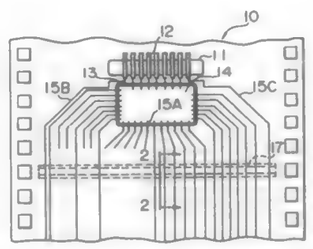
heating said thermally activated adhesive surface at said predetermined temperature to seal said non-woven fabric to said fibrous mat.

5,362,547

FILM CARRIER

Hideo Yamazaki, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 16, 1991, Ser. No. 745,918
Claims priority, application Japan, Aug. 20, 1990, 2-86991[U]
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—167 **10 Claims**



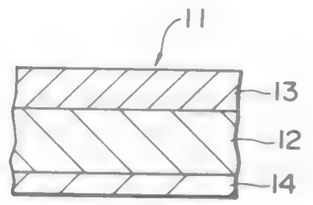
1. A film carrier for supporting an integrated circuit device and comprising an organic electrically insulating film arranged to have a thickness-reduced portion extending perpendicularly to the lengthwise direction of a multiplicity of copper leads secured to said film in such a manner that said multiplicity of leads are separated from and run parallel to one another, said thickness-reduced portion being formed for the purpose of aiding to bend said film.

5,362,548

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Yoshihiko Hiyoshi, Shizuoka; Youji Ide, Mishima; Tetsuji Kunitake, Numazu; Nobuyuki Maeda, Susono, and Kumi Surizaki, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,583
Claims priority, application Japan, May 14, 1991, 3-137062; Jun. 3, 1991, 3-131123; Jun. 4, 1991, 3-159446; Feb. 27, 1992, 4-075712
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—195 **22 Claims**



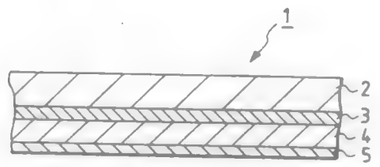
1. A thermal image transfer recording medium comprising a support, and a thermofusible ink layer having a thickness of 1 to 10 μm formed on said support, said thermofusible ink layer comprising a thermofusible material with a loaded needle penetration of 2 or less at 25° C., and a coloring agent, said thermofusible ink layer having a shearing strength of 8 to 20 gf/cm at 20° C., and an adhesion strength of 1.0 to 2.0 gf/cm with respect to said support.

5,362,549

THERMAL TRANSFER SHEET

Hirokatsu Imamura; Koichi Nakamura, and Jiro Ohnishi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 560,593, Jul. 31, 1990, Pat. No. 5,219,638. This application Feb. 4, 1993, Ser. No. 13,610
Claims priority, application Japan, Aug. 2, 1989, 1-202234; Jan. 31, 1990, 2-19324; May 24, 1990, 2-132605; Jun. 5, 1990, 2-146523; Jun. 5, 1990, 2-146525; Jun. 5, 1990, 2-146526
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—195 **26 Claims**



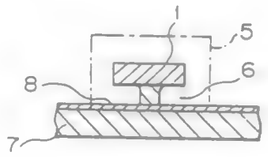
1. A thermal transfer sheet to be used for an n fold recording mode comprising a substrate film, a sensitizing layer formed on one surface side of the substrate film, an ink layer formed on the surface of the sensitizing layer, wherein the sensitizing layer and the ink layer are heat-fusible, and the sensitizing layer has a melt viscosity which is lower than that of the ink layer.

5,362,550

THIN FILM CIRCUIT BOARD AND ITS MANUFACTURING PROCESS

Shuji Takeshita, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 18, 1993, Ser. No. 19,565
Claims priority, application Japan, Feb. 19, 1992, 4-031239
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **10 Claims**



1. A thin film circuit board comprising:

an insulator layer and a conductor layer embedded in the insulator layer; the conductor layer being supported in an undercut state by an insulator; the entire conductor layer, excluding the portion supported by the insulator, being surrounded with an insulator having a relatively low dielectric constant; and, the relatively low dielectric constant insulator being surrounded with an insulator having a relatively high dielectric constant; and the insulator portion that supports the conductor layer in the undercut state comprises an insulator layer having a relatively high etching rate formed in a desired thickness on an insulator layer having a relatively low etching rate.

5,362,551

CERAMIC SUBSTRATE

Naoyuki Okamoto; Hidetoshi Mizutani; Kazunori Miura, and Kazuo Kondo, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 885,362, May 19, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,284
Claims priority, application Japan, May 22, 1991, 3-146843; Mar. 18, 1992, 4-92239
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—210 **4 Claims**

1. A ceramic substrate consisting essentially of a crystallized glass and having at least one through-hole filled with a conductor material consisting essentially of 100 parts by weight of copper and from 1 to 30 parts by weight of a glass which softens when the substrate is subjected to calcination at a temperature of 1,000° C. and which has a thermal expansion coefficient of from 1.5×10^{-6}/K to 4.0×10^{-6}/K as measured in a temperature range of from room temperature to 400° C.

5,362,552

VISIBLE-SPECTRUM ANTI-REFLECTION COATING INCLUDING ELECTRICALLY-CONDUCTIVE METAL OXIDE LAYERS

R. Russel Austin, 215 Butterfield Dr., Novato, Calif. 94945

Filed Sep. 23, 1993, Ser. No. 126,128
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—216 **15 Claims**

1. An antireflection coating for a substrate, comprising:

six-layers designated the first through the sixth in consecutive numerical order beginning with the layer furthest from the substrate, each of said layers having a physical thickness of at least about 9.0 nanometers, each of said layers having an extinction coefficient less than 0.1 for visible light and wherein one or more of said layers is formed of an electrically-conductive metal oxide which is transparent to visible light;

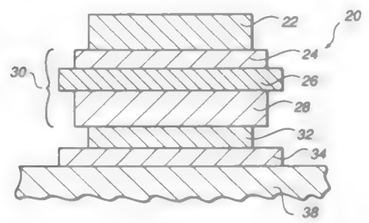
said first layer having a refractive index between about 1.46

and 1.52 at a wavelength of about 520 nm and having an optical thickness of about one-quarter wavelength of visible light;

said sixth layer having a refractive index greater than the refractive index of the substrate;

said fifth layer having a refractive index less than the refractive index of said sixth layer;

said fifth and sixth layers having a combined optical thickness between about one-tenth and one-quarter wavelength of visible light;



said third layer having a refractive index greater than about 2.15 at a wavelength of about 520 nanometers;

said second layer having a refractive index less than the refractive index of said third layer and greater than the refractive index of said first layer;

said fourth layer having a refractive index less than the refractive index of said third layer and greater than the refractive index of said fifth layer; and

said second, third, and fourth layers having a combined optical thickness between about one-half wavelength and one wavelength of visible light.

5,362,553

MICROPOROUS WATERPROOF AND MOISTURE VAPOR PERMEABLE FABRIC

Joseph A. Dillon, and Mark E. Dillon, both of Huntington Valley, Pa., assignors to Tetratec Corporation, Feasterville, Pa.

Continuation of Ser. No. 880,510, May 8, 1992, abandoned, which is a division of Ser. No. 713,029, Jun. 7, 1991, Pat. No. 5,157,058, which is a division of Ser. No. 518,435, May 1, 1990, Pat. No. 5,066,683, which is a continuation-in-part of Ser. No. 389, Jan. 5, 1987, Pat. No. 4,945,125. This application Aug. 27, 1993, Ser. No. 113,732

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—246 **7 Claims**

1. A waterproof and moisture vapor permeable laminated fabric consisting essentially of (1) a layer of breathable fabric and (2) a layer of waterproof and moisture vapor permeable matrix selected from the group consisting of microporous biaxially fibrillated polytetrafluoroethylene and a microporous biaxially fibrillated semi-interpenetrating polymer network of polytetrafluoroethylene and silicone, the internal microstructure of which is at least partially coated with a sufficient amount of hydrophobic material so as to increase resistance to surfactant activity, the hydrophobic material selected from the group consisting of cured silicone compositions, non-cured silicone compositions and combinations thereof.

5,362,554

HIGH TEMPERATURE LABEL

Mark R. Holzer, Woodbury, and Roger W. Lange, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 10, 1992, Ser. No. 927,821

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—283 **22 Claims**

1. A sheet comprising

(a) a backing material which is thermally stable at its application temperature and which bears a reflective pattern; and

(b) a coating on at least a portion of at least one major surface of said backing material, said coating consisting essentially of fused or fusible particles selected from the group consisting of glass particles, ceramic particles, and mixtures thereof.

5,362,555

COMPOSITIONS AND POLYMER FABRICS TREATED WITH THE SAME

Kasturi Lal, 2993 Nantucket Dr., Willoughby, Ohio 44094

Division of Ser. No. 771,682, Oct. 4, 1991, Pat. No. 5,321,098. This application Mar. 24, 1994, Ser. No. 217,400

Int. Cl.[5] B32B *27/00*

U.S. Cl. 428—290 **5 Claims**

1. An article, comprising: (A) a polymer fabric treated with (B) a composition comprising a mixture of (i) at least one ester-acid, ester-salt or mixtures thereof and (ii) at least one amidic-acid, amidic-salt or mixtures thereof.

5,362,556

PRESSURE-SENSITIVE TRANSFER RECORDING MEDIUM

Masami Shini, Osaka, Japan, assignor to Fujicopian Co., Ltd., Osaka, Japan

Filed Aug. 2, 1993, Ser. No. 100,415

Claims priority, application Japan, Aug. 3, 1992, 4-206673

Int. Cl.[5] B41M *5/03*

U.S. Cl. 428—321.3 **6 Claims**

1. A pressure-sensitive transfer recording medium adapted to overlapping strike printing on a low-noise impact printer, comprising a foundation, and a porous ink-releasing layer containing an ink paste on the foundation,

the ink paste comprising a coloring agent, a liquid vehicle and a starch,

the liquid vehicle comprising at least one member selected from the group consisting of a glycerol higher fatty acid ester, a polyglycerol higher fatty acid ester and a sorbitan higher fatty acid ester,

the ink paste having a viscosity of 4×10^3 to 12×10^3 cp at 25° C.

5,362,557

WEAR RESISTANT DECORATIVE LAMINATES COMPRISING MINERAL PARTICLES AND METHODS FOR PRODUCING SAME

Donald J. Albrinck, and John J. Mascavage, both of Cincinnati, Ohio, assignors to Formica Technology Inc., Wilmington, Del.

Continuation of Ser. No. 570,025, Aug. 20, 1990, abandoned. This application Oct. 28, 1992, Ser. No. 967,917

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—323 **9 Claims**

1. A decorative laminate having improved scratch, mar, scrape and abrasion resistance comprising at least one backing layer sheet and a melamine-formaldehyde resin impregnated decorative paper sheet laminated thereto, said decorative paper sheet having thereon an abrasion resistant coating comprising:

abrasion resistant mineral particles having a particle size of about 3 microns and abrasion resistant mineral particles having a particle size of about 25 microns, both of which are present in a concentration sufficient to provide for abrasion resistance, the ratio of the larger particles to the smaller particles being 2 to 1, said abrasion resistant mineral particles being applied concurrently with said melamine-formaldehyde resin to said decorative paper sheet to simultaneously coat and impregnate said decorative sheet;

a coupling agent;

a thickening agent in an amount sufficient to suspend said abrasion resistant mineral particles; and

a lubricating agent in a concentration sufficient to provide for scrape resistance.

5,362,558

INK-JET RECORDING MEDIUM AND INK-JET RECORDING METHOD MAKING USE OF IT

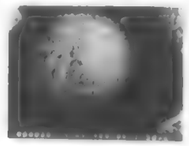
Mamoru Sakaki, Sagamihara; Yutaka Kurabayashi, Yokohama; Tomomi Nakatsugawa, Kawasaki; Hiroshi Sato, Yokohama, and Takahiro Shiratori, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 634,457, Dec. 27, 1990, Pat. No. 5,246,774. This application Jun. 25, 1993, Ser. No. 81,195

Claims priority, application Japan, Dec. 29, 1989, 1-341811; Dec. 29, 1989, 1-341812; Dec. 29, 1989, 1-341813; Jan. 24, 1990, 2-12454

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—323 **21 Claims**



1. A recording medium comprising a substrate with liquid absorption properties and, provided on said substrate, an ink-receiving layer containing a spherical basic magnesium carbonate, wherein said spherical basic magnesium carbonate has an average particle diameter of from 0.5 μm to 20 μm.

5,362,559

POLYSILANE MONOMOLECULAR FILM AND POLYSILANE BUILT-UP FILM

Shuji Hayase, Kawasaki; Yoshihiko Nakano, Tokyo; Yukihiro Mikogami; Akira Yoshizumi, both of Yokohama; Shinji Murai, and Rikako Kani, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 858,216, Mar. 26, 1992, abandoned. This application Jul. 12, 1993, Ser. No. 89,634

Claims priority, application Japan, Mar. 26, 1991, 3-062037; Oct. 24, 1991, 3-278029; Oct. 24, 1991, 3-278030; Oct. 24, 1991, 3-278031

Int. Cl.[5] B32B *5/00*

U.S. Cl. 428—333 **38 Claims**

1. A polysilane monomolecular film, prepared by a Langmuir-Blodgett process, the improvement comprising dissolving in an organic solvent a polysilane having a repeating unit represented by formula (1) given below:



(1)

where R^1 represents a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms or a substituted or unsubstituted aryl group having 6 to 24 carbon atoms;

R^2 represents a divalent hydrocarbon group having 1 to 24 carbon atoms which can be substituted; and

X represents a hydroxyl group, an amino group, or a carboxyl group.

5,362,560

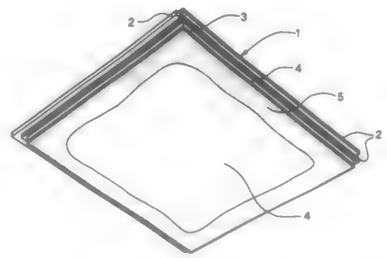
COMPOSITE TILE WITH MODIFIED ADHESIVE LAYER

Wendell A. Ehrhart, Red Lion, and Raymond C. Kent, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed May 20, 1993, Ser. No. 63,715

Int. Cl.[5] B32B *7/12, 23/02;* **E04F** *13/14*

U.S. Cl. 428—343 **5 Claims**



1. A rigid tile comprising a first major surface, a second major surface which is opposite the first major surface and which is to be bonded to a substrate, an edge portion interposed between the first and second major surfaces, and a pressure sensitive adhesive, the first major surface being exposed when the tile is bonded to the substrate, the adhesive being coated onto the second major surface, the second major surface being divided into an inner area and an outer area adjacent the edge portion, the adhesive coated onto the outer area having a dusting of fine inert powder on the surface of the adhesive opposite the second major surface and the adhesive coated onto the inner area of the second major surface having no dusting of fine inert powder.

5,362,561

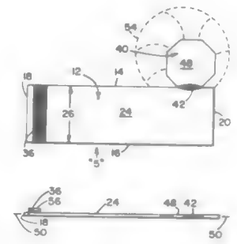
ORNAMENTAL PROMOTIONAL ARTICLE

W. Richard Lower, 2144 Memorial Ct., Kingsport, Tenn. 37664

Filed Nov. 30, 1993, Ser. No. 160,046

Int. Cl.[5] B65D *51/12, 23/12, 23/14*

U.S. Cl. 428—343 **11 Claims**



1. An attachment item for affixing an ornamental, promotional article to a container neck, said item comprising a thin, flexible, elongated body means having top and bottom edges, opposite ends, outer and inner surfaces and having a substantial width between said top and bottom edges, said body means being adapted for lengthwise wrapping around the neck of container with said ends in overlapping relationship and with said inner surface lying contiguous said neck, said body means when so wrapped having a generally cylindrical shape about a longitudinal axis, fastening means on said inner surface of said body means at least adjacent one of said ends and adapted for contacting said neck or a portion of said outer surface of said body means proximate the other of said ends to become affixed thereto for holding said body means in said generally closed

cylindrical shape around said neck, flap means affixed by hinge means to said body means along a portion of said top edge thereof and having outer and inner surfaces, said hinge means being adapted to allow said flap means to lie in substantially the same plane as said body means with said outer and inner surfaces of each juxtaposed when said body means is in a flat blank condition and to allow said flap means to lie in a plane oriented substantially normal to said longitudinal axis when said body means is wrapped around said neck with the outer surface of said flap means facing generally longitudinally outwardly of said neck, said outer surface of said flap means being adapted to provide a support for affixing an ornamental article to said item.

5,362,562

CRIMPED ACRYLIC FIBERS HAVING IMPROVED THIXOTROPIC PERFORMANCE

Robert E. Evans, Huntington; Arutun Maranci, Westport, and Stanley S. Kaminski, Stamford, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Filed Mar. 12, 1993, Ser. No. 30,953
Int. Cl.[5] D02G *3/22, 1/00*
U.S. Cl. 428—369 **23 Claims**

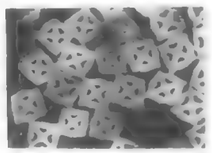
1. A physical thixotrope comprising crimped acrylic fibers having a maximum diameter of less than 100 micrometers, a minimum length in the range of 0.5–3 mm, a minimum aspect ratio (L/D) in the 20–50 range and a crimp of greater than 3%.

5,362,563

HOLLOW FILAMENT CROSS-SECTIONS CONTAINING FOUR CONTINUOUS VOIDS

Perry H.-C. Lin, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 82,878, Jun. 25, 1993, which is a division of Ser. No. 969,323, Oct. 30, 1992, Pat. No. 5,279,897, which is a division of Ser. No. 735,241, Jul. 24, 1991, Pat. No. 5,190,821. This application Dec. 22, 1993, Ser. No. 172,011
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—398 **8 Claims**



1. A continuous filament, comprising a thermoplastic synthetic polymer and having a solid axial core and four substantially equispaced continuous nonround voids, a void content of about 6% to 25%, and a four sided cross-sectional contour, wherein each void is substantially centered on a side of the contour.

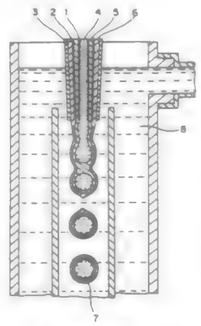
5,362,564

SEAMLESS CAPSULE COMPRISING A LOWER FATTY ESTER OF SUCROSE

Toshiyuki Suzuki, Itami, and Ryousei Kamaguchi, Osaka, both of Japan, assignors to Morishita Jintan Co., Ltd., Osaka, Japan

Filed Mar. 6, 1992, Ser. No. 846,949
Int. Cl.[5] B32B *5/16, 9/02*
U.S. Cl. 428—402.2 **5 Claims**

1. A seamless capsule comprising a content, a film coating said content, and a C_2–C_6 fatty ester of sucrose, said fatty acid ester of sucrose being present between said content and said film, said content being a hydrophilic substance which becomes a liquid under heating, said film being obtained by



gelling gelatin alone or in combination with a water-soluble polyhydric alcohol.

5,362,565

PRODUCTION METHOD OF MICROCAPSULES

Tsutomu Murano, and Toshifumi Nishikubo, both of Shinjuku, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

Filed May 12, 1993, Ser. No. 59,603
Claims priority, application Japan, May 13, 1992, 4-120474
Int. Cl.[5] B32B *5/16, 9/04*
U.S. Cl. 428—402.2 **13 Claims**

1. A method of producing microcapsules having wall films of an amine-aldehyde condensation polymer comprising forming said wall film in a system of a hydrophobic core substance dispersed or emulsified in an acid aqueous solution containing an anionic water-soluble polymer, wherein said anionic water-soluble polymer is a copolymer comprising at least monomers of acrylic acid, acrylamidealkylsulfonic acid, and alkyl acrylate.

5,362,566

COATING COMPOSITION, GRANULES COATED WITH SAME, AND METHOD OF REDUCING DUST GENERATION

Billy L. George; Stefan A. Babirad, both of Hudson, Wis., and Delmon H. Penny, Little Rock, Ark., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 4, 1993, Ser. No. 26,441
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—403 **17 Claims**

1. A coated granular material having a dust-reducing coating on base granules, the coating consisting essentially of a tackifier and an organic oil, the tackifier consisting essentially of an organic material having a glass transition temperature of no less than about 120° C. and a naphthenic oil present in sufficient amount to give the tackifier a kinematic viscosity ranging from about 3,000 to about 5,000 centistokes at 100° C., said organic oil being compatible with the base granules, the tackifier, and any optional adhesion agent.

5,362,567

CARBON-CARBON COMPOSITE AND METHOD OF PREPARATION

Robert M. Washburn, Santa Clara, and Jerry D. Dodson, Fremont, both of Calif., assignors to Aerotherm Corporation, Mountain View, Calif.

Continuation of Ser. No. 826,688, Feb. 6, 1986, abandoned. This application Mar. 30, 1989, Ser. No. 342,462
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—408 **4 Claims**

1. A carbon-carbon composite comprising a carbonaceous matrix having uniformly dispersed in the composite carbonaceous matrix at least one oxidation inhibitor.

5,362,568

PRE-FIRE WARNING SYSTEM AND METHOD USING A PERFLUOROCARBON TRACER

Russell N. Dietz, and Gunnar I. Senum, both of Patchogue, N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 836,244, Feb. 18, 1992, abandoned. This application May 27, 1993, Ser. No. 68,664
Int. Cl.[5] B32B *21/18;* G01N *31/12;* G01M *3/04;* C08K *5/02*
U.S. Cl. 428—421 **6 Claims**

1. A thermal overheat indicating apparatus or system comprising a plurality of electrical or electronic components each of which is coated with a composition said composition comprising a perfluorocarbon tracer material mixed, with a non-reactive carrier compound taken from the group consisting of glyptal paint, elastomeric film material, primary resin material, polymer material and electrical insulating coating material, wherein the amount of perfluorocarbon tracer is in the range of about 0.1% to 0.19% by weight, based on the overall weight of the carrier compound in the composition, said carrier compound being curable by drying at about 21° C. or less, said composition being effective to emit an essentially perfluorocarbon tracer gaseous vapor thereform at an increasing rate as a function of increasingly higher temperatures applied to the composition above 42° C., with the coating composition for certain different components being tagged by being made to contain different, separately identifiable perfluorocarbon tracer as tagging materials, and wherein the apparatus or system includes a perfluorocarbon tracer detector or detectors for detecting and identifying the different perfluorocarbon tracer tagging materials when emitted as essentially gaseous vapors from the different components of the system responsive to the components being heated in excess of 42° C., whereby the locations of such overheating can be readily identified by determining which of the different perfluorocarbon tracer tagging materials are detected and identified by the detector or detectors then correlating the detected perfluorocarbon tracer tagging materials with the identity of the given compositions applied as a coating on the respective coated components.

5,362,569

ANODIZING AND DUPLEX PROTECTION OF ALUMINUM COPPER ALLOYS

Albert J. Bauman, 524 Oakdale Dr., Sierra Madre, Calif. 91024

Filed Mar. 22, 1993, Ser. No. 34,291
Int. Cl.[5] B32B *15/04, 15/20*
U.S. Cl. 428—472.2 **27 Claims**

1. Method of protecting copper alloys of aluminum against surface corrosion, comprising anodizing the aluminum surface to be protected, treating said surface with a heterocyclic aromatic azole treating agent having up to 16 carbon atoms before, during or after the anodizing step, and coating said treated surface after the anodizing step with a fatty acid of 5 to 24 carbon atoms.

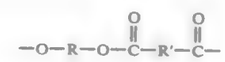
5,362,570

THERMOPLASTIC MULTILAYER COMPOSITES

Stefan Röber, Marl; Joachim Mügge, Haltern, and Hans Jadamus, Marl, all of Germany, assignors to Huels Aktiengesellschaft, Marl, Germany

Filed Nov. 16, 1992, Ser. No. 977,155
Claims priority, application Germany, Nov. 14, 1991, 4137434; Mar. 6, 1992, 4207125
Int. Cl.[5] B32B *27/38*
U.S. Cl. 428—475.2 **29 Claims**

1. A thermoplastic multilayer composite comprising
A) at least one layer, A, of a polyamide molding composition, and
B) at least one layer, B, of a molding composition comprising:
a) 98 to 60% by weight of a linear, crystalline polyester having units of the formula:



(I)

where R represents a divalent branched or non-branched, aliphatic or cycloaliphatic radical, derived from a diol having 2 to 12 carbon atoms in the chain, or a mixture of said branched or non-branched, aliphatic or cycloaliphatic radicals thereof, and R′ represents a divalent aromatic radical having 6 to 20 carbon atoms in the carbon skeleton, and
b) 2 to 40% by weight of a compound, Bb, containing at least one epoxide group,
wherein said epoxide groups are contained in a concentration of from 4 to 1000 mmol/kg based on the total weight of layer B, said compound containing epoxide group has an epoxide equivalent weight of from 70 to 10,000; and
wherein the layers are intimately bonded to one another.

5,362,571

MAGNETIC TAPE FOR USE IN CASSETTE FOR DIGITAL AUDIO TAPE RECORDER AND BIAXIALLY ORIENTED POLYESTER BASE FILM THEREFOR

Takao Chujo; Hisashi Hamano; Masanori Nishiyama; Yasuhiro Saeki; Tatsuya Ogawa, all of Sagamihara, and Kouhei Endou, Anpachi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 16, 1994, Ser. No. 213,638
Int. Cl.[5] B32B *23/08, 27/34;* C08G *63/02*
U.S. Cl. 428—480 **14 Claims**

1. A biaxially oriented laminated polyester base film for a magnetic tape for use in a cassette for a digital audio tape recorder, characterized in that:
(a) the stress when the biaxially oriented laminated polyester base film is extended in the longitudinal direction by 5% is at least 12 kg/mm^2,
(b) the residual extension in the longitudinal direction is 0.2% or less and the residual extension in the transverse direction is 0.3% or less,
(c) the heat shrinkage in the longitudinal direction after a heat treatment under no load at 105° C. for 30 minutes is 1.5% or less,
(d) a first polyester layer having an Ra of 8 nm or less and a second polyester layer having an Ra in the range of from 8 to 40 nm are outermost layers, and
(e) the laminated film thickness is in the range of from 3 to 12 μm.

5,362,572

TWO-LAYER THERMOPLASTIC ELASTOMER SHEET

Shunichi Hamada, and Katsuyoshi Yonekura, both of Tokyo, Japan, assignors to Mitsui Petrochemical Industries, ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 806,220, Dec. 13, 1991, abandoned. This application Feb. 19, 1993, Ser. No. 20,164
Claims priority, application Japan, Dec. 21, 1990, 2-404883; Dec. 3, 1991, 3-319373
Int. Cl.[5] B32B *9/04, 27/08;* C08L *23/10*
U.S. Cl. 428—497 **17 Claims**

1. A two-layer thermoplastic elastomer sheet comprising a skin layer (I) and a reverse surface layer (II), wherein:
said skin layer (I) comprises a partially crosslinked thermoplastic elastomer comprising a polyolefin resin (A) in an amount of 20 to 50 parts by weight and an α-olefin copolymer rubber (B) in an amount of 80 to 50 parts by weight, the total amount of (A) and (B) being 100 parts by weight;
said reverse surface layer (II) comprises a thermoplastic elastomer comprising a polyolefin resin (A) in an amount

30 to 60 parts by weight and an α-olefin copolymer rubber (B) in an amount of 70 to 40 parts by weight, the total amount of (A) and (B) being 100 parts by weight; and

a difference $((I_B)-(II_B))$ between the amount (I_B) of the α-olefin copolymer rubber (B) contained in the thermoplastic elastomer of the skin layer (I) and the amount (II_B) of the α-olefin copolymer rubber (B) contained in the thermoplastic elastomer of the reverse surface layer (II) is in the range of 15 to 50 parts by weight.

5,362,573

USE OF ZIRCONIUM SALTS TO IMPROVE THE SURFACE SIZING EFFICIENCY IN PAPER MAKING

Vernon E. Pandian, 3684 Twinberry Pl., Corvallis, Oreg. 97330; Dan van Calcar, 2036 Myrtle Ave. NE, Salem, Oreg. 97303, and Bernard W. Wolff, 402 Cherokee St., Marietta, Ga. 30060

Filed Jan. 28, 1993, Ser. No. 11,488
Int. Cl.[5] B32B *23/08, 27/10*
U.S. Cl. 428—511 **19 Claims**

1. A process of sizing the surface of paper or paperboard comprising the following steps

a) preparing an aqueous surface sizing compound by combining and mixing an aqueous solution of at least one water soluble or dispersible polymer or interpolymer, a solution or dispersion of auxiliary materials, and an aqueous solution of a metal salt, selected from the group of metals consisting of zirconium, hafnium and titanium;

b) adjusting the pH of said aqueous sizing compound from about 5 to about 10.5 by the addition of alkali, thereby increasing the molecular weight of said polymer or interpolymer by chemically or physically reacting said polymer or interpolymer with said salt of zirconium, hafnium or titanium, resulting in an increase in viscosity of said aqueous sizing compound;

c) applying said aqueous surface sizing compound to the surface of the paper or paperboard by means of a size press or a calender waterbox, to immobilize said aqueous sizing compound on the surface of said paper or paperboard in the wet state thereby preventing penetration of said aqueous surface sizing compound into said paper or paperboard; and

d) drying and curing said aqueous surface sizing compound by applying heat to the treated paper or paperboard thereby crosslinking said polymer or interpolymer contained in said surface sizing compound, and also forming bonds with the pigment particles and fiber present at the surface of said paper or paperboard, and thereby anchoring the polymer or interpolymer to the surface of said paper or paperboard.

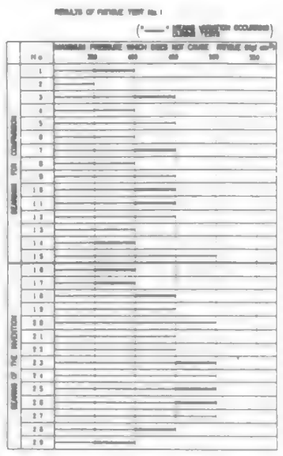
5,362,574

MULTILAYER ALUMINUM-BASED ALLOY BEARING HAVING SUPERIOR COMPATIBILITY AND SUPERIOR FATIGUE RESISTANCE

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya, and Yoshiaki Sato, Gifu, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Apr. 27, 1993, Ser. No. 52,679
Claims priority, application Japan, Apr. 28, 1992, 4-108221
Int. Cl.[5] F16C *33/12*
U.S. Cl. 428—643 **15 Claims**

1. A multilayer aluminum-based alloy bearing having superior compatibility and superior fatigue resistance, comprising a steel back metal, an intermediate bonding layer bonded to the steel back metal, and an aluminum bearing alloy layer bonded to the intermediate bonding layer, said aluminum bearing alloy layer consisting essentially of, by weight, of 7 to 15% Sn, 0.5 to 3% Si, and the balance Al and incidental impurities, the hardness of said aluminum bearing alloy layer being less than 50 Vickers hardness, said intermediate bonding layer consisting essentially of, by weight, of at least one metal selected from the group consisting of 0 to 1.7% Mn, 0 to 1.2% Cu and 0 to 1.8% Mg, and the balance Al and incidental impurities, Vickers hardness of said intermediate bonding layer being in a range of not less than 60% of the Vickers hardness of the aluminum



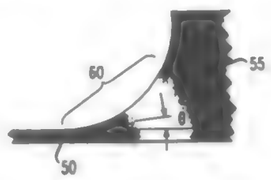
bearing alloy layer but not more than 120% of the Vickers hardness of the aluminum bearing alloy layer.

5,362,575

LITHOGRAPHIC MASK, COMPRISING A MEMBRANE HAVING IMPROVED STRENGTH

Lee E. Trimble, Hillsborough, Somerset County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 31, 1992, Ser. No. 999,065
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—688 **7 Claims**



1. An article comprising a perforate body having a principal surface and a thickness measured perpendicularly to the principal surface; and an imperforate, solid layer overlying the principal surface, wherein:

a) in at least a portion of the perforate body, the thickness is at least about 100 μm;

b) the perforate body has an inner surface such that the: the inner surface defines a hole, and the inner surface forms an effective contact angle with the imperforate, solid layer;

c) the imperforate, solid layer overlies the hole;

d) the imperforate, solid layer has a thickness of about 5 μm or less; and

e) that portion of the imperforate, solid layer that overlies the hole, such portion to be referred to as a membrane, has a diameter of at least about 1000 times the imperforate, solid layer thickness;

f) the article further comprises a skirt region intermediate the imperforate, solid layer and the hole, the skirt region providing an effective contact angle of about 10° or less;

g) the perforate body comprises silica-containing glass; and

h) the imperforate, solid layer comprises silicon.

5,362,576

CURRENT-ACTIVATED BYPASS SWITCH

Thomas Clark, Santa Monica; David M. McCormick, Camarillo, and Alan Whitebook, Santa Clarita, all of Calif., assignors to Reynolds Industries, Incorporated, Los Angeles, Calif.

Filed Jul. 31, 1992, Ser. No. 923,068
Int. Cl.[5] H01M *14/00, 2/00*
U.S. Cl. 429—7 **11 Claims**

1. A switch adapted for use in an electrical circuit and for changing its state from normally open to closed, or from normally closed to open, the switch comprising:

a generally cylindrical contact that is electrically coupled to a first terminal of the electrical circuit;

a movable switch contact comprised of a conductive material that is electrically coupled to a second terminal of the electrical circuit;

a third terminal of the electrical circuit that is electrically coupled to the movable switch contact;

closing means for applying a force that urges the cylindrical contact and the movable switch contact toward each other; and

holding means for holding the movable switch contact against the force of the closing means and for conducting current from the movable switch contact to the third terminal;

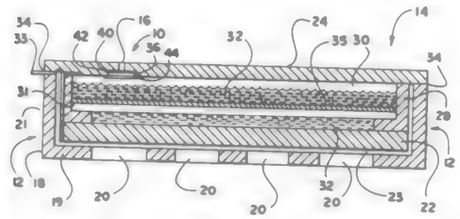
wherein the holding means ceases to hold the movable switch contact when a predetermined current flows through the holding means, such that the closing means urges the movable switch contact into electrical contact with the cylindrical contact.

5,362,577

DIFFUSION VENT FOR A RECHARGEABLE METAL-AIR CELL

Christopher S. Pedicini, Marietta, Ga., assignor to AER Energy Resources, Inc., Atlanta, Ga.

Filed Jun. 4, 1993, Ser. No. 71,844
Int. Cl.[5] H01M *2/12, 12/06*
U.S. Cl. 429—27 **49 Claims**



1. A system for venting gas from within a case housing an electrochemical metal air cell having an anode and a cathode with a separator positioned therebetween, said case having, an interior surface and an exterior surface, comprising:

at least one recess defined on the interior surface of said case on the anode side of said separator, said recess extending towards the exterior surface of said case, so as to define a gas collection area; and

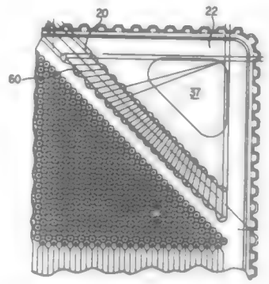
at least one gas exit hole communicating with the atmosphere, having a smaller cross-sectional area than the cross-sectional area of said recess, extending from the exterior surface of said case to said recess.

5,362,578

INTEGRATED MAIN RAIL, FEED RAIL, AND CURRENT COLLECTOR

Randy J. Petri, Crete; John Meek, Downers Grove; Robert P. Bachta, Chicago, and Leonard G. Marianowski, Mount Prospect, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Dec. 8, 1992, Ser. No. 986,970
Int. Cl.[5] H01M *8/08, 8/14*
U.S. Cl. 429—35 **26 Claims**



1. In a fuel cell stack comprising a plurality of fuel cell units, each said fuel cell unit comprising an anode and a cathode, an electrolyte in contact with one face of said anode and an electrolyte in contact with an opposite facing face of said cathode, and a separator plate separating said cell unit between said anode and said cathode forming an anode chamber between one face of said separator plate and said anode and a cathode chamber between the opposite face of said separator plate and said cathode, said anode chamber in gas communication with a fuel gas supply and outlet and said cathode chamber in gas communication with an oxidant gas supply and outlet, said electrolytes and said separator plates extending to the edge of said fuel cell stack, said separator plates having a flattened peripheral wet seal structure extending to contact said electrolytes on each face of said separator plates completely around their periphery forming a peripheral separator plate/electrolyte wet seal under cell operating conditions, said electrolytes and said separator plates each having a plurality of aligned perforations, each of said perforations in said separator plates being surrounded by a manifold wet seal structure extending to contact said electrolyte on each face of said separator plate forming a manifold separator plate/electrolyte wet seal under cell operating conditions to form a plurality of gas manifolds extending through said cell stack, the improvement comprising:

said separator plate comprising an anode current collector, a cathode current collector and a main plate, said main plate disposed between said anode current collector and said cathode current collector;

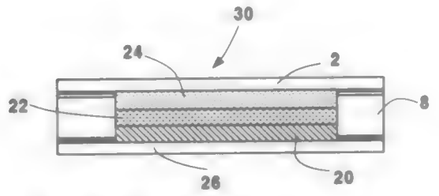
said anode current collector forming said flattened peripheral wet seal structure and said manifold set seal structure on the anode side of said separator plate;

said cathode current collector forming said flattened peripheral wet seal structure and said manifold wet seal structure on the cathode side of said separator plate;

means for providing fuel gas communication between one set of said manifolds and said anode chambers on one face of said separator plates; and

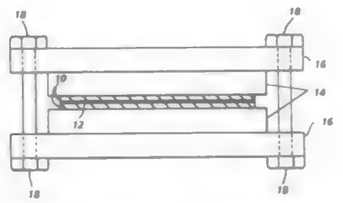
means for providing oxidant gas communication between the other set of manifolds and said cathode chambers on the other face of said separator plates, said means for providing fuel gas communication and said means for providing oxidant gas communication providing fully internal manifolding of fuel and oxidant gases to and from each said unit fuel cell in said fuel cell stack.

5,362,579
SOLDER SEALED SOLID ELECTROLYTE CELL HOUSED WITHIN A CERAMIC FRAME AND THE METHOD FOR PRODUCING IT
Mary P. Rossoll, Willoughby, and Alan J. Revilock, Middleburgh Heights, both of Ohio, assignors to Gould Electronics Inc., Eastlake, Ohio
Division of Ser. No. 982,556, Nov. 27, 1992, Pat. No. 5,279,626.
This application Oct. 20, 1993, Ser. No. 139,422
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—162 4 Claims



1. A cell comprising a ceramic frame defining an opening and having a top surface and a bottom surface; a first conductive terminal sheet solder secured to and closing the bottom surface of the frame; a second conductive terminal sheet solder secured to and closing the top surface of the frame; and an anode, an electrolyte and cathode assembly within the opening of the frame and arranged so that the anode makes electrical contact with one conductive terminal sheet and the cathode makes electrical contact with the other conductive terminal sheet.

5,362,580
LIGHTWEIGHT BATTERY ELECTRODE AND METHOD OF MAKING IT
William A. Ferrando, Arlington, and Amarnath P. Divecha, Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 977,966, Nov. 18, 1992, abandoned, which is a division of Ser. No. 728,915, Jul. 11, 1991, Pat. No. 5,197,993. This application Jul. 7, 1993, Ser. No. 87,002
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] H01M *4/66*; B05D *3/00*
U.S. Cl. 429—245 13 Claims



1. A process for producing a lightweight electrode grid comprising:
A. compressing a mat of dense graphite fibers to a desired thickness;
B. heating the compressed mat of dense graphite fibers to a temperature at which $Ni(CO)_4$ decomposes;
C. exposing the heated, compressed mat of graphite fibers to $Ni(CO)_4$ gas which is at a temperature above the vaporization temperature of $Ni(CO)_4$ but below the decomposition temperature of $Ni(CO)_4$,
wherein the $Ni(CO)_4$ decomposes when it contacts the heated graphite fiber mat and deposits nickel metal on the graphite fiber surfaces;
D. removing the heated graphite fiber mat from the $Ni(CO)_4$ gas when the desired thickness of nickel metal coating has been produced on the graphite fiber mat to bond the graphite fibers together; and
E. removing the external compressive forces from the nickel metal coated graphite fiber mat electrode grid.

5,362,581
BATTERY SEPARATOR
Victor S. Chang, Ellicott City; Richard C. Hartwig, Laurel, both of Md.; Joseph T. Landquist, Gilroy, Calif.; Marc E. Parham, Bedford, and Anthony J. Laccetti, North Andover, both of Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Apr. 1, 1993, Ser. No. 41,085.
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[5] H01M *2/14*
U.S. Cl. 429—249 16 Claims

1. A battery separator comprising a microporous sheet product having a thickness of less than about 50 mils bound by first and second surfaces of the sheet product, comprising a mixture of from 1:4 to 4:1 wt. ratio of a thermoplastic polycarbonate and a particulate filler with a porous sheet embedded between the first and second surfaces of the sheet product and having porosity throughout the sheet product's thickness with a pore size distribution such that the pore size increases from each major surface towards an interior, central portion of the sheet product's thickness.

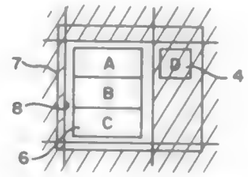
5,362,582
BATTERY SEPARATOR
Victor S. Chang, Ellicott City; Richard C. Hartwig, Laurel, both of Md.; Joseph T. Landquist, Gilroy, Calif.; Marc E. Parham, Bedford, Mass.; James K. Kung, Lexington, Mass.; James A. Avtges, Belmont, Mass., and Anthony J. Laccetti, North Andover, Mass., assignors to W.R. Grace & Co.-Conn., New York, N.Y.
Filed Apr. 1, 1993, Ser. No. 41,747
The portion of the term of this patent subsequent to Sep. 13, 2011, has been disclaimed.
Int. Cl.[5] H01M *2/14*
U.S. Cl. 429—249 13 Claims

1. A battery separator comprising a microporous sheet product having a thickness of less than about 50 mils bound by first and second surfaces of the sheet product, comprising a mixture of from 1:4 to 4:1 wt. ratio of a polymer and a filler with a porous sheet having a thickness which is substantially embedded between the first and second major surfaces of the sheet product, and having porosity throughout the sheet product's thickness with a pore size distribution such that the pore size increases from each surface towards an interior, central portion of the sheet product's thickness.

5,362,583
RETICLE MASK EXPOSURE METHOD COMPRISING BLANK TO REMOVE INCOMPLETE CIRCUITS
Koji Nakagawa, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jan. 26, 1993, Ser. No. 9,070
Claims priority, application Japan, Jan. 31, 1992, 4-016786
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 2 Claims

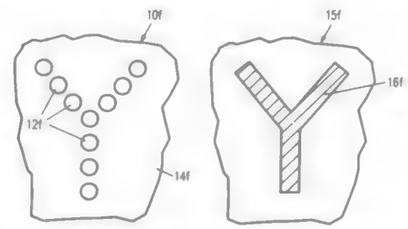
1. A method for exposing a pattern for integrated circuits which comprises the steps of:
shielding a blank window of a reticle mask, the reticle mask having both the blank window and an exposure pattern for replicating a unit comprising a plurality of integrated circuit chips on a wafer, the blank window being distinct from the exposure pattern, said blank window having a size on the order of the size of an integrated circuit chip of said unit;

exposing the exposure pattern for forming the unit of integrated circuit chips on the wafer;
shielding the exposure pattern of the reticle mask;



positioning and exposing the blank window over an incomplete pattern existing on a photoresist film at a periphery of the wafer; and
removing the exposed incomplete pattern by development.

5,362,584
PHASE-SHIFTING TRANSPARENT LITHOGRAPHIC MASK FOR WRITING CONTIGUOUS STRUCTURES FROM NONCONTIGUOUS MASK AREAS
Phillip J. Brock, Sunnyvale; Jacqlynn A. Franklin, Milpitas; Franklin M. Schellenberg, Cupertino, and Jiunn Tsay, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 2, 1993, Ser. No. 42,316
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 6 Claims

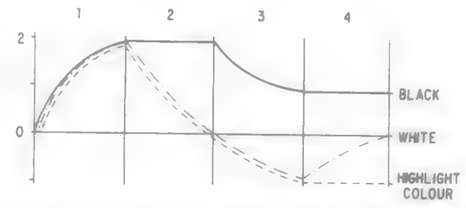


1. A lithographic mask for exposing a photoresist, said mask comprising a transparent portion providing a nonphase-shifting region covered in part by a plurality of noncontiguous phase-shifting regions in the form of substantially equally-spaced hollow circles arranged in a matrix of parallel columns and rows to facilitate fabrication and facilitate writing of said phase-shifting regions in any arbitrary pattern on an image plane, each of said hollow circles having circumferential edges spaced from each other by distances, as determined by the exposure characteristics of the photoresist, less than that at which images of said edges separate.

5,362,585
SEIMCONDUCTOR INTEGRATED CIRCUIT FABRICATION UTILIZING LATENT IMAGERY
Thomas E. Adams, Emmaus, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 664,187, Mar. 4, 1991, abandoned. This application Apr. 7, 1993, Ser. No. 45,346
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—30 44 Claims

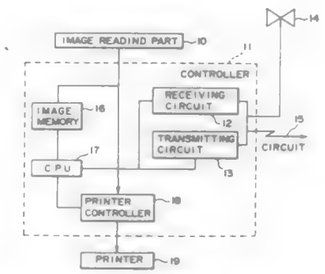
1. A method of semiconductor integrated circuit fabrication comprising:
providing a substrate having a resist;
creating a first plurality of latent images in said resist, each said latent image being characterized by at least one predetermined lithographic parameter;
interrogating said latent images by exposing them to energy and measuring scattered energy; selecting a desired value of said lithographic parameter chosen to create a desired latent image;
utilizing said desired lithographic parameter value to form a second plurality of latent images in said resist.

5,362,586
PROCESS FOR TWO COLOR IMAGING COMPRISING A PHOTORECEPTOR HAVING A UNIPOLAR HOLE TRANSPORTING LAYER
Geoffrey M. T. Foley, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Continuation of Ser. No. 634,588, Dec. 27, 1990, abandoned.
This application Jun. 25, 1992, Ser. No. 904,292
Int. Cl.[5] G03G *15/02*
U.S. Cl. 430—58 26 Claims



6. The process of claim 5 wherein said second color is red and wherein said electrostatic image is formed by a method comprising:
(1) positively charging said photoreceptor at a surface charge density of σ; and
(2) exposing said photoreceptor with red-filtered white light;
wherein said black and red toner particles are negatively and positively charged, respectively.

5,362,587
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING AN INTERMEDIATE LAYER COMPRISING A PLURALITY OF POLYETHER POLYOLS
Yuichi Hashimoto, Tokyo, and Takashi Koyama, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 860,604, Mar. 30, 1992, abandoned, which is a continuation of Ser. No. 536,298, Jun. 7, 1990, abandoned. This application Aug. 27, 1993, Ser. No. 112,234
Claims priority, application Japan, Jun. 8, 1989, 1-146219; Jun. 12, 1989, 1-150058
Int. Cl.[5] G03G *5/05*
U.S. Cl. 430—58 8 Claims



1. An electrophotographic photosensitive member comprising a conductive support, a photosensitive layer and an intermediate layer interposed therebetween, wherein said intermediate layer comprises a polyether polyurethane derived from an isocyanate compound and a plurality of kinds of polyether

polyol compounds, the polyether polyol compounds meeting at least one of the following requirements i) and ii):

i) a ratio of a weight average molecular weight of at least one polyether polyol compound to a weight average molecular weight of at least one other polyether polyol compound is 1.3 or more; and

ii) at least one polyether polyol compound has different functionality from that in at least one other polyether polyol compound.

5,362,588

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND APPARATUS INCLUDING SAME

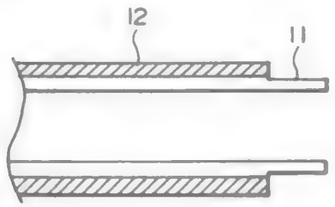
Toshiyuki Yoshihara, Inagi; Nobuyuki Hanami, Matsudo; Hideki Anayama, Yokohama; Junichi Kishi, and Hideyuki Ainoya, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1992, Ser. No. 920,637

Claims priority, application Japan, Aug. 1, 1991, 3-193178

Int. Cl.[5] G03G *5/02, 15/00*

U.S. Cl. 430—69 **12 Claims**



1. An electrophotographic photosensitive member, comprising:

a cylindrical substrate; and

a photosensitive layer disposed on the cylindrical substrate, wherein the cylindrical substrate has a circumferential end section adjacent to at least one longitudinal end of the cylindrical substrate, and the circumferential end section has been subjected to cutting which removes the photosensitive layer thereon and smooths the circumferential end section of the cylindrical substrate.

4. An apparatus unit, comprising:

an electrophotographic photosensitive member; and

at least one of a charging means, a developing means and a cleaning means integrally supported with the electrophotographic photosensitive member to form a single unit, which can be connected to or released from an apparatus body as desired;

wherein the electrophotographic photosensitive member comprises a cylindrical substrate and a photosensitive layer disposed on the cylindrical substrate, the cylindrical substrate has a circumferential end section adjacent to at least one longitudinal end of the cylindrical substrate, and the circumferential end section has been subjected to cutting which removes the photosensitive layer thereon and smooths the circumferential end section of the cylindrical substrate.

7. An electrophotographic apparatus, comprising:

an electrophotographic photosensitive member;

means for forming a latent image;

means for developing the latent image; and

means for transferring the developed image onto a transfer-receiving member;

wherein the electrophotographic photosensitive member comprises a cylindrical substrate and a photosensitive layer disposed on the cylindrical substrate, the cylindrical substrate has a circumferential end section adjacent to at least one longitudinal end of the cylindrical substrate, and the circumferential end section has been subjected to cutting which removes the photosensitive layer thereon and smooths the circumferential end section of the cylindrical substrate.

10. A facsimile apparatus, comprising:

an electrophotographic apparatus; and

receiving means for receiving image data from a remote terminal, wherein the electrophotographic apparatus comprises an electrophotographic photosensitive member, means for forming a latent image, means for developing the latent image, and means for transferring the developed image onto a transfer-receiving member, the electrophotographic photosensitive member comprises a cylindrical substrate and a photosensitive layer disposed on the cylindrical substrate, the cylindrical substrate has a circumferential end section adjacent to at least one longitudinal end of the cylindrical substrate, and the circumferential end section has been subjected to cutting which removes the photosensitive layer thereon and smooths the circumferential end section of the cylindrical substrate.

5,362,589

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING PHTHALOCYANINE MIXED CRYSTALS

Katsumi Nukada; Akira Imai; Katsumi Daimon, and Masakazu Iijima, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 927,967, Aug. 11, 1992, Pat. No. 5,302,710. This application Nov. 2, 1993, Ser. No. 144,524

Claims priority, application Japan, Aug. 16, 1991, 3-229688

Int. Cl.[5] C09B *47/32*

U.S. Cl. 430—78 **6 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate having formed thereon a photosensitive layer containing a phthalocyanine mixed crystal comprising a halogenated indium phthalocyanine and a halogenated gallium phthalocyanine.

5,362,590

LASER-SENSITIVE ELECTROPHOTOGRAPHIC LITHOGRAPH PRINTING PLATE MATERIAL

Shiro Nakano, Nichinan, Japan, assignor to Oji Paper Co., Ltd., Chuo, Japan

Filed Aug. 13, 1992, Ser. No. 928,755

Claims priority, application Japan, Sep. 9, 1991, 3-229915

Int. Cl.[5] G03G *5/09*

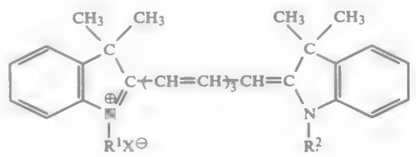
U.S. Cl. 430—89 **6 Claims**

1. A laser-sensitive electrophotographic lithograph printing plate material comprising:

a substrate and

a laser-sensitive photoconductive layer formed on a surface of the substrate and comprising a mixture of a finely divided photoconductive zinc oxide and an electrically insulating binder,

said photoconductive layer further comprising (1) a sensitizing dye comprising at least one compound of the formula (I):



(I)

wherein R^1 and R^2 respectively and independently from each other represent a member selected from the group consisting of $-CH_3$, $-C_2H_5$, and $-CH_2-CH=CH_2$ groups and X represents a halogen atom, and (2) an antioxidant comprising at least one member selected from the group consisting of 2,6-di-tert-butyl-p-cresol, 2,2'-methylene-bis (4-methyl-6-tert-butyl-phenol), dilaurylthiopropionate, nonylphenylphosphite and N-phenylnapthylamine.

5,362,591

MASK HAVING A PHASE SHIFTER AND METHOD OF MANUFACTURING SAME

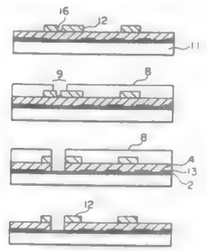
Akira Imai, Kokubunji; Norio Hasegawa, Tokyo; Hiroshi Fukuda, Kokubunji, and Toshihiko Tanaka, Tokyo, all of Japan, assignors to Hitachi Ltd. et al., Tokyo, Japan

Filed Oct. 5, 1990, Ser. No. 593,808

Claims priority, application Japan, Oct. 9, 1989, 1-262157; Dec. 26, 1989, 1-335061; Mar. 9, 1990, 2-056353; Apr. 2, 1990, 2-084836

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—5 **11 Claims**



1. A mask member comprising:

a substrate substantially transparent to exposure light;

a first phase shifter layer formed on said substrate; and

a second phase shifter layer formed on said first shifter layer;

said first phase shifter layer being adapted to change a phase of incident light by $180° \pm 10°$ when said incident light transmits through said first phase shifter layer, and

said second phase shifter layer being adapted to further change the phase of said incident light by $180° \pm 10°$ when said incident light which has transmitted through said first phase shifter layer further transmits through said second phase shifter layer.

5,362,592

DECOLORIZABLE TONER

Katsumi Murofushi; Yoshikazu Hosoda, both of Kawasaki; Toshio Kaji, Kobe; Yuki Abe, Kobe; Kiyotaka Yamaguchi, Kobe; Takayuki Yoshida, Kobe; Jiro Yamashiro, Kobe; Toshio Arai, Kobe; Takayuki Nagase, Kobe, and Harushi Nagami, Kobe, all of Japan, assignors to Showa Denko K.K., Tokyo and Bando Chemical Industries, Ltd., Kobe, both of Japan

Filed Nov. 13, 1992, Ser. No. 974,753

Claims priority, application Japan, Nov. 14, 1991, 3-298905; Dec. 21, 1991, 3-339142; Dec. 27, 1991, 3-347363; Dec. 27, 1991, 3-347365

Int. Cl.[5] G03G *9/09*

U.S. Cl. 430—106 **13 Claims**

1. A decolorizable toner comprising

(A) a resin binder having a melt viscosity of at most 10^7 poise at a temperature of 110° C. and a melt viscosity of at least 10^3 poise at a temperature of 140° C,

(B) at least one near infrared ray-absorbing dye selected from the group consisting of a near infrared ray-absorbing dye represented by the general formula (I):

$$X^- Y^+ \quad \text{(I)}$$

wherein X^- is a halogen ion, perchloric acid ion, PF_6^-, SbF_6^-, OH^-, sulfonic acid ion or BF_4^-, Y^+ is a cation having absorptions in the near infrared region, and a near infrared ray-absorbing dye represented by the general formula (II):



(II)

wherein each of R^1, R^2, R^3 and R^4 is independently hydrogen atom, a hydrocarbon group or a hydrocarbon group containing a hetero atom, Y^+ is the same as defined above,

(C) a decolorizing agent represented by the general formula (III):



(III)

wherein each of R^5, R^6, R^7 and R^8 is independently an alkyl group, an aryl group, an allyl group, an aralkyl group, an alkenyl group, an alkynyl group, silyl group, an alicyclic group, a substituted alkyl group, a substituted aryl group, a substituted allyl group, a substituted aralkyl group, a substituted alkenyl group, a substituted alkynyl group or a substituted silyl group, with the proviso that at least one of R^5, R^6, R^7 and R^8 is an alkyl group having 1 to 12 carbon atoms; and each of R^9, R^{10}, R^{11} and R^{12} is independently hydrogen atom, an alkyl group, an aryl group, an allyl group, an aralkyl group, an alkenyl group, an alkynyl group, an alicyclic group, a substituted alkyl group, a substituted aryl group, a substituted allyl group, a substituted aralkyl group, a substituted alkenyl group or a substituted alkynyl group, and

(D) a light fastness stabilizer.

5,362,593

ELECTROPHOTOGRAPHIC TONER HAVING IMPROVED LOW TEMPERATURE FIXING PROPERTIES, OFF-SET RESISTANCE AND HEAT RESISTANCE

Masahide Inoue; Koichi Tsuyama, both of Nara; Hidenori Asada, Hirakata, and Takeshi Arakawa, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 29, 1992, Ser. No. 890,159

Claims priority, application Japan, May 31, 1991, 3-129290

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—111 **19 Claims**

1. An electrophotographic toner having rheology characteristics, under the conditions of measuring frequency of 1 Hz and measuring distortion of 1 degree, such that:

(1) the drop starting temperature of storage elastic modulus is in the range from 100° to 110° C.;

(2) the storage elastic modulus at 150° C. is not greater than 1×10^4 dyn/cm^2; and

(3) the peak temperature of loss elastic modulus is not less than 125° C.

5,362,594

IMAGING PROCESS FOR ELECTROPHOTOGRAPHY

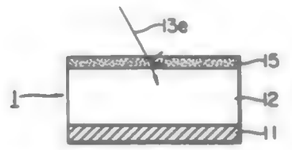
Akio Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 959,417, Oct. 13, 1992, abandoned, which is a continuation of Ser. No. 772,132, Oct. 9, 1991, abandoned, which is a continuation of Ser. No. 535,503, Jun. 11, 1990, abandoned, which is a division of Ser. No. 381,993, Jul. 17, 1989, Pat. No. 4,952,473, which is a continuation of Ser. No. 83,001, Aug. 5, 1987, abandoned, which is a continuation of Ser. No. 728,160, Apr. 30, 1985, abandoned, which is a continuation of Ser. No. 534,314, Sep. 21, 1983, abandoned. This application Dec. 14, 1993, Ser. No. 166,151

Claims priority, application Japan, Sep. 27, 1982, 57-166675

Int. Cl.[5] G03G *13/22*

U.S. Cl. 430—126 **4 Claims**



1. In an image-forming method comprising (1) irradiating a photoconductive layer of a charged photosensitive member with coherent laser light to form a latent image thereon; (2) developing the latent image to form a visible image; and (3) transferring the visible image onto paper; the improvement which comprises scattering the coherent laser light in the irradiating step by means of a blocking layer containing fine particles provided on the photoconductive layer, whereby the coherent laser light loses its coherence and interference within the photoconductive layer is minimized.

5,362,595

ELECTROPHOTOGRAPHIC TONER PRODUCTION PROCESS

Nobuhiro Hirayama, Yokohama; Masaki Shin, Fujisawa; Shoji Kawasaki, Yokohama; Akira Misawa, Kamakura; Akio Fujiwara, Yokohama, and Kenji Uchiyama, Odawara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 747,700, Aug. 20, 1991, abandoned, which is a division of Ser. No. 320,239, Feb. 24, 1989, Pat. No. 5,084,368. This application Oct. 26, 1992, Ser. No. 966,570

Claims priority, application Japan, Jul. 10, 1987, 62-171088

Int. Cl.[5] G03G *9/087*

U.S. Cl. 430—137 **5 Claims**

1. A method for the preparation of a toner resin having a number average molecular weight (Mn) of 2,000–15,000, a Z average molecular weight (Mz) of not less than 400,000, and Mz/Mn of 50–600, which comprises steps a) to d):

a) conducting bulk polymerization of vinyl monomer at 60°–150° C. to a conversion of 30–90% by weight, successively adding a solvent to reduce the viscosity of the reaction mixture and carrying out a solution polymerization at 60°–150° C., so as to obtain a high molecular weight polymer solution;

b) polymerizing a styrene type vinyl monomer at 190°–230° C. in a state of solution so as to obtain a low molecular weight polymer solution;

c) mixing 30–70 parts by weight of a solid component of said high molecular weight polymer solution with 70–30 parts by weight of a solid component of said low molecular weight polymer solution;

d) removing the solvent from the resulting mixture.

5,362,596

CARRIER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE AND PROCESS FOR PRODUCING THE SAME

Yasuo Matsumura; Hiroshi Takano; Masahiro Takagi, and Mamoru Yoshimura, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 836,385, Feb. 18, 1992, Pat. No. 5,256,511. This application Jul. 16, 1993, Ser. No. 92,483

Claims priority, application Japan, Feb. 20, 1991, 3-26276; Feb. 20, 1991, 3-26277; Feb. 25, 1991, 3-29816

Int. Cl.[5] G03G *9/113*

U.S. Cl. 430—137 **3 Claims**

1. A process for producing a carrier for developing an electrostatic latent image and comprising core particles having formed thereon a resin coating layer, said process comprising the steps of: dry-blending core particles, a fluorine-containing resin, and a second resin; and melting the resin blend to coat said core particles, wherein said second resin has a softening point lower than that of said fluorine-containing resin by an amount sufficient to cause said fluorine-containing resin and said second resin each to be partially exposed on the surface of said resin coating layer so as to form a sea-island structure thereon.

5,362,597

RADIATION-SENSITIVE RESIN COMPOSITION COMPRISING AN EPOXY-CONTAINING ALKALI-SOLUBLE RESIN AND A NAPHTHOQUINONE DIAZIDE SULFONIC ACID ESTER

Kimiyasu Sano; Osahiko Tomomitsu; Masayuki Endoh, all of Yokohama, and Yasuaki Yokoyama, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed May 27, 1992, Ser. No. 888,635

Claims priority, application Japan, May 30, 1991, 3-153729; Dec. 11, 1991, 3-350470

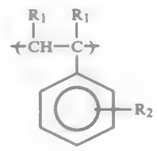
Int. Cl.[5] G03F *7/023, 7/30*

U.S. Cl. 430—191 **13 Claims**

1. A radiation-sensitive resin composition comprising an admixture of:

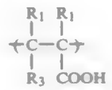
(a) at least one epoxy group-containing alkali-soluble resin selected from the group consisting of

(a1) an epoxy group-containing alkali-soluble resin which consists essentially of a structural unit of the formula (a)-1,


(a)-1

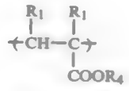
in which two R_1's are identical with, or different from, each other and each is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and R_2 is a hydrogen atom, a methyl group or a methoxy group,

a structural unit of the formula (a)-2,


(a)-2

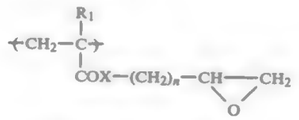
in which R_1 is as defined above, and R_3 is a hydrogen atom or a carboxyl group,

a structural unit of the formula (a)-3,

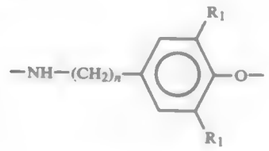

(a)-3

in which R_1 is as defined above, and R_4 is an alkyl group having 1 to 20 carbon atoms, a cycloalkyl group having 5 to 20 carbon atoms, or

an aryl group having 6 to 12 carbon atoms, and a structural unit of the formula (a)-4,

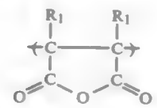

(a)-4

in which R_1 is as defined above, X is —O— or a group of the following formula



(wherein R_1 and n are defined as above), and n is an integer of 1 to 10, and

(a1)' an epoxy group-containing alkali-soluble resin comprising the above structural units (a)-1, (a)-3, (a)-4 and a structural unit of the formula (a)-5,


(a)-5

wherein R_1 is defined as above,

(b) 1,2-naphthoquinonediazide sulfonic acid ester, and

(c) a solvent.

5,362,598

QUINONE DIAZIDE PHOTORESIST COMPOSITION CONTAINING ALKALI-SOLUBLE RESIN AND AN ULTRAVIOLET RAY ABSORBING DYE

Naoki Takeyama; Yasunori Uetani; Hirotoshi Nakanishi, and Ryotaro Hanawa, all of Osaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

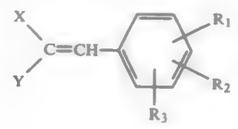
Continuation of Ser. No. 858,446, Mar. 24, 1992, abandoned, which is a continuation of Ser. No. 505,699, Apr. 6, 1990, abandoned. This application Oct. 6, 1993, Ser. No. 132,230

Claims priority, application Japan, Apr. 10, 1989, 1-91551

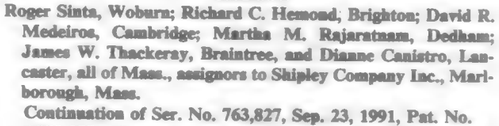
Int. Cl.[5] G03F *7/023;* G03C *1/61*

U.S. Cl. 430—191 **13 Claims**

1. A photoresist composition, which comprises an admixture of an alkali-soluble resin, a quinone diazide compound, and a compound of the general formula:


(I)

wherein R_1, R_2, and R_3 are the same or different and represent a hydrogen atom, a hydroxyl group, —$OCOR_4$, —O—R_5, —$OSi(R_6)_3$, an optionally substituted alkyl group or an optionally substituted alkenyl group; R_4, R_5 and R_6 represent an optionally substituted lower alkyl group; X and Y are the same or different and represent —CN, —$COOR_7$,



R_7 represents an alkyl group; R_8 and R_9 are the same or different and represent a hydrogen atom, or an optionally substituted alkyl or phenyl group; R_{10} represents a hydrogen atom, an optionally substituted alkyl group, or a hydroxyl group; and is a number from 1 to 2, wherein the amount of said compound of the general formula (I) is from 0.2 to 20% by weight based on the total weight of solid components in said photoresist composition.

5,362,599

FAST DIAZOQUINONE POSITIVE RESISTS COMPRISING MIXED ESTERS OF 4-SULFONATE AND 5-SULFONATE COMPOUNDS

Christopher J. Knors, Bound Brook, N.J.; Steve S. Miura, Poughkeepsie, N.Y.; Melvin W. Montgomery, New Windsor, N.Y.; Wayne M. Moreau, Wappingers Falls, N.Y., and Randolph J. Smith, Newburgh, N.Y., assignors to International Business Machines Corporations, Armonk, N.Y.

Filed Nov. 14, 1991, Ser. No. 792,115

Int. Cl.[5] G03F *7/023, 7/30*

U.S. Cl. 430—192 **6 Claims**

1. A positive working photoresist composition comprising, in admixture, 100 parts by weight of phenolic-aldehyde resin and from 18 to 100 parts by weight of a dissolution inhibitor which is a mixed ester derived from the esterification of a polyphenol with a mixture of naphthoquinone diazide 4- and 5-sulfonic acids, said polyphenol having the formula $(Ph(OH)_x)_yCR_{4-y}$ wherein Ph is a benzene ring, x is an integer from 1 to 3, y is 2 or 3, and R is hydrogen, fluorine, methyl, ethyl, trifluoromethyl or pentafluoroethyl, said dissolution inhibitor having greater than 80% of hydroxyl groups esterified, and said dissolution inhibitor containing from 10 to 90 mole percent of 4-sulfonate esters and from 90 to 10 mole percent of 5-sulfonate esters, with the proviso that when R is methyl and y is 2, the mole percent of 4-sulfonate esters is from 10 to 80.

5,362,600

RADIATION SENSITIVE COMPOSITIONS COMPRISING POLYMER HAVING ACID LABILE GROUPS

Roger Sinta, Woburn; Richard C. Hemond, Brighton; David R. Medeiros, Cambridge; Martha M. Rajaratnam, Dedham; James W. Thackeray, Braintree, and Dianne Canistro, Lancaster, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Continuation of Ser. No. 763,827, Sep. 23, 1991, Pat. No. 5,258,257. This application May 25, 1993, Ser. No. 78,654

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/54, 5/58*

U.S. Cl. 430—192 **19 Claims**

1. A photoresist composition comprising an admixture of a resin binder and a radiation sensitive component which generates acid upon exposure to activating radiation, the resin binder comprising a polymer having phenolic units and non-aromatic cyclic alcohol units, at least a portion of the hydroxyl groups of the polymer being bonded to acetate acid labile groups, and

the radiation sensitive component being present in an amount capable of generating a latent image by exposure of a coating of the composition to activating radiation.

5,362,601

HEAT-DEVELOPABLE COLOR PHOTOSENSITIVE MATERIAL

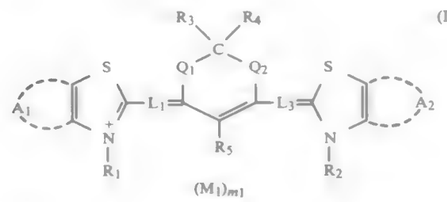
Kiyoteru Miyake, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 28, 1992, Ser. No. 967,051
Claims priority, application Japan, Oct. 31, 1991, 3-311498
Int. Cl.[5] G03C *1/20, 1/100*
U.S. Cl. 430—203 **2 Claims**

1. A heat-developable color photosensitive material comprising at least a photosensitive silver halide emulsion, a binder and a dye-providing compound on support, said photosensitive material comprising

at least one infrared-sensitive layer having a maximum spectral sensitivity at a wavelength of 700 nm or longer, said at least one infrared-sensitive layer containing a silver chlorobromide emulsion prepared by adding an iodide at an intermediate stage during grain formation or later;

wherein said infrared-sensitive layer containing a silver chlorobromide emulsion is spectrally sensitized with a thiadicarbocyanine sensitizing dye of the following general formula such that the spectral sensitivity to light having a wavelength 20 nm longer than the wavelength giving the maximum spectral sensitivity is up to one third of the maximum spectral sensitivity



(I)

$(M_1)_{m1}$

wherein

Q_1 and Q_2 each are a methylene radical,

R_1 and R_2 each are an alkyl radical,

R_3, R_4 and R_5 are independently selected from the group consisting of a hydrogen atom, an alkyl radical, an aryl radical and a heterocyclic radical, with the proviso that both R_3 and R_4 are not hydrogen atoms at the same time,

L_1 and L_3 each are a methine radical,

A_1 and A_2 each are a group of atoms necessary to form a benzene or naphthalene ring,

R_1 and L_1, and R_2 and L_3, taken together, may form a ring,

M_1 is an electric charge balancing counter ion, and

m_1 is a value necessary to neutralize the electric charge.

5,362,602

METHOD OF MAKING LITHOGRAPHIC ALUMINUM OFFSET PRINTING PLATES

Paul J. Coppens, Turnhout; Joan T. Vermeersch, Deinze; Luc H. Leenders, Herentals; Ludovicus H. Vervloet, Kessel; Eric M. Hoes, Herentals, and Eddie R. Daems, Herentals, all of , assignors to Agfa-Gevaert, N.V., Mortsel,

Division of Ser. No. 783,244, Oct. 28, 1991, Pat. No. 5,273,858. This application Nov. 22, 1993, Ser. No. 155,222
Claims priority, application European Pat. Off., Nov. 2, 1990, 90202900.8
Int. Cl.[5] G03C *5/54, 11/12, 1/90*
U.S. Cl. 430—262 **5 Claims**

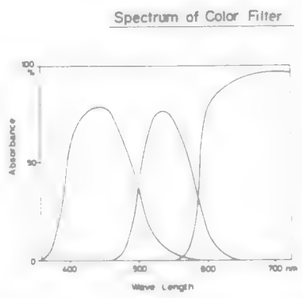
1. Photosensitive layer packet for making a lithographic aluminium printing plate according to the DTR-process, carrying on a temporary base a separable layer sandwich comprising in the given sequence at least one silver halide emulsion layer and an intermediate layer consisting essentially of hydrophobic polymer beads prepared by polymerization of at least one ethylenically unsaturated monomer and having an average diameter not lower than 0.2 μm said layer sandwich being transferable onto a wet separate hydrophilic grained and anodized aluminium foil when pressed thereon.

5,362,603

PHOTOPOLYMERIZABLE COMPOSITION FOR COLOR FILTER AND COLOR FILTER PREPARED THEREFROM

Yoshinori Katoh, Yono; Naoko Ichinose, Sagamihara, and Teruhito Sotogoshi, Miyashiromachi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00612, § 371 Date Feb. 24, 1993, § 102(e) Date Feb. 24, 1993, PCT Pub. No. WO92/21067, PCT Pub. Date Nov. 26, 1992
PCT Filed May 14, 1992, Ser. No. 969,232
Claims priority, application Japan, May 17, 1991, 3-140781
Int. Cl.[5] G03C *1/725;* **G03F** *9/00*
U.S. Cl. 430—281 **15 Claims**



1. A photopolymerizable composition for color filter containing a photosensitive resin which comprises a photopolymerizable compound having at least one ethylenically unsaturated double bond, a photopolymerization initiator, and a pigment characterized in that said photopolymerizable compound is contained in an amount not less than 60% by weight of the photosensitive resin and said pigment is used in an amount of 10 to 60% by weight based on the photosensitive resin.

5,362,604

PHOTOSENSITIVE RESIN COMPOSITION AND PROCESS FOR THE PRODUCTION THEREOF, AND VIRGIN FLEXOGRAPHIC PRINTING PLATE

Yoshimi Yatsuyanagi, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/01028, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO93/03423, PCT Pub. Date Feb. 18, 1993
PCT Filed Aug. 7, 1992, Ser. No. 977,000
Claims priority, application Japan, Aug. 9, 1991, 3-224546
Int. Cl.[5] G03F *7/027, 7/038*
U.S. Cl. 430—281 **10 Claims**

1. A photosensitive resin composition comprising (1) a dry photosensitive microgel obtained by emulsion-polymerizing (a) a compound having an α, β-ethylenically unsaturated double bond in the presence, as an emulsifier, of (b) a compound containing a tertiary ammonium salt to prepare (A) fine microgel particles and reacting the (A) fine microgel particles with (B) a compound having an epoxy group to react with the tertiary ammonium salt and at least one α, β-ethylenically unsaturated double bond per molecule, (2) a compound having an α, β-ethylenically unsaturated double bond, and (3) a rubber or thermoplastic elastomer.

5,362,605

PHOTOSENSITIVE POLYMER COMPOSITION FOR FLEXOGRAPHIC PRINTING PLATES PROCESSABLE IN AQUEOUS MEDIA

Srinivas K. Mirle, Ellicott City, and Truc-Chi T. Huynh-Tran, Burtonsville, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 10, 1993, Ser. No. 59,928
Int. Cl.[5] G03C *1/725*
U.S. Cl. 430—284 **10 Claims**

1. A printing plate comprising a support and a layer of photocurable composition thereon, where the composition comprises, in parts by weight:

(a) about 50 to about 100 parts of a photocurable polymer;

(b) about 0.1 to about 50 parts of a complexing polymer which is a polymer or copolymer of poly(vinylpyrrolidone);

(c) 0 to about 25 parts of (meth)acrylate diluents;

(d) about 0.1 to about 10 parts photoinitiator;

(e) about 0.002 to about 8 parts of a stabilizer;

(f) about 0.1 to about 20 parts of a plasticizer that is compatible with both the photocurable polymer and the complexing polymer;

wherein the photocurable polymer (a) is an amine-containing polyurethane-(meth)acrylate prepared by reacting together:

(i) an aromatic diisocyanate with

(ii) a polyether and/or a polyester diol of molecular weight about 600–7000 and

(iii) an alkyldialkanolamine containing two hydroxyl groups and an alkyl group and

(iv) a hydroxyalkylmethacrylate.

5,362,606

POSITIVE RESIST PATTERN FORMATION THROUGH FOCUSED ION BEAM EXPOSURE AND SURFACE BARRIER SILYLATION

Mark A. Hartney, Carlisle; John Melngailis, Newton, and David C. Shaver, Carlisle, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 599,033, Oct. 17, 1990, abandoned, which is a continuation-in-part of Ser. No. 423,016, Oct. 18, 1989, Pat. No. 5,139,925. This application Aug. 7, 1992, Ser. No. 926,971
Int. Cl.[5] G03F *7/38*
U.S. Cl. 430—315 **11 Claims**

1. A method of forming a positive resist pattern on a substrate, such method comprising the steps of

forming a film of polymeric resist material having a thickness below approximately two micrometers on the substrate,

controllably exposing the film to a pattern of focused ion beam radiation at a fluence and at an energy effective to crosslink exposed regions of the film, such that substantially all exposure radiation is absorbed by said resist and crosslinking is localized at the surface of the film without introducing chemical or thermal effects in regions adjacent or below the exposed localized surface regions, forming a crosslinked diffusion barrier layer at the surface such that said exposed surface regions become effectively impermeable to silylating ambients and prevent diffusion therethrough into the film,

controllably exposing said coated exposed substrate to diffusion of a silylating ambient under controlled conditions of pressure, temperature and time and effective to selectively incorporate silicon into only a surface portion of the unexposed regions of the resist between said exposed regions, in an amount effective to form an etch resistant barrier, and

etching the film with a plasma etch thereby selectively removing the resist material in said exposed regions.

5,362,607

METHOD FOR MAKING A PATTERNED RESIST SUBSTRATE COMPOSITE

James V. Crivello, Clifton Park; Michael J. O'Brien, Albany, and Julia L. Lee, Schenectady, all of N.Y., assignors to MicroSi, Inc., Phoenix, Ariz.

Division of Ser. No. 889,261, May 13, 1992, Pat. No. 5,310,619, which is a continuation of Ser. No. 629,054, Dec. 14, 1990, abandoned, which is a continuation of Ser. No. 338,346, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 135,963, Dec. 21, 1987, abandoned, and a continuation-in-part of Ser. No. 873,914, Jun. 13, 1986, abandoned. This application Feb. 14, 1994, Ser. No. 195,275
Int. Cl.[5] G03F *7/30, 7/38, 7/40*
U.S. Cl. 430—326 **8 Claims**

1. A method for making a patterned resist-substrate composite that is photo patternable in the substantial absence of moisture which comprises

(1) treating a substrate with a positive resist composition to produce a resist-substrate composite,

(2) baking the resist-substrate composite to a temperature in the range of from about 35° C. to 180° C.,

(3) irradiating the applied resist in a patterned manner,

(4) heating the irradiated resist to a temperature in the range of from about 35° C. to 185° C., and

(5) developing the irradiated resist to produce a patterned resist-substrate composite, where the resist composition comprises by weight

(A) 100 parts of organic solvent, and

(B) 5 to 85 parts of solids comprising by weight an admixture of

(a) 100 parts of a water or aqueous base soluble phenolic resin other than a resole resin,

(b) 5 to 100 parts of a simple compound having a molecular weight of less than 1000 and selected from the group consisting of tertiary butyl esters, aryl tertiary butyl ethers and aryl tertiary butyl carbonates that is a dissolution inhibitor for (a), and which is insoluble in water or aqueous base, and

(c) an aryl onium salt which generates a strong acid having a pKa of less than zero upon being irradiated, in an amount effective to deblock compound (b) when heated, where (b) is substituted with acid labile groups that can be deblocked by being heated in the presence of a strong acid to thereby render (b) soluble in water or aqueous base and ineffective as a dissolution inhibitor for (a).

5,362,608

MICROLITHOGRAPHIC SUBSTRATE CLEANING AND COMPOSITIONS THEREFOR

Tony D. Flaim, St. James; James Lamb, III, and Terry Brewer, borh of Rolla, all of Mo., assignors to Brewer Science, Inc., Rolla, Mo.

Filed Aug. 24, 1992, Ser. No. 935,572
Int. Cl.[5] B05D *5/12;* **G03C** *5/00*
U.S. Cl. 430—327 **8 Claims**

1. An improved method for highly polar aromatic polymer edge bead removal from microlithographic substrates of the type wherein

edge beads are formed, on spinning microlithographic wafers, from at least one layer of polymers having a predominance of benzenoid rings in the backbone of the polymer with the rings connected by polar chemical linkages, and said edge beads having glass transition temperatures in excess of 100° C.,

edge beads are removed by a cycle including dissolving said edge beads in a solvent composition containing N-methylpyrrolidone (NMP) as the active edge bead removal ingredient, leaving an oily residue and said cycle also including removing the oily residue by baking, the improvement comprising:

a. removing said edge beads by applying an edge bead

removal composition without NMP and comprising at least 10% tetrahydrofurfuryl alcohol (THFA) as the active ingredient; and

b. removing the oily residue during the spinning cycle without baking;

whereby the edge bead removal cycle is achieved 25% faster, and the need for the amine components of NMP is negated.

5,362,609

STABILIZING SOLUTION FOR LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL, AND PROCESSING METHOD MAKING USE OF THE STABILIZING SOLUTION

Kenji Kuwae; Hiroaki Kobayashi, and Moeko Hagiwara, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

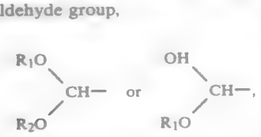
Continuation of Ser. No. 932,259, Aug. 19, 1992, abandoned.
This application Jan. 26, 1994, Ser. No. 187,801
Claims priority, application Japan, Sep. 25, 1991, 3-245912
Int. Cl.[5] G03C *5/39*
U.S. Cl. 430—372 **10 Claims**

1. A stabilizing solution for a light-sensitive silver halide color photographic material which comprises a compound represented by the following Formula F, and has a pH of from 7.5 to 10.0;

Formula F:



wherein Z represents a group of atoms necessary to form a substituted or unsubstituted cyclic hydrocarbon, X represents an aldehyde group,



wherein R_1 and R_2 each represent a lower alkyl group; and n is an integer of 1 to 3.

5,362,610

PHOTOGRAPHIC PROCESSING AGENT

Hiroshi Yoshimoto, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 958,648, Oct. 8, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,540
Claims priority, application Japan, Oct. 28, 1991, 3-281469
Int. Cl.[5] G03C *5/18, 5/26*
U.S. Cl. 430—465 **5 Claims**

5. A solid photographic color developing composition having a bulk density of 1.0 to 6.0 g/cm^3 for a silver halide photographic light-sensitive material, comprising: (a) a p-phenylene diamine having a water-solubilizing group selected from the group consisting of $-(CH_2)_nCH_2OH$, $-(CH_2)_m-NHSO_2(CH_2)_nCH_3$, $-(CH_2)_mO(CH_2)_nCH_3$, $-(CH_2CH_2O)_nC_mH_{2m+1}$, —COOH and $-SO_3H$ wherein m and n each represent an integer of not less than 0; (b) a compound selected from the group consisting of those represented by the following Formulas (A), (B) and (A'):

Formula (A)

Formula (B)

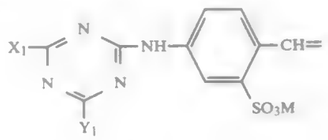


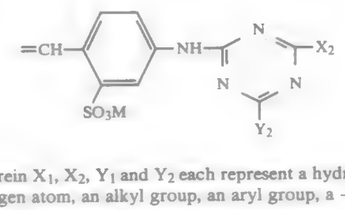
Formula (A')



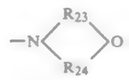
wherein R_1 and R_2 each represent a hydrogen atom, an alkyl group, an aryl group, or $R_3C(=O)-$ wherein R_3 represents an alkyl group, an alkoxy group or an aryl group; R_{11}, R_{12} and R_{13} each represent a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group; R_{14} represents an alkyl group, an alkoxy group, an aryl group, an aryloxy group, a carbamoyl group, an amino group, a hydroxy group or a hydroxyamino group; R_{15} represents —CO—, $-SO_2-$, or $-C(=NH)-$; n is 0 or 1, provided that when n is 0, R_{13} and R_{14} may form a heterocycle together; R represents a hydrogen atom or an alkyl group; A represents a carboxyl group, a sulfo group, a phosphono group, a phosphino group, a hydroxyl group, an amino group, an amido group, a carbamoyl group or a sulfamoyl group; and L represents a substituted or unsubstituted alkylene group; (c) a fluorescent whitening agent represented by the following Formula (E):

Formula (E)





wherein X_1, X_2, Y_1 and Y_2 each represent a hydroxyl group, a halogen atom, an alkyl group, an aryl group, a $-N(R_{21})(R_{22})$ group,



or $-OR_{25}$ in which R_{21} and R_{22} each represent a hydrogen atom, an alkyl group or an aryl group; R_{23} and R_{24} each represent an alkylene group; R_{25} represents a hydrogen atom, an alkyl group or an aryl group; and M represents a cation; and (d) at least one of the compounds represented by the following Formula (I):

Formula (I)



wherein R represents a phenyl group; X represents a hydrogen atom, an alkali metal or an ammonium group; and n is an integer of 0 or 1.

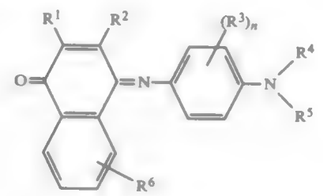
5,362,611

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kiyoshi Kawai, and Toru Harada, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

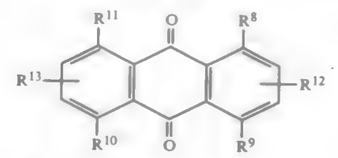
Filed Oct. 27, 1992, Ser. No. 966,838
Claims priority, application Japan, Oct. 30, 1991, 3-310143
Int. Cl.[5] G03C *1/08*
U.S. Cl. 430—508 **12 Claims**

1. A silver halide color photographic material which comprises a support having thereon at least three kinds of silver halide light-sensitive layers differing from one another in color sensitivity, each of at least two of the light-sensitive layers comprising silver halide emulsion grains spectrally sensitized with a sensitizing dye providing a spectral sensitivity maximum at wavelength not shorter than 570 nm, said photographic material further containing at least one water-soluble dye represented by the following general formula (IV), (V), (VI), (VIII), (VIII), (IX), or (X) and having an absorption maximum at a wavelength not shorter than 570 nm:



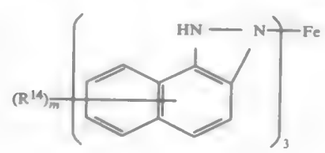
(IV)

wherein R^1 represents a hydrogen atom, a halogen atom, a sulfonic acid group, or a group of the formula $CONHR^7$, SO_2NHR^7, $NHCOR^7$, $NHCONHR^7$, or $NHSO_2R^7$, wherein R^7 represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, or a substituted or unsubstituted heterocyclic group; R^2 represents a hydrogen atom, an unsubstituted or substituted alkyl group or an unsubstituted or substituted aryl group; R^3 represents a hydrogen atom, a halogen atom, an unsubstituted or substituted group, a hydroxyl group, an unsubstituted or substituted alkoxy group, or a group represented by the formula $NHCOR^7$, $NHSO_2R^7$ or $NHCONHR^7$, wherein R^7 has the same meaning as described above; R^4 and R^5 may be the same or different, and each represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, an acyl group or a sulfonyl group; R^4 may combine with R^5 or R^3 to form a 5- or 6-membered ring, and R^5 also may combine with R^3 to form a 5- or 6-membered ring; R^6 represents a hydrogen atom, a sulfonic acid group, or a group represented by the formula $NHCOR^7$, $NHSO_2R^7$, SO_2NHR^7, wherein R^7 has the same meaning as described above; n represents an integer from 1 to 4; provided that at least one of the groups represented by R^1, R^2, R^3, R^4, R^5 and R^6 contains a sulfonic acid group as a substituent:



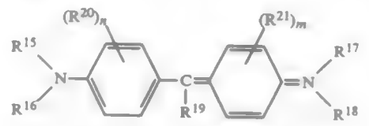
(V)

wherein R^8, R^9, R^{10} and R^{11} may be the same different, and each represents a hydrogen atom, a halogen atom, a hydroxyl group, an amino group, an unsubstituted or substituted alkylamino group or an unsubstituted or substituted arylamino group; and R^{12} and R^{13} may be the same or different, and each represents a hydrogen atom, a halogen atom or a sulfonic acid group; provided that at least one of the groups represented by R^8, R^9, R^{10}, R^{11}, R^{12} and R^{13} contains a sulfonic acid group as a substituent:



(VI)

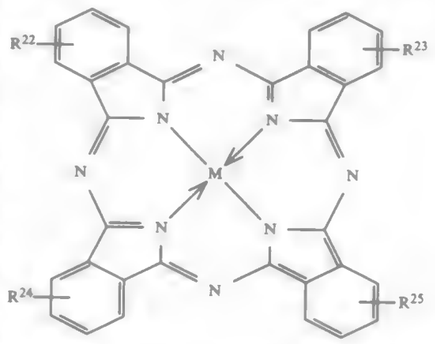
wherein R^{14} represents a sulfonic acid group, and m represents an integer from 1 to 6:



(VII)

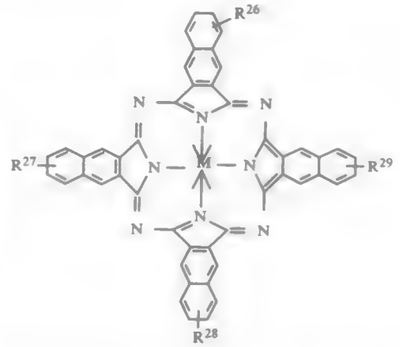
wherein R^{15}, R^{16}, R^{17} and R^{18} may be the same or different, and each represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, an acyl group or a sulfonyl group; R^{19} represents an unsubstituted or substituted aryl group, a substituted or unsubstituted heterocyclic group, or a cyano group; R^{20} and R^{21} may be the same or different, and each represents a hydrogen atom, a halogen atom, an unsubstituted or substituted alkyl group; a hydroxyl group, an unsubstituted or substituted alkoxy group, a sulfonic acid group, a carboxyl group or an unsubstituted or substituted amino group; and n and m each represent an integer from 1 to 4; provided that at least one of the groups represented by R^{15}, R^{16}, $R^{17}R^{18}$, R^{19}, R^{20} and R^{21} contains a sulfonic acid group as a substituent:

(VIII)

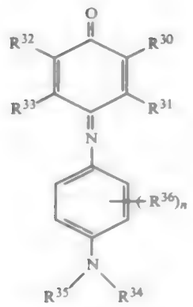


wherein R^{22}, R^{23}, R^{24} and R^{25} may be the same or different, and each represents a hydrogen atom or a sulfonic acid group; and M represents a hydrogen atom or a metal atom; provided that a dye according to formula (VIII) contains at least two sulfonic acid groups:

(IX)



wherein R^{26}, R^{27}, R^{28} and R^{29} may be the same or different, and each represents a hydrogen atom or a sulfonic acid group; and M represents a hydrogen atom, or a metal atom; provided that a dye according to formula (IX) contains at least two sulfonic acid groups:



wherein R^{30} represents a hydrogen atom, a halogen atom, or a group represented by the formula $CONHR^{37}$, $NHCOR^{37}$, COR^{37}, CO_2R^{37}, $NHCONHR^{37}$ or $NHSO_2R^{37}$, wherein R^{37} represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, or a unsubstituted or substituted heterocyclic group, R^{31}, R^{32} and R^{33} may be the same or different, and each represents a hydrogen atom, a halogen atom, an unsubstituted or substituted alkyl group or a group represented by the formula $NHCOR^{37}$, $NHCONHR^{37}$ or $NHSO_2R^{37}$, wherein R^{37} has the same meaning as described above, or a combination of R^{32} with R^{33} completes a 5- or 6-membered ring; R^{34} or R^{35} may be the same or different, and each represents an unsubstituted or substituted alkyl group, an unsubstituted or substituted aryl group, an acyl group or a sulfonyl group, or each combines with the other or R^{36} to complete a 5- or 6-membered ring; R^{36} represents a hydrogen atom, a halogen atom, an unsubstituted or substituted alkyl group, a hydroxyl group, an unsubstituted or substituted alkoxy group, or a group represented by the formula $NHCOR^{37}$, $NHSO_2R^{37}$ or $NHCONHR^{37}$, wherein R^{37} has the same meaning as described above; and n represents an integer from 1 to 4; provided that at least one of the groups represented by R^{30}, R^{31}, R^{32}, R^{33}, R^{34}, R^{35} and R^{36} contains a sulfonic acid group as a substituent.

5,362,612

PHOTOGRAPHIC MATERIAL CONTAINING A NON-SENSITIZING DYE ABSORBING AT 670 NM

Eric Kiekens, Kesselo-Lo; Paul Callant, Edegem, and Roland Claes, Dendermonde, all of , assignors to Agfa-Gevaert, N.V., Mortsel,

Filed Feb. 10, 1994, Ser. No. 194,511

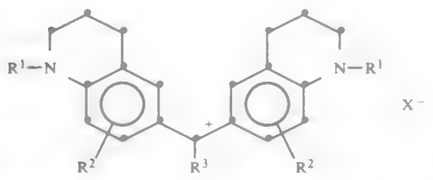
Claims priority, application European Pat. Off., Feb. 19, 1993, 93200476.5

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—520 **6 Claims**

1. Photographic material comprising a support, at least one silver halide emulsion layer, and optionally one or more non-photosensitive hydrophylic layer(s), characterized in that at least one of said emulsion layer(s) and/or non-photosensitive layer(s) contains a triphenylmethane dye represented by general formula (I-a):

(ID)



wherein R^1 and R^2 each independently represents hydrogen, unsubstitued or substituted alkyl, or unsubstituted or substituted aryl, R^3 represents an electron-withdrawing group, and the dye contains at least two water-solubilizing groups, the (X) X^- represents an anion, or an intramolecular anionic group.

5,362,613

CATIONIC HIGH-MOLECULAR WEIGHT COMPOUND

Kentaro Shiratsuchi, and Fumio Kawamoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 15, 1993, Ser. No. 5,114

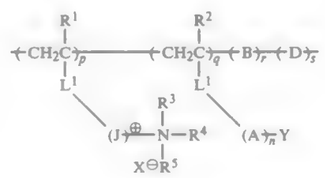
Claims priority, application Japan, Jan. 17, 1992, 4-025963

Int. Cl.[5] G03C *1/85*

U.S. Cl. 430—528 **12 Claims**

1. A silver halide photographic material comprising constituent layers including at least one light-sensitive silver halide emulsion layer on a support, wherein at least one of the constituent layers contains a cationic high-molecular weight compound represented by formula (I):

(I)



wherein R^1 and R^2 may be the same or different and each represents a hydrogen atom or C_{1-6} lower alkyl group; L^1 represents —COO— or —CONH— and L^2 represents a divalent group; J represents a C_{1-20} alkylene group or C_{7-20} aralkylene group; R^3, R^4 and R^5 may be the same or different and each represents a C_{1-20} alkyl group or C_{7-20} aralkyl group; X^- represents an anion; A represents a repeating unit made from an ethylenically unsaturated monomer; n represents a number-average polymerization degree of from 2 to 1,000; Y represents a monovalent connecting group; B represents divinylbenzene, allyl acrylate, ally methacrylate, N-allyl methacrylamide, 4,4'-isopropylidene diphenylene diacrylate, 1,3-butylene diacrylate, 3-butylene dimethacrylate, 4-cyclohexylene dimethylene dimethacrylate, diethylene glycol dimethacrylate, diisopropylidene glycol dimethacrylate, divinyloxymethane, ethylene glycol diacrylate, ethylene glycol dimethacrylate, ethylidene diacrylate, ethylidene dimethacrylate, 1,6-diacrylamide hexane, 1,6-hexamethylene diacrylate, 1,6-hexamethylene dimethacrylate, N,N'-methylene bisacrylamide, N,N'-(2-dihydroxy)ethylenebisacrylamide, 2,2-dimethyl-3-trimethylenedimethacrylate, phenylethylene dimethacrylate, tetraethylene glycol dimethacrylate, tetramethylene diacrylate, tetramethylene dimethacrylate, 2,2,2-trichloroethylidene dimethacrylate, triethylene glycol diacrylate, pentaerythritol triacrylate, trimethylol propane triacrylate, tetramethylolmethane tetraacrylate, triethylene glycol dimethacrylate, 1,3,5-triacryloylhexahydro-s-triazine, bisacrylamidoacetic acid ethylidene trimethacrylate propylidene triacrylate vinylallyloxy acetate, vinyl methacrylate, or 1-vinyloxy-2-allyloxyethane; D represents a repeating unit made from an ethylenically unsaturated monomer; and p, q, r and s each represents a monomer component weight percentage, with the proviso that p, q, r and s are 1 to 99% by weight, 0.5 to 70% by weight, 1 to 40% by weight and 0.1 to 20% by weight, respectively, and $p+q+r+s=100$.

5,362,614

PHOTOGRAPHIC PRINTING PAPER SUPPORT

Shinichiro Serizawa, and Shigehisa Tamagawa, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 14, 1994, Ser. No. 195,035

Claims priority, application Japan, Feb. 12, 1993, 5-046023

Int. Cl.[5] G03C *1/78;* **D21H** *1/10;* **B32B** *23/08*

U.S. Cl. 430—538 **13 Claims**

1. A photographic printing paper support which comprises a raw paper having polyolefin resin coats on the both sides, said raw paper being a paper made from pulp slurry containing an alkylketene dimer and a cationic substance other than epoxidized higher fatty acid amides by the addition thereto in an early stage of the preparation and further containing anionic colloidal silica added in a late stage of the preparation after controlling the pulp concentration so as to range from 0.1 to 1.5%.

5,362,615

PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A HYDROQUINONE DIETHER COMPOUND

Jörg Hagemann, Cologne; Ralf Weimann, Leverkusen; Erich Wolff, Solingen, and Johannes Sobel, Leverkusen, all of Germany, assignors to Agfa AG, Leverkusen, Germany

Filed Aug. 20, 1993, Ser. No. 109,436

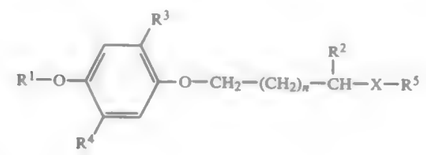
Claims priority, application Germany, Sep. 1, 1992, 4229132; European Pat. Off., Jun. 8, 1993, 93109236.5; Germany, Jul. 14, 1993, 4323512

Int. Cl.[5] G03C *1/08, 7/26, 7/32*

U.S. Cl. 430—551 **22 Claims**

1. A color photographic recording material comprising at least one red-sensitive silver halide emulsion layer having associated to it a cyan coupler, wherein said cyano coupler is present in the red-sensitive silver halide emulsion or in an adjacent binder layer, at least one green-sensitive silver halide emulsion layer having associated to it a magenta coupler, wherein said magenta coupler is present in the green-sensitive silver halide emulsion or in an adjacent binder layer, and at least one blue-sensitive silver halide emulsion layer having associated to it a yellow coupler, wherein said yellow coupler is present in the blue-sensitive silver halide emulsion or in an adjacent binder layer, the material containing a hydroquinone diether compound in at least one of said light-sensitive silver halide emulsion layers or at least one of said binder layers, characterised in that the hydroquinone diether compound corresponds to the following formula:

I



wherein

R^1 denotes alkyl, cycloalkyl or aryl, provided that said alkyl is not a propyl group having two or more substituents;

R^2 denotes H or alkyl;

R^3 and R^4 are the same or different and denote H, alkyl, cycloalkyl, aryl, halogen, alkoxy, aroxy, acyloxy, alkylthio, arylthio, acyl, sulphonyl, sulphamoyl, acylamino, sulphonylamino or nitro, provided that said alkoxy denoted by one of R^3 and R^4 is not a propoxy group having two or more substituents;

R^5 denotes H, acyl or alkyl;

X denotes —O— or —NR^6—;

R^6 denotes H or alkyl; and

n denotes zero or an integer from 1 to 3, provided that when n denotes zero and X denotes —O— said alkyl denoted by R^2 is not —CH_2OR^7 wherein R^7 denotes H, alkyl, alkenyl, phenylalkyl, aryl, cycloalkyl, alkylcarbonyl, akenylcarbonyl or phenylcarbonyl.

5,362,616

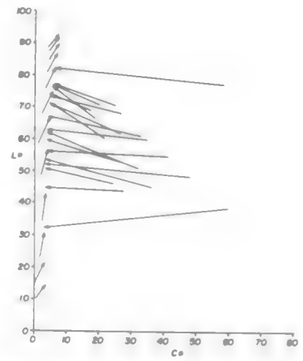
CHROMOGENIC BLACK-AND-WHITE PHOTOGRAPHIC IMAGING SYSTEMS

James L. Edwards, Rochester; Paul T. Hahm, Hilton; Mitchell J. Bogdanowicz, Spencerport, and Joseph E. LaBarca, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 810,311, Dec. 19, 1991, abandoned. This application Nov. 25, 1992, Ser. No. 981,566

Int. Cl.[5] G03C *7/20, 7/32, 7/30*

U.S. Cl. 430—356 **52 Claims**



12. A method of forming a black-and-white image comprising providing a photographic element comprising at least one layer of neutral balanced cyan, magenta, and yellow dye-forming couplers with silver halide grains comprising at least red sensitized silver halide grains which are only sensitized to red light and green sensitized silver halide grains which are only sensitized to green light, exposing said element to a color image and developing said element to provide a black-and-white image, wherein said at least one layer comprises at least two layers: one layer comprising blue sensitized Silver halide grains which are only sensitized to blue light and one comprising green sensitized silver halide grains which are only sensitized to green light and each layer further comprising balanced cyan, magenta and yellow dye-forming couplers.

5,362,617

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Masakazu Morigaki; Kohzaburoh Yamada; Nobuo Seto, and Yasuhiro Yoshioka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 12, 1993, Ser. No. 59,981

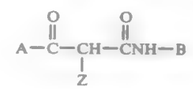
Claims priority, application Japan, May 15, 1992, 4-148009; Jan. 20, 1993, 5-023464

Int. Cl.[5] G03C *1/08, 7/26, 7/32*

U.S. Cl. 430—556 **20 Claims**

1. A silver halide color photographic light-sensitive material comprising a support provided thereon at least one blue-sensitive silver halide emulsion layer containing a yellow coupler represented by the following Formula (I):

Formula (I)

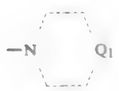


wherein A represents a group represented by the following Formula (a), (b) or (c):

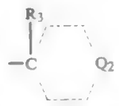
Formula (a)



Formula (b)

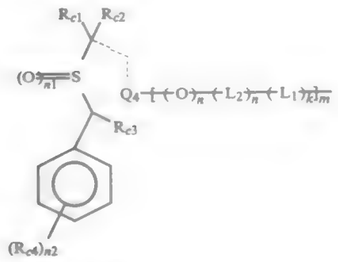


Formula (c)

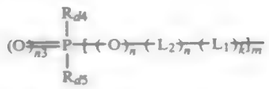


wherein R_1 and R_2 may be the same or different and each represents an aliphatic group, an aromatic group or a heterocyclic group; Q_1 represents an organic group necessary to form a nitrogen-containing heterocyclic ring; R_3 represents a monovalent organic group; Q_2 represents an organic group necessary to form a 3- or 6-membered ring; provided that R_3 is not a hydrogen atom and is not combined with Q_2 to form a ring; B represents an aromatic group or a heterocyclic group; Z represents a hydrogen atom or a group capable of splitting off upon a coupling reaction with an oxidation product of an aromatic primary amine developing agent; provided that at least one of the groups represented by R_1, R_2, Q_1, Q_2, B and Z when Z is a group capable of splitting off is substituted with a group represented by Formulas (P-III-a) or (P-IV-a):

Formula (P-III-a)



Formula (P-IV-a)



wherein R_{c1} represents an aliphatic group, an aromatic group or a heterocyclic group; R_{c2} and R_{c3} may be the same or different and each represents a hydrogen atom or a group defined for R_{c1}; Q_4 represents an organic group necessary to form a thiane ring; n_1 represents 0, 1 or 2; R_{c4} represents a substituent; n_2 represents an integer of 0 to 4; when n_2 is 2 or more, a plurality of R_{c4} groups may be the same or different; n_3 represents 0 or 1; L_1 represents a linkage group formed by combining at least one of —CO— and —SO_2— with —NH—, —CO—, or —COO—*; the mark * represents a bond to L_2; L_2 represents an alkylene group or an arylene group; k, h and n each represents 0 or 1; m represents an integer of 0 and 1 to 3; R_{d4} and R_{d5} each represents an aliphatic group, an aromatic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic amino group, or an aromatic amino group; and L_2, R_{d4} and R_{d5} may be combined with each other to form a ring.

5,362,618

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Sadayasu Ishikawa; Shigetami Kasai, and Yasuo Honda, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jul. 19, 1993, Ser. No. 94,454
Claims priority, application Japan, Jul. 23, 1992, 4-197168
Int. Cl.[5] G03C 1/005, 1/015
U.S. Cl. 430—567 8 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing silver halide grains wherein

(1) said silver halide grains are grown from seed grains in a reaction liquor, wherein a silver halide phase is formed in each grain while an intergrain distance between individual said silver halide grains in said reaction liquor is maintained at 0.1 to 2.0 μm until 30% of an amount of silver added has been supplied during grain growth, and

(2) each of said silver halide grains has a maximum silver iodide content at a distance L_1 from its center and a minimum silver iodide content at a distance L_2 from its center wherein L_1 is less than 0.67 L, L_2 is at least 0.58 L, and L is a radial distance from said grain center to a surface of said grains; silver iodide content decreasing substantially uniformly from said distance L_1, to said distance L_2, and the following relation is satisfied:

$$(L_2 - L_1)/L \geqq 0.20$$

5,362,619

HIGH-SPEED HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kouji Tashiro; Hiroyuki Hoshino; Shuji Murakami; Shoji Matsuzaka, and Hirofumi Ohtani, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 48,072, Apr. 15, 1993, abandoned, which is a continuation of Ser. No. 815,899, Dec. 31, 1991, abandoned, which is a continuation of Ser. No. 542,729, Jun. 22, 1990, abandoned. This application Mar. 1, 1994, Ser. No. 204,893
Claims priority, application Japan, Jun. 27, 1989, 1-165080
Int. Cl.[5] G03C 1/015, 1/035
U.S. Cl. 430—567 10 Claims

6. A silver halide photographic light-sensitive material comprising a silver halide emulsion layer containing core/shell silver halide grains comprising two or more phases having different silver halide compositions, a core portion containing silver iodide in an amount of 15 to 40 mol %, said silver halide grains being grown by:

preparing seed grains,

introducing a water-soluble halide and a water-soluble silver salt to initiate grain growth to form silver halide on said seed grains, said grain growth being carried out in the presence of fine grains of silver iodide having an average grain size of 0.01 to 0.1 μm, and

introducing a water-soluble iridium salt after at least 70% of the ultimate grain size of said silver halide grains is reached.

5,362,620

PHOTOGRAPHIC MATERIAL CONTAINING A MIXTURE OF SILVER HALIDE EMULSIONS

Johan Lamotte, Leuven, and Jean-Marie Dewanckele, Drongen, both of , assignors to Agfa-Gevaert, N.V., Mortsel,

Filed Oct. 25, 1993, Ser. No. 140,474
Claims priority, application European Pat. Off., Oct. 30, 1992, 92203348.5
Int. Cl.[5] G03C 1/00, 1/035
U.S. Cl. 430—571 6 Claims

1. A photographic material comprising on a support a photosensitive layer containing a mixture of silver halide emulsions at least one of which is spectrally sensitized and at least one of which is not spectrally sensitized wherein the surface of said silver halide particles of said silver halide emulsion not being spectrally sensitized is loaded with a stabilizer having a mercapto group or the tautomeric thione group thereof such that one molecule of stabilizer covers between 10 Å^2 and 70 Å^2 of said surface, and wherein said silver halide emulsion being spectrally sensitized has an average diameter of at least 0.5 μm and said silver halide emulsion not being spectrally sensitized having an average diameter of not more than 0.3 μm.

5,362,621

DIRECT POSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD FOR FORMING HIGH CONTRAST POSITIVE IMAGE USING THE SAME

Naoki Obi; Kiyoshi Suematsu, both of Tokyo; Yasuhiko Kojima, Saitama; Masatoshi Katayama, Saitama, and Yasuo Shigemitsu, Saitama, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 107,893
Claims priority, application Japan, Aug. 20, 1992, 4-221404; Mar. 5, 1993, 5-045128
Int. Cl.[5] G03C 1/485
U.S. Cl. 430—596 36 Claims

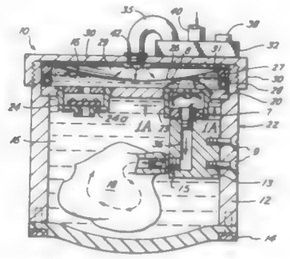
1. A direct positive silver halide photographic material having a pre-fogged silver halide emulsion layer, wherein said pre-fogged silver halide emulsion layer contains a slat of a nitrogen-containing compound containing at least one pyridine nucleus and at least one pyridinium nucleus.

5,362,622

COMBINED PERFUSION AND OXYGENATION APPARATUS

Bobby J. O'Dell, and Leonid Bunegin, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Mar. 11, 1993, Ser. No. 29,688
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[5] A01N 1/02
U.S. Cl. 435—1 10 Claims



1. An apparatus for use in perfusing and oxygenating living tissue, comprising:

a chamber comprising a perfusion compartment and a tissue compartment each capable of containing a perfusate, said tissue compartment at least one flexible wall, wherein said tissue compartment is disposed beneath said perfusion compartment;

a pumping compartment contained within said chamber having a gas opening;

a first one-way passage means coupling said perfusion compartment and said tissue compartment and connectable to a living tissue for transmitting a perfusate from said perfusion compartment to said living tissue in said tissue compartment;

a second one-way passage means coupling said perfusion compartment and said tissue compartment for transmitting a perfusate from said tissue compartment to said perfusion compartment; and

a flexible, gas-permeable membrane sealingly interposed between said pumping compartment and said perfusion compartment for enabling gas to permeate between said pumping compartment and said perfusion compartment, said membrane operable upon pressure differentials across the membrane to flex in a first direction so as to displace a perfusate from said perfusion compartment through said first passage means into said tissue compartment and in an opposite direction so as to displace perfusate from the tissue compartment through said second passage means into said perfusion compartment.

5,362,623

SEQUENCE SPECIFIC DNA BINDING BY P53

Bert Vogelstein; Kenneth W. Kinzler, both of Baltimore, Md., and Michael I. Sherman, Glen Ridge, N.J., assignors to The John Hopkins University, Baltimore, Md. and PharmaGenics, Inc., Allendale, N.J.

Continuation-in-part of Ser. No. 715,182, Jun. 14, 1991. This application Mar. 31, 1992, Ser. No. 860,758
Int. Cl.[5] C12Q 1/68
U.S. Cl. 435—6 12 Claims

1. A method of pre-screening agents for use in cancer therapy, comprising:

measuring the amount of binding of a p53 protein encoded by a mutant gene found in cancer cells of a patient to a DNA molecule which conforms to the consensus binding site having more than one monomer of the double-stranded sequence RRRCWWGYYY;

measuring the amount of binding of said p53 protein to said DNA molecule in the presence of a test substance; and

comparing the amount of binding of the p53 protein in the presence of said test substance to the amount of binding of the p53 protein in the absence of said test substance, a test substance which increases the amount of binding being a candidate for use in cancer therapy.

5,362,624

PROCESS FOR THE DETERMINATION OF AN IMMUNOLOGICALLY DETECTABLE SUBSTANCE AND A SUITABLE REACTION VESSEL THEREFOR

Urban Schmitt, Oberhausen; Eberhard Maurer, Weilheim; Wolfgang Rüdinger, Birkenau; Rolf Deeg, Berauried; Thomas Geiger, Diessen, and Wolf D. Engel, Feldafing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 691,685, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 356,336, May 24, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 925,300
Claims priority, application Germany, May 25, 1988, 3817716; Jan. 20, 1989, 3901638
Int. Cl.[5] C01N 33/576, 33/547
U.S. Cl. 435—7.5 2 Claims

1. Method for determining presence of antibodies to hepatitis B surface antigen in a sample comprising contacting a reaction vessel having a fixed reaction volume, an outer surface and an inner surface, wherein said inner surface is coated with a complex comprising avidin or streptavidin, wherein said avidin or streptavidin is present in an amount ranging from 0.1 to 2.5 ug per ml of reaction volume of said reaction vessel, with biotinylated, hepatitis B surface antigen to bind it thereto, contacting bound biotinylated hepatitis B surface antigen with said sample to bind antibodies to hepatitis B surface antigen to said bound, biotinylated hepatitis B surface antigen, contacting said bound antibodies with labeled hepatitis B surface antigen, and determining binding of said labeled hepatitis B surface antigen as a determination of antibodies to hepatitis B surface antigen in said sample.

2. Method for determining presence of thyroid stimulating hormone (TSH) in a sample, comprising contacting a reaction vessel having a fixed reaction volume, an outer surface and an inner surface, wherein said inner surface is coated with a complex comprising avidin or streptavidin, wherein said avidin or

streptavidin is present in an amount ranging from 0.1 to 2.5 ug per ml of reaction volume of said reaction vessel, with biotinylated antibodies specific to TSH to bind said biotinylated antibodies to said reaction vessel, contacting bound biotinylated antibodies with said sample to bind TSH to said biotinylated antibodies, contacting bound TSH with a labeled antibody which binds to bound TSH, and determining bound labeled antibody as a determination of TSH in said sample.

5,362,625

METHODS AND COMPOSITIONS FOR ENZYME COMPLEMENTATION ASSAYS USING THE OMEGA REGION OF β-GALACTOSIDASE

Mark Krevolin, El Cerrito, and David Kates, Concord, both of Calif., assignors to Microgenics Corporation, Concord, Calif.

Continuation of Ser. No. 700,549, May 15, 1991, abandoned. This application May 25, 1993, Ser. No. 67,342

Int. Cl.[5] C12Q *1/34*; G01N *33/535*

U.S. Cl. 435—7.6 **8 Claims**

1. In an improved β-galactosidase complementation assay method for determining the presence of an analyte in a sample, wherein an inactive donor polypeptide fragment of β-galactosidase and an inactive acceptor polypeptide of β-galactosidase which interact when combined to form an active β-galactosidase enzyme are combined in a reaction solution with said sample and additional reagents required for said complementation assay, an improvement comprising:

utilizing as said inactive donor polypeptide fragment a polypeptide comprising 10 to 500 amino acids of the C-terminus of β-galactosidase and utilizing as said acceptor polypeptide fragment a polypeptide comprising 600 to 1012 amino acids of the N-terminus of β-galactosidase, wherein no gap is present between said donor and acceptor polypeptide sequences when said sequences complement to form said active enzyme and further wherein said donor polypeptide is coupled to an analyte but not at the N-terminus of said donor polypeptide, with the proviso that the combination of X90, a polypeptide comprising β-galactosidase from which the amino acids at position 1013 to position 1023 have been deleted, as said acceptor molecule and CNBr24, a polypeptide containing the amino acids from position 990 to position 1023 of β-galactosidase, as said donor polypeptide is excluded.

5,362,626

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Takaaki Kojima; Mitsuhiro Okumura, and Takahiko Nojima, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 29, 1993, Ser. No. 128,818

Claims priority, application Japan, Oct. 14, 1992, 4-276175

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—642 **13 Claims**

1. A silver halide photographic light-sensitive material comprising a support and having thereon at least one silver halide emulsion layer, wherein the silver halide emulsion layer contains silver chloro-bromide grains having a silver chloride content of at least 95 mol % and

a gelatin comprising an iron ion of 0.5 ppm to 5 ppm and at least 40% by weight, based on said gelatin, of an α-constituent having weight-average molecular weight of 80,000 to 120,000.

5,362,627

STABILIZATION AND REDUCTION OF BACKGROUND FLUORESCENCE OF HYDROXY COUMARIN ESTER ENZYME SUBSTRATES

Richard A. Blumenthal, Charlestown, Mass.; Hou-Peng P. Lau, Hockessin, and Esther K. Yang, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 12, 1988, Ser. No. 242,598

Int. Cl.[5] G01N *33/53*; C12Q *1/44*

U.S. Cl. 435—7.9 **10 Claims**

1. A method of stabilizing a hydroxy coumarin ester against hydrolysis to a hydroxy coumarin which comprises dissolving the ester in water containing a strong base in sufficient concentration to bring the hydroxy coumarin and base solution to a pH≧11 to stabilize the ester against hydrolysis.

5,362,628

FLUORESCENT HALOALKYL DERIVATIVES OF REPORTER MOLECULES WELL RETAINED IN CELLS

Richard P. Haugland; Yu-Zhong Zhang; Ram Sabnis, all of Eugene, Oreg.; Nels A. Olson, Homer, Ak.; John J. Naleway, and Rosaria P. Haugland, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Continuation of Ser. No. 749,256, Aug. 23, 1991, abandoned. This application Mar. 5, 1993, Ser. No. 26,633

Int. Cl.[5] C12Q *1/00, 1/34*; G01N *33/40*; A61K *37/02*; C07H *15/24*

U.S. Cl. 435—18 **22 Claims**

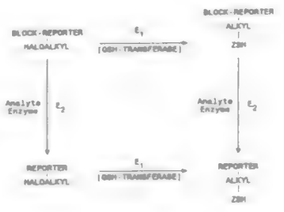


Diagram of two alternate pathways to formation of detectable thether conjugates

1. A method for retaining a fluorescent reaction product of enzyme activity in a cell for more than one hour to accomplish relevant analysis, comprising:

a) preparing a biocompatible solution of a substrate having the form:

XR-REPORTER-BLOCK

wherein BLOCK is selected to be removable from REPORTER by enzyme activity to give a fluorescent REPORTER;

-REPORTER- is a molecule that is bound to BLOCK by a BLOCK-REPORTER bond that is an amide bond that results from removal of a hydroxy group from a carboxylic acid of an amino acid or peptide and a hydrogen atom from an amino moiety on REPORTER;

or an ether bond formed by removal of a hydroxy group from a lower alcohol having 6 or less carbon atoms or of hydroxy from a mono- or polysaccharide and a hydrogen atom from a phenolic moiety on REPORTER;

or an ester bond, where the ester is an ester of an aliphatic or aromatic carboxylic acid or of phosphoric or sulfuric acid, or a biologically compatible salt thereof;

such that REPORTER, when bound to BLOCK is virtually non-fluorescent and when BLOCK is removed, REPORTER becomes fluorescent; and

XR— is a haloalkyl moiety, where X is a single Cl, I, or Br, and R contains 1–4 carbons, where XR— can covalently react with an intracellular thiol (Z—S—H) to form a thioether conjugate (Z—S—R-REPORTER);

b) bringing the biocompatible solution containing the substrate into contact with the cell under conditions where the substrate can readily enter intracellular areas of the cell that may contain the enzyme activity;

c) allowing sufficient time for the enzyme activity to remove BLOCK to make REPORTER fluorescent, and for the haloalkyl XR to react with said intracellular thiol to form the thioether conjugate inside the cell; and

d) preparing the cell for detection or measurement of fluorescence of REPORTER inside the cell.

5,362,629

DETECTION OF IMMUNOSUPPRESSANTS

Stuart L. Schreiber, Boston, Mass.; Jeffrey S. Friedman, Portola Valley; Irving L. Weissman, Stanford, both of Calif., and Jun Liu, Somerville, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass. and Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Aug. 5, 1991, Ser. No. 740,175

Int. Cl.[5] C12Q *1/42, 1/00*; G01N *33/53*; A61K *37/02*

U.S. Cl. 435—21 **1 Claim**

1. A method of evaluating the immunosuppressive activity of a compound comprising contacting said compound with calcineurin, contacting said compound-contacted-calcineurin with a phosphorylated substrate and determining the ability of said compound-contacted-calcineurin to dephosphorylate said substrate wherein the ability of said compound to decrease the phosphatase activity of said calcineurin being correlated to the immunosuppressant activity of said compound.

5,362,630

ISOLATION OF PSEUDOMONAS SALICYLATE HYDROXLASE AND ITS USE FOR THE IDENTIFICATION AND QUANTITATION OF SALICYLATE IN BODY FLUIDS

Kwan-sa You, Durham, N.C., assignor to Duke University, Durham, N.C.

Continuation of Ser. No. 713,586, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 404,664, Sep. 8, 1989, abandoned, which is a continuation of Ser. No. 500,800, Jun. 7, 1983, abandoned, which is a continuation of Ser. No. 287,802, Jul. 28, 1981, abandoned. This application Jun. 5, 1992, Ser. No. 895,424

Int. Cl.[5] C12Q *1/26*; C12N *9/02*

U.S. Cl. 435—25 **15 Claims**

1. A method for quantitating the amount of salicylate present in serum, plasma or whole blood containing salicylate, comprising:

(i) reacting a non-deproteinized sample of the serum, plasma or whole blood containing salicylate with a Pseudomonas salicylate hydroxylase in the presence of O_2 and NAD(P)H until all the salicylate in said sample has been converted into catechol; and

(ii) quantitate the amount of salicylate converted to catechol to determine the amount of salicylate in said sample.

5,362,631

C-MYB TRANSFECTED T98G CELLS WHICH PRODUCE GM-CSF AND STEM CELL FACTOR

Bruno Calabretta, Philadelphia, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Jul. 29, 1993, Ser. No. 99,868

Int. Cl.[5] C12N *5/22, 15/19*

U.S. Cl. 435—69.5 **9 Claims**

6. A method of producing granulocyte/macrophage-colony stimulation factor or stem cell factor comprising:

culturing T98G human glioblastoma cells;

co-transfecting said cultured T98G human glioblastoma cells with a first plasmid containing human c-myb cDNA and a second plasmid containing the gene encoding hygromycin resistance;

selecting for hygromycin-resistant cells in culture medium containing hygromycin B;

culturing the cells so selected in medium containing hygromycin B;

recovering granulocyte/macrophage-colony stimulation factor or stem cell factor from the culture medium.

5,362,632

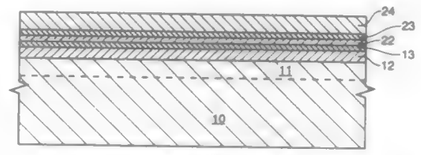
BARRIER PROCESS FOR TA_2O_5 CAPACITOR

Viju K. Mathews, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Feb. 8, 1994, Ser. No. 193,678

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—47 **16 Claims**



1. A method for forming an reaction prevention barrier between a first conductive layer and a tantalum oxide layer on a supporting substrate of a semiconductor device, said method comprising the steps of:

forming said tantalum oxide layer;

forming a semiconductive layer over said tantalum oxide layer;

converting said semiconductive layer into said reaction prevention barrier by subjecting said semiconductive layer to a rapid thermal processing (RTP) step; and

forming said conductive material over said reaction prevention barrier.

5,362,633

METHOD OF ASSAYING FOR PEROXIDATIVELY ACTIVE SUBSTANCES

Michael J. Pugia, Granger, Ind., assignor to Miles Inc., Elkhart, Ind.

Division of Ser. No. 472,295, Jan. 30, 1990, Pat. No. 5,318,894. This application Jan. 27, 1994, Ser. No. 187,384

Int. Cl.[5] C12Q *1/28, 1/26, 1/56*; G01N *33/72*

U.S. Cl. 435—28 **16 Claims**

1. A method of determining the presence or concentration of a peroxidatively active substance in a test sample comprising:

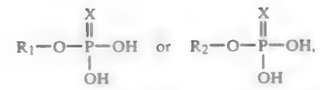
(a) contacting the test sample with a composition consisting essentially of:

(1) a redox indicator selected for the group consisting of benzidine; 3,3',5,5'-tetraalkylbenzidine, wherein the alkyl group includes from one to six carbon atoms; 2,7-diaminofluroene; bis-(N-ethyl-quinol-2-one)-azine; (N-methylbenzthiazol-2-one)-(1-ethyl-3-phenyl-5-methyltriazol-2-one)-azine; and combinations thereof;

(2) an organic hydroperoxide selected for the group consisting of cumene hydroperoxide, t-butyl hydroperoxide, diisopropylbenzene dihydroperoxide, 1-hydroxycyclohexane-1-hydroperoxide, 2,5-dimethylhexane-2,5-dihydroperoxide, paramethane hydroperoxide, 1,4-diisopropylbenzene monohydroperoxide, p-t-butylisopropylbenzene hydroperoxide, 2-(-hydroperoxyisopropyl)-6-isopropylnaphthalene, tetralin hydroperoxide; and combinations thereof;

(3) a ferric ion complex;

(4) a phosphorous compound having the formula



wherein R_1 and R_2 is a substituted or an unsubstituted aromatic moiety selected for the group consisting of benzene, naphthalene, pyrrole, furan, pyrimidine, thiophene, pyridine, pyrazine, indole, quinoline, carbazole, purine, and isoquinoline, or a polyhydric substituent selected from the group consisting of ethylene glycol, propylene glycol, butylene glycol, hexanediol, glycerol, neopentyl glycol, diethylene glycol, dipropylene glycol, triethylene glycol, cyclopentanediol, and cyclohexanediol; and wherein X is O, S or NH; and

(5) a suitable carrier vehicle;

(b) determining the color change of the composition; and

(c) comparing the change in color to a reference standard.

5,362,634

PROCESS FOR PRODUCING A83543 COMPOUNDS

LaVerne D. Boeck, Indianapolis; Hang Chio, Greenfield; Tom E. Eaton; Otis W. Godfrey, Jr., both of Greenwood; Karl H. Michel; Walter M. Nakatsukasa, both of Indianapolis, and Raymond C. Yao, Carmel, all of Ind., assignors to DowElanco, Indianapolis, Ind.

Continuation of Ser. No. 429,441, Oct. 30, 1989, abandoned. This application Oct. 10, 1991, Ser. No. 773,754

Int. Cl.[5] C12P *19/62*

U.S. Cl. 435—76 **18 Claims**

1. A process for producing fermentation product A83543, comprising A83543A, A83543B, A83543C, A83543D, A83543E, A83543F, A83543G, A83543H, and A83543J which comprises cultivating a *Saccharopolyspora spinosa* strain selected from NRRL 18395, NRRL 18537, NRRL 18538 or NRRL 18539, or an A83543-producing strain derived therefrom, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a recoverable amount of A83543 is produced.

5,362,635

PROCESS FOR THE PRODUCTION OF AN AMINO ACID USING A FERMENTATION APPARATUS

Toshiki Hirose; Minoru Tsuruta, both of Kawasaki; Koji Tamura, Saga; Yoshitomo Uehara, and Harufumi Miwa, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 764,210, Sep. 23, 1991, Pat. No. 5,260,216. This application Jun. 25, 1993, Ser. No. 82,459

Claims priority, application Japan, Sep. 21, 1990, 2-49983

Int. Cl.[5] C12P *13/04, 13/14, 7/14, 1/04*

U.S. Cl. 435—106 **4 Claims**

1. A process for fermentation to produce an amino acid using fermentation apparatus comprising:

a fermentor for holding at least bacterial cells in a culture medium and producing an amino acid by fermentation;

a centrifugal or filtration separator for separating a fermentation solution withdrawn from said fermentor into a solution containing said bacterial cells and a solution not containing bacterial cells;

a liquid pump for circulating said solution containing said bacterial cells from said centrifugal or filtration separator to said fermentor; and

a bubble separator provided upstream of said liquid pump and said centrifugal or filtration separator for removing bubbles from said fermentation solution, wherein no pump is present between said fermentor and said bubble separator;

wherein said process comprises;

introducing to said fermentor at least bacterial cells in a culture medium;

fermenting said bacterial cells in a culture medium in said fermentor;

separating a fermentation solution withdrawn from said fermentor into a solution containing said bacterial cells and a solution not containing bacterial cells, by means of said centrifugal or filtration separator;

circulating said solution containing said bacterial cells from said centrifugal or filtration separator to said fermentor by means of said liquid pump to perform fermentation continuously to produce an amino acid;

wherein bubbles are removed from said withdrawn fermentation solution by said bubble separator before said withdrawn fermentation solution is fed to said centrifugal or filtration separator and said liquid pump, wherein the bubble content of a solution leaving said bubble separator is not more than 15%.

5,362,636

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION WITH A BACTERIA HAVING SELENALYSINE RESISTANCE

Manabu Yokomori; Takeshi Niwa; Kazuhiko Totsuka; Yoshio Kawahara; Shigeru Nakamori, all of Kawasaki; Nobuyoshi Esaki, Otsu, and Kenji Soda, Uji, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 793,950

Claims priority, application Japan, Oct. 29, 1990, 2-291441

Int. Cl.[5] C12P *13/08;* **C12N** *1/20*

U.S. Cl. 435—115 **9 Claims**

1. A process for producing L-lysine, which comprises culturing a mutant L-lysine-producing strain belonging to the genus Brevibacterium or the genus Corynebacterium and having selenalysine resistance in a nutrient medium containing assimilable sources of carbon, nitrogen, and inorganic salts until a sufficient amount of L-lysine is produced, and recovering said L-lysine, wherein said strain is selected from the group consisting of *Brevibacterium lactofermentum* AJ 12564, *Corynebacterium acetoacidophylum* AJ 12565, *Brevibacterium lactofermentum* AJ 12566, *Brevibacterium flavum* AJ 12568 and *Corynebacterium glutamicum* AJ 12579.

5,362,637

PROCESS FOR PRODUCING L-ISOLEUCINE AND ETHIONINE BY ISOLEUCINE ANALOG RESISTANT STRAINS OF *E. COLI*

Kuniki Kino, and Yoshiyuki Kuratsu, both of Houhu, Japan, assignors to Kyowa Hakko Kogy Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,452

Claims priority, application Japan, Nov. 11, 1991, 3-294420

Int. Cl.[5] C12P *13/06*

U.S. Cl. 435—116 **2 Claims**

1. A process for producing L-isoleucine which comprises culturing in a nutrient medium a microorganism having resistance to isoleucine analog and ethionine which is selected from the group consisting of *Escherichia coli* FERM BP-3629 and *Escherichia coli* FERM BP-3630 until L-isoleucine is accumulated in the culture, and recovering L-isoleucine therefrom.

5,362,638

FUNGAL STRAINS AND USE THEREOF IN ANTIBIOTIC PRODUCTION

Jagroop S. Dahiya, 33-2088 Pembina Highway, Winnipeg, Manitoba, Canada R3T 2G8

Continuation of Ser. No. 833,496, Feb. 10, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 985,498

Int. Cl.[5] C12P *17/06;* **C12N** *15/10, 15/80, 1/15*

U.S. Cl. 435—125 **11 Claims**

1. A process of preparing lovastatin which comprises fermenting a nutrient medium with a transformed fungal microorganism of an Aspergillus strain naturally incapable of expressing lovastatin but which has been transformed to contain foreign DNA derived from a lovastatin-producing Aspergillus terreus species and coding for the enzymes capable of synthesizing lovastatin, and a selectable marker, and recovering the lovastatin from the nutrient medium.

5,362,639

METHOD TO INCREASE ANAEROBIC FERMENTATION RATES

Edward J. Griffith, Manchester, and Toan M. Ngo, Eureka, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 639,452, Jan. 10, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,227

Int. Cl.[5] C12P *7/06;* **C12N** *1/16, 1/18*

U.S. Cl. 435—161 **8 Claims**

1. In a process for the conversion of sugars to alcohol by yeast fermentation in a nutrient broth under anaerobic conditions, wherein the nutrient broth comprises a nitrogen source and a mineral base, said mineral base comprises microelements, macroelements and a phosphorus source, and wherein said phosphorous source comprises at least one condensed phosphate, the improvement comprising adding to said nutrient broth calcium and magnesium, in amounts sufficient to overcome the loss of said calcium and said magnesium due to sequestration resulting from the presence of condensed phosphate or phosphates, so as to maintain calcium and magnesium levels in the nutrient broth for assimilation by the yeast and whereby the rate of conversion of sugars to alcohol is increased.

5,362,640

ORNITHINE CARBAMOYL TRANSFERASE GENE AND UTILIZATION OF THE DNA

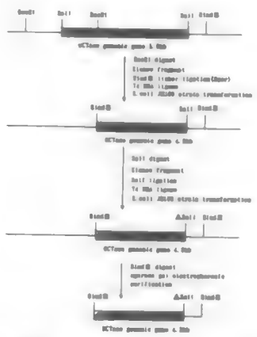
Akira Tsukamoto, Tokyo; Mieko Matsufuji, Kawaguchi, and Yukio Kita, Tokyo, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1993, Ser. No. 27,986

Claims priority, application Japan, Mar. 9, 1992, 4-050513; Apr. 23, 1992, 4-104549

Int. Cl.[5] C12N *15/00, 1/14;* **C07H** *17/00;* **C12P** *21/04*

U.S. Cl. 435—172.3 **17 Claims**



1. An isolated DNA sequence coding for ornithine carbamoyl transferase (OCTase) of *Coriolus hirsutus*, wherein the DNA sequence encodes an amino acid sequence having the amino acid sequence shown in SEQ ID no: 1 or SEQ ID No: 2.

5,362,641

HEPARANASE DERIVED FROM HUMAN SK-HEP-1 CELL LINE

Zvi Fuks, New York, N.Y., and Israel Vlodavsky, Gilo, Israel, assignors to Hadassah Medical Organization Kiryat Hadassah, Jerusalem, Israel

PCT No. PCT/US90/04772, § 371 Date Jan. 8, 1992, § 102(e) Date Jan. 8, 1992, PCT Pub. No. WO91/02977, PCT Pub. Date Mar. 7, 1991

Continuation-in-part of Ser. No. 397,554, Aug. 23, 1989, abandoned. This PCT application Aug. 22, 1990, Ser. No. 768,900

Int. Cl.[5] C12N *9/26, 9/24, 9/42, 9/14*

U.S. Cl. 435—209 **39 Claims**

1. A heparanase formulation, obtained from the Sk-Hep-1 cell line wherein the heparanase has hydrolytic activity for heparan sulfate but not heparin and the specific heparanase activity of the formulation is at least 1000-fold greater than the specific heparanase activity of a centrifuged dialyzed cell homogenate prepared from the Sk-Hep-1 cell line.

5,362,642

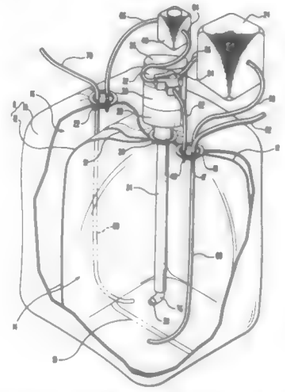
METHODS AND CONTAINMENT SYSTEM FOR STORING, RECONSTITUTING, DISPENSING AND HARVESTING CELL CULTURE MEDIA

Dale G. Kern, Hyde Park, Utah, assignor to Hyclone Laboratories, Logan, Utah

Filed Feb. 10, 1993, Ser. No. 15,804

Int. Cl.[5] C12M *1/24*

U.S. Cl. 435—240.1 **19 Claims**



18. A containment system for use with cell culture media, the containment system comprising:

a) a mixing bag having a mixing chamber formed therein;

b) an intermediate storage bag having an intermediate storage chamber formed therein, the intermediate storage bag substantially enclosing the mixing bag;

c) a storage bag having a storage chamber formed therein, the storage bag substantially enclosing the intermediate storage bag;

d) means for conveying liquid cell culture media from the mixing chamber to the intermediate storage chamber;

e) means for dispensing liquid cell culture media from the intermediate storage chambers; and

f) means for harvesting cell culture media into the storage bag from a cell growth container.

5,362,643
ANTIBODIES TO EPITOPES PRESENT ON MEMBRANE-BOUND BUT NOT SECRETED IGA
Tae W. Chang, Houston, Tex., assignor to Tanox Biosystems, Houston, Tex.
Continuation of Ser. No. 760,765, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 455,080, Dec. 22, 1989, Pat. No. 5,089,603, which is a continuation-in-part of Ser. No. 369,479, Jun. 21, 1989, Pat. No. 5,079,344. This application Jul. 20, 1993, Ser. No. 95,068
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] C12N *5/20;* C07K *15/28, 15/14*
U.S. Cl. 435—240.27 3 Claims

1. An antibody or fragment thereof which specifically binds to the extracellular segment of the membrane-bound domain of an immunoglobulin A chain.

5,362,644
HYBRID PROTEINS BETWEEN AN EXTRACYTOPLASMIC ENZYME AND AT LEAST ANOTHER PROTEIN, METHOD FOR PREPARING THEM AND ALSO THEIR APPLICATIONS
Paul Boquet, Marly le Roi; Jean-Claude Boulain, Palaiseau; Frederic Ducancel; Daniel Gillet, both of Paris, and André Ménez, St. Remy les Cheurieuse, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Continuation of Ser. No. 542,772, Jun. 25, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 876,910
Claims priority, application France, Jun. 26, 1989, 89 08444
Int. Cl.[5] C07K *13/00;* C12N *15/62*
U.S. Cl. 435—252.3 18 Claims

1. DNA encoding a hybrid tripartite protein comprising, in order, an N-terminal portion of from 6 to 28 amino acids of mature *E. coli* alkaline phosphatase, joined to a polypeptide, joined to a member of the group consisting of the C-terminal remaining amino acids of said alkaline phosphatase, a different alkaline phosphatase and an enzymatically active fragment of either, said DNA comprising successively at least four nucleic acid sequences: a first DNA encoding a secretory signal sequence of a mature *E. coli* alkaline phosphatase, functionally joined in proper reading frame to a second DNA encoding from 6 to 28 of the N-terminal amino acids of said alkaline phosphatase, a third DNA encoding a polypeptide or a fragment thereof and a fourth DNA encoding a member of the group consisting of the C-terminal remaining amino acids of said alkaline phosphatase, a different alkaline phosphatase and an enzymatically active fragment of either.

5,362,645
HEPARINASE-PRODUCING MICROORGANISM BELONGING TO THE GENUS BACILLUS
Robert W. Bellamy, Zama, and Kouki Horikoshi, Tokyo, both of Japan, assignors to Rsearch Development Corporation of Japan and Rikagaku Kenkyusho, both of Tokyo, Japan
Division of Ser. No. 440,061, Nov. 22, 1989, Pat. No. 5,145,778. This application Nov. 27, 1991, Ser. No. 799,597
Claims priority, application Japan, Nov. 25, 1988, 63-297807
Int. Cl.[5] C12N *1/20, 9/88*
U.S. Cl. 435—252.5 1 Claim

1. A biologically pure culture of a microorganism having all of the identifying characteristics of *Bacillus sp.* BH100 (FERM BP-2613, which produces and extracellular heparinase having a molecular weight of 120,000 daltons as determined by SDS PAGE, and the physiochemical properties of optimum activities in the pH range of 7.2–7.8 and the temperature range of 45°–50° C., a pI of 6.6 and stability of at least 30 minutes at 45° C. in the presence of calcium ions and which secretes said heparinase into the culture medium.

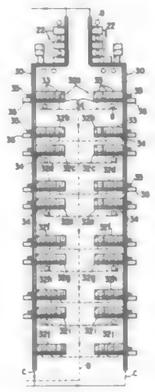
5,362,646
EXPRESSION CONTROL SEQUENCES
Hermann Bujard, Heidelberg, and Michael Lanzer, Laudenbach, both of Germany, assignors to Hoffman-La Roche, Inc., Nutley, N.J.
Continuation of Ser. No. 223,597, Jul. 25, 1988, abandoned. This application Dec. 11, 1991, Ser. No. 804,531
Claims priority, application Switzerland, Aug. 17, 1987, 3152/87
Int. Cl.[5] C12N *15/00, 15/72, 15/11*
U.S. Cl. 435—252.33 10 Claims

1. A DNA expression control sequence comprising a T-coliphage promoter sequence having a low signal strength in the induced state and a high in vivo promoter strength combined with a lac-operator sequence from a lac-operator/repressor system wherein said system has a high association rate prior to said combination with said promoter.

5,362,647
COMPOSITIONS AND METHODS FOR DESTROYING HYDROGEN PEROXIDE
James N. Cook, Mission Viejo, and John L. Worsley, Irvine, both of Calif., assignors to Allergan, Inc., Irvine, Calif.
Filed Feb. 12, 1993, Ser. No. 17,232
Int. Cl.[5] C12S *9/00;* A01N *25/32, 25/26;* A61L *9/00*
U.S. Cl. 435—264 6 Claims

1. A method for destroying hydrogen peroxide remaining after disinfecting a contact lens with hydrogen peroxide which comprises:
contacting a hydrogen peroxide disinfected contact lens with a liquid medium which is substantially isotonic and contains a non-mammalian-derived catalase derived from *Micrococcus luteus* in an amount and under conditions effective to promote the destruction of substantially all hydrogen peroxide remaining after disinfecting said contact lens.

5,362,648
METHOD FOR AUTOMATED CLINICAL SAMPLING OF A BODY FLUID
Toshiyuki Koreyasu, Saitawa, and Shoji Maruyama, Kawagoe, both of Japan, assignors to B.M.L., Inc., Tokyo, Japan
Filed Jul. 15, 1992, Ser. No. 913,527
Claims priority, application Japan, Apr. 10, 1992, 4-118161
Int. Cl.[5] G01N *35/02*
U.S. Cl. 436—48 2 Claims



1. In a sample testing system for affixing sample numbers, representing encoded information about samples and which samples include a body fluid contained in a plurality of original containers, to respective one of said original containers, accepting said original containers affixed with said sample numbers, and dispensing necessary amounts of samples from said original containers into dispensing containers to which a single test item or a group of test items is assigned and testing said dispensed samples, based on test specifying information corresponding to said sample numbers affixed to said original containers, an automatic sample dispensing method comprising the steps of:
setting a plurality of original containers in rows and columns in each of a plurality of original container racks and memorizing individual sample numbers in association with pre-dispensing sample positional information including a rack number attached to each original container rack and coordinates of each original container in said original container rack;
conveying in a main line each original container rack the pre-dispensing sample positional information of which is memorized;
determining, for a dispensing container rack containing a plurality of dispensing containers in rows and columns to each of which dispensing containers at least one test item is assigned, and at a branching portion including dispensing lines separated from said main line to each of which dispensing lines at least one test item is assigned, whether or not a sample in each of said original containers set in said original container rack should be dispensed, using said pre-dispensing sample positional information;
automatically dispensing a to-be-dispensed sample from an original container in said original container rack into an associated one of said dispensing containers set in said dispensing container rack;
memorizing said sample numbers in association with post-dispensing sample positional information including a rack number affixed to said dispensing container rack where sample-dispensed dispensing containers are set and coordinates of said dispensing containers in said dispensing container rack; and
retaining in a single dispensing container rack those dispensing containers to which different single test items are assigned and/or those dispensing containers to which a group of test items is assigned, and, after dispensing is completed, sorting said dispensing containers into second dispensing container racks for a same single test item or each group of test items, based on said post-dispensing sample positional information.

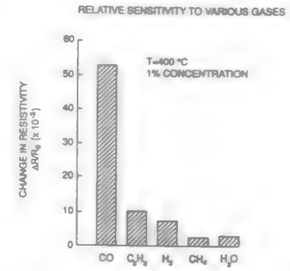
5,362,649
METHOD FOR CONCENTRATION BASED ANALYSIS OF LIPID FATTY ACIDS AND ITS USE IN DETERMINING THE LIKELIHOOD THAT A PATIENT IS AT RISK FOR CORONARY ARTERY DISEASE
Harvey A. Schwertner, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 16, 1993, Ser. No. 19,582
Int. Cl.[5] G01N *33/92*
U.S. Cl. 436—71 7 Claims

1. A method for identifying and quantifying lipid fatty acid compositions in a sample of blood serum, comprising the steps of:
(a) adding a known amount of an internal standard to a known amount of the sample, wherein the internal standard is a true analog of a class of lipid fatty acids to be analyzed;
(b) after adding the internal standard, extracting the lipids from the sample;
(c) separating the lipid fractions from each other;
(d) identifying the individual fatty acids;
(e) reporting the concentration of the individual fatty acids as weight of each individual fatty acid per amount of sample.

5,362,650
ULTRA-LOW RANGE CHLORINE DETERMINATION
Daniel L. Harp, Loveland, Colo., assignor to Hach Company, Loveland, Colo.
Filed Oct. 4, 1993, Ser. No. 131,140
Int. Cl.[5] G01N *31/12*
U.S. Cl. 436—125 7 Claims

1. A method for determining trace amounts of total chlorine in a sample of water, the method comprising the steps of:
(a) adding a chlorine indicator to said sample, wherein said indicator comprises a liquid solution of N,N-diethyl-p-phenylenediamine;
(b) adding a buffer reagent to said sample;
(c) after a color development delay, filtering said sample;
(d) measuring light absorbance of said sample; and
(e) comparing said light absorbance with the absorbance of a control sample to which has been added a blanking reagent to de-chlorinate said control sample, wherein said blanking reagent comprises malonic acid.

5,362,651
CARBON MONOXIDE SELECTIVE SENSOR AND METHOD OF ITS USE
Richard E. Soltis, Redford; Eleftherios M. Logothetis, Birmingham, and Jacobus H. Visser, Belleville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 919,312, Jul. 27, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,666
Int. Cl.[5] G01N *27/16*
U.S. Cl. 436—134 8 Claims



4. A process for detecting carbon monoxide, comprising the steps of:
A) providing a sensor, comprising:
i) a metal oxide element having the general formula:

$$(Bi_aM_b)Sr_c(Ca_aM'_e)Cu_fO_gV$$

wherein M is a metal ion selected from the group consisting of silicon, germanium, tin, antimony, lead, bismuth, and mixtures thereof, M' is a metal ion selected from the group consisting of strontium, barium, and mixtures thereof, a is from about 1.5 to about 2, b is from 0 to about 0.5, c is from about 1 to about 2, d is from 0 to 2, e is from 0 to about 0.5, f is from about 1 to 3, and g is from about 6 to about 12; and
ii) a pair of spaced-apart electrodes in electrical communication with the metal oxide element;
B) exposing the sensor to an atmosphere containing carbon monoxide; and
C) measuring a flow of electrical current between the electrodes.

5,362,652

SPECTROPHOTOMETRIC DETECTION OF HYDROPEROXIDES IN HYDROCARBONS

Robert D. McClain, Sugar Land, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Nov. 22, 1993, Ser. No. 156,374
Int. Cl.[5] G01N *21/00, 33/00*
U.S. Cl. 436—135 11 Claims

1. A method for the determination of organic hydroperoxides in a hydrocarbon which contains olefins and the hydrocarbon has been subjected to oxidative polymerization conditions, comprising the steps of:

(A) mixing an organic cupric salt and a copper complexing agent with a sample of a hydrocarbon in an organic solvent selected from the group consisting of dimethylformamide, acetonitrile, dimethylsulfoxide and isopropanol;

(B) measuring the color change after a fixed period of time for cuprous complex formation in the mixture; and

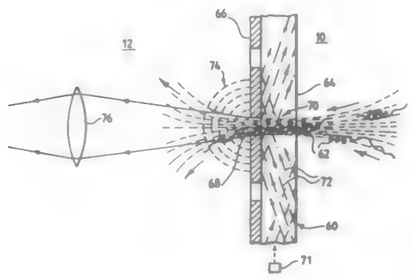
(C) comparing the measurement of step (B) to a measurement of the color change of a standard reference after said fixed period of time to determine the quantity of hydroperoxide in the sample relative to said standard reference.

5,362,653

EXAMINATION OF OBJECTS OF MACROMOLECULAR SIZE

Robert J. G. Carr, Wayside, Thorneydown Road, Winterbourne Gunner, Salisbury SP4 6LN; David J. Clarke, Carefree Rivermead Idmiston, Salisbury, Wilts, and Anthony Atkinson, Twingley Winterbourne Gunner, Salisbury SP4 6JJ, all of United Kingdom

PCT No. PCT/GB90/01407, § 371 Date May 6, 1992, § 102(e) Date May 6, 1992, PCT Pub. No. WO91/04507, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 12, 1990, Ser. No. 842,130
Claims priority, application United Kingdom, Sep. 12, 1989, 8920571
Int. Cl.[5] G01N *21/17, 29/00*
U.S. Cl. 436—165 9 Claims



1. A method of examining samples comprising individual objects of macromolecular size or smaller the method being a non-scanning, non-image-forming method from which measurement of distances is absent and which comprises the steps of:

(i) bringing a sample into proximity with an instrument element comprising at least one thin film layer having a discontinuity in a known or identifiable location;

(ii) exciting the instrument element with electromagnetic energy to which the material of said layer is substantially opaque, so as to cause a detectable signal to occur at the discontinuity;

(iii) causing the sample to move into intimate association with the discontinuity so that the sample and the discontinuity then interact with each other to produce changes in the detectable signal at the discontinuity; and

(iv) continuing to apply the said energy while detecting said changes,

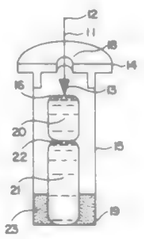
and wherein, the discontinuity consists of an asperity on the film layer, step (iii) comprises bringing the sample into contact, or almost into contact, with the asperity.

5,362,654

SELF-CONTAINED QUANTITATIVE ASSAY

Philippe Pouletty, Atherton, Calif., assignor to SangStat Medical Corporation, Menlo Park, Calif.

Continuation of Ser. No. 884,373, Jun. 18, 1992, abandoned, which is a continuation of Ser. No. 556,049, Jul. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 444,814, Dec. 1, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 34,604
The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.
Int. Cl.[5] G01N *33/543, 33/545*
U.S. Cl. 436—518 11 Claims



1. A collector-diluter-dispenser device useful for processing a sample for a diagnostic assay and quantitatively measuring a sample volume, said device comprising:

a compressible tube enclosed at one end;

a cover mounted over the open end of said tube and comprising at least one aperture;

a liquid medium in said tube;

a first frangible barrier separating said medium from said aperture;

at least one absorbent nib in said tube and extending through said aperture, said nib comprising means for preventing said nib to pass through said aperture, providing substantially quantitative release of said sample into said liquid medium for allowing for quantitative determination of an analyte in said sample; and

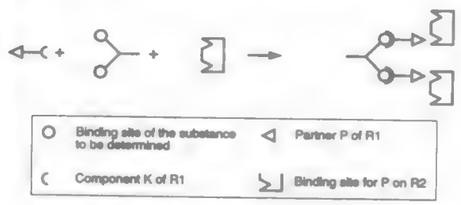
a second frangible barrier supporting said nib to maintain said nib extending through said aperture, wherein said first and second frangible barriers may be the same.

5,362,655

PROCESS FOR THE DETERMINATION OF A SPECIFICALLY BINDABLE SUBSTANCE

Roland Schenk, Weilheim, and Dietmar Zdunek, München, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Aug. 22, 1989, Ser. No. 396,860
Claims priority, application Germany, Aug. 29, 1988, 3829245
Int. Cl.[5] G01N *33/555, 33/566;* A61K *35/14;* A01N *1/02*
U.S. Cl. 436—520 13 Claims



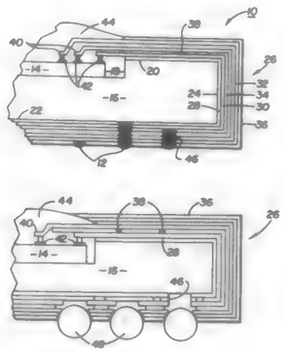
1. Method of determining the presence of a specifically bindable substance in a sample solution, comprising: incubating a sample solution with at least two receptors R_1 and R_2, wherein R_1 and R_2 bind to each other, wherein R_1 has only one binding site for R_2, specifically binds to the substance to be determined and contains (i) P, a first member of a specific binding pair, and (ii) a component K which specifically binds to the substance t be determined, and R_2 comprises a plurality of second members of said specific binding pair, wherein each of said plurality of second members has at least two binding sites for P, under conditions favoring agglutination of R_1, and R_2, and said substance to be determined, and measuring said agglutination to determine the presence of said specifically bindable substance.

5,362,656

METHOD OF MAKING AN ELECTRONIC ASSEMBLY HAVING A FLEXIBLE CIRCUIT WRAPPED AROUND A SUBSTRATE

John F. McMahon, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 985,175, Dec. 2, 1992. This application Apr. 15, 1994, Ser. No. 228,095
Int. Cl.[5] H01L *21/56, 21/60*
U.S. Cl. 437—21 8 Claims



1. A method of constructing an electronic assembly, comprising the steps of:

a) providing a substrate that has a top surface and a bottom surface;

b) mounting an electrical device to said top surface of said substrate;

c) attaching leads of a flexible circuit to said electrical device, said flexible circuit having a metal pad;

d) wrapping said flexible circuit around said substrate such that said metal pad is adjacent to said bottom surface of said substrate; and,

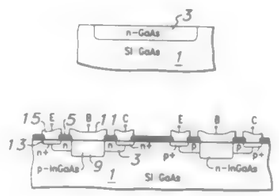
e) bonding said flexible circuit to said substrate.

5,362,657

LATERAL COMPLEMENTARY HETEROJUNCTION BIPOLAR TRANSISTOR AND PROCESSING PROCEDURE

Timothy S. Henderson, Richardson; Donald L. Plumton, and HanTzong Yuang, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 982,096, Nov. 25, 1992, abandoned.
This application Jan. 10, 1994, Ser. No. 180,753
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 16 Claims



1. A method of fabricating a heterojunction bipolar transistor comprising the steps of:

(a) providing a substrate of a group III-V semiconductor material;

(b) doping a first selected region of said substrate extending to a surface of said substrate a predetermined first conductivity type;

(c) doping a portion of said first selected region to provide a second conductivity type in said portion of said first selected region having a bandgap lower than the bandgap of said first selected region; and

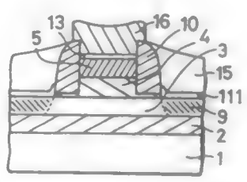
(d) forming contacts to said portion of said first selected region doped to a second conductivity type and to said first selected region external of said portion of said first selected region.

5,362,658

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

Takeshi Kuragaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1993, Ser. No. 55,865
Claims priority, application Japan, Oct. 14, 1992, 4-303088
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 10 Claims



1. A method for producing a semiconductor device comprising:

successively growing a collector layer, a base layer, and an

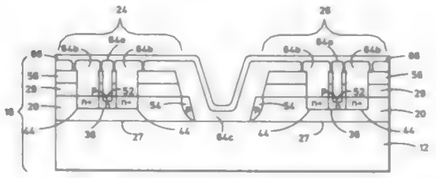
emitter layer on a semi-insulating semiconductors substrate;
forming an emitter electrode, a tungsten film, and a silicon film serving as an etching stopper on a region of said emitter layer;
etching and removing part of said emitter layer using, as a mask, said silicon film, said tungsten film, and said emitter electrode;
forming side walls on and contacting said silicon film, said tungsten film, said emitter electrode, and parts of said emitter layer;
forming a zinc oxide layer serving as a dopant impurity diffusion source on remaining parts of said emitter layer and performing a diffusion to diffuse zinc from said zinc oxide layer through remaining parts of said emitter layer and into said base layer to produce high dopant impurity concentration regions in said base layer;
removing said zinc oxide layer by wet etching;
removing the remaining parts of said emitter layer through which zinc was diffused into said base layer to expose said base layer where zinc was diffused into said base layer;
depositing a base metal on said base layer to form base electrodes;
selectively removing said silicon film to expose said tungsten film; and
forming an electrode in contact with said tungsten film.

5,362,659

METHOD FOR FABRICATING VERTICAL BIPOLAR JUNCTION TRANSISTORS IN SILICON BONDED TO AN INSULATOR

Eric N. Cartagena, Chula Vista, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1994, Ser. No. 232,914
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 17 Claims



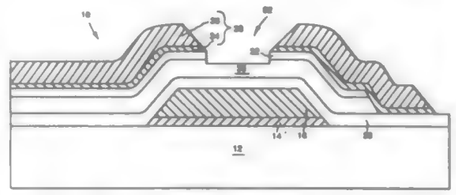
1. A method for manufacturing a bipolar transistor, comprising the steps of:
1) abutting a polished surface of a substantially single crystal silicon wafer with a polished surface of an insulating substrate;
2) heating said abutting silicon wafer and insulating substrate at about 200° C. for about 30 minutes to form a bonded wafer having a silicon layer;
3) forming a silicon island from said silicon layer;
4) ion implanting a first dopant species having a first conductivity into said silicon island to form a base region in said silicon island;
5) ion implanting a second dopant species having a second conductivity opposite said first conductivity into said silicon island to form an emitter region and a collector region in said silicon island;
6) ion implanting a third dopant species having said first conductivity into said base region of said silicon island;
7) heating said bonded wafer at a temperature of about 800° C. to activate said first, second, and third dopant species and to repair ion implanting damage to said silicon island;
8) forming electrical contacts to said base, emitter, and collector regions; and
9) forming an oxide layer over said electrical contacts to passivate said electrical contacts.

5,362,660

METHOD OF MAKING A THIN FILM TRANSISTOR STRUCTURE WITH IMPROVED SOURCE/DRAIN CONTACTS

Robert F. Kwasnick; George E. Possin, both of Schenectady, N.Y.; David E. Holden, Grenoble, France, and Richard J. Saia, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 825,218, Jan. 24, 1992, Pat. No. 5,198,694, which is a continuation of Ser. No. 593,419, Oct. 5, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 977,967
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 6 Claims



1. A method of fabricating a thin film transistor comprising:
partially fabricating said thin film transistor up to deposition of a source/drain metallization layer, the partially fabricated thin film transistor having an upper surface comprising silicon;
depositing a relatively thin first layer of a first conductor on the partially fabricated transistor, said first conductor comprising chromium;
depositing a relatively thick second layer of a second conductor on said first conductor, said second conductor comprising molybdenum;
masking said second conductor in a desired pattern of said source/drain metallization layer;
etching said second conductor with a second conductor etchant, said second conductor etchant being selected such that the first conductor comprises an etch stop therefor, said second conductor etchant further being capable of etching silicon at a rate that is not substantially less than the rate said second conductor etchant etches said second conductor;
etching said relatively thin first conductor with a first conductor etchant, said first conductor etchant being selected such that the silicon upper surface of said partially fabricated thin film transistor comprises an etch stop therefor; and
finishing the fabrication of said thin film transistor.

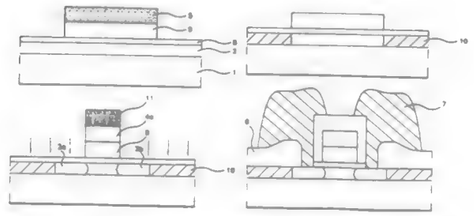
5,362,661

METHOD FOR FABRICATING THIN FILM TRANSISTOR

Hong K. Kim, Kyungki-do, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 15, 1993, Ser. No. 152,330
Claims priority, application Rep. of Korea, Nov. 20, 1992, 21925/1992
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 5 Claims

1. A method for fabricating a thin film transistor comprising the steps of:
depositing a semiconductor layer serving as an active layer, a first gate insulation film and a second gate insulation film on an insulation transparent substrate, in this order;
patterning the second gate insulation film using a mask for the patterning of an active region so that it is remained merely at the active region;
oxidizing the semiconductor layer except for the active region using the patterned second gate insulation film as an oxidization mask, to isolate the active region from the other portion;
forming a gate electrode on the second gate insulation film corresponding to the upper side of the defined active region;
implanting impurity-ions in the semiconductor layer using the gate electrode as an ion-implantation mask to form a source region and a drain region;



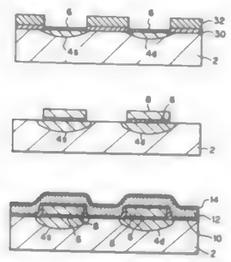
forming a protection film on the whole exposed surface of the resultant structure;
forming contact holes in the protection layer so that the source region and the drain region are exposed; and
forming a source electrode and a drain electrode, so that they are connected to the source region and the drain region, respectively, via the contact holes.

5,362,662

METHOD FOR PRODUCING SEMICONDUCTOR MEMORY DEVICE HAVING A PLANAR CELL STRUCTURE

Yuichi Ando, Sanda, and Koichi Sogawa, Kobe, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 800,746, Nov. 29, 1991, abandoned, which is a continuation of Ser. No. 554,665, Jul. 17, 1990, abandoned. This application May 3, 1993, Ser. No. 57,188
Claims priority, application Japan, Aug. 11, 1989, 1-209434
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 21 Claims



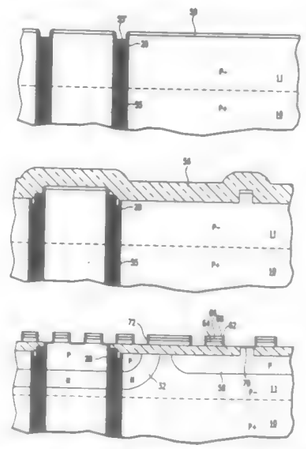
1. A method for producing a semiconductor memory device comprising steps of:
forming a buffer layer on a substrate;
forming a mask layer on said buffer layer, said mask layer having openings corresponding to patterns of diffusion regions;
implanting impurities into said substrate through said mask layer and said buffer layer;
forming diffusion regions in said substrate by diffusing said implanted impurities therein by a thermal treatment of said substrate;
removing said buffer layer disposed in each of said openings of said mask layer;
forming a refractory metal film on said diffusion region in each of said openings after removing said buffer layer from said diffusion region;
forming an electric insulation film on said refractory metal film formed in each of said openings;
removing said mask layer and said buffer layer disposed under said mask layer from said substrate while remaining said refractory metal film and said insulation film which are stacked on said diffusion region;
forming a gate oxide film so as to cover said substrate, said refractory metal film and said insulation film formed on said refractory metal film; and
forming gate electrodes on said gate oxide film.

5,362,663

METHOD OF FORMING DOUBLE WELL SUBSTRATE PLATE TRENCH DRAM CELL ARRAY

Gary B. Bronner, Mount Kisco; Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 818,668, Jan. 9, 1992, Pat. No. 5,250,829. This application Jun. 4, 1993, Ser. No. 72,261
Int. Cl.[5] H01L *21/70, 27/00*
U.S. Cl. 437—52 6 Claims



1. A method of making a dynamic random access memory device comprising the steps of:
forming first and second trenches in a semiconductor substrate, which is comprised of a first conductivity type and has a major surface, such that each trench has a portion at the surface;
forming a dielectric layer on the inside of each of the trenches and filling each of the trenches with a conductive electrode material;
ion implanting and diffusing within the substrate a region of a second conductivity type, the region surrounding the portion of the trenches which meet the surface and extending to a depth beneath the surface such that only a portion of each trench is between the second conductivity type and the surface, the region physically and electrically isolating a portion of the substrate at said surface; and
forming within the isolated portion first and second semiconductor devices which are respectively coupled to the conductive electrode material of the first and second trenches.

5,362,664

METHOD FOR FABRICATING A SEMICONDUCTOR MEMORY DEVICE

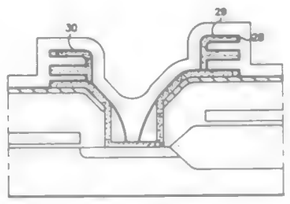
Young K. Jun, Seoul, Rep. of Korea, assignor to Gold Star Electron Co., Ltd., Rep. of Korea

Filed Feb. 2, 1994, Ser. No. 190,304

Claims priority, application Rep. of Korea, Jan. 12, 1994, 1994 426

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **10 Claims**



1. A method for fabricating a semiconductor memory device, comprising the steps of:
forming a gate insulating film on a semiconductor substrate;
forming a gate electrode on the gate insulating film; forming a source and drain region in the semiconductor substrate at each side of the gate electrode;
forming an interlayer and an etch stopper on the whole surface;
etching selectively away the etch stopper and the interlayer to form an opening, the opening exposing the source and drain region;
forming a first conductive layer on the whole surface; forming a first insulating film and a second insulating film on the whole surface, the second insulating film being etched selectively with the first insulating film;
etching selectively away the first and second insulating film to expose the first conductive layer at a part of the opening;
forming a side wall spacer of a third insulating film on the side of the first and second insulating film, the side wall spacer being the same material as the second insulating film;
forming a fourth insulating film on the whole surface; etching selectively away the fourth insulating film to expose the second insulating film;
removing the second insulating film and the side wall spacer;
forming a second conductive layer on the whole surface;
etching selectively away the second conductive layer and the first insulating film and the first conductive layer by using the fourth insulating film as a mask; removing the fourth insulating film and the first insulating film.

5,362,665

METHOD OF MAKING VERTICAL DRAM CROSS POINT MEMORY CELL

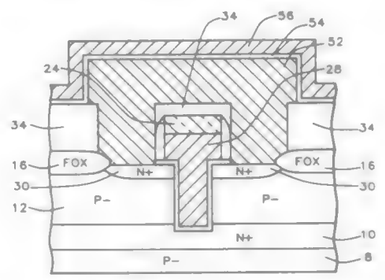
Chih-Yuan Lu, Hsin-chu, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Feb. 14, 1994, Ser. No. 194,736

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **23 Claims**

1. The method for fabricating a vertical DRAM cell which includes a field effect transistor having a Sate electrode and source/drain elements and a capacitor comprising:
providing a pattern of field oxide isolation in a silicon substrate wherein there are a pattern of openings to the silicon substrate, and a pattern of buried bit lines and a pattern of lines of holes with a hole located within each of said openings to said silicon substrate which lines of holes and buried bit lines are perpendicular to one another and which said lines cross at the planned locations of said vertical DRAM cell at said pattern of openings to the silicon substrate;
forming a gate dielectric on the surfaces of said holes;
forming a doped polysilicon layer in and over said holes so that it covers said gate dielectric;
etching said doped polysilicon layer to form said Sate electrode and word lines which are perpendicular to said pattern of buried bit lines;
forming said source/drain elements surrounding said Sate electrode in the surface of said substrate by ion implantation using the field oxide and gate electrode and word lines as the mask;
wherein said buried bit lines form common and additional said source/drain elements;
providing an insulating layer over said pattern of field oxide insulation, said word lines and openings to said source/-drain elements surrounding said gate electrode;
forming an opening through said insulating layer surrounding said gate electrode; and
forming a capacitor in and over said opening through said insulating layer.



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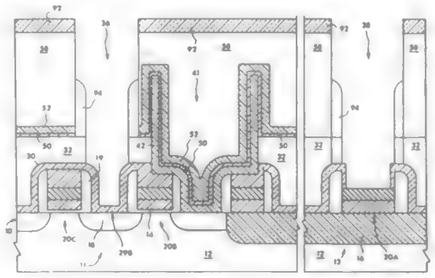
METHOD OF PRODUCING A SELF-ALIGNED CONTACT PENETRATING CELL PLATE

Charles H. Dennison, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 947,136, Sep. 18, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,381

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **16 Claims**



1. A method of fabricating a capacitor insulating spacer for a contact that passes through a capacitor cell conducting layer in an integrated circuit DRAM, said method comprising:
providing a semiconducting substrate having an active area formed therein;
providing a plurality of transistor gate members, one on either side of said active area, wherein each transistor gate member has a side that opposes a side of another transistor gate member;
providing a transistor insulating spacer member on each said opposing side of each said transistor gate member;
providing a lower insulating layer covering said transistor gate members, said transistor insulating spacer member, and said active area;
providing a capacitor conducting layer covering said lower insulating layer above said active area;
providing a hard mask layer over said capacitor conducting layer;
utilizing a photo-mask and etch process to define a contact region having Walls penetrating at least said hard mask layer and said capacitor conducting layer above said active area;
creating a cell insulating spacer layer on said walls and said hard mask layer, said cell insulating spacer layer made of a material that etches differently than said hard mask layer; and
performing an anisotropic etch of said cell insulating spacer layer to remove said cell insulating spacer layer from said hard mask layer and create a capacitor insulating spacer covering said capacitor conducting layer on said walls of said contact region, said capacitor insulating spacer traveling down said walls of said contact region during said anisotropic etch.

5,362,667

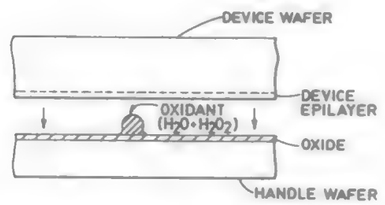
BONDED WAFER PROCESSING

Jack H. Linn, Melbourne; Robert K. Lowry, Melbourne Beach; George V. Rouse, Indiatlantic, all of Fla.; James F. Buller, Austin, Tex., and William H. Speece, Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jul. 28, 1992, Ser. No. 921,197

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—62 **26 Claims**



1. A method of wafer bonding, comprising the steps of:
(a) providing a device wafer and a handle wafer;
(b) joining a surface of said device wafer to a surface of said handle wafer with a liquid quantity of oxidant therebetween;
(c) heating said wafers in the range of about 800°–1000° C. wherein said wafers bond together.

5,362,668

METHOD OF FABRICATING AN BPSG-FILLED TREND AND OXIDATION ISOLATION STRUCTURE WITH A GATE ELECTRODE

Kazuhiro Tasaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

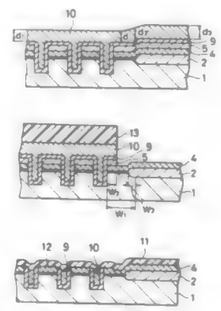
Filed Mar. 9, 1993, Ser. No. 28,113

Claims priority, application Japan, Mar. 9, 1992, 4-050208

Int. Cl.[5] H01L *21/302, 21/76*

U.S. Cl. 437—67 **10 Claims**

1. A method of fabricating a semiconductor device comprising the steps of:
forming a gate insulating film, a polycrystalline silicon film and a first insulating film sequentially on a semiconductor substrate
providing a portion acting as an active region in the semiconductore substrate and partitioning said active region by an element isolation region formed by selective oxidation;
selectively etching said first insulating film, polycrystalline silicon film and gate insulating film corresponding to any portions within said active region which act as trench isolation regions in said semiconductor device and thereafter etching said semiconductor substrate in self-alignment with said first insulating film, to form said trench isolation regions;
covering the resulting structure with a second insulating film and successively burying a third insulating film having a faster dry etch rate than that of said second insulating film;
covering said active region exclusive of a boundary between said active region and said element isolation region with a resist film;
dry etching-back a region exclusive of said active region



covered with said resist film by using said resist film as a mask and said polycrystalline film as a stopper at least until a thickness of said third insulating film of said region exclusive of said active region covered with said resist film is thinner than that of said third insulating film of said active region covered with said resist film;
removing said resist film and dry etching-back the resulting structure by using said polycrystalline silicon film as a stopper to cause said second and third insulating films to remain in said trench isolation regions;
depositing an electrically conductive film on the surface of the resulting structure; and
selectively removing said electrically conductive film and said polycrystalline silicon film to form gate electrodes.

5,362,669

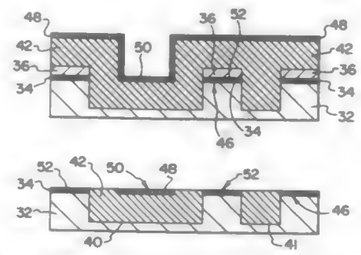
METHOD OF MAKING INTEGRATED CIRCUITS

John M. Boyd, Woodlawn; Joseph P. Ellul, and Sing P. Tay, both of Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 24, 1993, Ser. No. 80,544

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—67 **5 Claims**



1. A method of fabricating an integrated circuit, comprising:
providing a semiconductor substrate having a planar surface and comprising a surface layer of a chemical mechanical polish resistant material, the substrate having defined therein a steep sided trench;

filling the trench with at least one conformal layer of a trench filling material and a conformal layer of chemical mechanical polish resistant material, the layer of chemical mechanical polish resistant material within the trench providing, in a centre region of the trench, a polish stop having a surface coplanar with the surface layer of chemical mechanical polish resistant material of the semiconductor substrate; and

planarizing the resulting structure by a step of chemical mechanical polishing to remove all parts of each of the layers extending above the surface layer of chemical mechanical polish resistant material of the substrate and the coplanar surface of the polish stop in the centre region of the trench, whereby the polish stop in the centre region of the trench prevents dishing of the trench filling material.

5,362,670

SEMICONDUCTOR DEVICE PRODUCING METHOD REQUIRING ONLY TWO MASKS FOR COMPLETION OF ELEMENT ISOLATION REGIONS AND P- AND N-WELLS

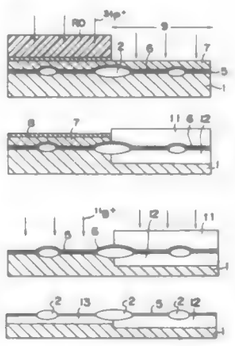
Katsuji Iguchi, Yamato-kooriyama; Shigeki Hayashida, Kita-katsuragi; Akio Kawamura, Nara; Shinichi Sato, Nara, and Tomohiko Tateyama, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 9, 1993, Ser. No. 103,250

Claims priority, application Japan, Aug. 10, 1992, 4-212890; Feb. 10, 1993, 5-022592

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 **18 Claims**



1. A semiconductor device producing method comprising the steps of:

a) forming element isolation regions of an oxide on a surface of a semiconductor substrate, active regions of the surface of said semiconductor substrate other than said element isolation regions being formed with an oxide film;

b) forming a first oxidization prevention layer, a semiconductor layer, and a second oxidization prevention layer in that order on said semiconductor substrate formed with said element isolation regions and oxide film;

c) forming a resist pattern on said second oxidization prevention layer, said resist pattern having a hole in a first conductive type channel MOS transistor formation region wherein a first conductive type channel MOS transistor is to be formed;

d) removing a portion of said second oxidization prevention layer that exists in said first conductive type channel MOS transistor formation region of said semiconductor substrate, whereby a portion of said semiconductor layer that exists in said first conductive type channel MOS transistor formation region is exposed;

e) implanting a second conductive type impurity into said semiconductor substrate in said first conductive type channel MOS transistor formation region using said resist pattern as a mask;

f) removing said resist pattern;

g) thermally treating said substrate in the presence of an oxidizer substance to transform at least an upper portion of said exposed portion of said semiconductor layer into an oxidized semiconductor layer and at the same time to diffuse the implanted impurity in the substrate to thereby form a second conductive type well;

h) removing the remaining second oxidization prevention layer and said semiconductor layer located under the remaining second oxidization prevention layer, said remaining second oxidization prevention layer and semiconductor layer being located in a second conductive type channel MOS transistor formation region wherein a second conductive type channel MOS transistor is to be formed;

i) implanting a first conductive type impurity into said second conductive type channel MOS transistor formation region of the semiconductor substrate, using said oxidized semiconductor layer as a mask, to thereby form a first conductive type well; and

j) forming the first and second conductive type channel MOS transistors in said second and first conductive type wells, respectively.

5,362,671

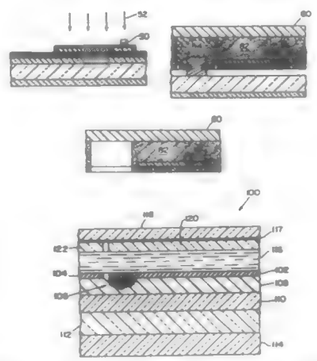
METHOD OF FABRICATING SINGLE CRYSTAL SILICON ARRAYED DEVICES FOR DISPLAY PANELS

Paul M. Zavracky, Norwood; John C. C. Fan, Chestnut Hill; Robert McClelland, Norwell, all of Mass.; Jeffrey Jacobsen, Hollister, Calif., and Brenda Dingle, Norton, Mass., assignors to Kopin Corporation, Taunton, Mass.

Continuation of Ser. No. 85,667, Jun. 30, 1993, abandoned, which is a continuation of Ser. No. 801,966, Dec. 3, 1991, abandoned, which is a division of Ser. No. 636,602, Dec. 31, 1990, Pat. No. 5,206,749

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—81 **25 Claims**



1. A method of fabricating a panel display comprising:

forming an essentially single crystal silicon semiconductor material on an insulating layer on a first substrate;

forming an array of transistors with the essentially single crystal silicon semiconductor material to form a circuit panel;

bonding the essentially single crystal silicon semiconductor material having the formed array of transistors and the insulating layer onto an optically transmissive substrate with an adhesive;

removing the first substrate from the circuit panel with the insulating layer; and

positioning a light transmitting material adjacent the circuit panel such that an electric field generated by a pixel electrode conductively connected to each transistor alters a light transmitting property of the material.

5,362,672

METHOD OF FORMING A MONOCRYSTALLINE FILM HAVING A CLOSED LOOP STEP PORTION ON THE SUBSTRATE

Tadahiro Ohmi, 1-17-301, Komegabukuro 2-chome, Aobu-ku, Sendai-shi, Miyagi-ken 980; Tadashi Shibata, Sendai, and Masaru Umeda, Tokyo, all of Japan, assignors to Tadahiro Ohmi, Miyagi, Japan

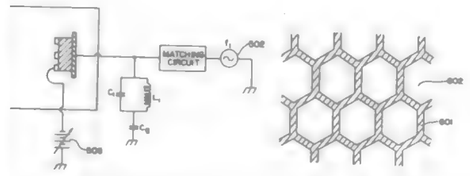
PCT No. PCT/JP89/00599, § 371 Date Feb. 1, 1990, § 102(e) Date Feb. 1, 1990, PCT Pub. No. WO89/12908, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 15, 1989, Ser. No. 465,175

Claims priority, application Japan, Jun. 17, 1988, 63-150581

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—89 **11 Claims**



1. A method of forming a monocrystalline film, comprising the steps of forming a conductor layer having a step portion on a surface of a substrate, said step portion including a lateral face, said lateral face of said step portion surrounding a lower surface of said step portion to form a closed loop, and thereafter forming a monocrystalline film on said lower surface while a DC potential is applied to said conductor layer, whereby the monocrystalline film is formed directly on said substrate.

5,362,673

METHOD OF MANUFACTURING A SEMICONDUCTOR LIGHT EMITTING DEVICE

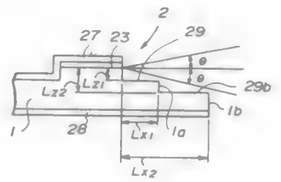
Hiroyuki Iechi, Sendai, Japan, assignor to Ricoh Company, Ltd., Tokyo and Ricoh Research Institute of General Electronics Co., Ltd., Natori, both of Japan

Division of Ser. No. 917,851, Jul. 21, 1992, Pat. No. 5,294,815. This application Dec. 7, 1993, Ser. No. 164,066

Claims priority, application Japan, Jul. 29, 1991, 3-188995

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—127 **2 Claims**



1. A manufacturing method of a light emitting device which comprises:

forming a plurality of light emitting diodes comprising a layered structure formed on a substrate, and having at least a light emitting layer and electrodes on both sides of the light emitting layer;

separating said light emitting diode into a plurality of light emitting diode elements by forming a plurality of separation grooves, and forming a first surface to be parallel to a center axis of a light beam emitted from said light emitting diode elements and forming a light emitting edge surface to be perpendicular to the surface of said substrate by an etching method;

applying a masking onto a predetermined portion of said first surface;

forming a second surface having a step and so as to be parallel to said first surface, by using an etching method, a first terrace edge is simultaneously formed between the first and second surfaces; and

separating each light emitting diode element of said plurality of light emitting diodes, so that a second terrace edge is formed on the edge of said substrate;

said first and second surfaces are formed so as to satisfy the following two equations;

$$Lx_1 < Lz_1/\tan\theta$$

$$Lx_2 < Lz_2/\tan\theta$$

where:

Lx_1 is a distance between said light emitting edge surface and said first terrace edge;

Lx_2 is a distance between said light emitting edge surface and said second terrace edge;

Lz_1 is a distance between said light emitting layer and said first surface;

Lz_2 is a distance between said light emitting layer and said second surface;

θ is a diverging angle of the light beam emitted from said light emitting diode elements, from the center axis towards the surface of said substrate.

5,362,674

METHOD OF PRODUCING A MESA EMBEDDED TYPE OPTICAL SEMICONDUCTOR DEVICE INCLUDING AN EMBEDDED LAYER AT ITS SIDE WALL

Nirou Okazaki, Atsugi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

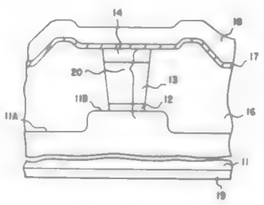
PCT No. PCT/JP91/00255, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO91/13480, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 26, 1991, Ser. No. 721,575

Claims priority, application Japan, Feb. 28, 1990, 2-45854

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **7 Claims**



1. A method of producing a mesa embedded optical semiconductor device, comprising the steps of:

forming a multilayer semiconductor structure which includes a laser active layer and an adjoining layer adjoined with said laser active layer, on a substrate;

selectively etching said multilayer semiconductor structure to form a mesa structure and expose a first planar surface around a root of the mesa structure, said mesa structure having, a second planar surface which is orthogonal to a side wall of the mesa structure and is lower than a top surface of the mesa structure, and a planar side wall formed by a side wall of said laser active layer and a side wall of said adjoining layer, and

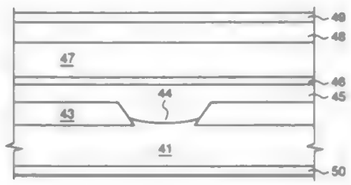
forming, by vapor growth deposition, an embedded layer at said first planar surface, said second planar surface, and said planar side wall of said mesa structure, such that said embedded layer is free of voids.

5,362,675

MANUFACTURING METHOD OF LASER DIODE AND LASER DIODE ARRAY

Song J. Lee, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Dec. 24, 1992, Ser. No. 995,750
Claims priority, application Rep. of Korea, Dec. 24, 1991, 24136/91; Dec. 24, 1991, 24137/91
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—129 18 Claims



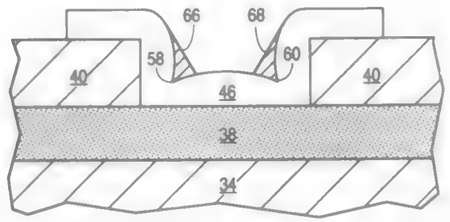
1. A method of manufacturing a laser diode comprising the steps of:
forming a second conductive type current blocking layer on the surface of a first conductive type semiconductor substrate having a reverse mesa-like structure;
forming a channel by melt-etching both said current blocking layer and said reverse mesa-like structure;
forming a first cladding layer of the first conductive type to completely cover said channel;
forming an active layer on said first cladding layer;
forming a second cladding layer of the second conductive type on said active layer;
forming a conductive cap layer on said second cladding layer; and
providing electrodes of first and second conductive type on a lower exterior surface of said semiconductor substrate and on an upper exterior surface of said cap layer, respectively.

5,362,676

PROGRAMMABLE INTERCONNECT STRUCTURES AND PROGRAMMABLE INTEGRATED CIRCUITS

Kathryn E. Gordon, Mountain View, and Richard J. Wong, Milpitas, both of Calif., assignors to QuickLogic Corporation, Santa Clara, Calif.

Division of Ser. No. 874,983, Apr. 23, 1992, Pat. No. 5,196,724, which is a continuation of Ser. No. 691,950, Apr. 26, 1991, abandoned. This application Jul. 28, 1992, Ser. No. 920,971
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 33 Claims



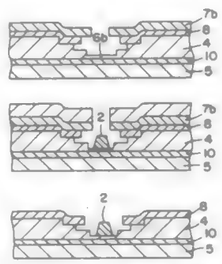
1. A method for fabricating a programmable interconnect structure for an integrated circuit having a plurality of devices, comprising the steps of:
fabricating a first conductor;
fabricating an insulating layer overlaying said first conductor;
fabricating an opening through said insulating layer at a selected location and terminating said opening at a portion of said first conductor;
depositing a film of a programmable material upon said insulating layer and in said opening, said programmable material being non-conductive when said structure is unprogrammed, said programmable material providing a conductive path therethrough when said structure is programmed;
patterning said programmable material film to form at said selected location a programmable material feature, said feature having a region contacting and fully overlaying said first conductor portion;
fabricating spacers over sidewalls of said opening, said spacers overlaying at least a portion of said programmable material film; and
fabricating a second conductor, wherein a portion of said second conductor contacts and overlays said programmable material region and wherein a portion of said second conductor overlays said spacers.

5,362,677

METHOD FOR PRODUCING A FIELD EFFECT TRANSISTOR WITH A GATE RECESS STRUCTURE

Shinichi Sakamoto, and Takuji Sonoda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 367,685, Jun. 19, 1989, Pat. No. 4,984,036. This application Dec. 14, 1990, Ser. No. 627,777
Claims priority, application Japan, Jun. 20, 1988, 63-153071
Int. Cl.[5] H01L *21/338, 21/306*
U.S. Cl. 437—203 4 Claims



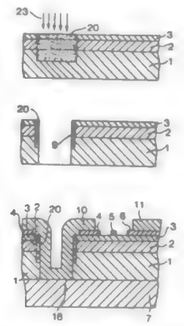
1. A method of producing a transistor comprising the sequential steps of:
successively depositing an active layer and a semiconductor surface protection film on a semiconductor substrate;
depositing a resist on said surface protection film, opening a gate aperture in the resist, and etching said surface protection film through the gate aperture;
alternatingly, successively etching said active layer at least three times and said surface protection film at least twice without removing said resist to produce a recess in the active layer having a multi-step configuration including at least three steps in said active layer; and
depositing a gate electrode material on the resist and on the active layer at the portion of the recess closest to the substrate, thereby forming a gate electrode, removing said resist and the overlying gate electrode material, and forming a source electrode and drain electrode on the active layer on opposite sides of the gate electrode.

5,362,678

METHOD OF MANUFACTURING INSULATED VIA HOLE STRUCTURE FOR SEMICONDUCTOR DEVICE

Makio Komaru, and Michihiro Kobiki, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 700,436, May 15, 1991, Pat. No. 5,225,707. This application Feb. 12, 1993, Ser. No. 17,494
Claims priority, application Japan, Jun. 5, 1990, 2-148181
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—203 16 Claims



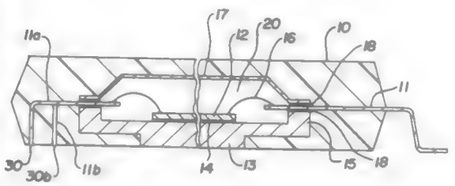
1. A method of making a semiconductor device comprising:
depositing first and second semiconductor layers of opposite conductivity types on a semiconductor substrate;
exposing the second semiconductor layer to a flux of ions to produce an electrically isolating region in and penetrating through the first and second semiconductor layers and into the semiconductor substrate;
etching a via hole penetrating through the first and second semiconductor layers within the electrically isolating region, thereby exposing a side wall of the first and second semiconductor layers within the electrically isolating region; and
depositing an electrically conducting material in the via hole in contact with the side wall of the first and second semiconductor layers at the electrically isolating region, thereby completing a via hole structure in which the first and second semiconductor films are not electrically connected through the electrically conducting material.

5,362,679

PLASTIC PACKAGE WITH SOLDER GRID ARRAY

Gene F. Wakefield, Plano, Tex., assignor to VLSI Packaging Corporation, Richardson, Tex.

Filed Jul. 26, 1993, Ser. No. 96,416
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—206 15 Claims



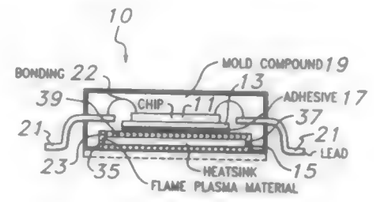
1. The method of forming an encapsulation package for an electronic device chip comprising the steps of:
(a) forming the outer portions of input/output leads in a lead frame assembly having inner lead portions and outer lead portions so that the outer ends of said leads terminate in and define a plane substantially parallel with one major face of a plastic package to be formed thereabout;
(b) securing the inner portions of said leads to stabilize and maintain their positions with respect to each other and the package to be formed hereabout; and
(c) forming a molded plastic package about the lead frame assembly having first and second oppositely disposed major faces with the first major face substantially parallel with the plane defined by the outer ends of said input/output leads.

5,362,680

TECHNIQUE FOR ENHANCING ADHESION CAPABILITY OF HEAT SPREADERS IN MOLDED PACKAGES

Katherine G. Heinen, Dallas; Brenda C. Gogue, Richardson, both of Tex., and Henry F. Breit, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 18, 1992, Ser. No. 931,797
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 19 Claims



1. A method of manufacturing a semiconductor packaged device, comprising the steps of:
providing a metal heat spreader for carrying heat out of said semiconductor packaged device;
providing a molding compound to be adhered to the heat spreader;
enhancing the adhesion capability of the heat spreader by using flame plasma deposition to apply a coating to a surface of the heat spreader; and
thereafter, applying to the coated surface of the heat spreader the molding compound.

5,362,681

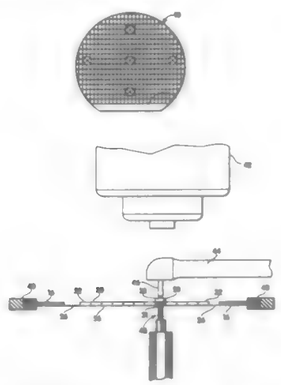
METHOD FOR SEPARATING CIRCUIT DIES FROM A WAFER

Carl M. Roberts, Jr., Topsfield; Lewis H. Long, Woburn, both of Mass., and Paul A. Ruggerio, Campbell, Calif., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Jul. 22, 1992, Ser. No. 918,665
Int. Cl.[5] H01L *21/304*
U.S. Cl. 437—226 13 Claims

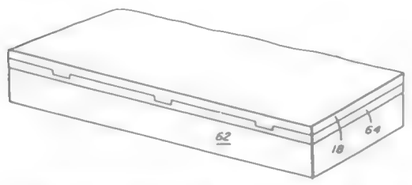
1. A method of separating an individual microcircuit die from a wafer comprising a plurality of dies containing componentry on a first side thereof, including at least a first component, said wafer comprising at least one street separating said dies from each other, said method comprising the steps of:
(1) placing clearance holes in a protective film, said clearance holes having a size corresponding to said first component,
(2) fixing said first side of said wafer to a first side of a protective film such that said clearance holes in said protective film align with said first component,
(3) sawing said wafer along said at least one street whereby

at least one of said dies is detached from all of the other dies on said wafer, and



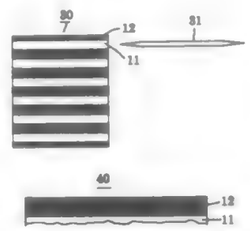
(4) removing said at least one detached die from said protective film.

5,362,682
METHOD OF PRODUCING SHEETS OF CRYSTALLINE MATERIAL AND DEVICES MADE THEREFROM
Carl O. Bozler, Sudbury; John C.C. Fan, Chestnut Hill, and Robert W. McClelland, Norwell, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 770,599, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 128,637, Dec. 4, 1987, abandoned, which is a continuation of Ser. No. 251,214, Apr. 6, 1981, Pat. No. 4,727,047, which is a continuation-in-part of Ser. No. 138,891, Apr. 10, 1980, abandoned. This application Mar. 15, 1993, Ser. No. 31,536
Int. Cl.[5] C30B *25/22*
U.S. Cl. 437—226 6 Claims



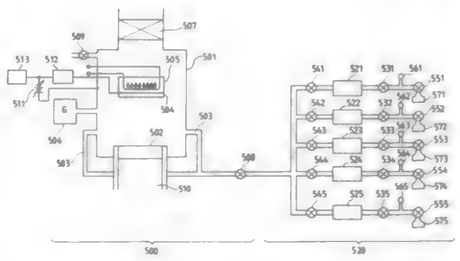
1. A method of producing an integrated circuit device in a single crystal semiconductor material comprising:
- forming a thin-film of single crystal semiconductor material over an insulating layer and a first substrate;
- attaching a second substrate to a surface of the thin-film;
- separating the thin-film from the first substrate to provide an exposed surface under the thin film and the second substrate;
- attaching the thin-film and the second substrate to a third substrate on the exposed surface; and
- separating the thin-film and the third substrate from the second substrate, the thin-film having an integrated circuit device formed therein that is attached to the third substrate with an adhesive layer.

5,362,683
METHOD OF MAKING EPITAXIAL WAFERS
Takao Takenaka, Annaka; Masahisa Endo, Gunma, and Masato Yamada, Annaka, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Mar. 4, 1994, Ser. No. 205,558
Claims priority, application Japan, Mar. 10, 1993, 5-076341
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—226 8 Claims



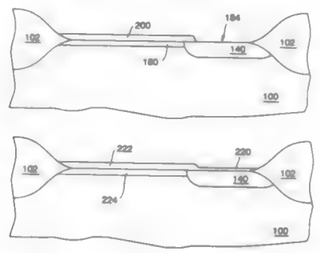
1. A method of manufacturing epitaxial wafers wherein epitaxial growth layers with identical structures are formed on both sides of semiconductor single crystal substrates and then the epitaxial wafer is divided, with the dividing plane in said semiconductor single crystal substrate portion parallel to the main surface, into two pieces to obtain two epitaxial wafers.

5,362,684
NON-MONOCRYSTALLINE SILICON CARBIDE SEMICONDUCTOR, PROCESS OF PRODUCTION THEREOF, AND SEMICONDUCTOR DEVICE EMPLOYING THE SAME
Keishi Saito; Tatsuyuki Aoike; Toshimitsu Kariya, and Yuzo Koda, all of Nagahama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 25, 1992, Ser. No. 840,537
Claims priority, application Japan, Feb. 25, 1991, 3-050133
Int. Cl.[5] H01L *21/205*
U.S. Cl. 437—234 6 Claims



1. A process for producing a non-monocrystalline silicon carbide semiconductor having therein microvoids with an average radius of not more than 3.5Å at a microvoid density of not more than 1×10^{19} cm^{-3}, which comprises adding deuterium gas to a starting silane type gas and a starting hydrocarbon type gas and effecting microwave glow discharge decomposition.

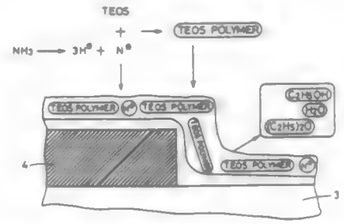
5,362,685
METHOD FOR ACHIEVING A HIGH QUALITY THIN OXIDE IN INTEGRATED CIRCUIT DEVICES
Mark I. Gardner, Red Rock; Henry J. Fulford, Jr., and Jay J. Seaton, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Oct. 29, 1992, Ser. No. 969,708
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—238 16 Claims



1. In an integrated circuit fabrication process, a method for forming two oxide layers of different thicknesses on a semiconductor body, the thinner oxide being disposed over a heavily-doped region of the semiconductor body, comprising the steps of:
- forming an active area in a semiconductor body having edges defined by field oxide regions;
- growing a first oxide upon the surface of the active area;
- implanting through a first region of the first oxide to form an implanted layer in the active area;
- annealing the implanted layer with at least some of the first oxide remaining over the implanted layer to form a heavily-doped region;
- removing the remaining first oxide subsequent to annealing the implanted layer, to expose the surface of the active area;
- growing a second oxide on the exposed surface of the active area;
- removing a first region of the second oxide, to expose a first region of the surface of the active area over the heavily-doped region, a second region of the second oxide remaining over a part of the active area; and
- oxidizing the semiconductor body to grow a third high quality oxide upon the exposed first surface region of the active area over the heavily-doped region and to thicken the second region of the second oxide.

5,362,686
MANUFACTURING METHOD FOR PROTECTIVE SILICON OXYNITRIDE FILM
Shigeru Harada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 704,422, May 23, 1991, Pat. No. 5,260,600. This application May 24, 1993, Ser. No. 65,305
Claims priority, application Japan, Jun. 5, 1990, 2-148185
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—238 14 Claims

1. A manufacturing method of a semiconductor device having a protective insulating film, comprising the steps of:
- forming elements on a semiconductor substrate;
- forming an interconnection pattern electrically connected with said elements on said semiconductor substrate; and
- depositing a silicon-oxy-nitride film on said interconnection pattern,
- said silicon-oxy-nitride film being deposited in accordance with a chemical vapor deposition method using plasma, using a mixture gas including organic silane and a nitriding gas at a film formation pressure in the range from 10 to 100



Torr, wherein the silicon-oxy-nitride film contains 0.01–0.5 weight percent of hydroxyl groups.

5,362,687
LEAD-FREE FRIT GLAZE
Yasuyuki Tokunaga, Nagoya, Japan, assignor to Narumi China Corporation, Nagoya, Japan
Filed Feb. 3, 1993, Ser. No. 12,871
Claims priority, application Japan, Feb. 4, 1992, 4-054270; Jan. 22, 1993, 5-027221
Int. Cl.[5] C03C *8/02, 3/091*
U.S. Cl. 501—21 2 Claims

1. A lead-free frit glaze composition consisting of, in mole % 61–66.6% SiO_2, 8–10% of Al_2O_3, 0.1–3% of CaO, 0.1–2% of MgO, 2–5% of Li_2O, 1–4% of K_2O, 2–4.6% of Na_2O, and 10–15% of B_2O_3.

5,362,688
PREPARATION OF GRANULATED ALKALINE EARTH METAL CARBONATE
Jacopo Porta; Guido Riccioli; Pierino Trifoni, and Christian Schiffling, all of Massa, Italy, assignors to Solvay Barium Strontium GmbH, Hannover, Germany
Filed Mar. 11, 1993, Ser. No. 29,650
Claims priority, application Germany, Mar. 13, 1992, 4208068
Int. Cl.[5] C01F *11/18*
U.S. Cl. 501—27 9 Claims

1. A method for preparing a granulated carbonate comprising simultaneously heating and shaping a carbonate material to be granulated into granules, wherein said carbonate is calcium carbonate, barium carbonate or strontium carbonate, and the granulation is performed in a flash reactor and in the presence of a binding agent additive, and the shaping is performed either by the action of mechanical forces or as granulation by accretion, and wherein the carbonate material to be granulated and the resulting granulated carbonate material are maintained free of contact with inorganic refractory material.

5,362,689
INFRARED AND ULTRAVIOLET RAY ABSORBING GLASS
Shigeki Morimoto, Mie; Tadashi Noguchi, Matsusaka; Yasusi Taguchi, Matsusaka, and Masakazu Taniguchi, Matsusaka, all of Japan, assignors to Central Glass Company, Ltd., Yamaguchi, Japan
Continuation of Ser. No. 794,908, Nov. 20, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,913
Claims priority, application Japan, Nov. 26, 1990, 2-321465; Dec. 25, 1990, 2-405840; Jun. 17, 1991, 3-144927; Jun. 17, 1991, 3-144928
The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.
Int. Cl.[5] C03C *3/087, 4/10*
U.S. Cl. 501—70 15 Claims

1. A green-colored infrared and ultraviolet ray absorbing

glass comprising as essential components, on a weight basis, 68–72% of SiO_2, 1.6–3.0% of Al_2O_3, 8.5–11.0% of CaO, 2.0–4.2% of MgO, 12.0–16.0% of Na_2O, 0.5–3.0% of K_2O, 0.08–0.30% of SO_3, 0.58–0.80% of total iron expressed as Fe_2O_3, 0.10–0.60% of CeO_2, 0.10–0.40% of TiO_2 and 5–350 ppm of MnO, with provisos that the total of said essential ingredients amounts to at least 98 wt % of the glass, that the total amount of SiO_2, Al_2O_3 and TiO_2 is from 70.0 to 74.0%, that the total amount CaO and MgO is from 12.0 to 15.0%, that the total amount of Na_2O and K_2O is from 13.0 to 17.0% and that said total iron includes ferrous iron and ferric iron, the weight ratio of said ferrous iron to said ferric iron, Fe^{2+}/Fe^{3+}, is in the range from 0.40 to 0.70.

5,362,690

REFRACTORY CASTABLE COMPOSITION AND PROCESS FOR ITS MANUFACTURE

Pierre Delvaux, Bromptonville; Normand Lesmerises, Rock Forest; Daniel Poisson, Sherbrooke, and Marcel Gouin, Deauville, all of Canada, assignors to Ceram SNA Inc., Sherbrooke, Canada

Filed Dec. 16, 1992, Ser. No. 991,821
Int. Cl.[5] C04B *35/02*
U.S. Cl. 501—95 **21 Claims**

1. A castable refractory composition, consisting essentially of:

1 part by weight of a phosphoric acid solution (H_3PO_4) having a concentration ranging from 40 to 85%, up to 50% of said phosphoric acid having its primary acidic function fully neutralized by reaction with vermiculite:

from 0.1 to 2.5 parts by weight of a mineral that is refractory and of fibrous structure and reacts with one part of the acidic functions of the phosphoric acid that are still free or not neutralized yet;

from 0.1 to 2.5 parts by weight of another mineral containing at least one cation that reacts with another part of the acidic functions of the phosphoric acid that are still free or not neutralized; and

from 0.28 to 1.45 parts by weight of water, being provided that the more concentrated is the phosphoric acid solution, the higher is the amount of water present in the composition.

5,362,691

SINTERED MATERIAL BASED ON Si_3N_4 AND PROCESSES FOR ITS PRODUCTION

Gerhard Wötting, Coburg; Gerhard Leimer, and Lutz Frassek, both of Roedental, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 793,468, Nov. 18, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 995,328
Claims priority, application Germany, Nov. 29, 1990, 4038003
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—97 **10 Claims**

1. A process for the production of Si_3N_4-based sintered compositions containing MgO and optionally other sintering additives, which after sintering, have a flexural strength level at room temperature of $\geqq$800 MPa, measured by the four-point bending method, and a Weibull modulus of >15, which process comprises mixing any sintering additives and Si_3N_4 powder to form a mixture, calcining the mixture in an oxygen-free atmosphere and then grinding the calcined mixture to obtain a pre-synthesis mixture, and adding the pre-synthesis mixture to uncalcined Si_3N_4 in an aqueous medium, which mixture is then sintered.

5,362,692

FREE-FLOWING REFRACTORY CASTING SLIP

Matgorzata Bugajski, Radenthein, Austria; Margit Hösler, Urmitz, Germany, and Günther Mörtl, Villach, Austria, assignors to Radex-Heraklith Industriebeteiligungs Aktiengesellschaft, Vienna, Austria

Filed Jul. 31, 1992, Ser. No. 923,312
Claims priority, application Germany, Aug. 1, 1991, 4125511
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—103 **18 Claims**

1. Refractory casting slip comprising

(i) 65.0 to 87.0 wt. % of a refractory matrix material,

the refractory matrix material including a substance selected from the group consisting of Al_2O_3, Zr_2O_3, Cr_2O_3, and a combination thereof,

the refractory matrix material having a particle size of between 0.05 and 10.0 mm,

(ii) 7.0 to 22.0 wt. % of a reactive refractory component,

the reactive refractory component including a substance selected from the group consisting of Al_2O_3, Zr_2O_3, Cr_2O_3, and a combination thereof,

the reactive refractory component having a particle size of between 0.1 and 10.0 microns,

(iii) 0.5 to 10.0 wt. % of a hydraulic binder containing more than 68.0 wt. % Al_2O_3, and

(iv) 0.2 to 6.5 wt. % of at least one additive which stabilizes the casting slip, or increases the water retention capacity of the casting slip,

the casting slip being free-flowing upon addition of 3.5 to 7.0 parts by weight of mixing water per 100 parts by weight of solids.

5,362,693

HIGH TEMPERATURE FIRED X7R DIELECTRIC CERAMIC COMPOSITION SUBMICRON PARTICLE SIZED BARIUM TITANATE

Mike S. H. Chu, Lewiston, and Susan E. Corah, Niagara Falls, both of N.Y., assignors to Tam Ceramics, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 692,744, Apr. 29, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 151,324
Int. Cl.[5] C04B *35/46, 35/48, 35/49*
U.S. Cl. 501—137 **6 Claims**

1. A ceramic composition having a dielectric constant between about 2400 and about 3000 at 25° C., and produced from a mixture consisting essentially of:

95.9 to 98.0% wt barium titanate;

1.9 to 3.7% wt niobium pentoxide;

0.1 to 0.4% wt cobalt oxide; and wherein

the barium titanate has a purity of about 99%, a BaO/TiO_2 stoichiometric ratio of about 0.995;

and an average particle size equal to or less than about 0.8 μm; and

the niobium pentoxide has a purity of about 99.0% and a particle size of 0.5 to 0.9 μm; and

the cobalt oxide has a purity of about 70% to about 74% and a particle size of less than about 1 μm.

5,362,694

SULFUR DIOXIDE REGENERATION OF SUPERACID CATALYST

Elmer J. Hollstein, Wilmington, Del., and Chao-Yang Hsu, Media, Pa., assignors to Sun Company, Inc. (R&M), Philadelphia, Pa.

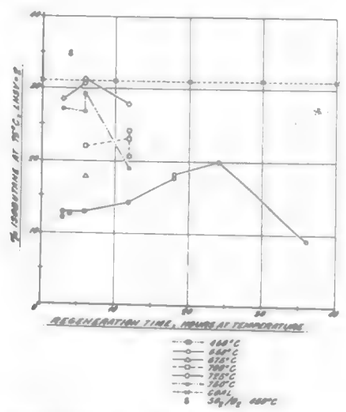
Filed Mar. 30, 1993, Ser. No. 39,716
Int. Cl.[5] B01J *27/30, 31/12;* **C07C** *5/13*
U.S. Cl. 502—52 **29 Claims**

1. A process for regenerating used solid superacid catalyst containing sulfate groups and carbonaceous deposits, which process comprises the steps of:

(a) heating said catalyst; and

(b) contacting said catalyst with a gas stream comprising:

(1) air or oxygen; and



(2) a sulfur-containing reagent; under reaction conditions sufficient to reoxidize reduced sulfate groups of said catalyst to sulfate groups.

5,362,695

INORGANIC MOLECULAR SIEVES ENCAPSULATING CHELATES

Jeffrey S. Beck, Princeton; Ralph M. Dessau, Edison, and John B. Higgins, Titusville, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 13, 1993, Ser. No. 45,383
Int. Cl.[5] B01J *29/04;* **C01B** *33/34*
U.S. Cl. 502—62 **10 Claims**

1. A composition comprising a crystalline molecular sieve encapsulating a macrocyclic organic molecule containing from about 8 to about 18 members in cyclic configuration with at least one bicyclic bridge having from about 3 to about 10 members, the molecule having members selected from a group consisting of carbon, nitrogen, oxygen, sulfur, selenium, phosphorus and arsenic, the members including at least two nitrogen atoms and at least one atom selected from a group consisting of oxygen, sulfur, selenium, phosphorus and arsenic, and the members including sufficient bonds to contiguous members or to hydrogen to form stable molecules.

5. The composition of claim 1 wherein the macrocyclic organic molecule is complexed with at least one ion selected from a group consisting of Periodic Table of the Elements Groups IA, IIA, IIIA, IVA, transition metals IIIB, IVB, VB, VIB, VIIB, VIII and IB, including lanthanides and actinides.

5,362,696

PROCESS FOR PRODUCING SPHERICAL ZEOLITE CATALYST AND APPARATUS FOR PRODUCING THE SAME

Kazuo Takahashi; Fumio Kumata; Hitoshi Nozaki; Shinichi Inoue, and Toshiji Makabe, all of Kanagawa, Japan, assignors to Research Association for the Utilization of Light Oil, Tokyo, Japan

Filed Mar. 11, 1992, Ser. No. 849,346
Claims priority, application Japan, Mar. 11, 1991, 3-070611; May 21, 1991, 3-146756
Int. Cl.[5] B01J *20/18, 29/06*
U.S. Cl. 502—64 **12 Claims**

1. A process for producing a spherical zeolite catalyst, which comprises dropping a zeolite-containing alumina sol into a surfactant-containing oil phase from a dropping opening directly or through air to thereby form spherical droplets of the sol, and then allowing the droplets to gel in an aqueous alkaline solution phase underlying the oil phase and withdrawing the thus gelled droplets, said dropping of the sol being conducted while the dropping opening is being impulsed to thereby impart a spherical and uniform shape to the resulting zeolite particles containing alumina as a binder.

5,362,697

SYNTHETIC LAYERED MCM-56, ITS SYNTHESIS AND USE

Anthony S. Fung, Chadds Ford, Pa.; Stephen L. Lawton, Pitman, and Wieslaw J. Roth, Sewell, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 26, 1993, Ser. No. 51,952
Int. Cl.[5] B01J *29/04, 29/28;* **C01B** *33/34*
U.S. Cl. 502—71 **17 Claims**

1. A synthetic layered material having a composition comprising the molar relationship

$$X_2O_3:(n)YO_2,$$

wherein n is less than about 35, X is a trivalent element selected from the group consisting of aluminum, boron., iron, gallium, and combination thereof, and Y is a tetravalent element selected from the group consisting of silicon, germanium, and combination thereof, said material further characterized by a sorption capacity for 1,3,5-trimethylbenzene of at least about 35 μl/gram of calcined synthetic material, an initial uptake of 15 mg 2,2-dimethylbutane/gram of calcined synthetic material of less than about 20 seconds, and an X-ray diffraction pattern for the calcined synthetic material having d-spacing maxima at 12.4±0.2, 9.9±0.3, 6.9±0.1, 6.2±0.1, 3.55±0.07, and 3.42±0.07 Angstroms.

16. A composition comprising the material of claim 1 and a matrix.

17. The composition of claim 16 wherein said matrix comprises alumina, silica, zirconia, titania, magnesia, beryllia or a combination thereof.

5,362,698

FREE RADICAL INITIATOR DELIVERY SYSTEM

Kolazi S. Narayanan, Palisades Park, and Waldo De Thomas, Morristown, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Apr. 8, 1993, Ser. No. 44,136
Int. Cl.[5] B01J *37/03, 31/00;* **C08F** *26/10*
U.S. Cl. 502—151 **25 Claims**

1. The process for the preparation of a coprecipitated free-radical initiator delivery system for the polymerization of a monomer containing olefinic unsaturation which comprises:

(a) dispersing in water with agitation, in a weight ratio of from about 1:5 to about 1:1.5, a water insoluble free radical initiator and a polymer of a monomer employed in said polymerization reaction in the presence of from about 1.0 to about 100 wt. % of a surfactant, based on the weight of initiator to form a first dispersion,

(b) removing water by subjecting said dispersion to a temperature of between about 0° C. and about −25° C. under from about 50 to about 400 milli Torr vacuum for a period of from about 5 to about 24 hours to form uniformly coprecipitated initiator-polymer solid microparticles and

(c) adding water to said coprecipitated microparticles with vigorous agitation in an amount sufficient to form a pumpable liquid and to form a stable second aqueous dispersion of coprecipitated microparticles containing surfactant having an average diameter of from about 0.001 to about 100 microns.

5,362,699

POLYMERISATION OF OLEFINIC-CONTAINING MONOMERS EMPLOYING ANIONIC INITIATORS

Neil Shepherd, Waltham Abbey, and Malcolm J. Stewart, Henlow, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

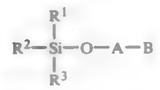
Division of Ser. No. 920,368, Aug. 17, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 142,966

Claims priority, application United Kingdom, Feb. 8, 1990, 9002804.4

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—158 20 Claims

1. A composition comprising a monofunctional silyl ether initiator for use in an anionic polymerization process and a non-polar solvent for said initiator, said initiator having the formula:



where R^1, R^2 and R^3 are independently selected from saturated and unsaturated aliphatic and aromatic radicals, A is a hydrocarbon bridging group containing from 1 to 25 carbon atoms and B is an alkali metal.

5,362,700

CATALYSTS AND PROCESS OF MAKING SAME FOR THE PRODUCTION OF LINEAR POLYAMINES

Arthur R. Doumaux, Jr., Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Oct. 8, 1992, Ser. No. 957,901

Int. Cl.[5] B01J *37/08, 27/18*

U.S. Cl. 502—208 7 Claims

1. A method for making a catalyst composition for the condensation of alcohols with amines to produce an enhanced ratio of acyclic polyamines to other reaction products, comprising reacting at a temperature of about 425° to about 625° C.: (a) high surface area titanium oxide or titanium oxide precursor, or mixtures thereof, Co) a phosphorus component, and (c) metal oxide or metal oxide precursor, of metals selected from the group consisting of Na, mixture of Li and Na, mixture of K and Na, mixture of Ba and Na, mixture of Na and Ca, mixture of Na and Mg and mixture of Na and La, for a period of time sufficient to produce at least one catalytically active phosphate species, wherein the mole ratios of component (a) calculated as MO_2 wherein M is Ti, Co) calculated as P_2O_5 and (c) calculated as metal oxide (M'_xO_y) wherein M' is Na, Li, K. Ba, Ca, Mg, or La, x is 1 or 2 and y is 1 or 3, in the catalyst formed fall within the compositional area defined by points I-J-K-L-I of FIG. 1.

5,362,701

IMAGE-RECEIVING SHEET

Noritaka Egashira; Koichi Asahi; Masanori Akada; Yoshinori Nakamura; Kazunobu Imoto, and Nobuhisa Nishitani, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 614,213, Nov. 15, 1990, Pat. No. 5,166,127, which is a division of Ser. No. 329,623, Mar. 8, 1989, Pat. No. 4,992,413. This application Sep. 11, 1992, Ser. No. 943,474

Claims priority, application Japan, Mar. 11, 1988, 27993; Mar. 11, 1988, 57990; Mar. 11, 1988, 57991; Mar. 11, 1988, 57992; Mar. 11, 1988, 57994; Apr. 18, 1988, 95288; May 20, 1988, 123694

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 6 Claims

1. An image-receiving sheet for use with a heat transfer sheet having a dye layer containing a heat-transferable dye, said image-receiving sheet comprising:

a substrate; and

an image-receiving layer formed on one surface of said substrate, said image-receiving layer comprising a dye-receptive resin and a releasable resin;

said releasable resin comprising a releasable resin having a long chain alkyl group of at least 16 carbon atoms as a part of a side chain.

5,362,702

DYE RECEIVING PAPER FOR THERMAL TRANSFER PRINTING OF VIDEO SIGNALS

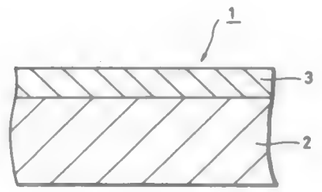
Huy Sam, Tokyo, and Yoshio Fujiwara, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 14, 1992, Ser. No. 944,262

Claims priority, application Japan, Sep. 19, 1991, 3-239746

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 3 Claims



1. A dye receiving sheet for accepting a dye contained in an ink which is transferred when melted or sublimed with heat, in combination with an ink donor material, said dye receiving sheet comprising:

a base sheet consisting of paper or plastic film; and

a dye receiving layer disposed on said base sheet and composed of a resin and a compound added thereto, said compound having an acid anhydride group and comprising a copolymer of a maleic anhydride monomer and at least one of monomers other than said maleic anhydride monomer which includes at least a styrene monomer, said maleic anhydride monomer being chemically modified by monoesterification diesterification, amidation, or imidation.

5,362,703

HEAT TRANSFERABLE SHEET

Sadanobu Kawasaki, Tokorozawa; Mineo Yamanchi, Ichikawa, and Masanori Akada, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

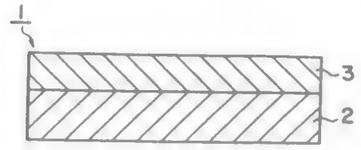
Continuation of Ser. No. 793,651, Nov. 18, 1991, Pat. No. 5,232,893, which is a continuation of Ser. No. 487,387, Mar. 2, 1990, Pat. No. 5,095,000, which is a division of Ser. No. 283,973, Dec. 13, 1988, Pat. No. 4,927,666, which is a division of Ser. No. 871,918, Jun. 9, 1986, Pat. No. 4,820,687, which is a continuation of Ser. No. 633,252, Jul. 23, 1984, Pat. No. 4,626,256. This application Apr. 29, 1993, Ser. No. 53,702

Claims priority, application Japan, Jul. 25, 1983, 58-135627

The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 54 Claims



21. A heat transfer process adapted to produce an image having a continuous gradation of shades or colors, comprising the steps of:

providing an image-receiving sheet comprising a substrate and an image-receiving layer, said image-receiving layer including a synthetic resin and a releasing agent comprising a hardened silicone oil;

providing a heat transfer sheet comprising a heat-transfer layer located on a support, said heat-transfer layer comprising a synthetic resin binder and a heat transferable sublimable dye in said synthetic resin binder;

contacting said heat transfer layer of the heat transfer sheet with the image-receiving layer of the image-receiving sheet; and

selectively applying thermal energy to at least a portion of the heat transfer sheet with heating means to transfer the dye selectively from the heat transfer layer to the image-receiving layer, said releasing agent serving to prevent adhesion between the image-receiving sheet and the heat transfer sheet while not adversely interfering with said dye transfer.

5,362,704

HERBICIDAL TETRAZOLINONES

Toshio Goto, Shimotsuga; Seishi Ito, Tochigi; Yukiyoshi Watanabe, Saitama; Shin-ichi Narabu, Ibaraki, and Akihiko Yanagi, Oyama, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

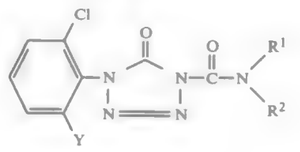
Filed Feb. 24, 1994, Ser. No. 201,927

Claims priority, application Japan, Feb. 25, 1993, 5-59395

Int. Cl.[5] C07D *257/04;* A01N *43/713, 47/38*

U.S. Cl. 504—134 18 Claims

1. A tetrazolinone of the formula



(I)

wherein

Y represents hydrogen, chlorine, or methyl,

R^1 represents ethyl or n-propyl, and

R^2 represents cyclopentyl or cyclohexyl, with the proviso that the total of the carbon atoms of R^1 and R^2 is 7 or 8.

5,362,705

HERBICIDAL FORMULATIONS CONTAINING N-PHOSPHONOMETHYLGLYCINE AND ALKYL PHENOL POLYOXYALKYLENE CARBOXYLIC ACID SURFACTANT

Nadim C. Moucharafieh, El Sobrante; Kang-Chi Lin, Lafayette, and James L. Ahle, Novato, all of Calif., assignors to Zeneca Ltd., London, United Kingdom

Filed Jul. 13, 1993, Ser. No. 90,583

Int. Cl.[5] A01N *25/30, 57/12*

U.S. Cl. 504—206 20 Claims

1. A herbicidal composition comprising

a) from about 0.1 to about 1.5 weight percent N-phosphonomethylglycine;

b) from about 0.1 to about 5 weight percent of an alkyl phenol polyoxyethylene surfactant containing from about 50 to about 90 weight percent alkyl phenol polyoxyethylene carboxylic acid;

c) the remainder comprising water.

5,362,706

ARYLAMINOCARBONYL COMPOUNDS

Karl Seckinger, Riegel, and Fred Kuhnen, Weil, both of Germany, assignors to Sandoz Ltd., Basel, Switzerland

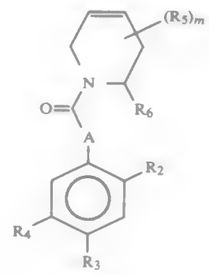
Division of Ser. No. 734,670, Jul. 23, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,347

Claims priority, application United Kingdom, Jul. 27, 1990, 9016476

Int. Cl.[5] C07D *265/36, 279/16, 471/04;* A01N *43/84*

U.S. Cl. 504—221 11 Claims

1. A compound of the formula (I)



(I)

wherein

R_2 is halo or hydrogen;

R_3 and R_4 join together to form a 5-membered ring, one to three of said ring atoms optionally selected from oxygen, nitrogen and sulfur and together with the phenyl ring form a bicyclic ring, or, R_3 and R_4 join together to form a 6-membered ring, wherein said 6-membered ring is optionally selected from the group consisting of rings having one nitrogen atom and one oxygen atom, one nitrogen atom and one sulfur atom, one or two oxygen atoms and one or two sulfur atoms, and together with the phenyl ring form a bicyclic ring, and optionally said bicyclic ring formed from the 5-member or 6-member ring joined together with the phenyl ring being substituted with one or more groups selected from C_{2-8}alkynyl, halo, oxo, C_{1-4}alkylene-R_6, C_{2-8}alkenyl and C_{1-8}alkyl which is itself optionally substituted by C_{2-5}alkoxycarbonyl, C_{1-4}alkoxy or CN;

R_5 is hydrogen; C_{1-4}alkyl; halogen; or C_{2-4}alkenyl;

A and R_6 join together to form N—C(X) wherein X is O or

S so oriented such that N is tied to the C=O moiety of formula (I);

R_{16} is tetrahydropyranyl, 5,6-dihydro-2H-thiinyl, pyridyl, oxazolyl or oxadiazolyl all of which are optionally substituted with C_{1-4}alkyl; and m is 0 to 4.

5,362,707

PLANT-PROTECTION SUSPO-EMULSIONS COMPRISING SUCROGLYCERIDES

Jean-Francois Fiard, Paris; Jean-Michel Mercier, Thiais, and Marie-Lace Prevotat, Paris, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Dec. 10, 1991, Ser. No. 804,327

Claims priority, application France, Dec. 10, 1990, 90 15739

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[5] A01N *25/30*

U.S. Cl. 504—234 **52 Claims**

1. A suspo-emulsion of a solid active plant-protection substance, comprising:

at least one oil; a first surface-active system containing at least sucroglycerides; a solid active plant-protection substance; and either (A) a nonionic or artionic surface-active agent, or (B) a second surface-active system containing sucroglycerides and at least one compound selected from the group consisting of an alkoxylated triglyceride, an alkoxylated fatty acid, a sorbitan ester, and an alkoxylated sorbitan ester,

wherein said solid active plant-protection substance has a melting point greater than or equal to 45° C. and is substantially insoluble in water.

5,362,708

HERBICIDAL AGENT

Dietmar Kores, Leonding; Hermann Tramberger, Seitenstetten; Rudolf H. Wörther; Rudolf Jellinger, both of Linz; Engelbert Kloimstein, Eferding, and Rupert Schönbeck, Leonding, all of Austria, assignors to Agrolinz Agrarchemikalien GmbH, Linz, Austria

Continuation of Ser. No. 668,477, Mar. 13, 1991, abandoned. This application Oct. 13, 1992, Ser. No. 960,292

Claims priority, application Austria, Apr. 5, 1990, A807/90

Int. Cl.[5] A01N *43/58*

U.S. Cl. 504—238 **2 Claims**

1. A method for controlling weeds which comprises applying to said weeds or to their environment at least 150 gram per hectare of 6-chloro-3-(4'-fluorophenyl)-pyridazin-4-yl-S-octyl-thiocarbonate or a salt thereof with or without extenders and-/or surface active agents.

5,362,709

SUPERCONDUCTING DEVICE

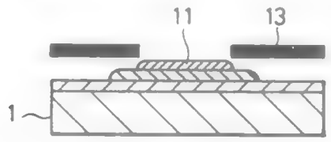
Yasuhiko Takemura, Atsugi, Japan, assignor to Semiconductor Energy Laboratory, Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 553,617, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 406,061, Sep. 12, 1989, Pat. No. 5,061,971. This application Oct. 22, 1991, Ser. No. 796,919

Claims priority, application Japan, Sep. 22, 1988, 63-239256; Jul. 22, 1989, 1-189328

Int. Cl.[5] H01L *39/00, 39/22*

U.S. Cl. 505—190 **18 Claims**



7. A superconducting device comprising:

a Bi-based high-TC oxide superconducting layer;

an epitaxial tunnel barrier layer grown on said oxide superconducting layer, said tunnel barrier layer being made of oxide and being of a different composition than the Bi-based superconducting layer; and

an epitaxial oxide superconducting layer grown on said tunnel barrier layer, said epitaxial oxide superconducting layer being of a different composition than the tunnel barrier layer.

5,362,710

PROCESS FOR PREPARING HIGH TC SUPERCONDUCTING MATERIAL

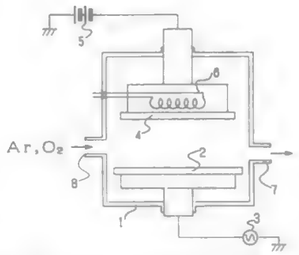
Nobuhiko Fujita; Tadakazu Kobayashi; Hideo Itozaki; Saburo Tanaka; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 563,687, Aug. 3, 1990, Pat. No. 5,175,140, which is a continuation of Ser. No. 171,359, Mar. 21, 1988, abandoned. This application Dec. 28, 1992, Ser. No. 997,563

Claims priority, application Japan, Mar. 19, 1987, 62-65281

Int. Cl.[5] C23C *14/34*; B05D *5/12*

U.S. Cl. 505—475 **24 Claims**



1. A method for producing a superconducting thin film on a substrate by depositing from a target, comprising the steps of:

preparing a target of a compound oxide which contains one element "A" selected from the group consisting of magnesium (Mg), calcium (Ca), strontium (Sr) and barium (Ba), one element "B" selected from the group consisting of yttrium (Y), lanthanum (La), and lanthanide elements, at least one element "C" selected from the group consisting of vanadium (V), tantalum (Ta), indium (In), and thallium (Tl), and copper, the atom ratio of said elements of "A", "B", "C" and copper being adjusted to such a range that an atom ratio of "A":"B":"C":Cu is (0 to 1):(0 to 1):(0 to 1):(0 to 1); and

using said target to deposit on a substrate a thin film of superconductive perovskite oxide or quasiperovskite oxide represented by the general formula:

$$A_uB_vC_wCu_xO_y$$

wherein

$0<u\leqq 1.0$,

$0<v\leqq 1.0$,

$0<w\leqq 1.0$,

$0<x\leqq 1.0$, and

$2\leqq y\leqq 4$.

5,362,711

METHOD FOR PRODUCING SINGLE CRYSTAL SUPERCONDUCTING $LnA_2Cu_3O_{7-x}$ FILMS

Toshio Takada; Takahito Terashima, both of Kyoto, and Yoshichika Bando, Ohtsu, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd.; Matsushita Electric Industris Co., Ltd., both of Osaka; NEC Corporation, Tokyo; Nippon Mining Co., Ltd., Tokyo; Nippon Steel Corporation, Tokyo; TDK Corporation, Tokyo; Tosoh Corporation, Yamaguchi; Toyo Boseki Kabushiki Kaisha, Osaka; Seisan Kaihatsu Kagaku Kenkyusho, Kyoto and Ube Industries, Ltd., Yamaguchi, all of Japan

Division of Ser. No. 818,655, Jan. 7, 1992, abandoned, which is a continuation of Ser. No. 247,261, Sep. 21, 1988, abandoned. This application Apr. 27, 1993, Ser. No. 53,318

Claims priority, application Japan, Sep. 21, 1987, 62-236792; Sep. 21, 1987, 62-263793; Dec. 11, 1987, 62-314670; Dec. 15, 1987, 62-318074; Feb. 15, 1988, 63-33630; Mar. 10, 1988, 63-57207; Mar. 28, 1988, 63-75486

Int. Cl.[5] B05D *3/06, 5/12*

U.S. Cl. 505—476 **14 Claims**

1. A process for producing a superconducting thin film consisting of a single crystal of LnA_2Cu_3 oxide:

$$[LnA_2Cu_3O_{7-x}] \quad (I)$$

wherein Ln is at least one rare earth element selected from the group consisting of Y, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm and Yb and A is at least one alkaline earth metal selected from the group consisting of Ba, Sr and Ca which has a three-layered perovskite structure, which comprises simultaneously evaporating Ln, A and Cu in an atomic ratio of about 1:2:3 from discrete evaporation sources of Ln, A and Cu onto a heated substrate in a vacuum vessel while blowing an oxygen gas onto the substrate to form an oxygen-containing atmosphere at the substrate, thereby forming said said superconducting thin film on the substrate.

5,362,712

PROCESS FOR REMOVING A COPPER MOLD FROM A MOLDED BODY

Eberhard Preisler, and Joachim Bock, both of Erftstadt, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

Continuation of Ser. No. 741,248, Aug. 2, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 81,855

Claims priority, application Germany, Aug. 17, 1990, 4026015.1

Int. Cl.[5] H01L *39/12*; C23F *1/00*

U.S. Cl. 505—410 **5 Claims**

1. A process for removing a copper mold from a molded high-temperature superconductor precursor body which comprises treating a copper mold which encloses a molded body of solidified bismuth strontium calcium cuprate melt with a solution of (a) a compound containing sulfate anions, (b) an aqueous mineral acid and (c) an oxidizing agent, to dissolve the copper mold and to form a protective layer of at least one of strontium sulfate or calcium sulfate on said molded body from the sulfate anions and strontium and calcium contained in the solidified melt, said protective layer suppressing an attack of the mineral acid upon said molded body, wherein

(1) said compound containing sulfate anions is a sulfate of sodium, potassium, ammonium, magnesium or zinc; and

(2) either hydrochloric or phosphoric acid is used as said mineral acid in combination with said compound containing sulfate anions and said oxidizing agent, or nitric acid is simultaneously used as said mineral acid and said oxidizing agent in combination with said compound containing sulfate anions.

5,362,713

DRILLING MUD COMPOSITIONS

John A. Westland, Bothell, Wash.; Glenn S. Penny, Duncan, Okla., and Deborah A. Lenk, Federal Way, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 714,913, Jun. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 450,360, Dec. 13, 1989, Pat. No. 5,009,797. This application Mar. 26, 1992, Ser. No. 860,291

Int. Cl.[5] C09K *7/02*

U.S. Cl. 507—110 **11 Claims**

1. A method of preparing a drilling mud composition for use during the formation of a bore hole comprising:

providing an aqueous transport medium;

dispersing sufficient amounts of a water insoluble reticulated bacterial cellulose in the medium to achieve a drilling mud having a plastic viscosity of at least about 5 cp; and

adding one or more drilling mud constituents selected from the group consisting of drill solids, bentonite and soda ash to the medium.

3. A method of drilling a geological formation comprising:

rotating a hollow drill stem and attached drill bit within a geological formation to create a bore hole;

delivering a drilling mud through the drill stem and out of the drill bit at a sufficient volumetric rate and pressure to cause the drilling mud to rise between the drill stem and bore hole, the drilling mud comprising an aqueous transport medium and a sufficient amount of water insoluble reticulated bacterial cellulose dispersed in the medium to achieve a drilling mud having a plastic viscosity of at least about 5 cp.

5,362,714

PROCESS FOR DEWAXING CITRUS OILS

Terence Radford, Dunwoody, and Ad S. Olansky, Decatur, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 29, 1993, Ser. No. 83,929

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—5 **36 Claims**

1. A process for treating a citrus oil comprising the steps of:

mixing a volume of a citrus oil containing psoralen epoxides with a volume of an acidic aqueous treatment solution, comprising water and an acid, for a period of time which is sufficient to convert substantially all of said epoxides to diols; and

separating the citrus oil from the acidic aqueous treatment solution.

5,362,715

MIXTURES OF ACETYLPOLYALKYLINDANES AND ACETYLPOLYALKYLTETRALINES

Amnon M. Cohen; Frank E. Conboy, both of Amersfoort; Willem Lenselink, Voorthuizen, and Everardus A. Oostveen, Bennekom, all of Netherlands, assignors to PFW Aroma Chemicals B.V., Nijverheidsweg, Netherlands

Filed Apr. 15, 1993, Ser. No. 48,344

Claims priority, application European Pat. Off., Apr. 16, 1992, 92201127.5

Int. Cl.[5] A61K *7/46*

U.S. Cl. 562—17 **13 Claims**

1. A mixture of acetylpolyalkylindanes and acetylpolyalkyltetralines prepared by cycloalkylation of p-cymene and/or p,α-dimethylstyrene and/or 8-p-cymenyl halides and/or 8-p-cymenyl alcohol with a mixture of alkenes of one ore more methylbutene Isomers and one or more dimethylbutene isomers in a ratio of 0.09–2.5 by weight, in the presence of a Lewis acid and in substantial absence of elemental Iodine, followed by acetylation of the intermediate mixture of polyalkylindanes and polyalkyltetralines.

12. Process for the preparation of an odorant, comprising cycloalkylating p-cymene and/or p,α-dimethylstyrene and/or 8-p-cymenyl halides and/or 8-p-cymenyl alcohol with a mix-

ture of alkenes of one or more methylbutane Isomers and one or more dimethylbutene isomers in a ratio of 0.09–2.5 by weight, in the presence of a Lewis acid and in substantial absence of elemental iodine, followed by acetylation of the intermediate mixture of polyalkylindanes and polyalkyltetralines.

5,362,716

METHODS FOR STIMULATING HEMATOPOIETIC PROGENITORS USING HEPATOCYTE GROWTH FACTOR AND LYMPHOKINES

Thomas E. Kmiecik, Frederick, Md., and George F. Vande Woude, Berryville, Va., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 830,586, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 642,971, Jan. 18, 1991, which is a continuation-in-part of Ser. No. 457,556, Dec. 27, 1989, abandoned, and Ser. No. 582,063, Sep. 14, 1990. This application Jul. 20, 1992, Ser. No. 914,630

Int. Cl.[5] A61K *37/00*

U.S. Cl. 514—12 **1 Claim**

1. A method of stimulating hematopoietic progenitors comprising administering to mammals a hematopoietic progenitor stimulating effective amount of Hepatocyte Growth Factor and at least one other growth factor selected from the group consisting of IL-3 and GM-CSF.

5,362,717

N-HALOCHITOSANS, THEIR PREPARATION AND USES

Edward O. Dingilian, Newark, Del., and George E. Heinsohn, Elkton, Md., assignors to Vanson L. P., Redmond, Wash.

Division of Ser. No. 613,602, Nov. 14, 1990, Pat. No. 5,204,452. This application Feb. 24, 1993, Ser. No. 21,825

Int. Cl.[5] A61K *31/73, 31/70;* **C07H** *5/06;* **C08B** *37/08*

U.S. Cl. 514—55 **7 Claims**

1. A polymeric composition consisting essentially of 1–35% of 2-deoxy-2-acetamidoglucose monomeric units, 1–90% of 2-deoxy-2-aminoglucose monomeric units and 8–98% of 2-deoxy-2-haloaminoglucose monomeric units, wherein the haloamino grouping is chloroamino or bromoamino.

5,362,718

RAPAMYCIN HYDROXYESTERS

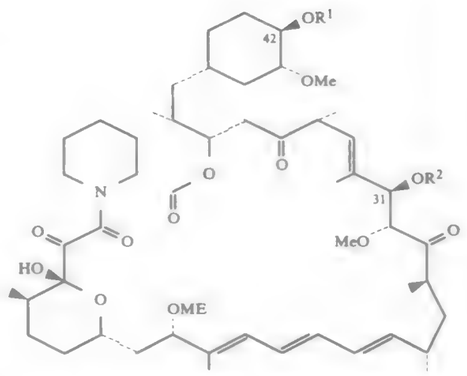
Jerauld S. Skotnicki, Allentown; Christina L. Leone, Princeton, both of N.J., and Guy A. Schiehser, Yardley, Pa., assignors to American Home Products Corporation, Madison, N.J.

Filed Apr. 18, 1994, Ser. No. 229,261

Int. Cl.[5] A61K *31/695, 31/395;* **C07D** *498/16, 7/04*

U.S. Cl. 514—63 **24 Claims**

1. A compound of the structure



wherein R^1 and R^2 are each, independently, hydrogen or $—CO(CR^3R^4)_b(CR^5R^6)_dCR^7R^8R^9$;

R^3 and R^4 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, or —F;

R^5 and R^6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, $—CF_3$, —F, or $—CO_2R^{11}$, or R^5 and R^6 may be taken together to form X or a cycloalkyl ring of 3–8 carbon atoms that is optionally mono-, di-, or tri-substituted with $—(CR^3R^4)_fOR^{10}$;

R^7 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, $—CF_3$—F, or$—CO_2R^{11}$;

R^8 and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, --CF_3, —F, or $—CO_2R^{11}$, or R^8 and R^9 may be taken together to form X or a cycloalkyl ring of 3–8 carbon atoms that is optionally mono-, di-, or tri-substituted with $—(CR^3R^4)_fOR^{10}$;

R^{10} is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms alkynyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silyl, tri-(alkyl of 1–6 carbon atoms)-silylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms,

tri-(alkyl of 1–6 carbon atoms)silylethoxymethyl, chloroethyl, or tetrahydropyranyl;

R^{11} is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, or phenylalkyl of 7–10 carbon atoms;

X is 5-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxanyl, 5-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxalanyl, or 4-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxalanyl;

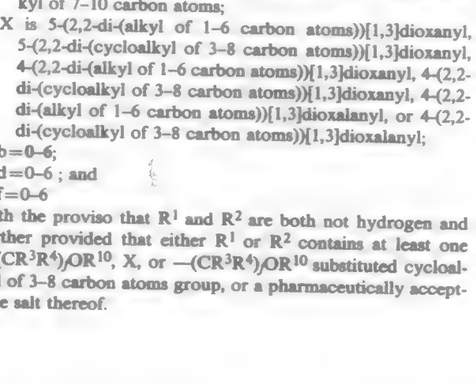
b=0–6;

d=0–6 ; and

f=0–6

with the proviso that R^1 and R^2 are both not hydrogen and further provided that either R^1 or R^2 contains at least one $—(CR^3R^4)_fOR^{10}$, X, or $—(CR^3R^4)_fOR^{10}$ substituted cycloalkyl of 3–8 carbon atoms group, or a pharmaceutically acceptable salt thereof.

19. A method of treating transplantation rejection or graft vs. host disease in a mammal in need thereof, which comprises administering to said mammal an antirejection effective amount of a compound of the structure



wherein R^1 and R^2 are each, independently, hydrogen or $—CO(CR^3R^4)_b(CR^5R^6)_dCR^7R^8R^9$;

R^3 and R^4 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, trifluoromethyl, or —F;

R^5 and R6 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, $—CF_3$, —F, or $—CO_2R^{11}$, or R^5 and R^6 may be taken together to form X or a cycloalkyl ring of 3–8 carbon atoms that is optionally mono-, di-, or tri-substituted with $—(CR^3R^4)_fOR^{10}$;

R^7 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, $—CF_3$, —F, or $—CO_2R^{11}$;

R^8 and R^9 are each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, $—(CR^3R^4)_fOR^{10}$, $—CF_3$, —F, or $—CO_2R^{11}$, or R^8 and R^9 may be taken together to form X or a cycloalkyl ring of 3–8 carbon atoms that is optionally mono-, di-, or tri-substituted with $—(CR^3R^4)_fOR^{10}$;

R^{10} is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silyl, tri-(alkyl of 1–6 carbon atoms)-silylethyl, triphenylmethyl, benzyl, alkoxymethyl of 2–7 carbon atoms, tri-(alkyl of 1–6 carbon atoms)silylethoxymethyl, chloroethyl, or tetrahydropyranyl;

R^{11} is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, or phenylalkyl of 7–10 carbon atoms;

X is 5-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxanyl, 5-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxanyl, 4-(2,2-di-(alkyl of 1–6 carbon atoms))[1,3]dioxalanyl, or 4-(2,2-di-(cycloalkyl of 3–8 carbon atoms))[1,3]dioxalanyl;

b=0–6;

d=0–6 ; and

f=0–6

with the proviso that R^1 and R^2 are both not hydrogen and further provided that either R^1 or R^2 contains at least one $—(CR^3R^4)_fOR^{10}$, X, or $—(CR^3R^4)_fOR^{10}$ substituted cycloalkyl of 3–8 carbon atoms group, or a pharmaceutically acceptable salt thereof.

5,362,719

USE OF VITAMIN-D ANALOGUES IN THE TREATMENT OF ACNE

Wagn Ole Godtfredsen, Varlose, Denmark, assignor to Leo Pharmaceutical Products, Ltd. a/s Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

Continuation-in-part of Ser. No. 859,529, Jun. 11, 1992, Pat. No. 5,292,727. This application Nov. 24, 1993, Ser. No. 156,630

Claims priority, application United Kingdom, Mar. 1, 1990, 9004544

Int. Cl.[5] A61K *31/59*

U.S. Cl. 514—167 **2 Claims**

1. The method of treating acne which comprises administering to a subject in need of such treatment an effective amount of 1(S),3(R)-dihydroxy-20(R)-(4'-hydroxy-4'-ethyl-1'-hexyloxy)-9,10-seco-pregna-5(Z),7(E),10(19)-triene.

5,362,720

METHODS OF TREATING OR PREVENTING BREAST OR ENDOMETRIAL CANCER WITH LOW DOSE NON-MASCULINIZING ANDROGENIC COMPOUNDS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Canada

Continuation of Ser. No. 724,532, Jun. 28, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,083

Int. Cl.[5] A01N *45/00;* **A61K** *31/56*

U.S. Cl. 514—169 **30 Claims**

1. A method of preventing breast or endometrial cancer in mammals, comprising administering a patient in need of such treatment at least one androgenic steroid having a Ki value for the androgen receptor of less than about 2×10^{-8}M and an androgen receptormediated inhibitory effect on the growth of human breast cancer ZR-75-1 cells at an ED_{50} value of less than 3.0 nanomoles per liter and no visible masculinizing activity wherein every such androgenic steroid is administered at a dosage effectively low to maintain a cumulative androgenic steroid serum concentration below 50 nanomoles per liter.

5,362,721

CORTICOID-17-ALKYL-CARBONATES SUBSTITUTED IN THE 17-POSITION, PROCESS FOR THEIR PREPARATION AND PHARMACEUTICALS CONTAINING THEM

Ulrich Stache, Hofheim am Taunus; Walter Dürckheimer, Hattersheim am Main; Hans G. Alpermann, Königstein/Taunus; Walter Petri, Wiesbaden, all of Germany

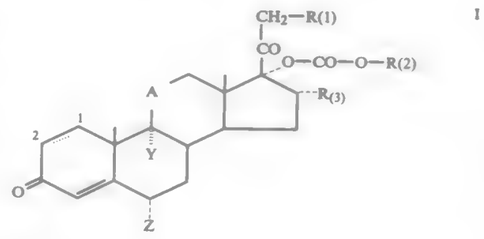
Continuation of Ser. No. 742,334, Aug. 8, 1991, abandoned. This application Feb. 8, 1993, Ser. No. 15,041

Claims priority, application Germany, Aug. 10, 1990, 4025342

Int. Cl.[5] C07J *9/00*

U.S. Cl. 514—179 **4 Claims**

1. A corticoid-17-alkylcarbonate of the formula I



I

in which:

A is CHOH in any desired steric arrangement, CH_2 or C=O,

Y is hydrogen, fluorine or chlorine,

Z is hydrogen, fluorine or methyl,

R(1) is O-acyl of the formula II: —O—CO—$(CH_2)_n$—R(4), oxycarbonyloxyalkyl of the formula III: —O—CO—O—$(CH_2)_n$—R(4) or alkylsulfonate or arylsulfonate of the formula IV: —O—SO_2—R(5) where R(4) is hydrogen, (C_1–C_{10})-alkyl or (C_3—C_6)-cycloalkyl R(5) is (C_1–C_4)-alkyl, phenyl, chlorophenyl or methylphenyl, n is an integer from 0 to 4,
R(2) is branched (C_3–C_8)-alkyl or —$(CH_2)_{2-4}$—OCH_3 and
R(3) is hydrogen or α-methyl.

5,362,722

CEPHALOSPORIN ANTIBACTERIAL AGENTS

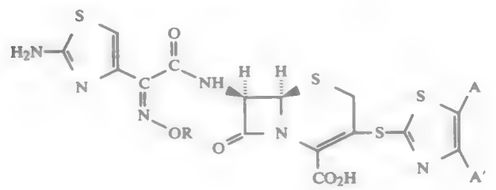
Robert J. Ternansky, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 642,959, Jan. 18, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 996,371

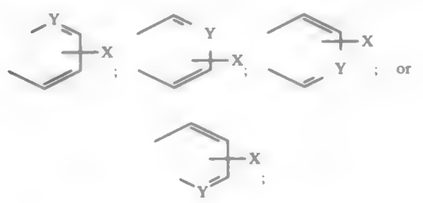
Int. Cl.[5] **C07D** *501/59;* **A61K** *31/545*

U.S. Cl. 514—206 **10 Claims**

1. A compound of the formula:



wherein
R is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_6 cycloalkyl, or C_1–C_6 haloalkyl; and
A and A′ are taken together form a group of the formulae



wherein
X is hydrogen, halo, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_1–C_6 alkoxycarbonyl, amino, nitro, or carboxy; and Y is nitrogen or a pharmaceutically acceptable salt thereof.

5,362,723

2-(HETEROCYCLYLHETEROARYLIUMALKYL) PHENYL CARBAPENEM ANTIBACTERIAL AGENTS

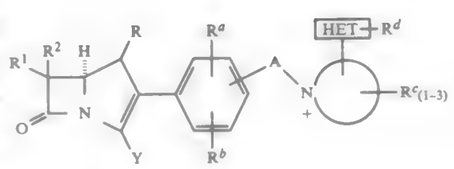
Frank P. DiNinno, Old Bridge; Thomas N. Salzmann, North Plainfield, and David A. Muthard, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 741,183, Jul. 29, 1991, abandoned. This application May 20, 1992, Ser. No. 886,272

Int. Cl.[5] **C07D** *487/04;* **A61K** *31/40*

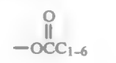
U.S. Cl. 514—210 **15 Claims**

1. A compound of the formula:

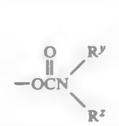


(I.)

wherein:
R is H or CH_3;
R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;
R^a, R^b, R^c, and R^d are independently selected from the group consisting of (R^c represents from 1 to 3 substituents which may be the same or different):
a) a trifluoromethyl group: —CF_3;
b) a halogen atom: —Br, —Cl, —F, or —I;
c) C_1–C_4 alkoxy radical: —OC_{1-4} alkyl;
d) a hydroxy group: —OH;
e) (C_1–C_6 alkyl) carbonyloxy radical:



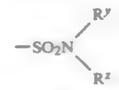
alkyl;
f) a carbamoyloxy radical which is unsubstituted or substituted on nitrogen with one or two C_1–C_4 alkyl groups:



where R^y and R^z are independently H or C_{1-4} alkyl;
g) a C_1–C_6 alkylthio radical, C_1–C_6 alkylsulfinyl radical or C_1–C_6 alkylsulfonyl radical:



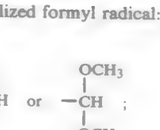
alkyl where n=0–2, and the alkyl portion is optionally substituted by cyano;
h) a sulfamoyl group which is unsubstituted or substituted on nitrogen by one or two C_1–C_4 alkyl groups:



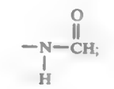
where R^y and R^z are as defined above;
i) an amino group, or a mono (C_1–C_4 alkyl) amino or di(C_1–C_4 alkyl)-amino group:



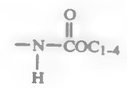
where R^y and R^z are as defined above;
j) a formylamino group:



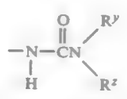
k) (C_1–C_6 alkyl)carbonylamino radical:



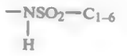
alkyl;
l) a (C_1–C_4 alkoxy) carbonylamino radical:



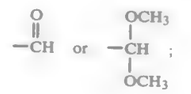
alkyl;
m) a ureido group in which the terminal nitrogen is unsubstituted or substituted with one or two C_1–C_4 alkyl groups:



where R^y and R^z are as defined above;
n) a sulfonamido group:



alkyl;
o) a cyano group: —CN;
p) a formyl or acetalized formyl radical:



q) (C_1–$_6$ alkyl)carbonyl radical wherein the carbonyl is free or acetalized:



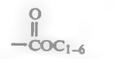
alkyl or



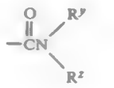
alkyl;
s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group:



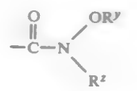
where R^y and R^z are as defined above;
t) a (C_1–C_6 alkoxy)carbonyl radical:



alkyl;
u) a carbamoyl radical which is unsubstituted or substituted on nitrogen by one or two C_1–C_4 alkyl groups:



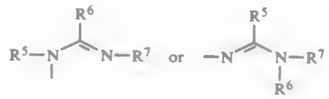
where R^y and R^z are as defined above;
v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group:



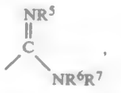
where R^y and R^z are as defined above;
w) a thiocarbamoyl group:



x) an amidino group



where R^5, R^6 and R^7 are independently hydrogen, C_1–C_4alkyl or wherein two of the alkyl groups together form a C_2–C_6alkylidene radical optionally interrupted by a heteroatom and joined together to form a ring;
y) a carboxamidino group



where R^5, R^6 and R^7 are as defined above;
z) a guanidinyl group where R^6 in a) above is NR^8R^9 and R^8 and R^9 are as defined for R^5 through R^7 above;
aa) hydrogen;
ab) C_2–C_6 alkenyl radical;
ac) an unsubstituted or substituted C_2–C_6 alkynyl radical;
ad) C_3–C_7 cycloalkyl radical;
ae) C_3–C_7 cycloalkyl methyl radical;
af) C_5–C_7 cycloalkenyl radical;
ag) phenyl;
ah) C_1–C_6 alkyl radical;
ai) C_1–C_4 alkyl monosubstituted by one of the substituents a)–ag) above;

aj) an anionic function selected from the group consisting of: phosphono [P═O(OM^c)$_2$]; alkylphosphono {P═O-(OM^c)—[O(C$_1$–C$_4$ alkyl)]}; alkylphosphinyl [P═O-(OM^c)—(C$_1$–C$_4$alkyl)]; phosphoramido [P═O(OM^c)N-(R^y)R^z and P═O(OM^c)NHR^x]; sulfino (SO$_2$M^c); sulfo (SO$_3$M^c); acylsulfonamides selected from the structures CONM^{c}SO$_2$R^x, CONM^{c}SO$_2$N(R^y)R^z, SO$_2$NM^{c}CON(-R^y)R^z, and SO$_2$NM^{c}CN, where

R^x is phenyl or heteroaryl, where heteroaryl is as defined below except that there is no quaternary nitrogen and attachment through nitrogen is optional, and the phenyl and heteroaryl are optionally mono-substituted by R^q; M^c is hydrogen or an alkali metal; R^y and R^z are as defined above; where

R^q is a member selected from the group consisting of —OH; —OCH$_3$—; —CN; —C(O)NH$_2$; —OC(O)NH$_2$; —OC-(O)N(CH$_3$)$_2$; —SO$_2$NH$_2$; —SO$_2$N(CH$_3$)$_2$; —SOCH$_3$; —F; —CF$_3$; tetrazolyl; and —COOM^d, where M^d is hydrogen, alkali metal, methyl or phenyl;

A is para (p) or meta (m) with respect to the point of attachment of the phenyl ring to the carbapenem nucleus, and is (CH$_2$)$_m$—Q—(CH$_2$)$_n$, where m is 0 to 2 and n is 1 or 2; and Q is a covalent bond; O; S; SO; SO$_2$; NH; or N(C$_1$–C$_4$ alkyl);



is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms in which one of the carbon atoms has been replaced by a nitrogen atom and attachment of said group is by way of said nitrogen atom, and in which one additional carbon atom is optionally replaced by a heteroatom selected from O and S, and from 1 to 3 carbon atoms are optionally replaced by a nitrogen heteroatom; and

HET

is a monocyclic aliphatic hydrocarbon group having 4 to 7 ring atoms in which one of the carbon ring atoms is replaced by a nitrogen atom and attachment of said group is by way of said nitrogen atom to a carbon of the monocyclic aromatic hydrocarbon group described above, and one of the remaining carbon ring atoms is optionally replaced by a heteroatom selected from N, O and S; and wherein the substitutent R^d, defined above, is attached to one of the carbon atoms of the ring; and

Y is selected from:

i) COOH or a pharmaceutically acceptable ester thereof;

ii) COOM wherein M is an alkali metal or other pharmaceutically acceptable salt;

iii) COOM wherein M is a negative charge in the case where a permanent positive charge exists elsewhere in the molecule.

5,362,724

THIOALKYLTHIO CARBACEPHALOSPORIN DERIVATIVES

Tadatoshi Kubota, Habikino, and Masaharu Kume, Amagasaki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

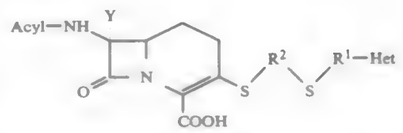
Filed Sep. 17, 1993, Ser. No. 128,770

Claims priority, application Japan, Sep. 30, 1992, 4-261478

Int. Cl.^{5} C07D *471/04;* A61K *31/435*

U.S. Cl. 514—210 **13 Claims**

1. A compound of the formula I:



I

wherein Acyl is C$_1$–C$_{12}$ acyl; Het is a 5- or 6-membered ring containing one or more hetero atoms selected from nitrogen and sulfur optionally substituted by lower alkyl; R^1 is a single bond or C$_1$–C$_4$ alkylene; R^2 is a straight or branched C$_1$–C$_4$ alkylene; and Y is a hydrogen atom or methoxy group, or a pharmaceutically acceptable salt thereof.

5,362,725

TETRACYCLIC COMPOUNDS HAVING ANTI-ALLERGIC AND ANTI-ASTHMATIC ACTIVITIES AND THEIR USE

Hiroshi Fukumi; Toshiaki Sakamoto; Mitsuo Sugiyama; Yoshio Iizuka, and Takeshi Yamaguchi, all of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

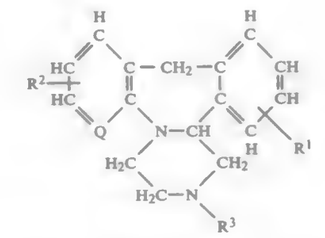
Continuation of Ser. No. 592,279, Oct. 3, 1990, abandoned. This application Oct. 15, 1992, Ser. No. 962,037

Claims priority, application Japan, Oct. 5, 1989, 1-260592; Mar. 29, 1990, 2-81513

Int. Cl.^{5} C07D *487/04;* A61K *31/55*

U.S. Cl. 514—214 **58 Claims**

1. A compound of formula (I):



(I)

in which:

Q represents a group of formula ═CH—;

R^1 R^2 and are independently selected from the group consisting of hydrogen atoms, alkyl groups having from 1 to 6 carbon atoms, alkoxy groups having from 1 to 6 carbon atoms, hydroxy groups, tri fluoromethyl groups and halogen atoms;

R^3 represents:

a substituted alkyl group having from 3 to 7 carbon atoms and having at least one substituent selected from the group consisting of hydroxy groups and groups of formula —COOR^4, where R^4 represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, an aryl group, as defined below, or an aralkyl group, as defined below;

a group of formula —B—O—D—OR^4, where: B represents an alkylene or alkylidene group having from 2 to 4 carbon atoms; D represents an alkylene or alkylidene group having from 2 to 7 carbon atoms or such an alkylene or alkylidene group in which the carbon chain is interrupted by 1 or 2 oxygen atoms; and R^4 is as defined above;

a group of formula 'E—O—G—COOR^4, where: E represents an alkylene or alkylidene group having from 2 to 7 carbon atoms; G represents a direct carbon-carbon single bond, an alkylene or alkylidene group having from 1 to 9 carbon atoms or such an alkylene or alkylidene group in which the carbon chain is interrupted by 1 or 2 oxygen atoms, said alkylene or alkylidene group being unsubstituted or being substituted by an aryl group; and R^4 is as defined above;

a group of formula —E—O—G—CONR^{5}R^6, where: E and G are as defined above; and R^5 and R^6 are independently selected from the group consisting of hydrogen atoms,

unsubstituted alkyl groups having from 1 to 6 carbon atoms,

substituted alkyl groups which have from 1 to 6 carbon atoms and which have at least one substituent selected from the group consisting of substituents (a), defined below,

cycloalkyl groups which have from 3 to 7 ring carbon atoms and which are unsubstituted or have at least one substituent selected from the group consisting of alkyl groups having from 1 to 4 carbon atoms,

aryl groups, as defined below, and

aralkyl groups, as defined below; or R^5 and R^6, together with the nitrogen atom to which they are attached, represent a cyclic amino group having from 3 to 6 ring atoms, of which one is said nitrogen atom, optionally having an additional hetero-atom selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms and the remainder are carbon atoms, said heterocyclic group being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents (c), defined below; or

a group of formula —J—CH(OH)—CH$_2$R^7, where: J represents an alkylene or alkylidene group having from 1 to 4 carbon atoms; and R^7 represents a hydroxy group, a halogen atom or a group of formula —NR^{5}R^6, where R^5 and R^6 are as defined above;

said aralkyl groups are alkyl groups having from 1 to 4 carbon atoms, which are substituted by 1 to 3 aryl groups, as defined below;

said aryl groups have from 6 to 10 ring carbon atoms and are unsubstituted or have at least one substituent selected from the group consisting of substituents (b), defined below;

substituents (a):

amino groups; alkylamino groups in which the alkyl group has from 1 to 6 carbon atoms; dialkylamino groups in which each alkyl group is independently selected from the group consisting of alkyl groups having from 1 to 6 carbon atoms; and cyclic amino groups having from 3 to 6 ring atoms, of which one is a nitrogen atom, optionally having an additional hetero-atom selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms and the remainder are carbon atoms, said heterocyclic group being unsubstituted or being substituted by at least one substituent selected from the group consisting of substituents (c), defined below;

substituents (b):

alkyl groups having from 1 to 6 carbon atoms; alkoxy groups having from 1 to 6 carbon atoms; aryl groups, as defined above, provided that they are not themselves substituted by aryl groups; and halogen atoms;

substituents (c):

alkyl groups having from 1 to 4 carbon atoms; aryl groups, as defined above; and aralkyl groups, as defined above;

or a pharmaceutically acceptable salt thereof.

41. A method for the treatment or prophylaxis of asthma or allergies in a mammal suffering from or susceptible to asthma or allergies, which method comprises administering to said mammal an effective amount of an active compound, wherein the active compound is at least one compound of formula (I) or a pharmaceutically acceptable salt thereof, as defined in claim 1.

5,362,726

COMPOUND AND METHOD OF TREATMENT FOR FALCIPARUM MALARIA

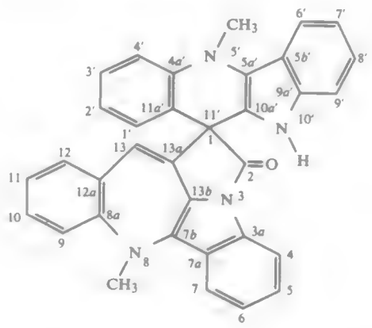
Albert Tackie, Manpong-Akwapin, Ghana, and Paul L. Schiff, Pittsburgh, Pa., assignors to Healthsearch, Inc., Plano, Tex. and Center for Scientific Research Into Plant Medicine, Ghana

Filed Feb. 12, 1993, Ser. No. 17,170

Int. Cl.^{5} A61K *31/55;* C07D *471/22*

U.S. Cl. 514—214 **15 Claims**

1. A compound of the formula



or a pharmacologically acceptable salt thereof.

10. A method for treating malaria comprising the administration of a therapeutically effective amount of a composition comprising a therapeutically effective amount of cryptospirolepine or pharmacologically acceptable salt thereof to a patient who might be exposed to or is suffering from malaria.

5,362,727

SUBSTITUTED AZEPINO[2,1-A]ISOQUINOLINE COMPOUNDS

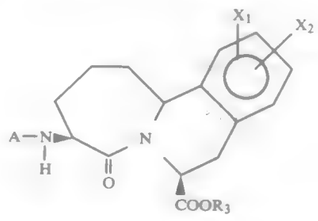
Jeffrey A. Robl, Newtown, Pa., assignor to Bristol-Myers Squibb, Princeton, N.J.

Filed Jul. 26, 1993, Ser. No. 96,504

Int. Cl.^{5} A61K *31/55;* C07D *487/14, 487/16*

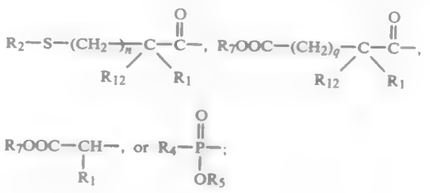
U.S. Cl. 514—214 **9 Claims**

1. A compound of the formula



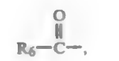
including a pharmaceutically acceptable salt thereof wherein:

A is



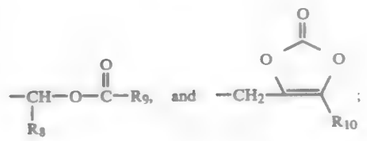
R_1 and R_{12} are independently selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, substituted alkyl, substituted alkenyl, aryl, substituted aryl, heteroaryl, cycloalkyl- alkylene-, aryl-alkylene-, substituted aryl-alkylene-, and heteroaryl-alkylene- or R_1 and R_{12} taken together with the carbon to which they are attached complete a cycloalkyl ring or a benzofused cycloalkyl ring;

R_2 is hydrogen,



or R_{11}—S—;

R_3, R_5 and R_7 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, aryl—$(CH_2)_p$—, substituted aryl —$(CH_2)_p$—, heteroaryl—$(CH_2)_p$—,



R_4 is alkyl, cycloalkyl—$(CH_2)_p$—, substituted alkyl, aryl—$(CH_2)_p$—, substituted aryl—$(CH_2)_p$—, or heteroaryl—$(CH_2)_p$—;

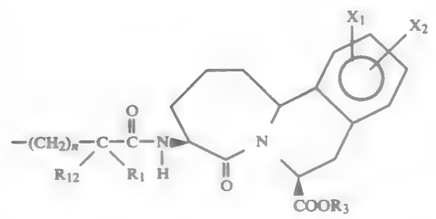
R_6 is alkyl, substituted alkyl, cycloalkyl—$(CH_2)_p$—, aryl—$(CH_2)_p$—, substituted aryl—$(CH_2)_p$—, or heteroaryl—$(CH_2)_p$—;

R_8 is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_9 is hydrogen, lower alkyl, lower alkoxy, or phenyl;

R_{10} is lower alkyl or aryl—$(CH_2)_p$—;

R_{11} is alkyl, substituted alkyl, cycloalkyl—$(CH_2)_p$—, aryl—$(CH_2)_p$—, substituted aryl—$(CH_2)_p$—, heteroaryl—$(CH_2)_p$—, or —S—R_{11} completes a symmetrical disulfide wherein R_{11} is



X_1 and X_2 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkylthio, halo, trifluoromethyl, hydroxy, amino, —NH(lower alkyl), —N(lower alkyl)$_2$, cycloalkyl—$(CH_2)_p$—, and aryl—$(CH_2)_p$—, or X_1 and X_2 are on adjacent carbons and are joined to complete a benzene ring or are joined to complete —O—$(CH_2)_m$—O— wherein m is one or two;

n is zero or one;

p is zero or an integer from 1 to 6; and

q is zero or an integer from 1 to 3.

5,362,728

4,5-BRIDGED-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE-7-OLS AND DERIVATIVES AND COMPOSITIONS AND METHODS EMPLOYING SUCH COMPOUNDS

Theodros Asberom, Morris Plains; Edward O'Connor, Hoboken; Joel G. Berger, Cedar Grove, and John W. Clader, Cranford, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

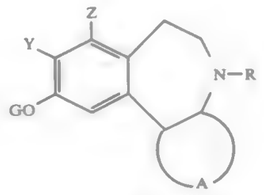
PCT No. PCT/US91/00503, § 371 Date Jul. 29, 1992, § 102(e) Date Jul. 29, 1992

Continuation-in-part of Ser. No. 474,428, Feb. 2, 1990, abandoned. This PCT application Jan. 31, 1991, Ser. No. 915,710

Int. Cl.[5] **A61K** *31/55;* **C07D** *223/18, 223/32*

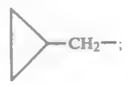
U.S. Cl. 514—217 **11 Claims**

1. A compound of the structural formula



I

or a pharmaceutically acceptable salt thereof, wherein R represents H, alkyl, allyl or



A represents —$_n$—;

n represents 3 or 4;

R^1 and R^2 may be the same or different and each independently represents H, OH, alkyl, alkoxy, phenyl or substituted phenyl, with the proviso that R^1 and R^2 on the same carbon atom are not both OH, or R^1 and R^2 on the same carbon atom together represent=O;

G represents H, R^3(CO)— or ArNHCO—;

R^3 represents H, alkyl, alkoxy, phenyl or substituted phenyl;

Ar represents phenyl or substituted phenyl; and

Y and Z may be the same or different and each is independently selected from H, halo, alkyl, alkoxy or haloalkyl.

11. A method for treating psychoses, drug dependence, D 1 dependent neurological disorder or pain comprising administering to a mammal in need of such treatment an effective amount of a compound of claim 1.

5,362,729

DIHYDROPYRIDINE DERIVATIVES USEFUL IN ANTITUMOR THERAPY

Paolo Cozzi; Maria Menichincheri; Laura Capolongo, and Nicola Mongelli, all of Milan, Italy, assignors to Farmitalia Carlo ERBA S.r.l., Milan, Italy

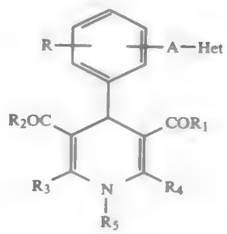
Filed Sep. 1, 1992, Ser. No. 937,681

Claims priority, application United Kingdom, Sep. 19, 1991, 9119983.6

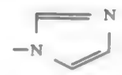
Int. Cl.[5] **C07D** *401/06;* **A61K** *31/535*

U.S. Cl. 514—235.5 **5 Claims**

1. A compound of formula (I)



wherein Het is



A represents a direct linkage at the phenyl 4-position; R is hydrogen; one of R_3 and R_4 is C_1–C_3 alkyl unsubstituted or omega substituted by C_1–C_3 alkoxy, and the other, independently, is:

a) C_1–C_3 alkyl unsubstituted or omega substituted by C_1–C_3 alkoxy; or

b) —$(CH_2)_m$—O—$(CH_2)_n$—NR_aR_b wherein each of m and n, which may be the same or different is an integer of 1 to 3, each of R_a and R_b, which may be the same or different, is hydrogen or C_{1-C3} alkyl; R_5 is hydrogen or C_1–C_6 alkyl unsubstituted or substituted by a morpholino;

each of R_1 and R_2 is independently a group —OR′ wherein R′ is C_{1-C6} alkyl; or a pharmaceutically acceptable salt thereof.

5,362,730

TERAZOSIN POLYMORPH AND PHARMACEUTICAL COMPOSITION

John F. Bauer, Lake Bluff, and James A. Morley, Gurnee, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 90,721, Jul. 13, 1993, Pat. No. 5,294,615, which is a continuation-in-part of Ser. No. 54,917, Apr. 29, 1993, abandoned. This application Jan. 6, 1994, Ser. No. 178,184

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[5] **A61K** *31/505;* **C07D** *239/84*

U.S. Cl. 514—254 **13 Claims**

1. A process for the preparation of anhydrous crystalline 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(tetrahydro-2-furoyl)piperazine monohydrochloride form II which comprises contacting a material selected from the group consisting of

crystalline 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(tetrahydro-2-furoyl)piperazine monohydrochloride dihydrate,

crystalline 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(tetrahydro-2-furoyl)piperazine monohydrochloride anhydrate form I, and

amorphous 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(tetrahydro-2-furoyl)piperazine monohydrochloride

with an anhydrous polar organic solvent selected from the group consisting of alcohols of one to six carbon atoms, ketones of three to six carbon atoms, and mixtures thereof, followed by removal of the solvent to recover the solid product.

5,362,731

(I) **USE OF PIRIBEDIL DERIVATIVES AND ANALOGS FOR THE TREATMENT OF HYPERACTIVE OR UNSTABLE BLADDERS**

Bernard Aranda, 5 rue Eugène Manuel, 75116 Paris, France

PCT No. PCT/FR92/00336, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO92/18129, PCT Pub. Date Oct. 29, 1992

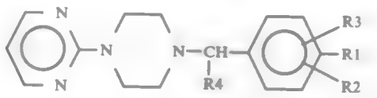
PCT Filed Apr. 15, 1992, Ser. No. 133,203

Claims priority, application France, Apr. 18, 1991, 91 04788

Int. Cl.[5] **A61K** *31/44, 31/505*

U.S. Cl. 514—255 **9 Claims**

1. A method of treating a hyperactive or unstable bladder in a patient afflicted therewith comprising administering thereto an effective amount of a compound of general formula I:



in which R_1, R_2, R_3, taken separately or together, may represent a hydrogen atom, a hydroxyl radical, an acetoxy group CH_3COO—, a C_1–C_5 lower alkoxy group or an alkylenedioxy chain —O—$(CH_2)_n$—O— in which n may take the values 1 or 2, and R_4 may represent a hydrogen atom, a C_1–C_5 lower alkyl radical, or a phenyl nucleus optionally substituted by radicals or group R_1, R_2, R_3, of the same type as those mentioned above, and R′ represents a hydrogen atom or a methyl radical, its physiologically acceptable derivatives and its active metabolites for the manufacture of a medicinal product intended for the treatment of hyperactive or unstable bladders.

5,362,732

BORONATED COMPOUNDS

Bernard F. Spielvogel, Raleigh; Anup Sood, Durham; Iris H. Hall, Carrboro; Barbara R. Shaw, and Jenó Tomasz, both of Durham, all of N.C., assignors to University of North Carolina at Chapel Hill, Chapel Hill; Boron Biologicals, Raleigh and Duke University, Durham, all of N.C.

Continuation-in-part of Ser. No. 453,311, Dec. 20, 1989, Pat. No. 5,130,302. This application Jul. 7, 1992, Ser. No. 909,950

Int. Cl.[5] **A61K** *31/505, 31/52;* **C07D** *239/00, 473/00*

U.S. Cl. 514—256 **30 Claims**

1. A boronated base selected from the group consisting of purines and pyrimidines, which base is N-boronated with a boron-containing substituent selected from the group consisting of —BH_2CN, —BH_3, —BF_3, —BH_2COOR and —BH_2-C(O)NHR, wherein R is hydrogen or C_1 to C_{18} alkyl.

5,362,733

PHARMACOLOGICALLY ACTIVE CATECHOL DERIVATIVES

Reijo Bäckström, Helsinki; Erkki Honkanen, Espoo; Inge-Britt Linden, Helsinki; Erkki Nissinen, Espoo; Aino Pippuri, Espoo; Pentti Pohto, Espoo, and Tapio Korkolainen, Helsinki, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

PCT No. PCT/FI91/00124, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO91/17151, PCT Pub. Date Nov. 14, 1991

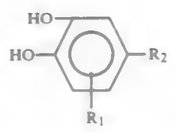
PCT Filed Apr. 26, 1991, Ser. No. 949,477

Claims priority, application United Kingdom, Apr. 27, 1990, 9009565.4; Jan. 24, 1991, 9101563.6

Int. Cl.[5] **A61K** *31/515;* **C07D** *239/02*

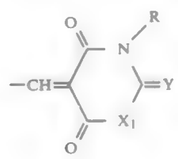
U.S. Cl. 514—270 **13 Claims**

1. A compound according to formula I



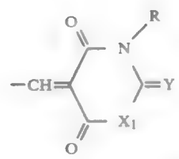
I

wherein R_1 is nitro, halogeno or cyano group and R_2 is a group selected from



Ia

and



Ib

wherein Y is oxygen or sulfur; X_1 is NR wherein R is hydrogen, straight or branched C_{1-8}alkyl or phenyl group or a pharmaceutically acceptable salt or ester thereof.

5,362,734

CERTAIN BENZO-QUINOLIZINE COMPOUNDS AND DERIVATIVES THEREOF

Terence J. Ward, Maidenhead, and Janet C. White, Wokingham, both of England, assignors to American Home Products Corporation, Madison, N.J.

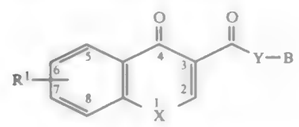
Continuation of Ser. No. 760,299, Sep. 16, 1991, Pat. No. 5,225,419, which is a division of Ser. No. 595,333, Oct. 10, 1990, Pat. No. 5,096,901. This application Feb. 18, 1993, Ser. No. 19,005

Claims priority, application United Kingdom, Oct. 14, 1989, 8923209.4; May 4, 1990, 9010085.0

Int. Cl.[5] **C07D** *491/048, 471/02, 453/02;* **A61K** *31/44*

U.S. Cl. 514—294 **4 Claims**

1. A compound of the formula

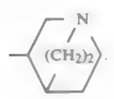


or a pharmaceutically acceptable acid addition salt thereof, in which

R^1 represents hydrogen or one or more substituents selected from lower alkyl, hydroxy, lower alkoxy, halogen, methylenedioxy, halo(lower)alkyl, nitro, amino, (lower)alkylamino and di(lower)alkylamino

X represents a group of formula —Z— which is connected to the 8-position of the aromatic ting so as to form a heterocyclic ring of 5–6 ting members wherein the ring members represented by Z are two or three methylene groups optionally substituted by one or more lower alkyl groups and the X position of the —Z— chain is N;

Y represents 0 or NR^3 where R^3 is hydrogen or lower alkyl and B represents a saturated azabicyclic ring, or an N-oxide thereof, wherein the saturated azabicyclic ting has the formula



(III)

5,362,735

RAPAMYCIN DERIVATIVES

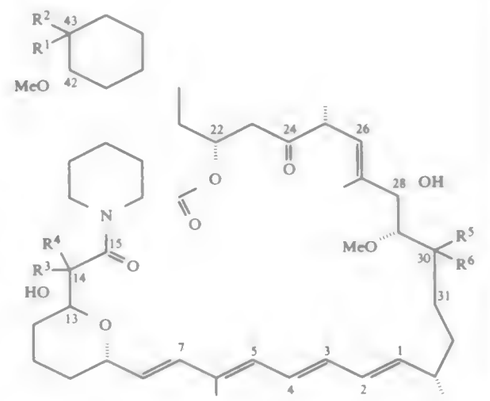
Juan I. Luengo, Audubon, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Feb. 23, 1994, Ser. No. 200,265

Int. Cl.[5] **A61K** *31/33, 31/445;* **C07D** *498/16*

U.S. Cl. 514—291 **18 Claims**

1. A compound of the formula



wherein:

R^1 and R^2 are selected from the group consisting of =O, (—OH,H) and (H,H);

R^3 and R^4 are selected from the group consisting of =O, (H,H) and (H,OH);and

R^5 and R^6 are selected from the group consisting of =O and (H,OH); and all pharmaceutically acceptable salts, hydrates or solvates thereof.

13. A method of inducing immunosuppression in a human or other animal in need thereof which comprises administering to such human or other animal an effective, non-toxic amount of a compound of claim 1.

5,362,736

ISOQUINOLINE DERIVATIVES

Kiyofumi Ishikawa, Chofu; Takashi Hayama, Kawasaki; Masaru Nishikibe, Urayasu, and Mitsuo Yano, Yokohama, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

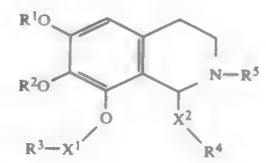
Continuation-in-part of Ser. No. 834,621, Feb. 12, 1992, abandoned. This application Feb. 25, 1992, Ser. No. 840,847

Claims priority, application Japan, Feb. 27, 1991, 3-055915

Int. Cl.[5] **C07D** *491/00;* **A01N** *43/42*

U.S. Cl. 514—291 **4 Claims**

1. A compound represented by formula (I):



wherein

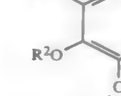
each of R^1 and R^2 is independently lower alkyl or both are combined together to form a methylene group;

X^1 is a divalent alkylene chain having 1 to 5 carbon atoms which may be substituted with lower alkyl one optional methylene group in which alkylene chain may be replaced by one group selected from the group consisting of oxy, thio, sulfinyl, sulfonyl or a group shown by formula: NR^6— wherein R^6 is hydrogen atom or lower alkyl; provided that said methylene group is not the methylene group adjacent to the oxygen atom at the 8-position of the isoquinoline ring;

X^2 is a divalent alkylene chain having 1 to 4 carbon atoms which may be substituted with lower alkyl;

each of R^3 and R^4 is independently aryl selected from the group consisting of phenyl and naphthyl each of which is optionally substituted with 1 to 3 substituents which are the same or different and are selected from the group consisting of lower alkyl, lower alkoxy, methylenedioxy, halogen, nitro, hydroxy, cyano, lower alkoxycarbonyl, lower alkanoyl, amino, N-mono-lower alkylamino, N,N-di-lower alkylamino, carbamoyl, N-mono-lower alkylcarbamoyl, N,N-di-lower alkylcarbamoyl, amino-lower alkyl, N-mono-lower alkylamino-lower alkyl, N,N-di-lower alkylamino-lower alkyl, N-(hydroxy-lower alkyl) amino-lower alkyl, N-lower-alkyl-N-(hydroxy-lower alkyl) amino-lower alkyl, N,N-di (hydroxy-lower alkyl) amino-lower alkyl, N-(lower alkoxy-lower alkyl) amino-lower alkyl, N-lower alkyl-N-(lower alkoxy-lower alkyl) amino-lower alkyl, N,N-di(lower alkoxy-lower alkyl) amino-lower alkyl and lower alkyl which is substituted with a group selected from the group consisting of pyrrolidinyl, 1,3-thiazolidinyl, piperidinyl, morpholinyl, thiomorpholinyl, piperazinyl, and S-oxide and N-alkylated derivatives thereof pyridyl and

R^5 is lower alkoxycarbonyl lower alkylsulfonyl, a group shown by formula:



wherein each of R^7 and R^8 independently is a hydrogen atom or lower alkyl which is optionally substituted with 1 or 2 substituents, which are the same or different and are selected from the group consisting of hydroxy and lower alkoxy and X represents an oxygen atom or a sulfur atom, or

R^5 is lower alkanoyl which is optionally substituted with 1 or 2 substituents, which are the same or different and are selected from the group consisting of lower alkylsulfinyl, a group shown by formula: R^9S— wherein R^9 is a hydrogen atom, lower alkyl, lower alkanoyl, carbamoyl, N-mono-lower alkylcarbonyl, N,N-di-lower alkyl-carbamoyl or lower alkoxycarbonyl; a group shown by formula: $R^{10}O$— wherein R^{10} represents hydrogen, lower alkyl or lower alkanoyl which are optionally substituted with hydroxy; and a group shown by formula:



wherein each R^{11} and R^{12} independently is hydrogen, lower alkyl or lower alkanoyl, or both are combined together to for pyrrolidino, 2-pyrrolidion-1-yl, morpholino or piperidino, and a pharmaceutically acceptable salt thereof.

5,362,737

METHODS OF TREATING APHTHOUS ULCERS AND OTHER MUCOCUTANEOUS DISORDERS WITH AMLEXANOX

Kakubhai R. Vora, Littleton; Atul Khandwala, Aurora, both of Colo., and Charles G. Smith, Sante Fe, Calif., assignors to Chemex Pharmaceuticals, Inc., Fort Lee, N.J.

Continuation of Ser. No. 682,359, Apr. 9, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 6,670

Int. Cl.[5] **A01N** *43/40;* **A61K** *31/44, 7/22*

U.S. Cl. 514—291 **10 Claims**

1. A method for speeding the healing of aphthous ulcers as determined by the reduction of the size of the ulcers which method consists essentially of reducing the size of the ulcers by administering topically to the oral mucosal membrane a composition which comprises a compound of the formula: 2-amino-7-(1-methylethyl)-5-oxo-5H-[1]benzopyrano(2,3-b) pyridine-3-carboxylic acid or a pharmaceutically acceptable salt thereof in an effective concentration and a pharmaceutically acceptable vehicle.

5,362,738

TRICYCLIC PYRIDONE DERIVATIVES

Serge Burner, Durmenach-Ferrette, France, and Ulrich Widmer, Rheinfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

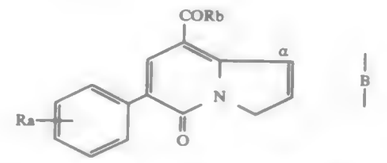
Division of Ser. No. 889,029, May 26, 1992, Pat. No. 5,258,387, which is a division of Ser. No. 739,757, Aug. 2, 1991, Pat. No. 5,143,912. This application Jun. 1, 1993, Ser. No. 70,124

Claims priority, application Switzerland, Aug. 21, 1990, 2700/90

Int. Cl.[5] **A61K** *31/44;* **C07D** *221/06*

U.S. Cl. 514—294 **17 Claims**

1. A compound of the formula



I

wherein Ra is hydrogen or halogen, Rb is —OR^1 or —NR^2R^3; R^1 is an unsubstituted lower alkyl or a lower alkyl substituted by hydroxy, lower alkoxy, amino, lower alkylamino, di(lower alkyl)amino, di(lower alkyl)carbamoyl or lower alkoxycarbonylamino; R^2 is hydrogen, an unsubstituted lower alkyl or a lower alkyl substituted by hydroxy, lower alkoxy, amino, lower alkylamino, di(lower alkyl)amino, di(lower alkyl)carbamoyl, or lower alkoxycarbonylamino; and R^3 is hydrogen or lower alkyl; B and the carbon atom denoted by α taken together is a group of the formula >Cα—CR^4=CH—CH=CH and R4 is hydrogen, fluorine or chlorine, or a pharmaceutically acceptable acid addition salt of the compound of formula I.

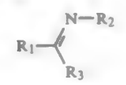
5,362,739

AZABICYCLIC COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Barry S. Orlek; Steven M. Bromidge, both of Harlow, England, Richard E. Faulkner, deceased, late of Harlow, England, by Geoffrey E. Falkner, executor

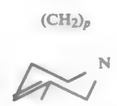
PCT No. PCT/GB91/01424, § 371 Date Mar. 19, 1993, § 102(e) Date Mar. 19, 1993, PCT Pub. No. WO92/03435, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 22, 1991, Ser. No. 975,555
Claims priority, application United Kingdom, Aug. 24, 1990, 9018675; May 11, 1991, 9110255
Int. Cl.[5] A61K *31/435;* C07D *471/08*
U.S. Cl. 514—299 7 Claims

1. A compound of Formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein R_1 represents



in which p represents 2 or 3;

R_2 is a group OR_4, where R_4 is C_{1-4}alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, a group $OCOR_5$ where R_5 is hydrogen or R_4, or a group NHR_6 or NR_7R_8 where R_6, R_7 and R_8 are independently C_{1-2}alkyl; and

R_3 is chloro, fluoro, bromo, C_{1-3}alkyl substituted by one, two or three halogen atoms, or R_3 is —CN, —CH_2CN, —OCH_3, —CH_2SH, —SCH_3 and —CH_2SCH_3.

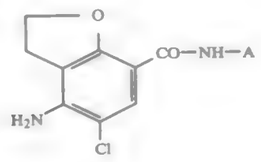
5,362,740

DIHYDROBENZOFURAN CARBOXAMIDES AND PROCESS FOR THEIR PREPARATION

Angelo Bedeschi, Milan; Walter Cabri, Rozzano; Ilaria Candiani, Varese; Silvia De Bernardinis; Marcello Marchi, both of Novara, and Mario Varasi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

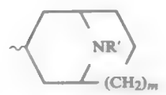
Continuation of Ser. No. 809,159, Dec. 18, 1991, abandoned. This application Nov. 30, 1992, Ser. No. 983,274
Claims priority, application United Kingdom, Dec. 27, 1990, 9028104; Apr. 5, 1991, 9107140
Int. Cl.[5] C07D *413/00;* A61K *31/44*
U.S. Cl. 514—299 12 Claims

1. A compound of formula (I)



(I)

wherein A is



wherein R′ is hydrogen or methyl, m is zero or 1 and the symbol ϕ means that the azabicyclic rings may be in the α or the β orientation, or a pharmaceutically acceptable salt thereof.

5,362,741

Patent Not Issued For This Number

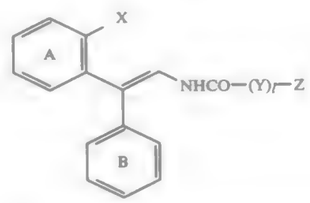
5,362,742

QUINOLINE DERIVATIVES, THEIR PRODUCTION AND USE AS ACAT INHIBITORS

Kanji Meguro, Nishinomiya, and Hitoshi Ikeda, Higashiosaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

PCT No. PCT/JP90/01617, § 371 Date Feb. 1, 1991, § 102(e) Date Feb. 1, 1991, PCT Pub. No. WO91/09017, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 10, 1990, Ser. No. 646,735
Claims priority, application Japan, Dec. 11, 1989, 1-322172
Int. Cl.[5] A61K *31/47;* C07D *215/38*
U.S. Cl. 514—312 4 Claims

1. A method for treatment of hypercholesterolemia or atherosclerosis, which comprises administration to a mammal in need thereof of an effective amount of a quinoline derivative having the following formula:

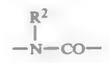


(I)

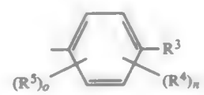
wherein each phenyl ring of A and B can have one or more substituents; X is



(R^1 is a hydrogen atom, a lower alkyl group or a lower alkoxy group) or

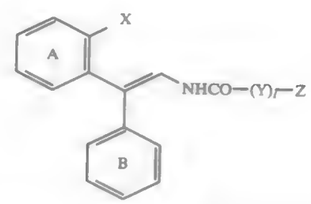


(R^2 is a hydrogen atom or a lower alkyl group); Y is —$(CH_2)_m$—(m is 0, 1 or 2) or —CH=CH—; Z is a group of the formula:

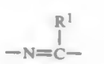


wherein R^3 and R^4 are each a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, lower acyloxy, lower alkoxycarbonyloxy, N,N-di-lower alkylcarbamoyloxy, optionally esterified carboxy or hydroxyl group, R^5 is a halogen atom, or a lower alkyl, lower alkoxy, lower acyloxy, lower alkoxycarbonyloxy, N,N-di-lower alkylcarbamoyloxy, optionally esterified carboxy or hydroxyl group, and n and o are each 1 or 2; l is 0 or 1, or its pharmaceutically acceptable salt.

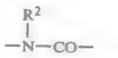
2. A method for inhibiting acyl-CoA:cholesterolacyltransferase which comprises administration to a mammal in need thereof of an effective amount of a quinoline derivative having the following formula:



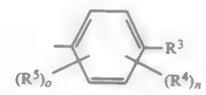
wherein each phenyl ring of A and B can have one or more substituents; X is



(R^1 is a hydrogen atom, a lower alkyl group or a lower alkoxy group) or



(R^2 is a hydrogen atom or a lower alkyl group); Y is —$(CH_2)_m$—(m is 0, 1 or 2) or —CH=CH—; Z is a group of the formula:



wherein R^3 and R^4 are each a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, lower acyloxy, lower alkoxycarbonyloxy, N,N-di-lower alkylcarbamoyloxy, optionally esterified carboxy or hydrogen group, R^5 is a halogen atom, or a lower alkyl lower alkoxy, lower acyloxy, lower alkoxycarbonyloxy, N,N-di-lower alkylcarbamoyloxy, optionally esterified carboxy or hydroxyl group, and n and o are each 1 or 2; l is 0 or 1, or its pharmaceutically acceptable salt.

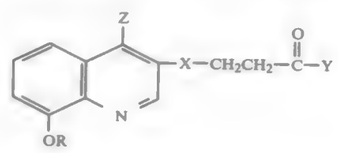
5,362,743

AMINOQUINOLINE DERIVATIVES

Reinhard Sarges, Mystic, Conn., and Li-An Yeh, Cambridge, Mass., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 9, 1993, Ser. No. 28,447
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—313 25 Claims

1. A 4-aminoquinoline compound of the formula:



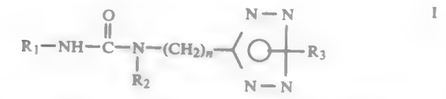
or a pharmaceutically acceptable salt thereof, wherein

R is methyl or ethyl;

X is carbonyl or hydroxymethylene;

Y is hydroxy, C_1–C_6 alkoxy, C_1–C_8 alkylamino or di(C_1–C_3 alkyl)amino; and

Z is di(C_1–C_3 alkyl)amino, benzylamino, phenylethylamino or phenylamino, with each phenyl moiety being optionally ring-substituted with an alkyl group having from one to three carbon atoms.



I

wherein R_1 is phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms;

wherein R_2 is

(a) aryl which is unsubstituted or substituted with 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms;

(b) a straight or branched hydrocarbon group which is saturated or contains from 1 to 3 double bonds and having from 7 to 20 carbon atoms and wherein said group is unsubstituted or is substituted with 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms;

(c) a straight or branched alkoxy group which is saturated or contains from 1 to 3 double bonds and having from 1 to 20 carbon atoms and wherein said group is unsubstituted or is substituted with 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms;

(d) a cycloalkyl group having from 3 to 8 atoms which is unsubstituted or substituted with 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms; or

(e) aralkyl wherein an aromatic group is attached to a straight or branched alkyl group having from 1 to 4 carbon atoms and which is unsubstituted or is substituted on the aromatic ring with from 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms or a straight or branched alkoxy group having from 1 to 6 carbon atoms;

wherein R_3 is attached to either the 1- or 2-position of the tetrazole ring and is selected from a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or unsaturated containing 1 double bond or 2 or 3 nonadjacent double bonds wherein said chain is unsubstituted or is substituted with from 1 to 6 substituents selected from:

(a) —NR_4R_5 wherein each of R_4 and R_5 is the same or different and is hydrogen, a straight or branched alkyl group having from 1 to 20 carbon atoms or —NR_4R_5 taken together form a monocyclic heterocyclic group selected from pyrrolidino, pyridino, piperidino, piperazino, or morpholino, the heterocyclic group being unsubstituted or substituted with a straight or branched alkyl group having from 1 to 4 carbon atoms;

(b) OR_6 wherein R_6 is hydrogen, a straight or branched alkyl group having from 1 to 20 carbon atoms or a cycloalkyl group having from 3 to 8 carbon atoms or phenyl which is

unsubstituted or substituted with from 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxyalkyl group having from 1 to 6 carbon atoms;
(c) SO_2R_6 wherein R_6 has the meaning defined above;
(d) SOR_6 wherein R_6 has the meaning defined above;
(e) SR_6 wherein R_6 has the meaning defined above;
(f) COR_6 wherein R_6 has the meaning defined above;
(g) CO_2R_6 wherein R_6 has the meaning defined above;
(h) $CONR_4R_5$ wherein R_4 and R_5 have the meanings defined above;
(i) $CONHR_1$ wherein R_1 has the meaning defined above;
(j) —CHO
(k) —CN
(l) halogen
(m) the group —(CH_2)r-phenyl wherein r is 1 to 4 and the phenyl moiety is unsubstituted or is substituted with from 1 to 3 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms; or
(n) O-pyranyl which is unsubstituted or substituted with from 1 to 4 substituents selected from fluorine, chlorine, bromine, iodine, hydroxy, a straight or branched alkyl group having from 1 to 6 carbon atoms, or a straight or branched alkoxy group having from 1 to 6 carbon atoms;
and n=0, 1, or 2;
a geometrical or optical isomer, or a pharmaceutically acceptable salt thereof.

5,362,745
ORAL PHARMACEUTICAL COMPOSITIONS CONTAINING MELATONIN
Bruno Graziella, Milan, Italy, assignor to Medea Research S.r.l., Milan, Italy
PCT No. PCT/EP91/01486, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/02207, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 7, 1991, Ser. No. 969,181
Claims priority, application Italy, Aug. 10, 1990, 21263 A/90
Int. Cl.[5] A61K *31/21, 31/275*
U.S. Cl. 514—415 **4 Claims**

1. An oral pharmaceutical composition consisting of melatonin as the active principle in form of a microemulsion, L-α-phosphatidylcholine as an emulsifier and a solvent mixture consisting of ethanol, propylene glycol and water and wherein the weight ratio of L-α-phosphatidylcholine to melatonin is about 1:1 and wherein the composition optionally contins a thicker agent.

5,362,746
PROCESS FOR THE MANUFACTURE OF INSECTICIDAL 2-ARYL-1-(ALKOXYMETHYL)-4-HALO-5-(TRIFLUOROMETHYL)PYRROLES
Venkataraman Kameswaran, Princeton Junction, and Robert Francis, East Windsor, both of N.J., assignors to American Cyanamid Company, Wayne, N.J.
Division of Ser. No. 634,288, Dec. 26, 1990, Pat. No. 5,194,630. This application Nov. 23, 1992, Ser. No. 979,741
Int. Cl.[5] A01N *43/36;* **C07D** *207/42, 207/34, 207/273*
U.S. Cl. 514—424 **6 Claims**

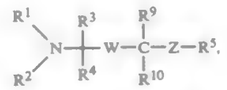
1. A compound 4-chloro-1-(chloromethyl)-2-(p-chlorophenyl)--5-(trifluoromethyl)pyrrole-3-carbonitrile.

2. A compound 4-bromo-1-(bromomethyl)-2-(p-chlorophenyl)-5-(trifluoromethyl)pyrrole-3-carbonitrile.

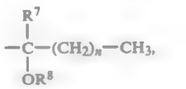
4. A method for protecting growing plants from attack by insects which comprises applying to the foliage of said plants or to the soil or water in which said plants are growing, an insecticidally effective amount of 4-chloro-1-(ethoxymethyl)--2-(p-chlcrophenyl)-5-(trifluoromethyl)pyrrole-3-carbonitrile.

5,362,747
2-NITROARYL AND 2-CYANOARYL COMPOUNDS AS REGULATORS OF NITRIC OXIDE SYNTHASE
Marlon Cowart, Round Lake Beach, and James F. Kerwin, Grayslake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation-in-part of Ser. No. 981,585, Nov. 25, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 147,241
Int. Cl.[5] A61K *31/135, 31/195, 31/24;* **C07C** *215/68*
U.S. Cl. 514—448 **8 Claims**

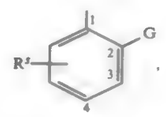
1. A compound of the formula:



or a pharmaceutically-acceptable salt, ester, amide or prodrug thereof, wherein
R^1 is selected from the group consisting of
(1) hydrogen;
(2) C_1–C_6-alkyl;
(3) C_6–C_{12}-aryl-C_1–C_4-alkyl,;
(4) substituted C_6–C_{12}-aryl-C_1–C_4-alkyl;
(5) N-protecting group;
(6) —CO—C_1–C_6-alkyl;
(7) —CO—C_6–C_{12}-aryl;
(8) —CO-substituted C_6–C_{12}-aryl;
(9) —CO—C_6–C_{12}-aryl-C_1–C_4-alkyl;
(10) —CO-substituted C_6–C_{12}-aryl-C_1–C_4-alkyl; and
(11) —CO—Het;
R^2 is hydrogen when R^1 is selected from options (5)–(11) above, or when R^1 is selected from options (1)–(4) above, hydrogen, C_1–C_6-alkyl, C_6-aryl-C_1–C_4-alkyl, or substituted C_6-aryl-C_1–C_4-alkyl;
R^3 is selected from the group consisting of:
(1) —CO—OR^6, wherein R^6 is hydrogen, C_1–C_6-alkyl, C_2–C_6-alkenyl, cyclo-C_3–C_7-alkyl, C_6–C_{12}-aryl, substituted C_6–C_{12}-aryl, C_6–C_{12}-aryl-C_1–C_4-alkyl, or substituted C_6–C_{12}-aryl-C_1–C_4-alkyl;
(2) —CHR^7—OR^8, wherein R^7 is hydrogen, C_1–C_6-alkyl, cyclo-C_3–C_7-alkyl, C_2–C_4-alkenyl, or C_6–C_{12}-aryl: and R^8 is hydrogen, C_1–C_6-alkyl, or an oxygen protecting group; and

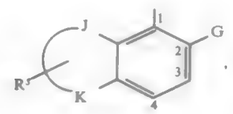


wherein n is 0–2, and R^7 and R^8 are as defined above;
R^4 is hydrogen, C_1–C_6-alkyl, C_6–C_{12}-aryl-C_1–C_3-alkyl, or substituted C_6–C_{12}-aryl-C_1–C_3-alkyl;
W is selected from
(a) C_2–C_4-alkylene;
(b) C_2–C_4-alkenylene;
(c) C_2–C_4-alkynylene;
(d) 1,4-(C_5–C_7-cycloalkylene);
(e) 1,4-(C_5–C_7-cycloalkenylene);
(f) phenylene;
(g) C_1–C_3-alkylene-phenylene; and
(h) phenylene-C_1–C_3-alkylene; and
R^9 and R^{10} are independently hydrogen or C_1–C_6-alkyl;
Z is S or NR^{11}, wherein R^{11} is hydrogen, C_1–C_6-alkyl, C_6–C_{12}-aryl-C_1–C_4-alkyl or substituted C_6–C_{12}-aryl-C_1–C_4-alkyl; and
R^5 is



(1)

wherein G is either nitro or cyano; and
R^S, which may be substituted at one or two or positions 3-, 5- or 6-, represents one or two substituents independently selected from the group consisting of:
(a) halogen;
(b) C_1–C_4-alkyl;
(c) C_1–C_4-alkoxy;
(d) C_1–C_4-thioalkoxy;
(e) hydroxy;
(f) carbo-C_1–C_4-alkoxy;
(g) cyano; and
(h) halo-C_1–C_4-alkyl; or



(2)

wherein G and R^S are as defined above, and J and K taken together with the existing ring represent a fused bi- or tricyclic carbocycle of from 9–14 carbon atoms, wherein R^S may be substituted anywhere within the entire bi- or tricyclic ring system except the 4-position.

5,362,748
METHODS OF USING DIETHYLDITHIOCARBAMIC ACID FOR THE PREVENTION OF HAIR GROWTH
Richard J. Schwen, Cincinnati, and Donald L. Bissett, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 15, 1993, Ser. No. 121,823
Int. Cl.[5] A61K *31/27*
U.S. Cl. 514—476 **8 Claims**

1. A method of regulating hair growth in mammals comprising topically applying to a mammal in need of treatment a composition comprising:
a) a safe and effective amount of diethyldithiocarbamic acid ("DEDCA") having the structure:

$$HSC(S)—N—(C_2H_5)_2$$

or a pharmaceutically-acceptable salt thereof; and
b) a safe and effective amount of a topical carrier.

5,362,749
MOLLUSCICIDES
Ian F. Henderson, Harpenden; Joseph I. Bullock, Guildford; Geoffrey G. Briggs, Harpenden, and Leslie F. Larkworthy, South Croyden, all of England, assignors to British Technology Group Limited, England
Continuation of Ser. No. 510,609, Apr. 18, 1990, abandoned, which is a continuation of Ser. No. 231,181, Aug. 11, 1988, abandoned. This application Sep. 15, 1992, Ser. No. 945,006
Claims priority, application United Kingdom, Aug. 11, 1987, 8719006
Int. Cl.[5] A61K *31/28*
U.S. Cl. 514—492 **16 Claims**

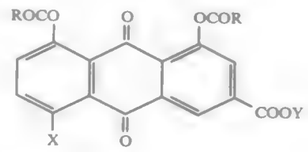
1. A method of killing molluscs, which comprises treating molluscs or an environment inhabited by molluscs with a molluscicidally effective amount of a chelate of iron (III) with a ligand of formula II

$$[R^3NO.N{=}O]^-$$ II

wherein in formula II R^3 represents C_1–C_6 alkyl, provided that when R^3 is alkyl containing more than four carbon atoms, said alkyl is branched chain alkyl.

5,362,750
4,5-DIHYDROXY- AND 4,5,8-TRIHYDROXY-9,10-DIHYDRO-9,10-DIOXO-2-ANTHRACENECARBOXYLIC ACID DICARBONATES AND URETHANS HAVING THERAPEUTICAL ACTIVITIES
Sergio Rosini, and Maurizio Mian, both of Pisa, Italy, assignors to Istituto Gentili S.p.A., Pisa, Italy
PCT No. PCT/EO91/02290, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/10464, PCT Pub. Date Jun. 25, 1992
PCT Filed Dec. 3, 1991, Ser. No. 70,382
Claims priority, application Italy, Dec. 11, 1990, 22343 A/90
Int. Cl.[5] A01N *37/00;* **A61K** *31/21;* **C07C** *271/44, 323/12*
U.S. Cl. 514—510 **8 Claims**

1. A compound of formula (I)

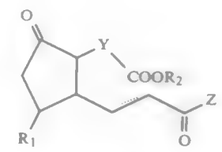


(I)

wherein:
X is hydrogen or a OCOR group, R is a straight, branched or cyclic C_1–C_{20} alkoxy, benzyloxy, 2-phenylethoxy group or R^1R^2N, wherein R^1 and R^2 are the same or different and are selected from a group consisting of hydrogen, straight, branched or alicyclic C_1–C_{10} alkyl, phenyl, benzyl and 2-phenylethyl;
Y is hydrogen, C_1–C_{20} alkyl, C_1–C_{16} alkoxyethyl or C_1–C_{16} alkylthioethyl;
or a pharmaceutically acceptable salt thereof.

5,362,751
TRACHEOBRONCHODILATOR USING 16-SUBSTITUTED PGES
Ryuzo Ueno; Ryuji Ueno, both of Nishinomiya, and Tomio Oda, Sanda, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan
Continuation of Ser. No. 744,682, Aug. 9, 1991, abandoned, which is a continuation of Ser. No. 349,475, May 9, 1989, abandoned. This application Jun. 17, 1993, Ser. No. 77,495
Claims priority, application Japan, May 11, 1988, 63-115409
Int. Cl.[5] A61K *31/215, 31/20*
U.S. Cl. 514—530 **21 Claims**

1. A method of dilating a tracheobronchea comprising administering to a patient in an amount effective for tracheobronchodilation a 15-keto-PGE represented by the following formula:



wherein R_1 is a hydroxyl group or a hydroxyalkyl group;
Y is a saturated or unsaturated hydrocarbon moiety having 2–6 carbon atoms wherein a portion of carbon atoms constituting the hydrocarbon moiety may be carbonyl or

a portion of hydrogen atoms constituting the hydrocarbon moiety may be substituted by other atoms or groups;

Z is a saturated or an unsaturated hydrocarbon moiety constituting a straight chain having the carbon number of 1–10 which may be substituted with one or more other atom(s) or group(s), wherein at least a portion of hydrogen atoms of the hydrocarbon moiety is substituted by one or more halogen atom(s) or C_1–C_2 alkyl group(s) at the 16-position; and

R_2 is a hydrogen atom, a physiologically acceptable salt or ester residue.

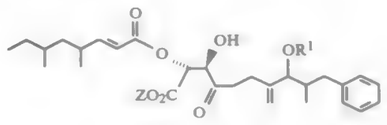
5,362,752

CHEMICAL COMPOUNDS

Byron H. Arison, Watchung; Gregory D. Berger, Belle Mead; Leeyuan Huang, Watchung, and John G. MacConnell, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 17, 1993, Ser. No. 61,518
Int. Cl.[5] A61K *31/215;* **C07C** *57/03*
U.S. Cl. 514—533 **8 Claims**

1. A compound of structural formula (I)



(I)

wherein

R^1 is selected from the group consisting of hydrogen and acetyl; and

Z is selected from the group consisting of

(a) hydrogen;

(b) C_{1-5}alkyl;

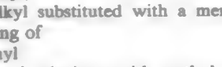
(c) C_{1-5}alkyl substituted with a member of the group consisting of

(i) phenyl

(ii) phenyl substitute with methyl, methoxy, halogen, (Cl, Br, I, F) or hydroxy; and

(iii) C_{1-5}alkylcarbonyloxy;

(d) $—CH_2—CH═CH_2$;



(e)

wherein

R^2 is —H or C_{1-4}alkyl,

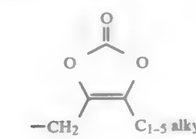
n is zero or 1, and

R^3

(a) C_{1-5} alkyl,

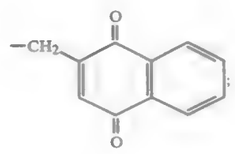
(b) phenyl, or

(c) phenyl substituted with X and Y, defined below,



;

and



;

(f)

(g)

-continued

and

X and Y are each independently selected from:

(1) hydrogen,

(2) hydroxy,

(3) halogen,

(4) trifluoromethyl,

(5) C_{1-4} alkyl,

(6) C_{1-4} alkyl—O—

(7) C_{1-4} alkyl—C(O)—O—

(8) CO_2C_{1-4} alkyl,

(9) —CO_2H, and

(10) nitro;

or a pharmaceutically acceptable salt thereof.

5,362,753

METHOD OF INCREASING THE HATCHABILITY OF EGGS BY FEEDING HENS CARNITINE

Rene Blum, Rheinfelden, Switzerland, and Josef Leibetseder, Vienna, Austria, assignors to Lonza Ltd., Basel, Switzerland

Filed Apr. 19, 1993, Ser. No. 49,258
Int. Cl.[5] A61K *31/205*
U.S. Cl. 514—556 **5 Claims**

1. A method for increasing the hatchability of eggs laid by a breeder hen, the method comprising providing to the hen a diet which comprises an effective amount of carnitine.

5,362,754

M-EDTA PHARMACEUTICAL PREPARATIONS AND USES THEREOF

Issam Raad, Houston, Tex., and Robert J. Sherertz, Winston-Salem, N.C., assignors to Univ. of TX MD Anderson Cancer Center, Houston, Tex.

Filed Nov. 12, 1992, Ser. No. 975,486
Int. Cl.[5] A01N *25/02;* **A61M** *31/00;* **A61K** *31/195*
U.S. Cl. 514—566 **14 Claims**

1. A catheter flushing pharmaceutical preparation comprising a pharmacologically effective amount of minocycline and an antimicrobially effective amount of EDTA in a carrier solution.

5,362,755

METHOD FOR TREATING ASTHMA USING OPTICALLY PURE (R)-ALBUTEROL

Timothy J. Barberich, Concord, and James W. Young, Still River, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 896,725, Jun. 9, 1992, abandoned, which is a continuation of Ser. No. 461,262, Jan. 5, 1990, abandoned. This application Dec. 7, 1993, Ser. No. 163,581
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—649 **7 Claims**

1. A method of treating asthma in an individual with albuterol, while reducing side effects associated with chronic administration of racemic albuterol, comprising chronically administering to the individual a quantity of an optically pure R(—) isomer of albuterol sufficient to result in bronchodilation while simultaneously reducing undesirable side effects, said R isomer being substantially free of its S(+) isomer.

5,362,756

USE OF FEDOTOZINE IN THE TREATMENT OF FUNCTIONAL STATES OF INTESTINAL OBSTRUCTIONS

Pierre J. M. Riviere, 9, Rue des Arquebusiers, 75003 Paris; Xavier B. Pascaud, 41, Rue de Charenton, 75012 Paris; François J. Roman, 11, Allée Pierre-Fresnay, 94400 Vitry-sur-Seine, and Jean-Louis Junien, 36, Avenue Eiffel, 92310 Sevres, all of France

Continuation-in-part of Ser. No. 931,994, Aug. 19, 1992, Pat. No. 5,266,599, and a continuation-in-part of Ser. No. 931,957, Aug. 19, 1992, Pat. No. 5,245,080, each is a continuation-in-part of Ser. No. 367,603, Jun. 19, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 937,127
Claims priority, application France, Feb. 20, 1989, 89 02177
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—651 **6 Claims**

1. Process for inhibiting functional ileus in a patient, which consists of administering a therapeutically effective dose of (+)-1-[(3,4,5-trimethoxy)benzyloxymethyl]-1-phenyl-N,N-dimethylpropylamine or the addition salt thereof with (—)-tartaric acid.

5,362,757

COMPOSITION AND METHOD CONTAINING OPTICALLY PURE (S) METOPROLOL

James W. Young, Still River, and Timothy J. Barberich, Concord, both of Mass., assignors to Sepracor, Inc., Marlborough, Mass.

Continuation of Ser. No. 670,995, Mar. 18, 1991, abandoned. This application Nov. 16, 1992, Ser. No. 976,676
Int. Cl.[5] A61K *31/135*
U.S. Cl. 514—652 **8 Claims**

1. A method of treating a cardiovascular disorder in an individual and reducing undesirable side effects associated with the administration of racemic metoprolol, comprising administering to the individual a therapeutically effective amount of (S) metoprolol, which is substantially free of (R) metoprolol.

5,362,758

OPHTHALMIC PIROXICAM SOLUTION

Imran Ahmed, New York, N.Y., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 584,227, Sep. 18, 1992, abandoned. This application Oct. 30, 1992, Ser. No. 970,350
Int. Cl.[5] A61K *31/74*
U.S. Cl. 514—777 **14 Claims**

1. An aqueous solution for treating inflammations of the eye comprising: from about 0.03–3 weight percent of piroxicam; a buffer comprising from about 0.5 to about 1 percent by weight of boric acid and from about 0.5 to about 1 percent by weight of sodium borate; from about 0 to about 1 weight percent of a wetting agent; from about 0 to about 5 weight percent of a pH adjusting agent; from about 0 to about 5 weight percent of a tonicity agent; an effective amount of a preservative; from about 0 to about 3 weight percent of a demulcent polymer; from about 0 to about 40 weight percent of a complexing agent; and from about 0 to about 0.1 weight percent of a stabilizer; and having a pH between about 7 and about 10.

5,362,759

PROCESS FOR RECLAIMING ELASTOMERIC WASTE

James R. Hunt, 1800 Montreal Ct., Suite A, Tucker, Ga. 30084, and David Hall, Auburn, Ala., assignors to James R. Hunt, Tucker, Ga.

Filed Mar. 21, 1994, Ser. No. 191,820
Int. Cl.[5] C08J *11/04*
U.S. Cl. 521—44.5 **7 Claims**

1. A process for reclaiming vulcanized rubber comprising the steps of:

a) impregnating rubber chips obtained from used tire rubber with a composition comprising an essential oil containing a member selected from the group consisting of d-limonene, linalool, mycrene or mixtures thereof;

b) particulating the treated rubber;

c) subjecting the rubber particles to microwave heating in the range of 5 KW of output and 2000–3000 MHz of frequency at a reduced pressure whereby substantially all the volatiles are removed and the rubber particles are desulfurized; and

d) recovering the rubber particles.

5,362,760

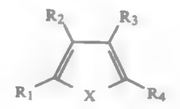
TEMPERATURE RESISTANT MICROPOROUS FILM

Markus J. H. Bulters, Sittard, Netherlands; Hans K. Van Dijk, Santa Barbara, Calif., and Ronald M. A. M. Schellekens, Meerssen, Netherlands, assignors to DSM N.V., Netherlands

Filed Jan. 15, 1992, Ser. No. 820,977
Claims priority, application Netherlands, Jan. 17, 1991, 9100085; Jan. 17, 1991, 9100086
Int. Cl.[5] C08J *9/36;* **B32B** *3/26*
U.S. Cl. 521—54 **9 Claims**

1. A process for at least partially coating a microporous film of a first polymer with the layer of a second polymer comprising:

applying a mixture comprising a precursor monomer of the second polymer and catalyst to the portions of a surface of the microporous film to be coated, wherein said precursor monomer is at least one monomer selected from the group of monomers represented by formulas (I) and (II), wherein formula (I) is



(I)

wherein said formula (I) X is selected from the group consisting of

—S—, and —O—;

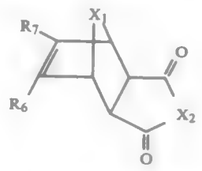
R_1, is selected from the group consisting of hydrogen, —C(O)OH,—C(O)C(O)OH, —SO_3H, —C(O)H, —I, and —Br;

R_2 is selected from the group consisting of hydrogen, a C_1 to C_{10} alkyl group, —C(O)OH, and a halogen;

R_3 is selected from the group consisting of hydrogen, a C_1 to C_{10} alkyl group, —C(O)OH, and a halogen;

R_4 is selected from the group consisting of hydrogen, —C(O)OH, —C(O)OH, —SO_3H, —C(O)H, —I, and —Br, wherein R_1 and R_4 are not both hydrogen,

and wherein formula (II) is



(II)

wherein formula (II) X_1 and X_2 are the same or different and are selected from a group consisting of —S—, —O—, >N—R_5, R_6 and R_7 are the same or different, and are selected from the group consisting of hydrogen and C_1 to C_2 alkyl, and wherein R_5 is selected from the group consisting of hydrogen, alkyl, aryl and alkoxy;

converting the precursor monomers to corresponding polymerizable monomers; and

subjecting the film to conditions under which the catalyst causes the monomers to polymerize, forming the second polymer.

5,362,761

PROCESS FOR FABRICATING POROUS SILICONE PRODUCT

Tadashi Uragami, Mino; Yoshiaki Tanaka, Takaishi; Masaru Ozaki, Ichihara, and Tatsuya Nakamura, Nishinomiya, all of Japan, assignors to Lignyte Co., Ltd., Osaka and Dow Corning Toray Silicone Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 23,430, Feb. 3, 1993, abandoned, which is a continuation of Ser. No. 912,245, Jul. 13, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 134,837

Claims priority, application Japan, Nov. 20, 1992, 3-171190

Int. Cl.[5] C08J *9/26, 9/28*

U.S. Cl. 521—64 **6 Claims**

1. A process for fabricating a porous silicone product by utilizing silicone emulsion capable of forming an elastomer by removal of water therefrom, said silicone emulsion comprising a water emulsion of an organopolysiloxane, a cross-linking agent, and a curing catalyst, said process comprising the steps of:

freezing said silicone emulsion; and

drying said frozen silicone emulsion, whereby water is sublimed therefrom and said porous silicone product is obtained.

5,362,762

PROCESS TO PREPARE LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Sharon M. Beshouri, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 148,141, Nov. 4, 1993. This application Apr. 11, 1994, Ser. No. 226,203

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—64 **6 Claims**

1. A curable water-in-oil emulsion composition comprising:

(a) a mixture of polymerizable monomers comprising at least one oil-soluble vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a multifunctional unsaturated crosslinking monomer;

(b) at least 90 weight percent, based on the emulsion, of water as the internal phase;

(c) an effective amount of a surfactant comprising (i) one or more sorbitan fatty acid ester, saccharide fatty acid ester or a mixture thereof and (ii) at least one glycerol fatty acid ester to produce an water-in-oil emulsion, and

(d) an effective amount of a polymerization initiator to polymerize and crosslink the polymerizable monomers.

5,362,763

FOAMED CELLULAR POLYESTER RESINS AND PROCESS FOR THEIR PREPARATION

Hussain A. K. Al Ghatta, Fiuggi; Tonino Severini, Colleferro, and Luca Astarita, Napoli, all of Italy, assignors to M. & G. Ricerche S.p.A., Pozzilli, Italy

PCT No. PCT/EP92/02889, § 371 Date Sep. 28, 1993, § 102(e) Date Sep. 28, 1993, PCT Pub. No. WO93/12164, PCT Pub. Date Jun. 24, 1993

PCT Filed Aug. 5, 1993, Ser. No. 98,341

Claims priority, application Italy, Dec. 16, 1991, MI91A003366

Int. Cl.[5] C08J *9/08, 9/14*

U.S. Cl. 521—79 **4 Claims**

1. Process for the preparation of a foamed cellular polyester resin from a polyester containing a foaming agent comprising the steps of extrusion foaming a polyester resin having said foamable melt strength higher than 8 centinewton, intrinsic viscosity between 0.85 and 1.95 dl/g and complex melt viscosity comprised between 30,000 poises at 270° C. and 300,000 poises at 290° C.

5,362,764

SURFACTANT FOR POLYISOCYANURATE FOAMS MADE WITH ALTERNATIVE BLOWING AGENTS

Michael E. Londrigan, Clearwater, and Kenneth G. Trout, Tampa, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 140,917, Oct. 25, 1993, Pat. No. 5,308,881. This application Feb. 28, 1994, Ser. No. 202,617

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—112 **23 Claims**

1. A closed cell, rigid polyisocyanurate foam which comprises the reaction product of a polyisocyanate and a polyol in the presence of (a) a hydrogen-containing blowing agent or a mixture of a hydrogen-containing blowing agent and at least one co-blowing agent, (b) a trimerization catalyst, and (c) a siloxane oxyalkylene copolymer as the surfactant, the siloxane oxyalkylene copolymer (i) having a weight average molecular weight below about 7500 and an oxyalkylene portion containing greater than 60 weight percent of oxyethylene units and (ii) being prepared by the reaction of an organohydrogensiloxane with a polyoxyalkylene in an essentially solventless system or in the presence of a high boiling point polar polyol.

5,362,765

POLYESTER FOAMED THIN MATERIALS

Toshio Taka; Yuichiro Yasukawa; Tetuya Takahashi; Akira Nakamura; Ryosuke Kamei, all of Kawasaki, Japan, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Division of Ser. No. 49,451, Apr. 20, 1993, Pat. No. 5,321,052. This application Mar. 31, 1994, Ser. No. 220,667

Claims priority, application Japan, May 12, 1992, 4-119196; May 14, 1992, 4-148313

Int. Cl.[5] C08G *75/00*

U.S. Cl. 521—172 **16 Claims**

1. An aliphatic polyester cellular fibrillated material which has a form of a net comprising net fragments of 5–20 denier;

wherein said aliphatic polyester has a melt viscosity of 1.0×10^3–1.0×10^5 poises at a temperature of 190° C. and a shear rate of 100 sec^{-1}, and has a melting point of 70°–200° C.; and

wherein said aliphatic polyester is obtained by reacting a diisocyanate with an aliphatic polyester prepolymer having a number average-molecular weight of at least 5,000 and a melting point of at least 60° C.

5,362,766

METHOD FOR IMMOBILIZING SUPERABSORBENT POLYMERS BY HOMOGENIZATION OF A SUSPENSION OF SAME

John B. Hopkins, Jr., Pineville; Joanne C. Maheras, Charlotte, both of N.C., and John B. Morton, Blacksburg, Va., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Mar. 9, 1993, Ser. No. 28,503

Int. Cl.[5] C08J *9/28;* **A61L** *15/22*

U.S. Cl. 523—105 **4 Claims**

1. A process for making a material containing a superabsorbent polymer comprising the steps of:

providing a matrix material in a suitable solvent, the matrix material being selected from the group consisting of cellulose esters, acrylic acid esters, polyvinyl esters, copolymers of the foregoing and combinations thereof;

mixing particles of a superabsorbent polymer into said solutioned matrix material to form a suspension;

homogenizing the suspension at a pressure greater than 2000 psig; and

removing the solvent from the suspension.

5,362,767

COPOLYMERS COMPRISING PROPELLANES AND CONTACT LENSES MADE THEREFROM

Peter Herbrechtsmeier, Königstein; Horst Schäfer, Aschaffenburg; Bernhard Seiferling, Goldbach; Arnulf-Dieter Schlüter, Berlin; Harald Bothe, Wiesbaden, and Rainer Freudenberger, Mühlheim, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

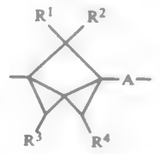
Filed Oct. 14, 1992, Ser. No. 961,105

Claims priority, application Switzerland, Oct. 14, 1991, 3003/91

Int. Cl.[5] C08F *210/00;* **G02B** *1/04;* **C08G** *61/06*

U.S. Cl. 523—106 **9 Claims**

1. A contact lens made from a copolymer comprising units of formula I



(I)

wherein R^1 and R^2 are each independently of the other hydrogen, alkyl, alkoxyalkyl, organosilylalkyl or organosilyl, R^3 and R^4 are each hydrogen or, taken together, are a divalent alkylene radical containing up to 8 carbon atoms, and A is a divalent substituted 1,2-ethylene radical which is derived from a copolymerisable vinyl monomer by virtue of the vinyl double bond being replaced with a single bond.

5,362,768

HYDROGEL MATERIAL

Syed H. Askari, Sunnyvale; Shao C. Jeang, Cupertino, and Herman H. Neidlinger, San Jose, all of Calif., assignors to Pilkington Visioncare, Inc., Menlo Park, Calif.

Continuation of Ser. No. 641,273, Jan. 15, 1991, abandoned. This application Jul. 30, 1993, Ser. No. 107,023

Int. Cl.[5] C08F *246/00, 220/24;* **G02B** *1/04*

U.S. Cl. 523—106 **17 Claims**



1. A soft contact lens comprising a polymer at least a portion of which comprises a hydrogel which has a cross-linked structure and which contains water in the range of from 5 to 95% by weight, which hydrogel is formed by the process which comprises:

selecting two or more monomers from a first group I, said monomers having an ethylenically unsaturated group and each of said monomers further having one or more substitutable leaving groups which can be removed by solvolysis wherein said substitutable leaving groups of each of said monomers are different from each other,

selecting one or more monomers from a second group II, containing one or more ethylenically unsaturated monomers without a substitutable leaving group

polymerizing the monomers selected above in the presence of a cross-linking agent to form a cross-linked, polymer composition;

solvolyzing and hydrating the polymer prepared above;

wherein the ratio of said two or more monomers of the first group I relative to each other and to the one or more monomers of the second group II is adjusted such that during solvolysis and hydration, the polymer undergoes a controlled volume change of between a shrinkage of 20% and an expansion of 40%, and further wherein the quantity by weight of each monomer present in the polymer being chosen so that the monomers of the first group I are in the range of from 5 to 95% by weight of the polymer and monomer(s) of the second group II is (are) in the range of from 5 to 95% by weight of the polymer.

5,362,769

ORTHODONTIC ADHESIVES

Duncan E. Waller, Ypsilanti, Mich., and Raymond F. Wong, Chino Hills, Calif., assignors to Ormco Corporation, Glendora, Calif. and Kerr Manufacturing Co., Romulus, Mich.

Filed May 7, 1992, Ser. No. 879,568

Int. Cl.[5] A61K *6/08;* **C08K** *5/02;* **C08F** *2/46, 118/02*

U.S. Cl. 523—116 **17 Claims**

1. A visible light curable orthodontic adhesive that comprises a high molecular weight resin or resin blend which is photocurable to form a tough, non-brittle polymer, blended with a hydrophilic copolymeric monomer which provides excellent substrate wetting characteristics;

an adhesion promoting monomer;

a photoinitiator;

a synergistic reducing agent;

a component which provides for a source of leachable fluoride;

an acyl peroxide capable of providing post-curing characteristics; and

a filler or fillers in the form of inert, finely divided visible light transmitting material.

5,362,770

HYDROPHOBICITY THROUGH METAL ION ACTIVATION

Bruce R. Palmer, and Rodney D. Stramel, both of Edmond, Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Division of Ser. No. 962,343, Oct. 16, 1992, Pat. No. 5,260,353. This application May 14, 1993, Ser. No. 63,269

Int. Cl.[5] C08K *9/10, 9/12, 9/02, 9/09*

U.S. Cl. 523—200 **20 Claims**

1. A method of forming a polymeric composition comprising the step of dispersing a treated particulate property modifier in a polymeric material, said treated particulate property modifier having been produced by a process comprising the steps of:

(a) metal ion activating the surface of a particulate property modifier to provide reactive metal sites on said surface and

(b) chemically bonding a surfactant to said surface at said reactive metal sites.

5,362,771

PROCESS FOR INCLUSION IN (METH)ACRYLIC RESINS OF SUBSTANCES OF LIQUID TO SOLID CONSISTENCY

Robert Legros, Mouceaux; Bernard Wiegert, Bremouille, and Jean-Luc Zeh, Spicheren, all of France, assignors to Elf Atochem, S.A., Paris, France

Filed Feb. 16, 1993, Ser. No. 18,228

Claims priority, application France, Feb. 13, 1992, 92 01638

Int. Cl.[5] C08K *9/10;* **G21F** *9/00, 9/16;* **C08F** *4/06*

U.S. Cl. 523—375 **19 Claims**

1. A process for inclusion in a resin of at least one substance of liquid to solid consistency, comprising embedding said at least one substance in a (meth)acrylic resin obtained in situ by direct polymerization, without prior preparation of a prepolymer syrup, using a monomer system based on at least one (meth)acrylic monomer possessing a boiling point between 330° C. and 380° C.,

wherein said at least one substance and the monomers of the resultant resin are mixed, then at least one polymerization initiator, at least one activator, and optionally at least one transfer agent are added, the resultant mixture is stirred and the temperature of the stirred mixture increases to at most 100° C. after not more than 40 minutes, and polymerization is allowed to proceed to completion, whereby a (meth)acrylic resin inclusion particle in which said at least one substance is embedded is obtained, and

wherein the inclusion particle resulting from said in situ polymerization is subjected to a postcuring at a temperature of between 50° C. and 85° C. for a period of 2 to 15 hours.

5,362,772

CROSSLINKED MICROGEL FOR CATHODIC ELECTROCOATING COMPOSITIONS

Peter W. Uhlianuk, Romeo, and Raymond S. Van Ham, Richmond, both of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 9, 1993, Ser. No. 89,005

Int. Cl.[5] C08G *59/50;* **C08L** *63/00;* **C25D** *13/06*

U.S. Cl. 523—404 **12 Claims**

1. A cationic finely divided polymeric microgel having a particle size of about 0.01–6 microns dispersed in an aqueous medium for use in aqueous cationic electrocoating compositions: said polymeric microgel consisting essentially of a product produced by reacting an epoxy terminated poly epoxy hydroxy ether resin, a ketimine, a primary, secondary amine or mixtures thereof and amino silane to provide a resin having silanol groups and amino groups when in an aqueous medium; and said amino groups being neutralized with an organic acid to form cationic groups for water dispersibility and said silanol groups being condensed with hydroxy groups of the resin and other silanol groups of the resin thereby forming a crosslinked microgel.

5,362,773

AQUEOUS RADIATION-CURABLE BINDER DISPERSIONS

Gerhard Brindoepke, Sulzbach, and Inge Kurth, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft AG, Germany

Filed Aug. 26, 1993, Ser. No. 112,093

Claims priority, application Germany, Aug. 28, 1992, 4228713

Int. Cl.[5] C08L *63/02*

U.S. Cl. 523—415 **4 Claims**

1. An aqueous radiation-curable binder dispersion consisting essentially of

A) a radiation-curable binder containing (meth)acrylate groups and

B) a radiation-curable emulsifier obtained by reaction of hydroxyalkyl (meth)acrylates, polyglycols, polyhydroxycarboxylic acids and polyisocyanates.

5,362,774

Patent Not Issued For This Number

5,362,775

EPOXY RESIN COMPOSITION AND CURED PRODUCT THEREOF

Akira Shintai, Obu; Hiroshi Shibata, Chita; Toshio Shiobara, Annaka; Koji Futatsumori, Annaka; Seizi Katayama, Annaka, and Yasutaka Yoshida, Bisai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed Mar. 24, 1992, Ser. No. 856,767

Claims priority, application Japan, Mar. 27, 1991, 3-063351; Sep. 25, 1991, 3-273100

Int. Cl.[5] C08G *59/14, 59/62;* **C08K** *5/51*

U.S. Cl. 523—451 **21 Claims**

1. An epoxy resin composition comprising:

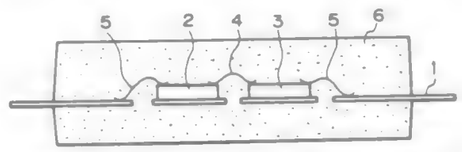
(i) an epoxy resin;

(ii) a phenolic curing agent;

(iii) an organophosphorus curing accelerator;

(iv) alumina; and

(v) a coating layer coating said alumina; said coating layer



comprising a silane coupling agent whereby said alumina is separated from said organophosphorus curing accelerator.

5,362,776

RECYCLABLE CELLULOSIC PACKAGING MATERIAL

Sumner A. Barenberg, Chicago, Ill.; C. Bruce Bradley, Miramar, Fla.; Gladys R. Vargas, Chicago, Ill., and Samuel C. Conway, Jr., Pine Bluff, Ark., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Jul. 21, 1993, Ser. No. 95,275

Int. Cl.[5] C08L *1/00;* **C08K** *5/12;* **B65D** *81/02, 85/30*

U.S. Cl. 524—35 **9 Claims**

1. A biodegradable material comprising cellulosic fiber, softener, and water so as to form a packaging product, provided that the softener is not water.

5,362,777

THERMOPLASTICALLY PROCESSABLE STARCH AND A METHOD OF MAKING IT

Ivan Tomka, Schutzenmattstr. 1, 5600 Lenzburg, Switzerland

Continuation of Ser. No. 785,931, Oct. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 536,683, Jul. 11, 1990, abandoned. This application Aug. 30, 1993, Ser. No. 115,243

Claims priority, application Switzerland, Nov. 3, 1988, 4083/88

Int. Cl.[5] C08L *3/04, 89/06, 101/00;* **C09H** *9/02*

U.S. Cl. 524—47 **27 Claims**

1. A method of preparing thermoplastically processable starch which is a substantially water free, combination of starch with at least one additive, the method comprising admixing starch with at least 5 weight percent based on the weight of the mixture of at least one additive, said additive being such that it reduces the melting point of the starch in the mixture to below the decomposition temperature of the starch, said additive having a solubility parameter of more than 15 $cal^{\frac{1}{2}}cm^{-2/3}$, said additive having a vapor pressure of less than 1 bar in said mixture at a temperature of about the melting point of said mixture, and melting and mixing said admixture until it is substantially water free and until the crystalline content is less than 5%.

5,362,778

EXTRUDABLE POLYVINYL ALCOHOL COMPOSITIONS CONTAINING MODIFIED STARCHES

Amir Famili, Orefield; James F. Nangeroni, Allentown, and Finn L. Marten, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 16, 1993, Ser. No. 17,932

Int. Cl.[5] C08L *89/00;* **B29C** *65/00;* **D01F** *6/14*

U.S. Cl. 524—50 **19 Claims**

1. In a melt extrudable polyvinyl alcohol composition consisting essentially of polyvinyl alcohol and 1–30 wt % plasticizer, based on polyvinyl alcohol, which has been made melt extrudable by adding sufficient energy to the polyvinyl alcohol to both melt it and substantially eliminate the crystallinity in the melt while simultaneously removing energy from the melt at a rate sufficient to avoid decomposition of the polyvinyl alcohol, wherein the improvement comprises 5–95 wt % thermoplastic hydroxypropylated starch, based on polyvinyl alcohol and starch in the composition.

5,362,779

DAMPENING WATER COMPOSITION

Takuo Kitayama, and Isamu Setoguchi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo and Kabushiki Kaisha Nichinan Kagaku, Saitama, both of Japan

Filed Dec. 2, 1992, Ser. No. 984,200

Claims priority, application Japan, Dec. 2, 1991, 3-341816

Int. Cl.[5] C08K *5/15, 5/05;* **G03C** *5/00*

U.S. Cl. 524—56 **4 Claims**

1. A dampening water composition comprising:

water;

a pH buffering agent comprising glucono-delta-lactone;

a water-soluble polymer comprising a propylene oxide-ethylene oxide copolymer and a natural polysaccharide, wherein the natural polysaccharide is pullulan produced from a partially degraded product of starch by a black yeast having the designation Aureobasidium pullulans; and

n-propyl alcohol.

5,362,780

COMPOSITIONS BASED ON 2,9-DICHLOROQUINACRIDONE PIGMENTS

Fridolin Babler, Hockessin; Charles G. Orange, Bear, and Edward E. Jaffe, Wilmington, all of Del., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 15, 1993, Ser. No. 77,974

Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—88 **20 Claims**

1. A violet-colored pigment composition which comprises

(A) a 2,9-dichloroquinacridone pigment having a specific surface area below $75 m^2/gram$; and

(B) a sulfonic acid of formula II

$$P—(SO_3H)_m \quad (II)$$

or a salt thereof; wherein P is a blue-colored indanthrone radical or a blue-colored copper phthalocyanine radical, and m is from 0.2 to 4.0.

5,362,781

ADDITION-CURABLE SILICONE ADHESIVE COMPOSITIONS AND N-HETEROCYCLIC SILANE ADHESION PROMOTERS

Judith Stein, Schenectady, N.Y., assignor to General Electric Compay, Schenectady, N.Y.

Filed Dec. 13, 1993, Ser. No. 165,626

Int. Cl.[5] C08K *5/3415*

U.S. Cl. 524—99 **5 Claims**

1. An addition-curable composition, comprising by weight,

(A) 100 parts of a vinyl-containing polydiorganosiloxane composition comprising:

(1) about 50 to about 100 parts of an essentially cyclic-free vinyl-terminated polydiorganosiloxane having the general formula,

$$(R)_2V_iSiO[(R)_2SiO]_m[RV_iSiO]_nS_i(R)_2V_i,$$

where Vi is a vinyl radical, R is selected from the class consisting of alkyl radicals having 1 to 8 carbon atoms, phenyl radicals, fluoroalkyl radicals having 3 to 10 carbon atoms and mixtures thereof, "m+n" has a value sufficient to provide a polydiorganosiloxane viscosity of 100 to about 100,000 centipoise at 25° C. and a polydiorganosiloxane vinyl content of from about 0.02 to about 2.0 weight %, and

(2) from about 0 to about 50 parts of a solid, benzene-soluble vinyl-containing resin copolymer comprising,

$(R^1)_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units,

where R^1 is a vinyl radical, or a monovalent hydrocarbon radical free of aliphatic unsaturation and containing no more than six carbon atoms, the ratio of $(R^1)_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units being from about 0.5:1 to about 1.5:1, and the resin having a vinyl content of from about 1.5 to about 3.5% by weight,

(B) from about 1 to about 20 parts of a hydrogen-containing polysiloxane having an average unit formula,

$$R^2_aH_bSiO_{(4-a-b)/2},$$

where R^2 is a monovalent hydrocarbon radical, or halogenated monovalent hydrocarbon radical having from 1 to about 10 carbon atoms and free of aliphatic unsaturation, "a" has a value of from about 0 to about 3, "b" has a value of from about 0 to about 3, and the sum of "a"+"b" has a value of from 0 to 3,

(C) a catalytic amount of a hydrosilylation catalyst,

(D) an amount of a bis[trialkyloxysilylalkenyl]pyridine dicarboxylate having the formula,

$$[(R^3O)_3S_iR^4OOC]_2C_5H_3N$$

which is effective as an adhesion promoter, wherein R^3 is a $C_{(1-4)}$alkyl radical and R^4 is a $C_{(2-8)}$alkylene radical,

(E) from about 0 to about 200 parts of an extending filler, and

(F) from about 0 to about 50 parts of a reinforcing filler, and in the absence of (A)(2), an amount effective for reinforcement.

5,362,782

POLYMER COMPOSITIONS

James D. McCullough, Jr., Houston, Tex., and Harold K. Ficker, Wayne, N.J., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 753,569, Sep. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 522,692, May 14, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 74,264

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—108 **10 Claims**

1. A polypropylene stress whitening resistant impact copolymer composition comprising a homopolymer phase containing at least 94% by weight polypropylene and a copolymer phase comprising a copolymer of ethylene and propylene, wherein the ratio of the intrinsic viscosity of the copolymer rubber phase to the homopolymer phase is from about 1.1 to about 1.3, the copolymer phase has from 40% by weight to about 55% by weight of ethylene, based on the copolymer rubber phase, the composition has a melt flow from about 18 dg/min. to 70 dg/min. and the composition also contains a nucleating agent selected from the group consisting of aromatic carboxylic acids and their derivatives, metal organic phosphates, benzylidene sorbitol derivatives, talc, polyvinyl cycloalkanes, and organic dicarboxylic acid derivatives.

5,362,783

STABILIZER COMPOSITION

Juergen Eiffler, Stade, Germany, and Robin J. Lee, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 8, 1993, Ser. No. 73,852

Int. Cl.[5] C08K *5/50*

U.S. Cl. 524—154 **17 Claims**

1. A polymer composition comprising a polycarbonate and an essentially epoxide-free stabilizer composition comprising

a) a phosphine of the general formula

$$PR^1R^2R^3 \quad (I)$$

wherein R^1, R^2 and R^3 independently from each other represent an alkyl, cycloalkyl, aryl or aryl-alkyl group or an aryl group which is substituted at the aromatic ring with one or more halogens and/or one or more alkyl or alkoxy groups and

b) a hindered phenol.

5,362,784

ALDEHYDE SCAVENGING COMPOSITIONS AND METHODS RELATING THERETO

Vincent Brodie, III, Wilmington, Del., and Donna L. Visioli, Lower Gwynedd, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 28, 1993, Ser. No. 67,251

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] C08K *5/21;* **C08F** *283/00;* **B65B** *55/00*

U.S. Cl. 524—211 **11 Claims**

1. A composition comprising a blend of polyester polymer and polyalkylene imine. ("PAI), whereby the PAI is defined by the following formula:

H—(CH2—(CH2)n—NH—)m—H

where n has a numerical value of at least 1 and m has a numerical value of at least 100, and whereby the weight ratio of polyalkylene imine to polyester polymer is in the range of about 0.001–30:100,and wherein the PAI and polyester are mixed at temperatures between about 150° C. and about 350° C., whereby the PAI forms a dispersed phase defining microscopic particles of less than 10 microns.

5,362,785

RUBBER COMPOSITION SUITABLE FOR AUTOMOBILE TIRES AND ITS PRODUCTION

Naoki Inui, Yamatokoriyama; Hideo Nagasaki, Osaka, and Shinichi Yachigo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 21, 1992, Ser. No. 886,094

Claims priority, application Japan, May 22, 1991, 3-117320

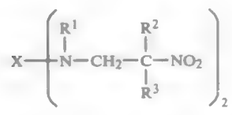
Int. Cl.[5] C08K *5/16, 5/32, 5/36*

U.S. Cl. 524—259 **18 Claims**

1. A rubber composition comprising a base rubber comprising at least 50% by weight of a styrene/butadiene copolymer rubber, a filler consisting essentially of carbon black, and the following components each based on 100 parts by weight of the base rubber:

(A) 0.1 to 10 parts by weight of a dinitrodiamine compound represented by the following formula (I):

(I)



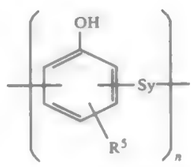
wherein X is a divalent aliphatic, alicyclic or aromatic group which may contain halogen or oxygen in the group; R^1 is hydrogen or an aliphatic, alicyclic or aromatic group, provided that two nitrogen atoms linking through X may further link through R^1 when both X and R^1 are the aliphatic groups; and R^2 and R^3 independently of one another are each hydrogen or an alkyl of 1 to 12 carbon atoms, provided that R^2 and R^3 may conjointly form a ring; and

(B) 0.1 to 1 part by weight of a sulfide compound selected from the group consisting of disulfide represented by the following formula (II):

$R^4—S—S—R^4$ (II)

wherein R^4 is benzothiazyl or N,N-dialkylthiocarbamoyl having 1 to 6 carbon atoms in each alkyl; and a substituted phenol sulfide resin represented by the following formula (III):

(III)



wherein R^5 is an aliphatic group of 1 to 12 carbon atoms or hydroxy, y is a numeral of 1 to 6, and n is a numeral of 1 to 20;

said components (A) and (B) being added to the base rubber together with the carbon black at a high temperature ranging from about 140° to about 200° C.

5,362,786

PROTECTIVE COATING AND METHOD OF USING SUCH COATING

Edward W. Woodhall, Los Altos, and Nicholas Kondrats, Goleta, both of Calif., assignors to Cal-West Equipment Co., Inc., Los Altos, Calif.

Continuation of Ser. No. 972,037, Nov. 5, 1992, Pat. No. 5,302,413, which is a continuation-in-part of Ser. No. 614,330, Nov. 16, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 16,872

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—267 **1 Claim**

1. A composition comprising

a) greater than 5% polyvinyl alcohol by weight;

b) less than 20% ethyl alcohol by weight, based on 190-proof ethyl alcohol;

c) less than about 1% of a surfactant by weight;

d) less than about 1% of a denaturant by weight;

e) less than about 1% of a polysiloxane defoamer by weight; and

f) water, with the proviso that each of components (b), (c), (d) and (e) are present.

5,362,787

RUBBERY BLEND HAVING LOW PERMANENT COMPRESSION SET

Hung D. Ngoc, Limeil Brevannes, and Guy P. R. Duval, Paris, both of France, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 18, 1993, Ser. No. 154,053

Int. Cl.[5] C08L *9/02*

U.S. Cl. 524—297 **9 Claims**

1. A rubbery composition which is useful in automotive body seal applications which is comprised of (1) polyvinyl chloride, (2) from about 20 to about 120 parts of a plasticizer per 100 parts of the polyvinylchloride, (3) from about 1 to about 3 parts of a stabilizer, and (4) from about 5 to about 300 parts of a highly crosslinked nitrile rubber composition per 100 parts of the polyvinyl chloride, wherein the highly crosslinked nitrile rubber composition is comprised of a highly crosslinked nitrile rubber and from about 1 to about 30 parts of a plasticizer, wherein the highly crosslinked nitrile rubber has repeat units which are derived from (a) 1,3-butadiene, (b) acrylonitrile, and (c) a crosslinking agent, and wherein said highly crosslinked nitrile rubber has a Mooney viscosity of about 50 to about 120, a swelling index of less than about 10 percent, a mill shrinkage of less than 10 percent, and a gel content of greater than 90 percent.

5,362,788

AQUEOUS COVERING COMPOSITION

Itsuo Kimura; Kazuhiro Fujiwara, and Shigeki Hikasa, all of Iwakuni, Japan, assignors to Nippon Paper Industries Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1993, Ser. No. 31,193

Claims priority, application Japan, Mar. 18, 1992, 4-092008

Int. Cl.[5] C08K *5/06*

U.S. Cl. 524—377 **10 Claims**

1. An aqueous composition for covering a polyolefin resin substrate, consisting essentially of:

a dispersion of a graph copolymer in which from 1 to 20% by weight, based on the weight of graph copolymer, of an α,β-unsaturated dicarboxylic acid or acid anhydride thereof is grafted onto a propyleneα-olefin polymer, a neutralizing base and an alcohol having two or more OH groups in water.

5,362,789

CROSSLINKED TERPOLYMERS OF HIGH SALT TOLERANCE

Yoon T. Kwak, Wayne, and Stephen L. Kopolow, Plainsboro, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Dec. 21, 1993, Ser. No. 171,147

Int. Cl.[5] C08K *3/00;* **C08F** *222/04*

U.S. Cl. 524—401 **9 Claims**

1. A 1–8% crosslinked terpolymer of C_1 to C_4 alkyl vinyl ether, maleic anhydride and a C_{10} to C_{20} alkyl acrylate or methacrylate in a mole ratio of 1–3:1:0.01–0.08, said terpolymer having a pH of from about 4 to about 11 and a Brookfield viscosity of from about 10,000 to about 150,000 cps.

5,362,790

IMPACT-RESISTANT COMPOSITIONS BASED ON VINYL CHLORIDE POLYMERS AND THEIR USE

Daniel Gloesener, Sart D'Avril-Fernelmont, , assignor to Solvay (Société Anonyme), Brussels,

Continuation-in-part of Ser. No. 826,782, Jan. 28, 1992, Pat. No. 5,214,092. This application Apr. 1, 1993, Ser. No. 41,167

Claims priority, application Belgium, Apr. 2, 1992, 09200311

The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.

Int. Cl.[5] C08J *3/20;* **C08K** *3/26;* **C08L** *51/00*

U.S. Cl. 524—425 **18 Claims**

1. An impact-resistant composition comprising:

(a) from about 3 to 40 parts of vinyl chloride graft copolymer on weakly crosslinked polybutyl acrylate containing from 12 to 45% by weight of weakly crosslinked polybutyl acrylate,

(b) from about 5 to 85 parts of vinyl chloride graft copolymer on a copolymer of ethylene and vinyl acetate, containing from 0.5 to 7% by weight of copolymer of ethylene and vinyl acetate whose intrinsic viscosity, measured at 20° C. in m-xylene, is between approximately 0.05 and 0.10 l/g, and

(c) from about 10 to 85 parts of unmodified vinyl chloride polymer,

per 100 parts by weight in all of the combination of the vinyl chloride polymers of (a), (b), and (c) and,

(d) from about 3 to 10 parts of coated calcium carbonate whose elementary particles have a mean diameter smaller than 1 μm per 100 parts by weight of the combination of the vinyl chloride polymers of (a), (b) and (c).

5,362,791

THERMOPLASTIC COMPOSITIONS FOR PRODUCING METALLIC MOLDINGS

Johan Ebenhoech, Ludwigshafen; Dieter Weinand, St. Martin; Wolfgang Kochanek, Neustadt, and Martin Bloemacher, Meckenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 1, 1991, Ser. No. 723,988

Claims priority, application Germany, Jul. 7, 1990, 4021739

The portion of the term of this patent subsequent to Sep. 8, 2009, has been disclaimed.

Int. Cl.[5] C08K *3/08*

U.S. Cl. 524—440 **5 Claims**

1. A thermoplastic composition for producing a metallic molding, containing

A) 40–70% by volume of a sinterable pulverulent metal or of a pulverulent metal alloy or of a mixture thereof,

B) 30–60% by volume of a mixture of

B1) 50–100% by weight of a polyoxymethylene homopolymer or copolymer and

B2) 2–20% by weight of a polymer which is immiscible with B1) and can be thermally removed without leaving a residue, or a mixture of such polymers,

as binder, and

C) 0–5% by volume of a dispersant.

5,362,792

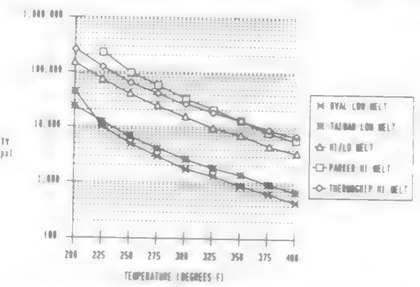
GIVE STICK FOR HIGH-TEMPERATURE AND LOW-TEMPERATURE APPLICATION BASED ON ETHYLENE VINYL ACETATE AND TACKIFYING RESINS

Elias S. Maayeh, Arlington, Tex., assignor to Uniplast, Inc., Arlington, Tex.

Continuation of Ser. No. 821,089, Jan. 16, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 70,046

Int. Cl.[5] C08J *5/10;* **C08K** *5/01;* **C08L** *31/04*

U.S. Cl. 524—491 **34 Claims**



1. A glue stick composition for use with glue guns comprising a mixture of (a) an EVA copolymer, (b) a high temperature tackifying resin and (c) a low temperature tackifying resin, the admixture being formable into a stick for use in a glue gun and exhibiting a viscosity between about 80,000 cps and about 2,000 cps over a temperature range of about 250° F. to about 380° F.

5,362,793

ELASTOMERIC COMPOSITION FOR TIRE TREADS

Luciano Garro, and Mario Martin, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Continuation of Ser. No. 673,320, Mar. 22, 1991, abandoned. This application May 10, 1993, Ser. No. 58,808

Claims priority, application Italy, Mar. 23, 1990, 19781A90

Int. Cl.[5] C08K *3/04*

U.S. Cl. 524—495 **11 Claims**

1. A tire for a vehicle wheel comprising a carcass, a tread strip on the crown of said carcass, sidewalls and beads for anchoring said tire to corresponding wheel rim, which com-

prises using in the tread thereof an elastomeric composition of natural rubber and carbon black, containing 100 parts by weight of an elastomeric material of:

a) from 80 to 95 parts by weight of natural rubber or of a mixture of natural rubber with styrene-butadiene and/or with polybutadiene, the amount of natural rubber being at least 50 parts by weight on 100 parts of said elastomeric composition, and

b) from 20 to 5 parts by weight of a synthetic rubber consisting essentially either or homopolymers of 2-chloro-1,3-butadiene or copolymers of the former with dienic monomers, selected from the group consisting of butadiene and isoprene, said synthetic rubber having a molecular weight from 2×10^4 to 10^6, and a Mooney viscosity from 20 to 100 ML(1+4), as measured at 100° C. according to ASTM specification D 1646, whereby said elastomeric composition has a loss tangent (tan δ) at 0° C. of not less than 0.30 and a loss tangent (tan δ) at 70° C. of not more than 0.16.

5,362,794

RUBBER COMPOSITION HAVING EXCELLENT GRIPPING POWER AND ROLLING RESISTANCE, AND PRODUCTION THEREOF

Naoki Inui, Yamatokoriyama; Kazuaki Yamamoto, Toyonaka; Hideo Nagasaki, Osaka; Manji Sasaki, Nishinomiya, and Shinichi Yachigo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Jul. 21, 1993, Ser. No. 89,521

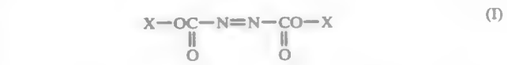
Int. Cl.[5] C08K *3/02*

U.S. Cl. 624—496 **13 Claims**

1. A rubber composition which comprises:

(A) 100 parts by weight of a rubber component comprising at least 50% by weight of a styrene/butadiene copolymer rubber;

(B) 1 to 6 parts by weight of an azodicarboxylic ester compound represented by the formula (I):



(I)

wherein X is an alkyl of 3 to 8 carbon atoms, an unsubstituted or substituted phenyl, or an unsubstituted or substituted benzyl;

(C) 60 to 250 parts by weight of carbon black having a nitrogen absorption specific surface area of 100 to 250 m^2/g and a dibutyl phthalate absorption number of 110 to 170 ml/100 g;

(D) 0.5 to 4 parts by weight of sulfur; and

(E) 0.3 to 3 parts by weight of a benzothiazole vulcanization accelerator;

said components (B) through (E) being incorporated into said rubber component by a rubber processing machine.

5,362,795

PROCESS FOR PRODUCING RUBBER-CONTAINING GRAFT COPOLYMER PARTICLES

Koji Matsumoto; Masaru Morimoto, and Susumu Hirano, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 16, 1993, Ser. No. 32,000

Claims priority, application Japan, Mar. 19, 1992, 4-062985

Int. Cl.[5] C08L *51/00, 51/04, 55/02*

U.S. Cl. 524—501 **8 Claims**

1. A process for producing rubber-containing graft copolymer particles having excellent powder properties, comprising mixing, with 100 parts by weight (as solid content) of a slurry of a rubber-containing graft copolymer (A), 0.1 to 10 parts by weight (as solid content) of a rigid non-elastic polymer (B) having a glass transition temperature of 40° C. or higher and a weight-average molecular weight of 10,000 to 500,000 in a substantially slurry state.

5,362,796

MOLDED CROSSLINKED VINYL LACTAM POLYMER GEL AND METHOD OF PREPARATION

Susan Y. Tseng, Staten Island, N.Y., and Philip F. Wolf, Bridgewater, N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Aug. 9, 1993, Ser. No. 104,302

The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.

Int. Cl.[5] C08L *37/00*

U.S. Cl. 524—548 **17 Claims**

1. A moldable composition consisting essentially of a uniform mixture of

(1) between about 10 and about 30 wt. % of a polymerizable N-vinyl lactam monomer;

(2) between about 0.01 and about 10 wt. % non-polymeric crosslinking agent;

(3) between about 60 and about 90 wt. % solvent selected from the group of water, C_1 to C_4 alkanol or a mixture thereof and

(4) between about 0.1 and about 5 wt. % of a free radical initiator having a decomposition temperature below the boiling point of said solvent.

5,362,797

Patent Not Issued For This Number

5,362,798

LOW-FORMALDEHYDE LATEX BINDER

Peter C. Hayes, Stow, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio

Filed Mar. 24, 1993, Ser. No. 36,300

Int. Cl.[5] C08L *3/00, 33/00*

U.S. Cl. 524—558 **25 Claims**

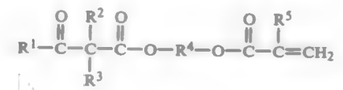
1. A latex binder composition, which comprises; a binder dispersed in water and made from monomers comprising from 10 to 90 parts by weight of one or more monomers of a conjugated diene having from 4 to 8 carbon atoms and from 10 to 90 parts by weight of one or more monomers of a vinyl-substituted aromatic having from 8 to 12 carbon atoms based upon 100 total parts by weight of said vinyl-substituted aromatic and said conjugated diene monomers,

optionally from about 0.1 to about 30 parts by weight based upon 100 parts by weight of said one or more conjugated diene and vinyl-substituted aromatic monomers of an alkyl (meth)acrylate ester or hydroxy derivative thereof wherein said alkyl group has from 1 to 10 carbon atoms,

optionally from about 0.1 to about 35 parts by weight based upon 100 parts by weight of said one or more conjugated diene and vinyl-substituted aromatic monomers of a vinyl chloride monomer or a vinylidene chloride monomer, or combinations thereof,

optionally, from about 0.1 to about 10 parts by weight per 100 parts by weight of said one or more conjugated dienes and said vinyl-substituted aromatic monomers of one or more unsaturated acid or amide monomers having a total of from 3 to 12 carbon atoms, and

from about 0.05 to about 7 parts by weight per 100 parts by weight of said one or more conjugated diene and said vinyl-substituted aromatic monomers of a β-ketoester derivative of a vinyl ester having the formula



wherein R^1 is an alkyl having from 1 to 6 carbon atoms, R^2 and R^3, independently, is hydrogen, or an alkyl having from 1 to 12 carbon atoms, or an alkyl-substituted aromatic having from 7 to 15 carbon atoms, or allyl, wherein R^4 is an alkylene having from 1 to 4 carbon atoms, wherein R^5 is hydrogen or an alkyl having from 1 to 4 carbon atoms, and wherein said latex binder contains less than 10 parts by weight of formaldehyde per million parts by weight of said latex binder.

5,362,799

UNSATURATED POLYESTER-FLEXIBLE POLYMER NETWORK COMPOSITION

Frederick J. McGarry, Weston, and Ramnath Subramaniam, Cambridge, both of Mass., assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 874,788, Apr. 27, 1992, Pat. No. 5,248,742. This application Sep. 13, 1993, Ser. No. 121,111

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] C08L *63/00*

U.S. Cl. 525—31 **14 Claims**

1. An unsaturated polyester reaction mixture comprising:

a) 20 to 40 parts by wt. of unsaturated polyester resin, wherein said unsaturated polyester resin is a 500 to 10,000 molecular weight reaction product of one or more diols having from 2 to 12 carbon atoms with one or more dicarboxylic acids or their anhydrides having 3 to 12 carbon atoms,

b) 40 to 79 parts by wt. of ethylenically unsaturated monomers,

c) 1 to 30 parts by wt. of amine-terminated flexible polymer,

d) a free radical initiator, and

e) optionally less than 10 parts by weight of an epoxy resin having one or more 1,2-epoxy groups per molecule,

when said epoxy resin is present up to 2 parts by weight catalysts for an epoxy amine reaction, wherein the parts by weight are based upon a total of 100 parts by weight of a, b, and c, and

wherein said a, b, and c form a composition having a single Tg value when determined by dynamic mechanical analysis.

5,362,800

UNSATURATED POLYESTER RESINS

Giuseppe Antonio Caramaschi, Montevarchi; Sergio Sanchioni, Terranuova B.ni; Marco Bocci, S. Giovanni V.no., and Maurizio Leonardi, Perugia, all of Italy, assignors to Alusuisse Italia S.p.A., Milan, Italy

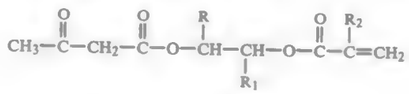
Continuation-in-part of Ser. No. 700,859, May 16, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,353

Claims priority, application Italy, May 16, 1990, 20319 A/90

Int. Cl.[5] C08G *63/91*

U.S. Cl. 525—48 **26 Claims**

3. Non-solvent unsaturated polyester resin composition which is curable at room temperature, comprising at least one unsaturated polyester resin and10 to 60 percent by weight, based on the total weight of said unsaturated polyester resin composition, of at least one crosslinking monomer, said at least one unsaturated polyester resin has been obtained by the reaction of at least one monomeric or polymeric glycol with at least one ethylenically α,β-unsaturated dicarboxylic acid or an anhydride thereof, said at least one monomeric or polymeric glycol being at least one member selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,3-butanediol, 1,4-butanediol, diethylene glycol, dipropylene glycol, neopentyl glycol, the bis-(β-hydroxypropyl) ether of bisphenol A, dibromoneopentyl glycol, and the tetrabromo derivative of bisphenol A, said at least one ethylenically α,β-unsaturated dicarboxylic acid or anhydride thereof being at least one member selected from the group consisting of maleic acid, fumaric acid, citraconic acid, mesaconic acid, maleic anhydride, fumaric acid, citraconic anhydride, and mesaconic anhydride, and said at least one crosslinking monomer being at least one compound of formula (I):



(I)

wherein R is H or a methyl group, R_1 is H or a methyl group and R_2 is H or a methyl group.

5,362,801

HOT MELT ADHESIVES MADE FROM THE BLEND OF POLYVINYL ALCOHOL COPOLYMERS AND COPOLYMERS FROM UNSATURATED MONOMERS

Robert M. Amici, Doylestown; Newman M. Bortnick, Oreland, both of Pa.; Roger K. Graham, Morrestown, N.J.; Edward E. LaFleur, Warminster, and William J. Work, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 981,570, Nov. 25, 1992, Pat. No. 5,322,892, which is a continuation of Ser. No. 781,715, Oct. 22, 1991, Pat. No. 5,189,097, which is a continuation-in-part of Ser. No. 623,864, Dec. 7, 1990, abandoned. This application Dec. 2, 1993, Ser. No. 161,643

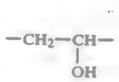
The portion of the term of this patent subsequent to Jun. 21, 2011, has been disclaimed.

Int. Cl.[5] C08G *63/48, 63/91*

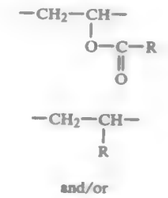
U.S. Cl. 525—57 **5 Claims**

1. A melt processable hot melt adhesive for the bonding of paper, wood, and other cellulosic articles comprising a polymeric blend of:

a) from greater than 90 parts to about 98 parts of at least one first polymer containing at least 85 mol % units of the structure

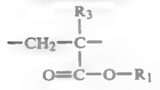


and optionally units of the structure



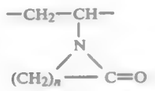
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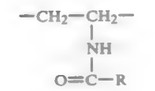


wherein R is H or —(—CH_2)$_m$—CH_3, where m is 0 to 7 and R_1 is an alkyleneoxy group or a C_1 to C_4 alkyl group, and R_3 is H or CH_3;

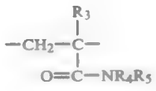
b) from about 2 to less than 10 parts of at least one second polymer containing from about 5 to about 35 parts of units of the structure



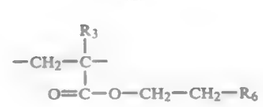
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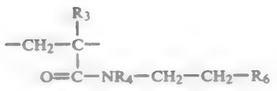
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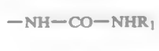
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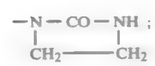
or



wherein n is 2, 3, 4, or 5, R_4 and R_5 may be the same or different and are H, C_1–C_4 alkyl, or —C_2H_4—(O—C_2H_4)— in a cyclic form, and where R_6 is a urea or cyclic ureido structure of the formula

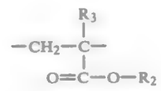


or



and

units from about 64 to about 4 parts of units of the structure



wherein R_2 is C_1–C_4 alkyl; and from about 1 to about 10 parts of a copolymerizable unsaturated acid, anhydride or glycidyl-containing ester.

5,362,802

HOT MELT ADHESIVES

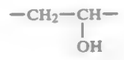
Robert M. Amici, Doylestown; Newman M. Bortnick, Oreland, both of Pa.; Roger K. Graham, Moorestown, N.J.; Edward E. LaFleur, Warminster, and William J. Work, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 161,643, Dec. 2, 1993, which is a continuation-in-part of Ser. No. 981,570, Nov. 25, 1992, Pat. No. 5,322,892, which is a continuation of Ser. No. 781,715, Oct. 19, 1991, Pat. No. 5,189,097, which is a continuation-in-part of Ser. No. 623,864, Dec. 7, 1990, abandoned. This application Mar. 18, 1994, Ser. No. 210,403

Int. Cl.[5] **C08G** *63/48*

U.S. Cl. 525—57 **2 Claims**

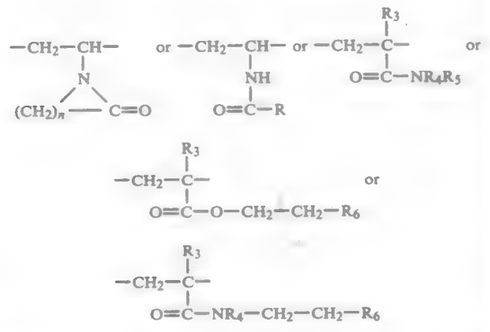
1. In the process of applying a poly(vinyl alcohol) polymer as a hot melt adhesive to a paper, wood, or other cellulosic substrate, the composition comprising more than about 90% units of the structure



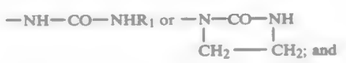
and

a. blending from about 2 to about 20 parts of

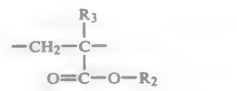
(i) at least one second polymer containing from about 5 to about 35 parts of units of the structure



wherein n is 2, 3, 4, or 5, R_4 and R_5 may be the same or different and are H, C_1–C_4 alkyl, or —C_2H_4—(O—C_2H_4)— in a cyclic form, and where R_6 is a urea or cyclic ureido structure of the formula



from about 64 to about 4 parts of units of the structure



wherein R_2 is C_1–C_4 alkyl; and from about 1 to about 10 parts of a copolymerizable unsaturated acid, anhydride or glycidyl-containing ester; and

(ii) from about 2 to about 20 parts of at least one plasticizer

wherein the poly(vinyl alcohol) polymer is washed with water or treated with an organic or inorganic acid to remove essentially all sodium acetate residue;

b. melting the polymer blend formed in step (a);

c. applying the polymer blend melt of step (b) to at least one paper, wood, or other cellulosic article surface.

5,362,803

POLYMERIC BLENDS OF POLYVINYL ALCOHOL COPOLYMERS WITH COPOLYMERS OF UNSATURATED MONOMERS

Edward E. LaFleur, Warminster; Robert M. Amici, Doylestown, and William J. Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

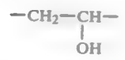
Continuation-in-part of Ser. No. 981,570, Nov. 25, 1992, Pat. No. 5,322,892, which is a continuation of Ser. No. 781,715, Oct. 22, 1991, Pat. No. 5,189,097, which is a continuation-in-part of Ser. No. 623,864, Dec. 7, 1990, abandoned. This application Jul. 16, 1993, Ser. No. 93,240

Int. Cl.[5] **C08G** *63/48, 63/91*

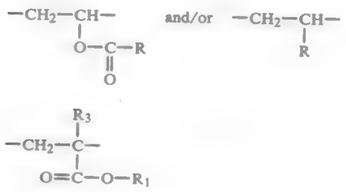
U.S. Cl. 525—57 **2 Claims**

1. A melt processable blend comprising:

a) from greater than 90 parts to about 98 parts of at least one first polymer containing at least about 87 mol percent of units of the structure

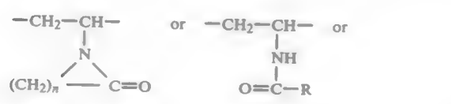


and optionally units of the structure

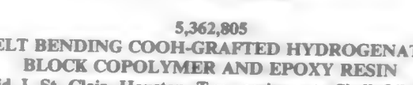


wherein R is H or —(—CH_2)$_m$—CH_3, where m is 0 to 7 and R_1 is an alkyleneoxy group, and R_3 is H or CH_3, wherein the at least one first polymer is washed with water or treated with an organic or inorganic acid to remove essentially all sodium acetate residues

b) from about 2 to less than 10 parts of a second polymer containing from about 5 to about 95 parts of units of the structure



wherein n is 2, 3, 4, or 5, R_4 and R_5 may be the same or different and are H, C_1–C_4 alkyl, or —C_2H_4—(O—C_2H_4)— in a cyclic form, and where R_6 is a urea or cyclic ureido structure of the formula



units from about 94 to about 4 parts of units of the structure



wherein R_2 is C_1–C_4 alkyl; and from about 1 to about 10 parts of a copolymerizable unsaturated acid, anhydride or glycidyl-containing ester.

5,362,804

CORE-SHELL POLYMER AND UNSATURATED POLYESTER RESIN COMPOSITION CONTAINING THE SAME AS LOW SHRINKING ADDITIVE

Junji Oshima, Toyonaka; Susumu Okatani, Takatsuki; Koichi Akiyama, Kamakura, and Masato Sakurai, Tokyo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 24, 1993, Ser. No. 21,945

Claims priority, application Japan, Feb. 25, 1992, 4-037868; Nov. 6, 1992, 4-297456

Int. Cl.[5] **C08L** *51/00*

U.S. Cl. 525—64 **7 Claims**

1. An unsaturated polyester resin composition for the production of a cured molded article which comprises:

an unsaturated polyester resin; and

a core-shell polymer as a low shrinking agent which comprises:

(a) a cross-linked core layer polymerized from a first vinyl monomer comprising an aromatic vinyl monomer in an amount of not less than 50% by weight, the core layer being contained in the core-shell polymer in an amount of 50–90% by weight; and

(b) a shell layer polymerized from a vinyl monomer comprising methyl methacrylate in an amount of 80–95% by weight, 20–5% by weight of at least one vinyl monomer selected from the group consisting of styrene, glycidyl methacrylate, methacrylic acid, hydroxyethyl methacrylate and vinyl acetate, 0–2% by weight of a cross-linking monomer and 0–2% by weight of a graft-linking monomer;

wherein the core-shell polymer has a particle size of 100–800 nm and a refractive index in the range of 1.52–1.58 and within ±0.02 from the refractive index of the cured material of the unsaturated polyester resin composition.

5,362,805

MELT BENDING COOH-GRAFTED HYDROGENATED BLOCK COPOLYMER AND EPOXY RESIN

David J. St. Clair, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 448,189, Dec. 8, 1989. This application Mar. 31, 1994, Ser. No. 220,805

Int. Cl.[5] **C08L** *33/14, 63/02, 63/04*

U.S. Cl. 525—65 **6 Claims**

1. A process for preparing a coating composition comprising:

a) melt blending

i) from about 0.5 to about 80 parts by weight of rubber particles having a number average particle diameter of less than 2 microns of a modified hydrogenated block copolymer comprising at least one polymeric block comprising predominantly monoalkenyl aromatic hydrocarbon monomer units and at least one polymer

block comprising, before hydrogenation, predominantly conjugated diolefin monomer units wherein the modified hydrogenated block copolymer contains from about 0.1% weight to about 20% weight of functional groups as —COOH, the functional groups being substantially grafted to the blocks comprising predominantly conjugated diolefin monomer units and the functional groups are selected from the group consisting of monocarboxylic acids, dicarboxylic acids, anhydrides, and mixtures thereof, and

ii) 100 parts by weight of an epoxy resin;

b) maintaining the blended composition at a temperature at or above about 150° C. for a time sufficient for an amount of the functional groups of the modified hydrogenated block copolymer to react with epoxy groups of the epoxy resin to form a stable dispersion of the crosslinked modified hydrogenated block copolymer rubber particles in the epoxy resin; and

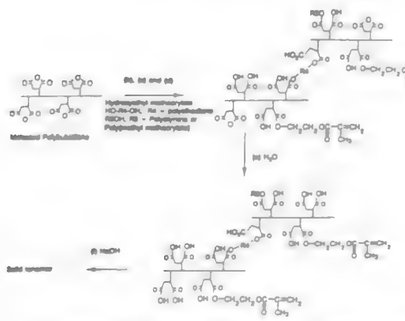
c) recovering a coating composition.

5,362,806

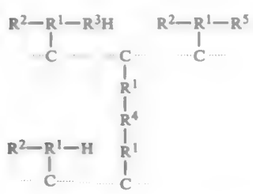
TOUGHENED PHOTOCURABLE POLYMER COMPOSITION FOR PROCESSIBLE FLEXOGRAPHIC PRINTING PLATES

Cynthia L. Ebner, Mt. Airy, and Srinivas K. Mirle, Ellicott City, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jan. 7, 1993, Ser. No. 1,363
Int. Cl.[5] C08L *51/04*
U.S. Cl. 525—74 **12 Claims**



1. A prepolymer comprising segments of the structure



. . . C . . . represents the backbone chain of a base polymer, which is a butadiene polymer or copolymer with at least 60% 1,4 microstructure;

R^1 is a maleic anhydride residue;

R^2 is H, Na, Li, or K;

R^3 is derived from a thermoplastic polymer comprising polystyrene having a number average molecular weight of about 5,000 to 30,000 or poly(methyl methacrylate) having a number average molecular weight of about 5,000 to 30,000;

R^4 is derived from a hydroxy-terminated polybutadiene having a molecular weight of about 800 to 9,000 or a hydroxy-terminated polyisoprene having a number average molecular weight of about 1,000 to 10,000;

R^5 is derived from a monohydroxy-terminated alkyl acrylate or methacrylate or a low molecular weight polycaprolactone acrylate.

5,362,807

ACRYLIC POLYMERS

Kouichi Nogura, Kurokawa; Kouichi Fujie, Kajikawa; Chouji Suga, Shibata; Naokiyo Inomata, Nakajyo, and Mitsuo Ootani, Niigata, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 731,326, Jul. 17, 1991, Pat. No. 5,306,777. This application Dec. 14, 1993, Ser. No. 165,908
Claims priority, application Japan, Jul. 18, 1990, 2-191718; May 30, 1991, 3-155604
Int. Cl.[5] C08L *51/00;* **C08F** *265/04, 265/06, 6/22*
U.S. Cl. 525—82 **5 Claims**

2. An acrylic polymer coagulated composition comprising a blend of a latex of a hard polymer formed by emulsion polymerizing a monomer of 50 to 100% by weight of at least one methacrylate unit and 0 to 50% by weight of another monomer unit copolymerizable therewith and a latex of the polymer with multiphase structure formed by emulsion polymerization which comprises (1) the outer-most phase being a hard phase comprising 40 to 100% by weight of at least one methacrylate unit and 0 to 60% by weight of another monomer unit copolymerizable therewith, and the polymer of the hard phase, if formed in the absence of other phases, having a glass transition temperature of 25° C. or more; and (2) at least one inner phase being a soft phase comprising 40 to 99.9% by weight of at least one acrylate ester unit, 0 to 60% by weight of another monomer copolymerizable therewith, and 0.1% to 5% by weight of polyfunctional monomer unit, and the polymer of the soft phase, if formed in the absence of other phases, having a glass transition temperature of less than 25° C., the polymer comprising the hard polymer and the polymer with multiphase structure having been isolated from the latex by freezing at a rate of 0.7 to 4 cm/hr, melting at a temperature of 40°–100° C. and dehydrating, the average particle size of coagulated acrylic polymer being 50–1,000 μm.

5,362,808

BISMALEIMIDE-CROSSLINKED, FLEXIBLE POLYOLEFIN BLENDS

Sibylle Brosius, Ludwigshafen; Bernd L. Marczinke, and Harald Schwager, both of Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jan. 7, 1993, Ser. No. 21,424
Claims priority, application Germany, Jan. 17, 1992, 4219863
Int. Cl.[5] C08K *3/24;* **C08L** *23/26, 9/02, 33/08, 53/00*
U.S. Cl. 525—88 **14 Claims**

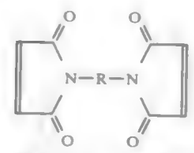
1. A partially crosslinked polyolefin blend, containing

a) a two stage polymerized polymer of from 25 to 97% by weight of a propylene polymer (I), which contains from 0 to 15% by weight of polymerized C_2–C_{10}–alk–1–enes, and of from 3 to 75% by weight of a further propylene polymer (II) which contains a greater amount of polymerized C_2–C_{10}–alk–1—enes than in (I) ranging from 15 to 80% by weight of polymerized C_2–C_{10}–alk–1–enes,

b) a random ethylene copolymer with from 5 to 20% by weight of polymerized C_3–C_{10}–alk–1–enes and having a density of from 0.89 to 0.925 g/cm^3 at room temperature,

c) a rubber material having a Shore A hardness of from 30 to 90 which differs from polymer a) and which is selected from the group consisting of ethylene/vinyl acetate copolymers, nitrile rubbers, styrene/ethylene/butene terpolymers, ethylene/propylene rubbers, ethylene/propylene/diene rubbers and acrylate rubber, and

d) a bismaleimido compound of the following formula (I)



(I)

where R is C_1–C_{10}–alkyl which may be interrupted by one or more oxygen atoms,

C_5–c_7–cycloalkyl or C_6–C_{15}–aryl, each of which in turn may be substituted by one or more C_1–C_{10}–alkyl or C_1–C_6–alkoxy or C_1–C_4–dialkylamino groups, or a radical of the following formula (II)

$$R^1—Z—R^2 \quad \text{(II)}$$

where independently are 0–alkyl, C_5–C_7–cycloalkyl or C_6–C_{10}–aryl, each of which in turn may be substituted by one or more C_1–C_{10}–alkyl or C_1–C_6–alkoxy or C_1–C_4–dialkylamino groups and Z is C_1–C_{10}–alkyl, C_1–C_4–dialkylamino, oxygen or sulfonyl and optionally as a further component e) a random propylene copolymer with from 1 to 10% by weight of polymerized —C_{10}—alk—1—enes.

5,362,809

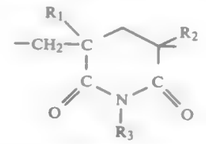
POLYMER BLENDS OF POLYGLUTARIMIDES

Michael P. Halliden-Abberton, Maple Glen; Newman M. Bortnick, Oreland, and William J. Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company

Filed Oct. 22, 1992, Ser. No. 964,740
Int. Cl.[5] C08L *33/06*
U.S. Cl. 525—132 **3 Claims**

1. A composition comprising a blend of

(a) a thermoplastic polyglutarimide copolymer containing units of the formula



where R_1, R_2, and R_3 independently represent hydrogen or C_1 to C_{20} unsubstituted or substituted alkyl, aryl, or mixtures thereof, and

(b) liquid crystalline copolyesters containing monomeric units selected from aromatic diols, aromatic diacids, aromatic hydroxy acids, aromatic amino phenoxy groups, and mixtures thereof; wherein the liquid crystalline copolyester comprises a copolyester of 6-hydroxy-2-naphthoic acid, terephthalic acid and p-hydroxyacetanilide, wherein the polyglutarimide comprises from about 70 to about 99% of the blend, and wherein the tensile strength and heat distortion temperature of the blend exceed the tensile strength and heat distortion temperature of the polyglutarimide absent the liquid crystalline copolyester.

5,362,810

THERMOPLASTIC MOLDING COMPOSITIONS OF AROMATIC POLYETHER SULFONE AND HYDROGENATED NITRILE RUBBER

Herbert Eichenauer; Hartmuth Buding; Thomas Eckel, all of Dormagen, and Karl-Heinz Ott, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen

Continuation of Ser. No. 673,253, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 402,686, Sep. 5, 1989, abandoned. This application Oct. 29, 1993, Ser. No. 145,294
Claims priority, application Germany, Sep. 15, 1988, 3831373
Int. Cl.[5] C08L *81/06, 9/02*
U.S. Cl. 525—150 **10 Claims**

1. A thermoplastic molding composition consisting of:

A) 70 to 99.5% by weight of a thermoplastic aromatic polyether sulfone or mixture of polyether sulfones; and

B) 30 to 0.5% by weight of a hydrogenated nitrile rubber, which hydrogenated nitrile rubber is the product of at least 80% hydrogenation of the carbon to carbon double bonds of a statistical butadiene/acrylonitrile polymer and;

C. optionally one or more additives selected from lubricants, mold release agents, nucleating agents, stabilizers, fillers, reinforcing agents, flameproofing agents, and dyes.

5,362,811

PROCESS FOR PREPARING CYCLOOLEFIN RANDOM COPOLYMER PELLETS

Tomoko Sueyoshi; Kenji Wakatsuru, and Masayuki Okabe, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jan. 28, 1994, Ser. No. 187,910
Claims priority, application Japan, Jan. 29, 1993, 5-014199
Int. Cl.[5] C08J *3/12;* **C08L** *23/08, 45/00*
U.S. Cl. 525—198 **3 Claims**

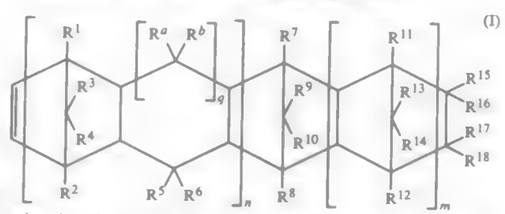
1. A process for preparing cycloolefin random copolymer pellets, comprising the steps of:

adding an organic polar solvent to a copolymer solution containing a cycloolefin random copolymer [A] obtained by copolymerizing ethylene and at least one cycloolefin represented by the following formula (I) or (II) in a hydrocarbon solvent in the presence of a catalyst, in an amount exceeding such an amount that the copolymer solution exhibits a cloud point, to give a liquid mixture;

separating the liquid mixture into a lower phase containing the cycloolefin random copolymer [A] in a high concentration and an upper phase containing the copolymer [A] in a low concentration;

feeding the lower phase seperated to an extruder where the solvents are removed and the cycloolefin random copolymer is melted during extrusion processing; and

pelletizing the cycloolefin random copolymer:



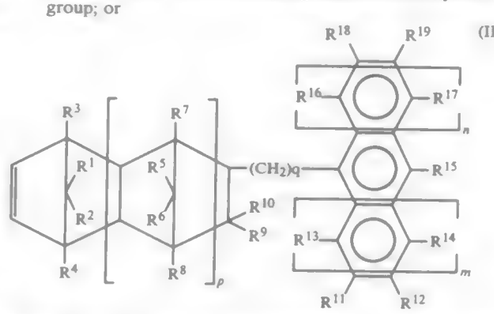
(I)

wherein n is 0 or 1; m is 0 or a positive integer; q is 0 or 1;

each of R^1–R^{18}, R^a and R^b is independently a hydrogen atom, a halogen atom or a hydrocarbon group;

R^{15}–R^{18} may be linked with one another to form a monocyclic or polycyclic group which may have a double bond; and

R^{15} and R^{16}, or R^{17} and R^{18} may together form an alkylidene group; or



(II)

wherein each of p and q is independently 0 or an integer of or more; each of m and n is independently 0, 1 or 2;

each of R^1–R^{19} is independently a hydrogen atom, a halogen

atom, a hydrocarbon group or an alkoxy group; the carbon atom to which R^9 and R^{10} are linked may be bonded directly or by way of an alkylene group of 1–3 carbon atoms to the carbon atom to which R^{13} is linked or the carbon atom to which R^{11} is linked; and

R^{15} and R^{12}, or R^{15} and R^{19} may be linked together to form a monocyclic or polycyclic aromatic ring when each of n and m is 0.

5,362,812

REACTIVE POLYMERIC DYES

Gary L. Holmes, Vadnais Heights; Terrance P. Smith, Woodbury; Mahfuza B. Ali, Mendota Heights, and David W. Macomber, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 23, 1993, Ser. No. 52,337

Int. Cl.[5] C08F *230/04*

U.S. Cl. 525—274 **37 Claims**

1. A reactive copolymeric dye comprising repeating units of azlactone and a free-radically polymerizable dye.

5,362,813

STAR POLYMERS MADE FROM MACROMONOMERS MADE BY COBALT CHAIN TRANSFER PROCESS

Joseph A. Antonelli, Riverton, N.J., and Christopher Scopazzi, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 998,350, Dec. 30, 1992, Pat. No. 5,310,807. This application Dec. 22, 1993, Ser. No. 172,293

Int. Cl.[5] C08F *4/80, 265/04, 265/06, 265/10*

U.S. Cl. 525—286 **9 Claims**

1. A process for forming a polymer dispersion comprising a star polymer dispersed in an organic liquid; wherein the star polymer consists essentially of a corsslinked core having attached thereto at least three arms each arm consisting of a macromonomer; wherein the process comprises the following steps:

(1) forming macromonomers in an organic liquid by free radical polymerization of monomers having at least two ethylenically unaturated double bonds in the presence of a free radical polymerization initiator and a catalytic chain transfer agent containing Co^{+2} to provide the macromonomers each with a terminal ethylenically unsaturated group and having a weight average molecular weight of about 1,000–40,000;

(2) polymerizing by free radical polymerization the macromonomers in the organic liquid with monomers having at least two ethylenically unsaturated double bonds in the presence of a polymerization initiator where the monomers react with each other to form the crosslinked core of the star polymer and the core has at least 3 free radical polymerizable sites that are polymerized with the macromonomer to form the arms of the star polymer which is dispersed in the organic liquid;

wherein the star polymer consists essentially of about 10–90% by weight of the core and correspondingly about 90–10% by weight of the arms.

9. A star polymer consisting essentially of a crosslinked core having attached thereto at least three arms each consisting of a macromonomer; where

(1) the core consists essentially of monomers polymerized by free radical polymerization having at least two ethylenically unsaturated double bonds which are crosslinked with each other and the core has at least 3 free radical polymerizable sites each of which are reacted with the macromonomer; and

(2) the macromonomer that forms the arms of the star polymer consists of ethylenically unsaturated monomers that have been polymerized by free radical polymerization in the presence of a free radical polymerization initiator and a catalytic chain transfer agent containing Co^{+2} to provide the macromonomer having a weight average molecular weight of about 1,000-40,000 with a terminal ethylenically unsaturated group that is polymerized with the free radical polymerizable site on the core to form the star polymer;

wherein the star polymer consists essentially of about 10–90% by weight of the core and correspondingly about 90–10% by weight of the arms.

5,362,814

GRAFT COPOLYMER, PROCESS FOR PRODUCTION THEREOF AND RESIN COMPOSITION CONTAINING SAME

Shuji Machida, and Noriyuki Tani, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,781

Claims priority, application Japan, Mar. 3, 1992, 4-045626; May 20, 1992, 4-151247

Int. Cl.[5] C08F *255/02, 279/02, 259/02, 259/08, 4/76, 4/642*

U.S. Cl. 525—324 **17 Claims**

1. A graft copolymer formed by grafting a styrene monomer onto a high polymer having polymerizable carbon—carbon double bonds in the side chains thereof to copolymerize therewith forming grafted syndiotactic polystyrene chains, wherein said high polymer is comprised of olefinic monomer units derived from monomers selected from the group consisting of ethylene, α-olefins, halogen-substituted α-olefins, cyclic olefins and mixtures thereof and diolefinic monomer units and the carbon—carbon double bonds in the side chain of said high polymer are derived from said diolefinic monomer unit, wherein the polystyrene side chains of said graft copolymer have a high degree of syndiotactic configuration, the content of said styrene monomer units is 0.005–99.9% by weight; the reduced viscosity of said graft copolymer is 0.01–30 dl/g as measured at a concentration of 0.05 g/dl in 1,2,4-trichlorobenzene at 135° C. or said graft copolymer has a melt index of 0.001–500 g/10 min as measured at 300° C. under a load of 2.16 kg.

5,362,815

PROCESS FOR MAKING POLYVINYLPYRROLIDONE POLYMER HAVING PREDETERMINED CHARACTERISTICS

Jenn S. Shih, Paramus; Jui-Chang Chuang, Wayne, and Robert B. Login, Oakland, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Apr. 26, 1993, Ser. No. 54,576

Int. Cl.[5] C08F *126/10, 2/04*

U.S. Cl. 525—326.9 **6 Claims**

1. A process for making a solution of PVP K-90 polymer having a weight average molecular weight, Mw, of about 630,000 to 750,000 and a molecular weight distribution, Mw/Mn, where Mn is the number average molecular weight of the polymer, of 5 or less, which comprises free radical polymerizing about 5–30% by weight vinylpyrrolidone at about 40°–100° C. in an aqueous-alcohol solvent selected from the group consisting of about (a) 5% isopropanol-95% water, (b) 10% ethanol-90% water and (c) 20% methanol-80% water, wherein said PVP polymer has a residual vinylpyrrolidone level of <0.1% therein.

5,362,816

HIGH COHESIVE STRENGTH PRESSURE-SENSITIVE ADHESIVES INCORPORATING ACETOACETATE

Barry S. Snyder, Dresher, and Daniel A. Bors, Warminster, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 4, 1992, Ser. No. 894,124

Int. Cl.[5] C08F *8/32;* **C09J** *7/02*

U.S. Cl. 525—329.9 **4 Claims**

1. A pressure-sensitive adhesive comprising a polymer prepared by free radical emulsion polymerization having a Tg below about 0° C. and having pendent acetoacetate functional groups wherein the pendent acetoacetate groups have been reacted with ammonia or a primary amine to form an enamine-containing composition at a pH greater than 9.

5,362,817

POLYISOBUTYLENE BASED BLOCK COPOLYMERS

Akhtar Osman, Sarnia, Canada, assignor to Polysar Rubber Corporation, Sarnia, Canada

Division of Ser. No. 686,553, Apr. 17, 1991, Pat. No. 5,260,383. This application Aug. 18, 1993, Ser. No. 108,862

Int. Cl.[5] C08F *8/22*

U.S. Cl. 525—334.1 **12 Claims**

1. A polyisobutylene having from 1 to 3 terminal allylic halogens wherein said halogen is selected from the group consisting of chlorine and bromine and wherein the terminal allylic halogens are the only halogen groups contained in the polyisobutylene.

5,362,818

MODIFIED CYCLOPENTADIENE RESIN

Albert Bender; Lothar Bothe, both of Mainz; Manfred Finke, Kelkheim, and Gerhard Werner, Glashuetten, all of Germany, assignors to Hoechst Aktiengesellschaft AG, Germany

Filed Apr. 5, 1993, Ser. No. 42,542

Claims priority, application Germany, Apr. 8, 1992, 4211721

Int. Cl.[5] C08L *61/10;* **C09D** *11/08, 11/10*

U.S. Cl. 525—391 **3 Claims**

1. A modified cyclopentadiene resin obtained by reacting

a. 20 to 80% by weight of cyclopentadiene compounds selected from the group consisting of cyclopentadiene, dicylcopentadiene, trimers and tetramers of cyclopentadiene, dimers of cyclopentadiene and isoprene and dimers of cyclopentadiene and piperylene.

b. 1 to 40% by weight of natural resin acids and

b. 31 to 70% by weight of phenol resins.

3. A printing ink containing as a binder resin the cyclopentadiene resin of claim 1.

5,362,819

POLYESTER-FLEXIBLE POLYMER BLOCK COPOLYMERS AND MIXTURES THEREOF

Douglas S. McBain, Norton, Ohio; Andrew L. Ratermann, Indianapolis, Ind.; I. Glen Hargis, Tallmadge, Ohio; Earl G. Melby, Uniontown, Ohio, and Kevin P. LaJudice, Akron, Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Jan. 30, 1992, Ser. No. 828,080

Int. Cl.[5] C08G *81/00, 63/91*

U.S. Cl. 525—404 **20 Claims**

1. A composition, comprising, a curable block copolymer having the formula AB, or ABA, or a mixture thereof, or a mixture of ABA and $A(BA)_n$ where n is 2 to 5, wherein the amount of said ABA in said mixture of said ABA and said $A(BA)_n$ is at least 50 percent by weight, wherein said A block is an unsaturated polyester having a molecular weight of from about 100 to 5,000, wherein said unsaturated polyester A block is polymerized from monomers consisting essentially of a saturated cyclic ether having 2 or 3 carbon atoms in the ether ring and a total and of 2 to 18 carbon atoms and from an unsaturated anhydride and optionally a saturated anhydride having a total of from 4 to 20 carbon atoms, said B block is a flexible polymer having a Tg of 0° C. or less, and wherein said B block polymer is a polyether, or a saturated polyester.

5,362,820

CARBOXYL GROUP-TERMINATED POLYESTERAMIDES

Luc Moens, Sint Genesius-Rode; Daniel Maetens, and Jean-Marie Loutz, both of Bruxelles, all of , assignors to U C B S.A., Drogenbos,

Division of Ser. No. 807,607, Dec. 16, 1991, Pat. No. 5,306,786. This application Mar. 4, 1994, Ser. No. 205,745

Claims priority, application United Kingdom, Dec. 21, 1990, 9027793.0

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—438 **14 Claims**

1. A powdered thermosetting composition which comprises

(A) a carboxyl group-terminated polyesteramide which comprises the reaction product of at least one diamine and a carboxyl group-terminated polyester, said carboxyl group-terminated polyester being selected from the group consisting of

(a) a polyester prepared from at least one aliphatic and/or cycloaliphatic dicarboxylic acid and at least one polyol;

(b) a polyester which is the reaction product of

(i) at least one dicarboxylic acid selected from aliphatic dicarboxylic acids, cycloaliphatic dicarboxylic acids and isophthalic acid, with

(ii) a hydroxyl group-terminated polyester prepared from at least one aromatic and/or aliphatic and/or cycloaliphatic polycarboxylic acid and at least one polyol; and

(c) a polyester which is the reaction product of

(i) at least one aliphatic and/or cycloaliphatic dicarboxylic acid with

(ii) a polyester containing both terminal hydroxyl and terminal carboxyl group, prepared by esterification of

(iii) isophthalic acid with

(iv) a hydroxyl group-terminated polyester prepared from at least one aromatic and/or aliphatic and/or cycloaliphatic polycarboxylic acid and at least one polyol. and

(B) a polyepoxy compound.

5,362,821

EPOXY RESIN WITH AMINOFUNCTIONAL MONOPHENYL POLYSILOXANE

Gary T. Decker, and Gerald A. Gornowicz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 811,276, Dec. 20, 1991, Pat. No. 5,262,507, which is a division of Ser. No. 580,741, Sep. 11, 1990, Pat. No. 5,135,993. This application Jul. 16, 1993, Ser. No. 92,105

Int. Cl.[5] C08L *63/02, 63/04*

U.S. Cl. 525—476 **1 Claim**

1. A composition comprising:

blending an aminofunctional silicone resin with at least one curable epoxy resin, at least one hardener for the epoxy resin, and at least one aromatic oligomer, said aminofunctional silicone resin comprising the units

(i) $PhSiO_{3/2}$,

(ii) R_2SiO and,

(iii) aminofunctional siloxy units selected from the group consisting of

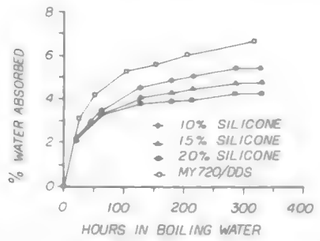
a. $H_2NR^iSiO_{3/2}$,

b. $R^{ii}HNR^iSiO_{3/2}$,

c. $(R^{ii}HNR^{ii})_{3-y}(R^v)_ySiO_{\frac{1}{2}}$,

d. $(H_2NR^{ii})_{3-x}(R^v)_xSiO_{\frac{1}{2}}$ and,

e. mixtures of a, b, c, and d, wherein Ph is the phenyl radical; each R is independently selected from phenyl and alkyl groups of 1 to 3 carbon atoms with the provisio that when R in (ii) is an alkyl radical in each case, there can be no more than 10 weight percent of (ii) in the silicone resin and with the further provisio that



when one R in (ii) is an alkyl radical and one R in (ii) is a phenyl radical on the same silicon atom, there can be no more than 15 weight percent of (ii) present in the silicone resin; R^i is a divalent hydrocarbon radical selected from alkylene, arylene, alkarylene, and aralkylene having 1 to 10 carbon atoms, or $—R^{ii}NHR^{iii}—$, wherein R^{ii} and R^{iii} are each independently selected from alkylene, arylene, alkarylene or aralkylene of 1 to 10 carbon atoms; each of x and y have a value of 0, 1, or 2; R^{iv} is selected from methyl, ethyl, propyl or phenyl; R^v is selected from methyl and phenyl, and the aminofunctional silicone resin has an —NH— equivalent in the range of 350 to 1000.

5,362,822

MESOGENIC ADDUCTS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 1,368, Jan. 7, 1993, abandoned, which is a continuation-in-part of Ser. No. 562,772, Aug. 3, 1990, Pat. No. 5,189,117. This application Jan. 3, 1994, Ser. No. 176,619

Int. Cl.[5] C08G *59/16, 59/14;* **C07C** *43/196, 43/23*

U.S. Cl. 525—523 **4 Claims**

1. An adduct prepared by reacting

(A) a compound containing at least one epoxy group per molecule, with

(B) a compound containing at least one epoxide reactive group per molecule selected from the group consisting of phenolic, thiol, secondary amine and carboxyl;

wherein

(i) when compound (A) is a polyepoxide, compound (B) contains a single epoxide reactive group per molecule;

(ii) when compound (A) is a monoepoxide it is a monoglycidyl ether and compound (B) contains at least two epoxide reactive groups per molecule;

(iii) at least one of components (A) and (B) contains a rodlike mesogenic moiety; and

(iv) components (A) and (B) are employed in amounts which provide an equivalent ratio of epoxide groups to epoxide-reactive groups of from about 1:0.80 to about 1:1.25;

with the proviso that

(i) said adduct is not an adduct of the diglycidyl ether of 3,3',5,5'-tetramethylbiphenyl and phenol;

(ii) when component (B) contains a carboxyl group as the single epoxide reactive group per molecule and the other portion of the molecule is an aliphatic group, it is a saturated aliphatic group; and

(iii) component (B) is not a compound containing a single epoxide-reactive group represented by the formula $M^1—Q$ wherein M^1 is an aliphatic or cycloaliphatic group and Q is —OH.

5,362,823

CATALYST SYSTEM CONTAINING AN AUTOACCELERATION INHIBITOR

Frederick J. Karol, Belle Meade; Kao Sun-Chueh, Piscataway, and James S. Drage, Edison, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 349,398, May 8, 1989, Pat. No. 4,942,147. This application Mar. 6, 1990, Ser. No. 488,899

Int. Cl.[5] C08F *4/60;* **C07C** *45/00, 5/00, 2/02*

U.S. Cl. 526—114 **6 Claims**

1. In a process catalyzed by a transition metal catalyst system, the improvement comprising carrying out the process in the presence of a transition metal catalyst system comprising a transition metal catalyst and an autoacceleration inhibitor wherein the catalyst is particulate and the inhibitor resides in substantially all of the transition metal catalyst particles, said autoacceleration inhibitor (i) at about the temperature at which the catalyst system autoaccelerates, decomposes into a poison for the catalyst system; (ii) is present in the catalyst system in an amount sufficient to provide the quantity of poison required to inhibit the catalyst system at the autoacceleration temperature; and (iii) is essentially inert at the normal operating temperature of the catalyst system or will cause substantially less inhibition of the catalyst system in the normal operating temperature range than in the autoacceleration temperature range.

5,362,824

OLEFIN POLYMERIZATION CATALYSTS

Allan B. Furtek, Warren, and Ronald S. Shinomoto, Edison, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 808,257, Dec. 13, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 991,486

Int. Cl.[5] C08F *4/64*

U.S. Cl. 526—114 **10 Claims**

1. An olefin polymerization process comprising polymerizing at least one polymerizable lower olefin, under polymerization conditions, with a polymerization catalyst comprising at least one metallocene and at least one aluminoxane dispersed on the surface of a resinous substrate comprising a cross-linked copolymer of about 30% divinyl benzene, about 55% styrene, and about 15% of acetoxy or hydroxy styrene.

5,362,825

CATALYSTS FOR POLYMERIZING OLEFINS AND METHODS

Gil R. Hawley, Dewey; Max P. McDaniel; Jesse R. Harris, both of Bartlesville, and David R. Battiste, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 13, 1992, Ser. No. 912,351

Int. Cl.[5] C08F *4/654, 4/44;* **B01J** *21/16*

U.S. Cl. 526—125 **27 Claims**

17. A method of polymerizing olefins comprising contacting at least one olefin under polymerization conditions with a catalyst produced by:

(a) contacting a pillared clay with the soluble complex produced from the combination of a mixture of a metal dihalide with at least one transition metal compound in the presence of a liquid diluent to produce a solid, said pillared clay being present in an amount in the range of from about 0.1% to about 30% by weight based on the weight of said soluble complex; and

(b) contacting said solid produced in step (a) with an organoaluminum halide in an amount in the range of from about 0.1 mole to about 10 moles per mole of transition metal compound in said solid to produce said catalyst.

5,362,826

METHOD OF PREPARING MACRMONOMER COMPOSITIONS

Charles T. Berge, Wilmington, Del.; Michael J. Darmon, Aston, Pa., and Joseph A. Antonelli, Riverton, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 876,764, May 1, 1992, Pat. No. 5,264,530. This application Aug. 9, 1993, Ser. No. 104,958

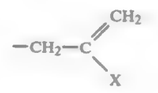
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] C08F *2/42*

U.S. Cl. 526—194 **23 Claims**

1. A method of preparing a macromonomer composition by free radical polymerization of unsaturated monomers wherein said macromonomer composition has a degree of polymerization ranging from 10 to 800, said method comprising the reaction of a mixture comprising:

(a) for chain transfer, an oligomer, or a molecular weight distribution of oligomers, having the following end group:



where X is $—CONR_2$, —COOR, OR^1, —OCOR, $—OCOOR^1$, $—NRCOOR^1$, halo, cyano, or a substituted or unsubstituted phenyl or aryl, wherein each R is independently selected from the group consisting of hydrogen, silyl, or a substituted or unsubstituted alkyl, alkyl ether, phenyl, benzyl, and aryl, wherein substituted means with a substituent selected from the group consisting of epoxy, hydroxy, isocyanato, cyano, amino, silyl, acid, halo, or acyl; and wherein R^1 is the same as R except not H; and wherein each alkyl is independently selected from the group consisting of branched or unbranched hydrocarbons having 1 to 12 carbon atoms or cyclical hydrocarbons having 4 to 12, preferably 5 to 6 carbon atoms; and halo or halogen is bromo, iodo, chloro or fluoro; except excluding the use of a pure dimer when X is substituted or unsubstituted phenyl or aryl; and

(b) a mixture of ethylenically unsatured monomers 80–100% by weight of which are monomers selected from the group consisting of methacrylates of the formula $CH_3=C(CH_3)CO_2J$ wherein J is H, C_1–C_{12} alkyl, C_2–C_{12} alkenyl, glycidyl, C_2–C_{12} hydroxyalkyl, $C_xH_{(2x+1-y)}F_y$ where x is 1 to 16 and y is 0 to 2x+1; $R_6R_7N(CH_2)_z$ where R_6 and R_7 are independently C_1 to C_{12} alkyl and z is 1 to 10, or $R_8R_9R_{10}Si(CH_2)z$ where R_8, R_9 and R_{10} are independently C_1 to C_{12} alkyl or C_1 to C_{12} alkoxy and z is 1 to 10, and mixtures thereof;

such that as a result of reacting the aforesaid mixture at least 80 mol percent of the macromonomer composition has said end group.

5,362,827

SOLUTION PROCESS FOR PREPARATION HYDROPHOBICALLY FUNCTIONALIZED CATIONIC POLYMERS (C-2691)

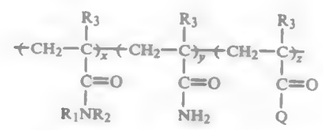
Jan Bock, Bridgewater; Paul L. Valint, Asbury, both of N.J.; Thomas J. Pacansky, Houston, and Henry W. H. Yang, Kingwood, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 314,674, Feb. 22, 1989, abandoned, which is a continuation of Ser. No. 53,970, May 26, 1987, abandoned, which is a continuation of Ser. No. 904,908, Sep. 8, 1986, abandoned. This application Jul. 27, 1992, Ser. No. 919,805

Int. Cl.[5] C08F *4/04, 2/10*

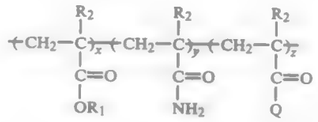
U.S. Cl. 526—219.2 **11 Claims**

1. A free radical polymerization process for the formation of a polymer of acrylamide, a hydrophobic monomer and a cationic monomer wherein said polymer is selected from the group consisting of:



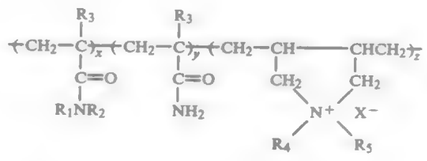
(a)

wherein R_1 is a C_4 to C_{30} linear or branched alkyl, alkylcycloalkyl or alkylaryl group; R_2 is a same or different group as R_1, or hydrogen or C_1 to C_3 linear or branched alkyl group; R_3 is hydrogen or methyl; Q is a salt of an ammonium cation, such as $NH(CH_2)_nN^+(R_{4,5,6})_3X^-$ or $O(CH_2)_nN^+(R_{4,5,6})_3X^-$ wherein n=1 to 6 and R_4, R_5 and R_6 can be hydrogen, a C_1 to C_6 linear or branched alkyl group, or C_5 to C_8 cycloalkyl, aromatic, or alkylaromatic group; X^- is an anion, such as chloride, bromide or methyl or hydrogen sulfate; and wherein x equals 0.1 to 20 mole percent; y is 1 to 94.9; and z is 5 to 99.9;



(b)

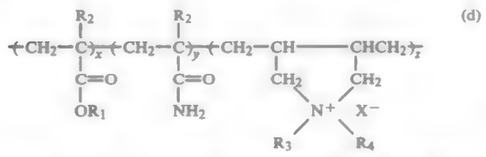
wherein R_1 is a C_4 to C_{30} linear or branched alkyl, alkylcycloalkyl or alkylaryl group; R_2 is hydrogen or methyl; Q is a salt of an ammonium cation, such as $NH(CH_2)_nN^+(R_{3,4,5})_3X^-$ or $O(CH_2)_nN^+(R_{3,4,5})_3X^-$ wherein n=1 to 6 and R_3, R_4 and R_5 can be hydrogen, a C_1 to C_6 linear or branched alkyl group, or C_5 to C_8 cycloalkyl, aromatic, or alkylaromatic group; X^- is an anion, such as chloride, bromide or methyl or hydrogen sulfate; and wherein x equals 0.1 to 20 mole percent; y is 1 to 94.9; and z is 5 to 99.9;



(c)

wherein R_1 is a C_4 to C_{30} linear or branched alkyl, alkylcycloalkyl or alkylaryl group; R_2 is the same or different group as R_1, or hydrogen or C_1 to C_3 linear or branched alkyl group; R_3 is hydrogen or methyl; R_4 and R_5 can be hydrogen, a C_1 to C_6 linear or branched alkyl group, or a C_5 to C_8 cycloalkyl, aromatic or alkylaromatic group; X^- is an anion, such as

chloride, bromide or methyl sulfate; and wherein x equals 0.1 to 20 mole percent; y is 1 to 94.9; and z is 5 to 99.9;



(d)

wherein R_1 is a C_4 to C_{30} linear or branched alkyl, alkylcycloalkyl or alkylaryl group; R_2 is hydrogen or methyl; R_3 and R_4 can be hydrogen, a C_1 to C_6 linear or branched alkyl group, or a C_5 to C_8 cycloalkyl, aromatic or alkylaromatic group; and X^- is an anion, such as chloride, bromide or methyl sulfate; and wherein x equals 0.1 to 20 mole percent; y is 1 to 94.9; and z is 5 to 99.9, which consists essentially of:

a. forming a solution in deoxygenated water of a nonionic acrylamide monomer, hydrophobic monomer and a cationic monomer and including a minor amount by volume of oxygenated solvent containing 1 to 4 carbon atoms;

b. adding free radical initiator to said solution to form a reaction mixture;

c. copolymerizing said reaction mixture at a temperature of about 10° C. to 90° C. for a sufficient period of time to form said terpolymer substantially completely dissolved within said water and oxygenated solvent.

5,362,828

PROCESS FOR THE PRODUCTION OF VINYL CHLORIDE POLYMERS USING A COMBINATION OF MONOMER-SOLUBLE POLYMERIZATION INITIATORS

Makoto Fujiwara, and Tadashi Amano, both of Kamisu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1993, Ser. No. 75,249

Claims priority, application Japan, Jun. 11, 1992, 4-177465

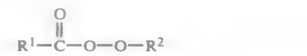
Int. Cl.[5] C08F *4/38*

U.S. Cl. 526—228 **20 Claims**

1. In a manufacturing method of manufacturing vinyl chloride-type polymers by suspension polymerization of vinyl chloride monomers, or a mixture vinyl chloride monomers and monomers capable of forming copolymers with vinyl chloride, in an aqueous media in the presence of a monomer-soluble polymerization initiator, the improvement wherein polymerization is conducted in the presence of the following combination of monomer-soluble polymerization initiators:

(A) a polymerization initiator compound having a half-life of 10 hours at 0.1 mol/l concentration in benzene solution and at a temperature of 40°–50° C., and wherein said polymerization initiator compound is

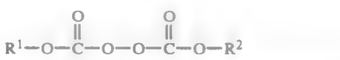
a compound of formula (1)



(1)

wherein R^1 and R^2 are each independently a n-alkyl group, sec-alkyl group, or tert-alkyl group, in each case having 1–20 carbon atoms; or

a compound of formula (2)



(2)

wherein R^1 and R^2 are each independently a n-alkyl, sec-alkyl group, or tert-alkyl group, in each case having 1–20 carbon atoms; and

(B) 1-cyclohexyl-1-methylethylperoxy pivalate; wherein the weight ratio of (A) to (B) is 8:2–2:8 and the total amount of (A) and (B) is 0.03–0.3 wt. % based on the total weight of monomers.

5,362,829

CEMENT DISPERSION AGENTS

Mitsuo Kinoshita; Yoshimasa Miura, and Takeshi Arashima, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Japan

Filed Sep. 17, 1993, Ser. No. 122,274

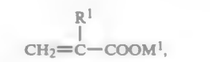
Claims priority, application Japan, Sep. 30, 1992, 4-286763; Aug. 30, 1993, 5-238741

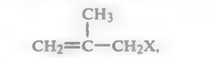
Int. Cl.[5] C08F *230/04, 228/02;* C08K *3/00*

U.S. Cl. 526—240 **2 Claims**

1. A cement dispersion agent comprising water-soluble vinyl copolymer obtained by aqueous solution radical copolymerization of a first monomer given by Formula (1), a second monomer given by Formula (Z), a third monomer given by Formula (3), a fourth monomer given by Formula (4) and a fifth monomer given by Formula (5) at copolymerization ratio of 45–65-/8–23/3–25/5–25/0.1–15 in molar % as converted to monomers;

Formulas (1), (2), (3), (4) and (5) being given respectively by



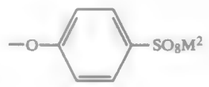




and



where R^1, R^2, R^3, R^4 and R^6 are each H or CH_3; R^5 and R^7 are each an alkyl group with 1–3 carbon atoms; X is $—SO_3M^2$ or an organic group shown by



M^1 is an alkali metal, an alkali earth metal, ammonium or organic amine; m is an integer 1–30; n is an integer 5–25; and M^2 is an alkali metal, an alkali earth metal, ammonium or organic amine.

5,362,830

METHOD OF MAKING CROSSLINKED PVP

Jui-Chang Chuang, Wayne; Jenn S. Shih, Paramus, and Robert B. Login, Oakland, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 966,489, Oct. 26, 1992, Pat. No. 5,283,305. This application Sep. 15, 1993, Ser. No. 122,834

Int. Cl.[5] C08F *226/10, 224/00;* C08K *5/05;* C08L *39/06*

U.S. Cl. 526—263 **7 Claims**

1. A water-soluble crosslinkable copolymer consisting essentially of (i) 80–99% by weight of vinylpyrrolidone and (ii) 1–20% by weight of an epoxide-containing polymerizable monomer.

5,362,831

POLYMER-BOUND PACLITAXEL DERIVATIVES

Nicola Mongelli; Francesco Angelucci, both of Milan; Enrico Pesenti, Cologno Monzese; Antonino Suarato, Milan, and Giovanni Biasoli, Gavirate, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

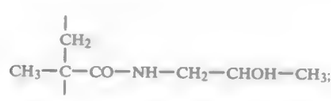
Filed Jun. 16, 1993, Ser. No. 77,065

Claims priority, application United Kingdom, Jun. 19, 1992, 9213077.2

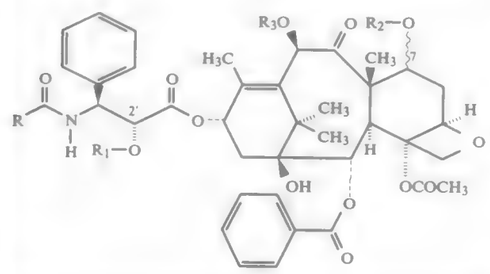
Int. Cl.[5] A61K *31/765;* C80F *222/38*

U.S. Cl. 526—304 **3 Claims**

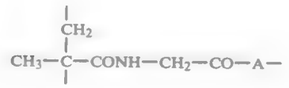
1. A polymer conjugate consisting essentially of: from 90 to 99.9 mol % of units represented by the formula



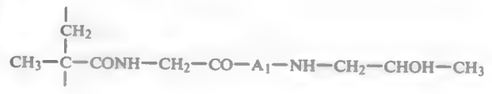
from 0.1 to 5 mol % of units represented by the formula



wherein one of R_1 and R_2 is a copolymer residue of the formula



and the other one is hydrogen atom; from 0 to 9.9 mol % of units represented by the formula



wherein R is a phenyl or t-butoxy group, the same or an acetyl group, A and A_1 which may be the same or different, represent a chemical single bond, an amino acid residue or peptide spacer selected from β Ala, Gly, Phe-Gly, Phe-Phe-, Leu-Gly, Val-Ala, Phe-Ala, Leu-Phe, Leu-Ala, Phe-Leu-Gly, Phe-Phe-Leu, Leu-Leu-Gly, Phe-Tyr-Ala, Phe-Gly-Phe, Phe-Phe-Gly, Phe-Leu-Gly-Phe, Gly-Phe-Leu-Gly-Phe, Gly-βAla, Phe-Gly-βAla, Phe-Phe-βAla, Leu-Gly-βAla, Val-Ala-βAla, Phe-Ala-βAla, Leu-Phe-βAla, Leu-Gly-βAla, Phe-Leu-Gly-βAla, Phe-Phe-Leu βAla, Leu-Leu-Gly-βAla, Phe-Tyr-Ala-βAla, Phe-Gly-Phe-β, Phe-Phe-Gly βAla, Phe-Leu-Gly-Phe-βAla or Gly-Phe-Leu-Gly-Phe-βAla.

5,362,832

FATTY ALCOHOL ALKOXYLATE

Iain Cook, West Brunswick, Australia, assignor to ICI Australia Operations Proprietary Limited, Melbourne, Australia

PCT No. PCT/AU90/00565, § 371 Date Sep. 3, 1992, § 102(e) Date Sep. 3, 1992, PCT Pub. No. WO91/13849, PCT Pub. Date Sep. 19, 1991

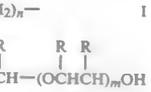
PCT Filed Nov. 23, 1990, Ser. No. 923,958

Claims priority, application Australia, Mar. 9, 1990, PJ9055

Int. Cl.[5] C08F *36/14*

U.S. Cl. 526—333 **13 Claims**

1. A compound of the formula I



I

where R, which may be the same or different, is selected from hydrogen, methyl, ethyl or phenyl, at least one R on each —OCHR—CHR— unit being hydrogen; where m is an integer selected from 1–100; where n is an integer selected from 8 and 9.

12. A chemical composition which is essentially a blend of alkoxylated fatty alcohols, at least 15% by weight of which alcohols are compounds according to claim 1.

5,362,833

PHENOLIC POLYSILOXANE-CONTAINING COATED ARTICLES USEFUL AS TONER FUSING MEMBERS

Jiann H. Chen, Fairport; Tsang J. Chen, and Lawrence P. DeMejo, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 10, 1992, Ser. No. 896,768

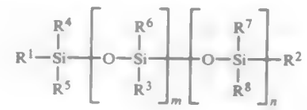
Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—25 **16 Claims**

1. A coated article comprising:

a substrate, and coated thereon a composition comprising a crosslinked product of,

a phenolic polysiloxane of the formula



wherein,

R^1, R^2 and R^3 are independently C_1–C_6 alkyl, phenyl or a HO-Ar-alk-group, provided that said polysiloxane has at least two HO-Ar-alk-groups;

R^4–R^8 are independently C_1–C_6 alkyl or phenyl;

Ar is phenylene, naphthylene or phenylene substituted with C_1–C_6 alkyl or C_1–C_3 alkoxy;

alk is C_2–C_6 alkylene;

m is 1 to 1,000;

n is 5 to 10,000;

a polyamine crosslinking agent; and

a hard silicone polymer resin comprising repeating units of the formulae,

$(R^9)_2SiO$ and $R^{10}SiO_{1.5}$,

wherein,

R^9 and R^{10} are independently methyl or phenyl, provided that the ratio of methyl to phenyl groups is between about 0.2 and 2 to 1.

5,362,834

GEL COMPOUNDS, THEIR PRODUCTION AND USE

Dietmar Schäpel, Cologne; Heinz-Dieter Ebert, Leichlingen, and Hartwig Grammes, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 28, 1992, Ser. No. 875,620
Claims priority, application Germany, May 1, 1991, 4114213
Int. Cl.[5] C08G *18/18*
U.S. Cl. 528—58 11 Claims

1. An improved gel compound based on a reaction product of polyols and polyisocyanates, in which the polyol component consists essentially of a mixture of

a) one or more polyols having hydroxyl values below 112 and

b) one or more polyols having hydroxyl values of 112 to 600 and in which the isocyanate index of the reaction mixture is in the range from 15 to 60 and wherein the reaction is carried out in the presence of an amine or organo tin catalyst.

5,362,835

PRODUCTION OF COMPOUNDS

William M. Rolfe, Haverhill; Michael R. Thoseby, Cambridge, and Bryan Dobinson, Duxford, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1991, Ser. No. 804,308
Claims priority, application United Kingdom, Dec. 18, 1990, 9027406
Int. Cl.[5] C08G *59/00*
U.S. Cl. 528—87 17 Claims

1. A process for the production of a material having an increased molecular weight relative to the diepoxide starting material, the material being either a hydroxy-terminated or an epoxy-terminated material, comprising

a) reacting a diepoxide with an alcohol of formula I:

$$Q(OH)_2 \qquad I$$

'in which Q is a divalent aliphatic, cycloaliphatic or araliphatic residue, in the presence, as catalyst, of a triflate sale of a metal of Group IIA, IIB, IIIA, IIIB, or VIIIA of the Periodic Table of Elements (according to the IUPAC 1970 convention) to give an epoxy-terminated material;

b) de-activating the triflate salt catalyst when the epoxy-terminated material produced in step a) has a desired epoxide content; and

c) optionally advancing the material produced in step b), with an aromatic diol or phenol to give a hydroxy-terminated or epoxy-terminated material.

5,362,836

POLYMER ELECTROLYTES AND THEIR PREPARATION

Freddy Helmer-Metzmann, Mainz, and Frank Osan, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 9, 1993, Ser. No. 73,878
Claims priority, application Germany, Jun. 11, 1992, 4219077
Int. Cl.[5] C08G *8/02, 14/00, 65/00, 67/00*
U.S. Cl. 528—125 19 Claims

1. A polymer electrolyte comprising a sulfonated aromatic polyether ketone of the formula I

$$\left\{\left\{Ar{-}O\right\}_{\beta}Ar\right\}_{\gamma}\left\{\left\{CO{-}Ar^{1}\right\}_{\chi}O{-}Ar\right\}_{\gamma} \qquad (I)$$
$$\left\{CO{-}Ar^{1}\right\}_{\psi}O{-}Ar\right\}_{N}CO\}$$

in which at least 20% of the O-phenylene-O units have been substituted by a SO_3H group, where

Ar is a phenylene ring with para and/or meta bonds,

Ar' is a phenylene, naphthylene, biphenylylene, anthrylene or another divalent aromatic unit,

X, M and N are, independently of one another, nought or 1,

Y is nought, 1, 2 or 3,

P is 1, 2, 3 or 4,

the combinations P=2, M=0, N=0, Y=0 and P=1, M=1, X=0, Y=0, N=0 being excluded.

5,362,837

PREPARATION OF MACROCYCLIC POLYETHERIMIDE OLIGOMERS FROM BIS(TRIALKYLSILYL) ETHERS

Tohru Takekoshi, Scotia, and Jane M. Terry, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 26, 1993, Ser. No. 96,393
Int. Cl.[5] C08G *8/02, 73/10, 69/26*
U.S. Cl. 528—125 13 Claims

1. A method for preparing a composition comprising macrocyclic polyetherimide oligomers which comprises effecting a displacement reaction between (A) at least one fluorinated aromatic phthalimide and (B) at least one phenolic trialkylsilyl ether compound, each of reagents A and B having two moieties selected from the group consisting of fluorinated phthalimide and trialkylsilyl ether moieties and the molar proportions of trialkylsilyl ether and fluorinated phthalimide moieties being equal;

reagents A and B being maintained throughout the reaction in high dilution in a dipolar aprotic organic liquid;

said reaction being conducted at a temperature in the range of about 200°–225° C. in a dipolar aprotic solvent, in the presence of a catalytic amount of at least one substantially soluble fluoride selected from the group consisting of alkali metal, alkaline earth metal and quaternary ammonium fluorides.

5,362,838

CARBONATE POLYMERS CONTAINING ETHENYL ARYL MOIETIES

James E. McGrath, Blacksburg, Va.; Stephen E. Bales, Midland, Mich.; Daniel M. Knauss, Blacksburg, Va.; Thomas A. Chamberlin; Michael J. Mullins, both of Midland, Mich., and Maurice J. Marks, Lake Jackson, Tex., assignors to Virginia Polytechnic Institute and State University, Blacksburg, Va. and The Dow Chemical Company, Midland, Mich.

Filed Feb. 19, 1993, Ser. No. 19,950
Int. Cl.[5] C08G *64/00*
U.S. Cl. 528—198 17 Claims

1. A carbonate polymer having ethenyl aryl moieties according to the formula:

$$-Ar{-}CH{=}CH_2$$

wherein Ar is an aryl radical optionally substituted with an electron-withdrawing substituent or electron-donating substituent.

5,362,839

POLYCARBONATE HAVING REDUCED CARBONATE BYPRODUCT CONTENT

Sarat Munjal; Thomas M. Wardlow, and Andrew F. Hall, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 43,103, Apr. 5, 1993, Pat. No. 5,288,837.
This application Feb. 16, 1994, Ser. No. 197,425
Int. Cl.[5] C08G *64/00*
U.S. Cl. 528—198 7 Claims

1. A process for preparing polycarbonate comprising

(a) forming a carbonate oligomer by contacting a carbonate precursor with a solution containing a dihydroxy compound, water and a base in the absence of a solvent capable of dissolving a carbonate oligomer,

(b) admixing a solvent capable of dissolving a carbonate oligomer with said solution after said carbonate precursor has been substantially completely reacted with said solution,

(c) admixing a chain terminator with said solution after dissolution of said carbonate oligomer,

(d) forming a polycarbonate by admixing a coupling catalyst with said solution after said chain terminator has been substantially completely reacted with said solution,

(e) recovering polycarbonate from said solution.

5,362,840

THERMOPLASTIC RESIN AND METHOD USING VOLATILE, SELF-QUENCHING TERTIARYAMINE CATALYST

Joseph A. King, Jr., 927 Vrooman Ave., Schenectady, N.Y. 12309, and Klaas Brouwer, Akeleiveld 36, 4613 CL Bergen op Zoom, Netherlands

Filed Jun. 15, 1993, Ser. No. 76,038
Int. Cl.[5] G08G *64/00*
U.S. Cl. 528—199 18 Claims

1. An improved process for preparing a polycarbonate resin, wherein said resin is prepared from a dihydric phenol; a copolymer of a dihydric phenol with a glycol, a hydroxy terminated ester or an acid terminated ester; or a dibasic acid in a melt condensation process wherein the improvement comprises conducting the condensation reaction in the presence of a tertiary amine catalyst selected from the group consisting of trialkylamines, peralkyldiamines, peralkyltriamines and mixtures thereof wherein the boiling point of the amine is such that the amine catalyst distills unchanged overhead during the course of the reaction whereby no undesirable catalyst residue in the resin results from the use of the catalyst.

5,362,841

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT HALOGENATED POLYCARBONATE

Sarat Munjal, Lake Jackson, Tex.; Clark J. Cummings, Midland, Mich., and Che-I Kao, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 742,140, Aug. 8, 1991, Pat. No. 5,212,281.
This application May 17, 1993, Ser. No. 62,884
Int. Cl.[5] C08G *64/20*
U.S. Cl. 528—202 14 Claims

1. A process for the preparation of halogenated polycarbonate comprising

(a) contacting a halogenated dihydroxy compound, a base, water and a non-reactive organic solvent with a carbonate precursor in a reaction mixture to form a halogenated carbonate oligomer product;

(b) condensing said halogenated carbonate oligomer product to form polycarbonate product by contacting halogenated carbonate oligomers in a tubular reactor with

(i) further organic solvent;

(ii) 150 weight parts per million or less of coupling catalyst, based on the weight of all organic solvent in steps (a) and (b), including any in which the coupling catalyst is dissolved; and

(iii) a further amount of base which, together with the amount of base in step (a), brings the total moles of base in steps (a) and (b) per mole of dihydroxy compound to the number $2+4(Y-1)+Q$, where Y is the number of moles of carbonate precursor per mole of dihydroxy compound, and Q is about 0.001 to about 0.5; and

(c) recovering a halogenated polycarbonate product.

5,362,842

UREA-FORMALDEHYDE RESIN COMPOSITION AND METHOD OF MANUFACTURE THEREOF

Larry R. Graves, Puyallup, and Jay V. Mueller, Tacoma, both of Wash., assignors to Georgia Pacific Resins, Inc., Atlanta, Ga.

Filed Sep. 10, 1993, Ser. No. 118,760
Int. Cl.[5] C08G *12/12*
U.S. Cl. 528—262 20 Claims

1. A method of preparing a urea-formaldehyde resin comprising:

mixing formaldehyde, urea, triethanolamine and optionally ammonia reactants at an alkaline pH, heating the mixture to an elevated temperature for a time sufficient to obtain complete metholylation of the urea, the reactants being present in an amount of about 1.50 to 4.0 moles of formaldehyde, about 0.001 to 0.1 mole of triethanolamine, and about 0.0 to 0.5 mole ammonia, per mole of urea, and

adding acid to lower the pH to within the range of about 4.9 to about 5.2 and adding urea until the molar formaldehyde to urea ratio is within the range of about 1.5:1 to about 2.5:1 and reacting for a time sufficient to reduce free formaldehyde to less than 2%.

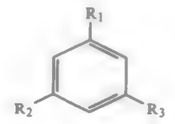
5,362,843

PROCESS FOR PREPARING HIGHLY BRANCHED MACROMOLECULE POLYMERS

Richard Vicari, and Michael P. Bodman, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 22, 1993, Ser. No. 125,441
Int. Cl.[5] C08G *63/00*
U.S. Cl. 528—271 21 Claims

1. A process for preparing a highly branched macromolecule polymer comprising the step of reacting a branching monomer, having functional groups thereon, having the formula:



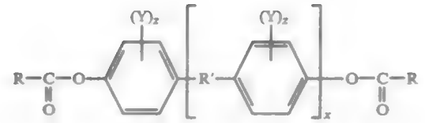
wherein

R_1 is independently selected from the group consisting of:
COOH
$C(O){-}OC_6H_5$
$O{-}CH_2CH_2OH$
$O{-}C(O){-}CH_3$ and
$N{-}CH_2CH_2OH$

R_2 and R_3 are each independently selected from the group consisting of:
COOH
OH
NH_2 and
$O{-}C(O){-}CH_3$;

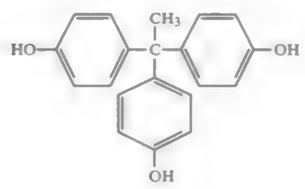
with the proviso that (a) when R_1 is —COOH, R_2 and R_3 must be the same but not equal to R_1, and R_2 and R_3 are either OH or $O{-}C(O){-}CH_3$, and (b) when R_1 is $-C(O){-}OC_6H_5$, R_2 and R_3 are equal and are either OH or NH_2; and (c) when R_1 is $O{-}CH_2CH_2OH$, R_2 and R_3 are equal, and R_2 and R_3 are COOH; with a core monomer, having functional groups thereon, selected from the group consisting of:

I.

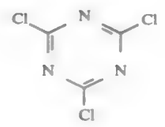


wherein R is independently selected from the group consisting of hydrogen, an alkyl radical having from one (1) to six (6) carbon atoms, cycloalkyl having from four (4) to seven (7) carbon atoms, and aryl; Y is independently selected from the group consisting of alkyl group of one (1) a four (4) carbon atoms, chlorine, and bromine; z independently has a value of zero (0) to four (4), inclusive; R_1 is independently selected from the group consisting of one (1) to eight (8) carbon atoms and halogenated derivatives thereof, cycloalkylene or cycloalkylidine radicals having up to and including nine (9) carbon atoms and halogenated derivatives thereof, O, S, SO_2, and CO; and x is 0 or 1;

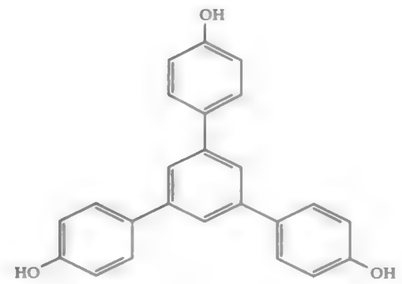
II.



III.



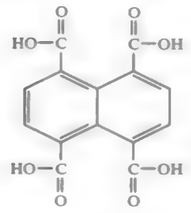
IV.



V.



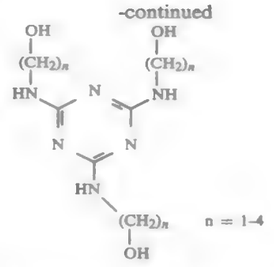
VI.



and

-continued

VII.



at a sufficient temperature and for a sufficient period of time to produce said highly branched polymer, with the proviso that the core monomer contains functional groups which will only react with one of the three functional groups of the branching monomer.

5,362,844

CONTINUOUS PROCESS FOR THE PRODUCTION OF POLYESTER FOR FOOD PACKAGING

Hans Kerpes, Grossheubach, and Ulrich Thiele, Bruchkoebel, both of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 16, 1994, Ser. No. 214,958

Claims priority, application Germany, Mar. 23, 1993, 4309227

Int. Cl.[5] C08G *63/00, 63/16*

U.S. Cl. 528—308.5 **4 Claims**

1. A continuous process for making a modified ethylene terephthalate polymer having an intrinsic viscosity of at least 0.60 dl/g, measured by dissolving 125 mg of polyester in 25 ml of a mixture of phenol and 1,2-dichlorobenzol (ratio 3:2 by weight) at 25° C., a free acetaldehyde content measured on pellets of less than 0.5 ppm and a bound acetaldehyde content of less than 5.0 ppm comprising

(a) introducing a polyethylene terephthalate precondensate modified with 0.5 to 10 weight percent of one or more comonomers, said precondensate having an intrinsic viscosity of 0.18 to 0.50 dl/g, into a polycondensation reactor,

(b) melt polycondensing said precondensate at an increasing temperature in the range of 268° to 288° C. in the presence of a polycondensation catalyst to produce a polycondensate at the reactor outlet having an intrinsic viscosity of 0.60 to 0.95 dl/g, 25 to 45 meq/kg of carboxyl-end groups and a free acetaldehyde content of less than 30 ppm,

(c) passing said polycondensate from said reactor into a pelletizer, whereby between the outlet of the reactor and the outlet of the pelletizer the temperature is maintained at a temperature not higher than the temperature at the reactor outlet and for a residence time corresponding to an increase of free acetaldehyde of less than 30 ppm, to produce amorphous pellets with a specific surface area of 1.8 to 2.9 m^2/kg,

(d) hardening said amorphous pellets which have a first-softening temperature in the range of 60° to 75° C. (Te-1), measured in a TMAanalyzer at a heat-up rate of 2° C./min., at a temperature between 30° C. and Te-1 in the presence of a gas taken from air, CO_2, N_2 or mixtures thereof, the dew point of which is below the hardening temperature, and for a time sufficient for the first-softening temperature (Te-2) to increase by 2° to 12° C. relative to Te-1,

(e) crystallizing said hardened pellets at a temperature in the range of between Te-2 and 230° C. in the presence of a gas taken from air, CO_2, N_2 or mixtures thereof, the dew point of which is below −20° C., the mass ratio of gas to pellets being in the range of 0.05–12.0 to 1.0 and for a time sufficient for the first-softening temperature (Te3) to increase by 100° to 150° C. relative to Te-2 and to a value which lies within the temperature range at which the solid phase polycondensation subsequently is carried out in step (f), and

(f) subjecting said crystallized pellets to dealdehydization at a temperature in the range of 175° to 225° C. in a gas taken from air, CO_2, N_2 or mixtures thereof, the dew point of which is below −20° C., the mass ratio of gas to pellets being in the range of 0.05–10.0 to 1.0 for a time sufficient to attain predetermined acetaldehyde and intrinsic viscosity values.

5,362,845

METHOD FOR CONVERTING MACROCYCLIC POLYIMIDE OLIGOMERS TO LINEAR POLYIMIDES

Tohru Takekoshi, Scotia, and Jane M. Terry, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

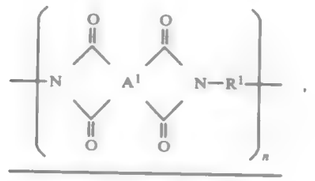
Filed Jun. 24, 1993, Ser. No. 80,864

Int. Cl.[5] C08G *73/10*

U.S. Cl. 528—322 **13 Claims**

1. A method for preparing a linear polyimide which comprises heating, at a temperature in the range of about 200°–350° C. with a primary amine as initiator in the presence of an alkaline earth or transition metal, salt thereof, or alkali metal hydroxide or salt thereof as a macrocyclic polyimide polymerization catalyst, a composition comprising macrocyclic polyimide oligomers of the formula

(I)



wherein each A^1 is independently a mono- or polycyclic aromatic radical, each R^1 is independently a non-silicon-containing organic radical or a bis(alkylene)polydiorganosiloxane radical and n has an average value of at least 1.

5,362,846

HIGH MELTING POINT CRYSTALLINE POLYAMIDES

Jean-Marc Sage, Serquigny, France, assignor to Elf Atochem S.A., Puteaux, France

Filed Jun. 11, 1993, Ser. No. 75,289

Claims priority, application France, Jun. 12, 1992, 92 07083

Int. Cl.[5] C08C *69/26*

U.S. Cl. 528—344 **14 Claims**

1. A copolyamide composition consisting essentially of

(1) a copolyamide consisting essentially of

(a) from 1 to 99 mole % repeating units of the formula —(NH—R—NHCO—AR_1—CO—; and

(b) from 99 to 1 mole % repeating units of the formula —(NH—R—NHCO—AR_2—CO)—; wherein R is alkylene having from 4 to 20 carbon atoms, AR_1 is a residue from the condensation of a compound selected from the group consisting of terephthalic acid, a terephthalic acid diester and mixtures thereof, and AR_2 is a residue from the condensation of a compound selected from the group consisting of naphthalene-2,6-dicarboxylic acid, a naphthalene-2,6-dicarboxylic acid ester, and mixtures thereof; and

(2) from 0 to 200% by weight, based on the weight of the copolyamide, of additives or fillers.

5,362,847

FLUOROCARBON AND IBMA GRAFTED POLYOXYALKYLENE COPOLYMERS

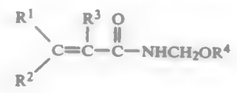
Robert Miller, Columbus; James L. Williams, Reynoldsburg, both of Ohio, and George H. Greene, Randolph, N.J., assignors to Karlshamns AB, Karlshamns, Sweden

Filed Nov. 27, 1991, Ser. No. 799,155

Int. Cl.[5] C08G *65/00, 65/04*

U.S. Cl. 528—403 **12 Claims**

1. A crosslinkable, hydrophilic graft copolymer produced by grafting both (a) a perfluoroacrylate and (b) at least one N-(oxymethyl) acrylamide having the following formula



wherein R^1, R^2, R^3, and R^4 may be the same or different and are a hydrogen atom or a monovalent hydrocarbon radical containing from 1 to about 6 carbon atoms onto poly(oxyalkylene) compositions, which copolymer, upon crosslinking, is hydrophobic and oil repellant.

5,362,848

PREPARATION AND POLYMERIZATION OF INITIATORS CONTAINING MULTIPLE OXETANE RINGS: NEW ROUTES TO STAR POLYMERS

Thomas G. Archibald; Roland P. Carlson, both of Fair Oaks; Aslam A. Malik, Cameron Park, and Gerald E. Manser, El Dorado Hills, all of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.

Filed Dec. 11, 1992, Ser. No. 989,401

Int. Cl.[5] C08G *65/04*

U.S. Cl. 528—414 **10 Claims**

1. A process for the preparation of a star polymer, said process comprising:

(a) forming an initiator compound by reacting a preinitiator precursor with a catalyst, said preinitiator precursor being an organic compound capable of forming an adduct with said catalyst, and said catalyst being a substance capable of causing cationic polymerization;

(b) combining said initiator compound with a multioxetane compound to form an initiating species;

(c) contacting said initiating species with a monomer capable of cationic polymerization; and

(d) allowing polymerization to proceed by chain elongation until the supply of available monomer is substantially exhausted.

5,362,849

N-GLYCIDYL COMPOUND

Bryan Dobinson, Duxford, and Michael R. Thoseby, Cambridge, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 693,874, Apr. 30, 1991, Pat. No. 5,280,069.

This application Nov. 4, 1993, Ser. No. 147,705

Claims priority, application European Pat. Off., May 5, 1990, 9010221.1

Int. Cl.[5] C07D *303/36;* C08G *59/50*

U.S. Cl. 528—418 **1 Claim**

1. A composition which consists essentially of N,N,N′,N′-tetraglycidyl-3,3′-diethyl-4,4′-diaminodiphenylmethane.

5,362,850
PROCESS FOR REMOVING PALLADIUM FROM POLYKETONES
Jeremy B. Cooper, West Sussex; Andrew R. Lacy, Surrey, and Kevin G. Smith, Middlesex, all of United Kingdom, assignors to BP Chemicals Limited, London, England
PCT No. PCT/GB93/00366, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO93/17061, PCT Pub. Date Sep. 2, 1993
PCT Filed Feb. 22, 1993, Ser. No. 119,204
Claims priority, application United Kingdom, Feb. 25, 1992, 9203988
Int. Cl.[5] C08G *67/02*
U.S. Cl. 528—483 11 Claims

1. A process for removing palladium from a contaminated polyketone containing palladium which comprises contacting the contaminated polyketone with an olefin in the substantial absence of carbon monoxide at a temperature above the temperature at which the polyketone was formed and in a solvent in which the contaminated polyketone is insoluble.

5,362,851
PEPTIDE SUBSTRATES, METHOD OF PREPARATION AND USE IN THE DETERMINATION OF PROTEIN C
Gérard Quentin, Colombes, and Jean-Luc Martinoli, Villeneuve-la-Garenne, both of France, assignors to Serbio, Gennevilliers, France
PCT No. PCT/FR90/00973, § 371 Date Oct. 2, 1991, § 102(e) Date Oct. 2, 1991, PCT Pub. No. WO91/12268, PCT Pub. Date Aug. 22, 1991
PCT Filed Dec. 31, 1990, Ser. No. 768,617
Claims priority, application France, Feb. 19, 1990, 90 01966
Int. Cl.[5] A61K *37/00;* C07K *5/00, 7/00;* A01N *43/78*
U.S. Cl. 530—331 3 Claims

1. A tripeptide compound of the formula

H-A_1-Pro-A_3-pNa

wherein A_1 is 2-(oxathiazolidin-4-yl)carbonyl (THC), and A_3 is Arg or Lys, and acid addition salts thereof.

5,362,852
MODIFIED PEPTIDE DERIVATIVES CONJUGATED AT 2-HYDROXYETHYLAMINE MOIETIES
Kieran F. Geoghegan, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Sep. 27, 1991, Ser. No. 766,682
Int. Cl.[5] C07K *3/08, 7/06*
U.S. Cl. 530—345 11 Claims

1. A process for the conjugation of a functionally useful group to a peptide comprising
(a) generating an aldehyde by oxidation of a 2-hydroxyethylamine structure, said 2 hydroxyethylamine structure being part of a hydroxylysine residue which is inserted into a synthetic peptide;
(b) reacting said aldehyde generated in step (a) with a reagent containing a functionally useful group.

5,362,853
POLYPEPTIDE DERIVATIVES OF HUMAN GRANULOCYTE COLONY STIMULATING FACTOR
Tetsuro Kuga, Yamaguchi; Hiromasa Miyaji; Moriyuki Sato, both of Tokyo; Masami Okabe; Makoto Morimoto, both of Shizuoka; Seiga Itoh, Kanagawa; Motoo Yamasaki, Tokyo; Yoshiharu Yokoo, Kanagawa; Kazuo Yamaguchi, Kanagawa, all of Japan, and Yoshinori Komatsu, Salt Lake City, Utah, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
Division of Ser. No. 337,002, Apr. 12, 1989, Pat. No. 5,214,132, which is a continuation-in-part of Ser. No. 318,527, Mar. 3, 1989, Pat. No. 5,194,592, which is a continuation-in-part of Ser. No. 136,647, Dec. 22, 1987, abandoned. This application Dec. 22, 1992, Ser. No. 994,924
Claims priority, application Japan, Dec. 23, 1986, 61-306799; Mar. 4, 1988, 63-051357; Mar. 31, 1988, 63-080088
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—351 2 Claims

1. A polypeptide having an amino acid sequence as derived from the amino acid sequence of human mature granulocyte colony stimulating factor (hG-CSF) polypeptide wherein the amino acids in the first, third, fourth, fifth and seventeenth position are Tyr, Ile, Arg, Ser and Ser, respectively.

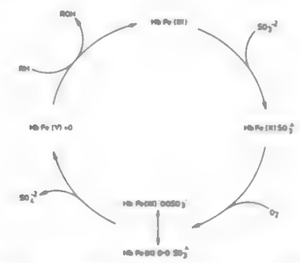
5,362,854
FACTOR VIII COAGULANT POLYPEPTIDES: METHOD OF MAKING
Theodore S. Zimmerman, and Carol A. Fulcher, both of La Jolla, Calif., assignors to Scripps Clinic & Research Foundation, La Jolla, Calif.
Division of Ser. No. 730,193, Jul. 15, 1991, Pat. No. 5,214,033, which is a continuation of Ser. No. 232,795, Aug. 16, 1988, abandoned, which is a continuation of Ser. No. 16,214, Feb. 19, 1987, abandoned, which is a continuation of Ser. No. 481,105, Mar. 31, 1983, abandoned. This application Feb. 24, 1993, Ser. No. 22,015
Int. Cl.[5] A61K *35/14;* C07K *17/02, 3/18*
U.S. Cl. 530—383 9 Claims

1. The process of making a biological preparation having enhanced Factor VIII:C coagulant activity, comprising the steps of
(a) digesting human Factor VIII:C in a digestion mixture with an effective amount of α-thrombin under digestion conditions to form a Factor VIII:C polypeptide complex in association with one or more other polypeptides;
(i) the complex comprising a polypeptide which exhibits a band at a point corresponding to an M, value of about 92,000, and at least one polypeptide which exhibits a band at a point corresponding to an M, value selected from the group consisting of about 80,000, about 79,000, about 72,000, and about 71,000, when subjected to sodium dodecyl sulfate-polyacrylamide gel electrophoresis;
(b) discontinuing the digestion of step (a) while said polypeptide complex is still present in said digestion mixture; and
(c) optionally, concentrating the complex, so that said complex comprises at least about 1 wt % of the proteinaceous matter in the preparation.

5,362,855
IMIDOESTER CROSS-LINKED HEMOGLOBIN COMPOSITIONS
Robert L. Garlick, Augusta; Stephen B. Lyle, Kalamazoo, and Joseph P. Martin, Jr., Richland, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Continuation-in-part of Ser. No. 619,840, Nov. 29, 1990, abandoned. This application May 20, 1993, Ser. No. 65,170
Int. Cl.[5] C07C *103/52;* A61K *37/00*
U.S. Cl. 530—385 9 Claims

1. A method for preparing a cross-linked hemoglobin composition for transporting oxygen to living cells, comprising cross-linking a purified hemoglobin lysate with dimethyl adipimidate or dimethyl suberimidate at a pH of at least 8.0, in a polymerization solution comprising TRIS-HCl buffer whereby at least 80% of said cross-linked hemoglobin has a molecular weight of 64,000 and a P50 of at least 13.

5,362,856
MONOOXYGENASE-LIKE ACTIVITY OF HEME PROTEINS
Ronald Kluger, Don Mills, and Yonghong Song, Toronto, both of Canada, assignors to University of Toronto Innovations Foundation, Toronto, Canada
Continuation-in-part of Ser. No. 61,478, May 17, 1993. This application Jun. 2, 1993, Ser. No. 71,013
Int. Cl.[5] C07K *15/06, 3/08;* C12N *9/02*
U.S. Cl. 530—385 7 Claims



1. A process whereby C—H bonds in organic chemical compounds having affinity for globin chains are oxidized to C—OH bonds, which comprises reacting the organic chemical compound in an aqueous medium containing dissolved molecular oxygen, an effective amount of a heme protein and sulfite ion, and in the absence of nicotinamide-adenine dinucleotide phosphate, reduced (NADPH), to cause splitting of the molecular oxygen followed by conversion of said C—H moieties to C—OH.

5,362,857
PURIFICATION OF PLASMINOGEN ACTIVATOR INHIBITOR 2 BY IMMUNOAFFINITY CHROMATOGRAPHY
Johann Hock, Marburg, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Germany
Filed May 4, 1993, Ser. No. 56,393
Claims priority, application Germany, May 6, 1992, 4214999
Int. Cl.[5] C07K *3/20, 15/06*
U.S. Cl. 530—395 4 Claims

1. A process for obtaining pure plasminogen activator inhibitor 2 (PAI-2) in biologically active form by immunoaffinity chromatography, which comprises contacting a solution which contains PAI-2 with a monoclonal antibody against PAI-2 which is bound to an affinity support material, separating affinity material and liquid from one another, and eluting PAI-2 from the affinity material in biologically active form and having a specific activity of 110,000 to 170,000 U/mg.

5,362,858
POLYETHYLENE GLYCOL-HIRUDIN CONJUGATES, PROCESS FOR PREPARING THEM AND THEIR USE FOR THE TREATMENT OF THROMBOSES
Rainer Bischoff, Illkirch-Graffenstaden, France, assignor to Transgene S.A., Strasbourg, France
Filed Feb. 17, 1993, Ser. No. 18,412
Claims priority, application France, Feb. 20, 1992, 92 01938
Int. Cl.[5] C07K *13/00;* A61K *37/64, 47/48*
U.S. Cl. 530—410 17 Claims

1. Process for preparing a polyethylene glycol-hirudin conjugate comprising:
a) activating polyethylene glycol (PEG) by reaction with carbonyldiimidazole in an anhydrous solvent,
b) recovering the activated PEG by precipitation with a hydrophobic solvent,
c) condensing the activated PEG of step b) with hirudin or in a slightly alkaline medium, and
d) purifying the conjugate obtained in step c).

5,362,859
HIGH-CAPACITY AFFINITY SUPPORTS AND METHODS FOR THE PREPARATION AND USE OF SAME
Stephen E. Zale, Uxbridge, Mass., assignor to Sepracor, Inc., Marlboro, Mass.
Filed Jul. 27, 1992, Ser. No. 920,240
Int. Cl.[5] C07K *3/20, 17/08, 17/12;* C08G *63/91*
U.S. Cl. 530—413 20 Claims

13. A method of performing affinity separations of a target compound to be separated from a mixture of compounds, comprising:
(a) contacting a mixture of compounds with an affinity support formed by
(i) chemically treating ligand molecules selected from the group consisting of Protein A, Protein G and hybrids thereof with a condensation or crosslinking reagent selected from the group consisting of carbodiimides, dialdehydes, bifunctional imidoesters, and 2-ethyl-5-phenylisoxazolium-3'-sulfonate to form a modified ligand comprising a plurality of said ligand molecules covalently bound to one another, and
(ii) subsequently immobilizing the modified ligand onto the surface of a solid support selected from the group consisting of porous particles, non-porous particles and porous membranes wherein said solid support comprises a material selected from the group consisting of agarose, polyethersulfone, polystyrene, silica, celluloses, poly-trisacryl, poly-meta-trisacryl, controlled pore glass, dextran, polyamides, polyacrylamide, hydroxyalkylmethacrylate gels, polyacrylamide/agarose gels, ethylene copolymers, diol-bonded silica, copolymers of methacrylamide, methylene bis-methacrylamide, glycidyl-methacrylate, allyl-glycidyl-ether, polyethersulfone coated with hydroxyethylcellulose, and polymer-silica composites, such that said modified ligand has a molecular weight that is greater than that of an individual ligand molecule, and exhibits a selective and reversible binding affinity for said target compound; and
(b) maintaining contact between the mixture and the affinity support for a time sufficient to selectively and reversibly bind the target compound to the immobilized modified ligand, thereby separating the target compound from the mixture.

5,362,860
NEUTRAL STABILIZATION COMPLEX FOR CI-979 HCL, A COGNITION ACTIVATOR
Hua-Pin Huang, Succasunna; Scott C. Wootton, Liberty Corner; Thomas N. Julian, Annandale; Galen W. Radebaugh, Chester, and Mahdi B. Fawzi, Flanders, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Feb. 1, 1993, Ser. No. 12,107
Int. Cl.[5] C07G *3/00, 11/00;* C07H *15/00;* A01N *43/40*
U.S. Cl. 536—4.1 12 Claims

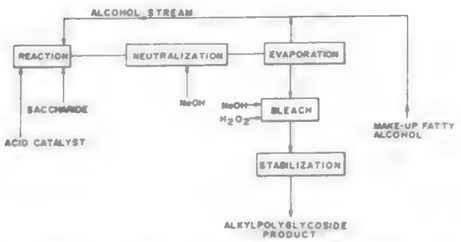
1. A solid cholinergic composition comprising in a stable complex an o-substituted 1,2,5,6-tetrahydropyridine oxime alkaloid derivative compound and a cyclic polydextrose excipient, the composition exhibiting a stable release of the o-substituted 1,2,5,6-tetrahydropyridine oxime alkaloid derivative compound when exposed to accelerated storage conditions at temperatures ranging up to about 60° C.

5,362,861

CONTINUOUS BLEACHING OF ALKYLPOLYGLYCOSIDES

Patrick M. McCurry, Jr., Lansdale, Pa.; Robert L. Klein, Jr., Libertyville, Ill.; Michael W. Gibson, Fairfield, Ohio; James D. Beaulieu, Humble, Tex., and Janet R. Varvil, Chalfont, Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jul. 15, 1992, Ser. No. 914,363
Int. Cl.[5] C07H *15/04, 1/06*
U.S. Cl. 536—4.1 **22 Claims**



1. A method of reducing the color of an alkylpolyglycoside comprising the steps of

(a) providing an aqueous solution of the alkylpolyglycoside;

(b) continuously introducing the aqueous solution from step (a) to a bleaching zone maintained at a temperature of about 85° to about 105° C.;

(c) adjusting and continuously maintaining the pH of the aqueous solution in said bleaching zone at a pH of about 10 to about 11.5;

(d) contacting the aqueous solution with a peroxy bleaching agent in an amount effective to bleach and reduce the color of the alkylpolyglycoside and in the presence of more than about 250 ppm and less than about 1000 ppm Magnesium (Mg); and

(e) continuously removing alkylpolyglycoside from said bleaching zone, wherein the alkylpolyglycoside has a Klett color below about 50, an extinction coefficient color from about 0.025 to about 0.15 and a residual bleaching agent level below about 1000 ppm.

5,362,862

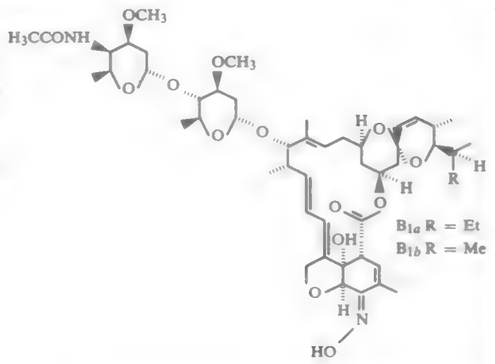
PROCESS FOR 4''-EPI-ACETYLAMINO-4''-DEOXY-5-OXIMINOAVERMECTIN-B_1

Joseph S. Amato, Brooklyn, N.Y., and Raymond Cvetovich, Scotch Plains, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 29, 1993, Ser. No. 128,935
Int. Cl.[5] C07H *17/04;* **A61K** *31/70*
U.S. Cl. 536—7.1 **1 Claim**

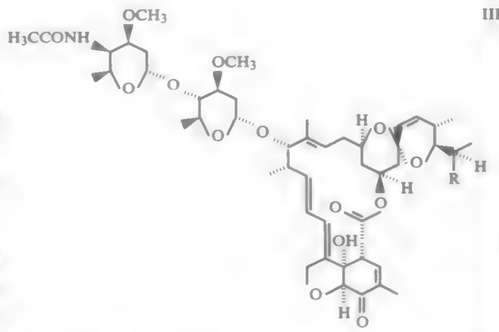
1. A process for the preparation of the compound of structural formula I.

I



which comprises the treatment of the compound of structural formula III:

III



in isopropyl acetate with O-(trimethylsilyl)hydroxylamine in the presence of $ZnCl_2$.

5,362,863

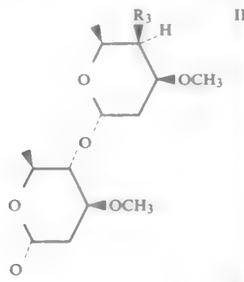
PROCESS FOR THE PREPARATION OF 4'-AMINO AVERMECTIN COMPOUNDS

Raymond Cvetovich, Scotch Plains, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

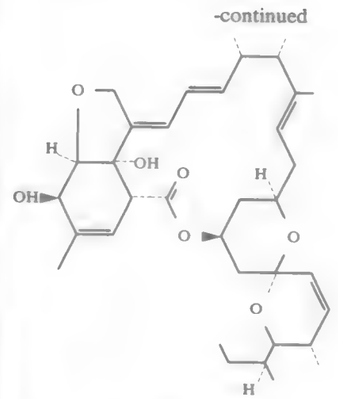
Filed Sep. 29, 1993, Ser. No. 128,936
Int. Cl.[5] C07H *17/04;* **A61K** *31/70*
U.S. Cl. 536—7.1 **1 Claim**

1. A process for the preparation of a compound of structural formula II

II



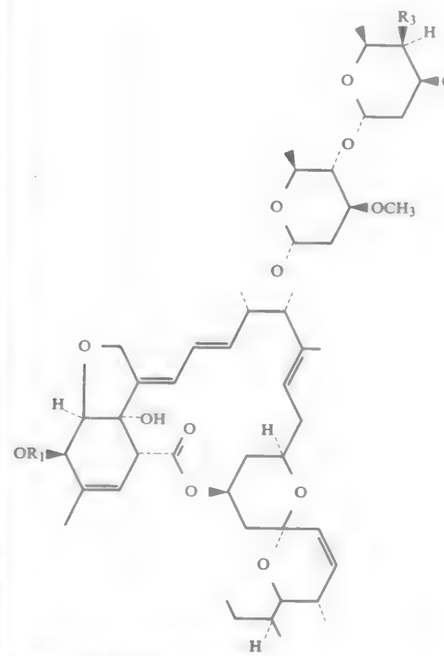
-continued



wherein R^3 is $-NHR^5$, wherein R^5 is —H or $-CH_3$ which comprises the steps of:

a) treating a compound of structural formula I

I



wherein $R_1 = CO_2CH_2CH{=}CH_2$ or $Si(CH_3)_2C(CH_3)_3$

with a compound of structural formula

$$(CH_3)_3Si{-}N{-}Si(CH_3)_3$$
$$\quad\quad\quad

wherein said non-translated leader sequence is heterologous to said promoter; which is operably linked to

(c) a structural DNA sequence, wherein said structural DNA sequence is heterologous to said non-translated leader sequence; which is operably linked to

(d) a 3′ non-translated sequence that functions in plant cells to cause the termination of transcription and the addition of polyadenylated ribonucleotides to the 3′ end of the transcribed mRNA sequence.

5,362,866

OLIGONUCLEOTIDE POLYMERIC SUPPORT SYSTEM WITH AN OXIDATION CLEAVABLE LINK

Lyle J. Arnold, Jr., San Diego, Calif., assignor to Molecular Biosystems, Inc., San Diego, Calif.

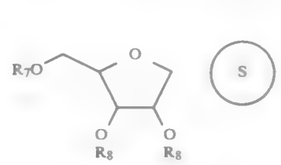
Continuation of Ser. No. 266,501, Nov. 3, 1988, abandoned, which is a division of Ser. No. 97,298, Oct. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 664,981, Oct. 26, 1984, abandoned, which is a continuation-in-part of Ser. No. 528,856, Sep. 2, 1983, abandoned. This application Mar. 17, 1992, Ser. No. 852,761

Int. Cl.[5] C07H *21/00;* **C12Q** *1/68*

U.S. Cl. 536—25.3 **8 Claims**

1. A process comprising the steps of:

(a) providing a compound consisting essentially of a polymeric support and a primer, said compound having the structure:



wherein Ⓢ is a solid support,

is a spacer of 1 to 50 atoms which is not cleaved under acidic or basic deprotecting conditions of oligonucleotide synthesis and is attached to said polymeric support, R_8 is a protecting group on an oxidizable substituent and R_7 is a protecting group for —OH;

(b) synthesizing an oligonucleotide having base-labile protective groups on the nucleotides onto the O of OR_7; and

(c) removing the protecting groups with a base.

5,362,867

METHOD OF MAKING CELLULOSE YARN SOLUTION

Hui-Ching Chin; Yuan-Tsung Chen, and Guo-Jane Cheng, all of Chung-Hua, Taiwan, Prov. of China, assignors to Formosa Chemicals & Fibre Corporation, Chung Hua, Taiwan, Prov. of China

Continuation of Ser. No. 888,633, May 27, 1992, abandoned. This application Oct. 29, 1993, Ser. No. 142,923

Int. Cl.[5] C08B *9/02;* **C08L** *1/24;* **C09J** *101/24*

U.S. Cl. 536—57 **13 Claims**

1. In a method of making cellulose yarn solution from wood pulp and a solvent including aqueous N-methylmorpholine-N-oxide in a kneading apparatus including a three stage heating step, wherein the improvement comprises including an effective amount of caprolactam derivatives recovered from manufacturing nylon and capable of dissolving the wood pulp as a solvent.

5,362,868

THINNING OF GRANULAR STARCH

Wilfried Eul, Ramsey, N.J., and Hans-Ulrich Suess, Gondsroth, Germany, assignors to Degussa Aktiengesellshaft, Frankfurt am Main, Germany

Filed Jun. 18, 1993, Ser. No. 77,914

Int. Cl.[5] C08B *31/00, 33/00, 35/00;* **C13K** *1/06*

U.S. Cl. 536—102 **38 Claims**

1. A process for degrading granular starch and starch derivatives comprising adding a peracid to an aqueous slurry of said starch, free of heavy metal catalyst, to initiate a degradation reaction, controlling the reaction by measuring the alkaline fluidity level, viscosity or molecular weight distribution, allowing the reaction to continue until the desired fluidity, molecular weight distribution, or viscosity is achieved, and thereafter terminating the reaction.

5,362,869

YEAST EXTRACT FROM *CANDIDA UTILIS*, PRODUCTION AND USE AS EMULSIFIER OF SAME

Edward G. Schanus, Warrenton, Oreg., and Marinelle McPherson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 802,578, Dec. 5, 1991, Pat. No. 5,286,630. This application Sep. 3, 1993, Ser. No. 116,771

Int. Cl.[5] C07G *17/00;* **C12P** *1/02*

U.S. Cl. 426—656 **7 Claims**

1. A process for preparing a yeast extract comprising:

(a) heating *Candida utilis* yeast cells for a time period in the range of about 30 seconds to about 20 minutes and at a temperature in the range of about 60° C. to about 100° C.;

(b) mechanically rupturing the heated cells;

(c) separating the ruptured cells into a soluble portion and an insoluble portion;

(d) washing and reconstituting the insoluble portion to obtain a reconstituted product;

(e) adjusting the pH of the reconstituted product to be in the range of about 10 to about 11.5;

(f) heating the pH adjusted product for a time period in the range of about 30 to about 120 minutes and at a temperature in the range of about 50° C. to about 70° C.;

(g) neutralizing the heated product to a pH in the range of about 6 to about 8;

(h) separating the neutralized product into a soluble portion and an insoluble portion; and

(i) recovering the resultant soluble yeast extract.

5,362,870

PROCESS FOR PRODUCING A HIGH PURITY CAPROLACTAM

Yasuhiko Higashio, Toyonaka; Hiroshi Kajikuri; Keisuke Sugita, both of Ibaraki; Hideki Doi, and Masanobu Matsubara, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Apr. 15, 1993, Ser. No. 46,146

Claims priority, application Japan, Apr. 17, 1992, 4-097717; Apr. 20, 1992, 4-099380; Jun. 18, 1992, 4-159277

Int. Cl.[5] C07D *201/16*

U.S. Cl. 540—540 **5 Claims**

1. A process for producing a high purity caprolactam which comprises

forming a liquid mixture by mixing a crude caprolactam obtained by a catalytic rearrangement of cyclohexanone oxime with water and at least one hydrocarbon selected from the group consisting of aliphatic hydrocarbons and alicyclic hydrocarbons;

separating the liquid mixture into a hydrocarbon layer and a water layer; and

recovering the high purity caprolactam from the water layer.

5,362,871

PROCESS FOR THE DIRECT AND REGIOSELECTIVE FUNCTIONALIZATION IN POSITION 2 OF PHENOTHIAZINE

Claudio Giordano, Monza; Maurizio Paiocchi, and Paolo Cavalleri, both of Milan, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Feb. 12, 1992, Ser. No. 833,800

Claims priority, application Italy, Feb. 14, 1991, MI91A000379

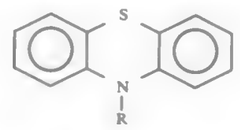
The portion of the term of this patent subsequent to Feb. 18, 2009, has been disclaimed.

Int. Cl.[5] C07D *279/20;* **C07B** *45/06*

U.S. Cl. 544—40 **5 Claims**

1. A process for the preparation of 2-mercapto-phenothiazine by regioselective introduction in position 2 of an SH group, comprising:

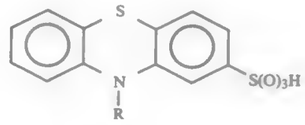
reacting an N-protected phenothiazine of formula II



(II)

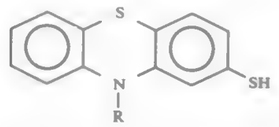
wherein R is a —COOR′ or —SO_2R″ group in which R′ is a C_1–C_6 alkyl and R″ is a C_1–C_6 alkyl or phenyl or naphthyl;

with a sulfonating agent selected from the group consisting of 96–98% sulfuric acid, sulfur trioxide, chlorosulfonic acid and oleum, in order to obtain a compound of formula III



(III)

reducing the compound of formula III to obtain the N-protected 2-mercapto-phenothiazine of formula IV



(IV)

wherein R has the above reported meanings; and

removing the protecting group from the nitrogen atom to obtain 2-mercapto-phenothiazine.

5,362,872

CHROMOGENIC LACTAMS

Hans Baumann, Oberwil, and Rox Pfaff, Itingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

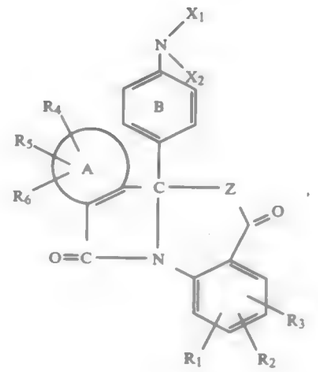
Filed Mar. 10, 1993, Ser. No. 28,899

Claims priority, application Switzerland, Mar. 13, 1992, 815/92

Int. Cl.[5] C07D *265/12*

U.S. Cl. 544—89 **13 Claims**

1. A lactam of formula I



(I)

wherein

the ring A is benzene, naphthalene, quinoline, quinoxaline or a nitrogen containing heterocycle which is aromatic and contains 6 ring atoms;

the ring B is a benzene nucleus which may be substituted by halogen, lower alkyl, lower alkoxy, benzyloxy, or lower alkylcarbonylamino, mono- or di-lower alkylamino;

Z is O;

R is hydrogen; lower alkyl which is unsubstituted or substituted by halogen, hydroxy, cyano, benzoyl, acyl, di-lower alkylamino or lower alkoxy; cycloalkyl of 5 to 10 carbon atoms; aryl or aralkyl which are each unsubstituted or ring-substituted by halogen, cyano, nitro, C_1–C_4haloalkyl, lower alkyl, lower alkoxy, lower alkoxycarbonyl or acyl; acyl; N-lower alkylcarbamoyl; or unsubstituted or ring-substituted N-arylcarbamoyl;

R_1, R_2 and R_3 are each independently of one another hydrogen; lower alkyl; lower alkoxy; lower alkylthio; lower alkylsulfonyl; sulfo; hydroxy; nitro; halogen; amino; mono-lower alkylamino; di-lower alkylamino; arylamino; aryl-lower alkylamino; diarylamino; aralkylamino; aralkyl-lower alkylamino; diaralkylamino; or a wholly or partially saturated heterocyclic radical which is attached at a ring nitrogen atom;

R_2 and R_3 together are an unsubstituted or a lower alkyl-substituted, vicinally linked methylenedioxy or 1,2-ethylene dioxy group;

R_4, R_5 and R_6 are each independently of one another hydrogen; halogen; cyano; nitro; lower alkyl; lower alkylthio; lower alkylcarbonyl; lower alkoxycarbonyl; amino; mono-lower alkylamino; di-lower alkylamino; arylamino; aryl-lower alkylamino; diarylamino, aralkylamino; aralkyl-lower alkylamino; diaralkylamino; cycloalkylamino; dicycloalkylamino; lower alkyl-cycloalkylamino; lower alkoxy; lower alkylsulfonyl; or a wholly or partially saturated heterocyclic radical which is attached at a ring nitrogen atom;

X_1 and X_2 are each independently of the other hydrogen; alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxy, cyano, tetrahydrofuryl or lower alkoxy; acyl of 1 to 8 carbon atoms; cycloalkyl of 5 to 10 carbon atoms; or aralkyl or aryl which are each unsubstituted or ring-substituted by halogen, cyano, nitro, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxycarbonyl, —NX′X″ or 4-X′X″N-phenylamino, wherein X′ and X″ are each independently of the other hydrogen, lower alkyl, cyclohexyl, benzyl or phenyl; or

X_1 and X_2 together with the linking nitrogen atom are a 5- or 6-membered, saturated, heterocyclic radical.

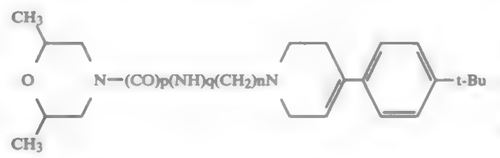
5,362,873

TETRAHYDROPYRIDINE DERIVATIVES

Hiromu Matsumura; Toshinada Yano, both of Hyogo; Hiroshi Hashizume, Osaka; Akira Matsushita, Hyogo, and Masami Eigyo, Nara, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 903,924, Jun. 26, 1992, Pat. No. 5,243,051, which is a division of Ser. No. 655,585, Feb. 15, 1991, Pat. No. 5,149,817. This application Jun. 14, 1993, Ser. No. 76,163
Claims priority, application Japan, Mar. 5, 1990, 2-54220
Int. Cl.[5] C07D *413/06*
U.S. Cl. 544—124 1 Claim

1. A compound of the formula:



wherein n is an integer of from 2 to 6; and
p and q each is an integer of 0 or 1, excluding the case where p is 0 when q is 1;
or a pharmaceutically acceptable acid addition salt thereof.

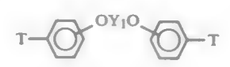
5,362,874

LIGHT-SENSITIVE BISTRIHALOMETHYL-S-TRIAZINE COMPOUNDS

Ken Iwakura; Yuichi Wakata; Hirotaka Matsumoto, and Mikio Totsuka, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1992, Ser. No. 850,810
Claims priority, application Japan, Mar. 15, 1991, 3-051454; Dec. 24, 1991, 3-340891
Int. Cl.[5] C07D *251/20, 401/12*
U.S. Cl. 544—216 5 Claims

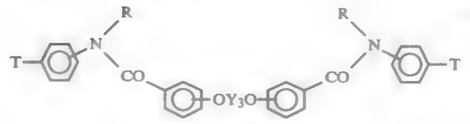
1. A light-sensitive bistrihalomethyl-s-triazine compound represented by one of the following formulas (II) to (IV):



(II)



(III)



(IV)

wherein T represents a (4,6-bistrihalomethyl-s-triazine-2-yl) group, Y_1 represents $-C_nH_{2n}-$ in which n represents an integer of 2 to 20, $-C_mH_{2m}COO(CH_2)_nOCOC_mH_{2m}-$ in which m represents an integer of 1 to 4, and n represents an integer 2 to 20, or $-CO(CH_2)_nCO-$ in which n represents an integer of 0 to 20, Y_2 represents $-C_nH_{2n}-$ in which n represents an integer of 2 to 20, $-CO(CH_2)_nCO-$ in which n represents an integer of 0 to 20, or $-CO(C_6H_4)CO-$, Y_3 represents $-C_nH_{2n}-$ in which n represents an integer 2 to 20, $-CO(CH_2)_nCO-$ in which n represents an integer of 0 to 20, or $-CO(C_6H_4)CO-$, and R represents a hydrogen atom, a C_{1-10} alkyl group, or a C_{2-10} acyl group, and the benzene rings of formulas (II) to (IV) may further contain a substituent selected from the group consisting of a C_{1-6} alkyl group, a C_{1-4} alkoxy group, a chlorine atom, a bromine atom and a fluorine atom.

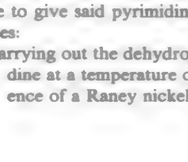
5,362,875

PREPARATION OF PYRIMIDINES

Klaus Ebel, Ludwigshafen, and Juergen Schroeder, Viernheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jun. 10, 1993, Ser. No. 75,041
Claims priority, application Germany, Jun. 17, 1992, 4219789
Int. Cl.[5] C07D *239/26*
U.S. Cl. 544—242 12 Claims

1. In a two-step process for preparing a substituted pyrimidine of the formula



I

where
R^1 is C_1–C_8-alkyl, c_7–C_{12}-aralkyl or phenyl, and
R^2, R^3 and R^4 are each, independently of one another, hydrogen, C_1–C_8-alkyl, C_7–C_{12}-aralkyl or phenyl,
by first reacting a nitrile of the formula



II,

where
R^1 has the abovementioned meaning,
with a 1,3, diaminopropane of the formula

III

where
R^2 to R^4 have the abovementioned meanings,
in the presence of a salt of a metal selected from the group consisting of zinc, copper, iron, cobalt and manganese, at an elevated temperature to produce a tetrahydropyrimidine of the formula

IV

where
R^1 to R^4 have the abovementioned meanings,
and then catalytically dehydrogenating said tetrahydropyrimidine to give said pyrimidine I, the improvement which comprises:
carrying out the dehydrogenation of said tetrahydropyrimidine at a temperature of from 150° to 300° C. in the presence of a Raney nickel catalyst.

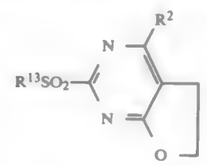
5,362,876

SALICYLALDEHYDE AND SALICYLIC ACID DERIVATIVES AND SULFUR ANALOGS THEREOF, THEIR PREPARATION AND INTERMEDIATES THEREFOR

Karl Eicken, Wachenheim; Joachim Rheinheimer; Uwe J. Vogelbacher, both of Ludwigshafen; Karl-Otto Westphalen, Speyer; Matthias Gerber, Mutterstadt, and Helmut Walter, Obrigheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 805,211, Dec. 11, 1991, Pat. No. 5,308,828. This application Nov. 3, 1993, Ser. No. 145,132
Claims priority, application Germany, Dec. 14, 1990, 4039940; Aug. 10, 1991, 4126935
Int. Cl.[5] C07D *491/048*
U.S. Cl. 544—278 2 Claims

1. A novel sulfone of the formula III



III

where R^2 is C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy or halogen and R^{13} is C_1–C_{12}-alkyl or is phenyl which is unsubstituted or substituted by alkyl, halogen or alkoxy.

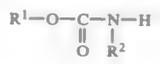
5,362,877

PROCESS OF SYNTHESIZING ACETALS

Atsuhiro Ohkawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

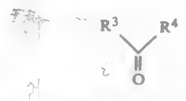
Filed May 24, 1993, Ser. No. 64,990
Claims priority, application Japan, May 25, 1992, 4-132707
Int. Cl.[5] C07D *211/72, 211/78, 211/68*
U.S. Cl. 546—290 20 Claims

1. A process of synthetizing an acetal, which comprises reacting,
i) a compound represented by formula (I);



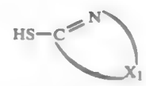
(I)

wherein R^1 represents an alkyl group, an aryl group, or a heterocyclic group and R^2 represents an alkyl group or an aryl group, said groups represented by R^1 and R^2 may be substituted,
ii) at least one compound selected from the group consisting of paraformaldehyde, trioxane and compound represented by formula (II);



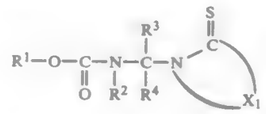
(II)

wherein R^3 and R^4 each independently represents a hydrogen atom, an alkyl group, an alkenyl group, an alkinyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, a sulfamoyl group, an aryl group, or a heterocyclic group, said groups represented by R^3 and R^4 may be substituted, and
iii) a compound represented by formula (III);



(III)

wherein X_1 represents a non-metallic atomic group necessary for forming a 5-membered or 6-membered nitrogen atom-containing heterocyclic group which may be condensed with another ring to form a di- or tri-cyclic group, said groups represented by X_1 may be substituted,
in the presence of at least one of a Lewis acid and a metal salt to synthesize the acetal represented by formula (IV);



(IV)

wherein R^1, R^2, R^3, R^4, and X_1 have the same meaning as those in formula (I), (II) and (III).

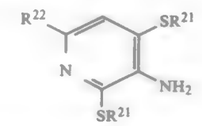
5,362,878

INTERMEDIATES FOR MAKING N-ARYL AND N-HETEROARYLAMIDE AND UREA DERIVATIVES AS INHIBITORS OF ACYL COENZYME A: CHOLESTEROL ACYL TRANSFERASE (ACAT)

George Chang, Ivoryton; Ernest S. Hamanaka, Gales Ferry; Peter A. McCarthy, Pawcatuck; Thien Truong, Saybrook, and Frederick J. Walker, Preston, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 648,677, Mar. 21, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 916,651
Int. Cl.[5] C07D *213/02, 239/24;* C07C *323/33, 275/18*
U.S. Cl. 546—296 5 Claims

1. A compound of the formula



wherein R^{21} is (C_1–C_3)alkyl and R^{22} is hydrogen or (C_1–C_3)alkyl.

5,362,879

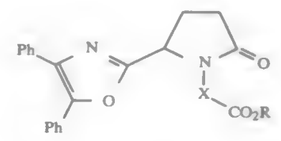
4-5-DIPHENYLOXAZOLE DERIVATIVES AS INHIBITORS OF BLOOD PLATELET AGGREGATION

Nicholas A. Meanwell, East Hampton, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

Filed Apr. 15, 1993, Ser. No. 47,738
Int. Cl.[5] C07D *263/30*
U.S. Cl. 548—236 7 Claims

1. A compound of the formula

Formula II



wherein
R is H or C_1–C_5 lower alkyl,

X is $(CH_2)_n$ or para or meta substituted phenyl wherein the substituent is OR^2,
R^2 is C_1–C_5 alkyl, and
n is an integer of 4 to 8, or
a pharmaceutically acceptable salt thereof.

5,362,880

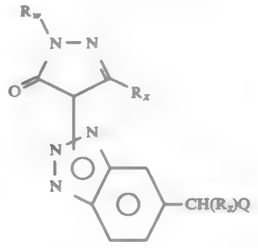
METHOD OF PREPARING A MAGENTA DEVELOPMENT INHIBITOR RELEASING COUPLER

William J. Begley, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1992, Ser. No. 906,633
Int. Cl.[5] C07D *403/14, 413/14, 417/14;* **G03C** *7/305*
U.S. Cl. 548—251 **4 Claims**

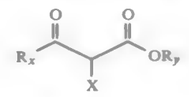
1. A method of preparing a 1-aryl-3-substituted-4-heterocyclic-5-pyrazolone development inhibitor releasing coupler having the structure

S9



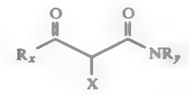
wherein
R_x and R_z are independently hydrogen, substituted or unsubstituted alkyl or aryl;
R_w is substituted or unsubstituted alkyl or aryl; at least one of R_w or R_x is a photographic ballast; and
Q is a development inhibitor group; comprising:
(a) reacting a haloacyl ester of the formula

S2A



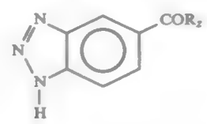
or a haloacylanilide of the formula

S2B



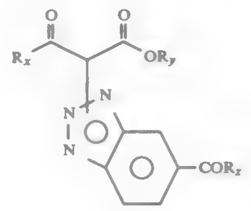
wherein
R_x is as defined above;
R_y is hydrogen, substituted or unsubstituted alkyl or aryl; and
X is a halogen
with a compound of the formula

S3

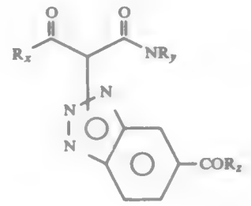


wherein
R_z is as defined above;
in the presence of a base to form a first product of the formula

S4 A



S4 B

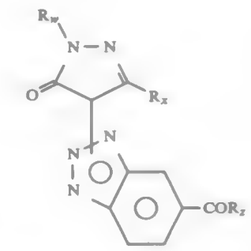


wherein
Rx, Ry and Rz are as defined above;
(b) reacting the first product with a hydrazine compound of the formula

R_wNHNH_2 S5

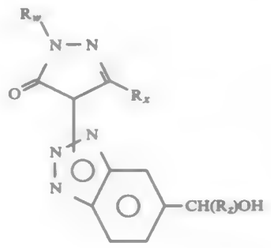
wherein
R_w is as defined above; to form a ballasted pyrazolone compound of the formula

S6



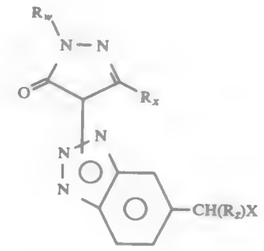
wherein
R_w, R_x, and R_z are as defined above;
(c) reducing the ballasted pyrazalone compound form a compound of the formula

S7



wherein
R_x, R_w and R_z are as defined above;
(d) halogenating this compound (S7) to form a compound of the formula:

S8



wherein
R_x, R_w, R_z and x are defined above; and then
(e) reacting (S8) with a compound having a development inhibitor group Q to form said 1-aryl-3-substituted-4-heterocyclic-5-pyrazolone development inhibitor releasing coupler (S9).

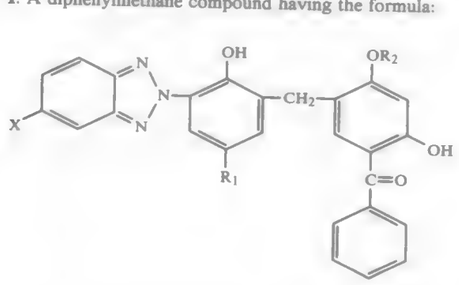
5,362,881

COUPLED BENZOTRIAZOLE AND BENZOPHENONE UV ABSORBERS

William E. Leistner, Atlantic Beach, N.Y., and Semyon Moshchitsky, Old Bridge, N.J., assignors to Fairmount Chemical Company, Inc., Newark, N.J.

Filed May 27, 1993, Ser. No. 69,000
Int. Cl.[5] C07D *249/20*
U.S. Cl. 548—260 **18 Claims**

1. A diphenylmethane compound having the formula:



wherein:
R_1 and R_2 are independently C_1 to C_8 alkyl, cyclopentyl, cyclohexyl or cumyl; and
X is selected from the group consisting of hydrogen, halogen, $C_1$to C_{12} alkyl and C_1 to C_{12} alkoxy.

5,362,882

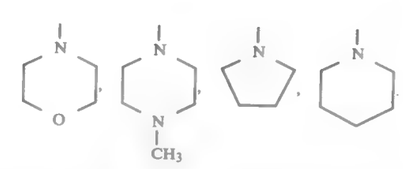
PYRROLOTRIAZOLE DERIVATIVE AND HEAT TRANSFER DYE PROVIDING MATERIAL CONTAINING A PYRROLOTRIAZOLE AZOMETHINE DYE

Makoto Suzuki; Yasuhiro Shimada; Koushin Matsuoka; Shigeru Yamazaki; Katsuyoshi Yamakawa, and Kozo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 5, 1992, Ser. No. 894,573
Claims priority, application Japan, Jun. 7, 1991, 3-162323; Jun. 7, 1991, 3-162324; Jun. 7, 1991, 3-162325; Nov. 27, 1991, 3-311212; Nov. 27, 1991, 3-335861; Feb. 21, 1992, 4-069980
Int. Cl.[5] C07D *487/14;* **G03C** *7/38, 7/36*
U.S. Cl. 548—262.4 **12 Claims**

1. A pyrrolotriazole compound represented by formula (V):

S8



wherein:
R^7 and R^8 each independently represents an electron attractive group having a Hammett's substituent constant σ_p or 0.15 or more;
R^9 represents hydrogen, aryl, a heterocyclic substituent, alkyl, cyano, carboxyl, formyl, acyl, carbamoyl, alkoxycarbonyl, aryloxycarbonyl, acylamino, alkoxycarbonylamino, aryloxycarbonylamino, sulfonylamino, aminocarbonylamino, sulfamoylamino, amino, alkoxy, aryloxy, silyloxy, heteryloxy, alkylthio, arylthio, heterylthio, halogen, hydroxyl, nitro, sulfamoyl, sulfonyl, azo, acyloxy, carbamoyloxy, imido, sulfinyl, phosphoryl, or azolyl;
the sum of Hammett's substituent constant σ_p of R^7 and R^8 is 0.65 or more;
R^7 and R^8 are a pair of substituents selected from the group consisting of substituents which are independent from each other and substituents which are combined with each other to complete a ring; and
Z represents hydrogen, halogen, arylthio, heterocyclic thio, arylsulfinyl, or nitroso.

5,362,883

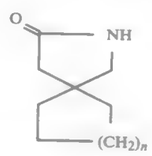
PROCESS FOR CYCLIC AMINO ACID ANTICONVULSANT COMPOUNDS

Rex A. Jennings, Holland; Don R. Johnson, Pinckney; Ronald E. Seamans, and James R. Zeller, both of Holland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 72,212, Jun. 4, 1993, which is a continuation-in-part of Ser. No. 846,509, Mar. 6, 1992, which is a division of Ser. No. 564,623, Aug. 10, 1990, Pat. No. 5,132,451, which is a continuation-in-part of Ser. No. 399,056, Aug. 25, 1989, abandoned. This application Mar. 8, 1994, Ser. No. 208,771
Int. Cl.[5] C07D *209/54*
U.S. Cl. 548—408 **3 Claims**

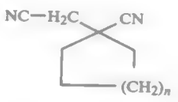
1. A process for the preparation of a compound of Formula VI

VI



wherein n is an integer of one to three which comprises:
Step (a)
reacting a compound of Formula V

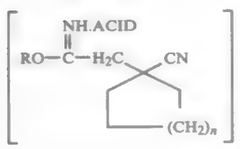
V



wherein n is as defined above with a compound of formula

R—OH

wherein R is alkyl of from one to six carbon atoms, in a solvent and an acid to afford in situ, after removal of excess acid, a compound of Formula IV

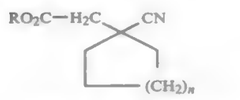


IV

wherein n and R are as defined above;

Step (b)

adding water and then adjusting the pH with an aqueous base, adding a water immiscible solvent and removing the aqueous phase to afford, after removal of the water immiscible solvent, a compound of Formula III



III

wherein n and R are as defined above;

Step (C)

treating a compound of Formula III with hydrogen in the presence of a catalyst and a solvent to afford a compound of Formula VI.

5,362,884

MALEIMIDIC DERIVATIVES CONTAINING ACRYLIC RESIDUES

Vittorio Di Ruocco, Novara; Liliana Gila, Trino, and Fabio Garbassi, Novara, all of Italy, assignors to Ministero Dell-'Universita' E Della Ricerca Scientifica E Tecnologica, Rome, Italy

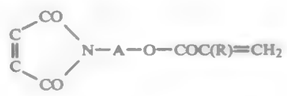
Filed Oct. 27, 1992, Ser. No. 967,125

Claims priority, application Italy, Oct. 29, 1991, MI91 A 002864

Int. Cl.[5] C07D *207/404*

U.S. Cl. 548—547 **4 Claims**

1. A thermostabilizing additive for an acrylic adhesive comprising a maleimidic compound of the formula (I):



(I)

wherein R denotes H or CH_3; and A denotes a cycloalkyl radical containing from 5 to 10 carbon atoms or an aryl radical containing from 6 to 12 carbon atoms.

5,362,885

N-SUBSTITUTED-3-(NITROGEN-CONTAINING 5-MEMBERED RING)-BENZENESULFONAMIDE DERIVATIVES

Hideo Arabori; Shiro Yamazaki; Masato Arahira, and Aiko Murakami, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

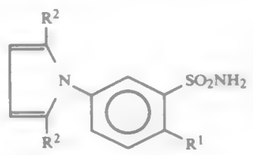
Division of Ser. No. 871,659, Apr. 21, 1992, Pat. No. 5,242,894, which is a division of Ser. No. 473,809, Feb. 2, 1990, Pat. No. 5,127,937. This application Jun. 25, 1993, Ser. No. 81,945

Claims priority, application Japan, Feb. 8, 1989, 1-27368

Int. Cl.[5] C07D *207/325*

U.S. Cl. 548—561 **2 Claims**

1. A 3-(pyrrol-1-yl)benzenesulfonamide derivative of the following formula (II-A):



(II-A)

wherein R^1 is Cl, C_1–C_3 alkyl or C_1–C_4 alkoxy-carbonyl and R^2 is H or CH_3.

5,362,886

ASYMMETRIC SYNTHESIS

Richard A. Berglund, Lafayette, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 12, 1993, Ser. No. 135,032

Int. Cl.[5] C07D *333/16*; C07C *41/05, 43/20*

U.S. Cl. 549—75 **7 Claims**

1. A process for preparing (S)-(+)-N,N-dimethyl-3-(1-naphthalenyloxy)-3-(2-thienyl)propanamine comprising reacting (S)-(−)-N,N-dimethyl-3-(2-thienyl)-3-hydroxypropanamine with sodium hydride, a potassium compound chosen from potassium benzoate or potassium acetate, and 1-fluoronaphthalene in an organic solvent.

5,362,887

FLUORINE - MODIFIED ACID ANHYDRIDES

Toshio Shiobara; Koji Futatsumori; Kazuhiro Arai; Hisashi Shimizu, and Shigeki Ino, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

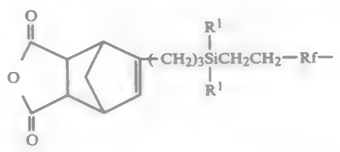
Filed Mar. 23, 1994, Ser. No. 216,566

Claims priority, application Japan, Mar. 23, 1993, 5-088201

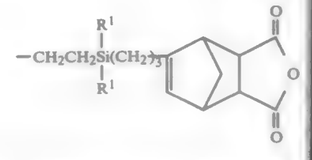
Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 549—214 **4 Claims**

1. A fluorine-modified acid anhydride of the formula (1):



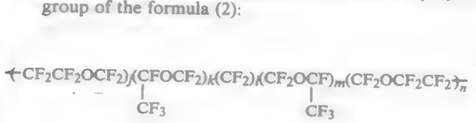
(1)



wherein R^1 is selected from the group consisting of a hydrogen atom, substituted or unsubstituted monovalent hydrocarbon

group, hydroxyl group, alkoxy group, and alkenyloxy group, and

Rf is a divalent perfluoroalkylene or perfluoropolyether group of the formula (2):



(2)

wherein l is an integer of 0 to 8, k and m are integers of 0 to 15, j and n are 0 or 1, with the proviso that j, k, l, m and n are not equal to 0 at the same time.

5,362,888

PREPARATION OF POLYCYCLIC DYES

Nigel Hall, Bury, and Michael C. H. Standen, Clackmannan, both of United Kingdom, assignors to Zeneca Limited, London, United Kingdom

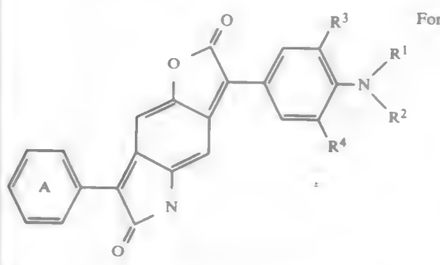
Filed Jun. 14, 1993, Ser. No. 76,197

Claims priority, application United Kingdom, Jun. 15, 1992, 9212629

Int. Cl.[5] C07D *307/80, 307/81*

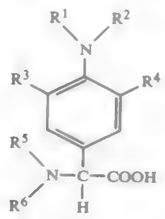
U.S. Cl. 549—299 **1 Claim**

1. A process for the preparation of a polycyclic dye of Formula (1).



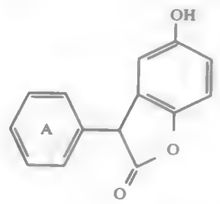
Formula (1)

by reacting a compound of Formula (2):



Formula (2)

with a benzofuranone of Formula (3):



Formula (3)

wherein:

R^1 and R^2 each independently is —H or alkyl;

R^3 is alkyl;

R^4 is —H or alkyl;

R^5 and R^6 each independently is alkyl; or

R^5 and R^6 together with the N atom to which they are attached form a heteroalicyclic ring; and

Ring A is unsubstituted or is substituted by from one to three substitutents independently selected from C_{1-4}-alkyl, C_{1-4}-alkoxy, hydroxy, C_{1-4}-alkylcarbonylamino and halogen,

provided that at least one of R^1, R^2 and R^4 is —H.

5,362,889

MONOMERS FOR DOUBLE RING-OPENING POLYMERIZATION WITH EXPANSION

Jeffrey W. Stansbury, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 6, 1992, Ser. No. 846,480

Int. Cl.[5] C07D *493/10*

U.S. Cl. 549—334 **9 Claims**

1. Monomers of the formula:



(I)

wherein R_1 represents a C_1–C_6 alkenyl, R_2 represents C_1–C_6 alkenyl, R_3 represents a C_1–C_6 alkyl or C_3–C_8 cycloaliphatic unsubstituted, or substituted with halo, C_1–C_6 alkyl, alkoxy, hydroxy, or one of one or more hetero atoms; and R_4 represents a C_1–C_6 alkyl or C_3–C_8 cycloaliphatic unsubstituted, or substituted with halo, C_1–C_6 alkyl, alkoxy, hydroxy, or one of one or more hereto atoms.

5,362,890

GAS PHASE PROCESS FOR THE EPOXIDATION OF NON-ALLYLIC OLEFINS

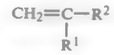
Jerome L. Stavinoha, Jr., Longview, Tex.; John R. Monnier, Kingsport, Tenn.; David M. Hitch, Kingsport, Tenn.; Timothy R. Nolen, Kingsport, Tenn., and George L. Oltean, Rochester, N.Y., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 4, 1993, Ser. No. 130,930

Int. Cl.[5] C07D *301/10, 303/04*

U.S. Cl. 549—536 **6 Claims**

1. A continuous process for the preparation of the monoepoxide of an olefin reactant selected from norbornene, norbornadiene and olefins having the general formula



(I)

wherein R^1 is hydrogen or alkyl and R^2 is an aryl radical or the group



provided that the olefins of formula (I) do not contain any allylic hydrogen atoms, which comprises the steps of:

(1) continuously feeding a gas comprising about 3 to 30 mole percent of said olefin reactant, about 3 to 30 mole percent oxygen and about 40 to 90 mole percent of a paraffin hydrocarbon containing 2 to 6 carbon atoms wherein the oxygen:paraffin hydrocarbon mole ratio is in the range of about 0.03:1 to 0.75:1 to an epoxidation zone containing a supported, silver epoxidation catalyst and maintained at a temperature of about 175° to 230° C.; and

(2) continuously removing from the epoxidation zone a gas

comprising about 0.5 to 3.5 mole percent of said monoepoxide of the olefin reactant, about 2 to 28 mole percent of said olefin reactant, about 2 to 28 mole percent oxygen and about 40 to 90 mole percent of said paraffin hydrocarbon.

5,362,891

PROCESS FOR THE PREPARATION OF TAURINE-CONJUGATED BILE ACIDS

Antonio Bonaldi, Chiuduno, and Egidio Molinari, Longone al Segrino, both of Italy, assignors to Erregierre Industria Chimica S.p.A., S. Paolo D'Argon, Italy

Filed Jul. 26, 1993, Ser. No. 97,103

Claims priority, application Italy, Aug. 4, 1992, MI92 A 001925

Int. Cl.[5] C07J *1/00*

U.S. Cl. 552—554 **10 Claims**

1. A process for the preparation of a taurine-conjugated biliary acid or salt thereof of general formula (I):

$$(Y—NH—CH_2—CH_2—SO_3)_nM \quad (I)$$

where Y is the acyl of a biliary acid selected from the group consisting of ursodeoxycholic, chenodeoxycholic, lithocholic, 3α-7β-12α-tri-hydroxycholanic, 3α-7β-dihydroxy-12-ketocholanic, deoxycholic, dehydrocholic, iodeoxycholic and iocholic acids; M is selected from the group consisting of H, Na, K, Mg and Ca; and n is 1 or 2, being 2 when M=Mg or Ca comprising the steps of:

a) salifying a biliary acid of formula (II)

$$Y—OH \quad (II)$$

where Y is as defined above, with an alkyl or heteroaromatic tertiary amine in an aprotic polar solvent at a temperature below 20° C. and optionally isolating said salified biliary acid;

b) treating either the reaction mixture containing the aforesaid biliary acid salt or previously isolated salt, with a chloroformate of general formula (III):

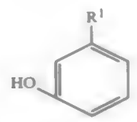
$$Cl—COOR \quad (III)$$

where R is selected from the group consisting of C_1–C_5alkyl, phenyl and benzyl, at a temperature below 20° C. in the presence of an aprotic polar solvent to give the corresponding mixed anhydride of formula (IV)

$$Y—O—COOR \quad (IV)$$

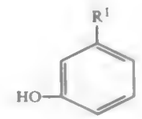
where Y and R are as defined above and optionally isolating said mixed anhydride;

c) reacting mixed anhydride (IV) with a phenol of general formula (V):



(V)

where R^1 is selected from the group consisting of H, C_1–C_5 alkyl, C_2–C_5 acyl and nitro group at a temperature below 60° C. in the presence of an aprotic solvent and of a tertiary amine to give the corresponding phenol ester of formula (VI):



(VI)

d) separating the intermediate (VI) by water addition, phenol ester extraction in a protic or aprotic polar solvent, evaporation and crystallization, optionally followed by recrystallization;

e) treating the phenol ester coming from step (d) with an aqueous solution of taurine as such or in the form of a salt of an alkaline metal or of an alkyl or heteroaromatic tertiary amine at a temperature ranging from 0° C. to 100° C. optionally in the presence of a protic solvent;

f) extracting the reaction mixture with ethyl acetate and acidifying the obtained aqueous solution to a pH between 0 and 1 with a mineral acid or an organic acid for the precipitation of the desired product, which is filtered;

g) crystallizing the product collected in (f) in a polar solvent which is protic or aprotic.

5,362,892

PHOSPHOLIPID COMPOSITION, FAT AND OIL COMPOSITION CONTAINING THE SAME AND PROCESS FOR PRODUCING PHOSPHATIDIC ACIDS

Tomoshige Umeda; Hideki Yokomichi; Hideki Mori; Takuji Yasukawa; Yoshihisa Katsuragi; Yuki Mitsui, and Yasuhiro Miura, all of Ibaraki, Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 822,983, Jan. 21, 1992, abandoned. This application Jan. 26, 1994, Ser. No. 196,992

Claims priority, application Japan, Jan. 18, 1991, 3-004412; Feb. 14, 1991, 3-020707; Feb. 22, 1991, 3-028418

Int. Cl.[5] C09F *9/02*

U.S. Cl. 554—82 **18 Claims**

1. A process for producing phosphatidic acids and/or lysophosphatidic acids comprising

(a) purifying a phospholipid mixture containing a phosphatidic acid and/or a lysophosphatidic acid by

(1) dispersing or dissolving the phospholipid mixture containing the phosphatidic acid and/or the lysophosphatidic acid in water or a nonpolar solvent and then

(2) reacting the phosphatidic acid and/or the lysophosphatidic acid with an aqueous solution of a polyvalent metal salt in the presence of a polar solvent under an alkaline condition to thereby give rise to a polyvalent metal salt of the phosphatidic acid and/or the lysophosphatidic acid;

(3) adding a substance capable of precipitating a polyvalent metal salt of a phosphatidic acid and/or a lysophosphatidic acid to said polyvalent metal salt of the phosphatidic acid and/or the lysophosphatidic acid obtained in said step (a)(2) in the presence of a nonpolar solvent to precipitate said polyvalent metal salt of the phosphatidic acid and/or the lysophosphatidic acid and then

(4) separating the resulting precipitated polyvalent metal salt of the phosphatidic acid and/or the lysophosphatidic acid,

(b) washing the resulting polyvalent metal salt of the phosphatidic acid and/or the lysophosphatidic acid obtained in said step (a)(4) with an aqueous water-soluble solvent under an acidic condition,

wherein said substance capable of precipitating a polyvalent metal salt of a phosphatidic acid and/or a lysophosphatidic acid is a lipid or a polar solvent containing 1 to 10 carbon atoms and having a polar group, and wherein said lipid is a monoglyceride, a diglyceride, a triglyceride or a mixture thereof.

5,362,893

METHOD FOR REFINING GLYCERIDE OIL

Joose R. L. Muylle; Albert J. Dijkstra, both of Kortrijk; Pieter J. A. Maes, Harelbeke, and Martin Van Opstal, Izegem, all of , assignors to N.V. Vandemoortele International, Kortrijk,

Filed Mar. 4, 1993, Ser. No. 26,418

Claims priority, application European Pat. Off., Mar. 9, 1992, 92200665.5

Int. Cl.[5] C11B *3/06*

U.S. Cl. 554—195 **6 Claims**

1. A process for refining glyceride oil comprising:

neutralizing glyceride oil by mixing said glyceride oil with alkali;

subjecting said neutralized glyceride oil to a first centrifugal separation during which a first soapstock, with low triglyceride oil content, is removed from an oil phase;

subjecting said oil phase from said first centrifugal separation to a second centrifugal separation to remove a second soapstock; and

recycling said second soapstock into the glyceride oil subjected to said first centrifugal separator, said second centrifugal separation being adjusted to yield a glyceride oil with minimum residual soap content and said second soapstock comprising a substantial amount of glyceride oil;

such that at least 1 wt. % of said glyceride oil passes through both separators twice.

5,362,894

PROCESS FOR PRODUCING AN ESTERIFIED ALKOXYLATED POLYOL

Beth M. Handwerker, West Chester; Charles F. Cooper, Paoli, both of Pa., and Bernard C. Sekula, High Bridge, N.J., assignors to Arco Chemical Technology, L.P. and CPC International, Inc., both of Englewood Cliffs, N.J.

Filed Nov. 12, 1993, Ser. No. 151,330

Int. Cl.[5] C07C *51/00*; C11C *1/00, 3/00*

U.S. Cl. 554—169 **23 Claims**

1. A process for the preparation of a fatty acid-esterified alkoxylated polyol, wherein said process comprises reacting a C_1–C_4 alkyl ester of a C_8–C_{24} fatty acid with a shod chain acid-esterified alkoxylated polyol in the presence of a basic catalyst in a reaction zone at a temperature effective to simultaneously form the fatty acid-esterified alkoxylated polyol and a C_1–C_4 alkyl ester of a shod chain acid with said C_1–C_4 alkyl ester of the shod chain acid being removed from the reaction zone during said reacting.

5,362,895

METHOD OF RECOVERING UNSATURATED FATTY ACIDS

Heinz Engelhardt, Bübingen; Rudolf Krumbholz, Merchweiler, and Peter Lembke, Eschringen, all of Germany, assignors to K.D. Pharma GmbH, Bexbach, Germany

Filed Mar. 1, 1993, Ser. No. 25,041

Claims priority, application Germany, Mar. 2, 1992, 4206539

Int. Cl.[5] C11B *3/10*

U.S. Cl. 554—175 **9 Claims**

1. A method of recovering an unsaturated fatty acid comprising sixteen or more carbon atoms or a derivative thereof from a mixture comprising:

(a) passing a mixture comprising an unsaturated fatty acid, a saturated fatty acid, mixtures thereof, or derivatives thereof in a mobile phase of supercritical or liquid carbon dioxide into a column containing a stationary phase comprising a support and an organic material bound to the support having at least one free electron pair, a multiple bond, or a combination thereof;

(b) eluting the saturated fatty acid and/or derivative thereof from said column; and

(c) recovering said unsaturated fatty acid from said column.

5,362,896

SILACYCLO RING COMPOUND HAVING ALKENOXY GROUPS

Toshiyuki Ozai; Masatoshi Arai, both of Gunma, Japan, and Yoshifumi Inoue, Torrance, Calif., assignors to Shin-Etsu Chemical Co., Inc., Tokyo, Japan

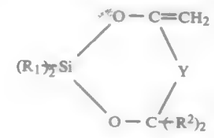
Filed Apr. 7, 1994, Ser. No. 224,468

Claims priority, application Japan, Apr. 7, 1993, 5-105157

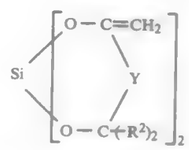
Int. Cl.[5] C07F *7/08, 7/18*

U.S. Cl. 556—464 **8 Claims**

1. A silacyclo ring compound of the formulae (1) or (2):



(1)



(2)

wherein R^1 is either a hydrogen atom, or an unsubstituted or substituted, branched or unbranched, monovalent hydrocarbon group of 1 to 8 carbon atoms, each R^1 being the same or different; R^2 is either a hydrogen atom, or an unsubstituted or substituted, branched or unbranched, monovalent hydrocarbon group of 1 to 8 carbon atoms, each R^2 being the same or different or both R^2 groups together may be an unsubstituted or substituted, branched or linear, monovalent hydrocarbon group of 1 to 8 carbon atoms, double bonded to the silacyclo ring; and Y is a bivalent branched or linear hydrocarbon group of 1 to 6 carbon atoms.

5,362,897

PROCESS FOR PRODUCING TRIALKOXYSILANES

Katsuyoshi Harada, Oka, and Yoshinori Yamada, Aichi, both of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1994, Ser. No. 229,921

Claims priority, application Japan, Apr. 30, 1993, 5-124737; May 11, 1993, 5-132962; May 11, 1993, 5-132963

Int. Cl.[5] C07F *7/04, 7/18*

U.S. Cl. 556—470 **12 Claims**

1. A process for producing trialkoxysilanes by reaction of a metallic silicon and an alcohol having 1 to 4 carbon atoms, in which the reaction is effected under at least one of the following conditions (1)–(3):

(1) using as the metallic silicon one which contains 0.30 to 0.37% by weight of aluminum,

(2) in the presence of a catalyst of cuprous chloride prepared by a wet process, and

(3) allowing aluminum and/or an aluminum compound to coexist.

5,362,898

BIS(PENTAERYTHRITOL PHOSPHATE ALCOHOL) ALKYLPHOSPHONATE

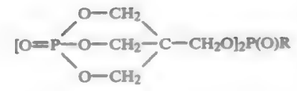
Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo Nobel nv, Arnhem, Netherlands

Filed Nov. 22, 1993, Ser. No. 155,666

Int. Cl.[5] C07F *9/53*

U.S. Cl. 558—74 **3 Claims**

1. A bis(pentaerythritol phosphate alcohol) alkyl-phosphonate compound



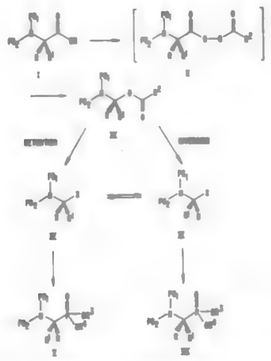
where R is alkyl.

5,362,899

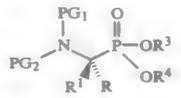
CHIRAL SYNTHESIS OF ALPHA-AMINOPHOSPONIC ACIDS

David A. Campbell, Redwood Shores, Calif., assignor to Affymax Technologies, N.V., Curacao, Netherlands

Filed Sep. 9, 1993, Ser. No. 120,007
Int. Cl.[5] *C07F 9/40*
U.S. Cl. 558—108 **16 Claims**

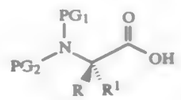


1. A method of preparing a compound of Formula V:

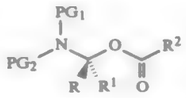


in which PG_1 and PG_2 are protecting groups, R and R^1 are independently selected from the group consisting of hydrogen, alkyl, aryl, substituted alkyl, substituted aryl, heteroaryl, alkylaryl, and aminoalkyl, provided that R is not the same as R^1 and provided that either R or R^1 is hydrogen, and R3 and R^4 are independently lower alkyl or aryl, the method comprising the steps of:

a) treating a compound of Formula I:

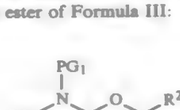


in which PG_1, PG_2, R, and R^1 are defined as above, with a peroxyacid having the structure $R^2(CO)OOH$, in which R^2 is alkyl or aryl, to yield an ester of Formula III:



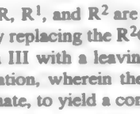
in which PG_1, PG_2, R, R^1, and R^2 are defined as above;

b) stereospecifically replacing the R^2COO— group from the ester of Formula III with a leaving group X with retention of configuration, wherein the leaving group X is a halide or a sulfonate, to yield a compound of Formula IV



in which PG_1, PG_2, R, R^1, and X are defined as above; and

c) treating the compound of Formula IV



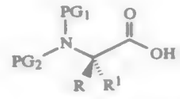
in which PG_1, PG_2, R, R^1, and X are defined as above, with a phosphite having the structure $P(OR^3)(OR^4)(OR^5)$, in which R^3, R^4, and R^5 are independently lower alkyl or aryl, to yield a compound of Formula V.

9. A method of preparing a compound of Formula VII:

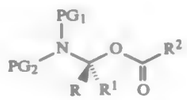


in which PG_1 and PG_2 are protecting groups, R and R^1 are independently selected from the group consisting of hydrogen, alkyl, aryl, substituted alkyl, substituted aryl, heteroaryl, alkylaryl, and aminoalkyl, provided that R is not the same as R^1 and provided that either R or R^1 is hydrogen, and R^3 and R^4 are independently lower alkyl or aryl, the method comprising the steps of:

a) treating a compound of Formula I:

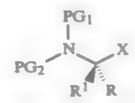


in which PG_1, PG_2, R, and R^1 are defined as above, with a peracid having the structure $R^2(CO)OOH$, in which R^2 is alkyl or aryl, to yield an ester of Formula III:



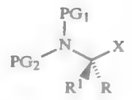
in which PG_1, PG_2, R, R^1, and R^2 are defined as above;

b) stereospecifically replacing the R^2COO— group from the ester of Formula III with a leaving group X with inversion of configuration, wherein the leaving group X is a halide or a sulfonate, to yield a compound of Formula VI



in which PG_1, PG_2, R, R^1, and X are defined as above; and

c) treating the compound of Formula VI



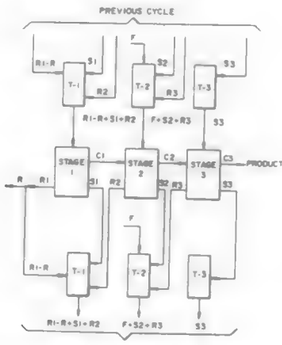
in which PG_1, PG_2, R, R^1, and X are defined as above, with a phosphite having the structure $P(OR^3)(OR^4)(OR^5)$, in which R^3, R^4, R^5 are independently lower alkyl or aryl, to yield a compound of Formula VII.

5,362,900

PROCESS AND COMPOSITION

Gaylord M. Kissinger, Evansville, Ind., and Nicholas P. Wynn, Toronto, Canada, assignors to General Electric Co., New York, N.Y. and Sulzer Canada, Inc., Canada

Division of Ser. No. 681,278, Apr. 8, 1991, Pat. No. 5,243,093, which is a continuation-in-part of Ser. No. 578,385, Sep. 7, 1990, abandoned. This application Aug. 18, 1993, Ser. No. 108,347
Int. Cl.[5] *C07C 68/04*
U.S. Cl. 558—265 **4 Claims**



1. An improved method for preparing polycarbonate from a purified bisphenol-A stream containing bisphenol A, phenol, acetone, water and side reaction products of an acid catalyzed condensation of phenol and acetone comprising separating from the impure bisphenol-A stream the phenol, acetone, water and side reaction products to provide a purified bisphenol-A having a purity of greater than about 99.5% and preparing polycarbonate from the purified bisphenol-A wherein the improvement comprises fractionally melt crystallizing the impure bisphenol-A stream in a falling film dynamic crystallizer.

5,362,901

PROCESS FOR THE PREPARATION OF ORGANIC CARBONATES HAVING AT LEAST ONE AROMATIC ESTER GROUP

Paul Wagner, Duesseldorf; Norbert Schön, and Hans-Josef Buysch, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1993, Ser. No. 66,735
Claims priority, application Germany, Jun. 1, 1992, 4218061
Int. Cl.[5] *C07C 69/96*
U.S. Cl. 558—270 **15 Claims**

1. A process for the preparation of an organic carbonate having at least one aromatic ester group of the formula

$$R^1—OCOO—R^2,$$

in which

R^2 denotes an unsubstituted phenyl or an unsubstituted naphthyl or phenyl or naphthyl each of which is mono- to trisubstituted by straight-chain or branched C_1–C_4-alkyl, straight-chain or branched C_1–C_4-alkoxy, cyano and/or halogen and

R^1 can, independently of R^2, assume the range of meanings of R^2 or can denote straight-chain or branched C_1–C_6-alkyl,

by catalysed reaction of 0.1–10 mol in each case of an organic carbonate having at least one aliphatic ester group of the formula

$$R^1—OCOO—R^3,$$

in which

R^3 denotes straight-chain or branched C_1–C_6-alkyl and

R^1 has the above range of meanings,

with 1 mol in each case of a phenolic compound of the formula

$$R^2—OX,$$

in which

R^2 has the above range of meanings and

X represents hydrogen or —COO—C_1–C_6-alkyl having a straight-chain or branched alkyl group,

in the presence of a transesterification catalyst at 60°–320° C. in a column-type reactor, the organic carbonate containing at least one aromatic ester group being withdrawn from the bottom part of the column and the alcoholic compound coformed as a reaction product of the formula

$$R^3—OX,$$

in which

X and R^3 have the meaning mentioned,

being withdrawn from the top part of the column wherein the bottom product withdrawn in the liquid state from the bottom part of the column which contains a carbonate containing at least one aromatic ester group, still unreacted phenol and, possibly, small amounts of the carbonate containing at least one aliphatic ester group, is subjected to 1 to 10 further passes through the same reactor with intermediate storage of the bottom product, where the further addition of the organic carbonate having at least one aliphatic ester group can be dispensed with in the last 1–4 passes employed.

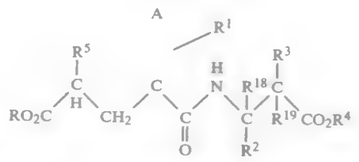
5,362,902

N-(1-(2-CARBOXYETHYL35CLOALKYLCARBONYL)-BETA-ALANINE DERIVATIVES FOR PHARMACEUTICAL USE

Ian T. Barnish, Ramsgate, and Keith James, Deal, both of England, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP90/01916, § 371 Date Jul. 21, 1992, § 102(e) Date Jul. 21, 1992, PCT Pub. No. WO91/08195, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 15, 1990, Ser. No. 910,331
Claims priority, application United Kingdom, Nov. 23, 1989, 8926512
Int. Cl.[5] *C07C 311/05, 311/06;* **A61K** *31/215*
U.S. Cl. 560—13 **15 Claims**

1. A compound of the formula (I):



or the pharmaceutically acceptable salt thereof, wherein A completes a 4 to 7 membered carbocyclic ring which may be saturated or monounsaturated and which may optionally be fused to a further saturated or unsaturated 5 or 6 membered carbocyclic ring; each of R and R^4 is independently H, C_1–C_6 alkyl, benzyl or a biolabile ester-forming

group other than C_1–C_6 alkyl or benzyl, said ester-forming group being selected from undecyl, 1-(2,2-diethylbutyryloxy)ethyl, 2-ethylpropionyloxymethyl, 1-(2-ethylpropionyloxy)ethyl, 1-(2,4-dimethylbenzoxy)ethyl, 1-(benzyloxy)benzyl, 1-benzoxyethyl, 4-(1-naphthyloxy)butyl, 2-methyl-1-propionoxypropyl, 2,4,6-trimethylbenzoyloxymethyl, 1-(2,4,6-trimethylbenzyloxy)ethyl, pivaloyloxymethyl, phenethyl, phenpropyl, 1-naphthylmethyl, 3-(cyclohexyl)propyl, 2,2,2-trifluoroethyl, naphthyl, 2,4-dimethylphenyl, 4-(tert.-butyl)phenyl, 5-(4-methyl-1,3-dioxalynyl-2-onyl)methyl and 5-indanyl;

R^1 is H or C_1–C_4 alkyl;

R^2 and R^{18} are each independently selected from H and aryl(C_2–C_4)alkenyl; or

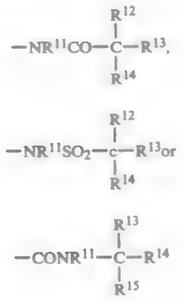
R^3 and R^{19} are each independently selected from H, C_1–C_4 alkyl and (C_1–C_4)alkoxy;

with the proviso that one of R^2 and R^{18} must be H and the other must be aryl(C_2–C_4)alkenyl, and at least one of R^3 and R^{19} must always be H; and

R^5 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_7 cycloalkyl or C_7 cycloalkenyl; or

R^5 is a C_1–C_6 alkyl substituted by halo, hydroxy, C_1–C_6 alkoxy, C_1–C_6 alkoxy, C_3–C_7 cycloalkyl, C_7 cycloalkenyl, aryl, aryloxy, heterocyclyl, $—NR_6R^7$, $—NR^8—COR^9$, $—NR^8SO_2R^{10}$, $—CONR^7R^7$ or $R^6R^7N—(C_1–C_6)$alkoxy; or

R^5 is C_1–C_6 alkyl substituted by a group of the formula:



wherein R^6 and R^7 are each independently H, C_1–C_4 alkyl, C_3–C_7 cycloalkyl, aryl, aryl(C_1–C_4)alkyl, C_2–C_6 alkoxyalkyl, or heterocyclyl; or the two groups R^6 and R^7 are taken together with the nitrogen to which they are attached to form a pyrrolidinyl, piperidino, morpholino, piperazinyl and N-(C_1–C_4)alkyl-piperazinyl group;

or R^5 is a biolabile mono or di-ester derivative of S-lysylaminomethyl, N^2-acetyl acetyl-S-lysylaminomethyl or N^2-methanesulphonyl-S-lysylaminomethyl, wherein the ester-forming group of said derivative is as previously defined for R and R^4 when at least one of said R and R^4 is other than H;

R^8 is H or C_1–C_4 alkyl;

R^9 is C_1–C_4 alkyl, CF_3, aryl, aryl(C_1–C_4)alkyl, aryl(C_1–C_4-)alkoxy, heterocyclyl, C_1–C_4alkoxy or NR^6R^7 wherein R^6 and R^7 are as previously defined;

R^{10} is C_1–C_4 alkyl, C_3–C_7 cycloalkyl, aryl or heterocyclyl;

R^{11} is H, C_1–C_6 alkyl, aryl or C_3–C_7 cycloalkyl;

R^{12} is $R^{11}CONR^{11}—$, $R^{16}R^{17}N$-$(CH_2)_p—$ or $R^{11}O—$, wherein each R^{11} is as previously defined above;

R^{13} and R^{14} are each independently H or C_1–C_6 alkyl; or

R^{13} is H and R^{14} is C_1–C_6 alkyl which is substituted by OH, C_1–C_4 alkoxy, SH, SCH_3, NH_2, aryl(C_1–C_6)alkyl OCONH—, $NH_2CO—$, CO_2H, guanidino, aryl or heterocyclyl; or

the two groups R^{13} and R^{14} are joined together to form, with the carbon atom to which they are attached, a 5 or 6 membered carbocyclic ring which may be saturated or monounsaturated and which may optionally be substituted by C_1–C_4 alkyl or fused to a further 5 or 6 membered saturated or unsaturated carbocyclic ring; or

R^{13} is H, and R^{12} and R^{14} are joined together to form, with the carbon atom to which they are attached, a 5 or 6 membered carbocyclic ring which may be saturated or monounsaturated and which may optionally by substituted by C_1–C_4 alkyl or used to a further 5 or 6 membered saturated or unsaturated carbocyclic ring; or

R^{13} is H, and R^{12} and R^{14} are linked to form a 2-(N—COR^{11}-4-aminopyrrolidinyl) group;

R^{15} is $R^{16}R^{17}NCO—$, $R^{11}OCH_2—$ or heterocyclyl, wherein R^{11} is as previously defined above;

R^{16} is R^{17} are each independently H or C_1–C_4 alkyl, and

p is 0 or an integer of from 1 to 6; or

the pharmaceutically acceptable salts thereof.

5,362,903

METHOD FOR PREPARING α-L-ASPARTYL-L-PHENYLALANINE

Shinji Fujita, and Satoji Takahashi, both of Yokkaichi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 152,134
Claims priority, application Japan, Dec. 7, 1992, 4-326883
Int. Cl.[5] C07C *103/52*
U.S. Cl. 560—41 **9 Claims**

1. A method for preparing e-L-aspartyl-L-phenylalanine comprising:

i) subjecting a mixed solution containing hydrochloric acid and at least one α-L-aspartyl-L-phenylalanine derivative to a diffusion dialysis to decrease a hydrochloric acid concentration of the mixed solution as a dehydrochlorinated solution;

ii) concentrating said dehydrochlorinated solution;

iii) adding a base to the concentrated solution for neutralization;

iv) crystallizing α-L-aspartyl-L-phenylalanine as α-L-aspartyl-L-phenylalanine crystals; and

v) isolating said α-L-aspartyl-L-phenylalanine crystals from the neutralized solution.

5,362,904

PROCESS FOR THE PREPARATION OF ACRYLIC ACID AND METHACRYLIC ACID ESTERS

Mark A. Kearns, Sutton, England, assignor to International Speciality Chemicals Limited, Hythe, Great Britain

Filed Sep. 24, 1992, Ser. No. 950,344
Claims priority, application United Kingdom, Sep. 27, 1991, 9120584
Int. Cl.[5] C07C *67/02*
U.S. Cl. 560—217 **2 Claims**

1. A process for the preparation of acrylic acid or methacrylic acid esters in an alcohol which has at least 2 carbon atoms and at least two oxygen functions which process comprises reacting under transesterification conditions a first reactant which is a preformed ester of (meth)acrylic acid and a C_1 to C_4 monohydric alcohol having only one oxygen function with a second reactant which is an alcohol having at least 2 carbon atoms and at least two oxygen functions in the presence of a catalyst composition comprising:

a. an oxide, hydroxide or nitrate of calcium or barium and

b. a lithium compound LiX, wherein X in LiX is selected from the anions nitrate and sulphite, such that both (a) and (b) are not nitrates in the same catalyst.

5,362,905

PROCESS FOR THE PREPARATION OF L-5-(2-ACETOXY-PROPIONYLAMINO)-2,4,6-TRIIODO-ISOPHTHALIC ACID DICHLORIDE

Marco Villa; Maurizio Paiocchi, both of Milan, and Aldo Di Caterino, Sesto San Giovanni Milan, all of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Oct. 22, 1993, Ser. No. 139,802
Claims priority, application Italy, Oct. 27, 1992, MI92 A 002450
Int. Cl.[5] C07C *67/02; C07B 43/06*
U.S. Cl. 560—250 **4 Claims**

1. In a process for the preparation of L-5-(2-acetoxy-propionylamino)-2,4,6-triiodo-isophthalic acid dichloride by reacting 5-amino-2,4,6-triiodo-isophthalic acid dichloride with L-2-acetoxy-propionyl-chloride, the improvement consisting in operating in the presence of a Lewis acid.

5,362,906

FARNESYL PYROPHOSPHATE ANALOGS

Neville J. Anthony, Hatfield; Ta-Jyh Lee; Robert L. Smith, both of Lansdale, and Gerald E. Stokker, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 766,981, Sep. 27, 1991, Pat. No. 5,298,655.
This application Jun. 18, 1993, Ser. No. 79,661
Int. Cl.[5] A01N *47/10; C07C 229/00*
U.S. Cl. 562—23 **9 Claims**

1. A compound of the formula:

wherein:

X is CH(OH)

Y is PO_3RR^1

R and R′ are each independently H, lower alkyl or $CH_2CH_2N^+Me_3A^-$

A^- is a pharmaceutically acceptable anion;

m is 0, 1, 2 or 3; and

n is 0, 1, 2 or 3;

or a pharmaceutically acceptable salt thereof.

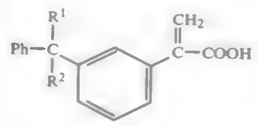
5,362,907

INTERMEDIATES AND THEIR USE IN THE PREPARATION OF S-KETOPROFEN

Christian Laue, Langenfeld; Georg Schröder, Leverkusen, and Dieter Arlt, Köln, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 21, 1992, Ser. No. 934,044
Claims priority, application Germany, Aug. 30, 1991, 4128787
Int. Cl.[5] C07C *59/48*
U.S. Cl. 562—470 **7 Claims**

1. A (2)-arylpropenoic acid of the formula (II)



(II)

in which

Ph is a phenyl radical, and

R^1 and R^2 are identical or different and in each case represent hydrogen, hydroxyl, alkoxy having up to 10 C atoms, cycloalkoxy having 5 to 10 C atoms, aralkoxy having 7 to 12 C atoms or aryloxy having 6 to 10 C atoms, which is unsubstituted or substituted by alkyl or alkoxy having in each case 1 to 5 C atoms, or

represent the group O_2CR^3 where R^3 is hydrogen, alkyl having up to 10 C atoms, cycloalkyl having 5 to 10 C atoms, aralkyl having 7 to 12 C atoms or aryl having 6 to 10 C atoms and unsubstituted or substituted by alkyl or alkoxy having in each case 1 to 5 C atoms, or

represent the group $OSiR^4R^5R^6$, where R^4, R^5 and R^6, independently of each other, each have the meaning given for R^3, or

represent the group NR^7R^8, where R^7 and R^8, independently of each other, have the meaning given for R^3, or

represent a 2-tetrahydropyryl group, or

R^1 and R^2 together represent a group of the structure



in which

D^1 and D^2, independently of each other, each represent oxygen, sulphur or the group NR^3, where R^3 has the meaning given above, and

n represents 1, 2 or 3.

5,362,908

CATALYST AND METHOD FOR PURIFYING CRUDE TEREPHTHALIC ACID, ISOPHTHALIC ACID OR NAPHTHALENE DICARBOXYLIC ACID

Hobe Schroeder, Naperville, and Ricky L. Wittman, Aurora, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 10, 1993, Ser. No. 29,037
Int. Cl.[5] C07C *51/42, 51/487*
U.S. Cl. 562—487 **14 Claims**

1. A method for the purification of a crude terephthalic acid, crude isophthalic acid or a crude naphthalene dicarboxylic acid produced by the liquid-phase oxidation of benzene having two oxidizable alkyl or acyl ring substituents or an oxidizable alkyl and acyl ring substituent in the meta or para positions or naphthalene having two oxidizable alkyl or acyl ring substituents or an oxidizable alkyl and acyl ring substituent, with an oxygen-containing gas in a solvent at an elevated temperature and pressure and in the presence of an oxidation catalyst comprising a heavy metal component, wherein the purification comprises passing an at least partially aqueous solution of from about 5 to about 50 weight percent of the crude terephthalic or isophthalic acid or the crude naphthalene dicarboxylic acid, at a temperature of from about 100° C. to about 350° C. and at a pressure sufficient to maintain the solution substantially in the liquid phase, through a particulate catalyst bed and in the presence of hydrogen, wherein the particulate catalyst comprises a noble metal of Group VIII of the Periodic Table of Elements on a titanium dioxide support which does not disintegrate in less than one month under the aforesaid conditions employed in the purification.

5,362,909

PROCESS FOR THE PREPARATION OF 3-CHLORO-2,4,5-TRIFLUOROBENZOYL CHLORIDE, 2,4,5-TRIFULUOROBENZOYL FLUORIDE, AND 2,3,4,5-TETRAHALOGENOBENZENE DERIVATIVES

Erich Klauke, Ocanthal; Uwe Petersen, Leverkusen, and Klaus Grohe, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 763,027, Sep. 20, 1991, Pat. No. 5,200,548, which is a division of Ser. No. 459,876, Jan. 2, 1990, Pat. No. 5,072,038, which is a continuation of Ser. No. 735,502, May 17, 1985, abandoned. This application Oct. 29, 1992, Ser. No. 968,603
Claims priority, application Germany, Jun. 4, 1984, 3420796
Int. Cl.[5] C07C *51/04, 51/363, 51/58, 51/62*
U.S. Cl. 562—852 **2 Claims**

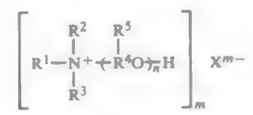
1. A process for the preparation of 3-chloro-2,4,5-trifluorobenzoyl chloride, which comprises chlorinating 2,4,5-trifluorobenzoic acid to give 3-chloro-2,4,5-trifluorobenzoic acid, and reacting the latter with thionyl chloride.

5,362,910
GERMICIDAL AND FUNGICIDAL AGENT AND A GERMICIDAL AND FUNGICIDAL METHOD

Masahiro Makino, Sabae; Mikihiko Kurose, Fukui, and Yoshihiro Sasada, Takefu, all of Japan, assignors to Nicca Chemical Co., Ltd., Fukui, Japan

Filed Jul. 24, 1992, Ser. No. 918,090
Claims priority, application Japan, Oct. 8, 1991, 3-289112; Oct. 15, 1991, 3-295093
Int. Cl.[5] C07C *211/63;* A01N *33/12*
U.S. Cl. 564—285 20 Claims

1. A germidical and fungicidal agent which comprises at least one compound selected from the group consisting of quaternary ammonium salts having the formula:



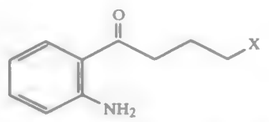
wherein R^1 is an alkyl group or an alkenyl group having 8 to 22 carbon atoms, R^2 is an alkyl group having 1 to 22 carbon atoms or an alkenyl group having 2 to 22 carbon atoms, R^3 is an alkyl group having 1 to 5 carbon atoms, R^4 is an alkylene group having 2 to 4 carbon atoms, R^6 is hydrogen or either one of an aryl group, a heteroaryl group and an arloxy group with or without substituents, X^{m-} is an anion of a carboxylic acid, an ion of an alkyl ester of phosphoric acid or an ion of a polyoxyalkylenealkylether ester of phosphoric acid having 1 to 12 carbon atoms, m is an integer from 1 to 3 and n is an integer from 1 to 5, R^5 being an aryl group, a heteroaryl group or an arloxy group with or without substituents when X^{m-} is an ion of an alkyl ester of phosphoric acid or an ion of a polyoxyalkylenenalkylether ester of phosphoric acid.

5,362,911
PROCESS FOR THE PREPARATION OF O-AMINOPHENYL CYCLO-PROPYL KETONE

Albert A. Cevasco, Belle Mead, N.J., assignor to American Cyanamid Company, Wayne, N.J.

Filed Dec. 30, 1993, Ser. No. 175,823
Int. Cl.[5] C07C *209/74*
U.S. Cl. 564—305 11 Claims

1. A process for the preparation of o-aminophenyl cyclopropyl ketone which comprises reacting a compound of formula I



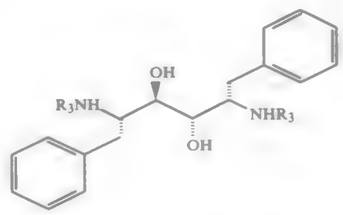
wherein X is chlorine or bromine with at least one molar equivalent of an aqueous base in the presence of a phase transfer catalyst and optionally in the presence of an organic solvent.

5,362,912
PROCESS FOR THE PREPARATION OF A SUBSTITUTED DIAMINODIOL

Thomas J. Sowin, Grayslake; Steven M. Hannick, Highland Park, both of Ill.; Elizabeth M. Doherty, New Haven, Conn.; Takahiro Sato, Tokyo, and Takayuki Suzuki, Kanagawa, both of Japan, assignors to Abbott Laboratories, Abbott Park, Ill.

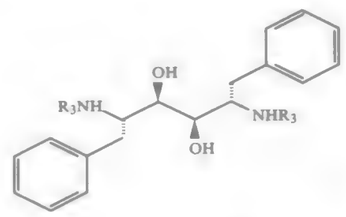
Continuation-in-part of Ser. No. 885,575, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 746,020, Aug. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 616,170, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 518,730, May 9, 1990, Pat. No. 5,142,056, which is a continuation-in-part of Ser. No. 456,124, Dec. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 405,604, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 355,945, May 23, 1989, abandoned. This application Apr. 23, 1993, Ser. No. 48,921
Int. Cl.[5] C07C *213/00*
U.S. Cl. 564—360 10 Claims

1. A process for the preparation of the (3R,4S)-diol of the formula:

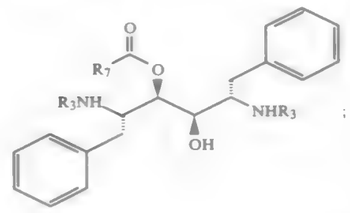


wherein at each occurrence R_3 is independently selected from hydrogen and an N-protecting group comprising

(a) reaction of the (3R,4R)-diol of the formula:

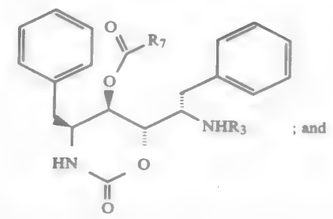


wherein R_3 is $R^*OC(O)$— wherein R^* is loweralkyl or benzyl with a compound of the formula $R_7C(OR_8)_3$ wherein R_7 is hydrogen, loweralkyl, phenyl or benzyl and R_8 is loweralkyl to provide a compound of the formula:



(b) reaction of the product of step a with $R^{**}SO_2Cl$ or $(R^{**}SO_2)_2O$ wherein R^{**} is methyl, trifluoromethyl or 4-methylphenyl to provide the sulfonate derivative of the product of step a;

(c) heating the product of step b in an inert solvent to provide a compound of the formula:



(d) reaction of the product of step c with a strong base.

5,362,913
SATURATED, AMINATED, ALKOXYLATED POLYBUTADIENES

John F. Knifton, and Michael Cuscurida, both of Austin, Tex., assignors to Huntsman Corporation, Salt Lake City, Utah

Filed Nov. 16, 1992, Ser. No. 976,914
The portion of the term of this patent subsequent to Feb. 19, 2006, has been disclaimed.
Int. Cl.[5] C07C *209/26*
U.S. Cl. 564—480 13 Claims

1. A process for making saturated, aminated alkoxylated polymers comprising the steps of:

(1) polymerizing one or more unsaturated hydrocarbons to form a liquid polymer, where at least one of the unsaturated hydrocarbons is butadiene;

(2) providing the liquid polymer with terminal hydroxyl groups to give a hydroxyl-terminated polybutadiene (HTPB);

(3) alkoxylating the HTPB with one or more alkylene oxides having at least three carbon atoms to provide secondary terminal hydroxyl groups;

(4) simultaneously aminating and hydrogenating the alkoxylated liquid polymer to produce an essentially completely saturated, essentially completely aminated, alkoxylated liquid polymer in the presence of hydrogen and ammonia and a catalyst consisting of components nickel oxide, copper oxide, chromium oxide and molybdenum oxide, and where the molar ratio of hydrogen to ammonia to secondary hydroxyl groups on the alkoxylated liquid polymer is in the range of about at least 50 to at least 10 to 1.

5,362,914
DECOLORIZATION OF POLYETHYLENE POLYAMINES USING COBALT/COPPER/CHROMIUM

Wei-Yang Su, Austin, Tex., assignor to Texaco Chemical Inc., White Plains, N.Y.

Filed Aug. 25, 1993, Ser. No. 111,580
Int. Cl.[5] C07C *209/84*
U.S. Cl. 564—498 14 Claims

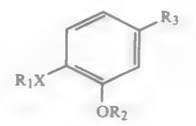
1. A continuous process for reducing the color of a polyamine product comprising contacting the product at elevated temperature and pressure with a catalytically effective amount of a cobalt on alumina hydrogenation catalyst promoted with copper and chromium in the presence of a hydrogen-containing atmosphere, where the catalyst has a lifetime in this process of at least 1,000 hours.

5,362,915
PHENYL-SUBSTITUTED CYCLOALKENYL COMPOUNDS USEFUL AS PDE IV INHIBITORS

Harald Maschler, Nordstemmen, Germany, and Siegfried B. Christensen, IV, King of Prussia, Pa., assignors to SmithKline Beecham Pharma GmbH, Munich, Germany and SmithKline Beecham Corporation, King of Prussia, Pa.

PCT No. PCT/EP91/00637, § 371 Date Oct. 2, 1992, § 102(e) Date Oct. 2, 1992, PCT Pub. No. WO91/15451, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 2, 1991, Ser. No. 934,546
Claims priority, application United Kingdom, Apr. 5, 1990, 9007762
Int. Cl.[5] C07C *43/205;* A61K *31/075*
U.S. Cl. 568—20 8 Claims

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:

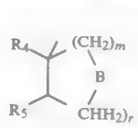


R_1 is $—CH_3$ or $—CH_2CH_3$ unsubstituted or substituted by 1 to 3 fluorine;

X is O or $S(O)_s$ where s=0 to 2;

R_2 is C_4- cyclic alkyl, optionally substituted by one to three methyl groups or one ethyl group; $—CH_2$-cyclopentyl, $—CH_2$-cyclopropyl, 3-tetrahydrofuranyl, C_{1-7} alkyl, CH_3 or CH_2CH_3 substituted by one to three fluorines; $—(CH_2)_nCOO(CH_2)_gCH_3$, or $(CH_2)_nO(CH_2)_gCH_3$, wherein n is 2 to 4 and g is 0 to 2;

R_3 represents a moiety of formula (a):



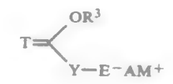
wherein R_4 and R_5 each represent hydrogen or R_4 and R_5 together represent a bond; B represents >C═O, >C═S or >CH—R_6 wherein R_6 represents H, OH, C_{1-6} alkoxy or C_{1-6} thioalkoxy; and m and r each independently represents zero or an integer in the range of 1 to 4 wherein m+r represents an integer in the range of from 2 to 4; with the proviso that when R_1 is methyl, X is oxygen, R_2 is [methyl or]cyclopentyl, R_3 does not represent cyclopent-1,2-ene-3-one.

5,362,916
SYNTHESIS OF MERCAPTARYL OR HYDROXYARYL ENOL ETHER ALKALI METAL SALTS

Brooks Edwards, Cambridge, and Rouh-Rong Juo, Alston, both of Mass., assignors to Tropix, Inc., Bedford, Mass.

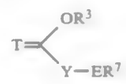
Continuation of Ser. No. 881,140, May 11, 1992, abandoned, which is a continuation of Ser. No. 574,789, Aug. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 402,847, Sep. 6, 1989, abandoned. This application Nov. 17, 1993, Ser. No. 153,791
Int. Cl.[5] G01N *21/76;* C07C *49/167*
U.S. Cl. 568—61 13 Claims

1. A process for preparing a mercaptoaryl or a hydroxyaryl enol ether alkali metal salt having the formula:



in which T is a substituted or unsubstituted adamant-2-ylidene

group, OR^3 is an ether group, Y is a light-emitting fluorophore-forming group which will be part of a luminescent substance formed by decomposition of a 1,2-dioxetane subsequently formed from the hydroxyaryl enol ether alkali metal salt, capable of absorbing energy to form an excited state from which it emits optically detectable energy to return to its ground state, E is oxygen or sulfur, and AM^+ is an alkali metal cation, which comprises subjecting the corresponding etherified or thioetherified aryl enol ether having the formula:



in which R^7 is a substituted or unsubstituted alkyl, alkenyl or aralkyl group, to ether cleavage with an alkali metal-containing reagent to give the corresponding hydroxyaryl enol ether alkali metal salt or mercaptoaryl enol ether alkali metal salt.

5,362,917

METHOD OF CONTROLLING A HYDROFORMYLATION REACTION

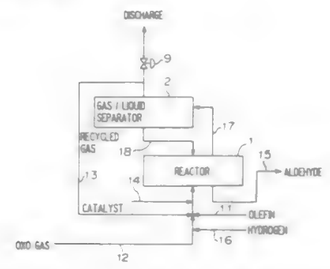
Morimasa Ogawa; Genichi Emoto; Akio Ueda; Takao Kibayashi; Keitaro Nakata, and Tsuneo Inoue, all of Kurashiki, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Sep. 24, 1993, Ser. No. 125,795

Claims priority, application Japan, Sep. 25, 1992, 4-279301; Sep. 13, 1993, 5-251108; Sep. 13, 1993, 5-251109

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 **20 Claims**



1. A method for producing aldehydes by subjecting an olefin, a feed oxo gas containing hydrogen and carbon monoxide, and a recycled gas withdrawn from a reactor and returned to the reactor, to a hydroformylation reaction in the reactor in the presence of a catalyst, which comprises the steps of:

providing an operation unit for adjusting a flow rate of the feed oxo gas supplied to the reactor or a flow rate of a discharged gas from the reactor;

setting out a target value for the partial pressure of carbon monoxide in the reaction system to obtain aldehydes with a desired production ratio of normal aldehyde to isoaldehyde;

detecting the partial pressure of carbon monoxide corresponding to the target value;

determining an operational amount of the operation unit required to maintain the detected partial pressure of carbon monoxide at the target value based on a deviation of the detected partial pressure of carbon monoxide from the target value; and

adjusting the flow rate of the feed oxo gas or the flow rate of the discharged gas based on the operational amount.

5,362,918

PROCESS FOR PRODUCING ACETALDEHYDE DIMETHYLACETAL

Toshiyuki Aizawa; Hitoshi Nakamura; Kunitoshi Wakabayashi; Tetsuo Kudo, and Hiroyuki Hasegawa, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,280

Claims priority, application Japan, Apr. 24, 1992, 4-106696; Apr. 24, 1992, 4-106697; Apr. 24, 1992, 4-106698

Int. Cl.[5] C07C *41/56*; B01D *3/34*

U.S. Cl. 568—594 **7 Claims**

1. A process for producing acetaldehyde dimethylacetal comprising reacting acetaldehyde and methanol in the presence of an acid catalyst in a part of a rectification tower while conducting rectification to withdraw the water by-produced from the bottom of the tower and to recover a distillate containing the acetaldehyde dimethylacetal produced from the top of the tower,

wherein said acid catalyst is a solid acid catalyst packed in a part of the rectification tower, and said acetaldehyde and methanol are continuously fed to said solid acid catalyst layer.

5,362,919

DIRECT FLUORINATION PROCESS FOR MAKING PERFLUORINATED ORGANIC SUBSTANCES

Michael G. Costello, and George G. I. Moore, both of Afton, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 612,307, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 278,965, Dec. 2, 1988, abandoned. This application Mar. 31, 1993, Ser. No. 40,402

Int. Cl.[5] C07C *43/303*

U.S. Cl. 568—601 **1 Claim**

1. Perfluoro-bis(2-butoxyethoxy)methane.

5,362,920

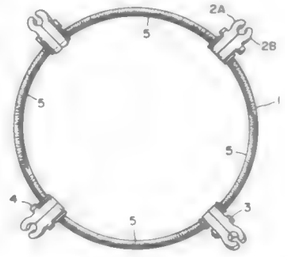
TRANSMISSION LINE SPACER-DAMPER DEVICE

Albert S. Richardson, Jr., 3 Wingate Rd., Lexington, Mass. 02173

Filed May 13, 1993, Ser. No. 61,183

Int. Cl.[5] H02G *7/12, 7/14*

U.S. Cl. 174—42 **3 Claims**



1. A spacer-damper device for providing necessary spacing of multiple subconductors from each other while allowing the subconductors to vibrate without causing damage to the subconductors comprising:

a hoop formed of rigid material;

a series of clamps spaced along the hoop, the clamps being capable of sliding along the hoop and rotating about the hoop; and

a series of springs about the hoop and between the clamps for separating the clamps along the hoop.

5,362,921

FLEXIBLE SUBSEA LINE

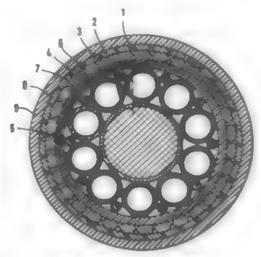
Ove S. Birkelund, and Inge J. Vintermyr, both of Oslo, Norway, assignors to Alcatel STK A/S, Oslo, Norway

Filed Mar. 26, 1992, Ser. No. 857,548

Claims priority, application Norway, Apr. 25, 1991, 911644

Int. Cl.[5] F16L *11/12*; C23F *13/00*

U.S. Cl. 174—47 **13 Claims**



1. A flexible subsea line comprising:

a plurality of longitudinal elements extending the length of the subsea line, said elements including at least fluid/gas conducting tubes and at least two sacrificial anodes enclosed within a common outer cover,

wherein a plurality of said tubes are made of stainless steel;

wherein each of said steel tubes is in longitudinal electrical contact with at least two sacrificial anodes along their entire length; and

wherein said tubes are stranded in at least one layer on a surface of galvanized steel tapes arranged around a core containing other longitudinal elements, said other longitudinal elements being at least one of electrical conductors and optical fibers.

5,362,922

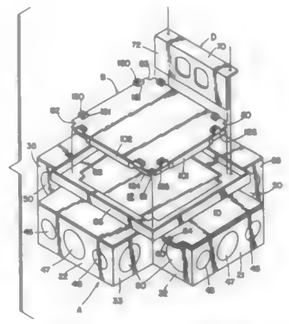
ELECTRICAL FLOOR BOX DIVIDER

James H. Whitehead, Collierville, Tenn., assignor to Thomas & Betts Corporation, Memphis, Tenn.

Filed Sep. 30, 1992, Ser. No. 954,650

Int. Cl.[5] H02G *3/12*

U.S. Cl. 174—48 **19 Claims**



1. A divider for providing a tunnel in the bottom portion of an electrical floor box, said divider comprising a substantially flat plate having top and bottom surfaces, angled, notched corners and an outer periphery, a peripheral wall extending outwardly from said bottom surface adjacent said outer periphery and being discontinued at said notched corners, and said peripheral wall including a plurality of selectively removable frangible wall sections.

5,362,923

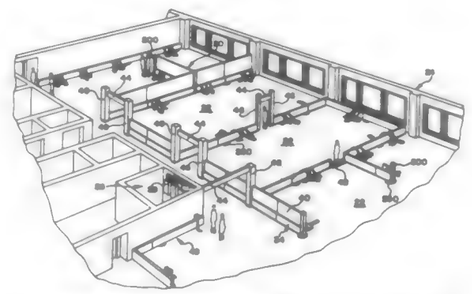
SYSTEM FOR DISTRIBUTING AND MANAGING CABLING WITHIN A WORK SPACE

Thomas J. Newhouse, Grand Rapids; Donald A. Shepherd, Holland, and Robert A. Harvey, Montague, all of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 798,925, Nov. 27, 1991. This application Oct. 9, 1992, Ser. No. 960,086

Int. Cl.[5] E04H *1/00*

U.S. Cl. 174—48 **59 Claims**



1. A furniture system for distributing and managing cabling and assist facility space planning through a work space comprising:

a plurality of free-standing horizontal cable housing units aligned end to end, either in a straight line or at an angle, each of said housing units comprising:

a top, and two sidewall means defining a hollow chamber open at both ends, with at least one of said sidewall means being easily demountable to provide access to the hollow chamber of the housing unit;

a first raceway mounted within said hollow chamber,

wherein said first raceway runs the length of said housing unit and is adapted to house electrical power cables;

a second raceway mounted within said housing unit, wherein said second raceway runs the length of said housing unit and is adapted to house communication cables;

vertical housing units; and

lintel housing units;

said vertical housing units and said lintel housing units adapted to pass cabling over a doorway in the work space.

5,362,924

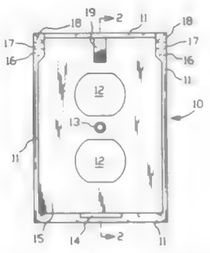
PROTECTIVE COVER FOR ELECTRICAL WALL SOCKETS

Giuseppe A. Correnti, 4 River St., Apt. 33, Little Ferry, N.J. 07643

Continuation-in-part of Ser. No. 885,379, May 19, 1992, abandoned. This application Jun. 23, 1993, Ser. No. 58,403

Int. Cl.[5] H01R *13/447*

U.S. Cl. 174—67 **5 Claims**



1. An electrical wall plug outlet enclosure and safety device comprising:

(a) a face plate having at least one electrical plug-receiving opening detachably mounted to an electrical wall plug outlet, for detachably receiving a box-like cover;

(b) a raised shoulder formed integrally on the four edges of said face plate generally perpendicular with a planar surface of said face plate;

(c) a flange-receiving recess formed in said raised shoulder adjacent said planar surface at the lower edge of said face plate;

(d) a tab formed integrally on the inside of each of two vertical shoulders of said face plate at the upper ends thereof;

(e) an aperture formed through each of said tabs and adjacent shoulder;

(f) said box-like cover being of generally rectangular shape and having one open end for engaging said face plate;

(g) a first flange formed on one end of said box-like cover adjacent said open end for engaging said flange receiving recess for securing said box-like cover to said face plate; and

(h) a second flange formed on one end of said box-like cover, adjacent said open end, and opposite the end having said first flange, said second flange having one pin extending horizontally from each end for engaging said apertures whereby said box-like cover is pivotably mounted to said face plate.

5,362,925

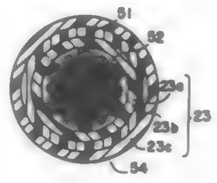
MULTI-LAYERED INSULATED WIRE FOR HIGH FREQUENCY TRANSFORMER WINDING

Tadashi Yamaguchi, Toubu; Masataka Muramatsu, Maruko, and Naoki Katagiri, Ueda, all of Japan, assignors to Totoku Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 929,657, Aug. 12, 1992. This application Jan. 18, 1994, Ser. No. 182,998

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—120 R **6 Claims**



1. A multi-layered insulated electric wire for a winding to be used in a high frequency switching power transformer comprising:

a plurality of small diameter conductors bundled together to form a bundled conductor having a round cross-section;

at least three insulating layers, each comprising an extruded layer of a heat resistant material formed around said bundled conductor;

any two insulating layers of said at least three insulating layers providing an insulating resistance of 3.75 kV for one minute; and

each of said at least three insulating layers being independent of each other and being separable from the other layers.

5,362,926

CIRCUIT SUBSTRATE FOR MOUNTING A SEMICONDUCTOR ELEMENT

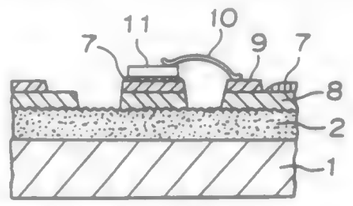
Makoto Fukuda; Naomi Yonemura, and Chiharu Watanabe, all of Shibukawa, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,971

Claims priority, application Japan, Jul. 24, 1991, 3-206146; Jul. 24, 1991, 3-206151; Jul. 26, 1991, 3-208780; Jan. 28, 1992, 4-037307

Int. Cl.[5] H05K *1/09*

U.S. Cl. 174—256 **19 Claims**



1. A circuit substrate for mounting a semiconductor, which comprises an aluminum-copper clad foil laminated on a metallic base plate, having an insulating layer interposed between said clad foil and said base plate, wherein a side of said clad foil in contact with the insulating layer has a surface roughness in a range of from 0.5 μm to 50 μm; and wherein the insulating layer is made of a polymeric resin.

5,362,927

THICK FILM HYBRID CIRCUIT BOARD DEVICE

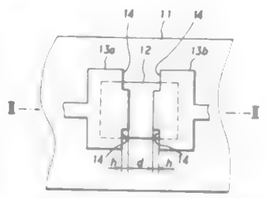
Shiro Ezaki, Yokohama, Japan, assignor to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 764,062, Sep. 24, 1991, Pat. No. 5,256,836, which is a division of Ser. No. 522,146, May 11, 1990, abandoned. This application Jul. 19, 1993, Ser. No. 92,800

Claims priority, application Japan, Jun. 9, 1989, 1-145277

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—261 **4 Claims**



1. A thick film hybrid circuit board device manufactured by utilizing a screen printing process, said circuit board device comprising:

an insulative base board as a base plate;

a first layer formed on said insulative base board;

a second layer formed so as to be overlapped with a surface of said first layer and a surface of said insulative base board,

said second layer being provided with an inwardly recessed portion formed at a cross portion where a peripheral edge portion of said first layer and a peripheral edge portion of said second layer are crossed; and

a bleeded portion at least partially filling said recessed portion said bleeded portion being generated from said second layer.

5,362,928

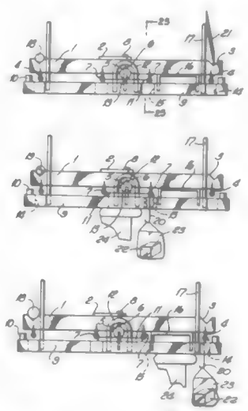
SCALE WITH ROLLING-FULCRUM AND CYLINDRICAL-WEIGHTS

John P. Pavlik, 20411 Lassen St., Chatsworth, Calif. 91311

Filed Jun. 14, 1993, Ser. No. 76,416

Int. Cl.[5] G01G *1/18*

U.S. Cl. 177—172 **6 Claims**



1. A lever type scale comprising:

a) a first oblong rigid slab having broad surfaces horizontally disposed, functioning as two arms of a lever and modified with a transverse "V" cut on its top surface near to and equidistant from each of its ends,

b) a dowel-shaped rod transversely affixed to the underside of said first slab at slab mid-length so as to demarcate the two lever arms of the first slab and function as a fulcrum,

c) a means for attaching an object to the underside of the first slab directly below the linear bottom of each "V" cut,

d) a means for attaching an object to the first slab underside at one determined point on each side of and equidistant from the fulcrum,

e) a means for balancing the first slab in its tilting movement on the fulcrum,

f) a second oblong rigid slab having broad surfaces horizontally disposed, located beneath the first slab and functioning as its base, having vertical passages through located so as to be beneath each said underside attachment point on the first slab and having on its top surface:

1) a low friction means of supporting the fulcrum and limiting its movement,

2) a means for limiting the tilting movement of the first slab,

3) one anchored upright near each "V" cut in the first slab, functioning to support objects placed in said "V" cuts in first slab in almost vertical position.

4) a means for holding more than one cylindrical shaped weights that are essentially the same size in diameter,

g) an elongate object with means at one end for attachment to any of the attachment means on first slab underside, having length to pass from its attachment to first slab underside through a passage in the second slab and having its lower end formed into a crook hanging below the second slab so as to function as a suspensor,

h) a means for suspending an object from the crook of the suspensor,

i) more than one cylindrical shaped weights, each weight essentially the same size and mass,

j) a means for containing at least two of said weights end to end so as to form a cylinder having approximate diameter of a weight, having approximate length of total length, of all the weights and having weight of approximate mass of all the weights, whereby after said first slab has been balanced and an object to be weighed having at least one straight, thin edge has been set into a "V" cut in a first lever arm so that the straight, thin edge is resting in the linear bottom of the "V" cut and its upper end is leaning in near vertical position on the close-by upright that is anchored in the second slab the object-loaded first lever arm will drop down to its stop so that placing said cylindrical weights onto the "V" cut in the second lever arm one by one until the first lever arm rises from its stop will indicate that the thin, straight edged object weighs less than the total mass of the cylindrical weights, so that in its near vertical leaning position the now-raised object can be moved, by the light touch of one finger, away from the upright and slightly past an absolute vertical position to see if it still remains raised.

5,362,929

WEIGHT SENSOR DEVICE

Hiroshi Goto, Yamatokoriyama, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Aug. 27, 1992, Ser. No. 935,101

Claims priority, application Japan, Aug. 29, 1991, 3-244378; Aug. 29, 1991, 3-244379

Int. Cl.[5] G01G *3/14;* **H01L** *41/04*

U.S. Cl. 177—210 FP **7 Claims**

1. A weight sensor device, comprising:

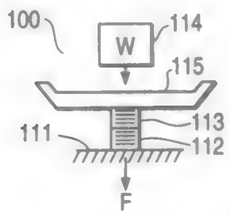
a table for receiving an object whose weight is to be measured;

a first piezoelectric element connected with said table, said first piezoelectric element inducing periodic vibration in said object;

a second piezoelectric element fixed to said first piezoelectric element in a coaxial fashion, said second piezoelectric

element converting into voltage a reaction force generated when said object vibrates;

an absorbing element between said first and second piezoelectric elements, said absorbing element absorbing a piezoelectric strain generated at a horizontal direction of said first piezoelectric element;



a drive device driving said first piezoelectric element to induce said periodic vibration; and

a device for detecting an output voltage from said second piezoelectric element.

5,362,930

COORDINATE INPUT APPARATUS

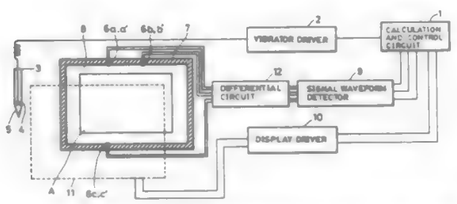
Yuichiro Yoshimura, Kamakura; Atsushi Tanaka, Kawasaki; Kiyoshi Kaneko, Yokohama; Katsuyuki Kobayashi, Yokohama, and Masaki Tokioka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1992, Ser. No. 905,523

Claims priority, application Japan, Jul. 16, 1991, 3-175008

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **26 Claims**



1. A coordinate input apparatus for determining a coordinate of a vibration input position by measuring a vibration transmitting time, said apparatus comprising;

a vibration transmitting member for transmitting vibrations;

a first vibration detection means disposed on a first surface of said vibration transmitting member for detecting vibration signals;

a second vibration detection means disposed on a second surface of said vibration transmitting member, said second vibration detection means being located so as to directly oppose said first vibration transmitting detection means for detecting vibration signals; and

separation means for separating a signal of a single vibration mode on the basis of both a signal detected by said first vibration detection means and a signal detected by the second vibration detection means.

5,362,931

PANEL SHAPED ELEMENT, SPECIFICALLY FOR SOUND ABSORBING STRUCTURES AND A SOUND ABSORBING INSTALLATION

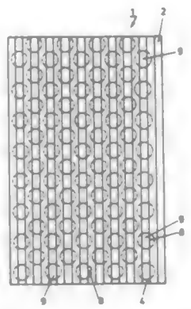
Arthur Fries, Am See, 6062 Wilen, Switzerland

Continuation of Ser. No. 850,094, Mar. 12, 1992, abandoned. This application Feb. 2, 1994, Ser. No. 190,690

Claims priority, application Switzerland, Mar. 20, 1991, 854/91

Int. Cl.[5] E04B *1/82*

U.S. Cl. 181—284 **9 Claims**



1. A sound absorbing panel having a front surface and a rear surface, the front surface having a plurality of parallel grooves therein, the rear surfacing having, for each groove in the front surface, a row of bores aligned with and centered with respect to the groove, the bores in adjacent rows being staggered, a portion of the bottom of each bore opening into and communicating with a respective one of the grooves, the bottom of each bore opening into and communicating with the respective one of the grooves having a diameter at a point of intersection with the respective groove which is larger than the width of the groove.

5,362,932

PUSH-BUTTON SWITCH, KEYTOP, AND METHOD OF MANUFACTURING THE KEYTOP

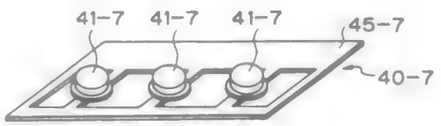
Jiroh Inagaki, Tokyo; Atsushi Hari, Kanagawa; Nobuyuki Yagi, Tokyo; Yasutoshi Kaku, Kanagawa, and Takashi Shinoki, Tokyo, all of Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Kanagawa, Japan

Division of Ser. No. 46,172, Apr. 14, 1993, abandoned, which is a division of Ser. No. 784,000, Oct. 29, 1991, Pat. No. 5,280,146. This application Oct. 12, 1993, Ser. No. 135,428

Claims priority, application Japan, Oct. 30, 1990, 2-113602; Nov. 5, 1990, 2-299541; Apr. 8, 1991, 3-103171; Apr. 8, 1991, 3-103172; Apr. 8, 1991, 3-103173; Apr. 8, 1991, 3-126765

Int. Cl.[5] H01H *3/12*

U.S. Cl. 200—341 **6 Claims**



1. A keytop sheet for use in a push-button switch, said keytop sheet comprising a synthetic resin film having a recess therethrough, a hinge portion, and a respective keytop mounting portion contiguous to said hinge portion, said keytop mounting portion being located in said recess, said hinge portion connecting said keytop mounting portion to a peripheral portion of said resin film defining the periphery of said recess such that said keytop mounting portion can be depressed relative to said peripheral portion by a flexing of the hinge portion of said resin film, and a molded one-piece keytop mounted to the keytop mounting portion of said resin film.

5,362,933

ELECTRICAL SWITCHING DEVICES, IN PARTICULAR LOW VOLTAGE POWER CIRCUIT BREAKERS

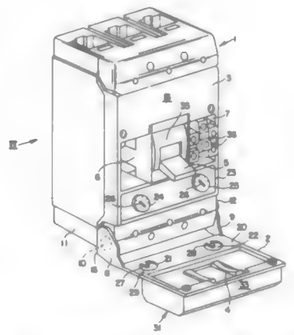
Wolfgang Kutsche, Königswinter; Wolfgang Kremers, Bonn; Andreas Baldewein, Bonn; Gerd Hentschel, Bonn, and Gerd Voiss, Cologne, all of Germany, assignors to Klöckner Moeller GmbH, Bonn, Germany

Filed Mar. 17, 1993, Ser. No. 33,645

Claims priority, application Germany, Mar. 17, 1992, 9203533[U]

Int. Cl.[5] H01H *23/00*

U.S. Cl. 200—401 **20 Claims**



1. An electrical switching device for being disposed along a power supply line, said electrical switching device comprising:

housing means, said housing means defining an interior space therein and separating the interior space from an exterior space at least partially surrounding the housing means, said housing means having an opening therein from the interior space to the exterior space;

first terminal means for receiving at least one power supply line;

second terminal means for receiving at least one output power line;

switch means for disrupting flow of current between the at least one power supply line and the at least one power output line, said switch means having a first position for connecting between the at least one power supply line and the at least one power output line, and a second position for disconnecting the at least one power supply line and the at least on output power line;

toggle arm means connected to said switch means to move said switch means into said first connecting position and said second disconnecting position;

cover means for covering the opening of said housing means, said cover means having a first opening therethrough for passage of at least a portion of said toggle arm means through said cover means;

hinge means for hingedly attaching said cover means to said housing means;

said housing means comprises chambers therein, at least one of said chambers being configured for receiving at least one of:

at least one shunt release,

at least one auxiliary switch, and

at least one adjustable tripping device,

said cover means being configured for covering each of said chambers in said housing means;

said cover means further comprises attachment means for attaching one of:

a mechanical rotary actuator, and

a motor drive

to said cover means, said attachment means being disposed about said opening of said cover means for engagement of one of: a mechanical rotary actuator and a motor drive with said toggle arm means;

said cover means comprises a first and a second leg portion extending away from said cover means, said first and said second leg portion being disposed substantially perpendicularly to said cover means and substantially parallel to one another;

said first and said second leg portion being configured for overlapping at least a part of said housing means;

said first and said second leg portion each have a first end disposed adjacent said cover means, and a second end disposed opposite said first end;

said second end of each of said first and said second leg portion being coaxially attached to said housing means by said hinge means;

said hinge means comprise a pivot bearing, said pivot bearing comprising a projection for being disposed in and interlocking with an opening;

one of:

said at least a part of said housing means, and

said second end of said leg portion comprise said projection of said pivot bearing; and

the other of:

said at least a part of said housing means, and

said second end of said leg portion comprise said opening for receipt of said pivot projection.

5,362,934

PUSH-BUTTON SWITCH, KEYTOP, AND METHOD OF MANUFACTURING THE KEYTOP

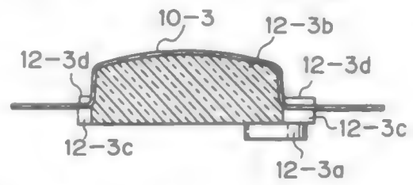
Jiroh Inagaki, Tokyo; Atsushi Hari, Kanagawa; Nobuyuki Yagi, Tokyo; Yasutoshi Kaku, Kanagawa, and Takashi Shinoki, Tokyo, all of Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 784,000, Oct. 29, 1991, Pat. No. 5,280,146. This application Apr. 14, 1993, Ser. No. 46,843

Claims priority, application Japan, Oct. 30, 1990, 2-113602; Nov. 5, 1990, 2-299541; Apr. 8, 1991, 3-103171; Apr. 8, 1991, 3-103172; Apr. 8, 1991, 1-103173; Apr. 30, 1991, 3-126765

Int. Cl.[5] H01H *13/14*

U.S. Cl. 200—520 **2 Claims**



1. A push-button switch comprising: a fixed contact and a movable contact opposing each other, a resin film extending over said contacts, and a molded one-piece keytop supported by said resin film above the movable contact, said keytop including a protruding keytop portion having a top surface and an outer periphery circumventing said top surface, a film retaining portion provided at the outer periphery of said keytop portion, and a film fixing portion, said resin film having a hole therethrough adjacent the outer periphery of said keytop portion, and said keytop also including a portion extending through said hole in said resin film from said film fixing portion to said film retaining portion, said resin film covering the top surface of said protruding keytop portion, and said resin film extending contiguously from said top surface to a location between said film retaining portion and said film fixing portion,

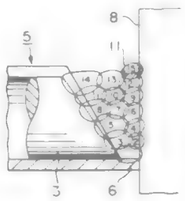
said resin film being sandwiched between and fixed in place at said location by said film retaining portion and said film fixing portion.

5,362,935

METHOD OF BUTT-WELDING BAR STEEL AND DEVICE THEREFOR

Hisashi Ariyasu, 37-9, Minami-Magome 4-chome, Ota-ku, Tokyo-to, and Yoichi Aikawa, Ichikawa, both of Japan, assignors to Toatsu Corporation and Hisashi Ariyasu, both of Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 85,004
Claims priority, application Japan, Jun. 30, 1992, 4-172788
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—56 **11 Claims**



1. A method of butt-welding steel bar, comprising the steps of:

forming an oblique tip surface having a prescribed angle at an end portion of a steel bar such as a reinforcing bar;

fitting said end portion of said steel bar within a guide member comprising a butting tab that extends forward, guide edge portions that start from diametrically opposite sides of a base portion of said butting tab and extend backward from a position at a distance from a surface to which said bar is to be welded, and protrude further outward than said oblique tip surface, and a slit formed in the axial direction of end portions of said guide edge portions;

trimming an end portion of said butting tab into an end shape in accordance with a surface to which said steel bar is to be welded and butting against said surface; and

building up weld beads in sequence from the inner surface of said butting tab and between said surface to which said bar is to be welded and said oblique tip surface at said end portion of said steel bar to form a single weld.

5,362,936

WIRE ELECTRIC DISCHARGE MACHINE HAVING ALTERABLE DISCHARGE PERIOD

Yuji Ishibashi, and Akihiro Komori, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 12, 1993, Ser. No. 45,322
Claims priority, application Japan, Apr. 30, 1992, 4-111459
Int. Cl.[5] B23H *7/04, 7/20*
U.S. Cl. 219—69.12 **15 Claims**

10. A wire electric discharge machine for processing a workpiece, comprising:

means for setting an initial discharge period;

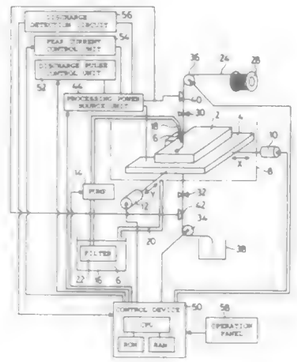
means for setting a one of a target inter-electrode voltage and a relative moving speed between the workpiece and a wire of the wire electric discharge machine;

means for controlling the relative moving speed between the workpiece and the wire of the wire electric discharge machine; and

means for renewing the discharge period on a periodic cycle, wherein the means for renewing the discharge period comprises:

means for estimating the thickness of the workpiece;

means for generating the optimum discharge period for the material and the estimated thickness of the workpiece; and



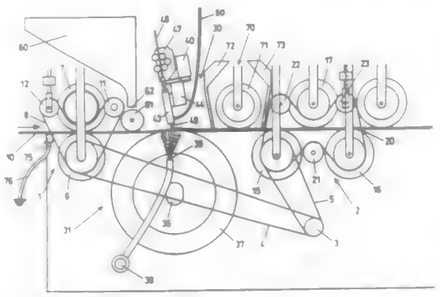
after the initial discharge period, means for using the generated optimum discharge period as a current discharge period.

5,362,937

OVERLAYING OF PLATES

George W. Browne, 14 Bailey Road, Glen Forrest, Western Australia, Australia 6071 , and Gene Kostecki, 40 Bramwell Road, Noranda, Western Australia, Australia 6062

PCT No. PCT/AU92/00167, § 371 Date Oct. 18, 1993, § 102(e) Date Oct. 18, 1993, PCT Pub. No. WO92/18283, PCT Pub. Date Oct. 29, 1992
PCT Filed Apr. 15, 1992, Ser. No. 137,115
Claims priority, application Australia, Apr. 18, 1992, PK5700
Int. Cl.[5] B23K *9/04*
U.S. Cl. 219—76.14 **16 Claims**



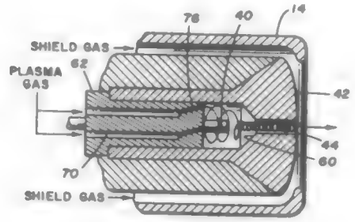
1. A weld overlaying apparatus comprising drive means to draw a metal plate substantially horizontally through the apparatus, and a plurality of welding heads arranged on a common oscillating carrier to oscillate for oscillating movement transverse to the direction of travel of the metal plate, characterized by an assembly positioned under the welding heads so as to be under the metal plate in use, wherein the assembly induces a slight upward convexity in the metal plate under the welding heads so as to accurately position the metal plate with respect to the welding heads.

5,362,938

PLASMA ARC WELDING TORCH HAVING MEANS FOR "VORTEXING" PLASMA GAS EXITING THE WELDING TORCH

William F. McGee, Decatur, and Daniel J. Rybicki, Huntsville, both of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 29, 1993, Ser. No. 158,327
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.51 **13 Claims**



1. A plasma arc welding torch comprising:

a body having aft and forward end portions;

an electrode supported in said body, said electrode having an aft portion and a forward portion including a tip, said electrode disposed for producing an electric arc from said tip;

first passage means provided in said body and disposed for directing an inert gas across said tip of said electrode;

vortexing means positioned around said forward portion of said electrode adjacent said tip to provide a vortexing motion to said inert gas and to direct the vortexing of said inert gas around said tip of said electrode, said vortexing means being defined as a swirl ring, said swirl ring having a central chamber therein to receive said electrode, said swirl ring disposed for supporting engagement with said electrode intermediate said aft and forward portions thereof, said swirl ring including an aft shoulder forming portion, an intermediate portion and a forward portion including a forward end surface, said aft and intermediate portions having an outer surface provided with a plurality of common channels disposed therein, said channels terminating in said forward portion at a predetermined distance from said forward end surface, said forward portion of said swirl ring being provided with a like plurality of holes extending therethrough, each hole of said like plurality of holes having first and second ends, said first end communicating with a corresponding one of said like plurality of channels and said second end opening through said end surface of said rings; and

orifice housing means mounted in said forward portion of said body, said.. Orifice housing means disposed for receiving the vortexing said gas from said vortexing means and having an orifice therein for directing the vortexing said gas and said electric arc out of said torch body.

5,362,939

CONVERTIBLE PLASMA ARC TORCH AND METHOD OF USE

Gary J. Hanus, Edina; Todd J. Stahl, Golden Valley, both of Minn., and Salvador L. Camacho, Raleigh, N.C., assignors to FluiDyne Engineering Corporation, Minneapolis, Minn.

Filed Dec. 1, 1993, Ser. No. 160,471
Int. Cl.[5] B23K *9/00, 10/00*
U.S. Cl. 219—121.59 **6 Claims**

1. A plasma arc torch capable of being assembled for operation in either a transfer arc mode or a non-transfer arc mode, and comprising:

(a) a substantially cylindrical torch body section;

(b) a cylindrical formed metal hollow rear electrode mounted coaxially to and extending lengthwise of said body section;

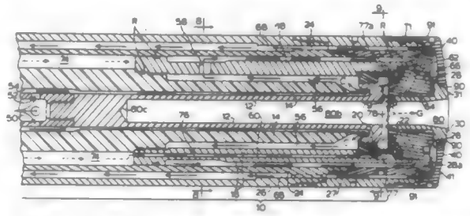
(c) first coolant means connected to a coolant source and providing passageways within said body section operative when said rear electrode is operative to cool both said rear electrode and components within said body section associated with mounting said rear electrode;

(d) a tubular formed metal electrode base member mounted on said body section coaxially to and forward of said rear electrode and having a bore serviceable in a transferred arc mode of said torch as a collimator and in a non-transferred arc mode of said torch as a portion of a front electrode;

(e) an annular mounting member spaced radially outwardly of said base member and fixed coaxially to said body section at a forward end thereof and providing releasable securing means thereon;

(f) an annular metal end cap member formed with a substantially convex outer face adapted to enhance transfer arc mode operation and removably securable to said securing means in a position coaxial to said body section and in operative association with said base member providing a collimating structure for said plasma arc torch when operating in said transferred arc mode;

(g) second coolant means adapted to operatively connect with said first coolant means when said end cap member is mounted on said mounting member to provide passageways located so as to be operative when said end cap member is operative to cool said end cap member, said



tubular base member and other components operatively associated therewith;

(h) a tubular metal electrode extension member formed with a substantially planar outer face adapted to promote a natural position of arc attachment and removably securable to said securing means in a position coaxial to said body section and in a manner whereby an inner rearward portion of said extension member is connected both thermally and electrically to a forward potion of said electrode base member and in operative association with said electrode base member providing a front electrode structure for said plasma arc torch when operating in a non-transferred arc mode and having a bore aligned with the bore of said base member;

(i) a third coolant means adapted to operatively connect with said first coolant means when said extension member is mounted on said mounting member to provide passageways located so as to be operative when said extension member is operative to cool said extension member, said tubular base member and other components operatively associated therewith; and

(j) whereby either said end cap member or said electrode extension member may be mounted by means of said securing means to said body section without replacing said electrode base member so that the torch may operate in a non-transfer arc mode when said electrode extension member is mounted to said body section or in the transfer arc mode when said end cap member is mounted to said body section.

5,362,940

USE OF FRESNEL ZONE PLATES FOR MATERIAL PROCESSING

Bruce G. MacDonald, San Diego; Robert O. Hunter, Jr., Rancho Santa Fe; Adlai H. Smith, and Clark C. Guest, both of San Diego, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Continuation of Ser. No. 612,212, Nov. 9, 1990, abandoned. This application Sep. 3, 1992, Ser. No. 940,008
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 40 Claims



1. A method of processing a plurality of selected locations on a workpiece by projecting arbitrary working patterns onto said workpiece at preselected locations, said method comprising the steps of:

providing a plate having an array of discrete diffractive regions, each discrete diffractive region focusing light incident on said plate at a discrete focal distance from said plate in an arbitrary working pattern corresponding to a selected discrete location on said workpiece;

aligning said plate with respect to said workpiece for simultaneous focus of each discrete diffraction region in said arbitrary working pattern at one of said plurality of selected locations; and

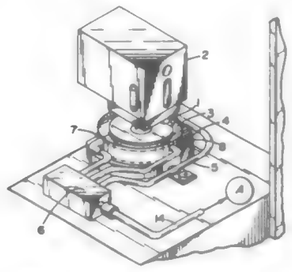
projecting an incident beam through said array of discrete diffractive regions on said plate whereby each said discrete diffractive region produces said arbitrary working pattern at each selected discrete location.

5,362,941

EXHAUST AND PARTICLE WASTES COLLECTING DEVICE FOR LASER ETCHING

Paul R. Johnson, Kaysville; James Bero, Ogden, and Jeff Heitzman, Roy, all of Utah, assignors to Iomega Corporation, Roy, Utah

Filed Jun. 11, 1992, Ser. No. 897,295
Int. Cl.[5] B23K *26/16*
U.S. Cl. 219—121.84 19 Claims



1. Apparatus for removing exhaust and particulate wastes from a floptical medium during laser etching, comprising:

a spindle for rotating said floptical medium at a predetermined angular velocity, said exhaust and said particulate wastes being transported towards an outer edge of said floptical medium by an airflow created by a pumping effect of said rotating floptical medium;

a platen disposed in a parallel plane of said floptical medium for guiding said airflow toward an outer edge of said platen;

a shroud placed around said platen and providing a gap between said outer platen edge and an inner surface of said shroud; and

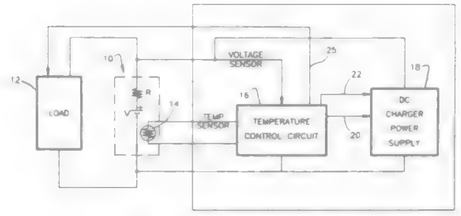
a plurality of vacuum sources connected to said shroud for creating an uniform low pressure through said gap, said uniform low pressure further transporting said exhaust and said particulate wastes from said outer edge of said floptical medium to said gap along a surface of said platen.

5,362,942

BATTERY HEATING SYSTEM USING INTERNAL BATTERY RESISTANCE

William T. Vanderslice, Jr., Norristown, and Christopher J. Scafidi, Downingtown, both of Pa., assignors to InterDigital Technology Corporation, Wilmington, Del.

Filed Aug. 24, 1993, Ser. No. 110,891
Int. Cl.[5] H02J *7/00;* H05B *3/60*
U.S. Cl. 219—209 8 Claims



1. A method for controlling the temperature of a battery having first and second battery terminals and an internal resistance between said first and second battery terminals, comprising the steps of:

(a) sensing the temperature of said battery to provide a sensed battery temperature;

(b) comparing said sensed battery temperature to a predetermined temperature;

(c) responsive to step (b) indicating that the temperature of said battery is less than said predetermined temperature, conducting a current between said first and second battery terminals through said battery;

(d) sensing the charge level of said battery to provide a sensed battery charge level;

(e) comparing said sensed battery charge level to a predetermined charge level; and

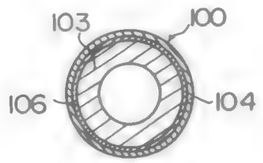
(f) responsive to step (e) indicating that said sensed battery charge level is above said predetermined charge level and responsive to step (b) indicating that the temperature of said battery is less than said predetermined temperature, connecting a load across said first and second battery terminals.

5,362,943

FIXING DEVICE AND HEAT ROLLER THEREFOR

Yoshio Sakata, Kanagawa, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 857,231, Mar. 25, 1992, Pat. No. 5,286,950.
This application Apr. 26, 1993, Ser. No. 51,997
Claims priority, application Japan, Mar. 26, 1991, 3-026703; Mar. 26, 1991, 3-026704; Mar. 26, 1991, 3-087743; Aug. 20, 1991, 3-073816; Aug. 20, 1991, 3-073817; Aug. 20, 1991, 3-0233988; Aug. 23, 1991, 3-074779
Int. Cl.[5] B21B *27/06;* H05B *3/02*
U.S. Cl. 219—216 3 Claims



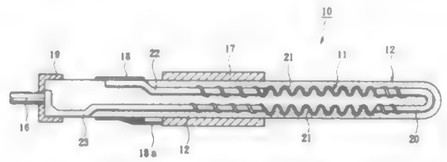
1. A heat roller having a resin layer for adhesion provided on an outer surface of a roller body, comprising a silicone resin material of good thermal conductivity which is in the form of oil in a temperature range of −50° C. to 150° C. and is thermosettable at 150° C. or higher, and which is interposed between said roller body and said resin layer by means of coating.

5,362,944

GLOW PLUG WITH DUAL, DISSIMILAR RESISTIVE HEATING ELEMENTS IN CERAMIC HEATER

Koji Hatanaka, and Takashi Aota, both of Saitama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 816,352, Dec. 30, 1991, abandoned.
This application Apr. 5, 1993, Ser. No. 42,833
Claims priority, application Japan, Feb. 6, 1991, 3-035128
Int. Cl.[5] H05B *3/18*
U.S. Cl. 219—270 4 Claims



1. A glow plug including a rod-like ceramic heater formed by burying a resistance element in an elongated rod-like member of insulating ceramic material, wherein said resistance element is buried in said insulating ceramic material comprises:

a first heating element arranged at a front end portion of said rod-like ceramic member, said first heating element being made of resistive SiAlON having a positive temperature coefficient set at a predetermined value;

a second heating element arranged behind and connected in series with said first heating element, said second heating element being made of tungsten, and having a positive temperature coefficient larger than the predetermined value of the positive temperature coefficient of said first heating element; and wherein said glow plug further includes:

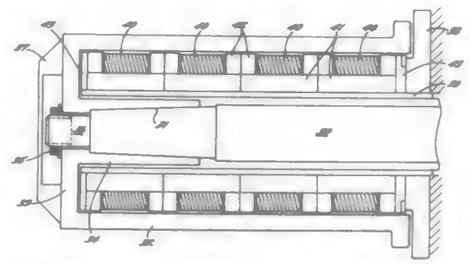
a substantially tubular metal holder holding the rod-like ceramic member rearwardly of said first and second heating elements with the front end portion thereof projecting from said metal holder, wherein said first and second heating elements are substantially entirely buried in the portion of the rod-like ceramic member projecting from said metal holder, and wherein said metal holder includes a metal pipe fitted on, and fixed at, a central portion in a longitudinal direction of said rod-like ceramic member, with said second heating element connected, at the portion where said metal pipe is fixed, to a lead portion buried in a rear end portion of said rod-like ceramic member.

5,362,945

GODET FOR HEATING AN ADVANCING YARN

Uwe Baader, Wuppertal, Germany, assignor to Barmag AG, Remscheid, Germany

Filed Apr. 24, 1992, Ser. No. 873,414
Int. Cl.[5] H05B *6/14*
U.S. Cl. 219—619 11 Claims



1. A godet for heating an advancing yarn, comprising:

a stationary primary winding;

a godet casing rotatably supported and concentric with said primary winding, said godet casing comprising magnetically conductive material to serve exclusively as both a core and a secondary winding for said primary winding, said godet casing being inductively connected with said primary winding via a narrow gap to thereby generate secondary currents in said godet casing to heat said godet casing; and

power supply means connected to said primary winding for operating same at an alternating current of an adjustable predetermined frequency of at least about 300 Hz, said power supply means further comprising matching means for delivering power to said primary winding at a power factor of greater than about 0.9 at the predetermined frequency of said power supply means.

5,362,946

COOKING APPLIANCE THAT PREVENTS INITIATION OF COOKING CYCLE AFTER PREDETERMINED TIME ELAPSES AFTER DOOR CLOSURE

Kazufumi Matsushima, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 12, 1993, Ser. No. 59,564
Claims priority, application Japan, May 29, 1992, 4-138560
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—704 11 Claims

1. A cooking appliance, comprising:

a cooking compartment for receiving food and an attachment;

a door for accessing the cooking compartment;

means for receiving a start command to cause initiation of a new cooking cycle;

means for heating food received in the cooking compartment after said receiving means receives said start command;

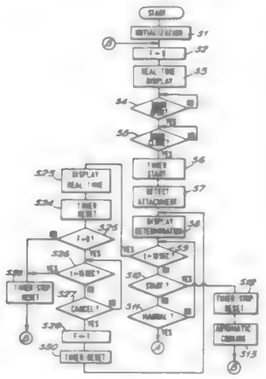
first detecting means for detecting the state of the door;

second detecting means for detecting the attachment received in the cooking compartment;

means, responsive to the first and second detecting means, for setting a cooking mode based on the received attachment when the door is closed, and

means for preventing initiation of said cooking cycle after a

predetermined time elapses from the closing of the door prior to initiation of said cooking cycle without said start



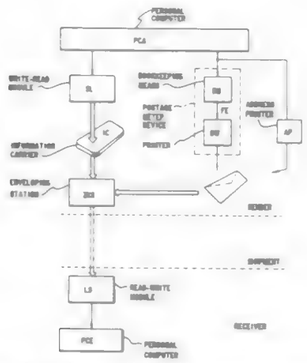
command being received by said receiving means to initiate said cooking cycle.

5,362,947

METHOD FOR SHIPPING CHIP CARDS

Klaus Dietrich; Stephan Günther; Norbert Knoth; Friedrich-Viktor Miehe, and Wolfgang Thiel, all of Berlin, Germany, assignors to Francotyp-Postalia GmbH, Berlin, Germany

Filed Jan. 17, 1992, Ser. No. 822,535
Claims priority, application Germany, Jan. 17, 1991, 4101440
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 3 Claims



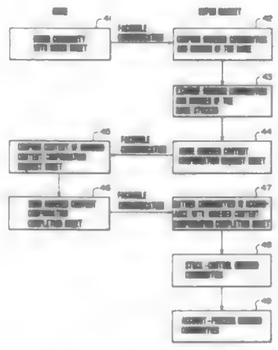
1. A method for shipping flat information carriers having electronic data stored thereon and requiring postal franking, which comprises transmitting communication data from a personal computer into a memory of an information carrier with a read-write module; transmitting associated shipping data from the personal computer to a postage meter device synchronously with the transmission of the communication data; accounting for postal charges for sending the information carrier with the postage meter device on the basis of the shipping data; imprinting postage on a strip with the postage meter device and then attaching the imprinted strip to a surface of the information carrier.

5,362,948

FACSIMILE-USE AUTOMATIC ORDER AND SALES MANAGEMENT SYSTEM

Kazuo Morimoto, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 17, 1991, Ser. No. 778,278
Claims priority, application Japan, Oct. 23, 1990, 2-285320
Int. Cl.[5] G06F *15/46;* G06K *15/00, 19/06, 7/10*
U.S. Cl. 235—376 8 Claims



1. A facsimile-use automatic order and sales management method, comprising the steps of:
- providing an order sheet for receiving automatically recognizable markings to convey information;
- receiving by a facsimile means a facsimile of said order sheet from an orderer;
- recognizing by automatic means said information on said order sheet to determine a kind and number of commodities written on said order sheet;
- checking a stock of said commodities;
- generating by automatic means an order content check request sheet;
- transmitting said order content check requires sheet to said orderer by a facsimile means in order to have said orderer check the order;
- receiving by a facsimile means an order content confirmation sheet by said orderer;
- recognizing by automatic means information on said order content confirmation sheet;
- collecting said ordered commodities based on said order content confirmation sheet;
- managing remaining stock of said ordered commodities; and
- performing accounting operations for said ordered commodities.

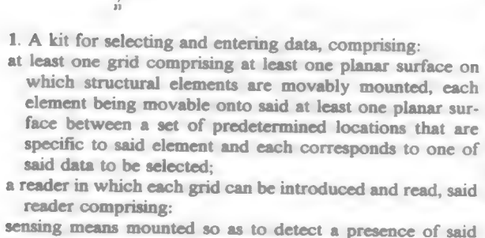
5,362,949

PACKING HOUSE CONTROL SYSTEM

Gilbert G. Gulick, 701 Chancellar Dr., Lutz, Fla. 33549

Continuation of Ser. No. 908,459, Jul. 6, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,157
Int. Cl.[5] G06F *15/24, 15/00*
U.S. Cl. 235—385 2 Claims

1. A method of control in a packing system including a manual packer person at a packing station for bringing together at least one item into one container, comprising:
- providing a central computer having stored packing information and at least one data generating device;
- transferring selected packing information from said central computer to said data generating device of an operation to be fulfilled;
- actuating a signal from said data generating device to indicate a ready condition including the identification of the packer person at the packing station;
- placing any needed additional and correctional data into said data generating device and transferring such additional and correctional data to the central computer to update the packing information in said central computer;
- thereafter instructing the data generating device by said central computer with a starting label number;
- verifying the number as the starting number in a series of code labels bearing a machine readable code indicating the sequential number of the label;
- thereafter packing a container and placing the next label in the sequence on the container;



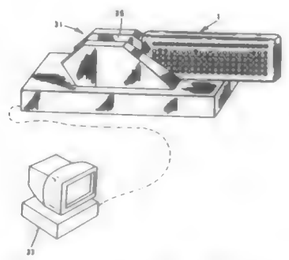
- informing the central computer that a box with the single unique label bearing the designated number has been packed;
- recording in the central computer a status information and sending the next label number to the data generating device, the primary reason for the central computer being to store the label numbers and their meanings;
- whereby, any needed processing of a container after leaving the packing station is obtained by reading the one only code label, and seeking container information from the central computer pertaining to the container identified by that code label.

5,362,950

GRID FOR SELECTING DATA AND KIT INCORPORATING THE SAME FOR ENTERING SAID DATA INTO A COMPUTER

Francois Larocque, 3115, rue Francois ler, R.R. 1, Drummondville, Québec, Canada J2B 6V2

Filed May 17, 1993, Ser. No. 61,476
Int. Cl.[5] G06K *7/04, 19/06;* G09B *3/00*
U.S. Cl. 235—448 10 Claims



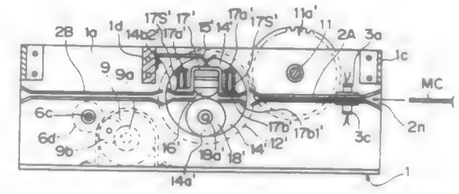
1. A kit for selecting and entering data, comprising:
- at least one grid comprising at least one planar surface on which structural elements are movably mounted, each element being movable onto said at least one planar surface between a set of predetermined locations that are specific to said element and each corresponds to one of said data to be selected;
- a reader in which each grid can be introduced and read, said reader comprising:
- sensing means mounted so as to detect a presence of said elements on said grid and determine the respective positions of said elements with respect to their corresponding sets of predetermined locations when the grid is introduced into the reader;
- a processing unit that determines the relative order of the elements whose presence and position have been detected, with respect to the other elements and as a function of the direction in which the grid is introduced into the reader; and
- an interface for connecting a processing unit to a computer for compilation purpose; and
- at least one software to be inserted and used by the computer to which the reader is connected, for compiling the information that is transmitted to said computer by said reader.

5,362,951

MAGNETIC CARD READER EQUIPPED WITH HEAD REVERSING FUNCTION

Masahiro Kanazawa, and Takeshi Miyashita, both of Yokohama, Japan, assignors to Amano Corporation, Kanagawa, Japan

Filed Mar. 24, 1992, Ser. No. 856,558
Claims priority, application Japan, Mar. 30, 1991, 3-092821
Int. Cl.[5] G06K *7/08, 13/08*
U.S. Cl. 235—449 5 Claims



1. A magnetic card reader comprising a frame having two sides to define a magnetic card passageway through which a magnetic card having a magnetic stripe along an edge thereof may pass through, two magnetic sensors mounted on said frame on an upper side of said passage way and two magnetic sensors mounted on said frame on a lower side of said passageway to determine the position of the magnetic stripe on said magnetic card passing through, reversing boards rotatably mounted on said frame each carrying a magnetic head which to correctly read and write magnetic information from said magnetic stripe of said magnetic card must coincide with said magnetic stripe, means to rotate said reversing board to render said magnetic head coincident with said magnetic stripe and a positioning stopper mounted on said frame wherein each said reversing board is in the form of a disc having two grooves on the periphery thereof diametrically opposed to each other into which said positioning stopper seats to position the magnetic head with respect to the magnetic stripe of said magnetic card.

5,362,952

CARD TRANSACTION TERMINAL

Parameswaran B. Nair, Acworth; Kumar S. Choudhuri, Kennesaw; James T. Stills, and John C. Evans, both of Atlanta, all of Ga., assignors to MicroBilt Corporation, Atlanta, Ga.

Division of Ser. No. 790,658, Nov. 8, 1991. This application Oct. 22, 1993, Ser. No. 141,918
Int. Cl.[5] G06K *13/06*
U.S. Cl. 235—449 1 Claim

1. A circuit for a low cost, easily manufacturable card transaction terminal for reading a magnetic stripe on a data card, said circuit being mountable in a card terminal housing, comprising:
- a single double-sided printed circuit board having a first side and a second side and a plurality of mounting holes;
- an alphanumeric liquid crystal display (LCD) device affixed to said first side;

a single chip liquid crystal display driver circuit responsive to control signals for causing said LCD to display alphanumeric information;

bracket means having a plurality of twistable fasteners for extending through some of said mounting holes in said circuit board and for holding said liquid crystal display to said first side;

a plurality of keypad electrical contacts formed on said first side, said keypad contacts being positioned to make an electrical circuit when contacted by a bridging conductive pellet on a keypad membrane associated with said card terminal housing; and

a plurality of circuit components all affixed to said second side, said circuit components consisting essentially of:

a nonvolatile electrically erasable programmable read-only memory (EEPROM) circuit for storing predetermined operational parameters for said circuit;

a single chip modem circuit;

data access arrangement circuitry for connecting said modem circuit to an external telephone line;

a magnetic stripe read head interface circuit connected to an external magnetic stripe read head, said circuit comprising a single integrated circuit containing a plurality of operational amplifiers and a plurality of external components for setting of parameters for said operational amplifiers, said interface circuit providing self clocking signals corresponding magnetic signals read from a magnetic stripe card swiped against the external read head;

a single chip microcomputer circuit including an internal mask-programmed read only memory for storage of a software program for said microcomputer circuit, said microcomputer circuit being operative for receiving operator input command signals from said keypad electrical contacts, for converting said self clocking signal into data corresponding to information encoded on the magnetic card without interim storage of said self clocking signals, for controlling communications with a host system via said modem circuit, and for providing said control signals to said liquid crystal display driver circuit; and

said circuit components including no memory components other than said EEPROM and memory internal to said single chip microcomputer.

5,362,953

READING APPARATUS WITH SEPARATE ILLUMINATION AND DETECTION OPTICAL AXES

Patrick M. McKenna, Mukilteo, Wash.; Robert W. Rudeen, Eugene, Oreg., and David W. Gilpin, Everett, Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Aug. 18, 1992, Ser. No. 931,767

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **35 Claims**

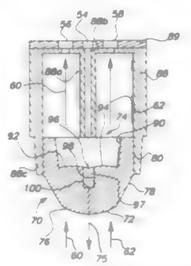
1. An apparatus for reading a bar code symbol containing information, comprising:

a light source generating an illumination beam of light along an optical axis;

a first optical element for receiving the illumination beam of light and transmitting the illumination beam of light therethrough along the optical axis onto the bar code symbol;

a second optical element for receiving a first portion of the light from the illumination beam of light reflected from the bar code symbol along a first return optical path commencing at the bar code symbol, and transmitting the first portion of the reflected light therethrough and along the first return optical path;

a third optical element for receiving a second portion of the light from the illumination beam of light reflected from the bar code symbol along a second return optical path commencing at the bar code symbol, the third optical element being in close proximity with the second optical element but spaced apart from the second optical element sufficient to permit the illumination beam of light to pass therebetween, the second return optical path being distinct from the first return optical path and transmitting the second portion of the reflected light therethrough and along the second return optical path, the first and second return optical paths each being offset from the optical axis but adjacent thereto;



a first transducer positioned away from the optical axis and along the first return optical path, and receiving the first portion of the reflected light transmitted through the second optical element along the first return optical path, the first transducer converting the first portion of the reflected light into an electrical signal representative of the full information contained on the bar code symbol;

a second transducer positioned away from the optical axis along the second return optical path, and receiving the second portion of the reflected light transmitted through the third optical element along the second return optical path, the second transducer converting the second portion of the reflected light into an electrical signal representative of the full information contained on the bar code symbol; and

a holder holding the first, second and third optical elements in fixed positions relative to each other and to the optical axis, the first second and third optical elements being arranged substantially in the same plane.

5,362,954

DATA TRANSFER METHOD FOR USE IN SEMICONDUCTOR DATA RECORDING MEDIUM

Eiichi Komatsu, Tokyo, Japan, assignor to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 975,434

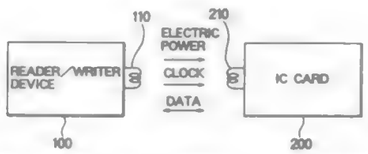
Claims priority, application Japan, Nov. 12, 1991, 3-323716; Nov. 12, 1991, 3-323717; Nov. 12, 1991, 3-323718; Nov. 12, 1991, 3-323719

Int. Cl.[5] G06K *19/06*

U.S. Cl. 235—492 **5 Claims**

1. A noncontact communication method between a semiconductor data recording medium and an reader/writer device for writing and reading data to and from the semiconductor data recording medium; said reader/writer device superimposing a signal wave on a carrier to generate a modulated wave and transmitting the modulated wave by a transmitting coil; said semiconductor data recording medium receiving the modulated wave by receiving coil, and demodulating the received modulated wave to detect the signal wave; the semiconductor data recording medium comprising a processing unit, an electric power and a clock signal generated from said modulated wave and supplied to the processing unit and having data transfer being conducted with the semiconductor data recording medium and the reader/writer device kept out of physical contact with each other; the method comprising:

generating the signal wave comprising trigger information and first bit information being data to be transferred from the reader/writer device to the semiconductor data recording medium, the trigger information being represented by periodic trigger pulses with a predetermined period T and the first bit information being represented by a presence and an absence of bit pulses located behind the trigger pulses by a set time interval t1 (t1<T);



the semiconductor data recording medium recognizing the first bit information from the detected signal wave;

the semiconductor data recording medium changing an input impedance of the receiving coil to generate second bit information, the second bit information being data to be transferred from the semiconductor data recording medium to the reader/writer device, said second bit information being represented by a presence or an absence of bit pulses located behind the trigger pulses by a set time interval t2 (t2<T);

the reader/writer device detecting changes in the input impedance of the receiving coil by deformation of said modulated wave for recognizing the second bit information; and

generating a reset signal for the processing unit to be transferred from the reader/writer device to the semiconductor data recording medium by omitting said trigger pulses for a predetermined period of time.

5,362,955

IC CARD HAVING SEVERABLE MINI CHIP CARD

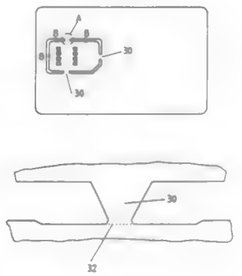
Yahya Haghiri-Tehrani, Munich, Germany, assignor to Gao Gesellschaft fur Automation und Organisation mbH, Germany

Continuation of Ser. No. 665,023, Mar. 5, 1991, abandoned. This application Feb. 22, 1994, Ser. No. 200,584

Claims priority, application Germany, Mar. 7, 1990, 4007221

Int. Cl.[5] G06K *19/07*

U.S. Cl. 235—492 **1 Claim**



1. A card structure comprising:

a rectangular, planar card member, said member having a pair of side edges separated by a width dimension of the member and a pair of end edges separated by a length dimension of the member, said end edges being longer than said side edges, the length and width dimensions of said member and a ratio between the length and width dimensions being those established by a standard for the dimensions of card structures;

a rectangular check card defined in said card member, said check card being suitable for insertion in terminal means and being defined by a plurality of elongated slits through the card member extending about portions of the periphery of said check card to form edges defining an outer contour of said check card, frangible bridge portions, extending between said card member and said check card in peripheral portions of said check card not occupied by said slits for maintaining said check card connected to said card member, said check card being rectangular in shape with a length dimension and a larger width dimension having the same general ratio as the width and length dimensions of said card member, said check card having a plurality of dimensionally fixed reference points on the edges thereof for orienting said check card in the terminal means, said bridge portions being located on the periphery of said check card at locations other than those occupied by said reference points, said bridge portions having predetermined lines of severance along which said check card may be separated from said card member while maintaining the outer contour of said check card;

an integrated circuit mounted in said check card; and

contact pads arranged on the surface of said check card and electrically connected to said integrated circuit, the mutual arrangement of said contact pads and the positions of said contact pads on said check card with respect to the edges of the card member being in accordance with a standard for card structures, said contact pads also having defined positions with respect to the edges of said check card so that the contact pads may be coupled to the terminal means when the check card is inserted therein.

5,362,956

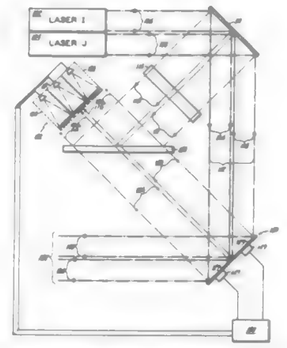
PISTON ERROR SENSOR FOR PHASED OPTICAL ARRAYS

David Anafi, West Palm Beach, and James M. Spinhirne, North Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 22, 1983, Ser. No. 487,775

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.9 **2 Claims**



1. An apparatus for generating a combined optical output beam comprising:

at least two lasers for generating at least two component beams;

a composite mirror having at least two composite mirror elements;

means for directing said at least two component beams onto corresponding ones of said at least two composite mirror elements whereby an output beam having at least two component output beams is reflected from said at least two composite mirror elements;

control means for controlling the orientation in space of at least one of said at least two composite mirror elements;

reference sample means for forming at least two reference sample beams from and corresponding to said at least two component beams;

output sample means for forming at least two output sample beams from and corresponding to at least two component output beams reflected from said at least two composite mirror elements; and

detector means for detecting said at least two reference sample beams and said at least two output sample beams and for passing signals corresponding to said reference beams and output beams to said control means, whereby said control means controls said at least one of said at least two composite mirror elements so that said output beam is configured in a predetermined manner; characterized in that:

said apparatus further includes at least one overlap detector means for detecting radiation simultaneously from two of said at least two component output beams, whereby said radiation from said two component output beams interferes in said detector means to produce an overlap phase signal depending on a first path length difference between a first optical path of one of said component output beams and a second optical path of another of said at least two component output beams; and

second control means connected to said overlap detector means for further controlling at least one of said at least two composite mirror elements to reduce said first path length difference to zero.

5,362,957

IMAGE READING APPARATUS

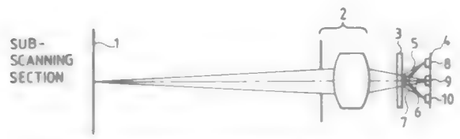
Takehiko Nakai, Tokyo, and Michitaka Setani, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1993, Ser. No. 64,875

Claims priority, application Japan, Jun. 25, 1992, 4-193124

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **18 Claims**



1. An image reading apparatus comprising:

light-receiving means in which a plurality of line sensors are arranged on one substrate;

an imaging optical system for forming an image of an object to be imaged on said light-receiving means; and

a blazed diffraction grating, arranged in an optical path between said imaging optical system and said light-receiving means, for color-separating a light beam from the object to be imaged into a plurality of light components, said diffraction grating having at least first and second kinds of grating lines, each kind of grating line having a different maximum height.

5,362,958

READING APPARATUS WITH POSITION CALCULATION AND FOCUS ADJUSTMENT AND CURVED SURFACE ADJUSTMENT

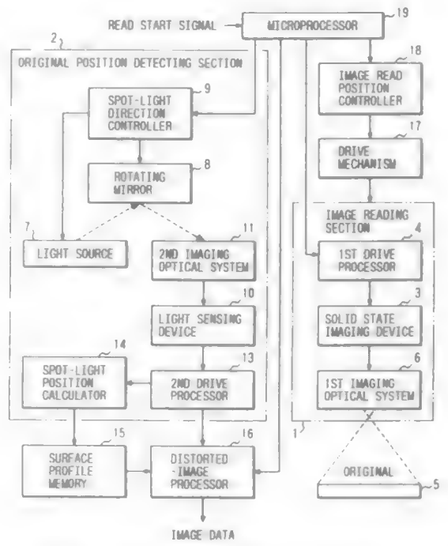
Kazuhisa Ando, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1993, Ser. No. 41,188

Claims priority, application Japan, Apr. 3, 1992, 4-109148; Apr. 8, 1992, 4-114296; Aug. 14, 1992, 4-237589

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **14 Claims**



1. An image reading apparatus having imaging optical means for imaging on a preset position light reflected from a surface of an object to be read, and image pickup means for picking up an optical image formed at the preset position to convert the optical image into electrical signals, said image reading apparatus comprising:

spot light projecting means for projecting a spot light at a desired position on the surface of said object;

reflected light receiving means for receiving the spot light reflected from the surface of said object to convert the spot light into an electrical signal corresponding to the quantity of the received spot light;

position calculating means for calculating a distance between a light receiving surface of said image pickup means and the surface of said object by using the output electrical signal of said reflected light receiving means;

focal-distance adjusting means for adjusting relative positions of said imaging optical means and said image pickup means to the surface of said object according to the results of the calculation by said position calculating means while keeping constant the distance between said imaging optical means and said image pickup means; and

correcting means for extending image signals representative of an image region from a curved or undulated portion of the surface of said object according to the results of the calculation by said position calculating means to provide signals representative of extended image data for said portion, and for obtaining an optical density of the image region from the curved portion according to a density difference between the actual densities of image data near the extended image data.

5,362,959

ULTRARAPID CAMERA FOR VISULAIZING THE INTENSITY PROFILE OF A LASER

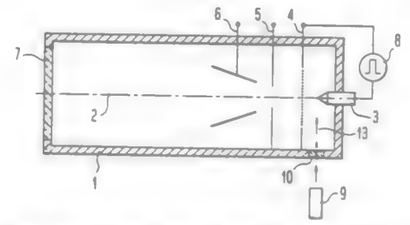
Jean-Claude Grossetie, Ispra; Joseph-Albert Miehe, Strasbourg, and Mustapha Boussoukaya, Bretigny sur Orge, all of France, assignors to European Economic Community (EEC), Plateau Du Kirchberg, Luxembourg

Filed Jul. 28, 1993, Ser. No. 94,061

Claims priority, application Luxembourg, Jan. 30, 1991, 87882

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **3 Claims**



1. An ultrarapid camera for visualizing the intensity profile of a laser pulse, comprising, in a vacuum housing, a photocathode, an extraction grid, focalization electrodes, deflection plates and a visualization screen, said photocathode being disposed in opposition to said visualization screen and said extraction grid, said focalization electrodes and said deflection plates being disposed between said photocathode and said visualization screen, characterized in that the photocathode is constituted by at least one metal emission surface having at least one pointed tip formed thereon (3, 12) and means (9, 10) are provided for sending said laser pulse (13) into a zone situated in front of said at least one metal conductor.

5,362,960

PHOTOELECTRIC TRANSDUCING DEVICE HAVING A SELF-EXCITING OSCILLATING MECHANISM

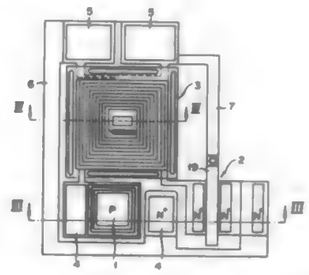
Kiyoshi Komatsu; Takehisa Mori; Takeshi Kudo; Hitomi Kadono, all of Kanagawa, and Mitsuteru Kimura, Miyagi, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,794

Claims priority, application Japan, Jan. 30, 1992, 4-015166

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214.1 **12 Claims**



1. A photoelectric transducing device comprising:

a photoelectric transducing element for converting an irradiated continuous light to a direct electric current;

a self-exciting oscillating mechanism for receiving said direct electric current; and

a thin film voltage transformer including a coil and a condenser for generating a resonance frequency matched to a switching action of a field-effect transistor, said photoelectric transducing element, said self-exciting oscillating mechanism and said thin film voltage transformer being formed on one substrate.

5,362,961

OPTICAL INFORMATION TRANSMITTING DEVICE AND METHOD OF MANUFACTURING SAME

Kenjiro Hamanaka, Osaka, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan

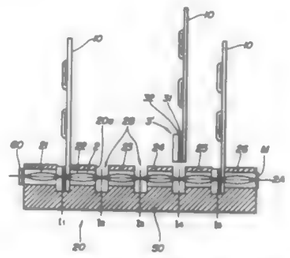
Division of Ser. No. 764,005, Sep. 23, 1991, Pat. No. 5,202,567.

This application Jan. 19, 1993, Ser. No. 5,755

Claims priority, application Japan, Sep. 21, 1990, 2-253829; Sep. 21, 1990, 2-253830; Sep. 21, 1990, 2-253831; Nov. 9, 1990, 2-304552; Nov. 9, 1990, 2-304553; Feb. 26, 1991, 3-53949; Feb. 26, 1991, 3-53950; Mar. 1, 1991, 3-59764

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—216 **22 Claims**



1. An optical information transmitting device for transmitting pattern information on a light beam emitted by a light source, comprising:

a substrate;

a coaxial lens array of lenses spaced at equal intervals along an optical axis on said substrate, with conjugate focusing planes of said lenses being of equal magnification and disposed between adjacent ones of said lenses, wherein each of said lenses comprises a distributed-index rod lens having a rotationally symmetric refractive index distribution with the refractive index varying radially with respect to said optical axis; and

said lenses and said conjugate focusing planes being arranged such that a light beam emitted by the light source along said optical axis focuses at said conjugate focusing planes, and when a transmissive optical pattern is formed in one of said conjugate focusing planes, images of said transmissive optical pattern are formed in the other conjugate focusing planes, respectively.

5,362,962

METHOD AND APPARATUS FOR MEASURING PIPELINE CORROSION

Darren M. Barborak, Pickerington, and William A. Bruce, Columbus, both of Ohio, assignors to Edison Welding Institute, Columbus, Ohio

Filed Apr. 16, 1993, Ser. No. 48,788

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—234 **33 Claims**

1. An automatic corrosion measurement system comprising:

a laser instrument emitting laser light to and detecting reflected laser light from an area of a surface to evaluate the condition thereof, said laser instrument including:

a laser light source producing laser light;

means for projecting laser light across an area of said surface to define a scan area; and

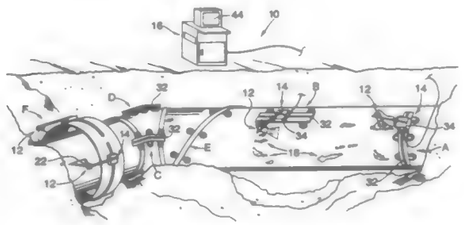
a laser light detector positioned to detect laser light reflected from said scan a real and generating surface condition signals related to laser light reflected from said scan area; and

a positioning mechanism removably mountable to a said

surface and connected to said laser instrument, said positioning mechanism:

defining a curvilinear direction of movement for said laser instrument along a portion of said surface; and

generating position signals related to the position of said laser instrument along said curvilinear direction of movement; and



processor means communicably connected to said laser instrument and said positioning mechanism for control thereof, wherein said processor means receives and processes said surface condition signals and position signals to produce data related to corrosion on said surface.

5,362,963

NANOMETER DIMENSION OPTICAL DEVICE WITH MICROIMAGING AND NANOILLUMINATION CAPABILITIES

Raoul Kopelman, 1065 Heatherway, Ann Arbor, Mich. 48104, and Aaron Lewis, 38 Woodcrest Ave., Ithaca, N.Y. 14850

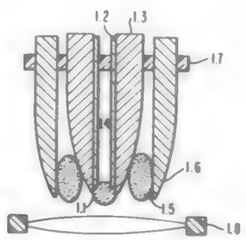
Continuation of Ser. No. 899,694, Jun. 17, 1992, Pat. No. 5,264,698, which is a division of Ser. No. 380,099, Jul. 14, 1989, Pat. No. 5,148,307. This application Nov. 3, 1993, Ser. No. 145,136

Claims priority, application Israel, Jul. 17, 1988, 87139

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] G01N *23/22*

U.S. Cl. 250—307 **20 Claims**



1. A method for producing radiation in nanometer dimensions comprising:

locating an active material capable of emitting light having a known wavelength in the tip of an electrically nonconductive pipette, wherein the tip has an exit aperture having a diameter that is less than said known wavelength;

coating said pipette with an opaque material;

exciting said active material to emit light;

confining the emitted light to a dimension less than said known wavelength; and

directing said light through the exit aperture toward the surface of a sample material adjacent said pipette tip to cause light to be transferred between the active material and the sample surface.

5,362,964

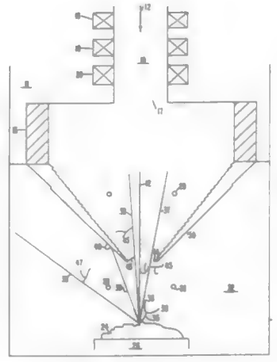
ENVIRONMENTAL SCANNING ELECTRON MICROSCOPE

W. Ralph Knowles, Lowell, Mass.; William G. Schultz, Nashua, N.H., and Allen E. Armstrong, Lexington, Mass., assignors to ElectroScan Corporation, Wilmington, Mass.

Filed Jul. 30, 1993, Ser. No. 100,545

Int. Cl.[5] H01J *37/244*

U.S. Cl. 250—310 **56 Claims**



1. An environmental scanning electron microscope comprising:

(a) means for generating and directing an electron beam towards a specimen;

(b) means for detecting secondary electron signals emanating from the surface of the specimen; and

(c) means for reducing signals emanating from backscattered electrons and means for reducing signal noise generated by said electron beam.

5,362,965

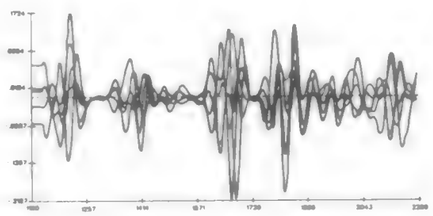
INDIRECT METHOD FOR DETERMINING OXYGENATE CONTENT USING NEAR-INFRARED ABSORPTION SPECTRA

Steven M. Maggard, Lake Jackson, Tex., assignor to Ashland Oil Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 890,048, May 27, 1992, abandoned. This application May 10, 1993, Ser. No. 59,700

Int. Cl.[5] G01N *21/35*

U.S. Cl. 250—339.12 **22 Claims**



1. A method for controlling total oxygenate content of a composition that comprises at least 1% by volume of oxygenate content, comprising in combination the steps:

a. measuring the value of at least one absorbance in at least one wavelength between about 1,300 to1,350 nanometers; and

b. substituting said value into an equation to obtain a prediction of oxygenate content of said composition, whereby the effect of temperature on said prediction is reduced; and

c. controlling said composition in response to said prediction.

5,362,966

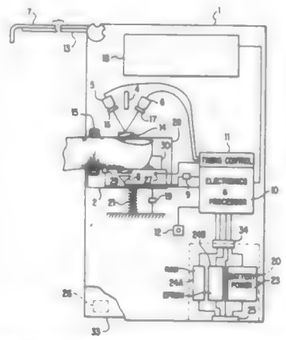
MEASUREMENT OF FINGER TEMPERATURE IN NEAR-INFRARED QUANTITATIVE MEASUREMENT INSTRUMENT

Robert D. Rosenthal; Lynn N. Paynter, and Reynaldo J. Quintana, all c/o Futurex, P.O. Box 2398, Gaithersburg, Md. 20886

Continuation-in-part of Ser. No. 813,739, Dec. 30, 1991, Pat. No. 5,237,178, which is a continuation-in-part of Ser. No. 565,302, Aug. 10, 1990, Pat. No. 5,077,476, which is a continuation-in-part of Ser. No. 544,580, Jun. 27, 1990, Pat. No. 5,086,229. This application Aug. 10, 1993, Ser. No. 103,758

Int. Cl.[5] G01N *21/35*

U.S. Cl. 250—341.1 **11 Claims**



1. A near-infrared quantitative analysis instrument for noninvasive measurement of blood present in a body part of a subject, comprising:

introducing means including a near-infrared energy source for introducing near-infrared energy into blood present in a body part of a subject;

detecting means for detecting near-infrared energy being emitted from said body part and producing signals in response thereto;

positioning means for positioning said body part closely adjacent to both said introducing means and said detecting means;

housing means for housing said introducing means, said detecting means and said positioning means;

temperature sensing means for measuring the temperature of said body part at a location on said body part external to said housing means; and

processing means responsive to the signals produced by said detecting means and the temperature measured by said temperature sensing means for generating a signal indicative of a quantity of a certain analyte in the blood present in said body part.

5,362,967

PNEUMATIC INFRARED RAY DETECTOR FOR USE IN GAS ANALYZER

Junji Aoki, and Kazuhide Mukaihara, both of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Sep. 24, 1993, Ser. No. 127,004

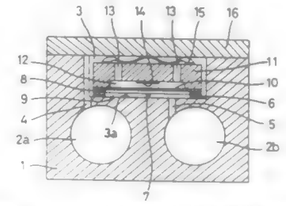
Claims priority, application Japan, Sep. 30, 1992, 4-074419[U]; Sep. 30, 1992, 4-286961

Int. Cl.[5] G01N *21/61*

U.S. Cl. 250—344 **21 Claims**

1. A pneumatic infrared ray detector for use in a gas analyzer, in which a pair of gas chambers upon which infrared rays are incident, is provided in a body, a gas passage being formed for communicating said pair of gas chambers with each other, a vibrating diaphragm cutting off said gas passage fixedly mounted on said body and having its circumferential edge portion supported from both sides, and a mechanism for communicating respective portions of said gas passage cut off by said vibrating diaphragm to slowly leak gases enclosed in the respective gas chambers so provided;

characterized in that a ring-shaped leak-controlling sheet



built up over the circumferential edge portion on one side of said vibrating diaphragm is provided with at least one groove-shaped gas-leaking passage formed between an inner circumferential edge and an outer circumferential edge thereof and one of said respective portions of said gas passage cut off by said vibrating diaphragm is provided on an outer circumferential side of said leak-controlling sheet while the other of said respective portions of said gas passage cut off by said vibrating diaphragm is provided on an inner circumferential side of said leak-controlling sheet.

5,362,968

OPTIC COLUMN HAVING PARTICULAR MAJOR/MINOR AXIS MAGNIFICATION RATIO

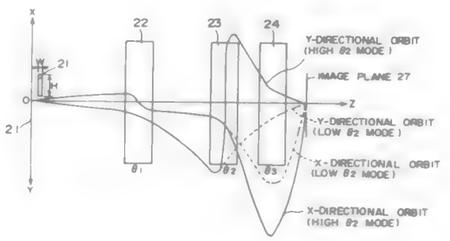
Motosuke Miyoshi, Minato; Yuichiro Yamazaki, Edogawa, both of Japan, and Katsuya Okumura, Poughkeepsie, N.Y., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1993, Ser. No. 126,968

Claims priority, application Japan, Sep. 25, 1992, 4-256879

Int. Cl.[5] G21K *1/093*

U.S. Cl. 250—396 R **5 Claims**



1. An optic column comprising:

a line beam source emitting a beam; and

multi-pole lenses arranged in multiple steps, wherein

a beam orbit in a direction of major axis of the line beam source and a beam orbit in a direction of minor axis of the line beam source coincide with each other on an image plane, and wherein

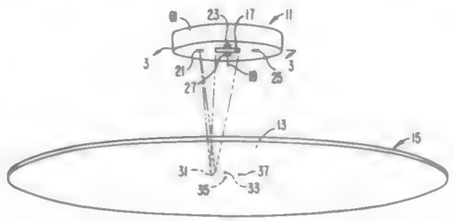
a ratio of magnification of the beam orbit in the direction of major axis to magnification of the beam orbit in the direction of minor axis is coincident with a ratio of a length of the line beam source in the direction of minor axis to a length of the line beam source in the direction of major axis.

5,362,969

PROCESSING ENDPOINT DETECTING TECHNIQUE AND DETECTOR STRUCTURE USING MULTIPLE RADIATION SOURCES OR DISCRETE DETECTORS

Daniel E. Glenn, Mountain View, Calif., assignor to Luxtron Corporation, Santa Clara, Calif.

Filed Apr. 23, 1993, Ser. No. 52,401
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 24 Claims



1. In a method of directing radiation against a surface being processed and thence onto a radiation detector in order to detect when an endpoint of the process is reached, a method of minimizing an effect on a level of radiation detected by any tilting of the surface, comprising the steps of:

directing said radiation against the surface from at least four positions forming a substantially symmetrical pattern,

causing the radiation emanating from each of said positions to have substantially the same radiation emission intensity distribution about each of the positions, and

locating the radiation detector at a position that is substantially symmetrically located within said at least four radiation emission positions.

5,362,970

METHOD AND APPARATUS FOR ELECTRO-OPTICALLY DETERMINING THE DIMENSION, LOCATION AND ATTITUDE OF OBJECTS

Timothy R. Pryor; Bernard S. Hockley; Nick Liptay-Wagner; Omer L. Hageniers, and W. J. Pastorius, all of Windsor, Canada, assignors to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 836,508, Feb. 8, 1992, Pat. No. 5,280,179, which is a division of Ser. No. 711,397, Jun. 6, 1991, Pat. No. 5,164,579, which is a continuation of Ser. No. 511,967, Apr. 17, 1990, abandoned, which is a continuation of Ser. No. 381,031, Jul. 19, 1989, abandoned, which is a continuation of Ser. No. 262,131, Oct. 25, 1988, abandoned, which is a continuation of Ser. No. 59,632, Jun. 8, 1987, abandoned, which is a continuation of Ser. No. 757,208, Jul. 22, 1985, Pat. No. 4,674,869, which is a continuation of Ser. No. 697,683, Feb. 1, 1985, abandoned, which is a continuation of Ser. No. 634,191, Jul. 27, 1984, abandoned, which is a continuation of Ser. No. 378,808, May 17, 1982, abandoned, which is a division of Ser. No. 34,278, Apr. 30, 1979, Pat. No. 4,373,804. This application Sep. 21, 1993, Ser. No. 124,605
Int. Cl.[5] G01C *3/10*
U.S. Cl. 250—561 81 Claims

1. A sensor for determining range to the surface of an object comprising:

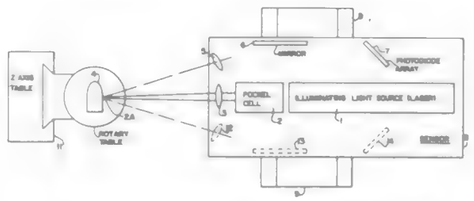
a light source comprising a laser diode;

focusing means for focussing radiation from said laser diode to a zone on said surface;

means for detecting light reflected from the object surface, said detecting means comprising a plurality of light detecting elements;

means for exposing said detecting means to the reflected light for a preselected exposure time;

means for reading the data from the detector means caused by exposure of the detector means to said light; and



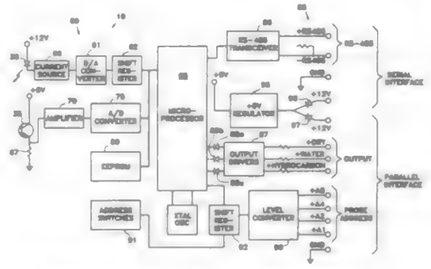
means for processing the data to determine the range to said object surface.

5,362,971

FIBER OPTIC DETECTION SYSTEM

Robert L. McMahon, Clayton; Robert B. McCullough, Sunol, and Victor Ivashin, Pleasant Hill, all of Calif., assignors to Terrascope Systems, Inc., Los Gatos, Calif.

Filed Mar. 10, 1993, Ser. No. 29,017
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 24 Claims



1. A fiber optic detecting system comprising:

(a) an optic fiber element having intermediate the ends thereof a continuous light variable section;

(b) a source of light disposed at one end of said optic fiber element for providing light for conduction through said optic fiber element; and

(c) a light detector disposed at the other end of said optic fiber element for detecting the quantum of light passing through said light variable section and producing an output signal representative of the quantum of light detected;

(d) said light variable section being adapted to be disposed in a medium and the quantum of light travelling from said light variable section to said light detector being dependent on the light absorption characteristics of the medium in which said light variable section is disposed, said light detector producing a signal representative of the medium in which said light variable section is disposed; and

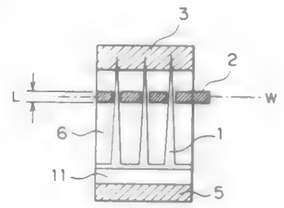
(e) an electronic circuit having a microcomputer connected to said light detector and responsive to the output signal of said light detector for measuring the quantum of light resulting from the light absorption characteristics of the medium in which said light variable section is disposed for determining the medium in which said light variable section is disposed.

5,362,972

SEMICONDUCTOR DEVICE USING WHISKERS

Masamitsu Yazawa, Yokohama; Kenji Hiruma, Tokorozawa; Toshio Katsuyama, Ome; Nobutaka Futigami, Mitaka; Hidetoshi Matsumoto, Kodaira; Hiroshi Kakibayashi, Nagareyama; Masanari Koguchi, Higashikurume, all of Japan; Gerard P. Morgan, Galway, Ireland, and Kensuke Ogawa, Hachioji, Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,780
Claims priority, application Japan, Apr. 20, 1990, 2-102948; Apr. 20, 1990, 2-102952; Sep. 10, 1990, 2-236961; Sep. 21, 1990, 2-250262
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—13 48 Claims



1. A semiconductor device, comprising:

a semiconductor substrate of one conductive type; and

a semiconductor whisker channel which is grown epitaxially on said substrate and has a diameter of 0.1 μm or less to contact with a surface of the substrate at one end thereof and apart from the substrate surface at another end thereof, and acts as a semiconductor quantum wire;

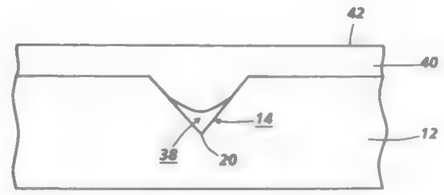
wherein said whisker channel has two ends and both ends are connected electrically to ohmic electrodes.

5,362,973

QUANTUM FABRICATED VIA PHOTO INDUCED EVAPORATION ENHANCEMENT DURING IN SITU EPITAXIAL GROWTH

Thomas L. Paoli, Los Altos, Calif., and John E. Epler, Zurich, Switzerland, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1990, Ser. No. 542,857
Int. Cl.[5] H01L *29/225*
U.S. Cl. 257—14 28 Claims



1. A semiconductor structure with a quantum wire comprising:

a substrate or a semiconductor layer,

a groove in said substrate or semiconductor layer,

a quantum wire at the vertex of said groove, and

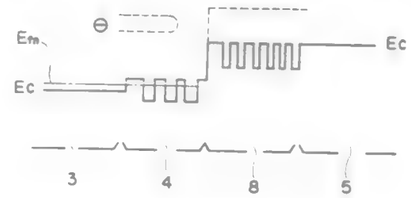
a semiconductor layer on said quantum wire and said groove and said substrate or semiconductor layer.

5,362,974

GROUP II-VI MATERIAL SEMICONDUCTOR OPTICAL DEVICE WITH STRAINED MULTIQUANTUM BARRIERS

Michinori Irikawa, Yokohama, and Kenichi Iga, Tokyo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 73,434
Claims priority, application Japan, Jun. 10, 1992, 4-177437
Int. Cl.[5] H01L *29/161, 27/12*
U.S. Cl. 257—15 9 Claims



1. A semiconductor optical device comprising:

a semiconductor substrate;

a first cladding layer formed on said semiconductor substrate;

a first optical confinement layer formed on said first cladding layer;

an active layer formed on said first optical confinement layer;

a multiquantum barrier layer formed on said active layer;

a second optical confinement layer formed on said multiquantum barrier layer; and

a second cladding layer formed on said second optical confinement layer;

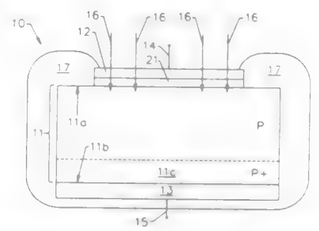
wherein said multiquantum barrier layer comprises a strained layer superlattice of group II-VI material, and said cladding layers comprise ZnS_xSe_{1-x} $(0<x<1)$ or $Zn_xCd_{1-x}S$ $(0<x<1)$.

5,362,975

DIAMOND-BASED CHEMICAL SENSORS

Jesko von Windheim, Raleigh, N.C., and Vasudev Venkatesan, Phoenix, Ariz., assignors to Kobe Steel USA, Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 939,446, Sep. 2, 1992, Pat. No. 5,285,034. This application Jul. 8, 1993, Ser. No. 89,170
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] H01L *29/66*
U.S. Cl. 257—76 33 Claims



1. A diamond-based chemical sensor comprising:

a first diamond layer having a first conductivity type;

a second semiconductor layer of a second conductivity type on said first diamond layer, said first and second layers forming a semiconductor junction therebetween;

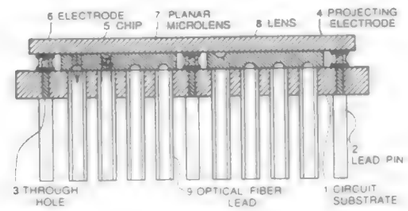
at least one of said first and second layers being configured to allow a chemical external to said diamond-based chemical sensor to interact with said at least one of said first and second layers and alter an electrical characteristic of said semiconductor junction.

5,362,976

HIGH FREQUENCY SEMICONDUCTOR DEVICE HAVING OPTICAL GUIDE PACKAGE STRUCTURE

Katsuhiko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1992, Ser. No. 966,346
Claims priority, application Japan, Oct. 26, 1991, 3-306540
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—81 **5 Claims**



1. A semiconductor device comprising a circuit substrate and a semiconductor device chip supported on said circuit substrate,

said semiconductor device chip being configured to treat all internal signals in the form of an electric signal, said semiconductor device chip having at least one voltage supply electrode and at least one ground electrode, a plurality of light emitting means each for converting into a photo output signal an electric signal to be outputted from said semiconductor device chip, said semiconductor device chip also having a plurality of photo detecting means each for converting a photo input signal into an electric signal, said at least one voltage supply electrode, said at least one ground electrode, said light emitting means and said photo detecting means being located on a first surface of said semiconductor device chip; and

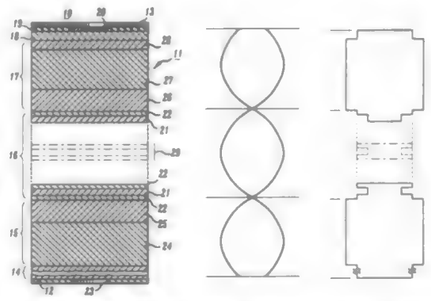
said circuit substrate having a first surface and including at least one voltage supply pin and at least one ground pin formed to project upright from said first surface of said circuit substrate, said at least one voltage supply pin and said at least one ground pin being connected to said one voltage supply electrode and said one ground electrode of said semiconductor device chip, respectively, so that said semiconductor chip is fixed to said circuit substrate, said circuit substrate also having a plurality of first optical guide means mounted thereon, each having its inner end located at said first surface of said circuit substrate in a position relative to a corresponding one of said light emitting means so as to guide the photo output signal emitted from said corresponding light emitting means, to an outer end of said first optical guide means, said circuit substrate also having a second optical guide means mounted thereon and each having its inner end located at said first surface of said circuit substrate in a position relative to said photo detecting means so as to guide to said photo detecting means the photo output signal inputted to an outer end of said second optical guide means.

5,362,977

SINGLE MIRROR LIGHT-EMITTING DIODES WITH ENHANCED INTENSITY

Neil E. J. Hunt, Scotch Plains, and Erdmann F. Schubert, New Providence, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1992, Ser. No. 997,415
Int. Cl.[5] H01L *29/161, 29/205, 29/225, 33/00*
U.S. Cl. 257—98 **16 Claims**



1. A light-emitting diode (LED) which comprises a semiconductor structure including an active region, and a top electrode and a bottom electrode to the structure, wherein

said top electrode is a reflector and said bottom electrode has a window for passage of light emission of the device, said top electrode sets up a standing optical wave for light emitted through said window,

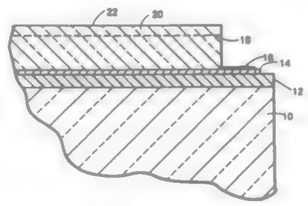
said active region comprises a plurality of quantum wells positioned relative to the top electrode so that the center of the active region occurs at a distance from the top electrode which is greater than $\lambda/2$, wherein λ is the emission wavelength of the semiconductor, said active region fits into an anti-node of an optical mode of the LED, and the center of said active region occurs at a position of at leat a second anti-note of the standing optical wave.

5,362,978

METHOD FOR ESTABLISHING AN ELECTRICAL FIELD AT A SURFACE OF A SEMICONDUCTOR DEVICE

William America, Newtown, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 670,672, Mar. 18, 1991, abandoned. This application Jun. 30, 1992, Ser. No. 906,624
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] H01L *29/78, 29/06*
U.S. Cl. 257—228 **6 Claims**



1. A semiconductor device, comprising:

a body of semiconductor material, said body having a front, front surface, a rear, and a rear surface, the rear including a layer of single type semiconductor material;

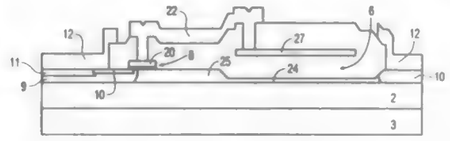
said layer of single type material having a region of implanted dopant ions having a maximum concentration substantially at the rear surface of the body, whereby a negative electrical field is established in the rear of said body so as to drive photoelectrons impinging on the rear surface toward the front of said body regardless of penetration depth.

5,362,979

SOI TRANSISTOR WITH IMPROVED SOURCE-HIGH PERFORMANCE

Steven L. Merchant, Yorktown Heights, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 101,164, Aug. 3, 1993, and a continuation of Ser. No. 811,554, Dec. 20, 1991, Pat. No. 5,246,878, which is a continuation-in-part of Ser. No. 650,391, Feb. 1, 1991, Pat. No. 5,300,448. This application Aug. 10, 1993, Ser. No. 105,213 Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—340 **5 Claims**



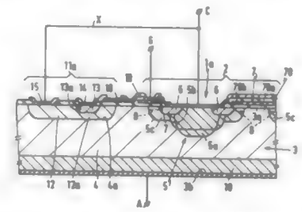
1. A thin film SOI device having improved source-high performance characteristics comprising the structure of a buried oxide layer; a layer of silicon on said buried oxide layer, said layer of silicon having a laterally extending region of both a first thickness and a second smaller thickness; a second oxide layer on said layer of silicon; a gate electrode above a a portion of said first thickness of said layer of silicon; a drain region laterally adjacent to said second smaller thickness of said layer of silicon; a source region laterally separated from said gate electrode; a field plate separate from said gate electrode and extending laterally over said second smaller thickness of said layer of silicon, and means for short-circuiting said gate electrode and said field plate.

5,362,980

SEMICONDUCTOR COMPONENT WITH PROTECTIVE ELEMENT FOR LIMITING CURRENT THROUGH COMPONENT

Paul A. Gough, Smallfield, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 20, 1993, Ser. No. 94,802
Claims priority, application United Kingdom, Jul. 23, 1992, 9215654.6
Int. Cl.[5] H01L *29/78, 23/56, 27/02, 27/08*
U.S. Cl. 257—355 **16 Claims**



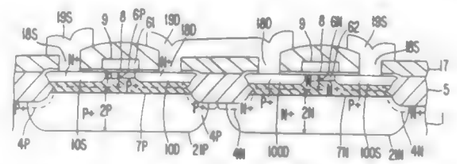
1. A semiconductor component comprising an insulated gate field effect device having a semiconductor body with a first region of one conductivity type adjacent one major surface, a second region defining a conduction channel area separating a third region from the first region, an insulated gate adjoining the conduction channel area for controlling current flow between the first and third regions and an injection region for injecting charge carriers of the opposite conductivity type into the first region, and a protection device for limiting the current through the insulated gate field effect device, the protection device comprising a fourth region of the opposite conductivity type formed within the first region so as to be spaced from the second region, a fifth region separated from the first region by the fourth region and forming a potential barrier with the fourth region, a first conductive path connecting the fifth region to the insulated gate for allowing the flow of charge carriers of the one conductivity type towards the insulated gate and a second conductive path connected to the fourth region, an area of the fourth region beneath the fifth region providing a route for charge carriers of the opposite conductivity type to the second conductive path for causing, when the current through the insulated gate field effect device exceeds a predetermined limit, the flow of opposite conductivity type charge carriers beneath the fifth region to become sufficient to forward bias the pn junction between the fourth and first regions to cause the voltage at the insulated gate to alter so as to limit the current through the insulated gate field effect device.

5,362,981

INTEGRATED SEMICONDUCTOR DEVICE HAVING A BURIED SEMICONDUCTOR LAYER AND FABRICATION METHOD THEREOF

Noriaki Sato, and Fumitake Mieno, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 5, 1993, Ser. No. 699
Claims priority, application Japan, Jan. 7, 1992, 4-000548
Int. Cl.[5] H01L *27/02, 27/04, 27/12*
U.S. Cl. 257—371 **15 Claims**



1. An integrated semiconductor device comprising:

a semiconductor substrate having a surface and a surface portion bordering the surface, the surface portion having a first conductivity type;

an insulating layer formed on said semiconductor substrate, said insulating layer having a plurality of windows, each window exposing a part of a surface of the surface portion;

a semiconductor layer formed on the exposed parts of the surface of the surface portion, said semiconductor layer further comprising;

a buried semiconductor layer of the first conductivity type having an upper surface in said semiconductor layer;

a first region of the first conductivity type formed above the buried semiconductor layer and adjacent to a surface thereof, the first region of the first conductivity type having an impurity concentration lower than an impurity concentration of the buried semiconductor layer;

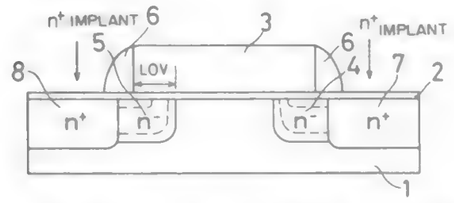
a pair of second regions of a second conductivity type opposite to the first conductivity type formed above the buried semiconductor layer and adjacent to the surface thereof, each one of the pair of second regions separated from the other one of the pair of second regions by the first region of the first conductivity type; and

a plurality of active elements formed in said semiconductor layer within selected ones of the windows, each of the active elements further comprising:

the first region of the first conductivity type, and

the pair of second regions of the second conductivity type.

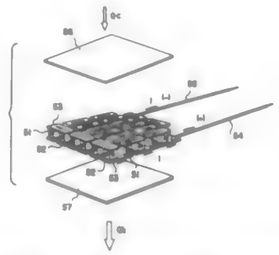
5,362,982
INSULATED GATE FET WITH A PARTICULAR LDD STRUCTURE
Junji Hirase, and Takashi Hori, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 1, 1993, Ser. No. 40,196
Claims priority, application Japan, Apr. 3, 1992, 4-081812
Int. Cl.[5] H01L *29/78, 29/784*
U.S. Cl. 257—408 4 Claims



1. A semiconductor device functioning as an insulated gate field-effect transistor, comprising:
a semiconductor substrate;
a heavily doped source region and a heavily doped drain region formed in said semiconductor substrate, each of which has a polarity type opposite that of the semiconductor substrate; and
a lightly doped source region and a lightly doped drain region formed adjacent to the heavily doped source region and the heavily doped drain region, respectively, at least a part of said lightly doped source and drain regions extending under a near-end part of a gate electrode formed over said semiconductor substrate, the lightly doped source region and the lightly doped drain region being of the same polarity type as the heavily doped source region and the heavily doped drain region, and having a lower impurity concentration than that of the heavily doped source region and the heavily doped drain region;
wherein the impurity concentration of the portion under the near-end part of the gate electrode in at least one of the lightly doped source region and the lightly doped drain region is continuously reduced from a maximum level as the vertical distance to the gate electrode decreases.

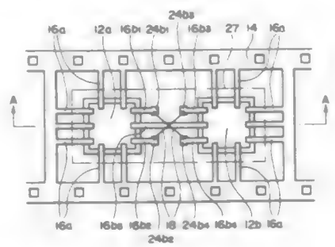
5,362,983
THERMOELECTRIC CONVERSION MODULE WITH SERIES CONNECTION
Akira Yamamura, c/o Nippon Ferrofluidics Corporation, 17-22, Akasaka 2-chome, Minato-ku, Tokyo, 107, Japan, and John Baldwin, c/o International Thermoelectric Incorporated, 131 Stedman St., Chelmsford, Mass. 01824
Continuation of Ser. No. 858,066, Mar. 26, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,066
Claims priority, application Japan, Mar. 27, 1991, 3-133776
Int. Cl.[5] H01L *29/66*
U.S. Cl. 257—414 3 Claims

1. A thermoelectric conversion module comprising:
a pair of substrates; and
P-type thermoelectric semiconductor chips and N-type thermoelectric semiconductor chips arranged in both longitudinal and transverse directions between said pair of substrates and all chips being electrically connected in series to absorb heat on one of the substrates and to generate heat on the other substrate,
wherein the thermoelectric conversion module having in at least a part a same type arrangement portion formed by providing a plurality of thermoelectric semiconductor chips of a same type side by side with predetermined



spacing in one of the longitudinal and the transverse directions.

5,362,984
SEMICONDUCTOR DEVICE WITH JUMPING WIRE
Masashi Konda; Toshio Yamamoto, and Yoshiaki Emoto, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Feb. 24, 1992, Ser. No. 839,558
Claims priority, application Japan, Feb. 28, 1991, 3-059425
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—666 21 Claims

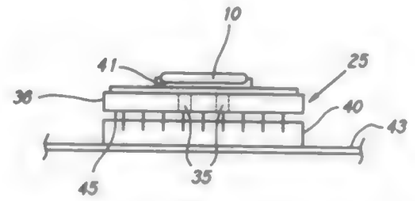


1. A semiconductor device comprising:
a plurality of semiconductor elements each having a plurality of terminals formed on one surface of a respective element;
a substrate film for mounting said semiconductor elements thereon;
a plurality of leads formed on said substrate, each lead having a first and a second end, the first ends of said leads being electrically connected to the terminals of said semiconductor elements, respectively;
at least one jumping wire having a first end which is connected to the second end of one of said leads and a second end which is connected to the second end of a different one of said leads; and
a resin layer for sealing said jumping wire and said semiconductor elements together.

5,362,985
PACKAGED INTEGRATED CIRCUIT ADD-ON CARD AND METHOD OF MANUFACTURE
Abraham C. Ma, Milpitas, and Paul Y. J. Hsueh, Concord, both of Calif., assignors to MA Laboratories, Inc., San Jose, Calif.
Filed May 27, 1993, Ser. No. 68,250
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—707 16 Claims

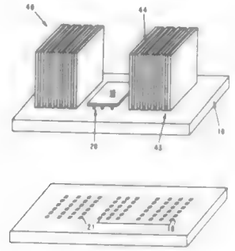
1. An add-on card which may by used to connect a flat pack packaged integrated circuit to an integrated circuit socket comprising
a board having a bonding surface, a pin surface and a plurality of convection cooling vents passing therethrough;

means for creating a centering force that centers leads of a flat pack packaged integrated circuit onto pads arranged on said bonding surface of said board, said plurality of



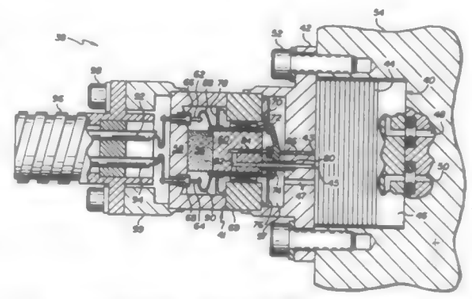
convection cooling vents placed so as to be bounded by said bonding pads; and
a plurality of pins fastened to said pin surface of said circuit board and in electrical connection with said bonding pads.

5,362,986
VERTICAL CHIP MOUNT MEMORY PACKAGE WITH PACKAGING SUBSTRATE AND MEMORY CHIP PAIRS
John M. Angiulli, Lagrangeville; Eugene S. Kolankowsky, Wappingers Falls; Richard R. Konian, Poughkeepsie, and Leon L. Wu, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 19, 1993, Ser. No. 109,230
Int. Cl.[5] H01L *23/498, 23/538*
U.S. Cl. 257—723 9 Claims



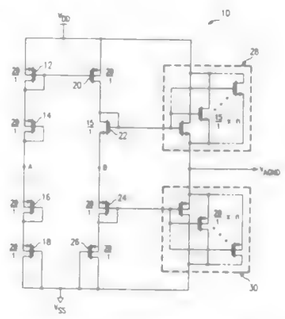
1. An integrated circuit chip package comprising:
a packaging wiring base substrate having a planar surface and having a plurality of bonding interconnect pads located on said planar surface,
at least one interconnection chip horizontally mounted on said planar surface and disposed horizontally and parallel to the planar surface with interconnection to first selected ones of said plurality of bonding interconnect pads,
a plurality of integrated circuit memory chips arranged as memory chip pairs mounted on the planar surface of the base substrate and electrically connected and mechanically bonded to second selected ones of said plurality of bonding interconnect pads located on said planar surface, said memory chip pairs being placed vertically and normal to the planar surface of said base substrate in close spacing between one another to form a memory chip cube mounted on said second selected ones of said plurality of bonding interconnect pads located on said planar surface of the packaging wiring base substrate,
a plurality of interconnections between said first and second selected ones of said plurality of interconnect pads located to interconnect said at least one interconnection chip and said memory chip pairs, and
an enclosure for said at least one interconnection chip and said plurality of integrated circuit memory chips to cover the integrated circuit memory chips which are mounted on said base substrate.

5,362,987
FLUIDIC GENERATOR
Ernest W. Cassaday, Apache Junction; John F. Thurston, Mesa, and Stuart L. Booth, Tempe, all of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 23, 1992, Ser. No. 996,301
Int. Cl.[5] H02P *9/04*
U.S. Cl. 290—54 10 Claims



1. A fluidic generator, comprising in combination:
fluidic circuit means for forming a feedback oscillator having first and second output channels; the oscillator being operable to produce oscillational changes in pressure within the first and second channels;
a permanent magnet connected to the fluidic circuit means and providing a magnetic field;
a wire coil connected in suspended relation to the permanent magnet so as to permit reciprocation of the coil within the field; and
means connected to the coil for reciprocating the coil in response to the oscillational changes in order to induce voltage in the coil.

5,362,988
LOCAL MID-RAIL GENERATOR CIRCUIT
James R. Hellums, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 877,333, May 1, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,212
Int. Cl.[5] H03K *3/01*
U.S. Cl. 327—543 19 Claims



1. A voltage generation circuit comprising:
a first plurality of transistors having source/drain paths coupled in series to establish a first current path between a first voltage rail and a second voltage rail, said first

plurality of transistors providing a preselected intermediate voltage at a node along said first current path;

a second plurality of transistors having source/drain paths coupled in series to establish a second current path between said rails and coupled to said first transistors such that current flow in said second current path mirrors current flow in said first current path, said second plurality of transistors providing a voltage substantially equal to said intermediate voltage at a node along said second current path; and

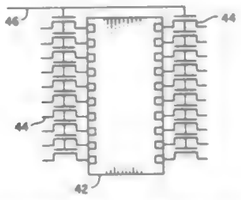
a pair of output transistors having source/drain paths coupled in series to establish a third current path between said voltage rails, a first one of said output transistors coupled as a current mirror with a first one of said second plurality of transistors and a second one of said output transistors coupled as a current mirror with a second one of said second plurality of transistors, said first and second output transistors providing a voltage substantially equal to said intermediate voltage at an output node coupling said source/drain paths of said output transistors.

5,362,989

ELECTRICAL ISOLATION FOR POWER-SAVING PURPOSES

Michael Hennedy, New York, N.Y., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 16, 1992, Ser. No. 991,684
Int. Cl.[5] H03K *3/01, 3/353;* **H01L** *25/00*
U.S. Cl. 327—544 **12 Claims**



1. In an electrical system of the type including a targeted device having a plurality of sets of pins, switching means for connecting and disconnecting the targeted device from the remainder of the electrical system thereby reducing power consumption, said switching means comprising:

dynamic means connected to the targeted device for rendering said targeted device in an on state and an off state a multiplicity of times;

initial configuration means connected to the targeted device for rendering said targeted device in one state of the on and off state, and for maintaining said targeted device in the rendered state for a period of operation of the electrical system;

means connected to the targeted device for connecting and disconnecting entire sets of pins of the plurality of sets of pins of said targeted device from the electrical system;

the switching means is integral with the targeted device; and

an external input connects said targeted device to and disconnects said targeted device from the electrical system.

5,362,990

CHARGE PUMP WITH A PROGRAMMABLE PUMP CURRENT AND SYSTEM

Jose Alvarez, Leander; Hector Sanchez, and Gianfranco Gerosa, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1993, Ser. No. 70,186
Int. Cl.[5] H03K *3/01, 5/13;* **H03L** *5/00*
U.S. Cl. 327—538 **13 Claims**

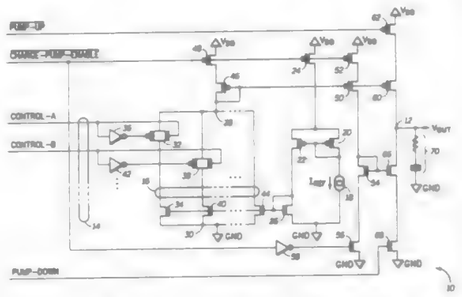
1. A charge pump comprising:

reference circuitry for generating a first predetermined voltage;

a first parallel current path coupled to a first node the first parallel current path being operable to sink a first current from the first node in response to the first predetermined voltage;

at least one second parallel current path coupled to the first node, each of the at least one second current path being operable to sink a current from the first node in response to the first predetermined voltage and to a first selected control signal of a plurality of control signals,

a mirror circuit coupled to the first node, the mirror circuit operable to generate a second predetermined voltage responsive to a total current sunk from the first node,



wherein the mirror circuit comprises a first transistor comprising a first current electrode, a second current electrode and a control electrode, the first current electrode and the control electrode coupled to the first node;

sourcing circuitry coupled to an output node and to the mirror circuit for sourcing a current to the output node in response to the second predetermined voltage and to a second selected control signal of the plurality of control signals, and

sinking circuitry coupled to the output node and to the mirror circuit for sinking a current from the output node in response to the second predetermined voltage and to a third selected control signal of the plurality of control signals.

5,362,991

ACTIVE DEASSERTION CIRCUIT

Francis M. Samela, 316 W. Goebel Dr., Lombard, Ill. 60148

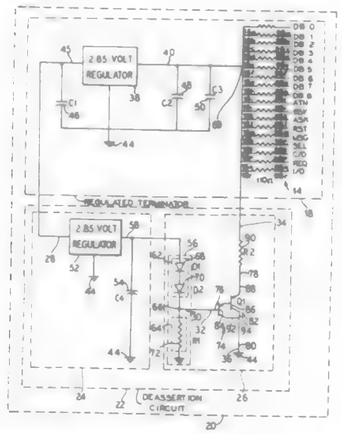
Filed Dec. 10, 1992, Ser. No. 988,908
Int. Cl.[5] G05F *1/46*
U.S. Cl. 327—540 **10 Claims**

1. An active deassertion circuit for a regulated terminator, said regulated terminator providing a constant voltage output to a plurality of signal lines comprising:

(a) means for providing a voltage reference having an input and an output; and

(b) means for sinking current having a first input, a second input, and an output, the first input being coupled to the output of the means for providing a voltage reference and the second input being coupled to said constant voltage output of the regulated terminator;

whereby the means for sinking current is capable of comparing its first input to its second input and, when voltage at the second input momentarily exceeds the first input due to active deassertion of at least one signal line of said plurality of signal lines, sinking current to prevent overcurrent on the other signal lines that are asserted or are going to be asserted to maintain said constant voltage.

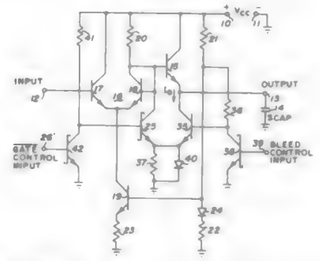


5,362,992

ELECTRONIC CONTROL OF PEAK DETECTOR RESPONSE TIME

Donald T. Wile, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 1, 1992, Ser. No. 891,245
Int. Cl.[5] H03K *5/24*
U.S. Cl. 327—58 **5 Claims**



1. A peak detector circuit having an input terminal for responding to a source of input signals and an output terminal for providing an output signal related to the peak value of the input signal, the peak detector circuit comprising:

a storage capacitor connected between output terminal and ground;

an emitter follower driver transistor coupled between the input terminal and the output terminal for changing the storage capacitor;

a bleed current transistor coupled in parallel with the capacitor and that responds to a bleed control input signal by conducting a constant bleed current such that the storage capacitor is discharged, the change developed across the storage capacitor being proportional to the peak value of the input signal; and

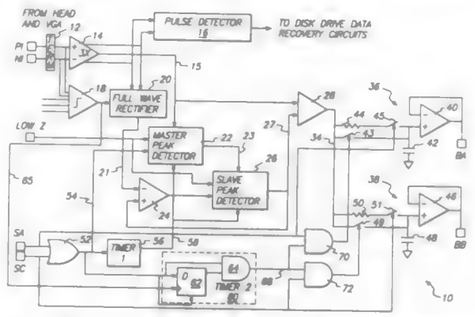
a differential transistor amplifier coupled between the input terminal and the emitter follower driver transistor such that the input signal is applied to the base of the emitter follower driver transistor, the inverting input of the differential transistor amplifier being connected to the output of the differential transistor amplifier such that the differential transistor amplifier function as a unity voltage gain noninverting buffer amplifier, the differential transistor amplifier having a constant tail current that is a controlled multiple of the bleed current.

5,362,993

WEIGHTED AVERAGE SERVO BURST PEAK DETECTOR FOR DISK DRIVE READ

Laurent Aubry, Sunnyvale, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Sep. 10, 1993, Ser. No. 119,748
Int. Cl.[5] G11C *27/02;* **H03K** *5/159*
U.S. Cl. 327—94 **10 Claims**



1. A peak detector for sampling and holding amplitudes of pulses of a signal burst comprising:

first detecting means for following a portion of a rising edge of each pulse until a peak amplitude is reached, and for decaying rapidly at a falling edge of each burst following the peak until a rising edge of a subsequent burst is intercepted at a point of interception, and for generating a control window extending from the point of interception of a rising edge to a peak value of each subsequent pulse,

second detecting means enabled by the control window of the first detecting means for following the portion of the rising edge of each burst from the point of interception to the peak value, and for holding the peak value reached by the first detecting means during the control window,

first holding means responsive to the second detecting means and having a first, rapid time constant for rapidly acquiring a peak value of at least one initial peak of the burst, and having a second, slower time constant for adjusting the initially acquired peak value in light of subsequent peak values of the burst, and

switching means for automatically switching the first holding means from the first time constant to the second time constant.

5,362,994

COMPARATOR WITH CONTROLLED HYSTERESIS

San L. Lin, San Jose, Calif., assignor to Winbond Electronics North America Corporation, San Jose, Calif.

Filed Oct. 13, 1992, Ser. No. 959,853
Int. Cl.[5] H03K *5/24*
U.S. Cl. 327—72 **15 Claims**

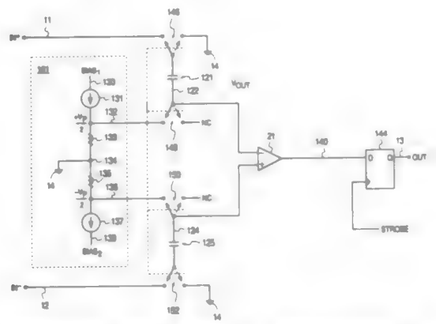
6. A hysteresis comparator comprising:

a gain stage having first and second inputs, and an output coupled to an output lead which can be driven to a first state when the voltage present on the first input exceeds the voltage present on the second input, and to a second state when the voltage present on the second input exceeds the voltage present on the first input;

a resistor having a first terminal, and further having a second terminal coupled to a reference lead;

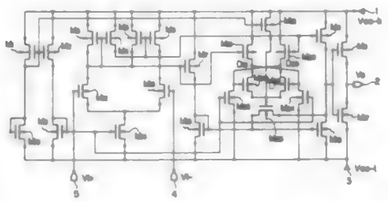
a current source having a first terminal coupled to a first bias

lead, and further having a second terminal coupled to the first terminal of the resistor;
a capacitor having a first terminal, and further having a second terminal coupled to the first input of the gain stage;
a first switch coupling, when in a first position, a first input lead to the first terminal of the capacitor and alternately coupling, when in a second position,



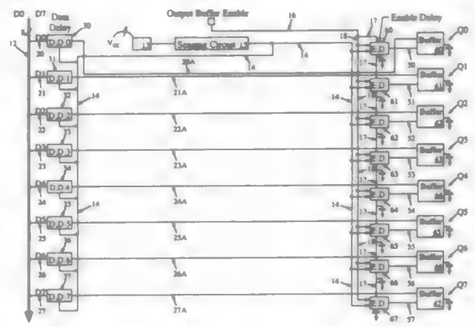
the first terminal of the capacitor to the reference lead;
a second switch coupling, when in a first position, the second terminal of the capacitor to the first terminal of the resistor, said second switch having a second position; and
a first conductor coupling a second input lead to both the second input of the gain stage and to the reference lead.

5,362,995
VOLTAGE COMPARING CIRCUIT
Satoru Kubo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 3, 1993, Ser. No. 56,508
Claims priority, application Japan, May 12, 1992, 4-118662
Int. Cl.[5] H03K *5/24, 17/16*
U.S. Cl. 327—65 **8 Claims**



1. Voltage comparing circuit for comparing two input signal voltages and outputting a voltage in response to a difference of said two input signal voltages, said voltage comparing circuit comprising:
a first field effect transistor for receiving one of two signal voltages into a control terminal of said first field effect transistor;
a second field effect transistor for receiving the other of said two signal voltages into a control terminal of said second field effect transistor, a main terminal of said second field effect transistor providing an output signal of said voltage comparing circuit;
a third field effect transistor connected to said first field effect transistor in series, said third field effect transistor having a control terminal connected to a main terminal of said third field effect transistor which is connected to said first field effect transistor;
a fourth field effect transistor connected to said second field effect transistor in series, said fourth field effect transistor having control terminal connected to said control terminal of said third field effect transistor and a main terminal connected to said one main terminal of said second field effect transistor; and
switch means responsive to the voltage difference between said two signals received by said control terminals of said first and second field effect transistors, respectively, for forming a current pass between a main terminal of said first field effect transistor and said main terminal of said second field effect transistor.

5,362,996
STAGGERED OUTPUT CIRCUIT FOR NOISE REDUCTION
Yehuda Yizraeli, Yokne'am, Israel, assignor to Intel Corporation, Santa Clara, Calif.
Filed Jun. 10, 1992, Ser. No. 896,673
Int. Cl.[5] H03K *17/16, 5/13*
U.S. Cl. 326—27 **3 Claims**

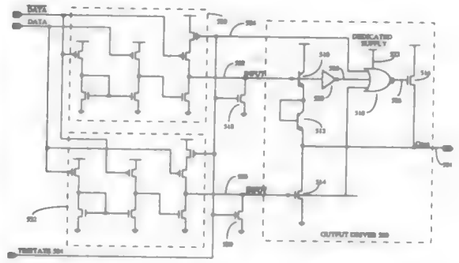


1. An apparatus for reducing noise spikes on voltage supply lines of an integrated circuit having a plurality of data signal lines each coupled to a respective tristate output buffer comprising:
a data delay circuit coupled to each of said data signal lines, wherein each of said data signal delay circuits provides a delay to its respective data signal line such that no two output buffers are toggled simultaneously;
an enable line delay circuit coupled to each of said tristate output buffers, said enable line delay circuits coupled in series with an enable signal line for enabling said tristate output buffers, said series connection of said enable delay circuits such that no two tristate output buffers become enabled simultaneously; and
a sensing circuit coupled to said enable line delay circuits and to said data delay circuits, said sensing circuit for signaling to said enable delay circuits and to said data signal delay circuits whether or not said delay circuits are to provide delays to said respective signal lines.

5,362,997
BICMOS OUTPUT DRIVER
Raymond E. Bloker, San Jose, Calif., assignor to Aspen Semiconductor Corporation, San Jose, Calif.
Filed Dec. 16, 1992, Ser. No. 991,568
Int. Cl.[5] H03K *19/02*
U.S. Cl. 326—64 **19 Claims**

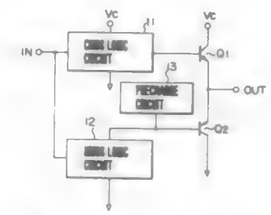
1. An Output Driver comprising:
an input node;
an output node;
a first pull-up circuit comprising a bipolar transistor for pulling high said output node, said first pull-up circuit coupled between said output node and a first operating potential, the base of said bipolar transistor coupled to said input
a pull-down circuit for pulling low said output node, said pull down circuit coupled between said output node and a second operating potential;

a second pull-up circuit coupled in parallel with said first pull-up circuit for assisting said first pull-up circuit with pulling high said output node, said second pull-up circuit comprising a MOS transistor; and



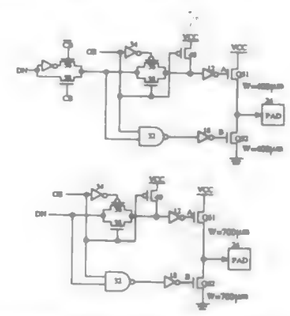
a circuit coupled to the gate of said MOS transistor and electrically isolated from the base of said bipolar transistor, said circuit slowly turning on said MOS transistor when said input node is high and quickly turning off said MOS transistor when said input node is low.

5,362,998
COMPOSITE CIRCUIT OF BIPOLAR TRANSISTORS AND MOS TRANSISTORS AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING THE SAME
Masahiro Iwamura; Hideo Maejima, both of Hitachi; Atsuo Watanabe, Hitachiota, and Kazutaka Mori, Higashiyamato, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Continuation of Ser. No. 762,335, Sep. 19, 1991, abandoned. This application Feb. 7, 1994, Ser. No. 193,643
Claims priority, application Japan, Sep. 19, 1990, 2-247544
Int. Cl.[5] H03K *19/02*
U.S. Cl. 326—110 **42 Claims**



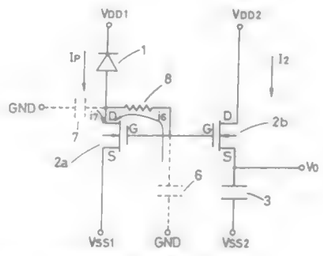
1. A composite circuit of bipolar transistors and MOS transistors comprising:
an output stage comprised of an NPN transistor and a PNP transistor each having an emitter, base and collector, said NPN transistor and said PNP transistor being connected in series between a power supply terminal and a reference potential terminal;
a CMOS logic circuit responsive to an input signal and adapted to effect on-off control of said NPN transistor;
an NMOS logic circuit responsive to said input signal and adapted to effect on-off control of said PNP transistor;
means adapted for pre-charging a base node of said PNP transistor to a predetermined level while said PNP transistor is turned off; and
means for providing an output signal from a common junction between said NPN and PNP transistors,
wherein the base of each of said NPN and PNP transistors is electrically isolated from the base of the other during the on-off control of said NPN and PNP transistors.

5,362,999
EPLD CHIP WITH HYBRID ARCHITECTURE OPTIMIZED FOR BOTH SPEED AND FLEXIBILITY
David Chiang, Saratoga, Calif., assignor to Xilinx, Inc., San Jose, Calif.
Filed Mar. 18, 1993, Ser. No. 32,920
Int. Cl.[5] H03K *19/177*
U.S. Cl. 326—44 **14 Claims**



1. A programmable integrated circuit logic device comprising:
a plurality of fast logic function blocks having input terminals at least some of which are connected to a pad of the device, and having at least one output terminal connected to a pad of the device, said fast logic function blocks being designed such that an output signal may be generated from input signals to that function block wherein the shortest sum-of-products path from input to output propagates through no more than 8 gates;
a plurality of flexible logic function blocks each having input terminals and at least one output terminal and designed such that more functions of signals on a given number of input terminals may be selectively provided at said output terminal of that flexible logic function block than can be provided by said fast logic function blocks; and
a universal interconnect matrix for interconnecting at least some of said input and output terminals of said fast logic function blocks and said flexible logic function blocks to each other.

5,363,000
SOLID-STATE IMAGE SENSING APPARATUS
Shigehiro Miyatake, Osaka; Kenji Takada, Itami; Kouichi Ishida, Amagasaki, and Kouichi Sameshima, Itami, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Feb. 3, 1993, Ser. No. 12,575
Claims priority, application Japan, Feb. 5, 1992, 4-019337
Int. Cl.[5] H03K *5/01;* **G06F** *7/556*
U.S. Cl. 327—350 **8 Claims**



1. An image sensing device comprising:
means for generating a photoelectric current proportional to an intensity of incident light;
a first MOS transistor, connected to the generating means,

for outputting a signal which is logarithmically proportional to the intensity of incident light to the generating means, said first MOS transistor is operated in a subthreshold region; and

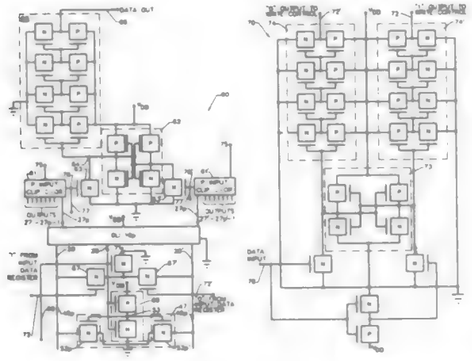
an active element, connecting a drain and a gate of the first MOS transistor, for delaying a variation in gate voltage of the first MOS transistor, said voltage variation being brought about by a variation in the photoelectric current wherein any stray capacitance existing at the gate of the first MOS transistor is promptly charged or discharged through the active element.

5,363,001

DATA INPUT REGISTER FOR RANDOM ACCESS MEMORY

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Division of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874.
This application Feb. 25, 1994, Ser. No. 202,296
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[5] H03K *19/0175*; G11C *7/00*
U.S. Cl. 327—55 **13 Claims**



7. A data input register for a random access memory comprising:

a data input line for accepting a binary input signal;

a latch having an input and TRUE and COMPLEMENT outputs, said data input line being connected to said latch input; and

first and second Ring Buffers (RSB) each having an input and an output, a respective RSB input being connected to a respective one of said TRUE and COMPLEMENT outputs, with a respective RSB output producing said TRUE and COMPLEMENT binary signals; and

write control means, connected to said TRUE and COMPLEMENT outputs, for storing said binary input signal into said random access memory.

5,363,002

DYNAMOELECTRIC MACHINE HAVING FLUID COOLING OF BACK IRON AND END TURNS

Michael Herndon, and Loren Rademacher, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 28, 1993, Ser. No. 98,657
Int. Cl.[5] H02K *1/20, 9/00, 9/16*
U.S. Cl. 310—54 **2 Claims**

1. A dynamoelectric machine, comprising:

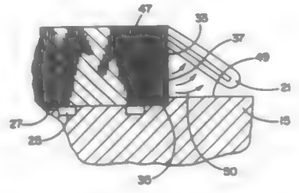
a rotor which is rotatable about an axis;

a stator radially spaced from the rotor about the axis, said stator including a laminated stator core and stator windings having end turns which extend beyond at least one axial end of said laminated stator core;

a housing about said stator core;

fluid passage means for conveying a fluid coolant for cooling at least a radially outer portion of said laminated stator core, said fluid passage means including at least one fluid coolant passage, said at least one fluid coolant passage being formed between a radially outer periphery of said stator core and said housing;

fluid transfer means for distributing the fluid coolant from said at least one fluid coolant passage to at least one fluid coolant exit port located adjacent said stator winding end turns and onto said end turns for cooling said end turns; and wherein



said at least one fluid coolant passage is formed in part by at least one groove formed in an outer periphery of said laminated stator core;

said fluid transfer means includes at least one radially inwardly extending slot in said at least one end lamination in fluid communication with said at least one fluid coolant massage for conveying fluid coolant radially inward in said at least one end lamination from said at least one fluid coolant passage to a location adjacent said stator winding end turns; and

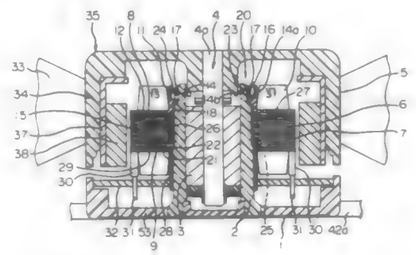
a radially inner end of said at least one slot is defined by a surface which is angled toward an open side of said at least one slot and the adjacent stator winding end turns.

5,363,003

MOTOR AND CIRCUITRY FOR PROTECTING SAME

Koji Harada; Takashi Hirata, both of Shiga; Fumihiro Morikawa, and Shuji Takahashi, both of Yonago, all of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Jan. 1, 1992, Ser. No. 891,717
Claims priority, application Japan, Jun. 6, 1991, 3-160820; Jun. 28, 1991, 3-185351; Dec. 13, 1991, 3-352463
Int. Cl.[5] H02K *7/14, 11/00, 5/00, 1/06*
U.S. Cl. 310—67 R **7 Claims**



1. A motor comprising:

a housing;

a stator attached to an outer periphery of a cylindrical wall of said housing;

a sleeve bearing attached to an inner periphery of the cylindrical wall of said housing;

a bearing member rotatably supported by said sleeve bearing;

a rotor secured to said bearing member;

a rotor magnet attached to said rotor and facing said stator; and

a plurality of projecting strips formed substantially at equal intervals on the inner and/or outer periphery of the cylindrical wall of said housing for attaching said sleeve bearing to the cylindrical wall, said cylindrical wall having an opening at one end of the cylindrical wall of said housing for inserting said sleeve bearing into said opening;

a positioning projection formed on the inner periphery of the cylindrical wall at the other end of the cylindrical wall for retaining said sleeve bearing in position; and

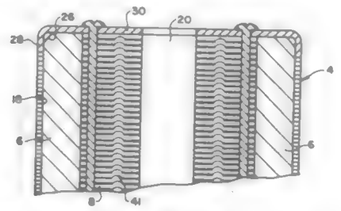
an annular projection formed on a portion of the inner periphery of the cylindrical wall, said portion being near said positioning projection formed on the cylindrical wall of said housing, said annular projection extending radially and inwardly more than said plurality of projecting strips.

5,363,004

ROTATOR ELEMENT FOR ELECTRIC MOTOR

Toshihiko Futami, Ashigara, and Yoshiharu Shida, Fuji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 4, 1993, Ser. No. 13,361
Claims priority, application Japan, Apr. 1, 1992, 4-078117
Int. Cl.[5] H02K *21/12*
U.S. Cl. 310—156 **7 Claims**



1. A rotator element of an electric motor comprising:

a cylindrical core body including a stack of disc-shaped plates, each of said plates having a plurality of cutout portions arranged on a circumferential area thereof so as to provided a plurality of holes along a rotational axis of said core body when said plates are stacked;

a plurality of permanent magnets placed in said holes so as to be fixed within said core body, each of said magnets having a cutaway portion provided on at least one end thereof, wherein each said cutaway portion projects axially outward from an axial end of one of said holes; and

a ring placed on at least one end of said core body so as to enclose each said cutaway portion of said magnets, wherein an outer circumferential surface of said ring lies substantially flush to a circumferential surface of said core body.

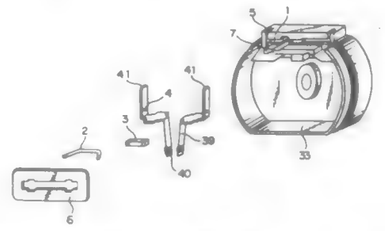
5,363,005

MINIATURE MOTOR

Hisashi Shibata; Norihiro Sasaki, and Yoshiaki Egawa, all of Chiba, Japan, assignors to Mabuchi Motor Co., Ltd., Matsudo, Japan

Filed Jan. 10, 1994, Ser. No. 179,517
Claims priority, application Japan, Jan. 14, 1993, 000672
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—244 **3 Claims**

1. A miniature motor comprising a housing made of a metallic material, formed into a bottom hollow tubular shape and having a permanent magnet fixedly fitted on the inner circumferential surface, a rotor consisting of an armature facing said permanent magnet and a commutator, and an end cap engaged with the open end of said housing and having brushes making sliding contact with said commutator and terminals electrically connected to said brushes; said rotor being rotatably supported by bearings provided on the bottom of said housing and said end cap, characterized in that a flat groove incorporating a plane parallel to the motor axial line and opening toward said housing is provided on said end cap, a pair of terminals are provided in such a manner as to face the side surface of said groove, and a chip laminated capacitor and a spring made of an



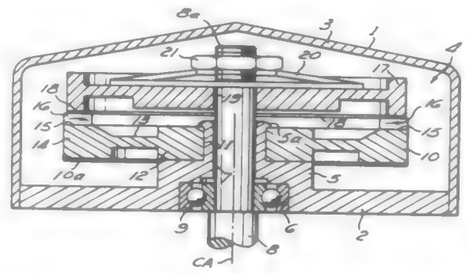
electrically conductive material and formed into a substantially U shape in planar projection are fitted into said groove in such a manner as to come in contact with each other, and with said terminals.

5,363,006

STATOR FOR ULTRASONIC MOTOR AND METHOD FOR MANUFACTURING THE SAME

Motoyasu Yano, Hamamatsu; Yoshinori Takemura, Kosai, and Takao Suzuki, Okazaki, all of Japan, assignors to Asmo Co., Ltd., Shizuoka and Nippondenso Col, Ltd., Aichi, both of Japan

Filed Nov. 25, 1992, Ser. No. 981,372
Claims priority, application Japan, Nov. 27, 1991, 3-337657; Mar. 5, 1992, 4-048878; Nov. 13, 1992, 4-304190
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **7 Claims**



1. A stator for use in an ultrasonic motor including a rotor and a piezoelectric element for causing the stator to vibrate and the rotor to rotate, the stator being made of sintered metal, the stator comprising:

a generally circular inner land portion to be mounted on a casing of the ultrasonic motor;

an outer land portion integrally formed with said inner land portion, to be secured to the piezoelectric element;

a plurality of teeth formed at said outer land portion by a plurality of radial slits, each of said teeth including a highly dense portion having a density ratio (Dr) of at least 90 percent; and

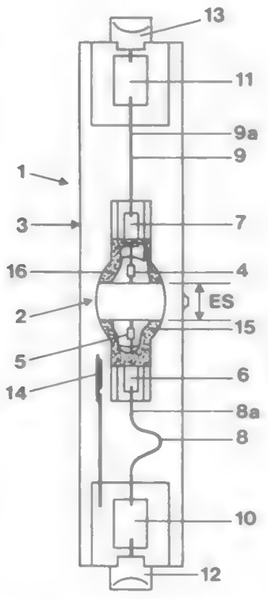
the density of said inner land portion being lower than that of said highly dense portion of said teeth.

5,363,007

LOW-POWER, HIGH-PRESSURE DISCHARGE LAMP, PARTICULARLY FOR GENERAL SERVICE ILLUMINATION USE

Dietrich Fromm, Warngau; Andreas Hohlfeld, Berlin, and Guenter Soehring, Munich, all of Germany, assignors to Patent-Treuhand-Gesellschaft fuer Elektrische Gluehlampen mbH, Munich, Germany

Filed Jul. 28, 1992, Ser. No. 920,782
Claims priority, application Germany, Sep. 30, 1991, 4132530
Int. Cl.[5] H01J *61/20*
U.S. Cl. 313—25 20 Claims



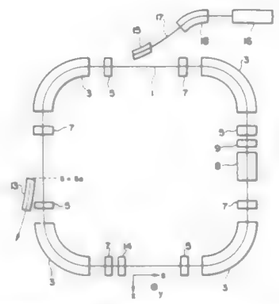
1. A low-power, high-pressure discharge lamp, particularly for general service illumination use, comprising
a discharge vessel (2) of quartz glass;
two spaced electrodes (4, 5) within the discharge vessel;
a transparent outer envelope (3) within which said discharge vessel is located;
current supply leads (8, 9) extending from the electrodes (4, 5) of the discharge vessel into the outer envelope;
connection means (10, 12, 11, 13) electrically connected to and extending from the current supply leads to the outside of the envelope for connection to a power supply;
an ionizable fill within the discharge vessel, said fill including
mercury,
a noble gas, and
halides (H) of sodium, scandium and thallium,
wherein, in accordance with the invention, the mol relationship between the sodium halide portion of the fill (Na—H) and the scandium halide portion of the fill (Sc—H) is between about 5:1 to 24:1;
the mol relationship between the sodium halide portion of the fill (Na—H) and the thallium halide portion of the fill (Tl—H) is between about 25:1 to 73:1; and
wherein a heat reflective coating (15, 16) is provided, formed on the discharge vessel to effect, during operation of the lamp, heat damming or heat retention within the discharge vessel.

5,363,008

CIRCULAR ACCELERATOR AND METHOD AND APPARATUS FOR EXTRACTING CHARGED-PARTICLE BEAM IN CIRCULAR ACCELERATOR

Kazuo Hiramoto, Hitachiota; Junichi Hirota, Hitachi; Masatsugu Nishi, Katsuta; Hiroyuki Watanabe, Hitachi, and Kenji Miyata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,161
Claims priority, application Japan, Oct. 8, 1991, 3-260094; Mar. 10, 1992, 4-051273
Int. Cl.[5] H05H *13/00*
U.S. Cl. 313—62 63 Claims



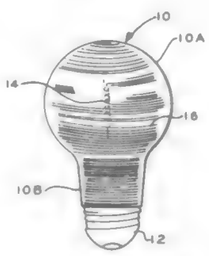
1. A circular accelerator comprising:
an electromagnet for circulating a charged-particle beam;
means for extracting said charged-particle beam through an extracting deflector in a resolating state, said extracting means including;
means for resonating betatron oscillation of said beam, and
means provided separately from said resonating means for increasing betatron oscillation amplitudes of said charged-particle beam.

5,363,009

INCANDESCENT LIGHT WITH PARALLEL GROOVES ENCOMPASSING A BULBOUS PORTION

Mark Monto, 1 Blueberry Bend, West Orange, N.J. 07052

Filed Aug. 10, 1992, Ser. No. 926,321
Int. Cl.[5] H01K *1/32*
U.S. Cl. 313—110 17 Claims



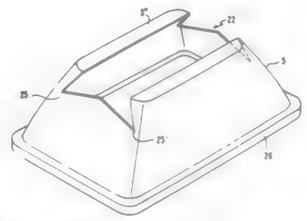
1. An incandescent light bulb comprising:
an evacuated envelope having a bulbous portion and a neck portion for containing a vacuum, said bulbous portion having a multiplicity of parallel grooves circling said bulbous portion longitudinally for focusing and directing light, said envelope at said bulbous portion having an opposing pair of external and internal surfaces, said bulbous portion being substantially ungrooved on one of said pair of surfaces, the other one of said pair of surfaces of said envelope having said grooves formed integrally thereon, said grooves alternating with ridges formed without an underlying gap on said envelope to act as a Fresnel lens, said ridges each having a wall extending between a distal corner at said ridge and a proximal corner at said groove; and
an electrical filament centrally located in said bulbous portion of said envelope.

5,363,010

COLOR DISPLAY TUBE HAVING AN INTERNAL MAGNETIC SHIELD

Adrianus J. Van Mensvoort, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1992, Ser. No. 874,254
Claims priority, application European Pat. Off., Apr. 29, 1991, 91201024.7
Int. Cl.[5] H01J *29/06*
U.S. Cl. 313—402 7 Claims



1. In a color display tube comprising:
(a) an envelope having a neck portion, a funnel portion and a window portion disposed along a longitudinal axis;
(b) an electron gun arranged in said neck portion;
(c) an elongated display screen disposed at an inner surface of said window portion, said display screen having an aspect ratio α, and said display screen having a pattern of phosphor rows parallel to an axis of said display screen;
(d) color selection means arranged adjacent to said display screen;
(e) an internal magnetic shield arranged within said funnel portion between said electron gun and said color selection means, said magnetic shield having two long walls parallel to a long axis of said elongated display screen and two short side walls parallel to a short axis of said elongated display screen, and said magnetic shield having an oblong scanning aperture adjacent to said electron gun for passing electron beams scanning said display screen, said scanning aperture being transverse to said longitudinal axis;
the improvement comprising said scanning aperture extending to each of said two side walls to provide an oversized aperture having a pair of diametrically extreme angular points at each of said two side walls, said oversized aperture having a long central axis a and a short central axis b, where

$$1.5 \leqq 1/\alpha \times a/b \leqq 1.75.$$

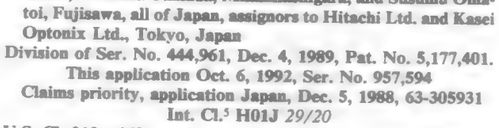
5,363,011

STRIP-TYPE SHADOW MASK EFFECTIVE TO ALLEVIATE DEGROUPING

James R. Feadley, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Nov. 12, 1992, Ser. No. 974,443
Int. Cl.[5] H01J *29/81, 29/07*
U.S. Cl. 313—408 4 Claims

1. A Striped-screen tension mask color CRT having a funnel and further comprising:
a) a flat glass faceplate having a flat inner, screen-receiving surface affixed to the funnel;
b) a substantially rectangular screen having an x-axis and a y-axis, the x-axis and the y-axis crossing each other at the center of the screen, and stripes of trios of colored-light-emitting phosphors on the inner screen-receiving surface oriented in a first direction, parallel to the y-axis, and activated by electron beams;
c) a tensed, strip-type foil shadow mask held in fixed relation



to the inner screen-receiving surface, with stripes oriented in the first direction, and having a predetermined curvature such that the distance between the shadow mask and the inner screen-receiving surface decreases as the distance increases from the y-axis, the curvature being effective to alleviate degrouping of the electron beams.

5,363,012

PIGMENT-ATTACHED BLUE-EMMITTING PHOSPHOR AND COLOR CATHODE-RAY TUBE

Tomohito Mizukami, and Chihito Funayama, both of Odawara, Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,552
Claims priority, application Japan, Sep. 7, 1992, 4-238222
Int. Cl.[5] H01J *29/18*
U.S. Cl. 313—468 5 Claims

1. A pigment-attached blue-emitting phosphor comprising a blue-emitting phosphor and from 0.3 to 15% by weight of a blue pigment attached to the surface of the blue-emitting phosphor, said blue pigment being represented by the formula

$$xCoO.yZnO.zSiO_2$$

wherein the compositional ratio is within the range of $0.05 \leqq x/z \leqq 1.5$ and $0.1 \leqq y/z \leqq 2.0$, wherein said pigment contains from 0.01 to 10% by weight of Mo and wherein said pigment is prepared by firing compounds containing Co, Zn, Si and Mo.

4. A color cathode-ray tube comprising a face plate having, on the inner surface thereof, a fluorescent layer containing a pigment-attached blue-emitting phosphor as defined in claim 1.

5,363,013

PHOSPHOR AND CATHODE-RAY TUBE USING THE SAME

Hidetsugu Matsukiyo, Koganei; Teruki Suzuki, Funabashi; Hajime Yamamoto, Tokyo; Yasuhiko Uehara, Chiba; Yasukazu Morita, Mobara; Yoshihiro Koseki, Chiba; Hiromichi Yamada, Hino; Shigeo Fujino, Odawara; Takashi Hase, Ebina; Tsutomu Yamada, Minamiashigara, and Susumu Omatoi, Fujisawa, all of Japan, assignors to Hitachi Ltd. and Kasei Optonix Ltd., Tokyo, Japan

Division of Ser. No. 444,961, Dec. 4, 1989, Pat. No. 5,177,401.
This application Oct. 6, 1992, Ser. No. 957,594
Claims priority, application Japan, Dec. 5, 1988, 63-305931
Int. Cl.[5] H01J *29/20*
U.S. Cl. 313—468 4 Claims

1. A green-emitting phosphor having a composition of:

$$(Y_{1-x-y-z}Gd_zTb_xYb_y)_2SiO_5$$

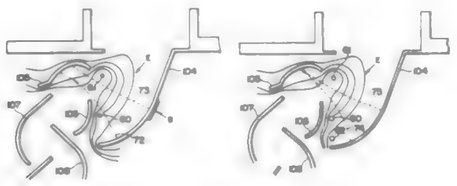
in which $0.05 \leqq x \leqq 0.15$, $1 \times 10^{-6} \leqq y \leqq 2 \times 10^{-2}$ and $0 \leqq z \leqq 0.45$, wherein the green-emitting phosphor emits colors in the range of $0.325 \leqq X \leqq 0.36$ and $0.54 \leqq Y \leqq 0.65$ in emission chromaticity coordinates.

2. A green-emitting phosphor having a composition of:

$$(Y_{1-x-y-z}Gd_zTb_xM_y)_2SiO_5$$

in which $0.05 \leqq x \leqq 0.15$, $1 \times 10^{-6} \leqq y \leqq 1 \times 10^{-3}$, $0 \leqq z \leqq 0.45$, and M is at least one element selected from the group consisting of thulium and samarium, wherein the green-emitting phosphor emits colors in the range of $0.325 \leqq X \leqq 0.36$ and $0.54 \leqq Y \leqq 0.625$ in emission chromaticity coordinates.

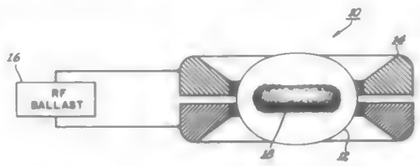
5,363,014
PHOTOMULTIPLIER
Kimitsugu Nakamura, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed Oct. 23, 1992, Ser. No. 965,721
Claims priority, application Japan, Oct. 24, 1991, 3-277792
Int. Cl.[5] H01J *43/20*
U.S. Cl. 313—533 **24 Claims**



19. A photomultiplier, comprising:
a photocathode for receiving incident light;
an anode; and
a dynode unit disposed between the photocathode and the anode for cascade-multiplying electrons emitted from the photocathode, the dynode unit comprising:
i.) a first dynode adapted to have a predetermined potential;
ii.) a second dynode disposed opposite to the first dynode, adapted to have a higher potential than the first dynode; and
iii.) a third dynode disposed opposite to the second dynode, adapted to have a higher potential than the second dynode; and
a first electrode for decelerating secondary electrons emitted from the first dynode which have a higher speed, the first electrode being disposed in a space near the third dynode, the space being passed through by the secondary electrons emitted from the first dynode;
a second electrode for accelerating secondary electrons emitted from the first dynode which have a lower speed, the first electrode being disposed in the space passed through by the secondary electrons emitted from the first dynode; and
a third electrode for correcting secondary electrons emitted from the first dynode which have an orbit near the third dynode, the third electrode being disposed between the first dynode and the first electrode.

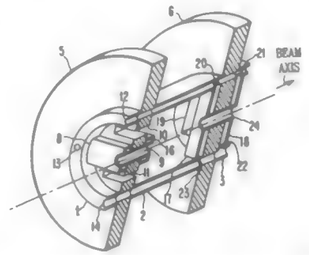
5,363,015
LOW MERCURY ARC DISCHARGE LAMP CONTAINING PRASEODYMIUM
James T. Dakin, Shaker Heights; Tommie Berry, Jr., East Cleveland; Mark E. Duffy, Shaker Heights, and Timothy D. Russell, Cleveland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 10, 1992, Ser. No. 927,041
Int. Cl.[5] H01J *17/20, 61/12*
U.S. Cl. 313—638 **27 Claims**

23. An electrodeless, metal halide arc discharge lamp having a hermetically sealed, light-transmissive fused quartz arc chamber having disposed therein an arc-sustaining fill including less than 1 mg per cc of arc chamber volume of mercury and comprising (i) a buffer gas at a pressure of at least 50 torr selected from the group consisting essentially of Kr, Xe, Ar and mixture thereof and (ii) a halide of Pr, said lamp further



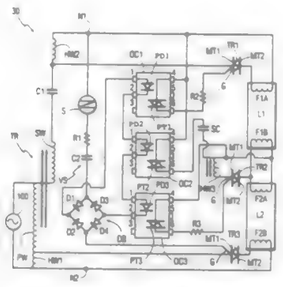
including means for applying RF energy to said fill to produce a light-emitting arc.

5,363,016
COOLED REENTRANT TWT LADDER CIRCUIT HAVING AXIALLY RAISED COOLING BARS
Bertram G. James, Redwood City, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.
Filed Sep. 30, 1991, Ser. No. 767,597
Int. Cl.[5] H01J *23/24, 23/087*
U.S. Cl. 315—3.5 **11 Claims**



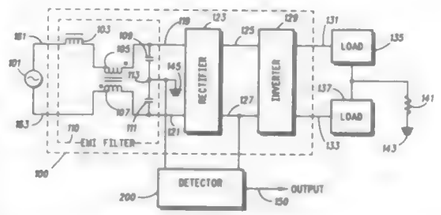
7. An improved ladder circuit structure for a PPM coupled cavity TWT comprising:
a) a first cavity having an axis, and first cavity comprising a pair of concentric nested cylindrical electrically conducting tubes of different diameters including a smaller diameter tube wall and a larger diameter tube wall, each of said tubes being substantially of a same length and having one end of each tube lying in a single plane perpendicular to said axis, whereby the space between said tubes defining a first coolant channel, said space being at a radial distance R from said axis;
b) a pair of disk shaped magnetic pole pieces, each said disk shaped magnetic pole pieces having a pair of faces, one face of a respective one of said pair of magnetic pole pieces being mounted on a corresponding end of said cavity transverse to said cavity axis, each said pole piece having a central axially aligned aperture therethrough for passing, in operation, a beam of electrons, each said pole piece further including cylindrical apertures means there through, said cylindrical apertures means being radially displaced from said axis but being aligned parallel to said axis, said radial displacement being equal to said distance R so that said cylindrical aperture means opens into said first coolant channel; each said magnetic pole pieces further including respective RF coupling slots therethrough; and
c) a plurality of reentrant highly conductive bars including a first said reentrant bar being affixed to one of the pair of faces in one of said magnetic pole piece discs and extending diametrically and transversely across said cavity, said bar having two ends, said bar passing through said smaller diameter tube wall at both ends of said bar, said first reentrant bar defining a second coolant channel, said second coolant channel being in flow communication with said first coolant channel.

5,363,017
STARTING CAPACITOR DISCONNECT SCHEME FOR A FLUORESCENT LAMP
Glenn D. Garbowicz, Rosemont, Ill., assignor to North American Philips Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 673,692, Mar. 21, 1991, Pat. No. 5,208,511, and a continuation-in-part of Ser. No. 753,280, Aug. 30, 1991, Pat. No. 5,243,258. This application Feb. 8, 1993, Ser. No. 14,902
Int. Cl.[5] H05B *41/14, 41/36*
U.S. Cl. 315—122 **22 Claims**



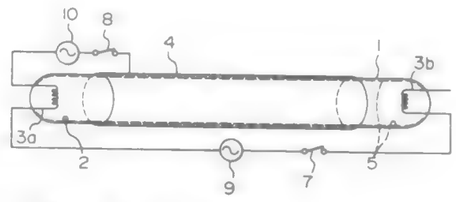
1. A ballast for powering at least two discharge lamp loads serially connected together, comprising:
means for supplying an a.c. voltage to said at least two lamp loads;
means for sensing that the lamp voltage has reached a predetermined level of a.c. voltage;
shunt means for shunting at least one lamp load; and
switching means responsive to said sensing means for controlling when said shunt means shunts at least one of said lamp loads.

5,363,018
BALLAST CIRCUIT EQUIPPED WITH GROUND FAULT DETECTOR
Peter W. Shackle, Arlington Heights, Ill., assignor to Motorola Lighting, Inc., Buffalo Grove, Ill.
Filed Sep. 16, 1993, Ser. No. 122,824
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—127 **17 Claims**



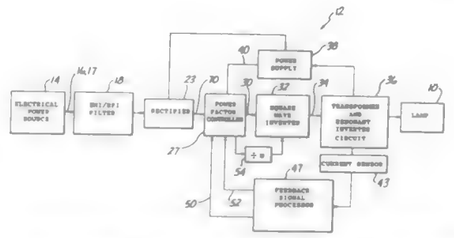
1. A ballast circuit arranged for coupling to a power source and a load, the power source being characterized by a source frequency, the ballast circuit including an electromagnetic interference ("EMI") filter, a rectifier, and an inverter, the EMI filter having a filter input, filter output, and a ground terminal, the rectifier having a rectifier input and a rectifier output, the inverter having an inverter input and an inverter output, the rectifier output and the inverter input having a common terminal therebetween, the filter input arranged for coupling to the power source, the filter output coupled to the rectifier input, the rectifier output coupled to the inverter input, the inverter output arranged for coupling to the load,
the ballast circuit including a ground fault detector for determining when the load is connected to a ground fault, the ground fault detector including:
means for determining when a high-frequency signal exists at the ground terminal with respect to the common terminal and for providing an output signal at an output terminal when the high-frequency signal exists,
where the high-frequency signal is characterized by a signal frequency that is substantially greater than the source frequency.

5,363,019
VARIABLE COLOR DISCHARGE DEVICE
Ryohei Itatani, Kyoto; Masatoshi Ryoko, Hyogo, and Tatsushi Fujino, Kakogawa, all of Japan, assignors to Research Institute For Applied Sciences, Kyoto, Japan
Filed Sep. 29, 1992, Ser. No. 953,100
Claims priority, application Japan, May 1, 1992, 4-157231
Int. Cl.[5] G09G *3/10*
U.S. Cl. 315—169.1 **29 Claims**



1. A discharge tube comprising:
a tubular vessel;
filled gases filled in said vessel and including a first gas and a second gas, said first and second gases being different in excitation level and luminous color from each other;
first electrode means for applying axially an electric field to said vessel to generate a positive column in said vessel; and
second electrode means for applying an electric field to said vessel to generate a negative glow in an area, said area extending substantially along a wall surface of said vessel and interacting with said positive column generated by the electric field applied by said first electrode means.

5,363,020
ELECTRONIC POWER CONTROLLER
Nian Chen, and Dudley G. Boyd, both of Memphis, Tenn., assignors to Systems and Service International, Inc., Memphis, Tenn.
Filed Feb. 5, 1993, Ser. No. 14,366
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—209 R **27 Claims**



1. Apparatus for controlling the illumination of a discharge lamp having a particular impedance, the apparatus comprising:
means for introducing electrical power to the discharge lamp, the power being characterized by a voltage and a frequency and at least the voltage of the electrical power being variable;

means for ramping the voltage of the electrical power upwardly to a particular magnitude sufficient to fire the discharge lamp; and

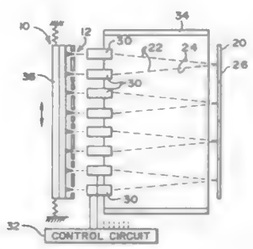
a control circuit responsive to the firing of the discharge lamp at the particular magnitude of the voltage for varying the voltage of the electrical power after the discharge lamp has fired thereby reducing the operating power of the discharge lamp.

5,363,021

MASSIVELY PARALLEL ARRAY CATHODE

Noel C. MacDonald, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 12, 1993, Ser. No. 89,821
Int. Cl.[5] H01J *29/70, 29/72*
U.S. Cl. 315—366 **15 Claims**



1. A massively parallel electron beam array, comprising:

a substrate;

a multiplicity of submicron emitter tips fabricated from said substrate for producing corresponding electron emission streams, said tips being separated into a plurality of groups of one or more, each group being electrically isolated from all remaining groups, said groups comprising a plurality of cathodes;

an emitter control electrode for each of said multiplicity of emitter tips for controlling corresponding emitter electron emission streams;

a cathode control electrode for each of said plurality of cathodes for producing from the electron emission streams of each cathode a corresponding single cathode beam, said plurality of cathodes producing an array of beams;

a target for receiving said array of beams, each beam striking a corresponding target region whereby each target region is illuminated by a corresponding beam; and

a deflector for said cathode array for deflecting ali of said beams of said array simultaneously with respect to said target.

5,363,022

HORIZONTAL DEFLECTION CIRCUIT WITH REDUCED VLF ELECTRIC FIELDS FROM CRT DISPLAYS

Kouji Kitou; Nobutaka Okuyama; Ikuya Arai, all of Yokohama, and Yuji Sano, Zushi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 26,815
Claims priority, application Japan, May 8, 1992, 4-115896
Int. Cl.[5] G09G *1/04;* **H01J** *29/70, 29/06, 1/52*
U.S. Cl. 315—408 **7 Claims**

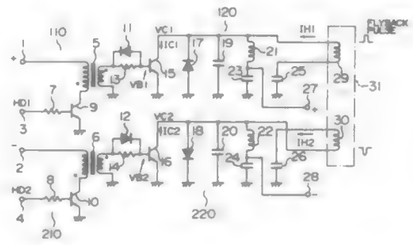
1. A horizontal deflection circuit for generating a horizontal scanning magnetic field in a horizontal deflection yoke by being driven by a sawtooth waveform current to deflect an electron beam horizontally, said circuit including:

a horizontal drive circuit part for receiving an oscillation signal having an oscillation frequency and for amplifying said oscillation signal to supply an output signal;

a horizontal output circuit part for generating said sawtooth waveform current in accordance with said output signal; and

first and second horizontal deflection coils wound around said horizontal deflection yoke, said coils being independent of one another and being energized by said sawtooth waveform current to generate said magnetic field in said horizontal deflection yoke,

wherein said horizontal output circuit part includes a first output circuit for causing said sawtooth waveform current to flow through said first horizontal deflection coil to generate a first part of said magnetic field in said horizontal deflection yoke in one direction and to induce a first flyback voltage therein, and a second output circuits operating independently of the first output circuit, for causing said sawtooth waveform current to flow through said second horizontal deflection coil to generate a second part of said magnetic field in said horizontal deflection yoke in the same direction as that of said first part of said magnetic field and to induce a second flyback voltage opposite in polarity to said first flyback voltage therein, so that radiation of an electric field generated by said first flyback voltage is decreased by radiation of an electric field generated by said second flyback voltage.

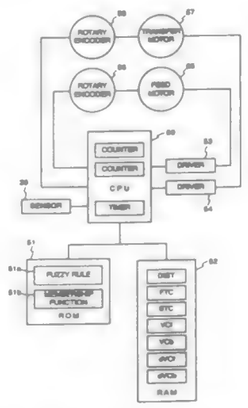


5,363,023

PAPER SHEET TRANSFER DEVICE

Satoshi Chobo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,214
Claims priority, application Japan, Sep. 10, 1991, 3-230297
Int. Cl.[5] G03G *15/14*
U.S. Cl. 318—70 **12 Claims**



1. A paper sheet handling system comprising:

a transfer motor for transferring sheets of paper;

a feeding motor for feeding the paper sheets transferred by said transfer motor, to a target position;

detection means for detecting a difference in a velocity value between said transfer motor and said feeding motor; and

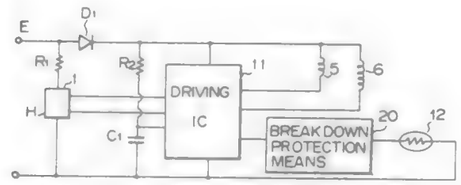
control means for controlling a rotational speed of at least one of said transfer motor and said feeding motor by using fuzzy inferential reasoning based on the velocity difference detected by said detection means, such that an interval between two consecutively feeding paper sheets is shortened.

5,363,024

D.C. FAN CONTROL CIRCUIT DEVICE FOR LINEARLY VARIABLE COOLING

Yoshiaki Hiratsuka, and Tsutomu Yoshii, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 24, 1992, Ser. No. 950,222
Claims priority, application Japan, Sep. 26, 1991, 3-274730
Int. Cl.[5] H02P *6/02;* **G05D** *23/24;* **H02H** *7/085*
U.S. Cl. 318—254 **13 Claims**



1. A linearly variable speed cooling D.C. fan comprising:

a stator including at least two pairs of main poles, two pairs of auxiliary poles and a Hall effect element provided on at least one of the auxiliary poles;

a rotor including a casing, at least two pairs of N and S poles and a plurality of blades;

a driving IC including an amplifier and two switching transistors;

a temperature sensor detachable to a connector means, for determining a revolution speed of the D.C. fan based on the detected temperature; and

a breakdown protection unit connected between said driving IC and said temperature sensor, including at least one of a resistor and a diode having a withstand voltage larger than a driving voltage of the fan.

13. An apparatus comprising:

a direct current (dc) motor having a rotor;

a fan attached to the rotor;

a driving integrated circuit (IC) coupled to the dc motor and having a sensor input, controlling a rotation speed of the fan based on a signal indicative of a detected temperature received at the sensor input;

a temperature sensor coupled to the sensor input of the driving IC, generating the signal indicative of the detected temperature; and

a breakdown protection circuit including a resistor coupled between the sensor input of the driving IC and the temperature sensor, preventing current from damaging the driving IC.

5,363,025

ACTUATOR EMPLOYING UNIDIRECTIONAL MOTOR FOR BIDIRECTIONAL ROTATIONAL POSITIONING

George J. Colling, Jordan, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1992, Ser. No. 998,201
Int. Cl.[5] F23C *11/00;* **G05D** *23/00*
U.S. Cl. 318—468 **7 Claims**

1. Apparatus utilizing a unidirectional motor for alternately rotating a member in opposite directions to alternately position said member at first and second positions, comprising:

a first member mounted for rotation about a first axis;

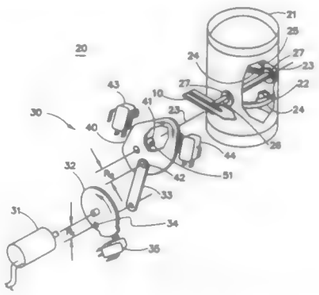
first and second stops positioned to limit rotation of said first member about the first axis, said first and second stops defining first and second limiting positions for said first member and defining a first angle through which said first member is permitted to rotate;

a second member mounted for rotation about a second axis,

a motor coupled to said second member and operable, when energized, to rotate said second member in a single direction only;

a third member mounted for rotation about the first axis;

a couple resiliently connecting said first and third member, and adapted to transfer torque about the first axis between the first and third members, while permitting said third member to rotate through a second angle greater than the first angle;



a connecting link joining said second and third member, said connecting link being pivotally connected to said second and third members at first and second locations respectively, the distance between the first axis and second location being greater than the distance between the second axis and first location; and

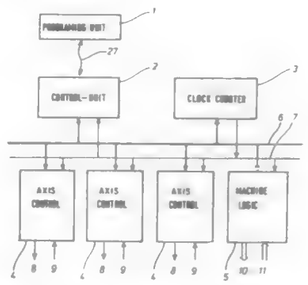
switch means through which energization can be supplied to said motor, said switch means being operable to interrupt energization to said motor substantially at the time said first member is rotated to either of said first and second stops.

5,363,026

METHOD OF OPERATING A NUMERICALLY CONTROLLED MACHINE TOOL AND A MACHINE TOOL FOR CARRYING OUT THE METHOD

Jacques Currat, 44 Condemine, Moutier, Switzerland 2740

Continuation of Ser. No. 973,890, Nov. 10, 1992, abandoned.
This application Feb. 25, 1994, Ser. No. 203,854
Claims priority, application Germany, Nov. 16, 1991, **91119587**
Int. Cl.[5] G05B *19/403*
U.S. Cl. 318—569 **6 Claims**



1. A method of operating a numerically controlled machine tool having tools for processing workpieces, the tools having a plurality of axis and spindle movements which are to be calcu-

lated independently of each other to control the tools, operation of the machine tool being controlled by further operating, auxiliary and control commands, the method comprising the steps of:

selecting one of an automatic mode, in which a central clock runs as a function of a frequency generator which is variable within a range of 0 to 100%, and a manual mode, in which the central clock can be made to run faster, slower, forward and in reverse in accordance with movement of a manually operated control element, to generate a timing of the central clock;

calculating, by means of a programming unit before processing a workpiece rather than in real time, tool axis paths for all of a plurality of tool axis controls;

storing each tool axis path so calculated in an object file, pertaining to a tool axis to be controlled, by means of a compiler; and

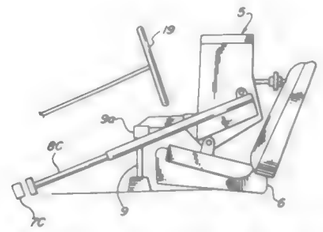
causing each object file to run in synchronism on the processing of said workpiece, under the timing of the central clock, to control said tools.

5,363,027

APPARATUS AND METHOD OF CONTROLLING THE ROBOTIC DRIVING OF A VEHICLE

Shinji Noguchi, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Continuation of Ser. No. 821,230, Jan. 16, 1992, abandoned. This application Aug. 23, 1993, Ser. No. 110,331
Claims priority, application Japan, Jan. 16, 1991, 3-015766
Int. Cl.[5] G05G *1/21*
U.S. Cl. 318—573 **17 Claims**



1. An apparatus for automatically operating transmission gear and clutch shifting controls of a vehicle, comprising:

drive means for automatically activating operator controls of the transmission gear and clutch, including a manual gearshift lever;

computer means for controlling the drive means during an initial determination of the operative displacement of the gearshift lever, including means for repetitively moving the gearshift lever to determine an operative displacement both along a path of movement which causes a shifting of gears and traverse to the path of movement for the shifting of gears,

first means for adjusting the position of the gearshift lever relative to a maximum traverse movement by a predetermined amount, and

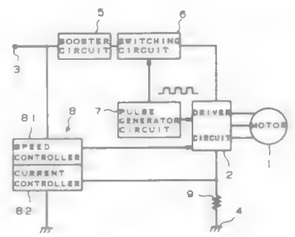
means for storing the operative displacement values, including the adjusted position values, to enable an automatic gear shifting of a manual transmission.

5,363,028

CIRCUIT AND METHOD OF DRIVING A DC MOTOR

Yoichi Mori, Shiga, Japan, assignor to Nippon Densan Corporation, Kyoto, Japan

Filed Jun. 1, 1992, Ser. No. 891,941
Claims priority, application Japan, May 7, 1991, 3-136594
Int. Cl.[5] H02K *25/00, 29/00*
U.S. Cl. 318—599 **12 Claims**



1. A circuit for driving a DC motor, comprising:

a booster circuit receiving an input voltage signal and generating an amplified output voltage signal;

a pulse generator circuit generating a pulse signal;

means coupled to the booster circuit and the pulse generator circuit for receiving the pulse signal from the pulse generator circuit and the amplified output voltage signal from the booster circuit and converting each phase of the amplified output voltage signal into a pulsed voltage signal; and

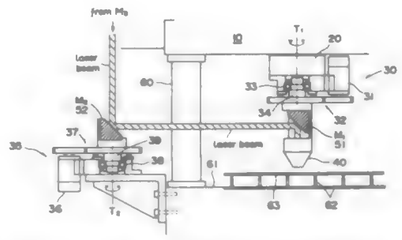
a driver circuit for transmitting the pulsed voltage signal to windings of the DC motor and generating a pulsating motor torque having a peak value which is sufficient to start the DC motor and an average value which would be insufficient for starting the DC motor in non-modulated form.

5,363,029

LASER-BEAM MACHINE USING TWO-DIMENSIONAL STEPPING MOTOR

Kaoru Kimura, Kitakyushu, Japan, and Philip V. Mounin, Troy, Ohio, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

Filed Apr. 19, 1993, Ser. No. 49,191
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **5 Claims**



1. A laser-beam machine using a two-dimensional stepping motor comprising:

said two-dimensional stepping motor consisting of a stator extending within a plane and a mover that is moved within a plane relative to the stator;

a frame which supports the stator of the two-dimensional stepping motor and on which a workpiece to be machined is set;

a laser mounted on said stator;

a first rotating shaft held to the frame in such a way as to be rotatable about an axis perpendicular to the plane on which the mover of the motor moves;

an optical system which causes the laser beam emitted by the laser to enter the optical system in the same direction as the direction of the central axis of the first rotating shaft;

a first optical means which is mounted on the first rotating shaft and which permits the laser beam entering via the optical system to exit from the first optical means in a direction parallel to the plane on which the mover moves;

a second rotating shaft held to the mover in such a way as to be rotatable about an axis perpendicular to the plane in which the mover moves;

a second optical means which is mounted on the second rotating shaft, receives the laser beam exiting from the first optical means, and directs the laser beam to the workpiece that is on the frame; and

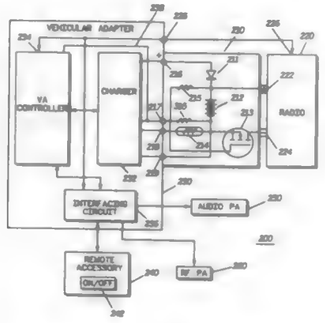
orientation control means for controlling the orientations of the rotating shafts in such a manner that the optical axis of the light exiting from the first optical means agrees with the optical axis of the light incident on the second optical means.

5,363,030

BATTERY HAVING A TRANSISTOR SWITCH FOR SUPPLYING ENERGY

Robert B. Ford, Tamarac, and Mehrdad Badie, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 760,288, Sep. 16, 1991, abandoned. This application Sep. 9, 1993, Ser. No. 119,447
Int. Cl.[5] H01M *10/44*
U.S. Cl. 320—13 **2 Claims**



1. A battery pack for use with other devices, comprising:

an energy source for supplying energy to a device through energy source output terminals;

battery terminals for coupling said device to said energy source;

a transistor switch coupled between said energy source output terminals and at least one battery terminal for selectively controlling supply of energy to at least one of said battery terminals in response to an external control signal;

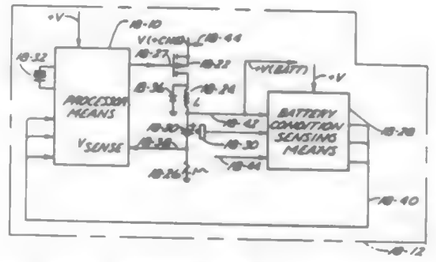
a control terminal for coupling said external control signal to said transistor switch wherein said control signal is generated by having said control terminal coupled to at least on of the energy source output terminals so as to control the supply of energy.

5,363,031

FAST BATTERY CHARGER

Phillip Miller, Cedar Rapids; Ronald D. Becker, Des Moines, and Steven E. Koenck, Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 446,231, Dec. 5, 1989, abandoned, Division of Ser. No. 478,180, Feb. 9, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 859,591
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—21 **59 Claims**



1. In a battery conditioning system,

(a) rechargeable battery means for supplying operating current during a number of hours of portable operation so as to become progressively discharged as a result,

(b) battery conditioning system means for coupling with said rechargeable battery means for supplying current to said rechargeable battery means during a battery conditioning cycle, after a period of portable operation,

(c) said battery conditioning system means comprising computer means having input means for receiving measures of battery temperature at successive times during such battery conditioning cycle, and

(d) current control means for coupling with said rechargeable battery means for controlling the rate of current flow to the rechargeable battery means during a battery conditioning cycle,

(e) said computer means having output means coupled with said current control means for varying the rate to said rechargeable battery means during conditioning cycle as a function of said measures of battery temperature as monitored by said computer means,

(f) said current control means providing a relatively low rate of current flow to said battery means suitable for a relatively low value of battery temperature during overcharge of the battery means, and providing a multiplicity of different higher rates of current flow to said battery means each of which is higher than said relatively low rate of current flow, and each of which is suitable for a respective different higher value of battery temperature during overcharge of said battery means,

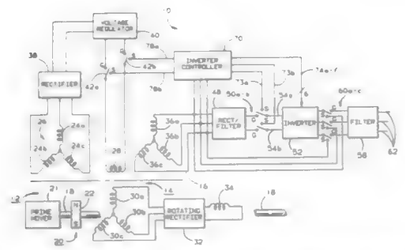
(g) said computer means being responsive to one of said measures of battery temperature representative of said relatively low value of battery temperature to select said relatively low rate of current flow to said battery means, and being responsive to respective others of said measures of battery temperature representing the respective different higher values of battery temperature to select respective ones of said multiplicity of different higher rates of current flow to said battery means, such that said battery conditioning cycle can be carried out under a wide range of environmental conditions while yet assuring a battery conditioning cycle which is suitable during overcharge of said battery means.

5,363,032

SENSORLESS START OF SYNCHRONOUS MACHINE

Michael J. Hansen, Loves Park, and Gregory I. Rozman, Rockford, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 12, 1993, Ser. No. 61,168
Int. Cl.[5] F02N *11/04*
U.S. Cl. 322—10 27 Claims



1. A synchronous machine operable in a starting mode during which variable frequency power is provided to drive the synchronous machine to generate motive power, said synchronous machine comprising:

means for generating a magnetic field;

an armature winding having a first phase winding, a second phase winding and a third phase winding, said armature winding being rotatable with respect to said field generating means;

means coupled to said armature winding for energizing two of said first, second and third phase windings while leaving one of said first, second and third phase windings unenergized, each of said phase windings having a voltage associated therewith;

means for generating an average voltage representing the sum of the voltages on the energized phase windings divided by the number of energized phase windings;

means for determining the relative position between said field generating means and said armature winding by comparing the voltage of said one unenergized phase winding with the average voltage of said two energized phase windings; and

means for providing said variable frequency power to said armature winding based upon the relative position of said field generating means and said armature winding as determined by said position determining means.

5,363,033

ELECTROMAGNETIC ROTATION DETECTOR HAVING A MAGNET OF A SYMMETRICALLY CUT OUT CROSS-SECTION FOR ELECTRICAL CONNECTIONS

Koichi Suda, Chita; Takeshi Fukaya, Tokai, and Tadao Horiuchi, Toyoake, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Sep. 24, 1992, Ser. No. 950,300
Claims priority, application Japan, Sep. 30, 1991, 3-280649
Int. Cl.[5] G01P *3/44, 3/488;* H01F *15/10;* G01B *7/14*
U.S. Cl. 324—207.15 16 Claims

1. An apparatus for detecting a rotation of a rotational member comprising:

a core disposed opposite to said rotational member;

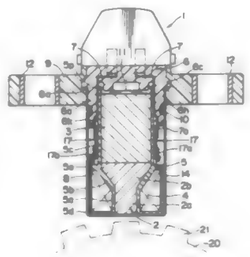
a coil of wire disposed around said core;

a columnar permanent magnet connected to said core, said magnet having cutout portions;

a bobbin having a first cylindrical portion for receiving therein said core for winding the wire of said coil around said first cylindrical portion, and a second cylindrical portion integrally connected to said first cylindrical portion in co-axial relationship therewith, said second portion formed with cutout portions to provide a periphery corresponding to a periphery of said permanent magnet, said second cylindrical portion receiving therein at least a part of said permanent magnet in co-axial relationship with said core;

a cylindrical case for receiving therein said bobbin assembled with said core, said permanent magnet and said coil, said case defining a space between an outer surface of said second cylindrical portion at the cutout portions thereof and an inner surface of said case; and

a terminal electrically connected to said coil, said terminal being disposed in the space defined between the outer surface of said second cylindrical portion and the inner surface of said case, and fixed to said second cylindrical portion.

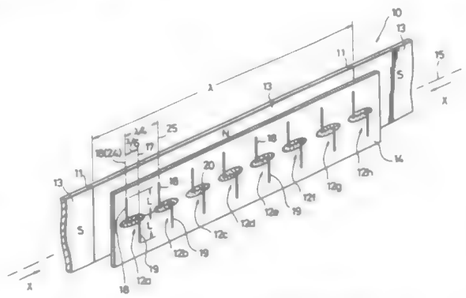


5,363,034

POSITION DETECTOR WITH MAGNETIC SCALE AND MAGNETIC SENSOR THAT HAS MAGNETIC RELUCTANCE ELEMENTS IN NON-OVERLAPPING RELATIONSHIP

Junichi Tada, and Takamoto Yoshioka, both of Kanagawa, Japan, assignors to Sony Magnescale, Inc., Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 811,151
Claims priority, application Japan, Jun. 8, 1990, 2-150688
Int. Cl.[5] G01B *7/14;* G01P *3/42*
U.S. Cl. 324—207.21 4 Claims



1. A position detecting apparatus comprising:

a magnetic scale formed by sequentially disposing magnets at a lattice pitch λ; and

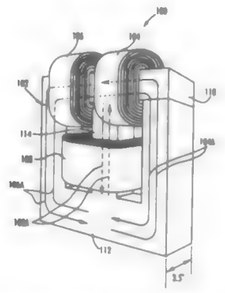
a magnetic sensor disposed in an opposing relation to said magnetic scale so as to become relatively movable to each other, wherein said magnetic sensor includes a plurality of magnetic sensor elements, each having first and second magnetic reluctance elements, said first and second magnetic reluctance elements are spaced apart from each other by λ/6 in the direction in which said magnets are disposed and connected in series, and said first and second magnetic reluctance elements are disposed so as not to overlap each other as seen from the direction parallel to the direction in which said magnets are disposed.

5,363,035

PHASE CONTROLLED TRANSFORMER

Richard M. Hutchison, New London, and Don J. Corrigall, Appleton, both of Wis., assignors to Miller Electric Mfg. Co., Appleton, Wis.

Continuation-in-part of Ser. No. 661,471, Feb. 26, 1991, Pat. No. 5,187,428. This application Sep. 30, 1992, Ser. No. 954,300
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] G05F *1/34*
U.S. Cl. 323—254 14 Claims



6. A controllable transformer comprising:

a main magnetic path, said main magnetic path including a secondary magnetic path;

a shunt magnetic path having a shunt reluctance greater than the reluctance of said secondary magnetic path;

a shunt coil inductively coupled to said shunt magnetic path; and

a phase controlled switch operatively associated with said shunt coil;

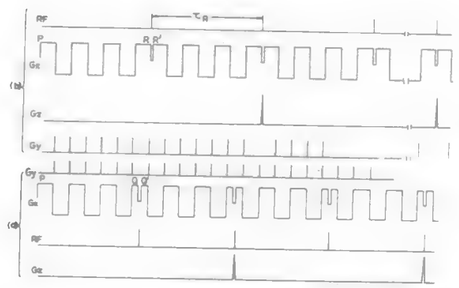
wherein said phase controlled switch includes means for selectively unbalancing an ac waveform induced in said shunt coil.

5,363,036

ECHO-VOLUMAR IMAGING USING 180 DEGREE RF PULSES

Peter Mansfield, Nottingham, England, assignor to British Technology Group Ltd., London, England

PCT No. PCT/GB91/01284, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/02829, PCT Pub. Date Feb. 20, 1992
PCT Filed Jul. 30, 1991, Ser. No. 966,037
Claims priority, application United Kingdom, Jul. 31, 1990, 9016803
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 11 Claims



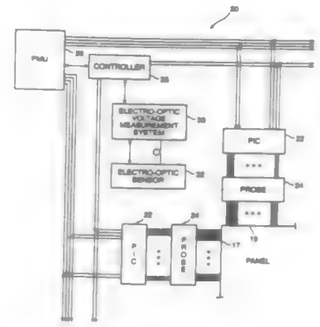
1. A method of producing a magnetic resonance three-dimensional image of a defined region of an object by an echo volumar imaging process, comprising the steps of: subjecting the object to an initial selection process to select a thick slice within the object to produce an active volume of spin magnetisation; and subjecting the active volume so defined to a combination of 180° RF pulses and modulated x, y and z gradients to produce an echo volumar three-dimensional image.

5,363,037

METHOD AND APPARATUS FOR TESTING LCD PANEL ARRAY

Francois J. Henley, Los Gatos, and Michael J. Miller, Sunnyvale, both of Calif., assignors to Photon Dynamics, Inc., Milpitas, Calif.

Division of Ser. No. 618,183, Nov. 26, 1990, Pat. No. 5,285,150. This application Jun. 25, 1993, Ser. No. 83,126
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158.1 4 Claims



1. An apparatus for testing a panel array of circuit elements, each one of said circuit elements being coupled to a drive line and a gate line, all drive lines being coupled to first panel boundaries and all gate lines being coupled to second panel boundaries which are adjacent and generally orthogonal to the first panel boundaries, the panel being logically configurable into test zones, the apparatus comprising:

means for generating a common signal to be input to a set of said drive lines or a set of said gate lines within a test zone;

means for electrically monitoring the other of said set of drive lines and said set of gate lines to identify existence within said test zone of a cross short defect;

means coupled to said generating means and said electrical monitoring means for interfacing at said first and said second panel boundaries said generating means and said monitoring means to said drive lines and said gate lines of said test zone; and

means for electro-optically sampling voltage magnitude along one of either one of said drive lines or one of said gate lines of said test zone to identify the location of a cross short defect.

5,363,038

METHOD AND APPARATUS FOR TESTING AN UNPOPULATED CHIP CARRIER USING A MODULE TEST CARD

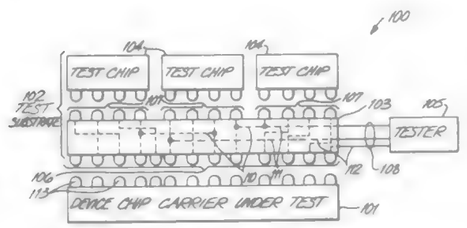
David G. Love, Pleasanton, Calif., assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 12, 1992, Ser. No. 929,000
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—158.1 20 Claims

1. In manufacturing semiconductor devices formed respectively by a plurality of semiconductor chips and a carrier of the chips, a method for increasing production yield through more refined testing methods, comprising the steps of:

coupling, prior to population of the semiconductor chips thereon, the carrier to a module test card, said module test

card having a test substrate and a plurality of test chips on the test substrate, the substrate being adapted for successively coupling to a plurality of carriers and for communicating electrical signals between a connector of one of the test chips and a respective connector on the carrier such that the connector on the test chip correlates to a connector on one of the plurality of semiconductor chip that communicates with the respective connector on the carrier after the carrier is populated with the semiconductor chips, the test chips being operable to simulate a portion of the chips;



coupling said module test card to a tester;

testing said carrier utilizing said module test card to generate test results; and

comparing the test results with expected results to accept or reject the carrier.

5,363,039

AUTO SELF TEST OF AC MOTOR SYSTEM

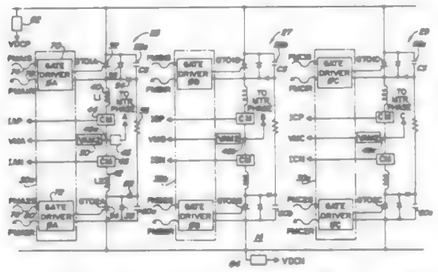
Ajith K. Kumar, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Continuation-in-part of Ser. No. 630,681, Dec. 20, 1990, Pat. No. 5,266,891. This application Nov. 6, 1992, Ser. No. 972,697

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] G08B *21/00*

U.S. Cl. 324—158.1 **5 Claims**



5. A method of pre-operation testing for a short-circuit condition in an electric power inverter having a plurality of phase legs connected in parallel circuit arrangement between a pair of relatively positive and relatively negative voltage busses, each of the legs including at least one pair of serially connected gate turn-off devices, each of the devices being connected in parallel with a corresponding snubber capacitor, the method comprising the steps of:

applying direct current electric power to the voltage busses;

waiting a first predetermined time interval selected to allow a voltage intermediate each of the pair of devices to reach a maximum normal voltage;

measuring the voltage intermediate the devices after the first predetermined time interval and before expiration of a second predetermined time interval selected to preclude normal discharge of the voltage;

comparing the measured voltage to a preselected reference voltage approximately equal to the maximum normal voltage for developing a voltage difference; and

inhibiting operation of the inverter if the step of comparing produces a voltage difference greater than a predetermined value, thus indicating a short-circuit condition.

5,363,040

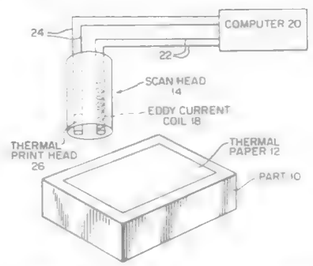
NON-DESTRUCTIVE EDDY CURRENT PART TESTING USING THERMAL PRINTING

Michael Horn, 35 Lucille Dr. S., Setauket, N.Y. 11720

Filed Feb. 23, 1993, Ser. No. 21,466

Int. Cl.[5] G01N *27/90;* **G01D** *9/00, 15/10*

U.S. Cl. 324—238 **3 Claims**



1. An apparatus for mapping sub-surface defects in a part being inspected, comprising:

a housing to scan a surface of the part;

a probe for detecting sub-surface defects enclosed within the housing;

a threshold detector for detecting an output of the probe which exceeds a predetermined level;

a thermal print head enclosed within the housing, adjacent the probe, and connected to an output of the threshold detector for creating a mark signal when a sub-surface defect is detected; and

thermal paper mounted on the surface to be scanned, permanent marks created on the paper by head, immediately upon occurrence of a mark signal, on a one-to-one size basis with all defects;

wherein a permanently recorded map of defects is produced on the paper at the conclusion of a scanning operation.

5,363,041

DETERMINING BOUND AND UNBOUND FLUID VOLUMES USING NUCLEAR MAGNETIC RESONANCE PULSE SEQUENCES

Abdurrahman Sezginer, Brookfield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,248

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—303 **21 Claims**



1. A method for measuring an indication of an attribute of a volume of earth formation with a borehole tool having means for producing static magnetic fields in a volume of a formation, means for producing oscillating magnetic fields in a volume of a formation, and means for measuring an induced magnetic signal, the method comprising:

a) producing a static magnetic field in the volume of formation;

b) producing oscillating magnetic fields according to a pulse sequence

$$T_r - 90°_{\pm x} - (t_{cp} - 180°_y - t_{cp} - \text{echo}_j)$$

where j=1, 2 . . . . N, and N is the number of echoes collected in a single Carr-Purcell-Meiboom-Gill (CPMG) sequence in order to induce signals in the volume which are measurable by the tool in the borehole;

where T_r is recovery time before a CPMG sequence, and where t_{cp} is the Carr-Purcell spacing;

c) using a linear operator to map a relaxation-time distribution to resulting spin echoes,

d) producing a singular value decomposition (SVD) of the linear operator according to the pulse sequence;

e) measuring with the tool the induced signals; and

f) determining from the measured signals an indication of unbound fluid volume (UFV) of the volume of earth formation in light of the SVD.

5,363,042

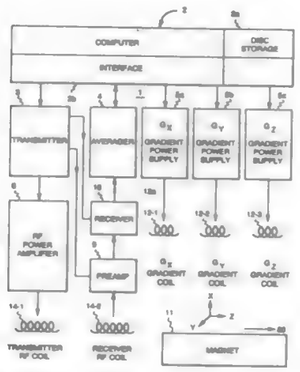
METHODS FOR MEASUREMENT OF LONGITUDINAL SPIN RELAXATION TIMES IN MOVING LIQUIDS

Charles L. Dumoulin, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 12, 1993, Ser. No. 105,256

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—306 **5 Claims**



1. A method of measuring spin lattice relaxation time, T_1, within a subject comprising the steps of:

a) placing said subject in a magnetic field to generate longitudinal spin magnetization of nuclear spins within the subject;

b) applying a spatially non-selective radio-frequency (RF) pulse to invert the longitudinal magnetization of the nuclear spins;

c) applying a spatially selective RF pulse having a predetermined frequency range to convert longitudinal magnetization into transverse spin magnetization of a selected ensemble of nuclear spins of a spatial region defined by the frequency range;

d) detecting at a time n, magnetic resonance signals generated by the transverse spin magnetization of the selected ensemble of nuclear spins;

e) repeating steps 'c' through 'd' for a plurality of 'N' repetitions to detect 'N' MR response signals, each detected at a different time 'n' after application of the spatially non-selective RF pulse to encode in a time dimension;

f) selecting a subset of the ensemble of nuclear spins; and

g) determining the spin lattice relaxation time, T_1, for the selected subset of the ensemble of nuclear spins, the spin relaxation time being an exponential recovery rate of the MR response signal of the selected subset as a function of time.

5,363,043

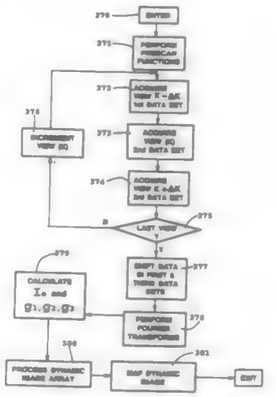
PRODUCING DYNAMIC IMAGES FROM MOTION GHOSTS

Qing-San Xiang, Vancouver, and Ross M. Henkelman, Toronto, both of Canada, assignors to Sunnybrook Health Science Center, Toronto, Canada

Filed Feb. 9, 1993, Ser. No. 15,103

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **11 Claims**



1. In an MRI system wherein an object to be imaged is subject to motion, a method for producing a dynamic image of the object, comprising:

operating said system to acquire an image of the object comprising a plurality of image pixels, each image pixel having a time averaged image component I_o and a ghost component g;

processing the time averaged image component I_o and the ghost component g to generate a dynamic image; and

mapping the dynamic image of the object to specified media.

5,363,044

MOTION GHOST MANIPULATION IN MAGNETIC RESONANCE IMAGING

Qing-San Xiang, Vancouver, and Ross M. Henkelman, Toronto, both of Canada, assignors to Sunnybrook Health Science Center, Toronto, Canada

Filed Feb. 9, 1993, Ser. No. 15,097

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **20 Claims**

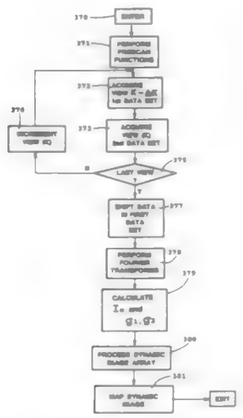
1. In an MRI system for producing an image of an object which is subject to motion, a method for removing image artifacts produced by the motion, comprising:

acquiring a first data set comprising a plurality of data pixels, each data pixel containing a time averaged image component I_o and a ghost component g_1;

acquiring a second data set comprising a plurality of data pixels, each data pixel containing a time averaged image component I_o and a ghost component g_2;

reconstructing the acquired first and second data sets to produce corresponding reconstructed images I_1 and I_2,

respectively, such that the reconstructed images each comprise a plurality of image pixels, each image pixel containing the time averaged image component I_o and the ghost components g_1 or g_2;



calculating the time averaged image component I_o for each of the plurality of image pixels within a selected region of the reconstructed images;

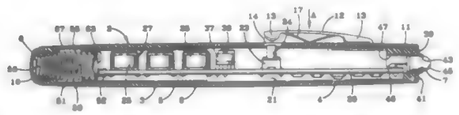
producing an image of the selected region without ghost artifacts.

5,363,045

HAND-HELD NON-CONTACTING ELECTRIC FIELD DETECTION TOOL

George G. Martin, 1743 Walnut Rd., Kent, Ohio 44240, and Thomas J. Martin, 1984 Park Forest Ave., State College, Pa. 16803

Filed Aug. 27, 1992, Ser. No. 935,930
Int. Cl.[5] F23Q *23/10;* **G01M** *15/00;* **F02P** *17/00;* **G01R** *19/14*
U.S. Cl. 324—395 **21 Claims**



1. An ignition system diagnostic tool including:

a portable hand held case having a pickup end adapted to be placed adjacent a component of a spark plug firing portion of an ignition system to be tested;

antenna means mounted in the case adjacent the pickup end for receiving an electric field generated by an ignition system, said antenna means including a metallic member and a metallic spring located within the pickup end of the case;

circuit means including a power source and an elongated printed circuit board located within the case electrically operatively connected to the antenna means for detection of the received electric field and for generation of a detected electric field signal; and

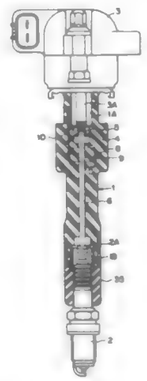
indicator means in an opposite end of the case from the pickup end, operatively connected to the circuit means for providing a positive indication of the detected electric field.

5,363,046

SPARK PLUG CAP WITH MISFIRE DETECTING CAPACITOR FOR INTERNAL COMBUSTION ENGINE

Yuichi Shimasaki; Shigeru Maruyama; Masaki Kanehiro; Takashi Hisaki; Shigeki Babe, and Takuji Ishioka, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1993, Ser. No. 12,524
Claims priority, application Japan, Feb. 6, 1992, 4-056395
Int. Cl.[5] F02P *17/00;* **F23Q** *23/00;* **G01R** *19/00*
U.S. Cl. 324—402 **18 Claims**



1. A spark plug cap for engaging and covering a terminal of a spark plug for an internal combustion engine, said spark plug cap comprising:

a first conductor selectively electrically connected to an ignition coil and to the spark plug terminal for carrying ignition voltage current from the ignition coil to the spark plug terminal, to thereby generate an electric spark between spark plug electrodes; and

an insulator surrounding the first conductor;

a second conductor radially located around a portion of the first conductor, wherein a predetermined distance is maintained from the first conductor such that a capacitor, which constitutes a capacitive divider with a capacitor for ignition voltage detection, is formed with the first and the second conductors,

wherein the first conductor, a portion of the insulator, and the second conductor are integrated in a cap portion of said spark plug cap, and wherein said cap portion is configured to engage and cover the terminal of the spark plug at a distal end of the first conductor to provide the electrical connection of the first conductor to the spark plug terminal.

5,363,047

PORTABLE GROUND FAULT DETECTOR

Mauro G. Dresti, West Covina; Juan P. Lopetrone, Rancho Palos Verdes, and James J. Regan, Covina, all of Calif., assignors to Southerni California Edison Company, Rosemead, Calif.

Filed Oct. 30, 1992, Ser. No. 969,494
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—510 **20 Claims**

1. Apparatus for detecting a ground fault condition in a normally ungrounded supply system including conductors from a supply for supplying power to a load connected in the system, the apparatus comprising:

(a) divider means for connecting a test impedance across the power supply, the test impedance having a tapping point;

(b) grounding means for periodically connecting the tapping point to ground potential;

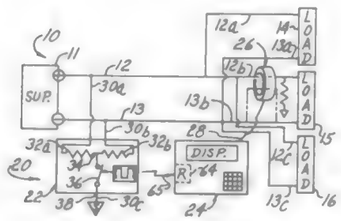
(c) a current transducer for measurement of electrical current in one or more of the conductors at a location downstream of the divider means during operation of the system; and

(d) a detector circuit for signalling the ground fault condition, comprising:

(i) a gain circuit for producing a first voltage signal, the first voltage signal being proportional to the electrical current measured by the current transducer over a range of the current in excess of 10 A;

(ii) an integrator for producing an integrator signal, the integrator having a summing input that is maintained proximate a first reference voltage;

(iii) an oscillator for producing a variable frequency oscillator output, the frequency of the oscillator output being smoothly proportional to an average DC component of the integrator signal;



(iv) a reference resistor connected between the gain circuit and the summing input for converting the first voltage signal to a current feeding the integrator;

(v) a reference capacitor; and

(vi) a switch controller responsive to the oscillator for sequencing the reference capacitor among a first connection wherein opposite sides of the capacitor are connected between the first reference voltage and a second reference voltage, a second connection between the summing input and the second reference voltage, a third connection between the summing input and the first reference voltage, and a fourth connection of both sides to the same potential, the frequency of the oscillator being a repeatable function of the net current sensed by the current transducer.

5,363,048

METHOD AND SYSTEM FOR ENSURING INTERCONNECT INTEGRITY IN A MICRO-CHIP-MODULE

Douglas Modlin, Palo Alto, Calif.; Joel Parke, Marlborough, Mass., and Deng-Yuan Fu, Sunnyvale, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 17, 1992, Ser. No. 977,531
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—519 **15 Claims**

1. A method for ensuring interconnect integrity in a micro-chip-module, said micro-chip-module comprising:

at least one receptacle for receiving predefined integrated circuit chips, each predefined integrated circuit chip having a multiplicity of pins; and

a multiplicity of interconnects, each interconnect comprising a distinct node, each interconnect being connected to ones of said multiplicity of pins when said micro-chip-module is loaded with said predefined integrated circuit chips;

said method comprising the steps of:

storing in a computer memory first maximum and minimum capacitance values for each node for when said micro-chip-module is not loaded with said predefined integrated circuit chips;

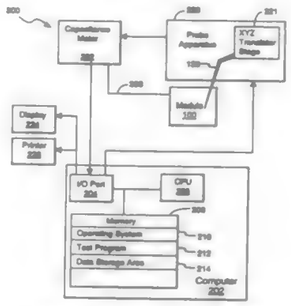
contacting with a probe apparatus each node while said micro-chip-module is not loaded with said predefined integrated circuit chips;

measuring with a capacitance measurement apparatus a first measured capacitance for each node contacted by said probe apparatus while said micro-chip-module is not loaded with said predefined integrated circuit chips;

comparing for each node said first measured capacitance with the corresponding stored first maximum and minimum capacitance values;

generating a first signal indicating an interconnect error at each node for which said first measured capacitance does not fall within a range between said corresponding stored first maximum and minimum capacitance values;

storing in said computer memory second maximum and minimum capacitance values for each node for when said micro-chip-module is loaded with integrated circuit chips;



loading said predefined integrated circuit chips in said at least one receptacle;

contacting with said probe apparatus each node while said micro-chip-module is loaded;

measuring with said capacitance measurement apparatus a second measured capacitance value for each node contacted by said probe apparatus while said micro-chip-module is loaded;

comparing for each node said second measured capacitance value with the corresponding stored second maximum and minimum capacitance values; and

generating a second signal indicating an interconnect error at each node for which said second measured capacitance value does not fall within a range between said corresponding stored second maximum and minimum capacitance values.

5,363,049

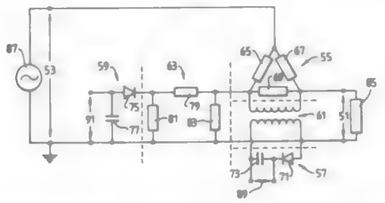
SINGLE DEVICE UNDER TEST (DUT) PORT COMMON REFERENCE/MATCHING IMPEDANCE CIRTUIT FOR THE DETECTION AND LOCATION OF DUT FAULTS

Andrew G. Bullock, Hemel Hemstead, and George Hjipieris, Hitchin, both of England, assignors to Marconi Instruments Limited, United Kingdom

Filed Jan. 25, 1993, Ser. No. 8,167
Claims priority, application United Kingdom, Jan. 27, 1992, 9201835
Int. Cl.[5] G01R *31/08*
U.S. Cl. 324—520 **8 Claims**

1. A circuit for use in the detection of the presence and location of the position of a fault or faults in a device under test comprising: a first port to which is connected the device under test for fault detection and location; a second port to which is connected a signal source which generates a plurality of signals of different frequencies which extend over the frequency range over which it is required that the device under test operate satisfactorily; a divider for dividing each signal generated by the source thereby to provide first and second fractions thereof, the second fraction passing to the device under test; a

fault detection section for providing in respect of each of said frequencies a fault detection voltage for use in the detection of the presence in the device under test of the fault or faults; and a branch including an impedance section and a fault location section, said branch receiving said first fraction, said fault location section providing in respect of each of said frequencies a fault location voltage for use in the location of the position or positions in the device under test of the fault or faults, said fault detection section being connected in said circuit



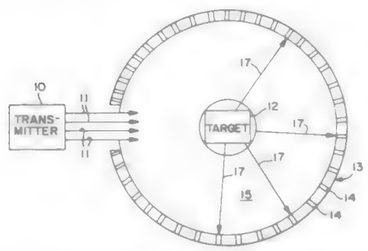
between said impedance section and the device under test such that each fault detection voltage provided thereby indicates whether a predetermined relationship exists between the impedance of said impedance section and the impedance presented by the device under test, said impedance section in addition to serving as a reference impedance for fault detection measurements also serving to match the fault location section which performs fault location measurements to the impedance presented thereto by said divider.

5,363,050

QUANTITATIVE DIELECTRIC IMAGING SYSTEM

Wendy W. Guo, and Theodore C. Guo, both of 10618 Tanager La., Potomac, Md. 20854

Filed Aug. 31, 1990, Ser. No. 576,209
Int. Cl.[5] G01N *29/00*
U.S. Cl. 324—638 **15 Claims**



1. A three dimensional quantitative dielectric imaging system comprising:

a transmitter for transmitting microwaves toward a target;

a receiver having an antenna disposed to receive waves scattered by the target in order to obtain a first set of scatter data in the form of a vector;

a processor for processing the first set of scatter data in order to generate a three dimensional profile of the dielectric permittivity of the target, wherein said processor uses an image reconstruction algorithm which utilizes predetermined matrices to operate on at least said first set of scatter data without inverting a matrix formed from said scatter data; and

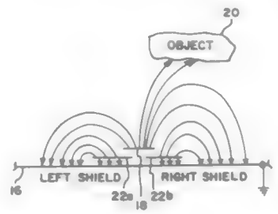
an output device for displaying a selected amount of the three dimensional profile generated by the processor.

5,363,051

STEERING CAPACIFLECTOR SENSOR

Del T. Jenstrom, Crofton, Md., and Robert L. McConnell, Independence, W. Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 23, 1992, Ser. No. 979,987
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] G01R *27/26*; G08C *19/10*; H01H *47/12*
U.S. Cl. 324—661 **10 Claims**



1. A capacitive type proximity sensor having substantial range and sensitivity between a machine and an intruding object in the immediate vicinity of the machine and a steerable sensing field, comprising:

an outer electrical conductor on said machine forming one electrode of a sensor capacitor, the other electrode comprising said object, said outer conductor comprising a first thin sheet of conductive material;

a plurality of intermediate electrical conductors located between said outer conductor and said machine, said plurality of intermediate electrical conductors in close proximity to each other, said plurality of intermediate electrical conductors together comprising a surface having a size substantially larger than said outer conductor acting as a shield for reducing the parasitic capacitance between said outer conductor and said machine, said plurality of intermediate conductors comprising a plurality of thin sheets of conductive material together substantially wider than said first conductor;

said outer and plurality of intermediate conductors attached to a surface on said machine with no gap between said conductors and no gap between said surface and said plurality of intermediate conductors, the surfaces of said outer and plurality of intermediate conductors conjoining with each other and said surface of said machine, said conductors being electrically isolated from one another and said surface of said machine acting as a ground plane;

first circuit means for coupling, in phase and with variable gain, the instantaneous voltage at said outer electrical conductor to said plurality of intermediate electrical conductors;

second circuit means coupled to said outer conductor and being responsive to the capacitance of said sensor capacitor for generating a control signal to said machine.

5,363,052

PERMITTIVITY SPECTROSCOPY APPARATUS AND METHOD

James M. McKee, Reno, Nev., assignor to Solid State Farms, Inc., Reno, Nev.

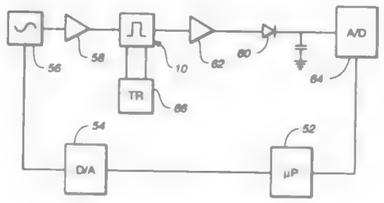
Filed Feb. 16, 1993, Ser. No. 18,230
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—663 **14 Claims**

14. An apparatus useful for determining the concentration of polar constituents in polar solutions comprising:

an electrical component including a dielectric element in said electrical component;

a source of electrical current connected to said electrical component;

frequency variation means electrically connected to said source to enable variation of the frequency at which current is applied to said electrical component; and



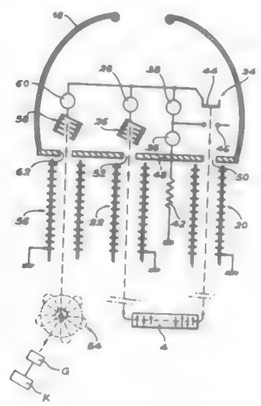
voltage sensing means electrically connected to sense the voltage passed by said electrical component.

5,363,053

ELECTROSTATIC ACCELERATOR AND FREE ELECTRON BEAM LASER USING THE ACCELERATOR

Claude Etievant, Versailles, and Michel Roche, Dijon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 7, 1992, Ser. No. 925,664
Claims priority, application France, Aug. 28, 1991, 91 10672
Int. Cl.[5] H01S *3/00*; H05H *15/00*
U.S. Cl. 315—506 **13 Claims**



1. Electrostatic accelerator for accelerating charged particles with to a high voltage, comprising:

an accelerating column (20) having a high voltage end and a low voltage end;

a high voltage terminal (18) located at said high voltage end of said accelerating column (20);

electric charge transporting means (54) for charging said high voltage terminal from ground to a high voltage and maintaining said high voltage terminal at said high voltage, by supplying charging current to said high voltage terminal; and

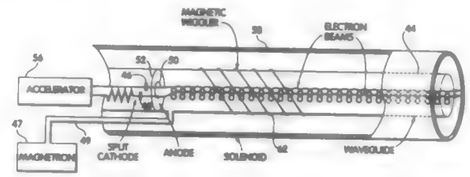
wherein said charge transporting means comprises a high frequency accelerator for supplying an electrically charged beam to said high voltage terminal.

5,363,054

DOUBLE BEAM CYCLOTRON MASER

George Bekefi, Brookline, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 27, 1992, Ser. No. 842,246
Int. Cl.[5] H01S *3/30*; H01J *23/08*
U.S. Cl. 330—4 **20 Claims**



1. An electromagnetic radiation amplification device comprising; means for producing first and second electron beams traveling in the same space in the same direction, said first electron beam having a velocity greater than said second electron beam and said first electron beam having a different electron cyclotron frequency harmonic than said second electron beam;

means for producing a uniform axial magnetic field parallel to said direction of said electron beams; and

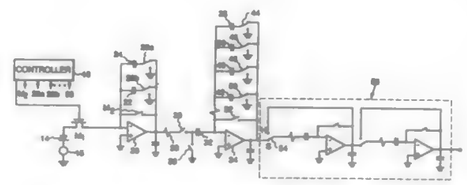
means for producing a magnetic field transverse to said axial magnetic field which field initially imparts a transverse rotational component to electrons comprising said first and second electron beams.

5,363,055

PHOTODIODE PREAMPLIFIER WITH PROGRAMMABLE GAIN AMPLIFICATION

David B. Ribner, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 15, 1993, Ser. No. 31,447
Int. Cl.[5] H03F *1/34*; H03G *3/20*
U.S. Cl. 330—9 **16 Claims**



1. A combined programmable gain and integrating amplifier comprising:

an operational amplifier having an inverting input terminal, a non-inverting input terminal and an output terminal, said non-inverting input terminal being coupled to a reference voltage;

a plurality of capacitors connectable in parallel between said inverting input terminal and said output terminal of said amplifier, at least one terminal of each of said capacitors being connected to said inverting input terminal;

a plurality of controllable switching means, each of said switching means being connected in series circuit between another terminal of a corresponding one of said capacitors and said output terminal for coupling said capacitors in circuit between said inverting input terminal and said output terminal in and for connecting said another terminal of selected ones of said capacitors to the reference voltage; and

means for controlling said switching means to connect each of said capacitors in circuit between said inverting input terminal and said output terminal in a first time phase of

operation and to connect said another terminal of said selected ones of said capacitors to the reference voltage in a second time phase of operation.

5,363,056

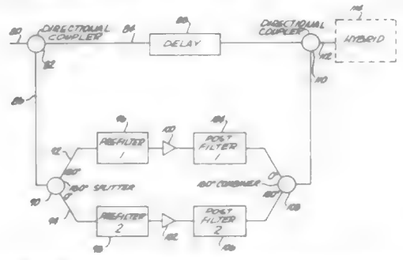
CIRCUIT FOR LINEARIZATION OF AMPLIFIED ELECTRONIC SIGNALS

Henry A. Blauvelt, San Marino, Calif., assignor to Ortel Corporation, Alhambra, Calif.

Continuation-in-part of Ser. No. 918,623, Jul. 21, 1992, Pat. No. 5,252,930, which is a continuation-in-part of Ser. No. 653,003, Feb. 8, 1991, Pat. No. 5,132,639, which is a continuation-in-part of Ser. No. 404,186, Sep. 7, 1989, Pat. No. 4,992,754. This application Apr. 27, 1993, Ser. No. 54,868

Int. Cl.[5] H03F *3/28*; H01H *7/14*

U.S. Cl. 330—118 **13 Claims**



1. A predistortion circuit for a hybrid amplifier comprising:

a primary signal path;

a secondary signal path;

means for splitting an input signal between the primary and secondary signal paths and means for recombining signals from the primary and secondary signal paths for producing an input signal for a hybrid amplifier;

a push-pull amplifier circuit in the secondary signal path comprising a first amplifier and a second amplifier;

a filter connected to the first amplifier and a filter connected to the second amplifier for simultaneously adjusting second order distortion and third order distortion in the secondary path to match distortion in the hybrid amplifier; and

a phase delay block in the primary signal path for controlling the phase relation between the primary and secondary signal paths.

5,363,057

CONTROL DEVICE FOR POWER AMPLIFIER

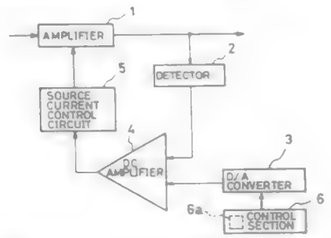
Kenichi Furuno, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,966

Claims priority, application Japan, Jan. 30, 1992, 4-014768

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—129 **9 Claims**



1. A control device for regulating the output power of a power amplifier at a continuous level from among different selected power levels, said control device comprising a detector for detecting the output power of said power amplifier and differential amplifying means for generating a control signal equivalent to the difference between the output of said detector and the output of reference voltage generating means representing a selected power level to control the power level of said amplifier at said selected power level, said control device further comprising storage means for storing a reference power level signal variation pattern representing a variation in reference power level as a function of time for changing the power level of said amplifier in accordance with said function of time from one selected continuous level to another selected continuous level and a control section for changing said control signal as a function of time based on the reference power level signal variation pattern stored in said storage means.

5,363,058

AMPLIFIER HAVING LINEAR INPUT-OUTPUT CHARACTERISTICS AND HIGH EFFICIENCY

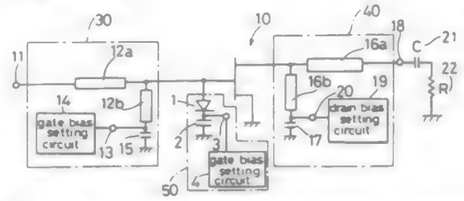
Yoshinobu Sasaki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,594

Claims priority, application Japan, Mar. 19, 1992, 4-093748

Int. Cl.[5] H03G *3/30*

U.S. Cl. 330—136 **3 Claims**



1. An amplifier for amplifying a high frequency signal comprising:

an input impedance matching circuit having an input end and an output end;

an output impedance matching circuit having an input end and an output end;

an FET having a gate connected to the output end of said input impedance matching circuit for receiving a high frequency signal having a power for amplification by said FET and a drain connected to the input end of said output impedance matching circuit; and

a gate voltage control circuit for controlling a gate voltage applied to the gate of said FET in response to the power of the high frequency signal, an output of said gate voltage control circuit being connected to a junction of the output end of said input impedance matching circuit and the gate of said FET, said gate voltage control circuit comprising a diode having an anode and a cathode, the anode being connected to the gate of said FET, a capacitor connected between the cathode of said diode and ground, and a gate bias setting circuit having an output terminal connected to the junction of the cathode of said diode and said capacitor for outputting a control voltage in response to the power of the high frequency signal.

5,363,059

TRANSCONDUCTANCE AMPLIFIER

Fran L. Thiel, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 17, 1993, Ser. No. 78,385

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—253 **3 Claims**

1. A low quiescent current, high output swing, low output impedance transconductance amplifier, comprising:

a first PMOS transistor having a source, a gate forming a first input, and a drain;

a second PMOS transistor having a source connected to the source of the first PMOS transistor, a gate forming a second input, and a drain;

a third PMOS transistor having a source connected to a first voltage source, a gate, and a drain connected to the source of the first PMOS transistor;

a fourth PMOS transistor having a source connected to the first voltage source, a gate connected to the gate of the third PMOS transistor, and a drain connected to its gate;

a fifth PMOS transistor having a source connected to the first voltage source, a gate connected to a first disable input, and a drain connected to the gate of the third PMOS transistor;

a sixth PMOS transistor having a source connected to the first voltage source, a gate, and a drain connected to its gate;

a seventh PMOS transistor having a source connected to the first voltage source, a gate connected to the gate of the sixth PMOS transistor, and a drain;

an eighth PMOS transistor having a source connected to the first voltage source, a gate connected to the first disable input, and a drain connected to the gate of the sixth PMOS transistor;

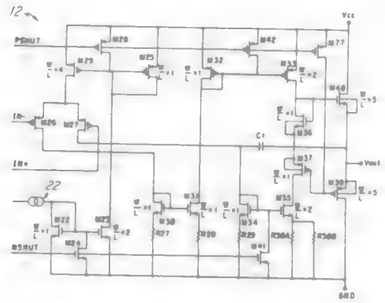
a ninth PMOS transistor having a source connected to the first voltage source, a gate connected to the first disable input, and a drain;

a tenth PMOS transistor having a source, a gate connected to the drain of the ninth PMOS transistor, and a drain connected to its gate;

an eleventh PMOS transistor having a source, a gate connected to the gate of the tenth PMOS transistor, and a drain connected to a second voltage source;

a first NMOS transistor having a drain connected to a current source, a gate connected to its drain, and a source connected to the second voltage source;

a second NMOS transistor having a drain connected to the gate of the first NMOS transistor, a gate connected to a second disable input, and a source connected to the second voltage source;



a third NMOS transistor having a drain connected to the drain of the fourth PMOS transistor, a gate connected to the gate of the first NMOS transistor, and a source connected to the second voltage source;

a fourth NMOS transistor having a drain connected to the drain of the first PMOS transistor, a gate connected to its drain, and a source;

a fifth NMOS transistor having a drain connected to the drain of the sixth PMOS transistor, a gate connected to the gate of the fourth NMOS transistor, and a source;

a sixth NMOS transistor having a drain connected to the drain of the second PMOS transistor, a gate connected to its drain, and a source;

a seventh NMOS transistor having a drain connected to the drain of the tenth PMOS transistor, a gate connected to the gate of the sixth NMOS transistor, and a source;

an eighth NMOS transistor having a drain connected to the gate of the sixth NMOS transistor, a gate connected to the second disable input, and a source connected to the second voltage source;

a ninth NMOS transistor having a drain connected to the drain of the seventh PMOS transistor, a gate connected to its drain, and a source connected to the source of the tenth PMOS transistor;

a tenth NMOS transistor having a drain connected to the first voltage source, a gate connected to the gate of the ninth NMOS transistor, and a source connected to the source of the eleventh PMOS transistor and forming an output of the amplifier;

a capacitance having a first terminal connected to the drain of the second PMOS transistor and a second terminal connected to the output of the amplifier;

a first resistance having a first terminal connected to the source of the fourth NMOS transistor and a second terminal connected to the second voltage source;

a second resistance having a first terminal connected to the source of the fifth NMOS transistor and a second terminal connected to the second voltage source;

a third resistance having a first terminal connected to the source of the sixth NMOS transistor and a second terminal connected to the second voltage source; and

a fourth resistance having a first terminal connected to the source of the seventh NMOS transistor and a second terminal connected to the second voltage source.

5,363,060

MICROWAVE AMPLIFIER

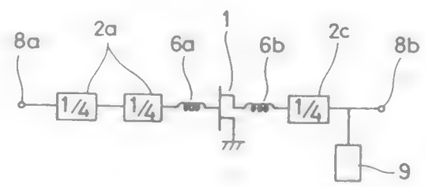
Masaki Kohno, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 103,531

Claims priority, application Japan, Aug. 12, 1992, 4-237703

Int. Cl.[5] H03F *3/60*

U.S. Cl. 330—286 **8 Claims**



1. A microwave amplifier comprising:

an amplifier;

an impedance match circuit for match input and output impedances of said amplifier, said impedance match circuit comprising input and output side distributed constant lines, each line having a length equivalent to ¼ wavelength of a signal having the highest frequency in a desired frequency band;

an open stub connected to at least one of said input and output side distributed constant lines, the length of said open stub being variable for varying a narrow frequency band in which maximum gain of said amplifier is attained; and

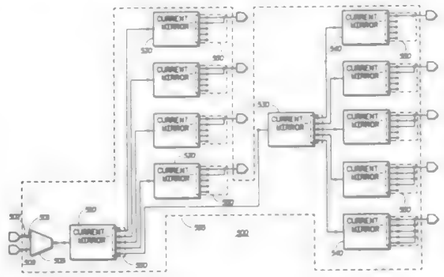
a package containing said amplifier and said impedance matching circuit, said open stub comprising a plurality of electrically conducting islands connected to each other by narrow electrically conducting patterns and connected to respective power supply pads disposed outside said package, said narrow patterns connecting the islands being selectively severable with an electrical current selectively applied to said power supply pads to produce a desired length of said open stub.

5,363,061

OPERATIONAL TRANSCONDUCTANCE AMPLIFIER WITH MATCHED OUTPUTS

Raymond L. Barrett, Jr., Ft. Lauderdale; Barry W. Herold, Boca Raton, and Grazyna A. Pajunen, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Fla.

Filed Nov. 10, 1993, Ser. No. 152,991
Int. Cl.[5] H03F 3/68
U.S. Cl. 330—288 7 Claims



1. A multi-output integrated circuit amplifier comprising:

a first primary current mirror implemented in a single substrate having a first primary input, said first primary current mirror generating a plurality of first inverted primary current outputs in response to a first current signal coupled to the first primary input; and

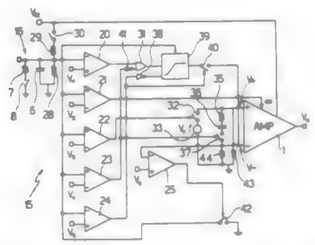
a plurality of secondary current mirrors implemented in the single substrate, each having a secondary input coupled to a unique one of the plurality of primary current outputs of said first primary current mirror, each of said plurality of secondary current mirrors having a gain, and each of said plurality of secondary current mirrors generating an inverted secondary current output signal, the magnitude of which is determined substantially by the unique one of the plurality of primary current outputs coupled thereto and the gain thereof.

5,363,062

AUDIO AMPLIFIER ON-OFF CONTROL CIRCUIT

Daniela Nebuloni, Bareggio, and Andrea Fassina, Milan, both of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy

Filed May 21, 1993, Ser. No. 65,633
Claims priority, application European Pat. Off., May 22, 1992, 92830254.6
Int. Cl.[5] H03F 1/26, 1/30; H03G 3/34
U.S. Cl. 330—296 16 Claims



1. A control circuit for controlling the turn on and turn off characteristics of an amplifier, the amplifier having positive and negative input terminals, and a standby input terminal to selectively enable and disable the amplifier, the amplifier generating an output signal when the standby input terminal is selectively enabled, the circuit comprising:

a voltage source connectable to the negative input terminal and generating an increasing voltage signal;

first comparing means for generating a first control signal, said first comparing means having a negative input and a positive input and a comparator output, said first negative input coupled to the amplifier standby input terminal, said first positive input receiving a first threshold voltage, said first comparator output activating said increasing voltage source when the amplifier is selectively enabled and the voltage on the standby input terminal is less than said first threshold voltage;

second comparing means for generating a second control signal, said second comparing means having a negative input and a positive input and a comparator output, said second negative input coupled to the standby input terminal, said second positive input receiving a second threshold voltage greater than said first threshold voltage, said second comparator output resetting said increasing voltage source when the amplifier is selectively enabled and the voltage on the standby input terminal exceeds said second threshold voltage;

third comparing means for generating a third control signal, said third comparing means having a negative input and a positive input and a comparator output, said third positive input coupled to the standby input terminal, said third negative input receiving a third threshold voltage greater than said first threshold voltage and less than said second threshold voltage, said third comparator output coupling a control voltage to the positive input terminal when the amplifier is selectively enabled and the voltage on the standby input terminal exceeds said third threshold voltage;

fourth comparing means for generating a fourth control signal, said fourth comparing means having a negative input and a positive input and a comparator output, said fourth positive input coupled to the standby input terminal, said fourth negative input receiving a fourth threshold voltage greater than said third threshold voltage and less than said second threshold voltage, said fourth comparator output activating said increasing voltage source when the amplifier is selectively disabled to permit the signal at the negative input terminal to increase in amplitude relative to the positive input terminal and causing the output from the amplifier to decrease in amplitude; and

fifth comparing means for generating a fifth control signal, said fifth comparing means having a negative input and a positive input and a comparator output, said fifth negative input coupled to the negative input terminal, said fifth positive input receiving a fifth threshold voltage less than the voltage at the positive input terminal, said fifth comparator output coupling the standby input terminal to a circuit ground when the voltage at the negative input terminal is less than said fifth threshold voltage, whereby the output of the amplifier is controlled by the circuit such that the output does not have undesired transients.

5,363,063

AMPLIFIER WITH AN OUTPUT CURRENT LIMITER

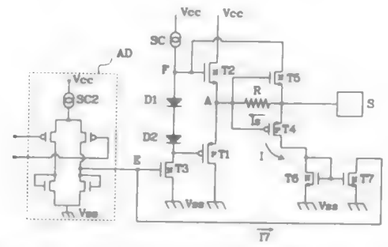
Colette Laot, and Bernard Majoux, both of Meylan, France, assignors to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed May 13, 1993, Ser. No. 61,181
Claims priority, application France, May 18, 1992, 92 06384
Int. Cl.[5] H03F 1/52; H04M 19/00
U.S. Cl. 330—298 20 Claims

1. An amplifier comprising an output stage and a current limiting circuit, said output stage including two output transistors in series between two supply terminals, and at least one first control terminal for controlling the conduction of the first transistor; and the current limiting circuit including a resistor in series between an output of the output stage and a junction between the two output transistors, with at least one limitation

transistor having a gate connected to one terminal of the resistor and a source connected to another terminal, wherein:

the limitation transistor has a drain connected to a transistor, connected as a diode, and conducting a current when an output current in the resistor exceeds a predetermined value in a first direction;



an additional duplicating transistor duplicates a current in the diode-connected transistor, a drain of the transistor being connected through an isolation transistor to the at least one first control terminal;

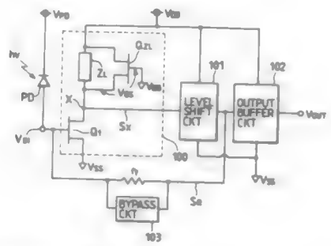
the isolation transistor is connected so as to be rendered conductive when the current in the limitation transistor exceeds a predetermined threshold.

5,363,064

PREAMPLIFIER FOR OPTICAL COMMUNICATION HAVING A GAIN CONTROL CIRCUIT

Yasuki Mikamura, Kanagawa, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 22, 1993, Ser. No. 50,621
Claims priority, application Japan, Apr. 24, 1992, 4-106682
Int. Cl.[5] H03F 3/08
U.S. Cl. 330—308 12 Claims



1. A preamplifier for optical communication that amplifies an input signal produced by a photodetector, comprising:

a phase-inverting amplifier including an input-state FET and a load thereof, for amplifying the input signal;

gain control means for increasing a bandwidth for the preamplifier so that the preamplifier bandwidth remains wider than a bandwidth of an optical receiver which includes the preamplifier, the increase being achieved by reducing an effective load resistance to lower an open-loop gain of the phase-inverting amplifier when a current flowing through the load exceeds a first predetermined value;

a feedback resistor provided in a negative feedback path of the phase-inverting amplifier; and

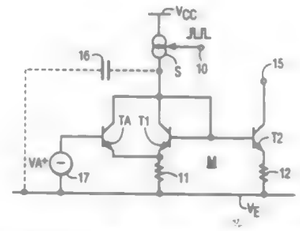
bypass means for reducing an effective feedback resistance when a feedback quantity exceeds a second predetermined value.

5,363,065

FREQUENCY SYNTHESIZER UTILIZING A FAST SWITCHING CURRENT MIRROR CIRCUIT AND APPARATUS COMPRISING SUCH A SYNTHESIZER

Yves Dufour, St Lo, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1993, Ser. No. 26,360
Claims priority, application France, Mar. 18, 1992, 92 03247
Int. Cl.[5] G05F 3/16; H03L 7/093
U.S. Cl. 331—17 12 Claims



1. A current mirror circuit having a power supply terminal (V_{cc}) and a reference voltage terminal (V_c) and which comprises:

a control branch which includes, connected in series between the power supply terminal and reference terminal,

a control current source for producing a control current which may be switched to either a preset value or a nominal zero value;

the main current path of a first transistor (T1) having a control electrode and reference electrode; and

a first balancing resistor connecting the reference electrode of the first transistor to the reference voltage terminal;

an output branch which includes a second transistor (T2) for producing an output current of a value in predetermined relation with the value of said control current, said second transistor having a control electrode and a reference electrode, the reference electrode thereof being connected to said reference voltage terminal by a second balancing resistor;

the control electrodes of the first and second transistors being interconnected together and coupled to said current source, and biassed by said control current so that each of said transistors is conductive when the control current has said preset value but becomes substantially non-conductive when the control current is switched to said nominal zero value thereof; and

a third transistor (TA,MA) having a current path connected in parallel with the main current path of said first transistor, said third transistor having a control electrode which is biassed to a fixed bias voltage such that the third transistor is substantially non-conductive when said first transistor is conductive but becomes conductive when said first transistor becomes substantially non-conductive.

5,363,066

FAST CMOS CHARGE PUMP CIRCUIT

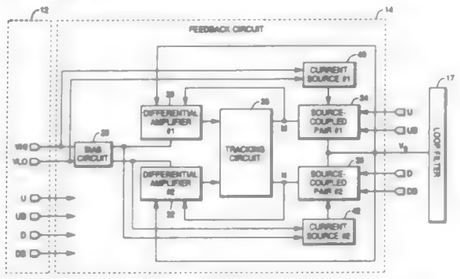
Dao-Long Chen, and Robert D. Waldron, both of Fort Collins, Colo., assignors to AT&T Global Information Solutions Company (FKA NCR Corporation), Dayton, Ohio

Filed Jun. 16, 1993, Ser. No. 78,880
Int. Cl.[5] H03L 7/089, 7/093
U.S. Cl. 331—17 10 Claims

8. A method for generating charge and discharge current signals for charging and discharging a loop filter in response to Up and Down signals from a phase detector in a phase-locked loop circuit comprising the step of:

(a) minimizing overshoots and undershoots in the charge and discharge current signals including the substeps of:

(a-1) diverting charge current to or away from the loop filter; and



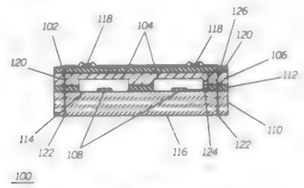
(a-2) diverting discharge current to or away from the loop filter.

5,363,067

MICROSTRIP ASSEMBLY

Mark A. Crandall, Sunrise; William J. Wingfield, Lauderhill, and Leng H. Ooi, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 19, 1993, Ser. No. 63,477
Int. Cl.[5] H03B 5/18; H01P 7/08
U.S. Cl. 331—107 SL 11 Claims



1. A microstrip assembly, comprising:

a first substrate having first and second surfaces, the second surface having at least one cavity area;

a second substrate having first and second surfaces, a transmission line disposed on the first surface and a ground plane disposed on the second surface;

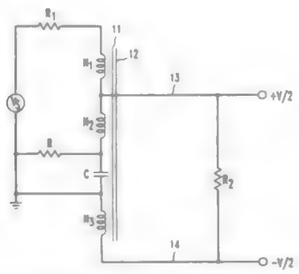
the first and second substrates are attached to each other such that the cavity area is substantially above the transmission line;

5,363,068

AUTOTRANSFORMER CAPABLE OF PASSING A DC SIGNAL AS WELL AS A BALANCED OUTPUT SIGNAL

William H. Georger, Township of Dover, Ocean County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 28, 1993, Ser. No. 84,041
Int. Cl.[5] H03H 5/00, 7/38
U.S. Cl. 333—25 7 Claims



1. A device comprising:

a primary winding wrapped around a core;

at least two secondary windings wrapped around the same core;

the primary and secondary windings being electrically coupled in series;

a capacitor in parallel with a resistor coupled between adjacent electrically connected ends of the two secondary windings;

a ground connection coupled to one end of the capacitor and resistor and one of said electrically connected ends of one of the secondary windings; and

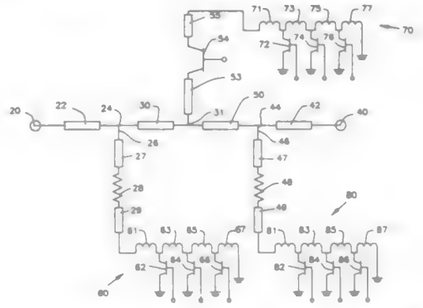
output leads coupled to ends of the secondary windings opposite to the electrically connected ends to provide a balanced output voltage for video signals above a predetermined frequency.

5,363,069

ELECTRONICALLY TUNABLE GAIN EQUALIZER

Virender K. Sadhir; David A. Willems, both of Roanoke, Va., and Kenneth S. Karsten, Jr., Bethlehem, Pa., assignors to ITT Corporation, New York, N.Y.

Filed Apr. 5, 1993, Ser. No. 42,548
The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.
Int. Cl.[5] H03H 7/03
U.S. Cl. 333—28 R 16 Claims



1. An electrically tunable equalizer circuit for RF frequencies of various attenuation profiles, wherein said tunable equalizer has a predetermined center frequency, said tunable equalizer circuit comprising:

a main microstrip transmission line having an RF input port and an RF output port;

a stub tuner disposed proximately centrally on said main microstrip transmission line;

shifting means for selectively shifting said predetermined center frequency to compensate for said various attenuation profiles; and

variable resistive means contained within said shifting means, wherein said variable resistive means is coupled to said stub tuner for providing a voltage variable resistance, said various resistive means being adapted to de-Q said stub tuner and thereby selectively determine an attenuation profile for said equalizer circuit.

5,363,070

ATTENUATOR HAVING PHASE BETWEEN INPUT AND OUTPUT SIGNALS INDEPENDENT OF ATTENUATION

Masao Arimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1993, Ser. No. 162,900
Claims priority, application Japan, Dec. 9, 1992, 4-352718
Int. Cl.[5] H03H 7/24, 7/48
U.S. Cl. 333—100 6 Claims

1. An attenuator comprising:

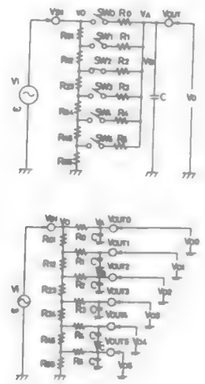
an input node to which an input signal to be attenuated is input;

a plurality of first resistors connected at connection nodes in series between said input node as a first of said connection nodes and a second node;

a plurality of voltage output nodes including a first voltage output node coupled to said input node and other voltage output nodes respectively coupled to respective connection nodes of said plurality of first resistors;

a plurality of switches, each switch being coupled to a respective voltage output node and a respective connection node;

a plurality of second resistors, each second resistor being connected in series to one of said switches between a



connection node and an output node from which an attenuated output signal is taken, one end of each of said plurality of series connections of said switches and second resistors being commonly connected at an output node; and

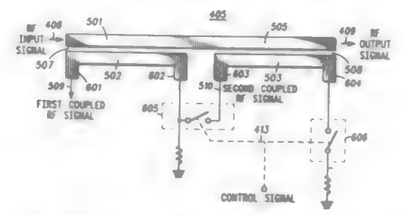
a load capacitance connected between said output node and said second node wherein said respective second resistors have resistances determined so that an output signal at said output node has a phase relative to an input signal that is determined by a dividing ratio of said first resistors and said load capacitance independent of signal attenuation selected by closing one of said switches.

5,363,071

APPARATUS AND METHOD FOR VARYING THE COUPLING OF A RADIO FREQUENCY SIGNAL

Dale G. Schwent, Hoffman Estates, and Rashid M. Osmani, Carol Stream, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1993, Ser. No. 55,900
Int. Cl.[5] H01P 5/18
U.S. Cl. 333—111 5 Claims



1. A radio frequency (RF) directional coupler for use with a transmission unit that produces an RF signal at a plurality of predetermined power levels, comprising:

a primary RF transmission element having an input end for receiving an RF signal and an output end for transmitting the RF signal;

a first directional coupling element for coupling a portion of the RF signal from the primary transmission element to produce a first coupled RF signal at a first end of the first directional coupling element, the second end of the first coupling directional element coupled to ground;

a second directional coupling element for coupling a portion of the RF signal from the primary transmission element to produce a second coupled RF signal at a first end of the second directional coupling element, the second end of the second directional coupling element coupled to ground;

a first switch, operably coupled to the first directional coupling element and the second directional coupling element, wherein the first switch selectively couples the second coupled RF signal to the second end of the first directional coupling element responsive to a first predetermined power level and selectively decouples the second coupled RF signal from the second end of the first directional coupling element responsive to a second predetermined power level; and

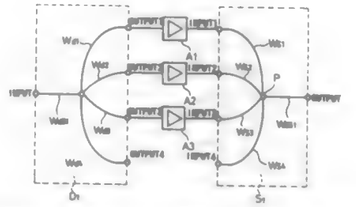
a second switch, operably coupled to the second directional coupling element, wherein the second switch selectively couples the second end of the second directional coupling element to ground responsive to the first predetermined power level and selectively decouples the second end of the second directional coupling element from ground responsive to the second predetermined power level.

5,363,072

HIGH-FREQUENCY POWER DIVIDER-COMBINER

Hironori Sakamoto; Akira Ito, both of Tokyo, and Toshio Nojima, Yokosuka, all of Japan, assignors to Japan Radio Co., Ltd.; Nippon Telephone & Telegraph Corporation and NTT Mobile Communication Network Inc., all of Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,171
Claims priority, application Japan, Oct. 29, 1991, 3-283315
Int. Cl.[5] H01P 5/12
U.S. Cl. 333—125 7 Claims



3. A power divider-combiner for use in a high-frequency power amplifying apparatus which includes a plurality of power amplifiers operated in parallel, the number of said power amplifiers being changeable between M and N, where M and N are positive integers and where N is greater than M, to control a total output power of said power amplifiers without stopping operation of said amplifiers, said power divider-combiner comprising:

a power dividing circuit including a first impedance transformer and N output terminals for supplying respective input signals to said plurality of power amplifiers, wherein said N output terminals branch from an output terminal of said first impedance transformer, and said first impedance transformer is arranged such that a power loss in said power dividing circuit is minimized when the number of division of power is an intermediate number K which is an integer between said M and N; and

a power combining circuit including N input terminals for receiving respective output signals from said plurality of power amplifiers, and a second impedance transformer, wherein said N input terminals are connected to an input terminal of said second impedance transformer, and said second impedance transformer is arranged such that a power loss in said power combining circuit is minimized

when the number of combinations is said intermediate number K;

said power dividing circuit further including N output impedance transformers having respective input terminals which are connected with said output terminal of said first impedance transformer, and N transmission lines respectively coupled between output terminals of said N output impedance transformers and said N output terminals, each of said N output impedance transformers being arranged such that a power loss in said power dividing circuit is minimized when the number of divisions is said intermediate number K, and each of said N output transmission lines having a length according to an operating frequency of said power amplifiers; and

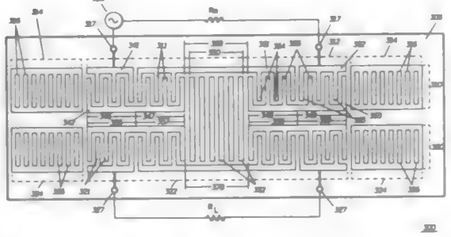
said power combining circuit further including N input transmission lines each having one end respectively connected with said N input terminals, and N input impedance transformers respectively coupled between other ends of said N input transmission lines and said input terminal of said second impedance transformer, each of said N input transmission lines having a length according to said operating frequency of said power amplifiers, and each of said N input impedance transformers being arranged such that a power loss in said power combining circuit is minimized when the number of combinations is said intermediate number K.

5,363,073

SAW RESONATOR FILTER WITH A MULTISTRIP COUPLER DISPOSED IN THE RESONATOR GAPS

Jr. Higgins, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 963,191
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—195 **14 Claims**



10. A radio, comprising:

a radio receiver means for receiving communication signals, said receiver means including a surface acoustic wave structure, comprising:

at least two SAW resonators being positioned on two substantially separate and parallel tracks, each resonator having a resonant surface acoustic wave structure including at least two conductive portions with a plurality of equally spaced interdigitated fingers, said conductive portions being separated from each other by a resonator gap; and

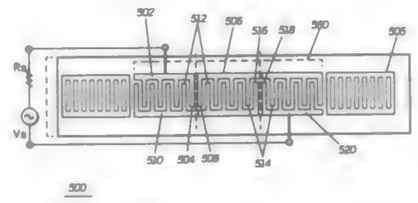
a multistrip coupler, disposed on said piezoelectric substrate, for acoustically coupling said resonators including a plurality of equally spaced parallel conductive strips extending between each corresponding resonator gap, the multistrip coupler having opposing sides, said conductive strip being spaced to provide an omni-directional coupling between said resonators such that there is an acoustic propagation track from the opposing sides of said multistrip coupler along the conductive portions of the resonators.

5,363,074

SAW STRUCTURE HAVING SERIALLY COUPLED TRANSDUCERS WITH OVERLAPPING FINGERS

Robert J. Higgins, Jr., Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 963,190
Int. Cl.[5] H03H *9/64*
U.S. Cl. 333—195 **4 Claims**



1. A radio, comprising:

a radio receiver means for receiving communication signals, said receiver means including a surface acoustic wave structure, comprising:

a piezoelectric substrate; and

a single port SAW transducer having conductive electrode patterns disposed on said piezoelectric substrate, said SAW transducer comprising first, second, and third sub-transducers acoustically coupled in a common acoustic track, wherein:

the first sub-transducer comprises a first conductive electrode pattern having a first set of open-ended fingers, and a second conductive electrode pattern having a second set of open-ended fingers; the second sub-transducer comprises the second conductive electrode pattern, and a third conductive electrode pattern having a third set of open-ended fingers; and the third sub-transducer comprises the third conductive electrode pattern, and a fourth conductive electrode pattern having a fourth set of open-ended fingers; wherein the first sub-transducer is electrically coupled to the second sub-transducer, and the second sub-transducer is electrically coupled to the third sub-transducer; and wherein at least one of the open-ended fingers of the first conductive pattern and at least one of the open-ended fingers of the third conductive pattern are directly positioned adjacent each other and also positioned between a pair of successive open-ended fingers of the second conductive pattern.

5,363,075

MULTIPLE LAYER MICROWAVE INTEGRATED CIRCUIT MODULE CONNECTOR ASSEMBLY

Richard Fanucchi, Fountain Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

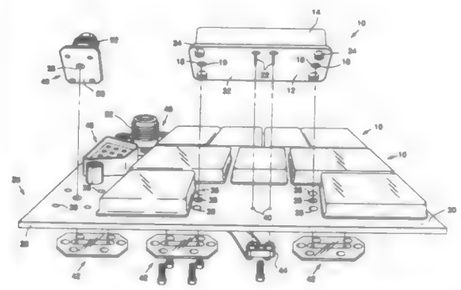
Filed Dec. 3, 1992, Ser. No. 985,054
Int. Cl.[5] H01P *5/00;* **H05K** *5/00*
U.S. Cl. 333—246 **39 Claims**

1. A multiple layer connector assembly for interconnecting microwave integrated circuit modules wherein each module has at least one microwave interconnection pin extending from a mounting surface of the module comprising:

a groundplane having a mounting surface for supporting the mounting surfaces of the modules, the groundplane having a plurality of holes for receiving the interconnection pins of the modules;

a conducting layer on the side of the ground plane opposite the mounting surface of the groundplane for receiving microwave signals from the interconnection pins of each module and for communicating signals between interconnection pins of different modules, the conducting layer having a predetermined impedance; and

a plurality of resilient bellows each having a first end oriented toward the groundplane mounting surface and a second end oriented toward the conducting layer and wherein each bellows is adapted to receive an interconnection pin at the first end and to contact the conducting



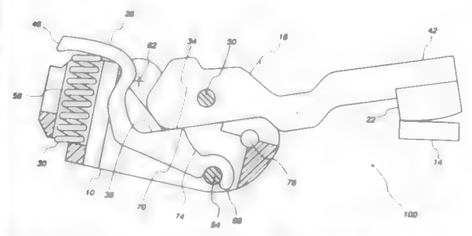
layer at the second end so that when an interconnection pin is urged against the respective bellows first end, the bellows second end is urged against the conducting layer, establishing an electromagnetic connection between the respective interconnection pin and the conducting layer.

5,363,076

CIRCUIT BREAKER HAVING SPRING BIASED BLADE SUSPENSION

Joel L. Miller, Cedar Rapids; Teresa I. Hood, Coralville, and John M. Winter, Cedar Rapids, all of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Apr. 28, 1993, Ser. No. 54,360
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **19 Claims**



1. A blade suspension assembly for a circuit breaker, comprising:

a first electrical contact;

an elongated contact arm having opposing ends and a second electrical contact adjacent one of the opposing ends for rotating about a pivot axis between a contacts-closed position and at least one contacts-open position with respect to said first electrical contact;

elongated lever means having opposing ends and a contoured surface therebetween, said contoured surface for supporting the elongated contact arm adjacent the other of said opposing ends of the elongated contact arm;

spring means for exerting a torque at one end of the elongated lever means so that the contoured surface exerts a force at the other of said opposing ends of the elongated contact arm about the pivot axis in the contacts-closed position and maintains the elongated contact arm in said at least one contacts-open position; and

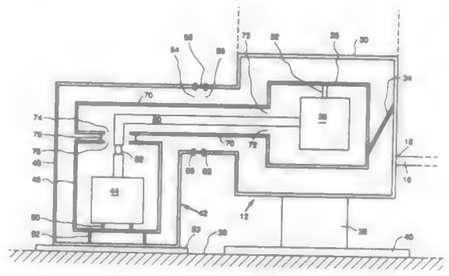
wherein said spring means exerts a force along a line of direction which does not intercept said elongated contact arm.

5,363,077

MRI MAGNET HAVING A VIBRATION-ISOLATED CRYOCOOLER

Kenneth G. Herd, Niskayuna; Evangelos T. Laskaris, Schenectady, and Thompson Paul S., Stephentown, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 31, 1994, Ser. No. 188,878
Int. Cl.[5] H01F *1/00;* **F25B** *19/00*
U.S. Cl. 335—216 **10 Claims**



1. A magnetic resonance imaging magnet comprising:

a) a cryocooler penetration assembly including:

(1) a thermal station;

(2) a thermal box generally spaced apart from and generally surrounding said thermal station, said thermal box having a thermal box opening; and

(3) a vacuum vessel generally spaced apart from and generally surrounding said thermal box, said vacuum vessel having a vacuum vessel opening;

b) a first superconducting coil assembly including:

(1) a magnet cartridge;

(2) a thermal shield generally spaced apart from and generally surrounding said magnet cartridge, said thermal shield having a thermal shield opening; and

(3) a vacuum enclosure generally spaced apart from and generally surrounding said thermal shield, said vacuum enclosure having a vacuum enclosure opening disposed proximate said vacuum vessel opening;

c) a flexible bellows surrounding said vacuum vessel opening and said vacuum enclosure opening and hermetically connecting said vacuum vessel and said vacuum enclosure;

d) a first rigid thermal busbar surrounding said thermal shield opening, rigidly attached to said thermal shield, and having an orifice proximate said thermal box opening;

e) a first flexible thermal busbar thermally connecting said thermal box and said first rigid thermal busbar;

f) a second rigid thermal busbar rigidly attached to said magnet cartridge; and

g) a second flexible thermal busbar thermally connecting said second rigid thermal busbar and said thermal station.

5,363,078

HOMOGENEOUS FIELD MAGNET HAVING POLE SHOES WITH POLE PIECE MEANS WHICH ARE SPACED OVER A CORRECTION AIR GAP

Günter Ries, Erlangen, and Horst Siebold, Effeltrich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 9, 1994, Ser. No. 209,031
Claims priority, application Germany, Mar. 15, 1993, 4308208.4
Int. Cl.[5] G01R *33/46;* **H01F** *7/06*
U.S. Cl. 335—297 **20 Claims**

1. A homogeneous field magnet comprising:

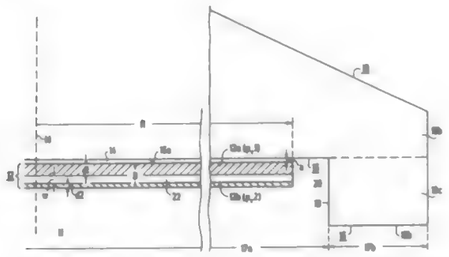
a) a yoke conducting magnetic flux;

b) two opposing pole shoes being magnetically coupled to the yoke, wherein between the two opposing pole shoes a useful volume having a magnetic field of high homogene-

ity is defined, and each pole shoe has a base part facing the yoke; and

d) two pole piece means, each being spaced from the base part of one of the pole shoes by a narrow correction gap, wherein each of said pole piece means comprises:

(i) a first pole piece element facing the base part, and being made of a first material with a first relative permeability; and



(ii) a second pole piece element facing the useful volume, and being made of a second material with a second relative permeability, wherein the first and second pole piece elements are disposed parallel to each other and are spaced apart by a gap of a predetermined width, the first relative permeability is smaller by at least a factor of 5 than the second relative permeability, and the second relative permeability is at least 10,000.

5,363,079

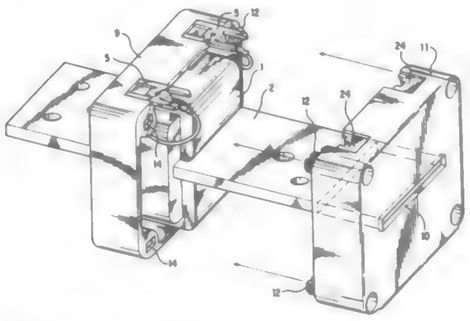
PROTECTIVE SNAP-TOGETHER ENCLOSURE FOR CURRENT TRANSFORMERS

Patrick J. Zawada, Menomonee Falls, Wis.; Peter D. Raine, and Benjamin C. Lindo, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.

Continuation of Ser. No. 669,827, Mar. 15, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 35,538

Int. Cl.[5] H01F *27/02*

U.S. Cl. 336—92 **10 Claims**



1. A transformer assembly comprising:

a current carrying means;

a transformer coupled with said current carrying means;

a plurality of wire leads extending from said transformer;

a first housing member having a hollow cavity therein, said first housing member also having an opening therein for section of said current carrying means;

a second housing member having a hollow cavity therein, said second housing member also having an opening therein for insertion of said current carrying means;

male and female securing means integrally formed on said first housing member, corresponding female and male securing means integrally formed on said second housing member, corresponding ones of said integral male and female securing means adapted to engage in snap-fit fashion so as to removably secure said first and second housing members without any additional securing means, when said housing members are forcibly brought into mutual contact, whereby said hollow cavities in said housing members in combination define a protective encapsulating enclosure for said transformer, said integral male and female securing means further being adapted to be forcibly disengaged from said snap-fit engagement in order to release the secured housing members and provide access to said transformer enclosed therein; and

a first and second wire terminal disposed between said first and second housing members for electrically coupling external wiring to said plurality of wire leads extending from said transformer, each of said first and second wire terminals having at least one internal prong and at least one external prong integral thereto which straddle either side of a wall of said first and second housing members, when said first and second housing members are brought in mutual contact, and one of said at least one internal prong being electrically coupled to one of said plurality of wire leads.

5,363,080

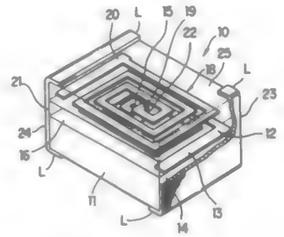
HIGH ACCURACY SURFACE MOUNT INDUCTOR

Barry N. Breen, Givat Ze'ev, Israel, assignor to AVX Corporation, New York, N.Y.

Filed Dec. 27, 1991, Ser. No. 813,789

Int. Cl.[5] H01F *15/10, 27/30*

U.S. Cl. 336—192 **7 Claims**



1. A high accuracy surface mount inductor comprising in combination:

(1) a flat insulating rectangular substrate having first and second opposed end portions, an upper planar surface and a lower planar surface;

(2) a first, non-magnetic insulating layer covering the upper planar surface, the first insulating layer having a first channel defining a first planar coil pattern having a spiral configuration, an outermost coil portion and an innermost terminus at a generally central location of said substrate;

(3) a first planar, metal coil substantially filling said first channel to a predetermined depth and conforming to the coil pattern defined by said first channel, said first coil including an outermost portion and an innermost terminus;

(4) a second, non-magnetic insulating layer covering said first insulating layer and said first coil, a via aperture being formed through the thickness of said second insulating layer in registry with said innermost terminus of said first coil;

(5) a third, non-magnetic insulating layer covering said second insulating layer and having a second channel defining a second planar coil pattern having a spiral configuration, an outermost coil portion and an innermost terminus in registry with said via aperture;

(6) a second planar, metal coil substantially filling said second channel to a predetermined depth and conforming to the coil pattern defined by the second channel, said second channel including an outermost portion and an innermost terminus in registry with said via aperture;

(7) conductor means in said via aperture connecting the innermost termini of said first and second coils;

(8) a cover layer of non-magnetic, insulating material formed over said third insulating layer and second coil; and

(9) first and second terminations covering said first and second end portions, respectively, of said substrate and said insulating layers and electrically connected to said first and second coils at the locations of said outermost coil portions, said terminations including contact portions overlying the cover layer and the lower surface of the substrate.

5,363,081

LINE TRANSFORMER AND MANUFACTURING PROCESS THEREOF

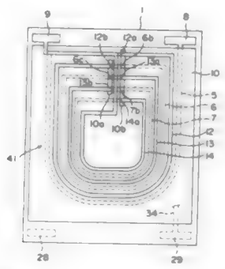
Masahiro Bando; Katsuhiro Misaki, and Toshimi Kaneko, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 8, 1993, Ser. No. 87,287

Claims priority, application Japan, Jul. 9, 1992, 4-182514

Int. Cl.[5] H01F *27/28, 41/04*

U.S. Cl. 336—200 **10 Claims**



1. A line transformer comprising:

an insulating substrate having two major surfaces;

a primary coil section provided on one surface of the insulating substrate; and

a secondary coil section provided on the other surface of the insulating substrate;

wherein each of the primary and the secondary coil sections comprises a first coil pattern layer having a plurality of conductors, a second coil pattern layer having a plurality of conductors and an insulating layer between the first and the second coil pattern layers, and the conductors of the first coil pattern layer and the conductors of the second coil pattern layer are electrically connected alternately via a hole made in the insulating layer.

5,363,082

FLIP CHIP MICROFUSE

Leon Gurevich, Grover, Mo., assignor to Rapid Development Services, Inc., Ellisville, Mo.

Filed Oct. 27, 1993, Ser. No. 141,575

Int. Cl.[5] H01H *85/143*

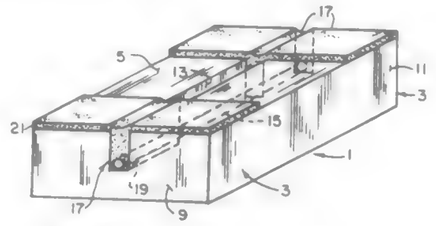
U.S. Cl. 337—227 **24 Claims**

1. A fuse comprising:

a body made of an electrical insulating material and having a top, a bottom, a front , a back, and sides; the body defining at least one elongate groove in the top and extending between said front and said back;

a fuse element received in said at least one groove in proximity to a bottom of said at least one groove, said fuse element extending substantially the full length of said at least one groove;

a pair of spaced metal fillings defining terminals received in said at least one groove to be in mechanical and electrical contact with said fuse element to secure said fuse element in said at least one groove; and



a seal of dielectric material extending between said terminals in said at least one groove.

5,363,083

TEMPERATURE RESPONSIVE, ELECTRIC OVERCURRENT PROTECTION MODULE

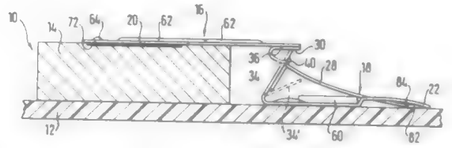
Kurt Fischer, Altdorf, Germany, assignor to Roederstein Spezialfabriken fuer Bauelemente der Elektronik und Kondensatoren der Starkstromtechnik GmbH., Landshut, Germany

Filed Jun. 11, 1993, Ser. No. 75,654

Claims priority, application Germany, Jun. 12, 1992, 4219304

Int. Cl.[5] H01H *37/76*

U.S. Cl. 337—407 **11 Claims**



1. A temperature responsive electric overcurrent protection module comprising:

a printed circuit board including an electric circuit;

a PTC resistor having first and second end faces and a thickness, said first end face being coupled to said printed circuit board;

a conductive plate in said electric circuit, thermally conductively attached to said second end face and having a portion projecting beyond an edge of said PTC resistor, said projecting portion defining a contact location on a side thereof facing said printed circuit board;

a conductive spring arm in said electric circuit having first and second, spaced-apart ends, said first end being secured to said printed circuit board and said second end being spaced from said conductive plate and substantially overlying said contact location thereon when said spring arm is in its relaxed condition; and

solder material electrically and mechanically coupling said second end of said spring arm at said contact location to said conductive plate so that current can flow between said conductive plate and said spring arm;

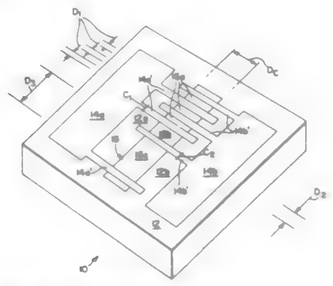
whereby a relatively minor overcurrent flow is controlled by said PTC resistor and a relatively major current overflow results in a heating of said PTC resistor, and thereby of said conductive plate, and causes said solder material to melt to permit said spring arm to return to its relaxed condition in which said second end of said spring arm is spaced from said conductive plate and further current flow between said conductive plate and said spring arm is prevented.

5,363,084

FILM RESISTORS HAVING TRIMMABLE ELECTRODES

Philip R. Swinehart, Columbus, Ohio, assignor to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Feb. 26, 1993, Ser. No. 24,273
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—308 24 Claims



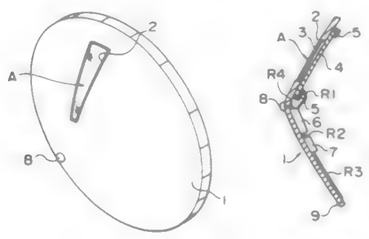
1. A resistor device comprising:
an electrical insulating substrate;
a pair of separated electrically conductive electrodes on a surface of said substrate;
an electrical resistance film formed on said substrate surface between said separated electrodes and having a width-wide dimension such that regions of said substrate surface are interposed between said film and each of said electrodes; and
a plurality of electrically conductive fingers each having one end integral with one of said electrodes and a terminal end which is in electrical contact with said film, said fingers between said one and terminal ends thereof electrically bridging a respective one of said interposed substrate surface regions; wherein
at least one of said electrically conductive fingers is severed at a location coextensive with said respective one of said interposed substrate surface regions without disturbing said electrical resistance film to achieve a selected resistance value for said resistor device.

5,363,085

WHEEL MARKER FOR VEHICLE

Toshiyuki Terada, Tokyo, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 929,176
Claims priority, application Japan, Aug. 20, 1991, 3-72992[U]
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—425.5 10 Claims



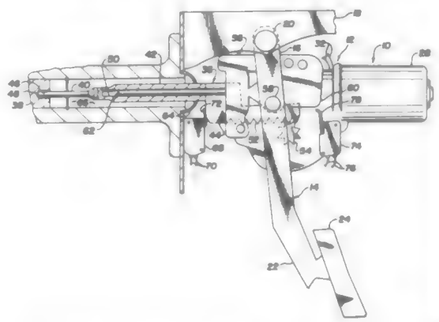
1. A wheel marker for a vehicle including a solar cell and disposed on a wheel cap to be mounted on a wheel of a vehicle, comprising:
said wheel cap having an exposed outer surface and an inner surface facing said wheel,
a light emitting section radially extending toward a center of said wheel cap,
a solar cell electricity generating section arranged around the central part of said wheel cap on the inner surface and including an opening in the wheel cap to receive sunshine in the day time, said solar cell electricity generating section including a solar cell,
a brightness detecting photosensor disposed at the center of said wheel cap, said brightness detecting photosensor being located on the outer surface of said wheel cap,
an inverter located on the inner surface of said wheel cap, and
a battery serving as a power source for said light emitting section, photosensor and inverter, said battery being located on the inner surface of said wheel cap and being charged by said solar cell,
said light emitting section, photosensor, inverter and battery being electrically connected together so as to cause the light emitting section to change its light output with changes in the light detected by the photosensor.

5,363,086

MOTOR VEHICLE ANTI-THEFT DEVICE

Jose L. Rios, 8801 Glen Crest, #6126, Houston, Tex. 77061

Filed Oct. 4, 1991, Ser. No. 771,648
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—426 18 Claims



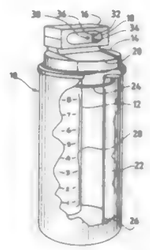
1. An anti-theft system for preventing the theft of a vehicle having brakes used for stopping the vehicle, comprising: brake override means connected to the vehicle for selectively moving the brakes of the vehicle between an engaged and locked position to prevent the vehicle from being moved and a disengaged position to allow the vehicle to be moved; remote controlled activating means mounted on the vehicle for activating said brake override means to move the brakes between the engaged and locked position and the disengaged position; remote controlling means provided exteriorly of the vehicle for activating said remote controlled activating means to prevent movement of the vehicle when an authorized user so desires and to allow movement of the vehicle when the authorized user so desires; an electrical system to control the operations of said brake override means; and an electrical drive motor means operably connected to said electrical system for moving the brakes between the engaged and disengaged positions and for locking the brakes of the vehicle in the engaged position after the brakes of the vehicle have been moved to the engaged position.

5,363,087

APPARATUS FOR PROVIDING A REGENERANT SOLUTION TO A REGENERABLE LIQUID TREATMENT MEDIUM BED

James Johannsen, Minnetonka; Ralph A. Larson, Bayport, and Jeffrey A. Zimmerman, Blaine, all of Minn., assignors to Ecowater Systems, Inc., Woodbury, Minn.

Filed Jul. 20, 1993, Ser. No. 94,282
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—612 8 Claims



1. An apparatus for providing a regeneration solution to a regenerable liquid treatment medium bed, said apparatus comprising:
an electronic regeneration control circuit for controlling the regeneration of said regenerable liquid treatment medium bed,
a container in which to make regeneration solution, said container having a bottom and sidewalls,
a quantity of pieces of a solid material used to form a regenerate solution when dissolved in a predetermined quantity of a liquid received in said container, said quantity of pieces of solid material having a top surface,
indicia associated with said container, said indicia being spaced apart in the vertical direction, said indicia being observable with respect to said top surface of the quantity of pieces of said solid material received in said container,
said electronic control circuit including manual input means for entering the observed indicia most closely corresponding to said top surface of said quantity of pieces of solid material, so as to store in said electronic control circuit an indication of the amount of said material available for creating regeneration solution,
said electronic control circuit including means for reducing said electronically stored indication of the amount of solid material available for creating regeneration solution each time a quantity of said regenerate solution is used to regenerate said liquid treatment medium bed,
alarm means responsive to said electronically stored indication of the amount of solid material available for creating regeneration solution to provide an alarm when based on said observed top surface of the quantity of pieces of said solid material, and usage, less than a predetermined amount of solid material remains in said container.

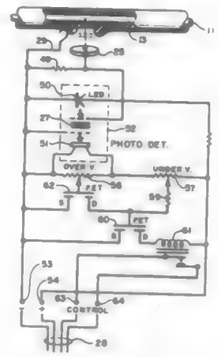
5,363,088

VOLTAGE MONITOR FOR ALTERNATING CURRENT POWER SYSTEM

Edmund O. Schweitzer, Jr., 2433 Center St., Northbrook, Ill. 60062

Filed Dec. 21, 1992, Ser. No. 994,624
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—660 15 Claims

1. A voltage monitor for monitoring the voltage level of an AC power system having a range of acceptable voltage levels, comprising:
a light source;
a photodetector responsive to light emitted by said light source;
a high impedance optical shutter device comprising a pair of electrodes disposed in operative association with a layer of voltage-responsive light controlling material;
said high impedance optical shutter device being arranged between said light source and said photodetector whereby the intensity of light emitted by said light source and impinging on said photodetector varies as a function of the transmissivity of said optical shutter;
first circuit means for capacitively coupling said electrodes



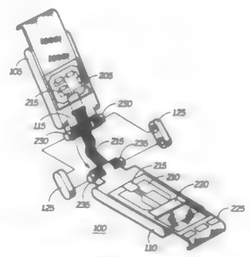
of said high impedance optical shutter device to the AC power system whereby the transmissivity of said device to light varies as a function of the voltage level of the system; and
second circuit means including said photodetector and responsive to the intensity of light impinging on said photodetector for producing an output signal upon the voltage level of the AC power system falling outside of the range of acceptable voltage levels.

5,363,089

ELECTRONIC DEVICE HAVING MULTI-POSITION HINGED MECHANISM

Michael P. Goldenberg, Golden, Colo., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1992, Ser. No. 950,338
Int. Cl.[5] H04M *1/02*
U.S. Cl. 340—825.44 14 Claims



1. A hinged electronic device comprising:
a first body portion having a first end formed about a first axis, the first body portion including a first electronic circuit disposed therein, wherein the first end is substantially cylindrical, includes a first geared portion having a first plurality of cogs formed thereon substantially parallel to the first axis, and has a first cylindrical post extending from a side thereof about the first axis, the first cylindrical post having a groove formed therein about the first axis;
a second body portion having a second end formed about a second axis, the second body portion including a second electronic circuit disposed therein, wherein the second end is substantially cylindrical, includes a second geared

portion having a second plurality of cogs formed thereon substantially parallel to the first axis, and has a second cylindrical post extending from a side thereof abut the second axis, the second cylindrical post having a groove formed therein about the second axis;

coupling means for electrically coupling the first and second electronic circuits; and

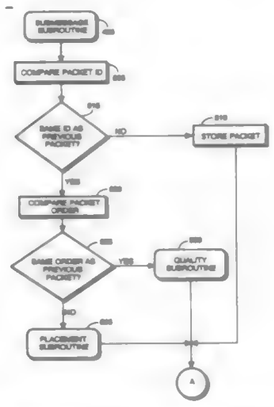
an elastomeric band disposed within the grooves formed in the first and second cylindrical posts for movably securing the first cylindrical post to the second cylindrical post such that the first and second pluralities of cogs mesh when the first body portion is secured to the second body portion by the first and second cylindrical posts.

5,363,090

METHOD AND APPARATUS FOR COMBINING SUBMESSAGES OF A MESSAGE TO FORM THE COMPLETE MESSAGE

Gregory L. Cannon, Coconut Creek; Gregory W. Fuller, Boca Raton; William J. Macko, West Palm Beach, and Robert D. Fennell, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 23, 1992, Ser. No. 917,878
Int. Cl.[5] H04Q *1/00*; G08B *5/22*
U.S. Cl. 340—825.44 13 Claims



1. A radio frequency (RF) communications device for receiving lengthy messages, comprising:

receiving means for receiving an RF signal comprising a plurality of messages, the plurality of messages comprising header information and submessages, wherein each submessage is a portion of a lengthy message;

storing means coupled to the receiving means for storing the submessages and the header information corresponding to each submessage;

comparing means coupled to the storing means and the receiving means for comparing the header information corresponding to each received submessage to the header information corresponding to previously stored submessages;

error detection means coupled to the storing means and the comparing means for determining the quality of each received submessage and the previously stored submessages, wherein the error detection means is activated in response to the comparing means determining that the header information corresponding to a received submessage is substantially similar to the header information corresponding to a previously stored submessage, and wherein the error detection means comprises:

means for discarding the received submessage if the previously stored submessage is of better quality than the received submessage; and

means for replacing the previously stored submessage with the received submessage if the received submessage is of better quality than the previously stored submessage; and

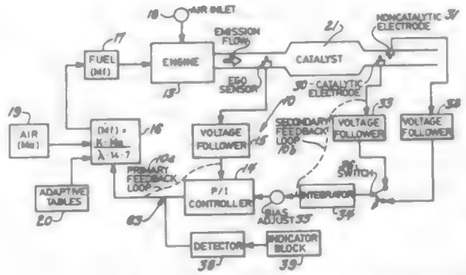
combining means coupled to the storing means and the receiving means for combining the submessages to form the lengthy message in response to the header information.

5,363,091

CATALYST MONITORING USING EGO SENSORS

Allan J. Kotwicki, Sterling Heights, and Douglas R. Hamburg, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 7, 1991, Ser. No. 741,881
Int. Cl.[5] B60Q *1/00*; F01N *3/00*
U.S. Cl. 340—439 24 Claims



1. A method of detecting malfunction or degradation of a primary gas mixture equilibrator, such as a device to fully catalytically convert substantially all exhaust gases of a flow, by the steps of:

(a) placing a pair of oxygen sensors in a common flow of gases exiting from said gas mixture equilibrator at essentially the same location to provide a pair of signals, said sensors differing in that one sensor has an electrode, exposed to such flow, which is designated to be substantially more catalytic than the design of the other sensor electrode exposed to such flow; and

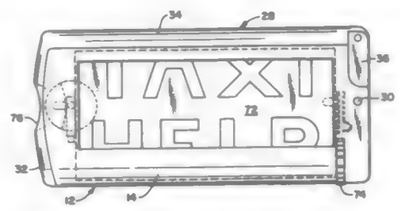
(b) determining if there is a predetermined difference between the signals of said sensors, indicating that the sensor having a more catalytic design was able to more fully equilibrate the flow, such difference meaning there is malfunction or degradation of the primary equilibrator.

5,363,092

PORTABLE SIGNALING DEVICE

Jovanka Starchevich, 138 Sullivan St., New York, N.Y. 10012

Filed May 25, 1993, Ser. No. 67,557
Int. Cl.[5] B60Q *7/00*
U.S. Cl. 340—473 23 Claims



1. A portable signaling device comprising:

a housing;

a handle member pivotably attached to said housing at a pivot point, said handle member including a partially circular portion having a center of curvature at said pivot point;

a lamp;

a rotary carrier rotatably mounted to said housing, said lamp being fixed to said carrier, said carrier having an arcuate part drivingly engageable with said circular portion at least during a portion of a pivoting motion of said handle member about said pivot point;

an electric power supply in said housing; and

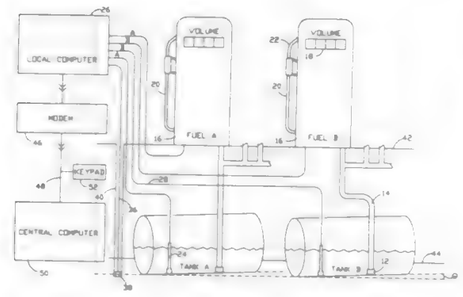
means for operatively connecting said power supply to said lamp at only a plurality of different angular positions of said carrier with respect to said housing.

5,363,093

METHOD AND APPARATUS FOR CONTINUOUS TANK MONITORING

Barry N. Williams, Rosharan, and Glenn A. Kauffmann, Pasadena, both of Tex., assignors to Tanknology Corporation International, Houston, Tex.

Filed Aug. 11, 1992, Ser. No. 928,278
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—605 12 Claims



1. A method of continuously monitoring the level of the liquid in a liquid dispensing system including an underground storage tank and a pump including a dispenser for providing an output indicative of the volume of liquid pumped out of the tank comprising the steps of:

(a) monitoring the depth of the liquid in the tank;

(b) calculating the volume of the liquid stored in the tank from the depth of the liquid at selected time increments over a predetermined period of time;

(c) correcting the calculated volume at each time increment for any variation between actual volume and calculated volume resulting from conditions external to the tank;

(d) comparing any change in the corrected volume at each time increment over the predetermined period of time to the volume of liquid dispensed from the tank;

(e) producing a warning signal if the discrepancy between change in corrected volume and volume dispensed exceeds a predetermined limit;

(f) if the change in volume and the volume dispensed does not exceed the predetermined limit, calculating a correlation coefficient between the change in volume and the volume dispensed and storing the correlation coefficient to memory;

(g) repeating steps (a)–(f) over successive predetermined periods of time, storing the correlation coefficient from each period; and

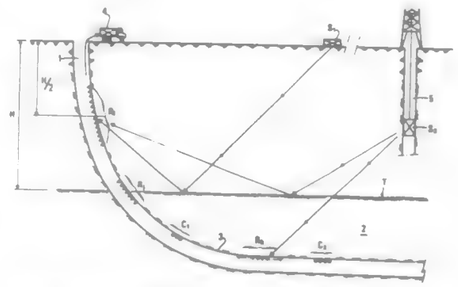
(h) comparing the stored correlation coefficients from each time period.

5,363,094

STATIONARY SYSTEM FOR THE ACTIVE AND/OR PASSIVE MONITORING OF AN UNDERGROUND DEPOSIT

Philippe Staron, Mennecy; Jacques Cretin, Le Chesnay; Claude Beauducel, Henonville, and Thierry Lepage, Noisy Le Roi, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Dec. 16, 1992, Ser. No. 991,594
Claims priority, application France, Dec. 16, 1991, 91 15691; Mar. 23, 1992, 92 03575
Int. Cl.[5] G01V *1/40*
U.S. Cl. 340—854.6 34 Claims



1. A system for monitoring of an underground deposit by an intervention device disposed at a fixed position in at least one well passing through said deposit, said intervention device including:

at least one intervention assembly provided with a set function;

at least one cable for linking a surface installation to each intervention assembly; and

each intervention assembly having a user module, a monitoring module permanently connected to said at least one cable and provided with a decoder for decoding address signals, and a switch controlled by said decoder for intermittently electrically connecting said at least one cable to each user module addressed by the address signal to at least one of electrical power and bidirectionally transmitted signals during a time interval that the user module is connected to said at least one cable by said switch.

5,363,095

DOWNHOLE TELEMETRY SYSTEM

Randy A. Normann, and Emil R. Kadlec, both of Albuquerque, N. Mex., assignors to Sandai Corporation, Albuquerque, N. Mex.

Filed Jun. 18, 1993, Ser. No. 79,306
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—854.7 18 Claims

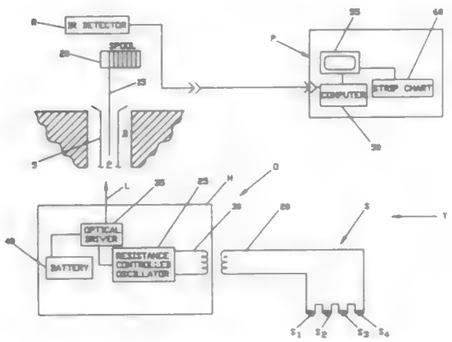
1. A downhole telemetry system for communicating drilling information to the surface during drilling operations, comprising:

a) sensing means mounted with a drill bit for monitoring at least one operating parameter of the drill bit and for generating a pulse modulated signal representative thereof;

b) telemetry means the transforming and optically communicating the signal up a borehole within the ambient atmosphere and without the use of fiber optic cables; and

c) a housing having an interior cavity containing said telemetry means and means for positioning the housing to a

circumferential positioning groove located within the interior passageway of a drill pipe, such that the housing



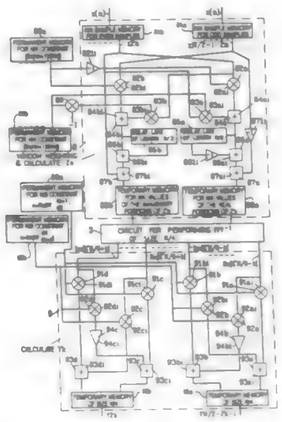
moves in concert with the downward motion of the drill pipe.

5,363,096

METHOD AND APPARATUS FOR ENCODING-DECODING A DIGITAL SIGNAL

Pierre Duhamel, Issy les Moulineaux, and Yannick Mahieux, Begard, both of France, assignors to France Telecom, Paris, France

Filed Apr. 21, 1992, Ser. No. 871,543
Claims priority, application France, Apr. 24, 1991, 91 05064
Int. Cl.[5] H03M 7/00
U.S. Cl. 341—50 **16 Claims**



1. A method of transforming a digital signal (x) represented by digital samples x(n), said samples being lumped into blocks of N successive samples, wherein an encoding transformation comprises the steps of: space or time weighting of the samples as a function of a position n of each sample within the block such that:

$$yn = x(n).h(N\text{-}1\text{-}n)$$

where h(N-1-n) represents a determined weighting law; performing a modified discrete cosine transform on said weighted blocks of samples to calculate even order transformation coefficients:

$$Y2K =$$

-continued

$$\sum_{n=0}^{N-1} yn \cdot \cos(2\pi/(4N) \cdot (2n+1) \cdot (4k+1) + (4k+1) \cdot \pi/4)$$

for kδ with YN-k=-Yk-1 in which (4k+1).π/4 designates a phase shift term, said phase shift term being distributed as a function of an order k of a transformation coefficient under consideration;

converting said calculated even order coefficients Y2k into of an invertible complex transformation

$$Y2k + N/4 + jY2k = (-1)^{k+1} \cdot W8^{-1} \cdot \sum_{n=0}^{N/4-1} ((y'n - y''n + N/4) + j(y'n + y'n + N/4)) \cdot W4N^{(4k+1)(4n+1)}$$

for k=0, . . . , N/4-1 with

$y'n = x2n.h2n$

$y''h = xN\text{-}2n\text{-}1.hN\text{-}2n\text{-}1$

$W4N = \cos(2\pi/4N) + j.\sin(2\pi/4N)$;

$W8 = W4N$ for N=2, and

calculating said invertible complex transformation using an auxiliary calculation equation set forth below:

$$Zk = (-1)^{k+1} \cdot W8^{-1} \cdot W4N^{4k+1} \cdot \sum_{n=0}^{N/4-1} (zn \cdot WN^{n}) \cdot WN/4^{nk}$$

where:

$$WN^{n} = \cos 2\pi n/N + j.\sin 2\pi n/N$$

$$zn = (y2n\text{-}yN/2\text{-}1\text{-}2n) + j(yN\text{-}1\text{-}2n + yN + 2 + 2n)$$

for n=0, . . . , N/4-1

designates a complex combination of particular weighted samples.

5,363,097

DIRECT SEQUENTIAL-BIT VARIABLE LENGTH DECODER

Yung-Jung Jan, Keelung, Taiwan, Prov. of China, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Sep. 14, 1992, Ser. No. 944,657
Int. Cl.[5] H03M 7/40
U.S. Cl. 341—67 **6 Claims**

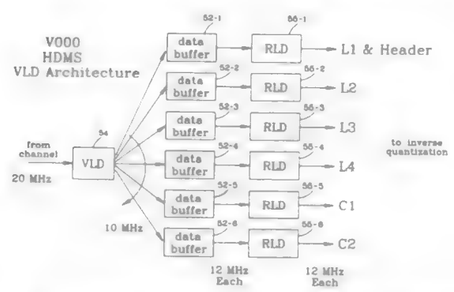
1. A receiver arrangement of a digital communication system for receiving a plurality of variable length code words in the form of serial bit-stream comprising:

a variable length decoder (VLD) for directly receiving said serial bit-stream and for sequentially decoding each of said plurality of variable length code words into fixed-length data;

a data storage means including a plurality of data banks for sequentially receiving and temporarily storing said fixed-length data therein;

a digital communication processing means including a plurality of parallel processing means, each connecting to a corresponding data bank, wherein each of said data banks connected in parallel between said variable length decoder (VLD) and said digital communication processing means via said parallel processing means; and

each of said plurality of parallel processing means processing in parallel said fixed-length data for generating a plurality of digital communication data at a higher rate than the



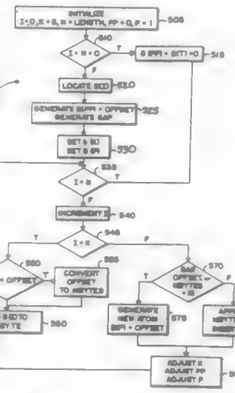
speed of said sequential decoding performed by said variable length decoder (VLD) to perform a real-time communication function.

5,363,098

BYTE ALIGNED DATA COMPRESSION

Gennady Antoshenkov, Amherst, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 25, 1993, Ser. No. 142,640
Int. Cl.[5] H03M 7/00, 7/46
U.S. Cl. 341—95 **9 Claims**



1. In a computer system, a method for compressing data comprising the steps of:

storing the data into a first set of bytes of a memory of the computer system, each byte of said set of bytes including an identical number of bits for storing logical values;

classifying a byte of said first set of bytes as a gap byte if each bit of said byte stores the identical logical value, otherwise, classifying said byte as a map byte;

grouping adjacent identically classified bytes;

storing, in a second set of ordered bytes of said memory, for each group of gap bytes, a first bit sequence representative of the number of bits in said group of gap bytes;

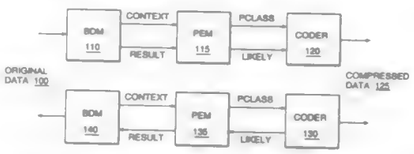
storing, in said second ordered set of bytes, for each group of map bytes, a second bit sequence representative of the number of bits in said group of map bytes, said second set of bytes having an order corresponding to said first set of bytes.

5,363,099

METHOD AND APPARATUS FOR ENTROPY CODING

James D. Allen, Castro Valley, Calif., assignor to Ricoh Corporation, Menlo Park, Calif. and Ricoh Corporation, Tokyo, Japan

Continuation of Ser. No. 931,156, May 17, 1992, Pat. No. 5,272,478. This application Oct. 4, 1993, Ser. No. 131,475
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] H03M 7/30
U.S. Cl. 341—107 **25 Claims**



1. A method of generating a coded output in response to a plurality of inputs, wherein each of the plurality of inputs is in one of a plurality of possible first states, said method comprising the steps of:

receiving a first threshold value for one of the plurality of inputs;

receiving a first indication for said one of the plurality of inputs, wherein said first indication indicates whether said one of the plurality of inputs is within one of the plurality of possible first states;

selecting one of a plurality of sets of transitions in one of a plurality of transition states according to the first threshold value, wherein each transition in the plurality of sets of transitions is associated with an output and a next state within the plurality of transition states;

selecting a transition in said one of a plurality of sets of transitions according to said first indication;

outputting the output associated with the transition; and

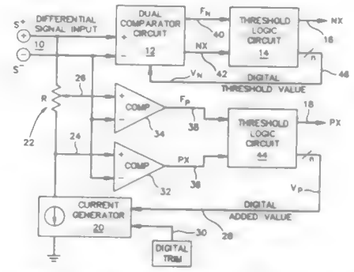
transitioning to the next state associated with the transition, such that a transition within the next state is selected using a second threshold value and a second indication corresponding to an input immediately following said one of the plurality of inputs.

5,363,100

DIGITAL PEAK-THRESHOLD TRACKING METHOD AND APPARATUS

James A. Bailey, and Yogesh B. Patel, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1993, Ser. No. 87,035
Int. Cl.[5] H03M 1/00, 1/06
U.S. Cl. 341—132 **14 Claims**



8. In a peak detector for detecting extrema in an analog signal S_P, a digital peak-threshold tracking apparatus for adjusting the level of an analog peak threshold signal T_P to compensate for extrema level fluctuation in said analog signal S_P,

said analog peak threshold level T_P corresponding to a digital threshold value V_P, said apparatus comprising:

signal input means for accepting said analog signal S_P;

first comparator means coupled to said signal input means for comparing said analog signal S_P to an analog intermediate threshold signal $T_M = T_P/a$, wherein (a) is a positive scaler greater than unity;

second comparator means coupled to said signal input means for comparing said analog signal S_P to said analog threshold signal T_P;

peak detection logic means coupled to said first and said second comparator means for creating a peak flag F_P having a one state ($F_P = 1$) corresponding to a level of said analog signal $S_P > T_M$ and having a zero state ($F_P = 0$) otherwise;

error flag logic means coupled to said peak detection logic means for creating an error flag F_E responsive to a transition of said peak flag F_P from said zero state so said one state, said error flag F_E having an increment state ($F_E = 1$) corresponding to a level of said analog signal $S_P > T_P$ and having a decrement state ($F_E = 0$) otherwise;

error flag history means coupled to said error flag logic means for storing said error flag F_E as the latest in a sequence V_K of a plurality of said error flags;

added value logic means coupled to said error flag history means for selecting a predetermined digital value V_A corresponding to said error flag sequence V_K;

accumulator means coupled to said added value logic means for adding said predetermined digital value V_A to said digital threshold value V_P to form an adjusted digital threshold value $V_{P'} = V_A + V_P$; and

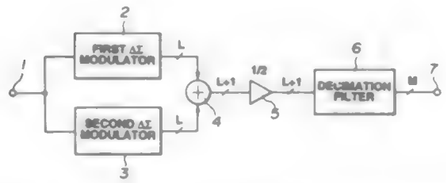
digital-to-analog converter means coupled to said accumulator means for converting said adjusted digital threshold value $V_{P'}$ to analog form, thereby generating an adjusted analog peak threshold signal $T_{P'}$.

5,363,101

ANALOG TO DIGITAL CONVERTER

Masaaki Ueki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 116,590
Claims priority, application Japan, Sep. 7, 1992, 4-238238
Int. Cl.[5] H03M *3/00*
U.S. Cl. 341—143 **5 Claims**



1. An analog to digital converter comprising

a plurality of ΔΣ modulators for translating analog signals from outside into digital signals in parallel and outputting the resulting translated data,

addition means for summing plural digital data supplied from said ΔΣ modulators for generating sum data and outputting said sum data,

attenuating means for dividing said sum data from said addition means by a number equal to the number of the plurality of ΔΣ modulators for generating quotient data and outputting said quotient data, and

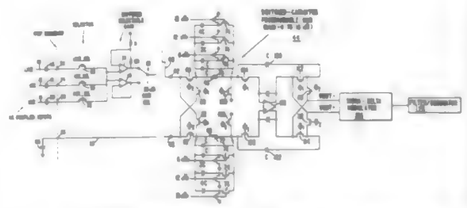
a decimation filter for translating said quotient data from said attenuating means into digital data having a predetermined number of bits larger than the number of bits of said quotient data and outputting said digital data.

5,363,102

OFFSET-INSENSITIVE SWITCHED-CAPACITOR GAIN STAGE

Paul F. Ferguson, Jr., Dracut, Mass., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Mar. 26, 1993, Ser. No. 37,300
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—172 **39 Claims**



1. An a-c gain circuit for use as part of signal-processing means to be incorporated in a system having a signal common and comprising:

an IC chip including:

an input signal line;

a reference signal line;

switched-capacitor circuitry having an input signal circuit and an output signal circuit, said input signal circuit including two input terminals, one of said input terminals being connected to said input signal line and the other being connected to said reference signal line;

amplifier means coupled to one of said signal circuits to provide amplification of signals passing through said switched-capacitor circuitry; and

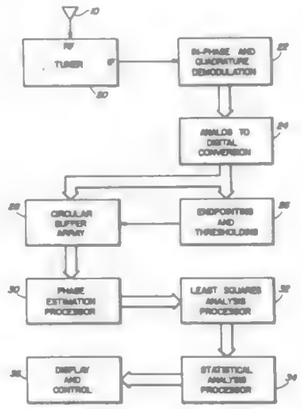
a capacitor fixedly connected through a non-switched connection between said reference signal line and signal common.

5,363,103

METHOD FOR EVALUATING SIMILARITY OF SIGNALS HAVING A CARRIER FREQUENCY OFFSET

Robert J. Inkol, Orleans, Canada, assignor to Her Majesty the Queen as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Jul. 6, 1993, Ser. No. 85,957
Claims priority, application Canada, Jan. 5, 1993, 2086704
Int. Cl.[5] G01S *7/36*
U.S. Cl. 342—13 **21 Claims**



1. An apparatus for evaluating the similarity of multi-mode radar signals detected by a passive receiver said apparatus

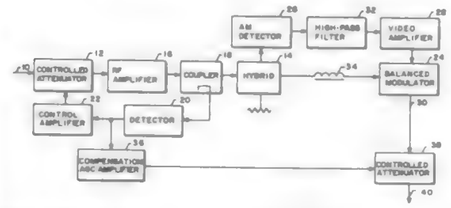
comprising a means to determine the differential phase of pairs of received signals, one signal of each pair being a currently received signal and the other a previously received signal, and means for fitting a straight line to the differential phase of pairs of signals wherein the slope of the line gives the frequency offset between signals and the mean square error between the actual phase-time data and the straight lines indicates the similarity of the signals.

5,363,104

JAMMING SIGNAL CANCELLATION SYSTEM

Martin R. Richmond, Lexington, Mass., assignor to Lockheed Sanders, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 448,430, Feb. 28, 1974, abandoned. This application Sep. 24, 1974, Ser. No. 509,158
Int. Cl.[5] G01S *7/36;* **H04K** *3/00*
U.S. Cl. 342—17 **16 Claims**



1. In a radar system, apparatus for recovering desired radar signals from an input signal which includes noise jamming signals of higher intensity, comprising:

a balanced modulator;

means for applying a portion of the input signal to one input of said balanced modulator;

means for detecting the difference frequency produced by the beating of the desired signal with the jamming signal; and

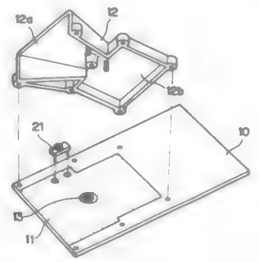
means for applying said detected signal to a second input of said balanced modulator whereby the output of said balanced modulator will contain the desired signal but not the jamming signal.

5,363,105

STRUCTURE OF MULTI-BAND MICROWAVE DETECTOR

Hisao Ono, Okazaki, and Takeshi Hatasa, Toyota, both of Japan, assignors to Yupiteru Industries Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1993, Ser. No. 51,648
Claims priority, application Japan, Apr. 28, 1992, 4-110026
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—20 **6 Claims**



1. A microwave detector comprising:

a printed circuit board having a metal layer formed on an upper side thereof;

a metallic microwave circuit part having an opened lower end which is closed by said metal layer on said printed circuit board, said microwave circuit part cooperating with said metal layer for defining a horn antenna and a cavity communicating with the inner end of a throat portion of said horn antenna;

a mixing diode positioned at a feeding point in said throat portion of said horn antenna and interposed between said microwave circuit part and said printed circuit board, said mixing diode having an output terminal extending through said printed circuit board and exposed on the lower side of the printed circuit board;

a first local oscillator installed on a microwave circuit board disposed in said cavity;

an intermediate frequency processing circuit portion positioned on the lower side of said printed circuit board around the portion where said output terminal of said mixing diode is exposed, said intermediate frequency processing circuit including a first intermediate frequency filter, a second mixing circuit and a second local oscillator; and

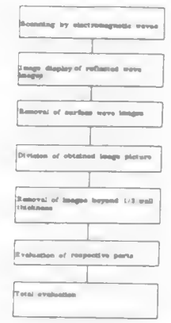
a shield casing mounted on the lower side of said printed circuit board, said shield casing covering said intermediate frequency processing circuit portion.

5,363,106

METHOD FOR EVALUATING INTERNAL QUALITY OF FUSED CAST REFRACTORIES

Yutaka Hosoda; Yukihiro Ushimaru, and Akinori Samejima, all of Takasago, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 35,261
Claims priority, application Japan, Mar. 27, 1992, 4-101625
Int. Cl.[5] G01S *13/02*
U.S. Cl. 342—22 **7 Claims**



1. A method for evaluating an internal quality of a fused cast refractory comprising the steps of:

emitted electromagentic wave pulses from antenna means through exactly one side of face of a fused cast refractory sample toward a symmetry plane thereof about which a structure of said fused cast refractory is symmetrical, said antenna means moving along a side face of said fused cast refractory sample;

receiving electromagnetic waves reflected from an inner portion of said fused cast refractory sample via said antenna means, thereby obtaining crude reflected wave images of said inner portion of said fused cast refractory sample; and

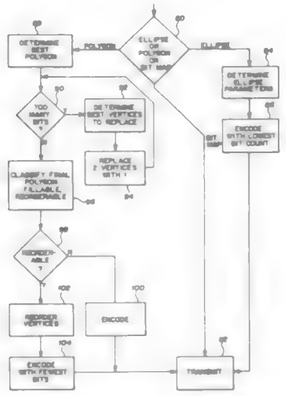
evaluating an internal structure of said fused cast refractory sample on the basis of said crude reflected wave images, wherein said side face of said fused cast refractory sample is aligned approximately parallel to said symmetry plane.

5,363,107

STORAGE AND TRANSMISSION OF COMPRESSED WEATHER MAPS AND THE LIKE

Jeffrey L. Gertz, Marblehead, and Robert D. Grappel, Concord, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 16, 1993, Ser. No. 93,161
Int. Cl.[5] G01S *13/95*; H03M *7/30*
U.S. Cl. 342—26 **13 Claims**



13. A method of transmitting weather maps produced by weather radar, comprising:

receiving weather data including weather regions, said weather regions having an area and a plurality of moments of inertia, and

measuring the ellipseticity of weather regions defined by said weather data by comparing said moments of inertia of each said region with said area of each said region,

determining whether to represent each said region with a signal including an elliptical approximation or with a signal representing another type of representation based on said step of measuring, and

transmitting one of said signals, based on said step of determining, over a communications channel.

5,363,108

TIME DOMAIN RADIO TRANSMISSION SYSTEM

Larry W. Fullerton, Huntsville, Ala., assignor to Charles A. Phillips, Ardmore, Tenn., a part interest

Continuation of Ser. No. 368,831, Jun. 20, 1989, which is a continuation-in-part of Ser. No. 192,475, May 10, 1988, which is a continuation-in-part of Ser. No. 870,177, Jun. 3, 1986, Pat. No. 4,743,906, which is a continuation-in-part of Ser. No. 677,597, Dec. 3, 1984, Pat. No. 4,641,317. This application Mar. 5, 1992, Ser. No. 846,597
Int. Cl.[5] G01S *13/04*; H04L *27/30*
U.S. Cl. 342—27 **34 Claims**

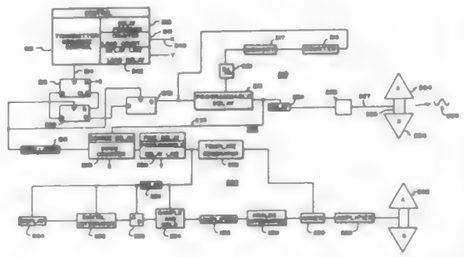
1. A wideband transmission system comprising:

a transmitter comprising:

generating means for generating a plurality of time spaced signals, each signal of said plurality of signals having a stepped-in-amplitude portion;

transmitting means including a broad frequency band radiator responsive to said generating means for transmitting wideband, time spaced, burst signals into a selected medium; and

receiving means responsive to wideband burst signals present in said medium, as received signals, for processing said received signals, by, (1) coherently detecting said received signals, (2) integrating, separately, a plurality of coherently detected signals, and (3) integrating the resultant



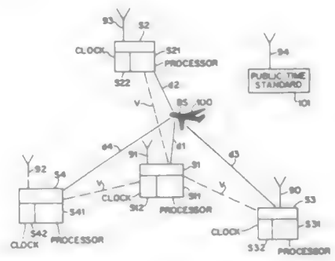
plurality of integrated signals and therefrom providing intelligence signals.

5,363,109

METHOD OF CORRECTING MEASUREMENT ERRORS CAUSED BY CLOCK DEVIATIONS IN A SECONDARY RADAR SYSTEM

Günter Höfgen, Kornwestheim, and Rudiger Zeitz, Ditzingen, both of Germany, assignors to Alcatel Sel Aktiengesellschaft, Stuttgart, Germany

Continuation-in-part of Ser. No. 29,922, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 858,554, Mar. 27, 1992, abandoned. This application Jul. 23, 1993, Ser. No. 97,595
Claims priority, application Germany, Mar. 27, 1991, 4109981; Jul. 25, 1992, 4224645
Int. Cl.[5] G01S *13/76, 13/91*
U.S. Cl. 342—31 **23 Claims**



1. A secondary radar system for Mode S operation, comprising:

a plurality of ground stations, each ground station including a ground-based interrogator which transmits a plurality of interrogation signals and receives a plurality of reply signals;

a plurality of antennas respectively connected to said interrogators;

at least one airborne station that transmits a reply signal in response to a received interrogation signal;

measuring means, connected to each of the interrogators, for measuring a time interval between a transmission of an interrogation signal and a reception of a reply signal;

synchronizing means for synchronizing the interrogator in each ground station to a system time within a fixed time frame;

said measuring means, including computing means for computing a signal transmit time from a respective one of said interrogators to which a respective measuring means is connected, to the at least one airborne station, and return; and

means provided in each of said interrogators, and responsive to the signal transit time computed by said computing means, for adjusting a time of transmission of a further interrogation signal from said respective one of said interrogators such that a further reply signal transmitted by the at least one airborne station, responsive to the further interrogation signal, will be received by said interrogators within the fixed time frame;

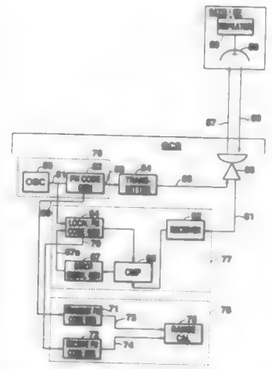
the further reply signals from the at least one airborne station, responsive to said further interrogation signal, being transmitted at a common time back to said interrogators.

5,363,110

POSITIONING SYSTEM UTILIZING ARTIFICIAL SATELLITES AND POSITIONING METHOD

Kenichi Inamiya, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 51,625
Claims priority, application Japan, Apr. 23, 1992, 4-130156; Dec. 28, 1992, 4-355871
Int. Cl.[5] G01S *5/02*
U.S. Cl. 342—357 **17 Claims**



1. A positioning system utilizing a plurality of artificial satellites, at least four artificial satellites always existing in a visible area as seen from a ground control station and being placed in quasi-geosynchronous altitude orbits so as to transmit positioning signals to a positioning available area for calculating a position of an observer within the positioning available area from a positioning algorithm of the observer, the positioning system comprising:

the artificial satellites including:

means for returning a positioning signal, transmitted from the ground control station, to the ground control station;

means for generating and outpouring a positioning time signal;

means for correcting a time of the positioning time signal on the basis of a time correction command signal transmitted from the ground control station;

means for receiving a monitored result of a status of the positioning signal transmitted from the ground control station and for outputting a telemetry data signal;

means for multiplexing the positioning time signal and the telemetry data signal and for outputting the positioning signal; and

means for transmitting the positioning signal to a predetermined positioning available area; and

a ground control station for controlling the artificial satellites, including:

means for measuring a range between the ground control station and each artificial satellite in real time on the basis of the positioning signal transmitted from the ground control station to each artificial satellite and returned from each artificial satellite;

means for comparing a time delayed standard time signal delayed for a radio wave propagation time corresponding to the range between the ground control station and each artificial satellite with the positioning time signal, transmitted from each artificial satellite, and for outputting an error signal;

means for generating the time correction command signal from the error signal and for transmitting the time correction command signal to each artificial satellite; and

means for always monitoring the status of the positioning signal and for transmitting the monitored result to each artificial satellite;

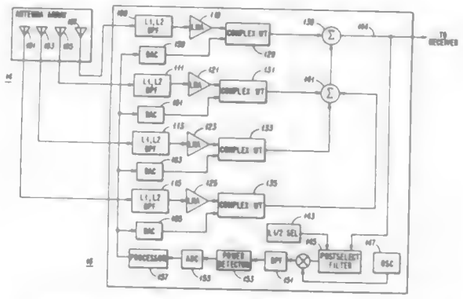
wherein the time included in the positioning signal of the artificial satellite is corrected so as to always coincide with the standard time of the ground control station, the status of the positioning signal is always monitored to include the monitored result into the positioning signal of the artificial satellite and to provide the monitored result to the observer within the positioning available area, in real time.

5,363,111

APPARATUS AND METHOD FOR SPATIAL NULLING OF INTERFERING SIGNALS

John W. Murphy, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 30, 1993, Ser. No. 56,690
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—383 **3 Claims**



1. A method of performing nulling of interfering signals in a wideband transmission system having a known noise power level comprising the following steps:

measuring a power level of a received signal and determining a complex weight value;

determining a value for a dithering variable large enough to provide plus and minus dither points above the noise level;

increasing the value of the complex weight by an amount equal to the dithering variable;

measuring the power level of the plus dithered signal;

decreasing the value of the complex weight by an amount equal to twice the dithering variable;

measuring the power level of the minus dithered signal;

returning the signal to its undithered state;

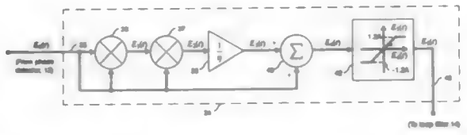
determining a minimum point of the power level of an interfering signal by use of a quadratic relationship between the plus dithered signal level and the minus dithered signal power level;

setting the complex weight value to the determined minimum;

adjusting the value of the dithering variable a finite decremental amount; and

repeating the steps.

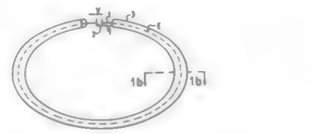
5,363,112
NOISE SUPPRESSION PROCESSOR FOR A CARRIER TRACKING LOOP
George S. Hatcher, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jul. 5, 1989, Ser. No. 375,484
Int. Cl.[5] H03D *3/18*
U.S. Cl. 342—389 17 Claims

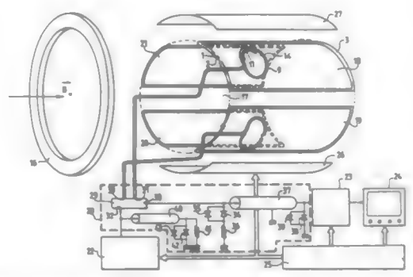


1. An apparatus for maintaining a carrier tracking loop having a phase detector which produces a loop error signal and a loop filter which filters the loop error signal in lock in the presence of noise, comprising:
a means for receiving the loop error signal from the phase detector;
a means for processing the received loop error signal by nonlinearly amplifying the loop error signal $E_0(t)$ by $1+E_0^2(t)/\eta$, where:
$\eta=A^2/\pi$, and
A=maximum noiseless amplitude of error signal $E_0(t)$ and limiting the amplified loop error signal to predetermined maximum and minimum values; and
a means for supplying the processed loop error signal to the loop filter.

5,363,113
ELECTROMAGNETIC ANTENNA AND EXCITATION ANTENNA PROVIDED WITH SUCH ELECTROMAGNETIC ANTENNA FOR A NUCLEAR MAGNETIC RESONANCE APPARATUS
Henri-Jose Mametsa, Castanet Tolosan, and Hervé Jacob, Cugnaux, both of France, assignors to General Electric CGR S.A., Paris, France
PCT No. PCT/FR88/00214, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO88/08971, PCT Pub. Date Nov. 17, 1988
PCT Filed May 3, 1988, Ser. No. 439,031
Claims priority, application France, May 7, 1987, 87 06485
Int. Cl.[5] H01Q *11/12*
U.S. Cl. 343—744 17 Claims

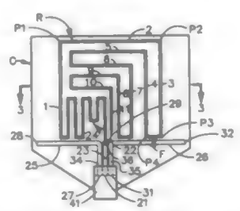
1. An electromagnetic antenna for exciting a region of space, comprising:
(A) a radiating circuit;
(B) an open conductive shield which is electrically connected to nothing, which almost totally masks said radiating circuit with respect to said region of space, and which has an aperture formed therein;
(C) a capacitor which is placed in said radiating circuit at the location of said aperture of said shield and which tunes said radiating circuit to resonate at a predetermined frequency; and





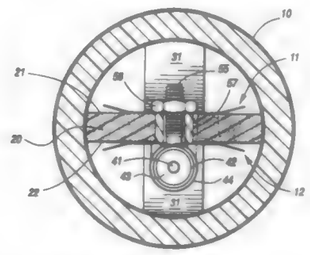
(D) an electrical circuit which is connected to an electrical source and which feeds an electrical current to said radiating circuit.

5,363,114
PLANAR SERPENTINE ANTENNAS
Kevin O. Shoemaker, 1410 Garfield Ct., Louisville, Colo. 80027
Continuation of Ser. No. 471,858, Jan. 29, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 873,724
Int. Cl.[5] H01Q *1/38, 9/42*
U.S. Cl. 343—828 8 Claims



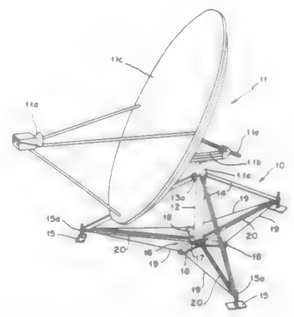
1. A planar serpentine antenna comprising:
a substantially planar carrier layer,
a substantially planar radiator of a preselected length secured to said carrier layer, said radiator extending in a substantially serpentine pattern and having a feed end and an open end, said radiator having a series of change of direction points along the length thereof with each said change of direction point forming an electric discontinuity to provide more than one connected radiator section along the length of said radiator, said radiator providing at least two different resonant frequencies, said radiator sections being arranged so that at least two of said sections are connected to one another and are arranged substantially perpendicular to one another to radiate energy in an omnidirectional pattern and so that the currents in alignment with the E vector are those corresponding to horizontal and vertical polarizations, and
a pair of substantially planar ground conductors of a preselected length secured to said carrier layer for optimizing the impedance match between a connecting cable and said radiator, said pair of ground conductors being arranged in spaced relation to the outer periphery of said radiator, said ground conductors extending in opposite directions away from one another and having turns to form adjacent, parallel spaced end sections arranged for connecting to an electric connector portion, said pair of ground conductors being coplanar and do not extend outside the coplanar plane, said series of change of direction points including turns at selected angles and back folds, there being an outer group of three of said radiator sections connected at two right angle turns and an inner group of a plurality of said radiator sections having a succession of alternating back folds and right angle turns, said inner group being completely surrounded by said outer group so as to be located inside said outer group.

5,363,115
PARALLEL-CONDUCTOR TRANSMISSION LINE ANTENNA
Charles L. Lipkin, Naperville, and Frederick W. Schmidt, Frankfort, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.
Continuation of Ser. No. 824,592, Jan. 23, 1992, abandoned. This application May 24, 1993, Ser. No. 66,911
Int. Cl.[5] H01Q *1/42*
U.S. Cl. 343—872 17 Claims



1. A microwave antenna comprising,
an elongated tubular radome made of a rigid nonconductive material and having an exterior surface and an interior surface;
an elongated, vibration-damping, unitary core made of a rigid dielectric material, said unitary core having a first element-affixing surface and a second element-affixing surface generally parallel to said first element-affixing surface, said unitary core further including a first supporting surface and a second supporting surface generally opposed to said first supporting surface, said unitary core being inserted within said radome and said first supporting surface of said unitary core shaped to form a first contacting yet unattached engagement between said first supporting surface and said inner surface of said radome and said second supporting surface shaped to form a second contacting yet unattached engagement between said second supporting surface and said inner surface of said radome without said inner surface of said radome contacting said first and second element-affixing surfaces, said first and second contacting yet unattached engagements between said core and said radome allowing said core to move relative to said radome after said core being inserted within said radome;
a plurality of conductive antenna elements affixed to said first and second element-affixing surfaces of said core and extending along a length thereof; and
a microwave transmission line connected to said conductive antenna elements for transmitting electromagnetic energy to and from said elements.

5,363,116
SUPPORT ASSEMBLY FOR PORTABLE MICROWAVE ANTENNA
Carrol M. Allen, Northport, N.Y., assignor to LNR Communications, Inc., Hauppauge, N.Y.
Filed Jul. 13, 1993, Ser. No. 90,660
Int. Cl.[5] H01Q *1/08*
U.S. Cl. 343—881 9 Claims

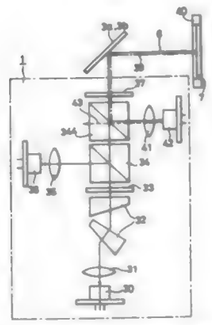


1. A portable support for a microwave antenna comprising:
(a) a central vertical torsion-resistant post to carry the antenna at its upper end;
(b) a plurality of at least three compression legs secured at substantially equi-angularly spaced points adjacent the upper end of the post and extending angularly downward to the ground plane at points substantially beyond the center of gravity of the antenna, adjacent legs forming a pair of legs;
(c) a stabilizing assembly attached to the post adjacent its lower end and having radially extending means to define at least three angularly spaced apart moment arms each approximately centered between each said pair of legs; and
(d) a pair of angularly divergent tension members for each leg connecting the lower end of the leg to the adjacent moment arms on either side of the leg.

5,363,117
LASER-ADDRESSED LIQUID CRYSTAL DISPLAY
Kiyoshige Matsuura; Naoyuki Sumi, and Kouichi Fujita, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 1, 1992, Ser. No. 938,610
Claims priority, application Japan, Sep. 4, 1991, 3-224385; Sep. 6, 1991, 3-227315; Sep. 9, 1991, 3-229181
Int. Cl.[5] G09G *3/36;* G02F *1/13*
U.S. Cl. 345—87 4 Claims

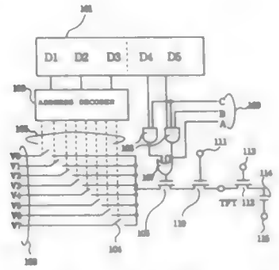
1. A liquid crystal display apparatus, comprising:
(a) a laser beam source for emitting a laser beam;
(b) a liquid crystal cell for providing an image by means of the effect of the laser beam heating and which contains a liquid crystal layer positioned between a pair of substrates;
(c) scanning means for scanning the laser beam to said liquid crystal layer to thereby produce a line drawing; and
(d) modulation means for modulating a line width of the line drawing so as to keep a uniform line width, said modulation means comprising
means for controlling a laser power level of a laser beam emitted from said laser beam source, said laser power level controlling means comprising

first and second beam splitters, said first beam splitter detecting a laser power and said second beam splitter



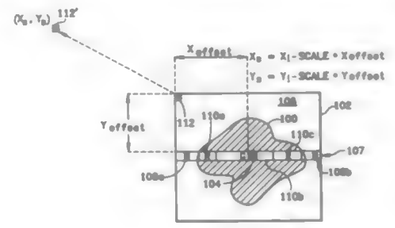
detecting a light returned from the liquid crystal layer.

5,363,118
DRIVER INTEGRATED CIRCUITS FOR ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAYS AND DRIVING METHOD THEREOF
Fujio Okumura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 6, 1992, Ser. No. 956,963
Claims priority, application Japan, Oct. 7, 1991, 3-258994
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—95 **12 Claims**



1. A multi-level driver system for driving active matrix circuits in a liquid crystal display device comprising:
means for storing digital data;
means connected to said storing means for selecting any one of a plurality of voltage levels supplied from power supply circuits according to partial informations of said stored digital data, said selecting means being connected to said power supply circuits;
means provided in said power supply circuits for varying each of said plurality of voltage levels within a predetermined range between adjacent ones of said plurality of voltage levels to produce variable voltage levels from said power supply; and
means connected to said storing means and to voltage signal transmission lines for selecting a desired variable voltage level to be stored in each pixel capacitor in said active matrix circuits according to both remaining digital data in said storing means and a plurality of timing control signals, said selecting means fetching said remaining digital data and receiving said timing control signals;
said remaining digital data selecting one of said plurality of timing control signals, said selected timing control signal in turn determining which of said variable voltage levels is to be stored in each pixel capacitor by actuating a switch means after a time interval associated with said desired variable voltage level.

5,363,119
SCALING PROCESSOR FOR RASTER IMAGES
Douglas E. Snyder, Sunnyvale, and Samuel Lee, San Jose, both of Calif., assignors to Atari Games Corporation, Milpitas, Calif.
Continuation of Ser. No. 694,139, May 1, 1991, abandoned. This application Jan. 15, 1993, Ser. No. 6,170
Int. Cl.[5] G09G *1/06*
U.S. Cl. 345—131 **19 Claims**

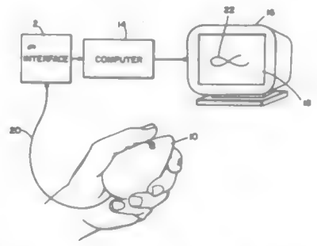


9. An image scaling system, comprising:
a compressed image memory storing a set of object images in a compressed format including transition segments having length and color information;
a parameter memory storing an object specifier having an index of a selected one of the object images, a center of scaling for the selected object image, and a scale factor;
a frame buffer storing color information belonging to a scaled object;
a video display receiving pixel data indicative of the scaled object; and
a blitter receiving a selected transition segment of the selected object image indexed in the object specifier and receiving the scale factor, the blitter having a rate multiplier to selectively disable the writing of color information to multiple locations in the frame buffer so as to produce an object image that is reduced in scale.

5,363,120
COMPUTER INPUT DEVICE USING ORIENTATION SENSOR
Donald E. Drumm, Billerica, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.
Continuation of Ser. No. 719,658, Jun. 24, 1991, abandoned, which is a continuation of Ser. No. 418,895, Oct. 4, 1989, abandoned, which is a continuation of Ser. No. 108,176, Oct. 14, 1987, abandoned. This application Sep. 27, 1993, Ser. No. 128,043
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] G09G *1/00*
U.S. Cl. 345—158 **24 Claims**

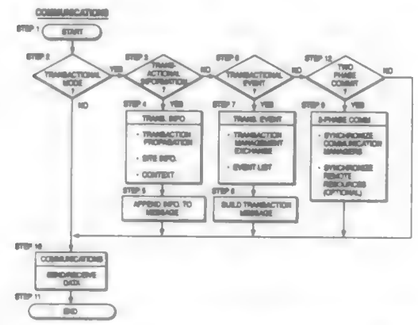
1. A graphics system for displaying a cursor and providing controlled movement of the cursor, comprising:
a display terminal unit having a display screen;
a computer, coupled to said display terminal unit, programmed to control the position of a cursor on the display screen in response to cursor control signals;
a computer input device coupled to said computer, the computer input device sensing angular orientation at the input device independently of the computer;
the computer input device generating electrical signals representative of the angular orientation of the input device with respect to a vertical axis passing therethrough for a

continuous range of angles and for a continuous range of directions; and



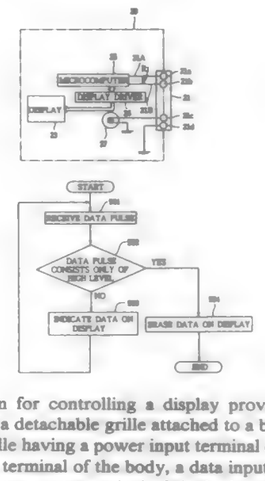
means, coupled to said computer, for generating cursor control signals for controlling the position of a cursor in response to said electrical signals.

5,363,121
MULTIPLE PROTOCOL COMMUNICATION INTERFACE FOR DISTRIBUTED TRANSACTION PROCESSING
Thomas J. Freund, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 29, 1990, Ser. No. 546,495
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—600 **16 Claims**



1. A communications system which allows a plurality of different communications protocols to be utilized in a distributed transactional processing environment which includes a local site having at least one local transaction manager and resource, and at least one remote site having at least one remote transaction manager and resource, said system comprising:
at least one local communications manager and one remote communications manager at each of said local and remote sites, respectively, for providing communications between said local site and said remote site, independent of which of said plurality of communications protocols is being used by said local transaction manager and said remote transaction manager, by said local communications manager providing to said local transaction manager and said remote communications manager providing to said remote transaction manager information relating to which said local and remote sites are participating in a transaction, the characteristics of said resource at the participating local and remote sites and the actual data being transferred between the local and remote sites;
means, within each said communications manger, for performing transaction processing operations, between said local and remote sites, which are normally performed by said transaction manager;
means for allowing a program application to directly access said resource and said communications manager, independent of said transaction manager; and
means for maintaining said communications manager separately from said transaction manager.

5,363,122
SYSTEM FOR CONTROLLING A DISPLAY PROVIDED ON A CAR STEREO
Syoji Suenaga; Masahiro Suzuki, and Masashi Iwasaki, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jul. 7, 1992, Ser. No. 909,842
Claims priority, application Japan, Jan. 6, 1992, 4-018299
Int. Cl.[5] G11B *33/00*
U.S. Cl. 345—212 **3 Claims**



1. A system for controlling a display provided on a car stereo having a detachable grille attached to a body of the car stereo, the grille having a power input terminal connected to a power supply terminal of the body, a data input terminal connected to a data output terminal of the body, a display, and a microcomputer for operating the display to display data in accordance with data signal applied from the body through the data terminals, the system comprises:
detector means for detecting disconnection of the data input terminal from the data output terminal when the power input terminal and the power output terminal are connected and for producing a disconnection signal wherein the detector means comprises a circuit, provided between the data input terminal and a constant voltage point, for applying a constant voltage to the microcomputer as long as the power input terminal is connected to the power output terminal and the data input terminal is disconnected from the data output terminal, and determining means for determining the constant voltage and for producing the disconnection signal; and
means provided in the microcomputer for stopping operation of the display in response tot he disconnection signal.

5,363,123
CUTTER DRIVE FOR A COMPUTER DRIVEN PRINTER/PLOTTER
David Petersen, Poway, and Jorge Pont, Encinitas, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jul. 14, 1992, Ser. No. 913,268
Int. Cl.[5] B41J *11/70*
U.S. Cl. 346—24 **9 Claims**

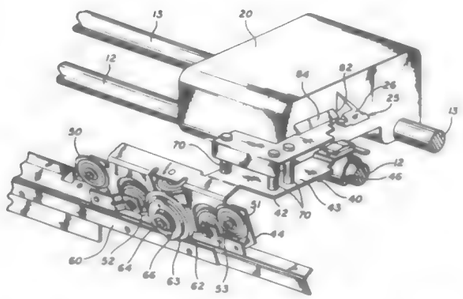
1. A cutter drive for a computer driven printer/plotter comprising:
a) a motor driven printer carriage which is linearly moveable between a first end position and a second end position

in a path of travel which extends transversely across a path of travel of a roll of print media to be cut, and

b) a cutter carriage which is linearly moveable between a first end parked position and a second end position in a path of travel transversely across and back across said path of travel of said media to be cut to return to said parked position, said cutter carriage comprising:

1) a support bracket, said support bracket having support means thereon for supporting said cutter carriage for said transverse movement; and

2) a cutter blade rotatably mounted on said support bracket; a first one of said carriages having a carriage pickup hook affixed thereto, said pickup hook having an inclined upper ramp, an inclined lower ramp spaced from said upper ramp in said path of travel of said first one of said carriages, a pusher surface and a shelf defining a support platform and a lower surface; and a second one of said carriages having a pickup arm affixed thereto in the path of travel of said pickup hook for engagement with said pickup hook, said pickup arm having an inclined ramp and first and second edges respectively engageable with said first one of said carriages and said pusher surface, said pickup arm being lifted from a free position disengaged from said pickup hook by said inclined upper ramp as said first one of said



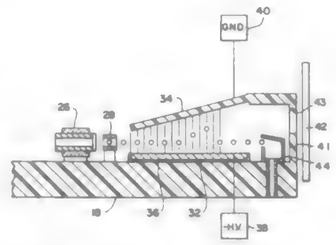
carriages moves in a first direction toward said second one of said carriages, said pickup arm moving to be supported on said platform as said second edge passes an upper end of said upper ramp whereby said pusher surface on said pickup hook engages said second edge on said pickup arm to permit said first one of said carriages to move said second one of said carriages across said transverse path, said pickup hook shelf being moved from a position in which said shelf supports said pickup arm as said first one of said carriages reaches said second end position and reverses direction to again move in said first direction thereby permitting said pickup arm to return to said free position, said first one of said carriages engaging said first edge of said pickup arm as said first one of said carriages moves in said first direction until said second one of said carriages reaches said first end parked position and said first one of said carriages again reverses to move in a second direction whereby said lower ramp of said pickup hook engages said inclined ramp of said pickup arm moving said pickup arm away from said free position, said lower surface of said shelf slideably engaging said pickup arm until said first one of said carriages moves away from said second carriage and said pickup arm returns to said free position.

5,363,124

PRINTHEAD FOR INK JET PRINTERS

George Arway, Norridge, Ill., assignor to Videojet Systems International, Inc., Wooddale, Ill.

Continuation-in-part of Ser. No. 9,586, Jan. 26, 1993, abandoned. This application May 10, 1993, Ser. No. 59,998
Int. Cl.[5] B41J *2/02*
U.S. Cl. 347—74 21 Claims



1. A printhead assembly for an ink jet printer, comprising:

(a) a chassis constructed of electrically conductive plastic;

(b) said chassis supporting an ink jet nozzle, a charging electrode, and a pair of spaced apart deflection plates; and

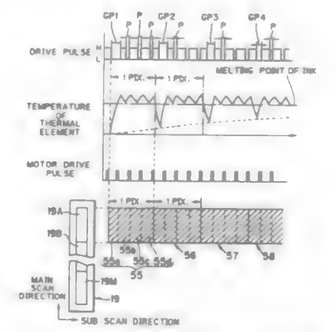
means for electrically grounding said chassis, said grounded chassis being sufficiently conductive to (i) discharge ink mist in the proximity of said deflection plates; and (ii) shield the electric deflection field generated by said deflection plates from electrical noise to insure accurate drop placement.

5,363,125

METHOD AND DEVICE FOR CORRECTING SHADING IN THERMAL PRINTER

Fuyuki Inui, and Hitoshi Saito, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 13, 1992, Ser. No. 882,017
Claims priority, application Japan, May 13, 1991, 3-137180
Int. Cl.[5] B41J *2/35*
U.S. Cl. 346—76 PH 19 Claims



1. In a thermal recording method for recording a half-tone image on a recording medium by using a thermal head having a plurality of heating elements aligned in a first direction comprising the steps of:

(a) arranging a plurality of pixels in a matrix which constitute the half-tone image, each of said pixels including a first to a first predetermined number of sub-lines aligned in a second direction orthogonal to said first direction where said first predetermined number is an integer;

(b) positioning each of the plurality of heating elements to seriatim face said first to said first predetermined number

of sub-lines of corresponding ones of said pixels in order to form said first of said sub-lines;

(c) moving the thermal head and the recording medium in said second direction relative to each other by a constant amount corresponding to one sub-line;

(d) supplying a first to a second predetermined number of drive pulses to one of the heating elements to heat said one of the heating elements and record said first to said second predetermined number of said sub-lines for one of said pixels where said second predetermined number is an integer less than or equal to said first predetermined number and one of said second predetermined number of said drive pulses is supplied each time said one of the heating elements faces one of said first to said second predetermined number of said sub-lines;

(e) changing said second predetermined number depending on a desired tonal step for said one of said pixels wherein said first of said drive pulses has a width wider than widths of said drive pulses other than said first of said drive pulses so as to heat said one of the heating elements up to a predetermined temperature; and

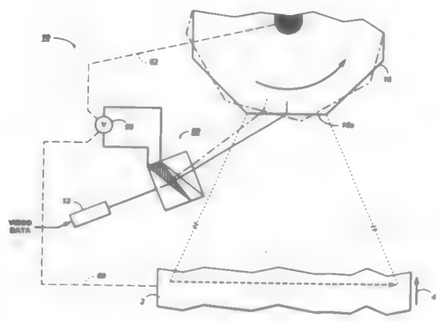
(f) changing said width for said first of said drive pulses relative to a standard value based on thermal conditions of the heating elements for heating the heating elements up to said predetermined temperature so that an equal size of ink is recorded on said first of said sub-lines of each of said pixels which is to be recorded with ink.

5,363,126

DEVICE AND APPARATUS FOR HIGH SPEED TRACKING IN A RASTER OUTPUT SCANNER

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1992, Ser. No. 951,286
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 21 Claims



1. An optical element, comprising:

a member having a pair of parallel external surfaces, said member including a pair of prism elements positioned substantially adjacent one another to form a chamber interposed therebetween, wherein the chamber is provided with a wedge-shaped cross-section having a progressively decreasing width from one marginal region to another marginal region opposed therefrom; and

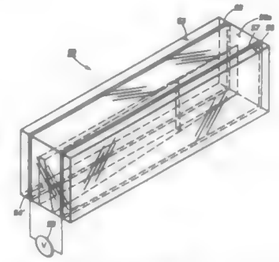
a material having a variable index of refraction substantially filling the chamber of said member for selectively deflecting a light beam passing therethrough.

5,363,127

DEVICE AND APPARATUS FOR SCAN LINE SKEW CORRECTION IN AN ELECTROSTATOGRAPHIC MACHINE

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1992, Ser. No. 951,714
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 22 Claims



1. An optical element, comprising:

a member having a pair of parallel external surfaces, said member including first and second optically transmissive plates defining a chamber interposed therebetween, said chamber having a volume defined by a first plane having a progressively decreasing width from one marginal region to another marginal region opposed therefrom in the first plane, and a second plane, substantially perpendicular to the first plane, having a progressively decreasing width from the one marginal region to another marginal region opposed therefrom in the second plane; and

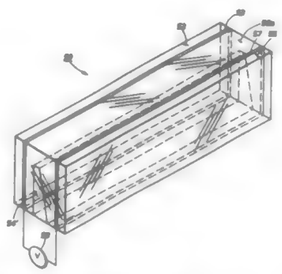
a material having a variable index of refraction substantially filling the chamber of said member.

5,363,128

DEVICE AND APPARATUS FOR SCAN LINE PROCESS DIRECTION CONTROL IN A MULTICOLOR ELECTROSTATOGRAPHIC MACHINE

John R. Andrews, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 25, 1992, Ser. No. 951,744
Int. Cl.[5] G01D *9/42*
U.S. Cl. 346—108 22 Claims



1. An optical element, comprising:

a member including first and second optically transmissive plates forming a pair of parallel external surfaces and defining a chamber therebetween, wherein one of said optically transmissive plates has a linearly varying thickness such that said chamber is provided with a wedge-shaped cross-section having a progressively decreasing volume from one marginal region to another marginal region opposed therefrom; and

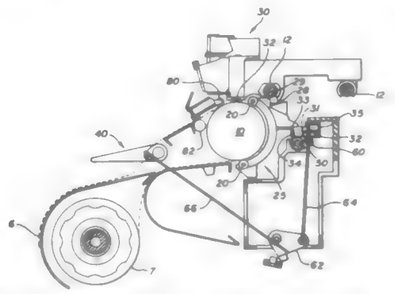
a material having a variable index of refraction substantially filling the chamber of said member for selectively deflecting a light beam passing therethrough.

5,363,129

PRINTING MEDIA FEED AND RETAINING APPARATUS FOR A THERMAL INK JET PRINTER/PLOTTER

Daniel S. Kline, Carlsbad; Frank Nasworthy, Leucadia, and Paul J. Wield, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1991, Ser. No. 785,832
Int. Cl.[5] B41J *2/01, 13/00*
U.S. Cl. 346—136 **14 Claims**



1. A printer/plotter having a chassis, a platen roller, a print head carriage and a bearing mounted on said chassis, said bearing having an axis normal to and intersecting an axis of rotation of said platen roller, said printer/plotter further comprising:

a pinch roller support member having an arcuate media guide surface thereon, said support member being moveable into and out of a pinching position adjacent a platen roller;

said pinch roller support member having a plurality of pinch rollers freely rotatably mounted on at least two spaced parallel axles affixed to said print roller support member;

said pinch roller support member having a support and actuation arm extending therefrom on a side thereof opposite said arcuate media guide surface, said arm being positioned substantially in the middle of a polygon-shaped member having each of said pinch rollers at intersections of sides of the polygon-shaped member;

at least one motion limiting abutment shoulder on the side of said pinch roller support member opposite said arcuate media guide surface for limiting movement of said pinch roller support member in a direction away from said pinching position;

wherein said support arm has a free end and an axis extending therethrough, said axis of said support arm intersecting the center of curvature of said media guide surface, with a circular support bearing surface on said free end for permitting rotation of said pinch roller support member about said axis of said support arm.

5,363,130

METHOD OF VALVING AND ORIENTATION SENSITIVE VALVE INCLUDING A LIQUID FOR CONTROLLING FLOW OF GAS INTO A CONTAINER

Bruce Cowger; John M. Altendorf; David J. Halko, and Marc A. Baldwin, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

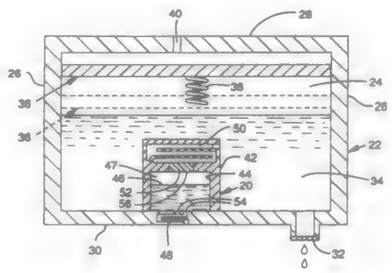
Filed Aug. 29, 1991, Ser. No. 752,107
Int. Cl.[5] B41J *2/20*
U.S. Cl. 347—92 **18 Claims**

1. A valve apparatus for controlling flow of a gas into a container, comprising:

a housing connected to the container and having an interior chamber, the chamber having a first amount of a liquid stored therein to fill the chamber to a first level when the apparatus is in an upright position;

inlet means for permitting the gas to flow into the chamber, the inlet means including an inlet aperture positioned at a second level below the first level when the apparatus is in the upright position; and

vent means connected to the housing for permitting flow of gas from the chamber into the container and preventing flow of the liquid from the chamber into the container, the vent means including a vent aperture positioned at a third level above the first level when the apparatus is in the upright position, such that the gas entering the inlet aperture bubbles through the liquid and moves through the vent aperture when the apparatus is in the upright position, in the chamber the liquid therein will extend between the vent aperture and the inlet aperture irrespective of the position of the apparatus.



15. A method of valving a flow of air through a passage in an apparatus and into a container that has an internal pressure less than that of ambient, comprising the steps of:

housing a liquid to cover one part of the passage when the apparatus is in an upright position for restricting the flow of ambient air through the passage;

positioning within the passage between the liquid and the container a porous vent member that is porous to air and substantially impermeable to the liquid; and

maintaining the liquid to cover at least one of the one part of the passage and the vent member at all times, so that the vent member is covered with the liquid when the apparatus is tipped from the upright position, and so that the one part of the passage and the vent member are not simultaneously uncovered by the liquid irrespective of how the apparatus is oriented.

5,363,131

INK JET RECORDING HEAD

Kaoru Momose; Tsutomu Nishiwaki; Masanori Tanizaki, and Hajime Mizutani, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

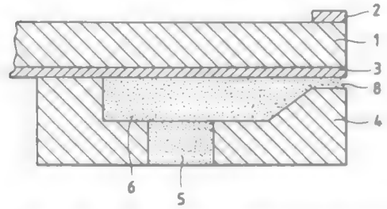
Filed Oct. 4, 1991, Ser. No. 770,814
Claims priority, application Japan, Oct. 5, 1990, 2-267624; Oct. 26, 1990, 2-290418; Nov. 2, 1990, 2-297680; Nov. 16, 1990, 2-310514; Nov. 20, 1990, 2-315467; Sep. 25, 1991, 3-273428
Int. Cl.[5] B41J *2/045*
U.S. Cl. 347—46 **43 Claims**

1. An ink jet recording head comprising:

a piezoelectric body comprising a substrate operable to vibrate in an edge mode, said piezoelectric body being polarized thicknesswise and having at least one edge portion;

first and second electrodes respectively formed on opposite surfaces of said at least one edge portion, corresponding to a dot forming region, of said piezoelectric body, wherein said first and second electrodes drive said substrate in the edge mode when a drive voltage is received by said first and second electrodes to form the dot;

gap forming means forming a gap for producing ink mist at said at least one edge portion of said piezoelectric body,



the gap being defined by said edge portion and said gap forming means; and

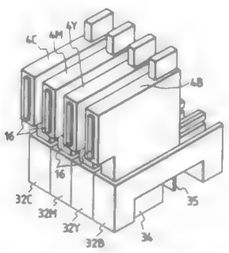
ink supply means for supplying ink to the gap.

5,363,132

COLOR INK JET PRINTING APPARATUS HAVING RETRACTABLE PRINTHEADS TO PREVENT NOZZLE CONTAMINATION

Masatoshi Ikkatai, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,468
Claims priority, application Japan, Feb. 28, 1991, 3-057895
Int. Cl.[5] B41J *2/165*
U.S. Cl. 349—8 **6 Claims**



1. An ink jet recording apparatus for performing color recording by depositing a plurality of inks on a recording medium, said apparatus comprising:

a plurality of recording means, provided apart from the recording medium by a predetermined distance, for discharging the ink to thereby effect recording;

a carriage for mounting said plurality of recording means for scanning; and

a moving means for allowing said plurality of recording means to independently move on said carriage from a position apart from the recording medium by the predetermined distance to a retracted position retracted from a region where ink mist associated with said recording means exists,

wherein said moving means retracts only those of said plurality of recording means which are not used in response to an input recording signal.

5,363,133

INK DROPLET JET DEVICE

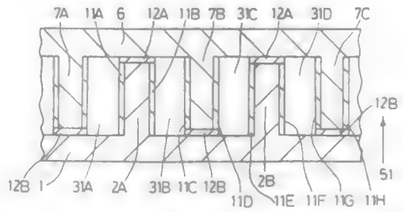
Hiroto Sugahara, Ama; Masahiko Suzuki, Nagoya, and Yoshikazu Takahashi, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 10, 1992, Ser. No. 866,450
Claims priority, application Japan, May 31, 1991, 3-129437
Int. Cl.[5] B41J *2/045*
U.S. Cl. 347—69 **20 Claims**

1. A droplet jet device having a jet unit for jetting ink in a plurality of ink channels by changing a volume of said ink channels with use of a piezoelectric transducer, comprising:

a base plate having a plurality of spaced apart first side walls extending therefrom and defining first grooves therebetween, each of said first side walls being formed of piezoelectric ceramic material and having a predetermined width, said first side walls each having two sides;

a cover plate mounted on said base plate and having a plurality of second side walls spaced apart and defining second grooves therebetween of a width greater than the predetermined width of each of said first side walls; and



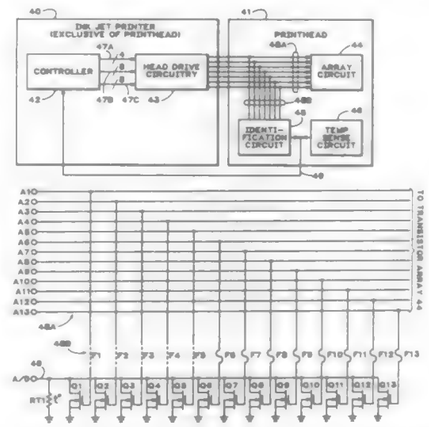
means for bonding said cover plate and base plate so that at least one of said first side walls is arranged substantially at a center of at least one of said second grooves and at least one of said second side walls is arranged substantially at a center of at least one of said first grooves, thereby defining said plurality of ink channels; wherein said first grooves have a width greater than a width of said ink channels.

5,363,134

INTEGRATED CIRCUIT PRINTHEAD FOR AN INK JET PRINTER INCLUDING AN INTEGRATED IDENTIFICATION CIRCUIT

George Barbehenn, Vancouver, Wash.; James R. Hulings, Fort Collins, Colo.; Rajeev Badyal, Corvallis, Oreg.; Ross R. Allen, Belmont, Calif., and Michael B. Saunders, Corvallis, Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed May 20, 1992, Ser. No. 886,641
Int. Cl.[5] B41J *2/05*
U.S. Cl. 347—49 **17 Claims**



1. An integrated circuit for use in thermal ink jet printheads for providing identifiable characteristics of individual print cartridges containing such a printhead to a printhead controller, comprising:

an array circuit heating an ink reservoir to produce a pattern of ink jets, the array circuit including a plurality of resistor cells arranged in a predetermined number of rows and columns;

a plurality of row and column lines coupled to the array

circuit for selectively driving at least one of the resistor cells; and

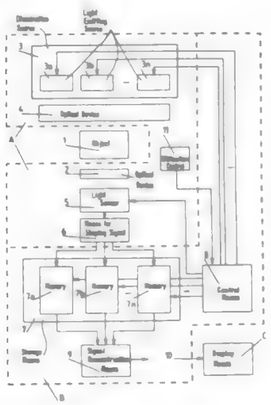
an identification circuit including a plurality of programmable paths, at least one of the programmable paths corresponding and coupled to each row line at a first end of the programmable paths and coupled at a second end of the programmable paths to a common node.

5,363,135

ENDOSCOPE HAVING A SEMI-CONDUCTOR ELEMENT ILLUMINATION ARRANGEMENT

Jean-Marc Inglese, 4 Impasse des Chênes, 78112 Fourqueux, France

Filed Apr. 19, 1993, Ser. No. 49,507
Claims priority, application France, Apr. 21, 1992, 92 04826
Int. Cl.[5] A61B *1/06*
U.S. Cl. 348—70 **12 Claims**



1. An endoscope for acquiring an image of an object and having a part insertable into a body cavity, comprising

light source means for successively emitting monochromatic light in a plurality of colors different from one another, the monochromatic light being directed to the object to produce different color monochromatic images of the object, said light source means comprising at least one semi-conductor light emitting element which is overmodulatable in a pulse operating mode to emit each different color monochromatic light, each of said semi-conductor light emitting elements comprising an electroluminescent diode having a light emission power different for each color and a light emission cycle having a diode activation period and a diode non-activation period,

light sensor means for sensing the different color monochromatic images, said light sensor means comprising a monochromatic charge coupled device and having a color sensitivity different for each color,

signal processing means for receiving signals representative of the different color monochromatic images from said light sensor means and producing a color image of the object from said signals by sequential analysis, and

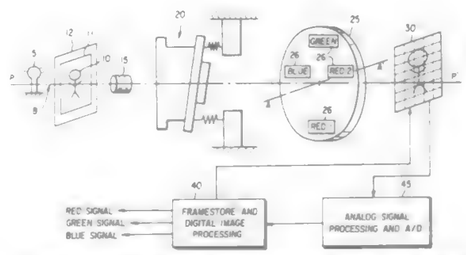
means for compensating for differences between the light emission power of said diodes for the different color monochromatic images and for differences between the color sensitivity of said charge coupled device by varying the cyclic ratio of the diode activation period and the diode non-activation period during said light emission cycle of said diodes, the cyclic ratio being selected to enable an overmodulation of said diodes.

5,363,136

CAM ACTUATED OPTICAL OFFSET IMAGE SAMPLING SYSTEM

Nicholas Sztanko, Rochester; Stephen P. Smith, Victor, and William B. Jones, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1992, Ser. No. 957,567
Int. Cl.[5] H04N *5/225*
U.S. Cl. 348—207 **21 Claims**



1. An optical imaging apparatus for increasing the resolution of an image comprising:

a source of light;

means for positioning an image-bearing support in the path of the light so as to generate an image beam directed along an optical axis;

an image sensor positioned in the path of the image beam in an X,Y plane perpendicular to the optical axis, said image sensor having active areas separated by inactive interstices between the active areas;

transparent means interposed in the path of the image beam for controlling the placement of the image beam on said image sensor; and

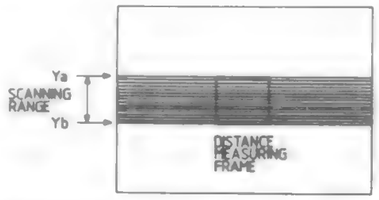
cam means for tilting said transparent means relative to the X,Y plane, without causing rotation of said transparent means about the optical axis, to displace the image beam through a plurality of discrete positions, whereby different portions of the image beam impinge upon the active areas of said image sensor.

5,363,137

FOCUS ADJUSTING APPARATUS WHICH READS A SELECTED PORTION OF AN IMAGE PICKUP PLANE

Akira Suga, Tokyo, and Kenichi Kondo, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,726, Dec. 5, 1991, abandoned. This application Jan. 3, 1994, Ser. No. 177,181
Claims priority, application Japan, Dec. 6, 1990, 2-400609
Int. Cl.[5] H04N *5/232*
U.S. Cl. 348—302 **29 Claims**



1. An automatic focus adjusting apparatus, comprising:

an image pickup device, wherein a desired area of an image pickup plane of said image pickup device can be selectively scanned;

read-out means for selectively scanning and reading out only lines in a focus detecting area set in said image pickup plane;

reset means capable of resetting the lines of the focus detecting area to be read out by said read-out means; and

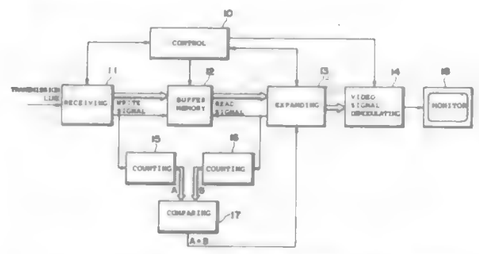
focus detecting means for causing said read-out means to read out the lines in the focus detecting area after the lines in the focus detecting area are reset by said reset means, and for detecting focus on the basis of an image signal based on the output of said read-out means.

5,363,138

IMAGE SIGNAL PEPRODUCING APPARATUS FOR PARTIALLY REPRODUCING IMAGE TO BE DISPLAYED

Junji Hayashi, and Hiroyuki Matsukawa, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Oct. 29, 1992, Ser. No. 968,352
Claims priority, application Japan, Oct. 30, 1991, 3-310113
Int. Cl.[5] H04N *7/130*
U.S. Cl. 348—390 **3 Claims**



1. An image signal reproducing apparatus which partially reproduces an image to be displayed to complete one frame of an image displayed in a plurality of stages while receiving compressed image data comprising:

receiving means for receiving the compressed image data from a transmitter process;

temporary storing means for temporarily storing the compressed image data;

write control means for writing the compressed image data received by said receiving means to said temporary storing means by a prescribed amount of compressed image data to be displayed in one stage of said plurality of stages;

image data expanding means for reading the compressed image data from said temporary storing means, and for subjecting the compressed and read image data to data expansion processing;

counting means for counting an amount of compressed image data read from said temporary storing means by said image data expanding means;

comparing means for comparing the amount of compressed image data counted by said counting means with said prescribed amount of compressed image data to be displayed in said one stage, and for outputting a coincidence signal when the count amount reaches said prescribed amount to stop said image data expanding means from data expansion processing; and

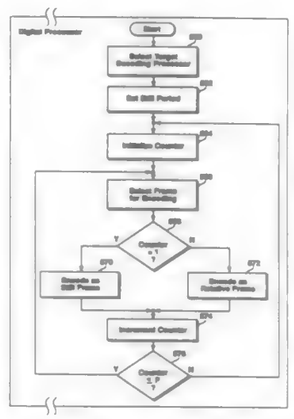
reproducing means, which starts reproducing processing in response to said coincidence signal, for converting the image data expanded by said image data expanding means into a video signal in a form suitable for displaying, and for outputting the video signal.

5,363,139

METHOD AND APPARATUS FOR SCALABLE COMPRESSION AND DECOMPRESSION OF A DIGITAL MOTION VIDEO SIGNAL

Michael Keith, Holland, Pa., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 861,227, Apr. 1, 1992, Pat. No. 5,325,126. This application Dec. 22, 1992, Ser. No. 995,122
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—415 **2 Claims**



1. A computer implemented method for scalably encoding in real time a sequence of digital video frames, comprising the steps of:

(A) selecting a target digital processor class to be used for decoding said sequence;

(B) selecting a stillperiod value in accordance with the selected target digital processor class; and

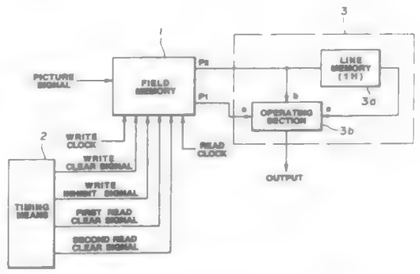
(C) encoding every Nth frame of said sequence as a still frame and encoding all other frames using interframe difference values, wherein N is equal to said stillperiod value.

5,363,140

VIDEO SIGNAL CONVERSION SYSTEM WITH A VERTICAL ENHANCEMENT CIRCUIT

Seiko Isomoto, Kanagawa; Toshio Sarugaku, Chiba, and Hiroyuki Kawashima, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 21, 1993, Ser. No. 65,153
Claims priority, application Japan, Jun. 23, 1992, 4-163284
Int. Cl.[5] H04N *7/01*
U.S. Cl. 348—445 **6 Claims**



4. A MUSE-to-NTSC converter comprising:

a field memory for performing frequency conversion and

aspect ratio conversion on an input picture signal, and for producing first and second converted picture signals which are asynchronous with each other;

timing signal generating means for controlling a writing operation of said input picture signal into said field memory, and for controlling reading operations of said first and second converted picture signals from said field memory so that one of said first and said second converted picture signals is shifted by one horizontal line period with respect to the other of said first or said second converted picture signal; and

operating means for receiving said first and said second converted picture signals from said field memory, and for producing an output picture signal by processing said first and said second picture signals,

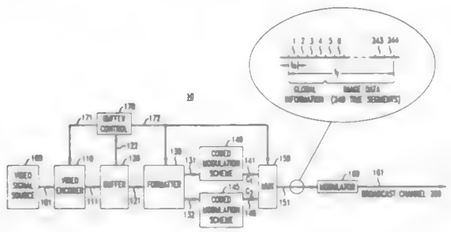
wherein said field memory comprises an input port for receiving said input picture signal, and first and second output ports for delivering said first and second converted picture signal, respectively, and said operating means comprises a line memory having an input terminal connected with said second output port of said field memory and an output terminal, and an operating section comprising a first input terminal connected with said output terminal of said line memory and an output terminal for delivering said output picture signal.

5,363,141

METHOD AND APPARATUS FOR TRANSMITTING ENCODED BLOCKS OF VIDEO SIGNALS AT DIFFERENT CHANNEL RATES

Alireza F. Faryar, Shrewsbury; George J. Kustka, Marlboro; John N. Mailhot, Somerville, and Charles A. Webb, III, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 29, 1993, Ser. No. 10,893
Int. Cl.[5] H04N *7/13*
U.S. Cl. 348—470 **20 Claims**



1. Apparatus for transmitting signals representing a video image, comprising:

means for encoding said signals into data blocks;

means for assigning a first channel rate having a lower susceptibility to degradation to data blocks encoding portions of said video image located in a first area of said image and a second channel rate having a higher susceptibility to degradation to data blocks encoding a second area of said video image;

means for transmitting each data block at its assigned channel rate;

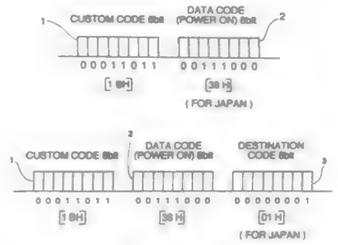
means for assigning the same channel rate to successive data blocks located in the same portion of the video image.

5,363,142

METHOD FOR CHANGING MICROCOMPUTER SPECIFICATIONS INSTALLED IN TV SETS FOR THE PURPOSE OF USING THE TV SETS IN DIFFERENT FOREIGN DESTINATIONS

Noboru Yoshida, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

Filed Apr. 16, 1993, Ser. No. 49,030
Claims priority, application Japan, Apr. 16, 1992, 4-124274
Int. Cl.[5] H04N *5/46*
U.S. Cl. 348—554 **6 Claims**



1. A method of changing microcomputer specifications in television sets comprising the steps of storing a plurality of programs in the microcomputer each of which can be used to provide the television set at least one instruction for a predetermined mode of operation; and selecting a desired one of said plurality of programs upon receipt of a predetermined destination code which is recognized by the microcomputer as specifying said selected program; and executing said selected program upon receipt of said predetermined destination code to cause the television set to implement a desired mode of operation, wherein the plurality of programs each implement a power-on mode which initializes the television set on reception of said predetermined destination code to receive television signals in accordance with a predetermined television transmission system.

5,363,143

SIDE BY SIDE PICTURE DISPLAY WITH REDUCED CROPPING

David J. Duffield, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

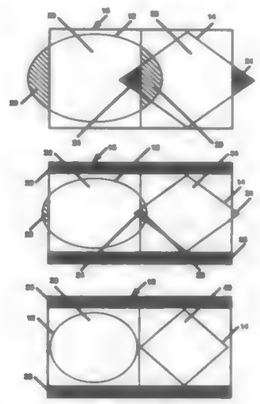
Continuation of Ser. No. 115,608, Sep. 3, 1993, abandoned. This application Feb. 10, 1994, Ser. No. 194,776
Int. Cl.[5] H04N *5/262*
U.S. Cl. 348—564 **16 Claims**

1. A television apparatus, comprising:

video display means having a first vertical display height and a first format display ratio greater than approximately 4:3;

means for combining video signals representative of at least two pictures for side by side display of said pictures on said video display means, each of said pictures having a second format display ratio smaller than approximately 4:3; and,

means for decreasing said vertical display height smaller than said first vertical display height during said side by side display of said pictures, each of said side by side pictures thereby having a third format display ratio between said first and second format display ratios.

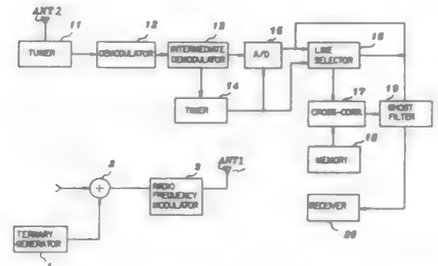


5,363,144

TELEVISION GHOST CANCELING DEVICE

Hyung M. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 16, 1993, Ser. No. 46,702
Claims priority, application Rep. of Korea, Apr. 16, 1992, 1992-6403; Dec. 30, 1992, 1992-26682
Int. Cl.[5] H04N *5/38*
U.S. Cl. 348—614 **8 Claims**



1. Television ghost cancellation device for a television system having transmitting and receiving sections, comprising:

a ternary sequence generating section included in the transmitting section of the television system for generating a ternary training signal which is inserted within a vertical blanking interval of a video signal to be modulated at a radio frequency;

a demodulating section which is included in the receiving section of the television system and for receiving a transmission signal from said transmitting section including the ternary training signal and demodulating the ternary training signal to an original video signal;

a line selecting section for selecting a line having the ternary training signal in the vertical blanking interval of the original video signal demodulated at said demodulating section;

a memory stored with a ternary sequence reference signal for comparison with the ternary training signal generated by said ternary sequence generating section;

a cross-correlation section for computing a mutual correlation of said ternary sequence reference signal and said ternary training signal via the original video signal selected by said line selection section and determining a ghost channel having a filter coefficient; and

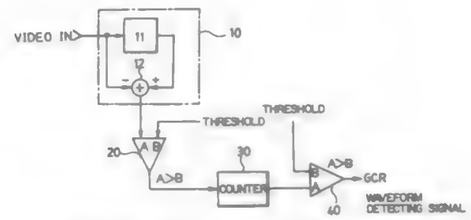
a ghost channel filter for cancelling a ghost of the video signal in accordance with the filter coefficient of said ghost channel.

5,363,145

DETECTING METHOD OF START SIGNAL OF GHOST CANCELLING REFERENCE SIGNAL AND CIRCUIT THEREOF

Do-Young Go, Anyang-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jun. 4, 1993, Ser. No. 70,938
Claims priority, application Rep. of Korea, Jun. 4, 1992, 92-9668
Int. Cl.[5] H04N *5/21*
U.S. Cl. 348—614 **10 Claims**



1. A detecting method for detecting a start signal of a ghost cancelling reference signal comprising the steps of:

a first step of obtaining differential values of received GCR signals and differential values of pedestal signals and comparing the differential values with a predetermined threshold to provide comparison results;

a second step of identifying GCR signals from the comparison results of said first step whenever a period during which the differential values are larger than the predetermined threshold exceeds a predetermined period; and

outputting and processing the identified GCR signals to determine which among the GCR signals is the start signal.

8. A detecting circuit for detecting a start signal of a ghost cancelling reference signal comprising:

a difference signal detecting means for ascertaining a difference between a maximum value and a minimum value among surrounding pixel values; and

a signal discriminating means for discriminating a GCR signal and a pedestal signal in accordance with the difference signal detected from the difference signal detecting means and for determining which among the GCR signals is the start signal.

10. A detecting circuit for detecting ghost cancelling reference signals comprising:

a differential value detecting unit arranged to (a) receive an incoming image signal and a delayed image signal, (b) process the image signal by calculating a differential value between the incoming image signal and the delayed image signal, and (c) output a difference signal;

a first comparator having respective inputs for the difference signal and a predetermined threshold signal, whereby said first comparator outputs a comparison result signal in accordance with a comparison performed between the difference signal and the threshold signal; and

a counter having an input for the comparison result signal, said counter determining a duration of the comparison result signal; and

a second comparator having respective inputs for the comparison result signal and a further threshold signal, whereby said second comparator outputs a ghost cancelling reference waveform detecting signal in accordance

with a comparison performed between the comparison result signal and the further threshold signal.

5,363,146

MOTION COMPENSATED IMAGE PROCESSING

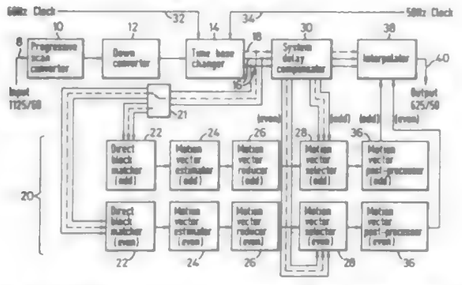
Nicholas I. Saunders, Basingstoke, and Stephen M. Keating, Reading, both of United Kingdom, assignors to Sony United Kingdom Ltd., Staines

Filed Feb. 17, 1993, Ser. No. 18,416

Claims priority, application United Kingdom, Mar. 2, 1992, 9204504

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—699 10 Claims



1. A method of motion compensated image processing in which motion vectors are generated to represent image motion between a pair of input images from which an output image is to be derived by motion compensated interpolation, said method comprising the steps of:

generating a plurality of motion vectors for each pixel of said output image;

testing each of said plurality of motion vectors associated with a target output pixel in said output image by:

(i) determining whether respective test blocks of each of said pair of input images, pointed to by a motion vector under test, lie partially outside their respective input images;

(ii) detecting a degree of correlation between said test blocks by performing a first correlation test on parts of said test blocks lying inside their respective input images if one or both of said test blocks lies partially outside its respective input image; and

(iii) detecting a degree of correlation between said test blocks by performing a second correlation test on said test blocks if both of said test blocks lie wholly inside their respective input images; and

selecting, from said plurality of motion vectors, a motion vector having a highest degree of correlation between said test blocks pointed to by the selected motion vector.

5,363,147

AUTOMATIC VOLUME LEVELER

George L. Joseph, Knoxville, and Steven M. Kaiser, Seymour, both of Tenn., assignors to North American Philips Corporation, New York, N.Y.

Filed Jun. 1, 1992, Ser. No. 892,545

Int. Cl.[5] H04N *5/60*

U.S. Cl. 348—738 12 Claims

1. A circuit for controlling a reproduced volume level of an audio signal to a desired level comprising:

means for detecting a peak amplitude level in said audio signal;

means for generating a signal indicative of a desired amplitude level;

means for comparing said peak amplitude level in said audio signal with said desired amplitude level and for generating a comparison signal as a result of said comparing; and

means coupled to said comparing means for adjusting said peak amplitude level in said audio signal in dependence on said comparison signal, wherein said adjusting means adjusts said peak amplitude level in said audio signal prior to said detecting means detecting said amplitude level in said audio signal.

3. A circuit for controlling a reproduced volume level of an audio signal to a desired level comprising:

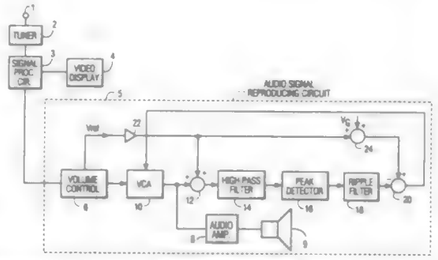
means for detecting a peak amplitude level in said audio signal;

means for generating a signal indicative of a desired amplitude level;

means for comparing said peak amplitude level in said audio signal with said desired amplitude level and for generating a comparison signal as a result of said comparing; and

means coupled to said comparing means for adjusting said peak amplitude level in said audio signal in dependence on said comparison signal, wherein said circuit further comprises means for rendering said circuit insensitive to low frequency components in said audio signal.

7. A television receiver having an input for receiving television signals, a tuner for tuning to a selected one of said television signals, signal processing means coupled to an output of said tuner for processing said selected television signal, said signal processing means having a first output for providing a video signal contained in said selected television signal, and a second output for providing an audio signal contained in said selected television signal, video display means for displaying said video signal at the first output of said signal processing means, and audio signal reproducing means for generating an



audible sound signal corresponding to the audio signal at the second output of said signal processing means, characterized in that said audio signal reproducing means includes a circuit for controlling a reproduced volume level of the audio signal to a desired level, said circuit comprising:

means for detecting a peak amplitude level in said audio signal;

means for generating a signal indicative of a desired amplitude level;

means for comparing said peak amplitude level in said audio signal with said desired amplitude level and for generating a comparison signal as a result of said comparing; and

means coupled to said comparing means for adjusting said peak amplitude level in said audio signal in dependence on said comparison signal, wherein said adjusting means adjusts said peak amplitude level in said audio signal prior to said detecting means detecting said peak amplitude level in said audio signal.

9. A television receiver having an input for receiving television signals, a tuner for tuning to a selected one of said television signals, signal processing means coupled to an output of said tuner for processing said selected television signal, said signal processing means having a first output for providing a video signal contained in said selected television signal, and a second output for providing an audio signal contained in said selected television signal, video display means for displaying said video signal at the first output of said signal processing means, and audio signal reproducing means for generating an audible sound signal corresponding to the audio signal at the second output of said signal processing means, characterized in that said audio signal reproducing means includes a circuit for controlling a reproduced volume level of the audio signal to a desired level, said circuit comprising:

means for detecting a peak amplitude level in said audio signal;

means for generating a signal indicative of a desired amplitude level;

means for comparing said peak amplitude level in said audio signal with said desired amplitude level and for generating a comparison signal as a result of said comparing; and

means coupled to said comparing means for adjusting said peak amplitude level in said audio signal in dependence on said comparison signal, wherein said adjusting means adjusts said peak amplitude level in said audio signal prior to said detecting means detecting said peak amplitude level in said audio signal.

second output of said signal processing means, characterized in that said audio signal reproducing means includes a circuit for controlling a reproduced volume level of the audio signal to a desired level, said circuit comprising:

means for detecting a peak amplitude level in said audio signal;

means for generating a signal indicative of a desired amplitude level;

means for comparing said peak amplitude level in said audio signal with said desired amplitude level and for generating a comparison signal as a result of said comparing; and

means coupled to said comparing means for adjusting said peak amplitude level in said audio signal in dependence on said comparison signal, wherein said circuit further comprises means for rendering said circuit insensitive to low frequency components in said audio signal.

5,363,148

CRT DISPLAY SET AND OPTICAL DEVICE HAVING MEANS FOR ACCURATELY POSITIONING THE CRT

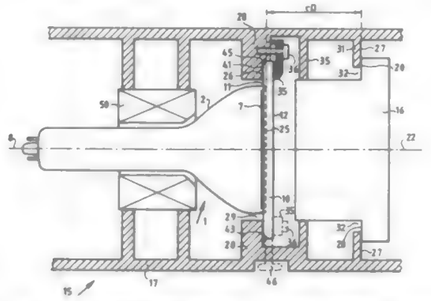
Jean-Pierre Sembely, St Egreve, France, assignor to Thomson Tubes Electroniques, Velizy, France

Filed Dec. 14, 1992, Ser. No. 992,251

Claims priority, application France, Dec. 31, 1991, 91 16378

Int. Cl.[5] H04N *5/645, 5/74;* H01J *29/24, 29/89*

U.S. Cl. 348—781 9 Claims



1. A display set comprising a cathode ray tube and an optical device, the cathode ray tube comprising a bulb, a front-end of which is closed by a transparent plate, the transparent plate having a rear face bearing a cathodoluminescent screen, the display set further comprising means for holding the optical device, and a mechanical reference surface, wherein the transparent plate has a central portion extending within the periphery of the bulb at the front-end thereof and a peripheral portion extending beyond a periphery of the bulb at the front-end thereof, and wherein the rear face of the transparent plate at the peripheral portion thereof is in direct contact with said mechanical reference surface for a precise positioning of the cathodoluminescent screen with respect to the optical device.

5,363,149

PROJECTION TELEVISION SET

Takashi Furuno; Toshiya Wakasa; Jun Iizuka; Kanehiro Hagiwara, and Mitsuyoshi Mitake, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 21, 1993, Ser. No. 49,772

Claims priority, application Japan, Apr. 23, 1992, 4-104801; Apr. 23, 1992, 4-104804; Apr. 23, 1992, 4-104805

Int. Cl.[5] H04N *5/64*

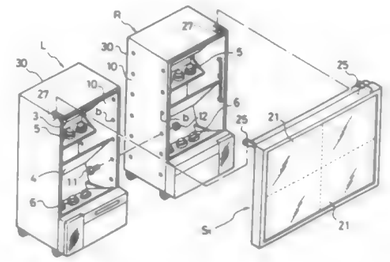
U.S. Cl. 348—789 19 Claims

1. A projection television set comprising:

a body composed of right and left divided units, each unit having at least one projector and one reflex mirror for directing projection light rays from the projector to a screen;

a screen assembly having an integrally formed screen arranged so that any seam lines of said units disappear and having a circular Fresnel lens and a lenticular sheet which receives projection light rays from the projectors to form an image on the screen;

a coupling device for coupling said screen assembly and said divided units together, said coupling device including a hook pin provided at upper positions of the left and rights



units and hook engagement devices provided on an upper portion of the screen assembly for engagement with the hook pins whereby the screen assembly may be openably held on respective front faces of the divided units; and

a caster assembly at the bottom of each of the divided units to permit independent movement of the divided units.

5,363,150

CASING FOR A TELEVISION SET

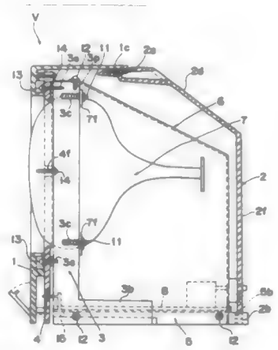
Kazunobu Kojima, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 763,656, Sep. 18, 1991, abandoned. This application Dec. 21, 1993, Ser. No. 171,200

Claims priority, application Japan, Sep. 21, 1990, 2-253237

Int. Cl.[5] H04N *5/65*

U.S. Cl. 348—836 6 Claims



1. A casing for use in a television set having a cathode ray tube and a circuit arrangement for driving the cathode ray tube, said casing comprising:

a back cover means defined by two side walls, a top wall provided with a claw on an end portion of said top wall, and a back wall provided with tongues at a bottom end of said back wall;

a cabinet means defined by two side walls, a front wall, and a top wall provided with two blocks on the inner surface of said top wall; and

an integral unit consisting of:

(a) a frame means for firmly supporting said cathode ray tube, said frame means having an engaging member;

(b) a chassis means having a plate-like shape for support-

ing said circuit arrangement thereon, said chassis means having:

(i) an engagable member for the engagement with said engaging member so that said chassis means is firmly connected to said frame means,

(ii) a top surface on which is mounted a printed circuit board with electronic parts and switches, and

(iii) a bottom surface having holes for receiving said tongues of said back cover means;

(c) an escutcheon means secured to said frame means and located in front of a screen of said cathode ray tube; and

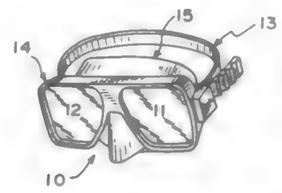
(d) a protection cover means connected to said frame means for covering said cathode ray tube, wherein said integral unit has a bottom side, a front portion and a back portion, and wherein said bottom surface of said chassis means encloses the bottom side of said integral unit.

5,363,151

COLOR CORRECTION FOR IMPROVED VISION THROUGH WATER AND OTHER ENVIRONMENTS

Alice de P. T. Biays, and W. Tuckerman Biays, both of 633 Island Dr., Key Largo, Fla. 33037

Filed Oct. 3, 1991, Ser. No. 790,481
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—43 **8 Claims**



1. A method of enhancing through-water vision by an individual of an object through a water path having a length from about 5 feet to about 50 feet comprising the steps of:

filtering light entering one eye of said individual by a first light transmitting element to effect a subtractive filtration using a first filter selected to compensate for differential light absorption of water, and

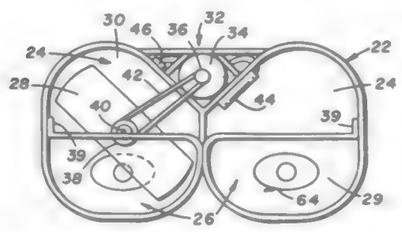
filtering light entering a second eye of said individual by a second light transmitting element which does not compensate for said differential light absorption of water.

5,363,152

SELECTIVE COLOR ENHANCEMENT OPTICAL GLASSES

Clurin B. Reed, III, 105 Camelia Way, Brandon, Miss. 39042

Filed Dec. 3, 1992, Ser. No. 985,271
Int. Cl.[5] G02C *9/00*
U.S. Cl. 351—47 **19 Claims**



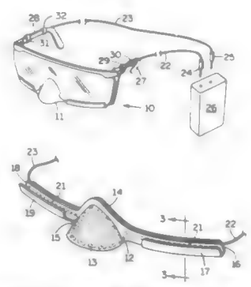
1. A method for enhancing the perception of the true color of an object, said true color being in a selected portion of the visible light spectrum, said method comprising the steps of positioning a filtering lens adjacent one eye that blocks a first predetermined portion of said selected portion of the visual light spectrum which contains said true color of said object from entering said one eye and simultaneously allowing a second predetermined portion of the same selected portion of the visible light spectrum to enter the second eye, said first predetermined portion being less than said second predetermined portion containing the true color of said object.

5,363,153

COMFORT ZONE HEATING APPARATUS FOR GLASSES OR THE LIKE

Clealen D. Bailiff, 25 Verde Hills, Center Point, Tex. 78010

Continuation-in-part of Ser. No. 772,663, Oct. 7, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,725
Int. Cl.[5] G02C *1/00*
U.S. Cl. 351—78 **2 Claims**



1. An apparatus capable of being removably attached to eyewear for imparting heat to the front facial region of an eyewear wearer, comprising:

a nosepiece, said nosepiece including means for removably attaching said nosepiece to said eyewear;

a pad affixed to one side of said nosepiece for providing a cushion between said nosepiece and the front facial region of said eyewear wearer; and

a resistive element affixed to said cushion and positioned between said cushion and said nosepiece, said resistive element being electrically connected to a power source for imparting heat to the front facial region of said eyewear wearer.

5,363,154

VISION TRAINING METHOD AND APPARATUS

Stephen M. Galanter, 1732 Riverview Rd., Gladwyne, Pa. 19035, and Barry G. Millis, 352 Gribbel Rd., Wyncote, Pa. 19095

Division of Ser. No. 299,680, Jan. 23, 1989, Pat. No. 5,088,810. This application Feb. 14, 1992, Ser. No. 836,140
Int. Cl.[5] A61B *3/02*
U.S. Cl. 351—203 **14 Claims**

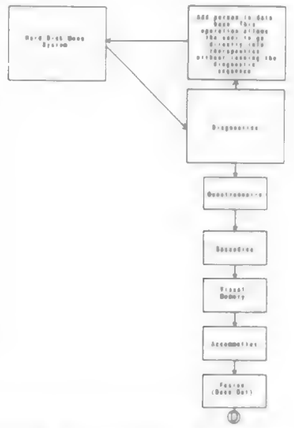
1. Method for administering tests for diagnosing deficiencies in visual function comprising the steps of:

(a) providing a computer, and a display device coupled thereto, for displaying a plurality of different patterns and instructions for responding to each pattern, the patterns and instructions defining a battery of different diagnostic tests each relating to a different visual function, each diagnostic test requiring a subject to enter responses to at least two of size, position, depth, motion and duration of presentation of the patterns displayed;

(b) prompting the subject, via the computer and display device, to enter personal information into the computer, the computer storing the same in a database;

(d) automatically, under software control of the computer and via the display device, administering the diagnostic tests to the subject under test by directing the subject to enter in the computer, via an input device, the responses to the patterns and instructions displayed, the administration of the diagnostic tests to the subject being interactive with the computer and being self-directing and self-advancing;

(d) automatically processing the responses in the computer, according to the software, to characterize the subject's performance in the diagnostic tests;



(e) automatically providing from the computer the characterization of the subject's performance to the subject, the characterization including an identification of the deficiencies in visual function; and,

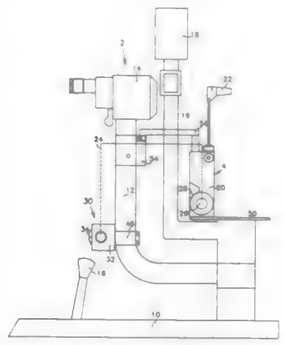
(f) automatically storing data indicative of the subject's performance in the database for each subject tested.

5,363,155

EYE EXAMINATION APPARATUS AND ACCESSORY THEREFOR

Ehud Urinowski, 6 Ben Tov Street, 43229 Raanana; Dror Nedivi, 41 A.D. Gordon St., 49280 Petah Tikva, and Joseph Petel, 83 Levona, Beit Arie, 71947 Doar Na Modiin, all of Israel

Filed Feb. 18, 1993, Ser. No. 19,378
Int. Cl.[5] A61B *3/10, 3/16*
U.S. Cl. 351—205 **20 Claims**



1. An accessory for use with an eye examination apparatus comprising an eyepiece carried at one side, constituting the forward side, of the apparatus to enable an examiner to view a subject's eye located at the opposite side, constituting the rear side, of the apparatus rearwardly of the eyepiece; a control lever for controlling the position of the eyepiece; and a tonometer unit located rearwardly of the eyepiece and including a housing, a contact element to contact the cornea of the subject's eye, and adjusting means for varying the pressure applied by the contact element against the subject's eye;

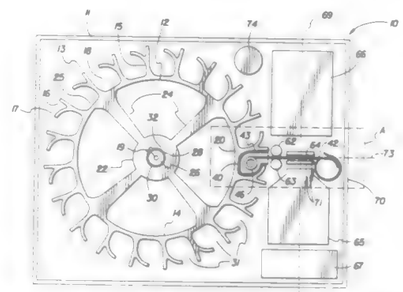
said accessory comprising: a remote control unit having a manual control member; attaching means for attaching said remote control unit to the apparatus; and a coupling between said manual control member and said adjusting means of said tonometer unit, said manual control member of the remote control unit being sufficiently close to said control lever of the apparatus for controlling the position of the eyepiece such as to permit the operation of both said control lever and said manual control member by the same one hand of the examiner while the examiner views the subject's eye via said eyepiece without lifting said one hand from the control lever or the examiner's eyes from said eyepiece.

5,363,156

FILM CARTRIDGE PROJECTION DEVICE

Dennis F. Tianello, Spencerport, and John A. Romansky, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1993, Ser. No. 171,800
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—26 R **21 Claims**



1. A projector having illumination and optical devices for projecting one or more images, is characterized by:

a magazine rotatably mounted to said projector, said magazine having a plurality of pockets disposed about its periphery, each of said pockets having a configuration for holding a film cartridge for delivery of a film strip contained within a said cartridge through a predetermined location for projecting an image of said film, said projector including means for conveying said film strip into and out of a held cartridge wherein said cartridge contains a spool for retaining film therein, said means for conveying said film strip including means for engaging said spool so as to thrust the film strip into or out of a said cartridge.

5,363,157

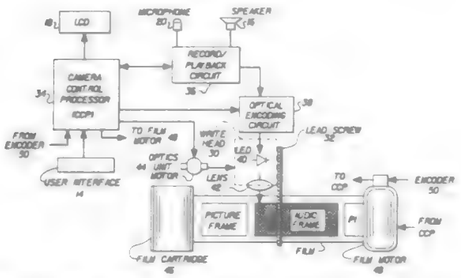
CAMERA UTILIZING VARIABLE AUDIO FILM FRAME FOR OPTICAL ENCODING OF AUDIO INFORMATION

J. David Cocca, New York, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1993, Ser. No. 110,280
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354;76 **7 Claims**

5. A camera system comprising: means for selecting the duration of an audio segment to be recorded; means for recording the audio segment for the selected duration; means for exposing a photosensitive film to an image to form a picture

frame; means for optically encoding the audio segment as an audio film frame at a location intermediate to a corresponding



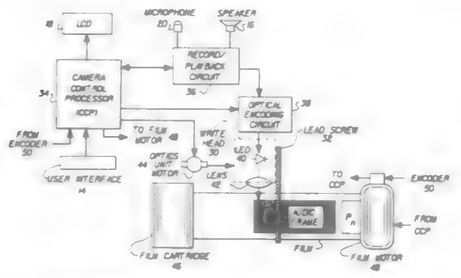
picture frame and a picture frame subsequent to the corresponding picture frame on the photosensitive film.

5,363,158

CAMERA INCLUDING OPTICAL ENCODING OF AUDIO INFORMATION

Jeffrey R. Stoneham, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1993, Ser. No. 110,660
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—76 **7 Claims**



5. A camera system comprising: means for exposing a photosensitive film to a plurality of images to form a plurality of picture film frames thereon; means for recording an audio segment corresponding to at least one of the plurality of picture film frames; means for selecting the duration of the audio segment to be recorded; means for optically encoding the recorded audio segment as an audio film frame on the photosensitive film adjacent to a last picture film frame of the plurality of picture film frames at a location intermediate the last picture film frame and an end of the photosensitive film.

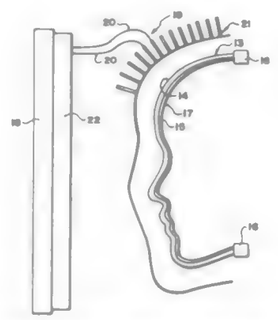
5,363,159

THREE-DIMENSIONAL PHOTOGRAPH

Kevin Melvin, 22 Dellwood Crescent, Winnipeg, Manitoba, Canada R3R 1S7

Filed Nov. 3, 1993, Ser. No. 145,191
Int. Cl.[5] G03B *29/00*
U.S. Cl. 354—76 **11 Claims**

1. A method of manufacturing a three-dimensional photograph of an outer surface of a three-dimensional object comprising scanning the object using a three dimensional color digitizer to generate spatial data representative of the three-dimensional shape of the outer surface of the object and color data representative of the color of the outer surface of the object, the color data being related to the spatial data, using the spatial data to generate a body having a three-dimensional body surface representative of the outer surface of the object, applying a photographic material to the body so to be visible at the body surface, and using the color data and its relation to the spatial data to expose the photographic material to generate



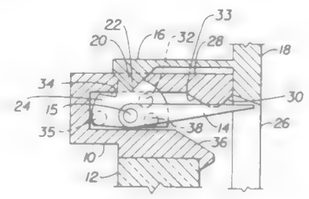
color on the photographic material representative of the color on the outer surface of the body.

5,363,160

CAMERA IN WHICH A LIGHT BLOCKING SHIELD IS AUTOMATICALLY MOVED TOWARDS A NORMAL POSITION AS A MOVABLE LENS MOUNT IS RETRACTED TO A STORAGE POSITION

Myron E. Fox, Spencerport, and Richard A. Gates, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 12, 1993, Ser. No. 90,850
Int. Cl.[5] G03B *37/00*
U.S. Cl. 354—94 **5 Claims**



1. In a camera having a movable lens mount for supporting a taking lens, the improvement comprising:

at least one light blocking shield which is movable between (1) a panoramic position in which light passing through said taking lens is partially blocked from reaching a photographic film such that a vertically reduced panoramic image can be recorded on the photographic film and (2) a normal position in which light passing through said taking lens is not blocked by said light blocking shield such that a normal image can be recorded on said film; and

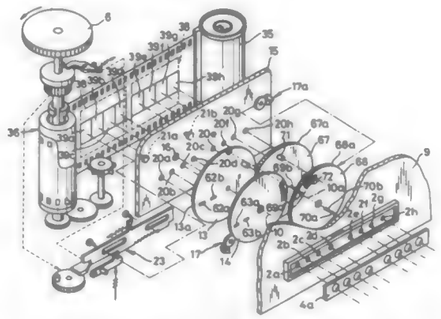
means for automatically moving said light blocking shield towards said normal position as said movable lens mount is being retracted into a storage position such that said movable lens mount can be fully retracted into said storage position without interference from said light blocking shield.

5,363,161

SEQUENTIAL TAKING CAMERA WITH PLURAL LENSES

Nobuyuki Kameyama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 30, 1992, Ser. No. 968,690
Claims priority, application Japan, Oct. 30, 1991, 3-285175
Int. Cl.[5] G03B *35/08*
U.S. Cl. 354—114 **20 Claims**



1. A sequential taking camera having a plurality of exposure chambers arranged in a line along a photographic film transporting direction and a plurality of taking lenses one mounted in front of each exposure chamber, for sequentially creating a plurality of original frames on a photographic film upon one release operation, said sequential taking camera comprising:

a film winding member for winding up said photographic film one frame after another, said film winding member being operable from the outside of said camera;

shutter drive means moving from an initial position to a cocked position in response to said operation of said film winding member;

shutter release means for releasably retaining said shutter drive means in said cocked position, said shutter release means releasing said shutter drive means in response to actuation of said shutter release means to allow said shutter drive means to move quickly from said cocked position to said initial position;

at least one shutter disk rotating in response to the operation of said shutter drive means, said shutter disk taking a first position when said shutter drive means is in said initial position and taking a second position when said shutter drive means is in said cocked position, and said shutter disk having a plurality of shutter openings which operate to sequentially expose said frames only when said shutter disk rotates from said second position to said first position, said shutter drive means including an elongated shutter drive lever slidable in the direction of its length between said initial and cocked positions, and a spring urging said shutter drive lever toward said initial position.

5,363,162

CAMERA WITH VALUABLE ILLUMINATION ANGLE POP-UP FLASH

Shoji Kaihara; Hidehiko Fukahori, and Tsuyoshi Fukuda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

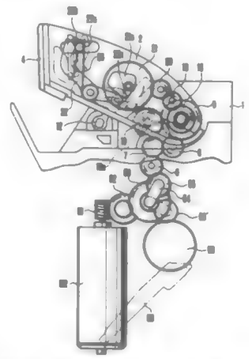
Filed May 14, 1992, Ser. No. 882,904
Claims priority, application Japan, May 17, 1991, 3-113004; Jul. 18, 1991, 3-178229
Int. Cl.[5] G03B *15/05*
U.S. Cl. 354—149.1 **18 Claims**

1. A camera including a camera body and a flash unit, said camera comprising:

(a) a motor disposed in said camera body;

(b) a moving mechanism for causing said flash unit to move from a non-projected position to a projected position;

(c) an illumination-angle switching mechanism for varying an illumination angle of said flash unit, said illumination-angle switching mechanism being driven by means of a rotation of said motor in one direction and being capable of stopping in any one of a plurality of specific illumination angle states; and



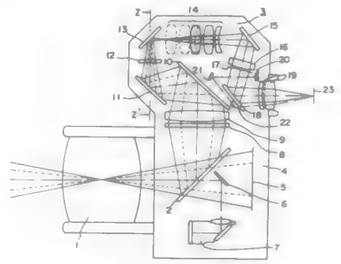
(d) an engagement mechanism arranged to engage said flash unit at said non-projected position, said engagement mechanism being arranged to engage when said illumination-angle switching mechanism is stopped in any one of said plurality of specific illumination angle states, and to be disengaged by means of the rotation of said motor in said one direction.

5,363,163

FINDER OPTICAL SYSTEM FOR PSEUDO FOCAL LENGTH

Kohtaro Hayashi, Suita; Hiromu Mukai, Kawachinagano, and Yoshinobu Kudo, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1992, Ser. No. 882,275
Claims priority, application Japan, May 14, 1991, 3-139728; Jul. 15, 1991, 3-201398; Jul. 15, 1991, 3-201399; Sep. 18, 1991, 3-268214; Oct. 7, 1991, 3-289276
Int. Cl.[5] G03B *13/10*
U.S. Cl. 354—155 **11 Claims**



1. A finder optical system comprising:

a photo-taking lens;

a mirror which reflects light rays passed through the photo-taking lens;

a focusing screen on which a first object image is formed from the light rays;

a relay lens system through which the first object image is reformed as a second object image smaller than the first object image, said relay lens system being located parallel to an optical axis of the photo-taking lens;

means for leading light rays from the focusing screen to the relay lens system;
an eye piece which enlarges the second object image, and
means for displaying picture-taking data in a viewfinder, said displaying means having a display data image generating device and a forming device which forms a small image of the display data generating device at a position having the same distance from the eye piece as the second object image.

5,363,164

DEVICE FOR INITIALIZING A CAMERA LENS UPON REINITIATION OF POWER TO CAMERA

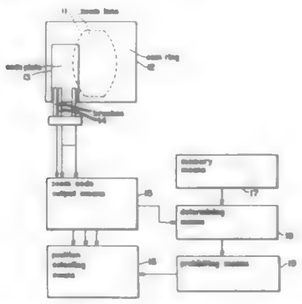
Takeo Kobayashi, Tokyo; Yasushi Tabata, Chiba; Norio Numako, Tochigi; Katsutoshi Nagai, and Takao Nishida, both of Saitama, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 825,779, Jan. 21, 1992, Pat. No. 5,291,232, which is a continuation of Ser. No. 626,794, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 477,522, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 374,346, Jun. 30, 1989, abandoned. This application Sep. 21, 1993, Ser. No. 124,021

Claims priority, application Japan, Jun. 30, 1988, 63-87118; Jun. 30, 1988, 63-87119; Jun. 30, 1988, 63-87120; Jun. 30, 1988, 63-163895; Jun. 30, 1988, 63-163896; Jun. 30, 1988, 63-163897; Jun. 30, 1988, 63-163898; Jun. 30, 1988, 63-163899; Feb. 10, 1989, 1-31315

Int. Cl.[5] G03B *5/00*

U.S. Cl. 354—195.1 30 Claims



1. Apparatus for initializing the lens of a camera having a power source, means for selectively transmitting power from said power source to the lens in accordance with a state of said transmitting means, said apparatus comprising positioning means, operated upon reintroduction of said power source, for positioning said lens at a predetermined reference position regardless of the state of said transmitting means, said positioning means comprising means for driving said lens in a direction towards said predetermined reference position.

5,363,165

POWER ZOOM LENS AND CAMERA SYSTEM

Masahiro Kawasaki; Hiroyuki Takahashi, and Yoshinari Tanimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

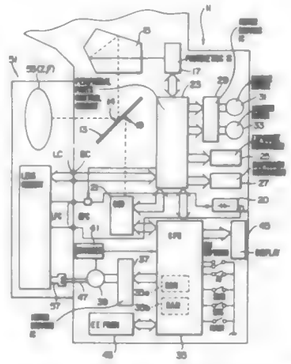
Filed May 21, 1992, Ser. No. 886,690

Claims priority, application Japan, May 21, 1991, 3-218146; Nov. 29, 1991, 3-342123

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—195.12 32 Claims

1. A camera system that includes a camera body, and a power zoom lens which is detachably mounted to said camera body, and which has a zooming lens unit that is movable in an optical axis direction to vary a focal length, wherein said power zoom lens comprises:
a zoom motor for driving said zooming lens unit;
means for detecting a focal length of said power zoom lens;
a lens memory for storing said focal length detected by said focal length detecting means; and
a lens controller for controlling a driving operation of said zoom motor until said focal length stored in said lens memory is obtained;
and wherein said camera body comprises;
a body controller that causes said lens memory to store data of said focal length detected by said focal length detecting means;
a power source which supplies said zoom motor with electrical power and supplies said focal length detecting means and said lens memory with a constant voltage; and,
a body memory for storing said focal length data stored in said lens memory;



said camera body and said power zoom lens further comprising input and output means for receiving and transmitting. focal length data therebetween;
said body controller comprises a main switch which is turned ON and OFF to selectively supply said power zoom lens with electrical power;
wherein, when said main switch is turned OFF, said body controller stores said focal length data stored in said lens memory into said body memory through said input and output means before said power supply is turned OFF; and
wherein, when said main switch is turned ON, said body controller transfers said focal length data stored in said body memory to said power zoom lens through said input and output means to store said focal length data in said lens memory.

5,363,166

PHOTOGRAPHIC FILM CASSETTE AND CAMERA FOR USE THEREIN

Koichi Takahashi, and Kiichiro Kitagawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 7, 1992, Ser. No. 986,621

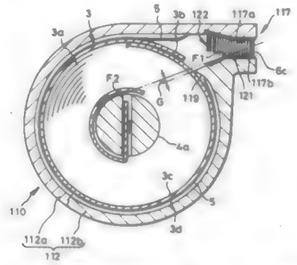
Claims priority, application Japan, Dec. 6, 1991, 3-323059; Jul. 15, 1992, 4-188340

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—275 36 Claims

36. A photographic film cassette including a cassette shell having a roll chamber defined therein, a spool rotatably contained in said roll chamber, photographic film wound in a roll on a core of said spool between a pair of flanges formed on said spool, said photographic film having an emulsion surface and a back surface, rotation of said spool in an unwinding direction causing a leader of said photographic film to advance outward through a passage mouth defined in said cassette shell, said photographic film cassette comprising:

a passageway formed in said cassette shell between said roll chamber and said passage mouth for allowing said photographic film to pass therethrough, a channel of said passageway being defined by opposed first and second inside faces which are spaced apart from each other, said first inside face being in opposition to said emulsion surface of said photographic film, and said second inside face being in opposition to said back surface of said photographic film when said film is in said passageway;
a first light-trapping member attached to said first inside face;



a second resilient light-trapping member attached to said second inside face so as to prevent ambient light from entering said roll chamber by virtue of cooperation with said first light-trapping member; and
a separator claw formed on said first inside face, on a side thereof which is proximate said roll chamber, so as to come into contact with said leader when said spool is rotated in said unwinding direction and separate said leader from said roll wound around said spool, said separator claw being entirely disposed on one side of a tangent line which is commonly tangent to said first inside face and said spool core.

5,363,167

PHOTOGRAPHIC FILM CASSETTE HAVING A LOCKING SPOOL

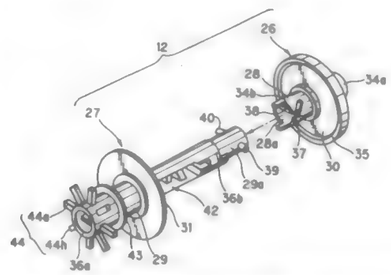
Tetsuya Takatori, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 21, 1992, Ser. No. 964,290

Claims priority, application Japan, Oct. 21, 1991, 3-320064

Int. Cl.[5] G03B *17/26, 1/04*

U.S. Cl. 354—275 33 Claims



7. A photographic film cassette in which photographic film is wound on a spool rotatably contained in a cassette shell, and in which a leader of said photographic film is advanced outward from a passage mouth when said spool is rotated, said cassette comprising;
locking means provided inside said cassette shell for stopping rotation of said spool when a rotational torque of less than a predetermined value is applied to said spool and for allowing said spool to rotate when a rotational torque of at least said predetermined value is applied to said spool, said locking means being set in an unlocked state, in which said spool can freely rotate, when said cassette is loaded in said camera, said locking means comprising:
a sleeve formed on an end of said spool;
a stopper member slidably contained within said sleeve and adapted to coming in contact with an inner lateral wall of said cassette shell; and
a biasing member disposed within said sleeve so as to bias said stopper member into contact with said inner lateral wall, said spool rotating against friction between said stopper member and said inner lateral wall when a torque of at least said predetermined value is applied thereto.

5,363,168

PHOTOGRAPHIC PROCESSING APPARATUS

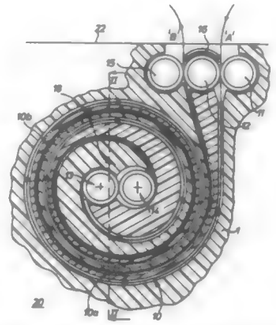
Edward T. S. Glover, London, and Anthony Earle, Middlesex, both of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 13, 1993, Ser. No. 47,145

Claims priority, application United Kingdom, Apr. 21, 1992, 9208606

Int. Cl.[5] G03D *3/08, 13/02*

U.S. Cl. 354—319 12 Claims

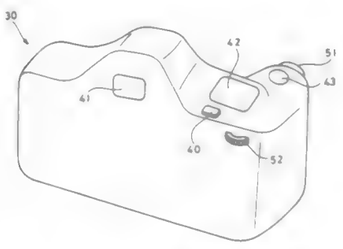


1. Photographic processing apparatus for processing photographic material, the apparatus comprising:
at least one processing tank;
a processing path within the processing tank;
an inlet to the processing path; and
an outlet from the processing path;
characterized in that the processing path comprises a spiral and the inlet and the outlet lie in substantially the same plane;
in that the material to be processed is transported along the processing path with its edges in substantially in the same plane; and wherein the processing path comprises an inlet portion and an outlet portion, the inlet portion and outlet portion each comprising a spiral and meeting at a junction at the center of the spiral, the inlet and outlet portions being interwoven to lie in substantially the same plane; and
connecting means provided at the junction between the inlet portion and the outlet portion for reversing the direction of transport of the material.

5,363,169
CAMERA OPERATED IN ONE OF A PLURALITY OF PHOTOGRAPHING MODES

Tokuji Ishida, Daito; Masataka Hamada, Osakasayama; Hiroaki Ootsuka, Sakai, and Hiroshi Ueda, Habikino, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 789,022, Nov. 7, 1991, Pat. No. 5,227,833, which is a division of Ser. No. 686,150, Apr. 16, 1991, Pat. No. 5,264,889. This application Dec. 15, 1992, Ser. No. 992,895
Claims priority, application Japan, Apr. 17, 1990, 2-101392; Apr. 17, 1990, 2-101393; Apr. 17, 1990, 2-101394; Apr. 17, 1990, 2-101395; Apr. 26, 1990, 2-111920; Apr. 27, 1990, 2-113639; Apr. 27, 1990, 2-113640; Apr. 27, 1990, 2-113641; Aug. 29, 1990, 2-230880; Aug. 29, 1990, 2-230881
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—442 **4 Claims**



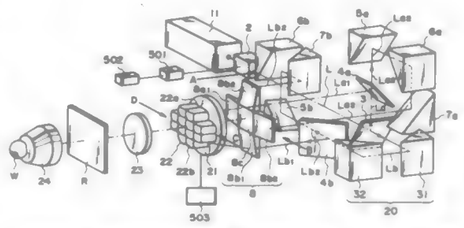
1. A camera operable in one among a first photographing mode, a second photographing mode and a third photographing mode, said camera further being selectively operable in one of a plurality of photographing states when said camera operates in the first mode, said camera comprising:
a first manual operation member,
first means responsive to an operation of said first manual operation member for cyclically selecting one of the first, second and third photographing modes in this order,
a second manual operation member,
second means responsive to an operation of said second manual operation member for selecting one of the plurality of photographing states in the first photographing mode, and
means responsive to the operation of said first manual operation member for changing a photographing mode of said camera from the first photographing mode to the third photographing mode without passing through the second photographing mode when said camera operates in the selected state in the first mode.

5,363,170
ILLUMINATION DEVICE AND PROJECTION EXPOSURE APPARATUS USING THE SAME

Masato Muraki, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 920,634, Jul. 28, 1992, abandoned. This application Jul. 6, 1993, Ser. No. 86,370
Claims priority, application Japan, Aug. 9, 1991, 3-225221
Int. Cl.[5] G03B *27/54*
U.S. Cl. 355—67 **57 Claims**

1. An illumination device, comprising:
a radiation source;
an incoherency imparting optical system for amplitude-dividing a coherent beam from said radiation source into plural beams and for imparting an optical path length difference, not less than a coherent length of the coherent beam, to the divided beams;
an optical integrator for receiving the divided beams to define a secondary light source;
a condensing optical system for directing a secondary beam from said secondary light source to a surface to be illuminated; and
an afocal system disposed on a path between said radiation source and said optical integrator, said afocal system

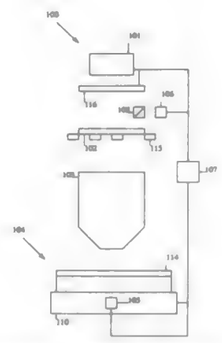


having a variable angular magnification, wherein changing the angular magnification of said afocal system is contributable to changing the section of each of the beams impinging on said optical integrator.

5,363,171
PHOTOLITHOGRAPHY EXPOSURE TOOL AND METHOD FOR IN SITU PHOTORESIST MEASURMENTS AND EXPOSURE CONTROL

Chris A. Mack, Austin, Tex., assignor to The United States of America as represented by The Director, National Security Agency, Ft. Meade, Md.

Filed Jul. 29, 1993, Ser. No. 98,914
Int. Cl.[5] G03B *27/74, 27/80, 27/42*
U.S. Cl. 355—68 **9 Claims**

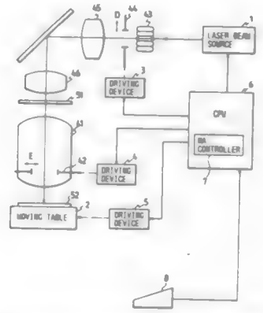


1. A photolithography exposure apparatus, comprising:
an imaging system for projecting an image from a mask onto a photosensitive layer of a substrate, said system comprising:
an illumination source;
a lens, for directing illumination from said illumination source onto said photosensitive layer;
a mask support structure for holding said mask at a first location; and
a chuck for supporting said substrate; and
a transmission detector positioned to measure illumination, from said illumination source, that passes through said photosensitive layer.

5,363,172
METHOD OF PROJECTION EXPOSURE AND STEPPER

Noriaki Tokuda, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,086
Claims priority, application Japan, Feb. 19, 1992, 4-031993
Int. Cl.[5] G03B *27/72*
U.S. Cl. 355—71 **13 Claims**

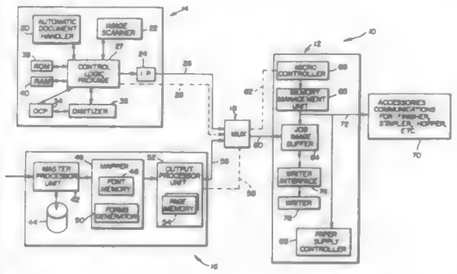


1. A method for projection exposure by irradiating illuminating rays through an optical illumination system onto a reticle on which a pattern to be transferred is formed and by imaging the projected image of said reticle on a transferring substrate through an optical projection system, including the following process of:
determining, based on the aperture number of said optical illumination system and the aperture number of said optical projection system, whether all the zero order diffraction rays which pass said reticle, among the illuminating rays passing a first variable stop arranged in said optical illumination system, are able to pass the aperture of a second variable stop arranged in said optical projection system or not; and
disabling the exposure operation when it is determined in said determining process that a part or all of said zero order diffraction rays cannot pass the aperture of said second variable stop.

5,363,173
DOCUMENT PRODUCTION APPARATUS WITH DESELECTED FEATURE RESTORATION

Philip Alesio, Rochester, and Douglas B. Beaudet, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 25, 1993, Ser. No. 83,792
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—204 **7 Claims**

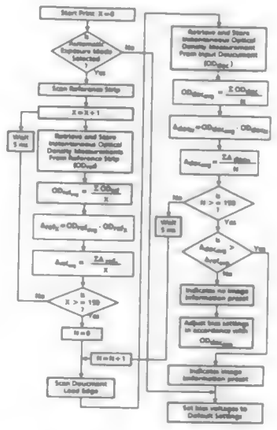


1. A document production apparatus comprising:
a plurality of operator-selectable features for a job, at least two of which features conflict due to mutually exclusivity thereof and which differ in level of assigned priority;
means for automatically deselecting a lower priority feature when a conflicting higher priority feature is selected for the job; and
means, operable upon subsequent deselection of said higher priority feature for automatically restoring the lower priority feature for the job.

5,363,174
METHOD AND APPARATUS FOR BACKGROUND CONTROL IN AN ELECTROSTATOGRAPHIC PRINTING MACHINE

John M. Magde, Jr., Webster, and Thomas F. Szlucha, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1993, Ser. No. 169,099
Int. Cl.[5] G03G *15/00, 15/052, 15/06, 15/04*
U.S. Cl. 355—208 **15 Claims**



1. An electrostatographic printing apparatus for producing a copy of an original input document having image information and background thereon, comprising:
an imaging member;
an imaging system for transmitting a light image of the original input document onto the imaging member to produce a latent image of the original input document thereon;
sensing means for sensing optical density of the light image being transmitted by said imaging system; and
means, coupled to said sensing means, for detecting image information in the transmitted light image.

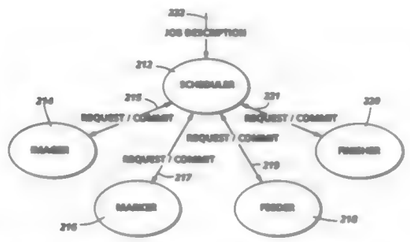
5,363,175
DISTRIBUTED JOB SCHEDULING WITH MODULAR COMPONENTS

James F. Matysek, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 1, 1993, Ser. No. 24,047
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 **4 Claims**

1. An electronic image processing apparatus having a plurality of image processing resources including image input means, marking means, copy sheet source means, finishing means with multiple components and a controller electrically connected by means of a communication channel to each of the resources for directing the operation of the image processing resources to provide an image on a copy sheet, the apparatus timing being based upon a given repetitive time period, the controller

comprising means for initiating status ready requests to a predetermined number of said multiple components over the communication channel for an operation to be executed during a first time period, means for receiving a not ready status signal from at least one of said multiple components over the communication channel, means for skipping said first time period and



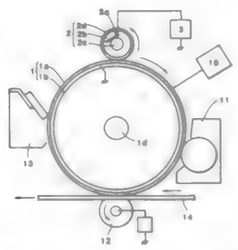
initiating status ready requests to said multiple component for said operation to be executed during a second time period in response to at least one not ready signal, means for receiving ready status signals from each of said multiple components, and means for executing said operation during the second time period.

5,363,176

CONTACT CHARGING MEMBER AND APPARATUS USING THE CHARGING MEMBER

Yuzi Ishihara, and Hisayo Ito, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,387, Jun. 17, 1993, abandoned. This application Jan. 26, 1994, Ser. No. 186,881
Claims priority, application Japan, Jun. 26, 1992, 4-169405
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **18 Claims**



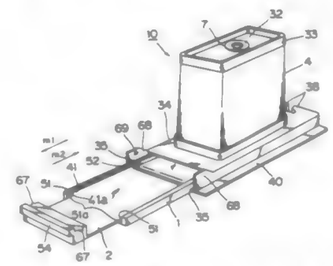
1. A charging member for charging a charged member by being brought into contact with the charged member, said charging member comprising a surface layer, wherein the content of components having a molecular weight of 1,000 or less in a resin forming said surface layer is 0.5 wt % or less.

5,363,177

METHOD OF STRIPPING A SEALING MEMBER FROM A TONER CARTRIDGE

Kuniaki Nakano, Nara; Yasuyuki Hirai, Yao; Masahiro Higashitani; Yasuhiro Matsuo, both of Osaka; Shingo Mori, Nara; Hiromi Sakata, Suita; Masahiro Sako, Hirakata, and Minoru Kishigami, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 865,098, Apr. 8, 1992, Pat. No. 5,294,963. This application Aug. 9, 1993, Ser. No. 103,390
Claims priority, application Japan, Apr. 19, 1991, 3-088776; Jun. 18, 1991, 3-174419
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **4 Claims**



1. A method of opening a toner cartridge by stripping a sealing member from an opening in the body of the toner cartridge, said method being performed with a first sliding means and a second sliding means which are slidable along said opening; said sealing member having a starting position at which stripping is started, an ending position at which stripping is terminated, and a middle position which is located between said starting and ending positions; said stripping member having an interior surface which is exposed to toner inside the cartridge body prior to stripping, said method including the following steps:

using the first sliding means to pull the sealing member and strip it from said starting position to said middle position;

using the second sliding means to apply force to the sealing member at the middle position to strip said sealing member from said middle position to said ending position;

said method including the step of folding the sealing member to place said interior surface inside the folded sealing member.

5,363,178

IMAGE FORMING APPARATUS

Kenichi Matsumoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,624, Dec. 26, 1990, abandoned, which is a continuation of Ser. No. 505,999, Apr. 9, 1990, abandoned. This application Oct. 8, 1992, Ser. No. 958,490
Claims priority, application Japan, Apr. 11, 1989, 1-091098
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—273 **30 Claims**

1. An image forming apparatus, comprising:

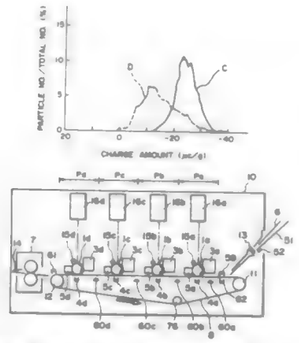
image bearing means;

means for forming latent images on said image bearing means;

a plurality of developing means for developing the latent images formed by said image forming means with different color toner particles into toner images, each of said plurality of developing means includes a developer containing said different color toner particles and carrier particles;

an image receiving material carrying means for carrying an image receiving material thereon; and

transfer means for sequentially effecting image transfer operations for respective colors to transfer electrostatically the different color toner images from said image bearing means to the same image receiving material carried on said image receiving material carrying means wherein the image receiving material carried on said image receiving material carrying means is subjected to the image transfer operation of said transfer means a plurality of times;



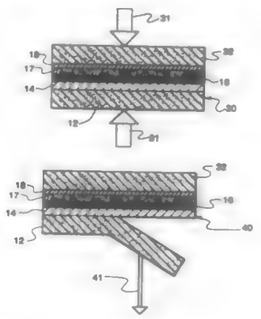
wherein the carrier particles used with the toner particles transferred in the initial stage or stages of the sequential image transfer operations are coated with surface coating resin having an uncured component content less than the carrier particles used with the toner particles in the later stage or stages of the sequential image transfer operations so as to control an average charge amount of the toner particles.

5,363,179

ELECTROGRAPHIC IMAGING PROCESS

Douglas A. Cahill, Belchertown; Donald A. Brault, Granby, and Richard S. Himmelwright, Wilbraham, all of Mass., assignors to Rexham Graphics Inc., South Hadley, Mass.

Continuation-in-part of Ser. No. 42,278, Apr. 2, 1993. This application Sep. 3, 1993, Ser. No. 119,563
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—278 **10 Claims**



1. A process for forming an electrographic image on a receptor substrate comprising the steps:

A) producing on the surface of an electrographic element a toned image layer to form an imaged electrographic element, wherein the electrographic element comprises in the order given;

a) a carrier layer,

b) a conductive layer,

c) a dielectric layer, and

d) a substantially tack-free, adhesive layer which is activated at a pressure and a temperature which is above ambient pressure and temperature of the electrographic element;

wherein the toned image layer is adhered to the surface of the adhesive layer;

B) pressure laminating the receptor substrate to the toned image layer at the temperature which is above the ambient temperature, to form a laminated image element; and

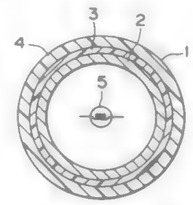
C) removing the carrier layer along with the conductive layer from the dielectric layer of the laminated image element formed in step (B).

5,363,180

FIXING DEVICE FOR ELECTROPHOTOGRAPHY AND ELECTROPHOTOGRAPHIC APPARATUS INCORPORATING THE FIXING DEVICE

Ryuuichi Shimizu, Hitachiota; Tsuneaki Kawanishi, Ibaraki; Toshiya Satoh, Hitachi; Teruaki Mitsuya, and Takashi Suzuki, both of Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co. Ltd., Tokyo, Japan

Filed May 15, 1992, Ser. No. 883,363
Claims priority, application Japan, May 17, 1991, 3-112924
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **18 Claims**



1. An electrophotographic apparatus comprising a photosensitive drum having a photoconductive layer on the surface thereof;

charging means for giving the surface of said photosensitive drum predetermined electric charges;

light irradiating means for irradiating light to said surface of said photosensitive drum in accordance with image information so that charges are locally removed from said surface of said photosensitive drum thereby forming an electrostatic latent image;

developing means for developing said electrostatic latent image into a visible toner image by a toner;

transfer means for transferring said toner image to an image supporting member;

fixing means for fixing the transferred toner image onto said image supporting member;

charge removing means for removing residual electric charges remaining on said photosensitive drum after the transfer; and

cleaning means for removing any residual toner from the surface of said photosensitive member after the transfer;

wherein said fixing means comprising a fixing roller and a pressing roller which are adapted to rotate while contacting each other, said fixing roller including a cylindrical core and a surface layer of a uniform film thickness on said cylindrical core, the surface of said core having a greater modulus of compressive elasticity than that of said surface layer so that, under application of fixing pressure, said surface layer is deformed so as to form fine irregularities on toner surfaces on said image supporting member, and

wherein said fixing roller further includes an underlying layer of a resin formed on said cylindrical core between said core and surface layer, and wherein said surface layer is formed of a resin on said underlying layer, said underlying layer having a larger elastic modulus than that of said surface layer and a surface of 5 to 50 μm in terms of a ten point average roughness or said underlying layer formed

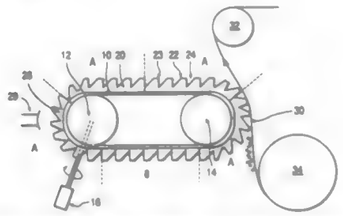
of a resin containing fillers uniformly dispersed therein, which fillers have a mean particle size of 5 to 50 μm and a larger elastic modulus than that of said surface layer or said underlying layer.

5,363,181

MULTI-FUNCTIONAL BELT/BLADE CLEANER

Nero R. Lindblad, Ontario, and Ronald Godlove, Bergen, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,846
Int. Cl.[5] G03G *21/00*; A46B *15/00*
U.S. Cl. 355—299 23 Claims



1. A multi-functional belt/blade cleaner for removing material from a surface to be cleaned, comprising:

a cleaner belt having a length extending in a longitudinal direction, a width extending in a transverse direction substantially perpendicular to said longitudinal direction, and a predetermined thickness;

a plurality of blades formed from said cleaner belt, said blades being formed by a plurality of substantially linear cuts in said cleaner belt, said cuts being made across said width and at predetermined intervals along said length, each of said cuts having a depth less than said thickness, wherein areas on said cleaner belt between adjacent cuts define individual blades having cleaning edges, and wherein said cuts include a succession of alternating first and second cuts intersecting to form wedge-shaped grooves between said blades, and each of said alternating first and second cuts extends across said width of said cleaner belt at an angle relative to said transverse direction; and

means for mounting said cleaner belt to dispose said cleaning edges of said plurality of blades in wiping contact with said surface to be cleaned to remove said material, such that the mounting means disposes the cleaning edges of not more than two of the blades in wiping contact with the surface at a time.

5,363,182

BLADE DEVICE AND IMAGE FORMING APPARATUS

Ikuo Kuribayashi, Tokyo, and Rie Saito, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

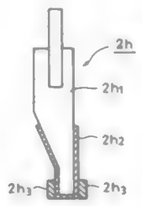
Filed May 11, 1993, Ser. No. 59,852
Claims priority, application Japan, May 21, 1992, 4-153087
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—299 18 Claims

1. A blade device for use in contact with an object, comprising:

an elastic blade body; and

a supporting member for supporting said blade body at the side of said blade body opposite to the side contactable with said object;

wherein said blade body has a surface coating layer and an underlying primer layer between said surface coating layer and said blade body, said primer layer covering an area of said blade body more extensive than that covered by said surface coating layer, said surface coating layer being provided on the region of said primer layer which is closer to said object than is a portion of said blade body



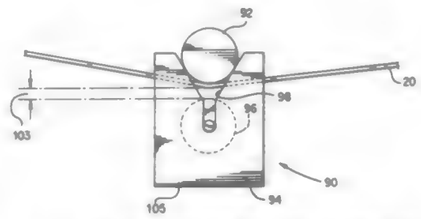
where stresses are concentrated when said blade is held in contact with said object.

5,363,183

COPYING MACHINE WITH DEVICE FOR REMOVING CARRIER BEADS FROM THE PHOTOCONDUCTIVE SURFACE

Scott A. Reese, Farmington; Dan F. Lockwood, Ontario; James Strollo, Rochester, and Stephen L. Logan, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 6, 1991, Ser. No. 755,997
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—305 3 Claims



1. An apparatus for removing magnetic carrier beads and similar particles from a photoconductive surface comprising:

a magnetic cylindrical roller having a longitudinal axis, said magnetic roller attracting and removing carrier beads from a photoconductive surface;

a self-contained housing within an electrophotographic printing machine having two v-shaped supports forming an integral unit with said housing, each of said v-shaped supports is formed in a side wall of said housing wherein said side walls are disposed on opposite ends of said housing with respect to each other, said housing containing and supporting said magnetic roller, said housing and magnetic roller are capable of being removed from and installed into said electrophotographic printing machine; and

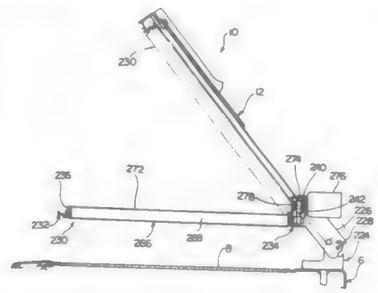
a non-rotatable back-up shaft disposed on a side of the photoconductive surface opposite said housing and supported by said v-shaped supports, said back-up shaft supports said photoconductive surface, said back-up shaft having a longitudinal axis which is disposed substantially perpendicular to planar surfaces defining said side walls of the housing, the longitudinal axis of said back-up shaft being disposed substantially parallel to the longitudinal axis of said magnetic roller, said shaft and said magnetic roller forming a uniform gap therebetween having a width of 0.65 +/−0.10 millimeters, such that said uniform gap is maintained after said housing and magnetic roller have been removed and reinstalled.

5,363,184

AUTOMATIC DOCUMENT CONVEYING DEVICE HAVING FIRST AND SECOND PIVOTING FRAMES

Takeshi Matsuo, Higashi; Shinya Aono, Amagasaki, and Toshinori Murasoka, Osaka, all of Japan, assignors to Mita Industrial Company Ltd., Osaka, Japan

Filed Sep. 29, 1992, Ser. No. 953,969
Claims priority, application Japan, Sep. 30, 1991, 3-276388
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 7 Claims



1. An automatic document conveying device for an image processor equipped with a housing having a transparent plate on an upper surface thereof, said automatic document conveying device comprising:

a main frame adapted to be swingably mounted on a main frame swing axis extending along one edge of the transparent plate for swinging between a closed position on which said main frame covers the transparent plate and an open position on which said main frame permits the transparent plate to be exposed to view,

a swing frame swingably mounted on said main frame to swing on a separation swing axis extending in parallel with and close to said main frame swing axis,

coupling means releasably coupling said swing frame to said main frame, and

a conveyer belt mechanism mounted on said swing frame, and thus on said main frame, said conveyor belt mechanism including a conveyor belt and positioned so that when said main frame is in said closed position with said swing frame coupled to said main frame by said coupling means, said conveyor belt mechanism is opposed to the transparent plate and when said main frame is in said open position with said swing frame coupled to said main frame by said coupling means, said conveyor belt mechanism is removed from the transparent plate and said coupling means can be released said swing frame from said main frame so that said swing frame and said conveyor belt mechanism swing away from said main frame to a position adjacent the transparent plate, permitting access to said conveyor belt.

5,363,185

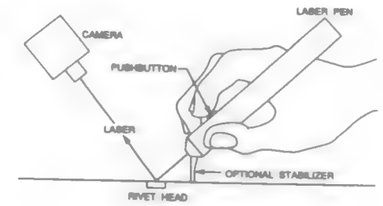
METHOD AND APPARATUS FOR IDENTIFYING THREE-DIMENSIONAL COORDINATES AND ORIENTATION TO A ROBOT

Lawrence J. Zana, Hampton Township, Allegheny County, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 23, 1992, Ser. No. 995,430
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—2 10 Claims

1. In combination with a stereo optical correlation system which uses a computer, and two cameras to locate an object in three dimensions, a process for identifying three-dimensional coordinates and orientation, said process comprising the steps of:

selectively illuminating at least one three-dimensional reference point on said object with a free-moving light source, said illuminating step identifying the three-dimensional reference point for orientation in three-dimensions, wherein said object is a fixed workpiece, and wherein said illuminating step is performed with a hand-held laser pen which reflects a beam of light off of said fixed workpiece to indicate the three-dimensional reference point on said workpiece;



detecting said three-dimensional reference point with said two cameras to provide thereby stereo optical data signals; and

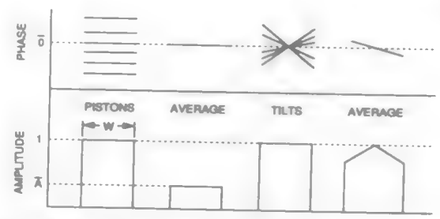
calculating the three-dimensional coordinates of the three-dimensional reference point from the stereo optical data signals with the computer.

5,363,186

METHOD OF PRODUCING AN OPTICAL WAVE WITH A PREDETERMINED OPTICAL FUNCTION

Robert W. Cohn, and Minhua Liang, both of Louisville, Ky., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1994, Ser. No. 192,475
Int. Cl.[5] G01C *3/08*
U.S. Cl. 356—4 9 Claims



1. A method of producing an optical wave having a predetermined optical function and wherein said method comprises the following steps:

selecting a desired far-field pattern for said optical wave containing pixel phases and pixel amplitudes that represent said predetermined optical function;

performing a fast Fourier transform on said desired far-field pattern to yield, a desired source distribution description for said optical wave;

determining a standard deviation σ_i for each pixel i that produces the predetermined optical function to yield thereby the pixel amplitudes Ai; and

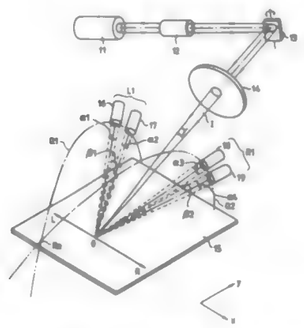
generating the pixel phases ϕ_i from random distributions of the standard deviation σ_i for each pixel i.

5,363,187

LIGHT SCANNING APPARATUS FOR DETECTING FOREIGN PARTICLES ON SURFACE HAVING CIRCUIT PATTERN

Tsuneyuki Hagiwara, Tokyo, and Fuminori Hayano, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 995,527, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 757,042, Sep. 9, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 76,697
Claims priority, application Japan, Sep. 12, 1990, 2-242247
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—237 26 Claims



1. A foreign particle detecting apparatus which comprises:
(a) a light source for radiating light onto a surface on which a miniaturized pattern is formed;
(b) focusing means for focusing the light radiated by said light source onto said surface with a predetermined angular aperture;
(c) moving means for moving the focused light relative to said surface;
(d) detection means including an array of light-receiving elements for receiving light from said surface and independently outputting photoelectric signals according to the quantity of light received, focused light incident on said miniaturized pattern producing discrete diffracted light components having a periodic distribution in a first direction, n light-receiving elements of said array being arranged in order along a direction of arrangement determined by said first direction, the minimum spatial angle defined between light-receiving elements located at respective ends of said order being substantially equal to or slightly larger than said angular aperture of the focused light, and the maximum spatial angle defined between adjacent light-receiving elements in said order being equal to or smaller than the pitch between adjacent diffracted light components along said direction of arrangement; and
(e) discrimination means for discriminating whether a foreign particle is present on said surface by whether the quantity of light received by each of said n light-receiving elements is equal to or greater than a predetermined threshold.

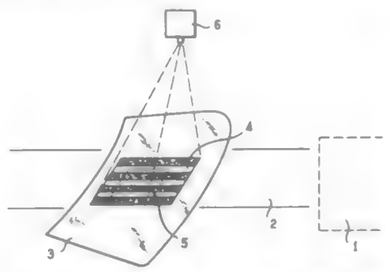
5,363,188

METHOD AND DEVICE FOR MONITORING THE TRANSPARENCY OF A LAMINATED PANE

Claude Didelot, Thourotte, and Bernard Parnet, St. Georges Haute Ville, both of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Mar. 3, 1993, Ser. No. 25,648
Claims priority, application France, Mar. 3, 1992, 92 02485
Int. Cl.[5] G01M *11/00*; G01B *9/00*; G01N *21/00*
U.S. Cl. 356—124.5 18 Claims

1. Method of monitoring the transparency of at least a portion of a preassembled laminated pane, comprising the steps of:
imaging a test pattern viewed through the portion of the pane by using a detector to image the luminous intensity of the test pattern;
digitizing each point of the image of the test pattern viewed through the pane to obtain a number corresponding to the luminous intensity at each point;



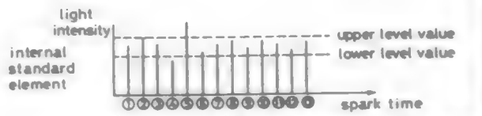
averaging the numbers obtained for the points of the image; and
comparing the average obtained with a previously determined theoretical value.

5,363,189

SPECTROSCOPIC ANALYSIS METHOD AND ANALYZING SYSTEM

Isao Fukui, and Takao Miyama, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 25, 1992, Ser. No. 840,526
Claims priority, application Japan, Feb. 28, 1991, 3-104909
Int. Cl.[5] G01J *3/30*
U.S. Cl. 356—306 8 Claims



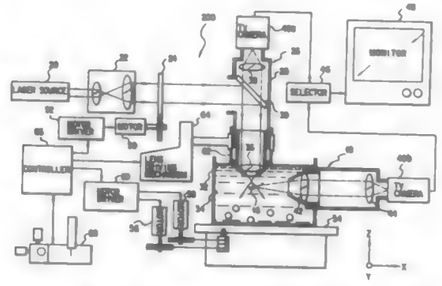
1. A spectroscopic analyzing method comprising the steps of:
exciting said specimen a predetermined number of times;
detecting the light intensity of the line of monitoring elements and measured elements each time said specimen is excited, said measured elements including ingredient elements and said monitoring elements including at least one element which comprises an internal standard element while the remaining elements comprise non-ingredient elements;
storing data of the light intensity of the line detected;
obtaining a distribution of the light intensity of the line of said monitoring elements based on said stored data;
determining an effective region of the light intensity of the line of said monitoring elements based on said distribution; and
integrating the light intensity of the line of said measured elements for each excitation when the light intensity of the line of said monitoring elements is within the effective region based on said stored data.

5,363,190

METHOD AND APPARATUS FOR OPTICAL MICRO MANIPULATION

Humio Inabe; Shunichi Sato, both of Sendai, and Susumu Kikuchi, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 116,663
Claims priority, application Japan, Sep. 7, 1992, 4-238571
Int. Cl.[5] G01N *21/47*
U.S. Cl. 356—337 17 Claims



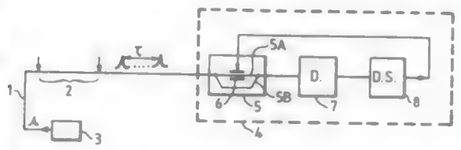
1. A method for optically micro-manipulating a specimen immersed in a liquid, comprising the steps of:
generating a laser beam having a non-rotational symmetrical spatial property distribution;
converging the laser beam onto the immersed specimen to trap it;
controlling the spatial property distribution of the laser beam by rotating the laser beam; and
microscopically observing the specimen by means of a microscope.

5,363,191

FIBRE OPTIC SENSOR ARRAY READING DEVICE

Philippe Refregier, Palaiseau, and Marc Turpin, Bures S/Yvette, both of France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR90/00867, § 371 Date Jul. 23, 1991, § 102(e) Date Jul. 23, 1991
Continuation of Ser. No. 730,954, Jul. 23, 1991, abandoned. This PCT application Nov. 30, 1990, Ser. No. 47,621
Claims priority, application France, Dec. 1, 1989, 89 15876
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 9 Claims



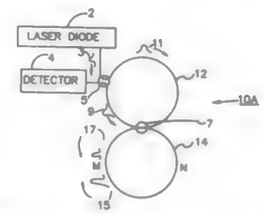
1. A device for reading sensors coherently, said device comprising:
a single integrated optics interferometer having two arms of different length with at least one of said arms having a phase modulator, a first detector, and circuit for slaving said interferometer including a feedback control synchronous detector for controlling said slaving of said interferometer wherein a control voltage necessary for slaving said interferometer by a negative-feedback signal provides a signal to be measured in order to coherently read said sensors, wherein said phase modulator is integrated with said single interferometer and wherein said synchronous detector is directly connected to said phase modulator.

5,363,192

MODE-LOCKED ACTIVE GYRO SOLID STATE LASERS

Jean-Claude M. Diels, and Michael L. Dennis, both of Albuquerque, N. Mex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 28, 1991, Ser. No. 722,754
Int. Cl.[5] H01S *3/10*; G01C *19/66*
U.S. Cl. 356—350 20 Claims



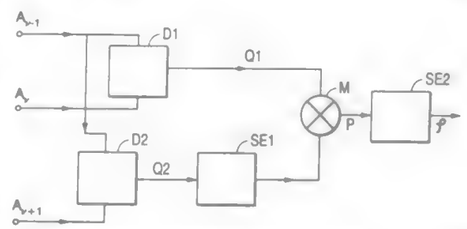
1. A laser gyro comprising:
(a) a mode-locked lasing means for generating a pump pulse;
(b) a first optical coupling means for splitting a pulse connected to the lasing means wherein the first optical coupling means splits the pump pulse into a first pulse and a second pulse;
(c) a delay means for time delaying the first pulse relative to the second pulse;
(d) a second optical coupling means for transmitting the first pulse and the second pulse;
(e) a gain means for laser amplification disposed to receive the transmitted first pulse and second pulse such that the gain means lases and wherein the gain means emits a first laser pulse in response to the first pulse in a first direction and emits a second laser pulse in a second opposite direction in response to the second pulse at a different time through the second optical coupling means;
(f) an interference means for interfering disposed to receive the first laser pulse and second laser pulse connected through the first optical coupling means, wherein the interference means generates an interference signal between the first laser pulse and second laser pulse that is positioned such that the first laser pulse and second laser pulse do not overlap in the first optical coupling means and the second optical coupling means; and
(g) a detector means for detecting the interference signal.

5,363,193

METHOD AND ARRANGEMENT FOR DETERMINING ANGULAR VELOCITIES

Robert Wolf, Mörlenbach, Germany, assignor to Teldix GmbH, Heidelberg, Germany

PCT No. PCT/EP91/00121, § 371 Date Aug. 5, 1992, § 102(e) Date Aug. 5, 1992, PCT Pub. No. WO91/11682, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 23, 1991, Ser. No. 917,040
Claims priority, application Germany, Feb. 5, 1990, 4003326
Int. Cl.[5] G01C *19/04*
U.S. Cl. 356—350 4 Claims



1. An arrangement for determining angular velocities with

the aid of an optical fiber ring interferometer which includes at least one optical fiber winding and a device for modulating the light waves propagating therein, with circuit units being provided which determine the amplitudes of several spectral lines of the interfering light waves that exit from the optical fiber to obtain therefrom the Sagnac phase shift that is proportional to the angular velocity, comprising:

a first divider which forms a first quotient from the amplitudes ($A_{\nu-1}$, A_{ν}) of two of three spectral lines, of which one amplitude is a function of the sine and the other amplitude is a function of the cosine of the Sagnac phase shift;

a second divider which forms a second quotient from the amplitudes ($A_{\nu+1}$, $A_{\nu-1}$) of two of the three spectral lines, with both amplitudes being a function of the sine or cosine of the Sagnac phase shift, so that the second quotient is given solely by the ratio of the Bessel functions associated with these two spectral lines as a function of the phase modulation index;

a first circuit unit which determines, from the Bessel function curves for each ratio that is a function of the phase modulation index and is associated with the second quotient, the corresponding ratio of the Bessel function values associated with the first quotient;

a multiplier which forms a product from the first quotient and the ratio of the Bessel function values associated with the first quotient as determined in the first circuit unit; and

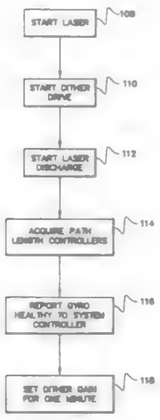
a second circuit unit which applies the arc tangent function to the product, thus obtaining the amount of the Sagnac phase shift $|\phi|$.

5,363,194

LASER GYRO MICROPROCESSOR START UP CONTROL METHOD AND APPARATUS

Joseph E. Killpatrick, Minneapolis; Keith R. Fritze, Minnetonka, and Dale F. Berndt, Plymouth, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 18, 1992, Ser. No. 931,941
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—350 **22 Claims**



1. A laser gyro start up apparatus comprising:

(a) a laser gyro;

(b) a laser gyro start up means connected to the laser gyro to start up the laser gyro in a predetermined manner; and

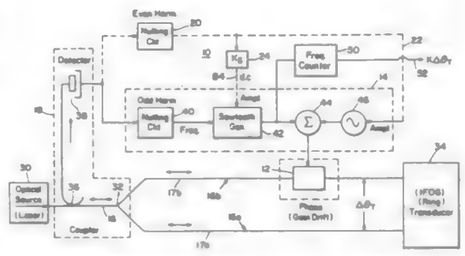
(c) a laser gyro monitoring means connected to the laser start up means to monitor the laser gyro and evaluate and report the health status of the laser gyro.

5,363,195

AUTOMATIC GAIN CALIBRATION SYSTEM FOR A PHASE MODULATOR IN A FIBER OPTIC GYRO

Paul A. Ward, Waltham, and Joseph G. Walsh, Cambridge, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Dec. 24, 1992, Ser. No. 996,724
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **22 Claims**



1. An automatic gain calibration system for a phase modulator for forcing a predetermined phase shift amplitude, comprising:

a phase modulator responsive to an applied voltage for modulating the phase of a radiation beam;

means for converting the frequency spectrum of the modulated radiation beam to the electrical domain;

means, responsive to said means for converting, for nulling a selected even harmonic of said spectrum; and

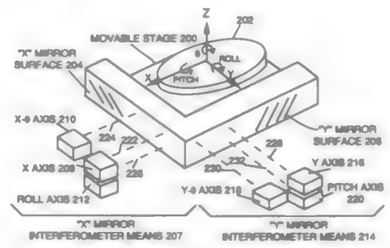
means, responsive to the voltage applied to said phase modulator, which voltage obtains the phase shift produced by the nulling of said selected even harmonic, for scaling that voltage to generate the predetermined phase shift amplitude.

5,363,196

APPARATUS FOR MEASURING A DEPARTURE FROM FLATNESS OR STRAIGHTNESS OF A NOMINALLY-PLANE MIRROR FOR A PRECISION X-Y MOVABLE-STAGE

John F. Cameron, Los Altos, Calif., assignor to Ultratech Stepper, Inc., San Jose, Calif.

Filed Jan. 10, 1992, Ser. No. 819,424
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—358 **11 Claims**



1. In the combination comprising an X-Y movable stage that includes a first nominally-plane surface having a longitudinal dimension oriented substantially parallel to an X-axis of said stage and a second nominally-plane surface having a longitudinal dimension oriented substantially parallel to a Y-axis of said stage oriented orthogonal to said X axis thereof, and apparatus for measuring the departure of the surface profile of at least a given one of said first and second surfaces from being flat or straight; the improvement wherein said apparatus comprises:

first means, in response to first control thereof, linearly moving said stage with respect to a reference position solely in a direction substantially parallel to the longitudinal dimension of said given one of said first and second surfaces, in turn, to each of a first plurality of predetermined positions;

second means cooperatively positioned with respect to the given one of said first and second surfaces for measuring at each of said first plurality of predetermined positions a first value of the rotational angular position of said stage about at least a given one of its X, Y and Z axes, where the Z axis is oriented orthogonal to both said X and Y axes; and

third means cooperatively positioned with respect to the other one of said first and second surfaces for redundantly measuring at each of said first plurality of predetermined positions a second value of the rotational angular position of said stage about said given one of said X, Y and Z axes;

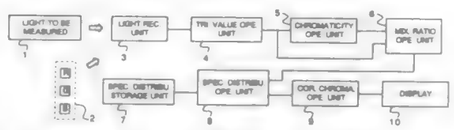
whereby the difference between the respective first and second angular values of the rotational position of said stage about said given one of said X, Y and Z axes at each of said first plurality of predetermined positions is a measure at that predetermined position of the departure of the surface profile of that given one of said first and second surfaces from being flat or straight.

5,363,197

COLORIMETER FOR COLOR DISPLAYS

Yoshihiro Ohno, Rockville, Md., and Rie Suzuki, Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 16, 1992, Ser. No. 869,657
Claims priority, application Japan, Apr. 19, 1991, 3-088188
Int. Cl.[5] G01J *3/50*
U.S. Cl. 356—405 **10 Claims**



1. A colorimeter for color displays comprising:

a light receiving means having three kinds of spectral responsivities close to color matching functions;

a tristimulus values operation means for performing operations required to calculate tristimulus values based on outputs from said light receiving means;

a chromaticity operation means for performing operations required to calculate a chromaticity based on outputs from said tristimulus values operation means;

a spectral distribution storage means for storing spectral distributions of representative colored lights of red, green, and blue;

a mixing ratio operation means for performing operations required to calculate a mixing ratio of a mixed light including colored lights of red, green, and blue and mixed at an arbitrary ratio based on outputs from said chromaticity operation means at the time said mixed light is received by said light receiving means and outputs from said tristimulus values operation means at the time said representative colored lights of red, green, and blue are individually received by said light receiving means;

a spectral distribution operation means for performing operations required to calculate a spectral distribution of said mixed light based on outputs from said mixing ratio operation means and outputs from said spectral distribution storage means; and

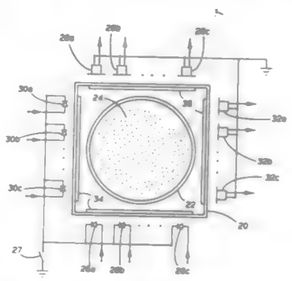
a corrected chromaticity operation means for performing operations required to calculate a corrected chromaticity of said mixed light based on outputs from said spectral distribution operation means.

5,363,198

APPARATUS AND METHOD FOR MEASURING SMOKE OPACITY A PLUME OF SMOKE USING AN ARRAY OF LIGHT

Thomas J. Fournier, 2140 Stephen Ter., Ann Arbor, Mich. 48103

Filed Nov. 9, 1992, Ser. No. 973,617
Int. Cl.[5] G01N *15/06*
U.S. Cl. 356—438 **16 Claims**



1. Apparatus for measuring the opacity of an exhaust plume of smoke having an imaginary longitudinal axis, said apparatus comprising:

an array of light sources and light detectors arranged in a plane that is substantially perpendicular to said axis, said light sources and detectors being arranged so as to define a plurality of light paths which are displaced about and traverse the planar area bounded by said array and further defining two sets of a plurality of matched source-detector pairs providing mutually perpendicular light paths;

means for activating said sources and said detectors to define source-detector pairs so that light emitted by said sources is absorbed by said detectors; and

means operatively associated with said detectors for determining the magnitude of the transmittance of light through said exhaust plume where said plume and emitted light intersect, where said emitted light is of a predetermined intensity and light absorbed by a corresponding detector of a given source-detector pair defines the transmittance of the exhaust plume at said intersection.

5,363,199

SMOKE OPACITY DETECTOR

Bruce H. Victor, 34 Cutlass Rd., Kinnelon, N.J. 07405, and Michael M. Katz, 13 Summit Ave., New City, N.Y. 10956

Filed Jan. 14, 1994, Ser. No. 182,741
Int. Cl.[5] G01N *21/61*
U.S. Cl. 356—439 **26 Claims**

1. A smoke opacity detector comprising:

a sample chamber;

sample heating block means in said sample chamber for heating a sample;

first temperature control means for controlling the temperature of said sample heating block means to a desired temperature;

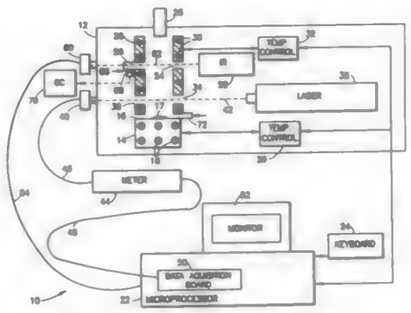
measurement stack means positioned above said sample heating block means for receiving smoke resulting from heating of said sample by said sample heating block means;

light means for projecting a light beam through said smoke in said measurement stack means;

photodetector means for detecting the amount of light from said light means that passes through said smoke in said measurement stack means;

determining means for determining the amount of smoke resulting from heating of the sample, in response to the light detected by said photodetector means; and

means for selectively eliminating conditions of water vapor in the determination of the amount of smoke by said determining means, said means for selectively eliminating including heating means for heating said measurement stack means and second temperature control means for selectively controlling the temperature of said measurement stack means to a selected temperature:



above 100° C. to render said water vapor gaseous and thereby eliminate affects of water vapor on said determination, and

a temperature below 100° C. to include affects of water vapor on said determination.

5,363,200

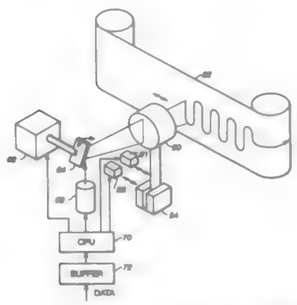
BUFFERING METHOD AND SYSTEM FOR RESONANT SCANNER USED TO READ AND WRITE DATA WITH RESPECT TO A STORAGE MEDIUM

Hugh F. Frohbach, Sunnyvale, and Norman A. Peppers, Belmont, both of Calif., assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Sep. 15, 1992, Ser. No. 944,951

Int. Cl.[5] H04N *5/76*

U.S. Cl. 358—335 **15 Claims**



1. Method for storing information on an optical recording medium comprising the steps of:

receiving information to be recorded on the optical recording medium;

storing said information in a buffer memory at a data input rate;

reading data from said buffer memory at a data output rate, said data output rate being greater than said data input rate;

moving said optical recording medium in a first direction;

scanning a beam of light over said moving optical recording medium in a second direction substantially perpendicular to said first direction for recording output data read from said buffer memory; and

periodically deflecting said scanning beam in said first direction, by a distance over which said optical recording medium moves during a cyclic pause in said recording of output data read from said buffer memory, to compensate for differences between said data input rate and said data output rate.

5,363,201

PICTURE CONTROL SYSTEM FOR VIDEO CASSETTE TAPE RECORDER

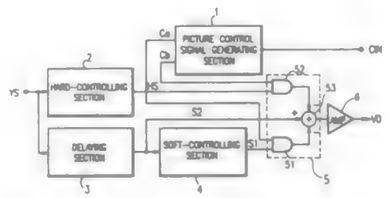
Jeong H. Hwang, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 30, 1991, Ser. No. 785,100

Claims priority, application Rep. of Korea, Oct. 30, 1990, 17480/1990

Int. Cl.[5] H04N *5/95*

U.S. Cl. 358—337 **7 Claims**



1. A picture control system for a video cassette tape recorder, comprising:

picture control signal generating means for generating a signal combination control signal upon receipt of a control voltage;

hard-controlling means for filtering a high-band component of a reproduction luminance signal and outputting a hard-compensating signal;

means for delaying said reproduction luminance signal for a predetermined time;

soft-controlling means for filtering a low-band component of the delayed reproduction luminance signal and outputting a soft-compensating signal;

signal selecting means for selecting the hard-compensating signal of said hard-controlling means and the soft-compensating signal of said soft-controlling means in response to the signal combination control signal of said picture control signal generating means; and, signal combining means for combining the selected signal output from the signal selecting means with the delayed reproduction luminance signal output from said delaying means.

5,363,202

IMAGE PROCESSING APPARATUS WITH ANTI-FORGERY FUNCTION

Yutaka Udagawa, Machida; Masahiro Funada, Yokohama; Kenich Ohta, Kawasaki; Yoichi Takaragi, Yokohama; Toshiyuki Kitamura, Kawasaki, and Eiji Ohta, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,500

Claims priority, application Japan, Mar. 29, 1991, 3-066901; Jul. 1, 1991, 3-160379; Jul. 1, 1991, 3-160381; Sep. 30, 1991, 3-252218; Feb. 28, 1992, 4-043896

Int. Cl.[5] H04N *1/00, 1/46, 1/44*

U.S. Cl. 358—501 **6 Claims**

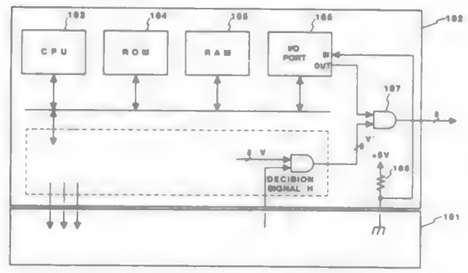
1. An image processing apparatus capable of connection to detachable discriminating means for discriminating a specific original, and generating a signal indicating the discrimination result, comprising:

processing means for processing input image signals;

connection mens for connecting the discriminating means, which is detachable from the apparatus and used for discriminatinq the specific original based on image information relating to the input image signals;

transmitting means for transmitting the image information to the detachable discriminating means;

detecting means for detecting whether the detachable discriminating means is connected with said connecting means or not; and



control means for controlling the apparatus in accordance with the result of the detection made by said detecting means.

5,363,203

STILL PICTURE TRANSMITTING SYSTEM

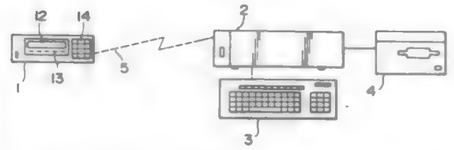
Tomonori Tahara; Tetsuya Yamamoto; Yasuyuki Baba; Hideki Koyanagi, and Akira Uchida, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,578

Claims priority, application Japan, Jun. 27, 1991, 3-157091; Jun. 28, 1991, 3-158689

Int. Cl.[5] H04N *1/46, 1/21*

U.S. Cl. 358—403 **10 Claims**



1. A system for transmitting still picture data between a first still picture transmitter with a display device and a keyboard disposed on one panel, and a second still picture transmitter with a display device and a keyboard disposed separately comprising:

memory means for storing a plurality of still picture files with individual file names;

transfer means for transmitting or receiving the still picture files and the file names therethrough, said memory means and said transfer means adapted to form part of said second still picture transmitter; and

control means adapted to form part of said first still picture transmitter for reading out data of said still picture files from said memory means via the transfer means of said second still picture transmitter.

5,363,204

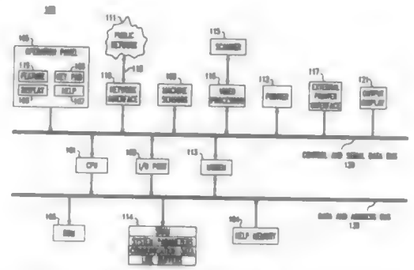
FACSIMILE MACHINE HAVING USER HELP CAPABILITY

Mark E. Millman, Bayville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 495,196, Mar. 19, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 919,072

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—406 **20 Claims**



1. A facsimile apparatus connectable to a communication facility, comprising

means for outputting a facsimile transmission received over said facility as a hard copy,

means for displaying an information message during one of a plurality of different operating modes of said facsimile apparatus,

means for inputting a user input to said facsimile apparatus,

means for generating a help signal in response to a user input occurring during a display of a first message by said displaying means, said help signal not being transmitted over said facility,

memory means for storing programs for controlling said plurality of different operating modes of said facsimile apparatus, said memory means also storing preprogrammed help information as a plurality of information messages, each of said information messages being associated with and describing operation aspects of a different operating mode of said facsimile apparatus; and

control means for controlling tile different operating modes of said facsimile apparatus and responsive to said help signal for displaying a second message via said displaying means to provide help information on said operating mode of said facsimile apparatus and requesting an additional user input, said control means responsive to said additional user input for outputting a third information message in hard copy form to the user, said third message providing more specific help information on said operating mode of said facsimile apparatus.

5,363,205

IMAGE COMPRESSING METHOD COMPRESSING AN IMAGE INTO A COMPRESSED IMAGE AND ERROR COEFFICIENTS

Guoliang Shou; Sunao Takatori, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan Inc., Tokyo, Japan

Filed Aug. 12, 1993, Ser. No. 105,058

Claims priority, application Japan, Aug. 13, 1992, 4-237687

Int. Cl.[5] H04N *1/415, 1/417, 7/13*

U.S. Cl. 358—429 **3 Claims**

1. An image compression method for compressing a gray scale original image with a plurality of pixels comprising the steps of:

i) diminishing in size said gray scale image step by step so that a plurality of diminished images are generated, and continuing to diminish in size said image until reaching a minimal diminished image representing a final amount of compression by the following steps:

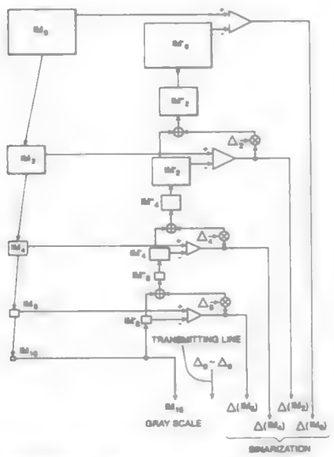
a) dividing an image to be diminished into a plurality of

partial areas with substantially equal size to one another;

b) calculating a mean pixel value of pixels in each partial area so that each said mean pixel value is defined as a representative pixel value of each said partial area; and

c) substituting one pixel with said representative pixel value for said pixels of each said partial area;

ii) enlarging in size the minimal diminished image into said plurality of diminished images step by step, thereby obtaining a plurality of enlarged images corresponding in size to said plurality of diminished images, respectively, but differing in content from said diminished images, by adding one pixel between two adjacent pixels of an image



to be enlarged, said one pixel to be added having a pixel value of an average pixel value of said adjacent pixels;

iii) comparing corresponding pixel values of said diminished image and enlarged image to each other to determine a plurality of compared images indicative of differences therebetween, each pixel value of said compared image being a binary value indicating which pixel value of said images is larger than the other;

iv) calculating error coefficients for each enlarged image representing a total error between said pixel value of said enlarged image and said diminished image; and

v) representing said gray scale original image by said diminished images, said compared images and said error coefficients.

5,363,206

FACSIMILE APPARATUS CAPABLE OF RE-TRANSMITTING THE SAME IMAGE DATA

Shigenobu Fukushima, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1991, Ser. No. 705,721

Claims priority, application Japan, May 29, 1990, 2-138766

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—440 **8 Claims**

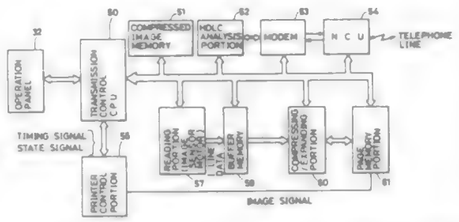
1. A facsimile apparatus comprising:

reading means for reading image data of an original to be transmitted,

transmitting means for transmitting the image data read by said reading means through a telephone line in a first transmission operation,

storing means for storing the image data read by said reading means substantially simultaneously with said first transmission operation by said transmitting means,

inputting means, responsive to a source external of said facsimile apparatus after said first transmission operation, for commanding a transmission of the image data stored by said storing means, and



controlling means responsive to the transmission command from said inputting means for controlling said transmitting means to start a second transmission operation for transmitting the image data stored by said storing means.

5,363,207

ADAPTOR DEVICE FOR A FACSIMILE

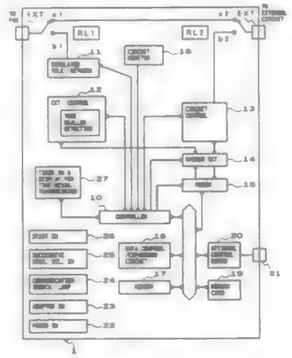
Kenzou Yoshihara, Kounosu; Toshio Osawa, Fujimi; Takayuki Kojima, Kawagoe, and Shinichi Machida, Sakado, all of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 779,367

Claims priority, application Japan, Oct. 19, 1990, 2-279112; Apr. 30, 1991, 3-126691

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—442 **7 Claims**



1. An adaptor device for a first facsimile which is adapted to be connected between the first facsimile and an external communication circuit network, said first facsimile being adapted for inputting and outputting first facsimile data coded in accordance with a first predetermined facsimile coding system, which device comprises:

simulated communication network means for, when a call informing a second facsimile of another party that facsimile data is going to be transmitted has been generated from the first facsimile, receiving the call and the first facsimile data to be transmitted from the first facsimile;

data compression means for compressing the first facsimile data received via the simulated communication network means in accordance with a predetermimed data compression technique, so as to provide second facsimile data coded in accordance with a second predetermined facsimile coding system, said second facsimile data being compressed further than said first facsimile data;

memory means for storing said second facsimile data provided from said data compression means; and

transmission control means for reading out of second facsimile data stored in the memory means and transmitting the same to the second facsimile of the other party via the external communication circuit network, wherein said transmission control means determines whether or not the other party has a function for decoding data compressed in accordance with said predetermined data compression technique, and said control means transmits the data read out from the memory means via the external communication circuit network if the other party has the function for decoding the data, but said control means decodes the data read out from the memory means and then transmits decoded data to the other party via the external communication circuit network if the other party does not have the function for decoding the data.

5,363,208

IMAGE FORMING APPARATUS COMPRISING INTEGRATING MEANS FOR INTEGRATING IMAGE DENSITY DATA

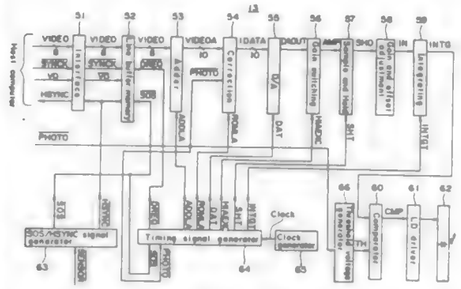
Shigeo Ogino, Toyokawa, and Masaaki Nishiyama, Toyohashi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1990, Ser. No. 606,075

Claims priority, application Japan, Nov. 1, 1989, 1-285339; Nov. 1, 1989, 1-285340; Nov. 1, 1989, 1-285341; Nov. 1, 1989, 1-285342; Nov. 1, 1989, 1-285343; Nov. 1, 1989, 1-285344

Int. Cl.[5] H04N *1/29*

U.S. Cl. 358—445 **28 Claims**



1. An image forming apparatus for generating a printing signal having a pulse width according to image density data corresponding to an image to be formed and forming dot images on a paper each dot image having a size corresponding to said pulse width, comprising:

integrating means for integrating said image density data for a predetermined integration period and outputting integrated image density data;

comparing means for comparing said integrated image density data with a predetermined threshold data and generating the printing signal having a pulse width corresponding to said comparison result thereof;

timing signal generating means for generating a timing signal provided for integrating said image density data so that said predetermined integration period of said integrating means is different from a period corresponding to said image density data; and

selection means for selecting any one of plural different integration periods of said integrating means,

wherein said timing signal generating means generates said timing signal responsive to said integration period selected by said selection means.

5,363,209

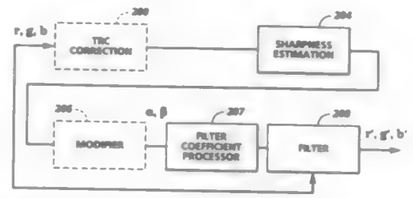
IMAGE-DEPENDENT SHARPNESS ENHANCEMENT

Reiner Eschbach, Webster, and William A. Fuss, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 5, 1993, Ser. No. 147,612

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—445 **40 Claims**



1. Apparatus for altering the sharpness in the reproduction of an electronically encoded natural scene image, comprising:

a) an electronic signal input suitable for receiving an electronically encoded natural scene image, where the encoding is in terms of color density signals;

b) a color space conversion circuit, converting the color density signals to a format wherein at least one signal represents image intensity and is defined for L levels of intensity;

c) a comparator iteratively comparing intensity signals for a predetermined area of the image to determine a measure of sharpness of the image and producing an output signal indicative thereof.

d) a sharpness filter coefficient deriving circuit, having an external signal input receiving desired sharpness signals from a user, and deriving filter coefficients as a function of the comparator output signals and desired sharpness;

e) a sharpness filter, operating on one of the color density encoded image signals or converted color density signals, to sharpen the image;

f) returning the image to an output encoding, if required, preparatory to output.

5,363,210

APPARATUS OUTPUTTING QUANTIZED IMAGE DATA, SELECTING FROM FILTERS WITH DIFFERENT ERROR SPREADING EFFECTS

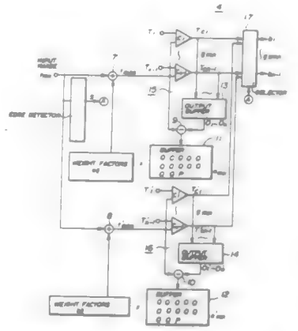
Tomio Sasaki, and Masahito Obata, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,173

Claims priority, application Japan, Sep. 30, 1991, 3-251622

Int. Cl.[5] G06F *15/70*

U.S. Cl. 358—448 **8 Claims**



1. An image processing apparatus in which an input image

signal is quantized into an output multilevel image signal through an error spreading process, said output multilevel image signal indicating one of "n" different density levels (n≧2), said image processing apparatus comprising:

detection means for detecting whether or not a target pixel of the input image signal is at an edge portion of a bi-level image;

a first quantizer for generating quantized image data with respect to the target pixel by using a first error spreading filter containing a set of weight factors aij (1≦i≦m; 1≦j≦n), the filter having a relatively high error spreading effect, such that a density error between the input image signal and the output multilevel image signal, which error is multiplied by one of the weight factors aij, is incorporated in "m" neighboring pixels surrounding the target pixel;

a second quantizer for generating quantized image data with respect to the target pixel by using a second error spreading filter containing a set of weight factors bij (1≦i≦m; 1≦j≦n), the filter having a relatively low error spreading effect, such that a density error between the input image signal and the output multilevel image signal, which error is multiplied by one of the weight factors bij, is incorporated in "m" neighboring pixels surrounding the target pixel; and

selection means for selecting either the quantized image data generated by the first quantizer or the quantized image data generated by the second quantizer in accordance with the result of a detection made by the detection means,

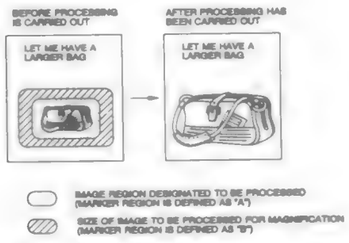
wherein the quantized image data generated by the second quantizer is selected to output said quantized image data when said detection means detects the target pixel as lying at an edge portion of a bi-level image, and, when said detection means detects that the target pixel does not lie at an edge portion of a bi-level image, the quantized image data generated by the first quantizer is selected to output said quantized image data.

5,363,211

IMAGE PROCESSING APPARATUS HAVING MEANS FOR MAGNIFYING A PORTION OF A DOCUMENT SELECTED THROUGH COLOR MARKING

Takashi Hasebe, and Satoshi Haneda, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 93,868
Claims priority, application Japan, Jul. 24, 1992, 4-198632
Int. Cl.[5] H04N *1/393*
U.S. Cl. 358—451 **2 Claims**



1. An image processing apparatus for changing an image size, comprising:

an image reader to scan a document to photoelectrically read an original image and to generate color image signals, wherein the document is marked with two kinds of color markers differing in color to designate a pre-change region in which an image size is to be changed and a post-change region indicating a region after the image size has been changed, the pre-change region and the post-change region being designated by double-looped marked lines differing in color;

a condition detector to detect the pre-change region and the post-change region from the color image signals and to obtain a magnification of the image size change on the basis of the pre-change region and the post-change region; and

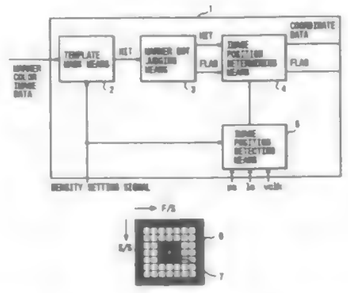
a magnification processor to process image signals to change the image size in accordance with the magnification.

5,363,212

MARKER DOT DETECTING DEVICE FOR COLOR IMAGE RECORDING APPARATUS

Kazuman Taniuchi; Hiroshi Sekine; Noboru Akita; Isao Kuwahara, and Kiyomasa Endoh, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 13, 1992, Ser. No. 882,283
Claims priority, application Japan, May 14, 1991, 3-109245
Int. Cl.[5] H04N *1/387, 1/40, 1/46*
U.S. Cl. 358—452 **8 Claims**



1. A marker dot detecting device for a color image recording apparatus, comprising marker dot detecting means for detecting a marker dot by detecting a plane size of binary image date having a preset marker color, said marker dot detecting means including template mask means having a first template mask in a predetermined first size and a second template mask in a predetermined second size larger than the first size, said second template mask including said first template mask, said template mask means outputting a marker dot detecting signal when a detected size of the marker dot is larger than that of said first template mask and smaller than that of said second template mask.

5. A color image recording apparatus for performing an editing process based on a marker dot detection, comprising:

original input means for supplying an input signal;

means for separating the input signal supplied from said original input means into and for supplying a color signal and a non-color signal; and

means for detecting a marker dot by comparing the color signal supplied from said separating means with a template, said template holding a measure for determining an upper limit of the size of the marker dot to be detected and a measure for determining a lower limit of the size of the marker dot.

5,363,213

UNQUANTIZED RESOLUTION CONVERSION OF BITMAP IMAGES USING ERROR DIFFUSION

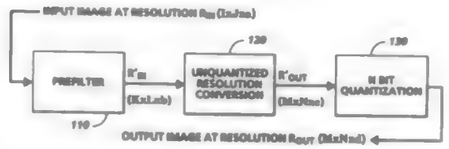
Robert E. Coward, and James D. Parker, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 8, 1992, Ser. No. 895,063
Int. Cl.[5] G06K *9/36*
U.S. Cl. 358—455 **19 Claims**

1. A method of image conversion, for converting an original bitmap image having a bitmap of pixels defined along x- and y-axes and at a resolution of I pixels per unit length along the x-axis×J pixels per unit length along the y-axis (I×J) and pixel depth a, to an output image having M pixels per unit length along the x-axis x, N pixels per unit length along the y-axis (M×N) and pixel depth d, comprising the steps of:

directing the original bitmap image including a number of input pixels defined at resolution I×J×a through a filter to produce a second bitmap image including a number of output pixels defined at a resolution of K pixels per unit length along the x-axis×L pixels per unit length along the y-axis (K×L) and pixel depth b;

determining, for each pixel in the output image defined at resolution M×N, a gray level value having pixel depth c



as a function of a predefined periodically repeating neighborhood of overlapped and nonoverlapped input pixels about each output pixel, each input pixel, defined by the second bitmap image at resolution K×L×b, in the periodically repeating neighborhood contributing to the gray level determination in accordance with a precalculated weight based on position in the periodically repeating neighborhood of each input pixel with respect to each output pixel; and

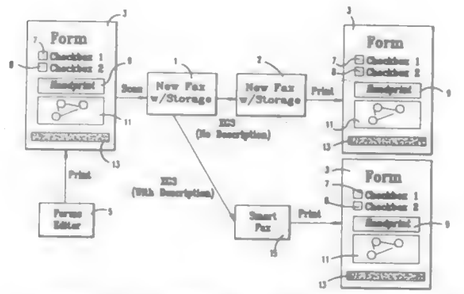
quantizing the gray level value of each pixel of the output image having pixel depth c to depth d, while retaining local area density and sharpness over the image at resolution M×N.

5,363,214

FACSIMILE TRANSMISSION SYSTEM

Walter A. L. Johnson, Santa Clara, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 738,716, Jul. 31, 1991, which is a division of Ser. No. 530,753, May 30, 1990, Pat. No. 5,060,980.
This application Dec. 30, 1991, Ser. No. 814,514
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—462 **14 Claims**



1. A method for transmitting a form from a transmitting device to a receiving device, which form has a generic part and a unique part, comprising the steps of:

a) storing a description of the generic part in a memory location within the receiving device;

b) encoding a pointer on the form, said pointer specifying the memory location within the receiving device in which the description of the generic part is stored;

c) scanning the form to detect the pointer and the unique part;

d) creating a digital encoding of the pointer and a bit map of the unique part;

e) transmitting the bit map and the digital encoding to the receiving device;

f) retrieving the description of the generic part from the storage location specified by the pointer; and

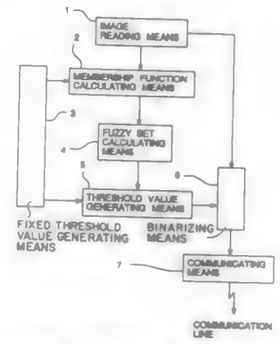
g) regenerating the form in the receiving device from the bit map and the description.

5,363,215

IMAGE PROCESSING APPARATUS HAVING FUZZY SET CALCULATING MEANS

Takashi Sekimoto, Tokyo; Kunio Nakano, and Toshiya Eguchi, both of Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 15, 1992, Ser. No. 944,784
Claims priority, application Japan, Sep. 18, 1991, 3-238002
Int. Cl.[5] H04N *1/387;* **G03G** *15/01*
U.S. Cl. 358—465 **3 Claims**



1. An apparatus for converting an image having a plurality of pixels obtained from an image reading device, each pixel having a density, the apparatus comprising:

means for processing densities of at least four pixels neighboring a target pixel and producing membership data for each neighboring pixel;

means for forming a fuzzy set from the membership data of the four neighboring pixels and for performing a fuzzy operation to determine optimum membership data;

means for determining a threshold value from the optimum membership data; and

means for comparing the density of the target pixel with the threshold value and converting the density of the target pixel into bi-level data.

5,363,216

CONTACT IMAGE SENSOR MODULE

Chung J. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1992, Ser. No. 996,016
Claims priority, application Rep. of Korea, Dec. 26, 1991, 24473/1991
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—482 **4 Claims**

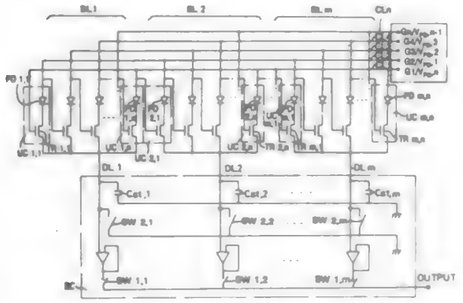
1. A contact image sensor module comprising:

a plurality of unit cells for transforming light being incident upon into image data, said unit cells being divided into m blocks, each of said blocks consisting of n unit cells, each of said unit cells including a light-electro transducer and a switching element;

n common lines for providing a driving voltage for said light-electro transducers and a driving voltage for said switching elements, each of said common lines is connected to a gate electrode of said switching element in a corresponding one of said unit cells in each of said blocks

via an anode electrode of said light-electro transducer in a preceding one of said unit cells;

a driving circuit connected to each of said common lines, for generating for each of said common lines said driving voltage for said switching element of said corresponding one of said unit cells and said driving voltage for said light-electro transducer of said preceding one of said unit cells in consecutive order, said driving voltage for said

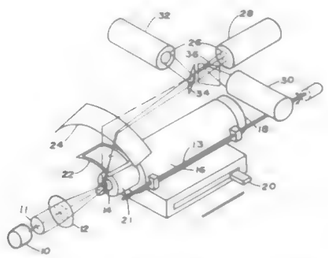


light-electro transducer of said preceding one of said unit cells is the same as a voltage of said switching element of said corresponding one of said unit cells for an off state;

m data lines, each of said data lines is connected to a drain electrode of every said switching element in a corresponding one of said m blocks; and

means for receiving said image data via said m data lines to read out.

5,363,217
IMAGE TRANSFER SYSTEM
John Keightley, Barnaby, Canada, assignor to Pthalo Systems, Inc., Barnaby, Canada
Filed Nov. 12, 1992, Ser. No. 974,888
Int. Cl.[5] G03F 3/08
U.S. Cl. 358—506 7 Claims



1. An image transferring device, comprising:

a) light source transmitting means for transmitting a collimated light beam;

b) a rotatable mirror having multiple facets positioned parallel to and so as to intercept the collimated light beam such that as said mirror rotates the collimated light beam falls onto one facet and then on subsequent adjacent ones, in turn, until light has been reflected from all of the facets;

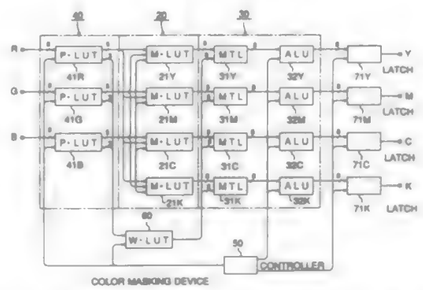
c) means for rotating said mirror;

d) a film positioned at the focal point of the light beam reflected from said mirror;

e) a plurality of lenses mounted so as to rotate with said mirror and positioned to intercept light reflected from said mirror and to focus said light beam onto said film; and

f) means for advancing said mirror in a direction along its axis of rotation so that the light beam traverses an image portion of said film. intercept light reflected from a corresponding one of the facets of said mirror and focus it onto said film.

5,363,218
COLOR ESTIMATION METHOD FOR COMPRESSING COLOR IMAGE DATA FOR IMAGE REPRODUCTION
Toru Hoshino, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Nov. 22, 1991, Ser. No. 796,241
Claims priority, application Japan, Nov. 26, 1990, 2-321685; Nov. 26, 1990, 2-321686
The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.
Int. Cl.[5] H04N 1/46; G03F 3/08
U.S. Cl. 358—518 10 Claims



1. A method for compressing color image data of a first media to be reproduced on a second media having a color reproducing capability larger than that of the first media, comprising:

obtaining a first color gamut on a colorimeter system on the basis of a plurality of color image data of the first media beforehand, the colorimetric system being one of the CIE standard L*u*v* and L*a*b* colorimetric systems;

obtaining a second color gamut on the colorimetric system on the basis of a plurality of color image data of the second media beforehand;

calculating a first lightness difference between maximum and minimum values of the lightness on a lightness axis of the first color gamut, a second lightness difference between maximum and minimum values of lightness on the lightness axis of the second color gamut, and a lightness deference ratio between the first and the second lightness differences;

inputting a color image data "T" of the first media;

converting the L* value of the color image data "T") of the first media on the basis of the lightness difference ratio;

comparing a chroma "rT" of the color image data "T" of the first media with a threshold value which is "a" ($a<1.0$) times a maximum chroma "r2max" of the first color gamut at a lightness "LT" and a hue "theta T" of the color image data "T"; and

in the case that the chroma "rT" is not larger that the threshold value,

using the u* and v* values or a* and b* values of the color image data "T" without any change, or

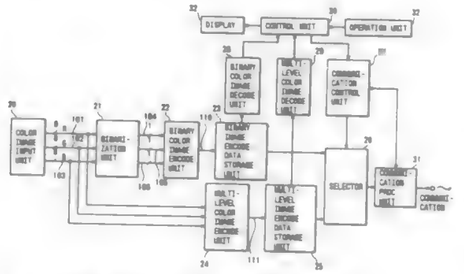
in the case that the chroma "rT" is larger than the threshold value,

assuming a first region enclosed between the inner gamut surface which comprises a value which is "a" times of the maximum chroma value at the each of the hue and lightness of the second color gamut and the outer surface of the first color gamut which comprises the maximum chroma value at the each of the hue and the lightness of the first color gamut, and a second region enclosed between the inner gamut surface above mentioned and the outer surface of the second color gamut which comprises the maximum chroma value of each of the hue and the lightness of the second color gamut; and

converting the u* and v* values or the a* and b* values of the color image data "T" so as to make the first region in continuous adoption with the second region;

wherein when the chroma "rT" decreases and the hue "theta T" locates within one of predetermined regions each neighboring the hue at the maximum chroma of each of blue, green, red, yellow, magenta and cyan in the first color gamut, the hue "theta T" is moved in a direction toward the hue at the maximum chroma of the same color of the second color gamut.

5,363,219
IMAGE PROCESSING METHOD AND APPARATUS
Tadashi Yoshida, Ichikawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 1, 1992, Ser. No. 861,763
Claims priority, application Japan, Apr. 4, 1991, 3-071693
Int. Cl.[5] H04N 1/46, 1/41
U.S. Cl. 358—539 24 Claims



1. An image encoding apparatus comprising:

input means for inputting image data representing an original;

first encoding means for encoding the image data as binary image data representing the original;

second encoding means for encoding the image data as multilevel image data representing the original;

selecting means for selecting one of the image data encoded by said first or second encoding means; and

transmitting means for transmitting the image data selected by said selecting means,

wherein said first encoding means encodes the image data as binary image data line by line and said second encoding means encodes the image data as multilevel image data block by block, each block being a two-dimensional block having a plurality of pixels, and

wherein said first encoding means and said second encoding means encode the same image data of one original in parallel.

5,363,220
DIFFRACTION DEVICE
Tetsuro Kuwayama, Yokohama; Naosato Taniguchi, Atsugi; Yoko Yoshinaga, Machida, and Nobuo Kushibiki, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 360,143, Jun. 1, 1989, abandoned. This application Jan. 7, 1993, Ser. No. 1,405
Claims priority, application Japan, Jun. 3, 1988, 63-135635
Int. Cl.[5] G02B 5/18, 5/32
U.S. Cl. 359—3 13 Claims

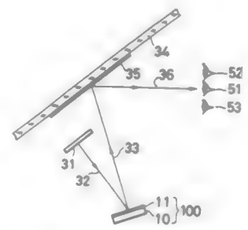
1. A head-up display apparatus, comprising:

a displaying device for displaying an image; and

an optical system for directing a beam indicative of said image from said displaying device to a viewer, said optical system including:

a beam combiner; and

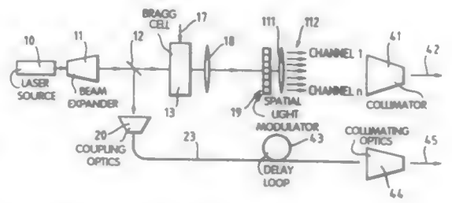
a relay member for diffracting said beam and making it incident on said beam combiner, at which the beam is rediffracted and directed to the viewer, wherein a half-width of a wavelength spectrum of a diffraction efficiency



of said relay member is set to be equal to or greater than 8% of a central wavelength of the wavelength spectrum, and

wherein a half-width of a wavelength spectrum of a diffraction efficiency of said beam combiner is smaller than that of said relay member.

5,363,221
OPTICAL MULTIPLEXER
Philip Sutton; Andrew P. Shaw, both of Hants; William Dawber, East Sussex; Peter F. Hirst, Dyfed, and Brian Condon, Bradford, all of England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland
PCT No. PCT/GB91/00382, § 371 Date Oct. 16, 1992, § 102(e) Date Oct. 16, 1992, PCT Pub. No. WO91/14321, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 11, 1991, Ser. No. 937,860
Claims priority, application United Kingdom, Mar. 13, 1990, 9005647.4
Int. Cl.[5] H04J 14/00; G02F 1/11; H04B 10/00
U.S. Cl. 359—11 23 Claims



1. An optical multiplexer for a communications system comprising:

a substantially monochromatic light source;

moving grating means for modulating and dispersing light from the source and for providing a plurality of spatially separated output light beams, each beam having a different non-overlapping optical frequency bandwidth;

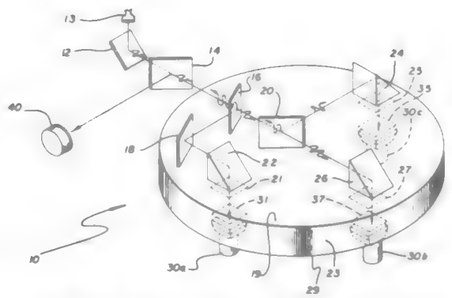
a spatial light modulation means (SLM) having array of spatial light modulating elements, each element of the array having an electrical signal input connection means for directing the spatially separated output beams from the moving grating means to respective modulating elements of the SLM, said SLM providing a plurality of SLM output beams, wherein a plurality of separate communication signals connected to the input connections to respective elements of the SLM produce output beams from the SLM comprising a plurality of orthogonal communications channels.

5,363,222

COMPACT OPTICAL SYSTEM FOR A SINGLE LIGHT VALVE FULL-COLOR PROJECTOR

Arno G. Ledebuhr, Pleasanton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 362,733, Jun. 7, 1989, abandoned. This application Feb. 3, 1992, Ser. No. 951,291
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—40 5 Claims



1. A full color liquid crystal light valve image projection system comprising:

a source of polarized light;

a reciprocal optical arrangement which provides equal optical path lengths for light of each color from input to the optical arrangement to output from the optical arrangement, the elements of said optical arrangement being disposed in a common plane including:

a first polarizing beamsplitter means for separating light from said source into first and second beams, said first beam consisting of light of a first polarization state and said second beam consisting of light of a second polarization state;

a second polarizing beamsplitter means for transmitting light of said second polarization state and reflecting light of said first polarization state;

a first dichroic separator means for separating said second beam into third and fourth beams, said third beam consisting of light of a first color and said fourth beam consisting of light of a second color and third color;

a second dichroic separator means for separating said fourth beam into fifth and sixth beams, said fifth beam consisting of light of said second color and said sixth beam consisting of light of said third color; and

means for directing said third, fifth and sixth beams into a parallel relation toward a common planar surface, the path lengths of said beams from said first dichroic separator to said common planar surface being equal;

a liquid crystal light valve means disposed at said common planar surface for modulating said third, fifth and sixth beams in response to input images to provide first, second and third polarization modulated beams, said first, second and third polarization modulated beams being combined into a single beam by said reciprocal optical arrangement; and

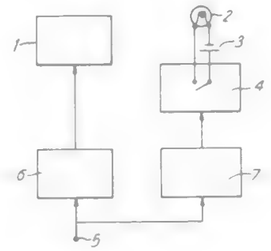
means for projecting said single beam.

5,363,223

ILLUMINATION OF DISPLAYS WITH CONTROL WHICH SWITCHES ILLUMINATOR IN RESPONSE TO CHANGES IN THE DISPLAY

Graham E. Beesley, Winchester, England, assignor to Shaye Communications Limited, Winchester, England

Filed Nov. 27, 1992, Ser. No. 982,721
Claims priority, application United Kingdom, Nov. 28, 1991, 9125331
Int. Cl.[5] G02F *1/1335, 1/133*
U.S. Cl. 359—48 20 Claims



1. Electronic equipment including a display and characterised by means for illuminating said display, and means controlling said illuminating means for switching on the illumination only as a result of the occurrence of a change in the display.

5,363,224

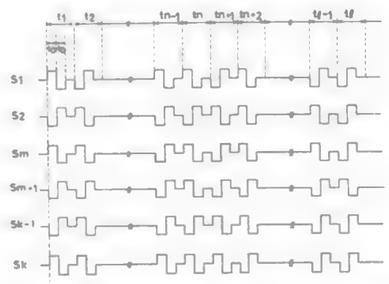
Patent Not Issued For This Number

5,363,225

LIQUID CRYSTAL ELEMENT AND DRIVING METHOD THEREOF INCLUDING MULTI-VALUE SIGNAL WHICH ENDS AT ZERO VOLTS

Tsugiko Minamihara, Sakai; Tomoaki Kuratate, Kobe, and Toshio Matsumoto, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1992, Ser. No. 974,111
Claims priority, application Japan, Nov. 11, 1991, 3-294489
Int. Cl.[5] G02F *1/1343, 1/13;* G09G *3/36*
U.S. Cl. 359—56 25 Claims



14. A liquid crystal display device, comprising:

a plurality of liquid crystal cells arranged in rows and columns, each liquid crystal cell being filled with a ferroelectric liquid crystal, each liquid crystal cell having a pair of substrates and a switching device, said switching device having a first electrode and a second electrode, said switching device switching to an on-state when a scanning signal is received at said first electrode, and said switching device controlling a display state of said liquid crystal cell based on a display signal received at said second electrode when in said on-state;

a plurality of scanning lines, each scanning line being connected to said first electrodes of a row of said liquid crystal cells, said scanning lines sequentially supplying a scanning signal for a predetermined period of time; and

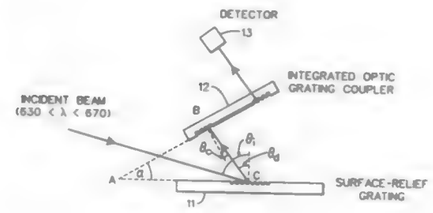
a plurality of signal lines, each signal line being connected to said second electrodes of a column of said liquid crystal cells, each signal line supplying a display signal during the supply of a scanning signal, said display signal having a first portion with a voltage other than zero and a second portion with a voltage substantially zero, said second portion of said display signal being supplied prior to expiration of said predetermined period of time.

5,363,226

APPARATUS AND METHOD FOR DISPERSION COMPENSATION FOR A GRATING COUPLER USING A SURFACE RELIEF REFLECTION GRATING

Thomas A. Strasser, Ithaca, and Mool C. Gupta, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 863,915, Apr. 6, 1992, abandoned. This application Aug. 2, 1993, Ser. No. 118,170
Int. Cl.[5] G02B *6/34, 27/44*
U.S. Cl. 359—566 8 Claims



7. A radiation coupling system having compensation for changes in wavelength so that no substantial coupling efficiency change occurs in response to said changes in wavelength, said coupling system comprising:

a diffraction grating coupler coupling an intermediate radiation beam having an angle θ_c with a perpendicular to a plane of a diffraction grating coupler grating to an optical waveguide, said diffraction grating coupler having a dispersion given by $d\theta_c/dl$;

a surface relief diffraction grating which provides said diffraction grating coupler with said intermediate radiation beam, said intermediate radiation beam making an angle θ_d with a perpendicular to a grating region of said surface relief grating, an incident intermediate radiation beam making an angle θ_i with said grating region, wherein said surface relief grating is fabricated to have dispersion for said θ_i and a selected wavelength l of $d\theta_d/dl = -d\theta_c/dl$ and to have an optimum value a_{opt} of angle a between said diffraction grating coupler plane and said grating region of said surface relief grating determined by $da_{opt}/dl = 0$; and

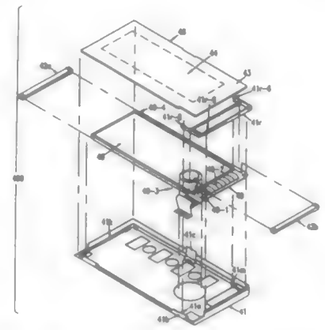
wherein said condition, $d\theta_d/dl = -d\theta_c/dl$, is equivalent to $-1/d_{SR}\cos(\theta_d) = [dn_{eff}/dl - 1/d_{IO}]/\cos(\theta_c)$, wherein d_{SR} = the periodicity of the reflection diffraction grating, d_{IO} = the periodicity of the coupling grating, and n_{eff} = effective index of refraction of the grating coupler.

5,363,227

LIQUID CRYSTAL DISPLAY MOUNTING STRUCTURE

Shinpei Ichikawa, Cupertino; Paul R. Hamerton-Kelly, Palo Alto, and Noah L. Anglin, San Jose, all of Calif., assignors to Fujitsu Personal Systems, Inc., Santa Clara, Calif.

PCT No. PCT/US90/03106, § 371 Date Jan. 29, 1992, § 102(e) Date Jan. 29, 1992, PCT Pub. No. WO90/15359, PCT Pub. Date Dec. 13, 1990
Continuation-in-part of Ser. No. 359,191, May 31, 1989, Pat. No. 5,002,368. This PCT application May 31, 1990, Ser. No. 809,536
Int. Cl.[5] G02F *1/1333*
U.S. Cl. 359—83 11 Claims



1. A liquid crystal (LCD) mounting structure comprising:

an LCD assembly having a first and second opposing edge;

a first and second resilient shock mount, each said shock mount mounted on an associated one of said opposing edges of said LCD assembly, each said shock mount having a slot for receiving each said associated edge of said LCD assembly, and each said slot having a pair of closed ends for securing said associated edge, thereby retaining said edges within said associated slots; and

a three-dimensional frame comprising a horizontal plate and a housing, said housing having sides forming a cavity into which said LCD assembly and said shock mounts are inserted, said horizontal plate having an inside perimeter defining a window, said horizontal plate being securely joined with said housing, with said LCD assembly and said shock mounts interposed between said housing and said horizontal plate to fixedly position said LCD assembly and shock mounts with respect to said housing.

5,363,228

OPTICAL DEVICE WITH SPATIAL LIGHT MODULATORS FOR SWITCHING ARBITRARILY POLARIZED LIGHT

Michael C. DeJule, Clifton Park, N.Y., and Thomas L. Credelle, Los Gatos, Calif., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,670
Int. Cl.[5] G02B *6/28;* G02F *1/29*
U.S. Cl. 359—117 17 Claims

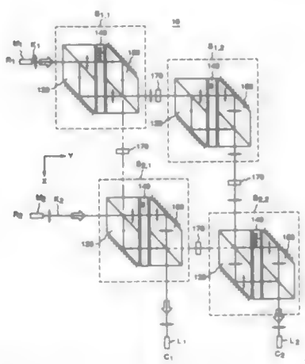
1. An optical switching device having input ports and output ports, for simultaneously and individually directing a plurality of externally derived arbitrarily polarized optical signal beams received through at least one of said input ports to a selected plurality of said output ports of said device, said device comprising:

a first switching matrix comprising a plurality of polarization-independent switching cells arranged in columns and rows, each of said polarization-independent switching cells independently controllable such that individual optical beams received by each respective one of said switch-

ing cells can respectively emerge therefrom along a selected one of first and second axes;

each polarization-independent switching cell located in a first column of said matrix being positioned to receive a portion of said plurality of externally derived optical beams;

each polarization-independent switching cell in a predetermined column of said matrix subsequent to said first column being optically coupled to receive optical beams passed along said selected second axis from a polarization-independent switching cell located in a preceding column of the same row, and each polarization-independent switching cell in a predetermined row of said matrix subsequent to a first row of said matrix being optically coupled to receive optical beams passed along said selected first axis from a switching cell located in a preceding row of the same column; and



each switching cell in the last row of said matrix being optically coupled to pass optical beams from within said matrix to said selected output ports;

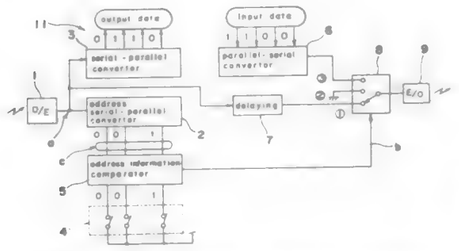
whereby externally derived arbitrarily polarized optical signal beams applied simultaneously through said at least one of said input ports to the first column of switching cells can propagate through said matrix so as to reach said selected plurality of output ports without mutual interference.

5,363,229

OPTICAL BUS TRANSMISSION SYSTEM

Tutomu Sakurai, Ikoma, and Takeshi Yamakita, Suita, both of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,600
Claims priority, application Japan, Nov. 26, 1990, 2-325028
Int. Cl.[5] H04B *10/10*
U.S. Cl. 359—159 **6 Claims**



1. An optical bus transmission system for transmitting data between a master station and a plurality of slave stations by means of an optical bus;

said master station being provided with a means for transmitting a serial optical signal in a transmission format consisting of a synchronizing signal, address information and data information comprising an output data part and an input data part;

each of said slave stations being provided with: a means for serial to parallel converting the serial signal received from said master station; a means for parallel to serial converting serial input data information stored in said slave station; a detecting means for detecting a coincidence of an address set previously in said slave station with the received address information from the master station; a transmitting means for transmitting a serial optical signal at least partially corresponding to the received serial signal; a switching means for switching said transmitting means so that said input data information is transmitted as the input data part of the data information in the transmission format of the transmitted serial optical signal from said slave station when a coincidence of addresses is detected, and the received serial signal is transmitted as the transmitted serial optical signal in the absence of a detection of a coincidence of addresses;

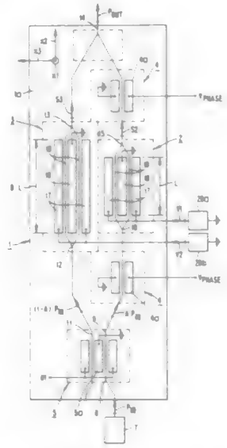
and said transmitting means includes a means for controlling an optical transmission time of information bits so as to generate a vacant transmission time among the slave stations.

5,363,230

METHOD OF LINEARIZING THE TRANSMISSION FUNCTION OF MODULATOR

Anders G. Djupsjobacka, Solna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 17, 1992, Ser. No. 992,100
Claims priority, application Sweden, Dec. 20, 1991, 9103807-5
Int. Cl.[5] H04B *10/04*
U.S. Cl. 359—182 **6 Claims**



1. A method for linearizing a response of an electrooptic modulator, said modulator including at least two mutually connected sub-modulators and having a response determined by a transmission function and a plurality of selectable parameters, each sub-modulator having a respective non-linear transmission function and a respective activation degree, and the selectable parameters including power levels of carrier waves applied to the sub-modulators and a ratio of the activation degrees of the sub-modulators, comprising the steps of:

determining the selectable parameters such that intermodulation distortion of a modulating control signal is less than a predetermined value and the modulator's transmission function is linearized based on the steps of:

forming a model relationship for the modulator's transmission function, said model relationship including parameters representing the power levels and the activation degree ratio;

forming a series expansion of the model relationship, the series expansion comprising at least two consecutive terms of second or higher degree, each consecutive term having a respective coefficient;

representing a modulated carrier wave to be produced by the modulator by an expression having at least one higher-order term representing intermodulation distortion;

determining the signs of the coefficients of the consecutive terms that minimize said at least one higher-order term representing intermodulation distortion;

determining at least one search region for the power levels and the activation degree ratio based on the sign-determined coefficients, said search region being limited by the values of the power levels and the activation degree ratio;

determining the intermodulation distortion within a search region from one of the model relationship and the series expansion; and

selecting the power levels and the activation degree ratio that linearize the modulator's transmission function to a predetermined level;

dividing a carrier wave applied to an input of the modulator between the sub-modulators according to the selected power levels;

generating modulating control signals having predetermined amplitudes and signal components of least two frequencies; and

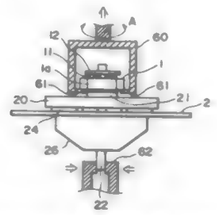
modulating the parts of the carrier wave with the modulating control signals such that the modulator's transmission function is linearized and a modulated carrier wave having a predetermined modulation depth and minimized intermodulation distortion is produced.

5,363,231

LIGHT DEFLECTING DEVICE

Shin Komori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 750,723, Aug. 21, 1991, abandoned, which is a continuation of Ser. No. 476,248, Feb. 7, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,408
Claims priority, application Japan, Feb. 9, 1989, 1-30234
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—219 **20 Claims**



1. A light deflecting apparatus for deflecting a light beam, comprising

a rotational mirror having at least a reflecting surface for reflecting the light beam;

a rotational mirror mounting portion;

biasing means for urging said rotational mirror against said mounting portion so that said rotational mirror and said mounting portion rotate together;

driving means for rotating said mounting portion; and

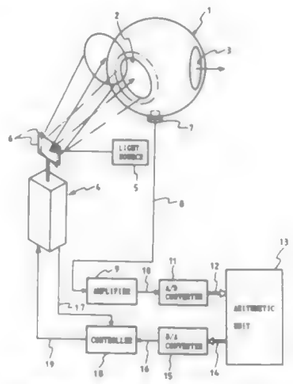
means for separating said rotational mirror from said mounting portion against said biasing means and for effecting rotation of said rotational mirror relative to said mounting portion.

5,363,232

DEVICE FOR CONTROLLING LUMINOUS ENERGY

Yutaka Tokue, Tokyo, Japan, assignor to Imagica, Corp., Osaka, Japan

Filed Aug. 30, 1993, Ser. No. 113,342
Claims priority, application Japan, Apr. 28, 1993, 5-102287
Int. Cl.[5] G02B *26/02*
U.S. Cl. 359—234 **2 Claims**



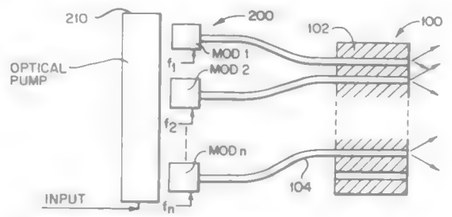
1. A device for controlling a luminous energy comprising a spherical integrator with beam input and output apertures, said beam output aperture being opened at a position to which incident beam does not directly strike, said spherical integrator having a curved inner surface which is a uniform diffusion surface, and a galvanometer scanner with a mirror capable of adjusting a reflection angle of a beam from a light source such that the luminous energy of the beam reflected by said mirror to said input aperture is quantitatively varied.

5,363,233

OPTICAL CORRELATOR USING FIBER OPTICS LASERS

Benjamin J. Pernick, 110-11 Queens Blvd., Forest Hills, N.Y. 11375

Filed Sep. 3, 1993, Ser. No. 115,660
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—316 **1 Claim**



1. An optical correlator comprising:

a plurality of fiber optic laser members;

a plate having an array of apertures formed therein for receiving the fiber optic laser members;

an optical pump located at an input end of the fiber optic laser members;

light modulating means interposed between the pumping means and the fiber optic laser members for respectively modulating light carried by the fiber optic laser members;

wherein the light modulating means are individually and

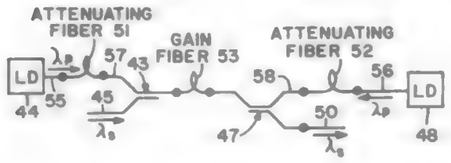
independently driven to aid detection of a single target, or multiple targets for which stored information exists, the orientation of one or more targets being determined by the highest output from the detecting means;
means located in optical alignment with the fiber optic laser members for storing optical information;
means for performing a Fourier transform of the information illuminated by the fiber optic laser members;
means located at the optical output of the transform means for optically filtering a Fourier transform of the stored optical information;
means located in optical alignment with the optical output of the filtering means for performing an inverse Fourier transform of an optically filtered information;
means for detecting the optical output of the inverse Fourier transform; and
lens means interposed between the fiber optic laser array and the optical information storing means for collimating light beams emitted by the fiber optic laser array.

5,363,234

AMPLIFIER HAVING PUMP FIBER FILTER

Mark A. Newhouse; Miles E. Vance, both of Corning, and Thomas W. Webb, Horseheads, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 14, 1993, Ser. No. 135,624
Int. Cl.[5] G02B *6/26;* **H01S** *3/30*
U.S. Cl. 359—341 **20 Claims**



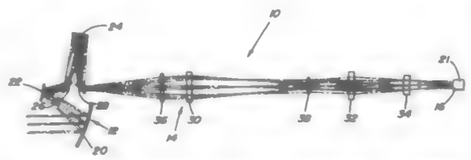
1. A one-way fiber amplifier comprising
gain fiber means having an input end and an output end,
means for coupling pump power of wavelength λ_p from a source to one end of said gain fiber means,
input means for introducing a signal of wavelength λ_s into the input end of said gain fiber means, said introduced signal traversing a preferred, designated path from said input means through said gain fiber means to the output end of said gain fiber means, whereby an amplified signal of wavelength λ_s appears at said output end, a portion of said introduced signal traversing a secondary path through said gain fiber means, that portion of said signal that traverses said secondary path would, if unattenuated, increase the noise factor of said amplifier, there being no further input signals applied to said gain fiber means, and
attenuating fiber means for attenuating only that portion of said signal that traverses said secondary path to said output end of said gain fiber means while leaving pump power substantially unattenuated, thereby preventing an increase in the noise factor of said amplifier that would have occured had said signal traversed said secondary path unattenuated.

5,363,235

DUAL FIELD OF VIEW MULTI WAVELENGTH SENSOR

Pui C. Kiunke, Long Beach; Reynold S. Kebo, Los Angeles, and Chungte W. Chen, Irvine, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 10, 1993, Ser. No. 15,941
Int. Cl.[5] G02B *17/00, 23/00*
U.S. Cl. 359—365 **7 Claims**



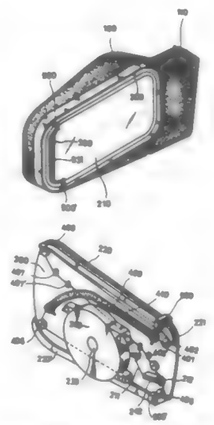
1. A dual field of view multi wavelength sensor comprising:
an afocal three-mirror anastigmat telescope for providing a magnified unobscured image of a scene, said three mirror anastigmat positioned to receive rays from the viewed scene;
imager elements provided to receive rays from said three mirror anastigmat for providing dual field of view imagery of the viewed scene, said imager elements including a triplet and pair of optical elements, said triplet of optical elements positioned for providing a first field of view and said pair of optical elements removably positioned for providing a second field of view.

5,363,236

MOTOR VEHICLE REAR VIEW MIRROR WIPER DEVICE

Ivan Han, No. 57-30, Ming Yi Road, Sec. 1, 34th Lin, Wu Ku Hsiang, Taipei Hsien, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 775,910, Oct. 15, 1991, Pat. No. 5,203,050. This application Jul. 9, 1992, Ser. No. 911,106
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] B60S *1/56, 1/70, 1/46*
U.S. Cl. 359—509 **7 Claims**



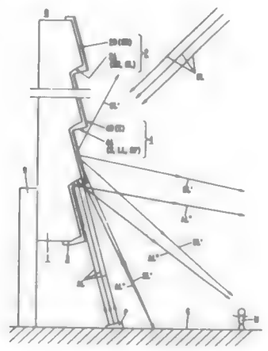
1. A motor vehicle rear view mirror wiper device comprising:
a rear view mirror case connected to a body of a motor vehicle;
a slide holder forming a substantially planar plate member having a front surface, a rear surface, a top edge and a bottom edge, said slide holder being fastened to said rear view mirror case, said slide holder having a first rail extending along said top edge thereof and a second rail extending along said bottom edge thereof;
a lens secured to said front surface of said slide holder;
two slides respectively movably mounted on said first and second rails, each of said slides having a first pair of rollers rotatable about a pair of spaced apart vertical axes and a second pair of rollers rotatable about a pair of spaced apart horizontal axes, said second pair of rollers being captured within grooves formed in respective first and second rails, each of said first and second pairs of rollers rollingly engaging a respective wall of a respective rail defined by a respective one of said grooves;
a wiper blade assembly connected to and extending between said two slides for removing water from said lens;
drive means mounted to said rear surface of said slide holder and coupled to said two slides for displacement thereof back and forth on said first and second rails respectively causing said wiper blade assembly to remove water from said lens; and
a perforated water spraying tube mounted on said slide holder along said top edge thereof and connected to a motor vehicle's windshield washer, said perforated water spraying tube having a plurality of water outlet holes through which water can be sprayed over said lens.

5,363,237

PSEUDO-LUMINOUS PANEL, SUBSTRATE THEREFOR, AND DISPLAY ELEMENT AND DEVICE USING THE PSEUDO-LUMINOUS PANEL

Yoshimasa Wakatake, Tokyo, Japan, assignor to Masayuki Wakatake, Happy Valley, Hong Kong, a part interest

Filed Nov. 4, 1992, Ser. No. 971,153
Claims priority, application Japan, Nov. 5, 1991, 3-317560
The portion of the term of this patent subsequent to Mar. 29, 2011, has been disclaimed.
Int. Cl.[5] G02B *5/136, 5/28, 5/02;* **G09F** *13/16*
U.S. Cl. 359—546 **19 Claims**



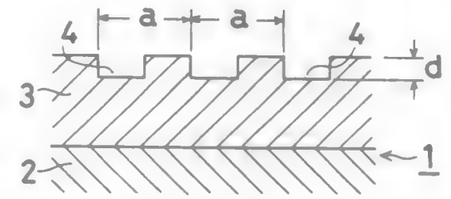
1. A pseudo-luminous panel comprising:
a substrate; and
a thin film optical color filter formed all over the main surface of said substrate;
wherein:
said main surface of said substrate is formed by a surface in which obliquely downward band-like surface portions and obliquely upward band-like surface portions are alternately arranged side by side in a vertical direction;
said obliquely downward band-like surface portions forming said main surface of said substrate are each a smooth reflecting surface;
said obliquely upward band-like surface portions forming said main surface of said substrate are each a reflecting surface;
obliquely downward band-like surface portions of said thin film optical color filter on said obliquely downward band-like surface portions of said substrate, forming the surface of said thin film optical color filter on the opposite side from said substrate, are each a smooth surface extending straight in a longitudinal section of said panel; and
obliquely upward band-like surface portions of said thin film optical color filter on said obliquely upward band-like surface portions of said substrate, forming the surface of said thin optical color filter on the opposite side from said substrate, are each a rough surface.

5,363,238

DIFFRACTION GRATING

Yasuhiro Akune; Kichiya Tanino, both of Sanda; Masaru Koeda, Kyoto; Tetsuya Nagano, Kyoto; Kazuo Sano, Kyoto, and Eiji Ishiguro, Nara, all of Japan, assignors to Nippon Packing Co., Ltd., Osaka and Shimadzu Corporation, Kyoto, both of Japan

Filed May 24, 1993, Ser. No. 64,912
Int. Cl.[5] G02B *5/18, 27/44*
U.S. Cl. 359—566 **9 Claims**



1. A diffraction grating comprising:
a substrate of sintered silicon carbide;
a film composed of silicon carbide disposed on said substrate;
said film having crystal planes strongly oriented to the (220) planes in terms of Miller indices and a surface roughness of about 5 Å RMS or less; and,
a plurality of grating grooves in a surface of said film.

5,363,239

METHOD FOR FORMING SPATIALLY-VARYING DISTRIBUTED BRAGG REFLECTORS IN OPTICAL MEDIA

Victor Mizrahi, Bedminster, and Lisa F. Mollenauer, Colts Neck, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 23, 1992, Ser. No. 995,492
Int. Cl.[5] G02B *5/18;* **G02F** *1/295*
U.S. Cl. 359—570 **11 Claims**



2. A method for imposing a grating pattern on an article which includes a photosensitive medium, and associated with

the medium, an axis which defines an axial direction, the method comprising the steps of:

a) producing first and second collimated, non-collinear beams of electromagnetic radiation having a actinic wavelength λ;

b) impinging the actinic beams on at least a portion of the medium such that the beams intersect at an angle ϕ, resulting in the creation of an interference pattern periodic in the axial direction and having an illuminated portion that falls on the impinged portion of the medium, leading to formation of a grating pattern in the medium; and

c) during the impinging step, axially advancing the illuminated portion of the interference pattern relative to the medium such that at least local coherence of the interference pattern is preserved, wherein the method further comprises:

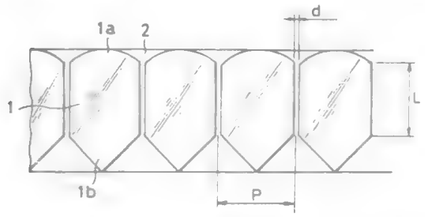
d) during the advancing step, impinging at least the first actinic beam onto a curved mirror surface, whereby an incident portion and a reflected portion of the first actinic beam are defined, and displacing the incident portion relative to the curved mirror surface such that the reflected portion is rotated relative to the second actinic beam, thereby changing the angle ϕ, leading to formation of a grating pattern that is quasiperiodic and that has a spatially varying period.

5,363,240

IMAGE FORMING DEVICE AND METHOD FOR PRODUCING IT

Takaaki Miyashita, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,336
Int. Cl.[5] G02B *27/10*
U.S. Cl. 359—625 19 Claims



1. An image forming device comprising:

a lens array having a plurality of lenses continuously formed;

a roof prism array having a plurality of roof prisms corresponding to said plurality of lenses in said lens array in one-to-one correspondence, each of said roof prisms having a rectangular reflection plane and defining a roof prism lens pair together with a corresponding lens;

said lens array and said roof prism array being integrally formed of a plastic; and

light shielding means disposed between respective two adjacent roof prism lens pairs to prevent crosstalk of light therebetween,

said light shielding means being a space portion provided between respective two adjacent roof prism lens pairs.

5,363,241

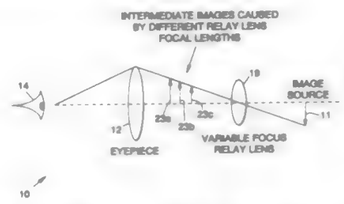
FOCUSABLE VIRTUAL IMAGE DISPLAY

Ronald G. Hegg, Los Angeles, and Mao-Jin Chern, Rancho Palos Verdes, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 7, 1992, Ser. No. 864,860
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—676 29 Claims

1. A focusable virtual image display optical system that is adapted to enlarge an image of an image source viewed by a user, said system comprising:

a movable cathode ray tube image source; and



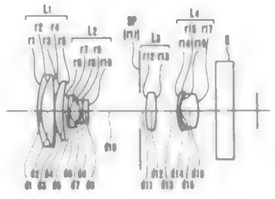
imaging optics disposed along an optical path between the movable cathode ray tube image source and the user, and that is adapted to produce a virtual magnified image of the movable cathode ray tube image source at the location of the user.

5,363,242

ZOOM LENS OF REAR FOCUS TYPE

Hideo Yokota, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1993, Ser. No. 62,220
Claims priority, application Japan, May 22, 1992, 4-155745
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 359—684 4 Claims



1. A zoom lens of the rear focus type comprising, in order from an object side, a first lens unit of positive refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power, and a fourth lens unit of positive refractive power, said second lens unit being moved toward an image side when zooming from a wide-angle end to a telephoto end while said fourth lens unit is moved to compensate for the image shift with zooming, and focusing being performed by moving said fourth lens unit, wherein said third lens unit consists of a positive single lens having an aspheric surface, said fourth lens unit includes a negative first lens and a positive second Lens, at least one of lens surfaces of said negative first lens and said positive second lens is aspherical, and the following conditions are satisfied:

$$2.2 < |Fb/Fw|$$

$$2.9 < \sqrt{Z} \cdot Fb/f3,4 < 3.5$$

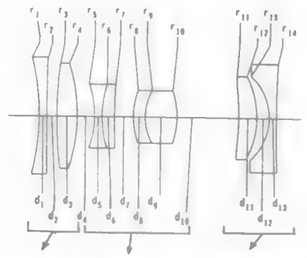
where f3,4 is the overall focal length of said third and fourth lens units in the wide-angle end, Fw is the focal length of the entire lens system in the wide-angle end, Fb is the distance from the last lens surface to an image plane which is shortest in an entire zooming range when focusing on an infinitely distant object, and Z is zoom ratio.

5,363,243

ZOOM LENS SYSTEM

Ito Takayuki, and Minefuji Nobutaka, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1992, Ser. No. 950,170
Claims priority, application Japan, Sep. 24, 1991, 3-315607
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—689 18 Claims



1. In a zoom lens system comprising at least three lens groups which are arranged, in order from the object side, as a first lens group having a positive focal length, a second lens group having a positive focal length and a third lens group having a negative focal length, wherein, when zooming is carried out from the wide-angle to the narrow-angle end, said first, second and third lens groups are all moved towards the object so that the distance between said first and second lens groups is increased whereas the distance between said second and third lens groups is decreased, the improvement wherein said second lens group has at least two aspheric surfaces; and wherein said at least two aspheric surfaces satisfy the following conditions (a) and (b):

(a) $-40<\Delta I2\leqq -15.7$

(b) $-4<\Delta III2<0$

where

ΔI2 is: the sum of variations in the coefficient of the third-order spherical aberration due to all aspheric surfaces in the second lens group (the aberration coefficient is such as is calculated with the focal length of the overall system at the wide-angle end being taken as 1.0); and

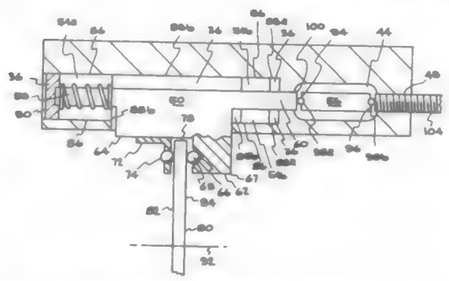
ΔIII2 is: the sum of variations in the coefficient of astigmatism due to all aspheric surfaces in the second lens group.

5,363,244

HIGH BANDWIDTH OPTICAL MOUNT

Donald A. Bender, Dublin, and Thomas Kuklo, Oakdale, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 28, 1992, Ser. No. 967,492
Int. Cl.[5] G02B *7/02, 27/00*
U.S. Cl. 359—823 15 Claims



1. An optical mount for controlling the position of an optic having a central axis, an outer radial edge, a front edge, and a back edge, the optical mount comprising:

a plurality of carriage means for three-dimensionally positioning the optic, each carriage means connected to the optic;

a plurality of first support member means, each first support member means limiting one of the plurality of carriage means to reciprocal movement within one dimension and for preventing radial translation, tangential translation, and rotation of said one of the plurality of carriage means, the one dimension of reciprocating movement being substantially parallel to the central axis of the optic;

a plurality of actuator means for reciprocatingly moving the carriage means in the one direction, each actuator means connected to one of the plurality of carriage means;

housing means for supporting the plurality of first support member means and the plurality of actuator means,

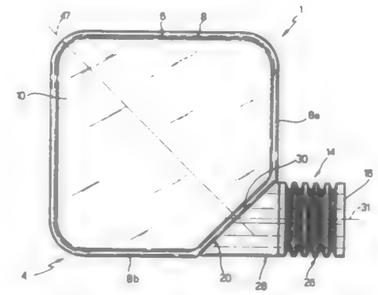
wherein the optic is three-dimensionally positioned by reciprocally moving each carriage means within the one dimension.

5,363,245

VEHICLE REARVIEW MIRROR

Antonio Borello, Settimo Torinese, Italy, assignor to Gilardini S.p.A., Turin, Italy

Filed Oct. 30, 1992, Ser. No. 969,421
Claims priority, application Italy, Oct. 31, 1991, T091 U 000272
Int. Cl.[5] G02B *7/182*
U.S. Cl. 359—872 6 Claims



1. A vehicle rearview mirror comprising:

a cup-shaped body (4) having a front edge (6) defining a frame (8) housing a reflective plate (10);

an arm (14) extending from a portion (20) of said body (4), and the free end (16) of which is fitted to an outer panel on the vehicle, said arm (14) presenting an end wall (30) mating with said portion (20);

connecting means (33) being provided between said portion (20) and said end wall (30), and defining at least two stable connecting positions of said body (4) and said arm (14);

said body (4) being adjustable in relation to said arm (14) between a first stable connecting position and a second stable connecting position wherein said body (4) is turned over and rotated 180° in relation to said arm (14);

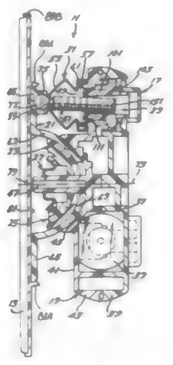
wherein said frame (8) being substantially square, and presenting, at one corner, a bevel (20); said arm (14) extending from said body (4) at said bevel (20).

5,363,246

POWER PACK FOR AN AUTOMOTIVE EXTERIOR MIRROR ASSEMBLY

William M. Perry, Palestine, and Kerry L. Helmer, Hollansburg, both of Ohio, assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed May 12, 1993, Ser. No. 60,268
Int. Cl.[5] G02B *7/182;* B60R *1/02*
U.S. Cl. 359—874 8 Claims



1. A power pack for an automotive exterior mirror assembly comprising:

a mirror casing for holding a mirror, said mirror casing having a non-appearance backside;

a pivot cup having a partially spherical center portion circumferentially bordered by a substantially flat rim thereabout, said rim being in proximate contact with said non-appearance backside of said mirror casing;

an upper housing having a centrally located post protruding upward therefrom, said upper housing having a partially spherical depression centrally located therewithin, said upper housing spherical depression partially extending below the top horizontal plane of a pair of motors contained therewithin, said upper housing spherical depression serving to provide frictional contact with the lower surface of said pivot cup's spherical center portion, said post of said upper housing extending through an aperture within the center of said pivot cup's spherical portion;

a pivot sleeve having a partially spherical shape, said pivot sleeve being frictionally located against the top of said pivot cup's central spherical portion, said pivot sleeve having an orifice in the center thereof such that said upper housing post extends therethrough;

a pivot retainer having a partially spherically shaped lower surface, said pivot retainer being forcibly located against the top of said pivot sleeve, said pivot retainer having a void in the center thereof such that said upper housing post extends therethrough;

a retention means for retaining said pivot retainer, said pivot sleeve, and said pivot cup, said retention means attached to the top of said upper housing post and thereby retaining said pivot retainer, said pivot sleeve, and said pivot cup against said upper housing;

a lower housing having a substantially flat central surface with ribs upwardly extending therefrom, said lower housing central surface being bordered by a raised side wall extending around the circumference thereof, said lower housing having cavities for locating said pair of motors therewithin, said lower housing having locations for positioning a means for driving thereupon, said lower housing being retained to said upper housing by a means for attachment; and

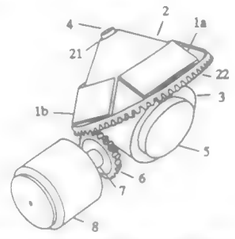
said driving means pivotally moving said pivot cup, said pivot cup sliding between said pivot sleeve and said upper housing.

5,363,247

FILTER DEVICE FOR COLOR OPTICAL SCANNERS

Hong-Wen Liu; Chih-Hong Hsu, and Jeff Hsiao, all of of Hsin-Chu, Taiwan, Prov. of China, assignors to Must Systems, Inc., Hsinchu, Taiwan, Prov. of China

Filed Jan. 6, 1993, Ser. No. 1,044
Int. Cl.[5] G02B *7/00, 5/20, 26/00*
U.S. Cl. 359—889 3 Claims



1. A filter device for optical scanners comprising:

a frame with a conically tapered surface about a central axis, comprising at least three filter windows on said frame which are located in angularly symmetrical relationship with respect to said central axis, and a power transmission means;

at least three filters each of a primary color, installed on said filter windows, respectively, on said frame;

a lens shelf having a front surface, said lens self being equipped with a space suited to accept a lens and a supporting means to rotatably support said frame, wherein the angle between the supporting means and the conically tapered surface of said frame is supplementary to that between the supporting means and the front surface of said lens shelf; and

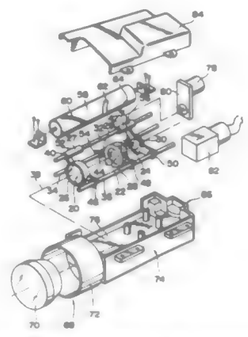
a power supply, to provide driving power to said power transmission means so that the frame may spin at the axis of said supporting means.

5,363,248

ZOOM LENS DEVICE AND METHOD OF ASSEMBLING THE SAME

Motohiko Horio, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama and Fuji Photo Film Co. Ltd., Kanagawa, both of Japan

Filed Jan. 8, 1993, Ser. No. 2,255
Claims priority, application Japan, Jan. 13, 1992, 4-004156
Int. Cl.[5] G02B *27/00, 15/22*
U.S. Cl. 359—704 9 Claims



1. A method of assembling a zoom lens device, comprising the steps of:

(a) inserting guide bars, supporting lens frames of lenses, through an opening in a first side of a lens housing in a direction perpendicularly intersecting an optical axis of the lenses;

(b) arranging said guide bars at a first predetermined position in said lens housing;

(c) inserting a cam through said opening in said direction perpendicularly intersecting said optical axis of said lenses; and

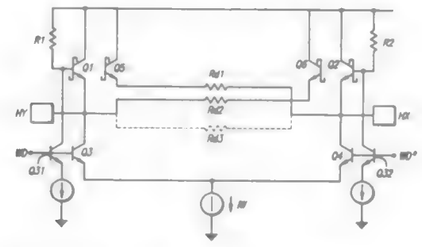
(d) arranging said cam at a second predetermined position in said lens housing such that said cam slidingly engages said lens frames.

5,363,249

SELF SWITCHING HEAD DAMPING

Michael Fitzmorris, Santa Ana, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Filed Feb. 20, 1992, Ser. No. 839,351
Int. Cl.[5] G11B *5/09, 15/12*
U.S. Cl. 360—46 12 Claims



1. A damping circuit comprising:

a first transistor having an emitter terminal coupled to a first loading node, a collector terminal coupled to a power supply and a base terminal resistively coupled to said power supply;

a second transistor having an emitter terminal coupled to a second loading node, a collector terminal coupled to said power supply and a base terminal resistively coupled to said power supply;

a current switching circuit coupled to said first and second loading nodes, said current switching circuit alternately coupling said first and second loading nodes to a current source;

a third transistor having base and collector terminals coupled to said base and collector terminals, respectively, of said first transistor, said third transistor having an emitter terminal coupled through a first damping resistor to said second loading node;

a fourth transistor having base and collector terminals coupled to said base and collector terminals, respectively, of said second transistor, said fourth transistor having an emitter terminal coupled through a second damping resistor to said first loading node;

a substantially reactive load coupled to said first and second loading nodes.

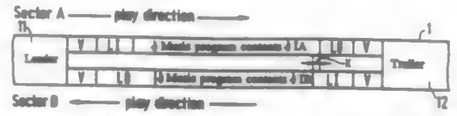
5,363,250

PRERECORDED RECORD CARRIER

Gerardus C. P. Lokhoff, Eindhoven, and Johannes J. Roering, Baarn, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y. and Polygram Internat. Holding B.V., Baarn, Netherlands

Filed Jun. 2, 1992, Ser. No. 892,100
Claims priority, application European Pat. Off., Jul. 31, 1991, 91201985.8
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—48 9 Claims

1. Prerecorded tape-like magnetic record carrier, comprising music programs recorded on an A and a B side, each of the two sides comprising a number of adjacent tracks running in a longitudinal direction on the record carrier, the tracks on the A side, viewed in a play direction of the A side, containing a lead-in, an information area in which music programs are recorded on the A side, and a lead-out, the tracks on the B side, viewed in a play direction of the B side, containing a lead-in, an information area in which music programs are recorded on the B side, and a lead-out, the information areas on the A and B sides comprising frames of essentially fixed length in which digital audio information, representing the music programs, is included, the lead-ins on the A and B sides comprising frames which contain lead-in information, these frames having a length essentially equal to the length of the frames in the information areas, the lead-outs on the A and B sides comprising frames which contain lead-out information, these frames having a length also essentially equal to the length of the frames in the information areas, characterized in that the end of the information area in a track on the A side, viewed in the play direction of the A side, is located past the beginning of the information area in a track on the B side, in that in the section of the lead-in of said track on the B side, located between the end of the information area in said track on the A side and the beginning of the information area in the track on the B side, there are X lead-in frames, and in that for X it holds that $1 \leqq X \leqq 24$.

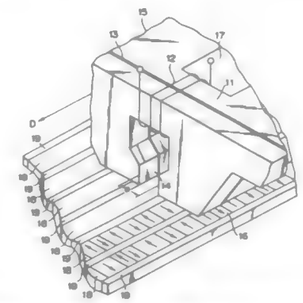


5,363,251

MAGNETIC RECORIDING DEVICE

Masayoshi Kamo; Yuzo Maruta; Hiroaki Sando, and Takashi Furuhata, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 509,625, Apr. 13, 1990, abandoned.
This application Jul. 30, 1992, Ser. No. 923,014
Claims priority, application Japan, Apr. 17, 1989, 1-97053; Jun. 8, 1989, 1-146472
Int. Cl.[5] G11B *5/02, 5/60, 5/127*
U.S. Cl. 360—55 2 Claims



1. A magnetic recording device for magnetically recording information on a magnetic recording medium, comprising:

a magnetic head including a core having means defining a gap, and a coil wound on the core;

means for causing relative movement between said magnetic head and said magnetic recording medium such that part of said magnetic recording medium and said gap are adjacent each other;

electrical circuit means connected to said coil to supply an electrical current to said coil to generate a magnetic flux F across said gap for writing information on said magnetic recording medium, or to receive a voltage induced in said

coil due to magnetic flux F from the information recorded on said magnetic recording medium for reading information;

wherein said means for causing relative movement includes means for holding said magnetic head and said magnetic recording medium in relative position so that the direction of the magnetic flux across said gap is oriented both at a right angle to the direction of said relative movement and also parallel with the surface of said magnetic recording medium,

wherein said magnetic head comprises a first body of a non-magnetic material, a second body of a non-magnetic material, and a magnetic film having said gap and clamped between said first body and said second body,

said magnetic film constituting said core and said coil being wound on part of said first and second bodies between which said magnetic film is clamped,

and wherein said first body has a first flat surface adjacent the second body and a coil opening near the first flat surface and extending parallel with the first flat surface;

the second body has a second flat surface adjacent the first body;

said magnetic film is clamped between the first and second flat surfaces respectively of said first body and said second body, wherein said magnetic film defines a plane substantially parallel to said first and second flat surfaces;

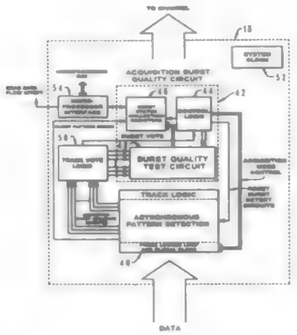
said coil is wound on the parts of the first and second bodies between which the magnetic film is clamped, with the coiled being passed through the coil opening, wherein the direction of the coil windings within the coil opening is parallel to the plane defined by said magnetic film.

5,363,252

METHOD AND SYSTEM FOR TRACK SKEW TOLERANT ACQUISITION BURST SEQUENCE VALIDATION IN A DATA STORAGE SYSTEM

Steven R. Bentley; Sushama M. Paranjape, and Rickey W. Murray, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1993, Ser. No. 85,518
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—53 **9 Claims**



1. A storage system for accurately storing and reading data stored as multiple data blocks within multiple skewed tracks on a removable storage medium mounted therein wherein each data block is preceded by a multibit acquisition sequence for clock synchronization purposes, said storage system comprising:

a transducing head;

means for moving said removable data storage medium relative to said transducing head;

means for controlling said transducing head to store and read data on said removable data storage medium;

acquisition sequence pattern detection means coupled to said transducing head for indicating detection of said multibit acquisition sequence in response to an occurrence of an accurate sequence of a first selected number of bits of said multibit acquisition sequence within each of said multiple tracks;

acquisition sequence quality determination means coupled to said transducing head for generating a quality indication for each of said multiple tracks for a period of time exceeding normal acquisition requirements wherein successful subsequent detection of said multibit acquisition sequence may occur despite increased skew among said multiple tracks; and

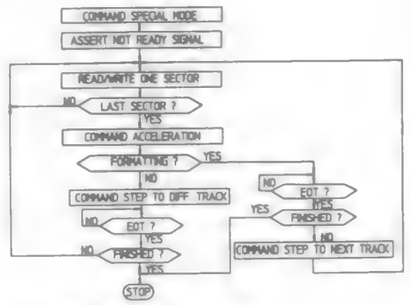
control logic means coupled to said acquisition sequence pattern detection means and said acquisition sequence quality determination means for validating an occurrence of a multibit acquisition sequence in response to both a detection of said multibit acquisition sequence and generation of a quality indication for a particular number of said multiple tracks wherein accurate clock synchronization may occur.

5,363,253

TAPE DRIVE FAST SEEK TO END-OF-TRACK

Mark E. Nash, Lyons; John K. Moore, and Kevin L. Miller, both of Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 25, 1993, Ser. No. 23,258
Int. Cl.[5] G11B *15/18*
U.S. Cl. 360—69 **5 Claims**



1. A tape drive system comprising:

a tape drive mechanism;

a drive controller adapted to control the tape drive mechanism, adapted to receive commands from a host computer and adapted to send a not-ready signal to the host computer;

the drive controller normally refusing to accept the commands from the host computer if the drive controller is asserting the not-ready signal; and

the drive controller having a special mode enabling the drive controller to accept the commands from the host computer even when the drive controller is asserting the not-ready signal.

5,363,254

TAPE RECORDER CAPABLE OF VARYING TAPE SPEED

Hitoshi Sato, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 748,644, Aug. 22, 1991, abandoned.
This application Jan. 7, 1994, Ser. No. 178,636
Claims priority, application Japan, Aug. 27, 1990, 2-222432
Int. Cl.[5] G11B *15/46*
U.S. Cl. 360—73.05 **20 Claims**

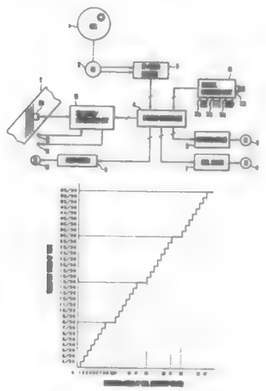
13. A reproducing apparatus comprising:

a) reproducing means operable for reproducing an information signal recorded on a recording medium;

b) moving means for moving the recording medium;

c) a dial; and

d) control means for setting a moving speed of the recording medium moved by said moving means at one of a plurality of speeds according to a rotation phase angle of said dial, said control means being arranged to be operable while said reproducing means is in operation, and said control



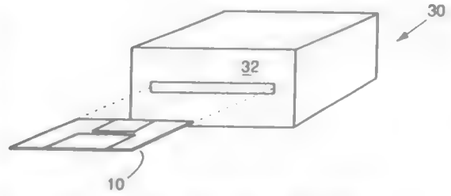
means including means for establishing a plurality of predetermined specific speeds within the plurality of speeds having a relatively greater phase angle of rotation of said dial than the phase angle rotation of said dial for the plurality of speeds not at said predetermined specific speeds.

5,363,255

DISK DRIVE FOR COMMUNICATING WITH REMOVABLE MEDIA THAT INCLUDE MEDIA TYPE IDENTIFICATION INFORMATION

Michael L. Ivers, San Jose; Andrew M. Rose, Mountain View, and Alton B. Otis, Jr., San Francisco, all of Calif., assignors to Insite Peripherals, Inc., San Jose, Calif.

Division of Ser. No. 612,095, Nov. 9, 1990, Pat. No. 5,210,672.
This application Mar. 16, 1993, Ser. No. 31,955
The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.
Int. Cl.[5] G11B *5/596, 13/00*
U.S. Cl. 360—77.03 **3 Claims**



1. A computer memory disk drive, comprising:

means for receiving a removable media, comprising:

a jacket having a liner material disposed within the jacket;

a flat circular media having two surfaces and a magnetic coating on both of said surfaces, the media disposed within the liner material; and

a plurality of optical positioning tracks on at least one of said surfaces of the media; and

a media type code that is magnetically readable and not magnetically erasable on at least one of said surfaces of the media comprising data for encoding the physical properties of the media important to the proper operation of said disk drive when in communication with the media;

magnetic read/write means for magnetically reading and writing data on said removable media; and

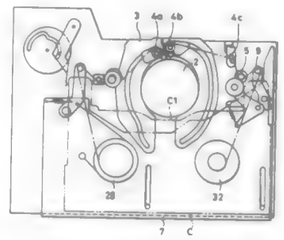
optical servo means for positioning the magnetic read/write means according to said plurality of optical positioning tracks.

5,363,256

TAPE TENSION ADJUSTING DEVICE

Junji Kobayashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1991, Ser. No. 802,212
Claims priority, application Japan, Dec. 6, 1990, 2-400569
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **26 Claims**



1. A tape tension adjusting device, comprising:

an adjusting member in contact with a running tape, said adjusting member including a pivoting pin for rotating said adjusting member in accordance with a tension applied by the tape;

a restricting member for restricting the rotation of said adjusting member when the tension applied by the tape is more than a predetermined value; and

pressing means for pressing said adjusting member against said restricting member when the tape is stationary.

5,363,257

APPARATUS FOR TAPE LOADING DEVICE

Hidetoshi Matsuoka, Sekimachi-higashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1992, Ser. No. 970,843
Claims priority, application Japan, Nov. 29, 1991, 3-340004
Int. Cl.[5] G11B *15/66*
U.S. Cl. 360—85 **16 Claims**

1. A video tape recorder apparatus comprising:

a drum base having a first circular guide groove lying in one plane therein;

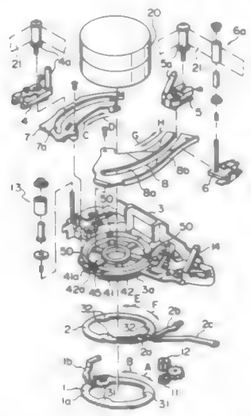
a rotary head drum having at least one head thereon, said rotary head drum being mounted on said drum base;

first rotating means for rotating said rotary head drum;

a first loading ring having a plurality of first protruding portions disposed on an inner peripheral portion thereof, said first protruding portions protruding in a radial direction of said first loading ring, said first loading ring being rotatably mounted on said drum base by the engagement of said plurality of first protruding portions with said first circular guide groove of said drum base;

second rotating means for rotating said first loading ring; and

a loading post which is moved by the rotation of said first loading ring to load a tape in a predetermined tape path



which includes a peripheral surface of said rotary head drum.

5,363,258

ROBOTIC MANIPULATOR WITH EJECTOR TAB

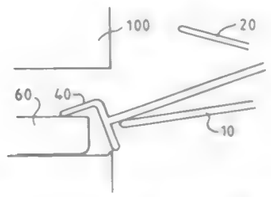
Richard D. Coles, Prinsted, and David C. Teale, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1993, Ser. No. 63,484

Claims priority, application United Kingdom, May 23, 1992, 9211045

Int. Cl.[5] G11B *15/68*

U.S. Cl. 360—92 **14 Claims**



1. A robotic manipulator for transporting a data storage medium in an automated storage library comprising:

a pair of fingers for gripping the data storage medium;

an ejector having a bar at a proximate end movable in a first direction for pushing the data storage medium positioned between said fingers away from the robotic manipulator and into a first position in a data transfer device in the automated storage library;

at least one tab extending outward from the bar of the ejector for engaging the data storage medium; and

means for moving the ejector in a second direction for substantially causing the at least one tab to push the data storage medium downward into a second seated operative position of the data transfer device.

5,363,259

TAPE RECORDER HAVING A COMPACT REVERSE FUNCTION INCLUDING A LIMITER GEAR MECHANISM AND A SWING ARM

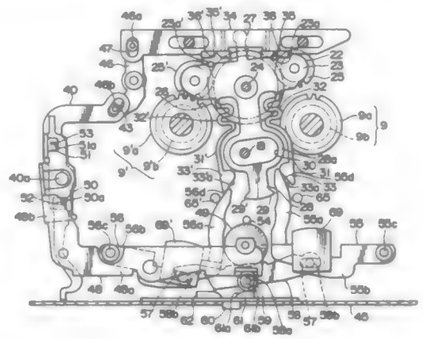
Hisaya Narita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 29, 1992, Ser. No. 921,249

Claims priority, application Japan, Aug. 7, 1991, 3-221265

Int. Cl.[5] G11B *5/54, 21/22*

U.S. Cl. 360—96.3 **10 Claims**



1. A tape recorder comprising:

a housing;

a chassis mounted on said housing;

a limiter gear mechanism supported on said chassis having a torque limiter;

driving means for rotationally driving said limiter gear mechanism in one of a forward or a reverse direction;

a pair of reel beds supported on said chassis;

a pair of reel bed gears attached to said pair of reel beds;

a swing lever swingably provided between said pair of reel bed gears, said swing lever having a gear train rotated by said limiter gear mechanism and also having a depressed portion;

a magnetic head supporting member supported on said chassis for supporting a pair of magnetic heads selectively operated according to a tape travelling direction of a tape contained in a tape cassette inserted in said housing;

means for moving said magnetic head supporting member so as to selectively move one of said magnetic heads between an operative position where said one of said magnetic heads is in contact with said tape and an inoperative position where said one of said magnetic heads is in separation from said tape;

direction selecting means supported on said chassis for selecting said tape travelling direction and controlling movement of said magnetic head supporting member so as to selectively restrict movement of another of said magnetic heads to said operative position; and

a mode lever supported on said chassis and movable among a neutral position, a record position and a playback position, said mode lever biasing said magnetic head supporting member to said operative position of said one of said magnetic heads when said mode lever is moved to said record position or said playback position;

whereby when said magnetic head supporting member is biased by said mode lever to move said one of said magnetic heads to said operative position according to said tape travelling direction selected by said direction selecting means, said magnetic head supporting member urges said depressed portion of said swing lever to swing said swing lever and bring said gear train into mesh with one of said reel bed gears according to said tape travelling direction.

5,363,260

MAGNETIC DISK APPARATUS AND METHOD FOR MANUFACTURING THE SAME

Yoshiyuki Kawakami, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

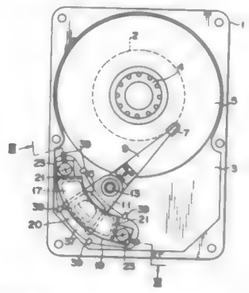
Continuation of Ser. No. 753,062, Aug. 30, 1991, abandoned.

This application Jul. 1, 1993, Ser. No. 84,435

Claims priority, application Japan, Aug. 31, 1990, 2-90703[U]

Int. Cl.[5] G11B *17/00*

U.S. Cl. 360—97.01 **14 Claims**



1. A magnetic disk apparatus comprising:

a base;

a magnetic recording medium;

rotating means, mounted on the base for rotating the recording medium;

supporting means, rotatably mounted on the base, for supporting a magnetic head for information processing on the recording medium; and

drive means for rotating the supporting means, the drive means including:

a first yoke formed integral to and partially disposed within the base, the base being formed from synthetic resin,

a second yoke disposed opposite to the first yoke at a predetermined distance therefrom,

a magnet fixed to one of the first and second yokes and being opposite to the other yoke, and

a coil mounted on the supporting means and disposed between the magnet and the other yoke.

5,363,261

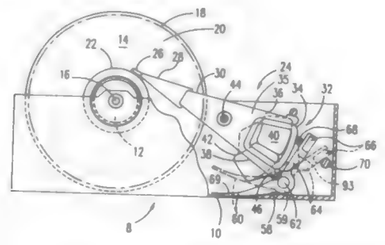
DISK DRIVE ACTUATOR LATCH

Eric A. Eckberg; Bruce P. Kruger; Richard E. Lagergren, all of Rochester; Brian E. Schultz, Lakeville, and Amy L. Warner, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1993, Ser. No. 149,882

Int. Cl.[5] G11B *5/54*

U.S. Cl. 360—105 **13 Claims**



1. A direct access storage device for storing data on a magnetic disk comprising:

a rotatable disk having a magnetic recording media on at least one surface thereof and having an axis of rotation;

a base member supporting said drive motor and said disk;

an actuator having an actuator drive motor disposed on said base member and displaced from said disk, said actuator comprising a load beam having a distal end projecting from said actuator and toward said surface of said disk, said actuator further pivotable relative to said base member about an axis parallel to said axis of rotation to translate said load beam distal end across said surface of said disk between an inner limit of travel and an outer limit of travel;

said actuator further comprising a latch arm protruding away from said disk and having an end;

an actuator latch for holding said actuator and said load beam in a restricted position relative to said axis of rotation, said actuator latch comprising a latch member pivotable between two positions, said positions being defined by engagement of said latch member with stop members, said latch member held in each of said positions by a magnetic attraction;

said latch member further including a recess engageable with and by said latch arm, said recess pivotable with said latch member from a first position where said latch arm end may enter said recess to a position trapping said latch arm end, said latch member moveable from first of said two positions to a second of said two positions responsive to forces exerted by said latch arm on surfaces defining said recess, said latch member held in each one of said two positions by a magnetic attraction force, said magnetic attraction force in each of said positions defeatable by forces exerted on said latch member and said recess by said actuator drive motor.

5,363,262

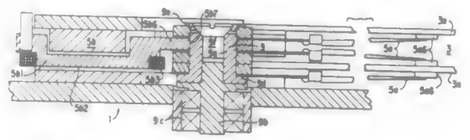
DISK DRIVE HAVING AN IMPROVED TRANSDUCER SUSPENSION ASSEMBLY

George A. Drennan, Eagle, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 8, 1992, Ser. No. 865,006

Int. Cl.[5] G11B *5/55, 21/08*

U.S. Cl. 360—106 **12 Claims**



1. A disk drive comprising:

a. a disk drive base;

b. at least one disk rotatably mounted to said base, said disk having a recording surface;

c. at least one flexible integral load beam having a mounting end with a reinforcing plate attached thereto and having a distal end, said mounting end and attached reinforcing plate having a mounting opening therethrough;

d. a transducer attached to said distal end of said flexible integral load beam;

e. a rotary actuator hub having a tubular body, said tubular body having an axial opening therein and having an external flange, said tubular body projecting through said mounting opening with said mounting end of said at least one flexible integral load beam seated upon said external flange which axially indexes said flexible integral load beam with respect to said tubular body of said rotary actuator hub;

f. means for securing said mounting end of said at least one flexible integral load beam to said tubular body with said mounting end seated upon said external flange, forming an integrated rotary transducer actuator assembly;

g. bearing assembly mounted to said base and having a rotatable part defining a bearing axis;

h. means for securing said rotatable part of said rotary actuator bearing assembly in said axial opening in said tubular body as a coaxial part thereof for axially indexing and rotatably positioning said integrated transducer actuator assembly with respect to said disk so that said transducer overlaps said recording surface of said disk, and

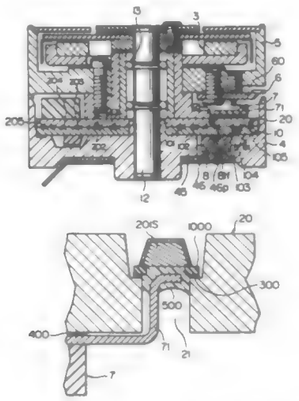
i. motor means having a stationary part mounted to said base and a moving part for rotating said integrated transducer actuator assembly about said bearing axis.

5,363,263

COIL ASSEMBLY FOR ROTARY MAGNETIC HEAD APPARATUS

Toshio Ohji, Mito; Juichi Morikawa, and Hideo Zama, both of Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,314
Claims priority, application Japan, Apr. 19, 1991, 3-088098
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—108 **11 Claims**



1. A rotary magnetic head apparatus comprising:

a transformer core including a rotor core and a stator core;

a rotary drum having said rotor core secured thereto;

a stationary drum having said stator core secured thereto and positioned so that said stator core faces said rotor core;

at least one of a surface of said rotor core facing said stator core and a surface of said stator core facing said rotor core having a plurality of grooves formed concentrically therein;

a plurality of magnetic heads provided in the outer peripheral portion of said rotary drum;

a multi-winding signal transmission coil disposed in each of the plurality of grooves for transmitting signals to and from said magnetic heads;

a flexible insulating layer lining a single surface of each of said coils and maintaining mutual positional relationships among the windings of each of said coils, while leaving exposed at least one other surface of each of said coils, said insulating layer being absent from each coil at starting and terminating end portions thereof;

an adhesive layer between the bottoms of said grooves and said insulating layer and bonding said insulating layer to the bottoms of said grooves so as to affix each coil in a respective groove;

said transformer core having through holes formed therein at positions corresponding to the starting and terminating end portions of each of said coils; and

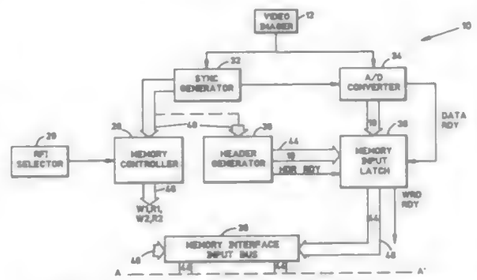
conductive junction members extending in said through holes and electrically connected to the starting and termination end portions of said coils to transmit signals to and from said magnetic heads.

5,363,264

VERSATILE DIGITAL RECORDING SYSTEM FOR RECORDING HIGH RESOLUTION VIDEO IMAGERY

David B. Cavanaugh, San Diego, and Warren M. Goldberg, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 514,079, Apr. 25, 1990, abandoned. This application Dec. 7, 1992, Ser. No. 988,377
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—11.1 **19 Claims**



1. A digital recording system for interfacing a video imager which generates information at a given generation rate with a recorder which records the video information at a record rate equal to or less than said given generation rate, said digital recording system comprising:

(a) means for storing video information;

(b) means for receiving video information from the video imager and processing the video information to produce frames of formatted video information capable of storage in said storing means;

(c) means coupled to said video information processing means for writing the frames of formatted video information from said processing means to said storing means;

(d) means coupled to said video information storing means for reading the frames of formatted video from said storing means to the recorder; and

(e) means coupled to said writing means and said reading means for controlling the operation of said writing means to cause writing of each frame of the formatted video information to said storing means at a write rate equal to said given generation rate of the video imager and for variably controlling the operation of said reading means to selectively skip no frames, one frame or more than one frame of the frames generated by said imager in response to a first input, a second input, or a third input, respectively, such that said skipped frames are not written to said recorder to cause said reading means to cause reading of specified ones of the frames of formatted video information from said storing means to said recorder at a rate equal to or below said record rate.

5,363,265

PLANARIZED MAGNETORESISTIVE SENSOR

Wei C. Hsie, Eden Prairie, and Michael M. Collver, Afton, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 761,001, Sep. 17, 1991, Pat. No. 5,256,249. This application Jul. 19, 1993, Ser. No. 94,496
Int. Cl.[5] G11B *5/127, 5/33*
U.S. Cl. 360—113 **3 Claims**

1. A magnetoresistive sensor comprising:

a magnetic lower shield;

an insulating layer of substantially uniform thickness deposited on the magnetic lower shield;

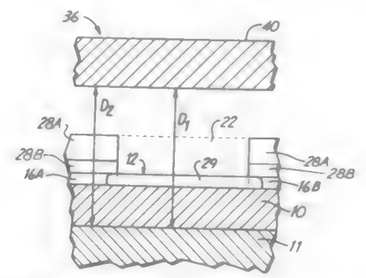
a magnetoresistive element deposited on the insulating layer and including an active region having first and second side edges and a top surface;

a first etch stop layer deposited adjacent the first side edge of the magnetoresistive element, the first etch stop layer having a top surface;

a second etch stop layer deposited adjacent the second side edge of the magnetoresistive element, the second etch stop layer having a top surface, the top surfaces of the magnetoresistive element, the first etch stop layer, and second etch stop layer being substantially coplanar in a first plane;

a track width oxide layer having a top surface, the track width oxide layer generally overlying the magnetoresistive element and defining the first and second side edges of the active region of the magnetoresistive element;

a first contact/boundary control layer having a top surface, the first contact/boundary control layer positioned adjacent the track width oxide layer and generally overlying the first etch stop layer;



a second contact/boundary control layer having a top surface, the second contact/boundary control layer positioned adjacent the track width oxide layer and generally overlying the second etch stop layer, the top surfaces of the track width oxide layer, the first contact/boundary control layer, and the second contact/boundary control layer being substantially coplanar in a second plane, the second plane being substantially parallel to the first plane;

a magnetic upper shield over the magnetoresistive element; and

a loft layer of substantial uniform thickness separating the magnetic upper shield from the first boundary contact-/boundary control layer and the second contact/boundary control layer.

5,363,266

ELECTRICAL SURGE ARRESTER

Gary H. Wiseman, San Francisco; William M. Robinson, Palo Alto; Jeffrey A. Bennett, Sunnyvale; Ronald J. Mosso, Fremont, and John T. Fossett, Mt. View, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 18, 1992, Ser. No. 900,855
Int. Cl.[5] H02H *1/00, 3/22*
U.S. Cl. 361—127 **27 Claims**

1. An electrical assembly comprising:

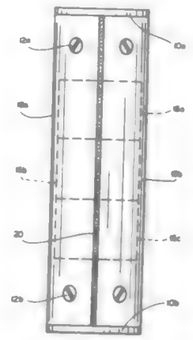
at least 2 valve elements having opposed ends, said at least 2 valve elements arranged end to end to form a stack of valve elements, said stack having two opposing ends and an outer surface;

at lest one resilient conductive spring member associated therewith;

first and second end terminals, said end terminals in forced electrical contact with said opposing ends and said at least one resilient conductive spring element;

at least two structural members having inner and outer surfaces, said structural members fastened so as to maintain compressive forces on said end terminals, said at least one resilient conductive spring element, and said stack of at least 2 valve elements, said structural members providing for two or more longitudinal gaps between said members to provide venting of failure event by-products;

a void filling non-rigidly bonding material between the inner surface of the structural members and the end terminals, valve elements and at least one resilient conductive spring member to provide a substantially void free interface with said valve elements, wherein the void filling material is placed between the adjacent surfaces from the application methods selected from the group consisting of coating the surface of the valve elements, coating the surface of the



structural member facing the valve elements, or combinations thereof; and

a polymeric housing having inner and outer surfaces, said housing having a substantially void free interface between its inner surface and the outer surface of said structural members.

5,363,267

HEAD TIP CLEANING TAPE AND ITS CLEANING METHOD

C. Y. Fang, No. 67, Ren Ay Road, Hsing Chu City, Taiwan, Prov. of China

Filed Dec. 9, 1992, Ser. No. 988,319
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 **2 Claims**



1. A magnetic head cleaning tape, comprising:

a longitudinally extended tape substrate having four consecutive cleaning sections defined thereon, each of said four cleaning sections of said tape substrate having a magnetic material coating thereon and a multiplicity of spaced parallel laser cut grooves formed in said coating to define cutting edges at peripheral edges of said grooves, each of said multiplicity of grooves extending obliquely with respect to said longitudinal direction;

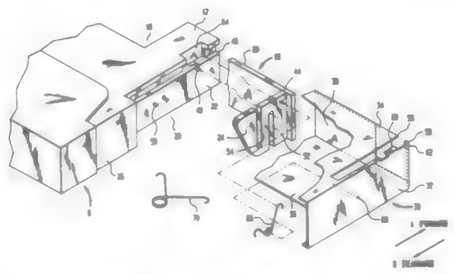
four elastic membrane members affixed to said tape substrate in longitudinally spaced relation, each of said four membrane members being positioned on said tape substrate at a terminus of a respective one of said four cleaning sections; and,

a non-oil base high density polymeric lubricant impregnated within each of said four membrane members.

5,363,268
TAPE CASSETTE

Mitsuo Utsumi, Yawata; Osamu Zaitsu, Neyagawa; Makoto Okuda, Hirakata, and Jiro Kajino, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1991, Ser. No. 794,121
Claims priority, application Japan, Nov. 16, 1990, 2-311726; Nov. 16, 1990, 2-311728; Nov. 29, 1990, 2-333887; Jul. 26, 1991, 3-187274
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—347.1 16 Claims



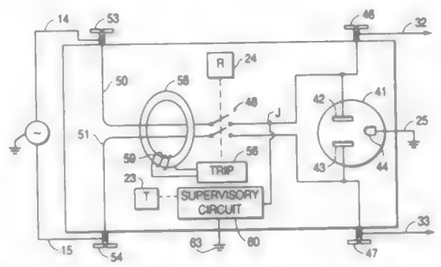
1. A tape cassette comprising:
a housing having a front surface which has two side portions, said housing having a projection at each side portion on the front surface of said housing, said projection at each side portion forming an opening therebetween in which a plurality of loading posts are entered, and having tape running apertures;
a pair of tape reels rotatably disposed in said housing;
a magnetic tape disposed in said housing and carried on said tape reels and stretched through said tape running apertures of the projections by said loading posts in such a manner that said tape is exposed to the outside;
a slider slidably mounted on said housing, said slider having a front portion located at said opening;
a front cover supported by both said slider and housing, said front cover and said front portion of said slider covering said magnetic tape exposed to the outside at said opening, the front cover having a pair of leg portions which are positioned in the sides of the housing, at least a part of the leg portions being covered with the slider; and
shifting means for rotating said front cover in the direction in which said loading posts are entered into said opening, and sliding said front cover in such a direction that said front cover moves away from said magnetic tape so that in accordance with a movement of said slider in a direction that said front portion moves away from said magnetic tape, said magnetic tape is exposed to the outside at said opening.

5,363,269
GFCI RECEPTACLE

Thomas M. McDonald, Monroe, Conn., assignor to Hubbell Incorporated, Orange, Conn.

Filed Feb. 22, 1993, Ser. No. 24,172
Int. Cl.[5] H02H *3/16, 3/32*
U.S. Cl. 361—45 2 Claims

1. A ground fault circuit interrupter (GFCI) receptacle comprising the combination of
a receptacle having hot, neutral and ground connectors for receiving blades of a mating plug;
first and second pairs of terminals for connection to AC source and load wires, said first pair of terminals being specifically designated for connection to hot and neutral wires from said source and said second pair of terminals being designated for connection to hot and neutral wires leading to a load device;
first circuit means for connecting said hot and neutral connectors of said receptacle to said second pair of terminals;
second circuit means connecting said first pair of terminals to said receptacle connectors, said second circuit means including contact sets openable to disconnect said first pair of terminals from said receptacle connectors;
means for opening said contact sets;

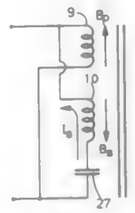


current sensing means responsive to a net current flow greater than a predetermined amount through said second circuit means for actuating said means for opening said contact sets; and
manually operable supervisory circuit means connected between said hot connector of said receptacle and ground without being connected to said neutral connector for selectively actuating said means for opening said contact sets to test operation of said means for opening without giving a false indication of proper installation of said GFCI receptacle.

5,363,270
RAPID RESPONSE DUAL COIL ELECTROMAGNETIC ACTUATOR WITH CAPACITOR

Brent J. Wahba, Honeoye Falls, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 18, 1992, Ser. No. 946,704
Int. Cl.[5] H01H *47/02*
U.S. Cl. 361—155 3 Claims



1. An electromagnetic actuator, comprising:
a movable armature;
a means for developing a mechanical force which biases said armature toward a first position;
a primary coil disposed in respect to said armature, effective when energized to develop a primary electromagnetic force in opposition to said mechanical force, moving said armature from said first position to a second position;
a capacitor; and
a secondary coil connected in series with said capacitor, said capacitor regulating the flow of current through said secondary coil, said series-connected secondary coil and capacitor connected in parallel with said primary coil and effective:
(1) upon energization of said primary coil to develop a first electromagnetic force which aids said primary electromagnetic force in moving said armature from said first position to said second position, said capacitor charging up as it progressively reduces current flow through said secondary coil, said capacitor thereafter functioning as an open circuit until deenergization of said primary coil, and
(2) upon deenergization of said primary coil said capacitor discharging a transient current flow through said secondary coil to develop a second electromagnetic force which opposes a residual of said primary electromagnetic force and aids said mechanical force in moving said armature from said second position to said first position.

5,363,271
THERMAL SHOCK CRACKING RESISTANT MULTILAYER CERAMIC CAPACITOR TERMINATION COMPOSITIONS

John G. Pepin, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

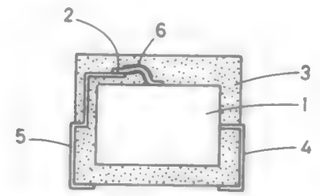
Filed Sep. 24, 1992, Ser. No. 950,220
Int. Cl.[5] H01G *4/20*
U.S. Cl. 361—320 6 Claims

1. A thick film conductor composition suitable for use in forming plateable base terminations for titanate-based MLCs consisting essentially of by weight basis solids finely divided particles of:
(a) 90–99% electrically conductive precious metal silver powder and
(b) 10–1% metal oxide-based glass having a Dilatometer softening point of 400°–700° C. comprising 1–10% by weight, basis glass of at least one glass modifier(s) having an ionic field strength higher than the ionic field strength of a titanate cation which forms a titanate phase upon reaction with a multilayer capacitor titanate-based dielectric and the remainder of glass modifier(s) in the glass having an ionic field strength similar to the titanate cation, both (a) and (b) being dispersed in (c) an organic medium.

5,363,272
CAPACITOR APPARATUS INCORPORATING FUSE

Eisaku Tanaka, Kameoka, and Choujirou Kuriyama, Kyoto, both of Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 25, 1991, Ser. No. 797,006
Claims priority, application Japan, Nov. 26, 1990, 2-324124
Int. Cl.[5] H01G *1/10*
U.S. Cl. 361—534 11 Claims

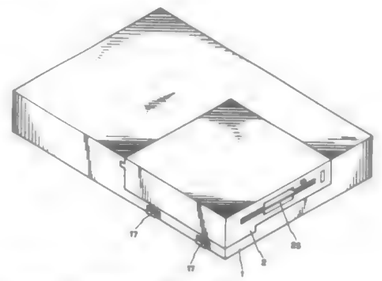


1. A capacitor apparatus incorporating a fuse comprising:
a capacitor device having a first electrode and a second electrode;
a fuse having a first end connected to the first electrode;
a first lead terminal connected to a second end of said fuse;
a second lead terminal connected to the second electrode;
a resin body in which said capacitor device, fuse, and inner end portions of said first and second lead terminals are enclosably molded therein, said fuse being formed such that first and second end portions of said fuse are wide and a central portion thereof is narrow relative to each other; and
an inner resin applied to a periphery of the central portion of said fuse and formed so as to not extend to said first lead terminal, said inner resin being further formed to melt at least at a predetermined temperature at which said fuse melts, the predetermined temperature being produced by said fuse when excess current passes therethrough.

5,363,273
COMPUTER SYSTEM WITH REMOVABLE FLOPPY DISK DRIVE AND EXPANSION SLOT ASSEMBLY MOUNTED FLUSH IN ONE CORNER

Hsi K. Ma, 4F, No. 48, Sec. 2, Chung Cherng Road, Taipei, Taiwan, Prov. of China

Filed May 10, 1993, Ser. No. 59,703
Claims priority, application China, Jul. 27, 1992, 92229155.1
Int. Cl.[5] H05K *7/12;* G06F *1/16*
U.S. Cl. 361—686 1 Claim



1. A computer system comprising:
a computer mainframe having a rectangular recessed hole around one corner thereof, said rectangular recessed hole having a border, a flat bottom wall, a first vertical side wall and a second vertical side wall abutted at a respective inner end at right angles, two multi-pin connectors on said first vertical side wall, a mounting board raised above said flat bottom, two spring latches disposed in respective holes on said flat bottom wall along said border and driven by respective bolts into respective unlocking positions from respective normal locking positions, an elongated mounting groove disposed along said second vertical side wall;
a floppy disk drive and expansion slot assembly fitted into said rectangular recessed hole in a flush manner, said floppy disk drive comprising two connectors electrically and respectively connected to the multi-pin connectors on said mainframe, a recessed hole disposed on a bottom surface thereof, into which said mounting board of said mainframe fits, two lock holes disposed on the bottom surface of said floppy disk drive and expansion slot assembly, into which said spring latches engage respectively, a slot on a front vertical side wall of said floppy disk drive and expansion slot assembly for inserting a disk or an expansion card, and a rail on a rear vertical side wall of said floppy disk drive and expansion slot assembly fitted into said mounting groove to hold said floppy disk drive and expansion slot assembly in place.

5,363,274
MEMORY CARD

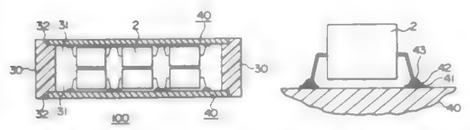
Makoto Omori; Jun Ohbuchi; Hajime Maeda, and Yasushi Kasatani, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,712
Claims priority, application Japan, Feb. 19, 1991, 3-023645
Int. Cl.[5] H05K *1/14*
U.S. Cl. 361—736 14 Claims

1. A memory card incorporating an electronic part comprising:
a metallic panel having obverse and reverse surfaces;
circuit means including at least one electronic part, an insulating layer 10 to 20 microns thick disposed on the reverse

surface of the metallic panel, and a circuit pattern disposed on the insulating layer, the circuit pattern having a shape and the insulating layer having the same shape as the circuit pattern, the electronic part being mounted on and connected to the circuit pattern;

accommodation means comprising a resin frame for accommodating the electronic part and having upper and lower sides, the upper side having an opening into which the metallic panel is fitted so that the obverse surface of the



metallic panel is exposed outside the card and that the electronic part is disposed within the accommodation means, the accommodation means having a height between the upper and lower sides sufficient to accommodate the circuit means; and

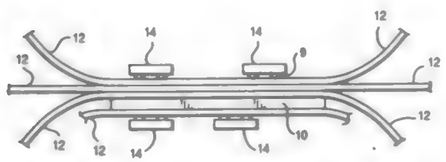
electrical connection means for electrical connection to the electronic part from outside of the card, the electrical connection means being disposed on the accommodation means.

5,363,275

MODULAR COMPONENT COMPUTER SYSTEM

Jerome A. Frankeny, Taylor; Richard F. Frankeny, Austin, both of Tex.; Karl Hermann, Romulus, N.Y., and Ronald L. Imken, Round Rock, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1993, Ser. No. 15,989
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—749 **21 Claims**



1. A computational element that performs specific functions in a computer system, comprising:

a plurality of flexibly independent substrate layers formed in a stacked relation and in electrical communication with one another, at least one of said substrate layers independently connectable to another device;

at least one integrated circuit device disposed on an exterior substrate layer and in electrical communication with at least one of the other substrate layers; and

means for supporting said plurality of substrate layers, and for distributing electrical power thereto from a power source connectable independently of said substrate layers.

5,363,276

APPARATUS FOR CONTAINING AND SUPPORTING ELECTRONIC COMPONENTS

Robert J. Crockett, Central, S.C., assignor to NCR Corporation, Dayton, Ohio

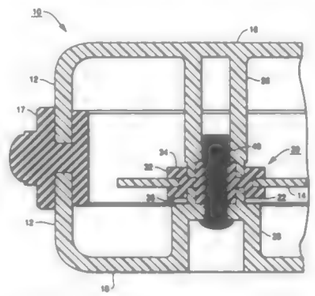
Filed Sep. 1, 1993, Ser. No. 115,300
Int. Cl.[5] H05K *5/00*
U.S. Cl. 361—752 **4 Claims**

1. An apparatus for containing and supporting electronic components, comprising: a housing; an elastomeric grommet positioned within said housing; and a base upon which electronic components are mounted, a portion of said base being secured to said elastomeric grommet,

wherein said elastomeric grommet has a first groove defined in the peripheral edge thereof,

wherein the portion of said base is positionable within the first groove of said elastomeric grommet,

wherein said housing comprises a first housing portion having a first support and a second housing portion having a second support, and



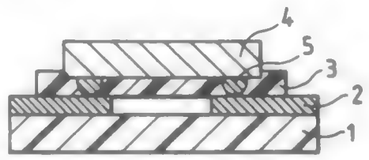
wherein said elastomeric grommet has (1) a second groove defined in a first side thereof, wherein a distal end of the first support is positionable within the second groove, and (2) a third groove defined in a second side thereof, wherein a distal end of the second support is positionable within the third groove.

5,363,277

STRUCTURE AND METHOD FOR MOUNTING SEMICONDUCTOR DEVICE

Osamu Tanaka, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 16, 1992, Ser. No. 991,177
Claims priority, application Japan, Dec. 20, 1991, 3-355877
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—760 **5 Claims**



1. A structure for mounting a semiconductor device, in which a wiring pattern on a circuit substrate and electrodes projecting from an integrated circuit are supported in opposition to and electrically connected to each other, comprising

an integrated circuit having projecting electrodes,

a circuit substrate having a wiring pattern and

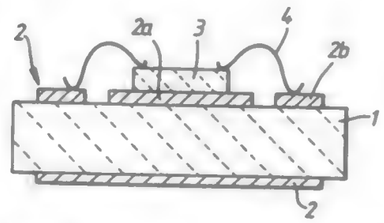
an adhesive and hardenable thin film member extending between and in adhesive contact both with the circuit substrate and with the integrated circuit to adhesively hold the integrated circuit onto the circuit substrate with the projecting electrodes extending through the adhesive and hardenable thin film member so as to be held in electrical contact with the wiring pattern in the circuit substrate.

5,363,278

BONDED CERAMIC-METAL COMPOSITE SUBSTRATE, CIRCUIT BOARD CONSTRUCTED THEREWITH AND METHODS FOR PRODUCTION THEREOF

Hiroshi Komorita, and Nobuyuki Mizunoya, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 324,553, Mar. 16, 1989, Pat. No. 5,155,665.
This application May 28, 1992, Ser. No. 889,384
Claims priority, application Japan, Mar. 30, 1988, 63-077225
Int. Cl.[5] H05K *1/18, 7/02*
U.S. Cl. 361—762 **17 Claims**



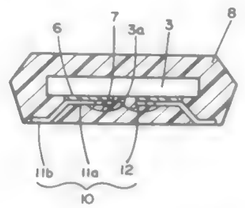
1. A bonded ceramic-metal composite substrate comprising a ceramic substrate having opposite surfaces and a copper sheet having a face directly bonded to one of the surfaces of the ceramic substrate, wherein the substrate is a non-oxide type ceramic substrate that has been subjected to an oxidizing treatment of the bonding surface prior to bonding, and the copper sheet has a Vickers hardness after bonding in the range of 40 kg/mm^2 to 100 kg/mm^2.

5,363,279

SEMICONDUCTOR PACKAGE FOR A SEMICONDUCTOR CHIP HAVING CENTRALLY LOCATED BOTTOM BOND PADS

Gi Bon Cha, Euiwang, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Nov. 3, 1992, Ser. No. 970,771
Claims priority, application Rep. of Korea, Nov. 14, 1991, 19458/1991
Int. Cl.[5] H05K *7/10*
U.S. Cl. 361—767 **6 Claims**



1. A semiconductor package comprising:

a semiconductor chip with a plurality of bond pads including at least one power supplying bond pad at a central portion of a bottom surface of said semiconductor chip;

a plurality of leads connected to bond pads for input/output of said bond pads, respectively, each of said leads defining an inner lead and an outer lead;

at least one bus bar connected to said at least one power supplying bond pad, said at least one bus bar defining an inner lead and an outer lead;

insulation adhesives for attaching said inner leads of each of the leads and said at least one bus bar to said bottom surface of the semiconductor chip;

metal wires for electrically connecting the inner leads of the leads and the at least one bus bar to the bond pads, respectively; and

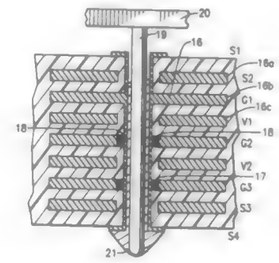
a molding compound enveloping the semiconductor chip, and the inner leads of the leads and the bus bar with bottom surfaces of said outer leads of the leads and the bus bar exposed to outside on the bottom surface of said molding compound.

5,363,280

PRINTED CIRCUIT BOARD OR CARD THERMAL MASS DESIGN

Ivan I. Chobot, Whitby, Canada; John A. Covert, Binghamton; Randy L. Haight, Waverly, both of N.Y.; Keith D. Mansfield, New Milford, Pa.; Donald W. Miller, Newark Valley, N.Y.; Reinaldo A. Neira; Alexander Petrovich, both of Endicott, N.Y.; Paul C. Sviedrys, Great Neck, N.Y.; Louise A. Tiemann, Endwell, N.Y.; Gerald A. Valenta, Haw River, N.C., and Thurston B. Youngs, Jr., Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 22, 1993, Ser. No. 50,589
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—794 **19 Claims**



1. A multi-layer printed circuit board or card including a plurality of conductive planes, including ground and power planes, and insulating planes, said circuit board or card having a plurality of through holes formed through at least one of said planes, said through holes having an electrically conductive material plated onto the inside surface, at least one integrated chip or component being attached to said circuit board or card such that pins made of an electrically conductive material and attached to a surface of said chip or component extend into said plated through holes, said circuit board or card comprising:

at least one thermal relief passage in at least one of said planes for preventing the diffusion of heat throughout said circuit board or card during the securing or removal of said pins in said plated through holes by the heating of said plating material to a temperature above a melting point of the plating material, said at least one thermal relief passage located in the vicinity of at least one of said plated through holes and being free from connection with said pins.

5,363,281

DEVICE FOR RECEIVING AND LOCKING INTEGRATED CARDS IN A SUPPORT

Günter Baitz, Berlin, and Joachim Burchart, Schlangen, both of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Munich, Germany

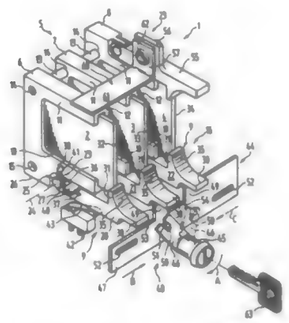
PCT No. PCT/EP91/01822, § 371 Date Mar. 23, 1993, § 102(e) Date Mar. 23, 1993, PCT Pub. No. WO92/05512, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 25, 1991, Ser. No. 30,491
Claims priority, application Germany, Sep. 26, 1990, 4030455
Int. Cl.[5] H05K *7/14;* **H01R** *13/62*
U.S. Cl. 361—801 **8 Claims**

1. A device for receiving circuit carriers in card form, in particular chip cards with integrated circuits, having a number of insert receptacles corresponding to a number of cards to be

received, a card being inserted into a respective receptacle in a direction of a plane of the card, comprising:

a plurality of means for protecting the cards in an inserted operating position thereof, each of the means for protecting having a bar which is assigned to a card and which is pivotable between an unlocking position, pivoted out of the plane of the card, and a locking position, pivoted into the plane of the card and which engages behind a locking edge of an inserted card;

a lockable blocking device which acts on at least one bar of the bars of the means for protection and which is moveable between a blocking position, preventing a movement of the bar out of a locking setting, and a release position,



releasing a movement of the bar, the blocking device having a sliding bar which is provided with a lock and which, in the locking position of a respective bar; can be moved into the blocking position and out of the release position over a pivoting range thereof;

a plurality of frames and respectively assigned bars,

the sliding bar having a cam profile having a plurality of cams which are assigned to respective bars and which, in the locking position of the respective bar, can be moved into and out of a pivoting range thereof; and

actuating device for displacing the sliding bar, the actuating device having a pivoting arm, which is provided with a lock, and a pin, which is connected to the sliding bar and interacts with the pivoting arm.

5,363,282

LUMINOUS SIMPLE IN LUMINOUS BODY UNIT AND THE METHOD OF MOUNTING IT

Yoshida Hirokazu, Osaka, Japan, assignor to Teiryo Industry Incorporated, Osaka, Japan

Filed Nov. 10, 1992, Ser. No. 974,062
Claims priority, application Japan, Nov. 11, 1991, 3-352581
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—807 **6 Claims**

1. A mounting for a luminous bulb unit in a luminous display unit comprising:

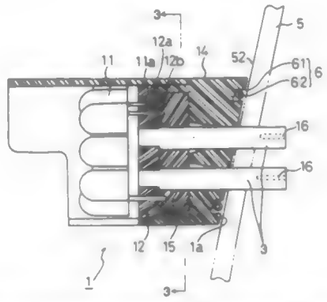
a tubular body having a plurality of conductors passing from one end to the other end of the tubular body;

a plurality of luminous body bulb units having a plurality of luminous elements and a printed circuit for electrically connecting said luminous elements;

a support plate for mounting a plurality of luminous bulb units through which said tubular body passes;

a plurality of printed circuit boards having a printed circuit for electrically connecting a plurality of said luminous body bulb units; and wherein

said luminous bulb units and said printed circuit boards are mounted to said support plate by said tubular body and



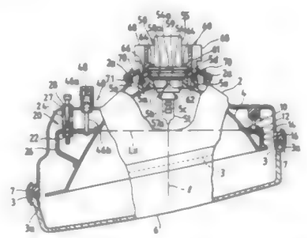
electrically connected by said conductors of said tubular body.

5,363,283

MOTOR VEHICLE HEADLIGHT INCLUDING DEVICE FOR MEASURING DEVIATION AND ADJUSTING DIRECTION OF ORIENTATION OF HEADLIGHT BEAM

Katutada Shirai, and Hideharu Mochizuki, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 894,348, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 370,949, Jun. 23, 1989, Pat. No. 5,121,303. This application Jun. 25, 1993, Ser. No. 82,462
Claims priority, application Japan, Jun. 24, 1988, 63-154630; Jul. 19, 1988, 63-178033
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] F21M *3/20*
U.S. Cl. 362—66 **5 Claims**



1. A method for adjusting a headlamp, comprising the steps of:

providing a horizontal aiming direction indicating device for indicating a horizontal aiming direction of a beam of said headlamp by a distance between first and second indicators on said indicating device in a direction parallel to the longitudinal direction of a horizontal aiming screw of said headlamp;

turning on a light source of said headlamp;

adjusting a horizontal aiming angle of a reflector of said headlamp on which said light source is mounted by turning said horizontal adjusting screw until a light beam produced by said headlamp is oriented in a predetermined direction; and

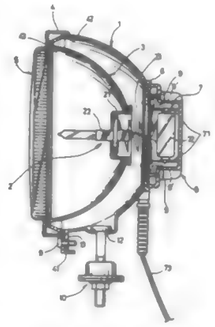
adjusting said first indicator relative to said second indicator to indicate a reference horizontal aiming angle.

5,363,284

AUTOMOBILE ROOF LAMP AND STOP LAMP ASSEMBLY

Wen Tsung Tsai, No. 58-3, Lane 410, Section 2, Wen Huan Rd., Baan Chyan, Taiwan, Prov. of China

Filed Nov. 19, 1993, Ser. No. 155,156
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—83.3 **1 Claim**



1. An automobile roof lamp and stop lamp assembly comprising:

a lamp case, said lamp case comprising a back wire hole, a bottom mounting tab, and a bottom connector for mounting on an automobile;

a roof lamp unit including a lamp holder fastened inside said lamp case and a lamp bulb mounted on said lamp holder;

a reflector fitted over the inside wall of said lamp case and being smaller than said lamp case, said reflector having a back opening;

a lens covered on said front opening of said lamp case;

a rim mounted around said front opening of said lamp case to hold said lens in place, said rim having a mounting tab fastened to the mounting tab on said lamp case;

a convex mounting plate fastened to said lamp case at the back, said mounting plate comprising an annular groove around the border, a wire hole in line with the wire hole on said lamp case, two symmetrical rivet holes and a lot of female screws disposed around the wire hole of said mounting plate;

a stop lamp unit mounted on said mounting plate, said stop lamp unit comprising two L-shaped metal contact plates fastened to said mounting plate and a signal lamp bulb connected between the mounting holes of said L-shaped metal contact plates; and

a signal display lamp shade comprising a front flange around one end; the signal display lamp shade fastened to said mounting plate by said front flange.

5,363,285

SIDE HANDLED BATON AND FLASHLIGHT ASSEMBLY

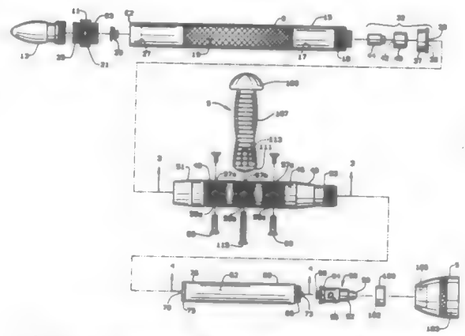
R. Leon Wideman, 1650 Neff Rd., St. Clair, Mo. 63077

Filed Dec. 15, 1993, Ser. No. 167,786
Int. Cl.[5] A63B *15/02*
U.S. Cl. 362—102 **8 Claims**

1. A kit for converting a conventional flashlight into a side handle baton and flashlight combination, the flashlight having a handle adapted to house a plurality of dry cell batteries therein and a lamp section adapted to house a light bulb attached to an end of the handle, the kit comprising:

an electrically conductive contact assembly for insertion in a first end of the handle;

an elongated, tubular spacer for attachment between the handle section and the lamp section, said spacer having an



electrically conductive insert therein extending from the batteries to the lightbulb and;

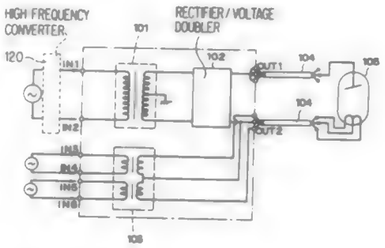
a side handle attachable perpendicular to said spacer.

5,363,286

HIGH VOLTAGE GENERATOR

Akira Tsuchiya, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1992, Ser. No. 995,710
Claims priority, application Japan, Dec. 25, 1991, 3-343488
Int. Cl.[5] H02M *7/06*
U.S. Cl. 363—8 **26 Claims**



1. A high voltage generator comprising:

a transformer means for boosting an inputted AC voltage; and

a rectifier means for rectifying the AC voltage boosted by the transformer means, said transformer means and said rectifier means being assembled as high voltage components,

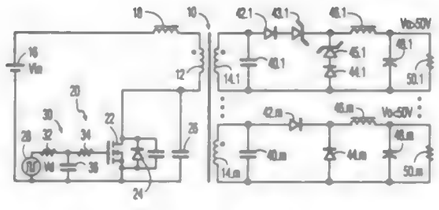
wherein said high voltage components are molded by a solid insulation material with said high voltage components being separated from each other by a predetermined distance to thereby form said high voltage components to a single block member, and wherein an electric conductive layer is formed on an outside surface of said block member.

5,363,287

LOW NOISE MULTI-OUTPUT AND MULTI-RESONANT FORWARD CONVERTER FOR TELEVISION POWER SUPPLIES

Rui Liu, Croton-On-Hudson, and Paulo Caldeira, Scarsdale, both of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Mar. 1, 1994, Ser. No. 203,964
Int. Cl.[5] H02M *3/335;* H04N *5/63*
U.S. Cl. 363—20 8 Claims



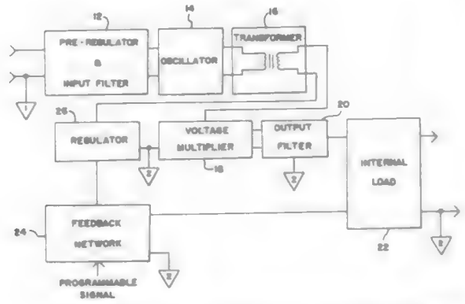
1. A multi-resonant and multi-output forward converter comprising an output transformer having a primary winding and at least two secondary windings each having a resonant capacitor and a series arrangement of two oppositely conducting diodes connected in parallel across the respective secondary winding for low output voltages (<50 V), and two oppositely conducting diode branches connected in parallel across the respective secondary winding for high output voltages (>50 V), each of said diode branches consisting of one high voltage fast recovery diode and one low voltage (100 V reverse voltage) Schottky diode, a dc voltage source having a first terminal coupled to one end of said primary winding through a resonant inductance, a switching circuit coupled between the other end of said primary winding and a second terminal of said dc voltage source, and a switching signal source coupled to said switching circuit for controlling an ON/OFF cycling of said switching circuit through a gate filter, said switching circuit comprising transistor switching means having a switching terminal connected to an output terminal of said gate filter for receiving a switching signal from said switching signal source, a source terminal coupled to the second terminal of said dc voltage source and a ground terminal of said gate filter, and a drain terminal coupled to the other end of said primary winding, and a parallel arrangement of a flyback diode and a charging capacitor coupled across the source and drain terminals of said transistor switching means, said gate filter comprising two resistors and one capacitor having one of their two ends connected together, the other end of the first resistor being connected to the first terminal of said switching signal source, the other end of the second resistor being connected to the switching terminal of said transistor switching means, and the second end of said capacitor constitutes the ground terminal of said gate filter, the multi-resonant circuit of the forward converter including the resonant inductance and a combination of the capacitances of output capacitors connected across the secondary windings and the capacitance of said charging capacitor.

5,363,288

PROGRAMMABLE HIGH VOLTAGE POWER SUPPLY WITH REGULATION CONFINED TO THE HIGH VOLTAGE SECTION

Karen D. Castell, Bethesda, and Arthur P. Ruitberg, Germantown, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 1, 1993, Ser. No. 41,373
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 16 Claims



1. A power supply having an input and an output, including:
a low voltage section including said input and a high voltage section including said output, said low voltage section being that portion of said power supply on the low voltage side of a step-up transformer and said high voltage section being that portion of said power supply on the step-up side of said step-up transformer;
the low voltage section having an oscillator that functionally requires the inclusion of said transformer;
the high voltage section having a voltage multiplier with an input and an output, a feedback network with an input and an output, and a regulator with an input, said regulator being connected to a reference potential and having an output that includes a plurality of elements, each one of which may operate to undergo a continuous variation in voltage appearing across that element, said elements operating sequentially;
said oscillator being coupled to and driving the input of said voltage multiplier by the step-up side of said step-up transformer;
said voltage multiplier output being coupled to and driving the input to said feedback network, the output of said feedback network being coupled to and driving the input of said regulator; and,
the output of said regulator being coupled to the step-up side of said transformer.

5,363,289

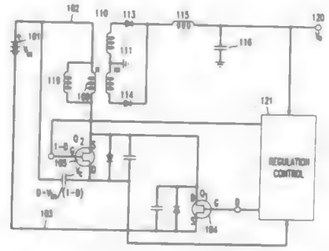
CONTROL APPARATUS FOR LIMITING VOLTAGE ON A CORE RESET CAPACITOR

Mark E. Jacobs, Dallas, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 15, 1992, Ser. No. 991,041
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—56 9 Claims

1. A power converter circuit including:
a power transformer providing galvanic isolation between an input and an output; the power transformer requiring a periodic reset of a core flux with the voltage stored on a reset capacitor;
a power switch connecting the input to the power transformer;
a voltage regulation feedback control to control a duty cycle of the power switch to regulate a voltage at the output;

a reset capacitor voltage control circuit operative to block a response of the converter's voltage regulation feedback control to a voltage at the output and operate the feedback control in response to a voltage of the reset capacitor



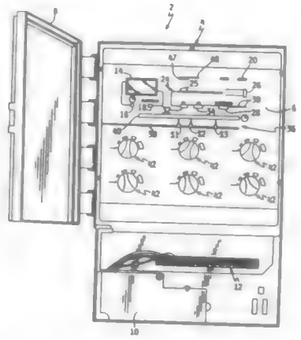
exceeding a preset threshold voltage to control the duty cycle of the power switch to limit a voltage of the reset capacitor whenever the reset capacitor sustains a voltage above the preset threshold.

5,363,290

IRRIGATION CONTROLLER

Leonard W. Doup, Riverside, and Kurt Maloney, Pomona, both of Calif., assignors to The Toro Company, Minneapolis, Minn.

Continuation of Ser. No. 554,686, Jul. 18, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 91,079
Int. Cl.[5] G05B *11/01;* A01G *27/00*
U.S. Cl. 364—145 11 Claims



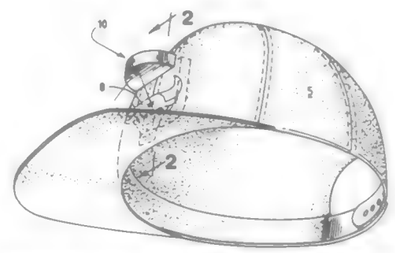
1. An improved irrigation controller for individually and automatically controlling water flow to a plurality of individual watering stations, which comprises:
(a) means for storing a programmed watering schedule which schedule is to be executed over a period of days, the schedule having at least one user selectable parameter of watering operation that may having a number of possible values up to a predetermined maximum number of values;
(b) means for monitoring the passage of time and for controlling the operation of the individual watering stations in accordance with the stored watering schedule; and
(c) a slide potentiometer for inputting into the stored watering schedule a plurality of possible values for the parameter, the slide potentiometer having a plurality of individual sliders each of which may be slid to a position corresponding to one particular value of the parameter which particular value is unique and is different from all the other values that may be set by any of the other sliders, the numbers of sliders corresponding to the maximum number of values allowed for the parameter, wherein the sliders are all movable in the same elongated slideway for ease of use and display, and wherein the slideway includes a starting zone in which all of the sliders can be received to select no value for the parameter, wherein a value for the parameter is input by a slider only when the slider is moved out of the starting zone.

5,363,291

PORTABLE LIGHT ASSEMBLY

Gregory A. Steiner, Lisle, Ill., assignor to New Erra Group, Inc., Lombard, Ill.

Filed Nov. 1, 1993, Ser. No. 144,331
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—191 8 Claims



1. A portable light assembly comprising
a base formed by a housing having a top end and a bottom end,
said housing including a chamber for accommodating a power source and related circuitry including a positive lead and a negative lead extending therefrom,
said housing further provided with a pair of stakes positioned adjacent to the top end of said housing and extending substantially horizontally outwardly from said housing for a distance, each of said stakes being formed from an electroconductive material,
said stakes each having an inner end positioned within said housing and an outer end spaced a distance from and positioned externally of said housing,
said inner end of one stake being connected to said negative lead within said housing and said inner end of the other stake being connected to said positive lead within said housing,
a light carrying ledge adapted for removable engagement with said housing, said ledge having a rear wall and bounded by top, bottom, front and side walls,
said light carrying ledge formed by a housing containing a chamber for accommodating a light bulb having positive and negative leads extending therefrom and contained within said chamber,
said ledge provided with a pair of stake apertures formed in said rear wall and spaced apart a distance equivalent to the spacing of said stakes and adapted to accommodate the insertion therein of said pair of stakes thereby to accommodate the mounting of said ledge onto said base, said stake apertures being formed from an electroconductive material,
one of each of said light bulb leads being carried within a corresponding stake aperture,
whereby said ledge may be mounted to said base at an angular disposition by inserting said stakes of said housing into said stake apertures of said ledge while simultaneously completing the circuit as between said power source and said light bulb and complete the assembly of said portable light assembly.

5,363,292

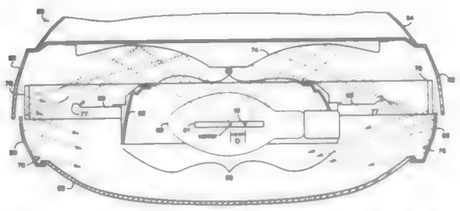
Patent Not Issued For This Number

5,363,293

AREA LIGHTING SYSTEM FOR NEAR UNIFORM ILLUMINATION OF A SQUARE HORIZONTAL SURFACE AREA WITHOUT SIDE GLARE AND INCLUDING A HORIZONTALLY-ORIENTED ARC TUBE LAMP

Martin L. Lasker, Edison, N.J., assignor to USI Lighting, Inc., San Leandro, Calif.

Filed Apr. 14, 1994, Ser. No. 227,780
Int. Cl.[5] F21V *7/09*
U.S. Cl. 362—302 **12 Claims**



1. A luminaire for providing a square-shaped illumination pattern from above onto a surface below, comprising:

an elongated arc tube (**61**) for providing a source of light in a plurality of radiant directions including a broadside and to a lesser extent toward its opposite ends, wherein a first and second opposite sides of said square-shaped illumination pattern are oriented broadsides to the elongated arc tube and a pair of remaining third and fourth opposite sides of said square-shaped illumination pattern are oriented on-end to the elongated arc tube;

a basket reflector (**62**) that encircles the elongated arc tube (**61**) in a plane parallel to an axis of elongation of the elongated arc tube (**61**) and that includes an opening (**65**) above the elongated arc tube (**61**) and a pair of cutoff lips (**77**) oppositely positioned on a blocking wall (**59**) on its outer perimeter and in-line with an axis of elongation of the elongated arc tube;

a ring reflector (**76**) that encircles both the elongated arc tube (**61**) and the basket reflector (**62**) in a plane above and parallel to said arc tube axis, and including a saw-toothed surface to direct light in a non-radial direction to avoid the basket reflector (**62**);

a lens frame reflector (**75**) positioned below the ring reflector (**76**) and encircling the elongated arc tube (**61**) in a plane parallel to said arc tube axis and placed below the basket reflector (**62**);

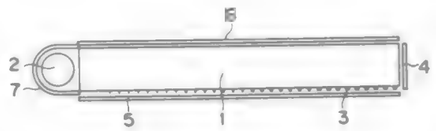
a top reflector (**74**) centrally positioned above the elongated arc tube (**61**) and opposite to said surface to be illuminated, for converging light rays from the elongated arc tube (**61**) to cross at a distance from said cutoff lip (**77**) and then to reflect off the ring reflector (**76**) to be emitted by the luminaire at vertical angles as low as 60° from nadir, and for directing light rays coming from near a center point of the arc tube (**61**) to converge in a crossing point closer to the cutoff lips (**77**) to then travel to the lens frame reflector (**75**) which redirects them into a slightly fanned beam ranging from approximately 67° to 73° vertical, and for directing light rays coming from a section of the arc tube (**61**) which is closer to the reflecting surface than the center point to converge at a point proximate to the cutoff lips (**77**) and to be subsequently distributed at vertical angles up to 80°, wherein light emitted from near the far ends of the arc tube (**61**) and that have a final vertical distribution angle that ranges from 60° to 80° causes a crossing point of such rays to come increasingly closer to said cutoff lips (**77**), and wherein at light distribution angles that would otherwise 80° the top reflector (**74**) directs this light at such an angle that it passes inside the cutoff lips (**77**) and is stopped by said blocking wall (**54**) to precisely cut off glare at an angle of 80° and yet emit high intensities of light immediately below this angle to produce a broad throw of light necessary for wide spacing of adjacent luminaires.

5,363,294

SURFACE LIGHT SOURCE DEVICE

Kunitoshi Yamamoto, and Hiroshi Fukushima, both of Kyoto, Japan, assignors to Nissha Printing Co., Ltd., Kyoto, Japan

Filed Mar. 27, 1992, Ser. No. 858,949
Claims priority, application Japan, Mar. 29, 1991, 3-93772; Jun. 17, 1991, 3-173070; Jun. 18, 1991, 3-174324
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—330 **17 Claims**



1. A surface light source device comprising:

a transparent light guiding plate having a first end edge, a second end edge opposite said first end edge, a first side edge, a second side edge opposite said first side edge, a front face and a back face;

a line light source mounted along said first end edge of said light guiding plate;

an end edge reflection layer mounted along said second end edge of said light guiding plate;

a back face reflection layer which is white and is provided on said back face of said light guiding plate;

a light diffusion/transmission section provided on said back face of said light guiding plate;

wherein, in a first region from said first end edge to a first predetermined position between said first and second end edges, a density of said light diffusion/transmission section increases gradually along a first direction perpendicular to said first end edge with an increase in distance from said first end edge; and

wherein, in a second region from said first predetermined position to said second end edge, a density of said light diffusion/transmission section is constant along said first direction.

5,363,295

COMPACT FLUORESCENT LAMP REFLECTOR

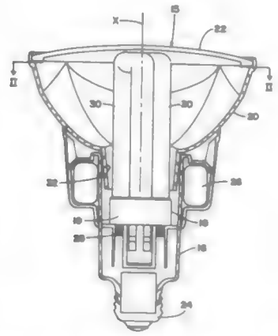
Paul C. DeKleine, and Rick A. Perkins, both of Holland, Mich., assignors to Progressive Technology in Lighting, Inc., Holland, Mich.

Filed Oct. 22, 1992, Ser. No. 964,928
Int. Cl.[5] F21V *7/00*
U.S. Cl. 362—346 **36 Claims**

1. A compact fluorescent lamp reflector for use with a fluorescent lamp having a given number of parallel tubes each elongated along an axis of elongation comprising:

a body including an annular wall having a reflecting inner surface segment defined by a geometric curve rotated at least partially about a given axis that is generally parallel the axis of elongation of the fluorescent tubes;

said geometric curve having a focal point wherein light rays emanating from said focal point and contacting substantially any point on said geometric curve will be reflected generally parallel said given axis; and



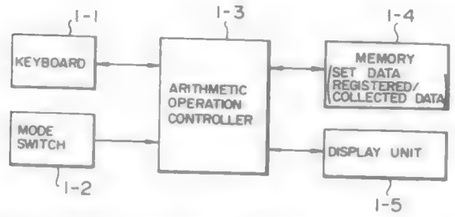
said focal point being laterally offset from said given axis whereby said reflecting inner surface segment will have a focal ring segment.

5,363,296

ELECTRONIC CASH REGISTER HAVING MACRO-KEYS

Seiji Fuyama, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 28, 1993, Ser. No. 142,064
Claims priority, application Japan, Mar. 3, 1993, 5-042499
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—405 **19 Claims**



9. An electronic cash register comprising a keyboard having a plurality of macro keys, an arithmetic operation controller having a key code decoder, a memory and display means for displaying an error thereon,

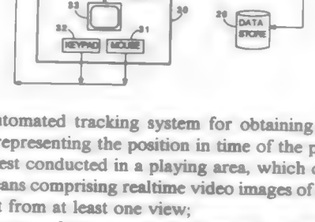
wherein, when one of said keys on said keyboard is operated, a key code corresponding to the operated key is generated and supplied to said arithmetic operation controller, said memory has a macro key information area for storing therein macro key information corresponding to said macro keys, said arithmetic operation controller stores in said macro key information area macro key information including key code information indicative of a sequence of the key codes to be sequentially executed when the respective macro keys are specified and controls to cause said key code decoder to convert said key codes and said key code information into executable instructions, said electronic register further comprises means for recognizing a state of the electronic register, said macro key information further includes a check code for check of conditions determining permission or non-permission of execution of operation of each macro key specified, said arithmetic operation controller when receiving the key code corresponding to any one of the macro keys from said keyboard reads out said key code information corresponding to the associated macro key and said check code from said area, compares the conditions specified by said check code with the state of the electronic register recognized by said recognition means, controls to cause said key code decoder to convert said key code information into the executable instruction when said register state satisfies said conditions, and displays an error on said display unit, ignores the key code and waits for a next input when the register state fails to satisfy the conditions.

5,363,297

AUTOMATED CAMERA-BASED TRACKING SYSTEM FOR SPORTS CONTESTS

Noble G. Larson, 15 Lewis Ave., Arlington, Mass. 02174, and Kent A. Stevens, 3414 Centennial Blvd., #160, Eugene, Oreg. 97401

Filed Jun. 5, 1992, Ser. No. 894,101
Int. Cl.[5] G06F *15/44*
U.S. Cl. 364—410 **14 Claims**



9. An automated tracking system for obtaining a detailed data base, representing the position in time of the players in a sports contest conducted in a playing area, which comprises:

a first means comprising realtime video images of said sports contest from at least one view;

a second means for automatically locating, and tracking the positions of said player images in said view, using realtime computing elements, provided said player images move in trajectories isolated from one another;

a third means for obtaining, and communicating to said computing elements, the identity and approximate position of players by the use of electronic devices, such as radio or ultrasound transmitters, situated on each player, in conjunction with off-field electronics, incorporating telemetry and triangulation;

a fourth means for allowing the maintenance of an on-going game record of the identity, and position, of each player image being tracked by said computing elements;

a fifth means allowing said computing elements to detect when ambiguity as to the identity of a player image has occurred due, for example, to the overlap of player images in said view;

a sixth means allowing said computing elements to resolve the ambiguity detected by said fifth means by comparing the position of the ambiguous player image to the approximate positions provided by said third means, and selecting the identity associated with the best match;

a seventh means allowing said computing elements to re-establish the identity of the ambiguous player image of said fifth means, as the player identity selected by said sixth means, and to, furthermore, propagate it backwards in time to the instant when said ambiguity was detected by

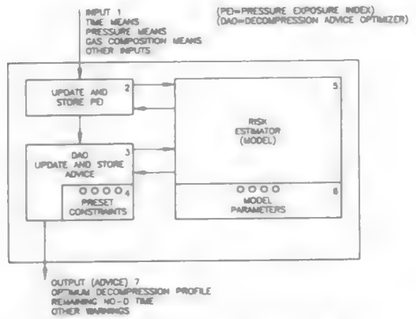
said fifth means, so as to avoid gaps in the game record of said fourth means.

5,363,298

CONTROLLED RISK DECOMPRESSION METER

Shalini S. Survanshi, Potomac, Md.; Paul K. Weathersby, Gales Ferry, Conn., and Edward D. Thalmann, Olney, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1993, Ser. No. 53,540
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.31 **20 Claims**



1. A device for calculating and signaling decompression advice to a user based on a given pressure time history and upon a specified level of risk of decompression sickness comprising:

a. a means for storing an experience algorithm for the quantitative risk of decompression sickness which has been objectively calibrated to actual background experience information of prior exposures of humans to various pressures for various times correlated with decompression sickness occurrence from such prior exposures,

b. means for presetting a value for the specified risk of decompression sickness into the device,

c. a clock for providing a time signal,

d. a pressure transducer for measuring ambient pressure in the vicinity of the user and providing real-time pressure signals,

e. a means responsive to the time signal and the pressure signal for calculating and storing a repetitively updatable Pressure Exposure Index reflecting the user's entire cumulative pressure time history up to the present,

f. a processor which uses the stored experience algorithm operating at said preset specified level of risk, and at least the time signals and the pressure signals to update the Pressure Exposure Index, and to perform calculations to provide repetitively updated optimal decompression advice,

g. a means of storing the updated optimal decompression advice, and

h. a means for supplying the optimal decompression advice to the user in real time whereby the user is provided the signal as advice to govern the user's own physical movements into areas of different ambient pressures.

5,363,299

METHOD FOR IDENTIFYING FAULTS AND UNCONFORMITIES IN A GEOLOGIC FORMATION

Neil F. Hurley, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

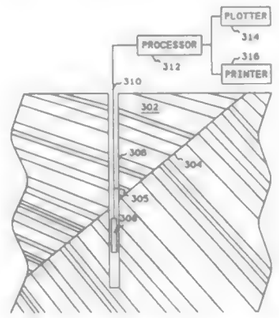
Filed Jun. 14, 1993, Ser. No. 76,510
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—422 **19 Claims**

1. A process for plotting a location of at least one fault or unconformity within a geologic formation containing a well, said process comprising the steps of:

(a) extending a measurement instrument into said well at a predetermined rate wherein said measurement instrument creates a borehole imaging log containing bedding plane data;

(b) retrieving said bedding plane data from said borehole imaging log;

(c) tabulating a measurement of depth and dip angle from each of a plurality of bedding planes defined within said bedding plane data, wherein said measurements of depth and dip angle are tabulated in a predetermined order;



(d) accumulating said dip angle for each successive measurement tabulated in said predetermined order and tabulating said accumulated dip angle;

(e) plotting a two-dimensional graph showing a single point for each of said measurements, wherein said depth of said measurement is plotted on a first axis and said accumulated dip angle of said measurement is plotted on a second axis of said two-dimensional graph;

(f) fitting a straight line to each of a plurality of groups of said plotted points; and

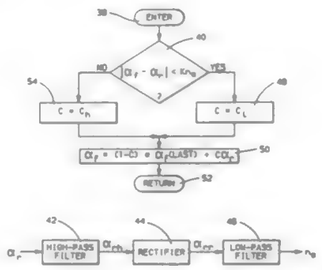
(g) labeling a fault or unconformity location at each point on said plot wherein said straight lines intersect, to create said plotted locations of said faults or unconformities.

5,363,300

VEHICLE ACCELERATION SENSOR

William C. Lin, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1993, Ser. No. 11,593
Int. Cl.[5] G06F *15/50*; B60K *31/00*
U.S. Cl. 364—424.01 **5 Claims**



1. A method of determining the acceleration of a vehicle from an acceleration signal α_r generated by an accelerometer carried by the vehicle, the acceleration signal being contaminated by a noise signal, the method comprising the steps of:

determining a magnitude n_α of the noise signal;

filtering the acceleration signal α_r by a filter having a time

constant C to generate a filtered acceleration signal α_f having a magnitude that comprises the determination of the vehicle acceleration;

comparing the magnitude of a difference between the acceleration signal α_r and the filtered acceleration signal α_f with a magnitude of a predetermined function of the noise signal;

setting the value of the time constant C equal to a value C_l when the magnitude of the difference between the acceleration signal α_r and the filtered acceleration signal α_f is less than the magnitude of the predetermined function of the noise signal, the value C_l establishing a predetermined low cutoff frequency of the filter to remove the noise signal from the acceleration signal α_r; and

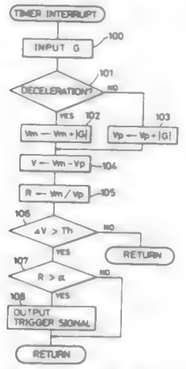
setting the value of the time constant C equal to a value C_h when the magnitude of the difference between the acceleration signal α_r and the filtered acceleration signal α_f is greater than the magnitude of the predetermined function of the noise signal, the value C_h establishing a predetermined cutoff frequency of the filter higher than the predetermined low cutoff frequency so that the determination of vehicle acceleration represented by the filtered acceleration signal α_f more rapidly responds to rapid changes int he actual vehicle acceleration.

5,363,301

CONTROL SYSTEM FOR VEHICLE SAFETY DEVICE

Kunihiro Takeuchi, Saitama, Japan, assignor to ZEXEL Corporation, Tokyo, Japan

Filed Feb. 20, 1992, Ser. No. 837,948
Claims priority, application Japan, Mar. 13, 1991, 3-072179
Int. Cl.[5] B60R *21/02*
U.S. Cl. 364—424.05 **5 Claims**



1. A control system for a vehicle safety device comprising:

(a) an acceleration sensor for outputting a signal representative of acceleration of a vehicle when the vehicle is accelerated and for outputting a signal representative of deceleration of the vehicle when the vehicle is decelerated;

(b) total integral value calculation means for effecting an integral calculation in accordance with said signal from said acceleration sensor to produce a total integral value representative of a change in speed of the vehicle;

(c) first comparison means for comparing said total integral value with a threshold level;

(d) deceleration integrating means for integrating the deceleration component of said signal from said acceleration sensor to produce a deceleration integral value;

(e) acceleration integrating means for integrating the acceleration component of said signal from said acceleration sensor to produce an acceleration integral value;

(f) second comparison means for comparing said deceleration integral value with said acceleration integral value; and

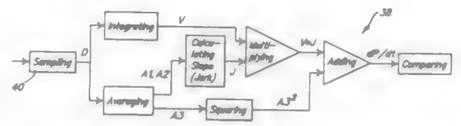
(g) trigger signal outputting means for outputting a trigger signal to the vehicle safety device when said first comparison means judges that said total integral value increasing in the decelerating direction exceeds said threshold level, and said second comparison means judges that said deceleration integral value becomes predetermined times greater than said acceleration integral value.

5,363,302

POWER RATE SYSTEM AND METHOD FOR ACTUATING VEHICLE SAFETY DEVICE

Jace L. Allen, Farmington Hills, and Tony Gioutsos, Brighton, both of Mich., assignors to Automotive Systems Laboratory, Inc., Farmington Hills, Mich.

Filed Jun. 4, 1991, Ser. No. 709,891
Int. Cl.[5] B60R *21/32*
U.S. Cl. 364—424.05 **16 Claims**



11. A method for actuating a vehicle safety device, said method comprising the steps of:

sampling data representative of instantaneous vehicle acceleration;

storing consecutive values of said acceleration data in a buffer;

integrating said data to determine a vehicle velocity value;

calculating a jerk value based on said stored acceleration data;

calculating a value for the rate of change of power of said vehicle due to said acceleration based on said vehicle velocity value and said jerk value; and

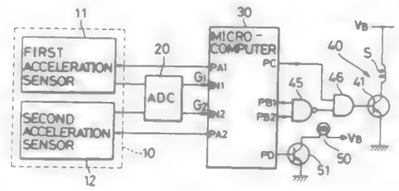
actuating said safety device if said value for the rate of change of power exceeds a threshold value.

5,363,303

CONTROL SYSTEM FOR VEHICLE SAFETY DEVICE

Hideyuki Kaneko, and Kunihiro Takeuchi, both of Saitama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Continuation of Ser. No. 841,574, Feb. 26, 1992, abandoned.
This application Mar. 18, 1994, Ser. No. 215,962
Claims priority, application Japan, Mar. 13, 1991, 3-072180
Int. Cl.[5] B60R *21/32*
U.S. Cl. 364—424.05 **4 Claims**



1. A control system for a vehicle safety device comprising:

(a) a plurality of acceleration sensors, each of which outputs a signal representative of acceleration and deceleration of a vehicle;

(b) test pulse output means for outputting test pulses to said plurality of acceleration sensors so that when one of said plurality of acceleration sensors receives the test pulse, the other acceleration sensor does not receive the test pulse;

(c) failure judgment means for checking said signal output from the acceleration sensor which received said test

pulse to judge whether or not this acceleration sensor has failed; and

(d) acceleration evaluation means for continuously calculating with the signals output from those acceleration sensors which have not received the test pulse to judge whether or not a vehicle collision has occurred, and then to output a trigger signal to a vehicle safety device which said acceleration evaluation means judges that the collision has occurred.

5,363,304

METHOD FOR CONTROLLING A HYDRAULIC EXCAVATOR

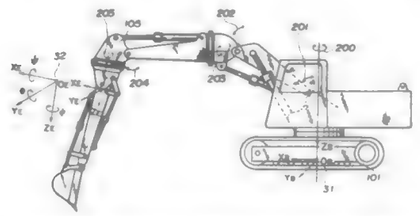
Katsusuke Awano, Akashi; Shiro Houmura, Kakogawa, and Akio Tanaka, Takasago, all of Japan, assignors to Shin Caterpillar Mitsubishi, Ltd., Tokyo, Japan

Continuation of Ser. No. 819,064, Jan. 10, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 196,824

Claims priority, application Japan, Jan. 23, 1991, 3-102129

Int. Cl.[5] E02F *3/32*

U.S. Cl. 364—424.07 **1 Claim**



1. A method for controlling a hydraulic excavator, equipped with a front excavating mechanism comprising freely rotating arms connected by pivotal joints, comprising the steps of:

collecting joint angle data from joint angle detecting sensors mounted on said pivotal joints;

transforming said joint angle data into initial position coordinates of a tip of a rear arm of said front excavating mechanism in a basic coordinate system defined on a lower traveling frame of said hydraulic excavator;

predetermining translational and rotational speeds of said tip enabling execution of a schedule of excavating work;

inputting said translational and rotational speeds through electrical joy sticks installed in a cabin of the excavator for determining position coordinates of said tip at certain elapsed times;

transforming said position coordinates of said tip in a working coordinate system to position coordinates in said basic coordinate system;

obtaining differences between said position coordinates of said tip at present and elapsed unit times;

transforming said differences to values defined in a wrist coordinate system;

multiplying said values defined in the wrist coordinate system by position control gains to obtain multiplied values;

converting said multiplied values to joint angle speeds defined in said wrist coordinate system;

inputting said joint angle speeds, for respective joints, into a hydraulic control system; and

operating the arms of the front excavating mechanism of the hydraulic excavator by using a computer located in a cabin of the hydraulic excavator to perform each of said collecting and transforming steps.

5,363,305

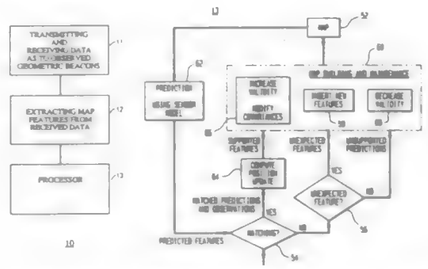
NAVIGATION SYSTEM FOR A MOBILE ROBOT

Ingemar Cox, Lawrenceville, N.J.; John J. Leonard, Boston, Mass., and Hugh Durrant-Whyte, Oxford, England, assignors to NEC Research Institute, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 547,768, Jul. 2, 1990, abandoned. This application Feb. 28, 1992, Ser. No. 843,570

Int. Cl.[5] G06F *15/00;* **G01C** *3/00*

U.S. Cl. 364—443 **7 Claims**



1. A navigation system to be carried on a mobile robot that is to traverse an environment that includes geometric beacons comprising,

means for scanning the environment for detecting reflections from geometric beacons in the environment and from said detected reflections extracting information as to the location of observed geometric beacons,

means responsive to the information extracted from the detected reflections for storing in storing means the location of said geometric beacons as features in a map with an initial credibility value, unless already stored in the storing means,

means for matching the location of geometric beacons extracted from said reflections information with map features in said storing means,

means for increasing the credibility value of a map feature in the storing means each time said feature is found to match the location of an observed geometric beacon as the robot traverses the environment,

means for decreasing the credibility value of a map feature in the storing means when no beacon is observed by the scanning means at the corresponding location as the robot traverses the location where such geometric beacon should have been observed, and

means for computing the position of the robot that includes selecting for the computation the needed data from those geometric beacons then being observed that match the map features having relatively high credibility values.

5,363,306

ON-VEHICLE NAVIGATION APPARATUS

Shingo Kuwahara, and Morio Araki, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,811

Claims priority, application Japan, Mar. 18, 1991, 3-052544

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 **8 Claims**

6. An on-vehicle navigation apparatus comprising:

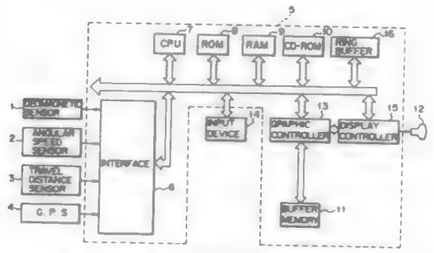
vehicle-location information generating means for generating information regarding a location of a vehicle;

travel locus data storage means for storing a plurality of pieces of travel locus data at a predetermined collecting time;

traffic jam index storage means for storing a traffic jam index from said predetermined collecting time for one piece of travel locus data to a next predetermined collecting time for a next piece of travel locus data;

reading means for retrieving said travel locus data and said traffic jam index from said travel locus data storage means and said traffic jam index storage means, respectively;

means for storing said vehicle-location information as travel locus data in said travel locus data storage means and storing said traffic jam index as a specific value that indicates deactivation or activation of a vehicle engine;



designation means for designating one travel locus mark from among a plurality of travel locus marks in accordance with said traffic jam index retrieved by said reading means; and

display control means for displaying said travel locus marks on a display screen based on said travel locus data retrieved by said reading means.

5,363,307

MEASURING APPARATUS HAVING AN INDICATOR FOR DISPLAYING TIDE OR TIDAL CURRENT DATA

Noriyuki Yoshida, Nishinomiya, Japan, assignor to Furuno Electric Company, Limited, Hyogo, Japan

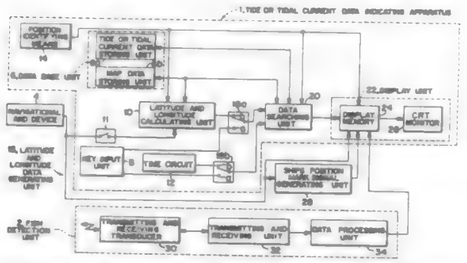
PCT No. PCT/JP91/00610, § 371 Date Mar. 4, 1992, § 102(e) Date Mar. 4, 1992, PCT Pub. No. WO91/17456, PCT Pub. Date Nov. 14, 1991

PCT Filed May 7, 1991, Ser. No. 778,860

Claims priority, application Japan, May 7, 1990, 3-118131

Int. Cl.[5] G01S *7/62;* **G01P** *5/00*

U.S. Cl. 364—452 **26 Claims**



1. A display apparatus for displaying tide or tidal current data comprising:

tide or tidal current data storing means for storing the tide or tidal current data corresponding to ages of the moon at a plurality of points on the earth;

latitude and longitude data generating means for generating longitude and latitude data representative of one of the plurality of points on the earth;

time data generating means for generating day and hour data;

data searching means for reading the tide or tidal current data for a desired age of the moon stored in said tide or tidal current data storing means based on the latitude and longitude data and the day and hour data; and

display means for displaying the tide or tidal current data for the desired age of the moon read by said data searching means,

said latitude and longitude data generating means including,

map data storing means for storing map data an area,

position specifying means for specifying a point of the stored map data, and

latitude and longitude calculating means for calculating a latitude and longitude based,,on the point of the stored map data specified by said position specifying means.

5,363,308

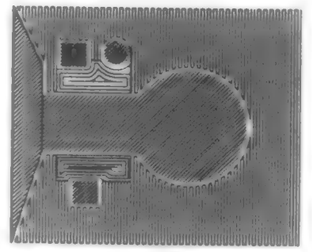
METHOD FOR AUTOMATING THE OPTIMIZATION OF TOOL PATH GENERATION FOR PROFILE MILLING

Margaret K. Guyder, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 2, 1992, Ser. No. 984,627

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.29 **6 Claims**



1. A method for generating tool paths for profile milling of parts comprising the steps of:

creating a geometric model of a part and stock from which said part is to be milled;

defining a first region on said stock within which a cutting tool has access from at least one side of said stock;

defining a plurality of second regions on said stock within which at least a portion of said regions are not accessible by a cutting tool from a side of said stock, said defining a plurality of second regions comprising defining a machining region; locating areas within said machining region where linear segments intersect said machining region in more than four places, said areas defining concave recesses; connecting all of said areas with a rectangle; and finding the Boolean intersection of said machining region with said rectangle and designating said intersection as said plurality of second regions;

generating lacing tool paths on said first region, said lacing tool paths being a path starting at an edge of the stock zig-zagging back to the part; and

generating closed loop tool paths on said second regions.

5,363,309

NORMAL DISTANCE CONSTRUCTION FOR MACHINING EDGES OF SOLID MODELS

Wickham H. Tong Loh, Los Angeles, Calif., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 25, 1993, Ser. No. 24,118

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—474.34 **18 Claims**

1. In a computer system having a processor and associated memory, a method for computing a normal distance from a cutter to a space curve for shaping a workpiece, comprising the steps of:

(a) computing a minimum distance from the cutter to the space curve;

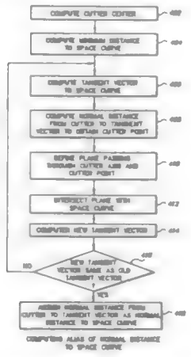
(b) computing a first tangent line to the space curve at the minimum distance point on the space curve;

c) computing a normal distance from the cutter to the first tangent line;

(d) defining a cutter plane passing through the rotation axis of the cutter and the normal distance point on the cutter;

(c) intersecting the cutter plane with the space curve to define a cutter normal to the space curve

(f) computing a second tangent line to the edge at the normal point on the edge and replacing the first tangent line with the second tangent line, and



(g) repeating steps (c) to (f) until the first and second tangent lines converge to within a predetermined tolerance

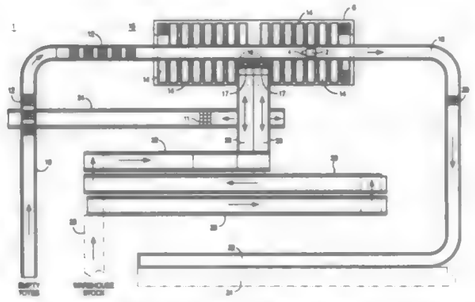
(h) automatically moving the cutter with respect to the workpiece in a direction defined by the computed normal distance.

5,363,310

SYSTEM AND METHOD FOR PARTIAL ORDER FILLING

Javad Haj-Ali-Ahmadi, and Edward C. Hume, III, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1992, Ser. No. 865,551
Int. Cl.[5] G06F *15/24*
U.S. Cl. 364—478 **27 Claims**



1. A material handling system for distributing a plurality of items in accordance with a plurality of separate requests for specific quantities of said items, comprising:

means for receiving said requests;

means for receiving a plurality of said items, each item being provided in a predetermined quantity;

means for automatically assembling said requested items in transport units contained within a work area of said material handling system for placement into said transport units in accordance with said requests, said requests including quantities of said items less than said predetermined quantity; and

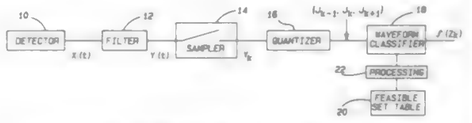
means for planning the distribution of said plurality of items by sequentially ordering said items to cause the predetermined quantity corresponding to the greatest number of requests for the item to be received in the work area first.

5,363,311

DATA COMPRESSION SYSTEM USING RESPONSE WAVEFORM DISCRIMINATION

Martin J. Garbo, Littleton, and Bruce T. Firtha, Aurora, both of Colo., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 4, 1992, Ser. No. 941,010
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—481 **15 Claims**



1. A waveform classification system comprising:

signal processing means for quantizing an input signal to produce a digital series, said digital series including a fixed number of quantized digital values;

storage means for storing a collection of a predetermined feasible series having a fixed number of digital values representing waveforms of high interest to said waveform classification system, said fixed number of digital values corresponding to said fixed number of quantized values; and

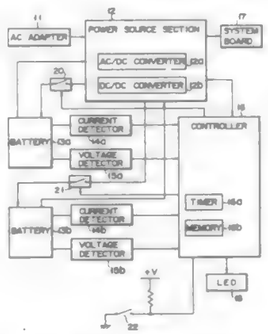
classifier means for comparing said digital series from said signal processing means to the collection of predetermined feasible series in the storage means, with said classifier means generating an output indicating the input signal is of high interest if the digital series is included in the collection of predetermined digital series or an output indicating the input signal is of low interest if the digital series is not included in the collection of predetermined digital series.

5,363,312

METHOD AND APPARATUS FOR BATTERY CONTROL

Ryozi Ninomiya, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 967,540, Oct. 27, 1992, abandoned, which is a continuation of Ser. No. 853,017, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 578,225, Sep. 6, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 29,967
Claims priority, application Japan, Mar. 30, 1990, 2-84651
Int. Cl.[5] H02J *7/00;* **G06F** *15/20*
U.S. Cl. 364—483 **30 Claims**



1. A battery power supply control apparatus for controlling power supply of a battery set in the apparatus, the apparatus comprising:

a controller;

checking means, operatively communicating with the set battery and the controller, for checking whether or not a charge amount of the set battery is in a low state;

charging means, controlled by the controller, for charging the set battery when the checking means communicates to the controller that the charge amount of the set battery is in the low state;

timer means, operatively communicating with the controller, for starting a time count value when the charging means commences charging the set battery; and

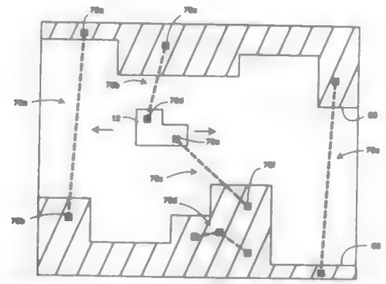
determining means, operatively communicating with the controller, for determining whether or not the time count value exceeds a desired time value, the controller stopping the charging means from charging the set battery in response to a predetermined count of the time count value communicated by the determining means.

5,363,313

MULTIPLE-LAYER CONTOUR SEARCHING METHOD AND APPARATUS FOR CIRCUIT BUILDING BLOCK PLACEMENT

Tsu-Chang Lee, San Jose, Calif., assignor to Cadence Design Systems, Inc., San Jose, Calif.

Filed Feb. 28, 1992, Ser. No. 843,712
Int. Cl.[5] G06F *15/60, 15/46*
U.S. Cl. 364—491 **21 Claims**



1. A method for compacting a set of objects, comprising the steps of:

(a) defining a set of N unrefined objects, each of said unrefined objects having at least one object profile, each of said objects having at least one layer;

(b) defining a set of refined objects;

(c) defining an object area, said object area having a vertical axis defining an upper and a lower end, said object area having a horizontal axis having a base width;

(d) placing said set of unrefined objects within and at said upper end of said object area, said placement defining a first unrefined configuration;

(e) removing a first removed object from said set of unrefined objects by selecting a lowest unrefined object along a longest critical path; said first unrefined configuration no longer including said first removed object, said first removed object no longer included in said set of unrefined objects;

(f) defining a first unrefined profile for at least one of said layers of said first unrefined configuration;

(g) defining a first refined profile for a first refined configuration, said first refined profile located within and at a lower end of said object area;

(h) finding a lowest cost for placing said first removed object along said first refined profile by iteratively positioning the first removed object along the first refined profile at matching points selected according to a matching of a curvature between a refined side of the first removed object and the first refined profile and a matching of a curvature between an unrefined side of the first removed object and the first unrefined profile; and

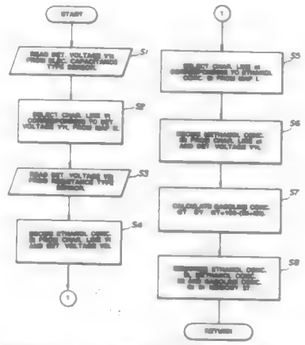
(i) placing said first removed object at a point along said first refined profile associated with said lowest cost.

5,363,314

FUEL CHARACTER JUDGING SYSTEM

Kazumitsu Kobayashi, and Masaru Kuribara, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Apr. 5, 1993, Ser. No. 41,588
Claims priority, application Japan, Apr. 7, 1992, 4-114141
Int. Cl.[5] G01N *27/06, 27/27, 33/22, 27/00*
U.S. Cl. 364—497 **14 Claims**



13. A method for judging fuel character of a fuel, comprising the steps of:

detecting a first character of the fuel using a first sensor disposed in the fuel, said first sensor outputting a first detection signal representative of the first character;

detecting a second character of the fuel using a second sensor, said second character being different from said first character, said second sensor being disposed in said fuel and outputting a second detection signal representative of said second character;

storing in a memory first and second maps for known fuels having known first, second and third parameters corresponding to components of the known fuel, said first map having a plurality of first characteristic lines which respectively correspond to a value of said known first parameter, said first characteristic lines being plotted in accordance with the first detection signal from said first sensor for a range of values of the known second parameter, said second map having a plurality of second characteristic lines which respectively correspond to a value of the first detection signals from said first sensor, the second characteristic lines being plotted in accordance with the second signal from said second sensor for a range of values of said known first parameter;

selecting one of the second characteristic lines in the second map in accordance with the first detection signal from said first sensor;

determining an unknown first parameter representing a first component of said unknown fuel in accordance with said one second characteristic line and with the second detection signal from the unknown fuel from said second sensor,

selecting one of the first characteristic lines in the first map in accordance with the determined unknown first parameter;

determining an unknown second parameter representing a second component of said unknown fuel in accordance with the one first characteristic line selected and with the first detection signal from the unknown fuel from said first sensor; and

determining an unknown third parameter representing a

third component of said unknown fuel in accordance with the determined unknown first parameter and with the determined unknown second parameter.

5,363,315

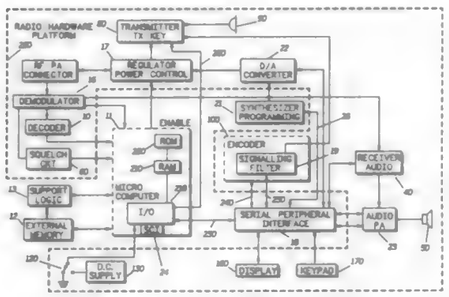
METHOD OF COMMUNICATIONS BETWEEN AND WITHIN VIRTUAL RADIO INTERFACE STANDARD LAYERS

Karl R. Weiss; Karen J. Ensor; Marc S. Desruisseaux, all of Plantation; Sanjay Wanchoo, Lauderhill; Jerry L. Sandvos, Davie, and Timothy A. Monahan-Mitchell, Deerfield Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1992, Ser. No. 906,990

Int. Cl.[5] G08C *17/00*

U.S. Cl. 364—514 **11 Claims**



1. A method for controlling a radio, the method comprising:

defining a plurality of radio-control tasks separated into predetermined categories representing architectural layers;

buffering messages for each of the tasks, for communicating among the tasks within or across the layers;

defining a messaging protocol for passing information from the tasks through one of the plurality of architectural layers;

formatting the messaging protocol into an information packet preceding optional data with a header having different portions;

designating the information as intralayer or interlayer in a flag portion of the header;

identifying the source of the information in an identifier portion of the header, if the information is interlayer; and

subdividing the header into an operation portion for providing an operation code.

5,363,316

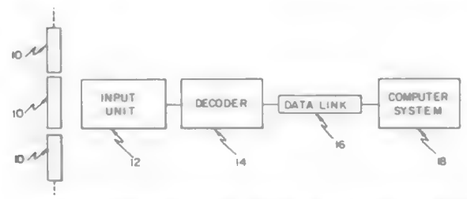
MAINTENANCE MONITORING SYSTEM FOR DETACHABLE SKI LIFT CARRIER VEHICLES

Paul W. Spencer, 649 Pinon Dr., Basalt, Colo. 81621

Continuation of Ser. No. 898,814, Jun. 15, 1992, abandoned. This application Mar. 3, 1994, Ser. No. 206,199

Int. Cl.[5] G07C *3/02*

U.S. Cl. 364—550 **19 Claims**



1. A maintenance monitoring system for detachable carrier vehicles of a moving transportation system in which selected ones of the detachable carrier vehicles are periodically attached to and detached from the moving transportation system, the maintenance monitoring system comprising:

vehicle identification means attached to each detachable carrier vehicle for providing vehicle identification information;

stationary input means positioned at a specific point along a route of the moving transportation system for receiving the vehicle identification information from each one of the detachable carrier vehicles presently attached to the moving transportation system as it passes the stationary input means; and

processing means, coupled to the input means, for processing the vehicle identification information at the time it is received by the input means to accumulate the usage of each detachable carrier vehicle presently attached to the moving transportation system, for comparing the accumulated usage of each detachable carrier vehicle to predetermined usage levels at which that detachable carrier vehicle is to receive scheduled maintenance, and for providing an indication to an operator whenever a particular detachable carrier vehicle has reached an accumulated usage that falls within a specified tolerance of one of said predetermined usage levels at which that detachable carrier vehicle is to be detached from said moving transportation system to receive scheduled maintenance.

5,363,317

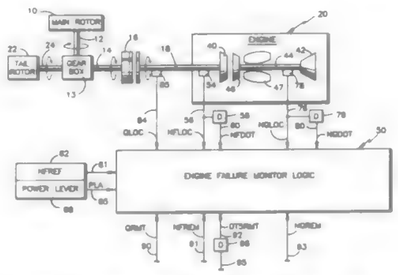
ENGINE FAILURE MONITOR FOR A MULTI-ENGINE AIRCRAFT HAVING PARTIAL ENGINE FAILURE AND DRIVESHAFT FAILURE DETECTION

Robert W. Rice, Sandy Hook, Conn., and David H. Sweet, Tequesta, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 29, 1992, Ser. No. 968,107

Int. Cl.[5] G01B *7/00*

U.S. Cl. 364—551.01 **12 Claims**



1. An engine failure monitor for detecting an engine failure in a multi-engine aircraft having at least two engines each of which includes a free turbine for driving an engine driveshaft and being operated in dependence on the angle of a power lever, each engine associated with a respective engine failure monitor constituting a local engine, and each remaining engine constituting a remote engine, comprising:

means for providing a ground idle signal in response to said power lever being at an angle (PLA) above ground idle for said local engine;

means for providing a local turbine shaft speed signal indicative of turbine shaft speed (NFLOC) of said local engine;

means for providing a rotor speed signal indicative of main rotor speed (NR);

means for providing a turbine shaft rate signal indicative of a rate of change in turbine shaft speed (NFDOT) of said local engine; and

said engine failure monitor being responsive to a simultaneous occurrence, for a period in excess of a first threshold period, of said ground idle signal, said local turbine shaft speed signal exceeding said main rotor speed signal by a first threshold value, and said local turbine shaft rate signal being in excess of a second threshold value for providing a shaft failure signal indicative of local engine driveshaft failure.

5,363,318

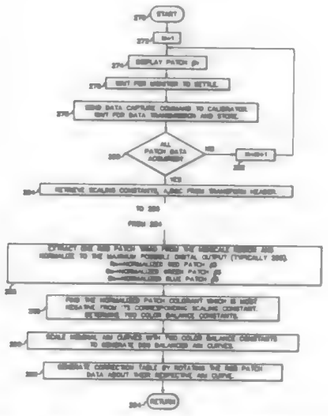
METHOD AND APPARATUS FOR ADAPTIVE COLOR CHARACTERIZATION AND CALIBRATION

David K. McCauley, Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1992, Ser. No. 855,280

Int. Cl.[5] H04N *17/02, 9/73*

U.S. Cl. 364—571.01 **20 Claims**



1. A method of calibrating a desk top computer color device, comprising the steps of:

(a) controlling, upon initiation of a user, the color device to produce three color characterization curves of a tricolor response of the color device; and

(b) adaptively producing three color balanced calibration tables from the characterization curves, comprising the steps of:

(b1) determining scaling constants;

(b2) normalizing the characterization curves for a maximum device dynamic range compensating for saturation;

(b3) determining a most negative normalized response;

(b4) determining color balance constants from the most negative normalized response;

(b5) scaling aim curves using the color balance constants; and

(b6) creating the calibration tables using the scaled aim curves and the normalized characterization curves.

5,363,319

LOGIC SIMULATOR

Nobuo Okuda, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,380

Claims priority, application Japan, Sep. 29, 1990, 2-258843; Sep. 29, 1990, 2-258845; Sep. 29, 1990, 2-258851; Sep. 29, 1990, 2-258852

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—578 **7 Claims**

1. A logic simulator comprising:

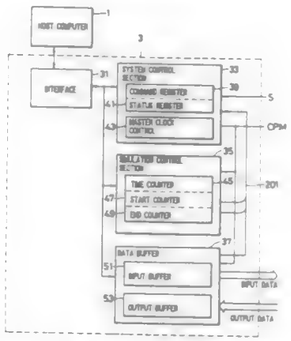
a plurality of stages each having a plurality of logic function sections for realizing functions equivalent to a circuit to be simulated;

a plurality of connection sections for connecting these logic function sections;

a plurality of memory means to receive inputs indicative of data and control information;

a control section for constructing a simulation circuit by controlling said logic function sections and connection sections so as to execute logic simulation by said simulation circuit;

holding means for creating connections of logical switching elements prior to the execution of said logic simulation;



stopping means for stopping a logic simulation upon receipt of an interruption signal produced by an individual logic element; and

a host computer for serving as an interface to a designer and for providing a means by which the designer can input the design of the circuit to be simulated.

5,363,320

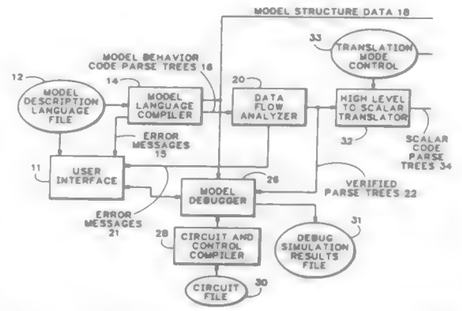
AUTOMATIC COMPILATION OF MODEL EQUATIONS INTO A GRADIENT BASED ANALOG SIMULATOR

Graeme R. Boyle, Yamhill; Susan C. Bergquist, Woodburn; Ernest G. McReynolds, Portland, and Matson M. Haug, Newberg, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 634,262, Dec. 14, 1990, abandoned. This application Jun. 21, 1993, Ser. No. 79,226

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—578 **24 Claims**



1. A method for incorporating a description of an analog component model into a circuit simulator in a computer programming language used by a simulator program residing in a computer, the method comprising the steps of:

entering a high-level description of the component model;

compiling the high-level description using the computer to produce model behavior code parse trees and model structure data;

translating using the computer the parse trees to produce scalar-code parse trees; and

converting using the computer the scalar-code parse trees

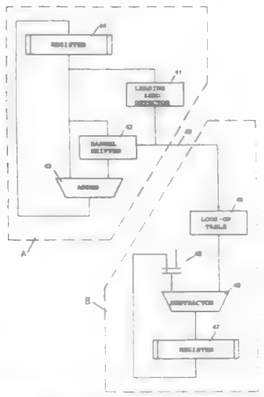
and model structure data into code in the computer programming language used by the simulator program.

5,363,321

DIGITAL CIRCUIT FOR CALCULATING A LOGARITHM OF A NUMBER

Son Dao Trong, Stuttgart; Klaus Helwig, Sindelfingen, and Markus Loch, Wittlich, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1993, Ser. No. 69,954
Claims priority, application Germany, Jun. 3, 1992, 92109342
Int. Cl.[5] G06F *7/00*
U.S. Cl. 364—748.5 27 Claims



1. A computer system for calculating a logarithm to a base B of a number M, said apparatus comprising:

first hardware means for storing approximate or exact logarithms to the base B of a predetermined set of numbers;

second hardware means for subsequently determining intermediate values I, using a shifter and adder, and detecting a position of a most significant zero digit in each of said number M and said intermediate values I_i wherein

$f_i=1+B$ to the power of (N_i-1) where N is the position of the most significant zero for $i=1$ and of the intermediate value I_i for i greater than 1,

$I_1=M\times f_1$,

$I_i=I_{i-1}\times f_1$ for i greater than 1; and third hardware means for looking up and fetching the logarithms of f_i from said first hardware means and including a subtractor for subtracting from one all of said logarithms of f_i, said third hardware means subtracting the log of f_i independently of said second hardware means adding I_{i-1} with the shifted I_{i-1} once the position of the respective most significant zero digit is determined.

5,363,322

DATA PROCESSOR WITH AN INTEGER MULTIPLICATION FUNCTION ON A FRACTIONAL MULTIPLIER

Joseph P. Gergen, and Peter A. Percosan, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1991, Ser. No. 679,470
Int. Cl.[5] G06F *7/52, 15/38*
U.S. Cl. 364—754 19 Claims

1. A data processor, comprising:

a controller for receiving one of a first instruction and a second instruction, the controller decoding the first instruction to provide a first control signal and a second control signal, the controller decoding the second instruction to provide a third control signal and a fourth control signal;

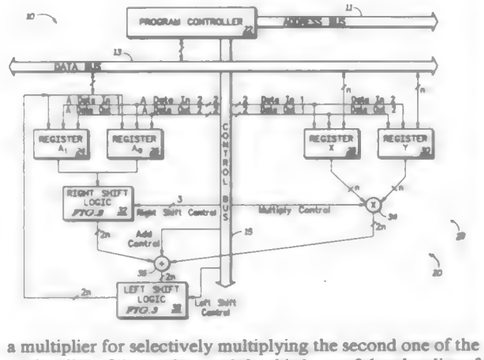
a data bus for providing a plurality of data values;

an accumulator having an input coupled to the data bus for receiving a first one of the plurality of data values;

first shifting means coupled to the accumulator for receiving the first one of the plurality of data values, the first shifting means selectively right shifting the first one of the plurality of data values by fifteen bits in response to the first control signal, the first shifting means selectively transferring the first one of the plurality of data values without shifting in response to the third control signal;

a first register having an input coupled to the data bus for receiving a second one of the plurality of data values;

a second register having an input coupled to the data bus for receiving a third one of the plurality of data values;



a multiplier for selectively multiplying the second one of the plurality of data values and the third one of the plurality of data values to provide a product;

an adder having a first input coupled to the first shifting means for receiving a transferred output and a second input coupled to the multiplier for receiving the product, the adder selectively adding the transferred output and the product to provide a sum; and

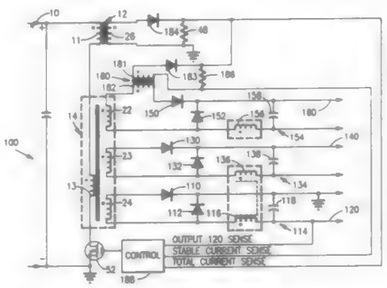
second shifting means coupled to the adder for receiving the sum, the second shifting means selectively left shifting the sum by fifteen bits and transferring a shifted sum to the accumulator in response to the second control signal, the second shifting means selectively transferring the sum without shifting in response to the fourth control signal.

5,363,323

POWER SUPPLY WITH PLURAL OUTPUTS SUPPLYING DYNAMIC AND STEADY LOADS

Gerhard G. Lange, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1993, Ser. No. 105,091
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 11 Claims



3. A power supply comprising:

a first transformer having a first primary winding and first and second secondary windings;

a first DC output circuit driven by said first secondary winding and comprising a first series rectifier, a first series inductor wound on a first core and a first parallel capacitor;

a second DC output circuit driven by said second secondary winding and comprising a second series rectifier, a second series inductor wound on a second core and a second parallel capacitor;

a second transformer having a second primary winding and a third secondary winding, said second primary winding being in series with said first primary winding of said first transformer;

a third transformer having a third primary winding and a fourth secondary winding, said third primary winding being in series with said second secondary winding, said fourth secondary winding being in series with said third secondary winding and polarized such that current in said fourth secondary winding is subtracted from current in said third secondary winding; and

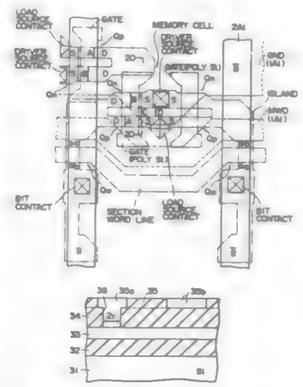
means for controlling a drive current to said first primary winding based on the difference between said currents from said third and fourth secondary windings.

5,363,324

FULL CMOS TYPE SRAM AND METHOD OF MANUFACTURING SAME

Makoto Hashimoto; Yoshihiro Miyazawa, and Takeshi Matsushita, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 855,663, Mar. 23, 1992. This application Jun. 17, 1993, Ser. No. 78,150
Claims priority, application Japan, Mar. 23, 1991, 3-083129; Mar. 23, 1991, 3-083130
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—156 2 Claims



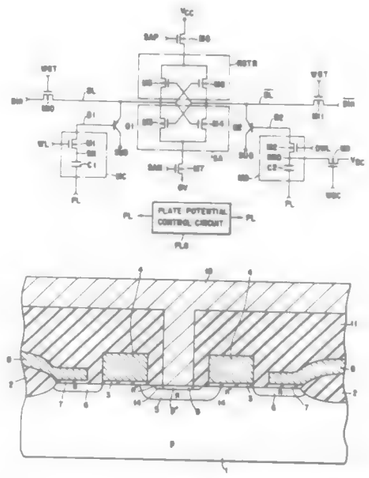
1. A SCRAM semiconductor device comprising, an insulator substrate (12), a silicon layer (11) covering a substantial portion of said substrate (12), a driver transistor and a load transistor located over said silicon layer (11) and having electrodes which are connected to said silicon layer (11) by through holes, and the sheet resistivity of said silicon layer (11) being 1000 ohms or less.

5,363,325

DYNAMIC SEMICONDUCTOR MEMORY DEVICE HAVING HIGH INTEGRATION DENSITY

Kazumasa Sunouchi, Yokohama; Tsuneaki Fuse, Tokyo; Akihiro Nitayama, Kawasaki; Takehiro Hasegawa, Tokyo; Shigeyoshi Watanabe, Yokohama; Fumio Horiguchi, Tokyo, and Katsuhiko Hieda, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 1, 1992, Ser. No. 907,032
Claims priority, application Japan, Jul. 1, 1991, 3-160568; Mar. 31, 1992, 4-105764
Int. Cl.[5] G11L *11/24*
U.S. Cl. 365—149 17 Claims



9. A dynamic semiconductor memory device comprising:

a semiconductor substrate having a region of first conductivity type;

at least one MOS transistor formed on said semiconductor substrate;

a capacitor formed to face said MOS transistor on said semiconductor substrate;

at least one bit line formed on said semiconductor substrate;

at least one word line formed on said semiconductor substrate;

a bipolar transistor having a base connected to said MOS transistor, an emitter connected to said bit line, and a collector connector to said semiconductor substrate;

wherein said MOS transistor has a source and a drain of second conductivity type separately formed in said first conductivity type region of said semiconductor substrate and a gate formed over that part of said first conductivity type region which lies between said source and drain with an insulation film disposed between said gate and said first conductivity type region;

said word line is formed of a layer which also constitutes the gate electrode of said MOS transistor;

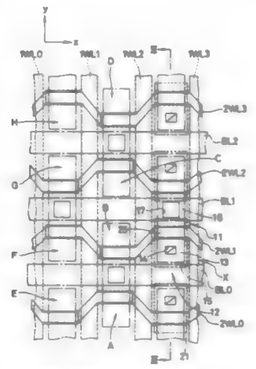
said capacitor has an electrode which is formed of said source of said second conductivity type of said MOS transistor;

said bipolar transistor is constituted by said second region serving as said base and also used as said drain, a third region of said first conductivity type formed on said second region and serving as said emitter, and said semiconductor substrate serving as said collector; and

said bit line is connected to the emitter of said bipolar transistor, and further comprising:

a resistor connected between said base and said bit line.

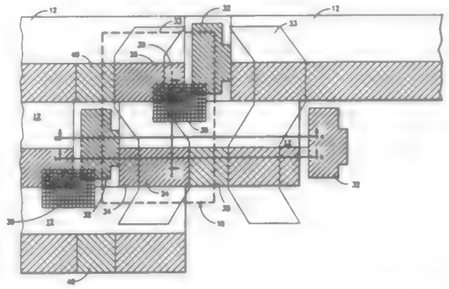
5,363,326
SEMICONDUCTOR MEMORY DEVICE HAVING CROSSED WORD LINES, AND METHOD OF OPERATING SAME
Hidekaru Nakajima, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 13, 1993, Ser. No. 3,595
Claims priority, application Japan, Feb. 4, 1992, 4-047985
Int. Cl.[5] G11C *11/24;* H01L *29/78*
U.S. Cl. 365—149 **6 Claims**



1. A semiconductor device comprising:
a plurality of memory cells arranged in an array of rows and columns, each memory cell having an access transistor and a storage capacitor which is connected to one diffusion region of the access transistor;
a bit line connected to the other diffusion region of the access transistor and extending in a second direction perpendicular to a first direction defined as the direction connecting said one diffusion region and the other diffusion region of said access transistor;
a first word line having a main portion extending in said first direction, located between adjacent memory cells, and having diverging portions alternately extending from both sides of said main portion of the first word line to corresponding adjacent memory cells; and
a second word line extending in said second direction and located along said diverging portion of the first word line.

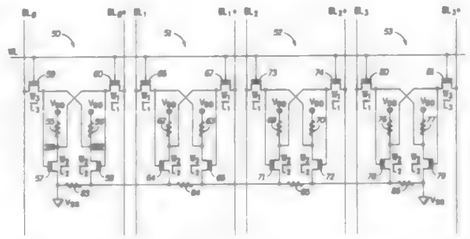
5,363,327
BURIED-SIDEWALL-STRAP TWO TRANSISTOR ONE CAPACITOR TRENCH CELL
Henkles, Walter H., Putnam Valley, and Wei Hwang, Armonk, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 19, 1993, Ser. No. 6,087
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—149 **19 Claims**

6. A two transistor, one capacitor, dynamic random access memory cell comprising:
a semiconductor substrate of a first conductivity type;
a first trench formed in said substrate, said trench having opposed sidewalls;
a first insulating layer formed on said opposed sidewalls of said trench;
a first conductive layer of a second conductivity type formed on said first insulating layer;
a second insulating layer formed on said first conductive layer;
a second conductive layer of said second conductivity type filling said trench;
said first and second conductive layers and said second insulating layer forming a storage capacitor;
a first field effect transistor formed in said semiconductor substrate, said transistor having source, drain and gate regions and means for connecting one of the source or drain regions to said first conductive layer; and



a second field effect transistor formed in said semiconductor substrate, said transistor having source, drain and gate regions and means for connecting one of the source or drain regions to said second conductive layer.

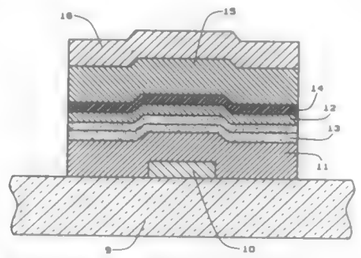
5,363,328
HIGHLY STABLE ASYMMETRIC SRAM CELL
Clyde H. Browning, III, and Michael L. Longwell, both of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.
Filed Jun. 1, 1993, Ser. No. 69,325
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—154 **16 Claims**



1. An asymmetric static random access memory cell, comprising:
a first load element having a first terminal connected to a first power supply voltage terminal, and a second terminal;
a second load element having a first terminal connected to the first power supply voltage terminal, and a second terminal;
a first pull-down transistor having a first current electrode coupled to the second terminal of the first load element, a second current electrode coupled to a second power supply voltage terminal, and a control electrode;
a second pull-down transistor having a first current electrode coupled to the second terminal of the second load element, a second current electrode coupled to the second power supply voltage terminal, and a control electrode;
a first coupling transistor having a first current electrode coupled to the first current electrode of the second pull-down transistor, a control electrode, and a second current electrode, the first coupling transistor having a first channel width; and
a second coupling transistor having a first current electrode coupled to the first current electrode of the first pull-down transistor, a control electrode, and a second current electrode, the second coupling transistor having a second channel width;

wherein the first channel width is less than the second channel width.

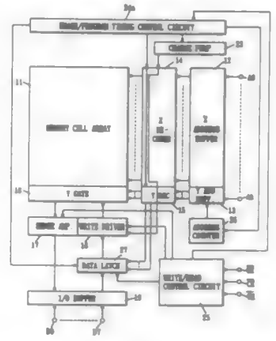
5,363,329
SEMICONDUCTOR MEMORY DEVICE FOR USE IN AN ELECTRICALLY ALTERABLE READ-ONLY MEMORY
Eugeniy Troyan, #19 Burdeinogo Str., Apt. 449, Minsk, Belarus 220134
Filed Nov. 10, 1993, Ser. No. 150,615
Int. Cl.[5] G11C *11/40, 13/04*
U.S. Cl. 365—184 **12 Claims**



1. An electrically alterable memory device comprising:
a lower electrode;
an upper electrode; and
a layer structure mounted inbetween said electrodes, which structure is constructed of first, second and third regions, said first region being adjacent to said lower electrode, said third region being adjacent to said upper electrode, said second region being between said first and third regions;
said second region being formed by the mutual diffusion of the main constituents of the first and third regions in order to provide a higher electrical resistance in one metastable state and lower electrical resistance in other metastable state, with switching from one state to the other upon application to the electrodes of an electrical signal of appropriate polarity, amplitude and duration;
said first region being formed of a material based tellurium with an electrically active donor impurity;
said third region being formed of a material having approximately equal percentages of tellurium and germanium or tellurium and stanus and containing inside an intermediate thin film of dielectric with a quantity of a fitted negative charge; and
said second region being formed because of a mutual diffusion of the main constituents of said first and third regions and have a higher percentage of tellurium than said third region.

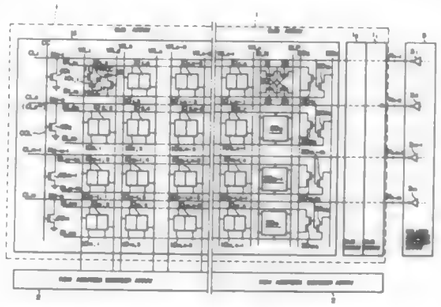
5,363,330
NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE INCORPORATING DATA LATCH AND ADDRESS COUNTER FOR PAGE MODE PROGRAMMING
Shinichi Kobayashi; Takeshi Nakayama; Yoshikazu Miyawaki; Tomoshi Futatsuya, and Yasushi Terada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 28, 1991, Ser. No. 826,943
Claims priority, application Japan, Jan. 28, 1991, 3-029404; Oct. 25, 1991, 3-280012
Int. Cl.[5] G11C *16/02*
U.S. Cl. 365—185 **6 Claims**

1. A non-volatile semiconductor memory device capable of electrically programming and erasing a plurality of bytes at one time, comprising:
a plurality of sets of bit lines;
a plurality of memory cells connected to said plurality of sets of bit lines;
input buffer means for inputting externally applied write data;
data holding means coupled to said input buffer means for holding the write data input by said input buffer means;
read/write control means coupled to said data holding means for periodically and repetitively controlling output of each of the write data held in said data holding means at programming;
write voltage generating means coupled to said read/write control means and said data holding means for receiving



the write data from said data holding means and generating a write voltage in accordance with the write data; and
selecting means coupled to said write voltage generating means and said data holding means, for periodically and repetitively selecting and charging a parasitic capacitance of each of said plurality of sets of bit lines so as to hold said parasitic capacitance charged when the corresponding bit line is unselected and for connecting repeatedly during a predetermined period a selected bit line to which data is to be written to said write voltage generating means.

5,363,331
SEMICONDUCTOR MEMORY WITH COLUMN LINE CONTROL CIRCUITS FOR PROTECTION AGAINST BROKEN COLUMN LINES
Katsuaki Matsui, and Sampei Miyamoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1992, Ser. No. 994,674
Claims priority, application Japan, Dec. 24, 1991, 3-341234
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.06 **17 Claims**



4. A memory comprising:
a memory cell array comprising n subarrays, wherein n is a natural number, a first said subarray located at a first side of the memory and an n-th one of said subarrays located at a second side of the memory opposite to the first side, each subarray including

(a) a plurality of memory cells each storing data therein,
(b) a plurality of word lines for applying selection signals to said memory cells,
(c) a data bus, and
(d) a plurality of switching circuit respectively transferring data from said memory cells to said data bus in response to a first logic level signal applied thereto;

a plurality of column lines coupled to corresponding switching circuits in each of said subarrays;

a column decoder, located at the first side adjacent to the first subarray, providing the first logic level signal to one of said column lines upon said subarray being accessed; and

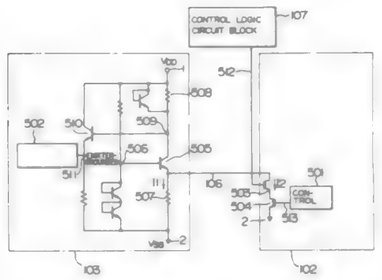
a plurality of clamping circuits, located at the second side adjacent to the n-th subarray and coupled to the column lines respectively, preliminarily setting said respective column lines to be in a predetermined potential so that said switching circuits each are inactive prior to said column decoder providing the first logic level signal.

5,363,332

CURRENT-DRIVEN SIGNAL INTERFACE IMPLEMENTED IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Fumio Murabayashi, Ibaraki; Takashi Hotta, Hitachi; Masahiro Iwamura, Hitachi, and Akiyoshi Osumi, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,442
Claims priority, application Japan, Mar. 29, 1991, 3-065999; Feb. 19, 1992, 4-032211
Int. Cl.[5] G11C *8/00*; H01L *27/06*
U.S. Cl. 365—189.08 **30 Claims**



1. A semiconductor integrated circuit device comprising:

a plurality of logic circuit blocks and a signal line interconnecting said logic circuit blocks,

wherein at least one of said logic circuit blocks includes an output portion connected to said signal line, each said output portion of said logic circuit blocks being comprised of a switching element for controlling current of said signal line in response to an input signal applied to at least one input terminal thereof, and

wherein at least another one of said blocks includes an input portion connected to said signal line, each said input portion of said blocks being comprised of:

a bipolar transistor having an emitter connected to said signal line and a collector coupled to an output node of the corresponding input portion, and

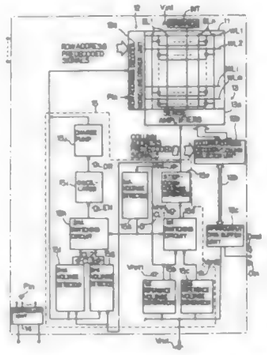
means for providing current to the emitter of said transistor constantly, the current flowing through the emitter of said bipolar transistor taking two different states depending on an ON or OFF state of said switching element.

5,363,333

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING POWER SUPPLY SYSTEM APPROPRIATELY BIASING SWITCHING TRANSISTORS AND STORAGE CAPACITORS IN BURN-IN TESTING PROCESS

Akira Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1993, Ser. No. 129,375
Claims priority, application Japan, Sep. 30, 1992, 4-262323
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—201 **6 Claims**



1. A dynamic random access memory device selectively entering standard modes for selectively accessing data bits and a testing mode for a burn-in testing process, comprising:

a) a plurality of addressable memory cells arranged in rows and columns, and respectively storing said data bits, each of said plurality of addressable memory cells being implemented by a switching transistor and a storage capacitor connected in series;

b) a plurality of word lines respectively associated with the rows of addressable memory cells, and connected with gate electrodes of the switching transistors in the associated rows;

c) a plurality of bit line pairs respectively associated with the columns of addressable memory cells, and having bit lines selectively connected with the drain nodes of said switching transistors in the associated columns;

d) a row address decoder and word line driver unit connected with said plurality of word lines, and lifting one of said plurality of word lines to a boosted voltage level for conducting accumulating electrodes of the storage capacitors through the switching transistors with the bit lines of said plurality of bit line pairs;

e) a plurality of sense amplifier circuits respectively connected with said plurality of bit line pairs, and operative to increase potential differences indicative of data bits in magnitude so that the bit lines of said plurality of bit line pairs selectively go to a step-down power voltage level and a low voltage level;

f) an intermediate voltage generating unit producing an intermediate voltage level from said step-down power voltage, and supplied to counter electrodes of said storage capacitors; and

g) a power supplying system supplied with a regular power voltage level from the outside of said dynamic random access memory device, and having

g-1) a first sub-system responsive to a first control signal for producing said step-down power voltage level from said regular power voltage level, and distributing said step-down power voltage level to at least said plurality of sense amplifier circuits and said intermediate voltage generating unit, said step-down power voltage being constant while said regular power voltage ranges from a first predetermined voltage level to a second predetermined voltage level, said step-down power voltage being proportional to and lower than said regular power voltage level after said regular power voltage level exceeds said second predetermined voltage level,

g-2) a first voltage detecting circuit monitoring said step-down power voltage level to see whether or not said regular power voltage level exceeds said second predetermined voltage level for producing said first control signal indicative of said regular power voltage level over said second predetermined voltage level, and

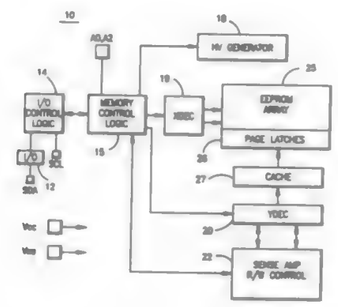
g-3) a second sub-system producing said boosted voltage level for distributing said boosted voltage level to at least said row address decoder and word line driver unit, and responsive to said first control signal for regulating said boosted voltage level first predetermined times larger than said step-down power voltage while said regular power voltage is lower than said second predetermined voltage level, said second sub-system being further operative to regulate said boosted voltage level second predetermined times larger than said step-down power voltage level after said regular power voltage level exceeds said second predetermined voltage level, said first predetermined times being different from said second predetermined times, said regular power voltage level being lower than said second predetermined voltage level in said standard modes and higher than said second predetermined voltage level in said burn-in testing process.

5,363,334

WRITE PROTECTION SECURITY FOR MEMORY DEVICE

Samuel E. Alexander, Gilbert; Richard J. Fisher, Phoenix, and Kent D. Hewitt, Tempe, all of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Apr. 10, 1993, Ser. No. 41,068
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **17 Claims**



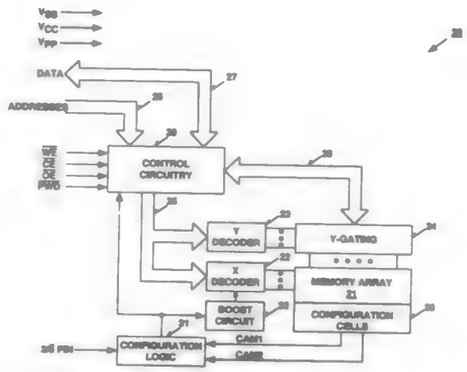
1. A security system for an erasable programmable memory device, comprising a plurality of contiguous data storage cells forming the data memory of the device, first means for storing the address of one of the contiguous data storage cells at which write protection is to be commenced to thereafter prevent the contents of that cell from being erased or overwritten, second means or storing the total number of the contiguous data storage cells over which write protection is to be provided so that thereafter none of the contents of any cell among those contiguous cells can be erased or overwritten, and means for selectively preventing the stored contents of at least one of the first and second means from being altered.

5,363,335

NONVOLATILE MEMORY WITH AUTOMATIC POWER SUPPLY CONFIGURATION

Owen Jungroth, Sonora, and Thomas C. Price, Fair Oaks, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 28, 1993, Ser. No. 127,943
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 **18 Claims**



3. A nonvolatile memory, comprising;

(A) a memory array:

(B) control circuitry having a boost circuit and coupled to the memory array for controlling memory operations with respect to the memory array. wherein the control circuitry can operate at either a first power supply voltage or a second power supply voltage:

(C) a power supply configuration circuit coupled to receive a power supply voltage indication signal for selectively configuring the control circuitry in accordance with the power supply indication signal to at one and second power supply voltages that is applied to the control circuitry, wherein when the power supply voltage indication signal is in a first state. the configuration circuit configures the control circuitry to operate at the first power supply voltage, wherein when the power supply voltage indication signal is in a second state, the configuration circuit configuration to control circuitry to operate at the second power supply voltage;

(D) an input pin coupled to the configuration circuit for receiving the power supply voltage indication signal from an external circuit and for applying the power supply voltage indication signal to the configuration circuit;

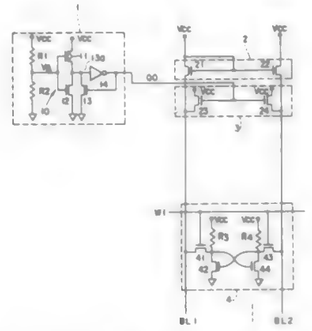
(E) a configuration memory coupled to the configuration circuit for storing configuration information to configure the configuration circuit to operate with respect to the power supply voltage indication signal, wherein the configuration memory can be in a first configuration state, a second configuration state, and a third configuration state, wherein when the configuration memory is in the first configuration state, the configuration circuit configures the control circuitry to operate in accordance with the power supply voltage indication signal, wherein when the configuration memory is in the second configuration state, the configuration circuit configures the control circuitry to operate at the first power supply voltage regardless of the power supply voltage indication signal, wherein when the configuration memory is in the third configuration state, the configuration circuit configures the control circuitry to operate at the second power supply voltage regardless of the power supply voltage indication signal.

5,363,336

SEMICONDUCTOR MEMORY DEVICE CONTROLLING THE SUPPLY VOLTAGE ON BIT LINES

Tomoaki Yabe, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 27, 1993, Ser. No. 68,535
Claims priority, application Japan, May 27, 1992, 4-135192
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **6 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells arrayed in a matrix and each connected to a word line and a pair of bit lines for supplying a power supply voltage;

control means for detecting a variation in the power supply voltage and outputting a control signal corresponding to a value of the power supply voltage;

a first bit line load having a first N-channel MOSFET and a second N-channel MOSFET whose current paths are connected to said pair of bit lines and to respective loading power supplies, and whose gate electrodes are connected in common to one of said loading power supplies; and

a second bit line load having a third N-channel MOSFET and a fourth N-channel MOSFET whose current paths are connected to said pair of bit lines, and whose gate electrodes are coupled to an output terminal of said control means so that said third N-channel MOSFET and said fourth N-channel MOSFET of said second bit line load receive the control signal from said control means when it is detected that the value of the power supply voltage exceeds a value of a reference voltage, thereby inactivating said second bit line load and decreasing the current flowing to said plurality of memory cells.

5,363,337

INTEGRATED CIRCUIT MEMORY WITH VARIABLE ADDRESSING OF MEMORY CELLS

Alan R. Reinberg, Westport, Conn., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 15, 1992, Ser. No. 914,480
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—230.06 **9 Claims**

1. An integrated circuit memory comprising:

a row decoder;

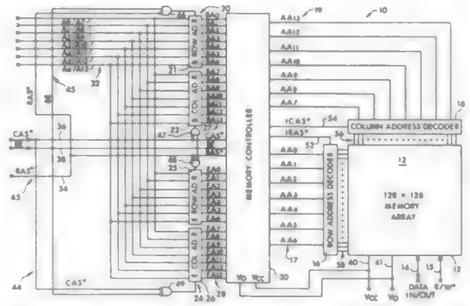
a column decoder;

a source of a memory input/output signal;

address input means for inputting a first cell address and a second cell address to said intergrated circuit, wherein said first cell address is a beginning address, said second cell address is an ending address, and said address input means comprises a beginning address register means for registering said beginning address and an ending address register means for registering said ending address;

memory controller means responsive to said first and second cell addresses for sequentially applying the addresses of cells between said first and second cell addresses to said row and column decoders; and

a memory cell circuit having an array of cells arranged in a plurality of rows and columns and responsive to said row



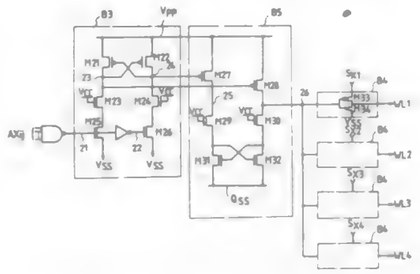
and column decoder and said input/output signal to output data from said memory cells between said first and second cell addresses and to input data to said memory cell between said first and second cell addresses.

5,363,338

WORD LINE DRIVING CIRCUIT FOR DYNAMIC RAM

Jong H. Oh, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Oct. 20, 1992, Ser. No. 963,810
Claims priority, application Rep. of Korea, Oct. 21, 1991, 1991-18516
Int. Cl.[5] G11C *13/00, 7/00*
U.S. Cl. 365—230.06 **4 Claims**



1. A word line driving circuit for a dynamic RAM comprising,

a number of CMOS type word line driving stages each including a P-channel MOS transistor and an N-channel MOS transistor;

a driving voltage source for generating a driving voltage much higher than a power source voltage by at least a threshold voltage of said N-channel MOS transistor;

a voltage level shifting means, connected to the driving voltage source for applying the driving voltage to a common gate electrode node of the CMOS type driving stages;

a means for generating a negative (−) voltage signal which varies between a ground voltage level and a predetermined negative voltage level below the ground voltage level; and

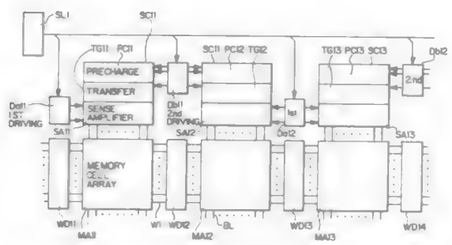
a negative voltage transferring means, connected to the voltage level shifting means, the means for generating a negative (−) voltage signal and the common gate electrode node of the CMOS type word line driving stages, for applying a voltage signal which varies between the driving voltage level and the negative voltage level, to the common gate electrode node.

5,363,339

SEMICONDUCTOR MEMORY DEVICE

Mamoru Fujita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 1, 1993, Ser. No. 159,560
Claims priority, application Japan, Dec. 1, 1992, 4-321745
Int. Cl.[5] G11C *11/407*
U.S. Cl. 365—230.06 **3 Claims**



1. A semiconductor memory device comprising: a plurality of memory cell arrays arranged in a matrix form, wherein said memory cell arrays are interconnected via rows of word lines and columns of bit lines;

a plurality of word drivers arranged in the rows of said matrix, parallel to the word lines and alternately with said memory cell arrays, each word driver driving any specified word line of the adjacent memory cell array to a select level,

a plurality of sensing circuits arranged in the memory cell array columns parallel to the bit lines and alternately with said memory cell arrays, each sensing circuit consisting of a precharge circuit, a transfer circuit and a sense amplifier; and

first and second driving circuits arranged alternately in the sensing circuit rows parallel to said word lines in order to interpose a sensing circuit between the first and second driving circuits adjacent each other, each sensing circuit being separated into first and second circuit parts, each first driving circuit driving said first circuit parts of the adjacent sensing circuits, and each second driving circuit driving said second circuit parts of the adjacent sensing circuits.

5,363,340

SEMICONDUCTOR MEMORY

Kimiyasu Ishikawa, and Kiyokazu Hashimoto, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,390
Claims priority, application Japan, Aug. 29, 1991, 3-245180
Int. Cl.[5] G11C *7/02, 7/00*
U.S. Cl. 365—233.5 **11 Claims**

1. A semiconductor memory comprising a digit line, a plurality of memory cells connected to said digit line, and a sense amplifier for detecting an electric potential of said digit line changed in accordance with information stored in said plurality of memory cells and amplifying said electric potential; wherein,

said sense amplifier has a bias circuit and a charging circuit, both for charging said digit line,

said bias circuit including;

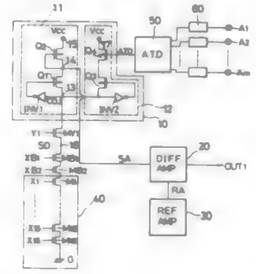
a first MOSFET having a source connected to said digit line, a second MOSFET provided between a power source and said first MOSFET, said second MOSFET acting as a load of said first MOSFET, and

a first inverter having an input end connected to a source of said first MOSFET and an output end connected to a gate of said first MOSFET;

said charging circuit including;

a third MOSFET having a source connected to said source of said first MOSFET,

a second inverter having an input end connected to a source of said third MOSFET and an output end connected to a gate of said third MOSFET, and



a fourth MOSFET provided between a drain of said third MOSFET and said power source, and fourth MOSFET receiving through its gate an output signal of an address transition detector and detecting an address change to generate a pulse signal;

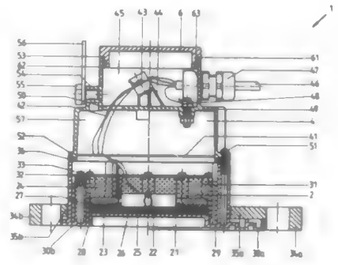
an input signal being supplied to said sense amplifier through said source of said first MOSFET, an output signal being derived from a connecting point of said first MOSFET and second MOSFET.

5,363,341

LEVEL MEASURING DEVICE WHICH CAN BE ASSEMBLED FROM COMPONENTS

Rolf Schwald, Schopfheim, and Edwin Steinebrunner, Todtnau, both of Germany, assignors to Endress u. Hauser GmbH u. Co., Germany

PCT No. PCT/DE90/00761, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO91/05226, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 5, 1990, Ser. No. 689,830
Claims priority, application Germany, Oct. 6, 1989, 3933474
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—140 **16 Claims**



1. A level measuring device for measuring the level of a material within a container, the level measuring device comprising an ultrasonic transducer for directing a transmitted pulse onto the surface of said material within said container and receiving the echo signal reflected at the surface of said material, an electrical circuit for exciting said ultrasonic transducer to oscillations and for converting said received reflected echo signal to an electrical signal which is transmitted to an evaluating device, said electronic circuit receiving the electri-

cal energy necessary for the operation of the level measuring device from said evaluating device, wherein

(a) said ultrasonic transducer is surrounded by a housing and together with said housing forms a first functional unit;

(b) said electrical circuit is surrounded by a hood and together with said hood forms a second functional unit;

(c)d said housing and said hood are detachably connected to each other;

(d) said housing is secured to a wall of said container enclosing said materials to be measured by means of a coupling flange which surrounds a sealing strip extending radially outwardly from the surface of said housing;

(e) said ultrasonic transducer is located in a cylindrical trough which is coupled to the sealing strip to reduce the effect of vibration of the container on the transducer;

(f) said ultrasonic transducer is covered on the side not facing said material to be measured by a steel plate which is borne by supports integrally formed with a ring zone of said housing and extending through the interior of said housing; and

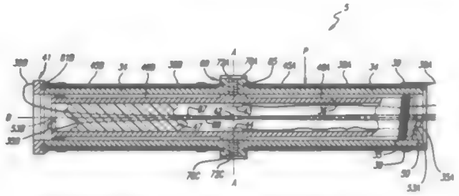
(g) on said hood a terminal space is integrally formed in the interior of which electrical connecting elements for connecting the level measuring device with said evaluating device are arranged and which is closed by a cover.

5,363,342

HIGH PERFORMANCE EXTENDED FIBER OPTIC HYDROPHONE

Michael R. Layton, Newbury Park; A. Douglas Meyer, Canoga Park, both of Calif., and Bruce A. Danver, Alexandria, Va., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 28, 1988, Ser. No. 187,166
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—149 **47 Claims**



1. An acoustic pressure sensor comprising:

A first cylindrical mandrel means that is a sense mandrel means, is hollow, and has a wall that is compliant in response to an incident acoustic pressure wave signal;

A first optical fiber wound around the circumference of said first mandrel means;

A second cylindrical mandrel means that is a support mandrel, is hollow, and has a wall that is noncompliant;

First means located on and extending above the circumference of said second mandrel means so as to support the inner wall of said first mandrel means for defining at least one first cavity backing a wound length of said first fiber when said second mandrel means is located in said first mandrel means;

A third cylindrical mandrel means that is hollow;

Second means located on and extending above the circumference of said third mandrel means so as to contact and be supported by the inner wall of said second mandrel means for defining at least one second cavity between said second and third mandrel means;

A second optical fiber wound around the circumference of said third mandrel means in the second cavities; and

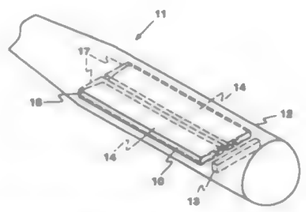
Third means for connecting points on said first and second fibers so as to form an interferometer.

5,363,343

FOLDED HYDROPHONE ARRAY FOR NARROW MARINE VEHICLES

Jerry G. Klein, Bellerose, N.Y., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Dec. 8, 1993, Ser. No. 162,930
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—154 **7 Claims**



1. A linear sonar hydrophone array extendible from a marine vehicle having a vehicle width, comprising:

first and second linear hydrophone array segments, each having an array segment width, extendible from a retracted position within said vehicle to an extended position projecting from said vehicle to form an extended array having an array width at least equal to the sum of said segment widths, said array width being substantially greater than said vehicle width,

extending means for moving said segments between said retracted and extended positions, and

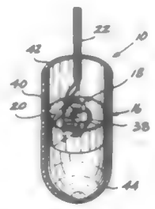
first and second stabilization fins movable between said retracted position and said extended position by said extending means, said first and second linear hydrophone array segments being installed on said first and second stabilization fins, respectively.

5,363,344

ACOUSTIC SENSOR HAVING A SHELL-MOUNTED TRANSDUCER

Michael E. Sofen, 2174 Golf Course Rd., Friday Harbor, Wash. 98250

Filed Aug. 10, 1987, Ser. No. 84,420
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—157 **6 Claims**



1. An acoustic sensor comprising:

an acoustically transmissive shell having an inner surface and an outer surface, the shell including a cylindrical body having a first end that is closed, a second end that is open, and a longitudinal axis; and

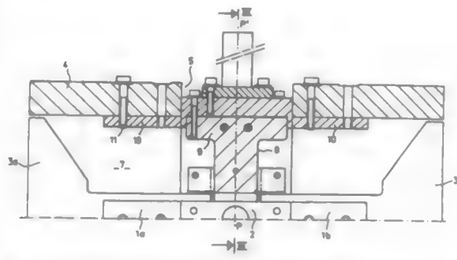
a transducer comprising a piezoelectric polymer tape, circumferentially secured to the inner surface of the body, for receiving acoustic energy through the shell from one or more directions normal to the axis and producing an electric signal in response thereto.

5,363,345

PROCESS AND ELECTRO-ACOUSTIC TRANSDUCERS FOR TRANSMITTING LOW-FREQUENCY ACOUSTIC WAVES IN A LIQUID

Didier Boucher, and Yves Ripoll, both of Six-Fours-Les-Plages, France, assignors to L'Etat Francais represente par . . . le Delegue Ministerial pour l'Armement, Paris, France

Filed May 3, 1989, Ser. No. 360,951
Claims priority, application France, May 5, 1988, 8806023
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—162 **13 Claims**



3. An electro-acoustic transducer comprising:

a cylindrical box open at both axial ends;

two identical electro-acoustic drivers located inside of said box;

a central counter-mass between said drivers; and

two horns in line coaxially with said box, said horns being located at axial ends of said drivers and said box, so that their outer faces are in contact with liquid and transmit low-frequency acoustic waves in said liquid when said two drivers are excited electrically;

said box delimiting a cavity with rear faces of said horns and with said electro-acoustic drivers, and said box being fitted with side holes and housing elastic tubes closed at both ends and filled with gas, dimensions and positions of said side holes and said tubes being determined so that a Helmholtz resonant frequency of said cavity will be close to a fundamental frequency of axial vibrations of a mechanical assembly constituted by said two electro-acoustic drivers, said counter-mass and said horns.

5,363,346

CONFORMING TUNING COUPLER FOR FLEXTENSIONAL TRANSDUCERS

John D. Maltby, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

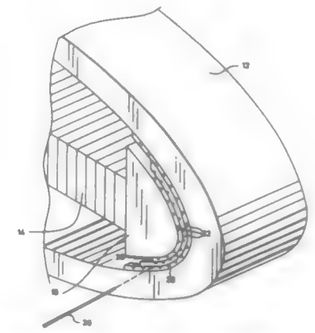
Filed Jan. 7, 1993, Ser. No. 1,438
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—163 **60 Claims**

1. A flextensional transducer comprising:

means for converting supplied energy into vibrational energy;

a flexural surface, having arcuate portions, operably coupled to said converting means to receive said vibrational energy and to flex in response thereto to transmit an acoustic wave, said flexural surface thus having both static and flexing states;

a pliant assembly positioned between said converting means and said flexural surface, said pliant assembly having arcuate portions biased in spring-like conformal engagement with said flexural surface arcuate portions during both said static and flexing states of said flexural surface; and



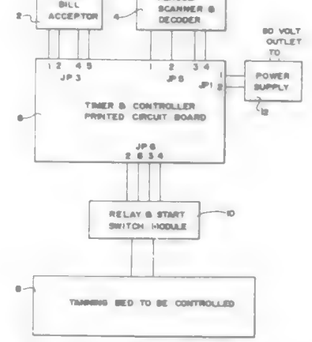
said pliant assembly including means for adjusting the stiffness thereof extending substantially along the entire length of said pliant assembly arcuate portions.

5,363,347

VENDING TANNING TIMER

Hap Nguyen, 17461 Pleasant Ct., Fountain Valley, Calif. 92708

Filed Feb. 24, 1994, Ser. No. 201,411
Int. Cl.[5] G04B *47/00;* **A61N** *5/06*
U.S. Cl. 368—10 **2 Claims**



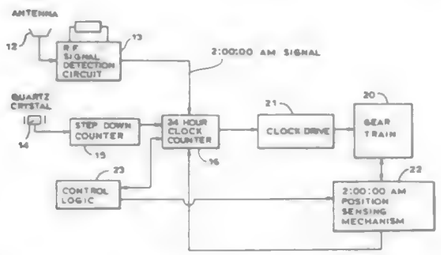
1. A tanning salon system for a plurality of subscribers, each subscriber having an identification code and a plurality of cards having different identification codes on each, said salon system comprising: tanning booth with means for emitting light, an activating means to render said booth operable, a vending stand having an insertion slot for said identification card and a money insertion slot, a card reader means in connection with said vending stand for reading said identification code on said card, a memory means for storing a plurality of said individual identification codes, a means for storing said identification codes in a second memory means for a short time period upon use of the tanning booth by those particular identification numbers, a means for comparing said identification code on said card with said codes in said second memory and for preventing the operation of said tanning booth in the event said identification code on said card matches one of said identification codes in said second memory, a means for recording time that tanning booth has been on, means for recording real time.

5,363,348

HIGH RESOLUTION, REMOTELY RESETTABLE TIME CLOCK

Madhav N. Damle, 100-25 Queens Blvd., Apt. 4N, Forest Hills, N.Y. 11375

Filed Sep. 4, 1992, Ser. No. 940,550
Int. Cl.[5] G04C *11/02*
U.S. Cl. 368—47 13 Claims



1. In a time keeping system of the type comprising a clock having hours, minutes, and seconds time indicating elements, pulse actuated drive means for progressively advancing said time indicating elements in increments of one second or less, and remotely located radio signalling means for periodically synchronizing said clock with respect with said signalling means, the improvement characterized by

(a) a crystal oscillator pulse generator for operating said pulse actuated drive means and operative to advance said time indicating elements with an expected level of accuracy within a few seconds per day,

(b) a resettable pulse counter actuated by said pulse generator and operative to count pulses of said pulse generator in increments corresponding to increments of advance of said time-indicating elements,

(c) said radio signalling means being adapted to generate a clock-reset signal at a precisely predetermined reset time each day,

(d) control means operative when the count of said pulse counter is a predetermined number of seconds earlier than said predetermined reset time to increase the rate of pulses delivered to said pulse actuated drive means, temporarily increasing the rate of movement of said time indicating elements,

(e) said predetermined number of seconds being at least slightly greater than the expected level of accuracy of said pulse generator,

(f) position sensing means operative when said time indicating elements are position precisely at the predetermined reset time for interrupting the flow of pulses to said pulse actuated drive means, whereby said time indicating elements remain fixed at the predetermined reset time,

(g) rf receiving means in said clock for selectively receiving said clock reset signal, and

(h) reset control means, responsive to receipt of said clock reset signal, for simultaneously resetting said pulse counter to its starting value and for resuming the flow of pulses to said pulse actuated drive means.

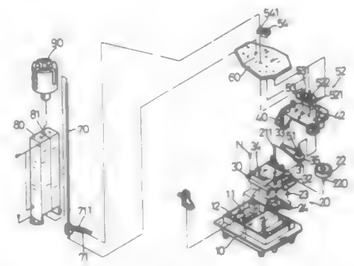
5,363,349

CLOCK ASSEMBLY HAVING A ROTATING DEVICE

Fu-Bing Huang, 58, Ma Yuan West St., Taichung, Taiwan, Prov. of China

Filed Apr. 18, 1994, Ser. No. 228,582
Int. Cl.[5] G04B *21/02*
U.S. Cl. 368—75 4 Claims

1. A clock assembly comprising a base, a seat and a frame fixed above said base, a motor fixed on said seat, a tape device for telling time being disposed in said base and coupled to said motor so as to be driven by said motor, a spindle rotatably supported on said frame, means coupling said tape to said spindle for rotating said spindle, a lever having a first end secured to said spindle and rotated in concert with said spindle and including an extension extended upward therefrom, a rod rotatably supported on said frame and including a leg laterally



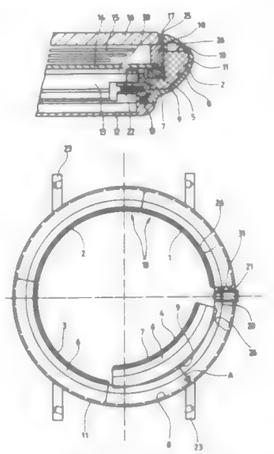
extended therefrom and having a groove formed therein for engaging with said extension of said lever such that said rod is rotated when said lever is rotated by said motor, a head fixed on top of said rod and rotated in concert with said rod for simulating the head of creature.

5,363,350

WATCH CASE WITH HOLLOWED-OUT CASEBAND

Miche Marr-André, Bienne, and Loichot Aimé, Cortébert, both of Switzerland, assignors to SMH Management Services AG, Bienne, Switzerland

Filed Nov. 26, 1993, Ser. No. 157,320
Claims priority, application Switzerland, Dec. 2, 1992, 03 696/92-0
Int. Cl.[5] G04B *37/00, 29/00*
U.S. Cl. 368—276 13 Claims



1. A watch case including a caseband-bezel provided with a hollow having a substantially arched profile opening out towards the interior of the case, a crystal and a back cover for retaining a movement surmounted by a dial and a casing ring arranged between the movement and the caseband, wherein the casing ring is made up from a plurality of juxtaposed segments partially engaged within the caseband hollow in order to overlay at least 85% of its periphery, the outer contour of said segments being formed so as to be in close contact with said substantially arched profile, maintaining means being applied so as to maintain said segments in place within said hollow, said

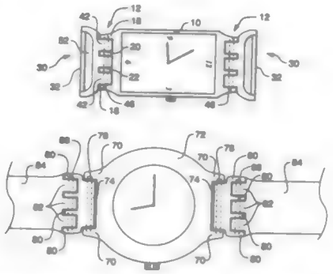
maintaining means extending in a housing provided in said segments.

5,363,351

WATCHBAND ADAPTOR FITTING FOR A WRISTWATCH CASING

Peter L. Carney, London, England, assignor to Chisco, Inc., Salt Lake City, Utah

Filed Jun. 29, 1993, Ser. No. 84,736
Int. Cl.[5] G04B *37/00*; A44C *5/18*
U.S. Cl. 368—282 13 Claims



1. Adaptor structure for attachment to the watch casing of a wristwatch comprising:

attachment structure configured to be positionable relative to, and securable to, the watchband securement means of a watch casing of a wristwatch; and

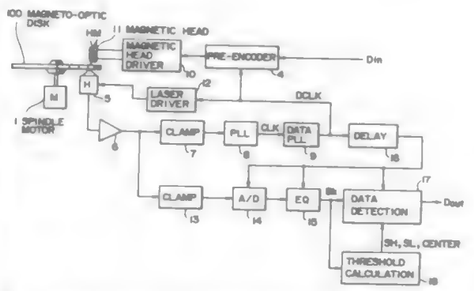
watchband retaining structure attached to said attachment structure, said watchband retaining structure providing a different means of attaching a watchband thereto than is provided by said watchband securement means of said watch casing, said watchband retaining structure being configured to provide pivotal articulation of said watchband thereabout.

5,363,352

MAGNETO-OPTIC DISK APPARATUS

Minoru Tobita, Tokyo, and Tamotsu Yamagami, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,112
Claims priority, application Japan, Feb. 10, 1992, 4-024036
Int. Cl.[5] G11B *11/00*
U.S. Cl. 369—13 6 Claims



1. A magneto-optic disk apparatus for a magneto-optic disk on which data are recorded in accordance with a magnetic field modulating method, the magneto-optic disk apparatus comprising:

means for driving the magneto-optic disk to rotate using a sample servo system;

means for reproducing the data from the magneto-optic disk to produce a reproduced signal;

equalizing means for equalizing the waveform of the reproduced signal applying partial response; and

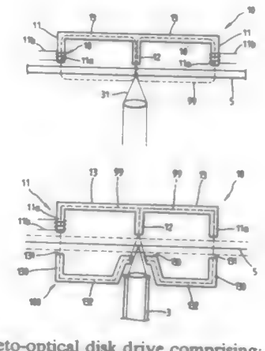
data detecting means for detecting data from the reproduced signal from the equalizing means applying viterbi decoding.

5,363,353

MAGNETO-OPTICAL DISK DRIVE HAVING MULTIPLE ELECTROMAGNET ELEMENTS

Young-woong Kim, Seoul; Ick-hyoung Yoo, Suwon, and Chul-woo Lee, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunki-do, Rep. of Korea

Filed Sep. 22, 1993, Ser. No. 124,762
Claims priority, application Rep. of Korea, Oct. 31, 1992, 92-20330
Int. Cl.[5] G11B *13/04*
U.S. Cl. 369—13 12 Claims



1. A magneto-optical disk drive comprising:

a driving apparatus for rotating a medium;

an electromagnet positioned above or below the medium for producing a magnetic field on a recording surface of the medium; and

an optical head by which laser light illuminates the recording surface and the laser light reflected from the recording surface is picked up,

wherein said electromagnet comprises a plurality of subdivided electromagnet elements, magnetic field concentration means by combining the electromagnet elements in a magnetic circuit and concentrating magnetic fields produced from the combined electromagnet elements on a portion of the electromagnet, and a center magnetic pole which provided in an opposing position with respect to the optical head, to make the magnetic field concentrated by the magnetic field concentration means pass through the recording surface of the medium.

5,363,354

DISK PLAYER WITH VARIABLE LEVEL SEARCH TIME

Yoichi Tabuchi, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

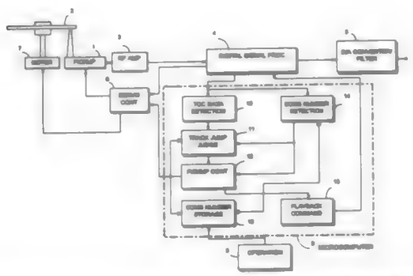
Continuation of Ser. No. 604,897, Oct. 30, 1990, abandoned. This application Feb. 11, 1993, Ser. No. 16,197
Claims priority, application Japan, Nov. 1, 1989, 1-287066; Dec. 15, 1989, 1-326548
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 9 Claims

1. A disk player for reproducing information from a disk-like information recording medium having a plurality of tracks in which information is recorded, said recording medium comprising a Table of Contents (TOC) Area and an area wherein said information is organized in a plurality of sections, each of said sections having a respective time length, said recording medium also having time-information recorded therein which is indicative of the playing time length of each of said sections,

and wherein when said recording medium is loaded in said disk player, information recorded in said Table of Contents (TOC) Area is read, information to be reproduced is selected by performing a programming operation, and a track of said information is searched based on said information recorded in said Table of Contents (TOC) Area, said disk player comprising:

a reproducing head for reading said recorded information, said recorded information containing said time-information;

detecting means for detecting said time-information recorded in said Table of Contents (TOC) Area and read by said reproducing head when said recording medium is loaded into the disk player;



judging means for receiving said detected time-information from said detecting means and for determining a degree of tracks to be track jumped corresponding to said detected time-information;

track jump means for receiving said degree of tracks from said judging means and for changing a relative location of said reproducing head; and

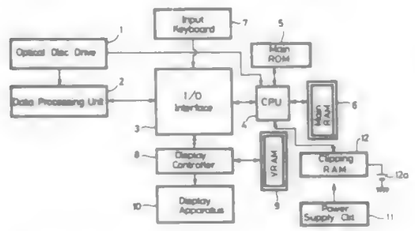
level search means, connected to said track jump means and said reproducing head, for alternately initiating said track jump of said reproducing head and a reproduction of said recorded information in at least one of said sections and for detecting one or more output levels of said recorded information.

5,363,355

CD-ROM DISC REPRODUCING APPARATUS WITH CLIPPING MEMORY

Koji Takagi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,570
Claims priority, application Japan, Apr. 8, 1992, 4-087334
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—32 **9 Claims**



1. A CD-ROM disc reproducing apparatus comprising:

a) disc drive means for reproducing data from a CD-ROM disc;

b) control means coupled to the disc drive means for controlling operations of the disc drive means;

c) user controllable input means coupled to the controlling means for entering data and command signals to the control means, including search commands for finding and reproducing data from the CD-ROM disc;

d) display means for displaying at least the data reproduced from the CD-ROM disc by the disc drive means; and

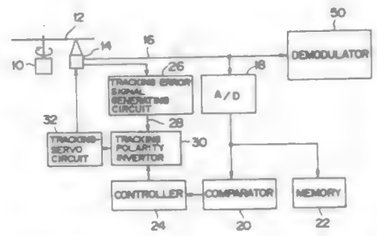
e) clipping memory means coupled to the control means for selectively storing at least a portion of the data reproduced from the CD-ROM disc upon entry of a clipping command by the user through the input means.

5,363,356

TRACKING APPARATUS FOR OPTICAL DISK AND TRACKING METHOD OF THE SAME WITH TRACKING POLARITY INVERTOR RESPONSIVE TO DISK TYPE

Satoru Tanaka; Shuichi Yangisawa, and Fumio Matsui, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 29, 1993, Ser. No. 158,915
Claims priority, application Japan, Nov. 30, 1992, 4-320635
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.29 **11 Claims**



1. A tracking apparatus for an optical disk, which has a pit array along a predetermined track, comprising:

an optical pickup for irradiating a light beam to said optical disk, and receiving a light modulated and reflected by said optical disk;

a tracking error signal generating circuit for generating a tracking error signal on the basis of an output signal of said optical pickup;

a tracking servo circuit for making the light beam follow the pit array when a polarity of the tracking error signal changes;

a comparing circuit for comparing an amplitude of a first RF signal, which is output from said optical pickup when the polarity of the tracking error signal changes from a first polarity to a second polarity which is reverse to the first polarity, and an amplitude of a second RF signal, which is output from the optical pickup when the polarity of the tracking error signal changes from the second polarity to the first polarity, with each other; and

a tracking polarity inverting circuit for selectively inverting a tracking polarity of said tracking servo circuit on the basis of a comparison result of said comparing circuit.

5,363,357

FOCUS CONTROL SYSTEM

Masaki Niwayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,529
Claims priority, application Japan, Oct. 16, 1991, 3-266621
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—44.27 **34 Claims**

1. A focus control system comprising:

a light source outputting a light beam;

optical means for focusing said light beam produced by said light source and for collecting a reflected beam of said light beam from a recording surface of a recording medium;

optical sensor means for converting said reflected light beam into electrical signals;

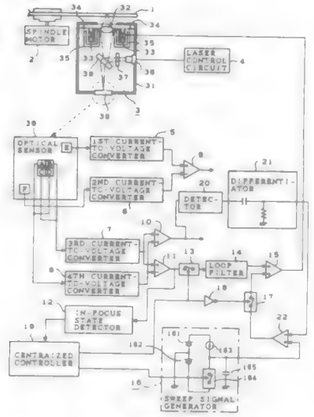
focus error detection means for producing an error signal indicative of a distance between said light beam's focus position and said recording medium surface;

focus moving means for driving said optical means so as to move said focus position;

an automatic focus control system which drives said focus moving means in accordance with said error signal so that said focus position of said light beam is located on said recording medium surface;

means for opening or closing a control loop of said focus control system;

detection means for detecting an envelope of at least one of said electrical signals;



differentiation means for differentiating an output of said detection means to obtain a signal representing a relative velocity of said optical means to said recording medium;

in-focus state detection means for detecting an in-focus state based on at least said error signal;

sweep signal generation means for generating a sweep signal for moving said focus position;

sweep control means for driving said focus moving means in accordance with said sweep signal and an output of said differentiation means; and

control means for controlling said loop opening/closing means in response to the result of detection of said in-focus state detection means.

5,363,358

OPTICAL DISC APPARATUS WITH SELECTION OF THREE-BEAM AND PUSH-PULL SYSTEMS

Naoharu Yanagawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

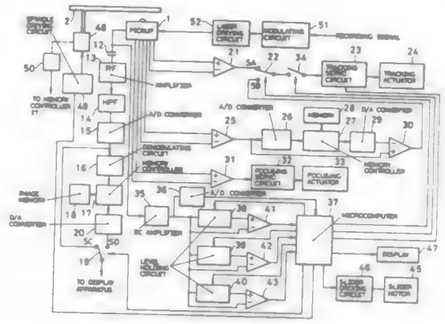
Filed Nov. 23, 1993, Ser. No. 155,700
Claims priority, application Japan, Nov. 24, 1992, 4-313619
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.29 **2 Claims**

1. An optical disc apparatus for recording an information signal to an optical disc and for reproducing the recorded information signal, comprising:

recording means for recording a level setting signal indicative of a recording level into a predetermined region of the disc when the information signal to be recorded is recorded on the disc;

memory means for reading out the level setting signal from said predetermined region by a pickup and storing when the information signal recorded on the disc is reproduced;

comparing means for comparing a signal level read out from a region other than said predetermined region of the disc by said pickup and the level setting signal stored in said memory means; and



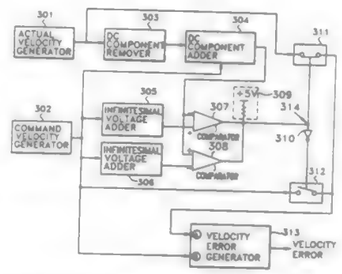
tracking servo means for selectively performing a tracking servo operation of either one of a three-beam system and a push-pull system operative in accordance with the result of the comparison by the comparing means.

5,363,359

METHOD AND APPARATUS FOR GENERATING VELOCITY ERROR SIGNALS

Cheol-won Lee, Euiwang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 14, 1993, Ser. No. 135,622
Claims priority, application Rep. of Korea, Mar. 31, 1993, 93-5200
Int. Cl.[5] G11B *7/085*
U.S. Cl. 369—44.28 **6 Claims**



1. A velocity error signal generation method for controlling a velocity by comparing an actual velocity signal from an actual velocity generator with a command velocity signal from a command velocity generator, said method comprising the steps of:

generating a comparison signal from an actual velocity signal;

generating a reference signal from a command velocity signal;

comparing the comparison signal with the reference signal; and

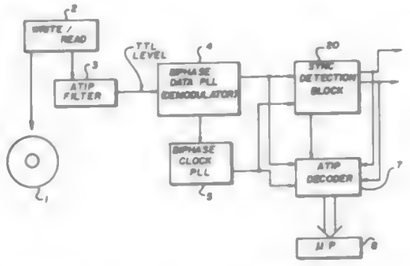
determining which of the actual velocity signal and the command velocity signal will be used as an input for generating a velocity error signal in response to the result of the comparing step.

5,363,360

METHOD AND APPARATUS FOR DETECTING AND PROCESSING SYNCHRONIZATION MARKS EXTRACTED FROM A PRERECORDED WOBBLED GROOVE ON A COMPACT DISK

Michael G. Fairchild, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 27, 1993, Ser. No. 127,218
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—48 **5 Claims**



1. A method for detecting and processing synchronization marks extracted from a prerecorded wobbled groove formed in a compact disk in order to produce pseudo-sync signals, each pseudo-sync signal enabling a writing sequence on said compact disk of an associated writer, said prerecorded wobbled groove having a plurality of blocks of information, said method comprising the steps of:

(a) extracting an FM signal from the wobbled groove when the disk is rotatably driven and converting such FM signal into biphase data;

(b) extracting a clock signal from the biphase data;

(c) detecting in each block of information a predetermined sequence of biphase data representing a sync mark by using the clock signal and the biphase data to produce a sync detect signal;

(d) generating a time window signal in which, for a given block of information, a valid sync detect signal is expected to occur, said time window signal being generated from a valid sync detect signal of the block preceding said given block;

(e) in response to a valid sync detect signal detected within the window signal of a given block of information, generating a pseudo-sync signal in the next block of information;

(f) in the case of no valid sync detect signal within the window signal of said given block of information, generating a pseudo-sync signal in the next block of information from the last valid sync detect signal; and

(g) indicating a system error when a predetermined number of sync detect signals are not detected within their corresponding time window signal.

5,363,361

INFORMATION RECORDING DEVICE HAVING VARIABLE DATA TRANSFER RATES AND VERIFICATION OF RECORDING QUALITY

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Filed Sep. 28, 1992, Ser. No. 952,027
Claims priority, application Netherlands, Mar. 4, 1992, 9200397
Int. Cl.[5] G11B *3/90*
U.S. Cl. 369—54 **5 Claims**

1. A device for recording information on a recording track of a record carrier at a rate greater than that at which the information is received, said device comprising:

a read and write head for producing a scanning spot at a position on the recording track determined by the position of the read and write head relative to the record carrier;

scanning means for translating the read and write head so that the scanning spot scans along the recording track;

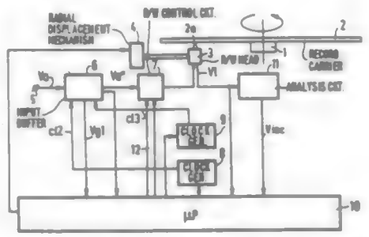
said read and write head being adapted to be selectively set to either of a write state and a read state, in the write state being responsive to a write signal supplied thereto to record an information pattern corresponding to said write signal in the portion of the recording track then being scanned, and in the read state producing a read signal corresponding to a recorded information pattern in the portion of the recording track then being scanned;

an input buffer memory for successively receiving and temporarily storing successive packets of the information to be recorded;

buffer control means for retrieving the stored information packets from the input buffer at a rate higher than the rate at which they are received in the input buffer;

a write control circuit coupled to said read and write head and to the input buffer for receiving each packet of information retrieved from the input buffer, converting said packet into a write signal, supplying said write signal to said read and write head, and setting said read and write head to said write state so as to record said write signal as an information pattern on said recording track;

system control means coupled to said read and write head, said write control circuit, said scanning means and said buffer control means, said system control means being programmed to:



(i) cause said buffer control means to interrupt retrieval of stored information packets from the input buffer during periodic interruption intervals so as to maintain a filling level of the input buffer between predetermined limits;

(ii) during each retrieval interruption interval cause said write control circuit to set the read and write head to the read state and cause said scanning means to return the read and write head to again scan the portion of the recording track wherein the last information packet already retrieved from the input buffer has been recorded and produce a read signal corresponding to said last recorded information packet; and

(iii) upon completion of each retrieval interruption interval, cause said write control circuit to return the read and write head to the write state and cause said buffer control means to resume retrieval of packets of information from the input buffer, so that recording of succeeding packets of information is resumed; and

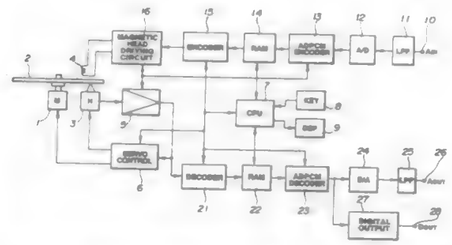
analysis circuit means coupled to said read and write head to receive the read signals produced thereby during said retrieval interruption intervals, and derive from said read signals a signal indicative of the quality of the recorded information patterns produced on said track during recording, whereby the retrieval interruption intervals for maintaining a predetermined filling level of the buffer memory are also utilized to derive an indication of the quality of the recorded information patterns produced during recording.

5,363,362

APPARATUS FOR REPRODUCING RECORDED DATA COMPRISING INTERLEAVED CLUSTERS AND CLUSTER LINKING SECTORS

Yasuaki Maeda; Ryo Ando, both of Tokyo; Hideo Obata, Kanagawa; Hideki Nagashima, Tokyo; Tadao Yoshida, Kanagawa; Kazuhiko Fujiie, Tokyo; Hirotoshi Fujisawa, Tokyo, and Hiroshi Mukawa, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 746,787, Jul. 16, 1991, Pat. No. 5,243,588.
This application Apr. 15, 1993, Ser. No. 48,359
Claims priority, application Japan, Aug. 24, 1990, 2-22281
Int. Cl.[5] G11B *5/09*
U.S. Cl. 369—54 **3 Claims**



1. A disc reproducing apparatus for reproducing record data continuously recorded on a disc-shaped recording medium, said apparatus comprising:

reproducing means for reproducing record data comprising time compressed, interleaved digital data clusters and cluster-linking sectors, where each of the cluster-linking sectors is concatenated between two of the clusters, wherein each of the cluster-linking sectors has a duration longer than an interleaving period, wherein the digital data in each of the clusters are interleaved in accordance with said interleaving period,

decoding means for receiving reproduced data from the reproducing means and generating decoded digital data from which said cluster-linking sectors have been removed,

storage means, connected to the decoding means, for storing intermittently received bursts of the decoded digital data from which said cluster-linking sectors have been removed,

time expanding means for reading deinterleaved, decoded digital data from said storage means and processing said deinterleaved, decoded digital data read from the storage means to generate time-expanded output signals, and

control means for effecting writing control on said storage means, including means for generating a control signal on determining that an amount of said decoded digital data stored in said storage means is lower than a predetermined amount of data, and supplying said control signal to the reproducing means to cause the reproducing means to reproduce a further amount of said record data for processing in the decoding means and storage in said storage means to increase the amount of decoded data in the storage means to an amount not less than said predetermined amount of data.

5,363,363

APPARATUS AND METHOD FOR LASER NOISE CANCELLATION IN AN OPTICAL STORAGE SYSTEM USING A FRONT FACET MONITOR SIGNAL

Edward C. Gage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

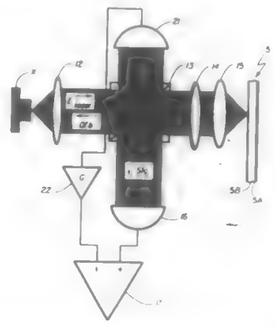
Filed Oct. 16, 1992, Ser. No. 961,965
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **16 Claims**

1. A read/write head in an information storage system, wherein information is stored in a storage medium having properties which can be altered to provide a controllable interaction with an impinging radiation beam, said information being stored and retrieved with said radiation beam, said read/write head comprising:

a laser unit;

a beam splitter providing a first radiation beam and for providing a second radiation beam from said laser unit;

focusing means for focusing said first radiation beam on said storage medium;



first detection means for detecting radiation reflected from said optical medium and deflected by said beam splitter;

second detection means for detecting said second radiation beam deflected from said beam splitter; and

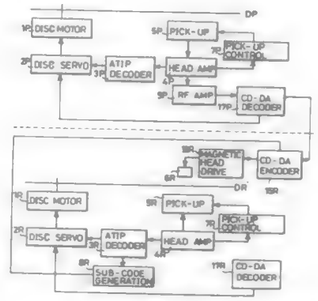
combining means for combining signals from said first detection means and from said second detection means to cancel noise generated by said laser unit.

5,363,364

AUDIO DATA RECORDING/REPRODUCING APPARATUS HAVING DIGITAL HIGH-SPEED DUBBING FUNCTION

Kenji Torazawa; Yasuhiro Ishii; Tateo Toyama; Shin'ichiro Tomisawa, and Nagatoshi Sugihara, all of Gifu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 30, 1992, Ser. No. 876,365
Claims priority, application Japan, May 7, 1991, 3-101518
Int. Cl.[5] G11B *5/02, 27/02*
U.S. Cl. 369—124 **3 Claims**



1. A magneto-optical reproducing apparatus comprising:

disc rotating means for rotating a disc at a fixed linear velocity, said disc contains a single continuous spiral recording track wherein said track contains compressed digital audio data obtained by compressing audio data such that a reduced data amount is recorded on said track with a time base of said audio data being compressed

intermittent reproducing means for intermittently reproduc-

ing said compressed digital audio data from said recording track of said disc rotated by said disc rotating means at said fixed linear velocity,

memory means, connected to said reproducing means, for storing said compressed digital audio data reproduced by said intermittent reproducing means,

data expanding means, connected to said memory means, for expanding said compressed digital audio data stored in said memory means to form first reproduced audio data, and

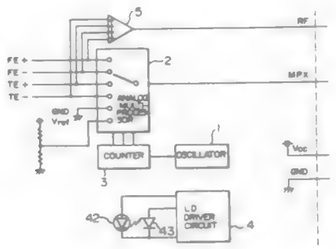
continuous reproducing means for continuously reproducing said compressed digital audio data from said recording track of said disc rotated by said disc rotating means at said fixed linear velocity to continuously output the compressed digital audio data as second reproduced audio data.

5,363,365

OPTICAL PICKUP APPARATUS INCLUDING A MOVEABLE PICKUP DRIVER USING A MULTIPLEXER FOR REDUCING THE NUMBER OF SIGNAL LINES

Takumi Ajima, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 7, 1993, Ser. No. 1,625
Claims priority, application Japan, Jan. 14, 1992, 4-004510
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—124 **1 Claim**



1. An optical pickup apparatus comprising:

a pickup driver part including a semiconductor laser emitting a laser beam for forming a spot of the laser beam on a recording surface of a recording medium;

control means for controlling the operation of said pickup driver part; and

a plurality of signal wires connected between said pickup driver part and said control means for transmitting and receiving signals therebetween,

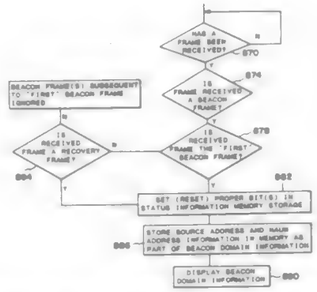
wherein said pickup driver part includes signal selector means for selecting one of a plurality of input signals and outputting the selected signal, and counter means for supplying signal selecting information to said signal selector means in a time division mode, such that the plural input signals can be supplied by said plural signal wires in a time division multiplex mode, said plural input signals being supplied together with a reference voltage signal by said plural signal wires on the signal transmitting side, and the level differential between said selected signal and said reference voltage signal is detected on the signal receiving side.

5,363,366

TOKEN RING LOCAL AREA NETWORK TESTING APPARATUS FOR OBTAINING BEACON DOMAIN INFORMATION

Thomas S. Wisdom, Jr., Colorado Springs, and David G. Fish, Monument, both of Colo., assignors to Forte Networks, Inc., Colorado Springs, Colo. and Fluke Corporation, Everett, Wash.

Filed Jan. 11, 1993, Ser. No. 3,234
Int. Cl.[5] H04J *3/14*; H04L *12/26, 12/42*
U.S. Cl. 370—13 **16 Claims**



1. A method for monitoring a fault in a token ring local area network, comprising:

inserting a testing apparatus into a token ring:

obtaining an initial beacon frame by said testing apparatus indicative of a first fault in the token ring, with contents of said initial beacon frame including a source address and a nearest active upstream neighbor address;

receiving a subsequent beacon frame by said testing apparatus that occurs after said initial beacon frame, with contents of said subsequent beacon frame including a source address and a nearest active upstream neighbor address that are different from said source address and said nearest active upstream neighbor address of said initial beacon frame;

storing said source address and said nearest active upstream neighbor address of said initial beacon frame in memory;

checking for recovery of the token ring from the first fault; and

displaying said source address and said nearest active upstream neighbor address of said initial beacon frame.

5,363,367

DATA TRANSMISSION SYSTEM USING AN OPTICAL FIBER LOOP

Isao Kobayashi, and Hirotaka Kumata, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,397
Claims priority, application Japan, Sep. 19, 1991, 3-266912; Sep. 19, 1991, 3-266913; Sep. 19, 1991, 3-266915
Int. Cl.[5] H04L *1/16*; H04J *3/16*
U.S. Cl. 370—16 **12 Claims**

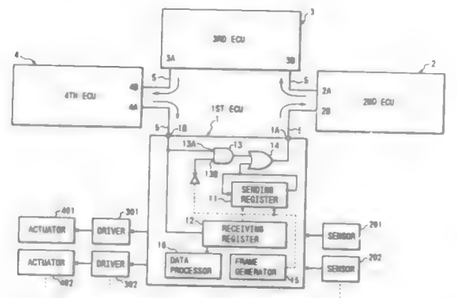
1. A data transmission system comprising a plurality of data processing units having data input and output terminals, and optical fibers for connecting the output terminal of a preceding data processing data processing unit with the input terminal of a succeeding data processing unit, said plurality of data processing units being interconnected in a daisy chain by connecting all the input and output terminals of each said data processing unit to the output and input terminals of the adjoining data processing units by the optical fibers, each data processing unit comprising:

optical/electrical converter means for converting optical signal data supplied from said preceding data processing unit through said optical fiber to electrical signal data,

electrical/optical converter means for converting electrical signal data to be sent to said succeeding data processing unit to optical signal data,

data receiving means for receiving the output of said optical-/electrical converter means, and

gate means connected between said optical/electrical converter means and electrical/optical converter means, said



gate means being closed when said data transmission system performs data transmission therefrom, and being opened in an alternative data receive/pass mode,

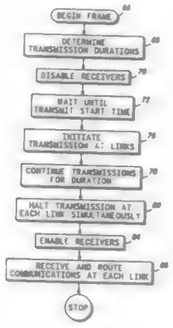
the data to be transmitted including a data length area, and at least one of said data processing units comprising means for adding data to the data transmitted from another data processing unit, and means for rewriting said data length area in the data transmitted from said other data processing unit when new data is multiplexed with the data transmitted from said other data processing unit.

5,363,368

SIMULTANEOUS TDMA COMMUNICATION SYSTEM

Gregory B. Vatt, Mesa, Ariz., and Raymond J. Leopold, Colorado Springs, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 26, 1992, Ser. No. 889,001
Int. Cl.[5] H04L *5/14*
U.S. Cl. 370—24 **29 Claims**



1. A method of communicating data between first and second nodes through a single communication channel, said first and second nodes having first and second timers, respectively, said method comprising the steps of:

a) transmitting for a first duration, beginning at a first point first data into said single communication channel from said first node;

b) transmitting for a second duration, beginning at substantially said first point in time, second data into said single communication channel from said second node;

c) receiving for at least said first duration, beginning at a second point in time which occurs after said first point in time, said first data from said single communication channel at said second node; and

d) receiving for at least said second duration, beginning at substantially said second point in time, said second data from said single communication channel at said first node, and

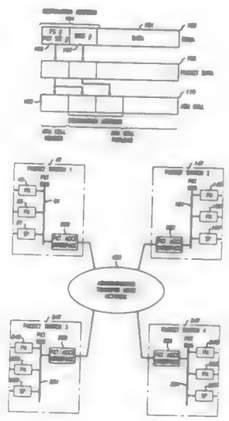
e) synchronizing said first and second timers so that both of said timers indicate the occurrence of said first and second points in time at substantially the same instant.

5,363,369

SYSTEM FOR INTER PACKET COMMUNITY COMMUNICATION

Jayant G. Hemmady, Naperville; Craig P. Reilly, Carol Stream; Neil J. Romy, Lisle, and Ronald A. Spanke, Wheaton, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1993, Ser. No. 40,818
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **32 Claims**



1. In a network comprising a plurality of packet switch communities, each of said packet switch communities having a plurality of endpoints connected to a means for transporting packets among said endpoints, each of said packet switch communities having a unique address and each of said endpoints in said packet switch communities having an address unique within its packet switch community, a connectionless system for delivering packetized data from one endpoint to another endpoint responsive to a destination address comprising a first field representing a packet switch community address and a second field representing a destination endpoint address within that packet switch community, said system comprising:

means at each of said endpoints for sending said packetized data to its transporting means, said packetized data including said destination address;

means at each of said packet switch communities responsive to said first field of said destination address for offering said packetized data to a switching means;

switching means responsive to said first field for delivering said packetized data to a packet switch community identified by said first field;

means at each of said packet switch communities for receiving said packetized data from said switching means and offering said packetized data to said endpoints; and

means at said endpoints responsive to said first and second address fields for accepting said packetized data, wherein only an endpoint in a packet switch community identified by said first address field having an address corresponding

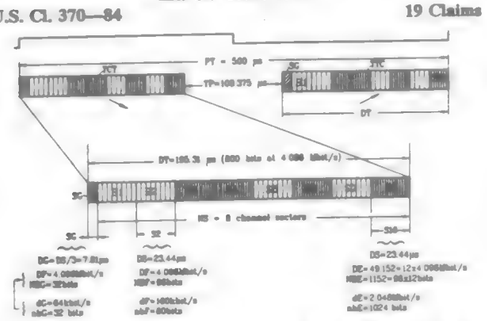
to said address in said second address field accepts said packetized data.

5,363,370

MULTIRATE DIGITAL MULTIPLEXING DEMULTIPLEXING METHOD AND DEVICE

Jacques Abiven, Plouaret, France, assignor to France Telecom, Paris, France

Continuation of Ser. No. 786,763, Nov. 1, 1991, abandoned. This application Jan. 18, 1994, Ser. No. 181,976
Claims priority, application France, Nov. 9, 1990, 90 13923
Int. Cl.[5] H04J 3/22
U.S. Cl. 370—84 19 Claims



1. A method for multiplexing a plurality of parallel digital channels having different primary channel rates (dF, dE), respectively, into a digital frame having a predetermined frame duration (DT) and a predetermined frame period (PT), comprising the steps of:

forming a digital frame (TCT) including a plurality of sectors (S1–S8) each having a predetermined sector duration (DS); and

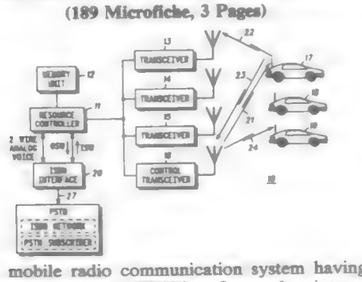
(b) allocating said sectors to said digital channels, respectively, at least some of said sectors (S2, S8) having different on-line sector rates (DF, DE) that are higher than the primary channel rates (dF, dE) of the associated digital channels, respectively, said different on-line sector rates being submultiples of the highest one of said sector on-line rates, whereby said sectors coincide with integer numbers of bits of said digital channels, respectively, irrespective of said on-line sector rates of said sectors.

5,363,371

MOBILE ISDN RADIO SYSTEM

Asim K. Roy, Naperville; Richard A. Comroe, Dundee, and Robert W. Furtaw, Arlington Hts., all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 598,081, Oct. 16, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 87,015
Int. Cl.[5] H04J 3/12
U.S. Cl. 370—79 11 Claims
MICROFICHE APPENDIX INCLUDED
(189 Microfiche, 3 Pages)



1. In a mobile radio communication system having a resource controller with an ISDN interface and an interconnect interconnecting the ISDN interface to a PSTN with an ISDN offering ISDN services, and at least one communication unit requesting communication services involving ISDN services, a method of providing the communication services to the requesting communication unit, such method comprising the steps of:

A) transmitting an inbound communication on a radio frequency channel from the communication unit to the resource controller requesting access to a communication target;

B) receiving and decoding the inbound communication to identify the target;

C) communicating target identity to the ISDN interface;

D) determining, upon occasion, whether an access code of the target is listed in a routing table within a memory operatively coupled to the ISDN interface;

E) recovering the access code from the routing table and a set of control words associated with the requesting communication unit specifying an ISDN environment from the memory; and,

F) transmitting by the ISDN interface the access code and the set of control words to the ISDN.

5,363,372

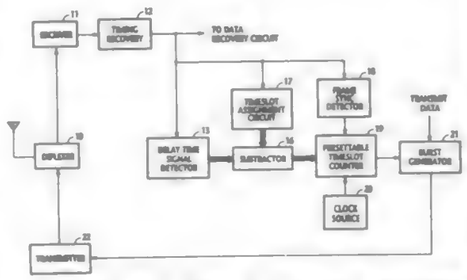
Patent Not Issued For This Number

5,363,373

DIGITAL MOBILE STATION USING PRESETTABLE TIMESLOT COUNTER FOR COMPENSATING FOR PROPAGATION DELAY TIME

Kenji Nakahara, and Jiro Tsudoda, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,173
Claims priority, application Japan, Apr. 30, 1991, 3-128566
Int. Cl.[5] H04J 3/06; H04L 7/00
U.S. Cl. 370—95.1 2 Claims



1. A digital mobile station for receiving a time-division multiplex (TDM) signal from a cell site of a cellular mobile communications system, the TDM signal containing a sequence of frames each containing a frame sync signal, a timeslot assignment signal indicative of the position of an assigned timeslot in said frame and a signal indicating a propagation delay time from the cell site and said mobile station, comprising:

detector means for detecting said delay time indicating signal from the received TDM signal;

timeslot assignment means for detecting said timeslot assignment signal and producing a timeslot count value representing the amount of time from the reception of a frame sync signal to the time of transmission of a burst signal from the mobile station,

subtractor means for subtracting the delay time indicating signal detected by said detector means from said timeslot count value detected by said timeslot assignment means and producing a subtracted timeslot count value;

frame sync detector means for detecting said frame sync signal from each frame of the received TDM signal;

a clock pulse source for generating clock pulses;

a presettable timeslot counter arranged to be set by said subtracted timeslot count value from said subtractor means and counting said clock pulses in response to said frame sync signal detected by said frame sync detector means and producing a timing pulse when the count of the clock pulses is equal to said preset count value; and

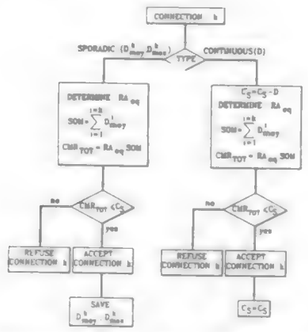
means for transmitting said burst signal to said cell site in response to said timing pulse.

5,363,374

METHOD FOR ALLOCATING RESOURCES BY ANTICIPATED RESERVATION IN AN INTEGRATED SERVICE SATELLITE NETWORK

Tarif Zein Al Abedeen, Toulouse; Gérard Maral, Goyrans; Dominique Seret, Gif Sur Yvette, and Marc Toudriaux, Castanet, all of France, assignors to France Telecom, Paris, France

PCT No. PCT/EP92/02292, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO93/07694, PCT Pub. Date Apr. 15, 1993
PCT Filed Oct. 2, 1992, Ser. No. 66,110
Claims priority, application France, Oct. 4, 1991, 91 12257
Int. Cl.[5] H04B 7/212, 7/185
U.S. Cl. 370—95.3 4 Claims



1. In a satellite asynchronous time-division telecommunication network, a method for allocating resources to earth stations by a central station, said earth stations receiving bursts of data cells transmitted by user stations during respective sporadic connections after set-up of said connections, said sporadic connections being defined by respective average lengths of bursts being transmitted, sporadicnesses and maximum bit rates, said method comprising the following steps:

in said central station, deciding between an acceptance and a refusal of a request for a sporadic connection to be set up, said request being transmitted in the form of a request message for sporadic connection in a signalling sub-frame of a time-division multiple access periodic frame from one of the earth stations to said central station, said decision being determined as a function of an algorithm in which said average lengths of bursts and sporadicnesses are considered as predetermined constants and which depends on maximum bit rates and average bit rates of sporadic connections in process and said to-be-set-up sporadic connection, a maximum bit rate and an average bit rate relating to said to-be-set-up sporadic connection being included in said request message for sporadic connection,

subsequent to an acceptance of said to-be-set-up sporadic connection thereby defining a sporadic connection being set up, transmitting a resource allocation request message in said signalling sub-frame from said one of the earth stations to said central station in response to the beginning of reception and storing in said one of the earth stations each one of the bursts of said sporadic connection being set up which are transmitted by a user station connected to said one of the earth stations,

in said central station, anticipatory reserving a resource in the form of a time interval in a data sub-frame of said time-division multiple access periodic frame, for said each one of the bursts as soon as a time interval of said data sub-frame is released so that said one of the earth stations can begin transmitting said each one of the bursts while continuing to store said each one of the bursts, and

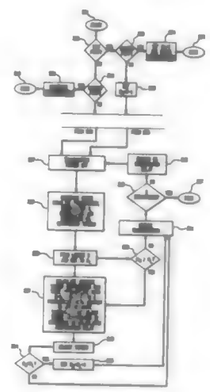
after said one of the earth stations has completely received said each one of the bursts, transmitting an end message in said signalling sub-frame from said one of the earth stations to said central station, said message including a length indication of said each one of the bursts, thereby releasing said resource allocated to said each one of the bursts when the whole of said each one of the bursts has been transmitted by said one of the earth stations.

5,363,375

METHOD AND APPARATUS FOR SYNCHRONIZING TIMING AMONG RADIO PORTS IN WIRELESS COMMUNICATIONS SYSTEMS USING HIERARCHICAL SCHEME

Justin C. Chuang, Holmdel, and Nelson R. Sollenberger, Tinton Falls, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jul. 30, 1993, Ser. No. 100,020
Int. Cl.[5] H04B 7/26, 7/212; H04J 3/06
U.S. Cl. 370—95.3 32 Claims



1. A method of synchronizing timing in a frequency-reusing radio communications system having a plurality of fixed base units and a plurality of mobile transceivers, at least one of said fixed base units being a master base unit which is time synchronized to a common timing reference, each fixed base unit having a transmitter for transmitting a downlink signal at an assigned downlink frequency to at least one mobile transceiver, a receiver for receiving an uplink signal at an associated uplink frequency from at least one mobile transceiver and for receiving downlink signals at all the downlink frequencies being transmitted by the other of the plurality of fixed base units in the system, means adjusting timing of the fixed base unit, and means for determining a quality measure and for determining a timing measure of the signals received at all the possible different downlink frequencies from the other of the plurality of fixed base units in the system, comprising the steps of:

(a) initializing each master base unit with a first predetermined hierarchical value;

(b) initializing each other base unit with a second hierarchical value, the second hierarchical value being greater than the first hierarchical value;

(c) transmitting the hierarchical value in each downlink signal from each fixed base unit;

(d) if it is not a master base unit, turning off the transmitter at a first base unit;

(e) tuning the receiver at that first base unit to each possible downlink frequency;

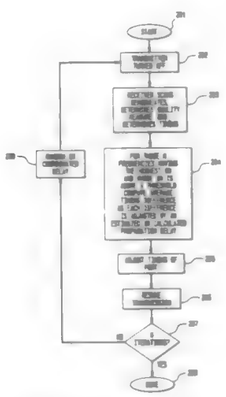
(f) measuring at that first base unit the quality measure, the timing measure, and the hierarchical value of the downlink signals received at each of the possible downlink frequencies from the other of the plurality of transmitting fixed base units in the system;
(g) for up to a predetermined number of downlink signals having the highest quality measures of those downlink signals having the lowest measured hierarchical value (H_L) if and only if H_L is less than or equal to the hierarchical value of the first base unit (H_R), calculating the average of the time differences between the timing measures of the downlink signals and the timing of the first base unit;
(h) adjusting the timing of the first base unit in response to the average of the time differences calculated in step (g);
(i) if H_R is greater than the H_L, setting the hierarchical value of that first base unit to a new value greater than H_L;
(j) turning on the transmitter at that first base unit;
(k) repeating steps (d) through (j) at each of the other of the plurality of base units in the system;
(l) after the timing of each of the plurality of base units in the system is adjusted in accordance with steps (d) through (j), repeating steps (d) through (k) a plurality of times.

5,363,376

METHOD AND APPARATUS FOR SYNCHRONIZING TIMING AMONG RADIO PORTS IN WIRELESS COMMUNICATIONS SYSTEMS

Justin C. Chuang, Holmdel, and Nelson R. Sollenberger, Tinton Falls, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jul. 30, 1993, Ser. No. 100,515
Int. Cl.[5] H04B *7/26, 7/212;* **H04J** *3/06*
U.S. Cl. 370—95.3 **32 Claims**



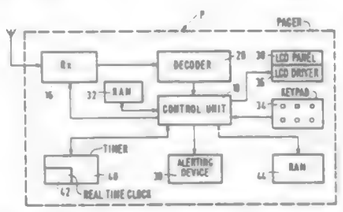
1. A method of synchronizing timing in a frequency-reusing radio communications system having a plurality of fixed base units and a plurality of mobile transceivers, each fixed based unit having a transmitter for transmitting a downlink signal at an assigned downlink frequency to at least one mobile transceiver, a receiver for receiving an uplink signal at an associated uplink frequency from at least one mobile transceiver and for receiving downlink signals at all the downlink frequencies being transmitted by the other of the plurality of fixed base units in the system, means adjusting timing of the fixed base unit, and means for determining a quality measure and for determining a timing measure of the signals received at all the possible different downlink frequencies from the other of the plurality of fixed base units in the system, comprising the steps of:
(a) turning off the transmitter at a first base unit;
(b) tuning the receiver at that first base unit to each possible downlink frequency;
(c) measuring at that first base unit the quality measure and the timing measure of the downlink signals received at each of the possible downlink frequencies from the other of the plurality of transmitting fixed base units in the system;
(d) for up to a predetermined number of downlink signals having the highest quality measures, calculating the average of the time differences between the timing measures of the downlink signals and the timing of the first base unit;
(e) adjusting the timing of the first base unit in response to the average of the time differences calculated in step (d);
(f) turning on the transmitter at that first base unit;
(g) repeating steps (a) through (f) at each of the other of the plurality of base units in the system; and
(h) after the timing of each of the plurality of base units in the system is adjusted in accordance with steps (a) through (f), repeating steps (a) through (g) a plurality of times.

5,363,377

COMMUNICATIONS SYSTEM AND RECEIVER FOR USE THEREIN WHICH INDICATES TIME BASED ON A SELECTED TIME MESSAGE SIGNAL FROM A CENTRAL STATION

Anthony K. Sharpe, Cambridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1993, Ser. No. 45,834
Claims priority, application United Kingdom, Apr. 9, 1992, 9207861.7
Int. Cl.[5] H04H *3/00;* **H04J** *3/06;* **H04L** *7/00*
U.S. Cl. 370—100.1 **10 Claims**



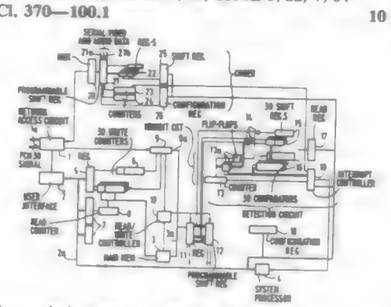
1. A receiving apparatus for use in a communication system wherein a succession of time message signals are transmitted to the receiving apparatus by a central station, each time message signal indicating its time of transmission with an accuracy which varies with different time message signals; said receiving apparatus comprising:
a receiving section for receiving the time message signals and decoding means coupled thereto for decoding said signals so as to derive the transmission times indicated thereby;
storage means for storing the indicated transmission times of the received time message signals;
timing means for producing timing signals indicative of actual time in relation to a reference time setting of said timing means, said reference time setting being the indicated transmission time of a received time message signal which has been selected and supplied to said timing means as a current time reference signal; and
control means for selecting and supplying time reference signals to said timing means, said control means being adapted to
(i) determine from said timing signals an indicated time of reception of a presently received time message signal, as based on a current reference time setting of said timing means; and
(ii) compare the indicated reception and transmission times of the presently received time message signal with the indicated reception and transmission times of the current time reference signal, from said comparison determine whether the presently received time message signal is more accurate than the current time reference signal, and in that event select and supply the presently received time message signal to said timing means as a new time reference signal replacing the current time reference signal.

5,363,378

CHANNEL DATA TRANSMISSION SYSTEM

Hans-Dieter Wahl, Kalchreuth, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 11, 1993, Ser. No. 29,813
Claims priority, application Germany,
Int. Cl.[5] H04J *3/06;* **H04L** *5/22, 7/04*
U.S. Cl. 370—100.1 **10 Claims**



1. Transmission system comprising a transmitter and a receiver for transmitting related data over at least two channels, the receiver including means for multiplexing received data, which data are structured channel-sequentially in frames and/or multiple frames, characterized in that the receiver comprises:
a) main memory (3), for storing, channel-sequentially, data of predetermined ones of the at least two channels, comprising addressing means for addressing the main memory (3),
b) detection means (11, 13, 13A, 14, 15, 16) for detecting, channel-sequentially, frames and/or multiple frames in the data stored in the main memory (3),
c) control means (6,8) for setting the addressing means, with respect to one of the predetermined channels in which a frame and/or multiple frame is detected, at a predetermined count, whereby the means for addressing is initialized.

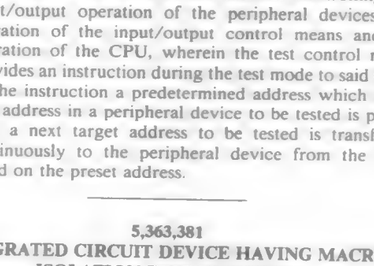
5,363,379

FDDI NETWORK TEST ADAPTOR ERROR INJECTION CIRCUIT

Thomas Eckenrode, Endicott, N.Y.; David R. Stauffer, League City, and Rebecca Stempski, Houston, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1992, Ser. No. 876,835
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—3 **2 Claims**

1. Apparatus for injecting data frames containing errors onto a FDDI token ring network comprising:
means for controlling fiber optic media access and performing validation of data frames to be transmitted over the FDDI network;
logic means connected to the fiber optic media access controlling means;
a first RAM buffer containing dummy data frames having valid formats;
a second RAM buffer containing data frames having invalid formats; and
means for multiplexing the data frames from the first and second RAM buffers, said multiplexing means having as inputs the two RAM buffers and the logic means, and providing as its output the data frames from one of the RAM buffers under control of said logic means,
said logic means first initiating the transmission of data frames from the first RAM buffer and upon completion of the validation of the data frames, discarding the valid data frames and switching the multiplexing means to permit transmission of the invalid data frames from said second RAM buffer,



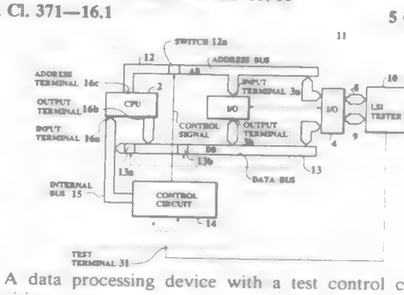
whereby invalid data frames can be transmitted over the FDDI network to permit testing of the error correction capability FDDI network.

5,363,380

DATA PROCESSING DEVICE WITH TEST CONTROL CIRCUIT

Makoto Shinohara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 29, 1991, Ser. No. 692,650
Claims priority, application Japan, May 16, 1990, 2-124037
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—16.1 **5 Claims**



1. A data processing device with a test control circuit, comprising:
a central processing unit (CPU);
a plurality of peripheral devices, an address bus and a data bus through which the CPU is connected to the peripheral devices;
input/output control means for controlling transfer of data input
/output and an address signal between the address bus and the data bus and an external device; and
test control means for isolating the data bus from the CPU in a test mode of the device and for controlling the input/output operation of the peripheral devices, the operation of the input/output control means and the operation of the CPU, wherein the test control means provides an instruction during the test mode to said CPU, by the instruction a predetermined address which is the first address in a peripheral device to be tested is preset, then a next target address to be tested is transferred continuously to the peripheral device from the CPU based on the preset address.

5,363,381

INTEGRATED CIRCUIT DEVICE HAVING MACRO ISOLATION TEST FUNCTION

Yasuyuki Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Nov. 4, 1991, Ser. No. 787,044
Claims priority, application Japan, Nov. 5, 1990, 2-300370
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.1 **6 Claims**

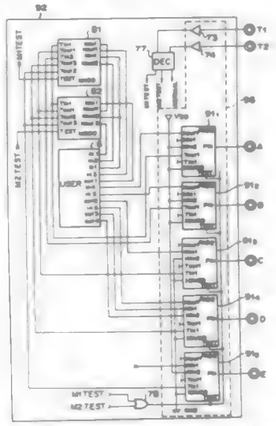
1. An integrated circuit device having at least one previously designed macro cell (31, 41; 81, 82) having a library of a stan-

dard large scale function block, and an interface block (76, 96) composed of a plurality of cells (51, 52, 53; $91_1 \ldots 91_5$) each designed as a library of a standard function block for transferring signals between external terminals and an internal region of an integrated circuit, said macro cell comprising:

switching means (32, 47, 48) for switching a mode between a normal mode and a test mode in response to an input signal applied thereto;

a first group of terminals (N_{in}, N_{io}, N_{out}) associated with said macro cell, said first group of terminals being made to be valid in said normal mode, said first group of terminals transferring signals to and from internal circuits in said macro cell during said normal mode while selected by said switching means;

a second group of terminals (T_{in}, T_{io}, T_{out}) associated with



said macro cell, said switching means having access to select said second group of terminals to replace said first group of terminals, said second group of terminals being made valid in said test mode for transferring signals to and from said internal circuit during said test mode when said second group of terminals are selected by said switching means; and

means for placing said second group of terminals in a high impedance state while said first group of terminals are valid during said normal mode.

5,363,382

FAULT ANALYSIS APPARATUS FOR MEMORIES HAVING REDUNDANCY CIRCUITS

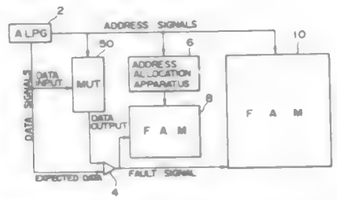
Hisao Tsukakoshi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 13, 1991, Ser. No. 791,171

Claims priority, application Japan, Nov. 13, 1990, 2-306452

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—21.2 **6 Claims**



1. An apparatus for analyzing faults in a memory having a redundancy circuit, comprising:

an algorithmic pattern generator for generating address signals to select memory cells in a memory under test MUT), said MUT being a measurement object having a redundancy circuit, said algorithmic pattern generator generating data supplied to said selected memory cells;

comparison means for performing a read operation of said data after data have been written into said selected memory cells selected by said address signals and comparing data read with said data supplied from said algorithmic pattern generator to determine whether or not both said data read and said data from said algorithmic pattern generator are in agreement, if both said data read and said data from said algorithmic pattern generator are not in agreement, generating a fault signal to indicate that said selected memory cells are faulty;

a fault analysis memory having a first function of storing fault data from a plural number of memory cells of said MUT in one memory cell in said fault analysis memory ,and a second function of storing said fault data from one of said memory cells of said MUT in said one memory cell of said fault analysis memory; and

address allocation means for receiving address signals from said algorithmic pattern generator and performing address allocation for said fault analysis memory so that said plural number of memory cells of said memory under test correspond, based on a predetermined rule, to a single memory cell of said fault analysis memory, and wherein said fault analysis memory writes fault information into a memory cell corresponding to a memory cell of said MUT having the fault, whenever said fault signal indicating said fault is sent from said comparison means.

5,363,383

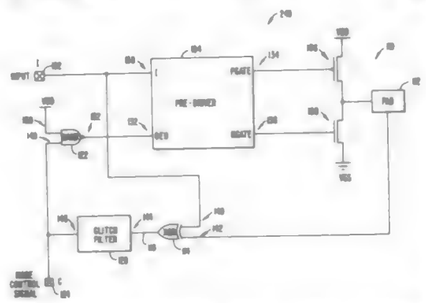
CIRCUIT FOR GENERATING A MODE CONTROL SIGNAL

Hanumanthrao Nimishakavi, San Jose, Calif., assignor to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 640,058, Jan. 11, 1991. This application Jul. 29, 1993, Ser. No. 98,750

Int. Cl.[5] H04B *17/00;* **G01R** *15/12*

U.S. Cl. 371—22.1 **18 Claims**



1. In a packaged electronic device having a plurality of external leads, a mode control circuit for providing a mode control signal, said mode control circuit comprising:

a driver circuit having a first input connected to an output from other circuitry in said packaged electronic device, a second input for receiving an output enable signal, and an output connected to one of said plurality of external leads, wherein said output of said driver circuit becomes a same logic state as said first input when said output enable signal is in an enabling state, and becomes a high impedance state when said output enable signal is in a disabling state; and

a logic circuit having a first input connected to said one external lead connected to said output of said driver circuit, a second input connected to said first input of said driver circuit, and an output providing said output enable signal and said mode control signal, wherein said output of said logic circuit causes said output enable signal to be in a disabling state when said first and second inputs of said logic circuit are in different logic states for more than a predetermined period of time.

5,363,384

AUDIO SIGNAL DEMODULATION CIRCUIT

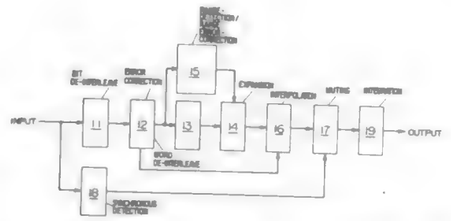
Toshihiro Miyoshi; Naoji Okumura, both of Osaka; Hisashi Arita, Hyogo; Kenji Ishikawa, Osaka; Yuichi Ninomiya; Yoshimichi Ohtsuka, both of Kawasaki; Tadashi Kawashima, Tokyo, and Takushi Iwamoto, Matsuyama, all of Japan, assignors to Matsushita Electric Industrial, Co., Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Continuation of Ser. No. 971,260, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 499,352, Aug. 6, 1990, abandoned. This application Dec. 10, 1993, Ser. No. 164,996

Claims priority, application Japan, Oct. 24, 1988, 63-267452

Int. Cl.[5] H04N *5/76;* **G06F** *11/00*

U.S. Cl. 371—31 **6 Claims**



1. An audio signal demodulator for demodulating an audio input signal received from a transmission side and for providing an audio output signal, the demodulator comprising:

synchronization detector means for detecting synchronization of the audio input signal, and for providing a synchronization lock signal which indicates whether or not synchronization has been achieved;

bit de-interleaving means, responsive to the audio input signal for canceling a bit interleaving operation performed at the transmission side, and for providing a bit-de-interleaved signal;

error correction means for error-correcting the bit-de-interleaved signal, and for providing a first signal and an interpolation signal;

word de-interleave means for receiving the first signal from the error correction means and for canceling a word interleaving operation performed at the transmission side, and for providing a word-de-interleaved signal;

means for detecting a range of, and for correcting range errors in, the first signal from the error correction means, and for providing range bits indicative of the detected range;

expansion means for expanding the word-de-interleaved signal in accordance with the range bits, and for providing an expanded signal;

means for interpolating the expanded signal in accordance with the interpolation signal from the error correction means, and for providing an interpolated signal;

means for selectively muting the interpolated signal based on the synchronization lock signal being in an unlock state, and for providing a switched interpolated signal; and

means for integrating the switched interpolated signal to provide the audio output signal.

5,363,385

FIBER-OPTIC AMPLIFIER WITH CONTROL OF THE PUMP LIGHT WAVELENGTH

Rolf Heidemann, Tamm, Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 19, 1993, Ser. No. 20,083

Claims priority, application Germany, Mar. 19, 1992, 4208858

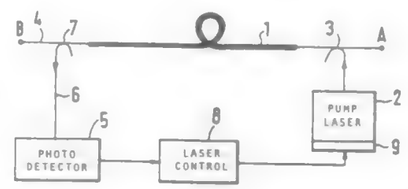
Int. Cl.[5] H01S *3/30, 3/091*

U.S. Cl. 372—6 **12 Claims**

1. A fiber-optic amplifier for use with optical communications systems, the fiber-optic amplifier comprising:

a light waveguide piece for amplifying an optical input signal,

a pump light source including a semiconductor laser, for generating pump light for the amplifying light waveguide piece,



coupling means for coupling generated pump light into the amplifying light waveguide piece, and

control means for regulating the pump light generated by the semiconductor laser to be within a desired wavelength range wherein the pump light is maximally absorbed in the amplifying light waveguide piece.

5,363,386

OPTICAL WAVEGUIDE LASER

Kevin Smith, Woodbridge, England, assignor to British Telecommunications public limited company, London, England

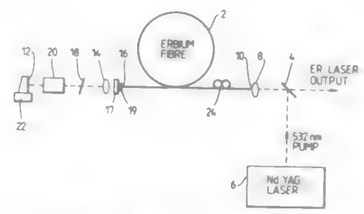
PCT No. PCT/GB91/00703, § 371 Date Nov. 18, 1992, § 102(e) Date Nov. 18, 1992, PCT Pub. No. WO91/17593, PCT Pub. Date Nov. 14, 1991

PCT Filed May 2, 1991, Ser. No. 946,464

Claims priority, application United Kingdom, May 2, 1990, 9009896.8; Nov. 15, 1990, 9024899.8

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—6 **19 Claims**



1. A laser including a soliton supporting waveguide doped with a material which when pumped produces optical gain, said waveguide having a soliton period characteristic of said soliton supporting waveguide, said soliton period being greater than an amplification period that is the round-trip fibre length of the laser waveguide which provides optical gain.

5,363,387

VARIABLE PULSEWIDTH LASERS

Edward L. Sinofsky, Dennis, Mass., assignor to Rare Earth Medical, Inc., Dennis, Mass.

Filed Nov. 18, 1992, Ser. No. 977,673

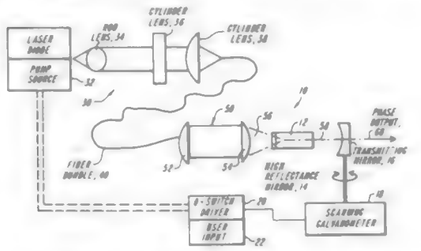
Int. Cl.[5] H01S *3/111*

U.S. Cl. 372—15 **21 Claims**

1. In a laser apparatus having a resonant cavity with an optical axis defined by a high reflection mirror and a transmitting mirror, a gain medium disposed between said mirrors, and a pump source for generating a population inversion within said medium and thereby inducing radiation to traverse said cavity along an optical path between said mirrors, the improvement comprising:

sweeping means for scanning one of said mirrors in a back and forth motion about an axis distinct the optical axis,

such that an output of laser radiation occurs in a pulse at a discrete time and for a discrete duration, the pulse duration being proportional to the rate of back and forth mo-



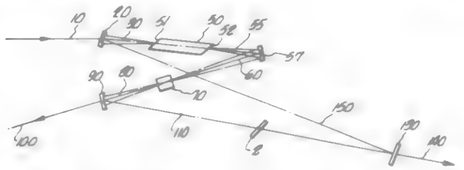
tion of the swept mirror, and the sweeping means further comprising means for varying the angular velocity of said swept mirror.

5,363,388

CONTINUOUSLY TUNABLE SOLID STATE ULTRAVIOLET COHERENT LIGHT SOURCE

Weiqiang Shi, and Warren S. Grundfest, both of Los Angeles, Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.

Filed Oct. 18, 1991, Ser. No. 781,328
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—20 **35 Claims**



1. An ultraviolet light source comprising:
a first pump light source comprising a laser,
a tunable laser driven by said first pump light source to provide a second light source,
a non-linear optical frequency mixing element optically coupled to said first pump light source and said second light source wherein said nonlinear optical frequency mixing element is fabricated of BBO.

5,363,389

Patent Not Issued For This Number

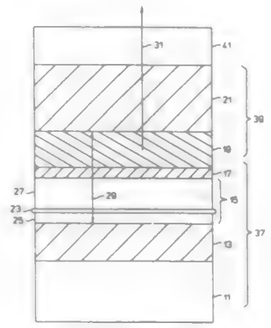
5,363,390

SEMICONDUCTOR LASER THAT GENERATES SECOND HARMONIC LIGHT BY MEANS OF A NONLINEAR CRYSTAL IN THE LASER CAVITY

Long Yang, Union City, and Rajeev Ram, Santa Barbara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1993, Ser. No. 156,216
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **19 Claims**

1. A semiconductor laser comprising:
a gallium arsenide substrate;
a first reflector adjacent the substrate, the first reflector comprising an arsenide, the first reflector reflective of light at a desired fundamental frequency;
an optical amplifier adjacent the first reflector, the optical amplifier comprising an arsenide;
an adhesive layer adjacent the optical amplifier;
a nonlinear crystal fused to the optical amplifier through the adhesive layer, the nonlinear crystal comprising a phosphide; and
a second reflector adjacent the nonlinear crystal, the second reflector comprising a phosphide, the second reflector reflective of light at said fundamental frequency and transmissive of light at twice the fundamental frequency, the first and second reflectors defining therebetween a laser cavity that extends from the first reflector through the optical amplifier, the adhesive layer and the nonlinear crystal to the second reflector,



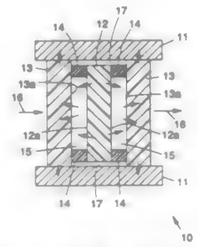
the laser responsive to an external energy source to generate light in the laser cavity at the fundamental frequency, the nonlinear cystal operative to convert the generated light into light having a frequency double the frequency of the generated light and thereby provide a beam of frequency-doubled light through the second reflector.

5,363,391

CONDUCTIVE FACE-COOLED LASER CRYSTAL

Steven C. Matthews, Pacific Palisades; James S. Sorce, Torrance, and Mario P. Palombo, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 24, 1992, Ser. No. 874,270
Int. Cl.[5] H01S *3/045*
U.S. Cl. 372—36 **18 Claims**



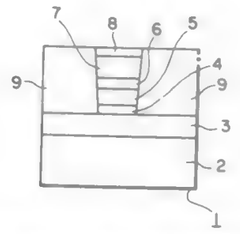
1. An optical device for use in a laser system, said optical device comprising:
a heat conducting housing;
an optical transmissive optical element having first and second surfaces disposed in the housing for propagating laser energy in a direction substantially transverse to the plane of said first and second surfaces; and
first and second optically transmissive windows that comprise optically transmissive heat sinks, each window disposed adjacent to and space apart from said respective first and second surfaces of the optically transmissive optical element by first and second gaps;
whereby heat generated in the optical element is passively conducted to said first and second optically transmissive windows by said gaps in a direction parallel to the direction of laser energy propagation and then to the housing.

5,363,392

STRAINED QUANTUM WELL TYPE SEMICONDUCTOR LASER DEVICE

Akihiko Kasukawa, Tokyo, and Toshio Kikuta, Fujisawa, both of Japan, assignors to The Furokawa Electric Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,234
Claims priority, application Japan, Nov. 18, 1991, 3-329517
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **5 Claims**



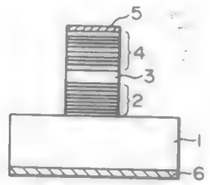
1. A strained quantum well type semiconductor laser device comprising a plurality of layers including a quantum well active layer formed on a semiconductor substrate, wherein each quantum well active layer comprises tensile strain quantum well layers and compressive strain barrier layers stacked alternately, wherein said quantum well layers are made of either InGaAs or InGaAsP and have a thickness between 100 and 200Å.

5,363,393

SURFACE EMITTING SEMICONDUCTOR LASER

Kazuhisa Uomi, Hachioji; Misuzu Sagawa, and Atsushi Takai, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,402
Claims priority, application Japan, Mar. 31, 1992, 4-076602
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **11 Claims**



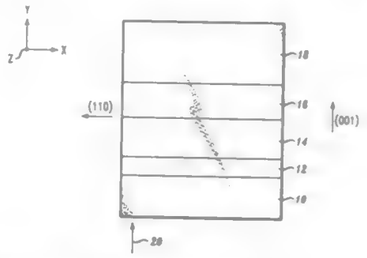
2. A surface emitting semiconductor layer of a laminated structure having at least a light emitting active layer sandwiched between a p-type semiconductor multi-layer mirror and an n-type semiconductor multi-layer mirror on a semiconductor substrate and a pair of electrodes for injecting current into the active layer, wherein energy ΔEc of conduction band discontinuity is higher than energy ΔEv of valence band discontinuity between at least two kinds of semiconductor layers with different refractive indices constituting said p-type semiconductor multi-layer mirror while the energy ΔEv of valence band discontinuity is higher than the energy ΔEc of conduction band discontinuity between at least two kinds of semiconductor layers with different refractive indices constituting said n-type semiconductor multi-layer mirror the n-type semiconductor multi-layer.

5,363,394

QUANTUM WIRE LASER

Loren N. Pfeiffer, Harding Township, Morris County; Horst L. Stormer, Summit; Werner H. Wegscheider, Gillette, and Kenneth W. West, Mendham Township, Morris County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 6, 1993, Ser. No. 103,876
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **21 Claims**



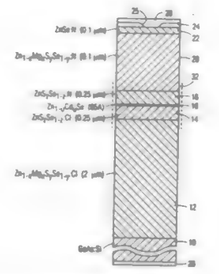
1. A quantum wire device comprising
means for forming at least one planar quantum well,
means for forming another planar quantum well disposed at an angle with respect to said first-mentioned well to define a quantum wire region at the intersection of said wells,
and means disposed about said wells for index guiding any emitted radiation to confine it to the vicinity of said quantum wire region.

5,363,395

BLUE-GREEN INJECTION LASER STRUCTURE UTILIZING II-VI COMPOUNDS

James M. Gaines; Ronald R. Drenten, both of Mohegan Lake; Kevin W. Haberern, Hopewell Junction; Thomas M. Marshall, Brooklyn; Piotr M. Mensz, Ossining, and John Petruzzello, Carmel, all of N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 997,988, Dec. 28, 1992, abandoned.
This application Nov. 30, 1993, Ser. No. 159,755
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **19 Claims**



1. A laser structure comprising:
(a) a substrate of a first conductivity type;
(b) a cladding layer of $Zn_{1-x}Mg_xS_ySe_{1-y}$ of said first conductivity type, disposed atop said substrate;
(c) a guiding layer of ZnS_zSe_{1-z} of said first conductivity type, disposed atop said first conductivity type cladding layer;
(d) an active layer of $Zn_{1-u}Cd_uSe$, disposed atop said first conductivity type guiding layer;
(e) a guiding layer of ZnS_zSe_{1-z} of a second conductivity type opposite said first conductivity type, disposed atop said active layer;

(f) a cladding layer of $Zn_{1-x}Mg_xS_ySe_{1-y}$ of said second conductivity type; and

(g) wherein $0 \leqq u \leqq 0.4$; $0 \leqq z$ 0.1; $0 \leqq x \leqq 1$ and $0.06 \leqq y \leqq 1$, x and y being chosen such that the cladding layers are lattice matched with said substrate.

5,363,396

HALOGEN GENERATOR

Colin E. Webb, Kidlington, and Gerard S. McGrady, Oxford, both of Great Britain, assignors to Oxford Lasers Limited, Kidlington, United Kingdom

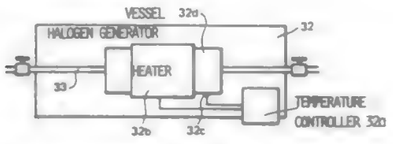
PCT No. PCT/GB91/00799, § 371 Date Jan. 14, 1992, § 102(e) Date Jan. 14, 1992, PCT Pub. No. WO91/18433, PCT Pub. Date Nov. 28, 1991

PCT Filed May 21, 1991, Ser. No. 809,488

Claims priority, application United Kingdom, May 23, 1990, 9011535.3

Int. Cl.[5] H01S *3/72*

U.S. Cl. 372—57 **25 Claims**



1. A fluorine generator comprising

a metal fluoro complex/compound capable of generating fluorine upon heating;

means for heating said complex/compound to evolve pure, gaseous fluorine, said fluorine having a vapour pressure; and

means for controlling the temperature within the generator to control the vapour pressure of fluorine generated from said complex/compound.

5,363,397

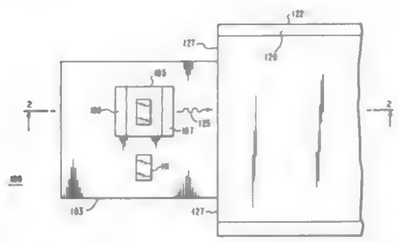
INTEGRATED SHORT CAVITY LASER WITH BRAGG MIRRORS

Reuben T. Collins, Yorktown Heights, and Sandip Tiwari, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,109

Int. Cl.[5] H01S *3/06, 3/08;* **G02B** *6/42*

U.S. Cl. 372—92 **17 Claims**



1. A low power single mode edge emitting semiconductor laser device, comprising:

an optical cavity between two parallel facing facets, each of said facets being covered with a Bragg reflector, said optical cavity being disposed between an n-type conductive layer and a p-type conductive layer on a substrate;

said optical cavity, n-type, and p-type layers forming a p-i-n device wherein said p-i-n device conducts electrical current through said optical cavity in a direction substantially parallel to said facets resulting in reflection of light by said Bragg reflectors back and forth in said optical cavity between said facets in a single mode of oscillation and emission of single mode light from said optical cavity through said Bragg reflector covering a first one of said facets

said optical cavity having a length between said facets that is no greater than approximately ten times the wavelength of said emitted single mode light,

whereby low power operation is achieved because said cavity is no longer than 10 wavelengths of said single mode light and because said electrical current is not conducted through said Bragg reflectors.

5,363,398

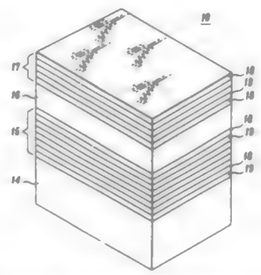
ABSORPTION RESONANT RARE EARTH-DOPED MICRO-CAVITIES

Alastair M. Glass, Rumson; Neil E. J. Hunt, Scotch Plains; John M. Poate, Summit; Erdmann F. Schubert, New Providence, and George J. Zydzik, Columbia, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1993, Ser. No. 129,528

Int. Cl.[5] H01S *3/08*

U.S. Cl. 372—92 **14 Claims**



1. A light-emitting device which comprises in an ascending order, a substrate, a bottom reflector, an active layer, and a top reflector, said reflectors forming a Fabry-Perot cavity enclosing said active layer, said active layer is doped with a rare earth element selected from lanthanide series elements with numbers 57 through 71, said rare-earth element being selected on basis of its optical transition so as to provide electroluminescence at a desired emission wavelength, wherein

the material of the active layer, the thickness of the active layer, the wavelength of excitation radiation and an angle, Θ, at which said radiation impinges on the top reflector are selected such that the fundamental mode of the cavity is in resonance with the excitation wavelength, said active layer including a host material selected from materials which either are not capable of spontaneous luminescence or whose luminescence is of such minor intensity as not to be considered emissive at the wavelength of the rare earth element, the thickness of the active layer being a whole number multiple of $\lambda/2$ wherein λ is the wavelength of excitation radiation divided by the index of refraction of the material of the active layer, said number being one of the numbers ranging from 1 to 5, and the wavelength of excitation radiation of the source of radiation being substantially smaller than said emission wavelength.

5,363,399

SEMICONDUCTOR DISTRIBUTED-FEEDBACK LASER DEVICE

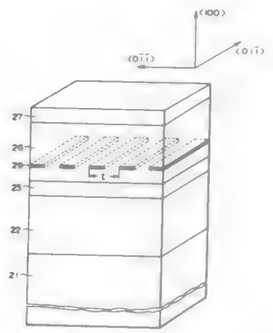
Tetsuya Yagi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1992, Ser. No. 978,476

Claims priority, application Japan, Nov. 21, 1991, 3-305875

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—96 **3 Claims**



3. A semiconductor distributed feedback laser device comprising:

a first conductivity type GaAs substrate having a (100) surface and having a predetermined thickness;

a first conductivity type $Al_{0.35}Ga_{0.65}As$ lower cladding layer having a thickness of about 1 μm disposed on said surface;

an undoped GaAs active layer having a thickness of about 0.1 μm disposed on said lower cladding layer;

a second conductivity type, opposite the first conductivity type, $Al_{0.35}Ga_{0.65}As$ upper cladding layer having a thickness of about 1 μm disposed on said active layer;

a plurality of amorphous insulating layers embedded in said upper cladding layer at a distance of about 0.05 μm from said active layer, said amorphous insulating layers extending in the <011> direction and being spaced from each other with a predetermined period in the <011> direction; and

a contact layer of the second conductivity type disposed on said upper cladding layer, said amorphous insulating layers being transparent to laser light and having a thickness that charge carriers cannot tunnel through.

5,363,400

METHOD OF TREATING METALS BY DEPOSITION OF MATERIALS AND FURNACE FOR IMPLEMENTING SAID METHOD

Eric Damond, Caluire; Georges Dervieux, St Priest, and Patrick Jacquot, Chassieu, all of France, assignors to Innovatique S.A., France

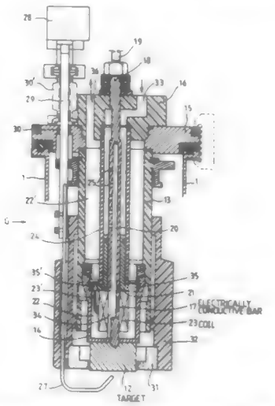
Division of Ser. No. 802,984, Dec. 6, 1991, Pat. No. 5,278,861. This application Oct. 1, 1993, Ser. No. 130,489

Claims priority, application France, Dec. 6, 1990, 90 15331

Int. Cl.[5] C23C *14/32*

U.S. Cl. 373—10 **13 Claims**

1. Physical vapor deposition method of thermochemical treatment of metals in which the substance of a target which constitutes a first electrode of a treatment furnace is evaporated by ion bombardment optionally assisted by an electrical arc discharge and the particles evaporated in this manner are deposited onto a substrate at the potential of a second electrode which is different from that of the first electrode, the substrate being heated during this deposition to a treatment temperature exceeding 600° C. and preferably between 800° C. and 1 200° C., and said target and its ancillary members in the furnace are continuously cooled by a flow of cooling fluid so that when the treatment temperature is reached the material of the target



remains solid and the evaporation occurring at the surface of the target is effected by sublimation.

5,363,401

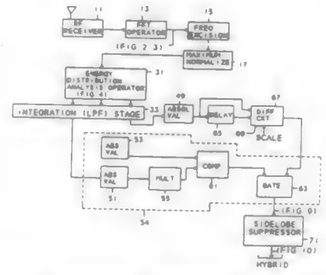
MECHANISM FOR EXTRACTING HYBRID (FH/DS) SPREAD SPECTRUM SIGNALS WITHIN MULTI-SIGNAL TYPE ENVIRONMENT

Leonard V. Lucas, Palm Bay; Charles L. Zahm, Indialantic; Edward A. Payne, Palm Bay, and Carl F. Andren, Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 25, 1993, Ser. No. 23,264

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **24 Claims**



1. A method of detecting and identifying hybrid, frequency-hopped direct sequence pseudo noise (FH/DS), signals from a potential multi-signal type environment comprising the steps of:

(a) receiving signals from said from said multi-signal type environment;

(b) processing signals received in step (a) in accordance with a signal processing operator which emphasizes the spectral magnitude of said hybrid signals and deemphasizes the spectral magnitude of signals other than said hybrid signals based upon their differing characteristics;

(c) processing Signals received in step (a) in accordance with a signal processing operator which emphasizes the spectoral magnitude of said signals other than hybrid signals and deemphasizes the magnitude of hybrid signals based on their differing characteristics; and

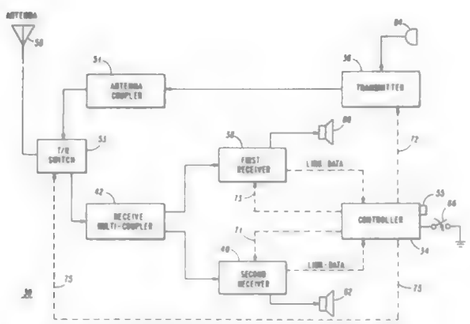
(d) selectively combining hybrid signals emphasized in step (b) and said signals other than said hybrid signals emphasized in step (c), so as to extract said hybrid signals.

5,363,402

HF RADIO APPARATUS OPERABLE IN MULTIPLE COMMUNICATION MODES

James V. Harmon, Cedar Rapids, Iowa, assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Sep. 8, 1993, Ser. No. 118,535
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **20 Claims**



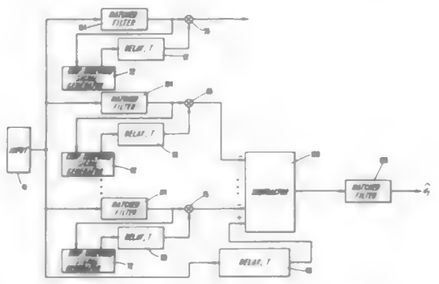
1. An HF radio transceiver apparatus, comprising:
antenna means;
a programmable controller having a plurality of control signals;
a plurality of receivers, connected to the antenna means, each receiving and demodulating radio signals transmitted from external radios, in common or mutually exclusive communication modes, and providing link-data information to the programmable controller;
a transmitter, responsive to the programmable controller and coupled to the antenna means, for transmitting modulated data in at least one of the common or mutually exclusive communication modes; and
the programmable controller commanding the plurality of receivers such that one of the receivers paired with the transmitter and operating in one of the communication modes is used to maintain a communication link for a substantial period of time and, in response to a communication link outage, a second receiver is paired with the transmitter operating in a second communication mode to reestablish the failed communication link.

5,363,403

SPREAD SPECTRUM CDMA SUBTRACTIVE INTERFERENCE CANCELER AND METHOD

Donald L. Schilling, Sands Point, and John Kowalski, New York, both of N.Y., assignors to InterDigital Technology Corporation, Wilmington, Del.

Filed Apr. 22, 1993, Ser. No. 51,017
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **25 Claims**



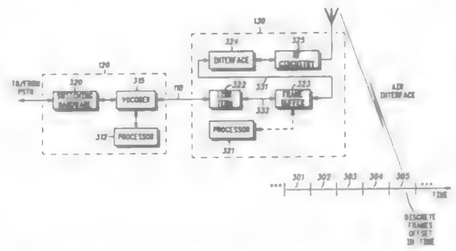
1. A spread-spectrum code division multiple access (CDMA) interference canceler for reducing interference in a spread-spectrum CDMA receiver having N channels, with each of the N channels identified by a distinct chip-code signal, comprising:
a plurality of means for generating a plurality of chip-code signals;
a plurality of despreading means, with each of said despreading means responsive to the respective distinct chip-code signal identifying a corresponding one of the N channels, for simultaneously despreading a plurality of spread-spectrum channels of a spread-spectrum CDMA signal as a plurality of despread signals, respectively;
a plurality of means for timing the plurality of chip-code signals thereby generating a timed version of the plurality of chip-code signals, respectively;
a plurality of means, responsive to the timed version of the plurality of chip-code-signals, for simultaneously spread-spectrum processing the plurality of despread signals, respectively, with a chip-code-signal corresponding to a respective despread signal;
means, for an ith chip-code signal, for subtracting from the spread-spectrum CDMA signal, simultaneously, each of the N-1 spread-spectrum-processed-despread signals, with the N-1 spread-spectrum-processed-despread signals not including a spread-spectrum processed-despread signal of the ith despread signal, thereby generating a subtracted signal; and
channel means for despreading the subtracted signal with the ith chip-code signal as an ith channel.

5,363,404

APPARATUS AND METHOD FOR CONVEYING INFORMATION IN A COMMUNICATION NETWORK

Michael D. Kotzin, Buffalo Grove, and Eugene J. Bruckert, Arlington Heights, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 13, 1993, Ser. No. 91,147
Int. Cl.[5] H04K *1/10*
U.S. Cl. 375—1 **23 Claims**



1. A communication network comprising:
a base-site for conveying information via an air interface having discrete frame offset timing; and
an interface means, coupled to the base-site, for implementing frame timing related to the discrete frame offset timing of the air interface.

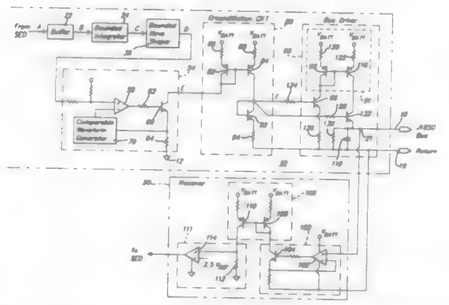
5,363,405

VEHICLE COMMUNICATIONS NETWORK TRANSCEIVER, BUS DRIVER THEREFOR

Ronald F. Hormel, Clinton Township, Macomb County, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 27, 1992, Ser. No. 982,321
Int. Cl.[5] H04B *1/38;* **H03K** *7/08, 9/08*
U.S. Cl. 375—7 **12 Claims**

1. A transceiver in nodes of a multiple node vehicle communications network having a communications bus prescribed for use in an automotive industrial standard data link, interconnecting the nodes, each node providing an input device for converting a chosen measurand into digital pulses appearing at varying rates in response to changes of the measurand into symmetrical, variable pulse width modulated (VPWM) trapezoidal shaped waveform signals, the waveform signals containing symbol information expressing the magnitudes of the measurand, each node containing a regulated power source connected to a vehicle battery to provide regulated logic voltages referenced with respect to a signal ground return; each node also containing a microcontroller (MCU) connected between the input device, power source and a symbol encoder decoder (SED), for receiving digital pulses from the input device representing magnitudes of the measurands, formatting the received digital pulses into digital messages, polling input and output ports connected to the SED, and initiating transmission over the bus via the SED, the SED being interconnected between the MCU and the transceiver for translating the digital messages from the MCU into said VPWM square-wave, line codings sent to other transceivers connected to the bus and for converting square wave digital signals received from other transceivers into digital messages used by the MCU for updating or controlling other peripherals associated with the network, said transceiver comprising:
(a) an integrator with an input for receiving the VPWM square-wave pulses from SED having pulse widths that define symbol information with respect to time and logic levels, and producing at an output terminal trapezoid type waveform signals with pulses 180 degrees out of phase with the square wave pulses and referenced with respect to a fixed voltage level;



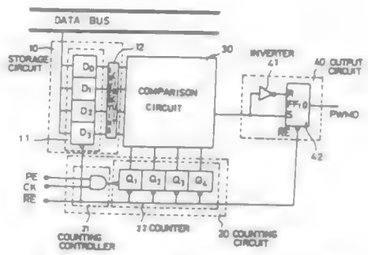
(b) a waveshaper having an input for receiving the trapezoid waveform signals from the integrator and reshaping both corners at the extremities of each edge of the pulses over a chosen duration and then producing at an output terminal other trapezoid waveform signals in phase with the input waveform signals having the same pulse width as the input trapezoid signals at trip point voltages so as to retain the symbol information contained in the original square-wave signals, the reshaped trapezoid signals being referenced with respect to another fixed voltage level different from signal ground;
(c) a voltage-to-current converter having an input for receiving the reshaped trapezoid waveform signals from the waveshaper, and providing at an output a replica of the reshaped trapezoid waveform signals used as control current source signals, said control current source signals being routed to a current sensor circuit within the voltage-to-current converter to provide pulse voltage potentials with respect to signal ground return of magnitudes proportional to the voltage across the current sensor;
(d) a ground translation circuit including a current mirror circuit having an input connected to the current sensor circuit of the voltage-to-current converter so that the current in an input circuit corresponds with the current flowing through the current sensor of the voltage-to-current converter, the ground translation circuit having an output circuit connected to carry a reflected current of the same magnitude and direction as the current in the current mirror input circuit but the output current is referenced with respect to an independent bus ground return, the ground translation circuit also having an output reference voltage circuit used to establish a reference voltage signal referenced with respect to the independent ground return but which establishes voltage levels in response to varying current signals from the output circuit of the current mirror;
d) a bus driver connected between the battery of the vehicle and the independent bus ground return, the bus driver comprising another current mirror circuit having an input circuit used to receive pulse signals from the reference voltage circuit of the ground translation circuit and for using the received pulse signals to program the current in an output circuit of the another current mirror, the programmed current causing a reflected current of an enhanced magnitude and of the same direction as the reference voltage and current to flow out of the output circuit of the another current mirror circuit, the bus driver having an output circuit connected between the output of the another current mirror and the bus for sourcing current onto the bus when the bus voltage levels permit transmitting and for cutting off the source current from the current mirror when the bus voltage levels
(e) a receiver circuit interconnected between the bus and SED for receiving reshaped trapezoid waveform signals from the bus and extracting symbol information contained in the waveform signals and converting the extracted symbol information into digital pulse signals with pulse durations equivalent to the symbol information.

5,363,406

PULSE WIDTH MODULATION APPARATUS

Dae K. Han, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Chuongchungbook-Do, Rep. of Korea

Filed Aug. 27, 1993, Ser. No. 112,281
Claims priority, application Rep. of Korea, Sep. 4, 1992, 16837/1992
Int. Cl.[5] H03K *7/08*
U.S. Cl. 375—22 **4 Claims**



1. A pulse width modulation apparatus comprising:
storage means for temporarily storing pulse width d- inputted over a data bus and then inverting it, th- width data determining a pulse width;
counting means for counting a clock signal in response to an external pulse width modulation enable signal and an external reset signal;
comparison means for comparing the number of logical 0 bits of the inverted pulse width data from said storage means with the number of logical 1 bits of count data from said counting means and outputting a high signal when the number of the logical 0 bits of the inverted pulse width data is greater than or equal to the number of the logical 1 bits of the count data and a low signal when the number of the logical 0 bits of the inverted pulse width data is smaller than the number of the logical 1 bits of the count data; and

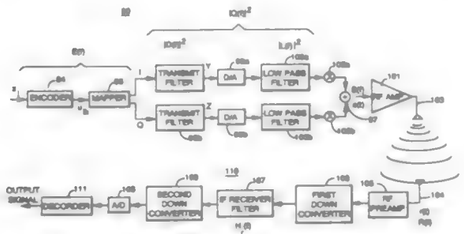
output means for latching an output signal from said comparison means to output a pulse width modulation signal.

5,363,407

TRANSMITTER OPTIMIZATION FOR SPECTRALLY CONGESTED RADIO COMMUNICATION SYSTEMS

Rajaram Ramesh, and Sandeep Chennakeshu, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1992, Ser. No. 939,747
Int. Cl.[5] H04B *14/04*
U.S. Cl. 375—34 **2 Claims**



1. A method of configuring a communication system for communicating signals on adjacent channels, said system including a transmitter having an encoder with a memory length L and capable of being in a plurality of encoder states N, a mapper coupled to said encoder, a transmit filter with a transfer function D(f) coupled to said mapper, a low pass filter having a transfer function L(f) coupled to said transmit filter and a modulator coupled to said low pass filter, said system further including a receiver including a receive filter having a power spectrum $H_r(f)$ and a decoder coupled to said receive filter, comprising the steps of:

a) choosing a symbol period T_s;

b) determining a combined power spectrum E(f) for the encoder and mapper;

c) solving the following equation, which is a standard eigenvalue problem, for a maximum eigenvalue λ, and its corresponding eigenvector d_{opt} which represents a set of transmitter coefficients:

$$D^{-1}Nd_{opt}=\lambda d_{opt}$$

where N and D are a plurality of matrices each defined respectively by:

$$N=\int_{-W_r}^{W_r} M_1(f)H_r(f)E(f)df$$

$$D=\int_{-W_r}^{W_r} M_1(f-f_\Delta)H_r(f)E(f-f_\Delta)df$$

and

$$\{M_1(f)\}_{i,j}=|L(f)|^2\exp\left\{j2\pi f(i-j)\frac{T_s}{b}\right\},$$

where i, j range from 0 through M−1; f is frequency, f_Δ is the frequency separation between said adjacent channels, b is a number of samples in sample period T_s, W_r is the one-sided bandwidth of the receive filter; and

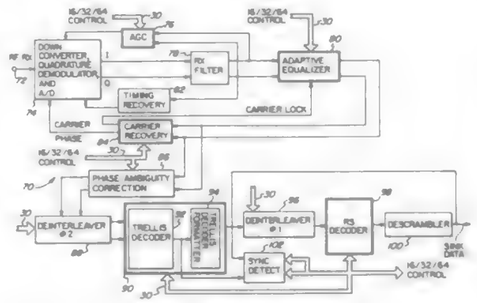
d) initializing said transmit filter to the optimum transmit filter coefficients d_{opt} for future transmissions so as to result in a communications system having an increased adjacent channel interference protection ratio.

5,363,408

MODE SELECTIVE QUADRATURE AMPLITUDE MODULATION COMMUNICATION SYSTEM

Woo H. Paik, Encinitas; Scott A. Lery, Leucadia, and John M. Fox, San Diego, all of Calif., assignors to General Instrument Corporation, Hatboro, Pa.

Filed Mar. 24, 1992, Ser. No. 852,330
Int. Cl.[5] H04L *5/12, 23/02*
U.S. Cl. 375—39 **19 Claims**



1. A QAM communication system comprising:

a transmission subsystem including means for selectively encoding source data for transmission using one of a plurality of QAM modes; and

a receiver subsystem for receiving QAM data from said transmission subsystem, including means for detecting the QAM mode of the received data by trial and error and means responsive to said detecting means for decoding the received data in accordance with the detected QAM mode; wherein said QAM mode detecting means comprise:

means for monitoring at least one output of said decoding means to detect a synchronization condition achieved when the received data is processed using a proper QAM mode for the data; and

means responsive to said monitoring means for actuating said decoding means to attempt to decode said received data using different QAM modes until said synchronization condition is detected;

wherein the detection of said synchronization condition indicates that the QAM mode then in use by the decoder is the proper QAM mode for the received data.

5,363,409

METHOD AND SYSTEM FOR MULTIPLEXED DATA TRANSMISSION FROM HAZARDOUS ENVIRONMENTS

Robert J. Desilets, Bristol, R.I., assignor to Scully Signal Company, Wilmington, Mass.

Filed Jan. 6, 1992, Ser. No. 818,638
Int. Cl.[5] H04L *27/10*
U.S. Cl. 375—45 **13 Claims**

1. A system for transmitting digital data from a hazardous location to a "safe area" computer, said system comprising:

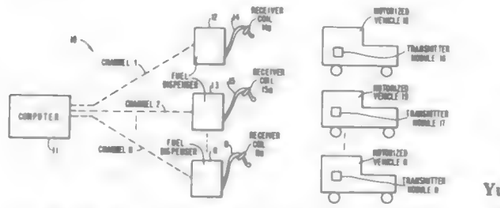
a plurality of digital data transmitting means located within said hazardous location;

a plurality of digital data generating means, each of said digital data generating means connectable to any one of said plurality of digital data transmitting means;

a computer located within a "safe area" remotely situated from said hazardous location;

means for carrying a frequency shift keyed signal generated by one of said digital data generating means and comprising pulses of three different frequencies from each of said digital data transmitting means to said computer, a first of said three different frequencies being indicative of a "synchronization" state, a second of said three different frequencies being indicative of a binary "one" bit and a third of said three different frequencies being indicative of a binary "zero", and wherein

said system comprises a plurality of fuel loading pump, said plurality of digital data transmitting means each comprise an electronic circuit situated proximate to a respective one of said fuel loading pumps, and said system comprises a plurality of motorized vehicles, and said digital data generating means each comprises a digital data generating circuit mounted on one of said plurality of motorized vehicles, said motorized vehicles each being connected to



one of said fuel loading pumps and each said digital data generating circuit being electrically connectable to each said electronic circuit,

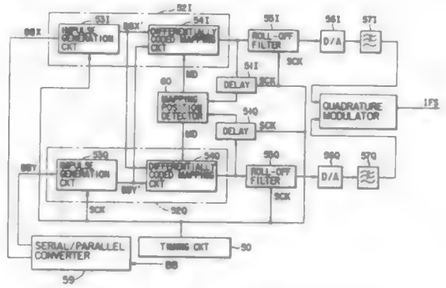
said digital data generating means further comprising a microcontroller, said microcontroller comprising a central processing unit (CPU), buffer area memory circuitry connected to said CPU, programmable timing circuit connected to said CPU, and a plurality of input/output ports, and said digital data generating means comprises an amplifier connected to an output of said microcontroller, and an induction coil connected to an output of said amplifier.

5,363,410

MODULATION CIRCUIT FOR A DIGITAL RADIO COMMUNICATIONS APPARATUS USING A PHASE SHIFTED DQPSK MODULATION SYSTEM

Takahisa Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 26, 1992, Ser. No. 888,028
Claims priority, application Japan, May 27, 1991, 3-120842
Int. Cl.[5] H03C *3/02*
U.S. Cl. 375—67 **4 Claims**



1. A modulation circuit for a digital radio communications equipment comprising:

serial/parallel converting means for converting a transmit data stream into a plurality of separated data streams;

mapping means for allowing the plurality of separated data streams which are output from said serial/parallel converting means to be differentially phase coded at their respective pulse time upon reference to a result of a differential phase coding at a pulse time corresponding to one previous pulse time and for outputting differentially coded signal containing amplitude information;

filtering means for filtering the differentially coded signal which is output from said mapping means and for outputting a modulation signal corresponding to the differentially coded signal;

modulating means for PSK (phase shift keying) modulating a transmit local oscillation signal on the basis of the modulation signal which is output from said filtering means; and

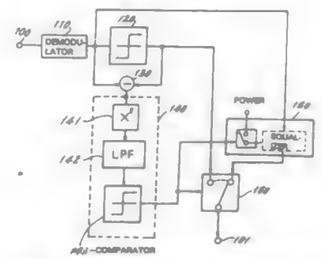
mapping position detecting means for detecting a phase mapping position on the differentially coded signal, which is output from said mapping means at the respective pulse time, on the basis of the amplitude information contained in the differentially coded signal and for supplying that information representing the detected phase mapping position to said mapping means so as to achieve the differentially phase coding at that pulse time following one pulse time.

5,363,411

LOW POWER CONSUMPTION RECEIVER WITH ADAPTIVE EQUALIZER

Yukitsuna Furuya; Kazuhiro Okanoue; Akihisa Ushirokawa, and Hideho Tomita, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 23, 1992, Ser. No. 902,383
Claims priority, application Japan, Jun. 27, 1991, 3-155042
Int. Cl.[5] H03H *7/30, 7/40;* **H03K** *5/159;* **H03G** *11/04*
U.S. Cl. 375—75 **7 Claims**



1. A receiver for digital radio communications, comprising:

demodulating means for demodulating a received signal;

decision means for determining the quality of the demodulated signal;

equalizing means for equalizing the demodulated signal when the quality of the demodulated signal is lower than a predetermined level;

means for supplying power;

switching means for connecting the power supplying means to the equalizing means when the quality of the demodulated signal is lower than a predetermined level and for disconnecting the power supplying means from the equalizing means when the quality of the demodulated signal is above the predetermined level; and

output means for selectively outputting the demodulated signal and the equalized signal.

5,363,412

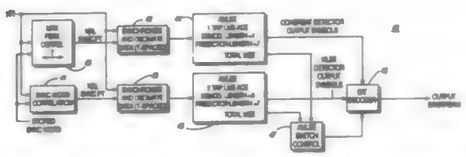
METHOD AND APPARATUS OF ADAPTIVE MAXIMUM LIKELIHOOD SEQUENCE ESTIMATION USING FILTERED CORRELATION SYNCHRONIZATION

Robert T. Love, Hoffman Estates; Gerald P. Labedz, Chicago, and Kevin L. Baum, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 28, 1992, Ser. No. 998,063
Int. Cl.[5] H04L *27/06;* **H03M** *13/12*
U.S. Cl. 375—94 **20 Claims**

1. An apparatus for maximum likelihood sequence estimating comprising: a first maximum likelihood sequence estimator

for flat fading; an at least second maximum likelihood sequence estimator for other than flat fading; means for selecting one of



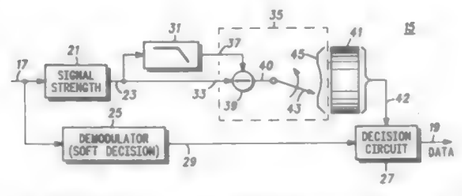
the first and second maximum likelihood sequence estimators with a least magnitude mean square error.

5,363,413

DATA DECODER AND METHOD FOR USE THEREIN USING A DYNAMICALLY INDEXED CHANNEL STATE METRIC

Gus Vos, Richmond, Canada, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1993, Ser. No. 64,308
Int. Cl.[5] H03D *1/00;* **H04L** *27/06;* **G06F** *11/10;* **H03M** *13/12*
U.S. Cl. 375—94 **15 Claims**



1. A data decoder using a dynamically indexed channel state metric to decode, with improved accuracy, symbols recovered from a signal received over a channel, comprising in combination:

signal strength means for providing a signal strength indication of the signal corresponding to a symbol time period;

averaging means, coupled to said signal strength means, for averaging a plurality of said signal strength indications to provide an average signal strength;

indexing means, coupled to said signal strength means and said averaging means, for generating an index value corresponding to said symbol time period, said index value depending on said signal strength indication and said average signal strength;

metric means, coupled to said indexing means, for selecting a channel metric corresponding to said index value; and

decision means for weighting a decoder decision for said symbol time period in accordance with said channel metric.

5,363,414

METHOD FOR DETECTING A SIGNAL SEQUENCE

Hiroyasu Muto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 28, 1993, Ser. No. 98,066
Claims priority, application Japan, Jul. 28, 1992, 4-220812
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—94 **2 Claims**

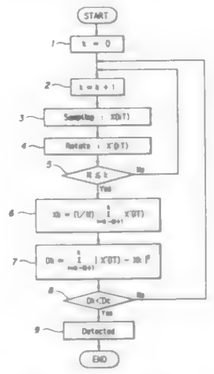
1. A method for detecting a signal sequence, comprising the steps of:

a) receiving a modulation signal on a carrier signal having phase changes of predetermined angles in a first direction and a second direction opposite to said first direction corresponding to "1" and "0" of symbols to be transmitted;

b) detecting a particular signal sequence having a constant phase change at each sampling time interval included in a signal vector obtained by synchronous detection of said modulation signal;

c) sampling said signal vector to provide a sampled value by a sampling rate equal to a symbol rate;

d) rotating said sampled value to provide a rotated signal vector by a predetermined angle;



e) calculating a mean value vector from a number of latest rotated signal vectors where said number corresponds to a length of said particular signal sequence;

f) calculating a square and summation value of a distance between said mean value vector and each of said rotated signal vector used for a calculation of said mean value vector; and

g) detecting said particular signal sequence when said square and summation value is less than a predetermined value.

5,363,415

CARRIER REGENERATING DEVICE CORRECTLY OPERABLE IN MOBILE SATELLITE COMMUNICATION

Motoya Iwasaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 17, 1993, Ser. No. 19,142
Claims priority, application Japan, Feb. 17, 1992, 4-029543
Int. Cl.[5] H04L *27/06*
U.S. Cl. 375—97 **4 Claims**

1. A carrier regenerating device for regenerating a regenerated carrier signal from a modulated overall signal having a frame period and comprising a modulated data signal and modulated unique words which are periodically interspersed in said modulated data signal, said carrier regenerating device comprising:

demodulating means for quadrature demodulating, by the use of said regenerated carrier signal, said modulated overall signal to produce a demodulated overall signal comprising a demodulated data signal and demodulated unique words;

carrier reproducing means for reproducing a reproduced carrier signal from said demodulated overall signa;

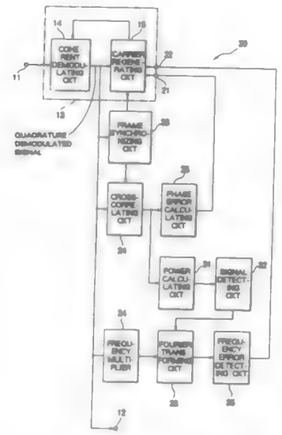
producing means for producing, by the sue of said demodulated overall signal, an aperture signal which defines an aperture interval determined on the basis of said frame period when said demodulated overall signal has a level which is lower than a predetermined threshold level;

cross-correlating means responsive to said aperture signal for calculating a cross-correlation coefficient between said demodulated overall signal and a locally known unique word;

phase error calculating means for calculating, by the use of said cross-correlation coefficient, a phase error which said reproduced carrier signal has relative to said regenerated carrier signal;

frequency error calculating means for calculating, by the use of said cross-correlation coefficient and said demodulated overall signal, a frequency error which said reproduced carrier signal has relative to said regenerated carrier signal;

first correction applying means for applying said phase error at said aperture interval to said carrier reproducing means; and



second correction applying means for applying said frequency error at said aperture interval to said carrier reproducing means;

said carrier reproducing means responding to said phase error to make said reproduced carrier signal become said regenerated carrier signal and responding to said frequency error to make said reproduced carrier signal become said regenerated carrier signal.

5,363,416

DATA INTERFACING METHOD AND ITS DEVICE

Jae W. Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

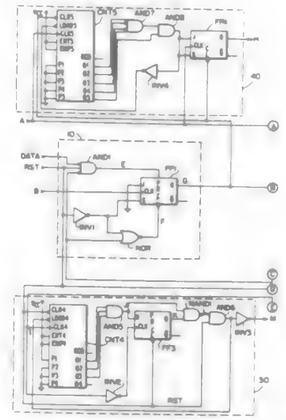
Filed Feb. 23, 1993, Ser. No. 21,234
Claims priority, application Rep. of Korea, Feb. 26, 1992, 92-3017
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—106 **25 Claims**

1. A data interfacing device receiving asynchronous serial data of a predetermined format, said format being a predetermined data group composed of a number of data lines, each consisting of multiple data bits, and receiving a basic clock signal; said data interfacing device providing synchronism to said asynchronous serial data and comprising:

means responsive to said asynchronous serial data having a start bit at the start of said each data line for generating a line recognizing signal for recognizing a section of each data line;

means for responsive to said basic clock and said line recognizing signal for generating a line clock signal having a predetermined pulse occurring at an ending time point synchronized to the end of each data line;

means responsive to said line recognizing signal for generating a group clock signal having a predetermined pulse occurring at an ending time point synchronized to the end of each said data group; and



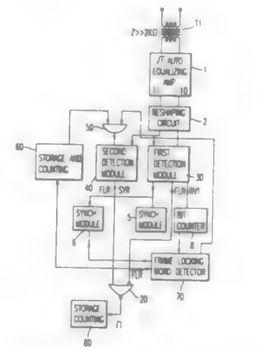
means responsive to said basic clock signal and said line recognizing signal for generating a synchronizing clock signal for synchronizing each data bit of said data group.

5,363,417

CLOCK SLIP COUNTING PROCESS AND APPARATUS

Christian Sempe, Blagnac, France, assignor to France Telecom Etablissement Autonome de Droit Public, Paris, France

Filed Oct. 16, 1992, Ser. No. 961,660
Claims priority, application France, Oct. 18, 1991, 91 12895
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—114 **11 Claims**



7. A slip counting apparatus for counting the clock slips of a digital transmission link constituted by frames (or sectors) indicatable by a frame locking word, comprising:

first detecting means for detecting the frame locking word of the data transmitted over said link,

second detecting means for detecting frame locking word after activation by said first detecting means only when said first detecting means has detected an error on the frame locking word,

means for the determination of frame locking loss other than the errors of a frame locking word, and means for a resumption coupled to said first and second detecting means, and

means for counting the clock slips activated by the frame locking loss determination means and said resumption determination means when there is a frame locking loss

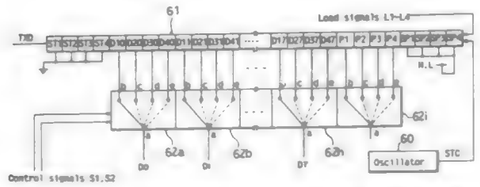
detected by the first detecting means and a resumption by the second detection means.

5,363,418

DATA TRANSMITTER AND RECEIVER AND THE DATA CONTROL METHOD THEREOF

Masatoshi Nakano, Hirakata, and Akio Kurobe, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1992, Ser. No. 900,913
Claims priority, application Japan, Jun. 21, 1991, 3-150376
Int. Cl.[5] H04L *25/38, 5/24*
U.S. Cl. 375—117 17 Claims



1. A start-stop synchronous data transmitter transmitting a code including a start bit, data, and a stop bit, the transmitter comprising:

an oscillator for outputting a high speed shift clock signal;

parallel-serial converting means for converting parallel signals into serial signals synchronously with the high speed shift clock signal and having (n) load signal lines and as many latch elements as a number obtained by multiplying the number of bit consisting of the code and (n) together, where (n) is an integer, with each load signal line being electrically connected to a plurality of load terminals of the latch elements at every (n)th load terminal, each latch element including a data input terminal; and

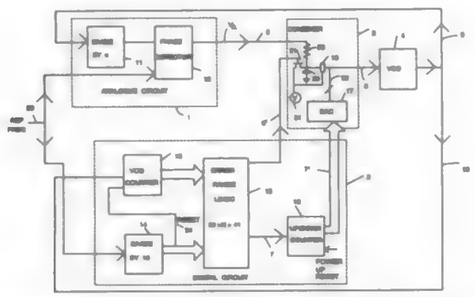
writing means for inputting the data and for activating the load signal lines one by one in order to write the data in the latch elements displaced in every (n) latch elements.

5,363,419

DUAL PHASE-LOCKED-LOOP HAVING FORCED MID RANGE FINE CONTROL ZERO AT HANDOVER

Kenneth S. Ho, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 24, 1992, Ser. No. 873,310
Int. Cl.[5] H03D *3/24*
U.S. Cl. 375—120 6 Claims



1. In a method for controlling handover to an analogue fine feedback loop in a phase locked loop (PLL) from a digital coarse control loop, said analogue fine feedback loop having a voltage controlled oscillator (VCO), said digital coarse control loop providing a digital control signal to a digital to analogue-converter (DAC) and said analogue fine feedback loop having a fine control signal having a range, said range having a middle point, said DAC providing a coarse control loop error signal, said fine control signal and said coarse control loop error signal being connected to a combiner circuit, said combiner circuit having an output said combiner circuit output being connected to said VCO, Comprising

digitally comparing in an error range logic circuit the digital representation of the frequency of said VCO to the digital representation of the frequency of a reference signal set nominally at 1/5 times the VCO frequency, and

providing an incrementing/decrementing signal from said error range logic circuit to an up/down counter indicative of whether said VCO frequency was greater or lesser than 5 times said frequency of said reference signal responsive to said step of digitally comparing;

integrating said incrementing/decrementing signal in said up/down counter, said up/down counter providing a multibit digital word to said DAC;

providing from said error range logic circuit a binary output control logic signal to said combiner circuit responsive to said step of digitally comparing wherein said binary output control logic signal is set to a true state when the frequency comparison made in said step of digitally comparing is within a preselected percentage;

summing said fine control control signal and said coarse control loop error signal in said combiner circuit;

centering said fine control signal at said middle point whenever said digital coarse control loop is in control of said PPL; and

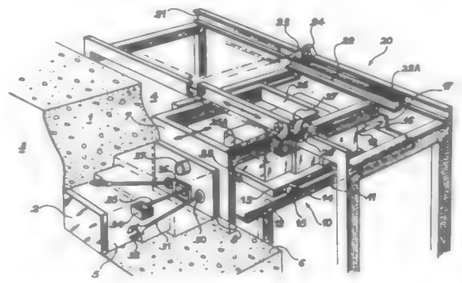
handling over control of said PLL to said analogue fine feedbacks control loop responsive to issuance of said binary output control logic signal.

5,363,420

METHOD AND SYSTEM FOR INTERVENING ON THE SEALING PANE OF AN ORIFICE OF A CONFINED CELL

Gilles Polydor, Roquemaure, and Jean-Claude Mathon, Sauveterre, both of France, assignors to Compagnie Generale des Matieres Nucleaires, France

Filed Jan. 21, 1994, Ser. No. 184,265
Claims priority, application France, Feb. 8, 1993, 93 01351
Int. Cl.[5] G21F *7/03*
U.S. Cl. 376—287 13 Claims



2. System for intervening on the sealing pane of an orifice of a shielded cell and possessing a shielding window placed in front of the pane on the outer side of the cell and including:

a frame for introducing and extracting the shielding window,

a protective screen including remote handling means for acting on the outer face of the pane from the outside, and

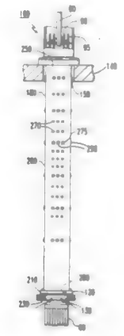
a portico for handling the protective screen to be placed in front of the orifice.

5,363,421

CONTROL ROD GUIDE TUBE

Franklin D. Obermeyer, Pensacola, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 13, 1993, Ser. No. 91,696
Int. Cl.[5] G21C *1/04*
U.S. Cl. 376—353 4 Claims



4. In a nuclear reactor pressure vessel having a liquid flowing upwardly therethrough, a control rod guide tube for providing guidance support to a plurality of vertically-oriented elongate control rods slidably disposed therein, the control rod guide tube adapted to reduce flow-induced vibration of the control rods, the control rod guide tube comprising:

(a) a vertically-oriented elongate housing having a tubular transverse cross section defining a perimeter surrounding the control rods, said housing having an opening at an end thereof for receiving the liquid therethrough, the liquid having a velocity component acting transversely to the control rods sufficient to induce vibration thereof, said housing having an intermediate portion pierced by a plurality of circularly-shaped apertures for exit of the liquid from said housing while preventing the liquid from reversing direction, so as to reduce vibration of the control rods; and

(b) a plurality of spaced-apart coaxially aligned and horizontally-oriented guide support plates disposed in said housing and connected thereto, each of said plates defining a plurality of transverse bores therethrough for slidably receiving respective ones of the control rods to provide guidance support to the control rods, whereby the velocity component of the liquid impinging the control rods is reduced as the liquid flows through the opening, enters said housing, and exits the apertures, and whereby the vibration of the control rods is reduced as the velocity component of the liquid impinging the control rods is reduced.

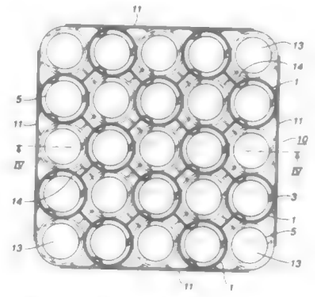
5,363,422

SPACER FOR RETAINING FUEL RODS IN A NUCLEAR REACTOR FUEL ASSEMBLY

Olov Nylund; Ragnar Mansson; Torsten Olsson; Tibor Farkas, and Thorbjörn Sahlin, all of Västerås, Sweden, assignors to ABB Atom AB, Västerås, Sweden

Filed Apr. 20, 1992, Ser. No. 870,922
Claims priority, application Sweden, Jun. 12, 1991, 9101784
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 8 Claims

1. A spacer comprising a cell-formed lattice-work for retaining parallel elongated elements such as fuel rods in a bundle in a nuclear reactor fuel assembly, said spacers being arranged in a spaced relationship to each other along the bundle, said cells being formed from a plurality of circular tubular sleeves, each one of said tubular sleeves offering a passage for one of said elements in order to fix the elements in relation to each other, wherein substantially half said plurality of circular tubular sleeves are distributed evenly over a cross section of the bundle in a first plane and are joined to each other, thereby forming a lattice of sleeves and gaps between the sleeves, the remaining half of said plurality of circular tubular sleeves being located over a cross section of the bundle in a second plane which is



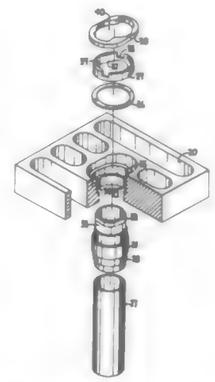
spaced from said first plane, and are joined to form a lattice of sleeves and gaps between the sleeves, the sleeves in said first and second planes being arranged in such a way that a normal length element fixed by a sleeve in said first plane traverses a gap arranged in said second plane and vice versa.

5,363,423

QUICK RELEASE TOP NOZZLE ASSEMBLY

Raymond W. Brashier, and Edmund E. DeMario, both of Columbia, S.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 19, 1993, Ser. No. 109,101
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—446 11 Claims



1. A quick release removable top nozzle assembly for use in a nuclear fuel element assembly comprising a top plate member, an enclosure frame and an adaptor plate having a plurality of spaced openings therein, a plurality of tubular insert support members each adapted to fit within a selected opening in the adaptor plate, each tubular insert support member having an enlarged collar section adapted to contact and support the underside of the adaptor plate, and a plurality of quick release joints, each quick release joint adapted to fit within a selected opening in the adaptor plate, each quick release joint having a tubular lock insert adapted to fit within the selected opening and having a circumferential groove and a plurality of lobes above the groove, and a lock ring retained in a recess in the top of the adaptor plate by a retainer ring, the lock ring being adapted to rotatably engage the circumferential groove and the lobes, whereby rotation of the lock ring locks or releases

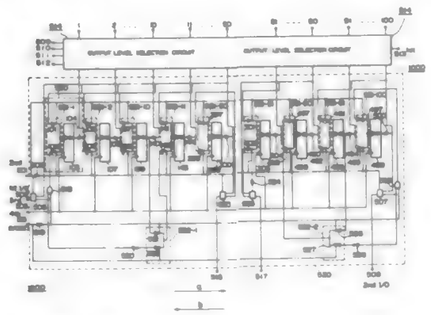
the tubular lock insert from the selected opening of the adaptor plate.

5,363,424

PARTIALLY-OPERABLE DRIVER CIRCUIT

Yoshimitu Fujisawa, Osaka, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,380
Claims priority, application Japan, Mar. 9, 1992, 4-050738
Int. Cl.[5] G11C *19/28*
U.S. Cl. 377—69 23 Claims



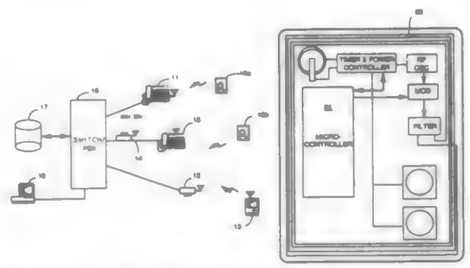
1. A driver circuit comprising:
an output level selection circuit having:
a plurality of driving terminals;
a plurality of potential level input terminals for receiving a plurality of electrical potential levels; and
a plurality of data terminals for receiving data signals, the output level selection circuit for outputing a signal having one of the electrical potential levels from the driving terminals in response to the received data signals; and
a register having:
an input terminal;
an output terminal;
a control terminal for receiving a control signal having a first state and a second state; and
a shift register for generating the data signals received by the data terminals of the output level selection circuit, the shift register being coupled to each of the data terminals of the output level selection circuit, the control terminal and the input and output terminals, the shift register including:
a first shift circuit including a plurality of serially coupled data latch circuits, the first shift circuit having an input coupled to the input terminal and an output;
a second shift circuit including a plurality of serially coupled data latch circuits, the second shift circuit having an input and an output coupled to the output terminal; and
a control circuit having inputs coupled to the input terminal, the output of the first shift circuit, and the control terminal, the control circuit having an output coupled to the input of the second shift circuit, the control circuit for coupling the input terminal and the input of the second shift circuit when the control signal is in the first state and for coupling the output of the first shift circuit and the input of the second shift circuit when the control signal is in the second state.

5,363,425

METHOD AND APPARATUS FOR PROVIDING A PERSONAL LOCATOR, ACCESS CONTROL AND ASSET TRACKING SERVICE USING AN IN-BUILDING TELEPHONE NETWORK

Sohale A. Mufti, Kanata; Robert G. Samuel; Peter P. K. Soong, both of Nepean; Adrian M.-G. Yip, Kanata, and Michael J. Wakim, Nepean, all of Canada, assignors to Northern Telecom Limited, Quebec, Canada

Filed Jun. 29, 1992, Ser. No. 906,192
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—38 21 Claims



1. A system for providing a personal communication and locator service within a telephone network as a subscriber moves along the network from a first receiver device associated with his home telephone set to a second receiver device associated with a visited telephone set, comprising:
storing means, at database means, for storing a list of subscriber profiles indicative of the identity of the subscriber and network services available to that subscriber at his home telephone set;
transmitter means adapted to be carried by a subscriber, and able to transmit a predetermined RF signal;
input means at said transmitter means to allow said subscriber to modify said predetermined RF signal to initiate a predetermined network service;
multiple receivers means adapted to be connected and distributed across said telephone network and able to receive said predetermined and modified RF signals indicative of a specific network service requested by said user;
signal modulation means at said multiple receivers means for modulating said predetermined and modified RF signals into a modulated signal;
means for sending, along a telephone line connected to said multiple receivers means, said modulated RF signal to a switch connected to said network; and
means for registering said subscriber service profile against said visited telephone set associated with said second receiver device when said subscriber activates said input means, such that the subscriber's network services and telephony features available from his home telephone set can be enabled at said visited telephone set.

5,363,426

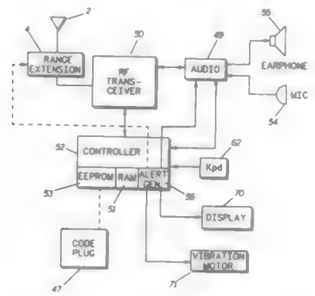
EXTENDED RANGE PAGING FOR A RADIO FREQUENCY COMMUNICATION SYSTEM

Scott O. Nyhart, Algonquin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 909,274, Jul. 6, 1992, abandoned. This application Apr. 14, 1994, Ser. No. 227,490
Int. Cl.[5] H04M *11/00;* H04Q *7/00*
U.S. Cl. 379—57 7 Claims

2. A cordless telephone comprising:
means for receiving a page signal providing notification that an incoming call is intended for the cordless telephone;
means for transmitting a page-response signal acknowledging the reception of the page signal;

means for detecting a call set-up grant signal responsive to the page-response signal to complete a call set-up;
means for enabling the detecting means for a predetermined signal sampling time during which reception of the call set-up grant signal is expected, in response to the page-response signal transmitted;



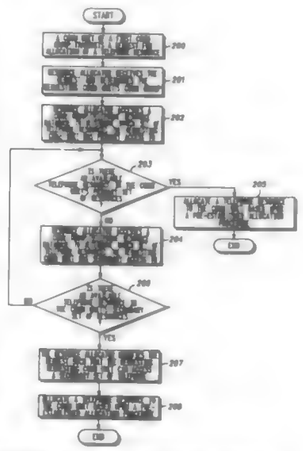
means for determining that the cordless telephone is out-of-range when the call set-up grant signal is not detected by the detecting means during the predetermined signal sampling time; and
means for indicating to a user that notification of an incoming call was received and that the cordless telephone is out-of-range thereby preventing completion of the call set-up.

5,363,427

TELEPHONE RESOURCE ALLOCATION METHOD IN A COMMUNICATION SYSTEM

Terry G. Ekstrom; Patricia A. Ekstrom, both of Algonquin, and John J. Coombes, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 26, 1992, Ser. No. 842,850
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—58 1 Claim



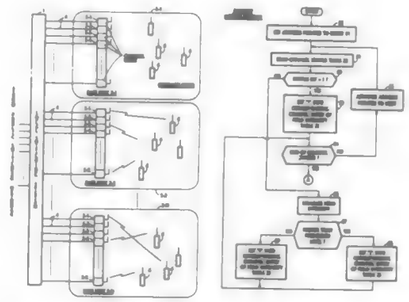
1. In a communication system that includes a plurality of communication units that are arranged into communication groups, a limited number of communication resources that are transceived via repeaters, a first limited number of telephone resources, at least a second limited number of telephone resources and a resource allocator that allocates the communication resources and the telephone resources among the plurality of communication units, a method for allocating the telephone resources among the plurality of communication units, the method comprises the steps of:
a) transmitting, by a communication unit of a first communication group, a request for allocation of a telephone resource to the resource allocator, wherein the request for allocation includes a group identity of the requesting communication unit and conforms to a format utilized by a telephone resource that the first communication group has primary access to;
b) determining, by the resource allocator, that the requesting communication unit is from the first communication group;
c) determining, by the resource allocator and based the on the first communication group, whether the requesting communication unit has primary access to at least one telephone resource in either the first or second limited number of telephone resources: and
d) when a telephone resource is available and the requesting communication unit has primary access to the telephone resource, allocating, by the resource allocator, the telephone resource to the requesting communication unit based upon a pre-established allocation procedure,
the method further comprising when a telephone resource is available and the requesting communication unit does not have primary access to the available telephone resource, modifying, by the resource allocator, the request for allocation of the telephone resource to request access to a telephone resource that the requesting communication unit does not have primary access to.

5,363,428

DYNAMIC CHANNEL ASSIGNMENT CORDLESS TELECOMMUNICATION NETWORK

Noriaki Nagashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 18, 1992, Ser. No. 884,154
Claims priority, application Japan, May 17, 1991, 3-113457
Int. Cl.[5] H04M *11/00;* H04Q *7/00;* H04B *1/00*
U.S. Cl. 379—58 10 Claims



1. A telecommunication network for serving cordless units located in a plurality of service zones, said network having radio speech channels which are organized into a plurality of channel groups such that no intermodulation products occur among the channels of each group, said network comprising a plurality of base units located respectively in said service zones, each of said base units comprising:
means for establishing two-way speech channels with those of the cordless units which are located in the same zone as the base unit;
a priority table for storing priority values of said channel groups;
means for detecting a maximum priority value from said priority table at periodic intervals and assigning one of said channel groups having the detected priority value to the base unit; and

means for (a) measuring field intensity of each of said radio channels, classifying the measured field intensity of each channel as representing first, second or third possible states, (b) determining whether all the measured field intensities simultaneously represent a mixture of said first, second and third possible states, (c) increasing the priority value of the assigned channel group if the measured field intensity of each channel is classified as representing the third possible state and all the measured field intensities are determined as representing said mixture of possible states, and (d) decreasing the priority value of the assigned channel group if the measured field intensity of each channel is classified as representing the first or second possible state and all the measured field intensities are determined as representing said mixture of possible states, said first, second and third possible states representing respectively an idle state of a channel, a busy state of a channel of the assigned channel group, and a busy state of a channel of a channel group other than the assigned channel group.

5,363,429

RADIO TELEPHONE DEVICE CAPABLE OF IDENTIFYING AN INTERRUPTING CALLER AND TELEPHONE SYSTEM USING THE SAME

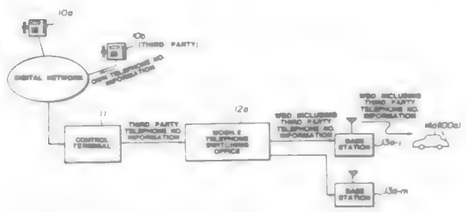
Akiko Fujisawa, Machida, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1992, Ser. No. 887,005

Claims priority, application Japan, May 23, 1991, 3-118374

Int. Cl.[5] H04M *11/00, 1/00*

U.S. Cl. 379—58 **2 Claims**



1. A telephone system comprising:

a control terminal having an exchanging function;

a plurality of mobile telephone switching offices connected to the control terminal;

a plurality of base stations each connected to one of the mobile telephone switching offices;

a plurality of radio telephone sets, each having a display unit and an assigned telephone number, each to be connected to one of the mobile telephone switching offices via a radio channel and operable for sending a call signal including the assigned telephone number;

wherein the control terminal includes:

means for controlling a connection between a first radio telephone set and a second radio telephone set,

means for receiving an interrupting call signal from a third radio telephone set directed to the first radio telephone set during the connection between the first radio telephone set and the second radio telephone set,

means for detecting a telephone number of the third radio telephone set included in the interrupting call signal, and

means for transmitting the detected telephone number to the mobile telephone switching office which controls the first radio telephone set,

wherein each of the mobile telephone switching offices include:

means for detecting the assigned telephone number of the third radio telephone set, and

means for generating control information including the detected telephone number,

wherein each of the base stations include means for sending the control information to the first radio telephone set, and

wherein the first radio telephone set includes means for detecting the assigned telephone number of the third radio telephone set in the control information and means for displaying the detected telephone number on the display unit of the first radio telephone set.

5,363,430

CORDLESS TELEPHONE APPARATUS HAVING A LOW POWER STAND-BY MODE AND A HOLD MODE

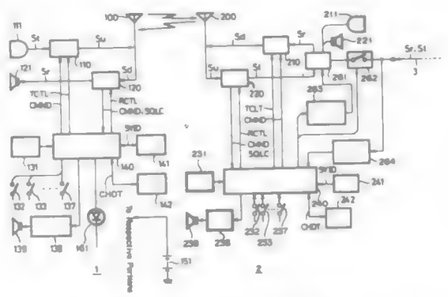
Masato Yamagata; Yoshikazu Tanaka, both of Kanagawa, and Keizo Tsukada, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 630,329, Dec. 19, 1990, abandoned. This application Apr. 28, 1993, Ser. No. 54,617

Claims priority, application Japan, Dec. 27, 1989, 1-339232; Dec. 27, 1989, 1-339239

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—61 **1 Claim**



1. A cordless telephone apparatus comprising:

a base unit connected to a telephone line network for connection through the latter with a desired party;

a handset unit operable upon opening of a communication channel selected from among a plurality of communication channels for radio communication of informational and mode control signals with said base unit so as to enable communication of said informational signals through the telephone line network with said desired party and having means for establishing an initiating and terminating mode in which said radio communication between said base unit and said handset unit is respectively initiated and terminated;

means for establishing a low power standby mode in which said handset unit intermittently monitors at least one predetermined communication channel from among said plurality of communication channels and said base unit monitors all of said plurality of communication channels;

means automatically responsive to an interruption of said radio communication between said handset and said base unit for establishing a channel changing mode in which said communication channel opened between said base unit and said handset unit is changed to another of said communication channels;

means for establishing and releasing a hold mode in which the communication of said informational signals between said handset unit and said desired party is inhibited when said hold mode is established; and

means for continuously monitoring said communication channel opened between said base unit and said handset unit for a predetermined period after initiation of said hold mode so as to detect one of said mode control signals indicating termination of said radio communication, releasing of said hold mode and establishing of said channel

changing mode for changing of said communication channel opened between said base unit and said handset unit, respectively, and, in the absence of detection of any of said mode control signals, for placing said handset unit in said stand-by mode after said predetermined period.

5,363,431

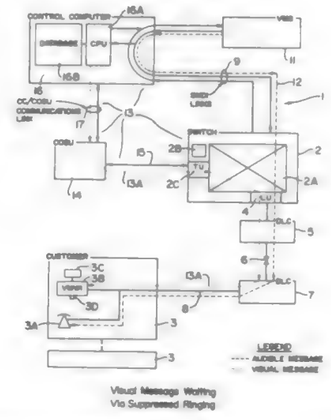
VISUAL MESSAGE WAITING INDICATION IN A TELEPHONE VOICE MESSAGE SYSTEM

Jerome W. Schull, Marietta, and Wayne R. Howe, Duluth, both of Ga., assignors to Bell South Corporation, Atlanta, Ga.

Filed Dec. 22, 1992, Ser. No. 995,025

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—67 **41 Claims**



1. A telephone system comprising:

a telephone switching network responsive to telephone subscriber locations for providing telephone connections for said telephone subscriber locations including connections to a voice message system;

and first means responsive to a message waiting indicator signal associated with a particular subscriber location, said message waiting indicator signal indicating that said voice message system contains a message, and said first means acting to establish a suppressed ringing connection through said telephone switching network to the particular subscriber location associated with said message waiting indicator signal.

5,363,432

TRANSMISSION OF BROADBAND SIGNALS TO SUBSCRIBERS USING A TELECOMMUNICATIONS CABLE

Horst Martin, Iserlohn; Alfred Naab, St Augustin; Bernhard Hesse, Siegen; Wolfgang Weidhaas, Cologne; Gunther Quednau, Hagen, and Dieter Fremgen, Wulfrath, all of Germany, assignors to Raynet GmbH, Germany and Philips Gloeilampenfabrieken, Netherlands

PCT No. PCT/GB90/01680, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/07018, PCT Pub. Date May 16, 1991

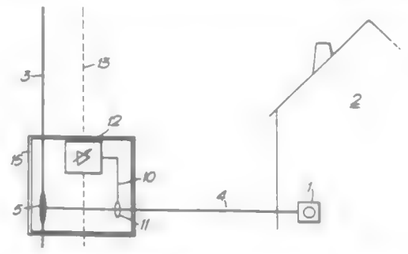
PCT Filed Nov. 2, 1990, Ser. No. 855,020

Claims priority, application United Kingdom, Nov. 3, 1989, 8924839

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—90 **14 Claims**

1. A method of transmitting a broadband electrical signal to a subscriber's premises by means of a telecommunications cable, the telecommunications cable comprising a first pair of electrical conductors surrounded by an electrical shield, com-



prising the steps of: applying the broadband signal between (a) the shield and (b) one of the conductors of the first pair.

5,363,433

INFORMATION ACQUISITION SYSTEM

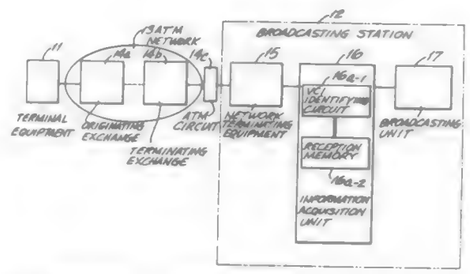
Osamu Isono, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 27, 1992, Ser. No. 874,975

Claims priority, application Japan, May 8, 1991, 3-102384

Int. Cl.[5] H04M *11/00;* **H04N** *7/00;* **H04Q** *11/04;* **H04J** *3/24*

U.S. Cl. 379—92 **10 Claims**



1. An information acquisition system for acquiring information which includes responses to questions which participants have been asked by broadcast program, comprising:

a plurality of terminal equipment for inputting responses from unspecified audiences of a predetermined broadcast program;

an ATM (Asynchronous Transfer Mode) network connected to said plurality of terminal equipment and receiving information including responses from unspecified audiences of said broadcast program and transmitting said information to a broadcasting station, said information including a response inputted from a predetermined terminal equipment of a participant of said broadcast program;

network terminating equipment provided in the broadcasting station and connected to a predetermined ATM exchange in said ATM network; and

an information acquisition unit, which is connected to said network terminating equipment, for receiving and collecting, via said ATM network and said network terminating equipment, information from unspecified audiences of said broadcast program, said information including the response inputted from said predetermined terminal equipment,

wherein when said predetermined terminal equipment calls the broadcasting station, said ATM network performs call control to decide a path between said terminal equipment and the broadcasting station and designates different virtual channel identifiers for said terminal equipment and said broadcasting station,

said terminal equipment produces a data cell by adding the

virtual channel identifier designated by said ATM network to the information which includes the response to the question, and sends the data cell produced to said ATM network,

said ATM network sends the data cell via said path to the ATM exchange to which the network termination equipment of the broadcasting station has been connected, and

said ATM exchange replaces the virtual channel identifier that has been added to the data cell by the virtual channel identifier that has been designated for said broadcasting station, and sends this data cell to said network terminating equipment; and

wherein, when a call is made at said predetermined terminal equipment, said terminal equipment produces a signal cell by adding a special virtual channel identifier determined for a call to information which includes an originating number and a terminating number, and sends said signal cell to said ATM network,

said ATM network performs the call control in response to reception of the signal cell and, prior to sending of a data cell, said ATM exchange as a terminating exchange produces a signal cell by adding a special virtual channel identifier determined for termination to information which includes a virtual channel identifier, designated for the broadcasting station, as well as the originating number, and sends said signal cell to the network terminating equipment of the broadcasting station, and

said network terminating equipment receives said signal cell and stores the correspondence between the virtual channel identifier and the originating number; and

wherein said network terminating equipment includes:

a cell distributor for identifying an incoming cell from said ATM network as being a data cell or a signal cell, distributing the data cell to said information acquisition unit and distributing the signal cell to a signal assembling circuit, which is a subsequent stage;

the signal assembling circuit which, when the incoming cell is a signal cell, is for assembling information contained in said signal cell;

a call controller which, in a case where said information contains an incoming message, sends an answer cell back to the terminating exchange and, upon reception of the data cell, sends back a call-disconnect cell; and

means for preserving the correspondence between the virtual channel identifier and the originating number contained in the assembled information.

5,363,434

AUDIO DISTRIBUTION SYSTEM

Robert Farinelli; Bruce B. Stevenson, and Bill R. Unseld, all of Lexington, Ky., assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 639,507, Jan. 9, 1991, Pat. No. 5,131,048. This application Jan. 9, 1992, Ser. No. 818,664

The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.

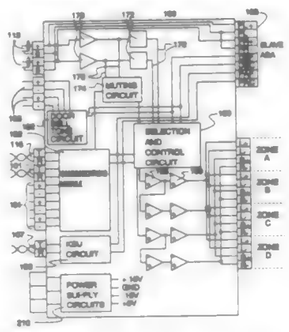
Int. Cl.[5] H04R *27/00*

U.S. Cl. 379—170 **24 Claims**

1. A signal distribution and communication arrangement for controlling broadcast of a plurality of different types of signals through speakers located in various zones, comprising:

a door speaker controller to a telephone to allow communication between said telephone and a door speaker;

for broadcasting over said speakers located in various zones from said telephone and thereafter muting the broadcast over said speakers located in various zones to allow private communication;



said broadcasting circuit further including means for placing a phone call on hold when said broadcasting said over said speakers located in various zones is originated.

5,363,435

METHOD AND APPARATUS FOR SEIZING A TRUNK CIRCUIT IN A TELECOMMUNICATIONS PRIVATE BRANCH EXCHANGE

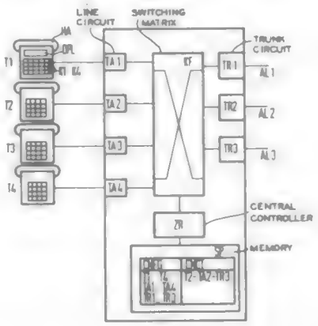
Noel Demuynck, Zedelgem, , assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 27, 1991, Ser. No. 802,064

Claims priority, application Germany, Nov. 30, 1990, 4038320; Nov. 30, 1990, 4038321

Int. Cl.[5] H04M *3/20*

U.S. Cl. 379—208 **18 Claims**



1. A method for seizing a trunk circuit in a telecommunications private branch exchange having a central controller connected to a memory for the acceptance of system configuration data and of connection-status-associated information and having a plurality of trunk circuits and a plurality of internal terminal equipment, comprising the steps of: the central controller, triggered by a first command of a first internal terminal equipment identifying a request to seize a trunk circuit, checking the trunk circuits of the telecommunications private branch exchange for idle condition within the framework of a first check; if the central control does not find a free trunk circuit in the first check, the central controller, triggered by the first command or by a second command of the first internal terminal equipment, checking the trunk circuits of the telecommunications private branch exchange for disconnectability, defined according to a given criterion, during the framework of a second check; the central controller forming information identifying the result of the second check such that information identifying a second internal terminal equipment that is connected to a respective disconnectable trunk circuit is displayed on an optical display means of the first internal terminal equipment allocated to the first internal terminal equipment; and the central controller executing one of the following steps, triggered by a third command of the first internal terminal equipment, the central controller disconnecting a first disconnectable trunk circuit that is connected to the second internal terminal equipment indicated on the display means of the first internal terminal equipment and allocating the disconnected first disconnectable trunk circuit to the first internal terminal equipment, or, triggered by a further command of the first internal terminal equipment, selecting a second disconnectable trunk circuit from remaining disconnectable trunk circuits for a later disconnect and forming information identifying a further internal terminal equipment that is connected to the second disconnectable trunk circuit, and the central controller disconnecting the selected second disconnectable trunk circuit and allocating the second disconnectable trunk circuit to the first internal terminal equipment.

5,363,436

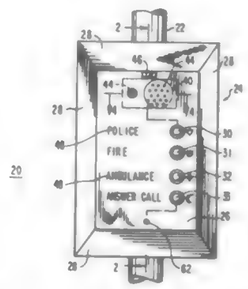
REMOTELY PROGRAMMABLE, VANDAL-RESISTANT VOICE COMMUNICATIONS UNIT

John J. McMonagle, Jr., 1369 E. 84th St., Brooklyn, N.Y. 11236, and Kevin T. Vesely, 100 Edinburgh Rd., Wallkill, N.Y. 10940

Continuation-in-part of Ser. No. 415,782, Oct. 2, 1989, Pat. No. 5,086,463. This application Nov. 21, 1990, Ser. No. 616,998

Int. Cl.[5] H04M *1/26*

U.S. Cl. 379—355 **7 Claims**



1. A remotely programmable voice communications unit, comprising:

transmitter means for transmitting a voice signal; receiver means for receiving a voice signal; means for coupling the transmitter means and the receiver means with a public telephone system for respectively transmitting and receiving voice signals therethrough; and remotely programmable unit controller means for controlling the operation of the transmitter means to automatically transmit a preprogrammed telephone number via the public telephone system in response to user actuation for establishing voice communication with a predetermined remotely located telephone unit; the receiver means being operative to receive a remotely generated programming signal transmitted via the public telephone system, the remotely generated programming signal including telephone number data; the remotely programmable unit controller means being operative in response to the remotely generated programming signal received by the receiver means to store the telephone number data as the preprogrammed telephone number; the remotely programmable unit controller means being further operative in response to receipt of a password included with said remotely generated programming signal to enable storage of the telephone number data included therewith and to inhibit storage thereof in the absence of such password.

5,363,437

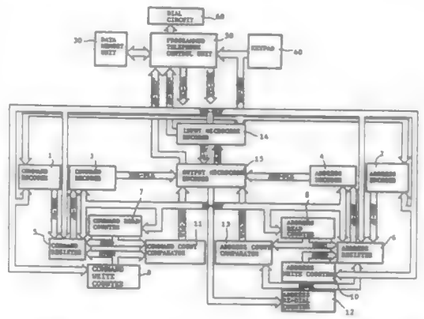
TELEPHONE DIALING DEVICE AND THE OPERATING METHOD THEREOF

Hung-Ting Shen, and Rin-Min Huang, both of Hsinchu, Taiwan, Prov. of China, assignors to Winbond Electronic Corp., Hsinchu, Taiwan, Prov. of China

Filed Aug. 17, 1992, Ser. No. 930,354

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—355 **4 Claims**



1. A method for dialing a telephone number, comprising the steps:

providing a data memory unit which includes a first memory region for storing normal dial numbers and a second memory region containing pre-stored memory dial numbers;

operating a keypad so as to provide a sequence of key inputs;

decoding said key inputs sequentially to determine if a decoded one of said key inputs involves a normal dialing activity or a memory dialing activity;

if the decoded one of said key inputs involves a normal dialing activity,

storing a normal dial number corresponding to the decoded one of said key inputs in said first memory region of said data memory unit; and

generating a first code which includes a normal dialing command code and a first address code to indicate the location of the normal dial number corresponding to the decoded one of said key inputs in said first memory region of said data memory unit;

if the decoded one of said key inputs involves a memory dialing activity, generating a second code which includes a memory dialing command code and a second address code to indicate the location of the memory dial number corresponding to the decoded one of said key inputs in said second memory region of said data memory unit;

storing said first and second codes in a program memory means in a sequence similar to that of said key inputs from said keypad;

retrieving said first and second codes sequentially from said program memory means; and

retrieving the corresponding dial number from said data memory unit and executing the dialing activity corresponding to the retrieved one of said first and second codes.

5,363,438

SELECTIVE RINGING RECEIVING DEVICE AND METHOD

Yasunari Tanaka, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 4, 1991, Ser. No. 787,111

Claims priority, application Japan, Nov. 9, 1990, 2-305141

Int. Cl.[5] H04L *7/06*

U.S. Cl. 379—375 **9 Claims**

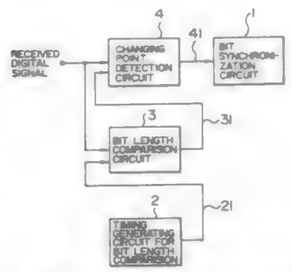
1. A selective ringing receiving circuit comprising:

receiving means for receiving a digital signal to output a

received digital signal which has rising and falling changing points;

a timing generating circuit for generating a timing signal for bit length comparison;

a bit length comparison circuit for comparing, in terms of said timing signal, respective bit lengths of '1' and '0' bits of the received digital signal outputted from said receiving means and for producing a changing point detection signal in accordance with a result of a comparison of said respective bit lengths;



a changing point detection circuit for selecting either the rising changing points or the falling changing points of said received digital signal in accordance with the changing point detection signal to produce a detected rising or falling changing point signal of the received digital signal; and

a bit synchronization circuit for performing bit synchronization in response to the detected rising or falling changing point signal.

5,363,439

DTMF SIGNAL RECEIVING SYSTEM

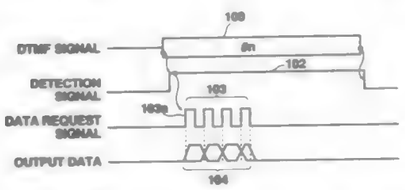
Noda Mitsuhiko, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 879,797, May 6, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,702

Claims priority, application Japan, May 14, 1991, 3-107978

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—386 **10 Claims**



1. A system for receiving DTMF signals from a telephone network, comprising:

(a) detecting means for detecting said DTMF signals;

(b) data requesting means for outputting a plurality of data request signals during each time period when said DTMF signals are detected by said detecting means;

(c) decoding means for decoding said DTMF signals and for outputting decoded data each consisting of a plurality of bits in parallel;

(d) data converting means for receiving the decoded data from said decoding means and for converting and outputting said decoded data as serial decoded data each time when one of said plurality of said data request signals is inputted into said data converting means; and

(e) discriminating means for identifying and selecting a decoded data having a highest reliability among said serial decoded data from said data converting means.

5,363,440

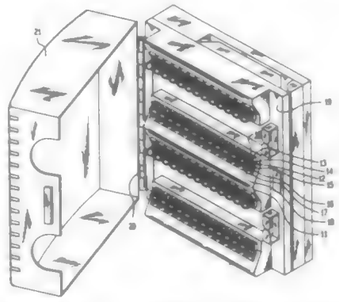
MULTILAYERED TYPE NETWORK INTERFACE UNIT

Bassel H. Daoud, Township of Parsippany-Troy Hills, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 31, 1993, Ser. No. 40,772

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—399 **7 Claims**



1. A network interface unit for servicing a multiplicity of subscribers, said unit comprising:

a bottom portion including a splice chamber and an array of protector devices mounted thereon, said splice chamber including wiring means for connecting a cable to said protectors; and

a top portion including an array of customer bridges, each adapted for coupling to a different subscriber line, the bridge array being coupled to said protector array through at least one removable electrical connector, said top portion being mounted to the bottom portion by means including a hinged member so that the top portion may be opened to reveal the bottom portion, and the mounting means including fasteners so that the top portion is removably mounted to the bottom portion.

5,363,441

TECHNIQUE FOR REDUCING ECHOES IN CONFERENCE COMMUNICATIONS

Alexander Feiner, Rumson; Gi-Hong Im, Middletown; Joseph G. Kaeser, Fair Haven; Burton R. Saltzberg, Middletown, and Jean-Jacques Werner, Holmdel, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 999,063, Dec. 31, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,595

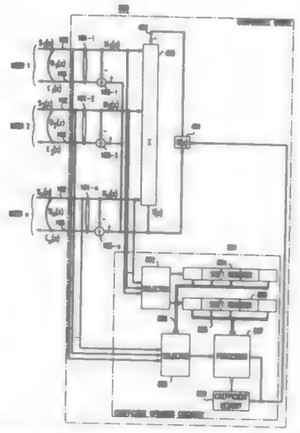
Int. Cl.[5] H04M *3/56*

U.S. Cl. 379—411 **13 Claims**

1. Apparatus for providing conferencing communications comprising

means for forming a signal sum equal to a sum of signals received from at least three information signal sources along with an echo compensation signal, the signal received from each information source including echoes and said signal sum including an aggregation of such echoes; and

an echo estimating filter having an input and an output, said input being solely responsive to said signal sum and said output being only coupled to said forming means, said



filter forming said echo compensation signal which is an estimate of said aggregation of echoes.

5,363,442

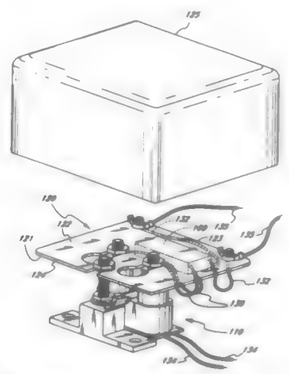
RETROFIT INTERFACE APPARATUS AND METHOD FOR REMOTE ISOLATION DEVICES

Donald F. Dernbach, El Cajon, and Donald W. Perkins, Bonita, both of Calif., assignors to Training Delivery Services, Inc., Irvine, Calif.

Filed Aug. 31, 1992, Ser. No. 937,976

Int. Cl.[5] H04M *9/00*

U.S. Cl. 379—412 **19 Claims**



1. A retrofit interface apparatus for use in connecting a remote isolation device to a previously installed surge protector device including a pair of surge posts and a ground post within a housing covering said surge posts and said ground post, said apparatus comprising:

a remote isolation device; and

a mounting unit, comprising:

a body defining an inner surface and an outer surface, said inner surface of said body defining a supporting surface to which said remote isolation device is secured;

a receiving element for receiving at least one of said posts; and

a pair of terminals on said outer surface of said body adapted to be connected to a pair of subscriber wires, said pair of terminals electrically connected through said body to said remote isolation device secured to said inner surface of said body, wherein said outer surface of said body shields said remote isolation device from subscriber contact,

and wherein said retrofit interface apparatus is sized and shaped to fit within said housing of said previously installed surge protector device.

5,363,443

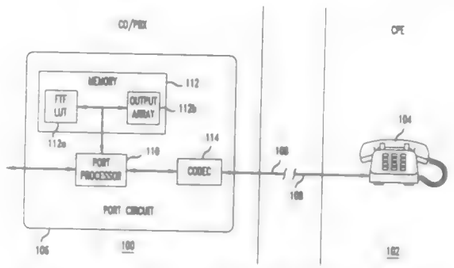
DIFFERING FREQUENCY SINE WAVE GENERATION FROM A LOOK-UP TABLE

Norman W. Petty, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 8, 1993, Ser. No. 163,968

Int. Cl.[5] H04M *3/00*

U.S. Cl. 379—418 **18 Claims**



1. A method for generating at least two different frequency sine waves for transmission at a first frequency from a look-up table having entries including samples taken at a second sampling frequency which is not an integral multiple of said first frequency, said method comprising the steps of:

selecting a fundamental table frequency such that the frequencies of said different frequency sine waves to be generated are each an integral multiple of said fundamental table frequency;

determining a fractional correction factor by:

placing said second sampling frequency over said first frequency to form a fraction; and

reducing said fraction;

forming a look-up table for a sine wave of said fundamental table frequency by taking samples at a rate equal to said second sampling frequency times a denominator of said fractional correction factor;

accessing said look-up table using at least two different table steps corresponding to said at least two different frequency sine waves to be generated; and

taking first and second fractional portions of two different table steps for transitions between corresponding first and second frequency sine waves, said first and second fractional portions summing to one.

5,363,444

UNIDIRECTIONAL EAR MICROPHONE AND METHOD

Norris, Elwood G., Poway, Calif., assignor to Jabra Corporation, San Diego, Calif.

Continuation of Ser. No. 881,141, May 11, 1992, abandoned. This application Jan. 18, 1994, Ser. No. 183,625

Int. Cl.[5] H04M *1/00;* **H04R** *25/00*

U.S. Cl. 379—430 **24 Claims**

1. An ear piece device configured for being supported at the ear and providing a microphone element which detects only sounds generated within the immediate vicinity of the skull of a user, said ear piece including:

a housing having a first end configured to fit snugly at the ear canal of the user, said housing including an interior surface defining a microphone compartment therein;

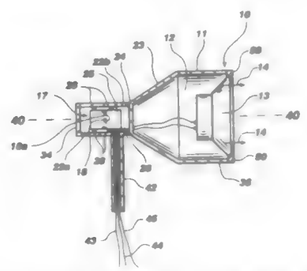
a microphone casing disposed within the microphone com-

partment and having first and second opposing walls, said casing defining a microphone enclosure therein;

a microphone support member for receiving mechanical vibrations disposed within the casing and having first and second opposing ends coupled to the first and second opposing walls of the casing, respectively, such that said support member spans the microphone enclosure and is substantially enclosed therein;

a microphone element coupled to the support member such that the microphone element is substantially enclosed within the microphone casing and is separated from contact with the skull by the housing, said microphone element and said support member being collectively interposed between the first and second opposing walls of the casing;

first and second mounting rings being relatively adjustable with respect to and circumscribing the microphone casing, said rings being positioned between an interior surface of the housing and an exterior surface of the microphone



casing to receive mechanical waves from said housing, said rings defining first and second substantially parallel imaginary planes, respectively, said planes pass through the opposing walls of the casings, said rings further being positioned at approximate equal entry distances from and on opposing sides of the microphone element such that the support member and said microphone element reside approximately midway between said parallel planes, said mounting rings thereby enabling cancellation at the microphone element of substantially all mechanical and acoustical waves passing through said rings and into the casing to the microphone element wherein (1) said mechanical waves enter the microphone compartment from the housing and (2) said acoustical waves enter the microphone compartment through air transmission openings from a substantial distance as compared to the relatively near location of the user's skull; and

means for coupling signal output from the microphone element to an audio circuit for processing.

5,363,445

AUXILIARY CHARGING DEVICE FOR A MOBILE TELEPHONE

Chih-Yes Shyu, 4F, No. 144, Chu-Lin Road, Yung-Ho Shih, Taipei Hsien, Taiwan, Prov. of China

Filed Jan. 7, 1994, Ser. No. 178,810

Int. Cl.[5] H04M *1/00;* **H02K** *7/14, 11/00*

U.S. Cl. 379—433 **2 Claims**

1. An auxiliary charging device for a mobile telephone comprising:

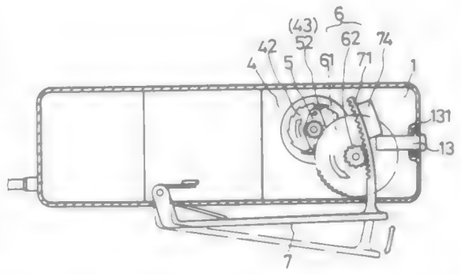
a compartment in a bottom portion of the mobile telephone for depositing components of said charging device described below;

a coil shaped round and having a central hole for a vertical shaft to pass through to secure said coil in said compartment, and two ends connected with input contact points of electric power of a mobile telephone; a magnet shaped round and having a central hole for said vertical shaft to pass through and placed on said coil and in a lower opening of a revolving disc;

said revolving disc having an H-shaped cross-section, a central hole for said vertical shaft to pass through and placed to have its lower opening containing said magnet and said coil and its upper opening containing an auxiliary gear, a plurality of ratchet teeth in an inner circumferential wall defining said upper opening, said ratchet teeth engaging two pawls provided on two ends of an auxiliary gear so that said revolving disc is rotated together with said auxiliary gear only in one directionn but not rotated in the reverse direction;

said auxiliary gear having a central hole for said vertical shaft to pass through and put in said upper opening of said revolving disc, two projecting-out ends under said gear body, and the two pawls respectively fixed firmly with said two projecting-out ends to engage said ratchet teeth to rotate said revolving disc only in one direction but not in the reverse direction;

a main gear having a large diameter teeth and a small diameter teeth secured by another vertical shaft in said compartment, said large diameter teeth engaging said auxiliary gear, said small diameter teeth engaging an elongate rack of an operating handle and rotated by said rack when said operating handle is manually pushed to swing inward;



said operating handle is nearly U-shaped, said operating handle having the elongate rack extending from an outer end to engage said small diameter teeth of said main gear so as to rotate said main gear when said operating handle is manually pushed to swing inward, and two fulcrum arms extending from an inner end, each said fulcrum arm having a fulcrum hole for a shaft pin to secure said operating handle with said compartment to enable said operating handle pushed inward or outward, and a spring provided to fit around said shaft pin between said two fulcrum arms to force said operating handle biased outward, a projecting block being affixed on a rear side of said rack to be stopped by a movable locking member fitted in a groove of an opening in a lower side wall of said compartment;

said operating handle being pushed manually inward to rotate said main gear, said auxiliary gear and then said magnet to let said coil produce electric current which is to be supplied to said mobile telephone, said operating handle being pushed to swing outward by elasticity of said spring after pushed to swing inward, rotating said main gear and said auxiliary gear in a reverse direction and forcing said auxiliary gear rotate idle, not rotating said revolving disc by means of said pawls of said auxiliary gear engaging said ratchet teeth of said revolving disc.

5,363,446

COMPUTER FOR THE CONTROL STATION OF A MACHINE, MORE PARTICULARLY A PRINTING PRESS

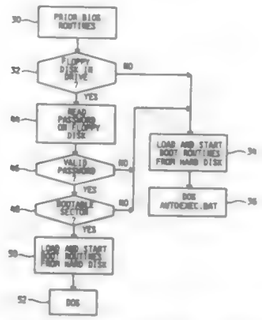
Michael Ruppertz, Kaiserstr. 7, 6232 Bad-Soden/Taunus; Dietrich Schebesta, Geschwister-Scholl-Str. 17, 6050 Offenbach-/Main, and Frank Schonfeld, Franz-Jakoby-Str. 13, 6052 Muhlhiem/Main 3, all of Germany

Filed Jul. 10, 1992, Ser. No. 911,961

Claims priority, application Germany, Jul. 12, 1991, 4123126

Int. Cl.[5] H04G *9/00*

U.S. Cl. 380—4 **12 Claims**



1. A control station computer having a plurality of configurations, the particular configuration depending upon the value of a password retrieved from electronically sensed interchangeable memory media inserted into an interchangeable memory drive during start-up of the control station computer comprising:

a central processing unit;

non-volatile memory storage;

a set of one or more passwords stored in the non-volatile memory storage;

security means for reading a password stored on a first portion of the electronically sensed interchangeable memory media inserted into the interchangeable memory drive prior to start-up of the control station computer to determine whether the password on the first portion of the electronically sensed interchangeable memory media matches a one of the set of one or more passwords stored in the non-volatile memory storage; and

means for booting the control station computer from a set of routines stored within a bootable portion of the electronically sensed interchangeable memory media when the password read from the first portion of the electronically sensed interchangeable memory media matches a one of the set of one or more valid passwords stored in the non-volatile memory storage.

5,363,447

METHOD FOR LOADING ENCRYPTION KEYS INTO SECURE TRANSMISSION DEVICES

Kent D. Rager, and Steven H. Lay, both of Elgin, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 26, 1993, Ser. No. 37,950

Int. Cl.[5] H04L *9/08*

U.S. Cl. 380—21 **16 Claims**

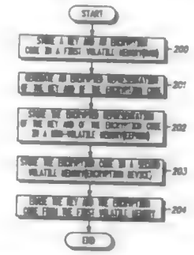
13. A method for a secure transmission device to utilize a key to transmit secure data, wherein an encrypted representation of the key, an encrypted representation of an encryption code and an encrypted representation of an encryption check code are stored in a non-volatile memory, the method comprises the steps of:

a) decrypting, by an encryption device, the encrypted representation of the encryption code and the encrypted representation of the encryption check code based on a master key to produce a recaptured encryption code and a recaptured encryption check code, wherein the master key is stored in a second volatile memory;

b) calculating an encryption check code based on the recaptured encryption code;

c) comparing the encryption check code and the recaptured encryption check code;

d) when the encryption check code and the recaptured encryption check code substantially match, decrypting,



by the encryption device, the encrypted representation of the key based on the master key to produce a recaptured key;

e) storing the recaptured key in a first volatile memory;

f) when the secure transmission device engages in secure communications, utilizing the recaptured key to encrypt and decrypt transmitted data; and

g) when the secure transmission device is disabled, erasing the recaptured key from the first volatile memory.

5,363,448

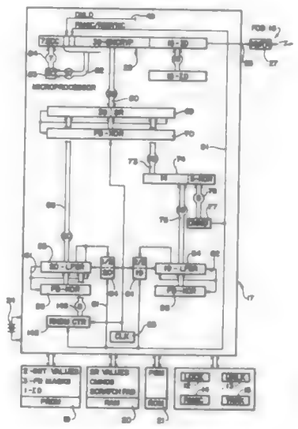
PSEUDORANDOM NUMBER GENERATION AND CRYPTOGRAPHIC AUTHENTICATION

Philip J. Koopman, Jr., Hebron, and Alan M. Finn, Amston, both of Conn., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jun. 30, 1993, Ser. No. 86,080

Int. Cl.[5] H04L *9/32*

U.S. Cl. 380—23 **46 Claims**



37. A cryptographically authenticated remote control system in which a command transmitting unit selectively causes a physical effect in a command receiving module rendered responsive thereto;

said transmitting unit comprising:

a source of signals for providing first and second seed signals indicative of respective secret pseudorandom number

generator initial values and first, second and third mask signals indicative of respective secret feedback masks, each mask defining a respective feedback polynomial for linear feedback shift register pseudorandom number generation, said initial values and said polynomials being essentially unique to said transmitting unit;

command switches operable to indicate a physical effect which is to be caused by said receiving module; and

first signal processing means responsive to selected operation of said switches indicative of a synchronization command for providing a random signal indicative of a variable random number, for performing a first linear feedback shift register pseudorandom number generation operation, on a combined number consisting of the initial value defined by said first seed signal concatenated with the random number defined by said random signal, a given number of iterations on the order of the degree of said first polynomial, or more, using the mask defined by said first mask signal, said first polynomial having a degree on the order of the degree of said combined word, for performing a second linear feedback shift register pseudorandom number generation operation, on a second word consisting of the initial value defined by said second seed signal, a fixed number of iterations on the order of the degree of said second polynomial, or more, using the mask defined by said second mask signal, said second polynomial having a degree on the order of the degree of said second initial value, for exclusive ORing a plurality of command bits indicative of said synchronization command with a corresponding plurality of bits of the result of said second generation operation to form an altered word, for storing, for future use in authenticating subsequent transmissions to said receiving module, first and second pseudorandom numbers respectively indicative of the results of said first and second generation operations, for performing a third linear feedback shift register pseudorandom number generation operation, on a word consisting of said first pseudorandom number concatenated with said altered word, a predetermined number of iterations on the order of the degree of said third polynomial, or more, using the mask defined by said third mask signal, said third polynomial having a degree on the order of the summation of the degrees of said first pseudorandom number and said altered word, and for transmitting, to said receiving module, a command word signal having the result of said third generation operation as a key portion and including a command bit indicative of said synchronization operation;

said first signal processing means responsive to selected operation of said switches indicative of a lock-related command for performing a fourth linear feedback shift register pseudorandom number generation operation, on said first pseudorandom number, a first determined number of iterations, using the mask defined by said first mask signal, to provide a new first pseudorandom number, for performing a fifth linear feedback shift register pseudorandom number generation operation, on said second pseudorandom number, a second determined number of iterations, using the mask defined by said second mask signal, to provide a new second pseudorandom number, for exclusive ORing a plurality of command bits indicative of said lock-related command with a corresponding plurality of bits of said new second pseudorandom number to form a new altered word, for performing a sixth linear feedback shift register pseudorandom number generation operation, on a word consisting of said new first pseudorandom number concatenated with said new altered word, said predetermined number of iterations, using the mask defined by said third mask signal, for storing said new first and second pseudorandom numbers for future use in authenticating subsequent transmissions to said receiving module, and for transmitting, to said receiving module, a command word signal having the result of said third generation operation as a key portion;

said receiving module comprising:

a signal source for providing third and fourth seed signals respectively indicative of said initial values and fourth, fifth and sixth mask signals respectively indicative of said masks; and

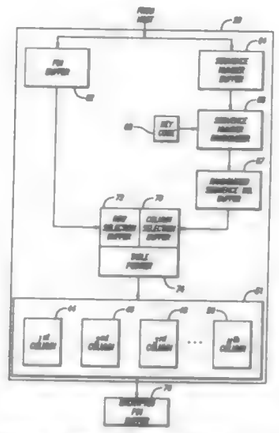
second signal processing means for receiving said command word signal and responsive to said command word including said command bit, for performing a first reverse linear feedback shift register pseudorandom number generation operation, on said key portion of said command word signal, said predetermined number of iterations, using the mask defined by said sixth mask signal, for performing a second reverse linear feedback shift register pseudorandom number generation operation, on a portion of the result of said first reverse generation operation corresponding to said combined word, said given number of iterations, using the mask defined by said fourth mask signal, for comparing said initial value defined by said third seed signal with an equivalent portion of the result of said second reverse generation operation and providing a first equal signal only if they are identical, for performing a seventh linear feedback shift register pseudorandom number generation operation on a word consisting of the initial value defined by said fourth seed signal, said fixed number of iterations, using the mask defined by said fifth mask signal, for comparing a portion of the result of said seventh generation operation, corresponding to the unaltered portion of said altered word, with a corresponding portion of the result of said first reverse generation operation and providing a second equal signal only if they are identical, in response to said first and second equal signals, for storing, for subsequent use, the random number portion of the result of said second reverse operation and for comparing said random number portion with a similar random number portion, previously stored for subsequent use in response to prior performances of said second reverse operation, and for selectively storing third and fourth pseudorandom numbers respectively indicative of the result of said second reverse operation and said seventh generation operation, for future use in subsequent authentication of transmissions from said transmitting unit, only if said compared random portions are not equal;

said second signal processing means responsive to said command word signal not including said command bit for performing a third reverse linear feedback shift register pseudorandom number generation operation, on said key portion of said command word signal, said predetermined number of iterations, using the mask defined by said sixth mask signal, to recover said new first pseudorandom number and said new modified word, for performing an eighth linear feedback shift register pseudorandom number generation operation, on said third pseudorandom number, said first determined number of iterations, using the mask defined by said fourth mask signal, to provide a third new pseudorandom number with said third new pseudorandom number and generating a third equal signal only if they are identical, for performing a ninth linear feedback shift register pseudorandom number generation operation, on said fourth pseudorandom number, said second determined number of iterations, using the mask defined by said fifth mask signal, to provide a fourth new pseudorandom number, for comparing the non-command portion of said recovered new altered word with a corresponding portion of said fourth new pseudorandom number and providing a fourth equal signal only if they are identical, and, in response to said first and second equal signals, for storing for future use in subsequent authentication of transmissions from said transmitting unit, said new third and fourth pseudorandom numbers indicative of the results of said eighth and ninth generation operations, for exclusive ORing the command portion of said recovered new altered word with the corresponding portion of said fourth new pseudorandom number to recover said plurality of command bits and for performing said lock-related command.

5,363,449
PERSONAL IDENTIFICATION ENCRYPTOR AND METHOD

Ralph R. Bestock, Los Altos, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Mar. 11, 1993, Ser. No. 29,833
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—23 **21 Claims**



1. An encryption system for designating an identification number via electronic communication between a remote user and said encryption system, said identification number for use with a user account number to access a secure transaction system, said encryption system comprising:

a first processing system for controlling an electronic communication between said remote user and said encryption system including:

electronic receiving means for receiving said identification number transmitted electronically from said remote user;

means for generating a user sequence code;

means for transmitting an encrypted identification number and said user sequence code to said remote user; and

a second processing system for processing said identification number and said user sequence code to form said encrypted identification number, said second processing system including:

means for receiving said identification number and said user sequence code from said first processing system;

encryption means for forming said encrypted identification number;

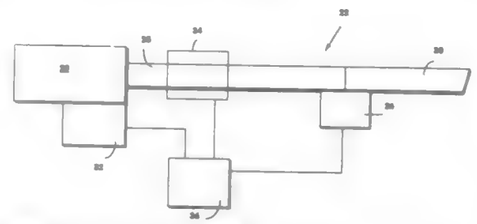
means for transmitting said encrypted identification number to said first processing system.

5,363,450
ACTIVE CONTROL OF NOISE

Martin J. Moody, Dunfermline, Scotland, and Alan V. Yorke, North Warnborough, England, assignors to The Secretary of State for Defence In Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB91/00412, § 371 Date Sep. 30, 1992, § 102(e) Date Sep. 30, 1992, PCT Pub. No. WO91/14854, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 18, 1991, Ser. No. 930,620
Claims priority, application United Kingdom, Mar. 21, 1990, 9006371.0
Int. Cl.[5] G10K *11/16*
U.S. Cl. 381—71 **20 Claims**

1. A method for reducing the noise produced by an engine's exhaust system which comprises the introduction of a liquid to the exhaust system in addition to that produced by the exhaust output of the engine; wherein the introduction of liquid into the system is suitably timed such that said noise produced by an

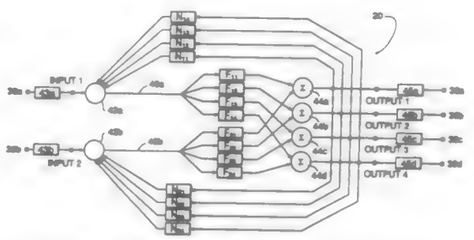


engine's exhaust system and noise produced by the liquid introduction are of different phase.

5,363,451
METHOD AND APPARATUS FOR THE ACTIVE REDUCTION OF COMPRESSION WAVES

J. Raul Martinez, Sunnyvale, and V. Bradford Mason, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation of Ser. No. 697,154, May 8, 1991, Pat. No. 5,224,168. This application Jun. 3, 1993, Ser. No. 71,687
Int. Cl.[5] H03B *29/00*
U.S. Cl. 381—71 **19 Claims**



1. An apparatus for reducing undesired compression waves in a quiet zone of a medium comprising:

a plurality of input transducers positioned externally to a quiet zone of a medium which are sensitive to undesired compression waves before they enter said quite zone, said plurality of input transducers being operative to produce a plurality of input signals in response thereto;

a signal processor responsive to said plurality of input signals and operating in an open-loop fashion with a predetermined transfer function that is unaffected by an input from a transducer within said quiet zone to produce at least one output signal which is derived at least in part by independently processing with said predetermined transfer function more than one of said plurality of input signals; and

an output transducer responsive to said output signal and operative to produce complementary compression waves in said medium which combine with said undesired compression waves in said quiet zone.

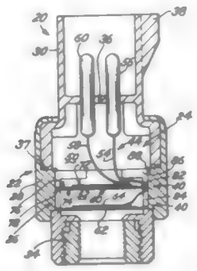
3. An apparatus as recited in claim 1 wherein said signal processor further includes a feedback reducer to reduce feedback between said output transducers and said input transducers.

5,363,452

MICROPHONE FOR USE IN A VIBRATING ENVIRONMENT

C. Roger Anderson, Wilmette, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Filed May 19, 1992, Ser. No. 884,805
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—168 22 Claims



1. A microphone for receiving an acoustic signal and responsively providing an electrical signal to an output lead, said microphone being subjected to vibration, comprising, in combination:

a housing having a chamber therein and defining a port into said chamber for receiving said acoustic signal form the exterior of the housing;

a microphone transducer positioned within said chamber for receiving said acoustic signal and sensing said vibration and responsively providing an electrical microphone signal to said output lead;

an acceleration transducer positioned within said chamber for sensing said vibration and responsively providing an electrical acceleration signal to said output lead said microphone transducer being between said acceleration transducer and said port; and

a vent allowing communication between the two sides of the acceleration transducer, reducing the acoustic sensitivity of the acceleration transducer,

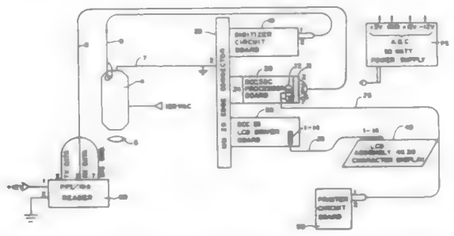
whereby said microphone transducer provides a signal substantially in response to acoustic signals and vibration and said acceleration transducer provides a signal substantially in response to vibration.

5,363,453

NON-MINUTIAE AUTOMATIC FINGERPRINT IDENTIFICATION SYSTEM AND METHODS

Patricia C. Gagne, and Carol M. Puterko, both of Coventry, R.I., assignors to TMS Inc., Coventry, R.I.

Continuation of Ser. No. 430,421, Nov. 2, 1989, abandoned. This application Mar. 22, 1993, Ser. No. 35,483
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—5 3 Claims



1. A method for the automatic non-minutiae identification of a fingerprint of a person to be identified, comprising the steps of:

video scanning an image of a fingerprint and producing fingerprint image data and whitespace data;

electronically storing in digital form, in an addressable memory, said fingerprint image data and whitespace data;

determining the location of the said fingerprint image data stored in digital form in said addressable memory with the said whitespace data;

image framing the said fingerprint image data and whitespace data to a predetermined dimension, and establishing Y-TOP and Y-BOTTOM values along the Y-axis of said predetermined dimension;

computing the X-Axis Range of the fingerprint image data contained in the framed image data by determining two X-axis values, said X-axis values being X-START and X-END, wherein X-START indicates the memory data location where the fingerprint image data starts on the X-axis, and X-END indicates the memory data location where the fingerprint image data ends on the X-axis;

computing the Y-Axis Range of the fingerprint image data contained in the framed image data by determining two Y-axis values, said Y-axis values being Y-START and Y-END, wherein in Y-START indicates the memory data location where the fingerprint image data starts on the Y-axis, and Y-END indicates the memory data location where the fingerprint image data ends on the Y-axis;

determining the dimensional area of said fingerprint image data by utilizing said X-START, X-END, Y-START and Y-END values;

defining a fingerprint identity window within said fingerprint image data;

defining said whitespace data as having a predetermined greylevel value;

defining said fingerprint image data as having a second predetermined greylevel value distinct from that defined for the said whitespace data;

as to said image framing, examining memory data locations (128, Y) where $0 \leqq Y \leqq 255$, and upon finding three consecutive rows of whitespace data, defining Y-TOP as the latter examined data row Y-axis value, and examining memory data locations (128, Y) where $255 \geqq Y \geqq 0$ and upon finding three consecutive rows of whitespace data, defining Y-BOTTOM as the last examined data row Y-axis value;

computing the X-Axis Range of the framed image data to indicate the start and end memory locations of the fingerprint image data on the X-axis by determining X-START and X-END X-axis values, wherein X-START is determined by examining memory data locations (X,Y) where $0 \leqq X \leqq 255$ and Y-TOP$\leqq$Y$\leqq$Y-BOTTOM, by detecting three consecutive columns of whitespace data and a next column having a greylevel value equal to said second predetermined value and considering the memory data location of said next column to be a first part of said fingerprint image data along the X-axis, and wherein X-END is determined in similar manner as for said X-START value but in an opposite direction from $255 \geqq X \geqq$ along the X-axis so that said X-END value indicates the memory data location along the X-axis where the fingerprint image data ends;

computing the Y-Axis Range of the framed image data to indicate the start and end memory locations of the fingerprint image data on the Y-axis by determining Y-START and Y-END Y-axis values, wherein Y-START is determined by memory data locations (X,Y) where X-START$\leqq$X$\leqq$X-END and Y-TOP$\leqq$Y$\leqq$Y-BOTTOM by detecting three consecutive rows of whitespace data and a next row having a greylevel value equal to said second predetermined value and considering the memory data location of said next row to be a first part of said fingerprint image along the Y-axis, and wherein Y-END is determined in similar manner as for said Y-START value but in an opposite direction from Y-BOTTOM$\geqq$Y$\geqq$Y-TOP along the Y-axis so that said Y-END value indicates the memory data location along the Y-axis where the fingerprint image data ends;

defining said fingerprint identity window by determining the dimension of said window around an origin point defined as (XC,YC) wherein:

XC=X-END minus (X-END minus X-START)$\div$3 and

YC=Y-END minus (Y-END minus Y-START)$\div$2; and

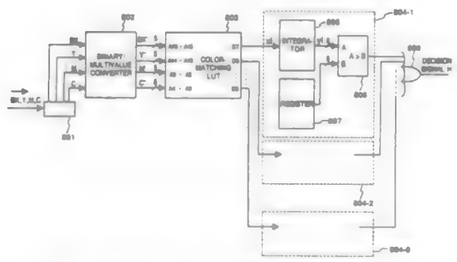
further defining the dimensional area of the said fingerprint identity window by predetermining a window-size for said fingerprint identity window and defining said dimensional area as from (XC$-$DIFF, YC$-$DIFF) to (XC+DIFF, YC+DIFF) where DIFF=$\frac{1}{2}$(window-size minus 1), wherein (XC$-$DIFF)=Xs (YC$-$DIFF)=Ys, (XC+DIFF)=Xe, and (YC+DIFF)=Ye.

5,363,454

IMAGE PROCESSING APPARATUS

Yutaka Udagawa, Machida; Masahiro Funada, Yokohama; Kenichi Ohta, Kawasaki; Yoichi Takaragi, Yokohama, and Eiji Ohta, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1992, Ser. No. 904,707
Claims priority, application Japan, Jul. 1, 1991, 3-160561
Int. Cl.[5] G06K 9/46
U.S. Cl. 382—17 14 Claims



1. An image processing apparatus comprising:

input means for inputting binary image data to be processed, the binary image data representing an image;

generating means for generating multi-value data based upon the binary image data input by said input means;

memory means for storing multivalue reference data relating to a specific original, which original contains a predetermined pattern;

judging means for judging whether the image represented by the binary image data is an image of the specific original, based on the multi-value data generated by said generating means and the multi-value reference data stored in said memory means; and

control means for controlling the apparatus based upon a judgment result provided by said judging means.

5,363,455

OPTICAL INFORMATION PROCESSOR

Kanji Nishii, Osaka; Masami Ito, Moriguchi, and Atsushi Hukui, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 28, 1993, Ser. No. 10,401
Claims priority, application Japan, Jan. 30, 1992, 4-014613
Int. Cl.[5] G06K 9/74
U.S. Cl. 382—31 4 Claims

1. An optical information processor comprising:

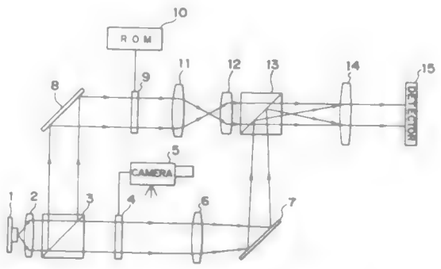
a first spatial light modulator for displaying an input image;

a first lens having first and second focal planes opposite to each other, said first spatial light modulator being positioned on the first focal plane of said first lens;

a second spatial light modulator for displaying at least one optical filter;

a second lens having first and second focal planes opposite to each other, said second spatial light-modulator being positioned on the first focal plane of said second lens;

a third lens having first and second focal planes opposite to each other, the second focal plane of said second lens lying on the first focal plane of said third lens, and the focal length of said third lens to said first focal plane thereof being smaller than the focal length of said second lens to said second focal plane thereof;



a fourth lens having first and second focal planes opposite to each other;

combining means, disposed between the first focal plane of said fourth lens and both of said first and third lenses, for combining light transmitted through said first lens with light transmitted through said third lens; and

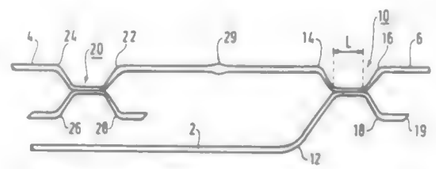
both the second focal plane of said first lens and the second focal plane of said third lens lying on the first focal plane of said fourth lens such that the lights combined by said combining means are picked up by the fourth lens with sufficient focus.

5,363,456

FREQUENCY SEPARATOR-AND-MIXER APPARATUS FOR GUIDED OPTICAL WAVES

Philippe Bousselet, Leudeville, France, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris Cedex, France

PCT No. PCT/FR92/00828, § 371 Date Apr. 4, 1993, § 102(e) Date Apr. 4, 1993, PCT Pub. No. WO93/05414, PCT Pub. Date Mar. 18, 1993
PCT Filed Aug. 28, 1992, Ser. No. 39,327
Claims priority, application France, Aug. 30, 1991, 91 10788
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—27 3 Claims



1. Frequency separator-and-mixer apparatus for guided optical waves, the apparatus including:

an optical waveguide for guiding an optical wave constituting a low-frequency wave, this optical waveguide constituting a low-frequency waveguide (2);

an optical waveguide for guiding an optical wave which has a frequency band above the frequency band of the low-frequency wave, and which constitutes a high-frequency wave, this optical waveguide constituting a high-frequency waveguide (4), and the low-frequency waveguide and the high-frequency waveguide constituting two single-frequency waveguides (2, 4), the optical waves consti-

tuted by at least fractions of the low-frequency wave and the high-frequency wave constituting directed waves, and their frequencies constituting two directed frequencies;

an optical waveguide for guiding said low-frequency wave and said high-frequency wave simultaneously, this optical waveguide constituting a mixed waveguide (6);

frequency-selective directing optical coupler of the evanescent-wave type (10) having three insertion branches (12, 14, 16) which connect it to said low-frequency waveguide (2), to said high-frequency waveguide (4), and to said mixed waveguide (6) respectively, and a fourth branch (18), this coupler constituting a directing coupler having an optical interaction length matched to said directed frequencies so that, when said low-frequency wave and said high-frequency wave propagate respectively in the low-frequency waveguide and in the high-frequency waveguide, the two waves propagate simultaneously in the mixed waveguide, said fourth branch of the coupler constituting a removal branch (18) which does not return any of said directed waves to the coupler; and

another evanescent-wave optical coupler (20) having two insertion branches (22, 24) and two removal branches for removing an optical wave,

said another evanescent-wave coupler being connected in series via said two insertion branches (22, 24) between said frequency-selective directing optical coupler and one of said single-band waveguides (4) constituting an isolated waveguide, said two removal branches (26, 28) of said another evanescent-wave coupler being organized so as not to return any of said directed waves towards said another evanescent-wave coupler, said another evanescent-wave coupler constituting a removal coupler (20) having an optical interaction length match to said directed frequencies so that that one of said low-frequency optical wave and said high-frequency optical wave which is to be guided by said isolated waveguide is passed to the two insertion branches of said another evanescent-wave coupler, and so that an interference component of the other one of said low-frequency optical wave and said high-frequency optical wave is directed towards one of the removal branches of said another evanescent-wave coupler.

5,363,457

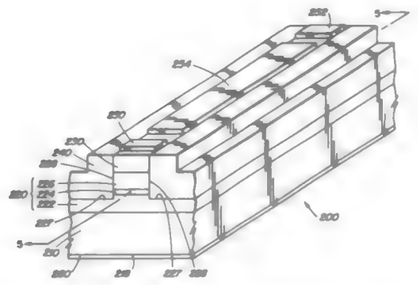
OPTICAL PHASE-MODULATING DEVICES AND METHODS FOR THEIR OPERATION

Christopher E. Falt; Bruce A. Richardson, both of Nepean, and Claude Rolland, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 15, 1993, Ser. No. 91,708

Int. Cl.[5] G02B *26/06*

U.S. Cl. 385—3 **15 Claims**



1. An optical phase-modulating device, comprising:

a plurality of semiconductor layers defining an optical waveguide section, the optical waveguide section having first and second longitudinally spaced parts and a third part disposed between the first and second parts;

a first pair of phase-fixing electrodes disposed adjacent the first part of the optical waveguide section for fixing an electric field in a predetermined direction across the first part of the optical waveguide section to fix an effective optical path length through the first part of the optical waveguide section;

a second pair of phase-fixing electrodes disposed adjacent the second part of the optical waveguide section for fixing an electric field in said predetermined direction across the second part of the optical waveguide section to fix an effective optical path length through the second part of the optical waveguide section; and

a pair of phase-modulating electrodes disposed adjacent the third part of the optical waveguide section for applying a variable electric field in said predetermined direction across the third part of the optical waveguide section to vary an effective optical path length through the third part of the optical waveguide section.

5,363,458

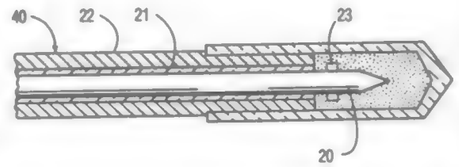
FIBER OPTIC LIGHT DIFFUSER

Angel Pan, North Plainfield, and Dipak Biswas, Plainsboro, both of N.J., assignors to Fiber guide Industries, Stirling, N.J.

Filed Feb. 28, 1994, Ser. No. 203,328

Int. Cl.[5] G02B *23/26*

U.S. Cl. 385—31 **9 Claims**



1. A cylindrical diffuser comprising an optical fiber having a proximal and a distal end, said fiber including a cladding for reflecting light back into said fiber and a protective sheath thereabout, said fiber including a distal end portion from which said cladding and said sheath are removed, said distal end portion including a ring of a material to reflect light back into said portion for providing a relatively even distribution of heat in human or animal tissue at said distal end portion said diffuser including a sleeve enclosing said distal end portion and connecting to said clad portion, said sleeve and said distal end portion having conical shapes.

5,363,459

OPTICAL FIBER CONNECTOR INCLUDING A BIASING MEANS IN HOUSING

Antonius P. C. M. Hultermans, Tilburg, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jan. 15, 1993, Ser. No. 6,063

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—60 **7 Claims**

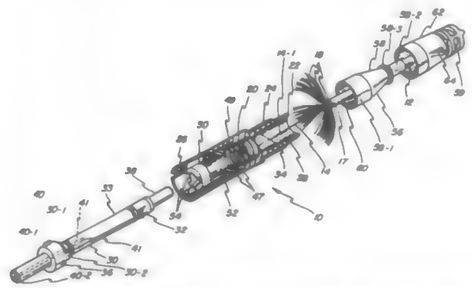
1. A connection between an optical fiber cable having a first optical fiber and an optical connector for connection to an optical device, said connector comprising:

(a) a housing having a barrel therein, the barrel being axially reciprocable relative to the housing, said barrel having a ferrule secured to a first end thereof, and said barrel including an outwardly directed projection at a second end thereof, said barrel and said ferrule being capable of receiving an optical fiber therein;

(b) a biasing means in said housing for biasing said ferrule towards the optical device; and

(c) wherein said housing includes an annular projection

formed thereon and having opposing side surfaces for contact with biasing means on one side surface, and for



contact with the barrel projection on the opposing side surface.

5,363,460

SLEEVE PORTION FOR AN OPTICAL FIBRE PLUG CONNECTOR

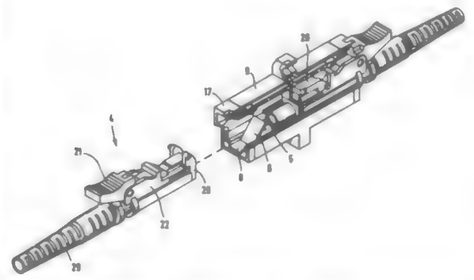
Silvio Marazzi, Cavigliano, and Silverio De Marchi, Contra, both of Switzerland, assignors to Diamond SA, Losone, Switzerland

Filed Nov. 23, 1993, Ser. No. 155,765

Claims priority, application Switzerland, Nov. 26, 1992, 3621/92

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—70 **11 Claims**



1. In a fiber optical plug connector receptacle having at least one socket with an open end for receiving a ferrule of a plug which can be inserted into the receptacle, the receptacle having a protective flap movably mounted in front of the opening, said flap having a deployed position at least partially covering the socket opening and a stowed position in uncovering the opening, the improvement wherein the receptacle comprises an outer sleeve housing and an inner sleeve housing which is slid into the outer sleeve housing, and the protective flap is held between the sleeve housings and is mounted so that it can pivot between said positions.

5,363,461

FIELD INSTALLABLE OPTICAL FIBER CONNECTORS

Ernest E. Bergmann, 730 Seneca St., Bethlehem, Pa. 18015

Filed Jul. 20, 1993, Ser. No. 95,127

Int. Cl.[5] G02B *6/36*

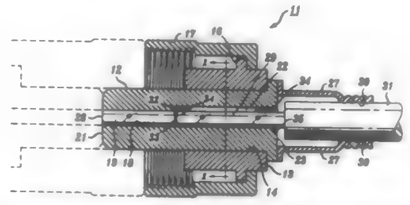
U.S. Cl. 385—78 **10 Claims**

1. For use in an optical fiber connector for terminating the end of an optical fiber;

a ferrule adapted to fit within the connector and to extend axially through at least a portion thereof, said ferrule having a bore formed therein and extending axially therethrough wherein said bore is adapted to receive an end and a portion of the length of the fiber to be terminated;

said ferrule having a front face and a rear face;

an optical fiber stub in said bore and extending from a region adjacent said front face toward said rear face, said stub having a front end in the region of said front face and a rear end within said bore and spaced from said rear face whereby the fiber to be terminated is insertable into said



bore through said rear face so that the end thereof butts against said real end to form a junction therewith with an index matching material between the fiber and stub ends; and

means for receiving the excess index matching material comprising at least one channel extending from the region of the junction between said rear end and the fiber end toward the exterior of said ferrule.

5,363,462

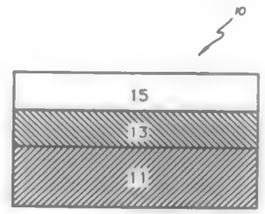
MULTILAYER WAVEGUIDE USING A NONLINEAR $LIN_bTA_{1-x}O_3$ OPTICAL FILM

Liang-Sun Hung, Webster; Jose M. Mir, and John A. Agostinelli, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1993, Ser. No. 85,361

Int. Cl.[5] G02B *6/10*; G02F *2/02*

U.S. Cl. 385—122 **16 Claims**



1. A multilayer waveguide comprising:

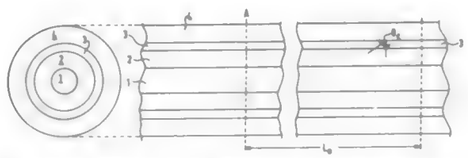
a c-oriented single crystal substrate of $LiNb_xTa_{1-x}O_3$ (x=0 to 1);

an epitaxial buffer layer having a thickness of from 200 to 1000 nm overlaying the substrate, and a nonlinear optical thin film $LiNb_xTa_{1-x}O_3$ having a thickness of 200 to 1000 nm grown epitaxially on the buffer layer;

the buffer layer providing a substantially low refractive index and having a nearly identical lattice structure with respect to the $LiNb_xTa_{1-x}O_3$ substrate so that the difference in refractive index between the buffer layer and $LiNb_xTa_{1-x}O_3$ is larger than 0.1; and

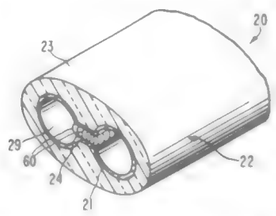
the buffer layer being selected to structurally match the $LiNb_xTa_{1-x}O_3$ substrate with a mismatch equal to or less than 7%.

5,363,463
REMOTE SENSING OF PHYSICAL VARIABLES WITH FIBER OPTIC SYSTEMS
Marcos Y. Kleinerman, 24 Jerome St., Southbridge, Mass. 01550
Continuation-in-part of Ser. No. 491,942, Mar. 12, 1990, Pat. No. 5,096,277, which is a continuation-in-part of Ser. No. 293,119, Jan. 3, 1989, which is a continuation-in-part of Ser. No. 102,835, Sep. 30, 1987, which is a continuation-in-part of Ser. No. 711,062, Mar. 12, 1985, Pat. No. 5,004,913, which is a continuation-in-part of Ser. No. 608,932, May 14, 1984, Pat. No. 4,708,494, which is a continuation of Ser. No. 405,732, Aug. 6, 1982, abandoned. This application Jan. 2, 1992, Ser. No. 815,741
Int. Cl.[5] G02B *6/02;* H04J *14/00;* G01J *3/42;* H01J *5/16*
U.S. Cl. 385—123 28 Claims



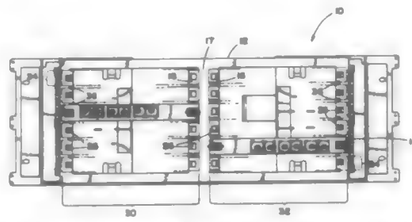
1. A light guiding optical fiber having a proximal end and a distal end and comprising a first core having an index of refraction n_1 and at least one light-guiding region including a preselected organic dye characterized by absorbing light of preselected wavelengths λs to which said core is substantially transparent, and by emitting fluorescence radiation when exposed to said light of wavelengths λ_s, said fluorescence radiation having wavelengths λ_f different from λ_s and a decay time of the order of 10^{-8} seconds or shorter, wherein said light guiding region including said organic dye can e a cladding around said first core or a second core separated from said first core by a clear cladding common to both cores.

5,363,464
DIELECTRIC/CONDUCTIVE WAVEGUIDE
James A. Way, Cupertino, and Peter A. Way, San Jose, both of Calif., assignors to Tangible Domain Inc., Los Altos, Calif.
Filed Jun. 28, 1993, Ser. No. 83,894
Int. Cl.[5] G02B *6/20;* H01P *3/16*
U.S. Cl. 385—125 15 Claims



1. A dielectric/conductive waveguide for propagation of electromagnetic radiation, said waveguide comprising:
- a dielectric housing having an outer surface and an inner surface defining an open longitudinal channel of selected cross-sectional size and shape, the cross-sectional size of the channel being selected to accommodate electromagnetic radiation having a frequency greater than a cut-off frequency; and
- a layer of conductive material affixed to at least one of said surfaces to confine the electromagnetic radiation within the waveguide as said radiation propagates through the channel;
- wherein the cross-sectional shape substantially comprises a pair of circles joined along their radii by a rectangular section.

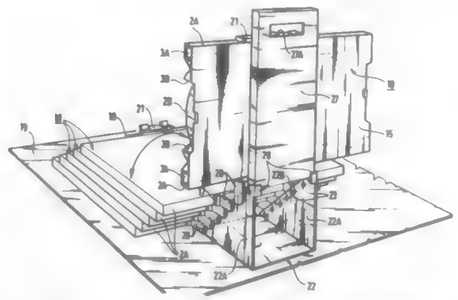
5,363,465
FIBER OPTIC CONNECTOR MODULE
Jeff L. Korkowski, Bloomington; David J. Emmons, Plymouth, and Dalen J. Defoe, Eden Prairie, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.
Filed Feb. 19, 1993, Ser. No. 19,615
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 10 Claims



1. A telecommunications module, comprising:
- a housing including an opening at a forward wall of the housing;
- a plurality of removable cartridges containing telecommunications equipment and insertable into the housing, wherein the cartridges slide into the housing through the opening, wherein each cartridge has a first and a second side, said first side having a first cartridge guide of a first predetermined shape and said second side having a second cartridge guide of a second predetermined shape;
- a cartridge supporting frame including a plurality of spaces for receiving the plurality of cartridges, said frame including first and second columns of said spaces, each of said first and second columns including first and second frame guides on opposite sides of said spaces, said first frame guide having a size and disposition so as to slidably mate with said first cartridge guide and said second frame guide having a size and disposition so as to slidably mate with said second cartridge guide;
- said first and second frame guides disposed on first and second sides, respectively, of said spaces of said first column;
- said first and second frame guides disposed on second and first sides, respectively, of said spaces of said second column whereby said cartridges are insertable into said spaces of said first column in a first orientation and insertable into said spaces of said second column in a second orientation inverted from said first orientation.

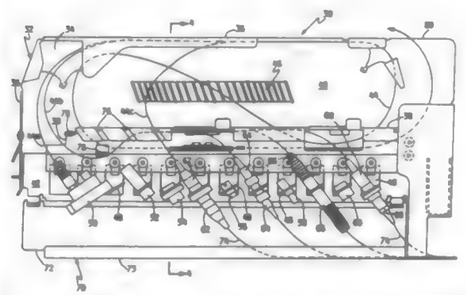
5,363,466
ASSEMBLY OF HINGED FLAT MODULES
Michel Milanowski, Anserville, and Alain Vincent, Juilly, both of France, assignors to Mars Actel, Vrigne Aux Bois, France
Filed Feb. 22, 1993, Ser. No. 21,171
Claims priority, application France, Feb. 21, 1992, 92 02031
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 8 Claims

1. An assembly of hinged flat modules, said assembly including a channel-section support formed by a web and two side flanges, flat modules superposed on one another facing said channel-section support and parallel to said web, with a hinge offset between first edges thereof situated facing the channel-section support, and individual hinge coupling means for hinge coupling said modules on said flanges, thereby defining individual hinge axes which are stepped and offset over the height of said flanges, wherein, for each module, said hinge coupling means are constituted by a hinge element having a rear face provided with first assembling and retaining means for assembling and retaining said hinge element directly against and substantially over the height of a front face of said first edge, and having a pair of hinge arms projecting from an opposite front face and received on said flanges of the channel-section support, wherein, said front face of said first edge has second assembling and retaining means which are complementary to said first means; said assembly further comprising individual locking elements on the modules, and means for locking each of the locking elements onto each adjacent locking element in



said assembly; and wherein said modules are cassettes for coiling and interconnecting optical fibers, and each of said cassettes has four corners with an access for fibers at each corner.

5,363,467
COMPACT FIBER OPTIC HOUSING
Roger H. Keith, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 28, 1993, Ser. No. 69,177
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 18 Claims

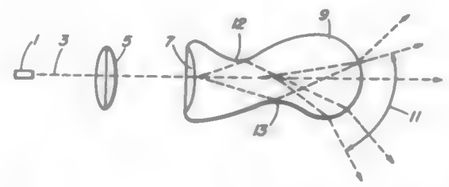


1. A device for housing a connector and associated conductors, comprising:
- a tray member;
- partition means for dividing said tray member into front and rear areas, said front area partially overlapping said rear area;
- means in said rear area for storing excess slack from the conductors; and
- bulkhead means in said front area for receiving the connectors, said bulkhead means including a plurality of clips releasably attached to said tray member, each of said clips having a hole therein for receiving a connector coupling.

5,363,468
FIBER OPTIC ROD AND PRODUCTION THEREOF
Eiichiro Yoshikawa; Koji Yamamoto; Hiroshi Kawashima, and Mika Anzai, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Oct. 28, 1993, Ser. No. 142,074
Claims priority, application Japan, Oct. 28, 1992, 4-290294; Nov. 30, 1992, 4-320562
Int. Cl.[5] G02B *6/16*
U.S. Cl. 385—145 14 Claims

1. A fiber optic rod which comprises an ultraviolet transmitting fibrous reinforcement impregnated, followed by curing, with a resin composition composed of, as essential components,
- (a) 40–70 parts by weight of epoxy (meth)acrylate oligomer,
- (b) 60–30 parts by weight of reactive diluent of mono-functional and/or multifunctional (meth)acrylate,
- (c) 5–20 parts by weight of xylene-formaldehyde resin, and
- (d) 1–10 parts by weight (for 100 parts by weight of the total amount of (a), (b), and (c)) of ultraviolet-sensitive polymerization initiator.

5,363,469
LIGHT GUIDE WITH VIRTUALLY CYLINDRICAL CONVEX LENS
David V. Elderfield, Site 34, R.R. #4, Calgary, Alberta, Canada T2M 4L4
Filed Aug. 10, 1993, Ser. No. 103,715
Int. Cl.[5] G02B *6/00*
U.S. Cl. 385—146 10 Claims

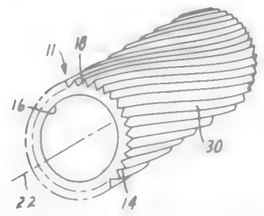


1. A light guide comprising:
- (a) a laser light source for providing a light beam along a central axis,
- (b) an optical system for collimating and focusing the beam at infinity,
- (c) a virtually cylindrical convex lens fixed in a position to intercept the focused beam wherein the angle between the centreline of the beam and an optical surface at an exit point from the lens is an oblique angle whereby the beam is spread radially toward a target, and thereby form a line of light on the target, and
- whereby the target surface can be located at various distances from said lens while the width of the beam impinging thereon is maintained along a straight line with constant width on a target surface normal to the plane thereof.

5,363,470
DISPLACING AN OPTICAL LIGHTING FILM'S LINEAR ARRAY OF GROOVES TO FACILITATE EMISSION OF LIGHT
David L. Wortman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jul. 8, 1993, Ser. No. 89,288
Int. Cl.[5] G02B *6/20*
U.S. Cl. 385—147 7 Claims

1. A longitudinal, hollow light conduit having a longitudinal axis, said light conduit for transporting light there along and distributing light therefrom, comprising a wall member of a transparent material, said wall member including a structured surface on one side and a smooth surface opposite said struc-

tured surface, said structured surface having a linear array of substantially right angled isosceles prisms arranged side-by-side, said linear array of substantially fight angled isosceles



prisms disposed in a non-parallel orientation and at an angle of greater than zero and less than or equal to ten degrees with respect to said longitudinal axis.

5,363,471

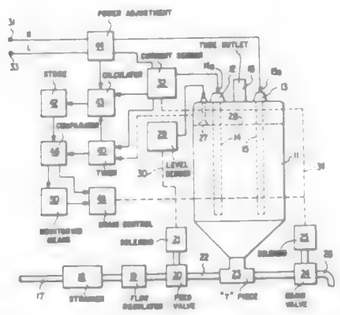
ELECTRODE BOILERS WITH CYLINDER FULL SENSOR CONTROL

Howard C. Jones, Haywards Heath, England, assignor to Eaton-Williams Group Limited, Edenbridge, England

Filed Jan. 29, 1993, Ser. No. 10,743

Int. Cl.[5] H05B *1/02, 3/60*

U.S. Cl. 392—325 **7 Claims**



1. An electrode boiler comprising a container for containing water, electrodes within the container which serve to pass electrical current through such water and which extend in a generally vertical direction when the boiler is in use, fill and drain means connected to the container to enable water to be fed to and drained from the container, outlet means of the container through which steam generated inside the container can pass when the boiler is in use, a water level contact member arranged to cause a signal to occur when the water in the container reaches a predetermined level so that it contacts the contact member, and control means connected to the water level contact member and the fill and drain means so as to inhibit filling of the container with water beyond the said predetermined level, in which the boiler is provided with circuitry which comprises (a) store means to store the value of an allowed time for water to boil away from the said predetermined level until the water is no longer in contact with the contact member, (b) a timer connected to time the actual time it takes for such boiling away to occur, and (c) comparison means connected to the store means and the timer to effect a comparison between the allowed time and the said actual time, and in which the control means are connected to the comparison means and are constructed to cause draining of water from the container in dependence upon an output from the comparison means, thereby reducing the amount of foaming occurring in the container.

5,363,472

REASONING COMPUTER SYSTEM

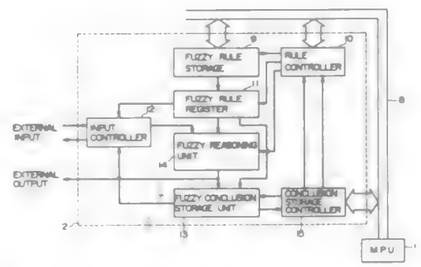
Atsushi Hisano, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 838,507, Feb. 18, 1992, abandoned, which is a continuation of Ser. No. 414,026, Sep. 28, 1989, abandoned. This application Apr. 22, 1993, Ser. No. 51,262

Claims priority, application Japan, Sep. 30, 1988, 63-248662; Sep. 30, 1988, 63-248663

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—3 **9 Claims**



1. A fuzzy reasoning system comprising:

first means for storing input data which can be used in fuzzy inference processing;

second means for storing output data which was produced by fuzzy inference processing and can be used in fuzzy inference processing as an input data;

third means for storing membership functions which can be used in fuzzy inference processing;

a rule data reading means for reading fuzzy rule data;

a rule storage means for storing a plurality of fuzzy rules;

a rule selection means for selecting one of said stored plurality of fuzzy rules, said rule data reading means reading a selected fuzzy rule and determining therefrom rule data associated with an input variable and a membership function label;

an address generating means for converting said associated fuzzy rule data into addresses for accessing at least one of said stored input data in said first means and said stored output data in said second means, and addresses for accessing said stored membership functions in said third means;

accessing means responsive to said addresses for accessing said at least one of input data in said first means and output data in said second means and said membership functions in said third means; and

a fuzzy reasoning device for performing fuzzy inference processing using data accessed by said accessing means and for outputting a defuzzified output determined by said fuzzy inference processing.

5,363,473

INCREMENTAL UPDATE PROCESS AND APPARATUS FOR AN INFERENCE SYSTEM

Salvatore J. Stolfo, Ridgewood; Ouri Wolfson, Paramus, both of N.J., and Hasanat Dewan, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed May 28, 1991, Ser. No. 706,401

Int. Cl.[5] G06F *15/18*

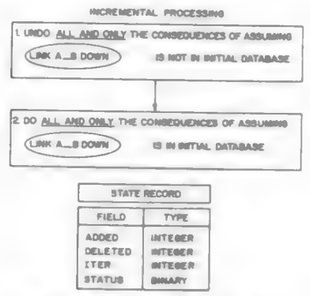
U.S. Cl. 395—50 **8 Claims**

5. A knowledge-based system comprising means for producing at least one inferential information item from at least one given information item, said knowledge-based system comprising:

processing means for performing a plurality of cycles comprising at least one step of applying a rule of inference to an information item to produce, at a cycle here called present cycle, a first set of information items,

modifying means for modifying, at said present cycle, said first set of information items to produce a second set of information items upon receipt of at least one additional information item, said modifying means comprising:

means for initializing a status record for each one of the at least one additional information item, indicating its presence at said present cycle and its absence at cycles preceding said present cycle, and



means for updating, for each one of the first set of information items, a status record indicating (i) its presence or absence for each one of said plurality of cycles, presence or absence being determined based on respective inferential compatibility or incompatibility with said at least one additional information item, (ii) the number of times it has been added, and (iii) the number of times it has been deleted.

5,363,474

EMERGENCY SHUTDOWN SYSTEM FOR CONTROLLING INDUSTRIAL ROBOT

Shinichi Sarugaku, Funabashi; Toru Kuresuma, Ibaraki; Takeshi Andoh, Yachiyo; Masami Otomo, Funabashi, and Kyoichi Kawasaki, Sakura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

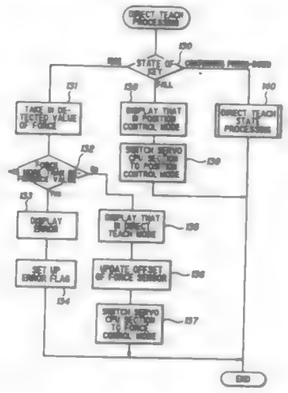
PCT No. PCT/JP92/00616, § 371 Date Mar. 18, 1993, § 102(e) Date Mar. 18, 1993, PCT Pub. No. WO92/21076, PCT Pub. Date Nov. 26, 1992

PCT Filed May 14, 1992, Ser. No. 30,291

Claims priority, application Japan, May 21, 1991, 3-144035

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—91 **7 Claims**



1. A system for controlling an industrial robot comprising:

sensor means for detecting an amount of external force applied to a forward end of a moving part of a main body of said robot;

means for controlling a driving force of the main body in accordance with the amount of external force detected by said sensor means, said means for controlling having a normal position control mode and a direct teach control mode; and

emergency cut-off means for cutting-off the supply of the driving force to the main body of said robot to stop the main body in an emergency when the amount of said external force exceeds a preset reference value.

5,363,475

IMAGE GENERATOR FOR GENERATING PERSPECTIVE VIEWS FROM DATA DEFINING A MODEL HAVING OPAQUE AND TRANSLUCENT FEATURES

Stephen J. Baker, Surrey; Dennis A. Cowdrey, West Sussex; Graham J. Olive, West Sussex, and Karl J. Wood, West Sussex, all of United Kingdom, assignors to Rediffusion Simulation Limited, Sussex, United Kingdom

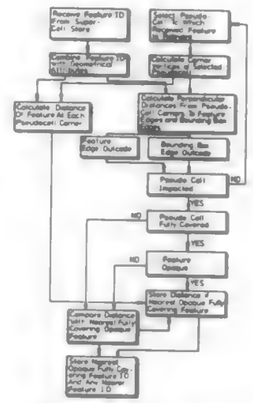
PCT No. PCT/GB89/01451, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO90/06561, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 5, 1989, Ser. No. 689,924

Claims priority, application United Kingdom, Dec. 5, 1988, 88 28342

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—122 **67 Claims**



1. An apparatus for generating an image to be displayed on a display screen from data defining a model including a plurality of opaque and translucent features, the image being intended to represent a view of the model from a predetermined eyepoint and being made up from an angry of screen space pixels to be displayed by a raster scanning process, each pixel being of uniform color and intensity, and the pixels together defining an image area, comprising:

a. dividing means for dividing the image area into an array of sub-areas each of which covers at least one pixel,

b. sub-area coverage determining means for determining for each feature in the model which of the sub-areas is at least partially covered by that feature,

c. list means for producing a list of feature identifiers in respect of each sub-area, the list for any one sub-area identifying features which at least partially cover that sub-area,

d. position means for determining a position in screen space for at least one sampling point within each sub-area,

e. sampling point cover determining means for determining, for each sub-area in turn, and for each said sampling point,

which of the features in that sub-area's list cover that sampling point,

f. distance determining means for determining, for each feature which covers a sampling point, a distance from the eyepoint to that feature at the sampling point,

g. feature storing means for storing feature describing data for each sampling point within a sub-area, the stored dam being indicative of at least the distance of the opaque feature which covers the sampling point and is nearest to the eyepoint and the distance and translucency of at least one nearer translucent feature which covers the sampling point,

h. sampling point output means for producing an output for each sampling point within a sub-area, the sampling point output corresponding to the combined effects of the features identified by the data stored in the data storing means,

i. pixel producing output means for producing an output for each pixel within a sub-area, the pixel output corresponding to the combined effects of the sampling point outputs for all sampling points which contribute to that pixel, and

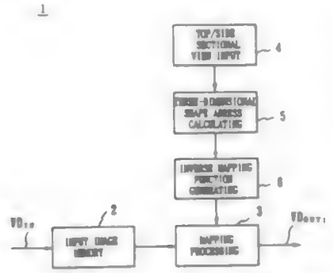
j. display means for displaying the pixel outputs.

5,363,476

IMAGE CONVERTER FOR MAPPING A TWO-DIMENSIONAL IMAGE ONTO A THREE DIMENSIONAL CURVED SURFACE CREATED FROM TWO-DIMENSIONAL IMAGE DATA

Masafumi Kurashige, Tokyo, and Shinichi Fukushima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,812
Claims priority, application Japan, Jan. 28, 1992, 4-037020
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—125 **3 Claims**



1. An image converter for mapping two dimensional image data onto a shape produced by a three-dimensional coordinate system, comprising:

input means for inputting first shape data representing a top sectional shape of the shape and second shape data representing a side sectional shape of the shape, the first shape data and the second shape data being plural coordinate data in a two-dimensional coordinate system;

store means for storing the first shape data and the second shape data;

three-dimensional shape data producing means supplied with the first shape data and the second shape data read out from the store means for calculating three-dimensional shape data representing the shape; and

mapping means supplied with the three-dimensional shape data and the two-dimensional image data for mapping the two-dimensional image data onto the shape and producing output data representing the shape on which the two-dimensional image is mapped, wherein the mapping means includes

an input image memory for storing the two-dimensional image data;

inverse mapping function producing means supplied with the three-dimensional shape data for producing an inverse mapping function; and

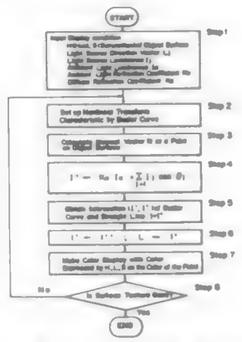
mapping processing means for reading output and outputting the two-dimensional image data from each address position of the input image memory in accordance with each address position on the shape using the inverse mapping function.

5,363,477

METHOD FOR DISPLAYING AN IMAGE OF AN OBJECT SURFACE USING A LUMINANCE TRANSFORMATION IN ACCORDANCE WITH A NON-LINEAR CHARACTERISTIC

Tetsuzo Kuragano, Tokyo, and Saga Fumie, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1991, Ser. No. 784,926
Claims priority, application Japan, Nov. 1, 1990, 2-293531
Int. Cl.[5] G06F *15/72, 15/62*
U.S. Cl. 395—126 **3 Claims**



1. A method for displaying an image of an object surface on a screen comprising the steps of:

determining, based on ambient light and diffusedly reflected light models, a luminance of each point on the object surface whose image is to be displayed;

inputting a nonlinear characteristic used for a luminance transformation;

making the luminance transformation of the determined luminance of each point on the object surface in accordance with the nonlinear characteristic; and

displaying the image of the object surface in accordance with the luminance transformation of the determined luminance;

wherein said nonlinear characteristic is represented by a Bezier curve exhibiting a nonlinear characteristic defined by designation of four control points on the screen and the luminance transformation is performed according to the Bezier curve.

5,363,478

METHOD AND APPARATUS FOR TRIMMING B-SPLINE DESCRIPTIONS OF PATCHES IN A HIGH PERFORMANCE THREE DIMENSIONAL GRAPHICS SYSTEM

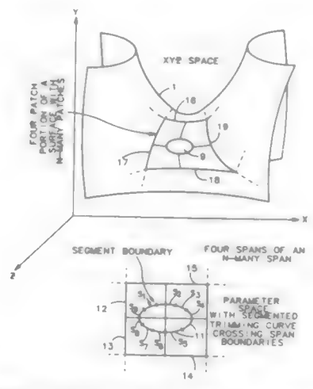
James G. Fiasconaro, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 526,410, May 18, 1990, which is a continuation of Ser. No. 11,667, Feb. 5, 1987, Pat. No. 4,999,789. This application Dec. 6, 1991, Ser. No. 804,861
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—141 **1 Claim**

1. In a graphics display system that represents a surface in XYZ space with first parametric functions in uv space, the first parametric functions trimmed by a trimming curve composed

of an ordered plurality of segments each defined by a respective trimming function, a method comprising the steps of:

traversing the ordered plurality of segments of the trimming curve by evaluating the segments' respective trimming functions at selected values of a parameter to find points in uv space which trim the first parametric functions;



using in place of the point in uv space corresponding to the end of each segment in the ordered plurality thereof, the point in uv space corresponding to the beginning of the succeeding segment in the ordered plurality thereof for the trimming curve; and

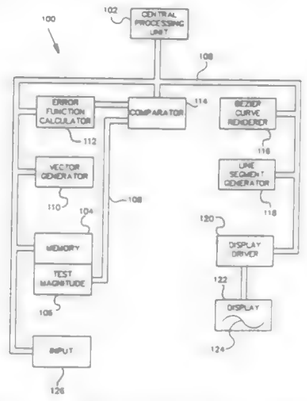
displaying a visual image of a surface upon the graphics display system in accordance with the trimming functions and the using step.

5,363,479

SYSTEM AND METHOD FOR RENDERING BEZIER SPLINES

Kirk O. Olynyk, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jul. 2, 1992, Ser. No. 909,101
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—142 **42 Claims**



1. A method of generating a straight line segment to approximate a Bézier curve defined by first, second, third and fourth sequential Bézier control points, the method comprising the steps of:

(a) selecting a test magnitude indicative of a desired degree of accuracy with which the line segment should approximate the Bézier curve;

(b) determining first, second, and third construction vectors based on the first, second, third, and fourth Bézier control points, said first construction vector having a magnitude defined by the distance between the first and second Bézier control points and a direction in the direction from the first to the second Bézier control points said second construction vector having a magnitude defined by the distance between the second and third Bézier control points and a direction in the direction from the second to the third Bézier control points; said third construction vector having a magnitude defined by the distance between the third and fourth Bézier control points and a direction in the direction from the third to the fourth Bézier control points;

(c) determining a first error vector having a magnitude and direction defined by subtracting said first construction vector from said second construction vector;

(d) determining a second error vector having a magnitude and direction defined by subtracting said second construction vector from said third construction vector;

(e) comparing the magnitude of said first error vector with said test magnitude, and indicating if the magnitude of said first error vector exceeds said test magnitude or if the magnitude of said first error vector is less than said test magnitude;

(f) comparing the magnitude of said second error vector with said test magnitude, and indicating if the magnitude of said second error vector exceeds said test magnitude or if the magnitude of said second error vector is less than said test magnitude;

(g) generating an indicator signal indicating that the magnitudes of both said first and second error vectors are less than said test magnitude; and

(h) generating the straight line segment between the first and fourth Bézier control points upon receiving said indicator signal

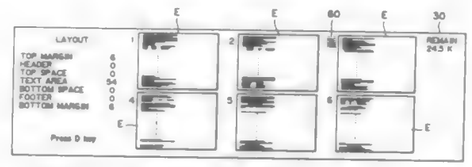
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5,363,480

LAYOUT DISPLAY CONTROL SYSTEM FOR DOCUMENT PROCESSING APPARATUS

Yuri Usami; Chiharu Hori, both of Nagoya; Misao Katsuka, Mie; Manami Yamada, Seto, and Kayoko Harada, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 4, 1991, Ser. No. 650,235
Claims priority, application Japan, Feb. 2, 1990, 2-24905
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—145 **13 Claims**



1. A document processing apparatus, comprising:

input means for inputting document data relating to plural pages of a document and various command data including format information which determine a printing format of the document;

document data memory means for storing the document data inputted from said input means;

format information memory means for storing the format information inputted from said input means, the format information being stored in association with the document data and comprising set values for specified formal items which are applied to each page of the document;

display means for selectively displaying at least one page of the document data in a layout display area;

layout display control means for reading the document data from said document data memory means, converting the document data read from the document data memory means into layout data, and displaying the layout data in the layout display area of said display means, said layout display control means converting an arrangement of characters in the at least one page into an arrangement of dots or lines;

layout display mode selecting means for selecting a layout display mode wherein said layout display control means displays the layout data in the layout display area;

format information display control means for reading the format information in association with the document data read from said format information memory means and displaying the format information in a region outside of the layout display area when the layout of the document data is displayed in the layout display area;

first designation means for designating one of the pages of the document from the document data displayed on said display means; first registering means for storing a number corresponding to the page designated by said first designation means;

second registering means for initially storing the number stored in said first registering means; and

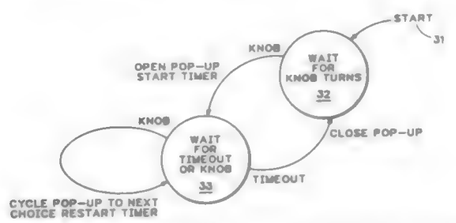
second designation means for designating one of the layout display areas identified by the number stored in said second registering means, wherein a plurality of pages of the document are displayed on a plurality of layout display areas in the layout display mode and the pages to be displayed are determined based on the page number registered in said first registering means.

5,363,481

AUTO SELECTING SCROLLING DEVICE

Christopher E. Tilt, Portland, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 22, 1992, Ser. No. 902,250
Int. Cl.[5] G06F *3/14*
U.S. Cl. 395—156 **4 Claims**



1. A method of selecting a parameter from a list of parameters within a menu displayed on a computer based method comprising the steps of:

opening a menu;

starting a timer as the menu is opened;

scrolling through the list of parameters within the menu;

resetting the timer while scrolling;

restarting the timer whenever scrolling ceases; and

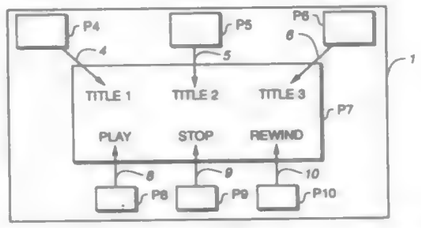
selecting the last parameter scrolled to when the timer expires.

5,363,482

GRAPHICAL SYSTEM AND METHOD IN WHICH A FUNCTION IS PERFORMED ON A SECOND PORTAL UPON ACTIVATION OF A FIRST PORTAL

Kenneth E. Victor, Mountain View, and Roger Badertscher, Los Altos Hills, both of Calif., assignors to Interactive Media Corporation, Los Altos Hills, Calif.

Continuation of Ser. No. 825,537, Jan. 24, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 197,550
Int. Cl.[5] G06F *3/14, 3/00*
U.S. Cl. 395—157 **12 Claims**



1. A system for selecting, displaying and controlling multimedia objects in a computer environment for creating and running presentations of successive displaying of said multimedia objects, said objects comprising motion pictures, pictures, music, sound, and text characters, said system comprising:

user input means for interactively defining a plurality of portals, each of said plurality of portals being defined as one of two types of portals, each portal being defined in a region on a display screen, a first type comprising controlled elements that contain at least one of said multimedia objects and a second type comprising button portals for controlling, responsive to a selected function, the behavior of objects within said plurality of portals and for navigation within the presentation;

user input means for interactively placing at least one of said multi-media objects within at least one of said plurality of portals; and

user input means for interactively designating one of said plurality of portals as a first one of said button portals having an associated function and for designating at least one other of said plurality of portals as one of said controlled elements to be operationally associated with said one of said button portals, wherein when said first one of said button portals is activated, the function associated therewith is performed to control said at least one object within at least one of said controlled elements operationally associated with said activated button portal and for interactively designating another one of said plurality of portals as a second one of said button portals having an associated navigation function wherein when said second one of said button portals is activated, the navigation function associated therewith is performed to control navigation between said plurality of portals during running of the presentation.

5,363,483

UPDATING OBJECTS DISPLAYED IN A COMPUTER SYSTEM

Stephen K. Jones, Norwood; Joseph J. Rzepiejewski, N. Attleboro, and Paul J. Vanslette, Blackstone, all of Mass., assignors to Intellution, Inc., Norwood, Mass.

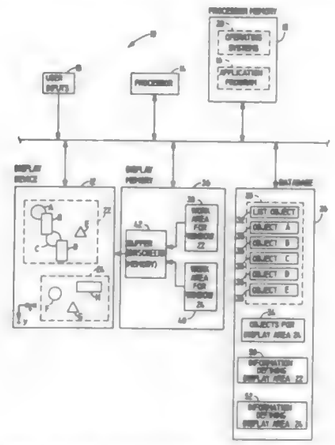
Filed Oct. 28, 1992, Ser. No. 967,777
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—161 **14 Claims**
MICROFICHE APPENDIX INCLUDED
(2 Microfiche, 102 Pages)

1. A computer-implemented method for displaying information that includes one or more objects, comprising

representing a display area as an array of regions and maintaining, for each displayed object, a record that identifies the regions that said object occupies in said display area, each said record including a plurality of entries each of which corresponds to one of said regions,

assigning to each of said entries a state that indicates whether the object for which the record is maintained occupies the region to which the entry corresponds,

responding to an event that causes a change in the information presented in the display area by detecting which of



said regions are affected by the change, and establishing an event record of entries each of which has a state that indicates whether the region to which the entry corresponds is an affected region,

comparing the states of the entries of the record maintained for each said object with the states of the entries of the event record to determine whether said object occupies at least one of said affected regions, and

determining to update a displayed object if said record for said object identifies at least one of said affected regions.

5,363,484

MULTIPLE COMPUTER SYSTEM WITH COMBINER/MEMORY INTERCONNECTION SYSTEM EMPLOYING SEPARATE DIRECT ACCESS LINK FOR TRANSFERRING INFORMATION PACKETS

Christine M. Desnoyers, Saugerties; Derrick L. Garmire, Kingston, both of N.Y.; Sheryl M. Genco, Boulder, Colo.; Donald G. Grice, Kingston, N.Y.; William R. Milani, Woodstock, N.Y.; Michael P. Muhlada, Saugerties, N.Y.; Donna C. Myers, Kingston, N.Y.; Peter K. Szwed, Saugerties, N.Y.; Vadim M. Tsinker, West Hurley, N.Y.; Antoinette E. Vallone, Hyde Park, N.Y., and Carl A. Bender, Highland, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 612,649, Nov. 13, 1990, abandoned. This application Sep. 30, 1993, Ser. No. 129,880
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—200 **19 Claims**

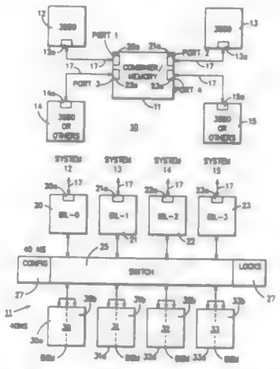
1. A supercomputer system comprising:

a plurality of computers each having a computer direct memory access link adapter means for sending and receiving data in packets in accordance with a communications protocol for the supercomputer system with each packet starting with a header page containing identifying command and destination information for the packet;

a combiner/memory system including internal shared memory means and a plurality of ports each port with a separate port direct line adapter means that is responsive to said header pages to send and receive the data in packets at said ports;

a separate direct memory access link connecting each one of said computer direct access link adapter means to a different one of said port direct line adapter means to couple each of said computers to one of said ports so that data sent in packets between the combiner/memory system and each computer is through a separate link; and

switch means in the combiner/memory system connected between the plurality of port direct line adapter means and



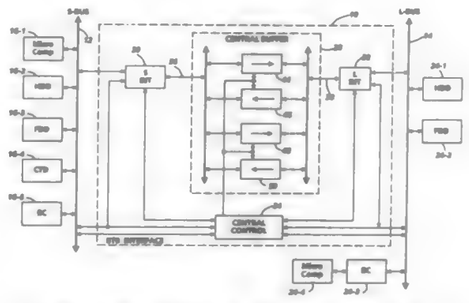
the internal shared memory means, said switch means including means responsive to any one of the port direct line adapter means for selectively linking said any one of the port direct line adapter means to another or to the internal shared memory means to form a path to send packets from one computer to another computer in said plurality of computers or from said one computer to said internal shared memory means in response to the command and destination information in the header pages of such packets.

5,363,485

BUS INTERFACE HAVING SINGLE AND MULTIPLE CHANNEL FIFO DEVICES USING PENDING CHANNEL INFORMATION STORED IN A CIRCULAR QUEUE FOR TRANSFER OF INFORMATION THEREIN

Uoc H. Nguyen, Long Beach; Lipson Whang, Hacienda Heights, and George Apostol, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1992, Ser. No. 955,176
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—250 **1 Claim**



1. A bus to bus interface for connecting a first bus to a second bus, the bus to bus interface comprising:

first bus interface means connected to the first bus for con-

veying data and control information to and from the first bus;

second bus interface means connected to the second bus for conveying data and control information to and from the second bus;

central buffer means connected to the first bus interface means and the second bus interface means, the central buffer means including:

first FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within first FIFO device as one or more serial, identified, channels, from first bus interface means to second bus interface means;

second FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within second FIFO device as one or more serial, identified, channels, from second bus interface means to first bus interface means;

third FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within third FIFO device as one channel, from second bus interface means to first bus interface means;

fourth FIFO device connected to first bus interface means and second bus interface means for conveying data, organized within fourth FIFO device as one channel, from first bus interface means to second bus interface means;

control means connected to the first bus, first bus interface means, second bus, second bus interface means, and the central buffer means, for receiving and transmitting control information from and to the first bus, first bus interface means, second bus, second bus interface means, and the central buffer means, and for controlling the operation of first bus interface means, second bus interface means, and the central buffer means, including operation of the first, second, third and fourth FIFO devices, in response to the received control information;

wherein central buffer means is for conveying data between first bus interface means and second bus interface means, and for conveying control information between control means and first bus interface means and second bus interface means; and

wherein the control means includes:

first control sequence means for tracking and controlling the channels of data within first FIFO device, the first sequence control means comprising:

first circular queue means for providing a predetermined number of slots, with the slots arranged circularly in series, with each slot capable of containing information regarding a channel of data already resident in first FIFO device, including the identity of the channel and the status of the channel, and capable of containing information regarding a channel of data pending residence in first FIFO device, including the identity of the pending channel;

first input pointer means for traversing first circular queue means, slot by slot, and if a slot contains the identity of a resident channel, then updating the status information in the slot of that resident channel, and if the slot does not contain the identity of a resident channel, then determining whether any channels are pending residence in first FIFO device, and if so inserting in the slot the identity of a pending channel and commencing transfer of the pending channel into first FIFO device, provided first FIFO device has room for the pending channel;

first output pointer means for traversing circular queue means, slot by slot, and if a slot contains the identity of a first FIFO device resident channel, then commensing transfer of that channel from the first FIFO device;

wherein the first input pointer means is prevented from advancing to the same slot as the first output pointer means, and the first output pointer means is prevented from advancing to the same slot as the first input pointer means so that resident channels of data in first FIFO device are not overwritten before the resident channels of data are outputted from the first FIFO device;

second control sequence means for tracking and controlling the channels of data within second FIFO device, the second sequence control means comprising:

second circular queue means for providing a predetermined number of slots, with the slots arranged circularly in series, with each slot capable of containing information regarding a channel of data already resident in second FIFO device, including the identity of the channel and the status of the channel, and capable of containing information regarding a channel of data pending residence in second FIFO device, including the identity of the pending channel;

second input pointer means for traversing second circular queue means, slot by slot, and if a slot contains the identity of a resident channel, then updating the status information in the slot of that resident channel, and if the slot does not contain the identity of a resident channel, then determining whether any channels are pending residence in second FIFO device, and if so inserting in the slot the identity of a pending channel and commencing transfer of the pending channel into second FIFO device, provided second FIFO device has room for the pending channel;

second output pointer means for traversing circular queue means, slot by slot, and if a slot contains the identity of a second FIFO device resident channel, then commensing transfer of that channel from the first FIFO device; and

wherein the second input pointer means is prevented from advancing to the same slot as the second output pointer means, and the second output pointer means is prevented from advancing to the same slot as the second input pointer means so that resident channels of data in second FIFO device are not overwritten before the resident channels of data are outputted from the second FIFO device.

5,363,486

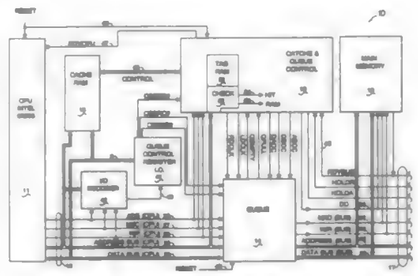
VARIABLE SIZE QUEUE CIRCUIT FOR BUFFERING DATA TRANSFERS FROM A PROCESSOR TO A MEMORY

Anthony M. Olson, Stevensville, and Babu Rajaram, St. Joseph, both of Mich., assignors to Zenith Data Systems Corporation, Buffalo Grove, Ill.

Continuation of Ser. No. 914,038, Jul. 14, 1992, abandoned, which is a continuation of Ser. No. 435,970, Nov. 13, 1989, abandoned. This application Jul. 13, 1993, Ser. No. 91,462

Int. Cl.[5] G06F *13/00, 12/00*

U.S. Cl. 395—250 **12 Claims**



1. An apparatus comprising: first means for storing a plurality of data words; second means for outputting data words to be stored in said first means; and queue means cooperable with said first and second means and having a storage portion, said queue means having means for accepting and temporarily storing in said storage portion each said data word from said second means, and having means for transferring to said first means each said data word stored in said storage portion, said queue means including third means specifying a maximum number of data words which can be stored in said storage portion, and including control means cooperable with said third means for facilitating selective variation of said maximum number of words, said control means having means cooperable with said third means for setting said maximum number of words specified by said third means to a selected one of first and second values which are different; wherein said means for transferring includes means cooperable with said storage portion and said first means for minimizing the number of data words stored in said storage portion at any given point in time by effecting said transferring to said first means of each said data word in said storage portion as soon as possible after the data word is stored in said storage portion; wherein said storage portion includes a predetermined number of storage elements each capable of storing a respective data word, includes load pointer means for identifying a respective one of said storage elements into which the next data word from said second means is to be stored, and includes read pointer means for identifying a respective one of said storage elements containing the next data word to be transferred from said queue means to said first means; wherein each said pointer means includes a cyclic counter having a plurality of states equal in number to said predetermined number of storage elements, and includes decode means responsive to said cyclic counter for selecting in response to each of said states of said cyclic counter a respective one of said storage elements of said storage portion; and wherein said queue means includes a plurality of flip-flops which are equal in number to said storage elements and which are each associated with a respective one of said storage elements, means responsive to storage of a data word from said second means in a respective one of said storage elements for setting the corresponding flip-flop, means responsive to transfer of a data word from one of said storage elements to said first means for resetting the corresponding flip-flop, an AND gate having a plurality of inputs each coupled to an output of a respective one of said flip-flops, a NOR gate having a plurality of inputs each coupled to the output of a respective one of said flip-flops, two further flip-flops having clock inputs respectively clocked by a signal which effects the storage of a data word in one of said storage elements and a signal which effects transfer of a data word out of one of said storage elements, one of said further flip-flops having a data input coupled to an inverted data output of the other thereof and having a data output coupled to a data input of the other thereof, an exclusive NOR gate having two inputs each coupled to the data output of a respective one of said further flip-flops and having a data output, an inverter having a data input coupled to said data output of said exclusive NOR gate and having a data output, a first selector having two inputs respectively coupled to and output of said AND gate and said output of said inverter and having an output coupled to said control means for indicating whether said storage portion can accept a data word from said second means, a further selector having two inputs respectively coupled to and output of said NOR gate and said output of said exclusive NOR gate and having an output coupled to said control means for indicating whether said storage portion contains a data word awaiting transfer to said first means, and wherein said third means includes a register containing a value corresponding to said maximum number of data words and means responsive to said value in said register for causing each said selector to supply to said output thereof the signal present at a selected one of said inputs thereof.

5,363,487

METHOD AND SYSTEM FOR DYNAMIC VOLUME TRACKING IN AN INSTALLABLE FILE SYSTEM

Bryan M. Willman, Bellevue; Mark J. Zbikowski, Woodinville; James G. Letwin, Kirkland, and Rajen J. Shah, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

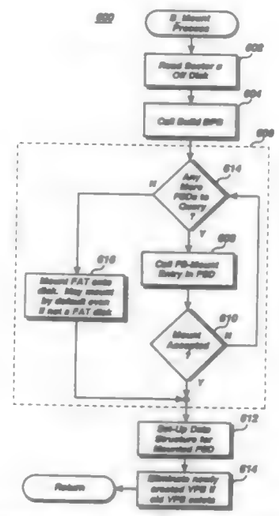
Filed Aug. 29, 1989, Ser. No. 400,531

Int. Cl.[5] G06F *13/10*

U.S. Cl. 395—275 **19 Claims**

MICROFICHE APPENDIX INCLUDED

(195 Microfiche, 4 Pages)



1. A method for mounting a file system driver for use in communicating with a data storage device and a computer system comprising the steps of:

a) including a plurality of file system driver modules in a computer operating system including a default file system driver module wherein said file system driver modules are organized in a sequence and wherein each of said plurality of file system drivers and said default file system driver is associated with an identifier;

b) coupling a data storage device to said computer system;

c) detecting a change in media in said data storage device or the first time said computer system accesses said data storage device;

d) identifying one of said plurality of file system driver modules as the loaded file system driver module;

e) reading a volume identifier from said media wherein the location of said volume identifier is specified by said loaded file system driver module;

f) comparing the read volume identifier from said media with the identifier associated with said loaded file system driver module;

g) associating said loaded file system driver module with said media if said identifiers match;

h) identifying the next file system driver module in said list of said plurality of file system driver modules as said loaded file system driver module if said identifiers do not match;

i) returning to step (e) until each of said plurality of file system driver modules in said list has been tested or until a match is found; and

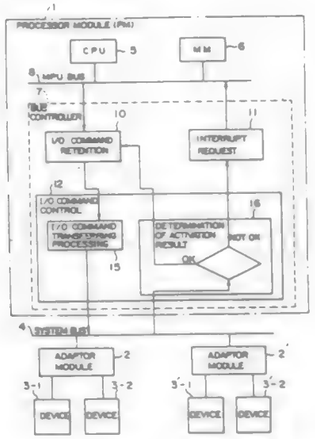
j) associating said default file system driver module with said media if no match is found.

5,363,488

INPUT/OUTPUT COMMAND ISSUING CONTROL SYSTEM IN DATA PROCESSING SYSTEM

Yuji Hidaka, and Makoto Kimura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP91/01325, § 371 Date Jun. 2, 1992, § 102(e) Date Jun. 2, 1992, PCT Pub. No. WO92/06057, PCT Pub. Date Apr. 16, 1992
PCT Filed Oct. 2, 1991, Ser. No. 859,468
Claims priority, application Japan, Oct. 3, 1990, 2-265885
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—275 **11 Claims**



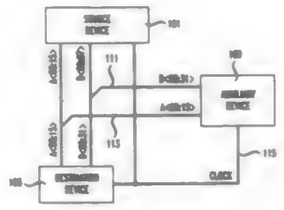
1. An I/O command issuing control system comprising:
a system bus;
a first module connected to the system bus; and
a second module connected to an input/output device and to the system bus so that the first module and the second module are connected together through the system bus, the first module issuing an I/O command which implements a corresponding process in the second module to thereby control the input/output device and the second module producing a processing result indicating whether the process corresponding to the I/O command was successfully implemented or was not successfully implemented and outputting a corresponding result signal;
the first module further comprising:
a processing unit that issues the I/O command and carries out a separate process after issuing the I/O command,
I/O command retaining means for receiving and retaining the I/O command issued from the processing unit,
transferring means for transferring, to the system bus, an I/O command retained in the I/O command retaining means,
examining means for receiving the result signal from the second module and determining whether the process corresponding to the I/O command was successfully implemented or not successfully implemented in the second module, and
interrupt request means for creating, when the examining means determines that the I/O command was not successfully implemented in the second module, an interrupt signal which indicates the processing result and providing the interrupt signal to the processing unit while the processing unit is carrying out the separate process; and
the second module further comprising:
response means for providing the result signal to the first module via the system bus.

5,363,489

AUXILIARY CIRCUIT FOR COMPLEMENTING THE SIGNALING OF INCOMPATIBLE PROTOCOL SYSTEMS

James H. Snyder, North Plainfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1991, Ser. No. 814,950
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—275 **12 Claims**



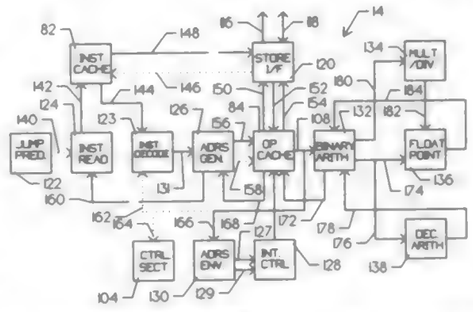
1. An apparatus comprising:
a source device (**101**) capable of sending a first set of signals, via a first set of conductors, in conformity with a source signaling protocol;
a destination device (**105**), connected to said source device by said first set of conductors, which demands a set of signals in conformity with a destination signaling protocol and which destination device is capable of receiving said first set of signals; and
an auxiliary device (**109**), connected to said destination device via a second set of conductors, said auxiliary device including,
means for knowing when said source device is sending said first set of signals to said destination device;
means for generating a supplemental set of signals that complements said first set of signals such that said first set of signals and said supplemental set of signals together conform to said destination signaling protocol; and
means for sending said supplemental set of signals to said destination device via said second set of conductors.

5,363,490

APPARATUS FOR AND METHOD OF CONDITIONALLY ABORTING AN INSTRUCTION WITHIN A PIPELINED ARCHITECTURE

Merwin H. Alferness, New Brighton, Minn., and Eric Collins, Naperville, Ill., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Feb. 3, 1992, Ser. No. 829,697
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—375 **7 Claims**



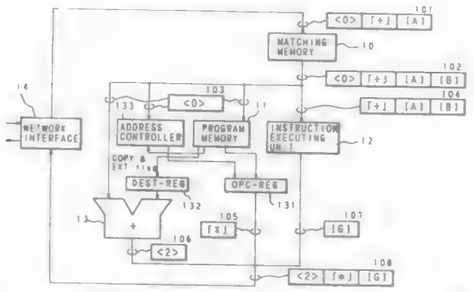
7. A pipelined data processing system having an instruction processor for executing a series of instructions comprising:
a. a control circuit for controlling said executing of said series of instructions such that said instruction processor can simultaneously execute a second portion of a first instruction of said series of instructions and a first portion of a second instruction of said series of instructions, wherein the first instruction precedes the second instruction in the series of instructions;
b. a detecting circuit coupled to said controlling circuit for detecting when the execution of said second portion of said first instruction of said series of instructions is conditioned on a result of the execution of said first portion of said second instruction of said series of instructions;
c. a general register stack located in said instruction processor for storing said results; and
d. an aborting circuit coupled to said controlling circuit and to said detecting circuit for aborting said second portion of said first instruction if said detecting circuit determines that said second portion of said first instruction of said series of instructions is conditioned on the result of the execution of said first portion of said second instruction of said series of instructions and the results of the execution of said first portion of said second instruction of said series of instructions indicates that the condition is met; and
wherein said first portion of said second instruction is a branch instruction and said second portion of said first instruction is a data store instruction.

5,363,491

DATA FLOW PROCESSOR WITH DATA PROCESSING AND NEXT ADDRESS DETERMINATION BEING MADE IN PARALLEL

Shinji Komori; Hirono Tsubota, both of Itami, and Kenji Shima, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 450,653, Dec. 13, 1989, Pat. No. 5,218,706. This application Feb. 1, 1993, Ser. No. 12,063
Claims priority, application Japan, Dec. 19, 1988, 63-321574; Jan. 26, 1989, 1-19256
Int. Cl.[5] G06F *15/82*
U.S. Cl. 395—375 **9 Claims**



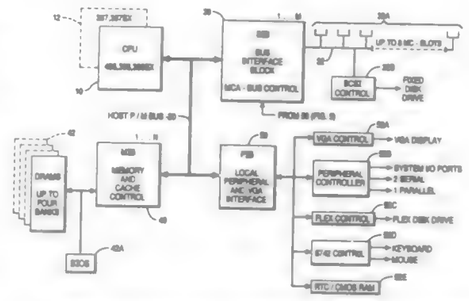
1. A data flow processor for processing a packet including a first data element, an operation code, and a destination node number comprising:
a coincidence detecting unit, having an input for receiving said packet and having an output port, for concatenating a second data element identified by said destination node number to said packet to form a two data element packet at said coincidence detecting unit output port;
a processing unit, having an input for receiving said first and second data elements and said operation code of said two data element packet and having an output port, for executing the processing specified by said operation code and for outputting a third data element which results from said processing at said processing unit output port;
a program memory, having an address input for receiving said destination node number of said two data element packet, for outputting a relative destination node number and an operation code to be executed next, wherein the inputs of said processing unit and said program memory are directly coupled to said output port of said coincidence detecting unit to process data and update said destination node number and said operation code in parallel.

5,363,492

INTERNAL BUS FOR WORK STATION INTERFACING MEANS

Edward C. King, Fremont, Calif., and Anton Goeppel, Burgau, Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 30, 1991, Ser. No. 752,371
Claims priority, application United Kingdom, Aug. 31, 1990, 9018992
Int. Cl.[5] G06F *9/38*
U.S. Cl. 395—325 **13 Claims**



1. A work station, including a central processing unit (CPU), said work station comprising:
a first integrated circuit interface block connected to a first external bus;
a second integrated circuit interface block connected to a first memory;
a third integrated circuit interface block connected to a peripheral unit; and
a local bus connected to said CPU and first, second and third blocks;
wherein each block includes operating units disposed therein and an internal bus interconnecting said operating units; and
wherein each interface block is adapted to operate at the same clock frequency as said CPU, but with operational signals generated on its respective internal bus independently of said CPU.

5,363,493

TOKEN RING NETWORK TEST DEVICE USING FINITE STATE MACHINE

Rod Unverrich, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 860,642, Mar. 3, 1992, abandoned. This application Aug. 4, 1993, Ser. No. 102,523
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—325 **3 Claims**

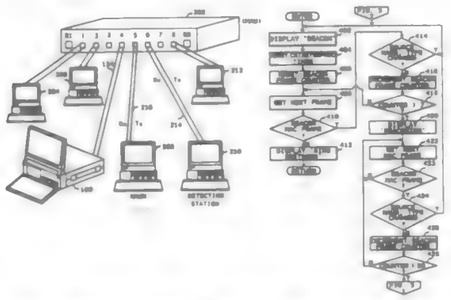
2. A test device for identifying one of a plurality of error states in a token-ring local area network, wherein said token-ring local area network has at least one network computer station attached thereto, and further wherein said at least one network computer station may send a plurality of frames, each frame being one of several types of frames, through said token-ring local area network, said test device comprising:
network interface means for connecting said test device to said token-ring local area network and for receiving a plurality of frames sent by said at least one network computer station;
means for storing said plurality of received frames from said

connecting means into a memory contained within said test device;

counter means connected to said memory means for examining said received frames, and for displaying a beacon error state, on a display device connected to said test device, when a first beacon type of frame is received;

counter means connected to said memory means for counting beacon frames received;

means connected to said counter means for displaying a



beaconing error state, on said display device, when said counter means exceeds seven;

means connected to said counter means for displaying a streaming beacons error state, on said display device, when said counter exceeds twenty;

timer means, connected to said network interface means, for timing a duration of receiving beacon frames; and

means connected to said timer means for displaying, on said display device, a catastrophic error state when said timer means exceeds twenty six seconds of time.

5,363,494

BUS INTERFACE CIRCUIT FOR CONNECTING BUS LINES HAVING DIFFERENT BIT RANGES

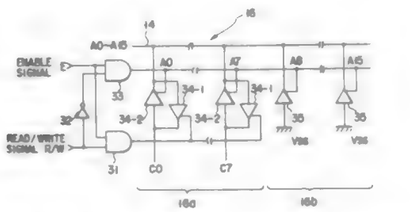
Tsuneaki Kudou, Yokohama, Japan, assignor to Kabushika Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1992, Ser. No. 964,886

Claims priority, application Japan, Oct. 24, 1991, 3-277509

Int. Cl.[5] G06F *13/40, 13/00*

U.S. Cl. 395—325 **12 Claims**



1. A bus system of semiconductor device comprising:

a plurality of bus wiring lines, each having different predetermined bit ranges, at least two bus wiring lines of which are connected to each other; and

a plurality of interface circuits, each having a buffer circuit which has a bit range equal to the lower bit range of the predetermined bit ranges of said at least two bus wiring lines, and which is connected between said at least two bus wiring lines, and a dummy buffer circuit which has a bit range equal to the difference between the bit range of said at least two bus wiring lines, and which is connected to a portion of said bus wiring line having the larger bit range of said at least two bus wiring lines, said portion of said bus wiring line having the larger bit range being a portion to which said buffer circuit is not connected.

5,363,495

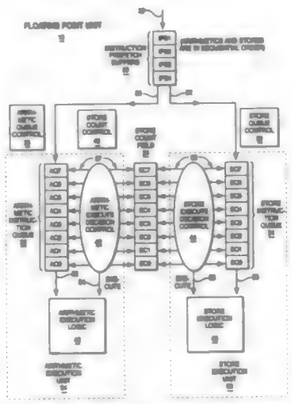
DATA PROCESSING SYSTEM WITH MULTIPLE EXECUTION UNITS CAPABLE OF EXECUTING INSTRUCTIONS OUT OF SEQUENCE

Richard E. Fry, Round Rock, and Troy N. Hicks, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1991, Ser. No. 750,132

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **18 Claims**



1. A data processing system, comprising:

first and second execution units;

means, coupled to said execution units, for providing instructions from a sequence of instructions to said execution units for execution;

means, coupled to said execution units, for associating with a first instruction in said first execution unit a count of instructions in said second execution unit that preceded said first instruction in said sequence;

means, coupled to said means for associating, for delaying execution of said first instruction until a second instruction in said second execution unit has completed execution, if:

the count associated with said first instruction is non-zero; and

said second instruction must execute prior to said first instruction to produce correct results; and

means, coupled to said means for associating, for delaying execution of said second instruction until said first instruction has completed execution, if:

the count associated with said first instruction is less than or equal to a number of instructions in said second execution unit that precede said second instruction; and

said first instruction must execute prior to said second instruction to produce correct results.

5,363,496

MICROPROCESSOR INCORPORATING CACHE MEMORY WITH SELECTIVE PURGE OPERATION

Rikako Kato, and Hiroyuki Takai, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 636,276, Dec. 31, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 84,434

Claims priority, application Japan, Jan. 22, 1990, 2-010667

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 **7 Claims**

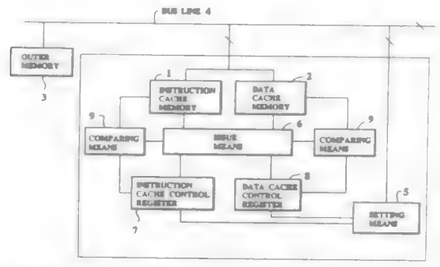
1. A microprocessor incorporating a cache memory with a selective purge operation for storing data and page addresses, each of said page addresses indicating one of a plurality of pages divided in the cache memory, an instruction decoder means for decoding an instruction transferred externally to the microprocessor, and an execution means for executing the

instruction decoded by the instruction decoder means, the microprocessor comprising:

a control register for storing control information including page information indicating said selective purge operation for purging a desired page in the cache memory;

setting means for transferring the control information from the execution means to the control register whenever the control information is set in the instruction decoder means by a load instruction;

comparing means for comparing a page address for the selective purge operation indicated in the control informa-



tion stored in the control register with a page address in the cache memory; and

issue means for providing a purge command to the comparing means to indicate a start of execution of the selective purge operation only when the page address for the selective purge operation is equal to the address indicating the page in the cache memory by the comparing means;

wherein, when the comparing means receives the purge command from the issue means, the comparing means indicates the selective purge operation to the cache memory.

5,363,497

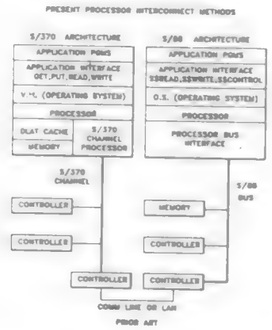
SYSTEM FOR REMOVING SECTION OF MEMORY FROM FIRST SYSTEM AND ALLOCATING TO SECOND SYSTEM IN A MANNER INDISCERNABLE TO BOTH OPERATING SYSTEMS

Ernest D. Baker, Boca Raton; John M. Dinwiddie, Jr., West Palm Beach; Lonnie E. Grice, Boca Raton; John M. Loffredo, Deerfield Beach; Kenneth R. Sanderson, West Palm Beach, and Gustavo A. Suarez, Boca Raton, all of Fla., assignors to IBM Corporation, Boca Raton, Fla.

Continuation of Ser. No. 867,721, Mar. 27, 1992, abandoned, which is a division of Ser. No. 353,113, May 17, 1989, Pat. No. 5,144,692. This application Sep. 30, 1993, Ser. No. 128,760

Int. Cl.[5] G06F *12/02*

U.S. Cl. 395—425 **18 Claims**



1. A method of removing a section of main storage from a first data processing system, including a first processing element, said main storage and I/O apparatus operated under a first operating system, for use by a second processing element having means coupling the second processing element to said main storage and operating under control of a second operating system, said method of removing being in a manner indiscernible to both operating systems, comprising the steps of:

dividing storage into a plurality of fixed-size blocks of contiguous storage under control of a storage manager of the first operating system;

creating in the first system under control of the storage manager a storage map with entries corresponding to each block;

tying together in a freelist in the first system under control of the storage manager the entries corresponding to blocks not presently assigned for use in a process by inserting in each entry a pointer to the next adjacent entry in the list;

ordering the freelist under control of the storage manager to tie together, in sequential address order, entries for a large contiguous area of storage;

accessing a predesignated location in main storage which holds a software pointer of the first operating system which points to the beginning of the freelist under control of a predetermined application program running in supervisory mode on the first processing element;

altering the freelist pointers under control of a predetermined application program running in supervisor mode on the first processing element to remove from the freelist a group of entries defining a contiguous area of storage of predetermined size thereby removing said contiguous area of storage from control by the storage manager of the first operating system;

operating the first processing element in isolation from the first operating system under the control of a predetermined application program executing on the first processing element for placing address data corresponding to the said defined area of storage into registers associated with said coupling means to permit accessing only of the defined area of storage by said second processing element during program execution under control of the second operating system, said second operating system being unaware of the use of the register address data for accessing said defined area of storage.

5,363,498

METHOD OF CONTROLLING SHARED DATA AMONG COMPUTERS

Taketoshi Sakuraba; Toshiaki Arai, both of Sagamihara; Nobuo Yamamoto, Yokohama; Masamitu Nomura, Ikoma; Kazuo Imai, Higashikurume; Michio Tandai, and Toru Yamamoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo; Hitachi Seibu Soft Ware Co., Ltd., Osaka and Hitachi Software Engineering Co., Ltd., Yokohama, all of Japan

Filed Feb. 4, 1991, Ser. No. 649,891

Claims priority, application Japan, Feb. 9, 1990, 2-28406; Sep. 25, 1990, 2-251971

Int. Cl.[5] G06F *13/10*

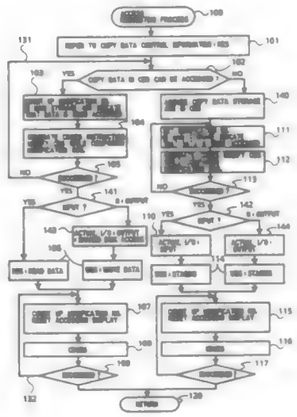
U.S. Cl. 395—425 **9 Claims**

1. A method of controlling shared data among computers in a multiprocessor system in which at least one peripheral unit storing data is shared by a plurality of computers, the method comprising steps of:

providing from a system user an extended storage which is shared and controlled by each of said plurality of computers;

storing a copy of at least a part of the data in said peripheral unit and control information into said extended storage by each of said computers to control the copied data, the control information including information for identifying copied data, information for indicating a location of the copied data in said extended storage and version information indicating a state of modification of the copied data;

copying the control information in the common extended storage into a main storage of a computer;
saving the version information of the control information in the main storage as old version information;
obtaining control information whose version-up was executed by performing a desired modification to the control information in the main storage;
comparing the version information in the common extended storage with the old version information in the main storage;



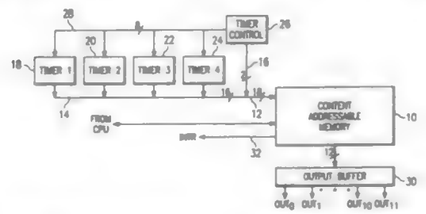
rewriting the control information in the common extended storage in accordance with the control information of the version-up contents in the main storage if both the version information and the old version information are equal as a result of the comparison; and
copying the control information in the common extended storage into the main storage if both the version information arid the old version information are not equal as a result of the comparison.

5,363,499

CAM FOR OUTPUTTING CONTROL SIGNALS OF ACTION FIELDS IN RESPONSE TO MATCHES OF INPUTTING DIGITAL TIMER SIGNALS WITH DATA IN COMPARING FIELDS

Kevin W. Glass, San Jose, assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 359,842, May 31, 1989, abandoned. This application Dec. 15, 1993, Ser. No. 168,583
Int. Cl.[5] G06F *7/02, 15/409*
U.S. Cl. 395—425 **7 Claims**



1. A content addressable memory for connection to receive digital timer output signals for outputting control signals in response to said digital timer output signals, said content addressable memory, comprising:
a plurality of memory data entries, each entry including: a comparison field for containing data for comparison with said digital timer output signals, and a corresponding action field for containing data to be outputted from said memory when a timer output signal matches data in the comparison field;
circuitry for simultaneously comparing the digital timer output signals to data contained in the comparison fields of each of said plurality of entries; and
circuitry operative when said digital timer output signals match the contents of said comparison field for outputting data from the corresponding action fields of said plurality of memory entries.

5,363,500

SYSTEM FOR IMPROVING ACCESS TIME TO VIDEO DISPLAY DATA USING SHADOW MEMORY SIZED DIFFERENTLY FROM A DISPLAY MEMORY

Koji Takeda, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 24, 1991, Ser. No. 645,902
Claims priority, application Japan, Jan. 25, 1990, 2-15303; Mar. 22, 1990, 2-72868; Mar. 22, 1990, 2-72869
Int. Cl.[5] G06F *12/00, 13/00, 15/62;* **G09G** *1/02*
U.S. Cl. 395—425 **1 Claim**

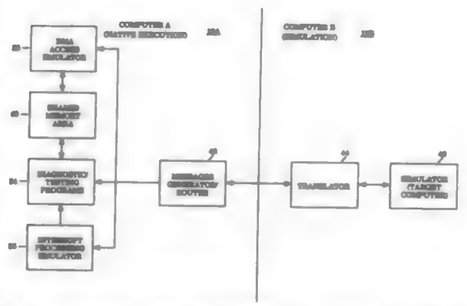
1. An information processing device (IPD), comprising:
a) a central processing unit (CPU) coupled to a data bus;
b) a display memory having a first size corresponding to a first address space;
c) a video controller;
d) a shadow memory, coupled to said data bus having a second size corresponding to a second address space, the first size being later than the second size:
e) arbitration means, coupled to said CPU, said data bus, said display memory and said video controller, for arbitrating between access requests from said CPU and said video controller, such that when said CPU requests write access to said display memory, said CPU is forced to wait until said arbitration means permits said CPU to access said display memory;
wherein said CPU concurrently writes identical data into said display memory and into said secondary memory when the second address space overlaps with the first address space; and selecting means
(1) for selecting said shadow memory in response to a reading request by said (PU when second address space overlaps with the first address space, and
(2) for selecting said display memory when the data is written exclusively in said display memory in response to a read request by said CPU.

5,363,501

METHOD FOR COMPUTER SYSTEM DEVELOPMENT VERIFICATION AND TESTING USING PORTABLE DIAGNOSTIC/TESTING PROGRAMS

Somayajulu S. K. Pullela, Campbell, Calif., assignor to Sony Electronics, Inc., Park Ridge, N.J.

Filed Dec. 22, 1992, Ser. No. 995,587
Int. Cl.[5] G06F *9/455, 15/16*
U.S. Cl. 395—500 **7 Claims**



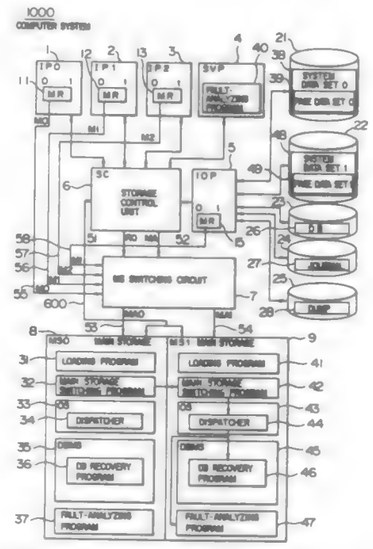
1. In a computer system apparatus comprising at least one computer for diagnostic/testing program execution and simulation, a method for performing development, verification and testing of a target computer under development, said method comprising the steps of:
a) simulating operations of said target computer;
b) verifying and testing functions of said simulated target computer by said diagnostic/testing program, said verification and testing being performed as if they are performed directly on said target computer;
c) detecting a plurality of raised exceptions, generating and sending corresponding messages for said detected exceptions, said exceptions being raised when said diagnostic/testing program references hardware elements of said simulated target computer;
d) receiving said corresponding messages, translating said received messages into corresponding hardware signals formatted for said simulation, said corresponding hardware signals corresponding to said exceptions, and providing said corresponding hardware signals to said simulation;
e) detecting outputs representative of reply hardware signals from said simulation, translating said detected outputs into corresponding messages formatted for said diagnostic/testing program execution, and sending said corresponding reply messages to said diagnostic/testing program execution;
f) receiving said corresponding reply messages by said diagnostic/testing program execution, and routing said received reply messages to emulate interrupts, to emulate DMA read/writes or to said diagnostic/testing program in accordance with the contents of said reply messages;
g) receiving said reply messages that are interrupt related, and emulating interruption of said diagnostic/testing program by said simulated target computer; and
h) receiving said reply messages that are DMA read/ write operation related and emulating DMA read/write operations between said diagnostic/testing program and said simulation;
said diagnostic/testing program also receiving non-interrupt and non-DMA read/write operation related reply messages.

5,363,502

HOT STAND-BY METHOD AND COMPUTER SYSTEM FOR IMPLEMENTING HOT STAND-BY METHOD

Toyohiko Kagimasa, Hachioji; Osamu Chinone, Tokyo, and Shigeo Yonenaga, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 712,685
Claims priority, application Japan, Jun. 8, 1990, 2-150173
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **17 Claims**



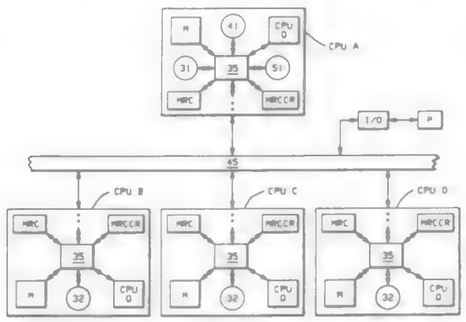
1. A hot stand-by method implemented in a computer system having a processing unit, normal-use and stand-by main storage units each connected to said processing unit, and an auxiliary storage unit for holding a journal and being connected to said processing unit, comprising the steps of:
loading a same application program to be executed and a same control program required for executing the application program to said normal-use main storage unit as normal-use control and application programs and to said stand-by main storage unit as stand-by control and application programs;
executing, by said processing unit, said normal-use control program and said normal-use application program loaded in said normal-use main storage unit, said normal-use control program and said normal-use application program serving to inhibit access to said stand-by main storage unit during execution thereof by said processing unit;
storing a journal concerned with an execution history of said normal-use application program in said auxiliary storage unit;
interrupting execution of said normal-use control program and said normal-use application program when a fault occurs in either one of said normal-use control program or said normal-use application program being executed; and
executing, by said processing unit, said stand-by control program and said stand-by application program loaded in said stand-by main storage unit, executing a fault-recovery program containing said stand-by application program by using the journal stored in said auxiliary storage unit for recovering the state of the stand-by application program to the state of said normal-use application program before said fault occurred, and executing the stand-by application program from the recovered programming state.

5,363,503

FAULT TOLERANT COMPUTER SYSTEM WITH PROVISION FOR HANDLING EXTERNAL EVENTS

Barry J. Gleeson, Palo Alto, Calif., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 22, 1992, Ser. No. 824,134
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **24 Claims**



1. In a fault tolerant computer system including a data processor providing at least one task which performs a persistent action and wherein said task is subject to receiving one or more external signals whose time of occurrence may affect the performance of said task, a method comprising:

providing a backup task external to said data processor for backing up said one task,

transmitting messages to said one task;

storing messages transmitted to said one task;

also storing external event data indicative of each external event type and its occurrence relationship to a predetermined primary task event;

transmitting at least certain ones of the stored messages to said backup task subsequently to said storing messages in a manner such that at least those particular messages which have been processed by said one task are transmitted to said backup task prior to performance of said persistent action;

also transmitting said external event data and said occurrence relationship to said backup task prior to performance of said persistent action;

said one task continuing to process messages transmitted thereto so long as the aforementioned transmitting of messages and external event data to said backup task is met; and

in the event of failure of said one task, causing said backup task to process said messages transmitted thereto while using said external event data and said occurrence relationship transmitted thereto to redeliver each external signal to said backup task at a time such that said backup task will properly recover.

5,363,504

ELECTRONIC FILING METHOD AND APPARATUS

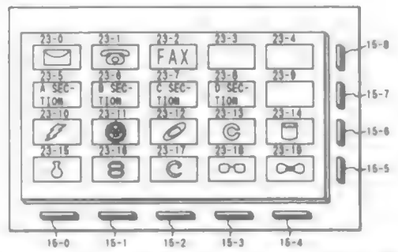
Kamon Hasuo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 478,250, Feb. 9, 1990, abandoned. This application Jun. 22, 1993, Ser. No. 79,854
Claims priority, application Japan, Feb. 9, 1989, 1-30794; Jun. 2, 1989, 1-140628; Jun. 2, 1989, 1-140629; Jun. 2, 1989, 1-140630
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—600 **17 Claims**

1. A filing method for an electronic filing apparatus, said method comprising the steps of:

(a) reading out index images from an index image storage means and displaying the readout index images on display means having a plurality of display locations, each of the index images being an image representative of index information used for retrieving image information stored in a storage medium and capable of being used as index information for a plurality of image information;

(b) selecting desired index images from among the plurality of index images displayed at the plurality of display locations;



(c) inputting the image information to be stored in the storage medium;

(d) storing the image information input in step (c) in a vacant area of the storage medium; and

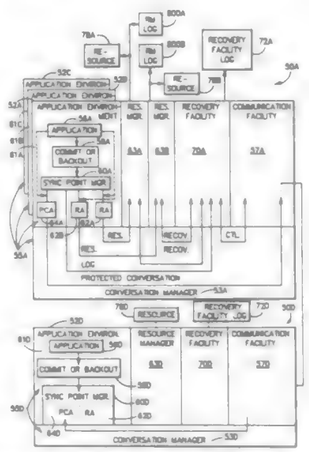
(e) forming an index file indicating a relationship between the selected index images selected in step (b) and a storage address of the image information stored in the storage medium in step (d).

5,363,505

LOCAL AND GLOBAL COMMIT SCOPES TAILORED TO WORK UNITS

Barbara A. M. Maslak, Endwell; James M. Showalter, and Thomas J. Szczygielski, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 425,426, May 16, 1990, abandoned. This application Jun. 9, 1993, Ser. No. 73,998
Int. Cl.[5] G06F *9/00, 15/16*
U.S. Cl. 395—650 **14 Claims**



1. A computer network for executing a first application program in a first execution environment and a second, related application program in a second execution environment coupled to the first execution environment, said network comprising:

means, resident in said first execution environment, for selecting independently of said second execution environment a first work unit identifier which is unique within said first execution environment to permit said first application program to collectively reference resources within a first work unit during a commit request, said first work unit comprising a first resource coupled to said first execution environment and a second resource coupled to said second execution environment;

means, responsive to said work request for said second resource, for selecting a logical unit of work identifier which is unique within said first and second execution environments for transmission to said second execution environment with said work request; and

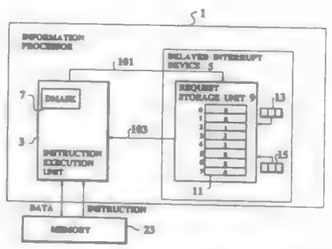
means, resident in said second execution environment and responsive to said work request, for selecting independently of said first execution environment a second work unit identifier which is unique within said second execution environment to permit said second application program to collectively reference resource(s) within a second work unit during a subsequent commit request, said second work unit comprising said second resource, the commit request from said first application program being passed to said second execution environment with said logical unit of work identifier to cause said second execution environment to issue said subsequent commit request.

5,363,506

INFORMATION PROCESSOR WITH DELAYED INTERRUPT DEVICE

Katsuhito Fukuoka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 729,028, Jul. 12, 1991, abandoned. This application Oct. 19, 1993, Ser. No. 137,762
Claims priority, application Japan, Jul. 17, 1990, 2-187256
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 **4 Claims**



1. An information processor having a delayed interrupt device, said information processor comprising:

execution means for executing a delayed interrupt request instruction, said execution means generating a delayed interrupt request in order to delay an execution of a delayed interrupt process specified by said delayed interrupt request instruction until conditions are established, said execution means including a status register for storing information indicating whether an interrupt process can be executed by said execution means; and

interrupt request means for storing said delayed interrupt request transferred from said execution means and for sending said delayed interrupt request back to said execution means to commence interrupt processing, said interrupt request means including

a delayed interrupt request storage unit which includes a plurality of storage portions for storing a plurality of delayed interrupt requests transferred from said execution means in a first-in/first-out manner, and

selecting means for selecting one of said plurality of delayed interrupt requests stored in said delayed interrupt request storage unit and for sending a delayed interrupt request selected by said selecting means back to said execution means; and

wherein said status register stores a value indicating whether an interrupt process corresponding to a delayed interrupt request sent from said interrupt request means can be executed, and

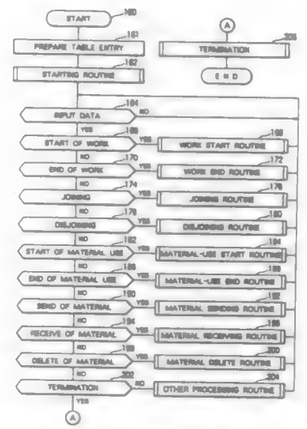
wherein said execution means executes the interrupt process corresponding to the delayed interrupt request when said status register indicates that conditions for executing said delayed interrupt request are established.

5,363,507

METHOD AND SYSTEM FOR STORING AND RETRIEVING COLLABORATIVELY PROCESSED INFORMATION BY ASSOCIATED IDENTIFICATION DATA

Yoshiyuki Nakayama, Yokohama; Kenjiro Mori, Machida, and Tadashi Yamamitsu, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1991, Ser. No. 743,851
Claims priority, application Japan, Aug. 13, 1990, 2-211711
Int. Cl.[5] G06F *15/40, 15/16, 13/10, 13/366*
U.S. Cl. 395—800 **21 Claims**



1. A method of storing collaboratively processed information referenced in a group work carried out through a computer network system in which a plurality of terminal units are interconnected through a network, each terminal unit comprising a microprocessor provided with a control program for controlling communication of control commands and data with other terminal units, a data base producing program for automatically producing a data set indicative of features of the group work and at least one application program for performing data processing according to control commands and data supplied through said control program a display unit and an input unit, and a plurality of users in remote places engaged in the group work by referring to at least one material displayed equally on a screen of the display unit of each terminal unit under control of said control program, said method comprising steps of:

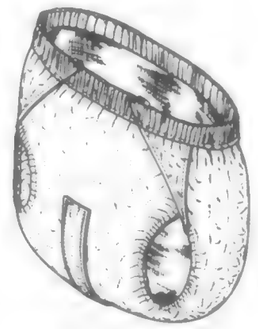
establishing in said network a logical communication path for connecting a plurality of control programs of said terminal units, and starting the group work;

creating group work identification data by said data base creating program in response to a predetermined control command supplied from said control program when the group work is started;

selectively creating, by said data base creating program, work matter data indicative of index information for retrieving a material referenced in the group work when control command or data is supplied from said control program during the group work; and

storing said work matter data in association with said work identification data in a file by said data base creating program.

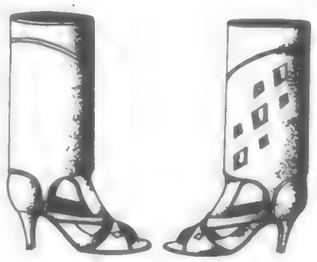
352,151
BOY'S TRAINING PANTS
Betty Warnock, 202 Lewis Dr., Savannah, Ga. 31406
Filed Aug. 5, 1993, Ser. No. 11,454
Term of patent 14 years
U.S. Cl. D2—712



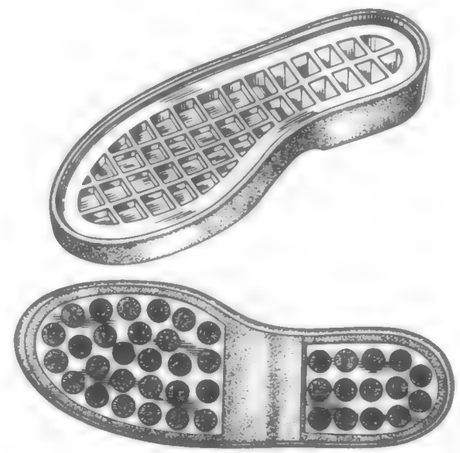
352,152
COMBINED CONVERTIBLE VEST AND PURSE
Aleta Maye, 6119 N. Winchester Ave., Chicago, Ill. 60660
Filed Oct. 22, 1992, Ser. No. 684
Term of patent 14 years
U.S. Cl. D2—830



352,153
SANDAL BOOT
Irma J. Luque, 3843 W. Charter Oak, Phoenix, Ariz. 85029
Filed Mar. 17, 1992, Ser. No. 853,312
Term of patent 14 years
U.S. Cl. D2—911



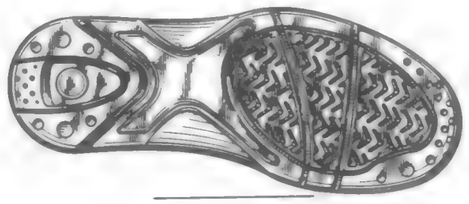
352,154
SHOE SOLE
Jean-Paul Merceron, Monthodon, France, assignor to Article Chaussant Europeen (Arche S.A.), Chateau-Renault, France
Filed Aug. 26, 1993, Ser. No. 12,195
Claims priority, application France, Feb. 26, 1993, 931076
Term of patent 14 years
U.S. Cl. D2—952



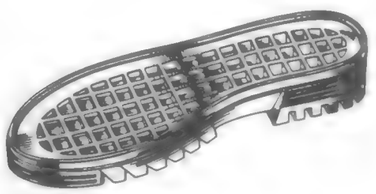
352,155
SHOE SOLE
Jean-Paul Merceron, Monthodon, France, assignor to Article Chaussant Europeen (Arche S.A.), Chateau-Renault, France
Filed Aug. 26, 1993, Ser. No. 12,193
Claims priority, application France, Feb. 26, 1993, FR 931076
Term of patent 14 years
U.S. Cl. D2—952



352,156
SHOE SOLE
Erik C. Purdom, Battleground, Wash., assignor to L.A. Gear Inc., Santa Monica, Calif.
Filed Jan. 22, 1993, Ser. No. 4,000
Term of patent 14 years
U.S. Cl. D2—954

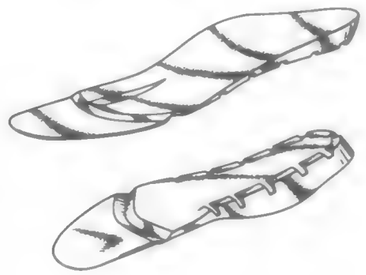


352,157
SHOE SOLE
Jean-Paul Merceron, Mouthodon, France, assignor to Article Chaussant Europeen (Arche S.A.), Chatean-Renault, France
Filed Aug. 26, 1993, Ser. No. 12,194
Claims priority, application France, Feb. 26, 1993, 931076
Term of patent 14 years
U.S. Cl. D2—957

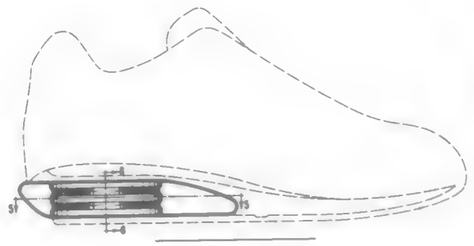




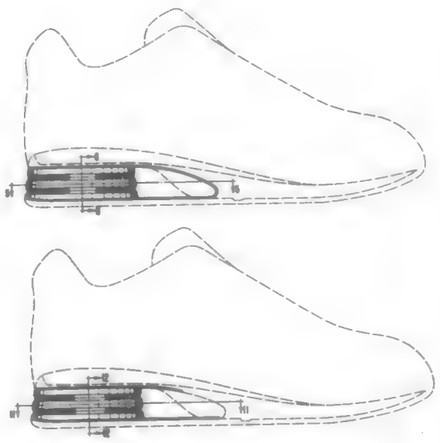
352,158
SHOE INSERT MEMBER
Dennis N. Brown, Blaine, Wash., assignor to Northwest Podiatric Laboratory, Inc., Blaine, Wash.
Filed Nov. 30, 1993, Ser. No. 15,806
Term of patent 14 years
U.S. Cl. D2—961



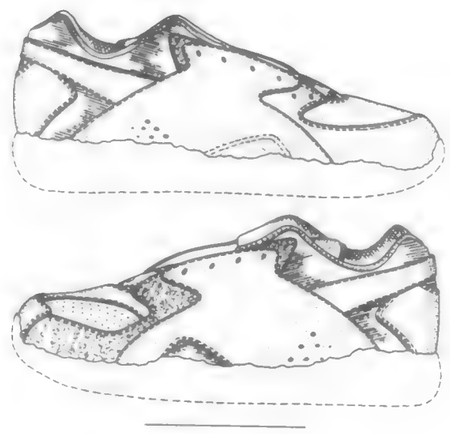
352,159
HEEL INSERT FOR A SHOE SOLE
Bruce Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,933, Nov. 1, 1991, Pat. No. D. 344,401.
This application Jan. 19, 1994, Ser. No. 17,635
Term of patent 14 years
U.S. Cl. D2—965



352,160
HEEL INSERT FOR A SHOE SOLE
Bruce J. Kilgore, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 786,932, Nov. 1, 1991. This application Mar. 23, 1994, Ser. No. 20,267
Term of patent 14 years
U.S. Cl. D2—967



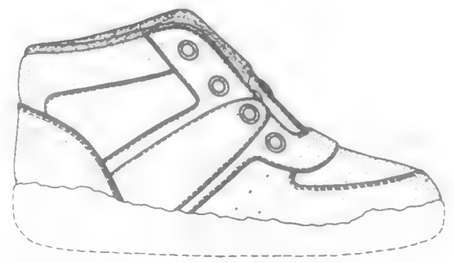
352,161
SHOE UPPER
David Preskar, North Quincy, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Aug. 20, 1993, Ser. No. 12,027
Term of patent 14 years
U.S. Cl. D2—969



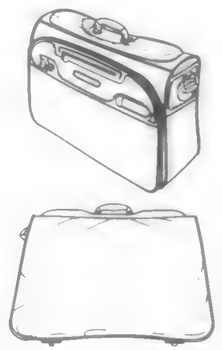
352,162
SHOE UPPER
Jonathan R. Morris, Cranston, R.I., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 2,865, Dec. 22, 1992, Pat. No. Des. 346,486.
This application Mar. 21, 1994, Ser. No. 20,211
Term of patent 14 years
U.S. Cl. D2—970



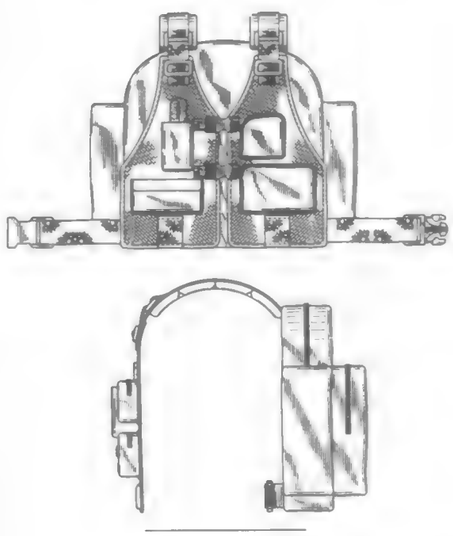
352,163
SHOE UPPER
Amy S. Minkin, Walpole, and Edward G. Tavino, Swampacott, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 6,720, Apr. 5, 1993, Pat. No. D. 347,316, which is a division of Ser. No. 923,350, Jul. 31, 1992, Pat. No. D. 336,151. This application Mar. 29, 1994, Ser. No. 20,590
Term of patent 14 years
U.S. Cl. D2—970



352,164
SUITCASE
Gioia Giovannella, Bologna, Italy, assignor to Plastimoda S.p.A., Desio, Italy
Filed Jul. 7, 1993, Ser. No. 10,354
Claims priority, application Italy, Jan. 7, 1993, B0930000001
Term of patent 14 years
U.S. Cl. D3—301



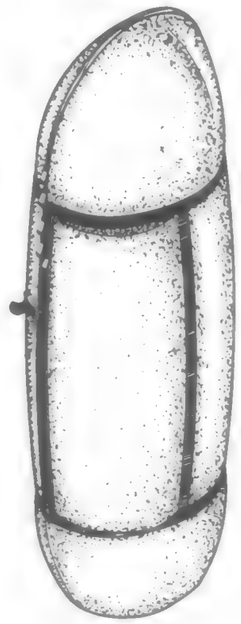
352,165
COMBINED VEST AND BACK PACK
Mason L. Covertson, 1258 High St., Auburn, Calif. 95603
Filed Dec. 11, 1992, Ser. No. 2,410
Term of patent 14 years
U.S. Cl. D3—217



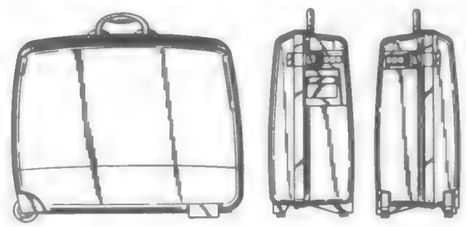
352,166
POUCH
Theodore L. Caligiuri, 436 Ardmore Ave., Hermosa Beach, Calif. 90254
Filed Mar. 5, 1993, Ser. No. 5,554
Term of patent 14 years
U.S. Cl. D3—243



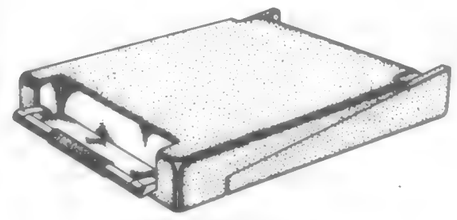
352,167
GOLF BAG COVER
James M. Sheppard, Jr., Monroe, N.C., assignor to Devant, Ltd., Monroe, N.C.
Filed May 10, 1993, Ser. No. 8,191
Term of patent 14 years
U.S. Cl. D3—255



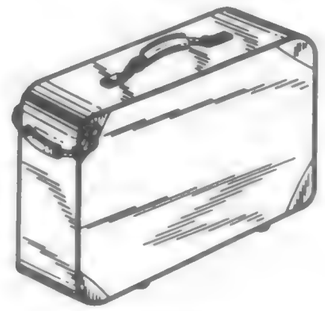
352,168
LUGGAGE
Michel Aumasson, Rueil-Malmaison, France, assignor to Delsey (Societe Anonyme), Bobigny, France
Filed Jun. 9, 1993, Ser. No. 9,253
Claims priority, application France, Dec. 11, 1992, 927,534
Term of patent 14 years
U.S. Cl. D3—276



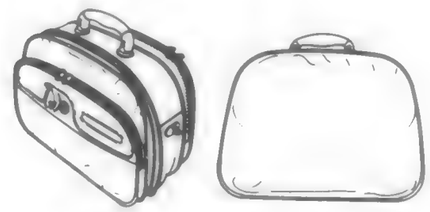
352,169
HAND TOOL BOX
Wen-Pin Chang, 66-1 Cheng Kung Road, Tali Hsiang, Taichung Hsien, Taiwan, Prov. of China
Filed Mar. 26, 1993, Ser. No. 6,325
Term of patent 14 years
U.S. Cl. D3—276



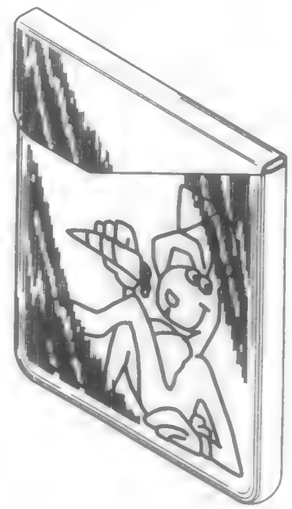
352,170
LUGGAGE WITH HANDLE
Walter Bialo, Scarsdale, N.Y., assignor to Badanco Enterprises, Inc., Secaucus, N.J.
Filed Feb. 23, 1993, Ser. No. 5,039
Term of patent 14 years
U.S. Cl. D3—279



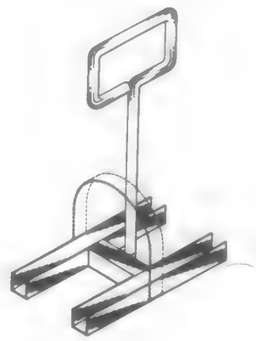
352,171
SMALL SUITCASE
Gioia Giovannella, Bologna, Italy, assignor to Plastimoda S.p.A., Desio, Italy
Filed Jul. 7, 1993, Ser. No. 10,358
Claims priority, application Italy, Jan. 7, 1993, B0930000001
Term of patent 14 years
U.S. Cl. D3—301



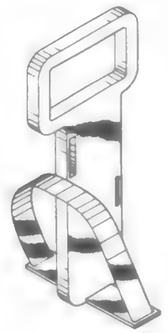
352,172
CONDOM CARRIER
Domenic Aversa, and Nicholas Pizzacalla, both of 3820 Holburn, Windsor, Ontario, Canada N9G 1R9
Filed Mar. 23, 1993, Ser. No. 6,249
Term of patent 14 years
U.S. Cl. D3—303



352,173
HOLDER FOR IN-LINE SKATES
Maria A. Tirone, 291 Winifred Dr., Totowa, N.J. 07512; Frank V. Mazzarisi, 267 Third St., Clifton, N.J. 07011, and Angelo G. Tirone, 291 Winifred Dr., Totowa, N.J. 07512
Filed Feb. 9, 1993, Ser. No. 4,615
Term of patent 14 years
U.S. Cl. D3—317

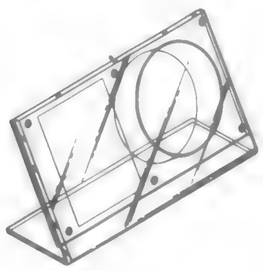


352,174
MULTI-USE FOOTWEAR HOLDER
Frank V. Mazzarisi, 267 Third St., Clifton, N.J. 07011, and Angelo G. Tirone, 291 Winifred Dr., Totowa, N.J. 07512
Filed Feb. 9, 1993, Ser. No. 4,613
Term of patent 14 years
U.S. Cl. D3—317

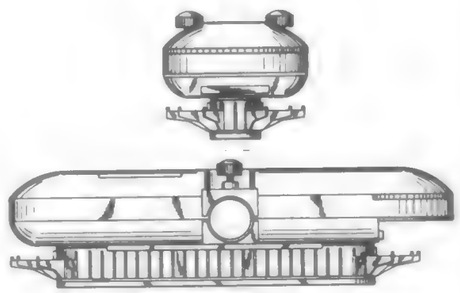


352,175
TOOTHBRUSH
Dennis M. Brown, 16 E. Elm St., Flora, Ind. 46929
Filed Oct. 19, 1992, Ser. No. 557
Term of patent 14 years
U.S. Cl. D4—104

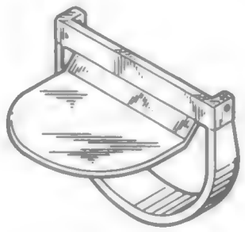
352,176
SPORTS MEMORABILIA HOLDER
Bruce D. McMillan, Surrey, Canada, assignor to PKK, Incorporated, Seattle, Wash.
Filed Sep. 21, 1992, Ser. No. 951,544
Term of patent 14 years
U.S. Cl. D6—310



352,177
ROTATABLE TIE RACK
Murray A. Nadel, New Rochelle, N.Y., assignor to Nadel Industries, Inc., Port Chester, N.Y.
Filed Mar. 1, 1993, Ser. No. 5,298
Term of patent 14 years
U.S. Cl. D6—315



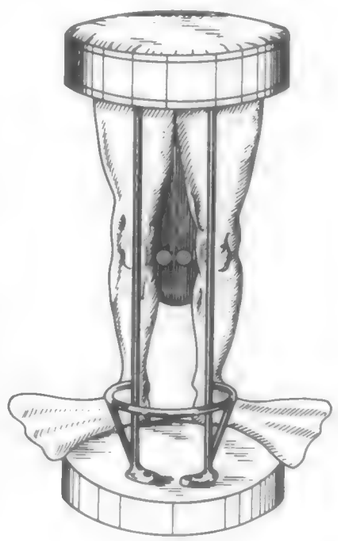
352,178
LOCKING SUPPORT FOR GARMENTS OR ACCESSORIES
Peter Shalson, London, England, assignor to Braitrim (U.K.) Limited, London, England
Filed Dec. 20, 1991, Ser. No. 810,916
Term of patent 14 years
U.S. Cl. D6—326



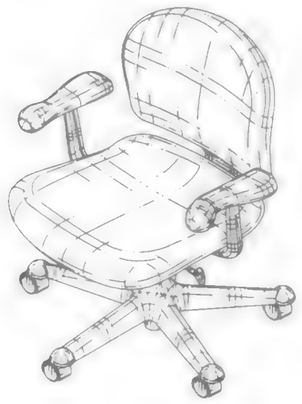
352,179
SEAT
Darrell G. Lowman, Hickory, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jul. 28, 1993, Ser. No. 11,149
Term of patent 14 years
U.S. Cl. D6—349



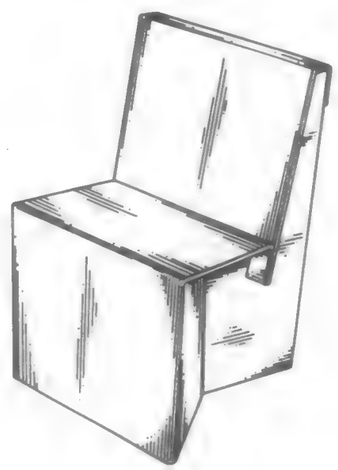
352,180
STOOL
James A. Collings, 3410 Sundorne St., Jefferson, La. 70121
Filed Dec. 28, 1992, Ser. No. 2,171
Term of patent 14 years
U.S. Cl. D6—351



352,181
CHAIR
Dragomir N. Ivicevi , New York, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jun. 9, 1993, Ser. No. 9,347
Term of patent 14 years
U.S. Cl. D6—366



352,182
COLLAPSIBLE SEAT
Akira Yoshimura, Los Angeles, Calif., assignor to Nikko Communications U.S.A., Inc., Los Angeles, Calif.
Filed Jul. 12, 1993, Ser. No. 10,493
Term of patent 14 years
U.S. Cl. D6—368



352,183
SIDE CHAIR
Denise Sheridan, Bankstown, Australia, assignor to Sebel Furniture Limited, Bankstown, Australia
Filed Oct. 6, 1992, Ser. No. 166
Claims priority, application Australia, Jul. 1, 1992, 1723/92
Term of patent 14 years
U.S. Cl. D6—374



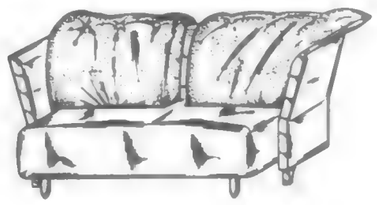
352,184
PATIO SOFA
Jeffrey A. Weiss, 222 Hemlock Dr., McMurray, Pa. 15317
Filed Oct. 13, 1992, Ser. No. 371
Term of patent 14 years
U.S. Cl. D6—376



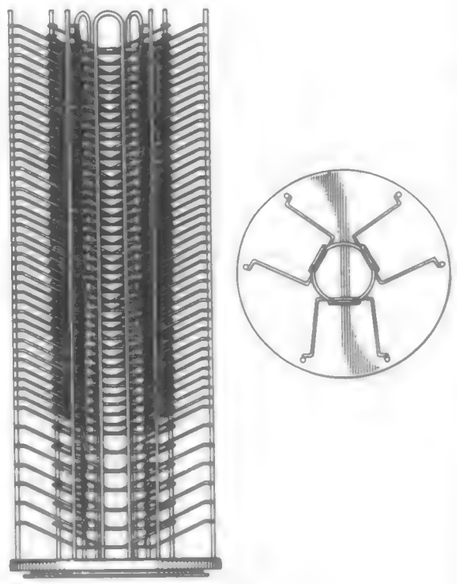
352,185
CHAIR
Patrick Pagnon, and Claude Pelhaitre, both of Alfortville, France, assignors to Casala-Werke Carl Salle GmbH & Co. KG, Germany
Filed Apr. 19, 1993, Ser. No. 7,304
Claims priority, application Germany, Oct. 22, 1992, 9207742
Term of patent 14 years
U.S. Cl. D6—380



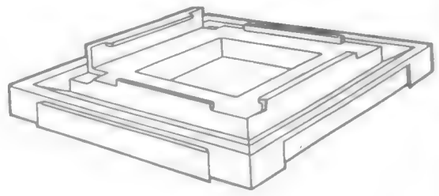
352,186
SOFA
Emmanuelle Torck; Emmanuelle Noirot, both of Paris, France; assignors to Roset S.A. Serrieres de Briord, France
Filed Jul. 1, 1993, Ser. No. 10,247
Claims priority, application Hague Agreement, Jan. 8, 1993, DM/024 883
Term of patent 14 years
U.S. Cl. D6—381



352,187
STORAGE RACK FOR COMPACT DISCS AND VIDEO CASSETTES
Henry B. David, Glendale, Calif., assignor to Melco Wire Products Company, Glendale, Calif.
Continuation-in-part of Ser. No. 948,795, Sep. 24, 1992, Pat. No. 343,533. This application Apr. 5, 1993, Ser. No. 6,718
Term of patent 14 years
U.S. Cl. D6—407



352,188
CD MODULAR FRAME
Erling W. Johansen, 628 River Rd., Belle Mead, N.J. 08502
Filed Dec. 2, 1991, Ser. No. 801,096
Term of patent 14 years
U.S. Cl. D6—407



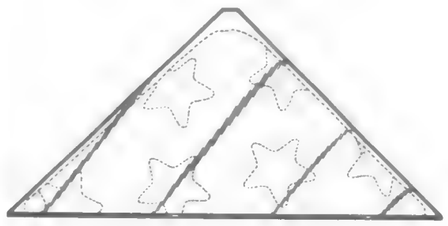
352,189
MONITOR TELEVISION SET STAND FOR TELEVISION CONFERENCE
Kazuaki Sakuta, Tokyo, and Yasushi Shiotani, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 27, 1992, Ser. No. 935,723
Claims priority, application Japan, Feb. 28, 1991, 4-5481
Term of patent 14 years
U.S. Cl. D6—449



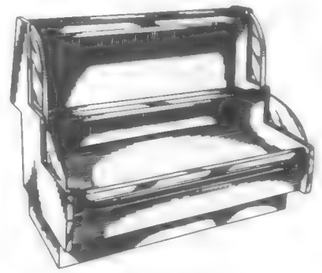
352,190
EARRING RACK
Robert J. Tucker, 29 First Ave., Spotswood, N.J. 08884
Filed Jul. 7, 1993, Ser. No. 10,367
Term of patent 14 years
U.S. Cl. D6—468



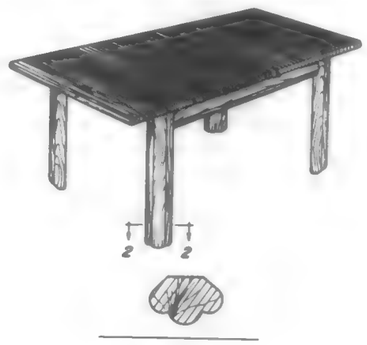
352,191
FLAG CASE
Gale M. Zorian, 725 Laurel Ridge Rd., Reinholds, Pa. 17569
Filed Jan. 28, 1993, Ser. No. 4,214
Term of patent 14 years
U.S. Cl. D6—470



352,192
TWO-LEVEL REFRIGERATED FOOD DISPLAY COUNTER
Maurice Gelinas, 370, av. des Bouleaux, St-Jean de Martha, Province of Quebec, Canada
Filed Sep. 28, 1992, Ser. No. 951,560
Term of patent 14 years
U.S. Cl. D6—474



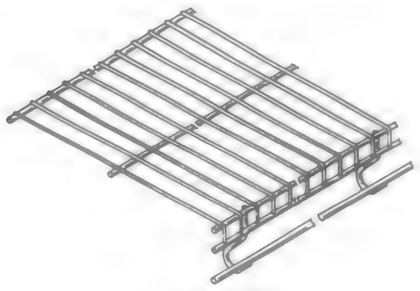
352,193
TABLE
Marshall B. Ward, High Point, N.C., assignor to Cal-Style Furniture Mfg. Co., Compton, Calif.
Filed Nov. 24, 1992, Ser. No. 1,893
Term of patent 14 years
U.S. Cl. D6—480



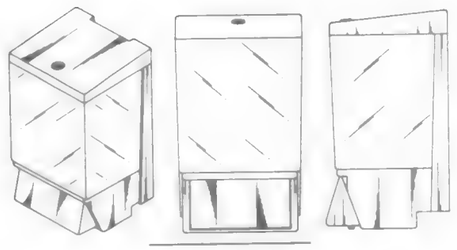
352,194
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Jul. 23, 1993, Ser. No. 11,009
Claims priority, application Japan, Jun. 4, 1993, 5-16340
Term of patent 14 years
U.S. Cl. D6—482



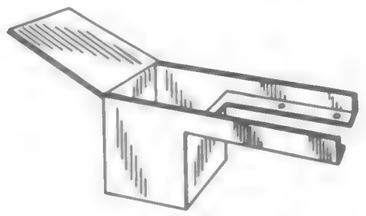
352,195
COMBINED CLOSET SHELF AND HANGER ROD UNIT
Richard D. Rogers, and Charles Camilleri, both of St. Louis, Mo., assignors to Lee Rowan Company, St. Louis, Mo.
Continuation of Ser. No. 771,763, Oct. 4, 1991, abandoned. This application Oct. 28, 1992, Ser. No. 899
Term of patent 14 years
U.S. Cl. D6—511



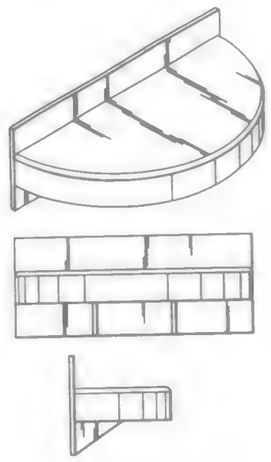
352,196
DETERGENT DISPENSING CONTAINER
Cheng-feng Chen, No. 16, Alley 157, Sec. 6, Chung Shan N. Rd., Taipei, Taiwan, Prov. of China
Filed Sep. 27, 1993, Ser. No. 13,518
Term of patent 14 years
U.S. Cl. D6—545



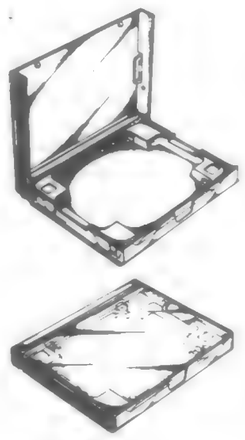
352,197
RECEPTABLE ATTACHABLE TO AN EXERCISE MACHINE
Frank J. LaCoco, 7201 Sandy La., Tinley Park, Ill. 60477, and David Harlan, 6516 Howard Ave., Indian Head Park, Ill. 60525
Filed May 20, 1993, Ser. No. 8,543
Term of patent 14 years
U.S. Cl. D6—567



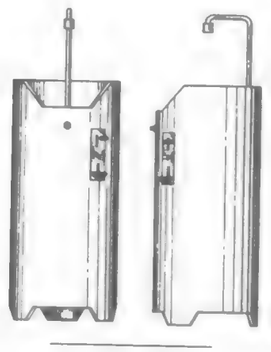
352,198
PRODUCT DISPLAY SHELF
Earl K. Wright, and Janet L. Kendall, both of Rte. #5, Box 369B, Chariton, Iowa 50049
Filed Dec. 14, 1992, Ser. No. 2,485
Term of patent 14 years
U.S. Cl. D6—574



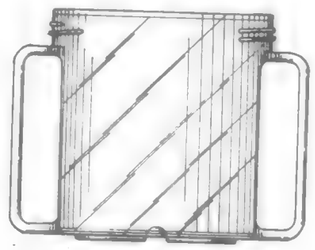
352,199
STORAGE CONTAINER FOR A MINI-OPTICAL DISC CARTRIDGE
Yoshihiko Taniyama, Alpharetta, Ga., assignor to Sony Corporation, Tokyo, Japan
Filed May 26, 1992, Ser. No. 889,514
Term of patent 14 years
U.S. Cl. D6—632



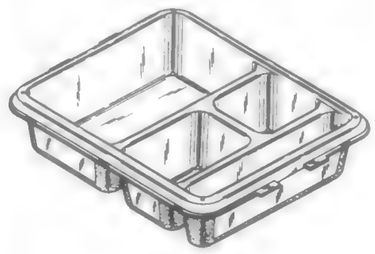
352,200
FILTERED WATER DISPENSER
George M. Hansen, Medina, Minn., assignor to Water Horse Inc., Golden Valley, Minn.
Filed Mar. 29, 1993, Ser. No. 6,447
Term of patent 14 years
U.S. Cl. D7—306



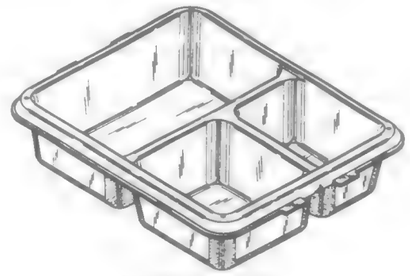
352,201
JUVENILE DRINKING CUP
Meredith Spence, Jr., Cuyahoga Falls, Ohio, assignor to Lisco, Inc., Tampa, Fla.
Filed May 13, 1992, Ser. No. 883,708
Term of patent 14 years
U.S. Cl. D7—510



352,202
COMPARTMENTED SERVING TRAY
Argyle Campbell, Newport Beach, and Ben Dawson, Huntington Beach, both of Calif., assignors to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Dec. 4, 1992, Ser. No. 3,002
Term of patent 14 years
U.S. Cl. D7—553

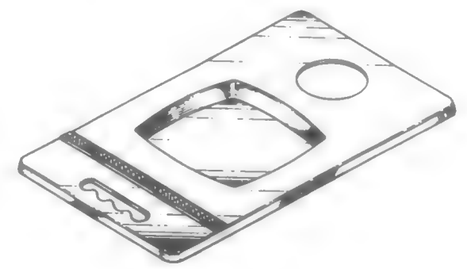


352,203
COMPARTMENTED SERVING TRAY
Argyle Campbell, Newport Beach, and Ben Dawson, Huntington Beach, both of Calif., assignors to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Dec. 4, 1992, Ser. No. 3,003
Term of patent 14 years
U.S. Cl. D7—553



352,204
CATERING TRAY
Thomas J. Hayes, Wauconda, and Timothy Goins, Wheeling, both of Ill., assignors to Packaging Corporation of America, Evanston, Ill.
Filed Mar. 16, 1993, Ser. No. 5,994
Term of patent 14 years
U.S. Cl. D7—554

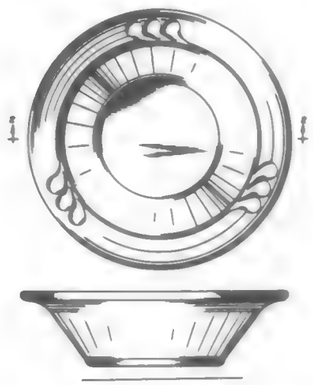
352,205
FOOD SUPPORTING TRAY
Sundaram Swetharanyam, 525 E. Jefferson Dr., Lake Charles, La. 70605
Filed Feb. 24, 1993, Ser. No. 5,168
Term of patent 14 years
U.S. Cl. D7—554



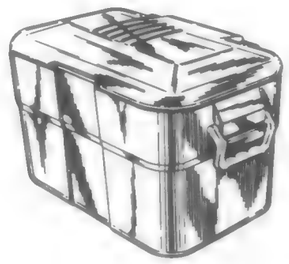
352,206
EGG POACHER
John E. Davis, Brighton, Australia, assignor to Trend Worldwide Pty. Ltd., Brighton, Australia
Filed Dec. 30, 1991, Ser. No. 814,680
Claims priority, application Australia, Jul. 9, 1991, 1966/91
Term of patent 14 years
U.S. Cl. D7—357



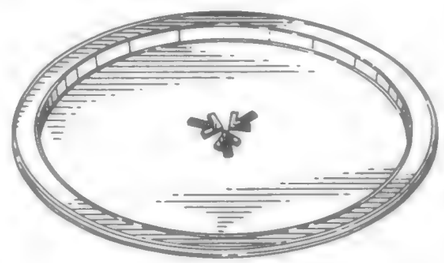
352,207
BOWL
Michele M. Jaworski, New Castle, Pa., assignor to The Pfaltzgraff Co., York, Pa.
Filed May 14, 1992, Ser. No. 881,563
Term of patent 14 years
U.S. Cl. D7—585



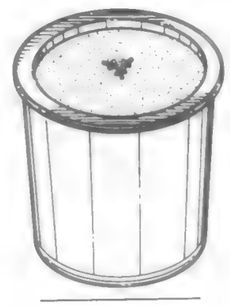
352,208
INSULATED ICE CHEST
Phillip L. Brookshire, Cincinnati, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 30, 1992, Ser. No. 3,119
Term of patent 14 years
U.S. Cl. D7—605



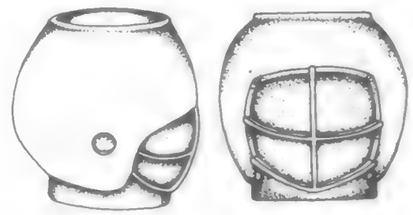
352,209
CONTAINER SEAL
Morison S. Cousins, Winter Park, and Douglas M. Laib, Kissimmee, both of Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 27, 1991, Ser. No. 817,123
Term of patent 14 years
U.S. Cl. D7—612



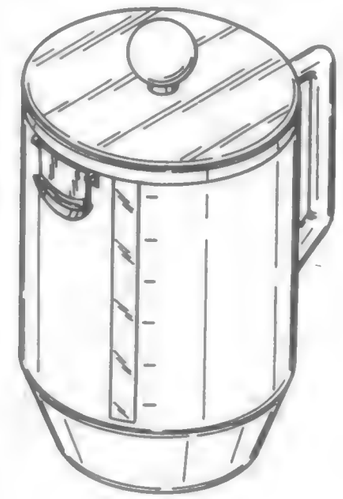
352,210
CONTAINER AND SEAL
Morison S. Cousins, Winter Park, and Douglas M. Laib, Kissimmee, both of Fla., assignors to Dart Industries Inc., Deerfield, Ill.
Filed Dec. 27, 1991, Ser. No. 817,121
Term of patent 14 years
U.S. Cl. D7—612



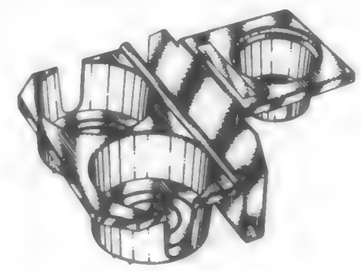
352,211
BEVERAGE CAN HOLDER
Robert R. Rucks, 2603 Dennis Dr., Vienna, Va. 22180
Filed Feb. 19, 1993, Ser. No. 5,032
Term of patent 14 years
U.S. Cl. D7—625



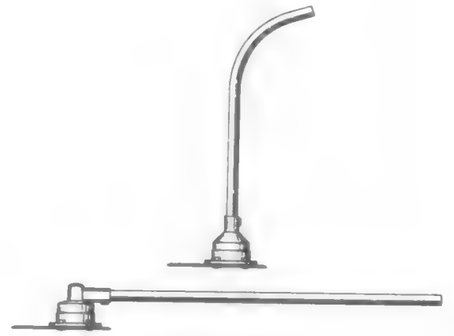
352,212
GREASE CONTAINER FOR REUSABLE COOKING OIL
Donna R. Burton, 1516 W. 102nd St., Los Angeles, Calif. 90047
Filed Apr. 6, 1993, Ser. No. 6,636
Term of patent 14 years
U.S. Cl. D7—629



352,213
COMBINED CUP HOLDER AND UTILITY TRAY
Russel Keven, 1435 Koll Cir., Ste. 109, San Jose, Calif. 95112
Filed Jun. 9, 1993, Ser. No. 9,283
Term of patent 14 years
U.S. Cl. D7—701



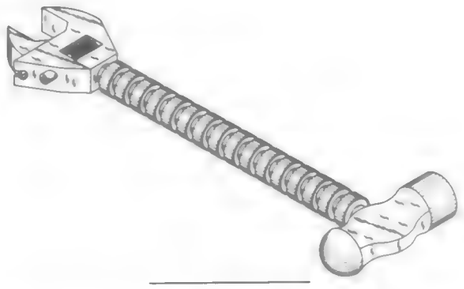
352,214
BUSH CUTTER
Katsumi Kiyooka, Tougane; Kouichi Shinotsuka, and Kaori Katoh, both of Chiba, all of Japan, assignors to Maruyama Mfg. Co., Inc., Tokyo, Japan
Filed Feb. 17, 1993, Ser. No. 5,011
Claims priority, application Japan, Aug. 19, 1992, 4-24393; Aug. 19, 1992, 4-24394; Aug. 19, 1992, 4-24395
Term of patent 14 years
U.S. Cl. D8—8



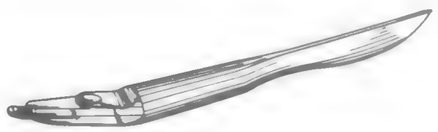
352,215
ADJUSTABLE WRENCH
Scott A. Starck, 237 SE. 50th St., Loveland, Colo. 80537
Filed May 13, 1993, Ser. No. 8,303
Term of patent 14 years
U.S. Cl. D8—22



352,216
COMBINED HAMMER AND WRENCH
Jonathan W. Liebenthal, P.O. Box 39185, Ninilchik, Ak. 99639
Filed May 26, 1993, Ser. No. 8,778
Term of patent 14 years
U.S. Cl. D8—26



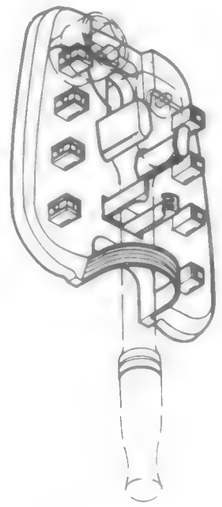
352,217
COMBINED STAPLE REMOVER AND LETTER OPENER
Stanley Hochfeld, Howard Beach, and Robert Perlmutter, Queens, both of N.Y., assignors to Stanley Hochfeld, Howard Beach, N.Y.
Division of Ser. No. 695,237, May 3, 1991, Pat. No. Des. 342,656. This application Sep. 30, 1993, Ser. No. 13,718
Term of patent 14 years
U.S. Cl. D8—48



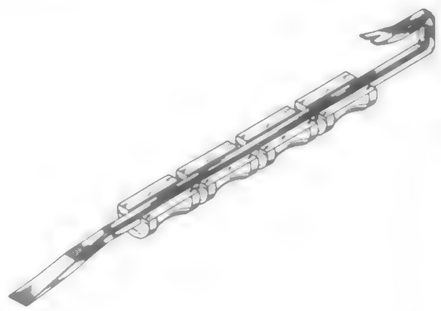
352,218
SAWBLADE EXTENSION FITTING
Nils Nygards, 7435 Highway 65 NE., Minneapolis, Minn. 55432
Filed Oct. 15, 1993, Ser. No. 14,227
Term of patent 14 years
U.S. Cl. D8—70



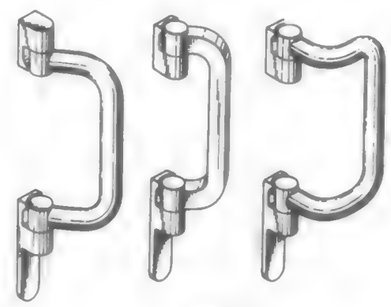
352,219
TOOL HOLDER
Jessie Chow, No. 18, Hou Juan Road, Taichung, Taiwan, Prov. of China
Filed Oct. 14, 1993, Ser. No. 14,191
Term of patent 14 years
U.S. Cl. D8—71



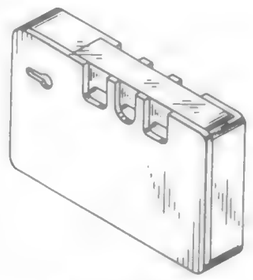
352,220
PRY BAR
Tom Schroeder, Rte. 2 Box 307A, Cushing, Tex. 75760
Filed Apr. 7, 1993, Ser. No. 6,777
Term of patent 14 years
U.S. Cl. D8—89



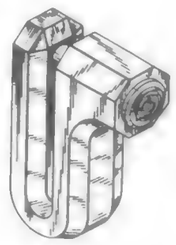
352,221
EXIT OPERATOR
Winfried Scholl, Ikenstr. 21, D-4000 Düsseldorf, Germany
Filed Jul. 17, 1992, Ser. No. 916,175
Claims priority, application Germany, Jan. 17, 1992, M9200278.1
Term of patent 14 years
U.S. Cl. D8—315



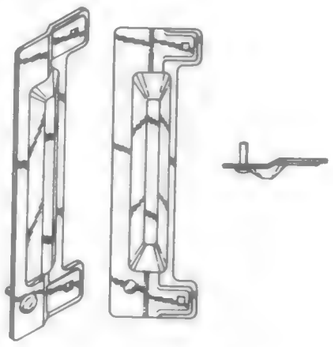
352,222
SECURITY UNIT FOR ATTACHMENT TO THE END OF MERCHANDISE DISPLAY HOOKS
Howard J. Fredrickson, 4218 Mill Village Rd., Raleigh, N.C. 27612
Filed Aug. 17, 1993, Ser. No. 11,874
Term of patent 14 years
U.S. Cl. D8—331



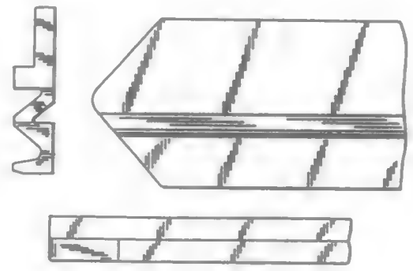
352,223
DISK BRAKE LOCK
Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan, Prov. of China
Filed Aug. 17, 1993, Ser. No. 11,869
Term of patent 14 years
U.S. Cl. D8—333



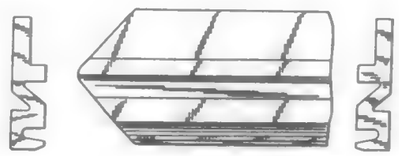
352,224
DOOR LATCH GUARD
Howard M. Allenbaugh, Huntington Beach, Calif., assignor to M.A.G. Eng. & Mfg. Inc., Huntington Beach, Calif.
Filed Apr. 28, 1993, Ser. No. 7,687
Term of patent 14 years
U.S. Cl. D8—346



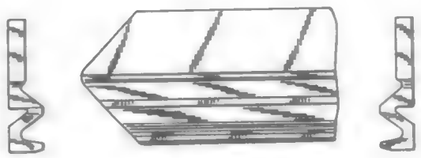
352,225
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,304
Term of patent 14 years
U.S. Cl. D8—347



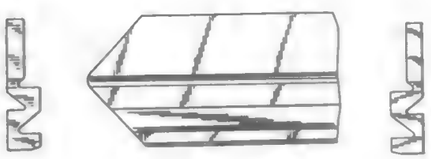
352,226
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,305
Term of patent 14 years
U.S. Cl. D8—347



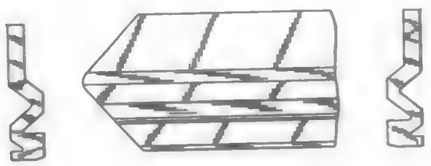
352,227
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,302
Term of patent 14 years
U.S. Cl. D8—347



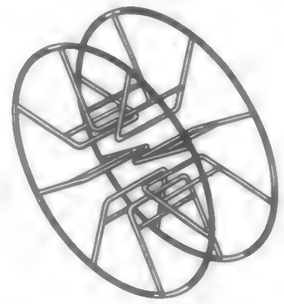
352,228
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,308
Term of patent 14 years
U.S. Cl. D8—347



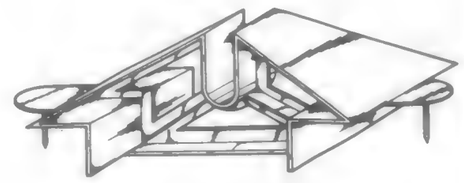
352,229
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,309
Term of patent 14 years
U.S. Cl. D8—347



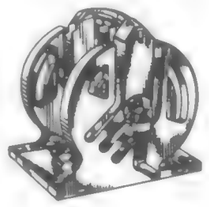
352,230
WIRE SPOOL
Wayne C. Colman, 210 E. Water St., Troy, Ohio 45373
Filed Dec. 17, 1992, Ser. No. 2,703
Term of patent 14 years
U.S. Cl. D8—358



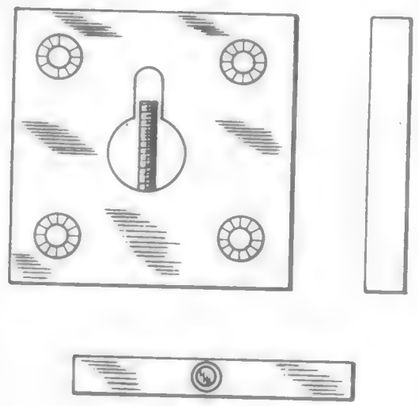
352,231
SPACER FOR USE IN CONCRETE CONSTRUCTION
Christopher Van de Peer, Seven Hills, Australia, assignor to Fiberslab Pty Limited, New South Wales, Australia
Filed Mar. 31, 1993, Ser. No. 6,541
Claims priority, application Australia, Oct. 1, 1992, 2754/92
Term of patent 14 years
U.S. Cl. D8—354



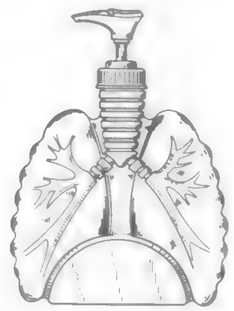
352,232
PORTABLE HOSE REEL
Jeffrey A. Apgar, Elburn, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Apr. 30, 1993, Ser. No. 7,838
Term of patent 14 years
U.S. Cl. D8—359



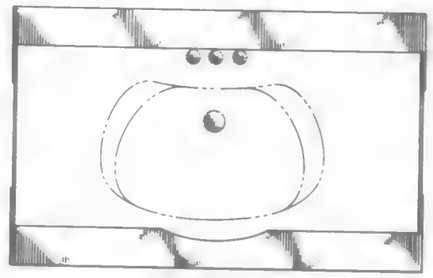
352,233
ANTI-THEFT HANGER FOR MOUNTING ON THE REAR OF ARTICLES TO BE HUNG ON A WALL
Eldon E. Le Gay, 2737 S. Quay Way, Denver, Colo. 80227
Filed Mar. 29, 1993, Ser. No. 6,537
Term of patent 14 years
U.S. Cl. D8—373



352,234
PUMP DISPENSER
Richard Costa, Piscataway, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed May 14, 1992, Ser. No. 883,410
Term of patent 14 years
U.S. Cl. D9—300



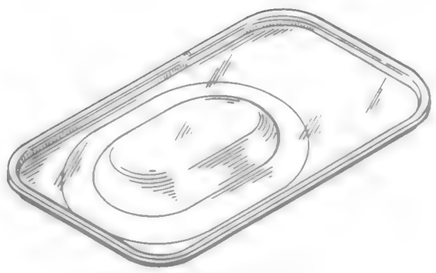
352,235
DISPLAY CARTON
Steven A. Strasevicz, Yorba Linda, and Robert Shoults, Rancho Cucamonga, both of Calif., assignors to Leucadia, Inc., New York, N.Y.
Continuation of Ser. No. 951,413, Sep. 25, 1992, Pat. No. Des. 348,000. This application Mar. 25, 1993, Ser. No. 6,306
The portion of the term of this patent subsequent to Jun. 21, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—415



352,236
BLISTER PACKAGE FOR A RAZOR
Wolfgang Althaus, Wuppertal, Germany, assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jul. 12, 1993, Ser. No. 10,621
Claims priority, application Germany, Jan. 12, 1993, M 9300096
Term of patent 14 years
U.S. Cl. D9—415



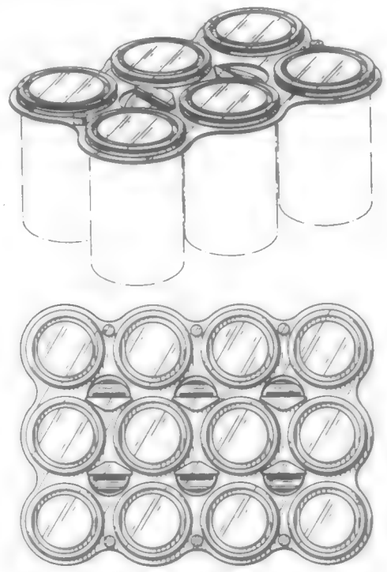
352,237
BLISTER PACKAGE
Michael F. Reardon, Chicago; Robert J. Kellar, Mount Prospect, and Jeffrey D. Aulenbacher, Glendale Heights, all of Ill., assignors to Wesley-Jessen Corporation, Chicago, Ill.
Filed Jun. 8, 1993, Ser. No. 9,338
Term of patent 14 years
U.S. Cl. D9—415



352,238
CONTAINER SIDEWALL
Dwayne G. Vailliencourt, Manchester, Mich., and Theodore F. Eberle, Jr., Kapellen, Belgium, assignors to Hoover Universal, Inc., Plymouth, Mich.
Filed Mar. 26, 1993, Ser. No. 6,383
Term of patent 14 years
U.S. Cl. D9—434



352,239
BEVERAGE CAN-CARRYING DEVICE
Arthur E. Adami, Andover, Mass., and Christopher P. Amberg, Owings Mills, Md., assignors to Sweetheart Cup Company, Inc., Owings Mills, Md.
Filed Aug. 8, 1991, Ser. No. 741,942
Term of patent 14 years
U.S. Cl. D9—455



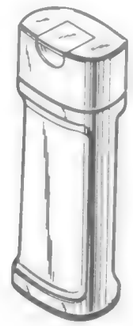
352,240
COMBINED BOTTLE AND CAP
Minoru Shiokawa, Yokohama, Japan, assignor to Shiseido Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 885,396, May 19, 1992, abandoned.
This application Sep. 22, 1993, Ser. No. 13,273
Claims priority, application Japan, Jan. 30, 1992, 4-2114
Term of patent 14 years
U.S. Cl. D9—523



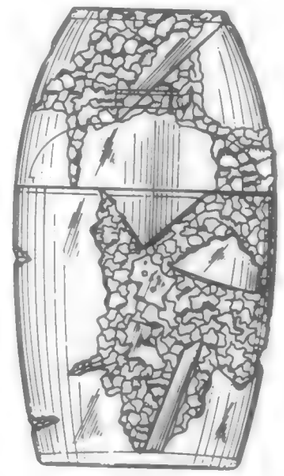
352,241
COMBINED BOTTLE AND CAP
Minoru Shiokawa, Yokohama, Japan, assignor to Shiseido Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 885,395, May 19, 1992, abandoned.
This application Sep. 22, 1993, Ser. No. 13,269
Claims priority, application Japan, Jan. 30, 1992, 4-2116
Term of patent 14 years
U.S. Cl. D9—523



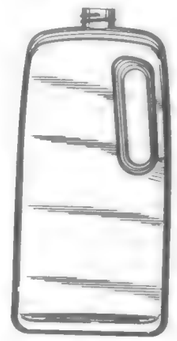
352,242
BOTTLE
John C. Crawford, Lake Mahopac, N.Y., and Gonzalo U. Marte, Jr., Metro Manila, Philippines, assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 28, 1993, Ser. No. 4,213
Term of patent 14 years
U.S. Cl. D9—529



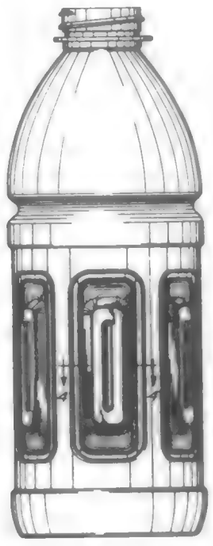
352,243
COMBINED BOTTLE AND CAP
Thierry Lecoule, Paris, France, assignor to Parfums Guy Laroche, Paris, France
Filed Apr. 2, 1993, Ser. No. 6,639
Claims priority, application France, Oct. 6, 1992, 926251
Term of patent 14 years
U.S. Cl. D9—529



352,244
BOTTLE WITH HANDLE
Ronald G. Cramer, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jun. 9, 1993, Ser. No. 9,351
Term of patent 14 years
U.S. Cl. D9—531



352,245
VACUUM PANEL CONTAINER
Suppayan M. Krishnakumar, Nashua; Wayne N. Collette, Merrimack, and David P. Piccioli, Auburn, all of N.H., assignors to Continental Pet Technologies, Inc., Florence, Ky.
Continuation-in-part of Ser. No. 676,256, Feb. 28, 1991, Pat. No. Des. 337,520. This application Feb. 18, 1993, Ser. No. 4,990
Term of patent 14 years
U.S. Cl. D9—538



352,246
BOTTLE
Barbara M. Samimi, Forest Hills, and Kenneth H. Nilsson, Huntington, both of N.Y., assignors to The Mennen Company, Morristown, N.J.
Filed Jan. 27, 1993, Ser. No. 4,085
Term of patent 14 years
U.S. Cl. D9—542



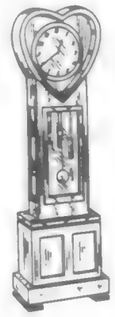
352,247
BOTTLE
Thierry Lecoule, Paris, France, assignor to Parfums Guy LaRoche, Paris, France
Filed Apr. 2, 1993, Ser. No. 6,637
Claims priority, application France, Oct. 6, 1992, 92 6251
Term of patent 14 years
U.S. Cl. D9—544



352,248
BOTTLE AND CAP
Howard H. McIlvain, Cincinnati, Ohio, and Stephen F. Kelsey, London, England, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 6, 1993, Ser. No. 16,081
Term of patent 14 years
U.S. Cl. D9—574



352,249
GRANDMOTHER CLOCK
Bertha W. Hansen, 1322 W. 90th Pl., Los Angeles, Calif. 90044
Filed Mar. 9, 1992, Ser. No. 849,314
Term of patent 14 years
U.S. Cl. D10—16



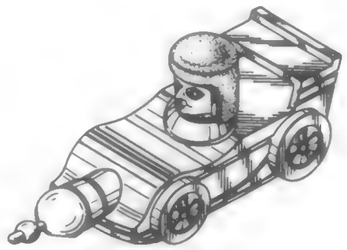
352,250
WATCH
Barbara Giardiello, Naples, Italy, assignor to Artime S.A., Neuchatel, Switzerland
Filed May 15, 1992, Ser. No. 883,723
Claims priority, application Hague Agreement, Nov. 18, 1991, DMA/001634
Term of patent 14 years
U.S. Cl. D10—39



352,251
TEST SIGNAL GENERATOR
Scott R. Ketterer, Hillsboro; Peter D. Rosback, Newberg; John W. Edwards, Lake Oswego, all of Oreg., and Forrest A. Edwards, Vancouver, Wash., assignors to Tektronix, Inc., Wilsonville, Oreg.
Filed Dec. 8, 1992, Ser. No. 10,321
Term of patent 14 years
U.S. Cl. D10—78



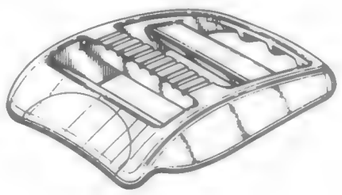
352,252
TIRE PRESSURE INDICATOR
Tien-Tsai Huang, No. 4, Lane 30, Wu-Chang St., Pan-Chiao City,
Filed Apr. 29, 1993, Ser. No. 7,647
Term of patent 14 years
U.S. Cl. D10—86



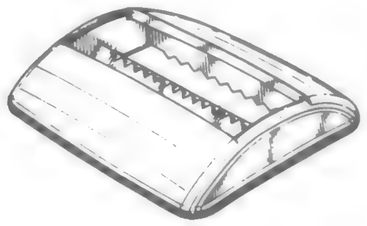
352,253
COMBINED BRACELET AND CLASP
Domenic A. Tortolano, Jr., Johnston, R.I., assignor to D. Gioielli, Inc., Providence, R.I.
Filed Dec. 16, 1993, Ser. No. 16,485
Term of patent 14 years
U.S. Cl. D11—4



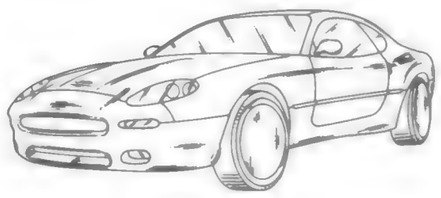
352,254
BUCKLE
Darren M. Prosser, Portsmouth, England, assignor to ITW Limited, Windsor, England
Filed May 20, 1993, Ser. No. 8,566
Claims priority, application United Kingdom, Dec. 23, 1992, 2027940
Term of patent 14 years
U.S. Cl. D11—218



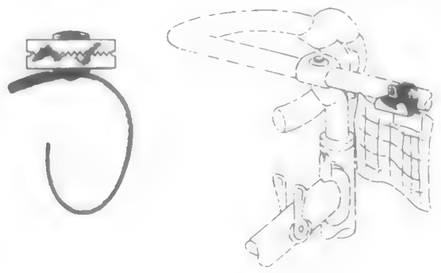
352,255
BUCKLE
Darren M. Prosser, Portsmouth, England, assignor to ITW Limited, Windsor, England
Filed May 20, 1993, Ser. No. 8,565
Claims priority, application United Kingdom, Dec. 23, 1992, 2027939
Term of patent 14 years
U.S. Cl. D11—218



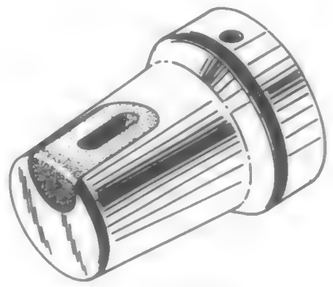
352,256
AUTOMOBILE
Ian S. Callum, Witney, United Kingdom, assignor to Jaguar Cars Limited, Coventry, England
Filed Dec. 21, 1992, Ser. No. 2,826
Claims priority, application United Kingdom, Jun. 26, 1992, 2023912
Term of patent 14 years
U.S. Cl. D12—91



352,257
DOCUMENT HOLDER FOR BICYCLES
Stephen M. Poline, 900-100 Mix Ave., Hamden, Conn. 06514
Filed May 7, 1993, Ser. No. 8,071
Term of patent 14 years
U.S. Cl. D12—114



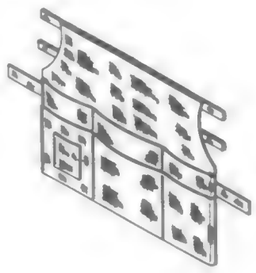
352,258
OIL SENDER UNIT COVER
Tom Rudd, Hudson, Wis., and Alwin J. Stahel, St. Paul, Minn., assignors to KuryAkyn Holdings, Inc., Somerset, Wis.
Filed Apr. 16, 1993, Ser. No. 9,993
Term of patent 14 years
U.S. Cl. D12—126



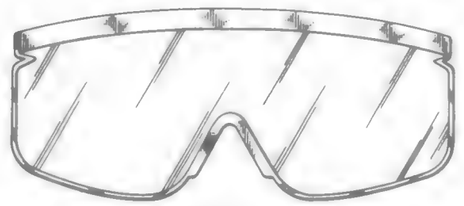
352,259
BABY STROLLER
Tomihiro Kaneko, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan
Filed Apr. 19, 1993, Ser. No. 7,109
Claims priority, application Japan, Oct. 23, 1992, 4-31125[U]
Term of patent 14 years
U.S. Cl. D12—129



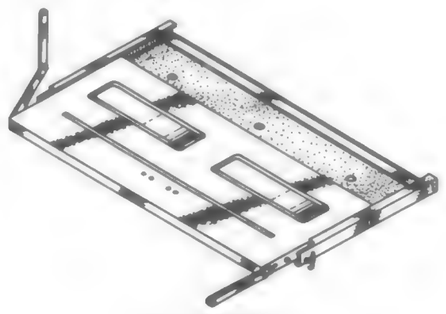
352,260
WALKER APRON WITH POCKETS
Helen J. Adamo, 1182 Pallwood, Memphis, Tenn. 38122
Filed Jan. 19, 1993, Ser. No. 3,829
Term of patent 14 years
U.S. Cl. D12—133



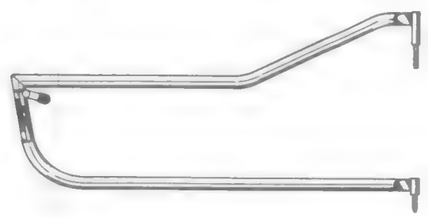
352,261
VEHICLE WINDOW ATTACHED GLARE REDUCER
Joseph M. Shink, Valencia, Calif., assignor to Auto-Shade, Inc., Moorpark, Calif.
Filed Jun. 19, 1992, Ser. No. 901,568
Term of patent 14 years
U.S. Cl. D12—191



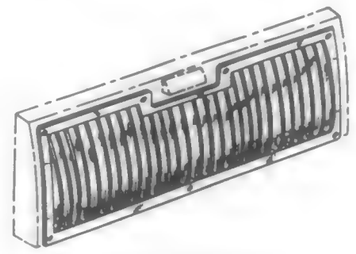
352,262
STORABLE TAILGATE FOR TRUCKS
James E. Hawkes, and Valerie A. Hawkes, both of 5055 Tamarus #5205, Las Vegas, Nev. 89119
Filed Mar. 5, 1993, Ser. No. 5,539
Term of patent 14 years
U.S. Cl. D12—196



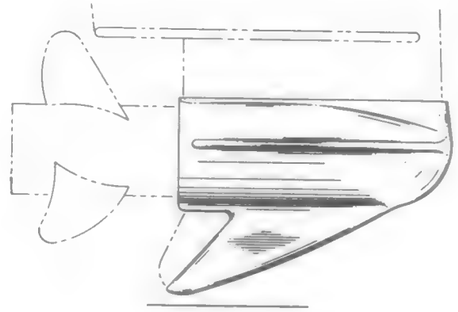
352,263
UTILITY VEHICLE DOOR
Ryan Harris, 1812 Navy St., Santa Monica, Calif. 90405
Filed Mar. 3, 1992, Ser. No. 845,441
The portion of the term of this patent subsequent to Aug. 2, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—196



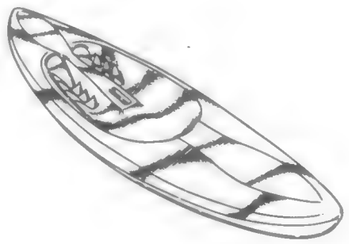
352,264
TRUCK TAILGATE FAIRING
Eddie R. Montgomery, 5016 Fernhill Dr., St. Louis, Mo. 63128
Division of Ser. No. 860,347, Mar. 30, 1992, Pat. No. Des. 345,335. This application Jan. 7, 1994, Ser. No. 17,209
Term of patent 14 years
U.S. Cl. D12—196



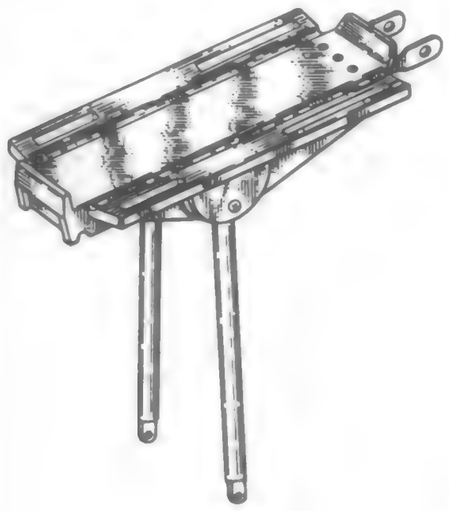
352,265
BOAT MOTOR PROPELLER AND SKEG GUARD
Michael G. Haney, 1311 Cypress Dr., Richardson, Tex. 75080, and Neill H. Watt, 9029 Diceman Dr., Dallas, Tex. 75218
Filed Sep. 21, 1993, Ser. No. 13,220
Term of patent 14 years
U.S. Cl. D12—214



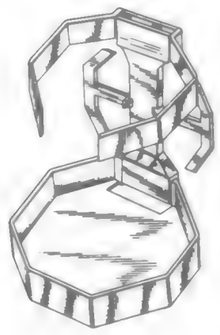
352,266
WATER CRAFT
Timothy A. Niemier, 1540 Wall St., Bellingham, Wash. 98226
Continuation-in-part of Ser. No. 11,911, Aug. 16, 1993. This application Feb. 15, 1994, Ser. No. 18,793
Term of patent 14 years
U.S. Cl. D12—302



352,267
BICYCLE RACK
James R. Blackburn, Los Gatos, Calif., assignor to Blackburn Designs, Inc., Campbell, Calif.
Filed Sep. 18, 1992, Ser. No. 948,975
Term of patent 14 years
U.S. Cl. D12—407



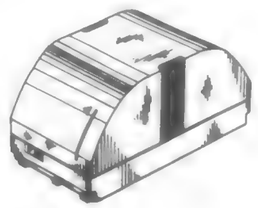
352,268
COLLAPSIBLE HOLDER FOR VEHICLES
Joyce Kavanaugh, Ft. Lauderdale, Fla., assignor to Lightning Strikes Enterprises, Inc., Ft. Lauderdale, Fla.
Filed Feb. 16, 1993, Ser. No. 5,702
Term of patent 14 years
U.S. Cl. D12—411



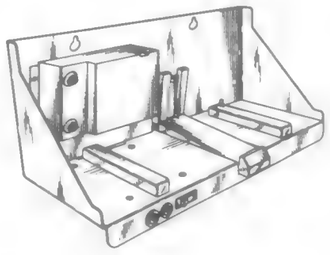
352,269
CELLULAR TELEPHONE BATTERY
Jon K. Alexandres; Gary J. Downs, and William R. Peterson, all of Mason City, Iowa, assignors to Alexander Manufacturing Company, Mason City, Iowa
Filed Oct. 11, 1991, Ser. No. 775,075
The portion of the term of this patent subsequent to Jul. 26, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—103



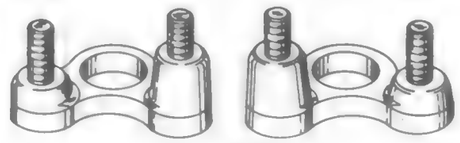
352,270
BATTERY PACK
Kin H. Yung, Hong Kong, Hong Kong, assignor to Dual Voltage Co., Ltd., Kowloon, Hong Kong
Filed Apr. 5, 1993, Ser. No. 6,655
Term of patent 14 years
U.S. Cl. D13—103



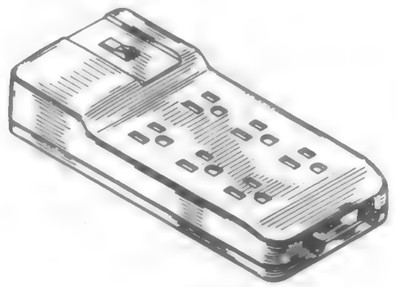
352,271
ASPIRATOR RECHARGING BRACKET
Thomas F. Fangrow, Jr., Mission Viejo, Calif., assignor to Life Support Products, Inc., Irvine, Calif.
Filed Mar. 23, 1993, Ser. No. 6,080
Term of patent 14 years
U.S. Cl. D13—108



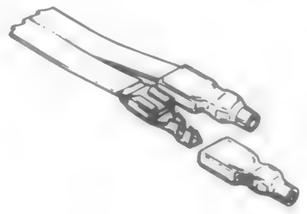
352,272
PAIR OF BATTERY CONNECTOR POSTS
David A. Thuerk, Brookfield, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.
Filed Aug. 27, 1992, Ser. No. 936,535
Term of patent 14 years
U.S. Cl. D13—120



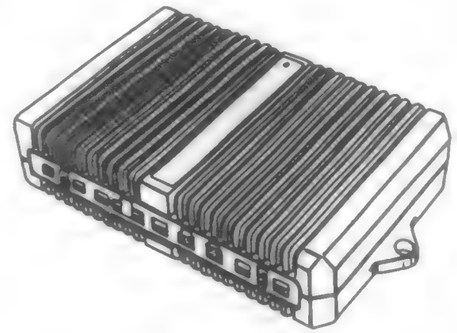
352,273
SURGE PROTECTOR
Philip E. Fladung, Carmel, Ind., assignor to Woods Wire Products, Inc., Carmel, Ind.
Filed Jun. 16, 1993, Ser. No. 9,629
Term of patent 14 years
U.S. Cl. D13—142



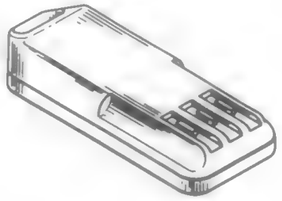
352,274
COMBINED CABLE, CONNECTORS AND COVERS FOR SPEAKER SYSTEMS
David R. Daleo, 994 Harwood St., Orange, Calif. 92667
Filed Jan. 19, 1993, Ser. No. 3,730
Term of patent 14 years
U.S. Cl. D13—153



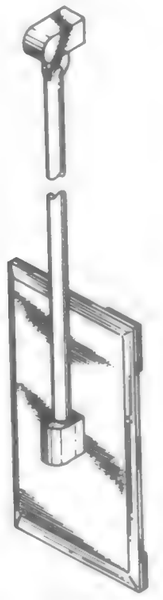
352,275
MOTOR CONTROLLER
Ian J. Crawley, Christchurch, New Zealand, assignor to Dynamic Controls Limited, Riccarton, New Zealand
Filed Aug. 3, 1993, Ser. No. 11,389
Claims priority, application New Zealand, Feb. 5, 1993, 24982
Term of patent 14 years
U.S. Cl. D13—162



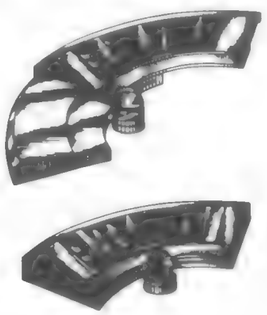
352,276
HOUSING
Franco G. Pucci; Michael D. Wythe, both of Durban, and Kevin E. Moulder, Westville, all of South Africa, assignors to Control Logic (Proprietary) Limited, South Africa
Filed Dec. 23, 1992, Ser. No. 2,968
Claims priority, application South Africa, Jun. 26, 1992, 92/0647
Term of patent 14 years
U.S. Cl. D13—168



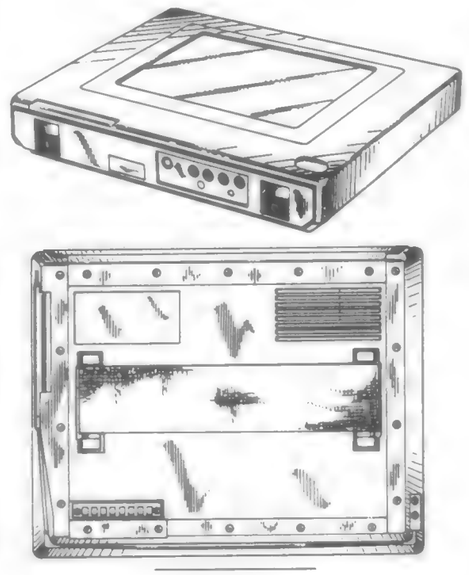
352,277
EXTENSION FOR A LIGHT SWITCH ACTUATOR
Pete L. Olsen, P.O. Box 187, Santa Cruz, N. Mex. 87567
Filed May 12, 1993, Ser. No. 8,217
Term of patent 14 years
U.S. Cl. D13—173



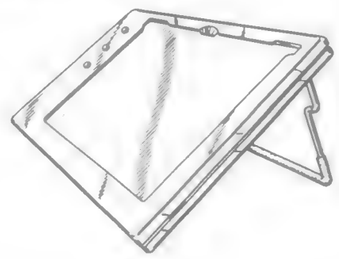
352,278
COMBINED SLIDER AND KEY PAD INPUT DEVICE FOR A COMPUTER
Henry Sharpe, III; Ralph Beckman, both of Providence, R.I.; Jim McKain, Andover, Mass., and Thomas Ohanian, Cranston, R.I., assignors to Avid Technology, Inc., Del.
Filed Aug. 13, 1992, Ser. No. 929,797
Term of patent 14 years
U.S. Cl. D14—100



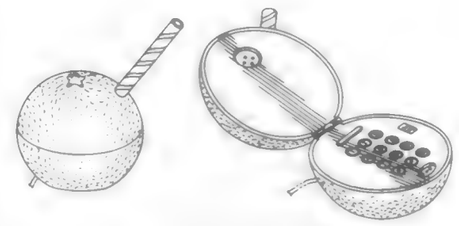
352,279
PORTABLE COMPUTER TABLET WITH A TOUCH SCREEN AND STYLUS
Hunter T. Foy; William E. Bratton; John C. Davis, all of Boca Raton, Fla., and Willis Y. Jordan, III, Burmingham, Ala., assignors to International Business Machines Incorporated, Armonk, N.Y.
Filed Nov. 2, 1992, Ser. No. 1,061
Term of patent 14 years
U.S. Cl. D14—100



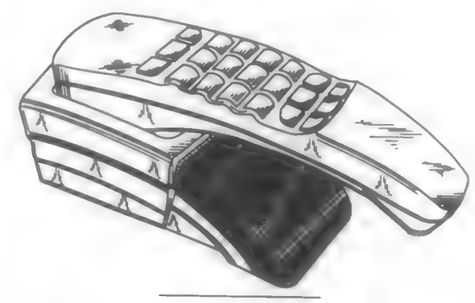
352,280
COMPUTER KEYBOARD
Wayne Calco, San Francisco, Calif., assignor to Intellitools, Inc., Richmond, Calif.
Filed Jun. 26, 1992, Ser. No. 905,845
Term of patent 14 years
U.S. Cl. D14—115



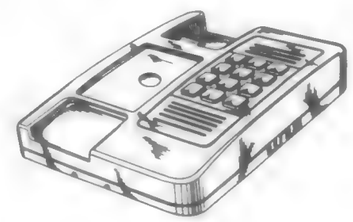
352,281
TELEPHONE
James L. Hanig, Highland Park, Ill., assignor to Hanig & Co., Lincolnwood, Ill.
Filed Nov. 6, 1992, Ser. No. 1,265
Term of patent 14 years
U.S. Cl. D14—143



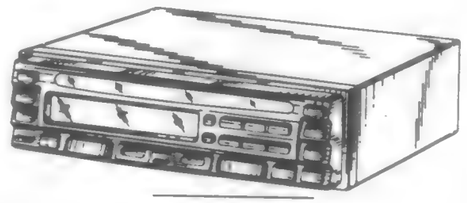
352,282
TELEPHONE HANDSET AND CRADLE UNIT
Alex Toh; James J. Lorenz; Kenneth A. Bloch, all of San Diego; David J. McDowell, La Jolla; William R. Story, and Robert P. Mayercheck, both of Irvine, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 14, 1992, Ser. No. 837,425
Term of patent 14 years
U.S. Cl. D14—150



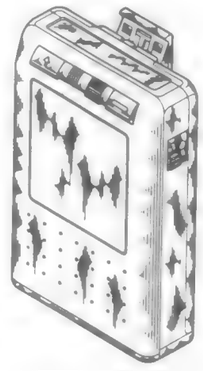
352,283
TELEPHONE BASE
James N. Schmidt, Richmond, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Nov. 4, 1993, Ser. No. 14,935
Term of patent 14 years
U.S. Cl. D14—151



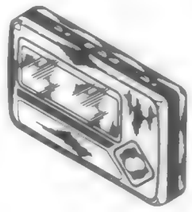
352,284
MOBILE AUDIO DISC PLAYER COMBINED WITH A RADIO TUNER
Shigeyuki Kakizaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 20, 1992, Ser. No. 3,571
Term of patent 14 years
U.S. Cl. D14—156



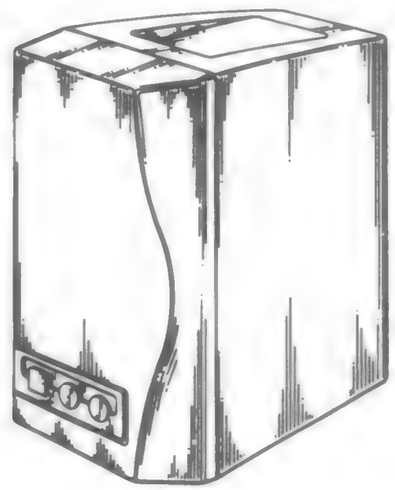
352,285
PORTABLE COMMUNICATION RECEIVER
Gabriel Khouri, Lantana, Fla.; Jun V. Peoya, and Byung-Soo Eun, both of Seoul, Rep. of Korea, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 26, 1993, Ser. No. 5,218
Term of patent 14 years
U.S. Cl. D14—191



352,286
FRONT MOUNT DISPLAY PAGER
William J. Scheid, Coral Springs; Anthony M. Potts, Lauderdale Lakes; Robert D. Lloyd, and Jeanette Orlen, both of Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 19, 1993, Ser. No. 3,817
Term of patent 14 years
U.S. Cl. D14—191



352,287
SPEAKER
Kentaro Yamamoto, Tokyo, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Jan. 16, 1993, Ser. No. 9,638
Claims priority, application Japan, Jan. 14, 1993, 5-844
Term of patent 14 years
U.S. Cl. D14—210



352,288
REMOTE CONTROL
Darren J. Wilson, 7190 Lakeside Dr., Indianapolis, Ind. 46278
Filed Jun. 11, 1992, Ser. No. 896,345
Term of patent 14 years
U.S. Cl. D14—218



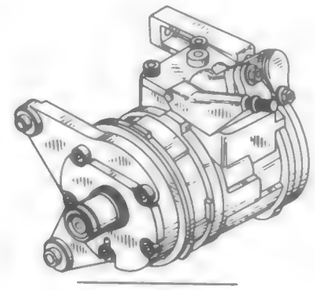
352,289
RADIO PACKET MODEM
Roman P. Rak, Delta, Canada, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 29, 1992, Ser. No. 906,124
Term of patent 14 years
U.S. Cl. D14—242



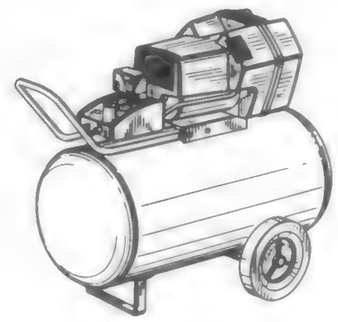
352,290
POCKET-SIZE RADIO PACKET MODEM
Roman P. Rak, Delta, Canada, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 29, 1992, Ser. No. 906,123
Term of patent 14 years
U.S. Cl. D14—242



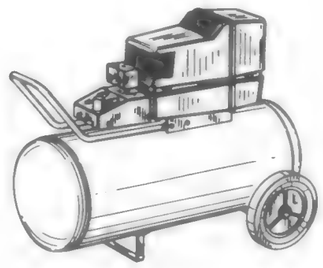
352,291
COMPRESSOR FOR A VEHICLE AIR CONDITIONER
Hayato Ikeda; Munecharu Murase; Mitsuhiro Hattori, and Koichi Ito, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan
Filed Nov. 1, 1991, Ser. No. 787,325
Term of patent 14 years
U.S. Cl. D15—7



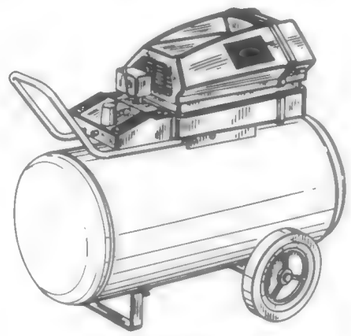
352,292
AIR COMPRESSOR
Fredrick M. Morgan, Jackson, Tenn., assignor to DeVilbiss Air Power Company, Jackson, Tenn.
Filed Oct. 18, 1993, Ser. No. 14,341
Term of patent 14 years
U.S. Cl. D15—9



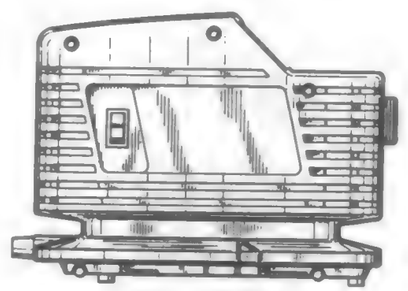
352,293
AIR COMPRESSOR
Fredrick M. Morgan, Jackson, Tenn., assignor to DeVilbiss Air Power Company, Jackson, Tenn.
Filed Oct. 13, 1993, Ser. No. 14,116
Term of patent 14 years
U.S. Cl. D15—9



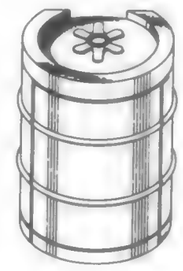
352,294
AIR COMPRESSOR
Fredrick M. Morgan, Jackson, Tenn., assignor to DeVilbiss Air Power Company, Jackson, Tenn.
Filed Oct. 13, 1993, Ser. No. 14,130
Term of patent 14 years
U.S. Cl. D15—9



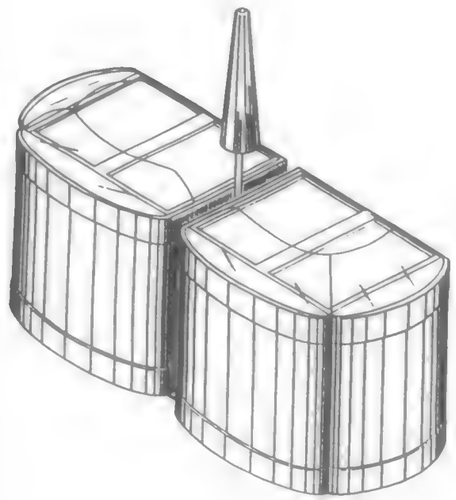
352,295
PORTABLE AIR COMPRESSOR
Fredrick M. Morgan, Jackson, Tenn., assignor to DeVilbiss Air Power Company, Jackson, Tenn.
Filed Sep. 23, 1993, Ser. No. 13,400
Term of patent 14 years
U.S. Cl. D15—9



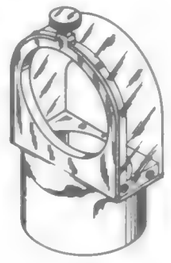
352,296
KEG REFRIGERATOR
Neal Westendorf, 1410 Maple Dr., Onawa, Iowa 51040
Filed Apr. 13, 1992, Ser. No. 867,404
Term of patent 14 years
U.S. Cl. D15—81



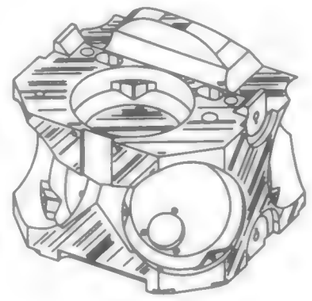
352,297
FREEZER CABINET
Allan H. Barish, 7 Vanwood Road, Thornhill, Ontario, Canada L3T 2N1
Filed Feb. 2, 1993, Ser. No. 4,344
Claims priority, application Canada, Aug. 12, 1992, 12-08-92-1
Term of patent 14 years
U.S. Cl. D15—83



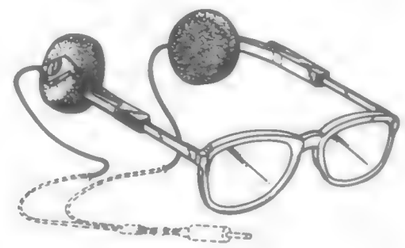
352,298
DUST COLLECTOR FOR MILLING MACHINE
Robert J. Beisbier, Jr., N56 W15763 Bette Dr., Menomonee Falls, Wis. 53051
Filed Jul. 15, 1993, Ser. No. 10,724
Term of patent 14 years
U.S. Cl. D15—126



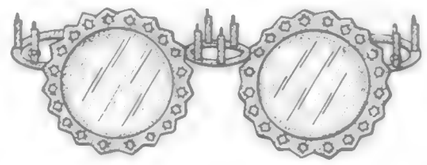
352,299
INERTIAL SENSOR SUPPORT STRUCTURE FOR ACCELEROMETERS AND GYROS
Lucien E. Joly, Cook; Michael A. Knipfer, Maple Grove; Michelle J. Miller, Minneapolis, all of Minn.; George O. Mitzschke, St. Petersburg, Fla., and Mark T. Weinberger, Mounds View, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 977,319, Nov. 17, 1992. This application Mar. 19, 1993, Ser. No. 5,969
Term of patent 14 years
U.S. Cl. D15—199



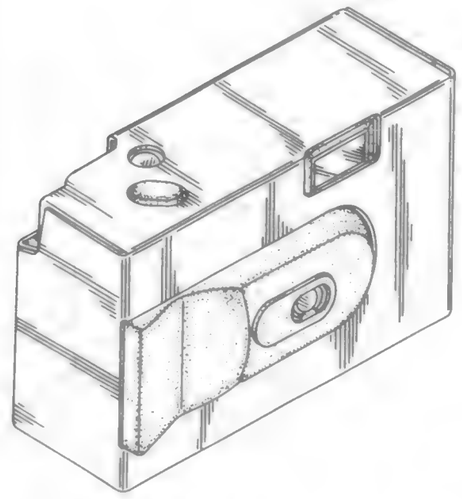
352,300
EARPHONE SPECTACLES
Kenneth R. Gales, 1058 63rd St., Oakland, Calif. 94608
Filed May 24, 1993, Ser. No. 8,716
Term of patent 14 years
U.S. Cl. D16—309



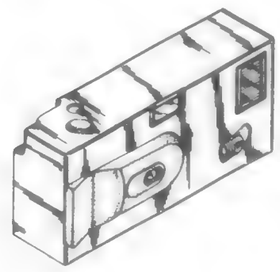
352,301
SPECTACLE FRAME
Thomas Kühne, München, Germany, assignor to Swatch AC, Bienne, Switzerland
Filed Mar. 24, 1993, Ser. No. 6,276
Claims priority, application Germany, Sep. 9, 1992, DM/023852
Term of patent 14 years
U.S. Cl. D16—306



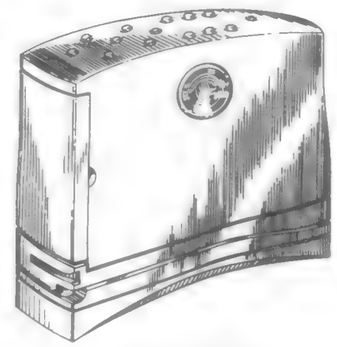
352,302
SINGLE-USE DAYLIGHT CAMERA
Mark A. Lamphron, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 14, 1993, Ser. No. 8,334
Term of patent 14 years
U.S. Cl. D16—208



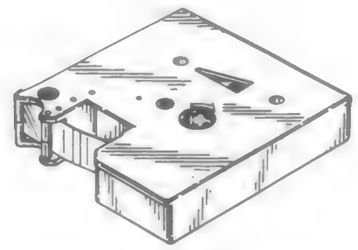
352,303
SINGLE-USE CAMERA WITH BUILT-IN FLASH
Mark A. Lamphron, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 14, 1993, Ser. No. 8,335
Term of patent 14 years
U.S. Cl. D16—209



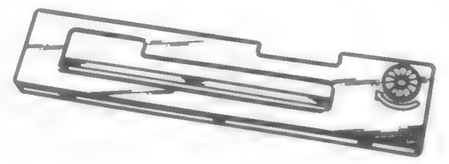
352,304
LIQUID CRYSTAL DISPLAY HOUSING UNIT ADAPTED FOR USE WITH A SLIDE PROJECTOR
Matthew Zavracky, Attleboro; Stephen Offsey, Brookline; David Chastain, Acton; Michel Arney, Needham; Benjamin Beck, Boston, and Gregory Hunter, Westwood, all of Mass., assignors to Kopin Corporation, Taunton, Mass.
Filed Oct. 14, 1993, Ser. No. 14,176
Term of patent 14 years
U.S. Cl. D16—235



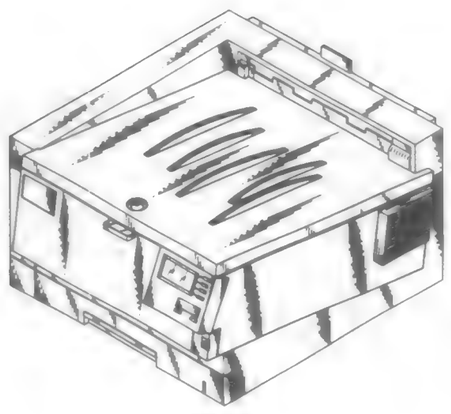
352,305
PRINTER CASSETTE
Alan R. Cooper, Haslingfield, United Kingdom, assignor to Esselte Dymo N.V., St. Niklaas,
Filed Jun. 9, 1992, Ser. No. 896,562
Claims priority, application United Kingdom, Apr. 22, 1992, 2022471
Term of patent 14 years
U.S. Cl. D18—12



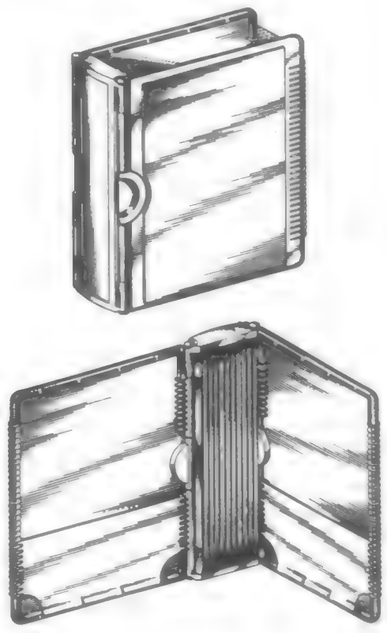
352,306
INK RIBBON CASSETTE FOR PRINTER
Masamitsu Nojima, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Apr. 16, 1992, Ser. No. 869,037
Term of patent 14 years
U.S. Cl. D18—12



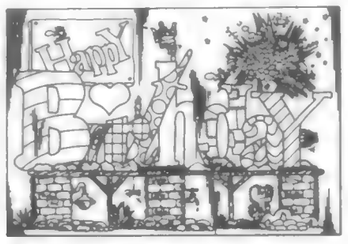
352,307
PRINTER
John W. Gassett, and Bernard L. Wilzbach, both of Lexington, Ky., assignors to Lexmark International, Inc., Greenwich, Conn.
Filed Mar. 11, 1993, Ser. No. 5,852
Term of patent 14 years
U.S. Cl. D18—55



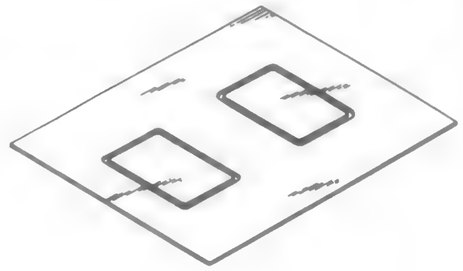
352,309
LOOSELEAF BINDER
David M. Gresham; John W. Davison, both of Columbus, Ohio, and Robert D. Soto, Chicago, Ill., assignors to Morningstar, Inc., Chicago, Ill.
Filed May 24, 1993, Ser. No. 8,695
Term of patent 14 years
U.S. Cl. D19—27



352,308
GREETING CARD
Stefan Reh, An der Schleuse 4, D-6336 Solms, Germany
Filed Dec. 31, 1990, Ser. No. 636,382
Term of patent 14 years
U.S. Cl. D19—1



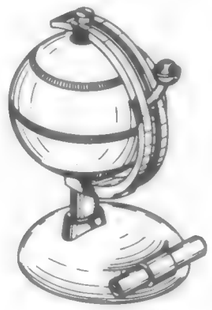
352,310
DOCUMENT SHEET WITH APERTURES FOR CARDS
Paul R. Edwards, St. Louis, Mo., assignor to FormStore Incorporated, Fenton, Mo.
Filed Oct. 23, 1992, Ser. No. 798
Term of patent 14 years
U.S. Cl. D19—32



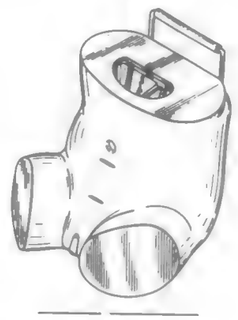
352,311
WRITING INSTRUMENT
Richard A. Waldinger, Searingtown, N.Y., assignor to 3 CPCO Corp, New York, N.Y.
Filed Apr. 8, 1993, Ser. No. 6,816
Term of patent 14 years
U.S. Cl. D19—51



352,312
COMBINED GLOBE AND SATELLITE
William N. Butler, 404-Balido Ter., Key West, Fla. 33040
Filed Mar. 5, 1993, Ser. No. 5,561
Term of patent 14 years
U.S. Cl. D19—61

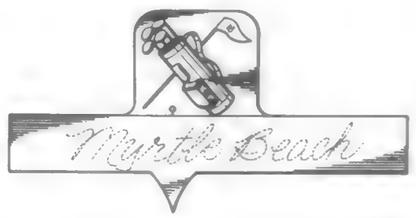


352,313
INSTRUCTIONAL GYNECOLOGIC SIMULATOR
John S. Eggert, Miami, Fla., assignor to Gaumard Scientific Company, Inc., Miami, Fla.
Filed Apr. 14, 1993, Ser. No. 7,093
Term of patent 14 years
U.S. Cl. D19—62

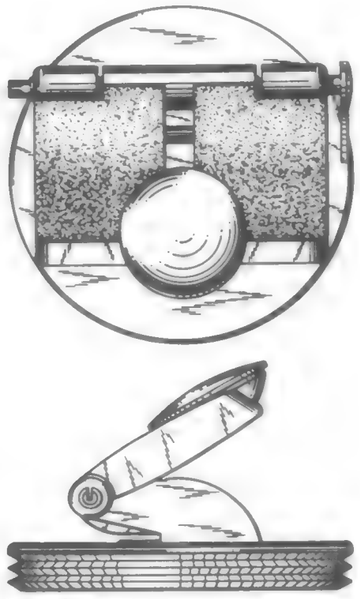


352,314
PROMOTIONAL CLIP FOR MOUNTING ON WALL OR CLIPBOARD
Stephen H. Wolff, 35 West 35th St., New York, N.Y. 10001
Filed Aug. 24, 1992, Ser. No. 934,251
Term of patent 14 years
U.S. Cl. D19—65

352,315
GOLF MAP MARKER
Glen G. Sellers, 415 Daniels, Palestine, Tex. 75801
Filed Jul. 16, 1993, Ser. No. 10,731
Term of patent 14 years
U.S. Cl. D19—65



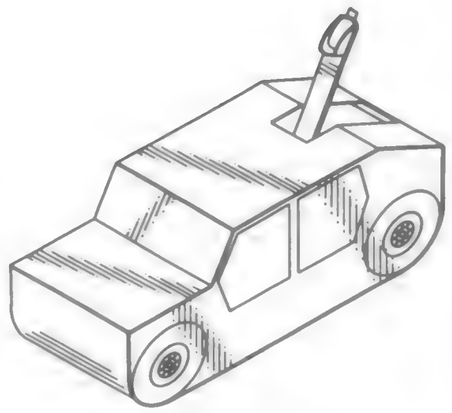
352,316
PAPER HOLE PUNCH
Joachim Zier, Berger Kunststoff-Spritzgusswerk, Postfach 1280, D-7730 Villingen, Germany
Filed Nov. 8, 1993, Ser. No. 15,024
Term of patent 14 years
U.S. Cl. D19—72



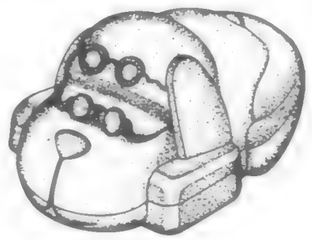
352,317
PUZZLE
Guillermo Bassignani, 1540 NW. 79 Ave., Miami, Fla. 33126
Filed Jan. 1, 1993, Ser. No. 8,964
Term of patent 14 years
U.S. Cl. D21—107



352,318
TOY MILITARY VEHICLE
Keith C. Matthews, 8270 S. 1280 E., Sandy, Utah 84094
Filed Jan. 31, 1992, Ser. No. 830,240
Term of patent 14 years
U.S. Cl. D21—134



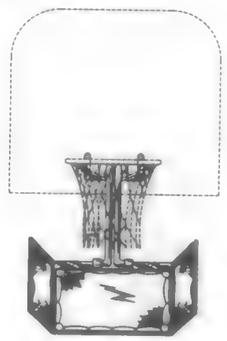
352,319
TOY DOG
Ming-Tuan Lin, 8F, No. 196-10, Chung-Hwa Rd., Yung-Kang Hsinag, Tainan Hsien, Taiwan, Prov. of China
Filed Jan. 12, 1993, Ser. No. 3,549
Term of patent 14 years
U.S. Cl. D21—161



352,320
DOLL
Gail T. Hallman, 27 N. Adams St., Pottstown, Pa. 19464
Filed Apr. 2, 1993, Ser. No. 6,620
Term of patent 14 years
U.S. Cl. D21—169



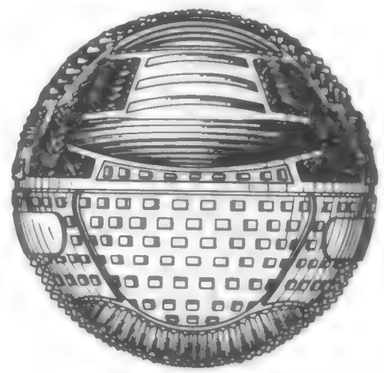
352,321
REBOUNDER FOR A BASKETBALL GOAL
James D. Ivey, P.O. Box 2, Rockaway, N.J. 07866
Filed Sep. 2, 1992, Ser. No. 938,339
Term of patent 14 years
U.S. Cl. D21—201



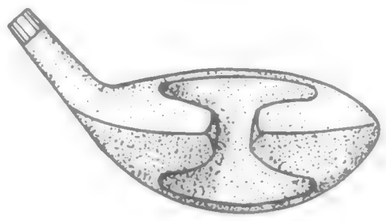
352,322
BALL
Sean T. Mullaney, Cincinnati, Ohio, and John V. Zaruba, Oak Park, Ill., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Jan. 11, 1993, Ser. No. 3,597
Term of patent 14 years
U.S. Cl. D21—204



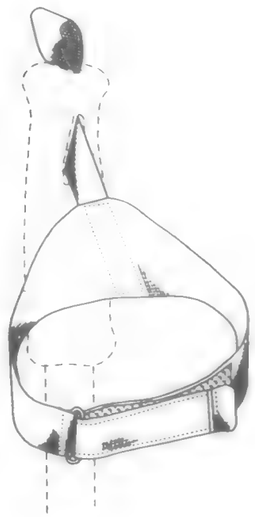
352,323
BALL
John S. Weiss, New York, N.Y., assignor to Weiss Twice Toys, Inc., New York, N.Y.
Filed Jan. 31, 1992, Ser. No. 830,230
Term of patent 14 years
U.S. Cl. D21—204



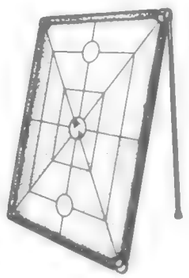
352,324
GOLF CLUB HEAD
Daniel Sicaeros, Corona, Calif., assignor to Bullet Golf Ball, Inc., Santa Ana, Calif.
Filed Feb. 12, 1993, Ser. No. 4,750
Term of patent 14 years
U.S. Cl. D21—214



352,325
CROSS-COUNTRY SKI POLE WRIST STRAP
Mark Joseph, 329 Freesilver Ct., Aspen, Colo. 81611
Filed Nov. 12, 1993, Ser. No. 15,273
Term of patent 14 years
U.S. Cl. D21—230



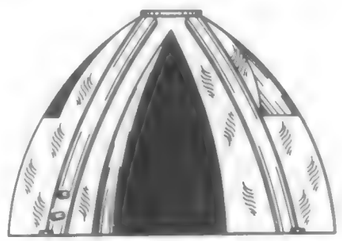
352,326
TARGET BOARD FOR GOLF PRACTICE
Chuan C. Hsiao, No. 73, Lin Sen Rd., Taoyuan City, Taoyuan Hsien, Taiwan, Prov. of China
Filed Sep. 7, 1993, Ser. No. 12,695
Term of patent 14 years
U.S. Cl. D21—234



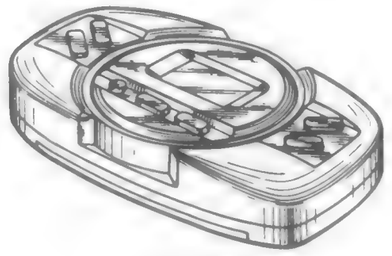
352,327
SPACESHIP AMUSEMENT RIDE
Timothy J. Delaney, Northridge, and Mark L. Shumate, Pasadena, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Mar. 20, 1992, Ser. No. 854,266
Term of patent 14 years
U.S. Cl. D21—249



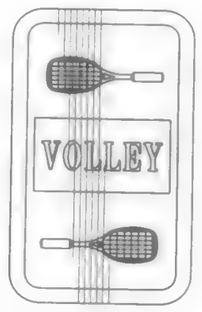
352,328
HAPPY CAMPER INFLATABLE TENT
Gary D. Boyd, P.O. Box 698, Carnation, Wash. 98014
Filed Mar. 1, 1993, Ser. No. 5,530
Term of patent 14 years
U.S. Cl. D21—253



352,329
ELECTRONIC GAME HOUSING
Kazuyuki Takiya, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Jul. 27, 1993, Ser. No. 11,107
Claims priority, application Japan, Jun. 2, 1993, 5-16280
Term of patent 14 years
U.S. Cl. D21—13



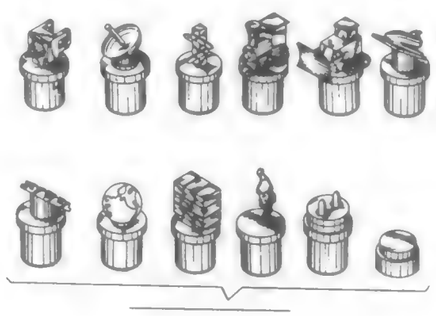
352,330
TENNIS GAME PLAYING CARD SET
Marcel A. Smith, 8, Rockall, Southend on Sea, Essex SS2 6TU, United Kingdom
Filed Apr. 24, 1992, Ser. No. 873,741
Term of patent 14 years
U.S. Cl. D21—42



352,331
JOY STICK
James Wu, No. 40, Yuan Tan Rd., Yuan Lin Chen, Changhua Hsien,
Filed Feb. 12, 1993, Ser. No. 4,749
Term of patent 14 years
U.S. Cl. D21—48



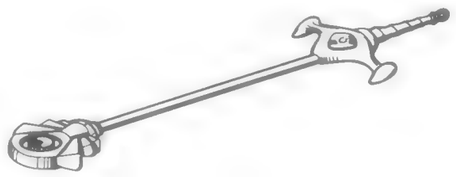
352,332
GAME PIECE SET FOR A BOARD GAME
Craig M. Hancock, Irvine, Calif., assignor to The Pod Group, Sepulveda, Calif.
Filed May 6, 1993, Ser. No. 7,967
Term of patent 14 years
U.S. Cl. D21—51



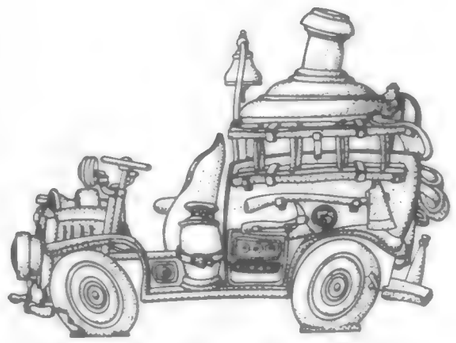
352,333
INFLATABLE FOOTBALL HELMET
Marvin S. Lieberman, New York, N.Y., assignor to Alvimar Manufacturing Co., Inc., Long Island City, N.Y.
Filed Jun. 10, 1993, Ser. No. 9,451
Term of patent 14 years
U.S. Cl. D21—59



352,334
TOY WAND
Randy O. Rissman, Northbrook, and Tamara Lebovitz, Chicago, both of Ill., assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 20, 1993, Ser. No. 13,191
Term of patent 14 years
U.S. Cl. D21—61



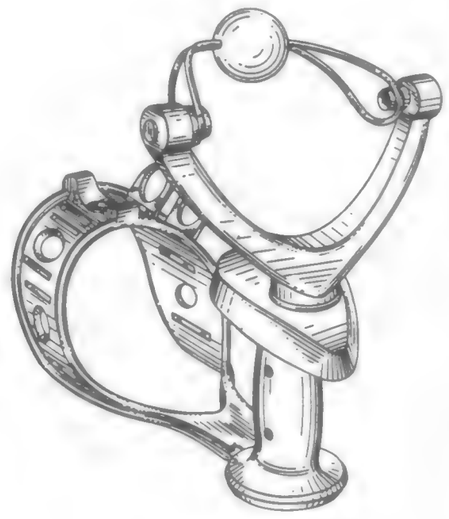
352,335
AMUSEMENT VEHICLE
Marcelo E. Vignali, Lancaster, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Jan. 22, 1993, Ser. No. 3,979
Term of patent 14 years
U.S. Cl. D21—78



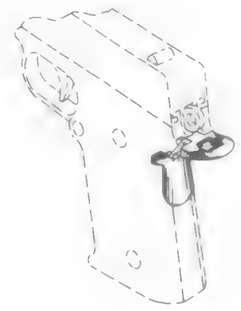
352,336
TOY FIGURE
Michelle G. Law, 207 Barecky Dr., Warner Robins, Ga. 31088
Filed Apr. 15, 1993, Ser. No. 7,042
Term of patent 14 years
U.S. Cl. D21—171



352,337
COMBINED SLINGSHOT AND PROJECTILE
Dietmar Nagel, 147 South Rd., Chester, and Craig P. Nadel, 201 Wingate Rd., Parsippany, both of N.J. 07930
Filed Nov. 2, 1992, Ser. No. 1,073
Term of patent 14 years
U.S. Cl. D22—106



352,338
GRIP SAFETY FOR A HANDGUN
Wilfred C. Schuemann, 705 Wagner Dr., Carson City, Nev. 89703
Filed Jan. 7, 1992, Ser. No. 818,711
Term of patent 14 years
U.S. Cl. D22—108



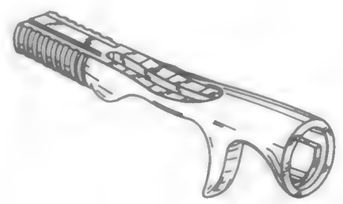
352,339
COMBINED SELF DEFENSE WEAPON AND KEY HOLDER
James P. McGowan, and Paul J. Nicol, both of PROTEX Company, 1902 Ridge Rd., Suite 310, West Seneca, N.Y. 14224-3312
Filed Nov. 22, 1993, Ser. No. 15,570
Term of patent 14 years
U.S. Cl. D22—117



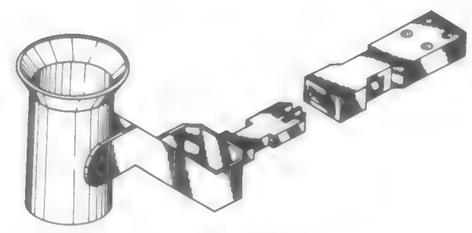
352,340
FISH LURE
Maurice W. Terrill, 2511A S. Worchester Ct., Aurora, Colo. 80014
Continuation-in-part of Ser. No. 683,752, Apr. 10, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 2,880
Term of patent 14 years
U.S. Cl. D22—132



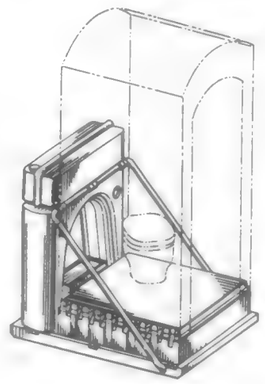
352,341
REEL SEAT FOR FISHING RODS
Bo K. Park, Busan, Rep. of Korea, assignor to Silver Star Co., Ltd., Busan, Rep. of Korea
Filed Sep. 29, 1992, Ser. No. 952,769
Claims priority, application Rep. of Korea, Jul. 9, 1992, 11683/1992
Term of patent 14 years
U.S. Cl. D22—142



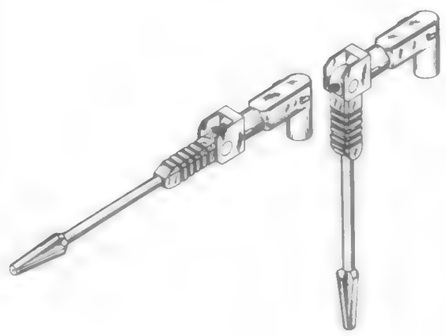
352,342
FISHING ROD SUPPORT
Don Arck, Oak St., Georgetown, S.C. 29440
Filed Feb. 10, 1993, Ser. No. 4,645
Term of patent 14 years
U.S. Cl. D22—147



352,343
FRESH WATER TANK UNIT FOR PORTABLE TOILET
Bertram Ito, 662 Hoohai Pl., Pearl City, Hi. 96782
Filed Sep. 28, 1992, Ser. No. 953,540
Term of patent 14 years
U.S. Cl. D23—202



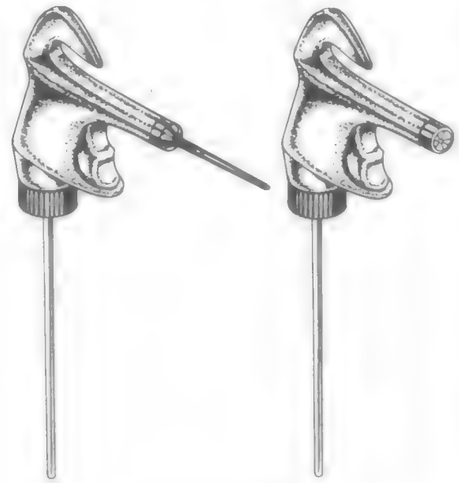
352,344
SPRAY NOZZLE FOR ATTACHMENT TO A PRESSURIZED SPRAY CAN
Ryuichi Mizuguchi, Tokyo, Japan, assignor to Mitani Valve Co., Tokyo, Japan
Filed Nov. 24, 1992, Ser. No. 1,850
Claims priority, application Japan, May 27, 1992, 4-15479
Term of patent 14 years
U.S. Cl. D23—213



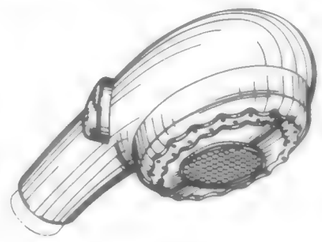
352,345
OVERHEAD PLANT WATERING DEVICE
Henry R. Stieh, Rte. 6, Box 498, Havana, Fla. 32333
Filed Sep. 23, 1993, Ser. No. 13,366
Term of patent 14 years
U.S. Cl. D23—213



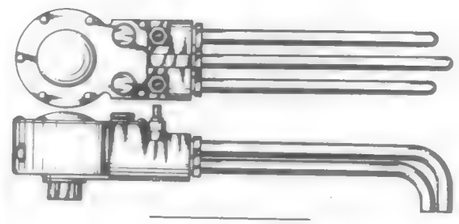
352,346
LIQUID SPRAYER
Claus Huckenbeck, 24701 Piute Dr., Tehachapi, Calif. 93561
Filed Apr. 24, 1992, Ser. No. 873,551
Term of patent 14 years
U.S. Cl. D23—213



352,347
HAND SPRAY
Todd D. Dannenberg, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Feb. 14, 1994, Ser. No. 18,750
Term of patent 14 years
U.S. Cl. D23—223



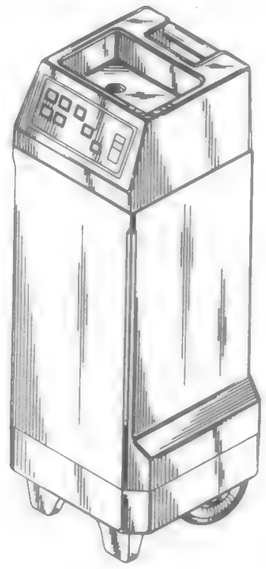
352,348
MULTI-FLUID DELIVERY VALVE
Dennis A. Niedwick, 27086 Lost Colt, Laguna Hills, Calif. 92653
Filed Jun. 26, 1992, Ser. No. 884,558
Term of patent 14 years
U.S. Cl. D23—233



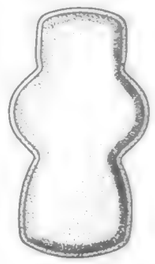
352,349
URINAL
Francois Kergoet, Paris, France, and Herbert V. Kohler, Jr., Kohler, Wis., assignors to Delafon Jacob, Paris, France
Filed Nov. 5, 1993, Ser. No. 14,963
Term of patent 14 years
U.S. Cl. D23—302



352,350
APPARATUS FOR REMOVING SMOKE AND LIQUID FROM A SURGICAL SITE IN A HOSPITAL OPERATING ROOM
Robert D. Rambo, Sellersville, Pa., and John Yorke, Canastota, N.N.Y., assignors to Medical Development Systems, Inc., Colmar, Pa.
Filed May 19, 1993, Ser. No. 8,460
Term of patent 14 years
U.S. Cl. D23—364



352,351
PANTILINER
Shirley F. Garth, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 29, 1993, Ser. No. 11,204
Term of patent 14 years
U.S. Cl. D24—125



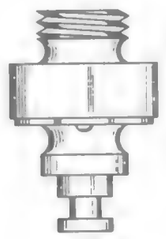
352,352
INCONTINENCE BRIEF
Jerry B. Silver, Newport Beach, Calif., assignor to Davstar, Inc., Costa Mesa, Calif.
Filed Aug. 16, 1993, Ser. No. 11,881
Term of patent 14 years
U.S. Cl. D24—126



352,353
INCONTINENCE BRIEF
Jerry B. Silver, Newport Beach, Calif., assignor to Davstar, Inc., Costa Mesa, Calif.
Filed Aug. 16, 1993, Ser. No. 11,883
Term of patent 14 years
U.S. Cl. D24—126



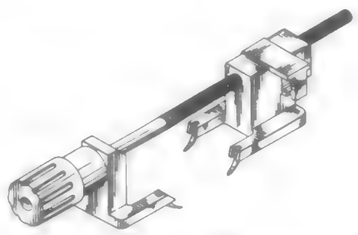
352,354
ADAPTOR FOR A THREE WAY SYRINGE
Warren Davis, 3026 Sullivan Ave., Rosemead, Calif. 91770; David Wasserman, 2095 Mohigan Way, Las Vegas, Nev. 89109, and Richard R. Matthews, 7950 S. Alameda St., Huntington Park, Calif. 90255
Filed Dec. 13, 1991, Ser. No. 807,573
Term of patent 14 years
U.S. Cl. D24—112



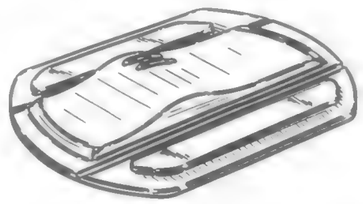
352,355
DEPILATOR
Peter Schneider, Königstein, and Peter Eckart, Frankfurt am Main, both of Germany, assignors to Braun Aktiengesellschaft, Germany
Filed Jan. 26, 1993, Ser. No. 4,038
Claims priority, application Hague Agreement, Jul. 30, 1992, DMA/001 858
Term of patent 14 years
U.S. Cl. D24—133



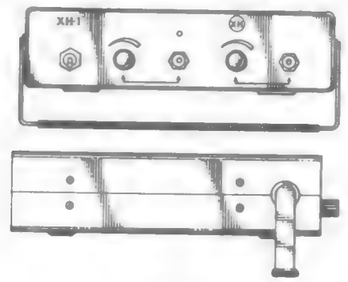
352,356
SURGICAL CONTRACTOR FOR THE CLOSURE OF WIDE SKIN DEFECTS
Bernard Hirshowitz, and Amnon Levy, both of Haifa, Israel, assignors to Life Medical Sciences, Inc., Princeton, N.J.
Filed Dec. 3, 1992, Ser. No. 3,751
Term of patent 14 years
U.S. Cl. D24—145



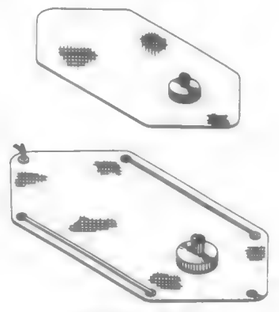
352,357
IONTOPHORETIC DRUG DELIVERY SYSTEM
Charles R. Ashley, Clinton, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Aug. 6, 1993, Ser. No. 11,556
Term of patent 14 years
U.S. Cl. D24—189



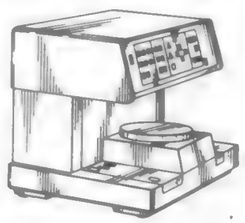
352,358
LOW CURRENT MASSAGE UNIT
Lai Y. Yan, 13409 Burton St., Panorama City, Calif. 91402
Filed Mar. 25, 1993, Ser. No. 6,314
Term of patent 14 years
U.S. Cl. D24—200



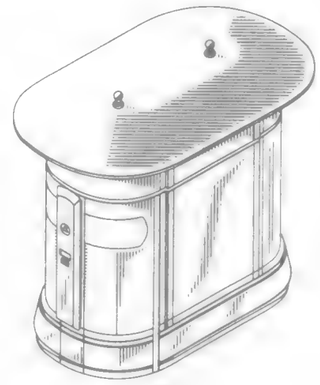
352,359
WATER BAG
Daniel J. Vorhis, Seattle, Wash., assignor to Mountain Safety Research, Inc., Seattle, Wash.
Filed May 21, 1990, Ser. No. 525,630
Term of patent 14 years
U.S. Cl. D24—207



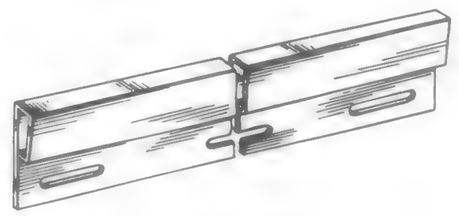
352,360
UNIT FOR APPLYING A LIQUID SAMPLE ONTO A CULTURE MEDIUM
Robert J. Nugteren, Nieuw Vennep, Netherlands, assignor to Prolion Development B.V., Netherlands
Filed Nov. 23, 1992, Ser. No. 1,839
Claims priority, application Benelux TM/Des. Off., May 22, 1992, 22599-00; May 22, 1992, 67693-00
Term of patent 14 years
U.S. Cl. D24—216



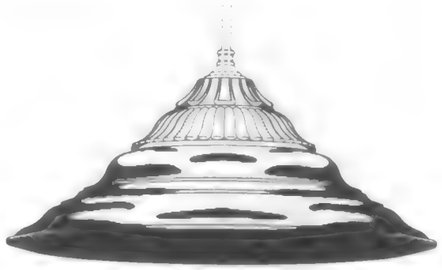
352,361
TOILET
Daniel Tellier, Guyancourt, France, assignor to JC Decaux, Neuilly Sur Seine, France
Filed Jun. 22, 1993, Ser. No. 9,743
Claims priority, application France, Mar. 24, 1993, 931 587
Term of patent 14 years
U.S. Cl. D25—16



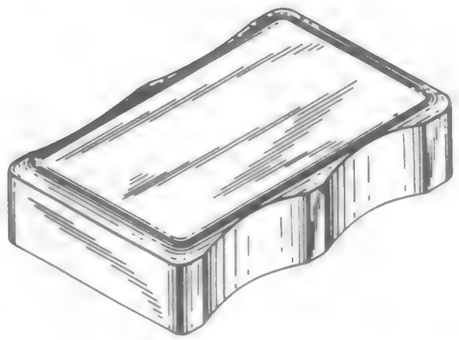
352,362
MOLDING
Carl E. Anderson, 2589 Richmond Ter., Staten Island, N.Y. 10303
Filed Feb. 3, 1993, Ser. No. 4,373
Term of patent 14 years
U.S. Cl. D25—136



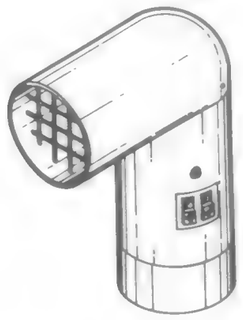
352,363
PENDANT LIGHTING FIXTURE
Patrick Dolan, 1020 SW. Westwood Ct., Portland, Oreg. 97201
Filed Mar. 10, 1993, Ser. No. 5,795
Term of patent 14 years
U.S. Cl. D26—88



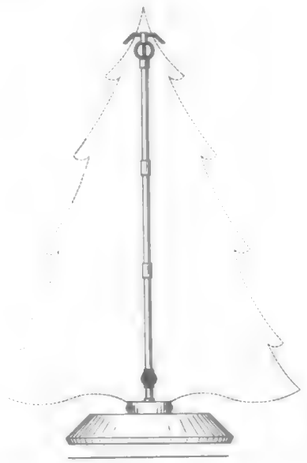
352,364
SOAP BAR
Richard G. Dietz, 9 Buckout Rd., West Harrison, N.Y. 10604
Filed Apr. 14, 1993, Ser. No. 7,005
Term of patent 14 years
U.S. Cl. D28—8.1



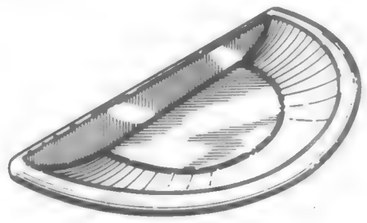
352,365
HAIRDRYER
Eric P. Hansen, and Yun-Hee Hansen, both of 6805 Western Pl., Apt. 2, Colorado Springs, Colo. 80915
Filed Apr. 2, 1993, Ser. No. 6,611
Term of patent 14 years
U.S. Cl. D28—13



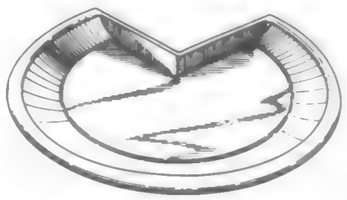
352,366
CHRISTMAS TREE FIRE EXTINGUISHER
Roger P. Cox, 700 Crestview Dr., Burleson, Tex. 76028
Filed Dec. 7, 1992, Ser. No. 2,243
Term of patent 14 years
U.S. Cl. D29—125



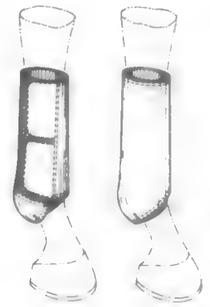
352,367
BIRD BATH
Joseph M. Gryzlak, West Dundee, Ill., assignor to Gris Pottery, Carpentersville, Ill.
Filed Apr. 29, 1993, Ser. No. 7,694
Term of patent 14 years
U.S. Cl. D30—123



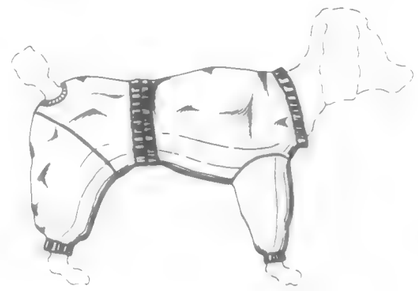
352,368
BIRD BATH
Joseph M. Gryzlak, West Dundee, Ill., assignor to Gris Pottery, Carpentersville, Ill.
Filed Apr. 29, 1993, Ser. No. 7,724
Term of patent 14 years
U.S. Cl. D30—123



352,369
SPLINT BOOT FOR FRONT RIGHT LEG OF A HORSE
Bonnie E. Figoni, 1955 Airport Blvd., Red Bluff, Calif. 96080
Filed Jan. 21, 1993, Ser. No. 3,901
Term of patent 14 years
U.S. Cl. D30—144



352,370
COMBINED SHIRT AND PANTS FOR CANINES
Stephanie A. Shover, 5231 NW. 53rd Ave., Coconut Creek, Fla. 33073
Filed Apr. 26, 1993, Ser. No. 7,500
Term of patent 14 years
U.S. Cl. D30—145



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Johanson, Jerry R., 5,361,945, Cl. 222-145.000.

A. E. Bishop & Associates Pty Limited: *See*—
Bishop, Arthur E.; and Baxter, John, 5,362,080, Cl. 280-91.000.

Aalborg Portland A/S: *See*—
Larsen, Soren B., 5,362,321, Cl. 106-713.000.

AB Volvo: *See*—
Annerstedt, Claes; Frid, Per; Johansson, Bengt; and Sahlmen, Thomas, 5,361,984, Cl. 236-49.300.

ABB Atom AB: *See*—
Nylund, Olov; Mansson, Ragnar; Olsson, Torsten; Farkas, Tibor; and Sahlin, Thorbjorn, 5,363,422, Cl. 376-442.000.

ABB Patent GmbH: *See*—
Flatz, Josef; Grunling, Hermann W.; and Sopka, Jorg, 5,362,514, Cl. 427-74.000.

Abbott Laboratories: *See*—
Bauer, John F.; and Morley, James A., 5,362,730, Cl. 514-254.000.
Cowart, Marlon; and Kerwin, James F., 5,362,747, Cl. 514-448.000.
Sibley, Murray J.; Hartung, Donald E.; and Ruland, Rosalyn, 5,362,488, Cl. 424-78.050.
Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, 5,362,912, Cl. 564-360.000.

Abbott, Richard A.: *See*—
Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., 5,362,487, Cl. 424-71.000.

Abe, Shinichi; and Ohtani, Mitsuo, to Zebra Co., Ltd. Writing device with spaced walls and sliding valve. 5,362,168, Cl. 401-206.000.

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Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Abidin, Michael R.; and Lehmbeck, Steven P., to Bloom, Leonard, a part interest. Surgical blade dispenser and disposal system for use during an operating procedure and method thereof. 5,361,902, Cl. 206-370.000.

Abiven, Jacques, to France Telecom. Multirate digital multiplexing demultiplexing method and device. 5,363,370, Cl. 370-84.000.

Abrams Fixture Corporation: *See*—
McNabb, James H., 5,361,538, Cl. 49-192.000.

Academy of Applied Science: *See*—
Carbone, Alfred V., 5,361,700, Cl. 102-439.000.

ACT Gesellschaft fuer Soft- und Hardware-systeme GmbH: *See*—
Thomas, Hartmut; Hertlein, Jens; and Seher, Eckhardt, 5,361,886, Cl. 194-317.000.

Adachi, Yukishige, to Sumitomo Rubber Industries, Ltd. Pneumatic radial tire. 5,361,820, Cl. 152-555.000.

Adamik, John A.: *See*—
Wang, David N.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,362,526, Cl. 427-573.000.

Adams, Max D.: *See*—
Moore, Dennis A.; Adams, Max D.; Cacheris, William P.; White, David H.; Periasamy, Muthunadar P.; Rajagopalan, Raghavan; deLearie, Lynn A.; and Woulfe, Steven R., 5,362,477, Cl. 424-9.000.

Adams, Thomas E., to AT&T Bell Laboratories. Seimconductor integrated circuit fabrication utilizing latent imagery. 5,362,585, Cl. 430-30.000.

Adams, William; Newcomer, Clyde; and Larson, Gary B., to MacDermid, Incorporated. Composition and process for treatment of metallic surfaces. 5,362,334, Cl. 148-268.000.

Adamson, Mark, to UNR Industries, Inc. Shopping cart having retractable cupholder. 5,362,077, Cl. 280-33.992.

ADC Telecommunications, Inc.: *See*—
Korkowski, Jeff L.; Emmons, David J.; and Defoe, Dalen J., 5,363,465, Cl. 385-135.000.

Adler, Howard I.: *See*—
Gopeland, James C.; Adler, Howard I.; and Crow, Weldon D., 5,362,501, Cl. 426-12.000.

Advanced Micro Devices, Inc.: *See*—
Gardner, Mark I.; Fulford, Henry J., Jr.; and Seaton, Jay J., 5,362,685, Cl. 437-238.000.
Ho, Kenneth S., 5,363,419, Cl. 375-120.000.

Advanced Technology Materials, Inc.: *See*—
Gardiner, Robin A.; Van Buskirk, Peter; and Kirlin, Peter S., 5,362,328, Cl. 118-726.000.

AER Energy Resources, Inc.: *See*—
Pedicini, Christopher S., 5,362,577, Cl. 429-27.000.

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Archibald, Thomas G.; Carlson, Roland P.; Malik, Aslam A.; and Manser, Gerald E., 5,362,848, Cl. 528-414.000.

Aeroquip Corporation: *See*—
Sterett, Robert A., 5,361,906, Cl. 206-509.000.

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Washburn, Robert M.; and Dodson, Jerry D., 5,362,567, Cl. 428-408.000.

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Campbell, David A., 5,362,899, Cl. 558-108.000.

Agfa AG: *See*—
Hagemann, Jorg; Weimann, Ralf; Wolff, Erich; and Sobel, Johannes, 5,362,615, Cl. 430-551.000.

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Nagel, Erich; and Benker, Gerhard, 5,362,008, Cl. 242-417.000.

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Coppens, Paul J.; Vermeersch, Joan T.; Leenders, Luc H.; Vervloet, Ludovicus H.; Hoes, Eric M.; and Daems, Eddie R., 5,362,602, Cl. 430-262.000.
Kiekens, Eric; Callant, Paul; and Claes, Roland, 5,362,612, Cl. 430-520.000.
Lamotte, Johan; and Dewanckele, Jean-Marie, 5,362,620, Cl. 430-571.000.

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Jetzer, Gregor; Kolb, Roland; and Spinnler, Fritz, 5,362,217, Cl. 418-55.400.

Agostinelli, John A.: *See*—
Hung, Liang-Sun; Mir, Jose M.; and Agostinelli, John A., 5,363,462, Cl. 385-122.000.

Agrolinz Agrarchemikalien GmbH: *See*—
Kores, Dietmar; Tramberger, Hermann; Worther, Rudolf H.; Jellinger, Rudolf; Kloimstein, Engelbert; and Schonbeck, Rupert, 5,362,708, Cl. 504-238.000.

Ahle, James L.: *See*—
Moucharafieh, Nadim C.; Lin, Kang-Chi; and Ahle, James L., 5,362,705, Cl. 504-206.000.

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Aichi Steel Works Ltd.: *See*—
Iwama, Naoki; and Nomura, Ichie, 5,362,338, Cl. 148-334.000.

Aikawa, Yoichi: *See*—
Ariyasu, Hisashi; and Aikawa, Yoichi, 5,362,935, Cl. 219-56.000.

AIL Corporation: *See*—
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Aime, Loichot: *See*—
Marr-Andre, Miche; and Aime, Loichot, 5,363,350, Cl. 368-276.000.

Ainoya, Hideyuki: *See*—
Yoshihara, Toshiyuki; Hanami, Nobuyuki; Anayama, Hideki; Kishi, Junichi; and Ainoya, Hideyuki, 5,362,588, Cl. 430-69.000.

Air Products and Chemicals, Inc.: *See*—
Famili, Amir; Marten, F. Lennart; and Nangeroni, James F., 5,362,532, Cl. 428-36.600.
Famili, Amir; Nangeroni, James F.; and Marten, Finn L., 5,362,778, Cl. 524-50.000.
Howard, Lee J.; and Rowles, Howard C., 5,361,589, Cl. 62-24.000.
Pham, Hoanh N.; and Shirley, Todd A., 5,362,462, Cl. 423-235.000.
Roth, Timothy J.; Gagliardi, Carmine R.; and Welliver, William R., 5,362,471, Cl. 423-555.000.

Aisan Kogyo Kabushiki Kaisha: *See*—
Suda, Koichi; Fukaya, Takeshi; and Horiuchi, Tadao, 5,363,033, Cl. 324-207.150.

Aisin Seiki Kabushiki Kaisha: *See*—
Shirai, Eiji, 5,361,734, Cl. 123-90.160.

Aizawa, Toshiyuki; Nakamura, Hitoshi; Wakabayashi, Kunitoshi; Kudo, Tetsuo; and Hasegawa, Hiroyuki, to Showa Denko K.K. Process for producing acetaldehyde dimethylacetal. 5,362,918, Cl. 568-594.000.

Ajima, Takumi, to Matsushita Electric Industrial Co., Ltd. Optical pickup apparatus including a moveable pickup driver using a multiplexer for reducing the number of signal lines. 5,363,365, Cl. 369-124.000.

Ajinomoto Co., Inc.: *See*—
Fujita, Shinji; and Takahashi, Satoji, 5,362,903, Cl. 560-41.000.
Hirose, Toshiki; Tsuruta, Minoru; Tamura, Koji; Uehara, Yoshitomo; and Miwa, Harufumi, 5,362,635, Cl. 435-106.000.
Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, 5,362,489, Cl. 424-852.000.

Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, 5,362,636, Cl. 435-115.000.

AKA Innovative Developments S.A.: *See—*
Hauf, Eric; Rossell, Jaime; and Gueissaz, Michel, 5,361,944, Cl. 222-136.000.

Akada, Masanori: *See—*
Egashira, Noritaka; Asahi, Koichi; Akada, Masanori; Nakamura, Yoshinori; Imoto, Kazunobu; and Nishitani, Nobuhisa, 5,362,701, Cl. 503-227.000.
Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 5,362,703, Cl. 503-227.000.

Akimoto, Masami, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Cleaning apparatus for cleaning reverse surface of semiconductor wafer. 5,361,449, Cl. 15-302.000.

Akita, Kazuyuki: *See—*
Niijima, Hiroyuki; and Akita, Kazuyuki, 5,362,365, Cl. 203-31.000.

Akita, Noboru: *See—*
Taniuchi, Kazuman; Sekine, Hiroshi; Akita, Noboru; Kuwahara, Isao; and Endoh, Kiyomasa, 5,363,212, Cl. 358-452.000.

Akiyama, Koichi: *See—*
Oshima, Junji; Okatani, Susumu; Akiyama, Koichi; and Sakurai, Masato, 5,362,804, Cl. 525-64.000.

Akiyama, Masami: *See—*
Itoh, Yoshikazu; and Akiyama, Masami, 5,362,129, Cl. 297-391.000.

Akiyama, Yasuo; Maekawa, Zenichiro; Hamada, Hiroyuki; and Yokoyama, Atsushi, to Murata Kikai Kabushiki Kaisha. Braiding apparatus for a tubular braid structure. 5,361,674, Cl. 87-9.000.

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Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, 5,362,489, Cl. 424-852.000.

Akro Corporation, The: *See—*
Reuben, Harold, 5,362,544, Cl. 428-82.000.

Aktiebolaget Electrolux: *See—*
Naslund, Ulf W.; and Losdahl, Claes H., 5,361,500, Cl. 30-381.000.

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Amtower, Patricia C., 5,362,444, Cl. 422-30.000.
Cook, James N.; and Worsley, John L., 5,362,647, Cl. 435-264.000.

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Flesher, Peter; Farrar, David; Skinner, Malcolm; and Dymond, Brian, 5,362,517, Cl. 427-222.000.

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Hennedy, Michael, 5,362,989, Cl. 327-544.000.
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Daly, Marilyn; Palmer, Scott L.; Sanders, Robert E., Jr.; Steverson, W. Bryan; and Morgan, Lyndon, 5,362,340, Cl. 148-691.000.
Grubbs, Donald K.; and Valente, Peter E., III, 5,362,457, Cl. 423-115.000.
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Kameswaran, Venkataraman; and Francis, Robert, 5,362,746, Cl. 514-424.000.

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Ward, Terence J.; and White, Janet C., 5,362,734, Cl. 514-294.000.

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Laabs, Roberto, 5,361,747, Cl. 124-91.000.

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Stettler, Andreas; and Anderegg, Kurt, 5,362,345, Cl. 156-173.000.

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Anello, Salvatore; and Turk, Nathan, to Sandt Technology, Ltd. Change return protection device. 5,361,979, Cl. 232-57.500.

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Ichikawa, Shinpei; Hamerton-Kelly, Paul R.; and Anglin, Noah L., 5,363,227, Cl. 359-83.000.

Anhalt, John W., to ITT Corporation. Coaxial connector. 5,362,255, Cl. 439-582.000.

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Wang, David N.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,362,526, Cl. 427-573.000.

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Whetsel, Jackie G., 5,362,384, Cl. 210-85.000.
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Trihey, John M., 5,361,729, Cl. 122-17.000.

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Shiraishi, Atsushi; Asano, Koji; Gotoh, Makoto; and Oka, Kotaro, 5,362,325, Cl. 117-201.000.

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Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.

Asberom, Theodros; O'Connor, Edward; Berger, Joel G.; and Clader, John W., to Schering Corporation. 4,5-bridged-2,3,4,5-tetrahydro-1H-3-benzazepine-7-ols and derivatives and compositions and methods employing such compounds. 5,362,728, Cl. 514-217.000.

Asea Brown Boveri Ltd.: *See—*
Matyscak, Kamil; and Schmid, Traugott, 5,362,204, Cl. 415-213.100.

Muller, Gerhard, 5,361,576, Cl. 60-39.030.

Ashemimry, Nasir M., to Businesship International, Inc. Multi-layered educational and entertaining device including a plurality of independent layers. 5,362,054, Cl. 273-157.00R.

Ashland Oil Inc.: *See—*
Maggard, Steven M., 5,362,965, Cl. 250-339.120.

Askari, Syed H.; Jeang, Shao C.; and Neidlinger, Herman H., to Pilkington Visioncare, Inc. Hydrogel material. 5,362,768, Cl. 523-106.000.

ASM-FICO Tooling B.V.: *See—*
Harmsen, Johannes G. T.; and De Boer, Willem A., 5,361,486, Cl. 29-563.000.

Asmo Co., Ltd.: *See—*
Yano, Motoyasu; Takemura, Yoshinori; and Suzuki, Takao, 5,363,006, Cl. 310-323.000.

Aspen Semiconductor Corporation: *See—*
Bloker, Raymond E., 5,362,997, Cl. 326-64.000.

Associated Universities, Inc.: *See—*
Dietz, Russell N.; and Senum, Gunnar I., 5,362,568, Cl. 428-421.000.
Skotheim, Terje A.; Lee, Hung S.; and Okamoto, Yoshiyuki, 5,362,493, Cl. 429-194.000.

Association pour l'Essor de la Transfusion Sanguine Dans la Region du Nord: *See—*
Faucompre, Annick; Gigout, Jean-Pierre; Millard, Jacques; and Leprince, Marc, 5,361,661, Cl. 83-177.000.

Astarita, Luca: *See—*
Al Ghatta, Hussain A. K.; Severini, Tonino; and Astarita, Luca, 5,362,763, Cl. 521-79.000.

Astec Industries, Inc.: *See—*
Milstead, John, 5,362,193, Cl. 414-332.000.

AT&T Bell Laboratories: *See—*
Adams, Thomas E., 5,362,585, Cl. 430-30.000.
Daoud, Bassel H., 5,363,440, Cl. 379-399.000.
Faryar, Alireza F.; Kustka, George J.; Mailhot, John N.; and Webb, Charles A., III, 5,363,141, Cl. 348-470.000.
Feiner, Alexander; Im, Gi-Hong; Kneuer, Joseph G.; Saltzberg, Burton R.; and Werner, Jean-Jacques, 5,363,441, Cl. 379-411.000.
Georger, William H., 5,363,068, Cl. 333-25.000.
Glass, Alastair M.; Hunt, Neil E. J.; Poate, John M.; Schubert, Erdmann F.; and Zydzik, George J., 5,363,398, Cl. 372-92.000.
Hemmady, Jayant G.; Reilly, Craig P.; Romy, Neil J.; and Spanke, Ronald A., 5,363,369, Cl. 370-60.000.
Hunt, Neil E. J.; and Schubert, Erdmann F., 5,362,977, Cl. 257-98.000.
Jacobs, Mark E., 5,363,289, Cl. 363-56.000.
Millman, Mark E., 5,363,204, Cl. 358-406.000.
Mizrahi, Victor; and Mollenauer, Linn F., 5,363,239, Cl. 359-570.000.
Petty, Norman W., 5,363,443, Cl. 379-418.000.
Pfeiffer, Loren N.; Stormer, Horst L.; Wegscheider, Werner H.; and West, Kenneth W., 5,363,394, Cl. 372-45.000.
Snyder, James H., 5,363,489, Cl. 395-275.000.
Trimble, Lee E., 5,362,575, Cl. 428-688.000.

AT&T Global Information Solutions Company (FKA NCR Corporation): *See—*
Chen, Dao-Long; and Waldron, Robert D., 5,363,066, Cl. 331-17.000.

Atari Games Corporation: *See—*
Snyder, Douglas E.; and Lee, Samuel, 5,363,119, Cl. 345-131.000.

Athanasiades, Neocles G.: *See—*
McLoughlin, John E.; and Athanasiades, Neocles G., 5,362,022, Cl. 248-313.000.

Atherton, Terry: *See—*
Crow, Harry; Anderson, Thomas M.; Kelly, Scott; Atherton, Terry; and Schmidt, Larry, 5,361,797, Cl. 137-101.190.

Atkinson, Anthony: *See—*
Carr, Robert J. G.; Clarke, David J.; and Atkinson, Anthony, 5,362,653, Cl. 436-165.000.

Atlantic Richfield Company: *See—*
Young, Weldon E., 5,361,831, Cl. 166-77.500.

Au, Andreas: *See—*
Lax, Hermann; and Au, Andreas, 5,361,825, Cl. 164-437.000.

Au, Van; Carson, Robert G.; Harirchian, Bijan; and Schilling, Kurt M., to Lever Brothers Company, Division of Conopco, Inc. Oral hygiene compositions containing amino sugars as antiplaque agents. 5,362,480, Cl. 424-54.000.

Aubry, Laurent, to Quantum Corporation. Weighted average servo burst peak detector for disk drive read. 5,362,993, Cl. 327-94.000.

Audi A.G.: *See—*
Enning, Norbert; Rinke, Klaus P.; Schmale, Walter; and Timm, Heinrich, 5,362,121, Cl. 296-204.000.

August Faller KG: *See—*
Mohrhauser, Klaus, 5,361,907, Cl. 206-528.000.

Austin, Glenn D., to Monsanto Company. Enhanced expression in plants using non-translated leader sequences. 5,362,865, Cl. 536-24.100.

Austin, R. Russel. Visible-spectrum anti-reflection coating including electrically-conductive metal oxide layers. 5,362,552, Cl. 428-216.000.

Automation Associates: *See—*
Westerman, G. Wayne; Montgomery, Richard C.; and Pippin, Gerald W., 5,362,206, Cl. 417-12.000.

Automotive Systems Laboratory, Inc.: *See—*
Allen, Jace L.; and Gioutsos, Tony, 5,363,302, Cl. 364-424.050.

Avco Corporation: *See—*
Ben-Porat, Avi; Milo, George; Smith, Walter; and Westerman, Theodore, 5,362,344, Cl. 156-148.000.

Avtges, James A.: *See—*
Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; Kung, James K.; Avtges, James A.; and Laccetti, Anthony J., 5,362,582, Cl. 429-249.000.

AVX Corporation: *See—*
Breen, Barry N., 5,363,080, Cl. 336-192.000.

AW-2R, Inc.: *See—*
Sovik, Robert A., 5,362,176, Cl. 404-72.000.

Awano, Katsusuke; Honmura, Shiro; and Tanaka, Akio, to Shin Caterpillar Mitsubishi, Ltd. Method for controlling a hydraulic excavator. 5,363,304, Cl. 364-424.070.

Axis U.S.A., Inc.: *See—*
Luciani, Sabatino; Ponzio, Massimo; and Lumini, Antonio, 5,361,487, Cl. 29-596.000.
Santandrea, Luciano, 5,362,005, Cl. 242-1.10R.

B.M.L., Inc.: *See—*
Koreyasu, Toshiyuki; and Maruyama, Shoji, 5,362,648, Cl. 436-48.000.

B&U Corporation: *See—*
Kuehn, Udo, 5,361,548, Cl. 451-76.000.

Baader, Uwe, to Barmag AG. Godet for heating an advancing yarn. 5,362,945, Cl. 219-619.000.

Baba, Shigeki: *See—*
Shimasaki, Yuichi; Maruyama, Shigeru; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; and Ishioka, Takuji, 5,363,046, Cl. 324-402.000.

Baba, Yasuyuki: *See—*
Tahara, Tomonori; Yamamoto, Tetsuya; Baba, Yasuyuki; Koyanagi, Hideki; and Uchida, Akira, 5,363,203, Cl. 358-403.000.

Babirad, Stefan A.: *See—*
George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., 5,362,566, Cl. 428-403.000.

Babler, Fridolin; Orange, Charles G.; and Jaffe, Edward E., to Ciba-Geigy Corporation. Compositions based on 2,9-dichloroquinacridone pigments. 5,362,780, Cl. 524-88.000.

Bachelder, Donald M., to Sundstrand Corporation. Turbojet fuel control system. 5,361,579, Cl. 60-39.281.

Bachta, Robert P.: *See—*
Petri, Randy J.; Meek, John; Bachta, Robert P.; and Marianowski, Leonard G., 5,362,578, Cl. 429-35.000.

Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, to Orion-yhtyma Oy. Pharmacologically active catechol derivatives. 5,362,733, Cl. 514-270.000.

Badertscher, Roger: *See—*
Victor, Kenneth E.; and Badertscher, Roger, 5,363,482, Cl. 395-157.000.

Badie, Mehrdad: *See—*
Ford, Robert B.; and Badie, Mehrdad, 5,363,030, Cl. 320-13.000.

Badyal, Rajeev: *See—*
Barbehenn, George; Hulings, James R.; Badyal, Rajeev; Allen, Ross R.; and Saunders, Michael B., 5,363,134, Cl. 347-49.000.

Bagel Trap, Inc.: *See—*
Kensrue, Milo M., 5,361,666, Cl. 83-870.000.

Baghel, Sunita S.: *See—*
Haitko, Deborah A.; Baghel, Sunita S.; and Mackenzie, Patricia D., 5,362,402, Cl. 210-757.000.

Bahn, Mark M.: *See—*
Kao, Yi-Hsuan; Sorenson, James A.; and Bahn, Mark M., 5,361,763, Cl. 128-653.200.

Bahnken, Beverly A.: *See—*
Wilson, William P.; and Bahnken, Beverly A., 5,361,895, Cl. 206-44.00R.

Bailey, James A.; and Patel, Yogesh B., to International Business Machines Corporation. Digital peak-threshold tracking method and apparatus. 5,363,100, Cl. 341-132.000.

Bailiff, Clealen D. Comfort zone heating apparatus for glasses or the like. 5,363,153, Cl. 351-78.000.

Baillie, Robert A.; and Baillie, Suzanne M. Litter containment apparatus for kittens and cats. 5,361,725, Cl. 119-165.000.

Baillie, Suzanne M.: *See—*
Baillie, Robert A.; and Baillie, Suzanne M., 5,361,725, Cl. 119-165.000.

Baitz, Gunter; and Burchart, Joachim, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Device for receiving and locking integrated cards in a support. 5,363,281, Cl. 361-801.000.

Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Loffredo, John M.; Sanderson, Kenneth R.; and Suarez, Gustavo A., to International Business Machines Corporation. System for removing section of memory from first system and allocating to second system in a manner indiscernable to both operating systems. 5,363,497, Cl. 395-425.000.

Baker Hughes Incorporated: *See—*
Tibbitts, Gordon A., 5,361,859, Cl. 175-286.000.

Baker, Paul W.: *See—*
Knight, John W., IV; Baker, Paul W.; and Harding, Dennis, 5,361,923, Cl. 280-6.000.

Baker, Richard W.; Santus, Giancarlo; and Vintilla-Friedman, Susan, to Pharmetrix Corporation. Method and therapeutic system for smoking cessation. 5,362,496, Cl. 424-435.000.

Baker, Stephen J.; Cowdrey, Dennis A.; Olive, Graham J.; and Wood, Karl J., to Rediffusion Simulation Limited. Image generator for generating perspective views from data defining a model having opaque and translucent features. 5,363,475, Cl. 395-122.000.

Bakker, Willem: *See—*
Houser, Nathan E.; Bakker, Willem; and Dreibelbis, Richard L., 5,362,432, Cl. 264-205.000.

Bakx, Johannes L., to U.S. Philips Corporation. Information recording device having variable data transfer rates and verification of recording quality. 5,363,361, Cl. 369-54.000.

Baldewein, Andreas: *See—*
Kutsche, Wolfgang; Kremers, Wolfgang; Baldewein, Andreas; Hentschel, Gerd; and Voiss, Gerd, 5,362,933, Cl. 200-401.000.

Baldi, Valter, to Reynolds Wheels S.p.A. Method of manufacturing wheels for motor vehicles. 5,361,493, Cl. 29-894.324.

Baldwin, John: *See—*
Yamamura, Akira; and Baldwin, John, 5,362,983, Cl. 257-414.000.

Baldwin, Marc A.: *See—*
Cowger, Bruce; Altendorf, John M.; Halko, David J.; and Baldwin, Marc A., 5,363,130, Cl. 347-92.000.

Bales, Stephen E.: *See—*
McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., 5,362,838, Cl. 528-198.000.

Bally Wulff Automaten GmbH: *See—*
Kubatsch, Gunter, 5,362,052, Cl. 273-145.00R.

Ban, Masuo, to Shimano Inc. Spinning reel having an improved pinion gear support structure. 5,362,012, Cl. 242-321.000.

Bando Chemical Industries, Ltd.: *See—*
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Bando, Masahiro; Misaki, Katsuhiro; and Kaneko, Toshimi, to Murata Manufacturing Co., Ltd. Line transformer and manufacturing process thereof. 5,363,081, Cl. 336-200.000.

Bando, Yoshichika: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Banez, Mark: *See—*
Voiculescu, Danut; Banez, Mark; and Carlo, Louis D., 5,361,612, Cl. 70-241.000.

Banyu Pharmaceutical Co., Ltd.: *See—*
Ishikawa, Kiyofumi; Hayama, Takashi; Nishikibe, Masaru; and Yano, Mitsuo, 5,362,736, Cl. 514-291.000.

Baran, Joseph S.: *See—*
Reynolds, Francis D.; Baran, Joseph S.; Bisey, Robert P.; Button, Terry; McGill, Robert E.; Nalven, Nathan I.; and Salvitti, Matthew A., 5,361,764, Cl. 128-653.500.

Baran, Margaret O.: *See—*
Baran, Walter, Jr., 5,361,991, Cl. 239-165.000.

Baran, Walter, Jr., to Baran, Margaret O., Executrix of the Estate of Walter Baran, Jr. Spray unit with anti-drift shield. 5,361,991, Cl. 239-165.000.

Barbehenn, George; Hulings, James R.; Badyal, Rajeev; Allen, Ross R.; and Saunders, Michael B., to Hewlett-Packard Corporation. Integrated circuit printhead for an ink jet printer including an integrated identification circuit. 5,363,134, Cl. 347-49.000.

Barberich, Timothy J.; and Young, James W., to Sepracor, Inc. Method for treating asthma using optically pure (R)-albuterol. 5,362,755, Cl. 514-649.000.

Barberich, Timothy J.: *See—*
Young, James W.; and Barberich, Timothy J., 5,362,757, Cl. 514-652.000.

Barborak, Darren M.; and Bruce, William A., to Edison Welding Institute. Method and apparatus for measuring pipeline corrosion. 5,362,962, Cl. 250-234.000.

Barenberg, Sumner A.; Bradley, C. Bruce; Vargas, Gladys R.; and Conway, Samuel C., Jr., to Packaging Corporation of America. Recyclable cellulosic packaging material. 5,362,776, Cl. 524-35.000.

Barker, Michael R. Purge strap for welding. 5,361,972, Cl. 228-219.000.

Barmag AG: *See—*
Baader, Uwe, 5,362,945, Cl. 219-619.000.

Barnes, Alva D. Apparatus and method for pasteurizing and drying sludge. 5,361,708, Cl. 110-246.000.

Barnish, Ian T.; and James, Keith, to Pfizer Inc. N-(1-(2-carboxyethyl35cloalkylcarbonyl)-beta-alanine derivatives for pharmaceutical use. 5,362,902, Cl. 560-13.000.

Baron, Pascal; and Desarmaux, Pierre, to Salomon S.A. Alpine ski binding. 5,362,086, Cl. 280-605.000.

Barone, Dana. No-sew window treatment mounting assembly. 5,361,821, Cl. 160-39.000.

Barrett, Raymond L., Jr.; Herold, Barry W.; and Pajunen, Grazyna A., to Motorola, Inc. Operational transconductance amplifier with matched outputs. 5,363,061, Cl. 330-288.000.

Barri, Sami A. I.; Bratton, Graham J.; and de Villiers Naylor, Timothy, to British Petroleum Company, p.l.c., The. Process for the production of a membrane. 5,362,522, Cl. 427-435.000.

Barske, Heiko, to Volkswagen AG. Airbag device mounted in a roof frame region of a vehicle. 5,362,097, Cl. 280-730.00R.

Bartos, Agnes M. Step ladder boot kit. 5,361,868, Cl. 182-111.000.

BASF Aktiengesellschaft: *See—*
Brosius, Sibylle; Marczinke, Bernd L.; and Schwager, Harald, 5,362,808, Cl. 525-88.000.
Ebel, Klaus; and Schroeder, Juergen, 5,362,875, Cl. 544-242.000.
Ebenhoech, Johan; Weinand, Dieter; Kochanek, Wolfgang; and Bloemacher, Martin, 5,362,791, Cl. 524-440.000.
Eicken, Karl; Rheinheimer, Joachim; Vogelbacher, Uwe J.; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, 5,362,876, Cl. 544-278.000.

BASF Corporation: *See—*
Schwarz, Hans V.; and Brunner, Erwin, 5,362,399, Cl. 210-689.000.

BASF Maonetics GmbH: *See—*
Thiele, Hartmut, 5,361,903, Cl. 206-403.000.

Bateman, Ivor, to Tramor, Inc. Waste processing machine. 5,362,004, Cl. 241-290.000.

Battiste, David R.: *See—*
Hawley, Gil R.; McDaniel, Max P.; Harris, Jesse R.; and Battiste, David R., 5,362,825, Cl. 526-125.000.

Batts, Inc.: *See—*
Batts, John H., 5,361,948, Cl. 223-96.000.

Batts, John H., to Batts, Inc. Inside waistband garment hanger. 5,361,948, Cl. 223-96.000.

Baudermann, Adolf, to Giddings & Lewis GmbH. Transfer line for machining workpieces especially for machining differential housings. 5,361,485, Cl. 29-563.000.

Bauer, John F.; and Morley, James A., to Abbott Laboratories. Terazosin polymorph and pharmaceutical composition. 5,362,730, Cl. 514-254.000.

Bauer, Richard G.: *See—*
Tung, Deborah A.; Segatta, Thomas J.; Verthe, John J. A.; Sandstrom, Paul H.; Bauer, Richard G.; and Marinko, Mark A., 5,361,818, Cl. 152-525.000.

Bauer, William. Intranasal septal stapling method. 5,361,782, Cl. 128-898.000.

Baum, Kevin L.: *See—*
Love, Robert T.; Labedz, Gerald P.; and Baum, Kevin L., 5,363,412, Cl. 375-94.000.

Bauman, Albert J. Anodizing and duplex protection of aluminum copper alloys. 5,362,569, Cl. 428-472.200.

Baumann, Hans; and Phaff, Rox, to Ciba-Geigy Corporation. Chromogenic lactams. 5,362,872, Cl. 544-89.000.

Baxter International Inc.: *See—*
Williamson, Warren P., IV, 5,362,291, Cl. 494-18.000.

Baxter, John: *See—*
Bishop, Arthur E.; and Baxter, John, 5,362,080, Cl. 280-91.000.

Bayer Aktiengesellschaft: *See—*
Eichenauer, Herbert; Buding, Hartmuth; Eckel, Thomas; and Ott, Karl-Heinz, 5,362,810, Cl. 525-150.000.
Klauke, Erich; Petersen, Uwe; and Grohe, Klaus, 5,362,909, Cl. 562-852.000.
Laue, Christian; Schroder, Georg; and Arlt, Dieter, 5,362,907, Cl. 562-470.000.
Schapel, Dietmar; Ebert, Heinz-Dieter; and Grammes, Hartwig, 5,362,834, Cl. 528-58.000.
Wagner, Paul; Schon, Norbert; and Buysch, Hans-Josef, 5,362,901, Cl. 558-270.000.
Wotting, Gerhard; Leimer, Gerhard; and Frassek, Lutz, 5,362,691, Cl. 501-97.000.

Bayer, Robert F. Elevating system. 5,361,565, Cl. 254-292.000.

Bayerische Motoren Werke AG: *See—*
Lindner, Thomas, 5,361,865, Cl. 180-273.000.

Beattie, John M.; and Sinden, Jimmie D., to TRLI, Inc. Lift forks. 5,362,196, Cl. 414-785.000.

Beaudet, Douglas B.: *See—*
Alesio, Philip; and Beaudet, Douglas B., 5,363,173, Cl. 355-204.000.

Beauducel, Claude: *See—*
Staron, Philippe; Cretin, Jacques; Beauducel, Claude; and Lepage, Thierry, 5,363,094, Cl. 340-854.600.

Beaulieu, James D.: *See—*
McCurry, Patrick M., Jr.; Klein, Robert L., Jr.; Gibson, Michael W.; Beaulieu, James D.; and Varvil, Janet R., 5,362,861, Cl. 536-4.100.

Beck, Erhard; and Otto, Albrecht, to Alfred Teves GmbH. Valve block and method of assembling an element thereto. 5,362,141, Cl. 303-119.200.

Beck, Jeffrey S.; Dessau, Ralph M.; and Higgins, John B., to Mobil Oil Corp. Inorganic molecular sieves encapsulating chelates. 5,362,695, Cl. 502-62.000.

Becker, Kurt J.: *See—*
Keck, Steven D.; and Becker, Kurt J., 5,361,824, Cl. 164-98.000.

Becker, Ronald D.: *See—*
Miller, Phillip; Becker, Ronald D.; and Koenck, Steven E., 5,363,031, Cl. 320-21.000.

Beckman Instruments, Inc.: *See—*
Moore, Patrick O.; and Schiessler, David L., 5,361,922, Cl. 215-364.000.

Beckmann, Harald, to Maschinenfabrik Alfred Schmermund GmbH & Co. Bobbin transport device. 5,362,191, Cl. 414-225.000.

Beckstrom, Kent A. Remote propane distribution pole with height adjustability. 5,361,798, Cl. 137-343.000.

Becton Dickinson and Company: *See—*
Burns, James A., 5,361,921, Cl. 215-320.000.

Bedeschi, Angelo; Cabri, Walter; Candiani, Ilaria; De Bernardinis, Silvia; Marchi, Marcello; and Varasi, Mario, to Farmitalia Carlo Erba S.r.l. Dihydrobenzofuran carboxamides and process for their preparation. 5,362,740, Cl. 514-299.000.

Beecham Group p.l.c.: *See—*
Orlek, Barry S.; and Bromidge, Steven M., 5,362,739, Cl. 514-299.000.

Beesley, Graham E., to Shaye Communications Limited. Illumination of displays with control which switches illuminator in response to changes in the display. 5,363,223, Cl. 359-48.000.

Beeuwkes, Reinier, III, to Therabite Corporation. Jaw opening measurement device. 5,361,506, Cl. 33-512.000.

Begin, Gaetan. Manhole head assembly having a manhole top ring and method of use of the same. 5,362,175, Cl. 404-26.000.

Begley, William J., to Eastman Kodak Company. Method of preparing a magenta development inhibitor releasing coupler. 5,362,880, Cl. 548-251.000.

Behr GmbH & Co.: *See—*
Kreutzer, Josef; and Mauch, Kurt, 5,361,829, Cl. 165-152.000.

Behrens, Wolfgang. Noise protection wall. 5,361,537, Cl. 47-82.000.

Behringwerke Aktiengesellschaft: *See—*
Hock, Johann, 5,362,857, Cl. 530-395.000.

Beidler, Michael J.: *See—*
Beidler, Michael T.; and Beidler, Michael J., 5,362,081, Cl. 280-250.100.

Beidler, Michael T.; and Beidler, Michael J. Wheelchair drive system. 5,362,081, Cl. 280-250.100.

Bekefi, George, to Massachusetts Institute of Technology. Double beam cyclotron maser. 5,363,054, Cl. 330-4.000.

Belanger, Inc.: *See—*
Belanger, Michael J.; and Wentworth, Robert J., 5,361,443, Cl. 15-97.300.

Belanger, Michael J.; and Wentworth, Robert J., to Belanger, Inc. Elastic coupling for a car wash rotary wheel assembly. 5,361,443, Cl. 15-97.300.

Bell Communications Research, Inc.: *See—*
Chuang, Justin C.; and Sollenberger, Nelson R., 5,363,375, Cl. 370-95.300.
Chuang, Justin C.; and Sollenberger, Nelson R., 5,363,376, Cl. 370-95.300.

Bell, Edward: *See—*
Burns, Ivey L.; Muller, Eldon R.; and Bell, Edward, 5,361,534, Cl. 47-79.000.

Bell & Howell GmbH: *See—*
Kusters, Johannes J. M., 5,362,039, Cl. 271-225.000.

Bell, Michael; and Mickelson, Richard, to Bell, Michael. Connector assembly for use on scaffolding to prevent a worker from falling. 5,361,866, Cl. 182-3.000.

Bell South Corporation: *See—*
Schull, Jerome W.; and Howe, Wayne R., 5,363,431, Cl. 379-67.000.

Bellamy, Robert W.; and Horikoshi, Kouki, to Rsearch Development Corporation of Japan; and Rikagaku Kenkyusho. Heparinase-producing microorganism belonging to the genus bacillus. 5,362,645, Cl. 435-252.500.

Belmans, Koen: *See—*
Matheussen, Koen; Hendrickx, Peter; Belmans, Koen; and de Bal, Luc, 5,361,987, Cl. 239-33.000.

Below, Randy: *See—*
Siemon, John; and Below, Randy, 5,362,254, Cl. 439-536.000.

Bemis, Sharon R.: *See—*
Wilson, Kenneth D.; Meixner, Larry A.; Bemis, Sharon R.; Calhoun, Clyde D.; and Ree, Buren R., 5,362,516, Cl. 427-207.100.

Ben-Porat, Avi; Milo, George; Smith, Walter; and Westerman, Theodore, to Avco Corporation. Ducted support housing assembly. 5,362,344, Cl. 156-148.000.

Bender, Albert; Bothe, Lothar; Finke, Manfred; and Werner, Gerhard, to Hoechst Aktiengesellschaft AG. Modified cyclopentadiene resin. 5,362,818, Cl. 525-391.000.

Bender, Carl A.: *See—*
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Sherry, A. Dean; and Kiefer, Garry E., 5,362,476, Cl. 424-9.000.

Bobo, Melvin: *See—*
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Schmitt, Urban; Maurer, Eberhard; Rudinger, Wolfgang; Deeg, Rolf; Geiger, Thomas; and Engel, Wolf D., 5,362,624, Cl. 435-7.500.

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Bone, Cheryl C.: *See—*
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Bontrager, Keith D. Bicycle saddle. 5,362,126, Cl. 297-195.100.

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Nandagiri, Arun; Abbott, Richard A.; Nardone, Renee E.; and Borish, Edward T., 5,362,487, Cl. 424-71.000.

Bormann, Thomas: *See—*
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Bors, Daniel A.: *See—*
Snyder, Barry S.; and Bors, Daniel A., 5,362,816, Cl. 525-329.900.

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Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,362,801, Cl. 525-57.000.
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Bothe, Harald: *See—*
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Boulain, Jean-Claude: *See—*
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Bounds, Ivan E., to Herzog Contracting Corp. Railroad track laying system with multiple railroad tie handling. 5,361,704, Cl. 104-6.000.

Bourdon Forge Company, Inc.: *See—*
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Boussoukaya, Mustapha: *See—*
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Bowhall, Garry; and Williams, Loren E., to Blaw-Knox Construction Equipment Corporation. Paving method and apparatus with fresh mat profiler. 5,362,177, Cl. 404-84.100.

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Boyle, Graeme R.; Bergquist, Susan C.; McReynolds, Ernest G.; and Haug, Matson M., to Tektronix, Inc. Automatic compilation of model equations into a gradient based analog simulator. 5,363,320, Cl. 364-578.000.

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Brashier, Raymond W.; and DeMario, Edmund E., to Westinghouse Electric Corporation. Quick release top nozzle assembly. 5,363,423, Cl. 376-446.000.

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Brasz, Joost J., to Lamson Corporation. Multiple stage centrifugal compressor. 5,362,203, Cl. 415-199.100.

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Braun, Otmar; and Schumacher, Herbert, to Carl Freudenberg, Firma. Supporting disk. 5,362,160, Cl. 384-549.000.

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Flaim, Tony D.; Lamb, James, III; and Brewer, Terry, 5,362,608, Cl. 430-327.000.

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Bridges, Donald Y. Pipe coupling with sealing plate. 5,362,107, Cl. 285-15.000.

Briggs, Geoffrey G.: *See—*
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British Aerospace Public Limited Company: *See—*
Domine, Christophe A., 5,362,347, Cl. 156-214.000.

British Petroleum Company, p.l.c., The: *See—*
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Evetts, Jan E.; and Somekh, Robert E., 5,361,720, Cl. 505-329.000.
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Brock, Phillip J.; Franklin, Jacqlynn A.; Schellenberg, Franklin M.; and Tsay, Jiunn, to International Business Machines Corporation. Phase-shifting transparent lithographic mask for writing contiguous structures from noncontiguous mask areas. 5,362,584, Cl. 430-5.000.

Brodie, Vincent, III; and Visioli, Donna L., to Du Pont de Nemours, E. I., and Company. Aldehyde scavenging compositions and methods relating thereto. 5,362,784, Cl. 524-211.000.

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Bromberg, Howard M., to Flexi/Group, Inc., The. Pull-out booklet. 5,362,103, Cl. 281-29.000.

Bromidge, Steven M.: *See—*
Orlek, Barry S.; and Bromidge, Steven M., 5,362,739, Cl. 514-299.000.

Bronicki, Lucien Y.: *See—*
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Bronner, Gary B.; Dhong, Sang H.; and Hwang, Wei, to International Business Machines Corporation. Method of forming double well substrate plate trench DRAM cell array. 5,362,663, Cl. 437-52.000.

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Maschler, Harald; and Christensen, Siegfried B., IV, 5,362,915, Cl. 568-20.000.
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Emanuele, Michael B.; and Gorby, Richard E., 5,362,083, Cl. 280-404.000.
Hormel, Ronald F., 5,363,405, Cl. 375-7.000.
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Baumann, Hans; and Phaff, Rox, 5,362,872, Cl. 544-89.000.
Dobinson, Bryan; and Thoseby, Michael R., 5,362,849, Cl. 528-418.000.
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Rolfe, William M.; Thoseby, Michael R.; and Dobinson, Bryan, 5,362,835, Cl. 528-87.000.
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Clinch, Marvin R.: *See*—
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Clorox Company, The: *See*—
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CME Telemetrix Inc.: *See*—
Hall, Jeffrey W.; and Cadell, T. E., 5,361,758, Cl. 128-633.000.
CMI International, Inc.: *See*—
Kuhn, John W.; and Prucha, Thomas E., 5,361,823, Cl. 164-9.000.
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Cohen, Amnon M.; Conboy, Frank E.; Lenselink, Willem; and Oostveen, Everardus A., to PFW Aroma Chemicals B.V. Mixtures of acetylpolyalkylindanes and acetylpolyalkyltetralines. 5,362,715, Cl. 562-17.000.
Cohen, Milton L.; and Siegel, Jeff, to Lifetime Hoan Corporation. Rotatable storage receptacle for knives and kitchen tools, utensils and gadgets. 5,361,915, Cl. 211-70.700.
Cohn, Robert W.; and Liang, Minhua, to United States of America, Air Force. Method of producing an optical wave with a predetermined optical function. 5,363,186, Cl. 356-4.000.
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Cole, John M.; and Bessey, Charles M., to Kolene Corporation. Apparatus for descaling metal strip. 5,361,788, Cl. 134-64.00R.
Coles, Richard D.; and Teale, David C., to International Business Machines Corporation. Robotic manipulator with ejector tab. 5,363,258, Cl. 360-92.000.
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Colligan, Francis D.; and Brown, Lloyd S., to United States Surgical Corporation. Method and apparatus for detecting leaks in sealed packages. 5,361,626, Cl. 73-40.700.
Colling, George J., to Honeywell Inc. Actuator employing unidirectional motor for bidirectional rotational positioning. 5,363,025, Cl. 318-468.000.
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Alferness, Merwin H.; and Collins, Eric, 5,363,490, Cl. 395-375.000.
Collins, Kenneth S.: *See*—
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Collins, Reuben T.; and Tiwari, Sandip, to International Business Machines Corporation. Integrated short cavity laser with bragg mirrors. 5,363,397, Cl. 372-92.000.
Collver, Michael M.: *See*—
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Columbia Gas of Ohio, Inc.: *See*—
Farstad, Jerry E.; and Cremean, Stephen P., 5,361,636, Cl. 73-592.000.
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Stolfo, Salvatore J.; Wolfson, Ouri; and Dewan, Hasanat, 5,363,473, Cl. 395-50.000.
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Comco Systems: *See*—
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Boquet, Paul; Boulain, Jean-Claude; Ducancel, Frederic; Gillet, Daniel; and Menez, Andre , 5,362,644, Cl. 435-252.300.
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Compagnie Generale des Matieres Nucleaires: *See*—
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Compera, Christian, to Heidelberger Druckmaschinen AG. Holding device for a plate which is to be displaced. 5,361,699, Cl. 101-477.000.
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Malekmadani, Mohammad G.; Sheikhrezai, Reza M.; and Cassingham, William J., 5,362,301, Cl. 494-16.000.
Comroe, Richard A.: *See*—
Roy, Asim K.; Comroe, Richard A.; and Furtaw, Robert W., 5,363,371, Cl. 370-79.000.
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Lewis, Gordon A. C., 5,361,592, Cl. 62-86.000.
Conboy, Frank E.: *See*—
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Condon, Brian: *See*—
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Conlee, James K.: *See*—
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Conley, Douglas A.: *See*—
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Conner, Michael D.: *See*—
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Connex AG: *See*—
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Muller-Rees, Christoph; Maurer, Robert; Stohrer, Jurgen; Kreuzer, Franz-Heinrich; Jung, Silvia; and Csellich, Franz, 5,362,315, Cl. 106-493.000.
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Barenberg, Sumner A.; Bradley, C. Bruce; Vargas, Gladys R.; and Conway, Samuel C., Jr., 5,362,776, Cl. 524-35.000.
Cook, Charles D., to Procter & Gamble Company, The. Packages for single-use folded towels which provide for unfolding of the towel upon removal from the package. 5,361,936, Cl. 221-63.000.
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Taylor, Robert B.; Penske, Ken A.; and Cook, Clif E., 5,361,844, Cl. 166-301.000.
Cook, Iain, to ICI Australia Operations Proprietary Limited. Fatty alcohol alkoxylate. 5,362,832, Cl. 526-333.000.
Cook, James N.; and Worsley, John L., to Allergan, Inc. Compositions and methods for destroying hydrogen peroxide. 5,362,647, Cl. 435-264.000.
Cooley, Allen M.: *See*—
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Coombes, John J.: *See*—
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Cooper, Charles F.: *See*—
Handwerker, Beth M.; Cooper, Charles F.; and Sekula, Bernard C., 5,362,894, Cl. 554-169.000.
Cooper, Jeremy B.; Lucy, Andrew R.; and Smith, Kevin G., to BP Chemicals Limited. Process for removing palladium from polyketones. 5,362,850, Cl. 528-483.000.
Cooper, Leon: *See*—
Wantz, James C., 5,361,623, Cl. 73-1.00G.
Coppens, Paul J.; Vermeersch, Joan T.; Leenders, Luc H.; Vervloet, Ludovicus H.; Hoes, Eric M.; and Daems, Eddie R., to Agfa-Gevaert, N.V. Method of making lithographic aluminum offset printing plates. 5,362,602, Cl. 430-262.000.
Corah, Susan E.: *See*—
Chu, Mike S. H.; and Corah, Susan E., 5,362,693, Cl. 501-137.000.
Coraje, Inc.: *See*—
Carter, Robert E., 5,362,309, Cl. 604-22.000.
Cornell Research Foundation, Inc.: *See*—
MacDonald, Noel C., 5,363,021, Cl. 315-366.000.
Cornille, Henry J., Jr., to Ford Motor Company. Vehicle body construction and method for inspection of adhesively secured joints therein. 5,362,120, Cl. 296-203.000.
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Newhouse, Mark A.; Vance, Miles E.; and Webb, Thomas W., 5,363,234, Cl. 359-341.000.
Correnti, Giuseppe A. Protective cover for electrical wall sockets. 5,362,924, Cl. 174-67.000.
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Hutchison, Richard M.; and Corrigall, Don J., 5,363,035, Cl. 323-254.000.
Costa, Jean-Louis, to Solvay & Cie (Societe Anonyme). Suspensions of particles containing transition metal compounds in oils. 5,362,416, Cl. 252-309.000.
Costello, Michael G.; and Moore, George G. I., to Minnesota Mining and Manufacturing Company. Direct fluorination process for making perfluorinated organic substances. 5,362,919, Cl. 568-601.000.
Cotton, Oren L., to Dock Tender, Inc. Boat mooring device and method. 5,361,716, Cl. 114-230.000.
Coulon, Michel; and Boucher, Jacques, to Le Carbone Lorraine. Process for the pyrolysis of fluid effluents and corresponding apparatus. 5,362,468, Cl. 423-445.00R.
Courcy, Richard R. Transmission fluid exchange apparatus. 5,361,870, Cl. 184-1.500.
Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., to Goodyear Tire & Rubber Company, The. Asymmetric tire. 5,361,814, Cl. 152-209.00A.
Covert, John A.: *See*—
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.
Covington, Michael J.: *See*—
Ulschmid, Timothy G.; and Covington, Michael J., 5,361,567, Cl. 56-13.500.
Covington, Rick L.; Ravi, Kris M.; Heath, Shawn A.; and Waugh, Bryan, to Halliburton Company. Apparatus and methods for determining the shear stress required for removing drilling fluid deposits. 5,361,631, Cl. 73-151.000.
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Hale, Arthur H.; and Cowan, Kenneth M., 5,361,841, Cl. 166-293.000.
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Coward, Robert E.; and Parker, James D., to Xerox Corporation. Unquantized resolution conversion of bitmap images using error diffusion. 5,363,213, Cl. 358-455.000.
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Cowdrey, Dennis A.: *See*—
Baker, Stephen J.; Cowdrey, Dennis A.; Olive, Graham J.; and Wood, Karl J., 5,363,475, Cl. 395-122.000.
Cowger, Bruce; Altendorf, John M.; Halko, David J.; and Baldwin, Marc A., to Hewlett-Packard Company. Method of valving and orientation sensitive valve including a liquid for controlling flow of gas into a container. 5,363,130, Cl. 347-92.000.
Cox, Don C., to Halliburton Company. Hydraulic release apparatus and method for retrieving a stuck downhole tool and moving a downhole tool longitudinally. 5,361,834, Cl. 166-120.000.
Cox, Ingemar; Leonard, John J.; and Durrant-Whyte, Hugh, to NEC Research Institute, Inc. Navigation system for a mobile robot. 5,363,305, Cl. 364-443.000.
Cox, John W. Picture frame hanging wire applicator tool. 5,361,510, Cl. 33-613.000.
Cozzi, Paolo; Menichincheri, Maria; Capolongo, Laura; and Mongelli, Nicola, to Farmitalia Carlo ERBA S.r.l. Dihydropyridine derivatives useful in antitumor therapy. 5,362,729, Cl. 514-235.500.
CPC International, Inc.: *See*—
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Crandall, Mark A.; Wingfield, William J.; and Ooi, Leng H., to Motorola, Inc. Microstrip assembly. 5,363,067, Cl. 331-107.0SL.
Craven, Robert M.: *See*—
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CRC-Evans Rehabilitation Systems, Inc.: *See*—
Chapman, Gordon R.; Reid, Charles M.; Seale, James B.; and Andruik, Donald R., 5,361,791, Cl. 134-122.00R.
Credelle, Thomas L.: *See*—
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Cremean, Stephen P.: *See*—
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Cretin, Jacques: *See*—
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Crockett, Robert J., to NCR Corporation. Apparatus for containing and supporting electronic components. 5,363,276, Cl. 361-752.000.
Crolla, Francesco. Apparatus for rapidly cooking alimentary pastas. 5,361,682, Cl. 99-352.000.
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Murnick, Janet G.; and Cronenberg, Richard A., 5,361,772, Cl. 128-730.000.
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Dang, Chi H., to International Business Machines Corporation. Automated data storage library with single input double gripper mechanism. 5,362,192, Cl. 414-280.000.
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Daniels Manufacturing Corporation: *See—*
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Takagi, Syunsuke; Kuroda, Kohzoh; and Ono, Jiro, 5,361,695, Cl. 101-127.000.
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Dasher, James F., to Whirlpool Corporation. Refrigerator shelf ladder fastener. 5,361,599, Cl. 62-298.000.
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Day, Eric, to AIL Corporation. Proportional solenoid actuator and pump system including same. 5,362,209, Cl. 417-293.000.
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DeBoalt, Robert A. Cable insulation removing tool. 5,361,496, Cl. 30-90.600.
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Decker, Gary T.; and Gornowicz, Gerald A., to Dow Corning Corporation. Epoxy resin with aminofunctional monophenyl polysiloxane. 5,362,821, Cl. 525-476.000.
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de Jong, Johannes; and Alasentie, Pentti, to Kone Elevator GmbH. Rope suspension arrangement. 5,361,873, Cl. 187-264.000.
DeJule, Michael C.; and Credelle, Thomas L., to General Electric Company. Optical device with spatial light modulators for switching arbitrarily polarized light. 5,363,228, Cl. 359-117.000.
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Moore, Dennis A.; Adams, Max D.; Cacheris, William P.; White, David H.; Periasamy, Muthunadar P.; Rajagopalan, Raghavan; deLearie, Lynn A.; and Woulfe, Steven R., 5,362,477, Cl. 424-9.000.
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Demuth, Robert; and Faas, Jurg, to Maschinenfabrik Rieter AG. Apparatus for controlling machines for cleaning of fibers. 5,361,458, Cl. 19-65.00A.
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Horvei, Knut V., 5,361,857, Cl. 175-93.000.
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Dennis, Michael L.: *See—*
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de Nora, Vittorio; and Sekhar, Jainagesh A., to Moltech Invent S.A. Anode-cathode arrangement for aluminum production cells. 5,362,366, Cl. 204-67.000.
Denz, Helmut; Neu, Hans; Riehl, Guenther; Blumenstock, Andreas; and Frank, Rainer, to Robert Bosch GmbH. Breather for an internal combustion engine fuel tank. 5,361,743, Cl. 123-519.000.
Dernbach, Donald F.; and Perkins, Donald W., to Training Delivery Services, Inc. Retrofit interface apparatus and method for remote isolation devices. 5,363,442, Cl. 379-412.000.
Derouet, Patrick R. J.; and Paris, Philippe M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma". Turbomachine equipped with means for adjusting the play between the rectifiers and the rotor of a compressor. 5,362,202, Cl. 415-148.000.
Derrien, Michel; and Brisedou, Philippe, to Messier-Bugatti. Device for steering the wheels at the bottom end of an aircraft landing gear leg. 5,362,015, Cl. 244-50.000.
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Derwin, Louis A. Sanitary drum and can opening device. 5,361,502, Cl. 30-431.000.
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; Grinstaff, Mark W.; and Suslick, Kenneth S., to Vivorx Pharmaceuticals, Inc. Magnetic resonance imaging with fluorocarbons encapsulated in a cross-linked polymeric shell. 5,362,478, Cl. 424-9.000.
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Desilets, Robert J., to Scully Signal Company. Method and system for multiplexed data transmission from hazardous environments. 5,363,409, Cl. 375-45.000.
Desmarais, Andrew R. Stoma wafer cutting apparatus. 5,361,664, Cl. 83-628.000.
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., to International Business Machines Corporation. Multiple computer system with combiner/memory interconnection system employing separate direct access link for transferring information packets. 5,363,484, Cl. 395-200.000.
Desouches, Alain M.: *See—*
Church, Mark A.; Desouches, Alain M.; and Krebs, Richard E., 5,361,547, Cl. 451-5.000.
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D'Hinterland, Lucien D.; Le Pape, Alain; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, to Pierre Fabre Medicament. Method for detecting and locating inflammatory or tumor foci in a patient and diagnostic kit therefor. 5,362,474, Cl. 424-1.130.
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Dietz, Timothy M.: *See—*
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Digicomp Research Corporation: *See—*
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Dillon, Joseph A.; and Dillon, Mark E., 5,362,553, Cl. 428-246.000.
Dines, Christopher A.: *See—*
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Dingilian, Edward O.; and Heinsohn, George E., to Vanson L. P. N-halochitosans, their preparation and uses. 5,362,717, Cl. 514-55.000.
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DiNinno, Frank P.; Salzmann, Thomas N.; and Muthard, David A., to Merck & Co., Inc. 2-(heterocyclylheteroaryliumalkyl) phenyl carbapenem antibacterial agents. 5,362,723, Cl. 514-210.000.

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Dobinson, Bryan: *See—*
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Dodson, Jerry D.: *See—*
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Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, 5,362,912, Cl. 564-360.000.

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Bird, Kevin C.; Gilbert, Donald C.; Herrmann, Robert S.; Wolters, Gregory T.; and Morgan, Cleon C., 5,362,145, Cl. 312-408.000.

Dorau, Wolfgang; Wagner, Friedrich; Wienands, Herbert; Rautenbach, Robert; and Mellis, Rainer, to Wehrle-Werk AG. Method and apparatus for biologically purifying sewage which is organically loaded with substances difficult to decompose biologically or not decomposable biologically. 5,362,395, Cl. 210-638.000.

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Eiffler, Juergen; and Lee, Robin J., 5,362,783, Cl. 524-154.000.
Hefner, Robert E., Jr., 5,362,822, Cl. 525-523.000.
McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., 5,362,838, Cl. 528-198.000.
Munjal, Sarat; Wardlow, Thomas M.; and Hall, Andrew F., 5,362,839, Cl. 528-198.000.
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Sherry, A. Dean; and Kiefer, Garry E., 5,362,476, Cl. 424-9.000.
Wagner, Phillip A., 5,362,436, Cl. 264-321.000.

Dow Corning Corporation: *See—*
Decker, Gary T.; and Gornowicz, Gerald A., 5,362,821, Cl. 525-476.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Uragami, Tadashi; Tanaka, Yoshiaki; Ozaki, Masaru; and Nakamura, Tatsuya, 5,362,761, Cl. 521-64.000.

DowElanco: *See—*
Boeck, LaVerne D.; Chio, Hang; Eaton, Tom E.; Godfrey, Otis W., Jr.; Michel, Karl H.; Nakatsukasa, Walter M.; and Yao, Raymond C., 5,362,634, Cl. 435-76.000.

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Sorem, Robert M.; Eslinger, David M.; and Thomeer, Bart V., 5,361,836, Cl. 166-187.000.

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Brown, Francis C., 5,362,020, Cl. 248-166.000.

Doyle, David; and Dunne, Neil. Self latching magnetic latching device. 5,362,116, Cl. 292-144.000.

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Karol, Frederick J.; Sun-Chueh, Kao; and Drage, James S., 5,362,823, Cl. 526-114.000.

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Houser, Nathan E.; Bakker, Willem; and Dreibelbis, Richard L., 5,362,432, Cl. 264-205.000.

Drennan, George A., to Hewlett-Packard Company. Disk drive having an improved transducer suspension assembly. 5,363,262, Cl. 360-106.000.

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Drew, David M.; and Drew, Robert E., 5,361,908, Cl. 206-536.000.

Drexel Oilfield Services, Inc.: *See—*
Van Winkle, D. Wayne, 5,361,832, Cl. 166-84.000.

Droste, Daniel L.; and Roozee, William F., to International Paper Company. Strawberry tray. 5,361,975, Cl. 229-120.340.

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Lombardi, Donald G., 5,361,670, Cl. 84-422.100.

Drumm, Donald E., to Wang Laboratories, Inc. Computer input device using orientation sensor. 5,363,120, Cl. 345-158.000.

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Westphal, Bernd A. K.; and Drummond, Thane M., 5,361,585, Cl. 60-646.000.

DSM N.V.: *See—*
Bulters, Markus J. H.; Van Dijk, Hans K.; and Schellekens, Ronald M. A. M., 5,362,760, Cl. 521-54.000.

Du, Benjamin R. Condiment dispensing device. 5,361,943, Cl. 222-134.000.

Dubuit, Jean-Louis, to Societe D'Exploitation des Machines Dubuit. Interchangeable printhead printing machine. 5,361,694, Cl. 101-115.000.

Ducancel, Frederic: *See—*
Boquet, Paul; Boulain, Jean-Claude; Ducancel, Frederic; Gillet, Daniel; and Menez, Andre , 5,362,644, Cl. 435-252.300.

Duffield, David J., to Thomson Consumer Electronics, Inc. Side by side picture display with reduced cropping. 5,363,143, Cl. 348-564.000.

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Dakin, James T.; Berry, Tommie, Jr.; Duffy, Mark E.; and Russell, Timothy D., 5,363,015, Cl. 313-638.000.

Duffy, Richard: *See—*
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Duke University: *See—*
You, Kwan-sa, 5,362,630, Cl. 435-25.000.

Duke Unversity: *See—*
Spielvogel, Bernard F.; Sood, Anup; Hall, Iris H.; Shaw, Barbara R.; and Tomasz, Jeno , 5,362,732, Cl. 514-256.000.

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Dumas, Edouard: *See—*
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Antonelli, Joseph A.; and Scopazzi, Christopher, 5,362,813, Cl. 525-286.000.
Berge, Charles T.; Darmon, Michael J.; and Antonelli, Joseph A., 5,362,826, Cl. 526-194.000.
Blumenthal, Richard A.; Lau, Hon-Peng P.; and Yang, Esther K., 5,362,627, Cl. 435-7.900.
Brodie, Vincent, III; and Visioli, Donna L., 5,362,784, Cl. 524-211.000.
Christensen, Dave S., 5,362,300, Cl. 494-16.000.
Hayes, Richard A.; and Robinson, George D., 5,362,515, Cl. 427-155.000.
Herold, John H., II; and Kobsa, Henry, 5,362,430, Cl. 264-103.000.
Houser, Nathan E.; Bakker, Willem; and Dreibelbis, Richard L., 5,362,432, Cl. 264-205.000.
Lin, Perry H.-C., 5,362,563, Cl. 428-398.000.
Pepin, John G., 5,363,271, Cl. 361-320.000.
Romanauskas, William A., 5,362,293, Cl. 494-84.000.
Uhlianuk, Peter W.; and Van Ham, Raymond S., 5,362,772, Cl. 523-404.000.

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Stache, Ulrich; Durckheimer, Walter; Alpermann, Hans G.; and Petri, Walter, 5,362,721, Cl. 514-179.000.

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Ngoc, Hung D.; and Duval, Guy P. R., 5,362,787, Cl. 524-297.000.

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Kuhns, Abe B., 5,361,724, Cl. 119-60.000.

Earl, Gary L.; and Goodwin, William A., to Anderson & Middleton Company. Box construction. 5,361,974, Cl. 229-23.00R.

Earle, Anthony: *See—*
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Eastman Chemical Company: *See—*
Stavinoha, Jerome L., Jr.; Monnier, John R.; Hitch, David M.; Nolen, Timothy R.; and Oltean, George L., 5,362,890, Cl. 549-536.000.

Eastman Kodak Company: *See—*
Alesio, Philip; and Beaudet, Douglas B., 5,363,173, Cl. 355-204.000.
Begley, William J., 5,362,880, Cl. 548-251.000.
Chen, Jiann H.; Chen, Tsang J.; and DeMejo, Lawrence P., 5,362,833, Cl. 528-25.000.
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Fairchild, Michael G., 5,363,360, Cl. 369-48.000.
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Fox, Myron E.; and Gates, Richard A., 5,363,160, Cl. 354-94.000.
Gage, Edward C., 5,363,363, Cl. 369-116.000.
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Hung, Liang-Sun; Mir, Jose M.; and Agostinelli, John A., 5,363,462, Cl. 385-122.000.
McCauley, David K., 5,363,318, Cl. 364-571.010.
Stoneham, Jeffrey R., 5,363,158, Cl. 354-76.000.
Strasser, Thomas A.; and Gupta, Mool C., 5,363,226, Cl. 359-566.000.
Sztanko, Nicholas; Smith, Stephen P.; and Jones, William B., 5,363,136, Cl. 348-207.000.
Tianello, Dennis F.; and Romansky, John A., 5,363,156, Cl. 353-26.00R.

Eaton Corporation: *See—*
Bojas, Edward J., 5,361,880, Cl. 192-3.250.
Klecker, Donald L.; and Vincent, Bruce, 5,361,650, Cl. 74-606.00R.

Eaton, Jay S. Method for gathering cut tobacco stalks. 5,362,190, Cl. 414-26.000.

Eaton, Tom E.: *See—*
Boeck, LaVerne D.; Chio, Hang; Eaton, Tom E.; Godfrey, Otis W., Jr.; Michel, Karl H.; Nakatsukasa, Walter M.; and Yao, Raymond C., 5,362,634, Cl. 435-76.000.

Eaton-Williams Group Limited: *See—*
Jones, Howard C., 5,363,471, Cl. 392-325.000.

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Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,361,942, Cl. 222-105.000.

Ebbott, Deborah: *See—*
Loser, Robert P.; and Ebbott, Deborah, 5,361,815, Cl. 152-209.00R.

Ebel, Klaus; and Schroeder, Juergen, to BASF Aktiengesellschaft. Preparation of pyrimidines. 5,362,875, Cl. 544-242.000.

Ebenhoech, Johan; Weinand, Dieter; Kochanek, Wolfgang; and Bloemacher, Martin, to BASF Aktiengesellschaft. Thermoplastic compositions for producing metallic moldings. 5,362,791, Cl. 524-440.000.

Eberhard Hoesch & Sohne GmbH Verfahrens-und Anlagentechnik: *See—*
Bonn, Heinz, 5,362,388, Cl. 210-230.000.

Ebert, Heinz-Dieter: *See—*
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Ebihara, Ben T.: *See—*
Eldridge, Jeffrey I.; and Ebihara, Ben T., 5,361,641, Cl. 73-842.000.

Ebner, Cynthia L.; and Mirle, Srinivas K., to W. R. Grace & Co.-Conn. Toughened photocurable polymer composition for processible flexographic printing plates. 5,362,806, Cl. 525-74.000.

Eckberg, Eric A.; Kruger, Bruce P.; Lagergren, Richard E.; Schultz, Brian E.; and Warner, Amy L., to International Business Machines Corporation. Disk drive actuator latch. 5,363,261, Cl. 360-105.000.

Eckel, Thomas: *See—*
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Eckenrode, Thomas; Stauffer, David R.; and Stempski, Rebecca, to International Business Machines Corporation. FDDI network test adaptor error injection circuit. 5,363,379, Cl. 371-3.000.

Ecowater Systems, Inc.: *See—*
Johannsen, James; Larson, Ralph A.; and Zimmerman, Jeffrey A., 5,363,087, Cl. 340-612.000.
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Edison Welding Institute: *See—*
Barborak, Darren M.; and Bruce, William A., 5,362,962, Cl. 250-234.000.

Edwards, Brooks; and Juo, Rouh-Rong, to Tropix, Inc. Synthesis of mercaptaryl or hydroxyaryl enol ether alkali metal salts. 5,362,916, Cl. 568-61.000.

Edwards, James L.; Hahm, Paul T.; Bogdanowicz, Mitchell J.; and LaBarca, Joseph E., to Eastman Kodak Company. Chromogenic black-and-white photographic imaging systems. 5,362,616, Cl. 430-356.000.

Edwards, Jerry A. Cable carrier for vehicle hitch. 5,362,084, Cl. 280-457.000.

Egashira, Noritaka; Asahi, Koichi; Akada, Masanori; Nakamura, Yoshinori; Imoto, Kazunobu; and Nishitani, Nobuhisa, to Dai Nippon Insatsu Kabushiki Kaisha. Image-receiving sheet. 5,362,701, Cl. 503-227.000.

Egawa, Yoshiaki: *See—*
Shibata, Hisashi; Sasaki, Norihiro; and Egawa, Yoshiaki, 5,363,005, Cl. 310-244.000.

Egle, Lawrence E.: *See—*
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Egoshi, Yoshiaki: *See—*
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Egraz, Jean-Bernard; Grondin, Henri; and Suau, Jean-Marc, to Coatex S.A. Acrylic copolymer which is water-soluble or moderately water-soluble and may be crosslinked; and its use. 5,362,415, Cl. 252-174.240.

Eguchi, Toshiya: *See—*
Sekimoto, Takashi; Nakano, Kunio; and Eguchi, Toshiya, 5,363,215, Cl. 358-465.000.

Eguchi, Yosuke: *See—*
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Ehrhart, Wendell A.; and Kent, Raymond C., to Armstrong World Industries, Inc. Composite tile with modified adhesive layer. 5,362,560, Cl. 428-343.000.

Eichenauer, Herbert; Buding, Hartmuth; Eckel, Thomas; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Thermoplastic molding compositions of aromatic polyether sulfone and hydrogenated nitrile rubber. 5,362,810, Cl. 525-150.000.

Eicken, Karl; Rheinheimer, Joachim; Vogelbacher, Uwe J.; Westphalen, Karl-Otto; Gerber, Matthias; and Walter, Helmut, to BASF Aktiengesellschaft. Salicylaldehyde and salicylic acid derivatives and sulfur analogs thereof, their preparation and intermediates therefor. 5,362,876, Cl. 544-278.000.

Eiffler, Juergen; and Lee, Robin J., to Dow Chemical Company, The. Stabilizer composition. 5,362,783, Cl. 524-154.000.

Eigyo, Masami: *See—*
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EJOT Eberhard Jaeger GmbH & Co. KG: *See—*
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Ekstrom, Patricia A.: *See—*
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Eldridge, Jeffrey I.; and Ebihara, Ben T., to United States of America, National Aeronautics and Space Administration. Apparatus for performing high-temperature fiber push-out testing. 5,361,641, Cl. 73-842.000.

Electric Power Development Co., Ltd.: *See—*
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Electro-Matic Staplers, Inc.: *See—*
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Electrolux Research & Innovation Aktiebolag: *See—*
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Electronics, Incorporated: *See—*
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ElectroScan Corporation: *See—*
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Electrovert Ltd.: *See—*
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Elephant Edelmetaal B.V.: *See—*
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Elf Atochem, S.A.: *See—*
Legros, Robert; Wiegert, Bernard; and Zeh, Jean-Luc, 5,362,771, Cl. 523-375.000.
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Eli Lilly and Company: *See—*
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Elkem Metals Company: *See—*
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Ellcon National, Inc.: *See—*
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Ellul, Joseph P.: *See—*
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Elmi, Hadi, to Modern Welding Company, Inc. Circular gravity clarifier and method. 5,362,407, Cl. 210-801.000.

Elton, Robert D.: *See—*
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Elvy, Steven: *See—*
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Emanuele, Michael B.; and Gorby, Richard E., to Chrysler Corporation. Apparatus for moving heavy equipment. 5,362,083, Cl. 280-404.000.

Emmons, David J.: *See—*
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Emoto, Genichi: *See—*
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Emoto, Yoshiaki: *See—*
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Empero, Christopher A.: *See—*
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Endo, Masahisa: *See—*
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Endoh, Kiyomasa: *See—*
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Endress u. Hauser GmbH u. Co.: *See—*
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Engelhardt, Heinz; Krumbholz, Rudolf; and Lembke, Peter, to K.D. Pharma GmbH. Method of recovering unsaturated fatty acids. 5,362,895, Cl. 554-175.000.

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Enning, Norbert; Rinke, Klaus P.; Schmale, Walter; and Timm, Heinrich, to Audi A.G. Suspension seating for a vehicle bodywork. 5,362,121, Cl. 296-204.000.

Ensor, Karen J.: *See—*
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Eschbach, Reiner; and Fuss, William A., to Xerox Corporation. Image-dependent sharpness enhancement. 5,363,209, Cl. 358-445.000.

Eshleman, Roger D. Material transport pusher mechanism in a material processing apparatus. 5,361,709, Cl. 110-255.000.

Eskelinen, Kari U.: *See—*
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Eslinger, David M.: *See—*
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Esparza, Joe O.: *See—*
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Esselte Pendaflex Corporation: *See—*
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Ethicon, Inc.: *See—*
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Etievant, Claude; and Roche, Michel, to Commissariat a l'Energie Atomique. Electrostatic accelerator and free electron beam laser using the accelerator. 5,363,053, Cl. 315-506.000.

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European Economic Community (EEC): *See—*
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Fujie, Junji; and Shibakawa, Hisamitsu, to Railway Technical Research Institute. Multiple feeder system of feeder sections for feeding ground coils of superconductive magnetically levitated railway. 5,361,707, Cl. 104-281.000.
Fujie, Kouichi: *See*—
Nogura, Kouichi; Fujie, Kouichi; Suga, Chouji; Inomata, Naokiyo; and Ootani, Mitsuo, 5,362,807, Cl. 525-82.000.
Fujihira, Yasutaka: *See*—
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.
Fujii, Satoru: *See*—
Shimada, Mikinari; Watanabe, Hirotoshi; Fujii, Satoru; Hagino, Masato; and Tsukamoto, Masahide, 5,362,513, Cl. 427-58.000.
Fujii, Toshiko: *See*—
Miyahara, Yuji; Fujii, Toshiko; Buhrer, Thomas; and Watanabe, Yoshio, 5,362,445, Cl. 422-82.090.
Fujiie, Kazuhiko: *See*—
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.
Fujikasui Engineering Co. Ltd.: *See*—
Iida, Toshikazu, 5,362,465, Cl. 423-304.000.
Fujikawa, Takatsugu: *See*—
Hasui, Takeshi; and Fujikawa, Takatsugu, 5,362,326, Cl. 118-44.000.
Fujikoshi Kikai Kogyo Kabushiki Kaisha: *See*—
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Fujino, Shigeo: *See*—
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.
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Itatani, Ryohei; Ryoko, Masatoshi; and Fujino, Tatsushi, 5,363,019, Cl. 315-169.100.
Fujisawa, Akiko, to Kabushiki Kaisha Toshiba. Radio telephone device capable of identifying an interrupting caller and telephone system using the same. 5,363,429, Cl. 379-58.000.
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Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.
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Fujita, Mamoru, to NEC Corporation. Semiconductor memory device. 5,363,339, Cl. 365-230.060.
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries, Ltd. Process for preparing high Tc superconducting material. 5,362,710, Cl. 505-475.000.
Fujita, Shinji; and Takahashi, Satoji, to Ajinomoto Co., Inc. Method for preparing α-L-aspartyl-L-phenylalanine. 5,362,903, Cl. 560-41.000.
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Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.
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Horikoshi, Eiji; Tani, Motoaki; Watanabe, Isao; Natori, Katsuhide; and Sato, Takehiko, 5,362,359, Cl. 156-645.000.
Isono, Osamu, 5,363,433, Cl. 379-92.000.
Kasai, Junichi; Sono, Michio; and Honda, Tosiyuki, 5,361,970, Cl. 228-180.500.
Love, David G., 5,363,038, Cl. 324-158.100.
Okazaki, Nirou, 5,362,674, Cl. 437-129.000.
Sato, Noriaki; and Mieno, Fumitake, 5,362,981, Cl. 257-371.000.
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Fujiwara, Akio: *See*—
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Fujiwara, Kazuhiro: *See*—
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Sam, Huy; and Fujiwara, Yoshio, 5,362,702, Cl. 503-227.000.
Fukahori, Hidehiko: *See*—
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Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Scroll type compressor with counterweight. 5,362,218, Cl. 418-55.500.
Fukaya, Takeshi: *See*—
Suda, Koichi; Fukaya, Takeshi; and Horiuchi, Tadao, 5,363,033, Cl. 324-207.150.
Fuks, Zvi; and Vlodavsky, Israel, to Hadassah Medical Organization Kiryat Hadassah. Heparanase derived from human Sk-Hep-1 cell line. 5,362,641, Cl. 435-209.000.
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Fukuda, Hideo; and Shimoda, Hideyoshi, to Nippon Zeon Co., Ltd. Rubber composition. 5,362,533, Cl. 428-36.800.
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Imai, Akira; Hasegawa, Norio; Fukuda, Hiroshi; and Tanaka, Toshihiko, 5,362,591, Cl. 430-5.000.
Fukuda, Isao: *See*—
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Fukuda, Makoto; Yonemura, Naomi; and Watanabe, Chiharu, to Denki Kagaku Kogyo Kabushiki Kaisha. Circuit substrate for mounting a semiconductor element. 5,362,926, Cl. 174-256.000.
Fukuda, Tsuyoshi: *See*—
Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, 5,363,162, Cl. 354-149.100.
Fukui, Isao; and Miyama, Takao, to Shimadzu Corporation. Spectroscopic analysis method and analyzing system. 5,363,189, Cl. 356-306.000.
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Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, 5,362,033, Cl. 266-275.000.
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Iizuka, Yoshio; and Yamaguchi, Takeshi, to Sankyo Company, Limited. Tetracyclic compounds having anti-allergic and anti-asthmatic activities and their use. 5,362,725, Cl. 514-214.000.
Fukuoka, Katsuhito, to Kabushiki Kaisha Toshiba. Information processor with delayed interrupt device. 5,363,506, Cl. 395-725.000.
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Yamamoto, Kunitoshi; and Fukushima, Hiroshi, 5,363,294, Cl. 362-330.000.
Fukushima, Shigenobu, to Minolta Camera Kabushiki Kaisha. Facsimile apparatus capable of re-transmitting the same image data. 5,363,206, Cl. 358-440.000.
Fukushima, Shinichi: *See*—
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Fukuyama Gomu Kogyo Kabushiki Gaisha: *See*—
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Fulford, Henry J., Jr.: *See*—
Gardner, Mark I.; Fulford, Henry J., Jr.; and Seaton, Jay J., 5,362,685, Cl. 437-238.000.
Fulford, Mark. Wooden door assembly and door jamb assembly having an insulative foam core. 5,361,552, Cl. 52-455.000.
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Fullerton, Larry W., to Phillips, Charles A., a part interest. Time domain radio transmission system. 5,363,108, Cl. 342-27.000.
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Kuragano, Tetsuzo; and Fumie, Saga, 5,363,477, Cl. 395-126.000.
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Funai Electric Co., Ltd.: *See*—
Yoshida, Noboru, 5,363,142, Cl. 348-554.000.
Funayama, Chihito: *See*—
Mizukami, Tomohito; and Funayama, Chihito, 5,363,012, Cl. 313-468.000.
Fung, Anthony S.; Lawton, Stephen L.; and Roth, Wieslaw J., to Mobil Oil Corp. Synthetic layered MCM-56, its synthesis and use. 5,362,697, Cl. 502-71.000.
Furokawa Electric Co., Ltd., The: *See*—
Kasukawa, Akihiko; and Kikuta, Toshio, 5,363,392, Cl. 372-45.000.
Furtaw, Robert W.: *See*—
Roy, Asim K.; Comroe, Richard A.; and Furtaw, Robert W., 5,363,371, Cl. 370-79.000.

Furtek, Allan B.; and Shinomoto, Ronald S., to Mobil Oil Corporation. Olefin polymerization catalysts. 5,362,824, Cl. 526-114.000.

Furuhata, Takashi: *See*—
Kamo, Masayoshi; Maruta, Yuzo; Sando, Hiroaki; and Furuhata, Takashi, 5,363,251, Cl. 360-55.000.

Furukawa Electric Co., Ltd., The: *See*—
Irikawa, Michinori; and Iga, Kenichi, 5,362,974, Cl. 257-15.000.

Furukawa, Yoshio; and Okada, Kazuhisa, to Hoshizaki Denki Kabushiki Kaisha. Coupling structure for stack-on type automatic ice making machine. 5,361,602, Cl. 62-344.000.

Furuno Electric Company, Limited: *See*—
Yoshida, Noriyuki, 5,363,307, Cl. 364-452.000.

Furuno, Kenichi, to Mitsubishi Denki Kabushiki Kaisha. Control device for power amplifier. 5,363,057, Cl. 330-129.000.

Furuno, Takashi; Wakasa, Toshiya; Iizuka, Jun; Hagiwara, Kanehiro; and Mitake, Mitsuyoshi, to Pioneer Electronic Corporation. Projection television set. 5,363,149, Cl. 348-789.000.

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Fuse, Tsuneaki: *See*—
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Fusegawa, Izumi: *See*—
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Futami, Toshihiko; and Shida, Yoshiharu, to Kabushiki Kaisha Toshiba. Rotator element for electric motor. 5,363,004, Cl. 310-156.000.

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Shiobara, Toshio; Futatsumori, Koji; Arai, Kazuhiro; Shimizu, Hisashi; and Ino, Shigeki, 5,362,887, Cl. 549-214.000.

Futatsuya, Tomoshi: *See*—
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Futigami, Nobutaka: *See*—
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Fuyama, Seiji, to Matsushita Electric Industrial Co., Ltd. Electronic cash register having macro-keys. 5,363,296, Cl. 364-405.000.

G. Leblanc Corporation: *See*—
Andersen, James H.; Hilliard, Gregory C.; Ramirez, Lawrence V., II; and Suter, Michael W., 5,361,668, Cl. 84-392.000.

Gage, Edward C., to Eastman Kodak Company. Apparatus and method for laser noise cancellation in an optical storage system using a front facet monitor signal. 5,363,363, Cl. 369-116.000.

Gagliardi, Carmine R.: *See*—
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Gagne, Patricia C.; and Puterko, Carol M., to TMS Inc. Non-minutiae automatic fingerprint identification system and methods. 5,363,453, Cl. 382-5.000.

Gaines, James M.; Drenten, Ronald R.; Haberern, Kevin W.; Marshall, Thomas M.; Mensz, Piotr M.; and Petruzzello, John, to North American Philips Corporation. Blue-green injection laser structure utilizing II-VI compounds. 5,363,395, Cl. 372-45.000.

Gal, Eli: *See*—
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Galante, Richard L.: *See*—
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Galanter, Stephen M.; and Millis, Barry G. Vision training method and apparatus. 5,363,154, Cl. 351-203.000.

Galchefski, John M., to CMS Gilbreth Packaging Systems. Self-tensioning chain drive. 5,362,279, Cl. 474-112.000.

Galleguillos, Ramiro: *See*—
Nandagiri, Arun; Hutter, Jacqueline; and Galleguillos, Ramiro, 5,362,486, Cl. 424-71.000.

Gallo, Paul E.; and Rakauskas, Paul V., to Dana Corporation. Reinforced core heavy duty gasket. 5,362,074, Cl. 277-233.000.

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Madan, Deepak; Lee, Young; FitzGibbon, Alan; and Gamroth, Roland, 5,362,440, Cl. 420-88.000.

Gandolfo, Rino, to Minnesota Mining and Manufacturing Company. Light-sensitive film feeding magazine for use in a day-light automatic film handling apparatus. 5,362,199, Cl. 414-788.000.

Gantke, Karl-Heinz: *See*—
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Gao Gesellschaft fur Automation und Organisation mbH: *See*—
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Garbo, Martin J.; and Firtha, Bruce T., to Hughes Aircraft Company. Data compression system using response waveform discrimination. 5,363,311, Cl. 364-481.000.

Garbowicz, Glenn D., to North American Philips Corporation. Starting capacitor disconnect scheme for a fluorescent lamp. 5,363,017, Cl. 315-122.000.

Gardiner, Robin A.; Van Buskirk, Peter; and Kirlin, Peter S., to Advanced Technology Materials, Inc. Apparatus and method for delivering reagents in vapor form to a CVD reactor, incorporating a cleaning subsystem. 5,362,328, Cl. 118-726.000.

Gardner, Mark I.; Fulford, Henry J., Jr.; and Seaton, Jay J., to Advanced Micro Devices, Inc. Method for achieving a high quality thin oxide in integrated circuit devices. 5,362,685, Cl. 437-238.000.

Gardner, Thomas H.; Fritz, Raymond F.; and Roberts, Patrick J., to General Motors Corporation. Method of making a torque converter clutch. 5,361,480, Cl. 29-467.000.

Garlick, Robert L.; Lyle, Stephen B.; and Martin, Joseph P., Jr., to Upjohn Company, The. Imidoester cross-linked hemoglobin compositions. 5,362,855, Cl. 530-385.000.

Garmire, Derrick L.: *See*—
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.

Garro, Luciano; and Martin, Mario, to Pirelli Coordinamento Pneumatici S.p.A. Elastomeric composition for tire treads. 5,362,793, Cl. 524-495.000.

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Gebhardt, Wolfgang, to Rieter Ingolstadt Spinnereimaschinenbau AG. Process and device for pneumatic feeding of fibers to the fiber collection surface of an open-end spinning element. 5,361,574, Cl. 57-408.000.

Gehling, Steven C.: *See*—
McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., 5,361,905, Cl. 206-494.000.

Geiger, Bernard M.: *See*—
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Gemmer, Bradley K. Waste aggregate mass density separator. 5,361,909, Cl. 209-12.100.

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GenCorp Inc.: *See*—
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McBain, Douglas S.; Ratermann, Andrew L.; Hargis, I. Glen; Melby, Earl G.; and LaJudice, Kevin P., 5,362,819, Cl. 525-404.000.
McGarry, Frederick J.; and Subramaniam, Ramnath, 5,362,799, Cl. 525-31.000.

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Ciokajlo, John J.; Hauser, Ambroae A.; and Davison, Samuel H., 5,361,580, Cl. 60-226.100.
Cromer, Robert H., 5,361,577, Cl. 60-39.320.
Dakin, James T.; Berry, Tommie, Jr.; Duffy, Mark E.; and Russell, Timothy D., 5,363,015, Cl. 313-638.000.
DeJule, Michael C.; and Credelle, Thomas L., 5,363,228, Cl. 359-117.000.
Dumoulin, Charles L., 5,363,042, Cl. 324-306.000.
Guyder, Margaret K., 5,363,308, Cl. 364-474.290.
Haitko, Deborah A.; Baghel, Sunita S.; and Mackenzie, Patricia D., 5,362,402, Cl. 210-757.000.
Haitko, Deborah A., 5,362,404, Cl. 210-757.000.
Herd, Kenneth G.; Laskaris, Evangelos T.; and Thompson Paul S., 5,363,077, Cl. 335-216.000.
Kissinger, Gaylord M.; and Wynn, Nicholas P., 5,362,900, Cl. 558-265.000.
Kumar, Ajith K.; and Stitt, Thomas D., 5,363,039, Cl. 324-158.100.
Kwasnick, Robert F.; Possin, George E.; Holden, David E.; and Saia, Richard J., 5,362,660, Cl. 437-40.000.
Lee, Ching-Pang; Savage, Joseph W.; and Bobo, Melvin, 5,361,828, Cl. 165-109.100.
Perkins, Dennis G., 5,362,221, Cl. 425-62.000.
Ramesh, Rajaram; and Chennakeshu, Sandeep, 5,363,407, Cl. 375-34.000.
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Takekoshi, Tohru; and Terry, Jane M., 5,362,837, Cl. 528-125.000.
Takekoshi, Tohru; and Terry, Jane M., 5,362,845, Cl. 528-322.000.
Westphal, Bernd A. K.; and Drummond, Thane M., 5,361,585, Cl. 60-646.000.

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General Electric Environmental Services, Incorporated: *See*—
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General Instrument Corporation: *See*—
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General Mills, Inc.: *See*—
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General Motors Corporation: *See*—
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Fuehrer, Reece R.; and Martin, Roy K., 5,362,276, Cl. 464-160.000.
Gardner, Thomas H.; Fritz, Raymond F.; and Roberts, Patrick J., 5,361,480, Cl. 29-467.000.
Jensen, Eric L., 5,362,094, Cl. 280-689.000.
Lambert, David K.; Verbrugge, Mark W.; and Koch, Brian J., 5,361,624, Cl. 73-19.100.
Lin, William C., 5,363,300, Cl. 364-424.010.
Riddiford, Bryan P.; and Littlejohn, Deron C., 5,362,135, Cl. 303-3.000.
Rogers, Lloyd W., Jr.; and Berklich, Mark M., 5,361,540, Cl. 49-449.000.
Rungta, Ravi, 5,362,335, Cl. 148-272.000.
Spath, Mark J.; Peterson, Timothy J.; Samalot, Ivan R.; De Minco, Christopher M.; Kunz, Timothy W.; and Nather, Scott H., 5,361,733, Cl. 123-90.160.
Wahba, Brent J., 5,363,270, Cl. 361-155.000.
Werbelow, Joel M.; Conlee, James K.; and Shepherd, Jeffrey A., 5,362,100, Cl. 280-741.000.
Wildern, William J., IV, 5,362,128, Cl. 297-284.110.

Genevier, Eric S. G.; Steer, Philip J.; Danielian, Peter J.; Randall, Nigel J.; and Smith, Robin W., to Charing Cross & Westminster Medical School. Meconium monitoring system. 5,361,759, Cl. 128-634.000.

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Harpell, Gary A.; Prevorsek, Dusan C.; and Gerlach, Max W., 5,362,527, Cl. 428-33.000.

Gerosa, Gianfranco: *See*—
Alvarez, Jose; Sanchez, Hector; and Gerosa, Gianfranco, 5,362,990, Cl. 327-538.000.

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Robinson, Howard W., 5,361,520, Cl. 37-458.000.

Giallourakis, Nicholas M., to Sponge Fishing Co., Inc. Scrubber washer apparatus. 5,361,445, Cl. 15-118.000.

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Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,361,942, Cl. 222-105.000.

Gibbs, Jerry L. Explosively-separable fastener with umbilical cord cutter. 5,361,676, Cl. 89-1.140.

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Giddings & Lewis GmbH: *See*—
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Di Ruocco, Vittorio; Gila, Liliana; and Garbassi, Fabio, 5,362,884, Cl. 548-547.000.

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Giles, Robert; and Zantow, Timothy, deceased (by Zantow, Scott W., administrator), to Hewlett-Packard Company. Sheet feeder for computer driven printer. 5,362,038, Cl. 271-10.000.

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Loftin, Rachel M., 5,362,167, Cl. 401-198.000.

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Allen, Jace L.; and Gioutsos, Tony, 5,363,302, Cl. 364-424.050.

Giovenzana, Marco, to Startes Jacquard S.r.l. Traveling blower type cleaning device for jacquard harnesses. 5,361,807, Cl. 139-1.00C.

Girguis, Sobhy L. Motor-vehicle constant-velocity joint with grooved running surface. 5,362,275, Cl. 464-111.000.

Givler, Gregory C., to Boeing Company, The. Method of guiding a rivet around a curve. 5,361,484, Cl. 29-525.200.

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Argyropoulos, John N.; Bone, Cheryl C.; and Glancy, Charles W., 5,362,519, Cl. 427-385.500.

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Leopold, Edmund A., 5,361,476, Cl. 29-417.000.

Glass, Kevin W., to SGS-Thomson Microelectronics, Inc. Cam for outputting control signals of action fields in response to matches of inputting digital timer signals with data in comparing fields. 5,363,499, Cl. 395-425.000.

Gleeson, Barry J., to Unisys Corporation. Fault tolerant computer system with provision for handling external events. 5,363,503, Cl. 395-575.000.

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Arkens, Charles T.; and Gleim, Robert D., 5,362,797, Cl. 524-555.000.

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Andreasson, Gunnar; and Glemberg, Ronny, 5,361,553, Cl. 52-480.000.

Glenn, Daniel E., to Luxtron Corporation. Processing endpoint detecting technique and detector structure using multiple radiation sources or discrete detectors. 5,362,969, Cl. 250-561.000.

Glinz, Michael, to Continental Aktiengesellschaft. Pneumatic vehicle tire having wound layer including wide and narrow strips covering belt. 5,361,819, Cl. 152-531.000.

Gloesener, Daniel, to Solvay (Societe Anonyme). Impact-resistant compositions based on vinyl chloride polymers and their use. 5,362,790, Cl. 524-425.000.

Glover, Edward T. S.; and Earle, Anthony, to Eastman Kodak Company. Photographic processing apparatus. 5,363,168, Cl. 354-319.000.

Gneuss, Detlef, to Gneuss Kunststofftechnik GmbH. Filter-changing system for molten plastic. 5,362,223, Cl. 425-185.000.

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Go, Do-Young, to Samsung Electronics Co., Ltd. Detecting method of start signal of ghost cancelling reference signal and circuit thereof. 5,363,145, Cl. 348-614.000.

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Godlove, Ronald: *See*—
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Goetz, Raymond J., to United States of America, Navy. Mechanical shielding for electric primer. 5,361,702, Cl. 102-472.000.
Goetz, Robert L.: *See—*
Semiatin, Sheldon L.; Seetharaman, Vankat; Goetz, Robert L.; and Jain, Vinod K., 5,361,477, Cl. 29-423.000.
Gogue, Brenda C.: *See—*
Heinen, Katherine G.; Gogue, Brenda C.; and Breit, Henry F., 5,362,680, Cl. 437-209.000.
Gohlisch, Hans J., to Paul Troester Maschinenfabrik. Apparatus for pulverizing rubber scrap. 5,362,001, Cl. 241-160.000.
Gold, Nancy. Baby carrier. 5,361,952, Cl. 224-159.000.
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Kim, Hong K., 5,362,661, Cl. 437-40.000.
Gold Star Electron Co., Ltd.: *See—*
Jun, Young K., 5,362,664, Cl. 437-52.000.
Goldberg, Warren M.: *See—*
Cavanaugh, David B.; and Goldberg, Warren M., 5,363,264, Cl. 360-11.100.
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Townsend, Bruce R.; Bird, Derek R.; and Goldsack, Norman C., 5,361,712, Cl. 111-168.000.
Goldstar Co., Ltd.: *See—*
Hwang, Jeong H., 5,363,201, Cl. 358-337.000.
Kim, Chung J., 5,363,216, Cl. 358-482.000.
Park, Hyung M., 5,363,144, Cl. 348-614.000.
Goldstar Electron Co., Ltd.: *See—*
Cha, Gi Bon, 5,363,279, Cl. 361-767.000.
Han, Dae K., 5,363,406, Cl. 375-22.000.
Goodwin, George, to Wingood Holding Company Limited. Power transmission for coupling a prime mover to a vehicle. 5,361,863, Cl. 180-205.000.
Goodwin, William A.: *See—*
Earl, Gary L.; and Goodwin, William A., 5,361,974, Cl. 229-23.00R.
Goodyear Tire & Rubber Company, The: *See—*
Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., 5,361,814, Cl. 152-209.00A.
Hitzky, Leo J., 5,361,816, Cl. 152-209.00R.
Loser, Robert P.; and Ebbott, Deborah, 5,361,815, Cl. 152-209.00R.
Ngoc, Hung D.; and Duval, Guy P. R., 5,362,787, Cl. 524-297.000.
Tung, Deborah A.; Segatta, Thomas J.; Verthe, John J. A.; Sandstrom, Paul H.; Bauer, Richard G.; and Marinko, Mark A., 5,361,818, Cl. 152-525.000.
Gopeland, James C.; Adler, Howard I.; and Crow, Weldon D., to Oxyrase, Inc. Method for removing oxygen from solutions containing acids. 5,362,501, Cl. 426-12.000.
Gorby, Richard E.: *See—*
Emanuele, Michael B.; and Gorby, Richard E., 5,362,083, Cl. 280-404.000.
Gordo, Wladimir P.; and Pitta, Mario de Souza N. Device for de-linting cotton seeds. 5,361,457, Cl. 19-41.000.
Gordon, Kathryn E.; and Wong, Richard J., to QuickLogic Corporation. Programmable interconnect structures and programmable integrated circuits. 5,362,676, Cl. 437-192.000.
Gornowicz, Gerald A.: *See—*
Decker, Gary T.; and Gornowicz, Gerald A., 5,362,821, Cl. 525-476.000.
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., to Technalum Research, Inc. Method for the production of compositionally graded coatings by plasma spraying powders. 5,362,523, Cl. 427-446.000.
Gotco International, Inc.: *See—*
Taylor, Robert B.; Penske, Ken A.; and Cook, Clif E., 5,361,844, Cl. 166-301.000.
Goto, Hideki: *See—*
Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, 5,361,728, Cl. 122-4.00D.
Goto, Hiroshi, to Omron Corporation. Weight sensor device. 5,362,929, Cl. 177-210.0FP.
Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, to Nihon Bayer Agrochem K.K. Herbicidal tetrazolinones. 5,362,704, Cl. 504-134.000.
Gotoh, Makoto: *See—*
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Gottlieb, Steven. Package for cassette tape. 5,361,898, Cl. 206-232.000.
Gough, Paul A., to U.S. Philips Corporation. Semiconductor component with protective element for limiting current through component. 5,362,980, Cl. 257-355.000.
Gouin, Marcel: *See—*
Delvaux, Pierre; Lesmerises, Normand; Poisson, Daniel; and Gouin, Marcel, 5,362,690, Cl. 501-95.000.
Gould Electronics Inc.: *See—*
Rossoll, Mary P.; and Revilock, Alan J., 5,362,579, Cl. 429-162.000.
Graco Inc.: *See—*
Lehrke, Kenneth E.; Lehman, Gerard L.; and Losey, Scott C., 5,362,148, Cl. 366-163.000.
Miller, Stanley M.; and McCormick, Martin P., 5,361,940, Cl. 222-77.000.
Graham, Gary. Beach caddy. 5,362,079, Cl. 280-47.230.
Graham, John M. Diaphragm-type pneumatic brake actuator with closing valve. 5,361,877, Cl. 188-170.000.
Graham, Roger K.: *See—*
Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,362,801, Cl. 525-57.000.
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Grammes, Hartwig: *See—*
Schapel, Dietmar; Ebert, Heinz-Dieter; and Grammes, Hartwig, 5,362,834, Cl. 528-58.000.
Grant, David C.: *See—*
Yang, Wen-Ching; and Grant, David C., 5,361,910, Cl. 209-13.000.
Grant TFW, Inc.: *See—*
Carlin, Frank J.; and Price, John F., 5,361,846, Cl. 166-380.000.
Grappel, Robert D.: *See—*
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Graves, Larry R.; and Mueller, Jay V., to Georgia Pacific Resins, Inc. Urea-formaldehyde resin composition and method of manufacture thereof. 5,362,842, Cl. 528-262.000.
Graziella, Bruno, to Medea Research S.r.l. Oral pharmaceutical compositions containing melatonin. 5,362,745, Cl. 514-415.000.
Green, Dennis E. Air freshener picture frame. 5,361,522, Cl. 40-152.100.
Green, Michael P.: *See—*
Sumser, Daniel P.; and Green, Michael P., 5,361,454, Cl. 16-20.000.
Greenberg, Bernard, to Pure-Etch Co. Neodymium recovery process. 5,362,459, Cl. 423-21.100.
Greene, George H.: *See—*
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Greene, Harold R.; and Foreman, Michael J., to Comco Systems. Tape conveyor system. 5,361,891, Cl. 198-797.000.
Greenmaster Idustrial Corp.: *See—*
Wang, Leao; and Wu, Peter, 5,362,296, Cl. 482-133.000.
Gregory, Wayne B., to Bianchi International. Modular backpack. 5,361,955, Cl. 224-211.000.
Grellman, H. Erwin, to Tektronix, Inc. Rotating clamp assembly. 5,362,043, Cl. 271-277.000.
Grice, Donald G.: *See—*
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.
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Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased (by Pfeiffer, Brigitte, executrix); and Renneke, Franz-Josef, to Schering Aktiengesellschaft. Gadolinium chelates for magnetic resonance imaging. 5,362,475, Cl. 424-9.000.
Griffith, Edward J.; and Ngo, Toan M., to Monsanto Company. Method to increase anaerobic fermentation rates. 5,362,639, Cl. 435-161.000.
Griffith, Michael J.; and Randermann, Ervin, Jr., to Schlumberger Technology Corporation. Full bore sampler including inlet and outlet ports flanking an annular sample chamber and parameter sensor and memory apparatus disposed in said sample chamber. 5,361,839, Cl. 166-264.000.
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Brown, Anthony R.; Griffiths, Allen F.; and Taylor, Robert H., 5,361,888, Cl. 198-347.300.
Grinnen, James R. Christmas tree stand. 5,362,024, Cl. 248-524.000.
Grinstaff, Mark W.: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; Grinstaff, Mark W.; and Suslick, Kenneth S., 5,362,478, Cl. 424-9.000.
Griswold, Les; Hewko, Mark D.; Krieger, John; and Elton, Robert D., to Hoover Universal, Inc. Vehicle seat assembly with structural seat back to accommodate seat belt loads applied to seat back. 5,362,132, Cl. 297-483.000.
Grohe, Klaus: *See—*
Klauke, Erich; Petersen, Uwe; and Grohe, Klaus, 5,362,909, Cl. 562-852.000.
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Groom, Bryan. Article support apparatus. 5,362,231, Cl. 432-258.000.
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Robertson, John S.; and Gross, Stephen E., 5,361,466, Cl. 28-158.000.
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Grossman, Michael R. Golf swing training and exercise apparatus. 5,362,059, Cl. 273-186.200.
Grossmann, Andreas: *See—*
Seseke-Koyro, Ulrich; Grossmann, Andreas; and Rudolph, Werner, 5,362,469, Cl. 423-484.000.

Grubbs, Donald K.; and Valente, Peter E., III, to Aluminum Company of America. Direct synthesis of anion substituted hydrotalcite. 5,362,457, Cl. 423-115.000.
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Schuettler, Achim; Flohe, Leopold; Buehren, Volker; Marzi, Ingo; and Trentz, Otmar, 5,362,492, Cl. 424-94.400.
Gruenwald, Heinrich: *See—*
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Grumman Aerospace Corporation: *See—*
Reynolds, Francis D.; Baran, Joseph S.; Bisey, Robert P.; Button, Terry; McGill, Robert E.; Nalven, Nathan I.; and Salvitti, Mathew A., 5,361,764, Cl. 128-653.500.
Grundfest, Warren S.: *See—*
Shi, Weiqiang; and Grundfest, Warren S., 5,363,388, Cl. 372-20.000.
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Grunling, Hermann W.: *See—*
Flatz, Josef; Grunling, Hermann W.; and Sopka, Jorg, 5,362,514, Cl. 427-74.000.
Grzybowski, Kenneth F.: *See—*
Vicenzi, Stephen P.; and Grzybowski, Kenneth F., 5,362,314, Cl. 106-284.060.
Gsell, Thomas C.; Matkovich, Vlado I.; and Bormann, Thomas, to Pall Corporation. Leucocyte depleting filter device and method of use. 5,362,406, Cl. 210-767.000.
GTE Products Corporation: *See—*
Dutta, Arunava; Morrison, Mark A.; Dullea, Leonard V.; Kingston, Richard A.; and Olsen, Joseph A., 5,362,524, Cl. 427-476.000.
Gueissaz, Michel: *See—*
Hauf, Eric; Rossell, Jaime; and Gueissaz, Michel, 5,361,944, Cl. 222-136.000.
Guerra, Ricardo: *See—*
Salazar, Alfred; and Guerra, Ricardo, 5,362,234, Cl. 433-169.000.
Guerrini, Gian L.; Savadori, Aurelio; Cutolo, Domingo; and Occhiello, Ernesto, to Enichem S.p.A. Process for preparing shaped bodies of thermoplastic polymers reinforced with long fibres. 5,362,431, Cl. 264-131.000.
Guest, Clark C.: *See—*
MacDonald, Bruce G.; Hunter, Robert O., Jr.; Smith, Adlai H.; and Guest, Clark C., 5,362,940, Cl. 219-121.680.
Guill, Frederick C., to United States of America, Navy. Releasable unconstrained inflatable body protector. 5,362,098, Cl. 280-733.000.
Gulick, Gilbert G. Packing house control system. 5,362,949, Cl. 235-385.000.
Gunter, Kirchhoff, to Handelsgesellschaft fur Medizin und Technik mit beschrankter Haftung. Apparatus for detecting properties, differences and changes of human or animal bodies. 5,361,762, Cl. 128-653.100.
Gunther, Stephan: *See—*
Dietrich, Klaus; Gunther, Stephan; Knoth, Norbert; Miehe, Friedrich-Viktor; and Thiel, Wolfgang, 5,362,947, Cl. 235-375.000.
Guo, Theodore C.: *See—*
Guo, Wendy W.; and Guo, Theodore C., 5,363,050, Cl. 324-638.000.
Guo, Wan S.: *See—*
Zhu, Li S.; He, Wei; Huang, Yu C.; and Guo, Wan S., 5,361,437, Cl. 5-639.000.
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Gupta, D. V. Satyanarayana: *See—*
Pakulski, Marek K.; and Gupta, D. V. Satyanarayana, 5,362,408, Cl. 252-8.551.
Gupta, Mool C.: *See—*
Strasser, Thomas A.; and Gupta, Mool C., 5,363,226, Cl. 359-566.000.
Gupta, Om P.; Clinch, Marvin R.; and Ricketson, Robert C., to Digicomp Research Corporation. Product information system for shoppers. 5,361,871, Cl. 186-61.000.
Gurevich, Leon, to Rapid Development Services, Inc. Flip chip microfuse. 5,363,082, Cl. 337-227.000.
Guthrie, William T. Method and apparatus for applying foil indicia on a video cassette. 5,362,348, Cl. 156-233.000.
Gutmark, Ephraim; Schadow, Klaus C.; Parr, Timothy P.; Hanson-Parr, Donna M.; Wilson, Kenneth J.; Smith, Robert A.; and Stalnaker, Richard A., to United States of America, Navy. Method and apparatus for the active control of a compact waste incinerator. 5,361,710, Cl. 110-346.000.
Guven, Ali: *See—*
Grossberndt, Hermann; Kretschmer, Gunter; Klees, Horst; and Guven, Ali, 5,361,478, Cl. 29-432.200.
Guy, Richard; and Rao, Girish, to University of California, The Regents of the. Method for the iontophoretic non-invasive-determination of the in vivo concentration level of an inorganic or organic substance. 5,362,307, Cl. 604-20.000.
Guyder, Margaret K., to General Electric Company. Method for automating the optimization of tool path generation for profile milling. 5,363,308, Cl. 364-474.290.
Haack, Johannes, to Connex AG. Device for positioning components. 5,362,185, Cl. 411-34.000.
Haberern, Kevin W.: *See—*
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Hach Company: *See—*
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Fuks, Zvi; and Vlodavsky, Israel, 5,362,641, Cl. 435-209.000.
Hadewe B.V.: *See—*
van der Werff, Jeichienus A.; and de Haan, Hendrik A., 5,362,037, Cl. 271-10.000.
Hageman, Kent D. Modified golf cup. 5,362,044, Cl. 273-34.00R.
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Hagemeister, Robert C.; Ogle, Steven E.; and Wells, Thomas J., to Leggett & Platt, Incorporated. Stackable bedding foundation. 5,361,434, Cl. 5-247.000.
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Hahn, Alfred, to Siemens Aktiengesellschaft. Patient support apparatus for medical examinations. 5,361,436, Cl. 5-601.000.
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Haines, William H.: *See—*
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Hale, Arthur H.; and Cowan, Kenneth M., to Shell Oil Company. Drilling and cementing with blast furnace slag/polyalcohol fluid. 5,361,841, Cl. 166-293.000.
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Hall, Andrew F.: *See—*
Munjal, Sarat; Wardlow, Thomas M.; and Hall, Andrew F., 5,362,839, Cl. 528-198.000.
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Hall, Herbert L.; Berdan, Clarke, II; Scott, James W.; Williams, Steven H.; and Schelhorn, Jean E., to Owens-Corning Fiberglas Technology Inc. Mineral fiber insulation assembly. 5,362,539, Cl. 428-68.000.
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Hall, Jeffrey W.; and Cadell, T. E., to CME Telemetrix Inc. Method and device for measuring concentration levels of blood constituents non-invasively. 5,361,758, Cl. 128-633.000.
Hall, Nigel; and Standen, Michael C. H., to Zeneca Limited. Preparation of polycyclic dyes. 5,362,888, Cl. 549-299.000.
Hall-Tipping, Justin, to Heartbeat Corporation. Combination exercise device/video game. 5,362,069, Cl. 273-438.000.
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Cox, Don C., 5,361,834, Cl. 166-120.000.
Kilgore, Marion D., 5,361,838, Cl. 166-255.000.
King, Randall K., 5,362,215, Cl. 417-455.000.

Shy, Perry C.; and Dines, Christopher A., 5,361,843, Cl. 166-297.000.
Surjaatmadja, Jim B.; Holden, Steven L.; and Szarka, David D., 5,361,856, Cl. 175-67.000.
Whiteman, Stephen S., 5,362,036, Cl. 269-51.000.

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Akiyama, Yasuo; Maekawa, Zenichiro; Hamada, Hiroyuki; and Yokoyama, Atsushi, 5,361,674, Cl. 87-9.000.

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Hamanaka, Ernest S.: *See*—
Chang, George; Hamanaka, Ernest S.; McCarthy, Peter A.; Truong, Thien; and Walker, Frederick J., 5,362,878, Cl. 546-296.000.

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Hamburg, Douglas R.: *See*—
Kotwicki, Allan J.; and Hamburg, Douglas R., 5,363,091, Cl. 340-439.000.

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Hartman, JudithAnn R.; and Woodbury, Richard P., 5,362,412, Cl. 252-94.000.

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Berger, Jeffrey M.; Foster, Randy C.; Hampton, Timothy J.; Hargus, Jack S.; Marsh, Richard L.; and Masseth, David A., 5,361,810, Cl. 141-59.000.

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Han, Ivan. Motor vehicle rear view mirror wiper device. 5,363,236, Cl. 359-509.000.

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Takeyama, Naoki; Uetani, Yasunori; Nakanishi, Hirotoshi; and Hanawa, Ryotaro, 5,362,598, Cl. 430-191.000.

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Gunter, Kirchhoff, 5,361,762, Cl. 128-653.100.

Handwerker, Beth M.; Cooper, Charles F.; and Sekula, Bernard C., to Arco Chemical Technology, L.P.; and CPC International, Inc. Process for producing an esterified alkoxylated polyol. 5,362,894, Cl. 554-169.000.

Haneda, Satoshi: *See*—
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Hanes, Douglas M.: *See*—
Mautino, Peter S.; and Hanes, Douglas M., 5,361,917, Cl. 213-50.000.

Hanlon, Robert T.: *See*—
Borghard, William S.; Hanlon, Robert T.; and Schramm, Suzanne E., 5,362,378, Cl. 208-138.000.

Hannick, Steven M.: *See*—
Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, 5,362,912, Cl. 564-360.000.

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Hanson, Michael J.; and Rozman, Gregory I., to Sundstrand Corporation. Sensorless start of synchronous machine. 5,363,032, Cl. 322-10.000.

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Laird, Douglas H.; and Hanson, Wendy K., 5,362,460, Cl. 423-157.400.

Hanus, Gary J.; Stahl, Todd J.; and Camacho, Salvador L., to FluiDyne Engineering Corporation. Convertible plasma arc torch and method of use. 5,362,939, Cl. 219-121.590.

Hara, Takehiko, to Nippon Thompson Co., Ltd. Linear motion guide unit with rolling elements. 5,362,156, Cl. 384-45.000.

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Harada, Koji; Hirata, Takashi; Morikawa, Fumihiro; and Takahashi, Shuji, to Nippon Densan Corporation. Motor and circuitry for protecting same. 5,363,003, Cl. 310-67.00R.

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Kawai, Kiyoshi; and Harada, Toru, 5,362,611, Cl. 430-508.000.

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Harbin, Thomas E., to VSI Corporation. Anti-rotation locking device for preventing separation of coupling nuts from fluid lines. 5,362,111, Cl. 285-92.000.

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Martin, Daniel T.; Harden, William H., III; Herbstritt, Dale R.; and Mistry, Dilip K., 5,362,207, Cl. 417-243.000.

Harding, Dennis: *See*—
Knight, John W., IV; Baker, Paul W.; and Harding, Dennis, 5,361,923, Cl. 280-6.000.

Hardison, Steven D.; and Stone, Walter H., to Parker Hannifin Corporation. Fuel filter assembly with reversible element. 5,362,389, Cl. 210-232.000.

Hargis, I. Glen: *See*—
McBain, Douglas S.; Ratermann, Andrew L.; Hargis, I. Glen; Melby, Earl G.; and LaJudice, Kevin P., 5,362,819, Cl. 525-404.000.

Hargus, Jack S.: *See*—
Berger, Jeffrey M.; Foster, Randy C.; Hampton, Timothy J.; Hargus, Jack S.; Marsh, Richard L.; and Masseth, David A., 5,361,810, Cl. 141-59.000.

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Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,932, Cl. 200-341.000.
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Harirchian, Bijan: *See*—
Au, Van; Carson, Robert G.; Harirchian, Bijan; and Schilling, Kurt M., 5,362,480, Cl. 424-54.000.

Harmon, James V., to Rockwell International Corp. HF radio apparatus operable in multiple communication modes. 5,363,402, Cl. 375-1.000.

Harms, Dirk: *See*—
Pothmann, Werner; Steinberg, Bastian; Poock-Haffmans, Peter; and Harms, Dirk, 5,361,753, Cl. 128-207.150.

Harmsen, Johannes G. T.; and De Boer, Willem A., to ASM-FICO Tooling B.V. System of machining devices. 5,361,486, Cl. 29-563.000.

Harnischfeger Corporation: *See*—
Kallenberger, Harvey J., 5,362,029, Cl. 254-269.000.
Pischke, David L., 5,361,916, Cl. 212-153.000.

Harnischfeger Engineers, Inc.: *See*—
Lloyd, Kurt M.; Jones, LaMar A.; White, David M.; and Roth, Christopher L., 5,361,481, Cl. 29-469.000.

Harp, Daniel L., to Hach Company. Ultra-low range chlorine determination. 5,362,650, Cl. 436-125.000.

Harpell, Gary A.; Prevorsek, Dusan C.; and Gerlach, Max W., to AlliedSignal Inc. Flexible composites having rigid isolated panels and articles fabricated from same. 5,362,527, Cl. 428-33.000.

Harris Corporation: *See*—
Linn, Jack H.; Lowry, Robert K.; Rouse, George V.; Butler, James F.; and Speece, William H., 5,362,667, Cl. 437-62.000.
Lucas, Leonard V.; Zahm, Charles L.; Payne, Edward A.; and Andren, Carl F., 5,363,401, Cl. 375-1.000.

Harris, James A.; and Harris, Nancy J. Animal leash. 5,361,726, Cl. 119-797.000.

Harris, Jesse R.: *See*—
Hawley, Gil R.; McDaniel, Max P.; Harris, Jesse R.; and Battiste, David R., 5,362,825, Cl. 526-125.000.

Harris, Nancy J.: *See*—
Harris, James A.; and Harris, Nancy J., 5,361,726, Cl. 119-797.000.

Hartman, JudithAnn R.; and Woodbury, Richard P., to Hampshire Chemical Corp. Biodegradable bleach stabilizers for detergents. 5,362,412, Cl. 252-94.000.

Hartmann, Eduard, to Bucher-Guyer AG, Maschinenfabrik. Draining element for presses. 5,361,691, Cl. 100-107.000.

Hartney, Mark A.; Melngailis, John; and Shaver, David C., to Massachusetts Institute of Technology. Positive resist pattern formation through focused ion beam exposure and surface barrier silylation. 5,362,606, Cl. 430-315.000.

Hartung, Donald E.: *See*—
Sibley, Murray J.; Hartung, Donald E.; and Ruland, Rosalyn, 5,362,488, Cl. 424-78.050.

Hartwig, Jurgen, to Pfaff Haushaltmaschinen GmbH. Sewing machine with electronic control device. 5,361,714, Cl. 112-445.000.

Hartwig, Richard C.: *See*—
Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., 5,362,581, Cl. 429-249.000.
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Harvey, Robert A.: *See*—
Newhouse, Thomas J.; Shepherd, Donald A.; and Harvey, Robert A., 5,362,923, Cl. 174-48.000.

Hase, Takashi: *See*—
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.

Hasebe, Takashi; and Haneda, Satoshi, to Konica Corporation. Image processing apparatus having means for magnifying a portion of a document selected through color marking. 5,363,211, Cl. 358-451.000.

Hasegawa, Hiroyuki: *See*—
Aizawa, Toshiyuki; Nakamura, Hitoshi; Wakabayashi, Kunitoshi; Kudo, Tetsuo; and Hasegawa, Hiroyuki, 5,362,918, Cl. 568-594.000.

Hasegawa, Norio: *See*—
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Hasegawa, Takehiro: *See*—
Sunouchi, Kazumasa; Fuse, Tsuneaki; Nitayama, Akihiro; Hasegawa, Takehiro; Watanabe, Shigeyoshi; Horiguchi, Fumio; and Hieda, Katsuhiko, 5,363,325, Cl. 365-149.000.

Hasegawa, Yasuyuki, to NEC Corporation. Integrated circuit device having macro isolation test function. 5,363,381, Cl. 371-22.100.

Hashiguchi, Osamu; and Shinmyo, Minoru, to Japan Aviation Electronics Industry, Ltd. Connector capable of automatically and reliably inhibiting disengagement of mehanical coupling between connection members. 5,362,248, Cl. 439-352.000.

Hashiguchi, Osamu, to NEC Corporation. Connector. 5,362,256, Cl. 439-660.000.

Hashimoto, Kazuyuki; and Jin, Hiroki, to NTN Corporation. Bearing unit and electric pump using the same. 5,362,158, Cl. 384-447.000.

Hashimoto, Kiyokazu: *See*—
Ishikawa, Kimiyasu; and Hashimoto, Kiyokazu, 5,363,340, Cl. 365-233.500.

Hashimoto, Makoto; Miyazawa, Yoshihiro; and Matsushita, Takeshi, to Sony Corporation. Full CMOS type SRAM and method of manufacturing same. 5,363,324, Cl. 365-156.000.

Hashimoto, Masakazu: *See*—
Sugiura, Atsushi; and Hashimoto, Masakazu, 5,362,101, Cl. 280-743.00A.

Hashimoto, Yuichi; and Koyama, Takashi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member having an intermediate layer comprising a plurality of polyether polyols. 5,362,587, Cl. 430-58.000.

Hashizume, Hiroshi: *See*—
Matsumura, Hiromu; Yano, Toshisada; Hashizume, Hiroshi; Matsushita, Akira; and Eigyo, Masami, 5,362,873, Cl. 544-124.000.

Haste, J. William. Golf club. 5,362,048, Cl. 273-80.200.

Hasti, George A.; and Dykhoff, Gerard D., to Worldwide Chimney, Inc. Chimney lining former and compactor. 5,362,224, Cl. 425-457.000.

Hasui, Keini; Inoue, Yasuhiro; and Fukuda, Isao, to Murata Kikai Kabushiki Kaisha. Steam setting apparatus. 5,361,609, Cl. 68-5.00D.

Hasui, Takeshi; and Fujikawa, Takatsugu, to Kurosawa Construction Co., Ltd. Apparatus for forming corrosion protection coatings on prestressing strand. 5,362,326, Cl. 118-44.000.

Hasuo, Kamon, to Canon Kabushiki Kaisha. Electronic filing method and apparatus. 5,363,504, Cl. 395-600.000.

Hatanaka, Koji; and Aota, Takashi, to Jidosha Kiki Co., Ltd. Glow plug with dual, dissimilar resistive heating elements in ceramic heater. 5,362,944, Cl. 219-270.000.

Hatasa, Takeshi: *See*—
Ono, Hisao; and Hatasa, Takeshi, 5,363,105, Cl. 342-20.000.

Hatcher, George S., to Boeing Company, The. Noise suppression processor for a carrier tracking loop. 5,363,112, Cl. 342-389.000.

Hauf, Eric; Rossell, Jaime; and Gueissaz, Michel, to AKA Innovative Developments S.A.; and Andre Gueissaz & Cie S. A. Device for the conditioning and the distribution of pasty or liquid products. 5,361,944, Cl. 222-136.000.

Haug, Matson M.: *See*—
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Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., to Molecular Probes, Inc. Fluorescent haloalkyl derivatives of reporter molecules well retained in cells. 5,362,628, Cl. 435-18.000.

Haugland, Rosaria P.: *See*—
Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., 5,362,628, Cl. 435-18.000.

Hauser, Ambrose A.: *See*—
Ciokajlo, John J.; Hauser, Ambrose A.; and Davison, Samuel H., 5,361,580, Cl. 60-226.100.

Hauser, Hans U.; Lindemans, Jorg; and Mick, Martin, to Laeis- Bucher GmbH. Vertical press and process for operating the same. 5,362,434, Cl. 264-239.000.

Haverick, Wallace F.; and Sopt, Paul P., to Ellcon National, Inc. Truck mounted brake apparatus. 5,361,876, Cl. 188-52.000.

Hawel, Hans: *See*—
Smolka, Heinz-Gerd; Lehmann, Klaus; Hawel, Hans; Schraml, Dieter; and Hornfeck, Klaus, 5,362,363, Cl. 162-8.000.

Hawkins, Thomas W.: *See*—
Hamilton, Larry J.; Hawkins, Thomas W.; and Shortman, Richard P., 5,362,112, Cl. 285-110.000.

Hawley, Gil R.; McDaniel, Max P.; Harris, Jesse R.; and Battiste, David R., to Phillips Petroleum Company. Catalysts for polymerizing olefins and methods. 5,362,825, Cl. 526-125.000.

Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, to Mitsubishi Petrochemical Company, Ltd. Hair cosmetic compositions comprising sulfide linked polysiloxanes. 5,362,485, Cl. 424-70.000.

Hayama, Takashi: *See*—
Ishikawa, Kiyofumi; Hayama, Takashi; Nishikibe, Masaru; and Yano, Mitsuo, 5,362,736, Cl. 514-291.000.

Hayano, Fuminori: *See*—
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Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, to Kabushiki Kaisha Toshiba. Polysilane monomolecular film and polysilane built-up film. 5,362,559, Cl. 428-333.000.

Hayashi, Junji; and Matsukawa, Hiroyuki, to Fuji Photo Film Co., Ltd. Image signal reproducing apparatus for partially reproducing image to be displayed. 5,363,138, Cl. 348-390.000.

Hayashi, Kohtaro; Mukai, Hiromu; and Kudo, Yoshinobu, to Minolta Camera Kabushiki Kaisha. Finder optical system for pseudo focal length. 5,363,163, Cl. 354-155.000.

Hayashi, Ryosuke: *See*—
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,362,026, Cl. 251-30.020.

Hayashi, Takahisa, to Kabushiki Kaisha Toshiba. Modulation circuit for a digital radio communications apparatus using a phase shifted DQPSK modulation system. 5,363,410, Cl. 375-67.000.

Hayashida, Shigeki: *See*—
Iguchi, Katsuji; Hayashida, Shigeki; Kawamura, Akio; Sato, Shinichi; and Tateyama, Tomohiko, 5,362,670, Cl. 437-70.000.

Hayes, Peter C., to GenCorp Inc. Low-formaldehyde latex binder. 5,362,798, Cl. 524-558.000.

Hayes, Richard A.; and Robinson, George D., to Du Pont de Nemours, E. I., and Company. Poly(vinyl alcohol)copolymer sizes having high capacity to be desized. 5,362,515, Cl. 427-155.000.

Hayes, Richard D.; Schroeder, Robert; Thorstens, Dale A.; and Schumacher, Larry L., to Laclede Chain Manufacturing Company. Chain cutter. 5,361,663, Cl. 83-522.190.

Hazime, Tanaka; Yano, Masamichi; and Ikoma, Tetsuro, to Fuji Koki Manufacturing Co., Ltd. Thermostatic expansion valve. 5,361,597, Cl. 62-205.000.

He, Wei: *See*—
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Healthsearch, Inc.: *See*—
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Heartbeat Corporation: *See*—
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Heat Exchangers, Inc.: *See*—
Albert, David J.; and Spencer, John, 5,361,981, Cl. 236-42.000.

Heath, Shawn A.: *See*—
Covington, Rick L.; Ravi, Kris M.; Heath, Shawn A.; and Waugh, Bryan, 5,361,631, Cl. 73-151.000.

Heavy Duty Marketing Corporation: *See*—
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Heck, Roland H.; and DiGuiseppi, Frank T., to Mobil Oil Corporation. Resid hydrocracking using dispersed metal catalysts. 5,362,382, Cl. 208-210.000.

Hedenhag, Jorgen G., to Applied Regenerative Tech. Co., Inc. Regenerative gas treatment. 5,362,449, Cl. 422-175.000.

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Heeren, Caesar W.: *See*—
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Hefner, Robert E., Jr., to Dow Chemical Company, The. Mesogenic adducts. 5,362,822, Cl. 525-523.000.

Hegg, Ronald G.; and Chern, Mao-Jin, to Hughes Aircraft Company. Focusable virtual image display. 5,363,241, Cl. 359-676.000.

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Stellberger, Rudi, 5,361,697, Cl. 101-415.100.

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Dingilian, Edward O.; and Heinsohn, George E., 5,362,717, Cl. 514-55.000.

Heitzman, Jeff: *See*—
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Nandagiri, Arun; Hutter, Jacqueline; and Galleguillos, Ramiro, 5,362,486, Cl. 424-71.000.
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Sinta, Roger; Hemond, Richard C.; Medeiros, David R.; Rajaratnam, Martha M.; Thackeray, James W.; and Canistro, Dianne, 5,362,600, Cl. 430-192.000.

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McCurry, Patrick M., Jr.; Klein, Robert L., Jr.; Gibson, Michael W.; Beaulieu, James D.; and Varvil, Janet R., 5,362,861, Cl. 536-4.100.
Yoshitake, Noriaki; Mizuno, Kensuke; and Ishii, Hitoshi, 5,362,333, Cl. 148-264.000.

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Breitzke, Willi; Tesmann, Holger; Gantke, Karl-Heinz; and Raths, Hans-Christian, 5,362,479, Cl. 424-49.000.

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Martin, Daniel T.; Harden, William H., III; Herbstritt, Dale R.; and Mistry, Dilip K., 5,362,207, Cl. 417-243.000.

Herburg, Andreas, to Korber AG. Apparatus for feeding webs of wrapping material. 5,361,783, Cl. 131-84.100.

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Frankeny, Jerome A.; Frankeny, Richard F.; Hermann, Karl; and Imken, Ronald L., 5,363,275, Cl. 361-749.000.

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Barrett, Raymond L., Jr.; Herold, Barry W.; and Pajunen, Grazyna A., 5,363,061, Cl. 330-288.000.

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Hewitt, Kent D.: *See*—
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Hewko, Mark D.: *See*—
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Hewlett-Packard Company: *See*—
Cowger, Bruce; Altendorf, John M.; Halko, David J.; and Baldwin, Marc A., 5,363,130, Cl. 347-92.000.
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Fiasconaro, James G., 5,363,478, Cl. 395-141.000.
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Kline, Daniel S.; Nasworthy, Frank; and Wield, Paul J., 5,363,129, Cl. 346-136.000.
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Hidaka, Yuji; and Kimura, Makoto, to Fujitsu Limited. Input/output command issuing control system in data processing system. 5,363,488, Cl. 395-275.000.

Hieda, Katsuhiko: *See*—
Sunouchi, Kazumasa; Fuse, Tsuneaki; Nitayama, Akihiro; Hasegawa, Takehiro; Watanabe, Shigeyoshi; Horiguchi, Fumio; and Hieda, Katsuhiko, 5,363,325, Cl. 365-149.000.

Higashi, Katsumi: *See*—
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Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, to Fujitsu Limited. Manufacturing method for antenna module. 5,361,488, Cl. 29-600.000.

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Process for producing a high purity caprolactam. 5,362,870, Cl. 540-540.000.

Higashitani, Masahiro: *See*—
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Higgins, John B.: *See*—
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Higgins, Jr.; Robert J., to Motorola, Inc. Saw resonator filter with a multistrip coupler disposed in the resonator gaps. 5,363,073, Cl. 333-195.000.

Higgins, Leo M., III; and Karpman, Maurice S., to Motorola, Inc. Method for making tape automated bonding (TAB) semiconductor device. 5,361,490, Cl. 29-827.000.

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Hikasa, Shigeki: *See*—
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Hilti Aktiengesellschaft: *See*—
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Himmelwright, Richard S.: *See*—
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Hinson, Larry W. Stance minder for golfers. 5,362,060, Cl. 273-187.00R.

Hirai, Hideo; Mishima, Kyoichi; and Yamakawa, Susumu, to Mitsuboshi Belting Ltd. Power transmission system. 5,362,280, Cl. 474-135.000.

Hirai, Mutsumi; Ishimoto, Shinji; and Ito, Kenichi, to Nippon Nuclear Fuel Development Co., Ltd. Nuclear fuel pellets and method of manufacturing the same. 5,362,426, Cl. 264-0.500.

Hirai, Yasuyuki: *See*—
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Hiramoto, Kazuo; Hirota, Junichi; Nishi, Masatsugu; Watanabe, Hiroyuki; and Miyata, Kenji, to Hitachi, Ltd. Circular accelerator and method and apparatus for extracting charged-particle beam in circular accelerator. 5,363,008, Cl. 313-62.000.

Hirano, Susumu: *See*—
Matsumoto, Koji; Morimoto, Masaru; and Hirano, Susumu, 5,362,795, Cl. 524-501.000.

Hirano, Toshio: *See*—
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Hirase, Junji; and Hori, Takashi, to Matsushita Electric Industrial Co., Ltd. Insulated gate FET with a particular LDD structure. 5,362,982, Cl. 257-408.000.

Hirata, Chikako: *See*—
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Hirata, Takashi: *See*—
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Hiratsuka, Yoshiaki; and Yoshii, Tsutomu, to Fujitsu Limited. D.C. fan control circuit device for linearly variable cooling. 5,363,024, Cl. 318-254.000.

Hirayama, Nobuhiro; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira; Fujiwara, Akio; and Uchiyama, Kenji, to Mitsui Toatsu Chemicals, Incorporated. Electrophotographic toner production process. 5,362,595, Cl. 430-137.000.

Hirokazu, Yoshida, to Teiryo Industry Incorporated. Luminous simple in luminous body unit and the method of mounting it. 5,363,282, Cl. 361-807.000.

Hirose, Toshiki; Tsuruta, Minoru; Tamura, Koji; Uehara, Yoshitomo; and Miwa, Harufumi, to Ajinomoto Co., Inc. Process for the production of an amino acid using a fermentation apparatus. 5,362,635, Cl. 435-106.000.

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Hirota, Kusato: *See*—
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Hirst, Peter F.: *See*—
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Hisaki, Takashi: *See*—
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Hisano, Atsushi, to Omron Tateisi Electronics Co. Reasoning computer system. 5,363,472, Cl. 395-3.000.

Hisler, Charles J. Locking device for a rod and reel. 5,361,611, Cl. 70-18.000.

Hitachi Cable Ltd.: *See*—
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Hitachi Koki Co. Ltd.: *See*—
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Miyahara, Yuji; Fujii, Toshiko; Buhrer, Thomas; and Watanabe, Yoshio, 5,362,445, Cl. 422-82.090.
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Hitachi Seibu Soft Ware Co., Ltd.: *See*—
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, 5,363,498, Cl. 395-425.000.

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Hitch, David M.: *See*—
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Hitzky, Leo J., to Goodyear Tire & Rubber Company, The. Tread for pneumatic tire and tire comprising such a tread. 5,361,816, Cl. 152-209.00R.

Hiwatashi, Tomoaki: *See*—
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.

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Ho, Kenneth S., to Advanced Micro Devices, Inc. Dual phase-locked-loop having forced mid range fine control zero at handover. 5,363,419, Cl. 375-120.000.

Ho, Kim K. System for automatically rippling and hackling wig yarns. 5,361,468, Cl. 28-279.000.

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Carlstrom, Borge, 5,362,528, Cl. 428-34.500.

Hock, Johann, to Behringwerke Aktiengesellschaft. Purification of plasminogen activator inhibitor 2 by immunoaffinity chromatography. 5,362,857, Cl. 530-395.000.

Hockley, Bernard S.: *See*—
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Hoechst Aktiengesellschaft AG: *See*—
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Preisler, Eberhard; and Bock, Joachim, 5,362,712, Cl. 505-410.000.
Stache, Ulrich; Durckheimer, Walter; Alpermann, Hans G.; and Petri, Walter, 5,362,721, Cl. 514-179.000.
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Hoechst Celanese Corporation: *See*—
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Vicari, Richard; and Bodman, Michael P., 5,362,843, Cl. 528-271.000.
Hoes, Eric M.: *See*—
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Hofer, Jurgen. Game score evaluation and game control system on the basis of player's physical value. 5,362,049, Cl. 273-118.00A.
Hoffman, Douglas V., to Georgeades, Paul. Vapor-compression-cycle refrigeration system having a thermoelectric condenser. 5,361,587, Cl. 62-3.200.
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Bujard, Hermann; and Lanzer, Michael, 5,362,646, Cl. 435-252.330.
Hoffman, Timothy C. Collapsible compact chair with back support for back-packing outdoors use. 5,362,130, Cl. 297-440.110.
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Hofgen, Gunter; and Zeitz, Rudiger, to Alcatel Sel Aktiengesellschaft. Method of correcting measurement errors caused by clock deviations in a secondary radar system. 5,363,109, Cl. 342-31.000.
Hofmann, Theo: *See*—
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Huang, Hung C. Universal guide for electrical hand drill. 5,361,504, Cl. 33-371.000.
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Hull, Harold L.; and Montalva, Jorge. Combination bottle cap and construction toy. 5,361,919, Cl. 215-228.000.
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Hwang, Jeong H., to Goldstar Co., Ltd. Picture control system for video cassette tape recorder. 5,363,201, Cl. 358-337.000.
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Imoto, Kazunobu: *See*—
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Ng, Daniel, 5,362,173, Cl. 403-320.000.

Industrial Rubber Applicators, Inc.: *See*—
Burkes, Daniel O., 5,361,997, Cl. 241-70.000.

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Feng, Chan-Hua; and Kang, Jiann-Chyun, 5,361,645, Cl. 74-502.200.
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Nogura, Kouichi; Fujie, Kouichi; Suga, Chouji; Inomata, Naokiyo; and Ootani, Mitsuo, 5,362,807, Cl. 525-82.000.

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Inoue, Tsuneo: *See*—
Ogawa, Morimasa; Emoto, Genichi; Ueda, Akio; Kibayashi, Takao; Nakata, Keitaro; and Inoue, Tsuneo, 5,362,917, Cl. 568-454.000.

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Hasui, Keini; Inoue, Yasuhiro; and Fukuda, Isao, 5,361,609, Cl. 68-5.00D.

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Ozai, Toshiyuki; Arai, Masatoshi; and Inoue, Yoshifumi, 5,362,896, Cl. 556-464.000.

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Ivers, Michael L.; Rose, Andrew M.; and Otis, Alton B., Jr., 5,363,255, Cl. 360-77.030.

Institut Francais Du Petrole: *See*—
Quang, Dang V.; and Cameron, Charles, 5,362,452, Cl. 422-192.000.
Staron, Philippe; Cretin, Jacques; Beauducel, Claude; and Lepage, Thierry, 5,363,094, Cl. 340-854.600.

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Petri, Randy J.; Meek, John; Bachta, Robert P.; and Marianowski, Leonard G., 5,362,578, Cl. 429-35.000.

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Jungroth, Owen; and Price, Thomas C., 5,363,335, Cl. 365-226.000.
Keith, Michael, 5,363,139, Cl. 348-415.000.
McMahon, John F., 5,362,656, Cl. 437-21.000.
Yizraeli, Yehuda, 5,362,996, Cl. 326-27.000.

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Jones, Stephen K.; Rzepiejewski, Joseph J.; and Vanslette, Paul J., 5,363,483, Cl. 395-161.000.

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Victor, Kenneth E.; and Badertscher, Roger, 5,363,482, Cl. 395-157.000.

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Schilling, Donald L.; and Kowalski, John, 5,363,403, Cl. 375-1.000.
Vanderslice, William T., Jr.; and Scafidi, Christopher J., 5,362,942, Cl. 219-209.000.

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McKenna, Patrick M.; Rudeen, Robert W.; and Gilpin, David W., 5,362,953, Cl. 235-472.000.

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Patrick, Kenneth J., 5,362,198, Cl. 414-786.000.

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Collins, Reuben T.; and Tiwari, Sandip, 5,363,397, Cl. 372-92.000.

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Angiulli, John M.; Kolankowsky, Eugene S.; Konian, Richard R.; and Wu, Leon L., 5,362,986, Cl. 257-723.000.
Bailey, James A.; and Patel, Yogesh B., 5,363,100, Cl. 341-132.000.
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Bentley, Steven R.; Paranjape, Sushama M.; and Murray, Rickey W., 5,363,252, Cl. 360-53.000.
Brock, Phillip J.; Franklin, Jacqlynn A.; Schellenberg, Franklin M.; and Tsay, Jiunn, 5,362,584, Cl. 430-5.000.
Bronner, Gary B.; Dhong, Sang H.; and Hwang, Wei, 5,362,663, Cl. 437-52.000.
Bross, Arthur; and Walsh, Thomas J., 5,362,360, Cl. 156-656.000.
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.
Church, Mark A.; Desouches, Alain M.; and Krebs, Richard E., 5,361,547, Cl. 451-5.000.
Coles, Richard D.; and Teale, David C., 5,363,258, Cl. 360-92.000.
Dang, Chi H., 5,362,192, Cl. 414-280.000.
Dao Trong, Son; Helwig, Klaus; and Loch, Markus, 5,363,321, Cl. 364-748.500.
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl 圓.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.
Eckberg, Eric A.; Kruger, Bruce P.; Lagergren, Richard E.; Schultz, Brian E.; and Warner, Amy L., 5,363,261, Cl. 360-105.000.
Eckenrode, Thomas; Stauffer, David R.; and Stempski, Rebecca, 5,363,379, Cl. 371-3.000.
Frankeny, Jerome A.; Frankeny, Richard F.; Hermann, Karl; and Imken, Ronald L., 5,363,275, Cl. 361-749.000.
Freund, Thomas J., 5,363,121, Cl. 395-600.000.
Fry, Richard E.; and Hicks, Troy N., 5,363,495, Cl. 395-375.000.
Haj-Ali-Ahmadi, Javad; and Hume, Edward C., III, 5,363,310, Cl. 364-478.000.
Henkles, Walter H.; and Hwang, Wei, 5,363,327, Cl. 365-149.000.
Lange, Gerhard G., 5,363,323, Cl. 363-21.000.
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Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., 5,362,599, Cl. 430-192.000.

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Droste, Daniel L.; and Roozee, William F., 5,361,975, Cl. 229-120.340.

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Kearns, Mark A., 5,362,904, Cl. 560-217.000.

Inui, Fuyuki; and Saito, Hitoshi, to Fuji Photo Film Co., Ltd. Method and device for correcting shading in thermal printer. 5,363,125, Cl. 346-76.0PH.

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Stettler, Andreas; and Anderegg, Kurt, 5,362,345, Cl. 156-173.000.

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Johnson, Paul R.; Bero, James; and Heitzman, Jeff, 5,362,941, Cl. 219-121.840.

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Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, 5,361,728, Cl. 122-4.00D.

Ishibashi, Masaru: *See*—
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Ishibashi, Yuji; and Komori, Akihiro, to Brother Kogyo Kabushiki Kaisha. Wire electric discharge machine having alterable discharge period. 5,362,936, Cl. 219-69.120.

Ishida, Hitoshi: *See*—
Yamauchi, Noriyoshi; Ishida, Hitoshi; Usui, Hirotake; and Egoshi, Yoshiaki, 5,361,826, Cl. 164-457.000.

Ishida, Kouichi: *See*—
Miyatake, Shigehiro; Takada, Kenji; Ishida, Kouichi; and Sameshima, Kouichi, 5,363,000, Cl. 327-350.000.

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Ishiguro, Eiji: *See*—
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.

Ishihara, Shinya: *See*—
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.

Ishihara, Yuzi; and Ito, Hisayo, to Canon Kabushiki Kaisha. Contact charging member and apparatus using the charging member. 5,363,176, Cl. 355-219.000.

Ishii, Hitoshi: *See*—
Yoshitake, Noriaki; Mizuno, Kensuke; and Ishii, Hitoshi, 5,362,333, Cl. 148-264.000.

Ishii, Tadayoshi; Yamada, Katsumi; and Makita, Kazuyuki, to Fuji Electric Co., Ltd. Method of soldering. 5,361,973, Cl. 228-257.000.

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Torazawa, Kenji; Ishii, Yasuhiro; Toyama, Tateo; Tomisawa, Shin'ichiro; and Sugihara, Nagatoshi, 5,363,364, Cl. 369-124.000.

Ishikawa, Kenji: *See*—
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.

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Ishikawa, Toshimitsu: *See*—
Okura, Hiroyuki; and Ishikawa, Toshimitsu, 5,362,354, Cl. 156-356.000.

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Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,362,423, Cl. 260-665.00R.

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Hirai, Mutsumi; Ishimoto, Shinji; and Ito, Kenichi, 5,362,426, Cl. 264-0.500.

Ishine, Seizo, to Kabushiki Kaisha Toshiba. Automatic vending apparatus adaptable to accommodate different-sized commodity. 5,361,938, Cl. 221-289.000.

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Shimasaki, Yuichi; Maruyama, Shigeru; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; and Ishioka, Takuji, 5,363,046, Cl. 324-402.000.

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Dittlo, Michel, 5,361,617, Cl. 72-57.000.

Isomoto, Seiko; Sarugaku, Toshio; and Kawashima, Hiroyuki, to Sony Corporation. Video signal conversion system with a vertical enhancement circuit. 5,363,140, Cl. 348-445.000.

Isono, Osamu, to Fujitsu Limited. Information acquisition system. 5,363,433, Cl. 379-92.000.

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Chuang, Jui-Chang; Shih, Jenn S.; and Login, Robert B., 5,362,830, Cl. 526-263.000.
Kwak, Yoon T.; and Kopolow, Stephen L., 5,362,789, Cl. 524-401.000.
Narayanan, Kolazi S.; and De Thomas, Waldo, 5,362,698, Cl. 502-151.000.
Shih, Jenn S.; Chuang, Jui-Chang; and Login, Robert B., 5,362,815, Cl. 525-326.900.
Tseng, Susan Y.; and Wolf, Philip F., 5,362,796, Cl. 524-548.000.

Israel Aircraft Industries Ltd: *See*—
Spektor, Moshe; Shalev, Gil; and Sagie, Yair, 5,361,675, Cl. 89-1.130.

Israeli, Leonardo: *See*—
Rainville, Gilles A.; and Israeli, Leonardo, 5,361,483, Cl. 29-524.100.

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Rosini, Sergio; and Mian, Maurizio, 5,362,750, Cl. 514-510.000.

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Facco, Giuseppe, 5,362,230, Cl. 432-236.000.
Stefanelli, Joseph M., 5,361,618, Cl. 72-174.000.

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Ito, Akira: *See—*
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, 5,363,072, Cl. 333-125.000.

Ito, Hisayo: *See—*
Ishihara, Yuzi; and Ito, Hisayo, 5,363,176, Cl. 355-219.000.

Ito, Kenichi: *See—*
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Ito, Seishi: *See—*
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Itoh, Isao: *See—*
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.

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Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Itoh, Steven K.; Dietz, Timothy M.; and Uy, Rosa, to Minnesota Mining and Manufacturing Company. Low impedance pressure sensitive adhesive composition and biomedical electrodes using same. 5,362,420, Cl. 252-500.000.

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Itozaki, Hideo: *See—*
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ITT Corporation: *See—*
Anhalt, John W., 5,362,255, Cl. 439-582.000.
Sadhir, Virender K.; Willems, David A.; and Karsten, Kenneth S., Jr., 5,363,069, Cl. 333-28.00R.

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McMahon, Robert L.; McCullough, Robert B.; and Ivashin, Victor, 5,362,971, Cl. 250-577.000.

Ivers, Michael L.; Rose, Andrew M.; and Otis, Alton B., Jr., to Insite Peripherals, Inc. Disk drive for communicating with removable media that include media type identification information. 5,363,255, Cl. 360-77.030.

Ives, John R., to Beth Israel Hospital. Basal view mapping of brain activity. 5,361,773, Cl. 128-731.000.

Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, to Fuji Photo Film Co., Ltd. Light-sensitive bistrihalomethyl-s-triazine compounds. 5,362,874, Cl. 544-216.000.

Iwama, Naoki; and Nomura, Ichie, to Aichi Steel Works Ltd. Non-heat treating steel for hot forging. 5,362,338, Cl. 148-334.000.

Iwamoto, Takushi: *See—*
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.

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Iwamura, Masahiro: *See—*
Murabayashi, Fumio; Hotta, Takashi; Iwamura, Masahiro; and Osumi, Akiyoshi, 5,363,332, Cl. 365-189.080.

Iwasa, Hiroshi: *See—*
Murakami, Yasuo; Utsumi, Yasuo; Noguchi, Shoji; Shimasaki, Yasuyuki; Iwasa, Hiroshi; and Kadokawa, Satoshi, 5,361,648, Cl. 74-569.000.

Iwasaki, Masashi: *See—*
Suenaga, Syoji; Suzuki, Masahiro; and Iwasaki, Masashi, 5,363,122, Cl. 345-212.000.

Iwasaki, Motoya, to NEC Corporation. Carrier regenerating device correctly operable in mobile satellite communication. 5,363,415, Cl. 375-97.000.

Iwata, Hitoshi: *See—*
Kanbe, Masakata; Iwata, Hitoshi; and Kinoshita, Kenichi, 5,361,966, Cl. 228-123.100.

Izumi, Yuji: *See—*
Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.

J R Johanson, Inc.: *See—*
Johanson, Jerry R., 5,361,945, Cl. 222-145.000.

Jabra Corporation: *See—*
Norris, Elwood G., 5,363,444, Cl. 379-430.000.

Jacob, Herve : *See—*
Mametsa, Henri-Jose; and Jacob, Herve , 5,363,113, Cl. 343-744.000.

Jacobs Brake Technology Corporation: *See—*
Pitzi, Vincent J., 5,361,740, Cl. 123-321.000.

Jacobs, Jordan N., to Fenwal Safety Systems, Inc. High speed gate valve. 5,362,028, Cl. 251-327.000.

Jacobs, Mark E., to AT&T Bell Laboratories. Control apparatus for limiting voltage on a core reset capacitor. 5,363,289, Cl. 363-56.000.

Jacobsen, Jeffrey: *See—*
Zavracky, Paul M.; Fan, John C. C.; McClelland, Robert; Jacobsen, Jeffrey; and Dingle, Brenda, 5,362,671, Cl. 437-81.000.

Jacquot, Patrick: *See—*
Damond, Eric; Dervieux, Georges; and Jacquot, Patrick, 5,363,400, Cl. 373-10.000.

Jadamus, Hans: *See—*
Mugge, Joachim; Rober, Stefan; Feinauer, Roland; and Jadamus, Hans, 5,362,529, Cl. 428-35.700.
Rober, Stefan; Mugge, Joachim; and Jadamus, Hans, 5,362,570, Cl. 428-475.200.

Jaeger, Silvio; and Wilhelm, Hans, to Zellweger Uster AG. Drop wire handling apparatus for warp yarn drawing-in machine. 5,361,467, Cl. 28-205.000.

Jaffe, Edward E.: *See—*
Babler, Fridolin; Orange, Charles G.; and Jaffe, Edward E., 5,362,780, Cl. 524-88.000.

Jain, Vinod K.: *See—*
Semiatin, Sheldon L.; Seetharaman, Vankat; Goetz, Robert L.; and Jain, Vinod K., 5,361,477, Cl. 29-423.000.

Jamaluddin, Abul K. M.; and Nazarko, Taras W., to Noranda, Inc. Process for increasing near-wellbore permeability of porous formations. 5,361,845, Cl. 166-302.000.

James B. Bonham Corp.: *See—*
Bennett, Tom, Jr., 5,362,117, Cl. 294-82.230.

James, Bertram G., to Varian Associates, Inc. Cooled reentrant TWT ladder circuit having axially raised cooling bars. 5,363,016, Cl. 315-3.500.

James, Keith: *See—*
Barnish, Ian T.; and James, Keith, 5,362,902, Cl. 560-13.000.

Jan, Yung-Jung, to Industrial Technology Research Institute. Direct sequential-bit variable length decoder. 5,363,097, Cl. 341-67.000.

Janaway, Alexander D.; and Janaway, Christine. Wall paper trimmer. 5,361,499, Cl. 30-277.400.

Janaway, Christine: *See—*
Janaway, Alexander D.; and Janaway, Christine, 5,361,499, Cl. 30-277.400.

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Nishii, Masanobu; Shimizu, Yuichi; Kawanishi, Shunichi; Sugimoto, Shunichi; Tanaka, Tadaharu; and Eguchi, Yosuke, 5,362,525, Cl. 427-554.000.

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Hashiguchi, Osamu; and Shinmyo, Minoru, 5,362,248, Cl. 439-352.000.

Japan Radio Co., Ltd.: *See—*
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, 5,363,072, Cl. 333-125.000.

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Sano, Kimiyasu; Tomomitsu, Osahiko; Endoh, Masayuki; and Yokoyama, Yasuaki, 5,362,597, Cl. 430-191.000.

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McDonald, Clayton C.; and Johnson, Wendell H., 5,361,890, Cl. 198-465.400.

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Sano, Eiji; and Matsumoto, Shigetsugu, 5,362,285, Cl. 477-92.000.

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Buchbinder, Jay; and Molina, Paul, 5,361,440, Cl. 15-21.200.

Jay Medical, Ltd.: *See—*
Nickerson, Lincoln P., 5,362,543, Cl. 428-76.000.

Jean Walterscheid GmbH: *See—*
Muller, Norbert; Vollmer, Jurgen; and Herchenbach, Paul, 5,361,850, Cl. 172-450.000.

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Askari, Syed H.; Jeang, Shao C.; and Neidlinger, Herman H., 5,362,768, Cl. 523-106.000.

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Kores, Dietmar; Tramberger, Hermann; Worther, Rudolf H.; Jellinger, Rudolf; Kloimstein, Engelbert; and Schonbeck, Rupert, 5,362,708, Cl. 504-238.000.

Jenkins, Jimmy R., to Traxxas Corporation. Apparatus and method for adjusting the tractive torque at the driven wheels of a scale model vehicle. 5,362,283, Cl. 475-184.000.

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Hatanaka, Koji; and Aota, Takashi, 5,362,944, Cl. 219-270.000.

Jin, Hiroki: *See—*
Hashimoto, Kazuyuki; and Jin, Hiroki, 5,362,158, Cl. 384-447.000.

Jodai, Tetsuji: *See—*
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, 5,362,710, Cl. 505-475.000.

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Vogelstein, Bert; Kinzler, Kenneth W.; and Sherman, Michael I., 5,362,623, Cl. 435-6.000.

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Boulanger, Roger, 5,362,546, Cl. 428-138.000.
Levesque, Yvon, 5,361,627, Cl. 73-73.000.

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Johnson, Rodney J. Method for watercolor painting using rock salt. 5,362,518, Cl. 427-259.000.

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Widenhoefer, Ronald H.; and Johnson, Roger A., 5,362,390, Cl. 210-235.000.

Johnson Service Company: *See—*
Liebl, Ronald J.; and Madaus, Paul W., 5,361,982, Cl. 236-46.00R.

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Johnson, William B. Process for treating fly ash and bottom ash and the resulting product. 5,362,319, Cl. 106-705.000.

Johnston, Randy: *See—*
Upton, Robert G.; Hooper, Michael F.; Portwood, Gary; Pyka, Jerry; Johnston, Randy; and Chambers, Robert, 5,362,073, Cl. 277-92.000.

Jones, Carl C.: *See—*
Pier, Steven J.; and Jones, Carl C., 5,361,604, Cl. 62-457.400.

Jones, Howard C., to Eaton-Williams Group Limited. Electrode boilers with cylinder full sensor control. 5,363,471, Cl. 392-325.000.

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Lloyd, Kurt M.; Jones, LaMar A.; White, David M.; and Roth, Christopher L., 5,361,481, Cl. 29-469.000.

Jones, Stephen K.; Rzepiejewski, Joseph J.; and Vanslette, Paul J., to Intellution, Inc. Updating objects displayed in a computer system. 5,363,483, Cl. 395-161.000.

Jones, William B.: *See—*
Sztanko, Nicholas; Smith, Stephen P.; and Jones, William B., 5,363,136, Cl. 348-207.000.

Jonsson, Holger. Apparatus for grinding, polishing ect. of workpieces. 5,361,546, Cl. 451-310.000.

Josef Bohle Stiftung + Co. KG: *See—*
Siebenlist, Bernd, 5,361,498, Cl. 30-164.950.

Joseph, George L.; and Kaiser, Steven M., to North American Philips Corporation. Automatic volume leveler. 5,363,147, Cl. 348-738.000.

Joyce, Michael F. Magnetic pot stabilizer. 5,361,571, Cl. 57-58.760.

Judd, Daniel R.; and McLoughlin, Robert F., to MKS Instruments, Inc. Temperature compensation circuitry employing a single temperature compensation element. 5,361,637, Cl. 73-766.000.

Julian, Thomas N.: *See—*
Huang, Hua-Pin; Wootton, Scott C.; Julian, Thomas N.; Radebaugh, Galen W.; and Fawzi, Mahdi B., 5,362,860, Cl. 536-4.100.

Jun, Young K., to Gold Star Electron Co., Ltd. Method for fabricating a semiconductor memory device. 5,362,664, Cl. 437-52.000.

Jung, Silvia: *See—*
Muller-Rees, Christoph; Maurer, Robert; Stohrer, Jurgen; Kreuzer, Franz-Heinrich; Jung, Silvia; and Csellich, Franz, 5,362,315, Cl. 106-493.000.

Jungroth, Owen; and Price, Thomas C., to Intel Corporation. Nonvolatile memory with automatic power supply configuration. 5,363,335, Cl. 365-226.000.

Junien, Jean-Louis: *See—*
Riviere, Pierre J. M.; Pascaud, Xavier B.; Roman, Francois J.; and Junien, Jean-Louis, 5,362,756, Cl. 514-651.000.

Juo, Rouh-Rong: *See—*
Edwards, Brooks; and Juo, Rouh-Rong, 5,362,916, Cl. 568-61.000.

Jyan-Tsai, Guo. Foldable baby stroller. 5,362,089, Cl. 280-655.100.

K.D. Pharma GmbH: *See—*
Engelhardt, Heinz; Krumbholz, Rudolf; and Lembke, Peter, 5,362,895, Cl. 554-175.000.

Kabushika Kaisha Toshiba: *See—*
Kudou, Tsuneaki, 5,363,494, Cl. 395-325.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Kurimoto, Masashi; and Mitsuhashi, Masakazu, 5,362,490, Cl. 424-85.500.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Kira, Yoshifumi; and Konishi, Shinya, 5,361,673, Cl. 84-615.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Yoshikawa, Eiichiro; Yamamoto, Koji; Kawashima, Hiroshi; and Anzai, Mika, 5,363,468, Cl. 385-145.000.

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Kabushiki Kaisha Nichinan Kagaku: *See—*
Kitayama, Takuo; and Setoguchi, Isamu, 5,362,779, Cl. 524-56.000.

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Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Kanbe, Masakata; Iwata, Hitoshi; and Kinoshita, Kenichi, 5,361,966, Cl. 228-123.100.

Kabushiki Kaisha Toshiba: *See—*
Fujisawa, Akiko, 5,363,429, Cl. 379-58.000.
Fukuoka, Katsuhito, 5,363,506, Cl. 395-725.000.
Futami, Toshihiko; and Shida, Yoshiharu, 5,363,004, Cl. 310-156.000.
Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, 5,362,559, Cl. 428-333.000.
Hayashi, Takahisa, 5,363,410, Cl. 375-67.000.
Ishine, Seizo, 5,361,938, Cl. 221-289.000.
Kato, Rikako; and Takai, Hiroyuki, 5,363,496, Cl. 395-425.000.
Kawakami, Yoshiyuki, 5,363,260, Cl. 360-97.010.
Komorita, Hiroshi; and Mizunoya, Nobuyuki, 5,363,278, Cl. 361-762.000.
Matsushima, Kazufumi, 5,362,946, Cl. 219-704.000.
Miyoshi, Motosuke; Yamazaki, Yuichiro; and Okumura, Katsuya, 5,362,968, Cl. 250-396.00R.
Ninomiya, Ryozi, 5,363,312, Cl. 364-483.000.
Okuda, Nobuo, 5,363,319, Cl. 364-578.000.
Okura, Hiroyuki; and Ishikawa, Toshimitsu, 5,362,354, Cl. 156-356.000.
Shinohara, Makoto, 5,363,380, Cl. 371-16.100.
Sunouchi, Kazumasa; Fuse, Tsuneaki; Nitayama, Akihiro; Hasegawa, Takehiro; Watanabe, Shigeyoshi; Horiguchi, Fumio; and Hieda, Katsuhiko, 5,363,325, Cl. 365-149.000.
Tsuchiya, Akira, 5,363,286, Cl. 363-8.000.
Tsukakoshi, Hisao, 5,363,382, Cl. 371-21.200.
Yabe, Tomoaki, 5,363,336, Cl. 365-226.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.
Nishimyo, Teruyuki, 5,361,872, Cl. 187-226.000.

Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, 5,362,751, Cl. 514-530.000.

Kabushiki Kaisha Yaskawa Denki: *See—*
Kimura, Kaoru; and Monnin, Philip V., 5,363,029, Cl. 318-696.000.

Kaco GmbH & Co.: *See—*
Uhrner, Klaus-Jurgen; and Schlotzer, Eugen, 5,362,201, Cl. 415-111.000.

Kaden, Richard A., to United States of America, Army. Movable hardened air form dome-shaped structure for containing hazardous, toxic, or radioactive airborne releases. 5,361,550, Cl. 52-2.150.

Kadlec, Emil R.: *See—*
Normann, Randy A.; and Kadlec, Emil R., 5,363,095, Cl. 340-854.700.

Kadokawa, Satoshi: *See—*
Murakami, Yasuo; Utsumi, Yasuo; Noguchi, Shoji; Shimasaki, Yasuyuki; Iwasa, Hiroshi; and Kadokawa, Satoshi, 5,361,648, Cl. 74-569.000.

Kadono, Hitomi: *See—*
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, 5,362,960, Cl. 250-214.100.

Kageyama, Shuhei: *See—*
Yamamoto, Tadashi; and Kageyama, Shuhei, 5,362,166, Cl. 401-93.000.

Kagimasa, Toyohiko; Chinone, Osamu; and Yonenaga, Shigeo, to Hitachi, Ltd. Hot stand-by method and computer system for implementing hot stand-by method. 5,363,502, Cl. 395-575.000.

Kaihara, Shoji; Fukahori, Hidehiko; and Fukuda, Tsuyoshi, to Canon Kabushiki Kaisha. Camera with valuable illumination angle pop-up flash. 5,363,162, Cl. 354-149.100.

Kaiser, Steven M.: *See—*
Joseph, George L.; and Kaiser, Steven M., 5,363,147, Cl. 348-738.000.

Kaji, Eiichi: *See—*
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,362,423, Cl. 260-665.00R.

Kaji, Toshio: *See*—
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Kajikuri, Hiroshi: *See*—
Higashio, Yasuhiko; Kajikuri, Hiroshi; Sugita, Keisuke; Doi, Hideki; and Matsubara, Masanobu, 5,362,870, Cl. 540-540.000.

Kajino, Jiro: *See*—
Utsumi, Mitsuo; Zaitsu, Osamu; Okuda, Makoto; and Kajino, Jiro, 5,363,268, Cl. 242-347.100.

Kakibayashi, Hiroshi: *See*—
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.

Kaku, Yasutoshi: *See*—
Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,932, Cl. 200-341.000.
Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,934, Cl. 200-520.000.

Kakuo, Kazuo: *See*—
Ohbayashi, Gentaro; Kakuo, Kazuo; Hirota, Kusato; and Seo, Naoya, 5,362,538, Cl. 428-64.000.

Kallenberger, Harvey J., to Harnischfeger Corporation. Lift limit device for a load lifting mechanism. 5,362,029, Cl. 254-269.000.

Kalloy Industrial Co., Ltd.: *See*—
Chang, Robert, 5,362,127, Cl. 297-195.100.

Kalogina, Karina V.: *See*—
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., 5,362,523, Cl. 427-446.000.

Kamaguchi, Ryousei: *See*—
Suzuki, Toshiyuki; and Kamaguchi, Ryousei, 5,362,564, Cl. 428-402.200.

Kamata, Kunihisa: *See*—
Tada, Naohumi; Wadayama, Yoshihide; Inoue, Kiyoshi; and Kamata, Kunihisa, 5,362,331, Cl. 148-98.000.

Kamata, Toshihiro: *See*—
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Kamata, Yoshikiyo, to Kioritz Corporation. Two cycle internal combustion engine. 5,361,732, Cl. 123-65.0PE.

Kamei, Ryosuke: *See*—
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Kamei, Yoshikazu: *See*—
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.

Kameswaran, Venkataraman; and Francis, Robert, to American Cyanamid Company. Process for the manufacture of insecticidal 2-aryl-1-(alkoxymethyl)-4-halo-5-(trifluoromethyl)pyrroles. 5,362,746, Cl. 514-424.000.

Kameyama, Nobuyuki, to Fuji Photo Film Co., Ltd. Sequential taking camera with plural lenses. 5,363,161, Cl. 354-114.000.

Kamimura, Ichiro: *See*—
Shimura, Kazuhiro; Ookubo, Takeshi; Nagae, Kouji; Shiina, Takao; Sekigami, Kunie; and Kamimura, Ichiro, 5,361,595, Cl. 62-175.000.

Kaminski, Stanley S.: *See*—
Evans, Robert E.; Maranci, Arutun; and Kaminski, Stanley S., 5,362,562, Cl. 428-369.000.

Kamo, Masayoshi; Maruta, Yuzo; Sando, Hiroaki; and Furuhata, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recorlding device. 5,363,251, Cl. 360-55.000.

Kamper, Susan L.; and McGauley, Mary A., to General Mills, Inc. Edible microwave susceptor composition. 5,362,504, Cl. 426-89.000.

Kamphuis, Carolus H. M.; and Rouhof, Hendrikus J. H., to D.S.M. N.V. Process for the preparation and purification of a hydroxylammonium salt solution. 5,362,398, Cl. 210-651.000.

Kanazawa, Masahiro; and Miyashita, Takeshi, to Amano Corporation. Magnetic card reader equipped with head reversing function. 5,362,951, Cl. 235-449.000.

Kanbe, Masakata; Iwata, Hitoshi; and Kinoshita, Kenichi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Solder-bonded structure. 5,361,966, Cl. 228-123.100.

Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Sakata, Yoshio, 5,362,943, Cl. 219-216.000.

Kanehiro, Masaki: *See*—
Shimasaki, Yuichi; Maruyama, Shigeru; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; and Ishioka, Takuji, 5,363,046, Cl. 324-402.000.

Kaneko, Hideyuki; and Takeuchi, Kunihiro, to Zexel Corporation. Control system for vehicle safety device. 5,363,303, Cl. 364-424.050.

Kaneko, Kiyoshi: *See*—
Yoshimura, Yuichiro; Tanaka, Atsushi; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,362,930, Cl. 178-18.000.

Kaneko, Toshimi: *See*—
Bando, Masahiro; Misaki, Katsuhiro; and Kaneko, Toshimi, 5,363,081, Cl. 336-200.000.

Kang, Jiann-Chyun: *See*—
Feng, Chan-Hua; and Kang, Jiann-Chyun, 5,361,645, Cl. 74-502.200.

Kani, Rikako: *See*—
Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, 5,362,559, Cl. 428-333.000.

Kansai Paint Company, Limited: *See*—
Ozaki, Tohru; Kasari, Akira; and Nakamura, Shigeru, 5,362,521, Cl. 427-407.100.

Kao, Che-I: *See*—
Munjal, Sarat; Cummings, Clark J.; and Kao, Che-I, 5,362,841, Cl. 528-202.000.

Kao Corporation: *See*—
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.
Yamasaki, Seiji; Suzuki, Toshiyuki; and Hirata, Chikako, 5,362,418, Cl. 252-314.000.

Kao, Yi-Hsuan; Sorenson, James A.; and Bahn, Mark M., to Wisconsin Alumni Research Foundation. Method for segmenting features in an image. 5,361,763, Cl. 128-653.200.

Kapec, Jeffrey; Chochinov, Allan; and Froelich, Carl, to Esselte Pendaflex Corporation. Color coded labeling system and dispenser therefor. 5,361,904, Cl. 206-460.000.

Kariya, Toshimitsu: *See*—
Saito, Keishi; Aoike, Tatsuyuki; Kariya, Toshimitsu; and Koda, Yuzo, 5,362,684, Cl. 437-234.000.

Karkau, Robert R.; Wortz, Marc S.; and Conner, Michael D. Gas powered weapon system including an improved gas seal. 5,361,524, Cl. 42-1.160.

Karl Brieden Bau-Und Beteiligungs-KG: *See*—
Kuhme, Ernst, 5,362,393, Cl. 210-333.010.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Ritschel, Gerd, 5,362,171, Cl. 403-66.000.

Karlshamns AB: *See*—
Miller, Robert; Williams, James L.; and Greene, George H., 5,362,847, Cl. 528-403.000.

Karol, Frederick J.; Sun-Chueh, Kao; and Drage, James S., to Union Carbide Chemicals & Plastics Technology Corporation. Catalyst system containing an autoacceleration inhibitor. 5,362,823, Cl. 526-114.000.

Karpman, Maurice S.: *See*—
Higgins, Leo M., III; and Karpman, Maurice S., 5,361,490, Cl. 29-827.000.

Karsten, Kenneth S., Jr.: *See*—
Sadhir, Virender K.; Willems, David A.; and Karsten, Kenneth S., Jr., 5,363,069, Cl. 333-28.00R.

Karszes, William M. Method of making lenticular plastics and products therefrom. 5,362,351, Cl. 156-243.000.

Kasai, Junichi; Sono, Michio; and Honda, Tosiyuki, to Fujitsu Limited. Method of producing a semiconductor integrated circuit device having terminal members provided between semiconductor element and leads. 5,361,970, Cl. 228-180.500.

Kasai, Shigetami: *See*—
Ishikawa, Sadayasu; Kasai, Shigetami; and Honda, Yasuo, 5,362,618, Cl. 430-567.000.

Kasari, Akira: *See*—
Ozaki, Tohru; Kasari, Akira; and Nakamura, Shigeru, 5,362,521, Cl. 427-407.100.

Kasatani, Yasushi: *See*—
Omori, Makoto; Ohbuchi, Jun; Maeda, Hajime; and Kasatani, Yasushi, 5,363,274, Cl. 361-736.000.

Kasei Optonix Ltd.: *See*—
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.
Mizukami, Tomohito; and Funayama, Chihito, 5,363,012, Cl. 313-468.000.

Kashani, David M.; and Kashani, Samson M., to Kashani, David M.; and Kashani, Samson M. Remotely controlled fishing line carrier. 5,361,530, Cl. 43-26.100.

Kashani, Samson M.: *See*—
Kashani, David M.; and Kashani, Samson M., 5,361,530, Cl. 43-26.100.

Kassebaum, Larry A., to Norco Industries, Inc. Lift/tilt wheel dolly. 5,362,194, Cl. 414-427.000.

Kasukawa, Akihiko; and Kikuta, Toshio, to Furokawa Electric Co., Ltd., The. Strained quantum well type semiconductor laser device. 5,363,392, Cl. 372-45.000.

Katagiri, Naoki: *See*—
Yamaguchi, Tadashi; Muramatsu, Masataka; and Katagiri, Naoki, 5,362,925, Cl. 174-120.00R.

Kataoka, Hiroshi; and Umei, Yuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Mold for synthetic resin molding. 5,362,226, Cl. 425-526.000.

Kataoka, Misao: *See*—
Usami, Yuri; Hori, Chiharu; Kataoka, Misao; Yamada, Manami; and Harada, Kayoko, 5,363,480, Cl. 395-145.000.

Katayama, Masatoshi: *See*—
Obi, Naoki; Suematsu, Kiyoshi; Kojima, Yasuhiko; Katayama, Masatoshi; and Shigemitsu, Yasuo, 5,362,621, Cl. 430-596.000.

Katayama, Seizi: *See*—
Shintai, Akira; Shibata, Hiroshi; Shiobara, Toshio; Futatsumori, Koji; Katayama, Seizi; and Yoshida, Yasutaka, 5,362,775, Cl. 523-451.000.

Kates, David: *See*—
Krevolin, Mark; and Kates, David, 5,362,625, Cl. 435-7.600.

Kato, Kazuhiko; and Shibasaki, Katsuo, to Komori Corporation. Preset state display apparatus and preset state adjusting apparatus. 5,361,696, Cl. 101-232.000.

Kato, Osamu: *See*—
Kubo, Junichi; and Kato, Osamu, 5,362,375, Cl. 208-19.000.

Kato, Rikako; and Takai, Hiroyuki, to Kabushiki Kaisha Toshiba. Microprocessor incorporating cache memory with selective purge operation. 5,363,496, Cl. 395-425.000.

Katoh, Yoshinori; Ichinose, Naoko; and Sotogoshi, Teruhito, to Nippon Kayaku Kabushiki Kaisha. Photopolymerizable composition for color filter and color filter prepared therefrom. 5,362,603, Cl. 430-281.000.

Katoh, Yusaku, to Fukuyama Gomu Kogyo Kabushiki Gaisha. Combination linkage type rubber crawler. 5,362,142, Cl. 305-38.000.

Katsura, Toru; and Senoh, Hideaki, to Mitsubishi Paper Mills Limited. Process for producing alkaline paper. 5,362,364, Cl. 162-158.000.

Katsuragi, Yoshihisa: *See*—
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Katsuyama, Toshio: *See*—
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.

Katz, Michael M.: *See*—
Victor, Bruce H.; and Katz, Michael M., 5,363,199, Cl. 356-439.000.

Kauffmann, Glenn A.: *See*—
Williams, Barry N.; and Kauffmann, Glenn A., 5,363,093, Cl. 340-605.000.

Kaufmann, Edward J.; Wiersig, James R.; and Wilts, James F., to Clorox Company, The. Low-temperature-effective detergent compositions and delivery systems therefor. 5,362,413, Cl. 252-174.000.

Kawaguchi, Sigeoki: *See*—
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.

Kawahara, Yoshio: *See*—
Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, 5,362,636, Cl. 435-115.000.

Kawai, Kiyoshi; and Harada, Toru, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,362,611, Cl. 430-508.000.

Kawakami, Atsuo; Shimada, Toshiro; Tsumiyama, Tatsuo; and Yamaguchi, Hisaya, to Ube Industries, Ltd. Continous polymerization method of laurolactam and apparatus therefor. 5,362,448, Cl. 422-137.000.

Kawakami, Yoshiyuki, to Kabushiki Kaisha Toshiba. Magnetic disk apparatus and method for manufacturing the same. 5,363,260, Cl. 360-97.010.

Kawamoto, Fumio: *See*—
Shiratsuchi, Kentaro; and Kawamoto, Fumio, 5,362,613, Cl. 430-528.000.

Kawamoto, Masashi: *See*—
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.

Kawamura, Akio: *See*—
Iguchi, Katsuji; Hayashida, Shigeki; Kawamura, Akio; Sato, Shinichi; and Tateyama, Tomohiko, 5,362,670, Cl. 437-70.000.

Kawanishi, Shunichi: *See*—
Nishii, Masanobu; Shimizu, Yuichi; Kawanishi, Shunichi; Sugimoto, Shunichi; Tanaka, Tadaharu; and Eguchi, Yosuke, 5,362,525, Cl. 427-554.000.

Kawanishi, Tsuneaki: *See*—
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,363,180, Cl. 355-285.000.

Kawasaki, Kyoichi: *See*—
Sarugaku, Shinichi; Kurenuma, Toru; Andoh, Takeshi; Otomo, Masami; and Kawasaki, Kyoichi, 5,363,474, Cl. 395-91.000.

Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, to Asahi Kogaku Kabushiki Kaisha. Power zoom lens and camera system. 5,363,165, Cl. 354-195.120.

Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transferable sheet. 5,362,703, Cl. 503-227.000.

Kawasaki, Shoji: *See*—
Hirayama, Nobuhiro; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira; Fujiwara, Akio; and Uchiyama, Kenji, 5,362,595, Cl. 430-137.000.

Kawase, Tsuyoshi: *See*—
Tanaka, Keizou; Nishikawa, Noboru; Kawase, Tsuyoshi; and Watanabe, Masami, 5,361,968, Cl. 228-160.000.

Kawashima, Hiroshi: *See*—
Yoshikawa, Eiichiro; Yamamoto, Koji; Kawashima, Hiroshi; and Anzai, Mika, 5,363,468, Cl. 385-145.000.

Kawashima, Hiroyuki: *See*—
Isomoto, Seiko; Sarugaku, Toshio; and Kawashima, Hiroyuki, 5,363,140, Cl. 348-445.000.

Kawashima, Tadashi: *See*—
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.

Kawata, Yutaka: *See*—
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Kazama, Koji: *See*—
Kitano, Minoru; Mitsui, Kenji; Tanaka, Hozumi; and Kazama, Koji, 5,362,225, Cl. 425-472.000.

Kearns, Mark A., to International Speciality Chemicals Limited. Process for the preparation of acrylic acid and methacrylic acid esters. 5,362,904, Cl. 560-217.000.

Keating, Stephen M.: *See*—
Saunders, Nicholas I.; and Keating, Stephen M., 5,363,146, Cl. 348-699.000.

Kebo, Reynold S.: *See*—
Kiunke, Pul C.; Kebo, Reynold S.; and Chen, Chungte W., 5,363,235, Cl. 359-365.000.

Keck, Steven D.; and Becker, Kurt J., to Lanxide Technology Company, LP. Method for making internal shapes in a metal matrix composite body. 5,361,824, Cl. 164-98.000.

Keightley, John, to Pthalo Systems, Inc. Image transfer system. 5,363,217, Cl. 358-506.000.

Keith, Michael, to Intel Corporation. Method and apparatus for scalable compression and decompression of a digital motion video signal. 5,363,139, Cl. 348-415.000.

Keith, Roger H., to Minnesota Mining and Manufacturing Company. Compact fiber optic housing. 5,363,467, Cl. 385-135.000.

Kellan, Robert E. Head stabilizer and superior rectus bridle suture fixator device and drainage device for use in eye surgery and methods therefor. 5,361,780, Cl. 128-849.000.

Keller, Myron C.; and McDonald, Michael C. Water conservation valve. 5,361,804, Cl. 137-801.000.

Kelley, Archie W., to Martin Marietta Corporation. Apparatus for and method of dispensing granular material. 5,361,811, Cl. 141-250.000.

Kelley, Franklyn F. Evaporative cooler with scrubber system. 5,361,600, Cl. 62-310.000.

Kelley, John H.: *See*—
Nanowsky, John P.; and Kelley, John H., 5,361,428, Cl. 4-558.000.

Kelly, Scott: *See*—
Crow, Harry; Anderson, Thomas M.; Kelly, Scott; Atherton, Terry; and Schmidt, Larry, 5,361,797, Cl. 137-101.190.

Keng, Leigh L. Document protecting apparatus. 5,362,540, Cl. 428-13.000.

Kensrue, Milo M., to Bagel Trap, Inc. Bagel slicer. 5,361,666, Cl. 83-870.000.

Kent, Randall S., to 2920913 Canada Inc. Method for sterilizing products with gamma radiation. 5,362,442, Cl. 422-22.000.

Kent, Raymond C.: *See*—
Ehrhart, Wendell A.; and Kent, Raymond C., 5,362,560, Cl. 428-343.000.

Kern, Dale G., to Hyclone Laboratories. Methods and containment system for storing, reconstituting, dispensing and harvesting cell culture media. 5,362,642, Cl. 435-240.100.

Kerpan, Stephen J.; and McKee, Gary F., to Whittaker Controls, Inc. Ball valve. 5,361,801, Cl. 137-547.000.

Kerpes, Hans; and Thiele, Ulrich, to Zimmer Aktiengesellschaft. Continuous process for the production of polyester for food packaging. 5,362,844, Cl. 528-308.500.

Kerr Manufacturing Co.: *See*—
Waller, Duncan E.; and Wong, Raymond F., 5,362,769, Cl. 523-116.000.

Kerr-McGee Chemical Corporation: *See*—
Palmer, Bruce R.; and Stramel, Rodney D., 5,362,770, Cl. 523-200.000.

Kerwin, James F.: *See*—
Cowart, Marion; and Kerwin, James F., 5,362,747, Cl. 514-448.000.

Khandwala, Atul: *See*—
Vora, Kakubhai R.; Khandwala, Atul; and Smith, Charles G., 5,362,737, Cl. 514-291.000.

Khinsky, Alexander P.: *See*—
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., 5,362,523, Cl. 427-446.000.

Kibayashi, Takao: *See*—
Ogawa, Morimasa; Emoto, Genichi; Ueda, Akio; Kibayashi, Takao; Nakata, Keitaro; and Inoue, Tsuneo, 5,362,917, Cl. 568-454.000.

Kiebke, Theodore M. Biodegradable hydrating cat litter. 5,361,719, Cl. 119-171.000.

Kiedaisch, Edward; and Walljasper, David L., to Svedala Industries, Inc. Marine dock fender contact surface attaching boss. 5,361,715, Cl. 114-219.000.

Kiefer, Garry E.: *See*—
Sherry, A. Dean; and Kiefer, Garry E., 5,362,476, Cl. 424-9.000.

Kiefer, James, to RAN Enterprises, Inc. Hinge. 5,361,455, Cl. 16-235.000.

Kiekens, Eric; Callant, Paul; and Claes, Roland, to Agfa-Gevaert, N.V. Photographic material containing a non-sensitizing dye absorbing at 670 nm. 5,362,612, Cl. 430-520.000.

Kikuchi, Masao: *See*—
Ozawa, Nobuyuki; Hosokawa, Junji; Kikuchi, Masao; Hoshijima, Tokitaro; and Yagi, Kensuke, 5,362,542, Cl. 428-70.000.

Kikuchi, Susumu: *See*—
Inaba, Humio; Sato, Shunichi; and Kikuchi, Susumu, 5,363,190, Cl. 356-337.000.
Kikuta, Toshio: *See*—
Kasukawa, Akihiko; and Kikuta, Toshio, 5,363,392, Cl. 372-45.000.
Kilgore, Marion D., to Halliburton Company. Slick line casing and tubing joint locator apparatus and associated methods. 5,361,838, Cl. 166-255.000.
Killpatrick, Joseph E.; Fritze, Keith R.; and Berndt, Dale F., to Honeywell Inc. Laser gyro microprocessor start up control method and apparatus. 5,363,194, Cl. 356-350.000.
Kim, Chung J., to Goldstar Co., Ltd. Contact image sensor module. 5,363,216, Cl. 358-482.000.
Kim, Hong K., to Gold Star Co., Ltd. Method for fabricating thin film transistor. 5,362,661, Cl. 437-40.000.
Kim, Jae W., to Samsung Electronics Co., Ltd. Data interfacing method and its device. 5,363,416, Cl. 375-106.000.
Kim, Young-woong; Yoo, Ick-hyoung; and Lee, Chul-woo, to Samsung Electronics Co., Ltd. Magneto-optical disk drive having multiple electromagnet elements. 5,363,353, Cl. 369-13.000.
Kimberly-Clark Corporation: *See*—
McCarver, Stacey G.; Strack, David C.; Porter, Marsha L.; and Mathis, Peter, 5,362,306, Cl. 602-60.000.
McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., 5,361,905, Cl. 206-494.000.
Kimura, Itsuo; Fujiwara, Kazuhiro; and Hikasa, Shigeki, to Nippon Paper Industries Co., Ltd. Aqueous covering composition. 5,362,788, Cl. 524-377.000.
Kimura, Kaoru; and Monnin, Philip V., to Kabushiki Kaisha Yaskawa Denki. Laser-beam machine using two-dimensional stepping motor. 5,363,029, Cl. 318-696.000.
Kimura, Makoto: *See*—
Hidaka, Yuji; and Kimura, Makoto, 5,363,488, Cl. 395-275.000.
Kimura, Mitsuteru: *See*—
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, 5,362,960, Cl. 250-214.100.
Kimura, Naomasa: *See*—
Yamaguchi, Tadashi; Kimura, Naomasa; and Inoue, Akihisa, 5,362,336, Cl. 148-301.000.
Kinder, Larry L. System for removing and disposing of cigarette and cigar smoke and residues. 5,361,784, Cl. 131-231.000.
King, Edward C.; and Goeppel, Anton, to NCR Corporation. Internal bus for work station interfacing means. 5,363,492, Cl. 395-325.000.
King, Joseph A., Jr.; and Brouwer, Klaas. Thermoplastic resin and method using volatile, self-quenching tertiaryamine catalyst. 5,362,840, Cl. 528-199.000.
King, Randall K., to Halliburton Company. Modular pump cylinder-head having integral over-pressure protection. 5,362,215, Cl. 417-455.000.
Kingston, Richard A.: *See*—
Dutta, Arunava; Morrison, Mark A.; Dullea, Leonard V.; Kingston, Richard A.; and Olsen, Joseph A., 5,362,524, Cl. 427-476.000.
Kino, Kuniki; and Kuratsu, Yoshiyuki, to Kyowa Hakko Kogy Co., Ltd. Process for producing L-isoleucine and ethionine by isoleucine analog resistant strains of *E. coli*. 5,362,637, Cl. 435-116.000.
Kinoshita, Kenichi: *See*—
Kanbe, Masakata; Iwata, Hitoshi; and Kinoshita, Kenichi, 5,361,966, Cl. 228-123.100.
Kinoshita, Mitsuo; Miura, Yoshimasa; and Arashima, Takeshi, to Takemoto Yushi Kabushiki Kaisha. Cement dispersion agents. 5,362,829, Cl. 526-240.000.
Kinzler, Kenneth W.: *See*—
Vogelstein, Bert; Kinzler, Kenneth W.; and Sherman, Michael I., 5,362,623, Cl. 435-6.000.
Kioritz Corporation: *See*—
Iida, Yoshikazu, 5,361,738, Cl. 123-182.100.
Kamata, Yoshikiyo, 5,361,732, Cl. 123-65.0PE.
Kira, Yoshifumi; and Konishi, Shinya, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 5,361,673, Cl. 84-615.000.
Kirii, Kazunari; Shinabe, Masahiro; Ono, Tsutomu; Watanabe, Masuo; and Koshida, Hideo, to Toyota Jidosha Kabushiki Kaisha. Apparatus for measuring blank holding force acting on pressure ring of a press. 5,361,615, Cl. 72-19.000.
Kirlin, Peter S.: *See*—
Gardiner, Robin A.; Van Buskirk, Peter; and Kirlin, Peter S., 5,362,328, Cl. 118-726.000.
Kishi, Junichi: *See*—
Yoshihara, Toshiyuki; Hanami, Nobuyuki; Anayama, Hideki; Kishi, Junichi; and Ainoya, Hideyuki, 5,362,588, Cl. 430-69.000.
Kishigami, Minoru: *See*—
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.
Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, to Ajinomoto Co., Inc.; and Tadamitsu Kishimoto. Use of recombinant B-cell differentiation factor for augmenting antibody production and stimulating bone marrow proliferation. 5,362,489, Cl. 424-852.000.
Kissinger, Gaylord M.; and Wynn, Nicholas P., to General Electric Co.; and Sulzer Canada, Inc. Process and composition. 5,362,900, Cl. 558-265.000.
Kita, Kazuhiko: *See*—
Horimura, Hiroyuki; Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,362,339, Cl. 148-403.000.
Kita, Yukio: *See*—
Tsukamoto, Akira; Matsufuji, Mieko; and Kita, Yukio, 5,362,640, Cl. 435-172.300.
Kitagawa, Kiichiro: *See*—
Takahashi, Koichi; and Kitagawa, Kiichiro, 5,363,166, Cl. 354-275.000.
Kitami, Tetsu; Ozawa, Osamu; and Mito, Jun, to Yokohama Rubber Co., Ltd., The. Gas-and-oil impermeable hose construction. 5,362,530, Cl. 428-36.200.
Kitamura, Hikaru: *See*—
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.
Kitamura, Takashi: *See*—
Komatsu, Kiyoshi; Kudo, Takeshi; Kitamura, Takashi; and Tsukamoto, Ryo, 5,362,213, Cl. 417-418.000.
Kitamura, Toshiyuki: *See*—
Udagawa, Yutaka; Funada, Masahiro; Ohta, Ken-ich; Takaragi, Yoichi; Kitamura, Toshiyuki; and Ohta, Eiji, 5,363,202, Cl. 358-501.000.
Kitano, Minoru; Mitsui, Kenji; Tanaka, Hozumi; and Kazama, Koji, to Kyokuto Seiki Kabushiki Kaisha. Support mechanism for forming dies. 5,362,225, Cl. 425-472.000.
Kitayama, Takuo; and Setoguchi, Isamu, to Dai Nippon Printing Co., Ltd.; and Kabushiki Kaisha Nichinan Kagaku. Dampening water composition. 5,362,779, Cl. 524-56.000.
Kitazawa, Hidenori: *See*—
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.
Kitou, Kouji; Okuyama, Nobutaka; Arai, Ikuya; and Sano, Yuji, to Hitachi Ltd. Horizontal deflection circuit with reduced VLF electric fields from CRT displays. 5,363,022, Cl. 315-408.000.
Kiunke, Pul C.; Kebo, Reynold S.; and Chen, Chungte W., to Hughes Aircraft Company. Dual field of view multi wavelength sensor. 5,363,235, Cl. 359-365.000.
Klauke, Erich; Petersen, Uwe; and Grohe, Klaus, to Bayer Aktiengesellschaft. Process for the preparation of 3-chloro-2,4,5-trifluorobenzoyl chloride, 2,4,5-trifuluorobenzoyl fluoride, and 2,3,4,5-tetrahalogenobenzene derivatives. 5,362,909, Cl. 562-852.000.
Klecker, Donald L.; and Vincent, Bruce, to Eaton Corporation. Transmission having externally mounted electronic control unit. 5,361,650, Cl. 74-606.00R.
Klees, Horst: *See*—
Grossberndt, Hermann; Kretschmer, Gunter; Klees, Horst; and Guven, Ali, 5,361,478, Cl. 29-432.200.
Klegerman, Neal A.; and Fuksa, Richard, to Klegerman, Neal A. Portable water filtering device. 5,362,385, Cl. 210-136.000.
Klein, Jerry G., to Unisys Corporation. Folded hydrophone array for narrow marine vehicles. 5,363,343, Cl. 367-154.000.
Klein, Robert L., Jr.: *See*—
McCurry, Patrick M., Jr.; Klein, Robert L., Jr.; Gibson, Michael W.; Beaulieu, James D.; and Varvil, Janet R., 5,362,861, Cl. 536-4.100.
Kleinerman, Marcos Y. Remote sensing of physical variables with fiber optic systems. 5,363,463, Cl. 385-123.000.
Kleinschmit, Peter: *See*—
Sextl, Gerhard; Reuter, Roland; Kleinschmit, Peter; Schwarz, Rudolf; and Sporys, Ilona, 5,362,541, Cl. 428-69.000.
Kline, Daniel S.; Nasworthy, Frank; and Wield, Paul J., to Hewlett-Packard Company. Printing media feed and retaining apparatus for a thermal ink jet printer/plotter. 5,363,129, Cl. 346-136.000.
Klockner Moeller GmbH: *See*—
Kutsche, Wolfgang; Kremers, Wolfgang; Baldewein, Andreas; Hentschel, Gerd; and Voiss, Gerd, 5,362,933, Cl. 200-401.000.
Kloimstein, Engelbert: *See*—
Kores, Dietmar; Tramberger, Hermann; Worther, Rudolf H.; Jellinger, Rudolf; Kloimstein, Engelbert; and Schonbeck, Rupert, 5,362,708, Cl. 504-238.000.
Klosterhuber, Robert; and Sommerer, Karl, to Dr. Ing. h.c.F. Porsche AG. Twin control arm axle assembly for wheel suspension systems. 5,362,093, Cl. 280-674.000.
Kluga, Mark L.; and Kluga, Robert A., to Kluga, Mark L. Concrete hand edger tool with water spray. 5,362,165, Cl. 401-9.000.
Kluga, Robert A.: *See*—
Kluga, Mark L.; and Kluga, Robert A., 5,362,165, Cl. 401-9.000.
Kluger, Ronald; and Song, Yonghong, to University of Toronto Innovations Foundation. Monooxygenase-like activity of heme proteins. 5,362,856, Cl. 530-385.000.
Kmiecik, Thomas E.; and Vande Woude, George F., to United States of America, Health and Human Services. Methods for stimulating hematopoietic progenitors using hepatocyte growth factor and lymphokines. 5,362,716, Cl. 514-12.000.
Knauss, Daniel M.: *See*—
McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., 5,362,838, Cl. 528-198.000.
Kneuer, Joseph G.: *See*—
Feiner, Alexander; Im, Gi-Hong; Kneuer, Joseph G.; Saltzberg, Burton R.; and Werner, Jean-Jacques, 5,363,441, Cl. 379-411.000.
Knifton, John F.; and Cuscurida, Michael, to Huntsman Corporation. Saturated, aminated, alkoxylated polybutadienes. 5,362,913, Cl. 564-480.000.

Knight, John W., IV; Baker, Paul W.; and Harding, Dennis, to Fabri-Form Co., The. Stackable and collapsible container. 5,361,923, Cl. 280-6.000.
Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., to International Business Machines Corporations. Fast diazoquinone positive resists comprising mixed esters of 4-sulfonate and 5-sulfonate compounds. 5,362,599, Cl. 430-192.000.
Knoth, Norbert: *See*—
Dietrich, Klaus; Gunther, Stephan; Knoth, Norbert; Miehe, Friedrich-Viktor; and Thiel, Wolfgang, 5,362,947, Cl. 235-375.000.
Knowles, W. Ralph; Schultz, William G.; and Armstrong, Allen E., to ElectroScan Corporation. Environmental scanning electron microscope. 5,362,964, Cl. 250-310.000.
Knuth, Howard D.: *See*—
Anderson, Michael J.; Knuth, Howard D.; and Pasco, Wayne D., 5,361,967, Cl. 228-124.600.
Kobayashi, Hideyuki; Nozawa, Masayuki; and Nagayama, Yashuhiro, to Singer Company N.V., The. Feeding device of a wide sewing material. 5,361,961, Cl. 226-171.000.
Kobayashi, Hiroaki: *See*—
Kuwae, Kenji; Kobayashi, Hiroaki; and Hagiwara, Moeko, 5,362,609, Cl. 430-372.000.
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, to Toto Ltd. Water flow control system. 5,362,026, Cl. 251-30.020.
Kobayashi, Isao; and Kumata, Hirotaka, to Honda Giken Kogyo Kabushiki Kaisha. Data transmission system using an optical fiber loop. 5,363,367, Cl. 370-16.000.
Kobayashi, Junji, to Canon Kabushiki Kaisha. Tape tension adjusting device. 5,363,256, Cl. 360-85.000.
Kobayashi, Katsuyuki: *See*—
Yoshimura, Yuichiro; Tanaka, Atsushi; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,362,930, Cl. 178-18.000.
Kobayashi, Kazumitsu; and Kuribara, Masaru, to Unisa Jecs Corporation. Fuel character judging system. 5,363,314, Cl. 364-497.000.
Kobayashi, Noboru, to Yamaha Hatsudoki Kabushiki Kaisha. Water vehicle with a swingable cover. 5,361,717, Cl. 114-361.000.
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Non-volatile semiconductor memory device incorporating data latch and address counter for page mode programming. 5,363,330, Cl. 365-185.000.
Kobayashi, Tadakazu: *See*—
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, 5,362,710, Cl. 505-475.000.
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; Nagai, Katsutoshi; and Nishida, Takao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for initializing a camera lens upon reinitiation of power to camera. 5,363,164, Cl. 354-195.100.
Kobe Steel USA: *See*—
von Windheim, Jesko; and Venkatesan, Vasudev, 5,362,975, Cl. 257-76.000.
Kobiki, Michihiro: *See*—
Komaru, Makio; and Kobiki, Michihiro, 5,362,678, Cl. 437-203.000.
Kobsa, Henry: *See*—
Herold, John H., II; and Kobsa, Henry, 5,362,430, Cl. 264-103.000.
Koch, Brian J.: *See*—
Lambert, David K.; Verbrugge, Mark W.; and Koch, Brian J., 5,361,624, Cl. 73-19.100.
Koch, Richard C., to Fellowes Manufacturing Company. Multi-media file. 5,362,143, Cl. 312-9.540.
Kochanek, Wolfgang: *See*—
Ebenhoech, Johan; Weinand, Dieter; Kochanek, Wolfgang; and Bloemacher, Martin, 5,362,791, Cl. 524-440.000.
Koda, Yuzo: *See*—
Saito, Keishi; Aoike, Tatsuyuki; Kariya, Toshimitsu; and Koda, Yuzo, 5,362,684, Cl. 437-234.000.
Koeda, Masaru: *See*—
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.
Koenck, Steven E.: *See*—
Miller, Phillip; Becker, Ronald D.; and Koenck, Steven E., 5,363,031, Cl. 320-21.000.
Koga, Kouhei, to Nissei ASB Machine Co., Ltd. Blow molding method. 5,362,437, Cl. 264-537.000.
Koguchi, Masanari: *See*—
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.
Kogure, Yoshio: *See*—
Ryuzaki, Takahiko; Kogure, Yoshio; Ichikawa, Hideo; Nakamura, Yasuo; and Miyazawa, Takuji, 5,362,041, Cl. 271-236.000.
Kohler Co.: *See*—
Freier, Donald P.; and Matznick, Andrew H., 5,361,431, Cl. 4-677.000.
Kohma, Noriyuki: *See*—
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.
Kohmura, Kisaburo: *See*—
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.
Kohno, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Microwave amplifier. 5,363,060, Cl. 330-286.000.
Kohno, Teruhisa, to Sumitomo Electric Industries, Ltd. Brake fluid pressure control unit. 5,362,137, Cl. 303-10.000.
Koito Manufacturing Co., Ltd.: *See*—
Shirai, Katutada; and Mochizuki, Hideharu, 5,363,283, Cl. 362-66.000.
Kojima, Ichirou; Nishida, Terumi; and Yamada, Kunio, to Nippondenso Co., Ltd. Process and apparatus for press forming. 5,361,619, Cl. 72-348.000.
Kojima, Kazunobu, to Matsushita Electric Industrial Co., Ltd. Casing for a television set. 5,363,150, Cl. 348-836.000.
Kojima, Takaaki; Okumura, Mitsuhiro; and Nojima, akahiko, to Konica Corporation. Silver halide photographic light-sensitive material. 5,362,626, Cl. 430-642.000.
Kojima, Takayuki: *See*—
Yoshihara, Kenzou; Osawa, Toshio; Kojima, Takayuki; and Machida, Shinichi, 5,363,207, Cl. 358-442.000.
Kojima, Yasuhiko: *See*—
Obi, Naoki; Suematsu, Kiyoshi; Kojima, Yasuhiko; Katayama, Masatoshi; and Shigemitsu, Yasuo, 5,362,621, Cl. 430-596.000.
Kolankowsky, Eugene S.: *See*—
Angiulli, John M.; Kolankowsky, Eugene S.; Konian, Richard R.; and Wu, Leon L., 5,362,986, Cl. 257-723.000.
Kolb, Roland: *See*—
Jetzer, Gregor; Kolb, Roland; and Spinnler, Fritz, 5,362,217, Cl. 418-55.400.
Kolene Corporation: *See*—
Cole, John M.; and Bessey, Charles M., 5,361,788, Cl. 134-64.00R.
Kolowski, Michael A.: *See*—
Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., 5,361,814, Cl. 152-209.00A.
Komaki, Toshiaki: *See*—
Yoshino, Zenichi; Komaki, Toshiaki; and Kurahashi, Yoshiki, 5,362,329, Cl. 127-65.000.
Komaru, Makio; and Kobiki, Michihiro, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing insulated via hole structure for semiconductor device. 5,362,678, Cl. 437-203.000.
Komatsu, Eiichi, to Dai Nippon Printing Co., Ltd. Data transfer method for use in semiconductor data recording medium. 5,362,954, Cl. 235-492.000.
Komatsu, Kiyoshi; Kudo, Takeshi; Kitamura, Takashi; and Tsukamoto, Ryo, to Terumo Kabushiki Kaisha. Micro-pump and method for production thereof. 5,362,213, Cl. 417-418.000.
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, to Terumo Kabushiki Kaisha. Photoelectric transducing device having a self-exciting oscillating mechanism. 5,362,960, Cl. 250-214.100.
Komatsu Plastics Industry Co., Ltd.: *See*—
Ozawa, Nobuyuki; Hosokawa, Junji; Kikuchi, Masao; Hoshijima, Tokitaro; and Yagi, Kensuke, 5,362,542, Cl. 428-70.000.
Komatsu, Yoshinori: *See*—
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Masato; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.
Komori, Akihiro: *See*—
Ishibashi, Yuji; and Komori, Akihiro, 5,362,936, Cl. 219-69.120.
Komori Corporation: *See*—
Kato, Kazuhiko; and Shibasaki, Katsuo, 5,361,696, Cl. 101-232.000.
Komori, Shin, to Canon Kabushiki Kaisha. Light deflecting device. 5,363,231, Cl. 359-219.000.
Komori, Shinji; Tsubota, Hirono; and Shima, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Data flow processor with data processing and next address determination being made in parallel. 5,363,491, Cl. 395-375.000.
Komorita, Hiroshi; and Mizunoya, Nobuyuki, to Kabushiki Kaisha Toshiba. Bonded ceramic-metal composite substrate, circuit board constructed therewith and methods for production thereof. 5,363,278, Cl. 361-762.000.
Kon, Shigeki: *See*—
Sasaki, Ayaru; Haraguchi, Youichiro; and Kon, Shigeki, 5,362,535, Cl. 428-43.000.
Konda, Masashi; Yamamoto, Toshio; and Emoto, Yoshiaki, to Nippon Steel Corporation. Semiconductor device with jumping wire. 5,362,984, Cl. 257-666.000.
Kondo, Kazuo: *See*—
Okamoto, Naoyuki; Mizutani, Hidetoshi; Miura, Kazunori; and Kondo, Kazuo, 5,362,551, Cl. 428-210.000.
Kondo, Kenichi: *See*—
Suga, Akira; and Kondo, Kenichi, 5,363,137, Cl. 348-302.000.
Kondrats, Nicholas: *See*—
Woodhall, Edward W.; and Kondrats, Nicholas, 5,362,786, Cl. 524-267.000.
Kone Elevator GmbH: *See*—
de Jong, Johannes; and Alasentie, Pentti, 5,361,873, Cl. 187-264.000.
Konian, Richard R.: *See*—
Angiulli, John M.; Kolankowsky, Eugene S.; Konian, Richard R.; and Wu, Leon L., 5,362,986, Cl. 257-723.000.

Konica Corporation: *See—*
Hasebe, Takashi; and Haneda, Satoshi, 5,363,211, Cl. 358-451.000.
Hoshino, Toru, 5,363,218, Cl. 358-518.000.
Ishikawa, Sadayasu; Kasai, Shigetami; and Honda, Yasuo, 5,362,618, Cl. 430-567.000.
Kojima, Takaaki; Okumura, Mitsuhiro; and Nojima, akahiko, 5,362,626, Cl. 430-642.000.
Kuwae, Kenji; Kobayashi, Hiroaki; and Hagiwara, Moeko, 5,362,609, Cl. 430-372.000.
Masutomi, Haruhiko; Uchida, Naoko; Ohtani, Hirofumi; and Ichikawa, Kazuyoshi, 5,362,470, Cl. 423-509.000.
Sekimoto, Takashi; Nakano, Kunio; and Eguchi, Toshiya, 5,363,215, Cl. 358-465.000.
Tashiro, Kouji; Hoshino, Hiroyuki; Murakami, Shuji; Matsuzaka, Shoji; and Ohtani, Hirofumi, 5,362,619, Cl. 430-567.000.
Yoshimoto, Hiroshi, 5,362,610, Cl. 430-465.000.

Konishi, Shinya: *See—*
Kira, Yoshifumi; and Konishi, Shinya, 5,361,673, Cl. 84-615.000.

Kono, Hiromi: *See—*
Satoh, Yuji; Kono, Hiromi; Soda, Hiroyuki; and Otsuka, Masuhiro, 5,362,286, Cl. 477-115.000.

Konzman, Edward J.: *See—*
Wiggins, Gary W.; Konzman, Edward J.; Vinci, James N.; and Todd, Patricia R., 5,362,409, Cl. 252-32.70E.

Koopman, Peter J., to Henny Penny Corporation. Rotisserie oven. 5,361,686, Cl. 99-421.00H.

Koopman, Philip J., Jr.; and Finn, Alan M., to United Technologies Automotive, Inc. Pseudorandom number generation and cryptographic authentication. 5,363,448, Cl. 380-23.000.

Kopelman, Raoul; and Lewis, Aaron. Nanometer dimension optical device with microimaging and nanoillumination capabilities. 5,362,963, Cl. 250-307.000.

Kopin Corporation: *See—*
Zavracky, Paul M.; Fan, John C. C.; McClelland, Robert; Jacobsen, Jeffrey; and Dingle, Brenda, 5,362,671, Cl. 437-81.000.

Kopolow, Stephen L.: *See—*
Kwak, Yoon T.; and Kopolow, Stephen L., 5,362,789, Cl. 524-401.000.

Koppe, Susan M.: *See—*
Bohn, William W.; and Koppe, Susan M., 5,361,411, Cl. 2-69.000.

Korber AG: *See—*
Herburg, Andreas, 5,361,783, Cl. 131-84.100.

Korea Research Institute of Chemical Technology: *See—*
Lee, Haibang; and Yuk, Soonhong, 5,362,424, Cl. 264-4.300.

Kores, Dietmar; Tramberger, Hermann; Worther, Rudolf H.; Jellinger, Rudolf; Kloimstein, Engelbert; and Schonbeck, Rupert, to Agrolinz Agrarchemikalien GmbH. Herbicidal agent. 5,362,708, Cl. 504-238.000.

Koreyasu, Toshiyuki; and Maruyama, Shoji, to B.M.L., Inc. Method for automated clinical sampling of a body fluid. 5,362,648, Cl. 436-48.000.

Korkolainen, Tapio: *See—*
Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,362,733, Cl. 514-270.000.

Korkowski, Jeff L.; Emmons, David J.; and Defoe, Dalen J., to ADC Telecommunications, Inc. Fiber optic connector module. 5,363,465, Cl. 385-135.000.

Kornberg, Gary. Adjustable lateral thoracic support for a solid back of a wheelchair. 5,362,082, Cl. 280-304.100.

Kosa, Theodore, to CRS Holdings, Inc. Free-machining martensitic stainless steel. 5,362,337, Cl. 148-325.000.

Koseki, Yoshihiro: *See—*
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.

Koshida, Hideo: *See—*
Kirii, Kazunari; Shinabe, Masahiro; Ono, Tsutomu; Watanabe, Masuo; and Koshida, Hideo, 5,361,615, Cl. 72-19.000.

Kostecki, Gene: *See—*
Browne, George W.; and Kostecki, Gene, 5,362,937, Cl. 219-76.140.

Kotobuki & Co., Ltd.: *See—*
Yamamoto, Tadashi; and Kageyama, Shuhei, 5,362,166, Cl. 401-93.000.

Kotwicki, Allan J.; and Hamburg, Douglas R., to Ford Motor Company. Catalyst monitoring using ego sensors. 5,363,091, Cl. 340-439.000.

Kotzin, Michael D.; and Bruckert, Eugene J., to Motorola Inc. Apparatus and method for conveying information in a communication network. 5,363,404, Cl. 375-1.000.

Koukolitschek, Karl: *See—*
Krieg, Gunther; Koukolitschek, Karl; and Maier, Wilfried, 5,361,912, Cl. 209-524.000.

Kowalski, James E., to Chrysler Corporation. Ignition system sensor. 5,361,630, Cl. 73-117.300.

Kowalski, John: *See—*
Schilling, Donald L.; and Kowalski, John, 5,363,403, Cl. 375-1.000.

Koyama, Masahiro, to Yamaha Corporation. Electronic musical instrument with help key for displaying the function of designated keys. 5,361,672, Cl. 84-478.000.

Koyama, Takashi: *See—*
Hashimoto, Yuichi; and Koyama, Takashi, 5,362,587, Cl. 430-58.000.

Koyanagi, Hideki: *See—*
Tahara, Tomonori; Yamamoto, Tetsuya; Baba, Yasuyuki; Koyanagi, Hideki; and Uchida, Akira, 5,363,203, Cl. 358-403.000.

Koyanagi, Hiroo: *See—*
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

Koyata, Hideo; and Honda, Susumu, to W. R. Grace & Co. Conn.; and NOF Corporation. Cement admixture composition. 5,362,323, Cl. 106-810.000.

Kraft, Wolfgang: *See—*
Langen, Alfred; and Kraft, Wolfgang, 5,361,584, Cl. 60-460.000.

Krauss Maffei Aktiengesellschaft: *See—*
Messner, Johann, 5,361,926, Cl. 220-331.000.

Krebs, Richard E.: *See—*
Church, Mark A.; Desouches, Alain M.; and Krebs, Richard E., 5,361,547, Cl. 451-5.000.

Kremers, Wolfgang: *See—*
Kutsche, Wolfgang; Kremers, Wolfgang; Baldewein, Andreas; Hentschel, Gerd; and Voiss, Gerd, 5,362,933, Cl. 200-401.000.

Kressdorf, Burkhard: *See—*
Hoppe, Lutz; Kressdorf, Burkhard; Luhmann, Erhard; and Nader, Reinhard, 5,362,313, Cl. 106-171.000.

Kretschmer, Gunter: *See—*
Grossberndt, Hermann; Kretschmer, Gunter; Klees, Horst; and Guven, Ali, 5,361,478, Cl. 29-432.200.

Kreutzer, Josef; and Mauch, Kurt, to Behr GmbH & Co. Corrugated fin for flat-tube heat exchangers. 5,361,829, Cl. 165-152.000.

Kreuzer, Franz-Heinrich: *See—*
Muller-Rees, Christoph; Maurer, Robert; Stohrer, Jurgen; Kreuzer, Franz-Heinrich; Jung, Silvia; and Csellich, Franz, 5,362,315, Cl. 106-493.000.

Krevolin, Mark; and Kates, David, to Microgenics Corporation. Methods and compositions for enzyme complementation assays using the omega region of β-galactosidase. 5,362,625, Cl. 435-7.600.

Krieg, Gunther; Koukolitschek, Karl; and Maier, Wilfried, to Prof. Dr. Ing. Gunther Krieg. Apparatus and process for classifying the contents of non-disposable beverage bottles and containers. 5,361,912, Cl. 209-524.000.

Krieger, John: *See—*
Griswold, Les; Hewko, Mark D.; Krieger, John; and Elton, Robert D., 5,362,132, Cl. 297-483.000.

Kroll, Dieter; and Weber, Jurgen, to Herion-Werke KG. Valve block. 5,361,802, Cl. 137-552.000.

Kropp, Michael A.; and Mahoney, Wayne S., to Minnesota Mining and Manufacturing Company. Electrically conductive adhesive compositions. 5,362,421, Cl. 252-512.000.

Kruger, Bruce P.: *See—*
Eckberg, Eric A.; Kruger, Bruce P.; Lagergren, Richard E.; Schultz, Brian E.; and Warner, Amy L., 5,363,261, Cl. 360-105.000.

Krumbholz, Rudolf: *See—*
Engelhardt, Heinz; Krumbholz, Rudolf; and Lembke, Peter, 5,362,895, Cl. 554-175.000.

Kubatsch, Gunter, to Bally Wulff Automaten GmbH. Drive mechanism for a symbol-carrying symbol carrier. 5,362,052, Cl. 273-145.00R.

Kubo, Junichi; and Kato, Osamu, to Nippon Oil Co., Ltd. Oil compositions. 5,362,375, Cl. 208-19.000.

Kubo, Satoru, to NEC Corporation. Voltage comparing circuit. 5,362,995, Cl. 327-65.000.

Kubota, Minoru, to Seiko Seiki Kabushiki Kaisha. NC complex automatic lathe. 5,361,472, Cl. 29-37.00A.

Kubota, Tadatoshi; and Kume, Masaharu, to Shionogi & Co., Ltd. Thioalkylthio carbacephalosporin derivatives. 5,362,724, Cl. 514-210.000.

Kuchiki, Junichi: *See—*
Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, 5,362,033, Cl. 266-275.000.

Kudo, Takeshi: *See—*
Komatsu, Kiyoshi; Kudo, Takeshi; Kitamura, Takashi; and Tsukamoto, Ryo, 5,362,213, Cl. 417-418.000.
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, 5,362,960, Cl. 250-214.100.

Kudo, Tetsuo: *See—*
Aizawa, Toshiyuki; Nakamura, Hitoshi; Wakabayashi, Kunitoshi; Kudo, Tetsuo; and Hasegawa, Hiroyuki, 5,362,918, Cl. 568-594.000.

Kudo, Yoshinobu: *See—*
Hayashi, Kohtaro; Mukai, Hiromu; and Kudo, Yoshinobu, 5,363,163, Cl. 354-155.000.

Kudou, Tsuneaki, to Kabushika Kaisha Toshiba. Bus interface circuit for connecting bus lines having different bit ranges. 5,363,498, Cl. 395-325.000.

Kuehn, Udo, to B&U Corporation. Multi-station abrading apparatus. 5,361,548, Cl. 451-76.000.

Kufner, Emilie, legal representative: *See—*
Kufner, Walter, deceased; and Meidl, Lothar, 5,362,159, Cl. 384-484.000.

Kufner, Walter, deceased (by Kufner, Emilie, legal representative); and Meidl, Lothar, to SKF GmbH. Bearing seal. 5,362,159, Cl. 384-484.000.

Kuga, Kazuhiko: *See—*
Tsujino, Masaki; Yoshihara, Noriyuki; and Kuga, Kazuhiko, 5,362,428, Cl. 264-40.500.

Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, to Kyowa Hakko Kogyo Co., Ltd. Polypeptide derivatives of human granulocyte colony stimulating factor. 5,362,853, Cl. 530-351.000.

Kuhlman Corporation: *See—*
Richerson, James D.; Smith, Stephen D.; and Springtube, George W., 5,362,006, Cl. 242-4.0BE.

Kuhme, Ernst, to Karl Brieden Bau-Und Beteiligungs-KG. Pressure filter for liquids. 5,362,393, Cl. 210-333.010.

Kuhn, John W.; and Prucha, Thomas E., to CMI International, Inc. Casting core and method for cast-in-place attachment of a cylinder liner to a cylinder block. 5,361,823, Cl. 164-9.000.

Kuhnen, Fred: *See—*
Seckinger, Karl; and Kuhnen, Fred, 5,362,706, Cl. 504-221.000.

Kuhns, Abe B., to E-Z Trail, Inc. Expandable bale carrier and feeder. 5,361,724, Cl. 119-60.000.

Kuklo, Thomas: *See—*
Bender, Donald A.; and Kuklo, Thomas, 5,363,244, Cl. 359-823.000.

Kumagai, Shigenori: *See—*
Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, 5,362,482, Cl. 424-69.000.

Kumar, Ajith K.; and Stitt, Thomas D., to General Electric Company. Auto self test of AC motor system. 5,363,039, Cl. 324-158.100.

Kumata, Fumio: *See—*
Takahashi, Kazuo; Kumata, Fumio; Nozaki, Hitoshi; Inoue, Shinichi; and Makabe, Toshiji, 5,362,696, Cl. 502-64.000.

Kumata, Hirotaka: *See—*
Kobayashi, Isao; and Kumata, Hirotaka, 5,363,367, Cl. 370-16.000.

Kume, Masaharu: *See—*
Kubota, Tadatoshi; and Kume, Masaharu, 5,362,724, Cl. 514-210.000.

Kunczynski, Jan K., to Yantrak, LLC. Conveying system with tensioning and docking assembly and method. 5,361,706, Cl. 104-196.000.

Kung, James K.: *See—*
Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; Kung, James K.; Avtges, James A.; and Laccetti, Anthony J., 5,362,582, Cl. 429-249.000.

Kunitaka, Tetsuya: *See—*
Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, 5,361,728, Cl. 122-4.00D.

Kunitake, Tetsuji: *See—*
Hiyoshi, Yoshihiko; Ide, Youji; Kunitake, Tetsuji; Maeda, Nobuyuki; and Surizaki, Kumi, 5,362,548, Cl. 428-195.000.

Kunz, Timothy W.: *See—*
Spath, Mark J.; Peterson, Timothy J.; Samalot, Ivan R.; De Minco, Christopher M.; Kunz, Timothy W.; and Nather, Scott H., 5,361,733, Cl. 123-90.160.

Kurabayashi, Yutaka: *See—*
Sakaki, Mamoru; Kurabayashi, Yutaka; Nakatsugawa, Tomomi; Sato, Hiroshi; and Shiratori, Takahiro, 5,362,558, Cl. 428-323.000.

Kuragaki, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Method for producing semiconductor device. 5,362,658, Cl. 437-31.000.

Kuragano, Tetsuzo; and Fumie, Saga, to Sony Corporation. Method for displaying an image of an object surface using a luminance transformation in accordance with a non-linear characteristic. 5,363,477, Cl. 395-126.000.

Kurahashi, Yoshiki: *See—*
Yoshino, Zenichi; Komaki, Toshiaki; and Kurahashi, Yoshiki, 5,362,329, Cl. 127-65.000.

Kuraray Co., Ltd.: *See—*
Nogura, Kouichi; Fujie, Kouichi; Suga, Chouji; Inomata, Naokiyo; and Ootani, Mitsuo, 5,362,807, Cl. 525-82.000.

Kurashige, Masufumi; and Fukushima, Shinichi, to Sony Corporation. Image converter for mapping a two-dimensional image onto a three dimensional curved surface created from two-dimensional image data. 5,363,476, Cl. 395-125.000.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Nishii, Masanobu; Shimizu, Yuichi; Kawanishi, Shunichi; Sugimoto, Shunichi; Tanaka, Tadaharu; and Eguchi, Yosuke, 5,362,525, Cl. 427-554.000.

Kuratate, Tomoaki: *See—*
Minamihara, Tsugiko; Kuratate, Tomoaki; and Matsumoto, Toshio, 5,363,225, Cl. 359-56.000.

Kuratsu, Yoshiyuki: *See—*
Kino, Kuniki; and Kuratsu, Yoshiyuki, 5,362,637, Cl. 435-116.000.

Kureha Kagaku Kogyo K.K.: *See—*
Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, 5,362,885, Cl. 548-561.000.

Kurenuma, Toru: *See—*
Sarugaku, Shinichi; Kurenuma, Toru; Andoh, Takeshi; Otomo, Masami; and Kawasaki, Kyoichi, 5,363,474, Cl. 395-91.000.

Kuribara, Masaru: *See—*
Kobayashi, Kazumitsu; and Kuribara, Masaru, 5,363,314, Cl. 364-497.000.

Kuribayashi, Ikuo; and Saito, Rie, to Canon Kabushiki Kaisha. Blade device and image forming apparatus. 5,363,182, Cl. 355-299.000.

Kurimoto, Masashi; and Mitsuhashi, Masakazu, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Human myelomonocyte interferon-gamma, and process for preparation and use thereof. 5,362,490, Cl. 424-85.500.

Kurita Water Industries, Ltd.: *See—*
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,362,461, Cl. 423-163.000.

Kuriyama, Choujirou: *See—*
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Kurobe, Akio: *See—*
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Kuroda, Kohzoh: *See—*
Takagi, Syunsuke; Kuroda, Kohzoh; and Ono, Jiro, 5,361,695, Cl. 101-127.000.

Kurosawa Construction Co., Ltd.: *See—*
Hasui, Takeshi; and Fujikawa, Takatsugu, 5,362,326, Cl. 118-44.000.

Kurose, Mikihiko: *See—*
Makino, Masahiro; Kurose, Mikihiko; and Sasada, Yoshihiro, 5,362,910, Cl. 564-285.000.

Kurth, Inge: *See—*
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Kushibiki, Nobuo: *See—*
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Kusters, Johannes J. M., to Bell & Howell GmbH. Device for turning a sheet with a simultaneous change in conveying direction. 5,362,039, Cl. 271-225.000.

Kustka, George J.: *See—*
Faryar, Alireza F.; Kustka, George J.; Mailhot, John N.; and Webb, Charles A., III, 5,363,141, Cl. 348-470.000.

Kutsche, Wolfgang; Kremers, Wolfgang; Baldewein, Andreas; Hentschel, Gerd; and Voiss, Gerd, to Klockner Moeller GmbH. Electrical switching devices, in particular low voltage power circuit breakers. 5,362,933, Cl. 200-401.000.

Kuwae, Kenji; Kobayashi, Hiroaki; and Hagiwara, Moeko, to Konica Corporation. Stabilizing solution for light-sensitive silver halide color photographic material, and processing method making use of the stabilizing solution. 5,362,609, Cl. 430-372.000.

Kuwahara, Isao: *See—*
Taniuchi, Kazuman; Sekine, Hiroshi; Akita, Noboru; Kuwahara, Isao; and Endoh, Kiyomasa, 5,363,212, Cl. 358-452.000.

Kuwahara, Shingo; and Araki, Morio, to Pioneer Electronic Corporation. On-vehicle navigation apparatus. 5,363,306, Cl. 364-449.000.

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Kwak, Yoon T.; and Kopolow, Stephen L., to ISP Investments Inc. Crosslinked terpolymers of high salt tolerance. 5,362,789, Cl. 524-401.000.

Kwasnick, Robert F.; Possin, George E.; Holden, David E.; and Saia, Richard J., to General Electric Company. Method of making a thin film transistor structure with improved source/drain contacts. 5,362,660, Cl. 437-40.000.

Kyocera Corporation: *See—*
Amino, Hirokazu; Shiraiwa, Yoshinori; and Clarke, Ian C., 5,362,311, Cl. 623-22.000.

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Kitano, Minoru; Mitsui, Kenji; Tanaka, Hozumi; and Kazama, Koji, 5,362,225, Cl. 425-472.000.

Kyowa Hakko Kogy Co., Ltd.: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Laabs, Roberto, to "Amerika-Bogen" Handelsgesellschaft mbH. Nocking system for archery. 5,361,747, Cl. 124-91.000.

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Edwards, James L.; Hahm, Paul T.; Bogdanowicz, Mitchell J.; and LaBarca, Joseph E., 5,362,616, Cl. 430-356.000.

Labedz, Gerald P.: *See—*
Love, Robert T.; Labedz, Gerald P.; and Baum, Kevin L., 5,363,412, Cl. 375-94.000.

Labrie, Fernand, to Endorecherche, Inc. Method of treating or preventing breast or endometrial cancer with low dose non-masculinizing androgenic compounds. 5,362,720, Cl. 514-169.000.

Laccetti, Anthony J.: *See—*
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Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; Kung, James K.; Avtges, James A.; and Laccetti, Anthony J., 5,362,582, Cl. 429-249.000.

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Hayes, Richard D.; Schroeder, Robert; Thorstens, Dale A.; and Schumacher, Larry L., 5,361,663, Cl. 83-522.190.

Laeis- Bucher GmbH: *See—*
Hauser, Hans U.; Lindemans, Jorg; and Mick, Martin, 5,362,434, Cl. 264-239.000.

LaFleur, Edward E.; Amici, Robert M.; and Work, William J., to Rohm and Haas Company. Polymeric blends of polyvinyl alcohol copolymers with copolymers of unsaturated monomers. 5,362,803, Cl. 525-57.000.

LaFleur, Edward E.: *See—*
Amici, Robert M.; Bortnick, Newman M.; Graham, Roger K.; LaFleur, Edward E.; and Work, William J., 5,362,801, Cl. 525-57.000.
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LaFleur, Karl K., to LaFleur Petroleum Services, Inc. Cementing plug. 5,361,835, Cl. 166-152.000.
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LaFleur, Karl K., 5,361,835, Cl. 166-152.000.
LaFrance Corporation: *See*—
Peroni, Peter A., 5,362,186, Cl. 411-508.000.
Lag Steering Systems: *See*—
Tull, Herbert; and Berry, Frederick, 5,361,854, Cl. 175-45.000.
Lagergren, Richard E.: *See*—
Eckberg, Eric A.; Kruger, Bruce P.; Lagergren, Richard E.; Schultz, Brian E.; and Warner, Amy L., 5,363,261, Cl. 360-105.000.
Lagerstedt, Torgny: *See*—
Borgstrom, Leonard; Carlsson, Claes-Goran; Franzen, Peter; Inge, Claes; Lagerstedt, Torgny; Moberg, Hans; and Näbo, Olle, 5,362,292, Cl. 494-74.000.
Lahoda, Edward J.; Paffenbarger, John A.; Paulson, C. Keith; Seagle, Jerry C.; and Cash, Donald W., to Westinghouse Electric Corporation. Removal of volatile and semi-volatile contaminants from solids using thermal desorption and gas transport at the solids entrance. 5,361,514, Cl. 34-391.000.
Lai, Yen-Pin. Bicycle head tube assembly. 5,361,647, Cl. 74-551.200.
Laird, Douglas H.; and Hanson, Wendy K., to Science Ventures Inc. Magnesium separation from dolomitic phosphate by sulfuric acid leaching. 5,362,460, Cl. 423-157.400.
Laitram Corporation, The: *See*—
Lapeyre, Robert S.; and Carbone, John J., 5,361,893, Cl. 198-853.000.
LaJudice, Kevin P.: *See*—
McBain, Douglas S.; Ratermann, Andrew L.; Hargis, I. Glen; Melby, Earl G.; and LaJudice, Kevin P., 5,362,819, Cl. 525-404.000.
Lake Shore Cryotronics, Inc.: *See*—
Swinehart, Philip R., 5,363,084, Cl. 338-308.000.
Lal, Kasturi. Compositions and polymer fabrics treated with the same. 5,362,555, Cl. 428-290.000.
Lalaouna, Said: *See*—
Ollivier, Jean-Francois; Lalaouna, Said; and Penha, Manuel, 5,362,151, Cl. 374-55.000.
Lalikos, James M.; and Desilets, Norman H., to Titeflex Corporation. Kevlar reinforced high pressure hose assembly with grip and environmental barrier. 5,361,806, Cl. 138-109.000.
Lamb, James, III: *See*—
Flaim, Tony D.; Lamb, James, III; and Brewer, Terry, 5,362,608, Cl. 430-327.000.
Lambert, David K.; Verbrugge, Mark W.; and Koch, Brian J., to General Motors Corporation. Sensor for dissolved air in brake fluid and method of using the same. 5,361,624, Cl. 73-19.100.
Lamotte, Johan; and Dewanckele, Jean-Marie, to Agfa-Gevaert, N.V. Photographic material containing a mixture of silver halide emulsions. 5,362,620, Cl. 430-571.000.
Lamson Corporation: *See*—
Brasz, Joost J., 5,362,203, Cl. 415-199.100.
Lamson & Sessions Co., The: *See*—
Hamilton, Larry J.; Hawkins, Thomas W.; and Shortman, Richard P., 5,362,112, Cl. 285-110.000.
Landes, Hugh D., to Heavy Duty Marketing Corporation. Rivet setting anvil. 5,361,473, Cl. 29-243.530.
Lange, Gerhard G., to International Business Machines Corporation. Power supply with plural outputs supplying dynamic and steady loads. 5,363,323, Cl. 363-21.000.
Lange, Roger W.: *See*—
Holzer, Mark R.; and Lange, Roger W., 5,362,554, Cl. 428-283.000.
Langen, Alfred; and Kraft, Wolfgang, to Linde Aktiengesellschaft. Hydrostatic drive system. 5,361,584, Cl. 60-460.000.
Lanner, David A.: *See*—
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,362,511, Cl. 426-549.000.
Lanxide Technology Company, LP: *See*—
Keck, Steven D.; and Becker, Kurt J., 5,361,824, Cl. 164-98.000.
Lanzer, Michael: *See*—
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Laot, Colette; and Majoux, Bernard, to SGS-Thomson Microelectronics S.A. Amplifier with an output current limiter. 5,363,063, Cl. 330-298.000.
Lapeyre, Robert S.; and Carbone, John J., to Laitram Corporation, The. High friction plastic conveyor belts having modular links formed by two integrated plastic materials. 5,361,893, Cl. 198-853.000.
Larkworthy, Leslie F.: *See*—
Henderson, Ian F.; Bullock, Joseph I.; Briggs, Geoffrey G.; and Larkworthy, Leslie F., 5,362,749, Cl. 514-492.000.
Larocque, Francois. Grid for selecting data and kit incorporating the same for entering said data into a computer. 5,362,950, Cl. 235-448.000.
Larsen, Soren B., to Aalborg Portland A/S. Cement composition and methods for producing same. 5,362,321, Cl. 106-713.000.
Larson, Gary B.: *See*—
Adams, William; Newcomer, Clyde; and Larson, Gary B., 5,362,334, Cl. 148-268.000.
Larson, Noble G.; and Stevens, Kent A. Automated camera-based tracking system for sports contests. 5,363,297, Cl. 364-410.000.
Larson, Ralph A.: *See*—
Johannsen, James; Larson, Ralph A.; and Zimmerman, Jeffrey A., 5,363,087, Cl. 340-612.000.
Laskaris, Evangelos T.: *See*—
Herd, Kenneth G.; Laskaris, Evangelos T.; and Thompson Paul S., 5,363,077, Cl. 335-216.000.
Lasker, Martin L., to USI Lighting, Inc. Area lighting system for near uniform illumination of a square horizontal surface area without side glare and including a horizontally-oriented arc tube lamp. 5,363,293, Cl. 362-302.000.
Lau, Hon-Peng P.: *See*—
Blumenthal, Richard A.; Lau, Hon-Peng P.; and Yang, Esther K., 5,362,627, Cl. 435-7.900.
Lau, Kenneth. Convertible fluorescent adaptor with compacted installation mode. 5,362,246, Cl. 439-231.000.
Laue, Christian; Schroder, Georg; and Arlt, Dieter, to Bayer Aktiengesellschaft. Intermediates and their use in the preparation of s-ketoprofen. 5,362,907, Cl. 562-470.000.
Lauter, Josef; Mayr, Walter; Opitz, Joachim; and Romanowski, Gerd, to U.S. Philips Corporation. Method of manufacturing aqueous ceramic suspensions and the use of said suspensions. 5,362,472, Cl. 423-598.000.
Law, Kam S.: *See*—
Wang, David N.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,362,526, Cl. 427-573.000.
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Lax, Hermann; and Au, Andreas. Plug for metallurgical vessels. 5,361,825, Cl. 164-437.000.
Lay, James D., to Oregon Industrial Machine & Manufacturing, Inc. Wood patch cutting method and apparatus. 5,361,813, Cl. 144-363.000.
Lay, Steven H.: *See*—
Rager, Kent D.; and Lay, Steven H., 5,363,447, Cl. 380-21.000.
Layton, Michael R.; Meyer, A. Douglas; and Danver, Bruce A., to Litton Systems, Inc. High performance extended fiber optic hydrophone. 5,363,342, Cl. 367-149.000.
Le Carbone Lorraine: *See*—
Coulon, Michel; and Boucher, Jacques, 5,362,468, Cl. 423-445.00R.
Leach, Peter M. Personal water vehicle. 5,362,269, Cl. 441-65.000.
Lear Seating Corporation: *See*—
Susko, Thomas; and Moore, Douglas, 5,362,131, Cl. 297-463.000.
LeBlond Makino Machine Tool Co.: *See*—
Hrvatin, Scott, 5,362,108, Cl. 285-24.000.
Ledbetter, Elmer W. Hand climber. 5,361,869, Cl. 182-133.000.
Ledebuhr, Arno G., to Hughes Aircraft Company. Compact optical system for a single light valve full-color projector. 5,363,222, Cl. 359-40.000.
Lee, Cheol-won, to Samsung Electronics Co., Ltd. Method and apparatus for generating velocity error signals. 5,363,359, Cl. 369-44.280.
Lee, Ching-Pang; Savage, Joseph W.; and Bobo, Melvin, to General Electric Company. Scaled heat transfer surface with protruding ramp surface turbulators. 5,361,828, Cl. 165-109.100.
Lee, Chul-woo: *See*—
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Lee, Haibang; and Yuk, Soonhong, to Korea Research Institute of Chemical Technology. Microencapsulation for controlled oral drug delivery system. 5,362,424, Cl. 264-4.300.
Lee, Hung S.: *See*—
Skotheim, Terje A.; Lee, Hung S.; and Okamoto, Yoshiyuki, 5,362,493, Cl. 429-194.000.
Lee, Jing M.: *See*—
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Lee, Julia L.: *See*—
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Lee, Robin J.: *See*—
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Lee, Samuel: *See*—
Snyder, Douglas E.; and Lee, Samuel, 5,363,119, Cl. 345-131.000.
Lee, Seung H. Burn remedial composition using natural materials and its production method. 5,362,499, Cl. 424-547.000.
Lee, Song J., to Samsung Electronics Co., Ltd. Manufacturing method of laser diode and laser diode array. 5,362,675, Cl. 437-129.000.
Lee, Ta-Jyh: *See*—
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Lee, Tsu-Chang, to Cadence Design Systems, Inc. Multiple-layer contour searching method and apparatus for circuit building block placement. 5,363,313, Cl. 364-491.000.
Lee, Unkoo, to Hyundai Motor Company. Rear suspension for vehicle. 5,362,091, Cl. 280-662.000.
Lee, Young: *See*—
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Leggett & Platt, Incorporated: *See*—
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Leglertex S.p.A.: *See*—
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Legros, Robert; Wiegert, Bernard; and Zeh, Jean-Luc, to Elf Atochem, S.A. Process for inclusion in (meth)acrylic resins of substances of liquid to solid consistency. 5,362,771, Cl. 523-375.000.
Lehman, Gerard L.: *See*—
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Lehmann, Klaus: *See*—
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Lehmbeck, Steven P.: *See*—
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Lehner, Edwin: *See*—
Stepanek, Premek; Wagner, Ludwig; Lehner, Edwin; and Ruffinengo, Piero G., 5,362,085, Cl. 280-602.000.
Lehrke, Kenneth E.; Lehman, Gerard L.; and Losey, Scott C., to Graco Inc. Rotary agitator with concentric suction tube. 5,362,148, Cl. 366-163.000.
Leibetseder, Josef: *See*—
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Leica Mikroskopie und Systeme GmbH: *See*—
Preussner, Elke; Gruenwald, Heinrich; and Scheerer, Friedrich, 5,362,330, Cl. 134-1.000.
Leimer, Gerhard: *See*—
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Leistner, William E.; and Moshchitsky, Semyon, to Fairmount Chemical Company, Inc. Coupled benzotriazole and benzophenone UV absorbers. 5,362,881, Cl. 548-260.000.
Leland Stanford Junior University, Board of Trustees of the: *See*—
Schreiber, Stuart L.; Friedman, Jeffrey S.; Weissman, Irving L.; and Liu, Jun, 5,362,629, Cl. 435-21.000.
Lembke, Peter: *See*—
Engelhardt, Heinz; Krumbholz, Rudolf; and Lembke, Peter, 5,362,895, Cl. 554-175.000.
Lenk, Deborah A.: *See*—
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Lenselink, Willem: *See*—
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Leo Pharmaceutical Products, Ltd. a/s Lovens Kemiske Fabrik Produktionsaktieselskab): *See*—
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Leonard, Phillip S.: *See*—
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Caramaschi, Giuseppe Antonio; Sanchioni, Sergio; Bocci, Marco; and Leonardi, Maurizio, 5,362,800, Cl. 525-48.000.
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Leopold, Edmund A., to Glass Equipment Development, Inc. Method of making a spacer frame assembly. 5,361,476, Cl. 29-417.000.
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Lepage, Thierry: *See*—
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Le Pape, Alain: *See*—
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Leprince, Marc: *See*—
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L'Etat Francais represente par . . . le Delegue Ministerial pour l'Armement: *See*—
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Letwin, James G.: *See*—
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Leung, Cissy: *See*—
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Lever Brothers Company, Division of Conopco, Inc.: *See*—
Au, Van; Carson, Robert G.; Harirchian, Bijan; and Schilling, Kurt M., 5,362,480, Cl. 424-54.000.
Levesque, Yvon, to Johnson & Johnson Inc. Method and apparatus for the measuring the capillary attraction developed at a surface of an absorbent body. 5,361,627, Cl. 73-73.000.
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Levine, Harry: *See*—
Slade, Louise; Levine, Harry; Craig, Stuart; and Arciszewski, Henry, 5,362,502, Cl. 426-20.000.
Levingston, Jerry C. Pipe joint and method for forming same for threaded connection of profile pipe. 5,362,114, Cl. 285-334.000.
Levy, Roger, to Tishken Products Co. Moving hydraulic press. 5,361,662, Cl. 83-308.000.
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Leybold Durfrrit GmbH: *See*—
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Liebl, Ronald J.; and Madaus, Paul W., to Johnson Service Company. Temperature control system having central control for thermostats. 5,361,982, Cl. 236-46.00R.
Liebl, Thomas J.: *See*—
Jensen, Robert O.; Liebl, Thomas J.; and Liebl, David J., 5,362,302, Cl. 601-24.000.
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Lifetime Hoan Corporation: *See*—
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Lignyte Co., Ltd.: *See*—
Uragami, Tadashi; Tanaka, Yoshiaki; Ozaki, Masaru; and Nakamura, Tatsuya, 5,362,761, Cl. 521-64.000.
Lima, Paul G.; and Singleton, John M., to Cantrell International. Method and apparatus for blanching nuts. 5,361,689, Cl. 99-575.000.
Lin, Chung-Kuang; and Chang, Jung-Jen. Reliably operated automatic umbrella with upwardly and downwardly thrusted push button. 5,361,792, Cl. 135-24.000.
Lin, Jia S., to New Tide Enterprises Co., Ltd. Microphone connector. 5,362,252, Cl. 439-462.000.
Lin, Jung-Fa. Double tub bath structure. 5,361,429, Cl. 4-572.100.
Lin, Kang-Chi: *See*—
Moucharafieh, Nadim C.; Lin, Kang-Chi; and Ahle, James L., 5,362,705, Cl. 504-206.000.
Lin, Kuang-Ts'an; and Liang, Shih-Tzung. Distribution cable mounting device. 5,362,253, Cl. 439-462.000.
Lin, Perry H.-C., to Du Pont de Nemours, E. I., and Company. Hollow filament cross-sections containing four continuous voids. 5,362,563, Cl. 428-398.000.
Lin, San L., to Winbond Electronics North America Corporation. Comparator with controlled hysteresis. 5,362,994, Cl. 327-72.000.
Lin, William C., to General Motors Corporation. Vehicle acceleration sensor. 5,363,300, Cl. 364-424.010.
Lin, Yeong-hwa. Extension cord reel. 5,361,879, Cl. 191-12.400.
Lin, Yung-Ching. Lawn mower. 5,361,568, Cl. 56-194.000.
Lincoln, Clifford F.: *See*—
Neal, Donald R.; Reed, Carl G.; Lincoln, Clifford F.; and Ferry, Julian J., 5,362,257, Cl. 439-676.000.
Lindahl, Michael J. Bale handling carrier. 5,362,189, Cl. 414-24.500.
Lindblad, Nero R.; and Godlove, Ronald, to Xerox Corporation. Multifunctional belt/blade cleaner. 5,363,181, Cl. 355-299.000.
Linde Aktiengesellschaft: *See*—
Langen, Alfred; and Kraft, Wolfgang, 5,361,584, Cl. 60-460.000.
Lindegaard, Poul: *See*—
Outtrup, Helle; Dambmann, Claus; and Lindegaard, Poul, 5,362,414, Cl. 252-174.120.
Lindemans, Jorg: *See*—
Hauser, Hans U.; Lindemans, Jorg; and Mick, Martin, 5,362,434, Cl. 264-239.000.
Linden, Inge-Britt: *See*—
Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,362,733, Cl. 514-270.000.
Lindler, James M. Line guide for fishing rod. 5,361,529, Cl. 43-24.000.
Lindner, Thomas, to Bayerische Motoren Werke AG. Motor vehicle having equipment parts in the front occupant area which can be adjusted on separate sides. 5,361,865, Cl. 180-273.000.
Lindo, Benjamin C.: *See*—
Zawada, Patrick J.; Raine, Peter D.; and Lindo, Benjamin C., 5,363,079, Cl. 336-92.000.

Linn, Jack H.; Lowry, Robert K.; Rouse, George V.; Butler, James F.; and Speece, William H., to Harris Corporation. Bonded wafer processing. 5,362,667, Cl. 437-62.000.

Lipkin, Charles L.; and Schmidt, Frederick W., to Andrew Corporation. Parallel-conductor transmission line antenna. 5,363,115, Cl. 343-872.000.

Liptay-Wagner, Nick: *See*—
Pryor, Timothy R.; Hockley, Bernard S.; Liptay-Wagner, Nick; Hageniers, Omer L.; and Pastorius, W. J., 5,362,970, Cl. 250-561.000.

Lisco, Inc.: *See*—
Spence, Meredith, Jr., 5,361,934, Cl. 220-707.000.

Litel Instruments: *See*—
MacDonald, Bruce G.; Hunter, Robert O., Jr.; Smith, Adlai H.; and Guest, Clark C., 5,362,940, Cl. 219-121.680.

Littlejohn, Deron C.: *See*—
Riddiford, Bryan P.; and Littlejohn, Deron C., 5,362,135, Cl. 303-3.000.

Litton Systems, Inc.: *See*—
Layton, Michael R.; Meyer, A. Douglas; and Danver, Bruce A., 5,363,342, Cl. 367-149.000.

Liu, Hong-Wen; Hsu, Chih-Hong; and Hsiao, Jeff, to Must Systems, Inc. Filter device for color optical scanners. 5,363,247, Cl. 359-889.000.

Liu, Houng-Yean. Game cartridge for a television game console. 5,362,068, Cl. 273-435.000.

Liu, Jun: *See*—
Schreiber, Stuart L.; Friedman, Jeffrey S.; Weissman, Irving L.; and Liu, Jun, 5,362,629, Cl. 435-21.000.

Liu, Leueis. Protective casing for a racket frame. 5,362,071, Cl. 273-73.00D.

Liu, Rui; and Caldeira, Paulo, to Philips Electronics North America Corporation. Low noise multi-output and multi-resonant forward converter for television power supplies. 5,363,287, Cl. 363-20.000.

Llamas, Sandra A. Horse covering. 5,361,563, Cl. 54-79.200.

Lloyd, Kurt M.; Jones, LaMar A.; White, David M.; and Roth, Christopher L., to Harnischfeger Engineers, Inc. Method of assembling an automatic storage and retrieval system. 5,361,481, Cl. 29-469.000.

LNR Communications, Inc.: *See*—
Allen, Carrol M., 5,363,116, Cl. 343-881.000.

Loch, Markus: *See*—
Dao Trong, Son; Helwig, Klaus; and Loch, Markus, 5,363,321, Cl. 364-748.500.

Lockheed Sanders, Inc.: *See*—
Richmond, Martin R., 5,363,104, Cl. 342-17.000.

Lockwood, Dan F.: *See*—
Reese, Scott A.; Lockwood, Dan F.; Strollo, James; and Logan, Stephen L., 5,363,183, Cl. 355-305.000.

Loffredo, John M.: *See*—
Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Loffredo, John M.; Sanderson, Kenneth R.; and Suarez, Gustavo A., 5,363,497, Cl. 395-425.000.

Lofink, Kurt: *See*—
Lofink, Richard; and Lofink, Kurt, 5,362,064, Cl. 273-292.000.

Lofink, Richard; and Lofink, Kurt. Modified baccarat. 5,362,064, Cl. 273-292.000.

Loftin, Rachel M., to Gillette Company, The. Fiber marker including an erasable ink. 5,362,167, Cl. 401-198.000.

Logan, Stephen L.: *See*—
Reese, Scott A.; Lockwood, Dan F.; Strollo, James; and Logan, Stephen L., 5,363,183, Cl. 355-305.000.

Login, Robert B.: *See*—
Chuang, Jui-Chang; Shih, Jenn S.; and Login, Robert B., 5,362,830, Cl. 526-263.000.
Shih, Jenn S.; Chuang, Jui-Chang; and Login, Robert B., 5,362,815, Cl. 525-326.900.

Logothetis, Andreas: *See*—
Bergstra, Raymond; Logothetis, Andreas; Olszewski, William F.; and Wu, Shi-Ming, 5,362,411, Cl. 252-51.50A.

Logothetis, Eleftherios M.: *See*—
Soltis, Richard E.; Logothetis, Eleftherios M.; and Visser, Jacobus H., 5,362,651, Cl. 436-134.000.

Lokhoff, Gerardus C. P.; and Roering, Johannes J., to U.S. Philips Corporation; and Polygram Internat. Holding B.V. Prerecorded record carrier. 5,363,250, Cl. 360-48.000.

Lombardi, Donald G., to Drum Workshop, Inc. Multi-axle drum beater and pedal apparatur. 5,361,670, Cl. 84-422.100.

Londrigan, Michael E.; and Trout, Kenneth G., to Celotex Corporatuon, The. Surfactant for polyisocyanurate foams made with alternative blowing agents. 5,362,764, Cl. 521-112.000.

Long, Lewis H.: *See*—
Roberts, Carl M., Jr.; Long, Lewis H.; and Ruggerio, Paul A., 5,362,681, Cl. 437-226.000.

Longtin, Andre G., to Moore Business Forms, Inc. Self-sealing card assembly on carrier and methods of manufacture. 5,362,106, Cl. 283-109.000.

Longwell, Michael L.: *See*—
Browning, Clyde H., III; and Longwell, Michael L., 5,363,328, Cl. 365-154.000.

Lonza Ltd.: *See*—
Blum, Rene; and Leibetseder, Josef, 5,362,753, Cl. 514-556.000.

Lopetrone, Juan P.: *See*—
Dresti, Mauro G.; Lopetrone, Juan P.; and Regan, James J., 5,363,047, Cl. 324-510.000.

Lopez, Claudio I. Infant measuring device with progress charting capability. 5,361,507, Cl. 33-515.000.

L'Oreal: *See*—
Zysman, Alexandre; Sebag, Henri; Ribier, Alain; Vanlerberghe, Guy; Mahieu, Claude; and Berthelot, Claude, 5,362,494, Cl. 424-401.000.

Losdahl, Claes H.: *See*—
Naslund, Ulf W.; and Losdahl, Claes H., 5,361,500, Cl. 30-381.000.

Loser, Robert P.; and Ebbott, Deborah, to Goodyear Tire & Rubber Company, The. Tread for a tire with blocks and ribs. 5,361,815, Cl. 152-209.00R.

Losey, Scott C.: *See*—
Lehrke, Kenneth E.; Lehman, Gerard L.; and Losey, Scott C., 5,362,148, Cl. 366-163.000.

Louis Berkman Company, The: *See*—
Ciula, James C.; and Smick, Charles J., Jr., 5,361,519, Cl. 37-234.000.

Loutz, Jean-Marie: *See*—
Moens, Luc; Maetens, Daniel; and Loutz, Jean-Marie, 5,362,820, Cl. 525-438.000.

Love, David G., to Fujitsu Limited. Method and apparatus for testing an unpopulated chip carrier using a module test card. 5,363,038, Cl. 324-158.100.

Love, Robert T.; Labedz, Gerald P.; and Baum, Kevin L., to Motorola, Inc. Method and apparatus of adaptive maximum likelihood sequence estimation using filtered correlation synchronization. 5,363,412, Cl. 375-94.000.

Lower, W. Richard. Ornamental promotional article. 5,362,561, Cl. 428-343.000.

Lowry, Robert K.: *See*—
Linn, Jack H.; Lowry, Robert K.; Rouse, George V.; Butler, James F.; and Speece, William H., 5,362,667, Cl. 437-62.000.

LSI Logic Corporation: *See*—
Mallon, Thomas G., 5,362,353, Cl. 156-345.000.
Schoenborn, Philippe, 5,362,356, Cl. 156-626.000.

Lu, Chih-Yuan, to Industrial Technology Research Institute. Method of making vertical DRAM cross point memory cell. 5,362,665, Cl. 437-52.000.

Lu, Shao W. Litter bag for automobiles. 5,362,153, Cl. 383-38.000.

Lubrizol Corporation, The: *See*—
Wiggins, Gary W.; Konzman, Edward J.; Vinci, James N.; and Todd, Patricia R., 5,362,409, Cl. 252-32.70E.

Lucas, Leonard V.; Zahm, Charles L.; Payne, Edward A.; and Andren, Carl F., to Harris Corporation. Mechanism for extracting hybrid (fh/ds) spread spectrum signals within multi-signal type environment. 5,363,401, Cl. 375-1.000.

Luciani, Sabatino; Ponzio, Massimo; and Lumini, Antonio, to Axis U.S.A., Inc. Methods for connecting intermediate stator coil leads. 5,361,487, Cl. 29-596.000.

Lucy, Andrew R.: *See*—
Cooper, Jeremy B.; Lucy, Andrew R.; and Smith, Kevin G., 5,362,850, Cl. 528-483.000.

Ludwig, Ralf: *See*—
Meier, Peter; Wechselberger, Klaus; and Ludwig, Ralf, 5,361,986, Cl. 238-283.000.

Ludwig, Wolfgang, to WTI, Inc. Method of processing freshly slaughtered fowl meat. 5,362,507, Cl. 426-281.000.

Luengo, Juan I., to SmithKline Beecham Corporation. Rapamycin derivatives. 5,362,735, Cl. 514-291.000.

Luhmann, Erhard: *See*—
Hoppe, Lutz; Kressdorf, Burkhard; Luhmann, Erhard; and Nader, Reinhard, 5,362,313, Cl. 106-171.000.

Lumini, Antonio: *See*—
Luciani, Sabatino; Ponzio, Massimo; and Lumini, Antonio, 5,361,487, Cl. 29-596.000.

Lundquist, Joseph T.: *See*—
Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; and Laccetti, Anthony J., 5,362,581, Cl. 429-249.000.
Chang, Victor S.; Hartwig, Richard C.; Lundquist, Joseph T.; Parham, Marc E.; Kung, James K.; Avtges, James A.; and Laccetti, Anthony J., 5,362,582, Cl. 429-249.000.

Luxtron Corporation: *See*—
Glenn, Daniel E., 5,362,969, Cl. 250-561.000.

Luzenske, Frank J. Safety carry garment. 5,361,418, Cl. 2-338.000.

Lyle, Stephen B.: *See*—
Garlick, Robert L.; Lyle, Stephen B.; and Martin, Joseph P., Jr., 5,362,855, Cl. 530-385.000.

Lynn, Scott; Sciamanna, Steven F.; and Sciamanna, Aldo F. Chlorine generator. 5,362,368, Cl. 204-98.000.

M. & G. Ricerche S.p.A.: *See*—
Al Ghatta, Hussain A. K.; Severini, Tonino; and Astarita, Luca, 5,362,763, Cl. 521-79.000.

M. W. Kellogg Company, The: *See*—
Cizmer, Lloyd E.; Lee, Jing M.; and O'Connor, Thomas M., 5,362,454, Cl. 422-201.000.

Ma, Abraham C.; and Hsueh, Paul Y. J., to MA Laboratories, Inc. Packaged integrated circuit add-on card and method of manufacture. 5,362,985, Cl. 257-707.000.

Ma, Hsi K. Computer system with removable floppy disk drive and expansion slot assembly mounted flush in one corner. 5,363,273, Cl. 361-686.000.

MA Laboratories, Inc.: *See*—
Ma, Abraham C.; and Hsueh, Paul Y. J., 5,362,985, Cl. 257-707.000.

Maayeh, Elias S., to Uniplast, Inc. Give stick for high-temperature and low-temperature application based on ethylene vinyl acetate and tackifying resins. 5,362,792, Cl. 524-491.000.

Mabuchi Motor Co., Ltd.: *See*—
Shibata, Hisashi; Sasaki, Norihiro; and Egawa, Yoshiaki, 5,363,005, Cl. 310-244.000.

MacConnell, John G.: *See*—
Arison, Byron H.; Berger, Gregory D.; Huang, Leeyuan; and MacConnell, John G., 5,362,752, Cl. 514-533.000.

MacDermid, Incorporated: *See*—
Adams, William; Newcomer, Clyde; and Larson, Gary B., 5,362,334, Cl. 148-268.000.

MacDonald, Bruce G.; Hunter, Robert O., Jr.; Smith, Adlai H.; and Guest, Clark C., to Litel Instruments. Use of Fresnel zone plates for material processing. 5,362,940, Cl. 219-121.680.

MacDonald, Noel C., to Cornell Research Foundation, Inc. Massively parallel array cathode. 5,363,021, Cl. 315-366.000.

Machida, Shinichi: *See*—
Yoshihara, Kenzou; Osawa, Toshio; Kojima, Takayuki; and Machida, Shinichi, 5,363,207, Cl. 358-442.000.

Machida, Shuji; and Tani, Noriyuki, to Idemitsu Kosan Co., Ltd. Graft copolymer, process for production thereof and resin composition containing same. 5,362,814, Cl. 525-324.000.

Machin, Brian F.: *See*—
Shaw, Michael; and Machin, Brian F., 5,362,047, Cl. 273-77.00A.

Mack, Chris A., to United States of America, Director, National Security Agency. Photolithography exposure tool and method for in situ photoresist measurments and exposure control. 5,363,171, Cl. 355-68.000.

Mackenzie, Patricia D.: *See*—
Haitko, Deborah A.; Baghel, Sunita S.; and Mackenzie, Patricia D., 5,362,402, Cl. 210-757.000.

Macko, William J.: *See*—
Cannon, Gregory L.; Fuller, Gregory W.; Macko, William J.; and Fennell, Robert D., 5,363,090, Cl. 340-825.440.

Macomber, David W.: *See*—
Holmes, Gary L.; Smith, Terrance P.; Ali, Mahfuza B.; and Macomber, David W., 5,362,812, Cl. 525-274.000.

Madan, Deepak; Lee, Young; FitzGibbon, Alan; and Gamroth, Roland, to Elkem Metals Company. Ferrophosphorus refining process. 5,362,440, Cl. 420-88.000.

Madaus, Paul W.: *See*—
Liebl, Ronald J.; and Madaus, Paul W., 5,361,982, Cl. 236-46.00R.

Maechler, Ernst: *See*—
Hostettler, Rene; and Maechler, Ernst, 5,361,995, Cl. 241-29.000.

Maeda, Hajime: *See*—
Omori, Makoto; Ohbuchi, Jun; Maeda, Hajime; and Kasatani, Yasushi, 5,363,274, Cl. 361-736.000.

Maeda, Nobuyuki: *See*—
Hiyoshi, Yoshihiko; Ide, Youji; Kunitake, Tetsuji; Maeda, Nobuyuki; and Surizaki, Kumi, 5,362,548, Cl. 428-195.000.

Maeda, Takeyasu: *See*—
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.

Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, to Sony Corporation. Apparatus for reproducing recorded data comprising interleaved clusters and cluster linking sectors. 5,363,362, Cl. 369-54.000.

Maejima, Hideo: *See*—
Iwamura, Masahiro; Maejima, Hideo; Watanabe, Atsuo; and Mori, Kazutaka, 5,362,998, Cl. 326-110.000.

Maekawa, Zenichiro: *See*—
Akiyama, Yasuo; Maekawa, Zenichiro; Hamada, Hiroyuki; and Yokoyama, Atsushi, 5,361,674, Cl. 87-9.000.

Maeno, Hiroshi: *See*—
Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, 5,361,728, Cl. 122-4.00D.

Maeno, Matagoro: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,362,461, Cl. 423-163.000.

Maenpaa, Tarmo: *See*—
Hyvonen, Tapani; and Maenpaa, Tarmo, 5,361,459, Cl. 24-35.000.

Maes, Pieter J. A.: *See*—
Muylle, Joose R. L.; Dijkstra, Albert J.; Maes, Pieter J. A.; and Van Opstal, Martin, 5,362,893, Cl. 554-195.000.

Maetens, Daniel: *See*—
Moens, Luc; Maetens, Daniel; and Loutz, Jean-Marie, 5,362,820, Cl. 525-438.000.

Magde, John M., Jr.; and Szlucha, Thomas F., to Xerox Corporation. Method and apparatus for background control in an electrostatographic printing machine. 5,363,174, Cl. 355-208.000.

Maggard, Steven M., to Ashland Oil Inc. Indirect method for determining oxygenate content using near-infrared absorption spectra. 5,362,965, Cl. 250-339.120.

Magnani, Charles F., to Chevron Research and Technology Company. Method and apparatus for determining multiphase holdup fractions using a gradiomanometer and a densitometer. 5,361,632, Cl. 73-153.000.

Magnescale, Inc.: *See*—
Tada, Junichi; and Yoshioka, Takamoto, 5,363,034, Cl. 324-207.210.

Magnum Manufacturing, Inc.: *See*—
Orlewicz, Dennis J.; Orlewicz, William P.; and Orlewicz, Lawrence W., 5,362,429, Cl. 264-46.600.

Maheras, Joanne C.: *See*—
Hopkins, John B., Jr.; Maheras, Joanne C.; and Morton, John B., 5,362,766, Cl. 523-105.000.

Mahieu, Claude: *See*—
Zysman, Alexandre; Sebag, Henri; Ribier, Alain; Vanlerberghe, Guy; Mahieu, Claude; and Berthelot, Claude, 5,362,494, Cl. 424-401.000.

Mahieux, Yannick: *See*—
Duhamel, Pierre; and Mahieux, Yannick, 5,363,096, Cl. 341-50.000.

Mahoney, Wayne S.: *See*—
Kropp, Michael A.; and Mahoney, Wayne S., 5,362,421, Cl. 252-512.000.

Maier, Wilfried: *See*—
Krieg, Gunther; Koukolitschek, Karl; and Maier, Wilfried, 5,361,912, Cl. 209-524.000.

Mailhot, John N.: *See*—
Faryar, Alireza F.; Kustka, George J.; Mailhot, John N.; and Webb, Charles A., III, 5,363,141, Cl. 348-470.000.

Majoux, Bernard: *See*—
Laot, Colette; and Majoux, Bernard, 5,363,063, Cl. 330-298.000.

Makabe, Toshiji: *See*—
Takahashi, Kazuo; Kumata, Fumio; Nozaki, Hitoshi; Inoue, Shinichi; and Makabe, Toshiji, 5,362,696, Cl. 502-64.000.

Makino Corporation: *See*—
Saito, Koji; and Makino, Tetsuhisa, 5,362,387, Cl. 210-225.000.

Makino, Masahiro; Kurose, Mikihiko; and Sasada, Yoshihiro, to Nicca Chemical Co., Ltd. Germicidal and fungicidal agent and a germicidal and fungicidal method. 5,362,910, Cl. 564-285.000.

Makino, Tetsuhisa: *See*—
Saito, Koji; and Makino, Tetsuhisa, 5,362,387, Cl. 210-225.000.

Makita, Kazuyuki: *See*—
Ishii, Tadayoshi; Yamada, Katsumi; and Makita, Kazuyuki, 5,361,973, Cl. 228-257.000.

Malchow, Gregory L., to Speed Queen Company. Method and apparatus for spinning and draining automatic clothes washer. 5,361,439, Cl. 8-158.000.

Malekmadani, Mohammad G.; Sheikhrezai, Reza M.; and Cassingham, William J., to Composite Rotors, Inc. Fixed-angle composite centrifuge rotor. 5,362,301, Cl. 494-16.000.

Malik, Aslam A.: *See*—
Archibald, Thomas G.; Carlson, Roland P.; Malik, Aslam A.; and Manser, Gerald E., 5,362,848, Cl. 528-414.000.

Mallinckrodt Medical, Inc.: *See*—
Moore, Dennis A.; Adams, Max D.; Cacheris, William P.; White, David H.; Periasamy, Muthunadar P.; Rajagopalan, Raghavan; deLearie, Lynn A.; and Woulfe, Steven R., 5,362,477, Cl. 424-9.000.
Panek, Karel J., 5,362,473, Cl. 424-1.130.
Stuart, John M., 5,361,754, Cl. 128-207.170.

Mallon, Thomas G., to LSI Logic Corporation. Faraday cage for barrel-style plasma etchers. 5,362,353, Cl. 156-345.000.

Maloney, Kurt: *See*—
Doup, Leonard W.; and Maloney, Kurt, 5,363,290, Cl. 364-145.000.

Maltby, John D., to United States of America, Navy. Conforming tuning coupler for flextensional transducers. 5,363,346, Cl. 367-163.000.

Mametsa, Henri-Jose; and Jacob, Herve , to General Electric CGR S.A. Electromagnetic antenna and excitation antenna provided with such electromagnetic antenna for a nuclear magnetic resonance apparatus. 5,363,113, Cl. 343-744.000.

MAN Roland Druckmaschinen AG: *See*—
Simeth, Claus, 5,361,698, Cl. 101-415.100.

Mannesmann Aktiengesellschaft: *See*—
Wurl, Ernst; and Schreiner, Helmut, 5,362,227, Cl. 425-574.000.

Manser, Gerald E.: *See*—
Archibald, Thomas G.; Carlson, Roland P.; Malik, Aslam A.; and Manser, Gerald E., 5,362,848, Cl. 528-414.000.

Mansfield, Keith D.: *See*—
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Mansfield, Peter, to British Technology Group Ltd. Echo-volumar imaging using 180 degree RF pulses. 5,363,036, Cl. 324-309.000.

Mansson, Ragnar: *See*—
Nylund, Olov; Mansson, Ragnar; Olsson, Torsten; Farkas, Tibor; and Sahlin, Thorbjorn, 5,363,422, Cl. 376-442.000.

MAPEI S.p.A.: *See*—
Cerulli, Tiziano; Clemente, Paolo; Collepardi, Mario; Ferrari, Giorgio; and Zaffaroni, Pasquale, 5,362,324, Cl. 106-823.000.

Maral, Gerard: *See*—
Zein Al Abedeen, Tarif; Maral, Gerard; Seret, Dominique; and Tondriaux, Marc, 5,363,374, Cl. 370-95.300.

Maranci, Arutun: *See*—
Evans, Robert E.; Maranci, Arutun; and Kaminski, Stanley S., 5,362,562, Cl. 428-369.000.

Marathon Oil Company: *See*—
Hurley, Neil F., 5,363,299, Cl. 364-422.000.

Marazzi, Silvio; and De Marchi, Silverio, to Diamond SA. Sleeve portion for an optical fibre plug connector. 5,363,460, Cl. 385-70.000.

Marchi, Marcello: *See*—
Bedeschi, Angelo; Cabri, Walter; Candiani, Ilaria; De Bernardinis, Silvia; Marchi, Marcello; and Varasi, Mario, 5,362,740, Cl. 514-299.000.

Marconi Instruments Limited: *See—*
Bullock, Andrew G.; and Hjipieris, George, 5,363,049, Cl. 324-520.000.
Marczinke, Bernd L.: *See—*
Brosius, Sibylle; Marczinke, Bernd L.; and Schwager, Harald, 5,362,808, Cl. 525-88.000.
Mariahazy, Andrea: *See—*
Wood, James L.; and Mariahazy, Andrea, 5,362,484, Cl. 424-70.000.
Marianowski, Leonard G.: *See—*
Petri, Randy J.; Meek, John; Bachta, Robert P.; and Marianowski, Leonard G., 5,362,578, Cl. 429-35.000.
Marinaro, Douglas E.: *See—*
Roopchand, Brijmohan J.; Yun, David I.; Marinaro, Douglas E.; and Hyland, Mary E., 5,361,678, Cl. 89-36.020.
Marinko, Mark A.: *See—*
Tung, Deborah A.; Segatta, Thomas J.; Verthe, John J. A.; Sandstrom, Paul H.; Bauer, Richard G.; and Marinko, Mark A., 5,361,818, Cl. 152-525.000.
Marker Deutschland GmbH: *See—*
Stepanek, Premek; Wagner, Ludwig; Lehner, Edwin; and Ruffinengo, Piero G., 5,362,085, Cl. 280-602.000.
Marker, Terry L., to UPO. Conversion of olefins by catalytic distillation. 5,362,377, Cl. 208-133.000.
Marko, Kenneth A.; Bryant, Bruce D.; and Soderborg, Nathan R., to Ford Motor Company. System and method for processing test measurements collected from an internal combustion engine for diagnostic purposes. 5,361,628, Cl. 73-116.000.
Marks, Maurice J.: *See—*
McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., 5,362,838, Cl. 528-198.000.
Marr-Andre, Miche; and Aime, Loichot, to SMH Management Services AG. Watch case with hollowed-out caseband. 5,363,350, Cl. 368-276.000.
Mars Actel: *See—*
Milanowski, Michel; and Vincent, Alain, 5,363,466, Cl. 385-135.000.
Marsch, Hans-Dieter, to Uhde GmbH. Reformer for the generation of synthesis gas. 5,362,453, Cl. 422-197.000.
Marsh, Richard L.: *See—*
Berger, Jeffrey M.; Foster, Randy C.; Hampton, Timothy J.; Hargus, Jack S.; Marsh, Richard L.; and Masseth, David A., 5,361,810, Cl. 141-59.000.
Marshall, Thomas M.: *See—*
Gaines, James M.; Drenten, Ronald R.; Haberern, Kevin W.; Marshall, Thomas M.; Mensz, Piotr M.; and Petruzzello, John, 5,363,395, Cl. 372-45.000.
Marstaller, Ronald D.: *See—*
Brown, Stanton D.; Wentworth, Michael M.; Marstaller, Ronald D.; and Bullin, Jerry A., 5,362,381, Cl. 208-179.000.
Marten, F. Lennart: *See—*
Famili, Amir; Marten, F. Lennart; and Nangeroni, James F., 5,362,532, Cl. 428-36.600.
Marten, Finn L.: *See—*
Famili, Amir; Nangeroni, James F.; and Marten, Finn L., 5,362,778, Cl. 524-50.000.
Martens, Johannes C. A., to Typhoon-Martens B.V. Method and apparatus for making a frozen mass of drinkable product ready for treatment. 5,362,509, Cl. 426-524.000.
Martin, Daniel T.; Harden, William H., III; Herbstritt, Dale R.; and Mistry, Dilip K., to Ingersoll-Rand Company. Portable diesel-driven centrifugal air compressor. 5,362,207, Cl. 417-243.000.
Martin, David D., to Robertshaw Controls Company. Refrigerator system, a control device therefor and methods of making the same. 5,361,596, Cl. 62-187.000.
Martin, George G.; and Martin, Thomas J. Hand-held non-contacting electric field detection tool. 5,363,045, Cl. 324-395.000.
Martin, Horst; Naab, Alfred; Hesse, Bernhard; Weidhaas, Wolfgang; Quednau, Gunther; and Fremgen, Dieter, to Raynet GmbH; and Philips Gloeilampenfabrieken. Transmission of broadband signals to subscribers using a telecommunications cable. 5,363,432, Cl. 379-90.000.
Martin, Joseph P., Jr.: *See—*
Garlick, Robert L.; Lyle, Stephen B.; and Martin, Joseph P., Jr., 5,362,855, Cl. 530-385.000.
Martin Marietta Corporation: *See—*
Kelley, Archie W., 5,361,811, Cl. 141-250.000.
Martin, Mario: *See—*
Garro, Luciano; and Martin, Mario, 5,362,793, Cl. 524-495.000.
Martin, Raymond B., to W/C Technology Corporation. Hydraulically controlled pressurized water closet flushing system. 5,361,426, Cl. 4-361.000.
Martin, Roy K.: *See—*
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Martin, Thomas J.: *See—*
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Martinell, Hakan R., to Paref AB. Process for the purification of water. 5,362,400, Cl. 210-717.000.
Martinez, J. Raul; and Mason, V. Bradford, to SRI International. Method and apparatus for the active reduction of compression waves. 5,363,451, Cl. 381-71.000.
Martinoli, Jean-Luc: *See—*
Quentin, Gerard; and Martinoli, Jean-Luc, 5,362,851, Cl. 530-331.000.
Maruta, Yuzo: *See—*
Kamo, Masayoshi; Maruta, Yuzo; Sando, Hiroaki; and Furuhata, Takashi, 5,363,251, Cl. 360-55.000.
Maruyama, Shigeru: *See—*
Shimasaki, Yuichi; Maruyama, Shigeru; Kanehiro, Masaki; Hisaki, Takashi; Baba, Shigeki; and Ishioka, Takuji, 5,363,046, Cl. 324-402.000.
Maruyama, Shoji: *See—*
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Mascavage, John J.: *See—*
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Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
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Maschinenfabrik Rieter AG: *See—*
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Maschinenfabrik Sulzer Burckhardt AG: *See—*
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Maschler, Harald; and Christensen, Siegfried B., IV, to SmithKline Beecham Pharma GmbH; and SmithKline Beecham Corporation. Phenyl-substituted cycloalkenyl compounds useful as PDE IV inhibitors. 5,362,915, Cl. 568-20.000.
Maslak, Barbara A. M.; Showalter, James M.; and Szczygielski, Thomas J., to International Business Machines Corporation. Local and global commit scopes tailored to work units. 5,363,505, Cl. 395-650.000.
Mason, Terri L. Cap for nursing bottle for providing a compartmental dispensing receptacle. 5,361,918, Cl. 215-6.000.
Mason, V. Bradford: *See—*
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Bekefi, George, 5,363,054, Cl. 330-4.000.
Bozler, Carl O.; Fan, John C.C.; and McClelland, Robert W., 5,362,682, Cl. 437-226.000.
Gertz, Jeffrey L.; and Grappel, Robert D., 5,363,107, Cl. 342-26.000.
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Masters, Ronald A., to Procter & Gamble Company, The. Liquid hard surface detergent compositions containing amphoteric detergent surfactant and specific anionic surfactant. 5,362,422, Cl. 252-544.000.
Masumoto, Tsuyoshi: *See—*
Horimura, Hiroyuki; Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,362,339, Cl. 148-403.000.
Masutomi, Haruhiko; Uchida, Naoko; Ohtani, Hirofumi; and Ichikawa, Kazuyoshi, to Konica Corporation. Ultrafine gold and/or silver chalcogenide and production thereof. 5,362,470, Cl. 423-509.000.
Matalia, Harshad D.: *See—*
Cunningham, H. Wilson; Cooley, Allen M.; and Matalia, Harshad D., 5,362,362, Cl. 162-5.000.
Matheussen, Koen; Hendrickx, Peter; Belmans, Koen; and de Bal, Luc. Straw. 5,361,987, Cl. 239-33.000.
Mathews, Viju K., to Micron Semiconductor, Inc. Barrier process for Ta_2O_5 capacitor. 5,362,632, Cl. 437-47.000.
Mathis, Peter: *See—*
McCarver, Stacey G.; Strack, David C.; Porter, Marsha L.; and Mathis, Peter, 5,362,306, Cl. 602-60.000.
Mathon, Jean-Claude: *See—*
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Matkovich, Vlado I.: *See—*
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Matsubara, Masanobu: *See—*
Higashio, Yasuhiko; Kajikuri, Hiroshi; Sugita, Keisuke; Doi, Hideki; and Matsubara, Masanobu, 5,362,870, Cl. 540-540.000.
Matsuda, Mikio: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.
Matsuda, Yasuhiko: *See—*
Morioka, Koitsu; and Matsuda, Yasuhiko, 5,361,471, Cl. 29-33.200.
Matsufuji, Mieko: *See—*
Tsukamoto, Akira; Matsufuji, Mieko; and Kita, Yukio, 5,362,640, Cl. 435-172.300.
Matsui, Akio. Pressure-intensifying type fluid pressure cylinder. 5,361,680, Cl. 91-519.000.
Matsui, Fumio: *See—*
Tanaka, Satoru; Yangisawa, Shuichi; and Matsui, Fumio, 5,363,356, Cl. 369-44.290.
Matsui, Hiroshi: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, 5,362,489, Cl. 424-852.000.
Matsui, Katsuaki; and Miyamoto, Sampei, to Oki Electric Industry Co., Ltd. Semiconductor memory with column line control circuits for protection against broken column lines. 5,363,331, Cl. 365-189.060.

Matsui, Kunihiko: *See—*
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.
Matsukawa, Hiroyuki: *See—*
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Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, to Hitachi Ltd.; and Kasei Optonix Ltd. Phosphor and cathode-ray tube using the same. 5,363,013, Cl. 313-468.000.
Matsumoto, Hidetoshi: *See—*
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.
Matsumoto, Hirotaka: *See—*
Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, 5,362,874, Cl. 544-216.000.
Matsumoto, Kenichi, to Canon Kabushiki Kaisha. Image forming apparatus. 5,363,178, Cl. 355-273.000.
Matsumoto, Koji; Morimoto, Masaru; and Hirano, Susumu, to Mitsubishi Rayon Company, Ltd. Process for producing rubber-containing graft copolymer particles. 5,362,795, Cl. 524-501.000.
Matsumoto, Mikio: *See—*
Uchida, Masaaki; and Matsumoto, Mikio, 5,361,582, Cl. 60-276.000.
Matsumoto, Shigetsugu: *See—*
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Matsumoto, Toshio: *See—*
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Matsumura, Hiromu; Yano, Toshisada; Hashizume, Hiroshi; Matsushita, Akira; and Eigyo, Masami, to Shionogi & Co., Ltd. Tetrahydropyridine derivatives. 5,362,873, Cl. 544-124.000.
Matsumura, Yasuo; Takano, Hiroshi; Takagi, Masahiro; and Yoshimura, Mamoru, to Fuji Xerox Co., Ltd. Carrier for developing electrostatic latent image and process for producing the same. 5,362,596, Cl. 430-137.000.
Matsuo, Takeshi; Aono, Shinya; and Muraoka, Toshinori, to Mita Industrial Company Ltd. Automatic document conveying device having first and second pivoting frames. 5,363,184, Cl. 355-309.000.
Matsuo, Yasuhiro: *See—*
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.
Matsuoka, Hidetoshi, to Canon Kabushiki Kaisha. Apparatus for tape loading device. 5,363,257, Cl. 360-85.000.
Matsuoka, Koushin: *See—*
Suzuki, Makoto; Shimada, Yasuhiro; Matsuoka, Koushin; Yamazaki, Shigeru; Yamakawa, Katsuyoshi; and Sato, Kozo, 5,362,882, Cl. 548-262.400.
Matsuoka, Noriyuki; and Takahashi, Toru, to Yamaichi Electronics Co., Ltd. Contactor for electric part. 5,362,241, Cl. 439-66.000.
Matsuoka, Yasuo: *See—*
Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, 5,362,482, Cl. 424-69.000.
Matsushima, Kazufumi, to Kabushiki Kaisha Toshiba. Cooking appliance that prevents initiation of cooking cycle after predetermined time elapses after door closure. 5,362,946, Cl. 219-704.000.
Matsushita, Akira: *See—*
Matsumura, Hiromu; Yano, Toshisada; Hashizume, Hiroshi; Matsushita, Akira; and Eigyo, Masami, 5,362,873, Cl. 544-124.000.
Matsushita Electric Inductris Co., Ltd.: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Ajima, Takumi, 5,363,365, Cl. 369-124.000.
Fuyama, Seiji, 5,363,296, Cl. 364-405.000.
Hamada, Tutomu; Asada, Takafumi; Ikemoto, Yoshihiro; and Nakagawa, Toru, 5,361,470, Cl. 29-27.00R.
Hirase, Junji; and Hori, Takashi, 5,362,982, Cl. 257-408.000.
Inoue, Hiroyuki; Fujiwara, Keiji; Ogawa, Tomomi; and Tezuka, Masumi, 5,361,852, Cl. 173-176.000.
Kojima, Kazunobu, 5,363,150, Cl. 348-836.000.
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.
Morimoto, Kazuo, 5,362,948, Cl. 235-376.000.
Nakano, Masatoshi; and Kurobe, Akio, 5,363,418, Cl. 375-117.000.
Nishii, Kanji; Ito, Masami; and Hukui, Atsushi, 5,363,455, Cl. 382-31.000.
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Shimada, Mikinari; Watanabe, Hirotoshi; Fujii, Satoru; Hagino, Masato; and Tsukamoto, Masahide, 5,362,513, Cl. 427-58.000.
Tanaka, Yasunari, 5,363,438, Cl. 379-375.000.
Utsumi, Mitsuo; Zaitsu, Osamu; Okuda, Makoto; and Kajino, Jiro, 5,363,268, Cl. 242-347.100.
Matsushita Electrical Industrial Co., Ltd.: *See—*
Sakurai, Tutomu; and Yamakita, Takeshi, 5,363,229, Cl. 359-159.000.
Matsushita, Takeshi: *See—*
Hashimoto, Makoto; Miyazawa, Yoshihiro; and Matsushita, Takeshi, 5,363,324, Cl. 365-156.000.
Matsutani Chemical Industries Co., Ltd.: *See—*
Mizoguchi, Naoyuki; Yanetani, Yoshifumi; and Yamashita, Naoko, 5,362,510, Cl. 426-549.000.
Matsuura, Kiyoshige; Sumi, Naoyuki; and Fujita, Kouichi, to Sony Corporation. Laser-addressed liquid crystal display. 5,363,117, Cl. 345-87.000.
Matsuyama, Yasushi, to Tomy Company, Ltd. Movable body jumping mechanism for amusement devices. 5,362,050, Cl. 273-118.00R.
Matsuzaka, Shoji: *See—*
Tashiro, Kouji; Hoshino, Hiroyuki; Murakami, Shuji; Matsuzaka, Shoji; and Ohtani, Hirofumi, 5,362,619, Cl. 430-567.000.
Matteucci, Francesco. Method and device for cutting underwater structures. 5,361,748, Cl. 125-21.000.
Matthews, Bruce. Well plugging apparatus and method. 5,361,840, Cl. 166-285.000.
Matthews, Steven C.; Sorce, James S.; and Palombo, Mario P., to Hughes Aircraft Company. Conductive face-cooled laser crystal. 5,363,391, Cl. 372-36.000.
Mattis, John: *See—*
McMills, Corey; and Mattis, John, 5,362,250, Cl. 439-387.000.
Matyscak, Kamil; and Schmid, Traugott, to Asea Brown Boveri Ltd. Gas turbine with flanged-on exhaust gas casing. 5,362,204, Cl. 415-213.100.
Matysek, James F., to Xerox Corporation. Distributed job scheduling with modular components. 5,363,175, Cl. 355-208.000.
Matznick, Andrew H.: *See—*
Freier, Donald P.; and Matznick, Andrew H., 5,361,431, Cl. 4-677.000.
Mauch, Kurt: *See—*
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Maurer, Eberhard: *See—*
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Maurer, Robert: *See—*
Muller-Rees, Christoph; Maurer, Robert; Stohrer, Jurgen; Kreuzer, Franz-Heinrich; Jung, Silvia; and Csellich, Franz, 5,362,315, Cl. 106-493.000.
Mautino, Peter S.; and Hanes, Douglas M., to McConway & Torley Corporation. Drawbar bearing block. 5,361,917, Cl. 213-50.000.
Max Display Fixtures & Woodworks: *See—*
Frei, Max, 5,361,927, Cl. 220-334.000.
Maxwell, Paul B.: *See—*
Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., 5,361,814, Cl. 152-209.00A.
Maydan, Dan: *See—*
Wang, David N.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,362,526, Cl. 427-573.000.
Mayeux, Donald P., to Whitey Co. Stream selector for process analyzer. 5,361,805, Cl. 137-885.000.
Mayr, Max; Blatt, Wolfgang; and Heinke, Harri, to Heraeus Elektrochemie GmbH. Fully automatic current control for metal depletion cells. 5,362,369, Cl. 204-105.00R.
Mayr, Walter: *See—*
Lauter, Josef; Mayr, Walter; Opitz, Joachim; and Romanowski, Gerd, 5,362,472, Cl. 423-598.000.
Mazurek, Pamela M.; and Midon, Christian, to Wm. Wrigley Jr. Company. Method of stabilizing chewing gum with an antioxidant containing tissue and product thereof. 5,362,500, Cl. 426-5.000.
McBain, Douglas S.; Ratermann, Andrew L.; Hargis, I. Glen; Melby, Earl G.; and LaJudice, Kevin P., to GenCorp Inc. Polyester-flexible polymer block copolymers and mixtures thereof. 5,362,819, Cl. 525-404.000.
McCarthy, Peter A.: *See—*
Chang, George; Hamanaka, Ernest S.; McCarthy, Peter A.; Truong, Thien; and Walker, Frederick J., 5,362,878, Cl. 546-296.000.
McCarver, Stacey G.; Strack, David C.; Porter, Marsha L.; and Mathis, Peter, to Kimberly-Clark Corporation. Surgical stockinette. 5,362,306, Cl. 602-60.000.
McCauley, David K., to Eastman Kodak Company. Method and apparatus for adaptive color characterization and calibration. 5,363,318, Cl. 364-571.010.
McClain, Robert D., to Nalco Chemical Company. Spectrophotometric detection of hydroperoxides in hydrocarbons. 5,362,652, Cl. 436-135.000.
McClelland, Robert: *See—*
Zavracky, Paul M.; Fan, John C. C.; McClelland, Robert; Jacobsen, Jeffrey; and Dingle, Brenda, 5,362,671, Cl. 437-81.000.
McClelland, Robert W.: *See—*
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McClement, Arthur: *See—*
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McCombie, Jay C., to Chrysler Corporation. Single sensor misfire detection apparatus and method for an internal combustion engine. 5,361,629, Cl. 73-117.300.
McConnell, Robert L.: *See—*
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McConway & Torley Corporation: *See—*
Mautino, Peter S.; and Hanes, Douglas M., 5,361,917, Cl. 213-50.000.

McCormick, David M.: *See—*
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McCormick, Martin P.: *See—*
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McCown, Jon: *See—*
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McCullough, James D., Jr.; and Ficker, Harold K., to Shell Oil Company. Polymer compositions. 5,362,782, Cl. 524-108.000.

McCullough, Robert B.: *See—*
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McCurry, Patrick M., Jr.; Klein, Robert L., Jr.; Gibson, Michael W.; Beaulieu, James D.; and Varvil, Janet R., to Henkel Corporation. Continuous bleaching of alkylpolyglycosides. 5,362,861, Cl. 536-4.100.

McDaniel, Max P.: *See—*
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McDonald, Clayton C.; and Johnson, Wendell H., to Jarvis B. Webb Company. Conveyor trolley assembly. 5,361,890, Cl. 198-465.400.

McDonald, Michael C.: *See—*
Keller, Myron C.; and McDonald, Michael C., 5,361,804, Cl. 137-801.000.

McDonald, Thomas M., to Hubbell Incorporated. GFCI receptacle. 5,363,269, Cl. 361-45.000.

McGarry, Frederick J.; and Subramaniam, Ramnath, to GenCorp Inc. Unsaturated polyester-flexible polymer network composition. 5,362,799, Cl. 525-31.000.

McGauley, Mary A.: *See—*
Kamper, Susan L.; and McGauley, Mary A., 5,362,504, Cl. 426-89.000.

McGee, William F.; and Rybicki, Daniel J., to United States of America, National Aeronautics and Space Administration. Plasma arc welding torch having means for "vortexing" plasma gas exiting the welding torch. 5,362,938, Cl. 219-121.510.

McGill, Robert E.: *See—*
Reynolds, Francis D.; Baran, Joseph S.; Bisey, Robert P.; Button, Terry; McGill, Robert E.; Nalven, Nathan L.; and Salvitti, Matthew A., 5,361,764, Cl. 128-653.500.

McGrady, Gerard S.: *See—*
Webb, Colin E.; and McGrady, Gerard S., 5,363,396, Cl. 372-57.000.

McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., to Virginia Polytechnic Institute and State University; and Dow Chemical Company, The. Carbonate polymers containing ethenyl aryl moieties. 5,362,838, Cl. 528-198.000.

McKee, Gary F.: *See—*
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McKee, James M., to Solid State Farms, Inc. Permittivity spectroscopy apparatus and method. 5,363,052, Cl. 324-663.000.

McKenna, Patrick M.; Rudeen, Robert W.; and Gilpin, David W., to Intermec Corporation. Reading apparatus with separate illumination and detection optical axes. 5,362,953, Cl. 235-472.000.

McKenney, Darryl J.; and Cyr, Robert D., to Parlex Corporation. Multiple layer printed circuit boards and method of manufacture. 5,362,534, Cl. 428-40.000.

McLain, Mike D.; and McLain, Robert W. Fluid tank with saddle rack top. 5,361,929, Cl. 220-562.000.

McLain, Robert W.: *See—*
McLain, Mike D.; and McLain, Robert W., 5,361,929, Cl. 220-562.000.

McLoughlin, John E.; and Athanasiades, Neocles G. Air tank bracket with strap-lifting arms. 5,362,022, Cl. 248-313.000.

McLoughlin, Robert F.: *See—*
Judd, Daniel R.; and McLoughlin, Robert F., 5,361,637, Cl. 73-766.000.

McMahon, John F., to Intel Corporation. Method of making an electronic assembly having a flexible circuit wrapped around a substrate. 5,362,656, Cl. 437-21.000.

McMahon, Robert L.; McCullough, Robert B.; and Ivashin, Victor, to Terrascope Systems, Inc. Fiber optic detection system. 5,362,971, Cl. 250-577.000.

McMills, Corey; and Mattis, John, to Raychem Corporation. Coaxial cable connection method and device using oxide inhibiting sealant. 5,362,250, Cl. 439-387.000.

McMonagle, John J., Jr.; and Vesely, Kevin T. Remotely programmable, vandal-resistant voice communications unit. 5,363,436, Cl. 379-355.000.

McNabb, James H., to Abrams Fixture Corporation. Gate for check-out lane. 5,361,538, Cl. 49-192.000.

McPherson, Marinelle: *See—*
Schanus, Edward G.; and McPherson, Marinelle, 5,362,869, Cl. 426-656.000.

McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., to Kimberly-Clark Corporation. Flexible packaging with center opening feature. 5,361,905, Cl. 206-494.000.

McReynolds, Ernest G.: *See—*
Boyle, Graeme R.; Bergquist, Susan C.; McReynolds, Ernest G.; and Haug, Matson M., 5,363,320, Cl. 364-578.000.

McWhirter, Anthony; Colautti, Eugenio; and Amos, David J., to Westinghouse Electric Corporation. Gas turbine ultra low NOx combustor. 5,361,586, Cl. 60-737.000.

MEAD: *See—*
Bullock, Bobby T., Sr., 5,362,346, Cl. 156-205.000.

Meadows, John L. Method and apparatus for hemming sheets of metal material. 5,361,620, Cl. 72-387.000.

Meanwell, Nicholas A., to Bristol-Myers Squibb Company. 4-5-diphenyloxazole derivatives as inhibitors of blood platelet aggregation. 5,362,879, Cl. 548-236.000.

Meco Equipment Engineers B.V.: *See—*
van der Heijden, Henricus J., 5,362,370, Cl. 204-141.500.

Medea Research S.r.l.: *See—*
Graziella, Bruno, 5,362,745, Cl. 514-415.000.

Medeiros, David R.: *See—*
Sinta, Roger; Hemond, Richard C.; Medeiros, David R.; Rajaratnam, Martha M.; Thackeray, James W.; and Canistro, Dianne, 5,362,600, Cl. 430-192.000.

Medevelop AB: *See—*
Branemark, Per-Ingvar, 5,362,236, Cl. 433-173.000.

Medical Advances, Inc.: *See—*
Herlihy, David J.; and Boskamp, Eddy B., 5,361,765, Cl. 128-653.500.

Medical Composite Technology, Inc.: *See—*
Robertson, A. Scott; and Geiger, Richard, 5,361,494, Cl. 29-897.200.

Meek, John: *See—*
Petri, Randy J.; Meek, John; Bachta, Robert P.; and Marianowski, Leonard G., 5,362,578, Cl. 429-35.000.

MEGA ELEKTRONIIKKA OY PL.: *See—*
Remes, Arto J.; and Eskelinen, Kari U., 5,361,775, Cl. 128-733.000.

Meguro, Kanji; and Ikeda, Hitoshi, to Takeda Chemical Industries, Ltd. Quinoline derivatives, their production and use as ACAT inhibitors. 5,362,742, Cl. 514-312.000.

Meidl, Lothar: *See—*
Kufner, Walter, deceased; and Meidl, Lothar, 5,362,159, Cl. 384-484.000.

Meier, Peter; Wechselberger, Klaus; and Ludwig, Ralf, to Hilti Aktiengesellschaft. Arrangement for laying rail. 5,361,986, Cl. 238-283.000.

Meixner, Larry A.: *See—*
Wilson, Kenneth D.; Meixner, Larry A.; Bemis, Sharon R.; Calhoun, Clyde D.; and Ree, Buren R., 5,362,516, Cl. 427-207.100.

Mekata, Kouroh: *See—*
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.

Melby, Earl G.: *See—*
McBain, Douglas S.; Ratermann, Andrew L.; Hargis, I. Glen; Melby, Earl G.; and LaJudice, Kevin P., 5,362,819, Cl. 525-404.000.

Melchionna, Carmine M., to New England Redemption of Connecticut, Inc. Reverse bottle vending, crushing and sorting machine. 5,361,913, Cl. 209-583.000.

Mellis, Rainer: *See—*
Dorau, Wolfgang; Wagner, Friedrich; Wienands, Herbert; Rautenbach, Robert; and Mellis, Rainer, 5,362,395, Cl. 210-638.000.

Melngailis, John: *See—*
Hartney, Mark A.; Melngailis, John; and Shaver, David C., 5,362,606, Cl. 430-315.000.

Meluskey, Richard. Pin guide and pinsetting machine. 5,362,277, Cl. 473-94.000.

Melvin, Kevin. Three-dimensional photograph. 5,363,159, Cl. 354-76.000.

Menchetti, Robert J., to National Gypsum Company. Horizontal unitized panel. 5,361,556, Cl. 52-561.000.

Menez, Andre : *See—*
Boquet, Paul; Boulain, Jean-Claude; Ducancel, Frederic; Gillet, Daniel; and Menez, Andre , 5,362,644, Cl. 435-252.300.

Mengel, Michael: *See—*
Saleem, Abdus; Gal, Eli; Brown, Gregory; and Mengel, Michael, 5,362,458, Cl. 423-243.060.

Menichincheri, Maria: *See—*
Cozzi, Paolo; Menichincheri, Maria; Capolongo, Laura; and Mongelli, Nicola, 5,362,729, Cl. 514-235.500.

Mensz, Piotr M.: *See—*
Gaines, James M.; Drenten, Ronald R.; Haberern, Kevin W.; Marshall, Thomas M.; Mensz, Piotr M.; and Petruzzello, John, 5,363,395, Cl. 372-45.000.

Menzler, Horst: *See—*
Schels, Hans; and Menzler, Horst, 5,362,147, Cl. 366-107.000.

Merchant, Steven L., to Philips Electronics North America Corporation. SOI transistor with improved source-high performance. 5,362,979, Cl. 257-340.000.

Merchat, Serge; Teixeira, Jose; and Cinquin, Gerard, to D.P. Medical. Device for generating a mist from a liquid, especially a medication. 5,361,989, Cl. 239-102.200.

Mercier, Jean-Michel: *See—*
Fiard, Jean-Francois; Mercier, Jean-Michel; and Prevotat, Marie-Luce, 5,362,707, Cl. 504-234.000.

Merck & Co., Inc.: *See—*
Amato, Joseph S.; and Cvetovich, Raymond, 5,362,862, Cl. 536-7.100.
Anthony, Neville J.; Lee, Ta-Jyh; Smith, Robert L.; and Stokker, Gerald E., 5,362,906, Cl. 562-23.000.

Arison, Byron H.; Berger, Gregory D.; Huang, Leeyuan; and MacConnell, John G., 5,362,752, Cl. 514-533.000.
Cvetovich, Raymond, 5,362,863, Cl. 536-7.100.
DiNinno, Frank P.; Salzmann, Thomas N.; and Muthard, David A., 5,362,723, Cl. 514-210.000.
Lifshey, Arthur L., 5,361,947, Cl. 222-212.000.
Skaggs, Bryan; O'Brien, Mike; Scheult, James M.; and Swazey, John M., 5,362,312, Cl. 106-189.000.

Merritt-Munson, Carolann. Insulative carrying case. 5,361,603, Cl. 62-457.200.

Messier-Bugatti: *See—*
Derrien, Michel; and Brisedou, Philippe, 5,362,015, Cl. 244-50.000.

Messner, Johann, to Krauss Maffei Aktiengesellschaft. Cover for centrifuge housing. 5,361,926, Cl. 220-331.000.

Metcalf, Jeff W., to Elvy, Steven; and Culshaw, Al. Pin-tumbler lock with retained key and method of operation thereof. 5,361,614, Cl. 70-389.000.

Meyer, A. Douglas: *See—*
Layton, Michael R.; Meyer, A. Douglas; and Danver, Bruce A., 5,363,342, Cl. 367-149.000.

Mian, Maurizio: *See—*
Rosini, Sergio; and Mian, Maurizio, 5,362,750, Cl. 514-510.000.

Michel, Karl H.: *See—*
Boeck, LaVerne D.; Chio, Hang; Eaton, Tom E.; Godfrey, Otis W., Jr.; Michel, Karl H.; Nakatsukasa, Walter M.; and Yao, Raymond C., 5,362,634, Cl. 435-76.000.

Michino, Masahiro: *See—*
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.

Mick, Martin: *See—*
Hauser, Hans U.; Lindemans, Jorg; and Mick, Martin, 5,362,434, Cl. 264-239.000.

Mickelson, Richard: *See—*
Bell, Michael; and Mickelson, Richard, 5,361,866, Cl. 182-3.000.

MicroBilt Corporation: *See—*
Nair, Parameswaran B.; Choudhuri, Kumar S.; Stills, James T.; and Evans, John C., 5,362,952, Cl. 235-449.000.

Microchip Technology Incorporated: *See—*
Alexander, Samuel E.; Fisher, Richard J.; and Hewitt, Kent D., 5,363,334, Cl. 365-218.000.

Microgenics Corporation: *See—*
Krevolin, Mark; and Kates, David, 5,362,625, Cl. 435-7.600.

Micron Semiconductor, Inc.: *See—*
Mathews, Viju K., 5,362,632, Cl. 437-47.000.

Micron Technology, Inc.: *See—*
Dennison, Charles H., 5,362,666, Cl. 437-52.000.
Reinberg, Alan R., 5,363,337, Cl. 365-230.060.

MicroSi, Inc.: *See—*
Crivello, James V.; O'Brien, Michael J.; and Lee, Julia L., 5,362,607, Cl. 430-326.000.

Microsoft Corporation: *See—*
Olynyk, Kirk O., 5,363,479, Cl. 395-142.000.
Willman, Bryan M.; Zbikowski, Mark J.; Letwin, James G.; and Shah, Rajen J., 5,363,487, Cl. 395-275.000.

Midavaine, Pierre; and Roch, Jean, to Bertin & CIE. Device for transferring flat objects using a conveyor belt and drum arrangement. 5,362,040, Cl. 271-225.000.

Midland Brake, Inc.: *See—*
Wallestad, Steven D., 5,362,136, Cl. 303-9.720.

Midon, Christian: *See—*
Mazurek, Pamela M.; and Midon, Christian, 5,362,500, Cl. 426-5.000.

Miehe, Friedrich-Viktor: *See—*
Dietrich, Klaus; Gunther, Stephan; Knoth, Norbert; Miehe, Friedrich-Viktor; and Thiel, Wolfgang, 5,362,947, Cl. 235-375.000.

Miehe, Joseph-Albert: *See—*
Grossetie, Jean-Claude; Miehe, Joseph-Albert; and Boussoukaya, Mustapha, 5,362,959, Cl. 250-214.0VT.

Mieno, Fumitake: *See—*
Sato, Noriaki; and Mieno, Fumitake, 5,362,981, Cl. 257-371.000.

Mikamura, Yasuki, to Sumitomo Electric Industries, Ltd. Preamplifier for optical communication having a gain control circuit. 5,363,064, Cl. 330-308.000.

Miki, Nobuhiro: *See—*
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,362,461, Cl. 423-163.000.

Mikogami, Yukihiro: *See—*
Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, 5,362,559, Cl. 428-333.000.

Milani, William R.: *See—*
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.

Milanowski, Michel; and Vincent, Alain, to Mars Actel. Assembly of hinged flat modules. 5,363,466, Cl. 385-135.000.

Miles Inc.: *See—*
Pugia, Michael J., 5,362,633, Cl. 435-28.000.

Millard, Jacques: *See—*
Faucompre, Annick; Gigout, Jean-Pierre; Millard, Jacques; and Leprince, Marc, 5,361,661, Cl. 83-177.000.

Miller, Arthur, to Tech Art, Inc. Card reader for blackjack table. 5,362,053, Cl. 273-148.00R.

Miller, Donald W.: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Miller Electric Mfg. Co.: *See—*
Hutchison, Richard M.; and Corrigall, Don J., 5,363,035, Cl. 323-254.000.

Miller, Frederick W.: *See—*
Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., 5,361,814, Cl. 152-209.00A.

Miller, Jan W.: *See—*
Brown, Michael L.; Miller, Jan W.; Spatig, Wilbur W.; and Zigoris, Dean M., 5,362,298, Cl. 482-137.000.

Miller, Joel L.; Hood, Teresa I.; and Winter, John M., to Square D Company. Circuit breaker having spring biased blade suspension. 5,363,076, Cl. 335-16.000.

Miller, Kevin L.: *See—*
Nash, Mark E.; Moore, John K.; and Miller, Kevin L., 5,363,253, Cl. 360-69.000.

Miller, Laurence L., to TRW Inc. Power steering system. 5,361,861, Cl. 180-132.000.

Miller, Michael J.: *See—*
Henley, Francois J.; and Miller, Michael J., 5,363,037, Cl. 324-158.100.

Miller, Phillip; Becker, Ronald D.; and Koenck, Steven E., to Norand Corporation. Fast battery charger. 5,363,031, Cl. 320-21.000.

Miller, Robert; Williams, James L.; and Greene, George H., to Karlshamns AB. Fluorocarbon and IBMA grafted polyoxyalkylene copolymers. 5,362,847, Cl. 528-403.000.

Miller, Stanley M.; and McCormick, Martin P., to Graco Inc. Pump evacuation system for bulk containers of high viscosity fluids. 5,361,940, Cl. 222-77.000.

Miller, William A.: *See—*
Arneson, Theodore R.; and Miller, William A., 5,361,812, Cl. 141-275.000.

Miller Wire Works, Inc.: *See—*
Waites, Robert F., Sr.; and Waites, Robert F., Jr., 5,361,911, Cl. 209-399.000.

Millis, Barry G.: *See—*
Galanter, Stephen M.; and Millis, Barry G., 5,363,154, Cl. 351-203.000.

Millman, Mark E., to AT&T Bell Laboratories. Facsimile machine having user help capability. 5,363,204, Cl. 358-406.000.

Milo, George: *See—*
Ben-Porat, Avi; Milo, George; Smith, Walter; and Westerman, Theodore, 5,362,344, Cl. 156-148.000.

Milstead, John, to Astec Industries, Inc. Self erecting asphalt production plant. 5,362,193, Cl. 414-332.000.

Minakawa, Kuninori: *See—*
Ogawa, Atsushi; Minakawa, Kuninori; and Takahashi, Kazuhide, 5,362,441, Cl. 420-420.000.

Minamide, Yoshio: *See—*
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.

Minamihara, Tsugiko; Kuratate, Tomoaki; and Matsumoto, Toshio, to Sharp Kabushiki Kaisha. Liquid crystal element and driving method thereof including multi-value signal which ends at zero volts. 5,363,225, Cl. 359-56.000.

Minarski, Peter: *See—*
Heilmann, Paul; Minarski, Peter; and Preisser, Friedrich, 5,362,031, Cl. 266-89.000.

Miner Urdampilleta, Jose L. Brake for bicycles. 5,361,875, Cl. 188-24.210.

Ministero Dell'Universita' E Della Ricerça Scientifica E Tecnologica: *See—*
Di Ruocco, Vittorio; Gila, Liliana; and Garbassi, Fabio, 5,362,884, Cl. 548-547.000.

Minnesota Mining and Manufacturing Company: *See—*
Costello, Michael G.; and Moore, George G. I., 5,362,919, Cl. 568-601.000.
Gandolfo, Rino, 5,362,199, Cl. 414-788.000.
George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., 5,362,566, Cl. 428-403.000.
Holmes, Gary L.; Smith, Terrance P.; Ali, Mahfuza B.; and Macomber, David W., 5,362,812, Cl. 525-274.000.
Holzer, Mark R.; and Lange, Roger W., 5,362,554, Cl. 428-283.000.
Howard, William L., Jr.; and Smith, David P., 5,362,009, Cl. 242-342.000.
Hubbling, David L., 5,362,172, Cl. 403-282.000.
Itoh, Steven K.; Dietz, Timothy M.; and Uy, Rosa, 5,362,420, Cl. 252-500.000.
Keith, Roger H., 5,363,467, Cl. 385-135.000.
Kropp, Michael A.; and Mahoney, Wayne S., 5,362,421, Cl. 252-512.000.
Schenz, James L.; and Skrtic, Tom, 5,361,901, Cl. 206-330.000.
Wilson, Kenneth D.; Meixner, Larry A.; Bemis, Sharon R.; Calhoun, Clyde D.; and Ree, Buren R., 5,362,516, Cl. 427-207.100.
Wortman, David L., 5,363,470, Cl. 385-147.000.
Yamazaki, Hideo, 5,362,547, Cl. 428-167.000.

Minolta Camera Kabushiki Kaisha: *See—*
Fukushima, Shigenobu, 5,363,206, Cl. 358-440.000.

Hayashi, Kohtaro; Mukai, Hiromu; and Kudo, Yoshinobu, 5,363,163, Cl. 354-155.000.
Ishida, Tokuji; Hamada, Masataka; Ootsuka, Hiroshi; and Ueda, Hiroshi, 5,363,169, Cl. 354-442.000.
Ogino, Shigeo; and Nishiyama, Masaaki, 5,363,208, Cl. 358-445.000.

Minolta Co., Ltd.: *See—*
Miyatake, Shigehiro; Takada, Kenji; Ishida, Kouichi; and Sameshima, Kouichi, 5,363,000, Cl. 327-350.000.

Minotti, Peter. Heads for golf clubs. 5,362,056, Cl. 273-175.000.

Mir, Jose M.: *See—*
Hung, Liang-Sun; Mir, Jose M.; and Agostinelli, John A., 5,363,462, Cl. 385-122.000.

Mirle, Srinivas K.; and Huynh-Tran, Truc-Chi T., to W. R. Grace & Co.-Conn. Photosensitive polymer composition for flexographic printing plates processable in aqueous media. 5,362,605, Cl. 430-284.000.

Mirle, Srinivas K.: *See—*
Ebner, Cynthia L.; and Mirle, Srinivas K., 5,362,806, Cl. 525-74.000.

Misaki, Katsuhiro: *See—*
Bando, Masahiro; Misaki, Katsuhiro; and Kaneko, Toshimi, 5,363,081, Cl. 336-200.000.

Misawa, Akira: *See—*
Hirayama, Nobuhiro; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira; Fujiwara, Akio; and Uchiyama, Kenji, 5,362,595, Cl. 430-137.000.

Mishima, Kyoichi: *See—*
Hirai, Hideo; Mishima, Kyoichi; and Yamakawa, Susumu, 5,362,280, Cl. 474-135.000.

Mishkin, Martin A.: *See—*
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,362,511, Cl. 426-549.000.

Mistry, Dilip K.: *See—*
Martin, Daniel T.; Harden, William H., III; Herbstritt, Dale R.; and Mistry, Dilip K., 5,362,207, Cl. 417-243.000.

Misumi, Ikuo: *See—*
Amano, Yukihisa; and Misumi, Ikuo, 5,362,220, Cl. 418-171.000.

Mita Industrial Co., Ltd.: *See—*
Inoue, Masahide; Tsuyama, Koichi; Asada, Hidenori; and Arakawa, Takeshi, 5,362,593, Cl. 430-111.000.
Matsuo, Takeshi; Aono, Shinya; and Muraoka, Toshinori, 5,363,184, Cl. 355-309.000.
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.

Mitake, Mitsuyoshi: *See—*
Furuno, Takashi; Wakasa, Toshiya; Iizuka, Jun; Hagiwara, Kanehiro; and Mitake, Mitsuyoshi, 5,363,149, Cl. 348-789.000.

Mitchell, Porter H., Jr. Method and apparatus for manufacturing an article using a support structure for supporting an article during manufacture therefor. 5,362,427, Cl. 264-22.000.

Mito, Jun: *See—*
Kitami, Tetsu; Ozawa, Osamu; and Mito, Jun, 5,362,530, Cl. 428-36.200.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Arimoto, Masao, 5,363,070, Cl. 333-100.000.
Furuno, Kenichi, 5,363,057, Cl. 330-129.000.
Harada, Shigeru, 5,362,686, Cl. 437-238.000.
Inamiya, Kenichi, 5,363,110, Cl. 342-357.000.
Kamo, Masayoshi; Maruta, Yuzo; Sando, Hiroaki; and Furuhata, Takashi, 5,363,251, Cl. 360-55.000.
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,363,330, Cl. 365-185.000.
Kohno, Masaki, 5,363,060, Cl. 330-286.000.
Komaru, Makio; and Kobiki, Michihiro, 5,362,678, Cl. 437-203.000.
Komori, Shinji; Tsubota, Hirono; and Shima, Kenji, 5,363,491, Cl. 395-375.000.
Kuragaki, Takeshi, 5,362,658, Cl. 437-31.000.
Niwayama, Masaki, 5,363,357, Cl. 369-44.270.
Omori, Makoto; Ohbuchi, Jun; Maeda, Hajime; and Kasatani, Yasushi, 5,363,274, Cl. 361-736.000.
Sakamoto, Shinichi; and Sonoda, Takuji, 5,362,677, Cl. 437-203.000.
Sasaki, Yoshinobu, 5,363,058, Cl. 330-136.000.
Uramachi, Hiroyuki, 5,361,634, Cl. 73-204.260.
Yagi, Tetsuya, 5,363,399, Cl. 372-96.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Mitsubishi Kasei Corporation: *See—*
Ogawa, Morimasa; Emoto, Genichi; Ueda, Akio; Kibayashi, Takao; Nakata, Keitaro; and Inoue, Tsuneo, 5,362,917, Cl. 568-454.000.
Ozawa, Nobuyuki; Hosokawa, Junji; Kikuchi, Masao; Hoshijima, Tokitaro; and Yagi, Kensuke, 5,362,542, Cl. 428-70.000.

Mitsubishi Paper Mills Limited: *See—*
Katsura, Toru; and Senoh, Hideaki, 5,362,364, Cl. 162-158.000.

Mitsubishi Petrochemical Company, Ltd.: *See—*
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.

Mitsubishi Rayon Company, Ltd.: *See—*
Matsumoto, Koji; Morimoto, Masaru; and Hirano, Susumu, 5,362,795, Cl. 524-501.000.

Mitsuboshi Belting Ltd.: *See—*
Hirai, Hideo; Mishima, Kyoichi; and Yamakawa, Susumu, 5,362,280, Cl. 474-135.000.

Mitsuhashi, Masakazu: *See—*
Kurimoto, Masashi; and Mitsuhashi, Masakazu, 5,362,490, Cl. 424-85.500.

Mitsuhiko, Noda, to Rohm Co., Ltd. DTMF signal receiving system. 5,363,439, Cl. 379-386.000.

Mitsui, Kenji: *See—*
Kitano, Minoru; Mitsui, Kenji; Tanaka, Hozumi; and Kazama, Koji, 5,362,225, Cl. 425-472.000.

Mitsui Petrochemical Industries, ltd.: *See—*
Hamada, Shunichi; and Yonekura, Katsuyoshi, 5,362,572, Cl. 428-497.000.
Sueyoshi, Tomoko; Wakatsuru, Kenji; and Okabe, Masayuki, 5,362,811, Cl. 525-198.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Hirayama, Nobuhiro; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira; Fujiwara, Akio; and Uchiyama, Kenji, 5,362,595, Cl. 430-137.000.

Mitsui, Yuki: *See—*
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Mitsumoto, Shigenobu; and Okuno, Masao, to Shima Seiki Mfg., Ltd. Knitted fabric integrally knitted with an additional pocket and the method of integrally knitting them. 5,361,607, Cl. 66-69.000.

Mitsuya, Teruaki: *See—*
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,363,180, Cl. 355-285.000.

Miura, Kazunori: *See—*
Okamoto, Naoyuki; Mizutani, Hidetoshi; Miura, Kazunori; and Kondo, Kazuo, 5,362,551, Cl. 428-210.000.

Miura, Steve S.: *See—*
Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., 5,362,599, Cl. 430-192.000.

Miura, Yasuhiro: *See—*
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Miura, Yoshimasa: *See—*
Kinoshita, Mitsuo; Miura, Yoshimasa; and Arashima, Takeshi, 5,362,829, Cl. 526-240.000.

Miwa, Harufumi: *See—*
Hirose, Toshiki; Tsuruta, Minoru; Tamura, Koji; Uehara, Yoshitomo; and Miwa, Harufumi, 5,362,635, Cl. 435-106.000.

Miyahara, Yuji; Fujii, Toshiko; Buhrer, Thomas; and Watanabe, Yoshio, to Hitachi, Ltd. Biochemical analyzer and attenuated total reflection prism cell used in said analyzer. 5,362,445, Cl. 422-82.090.

Miyaji, Hiromasa: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

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Fukui, Isao; and Miyama, Takao, 5,363,189, Cl. 356-306.000.

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Miyano, Kouichi: *See—*
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.

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Kanazawa, Masahiro; and Miyashita, Takeshi, 5,362,951, Cl. 235-449.000.

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Hiramoto, Kazuo; Hirota, Junichi; Nishi, Masatsugu; Watanabe, Hiroyuki; and Miyata, Kenji, 5,363,008, Cl. 313-62.000.

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Miyazaki, Takanori; and Sakurai, Hiroshi, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Saga Kabushiki Kaisha. Cleaning apparatus. 5,361,787, Cl. 134-57.00R.

Miyazawa, Junichi, to Molex Incorporated. Method of mounting terminals to substrate. 5,361,492, Cl. 29-879.000.

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Ryuzaki, Takahiko; Kogure, Yoshio; Ichikawa, Hideo; Nakamura, Yasuo; and Miyazawa, Takuji, 5,362,041, Cl. 271-236.000.

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Hashimoto, Makoto; Miyazawa, Yoshihiro; and Matsushita, Takeshi, 5,363,324, Cl. 365-156.000.

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Mizoguchi, Naoyuki; Yanetani, Yoshifumi; and Yamashita, Naoko, to Matsutani Chemical Industries Co., Ltd. Processed starch and bakery foods utilizing same. 5,362,510, Cl. 426-549.000.

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Mizukami, Tomohito; and Funayama, Chihito, to Kasei Optonix, Ltd. Pigment-attached blue-emmitting phosphor and color cathode-ray tube. 5,363,012, Cl. 313-468.000.

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Yoshitake, Noriaki; Mizuno, Kensuke; and Ishii, Hitoshi, 5,362,333, Cl. 148-264.000.

Mizunoya, Nobuyuki: *See—*
Komorita, Hiroshi; and Mizunoya, Nobuyuki, 5,363,278, Cl. 361-762.000.

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Mizutani, Hajime: *See—*
Momose, Kaoru; Nishiwaki, Tsutomu; Tanizaki, Masanori; and Mizutani, Hajime, 5,363,131, Cl. 347-46.000.

Mizutani, Hidetoshi: *See—*
Okamoto, Naoyuki; Mizutani, Hidetoshi; Miura, Kazunori; and Kondo, Kazuo, 5,362,551, Cl. 428-210.000.

MKS Instruments, Inc.: *See—*
Ewing, James H., 5,361,800, Cl. 137-495.000.
Judd, Daniel R.; and McLoughlin, Robert F., 5,361,637, Cl. 73-766.000.

Moberg, Hans: *See—*
Borgstrom, Leonard; Carlsson, Claes-Goran; Franzen, Peter; Inge, Claes; Lagerstedt, Torgny; Moberg, Hans; and Nåbo, Olle, 5,362,292, Cl. 494-74.000.

Mobil Oil Corp.: *See—*
Beck, Jeffrey S.; Dessau, Ralph M.; and Higgins, John B., 5,362,695, Cl. 502-62.000.
Bergstra, Raymond; Logothetis, Andreas; Olszewski, William F.; and Wu, Shi-Ming, 5,362,411, Cl. 252-51.50A.
Borghard, William S.; Hanlon, Robert T.; and Schramm, Suzanne E., 5,362,378, Cl. 208-138.000.
Fung, Anthony S.; Lawton, Stephen L.; and Roth, Wieslaw J., 5,362,697, Cl. 502-71.000.
Furtek, Allan B.; and Shinomoto, Ronald S., 5,362,824, Cl. 526-114.000.
Heck, Roland H.; and DiGuiseppi, Frank T., 5,362,382, Cl. 208-210.000.
Okorodudu, Abraham O. M.; and Cardis, Angeline B., 5,362,410, Cl. 282-47.500.
Schatz, Klaus W., 5,362,446, Cl. 422-117.000.
Shih, Stuart S.; and Angevine, Philip J., 5,362,376, Cl. 208-89.000.
Shu, Paul, 5,362,318, Cl. 106-634.000.

Mochizuki, Hajime: *See—*
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.

Mochizuki, Hideharu: *See—*
Shirai, Katutada; and Mochizuki, Hideharu, 5,363,283, Cl. 362-66.000.

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Elmi, Hadi, 5,362,407, Cl. 210-801.000.

Modler, Peter. Anticounterfeiting device for gaming chips. 5,361,885, Cl. 194-214.000.

Modlin, Douglas; Parke, Joel; and Fu, Deng-Yuan, to Digital Equipment Corporation. Method and system for ensuring interconnect integrity in a micro-chip-module. 5,363,048, Cl. 324-519.000.

Moeller Manufacturing Co., Inc.: *See—*
Bynum, Kurt K., 5,362,110, Cl. 285-87.000.

Moens, Luc; Maetens, Daniel; and Loutz, Jean-Marie, to U C B S.A. Carboxyl group-terminated polyesteramides. 5,362,820, Cl. 525-438.000.

Moff, Frank A., to Big 10 Tackle, Inc. Fishing bobber. 5,361,532, Cl. 43-44.900.

Mohrhauser, Klaus, to August Faller KG. Box for storing ampules. 5,361,907, Cl. 206-528.000.

Molecular Biosystems, Inc.: *See—*
Arnold, Lyle J., Jr., 5,362,866, Cl. 536-25.300.

Molecular Probes, Inc.: *See—*
Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., 5,362,628, Cl. 435-18.000.

Molex Incorporated: *See—*
Miyazawa, Junichi, 5,361,492, Cl. 29-879.000.
Peloza, Kirk B., 5,362,260, Cl. 439-746.000.

Molina, Paul: *See—*
Buchbinder, Jay; and Molina, Paul, 5,361,440, Cl. 15-21.200.

Molinari, Egidio: *See—*
Bonaldi, Antoni; and Molinari, Egidio, 5,362,891, Cl. 552-554.000.

Molins plc: *See—*
Brown, Anthony R.; Griffiths, Allen F.; and Taylor, Robert H., 5,361,888, Cl. 198-347.300.

Moll, Frederic H.; and Chin, Albert K., to Origin Medsystems, Inc. Retraction apparatus and methods for endoscopic surgery. 5,361,752, Cl. 128-20.000.

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Mizrahi, Victor; and Mollenauer, Linn F., 5,363,239, Cl. 359-570.000.

Mollenkamp, Daniel L. Device for sterilizing products packed in cylindrical containers. 5,362,456, Cl. 422-310.000.

Moltech Invent S.A.: *See—*
de Nora, Vittorio; and Sekhar, Jainagesh A., 5,362,366, Cl. 204-67.000.

Momose, Kaoru; Nishiwaki, Tsutomu; Tanizaki, Masanori; and Mizutani, Hajime, to Seiko Epson Corporation. Ink jet recording head. 5,363,131, Cl. 347-46.000.

Monahan-Mitchell, Timothy A.: *See—*
Weiss, Karl R.; Ensor, Karen J.; Desruisseaux, Marc S.; Wanchoo, Sanjay; Sandvos, Jerry L.; and Monahan-Mitchell, Timothy A., 5,363,315, Cl. 364-514.000.

Mongelli, Nicola; Angelucci, Francesco; Pesenti, Enrico; Suarato, Antonino; and Biasoli, Giovanni, to Farmitalia Carlo Erba S.r.l. Polymer-bound paclitaxel derivatives. 5,362,831, Cl. 526-304.000.

Mongelli, Nicola: *See—*
Cozzi, Paolo; Menichincheri, Maria; Capolongo, Laura; and Mongelli, Nicola, 5,362,729, Cl. 514-235.500.

Monnier, John R.: *See—*
Stavinoha, Jerome L., Jr.; Monnier, John R.; Hitch, David H.; Nolen, Timothy R.; and Oltean, George L., 5,362,890, Cl. 549-536.000.

Monnin, Philip V.: *See—*
Kimura, Kaoru; and Monnin, Philip V., 5,363,029, Cl. 318-696.000.

Monroe, Thomas L. Waste receptacle. 5,361,978, Cl. 232-43.100.

Monsanto Company: *See—*
Austin, Glenn D., 5,362,865, Cl. 536-24.100.
Griffith, Edward J.; and Ngo, Toan M., 5,362,639, Cl. 435-161.000.

Montalva, Jorge: *See—*
Hull, Harold L.; and Montalva, Jorge, 5,361,919, Cl. 215-228.000.

Montgomery, Melvin W.: *See—*
Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., 5,362,599, Cl. 430-192.000.

Montgomery, Richard C.: *See—*
Westerman, G. Wayne; Montgomery, Richard C.; and Pippin, Gerald W., 5,362,206, Cl. 417-12.000.

Monto, Mark. Incandescent light with parallel grooves encompassing a bulbous portion. 5,363,009, Cl. 313-110.000.

Moody, Martin J.; and Yorke, Alan V., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence In Her Britannic Majesty's Government of the. Active control of noise. 5,363,450, Cl. 381-71.000.

Moore Business Forms, Inc.: *See—*
Longtin, Andre G., 5,362,106, Cl. 283-109.000.

Moore, Dennis A.; Adams, Max D.; Cacheris, William P.; White, David H.; Periasamy, Muthunadar P.; Rajagopalan, Raghavan; deLearie, Lynn A.; and Woulfe, Steven R., to Mallinckrodt Medical, Inc. 19F magnetic resonance imaging agents which include a nitroxide moiety. 5,362,477, Cl. 424-9.000.

Moore, Don L. Hand tool for use with a water supply. 5,361,849, Cl. 172-380.000.

Moore, Douglas: *See—*
Susko, Thomas; and Moore, Douglas, 5,362,131, Cl. 297-463.000.

Moore, George G. I.: *See—*
Costello, Michael G.; and Moore, George G. I., 5,362,919, Cl. 568-601.000.

Moore, John K.: *See—*
Nash, Mark E.; Moore, John K.; and Miller, Kevin L., 5,363,253, Cl. 360-69.000.

Moore, Patrick O.; and Schiessler, David L., to Beckman Instruments, Inc. Centrifuge tubes with snap plugs. 5,361,922, Cl. 215-364.000.

Morasiewicz, Kathleen. Plant protection device. 5,361,535, Cl. 47-58.000.

Moreau, Wayne M.: *See—*
Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., 5,362,599, Cl. 430-192.000.

Morford, Earl: *See—*
Iler, Ralph K., Jr.; and Morford, Earl, 5,362,030, Cl. 256-65.000.

Morgan, Cleon C.: *See—*
Bird, Kevin C.; Gilbert, Donald C.; Herrmann, Robert S.; Wolters, Gregory T.; and Morgan, Cleon C., 5,362,145, Cl. 312-408.000.

Morgan Food Products, Inc.: *See—*
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Morgan, Gerard P.: *See—*
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.

Morgan, Lyndon: *See—*
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Palmer, Scott L.; Sanders, Robert E.; Steverson, W. Bryan; and Morgan, Lyndon, 5,362,341, Cl. 148-692.000.

Morgan, Robert D.; and Blagdon, Peter A., to Morgan Food Products, Inc. Flavoring, fragrance, skin texturizing and deodorant materials and method of making same. 5,362,483, Cl. 424-69.000.

Mori, Hideki: *See—*
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Mori, Kazutaka: *See—*
Iwamura, Masahiro; Maejima, Hideo; Watanabe, Atsuo; and Mori, Kazutaka, 5,362,998, Cl. 326-110.000.

Mori, Kenjiro: *See—*
Nakayama, Yoshiyuki; Mori, Kenjiro; and Yamamitsu, Tadashi, 5,363,507, Cl. 395-800.000.

Mori, Shingo: *See—*
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.

Mori, Takehisa: *See—*
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, 5,362,960, Cl. 250-214.100.

Mori, Yoichi, to Nippon Densan Corporation. Circuit and method of driving a DC motor. 5,363,028, Cl. 318-599.000.

Morigaki, Masakazu; Yamada, Kohzaburoh; Seto, Nobuo; and Yoshioka, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 5,362,617, Cl. 430-556.000.

Morikawa, Fumihiro: *See—*
Harada, Koji; Hirata, Takashi; Morikawa, Fumihiro; and Takahashi, Shuji, 5,363,003, Cl. 310-67.00R.

Morikawa, Juichi: *See—*
Ohji, Toshio; Morikawa, Juichi; and Zama, Hideo, 5,363,263, Cl. 360-108.000.

Morimoto, Kazuo, to Matsushita Electric Industrial Co., Ltd. Facsimile-use automatic order and sales management system. 5,362,948, Cl. 235-376.000.

Morimoto, Makoto: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Morimoto, Masaru: *See—*
Matsumoto, Koji; Morimoto, Masaru; and Hirano, Susumu, 5,362,795, Cl. 524-501.000.

Morimoto, Shigeki; Noguchi, Tadashi; Taguchi, Yasusi; and Taniguchi, Masakazu, to Central Glass Company, Ltd. Infrared and ultraviolet ray absorbing glass. 5,362,689, Cl. 501-70.000.

Morin, Joseph C.: *See—*
Hammett, Brad; and Morin, Joseph C., 5,362,045, Cl. 273-57.200.

Morioka, Koitsu; and Matsuda, Yasuhiko, to Yoshida Kogyo K.K. Slide fastener coupling element forming apparatus and cutting punch. 5,361,471, Cl. 29-33.200.

Morishita Jintan Co., Ltd.: *See—*
Suzuki, Toshiyuki; and Kamaguchi, Ryousei, 5,362,564, Cl. 428-402.200.

Morita, Yasukazu: *See—*
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.

Morley, James A.: *See—*
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Morris, Frank P.: *See—*
Pyle, Stoddard H.; and Morris, Frank P., 5,361,495, Cl. 29-897.310.

Morris, Robert A.: *See—*
Samuelson, Kent E.; Morris, Robert A.; Nolan, James A.; and Steinhaus, Bruce M., 5,361,776, Cl. 128-734.000.

Morrison, Mark A.: *See—*
Dutta, Arunava; Morrison, Mark A.; Dullea, Leonard V.; Kingston, Richard A.; and Olsen, Joseph A., 5,362,524, Cl. 427-476.000.

Mortl, Gunther: *See—*
Bugajski, Matgorzata; Hosler, Margit; and Mortl, Gunther, 5,362,692, Cl. 501-103.000.

Morton, John B.: *See—*
Hopkins, John B., Jr.; Maheras, Joanne C.; and Morton, John B., 5,362,766, Cl. 523-105.000.

Moshchitsky, Semyon: *See—*
Leistner, William E.; and Moshchitsky, Semyon, 5,362,881, Cl. 548-260.000.

Mosso, Ronald J.: *See—*
Wiseman, Gary H.; Robinson, William M.; Bennett, Jeffrey A.; Mosso, Ronald J.; and Fossett, John T., 5,363,266, Cl. 361-127.000.

Motivator, Inc.: *See—*
Brown, Michael L.; Miller, Jan W.; Spatig, Wilbur W.; and Zigoris, Dean M., 5,362,298, Cl. 482-137.000.

Motorola, Inc.: *See—*
Alvarez, Jose; Sanchez, Hector; and Gerosa, Gianfranco, 5,362,990, Cl. 327-538.000.
Anderson, Michael J.; Knuth, Howard D.; and Pasco, Wayne D., 5,361,967, Cl. 228-124.600.
Barrett, Raymond L., Jr.; Herold, Barry W.; and Pajunen, Grazyna A., 5,363,061, Cl. 330-288.000.
Browning, Clyde H., III; and Longwell, Michael L., 5,363,328, Cl. 365-154.000.
Cannon, Gregory L.; Fuller, Gregory W.; Macko, William J.; and Fennell, Robert D., 5,363,090, Cl. 340-825.440.
Crandall, Mark A.; Wingfield, William J.; and Ooi, Leng H., 5,363,067, Cl. 331-107.0SL.
Ekstrom, Terry G.; Ekstrom, Patricia A.; and Coombes, John J., 5,363,427, Cl. 379-58.000.
Ford, Robert II.; and Badie, Mehrdad, 5,363,030, Cl. 320-13.000.
Gergen, Joseph P.; and Percoasn, Peter A., 5,363,322, Cl. 364-754.000.
Goldenberg, Michael P., 5,363,089, Cl. 340-825.440.
Higgins, Jr.; Robert J., 5,363,073, Cl. 333-195.000.
Higgins, Leo M., III; and Karpman, Maurice S., 5,361,490, Cl. 29-827.000.
Higgins, Robert J., Jr., 5,363,074, Cl. 333-195.000.
Kotzin, Michael D.; and Bruckert, Eugene J., 5,363,404, Cl. 375-1.000.
Love, Robert T.; Labedz, Gerald P.; and Baum, Kevin L., 5,363,412, Cl. 375-94.000.
Nyhart, Scott O., 5,363,426, Cl. 379-57.000.
Rager, Kent D.; and Lay, Steven H., 5,363,447, Cl. 380-21.000.
Roy, Asim K.; Comroe, Richard A.; and Furtaw, Robert W., 5,363,371, Cl. 370-79.000.
Schwent, Dale G.; and Osmani, Rashid M., 5,363,071, Cl. 333-111.000.
Vatt, Gregory B.; and Leopold, Raymond J., 5,363,368, Cl. 370-24.000.
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Weiss, Karl R.; Ensor, Karen J.; Desruisseaux, Marc S.; Wanchoo, Sanjay; Sandvos, Jerry L.; and Monahan-Mitchell, Timothy A., 5,363,315, Cl. 364-514.000.

Motorola Lighting, Inc.: *See—*
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Moucharafieh, Nadim C.; Lin, Kang-Chi; and Ahle, James L., to Zeneca Ltd. Herbicidal formulations containing n-phosphonomethylglycine and alkyl phenol polyoxyalkylene carboxylic acid surfactant. 5,362,705, Cl. 504-206.000.

Mudra, James, IV: *See—*
Hsing, Hsu-Hui; and Mudra, James, IV, 5,362,380, Cl. 208-164.000.

Mueller, Jay V.: *See—*
Graves, Larry R.; and Mueller, Jay V., 5,362,842, Cl. 528-262.000.

Mufti, Sohale A.; Samuel, Robert G.; Soong, Peter P. K.; Yip, Adrian M.-G.; and Wakim, Michael J., to Northern Telecom Limited. Method and apparatus for providing a personal locator, access control and asset tracking service using an in-building telephone network. 5,363,425, Cl. 379-38.000.

Mugge, Joachim; Rober, Stefan; Feinauer, Roland; and Jadamus, Hans, to Huels Aktiengesellschaft. Thermoplastic laminates. 5,362,529, Cl. 428-35.700.

Mugge, Joachim: *See—*
Rober, Stefan; Mugge, Joachim; and Jadamus, Hans, 5,362,570, Cl. 428-475.200.

Muhlada, Michael P.: *See—*
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.

Muir, Arthur M. Exercise machine. 5,362,297, Cl. 482-134.000.

Mukai, Hiromu: *See—*
Hayashi, Kohtaro; Mukai, Hiromu; and Kudo, Yoshinobu, 5,363,163, Cl. 354-155.000.

Mukaihara, Kazuhide: *See—*
Aoki, Junji; and Mukaihara, Kazuhide, 5,362,967, Cl. 250-344.000.

Mukawa, Hiroshi: *See—*
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.

Muller, Eldon R.: *See—*
Burns, Ivey L.; Muller, Eldon R.; and Bell, Edward, 5,361,534, Cl. 47-79.000.

Muller, Gerhard, to Asea Brown Boveri Ltd. Method for operating a combustion chamber of a gas turbine. 5,361,576, Cl. 60-39.030.

Muller, Norbert; Vollmer, Jurgen; and Herchenbach, Paul, to Jean Walterscheid GmbH. Side strut for the lower steering arm of a three-point hitch. 5,361,850, Cl. 172-450.000.

Muller, Paul W., to Britax Wingard Limited. Tank closure. 5,361,924, Cl. 220-293.000.

Muller-Rees, Christoph; Maurer, Robert; Stohrer, Jurgen; Kreuzer, Franz-Heinrich; Jung, Silvia; and Csellich, Franz, to Consortium fur elektrochemische Industrie GmbH. Pigments whose color depends on the viewing angle, their preparation and use. 5,362,315, Cl. 106-493.000.

Mullins, Michael J.: *See—*
McGrath, James E.; Bales, Stephen E.; Knauss, Daniel M.; Chamberlin, Thomas A.; Mullins, Michael J.; and Marks, Maurice J., 5,362,838, Cl. 528-198.000.

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Murai, Shinji: *See—*
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Murakami, Aiko: *See—*
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Murakami, Shuji: *See—*
Tashiro, Kouji; Hoshino, Hiroyuki; Murakami, Shuji; Matsuzaka, Shoji; and Ohtani, Hirofumi, 5,362,619, Cl. 430-567.000.

Murakami, Takefumi: *See—*
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

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Muraki, Masato, to Canon Kabushiki Kaisha. Illumination device and projection exposure apparatus using the same. 5,363,170, Cl. 355-67.000.

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Murano, Tsutomu; and Nishikubo, Toshifumi, to Nippon Paper Industries Co., Ltd. Production method of microcapsules. 5,362,565, Cl. 428-402.200.

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Matsuo, Takeshi; Aono, Shinya; and Muraoka, Toshinori, 5,363,184, Cl. 355-309.000.

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Akiyama, Yasuo; Maekawa, Zenichiro; Hamada, Hiroyuki; and Yokoyama, Atsushi, 5,361,674, Cl. 87-9.000.
Hasui, Keini; Inoue, Yasuhiro; and Fukuda, Isao, 5,361,609, Cl. 68-5.00D.
Uematsu, Ikuzo; and Takahashi, Tomoaki, 5,361,572, Cl. 57-304.000.

Murata Manufacturing Co., Ltd.: *See—*
Bando, Masahiro; Misaki, Katsuhiro; and Kaneko, Toshimi, 5,363,081, Cl. 336-200.000.

Murdoch, Karen E.; and Birbara, Philip J., to United Technologies Corporation. Oxygen and methane production device. 5,362,373, Cl. 204-242.000.

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Must Systems, Inc.: *See—*
Liu, Hong-Wen; Hsu, Chih-Hong; and Hsiao, Jeff, 5,363,247, Cl. 359-889.000.

Muthard, David A.: *See—*
DiNinno, Frank P.; Salzmann, Thomas N.; and Muthard, David A., 5,362,723, Cl. 514-210.000.

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Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.

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Slade, Louise; Levine, Harry; Craig, Stuart; and Arciszewski, Henry, 5,362,502, Cl. 426-20.000.
Wheeler, Edward L.; and Busk, G. Curtis, Jr., 5,362,508, Cl. 426-302.000.

NACAM: *See—*
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Nader, Reinhard: *See—*
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Nagai, Keigo: *See—*
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Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

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Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.

Nagaoka, Hitoshi; Shimizu, Hiroyuki; and Nakashima, Keizo, to Niigata Engineering Co., Ltd. Method and apparatus for opening lid of box. 5,361,562, Cl. 53-492.000.

Nagasaki, Hideo: *See—*
Inui, Naoki; Nagasaki, Hideo; and Yachigo, Shinichi, 5,362,785, Cl. 524-259.000.
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Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

Nagase, Tadahiko: *See—*
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

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Nagashima, Hideki: *See—*
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.

Nagashima, Noriaki, to NEC Corporation. Dynamic channel assignment cordless telecommunication network. 5,363,428, Cl. 379-58.000.

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Takahashi, Toshiya; Uriya, Norio; and Nagashima, Yoshihisa, 5,361,616, Cl. 72-46.000.

Nagayama, Yashuhiro: *See—*
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Nagayoshi, Isamu: *See—*
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

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Nakagawa, Toru: *See—*
Hamada, Tutomu; Asada, Takafumi; Ikemoto, Yoshihiro; and Nakagawa, Toru, 5,361,470, Cl. 29-27.00R.

Nakahara, Kenji; and Tsundoda, Jiro, to NEC Corporation. Digital mobile station using presettable timeslot counter for compensating for propagation delay time. 5,363,373, Cl. 370-95.100.

Nakai, Takehiko; and Setani, Michitaka, to Canon Kabushiki Kaisha. Image reading apparatus. 5,362,957, Cl. 250-208.100.

Nakajima, Hideharu, to Sony Corporation. Semiconductor memory device having crossed word lines, and method of operating same. 5,363,326, Cl. 365-149.000.

Nakamori, Shigeru: *See—*
Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, 5,362,636, Cl. 435-115.000.

Nakamura, Akira: *See—*
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Nakamura, Hitoshi: *See—*
Aizawa, Toshiyuki; Nakamura, Hitoshi; Wakabayashi, Kunitoshi; Kudo, Tetsuo; and Hasegawa, Hiroyuki, 5,362,918, Cl. 568-594.000.

Nakamura, Kimitsugu, to Hamamatsu Photonics K.K. Photomultiplier. 5,363,014, Cl. 313-533.000.

Nakamura, Koichi: *See—*
Imamura, Hirokatsu; Nakamura, Koichi; and Ohnishi, Jiro, 5,362,549, Cl. 428-195.000.

Nakamura, Masayoshi, to Sumitomo Wiring Systems, Ltd. Junction box and terminal to be used in the junction box. 5,362,242, Cl. 439-76.000.

Nakamura, Shigeru: *See—*
Ozaki, Tohru; Kasari, Akira; and Nakamura, Shigeru, 5,362,521, Cl. 427-407.100.

Nakamura, Takashi: *See—*
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.

Nakamura, Tatsuya: *See—*
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Nakamura, Yasuo: *See—*
Ryuzaki, Takahiko; Kogure, Yoshio; Ichikawa, Hideo; Nakamura, Yasuo; and Miyazawa, Takuji, 5,362,041, Cl. 271-236.000.

Nakamura, Yoshinori: *See—*
Egashira, Noritaka; Asahi, Koichi; Akada, Masanori; Nakamura, Yoshinori; Imoto, Kazunobu; and Nishitani, Nobuhisa, 5,362,701, Cl. 503-227.000.

Nakamura, Yoshio, to Fujikoshi Kikai Kogyo Kabushiki Kaisha. Polishing machine. 5,361,545, Cl. 451-287.000.

Nakanishi, Hirotoshi: *See—*
Takeyama, Naoki; Uetani, Yasunori; Nakanishi, Hirotoshi; and Hanawa, Ryotaro, 5,362,598, Cl. 430-191.000.

Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, to Mita Industrial Co., Ltd. Method of stripping a sealing member from a toner cartridge. 5,363,177, Cl. 355-260.000.

Nakano, Kunio: *See—*
Sekimoto, Takashi; Nakano, Kunio; and Eguchi, Toshiya, 5,363,215, Cl. 358-465.000.

Nakano, Masatoshi; and Kurobe, Akio, to Matsushita Electric Industrial Co., Ltd. Data transmitter and receiver and the data control method thereof. 5,363,418, Cl. 375-117.000.

Nakano, Shiro, to Oji Paper Co., Ltd. Laser-sensitive electrophotographic lithograph printing plate material. 5,362,590, Cl. 430-89.000.

Nakano, Yoshihiko: *See—*
Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, 5,362,559, Cl. 428-333.000.

Nakashima, Keizo: *See—*
Nagaoka, Hitoshi; Shimizu, Hiroyuki; and Nakashima, Keizo, 5,361,562, Cl. 53-492.000.

Nakata, Keitaro: *See—*
Ogawa, Morimasa; Emoto, Genichi; Ueda, Akio; Kibayashi, Takao; Nakata, Keitaro; and Inoue, Tsuneo, 5,362,917, Cl. 568-454.000.

Nakatsugawa, Tomomi: *See—*
Sakaki, Mamoru; Kurabayashi, Yutaka; Nakatsugawa, Tomomi; Sato, Hiroshi; and Shiratori, Takahiro, 5,362,558, Cl. 428-323.000.

Nakatsukasa, Walter M.: *See—*
Boeck, LaVerne D.; Chio, Hang; Eaton, Tom E.; Godfrey, Otis W., Jr.; Michel, Karl H.; Nakatsukasa, Walter M.; and Yao, Raymond C., 5,362,634, Cl. 435-76.000.

Nakayama, Takeshi: *See—*
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Nakayama, Yoshiyuki; Mori, Kenjiro; and Yamamitsu, Tadashi, to Hitachi, Ltd. Method and system for storing and retrieving collaboratively processed information by associated identification data. 5,363,507, Cl. 395-800.000.

Nalbandian, Gevork: *See—*
Nhaissi, Eli; Cui, Chunyu; and Nalbandian, Gevork, 5,361,606, Cl. 63-26.000.

Nalco Chemical Company: *See—*
McClain, Robert D., 5,362,652, Cl. 436-135.000.

Naleway, John J.: *See—*
Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., 5,362,628, Cl. 435-18.000.

Nalven, Nathan I.: *See—*
Reynolds, Francis D.; Baran, Joseph S.; Bisey, Robert P.; Button, Terry; McGill, Robert E.; Nalven, Nathan I.; and Salvitti, Matthew A., 5,361,764, Cl. 128-653.500.

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Famili, Amir; Marten, F. Lennart; and Nangeroni, James F., 5,362,532, Cl. 428-36.600.
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Nanowsky, John P.; and Kelley, John H. Splash guard for use with transfer bench. 5,361,428, Cl. 4-558.000.

Napolitano, Patricia A. Game board apparatus. 5,362,061, Cl. 273-243.000.

Narabu, Shin-ichi: *See—*
Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,362,704, Cl. 504-134.000.

Narayanan, Kolazi S.; and De Thomas, Waldo, to ISP Investments Inc. Free radical initiator delivery system. 5,362,698, Cl. 502-151.000.

Narazaki, Kanji: *See—*
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.

Nardone, Renee E.: *See—*
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Narita, Hisaya, to Sony Corporation. Tape recorder having a compact reverse function including a limiter gear mechanism and a swing arm. 5,363,259, Cl. 360-96.300.

Narumi China Corporation: *See—*
Tokunaga, Yasuyuki, 5,362,687, Cl. 501-21.000.

Naruse, Syoichi: *See—*
Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, 5,362,033, Cl. 266-275.000.

Nash, Mark E.; Moore, John K.; and Miller, Kevin L., to Hewlett-Packard Company. Tape drive fast seek to end-of-track. 5,363,253, Cl. 360-69.000.

Naslund, Ulf W.; and Loadahl, Claes H., to Aktiebolaget Electrolux. De-vibration element. 5,361,500, Cl. 30-381.000.

Nasworthy, Frank: *See—*
Kline, Daniel S.; Nasworthy, Frank; and Wield, Paul J., 5,363,129, Cl. 346-136.000.

Nather, Scott H.: *See—*
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National Gypsum Company: *See—*
Menchetti, Robert J., 5,361,556, Cl. 52-561.000.

National Molding Corp.: *See—*
Anscher, Joseph, 5,361,461, Cl. 24-115.00G.

National Research Institute for Metals: *See—*
Tada, Naohumi; Wadayama, Yoshihide; Inoue, Kiyoshi; and Kamata, Kunihisa, 5,362,331, Cl. 148-98.000.

National Semiconductor Corporation: *See—*
Wile, Donald T., 5,362,992, Cl. 327-58.000.

Natori, Katsuhide: *See—*
Horikoshi, Eiji; Tani, Motoaki; Watanabe, Isao; Natori, Katsuhide; and Sato, Takehiko, 5,362,359, Cl. 156-645.000.

Nazarko, Taras W.: *See—*
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Näbo, Olle: *See—*
Borgstrom, Leonard; Carlsson, Claes-Goran; Franzen, Peter; Inge, Claes; Lagerstedt, Torgny; Moberg, Hans; and Näbo, Olle, 5,362,292, Cl. 494-74.000.

NCR Corporation: *See—*
Crockett, Robert J., 5,363,276, Cl. 361-752.000.
King, Edward C.; and Goeppel, Anton, 5,363,492, Cl. 395-325.000.

Neal, Donald R.; Reed, Carl G.; Lincoln, Clifford F.; and Ferry, Julian J., to Whitaker Corporation, The. Communications connector terminal arrays having noise cancelling capabilities. 5,362,257, Cl. 439-676.000.

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NEC Corporation: *See—*
Fujita, Mamoru, 5,363,339, Cl. 365-230.060.
Furuya, Yukitsuna; Okanoue, Kazuhiro; Ushirokawa, Akihisa; and Tomita, Hideho, 5,363,411, Cl. 375-75.000.
Hasegawa, Yasuyuki, 5,363,381, Cl. 371-22.100.
Hashiguchi, Osamu, 5,362,256, Cl. 439-660.000.
Ishikawa, Kimiyasu; and Hashimoto, Kiyokazu, 5,363,340, Cl. 365-233.500.
Itoh, Masaki, 5,362,537, Cl. 428-64.000.
Iwasaki, Motoya, 5,363,415, Cl. 375-97.000.
Kubo, Satoru, 5,362,995, Cl. 327-65.000.
Muto, Hiroyasu, 5,363,414, Cl. 375-94.000.
Nagashima, Noriaki, 5,363,428, Cl. 379-58.000.
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Okumura, Fujio, 5,363,118, Cl. 345-95.000.
Suzuki, Katsuhiko, 5,362,976, Cl. 257-81.000.
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.
Tasaka, Kazuhiro, 5,362,668, Cl. 437-67.000.
Tsujimoto, Akira, 5,363,333, Cl. 365-201.000.
Yamagata, Yasushi; and Sato, Fumihide, 5,362,358, Cl. 156-643.000.
Yamazaki, Toshimasa; and Van Dijk, Bob W., 5,361,774, Cl. 128-731.000.

NEC Research Institute, Inc.: *See—*
Cox, Ingemar; Leonard, John J.; and Durrant-Whyte, Hugh, 5,363,305, Cl. 364-443.000.

Nedele, Helmut; and Schnabel, Hartwig, to Wagner Fordertechnik GmbH & Co. KG. Combination control grip for two-hand operation or guided-surface industrial trucks. 5,361,644, Cl. 74-491.000.

Nedivi, Dror: *See—*
Urinowski, Ehud; Nedivi, Dror; and Petel, Joseph, 5,363,155, Cl. 351-205.000.

Neese, Jon: *See—*
Smith, Roger E.; and Neese, Jon, 5,361,757, Cl. 128-633.000.

Negoro, Masaaki: *See—*
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Neidlinger, Herman H.: *See—*
Askari, Syed H.; Jeang, Shao C.; and Neidlinger, Herman H., 5,362,768, Cl. 523-106.000.

Neira, Reinaldo A.: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Nelson, Don. Vehicle mounted particulate material spreader. 5,361,988, Cl. 239-71.000.

Nelson, Richard J. Vortex finder high shear mud mixing system. 5,362,149, Cl. 366-165.000.

Nelson, Webb T. Throwable toy having a ring arrangement of many extended fibers having one end of each fiber held with other fiber ends in a set of twisted wires arranged and joined together in a ring. 5,362,067, Cl. 273-425.000.

Nestec S.A.: *See—*
Burri, Josef; and Nicod, Pierre, 5,362,503, Cl. 426-50.000.

Neu, Hans: *See—*
Denz, Helmut; Neu, Hans; Riehl, Guenther; Blumenstock, Andreas; and Frank, Rainer, 5,361,743, Cl. 123-519.000.

New England Redemption of Connecticut, Inc.: *See—*
Melchionna, Carmine M., 5,361,913, Cl. 209-583.000.

New Erra Group, Inc.: *See—*
Steiner, Gregory A., 5,363,291, Cl. 362-191.000.

New Tide Enterprises Co., Ltd.: *See—*
Lin, Jia S., 5,362,252, Cl. 439-462.000.

Neward, Theodore C. Multi-vacuum release for pump. 5,362,214, Cl. 417-440.000.

Newby, John P., Sr., to Southern Case, Inc. Hinge configuration. 5,361,456, Cl. 16-257.000.

Newcomer, Clyde: *See—*
Adams, William; Newcomer, Clyde; and Larson, Gary B., 5,362,334, Cl. 148-268.000.

Newhouse, Mark A.; Vance, Miles E.; and Webb, Thomas W., to Corning Incorporated. Amplifier having pump fiber filter. 5,363,234, Cl. 359-341.000.

Newhouse, Thomas J.; Shepherd, Donald A.; and Harvey, Robert A., to Herman Miller, Inc. System for distributing and managing cabling within a work space. 5,362,923, Cl. 174-48.000.

Newman, William R.: *See—*
McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., 5,361,905, Cl. 206-494.000.

Newspaper Association of America: *See—*
Cunningham, H. Wilson; Cooley, Allen M.; and Matalia, Harshad D., 5,362,362, Cl. 162-5.000.

Ng, Daniel, to Industri AB Thule. Lockable quick release mechanism. 5,362,173, Cl. 403-320.000.

NGK Spark Plug Co., Ltd.: *See—*
Okamoto, Naoyuki; Mizutani, Hidetoshi; Miura, Kazunori; and Kondo, Kazuo, 5,362,551, Cl. 428-210.000.

Ngo, Toan M.: *See—*
Griffith, Edward J.; and Ngo, Toan M., 5,362,639, Cl. 435-161.000.

Ngoc, Hung D.; and Duval, Guy P. R., to Goodyear Tire & Rubber Company, The. Rubbery blend having low permanent compression set. 5,362,787, Cl. 524-297.000.

Nguyen, Hap. Vending tanning timer. 5,363,347, Cl. 368-10.000.

Nguyen, Uoc H.; Whang, Lipson; and Apostol, George, to Xerox Corporation. Bus interface having single and multiple channel FIFO devices using pending channel information stored in a circular queue for transfer of information therein. 5,363,485, Cl. 395-250.000.

Nhaissi, Eli; Cui, Chunyu; and Nalbandian, Gevork, to Pan American Diamond Corp. Magnifying gem holder. 5,361,606, Cl. 63-26.000.

Nicca Chemical Co., Ltd.: *See—*
Makino, Masahiro; Kurose, Mikihiko; and Sasada, Yoshihiro, 5,362,910, Cl. 564-285.000.

Nichias Corporation: *See—*
Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, 5,362,033, Cl. 266-275.000.

Nichols, David; and Szalay, David. Quick release bone probe and X-ray marker. 5,361,766, Cl. 128-654.000.

Nichols, Richard E. E., to Shooting Systems Group, Inc. Shoulder harness with connector piece. 5,361,953, Cl. 224-198.000.

Nickerson, Lincoln P., to Jay Medical, Ltd. Pressure-compensating compositions and pads made therefrom. 5,362,543, Cl. 428-76.000.

Nicod, Pierre: *See—*
Burri, Josef; and Nicod, Pierre, 5,362,503, Cl. 426-50.000.

Nihon Bayer Agrochem K.K.: *See—*
Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,362,704, Cl. 504-134.000.

Niigata Engineering Co., Ltd.: *See—*
Nagaoka, Hitoshi; Shimizu, Hiroyuki; and Nakashima, Keizo, 5,361,562, Cl. 53-492.000.

Niijima, Hiroyuki; and Akita, Kazuyuki, to Daicel Chemical Industries, Ltd. Purification of acetic anhydride or acetic anhydride and acetic acid using ozone. 5,362,365, Cl. 203-31.000.

Nija, Frederik; G. J., to Nysan Shading Systems Ltd. Shade operator. 5,361,822, Cl. 160-321.000.

Nikko Wool Textile Co., Ltd.: *See—*
Watanabe, Tatsuo, 5,361,417, Cl. 2-227.000.

Nikon Corporation: *See—*
Hagiwara, Tsuneyuki; and Hayano, Fuminori, 5,363,187, Cl. 356-237.000.
Tokuda, Noriaki, 5,363,172, Cl. 355-71.000.

Nilsson, Gert. Method and a system for measuring fluid flow movements by a laser-doppler technique. 5,361,769, Cl. 128-666.000.

Nimishakavi, Hanumanthrao, to Zilog, Inc. Circuit for generating a mode control signal. 5,363,383, Cl. 371-22.100.

Ninomiya, Ryozi, to Kabushiki Kaisha Toshiba. Method and apparatus for battery control. 5,363,312, Cl. 364-483.000.

Ninomiya, Yuichi: *See—*
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.

Nippon Conlux Co., Ltd.: *See—*
Yoshihara, Kenzou; Osawa, Toshio; Kojima, Takayuki; and Machida, Shinichi, 5,363,207, Cl. 358-442.000.

Nippon Densan Corporation: *See—*
Harada, Koji; Hirata, Takashi; Morikawa, Fumihiro; and Takahashi, Shuji, 5,363,003, Cl. 310-67.00R.
Mori, Yoichi, 5,363,028, Cl. 318-599.000.

Nippon Hoso Kyokai: *See—*
Miyoshi, Toshihiro; Okumura, Naoji; Arita, Hisashi; Ishikawa, Kenji; Ninomiya, Yuichi; Ohtsuka, Yoshimichi; Kawashima, Tadashi; and Iwamoto, Takushi, 5,363,384, Cl. 371-31.000.

Nippon Kayaku Kabushiki Kaisha: *See—*
Katoh, Yoshinori; Ichinose, Naoko; and Sotogoshi, Teruhito, 5,362,603, Cl. 430-281.000.

Nippon Mektron, Ltd.: *See—*
Oomachi, Chikafumi; and Tanaka, Yasuyuki, 5,361,491, Cl. 29-852.000.

Nippon Metal Industry Co., Ltd.: *See—*
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.

Nippon Mining Co., Ltd.: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Nippon Nuclear Fuel Development Co., Ltd.: *See—*
Hirai, Mutsumi; Ishimoto, Shinji; and Ito, Kenichi, 5,362,426, Cl. 264-0.500.

Nippon Oil Co., Ltd.: *See—*
Kubo, Junichi; and Kato, Osamu, 5,362,375, Cl. 208-19.000.

Nippon Packing Co., Ltd.: *See—*
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.

Nippon Paper Industries Co., Ltd.: *See—*
Kimura, Itsuo; Fujiwara, Kazuhiro; and Hikasa, Shigeki, 5,362,788, Cl. 524-377.000.
Murano, Tsutomu; and Nishikubo, Toshifumi, 5,362,565, Cl. 428-402.200.

Nippon Sheet Glass Co., Ltd.: *See—*
Hamanaka, Kenjiro, 5,362,961, Cl. 250-216.000.

Nippon Soken, Inc.: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.

Nippon Steel Corporation: *See—*
Konda, Masashi; Yamamoto, Toshio; and Emoto, Yoshiaki, 5,362,984, Cl. 257-666.000.
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Nippon Telephone & Telegraph Corporation: *See—*
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, 5,363,072, Cl. 333-125.000.

Nippon Thompson Co., Ltd.: *See—*
Hara, Takehiko, 5,362,156, Cl. 384-45.000.
Ichida, Tomohiro, 5,362,155, Cl. 384-15.000.
Ichida, Tomohiro, 5,362,157, Cl. 384-45.000.

Nippon Zeon Co., Ltd.: *See—*
Fukuda, Hideo; and Shimoda, Hideyoshi, 5,362,533, Cl. 428-36.800.

Nippondenso Col, Ltd.: *See—*
Yano, Motoyasu; Takemura, Yoshinori; and Suzuki, Takao, 5,363,006, Cl. 310-323.000.

Nippondenso Co., Ltd.: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.
Kojima, Ichirou; Nishida, Terumi; and Yamada, Kunio, 5,361,619, Cl. 72-348.000.
Shintai, Akira; Shibata, Hiroshi; Shiobara, Toshio; Futatsumori, Koji; Katayama, Seizi; and Yoshida, Yasutaka, 5,362,775, Cl. 523-451.000.

Nishi, Masatsugu: *See—*
Hiramoto, Kazuo; Hirota, Junichi; Nishi, Masatsugu; Watanabe, Hiroyuki; and Miyata, Kenji, 5,363,008, Cl. 313-62.000.

Nishida, Takao: *See—*
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; Nagai, Katsutoshi; and Nishida, Takao, 5,363,164, Cl. 354-195.100.

Nishida, Terumi: *See—*
Kojima, Ichirou; Nishida, Terumi; and Yamada, Kunio, 5,361,619, Cl. 72-348.000.

Nishii, Kanji; Ito, Masami; and Hukui, Atsushi, to Matsushita Electric Industrial Co., Ltd. Optical information processor. 5,363,455, Cl. 382-31.000.

Nishii, Masanobu; Shimizu, Yuichi; Kawanishi, Shunichi; Sugimoto, Shunichi; Tanaka, Tadaharu; and Eguchi, Yosuke, to Kurashiki Boseki Kabushiki Kaisha; Japan Atomic Energy Research Institute; and Radiation Application Development Association. Process for modifying fluorine resin surfaces. 5,362,525, Cl. 427-554.000.

Nishikawa, Kohei: *See—*
Yamada, Masayuki; Nonomura, Muneo; and Nishikawa, Kohei, 5,362,497, Cl. 424-449.000.

Nishikawa, Noboru: *See—*
Tanaka, Keizou; Nishikawa, Noboru; Kawase, Tsuyoshi; and Watanabe, Masami, 5,361,968, Cl. 228-160.000.

Nishikibe, Masaru: *See—*
Ishikawa, Kiyofumi; Hayama, Takashi; Nishikibe, Masaru; and Yano, Mitsuo, 5,362,736, Cl. 514-291.000.

Nishikubo, Toshifumi: *See—*
Murano, Tsutomu; and Nishikubo, Toshifumi, 5,362,565, Cl. 428-402.200.

Nishimyo, Teruyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Chain wheel mounting structure in forklift. 5,361,872, Cl. 187-226.000.

Nishitani, Nobuhisa: *See—*
Egashira, Noritaka; Asahi, Koichi; Akada, Masanori; Nakamura, Yoshinori; Imoto, Kazunobu; and Nishitani, Nobuhisa, 5,362,701, Cl. 503-227.000.

Nishiwaki, Tsutomu: *See—*
Momose, Kaoru; Nishiwaki, Tsutomu; Tanizaki, Masanori; and Mizutani, Hajime, 5,363,131, Cl. 347-46.000.

Nishiyama, Masaaki: *See—*
Ogino, Shigeo; and Nishiyama, Masaaki, 5,363,208, Cl. 358-445.000.

Nishiyama, Masanori: *See—*
Chujo, Takao; Hamano, Hisashi; Nishiyama, Masanori; Saeki, Yasuhiro; Ogawa, Tatsuya; and Endou, Kouhei, 5,362,571, Cl. 428-480.000.

Nissan Motor Co., Ltd.: *See—*
Suzuki, Keisuke; and Satoh, Hiroshi, 5,361,745, Cl. 123-698.000.
Uchida, Masaaki; and Matsumoto, Mikio, 5,361,582, Cl. 60-276.000.
Wakahara, Tatsuo, 5,361,651, Cl. 477-130.000.

Nissei ASB Machine Co., Ltd.: *See—*
Koga, Kouhei, 5,362,437, Cl. 264-537.000.

Nissen Corporation: *See—*
Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, 5,362,443, Cl. 422-26.000.

Nissha Printing Co., Ltd.: *See—*
Yamamoto, Kunitoshi; and Fukushima, Hiroshi, 5,363,294, Cl. 362-330.000.

Nissinen, Erkki: *See—*
Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,362,733, Cl. 514-270.000.

Nitayama, Akihiro: *See—*
Sunouchi, Kazumasa; Fuse, Tsuneaki; Nitayama, Akihiro; Hasegawa, Takehiro; Watanabe, Shigeyoshi; Horiguchi, Fumio; and Hieda, Katsuhiko, 5,363,325, Cl. 365-149.000.

Niwa, Takeshi: *See—*
Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, 5,362,636, Cl. 435-115.000.

Niwayama, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Focus control system. 5,363,357, Cl. 369-44.270.

NKK Corporation: *See—*
Ogawa, Atsushi; Minakawa, Kuninori; and Takahashi, Kazuhide, 5,362,441, Cl. 420-420.000.

Nobutaka, Minefuji: *See—*
Takayuki, Ito; and Nobutaka, Minefuji, 5,363,243, Cl. 359-689.000.

Noda, Hidetomo: *See—*
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

NOF Corporation: *See—*
Koyata, Hideo; and Honda, Susumu, 5,362,323, Cl. 106-810.000.

Nogossek, Alfred, to Friedrich Theysohn GmbH. Plastifier with disk and pin throttle for plastic materials. 5,362,146, Cl. 366-82.000.

Noguchi, Shinji, to Horiba, Ltd. Apparatus and method of controlling the robotic driving of a vehicle. 5,363,027, Cl. 318-573.000.

Noguchi, Shoji: *See—*
Murakami, Yasuo; Utsumi, Yasuo; Noguchi, Shoji; Shimasaki, Yasuyuki; Iwasa, Hiroshi; and Kadokawa, Satoshi, 5,361,648, Cl. 74-569.000.

Noguchi, Tadashi: *See—*
Morimoto, Shigeki; Noguchi, Tadashi; Taguchi, Yasusi; and Taniguchi, Masakazu, 5,362,689, Cl. 501-70.000.

Nogura, Kouichi; Fujie, Kouichi; Suga, Chouji; Inomata, Naokiyo; and Ootani, Mitsuo, to Kuraray Co., Ltd. Acrylic polymers. 5,362,807, Cl. 525-82.000.

Nojima, akahiko: *See—*
Kojima, Takaaki; Okumura, Mitsuhiro; and Nojima, akahiko, 5,362,626, Cl. 430-642.000.

Nojima, Toshio: *See—*
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, 5,363,072, Cl. 333-125.000.

Nokia Mobile Phones Ltd.: *See—*
Hyvonen, Tapani; and Maenpaa, Tarmo, 5,361,459, Cl. 24-35.000.

Nokihara, Kiyoshi, to Shimadzu Corporation. Automated peptide synthesizer. 5,362,447, Cl. 422-131.000.

Nolan, James A.: *See—*
Samuelson, Kent E.; Morris, Robert A.; Nolan, James A.; and Steinhaus, Bruce M., 5,361,776, Cl. 128-734.000.

Nolen, Timothy R.: *See—*
Stavinoha, Jerome L., Jr.; Monnier, John R.; Hitch, David M.; Nolen, Timothy R.; and Oltean, George L., 5,362,890, Cl. 549-536.000.

Nomura, Ichie: *See—*
Iwama, Naoki; and Nomura, Ichie, 5,362,338, Cl. 148-334.000.

Nomura, Masamitu: *See—*
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, 5,363,498, Cl. 395-425.000.

Nonomura, Muneo: *See—*
Yamada, Masayuki; Nonomura, Muneo; and Nishikawa, Kohei, 5,362,497, Cl. 424-449.000.

Norand Corporation: *See—*
Miller, Phillip; Becker, Ronald D.; and Koenck, Steven E., 5,363,031, Cl. 320-21.000.

Noranda, Inc.: *See—*
Jamaluddin, Abul K. M.; and Nazarko, Taras W., 5,361,845, Cl. 166-302.000.

Norco Industries, Inc.: *See—*
Kassebaum, Larry A., 5,362,194, Cl. 414-427.000.

Nordbeck, Ellis L.; and Walker, Charles. Swim fin. 5,362,268, Cl. 441-64.000.

Normann, Randy A.; and Kadlec, Emil R., to Sandai Corporation. Downhole telemetry system. 5,363,095, Cl. 340-854.700.

Normann, Richard A.; Rousche, Patrick J.; Horch, Kenneth W.; and Schmidt, Susan P., to University of Utah Research Foundation. Impact inserter mechanism for implantation of a biomedical device. 5,361,760, Cl. 128-642.000.

Normier, Gerard: *See—*
D'Hinterland, Lucien D.; Le Pape, Alain; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 5,362,474, Cl. 424-1.130.

Norris, Elwood G., to Jabra Corporation. Unidirectional ear microphone and method. 5,363,444, Cl. 379-430.000.

North American Philips Corporation: *See—*
Gaines, James M.; Drenten, Ronald R.; Haberern, Kevin W.; Marshall, Thomas M.; Menaz, Piotr M.; and Petruzzello, John, 5,363,395, Cl. 372-45.000.
Garbowicz, Glenn D., 5,363,017, Cl. 315-122.000.
Joseph, George L.; and Kaiser, Steven M., 5,363,147, Cl. 348-738.000.

Northern Telecom Limited: *See—*
Boyd, John M.; Ellul, Joseph P.; and Tay, Sing P., 5,362,669, Cl. 437-67.000.
Falt, Christopher E.; Richardson, Bruce A.; and Rolland, Claude, 5,363,457, Cl. 385-3.000.
Mufti, Sohale A.; Samuel, Robert G.; Soong, Peter P. K.; Yip, Adrian M.-G.; and Wakim, Michael J., 5,363,425, Cl. 379-38.000.

Notzold, Norbert. Connecting element between WC seat/lid and WC bowl. 5,361,423, Cl. 4-237.000.

Novo Nordisk A/S: *See—*
Outtrup, Helle; Dambmann, Claus; and Lindegaard, Poul, 5,362,414, Cl. 252-174.120.

Nozaki, Hitoshi: *See—*
Takahashi, Kazuo; Kumata, Fumio; Nozaki, Hitoshi; Inoue, Shinichi; and Makabe, Toshiji, 5,362,696, Cl. 502-64.000.

Nozawa, Masayuki: *See—*
Kobayashi, Hideyuki; Nozawa, Masayuki; and Nagayama, Yashuhiro, 5,361,961, Cl. 226-171.000.

Nozawa, Takamitsu; and Tasaki, Takaharu, to Yoshino Kogyosho Co., Ltd. Cap structure with elastic turnover cover. 5,361,920, Cl. 215-237.000.

NSK Ltd.: *See—*
Murakami, Yasuo; Utsumi, Yasuo; Noguchi, Shoji; Shimasaki, Yasuyuki; Iwasa, Hiroshi; and Kadokawa, Satoshi, 5,361,648, Cl. 74-569.000.

NTN Corporation: *See—*
Hashimoto, Kazuyuki; and Jin, Hiroki, 5,362,158, Cl. 384-447.000.

NTT Mobile Communication Network Inc.: *See—*
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, 5,363,072, Cl. 333-125.000.

Nukada, Katsumi; Imai, Akira; Daimon, Katsumi; and Iijima, Masakazu, to Fuji Xerox Co., Ltd. Electrophotographic photoreceptor containing phthalocyanine mixed crystals. 5,362,589, Cl. 430-78.000.

Numako, Norio: *See—*
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; Nagai, Katsutoshi; and Nishida, Takao, 5,363,164, Cl. 354-195.100.

Nurge, William. Exercise belt system. 5,362,295, Cl. 482-124.000.

N.V. Vandemoortele International: *See—*
Muylle, Joose R. L.; Dijkstra, Albert J.; Maes, Pieter J. A.; and Van Opstal, Martin, 5,362,893, Cl. 554-195.000.

Nyhart, Scott O., to Motorola, Inc. Extended range paging for a radio frequency communication system. 5,363,426, Cl. 379-57.000.

Nylok Fastener Corporation: *See—*
Sessa, Eugene; and Duffy, Richard, 5,362,327, Cl. 118-308.000.

Nylund, Olov; Mansson, Ragnar; Olsson, Torsten; Farkas, Tibor; and Sahlin, Thorbjorn, to ABB Atom AB. Spacer for retaining fuel rods in a nuclear reactor fuel assembly. 5,363,422, Cl. 376-442.000.

Nysan Shading Systems Ltd.: *See—*
Nijs, Frederik; G. J., 5,361,822, Cl. 160-321.000.

Obata, Hideo: *See—*
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.

Obata, Masahito: *See—*
Sasaki, Tomio; and Obata, Masahito, 5,363,210, Cl. 358-448.000.

Obermeyer, Franklin D., to Westinghouse Electric Corporation. Control rod guide tube. 5,363,421, Cl. 376-353.000.

Obi, Naoki; Suematsu, Kiyoshi; Kojima, Yasuhiko; Katayama, Masatoshi; and Shigemitsu, Yasuo, to Dainippon Ink and Chemicals, Inc. Direct positive silver halide photographic material and method for forming high contrast positive image using the same. 5,362,621, Cl. 430-596.000.

O'Brien, Michael J.: *See—*
Crivello, James V.; O'Brien, Michael J.; and Lee, Julia L., 5,362,607, Cl. 430-326.000.

O'Brien, Mike: *See—*
Skaggs, Bryan; O'Brien, Mike; Scheult, James M.; and Swazey, John M., 5,362,312, Cl. 106-189.000.

Occhiello, Ernesto: *See—*
Guerrini, Gian L.; Savadori, Aurelio; Cutolo, Domingo; and Occhiello, Ernesto, 5,362,431, Cl. 264-131.000.

Oceaneering International, Inc.: *See—*
Caldwell, Bruce D., 5,361,591, Cl. 62-50.400.

Ochiai, Yoshihiro: *See—*
Iizuka, Jiro; and Ochiai, Yoshihiro, 5,362,211, Cl. 417-310.000.

O'Connor, Edward: *See—*
Asberom, Theodros; O'Connor, Edward; Berger, Joel G.; and Clader, John W., 5,362,728, Cl. 514-217.000.

O'Connor, Thomas M.: *See—*
Cizmer, Lloyd E.; Lee, Jing M.; and O'Connor, Thomas M., 5,362,454, Cl. 422-201.000.

Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, to Asahi Glass Company Ltd.; and Electric Power Development Co., Ltd. Pressurized fluidized bed combustion boiler system. 5,361,728, Cl. 122-4.00D.

Oda, Tomio: *See—*
Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, 5,362,751, Cl. 514-530.000.

O'Dell, Bobby J.; and Bunegin, Leonid, to Board of Regents, The University of Texas System. Combined perfusion and oxygenation apparatus. 5,362,622, Cl. 435-1.000.

O'Donnell, James H. Fluid retaining container. 5,361,465, Cl. 27-29.000.

Ogawa, Atsushi; Minakawa, Kuninori; and Takahashi, Kazuhide, to NKK Corporation. Ti-Al-V-Mo-O alloys with an iron group element. 5,362,441, Cl. 420-420.000.

Ogawa, Kensuke: *See—*
Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, 5,362,972, Cl. 257-13.000.

Ogawa, Morimasa; Emoto, Genichi; Ueda, Akio; Kibayashi, Takao; Nakata, Keitaro; and Inoue, Tsuneo, to Mitsubishi Kasei Corporation. Method of controlling a hydroformylation reaction. 5,362,917, Cl. 568-454.000.

Ogawa, Tatsuya: *See—*
Chujo, Takao; Hamano, Hisashi; Nishiyama, Masanori; Saeki, Yasuhiro; Ogawa, Tatsuya; and Endou, Kouhei, 5,362,571, Cl. 428-480.000.

Ogawa, Tomomi: *See—*
Inoue, Hiroyuki; Fujiwara, Keiji; Ogawa, Tomomi; and Tezuka, Masumi, 5,361,852, Cl. 173-176.000.

Ogino, Shigeo; and Nishiyama, Masaaki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus comprising integrating means for integrating image density data. 5,363,208, Cl. 358-445.000.

Ogle, Steven E.: *See—*
Hagemeister, Robert C.; Ogle, Steven E.; and Wells, Thomas J., 5,361,434, Cl. 5-247.000.

Ogrodnick, Michael, Jr. Modular mailbox housing assembly. 5,361,977, Cl. 232-39.000.

Ogura Clutch Co., Ltd.: *See—*
Yamamoto, Tetsuo, 5,361,883, Cl. 192-84.00C.

Oh, Jong H., to Hyundai Electronics Industries Co., Ltd. Word line driving circuit for dynamic RAM. 5,363,338, Cl. 365-230.060.

Oh, Uk-Hwan: *See—*
Park, Jong-Mun; Jeong, Chan-Sik; Oh, Uk-Hwan; and Yu, Taek-Jong, 5,361,790, Cl. 134-95.300.

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Patrick, Kenneth J., to Intermodal Technologies, Inc. Bulk materials transportation system. 5,362,198, Cl. 414-786.000.

Paul, Ana: *See*—
Paul, Marius A.; and Paul, Ana, 5,362,219, Cl. 418-61.200.

Paul, Joseph L.: *See*—
Fort, Raymond S.; and Paul, Joseph L., 5,361,613, Cl. 70-247.000.

Paul, Marius A.; and Paul, Ana. Internal combustion engine with compound air compression. 5,362,219, Cl. 418-61.200.

Paul Troester Maschinenfabrik: *See*—
Gohlisch, Hans J., 5,362,001, Cl. 241-160.000.

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Lahoda, Edward J.; Paffenbarger, John A.; Paulson, C. Keith; Seagle, Jerry C.; and Cash, Donald W., 5,361,514, Cl. 34-391.000.

Pavlik, John P. Scale with rolling-fulcrum and cylindrical-weights. 5,362,928, Cl. 177-172.000.

Payne, Amy: *See*—
Payne, Mark; and Payne, Amy, 5,361,442, Cl. 15-97.100.

Payne, Edward A.: *See*—
Lucas, Leonard V.; Zahm, Charles L.; Payne, Edward A.; and Andren, Carl F., 5,363,401, Cl. 375-1.000.

Payne, Mark; and Payne, Amy. Pool tile scrubber. 5,361,442, Cl. 15-97.100.

Paynter, Lynn N.: *See*—
Rosenthal, Robert D.; Paynter, Lynn N.; and Quintana, Reynaldo J., 5,362,966, Cl. 250-341.100.

Peacock, Francis E. N. Trawling system and trawl device for shrimp. 5,361,528, Cl. 43-6.500.

Peak, Matthew L. Van seat auxiliary support rails. 5,362,125, Cl. 297-130.000.

Pearce, Willard L.: *See*—
Carroll, Norman L.; and Pearce, Willard L., 5,361,640, Cl. 73-831.000.

Pedicini, Christopher S., to AER Energy Resources, Inc. Diffusion vent for a rechargeable metal-air cell. 5,362,577, Cl. 429-27.000.

Peet Bros. Company, Inc.: *See*—
Peet, William J., II, 5,361,633, Cl. 73-170.080.

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Peloza, Kirk B., to Molex Incorporated. Electrical connector with improved terminal latching system. 5,362,260, Cl. 439-746.000.

Penha, Manuel: *See*—
Ollivier, Jean-Francois; Lalaouna, Said; and Penha, Manuel, 5,362,151, Cl. 374-55.000.

Penny, Delmon H.: *See—*
George, Billy L.; Babirad, Stefan A.; and Penny, Delmon H., 5,362,566, Cl. 428-403.000.

Penny, Glenn S.: *See—*
Westland, John A.; Penny, Glenn S.; and Lenk, Deborah A., 5,362,713, Cl. 507-110.000.

Penske, Ken A.: *See—*
Taylor, Robert B.; Penske, Ken A.; and Cook, Clif E., 5,361,844, Cl. 166-301.000.

Pepin, John G., to Du Pont de Nemours, E. I., and Company. Thermal shock cracking resistant multilayer ceramic capacitor termination compositions. 5,363,271, Cl. 361-320.000.

Pepper, Douglas D. Device for injecting a pesticide into concealed areas within a structure. 5,361,533, Cl. 43-124.000.

Peppers, Norman A.: *See—*
Frohbach, Hugh F.; and Peppers, Norman A., 5,363,200, Cl. 358-335.000.

Percosan, Peter A.: *See—*
Gergen, Joseph P.; and Percosan, Peter A., 5,363,322, Cl. 364-754.000.

Peremyschev, Vladimir A. Method of drying a protective polymer coating applied onto a surface of an article from a solution, and device for effecting thereof. 5,361,515, Cl. 34-393.000.

Periasamy, Muthunadar P.: *See—*
Moore, Dennis A.; Adams, Max D.; Cacheris, William P.; White, David H.; Periasamy, Muthunadar P.; Rajagopalan, Raghavan; deLearie, Lynn A.; and Woulfe, Steven R., 5,362,477, Cl. 424-9.000.

Perkins, Dennis G., to General Electric Company. Manufacturing device with an automatic self-aligning connector for attachment to a docking station. 5,362,221, Cl. 425-62.000.

Perkins, Donald W.: *See—*
Dernbach, Donald F.; and Perkins, Donald W., 5,363,442, Cl. 379-412.000.

Perkins, Rick A.: *See—*
DeKleine, Paul C.; and Perkins, Rick A., 5,363,295, Cl. 362-346.000.

Perlov, Ilya: *See—*
Wang, David N.; White, John M.; Law, Kam S.; Leung, Cissy; Umotoy, Salvador P.; Collins, Kenneth S.; Adamik, John A.; Perlov, Ilya; and Maydan, Dan, 5,362,526, Cl. 427-573.000.

Pernick, Benjamin J. Optical correlator using fiber optics lasers. 5,363,233, Cl. 359-316.000.

Peroni, Peter A., to LaFrance Corporation. Single post stud with locking blade. 5,362,186, Cl. 411-508.000.

Perry, Betty J. Emergency preparedness vest apparatus. 5,361,412, Cl. 2-69.000.

Perry, Carlos. Two-piece nestable septic tank with integral antifloatation collar. 5,361,930, Cl. 220-565.000.

Perry, William M.; and Helmer, Kerry L., to United Technologies Automotive, Inc. Power pack for an automotive exterior mirror assembly. 5,363,246, Cl. 359-874.000.

Pesenti, Enrico: *See—*
Mongelli, Nicola; Angelucci, Francesco; Pesenti, Enrico; Suarato, Antonino; and Biasoli, Giovanni, 5,362,831, Cl. 526-304.000.

Petel, Joseph: *See—*
Urinowski, Ehud; Nedivi, Dror; and Petel, Joseph, 5,363,155, Cl. 351-205.000.

Petersen, David; and Pont, Jorge, to Hewlett-Packard Company. Cutter drive for a computer driven printer/plotter. 5,363,123, Cl. 346-24.000.

Petersen, Uwe: *See—*
Klauke, Erich; Petersen, Uwe; and Grohe, Klaus, 5,362,909, Cl. 562-852.000.

Peterson, Jeffrey A.: *See—*
Franseen, Steven A.; and Peterson, Jeffrey A., 5,362,232, Cl. 433-9.000.

Peterson, Timothy J.: *See—*
Spath, Mark J.; Peterson, Timothy J.; Samalot, Ivan R.; De Minco, Christopher M.; Kunz, Timothy W.; and Nather, Scott H., 5,361,733, Cl. 123-90.160.

Petri, Randy J.; Meek, John; Bachta, Robert P.; and Marianowski, Leonard G., to Institute of Gas Technology. Integrated main rail, feed rail, and current collector. 5,362,578, Cl. 429-35.000.

Petri, Walter: *See—*
Stache, Ulrich; Durckheimer, Walter; Alpermann, Hans G.; and Petri, Walter, 5,362,721, Cl. 514-179.000.

Petrie, Roger C.: *See—*
Petrie, Steven C.; and Petrie, Roger C., 5,361,416, Cl. 2-171.200.

Petrie, Steven C.; and Petrie, Roger C. Headcover and chin strap for treating sleep apnea. 5,361,416, Cl. 2-171.200.

Petrou, Nicoleon. Pants hanger with pivotable finger on lower bar. 5,361,949, Cl. 223-96.000.

Petrovich, Alexander: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Petrovich, Paul A.: *See—*
Warner, Joseph G.; and Petrovich, Paul A., 5,361,677, Cl. 89-14.200.

Petruzzello, John: *See—*
Gaines, James M.; Drenten, Ronald R.; Haberern, Kevin W.; Marshall, Thomas M.; Mensz, Piotr M.; and Petruzzello, John, 5,363,395, Cl. 372-45.000.

Pettersson, Thorulf; and Anttila, Jorma, to STFI. Arrangement for measuring mechanical properties of a foil material through use of an excitation unit that includes a laser. 5,361,638, Cl. 73-800.000.

Petty, Norman W., to AT&T Bell Laboratories. Differing frequency sine wave generation from a look-up table. 5,363,443, Cl. 379-418.000.

Petty, Ralph E. Trolling autopilot. 5,362,263, Cl. 440-1.000.

Pfaff Haushaltmaschinen GmbH: *See—*
Hartwig, Jurgen, 5,361,714, Cl. 112-445.000.

Pfeiffer, Brigitte, executrix: *See—*
Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Renneke, Franz-Josef, 5,362,475, Cl. 424-9.000.

Pfeiffer, Edward A., Jr.; and Hamilton, Paul, to Exhaust Track, Inc. Vehicle exhaust distribution system for buildings. 5,362,273, Cl. 454-63.000.

Pfeiffer, Heinrich, deceased: *See—*
Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Renneke, Franz-Josef, 5,362,475, Cl. 424-9.000.

Pfeiffer, Loren N.; Stormer, Horst L.; Wegscheider, Werner H.; and West, Kenneth W., to AT&T Bell Laboratories. Quantum wire laser. 5,363,394, Cl. 372-45.000.

Pfizer Inc.: *See—*
Ahmed, Imran, 5,362,758; Cl. 514-777.000.
Barnish, Ian T.; and James, Keith, 5,362,902, Cl. 560-13.000.
Chang, George; Hamanaka, Ernest S.; McCarthy, Peter A.; Truong, Thien; and Walker, Frederick J., 5,362,878, Cl. 546-296.000.
Geoghegan, Kieran F., 5,362,852, Cl. 530-345.000.
Sarges, Reinhard; and Yeh, Li-An, 5,362,743, Cl. 514-313.000.

Pfuetze, Dave. Mapping and geographic locator system. 5,362,239, Cl. 434-153.000.

PFW Aroma Chemicals B.V.: *See—*
Cohen, Amnon M.; Conboy, Frank E.; Lenselink, Willem; and Oostveen, Everardus A., 5,362,715, Cl. 562-17.000.

Phaff, Rox: *See—*
Baumann, Hans; and Phaff, Rox, 5,362,872, Cl. 544-89.000.

Pham, Hoanh N.; and Shirley, Todd A., to Air Products and Chemicals, Inc. Process for nitrogen oxides reduction. 5,362,462, Cl. 423-235.000.

PharmaGenics, Inc.: *See—*
Vogelstein, Bert; Kinzler, Kenneth W.; and Sherman, Michael I., 5,362,623, Cl. 435-6.000.

Pharmetrix Corporation: *See—*
Baker, Richard W.; Santus, Giancarlo; and Vintilla-Friedman, Susan, 5,362,496, Cl. 424-435.000.

Phelps, Graham B., to Pyroguard Limited. Failsafe phial-type fire extinguishing system. 5,361,847, Cl. 169-58.000.

Philips Electronics North America Corporation: *See—*
Liu, Rui; and Caldeira, Paulo, 5,363,287, Cl. 363-20.000.
Merchant, Steven L., 5,362,979, Cl. 257-340.000.

Philips Gloeilampenfabrieken: *See—*
Martin, Horst; Naab, Alfred; Hesse, Bernhard; Weidhaas, Wolfgang; Quednau, Gunther; and Fremgen, Dieter, 5,363,432, Cl. 379-90.000.

Phillips, Charles A.: *See—*
Fullerton, Larry W., 5,363,108, Cl. 342-27.000.

Phillips, James L., to Phillips Medical Group, Inc. Multi-adjustable surgical tray apparatus. 5,362,021, Cl. 248-225.310.

Phillips Medical Group, Inc.: *See—*
Phillips, James L., 5,362,021, Cl. 248-225.310.

Phillips Petroleum Company: *See—*
Hawley, Gil R.; McDaniel, Max P.; Harris, Jesse R.; and Battiste, David R., 5,362,825, Cl. 526-125.000.
Schanus, Edward G.; and McPherson, Marinelle, 5,362,869, Cl. 426-656.000.

Phoenix, John B.: *See—*
Phoenix, Lancelot; and Phoenix, John B., 5,361,736, Cl. 123-90.170.

Phoenix, Lancelot; and Phoenix, John B. Variable valve timing. 5,361,736, Cl. 123-90.170.

Photon Dynamics, Inc.: *See—*
Henley, Francois J.; and Miller, Michael J., 5,363,037, Cl. 324-158.100.

Picraux, Lyle: *See—*
Ginther, Pamela J.; Washburn, Valerie A.; and Picraux, Lyle, 5,361,946, Cl. 222-175.000.

Pier, Steven J.; and Jones, Carl C. Beverage chilling receptacle. 5,361,604, Cl. 62-457.400.

Pierre Fabre Medicament: *See—*
D'Hinterland, Lucien D.; Le Pape, Alain; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 5,362,474, Cl. 424-1.130.

Pilkington Visioncare, Inc.: *See—*
Askari, Syed H.; Jeang, Shao C.; and Neidlinger, Herman H., 5,362,768, Cl. 523-106.000.

Pimentel, Daniel R., to Texas Instruments Incorporated. Fuel injector heater. 5,361,990, Cl. 239-133.000.

Pinel, Anne-Marie: *See—*
D'Hinterland, Lucien D.; Le Pape, Alain; Normier, Gerard; Pinel, Anne-Marie; and Durand, Jacques, 5,362,474, Cl. 424-1.130.

Pioneer Electronic Corporation: *See—*
Furuno, Takashi; Wakasa, Toshiya; Iizuka, Jun; Hagiwara, Kanehiro; and Mitake, Mitsuyoshi, 5,363,149, Cl. 348-789.000.
Kuwahara, Shingo; and Araki, Morio, 5,363,306, Cl. 364-449.000.
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.
Suenaga, Syoji; Suzuki, Masahiro; and Iwasaki, Masashi, 5,363,122, Cl. 345-212.000.
Tanaka, Satoru; Yangisawa, Shuichi; and Matsui, Fumio, 5,363,356, Cl. 369-44.290.
Yanagawa, Naoharu, 5,363,358, Cl. 369-44.290.

Pippin, Gerald W.: *See—*
Westerman, G. Wayne; Montgomery, Richard C.; and Pippin, Gerald W., 5,362,206, Cl. 417-12.000.

Pippuri, Aino: *See—*
Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,362,733, Cl. 514-270.000.

Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Garro, Luciano; and Martin, Mario, 5,362,793, Cl. 524-495.000.

Pischke, David L., to Harnischfeger Corporation. Gate-handling crane. 5,361,916, Cl. 212-153.000.

Pitta, Mario de Souza N.: *See—*
Gordo, Wladimir P.; and Pitta, Mario de Souza N., 5,361,457, Cl. 19-41.000.

Pitzi, Vincent J., to Jacobs Brake Technology Corporation. Mechanical assemblies with hardened bearing surfaces. 5,361,740, Cl. 123-321.000.

Pizzi, Joseph A.; and Snyder, Jeffrey G. Beverage keg insulated cooling jacket. 5,361,605, Cl. 62-530.000.

Plumton, Donald L.: *See—*
Henderson, Timothy S.; Plumton, Donald L.; Yuang, Han-Tzong; and Sigmon, Thomas W., 5,362,657, Cl. 437-31.000.

Poate, John M.: *See—*
Glass, Alastair M.; Hunt, Neil E. J.; Poate, John M.; Schubert, Erdmann F.; and Zydzik, George J., 5,363,398, Cl. 372-92.000.

Poehler, Oliver. Kit of library forms. 5,361,897, Cl. 206-232.000.

Pohto, Pentti: *See—*
Backstrom, Reijo; Honkanen, Erkki; Linden, Inge-Britt; Nissinen, Erkki; Pippuri, Aino; Pohto, Pentti; and Korkolainen, Tapio, 5,362,733, Cl. 514-270.000.

Poisson, Daniel: *See—*
Delvaux, Pierre; Lesmerises, Normand; Poisson, Daniel; and Gouin, Marcel, 5,362,690, Cl. 501-95.000.

Pollard, Albert C. Furnace waste water freeze protection method. 5,361,795, Cl. 137-1.000.

Polydor, Gilles; and Mathon, Jean-Claude, to Compagnie Generale des Matieres Nucleaires. Method and system for intervening on the sealing pane of an orifice of a confined cell. 5,363,420, Cl. 376-287.000.

Polyfoam Products, Inc.: *See—*
Murray, Pat L.; Huber, E. Richard; and Hughes, Thomas C., 5,362,342, Cl. 156-71.000.

Polygram Internat. Holding B.V.: *See—*
Lokhoff, Gerardus C. P.; and Roering, Johannes J., 5,363,250, Cl. 360-48.000.

Polysar Rubber Corporation: *See—*
Osman, Akhtar, 5,362,817, Cl. 525-334.100.

Pont, Jorge: *See—*
Petersen, David; and Pont, Jorge, 5,363,123, Cl. 346-24.000.

Ponzio, Massimo: *See—*
Luciani, Sabatino; Ponzio, Massimo; and Lumini, Antonio, 5,361,487, Cl. 29-596.000.

Poock-Haffmans, Peter: *See—*
Pothmann, Werner; Steinberg, Bastian; Poock-Haffmans, Peter; and Harms, Dirk, 5,361,753, Cl. 128-207.150.

Porta, Jacopo; Riccioli, Guido; Trifoni, Pierino; and Schiffling, Christian, to Solvay Barium Strontium GmbH. Preparation of granulated alkaline earth metal carbonate. 5,362,688, Cl. 501-27.000.

Porter, Kenneth L. Apparatus for and method of rolling a cover over the top of a module. 5,361,561, Cl. 53-397.000.

Porter, Marsha L.: *See—*
McCarver, Stacey G.; Strack, David C.; Porter, Marsha L.; and Mathis, Peter, 5,362,306, Cl. 602-60.000.

Portwood, Gary: *See—*
Upton, Robert G.; Hooper, Michael F.; Portwood, Gary; Pyka, Jerry; Johnston, Randy; and Chambers, Robert, 5,362,073, Cl. 277-92.000.

Possin, George E.: *See—*
Kwasnick, Robert F.; Possin, George E.; Holden, David E.; and Saia, Richard J., 5,362,660, Cl. 437-40.000.

Post, Joseph. Ventilation spacer for roof construction. 5,361,551, Cl. 52-95.000.

Pothmann, Werner; Steinberg, Bastian; Poock-Haffmans, Peter; and Harms, Dirk, to Deutsche Aerospace AG. Method of measuring and regulating the pressure in the sealing cuff of a tracheal tube and apparatus for implementing the method. 5,361,753, Cl. 128-207.150.

Pouletty, Philippe, to SangStat Medical Corporation. Self-contained quantitative assay. 5,362,654, Cl. 436-518.000.

Powell, Tyrone E. Interactive drag strip amusement ride. 5,361,705, Cl. 104-60.000.

Prabhu, Gajanan M.: *See—*
Smith, Mark Jr.; and Prabhu, Gajanan M., 5,361,749, Cl. 126-21.00A.

Pradin, Louis, to Societe Nationale Industrielle et Aerospatiale. Stripper for elements made of electric-conducting material and covered with a protective or insulating element such as a film, a sheath or similar. 5,361,653, Cl. 81-9.510.

Praxair Technology, Inc.: *See—*
Cheng, Alan T., 5,362,455, Cl. 422-253.000.

Preisler, Eberhard; and Bock, Joachim, to Hoechst Aktiengesellschaft. Process for removing a copper mold from a molded body. 5,362,712, Cl. 505-410.000.

Preisser, Friedrich: *See—*
Heilmann, Paul; Minarski, Peter; and Preisser, Friedrich, 5,362,031, Cl. 266-89.000.

President and Fellows of Harvard College: *See—*
Schreiber, Stuart L.; Friedman, Jeffrey S.; Weissman, Irving L.; and Liu, Jun, 5,362,629, Cl. 435-21.000.

Preussner, Elke; Gruenwald, Heinrich; and Scheerer, Friedrich, to Leica Mikroskopie und Systeme GmbH. Process for the emission-free, in particular CFC-free, cleaning of precision optics or optical element groups. 5,362,330, Cl. 134-1.000.

Prevorsek, Dusan C.: *See—*
Harpell, Gary A.; Prevorsek, Dusan C.; and Gerlach, Max W., 5,362,527, Cl. 428-33.000.

Prevotat, Marie-Luce: *See—*
Fiard, Jean-Francois; Mercier, Jean-Michel; and Prevotat, Marie-Luce, 5,362,707, Cl. 504-234.000.

Price, John F.: *See—*
Carlin, Frank J.; and Price, John F., 5,361,846, Cl. 166-380.000.

Price, Thomas C.: *See—*
Jungroth, Owen; and Price, Thomas C., 5,363,335, Cl. 365-226.000.

Printpac-Ueb Limited: *See—*
Blomfield, Gregory T., 5,361,976, Cl. 229-148.000.

Printronix, Inc.: *See—*
Farb, Norman E.; and Chon, James, 5,361,693, Cl. 101-93.040.

Pritchard, Eric K. Termination for strings of a musical instrument. 5,361,667, Cl. 84-297.00R.

Procter & Gamble Company, The: *See—*
Cook, Charles D., 5,361,936, Cl. 221-63.000.
Hsieh, Yen C.; Richards, Anthony P.; Alvarado, Jose; and Romanach, Benito, 5,362,505, Cl. 426-93.000.
Masters, Ronald A., 5,362,422, Cl. 252-544.000.
Schwen, Richard J.; and Bissett, Donald L., 5,362,748, Cl. 514-476.000.
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,362,511, Cl. 426-549.000.

Prof. Dr. Ing. Gunther Krieg: *See—*
Krieg, Gunther; Koukolitschek, Karl; and Maier, Wilfried, 5,361,912, Cl. 209-524.000.

Progear, Inc.: *See—*
Rennie, Gordon S., 5,362,055, Cl. 273-167.00H.

Progressive Technology in Lighting, Inc.: *See—*
DeKleine, Paul C.; and Perkins, Rick A., 5,363,295, Cl. 362-346.000.

Protector Development: *See—*
Bernstein, Lawrence A., 5,361,419, Cl. 2-423.000.

Prucha, Thomas E.: *See—*
Kuhn, John W.; and Prucha, Thomas E., 5,361,823, Cl. 164-9.000.

Pryor, Timothy R.; Hockley, Bernard S.; Liptay-Wagner, Nick; Hageniers, Omer L.; and Pastorius, W. J., to Sensor Adaptive Machines, Inc. Method and apparatus for electro-optically determining the dimension, location and attitude of objects. 5,362,970, Cl. 250-561.000.

Ptacek, Carol J.: *See—*
Blowes, David W.; Ptacek, Carol J.; Robertson, William; and Cherry, John A., 5,362,394, Cl. 210-617.000.

Pthalo Systems, Inc.: *See—*
Keightley, John, 5,363,217, Cl. 358-506.000.

Puckett, Lawrence J., to United States of America, Army. Parawing. 5,362,017, Cl. 244-146.000.

Puerner, Dean A., to Whitaker Corporation, The. Hybrid connector. 5,362,261, Cl. 439-752.000.

Pugh, Blaine E.: *See—*
Hull, Harold L.; and Pugh, Blaine E., 5,362,184, Cl. 410-90.000.

Pugia, Michael J., to Miles Inc. Method of assaying for peroxidatively active substances. 5,362,633, Cl. 435-28.000.

Pullela, Somayajulu S. K., to Sony Electronics, Inc. Method for computer system development verification and testing using portable diagnostic/testing programs. 5,363,501, Cl. 395-500.000.

Purchase, Claude Forsey, Jr.; and White, Andrew D., to Warner-Lambert Company. Tetrazole-substituted urea acat inhibitors. 5,362,744, Cl. 514-381.000.

Pure-Etch Co.: *See—*
Greenberg, Bernard, 5,362,459, Cl. 423-21.100.

Puterko, Carol M.: *See—*
Gagne, Patricia C.; and Puterko, Carol M., 5,363,453, Cl. 382-5.000.

Pyka, Jerry: *See—*
Upton, Robert G.; Hooper, Michael F.; Portwood, Gary; Pyka, Jerry; Johnston, Randy; and Chambers, Robert, 5,362,073, Cl. 277-92.000.

Pyle, Stoddard H.; and Morris, Frank P. Roof truss fabrication method. 5,361,495, Cl. 29-897.310.

Pyroguard Limited: *See—*
Phelps, Graham B., 5,361,847, Cl. 169-58.000.

Quabaug Corporation: *See—*
Volpe, John F., 5,362,435, Cl. 264-248.000.

Quang, Dang V.; and Cameron, Charles, to Institut Francais Du Petrole. Reactor for carrying out a succession of heterogeneous catalysis and thermal reactions. 5,362,452, Cl. 422-192.000.

Quantum Corporation: *See—*
Aubry, Laurent, 5,362,993, Cl. 327-94.000.

Quednau, Gunther: *See—*
Martin, Horst; Naab, Alfred; Hesse, Bernhard; Weidhaas, Wolfgang; Quednau, Gunther; and Fremgen, Dieter, 5,363,432, Cl. 379-90.000.
Quentin, Gerard; and Martinoli, Jean-Luc, to Serbio. Peptide substrates, method of preparation and use in the determination of protein C. 5,362,851, Cl. 530-331.000.
QuickLogic Corporation: *See—*
Gordon, Kathryn E.; and Wong, Richard J., 5,362,676, Cl. 437-192.000.
Quintana, Reynaldo J.: *See—*
Rosenthal, Robert D.; Paynter, Lynn N.; and Quintana, Reynaldo J., 5,362,966, Cl. 250-341.100.
R.L.L. Limited: *See—*
Lickton, Robert J., 5,362,282, Cl. 474-220.000.
Raad, Issam; and Sherertz, Robert J., to Univ. of TX MD Anderson Cancer Center. M-EDTA pharmaceutical preparations and uses thereof. 5,362,754, Cl. 514-566.000.
Raasch, Hans, to W. Schlafhorst AG & Co. Apparatus for forming a yarn reserve. 5,362,007, Cl. 242-18.0EW.
Radebaugh, Galen W.: *See—*
Huang, Hua-Pin; Wootton, Scott C.; Julian, Thomas N.; Radebaugh, Galen W.; and Fawzi, Mahdi B., 5,362,860, Cl. 536-4.100.
Rademacher, Loren: *See—*
Herndon, Michael; and Rademacher, Loren, 5,363,002, Cl. 310-54.000.
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Rouhof, Hendrikus J. H.: *See*—
Kamphuis, Carolus H. M.; and Rouhof, Hendrikus J. H., 5,362,398, Cl. 210-651.000.
Rousche, Patrick J.: *See*—
Normann, Richard A.; Rousche, Patrick J.; Horch, Kenneth W.; and Schmidt, Susan P., 5,361,760, Cl. 128-642.000.
Rouse, George V.: *See*—
Linn, Jack H.; Lowry, Robert K.; Rouse, George V.; Butler, James F.; and Speece, William H., 5,362,667, Cl. 437-62.000.
Rowles, Howard C.: *See*—
Howard, Lee J.; and Rowles, Howard C., 5,361,589, Cl. 62-24.000.
Roy, Asim K.; Comroe, Richard A.; and Furtaw, Robert W., to Motorola, Inc. Mobile ISDN radio system. 5,363,371, Cl. 370-79.000.
Rozenwasser, David, to David Rozenvasser, Ltd. Fine jewelry rope chain. 5,361,575, Cl. 59-80.000.
Rozman, Gregory I.: *See*—
Hanson, Michael J.; and Rozman, Gregory I., 5,363,032, Cl. 322-10.000.
Rsearch Development Corporation of Japan: *See*—
Bellamy, Robert W.; and Horikoshi, Kouki, 5,362,645, Cl. 435-252.500.
RTC Industries, Inc.: *See*—
Swafford, John W., Jr.; and Carlson, William P., 5,362,051, Cl. 273-138.00A.
Rude, Kai-Uwe: *See*—
Bergles, Eduard; Waschkuhn, Wolf; Rude, Kai-Uwe; and Dumas, Edouard, 5,362,278, Cl. 474-69.000.
Rudeen, Robert W.: *See*—
McKenna, Patrick M.; Rudeen, Robert W.; and Gilpin, David W., 5,362,953, Cl. 235-472.000.
Rudinger, Wolfgang: *See*—
Schmitt, Urban; Maurer, Eberhard; Rudinger, Wolfgang; Deeg, Rolf; Geiger, Thomas; and Engel, Wolf D., 5,362,624, Cl. 435-7.500.
Rudolph, Werner: *See*—
Seseke-Koyro, Ulrich; Grossmann, Andreas; and Rudolph, Werner, 5,362,469, Cl. 423-484.000.
Ruffinengo, Piero G.: *See*—
Stepanek, Premek; Wagner, Ludwig; Lehner, Edwin; and Ruffinengo, Piero G., 5,362,085, Cl. 280-602.000.
Rufo, Mark. Toothbrush. 5,361,446, Cl. 15-167.100.
Ruggerio, Paul A.: *See*—
Roberts, Carl M., Jr.; Long, Lewis H.; and Ruggerio, Paul A., 5,362,681, Cl. 437-226.000.
Ruggiero, Joseph. Tile, angle-cutting gauge. 5,361,508, Cl. 33-527.000.
Ruitberg, Arthur P.: *See*—
Castell, Karen D.; and Ruitberg, Arthur P., 5,363,288, Cl. 363-21.000.
Ruland, Rosalyn: *See*—
Sibley, Murray J.; Hartung, Donald E.; and Ruland, Rosalyn, 5,362,488, Cl. 424-78.050.
Rungta, Ravi, to General Motors Corporation. Rare earth coating process for aluminum alloys. 5,362,335, Cl. 148-272.000.
Ruppertz, Michael; Schebesta, Dietrich; and Schonfeld, Frank. Computer for the control station of a machine, more particularly a printing press. 5,363,446, Cl. 380-4.000.
Russell, Stephen D.; and Sexton, Douglas A., to United States of America, Navy. Laser controlled decomposition of chlorofluorocarbons. 5,362,450, Cl. 422-186.300.
Russell, Timothy D.: *See*—
Dakin, James T.; Berry, Tommie, Jr.; Duffy, Mark E.; and Russell, Timothy D., 5,363,015, Cl. 313-638.000.
Rutgers, The State University of New Jersey: *See*—
Chien, Yie W.; and Chen, Li-Lan H., 5,362,308, Cl. 604-20.000.
Rybicki, Daniel J.: *See*—
McGee, William F.; and Rybicki, Daniel J., 5,362,938, Cl. 219-121.510.
Ryobi Limited: *See*—
Takamura, Akio; Yagi, Hideto; and Yokota, Takao, 5,361,853, Cl. 173-217.000.
Yamauchi, Noriyoshi; Ishida, Hitoshi; Usui, Hirotake; and Egoshi, Yoshiaki, 5,361,826, Cl. 164-457.000.
Ryoko, Masatoshi: *See*—
Itatani, Ryohei; Ryoko, Masatoshi; and Fujino, Tatsushi, 5,363,019, Cl. 315-169.100.
Ryuzaki, Takahiko; Kogure, Yoshio; Ichikawa, Hideo; Nakamura, Yasuo; and Miyazawa, Takuji, to Fuji Xerox Co., Ltd. Sheet registering unit for an image forming apparatus. 5,362,041, Cl. 271-236.000.
Rzepiejewski, Joseph J.: *See*—
Jones, Stephen K.; Rzepiejewski, Joseph J.; and Vanslette, Paul J., 5,363,483, Cl. 395-161.000.
Sabnis, Ram: *See*—
Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., 5,362,628, Cl. 435-18.000.
Sadhir, Virender K.; Willems, David A.; and Karsten, Kenneth S., Jr., to ITT Corporation. Electronically tunable gain equalizer. 5,363,069, Cl. 333-28.00R.
Saeki, Yasuhiro: *See*—
Chujo, Takao; Hamano, Hisashi; Nishiyama, Masanori; Saeki, Yasuhiro; Ogawa, Tatsuya; and Endou, Kouhei, 5,362,571, Cl. 428-480.000.

Saeva, Franklin D.: *See*—
Fleming, James C.; Detty, Michael R.; and Saeva, Franklin D., 5,362,536, Cl. 428-64.000.
Sagawa, Misuzu: *See*—
Uomi, Kazuhisa; Sagawa, Misuzu; and Takai, Atsushi, 5,363,393, Cl. 372-45.000.
Sage, Jean-Marc, to Elf Atochem S.A. High melting point crystalline polyamides. 5,362,846, Cl. 528-344.000.
Sagie, Yair: *See*—
Spektor, Moshe; Shalev, Gil; and Sagie, Yair, 5,361,675, Cl. 89-1.130.
Sagucio, Esteban N. Spill-resistant cup for soft drink. 5,361,935, Cl. 220-709.000.
Sahlin, Thorbjorn: *See*—
Nylund, Olov; Mansson, Ragnar; Olsson, Torsten; Farkas, Tibor; and Sahlin, Thorbjorn, 5,363,422, Cl. 376-442.000.
Sahlmen, Thomas: *See*—
Annerstedt, Claes; Frid, Per; Johansson, Bengt; and Sahlmen, Thomas, 5,361,984, Cl. 236-49.300.
Saia, Richard J.: *See*—
Kwasnick, Robert F.; Possin, George E.; Holden, David E.; and Saia, Richard J., 5,362,660, Cl. 437-40.000.
Sailor Pen Co., Ltd.: *See*—
Hamamoto, Hirofumi; and Okamoto, Hideshi, 5,362,169, Cl. 401-213.000.
Saindon, Stephen A.: *See*—
Gietman, Peter J., Jr.; and Saindon, Stephen A., 5,362,013, Cl. 242-521.000.
St. Clair, David J., to Shell Oil Company. Melt bending cooh-grafted hydrogenated block copolymer and epoxy resin. 5,362,805, Cl. 525-65.000.
Saint-Gobain Virtage International: *See*—
Didelot, Claude; and Parnet, Bernard, 5,363,188, Cl. 356-124.500.
Saito, Hitoshi: *See*—
Inui, Fuyuki; and Saito, Hitoshi, 5,363,125, Cl. 346-76.0PH.
Saito, Keishi; Aoike, Tatsuyuki; Kariya, Toshimitsu; and Koda, Yuzo, to Canon Kabushiki Kaisha. Non-monocrystalline silicon carbide semiconductor, process of production thereof, and semiconductor device employing the same. 5,362,684, Cl. 437-234.000.
Saito, Koji; and Makino, Tetsuhisa, to Sapporo Breweries Ltd.; and Makino Corporation. Beer filtering device. 5,362,387, Cl. 210-225.000.
Saito, Rie: *See*—
Kuribayashi, Ikuo; and Saito, Rie, 5,363,182, Cl. 355-299.000.
Saitoh, Yukio: *See*—
Hayama, Kazuhide; Narazaki, Kanji; Saitoh, Yukio; Hiwatashi, Tomoaki; Itoh, Isao; and Kawaguchi, Sigeoki, 5,362,485, Cl. 424-70.000.
Saji, Akira: *See*—
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakan.., Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, to Chubu Electric Power Company, Incorporated; and Mitsubishi Jukogyo Kabushiki Kaisha. Process for producing carbon dioxide clathrate. 5,362,467, Cl. 423-437.00R.
Sakai, Takeshi: *See*—
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.
Sakaki, Mamoru; Kurabayashi, Yutaka; Nakatsugawa, Tomomi; Sato, Hiroshi; and Shiratori, Takahiro, to Canon Kabushiki Kaisha. Ink-jet recording medium and ink-jet recording method making use of it. 5,362,558, Cl. 428-323.000.
Sakamoto, Hironori; Ito, Akira; and Nojima, Toshio, to Japan Radio Co., Ltd.; Nippon Telephone & Telegraph Corporation; and NTT Mobile Communication Network Inc. High-frequency power divider-combiner. 5,363,072, Cl. 333-125.000.
Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, 5,362,574, Cl. 428-643.000.
Sakamoto, Shinichi; and Sonoda, Takuji, to Mitsubishi Denki Kabushiki Kaisha. Method for producing a field effect transistor with a gate recess structure. 5,362,677, Cl. 437-203.000.
Sakamoto, Toshiaki: *See*—
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Iizuka, Yoshio; and Yamaguchi, Takeshi, 5,362,725, Cl. 514-214.000.
Sakata, Hiromi: *See*—
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.
Sakata, Masahiro: *See*—
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,362,461, Cl. 423-163.000.
Sakata, Yoshio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Fixing device and heat roller therefor. 5,362,943, Cl. 219-216.000.
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, to Kabushiki Kaisha Sakato Kosakusho. Crusher having a stationary jaw body and a movable jaw body. 5,361,999, Cl. 241-101.700.
Sako, Masahiro: *See*—
Nakano, Kuniaki; Hirai, Yasuyuki; Higashitani, Masahiro; Matsuo, Yasuhiro; Mori, Shingo; Sakata, Hiromi; Sako, Masahiro; and Kishigami, Minoru, 5,363,177, Cl. 355-260.000.
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, to Hitachi, Ltd.; Hitachi Seibu Soft Ware Co., Ltd.; and Hitachi Software Engineering Co., Ltd. Method of controlling shared data among computers. 5,363,498, Cl. 395-425.000.
Sakurai, Hiroshi: *See*—
Miyazaki, Takanori; and Sakurai, Hiroshi, 5,361,787, Cl. 134-57.00R.
Sakurai, Masato: *See*—
Oshima, Junji; Okatani, Susumu; Akiyama, Koichi; and Sakurai, Masato, 5,362,804, Cl. 525-64.000.
Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, to Nichias Corporation; and Ariake Ceramic Constructions Co., Ltd. Hot plate for keeping molten metal in a molten state. 5,362,033, Cl. 266-275.000.
Sakurai, Tutomu; and Yamakita, Takeshi, to Matsushita Electrical Industrial Co., Ltd. Optical bus transmission system. 5,363,229, Cl. 359-159.000.
Sala International AB: *See*—
Svensson, Krister U.; and Rehnvall, Conny L., 5,361,996, Cl. 241-30.000.
Salazar, Alfred; and Guerra, Ricardo. Self-drilling endosteal hollow-basket implant system with shock-absorber. 5,362,234, Cl. 433-169.000.
Saleem, Abdus; Gal, Eli; Brown, Gregory; and Mengel, Michael, to General Electric Environmental Services, Incorporated. Process for the simultaneous absorption of sulfur oxides and production of ammonium sulfate. 5,362,458, Cl. 423-243.060.
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, to Ebac Limited. Liquid dispensers having removable components. 5,361,942, Cl. 222-105.000.
Salomon S.A.: *See*—
Baron, Pascal; and Desarmaux, Pierre, 5,362,086, Cl. 280-605.000.
Saltzberg, Burton R.: *See*—
Feiner, Alexander; Im, Gi-Hong; Kneuer, Joseph G.; Saltzberg, Burton R.; and Werner, Jean-Jacques, 5,363,441, Cl. 379-411.000.
Salucci, Paolo; and Ando, Jan, to Savio S.p.A. Circular knitting machine of elastic needle type with a slider selection device. 5,361,608, Cl. 66-220.000.
Saluja, Navteg S.: *See*—
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., 5,362,523, Cl. 427-446.000.
Salvitti, Matthew A.: *See*—
Reynolds, Francis D.; Baran, Joseph S.; Bisey, Robert P.; Button, Terry; McGill, Robert E.; Nalven, Nathan I.; and Salvitti, Matthew A., 5,361,764, Cl. 128-653.500.
Salvucci, Orfeo J: *See*—
Fokos, Robert; Williams, Robert M.; and Salvucci, Orfeo J, 5,361,960, Cl. 226-2.000.
Salzmann, Thomas N.: *See*—
DiNinno, Frank P.; Salzmann, Thomas N.; and Muthard, David A., 5,362,723, Cl. 514-210.000.
Sam, Huy; and Fujiwara, Yoshio, to Sony Corporation. Dye receiving paper for thermal transfer printing of video signals. 5,362,702, Cl. 503-227.000.
Samalot, Ivan R.: *See*—
Spath, Mark J.; Peterson, Timothy J.; Samalot, Ivan R.; De Minco, Christopher M.; Kunz, Timothy W.; and Nather, Scott H., 5,361,733, Cl. 123-90.160.
Samejima, Akinori: *See*—
Hosoda, Yutaka; Ushimaru, Yukihiro; and Samejima, Akinori, 5,363,106, Cl. 342-22.000.
Samela, Francis M. Active deassertion circuit. 5,362,991, Cl. 327-540.000.
Sameshima, Kouichi: *See*—
Miyatake, Shigehiro; Takada, Kenji; Ishida, Kouichi; and Sameshima, Kouichi, 5,363,000, Cl. 327-350.000.
Samsung Electronics Co., Ltd.: *See*—
Frohbach, Hugh F.; and Peppers, Norman A., 5,363,200, Cl. 358-335.000.
Go, Do-Young, 5,363,145, Cl. 348-614.000.
Han, Geun P.; and Sung, Ho Y., 5,361,601, Cl. 62-324.600.
Kim, Jae W., 5,363,416, Cl. 375-106.000.
Kim, Young-woong; Yoo, Ick-hyoung; and Lee, Chul-woo, 5,363,353, Cl. 369-13.000.
Lee, Cheol-won, 5,363,359, Cl. 369-44.280.
Lee, Song J., 5,362,675, Cl. 437-129.000.
Samuel, David N.; and Williams, Richard S., to W. R. Grace & Co.-Conn. Container closures, sealed containers and sealing compositions for them. 5,362,531, Cl. 428-36.600.
Samuel, Robert G.: *See*—
Mufti, Sohale A.; Samuel, Robert G.; Soong, Peter P. K.; Yip, Adrian M.-G.; and Wakim, Michael J., 5,363,425, Cl. 379-38.000.
Samuelson, Kent E.; Morris, Robert A.; Nolan, James A.; and Steinhaus, Bruce M., to Telectronics Pacing Systems, Inc. Time domain reflectometer impedance sensor method of use and implantable cardiac stimulator using same. 5,361,776, Cl. 128-734.000.
Sanchez, Hector: *See*—
Alvarez, Jose; Sanchez, Hector; and Gerosa, Gianfranco, 5,362,990, Cl. 327-538.000.

Sanchioni, Sergio: *See—*
Caramaschi, Giuseppe Antonio; Sanchioni, Sergio; Bocci, Marco; and Leonardi, Maurizio, 5,362,800, Cl. 525-48.000.

Sandai Corporation: *See—*
Normann, Randy A.; and Kadlec, Emil R., 5,363,095, Cl. 340-854.700.

Sanden Corporation: *See—*
Iizuka, Jiro; and Ochiai, Yoshihiro, 5,362,211, Cl. 417-310.000.

Sanders, Richard. Totelock. 5,361,610, Cl. 70-14.000.

Sanders, Robert E.: *See—*
Palmer, Scott L.; Sanders, Robert E.; Steverson, W. Bryan; and Morgan, Lyndon, 5,362,341, Cl. 148-692.000.

Sanders, Robert E., Jr.: *See—*
Daly, Marilyn; Palmer, Scott L.; Sanders, Robert E., Jr.; Steverson, W. Bryan; and Morgan, Lyndon, 5,362,340, Cl. 148-691.000.

Sanderson, Kenneth R.: *See—*
Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Loffredo, John M.; Sanderson, Kenneth R.; and Suarez, Gustavo A., 5,363,497, Cl. 395-425.000.

Sandford, Paul A.: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; Grinstaff, Mark W.; and Suslick, Kenneth S., 5,362,478, Cl. 424-9.000.

Sandham, Warren A., to United States of America, Air Force. Ejectable lightweight foam protective covers for fiber optic data link systems. 5,362,014, Cl. 244-3.120.

Sando, Hiroaki: *See—*
Kamo, Masayoshi; Maruta, Yuzo; Sando, Hiroaki; and Furuhata, Takashi, 5,363,251, Cl. 360-55.000.

Sandolo, Ralph. Apparatus for flavoring and packaging coffee. 5,361,560, Cl. 53-111.0RC.

Sandoz Ltd.: *See—*
Patel, Pinakin; and Ranieri, Richard L., 5,362,317, Cl. 106-287.230.
Seckinger, Karl; and Kuhnen, Fred, 5,362,706, Cl. 504-221.000.

Sandstrom, Paul H.: *See—*
Tung, Deborah A.; Segatta, Thomas J.; Verthe, John J. A.; Sandstrom, Paul H.; Bauer, Richard G.; and Marinko, Mark A., 5,361,818, Cl. 152-525.000.

Sandt Technology, Ltd.: *See—*
Anello, Salvatore; and Turk, Nathan, 5,361,979, Cl. 232-57.500.

Sandvik AB: *See—*
Sonefors, Yngve, 5,361,665, Cl. 83-848.000.

Sandvos, Jerry L.: *See—*
Weiss, Karl R.; Ensor, Karen J.; Desruisseaux, Marc S.; Wanchoo, Sanjay; Sandvos, Jerry L.; and Monahan-Mitchell, Timothy A., 5,363,315, Cl. 364-514.000.

SangStat Medical Corporation: *See—*
Pouletty, Philippe, 5,362,654, Cl. 436-518.000.

Sankyo Company, Limited: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Iizuka, Yoshio; and Yamaguchi, Takeshi, 5,362,725, Cl. 514-214.000.

Sano, Eiji; and Matsumoto, Shigetsugu, to Jatco Corporation. Control system for vehicular power plant including automatic transmission and exhaust brake. 5,362,285, Cl. 477-92.000.

Sano, Kazuo: *See—*
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.

Sano, Kimiyasu; Tomomitsu, Osahiko; Endoh, Masayuki; and Yokoyama, Yasuaki, to Japan Synthetic Rubber Co., Ltd. Radiation-sensitive resin composition comprising an epoxy-containing alkali-soluble resin and a naphthoquinone diazide sulfonic acid ester. 5,362,597, Cl. 430-191.000.

Sano, Yuji: *See—*
Kitou, Kouji; Okuyama, Nobutaka; Arai, Ikuya; and Sano, Yuji, 5,363,022, Cl. 315-408.000.

Sanshi Kogyo Kabushiki Kaisha: *See—*
Tanaka, Seiichi, 5,361,731, Cl. 123-65.00P.

Santandrea, Luciano, to Axis U.S.A., Inc. Methods and apparatus for automated stator winding station set up. 5,362,005, Cl. 242-1.10R.

Santus, Giancarlo: *See—*
Baker, Richard W.; Santus, Giancarlo; and Vintilla-Friedman, Susan, 5,362,496, Cl. 424-435.000.

Sanwa Kosan Kabushiki Kaisha: *See—*
Yoshino, Zenichi; Komaki, Toshiaki; and Kurahashi, Yoshiki, 5,362,329, Cl. 127-65.000.

Sanyo Electric Co., Ltd.: *See—*
Shimura, Kazuhiro; Ookubo, Takeshi; Nagae, Kouji; Shiina, Takao; Sekigami, Kunie; and Kamimura, Ichiro, 5,361,595, Cl. 62-175.000.
Torazawa, Kenji; Ishii, Yasuhiro; Toyama, Tateo; Tomisawa, Shin'ichiro; and Sugihara, Nagatoshi, 5,363,364, Cl. 369-124.000.

Sapporo Breweries Ltd.: *See—*
Saito, Koji; and Makino, Tetsuhisa, 5,362,387, Cl. 210-225.000.

Sarges, Reinhard; and Yeh, Li-An, to Pfizer Inc. Aminoquinoline derivatives. 5,362,743, Cl. 514-313.000.

Sarugaku, Shinichi; Kurenuma, Toru; Andoh, Takeshi; Otomo, Masami; and Kawasaki, Kyoichi, to Hitachi Construction Machinery Co., Ltd. Emergency shutdown system for controlling industrial robot. 5,363,474, Cl. 395-91.000.

Sarugaku, Toshio: *See—*
Isomoto, Seiko; Sarugaku, Toshio; and Kawashima, Hiroyuki, 5,363,140, Cl. 348-445.000.

Sasada, Yoshihiro: *See—*
Makino, Masahiro; Kurose, Mikihiko; and Sasada, Yoshihiro, 5,362,910, Cl. 564-285.000.

Sasaki, Ayaru; Haraguchi, Youichiro; and Kon, Shigeki, to Tachi-S Co., Ltd. Location board in a covering member of automotive seat. 5,362,535, Cl. 428-43.000.

Sasaki, Manji: *See—*
Inui, Naoki; Yamamoto, Kazuaki; Nagasaki, Hideo; Sasaki, Manji; and Yachigo, Shinichi, 5,362,794, Cl. 624-496.000.

Sasaki, Norihiro: *See—*
Shibata, Hisashi; Sasaki, Norihiro; and Egawa, Yoshiaki, 5,363,005, Cl. 310-244.000.

Sasaki, Tomio; and Obata, Masahito, to Ricoh Company, Ltd. Apparatus outputting quantized image data, selecting from filters with different error spreading effects. 5,363,210, Cl. 358-448.000.

Sasaki, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Amplifier having linear input-output characteristics and high efficiency. 5,363,058, Cl. 330-136.000.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; Matsuda, Mikio; Ishihara, Shinya; Ueda, Motohiko; Sasaya, Hideaki; and Sakai, Takeshi, 5,362,208, Cl. 417-269.000.

Sassak, Mark S. Aerial throwing game. 5,362,066, Cl. 273-344.000.

Sato, Fumihide: *See—*
Yamagata, Yasushi; and Sato, Fumihide, 5,362,358, Cl. 156-643.000.

Sato, Hiroshi: *See—*
Sakaki, Mamoru; Kurabayashi, Yutaka; Nakatsugawa, Tomomi; Sato, Hiroshi; and Shiratori, Takahiro, 5,362,558, Cl. 428-323.000.

Sato, Hitoshi, to Canon Kabushiki Kaisha. Tape recorder capable of varying tape speed. 5,363,254, Cl. 360-73.050.

Sato, Jun, to Shimano Inc. Baitcasting reel having an improved centrifugal brake. 5,362,011, Cl. 242-289.000.

Sato, Kozo: *See—*
Suzuki, Makoto; Shimada, Yasuhiro; Matsuoka, Koushin; Yamazaki, Shigeru; Yamakawa, Katsuyoshi; and Sato, Kozo, 5,362,882, Cl. 548-262.400.

Sato, Moriyuki: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Sato, Noriaki; and Mieno, Fumitake, to Fujitsu Limited. Integrated semiconductor device having a buried semiconductor layer and fabrication method thereof. 5,362,981, Cl. 257-371.000.

Sato, Shinichi: *See—*
Iguchi, Katsuji; Hayashida, Shigeki; Kawamura, Akio; Sato, Shinichi; and Tateyama, Tomohiko, 5,362,670, Cl. 437-70.000.

Sato, Shunichi: *See—*
Inaba, Humio; Sato, Shunichi; and Kikuchi, Susumu, 5,363,190, Cl. 356-337.000.

Sato, Takahiro: *See—*
Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, 5,362,912, Cl. 564-360.000.

Sato, Takehiko: *See—*
Horikoshi, Eiji; Tani, Motoaki; Watanabe, Isao; Natori, Katsuhide; and Sato, Takehiko, 5,362,359, Cl. 156-645.000.

Sato, Yoshiaki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, 5,362,574, Cl. 428-643.000.

Satoh, Hiroshi: *See—*
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Saunders, Michael B.: *See—*
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Saunders, Nicholas I.; and Keating, Stephen M., to Sony United Kingdom Ltd. Motion compensated image processing. 5,363,146, Cl. 348-699.000.

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Savage, Joseph W.: *See—*
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Savio S.p.A.: *See—*
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Scalise, Dane C. Releasable locking fastener. 5,362,187, Cl. 411-555.000.

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Covert, Darrell E.; Maxwell, Paul B.; Miller, Frederick W.; Galante, Richard L.; Kolowski, Michael A.; Hopkins, William M.; and Scarpitti, Anthony J., 5,361,814, Cl. 152-209.00A.

Schadow, Klaus C.: *See—*
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Schaefer, Aaron M. Bow tie. 5,361,413, Cl. 2-144.000.

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Schatz, Klaus W., to Mobil Oil Corporation. Containment of an aerosolable liquid jet. 5,362,446, Cl. 422-117.000.

Schebesta, Dietrich: *See—*
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Scheerer, Friedrich: *See—*
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Schelhorn, Jean E.: *See—*
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Schellekens, Ronald M. A. M.: *See—*
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Gries, Heinz; Rosenberg, Douwe; Weinmann, Hanns-Joachim; Speck, Ulrich; Mutzel, Wolfgang; Hoyer, Georg-Alexander; Pfeiffer, Heinrich, deceased; and Renneke, Franz-Josef, 5,362,475, Cl. 424-9.000.

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Asberom, Theodros; O'Connor, Edward; Berger, Joel G.; and Clader, John W., 5,362,728, Cl. 514-217.000.

Schiehser, Guy A.: *See—*
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Schiessler, David L.: *See—*
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Schiff, Paul L.: *See—*
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Schiffling, Christian: *See—*
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Schilling, Kurt M.: *See—*
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Schlegel, Myron L.: *See—*
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Schlidt, Richard S. Seat locking and adjustment mechanism. 5,362,124, Cl. 297-95.000.

Schlotzer, Eugen: *See—*
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Schluter, Arnulf-Dieter: *See—*
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Schmale, Walter: *See—*
Enning, Norbert; Rinke, Klaus P.; Schmale, Walter; and Timm, Heinrich, 5,362,121, Cl. 296-204.000.

Schmid, Traugott: *See—*
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Schmidt, Frederick W.: *See—*
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Schmidt, Larry: *See—*
Crow, Harry; Anderson, Thomas M.; Kelly, Scott; Atherton, Terry; and Schmidt, Larry, 5,361,797, Cl. 137-101.190.

Schmidt, Susan P.: *See—*
Normann, Richard A.; Rousche, Patrick J.; Horch, Kenneth W.; and Schmidt, Susan P., 5,361,760, Cl. 128-642.000.

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Nedele, Helmut; and Schnabel, Hartwig, 5,361,644, Cl. 74-491.000.

Schock, William H.; and Rogers, Shannon P., to Triumph*LOR, Inc. Bottom set, non-retrievable whipstock assembly. 5,361,833, Cl. 166-117.600.

Schoenborn, Philippe, to LSI Logic Corporation. Plasma etching process control. 5,362,356, Cl. 156-626.000.

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Schonbeck, Rupert: *See—*
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Schonfeld, Frank: *See—*
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Schote, Norbert; and Sommerer, Karl, to Dr. Ing. h.c.F. Porsche AG. Apparatus for connecting a control arm with a bearing. 5,362,092, Cl. 280-673.000.

Schott, Ted J. Pillow fight stress reducing game. 5,362,062, Cl. 273-243.000.

Schou, Diane D. Stamp storage envelope and method of making same. 5,362,299, Cl. 493-240.000.

Schraag, Martin; and Boos, Andreas, to Hewlett-Packard Company. Method and apparatus for medical monitoring. 5,361,755, Cl. 128-630.000.

Schraml, Dieter: *See—*
Smolka, Heinz-Gerd; Lehmann, Klaus; Hawel, Hans; Schraml, Dieter; and Hornfeck, Klaus, 5,362,363, Cl. 162-8.000.

Schramm, Suzanne E.: *See—*
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Schrier, Bruce K., to Technology Unlimited, Inc. Organic oil spray-drying techniques. 5,362,425, Cl. 264-4.600.

Schroder, Georg: *See—*
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Glass, Alastair M.; Hunt, Neil E. J.; Poate, John M.; Schubert, Erdmann F.; and Zydzik, George J., 5,363,398, Cl. 372-92.000.
Hunt, Neil E. J.; and Schubert, Erdmann F., 5,362,977, Cl. 257-98.000.

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Schull, Jerome W.; and Howe, Wayne R., to Bell South Corporation. Visual message waiting indication in a telephone voice message system. 5,363,431, Cl. 379-67.000.

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Schultz, Brian E.: *See—*
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Schultz, William G.: *See—*
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Schumacher, Herbert: *See—*
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Schumacher, Larry L.: *See—*
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Schwald, Rolf; and Steinebrunner, Edwin, to Endress u. Hauser GmbH u. Co. Level measuring device which can be assembled from components. 5,363,341, Cl. 367-140.000.
Schwarz, Hans V.; and Brunner, Erwin, to BASF Corporation. Removal of water from a phosgene recycle stream. 5,362,399, Cl. 210-689.000.
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Schweitzer, Edmund O., Jr. Voltage monitor for alternating current power system. 5,363,088, Cl. 340-660.000.
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Schwent, Dale G.; and Osmani, Rashid M., to Motorola, Inc. Apparatus and method for varying the coupling of a radio frequency signal. 5,363,071, Cl. 333-111.000.
Schwertner, Harvey A., to United States of America, Air Force. Method for concentration based analysis of lipid fatty acids and its use in determining the likelihood that a patient is at risk for coronary artery disease. 5,362,649, Cl. 436-71.000.
Schwing America, Inc.: *See—*
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Sciamanna, Aldo F.: *See—*
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Seeland, Jon-Arne: *See—*
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Seikagaku Kogyo Co., Ltd.: *See—*
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Seiko Epson Corporation: *See—*
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Seitzinger, Michael R. Sling for positioning internal organ during laparoscopic surgery and method of use. 5,362,294, Cl. 600-37.000.
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Sekigami, Kunie: *See—*
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Semm, Kurt, to Wisap Gesellschaft fur Wissenschaftlichen Apparatebau MbH. Heating apparatus for insufflator. 5,362,310, Cl. 604-26.000.
Sempe, Christian, to France Telecom Etablissement Autonome de Droit Public. Clock slip counting process and apparatus. 5,363,417, Cl. 375-114.000.
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Sessa, Eugene; and Duffy, Richard, to Nylok Fastener Corporation. Apparatus for producing a coating on an internally threaded fastener. 5,362,327, Cl. 118-308.000.
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Iguchi, Katsuji; Hayashida, Shigeki; Kawamura, Akio; Sato, Shinichi; and Tateyama, Tomohiko, 5,362,670, Cl. 437-70.000.
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Beesley, Graham E., 5,363,223, Cl. 359-48.000.
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Kato, Kazuhiko; and Shibasaki, Katsuo, 5,361,696, Cl. 101-232.000.
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Futami, Toshihiko; and Shida, Yoshiharu, 5,363,004, Cl. 310-156.000.
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Obi, Naoki; Suematsu, Kiyoshi; Kojima, Yasuhiko; Katayama, Masatoshi; and Shigemitsu, Yasuo, 5,362,621, Cl. 430-596.000.
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Shima Seiki Mfg., Ltd.: *See—*
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Shimadzu Corporation: *See—*
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.
Fukui, Isao; and Miyama, Takao, 5,363,189, Cl. 356-306.000.
Nokihara, Kiyoshi, 5,362,447, Cl. 422-131.000.
Shimano Inc.: *See—*
Ban, Masuo, 5,362,012, Cl. 242-321.000.
Sato, Jun, 5,362,011, Cl. 242-289.000.
Shimasaki, Yasuyuki: *See—*
Murakami, Yasuo; Utsumi, Yasuo; Noguchi, Shoji; Shimasaki, Yasuyuki; Iwasa, Hiroshi; and Kadokawa, Satoshi, 5,361,648, Cl. 74-569.000.
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Shimizu, Izuru: *See—*
Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, to Hitachi, Ltd.; and Hitachi Koki Co. Ltd. Fixing device for electrophotography and electrophotographic apparatus incorporating the fixing device. 5,363,180, Cl. 355-285.000.
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Shimoda, Hideyoshi: *See—*
Fukuda, Hideo; and Shimoda, Hideyoshi, 5,362,533, Cl. 428-36.800.
Shimura, Kazuhiro; Ookubo, Takeshi; Nagae, Kouji; Shiina, Takao; Sekigami, Kunie; and Kamimura, Ichiro, to Sanyo Electric Co., Ltd. Air-conditioning apparatus. 5,361,595, Cl. 62-175.000.

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Awano, Katsusuke; Honmura, Shiro; and Tanaka, Akio, 5,363,304, Cl. 364-424.070.

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Ozai, Toshiyuki; Arai, Masatoshi; and Inoue, Yoshifumi, 5,362,896, Cl. 556-464.000.

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Fujiwara, Makoto; and Amano, Tadashi, 5,362,828, Cl. 526-228.000.
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Shin-Etsu Handotai Co., Ltd.: *See—*
Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,361,721, Cl. 117-214.000.
Takenaka, Takao; Endo, Masahisa; and Yamada, Masato, 5,362,683, Cl. 437-226.000.

Shin, Masaaki: *See—*
Hirayama, Nobuhiro; Shin, Masaaki; Kawasaki, Shoji; Misawa, Akira; Fujiwara, Akio; and Uchiyama, Kenji, 5,362,595, Cl. 430-137.000.

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Kirii, Kazunari; Shinabe, Masahiro; Ono, Tsutomu; Watanabe, Masuo; and Koshida, Hideo, 5,361,615, Cl. 72-19.000.

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Hashiguchi, Osamu; and Shinmyo, Minoru, 5,362,248, Cl. 439-352.000.

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Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,932, Cl. 200-341.000.
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Shinomoto, Ronald S.: *See—*
Furtek, Allan B.; and Shinomoto, Ronald S., 5,362,824, Cl. 526-114.000.

Shintai, Akira; Shibata, Hiroshi; Shiobara, Toshio; Futatsumori, Koji; Katayama, Seizi; and Yoshida, Yasutaka, to Nippondenso Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Epoxy resin composition and cured product thereof. 5,362,775, Cl. 523-451.000.

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Shionogi & Co., Ltd.: *See—*
Kubota, Tadatoshi; and Kume, Masaharu, 5,362,724, Cl. 514-210.000.
Matsumura, Hiromu; Yano, Toshisada; Hashizume, Hiroshi; Matsushita, Akira; and Eigyo, Masami, 5,362,873, Cl. 544-124.000.

Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, to Pioneer Electronic Corporation. System for moving a television set mounted on a motor vehicle. 5,362,144, Cl. 312-319.600.

Shipley Company Inc.: *See—*
Sinta, Roger; Hemond, Richard C.; Medeiros, David R.; Rajaratnam, Martha M.; Thackeray, James W.; and Canistro, Dianne, 5,362,600, Cl. 430-192.000.

Shirai, Eiji, to Aisin Seiki Kabushiki Kaisha. Valve control device for an engine. 5,361,734, Cl. 123-90.160.

Shirai, Katutada; and Mochizuki, Hideharu, to Koito Manufacturing Co., Ltd. Motor vehicle headlight including device for measuring deviation and adjusting direction of orientation of headlight beam. 5,363,283, Cl. 362-66.000.

Shiraishi, Atsushi; Asano, Koji; Gotoh, Makoto; and Oka, Kotaro, to Fujitsu Limited. Apparatus for growing crystals in an environment in which opportunity for accessing is limited. 5,362,325, Cl. 117-201.000.

Shiraiwa, Yoshinori: *See—*
Amino, Hirokazu; Shiraiwa, Yoshinori; and Clarke, Ian C., 5,362,311, Cl. 623-22.000.

Shiratori, Takahiro: *See—*
Sakaki, Mamoru; Kurabayashi, Yutaka; Nakatsugawa, Tomomi; Sato, Hiroshi; and Shiratori, Takahiro, 5,362,558, Cl. 428-323.000.

Shiratsuchi, Kentaro; and Kawamoto, Fumio, to Fuji Photo Film Co., Ltd. Cationic high-molecular weight compound. 5,362,613, Cl. 430-528.000.

Shirley, Todd A.: *See—*
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Shiseido Company Ltd.: *See—*
Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, 5,362,482, Cl. 424-69.000.

Shoemaker, Kevin O. Planar serpentine antennas. 5,363,114, Cl. 343-828.000.

Shofner, Frederick M.; and Townes, Mark G., to Zellweger Uster, Inc. Direct control of fiber testing or processing performance parameters by application of controlled, conditioned gas flows. 5,361,450, Cl. 19-66.00R.

Shooting Systems Group, Inc.: *See—*
Nichols, Richard E. E., 5,361,953, Cl. 224-198.000.

Shortman, Richard P.: *See—*
Hamilton, Larry J.; Hawkins, Thomas W.; and Shortman, Richard P., 5,362,112, Cl. 285-110.000.

Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, to Yozan Inc. Image compressing method compressing an image into a compressed image and error coefficients. 5,363,205, Cl. 358-429.000.

Showa Denko K.K.: *See—*
Aizawa, Toshiyuki; Nakamura, Hitoshi; Wakabayashi, Kunitoshi; Kudo, Tetsuo; and Hasegawa, Hiroyuki, 5,362,918, Cl. 568-594.000.
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Showa Highpolymer Co., Ltd.: *See—*
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Showalter, James M.: *See—*
Maslak, Barbara A. M.; Showalter, James M.; and Szczygielski, Thomas J., 5,363,505, Cl. 395-650.000.

Shu, Paul, to Mobil Oil Corporation. Consolidation agent and method. 5,362,318, Cl. 106-634.000.

Shure Brothers, Inc.: *See—*
Anderson, C. Roger, 5,363,452, Cl. 381-168.000.

Shy, Perry C.; and Dines, Christopher A., to Halliburton Company. Dedicated perforatable nipple with integral isolation sleeve. 5,361,843, Cl. 166-297.000.

Shyu, Chih-Yes. Auxiliary charging device for a mobile telephone. 5,363,445, Cl. 379-433.000.

Sibley, Murray J.; Hartung, Donald E.; and Ruland, Rosalyn, to Abbott Laboratories. Buffered diaper rash cream. 5,362,488, Cl. 424-78.050.

Siebenlist, Bernd, to Josef Bohle Stiftung + Co. KG. Cutting nippers. 5,361,498, Cl. 30-164.950.

Siebold, Horst: *See—*
Ries, Gunter; and Siebold, Horst, 5,363,078, Cl. 335-297.000.

Siegel, Jeff: *See—*
Cohen, Milton L.; and Siegel, Jeff, 5,361,915, Cl. 211-70.700.

Siemens Aktiengesellschaft: *See—*
Demuynck, Noel, 5,363,435, Cl. 379-208.000.
Hahn, Alfred, 5,361,436, Cl. 5-601.000.
Ries, Gunter; and Siebold, Horst, 5,363,078, Cl. 335-297.000.

Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
Baitz, Gunter; and Burchart, Joachim, 5,363,281, Cl. 361-801.000.

Siemon Company, The: *See—*
Siemon, John; and Below, Randy, 5,362,254, Cl. 439-536.000.

Siemon, John; and Below, Randy, to Siemon Company, The. Electrically balanced connector assembly. 5,362,254, Cl. 439-536.000.

Sigl, Klaus. Padding device for protecting the human body against impact. 5,361,410, Cl. 2-2.000.

Sigmon, Thomas W.: *See—*
Henderson, Timothy S.; Plumton, Donald L.; Yuang, Han-Tzong; and Sigmon, Thomas W., 5,362,657, Cl. 437-31.000.

Signal, Noel W.; and Darling, James R. M. Carrying device. 5,361,950, Cl. 224-151.000.

Sikora, Larry A.: *See—*
Andersen, Norman E.; and Sikora, Larry A., 5,361,962, Cl. 227-90.000.

Silicon Systems, Inc.: *See—*
Fitzmorris, Michael, 5,363,249, Cl. 360-46.000.

Silvestrini, Jesus A.; Parentini, Andres H.; and Villa Dolores 530H. Apparatus for batch cooking and packing fruit and vegetable pieces. 5,361,683, Cl. 99-356.000.

Sim, Ah T., to Sun Industrial Coatings Private Limited. Soldering apparatus and method. 5,361,964, Cl. 228-56.200.

Simeth, Claus, to MAN Roland Druckmaschinen AG. Device for clamping a printing plate onto a plate cylinder. 5,361,698, Cl. 101-415.100.

Simmons, Sharon L. Wall mounted child seats with fold-up capabilities. 5,362,123, Cl. 297-14.000.

Simond, Alfred, to W. Tregaskiss, Ltd. Breakaway clutch. 5,361,881, Cl. 192-56.00R.

Sims, Steven C., to Steven C. Sims, Inc. Vibration damping. 5,362,046, Cl. 273-73.00R.

Sinden, Jimmie D.: *See—*
Beattie, John M.; and Sinden, Jimmie D., 5,362,196, Cl. 414-785.000.

Singer Company N.V., The: *See—*
Kobayashi, Hideyuki; Nozawa, Masayuki; and Nagayama, Yashuhiro, 5,361,961, Cl. 226-171.000.

Singleton, John M.: *See—*
Lima, Paul G.; and Singleton, John M., 5,361,689, Cl. 99-575.000.

Sinofsky, Edward L., to Rare Earth Medical, Inc. Variable pulsewidth lasers. 5,363,387, Cl. 372-15.000.

Sinta, Roger; Hemond, Richard C.; Medeiros, David R.; Rajaratnam, Martha M.; Thackeray, James W.; and Canistro, Dianne, to Shipley Company Inc. Radiation sensitive compositions comprising polymer having acid labile groups. 5,362,600, Cl. 430-192.000.

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Sirovich, Lawrence; Levich, Eugene; and Bronicki, Lucien Y. Method of and apparatus for controlling turbulence in a wall-bounded fluid flow field. 5,362,179, Cl. 405-52.000.

Skagga, Bryan; O'Brien, Mike; Seheult, James M.; and Swazey, John M., to Merck & Co., Inc. Carrier fluid for the suspension and delivery of water soluble polymers. 5,362,312, Cl. 106-189.000.

SKC Limited: *See—*
Park, Jong-Mun; Jeong, Chan-Sik; Oh, Uk-Hwan; and Yu, Taek-Jong, 5,361,790, Cl. 134-95.300.

SKF GmbH: *See—*
Kufner, Walter, deceased; and Meidl, Lothar, 5,362,159, Cl. 384-484.000.

Skinner, Malcolm: *See—*
Flesher, Peter; Farrar, David; Skinner, Malcolm; and Dymond, Brian, 5,362,517, Cl. 427-222.000.

Skotheim, Terje A.; Lee, Hung S.; and Okamoto, Yoshiyuki, to Associated Universities, Inc. Preparation of redox polymer cathodes for thin film rechargeable batteries. 5,362,493, Cl. 429-194.000.

Skotnicki, Jerauld S.; Leone, Christina L.; and Schiehser, Guy A., to American Home Products Corporation. Rapamycin hydroxyesters. 5,362,718, Cl. 514-63.000.

Skrtic, Tom: *See—*
Schenz, James L.; and Skrtic, Tom, 5,361,901, Cl. 206-330.000.

Slade, Louise; Levine, Harry; Craig, Stuart; and Arciszewski, Henry, to Nabisco, Inc. Reducing checking in crackers with pentosanase. 5,362,502, Cl. 426-20.000.

Slavin, Sidney H. Method for driver education that mimics intoxication. 5,362,238, Cl. 434-65.000.

Slocum, Edwin J., Jr., to High Sierra Cycle Center. Bicycle crank and pedal assembly. 5,361,649, Cl. 74-594.200.

SMH Management Services AG: *See—*
Marr-Andre, Miche; and Aime, Loichot, 5,363,350, Cl. 368-276.000.

Smick, Charles J., Jr.: *See—*
Ciula, James C.; and Smick, Charles J., Jr., 5,361,519, Cl. 37-234.000.

Smith, Adlai H.: *See—*
MacDonald, Bruce G.; Hunter, Robert O., Jr.; Smith, Adlai H.; and Guest, Clark C., 5,362,940, Cl. 219-121.680.

Smith, Astor M. Hospital privacy gown. 5,361,414, Cl. 2-114.000.

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Vora, Kakubhai R.; Khandwala, Atul; and Smith, Charles G., 5,362,737, Cl. 514-291.000.

Smith, David P.: *See—*
Howard, William L., Jr.; and Smith, David P., 5,362,009, Cl. 242-342.000.

Smith, Franklin R.: *See—*
Butterfield, Roger P.; Dembosky, Stanley K.; and Smith, Franklin R., 5,361,735, Cl. 123-90.170.

Smith International, Inc.: *See—*
Upton, Robert G.; Hooper, Michael F.; Portwood, Gary; Pyka, Jerry; Johnston, Randy; and Chambers, Robert, 5,362,073, Cl. 277-92.000.

Smith, James E.; Craven, Robert M.; VanVoorhies, Kurt L.; and Bonazza, Thomas J., to West Virginia University. Radio frequency coaxial cavity resonator as an ignition source and associated method. 5,361,737, Cl. 123-143.00B.

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Cooper, Jeremy B.; Lucy, Andrew R.; and Smith, Kevin G., 5,362,850, Cl. 528-483.000.

Smith, Mark Jr.; and Prabhu, Gajanan M., to Southbend. Gas fired convection oven. 5,361,749, Cl. 126-21.00A.

Smith, Randolph J.: *See—*
Knors, Christopher J.; Miura, Steve S.; Montgomery, Melvin W.; Moreau, Wayne M.; and Smith, Randolph J., 5,362,599, Cl. 430-192.000.

Smith, Robert A.: *See—*
Gutmark, Ephraim; Schadow, Klaus C.; Parr, Timothy P.; Hanson-Parr, Donna M.; Wilson, Kenneth J.; Smith, Robert A.; and Stalnaker, Richard A., 5,361,710, Cl. 110-346.000.

Smith, Robert L.: *See—*
Anthony, Neville J.; Lee, Ta-Jyh; Smith, Robert L.; and Stokker, Gerald E., 5,362,906, Cl. 562-23.000.

Smith, Robin W.: *See—*
Genevier, Eric S. G.; Steer, Philip J.; Danielian, Peter J.; Randall, Nigel J.; and Smith, Robin W., 5,361,759, Cl. 128-634.000.

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Smith, Scott V.: *See—*
Smith, John S.; and Smith, Scott V., 5,361,860, Cl. 180-9.210.

Smith, Stanley A.: *See—*
Snyder, John N.; and Smith, Stanley A., 5,361,557, Cl. 52-608.000.

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Richerson, James D.; Smith, Stephen D.; and Springtube, George W., 5,362,006, Cl. 242-4.0BE.

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Porta, Jacopo; Riccioli, Guido; Trifoni, Pierino; and Schiffling, Christian, 5,362,688, Cl. 501-27.000.

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Hashimoto, Makoto; Miyazawa, Yoshihiro; and Matsushita, Takeshi, 5,363,324, Cl. 365-156.000.
Isomoto, Seiko; Sarugaku, Toshio; and Kawashima, Hiroyuki, 5,363,140, Cl. 348-445.000.
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Kurashige, Masufumi; and Fukushima, Shinichi, 5,363,476, Cl. 395-125.000.
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.
Matsuura, Kiyoshige; Sumi, Naoyuki; and Fujita, Kouichi, 5,363,117, Cl. 345-87.000.
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Sam, Huy; and Fujiwara, Yoshio, 5,362,702, Cl. 503-227.000.
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Takagi, Koji, 5,363,355, Cl. 369-32.000.
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Tatsumi, Tetsuya, 5,362,361, Cl. 156-662.000.
Tobita, Minoru; and Yamagami, Tamotsu, 5,363,352, Cl. 369-13.000.
Ueki, Masaaki, 5,363,101, Cl. 341-143.000.
Yamagata, Masato; Tanaka, Yoshikazu; and Tsukada, Keizo, 5,363,430, Cl. 379-61.000.
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Sood, Anup: *See—*
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Soon-Shiong, Patrick: *See—*
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Sopt, Paul P.: *See—*
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Newby, John P., Sr., 5,361,456, Cl. 16-257.000.
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Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, to Abbott Laboratories. Process for the preparation of a substituted diaminodiol. 5,362,912, Cl. 564-360.000.
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Hemmady, Jayant G.; Reilly, Craig P.; Romy, Neil J.; and Spanke, Ronald A., 5,363,369, Cl. 370-60.000.
Sparer, Ronald M.: *See—*
Faig, Harold J.; and Sparer, Ronald M., 5,362,222, Cl. 425-145.000.
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Speece, William H.: *See—*
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Malchow, Gregory L., 5,361,439, Cl. 8-158.000.
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Spencer, John: *See—*
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Spencer, Paul W. Maintenance monitoring system for detachable ski lift carrier vehicles. 5,363,316, Cl. 364-550.000.
Spielvogel, Bernard F.; Sood, Anup; Hall, Iris H.; Shaw, Barbara R.; and Tomasz, Jeno , to University of North Carolina at Chapel Hill; Boron Biologicals; and Duke Unversity. Boronated compounds. 5,362,732, Cl. 514-256.000.
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Spink, Donald R.: *See—*
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Sponge Fishing Co., Inc.: *See—*
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Sporys, Ilona: *See—*
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Miller, Joel L.; Hood, Teresa I.; and Winter, John M., 5,363,076, Cl. 335-16.000.
Zawada, Patrick J.; Raine, Peter D.; and Lindo, Benjamin C., 5,363,079, Cl. 336-92.000.
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Stache, Ulrich; Durckheimer, Walter; Alpermann, Hans G.; and Petri, Walter, to Hoechst Aktiengesellschaft. Corticoid-17-alkyl-carbonates substituted in the 17-position, process for their preparation and pharmaceuticals containing them. 5,362,721, Cl. 514-179.000.
Stahl, Todd J.: *See—*
Hanus, Gary J.; Stahl, Todd J.; and Camacho, Salvador L., 5,362,939, Cl. 219-121.590.
Stahnke, Richard E. Golf ball walking stick. 5,361,793, Cl. 135-65.000.
Stalnaker, Richard A.: *See—*
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Standard Products Company, The: *See—*
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Standen, Michael C. H.: *See—*
Hall, Nigel; and Standen, Michael C. H., 5,362,888, Cl. 549-299.000.
Stanley Electric Co., Ltd.: *See—*
Terada, Toshiyuki, 5,363,085, Cl. 340-425.500.
Stanley-Vidmar, Inc.: *See—*
Rigling, Richard, 5,362,197, Cl. 414-786.000.
Stansbury, Jeffrey W., to United States of America, Commerce. Monomers for double ring-opening polymerization with expansion. 5,362,889, Cl. 549-334.000.
Starchevich, Jovanka. Portable signaling device. 5,363,092, Cl. 340-473.000.
Staron, Philippe; Cretin, Jacques; Beauducel, Claude; and Lepage, Thierry, to Institut Francais du Petrole. Stationary system for the active and/or passive monitoring of an underground deposit. 5,363,094, Cl. 340-854.600.
Starr, Robert W. Starr socket adapter. 5,361,656, Cl. 81-180.100.
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Giovenzana, Marco, 5,361,807, Cl. 139-1.00C.
Stauffer, David R.: *See—*
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Stavinoha, Jerome L., Jr.; Monnier, John R.; Hitch, David M.; Nolen, Timothy R.; and Oltean, George L., to Eastman Chemical Company. Gas phase process for the epoxidation of non-allylic olefins. 5,362,890, Cl. 549-536.000.
Steer, Philip J.: *See—*
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Stefanelli, Joseph M., to Italimpianti of America, Inc. Method and apparatus for adjusting bending rolls. 5,361,618, Cl. 72-174.000.
Stein, Jerry Y.: *See—*
Burgess, J. Stuart; Spink, Donald R.; and Stein, Jerry Y., 5,362,464, Cl. 423-243.080.
Stein, Judith, to General Electric Compay. Addition-curable silicone adhesive compositions and N-heterocyclic silane adhesion promoters. 5,362,781, Cl. 524-99.000.
Steinberg, Bastian: *See—*
Pothmann, Werner; Steinberg, Bastian; Poock-Haffmans, Peter; and Harms, Dirk, 5,361,753, Cl. 128-207.150.
Steinebrunner, Edwin: *See—*
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Steiner, Gregory A., to New Erra Group, Inc. Portable light assembly. 5,363,291, Cl. 362-191.000.
Steinhaus, Bruce M.: *See—*
Samuelson, Kent E.; Morris, Robert A.; Nolan, James A.; and Steinhaus, Bruce M., 5,361,776, Cl. 128-734.000.
Stellberger, Rudi, to Heidelberger Druckamschinen AG. Plate cylinder of a rotary printing press. 5,361,697, Cl. 101-415.100.
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Stepanek, Premek; Wagner, Ludwig; Lehner, Edwin; and Ruffinengo, Piero G., to Marker Deutschland GmbH. Support plate for a ski binding. 5,362,085, Cl. 280-602.000.
Stephens, Leo W. Apparatus for picking up oil from water. 5,362,391, Cl. 210-242.300.
Sterett, Robert A., to Aeroquip Corporation. Fluid container with sump. 5,361,906, Cl. 206-509.000.
Stettler, Andreas; and Anderegg, Kurt, to Inventio AG. Method of manufacturing integral railway coach bodies. 5,362,345, Cl. 156-173.000.
Steven C. Sims, Inc.: *See—*
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Stevens, Kent A.: *See—*
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Stevens, Robert D. Shotgun slug tracer round and improved shotgun slug. 5,361,701, Cl. 102-450.000.
Stevenson, Bruce B.: *See—*
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Palmer, Scott L.; Sanders, Robert E.; Steverson, W. Bryan; and Morgan, Lyndon, 5,362,341, Cl. 148-692.000.
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STFI: *See—*
Pettersson, Thorulf; and Anttila, Jorma, 5,361,638, Cl. 73-800.000.
Stiles, Alvin B.; and Hong, Charles C., to University of DE. Process for removing NO_x from combustion zone gases by adsorption. 5,362,463, Cl. 423-239.100.
Stills, James T.: *See—*
Nair, Parameswaran B.; Choudhuri, Kumar S.; Stills, James T.; and Evans, John C., 5,362,952, Cl. 235-449.000.
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Stohrer, Jurgen: *See—*
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Stolfo, Salvatore J.; Wolfson, Ouri; and Dewan, Hasanat, to Columbia University in the City of New York, The Trustees of. Incremental update process and apparatus for an inference system. 5,363,473, Cl. 395-50.000.
Stoll, Kurt, to Festo KG. Spool valve. 5,361,803, Cl. 137-625.660.
Stolzman, Michael D. Closure assembly. 5,361,928, Cl. 220-378.000.
Stone, Walter H.: *See—*
Hardison, Steven D.; and Stone, Walter H., 5,362,389, Cl. 210-232.000.
Stoneham, Jeffrey R., to Eastman Kodak Company. Camera including optical encoding of audio information. 5,363,158, Cl. 354-76.000.
Stormer, Horst L.: *See—*
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Stout, Fred. Fail-safe thermostat valve. 5,361,980, Cl. 236-34.500.
Strack, David C.: *See—*
McCarver, Stacey G.; Strack, David C.; Porter, Marsha L.; and Mathis, Peter, 5,362,306, Cl. 602-60.000.
Straeter, William F.: *See—*
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Stramel, Rodney D.: *See—*
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Strasser, Thomas A.; and Gupta, Mool C., to Eastman Kodak Company. Apparatus and method for dispersion compensation for a grating coupler using a surface relief reflection grating. 5,363,226, Cl. 359-566.000.
Stringer, Hugh C.; and Leonard, Phillip S., to Bristol Compressors. Compressor shipping carton. 5,361,900, Cl. 206-319.000.
Strollo, James: *See—*
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Stuart, John M., to Mallinckrodt Medical, Inc. Apparatus and method for connecting a tracheostomy tube to a neckplate. 5,361,754, Cl. 128-207.170.
Su, Frank F. S. Flying saucer projecting and catching device. 5,362,065, Cl. 273-327.000.
Su, Wei-Yang, to Texaco Chemical Inc. Decolorization of polyethylene polyamines using cobalt/copper/chromium. 5,362,914, Cl. 564-498.000.
Suarato, Antonino: *See—*
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Subramaniam, Ramnath: *See—*
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Suda, Koichi; Fukaya, Takeshi; and Horiuchi, Tadao, to Aisan Kogyo Kabushiki Kaisha. Electromagnetic rotation detector having a magnet of a symmetrically cut out cross-section for electrical connections. 5,363,033, Cl. 324-207.150.
Suematsu, Kiyoshi: *See—*
Obi, Naoki; Suematsu, Kiyoshi; Kojima, Yasuhiko; Katayama, Masatoshi; and Shigemitsu, Yasuo, 5,362,621, Cl. 430-596.000.
Suenaga, Syoji; Suzuki, Masahiro; and Iwasaki, Masashi, to Pioneer Electronic Corporation. System for controlling a display provided on a car stereo. 5,363,122, Cl. 345-212.000.
Suess, Hans-Ulrich: *See—*
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Sueyoshi, Tomoko; Wakatsuru, Kenji; and Okabe, Masayuki, to Mitsui Petrochemical Industries, Ltd. Process for preparing cycloolefin random copolymer pellets. 5,362,811, Cl. 525-198.000.
Suga, Akira; and Kondo, Kenichi, to Canon Kabushiki Kaisha. Focus adjusting apparatus which reads a selected portion of an image pickup plane. 5,363,137, Cl. 348-302.000.
Suga, Chouji: *See—*
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Sugahara, Hiroto; Suzuki, Masahiko; and Takahashi, Yoshikazu, to Brother Kogyo Kabushiki Kaisha. Ink droplet jet device. 5,363,133, Cl. 347-69.000.
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Sugimoto, Shunichi: *See—*
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Sugita, Keisuke: *See—*
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Sugiura, Atsushi; and Hashimoto, Masakazu, to Toyota Jidosha Kabushiki Kaisha. Air bag device. 5,362,101, Cl. 280-743.00A.
Sugiyama, Mitsuo: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Iizuka, Yoshio; and Yamaguchi, Takeshi, 5,362,725, Cl. 514-214.000.
Suguro, Masahiro; Ohumura, Yoshinori; and Imamura, Minoru, to Yazaki Corporation. Frame-coupling-type electrical connector. 5,362,245, Cl. 439-160.000.
Sulzer Canada, Inc.: *See—*
Kissinger, Gaylord M.; and Wynn, Nicholas P., 5,362,900, Cl. 558-265.000.
Sumi, Naoyuki: *See—*
Matsuura, Kiyoshige; Sumi, Naoyuki; and Fujita, Kouichi, 5,363,117, Cl. 345-87.000.
Sumitomo Chemical Company, Ltd.: *See—*
Higashio, Yasuhiko; Kajikuri, Hiroshi; Sugita, Keisuke; Doi, Hideki; and Matsubara, Masanobu, 5,362,870, Cl. 540-540.000.
Inui, Naoki; Nagasaki, Hideo; and Yachigo, Shinichi, 5,362,785, Cl. 524-259.000.
Inui, Naoki; Yamamoto, Kazuaki; Nagasaki, Hideo; Sasaki, Manji; and Yachigo, Shinichi, 5,362,794, Cl. 624-496.000.
Takeyama, Naoki; Uetani, Yasunori; Nakanishi, Hirotoshi; and Hanawa, Ryotaro, 5,362,598, Cl. 430-191.000.
Sumitomo Electric Industries, Ltd.: *See—*
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, 5,362,710, Cl. 505-475.000.
Kohno, Teruhisa, 5,362,137, Cl. 303-10.000.
Mikamura, Yasuki, 5,363,064, Cl. 330-308.000.
Sumitomo Heavy Industries, Ltd.: *See—*
Asami, Hiroshi; and Suzuki, Mitsuru, 5,361,588, Cl. 62-6.000.
Sumitomo Rubber Industries, Ltd.: *See—*
Adachi, Yukishige, 5,361,820, Cl. 152-555.000.
Sumitomo Wiring Systems, Ltd.: *See—*
Nakamura, Masayoshi, 5,362,242, Cl. 439-76.000.
Sumser, Daniel P.; and Green, Michael P., to Century Products Company. Snap-on swivel wheel assembly. 5,361,454, Cl. 16-20.000.
Sun-Chueh, Kao: *See—*
Karol, Frederick J.; Sun-Chueh, Kao; and Drage, James S., 5,362,823, Cl. 526-114.000.
Sun Company, Inc. (R&M): *See—*
Hollstein, Elmer J.; and Hsu, Chao-Yang, 5,362,694, Cl. 502-52.000.
Sun Industrial Coatings Private Limited: *See—*
Sim, Ah T., 5,361,964, Cl. 228-56.200.
Sunds Defibrator Industries Aktiebolag: *See—*
Virving, Nils, 5,362,003, Cl. 241-261.300.
Sundstrand Corporation: *See—*
Bachelder, Donald M., 5,361,579, Cl. 60-39.281.

Hanson, Michael J.; and Rozman, Gregory I., 5,363,032, Cl. 322-10.000.
Hernden, Michael; and Rademacher, Loren, 5,363,002, Cl. 310-54.000.

Sung, Ho Y.: *See—*
Han, Geun P.; and Sung, Ho Y., 5,361,601, Cl. 62-324.600.

Sunnybrook Health Science Center: *See—*
Xiang, Qing-San; and Henkelman, Ross M., 5,363,043, Cl. 324-309.000.
Xiang, Qing-San; and Henkelman, Ross M., 5,363,044, Cl. 324-309.000.

Sunouchi, Kazumasa; Fuse, Tsuneaki; Nitayama, Akihiro; Hasegawa, Takehiro; Watanabe, Shigeyoshi; Horiguchi, Fumio; and Hieda, Katsuhiko, to Kabushiki Kaisha Toshiba. Dynamic semiconductor memory device having high integration density. 5,363,325, Cl. 365-149.000.

Superflex, Inc.: *See—*
Szyjkowski, Jerzy, 5,361,541, Cl. 49-465.000.

Surizaki, Kumi: *See—*
Hiyoshi, Yoshihiko; Ide, Youji; Kunitake, Tetsuji; Maeda, Nobuyuki; and Surizaki, Kumi, 5,362,548, Cl. 428-195.000.

Surjaatmadja, Jim B.; Holden, Steven L.; and Szarka, David D., to Halliburton Company. Well jetting apparatus and met of modifying a well therewith. 5,361,856, Cl. 175-67.000.

Survanshi, Shalini S.; Weathersby, Paul K.; and Thalmann, Edward D., to United States of America, Navy. Controlled risk decompression meter. 5,363,298, Cl. 364-413.310.

Susko, Thomas; and Moore, Douglas, to Lear Seating Corporation. Protective cover for a hinge joint. 5,362,131, Cl. 297-463.000.

Suslick, Kenneth S.: *See—*
Desai, Neil P.; Soon-Shiong, Patrick; Sandford, Paul A.; Grinstaff, Mark W.; and Suslick, Kenneth S., 5,362,478, Cl. 424-9.000.

Sussmann, Reinhold; and Hofmann, Theo, to Tretorn AB. Sport shoe with an outsole with holding inserts for holding gripping elements. 5,361,518, Cl. 36-134.000.

Suter, Michael W.: *See—*
Andersen, James H.; Hilliard, Gregory C.; Ramirez, Lawrence V., II; and Suter, Michael W., 5,361,668, Cl. 84-392.000.

Sutton, Philip; Shaw, Andrew P.; Dawber, William; Hirst, Peter F.; and Condon, Brian, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in her Britannic Majesty's Government of the. Optical multiplexer. 5,363,221, Cl. 359-11.000.

Suzuki, Akio, to Canon Kabushiki Kaisha. Imaging process for electrophotography. 5,362,594, Cl. 430-126.000.

Suzuki, Harumi: *See—*
Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, 5,362,482, Cl. 424-69.000.

Suzuki, Hiroyuki, to Brother Kogyo Kabushiki Kaisha. Work sheet cutting blade with continuous blade displacement detection. 5,361,713, Cl. 112-68.000.

Suzuki, Katsuhiko, to NEC Corporation. High frequency semiconductor device having optical guide package structure. 5,362,976, Cl. 257-81.000.

Suzuki, Keisuke; and Satoh, Hiroshi, to Nissan Motor Co., Ltd. Combustion state control apparatus for internal combustion engine. 5,361,745, Cl. 123-698.000.

Suzuki, Makoto; Shimada, Yasuhiro; Matsuoka, Koushin; Yamazaki, Shigeru; Yamakawa, Katsuyoshi; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Pyrrolotriazole derivative and heat transfer dye providing material containing a pyrrolotriazole azomethine dye. 5,362,882, Cl. 548-262.400.

Suzuki, Masahiko: *See—*
Sugahara, Hiroto; Suzuki, Masahiko; and Takahashi, Yoshikazu, 5,363,133, Cl. 347-69.000.

Suzuki, Masahiro: *See—*
Suenaga, Syoji; Suzuki, Masahiro; and Iwasaki, Masashi, 5,363,122, Cl. 345-212.000.

Suzuki, Mitsuru: *See—*
Asami, Hiroshi; and Suzuki, Mitsuru, 5,361,588, Cl. 62-6.000.

Suzuki Motor Corporation: *See—*
Takeuchi, Naoyuki, 5,362,090, Cl. 280-660.000.

Suzuki, Rie: *See—*
Ohno, Yoshihiro; and Suzuki, Rie, 5,363,197, Cl. 356-405.000.

Suzuki, Takao: *See—*
Yano, Motoyasu; Takemura, Yoshinori; and Suzuki, Takao, 5,363,006, Cl. 310-323.000.

Suzuki, Takashi: *See—*
Shimizu, Ryuuichi; Kawanishi, Tsuneaki; Satoh, Toshiya; Mitsuya, Teruaki; and Suzuki, Takashi, 5,363,180, Cl. 355-285.000.

Suzuki, Takayuki: *See—*
Sowin, Thomas J.; Hannick, Steven M.; Doherty, Elizabeth M.; Sato, Takahiro; and Suzuki, Takayuki, 5,362,912, Cl. 564-360.000.

Suzuki, Teruki: *See—*
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.

Suzuki, Toshiyuki; and Kamaguchi, Ryousei, to Morishita Jintan Co., Ltd. Seamless capsule comprising a lower fatty ester of sucrose. 5,362,564, Cl. 428-402.200.

Suzuki, Toshiyuki: *See—*
Yamasaki, Seiji; Suzuki, Toshiyuki; and Hirata, Chikako, 5,362,418, Cl. 252-314.000.

Suzuki, Yasutaka: *See—*
Darr, Christopher J.; and Suzuki, Yasutaka, 5,362,018, Cl. 248-74.300.

Svedala Industries, Inc.: *See—*
Kiedaisch, Edward; and Walljasper, David L., 5,361,715, Cl. 114-219.000.

Svensson, Krister U.; and Rehnvall, Conny L., to Sala International AB. Method and arrangement for finely-grinding minerals. 5,361,996, Cl. 241-30.000.

Sviedrys, Paul C.: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Swafford, John W., Jr.; and Carlson, William P., to RTC Industries, Inc. Entertainment and promotional method. 5,362,051, Cl. 273-138.00A.

Swanson, Greg. Postal box mounting pedestal. 5,362,019, Cl. 248-146.000.

Swazey, John M.: *See—*
Skaggs, Bryan; O'Brien, Mike; Seheult, James M.; and Swazey, John M., 5,362,312, Cl. 106-189.000.

Sweet, David H.: *See—*
Rice, Robert W.; and Sweet, David H., 5,363,317, Cl. 364-551.010.

Swinehart, Philip R., to Lake Shore Cryotronics, Inc. Film resistors having trimmable electrodes. 5,363,084, Cl. 338-308.000.

Switchcraft Inc.: *See—*
Bielak, Kenneth J., 5,362,251, Cl. 439-394.000.

Systems and Service International, Inc.: *See—*
Chen, Nian; and Boyd, Dudley G., 5,363,020, Cl. 315-209.00R.

Szalay, David: *See—*
Nichols, David; and Szalay, David, 5,361,766, Cl. 128-654.000.

Szarka, David D.: *See—*
Surjaatmadja, Jim B.; Holden, Steven L.; and Szarka, David D., 5,361,856, Cl. 175-67.000.

Szczygielski, Thomas J.: *See—*
Maslak, Barbara A. M.; Showalter, James M.; and Szczygielski, Thomas J., 5,363,505, Cl. 395-650.000.

Szekely, Julian: *See—*
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., 5,362,523, Cl. 427-446.000.

Szendel, Adrian J. Method and apparatus for protecting wheel bearings in in-line roller skates. 5,362,075, Cl. 280-11.220.

Szente, Pedro A. Magazine for compressed gas single-shot bolt-action pellet shoulder guns. 5,361,746, Cl. 124-50.000.

Szlucha, Thomas F.: *See—*
Magde, John M., Jr.; and Szlucha, Thomas F., 5,363,174, Cl. 355-208.000.

Sztanko, Nicholas; Smith, Stephen P.; and Jones, William B., to Eastman Kodak Company. Cam actuated optical offset image sampling system. 5,363,136, Cl. 348-207.000.

Szwed, Peter K.: *See—*
Desnoyers, Christine M.; Garmire, Derrick L.; Genco, Sheryl M.; Grice, Donald G.; Milani, William R.; Muhlada, Michael P.; Myers, Donna C.; Szwed, Peter K.; Tsinker, Vadim M.; Vallone, Antoinette E.; and Bender, Carl A., 5,363,484, Cl. 395-200.000.

Szyjkowski, Jerzy, to Superflex, Inc. Universal, spring loaded access door. 5,361,541, Cl. 49-465.000.

Tabata, Yasushi: *See—*
Kobayashi, Takeo; Tabata, Yasushi; Numako, Norio; Nagai, Katsutoshi; and Nishida, Takao, 5,363,164, Cl. 354-195.100.

Tabuchi, Yoichi, to Sharp Kabushiki Kaisha. Disk player with variable level search time. 5,363,354, Cl. 369-32.000.

Tachi-s Co., Ltd.: *See—*
Itoh, Yoshikazu; and Akiyama, Masami, 5,362,129, Cl. 297-391.000.
Sasaki, Ayaru; Haraguchi, Youichiro; and Kon, Shigeki, 5,362,535, Cl. 428-43.000.

Tackie, Albert; and Schiff, Paul L., to Healthsearch, Inc.; and Center for Scientific Research Into Plant Medicine. Compound and method of treatment for falciparum malaria. 5,362,726, Cl. 514-214.000.

Tada, Junichi; and Yoshioka, Takamoto, to Magnescale, Inc. Position detector with magnet scale and magnetic sensor that has magnetic reluctance elements in non-overlapping relationship. 5,363,034, Cl. 324-207.210.

Tada, Naohumi; Wadayama, Yoshihide; Inoue, Kiyoshi; and Kamata, Kunihisa, to Hitachi Ltd.; National Research Institute for Metals; and Hitachi Cable Ltd. Process and apparatus for producing Nb_3Al super-conducting wire. 5,362,331, Cl. 148-98.000.

Tadamitsu Kishimoto: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, 5,362,489, Cl. 424-852.000.

Taguchi, Yasusi: *See—*
Morimoto, Shigeki; Noguchi, Tadashi; Taguchi, Yasusi; and Taniguchi, Masakazu, 5,362,689, Cl. 501-70.000.

Tahara, Tomonori; Yamamoto, Tetsuya; Baba, Yasuyuki; Koyanagi, Hideki; and Uchida, Akira, to Sony Corporation. Still picture transmitting system. 5,363,203, Cl. 358-403.000.

Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Polyester foamed thin materials. 5,362,765, Cl. 521-172.000.

Takada, Kenji: *See—*
Miyatake, Shigehiro; Takada, Kenji; Ishida, Kouichi; and Sameshima, Kouichi, 5,363,000, Cl. 327-350.000.

Takada, Susumu: *See—*
Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, 5,362,482, Cl. 424-69.000.

Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, to Kanegafuchi Chemical Industry Co., Ltd.; Matsushita Electric Inductris Co., Ltd.; NEC Corporation; Nippon Mining Co., Ltd.; Nippon Steel Corporation; TDK Corporation; Tosoh Corporation; Toyo Boseki Kabushiki Kaisha; Seisan Kaihatsu Kagaku Kenkyusho; and Ube Industries, Ltd. Method for producing single crystal superconducting $LnA_2Cu_3O_{7-x}$ films. 5,362,711, Cl. 505-476.000.

Takagi, Koji, to Sony Corporation. CD-ROM disc reproducing apparatus with clipping memory. 5,363,355, Cl. 369-32.000.

Takagi, Masahiro: *See—*
Matsumura, Yasuo; Takano, Hiroshi; Takagi, Masahiro; and Yoshimura, Mamoru, 5,362,596, Cl. 430-137.000.

Takagi, Syunsuke; Kuroda, Kohzoh; and Ono, Jiro, to Danippon Screen Mfg. Co., Ltd. Screen printing plate for limiting the spread of ink on an object. 5,361,695, Cl. 101-127.000.

Takahara, Yoshiyuki: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Matsui, Hiroshi; Takahara, Yoshiyuki; Akiyama, Yukio; and Okano, Akira, 5,362,489, Cl. 424-852.000.

Takahashi, Hiroyuki: *See—*
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,363,165, Cl. 354-195.120.

Takahashi, Kazuhide: *See—*
Ogawa, Atsushi; Minakawa, Kuninori; and Takahashi, Kazuhide, 5,362,441, Cl. 420-420.000.

Takahashi, Kazuo; Kumata, Fumio; Nozaki, Hitoshi; Inoue, Shinichi; and Makabe, Toshiji, to Research Association for the Utilization of Light Oil. Process for producing spherical zeolite catalyst and apparatus for producing the same. 5,362,696, Cl. 502-64.000.

Takahashi, Koichi; and Kitagawa, Kiichiro, to Fuji Photo Film Co., Ltd. Photographic film cassette and camera for use therein. 5,363,166, Cl. 354-275.000.

Takahashi, Satoji: *See—*
Fujita, Shinji; and Takahashi, Satoji, 5,362,903, Cl. 560-41.000.

Takahashi, Shuji: *See—*
Harada, Koji; Hirata, Takashi; Morikawa, Fumihiro; and Takahashi, Shuji, 5,363,003, Cl. 310-67.00R.

Takahashi, Tetuya: *See—*
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Takahashi, Tomoaki: *See—*
Uematsu, Ikuzo; and Takahashi, Tomoaki, 5,361,572, Cl. 57-304.000.

Takahashi, Toru: *See—*
Matsuoka, Noriyuki; and Takahashi, Toru, 5,362,241, Cl. 439-66.000.

Takahashi, Toshio, to Brother Kogyo Kabushiki Kaisha. Tape cassette with image receiving member and protection sheet. 5,362,162, Cl. 400-613.000.

Takahashi, Toshiya; Uriya, Norio; and Nagashima, Yoshihisa, to Dai Nippon Toryo Co., Ltd. Coating composition and process for producing a precoated plate. 5,361,616, Cl. 72-46.000.

Takahashi, Yoshikazu: *See—*
Sugahara, Hiroto; Suzuki, Masahiko; and Takahashi, Yoshikazu, 5,363,133, Cl. 347-69.000.

Takai, Atsushi: *See—*
Uomi, Kazuhisa; Sagawa, Misuzu; and Takai, Atsushi, 5,363,393, Cl. 372-45.000.

Takai, Hiroyuki: *See—*
Kato, Rikako; and Takai, Hiroyuki, 5,363,496, Cl. 395-425.000.

Takamatsu, Shingo, to Daiwa Seiko, Inc. Clutch device for fishing reel. 5,362,010, Cl. 242-261.000.

Takamura, Akio; Yagi, Hideto; and Yokota, Takao, to Ryobi Limited. Power tool. 5,361,853, Cl. 173-217.000.

Takano, Hiroshi: *See—*
Matsumura, Yasuo; Takano, Hiroshi; Takagi, Masahiro; and Yoshimura, Mamoru, 5,362,596, Cl. 430-137.000.

Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, to Shin-Etsu Handotai Co., Ltd. Single crystal pulling apparatus. 5,361,721, Cl. 117-214.000.

Takano, Kouji: *See—*
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.

Takano, Masatoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Sheet holding mechanism. 5,362,163, Cl. 400-625.000.

Takaragi, Yoichi: *See—*
Udagawa, Yutaka; Funada, Masahiro; Ohta, Ken-ich; Takaragi, Yoichi; Kitamura, Toshiyuki; and Ohta, Eiji, 5,363,202, Cl. 358-501.000.
Udagawa, Yutaka; Funada, Masahiro; Ohta, Ken-ichi; Takaragi, Yoichi; and Ohta, Eiji, 5,363,454, Cl. 382-17.000.

Takasugi, Masataka, to Yamashou Sangyo Kabushiki Kaisha. Support mechanism of overflow weir in sewage disposal tank. 5,362,386, Cl. 210-206.000.

Takata Corporation: *See—*
Satoh, Takeshi; and Zushi, Takayasu, 5,362,096, Cl. 280-728.00B.

Takatori, Sunao: *See—*
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,363,205, Cl. 358-429.000.

Takatori, Tetsuya, to Fuji Photo Film Co., Ltd. Photographic film cassette having a locking spool. 5,363,167, Cl. 354-275.000.

Takayuki, Ito; and Nobutaka, Minefuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Zoom lens system. 5,363,243, Cl. 359-689.000.

Takeda Chemical Industries, Ltd.: *See—*
Meguro, Kanji; and Ikeda, Hitoshi, 5,362,742, Cl. 514-312.000.
Oshima, Junji; Okatani, Susumu; Akiyama, Koichi; and Sakurai, Masato, 5,362,804, Cl. 525-64.000.
Yamada, Masayuki; Nonomura, Muneo; and Nishikawa, Kohei, 5,362,497, Cl. 424-449.000.

Takeda, Koji, to Seiko Epson Corporation. System for improving access time to video display data using shadow memory sized differently from a display memory. 5,363,500, Cl. 395-425.000.

Takei, Shinzo; and Ida, Hiroyuki, to Sony Corporation; and Sony Chemicals Corporation. Method of manufacturing color selecting mask. 5,362,357, Cl. 156-634.000.

Takekoshi, Tohru; and Terry, Jane M., to General Electric Company. Preparation of macrocyclic polyetherimide oligomers from bis(trialkylsilyl) ethers. 5,362,837, Cl. 528-125.000.

Takekoshi, Tohru; and Terry, Jane M., to General Electric Company. Method for converting macrocyclic polyimide oligomers to linear polyimides. 5,362,845, Cl. 528-322.000.

Takemoto Yushi Kabushiki Kaisha: *See—*
Kinoshita, Mitsuo; Miura, Yoshimasa; and Arashima, Takeshi, 5,362,829, Cl. 526-240.000.

Takemura, Yasuhiko, to Semiconductor Energy Laboratory, Co., Ltd. Superconducting device. 5,362,709, Cl. 505-190.000.

Takemura, Yoshinori: *See—*
Yano, Motoyasu; Takemura, Yoshinori; and Suzuki, Takao, 5,363,006, Cl. 310-323.000.

Takenaka, Takao; Endo, Masahisa; and Yamada, Masato, to Shin-Etsu Handotai Co., Ltd. Method of making epitaxial wafers. 5,362,683, Cl. 437-226.000.

Takeshita, Shuji, to Fujitsu Limited. Thin film circuit board and its manufacturing process. 5,362,550, Cl. 428-209.000.

Takeuchi, Kunihiro, to ZEXEL Corporation. Control system for vehicle safety device. 5,363,301, Cl. 364-424.050.

Takeuchi, Kunihiro: *See—*
Kaneko, Hideyuki; and Takeuchi, Kunihiro, 5,363,303, Cl. 364-424.050.

Takeuchi, Naoyuki, to Suzuki Motor Corporation. Suspension of motor vehicle. 5,362,090, Cl. 280-660.000.

Takeyama, Naoki; Uetani, Yasunori; Nakanishi, Hirotoshi; and Hanawa, Ryotaro, to Sumitomo Chemical Co., Ltd. Quinone diazide photoresist composition containing alkali-soluble resin and an ultraviolet ray absorbing dye. 5,362,598, Cl. 430-191.000.

Takiyama, Eiichiro: *See—*
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Tam Ceramics, Inc.: *See—*
Chu, Mike S. H.; and Corah, Susan E., 5,362,693, Cl. 501-137.000.

Tamagawa, Shigehisa: *See—*
Serizawa, Shinichiro; and Tamagawa, Shigehisa, 5,362,614, Cl. 430-538.000.

Tamura, Koji: *See—*
Hirose, Toshiki; Tsuruta, Minoru; Tamura, Koji; Uehara, Yoshitomo; and Miwa, Harufumi, 5,362,635, Cl. 435-106.000.

Tanaka, Akio: *See—*
Awano, Katsusuke; Honmura, Shiro; and Tanaka, Akio, 5,363,304, Cl. 364-424.070.

Tanaka, Atsushi: *See—*
Yoshimura, Yuichiro; Tanaka, Atsushi; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,362,930, Cl. 178-18.000.

Tanaka, Eisaku; and Kuriyama, Choujirou, to Rohm Co., Ltd. Capacitor apparatus incorporating fuse. 5,363,272, Cl. 361-534.000.

Tanaka, Hideo: *See—*
Sakurai, Seiji; Kuchiki, Junichi; Tanaka, Hideo; Naruse, Syoichi; and Fukumaru, Shigeru, 5,362,033, Cl. 266-275.000.

Tanaka, Hiromune: *See—*
Ozawa, Kazushige; and Tanaka, Hiromune, 5,361,963, Cl. 228-33.000.

Tanaka, Hiroshi; and Okayasu, Maki, to Fuji Jukogyo Kabushiki Kaisha. Control system for an automatic clutch of a motor vehicle. 5,362,287, Cl. 477-175.000.

Tanaka, Hozumi: *See—*
Kitano, Minoru; Mitsui, Kenji; Tanaka, Hozumi; and Kazama, Koji, 5,362,225, Cl. 425-472.000.

Tanaka, Keizou; Nishikawa, Noboru; Kawase, Tsuyoshi; and Watanabe, Masami, to Honda Giken Kogyo Kabushiki Kaisha. Method of manufacturing metallic press die. 5,361,968, Cl. 228-160.000.

Tanaka, Mitsuyuki; Michino, Masahiro; Fujihira, Yasutaka; Nakamura, Takashi; Kohmura, Kisaburo; Asaoka, Toshiro; and Ohya, Akio, to Nippon Metal Industry Co., Ltd.; and Nissen Corporation. Method and apparatus for disposal of medical waste. 5,362,443, Cl. 422-26.000.

Tanaka, Osamu, to Rohm Co., Ltd. Structure and method for mounting semiconductor device. 5,363,277, Cl. 361-760.000.

Tanaka, Saburo: *See—*
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, 5,362,710, Cl. 505-475.000.

Tanaka, Satoru; Yangisawa, Shuichi; and Matsui, Fumio, to Pioneer Electronic Corporation. Tracking apparatus for optical disk and

tracking method of the same with tracking polarity invertor responsive to disk type. 5,363,356, Cl. 369-44.290.

Tanaka, Seiichi, to Sanshi Kogyo Kabushiki Kaisha. Scavenging port delivery for two stroke engine. 5,361,731, Cl. 123-65.00P.

Tanaka, Tadaharu: *See—*
Nishii, Masanobu; Shimizu, Yuichi; Kawanishi, Shunichi; Sugimoto, Shunichi; Tanaka, Tadaharu; and Eguchi, Yosuke, 5,362,525, Cl. 427-554.000.

Tanaka, Tadashi; Sakamoto, Masaaki; and Sato, Yoshiaki, to Daido Metal Company Ltd. Multilayer aluminum-based alloy bearing having superior compatibility and superior fatigue resistance. 5,362,574, Cl. 428-643.000.

Tanaka, Toshihiko: *See—*
Imai, Akira; Hasegawa, Norio; Fukuda, Hiroshi; and Tanaka, Toshihiko, 5,362,591, Cl. 430-5.000.

Tanaka, Toyoji, to Yamaha Hatsudoki Kabushiki Kaisha. Front wheel suspension for motorcycle. 5,361,864, Cl. 180-219.000.

Tanaka, Yasunari, to Matsushita Electric Industrial Co., Ltd. Selective ringing receiving device and method. 5,363,438, Cl. 379-375.000.

Tanaka, Yasuyuki: *See—*
Oomachi, Chikafumi; and Tanaka, Yasuyuki, 5,361,491, Cl. 29-852.000.

Tanaka, Yoshiaki: *See—*
Uragami, Tadashi; Tanaka, Yoshiaki; Ozaki, Masaru; and Nakamura, Tatsuya, 5,362,761, Cl. 521-64.000.

Tanaka, Yoshikazu: *See—*
Yamagata, Masato; Tanaka, Yoshikazu; and Tsukada, Keizo, 5,363,430, Cl. 379-61.000.

Tandai, Michio: *See—*
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, 5,363,498, Cl. 395-425.000.

Tandem Computers Incorporated: *See—*
Bestock, Ralph R., 5,363,449, Cl. 380-23.000.

Tangible Domain Inc.: *See—*
Way, James A.; and Way, Peter A., 5,363,464, Cl. 385-125.000.

Tani, Motoaki: *See—*
Horikoshi, Eiji; Tani, Motoaki; Watanabe, Isao; Natori, Katsuhide; and Sato, Takehiko, 5,362,359, Cl. 156-645.000.

Tani, Noriyuki: *See—*
Machida, Shuji; and Tani, Noriyuki, 5,362,814, Cl. 525-324.000.

Taniguchi, Masakazu: *See—*
Morimoto, Shigeki; Noguchi, Tadashi; Taguchi, Yasusi; and Taniguchi, Masakazu, 5,362,689, Cl. 501-70.000.

Taniguchi, Naosato: *See—*
Kuwayama, Tetsuro; Taniguchi, Naosato; Yoshinaga, Yoko; and Kushibiki, Nobuo, 5,363,220, Cl. 359-3.000.

Tanii, Tadaaki: *See—*
Sakai, Matsushige; Saji, Akira; Noda, Hidetomo; Hondoh, Takeo; Tanii, Tadaaki; Ishibashi, Masaru; Negoro, Masaaki; Kawata, Yutaka; Murakami, Takefumi; Kitamura, Hikaru; and Kamata, Toshihiro, 5,362,467, Cl. 423-437.00R.

Tanimura, Yoshinari: *See—*
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,363,165, Cl. 354-195.120.

Tanino, Kichiya: *See—*
Akune, Yasuhiro; Tanino, Kichiya; Koeda, Masaru; Nagano, Tetsuya; Sano, Kazuo; and Ishiguro, Eiji, 5,363,238, Cl. 359-566.000.

Taniuchi, Kazuman; Sekine, Hiroshi; Akita, Noboru; Kuwahara, Isao; and Endoh, Kiyomasa, to Fuji Xerox Co., Ltd. Marker dot detecting device for color image recording apparatus. 5,363,212, Cl. 358-452.000.

Tanizaki, Masanori: *See—*
Momose, Kaoru; Nishiwaki, Tsutomu; Tanizaki, Masanori; and Mizutani, Hajime, 5,363,131, Cl. 347-46.000.

Tanizawa, Hidenori: *See—*
Higashiguchi, Yutaka; Inagaki, Mitsuo; Tanizawa, Hidenori; Maeda, Takeyasu; Kohma, Noriyuki; Mochizuki, Hajime; Mekata, Kouroh; Amano, Toshiaki; and Kamei, Yoshikazu, 5,361,488, Cl. 29-600.000.

Tanknology Corporation International: *See—*
Williams, Barry N.; and Kauffmann, Glenn A., 5,363,093, Cl. 340-605.000.

Tanox Biosystems: *See—*
Chang, Tse W., 5,362,643, Cl. 435-240.270.

Tansley, Robert: *See—*
Salkeld, Paul; Gibbs, Andrew; and Tansley, Robert, 5,361,942, Cl. 222-105.000.

Tarkett AB: *See—*
Andreasson, Gunnar; and Glemberg, Ronny, 5,361,553, Cl. 52-480.000.

Tasaka, Kazuhiro, to NEC Corporation. Method of fabricating an BPSG-filled trend and oxidation isolation structure with a gate electrode. 5,362,668, Cl. 437-67.000.

Tasaki, Takaharu: *See—*
Nozawa, Takamitsu; and Tasaki, Takaharu, 5,361,920, Cl. 215-237.000.

Tashiro, Kouji; Hoshino, Hiroyuki; Murakami, Shuji; Matsuzaka, Shoji; and Ohtani, Hirofumi, to Konica Corporation. High-speed halide photographic light-sensitive material. 5,362,619, Cl. 430-567.000.

Tateyama, Tomohiko: *See—*
Iguchi, Katsuji; Hayashida, Shigeki; Kawamura, Akio; Sato, Shinichi; and Tateyama, Tomohiko, 5,362,670, Cl. 437-70.000.

Tatsumi, Tetsuya, to Sony Corporation. Dry etching method. 5,362,361, Cl. 156-662.000.

Tay, Sing P.: *See—*
Boyd, John M.; Ellul, Joseph P.; and Tay, Sing P., 5,362,669, Cl. 437-67.000.

Taylor, Robert B.; Penske, Ken A.; and Cook, Clif E., to Gotco International, Inc. Well fishing grapple assembly and method abstract. 5,361,844, Cl. 166-301.000.

Taylor, Robert H.: *See—*
Brown, Anthony R.; Griffiths, Allen F.; and Taylor, Robert H., 5,361,888, Cl. 198-347.300.

Taylor, William D., to Hughes Aircraft Company. Fluid mixer. 5,362,150, Cl. 366-173.000.

TDK Corporation: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Teale, David C.: *See—*
Coles, Richard D.; and Teale, David C., 5,363,258, Cl. 360-92.000.

Tech Art, Inc.: *See—*
Miller, Arthur, 5,362,053, Cl. 273-148.00R.

Technalum Research, Inc.: *See—*
Gorynin, Igor V.; Farmakovsky, Boris V.; Khinsky, Alexander P.; Kalogina, Karina V.; Riviere, Alfredo V.; Szekely, Julian; and Saluja, Navteg S., 5,362,523, Cl. 427-446.000.

Technology Unlimited, Inc.: *See—*
Schrier, Bruce K., 5,362,425, Cl. 264-4.600.

Tecumseh Products Company: *See—*
Richardson, Hubert, Jr., 5,362,210, Cl. 417-307.000.

Tecza, Joe, to Universal Dairy Equipment Inc. Milking facility with service alley. 5,361,722, Cl. 119-14.030.

Teijin Limited: *See—*
Chujo, Takao; Hamano, Hisashi; Nishiyama, Masanori; Saeki, Yasuhiro; Ogawa, Tatsuya; and Endou, Kouhei, 5,362,571, Cl. 428-480.000.

Teikoku Tsushin Kogyo Co., Ltd.: *See—*
Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,932, Cl. 200-341.000.
Inagaki, Jiroh; Hari, Atsushi; Yagi, Nobuyuki; Kaku, Yasutoshi; and Shinoki, Takashi, 5,362,934, Cl. 200-520.000.

Teiryo Industry Incorporated: *See—*
Hirokazu, Yoshida, 5,363,282, Cl. 361-807.000.

Teixeira, Jose: *See—*
Merchat, Serge; Teixeira, Jose; and Cinquin, Gerard, 5,361,989, Cl. 239-102.200.

Tektronix, Inc.: *See—*
Boyle, Graeme R.; Bergquist, Susan C.; McReynolds, Ernest G.; and Haug, Matson M., 5,363,320, Cl. 364-578.000.
Grellman, H. Erwin, 5,362,043, Cl. 271-277.000.
Tilt, Christopher E., 5,363,481, Cl. 395-156.000.

Teldix GmbH: *See—*
Wolf, Robert, 5,363,193, Cl. 356-350.000.

Telectronics Pacing Systems, Inc.: *See—*
Samuelson, Kent E.; Morris, Robert A.; Nolan, James A.; and Steinhaus, Bruce M., 5,361,776, Cl. 128-734.000.

Telefonaktiebolaget L M Ericsson: *See—*
Djupsjobacka, Anders G., 5,363,230, Cl. 359-182.000.

Telschow, Jeffrey E., to Akzo Nobel nv. Bis(pentaerythritol phosphate alcohol) alkylphosphonate. 5,362,898, Cl. 558-74.000.

Tenryu Technics Co., Ltd.: *See—*
Ozawa, Kazushige; and Tanaka, Hiromune, 5,361,963, Cl. 228-33.000.

Tepman, Avi, to Applied Materials, Inc. Self cleaning collimator. 5,362,372, Cl. 204-192.120.

Terada, Toshiyuki, to Stanley Electric Co., Ltd. Wheel marker for vehicle. 5,363,085, Cl. 340-425.500.

Terada, Yasushi: *See—*
Kobayashi, Shinichi; Nakayama, Takeshi; Miyawaki, Yoshikazu; Futatsuya, Tomoshi; and Terada, Yasushi, 5,363,330, Cl. 365-185.000.

Teraoka, Masso, to Tochigifujisangyo Kabushiki Kaisha. Supercharging device for an internal combustion engine. 5,361,744, Cl. 123-561.000.

Terasawa, Norio: *See—*
Ohmi, Tadahiro; Harada, Hiroyuki; Miki, Nobuhiro; Fukutome, Toshiro; Maeno, Matagoro; Terasawa, Norio; Eto, Yoshihiro; and Sakata, Masahiro, 5,362,461, Cl. 423-163.000.

Terashima, Takahito: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.

Ternansky, Robert J., to Eli Lilly and Company. Cephalosporin antibacterial agents. 5,362,722, Cl. 514-206.000.

Terrascope Systems, Inc.: *See—*
McMahon, Robert L.; McCullough, Robert B.; and Ivashin, Victor, 5,362,971, Cl. 250-577.000.

Terry, Elliott P. Drive socket. 5,361,657, Cl. 81-186.000.

Terry, Jane M.: *See—*
Takekoshi, Tohru; and Terry, Jane M., 5,362,837, Cl. 528-125.000.
Takekoshi, Tohru; and Terry, Jane M., 5,362,845, Cl. 528-322.000.

Terumo Kabushiki Kaisha: *See—*
Komatsu, Kiyoshi; Kudo, Takeshi; Kitamura, Takashi; and Tsukamoto, Ryo, 5,362,213, Cl. 417-418.000.
Komatsu, Kiyoshi; Mori, Takehisa; Kudo, Takeshi; Kadono, Hitomi; and Kimura, Mitsuteru, 5,362,960, Cl. 250-214.100.

Tesmann, Holger: *See—*
Breitzke, Willi; Tesmann, Holger; Gantke, Karl-Heinz; and Ratha, Hans-Christian, 5,362,479, Cl. 424-49.000.

Tetratec Corporation: *See—*
Dillon, Joseph A.; and Dillon, Mark E., 5,362,553, Cl. 428-246.000.

Texaco Chemical Inc.: *See—*
Su, Wei-Yang, 5,362,914, Cl. 564-498.000.

Texaco Inc.: *See—*
Hsing, Hsu-Hui; and Mudra, James, IV, 5,362,380, Cl. 208-164.000.

Texas Instruments Incorporated: *See—*
Heinen, Katherine G.; Gogue, Brenda C.; and Breit, Henry F., 5,362,680, Cl. 437-209.000.
Hellums, James R., 5,362,988, Cl. 327-543.000.
Henderson, Timothy S.; Plumton, Donald L.; Yuang, Han-Tzong; and Sigmon, Thomas W., 5,362,657, Cl. 437-31.000.
Pimentel, Daniel R., 5,361,990, Cl. 239-133.000.
Thiel, Fran L., 5,363,059, Cl. 330-253.000.

Texas Sampling Co.: *See—*
Boyd, Charles R.; and Anderson, John D., 5,361,643, Cl. 73-863.710.

Tezuka, Masumi: *See—*
Inoue, Hiroyuki; Fujiwara, Keiji; Ogawa, Tomomi; and Tezuka, Masumi, 5,361,852, Cl. 173-176.000.

Thackeray, James W.: *See—*
Sinta, Roger; Hemond, Richard C.; Medeiros, David R.; Rajaratnam, Martha M.; Thackeray, James W.; and Canistro, Dianne, 5,362,600, Cl. 430-192.000.

Thalmann, Edward D.: *See—*
Survanshi, Shalini S.; Weathersby, Paul K.; and Thalmann, Edward D., 5,363,298, Cl. 364-413.310.

Theilemann, Horst A., to Retheto Filmtechnik Theilemann & Co. Film cleaning apparatus. 5,361,444, Cl. 15-100.000.

Theobald, John E.: *See—*
McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., 5,361,905, Cl. 206-494.000.

Therabite Corporation: *See—*
Beeuwkes, Reinier, III, 5,361,506, Cl. 33-512.000.

Thiel, Fran L., to Texas Instruments Incorporated. Transconductance amplifier. 5,363,059, Cl. 330-253.000.

Thiel, Wolfgang: *See—*
Dietrich, Klaus; Gunther, Stephan; Knoth, Norbert; Miehe, Friedrich-Viktor; and Thiel, Wolfgang, 5,362,947, Cl. 235-375.000.

Thiele, Hartmut, to BASF Maonetics GmbH. Reel container for magnetic tapes. 5,361,903, Cl. 206-403.000.

Thiele, Ulrich: *See—*
Kerpes, Hans; and Thiele, Ulrich, 5,362,844, Cl. 528-308.500.

Thomas & Betts Corporation: *See—*
Whitehead, James H., 5,362,922, Cl. 174-48.000.

Thomas, Hartmut; Hertlein, Jens; and Seher, Eckhardt, to ACT Gesellschaft fuer Soft- und Hardware-systeme GmbH. Method and apparatus for examining coins. 5,361,886, Cl. 194-317.000.

Thomas Jefferson University: *See—*
Calabretta, Bruno, 5,362,631, Cl. 435-69.500.

Thomas, Michael P.; and Thomas, Paul. Pneumatic pump roller blades. 5,362,076, Cl. 280-11.220.

Thomas, Paul: *See—*
Thomas, Michael P.; and Thomas, Paul, 5,362,076, Cl. 280-11.220.

Thomas, Roy W., to Tru-Flex Metal Hose Corp. Spot-welded end fitting for flexible metal piping. 5,362,113, Cl. 285-286.000.

Thomeer, Bart V.: *See—*
Sorem, Robert M.; Eslinger, David M.; and Thomeer, Bart V., 5,361,836, Cl. 166-187.000.

Thompson Paul S.: *See—*
Herd, Kenneth G.; Laskaris, Evangelos T.; and Thompson Paul S., 5,363,077, Cl. 335-216.000.

Thompson, William J. Orthodontic appliance. 5,362,233, Cl. 433-9.000.

Thomson Consumer Electronics, Inc.: *See—*
Duffield, David J., 5,363,143, Cl. 348-564.000.

Thomson-CSF: *See—*
Refregier, Philippe; and Turpin, Marc, 5,363,191, Cl. 356-345.000.

Thomson Tubes Electroniques: *See—*
Sembely, Jean-Pierre, 5,363,148, Cl. 348-781.000.

Thornton, Stacy; and McCown, Jon. Roof mountable safety line anchor. 5,361,558, Cl. 52-698.000.

Thorsen, Helge. Tensile testing device. 5,361,639, Cl. 73-827.000.

Thorstens, Dale A.: *See—*
Hayes, Richard D.; Schroeder, Robert; Thorstens, Dale A.; and Schumacher, Larry L., 5,361,663, Cl. 83-522.190.

Thoseby, Michael R.: *See—*
Dobinson, Bryan; and Thoseby, Michael R., 5,362,849, Cl. 528-418.000.
Rolfe, William M.; Thoseby, Michael R.; and Dobinson, Bryan, 5,362,835, Cl. 528-87.000.

Thunderbird Technologies, Inc.: *See—*
Vinal, Albert W., 5,363,001, Cl. 327-55.000.

Thurston, John F.: *See—*
Cassaday, Ernest W.; Thurston, John F.; and Booth, Stuart L., 5,362,987, Cl. 290-54.000.

Tianello, Dennis F.; and Romansky, John A., to Eastman Kodak Company. Film cartridge projection device. 5,363,156, Cl. 353-26.00R.

Tibbitts, Gordon A., to Baker Hughes Incorporated. Expandable gage bit for drilling and method of drilling. 5,361,859, Cl. 175-286.000.

Tiemann, Louise A.: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Tilt, Christopher E., to Tektronix, Inc. Auto selecting scrolling device. 5,363,481, Cl. 395-156.000.

Timm, Heinrich: *See—*
Enning, Norbert; Rinke, Klaus P.; Schmale, Walter; and Timm, Heinrich, 5,362,121, Cl. 296-204.000.

Tingley, Daniel A. Aligned fiber reinforcement panel for structural wood members. 5,362,545, Cl. 428-96.000.

Tipton, Kenneth L. Multi-stage clutch lock-up system. 5,361,882, Cl. 192-70.240.

Tishken Products Co.: *See—*
Levy, Roger, 5,361,662, Cl. 83-308.000.

Titeflex Corporation: *See—*
Lalikos, James M.; and Desilets, Norman H., 5,361,806, Cl. 138-109.000.

Tiwari, Sandip: *See—*
Collins, Reuben T.; and Tiwari, Sandip, 5,363,397, Cl. 372-92.000.

TMS Inc.: *See—*
Gagne, Patricia C.; and Puterko, Carol M., 5,363,453, Cl. 382-5.000.

Toagosei Chemical Industry Co., Ltd.: *See—*
Harada, Katsuyoshi; and Yamada, Yoshinori, 5,362,897, Cl. 556-470.000.

Toatsu Corporation: *See—*
Ariyasu, Hisashi; and Aikawa, Yoichi, 5,362,935, Cl. 219-56.000.

Tobiason, Timothy W., to General Chemical Co. System for applying herbicides to flora infestations within sewer lines. 5,361,512, Cl. 34-60.000.

Tobita, Minoru; and Yamagami, Tamotsu, to Sony Corporation. Magneto-optic disk apparatus. 5,363,352, Cl. 369-13.000.

Tochigifujisangyo Kabushiki Kaisha: *See—*
Teraoka, Masao, 5,361,744, Cl. 123-561.000.

Todd, Patricia R.: *See—*
Wiggins, Gary W.; Konzman, Edward J.; Vinci, James N.; and Todd, Patricia R., 5,362,409, Cl. 252-32.70E.

Tokioka, Masaki: *See—*
Yoshimura, Yuichiro; Tanaka, Atsushi; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, 5,362,930, Cl. 178-18.000.

Tokuda, Noriaki, to Nikon Corporation. Method of projection exposure and stepper. 5,363,172, Cl. 355-71.000.

Tokue, Yutaka, to Imagica, Corp. Device for controlling luminous energy. 5,363,232, Cl. 359-234.000.

Tokunaga, Yasuyuki, to Narumi China Corporation. Lead-free frit glaze. 5,362,687, Cl. 501-21.000.

Tokyo Electron Kabushiki Kaisha: *See—*
Miyazaki, Takanori; and Sakurai, Hiroshi, 5,361,787, Cl. 134-57.00R.
Yamaga, Kenichi, 5,362,229, Cl. 432-152.000.

Tokyo Electron Kyushu Limited: *See—*
Akimoto, Masami, 5,361,449, Cl. 15-302.000.

Tokyo Electron Limited: *See—*
Akimoto, Masami, 5,361,449, Cl. 15-302.000.

Tokyo Electron Saga Kabushiki Kaisha: *See—*
Miyazaki, Takanori; and Sakurai, Hiroshi, 5,361,787, Cl. 134-57.00R.

Tokyo Electron Tohoku Kabushiki Kaisha: *See—*
Yamaga, Kenichi, 5,362,229, Cl. 432-152.000.

Toman, Lori J.: *See—*
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,362,511, Cl. 426-549.000.

Tomasz, Jeno : *See—*
Spielvogel, Bernard F.; Sood, Anup; Hall, Iris H.; Shaw, Barbara R.; and Tomasz, Jeno , 5,362,732, Cl. 514-256.000.

Tomatis International: *See—*
Cave, Dominique; and Bongiorno, Marc, 5,362,240, Cl. 434-157.000.

Tomisawa, Shin'ichiro: *See—*
Torazawa, Kenji; Ishii, Yasuhiro; Toyama, Tateo; Tomisawa, Shin'ichiro; and Sugihara, Nagatoshi, 5,363,364, Cl. 369-124.000.

Tomita, Hideho: *See—*
Furuya, Yukitsuna; Okanoue, Kazuhiro; Ushirokawa, Akihisa; and Tomita, Hideho, 5,363,411, Cl. 375-75.000.

Tomka, Ivan. Thermoplastically processable starch and a method of making it. 5,362,777, Cl. 524-47.000.

Tomomitsu, Osahiko: *See—*
Sano, Kimiyasu; Tomomitsu, Osahiko; Endoh, Masayuki; and Yokoyama, Yasuaki, 5,362,597, Cl. 430-191.000.

Tomy Company, Ltd.: *See—*
Matsuyama, Yasushi, 5,362,050, Cl. 273-118.00R.

Tondriaux, Marc: *See—*
Zein Al Abedeen, Tarif; Maral, Gerard; Seret, Dominique; and Tondriaux, Marc, 5,363,374, Cl. 370-95.300.

Tong Loh, Wickham H., to International Business Machines Corp. Normal distance construction for machining edges of solid models. 5,363,309, Cl. 364-474.340.

Tooker, John C. Apparatus and method for applying adhesive for book binding and independent adhesive roller speed control. 5,362,188, Cl. 412-37.000.

Toray Industries, Inc.: *See—*
Ohbayashi, Gentaro; Kakuo, Kazuo; Hirota, Kusato; and Seo, Naoya, 5,362,538, Cl. 428-64.000.

Torazawa, Kenji; Ishii, Yasuhiro; Toyama, Tateo; Tomisawa, Shin'ichiro; and Sugihara, Nagatoshi, to Sanyo Electric Co., Ltd. Audio data recording/reproducing apparatus having digital high-speed dubbing function. 5,363,364, Cl. 369-124.000.

Toriyama, Akira: *See—*
Oda, Noriyuki; Toriyama, Akira; Higashi, Katsumi; Maeno, Hiroshi; Kunitaka, Tetsuya; Iritani, Junichi; and Goto, Hideki, 5,361,728, Cl. 122-4.00D.

Toro Company, The: *See—*
Doup, Leonard W.; and Maloney, Kurt, 5,363,290, Cl. 364-145.000.
Toscan, Maria; and Humbrecht, Remy, to Viscosuisse S.A. Process of making polyurethane elastomer thread. 5,362,433, Cl. 264-210.800.
Toshiba Lighting & Technology Corporation: *See—*
Ezaki, Shiro, 5,362,927, Cl. 174-261.000.
Tosoh Akzo Corporation: *See—*
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,362,423, Cl. 260-665.00R.
Tosoh Corporation: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.
Toto Ltd.: *See—*
Kobayashi, Hiroshi; Hayashi, Ryosuke; Inokuchi, Shoji; and Muroya, Yukihiro, 5,362,026, Cl. 251-30.020.
Totoku Electric Co., Ltd.: *See—*
Yamaguchi, Tadashi; Muramatsu, Masataka; and Katagiri, Naoki, 5,362,925, Cl. 174-120.00R.
Totsuka, Kazuhiko: *See—*
Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, 5,362,636, Cl. 435-115.000.
Totsuka, Mikio: *See—*
Iwakura, Ken; Wakata, Yuichi; Matsumoto, Hirotaka; and Totsuka, Mikio, 5,362,874, Cl. 544-216.000.
Townes, Mark G.: *See—*
Shofner, Frederick M.; and Townes, Mark G., 5,361,450, Cl. 19-66.00R.
Townsend, Bruce R.; Bird, Derek R.; and Goldsack, Norman C., to Townsend, Bruce Robert. Cultivating apparatus for leveling, cultivating, and resowing lawns or fields. 5,361,712, Cl. 111-168.000.
Townsend, Bruce Robert: *See—*
Townsend, Bruce R.; Bird, Derek R.; and Goldsack, Norman C., 5,361,712, Cl. 111-168.000.
Toyama, Tateo: *See—*
Torazawa, Kenji; Ishii, Yasuhiro; Toyama, Tateo; Tomisawa, Shin'ichiro; and Sugihara, Nagatoshi, 5,363,364, Cl. 369-124.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Takada, Toshio; Terashima, Takahito; and Bando, Yoshichika, 5,362,711, Cl. 505-476.000.
Toyo Ink Manufacturing Co., Ltd.: *See—*
Yatsuyanagi, Yoshimi, 5,362,604, Cl. 430-281.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kirii, Kazunari; Shinabe, Masahiro; Ono, Tsutomu; Watanabe, Masuo; and Koshida, Hideo, 5,361,615, Cl. 72-19.000.
Sugiura, Atsushi; and Hashimoto, Masakazu, 5,362,101, Cl. 280-743.00A.
Watanabe, Masao, 5,362,139, Cl. 303-96.000.
Training Delivery Services, Inc.: *See—*
Dernbach, Donald F.; and Perkins, Donald W., 5,363,442, Cl. 379-412.000.
Tramberger, Hermann: *See—*
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Fohl, Artur, 5,362,099, Cl. 280-737.000.
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Tung, Deborah A.; Segatta, Thomas J.; Verthe, John J. A.; Sandstrom, Paul H.; Bauer, Richard G.; and Marinko, Mark A., to Goodyear Tire & Rubber Company, The. Polyester/polyepoxide/rubber alloys. 5,361,818, Cl. 152-525.000.
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Maltby, John D., 5,363,346, Cl. 367-163.000.
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Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.
Yamada, Kohzaburoh: *See—*
Morigaki, Masakazu; Yamada, Kohzaburoh; Seto, Nobuo; and Yoshioka, Yasuhiro, 5,362,617, Cl. 430-556.000.
Yamada, Kunio: *See—*
Kojima, Ichirou; Nishida, Terumi; and Yamada, Kunio, 5,361,619, Cl. 72-348.000.
Yamada, Manami: *See—*
Usami, Yuri; Hori, Chiharu; Kataoka, Misao; Yamada, Manami; and Harada, Kayoko, 5,363,480, Cl. 395-145.000.
Yamada, Masato: *See—*
Takenaka, Takao; Endo, Masahisa; and Yamada, Masato, 5,362,683, Cl. 437-226.000.
Yamada, Masayuki; Nonomura, Muneo; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Transdermal therapeutic composition. 5,362,497, Cl. 424-449.000.
Yamada, Tsutomu: *See—*
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.
Yamada, Yoshinori: *See—*
Harada, Katsuyoshi; and Yamada, Yoshinori, 5,362,897, Cl. 556-470.000.
Yamaga, Kenichi, to Tokyo Electron Kabushiki Kaisha; and Tokyo Electron Tohoku Kabushiki Kaisha. Piping connection device. 5,362,229, Cl. 432-152.000.
Yamagami, Tamotsu: *See—*
Tobita, Minoru; and Yamagami, Tamotsu, 5,363,352, Cl. 369-13.000.
Yamagata, Masato; Tanaka, Yoshikazu; and Tsukada, Keizo, to Sony Corporation. Cordless telephone apparatus having a low power stand-by mode and a hold mode. 5,363,430, Cl. 379-61.000.
Yamagata, Yasushi; and Sato, Fumihide, to NEC Corporation. Dry etching apparatus and method of forming a via hole in an interlayer insulator using same. 5,362,358, Cl. 156-643.000.
Yamagishi, Hirotoshi: *See—*
Takano, Kiyotaka; Fusegawa, Izumi; and Yamagishi, Hirotoshi, 5,361,721, Cl. 117-214.000.
Yamaguchi, Hisaya: *See—*
Kawakami, Atsuo; Shimada, Toshiro; Tsumiyama, Tatsuo; and Yamaguchi, Hisaya, 5,362,448, Cl. 422-137.000.
Yamaguchi, Hitoshi: *See—*
Horimura, Hiroyuki; Masumoto, Tsuyoshi; Inoue, Akihisa; Kita, Kazuhiko; and Yamaguchi, Hitoshi, 5,362,339, Cl. 148-403.000.
Yamaguchi, Kazuo: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.
Yamaguchi, Kiyotaka: *See—*
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.
Yamaguchi, Tadashi; Kimura, Naomasa; and Inoue, Akihisa, to Yoshida Kogyo K.K. Permanent magnet material. 5,362,336, Cl. 148-301.000.
Yamaguchi, Tadashi; Muramatsu, Masataka; and Katagiri, Naoki, to Totoku Electric Co., Ltd. Multi-layered insulated wire for high frequency transformer winding. 5,362,925, Cl. 174-120.00R.
Yamaguchi, Takashi: *See—*
Shioya, Yuichiro; Kitazawa, Hidenori; Miyano, Kouichi; Takano, Kouji; Nagai, Keigo; Yamaguchi, Takashi; Minamide, Yoshio; Kawamoto, Masashi; and Watanabe, Masaaki, 5,362,144, Cl. 312-319.600.
Yamaguchi, Takeshi: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Iizuka, Yoshio; and Yamaguchi, Takeshi, 5,362,725, Cl. 514-214.000.
Yamaguchi, Tetsuya: *See—*
Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.
Yamaha Corporation: *See—*
Koyama, Masahiro, 5,361,672, Cl. 84-478.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kobayashi, Noboru, 5,361,717, Cl. 114-361.000.
Tanaka, Toyoji, 5,361,864, Cl. 180-219.000.
Yamaichi Electronics Co., Ltd.: *See—*
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Yamakawa, Katsuyoshi: *See—*
Suzuki, Makoto; Shimada, Yasuhiro; Matsuoka, Koushin; Yamazaki, Shigeru; Yamakawa, Katsuyoshi; and Sato, Kozo, 5,362,882, Cl. 548-262.400.
Yamakawa, Susumu: *See—*
Hirai, Hideo; Mishima, Kyoichi; and Yamakawa, Susumu, 5,362,280, Cl. 474-135.000.
Yamakita, Takeshi: *See—*
Sakurai, Tutomu; and Yamakita, Takeshi, 5,363,229, Cl. 359-159.000.
Yamamitsu, Tadashi: *See—*
Nakayama, Yoshiyuki; Mori, Kenjiro; and Yamamitsu, Tadashi, 5,363,507, Cl. 395-800.000.
Yamamoto, Hajime: *See—*
Matsukiyo, Hidetsugu; Suzuki, Teruki; Yamamoto, Hajime; Uehara, Yasuhiko; Morita, Yasukazu; Koseki, Yoshihiro; Yamada, Hiromichi; Fujino, Shigeo; Hase, Takashi; Yamada, Tsutomu; and Omatoi, Susumu, 5,363,013, Cl. 313-468.000.
Yamamoto, Kazuaki: *See—*
Inui, Naoki; Yamamoto, Kazuaki; Nagasaki, Hideo; Sasaki, Manji; and Yachigo, Shinichi, 5,362,794, Cl. 624-496.000.
Yamamoto, Koji: *See—*
Yoshikawa, Eiichiro; Yamamoto, Koji; Kawashima, Hiroshi; and Anzai, Mika, 5,363,468, Cl. 385-145.000.
Yamamoto, Kunitoshi; and Fukushima, Hiroshi, to Nissha Printing Co., Ltd. Surface light source device. 5,363,294, Cl. 362-330.000.
Yamamoto, Makoto: *See—*
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,363,205, Cl. 358-429.000.
Yamamoto, Nobuo: *See—*
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, 5,363,498, Cl. 395-425.000.
Yamamoto, Tadashi; and Kageyama, Shuhei, to Kotobuki & Co., Ltd. Flat stick-shaped material propelling container. 5,362,166, Cl. 401-93.000.
Yamamoto, Tetsuo, to Ogura Clutch Co., Ltd. Electromagnetic clutch. 5,361,883, Cl. 192-84.00C.

Yamamoto, Tetsuya: *See—*
Tahara, Tomonori; Yamamoto, Tetsuya; Babe, Yasuyuki; Koyanagi, Hideki; and Uchida, Akira, 5,363,203, Cl. 358-403.000.

Yamamoto, Toru: *See—*
Sakuraba, Taketoshi; Arai, Toshiaki; Yamamoto, Nobuo; Nomura, Masamitu; Imai, Kazuo; Tandai, Michio; and Yamamoto, Toru, 5,363,498, Cl. 395-425.000.

Yamamoto, Toshio: *See—*
Konda, Masashi; Yamamoto, Toshio; and Emoto, Yoshiaki, 5,362,984, Cl. 257-666.000.

Yamamura, Akira; and Baldwin, John. Thermoelectric conversion module with series connection. 5,362,983, Cl. 257-414.000.

Yamane, Takeo: *See—*
Ikeda, Yoshihiko; Yamane, Takeo; Kaji, Eiichi; and Ishimaru, Kenji, 5,362,423, Cl. 260-665.00R.

Yamasaki, Motoo: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Yamasaki, Seiji; Suzuki, Toshiyuki; and Hirata, Chikako, to Kao Corporation. Gel-like emulsion and O/W emulsion obtained from the gel-like emulsion. 5,362,418, Cl. 252-314.000.

Yamashiro, Jiro: *See—*
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Yamashita, Naoko: *See—*
Mizoguchi, Naoyuki; Yanetani, Yoshifumi; and Yamashita, Naoko, 5,362,510, Cl. 426-549.000.

Yamashita, Yukio: *See—*
Sakato, Seiichi; Yamashita, Yukio; Fujitaka, Chikai; Matsui, Kunihiko; Nagayoshi, Isamu; Nagase, Tadahiko; Koyanagi, Hiroo; and Nagasawa, Yuuji, 5,361,999, Cl. 241-101.700.

Yamashou Sangyo Kabushiki Kaisha: *See—*
Takasugi, Masataka, 5,362,386, Cl. 210-206.000.

Yamauchi, Mineo: *See—*
Kawasaki, Sadanobu; Yamauchi, Mineo; and Akada, Masanori, 5,362,703, Cl. 503-227.000.

Yamauchi, Noriyoshi; Ishida, Hitoshi; Usui, Hirotake; and Egoshi, Yoshiaki, to Ryobi Ltd. Laminar flow injection molding apparatus and laminar flow injection molding method. 5,361,826, Cl. 164-457.000.

Yamazaki, Hideo, to Minnesota Mining and Manufacturing Company. Film carrier. 5,362,547, Cl. 428-167.000.

Yamazaki, Shigeru: *See—*
Suzuki, Makoto; Shimada, Yasuhiro; Matsuoka, Koushin; Yamazaki, Shigeru; Yamakawa, Katsuyoshi; and Sato, Kozo, 5,362,882, Cl. 548-262.400.

Yamazaki, Shiro: *See—*
Arabori, Hideo; Yamazaki, Shiro; Arahira, Masato; and Murakami, Aiko, 5,362,885, Cl. 548-561.000.

Yamazaki, Toshimasa; and Van Dijk, Bob W., to NEC Corporation. Equivalent current dipole localization system. 5,361,774, Cl. 128-731.000.

Yamazaki, Yuichiro: *See—*
Miyoshi, Motosuke; Yamazaki, Yuichiro; and Okumura, Katsuya, 5,362,968, Cl. 250-396.00R.

Yanagawa, Naoharu, to Pioneer Electronic Corporation. Optical disc apparatus with selection of three-beam and push-pull systems. 5,363,358, Cl. 369-44.290.

Yanagi, Akihiko: *See—*
Goto, Toshio; Ito, Seishi; Watanabe, Yukiyoshi; Narabu, Shin-ichi; and Yanagi, Akihiko, 5,362,704, Cl. 504-134.000.

Yanagida, Toshiharu, to Sony Corporation. Method for etching in dry process. 5,362,350, Cl. 156-643.000.

Yanetani, Yoshifumi: *See—*
Mizoguchi, Naoyuki; Yanetani, Yoshifumi; and Yamashita, Naoko, 5,362,510, Cl. 426-549.000.

Yang, Ah-Mi. Riveter. 5,361,474, Cl. 29-243.528.

Yang, Esther K.: *See—*
Blumenthal, Richard A.; Lau, Hon-Peng P.; and Yang, Esther K., 5,362,627, Cl. 435-7.900.

Yang, Henry W. H.: *See—*
Bock, Jan; Valint, Paul L.; Pacansky, Thomas J.; and Yang, Henry W. H., 5,362,827, Cl. 526-219.200.

Yang, Jeng-Yih. Manhole cover. 5,362,174, Cl. 404-25.000.

Yang, Long; and Ram, Rajeev, to Hewlett-Packard Company. Semiconductor laser that generates second harmonic light by means of a nonlinear crystal in the laser cavity. 5,363,390, Cl. 372-22.000.

Yang, Ming-Tung. Self-assembly type interchangeable windshield wiper. 5,361,896, Cl. 206-223.000.

Yang, Tai-Her. Apparatus and method for grinding, polishing and burnishing operations on a stationary workpiece to relieve internal stresses or preclude material flow in the workpiece during operations thereon. 5,361,544, Cl. 451-231.000.

Yang, Wen-Ching; and Grant, David C., to Westinghouse Electric Corporation. Modified mineral jig. 5,361,910, Cl. 209-13.000.

Yangisawa, Shuichi: *See—*
Tanaka, Satoru; Yangisawa, Shuichi; and Matsui, Fumio, 5,363,356, Cl. 369-44.290.

Yano, Masamichi: *See—*
Hazime, Tanaka; Yano, Masamichi; and Ikoma, Tetsuro, 5,361,597, Cl. 62-205.000.

Yano, Mitsuo: *See—*
Ishikawa, Kiyofumi; Hayama, Takashi; Nishikibe, Masaru; and Yano, Mitsuo, 5,362,736, Cl. 514-291.000.

Yano, Motoyasu; Takemura, Yoshinori; and Suzuki, Takao, to Asmo Co., Ltd.; and Nippondenso Col, Ltd. Stator for ultrasonic motor and method for manufacturing the same. 5,363,006, Cl. 310-323.000.

Yano, Toshisada: *See—*
Matsumura, Hiromu; Yano, Toshisada; Hashizume, Hiroshi; Matsushita, Akira; and Eigyo, Masami, 5,362,873, Cl. 544-124.000.

Yantrak, LLC: *See—*
Kunczynski, Jan K., 5,361,706, Cl. 104-196.000.

Yao, Raymond C.: *See—*
Boeck, LaVerne D.; Chio, Hang; Eaton, Tom E.; Godfrey, Otis W., Jr.; Michel, Karl H.; Nakatsukasa, Walter M.; and Yao, Raymond C., 5,362,634, Cl. 435-76.000.

Yasukawa, Takuji: *See—*
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Yasukawa, Yuichiro: *See—*
Taka, Toshio; Yasukawa, Yuichiro; Takahashi, Tetuya; Nakamura, Akira; Kamei, Ryosuke; and Takiyama, Eiichiro, 5,362,765, Cl. 521-172.000.

Yatsuyanagi, Yoshimi, to Toyo Ink Manufacturing Co., Ltd. Photosensitive resin composition and process for the production thereof, and virgin flexographic printing plate. 5,362,604, Cl. 430-281.000.

Yazaki Corporation: *See—*
Darr, Christopher J.; and Suzuki, Yasutaka, 5,362,018, Cl. 248-74.300.
Suguro, Masahiro; Ohumura, Yoshinori; and Imamura, Minoru, 5,362,245, Cl. 439-160.000.

Yazawa, Masamitsu; Hiruma, Kenji; Katsuyama, Toshio; Futigami, Nobutaka; Matsumoto, Hidetoshi; Kakibayashi, Hiroshi; Koguchi, Masanari; Morgan, Gerard P.; and Ogawa, Kensuke, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corporation. Semiconductor device using whiskers. 5,362,972, Cl. 257-13.000.

Yazu, Shuji: *See—*
Fujita, Nobuhiko; Kobayashi, Tadakazu; Itozaki, Hideo; Tanaka, Saburo; Yazu, Shuji; and Jodai, Tetsuji, 5,362,710, Cl. 505-475.000.

Yee, Paul Y.: *See—*
McQueeny, Thomas P.; Gehling, Steven C.; Newman, William R.; Theobald, John E.; and Yee, Paul Y., 5,361,905, Cl. 206-494.000.

Yeh, Li-An: *See—*
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Yip, Adrian M.-G.: *See—*
Mufti, Sohale A.; Samuel, Robert G.; Soong, Peter P. K.; Yip, Adrian M.-G.; and Wakim, Michael J., 5,363,425, Cl. 379-38.000.

Yizraeli, Yehuda, to Intel Corporation. Staggered output circuit for noise reduction. 5,362,996, Cl. 326-27.000.

Ylvisaker, Jon A. Method and device for the measurement of barrier properties of films against gases. 5,361,625, Cl. 73-38.000.

Yokohama Rubber Co., Ltd., The: *See—*
Kitami, Tetsu; Ozawa, Osamu; and Mito, Jun, 5,362,530, Cl. 428-36.200.

Yokomichi, Hideki: *See—*
Umeda, Tomoshige; Yokomichi, Hideki; Mori, Hideki; Yasukawa, Takuji; Katsuragi, Yoshihisa; Mitsui, Yuki; and Miura, Yasuhiro, 5,362,892, Cl. 554-82.000.

Yokomori, Manabu; Niwa, Takeshi; Totsuka, Kazuhiko; Kawahara, Yoshio; Nakamori, Shigeru; Esaki, Nobuyoshi; and Soda, Kenji, to Ajinomoto Co., Inc. Process for producing L-lysine by fermentation with a bacteria having selenalysine resistance. 5,362,636, Cl. 435-115.000.

Yokoo, Yoshiharu: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Yokota, Hideo, to Canon Kabushiki Kaisha. Zoom lens of rear focus type. 5,363,242, Cl. 359-684.000.

Yokota, Takao: *See—*
Takamura, Akio; Yagi, Hideto; and Yokota, Takao, 5,361,853, Cl. 173-217.000.

Yokoyama, Atsushi: *See—*
Akiyama, Yasuo; Maekawa, Zenichiro; Hamada, Hiroyuki; and Yokoyama, Atsushi, 5,361,674, Cl. 87-9.000.

Yokoyama, Yasuaki: *See—*
Sano, Kimiyasu; Tomomitsu, Osahiko; Endoh, Masayuki; and Yokoyama, Yasuaki, 5,362,597, Cl. 430-191.000.

Yonekura, Katsuyoshi: *See—*
Hamada, Shunichi; and Yonekura, Katsuyoshi, 5,362,572, Cl. 428-497.000.

Yonemura, Naomi: *See—*
Fukuda, Makoto; Yonemura, Naomi; and Watanabe, Chiharu, 5,362,926, Cl. 174-256.000.

Yonenaga, Shigeo: *See—*
Kagimasa, Toyohiko; Chinone, Osamu; and Yonenaga, Shigeo, 5,363,502, Cl. 395-575.000.

Yoneyama, Toshio; Matsuoka, Yasuo; Suzuki, Harumi; Kumagai, Shigenori; and Takada, Susumu, to Shiseido Company Ltd. Water-in-oil emulsion solid cosmetic composition. 5,362,482, Cl. 424-69.000.

Yonezawa, Keitaro, to Kabushiki Kaisha Kosmek. Conveying roller. 5,361,884, Cl. 193-35.00R.

Yoo, Ick-hyoung: *See—*
Kim, Young-woong; Yoo, Ick-hyoung; and Lee, Chul-woo, 5,363,353, Cl. 369-13.000.

Yorke, Alan V.: *See—*
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Yoshida, Hajime: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,362,853, Cl. 530-351.000.

Yoshida, Ichiro; and Iida, Hiroshi, to Fujitsu Limited. Washing/drying method and apparatus. 5,361,789, Cl. 134-68.000.

Yoshida Kogyo K.K.: *See—*
Morioka, Koitsu; and Matsuda, Yasuhiko, 5,361,471, Cl. 29-33.200.
Murasaki, Ryuichi, 5,361,462, Cl. 24-452.000.
Yamaguchi, Tadashi; Kimura, Naomasa; and Inoue, Akihisa, 5,362,336, Cl. 148-301.000.

Yoshida, Noboru, to Funai Electric Co., Ltd. Method for changing microcomputer specifications installed in TV sets for the purpose of using the TV sets in different foreign destinations. 5,363,142, Cl. 348-554.000.

Yoshida, Noriyuki, to Furuno Electric Company, Limited. Measuring apparatus having an indicator for displaying tide or tidal current data. 5,363,307, Cl. 364-452.000.

Yoshida, Tadao: *See—*
Maeda, Yasuaki; Ando, Ryo; Obata, Hideo; Nagashima, Hideki; Yoshida, Tadao; Fujiie, Kazuhiko; Fujisawa, Hirotoshi; and Mukawa, Hiroshi, 5,363,362, Cl. 369-54.000.

Yoshida, Tadashi, to Canon Kabushiki Kaisha. Image processing method and apparatus. 5,363,219, Cl. 358-539.000.

Yoshida, Takayuki: *See—*
Murofushi, Katsumi; Hosoda, Yoshikazu; Kaji, Toshio; Abe, Yuki; Yamaguchi, Kiyotaka; Yoshida, Takayuki; Yamashiro, Jiro; Arai, Toshio; Nagase, Takayuki; and Nagami, Harushi, 5,362,592, Cl. 430-106.000.

Yoshida, Tetsuo: *See—*
Fukanuma, Tetsuhiko; Watanabe, Yasushi; Yamada, Kiyohiro; Shimizu, Izuru; Izumi, Yuji; Yoshida, Tetsuo; and Yamaguchi, Tetsuya, 5,362,218, Cl. 418-55.500.

Yoshida, Yasutaka: *See—*
Shintai, Akira; Shibata, Hiroshi; Shiobara, Toshio; Futatsumori, Koji; Katayama, Seizi; and Yoshida, Yasutaka, 5,362,775, Cl. 523-451.000.

Yoshihara, Kenzou; Osawa, Toshio; Kojima, Takayuki; and Machida, Shinichi, to Nippon Conlux Co., Ltd. Adaptor device for a facsimile. 5,363,207, Cl. 358-442.000.

Yoshihara, Noriyuki: *See—*
Tsujino, Masaki; Yoshihara, Noriyuki; and Kuga, Kazuhiko, 5,362,428, Cl. 264-40.500.

Yoshihara, Toshiyuki; Hanami, Nobuyuki; Anayama, Hideki; Kishi, Junichi; and Amoya, Hideyuki, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and apparatus including same. 5,362,588, Cl. 430-69.000.

Yoshii, Tsutomu: *See—*
Hiratsuka, Yoshiaki; and Yoshii, Tsutomu, 5,363,024, Cl. 318-254.000.

Yoshikawa, Eiichiro; Yamamoto, Koji; Kawashima, Hiroshi; and Anzai, Mika, to Kabushiki Kaisha Kobe Seiko Sho. Fiber optic rod and production thereof. 5,363,468, Cl. 385-145.000.

Yoshimoto, Hiroshi, to Konica Corporation. Photographic processing agent. 5,362,610, Cl. 430-465.000.

Yoshimura, Mamoru: *See—*
Matsumura, Yasuo; Takano, Hiroshi; Takagi, Masahiro; and Yoshimura, Mamoru, 5,362,596, Cl. 430-137.000.

Yoshimura, Yuichiro; Tanaka, Atsushi; Kaneko, Kiyoshi; Kobayashi, Katsuyuki; and Tokioka, Masaki, to Canon Kabushiki Kaisha. Coordinate input apparatus. 5,362,930, Cl. 178-18.000.

Yoshinaga, Yoko: *See—*
Kuwayama, Tetsuro; Taniguchi, Naosato; Yoshinaga, Yoko; and Kushibiki, Nobuo, 5,363,220, Cl. 359-3.000.

Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu; and Tasaki, Takaharu, 5,361,920, Cl. 215-237.000.

Yoshino, Zenichi; Komaki, Toshiaki; and Kurahashi, Yoshiki, to Sanwa Kosan Kabushiki Kaisha. Process for producing heat-moisture treated starch. 5,362,329, Cl. 127-65.000.

Yoshioka, Takamoto: *See—*
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Yoshioka, Yasuhiro: *See—*
Morigaki, Masakazu; Yamada, Kohzaburoh; Seto, Nobuo; and Yoshioka, Yasuhiro, 5,362,617, Cl. 430-556.000.

Yoshitake, Noriaki; Mizuno, Kensuke; and Ishii, Hitoshi, to Henkel Corporation. Pretreatment for zinc and zinc alloy prior to chromating. 5,362,333, Cl. 148-264.000.

Yoshizumi, Akira: *See—*
Hayase, Shuji; Nakano, Yoshihiko; Mikogami, Yukihiro; Yoshizumi, Akira; Murai, Shinji; and Kani, Rikako, 5,362,559, Cl. 428-333.000.

You, Kwan-sa, to Duke University. Isolation of pseudomonas salicylate hydroxlase and its use for the identification and quantitation of salicylate in body fluids. 5,362,630, Cl. 435-25.000.

Young, James W.; and Barberich, Timothy J., to Sepracor, Inc. Composition and method containing optically pure (S) metoprolol. 5,362,757, Cl. 514-652.000.

Young, James W.: *See—*
Barberich, Timothy J.; and Young, James W., 5,362,755, Cl. 514-649.000.

Young, Robert E. Refrigeration recovery and purification. 5,361,594, Cl. 62-129.000.

Young, Weldon E., to Atlantic Richfield Company. Rod coupling breakout device. 5,361,831, Cl. 166-77.500.

Youngs, Thurston B., Jr.: *See—*
Chobot, Ivan I.; Covert, John A.; Haight, Randy L.; Mansfield, Keith D.; Miller, Donald W.; Neira, Reinaldo A.; Petrovich, Alexander; Sviedrys, Paul C.; Tiemann, Louise A.; Valenta, Gerald A.; and Youngs, Thurston B., Jr., 5,363,280, Cl. 361-794.000.

Yozan Inc.: *See—*
Shou, Guoliang; Takatori, Sunao; and Yamamoto, Makoto, 5,363,205, Cl. 358-429.000.

Yu, Taek-Jong: *See—*
Park, Jong-Mun; Jeong, Chan-Sik; Oh, Uk-Hwan; and Yu, Taek-Jong, 5,361,790, Cl. 134-95.300.

Yuang, Han-Tzong: *See—*
Henderson, Timothy S.; Plumton, Donald L.; Yuang, Han-Tzong; and Sigmon, Thomas W., 5,362,657, Cl. 437-31.000.

Yuk, Soonhong: *See—*
Lee, Haibang; and Yuk, Soonhong, 5,362,424, Cl. 264-4.300.

Yukov, Igor. Tissue characterization method and apparatus. 5,361,767, Cl. 128-660.060.

Yun, David I.: *See—*
Roopchand, Brijmohan J.; Yun, David I.; Marinaro, Douglas E.; and Hyland, Mary E., 5,361,678, Cl. 89-36.020.

Yupiteru Industries Co., Ltd.: *See—*
Ono, Hisao; and Hatasa, Takeshi, 5,363,105, Cl. 342-20.000.

Zach, Elmer S.: *See—*
Fleischer, Mathew W.; David, John C.; Evans, Russell G.; Cutsor, Robert R.; and Zach, Elmer S., 5,361,848, Cl. 172-140.000.

Zaffaroni, Pasquale: *See—*
Cerulli, Tiziano; Clemente, Paolo; Collepardi, Mario; Ferrari, Giorgio; and Zaffaroni, Pasquale, 5,362,324, Cl. 106-823.000.

Zaharia, Vlad; and McClement, Arthur, to Otis Elevator Company. Apparatus for detecting an irregularity in the frequency of steps passing a particular point within a passenger conveying device. 5,361,887, Cl. 198-323.000.

Zahm, Charles L.: *See—*
Lucas, Leonard V.; Zahm, Charles L.; Payne, Edward A.; and Andren, Carl F., 5,363,401, Cl. 375-1.000.

Zaitsu, Osamu: *See—*
Utsumi, Mitsuo; Zaitsu, Osamu; Okuda, Makoto; and Kajino, Jiro, 5,363,268, Cl. 242-347.100.

Zale, Stephen E., to Sepracor, Inc. High-capacity affinity supports and methods for the preparation and use of same. 5,362,859, Cl. 530-413.000.

Zama, Hideo: *See—*
Ohji, Toshio; Morikawa, Juichi; and Zama, Hideo, 5,363,263, Cl. 360-108.000.

Zambon Group S.p.A.: *See—*
Giordano, Claudio; Paiocchi, Maurizio; and Cavalleri, Paolo, 5,362,871, Cl. 544-40.000.
Villa, Marco; Paiocchi, Maurizio; and Di Caterino, Aldo, 5,362,905, Cl. 560-250.000.

Zana, Lawrence J., to United States of America, Air Force. Method and apparatus for identifying three-dimensional coordinates and orientation to a robot. 5,363,185, Cl. 356-2.000.

Zanetti, Enzo: *See—*
Hedstrom, Per G.; Filippetti, Mario; and Zanetti, Enzo, 5,361,681, Cl. 99-331.000.

Zantow, Scott W., administrator: *See—*
Giles, Robert; and Zantow, Timothy, deceased, 5,362,038, Cl. 271-10.000.

Zantow, Timothy, deceased: *See—*
Giles, Robert; and Zantow, Timothy, deceased, 5,362,038, Cl. 271-10.000.

Zavracky, Paul M.; Fan, John C. C.; McClelland, Robert; Jacobsen, Jeffrey; and Dingle, Brenda, to Kopin Corporation. Method of fabricating single crystal silicon arrayed devices for display panels. 5,362,671, Cl. 437-81.000.

Zawada, Patrick J.; Raine, Peter D.; and Lindo, Benjamin C., to Square D Company. Protective snap-together enclosure for current transformers. 5,363,079, Cl. 336-92.000.

Zbikowski, Mark J.: *See—*
Willman, Bryan M.; Zbikowski, Mark J.; Letwin, James G.; and Shah, Rajen J., 5,363,487, Cl. 395-275.000.

Zdunek, Dietmar: *See—*
Schenk, Roland; and Zdunek, Dietmar, 5,362,655, Cl. 436-520.000.

Zebra Co., Ltd.: *See—*
Abe, Shinichi; and Ohtani, Mitsuo, 5,362,168, Cl. 401-206.000.

Zeh, Jean-Luc: *See—*
Legros, Robert; Wiegert, Bernard; and Zeh, Jean-Luc, 5,362,771, Cl. 523-375.000.

Zein Al Abedeen, Tarif; Maral, Gerard; Seret, Dominique; and Tondriaux, Marc, to France Telecom. Method for allocating resources by anticipated reservation in an integrated service satellite network. 5,363,374, Cl. 370-95.300.

Zeitz, Rudiger: *See—*
Hofgen, Gunter; and Zeitz, Rudiger, 5,363,109, Cl. 342-31.000.

Zelder, Manfred: *See—*
Arnswald, Kurt-Werner; and Zelder, Manfred, 5,362,258, Cl. 439-695.000.

Zeller, James R.: *See*—
Jennings, Rex A.; Johnson, Don R.; Seamans, Ronald E.; and Zeller, James R., 5,362,883, Cl. 548-408.000.
Zellweger Uster AG: *See*—
Jaeger, Silvio; and Wilhelm, Hans, 5,361,467, Cl. 28-205.000.
Zellweger Uster, Inc.: *See*—
Shofner, Frederick M.; and Townes, Mark G., 5,361,450, Cl. 19-66.00R.
Zeltron S.p.A.: *See*—
Hedstrom, Per G.; Filippetti, Mario; and Zanetti, Enzo, 5,361,681, Cl. 99-331.000.
Zeneca Limited: *See*—
Hall, Nigel; and Standen, Michael C. H., 5,362,888, Cl. 549-299.000.
Moucharafieh, Nadim C.; Lin, Kang-Chi; and Ahle, James L., 5,362,705, Cl. 504-206.000.
Zenith Data Systems Corporation: *See*—
Olson, Anthony M.; and Rajaram, Babu, 5,363,486, Cl. 395-250.000.
Zenith Electronics Corporation: *See*—
Fendley, James R., 5,363,011, Cl. 313-408.000.
Zexel Corporation: *See*—
Kaneko, Hideyuki; and Takeuchi, Kunihiro, 5,363,303, Cl. 364-424.050.
Satoh, Yuji; Kono, Hiromi; Soda, Hiroyuki; and Otsuka, Masuhiro, 5,362,286, Cl. 477-115.000.
Takeuchi, Kunihiro, 5,363,301, Cl. 364-424.050.
Zexel-Gleason USA, Inc.: *See*—
Brewer, Mark S., 5,362,284, Cl. 475-249.000.
Zhang, Yu-Zhong: *See*—
Haugland, Richard P.; Zhang, Yu-Zhong; Sabnis, Ram; Olson, Nels A.; Naleway, John J.; and Haugland, Rosaria P., 5,362,628, Cl. 435-18.000.
Zhu, Li S.; He, Wei; Huang, Yu C.; and Guo, Wan S., to Shanghai Intor Electrical Applicance Factory. Massage cushion for providing a hammering mode massage. 5,361,437, Cl. 5-639.000.
Zigoris, Dean M.: *See*—
Brown, Michael L.; Miller, Jan W.; Spatig, Wilbur W.; and Zigoris, Dean M., 5,362,298, Cl. 482-137.000.
Zilog, Inc.: *See*—
Nimishakavi, Hanumanthrao, 5,363,383, Cl. 371-22.100.
Zimmer Aktiengesellschaft: *See*—
Kerpes, Hans; and Thiele, Ulrich, 5,362,844, Cl. 528-308.500.
Zimmer, John. Compaction system for metal drums. 5,361,692, Cl. 100-229.00A.
Zimmerman, Jeffrey A.; and Frank, Marlin A., to Ecowater Systems, Inc. Self-contained reverse osmosis electronic monitoring system. 5,362,383, Cl. 210-85.000.
Zimmerman, Jeffrey A.: *See*—
Johannsen, James; Larson, Ralph A.; and Zimmerman, Jeffrey A., 5,363,087, Cl. 340-612.000.
Zimmerman, Theodore S.; and Fulcher, Carol A., to Scripps Clinic & Research Foundation. Factor VIII coagulant polypeptides: method of making. 5,362,854, Cl. 530-383.000.
Zinke, Horst; and Schumacher, Rolf, to Ciba-Geigy Corporation. Dithiophosphoric acid derivatives as lubricant additives. 5,362,419, Cl. 252-46.600.
Ziolo, Ronald E., to Xerox Corporation. Method of preparing a stable colloid of submicron particles. 5,362,417, Cl. 252-314.000.
Zoller, Robert A., to Standard Products Company, The. Plastic heat set molding. 5,362,349, Cl. 156-242.000.
Zushi, Takayasu: *See*—
Satoh, Takeshi; and Zushi, Takayasu, 5,362,096, Cl. 280-728.00B.
Zydzik, George J.: *See*—
Glass, Alastair M.; Hunt, Neil E. J.; Poate, John M.; Schubert, Erdmann F.; and Zydzik, George J., 5,363,398, Cl. 372-92.000.
Zysman, Alexandre; Sebag, Henri; Ribier, Alain; Vanlerberghe, Guy; Mahieu, Claude; and Berthelot, Claude, to L'Oreal. Cosmetic, dermopharmaceutical or vesicle-containing composition including glycerol-derived compounds. 5,362,494, Cl. 424-401.000.
2910683 Canada Inc.: *See*—
Canning, Daniel; and Fraser, Serge, 5,362,180, Cl. 405-66.000.
2920913 Canada Inc.: *See*—
Kent, Randall S., 5,362,442, Cl. 422-22.000.
3V Inc.: *See*—
Raspanti, Giuseppe, 5,362,481, Cl. 424-59.000.
7th Man Enterprises Inc.: *See*—
Hammett, Brad; and Morin, Joseph C., 5,362,045, Cl. 273-57.200.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF NOVEMBER, 1994

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aeroquip Corporation: *See*—
Spalink, Robert D.; Knowles, Steven M.; and Kosztowny, John T., Re. 34,781, Cl. 137-614.050.
Barr, Howard S.: *See*—
Dandliker, Walter B.; Barr, Howard S.; Katzenstein, Henry S.; and Watson, Keith R., Re. 34,782, Cl. 250-458.100.
Bertrand, Carol A.: *See*—
Trenconsky, Robert P.; Bertrand, Carol A.; and Weiss, Robert A., Re. 34,780, Cl. 606-49.000.
Birtcher Medical Systems, Inc.: *See*—
Trenconsky, Robert P.; Bertrand, Carol A.; and Weiss, Robert A., Re. 34,780, Cl. 606-49.000.
Coates, Vincent J., to Nanometrics Incorporated. Method for determining absolute reflectance of a material in the ultraviolet range. Re. 34,783, Cl. 250-372.000.
Dandliker, Walter B.; Barr, Howard S.; Katzenstein, Henry S.; and Watson, Keith R., to Diatron Corporation. Fluorometer. Re. 34,782, Cl. 250-458.100.
Diatron Corporation: *See*—
Dandliker, Walter B.; Barr, Howard S.; Katzenstein, Henry S.; and Watson, Keith R., Re. 34,782, Cl. 250-458.100.
Enkotec A/S: *See*—
Nielsen, Ove, Re. 34,777, Cl. 470-129.000.
Kakuta, Takuya: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Katzenstein, Henry S.: *See*—
Dandliker, Walter B.; Barr, Howard S.; Katzenstein, Henry S.; and Watson, Keith R., Re. 34,782, Cl. 250-458.100.
Knowles, Steven M.: *See*—
Spalink, Robert D.; Knowles, Steven M.; and Kosztowny, John T., Re. 34,781, Cl. 137-614.050.
Kondo, Ryoji, to Nippondenso Co., Ltd. Spark plug and method of manufacturing the same. Re. 34,778, Cl. 445-7.000.
Kondo, Yasuo: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Kosztowny, John T.: *See*—
Spalink, Robert D.; Knowles, Steven M.; and Kosztowny, John T., Re. 34,781, Cl. 137-614.050.
Nanometrics Incorporated: *See*—
Coates, Vincent J., Re. 34,783, Cl. 250-372.000.
Nawamaki, Tsutomu: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Nielsen, Ove, to Enkotec A/S. Tool ring, a method of making it, and a holding tool for use in the performance of the method. Re. 34,777, Cl. 470-129.000.
Nippondenso Co., Ltd.: *See*—
Kondo, Ryoji, Re. 34,778, Cl. 445-7.000.
Nissan Chemical Industries Ltd.: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, to Nissan Chemical Industries Ltd. Pyrazole derivatives and herbicides containing them. Re. 34,779, Cl. 504-282.000.
Pratt, William C. Programmable apparatus and method for delivering microingredient feed additives to animals by weight. Re. 34,776, Cl. 366-141.000.
Spalink, Robert D.; Knowles, Steven M.; and Kosztowny, John T., to Aeroquip Corporation. Coupling adapter. Re. 34,781, Cl. 137-614.050.
Suzuki, Koichi: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Trenconsky, Robert P.; Bertrand, Carol A.; and Weiss, Robert A., to Birtcher Medical Systems, Inc. Electrosurgical conductive gas stream equipment. Re. 34,780, Cl. 606-49.000.
Watanabe, Junichi: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Watanabe, Shigeomi: *See*—
Oya, Eiichi; Watanabe, Junichi; Kondo, Yasuo; Kakuta, Takuya; Suzuki, Koichi; Nawamaki, Tsutomu; and Watanabe, Shigeomi, Re. 34,779, Cl. 504-282.000.
Watson, Keith R.: *See*—
Dandliker, Walter B.; Barr, Howard S.; Katzenstein, Henry S.; and Watson, Keith R., Re. 34,782, Cl. 250-458.100.
Weiss, Robert A.: *See*—
Trenconsky, Robert P.; Bertrand, Carol A.; and Weiss, Robert A., Re. 34,780, Cl. 606-49.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Ikeda, Takashi: *See*—
Ikesue, Masumi; and Ikeda, Takashi, B1 4,611,730, Cl. 222-167.000.
Ikesue, Masumi; and Ikeda, Takashi, B1 4,878,603, Cl. 222-167.000.
Ikesue, Masumi; and Ikeda, Takashi, to Ricoh Comp. Toner replenishing device. B1 4,611,730, 11-8-94, Cl. 222-167.000.
Ikesue, Masumi; and Ikeda, Takashi, to Ricoh Company, Ltd. Toner replenishing device. B1 4,878,603, 11-8-94, Cl. 222-167.000.
Laumeister, William C.: *See*—
Warren, Eugene D.; Pfannkuch, Robert B.; Laumeister, William C.; and Pourciau, Louis L., B1 5,065,258, Cl. 360-15.000.
Pfannkuch, Robert B.: *See*—
Warren, Eugene D.; Pfannkuch, Robert B.; Laumeister, William C.; and Pourciau, Louis L., B1 5,065,258, Cl. 360-15.000.
Pourciau, Louis L.: *See*—
Warren, Eugene D.; Pfannkuch, Robert B.; Laumeister, William C.; and Pourciau, Louis L., B1 5,065,258, Cl. 360-15.000.
Rank Video Services America: *See*—
Warren, Eugene D.; Pfannkuch, Robert B.; Laumeister, William C.; and Pourciau, Louis L., B1 5,065,258, Cl. 360-15.000.
Ricoh Comp.: *See*—
Ikesue, Masumi; and Ikeda, Takashi, B1 4,611,730, Cl. 222-167.000.
Ricoh Company, Ltd.: *See*—
Ikesue, Masumi; and Ikeda, Takashi, B1 4,878,603, Cl. 222-167.000.
Warren, Eugene D.; Pfannkuch, Robert B.; Laumeister, William C.; and Pourciau, Louis L., to Rank Video Services America. Transmitting information from producer to end users through slant-track tape-to-tape copying at higher-than-standard signal transmission. B1 5,065,258, 11-8-94, Cl. 360-15.000.

LIST OF DESIGN PATENTEES

Adami, Arthur E.; and Amberg, Christopher P., to Sweetheart Cup Company, Inc. Beverage can-carrying device. 352,239, 11-8-94, Cl. D9-455.000.

Adamo, Helen J. Walker apron with pockets. 352,260, 11-8-94, Cl. D12-133.000.

Alexander Manufacturing Company: *See*—
Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., 352,269, Cl. D13-103.000.

Alexandres, Jon K.; Downs, Gary J.; and Peterson, William R., to Alexander Manufacturing Company. Cellular telephone battery. 352,269, 11-8-94, Cl. D13-103.000.

Allenbaugh, Howard M., to M.A.G. Eng. & Mfg. Inc. Door latch guard. 352,224, 11-8-94, Cl. D8-346.000.

Althaus, Wolfgang, to Warner-Lambert Company. Blister package for a razor. 352,236, 11-8-94, Cl. D9-415.000.

Alvimar Manufacturing Co., Inc.: *See*—
Lieberman, Marvin S., 352,333, Cl. D21-59.000.

Amberg, Christopher P.: *See*—
Adami, Arthur E.; and Amberg, Christopher P., 352,239, Cl. D9-455.000.

Anderson, Carl E. Molding. 352,362, 11-8-94, Cl. D25-136.000.

Apgar, Jeffrey A., to Suncast Corporation. Portable hose reel. 352,232, 11-8-94, Cl. D8-359.000.

Arck, Don. Fishing rod support. 352,342, 11-8-94, Cl. D22-147.000.

Arney, Michel: *See*—
Zavracky, Matthew; Offsey, Stephen; Chastain, David; Arney, Michel; Beck, Benjamin; and Hunter, Gregory, 352,304, Cl. D16-235.000.

Article Chaussant Europeen (Arche S.A.): *See*—
Merceron, Jean-Paul, 352,154, Cl. D2-952.000.
Merceron, Jean-Paul, 352,155, Cl. D2-952.000.
Merceron, Jean-Paul, 352,157, Cl. D2-957.000.

Artime S.A.: *See*—
Giardiello, Barbara, 352,250, Cl. D10-39.000.

Ashley, Charles R., to Becton Dickinson and Company. Iontophoretic drug delivery system. 352,357, 11-8-94, Cl. D24-189.000.

Aulenbacher, Jeffrey D.: *See*—
Reardon, Michael F.; Kellar, Robert J.; and Aulenbacher, Jeffrey D., 352,237, Cl. D9-415.000.

Aumasson, Michel, to Delsey (Societe Anonyme). Luggage. 352,168, 11-8-94, Cl. D3-276.000.

Auto-Shade, Inc.: *See*—
Shink, Joseph M., 352,261, Cl. D12-191.000.

Aversa, Domenic; and Pizzacalla, Nicholas. Condom carrier. 352,172, 11-8-94, Cl. D3-303.000.

Avid Technology, Inc.: *See*—
Sharpe, Henry, III; Beckman, Ralph; McKain, Jim; and Ohanian, Thomas, 352,278, Cl. D14-100.000.

Badanco Enterprises, Inc.: *See*—
Bialo, Walter, 352,170, Cl. D3-279.000.

Barish, Allan H. Freezer cabinet. 352,297, 11-8-94, Cl. D15-83.000.

Bassignani, Guillermo. Puzzle. 352,317, 11-8-94, Cl. D21-107.000.

Beck, Benjamin: *See*—
Zavracky, Matthew; Offsey, Stephen; Chastain, David; Arney, Michel; Beck, Benjamin; and Hunter, Gregory, 352,304, Cl. D16-235.000.

Beckman, Ralph: *See*—
Sharpe, Henry, III; Beckman, Ralph; McKain, Jim; and Ohanian, Thomas, 352,278, Cl. D14-100.000.

Becton Dickinson and Company: *See*—
Ashley, Charles R., 352,357, Cl. D24-189.000.

Beisbier, Robert J., Jr. Dust collector for milling machine. 352,298, 11-8-94, Cl. D15-126.000.

Bialo, Walter, to Badanco Enterprises, Inc. Luggage with handle. 352,170, 11-8-94, Cl. D3-279.000.

Blackburn Designs, Inc.: *See*—
Blackburn, James R., 352,267, Cl. D12-407.000.

Blackburn, James R., to Blackburn Designs, Inc. Bicycle rack. 352,267, 11-8-94, Cl. D12-407.000.

Bloch, Kenneth A.: *See*—
Toh, Alex; Lorenz, James J.; Bloch, Kenneth A.; McDowell, David J.; Story, William R.; and Mayercheck, Robert P., 352,282, Cl. D14-150.000.

Boyd, Gary D. Happy camper inflatable tent. 352,328, 11-8-94, Cl. D21-253.000.

Braitrim (U.K.) Limited: *See*—
Shalson, Peter, 352,178, Cl. D6-326.000.

Bratton, William E.: *See*—
Foy, Hunter T.; Bratton, William E.; Davis, John C.; and Jordan, Willis Y., III, 352,279, Cl. D14-100.000.

Braun Aktiengesellschaft: *See*—
Schneider, Peter; and Eckart, Peter, 352,355, Cl. D24-133.000.

Brookshire, Phillip L., to Rubbermaid Incorporated. Insulated ice chest. 352,208, 11-8-94, Cl. D7-605.000.

Brown, Dennis M. Toothbrush. 352,175, 11-8-94, Cl. D4-104.000.

Brown, Dennis N., to Northwest Podiatric Laboratory, Inc. Shoe insert member. 352,158, 11-8-94, Cl. D2-961.000.

Bullet Golf Ball, Inc.: *See*—
Sicaeros, Daniel, 352,324, Cl. D21-214.000.

Burton, Donna R. Grease container for reusable cooking oil. 352,212, 11-8-94, Cl. D7-629.000.

Butler, William N. Combined globe and satellite. 352,312, 11-8-94, Cl. D19-61.000.

Cal-Style Furniture Mfg. Co.: *See*—
Ward, Marshall B., 352,193, Cl. D6-480.000.

Calco, Wayne, to Intellitools, Inc. Computer keyboard. 352,280, 11-8-94, Cl. D14-115.000.

Caligiuri, Theodore L. Pouch. 352,166, 11-8-94, Cl. D3-243.000.

Callum, Ian S., to Jaguar Cars Limited. Automobile. 352,256, 11-8-94, Cl. D12-91.000.

Cambro Manufacturing Company: *See*—
Campbell, Argyle; and Dawson, Ben, 352,202, Cl. D7-553.000.
Campbell, Argyle; and Dawson, Ben, 352,203, Cl. D7-553.000.

Camilleri, Charles: *See*—
Rogers, Richard D.; and Camilleri, Charles, 352,195, Cl. D6-511.000.

Campbell, Argyle; and Dawson, Ben, to Cambro Manufacturing Company. Compartmented serving tray. 352,202, 11-8-94, Cl. D7-553.000.

Campbell, Argyle; and Dawson, Ben, to Cambro Manufacturing Company. Compartmented serving tray. 352,203, 11-8-94, Cl. D7-553.000.

Canon Kabushiki Kaisha: *See*—
Sakuta, Kazuaki; and Shiotani, Yasushi, 352,189, Cl. D6-449.000.

Casala-Werke Carl Salle GmbH & Co. KG: *See*—
Pagnon, Patrick; and Pelhaitre, Claude, 352,185, Cl. D6-380.000.

Chang, Wen-Pin. Hand tool box. 352,169, 11-8-94, Cl. D3-276.000.

Chastain, David: *See*—
Zavracky, Matthew; Offsey, Stephen; Chastain, David; Arney, Michel; Beck, Benjamin; and Hunter, Gregory, 352,304, Cl. D16-235.000.

Chen, Cheng-feng. Detergent dispensing container. 352,196, 11-8-94, Cl. D6-545.000.

Chow, Jessie. Tool holder. 352,219, 11-8-94, Cl. D8-71.000.

Citizen Watch Co., Ltd.: *See*—
Nojima, Masamitsu, 352,306, Cl. D18-12.000.

Colgate-Palmolive Company: *See*—
Crawford, John C.; and Marte, Gonzalo U., Jr., 352,242, Cl. D9-529.000.

Collette, Wayne N.: *See*—
Krishnakumar, Suppayan M.; Collette, Wayne N.; and Piccioli, David P., 352,245, Cl. D9-538.000.

Collings, James A. Stool. 352,180, 11-8-94, Cl. D6-351.000.

Colman, Wayne C. Wire spool. 352,230, 11-8-94, Cl. D8-358.000.

Combi Corporation: *See*—
Kaneko, Tomihiro, 352,259, Cl. D12-129.000.

Continental Pet Technologies, Inc.: *See*—
Krishnakumar, Suppayan M.; Collette, Wayne N.; and Piccioli, David P., 352,245, Cl. D9-538.000.

Control Logic (Proprietary) Limited: *See*—
Pucci, Franco G.; Wythe, Michael D.; and Moulder, Kevin E., 352,276, Cl. D13-168.000.

Cooper, Alan R., to Esselte Dymo N.V. Printer cassette. 352,305, 11-8-94, Cl. D18-12.000.

Corbin Russwin, Inc.: *See*—
Hoffman, Anthony J.; and Kearns, Robert E., 352,225, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 352,226, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 352,227, Cl. D8-347.000.
Hoffman, Anthony J.; and Kearns, Robert E., 352,228, Cl. D8-347.000.
Kearns, Robert E., 352,229, Cl. D8-347.000.

Costa, Richard, to PharmaDesign, Inc. Pump dispenser. 352,234, 11-8-94, Cl. D9-300.000.

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420.3	5,361,427
558	5,361,428
572.1	5,361,429
	5,361,430
677	5,361,431

CLASS 5

11	5,361,432
81.1	5,361,433
247	5,361,434
419	5,361,435
601	5,361,436
639	5,361,437

CLASS 8

149.1	5,361,438
158	5,361,439

CLASS 15

21.2	5,361,440
84	5,361,441
97.1	5,361,442
97.3	5,361,443
100	5,361,444
118	5,361,445
167.1	5,361,446
229.6	5,361,447
263	5,361,448
302	5,361,449
308	5,361,453
406	5,361,452

CLASS 16

20	5,361,454
235	5,361,455
257	5,361,456

CLASS 19

41	5,361,457
65 A	5,361,458
66 R	5,361,450
304	5,361,451

CLASS 24

35	5,361,459
49 R	5,361,460
115 G	5,361,461
452	5,361,462
543	5,361,463
599.5	5,361,464

CLASS 27

29	5,361,465

CLASS 28

158	5,361,466
205	5,361,467
279	5,361,468

CLASS 29

2.14	5,361,469
27 R	5,361,470
33.2	5,361,471
37 A	5,361,472
243.528	5,361,474
243.53	5,361,473
267	5,361,475
417	5,361,476
423	5,361,477
432.2	5,361,478
454	5,361,479
467	5,361,480
469	5,361,481
469.5	5,361,482
524.1	5,361,483
525.2	5,361,484
563	5,361,485
	5,361,486
596	5,361,487
600	5,361,488
825	5,361,489
827	5,361,490
852	5,361,491
879	5,361,492
894.324	5,361,493
897.2	5,361,494
897.31	5,361,495

CLASS 30

90.6	5,361,496
155	5,361,497
164.95	5,361,498
277.4	5,361,499
381	5,361,500
391	5,361,501
431	5,361,502

CLASS 33

348.2	5,361,503
371	5,361,504
506	5,361,505
512	5,361,506
515	5,361,507
527	5,361,508
528	5,361,509
613	5,361,510

CLASS 34

60	5,361,512
363	5,361,513
391	5,361,514
393	5,361,515
440	5,361,516
468	5,361,511

CLASS 36

72 R	5,361,517
134	5,361,518

CLASS 37

234	5,361,519
458	5,361,520

CLASS 40

152.1	5,361,521
	5,361,522
586	5,361,523

CLASS 42

1.16	5,361,524
70.11	5,361,525
	5,361,526

CLASS 43

1	5,361,527
6.5	5,361,528
24	5,361,529
26.1	5,361,530
42.09	5,361,531
44.9	5,361,532
124	5,361,533

CLASS 47

58	5,361,535
	5,361,536
79	5,361,534
82	5,361,537

CLASS 49

192	5,361,538
394	5,361,539
449	5,361,540
465	5,361,541
477.1	5,361,542

CLASS 52

1	5,361,549
2.15	5,361,550
95	5,361,551
455	5,361,552
480	5,361,553
	5,361,554
514	5,361,555
561	5,361,556
608	5,361,557
698	5,361,558
746	5,361,559

CLASS 53

111 RC	5,361,560
397	5,361,561
492	5,361,562

CLASS 54

79.2	5,361,563
80.4	5,361,564

CLASS 56

11.6	5,361,566
13.5	5,361,567
194	5,361,568
228	5,361,569
255	5,361,570

CLASS 57

58.76	5,361,571
304	5,361,572
354	5,361,573
408	5,361,574

CLASS 59

80	5,361,575

CLASS 60

39.03	5,361,576
39.281	5,361,579
39.32	5,361,577
	5,361,578
226.1	5,361,580
247	5,361,581
276	5,361,582
413	5,361,583
460	5,361,584
646	5,361,585
737	5,361,586

CLASS 62

3.2	5,361,587
6	5,361,588
24	5,361,589
25	5,361,590
50.4	5,361,591
86	5,361,592
89	5,361,593
129	5,361,594
175	5,361,595
187	5,361,596
205	5,361,597
229	5,361,598
298	5,361,599
310	5,361,600
324.6	5,361,601
344	5,361,602
457.2	5,361,603
457.4	5,361,604
530	5,361,605

CLASS 63

26	5,361,606

CLASS 66

69	5,361,607
220	5,361,608

CLASS 68

5 D	5,361,609

CLASS 70

[illegible]	5,361,610
18	5,361,611
241	5,361,612
247	5,361,613
389	5,361,614

CLASS 72

[illegible]	5,361,615
46	5,361,616
57	5,361,617
174	5,361,618
348	5,361,619
387	5,361,620
467	5,361,621

CLASS 73

1 G	5,361,623
19.1	5,361,624
38	5,361,625
40.7	5,361,626
49.2	5,361,622
73	5,361,627
116	5,361,628
117.3	5,361,629
	5,361,630
151	5,361,631
153	5,361,632
170.08	5,361,633
204.26	5,361,634
517 B	5,361,635
592	5,361,636
766	5,361,637
800	5,361,638
827	5,361,639
831	5,361,640
842	5,361,641
862.632	5,361,642
863.71	5,361,643

CLASS 74

491	5,361,644
502.2	5,361,645
531	5,361,646
551.2	5,361,647
569	5,361,648
594.2	5,361,649
606 R	5,361,650

CLASS 81

3.29	5,361,652
9.51	5,361,653
64	5,361,654
177.2	5,361,655
180.1	5,361,656
186	5,361,657
487	5,361,658

CLASS 82

113	5,361,659

CLASS 83

55	5,361,660
177	5,361,661
308	5,361,662
522.19	5,361,663
628	5,361,664
848	5,361,665
870	5,361,666

CLASS 84

297 R	5,361,667
392	5,361,668
414	5,361,669
422.1	5,361,670
422.4	5,361,671
478	5,361,672
615	5,361,673

CLASS 87

9	5,361,674

CLASS 89

1.13	5,361,675
1.14	5,361,676
14.2	5,361,677
36.02	5,361,678

CLASS 91

448	5,361,679
519	5,361,680

CLASS 99

331	5,361,681
352	5,361,682
356	5,361,683
410	5,361,684
421 H	5,361,685
	5,361,686
426	5,361,687
572	5,361,688
575	5,361,689

CLASS 100

48	5,361,690
107	5,361,691
229 A	5,361,692

CLASS 101

93.04	5,361,693
115	5,361,694
127	5,361,695
232	5,361,696
415.1	5,361,697
	5,361,698
477	5,361,699

CLASS 102

439	5,361,700
450	5,361,701
472	5,361,702
481	5,361,703

CLASS 104

6	5,361,704
60	5,361,705
196	5,361,706
281	5,361,707

CLASS 106

171	5,362,313
189	5,362,312
278	5,362,316
284.06	5,362,314
287.23	5,362,317
493	5,362,315
634	5,362,318
705	5,362,319
709	5,362,320
713	5,362,321
802	5,362,322
810	5,362,323
823	5,362,324

CLASS 110

246	5,361,708
255	5,361,709
346	5,361,710

CLASS 111

127	5,361,711
168	5,361,712

CLASS 112

168	5,361,713
445	5,361,714

CLASS 114

219	5,361,715
230	5,361,716
361	5,361,717

CLASS 116

28 R	5,361,718

CLASS 117

201	5,362,325
214	5,361,721

CLASS 118

44	5,362,326
308	5,362,327
726	5,362,328

CLASS 119

14.03	5,361,722
52.3	5,361,723
60	5,361,724
165	5,361,725
171	5,361,719
797	5,361,726
846	5,361,727

CLASS 122

4 D	5,361,728
17	5,361,729

CLASS 123

41.81	5,361,730
65 P	5,361,731
65 PE	5,361,732
90.16	5,361,733
	5,361,734
90.17	5,361,735
	5,361,736
143 B	5,361,737
182.1	5,361,738
190.14	5,361,739
321	5,361,740
427	5,361,741
506	5,361,742
519	5,361,743
561	5,361,744
698	5,361,745

CLASS 124

50	5,361,746
91	5,361,747

CLASS 125

21	5,361,748

CLASS 126

21 A	5,361,749
91 A	5,361,750
101	5,361,751

CLASS 127

65	5,362,329

CLASS 128

20	5,361,752
207.15	5,361,753
207.17	5,361,754
630	5,361,755
	5,361,756
633	5,361,757
	5,361,758
634	5,361,759
642	5,361,760
653.1	5,361,761
	5,361,762
653.2	5,361,763
653.5	5,361,764
	5,361,765
654	5,361,766
660.06	5,361,767
660.09	5,361,768
666	5,361,769
719	5,361,771
730	5,361,772
731	5,361,773
	5,361,774
733	5,361,775
734	5,361,776
772	5,361,777
779	5,361,778
842	5,361,779
849	5,361,780
	5,361,781
898	5,361,782

CLASS 131

84.1	5,361,783
231	5,361,784
235.1	5,361,785

CLASS 132

200	5,361,786

CLASS 134

1	5,362,330
57 R	5,361,787
64 R	5,361,788
68	5,361,789
95.3	5,361,790
122 R	5,361,791

CLASS 135

24	5,361,792
65	5,361,793
147	5,361,794

CLASS 137

1	5,361,795
14	5,361,796
101.19	5,361,797
343	5,361,798
363	5,361,799
495	5,361,800
547	5,361,801
552	5,361,802
614.05	Re.34,781
625.66	5,361,803
801	5,361,804
885	5,361,805

CLASS 138

109	5,361,806

CLASS 139

1 C	5,361,807
383 A	5,361,808

CLASS 140

119	5,361,809

CLASS 141

59	5,361,810
250	5,361,811
275	5,361,812

CLASS 144

363	5,361,813

CLASS 148

98	5,362,331
105	5,362,332
264	5,362,333

268 5,362,334
272 5,362,335
301 5,362,336
325 5,362,337
334 5,362,338
403 5,362,339
691 5,362,340
692 5,362,341

CLASS 152

209 A 5,361,814
209 R 5,361,815
5,361,816
520 5,361,817
525 5,361,818
531 5,361,819
555 5,361,820

CLASS 156

71 5,362,342
117 5,362,343
148 5,362,344
173 5,362,345
205 5,362,346
214 5,362,347
233 5,362,348
242 5,362,349
243 5,362,351
345 5,362,353
356 5,362,354
542 5,362,355
626 5,362,356
634 5,362,357
643 5,362,350
5,362,358
645 5,362,359
656 5,362,360
662 5,362,361

CLASS 160

39 5,361,821
321 5,361,822

CLASS 162

5 5,362,362
8 5,362,363
158 5,362,364

CLASS 164

9 5,361,823
98 5,361,824
437 5,361,825
457 5,361,826

CLASS 165

103 5,361,827
109.1 5,361,828
152 5,361,829

CLASS 166

51 5,361,830
77.5 5,361,831
84 5,361,832
117.6 5,361,833
120 5,361,834
152 5,361,835
187 5,361,836
249 5,361,837
255 5,361,838
264 5,361,839
285 5,361,840
293 5,361,841
5,361,842
297 5,361,843
301 5,361,844
302 5,361,845
380 5,361,846

CLASS 169

58 5,361,847

CLASS 172

140 5,361,848
380 5,361,849
450 5,361,850

CLASS 173

170 5,361,851
176 5,361,852
217 5,361,853

CLASS 174

42 5,362,920
47 5,362,921
48 5,362,922
5,362,923
67 5,362,924
120 R 5,362,925
256 5,362,926
261 5,362,927

CLASS 175

45 5,361,854
67 5,361,855
5,361,856
93 5,361,857
286 5,361,859

CLASS 177

172 5,362,928
210 FP 5,362,929

CLASS 178

18 5,362,930

CLASS 180

9.21 5,361,860
132 5,361,861
205 5,361,863
219 5,361,864
273 5,361,865

CLASS 181

284 5,362,931

CLASS 182

3 5,361,866
[redacted] 5,361,867
111 5,361,868
133 5,361,869

CLASS 184

1.5 5,361,870

CLASS 186

61 5,361,871

CLASS 187

226 5,361,872
253 5,361,874
264 5,361,873

CLASS 188

24.21 5,361,875
52 5,361,876
170 5,361,877
378 5,361,878

CLASS 191

12.4 5,361,879

CLASS 192

3.25 5,361,880
56 R 5,361,881
70.24 5,361,882
84 C 5,361,883

CLASS 193

35 R 5,361,884

CLASS 194

214 5,361,885
317 5,361,886

CLASS 198

323 5,361,887
347.3 5,361,888
357 5,361,889
465.4 5,361,890
797 5,361,891
841 5,361,892
853 5,361,893
860.1 5,361,894

CLASS 200

341 5,362,932
401 5,362,933
520 5,362,934

CLASS 203

31 5,362,365

CLASS 204

67 5,362,366
72 5,362,367
98 5,362,368
105 R 5,362,369
141.5 5,362,370
182.3 5,362,371
192.12 5,362,372
242 5,362,373

CLASS 205

164 5,362,374

CLASS 206

44 R 5,361,895
223 5,361,896
232 5,361,897
5,361,898
315.6 5,361,899
319 5,361,900
330 5,361,901
370 5,361,902
403 5,361,903
460 5,361,904
494 5,361,905
509 5,361,906
528 5,361,907
536 5,361,908

CLASS 208

[redacted] 5,362,375
89 5,362,376
133 5,362,377
138 5,362,378
161 5,362,379
164 5,362,380
179 5,362,381
210 5,362,382

CLASS 209

12.1 5,361,909
13 5,361,910
399 5,361,911
524 5,361,912
583 5,361,913

CLASS 210

85 5,362,383
5,362,384
136 5,362,385
206 5,362,386
225 5,362,387
230 5,362,388
232 5,362,389
235 5,362,390
242.3 5,362,391
249 5,362,392
333.01 5,362,393
610 5,362,397
617 5,362,394
638 5,362,395
651 5,362,398
689 5,362,399
717 5,362,400
741 5,362,401
744 5,362,403
757 5,362,402
5,362,404
763 5,362,405
767 5,362,406
801 5,362,407

CLASS 211

41 5,361,914
70.7 5,361,915

CLASS 212

153 5,361,916

CLASS 213

50 5,361,917

CLASS 215

6 5,361,918
228 5,361,919
237 5,361,920
320 5,361,921
364 5,361,922

CLASS 219

56 5,362,935
69.12 5,362,936
76.14 5,362,937
121.51 5,362,938
121.59 5,362,939
121.68 5,362,940
121.84 5,362,941
209 5,362,942
216 5,362,943
270 5,362,944
619 5,362,945
704 5,362,946

CLASS 220

293 5,361,924
325 5,361,925
331 5,361,926
334 5,361,927
378 5,361,928
562 5,361,929
565 5,361,930
571 5,361,931
574 5,361,932
578 5,361,933
707 5,361,934
709 5,361,935

CLASS 221

63 5,361,936
189 5,361,937
289 5,361,938

CLASS 222

5,361,939
77 5,361,940
95 5,361,941
105 5,361,942
134 5,361,943
136 5,361,944
145 5,361,945
167 B1 4,611,730
B1 4,878,603
175 5,361,946
212 5,361,947

CLASS 223

96 5,361,948
5,361,949

CLASS 224

151 5,361,950
153 5,361,951
159 5,361,952
191 5,361,954
198 5,361,953
211 5,361,955
257 5,361,956
264 5,361,957
274 5,361,958
314 5,361,959

CLASS 226

2 5,361,960
171 5,361,961

CLASS 227

90 5,361,962

CLASS 228

33 5,361,963
56.2 5,361,964
117 5,361,965
123.1 5,361,966
124.6 5,361,967
160 5,361,968
180.1 5,361,969
180.5 5,361,970
193 5,361,971
219 5,361,972
257 5,361,973

CLASS 229

23 R 5,361,974
120.34 5,361,975
148 5,361,976

CLASS 232

39 5,361,977
43.1 5,361,978
57.5 5,361,979

CLASS 235

375 5,362,947
376 5,362,948
385 5,362,949
448 5,362,950
449 5,362,951
5,362,952
472 5,362,953
492 5,362,954
5,362,955

CLASS 236

34.5 5,361,980
42 5,361,981
46 R 5,361,982
5,361,983
49.3 5,361,984
5,361,985

CLASS 238

283 5,361,986

CLASS 239

33 5,361,987
71 5,361,988
102.2 5,361,989
133 5,361,990
165 5,361,991
172 5,361,992
752 5,361,993

CLASS 241

23 5,361,994
29 5,361,995
30 5,361,996
70 5,361,997
79.1 5,361,998
101.7 5,361,999
159 5,362,000
160 5,362,001
222 5,362,002
261.3 5,362,003
290 5,362,004

CLASS 242

1.10 R 5,362,005
4 BE 5,362,006
18 OEW 5,362,007
261 5,362,010
289 5,362,011
321 5,362,012
342 5,362,009
347.1 5,363,268
417 5,362,008
521 5,362,013

CLASS 244

3.12 5,362,014
50 5,362,015
122 AE 5,362,016
146 5,362,017

CLASS 248

74.3 5,362,018
146 5,362,019
166 5,362,020
225.31 5,362,021
313 5,362,022
461 5,362,023
524 5,362,024
670 5,362,025

CLASS 250

201.9 5,362,956
208.1 5,362,957
5,362,958
214 VT 5,362,959
214.1 5,362,960
216 5,362,961
234 5,362,962
307 5,362,963
310 5,362,964
339.12 5,362,965
341.1 5,362,966
344 5,362,967
372 Re.34,783
396 R 5,362,968
458.1 Re.34,782
561 5,362,969
5,362,970
577 5,362,971

CLASS 251

30.02 5,362,026
129.01 5,362,027
327 5,362,028

CLASS 252

8.551 5,362,408
32.7 E 5,362,409
46.6 5,362,419
51.5 A 5,362,411
94 5,362,412
174 5,362,413
174.12 5,362,414
174.24 5,362,415
309 5,362,416
314 5,362,417
5,362,418
500 5,362,420
512 5,362,421
544 5,362,422

CLASS 254

269 5,362,029
292 5,361,565

CLASS 256

65 5,362,030

CLASS 257

13 5,362,972
14 5,362,973
15 5,362,974
76 5,362,975
81 5,362,976
98 5,362,977
228 5,362,978
340 5,362,979
355 5,362,980
371 5,362,981
408 5,362,982
414 5,362,983
666 5,362,984
707 5,362,985
723 5,362,986

CLASS 260

665 R 5,362,423

CLASS 264

0.5 5,362,426
4.3 5,362,424
4.6 5,362,425
22 5,362,427
40.5 5,362,428
46.6 5,362,429
103 5,362,430
131 5,362,431
205 5,362,432
210.8 5,362,433
239 5,362,434
248 5,362,435
321 5,362,436
537 5,362,437

CLASS 266

89 5,362,031
182 5,362,032
275 5,362,033

CLASS 267

64.12 5,362,034
220 5,362,035

CLASS 269

51 5,362,036

CLASS 271

10 5,362,037
5,362,038
225 5,362,039
5,362,040
236 5,362,041
277 5,362,043

CLASS 273

34 R 5,362,044
57.2 5,362,045
73 D 5,362,071
73 R 5,362,046
77 A 5,362,047
80.2 5,362,048
118 A 5,362,049
118 R 5,362,050
138 A 5,362,051
145 R 5,362,052
148 R 5,362,053
157 [redacted] 5,362,054
167 H 5,362,055
175 5,362,056
186.1 5,362,057
186.2 5,362,058
5,362,059
187 R 5,362,060
243 5,362,061
5,362,062
287 5,362,063
292 5,362,064
327 5,362,065
344 5,362,066
425 5,362,067
435 5,362,068
438 5,362,069

CLASS 277

53 5,362,072
92 5,362,073
233 5,362,074

CLASS 280

6 5,361,923
11.22 5,362,075
5,362,076
33.992 5,362,077
47.18 5,362,078
47.23 5,362,079
91 5,362,080
250.1 5,362,081
304.1 5,362,082
404 5,362,083
457 5,362,084
602 5,362,085
605 5,362,086
611 5,362,087
625 5,362,088
655.1 5,362,089
660 5,362,090
662 5,362,091
673 5,362,092
674 5,362,093
689 5,362,094
712 5,362,095
728 B 5,362,096
730 R 5,362,097
733 5,362,098
737 5,362,099
741 5,362,100
743 A 5,362,101
751 5,362,102

CLASS 281

29 5,362,103

CLASS 282

47.5 5,362,410

CLASS 283

5 5,362,104
65 5,362,105
109 5,362,106

CLASS 285

15 5,362,107
24 5,362,108
39 5,362,109
[redacted] 5,362,110
92 5,362,111
110 5,362,112
286 5,362,113
334 5,362,114
363 5,362,115

CLASS 290

54 5,362,987

CLASS 292

144 5,362,116

CLASS 294

82.23 5,362,117

CLASS 296

96.21 5,362,118
97.8 5,362,119
203 5,362,120
204 5,362,121
216 5,362,122

CLASS 297

14 5,362,123
95 5,362,124
130 5,362,125
195.1 5,362,126
5,362,127

284.11 5,362,128
391 5,362,129
440.11 5,362,130
463 5,362,131
483 5,362,132

CLASS 299

1.7 5,362,133

CLASS 301

35.62 5,362,134

CLASS 303

3 5,362,135
9.72 5,362,136
10 5,362,137
50 5,362,138
96 5,362,139
113.2 5,362,140
119.2 5,362,141

CLASS 305

38 5,362,142

CLASS 310

54 5,363,002
67 R 5,363,003
156 5,363,004
244 5,363,005
323 5,363,006

CLASS 312

9.54 5,362,143
319.6 5,362,144
408 5,362,145

CLASS 313

25 5,363,007
62 5,363,008
110 5,363,009
402 5,363,010
408 5,363,011
468 5,363,012
5,363,013
533 5,363,014
638 5,363,015

CLASS 315

3.5 5,363,016
122 5,363,017
127 5,363,018
169.1 5,363,019
209 R 5,363,020
366 5,363,021
408 5,363,022
506 5,363,053

CLASS 318

70 5,363,023
254 5,363,024
468 5,363,025
569 5,363,026
573 5,363,027
599 5,363,028
696 5,363,029

CLASS 320

13 5,363,030
21 5,363,031

CLASS 322

10 5,363,032

CLASS 323

254 5,363,035

CLASS 324

158.1 5,363,037
5,363,038
5,363,039
207.15 5,363,033
207.21 5,363,034
238 5,363,040
303 5,363,041
306 5,363,042
309 5,363,036
5,363,043
5,363,044
395 5,363,045
402 5,363,046
510 5,363,047
519 5,363,048
520 5,363,049
638 5,363,050
661 5,363,051
663 5,363,052

CLASS 326

27 5,362,996
44 5,362,999
64 5,362,997
110 5,362,998

CLASS 327

55 5,363,001
58 5,362,992
65 5,362,995
72 5,362,994
94 5,362,993
350 5,363,000
538 5,362,990
540 5,362,991
543 5,362,988
544 5,362,989

CLASS 330

4 5,363,054
9 5,363,055
118 5,363,056
129 5,363,057
136 5,363,058
253 5,363,059
286 5,363,060
288 5,363,061
296 5,363,062
298 5,363,063
308 5,363,064

CLASS 331

17 5,363,065
5,363,066
107 SL 5,363,067

CLASS 333

[redacted] 5,363,068
28 R 5,363,069
100 5,363,070
111 5,363,071
125 5,363,072
195 5,363,073
5,363,074
246 5,363,075

CLASS 335

16 5,363,076
216 5,363,077
297 5,363,078

CLASS 336

92 5,363,079
192 5,363,080
200 5,363,081

CLASS 337

227 5,363,082
407 5,363,083

CLASS 338

308 5,363,084

CLASS 340

425.5 5,363,085
426 5,363,086
439 5,363,091
473 5,363,092
605 5,363,093
612 5,363,087
660 5,363,088
825.44 5,363,089
5,363,090
854.6 5,363,094
854.7 5,363,095

CLASS 341

50 5,363,096
67 5,363,097
95 5,363,098
107 5,363,099
132 5,363,100
143 5,363,101
172 5,363,102

CLASS 342

13 5,363,103
17 5,363,104
20 5,363,105
[redacted] 5,363,106
26 5,363,107
27 5,363,108
31 5,363,109
357 5,363,110
383 5,363,111
389 5,363,112

CLASS 343

744 5,363,113
828 5,363,114
872 5,363,115
881 5,363,116

CLASS 345

87 5,363,117
95 5,363,118
131 5,363,119
158 5,363,120
212 5,363,122

CLASS 346

24 5,363,123
76 PH 5,363,125
108 5,363,126
5,363,127
5,363,128
136 5,363,129

CLASS 347

46 5,363,131
49 5,363,134
69 5,363,133
74 5,363,124
92 5,363,130

CLASS 348

70 5,363,135
207 5,363,136
302 5,363,137
390 5,363,138
415 5,363,139
445 5,363,140
470 5,363,141
554 5,363,142
564 5,363,143
614 5,363,144
5,363,145
699 5,363,146
738 5,363,147
781 5,363,148
789 5,363,149
836 5,363,150

CLASS 349

8 5,363,132

CLASS 351

43 5,363,151
47 5,363,152
78 5,363,153
203 5,363,154
205 5,363,155

CLASS 353

26 R 5,363,156

CLASS 354

76 5,363,157
5,363,158
5,363,159
94 5,363,160
114 5,363,161
149.1 5,363,162
155 5,363,163
195.1 5,363,164
195.12 5,363,165
275 5,363,166
5,363,167
319 5,363,168
442 5,363,169

CLASS 355

67 5,363,170
68 5,363,171
71 5,363,172
204 5,363,173
208 5,363,174
219 5,363,176
260 5,363,177
273 5,363,178
278 5,363,179
285 5,363,180
299 5,363,181
5,363,182
305 5,363,183
309 5,363,184

CLASS 356

2 5,363,185
4 5,363,186
124.5 5,363,188
237 5,363,187
306 5,363,189
337 5,363,190
345 5,363,191
350 5,363,192
5,363,193
5,363,194
5,363,195
358 5,363,196
405 5,363,197
438 5,363,198
439 5,363,199

CLASS 358

335 5,363,200
337 5,363,201
403 5,363,203
406 5,363,204
429 5,363,205
440 5,363,206
442 5,363,207
445 5,363,208
5,363,209
448 5,363,210
451 5,363,211
452 5,363,212
455 5,363,213
462 5,363,214
465 5,363,215
482 5,363,216
501 5,363,202
506 5,363,217
518 5,363,218
539 5,363,219

CLASS 359

3 5,363,220
11 5,363,221
40 5,363,222
48 5,363,223
56 5,363,225
[redacted] 5,363,227
117 5,363,228
159 5,363,229
182 5,363,230
219 5,363,231
234 5,363,232
316 5,363,233
341 5,363,234
365 5,363,235
509 5,363,236
546 5,363,237
566 5,363,226
5,363,238
570 5,363,239
625 5,363,240
676 5,363,241
684 5,363,242
689 5,363,243
704 5,363,248
823 5,363,244
872 5,363,245
874 5,363,246
889 5,363,247

CLASS 360

11.1 5,363,264
15 B1 5,065,258
46 5,363,249
48 5,363,250
53 5,363,252
55 5,363,251
69 5,363,253
73.05 5,363,254
77.03 5,363,255
85 5,363,256
5,363,257
92 5,363,258
96.3 5,363,259
97.01 5,363,260
105 5,363,261
106 5,363,262
108 5,363,263
113 5,363,265
128 5,363,267

CLASS 361

45 5,363,269
127 5,363,266
155 5,363,270
320 5,363,271
534 5,363,272
686 5,363,273
736 5,363,274
749 5,363,275
752 5,363,276
760 5,363,277
762 5,363,278
767 5,363,279
794 5,363,280
801 5,363,281
807 5,363,282

CLASS 362

66 5,363,283
83.3 5,363,284
102 5,363,285
191 5,363,291
302 5,363,293
330 5,363,294
346 5,363,295

CLASS 363

8 5,363,286
20 5,363,287
21 5,363,288
5,363,323
56 5,363,289

CLASS 364

145 5,363,290
405 5,363,296
410 5,363,297
413.31 5,363,298
422 5,363,299
424.01 5,363,300
424.05 5,363,301
5,363,302
5,363,303
424.07 5,363,304
443 5,363,305
449 5,363,306
452 5,363,307
474.29 5,363,308
474.34 5,363,309
478 5,363,310
481 5,363,311
483 5,363,312
491 5,363,313
497 5,363,314
514 5,363,315
550 5,363,316
551.01 5,363,317
571.01 5,363,318
578 5,363,319
5,363,320
748.5 5,363,321
754 5,363,322

CLASS 365

149 5,363,325
5,363,326
5,363,327
154 5,363,328
156 5,363,324
184 5,363,329
185 5,363,330
189.06 5,363,331
189.08 5,363,332
201 5,363,333
218 5,363,334
226 5,363,335
5,363,336
230.06 5,363,337
5,363,338
5,363,339
233.5 5,363,340

CLASS 366

[redacted] 5,362,146
107 5,362,147
141 Re.34,776
163 5,362,148
165 5,362,149
173 5,362,150

CLASS 367

140 5,363,341
149 5,363,342
154 5,363,343
157 5,363,344
162 5,363,345
163 5,363,346

CLASS 368

10 5,363,347
47 5,363,348
75 5,363,349
276 5,363,350
282 5,363,351

CLASS 369

13 5,363,352
5,363,353
32 5,363,354
5,363,355
44.27 5,363,357
44.28 5,363,359
44.29 5,363,356
5,363,358
48 5,363,360
54 5,363,361
5,363,362
116 5,363,363
124 5,363,364
5,363,365

CLASS 370

13 5,363,366
16 5,363,367
24 5,363,368
60 5,363,369
79 5,363,371
84 5,363,370
95.1 5,363,373
95.3 5,363,374
5,363,375
5,363,376
100.1 5,363,377
5,363,378

CLASS 371

3 5,363,379
16.1 5,363,380
21.2 5,363,382
22.1 5,363,381
5,363,383
31 5,363,384

CLASS 372

6 5,363,385
5,363,386
15 5,363,387
20 5,363,388
22 5,363,390
36 5,363,391
45 5,363,392
5,363,393
5,363,394
5,363,395
57 5,363,396
92 5,363,397
5,363,398
96 5,363,399

CLASS 373

10 5,363,400

CLASS 374

55 5,362,151

CLASS 375

1 5,363,401
5,363,402
5,363,403
5,363,404
7 5,363,405
[redacted] 5,363,406
34 5,363,407
39 5,363,408
45 5,363,409
67 5,363,410
75 5,363,411
94 5,363,412
5,363,413
5,363,414
97 5,363,415
106 5,363,416
114 5,363,417
117 5,363,418
120 5,363,419

CLASS 376

287 5,363,420
353 5,363,421
442 5,363,422
446 5,363,423

CLASS 377

69 5,363,424

CLASS 379

38 5,363,425
57 5,363,426
58 5,363,427
5,363,428
5,363,429
61 5,363,430
67 5,363,431
90 5,363,432
92 5,363,433
170 5,363,434
208 5,363,435
355 5,363,436
5,363,437
375 5,363,438
386 5,363,439
399 5,363,440
411 5,363,441
412 5,363,442
418 5,363,443
430 5,363,444
433 5,363,445

CLASS 380

4 5,363,446
21 5,363,447
23 5,363,448
5,363,449

CLASS 381

71 5,363,450
5,363,451
168 5,363,452

CLASS 382

5 5,363,453
17 5,363,454
31 5,363,455

CLASS 383

8 5,362,152
38 5,362,153

CLASS 384

11 5,362,154
15 5,362,155
45 5,362,156
5,362,157
447 5,362,158
484 5,362,159
549 5,362,160

CLASS 385

3 5,363,457
27 5,363,456
31 5,363,458
60 5,363,459
70 5,363,460
78 5,363,461
122 5,363,462
123 5,363,463
125 5,363,464
135 5,363,465
5,363,466
5,363,467
145 5,363,468
146 5,363,469
147 5,363,470

CLASS 392

325 5,363,471

CLASS 395

3 5,363,472

50 5,363,473
91 5,363,474
122 5,363,475
125 5,363,476
126 5,363,477
141 5,363,478
142 5,363,479
145 5,363,480
156 5,363,481
157 5,363,482
161 5,363,483
200 5,363,484
250 5,363,485
5,363,486
275 5,363,487
5,363,488
5,363,489
325 5,363,492
5,363,493
5,363,494
375 5,363,490
5,363,491
5,363,495
425 5,363,496
5,363,497
5,363,498
5,363,499
5,363,500
500 5,363,501
575 5,363,502
5,363,503
600 5,363,121
5,363,504
650 5,363,505
725 5,363,506
800 5,363,507

CLASS 400

120.12 5,362,161
613 5,362,162
625 5,362,163

CLASS 401

2 5,362,164
9 5,362,165
93 5,362,166
198 5,362,167
206 5,362,168
213 5,362,169

CLASS 403

57 5,362,170
66 5,362,171
282 5,362,172
320 5,362,173

CLASS 404

25 5,362,174
26 5,362,175
72 5,362,176
84.1 5,362,177
101 5,362,178

CLASS 405

52 5,362,179
66 5,362,180
129 5,362,181
5,362,182

CLASS 407

119 5,362,183

CLASS 410

90 5,362,184

CLASS 411

34 5,362,185
508 5,362,186
555 5,362,187

CLASS 412

37 5,362,188

CLASS 414

24.5 5,362,189
26 5,362,190
225 5,362,191
280 5,362,192
332 5,362,193
427 5,362,194
483 5,362,195
785 5,362,196
786 5,362,197
5,362,198
788 5,362,199
791 5,362,200

CLASS 415

111 5,362,201
148 5,362,202
199.1 5,362,203
213.1 5,362,204

CLASS 416

34 5,362,205

CLASS 417

12 5,362,206
243 5,362,207
269 5,362,208
293 5,362,209
307 5,362,210
310 5,362,211
395 5,362,212
418 5,362,213
440 5,362,214
455 5,362,215
567 5,362,216

CLASS 418

55.4 5,362,217
55.5 5,362,218
61.2 5,362,219
171 5,362,220

CLASS 419

28 5,362,438

CLASS 420

41 5,362,439
88 5,362,440
420 5,362,441

CLASS 422

22 5,362,442
26 5,362,443
30 5,362,444
82.09 5,362,445
117 5,362,446
131 5,362,447
137 5,362,448
175 5,362,449
186.3 5,362,450
5,362,451
192 5,362,452
197 5,362,453
201 5,362,454
253 5,362,455
310 5,362,456

CLASS 423

21.1 5,362,459
115 5,362,457
157.4 5,362,460
163 5,362,461
235 5,362,462
239.1 5,362,463
243.06 5,362,458
243.08 5,362,464
304 5,362,465
328.1 5,362,466
437 R 5,362,467
445 R 5,362,468
484 5,362,469
509 5,362,470
555 5,362,471
598 5,362,472

CLASS 424

1.13 5,362,473
5,362,474
5,362,475
5,362,476
5,362,477
5,362,478
49 5,362,479
54 5,362,480
59 5,362,481
69 5,362,482
5,362,483
70 5,362,484
5,362,485
71 5,362,486
5,362,487
78.05 5,362,488
85.5 5,362,490
94.4 5,362,492
180.1 5,362,491
401 5,362,494
435 5,362,495
5,362,496
5,362,498
449 5,362,497
547 5,362,499
852 5,362,489

CLASS 425

62 5,362,221
145 5,362,222
185 5,362,223
457 5,362,224
472 5,362,225
526 5,362,226
574 5,362,227

CLASS 426

5 5,362,500
12 5,362,501
20 5,362,502
50 5,362,503
89 5,362,504
93 5,362,505
281 5,362,507
302 5,362,508
524 5,362,509
549 5,362,510
601 5,362,511
5,362,512
656 5,362,869

CLASS 427

58 5,362,513
74 5,362,514
155 5,362,515
207.1 5,362,516
222 5,362,517
259 5,362,518
385.5 5,362,519
393 5,362,520
407.1 5,362,521
435 5,362,522
446 5,362,523
476 5,362,524
554 5,362,525
573 5,362,526

CLASS 428

13 5,362,540
33 5,362,527
34.5 5,362,528
35.7 5,362,529
36.2 5,362,530
36.6 5,362,531
5,362,532
36.8 5,362,533
40 5,362,534
43 5,362,535
64 5,362,536
5,362,537
5,362,538
68 5,362,539
69 5,362,541
70 5,362,542
76 5,362,543
82 5,362,544
96 5,362,545
138 5,362,546
167 5,362,547
195 5,362,548
5,362,549
209 5,362,550
210 5,362,551
216 5,362,552
246 5,362,553
283 5,362,554
290 5,362,555
321.3 5,362,556
323 5,362,557
5,362,558
333 5,362,559
343 5,362,560
5,362,561
369 5,362,562
398 5,362,563
402.2 5,362,564
5,362,565
403 5,362,566
408 5,362,567
421 5,362,568
472.2 5,362,569
475.2 5,362,570
480 5,362,571
497 5,362,572
511 5,362,573
643 5,362,574
688 5,362,575

CLASS 429

7 5,362,576
27 5,362,577
35 5,362,578
162 5,362,579
194 5,362,493
245 5,362,580
249 5,362,581
5,362,582

CLASS 430

5 5,362,583
5,362,584
5,362,591
30 5,362,585
58 5,362,586
5,362,587
69 5,362,588
78 5,362,589
89 5,362,590
106 5,362,592
111 5,362,593
126 5,362,594
137 5,362,595
5,362,596
191 5,362,597
5,362,598
192 5,362,599
5,362,600
203 5,362,601
262 5,362,602
281 5,362,603
5,362,604
284 5,362,605
315 5,362,606
326 5,362,607
327 5,362,608
356 5,362,616
372 5,362,609
465 5,362,610
508 5,362,611
520 5,362,612
528 5,362,613
538 5,362,614
551 5,362,615
556 5,362,617
567 5,362,618
5,362,619
571 5,362,620
596 5,362,621
642 5,362,626

CLASS 432

120 5,362,228
152 5,362,229
236 5,362,230
258 5,362,231

CLASS 433

9 5,362,232
5,362,233
169 5,362,234
172 5,362,235
173 5,362,236
220 5,362,237

CLASS 434

65 5,362,238
153 5,362,239
157 5,362,240

CLASS 435

1 5,362,622
6 5,362,623
7.5 5,362,624
7.6 5,362,625
7.9 5,362,627
18 5,362,628
21 5,362,629
25 5,362,630
28 5,362,633
69.5 5,362,631
76 5,362,634
106 5,362,635
115 5,362,636
116 5,362,637
125 5,362,638
161 5,362,639
172.3 5,362,640
209 5,362,641
240.1 5,362,642
240.27 5,362,643
252.3 5,362,644
252.33 5,362,646
252.5 5,362,645
264 5,362,647

CLASS 436

5,362,648
71 5,362,649
125 5,362,650
134 5,362,651
135 5,362,652
165 5,362,653
518 5,362,654
520 5,362,655

CLASS 437

5,362,656
31 5,362,657
5,362,658
5,362,659
40 5,362,660
5,362,661
47 5,362,632
52 5,362,662
5,362,663
5,362,664
5,362,665
5,362,666
62 5,362,667
67 5,362,668
5,362,669
70 5,362,670
81 5,362,671
89 5,362,672
127 5,362,673
129 5,362,674
5,362,675
192 5,362,676
203 5,362,677
5,362,678
206 5,362,679
209 5,362,680
226 5,362,681
5,362,682
5,362,683
234 5,362,684
238 5,362,685
5,362,686

CLASS 439

66 5,362,241
76 5,362,242
5,362,243
82 5,362,244
160 5,362,245
231 5,362,246
330 5,362,247
352 5,362,248
357 5,362,249
387 5,362,250
394 5,362,251
462 5,362,252
5,362,253
536 5,362,254
582 5,362,255
660 5,362,256
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For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 12, 1991 for which maintenance fees due at 3 years

and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,063,613 through 5,065,456
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 10, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,704,742 through 4,706,300
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 8, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,413,357 through 4,414,690
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 7, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,853	07/089,440	01/31/89
(4,609,894)	(06/653,846)	(09/02/86)
Re. 33,165	07/238,558	02/13/90
(4,609,360)	(06/630,300)	(09/02/86)
Re. 33,194	07/239,694	04/10/90
(4,608,970)	(06/711,571)	(09/02/86)
Re. 33,378	07/352,158	10/09/90
(4,609,832)	(06/542,147)	(09/02/86)
4,347,644	06/217,557	09/07/82
4,347,677	06/244,838	09/07/82
4,347,685	06/217,266	09/07/82
4,347,707	06/249,543	09/07/82
4,347,708	06/235,888	09/07/82
4,347,709	06/225,919	09/07/82
4,347,807	06/244,555	09/07/82
4,347,844	06/220,395	09/07/82
4,347,855	06/303,519	09/07/82
4,347,861	06/238,356	09/07/82
4,347,867	06/221,129	09/07/82
4,347,879	06/248,463	09/07/82
4,347,880	06/216,782	09/07/82
4,347,884	06/253,102	09/07/82
4,347,890	06/241,877	09/07/82
4,347,899	06/267,301	09/07/82
4,347,911	06/245,127	09/07/82
4,347,940	06/252,714	09/07/82
4,347,947	06/216,647	09/07/82
4,347,967	06/228,310	09/07/82
4,347,968	06/238,659	09/07/82
4,347,989	06/227,912	09/07/82
4,347,998	06/254,798	09/07/82
4,348,003	06/253,882	09/07/82
4,348,006	06/224,203	09/07/82
4,348,025	06/227,033	09/07/82
4,348,030	06/260,937	09/07/82
4,348,031	06/241,647	09/07/82
4,348,174	06/228,613	09/07/82
4,348,177	06/287,493	09/07/82
4,348,181	06/237,919	09/07/82
4,348,183	06/226,783	09/07/82
4,348,188	06/231,863	09/07/82
4,348,214	06/249,547	09/07/82
4,348,215	06/223,801	09/07/82
4,348,219	06/254,256	09/07/82
4,348,223	06/216,574	09/07/82
4,348,233	06/255,084	09/07/82
4,348,250	06/234,151	09/07/82
4,348,251	06/218,251	09/07/82
4,348,252	06/253,017	09/07/82
4,348,261	06/243,505	09/07/82
4,348,271	06/283,167	09/07/82
4,348,274	06/220,205	09/07/82
4,348,284	06/223,821	09/07/82
4,348,285	06/239,118	09/07/82
4,348,287	06/266,775	09/07/82

Patent Number	Serial Number	Issue Date
4,348,303	06/264,509	09/07/82
4,348,305	06/243,503	09/07/82
4,348,308	06/226,165	09/07/82
4,348,311	06/233,459	09/07/82
4,348,319	06/223,064	09/07/82
4,348,332	06/308,717	09/07/82
4,348,338	06/251,060	09/07/82
4,348,359	06/270,231	09/07/82
4,348,369	06/280,377	09/07/82
4,348,382	06/313,046	09/07/82
4,348,398	06/219,728	09/07/82
4,348,400	06/261,423	09/07/82
4,348,404	06/271,276	09/07/82
4,348,424	06/248,083	09/07/82
4,348,428	06/216,087	09/07/82
4,348,438	06/221,711	09/07/82
4,348,443	06/217,737	09/07/82
4,348,444	06/299,710	09/07/82
4,348,445	06/299,753	09/07/82
4,348,448	06/299,852	09/07/82
4,348,451	06/261,066	09/07/82
4,348,456	06/227,102	09/07/82
4,348,466	06/227,511	09/07/82
4,348,468	06/217,333	09/07/82
4,348,476	06/227,135	09/07/82
4,348,483	06/227,962	09/07/82
4,348,486	06/296,713	09/07/82
4,348,490	06/227,706	09/07/82
4,348,491	06/309,376	09/07/82
4,348,493	06/284,885	09/07/82
4,348,497	06/245,929	09/07/82
4,348,500	06/219,872	09/07/82
4,348,511	06/259,322	09/07/82
4,348,525	06/252,455	09/07/82
4,348,526	06/320,051	09/07/82
4,348,527	06/282,972	09/07/82
4,348,529	06/294,408	09/07/82
4,348,537	06/271,793	09/07/82
4,348,599	06/264,095	09/07/82
4,348,621	06/222,128	09/07/82
4,348,673	06/217,700	09/07/82
4,348,755	06/228,034	09/07/82
4,348,767	06/220,322	09/07/82
4,608,717	06/628,298	09/02/86
4,608,719	06/676,927	09/02/86
4,608,723	06/585,437	09/02/86
4,608,725	06/704,078	09/02/86
4,608,728	06/694,720	09/02/86
4,608,734	06/680,091	09/02/86
4,608,738	06/585,545	09/02/86
4,608,740	06/616,620	09/02/86
4,608,744	06/647,029	09/02/86
4,608,747	06/488,785	09/02/86
4,608,750	06/653,353	09/02/86
4,608,755	06/670,566	09/02/86
4,608,758	06/583,692	09/02/86
4,608,766	06/740,023	09/02/86
4,608,770	06/635,908	09/02/86
4,608,789	06/530,710	09/02/86
4,608,793	06/535,885	09/02/86
4,608,796	06/623,386	09/02/86
4,608,797	06/752,571	09/02/86
4,608,801	06/622,007	09/02/86
4,608,803	06/620,887	09/02/86
4,608,804	06/731,427	09/02/86
4,608,805	06/792,502	09/02/86
4,608,806	06/521,107	09/02/86
4,608,810	06/757,951	09/02/86
4,608,812	06/733,041	09/02/86
4,608,815	06/674,606	09/02/86
4,608,818	06/614,470	09/02/86
4,608,820	06/730,000	09/02/86
4,608,821	06/636,463	09/02/86
4,608,823	06/752,002	09/02/86
4,608,826	06/734,765	09/02/86
4,608,834	06/716,284	09/02/86
4,608,836	06/828,242	09/02/86
4,608,838	06/730,437	09/02/86
4,608,842	06/623,925	09/02/86
4,608,843	06/778,624	09/02/86
4,608,846	06/739,207	09/02/86
4,608,849	06/679,508	09/02/86
4,608,860	06/750,125	09/02/86
4,608,862	06/692,949	09/02/86
4,608,864	06/625,469	09/02/86
4,608,865	06/678,871	09/02/86
4,608,873	06/488,907	09/02/86
4,608,881	06/786,707	09/02/86
4,608,886	06/785,238	09/02/86
4,608,893	06/692,038	09/02/86
4,608,898	06/680,912	09/02/86
4,608,900	06/636,929	09/02/86
4,608,902	06/664,289	09/02/86
4,608,903	06/652,039	09/02/86
4,608,904	06/735,723	09/02/86
4,608,905	06/701,122	09/02/86
4,608,906	06/751,629	09/02/86
4,608,907	06/489,644	09/02/86
4,608,908	06/571,609	09/02/86
4,608,909	06/495,258	09/02/86
4,608,910	06/743,887	09/02/86
4,608,913	06/614,458	09/02/86
4,608,915	06/702,137	09/02/86
4,608,916	06/677,926	09/02/86
4,608,919	06/667,415	09/02/86
4,608,920	06/491,169	09/02/86
4,608,921	06/649,548	09/02/86
4,608,924	06/578,984	09/02/86
4,608,933	06/664,146	09/02/86
4,608,937	06/709,787	09/02/86
4,608,942	06/733,511	09/02/86
4,608,944	06/701,982	09/02/86
4,608,945	06/770,286	09/02/86
4,608,948	06/650,247	09/02/86
4,608,950	06/682,048	09/02/86
4,608,955	06/768,890	09/02/86
4,608,956	06/671,013	09/02/86
4,608,959	06/729,083	09/02/86
4,608,960	06/560,191	09/02/86
4,608,969	06/681,233	09/02/86
4,608,974	06/790,267	09/02/86
4,608,983	06/604,859	09/02/86
4,608,989	06/662,297	09/02/86
4,608,991	06/654,956	09/02/86
4,608,995	06/640,662	09/02/86
4,609,000	06/744,613	09/02/86
4,609,001	06/744,612	09/02/86
4,609,002	06/744,700	09/02/86
4,609,014	06/791,628	09/02/86
4,609,015	06/658,393	09/02/86
4,609,019	06/704,946	09/02/86
4,609,020	06/704,947	09/02/86
4,609,021	06/666,627	09/02/86
4,609,025	06/780,872	09/02/86
4,609,031	06/623,384	09/02/86
4,609,033	06/736,261	09/02/86
4,609,034	06/601,150	09/02/86
4,609,035	06/705,826	09/02/86
4,609,037	06/786,231	09/02/86
4,609,038	06/758,624	09/02/86
4,609,041	06/465,667	09/02/86
4,609,045	06/751,366	09/02/86
4,609,046	06/650,791	09/02/86
4,609,047	06/635,767	09/02/86
4,609,052	06/676,308	09/02/86
4,609,055	06/681,991	09/02/86
4,609,057	06/749,953	09/02/86
4,609,061	06/722,328	09/02/86
4,609,066	06/747,392	09/02/86
4,609,070	06/616,590	09/02/86
4,609,078	06/804,234	09/02/86
4,609,081	06/630,516	09/02/86
4,609,082	06/622,535	09/02/86
4,609,084	06/728,250	09/02/86
4,609,093	06/751,980	09/02/86
4,609,094	06/667,160	09/02/86

Patent Number	Serial Number	Issue Date
4,609,096	06/660,446	09/02/86
4,609,098	06/623,371	09/02/86
4,609,099	06/641,897	09/02/86
4,609,102	06/687,851	09/02/86
4,609,108	06/574,705	09/02/86
4,609,110	06/642,623	09/02/86
4,609,112	06/674,765	09/02/86
4,609,117	06/745,647	09/02/86
4,609,120	06/748,769	09/02/86
4,609,125	06/800,044	09/02/86
4,609,133	06/766,576	09/02/86
4,609,136	06/765,648	09/02/86
4,609,141	06/602,637	09/02/86
4,609,152	06/757,938	09/02/86
4,609,154	06/594,868	09/02/86
4,609,156	06/678,301	09/02/86
4,609,157	06/602,110	09/02/86
4,609,161	06/696,288	09/02/86
4,609,162	06/683,515	09/02/86
4,609,164	06/659,853	09/02/86
4,609,169	06/640,636	09/02/86
4,609,173	06/656,249	09/02/86
4,609,175	06/631,149	09/02/86
4,609,180	06/830,911	09/02/86
4,609,181	06/830,912	09/02/86
4,609,183	06/648,306	09/02/86
4,609,187	06/637,080	09/02/86
4,609,189	06/633,619	09/02/86
4,609,191	06/535,076	09/02/86
4,609,194	06/615,310	09/02/86
4,609,197	06/572,906	09/02/86
4,609,199	06/702,049	09/02/86
4,609,203	06/771,314	09/02/86
4,609,204	06/418,081	09/02/86
4,609,205	06/780,672	09/02/86
4,609,206	06/763,613	09/02/86
4,609,207	06/690,375	09/02/86
4,609,213	06/431,387	09/02/86
4,609,214	06/678,150	09/02/86
4,609,215	06/642,289	09/02/86
4,609,226	06/640,522	09/02/86
4,609,228	06/690,007	09/02/86
4,609,229	06/622,724	09/02/86
4,609,235	06/707,557	09/02/86
4,609,240	06/783,889	09/02/86
4,609,248	06/646,936	09/02/86
4,609,249	06/726,813	09/02/86
4,609,252	06/579,791	09/02/86
4,609,257	06/603,188	09/02/86
4,609,259	06/669,792	09/02/86
4,609,262	06/681,558	09/02/86
4,609,266	06/642,179	09/02/86
4,609,273	06/753,787	09/02/86
4,609,275	06/774,228	09/02/86
4,609,280	06/547,546	09/02/86
4,609,284	06/703,741	09/02/86
4,609,285	06/770,977	09/02/86
4,609,293	06/604,059	09/02/86
4,609,294	06/253,875	09/02/86
4,609,297	06/667,577	09/02/86
4,609,300	06/634,754	09/02/86
4,609,302	06/710,555	09/02/86
4,609,303	06/645,521	09/02/86
4,609,306	06/525,688	09/02/86
4,609,307	06/669,692	09/02/86
4,609,309	06/619,599	09/02/86
4,609,311	06/535,178	09/02/86
4,609,312	06/671,635	09/02/86
4,609,314	06/612,268	09/02/86
4,609,315	06/590,776	09/02/86
4,609,316	06/615,487	09/02/86
4,609,317	06/764,842	09/02/86
4,609,318	06/662,764	09/02/86
4,609,319	06/650,934	09/02/86
4,609,323	06/663,443	09/02/86
4,609,324	06/631,581	09/02/86
4,609,325	06/684,905	09/02/86
4,609,331	06/657,559	09/02/86
4,609,338	06/696,903	09/02/86
4,609,339	06/783,412	09/02/86
4,609,340	06/768,585	09/02/86
4,609,346	06/748,571	09/02/86
4,609,348	06/754,279	09/02/86
4,609,354	06/720,564	09/02/86
4,609,356	06/714,251	09/02/86
4,609,357	06/519,398	09/02/86
4,609,359	06/776,127	09/02/86
4,609,362	06/510,539	09/02/86
4,609,368	06/643,252	09/02/86
4,609,376	06/717,551	09/02/86
4,609,379	06/621,073	09/02/86
4,609,385	06/731,071	09/02/86
4,609,386	06/769,753	09/02/86
4,609,394	06/789,296	09/02/86
4,609,404	06/524,083	09/02/86
4,609,407	06/563,036	09/02/86
4,609,410	06/585,611	09/02/86
4,609,415	06/572,096	09/02/86
4,609,423	06/549,970	09/02/86
4,609,426	06/736,769	09/02/86
4,609,428	06/756,233	09/02/86
4,609,431	06/634,724	09/02/86
4,609,432	06/621,139	09/02/86
4,609,433	06/685,569	09/02/86
4,609,437	06/710,816	09/02/86
4,609,446	06/568,626	09/02/86
4,609,447	06/693,353	09/02/86
4,609,448	06/685,645	09/02/86
4,609,454	06/731,466	09/02/86
4,609,455	06/703,858	09/02/86
4,609,462	06/695,041	09/02/86
4,609,463	06/676,983	09/02/86
4,609,466	06/663,860	09/02/86
4,609,470	06/752,824	09/02/86
4,609,472	06/717,768	09/02/86
4,609,473	06/711,796	09/02/86
4,609,475	06/582,994	09/02/86
4,609,476	06/673,635	09/02/86
4,609,482	06/709,695	09/02/86
4,609,485	06/700,271	09/02/86
4,609,494	06/703,953	09/02/86
4,609,498	06/711,891	09/02/86
4,609,500	06/470,120	09/02/86
4,609,502	06/701,725	09/02/86
4,609,504	06/331,828	09/02/86
4,609,506	06/694,754	09/02/86
4,609,519	06/590,481	09/02/86
4,609,520	06/575,245	09/02/86
4,609,522	06/576,677	09/02/86
4,609,523	06/576,060	09/02/86
4,609,524	06/552,227	09/02/86
4,609,529	06/672,261	09/02/86
4,609,534	06/658,649	09/02/86
4,609,544	06/510,776	09/02/86
4,609,549	06/606,479	09/02/86
4,609,550	06/459,596	09/02/86
4,609,552	06/722,900	09/02/86
4,609,565	06/681,003	09/02/86
4,609,570	06/479,030	09/02/86
4,609,571	06/699,260	09/02/86
4,609,580	06/689,421	09/02/86
4,609,581	06/380,568	09/02/86
4,609,593	06/630,898	09/02/86
4,609,596	06/753,496	09/02/86
4,609,600	06/704,327	09/02/86
4,609,606	06/718,315	09/02/86
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4,609,610	06/761,280	09/02/86
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4,954,555	07/358,218	09/04/90
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4,954,569	07/371,086	09/04/90
4,954,570	07/198,546	09/04/90
4,954,579	07/264,920	09/04/90
4,954,580	07/273,525	09/04/90
4,954,593	07/395,687	09/04/90
4,954,604	07/238,406	09/04/90
4,954,606	07/259,768	09/04/90
4,954,608	07/055,973	09/04/90
4,954,609	07/317,169	09/04/90
4,954,610	07/316,380	09/04/90
4,954,611	07/316,342	09/04/90
4,954,625	07/400,680	09/04/90
4,954,632	07/308,571	09/04/90
4,954,633	07/384,910	09/04/90
4,954,643	07/306,262	09/04/90
4,954,648	07/350,394	09/04/90
4,954,654	07/237,380	09/04/90
4,954,658	07/407,067	09/04/90
4,954,664	07/470,428	09/04/90
4,954,667	07/311,334	09/04/90
4,954,668	07/224,221	09/04/90
4,954,675	07/244,373	09/04/90
4,954,676	07/144,561	09/04/90
4,954,677	07/347,775	09/04/90
4,954,689	07/379,351	09/04/90
4,954,693	07/378,293	09/04/90
4,954,712	07/421,827	09/04/90
4,954,719	07/241,486	09/04/90
4,954,720	07/460,491	09/04/90
4,954,724	07/456,945	09/04/90
4,954,725	07/326,565	09/04/90
4,954,735	07/366,592	09/04/90
4,954,748	07/278,892	09/04/90
4,954,750	07/216,096	09/04/90
4,954,753	07/238,039	09/04/90
4,954,765	07/372,758	09/04/90
4,954,771	07/249,351	09/04/90
4,954,780	07/397,402	09/04/90
4,954,782	07/374,486	09/04/90
4,954,783	07/398,714	09/04/90
4,954,785	07/337,082	09/04/90
4,954,802	07/354,498	09/04/90
4,954,806	07/466,191	09/04/90
4,954,807	07/257,988	09/04/90
4,954,808	07/390,197	09/04/90
4,954,809	07/345,596	09/04/90
4,954,810	07/468,057	09/04/90
4,954,813	07/391,086	09/04/90
4,954,817	07/189,185	09/04/90
4,954,825	07/327,073	09/04/90
4,954,837	07/382,197	09/04/90
4,954,839	07/383,436	09/04/90
4,954,840	07/468,916	09/04/90
4,954,842	07/220,182	09/04/90
4,954,843	07/355,690	09/04/90
4,954,849	07/370,187	09/04/90

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4,954,852	07/138,504	09/04/90
4,954,863	07/271,316	09/04/90
4,954,869	07/318,154	09/04/90
4,954,872	07/188,373	09/04/90
4,954,873	07/147,779	09/04/90
4,954,876	07/226,741	09/04/90
4,954,896	07/473,314	09/04/90
4,954,908	07/258,897	09/04/90
4,954,922	07/252,515	09/04/90
4,954,932	07/441,035	09/04/90
4,954,934	07/311,056	09/04/90
4,954,937	07/404,657	09/04/90
4,954,948	07/246,222	09/04/90
4,954,949	07/415,469	09/04/90
4,954,954	06/769,353	09/04/90
4,954,964	07/268,846	09/04/90
4,954,970	07/179,565	09/04/90
4,954,983	07/107,203	09/04/90
4,954,987	07/380,368	09/04/90
4,955,004	07/240,779	09/04/90
4,955,029	06/682,355	09/04/90
4,955,035	07/276,445	09/04/90
4,955,036	07/324,682	09/04/90
4,955,040	07/257,559	09/04/90
4,955,041	07/304,190	09/04/90
4,955,052	07/385,407	09/04/90
4,955,063	07/332,420	09/04/90
4,955,068	07/278,479	09/04/90
4,955,069	07/317,932	09/04/90
4,955,072	07/396,669	09/04/90

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,009,613, Re. S.N. 08/296,959, Aug. 26, 1994, Cl. 439/482, SPRING CONTACT TWISTER PROBE FOR TESTING ELECTRICAL PRINTED CIRCUIT BOARDS, Ulf R. Langgard, et. al., Owner of Record: *Interconnect Devices Inc., Kanas City, Kans.*, Attorney or Agent: Wm. Bruce Day, Ex. Gp.: 3202

5,108,589, Re. S.N. 08/294,961, Aug. 24, 1994, Cl. 209/393, MATERIAL SEPERATING APPARATUS, Raymond W. Sherman, et. al., Owner of Record: *General Kinematics Corp., Barrington, Ill.*, Attorney or Agent: Patrick D. Ertel, Ex. Gp.: 3108

5,151,505, Re. S.N. 08/312,209, Sept. 26, 1994, Cl. 534/728, AMINE SALTS OF AZO PIGMENTS BASED ON PYRAZOLONE DERIVATIVES, Stefan Hariet, et. al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.*, Attorney or Agent: Michele A. Kovaleski, Ex. Gp.: 1201

5,154,368, Re. S.N. 08/312,616, Sept. 27, 1994, Cl. 242/107.2, SEAT BELT RETRACTOR WITH DEFORMABLE LOCK MECHANISM, Yoshiichi Fujimura, et. al., Owner of Record: *Takata Corp., Tokyo, Japan*, Attorney or Agent: Manabu Kanesaka, Ex. Gp.: 2405

5,175,123, Re. S.N. 08/245,131, May 17, 1994, Cl. 437/70, HIGH-PRESSURE POLYSILICON ENCAPSULATED LOCALIZED OXIDATION OF SILICON, Barbara Vasquez, et. al., Owner of Record: *Motorola, Inc., Schaumburg, Ill.*, Attorney or Agent: Jasper W. Dockrey, Ex. Gp.: 1104

5,230,386, Re. S.N. 08/290,195, Aug. 15, 1994, Cl. 175/45, METHOD FOR DRILLING DIRECTIONAL WELLS, Jian-Qun Wu, et. al., Owner of Record: *Baker Hughes Incorp., Houston, Tex.*, Attorney or Agent: Michael A. Cantor, Ex. Gp.: 3506

5,239,995, Re. S.N. 08/296,018, Aug. 24, 1994, Cl. 128/204.23, SLEEP APNEA TREATMENT APPARATUS, Mark C. Estes, et. al., Owner of Record: *Allied-Signal Inc., Morristown, N.J.*, Attorney or Agent: John F. Letchford, Ex. Gp.: 3307

5,272,236, Re. S.N. 08/305,631, Sept. 14, 1994, Cl. 526/348.5, ELASTIC SUBSTANTIALLY LINEAR OLEFIN POLYMERS, Shih-Yaw Lai, et. al., Owner of Record: *Dow Chemical Co., Midland, Mich.*, Attorney or Agent: L. Wayne White, Ex. Gp.: 1505

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,325,984, Reexam. No. 90/003,566, Sept. 13, 1994, Cl. 427/534, PLASMA PASSIVATION TECHNIQUE FOR THE PREVENTION OF POST-ETCH CORROSION OF PLASMA-ETCHED ALUMINUM FILMS, Christopher H. Galfo, et. al., Owner of Record: *Fairchild Camera and Instrument Corp., Mountain View, Calif.*, Attorney or Agent: Michael J. Pollack, Limbach & Limbach, San Francisco, Calif., Ex. Gp.: 1112, Requester: Michael N. Berg, Phillips Moore Limpio & Finley, Palo Alto, Calif.

4,728,565, Reexam. No. 90/003,431, May 12, 1994, Cl. 428/255, ELASTIC SUPPORT MEMBER FOR SUPPORTING STUFFING OF FURNITURE PIECES, Anacieto Fontana, Owner of Record: *Cintel S.A.S. Di Fontana A & C, Italy*, Attorney or Agent: Joseph S. Littenberg, Lerner, David, Littenberg, Krumholz & Mentlik, Westfield, N.J., Ex. Gp.: 1504, Requester: Robert F.I. Conte, Laff, Whitesel, Conte & Saret, Chicago, Ill.

4,961,740, Reexam. No. 90/003,433, May 13, 1994, Cl. 606/061, V-THREAD FUSION CAGE AND METHOD OF FUSING A BONE JOINT, Charles D. Ray, et. al., Owner of Record: *Surgical Dynamics, Inc., Alameda, Calif.*, Attorney or Agent: Sheldon R. Meyer, Fliesler, Dubb, Meyer & Lovejoy, San Francisco, Calif., Ex. Gp.: 3309, Requester: Spine-Tech, Inc., Minneapolis, Minn.

5,105,184, Reexam. No. 90/003,423, May 16, 1994, Cl. 345/115, METHODS FOR DISPLAYING AND INTEGRATING COMMERCIAL ADVERTISEMENTS WITH SOFTWARE, Noorali Pirani, et. al., Owner of Record: *Noorali Pirani, Carlsbad, Calif., David Ekedal, Carlsbad, Calif.*, Attorney or Agent: None, Ex. Gp.: 2609, Requester: Commissioner of Patents & Trademarks, Washington, D.C.

5,132,832, Reexam. No. 90/003,472, June 23, 1994, Cl. 359/137, TOKEN RING CONCENTRATOR WITH GLOBAL RESET CAPABILITY, Bret A. Matz, et. al., Owner of Record: *AMP Incorporated, Harrisburg, Pa.*, Attorney or Agent: Willaim B. Noll, c/o The Whitaker Corp., Wilmington, Del., Ex. Gp.: 2616, Requester: Owner

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED SEPTEMBER 26, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
41,689	70/041,689	12/22/1903
41,720	70/041,720	12/22/1903
94,643	71/072,748	12/23/1913
94,653	71/040,434	12/23/1913
94,664	71/072,384	12/23/1913
94,667	71/058,881	12/23/1913
94,697	71/072,195	12/23/1913
94,704	71/072,506	12/23/1913
308,732	71/340,498	12/19/1933
308,744	71/340,567	12/19/1933
308,747	71/339,931	12/19/1933
308,781	71/340,977	12/19/1933
308,782	71/340,979	12/19/1933
308,787	71/341,020	12/19/1933
308,793	71/339,867	12/19/1933
583,761	71/563,943	12/22/1953
583,763	71/581,515	12/22/1953
583,772	71/604,141	12/22/1953
583,775	71/605,166	12/22/1953
583,776	71/607,896	12/22/1953
583,783	71/615,682	12/22/1953
583,786	71/616,857	12/22/1953
583,794	71/662,015	12/22/1953
583,795	71/622,156	12/22/1953
583,796	71/622,607	12/22/1953
583,799	71/623,203	12/22/1953
583,811	71/626,684	12/22/1953
583,821	71/628,279	12/22/1953
583,823	71/628,679	12/22/1953
583,828	71/629,800	12/22/1953
583,837	71/631,665	12/22/1953
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583,870	71/636,148	12/22/1953
583,874	71/637,198	12/22/1953
583,879	71/637,715	12/22/1953
583,885	71/638,802	12/22/1953
583,896	71/640,192	12/22/1953
583,898	71/640,279	12/22/1953
583,900	71/640,484	12/22/1953
583,902	71/640,535	12/22/1953
583,916	71/641,479	12/22/1953
583,917	71/641,480	12/22/1953
583,918	71/641,481	12/22/1953
583,922	71/641,630	12/22/1953
583,931	71/642,024	12/22/1953
583,937	71/642,462	12/22/1953
583,938	71/642,522	12/22/1953
583,939	71/642,710	12/22/1953
583,942	71/642,957	12/22/1953
583,943	71/642,958	12/22/1953
583,945	71/642,971	12/22/1953
583,947	71/643,103	12/22/1953
583,951	71/643,384	12/22/1953
583,955	71/643,761	12/22/1953
583,957	71/644,016	12/22/1953
583,965	71/644,424	12/22/1953
583,967	71/644,429	12/22/1953
583,970	71/644,619	12/22/1953
583,973	71/644,898	12/22/1953
583,975	71/645,054	12/22/1953
583,977	71/645,405	12/22/1953
583,985	71/645,682	12/22/1953
583,988	71/645,782	12/22/1953
583,993	71/645,993	12/22/1953
583,995	71/646,100	12/22/1953
583,996	71/646,104	12/22/1953
584,005	71/646,422	12/22/1953
584,011	71/649,872	12/22/1953
584,013	71/634,803	12/22/1953
584,015	71/638,639	12/22/1953
584,016	71/640,352	12/22/1953
974,740	72/411,812	12/18/1973
974,744	72/444,100	12/18/1973
974,747	72/421,096	12/18/1973
974,748	72/435,947	12/18/1973
974,752	72/453,370	12/18/1973
974,754	72/440,773	12/18/1973
974,755	72/442,366	12/18/1973
974,756	72/442,370	12/18/1973
974,760	72/406,625	12/18/1973
974,762	72/423,098	12/18/1973
974,763	72/424,730	12/18/1973
974,765	72/430,916	12/18/1973
974,766	72/430,917	12/18/1973
974,768	72/435,064	12/18/1973
974,770	72/444,547	12/18/1973
974,771	72/448,305	12/18/1973
974,774	72/446,849	12/18/1973
974,775	72/446,850	12/18/1973
974,776	72/450,932	12/18/1973
974,777	72/450,933	12/18/1973
974,778	72/450,934	12/18/1973
974,779	72/450,935	12/18/1973
974,781	72/414,616	12/18/1973
974,783	72/329,742	12/18/1973
974,786	72/412,517	12/18/1973
974,796	72/434,960	12/18/1973
974,797	72/437,727	12/18/1973
974,801	72/439,348	12/18/1973
974,803	72/441,216	12/18/1973
974,806	72/437,463	12/18/1973
974,812	72/423,632	12/18/1973
974,818	72/417,891	12/18/1973
974,822	72/427,219	12/18/1973
974,825	72/430,694	12/18/1973
974,826	72/431,323	12/18/1973
974,828	72/434,286	12/18/1973
974,829	72/436,145	12/18/1973
974,832	72/443,426	12/18/1973
974,836	72/446,268	12/18/1973
974,837	72/448,304	12/18/1973
974,838	72/450,606	12/18/1973
974,840	72/450,849	12/18/1973
974,845	72/407,620	12/18/1973
974,847	72/412,281	12/18/1973
974,859	72/390,333	12/18/1973
974,860	72/390,334	12/18/1973
974,866	72/407,351	12/18/1973
974,868	72/410,055	12/18/1973
974,869	72/410,656	12/18/1973
974,874	72/414,872	12/18/1973
974,875	72/418,631	12/18/1973
974,876	72/420,773	12/18/1973
974,879	72/423,136	12/18/1973
974,882	72/426,288	12/18/1973
974,893	72/433,594	12/18/1973
974,894	72/433,724	12/18/1973
974,895	72/434,086	12/18/1973
974,902	72/437,554	12/18/1973
974,906	72/445,576	12/18/1973
974,910	72/445,903	12/18/1973
974,911	72/446,259	12/18/1973
974,919	72/390,527	12/18/1973
974,920	72/397,627	12/18/1973
974,921	72/397,629	12/18/1973
974,923	72/403,764	12/18/1973
974,927	72/418,778	12/18/1973
974,929	72/419,813	12/18/1973
974,930	72/419,823	12/18/1973
974,936	72/389,027	12/18/1973
974,937	72/405,274	12/18/1973
974,940	72/412,958	12/18/1973
974,941	72/413,572	12/18/1973
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974,946	72/415,283	12/18/1973
974,947	72/416,502	12/18/1973

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974,953	72/425,127	12/18/1973
974,956	72/425,934	12/18/1973
974,961	72/432,149	12/18/1973
974,966	72/438,073	12/18/1973
974,967	72/439,422	12/18/1973
974,971	72/376,257	12/18/1973
974,972	72/384,780	12/18/1973
974,975	72/398,225	12/18/1973
974,976	72/407,231	12/18/1973
974,978	72/411,771	12/18/1973
974,980	72/413,170	12/18/1973
974,981	72/416,198	12/18/1973
974,982	72/416,208	12/18/1973
974,984	72/419,923	12/18/1973
974,987	72/428,045	12/18/1973
974,989	72/429,042	12/18/1973
974,991	72/431,248	12/18/1973
974,994	72/433,800	12/18/1973
974,995	72/439,469	12/18/1973
974,998	72/424,483	12/18/1973
975,004	72/433,982	12/18/1973
975,005	72/443,027	12/18/1973
975,006	72/429,446	12/18/1973
975,007	72/429,790	12/18/1973
975,008	72/432,025	12/18/1973
975,014	72/343,723	12/18/1973
975,015	72/414,124	12/18/1973
975,017	72/419,941	12/18/1973
975,020	72/461,849	12/18/1973
975,021	72/376,566	12/18/1973
975,023	72/431,578	12/18/1973
975,025	72/450,216	12/18/1973
975,029	72/419,257	12/18/1973
975,030	72/419,755	12/18/1973
975,033	72/424,074	12/18/1973
975,034	72/428,016	12/18/1973
975,037	72/433,475	12/18/1973
975,038	72/435,367	12/18/1973
975,042	72/404,230	12/18/1973
975,046	72/424,196	12/18/1973
975,047	72/424,562	12/18/1973
975,050	72/426,106	12/18/1973
975,052	72/431,947	12/18/1973
975,054	72/434,067	12/18/1973
975,055	72/435,843	12/18/1973
975,059	72/439,292	12/18/1973
975,062	72/439,576	12/18/1973
975,064	72/440,480	12/18/1973
975,067	72/445,043	12/18/1973
975,073	72/351,150	12/18/1973
975,076	72/442,295	12/18/1973
975,079	72/411,041	12/18/1973
975,080	72/435,377	12/18/1973
975,084	72/423,768	12/18/1973
975,088	72/427,409	12/18/1973
975,096	72/445,350	12/18/1973
975,102	72/429,614	12/18/1973
975,103	72/453,736	12/18/1973
975,105	72/454,101	12/18/1973
975,109	72/424,126	12/18/1973
975,110	72/425,352	12/18/1973
975,111	72/425,971	12/18/1973
975,112	72/426,313	12/18/1973
975,113	72/427,358	12/18/1973
975,116	72/435,303	12/18/1973
975,117	72/436,106	12/18/1973
975,121	72/360,913	12/18/1973
975,122	72/386,708	12/18/1973
975,127	72/409,624	12/18/1973
975,131	72/420,525	12/18/1973
975,137	72/393,127	12/18/1973
975,142	72/442,971	12/18/1973
975,145	72/409,464	12/18/1973
975,151	72/425,393	12/18/1973
975,152	72/429,255	12/18/1973
975,154	72/434,500	12/18/1973
975,159	72/447,264	12/18/1973
975,161	72/450,086	12/18/1973
975,162	72/451,803	12/18/1973
975,163	72/451,806	12/18/1973
975,164	72/451,807	12/18/1973
975,168	72/441,792	12/18/1973
975,173	72/344,394	12/18/1973
975,175	72/400,683	12/18/1973
975,176	72/412,198	12/18/1973
975,180	72/425,270	12/18/1973
975,184	72/434,196	12/18/1973
975,186	72/436,615	12/18/1973
975,187	72/442,116	12/18/1973
975,188	72/443,364	12/18/1973
975,190	72/443,374	12/18/1973
975,205	72/427,687	12/18/1973
975,207	72/428,157	12/18/1973
975,213	72/427,281	12/18/1973
975,223	72/430,784	12/18/1973
975,224	72/442,065	12/18/1973
975,228	72/424,420	12/18/1973
975,231	72/435,602	12/18/1973
975,232	72/435,603	12/18/1973
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975,245	72/414,180	12/18/1973

Reinstatement to Register

The following list of persons, whose names have been previously removed from the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.11(b), have been reinstated in view of the required fee and information they furnished to the Office of Enrollment and Discipline.

Benson, Kenneth A., P.O. Box 191, Chatham, Pa. 19318
Bratschun, Thomas D., Swanson & Bratschun, 8400 E. Prentice Ave., Ste. 200, Englewood, Colo. 80111
Edminister, Joseph A., Cornell University, College of Engineering, 252 Carpenter Hall, Ithaca, N.Y. 14853
Ettinger, Mitchell S., Skadden Arps Slate Meagher & Flom, 1440 New New York Ave., Washington, D.C. 20005
Farris, Robert L., Reising, Ethington, Barnard, Perry & Milton & Learman & Mc Culloch, 5291 Colony Drive., N., Saginaw, Mich. 48603
Flanagan, Joseph P., Village Plaza, P.O. Box 282, Mayfield, N.Y. 12117
Forman, Charles D., International Paper Co., 2 Manhattanville Rd., Purchase, N.Y. 10577
Gallinger, Glen F., 3920 Sunnyside Ave., N., Seattle, Wash. 98103
Grubman, Ronald E., La Riviere, Grubman & Payne, Two Harris Ct., Ste. A2, Monterey, Calif. 93940
Guttag, Mark J., 415 Russel Ave., #108, Gaithersburg, Md. 20877
Hall, Charles S., Finnegan, Henderson, Farabow, Garrett & Dunner, 1300 I St., N.W., Washington, D.C. 20005
Hillberg, Frank C., Jr., D V C, 1007 Market St., Wilmington, Del. 19898
Hinson, James B., 2421 Thornridge Rd., Charlotte, N.C. 28226
Hoffman, Bernard S., 33 Thimble Lane, Hicksville, N.Y. 11801
Holloway, Lawrence M., 115 Fifth St., Glenwood Springs, Colo. 81601
Hook, Byron J., Rural Route #3, County Rd. 69, Stockport, Ohio 43787
Howard, William H.F., Howard & Associates, 928 Kingston Ave., Ste. 703, Piedmont, Calif. 94611
Humble, Deborah S., Heiskell, Donelson, Bearman, Adams, Williams & Caldwell, 1800 Republic Centre, 633 Chestnut St., Chattanooga, Tenn. 37450
Jay, Robert L., 6934 Clear Lake Court, Atlanta, Ga. 30360
Johnson, Keith L., 28620 Lapine Ave., Santa Clarita, Calif. 91350
Kagan, Sarah A., Banner, Birch, McKie & Beckett, 1001 G St., N.W. 11th Flr., Washington, D.C. 20001
Kapustij, Myron, B., Masco Corp., 21001 Van Born Rd., Taylor, Mich. 48180
Kaufman, Daniel C., Brickfield, Burchette & Ritts, P.C., 1025 Thomas Jefferson St., N.W., 8th Flr., W., Washington, D.C. 20007
Kluegel, Arthur E., Eastman Kodak Co., 343 State St., Rochester, N.Y. 14650
Knearl, Homer L., Hancock & Knearl, P.C., 3445 Penrose Pl., Ste. 210, Boulder, Colo. 80301
Knoble, John L., Woodcock Washburn Kurtz Mackiewicz & Norris, One Liberty Pl., 46th Flr., Philadelphia, Pa. 19103
Koch, William E., Motorola, Inc., P.O. Box 10219, Scottsdale, Ariz. 85271
Koestner, Ken, Skjerven, Morrill, Mac Pherson, Franklin & Friel, 100 Congress Ave., Ste. 1050, Austin, Tex. 78701
Konski, Antoinette F., Campbell & Flores, 4370 La Jolla Village Dr., Ste. 700, San Diego, Calif. 92122
Korman, Alan S., Ivoclar N. America, Inc., 175 Pineview Dr., Amherst, N.Y. 14228
Korniczky, Stephen S., Knobbe, Martens, Olson & Bear, 620 Newport Center Dr., 16th Flr., Newport Beach, Calif. 92660
Koss, David B., 160 Kaydeross Park Rd., Saratoga Springs, N.Y. 12866
Kowalski, Thomas J., Curtis, Morris & Safford, P.C. 530 Fifth Ave., New York, N.Y. 10036
Kreiss, Steven, 323 E. Capitol St., S.E., Washington, D.C. 20003
Kullick, Ronald H., Ribi Immunochem Research, Inc., 553 Old Corvallis Rd., Hamilton, Mont. 59840
Krubel, Frederick J., 289 Shenstone Rd., Riverside, Ill. 60546
Kushman, James A., Brooks & Kushman, 1000 Town Center, 22nd Flr., Southfield, Mich. 48075
Lahr, Jack L., Foley & Lardner, 3000 K St., N.W., Ste. 500, Washington, D.C. 20007
Laibowitz, Danielle B., Meltzer, Lippe, Goldstein, Wolf, Schlissel & Sazer, 190 Willis Ave., Mineola, N.Y. 11501
Laurenson, Robert C., Court of Appeals for the Federal Circuit, 717 Madison Pl., N.W., Rm. 915, Washington, D.C. 20439
Lee, Newton H., Jr., Gradco Systems, Inc., 39 Parker, Irvine, Calif. 92718
Leinberg, Gunnar G., Nixon, Hargrave, Devans & Doyle, Clinton Sq., P.O. Box 1051, Rochester, N.Y. 14603
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Levine, Alfred B., P.O. Box 34-1738, Bethesda, Md. 20827
Linder, Walter C., Faegre & Benson, 2200 Norwest Center, Minneapolis, Minn. 55402
Linton, Thomas D., Jr., 3404 Colville Pl., Encino, Calif. 91436
Luckhardt, Philip G., 20 Ridgeway Rd., Easton, Conn. 06612
Luddy, Marc J., Ovonic Battery Co., 1707 Northwood Dr., Troy, Mich. 48084
Lynch, Michael L., Arnold, White & Durkee, P.O. Box 4433, Houston, Tex. 77210
Malur, Shrinath, Fay, Sharpe, Beall, Fagan, Minnich & Mc Kee, 104 E. Hume Ave., Alexandria, Va. 22301
Marquis, Harold L., Deveau, Colton & Marquis, Ste., 1400, Midtown Plaza Two, 1360 Peachtree St., N.E., Atlanta, Ga. 30309
Martine, Peter B., Adduci, Mastriani, Schaumberg & Schill, 1140 Conn. Ave., N.W., Washington, D.C. 20036
Massengill, Roy H., 101 William Richmond, Williamsburg, Va. 23185
Matukaitis, Paul D., Merck & Co., Inc., P.O. Box 2000, Rahway, N.J. 07065
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McDaniel, Claude S., Conley, Rose & Tayon, P.C., 600 Travis, Ste. 1850, Houston, Tex. 77002
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Mc Lemore, Michael T., P.O. 8051, Horseshow Bay, Tex. 78654
McNichol, William J., Jr., Stoel Rives Boley Jones & Grey, One Union Sq., 600 University St., 36th Flr., Seattle, Wash. 98101
Melser, Allen S., Popham Haik Schnobrich & Kaufman, Ltd., 1225 I St., N.W., Ste. 100, Washington, D.C. 20005
Melton, Michael E., Texas Instruments Inc., Pat. Dept., M.S. 219, P.O. Box 655474, Dallas, Tex. 75265
Merek, James J., Merek & Voorhees, 1240 N. Pitt St., Ste. 300, Alexandria, Va. 22314
Mersereau, Charles G., Haugen & Nikolai, P.A., 820 International Centre, 900 Second Ave., S., Minneapolis, Minn. 55402
Metzger, David R., Hill, Steadman & Simpson, P.C., 85th Floor-Sears Tower, 233 S. Wacker Dr., Chicago, Ill. 60606
Meyer, Richard S., Howrey & Simon, 1299 Penn. Ave., N.W., Washington, D.C. 20004
Mican, Stephen G., Amoco Corp., 55 Shuman Blvd., Ste. 600, Naperville, Ill. 60563
Mickelson, Carole A., 816 Pawnee Lane, Naperville, Ill. 60563
Miller, Marc A., c/o R.E. Bushnell Law Office, 1511 K St., N.W., Ste. 425, Washington, D.C. 20005
Mills, Demetra J., Lowe, Price, Le Blanc & Becker, 99 Canal Center Plaza, Suite 300, Alexandria, Va. 22314
Mirabito, Anthony J., Wolf, Greenfield & Sacks, P.C., 600 Atlantic Ave., Ste. 1700, Boston, Mass. 02210
Montalvo, Eugene R., Halliburton Energy Services, Inc., 5151 San Felipe, Ste. 2125, Houston, Tex. 77056
Morreale, Lynn B., Woodcock Washburn Kurtz Mackiewicz & Norris One Liberty Pl., 46th Flr., Philadelphia, Pa. 19103
Morris, Paula D., Rosenblatt & Associates, P.C., One Greenway Plaza, Ste. 500, Houston, Tex. 77046
Morron, Kelly L., Rosenman & Colin, 575 Madison Ave., New York, N.Y. 10022
Morse, Susan S., Larson & Taylor, 727 23rd St., Arlington, Va. 22202
Nash, Roger, IBM Corp., 115400 Burnet Rd., Austin, Tex. 78758
Neitzke, Frederic W., 3165 Hilliard Ct., Melbourne, Fla. 32934
Nesbitt, Daniel F., Procter & Gamble Far East, Inc., 1-17, Koyo-Cho Naka, Haigashinada-Ku, Kobe Hyogo 658, Japan
North, Robert J., Merck & Co., Inc., P.O. Box 2000, Rahway, N.J. 07065
Nwaneri, Angela N., Corning Inc., SP-FR-02-12, Corning, N.Y. 14831
O'Brien, Robert P.O., Intellectual Prop. Sec., Hercules Plaza, 1313 N. Market St., Wilmington, Del. 19894
Oberheim, Earnest F., Hewlett-Packard Co., 11413 Chinden Blvd., M.S. 314, Boise, Id. 83714
Olds, Judith L., 10534 Vernon, Huntington Woods, Mich. 48070
Olds, Theodore, W., III., Howard & Howard, 1400 N. Woodward Ave., Ste. 101, Bloomfield Hills, Mich. 48304

October 17, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment & Discipline

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 30, 1994.

Basichas, Alfred, 28-07 208th St., (Basement), Bayside, N.Y. 11361
Cooper, Jack, 424 Lamberton Dr., Silver Spring, Md. 20902
Davis, Albert W. Jr., 3001 N. Monroe St., Arlington, Va. 22207
Henry, Jon W., 5832 Wessex Ln., Alexandria, Va. 22310
Kendell, Lorraine B.T., 3845 Tremayne Terr., Silver Spring, Md. 20906
Lewis, Ralph A., 3032 Kenilworth Ln., Knoxville, Tenn. 37917
Miller, George H. Jr., 2936 Miller Hgts. Rd., Oakton, Va. 22124
Parsons, Marion, Jr., 5711 Heming Ave., Springfield, Va. 22151
Pitlick, Harris A., 2331 Blaine Dr., Chevy Chase, Md. 20815
Ridgill, James L., Jr., 2516 Appaloosa Ct., Reston, Va. 22091
Rosenthal, Arnold, 6306 Bannockburn Dr., Bethesda, Md. 20817
Seidleck, James A., 12704 Kavanaugh Ln., Bowie, Md. 20715
Snead, Helen M.S., 3841 Tremayne Terr., Silver Spring, Md.

20906
Trafton, David L., 6309 Stoneham Rd., Bethesda, Md. 20817
Welsh, Maurice J., 103 Kent Oaks Way, Gaithersburg, Md. 20788
Weston, Caleb, 7800 Hanover Pkwy., #302, Greenbelt, Md. 20770

October 19, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Certificates of Correction
For Week of November 15, 1994

B1 4,378,313	5,162,384	5,251,294	5,281,624
B1 4,408,150	5,163,448	5,251,598	5,281,640
B1 4,504,310	5,174,849	5,251,893	5,281,879
B1 4,564,164	5,179,091	5,253,419	5,283,101
B1 4,947,506	5,180,790	5,253,512	5,283,175
D. 327,332	5,185,573	5,254,847	5,284,183
D. 335,740	5,185,694	5,255,280	5,284,871
P. 8,668	5,187,651	5,256,120	5,285,492
P. 8,680	5,192,850	5,257,973	5,285,503
Re. 32,975	5,198,297	5,258,082	5,286,257
4,384,829	5,198,464	5,259,381	5,286,313
4,436,547	5,200,827	5,260,210	5,286,777
4,457,673	5,209,075	5,260,774	5,287,187
4,552,816	5,209,821	5,262,375	5,287,204
4,798,964	5,212,334	5,262,822	5,287,811
4,945,914	5,216,475	5,264,456	5,288,027
4,971,034	5,217,114	5,264,915	5,288,322
4,991,617	5,217,370	5,267,322	5,288,540
4,992,427	5,220,177	5,268,412	5,289,310
5,009,395	5,221,681	5,269,654	5,289,402
5,034,980	5,223,244	5,270,418	5,290,440
5,052,994	5,225,908	5,270,857	5,292,303
5,053,485	5,226,315	5,271,929	5,292,343
5,055,556	5,226,895	5,271,990	5,292,623
5,055,562	5,227,198	5,272,357	5,292,764
5,064,143	5,227,377	5,272,439	5,292,783
5,064,546	5,232,695	5,273,006	5,292,801
5,065,674	5,233,461	5,273,667	5,293,779
5,093,737	5,234,172	5,274,821	5,294,395
5,099,208	5,236,446	5,275,622	5,294,909
5,103,030	5,237,733	5,276,566	5,296,392
5,107,860	5,239,498	5,276,662	5,296,888
5,128,319	5,240,459	5,276,978	5,297,277
5,132,086	5,240,602	5,277,221	5,298,497
5,134,432	5,240,768	5,277,401	5,298,619
5,140,450	5,242,712	5,278,362	5,298,762
5,149,323	5,246,644	5,278,469	5,299,170
5,150,111	5,248,543	5,278,873	5,299,884
5,155,133	5,248,627	5,280,532	5,299,972
5,155,902	5,248,894	5,281,211	5,300,292
5,159,962	5,250,548	5,281,344	5,300,434
5,300,501	5,320,301	5,332,287	5,344,091
5,300,717	5,320,413	5,332,456	5,344,543
5,300,880	5,320,635	5,332,579	5,344,789
5,301,325	5,320,922	5,332,726	5,344,956
5,302,119	5,321,482	5,332,740	5,345,195
5,302,717	5,321,733	5,332,780	5,345,304
5,302,840	5,322,144	5,332,808	5,345,353
5,303,269	5,322,323	5,334,392	5,345,361
5,303,418	5,322,656	5,334,407	5,345,729
5,303,705	5,322,688	5,334,602	5,345,781
5,305,148	5,322,811	5,334,605	5,345,865
5,306,381	5,322,842	5,334,782	5,345,976
5,306,838	5,323,065	5,334,785	5,345,981
5,308,062	5,323,352	5,335,036	5,346,042
5,308,085	5,323,488	5,335,065	5,346,183
5,308,386	5,323,503	5,335,183	5,346,468
5,308,770	5,323,664	5,335,279	5,346,689
5,309,029	5,323,871	5,335,982	5,346,865
5,309,203	5,324,632	5,336,065	5,346,924
5,309,251	5,324,636	5,336,130	5,346,968
5,309,385	5,324,722	5,336,324	5,347,084
5,309,397	5,325,559	5,336,356	5,347,217
5,309,612	5,326,419	5,336,369	5,347,358
5,310,043	5,326,466	5,336,489	5,347,670
5,310,287	5,326,637	5,336,722	5,347,770
5,310,614	5,326,744	5,336,944	5,347,786
5,310,665	5,326,775	5,337,189	5,348,021
5,311,031	5,326,850	5,338,179	5,348,022
5,311,441	5,326,857	5,338,238	5,348,338
5,312,744	5,326,927	5,338,564	5,348,618
5,312,831	5,327,086	5,338,647	5,348,643
5,313,115	5,327,108	5,338,749	5,348,733
5,313,308	5,327,340	5,338,803	5,348,753
5,313,421	5,327,375	5,338,901	5,349,091
5,314,637	5,327,390	5,239,022	5,349,339
5,314,670	5,327,519	5,339,432	5,349,403
5,315,920	5,327,624	5,339,475	5,349,811
5,316,287	5,327,648	5,339,643	5,349,924
5,317,221	5,328,123	5,339,693	5,349,978
5,317,260	5,328,677	5,339,970	5,350,074
5,317,366	5,328,848	5,339,982	5,350,344
5,317,411	5,328,991	5,340,390	5,350,417
5,317,452	5,329,193	5,340,412	5,350,559
5,317,479	5,329,238	5,341,105	5,350,647
5,317,522	5,329,628	5,341,114	5,350,737
5,318,027	5,329,722	5,341,800	5,351,173
5,318,341	5,330,146	5,341,989	5,351,698
5,318,432	5,330,358	5,342,114	5,351,743
5,319,152	5,330,506	5,342,466	5,351,784
5,319,267	5,330,547	5,342,906	5,352,525
5,319,573	5,330,714	5,343,042	5,352,658
5,319,619	5,331,121	5,343,092	5,353,182
5,319,636	5,331,265	5,343,147	5,353,385
5,319,873	5,331,381	5,343,491	5,353,422
5,319,882	5,331,687	5,343,676	
5,320,157	5,332,125	5,343,827	

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
September 19-23, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-19	EX	74/287,401	Linvatec Corp.	2(e)(1)	Refusal Affirmed		"PUDDLEVAC" [medical and surgical devices, namely, floor suction device used to remove pools of fluid from operating room floors]		No
9-19	EX	74/264,399	Time Solutions Inc.	2(e)(1)	Refusal Affirmed		"YOUR HEALTH INSURANCE MANAGER" [software programs for personal record keeping and processing of medical records, health insurance and claims]		No
9-19	EX	74/332,408	Textalia, Ltd.	2(e)(1)	Refusal Affirmed		"MEDITERRANEO" [restaurant services]		No
9-19	EX	74/177,634	Frankford Candy & Chocolate Co.	2(e)(1)	Refusal Reversed		"WOODLAND ANIMALS" [candy]		No
9-20	EX	74/257,950	Robert J. Ligon	2(d)	Refusal Affirmed		"HEALTHWISE" [protein dietary supplements]	"HEALTH WISE" (and design) [vitamin C tablets] and "HEALTHWISE" [rose hips, lecithin, desiccated liver, dried dates, soybeans and nuts, etc.]	No
9-21	OPP	88,022	Franklin Environmental Services, Inc. v. Med-Waste Management Inc.	2(d)	Opposition Sustained	design mark (including graphic depiction of cloud, sun, land, water, and fish) [handling and transporting hazardous waste material]	"MED-WASTE MANAGEMENT INCORPORATED" (and design incorporation graphic depiction of clouds, sun, land, trees, water and fish) [removal and disposal of infectious medical waste]		No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ FOR RECONSIDERATION

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
9-23	EX (R)	74/037,972	Richard M. Hines	2(a) [disparagement]	Request for Reconsideration Granted (Refusal Reversed)		"BUDDA BEACHWEAR" (and design of seated Buddha figure wearing shorts)		Yes
9-23	EX	74/282,761	Cotton Mill A/S	2(a) [false suggestion of a connection]	Refusal Affirmed		"WINTER GAMES" [glass and porcelain figurines; clothing for men, women and children, namely, shirts, pants, jackets, socks and caps; and all-purpose athletic and sporting goods bags]		No
9-23	EX	74/241,473	Environmental Protection Corp.	whether the identification of goods may be amended; 2(e)(1)	Refusal Affirmed		"ENVIRONMENTAL PROTECTION CORPORATION" [mail order catalog services featuring products that improve the quality of the air and water]		No
9-23	EX	74/235,687	Doug-A Pharmaceutical Co., Ltd.	2(d)	Refusal Affirmed		"BACCHUS D" (and design) [soft drinks]	"BACCHUS" [powdered mix used in the preparation of bases of alcoholic and non-alcoholic drinks]	No
9-23	EX	74/288,093	Packer Foods, Inc.	2(d)	Refusal Affirmed		"FRUIT BELT" [canned and frozen fruits and vegetables]	"BELT" [citrus fruits, namely, oranges, lemons and grapefruit in their natural state]	No
9-23	EX	74/341,790	Institutional Foods Packaging Co.	2(d)	Refusal Reversed		"DIET-CAL" [sugar free reduced calorie pancake syrup]	"DIET-O-CAL" [chewing gum]	No

(1)EX = EX PARTE APPEAL; OPP = OPPOSITION; C = CANCELLATION; CU = CONCURRENT USE; (R) = REQ. FOR RECONSIDERATION

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Washington, D.C. 20231

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Box 5	"No Fee" mail related to trademarks.
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Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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	Columbus: Ohio State University Libraries	(614) 292-6175
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Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
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PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/15/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	09/09/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	01/25/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/25/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/10/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/11/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/05/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	10/12/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	10/17/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/08/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	03/25/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	01/19/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	10/25/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	10/05/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	11/11/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	05/21/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/02/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during October 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,051,552 to 4,055,851 inclusive
Plant Patents.....4,117 to 4,137

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Oct. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	08/30/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	07/27/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/20/94	07/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/03/94	07/05/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	07/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/94	07/05/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	06/27/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/94	07/13/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/17/94	06/04/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	09/08/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	04/26/94	—0—
Renewals (All Classes)	07/07/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

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REEXAMINATIONS

NOVEMBER 15, 1994

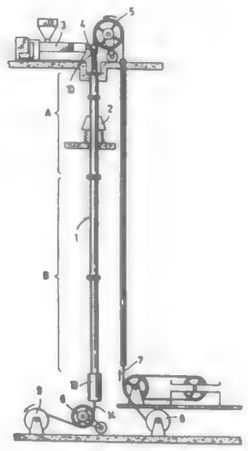
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,155,695 (2426th)

CONTINUOUS CURING DEVICE FOR LONGITUDINALLY EXTENDED PRODUCTS WITH COOLING ZONE

Jukka S. Karppo, Helsinki, and Matti A. Aaltonen, Espoo, both of Finland, assignors to Oy Nokia AB, Helsinki, Finland

Reexamination Request No. 90/002,738, May 29, 1992.
Reexamination Certificate for Patent No. 4,155,695, issued May 22, 1979, Ser. No. 756,543, Jan. 3, 1977.
Division of Ser. No. 707,097, Jul. 20, 1976
Claims priority, application Finland, Oct. 21, 1975, 752942
Int. Cl.[5] B29C *35/06, 35/08, 35/14*
U.S. Cl. 425—445



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7 are cancelled.

New claims 8–16 are added and determined to be patentable.

8. An apparatus for continuous curing of a longitudinally extending crosslinkable product under completely dry conditions, comprising:

a curing tube through which the product is longitudinally drawn, the curing tube including a heating zone, a cooling zone and means for maintaining inert gas in the heating and cooling zones at a pressure above atmospheric pressure;

a heater in the heating zone for radiation heat toward the product to heat the product in the pressurized inert gas to a crosslinking temperature under water free conditions to create a dry crosslinked product; and

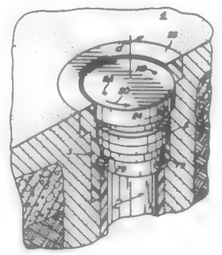
circulator means in the cooling zone for circulating the pressurized inert gas in the cooling zone to cool the crosslinked product under water free conditions, the circulator means including a blower for contacting the crosslinked product with the pressurized inert gas to transfer heat from the crosslinked product by radiation to a wall of the curing tube and by convection to the gas to create a dry crosslinked product without water filled micro voids capable of generating water trees.

B1 4,466,142 (2427th)

POOL CLEANING HEAD WITH ROTARY POPUP JET PRODUCING ELEMENT

H. Daniel Gould, Phoenix, Ariz., assignor to Shasta Industries, Inc., Phoenix, Ariz.

Reexamination Request No. 90/002,892, Nov. 17, 1992.
Reexamination Certificate for Patent No. 4,466,142, issued Aug. 21, 1984, Ser. No. 356,967, Mar. 11, 1982.
Continuation of Ser. No. 194,679, Oct. 6, 1980
The portion of the term of this patent subsequent to Apr. 6, 1999, has been disclaimed.
Int. Cl.[5] E04H *4/16, 3/20*
U.S. Cl. 4—490



AS A RESULT REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1 and 4 are determined to be patentable as amended.

Claims 2 and 3, dependent on an amended claim, are determined to be patentable.

1. A cleaning head for installation in a receptacle disposed in an under-liquid surface of a liquid container such as a swimming pool, the receptacle receiving liquid, the pressure of which is intermittently or periodically cycled between a relatively low pressure and a relatively high pressure, said cleaning head comprising in combination:

(a) stationary means open at upper and lower ends thereof *and adapted* for removable connection in substantially sealed relation to said receptacle;

(b) pop-up jet producing means, having an outlet opening, rotatably, indexably disposed in said stationary means, for moving outwardly from the under-liquid surfae in response to said relatively high pressure to expose said outlet opening *entirely above said under-liquid surface* and produce a concentrated, high velocity liquid jet along said under-liquidsurface *directly* from said outlet opening[;], *said pop-up jet producing means further including*

(i) a cylindrical lower section extending into said stationary means and having an inlet at its lower end for receiving liquid,

(ii) a cylindrical upper section having a top plate attached in sealing relation across an upper end thereof and said outlet opening extending through a side thereof, said upper section being axially aligned with and connected to said lower section and having a diameter greater than the diameter of said lower section,

(iii) conduit means within said pop-up jet producing means for providing continuous liquid communication between said inlet at the lower end of said lower section and said outlet opening through the side of said upper section,

(iv) stop means secured to said lower section for engaging said

stationary means to limit the outward movement of said pop-up jet producing means;

(c) retracting means connected to both said stationary means and said pop-up jet producing means for retracting said pop-up jet producing means *to a retracted position substantially within said stationary means* when said liquid pressure is cycled from said relatively high pressure to said relatively low pressure, said pop-up jet producing means rotating to followingfixed positions in response to said cycling, thereby producing a plurality of successive, concentrated, high velocity liquid jets to clean a circular pattern around said cleaning head, said retracting means including a coil spring *axially aligned with and located below the upper section of said pop-up jet producing means* for urging said pop-up jet producing means towards its retracted position, said retracting means also including low-friction spring engaging means engaging opposed ends of said coil spring for transmitting opposed forced from said coil spring to said stationary means and said pop-up jet producing means and also effecting sufficiently low-friction rotational engagement between said pop-up jet producing means and said stationary means by said coil spring to avoid substantial winding of said coil spring as said pop-up jet producing means rotates; and

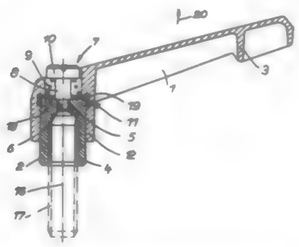
(d) first [cramming] *camming* means attached to said stationary means and second camming means attached to said pop-up jet producing means, said first and second camming means engaging each other to cause rotation of said pop-up jet producing means relative to said stationary means each time said pop-up jet producing means moves outwardly from the under-liquid surface in response to said relatively high pressure and/or is retracted by said retracting means.

B1 4,598,614 (2428th)

HAND LEVER TURNING MECHANISM

Heinrich Kipp, Sulz-Holzhausen, Germany, assignor to Monroe Engineering Products, Inc., Bloomfield Hills, Mich.

Reexamination Request No. 90/003,424, May 4, 1994.
Reexamination Certificate for Patent No. 4,598,614, issued Jul. 8, 1986, Ser. No. 686,223, Dec. 26, 1984.
Claims priority, application Germany, Dec. 29, 1993, 3347433
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—58.3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

1. A hand lever mechanism, particularly for turning a member, such as a spindle, axle or the like about an axis, comprising:

a fastening element made of metal adapted to be placed in engagement with a member to be turned;

a hand lever made of synthetic material softer than said fastening element material;

a coupling element formed with an annular configuration consisting essentially of a metallic pressure die cast member having one side affixed to said hand lever and an opposite side said engaging said fastening element to connect said fastening element and said hand lever in rotative engagement with each other, the material of said coupling element being selected to be harder than the material of said hand lever, whereby said coupling element is anchored in the material of said hand lever and is rotatable therewith;

coupling members formed on said opposite side of said coupling element and distributed along the periphery thereof, said coupling members being formed on said opposite side of said coupling element facing said fastening element and comprising gear teeth formed as a toothed rim with said gear teeth facing radially inwardly;

anchoring elements comprising projecting elements arranged uniformly along an outer periphery of said coupling element for anchoring said coupling element in the material of said hand lever;

a complementary coupling element formed on said fastening element engaging said coupling members of said coupling element, said complementary coupling element being formed as a pinion having gear teeth radially outwardly directed and shaped to engage with said teeth of said toothed rim of said coupling element, said coupling element and said complementary coupling element being capable of engaging and disengaging by relative movement thereof in the direction of said axis;

spring means acting in the direction of said axis urging said coupling element and said complementary coupling element into rotative engagement with each other; and

a screw member threadedly engaged in said fastening element and extending through said coupling element with said spring means being engaged between said screw member and said coupling element;

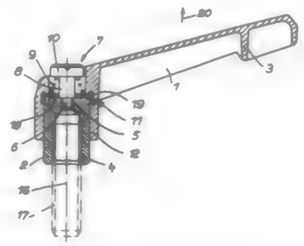
said fastening element being in the form of a sleeve with said hard lever being formed with an end thereof having a sleeve-like configuration, said fastening element being arranged longitudinally displaceable within said sleeve-like configuration of said one end of said hand lever.

B1 4,739,768 (2430th)

CATHETER FOR GUIDE-WIRE TRACKING

Erik T. Engelson, Palo Alto, Calif., assignor to Target Therapeutics, Fremont, Calif.

Reexamination Request No. 90/003,095, Jun. 16, 1993.
Reexamination Certificate for Patent No. 4,739,768, issued Apr. 26, 1988, Ser. No. 869,597, Jun. 2, 1986.
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—658



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–11** are cancelled.

New claims **12–49** are added and determined to be patentable.

[**1**. A catheter for use with a guide wire which can be guided from an external body access site to an internal tissue, and into the tissue along a tortuous path of at least about 5 cm through vessels of less than about 3 mm lumen inner diameter, said catheter comprising

an elongate tubular member having proximal and distal ends, and an inner lumen extending between these ends, said member being composed of

a relatively stiff proximal segment means for tracking the wire from the access site to a region adjacent the internal tissue, and

a relatively flexible distal segment means at least about 5 cm long for tracking the wire along the tortuous path within the internal tissue.]

B1 4,758,745 (2429th)

USER PROGRAMMABLE INTEGRATED CIRCUIT INTERCONNECT ARCHITECTURE AND TEST METHOD

Abbas Elgamal, Palo Alto; Khaled A. El-Ayat, Cupertino, and Amr Mohsen, Saratoga, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Reexamination Request Nos. 90/003,274, Dec. 15, 1993 and 90/003,413, Apr. 19, 1994.
Reexamination Certificate for Patent No. 4,758,745, issued Jul. 19, 1988, Ser. No. 909,261, Sep. 19, 1986.
Int. Cl.[5] H03K *17/693*
U.S. Cl. 307—465

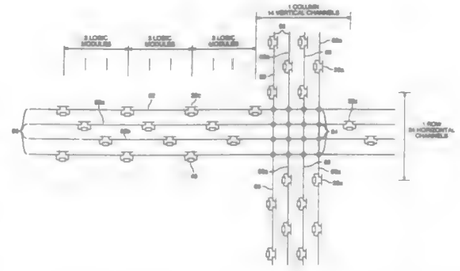
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–22** is confirmed.

1. In an integrated circuit, an electrically programmable interconnect architecture, comprising:

a plurality of modules placed in an array, the modules having connection nodes,

a plurality of sets of wiring channels, at least some of said sets of wiring channels having at least one wiring channel comprising at least two wiring segments and wherein at least one of said wiring segments is connected to at least one of said connection nodes,



a plurality of two-terminal, normally-open, electrically-programmable elements, each of said elements located between selected ones of said wiring segments comprising one of said channels, said programmable elements being characterized by a high impedance before programming and being selectively programmable by the user in order to create a permanent bidirectional low impedance electrical connection between wire segments.

REISSUES

NOVEMBER 15, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,784

METHOD AND APPARATUS FOR THE DRY TREATMENT OF A FABRIC

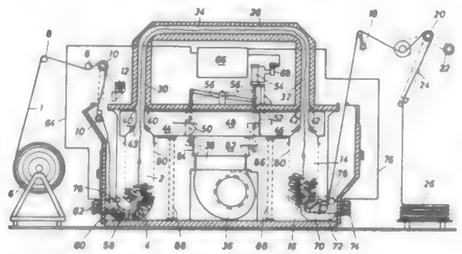
Jaime A. Vinas, Barcelona 23, La Llagosta 08120 (Province of Barcelona), Spain

Original No. 4,679,333, dated Jul. 14, 1987, Ser. No. 796,605, Nov. 8, 1985. Continuation-in-part of Ser. No. 696,751, Jan. 31, 1985, abandoned. Application for reissue Aug. 4, 1993, Ser. No. 103,880

Claims priority, application Spain, May 11, 1984, 532408

Int. Cl.[5] F26B *13/12*

U.S. Cl. 34—629 **7 Claims**



1. An apparatus for the dry treatment of a fabric, comprising first and second chambers adapted to contain respective piles of open width fabric, said first chamber being for an inlet pile and said second chamber for an outlet pile; means for providing gradual supply of the fabric into said first chamber; means for providing a gradual removal of the fabric from said second chamber; a flattened section duct for containing the open width fabric and having ends which connect said first and second chambers; movable means situated at least partly in each chamber, adapted to be moved by the fabric on exhaustion of the respective pile; blower means for blowing air into said duct and transporting the fabric contained therein; heating elements disposed downstream of said blower means in the direction of said air to heat said air; slot means in each of the ends of said duct for allowing the ingress of air into the duct; gate means adapted to regulate alternately the direction of air flow towards one or the other slot means; drive means for said gate means, closing one of said gate means while opening the other of said gate means; and connecting means associating the movement of said movable means with said drive means so that upon the movable means sensing the exhaustion of a pile of fabric the drive means reverse the flow of air so as to reverse the direction of transport of the fabric.

Re. 34,785

PROCESS FOR LUBRICATING A SURFACE SUCH AS A MOULD FOR THE MANUFACTURE OF A GLASS OBJECT

Franck Virey, Le Vallois Perret, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Original No. 4,806,137, dated Feb. 21, 1989, Ser. No. 110,214, Mar. 13, 1987. Application for reissue Feb. 8, 1991, Ser. No. 652,579

Claims priority, application France, Mar. 17, 1986, 86 03733

Int. Cl.[5] C03B *9/48*

U.S. Cl. 65—26 **24 Claims**

1. A process for providing a lubrication layer on a [mold] surface *of an object which contacts an article*, in which the layer of lubricant is periodically deposited onto the surface, the process comprising [maintaining the temperature of the surface at least about 500° C. as the lubricant is deposited thereon,] producing said layer of lubricant by [a] *an oxygen-fuel superstoichiometric* flame having a temperature higher than 2000° K. *and an oxygen factor greater than 1,* and injecting a gaseous hydrocarbon through the flame for a given period of time, the gaseous hydrocarbon comprising at least 15% of a constituent in respect of which the ratio of the number of the carbon atoms to the number of hydrogen atoms C/H is higher than 0.75, the rate of injection of the hydrocarbon through the flame and the temperature of the flame being controlled in such manner as to obtain a porous layer of carbonaceous particles capable of burning in [the] air when they are [deposited on the] *transferred onto a* surface *of the article* when the [surface] temperature *of the article* is equal to at least about 500° C.[, the particles adhering to the surface].

Re. 34,786

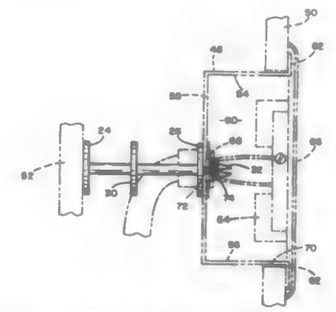
MOLDED PLASTIC STUD BOX SUPPORT AND BOX

Donovan L. Slough, 3301 Brunswick Ave. North, Crystal, Minn. 55422

Original No. 4,903,851, dated Feb. 27, 1990, Ser. No. 215,988, Jul. 7, 1988. Application for reissue Apr. 1, 1991, Ser. No. 680,242

Int. Cl.[5] A47B *96/06*

U.S. Cl. 248—205.1 **6 Claims**



3. An electrical box and an apparatus for supporting the electrical box with respect to parallel and spaced apart first and second structural wall panels, said apparatus comprising:

an electrical box having a plurality of side walls and a back wall defining a chamber with an open front, a forward edge means aligned with said open front and parallel with said back wall, and an access bore formed through said back wall;

a unitary support member including an elongate shaft, a first abutment member formed at a rearward end of said shaft, disposed transversely of the shaft and having a substantially planar and transverse first abutment surface, and a second abutment member formed proximate a forward end of the shaft, said second abutment member having a substantially planar and transverse second abutment surface; and

a mounting segment disposed forwardly of said second abutment member and substantially coaxially with said shaft, said mounting segment including two parallel and spaced apart flexible legs extending forwardly of the second abutment member, each leg converging to a tip region, and two flared extensions, one flared extension projected rearwardly and transversely outwardly of the top region of each of said legs, each flared extension including a rearward end portion spaced apart from its associated leg, said flared extensions

together defining forwardly converging cone having a forward tip and said rearward portions together defining a shoulder of said cone;

said access bore being smaller in diameter than said shoulder, said legs being flexible to permit their transversely inward displacement a sufficient amount to permit passage of said cone through said access bore of said electrical box, with said mounting portion extended through said access bore of said electrical box, into the chamber of said electrical box, and with said second abutment surface contiguous with said back wall of said electrical box; and

wherein a first distance between said first and second abutment surfaces is predetermined in accordance with the separation between said first and second structural wall panels, whereby said first abutment surface of said first abutment member is contiguous with one of said panels, said second abutment surface is contiguous with said back wall of said electrical box, and said forward edge means of said electrical box is contiguous with the other of said wall panels, with said shaft normal to said panels.

Re. 34,787

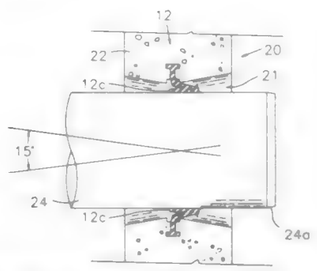
BIDIRECTIONAL GASKET HAVING WATER ENERGIZING POCKETS

James A. Westhoff, Langhorne, and James A. Kelly, Warrington, both of Pa., assignors to Poly-Tec Products, Inc., Tullytown, Pa.

Original No. 5,217,237, dated Jun. 8, 1993, Ser. No. 825,135, Jan. 24, 1992. Application for reissue Jul. 21, 1993, Ser. No. 94,694

Int. Cl.[5] F16J *15/10*

U.S. Cl. 277—207 A **13 Claims**



4. A bidirectional gasket for use in forming a fluid-tight seal between a pipe and an opening in a barrier wall through which said pipe passes, comprising:

an annular member of elastomeric material having a tubular head portion of a substantially A-shaped cross-section defined by a wide end and having tapering sides tapering to a narrow tip and a foot portion comprising a base flange portion and a neck portion of substantial thickness integrally joined to a mid-region of said base flange portion to form a substantially T-shaped anchoring portion for embodiment within a cast material forming said barrier wall;

said head portion tapering sides being substantially symmetrical about a plane passing through a longitudinal axis of the said A-shaped portion;

a connecting web extending between said neck portion of said foot portion and the wide end of said A-shaped head portion;

said A-shaped head portion having [a plurality of] recesses at the wide end thereof *and arranged* on opposite sides of said connecting web and a pair of flanges, each extending diagonally away from its associated recess at an angle substantially equal to the angle formed by the tapering sides of said A-shaped cross-section, said recesses forming self-energizing water pockets to cause the flange of the associated water pocket which may be filled with water to exert a greater compression force against an engaging surface of a pipe inserted through said gasket as a function of increasing water pressure applied upon said water pocket; and

said annular member being formed from *a linear extrusion*, a length of said linear extrusion being curved and joined at its ends to form said annular [ring] *member*.

Re. 34,788

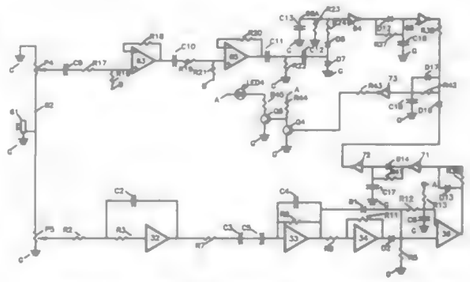
PRESSURE CHANGE INTRUSION DETECTOR

Elden E. DuRand, III, Crestwood, and William K. Logsdon, Louisville, both of Ky., assignors to Blue Grass Electronics, Inc., LaGrange, Ky.

Original No. 4,928,085, dated May 22, 1990, Ser. No. 359,045, May 30, 1989. Continuation of Ser. No. 469,089, Feb. 23, 1983, abandoned. Application for reissue May 19, 1992, Ser. No. 885,497

Int. Cl.[5] G08B *13/16*

U.S. Cl. 340—550 **20 Claims**



1. A signalling device to detect coincidence of first and second selected conditions in a selected area [where] *wherein* the first selected condition is infrasonic air pressure waves having frequencies below 20 cycles per second and the second selected condition is selected sonic frequency waves, said device comprising;

a pressure sensitive transducer means responsive to said infrasonic air pressure waves to provide an alternating electrical signal;

an amplifier means to selectively amplify said alternating electrical signal to provide an amplified alternating output signal;

a rectifier means to rectify said amplified alternating output signal to provide a first *rectified* signal;

a sonic frequency transducer means responsive to selected frequencies to provide a second alternating electrical signal;

a second amplifier means to selectively amplify said second alternating electrical signal to provide a second amplified alternating output signal;

a second rectifier means to rectify said second amplified alternating output signal to provide a second rectified signal;

a switch means, including a coincidence detector responsive to the first and second rectified signals, which activates an alarm in response to coincident receipt of the first and second rectified signals.

4. A signalling device according to claim 1, including a stretch means to cause said first rectified signal to have an increased pulse duration, wherein said switch means activates said alarm during any coincident receipt of said second rectified signal and said first rectified signal having said increased pulse duration.

Re. 34,789

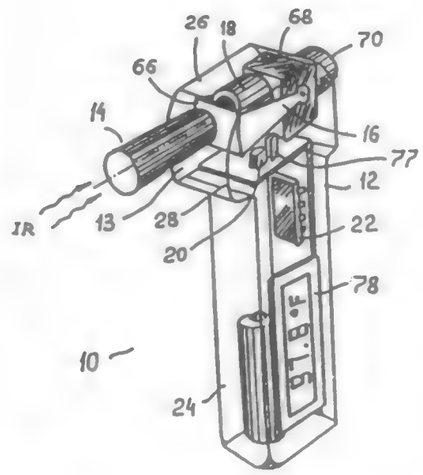
INFRARED ELECTRONIC THERMOMETER AND METHOD FOR MEASURING TEMPERATURE

Jacob Fraden, San Diego, Calif., assignor to Thermoscan Inc., San Diego, Calif.

Original No. 4,797,840, dated Jan. 10, 1989, Ser. No. 9,181, Jan. 20, 1987. Continuation-in-part of Ser. No. 724,339, Apr. 17, 1985, abandoned. Application for reissue Jul. 30, 1991, Ser. No. 738,095

Int. Cl.[5] G01J *5/18*; G01K *3/10*

U.S. Cl. 364—557 **40 Claims**



1. A thermometer comprising:

a housing;

a sensor carried by said housing and responsive to infrared radiation for generating an electrical signal which exhibits a transient response upon initial receipt of said radiation;

means, carried by said housing, in optical alignment with said sensor, for directing infrared radiation from an object, the actual temperature of which is to be measured, to impinge upon said sensor, *said directing means including an elongated guide of predetermined length having an outer end to receive infrared radiation from the object to be measured and an inner end in operative alignment with said sensor, in which said guide is mounted to said housing and inter-connected to said sensor so as to be in thermal equilibrium therewith and with said guide having a smooth and shiny interior surface and an outer surface;*

means, carried by said housing, for enabling response of said sensor to said radiation;

and electrical means carried by said housing and responsive essentially only to said transient response of said signal for processing said signal to develop an indication of the actual temperature of said object.

Re. 34,790

OPTICAL COMPONENTS

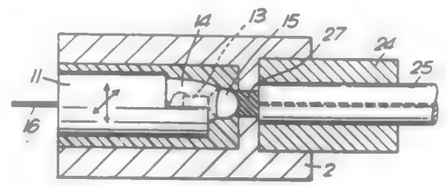
Robert W. Musk, Yokohama, Japan, assignor to BT&D Technologies Limited, Ispwich, England

Original No. 5,094,518, dated Mar. 10, 1992, Ser. No. 465,112, Feb. 23, 1990. Application for reissue Jul. 29, 1992, Ser. No. 921,325

Claims priority, application United Kingdom, Jul. 13, 1988, 8816603

Int. Cl.[5] G02B *6/26, 6/36*

U.S. Cl. 385—93 **8 Claims**



2. A method of making an optical component which comprises the steps of:

inserting an optical component mounted on a support structure into a mould,

filling the mould with curable material,

optically aligning the optical component *and its support structure* with respect to the mould,

curing the material to form an alignment shell about the [device carrier] *optical component and its support structure*, and

removing the [device carrier] *optical component and its support structure* now permanently disposed within said material from said mould.

Re. 34,791

POLYMER BOUND HINDERED AMINE LIGHT STABILIZERS

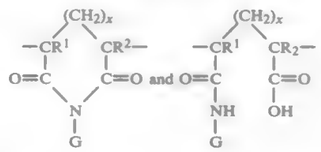
Robert T. Kazmierzak, and Ronald E. MacLeay, both of Williamsville, N.Y., assignors to Atochem North America, Inc., Philadelphia, Pa.

Original No. 4,857,595, dated Aug. 15, 1989, Ser. No. 84,603, Aug. 12, 1987. Application for reissue Jul. 16, 1991, Ser. No. 730,707

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—142 **21 Claims**

1. A polymer with recurring units selected from



or both in which the units occur either in the polymer backbone, or as pendant units, or both and wherein R^1 and R^2 are independently selected from hydrogen, alkyl of 1 to 6 carbons, cycloakyl of 5 to 7 carbons, phenyl, chlorine, or bromine, x is an integer of 0 or 1, and



represents the residue of a hydrazido substituted hindered amine light stabilizer group.

PLANT PATENTS

GRANTED NOVEMBER 15, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,978

P.F. 15A PEACH TREE

Paul J. Friday, P.O. Box 850, Coloma, Mich. 49038

Filed Nov. 29, 1993, Ser. No. 158,891

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described as large size, vigorous and upright in growth and a regular and productive bearer of medium large size, yellow flesh with some red mottling, freestone fruit with good flavor and eating quality; and being further characterized by a partially showy blossom about $\frac{1}{2}$" diameter when in full bloom, said fruit at maturity being of substantially spheroidal shape with firm flesh and a red skin color covering 80% of the fruit and having a moderately pronounced suture, said maturity occurring about 9 days after maturity of the Redhaven peach.

8,979

CHRYSANTHEMUM PLANT NAMED ROYAL LYNN

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 29, 1993, Ser. No. 143,152

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Royal Lynn, as described and illustrated.

8,980

CHRYSANTHEMUM PLANT NAMED SUNNY DENISE

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 17, 1993, Ser. No. 168,174

Int. Cl.[5] A01A *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Sunny Denise, as described and illustrated.

8,981

CHRYSANTHEMUM PLANT NAMED AUTUMN DENISE

Leon Glicenstein, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 29, 1993, Ser. No. 143,155

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct Chrysanthemum plant named Autumn Denise, as described and illustrated.

8,982

CHRYSANTHEMUM PLANT NAMED RAQUEL

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 20, 1993, Ser. No. 169,190

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct Chrysanthemum plant named Raquel, as described and illustrated.

PATENTS

GRANTED NOV. 15, 1994

ERRATA

For CLASS	See PATENT NO.
004-235	5,363,509
004-321	5,363,510
431-253	5,363,590
451-069	5,363,597
451-331	5,361,398
451-326	5,363,599
001-001	5,363,600
451-540	5,363,601
451-540	5,363,602
451-040	5,363,603
451-536	5,363,604
312-116	5,363,611
477-143	5,363,724
604-164	5,363,807
209-539	5,363,967
209-546	5,363,968
244-161	5,364,046
246-122	5,364,047
269-021	5,364,083
269-041	5,364,084
270-058	5,364,085
285-021	5,364,130
285-023	5,364,131
297-327	5,364,137
400-477	5,364,193
347-004	5,364,195
600-002	5,364,366
148-033	5,364,468
118-718	5,364,481
117-105	5,364,492
208-058	5,364,514
208-113	5,364,515
208-120	5,364,516
208-121	5,364,517
588-018	5,364,568
514-574	5,364,644
424-464	5,364,646
424-490	5,364,647

424-637	5,364,649
436-073	5,364,792
436-086	5,364,793
530-345	5,364,851
521-159	5,364,852
568-421	5,364,969
568-454	5,364,970
327-374	5,365,117
327-109	5,365,118
327-115	5,365,119
327-077	5,365,120
327-170	5,365,121
327-306	5,365,122
310-012	5,365,131
310-058	5,365,132
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315-194	5,365,148
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315-209	5,365,150
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315-291	5,365,152
318-034	5,365,153
318-103	5,365,154
318-268	5,365,155
318-568	5,365,156
323-237	5,365,157
318-806	5,365,158
320-015	5,365,159
320-022	5,365,160
323-282	5,365,161

ERRATA – CONTINUED

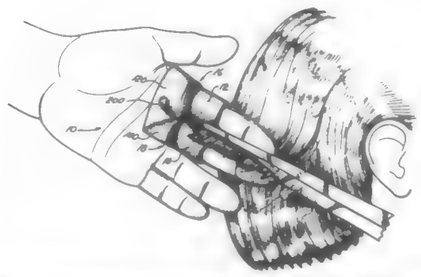
323-320	5,365,162
324-067	5,365,163
324-076	5,365,164
324-158	5,365,165
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324-158	5,365,167
324-207	5,365,168
324-233	5,365,169
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324-644	5,365,178
324-650	5,365,179
324-715	5,365,180
333-161	5,365,203
347-045	5,365,255
347-016	5,365,256
056-427	5,365,343
359-124	5,365,344
359-359	5,365,345
348-708	5,365,346
395-159	5,365,360
364-140	5,365,423
370-017	5,365,537

PATENTS

GRANTED NOVEMBER 15, 1994

GENERAL AND MECHANICAL

5,363,508
FINGER AND PALM GUARD
Ok C. Kim, 3024 Sandstone Apt. #11, Manhattan, Kans. 66502
Filed Jul. 19, 1993, Ser. No. 92,885
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—21 **12 Claims**



1. A finger and palm guard for use by barbers and cosmeticians and covering the palmar fascia area in the region immediately adjacent the knuckles joining the metacarpals and the third phalanges of both the middle and index fingers, comprising:

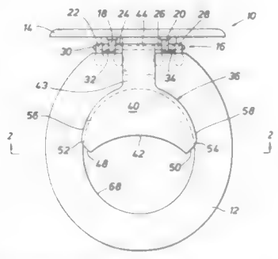
a first finger protection ring including a protruding first palmar fascia shield;

a second finger protection ring including a protruding second palmar fascia shield, said first and second palmar fascia shields being parallel to one another and one of said shields partially overlying the other; and

engagement means for movably engaging said first and said second palmar fascia shields, said engagement means located on an overlapping region of said first and second palmar fascia shields; whereby

said first and second protection rings may be placed over the third phalanges of the index and middle fingers of the user's hand, said first and second palmar fascia shields covering and protecting the flexure and palm area adjacent the fingers, and the movable engagement means allowing for the two fingers thus protected to be moved toward and away from one another, in substantially unrestricted fashion.

5,363,509
PINCH RESISTANT CHILD'S TOILET SEAT INSERT
Hank A. Evans, 106½ Elk, Crosby, Tex. 77532
Continuation-in-part of Ser. No. 749,212, Aug. 23, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 52,907
Int. Cl.[5] A47K *13/06*
U.S. Cl. 4—235 **19 Claims**

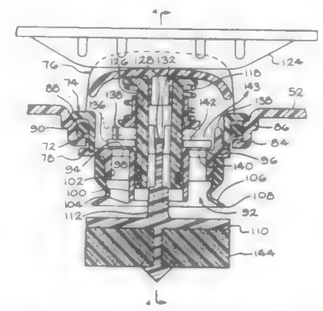


1. A pinch resistant toilet seat insert to facilitate safe and effective use by children for use in combination with conventional toilet seats having a hinge and hinge pin assembly for pivotal mounting thereof on a toilet structure and defining an upwardly facing seat surface and an inner curved surface defining a toilet seat opening, said pinch resistant toilet seat insert comprising:

(a) a seat insert body having curved side edges, a front edge and a rear edge and having opposed forwardly extending portions and having an outer supporting edge for interfitting supported engagement with said seat surface of said conventional toilet seat at a location adjacent said inner curved surface, said seat insert further having rearwardly diverging angulated side surfaces extending between said curved edges and said opposed forwardly extending portions, contact between said seat surface and said insert being located inwardly of said curved side edges and extending between contact points at said rearwardly diverging angulated side surfaces, to minimize the possibility of pinching the buttocks or thighs of a child between the toilet seat and toilet seat insert during use,

(b) a tailpiece projecting rearwardly from said seat insert body and defining means for pivotally attaching said insert body to said hinge and hinge pin assembly of said conventional toilet seat and enabling said seat insert body to be pivotally moved to said raised position to permit use of said conventional toilet seat by adults and a lowered position in supported assembly with said conventional toilet seat to facilitate use thereof by children.

5,363,510
PRESSURE RELIEF VENT FOR A WASTE HOLDING TANK
Kevin B. Chlebek, Britton, Mich., assignor to Thetford Corporation, Ann Arbor, Mich.
Filed Sep. 3, 1993, Ser. No. 115,639
Int. Cl.[5] E03D *7/00*
U.S. Cl. 4—321 **12 Claims**



1. A water use sanitary system having an upper portion containing a sanitary fixture with a bottom discharge outlet for removing waste from said fixture and a waste holding tank removably coupled to said discharge outlet for receiving waste from said fixture for storage of the waste, a vent assembly venting the interior of the waste holding tank to relieve excessive internal pressure from said holding tank, said vent assembly comprising:

a vent body having an opening therethrough forming a passage for air flow from said tank interior to atmosphere, said passage having a first end exposed to the atmosphere and a second end exposed to the tank interior and said vent body including a first valve seat surrounding said passage at said first end;

a first valve member positioned upon said first valve seat

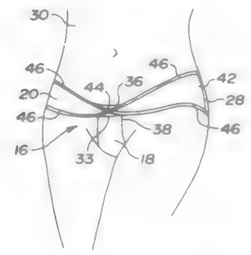
covering said opening to close the interior of the tank from atmosphere, said first valve member being held against said first valve seat by gravity, said first valve member having an interior surface in communication with the interior of the holding tank through said passage and an exterior surface in communication with atmosphere whereby when the internal pressure in said tank exceeds atmospheric pressure by an amount sufficient to overcome the force of gravity on said first valve member, said first valve member is moved off said first valve seat allowing gas from said tank interior to be vented to atmosphere until the internal pressure in the tank is reduced sufficiently for said first valve member to be returned by gravity against said first valve seat to cover said opening; and closure means for closing said passage from said tank interior when said holding tank is removed from said discharge outlet of said sanitary fixture.

5,363,511

PANTIES AND A METHOD OF FABRICATING THE SAME

Christine G. Brewer, 3711-40th Street SW., Calgary, Alberta, Canada T3E 3K4

Filed Sep. 16, 1993, Ser. No. 121,577
Int. Cl.[5] A41B *9/00, 9/14*
U.S. Cl. 2—406 **6 Claims**



1. A panties comprised of:
a shell-form body having:
i. a back panel adapted to substantially cover a ladies buttocks, the back panel having a top, a bottom, a first side and a second side;
ii. a generally "T" shaped front panel consisting solely of:
a front waist band having a first end secured to the first side of the back panel and a second end secured to the second side of the back panel; and
a front crotch strip secured between the bottom of the back panel and a symmetrical center point of the front waist band unencumbered by elastic or connecting fabric webbing;
b. elastic generally extending from where the back panel meets the front crotch strip, up the first side of the back panel, diagonally upwardly across the center point of the waist band, around the top of the back panel, diagonally downwardly across the center point of the waist band, down the second side of the back panel, and terminating where the back panel meets the front crotch strip.

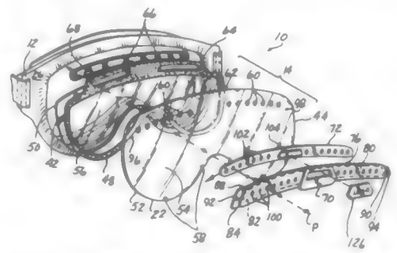
5,363,512

PROTECTIVE GOGGLE AND LENS WITH ADJUSTABLE VENTILATION

Fred F. Grabos, Jr., and George V. Dondero, both of Ketchum, Id., assignors to Smith Sport Optics, Inc., Ketchum, Id.

Filed Jan. 30, 1992, Ser. No. 828,434
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—436 **51 Claims**

50. A goggle having adjustable ventilation, comprising:
a frame;
a lens mounted in said frame and having a ventilation aperture and an adjustment aperture formed in the lens;
means movably disposed adjacent to an inside surface of said lens for selectively obstructing said lens ventilation aperture, said obstructing means including an adjustment



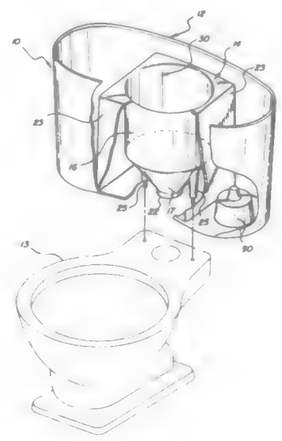
member projecting outwardly through said adjustment aperture for movement by the wearer of the goggle;
wherein said obstructing means comprises a further aperture formed therein movable relative to said lens for positioning said further aperture in at least partial alignment with said lens aperture.

5,363,513

PRESSURIZED FLUSHING TOILET

Karl Blankenburg, 32131 Claeys Dr., Warren, Mich. 48093

Filed Sep. 22, 1993, Ser. No. 125,106
Int. Cl.[5] E03D *3/10*
U.S. Cl. 4—354 **38 Claims**



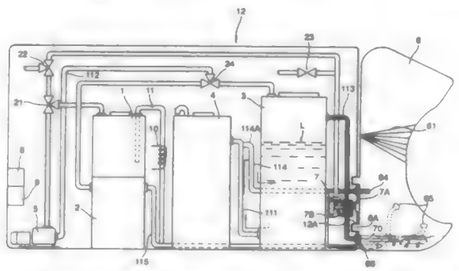
1. A pressurized water container apparatus for a toilet connectible to a water delivery conduit, the toilet including a toilet bowl having a water inlet and a water outlet, the pressurized container apparatus comprising:
a closed pressurizable container having an interior chamber with a water inlet and a water outlet connectible in fluid flow communication with a water inlet of a toilet bowl;
stopper means for releasably closing the water outlet in the container;
means, connected to the stopper means, for moving the stopper means between a first position closing the water outlet and a second position opening the water outlet for the flow of water through the water outlet to the toilet bowl;
means, connected to the water delivery conduit and the water inlet of the container, for selectively delivering water to the interior chamber in the container;
an air compressor, disposed in communication with the interior chamber of the container, for supplying compressed air to the interior chamber above water in the interior chamber to pressurize the container; and
electric control means for controlling the stopper moving means and the air compressor to fill the interior chamber with water, to pressurize the container to a predetermined pressure level and to discharge the water under pressure through the water outlet to a toilet bowl.

5,363,514

PORTABLE BEDPAN

Seong-Kyu Lee, 1/5, Whachun-dong 23-3, Jinhae-si, Kyeongsangnam-do, Rep. of Korea

Filed Jul. 30, 1993, Ser. No. 99,426
Claims priority, application Rep. of Korea, Jun. 7, 1993, 10233
Int. Cl.[5] A61G *9/00*
U.S. Cl. 4—455 **9 Claims**



1. A portable bedpan operated by a pump and a controller comprising:
a pan;
a body accommodating a first filth box, a second filth box, a remnant box, and a water box, said first filth box being connected with the pump via a conduit and with the pan via a hose, said second filth box being connected with the first filth box via a hose, said hose connecting said first and second filth boxes being connected at its upper portion with a hose connecting with the pan, said remnant box being connected via a hose with a lower portion of said pan and being connected with the pump via a conduit, and said water box being connected via a conduit with the pump and being connected with said lower portion of said pan via a hose;
said pan having a hole connected with said hose connecting the first and second filth boxes, a plurality of holes connected with the hose connecting the water box and the pan, and a suction hole connected with the hose connecting the pan and the first filth box and the hose connecting the remnant box and the pan;
a pushing cylinder connected via a conduit to said pump for pushing said pan by pump operation; and
four valves, one each installed in said connecting conduits for regulating air flow in connection with said pump operation.

5,363,515

Patent Not Issued For This Number

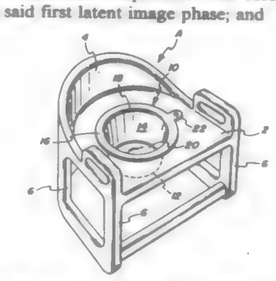
5,363,516

TOILET TRAINING DEVICE FOR CHILDREN

Becky Butts, 125 McGaughey Dr., Mt. Zion, Ill. 62549

Filed Oct. 4, 1993, Ser. No. 131,187
Int. Cl.[5] A47K *11/04*
U.S. Cl. 4—661 **9 Claims**

1. A reusable image generating toilet training device for children comprising:
a) a receptacle for receiving urine from a child;
b) a chair member having an opening therein for receiving and supporting said receptacle;
c) said receptacle having a bottom, sides and an open top;
d) a reversible image generating element having a first latent image phase operable at a first predetermined temperature and a second exposed image phase operable at a second predetermined temperature such that re-exposure to the first predetermined temperature will result in a change back to said first latent image phase; and



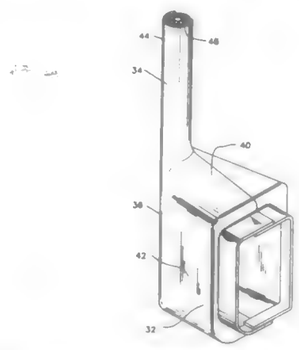
e) said image generating element is positioned on said receptacle bottom and viewable by the child from said open top so that when the child urinates into the receptacle, the urine will collect on the receptacle bottom and cover the reversible image element generating said second exposed image phase for viewing by the child.

5,363,517

PROTECTIVE COVERS FOR P-SHAPED TRAPS AND FOR WATER SUPPLY VALVES

Christos J. Botsolas, Fla., assignor to Carol M. Botsolas, Clearwater, Fla.

Filed Jan. 13, 1994, Ser. No. 180,677
Int. Cl.[5] E03C *1/00*
U.S. Cl. 4—661 **7 Claims**



1. A protective cover for an exposed horizontally disposed P-shaped sink trap, said sink trap having a vertical drain pipe connected to and extending downwardly from a sink drain outlet and a horizontally disposed P-shaped trap section having a vertical front leg connected to said vertical drain pipe, an arcuate section extending rearwardly therefrom to a vertical back leg connected to an elbow, and an outlet pipe extending from said elbow, for protecting a wheelchair bound person from burning when using the sink, said protective sink trap cover comprising:
an expandable housing for substantially enclosing said P-shaped trap section, said housing having a front section and a vertically disposed upper section for substantially enclosing said vertical drain pipe,
said housing being comprised of a pair of oppositely disposed substantially mirror-image portions comprising a left portion and a right portion,
each of said left and right portions comprising a partial

housing portion including said front section and a partial upper section portion;

whereby, by partially and temporarily deforming and inserting one of said left or right portions into the other said left or right portion and disposing said portion around the vertical drain pipe and the P-shaped trap section, the left and right portions are rotatable relative to each other around an axis extending vertically through the center of the upper section,

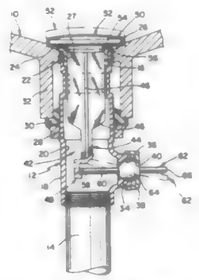
and the volume of space inside the housing can be enlarged or reduced to accommodate a variety of sizes of P-shaped traps and a variety of angles of installation of P-shaped traps.

5,363,518

POPUP DRAIN STOPPER

Richard W. Mowery, Long Beach, Calif., assignor to Emhart Inc., Newark, Del.

Filed Feb. 28, 1992, Ser. No. 843,778
Int. Cl.[5] A47K *1/14*; E03C *1/23*
U.S. Cl. 4—692 **10 Claims**



1. A popup drain stopper for assembly with a basin, a drain assembly and a drain opening common to the basin and drain assembly, which comprises:

a one-piece plunger body having a first end and a second end;

a connector formed in the body at the first end thereof;

a head formed in the body at the second end thereof;

the head being formed with holes to allow condensation which may form in a space between the head and the cap to drain from the space;

a removable cap positioned on the head;

means for removably retaining the cap with the head; and

sealing means assembled with the body adjacent the head for sealing the drain opening,

whereby the plunger body can be assembled within the drain assembly with the head located within the basin and with the connector attached to an operating mechanism to lower the plunger body to a lowermost position and locate the sealing means to seal the drain opening and to raise the plunger body to allow the drain opening to be unsealed.

5,363,519

DRAIN VALVE ASSEMBLY

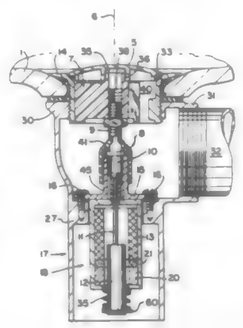
Thomas J. Husting, Port Washington, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Dec. 23, 1992, Ser. No. 996,302
Int. Cl.[5] E03C *1/23*
U.S. Cl. 4—689 **15 Claims**

1. A drain valve assembly for causing a valve poppet to seal and unseal a downward facing drain opening of a container of liquid, comprising:

a drain conduit connectable to the drain opening and having a portion shaped to move liquid outflow at least partially transverse to a longitudinal axis of the drain opening, the said at least partially transverse portion having a lower wall on which the draining liquid flows, the lower wall having a hole therethrough;

a drive member extending upward through the hole and connectable to the poppet such that one direction of motion of the drive member will drive the poppet upward to unseal the valve poppet, and a second direction of motion of the drive member will permit the valve poppet to seal the drain opening;



electrically powered means mounted outside the conduit below said lower wall for moving the drive member; and

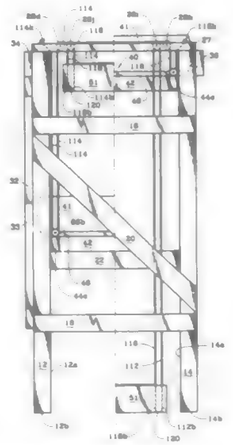
means for preventing liquid from leaking out of the conduit through the hole and onto the electrically powered means, the leak preventing means including a sleeve which circumscribes the hole and a piston which is formed on the drive member, is positioned at least partially within the sleeve and has a peripheral surface which seals against the sleeve.

5,363,520

SPACE-SAVING BED

Robert C. Lyne, Jr., 10207 Maremont Cir., Richmond, Va. 23233

Continuation-in-part of Ser. No. 579,798, Sep. 10, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,410
Int. Cl.[5] A47C *17/00*
U.S. Cl. 5—11 **26 Claims**



1. A self-supporting bed comprising:

a longitudinal axis;

a head structure comprising a vertical front post, a vertical rear post, and bracing means fastened to each of said posts

at vertically spaced locations thereon and extending between said posts in a plane perpendicular to said longitudinal axis, said head structure having bottom bearing surfaces suitable for supporting said head structure on a horizontal floor;

a foot structure comprising a vertical front post, a vertical rear post, and bracing means fastened to each of said posts at vertically spaced locations thereon and extending between said posts in a plane perpendicular to said longitudinal axis, said foot structure having bottom bearing surfaces suitable for supporting said foot structure on a horizontal floor, said bottom bearing surfaces being disposed in a common plane with said bottom bearing surfaces of said head structure;

rear bracing means fastened to each of said rear posts at vertically spaced locations thereon and extending in a plane parallel to said longitudinal axis;

a front rail fastened to each of said front posts of said head structure and said foot structure and extending therebetween in a direction parallel to the longitudinal axis of the bed, so that said head structure, said foot structure, said rear bracing means, and said front rail being spaced a sufficient distance above said plane of said bottom bearing surfaces to define, with said front posts, an unobstructed rectangular opening through which a person can walk without crouching or ducking;

pulley means secured in said frame including a plurality of pulleys secured to said head structure and a plurality of pulleys secured to said foot structure;

a rectangular platform which is suitable for supporting a mattress and is movable vertically within said frame between a lower, sleeping position and a higher, stored position in which said movable platform is spaced a sufficient distance above said plane of said bottom bearing surfaces that a person can walk through said rectangular opening and stand under said movable platform without crouching or ducking, said platform being horizontal in both said lower, sleeping position and said higher, stored position and having a front edge, a rear edge, a head edge, a foot edge, and four corners, each of which corners is proximate to one of said posts and beneath at least one of said pulleys;

a vertically movable counterweight connected to each of said corners of said platform by at least one line in tension extending upward from each of said corners to said pulley above each of said corners, over said pulley, and downward to said counterweight where it is connected at a location;

fist stationary support means fastened to said front and rear posts of said head structure;

second stationary support means fastened to said front and rear posts of said foot structure;

said first and second stationary support means being adapted to define said lower, sleeping position by limiting the downward travel of said platform and to support said platform in said position;

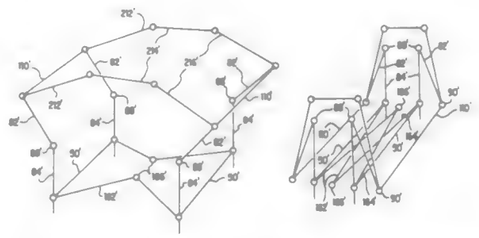
said pulley means and said lines being arranged and connected so that at each end of the bed a first line supports a front corner of said platform, a second line supports an adjacent rear corner of said platform, said first line also supports said counterweight, and said second line also supports said counterweight at the same location as where the counterweight is supported by said first line so that the raising of said front corner by a first distance with said lines in tension requires said counterweight to be lowered, which in turn causes said adjacent rear corner to be raised by a second distance which is equal to the first distance, and so that the lowering of said front corner by a first distance causes said counterweight to be raised, which in turn causes said adjacent rear corner to be lowered by a distance which is equal to the first distance, with the result that said adjacent front and rear corners must remain in horizontal alignment with each other during raising and lowering of the platform.

5,363,521

COLLAPSIBLE PLAYPEN

Thomas A. Garland, Jamestown, R.I.; Robert A. Kolich, East Aurora, N.Y.; Charles W. Paddock, Lancaster, N.Y., and James P. Bicheler, Alden, N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.

Continuation-in-part of Ser. No. 891,854, Jun. 1, 1992, abandoned. This application Dec. 30, 1992, Ser. No. 998,370
Int. Cl.[5] A47D *7/00, 13/06*
U.S. Cl. 5—99.1 **26 Claims**



1. A collapsible playpen moveable between a collapsed position and an operative position, comprising:

(a) a first end assembly and a second end assembly, each end assembly including an end base for contacting a supporting surface and an upper cross bar;

(b) articulated uprights extending between the end base and the upper cross bar in each end assembly for selectively separating the upper cross bars by a distance greater than the distance between the end bases, the articulated uprights adapted to be substantially vertical in the operative position of the playpen;

(c) lower articulated rails extending between the end bases for disposing the end bases in a parallel spaced apart orientation in the operative position and a parallel adjacent orientation in the collapsed position; and

(d) upper articulated rails extending between the upper cross bars for connecting the upper cross bars of the first and second end assembly;

the uprights and the upper and lower rails adapted to orient the upper cross bar and the end base of each end assembly in a spaced apart parallel orientation in the operative position, and an adjacent parallel orientation in the collapsed position wherein the distance between the upper cross bars is greater than the distance between the end bases in the collapsed position of the playpen.

5,363,522

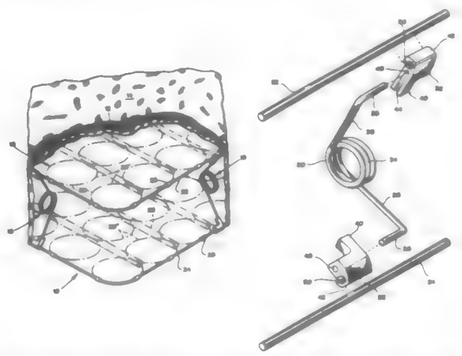
SPRING ASSEMBLY AND PERIMETER SUPPORT SPRING THEREFOR

Kevin N. McGraw, Micaville, N.C., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed Mar. 2, 1994, Ser. No. 204,546
Int. Cl.[5] A47C *27/04*
U.S. Cl. 5—474 **17 Claims**

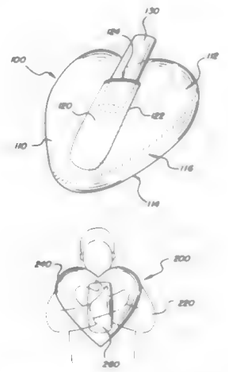
1. A spring assembly having an array of coil springs arranged and connected to one another generally in side-by-side parallel relation and upper and lower border wires extending in spaced parallel relation about the lateral perimeter of the spring array and connected to the coil springs along the perimeter of the spring array, and a plurality of perimeter support springs connected to and extending between the border wires, each perimeter support spring comprising a spring member having an intermediate spring element disposed generally between the border wires, a pair of spring arms extending in diverging directions from opposite ends of the spring element to respective terminal arm ends in proximity respectively with the border wires, and a pair of mounting clips attached respec-

tively to the terminal arm ends of the spring arms, each mounting clip having a first attachment portion receiving the respec-



tive terminal arm end and a second attachment portion receiving the respective border wire.

5,363,523
SURGICAL PILLOW WITH REMOVABLE WEIGHT
Linda M. Blackburn, 5181 Daval Dr., Swartz Creek, Mich. 48473
Filed Mar. 14, 1994, Ser. No. 209,705
Int. Cl.[5] A61G *7/06*
U.S. Cl. 5—630 **11 Claims**



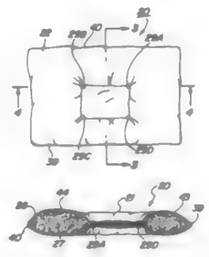
1. A post-operative pillow of the type used to apply pressure to the chest area of a patient having undergone chest-related surgery, comprising:

a pad having a volume and a chest-contacting surface;

a weight; and

means to removably secure the weight to the pad, the pad/-weight combination having a greater weight to volume ratio than the pad itself, thereby assisting in the application of pressure to the chest area through gravitational pull.

5,363,524
MULTI-ADJUSTMENT CERVICAL PILLOW
Gary E. Lang, Garden Grove, Calif., assignor to Makura Corporation, Garden Grove, Calif.
Filed Aug. 26, 1993, Ser. No. 112,416
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—640 **21 Claims**



12. A pillow comprising:

a. a first, upper fabric cover panel,

b. a second, lower fabric cover panel substantially similar in shape and size to said upper cover panel, said lower cover panel positioned congruently beneath said upper cover panel and peripherally joined thereby to form a cover defining therewithin a closed interior space,

c. a yieldable solid filler material within said interior space,

d. a plurality of first type of said spaced apart fasteners attached to said upper cover panel, and

e. a plurality of a second type of spaced apart fasteners attached to said lower cover panel, said second type of fastener being engageable with said first type of fastener exteriorly of said pillow cover to hold together selected spaced apart interior portions of said upper and lower cover panels, said spaced apart interior portions defining boundaries of subdivisions of said interior space of said pillow, said boundaries restricting flow of said solid filler material therethrough.

5,363,525
CEILING WIRE TOOL
Jon R. Andreasen, P.O. Box 111474, Anchorage, Ak. 99511-1474
Filed Mar. 24, 1993, Ser. No. 36,469
Int. Cl.[5] B25B *13/00*
U.S. Cl. 7—138 **22 Claims**

1. A tool for installing suspending ceiling fasteners and wires, comprising:

(a) a generally cylindrical body portion;

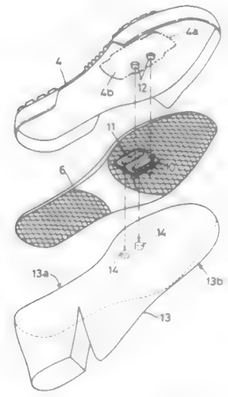
(b) a generally mammillated head portion, said head portion extending from an end of said body portion, said head portion including a tapered tip portion;

(c) a generally cylindrical cavity, said cavity extending coaxially through said head portion and into said body portion wherein said cavity terminates at a closed end;

(d) a first plurality of slots, said first plurality of slots extending longitudinally through said head portion and into said body portion, said first plurality of slots communicating with said cavity;

(e) a second plurality of slots, said second extending longitudinally through said head portion and into said body portion, said second plurality of slots communicating with said cavity, said second plurality of slots positioned substantially perpendicular to said first plurality slots.

5,363,526
LAST FOR USE IN MAKING CYCLING SHOES, LAST AND CYCLING SHOE SOLE, AND A METHOD FOR MAKING SHOES USING A LAST
Shinpei Okajima, Izumi, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Aug. 29, 1991, Ser. No. 751,953
Claims priority, application Japan, Sep. 7, 1990, 2-237763
Int. Cl.[5] A43B *3/00, 5/00*
U.S. Cl. 12—133 B **18 Claims**



1. A combination comprising:

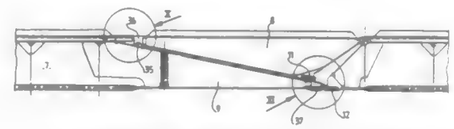
a cycling shoe comprising a cycling show sole and attaching means for attaching said sole to a cycle pedal, said sole comprising at least one mounting bore for attaching said attaching means to said sole; and

a last for use in manufacturing said cycling shoe, comprising:

a sole supporting surface opposed to said cycling shoe, and

position setting projections formed on said sole supporting surface for engaging said mounting bore to a set position of said sole relative to said sole supporting surface.

5,363,527
SPANNING BEAM STRUCTURE FOR CLEARING BREACHES BY VEHICLES
Guy Rainaud; Denis Allain, both of Toulon, and Henri Aubert, La Seyne sur Mer, all of France, assignors to Constructions Industrielles de la Mediterranee CNIM, Paris, France
Filed Nov. 13, 1992, Ser. No. 977,283
Claims priority, application France, Nov. 15, 1991, 91 14116
Int. Cl.[5] E01D *15/12*
U.S. Cl. 14—2.4 **15 Claims**



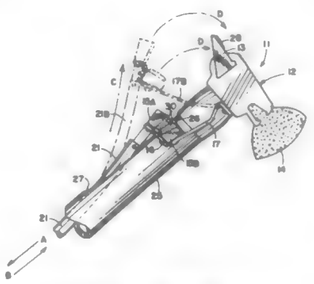
1. In a spanning beam structure for clearing breaches by vehicles and having at least one spanning beam element comprising a rigid central box with an upper trackway, said central box having a first end and a second end opposite to said first end, at least one movable access jib being coupled to one of said first and second ends of said central box for extending said upper trackway of said central box, said at least one of said access jibs being fastened to said central box by a transverse pivot pin to permit said at least one access jib to pivot about said pivot pin between a locked position and a raised position, and releasable locking means for locking said at least one access jib in said locked position, the improvement wherein said locking means comprise

at least one jib locking shaft fixed to said at least one access jib, said jib locking shaft having a head,

at least one box locking shaft fixed to said central box, said box locking shaft having a head, said at least one jib locking shaft and said at least one box locking shaft being aligned along a common axis and extending in a longitudinal direction of said central box when said at least one access jib is in said locked position with respect to said central box, such that said head of said at least one jib locking shaft confronts said head of said at least one box locking shaft, and

two jaw-like members for releasably securing said heads of said at least one jib locking shaft and said at least one box locking shaft to lock said at least one access jib to said central box.

5,363,528
WINDOW WASHING TOOL
Roger D. Brock, 208 Fairhope Ave. #13, Fairhope, Ala. 36532
Filed Jan. 31, 1994, Ser. No. 188,696
Int. Cl.[5] A47L *13/12, 1/06*
U.S. Cl. 15—121 **8 Claims**



1. A window washing tool comprising:

a) a squeegee head having a body, an absorbent washing pad attached to a first portion of said body, and a squeegee

blade having a front and rear face, and attached to a second portion of said body;

b) an elongate handle having a proximal end thereof attached to said body;

c) a pair of opposed wiping bars hinged together and disposed transverse to said handle, each of said bars having an absorbent pad attached thereto, and one of said pair of wiping bars pivotally attached to said squeegee head body; and

d) means for moving said wiping bars from a rearward retracted position to a forward extended position in which said pads contact said front and rear faces of said squeegee blade respect.

5,363,529

DENTAL BRUSH

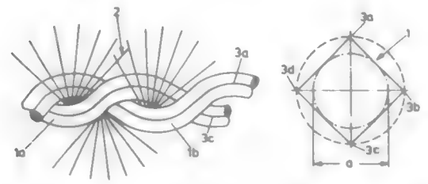
Holger Fitjer, Ansbach, Germany, assignor to George Karl Geka-Brush GmbH, Bechhofen-Waizendorf, Germany

Filed May 21, 1993, Ser. No. 65,263

Claims priority, application Germany, May 22, 1992, 9206967[U]

Int. Cl.[5] A46B *3/18*

U.S. Cl. 15—167.1 **3 Claims**



1. A dental brush comprising two intertwisted elongated wire sections, between which fibers for cleaning teeth and tooth gaps are arrested by the twisting, at least one of said two intertwisted wire sections having a polygonal cross section and a fin (3) formed by adjacent sides of said at least one of said two intertwined wire sections extending in a longitudinal direction of said at least one of the elongated wire sections, said fin having a sharp edge engaged to and arresting in point contact said fibers to prevent the fibers being pulled from between said two intertwisted wire sections, wherein a diameter of a circle drawn within and touching sides of said polygonal cross section is between 0.2 and 1.2 mm.

5,363,530

PIPE JOINT CLEANER

Jeffery D. Dunn, and Starla J. Dunn, both of P.O. Box 1103, Ault, Colo. 80610

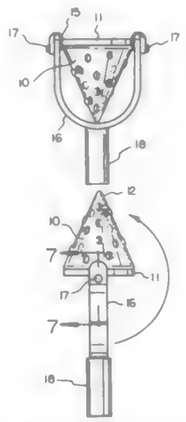
Filed Nov. 9, 1993, Ser. No. 149,512

Int. Cl.[5] B08B *9/02*

U.S. Cl. 15—236.08 **2 Claims**

1. A pipe joint cleaner, particularly suitable for cleaning the cut ends of a plastic pipe preparatory to joining, which comprises:

a hollow rigid conical member having an open wide end, an interior surface, and an exterior surface; a plurality of sharp cutting projections extending from both the interior and the exterior surfaces of said conical member; and means to rotate said conical member with said projections in contact with a pipe to be cleaned, wherein said means comprises an annular ring secured to said conical member about said open wide end, and wherein said means further comprises a two-arm yoke having a demanding handle



portion, with said yoke being mounted to diametrically opposed sides of said annular ring.

5,363,531

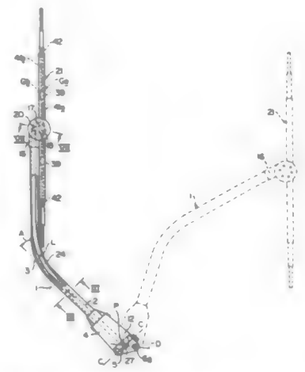
WINDSCREEN WIPER ARM, PARTICULARLY FOR A HIGH-SPEED VEHICLE

Pascal Chevrier, Ozoir la Ferriere, and Edmond Faubeau, Andilly, both of France, assignors to Forges de Belles Ondes, Paris, France

Filed Aug. 2, 1993, Ser. No. 100,419

Int. Cl.[5] B60S *1/20, 1/37, 1/116*

U.S. Cl. 15—250.04 **7 Claims**



1. A wind screen wiper arm assembly for wiping a windscreen comprising:

a tubular element having first and seconds ends and a base at said first end;

a clevis connected to said base by a pivot member having an axis substantially parallel to a surface of said windscreen, said tubular element and base being rotatable about said pivot member away from said wind screen, said clevis being connected to a drive shaft which rotates said clevis, connected base and tubular element parallel to said wind screen surface about a rotational axis;

an orientation member fixed to structure supporting said wind screen, said orientation member defines a support point lying on an axis parallel to said rotational axis of said drive shaft;

linkage means having first and second ends, said means connected at said first end to said orientation member at said, support point by a pivot pin which defines a pivot pin axis, said linkage means extending through said tubular element;

a lever rotatably connected to the second end of said tubular element having a rotation axis parallel to said axis of said drive shaft, and connected to the second end of said linkage means;

said pivot member and said pivot pin of the linkage means having their axes alignable for a given angular position of the tubular element relative to said structure;

a wind screen wiper blade connected to said lever, said linkage means rotating said lever during wiping motion of said tubular element, to maintain a fixed distance between said support point and said rotation axis of said lever to maintain said wiper blade in a fixed orientation with respect to said wind screen; and,

stop means for inhibiting rotation of said base about said pivot member when said pivot member axis is not in alignment with said pivot pin axis.

5,363,532

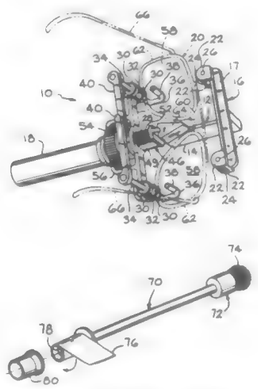
APPARATUS FOR CLAMPING EYEGLASSES

Charles L. Sargent, 3000 Glazier Way #160, Ann Arbor, Mich. 48105

Division of Ser. No. 761,473, Sep. 18, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,328

Int. Cl.[5] B25B *5/14;* **G02C** *13/00*

U.S. Cl. 15—268 **15 Claims**



1. An apparatus for clamping eyeglasses, the eyeglasses having a frame and lenses mounted on the frame, the lenses having two surfaces and peripheral edges and the frame further having bows movable between a closed position overlaying one of the surfaces of the lenses and an open position extending away form the lenses, said clamping apparatus enabling washing and drying of the lenses, said clamping apparatus comprising:

a holder including clamp means for clamping said eyeglasses at a plurality of locations, said clamp means being engagable with the eyeglasses at said locations so as to provide access to all of the lens surfaces and said holder being spaced from the lens surfaces to provide access to the lens surfaces for cleaning the lenses;

means on said holder for grasping of said holder; and

means on said holder adapted to engage said bows for retaining the bows of the eyeglasses in the open position regardless of the orientation of the eyeglasses in space to maintain unobstructed access to the lens surfaces for cleaning the lenses.

5,363,533

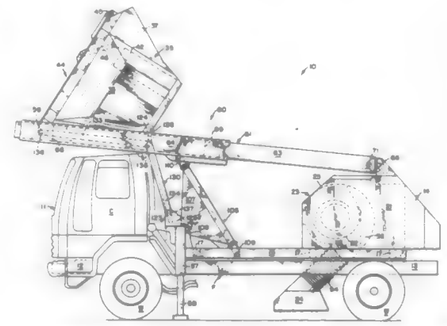
SURFACE SWEEPING MACHINE WITH OVER-THE-CAB HOPPER DUMPING

Gary B. Young, Waco; Albert L. Hanel, Eddy, and Kenneth R. Veselka, Axtell, all of Tex., assignors to Tymco, Inc., Waco, Tex.

Division of Ser. No. 769,419, Oct. 1, 1991, Pat. No. 5,173,989, which is a division of Ser. No. 188,521, Apr. 29, 1988, Pat. No. 5,072,485. This application Oct. 7, 1992, Ser. No. 957,881

Int. Cl.[5] E01H *1/08*

U.S. Cl. 15—339 **13 Claims**



1. A vehicle occupant protection system comprising a vehicle, means defining an occupant area of the vehicle, a movable element, means for moving said movable element from a first position generally remote from said occupant area to a second position substantially overhead said occupant area which might prove hazardous to an occupant unless otherwise provided for; and means automatically movable, during the movement of the movable element from its first position to its second position, from a nonuse position adjacent said occupant area to a use position above said occupant area and beneath said movable element second position to prevent downward movement of the movable element from its second position into said occupant area.

5,363,534

VACUUM CLEANER AND SUCTION TUBE FOR USE WITH A VACUUM CLEANER

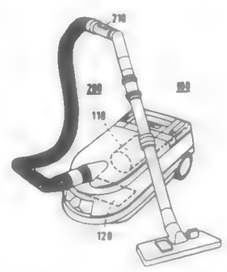
Jan H. Dekker, Hoogeveen, and Ate K. Damstra, Drachten, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1993, Ser. No. 67,199

Claims priority, application European Pat. Off., Jun. 19, 1992, 92201787.6

Int. Cl.[5] A47L *9/28*

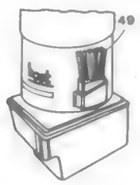
U.S. Cl. 15—339 **9 Claims**



1. A vacuum cleaner comprising a housing (**100**) provided with an electric motor (**110**) and with an electronic circuit (**120**) for controlling the electric motor (**110**), which housing

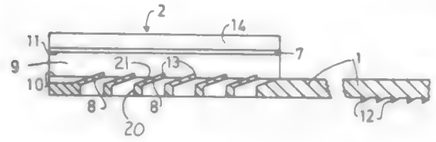
(100) is constructed for the connection of a suction tube (200) with a remote control circuit (210) for controlling the electronic circuit (120), wherein the electronic circuit (120) is adapted to control the electric motor (110) both in the presence and in the absence of the suction tube (200).

5,363,535
CARPET CLEANING MACHINE WITH CONVERTIBLE-USE FEATURE
Geoffrey B. Rench, Racine, Wis.; Stephen Jacobs, Eureka, and Frank Jolly, Arcata, both of Calif., assignors to Racine Industries, Inc., Racine, Wis.
Division of Ser. No. 860,689, Mar. 30, 1992, Pat. No. 5,287,591. This application Dec. 10, 1993, Ser. No. 164,815
Int. Cl.[5] A47L 5/24
U.S. Cl. 15—344 3 Claims



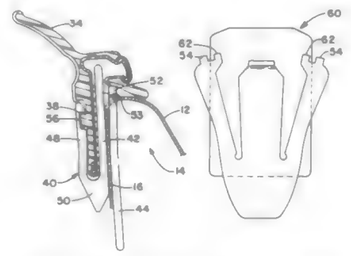
1. A hand-carried pod for vacuum-cleaning carpet and including:
a canister having an air flow path therethrough;
canister-mounted particle-removing media selected to remove particles of differing sizes from the flow path;
a particle-collecting bin removably mounted at the bottom of the canister for receiving particles removed from the flow path;
and wherein:
the bin has a pair of downwardly-depending portions;
each portion has a surface substantially coplanar with the surface of the other portion, whereby such surfaces may support the pod upright on a floor.

5,363,536
CLOSING BAND
Karl F. Kleemann, deceased, late of Murrhardt, Germany, by Margarete Kleemann, legal representative, assignor to Erich Schumm GmbH & Co. KG, Murrhardt, Germany
Filed Aug. 7, 1992, Ser. No. 927,195
Claims priority, application Germany, Aug. 8, 1991, 4126225
Int. Cl.[5] B65D 63/10
U.S. Cl. 24—30.5 P 10 Claims



1. A closing band, comprising:
an elongated, flexible band having a ribbed portion and a narrower threading portion, said band having a free end for gripping, and having a holding head at an opposite end, said holding head providing a longitudinally extending channel with a top opening for laterally receiving the threading portion and with opposite end openings to allow the band to be moved longitudinally through the channel until the ribbed portion is positioned in the channel, and wherein the head forms a plurality of flexible, spaced tongues having web portions extending transversely to the channel, said web portions being spaced longitudinally along the channel, and said tongues having engagement portions being formed at an obtuse angle to said web portions for angling into said channel and engaging said ribbed portion within the channel, said head also forming yieldable retaining means alongside the channel such that the ribbed portion is retained in said channel against longitudinal forces but is removable from said channel through exertion of a force on the ribbed portion outwardly through the top opening of the channel.

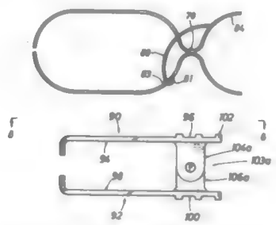
5,363,537
VEHICLE WINDOW WEATHER SEAL RETAINING CLIP
Steven E. Schneider, Rochester Hills, Mich.; Rick L. Rogers, Wabash, and Eric E. Gardner, Hartford, both of Ind., assignors to GenCorp Inc., Fairlawn, Ohio
Filed May 13, 1993, Ser. No. 61,126
Int. Cl.[5] A44B 17/00
U.S. Cl. 24—289 12 Claims



1. A clip adapted to be engaged within a rectangular slot on a first object and for retaining a second object, comprising:
a substantially planar vertical central portion;
an integral, downwardly depending, substantially planar arm connected to one side of and substantially parallel with, said central portion;
a pair of wings coplanar with and extending upwardly and outwardly from said downwardly depending arm, said wings including means for engaging opposing narrow edges of said rectangular slot to secure said downwardly depending arm within said rectangular slot; and
an integral, substantially upwardly extending arm connected to the other side of said central portion, said second object being securable between said central portion and said upwardly extending arm.

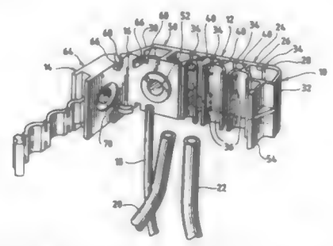
5,363,538
CORD CLASP
Robert W. Arrendiell, and Gwendolyn G. Ellis, both of 280 Sugarberry Cir., Houston, Tex. 77024
Continuation-in-part of Ser. No. 821,975, Jan. 16, 1992, Pat. No. 5,153,969. This application Oct. 7, 1992, Ser. No. 957,685
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] A44B 21/00
U.S. Cl. 24—499 14 Claims

2. A clasp for holding together multiple thicknesses of gathered cord, comprising
a first elongated jaw member having a cord surrounding portion and a handle portion for accommodating at least one finger,
a second elongated jaw member having a cord surrounding portion and a handle portion for accommodating a thumb, said second jaw member being pivoted with respect to said first jaw member so that said first jaw member cord surrounding portion and said second jaw member cord surrounding portion are juxtapositioned to open away from one another when said handle portions are squeezed together,
bias means secured to said first jaw member and said second jaw member to urge closure of said cord surrounding portion of said jaw member with said cord surrounding portion of said second jaw member, said first jaw member and said second jaw member being farther apart at said handle portions than at said cord surrounding portions when the clasp is closed and



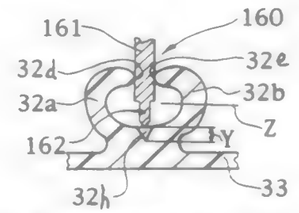
said cord surrounding portions of said first and second jaw members having respectively complementary front edges, at least one of said first and second jaw members having at least one shark-shaped tooth engageable with the edge of the other jaw member when said jaw members close for retaining the gathered cord within said surrounding portions even when not fully closed.

5,363,539
FLEXIBLE TUBE CLIP
James S. Tisol, New Auburn, Wis., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Feb. 8, 1993, Ser. No. 14,498
Int. Cl.[5] A44B 21/00
U.S. Cl. 24—543 15 Claims



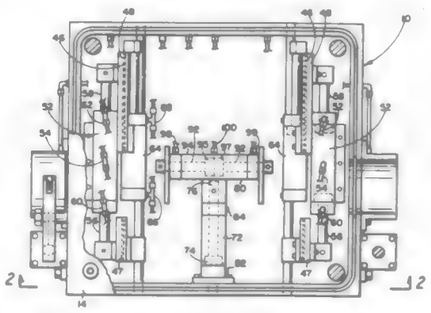
1. A tube clip for mounting a plurality of tubular elements thereto, comprising:
a base member having oppositely disposed edge portions;
a plurality of substantially C-shaped channel members, having a substantially closed rear portion and an open front portion for receiving a tubular element therein, fixedly mounted upon one side of said base member at said substantially closed rear portions such that longitudinal axes of said substantially C-shaped channel members are substantially parallel to each other and front edge portions of each one of said substantially C-shaped channel members are separated from adjacent front edge portions of adjacent substantially C-shaped channel members; and
longitudinally extending slot means defined within said base member and extending toward a longitudinally central portion of said base member from said oppositely disposed edge portions of said base member so as to divide said base member into a plurality of base sections, which are separated from each other except at said longitudinally central portion of said base member and wherein said plurality of substantially C-shaped channel members are respectively disposed upon said plurality of separate base sections of said base member, for enabling independent movement of said plurality of base sections of said base member and said substantially C-shaped channel members disposed upon said plurality of base sections in order to facilitate mounting of a plurality of tubular elements within said plurality of substantially C-shaped channel members.

5,363,540
PROCESS AND APPARATUS FOR CONTROLLING THE GAP WIDTH OF A RECLOSABLE CLOSURE PROFILE FOR A THERMOPLASTIC CONTAINER
Brian C. Dais, and Jose Porchia, both of Midland, Mich., assignors to Dowbrands L.P., Indianapolis, Ind.
Filed Aug. 7, 1992, Ser. No. 926,985
Int. Cl.[5] A44B 17/00
U.S. Cl. 24—587 2 Claims



1. A zipper for a reclosable thermoplastic bag comprising two opposing, longitudinally extending interlockable rib and groove profiles, wherein the groove profile has intermittent cuts therein at intervals along the surface of the longitudinal length of the base of the groove profile to provide better control of the strength of the profile both from a structural and closure force standpoint.

5,363,541
METHOD FOR REPAIRING A TRANSPORT PIPE
Danny D. Toomey, Broken Arrow; Gene R. Ralls, Tulsa, and Johnny M. Manley, Owasso, all of Okla., assignors to TDW Delaware, Inc., Wilmington, Del.
Division of Ser. No. 970,116, Nov. 2, 1992, Pat. No. 5,280,670. This application Oct. 21, 1993, Ser. No. 140,592
Int. Cl.[5] F16L 55/16; B23P 6/00
U.S. Cl. 29—890.14 1 Claim



1. A method of repairing a transport pipe having a selected section and having fluid therein under pressure comprising:
enclosing the selected section of the pipe in a pressure container;
cutting said selected section out of said pipe while said container is under pressure and leaving a space between cut ends of said pipe within said container;
placing a replacement nipple within said space, said nipple supporting two electrofusion collars, said nipple being of a length to fit into said space;
moving said collars axially along said nipple to fit over the position where said collars and the ends of said transport pipe meet; and

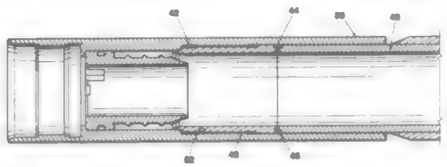
energizing said collars to fuse said transport pipe with said nipple to create a leakproof joint.

5,363,542

METHOD OF ASSEMBLY FOR INFLATABLE PACKER

Robert M. Sorem, Tulsa, and David M. Eslinger, Broken Arrow, both of Okla., assignors to Dowell Schlumberger Incorporated, Sugar Land, Tex.

Filed Dec. 11, 1992, Ser. No. 988,658
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—454 **1 Claim**



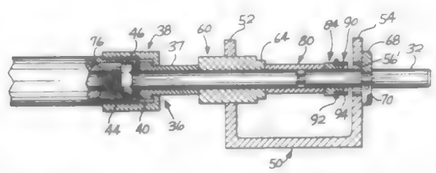
1. In the method of assembly of an inflatable packer including attachment of a plurality of reinforcing slats to an end fitting of said packer comprising the sequential steps of forming slats of an age-hardening material in annealed condition, welding said slats to said end fitting, heat treating and age hardening the resultant welded slats and end fitting, the improvement which comprises providing external threads on the end fitting, slipping an overlying sleeve onto the end connector and engaging internal threads on the sleeve with the external threads of the end fitting.

5,363,543

METHOD OF ALIGNING TWO BUSHINGS IN A BORE

Jerry L. Boyd, Auburn, and Kenneth C. Cameron, Sr., Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 677,545, Mar. 29, 1991, Pat. No. 5,317,793.
This application Jul. 1, 1993, Ser. No. 84,112
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—464 **7 Claims**



1. A method for aligning two bushings coaxially with a bore through two legs of a U-shaped part, and pressing said bushings into said bore with an interference fit without exerting bending moments on said U-shaped part, so that said bushings are concentric with said bore and coaxial with each other, comprising:

inserting a mandrel through a hole in an anvil, said anvil having an inner end and an outer end, and connecting an inner end of said mandrel to a pulling tool so that said mandrel can be pulled by said pulling tool through said anvil hole;

positioning said inner end of said anvil in engagement with said pulling tool;

inserting said bushing onto said mandel;

inserting a guide in one end of said bore in a near leg closest to said pulling tool, and positioning a spacer between said anvil outer end and said bushing, said spacer, said guide and said anvil having a combined length to reach from said pulling tool to a far leg, farthest from said pulling tool;

inserting said mandrel through an axial hole in said guide, said guide being sized to fit into said bore with a snug sliding fit, and said mandrel being concentrically disposed within said guide, and sliding said bushing along said mandrel to a position adjacent another end of said bore through said far leg;

positioning said pulling tool on one side of said part nearest to said near leg so that a flat face on said outer end of said anvil, which is perpendicular to the axis of said hole through said anvil, abuts against said guide;

attaching a collar in an axially fixed position on said mandrel on the other side of said part from where said anvil is disposed, said collar being attached to said mandrel with a flat face disposed perpendicular to the axis of said mandrel and facing said far leg;

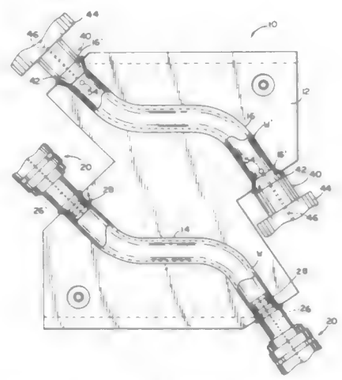
operating said pulling tool to pull said mandrel through said anvil to exert a squeezing force between said collar and said anvil on said far leg of said part and said bushing to press said bushing into said bore with a straight axial force that is uniformly distributed around said bushing, whereby forces exerted by said mandrel on said far leg are reacted directly through said leg around said bore by said spacer to prevent any turning moment from being exerted on said leg by said mandrel, and said mandrel is maintained by said guide in a coaxial position in said bore, and guides said bushing to move in a straight concentric path into said bore, pressed therein by said squeezing force without being cocked sideways and without gouging the walls of said bore, and is seated in a concentric position in said bore.

5,363,544

MULTI-STAGE DUAL WALL HYDROFORMING

Gary L. Wells, Kalamazoo; James R. Dehlinger, Ada, and Donald R. Rigsby, Jenison, all of Mich., assignors to Benteler Industries, Inc., Grand Rapids, Mich.

Filed May 20, 1993, Ser. No. 65,126
Int. Cl.[5] B21D *39/08, 3/00;* **B23P** *11/02;* **F16L** *9/18*
U.S. Cl. 29—523 **19 Claims**



1. A method of forming a configurated dual tube metal conduit with controlled spacing between the inner and outer tubes comprising the steps of:

providing a dual tube workpiece of metal having a pair of open ends, an inner tube and an outer tube in telescopic engagement with each other, and openings through said inner tube adjacent at least one of said ends;

providing sealing end plugs having annular seals thereon;

bending said dual tube workpiece to a predetermined configuration;

inserting said sealing end plugs in said workpiece ends to a depth sufficient to cover said openings, and sealing said open ends of said workpiece;

first expanding both of said inner and outer tubes simultaneously by filling said workpiece with fluid and increasing the pressure of said fluid sufficient to cause said inner and outer walls to simultaneously expand a controlled amount to a desired size of said inner tube;

withdrawing said sealing plugs to uncover said openings; and

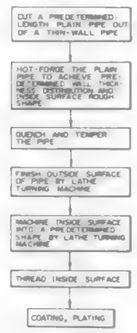
repressurizing fluid in said workpiece to cause flow through said openings and between said inner and outer tubes, to expand only said outer tube to its final outside shape and size which results in a predetermined spacing from said inner tube, and thereby form the dual wall metal conduit.

5,363,545

METHOD OF PRODUCING A COUPLING FOR OIL COUNTRY TUBULAR GOODS

Yutaka Hirano; Masayuki Tsuji, and Hironobu Sakakibara, all of Aichi, Japan, assignors to Kawatetsu Tubic Co., Ltd., Japan

Filed Sep. 14, 1993, Ser. No. 121,208
Claims priority, application Japan, Sep. 14, 1992, 4-244465
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—527.4 **4 Claims**



1. In a method of producing a coupling for oil country tubular goods having a metal seal portion and a screw thread portion tapered toward an end thereof, the steps which comprise:

(a) cutting a pipe of a predetermined thickness to a predetermined length;

(b) hot forging said pipe to deform its inside surface into a predetermined shape at least a portion of which has a thickness greater than said predetermined thickness;

(c) quenching and tempering the resulting forging;

(d) machining an outside surface of said forging into a final dimensions;

(e) machining the inside surface of said forging into a predetermined shape; and

(f) threading the inside surface of said forging.

5,363,546

APPARATUS FOR MAKING ARMATURES FOR ELECTRODYNAMIC MACHINES

Lynn E. Bradtmueller, Fort Wayne; Gustave F. Wiedemann, New Haven; David M. Pierre, and Ronnie G. Smitley, both of Fort Wayne, all of Ind., assignors to General Electric Company, Fort Wayne, Ind.

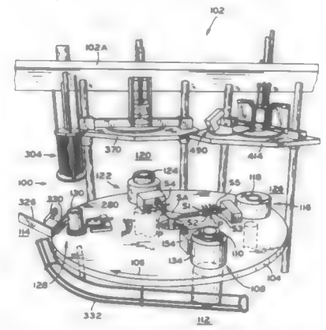
Filed Feb. 3, 1992, Ser. No. 830,103
Int. Cl.[5] H01K *15/06*
U.S. Cl. 29—564.1 **29 Claims**

1. A system for manufacturing an armature for an electrodynamic machine comprising:

a plurality of processing positions;

a plurality of processing stations, a first one of said processing stations being an operator's station where components are placed into the system for assembly, said components comprising a plurality of hairpin conductors disposed in a magazine, an armature core and a commutator;

conveyor means supporting said plurality of processing positions and sequentially moving said plurality of processing positions to said plurality of processing stations to assemble said core, commutator, and hairpin conductors together wherein said plurality of processing positions includes a first position defining upper twist tooling for



twisting hairpin conductors; said first position receiving said magazine when positioned in said operator's station; and wherein said plurality of processing stations further includes a second station comprising

hairpin insert presser means for transferring said plurality of hairpin conductors from said magazine into said upper twist tooling while said first position is positioned at said second station, and

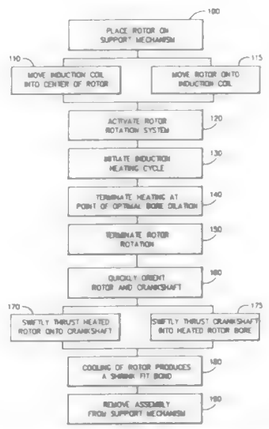
magazine ejection means for forcing said magazine away from said upper twist tooling.

5,363,547

METHOD FOR ATTACHING ROTORS TO CRANKSHAFTS

Alan M. Brown, 4280 Carmel Dr., Liverpool, N.Y. 13090

Division of Ser. No. 519,695, May 4, 1990, Pat. No. 5,279,027.
This application Sep. 16, 1993, Ser. No. 121,632
Int. Cl.[5] H02K *15/02*
U.S. Cl. 29—598 **6 Claims**



1. A method for securing two members in a shrink fit comprising the steps of:

locating a means for providing localized heating within an opening in a first one of the two members;

with the means for providing localized heating in place within an opening in the first one of the two members, heating a localized portion of the first one of the two members by the means for providing localized heating;

separating the means for providing localized heating from the opening;

while the first one of the two members is still heated in a localized manner, locating a portion of the second one of the two members within the opening whereby the second one of the two members acts as a heat sink with respect to the first one of the two members and the first one of the two members shrink fits onto the second one of the two members.

5,363,548

SHEET-WOUND COILS

Erik Forsberg, Smedjebacken; Lennart Lundström, Bjästa, and Uno Zetterlund, Ludvika, all of Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

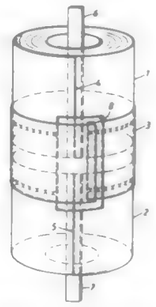
PCT No. PCT/SE91/00471, § 371 Date Jan. 6, 1993, § 102(e) Date Jan. 6, 1993, PCT Pub. No. WO92/02941, PCT Pub. Date Feb. 20, 1992

PCT Filed Jul. 1, 1991, Ser. No. 961,689

Claims priority, application Sweden, Aug. 7, 1990, 9002585-9

Int. Cl.[5] H01F *27/28*

U.S. Cl. 29—605 **5 Claims**



1. A method of joining sheet-wound coils stacked one on top of the other with an axial space therebetween comprising:

stacking a first coil having a top surface and a bottom surface on top of a second coil having a top surface and a bottom surface leaving a space between the bottom surface of the first coil and the top surface of the second coil,

wrapping a belt consisting of a thin leader strip having a leading end and a tail end covering the bottom surface of the first coil, the top surface of the second coil and the space therebetween; and

connecting the leader strip to the bottom surface of the first coil and the top surface of the second coil along one coil turn.

5,363,549

CABLE LAMINATING AND TERMINATING SYSTEM

Jack D. Hecker, Duncanville, Tex., assignor to E. D. Design Manufacturing, Dallas, Tex.

Filed Jul. 30, 1993, Ser. No. 99,607

Int. Cl.[5] H01R *43/04*

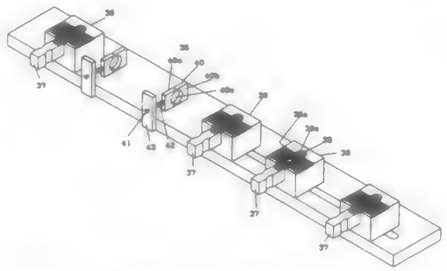
U.S. Cl. 29—742 **15 Claims**

1. An apparatus for utilizing round cable with a plurality of conductors, and attaching ribbon cable connectors to portions of the conductors that have been arranged in a flat array of conductors, comprising

a housing including at least one pressing station;

a platform under the housing and pressing station;

a lacing bar, including a plurality of comb blocks for holding a connector and for positioning conductors over contacts on said connector, movable on said platform for holding a cable, and connectors than are be attached to the cable; and



a sensor on said platform for indicating when a connector is under said pressing station.

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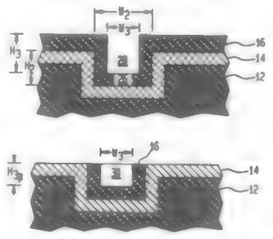
METHOD OF FABRICATING A MICRO-COAXIAL WIRING STRUCTURE

John M. Aitken, Mahopac, N.Y.; Shahzad Akbar, Austin, Tex.; Billy L. Crowder, Putnam Valley, N.Y.; Asif Iqbal, Danbury, Conn., and Perwaiz Nihal, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 996,210

Int. Cl.[5] H01B *13/20*

U.S. Cl. 29—828 **7 Claims**



1. A method of fabricating a micro-coaxial wiring structure, said method comprising the steps of:

a) forming a first insulator layer;

b) patterning a first trench of first dimensions in the first insulator layer;

c) forming a first conductive layer on the first insulator layer, the first conductive layer having a shape conforming to the first insulator layer and lining the first trench to form a second trench of second dimensions within the first trench;

d) forming a second insulator layer on the first conductive layer, the second insulator layer having a shape conforming to the first conductive layer and lining the second trench to form a third trench of third dimensions within the second trench;

e) planarizing the second insulator layer down to the first conductive layer, thereby planarizing the third trench, the planarized third trench being of predetermined dimensions;

f) forming a conductive signal line within the planarized third trench, the conductive signal line having a predetermined aspect ratio of width to height corresponding to the dimensions of the planarized third trench for providing a desired value of resistance per unit length and further being electrically shielded by the first conformal conductive layer;

g) forming a third insulation layer upon the first conductive layer, the second insulation layer, and the conductive signal line; and

h) forming a conductive shielding line upon the third insulation layer, the conductive shielding line being in alignment with the first trench and further shielding the conductive signal line.

5,363,551

METHOD AND APPARATUS FOR MOUNTING COMPONENTS WITH ANGLED TERMINALS

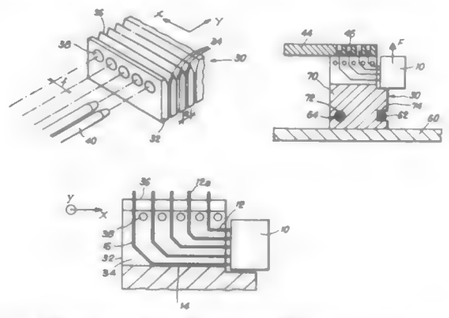
Jacques Cottet, Vinz En Sallaz, and Serge Servoz, Lugrin, both of France, assignors to Amphenol Socapex, France

Filed Jul. 28, 1993, Ser. No. 103,039

Claims priority, application France, Jul. 31, 1992, 92 09576

Int. Cl.[5] H05K *3/32*

U.S. Cl. 29—837 **7 Claims**



1. A method of mounting an electronic component having a plurality of angled terminals onto a printed card having plated-through holes, said angled terminals having ends disposed in parallel rows and columns, said terminals extending in a column direction and being intended to be received in respective ones of said holes, the method comprising

positioning terminals disposed in the same columns in corresponding parallel slots of a guide assembly, said slots being separated by parallel teeth, the terminals being positioned such that the ends of the terminals project beyond ends of said teeth;

inserting elongate elements in a plurality of aligned orifices formed in said teeth such that said elongate elements extend between adjacent terminals in the same column;

positioning said guide assembly relative to said card such that said terminal ends penetrate, at least in part, into said plated-through holes;

withdrawing said elongate elements from said orifices;

displacing said card relative to said component perpendicular to a plane defined by said card so as to cause the ends of said terminals to penetrate fully into said plated-through holes;

securing said component to the card; and

separating said guide assembly from the card and said component.

5,363,552

METHOD OF HEAT SINKING AND MOUNTING A SOLID-STATE DEVICE

John B. Coniff, Hoffman Estates, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 23, 1993, Ser. No. 96,590

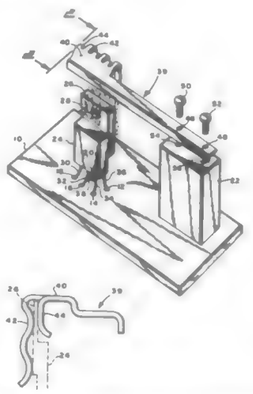
Int. Cl.[5] H05K *3/30*

U.S. Cl. 29—840 **10 Claims**

4. A method of heat sinking and mounting a solid-state junction device having leads for attachment to a circuit and a bus bar comprising:

(a) attaching said leads to a circuit;

(b) providing a strip of material of relatively high electrical and thermal conductivity;



(c) forming at least two fingers extending from said strip and disposed in spaced generally parallel arrangement;

(d) inserting said bus bar between said fingers and making electrical and thermally conductive contact therebetween and anchoring said strip to said circuit.

5,363,553

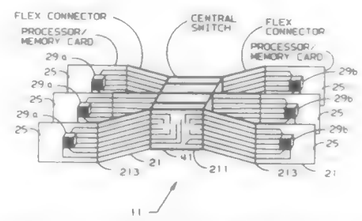
METHOD OF DRILLING VIAS AND THROUGH HOLES

Robert D. Edwards; Frank D. Egitto, both of Binghamton; Thomas P. Gall, Endwell; Paul S. Gursky, Vestal; David E. Houser, Apalachin; James S. Kamperman, and Warren R. Wrenner, both of Endicott, all of N.Y., assignors to International Business Machines, Inc., Armonk, N.Y.

Filed Jul. 27, 1993, Ser. No. 98,085

Int. Cl.[5] H01K *3/10*

U.S. Cl. 29—852 **1 Claim**



1. A method of producing vias and through holes through a metal laminate, said laminate comprising a copper-invar-copper multi-layer having first and second copper layers laminated to opposite sides of an Invar layer, said method comprising the steps of:

a. etching a clearance hole through the first copper layer on one side of the multi-layer laminate;

b. partially etching the Invar metal layer;

c. drilling the remaining thickness of the Invar layer and the second copper layer of the multi-layer laminate.

5,363,554

TITANIUM COMPRESSOR BLADE HAVING A WEAR-RESISTANT PORTION

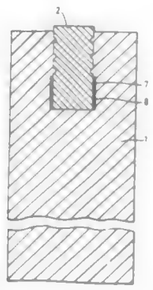
Peter G. Partridge, Bristol, and Andrew Wisbey, Farnborough, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

Filed Apr. 5, 1993, Ser. No. 41,581

Claims priority, application United Kingdom, Jun. 5, 1991, 9112043

Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.71 **5 Claims**



1. A method of producing a titanium or titanium based alloy compressor blade having a wear-resistant portion of non-titanium based metallic material, comprising the following steps:

producing a first part for the blade from said material which is hard in comparison to the titanium or titanium based alloy, said first part including a joint portion of one of a male and female form having at least one inwardly-directed corrugation upon its surface;

producing a second part for the blade from titanium or a titanium alloy, said second part including a joint portion of one of a complementary female and male form to the first part and being of dimensions such that it can be placed within or round the first part, and

assembling the first and second parts together by interfitting their joint portions,

pressing the two parts together at elevated temperature to superplastically deform the titanium or titanium alloy material of the second part such that it flows into and fills the or each corrugation in the first part, and maintaining the conditions of elevated temperature and pressure to produce a diffusion bond between the first and second parts.

5,363,555

METHOD OF MANUFACTURING AN ARTICLE BY SUPERPLASTIC FORMING AND DIFFUSION BONDING

John O. Fowler, and Brian Richardson, both of Lancashire, England, assignors to Rolls-Royce plc, Derby, United Kingdom

Filed Apr. 12, 1993, Ser. No. 45,097

Claims priority, application United Kingdom, May 1, 1992, 9209464.8

Int. Cl.[5] B23K *31/02*

U.S. Cl. 29—889.72 **20 Claims**

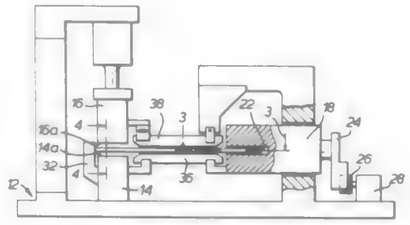
1. A method of manufacturing an article by superplastic forming and diffusion bonding at least two metal workpieces, each of the metal workpieces having at least one flat surface, the method comprising the steps of

(a) applying a stop off material to prevent diffusion bonding to preselected areas of one of the flat surfaces of at least one of the at least two metal workpieces,

(b) assembling the at least two workpieces into a stack relative to each other so that the flat surfaces are in mating abutment,

(c) applying heat and pressure across the thickness of the at least two workpieces to diffusion bond the at least two workpieces together in areas other than the preselected areas to form an integral structure,

(d) heating the integral structure and applying loads to opposite ends of the integral structure to twist one end relative to the other end to contour the integral structure to a predetermined shape,



(e) while maintaining the at least one workpiece at a temperature at which the metal is elastic, internally pressurising the twisted integral structure to break the adhesive bond between the stop off material and the at least one workpiece in the preselected areas,

(f) heating the twisted integral structure and internally pressurising it to cause the preselected areas of at least one of the workpieces to be superplastically formed to produce an article of predetermined shape.

5,363,556

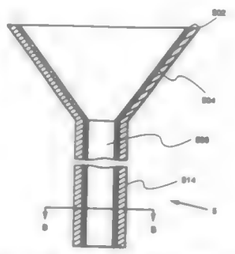
WATER JET MIXING TUBES USED IN WATER JET CUTTING DEVICES AND METHOD OF PREPARATION THEREOF

William F. Banholzer, Columbus, Ohio; Thomas R. Anthony, Schenectady; Robert S. Gilmore, Burnt Hills, both of N.Y.; Paul A. Siemers, Clifton Park, N.Y., and John C. McCloskey, No. Attleboro, Mass., assignors to General Electric company, Schenectady, N.Y.

Continuation of Ser. No. 858,831, Mar. 27, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,989

Int. Cl.[5] B05B *1/02;* **B05D** *7/22;* **C23C** *16/26;* **B29C** *41/02*

U.S. Cl. 29—890.142 **11 Claims**



1. A method of producing a substantially crack-free water jet mixing tube of an abrasive water jet cutting device comprising:

chemical vapor depositing a diamond layer on a support member to form an inner member of said tube, said inner member having a smooth inner side of diamond with a microcrystalline structure;

separating said inner member from said support member;

depositing an outer member material having a higher coefficient of thermal expansion than diamond on an outer side of said inner member to form an outer member of said tube; and

cooling said tube to contract said outer member for inducing compressive stresses of sufficient strength on said inner member to substantially prevent formation of cracks in said inner member.

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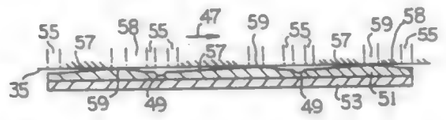
METHOD FOR FORMING A CRANKSHAFT BEARING HAVING HYDRODYNAMIC THRUST FLANGES

Ronald J. Thompson, Howell; Ned L. Misner, Stanton, and Michael D. Winegard, Greenville, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 957,300, Oct. 6, 1992, abandoned, which is a continuation of Ser. No. 810,225, Dec. 19, 1991, Pat. No. 5,192,136. This application Jan. 13, 1994, Ser. No. 182,308

Int. Cl.[5] F16C *33/14*

U.S. Cl. 29—898.041 **6 Claims**



1. A method of forming a half bearing for an engine crankshaft, said half bearing comprising a semi-cylindrical wall and a radially-extending semi-cylindrical thrust flange comprising a steel backing and a relatively soft anti-friction material, said flange being located on an axial end portion of said wall, wherein said method comprises forming an oil supply groove in said relatively soft anti-friction material with a first machine operation and forming a hydrodynamic contour on said relatively soft anti-friction material adjacent said oil supply groove with a second machine operation which comprises a metal deformation operation which deforms said relatively soft anti-friction material laterally toward said oil supply groove.

5,363,558

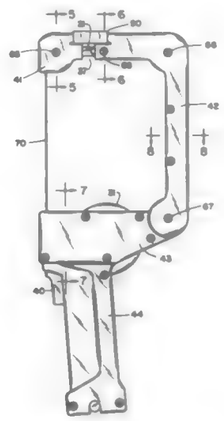
HAND HELD CORDLESS ELECTRIC SAW WITH ENDLESS BLADE IN "U"-FRAME

Ronald Schroeder, 4221 Vogel Rd., Milton, Wis. 53563

Filed Nov. 15, 1993, Ser. No. 151,866

Int. Cl.[5] B27B *13/00*

U.S. Cl. 30—380 **1 Claim**



1. A hand held, cordless, battery powered, electric motor driven endless blade saw comprising:

a "U"-frame having four wheels, one in each corner of the "U" frame and lying in a common plane;

an endless flexible blade trained about said wheels in a generally rectangular loop and extending across the opening of the "U";

one of said wheels being the blade drive wheel for said blade, and the others being idler wheels;

a motor connected to said frame and being in driving engagement with said drive wheel;

a handle extending from said frame;

a battery disposed within said handle and electrically connected to said motor through a switch; (The invention of claim 1) wherein:

said handle extends from said frame at one end of said frame;

said frame near the other end thereof having a corner piece slidably engaging the main part of the frame and being resiliently biased apart therefrom to provide saw blade tensioning;

said motor extends from said frame near the handle end of the frame in a direction substantially normal to the plane of the saw-blade and "U" frame;

said driving engagement between said motor and said blade drive wheel provided by a belt drive arrangement comprising a belt drive wheel driven by the motor, a belt driven wheel on the same axle as the blade drive wheel, and a belt connecting said belt drive wheel and said belt driven wheel;

a corner cover piece covering said corner piece;

a main cover piece covering said main piece;

a driving engagement cover piece covering said belt drive arrangement; and

a handle cover piece covering said handle.

5,363,559

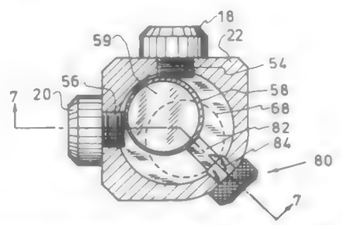
TELESCOPE INNER TUBE LOCKING DEVICE AND METHOD

John P. McCarty, Greeley, Colo., assignor to Burris Company, Greeley, Colo.

Filed Nov. 16, 1992, Ser. No. 977,114

Int. Cl.[5] F41G *1/38*

U.S. Cl. 33—246 **8 Claims**



1. An inner bias locking means for use in at least a three point adjustment for an inner tube of a telescope mounting of the type having an adjustable inner tube member surrounded by an outer elongated member of the type having a surrounding mounting area for mounting the telescope to a firearm on the outer member at two spaced apart positions, comprising:

(a) an outer locking means, movably attached to the outer member and moveable towards and away from the inner tube;

(b) an inner bias force means, movably contained within the outer locking means and positioned to provide a directional bias force from the outer locking means to the inner tube; and

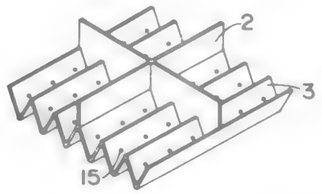
(c) means, associated with the outer locking means, to move the outer locking means to a rigid position against the inner tube in a desired position, the movement of the outer locking means to a rigid position serving to inactivate the inner bias force means by moving the outer locking means against the inner tube.

5,363,560

DEVICE FOR MAINTAINING PROPER SPACING AND LEVELLING OF TILES DURING LAYING THEREOF

Stan P. Makow, 228 Withrow Ave., Toronto, Ontario M4K 1E1, Canada

Filed Mar. 2, 1993, Ser. No. 25,129
Int. Cl.[5] E04G *21//16*
U.S. Cl. 33—527 **6 Claims**



1. A tile leveller and spacing device for use in the laying of individual tiles in adjacent relationship with one another, the device comprising:

i) a corrugated levelling plate of uniform plate thickness to space corners of adjacent tiles to be level above a level surface on which tiles are to be laid; and

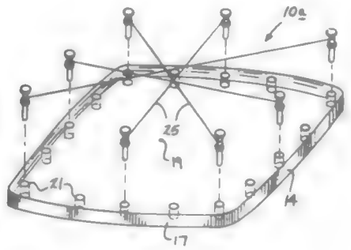
ii) a plurality of spacing fins angled one to another and extending perpendicularly upwardly from said levelling plate, each of said fins having a fin thickness to space edges of said adjacent tiles apart by a distance equal to said fin thickness, and the angles between the fins being selected for lodgement of tile corners therein.

5,363,561

PILLOW TEMPLATE APPARATUS

Karen P. Essary, 6333 Lighthouse Rd., Monroe, Mich. 48161

Filed May 17, 1993, Ser. No. 61,592
Int. Cl.[5] G01B *3/14*
U.S. Cl. 33—562 **4 Claims**



1. A template apparatus, comprising,

a transparent rigid template member, having a continuous peripheral side wall orthogonally oriented relative to a planar top wall and a planar bottom wall of the template member, the peripheral side wall including a convex first side wall portion, a convex second side wail portion, a convex third side wall portion, and a convex fourth side wall portion, with each wall portion oriented at an oblique angle relative to one another, with the template member arranged for positioning upon a fabric web, and

a medial center indicator oriented medially of the first and third side walls, and

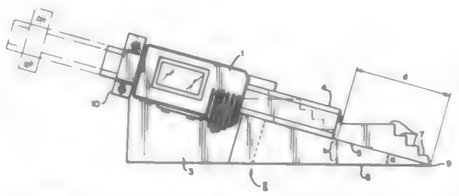
a plurality of registration bores orthogonally directed through the top wall and the bottom wall in adjacency to the peripheral side wall, with a plurality of said registration bores positioned in adjacency to each said side wall portion, and each registration bore of said registration bores including a registration rod, each said rod having a rod first flange and a rod second flange, with the rod second flange arranged for abutment of the top wait, and a flexible alignment cable extending between a plurality of registration rods, and including a plurality of pairs of said registration rods and a plurality of alignment cables to provide for intersection of a plurality of said cables for positioning of a pictorial representation upon said fabric web.

5,363,562

DIGITAL TAPER/PARALLEL GAUGE

George S. Schmidt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 31, 1992, Ser. No. 996,940
Int. Cl.[5] G01B *3/30*
U.S. Cl. 33—567.1 **11 Claims**



3. A device for measuring the distance between two opposing surfaces, comprising:

a wedge-shaped base section having an upper surface and a lower surface, a substantial portion of which is of a cross-section of less than 0.25" in width;

a digital read-out having means for measuring and displaying a translational displacement of a linear-scale slider, said displacement measuring means fixedly secured to a portion of said base;

a substantially flat, linear-scale slider means operatively associated with said displacement measuring means;

said slider means being freely movable with respect to said displacement measurement means and capable of substantially unimpeded translational displacement with respect to one surface of said base;

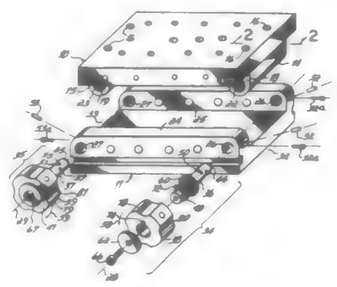
said displacement measuring means indicating the amount of translational displacement on said digital read-out of said slider means with respect to said base.

5,363,563

PALLET/SINE PLATE CONNECTOR

Jerry J. Hunter, Madison, Ind., assignor to Doe Run Tooling, Madison, Ind.

Filed Jul. 30, 1992, Ser. No. 922,680
Int. Cl.[5] B23Q *1/06*
U.S. Cl. 33—568 **19 Claims**



1. A work-holding system comprising:

an upper plate for holding a workpiece during a machining operation;

a lower plate for supporting the upper plate at a workstation;

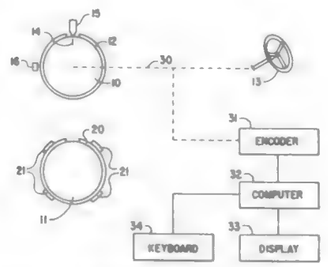
connection means mounted to one of the upper and lower plates and selectively engageable with the other of the plates to accurately hold the upper plate at the workstation, the connection means including a pin aligned along an axis, an actuating knob and a wrap spring, the pin having forward and rearward ends and being rotatable about the axis in first and second directions, to continuously axially move the forward end of the pin into and out of engagement, respectively, with said other plate during said rotation, the actuating knob connected to the rearward end of the pin and the wrap spring operatively interconnecting the pin and the knob so that the pin and the knob are rotationally slippable about the axis.

5,363,564

PRINTING PLATE MOUNTING AND PROOFING MACHINE AND METHOD FOR USING SAME

Richard E. Harley, New York, and Erik Mikkelsen, Selden, both of N.Y., assignors to E. L. Harley Inc., Brooklyn, N.Y.

Filed Apr. 22, 1993, Ser. No. 52,067
Int. Cl.[5] B41C *1/18*; G06F *15/46*
U.S. Cl. 33—618 **14 Claims**



1. A machine for producing a layout pattern for mounting printing plates on a printing cylinder of a printing press, comprising a rotatably mounted layout cylinder for receiving a layout sheet for the drawing of a layout pattern thereon, means for circumferentially displacing said layout cylinder, and means responsive to circumferential displacement of said layout cylinder and various diameters of said printing cylinder for determining the circumferential displacement of said layout cylinder compensated for stretch due to differing diameters of said printing cylinder and a mounting cylinder.

5,363,565

FISHING LINE LENGTH MEASURING DEVICE FOR FISHING REELS

Kyoichi Kaneko, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed May 18, 1993, Ser. No. 63,405
Claims priority, application Japan, May 18, 1992, 4-124861
Int. Cl.[5] A01K *89/00*
U.S. Cl. 33—719 **7 Claims**

1. A fishing reel having a fishing line length measuring device comprising a reel;

a spool rotatably supported by said reel whereon the fishing line is wound;

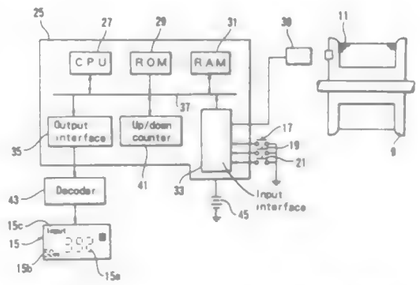
a sensor for detecting the revolutions of the spool and to output pulse signals;

an up/down counter for obtaining count values by counting either up or down the pulse signals output from the sensor;

storage means for receiving and holding the count values obtained at said up/down counter when the counter counts actual number of spool revolutions during winding or unwinding the fishing line for a plurality of specified lengths from a reference point set on the fishing line;

an indication unit for indicating a line length determined by operation means; and

operation means for determining the line length independent of the thickness and length of the fishing line, said operation means including a first specified line length formula and a second specified line length formula for calculating common constant values in said first and second formulas



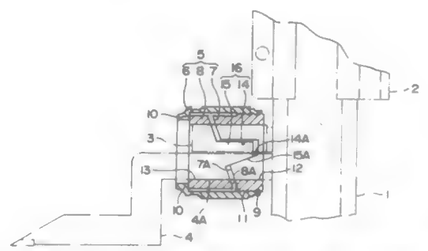
to thereby obtain said determined line length, each said line length formula corresponding to the numbers of spool revolutions for each specified length and the actual number of revolutions for each specified length.

5,363,566

CLAMPING ASSEMBLY FOR MEASURING INSTRUMENT

Shingo Nishina, Kawasaki; Tamio Suzuki, and Kazuhiko Kimura, both of Tochigi, all of Japan, assignors to Mitutoyo Corporation, Tokyo, Japan

Filed Dec. 18, 1992, Ser. No. 993,117
Claims priority, application Japan, Dec. 24, 1991, 3-106247[U]
Int. Cl.[5] F16B *7/04*; G01B *21/16*
U.S. Cl. 33—810 **15 Claims**



1. A clamping assembly for attaching a probe device to an attachment arm of a measuring instrument which extends from the instrument along a first axis, the probe device having a base arm adjacent to the attachment arm in an axially overlapping manner, the assembly comprising:

a first annular clamping member proximate the measuring instrument, the first clamping member having a first axially extending central bore therethrough and an externally threaded portion on a radially outer surface thereof;

a second annular clamping member positioned axially adjacent the first clamping member remote from the measuring instrument and having a second axially extending central bore therethrough, the second clamping member being axially movable relative to the first clamping member, and the attachment and base arms extending through the first and second central bores;

an annular clamping ring .encompassing the first and second clamping members, the clamping ring having an annular flange extending radially inwardly from an end surface of the clamping ring proximate the probe device and an internally threaded portion which threadably engages the

externally threaded portion of the first clamping member to effect a relative axial movement between the clamping ring and the first clamping member, the annular flange urging the second clamping member in a direction along the first axis during the relative axial movement; and

means for effecting an offset of the second central bore relative to the first central bore along a second axis extending perpendicular to the first axis during the relative axial movement to urge the base arm into abutment with the attachment arm in a direction along the second axis.

5,363,567

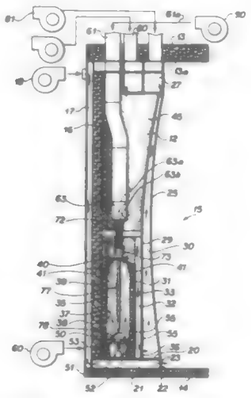
SELF INCINERATING OVEN AND PROCESS CARRIED OUT THEREBY

Willie H. Best, Columbia, S.C., assignor to Thermal Engineering Corp., Columbia, S.C.

Continuation-in-part of Ser. No. 702,109, May 15, 1991, Pat. No. 5,230,161, which is a continuation of Ser. No. 329,891, Mar. 28, 1989, abandoned. This application Mar. 10, 1992, Ser. No. 850,111

Int. Cl.[5] F26B *21/06*

U.S. Cl. 34—271 **39 Claims**



1. A self incinerating oven:

(a) a housing;

(b) a radiant wall within said housing, said radiant wall having an inner surface for defining at least in part an oven cavity, through which objects to be dried or cured are passed, said objects incidentally releasing volatile organic compounds into said oven cavity, and an outer surface;

(c) an exhaust system for removing the polluted air containing the volatile organic compounds from said oven cavity;

(d) an incineration chamber contained within said housing;

(e) a burner within said chamber for heating gases in said chamber;

(f) a recuperative type of heat exchanger contained within said incineration chamber;

(g) said exhaust system including a conduit for directing the polluted air containing volatile organic compounds through the recuperative heat exchanger and thence in preheated condition into the incineration chamber such that the volatile organic compounds are oxidized within said incineration chamber; and

(h) a means for directing the hot gases from the incineration chamber against said outer surface for heating by heat transfer through said radiant wall, the inner surface of said radiant wall of the oven.

5,363,568

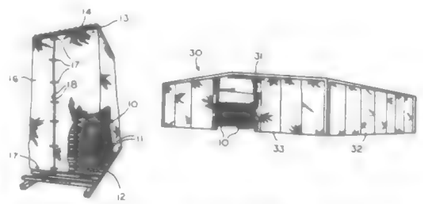
METHOD OF INHIBITING LUMBER CHECKING

Nat Cloer, West Union, S.C., assignor to Cornelia Textiles, Inc., Cornelia, Ga.

Filed Nov. 20, 1992, Ser. No. 979,584

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—511 **7 Claims**



1. A method of inhibiting the checking of lumber as it dries wherein the lumber is sheltered by an air pervious plastic material having a material to air density of between 50% and 90%.

5,363,569

BEARING AND SEAL ASSEMBLY FOR CLOTHES DRYER DRUM

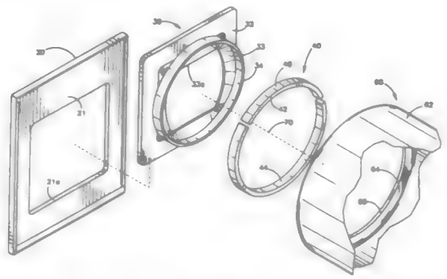
Pratish R. Kadakia, Fort Dodge, Iowa, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 11, 1993, Ser. No. 29,879

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] F26B *11/04*

U.S. Cl. 34—601 **15 Claims**



1. A bearing and seal assembly for rotatably supporting an end of a rotatable dryer drum located within a cabinet and rotatable on a horizontal axis, said end of the drum providing a circular lip, comprising:

a circular flange supported by and fixed to the cabinet, said circular flange being coaxially nested within the circular lip;

a ring of felt-like material fixed to one of said circular flange or said circular lip, said ring of felt-like material substantially filling an annular space between said flange to establish an air seal therebetween, wherein the ring comprises an upper felt member and a lower felt member, said upper felt member being of higher density than said lower felt member, and at least a portion of said ring provides a surface which is powder-coated with a wear-resistant material, said powder-coated surface being slidably engaged by the other of said circular flange or said circular lip to rotatably support the end of the drum.

5,363,570

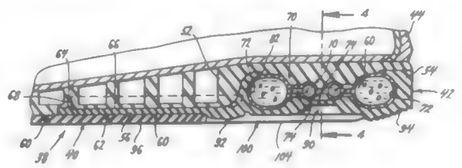
SHOE SOLE WITH A CUSHIONING FLUID FILLED BLADDER AND A CLIP HOLDING THE BLADDER AND PROVIDING ENHANCED LATERAL AND MEDIAL STABILITY

Bernie Alles, Wayland; Aaron Azevedo, Boston; Eckhard Knoepke, Duxbury; Neal F. X. Kimball, Framingham; Philip L. Blake, Marblehead; John A. Hayes, Milton, all of Mass.; John A. Healy, Madbury, N.H., and Christopher J. Edington, Shrewsbury, Mass., assignors to Converse Inc., North Reading, Mass.

Continuation of Ser. No. 13,573, Feb. 4, 1993. This application Jun. 6, 1994, Ser. No. 254,171

Int. Cl.[5] A43B *13/18, 21/26*

U.S. Cl. 36—28 **25 Claims**



1. A shoe sole comprising:

a bladder constructed of a fluid tight material that completely encloses a fluid filled interior volume of the bladder and defines an exterior configuration of the bladder;

a midsole constructed of a material having a first flexibility, the midsole having a top surface and a bottom surface;

a midsole clip formed separately from the midsole, the clip having a top surface and a bottom surface with a hollow cavity formed in the clip, the clip cavity containing the bladder and having an interior volume defined by a base of the clip that extends below the bladder and a cavity side wall that extends upwardly from the base and completely around the bladder exterior, the cavity side wall terminating at and defining a top opening in the clip top surface that provides access to the cavity interior, the top surface of the midsole clip being secured to the bottom surface of the midsole with a portion of the midsole bottom surface covering over the top opening in the clip top surface; and,

an outsole constructed of a material having a second flexibility that is less than the flexibility of the midsole, the outsole having a top surface and a bottom surface, the outsole top surface being secured to the bottom surface of the midsole and the bottom surface of the midsole clip, and the outsole bottom surface being formed as the traction surface of the shoe sole.

5,363,571

SKI BOOT CLOSING COVER WITH TIGHTENING DEVICE

Benoit Montfort, Annecy, France, assignor to Salomon S.A., Chavanod, France

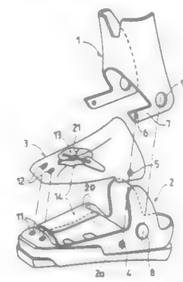
Filed Jan. 31, 1991, Ser. No. 648,982

Claims priority, application France, Jan. 31, 1990, 90 01156

Int. Cl.[5] A43B *5/04, 5/16*

U.S. Cl. 36—119 **21 Claims**

1. Alpine ski boot comprising a rigid shell base (2, 3) surmounted by an upper (1), said shell base being made of two pieces assembled together, i.e., a lower part (2) opening upward, comprising lateral walls (2*a*), and extending substantially over the entire length of the boot, and an upper closing cover (3) extending above the front part of the foot, comprising two opposite lateral walls (3*a*, 3*b*), wherein said upper closing cover (3) bears tightening means (13) forming part of an internal foot position maintenance device (14) and comprising a cable (21) extending between the two lateral walls (3*a*, 3*b*) of said upper closing cover (3) and means for generating tension



of said cable (21), said cable (21) extending above at least one tongue (15, 24, 31) constituting a pressure-distribution element.

5,363,572

LATERAL-INCLINATION ADJUSTING DEVICE FOR SKI-BOOTS

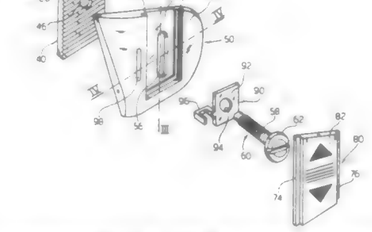
Antonello Marega, Volpago del Montello; Goggia Giuseppe, Montebelluna, and Breda Marco, Arcade, all of Italy, assignors to Calzaturificio Tecnica Spa, Treviso, Italy

Filed May 4, 1993, Ser. No. 56,389

Claims priority, application Italy, May 15, 1992, PD92 U 000055

Int. Cl.[5] A43B *5/04*

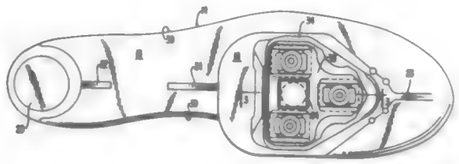
U.S. Cl. 36—121 **6 Claims**



1. In a lateral inclination adjusting device for a leg piece of a ski-boot comprising an elongated threaded member, which passes through an elongated window formed in a base integral with the leg-piece and which threaded member is engageable at a distal end with a thread nut disposed at an inside surface of a shell of the ski-boot, a toothed plate having outwardly directed teeth, said toothed plate being disposed between the nut and the base and the teeth of which are engageable with inwardly directed teeth on an inward surface of base, such that the outwardly directed teeth and the inwardly directed teeth are disengageable by loosening the threaded member for adjusting the lateral inclination of the leg piece and said teeth are engageable to maintain an adjusted lateral inclination of the leg piece by tightening the threaded member,

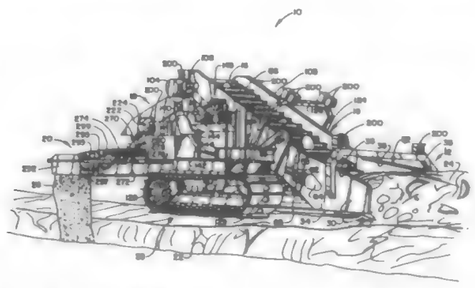
the improvement comprising a seating formed in an external surface of the base for receiving a head of the threaded member, a removable and replaceable cover over said seating for protecting the head and seating, and a positioning indicator having a plate with a hole for passing therethrough the threaded member and a folded-back lug configured to pass through an elongated slot disposed on the base, said slot being disposed parallel to a side of the seating so as to externally indicate the lateral inclination position of the leg piece with respect to the shell.

5,363,573
ROTATABLE CLEAT
Bruce J. Kilgore, Lake Oswego; Thomas P. Allen, Beaverton, and Perry W. Anger, Tigard, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Division of Ser. No. 539,891, Jun. 14, 1990, Pat. No. 5,199,192. This application Apr. 5, 1993, Ser. No. 42,626
Int. Cl.[5] A43B *5/14*
U.S. Cl. 36—131 17 Claims



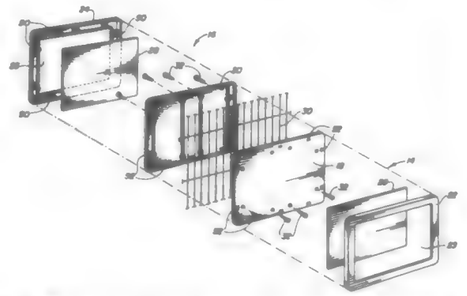
1. A cycling cleat for movably attaching a shoe to a clipless cycle pedal such that a user can rotate the shoe during pedaling, said cycling cleat comprising a cleat part and a base part, said cleat part including front and rear ledge structures adapted to releasably attach said cleat part to a clipless cycle pedal, said base part including a mounting structure adapted to fixedly attach said base part to a shoe, said cleat part being rotatably coupled to said base part for rotation about an axis extending generally perpendicular to said cycling cleat, said base part and said cleat part each including cooperating stops which selectively abut with one another to limit the rotational movement of said cleat part relative to said base part.

5,363,574
PIPELINE PADDING APPARATUS
Mark Osadchuk, 10040 Happy Valley Rd., Scottsdale, Ariz. 85255
Division of Ser. No. 538,924, Jun. 15, 1990, Pat. No. 5,195,260, which is a continuation-in-part of Ser. No. 255,720, Oct. 11, 1988, abandoned. This application Mar. 22, 1993, Ser. No. 34,133
Int. Cl.[5] E02F *5/22*; F16L *1/028*
U.S. Cl. 37—142.5 12 Claims



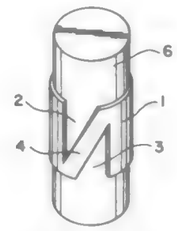
1. An apparatus for padding pipe by separating fine material from spoil which is piled alongside an excavated trough and returning the fine material to the trough atop a pipeline positioned therein, comprising:
a support vehicle adapted for moving relative to a trough and associated spoil;
means on said vehicle for elevating spoil in an elevating direction from a forward end to a rearward end;
means connected to said forward end of said elevating means for guiding spoil into said elevating means;
separating means on said vehicle for receiving spoil from said elevating means and for separating the spoil into fine material and rough material;
conveying means on said vehicle for receiving the fine material from said separating means and for conveying the fine material into the trough; and
means for applying a downward force to said guide means, said downward forcing means being positioned elevated with respect to and at least partially forward of said forward end of said elevating means, whereby said guide means is more stable relative to the spoil during operation.

5,363,575
DISPLAY CARD HOLDER
Thomas E. Sawyer, and James E. Hoback, both of Valencia, Calif., assignors to T.V. Fanfare, Valencia, Calif.
Continuation of Ser. No. 855,451, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 398,702, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,156, May 8, 1989, abandoned. This application Jul. 19, 1993, Ser. No. 93,514
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—308 12 Claims



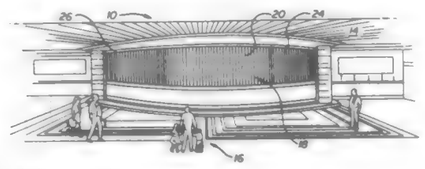
1. A display card holder for receiving a directory card or the like for use in combination with a shopping cart having a basket, the display card holder to be mounted to the basket of the shopping cart to facilitate shopping for items in a store, the display card holder comprising:
a first backing member to be coupled to the basket;
a first outer frame member having a periphery of substantially the same size and shape of at least a portion of the periphery of the first backing member, and defining therein a plurality of first access openings; and
a first plurality of fasteners for releasably fastening the first outer frame member to the first backing member, each fastener comprising a first hook carried by the first outer frame member, said fastener further comprising a second hook carried by the first backing member and positioned to be engaged by the first hook so as to fasten the first outer frame member and the first backing member together and to effect clamping a card at its periphery between the first outer frame and the first backing member, at least one of said first and second hooks being movable by means of access provided at an associated one of the first access openings to disengage the other hook so as to allow the first outer frame member to be released from the first backing member;
a second backing member;
a second outer frame member defining therein a plurality of second access openings;
a second plurality of fasteners for releasably coupling the second outer frame member to the second backing member; and
a third plurality of fasteners for coupling the first and second backing members together with a wall of the cart therebetween.

5,363,576
SUPPORT FOR ELECTRIC CABLE AND WIRE MARKING WITH CLOSED, PARTIALLY NOTCHED SLEEVE
Ivana Piana, and Silvano Piana, both of Genova, Italy, assignors to Graphoplast S.p.A., Italy
Continuation of Ser. No. 508,092, Apr. 10, 1990, abandoned. This application May 30, 1991, Ser. No. 709,063
Claims priority, application Italy, Apr. 14, 1989, 12477 A/89
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—316 14 Claims



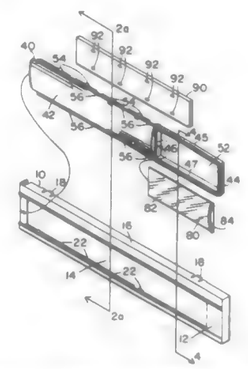
1. A cable support for marking an electrical cable, comprising:
a closed, endless, cylindrical sleeve having a circular cross-section of a predetermined diameter and extending along, and about, a longitudinal axis,
said sleeve having a body portion at one lateral side of said axis,
said sleeve also having a notched connecting portion at another lateral side of said axis opposite to said one lateral side,
said notched connecting portion being integral with the body portion and together having an interior circular surface that extends about said axis,
said notched connecting portion being deformable relative to the body portion to permit radial expansion of the sleeve to a different circular cross-section having a different diameter greater than said predetermined diameter, and
said sleeve including a plurality of notches extending along said axis solely at said notched connecting portion at said opposite lateral side of said axis, the notches being spaced away from said body portion at said one lateral side of said axis.

5,363,577
ALPHANUMERIC AND GRAPHIC WATER DISPLAY
Mark Fuller, 10711 Bluffside Dr., #101, Studio City, Calif. 91604, and Alan Robinson, 5344 C N. Peck Rd., El Monte, Calif. 91732
Continuation of Ser. No. 755,644, Sep. 6, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 94,583
Int. Cl.[5] G09F *13/24*
U.S. Cl. 40—406 28 Claims



1. A liquid display, comprising:
at least one fluid filled tube that has a longitudinal axis;
air means operatively connected to said tube for introducing air into said tube;
first valve means operatively connected to said tube and said air means for introducing air into said tube such that said air forms a bubble in said tube;
control means operatively connected to said valve means for controlling said bubble size and frequency of occurrence; and,
accumulator means for receiving and supplying fluid to said tube in response to said introduction of said air into said tube and for bleeding said air from said tube into an ambient without exposing said tube to the ambient;
whereby there is a pattern of bubbles created within said tube that float up said longitudinal axis of said tube.

5,363,578
IDENTIFICATION PANEL FOR ELECTRONIC EQUIPMENT CABINET
David Chesley, Pepperell; Deborah Falck, Sudbury; Robert L. Hanson, Marlborough, and Margaret Hetfield, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 24, 1992, Ser. No. 873,319
Int. Cl.[5] G09F *7/00*
U.S. Cl. 40—488 9 Claims



6. An identification panel for an electronic equipment cabinet, comprising:
a window and doorframe member comprising:
a doorframe portion defining a plane and framing a generally rectangular opening,
a translucent window portion protruding outwardly from the plane defined by said doorframe portion,
a door member, slidably mounted in said window and doorframe member having a first position in which said door member covers said generally rectangular opening and a second position in which said door member leaves said generally rectangular opening uncovered; and
an artwork panel, mounted on the back of said window portion, so that said artwork panel is visible through said translucent window portion.

5,363,579

FLOOR TYPE ADVERTISING APPARATUS

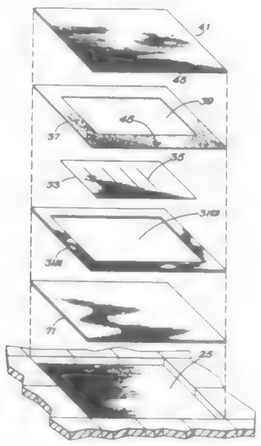
George W. Plumly, 3451 Boston Ave. Boston Bldg., Fort Worth, Tex. 76116

Continuation-in-part of Ser. No. 962,465, Oct. 16, 1992, which is a continuation-in-part of Ser. No. 707,695, May 30, 1991, Pat. No. 5,167,087, which is a continuation-in-part of Ser. No. 609,195, Nov. 5, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,414

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[5] G09F *7/04*

U.S. Cl. 40—600 48 Claims



1. A floor type advertising apparatus, comprising:
a floor,
a cavity formed in said floor,
said cavity having a lower portion,
a thin lower holding layer located in and secured in the lower portion of said cavity,
said lower holding layer having an upper side,
a thin upper holding layer located in said cavity and having an opening extending therethrough,
said upper holding layer having an upper side and a lower side,
a thin transparent layer of material in sheet form having a lower side securely coupled to the upper side of said upper holding layer and having dimensions such that said transparent layer of material covers the opening of said upper holding layer,
said transparent layer of material having an upper side,
said transparent layer of material and said upper holding layer being located in said cavity with the lower side of said upper holding layer facing the upper side of said lower holding layer and the upper side of said transparent layer of material facing upward and being about flush with the level of the floor when located in said cavity,
an advertising layer secured to the lower side of said transparent layer of material within said opening in a manner to allow the advertisement of the advertising layer to be seen through said transparent layer of material when viewed from above,
said transparent layer of material and said upper holding layer being movable relative to said lower holding layer,
one of said holding layers comprising magnetic material forming magnetic lines of force and the other of said holding layers being formed of a material which is attracted by the magnetic lines of force from said magnetic material.

5,363,580

SWITCHING MECHANISM OF AN EJECTOR IN GUN

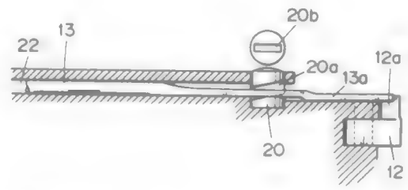
Tadahiro Nishigawa, Kobchi, Japan, assignor to Kabushiki Kaisha Miroku Seisakusho, Kobchi, Japan

Filed Jun. 29, 1993, Ser. No. 82,871

Claims priority, application Japan, Sep. 4, 1992, 4-237173

Int. Cl.[5] F41A *15/06*

U.S. Cl. 42—48 6 Claims



1. A switching mechanism of an ejector mechanism in a gun, said ejector mechanism including a hammer with a projection adapted to pivot to return to an original position thereof when a breech of the gun is opened after firing, and a trip rod engaged by said projection as said hammer returns to the original position and moves longitudinally to drive an ejector, said switching mechanism comprising:
a selector button disposed adjacent said trip rod, rotatable around an axis parallel to an axis intersecting with an axis of the trip rod, one end of said selector button exposed to an outside of the gun;
a spiral guide provided on an outer periphery of said selector button for engagement with said trip rod; and
a groove formed on a surface of said one end of the selector button for rotating operation of the selector button;
wherein on rotation of said selector button, the trip rod is moved laterally so that the trip rod is brought into and out of engagement with said projection of the hammer.

5,363,581

FIRING MECHANISM FOR A RIFLE

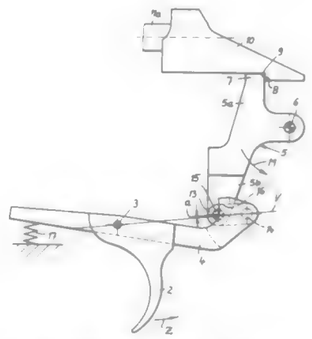
Gerhard Blenk, Wertach, and Meinrad Zeh, Isny, both of Germany, assignors to Horst Blaser Jagdwaffenfabrik, Isny, Germany

Filed Jul. 19, 1993, Ser. No. 94,305

Claims priority, application Germany, Jul. 21, 1992, 9209761[U]

Int. Cl.[5] F41A *19/31*

U.S. Cl. 42—69.02 6 Claims



1. In a firing mechanism for a rifle, with a trigger pivoting about a trigger axis in a breech housing, the trigger being fixed to a trigger blade, and a two-armed firing lever pivoting about a pivotal axis arranged in the breech housing parallel to the trigger axis, the first lever arm of the lever being connected directly or indirectly to a firing sear which holds a retainer on the end of the firing pin in the cocked position, the second lever arm cooperating with the trigger blade, wherein the firing spring exerts a turning moment on the firing lever in the cocked position of the firing mechanism through the firing pin, the retainer and the firing sear, the improvement wherein that a link (13) is hinged at one end to the trigger blade (4) and at the other end to the second lever arm (5*b*) by means of two hinge axes (14, 15) running parallel to the trigger axis (3), in that the first hinge axis (14) at the trigger blade is so arranged relative to the second hinge axis (15) at the second lever arm (5*b*) that, in the cocked position (FIGS. 2, 4, 6) of the firing mechanism, the link (13) is in compression, and the second hinge axis (15) lies a small distance (a) from a straight connecting line (V) running through the first hinge axis (14) and the trigger axis (3), whereby on cocking, the second hinge axis (15) is moved slightly over-center beyond a dead-point position of the link (13) determined by the connecting line (V), and in that a stop (16, 16*a*) is provided on the trigger blade (4) which limits the over-center movement of the link (13) and on which the link (13) bears in the cocked position under the action of the turning moment (M, M1) exerted on the firing lever (5).

5,363,582

AUTOMATIC HOOKING DEVICE

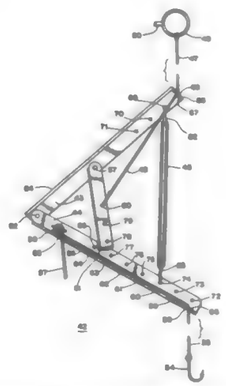
Wade A. Walker, Rt. 3, Box 39, Hallsville, Tex. 75650, and Danny C. Reaves, Rt. 7, Box 260, Longview, Tex. 75602

Filed Apr. 27, 1988, Ser. No. 186,553

The portion of the term of this patent subsequent to Sep. 15, 2007, has been disclaimed.

Int. Cl.[5] A01K *97/00*

U.S. Cl. 43—15 9 Claims



1. A lever operated hooking apparatus comprising at least one set of pivotably connected lever members wherein said lever members are single levers pivotably connected near one end having at least one force means connected near the distal end of each of said lever members so that the first of said lever members has connected near the distal end a supporting cord member and the other lever member has connected near the distal end a depending cord member having a hook attached thereto, wherein said apparatus has a hook setting apparatus for setting a hook supported by a line and maintaining tension on said line within a predetermined distance of movement for said hook and line comprising;
a first elongated support member oriented in a generally vertical position having a second elongated support member pivotably attached at a first pivot point near the lower end of said first support member, with an upper cord member slideably engaging the upper end of said first elongated support member;
a trigger means pivotably mounted on said first support member at a second pivot point intermediate between said lower end and upper end of said first support member with said upper cord attached to said trigger means and adapted to pivot said trigger means about said second pivot point toward said upper end of said first support member and said trigger means being adapted to engage said second support means in a manner to restrict rotation of said first and second support members relative to each other;
an upper cord member attached near the upper end of said first elongated support member with its upper end attached to a fixed support, slideably engaging said first support member, and pivotably attached to said trigger means and adapted to transmit force from said fixed support to said trigger means; thereby causing said trigger means to pivot and disengage from said second support means;
a second cord member attached to said hook setting apparatus so that said second cord member depends from the distal end of said second lever member at a predetermined distance from said first pivot point with a hook means supported by the lower end of said second cord member with said second cord member being adapted to transmit force applied to the distal end of said second support member as a downward force is applied to said hook means:
a tension means attached to said first support means near its upper extremity and attached to said second support member at a point a spaced distance from said first pivot point and being adapted to cause said first support member and said second support member to pivot about said first pivot point towards each other and engage said trigger means except when said trigger means is pivoted by said upper cord member to disengage said second support member allowing further movement of said first and second support members relative to each other and said tension means being adapted to maintain tension between said upper cord member and said second cord member when said trigger means is disengaged.

5,363,583

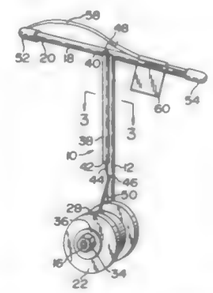
TIP-UP FISHING APPARATUS

Phillip G. Brunner, 110 Young Dr., Concord, Mich. 49237

Filed Oct. 25, 1993, Ser. No. 140,508

Int. Cl.[5] A01K *85/01*

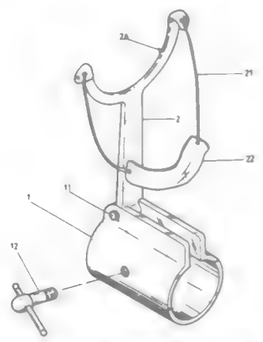
U.S. Cl. 43—17 9 Claims



1. Fishing apparatus comprising, in combination, a column having upper and lower ends, a fishing line reel rotatably mounted on said column lower end having fishing line wound thereon and having an axis of rotation, a reel detent member mounted on said reel at a location radially spaced from said axis of rotation, an anchor member supported by said column in proximity to said reel, an elastic element under tension interconnecting said reel detent and anchor member preventing rotation of said reel in a fishing line deploying direction until an elastic element pre-determined tension is achieved, said element releasing from one of said members upon said pre-determined tension being reached to permit rotation of said

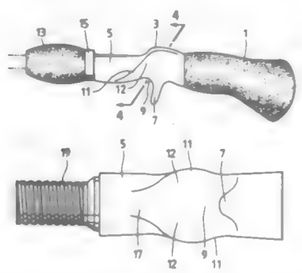
reel and deploying of said fishing line therefrom, and an elongated column support cross arm affixed to said column upper end having a length transversely disposed to the length of said column for supporting said column.

5,363,584
SLINGSHOT FOR USE IN SHOOTING FISH LINE
Hsin-Hsin Lo, 9, Alley 3, Lane 35, Weitao Rd., N. Dis. Taichung, Taiwan, Prov. of China
Filed Mar. 22, 1993, Ser. No. 35,067
Int. Cl.[5] A01K *91/02*
U.S. Cl. 43—19 **1 Claim**



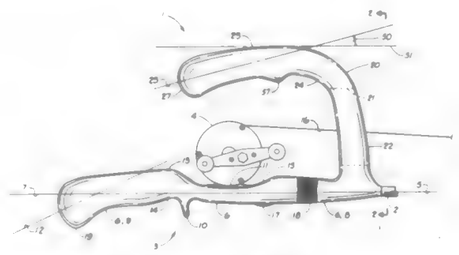
1. A slingshot for use in shooting fish line comprising a Y-shaped body having first and second arms and a bottom end, a fastener for attaching said bottom end of said Y-shaped body to a fishing rod, said fastener including means which allow said Y-shaped body to be held in a position perpendicular to a fishing rod or pushed downward to rest on a fishing rod, an elastic band having first and second ends attached to said arms at upper ends thereof, respectively, and a safety fork positioned on an inner side of one of said arms for supporting a fish hook.

5,363,585
CASTING HANDLE FOR FISHING RODS
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Apr. 29, 1993, Ser. No. 53,858
Claims priority, application Japan, Apr. 30, 1992, 4-137730
Int. Cl.[5] A01K *87/02*
U.S. Cl. 43—23 **2 Claims**



1. A casting handle for fishing rods comprising
a lowermost end;
a reel seat portion;
an elongated protrusion comprising
an index finger recess comprising an index finger front wall and
a middle finger recess comprising a middle finger back wall; and
an index finger collar portion that is bulgedly outwardly extended from side surfaces of the collar portion to above the reel seat portion so as to define a surface having ridges on the side surfaces, said surface being tangential to a plane defined by the front wall of the index finger recess.

5,363,586
DUAL-GRIP FISHING ROD HANDLE
James W. Balkenbush, 2805 Silverglade, Oklahoma City, Okla. 73120
Filed Aug. 30, 1993, Ser. No. 112,962
Int. Cl.[5] A01K *87/00*
U.S. Cl. 43—23 **19 Claims**

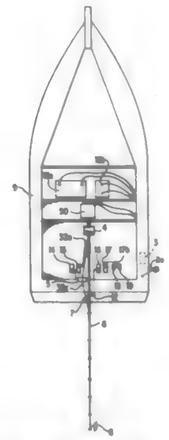


1. A fishing rod handle comprising:
an elongated body having a forward end and a rear end, and having an upper surface and a lower surface, said body having a longitudinal central axic;
a reel seat defined on said upper surface of said body;
reel attachment means for attaching a fishing reel to said reel seat;
a casting handle defined on said body rearward of said reel seat;
a retrieving handle fixed to said upper surface of said body forward of said reel seat, wherein said retrieving handle comprises:
a first support segment extending upwardly from said elongated body and terminating at an upper end, said first support segment having an aperture defined therein for allowing fishing line to pass forward from said fishing reel through said aperture; and
a gripping segment extending rearwardly from said upper end of said first support segment, said gripping segment having a longitudinal central axis.

5,363,587
REMOTE CONTROL FISHING BOAT REMOTE TROLLER
Carl E. Nordling, 7201 Forest Wood Dr., Austin, Tex. 78745
Filed Jul. 28, 1993, Ser. No. 98,071
Int. Cl.[5] A01K *89/00*
U.S. Cl. 43—26.1 **20 Claims**

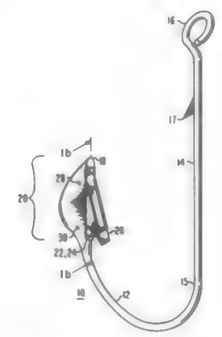
18. A remotely controlled fishing vehicle, comprising:
a powered platform;
control means for controlling said powered platform from a remote location;

a rod mounted to said powered platform;
a reel mounted to said rod; and



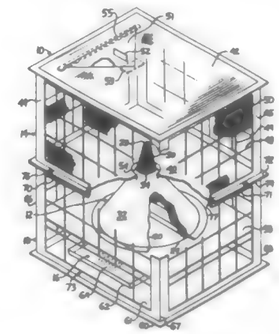
line cutting means for cutting a fishing line deployed from said reel, wherein said control means also controls said line cutting means.

5,363,588
GOTCHYA FISHHOOK
Paul A. Konow, 1035 Horsham Rd., Horsham, Pa. 19044
Filed Jul. 9, 1993, Ser. No. 89,800
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—43.16 **6 Claims**



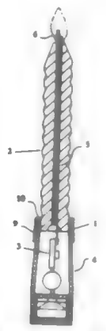
1. A fishhook, comprising
an elongated structural member including a generally smooth hook portion defining a point end and a support end, said hook portion being formed into a generally curved shape, said hook portion further defining a cavity adjacent said point end;
a shank defining first and second ends, said first end being monolithically contiguous with said support end of said hook portion of said fishhook;
line coupling means affixed to said second end of said shank, adapted for coupling said fishhook to a fishline;
movable barb means affixed within said cavity for movement between a retracted state in which substantially all of said barb means lies generally within said cavity, and a projecting state in which a portion of said barb means projects from said cavity;
spring means coupled to said barb means for urging said barb means toward said projecting state; and
a hinge pin affixed to at least one of said barb means and said hook portion for providing rotational freedom for motion of said barb means between said retracted and projecting states.

5,363,589
FLY CATCHER
William E. Flynn, 12916 Second Ave. S., Burnsville, Minn. 55337
Filed Jul. 9, 1993, Ser. No. 89,020
Int. Cl.[5] A01M *1/00*
U.S. Cl. 43—122 **11 Claims**



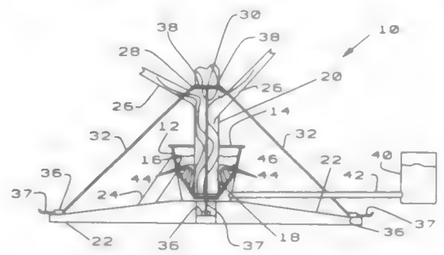
1. A fly catcher comprising:
a vertically-oriented tapered passageway forming a fly guidance path and defined by a surrounding wall having upper and lower portions and an outer side, said upper and lower portions of said passageway being conical and united together with a common vertical axis, said upper and lower conical portions being united together at a juncture, the slope of said surrounding wall of said upper conical portion being more vertical than the slope of said surrounding wall of said lower conical portion, the surrounding wall of said upper portion comprising screen material, said passageway having top and bottom openings defining the height of said passageway, said top opening being an exit port at the top end of the upper portion of said passageway, said exit port having a minimum width in all directions sufficiently large to permit movement of a fly therethrough but not exceeding about one centimeter in any direction, said bottom opening of said passageway being an entrance mouth at the bottom end of the lower portion of said passageway, said entrance mouth having a width of at least about 10 centimeters in all directions,
means for supporting said entrance mouth in an elevated condition to allow flies to move from an external location through said entrance mouth into said passageway,
a capture chamber having an interior for confining flies therewithin and having a substantially horizontal interior floor with an aperture therein through which the upper portion of said passageway extends so that the juncture of said upper and lower portions lies substantially in the plane of said floor and said exit port is spaced above said floor and a fly-impenetrable interface is formed between said aperture and the outer side of said passageway, said lower portion of said passageway being below and outside said capture chamber so that said entrance mouth of said passageway is spaced below said floor, the width of said mouth being larger than the width of said aperture, and
capture chamber support means for removably supporting said chamber such that said chamber may be lifted off and entirely separated from said passageway and said chamber support means for cleaning purposes.

5,363,590
SAFETY APPARATUS FOR CANDLES
Seung S. Lee, 808 Pony Trail, Franklin Lakes, N.J. 07417
Filed Mar. 26, 1993, Ser. No. 37,302
Int. Cl.[5] F23D *3/16*
U.S. Cl. 431—253 **5 Claims**



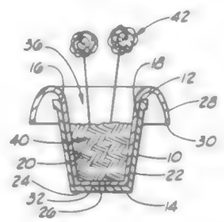
1. A safety apparatus for a plastic housing containing a candle flame activatable electronic melodic assembly, comprising a non-flammable fitting means, said plastic housing comprising a candle holder, said candle holder having an upwardly extended candle holding section which has an outside surface and an inside surface, said fitting means having an inside shape that conforms to said outside surface of said candle holding section so as to tightly fit over said candle holding section, wherein said candle holding section has an average diameter equal to or less than about $\frac{1}{4}$ of an inch and said fitting means has a length to average diameter ratio of equal to or greater than about 0.75.

5,363,591
PLANT STAND AND FEEDER
David A. Jones, 4304 Park Cir. Dr., Bakersfield, Calif. 93309
Filed Apr. 20, 1993, Ser. No. 48,215
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—40.5 **10 Claims**



1. A plant stand comprising:
a reservoir member having an open upper end for receiving a plant,
at least one base member projecting outwardly from said reservoir member to provide a support therefore,
a plurality of releasable retaining means, each mounted adjacent the outer end of a portion of said base member,
a flexible member releasably securable to tightly encircle said plant,
a plurality of flexible support members each having one end attached to said flexible member and having the opposite end engaged by said retaining means,
a fluid supply tank adapted to be mounted on the same level with said reservoir, and a hose connecting a lower portion of said tank to a lower portion of said reservoir, said hose being inclined downwardly from said tank to said reservoir thereby relying upon gravity to supply fluid into said reservoir to a height just equal to that of the fluid in said reservoir and being of sufficient length to allow said tank to be located beyond the branches of said plant.

5,363,592
METHOD FOR GROWING BOTANICAL ITEMS AND PROVIDING A DECORATIVE COVER FOR SAME
Donald E. Weder, Highland, and William F. Straeter, Breese, both of Ill., assignors to Highland Supply Corporation, Highland, Ill.
Filed Jul. 30, 1992, Ser. No. 922,302
Int. Cl.[5] A01B *79/00*
U.S. Cl. 47—58 **14 Claims**

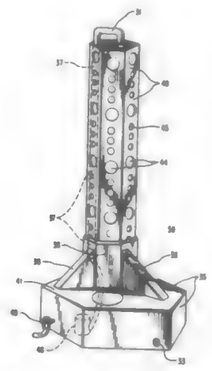


1. A method for growing botanical items comprising:
providing a liner having an upper end with an opening formed therethrough providing access to a liner retaining space and a lower end;
providing a container having an upper end with an opening formed through the upper end providing access to a container retaining space and a lower end;
placing the liner in the container retaining space and positioning the liner in the container retaining space where the opening in the upper end of the liner is disposed near the opening in the upper end of the container;
placing growing medium in the liner retaining space;
placing a propagule in the growing medium;
growing a botanical item in the growing medium in the liner;
providing a decorative covering with an upper end and a lower end with an opening formed through the upper end thereof providing access to a covering receiving space;
removing the liner with the growing medium and the botanical items therein from the container; and
disposing the liner with the growing medium and the botanical items therein in the covering receiving space of the decorative covering.

5,363,593
SYNTHETIC CULTIVATION MEDIUM AND ITS METHOD OF MANUFACTURE
Glint Hsh, 2 Fl., Ming Te Rd., No. 100, Taipei, Taiwan, Prov. of China
Filed Aug. 12, 1992, Ser. No. 928,324
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—59 **11 Claims**

1. A method of manufacturing a synthetic cultivation medium from scrap textiles substantially made of man-made fibers comprising the following steps:
shredding said scrap textiles into short fibers;
agitating said short fibers to form glomerates of intertwined fibers; and
refining said glomerates to render said glomerates substantially environmentally inert.

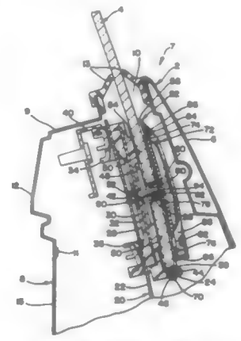
5,363,594
VERTICAL GARDENS
Kenneth W. Davis, Mtn View, Wyo., assignor to A.C.T. Inc., Salt Lake City, Utah
Filed Nov. 7, 1991, Ser. No. 788,944
Int. Cl.[5] A01G *25/00*
U.S. Cl. 47—82 **1 Claim**



1. A vertical plant, flower and vegetable growing garden structure, comprising:
an elongated, vertically disposed growth container formed of a relatively rigid material and being hexagonal-shaped in cross-section, said growth container having an internal bore containing a burlap bag with an organic, soilless growing medium being disposed within said bag,
said growth container having a plurality of vertically extending, external flat surfaces, said flat surfaces having a plurality of perforations therethrough defining planting orifices through which roots of plants, flowers and vegetables are inserted, said planting orifices being separated by a plurality of aeration holes which are smaller than said planting orifices,
an enclosed base including a reservoir for holding a water, nutrients and mineral mixture, said growth container being anchored to said enclosed base,
and means for supplying said water, nutrients and mineral mixture to said soilless growing medium comprising a pump connected to an irrigation conduit which delivers the mixture at the top of the growth container through a water emitter.

5,363,595
ARRANGEMENT OF A VEHICLE DOOR WITH EXTENDABLE WINDOW
Timothy A. Wirsing, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 28, 1993, Ser. No. 174,298
Int. Cl.[5] E05F *11/38*
U.S. Cl. 49—375 **6 Claims**

1. An arrangement for a vehicle door having an extendable window comprising:
a door body forming an envelope having an inner panel spaced from an outer panel;
a window pane positioned within the door body between the inner and outer panels, the window pane being extendable therefrom, the window pane having a bore extending therethrough;
a channel member vertically extending within the door body for vertically guiding the window pane;
a guide block slidably mounted on the channel by bearings wherein the channel member is inserted within the bearings, the guide block having a bore in general alignment with the bore in the window pane, the guide block having at least one window pane contact surface;
a cushion insulator, the insulator having a first inner member joined to a second outer member by a bottom wall, the inner member, bottom wall and outer member generally forming a U-shaped opening for receipt of a lower end of the window pane, the first and second insulator members having a bore generally aligned with the window pane bore, one of the members having a cylindrical portion for extending through the window pane bore and the cylindrical portion having a snap fit connection with the other of the insulator members, thereby retaining the insulator to the window pane;
a retainer plate having a first surface joined to a cylindrical projection, the cylindrical projection protruding within

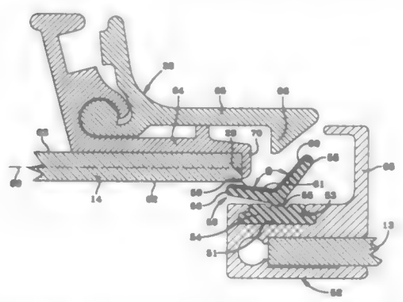


the cylindrical portion of the insulator, the retainer plate cylindrical portion having a threaded interior;
means to hold the retainer plate from rotating with respect to the second member of the insulator;
snap-in retention means allowing the retainer plate to be joined with the insulator second member;
means to align the insulator with the guide block; and
a fastener joining the guide block with the insulator, the window pane and the retainer plate, the fastener having a threaded shank for engagement with the cylindrical projection of the retainer plate and a head portion abutting a side of the guide block generally opposite the window pane contact surface, thereby allowing an assembly of the window pane, insulator and retainer plate to be joined to the guide block subsequent to the guide block being mounted on the channel.

5,363,596
SEAL ASSEMBLY FOR A SLIDING WINDOW
Clarence W. Kronbetter, St. Joseph, Mich., assignor to Chardon Rubber Company, Chardon, Ohio
Filed Mar. 7, 1994, Ser. No. 207,573
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—495.1 **10 Claims**

1. A window seal and frame assembly in combination, said combination comprising:
a window frame assembly having an opening defined between spaced edges;
a window pane supported from said frame assembly and being reciprocatingly displaceable between an open and a closed position;
a seal supported from said window frame assembly adjacent one edge of said opening in said window frame assembly;
said seal having a mounting base secured to said frame assembly;
hinge means supported from said mounting base;
first and second diverging sealing lips supported from said hinge means for engaging said reciprocatingly displaceable window pane when said window pane is closed and

for disengaging from said window pane when said window pane is opened;



said hinge means urging said first sealing lip to disengage from said window pane in order to clear a path for reciprocating displacement of said window pane during opening and closing thereof.

5,363,597

EYELGASS LENS EDGING MACHINE

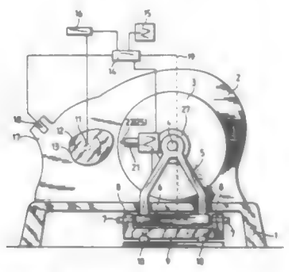
Lutz Gottschald, Meerbusch, and Gunter Barwasser, Neuss, both of Germany, assignors to Wernicke & Co. GmbH, Germany

Filed Apr. 13, 1993, Ser. No. 46,155

Claims priority, application Germany, Apr. 14, 1992, 4212453; Dec. 5, 1992, 4241016; Feb. 26, 1993, 4306002; Mar. 19, 1993, 4308800

Int. Cl.[5] B24B *13/00*

U.S. Cl. 451—69 **18 Claims**



1. Apparatus for machining an edge of an eyeglass lens, comprising:

two coaxial shaft halves for clamping therebetween and rotating said eyeglass lens;

a grinding wheel shaft disposed in parallel with said coaxial shaft halves;

a bearing stand for supporting said grinding wheel shaft;

a grinding wheel, mounted on said grinding wheel shaft, for roughing out and finishing said edge;

an edging tool for making a groove or bevel along said eyeglass lens, said edging tool having a central axis, said edging tool being mounted on said bearing stand such that said central axis is oriented radially to said lens;

means for providing both radial and axial relative movement between said coaxial shaft halves and said bearing stand for bringing said edge into controlled contact with one of said edging tool and said grinding wheel.

5,363,598

MACHINE TOOL CAPABLE OF GRINDING A WORKPIECE WITH A TRUING APPARATUS

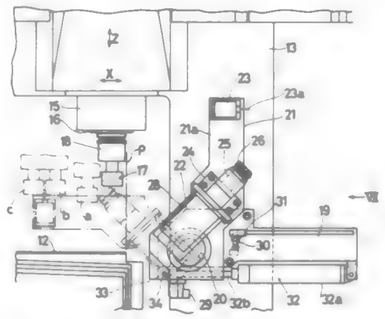
Tomoyasu Imai, Kariya; Takani Yoshimi, Gamagori; Akihiro Matsuura, Chiryu; Toshiharu Takashima, Kariya; Toshihiro Tsutsui, Nishio, and Hiroyuki Nakano, Tokai, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 757,067, Sep. 9, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,433

Claims priority, application Japan, Sep. 20, 1990, 2-248934; Sep. 20, 1990, 2-248935; Sep. 28, 1990, 2-257496

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—331 **12 Claims**



1. A machine tool having a table including a surface on which a workpiece is to be mounted, said table surface having peripheral edges whereby planes perpendicular to the table surface and coplanar with the peripheral edge form a volume defining a grinding and truing area, a spindle head, a spindle carried by said spindle head, a grinding wheel attached to said spindle for rotation therewith, a moving mechanism for moving said spindle head in three dimensional directions with respect to said table for grinding said workpiece so that said grinding wheel is movable within said grinding and truing area, and a truing apparatus having a truer for truing said grinding wheel, wherein said machine tool further comprises:

a movable base on which said truing apparatus is mounted; and

an actuator for moving said movable base between a first position at which said truing apparatus is in a predetermined location for truing said grinding wheel within said grinding and truing area, and a second position located such that when moving from said first position to said second position, the truer crosses a plane perpendicular to said table surface and coplanar with the peripheral edge of the table surface and is withdrawn from said grinding and truing area.

5,363,599

METHOD AND APPARATUS FOR MODIFICATION OF TEXTURE AND APPEARANCE OF TEXTILE FABRICS

Louis Dischler, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 12, 1990, Ser. No. 596,271

Int. Cl.[5] B24B *31/00*

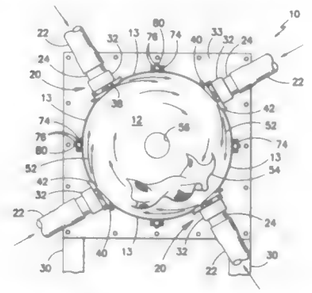
U.S. Cl. 451—326 **36 Claims**

1. An apparatus for modifying the texture and appearance of textile fabric which comprises:

(a) a closed hollow cylinder having an interior surface with curved walls;

(b) means for textile fabric entry and exit to said hollow cylinder;

(c) at least one gas jet attached to said curved walls for the purpose of propelling gas directed away from the interior



of the curved wall of said cylinder for propelling said textile fabric around the inside of said cylinder; and

(d) an air exhaust means for said hollow cylinder.

5,363,600

DUST SCATTERING PREVENTION DEVICE IN FLOOR POLISHER

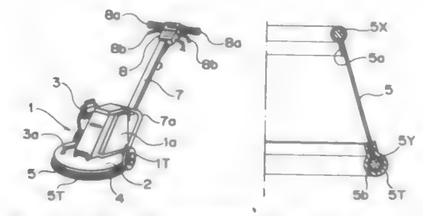
Osamu Shishido; Satoshi Arai; Yuugo Tomaru, and Eiji Nagayama, all of Shizuoka, Japan, assignors to Amano Corporation, Kanagawa, Japan

Filed Oct. 27, 1992, Ser. No. 966,836

Claims priority, application Japan, Oct. 31, 1991, 3-098028[U]

Int. Cl.[5] B24B *23/02*

U.S. Cl. 451—397 **3 Claims**



1. In a floor polisher for polishing a floor by rotating a pad with an upper side surface pad cover by a motor while running said floor polishing by way of pushing an operational handle, the improvement comprising a dust scattering prevention device attached to said floor polisher, said dust scattering prevention device comprising a dust scattering prevention cover formed from a flexible cloth into a generally skirt-like shape widening toward a lower end portion thereof and having at least a lower end portion thereof covering a ring-shaped core bar, said dust scattering prevention cover being attached to a lower end opening of said upper side surface pad cover in such a manner that said lower end portion of said cover contacts the floor.

5,363,601

GRINDING BIT

Lawrence C. Baltazar, Schenectady, and Robert J. Buck, Ballston Lake, both of N.Y., assignors to Constant Velocity Systems, Inc., Ballston Spa, N.Y.

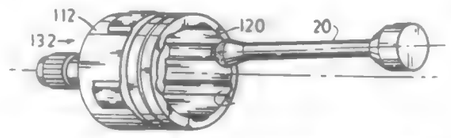
Continuation-in-part of Ser. No. 658,178, Feb. 20, 1991, Pat. No. 5,197,228, which is a continuation-in-part of Ser. No. 367,890, Jun. 19, 1989, abandoned. This application Nov. 4, 1992, Ser. No. 971,328

Int. Cl.[5] B23F *21/03*

U.S. Cl. 451—540 **6 Claims**

1. A grinding bit for regrinding a component of a constant velocity universal joint, wherein said grinding bit has a length of from about 2.0 to about 4.75 inches and is comprised of a grinding tip, an arbor, and means for removably attaching said grinding tip to said arbor, and wherein:

(a) said grinding tip consists essentially of a steel blank coated with cubic boron nitride, wherein said grinding tip is comprised of at least about 95 weight percent of steel,



(b) said grinding tip has a length which is from about 1 to about 1.3 inches,

(c) said grinding arbor has a length of from about 2.2 to about 4.2 inches, and

(d) said arbor consists essentially of metal carbide.

5,363,602

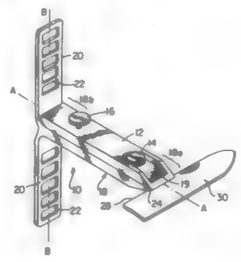
BLADE SHARPENER

John R. Anthon, Getzville; James V. Cox, West Seneca, and Scott L. Sullivan, Chappaqua, all of N.Y., assignors to The Great American Tool Company, Inc., Getzville, N.Y.

Continuation of Ser. No. 60,692, May 10, 1993, abandoned, which is a continuation of Ser. No. 849,288, Mar. 10, 1992, abandoned, which is a division of Ser. No. 405,471, Sep. 11, 1989, Pat. No. 5,138,801. This application Jan. 7, 1994, Ser. No. 178,638

Int. Cl.[5] B24B *3/54*

U.S. Cl. 451—540 **4 Claims**



1. A portable hand held blade sharpening device comprising:

a main body having a front;

a clamping bar adjustably attached in opposed relationship to said main body for retaining a blade to be sharpened therebetween and at the front of said main body, said clamping bar having an upper surface with a cavity formed therein;

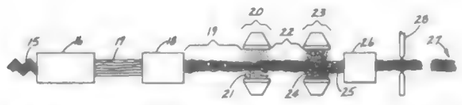
means for guiding a sharpening hone against said blade at a predetermined cutting angle; and

means for adjusting said clamping bar relative to said main body, said adjustment means including a bolt having a hand operable head portion which is recessed in said cavity, said cavity being open towards the front of said main body and in a direction generally perpendicular to the length of said bolt to provide access to said head portion directly by the fingers of an operator without requiring the use of tools, said recessed head of said bolt allowing a smaller cutting angle between said sharpening hone and said blade without interference with said sharpening hone.

5,363,603
ABRASIVE FLUID JET CUTTING COMPOSITON AND METHOD
Paul L. Miller, Minnetonka; Mark D. Stignani, Minneapolis, and Gary G. Wittmer, New Hope, all of Minn., assignors to Alliant Techsystems, Inc., Edina, Minn.
Filed Jun. 22, 1992, Ser. No. 901,804
Int. Cl.[5] B24C *1/00*
U.S. Cl. 451—40 11 Claims

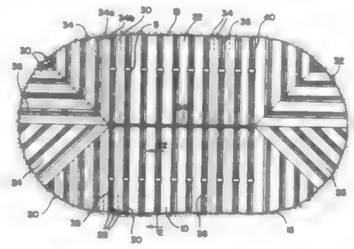
1. A method for cutting an explosive material through application of a fluid comprising an effective suspending amount of carrier, an effective reactive material cutting amount of an abrasive and an effective surface tension reducing amount of surface active agent, said method comprising the steps of:
(a) mixing said carrier and said surface active agent;
(b) introducing said abrasive into said carrier/surface active agent mix; and
(c) projecting the fluid onto the explosive material from a fluid jet orifice of a fluid jet at a pressure of between about 0.001 to 500 kpsi wherein the fluid jet orifice has a projected diameter of about 0.001 to 1.5 inch and wherein said fluid is directed toward said explosive material at a rate of about 0.1 to 10 liters per minute.

5,363,604
ENTANGLED CONTINUOUS FILAMENT NONWOVEN SCOURING ARTICLES AND METHODS OF MAKING SAME
Raymond F. Heyer, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 21, 1992, Ser. No. 933,388
Int. Cl.[5] B24D *11/02*
U.S. Cl. 51—400 5 Claims



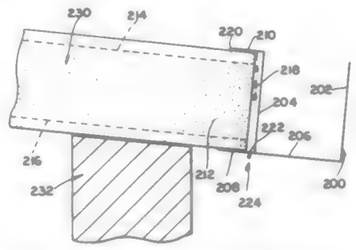
1. A method of making a nonwoven abrasive or scouring article of the type comprising a low-density, lofty, open, porous, nonwoven web, the web comprising a multiplicity of crimped or undulated, continuous, preformed thermoplastic organic filaments, said filaments entangled together at a multiplicity of points along their length sufficient to provide a cross-direction tensile strength of the web of at least about 0.02 kg/cm before application of a binder precursor, said filaments at least partially coated with an organic binder which binds said filaments at least at a portion of points where they contact, said method comprising the steps of:
(a) arranging a multiplicity of continuous, crimped or undulated, continuous, preformed thermoplastic organic filaments into an open lofty array of a multiplicity of substantially parallel continuous filaments;
(b) entangling said multiplicity of substantially parallel continuous filaments together to form an entangled continuous fiber web employing means for entangling so that said entangled web has a cross direction tensile strength of at least about 0.02 kg/cm;
(c) coating the entangled continuous fiber web with a binder precursor solution;
(d) subjecting the product of step (c) to conditions sufficient to cure the binder precursor solution, thereby forming an entangled continuous fiber web having a binder; and
(e) separating the product of step (d) into individual scouring articles.

5,363,605
COVER FOR PILES OF PARTICULATE MATTER
Gary Handwerker, 2311 Burr Oak Rd., Northfield, Ill. 60093
Filed Jun. 10, 1993, Ser. No. 74,916
Int. Cl.[5] E04D *1/34*
U.S. Cl. 52—3 18 Claims



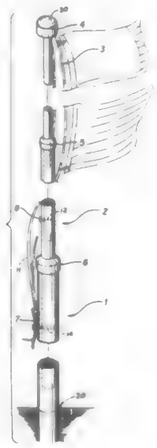
1. A protective cover for a pile of particulate material having an apex and a base and sides sloping downwardly and outwardly from said apex toward the perimeter of said base, said cover comprising:
a plurality of elongated panels adapted to overlie said pile and extend lengthwise along the sloping sides of said pile, each of said panels having laterally spaced side edges joined together by seams, and
an attachment strip extending along a portion of the length of at least one of said panels, said attachment strip being fastened to aid at least one panel generally along the length of said strip, a portion of said attachment strip being separated from said at least one panel to form an attachment loop adapted to engage and retain a ballast weight on said cover.

5,363,606
CONSTRUCTION ARRANGEMENT INCLUDING MULTIPLE PANELS PROVIDED WITH INTERLOCKING EDGES AND RELATED METHODS
Chris Esposito, 5005 Veterans Mem. Hwy., Holbrook, N.Y. 11741
Filed May 11, 1992, Ser. No. 881,483
Int. Cl.[5] E04D *13/06*; E04B *7/00*
U.S. Cl. 52—11 1 Claim



1. A structure comprising a plurality of parallel panels connected in series and including juxtaposed edge portions, locking means extending along the edge portions and connecting the panels together, said locking means defining channels for fluid evacuation, said panels having ends which are at least substantially aligned, and a generally U-shaped gutter adjacent said ends and including flanges embracing said ends to retain said gutter thereon, said gutter defining a passage at said ends to receive fluid evacuated via said channels, at least one of said flanges being provided with openings for the removal of fluid from said passage.

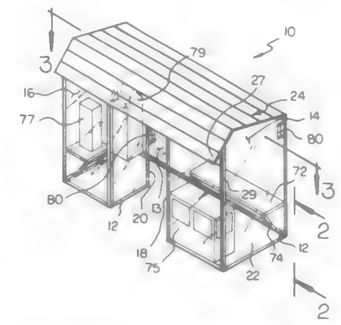
5,363,607
FLAGPOLE AND CAP
Nicholas A. Turturro, 7 Mohegan Trail, Saddle River, N.J. 07458
Filed Jan. 26, 1994, Ser. No. 186,575
Int. Cl.[5] E04H *12/00*
U.S. Cl. 52—40 10 Claims



1. An improved flagpole comprising:
a pole portion having a base and a top, said pole portion being made up of a plurality of hollow tubular portions, each portion having a length and said portions each having a unique diameter, said tubular portion diameters being sized such that each of said tube portions can slide and telescope within one other;
fixing means for positioning said tubular portions in a predetermined operational relation to one another;
a cap portion located at said top of said pole portion, said cap portion having a pair of halyard apertures for the passage of a halyard rope; whereby
said plurality of tubular portions are disposed telescopically in relation to one another, and said fixing means positions said portions in said predetermined operational relation, said base is secured to the ground, and a halyard rope is passed through said halyard apertures in said cap portion such that a flag or banner can be raised or lowered on the pole, thus obviating the necessity for moving parts.

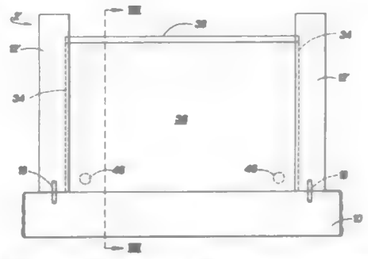
5,363,608
SEE-THROUGH BUS STOP SHELTER
Michael D. Conlan, 1774 Bethany Ave., San Jose, Calif. 95132-1513
Filed Jun. 28, 1993, Ser. No. 82,388
Int. Cl.[5] E04H *1/00*
U.S. Cl. 52—79.1 8 Claims

1. A new and improved see-through bus stop shelter, comprising:
a rigid, opaque framework that defines an interior space which includes a first interior room and a second interior room, said framework also defining a first threshold between space exterior to said framework and said first interior room, said framework also defining a second threshold between said first interior room and said second interior room,
transparent wall elements connected to said framework, said transparent wall elements providing walls for said first interior room and said second interior room, and
a roof element placed on top of said framework for providing a roof for said first interior room and said second interior room,
wherein said roof element includes a first roof edge and a roof body portion, and said framework includes a first framework edge and an upper framework body portion, further including:
a hinge assembly connected between said first roof edge and said first framework edge, such that said roof body portion can be rotated around said hinge assembly, whereby



said roof body portion is raised above said upper framework body portion, and
collapsible roof support assembly means, connected between said roof body portion and said upper framework body portion, for selectively supporting said roof body portion in a position raised above said upper framework body portion.

5,363,609
COMBINED STONE AND BRONZE UPRIGHT MONUMENT
John P. Hancovsky, McMurray, Pa., assignor to Matthews International Corporation, Pittsburgh, Pa.
Filed Apr. 7, 1993, Ser. No. 44,376
Int. Cl.[5] E01F *9/02*
U.S. Cl. 52—103 19 Claims



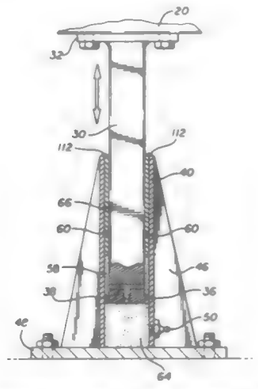
1. An upright monument for the deceased comprising:
a stone base;
a pair of spaced-apart vertical stone posts attached to the base; and
metal panel means having indicia of the deceased thereon mounted between the vertical posts wherein the metal panel means comprises a pair of metal panels, each of said metal panels having a pair of outwardly extending, offset flanges on opposed lateral sides, and wherein said post members have vertically extending grooves to receive said flanges therein.

5,363,610

SEISMIC ANCHOR

Delbert D. Thomas, 1522 Cameo Dr., Redlands, Calif. 92374, and Donald J. Webb, 12,680 Fourth St.-Space 8, Yucaipa, Calif. 92399

Filed Mar. 24, 1993, Ser. No. 36,443
Int. Cl.[5] E04D *15/00*
U.S. Cl. 52—167 R 20 Claims



1. An anchor for stabilizing a mobile home during an earthquake or windstorm, the anchor comprising:

an upper member comprising a moving post, an attachment plate which is fixedly attached to one end of said moving post, and a piston plate which is fixedly attached to an opposing end of said moving post;

said attachment plate being fixedly attached to a frame member of a mobile home;

a base unit comprising a hollow outer stationary post having an upper portion, a lower portion, and a bottom end;

said base unit further comprising a retention sleeve secured to the interior of said upper portion of said outer stationary post, and a base plate;

said bottom end of said stationary post being fixedly attached to said base plate;

said piston plate being retained inside of said lower portion of said stationary post by said retention sleeve thereby interconnecting said upper member with said base unit, and at least a portion of said moving post being positioned inside said retention sleeve so that said moving post can slide along said retention sleeve;

said base unit having a volume of viscous fluid in said lower portion of said hollow stationary post;

a layer of viscous fluid between said moving post and said stationary post, said layer of viscous fluid being located above said piston plate and below said retention sleeve;

said piston plate and said moving post having a channel having at least one opening through said piston plate immediately adjacent to said volume of viscous fluid and at least one opening on a side of said moving post immediately adjacent to said layer of viscous fluid;

said retention sleeve having one or more seals for preventing migration of viscous fluid;

a footing which is anchored into the earth; and

means for fixedly securing said base plate to said footing;

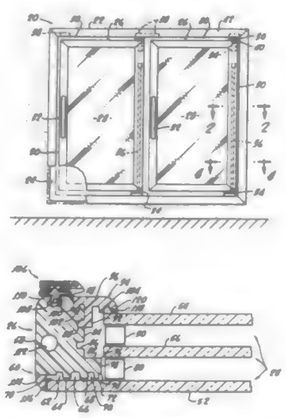
whereby said stationary post prevents said moving post and said mobile home from moving horizontally relative to the base unit and whereby vertical motion of said moving post and mobile home relative to the base unit causes said viscous fluid to flow in and out of said openings and through said grease channel, thereby damping vertical motion of the mobile home.

5,363,611

FOAM RAIL DOOR

Richard J. Richardson, Simi Valley, and Charles F. Crown, San Fernando, both of Calif., assignors to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Continuation-in-part of Ser. No. 644,072, Jan. 18, 1991, Pat. No. 5,113,628, which is a continuation-in-part of Ser. No. 585,602, Sep. 20, 1990, Pat. No. 5,097,642. This application Mar. 12, 1992, Ser. No. 849,900
Int. Cl.[5] E06B *3/00*
U.S. Cl. 312—116 26 Claims



1. A door for a refrigeration unit comprising:

door rail elements formed from a foamed polymeric substance;

at least one substantially transparent panel having sides and a front portion supported, retained by and sealed in the door rail elements such that no substantial portion of a door rail element on at least one side of the panel overlaps a front portion of the panel;

a connector for the door rail elements; and

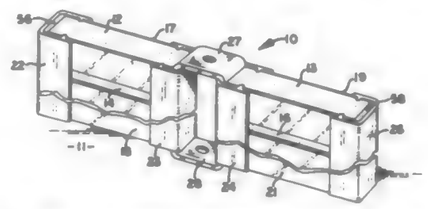
at least one hinge for allowing pivotal movement of the door about an axis.

5,363,612

DISPLAY PANEL ASSEMBLY

Arvid L. Erickson, 21365 Hamburg Ave., Lakeville, Minn. 55044

Filed Feb. 12, 1993, Ser. No. 17,009
Int. Cl.[5] E04C *2/38*
U.S. Cl. 52—239 18 Claims



1. A panel and connector assembly for joining panels in an angular relative relationship comprising: a first panel having a top end, a bottom end, a first end face extended between the top end and the bottom end, an outer surface, an inner surface, and first channel means located adjacent the first end face and extended into the outer and inner surfaces, first cap means slidably mounted on the first panel adjacent the first end face, the first cap means having an end wall, and a pair of parallel

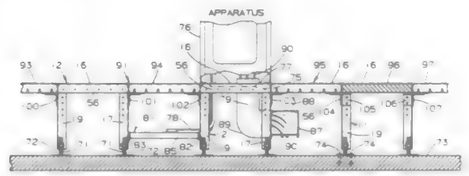
flanges joined to opposite edges of the end wall, each flange having an inwardly directed rib inserted in the channel means to prevent lateral movement of the cap means relative to the first panel, the end wall of the cap means having opposite upper and lower end portions laterally spaced from the end face of the first panel to define first slot means, the first slot means comprising a pair of first slots located adjacent opposite upper and lower end portions of the end face of the first panel, a second panel having a top end, a bottom end, a second end face extended between the top end and the bottom end thereof, the second panel having an outer surface and an inner surface, and second channel means extended into the outer surface and inner surface, second cap means slidably mounted on the second panel adjacent the second end face, the second cap means having an end wall, and a pair of parallel flanges joined to opposite edges of the end wall, each flange having an inwardly directed rib inserted in the second channel means preventing lateral movement of the second cap means relative to the second panel, the end wall of the second cap means having opposite upper and lower end portions laterally spaced from the second end face to define second slot means, the second slot means comprising a pair of second slots located adjacent opposite upper and lower end portions of the second end face, and a plurality of connector means located in assembled relation with adjacent top and bottom ends of the first panel and second panel joining the first and second panels together in a fixed relationship relative to each other, each connector means comprising a generally U-shaped connector having leg means including a first leg and a second leg, the first leg accommodated by one of the first slots and inserted in engagement with the end face of the first panel and the end wall of the first cap means, the second leg accommodated by one of the second slots adjacent to said first slot and inserted in engagement with the end face of the second panel and the end wall of the second cap means to fix the angular relationship between the first and second panels, each panel having transverse groove means extended into the outer surface of the panel.

5,363,613

RIGID SUPPORTING STRUCTURES

Richard W. Sevier, Goleta, Calif., assignor to Hendry Mechanical Works, Goleta, Calif.

Filed Mar. 12, 1992, Ser. No. 849,897
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—263 44 Claims



1. A rigid supporting structure having a top and several legs, comprising in combination:

one piece of sheet material constituting said top and several legs depending from said top in one piece with said top;

each of said several legs having an angled profile of said one piece of sheet material and in one piece with said top across the entire profile;

side panels of said one piece of sheet material;

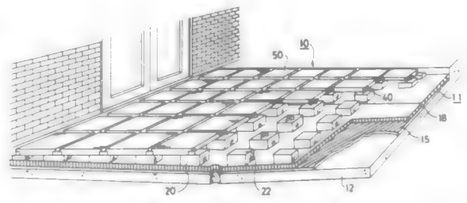
each of said side panels depending from said top and extending between two of said several legs in one piece with the angled profiles of said two legs, with each of said side panels solidly interconnected by a butt joint with each of said two legs.

5,363,614

TERRACE FLOOR AND METHOD OF CONSTRUCTING SAME

David L. Faulkner, Scio, N.Y., assignor to Syrstone, Inc., North Syracuse, N.Y.

Filed Mar. 12, 1993, Ser. No. 30,834
Int. Cl.[5] E04F *15/08*
U.S. Cl. 52—263 18 Claims



1. A horizontally level terrace floor comprising:

a plurality of solid blocklike support elements, each element comprised of a single pedestal, said pedestals being fabricated of a heat shearable material, said pedestals being directly affixed in spaced apart relationship onto a non-horizontally level substructure, said pedestals being of non-uniform heights having been sheared to produce upper surfaces so that all said upper surfaces are horizontally level and parallel with respect one another and wherein said upper surfaces are non-parallel with respect to corresponding pedestal lower surfaces;

a plurality of joint dividers, set upon the upper surfaces of said pedestals; and

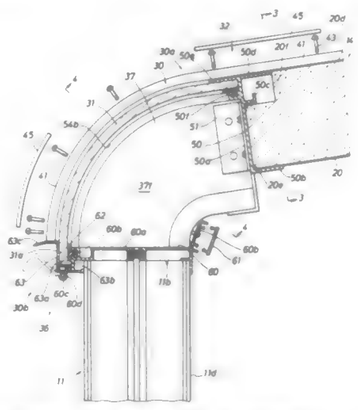
a plurality of paving blocks laid directly on said pedestals, and abutting against said joint dividers.

5,363,615

ENERGY-EFFICIENT SUN ROOM

Michael E. Christopher, Houston, and Gerald N. Cochran, Dickinson, both of Tex., assignors to Texas Aluminum Industries, Inc., Houston, Tex.

Filed Jun. 9, 1993, Ser. No. 74,221
Int. Cl.[5] E04B *1/56*; E04C *3/02*
U.S. Cl. 52—272 16 Claims



1. An energy efficient sun room, comprising:

a generally box-like frame assembly including a front wall frame assembly, opposing side wall frame assemblies and a roof frame assembly;

said front wall frame assembly and said opposing side wall frame assemblies mounting generally planar glass panels, windows and/or doors in predesignated positions;

said roof frame assembly including a plurality of insulated panels and a plurality of curved glass panels which are supported in a substantially continuous relationship;

said roof frame assembly including spaced roof frame members extending in spaced parallel relationship supporting said plurality of insulated roof panels, each of said insulated roof panels being formed of an inner core of insulating material and having outside surfaces formed of thin metal skins;

said roof frame assembly including a curved transition frame assembly including a plurality of curved transition frame members extending in spaced, parallel relationship between said roof frame assembly and said front wall frame assembly, one of said curved glass panels being positioned between adjacent curved transition frame members;

said curved transition frame assembly having a roof adjoining end and roof/curved section transition means mounted with said curved transition frame members for attaching said curved glass members to said roof frame assembly and said insulated roof panel members; and

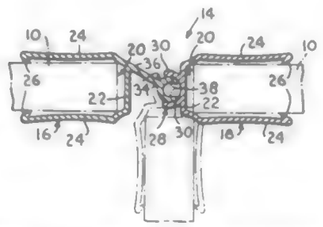
said curved transition frame assembly further including a front wall adjoining end and a curved section/front wall transition means for supporting said front wall adjoining end and said plurality of curved glass panels on said front wall frame assembly.

5,363,616

ADJUSTABLE CORNER MULLION FOR JOINING BUILDING PANELS

Ana M. Hernandez, Miami, Fla., assignor to Diston Industries, Inc., Hialeah, Fla.

Filed Aug. 13, 1992, Ser. No. 928,715
Int. Cl.[5] F04B *1/343*
U.S. Cl. 52—281 **15 Claims**



1. A mullion for forming a joint between first and second panels, said mullion comprising:

a first member having a channel formed for receiving said first panel;

a second member having a channel formed for receiving said second panel;

a first barrel connected to said first member and a second barrel connected to said second member,

said first and second barrels being constructed to allow said first barrel to be releasably received within said second barrel for interconnecting said first and second members in one orientation to form said joint and to allow variable angular positioning of said first member in relation to said second member along a first arc of movement,

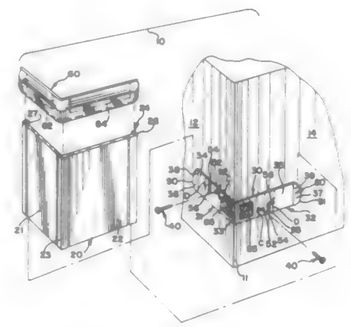
said first and second barrels being constructed to allow said first member to be inverted from said one orientation and then interconnected with said second member by releasably receiving said first barrel within said second barrel to reform said joint and allow variable angular positioning of said first member in relation to said second member along a second arc of movement which in substantial part extends beyond the first arc of movement and in opposite direction, said first and second arcs of movement together providing an approximately 180° range of movement between the first and second members.

5,363,617

CORNER PROTECTOR ASSEMBLY AND RETAINER CLIP THEREFOR

Donald W. Miller, 17W708 Butterfield Rd., Oak Brook, Ill. 60181

Division of Ser. No. 722,096, Jun. 19, 1991, Pat. No. 5,233,804.
This application Aug. 9, 1993, Ser. No. 103,200
Int. Cl.[5] F04B *5/00*
U.S. Cl. 52—288.1 **18 Claims**



1. A retainer clip for retaining a corner protector on a corner wherein the corner protector includes an elongated corner cover member having an angular configuration approximately equal to that of the corner, and wherein the corner cover member has shoulder portions defining retainer clip engagement surfaces of said corner cover member, said retainer clip comprising: a resilient angle member, the angle member having two leg portions extending outwardly from an apex of said angle member, corner wall engaging portions of said leg portions being adapted to contact intersecting angled surface of said corner, said leg portions further including corner cover member engagement portions further having end faces which extend outwardly from a plane defined by said corner wall engaging portion, and are adapted to supportingly engage said retainer clip engagement surfaces, the retainer clip further including flexure reduction means in the form of an interruption of said corner wall engaging portions which extends from a side edge of said leg portion into an area of flexure of said corner wall engaging portions, the interruption disposed between said corner wall engaging portion and said corner cover member engagement portion.

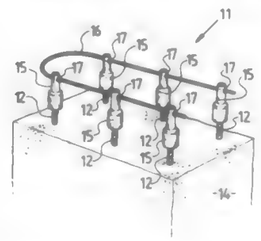
5,363,618

CONSTRUCTION SITE SAFETY

Daniel C. Underwood, 12 Lewisham Ct., Birkdale, Queensland, 4159, Australia

PCT No. PCT/AU91/00110, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/14839, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 22, 1991, Ser. No. 923,985
Claims priority, application Australia, Mar. 22, 1990, PJ 9247; Apr. 30, 1990, PJ 9885; Sep. 10, 1990, PK 2215; Dec. 6, 1990, PK 3739
Int. Cl.[5] B65D *59/06*
U.S. Cl. 52—301 **4 Claims**

1. A method for reducing the risk of impalement of a person falling on free ends of exposed reinforcing bars, the method including capping the free ends of exposed reinforcing bars with a bar end cap having an impact member receiving means for adjustably locating an impact member in the receiving means relative to the respective free ends of the respective bars



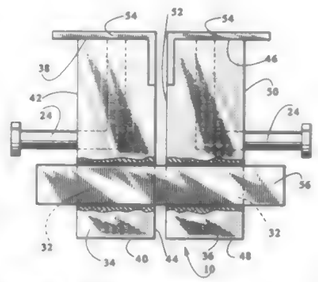
whereby the impact member takes the brunt of impact from the falling person to prevent impalement of the person on the bar.

5,363,619

POSITIVE LOCKING CONCRETE SCREED RAIL

Mike McPhee, Charlotte, N.C., assignor to Permaban North America, Inc., Matthews, N.C.

Filed Dec. 2, 1992, Ser. No. 984,982
Int. Cl.[5] E04B *2/00;* **E01C** *11/02, 11/04*
U.S. Cl. 52—367 **2 Claims**



1. A screed rail assembly for use in the construction of a concrete slab, comprising

a) an elongated rail comprising separate first and second half rails, each half rail having a top surface, a bottom surface, an outer surface, and an inner surface, with the inner surfaces of each half rail being positioned adjacent to one another, and

b) one or more locking members projecting from at least one of the outer surfaces of one of the half rails, and

c) an elongated protective strip that extends along the upper surface of at least one of the half rails, and also extends along the inner surface of said one of the half rails.

5,363,620

STONE MOUNTING MEMBER

Han-Du Liu, 2nd Fl., No. 36, Yung Fu St., Taipei, Taiwan, Prov. of China

Filed Feb. 26, 1993, Ser. No. 23,406
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—482 **4 Claims**

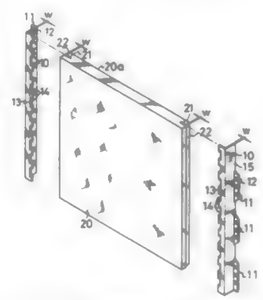
1. An apparatus for mounting stones to a wall, comprising:

a plurality of stone/mounting combinations, each comprising:

a stone comprising two parallel edges in each of which a slit is defined therein; and two mounts, each comprising; a body;

a stone-engaging means perpendicularly extending from an edge of the body, wherein the stone engaging means is secured in the slit by means of an adhesive material and comprises a plurality of recesses defined therein for enforcing the engagement between the stone-engaging means and the adhesive material;

a frame-engaging means perpendicularly extending from an opposite edge of the body, wherein the frame-engaging means comprises a plurality of



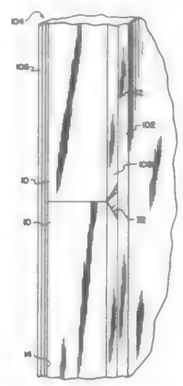
spaced fins each defining apertures for receiving a corresponding number of screws for securing the stone/mount combination to a wall and the spaced fins of one stone/mount combination being fittingly mated to the spaced fins of an adjacent stone/mount combination.

5,363,621

INSULATIVE WALL CLADDING HAVING INSULATION BOARDS FITTING TOGETHER TO FORM CHANNELS

Richard E. Kroll; Vincent Tamburrini, both of West Warwick, R.I., and Frederick M. Hansen, Ontario, Canada, assignors to Dryvit Systems, Inc., West Warwick, R.I.

Filed Jan. 28, 1993, Ser. No. 12,161
Int. Cl.[5] F24F *7/00;* **E04B** *1/70*
U.S. Cl. 52—506.01 **29 Claims**



1. A wall of a building, said wall comprising:

an outer member;

an inner member; and

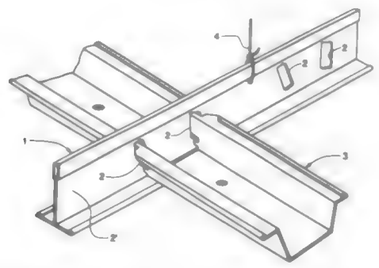
insulation cladding disposed between said outer member and said inner member, said outer and inner members essentially covering opposite surfaces of said insulation cladding, said insulation cladding including a plurality of insulation boards in such cooperative, adjacent relationship as to provide a plurality of interconnecting air pressure equalization and moisture vent channels.

5,363,622

FIRE-RATED DRYWALL SUSPENSION SYSTEM

Gale E. Sauer, Sinclairville, N.Y., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Dec. 24, 1992, Ser. No. 996,626
Int. Cl.[5] E04B *9/00*
U.S. Cl. 52—506.07 1 Claim



1. A suspension system for supporting ceiling drywall comprising:
(a) at least three main runners;
(b) a number of cross runners positioned between the main runners and connected thereto;
(c) said main runner having a web with a pair of cross runners on either side thereof and the pair of cross runners being connected to the opposite sides of the main runner at the same point;
(d) the cross runners are shaped with an elongated flat base, a pair of upstanding side walls extending from the sides of the base and flanges, parallel to the base, extending from the top of the side walls;
(e) the flanges having connector ends on each end thereof, the connector ends have notches cut therein to form a latch shoulder near the end of the connector end;
(f) the side walls near the base having tongue shaped stops extending from the side walls under the notch;
(g) the main runner having two apertures in its web with the connector ends of each cross runner inserted into the apertures and the latch shoulder and end of the tongue shaped stops positioned so that the latch shoulders engage the side of the main runner web near the apertures opposite from the side where the cross runner is located and the end of the tongue shaped stop engages the side of the main runner web below the apertures on the side of the web where the cross runner is located;
(h) the pair of cross runners on either side of the main runner being inserted from opposite sides into the pair of apertures so that the latch shoulders of each cross runner engage opposite sides of the main runner web at the same point and the ends of the tongue shaped stops of each cross runner engage opposite sides of the main runner web at the same point; and
(i) the tongue shaped stops are formed to buckle when excessive force is applied thereto to provide a means to relieve thermal expansion of the cross runner.

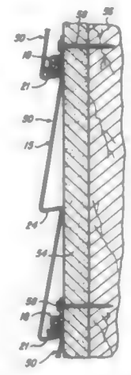
5,363,623

SIDING PANEL AND SUPPORT STRIP ASSEMBLY

Daniel W. King, 113 N. Ohio Ave., Suite 208, Sidney, Ohio 45365

Filed Dec. 14, 1992, Ser. No. 990,038
Int. Cl.[5] E04D *1/00*
U.S. Cl. 52—520 15 Claims

1. A siding panel and support strip assembly, comprising an elongated siding panel including longitudinally extending upper and lower portions providing said panel with a contoured cross-sectional configuration, a longitudinally extending support strip and including an upper portion adapted to receive a series of longitudinally spaced fasteners, means defining a series of longitudinally spaced slots and corresponding hook-shaped tabs within said support strip and said upper portion of said panel, said tabs projecting into said slots and forming positive connections of said support strip to said panel for supporting said panel by said support strip, and said slots



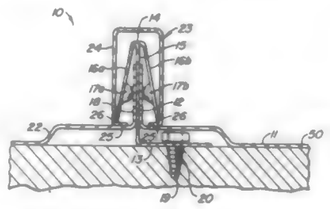
each having a length longer than the length of the corresponding said tab to provide for limited longitudinal movement of said panel relative to said support strip to provide for thermal expansion and contraction of said panel while providing for convenient handling and rapid installation of said panel.

5,363,624

ROOFING AND SIDING SYSTEM

Donald P. Cotter, Livermore Falls, Me., assignor to Cotterco, Inc., Livermore Falls, Me.

Continuation of Ser. No. 939,030, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 685,237, Apr. 12, 1991, abandoned. This application Dec. 17, 1993, Ser. No. 169,732
Int. Cl.[5] E04D *1/34, 1/36*
U.S. Cl. 52—547 4 Claims



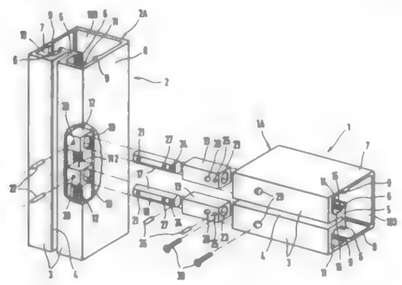
1. A system for mounting a pan, used in roofing and siding systems, to a building surface, the pan including a panel portion and an upwardly extending lateral border, the system comprising:
a bracket including a base portion mountable to the building surface; and
a clip portion connected to the base portion, the clip portion including a first leg extending away from the base portion having a first length and a top end, and a second leg extending at an acute angle from the top end of the first leg towards the base portion, the second leg having a second length, a distal edge and a protrusion extending towards the first leg, the second length being shorter than the first length to form a flange gap between the distal edge and the base, the protrusion positioned and sized to form a narrow bracket slot between the protrusion and the first leg configured to fictionally retain the clip portion on the lateral border and thereby substantially eliminate undesired sliding of the clip portion relative to the lateral border while the base portion is unsecured to the building surface; and
a longitudinal batten cap configured to generally overlap the bracket and the pan lateral border, the cap including a side wall terminating at a laterally extending flange forming a shoulder therebetween, wherein when the lateral border ia positioned in the narrow bracket slot and the cap is installed over the bracket, the second leg is biased toward the first leg by the side wall to cause the protrusion to bias the lateral border against the first leg and thereby promote frictional engagement therebetween, the flange and the flange gap configured to mate together and retain the cap in a substantially fixed vertical position relative to the base.

5,363,625

MODULAR BUILDING SYSTEM

Gerd Philippi, Anton-Bruckner-Strasse 29, D-6632 Saarwellingen, Germany

Filed Nov. 30, 1992, Ser. No. 982,875
Int. Cl.[5] E04C *3/00*
U.S. Cl. 52—653.2 23 Claims



1. A structural framework comprising first and second elongated tubular members each having a first wall, second and third walls flanking the first wall and at least substantially normal thereto, a first longitudinal internal channel adjacent a first portion of the first wall and the second wall, and a second longitudinal internal channel adjacent a second portion of the first wall and the third wall, said channels having identical cross-sectional outlines and one of said first and second members having an end face adjacent the third wall of the other of said first and second members; two first cores snugly and longitudinally movably received in the second channel of said first member, said cores having first sockets aligned with passages in the third wall of said first member; two second cores snugly and longitudinally movably received in the first and second channels of said second member adjacent said end face, said second cores having second sockets each aligned with one of said first sockets; two coupling posts each having an at least partially circular cross-sectional outline and each extending into one of said first sockets, through one of said passages and into one of said second sockets; first and second pins each extending through a hole in the first wall of said first member and through a hole of one of said first cores and engaging the respective post; and means for connecting said second cores with the respective posts.

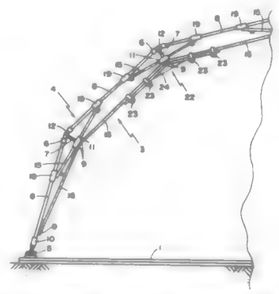
5,363,626

RIB FOR COVERED SHELTER FRAME

Arvi K. Hanninen, Box 33011, Regina, Saskatchewan, Canada S4T 7X2

Filed Jul. 8, 1993, Ser. No. 87,528
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—639 14 Claims

1. A frame rib for the frame of a covered shelter comprising in combination, a first rib pivot support to be mounted on a base, said first rib pivot support including adjusting means, a second rib pivot support to be mounted on said base, said second rib pivot support including adjusting means, a series of sectional tubes joined to form an arc having two ends, each of said arc ends slideably received in one of said first and second rib pivot supports, several rigid couplers each one joining a pair of said series of said joined sectional tubes, each said rigid coupler having an upper member, a lower member, and a central body member joining said upper member and said



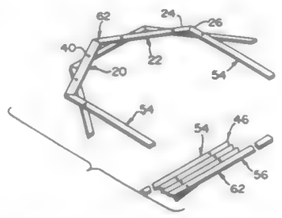
lower member, said upper member having two ends each of which includes a sectional tube receiver for slideably receiving one end of one of said sectional tubes, said lower member having two ends each of which includes a sectional tube guide to slideably receive and guide one of said sectional tubes, each said lower member including a lower member reinforcement having a double pin receiving tab, a rib brace pin connected between each successive ones of said rigid couplers at said double pin receiving tab.

5,363,627

FOLDABLE ASSEMBLY OF LIKE SIZE AND SHAPE STRUCTURAL MEMBERS, FOLDABLE FOR HANDLING PACKAGING, SHIPPING, AND STORAGE, AND UNFOLDED AND UTILIZED AS PRINCIPAL MEMBERS OF STRUCTURES

Donald M. Wilson, 11416 105th S.W., Apt. G10, Tacoma, Wash. 98498

Filed Jun. 4, 1993, Ser. No. 72,468
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—641 12 Claims



1. A foldable assembly of like size and shape structural members, foldable for handling, packaging, shipping, and storage, and unfolded and utilized, with each member being in compression, as roof trusses arranged in a vertical plane, comprising:
a. seven structural members of equal overall width, thickness, and length, the length being measured along the longitudinal centerline, wherein:
five of the seven structural members, which are the intermediate members, having their opposite end surfaces formed in a 60 degree bias, whereby one longitudinal edge surface of each of the seven structural members is longer than the

other opposite longitudinal edge surface, thereby creating opposite trapezoidal side surfaces, and

each of the five structural members having two spaced holes positioned on the longitudinal centerline, and each of the holes is respectively equally spaced inwardly from the nearest biased opposite end surface; and

two of the seven structural members, which are the respective end members of the foldable assembly, having only one end surface formed on a 60 degree bias, and the opposite end surface being formed at ninety degrees, and each of the two structural members having at least one hole positioned on the longitudinal centerline, and spaced inwardly from the end surface formed on a 60 degree bias, at the same distance each of the two spaced holes on the five structural members are spaced from the end surfaces formed on a 60 degree bias; and

b. fastener assemblies passing through respective aligned holes of respective interconnecting groups of three of the structural members, and being secured;

whereby two of the three structural members are positioned in one plane, and the remaining one of the three structural members is positioned in an adjacent parallel plane, resulting in the seven structural members being connected together within the two adjacent parallel planes using the fastener assemblies; and

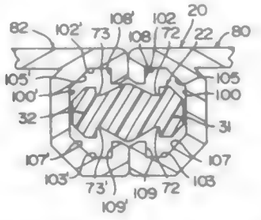
thereafter the seven structural members are pivoted together, in one direction, into a side by side convenient non use compacted storage, handling, and transporting, configuration, and pivoted apart, in the opposite direction, into an end for end useful expanded structural configuration, wherein oppositely positioned end surfaces, formed on a 60 degree bias, are in an abutting relationship.

5,363,628

THERMAL BARRIER APPARATUS AND PROCESS FOR FABRICATING SAME

Ronald J. Basar, Geneva, and Joseph C. Benedyk, Lake Zurich, both of Ill., assignors to Alumax Extrusions, Inc., West Chicago, Ill.

Filed Feb. 5, 1992, Ser. No. 831,154
Int. Cl.[5] B23P *11/02;* **B29C** *65/00*
U.S. Cl. 52—745.19 **7 Claims**



1. A process for constructing a thermal barrier apparatus which thermally improves the mechanical connection between two or more juxtaposed separated frame members having strip acceptance channels for acceptance of a portion of an attachment strip, wherein each of the two or more juxtaposed separated frame members are connected by one or more stretchable attachment strips each having a longitudinal axis, an exterior surface including a first side, a second side opposite the first side, a top side, a bottom side opposite the top side, and a transverse cross-sectional dimension, and wherein each of the juxtaposed frame members may be exposed to different temperatures and environmental conditions after the thermal barrier apparatus is constructed, the process comprising the steps of:

aligning and maintaining the two separated frame members in juxtaposition in preparation for insertion of the stretchable attachment strips;

stretching the one or more stretchable attachment strips from a first transverse cross-sectional dimension which is greater than that of the transverse cross-sectional dimension of the corresponding strip acceptance channel, to a second transverse cross-sectional dimension less than the transverse cross-sectional dimension of the corresponding strip acceptance channel;

inserting the one or more stretched attachment strips between the two or more juxtaposed frame members so that at least a portion of the one or more stretched attachment strips are operably positioned within the corresponding strip acceptance channels of the frame members; and

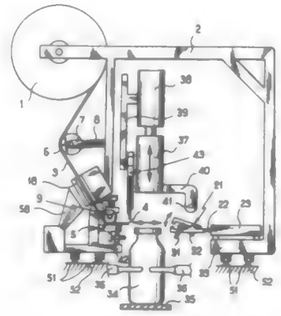
recovering each of the stretched attachment strips back toward the first transverse cross-sectional dimension so as to bind a portion of the stretchable attachment strip within the corresponding strip acceptance channels to, in turn, result in a restrained thermal connection therebetween the two juxtaposed frame members.

5,363,629

DEVICE FOR CLOSING RECEPTACLES BY WELDING ON LIDS, AND INSTALLATION INCLUDING THE SAME

André Graffin, La Ferte Bernard, France, assignor to Serac France, La Ferte Bernard, France

Filed Feb. 24, 1993, Ser. No. 21,906
Claims priority, application France, Mar. 3, 1992, 92 02522
Int. Cl.[5] B65B *7/28*
U.S. Cl. 53—329.3 **8 Claims**



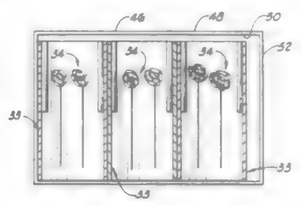
1. A receptacle closure rotatable carousel, comprising a series of stations at which receptacles are receivable for closing in a continuous manner, each station having a receptacle closure means for closing receptacles by welding flat lids on the receptacle, said flat lids being obtainable from a heat-fusible strip material, said closure means comprising a means for supplying the heat-fusible strip material, an end-of-strip support member from which an end of the strip is cantileverable, a receptacle positioning member for bringing respective receptacles up to the end-of-strip support member, a weld head disposed to move vertically above a location for closing the receptacles, a grasping member disposed facing the end-of-strip support member, and a drive member disposed relative to the location for closing the receptacles on the side opposite to the end-of-strip support member and connected to the grasping member such as to displace the grasping member radially with respect to the carousel between a first position in which the grasping member is positioned to grasp the cantileverable end of the strip, and a second position in which the grasping member is spaced apart from the end-of-strip support member by a distance sufficient for the strip to be pulled under the weld head.

5,363,630

FLORAL GROUPING WRAPPER WITH REINFORCING MEMBER

Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.

Continuation-in-part of Ser. No. 687,701, Apr. 18, 1991, abandoned, and Ser. No. 803,318, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 707,417, May 28, 1991, abandoned, which is a continuation of Ser. No. 502,358, Mar. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 391,463, Aug. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, abandoned. This application Aug. 10, 1992, Ser. No. 928,242
Int. Cl.[5] B65B *25/02, 11/58, 5/06*
U.S. Cl. 53—399 **20 Claims**



1. A method for wrapping a floral grouping comprising:

providing a sheet of material with a closure bonding material disposed thereon and with reinforcing member means being connected thereto;

providing the floral grouping;

placing the floral grouping on the sheet of material; and

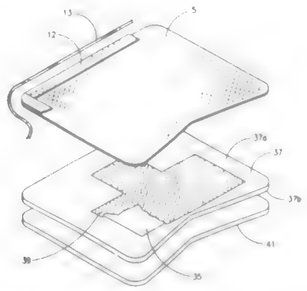
wrapping the floral grouping with the sheet of material, the closure bonding material engaging portions of the sheet of material to cooperate in securing the sheet of material wrapped about the floral grouping to provide a wrapper with at least a portion of the floral grouping being disposed in the wrapper, the reinforcing member means cooperating to provide reinforcing member rigidity to at least a portion of the wrapper and for preventing engagement of the floral grouping with a side wall of a carton when the wrapper is disposed within a carton.

5,363,631

SHOCK-REDUCING SADDLE PAD

Tim Garrison, 3806 E. Hancock, Muskogee, Okla. 74403

Filed Dec. 16, 1993, Ser. No. 168,775
Int. Cl.[5] B68C *1/12*
U.S. Cl. 54—66 **8 Claims**



1. A saddle pad, comprising:

(a) a layer of polyurethane foam having an upper surface and a lower surface, said upper surface having a pocket;

(b) an impact dispersing gel mold disposed inside said pocket;

(c) a layer of elastomeric rubber, said rubber being attached to said lower surface of said layer of polyurethane foam; and

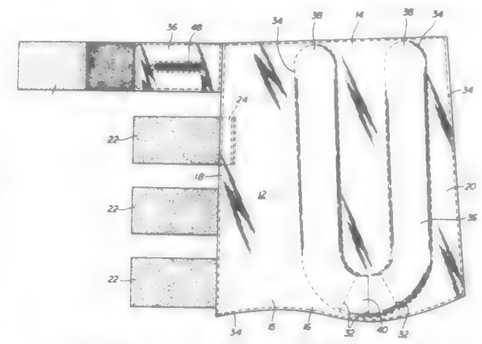
(d) a layer of cover material, said cover material being attached to said upper surface of said layer of polyurethane foam.

5,363,632

EQUINE ATHLETIC BOOT WITH INFLATABLE U-SHAPED BLADDER

Peter J. Armato, Mt. Sterling, Ky., assignor to Equine Textiles, Inc., Mt. Sterling, Ky.

Filed Aug. 13, 1993, Ser. No. 106,464
Int. Cl.[5] A61D *9/00;* **B68C** *5/00*
U.S. Cl. 54—82 **19 Claims**



1. An equine athletic boot for support and protection of a leg of a horse in the area of the pastern, fetlock, and canon bone, comprising:

a panel of shock absorbing material, for wrapping around the leg of the horse, having a lower end for positioning adjacent the pastern and an upper end for positioning above the fetlock;

a means for fastening said panel to the leg of the horse;

a tubular U-shaped bladder carried by said panel; and

a means for inflating said tubular bladder to a selected pressure;

whereby said boot is worn upon the leg of the horse, and said tubular bladder is inflated, providing substantially uniform pressure around the full circumference of the leg, thus reducing the risk of injury.

5,363,633

POSITION ADJUSTMENT STRUCTURE USING AN ECCENTRIC SHAFT

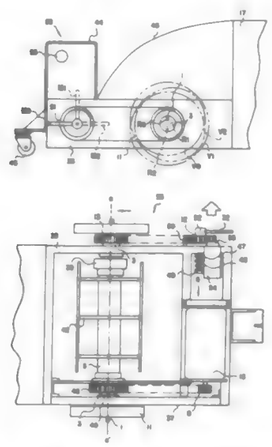
Tsuda Masaru, 2250-2, Ooaza-Takahagi, Hidaka Shi, Saitama 350-12, Japan

Filed Aug. 9, 1993, Ser. No. 103,266
Claims priority, application Japan, Aug. 7, 1992, 4-251816
Int. Cl.[5] A01D *34/54, 34/56*
U.S. Cl. 56—17.2 **6 Claims**

1. A position adjustment structure for a vehicle, comprising:

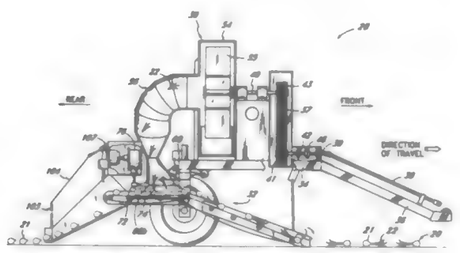
a composite rotary shaft, including small, medium and large shafts rotatably supported in a main frame of the vehicle, said medium shaft engaging a phase adjustment means to form a base shaft, said small shaft forming a support shaft connected to said base shaft eccentrically off the rota-

tional axis of said base shaft; and one or more wheels rotatably attached to a rotational axis of said support shaft,



wherein said large shaft is rotatably connected to said base shaft with bearings and is driven by a prime mover disposed on said main frame.

5,363,634
VEGETABLE TOPPER AND METHOD FOR TOPPING TUBER VEGETABLES
Al Saito, Weiser, Id., assignor to Veggie Vac Company, Weiser, Id.
Filed Feb. 4, 1993, Ser. No. 13,692
Int. Cl.[5] A01D *23/04, 33/02*
U.S. Cl. 56—121.42 **35 Claims**



22. A method for mechanically cutting the tops off of tubers while not damaging the tubers, comprising the steps of:

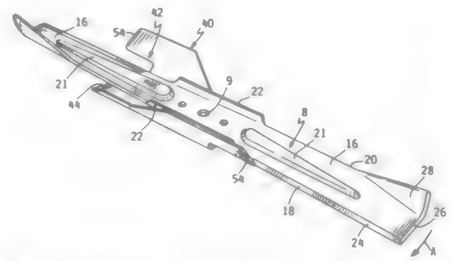
using a high speed fan with a plurality of fan blades to create a suction sufficient to lift the tops of tubers into a position for cutting;

communicating the suction to an area covering one or more conveyors on which tubers ride with sufficient suction to lift the tops of the tubers as needed for cutting;

adjustably positioning a plate horizontally relative to the conveyor where the conveyor enters the suction area to adjust the suction to accommodate different tuber conditions; and

automatically cutting the lifted tops.

5,363,635
MULCHING MOWER WITH IMPROVED MULCHING BLADE
Donald M. White, III, Chanhassen; Gregory P. Tousager, Plymouth, and Richard A. Thorud, Bloomington, all of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Mar. 16, 1993, Ser. No. 31,746
Int. Cl.[5] A01D *34/73*
U.S. Cl. 56—255 **39 Claims**



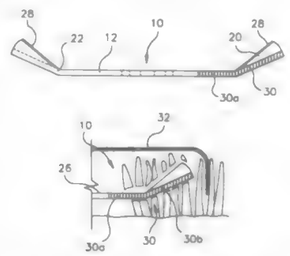
19. An improved lawn mower for cutting ground growing vegetation, wherein the lawn mower has at least one cutting blade attached to a rotatable drive means for rotating the blade about a generally vertical rotational axis, wherein the cutting blade is contained in a mulching mode inside a generally enclosed cutting chamber having a peripheral sidewall and a substantially open bottom side, wherein the cutting blade includes spaced apart tip portions located on either side of a central portion of the blade, wherein the blade includes a leading edge and a trailing edge taken with reference to a forward direction of rotation of the blade, wherein the leading edge of the blade has a sharpened cutting surface for cutting the vegetation and thereby creating vegetation clippings as the blade rotates in the forward direction of rotation, and further including means for securing the blade to the drive means, wherein the improvement relates to means for enhancing the mower's mulching effectiveness, which comprises:

(a) grass deflecting means fixed inside the cutting chamber above a plane of rotation of the blade and above radially outer portions of the blade, the grass deflecting means having a grass deflecting surface located to intercept the grass clippings being circulated inside the cutting chamber; and

(b) a plurality of winglets that rotate in unison with the blade with the winglets acting as rotating kickers for further deflecting the vegetation clippings downwardly, wherein the winglets are inclined forwardly in the direction of rotation of the blade such that an upper edge of the winglet is located forwardly of a lower edge of the winglet taken with respect to the forward direction of blade rotation.

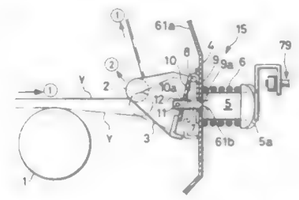
5,363,636
ROTARY LAWN MOWER BLADE WITH UPTURNED CUTTING EDGES FOR MAKING MULTIPLE CUTS
William R. Lamoureux, 1507 Ebb Dr., Wilmington, N.C. 28409
Filed Feb. 25, 1992, Ser. No. 841,027
Int. Cl.[5] A01D *34/68*
U.S. Cl. 56—255 **3 Claims**

1. A lawn mower blade having upwardly and outwardly inclined cutting edges formed on opposite ends of the blade for making multiple cuts of upstanding grass as the blade is rotated and advanced over a cutting area, the blade comprising: a main body having opposed end portions; first and second upwardly and outwardly inclined cutting ends extending outwardly from the opposed ends of the main body with the inclined cutting ends forming the outer portions of the law mower blade; each upwardly and outwardly inclined cutting end having an outer terminal side edge that defines the length of the lawn mower blade, an upwardly and outwardly inclined leading edge, and a trailing edge; a beveled cutting edge formed on the leading edge of each upwardly and outwardly inclined cutting end and extending from a point adjacent an opposite end portion of the main body upwardly and outwardly therefrom along the leading edge of the inclined cutting end and terminating adjacent the outer terminal side edge of the cutting end so as to give rise



to upwardly and outwardly extending cutting edges formed on opposite ends of the blade for making multiple cuts of upstanding grass as the blade is rotated and passed over the cutting area such that the inclined cutting edge formed on the upwardly and outwardly inclined cutting ends progressively cuts the standing grass from a certain height to a lower cutting height as the blade is passed over the cutting area.

5,363,637
METHOD OF THREADING IN A FALSE TWISTING MACHINE AND AN APPARATUS FOR CARRYING OUT THE SAME
Kazuyasu Hirai, Nagaokakyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed May 3, 1993, Ser. No. 56,995
Claims priority, application Japan, May 7, 1992, 4-143195
Int. Cl.[5] D01H *9/10, 13/30*
U.S. Cl. 57—269 **7 Claims**



1. In a false twisting machine for false twisting yarn, a threading method comprising the steps of:

providing an oiling roller for oiling the yarn,

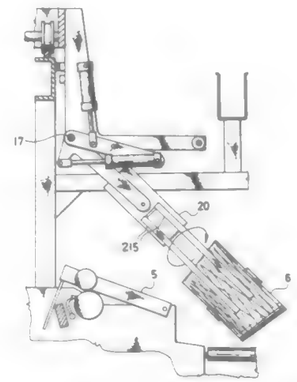
providing a take up means for taking up the yarn into a yarn package,

removing a full yarn package from the take-up means and putting an empty bobbin on the take-up means,

threading yarn onto the empty bobbin, the step of threading yarn onto the empty bobbin comprising the step of catching a free end of yarn received from the oiling roller via suction force, and

separating the yarn and the oiling roller to thereby eliminate contact between the yarn and the oiling roller during the step of threading yarn onto the empty bobbin.

5,363,638
METHOD OF HANDLING A WOUND BOBBIN ON OPEN-END SPINNING MACHINES AND A DEVICE FOR CARRYING OUT THE METHOD
Zdeněk Špindler; František Burýšek, and Vojtěch Novotný, all of Ústí nad Orlicí, Czechoslovakia, assignors to Elitex Ústí Nad Orlicí, Czech Rep.
Filed Sep. 18, 1992, Ser. No. 947,702
Claims priority, application Czechoslovakia, Sep. 23, 1991, 2898-91
Int. Cl.[5] D01H *9/10*
U.S. Cl. 57—270 **6 Claims**



1. A device for handling wound bobbins processed on an open-end spinning machine having opposite sides and a rail fixed along each side, the wound bobbins being located at each side of the machine near the rail, the machine having a conveyor arranged along a longitudinal axis of the machine for receiving wound bobbins and moving the bobbins from the machine, the device comprising:

an attending device movably mounted to the rail for transversing the rail along each side of the machine, the attending device having gripping means for gripping the wound bobbins and placing the wound bobbins on the conveyor, the attending device having control means for detecting a wound bobbin located at a side of the machine and for directing movement of the attending device along the rail to the location of the wound bobbin, the control means being for directing the gripping of the wound bobbin and placement of the wound bobbin on the conveyor by the gripping means;

the attending device including lever means connected to the gripping means for moving the gripping means toward and away from a wound bobbin when the attending device is moved by the control means to a location of a wound bobbin along a side of the machine, the lever means also moving the gripping means from the side of the machine to the conveyor for depositing the wound bobbin on the conveyor; and

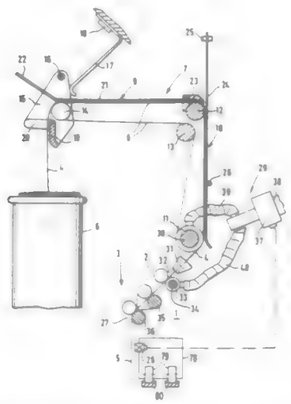
the gripping means including a body pivotally mounted to the lever means for pivotal movement about an axis extending in a first direction and a gripping device rotatably mounted to the body for rotation about an axis extending in a second direction which is perpendicular to the first direction, the gripping device gripping the wound body from one side of the machine and thereafter rotating the wound bobbin from the one side of the machine through 180° so that all wound bobbins on the conveyor from one side of the machine can be rotated and all wound bobbins from an opposite side of the machine are not rotated, so that all wound bobbins on the conveyor face in the same direction.

5,363,639

SPINNING MACHINE WITH SPINNING STATIONS COMPRISING ONE DRAFTING UNIT RESPECTIVELY

Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Sussen, both of Germany

Filed Dec. 22, 1992, Ser. No. 993,592
Claims priority, application Germany, Jan. 22, 1992, 4201575
Int. Cl.[5] D01H *13/04*
U.S. Cl. 57—315 **15 Claims**



1. A spinning machine comprising a plurality of spinning stations, each spinning station including:
a drafting unit having a feeding roller pair;
a depositing site for a sliver supply can;
sliver transport means for transporting a sliver from said sliver supply can to said drafting unit;
means for interrupting transport of said sliver by the sliver transport means and transport of said sliver within said drafting unit such that said sliver remains at least in said feeding roller pair; and
a yarn detector coupled to the means for interrupting and which controls the means for interrupting.

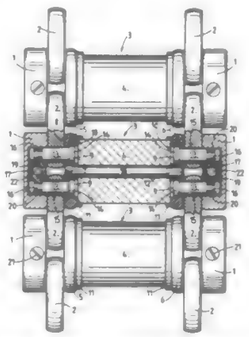
5,363,640

BRACELET, PARTICULARLY WATCH BRACELET

Herve Schick, Besancon, France, assignor to Complications S.A., La Cote-Aux-Fees, Switzerland

Filed Jan. 21, 1993, Ser. No. 7,266
Claims priority, application Switzerland, Jan. 21, 1992, 157/92
Int. Cl.[5] A44C *11/00*
U.S. Cl. 59—80 **5 Claims**

1. A watch armband, comprising:
a succession of central elements, intermediate elements, and outside elements;
fixing pins being arranged at ends of the central elements and crossing through the intermediate elements, said fixing pins also having ends axially retained in the outside elements;
said outside elements having internal faces with dead recesses therein, said dead recesses receiving the ends of the fixing pins;
riders being maintained in the dead recesses and connecting with the ends of the fixing pins; and



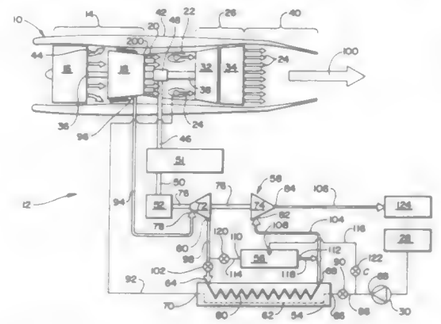
fasteners maintaining the riders in the dead recesses, said fasteners extending crosswise through the outside elements into the dead recesses.

5,363,641

INTEGRATED AUXILIARY POWER SYSTEM

James T. Dixon, Jupiter, and Marvin R. Glickstein, North Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 6, 1993, Ser. No. 103,502
Int. Cl.[5] F02C *7/26*
U.S. Cl. 60—39.02 **8 Claims**



1. A method of starting a vehicle and cooling heated components thereof, said method comprising:
providing at least one gas turbine engine in said vehicle, said engine having in serial flow arrangement a compressor section having at least one engine compressor for compressing ambient air to produce compressed air, a combustion section, and an engine turbine section having at least one turbine for driving the compressor section via an engine shaft;
providing an auxiliary unit having a starter compressor and a starter turbine, said starter turbine connected to said starter compressor by a starter shaft to drive said starter compressor;
linking rotationally the starter shaft and engine shaft via a mechanical linkage;
accelerating the rotational velocity of the engine shaft by driving the engine shaft with the starter shaft until the engine shaft reaches a predetermined velocity:
pumping fuel to said combustion section, and combusting said fuel and compressed air therein, thereby producing engine combustion products;

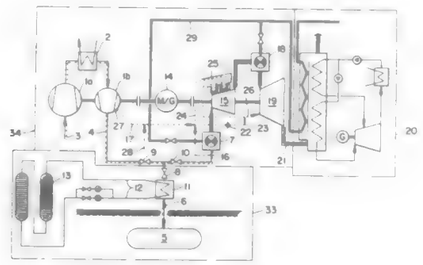
driving said engine turbine by expanding the engine combustion products therethrough, thereby driving the connected compressor;
disconnecting the mechanical linkage between the engine shaft and the starter shaft;
driving the starter compressor by expanding a portion of the compressed air through the starter turbine until the portion cools to a temperature cooler than said components; and
flowing the expanded portion into contact with the components.

5,363,642

METHOD OF OPERATING A GAS TURBINE GROUP

Hans U. Frutschi, Riniken; Anders Lindvall, Baden, and Hans Wettstein, Fislisbach, all of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Continuation of Ser. No. 26,402, Mar. 4, 1993, abandoned. This application Feb. 25, 1994, Ser. No. 202,688
Claims priority, application Germany, Mar. 31, 1992, 4210541
Int. Cl.[5] F02C *7/18*
U.S. Cl. 60—39.04 **6 Claims**



1. A method of operating a gas turbine group, the gas turbine group comprising a high pressure and a low pressure compressor, an intercooler operating between the compressors, at least a first high pressure and a second low pressure gas turbine, the first gas turbine upstream of the second gas turbine, and at least one electrical machine,
the method comprising the steps of:
operating a first heat generator upstream of the first gas turbine to generate a hot mass flow for driving the first gas turbine;
operating a further heat generator downstream of the first turbine and upstream of the second gas turbine to further heat the mass flow for driving the second gas turbine;
extracting a single stream of compressed air from the high pressure compressor upstream of its outlet;
directing the single flow of compressed air in series to at least two components of the gas turbine group through which the hot mass flow moves for cooling the components, at least a first component being cooled by providing the compressed air to the component without mixing the compressed cooling air with the hot mass flow; and,
upon cooling a final component in series, admixing the compressed air in with the hot mass flow.

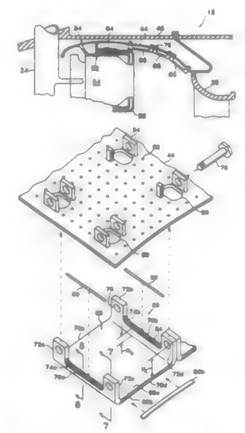
5,363,643

SEGMENTED COMBUSTOR

Ely E. Halila, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Feb. 8, 1993, Ser. No. 14,949
Int. Cl.[5] F02C *7/20;* **F02G** *3/00*
U.S. Cl. 60—39.31 **19 Claims**

1. A combustor liner segment for bounding combustion gases in a gas turbine engine combustor comprising:
a panel having top and bottom surfaces and bounded by first and second opposite sidewalls and third and fourth opposite sidewalls forming a rectangular outer perimeter thereof;
a plurality of integral supporting lugs disposed substantially perpendicularly to said panel top surface and extending from respective ones of said four sidewalls; and



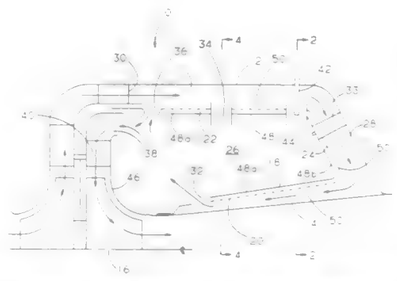
a plurality of integral bosses disposed substantially perpendicularly to said panel top surface and extending from respective ones of said four sidewalls, said bosses being shorter than said lugs.

5,363,644

ANNULAR COMBUSTOR

Jack R. Shekleton, San Diego, and William D. Treece, La Mesa, both of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 21, 1989, Ser. No. 455,575
Int. Cl.[5] F23R *3/50*
U.S. Cl. 60—39.36 **18 Claims**



1. An annular combustor for a gas turbine, comprising:
a combustor housing including a generally axially extending sleeve having an axis;
an annular liner disposed within said housing and about said sleeve and having generally concentric inner and outer axially elongated walls, said inner and outer walls of said liner being spaced from said sleeve and said housing, respectively, said liner also having a generally radially extending wall spaced from said housing and interconnecting said inner and outer walls at one end to define a combustion chamber;
said liner being spaced from said housing and said sleeve to define a compressed air flow path, said compressed air flow path extending from a radially outer compressed air inlet in communication with a source of compressed air to

a radially inner compressed air outlet in communication with said combustion chamber, said compressed air outlet being axially remote from said radially extending wall;

fuel injection means for injecting a fuel/air mixture into said liner in a generally tangential direction adjacent said radially extending wall;

a plurality of openings in said outer wall adjacent said compressed air inlet, said openings generally being disposed in a plane transverse to said axis and being directed toward a combustor outlet at the end of said combustion chamber remote from said radially extending wall, said openings being adapted to provide dilution air at a point upstream of a turbine nozzle;

a plurality of open ended elongated tubes in said outer wall intermediate said dilution air openings and said radially extending wall, said tubes being generally disposed in a plane transverse to said axis, said tubes communicating with said compressed air flow path so as to direct air for combustion into said combustion chamber in a generally tangential direction;

said combustion air tubes being sized to admit sufficient combustion air to ensure completion of combustion upstream of said plane defined by said dilution air openings while forming a flame zone extending from a point adjacent said radially extending wall to a point no further downstream than said dilution air openings; and

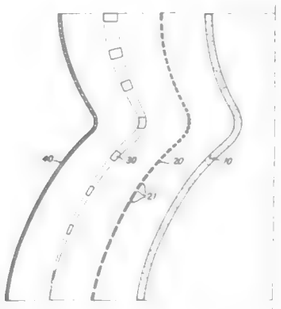
means for igniting a mixture of fuel and air within said combustion chamber.

5,363,645

ENCLOSURE CONTAINING HOT GASES COOLED BY TRANSPIRATION, IN PARTICULAR THE THRUST CHAMBER OF A ROCKET ENGINE

Marc Pellet, Vernon, France, assignor to Societe Europeenne de Propulsion, Suresnes, France

Filed May 14, 1993, Ser. No. 62,068
Claims priority, application France, May 18, 1992, 92 06002
Int. Cl.[5] F02K *9/97*
U.S. Cl. 60—267 **13 Claims**



1. An enclosure containing hot gases cooled by transpiration, the enclosure comprising:

a porous wall of substantially uniform porosity and thickness forming the inside portion of the enclosure, and

means for applying a cooling fluid over an outside face of the transpiration through the porous wall,

the means for applying a cooling fluid comprising

a hydraulic calibration sheath applied on the outside face of the porous wall and constituted by a material that is impermeable to the cooling fluid,

an outer sealing envelope of the enclosure disposed proximate the hydraulic calibration sheath, and

a cooling fluid feed volume formed between the hydraulic calibration sheath secured to the porous wall and the outer sealing envelope of the enclosure,

the hydraulic calibration sheath perforated by a multiplicity of microperforations whose distribution density varies progressively over various zones of the porous wall of the enclosure with the distribution density being greater where a flow to be cooled and reaching the porous wall is greater, thereby enabling a predetermined cooling fluid flow rate per unit area to be applied through the hydraulic calibration sheath in the various zones of the enclosure wall,

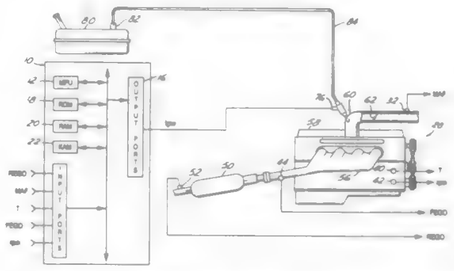
spacers interposed between the hydraulic calibration sheath and the outer sealing envelope, and the porous wall constituted by a sintered material made by compacting together metal beads that are slightly greater in size than a smallest dimension of the microperforations through the hydraulic calibration sheath.

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ENGINE AIR/FUEL CONTROL SYSTEM WITH CATALYTIC CONVERTER MONITORING

Daniel V. Orzel, Westland; Glenn A. Zimlich, Dearborn Heights, and Tri T. Truong, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 27, 1993, Ser. No. 126,849
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—274 **18 Claims**



1. A method for controlling engine air/fuel ratio and currently monitoring efficiency of a catalytic converter positioned in the engine exhaust, comprising the steps of:

controlling fuel delivery to the engine in response to an output of an exhaust gas oxygen sensor positioned upstream of the catalytic converter and an output of an exhaust gas oxygen sensor positioned downstream of the catalytic converter;

providing a test period each time the engine has completed a predetermined operation;

generating a monitoring ratio of a downstream signal derived from said downstream sensor output to an upstream signal derived from said upstream sensor output for each of said test periods;

providing a weighted average of said monitoring ratio over a plurality of said test periods;

indicating degradation in efficiency of the converter when said weighted average of said monitoring ratio exceeds a predetermined value; and

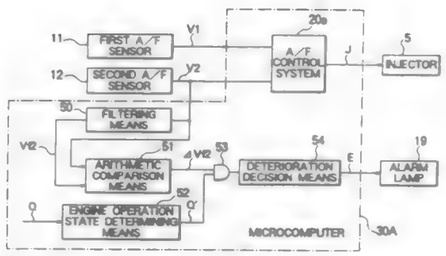
wherein said downstream signal is derived from frequency in transitions of said downstream sensor output and said upstream signal is derived from frequency in transitions of an integration of said upstream sensor output.

5,363,647

DUAL-SENSOR TYPE AIR FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE AND CATALYTIC CONVERTER DIAGNOSIS APPARATUS FOR THE SAME

Hirofumi Ohuchi, and Shinya Fujimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 133,983
Claims priority, application Japan, Oct. 13, 1992, 4-274337; Oct. 15, 1992, 4-277444; Oct. 21, 1992, 4-283182
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—276 **6 Claims**



1. In a dual-sensor type air-fuel ratio control system for an internal combustion engine, comprising:

a catalytic converter disposed within an exhaust pipe of said engine for purifying an exhaust gas;

a first air-fuel ratio sensor disposed upstream of said catalytic converter for detecting concentration of a particular component of said exhaust gas to output a first air-fuel ratio signal indicating said concentration;

a second air-fuel ratio sensor disposed downstream of said catalytic converter for detecting concentration of said particular component of said exhaust gas to thereby output a second air-fuel ratio signal indicating said concentration; and

air-fuel ratio control means for controlling an aimed air-fuel ratio of a mixture supplied to said engine by arithmetically determining an air-fuel ratio control quantity on the basis of said first and second air-fuel ratio signals;

an apparatus for detecting deterioration of said catalytic converter, comprising:

deterioration decision means for determining deterioration of said catalytic converter on the basis of at least said second air-fuel ratio signal;

alarm means for generating an alarm when deterioration of said catalytic converter is determined;

operation state detecting means for detecting operation state of said internal combustion engine;

filtering means for filtering said second air-fuel ratio signal to thereby derive a filtered air-fuel ratio signal; and

comparison means for comparing said second air-fuel ratio signal with said filtered air-fuel ratio signal;

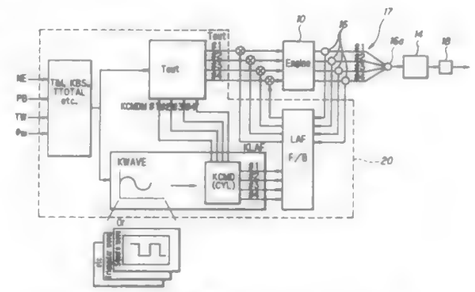
wherein said deterioration decision means compares a deterioration parameter value derived from the result of said comparison with a predetermined value corresponding to said detected operation state of said engine to thereby determine deterioration of said catalytic converter when said deterioration parameter value exceeds said predetermined value.

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A/F RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Shusuke Akazaki; Yusuke Hasegawa; Yoichi Nishimura, and Isao Komoriya, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1993, Ser. No. 172,896
Claims priority, application Japan, Dec. 29, 1992, 4-360919
Int. Cl.[5] F01N *3/22*
U.S. Cl. 60—276 **39 Claims**



1. A system for controlling an air/fuel ratio of a multicylinder internal combustion engine such that an actual air/fuel ratio, at at least one of upstream and downstream of a catalytic converter installed at an exhaust system of the engine, is intentionally oscillated at least one of its amplitude and cycle, comprising:

first means for establishing a characteristic of a desired air/fuel ratio as a periodic function such that the desired air/fuel ratio varies at at least one of a predetermined amplitude and cycle within a predetermined period;

second means for sampling the characteristic by a time interval determined on the basis of a time interval between TDC crank angle positions of the engine;

third means for determining each cylinder's desired air/fuel ratio from the sampled data;

fourth means for determining a fuel injection amount for each cylinder from each determined cylinder's desired air/fuel ratio; and

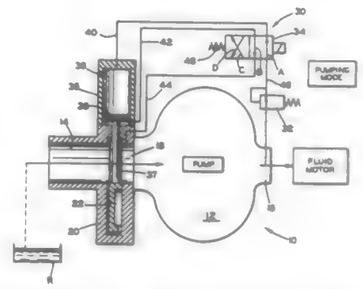
fifth means for supplying a fuel to each cylinder in response to the determined fuel injection amount.

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HYDRAULIC DRY VALVE CONTROL APPARATUS

James R. McBurnett, Greer, and Weston R. Poyner, Greenville, both of S.C., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 18, 1989, Ser. No. 452,521
Int. Cl.[5] F16D *31/00*
U.S. Cl. 60—325 **9 Claims**



1. In a hydraulic pressure system adapted to generate a flow of pressurized fluid to a hydraulic motor from a fluid reservoir,

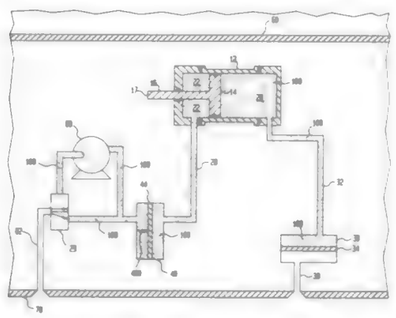
said pressure system including a pump having an inlet port communicating with said reservoir, said pump having an outlet port communicating with said motor, wherein said system comprises fluid flow control apparatus communicating with both said inlet and outlet ports, said fluid control apparatus comprising moveable pilot valve having a first position which corresponds to an active pumping mode and a second position corresponding to a dry operating mode, a dry valve positioned at said inlet port for selective interruption of fluid flow to said inlet port from said reservoir, wherein said dry valve moves between a closed position wherein fluid flow through the pump is substantially prevented to define said dry operating mode, and an opened position wherein fluid flow is unrestricted to define said active pumping mode; an improvement comprising said control apparatus being responsive to pump output pressure for moving said dry valve to said closed position, and responsive to differential pressure between said inlet and outlet ports for moving said dry valve to said opened position, wherein pressure at said inlet port is taken at a point downstream of said dry valve, and wherein during said dry operating mode, pressure at said point is below atmospheric.

5,363,650

HYDRAULIC CYLINDER ASSEMBLY FOR USE IN VARIABLE EXTERNAL PRESSURE ENVIRONMENTS

Peter R. Bodycoat, Newport, and Louis P. DiNola, Cranston, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1993, Ser. No. 134,449
Int. Cl.[5] F16D *31/00*; F15B *15/17*
U.S. Cl. 60—325 **19 Claims**



1. A hydraulic cylinder assembly for use in a variable pressure environment, comprising:

a hydraulic cylinder immersed in said variable pressure environment, said hydraulic cylinder having two chambers and a piston interposed between said two chambers;

hydraulic fluid for filling said two chambers;

pressurizing means in hydraulic communication with said two chambers for normalizing a pressure of said hydraulic fluid in said two chambers to a pressure of said variable pressure environment, wherein said pressurizing means includes a diaphragm having first and second sides, said first side exposed to said pressure of said variable pressure environment and said second side exposed to said hydraulic fluid; and

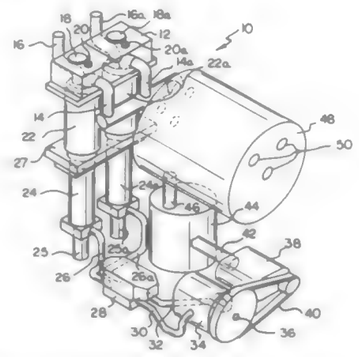
pressure varying means in hydraulic communication with one of said two chambers for selectively varying said pressure of said hydraulic fluid from said pressure of said variable pressure environment in said one of said two chambers such that said piston moves.

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FREE PISTON INTERNAL COMBUSTION ENGINE

Arthur G. Knight, 3209 58th St. S., Apt. No. 130, Gulfport, Fla. 33707

Filed Jul. 12, 1993, Ser. No. 89,281
Int. Cl.[5] F02B *71/04*
U.S. Cl. 60—595 **9 Claims**



1. A new and improved internal combustion engine comprising:

a cylinder, said cylinder having a combustion chamber and a piston head and rod assembly for movement up and down in said cylinder relative to said combustion chamber,

said cylinder further having an intake valve assembly and an exhaust valve assembly interconnected with said combustion chamber,

said piston head and rod assembly being operatively connected to a hydraulic piston movable in a hydraulic cylinder to produce a high pressure hydraulic output in response to said up and down movement of said piston head and rod assembly,

a hydraulic motor

a conduit connected between said hydraulic cylinder and said hydraulic motor, said hydraulic motor having a rotatable output shaft adapted to be rotated in response to the high pressure output from said hydraulic cylinder applied to said motor through said conduit,

and valve-actuating means connected between said hydraulic motor and said combustion chamber for actuating said intake and exhaust valve assemblies in a predetermined timed sequence,

wherein said intake and exhaust valve assemblies are operated by pressurized air, and said valve-actuating means comprises an air compressor connected to the output of said hydraulic motor, a pair of air-pressure operable valves connected to said air compressor, said air-pressure operable valves being interposed between said air compressor and said intake valve and said exhaust valve assemblies, respectively, and means for controlling the operation of said air-pressure operated valves in said predetermined timed sequence.

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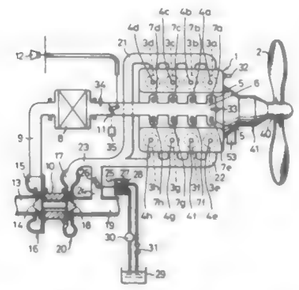
AIR/FUEL RATIO CONTROL DEVICE OF A TURBOCHARGED ENGINE

Shigetaka Tanaka; Yukio Ohtake, and Yutaka Ohbuchi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 14, 1993, Ser. No. 77,224
Claims priority, application Japan, Jun. 24, 1992, 4-166192
Int. Cl.[5] F02B *37/12*; B64C *11/30*
U.S. Cl. 60—603 **11 Claims**

1. A device for controlling an output power of an engine having a supercharger, said device comprising:

air-fuel ratio control means for controlling an air-fuel ratio of a mixture fed into the engine cylinders to make said air-fuel ratio of the mixture equal to a predetermined first air-fuel ratio when the engine is operating in a predetermined first operating state and make the air-fuel ratio of the mixture equal to a predetermined second air-fuel ratio which is smaller than said first air-fuel ratio when the engine is operating in a predetermined second operating state and



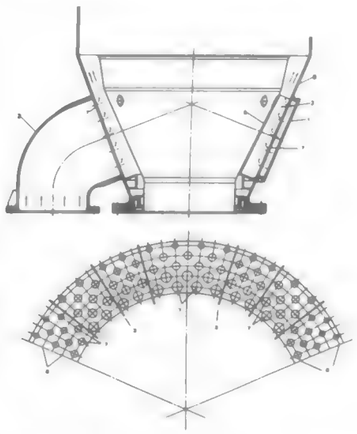
supercharged pressure control means for controlling a supercharged pressure of air discharged from the supercharger and fed into the engine cylinders to make the supercharged pressure equal to a predetermined first supercharged pressure when the engine is operating in said first operating state and make the supercharged pressure equal to a predetermined second supercharged pressure which is lower than said first supercharged pressure when the engine is operating in said second operating state.

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CYLINDRICAL COMBUSTION CHAMBER HOUSING OF A GAS TURBINE

Achim Zimmermann, Mülheim a.d. Ruhr; Karl-Erhard Beck, Berlin, and Klaus D. Mohr, Wuppertal, all of Germany, assignors to Man Gutehoffnungshutte AG, Oberhausen, Germany

Filed Jul. 7, 1993, Ser. No. 88,311
Claims priority, application Germany, Jul. 8, 1992, 4222391
Int. Cl.[5] F02C *3/14*
U.S. Cl. 60—751 **12 Claims**



1. Cylindrical combustion chamber housing of a gas turbine, comprising:

a conical injector tube;

a perforated cone, arranged circularly around said conical injector tube;

a bladeless inlet elbow for admitting compressor air through openings of said perforated cone into the interior of the combustion chamber, said inlet elbow being formed as an arc-shaped inlet elbow arranged laterally to the combustion chamber housing and attached to the combustion chamber housing;

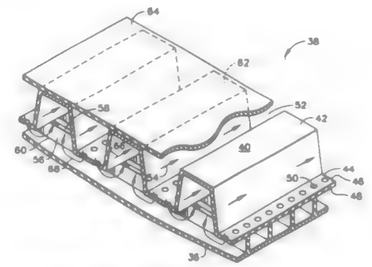
flow distribution means for distribution of flow from said arc-shaped inlet elbow to said openings into said interior of the combustion chamber and for converting tangential flow to axial flow, said flow distribution means including a substantially circular intake element which is led on both sides around the combustion chamber housing.

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RECUPERATIVE IMPINGEMENT COOLING OF JET ENGINE COMPONENTS

Ching-Pang Lee, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 10, 1993, Ser. No. 58,059
Int. Cl.[5] F02C *7/12*
U.S. Cl. 60—752 **10 Claims**



1. A jet engine subassembly comprising:

(a) a corrugated plate including spaced-apart, generally aligned, and raised corrugation portions joined together by intervening and spaced-apart plate portions having a first surface on the same side of said corrugated plate as said corrugation portions, a generally opposing second surface, and impingement cooling holes between said first and second surfaces, with adjacent said corrugation portions and intervening said plate portions defining coolant channels in fluid communication with a pressurized source of supply cooling fluid during engine operation;

(b) a plurality of spaced-apart and generally aligned dividers disposed generally transverse to said corrugation portions and having first and generally opposing second sides, said first side of said dividers generally abutting said second surface of said plate portions; and

(c) an impingement-cooled surface generally abutting said second side of said dividers, and wherein a said corrugation portion defines therewithin a return channel in fluid communication with post-impingement cooling fluid during engine operation.

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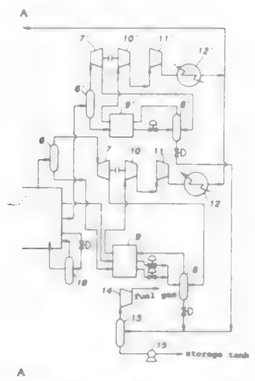
METHOD FOR LIQUEFYING NATURAL GAS

Yoshitsugi Kikkawa; Osamu Yamamoto; Junichi Sakaguchi, and Moritaka Nakamura, all of Kanagawa, Japan, assignors to Chiyoda Corporation, Kanagawa, Japan

Filed Mar. 8, 1993, Ser. No. 28,025
Claims priority, application Japan, Nov. 20, 1992, 4-335540
Int. Cl.[5] F25J *1/00*
U.S. Cl. 62—9 **12 Claims**

1. A method for liquefying natural gas, comprising the steps of:

cooling feed natural gas with a refrigerant in a first feed gas stage to produce liquefied and non-liquefied parts of said feed natural gas;
cooling the non-liquefied part of said feed natural gas with a substantially isentropic expansion in a second feed gas stage to produce liquefied and non-liquefied parts of said feed natural gas;
pressurizing and recycling the non-liquefied part of said feed natural gas from said second feed gas stage by using a first compressor to produce a recycle natural gas;
cooling the recycle natural gas with a refrigerant in a first



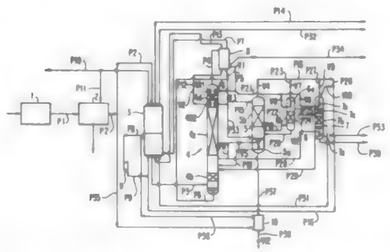
recycle gas stage to produce liquefied and non-liquefied parts of said recycle natural gas;
cooling the non-liquefied part of said recycle natural gas from said first recycle gas stage with a substantially isentropic expansion in a second recycle gas stage to produce liquefied and non-liquefied parts of said recycle natural gas; and
recovering the liquefied parts of said feed natural gas and said recycle natural gas;
said first compressor being driven at least partly by power obtained by at least one of said substantially isentropic expansion steps.

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ULTRA-HIGH PURITY NITROGEN AND OXYGEN GENERATOR

Takashi Nagamura, and Takao Yamamoto, both of Hyogo, Japan, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Dec. 2, 1993, Ser. No. 157,035
Claims priority, application Japan, Apr. 13, 1992, 4-093045
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—25 **4 Claims**



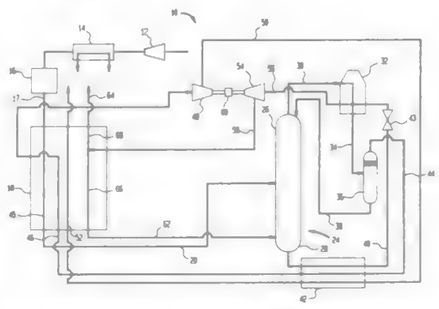
1. Process for the production of ultra-high purity nitrogen and oxygen, in which compressed feed air left after removal of impurities therefrom is cooled down for liquefaction, and introduced to a lower portion of a first rectification column (4), so that through its rectification in a rectifying portion (4*b*, 4*c*, 4*d*) of the first rectification column, ultra-high purity nitrogen is taken out of an upper portion of the first rectification column (4), and ultra-high purity oxygen is produced at the same time, characterized in that after oxygen-enriched liquid air taken out of the lower portion of the first rectification column (4) is reduced in pressure, it is introduced to a second rectification column (5), so that through its rectification in a rectifying portion (5*b*) of the second rectification column, liquid oxygen is collected in a bottom portion of the second rectification column (5), the same liquid oxygen is warmed by a reboiler (5*a*) so as to be turned to oxygen gas containing a trace amount of impurities, the same oxygen gas is purified in a third rectification column (6) wherein components in the oxygen gas, whose boiling points are higher than that of oxygen, are removed therefrom by liquefaction in the third rectification column, and the purified oxygen gas is thereafter introduced to a fourth rectification column (7), so that following rectification in a rectifying portion (7*b*, 7*c*) of the fourth rectification column, ultra-high purity oxygen is taken out from below a rectifying portion thereof.

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SINGLE COLUMN PROCESS AND APPARATUS FOR PRODUCING OXYGEN AT ABOVE-ATMOSPHERIC PRESSURE

Joseph P. Naumovitz, Lebanon, N.J., assignor to The BOC Group, Inc., New Providence, N.J.

Filed May 13, 1993, Ser. No. 60,144
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—39 **10 Claims**



1. A process of separating oxygen from air to form an oxygen product, said process comprising:
compressing and purifying the air;
cooling the air to a temperature suitable for its rectification;
rectifying the air in a rectification column operating at a superatmospheric pressure and such that a nitrogen vapor tower overhead and a liquid oxygen column bottom are produced within top and bottom regions of the column and a nitrogen rich vapor is produced below the nitrogen vapor tower overhead;
removing from the column a refrigerant stream composed of either the nitrogen rich vapor or the nitrogen vapor tower overhead, a reflux stream composed the nitrogen vapor tower overhead, and an oxygen stream composed of the liquid oxygen column bottom;
vaporizing the oxygen stream against at least partially condensing the reflux stream, returning at least part of the reflux stream back to the column as reflux, compressing all of the oxygen stream to at least the superatmospheric pressure of the column and thereafter, dividing the oxygen stream into two partial streams;
cooling one of the two partial streams to essentially a dew-point temperature and then introducing it into the bottom region of the column as a vapor to provide boilup in said bottom region of the column;

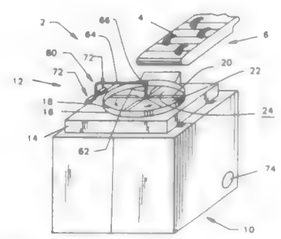
partially warming the refrigerant stream against the cooling of the air and the one of the two partial streams, expanding the refrigerant stream with performance of work, and then, fully warming the refrigerant stream against the cooling of the air and the one of the two partial streams to add refrigeration to the process;
applying the performance of the work of the expansion to the compression of the oxygen stream so that all required compression work for compressing the oxygen stream is supplied from at least part of the work of the expansion
recovering the oxygen product from the other of the two partial streams.

5,363,658

APPARATUS AND PROCESS FOR CHILLING FOOD PRODUCTS

John Appolonia, Yardley; Steve McCormick, Warrington, both of Pa., and Robert Boddaert, Washington, N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Jul. 9, 1993, Ser. No. 90,347
Int. Cl.[5] F25D *13/06*
U.S. Cl. 62—63 **21 Claims**



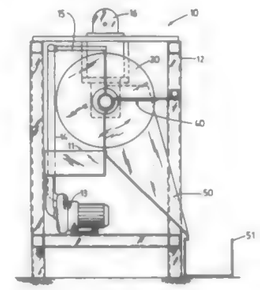
3. Apparatus for chilling a food product comprising:
(a) a food storage compartment for receiving the food product from a food distribution means;
(b) food distribution means operatively engaged to the top of the food storage compartment for receiving the food product from a source and for uniformly distributing the food product within the food storage compartment said food distribution means comprising;
(i) a first circular member having an upper and lower surface and an opening therein sufficient for the food product to pass therethrough,
(ii) means for rotating the first circular member,
(iii) a second circular member positioned above the first circular member comprising at least one partition and together with the upper surface of the first circular member forming at least one food receiving area on the upper surface of the first circular member,
(iv) means for rotating the second circular member in a non-congruent manner with respect to the first circular member, whereby the food product which is placed on the upper surface of the first circular member is caused to fall through the opening in the first circular member into the food storage compartment when one of said partitions contacts the food product and urges said food product into said opening; and
(c) means for cooling the food product.

5,363,659

ICE MAKING APPARATUS

Douglas J. Lyon, Yeronga; Stefan S. Jensen, Wavel Heights; Jeffrey B. Cage, Macgregor, all of Australia, and Robert R. Niblock, Seattle, Wash., assignors to Heat and Control, Inc., South San Francisco, Calif.

Continuation of Ser. No. 6,141, Jan. 19, 1993, abandoned, which is a continuation of Ser. No. 882,701, May 14, 1992, abandoned, which is a continuation of Ser. No. 458,670, Jul. 6, 1990, Pat. No. 5,157,939. This application Sep. 15, 1993, Ser. No. 121,832
The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.
Claims priority, application Australia, Jul. 31, 1987, PI 3458
Int. Cl.[5] F25C *5/12*
U.S. Cl. 62—71 **5 Claims**



1. Ice making apparatus included in a refrigerating system using an evaporative working fluid and comprising at least one rotatable refrigerated disc member serving as the evaporator in the refrigerating system; both sides of said disc member serving to define in their entirety liquid freezing surfaces,
means for applying liquid at a first location to both sides of said disc member whereby at least some of said liquid adheres to said liquid freezing surfaces of said disc member and is frozen as said disc member rotates; and
means for removing the frozen liquid from the sides of said disc member at a second location angularly displaced from said first location in the direction of rotation of the disc member;
said disc member having a multiplicity in excess of three relatively narrow internal channels sized expressly to accommodate the passage of an evaporative coolant therethrough such that the expansion of the refrigerant cools the disc member,
said channels extending substantially over all of the operative portion of the disc member so that all points on the liquid freezing surfaces are close to and are chilled by the refrigerant passing through said channels and means for rotating the disc member.

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ORBITAL TYPE FREEZING APPARATUS AND METHOD

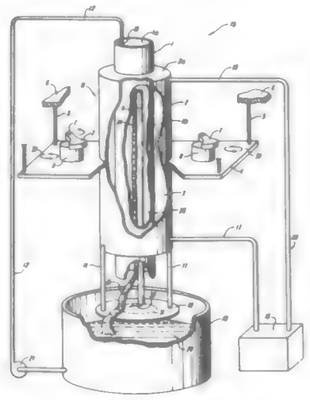
Yao-Tzu Li, Lincoln, Mass.; Albert P. Yundt, Jr., Nashua, N.H.; I-Chieng Ho, Concord, and Henry Huang, Brighton, both of Mass., assignors to Y. T. Li Engineering, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 716,083, Jun. 17, 1991, Pat. No. 5,221,439. This application Jun. 22, 1993, Ser. No. 81,499
Int. Cl.[5] F25C *5/12*
U.S. Cl. 62—71 **38 Claims**

1. An apparatus for freezing or chilling a liquid comprising,
a heat-transfer tube formed of a material with a high heat transfer property, oriented vertically with upper and lower ends and inner and outer surfaces, and adapted to receive the liquid to be frozen or chilled at its inner surface near its upper end,
a housing surrounding said heat transfer tube to define there-

between a closed evaporator chamber at the outer surface of said heat transfer tube,

refrigeration means for circulating a refrigerant through said chamber over the outer surface of said heat transfer tube where the refrigerant evaporates due to heat transferred



to said refrigerant from said liquid through said heat transfer tube,

a whip rod disposed within said heat transfer tube and,

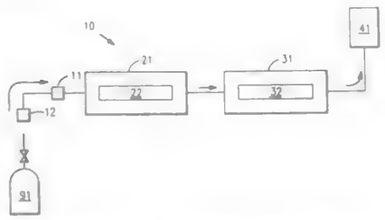
means for driving at least said whip rod in an orbital motion to revolve about said inner surface.

5,363,661

METHOD AND APPARATUS FOR TESTING REFRIGERANT

David A. Condit, 45 Rockledge Dr., Avon, Conn. 06001; H. Harvey Michels, 7 Tumblebrook La., West Hartford, Conn. 06117; Thomas J. Garoushen, 90 Gilead Rd., Andover, Conn. 06232, and Warren R. Clough, 6103 Owlwood Dr., Cicero, N.Y. 13039

Filed Sep. 3, 1993, Ser. No. 116,936
Int. Cl.[5] G01N *31/00*
U.S. Cl. 62—77 **20 Claims**



1. A method of testing a refrigerant that should be a pure first refrigerant compound for the contaminating presence of a second refrigerant compound comprising the steps of:

withdrawing a sample flow of said refrigerant from a closed system containing refrigerant;

causing said sample flow to come in contact with means for decomposing said second refrigerant compound; and

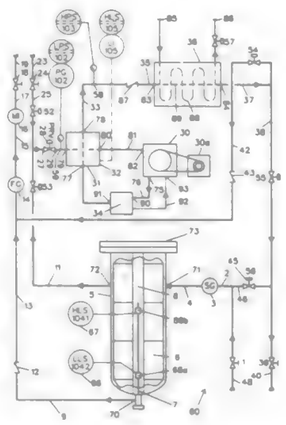
testing said sample flow by causing it to come in contact with means for indicating the presence of a decomposition product of said second refrigerant compound, a positive indication of the presence of said decomposition product being indicative of contamination of said refrigerant by said second refrigerant compound.

5,363,662

REFRIGERANT RECOVERY AND RECYCLING METHOD AND APPARATUS

James J. Todack, 14407 Sycamore Lake Rd., Houston, Tex. 77062

Continuation-in-part of Ser. No. 906,773, Jun. 30, 1992, abandoned. This application Oct. 13, 1992, Ser. No. 959,589
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—85 **26 Claims**



19. A method for recovering liquid and vapor refrigerant from a refrigeration system and storing recovered refrigerant in a refrigerant storage system in a closed system preventing release of the refrigerant to the environment, said method comprising the steps of:

withdrawing the refrigerant liquid from the refrigeration system and into the refrigerant storage system by increasing the pressure within the refrigeration system to a pressure greater than the pressure within the refrigerant storage system;

filtering the refrigerant liquid;

withdrawing the refrigerant vapor from the refrigeration system by decreasing the pressure therein after withdrawing substantially all of the refrigerant liquid;

condensing the refrigerant vapor to a liquid; and

storing the condensed refrigerant in the refrigerant storage system until reaching a desired pressure value representative of substantially all of the refrigerant being withdrawn from the refrigeration system.

5,363,663

CHEMICAL WARFARE METHOD WITH INTERMITTENTLY COOLED PROTECTIVE GARMENT

Yasu T. Chen, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 2, 1990, Ser. No. 548,454
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—99 **17 Claims**

1. The method for performing hazardous environment extreme temperature physical work activity comprising the steps of:

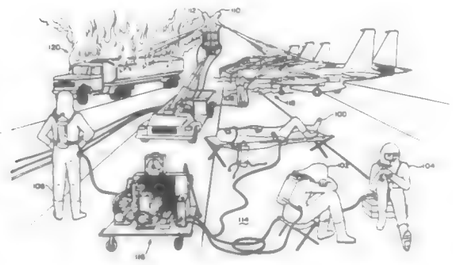
surrounding the worker performing said work activity with an enclosing array of hazardous environment isolating protective clothing garments:

engaging said clothing isolated worker in said work activity with a repeating cycle of work performance for a first predetermined time interval and quiescent rest for a second physical and temperature recovery predetermined time interval;

communicating thermal equilibrium restoring heat energy

with the torso of said worker during said quiescent rest predetermined time intervals;

said communicating step including establishing a tether conveyed temporary flow of temperature regulated liquid between a source thereof and a torso adjacent closed circuit path disposed within the torso adjacent interior



enclosure of said protective clothing garments during said quiescent rest second temperature recovery predetermined time intervals: and

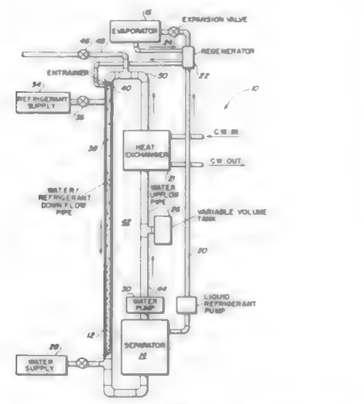
severing said tether conveyance at the end of said physical and temperature recovery second predetermined time intervals thereby enabling reengagement of said worker with a new cycle of said work activity.

5,363,664

SINGLE AND MULTISTAGE REFRIGERATION SYSTEM AND METHOD USING HYDROCARBONS

George Beakley, Tempe, Ariz.; Craig Hosterman, Corvallis, Oreg., and Warren Rice, Tempe, Ariz., assignors to HRB, L.L.C., Tempe, Ariz.

Continuation-in-part of Ser. No. 543,976, Jun. 26, 1990, Pat. No. 5,056,323. This application Dec. 22, 1992, Ser. No. 994,885
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclosed.
Int. Cl.[5] F04B *23/04;* **F25B** *41/00*
U.S. Cl. 62—113 **31 Claims**



8. A method for converting a gaseous refrigerant fluid expelled from an evaporator in a refrigeration system into a liquid refrigerant fluid introduced to an expansion valve of the refrigeration system by entraining the refrigerant fluid with a carrier fluid non-miscible with the refrigerant fluid, said method comprising the steps of:

a) entraining the gaseous refrigerant fluid with the carrier fluid;

b) conveying the carrier fluid and the entrained refrigerant fluid downwardly through a down pipe to increase the pressure thereof in proportion to the depth of the down pipe until the entrained gaseous refrigerant fluid is converted into entrained mostly liquid refrigerant fluid;

c) segregating the carrier fluid from the liquid refrigerant fluid;

d) withdrawing the segregated carrier fluid and returning the carrier fluid to the down pipe;

e) accommodating for differences in load placed upon the refrigeration system by varying the volume of the segregated carrier fluid; and

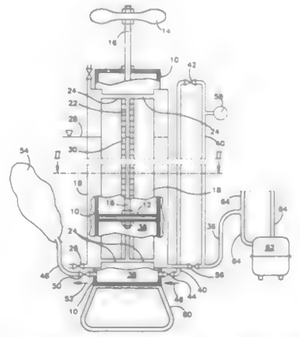
f) conveying the segregated liquid refrigerant fluid to the expansion valve.

5,363,665

HAND PUMP FOR EVACUATING AND CHARGING A REFRIGERATING SYSTEM

Kurt Sundman, Spånga, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Sep. 8, 1993, Ser. No. 118,416
Claims priority, application Sweden, Sep. 10, 1992, 9202606
Int. Cl.[5] F25B *49/00*
U.S. Cl. 62—125 **5 Claims**



1. Device for evacuating and charging refrigerant in a refrigerant circuit (**64**) comprising a pump to evacuate the circuit and a container (**18**) with refrigerant which is conducted into the circuit by self pressure, wherein the pump is constituted by a hand pump having a pump cylinder (**10**) in which a pump piston (**12**) is arranged to be moved to and fro by a piston rod (**16**) by means of a handle (**14**) for manual pumping, said container (**18**) extending in a longitudinal direction of the pump cylinder (**10**) and is fastened to the cylinder, a gauge (**22**) being arranged in parallel with the container (**18**) and communicating with said container, said gauge (**22**) including scale means (**30**) to allow refrigerant level within said container (**18**) to be determined.

5,363,666

MANUALLY OPERATED REFRIGERANT RECOVERY DEVICE

James B. Tieken, 2018 Woodlawn Ave., Indianapolis, Ind. 46203

Continuation of Ser. No. 950,463, Sep. 24, 1992, Pat. No. 5,297,399. This application Mar. 9, 1994, Ser. No. 209,208
Int. Cl.[5] G01K *13/00*
U.S. Cl. 62—129 **2 Claims**

1. A device for manually transferring fluid in a pressurized fluid system, said pressurized fluid system including a fluid supply location to be emptied and a receiving fluid reservoir, said device comprising:

a cylinder including an inlet and an outlet;

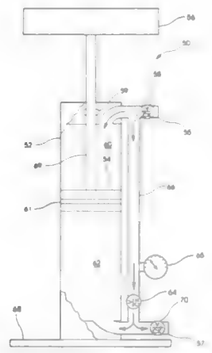
a piston movably disposed in said cylinder, said piston defining a first and a second fluid chamber in said cylinder, said first fluid chamber being in fluid communication with said

outlet and said second fluid chamber being in fluid communication with said inlet;

a rod attached to said piston and extending axially outward from within said cylinder;

first one-way valve means in fluid communication with said outlet, said first one-way valve means enabling fluid flow out of said first fluid chamber;

second one-way valve means in fluid communication with said inlet, said second one-way valve means enabling fluid flow into said second fluid chamber;



means for fluidly coupling said first fluid chamber to said second fluid chamber, said means for fluidly coupling including third one-way valve means enabling fluid flow out from said second fluid chamber into said first fluid chamber; and

a pressure/vacuum gauge arranged in fluid communication with said second fluid chamber to provide a visual indication of the fluid pressure/vacuum within said second fluid chamber.

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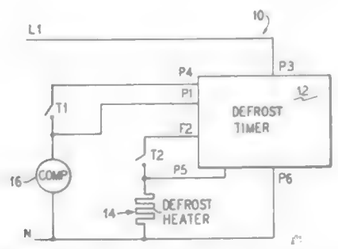
REFRIGERATOR CONTROL CIRCUIT WITH RELAY OPERATION CHECKING

Donald E. Janke, Benton Township, Berrien County, Mich.; Joseph M. Szynal, Laporte, Ind.; Ronald W. Guess, Scott Township, Vanderburgh County, Ind., and Greg A. Bradley, Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 978,275, Nov. 18, 1992. This application Dec. 27, 1993, Ser. No. 172,935

Int. Cl.[5] F25B *49/02*

U.S. Cl. 62—131 **3 Claims**



1. A defrost cycle controller for a refrigerator or freezer having a compressor and a defrost heater, comprising:

a relay operatively connected to the compressor and the defrost heater via contacts to couple one or the other to a power supply, the relay having a normally closed contact to which said compressor is connected and a normally open contact to which said defrost heater is connected; and

a control circuit operatively connected to the compressor, defrost heater and relay and configured to implement the following algorithm:

(a) first, energize the relay;

(b) second, monitor the relay contacts;

(c) third, if the contacts do not change states, de-energize the relay; and

(d) fourth, rest for a predetermined period, and then commence the algorithm.

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ABSORPTION AIR CONDITIONING SYSTEM AND COOLING/HEATING CHANGING-OVER METHOD

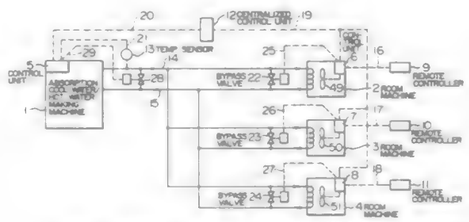
Takashi Nakao, Ibaraki, and Hiroaki Yoda, Tsuchiura, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,375

Claims priority, application Japan, Mar. 18, 1992, 4-061856

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—141 **5 Claims**



1. A cooling/heating change-over method of an absorption air conditioning system which includes an absorption cool water/hot water making machine for producing cool water in a cooling mode of operation and for producing hot water in a heating mode of operation for air conditioning, a room machine for carrying out the air conditioning of a room by circulation therethrough of the cool water/hot water from the absorption cool water/hot water making machine and by flowing of air through the room machine, a water circulation piping for allowing the cool water/hot water to circulate from the absorption cool water/hot water making machine through the room machine and back to the making machine, and changeover control means for changing the mode of operation of the system between the cooling mode and the heating mode, the method comprising:

upon changing the system from the cooling mode of operation to the heating mode of operation, constantly detecting a temperature of the water at an outlet of the absorption cool water/hot water making machine after the making machine has been changed to the heating mode of operation,

(a) when the detected temperature of the water is lower than a predetermined temperature,

i) opening a bypass valve disposed in a bypass pipe connecting between a supply part, of the water circulation piping, for supplying the water from the making machine to the room machine, and a return part of the water circulation piping, for returning the water from the room machine to the making machine so as to bypass the room machine, thereby stopping supply of the water to the room machine, and

ii) stopping flow of air through the room machine; and

(b) when the detected temperature, at the outlet of the making machine, of the water having been heated by the making machine in the heating mode of operation is raised to a level not lower than the predetermined temperature,

i) closing the bypass valve to prevent the bypassing of the water through the bypass pipe, thereby starting to supply the water to the room machine; and

ii) starting to flow the air through the room machine.

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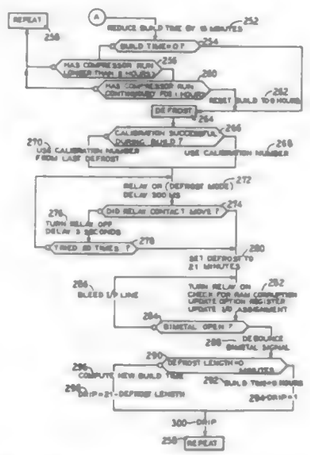
DEFROST CYCLE CONTROLLER

Donald E. Janke, Benton Township, Berrien County, Mich.; Joseph M. Szynal, LaPorte, and Ronald W. Guess, Scott Township, Vanderburgh County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 18, 1992, Ser. No. 978,275

Int. Cl.[5] F25D *21/00*

U.S. Cl. 62—155 **7 Claims**



1. A defrost cycle controller for a freezer system including a compressor whose operation is actuated by a thermostatic switch and a defrost heater whose operation is actuated by a bimetal switch, comprising:

a relay operatively connected to mutually exclusively couple the compressor and the defrost heater to a power supply;

a first signal line providing a first signal indicative of the operating status of the compressor;

a second signal line providing a second signal indicative of the operating status of the defrost heater;

a microprocessor operatively coupled to the first and second signal lines and to the relay to control energization of the relay and to select coupling of the compressor and the defrost heater to the power supply, the microprocessor being programmed to sense the first and second signals and vary the length of intervals during which the compressor and defrost heater are coupled to the power supply, the microprocessor being programmed to couple the defrost heater to the power supply after times determined by preselected continuous compressor run periods and preselected cumulative compressor run periods.

5,363,670

SELF-CONTAINED COOLER/FREEZER APPARATUS

Anthony Bartilucci, 3434 S. Hawthorne Dr., Wantagh, N.Y. 11793

Filed Apr. 19, 1993, Ser. No. 47,957

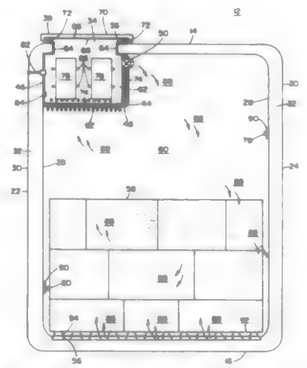
Int. Cl.[5] F25D *3/12*

U.S. Cl. 62—166 **27 Claims**

1. A self-contained cooler/freezer apparatus for holding and preserving items which need to be stored at refrigerated or frozen temperatures, said apparatus comprising:

(a) a container having an insulated shell and an access door-way and door, a first portion of said container being adapted to hold said items;

(b) a pressurized coolant compartment constructed within a second portion of said container for holding solid carbon dioxide, said pressurized coolant compartment comprising a plurality of removable insulation panels for controlling heat energy transfer from said first portion to said solid carbon dioxide contained in said pressurized coolant compartment; and



(c) temperature control means for maintaining the temperature within the first portion of said container at a predetermined value, said temperature control means comprising means for setting the temperature at said predetermined value, at least one temperature sensing device mounted within said first portion of said container, means for controlling the temperature at which said solid carbon dioxide sublimates, and means for circulating gaseous carbon dioxide formed by the sublimation of said solid carbon dioxide throughout said container.

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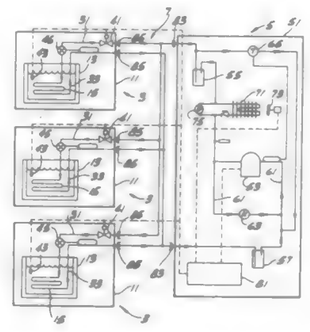
MODULAR BEVERAGE COOLING AND DISPENSING SYSTEM

David P. Forsythe, Fenton, and Dean A. Martin, Maryland Heights, both of Mo., assignors to Multiplex Company, Inc., St. Louis, Mo.

Filed Jul. 12, 1993, Ser. No. 90,806

Int. Cl.[5] F25B *41/00*; **B67D** *5/62*

U.S. Cl. 62—197 **11 Claims**



1. A modular beverage cooling and dispensing system, comprising

a plurality of beverage cooling and dispensing modules, each beverage cooling and dispensing module comprising a housing, a tank within the housing for holding a liquid, an

evaporator in the tank for chilling said liquid, at least one beverage conduit positioned in the tank for exposure to said chilled liquid to cool beverage flowing through the conduit, and at least one dispensing head connected to said at least one beverage conduit for dispensing beverage supplied via said beverage conduit to said dispensing head,

a power module comprising a housing, and a single compressor in said housing,

refrigerant conduit means connecting the compressor of the power module and the evaporators of said beverage cooling and dispensing modules for flow of refrigerant from the compressor through said evaporators and then back to said compressor to effect a refrigeration cycle,

said power module being physically separate from said beverage cooling and dispensing modules whereby the power module may be placed at a convenient location remote from said beverage cooling and dispensing modules.

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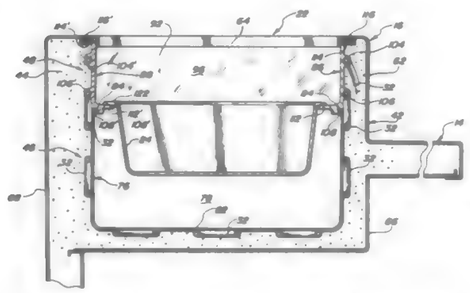
REFRIGERATION COMPARTMENT FOR USE WITH PREPARATION TABLE

Earl Moore, Blanchard; Thomas Frick, Rosebush; Wayne Smith, Mt. Pleasant, and James Lyon, Alma, all of Mich., assignors to The Delfield Company, Mt. Pleasant, Mich.

Continuation of Ser. No. 869,617, Apr. 16, 1992, abandoned. This application Aug. 31, 1993, Ser. No. 114,972

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—258 **8 Claims**



1. Food storage and preparation equipment comprising:

a table having a work surface at the front and an open-top refrigerated rail at the rear,

said refrigerated rail having a housing containing a refrigerated food compartment,

said compartment being generally rectangular and extending laterally across the table and having an access opening at the top which allows exposure of the compartment to ambient room air,

said compartment having a lower section comprising a cold wall pan defining a lower cooling zone, said cold wall pan including a pan member having oppositely disposed front and rear walls and oppositely disposed end walls and including a refrigerant tube mounted on the exterior of the pan member in heat exchange relation therewith,

said compartment having an upper section comprising a pair of oppositely disposed front and rear heat sink walls defining an upper cooling zone, each said heat sink wall being constructed of extruded metal and having a wall thickness and thermal inertia greater than said pan member and having a refrigerant tube mounted on the exterior thereof in heat exchange relation therewith, said upper section further comprising oppositely disposed end walls of insulating material,

and a plurality of open-top food pans removably supported side-by-side in said compartment, said pans having front, rear and lateral sides, with said sides of said pans being disposed in said lower cooling zone and the top of said pans being disposed at the bottom of said upper cooling zone and with said front and rear sides of said pans being separated by unobstructed air space, respectively, from said front rear walls of said cold wall pan.

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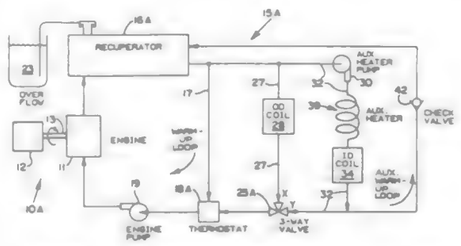
SIMPLIFIED ENGINE COOLANT SYSTEM FOR GAS ENGINE HEAT PUMP

William G. Atterbury, Worthington, and Douglas E. Boyd, Dublin, both of Ohio, assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 919,037, Jul. 24, 1992, Pat. No. 5,249,742. This application Jul. 12, 1993, Ser. No. 90,512

Int. Cl.[5] F25B *27/00*

U.S. Cl. 62—323.1 **19 Claims**



1. A heat engine driven heat pump system comprising:

a) a refrigeration cycle heat pump compressor driven by a heat engine means;

b) a coolant fluid circulation subsystem including a recouperator means in fluid connection with the heat engine to receive a coolant fluid flowed from the engine, and wherein said recouperator means further includes a volume comprising a coolant fluid reservoir for supply of coolant fluid to said subsystem;

c) a thermostatic coolant fluid control means in fluid connection with the recouperator means to receive through a first inlet and control the coolant fluid flow in response to the temperature of the coolant fluid;

d) a first pump means in fluid connection with the thermostatic fluid control means to convey coolant fluid to the engine and complete a first loop circuit, operable by the control of the thermostatic means to warm or cool the engine more rapidly when the subsystem operation will benefit therefrom;

e) a switching valve means in fluid connection with a second inlet of the thermostatic control means to supply coolant fluid to the engine means as required to warm or cool the engine means by modulation of coolant fluid flow through the thermostatic control means, and, further, to receive coolant fluid flow, in fluid connection with

A) a first conduit means, including a first heat exchanger in heat exchange relation to an ambient heat source or sink, conveying coolant flow from the recouperator to the switching valve, or with

B) a second conduit means, including a second heat exchanger in heat exchange relation to a heating or cooling load, said second conduit means receiving and conveying coolant fluid flow from the recouperator to the switching valve,

to selectively switch the coolant fluid flow to receive such flow through the first heat exchanger in the cooling mode of operation or through the second heat exchanger in the heating mode of operation;

f) a second pump means and an auxiliary heating means in the second conduit between the recouperator and the switching valve means to flow auxiliary heated coolant fluid to the second heat exchanger in the heating mode of operation; and

g) a third conduit means connecting the second conduit means at a position downstream of the second pump means, auxiliary heating means, and second heat exchanger, directly to the recouperator through a check valve means, to return coolant fluid from the second heat exchanger during the heating mode of operation by selective operation of the second pump means and the auxiliary heating means.

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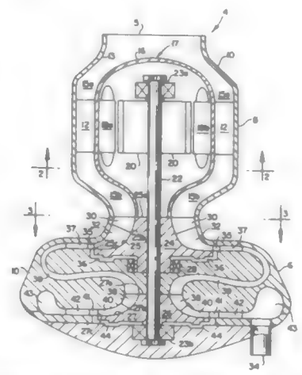
ZERO SUPERHEAT REFRIGERATION COMPRESSION SYSTEM

James W. Powell, deceased, late of Guilford, Conn. by Barbara G. Powell, Executrix , assignor to Ecoair Corp., New Haven, Conn.

Filed May 4, 1993, Ser. No. 58,392

Int. Cl.[5] F25B *31/00, 1/00, 43/00;* **F04B** *17/00*

U.S. Cl. 62—505 **29 Claims**



1. A method of operating a refrigeration system, comprising the steps of:

(a) providing a refrigeration system comprising a condensor for cooling and liquefying refrigerant, an evaporator and a valve connected between the condensor and the evaporator for controlling the refrigerant flow from the condensor to the evaporator so as to maintain the operation of the evaporator at a normal zero superheat level;

(b) providing a centrifugal compressor, said compressor comprising a gas tight casing having an inlet portion and a compression portion, said inlet portion having an inlet opening gaseously coupled to said evaporator so as to receive a gaseous refrigerant, said inlet and compression portions each having a plurality of gas passages therethrough, said gas passages in said inlet portion being substantially parallel to the axis of said casing, said compression portion having an outlet opening that is located at the end of said casing which is opposite the end of said casing having said inlet opening, an electric motor assembly positioned within said inlet portion of said casing, a shaft disposed within and coaxial with the axis of said casing, said shaft being rotatably engaged with said motor assembly, at least one (1) centrifugal compression stage gaseously coupled to said inlet portion and to said outlet opening, said compression stage being drivingly engaged with said shaft and intermediate said inlet portion and said outlet opening;

(c) axially flowing the refrigerant gas into said inlet portion and around said motor assembly substantially parallel to the axis of said casing;

(d) convectively transferring the heat dissipated by said motor assembly to the gaseous refrigerant flowing in said inlet portion so as to cool the motor assembly, evaporate any liquid in the gaseous refrigerant thereby permitting the evaporator to operate at a zero superheat level, and prevent gaseous refrigerant containing liquid from entering said compression stage;

(e) suctionally inducing the gaseous refrigerant from said inlet portion into said centrifugal compressor stage;

(f) centrifugally compressing the gaseous refrigerant within said compression stage; and

(g) exducing the compressed gaseous refrigerant from said compression stage into said outlet passage.

5,363,675

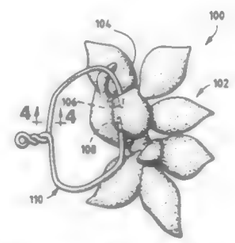
FACE DECORATION AND METHOD OF USING THE SAME

Mary J. Carter, 287 Surrey Dr., Bonita, Calif. 91902

Filed Jul. 14, 1993, Ser. No. 91,778

Int. Cl.[5] A44C *7/00*

U.S. Cl. 63—14.1 **7 Claims**



1. A method of using a face decoration worn on a face portion adjacent to an ear of a user, including an ornamental main body having an inner surface; attachment means secured to said inner surface for supporting said main body on the face portion; wherein said attachment means engages a base portion of the ear substantially along the entire length of a groove formed by the intersection of the ear and the head to secure said attachment means on the ear of the user; said attachment means includes a flexible pliable and non-resilient wire member having a pair of distal ends connected to said inner surface to form a closed loop configuration having an associated circumference of a sufficient size to fit over and to receive various sizes and shapes of ears; said wire member having an intermediate twistable portion to adjust the size of said circumference to a smaller size circumference by enabling the user to twist manually said twistable portion so that said wire member securely and releasably attaches said main body to the face of the user in a comfortable manner, wherein said smaller size circumference is substantially equal to the circumference of the base portion of the ear of the user to engage said groove for securing said main body in place on the face of the user; wherein said wire member includes an inner wire and a plastic coating surrounding said inner wire; and wherein said plastic coating is colored to enhance the aesthetic appearance of the face decoration in conjunction with an ear of a user, comprising:

positioning the ornamental main body in front of and adjacent to the ear;

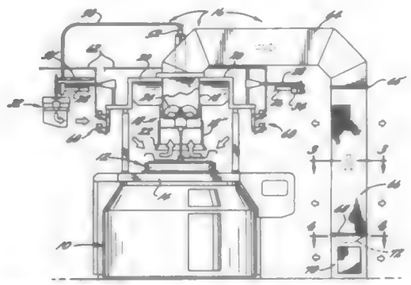
slipping said wire member over the ear;

manually grasping said wire member behind the ear at the twistable portion;

manually twisting the twistable portion of said wire member about itself, wherein the size of said circumference is reduced; and

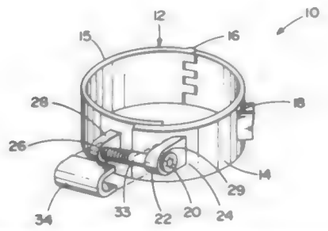
continuing to twist the twistable portion until the size of said circumference is substantially equal to the circumference of the base of the ear of the user, wherein said main body is secured releasably in place on the face of the user.

5,363,676
DUST SUCKING AND DISCHARGING DEVICE FOR FIBER WASTES ON KNITTING MACHINE
Koji Tsuchiya, Hyogo, Japan, assignor to Precision Fukuhara Works, Ltd., Hyogo, Japan
Filed Mar. 2, 1993, Ser. No. 24,508
Claims priority, application Japan, Apr. 2, 1992, 4-110744
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] D04B *35/32*
U.S. Cl. 66—168 20 Claims



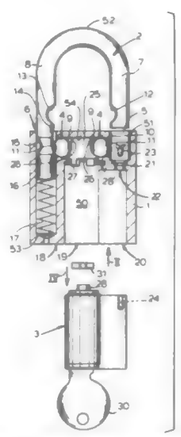
1. Apparatus for collecting and removing fiber waste generated during operation of a circular knitting machine having a knitting unit, comprising:
generally vertically extending first duct means located above and in general axial alignment with said knitting unit, said first duct means having a lower end adjacent said knitting section and an upper end distal from said knitting section;
fan means for generating fiber waste entraining air streams that pass into said first duct through said lower end thereof, then upwardly through said duct, and then from said first duct means;
second duct means for receiving said fiber waste entraining air streams passing from said first duct means and for conducting said air streams laterally outwardly from said knitting machine;
third duct means for receiving said fiber waste entraining air streams passing from said second duct means, and for downwardly conducting said air streams and therein entrained fiber waste; said third duct means being constructed along at least part of its length of material having a multiplicity of openings therein permitting passage of air laterally from said duct means while restricting lateral passage of entrained fiber waste from said duct means.

5,363,677
GEAR POST STEERING COLUMN SHACKLE
Choice L. Cox, 3915 River Park Dr., Louisville, Ky. 40211
Continuation-in-part of Ser. No. 803,468, Dec. 4, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 54,909
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—18 7 Claims



1. A rotatable steering column shackle protection device for removably mounting around a steering column housing below an ignition switch comprising:
a collar shackle defining a first generally semicircular solid band and a second generally semicircular solid band hingeably connected together circumscribing and totally enclosing a portion of said steering column housing;
at least one of said bands having at least one opening therein for cooperating with a gear shift lever and for limiting rotational and axial movement of said collar on said steering column housing;
means for holding, adjustably tightening, and locking said bands together comprising a bracket having an opening therein extending from said first band, a flange having an opening therein extending from said second band, and a longitudinal member rotatably connected to said bracket threadably engageable with said opening of said flange, and the distal end of said first band overlapping the distal end of said second band upon tightening said means for holding, adjustably tightening and locking said bands together;
a lock latch assembly comprising a lock removably mounted and enclosed within said bracket in cooperation with said longitudinal member extending therefrom being secured to said bracket for adjusting the tightness of said first band with said second band around said steering column housing and locking said first band and said second band together; and
a protective cover for protecting said means for holding, adjustably tightening and locking said bands together.

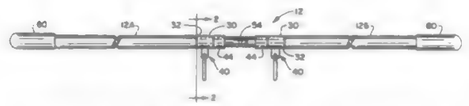
5,363,678
PADLOCK WITH BALL-LOCKED SHACKLE
Gerhard Meckbach, Hagen, Germany, assignor to Abus August Bremicker Sohne KG, Volmarstein, Germany
Filed Apr. 9, 1993, Ser. No. 46,008
Int. Cl.[5] E05B *67/24*
U.S. Cl. 70—38 A 6 Claims



1. A padlock having a key-rotated cylinder with an end face juxtaposed with an end face of a pin rotatable in a padlock body to release a pair of balls held by said pin in notches in shanks of a shackle and wherein said end faces having entraining formations enabling rotation of said cylinder to rotate said pin, the improvement wherein:
each of said end faces has, as said formations, a pair of entrainer posts disposed diametrically opposite one another and offset from a center of a respective end face and reaching toward the other end face, said posts of one of said end faces being angularly offset from the posts of the other end face to define an angular play between them, and

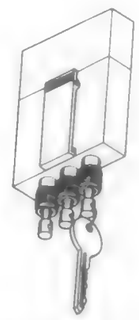
a bridge provided as a z-shaped member between the posts and disposed on the end face of said cylinder for taking up said play.

5,363,679
STEERING WHEEL LOCKING APPARATUS
Romeo Prasad, 10 Warren La., Windsor, Conn. 06095
Filed Dec. 18, 1992, Ser. No. 993,294
Int. Cl.[5] B60R *25/02*
U.S. Cl. 70—209 10 Claims



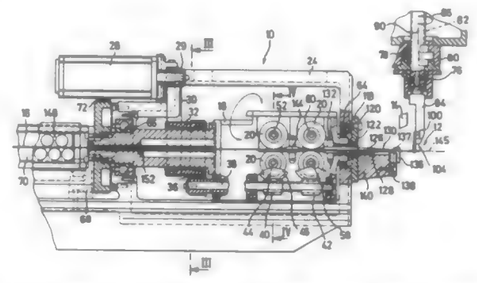
1. Apparatus for obstructing rotational movement of an associated steering wheel of an associated automobile, the associated steering wheel having a central hub and an outer circular rim and a plurality of spokes having respective first axial extremities connected to the central hub and respective second axial extremities which are connected to the outer circular rim, wherein the apparatus comprises:
a bar having a length that is greater than the diameter of the associated steering wheel with which said apparatus cooperates, said bar having first and second axial portions:
first and second engaging means for securely engaging only two spokes of the associated steering wheel intermediate the hub and the rim; and
first and second securing means for respectively securing said first and second engaging means respectively to said first and second axial portions of said bar.

5,363,680
STRUCTURE FOR KEY CHAIN
Yeou-Jyh Wu, No. 156-6, Sec. 3, Chung-kang Rd., Taichung, Taiwan, Prov. of China
Filed Jul. 22, 1993, Ser. No. 95,836
Int. Cl.[5] A47G *29/10*
U.S. Cl. 70—456 R 1 Claim



1. An improved structure for a key chain, comprising:
a) a fixed seat having a movable cover and a chamber, and externally having a clasp, and defining a plurality of threaded holes;
b) a main body having a threaded top portion to be screwed into one of the threaded holes of the fixed seat, and defining a chamber therein;
c) a disk spring located in the chamber and having a plurality of conical spring arms defining an opening;
d) a top ring having a circular hollow body configured to movably receive a portion of the main body and a bottom portion having a conical body located so as to contact the spring arms; and
e) a key fastener having a ball at an upper end, the ball having a cross-sectional dimension greater than that of the opening defined by the spring arms whereby, said disk spring is inserted within said chamber of said main body, and said ball of said key fastener is held by the spring arms of said disk spring to hold said key fastener without risk of falling off and when said key fastener is to be removed said top ring is moved relative to said main body to cause said conical body on said top ring to prop open said spring arms of said disk spring so that said key fastener is thus removed.

5,363,681
APPARATUS FOR SHAPING WIRE
Norbert Speck, Reutlingen-Altenburg; Theodor Tröster, Reutlingen-Rommelsbach, and Dietmar Sautter, Reutlingen-Betzingen, all of Germany, assignors to Wafios Machinenfabrik GmbH & Co., Reutlingen, Germany
Filed May 27, 1993, Ser. No. 68,014
Claims priority, application Germany, Sep. 2, 1992, 4229294
Int. Cl.[5] B21F *35/00*
U.S. Cl. 72—129 4 Claims



1. An apparatus for shaping wire, in particular a spiral spring winding and bending machine, comprising a wire guide, a wire intake device having clamping parts arranged at the intake opening of said wire guide and non-rotatably clamping the wire, a shaft rotatably mounted at the outlet end of the wire guide and having its longitudinal axis of rotation situated close to the straight path of the wire outside the wire guide, a tool holder mounted to be rotationally fixed at the free end of the shaft and carrying at least one tool for winding and/or bending the wire supplied thereto, the forward feed of the wire to the shaft by the wire intake device and the movements of rotation and displacement of the shaft for moving the tool into the path of the wire and relatively to the wire being program controlled, whereby at least the clamping parts of the wire intake device which clamp the wire which has been taken in can together be rotated selectively in either direction of rotation about the axis of the wire guide in an intermittent manner related to the progress of the shaping operation, and in that the common movements of rotation of the said clamping parts about the axis can be program controlled and further, wherein the wire intake device has at least one pair of cooperating rollers provided with at least one driving shaft mounted on a housing which is rotatable about the axis of the wire guide and on which a main shaft which is parallel to the axis is rotatably mounted and acts on the roller-driving shaft by way of a gear wheel transmission, and wherein the gear wheel transmission comprises a worm gear whose main shaft is a worm shaft which is situated outside the axis of the wire guide and which is adapted to be driven by an annular gear by way of a toothed belt transmission, which annular gear is arranged coaxially with the wire guide axis.

5,363,682

FOUR-ROLLER TYPE SIZING MILL APPARATUS FOR PRODUCING ROUND STEEL RODS

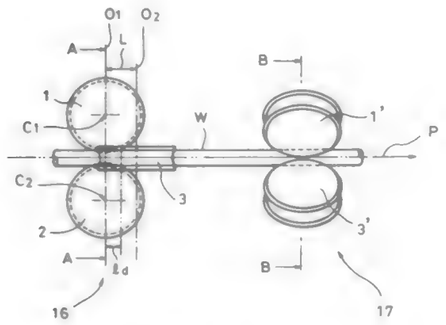
Ryo Takeda; Eisuke Yamanaka; Hidenori Kondo; Kiyoji Ino; Hiroshi Hagihara, all of Okayama; Takaya Suzuki, Hokkaido; Sadao Yoshizawa, Hokkaido, and Atsumu Nakamura, Hokkaido, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo and Kotobuki Sangyo Co., Ltd., Hokkaido, both of Japan

Filed Nov. 30, 1992, Ser. No. 982,982

Claims priority, application Japan, Nov. 29, 1991, 3-316778; Aug. 19, 1992, 4-220065

Int. Cl.[5] B21B *13/12, 35/04*

U.S. Cl. 72—224 **2 Claims**



1. A four-roller type sizing mill apparatus for forming round steel rods, comprising two four-roller stands each having two pair of facing rollers, one pair of facing rollers is arranged in a rolling direction perpendicular to the rolling direction of the other pair of facing rollers, the two four-roller stands being arranged in line, with the rolling direction of one of the two four-roller stands being shifted by 45° from the rolling direction of the other four-roller stand, wherein the two pair of facing rollers of a first four-roller stand of the two four-roller stands are positioned closer to a rolling material inlet and are separated from each other by a distance which is greater than zero and not greater than five times a projected contact length of one of the pair of facing rollers positioned closer to the rolling material inlet, the distance being measured between a first standard straight line which passes through centers of one of the pair of facing rollers and lies on a plane parallel to side surfaces of the same pair of facing rollers and a second standard straight line obtained by projecting axes of the other pair of facing rollers onto the above-mentioned plane, wherein, in the first four-roller stand, the pair of facing rollers closer to the rolling material inlet are connected to roller driving means for transmitting to the same pair of facing rollers a torque large enough for the pair of facing rollers to roll a rolling material, and the other pair of facing rollers are not connected to roller driving means, and wherein, in the second four-roller stand, one of the two pair of facing rollers is connected to roller driving means for transmitting to the same pair of facing rollers a torque large enough for the pair of facing rollers to roll a rolling material, and the other pair of facing rollers are not connected to roller driving means, the pair of facing rollers in both the first and second four-roller stands which are not connected to roller driving means are provided with pre-rotating means for rotating the same pair of facing rollers by a torque smaller than the torque of the pair of facing rollers driven by the roller driving means but at substantially the same speed as the speed of the pair of facing rollers driven by the roller driving means at least when a front end portion of a rolling material is bitten by the pair of facing rollers which are not connected to roller driving means.

5,363,683

FORMING MACHINE

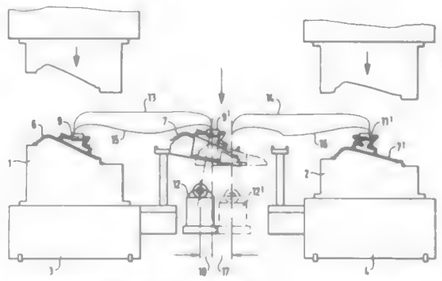
Karl Thudium, Wäschenbeuren, and Walter Rieger, Göppingen, both of Germany, assignors to L. Schuler GmbH, Germany

Filed Nov. 5, 1993, Ser. No. 147,536

Claims priority, application Germany, Nov. 5, 1992, 4237312

Int. Cl.[5] B21D *43/05*

U.S. Cl. 72—405 **1 Claim**



1. A forming machine comprising;

at least two forming stations, the forming stations driven by a press drive and each forming station having means for shaping sheet metal parts;

a transfer device with holding devices movable by the press drive for gripping and transporting the sheet metal parts through the forming machine along a transfer direction between the forming stations;

at least one intermediate depositing device movably mounted along the transfer direction on horizontally extending rails between the two forming stations, the intermediate depositing device having at least one template for supporting the sheet metal parts;

an adjusting device coupled to the intermediate depositing device which adjusts the template on the intermediate depositing device in height, oblique position and horizontal orientation with respect to the sheet metal part to be deposited and gripped by the holding devices;

wherein the transfer movement of the holding devices is less than half the distance between two successive forming stations such that a partial path between the forming stations is not bridged by the transfer device, and the adjusting device has a range of action such that the intermediate depositing device is moved on the rails over the partial path to transfer the sheet metal parts between the holding devices within the partial path.

5,363,684

DEVICE FOR TRANSFERRING SHEET METAL PARTS IN A PRESS INSTALLATION

Karl Thudium, Wäschenbeuren; Andreas Dangelmayr, Ottenbach, and Walter Rieger, Göppingen, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Nov. 5, 1993, Ser. No. 147,537

Claims priority, application Germany, Nov. 5, 1992, 4237316

Int. Cl.[5] B21D *43/05*

U.S. Cl. 72—405 **4 Claims**

1. A device for the transfer of sheet metal parts in a press installation comprising:

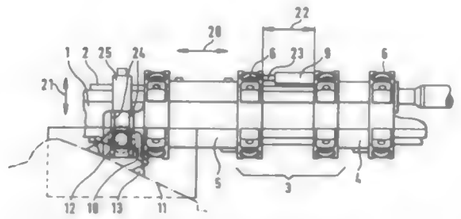
liftable and lowerable rails;

running carriages horizontally movably mounted on the rails and liftable and lowerable with the rails, the running carriages having first and second carriage parts that are movably connected to one another and are both directly mounted on the rails;

drives coupled to the first carriage parts of the running carriages that move both of the first and second carriage parts of the running carriages together horizontally on the rails to move the sheet metal parts;

traverses serving as holding devices which hold and move the sheet metal parts and are fastened to the second carriage parts of the running carriages at a fastening point that is adjustable at least in a direction of the travelling movement of the running carriage; and

an adjusting device coupled between the first and second carriage parts for adjusting the fastening point by moving



the second carriage parts relative to the first carriage parts during the movement of the sheet metal parts, by an additional amount separate from the movement of both of the first and second carriage parts provided by said drives to thereby move the traverses and the sheet metal parts by said additional amount.

5,363,685

TRANSFER DEVICE IN A PRESS

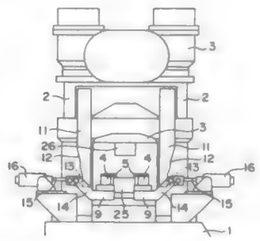
Rudolf Lüthi, Niederwangen; Roland Krebs, Fraubrunnen, and Theo Egolf, Boesingen, all of Switzerland, assignors to Styner & Bienz AG, Niederwangen, Switzerland

Continuation of Ser. No. 804,363, Dec. 10, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 112,301

Claims priority, application Switzerland, Dec. 11, 1990, 03 917/90-9

Int. Cl.[5] B21J *13/10*

U.S. Cl. 72—405 **9 Claims**



1. In a press having a transfer device for the stepwise transport of a workpiece through processing stations of a tool of the press, the press having a slide supporting at least part of the tool and columns for supporting and guiding the slide, the improvement wherein the transfer device comprises:

a plurality of transport bars having first and second ends disposed laterally with respect to said tool for transporting said workpiece, said transport bars being displacable longitudinally and transversely only in cyclic relation to the reciprocating movement of the press;

grippers disposed on said transport bars for gripping said workpiece;

guide means for guiding said transport bars longitudinally and transversely, said first and second ends of said transport bars being directly and rigidly connected to said guide means, and

first and second driving means for driving said transport bars longitudinally and transversely, respectively thereby advancing the workpiece, said first driving means connected to and acting upon said first end of said transport bars only;

wherein said first driving means includes leaf springs to commonly drive said transport bars longitudinally.

5,363,686

PROGRESSIVE FORMER

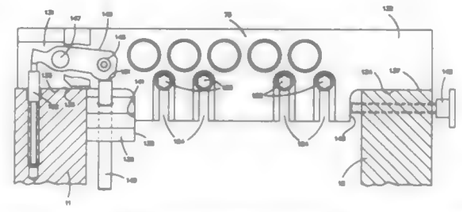
William H. Hite; Dennis H. Roush, and Stephen G. Corthell, all of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Division of Ser. No. 872,054, Apr. 22, 1992, Pat. No. 5,263,356, which is a division of Ser. No. 692,352, Apr. 26, 1991, Pat. No. 5,138,866, which is a continuation of Ser. No. 459,463, Jan. 2, 1990, abandoned, which is a division of Ser. No. 190,175, May 4, 1988, Pat. No. 4,910,993. This application Jun. 29, 1993, Ser. No. 84,368

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] B21J *13/04*

U.S. Cl. 72—455 **4 Claims**



1. A progressive forging machine having a number of work stations and comprising a bed frame, a slide reciprocable on said bed frame, and a die breast mounted on said bed frame, the slide and die breast having a lateral position with respect to said frame, said bed frame including two side frame portions and a spacer portion, said side frame portions being mounted on opposite sides of said spacer portion and cooperating therewith to laterally space said side frame portions and to provide said bed frame, the lateral position of said slide and die breast being determined solely by one of said side frame portions independent of tolerance variations in the spacing between the side frame portions and changes in the spacing of said side frame portions created by thermal expansion.

5,363,687

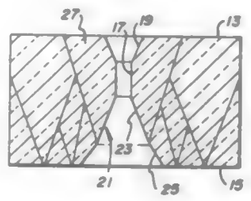
DIAMOND WIRE DIE

Thomas R. Anthony, Schenectady, N.Y., and Brad E. Williams, Worthington, Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Sep. 14, 1993, Ser. No. 121,014

Int. Cl.[5] B21D *3/02*

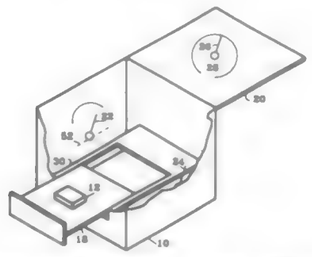
U.S. Cl. 72—467 **31 Claims**



1. A die for drawing wire of a predetermined diameter comprising a CVD diamond body having a first surface in a region of larger diamond grains and a second surface in a region of smaller diamond grains, an opening extending through said body and having a wire bearing portion of substantially circular cross-section determinative of the diameter of the wire positioned more closely adjacent to said first sur-

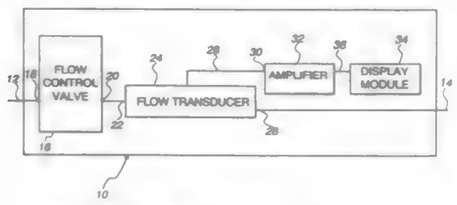
face in said region of larger grains than to said second surface in a region of smaller diamond grains.

5,363,688
METHOD OF CALIBRATING MOTION DETECTORS WITHIN A SCALED ENVIRONMENT
Brian E. Elwell, Brentwood, Calif., assignor to Novitas Incorporated, Calif.
Filed Aug. 12, 1993, Ser. No. 105,558
Int. Cl.[5] G01P *13/00*
U.S. Cl. 73—1 D **6 Claims**



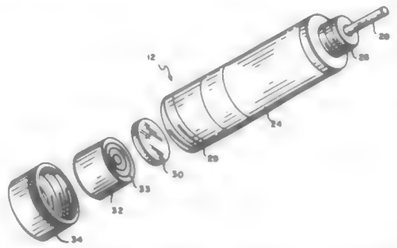
1. A method for testing motion sensors, comprising:
calibrating a master motion sensor in an operating environment to be monitored;
positioning the master motion sensor in a scaled environment simulating the operating environment;
operating motion simulators in the scaled environment to determine motion simulator testing operations which activate and which do not activate the master motion sensors;
replacing the master motion sensor with sensors to be tested; and
operating the motion simulators in accordance with the determined testing operations to test said sensors.

5,363,689
CALIBRATION DEVICE FOR LEAK DETECTING INSTRUMENTS
Jacques E. Hoffmann, and David J. Balke, both of Chicago, Ill., assignors to Intertech Development Company, Skokie, Ill.
Filed Sep. 11, 1992, Ser. No. 943,490
Int. Cl.[5] G01F *25/00*
U.S. Cl. 73—3 **17 Claims**



1. A leak detector calibration device for generating a leak standard, said leak detector calibration device comprising:
flow control valve means for controlling the flow rate of a gas;
said flow control valve means including means for adjusting the controlled flow rate of the gas;
flow transducer means for producing a signal indicating flow rate, said flow transducer means coupled to said flow control valve means to measure said controlled flow rate;
an amplifier means connected to said flow transducer means for amplifying the signal indicating flow rate;
display means for displaying the flow rate, said display means coupled to said amplifier means; and
housing means for housing said flow control valve means, said flow transducer means, said amplifier means, and said display means in a singled unified package.

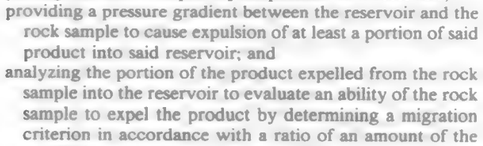
5,363,690
GAS DETECTION APPARATUS
Richard A. Evangelista, Downingtown; Stephen D. Summerfield, Philadelphia, and Leslie S. Cerovich, King of Prussia, all of Pa., assignors to Exidyne Instrumentation Technologies, Inc., Exton, Pa.
Filed Sep. 30, 1992, Ser. No. 953,892
Int. Cl.[5] G01N *27/00*
U.S. Cl. 73—31.05 **10 Claims**



1. A self-contained gas detection apparatus, comprising:
a housing defining an inner chamber between a first end and a second end, said second end having an access opening to said chamber;
an output port disposed at said first end;
a microprocessor control circuit mounted within said chamber and being operable for processing input signals associated with measured gas levels and generating output signals corresponding to same to said output port, said microprocessor control circuit including a first substantially planar conductive interfacing surface;
an interchangeable electrochemical sensor device removably disposed within said chamber via said access opening and being operable for sensing and measuring gas levels and generating said input signals to said microprocessor control circuit, said sensor device including a second substantially planar conductive interfacing surface; and
an elastomeric connector unit removably and sealingly disposed between said first and second conductive interfacing surfaces via said access opening, said elastomeric connector unit providing a conductive path between said microprocessor control circuit and said sensor device for said input signals and electromagnetic shielding therebetween.

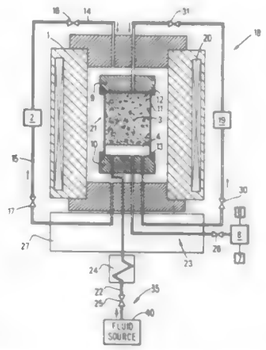
5,363,691
VIBRATILE SENSING INSTRUMENT
John G. Gallagher, Old Malton, England, assignor to Hydramotion Limited, Malton, United Kingdom
PCT No. PCT/GB91/01623, § 371 Date Apr. 14, 1993, § 102(e) Date Apr. 14, 1993, PCT Pub. No. WO92/05421, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 20, 1991, Ser. No. 39,194
Claims priority, application United Kingdom, Sep. 24, 1990, 9020771; Mar. 4, 1991, 9104539
Int. Cl.[5] G01N *9/00, 11/16*
U.S. Cl. 73—32 A **15 Claims**

1. An instrument for the measurement of attributes of a material, comprising:
a support;
an elongate vane which is symmetrical about a longitudinal median line;
means for clamping the vane to said support in a region extending along said longitudinal median line wherein said vane constitutes two similar fins in a mechanically balanced resonant system;
a drive transducer which is disposed to induce in said vane



vibration in a plane transverse said longitudinal median line; and
at least one sensing transducer disposed to sense said vibration.

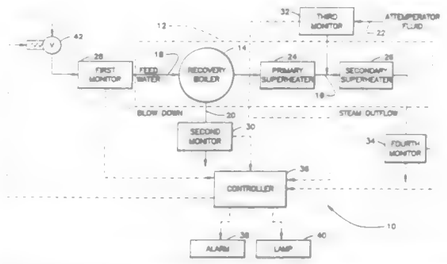
5,363,692
DEVICE AND METHOD FOR EVALUATING THE ABILITY OF A BODY CONTAINING A PRODUCT TO EXPEL THE PRODUCT FROM THE BODY
Eric Lafargue, Paris; Jean Espitalie, Le Vesinet, and Thierry Lesage, Tessancourt sur Aubette, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France
Filed Sep. 17, 1990, Ser. No. 583,321
Claims priority, application France, Sep. 15, 1990, 89 12150
Int. Cl.[5] G01N *15/08*
U.S. Cl. 73—38 **20 Claims**



1. A method for evaluating an ability of a rock sample containing a product to expel the product from the rock sample, the method comprising the steps:
placing said rock sample in juxtaposition to a reservoir;
providing a pressure gradient between the reservoir and the rock sample to cause expulsion of at least a portion of said product into said reservoir; and
analyzing the portion of the product expelled from the rock sample into the reservoir to evaluate an ability of the rock sample to expel the product by determining a migration criterion in accordance with a ratio of an amount of the expelled product to an amount of the rock sample as initially treated.

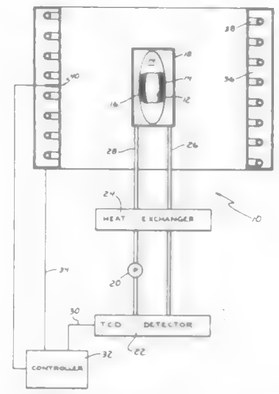
5,363,693
RECOVERY BOILER LEAK DETECTION SYSTEM AND METHOD
Albert A. Nevruz, Lawrenceville, N.J., assignor to Union Camp Corporation, Princeton, N.J.
Filed Aug. 19, 1992, Ser. No. 932,164
Int. Cl.[5] G01M *3/08*
U.S. Cl. 73—40.5 R **16 Claims**

1. A method for detecting leakage from a chemical recovery boiler system of the type which includes a recovery boiler and associated output steam piping, comprising steps of:
(a) periodically measuring fluid input to a recovery boiler system to obtain data;
(b) periodically measuring fluid output from a recovery boiler system to obtain data;
(c) periodically calculating short term average drum balances from the data obtained in steps (a) and (b);
(d) periodically calculating long term average drum balances from the data obtained in steps (a) and (b);
(e) calculating a standard deviation for said short term average drum balances;



(f) calculating a standard deviation for said long term average drum balances;
(g) using said standard deviation of said short term average drum balances and said long term average drum balances to determine whether a significant difference exists between said short term average and said long term average; and
(h) indicating an error condition if a significant difference is determined to exist.

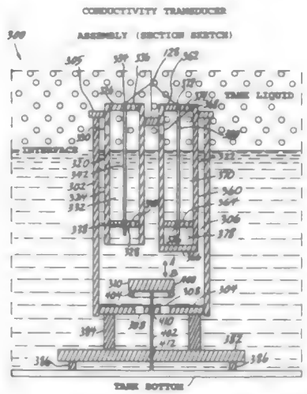
5,363,694
AMPOULE RUPTURE DETECTION SYSTEM
Norman A. Grabowski, Pawcatuck, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Nov. 17, 1993, Ser. No. 153,762
Int. Cl.[5] G01M *3/20*
U.S. Cl. 73—40.7 **9 Claims**



1. In a crystal growth facility of the type in which inorganic components are heated by a furnace to form a crystallized reaction product, the improvement comprising:
a. an inner ampoule that contains the components and reaction product;
b. an outer, larger ampoule that is adapted in size and shape to encase the inner ampoule, leaving a gap between the ampoules;

c. an inert gas normally trapped in the gap;
d. a canister that houses the ampoules; and
e. a detection means to sense the rupture of both ampoules and automatically shut off the heat generated by the furnace, thereby preventing the canister from breaking and maintaining within the canister any harmful gases from the previously heated components.

5,363,695
LEAK DETECTION SYSTEM AND METHOD FOR DETECTING AND MEASURING LIQUID LEAKS
Jeffrey C. Jensen, 22 King Arthurs Ct., Bridgewater, N.J. 08807
Filed Oct. 19, 1992, Ser. No. 963,197
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 **22 Claims**



1. A system for detecting a leak in a storage tank, the storage tank including a stored tank liquid and a test liquid, with the test liquid having a higher specific gravity than the tank liquid, and with an interface being formed between the tank liquid and the test liquid, the system comprising:

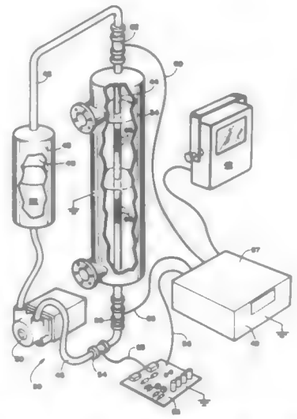
signal generator for generating signals for determining a level of the interface within the storage tank with respect to a predetermined level of the interface in the storage tank, the signal generator further comprising:

first measuring cell, which is disposed a predetermined distance from the bottom of the storage tank and extends across the interface such that a first portion of the first measuring cell is in the tank liquid and a second portion of the first measuring cell is in the test liquid, for generating a first signal indicative of a height of the interface in the first measuring cell, the first measuring cell including means for maintaining the interface at a predetermined height within the first measuring cell so that the height of the interface in the first measuring remains substantially the same when the height of the interface in the storage tank changes;

second measuring cell, which is disposed a predetermined distance from the bottom of the storage tank and extends across the interface such that a first portion of the second measuring cell is in the tank liquid and a second portion of the second measuring cell is in the test liquid, for generating a second signal indicative of a height of the interface in the second measuring cell, the second measuring cell including means for allowing a height of the interface within the second measuring cell to change with the height of the interface in the storage tank; and

an electronic device coupled to a test system transducer for receiving and processing the first and second signals to generate at least a third signal indicative of a comparison of the first and second signals.

5,363,696
METHOD AND ARRANGEMENT FOR OIL WELL TEST SYSTEM
David A. Cardellini, Huntington Beach; Michael P. Biencourt, Chino; Jeffrey P. Taylor, Trabuco Canyon, all of Calif.; John A. Haeber, Roseburg, Oreg., and John A. DeVires, Tustin, Calif., assignors to Paul-Munroe Engineering, Orange, Calif.
Filed Sep. 21, 1993, Ser. No. 124,958
Int. Cl.[5] G01N *27/22*
U.S. Cl. 73—61.44 **20 Claims**



1. A method for calculating the fluid phase fractions of gas, oil, and water and oil-water emulsion in an oil well production fluid stream flowing from an oil well which comprises:

separating out the majority of gas from the well stream;

introducing the remainder of the well stream into a vertically disposed sampling chamber having a predetermined volume and height for a predetermined period of time to purge the chamber of any fluid it may have previously contained;

closing the chamber to trap a sample of the well stream therein as a fluid column;

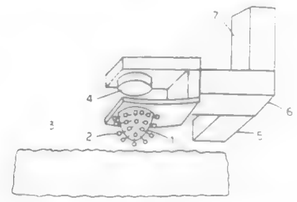
holding the well stream sample in the chamber for a predetermined period of time to permit the same to separate in such period into vertically disposed layers of gas, oil and water;

measuring at least one physical feature of the sample at a plurality of points along the vertical length of the sample;

determining a plurality of other measurements of the well stream sample relating to such fluid column sample, and employing such measurements to calculate the fluid phase fractions of gas, oil, and water and the oil-water emulsion in the well stream sample.

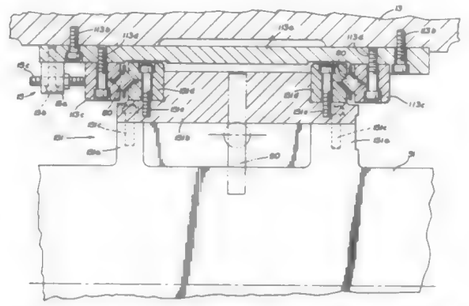
5,363,697
SCANNING PROBE MICROSCOPE, MOLECULAR PROCESSING METHOD USING THE SCANNING PROBE MICROSCOPE AND DNA BASE ARRANGEMENT DETECTING METHOD
Tohru Nakagawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 29, 1992, Ser. No. 875,694
Claims priority, application Japan, Apr. 30, 1991, 3-098919; Apr. 30, 1991, 3-098920
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 **6 Claims**

1. A scanning probe microscope comprising a probe approaching or contacting a substance surface to detect a physical quantity between the substance surface and the probe, wherein the physical quantity is what is interacted or chemically reacted between the substance surface and molecules or atom groups which act as a sensor are fixed on the probe to



form a chemically adsorbed monomolecular film, and the probe is scanned at an atomic level of precision.

5,363,698
FRICTIONLESS CARRIAGE FOR TIRE UNIFORMITY MACHINE LOADWHEEL CARRIAGE
David L. Poling, Sr., 2740 Cory Ave., Akron, Ohio 44314
Continuation-in-part of Ser. No. 935,264, Aug. 27, 1992, Pat. No. 5,323,646. This application Sep. 7, 1993, Ser. No. 116,736
Int. Cl.[5] E01C *23/00;* **G01M** *17/02;* **G01N** *19/02*
U.S. Cl. 73—146 **6 Claims**



1. In a tire uniformity machine having a framework for receiving and rotating a tire and a loadwheel mounted on a carriage and driven linearly along the framework and radially of the tire toward and away from the tire, the improvement comprising:

a) first bearing ways attached to the framework;

b) the carriage having second bearing ways overlying said first bearing ways; and

c) anti-friction means disposed on said bearing ways and interconnecting the framework and the carriage.

5,363,699
METHOD AND APPARATUS FOR DETERMINING CHARACTERISTICS OF FLUID FLOW
Floyd McCall, Palm Springs, Calif., assignor to Ketema, Inc., Hemet, Calif.
Filed Aug. 25, 1993, Ser. No. 112,756
Int. Cl.[5] G01F *15/00;* **F15D** *1/02*
U.S. Cl. 73—198 **22 Claims**

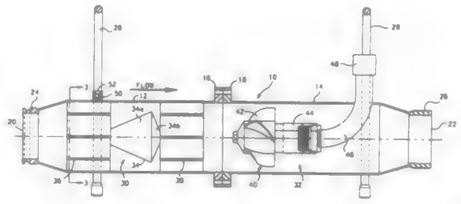
1. Apparatus for determining characteristics of fluid flow comprising, in combination,

a conduit for conveying a fluid therethrough in a given direction,

and within said conduit, in sequence in the direction of fluid flow,

means for stabilizing and conditioning the fluid flow and providing within said conduit a substantially uniform flow profile having a large and axially centered mean flow diameter,

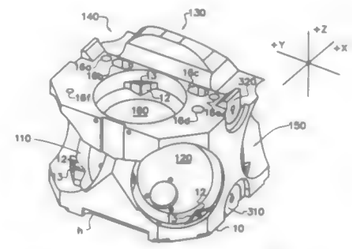
said flow stabilizing and conditioning means comprising a fluid flow displacement member of smaller size than said conduit comprised of two frustums joined at their larger ends and mounted coaxially in said conduit substantially normal to the direction of fluid flow and with the peripheries of said frustums spaced symmetrically inwardly from the conduit, said displacement member deflecting the fluid and causing the fluid to flow through a region defined



between the peripheries of said frustums and the inner wall of the conduit and being effective to substantially linearize the velocity profile of the fluid over a predetermined range of flow rates through said conduit, and

means downstream from said flow stabilizing and conditioning means for determining a characteristic of the stabilized and conditioned fluid flow.

5,363,700
SKEWED AXIS INERTIAL SENSOR ASSEMBLY
Lucien E. Joly, Cook; Michael A. Knipfer, Maple Grove; Michelle J. Miller, Minneapolis, all of Minn.; George O. Nitzschke, St. Petersburg, Fla., and Mark T. Weinberger, Mounds View, Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 17, 1992, Ser. No. 977,319
Int. Cl.[5] G01P *9/02, 1/02*
U.S. Cl. 73—504 **16 Claims**



1. An inertial sensor assembly comprising:

a support frame for supporting first, second, third, fourth, fifth, and sixth gyros, the peripheral portions of said support frame surrounding a coordinate reference point of a right hand orthogonal XYZ coordinate system including ±XYZ reference axes passing through said coordinate reference point, and in which said X and Y reference axes define an XY plane, said Y and Z reference axes define a YZ plane, and said X and Z reference axes define an XZ plane;

said first and second gyros being mounted to said support frame and spaced apart from said XY plane in the +Z direction therefrom and spaced apart from said YZ plane in the −X direction therefrom, said first and second gyros having the extension of their respective input axes intersecting at a first intersection point in the XZ plane, and in which said first and second gyro input axes are at a first selected angle relative to said XY plane, and in which the angle value between said +X axis and the perpendicular projection of said first gyro input axis onto said XY plane

measure in the counter-clockwise direction is a selected second angle value, and in which the angle between said +X axis and the perpendicular projection of said second gyro input axis on said XY plane measured in the clockwise direction is also said selected second angle value, and wherein said first intersection point is spaced apart from said YZ plane in the +X direction therefrom;

said third gyro being mounted to said support frame and spaced apart from said XY plane in the +Z direction therefrom and spaced apart from said YZ plane in the +X direction therefrom, said third gyro having the extension of its input axis which lies in said XZ plane and is at said first selected angle relative to said XY plane;

said fourth and fifth gyros being mounted to said support frame and spaced apart from said XY plane in the +Z direction therefrom and spaced apart from said YZ plane in the +X direction therefrom, said fourth and fifth gyros having the extension of their respective input axes intersecting at a second intersection point in said XZ plane, and in which said fourth and fifth gyro input axes are at a said first selected angle relative to said XY plane, and in which the angle between said +X axis and the perpendicular projection of said fourth gyro input axis on said XY plane is a third selected angle value measured in the counter-clockwise direction, and in which the angle between said +X axis and the perpendicular projection of said fifth gyro input axis on said XY plane measured in the clockwise direction is also said selected third angle value, and wherein said second intersection point is spaced apart from said YZ plane in the +X direction therefrom; and

said sixth gyro being mounted to said support frame and spaced apart from said XY plane in the +Z direction therefrom and slanted apart from said YZ plane in the −X direction therefrom, said sixth gyro having its input axis in parallel with said Z axis and the extension thereof intersecting the extension of said third gyro input axis at a third intersection point, and wherein said third intersection point lies in said XZ plane and is spaced apart from said YZ plane in the −X direction therefrom and spaced apart from said XY plane in the +Z direction therefrom.

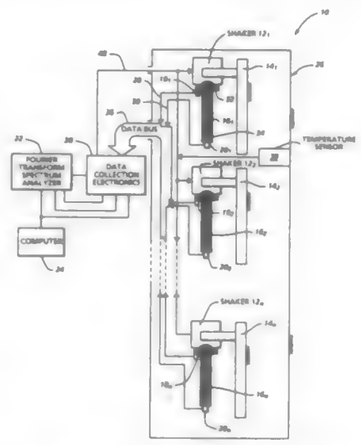
5,363,701

MATERIAL CHARACTERIZING SYSTEM

Gilbert F. Lee, Greenbelt, and Bruce Hartmann, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 652,821, Feb. 8, 1991. This application Apr. 14, 1994, Ser. No. 227,771
Int. Cl.[5] G01H *15/00*
U.S. Cl. 73—574 **12 Claims**

1. In a method of determining material properties by measuring vibration acceleration of a plurality of test specimens induced by random noise within a frequency range establishing standing waves propagated between driven ends of the specimens and opposite freely movable ends from which measurements are obtained on ratio of acceleration amplitude at said ends and acceleration phase difference between said ends at resonant frequencies of the standing waves and calculations performed with respect to said measurements, the steps of: acoustically driving the driven ends of said specimens simultaneously to obtain the measurements of the ratio of acceleration amplitude therefrom; selecting the calculations obtained simultaneously from the measurements of the plurality of the driven specimens at the resonant frequencies of the standing waves; programming said acoustic driving of the driven ends of the specimens to restrict the simultaneously obtained measurements and the selected calculations to limited time periods; and



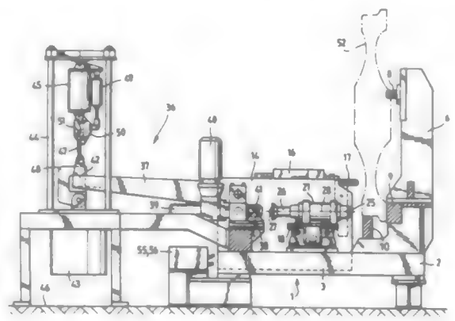
automatically analyzing the selected calculations to determine the material properties.

5,363,702

DEVICE FOR INSPECTING THE RIM OF A RAILWAY WHEEL

Bernard Catot, Leffrinckoucke; Vaerio Del Fabbro, Marly, and Guy Stevenot, Dunkerque, all of France, assignors to Valdunes, Puteaux, France

Filed Jun. 14, 1993, Ser. No. 75,878
Claims priority, application France, Jun. 18, 1992, 92 07433
Int. Cl.[5] G01H *1/00*
U.S. Cl. 73—598 **7 Claims**



1. Device for inspecting a rim of a railway wheel by measuring under a predetermined force the hardness of said rim, wherein said device comprises:

a stand comprising a horizontal part in the shape of a quadrilateral and at least one vertical part which is parallel to an edge of said horizontal part,

a rail for supporting said wheel, said rail being fixed to said horizontal part of said stand and extending in a direction parallel to said at least one vertical part of said stand,

a plurality of longitudinal guide members for guiding said wheel, said longitudinal guide members being fixed to said at least one vertical part of said stand and extending in a direction parallel to said rail,

a movable longitudinal member positioned parallel to said longitudinal guide members,

a shifting mechanism connected to said movable longitudinal member for moving said longitudinal member in a direction perpendicular to said longitudinal guide members and parallel to said horizontal part of said stand and for contacting said longitudinal member against said wheel,

a plurality of slideways fixed to said horizontal part of said stand and extending in a direction parallel to said rail,

a carriage mounted on said slideways for moving along the slideways,

a mechanism for shifting said carriage on said slideways,

a grinding device mounted on said carriage and connected to said shifting mechanism for moving the grinding device on said carriage in a direction perpendicular to said slideways,

a ball-test device carried by said carriage for measuring hardness of said rim under the predetermined force, and

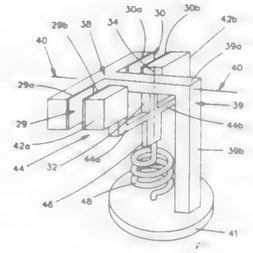
a device mounted on said stand for applying the predetermined force on said ball-test device.

5,363,703

DUAL TRANSDUCER

Leroy C. Delatorre, Sugar Land, Tex., assignor to Panex Corporation, Sugar Land, Tex.

Filed Jul. 6, 1993, Ser. No. 86,086
Int. Cl.[5] G01L *9/12*
U.S. Cl. 73—733 **31 Claims**



1. A tandem capacitor device for utilizing dependent capacitances for measurement purposes comprising:

a first dual capacitor having a first capacitor base member and a second capacitor base member arranged with parallel capacitor surfaces in parallel planes where facing parallel capacitor surfaces are located on opposite sides relative to a transverse central plane and where said facing capacitance surfaces respectively define first and second capacitors;

said second capacitor base member having a centrally located section connected to an outer section of said second capacitor base member by torsion beam means, said centrally located section being attached to said first capacitor base member by attachment means;

said torsion beam means having a displacement axis parallel to said capacitor surfaces so that angular torque displacement of said outer section of said second capacitor base member relative to said centrally located section about said displacement axis produces a capacitance change in said first and second capacitors;

force means coupled to said outer section of said second capacitor base member for producing a torque force on said torsion beam means for developing angular displacement of said outer section and a capacitance change as a function of said torque force;

a second dual capacitor having a third capacitor base member and a fourth capacitor base member arranged with parallel capacitor surfaces in parallel planes where facing parallel capacitor surfaces are located on opposite sides relative to said transverse central plane and where said facing capacitance surfaces respectively define third and fourth capacitors;

said fourth capacitor base member having a centrally located section connected to an outer section of said fourth capacitor base member by torque beam means, said centrally located section being attached to said third capacitor base member by attachment means, said last mentioned torque beam means being aligned with said displacement axis;

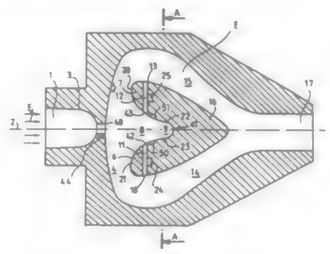
coupling means for rigidly coupling said second and said fourth capacitor base members to one another for simultaneous angular torque displacement of said outer section of said fourth capacitor base member and said second capacitor base member to produce a simultaneous capacitance change in said first and second dual capacitors.

5,363,704

FLUIDIC OSCILLATOR AND A FLOW METER INCLUDING SUCH AN OSCILLATOR

Bao T. Huang, Antony, France, assignor to Schlumberger Industries, Montrouge, France

Filed Jul. 14, 1992, Ser. No. 913,498
Int. Cl.[5] G01F *1/20*; F15C *1/22*
U.S. Cl. 73—861.19 **19 Claims**



1. A fluidic oscillator comprising:

a fluid inlet suitable for forming a two-dimensional fluid jet;

an enclosure opening out firstly to said fluid inlet and secondly to a fluid outlet;

a single obstacle being disposed within said enclosure and occupying the major portion of said enclosure, said enclosure having walls cooperating with outside walls of said obstacle to form flow passages for said fluid, said obstacle including a pair of side flanks defining a front portion forming a chamber which both faces said inlet and is located on the path of said jet, said front portion including two walls forming a part of said chamber, said two walls being symmetrical about a longitudinal plane of symmetry passing through said inlet, said walls meeting in said plane: said fluid jet oscillating between two points respectively symmetrically located on each said wall of said chamber, two alternately strong and weak eddies being formed on either side of said longitudinal plane of symmetry in said flow passages; and

wherein said oscillator further includes means adapted to alternately accentuate the increase in pressure on each of said side flanks of said obstacle in the vicinity of said front portion in relation to oscillation of said jet between said walls of said chamber.

5,363,705

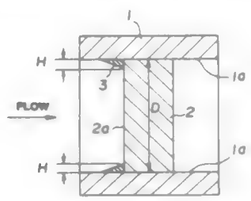
VORTEX GENERATOR HAVING A PROTRUSION FORMED AT AN UPSTREAM SURFACE

Yuichi Nakao; Masao Misumi, and Naoki Matsubara, all of Tokyo, Japan, assignors to Oval Corporation, Tokyo, Japan

Filed Jul. 19, 1993, Ser. No. 93,215
Claims priority, application Japan, Jul. 20, 1992, 4-214643
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.22 **8 Claims**

1. A vortex flow means comprising a flow pipe and a vortex generator disposed at a right angle to the fluid's flow along the flow pipe for determining the flow rate of the fluid from a quantity of vortexes generated per unit of time from the vortex generator, said vortex generator having an upstream surface,

said pipe having an upstream side upstream of said vortex generator, said vortex generator being joined to an inner wall of the flow pipe by a protrusion which is formed at the upstream surface of the vortex generator fronting the fluid's flow and extending toward the upstream side along the inner wall of



the flow pipe, said protrusion having a cylindrical surface and a circular arched section with a chord defined between both side edges of the vortex generator on the inner wall of the flow pipe and with a top height being gradually reduced in the direction toward a given position on the upstream side of the inner wall of the flow pipe.

5,363,706

CONVECTIVE ACCELERATION FLOWMETER

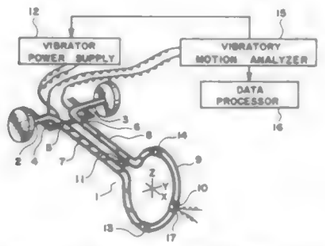
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation of Ser. No. 617,492, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 440,693, Nov. 24, 1989, Pat. No. 5,123,287, and Ser. No. 467,481, Jan. 19, 1990, Pat. No. 5,060,523. This application Sep. 28, 1992, Ser. No. 952,325

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **20 Claims**



1. An apparatus for measuring mass flow rate of media moving through a conduit comprising in combination:

a) a conduit of a constant shape with two extremities secured to a supporting structure including a first end section disposed on a first plane and extending from one of the two secured extremities of the conduit, a second end section disposed on a second plane and extending from the other of the two secured extremities of the conduit, and a looped midsection of loop angle approximately equal to 360 degrees disposed substantially intermediate said first and second planes; wherein the center line of a first half of the conduit including the first end section and a first half of the looped midsection of the conduit is disposed on one side of a center plane intersecting a middle portion of the looped midsection of the conduit in a perpendicular relationship and dividing the conduit into two equal opposite halves, said center line of the first half of the conduit being a line passing through the geometrical center of every cross section of the first half of the conduit, and the center line of a second half of the conduit including the second end section and a second half of the looped midsection of the conduit is disposed on the other side of said center plane opposite to said one side, said center line of the second half of the conduit being a line passing through the geometrical center of every cross section of the second half of the conduit;

b) means for exerting vibratory force with action and reaction elements respectively secured to over-hanging extremities of the first and second end sections of the conduit opposite to the respective secured extremities of the first and second end sections of the conduit and adjacent to the looped midsection of the conduit, wherein said means for exerting vibratory force exerts vibratory forces to the first and second halves of the conduit in two opposite directions on a single line of action approximately perpendicular to a reference plane substantially including a central portion of the center line of the looped midsection of the conduit and approximately parallel to the looped midsection of the conduit, said center line of the looped midsection of the conduit being a line passing through the geometrical center of every cross section of the looped midsection of the conduit; wherein said vibratory forces generate a relative flexural vibration between the first and second halves of the conduit in directions approximately perpendicular to said reference plane; and

c) means for detecting difference in the flexural vibration between the first and second halves of the conduit as a measure of mass flow rate of media moving through the conduit.

5,363,707

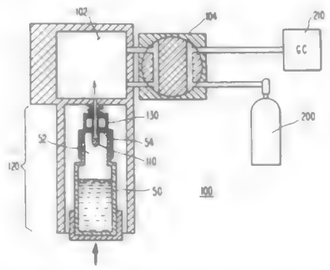
HEADSPACE SAMPLING SYSTEM

Kurt B. Augenblick, Wilmington, Del.; Paul B. Crilly, Knoxville, Tenn.; Steven J. Engel, Kennett Square, Pa., and Kimber D. Fogelman, Hockessin, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 1, 1992, Ser. No. 877,909

Int. Cl.[5] G01N *1/22*

U.S. Cl. 73—864.84 **24 Claims**



1. Apparatus for collecting gasses from a sample in a sealed container comprising:

a substantially constant volume external headspace selectively connectable with the sample container, wherein gas is transferred from the sample container to the external headspace, wherein the external headspace is disposed outside of;

a first valve means for isolating the external headspace from the sample container; and

an outlet connecting the external headspace to an analytical instrument, and an inlet connecting the external headspace to a source of carrier gas,

wherein the gas within the external headspace is transferred to the analytical instrument for further processing by carrier gas flowing into the inlet and through the outlet.

5,363,708

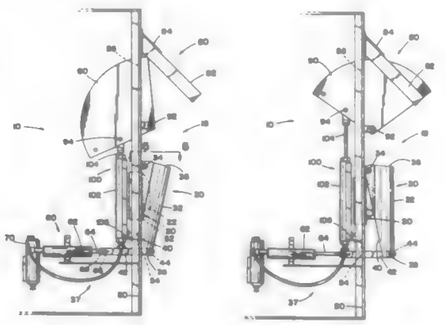
SELF-CLEARING MATERIAL SENSING APPARATUS

David M. Johnson, Anoka, and Larry C. McNeff, Hopkins, both of Minn., assignors to SarTec Corporation, Anoka, Minn.

Filed Nov. 10, 1992, Ser. No. 974,199

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—865.8 **10 Claims**



1. A self-clearing material sensing apparatus for sensing a physical parameter of a particulate material flowing through a conduit having a cross-sectional area, said self-clearing material sensing apparatus comprising:

a) a sensor device;

b) a funnel means located within the conduit for directing a consistent flow of the particulate material to an area proximate the sensor device, said funnel means having a read configuration and a clearance configuration, said funnel means further having an upper inlet and a lower outlet, the lower outlet including a narrowing below the upper inlet, the upper inlet having a first cross-sectional area and the narrowing having a second cross-sectional area, said first cross-sectional area being greater than said second cross-sectional area when said funnel means is in the read configuration, said funnel means further including narrowing adjustment means for increasing said second cross-sectional area when said funnel means is changed from the read configuration to the clearance configuration; and

c) first actuation means for changing said funnel means from the read configuration to the clearance configuration and from the clearance configuration back to the read configuration such that the cross-sectional area of the conduit remains substantially constant; wherein said funnel means can channel the particulate material to the area proximate the sensor when said funnel means is in the read configuration and the particulate material can be efficiently released from the area proximate the sensor when said funnel means is changed from the read configuration to the clearance configuration.

5,363,709

DIE SENSOR ASSEMBLY

Kenneth Ives, Valparaiso; Gregory Keating, Chesterton, and Kenneth Sorenson, Valparaiso, all of Ind., assignors to Acutus Mold Inc., Pontiac, Mich.

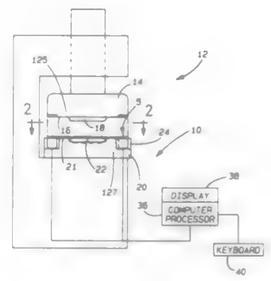
Filed Mar. 11, 1993, Ser. No. 986,176

Int. Cl.[5] G01B *7/14*

U.S. Cl. 73—865.9 **6 Claims**

1. A sensor assembly for use in combination with a die having a lower portion adapted to receive a blank, and a movable upper portion adapted to be moved from a first position, in which said upper portion is remote from said lower portion, to a second blank-contacting position, said sensor assembly comprising:

spring means, positioned upon said lower portion and adapted to be contacted by a surface of said movable upper portion as said movable upper portion contacts said blank, for determining whether a first distance between a first point on said surface and a first point on said lower portion, and a second distance between a second point on said surface and a second point on said lower portion are equal; and



plunger means, movably coupled to said spring means and adapted to be contacted by said surface of said movable upper portion, for determining whether said first and said second distances are equal when said upper portion is in said first position.

5,363,710

IMPACT SENSING APPARATUS

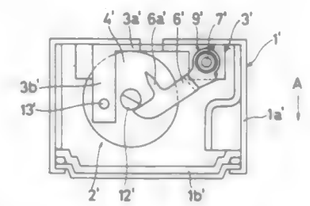
Kazunori Sakamoto, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 4, 1992, Ser. No. 986,083

Claims priority, application Japan, Dec. 6, 1991, 3-323301

Int. Cl.[5] G05G *17/00*

U.S. Cl. 74—2 **2 Claims**

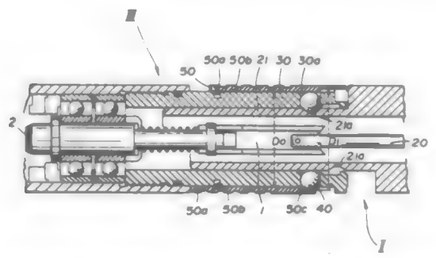


1. An impact sensing apparatus comprising:

a housing having an inner space and a wall for receiving an impact applied in a first direction; and

a unitary assembly constructed independent of the housing and positioned within the housing for being secured to the housing, said unitary assembly including a frame having a first portion which extends along the wall of the housing and a second portion which extends transverse to the first portion, a weight pivotally mounted on the second portion of the frame to rotate about a pivot axis when an impact is applied to the housing, a cam provided on the weight, a firing lever pivotally mounted on the first portion of the frame for moving rotatably through an angle less than ninety degrees between one position in which a portion of the firing lever engages the cam and another position in which a portion of the firing lever extends outside the housing through the first portion of the frame in opposition to the first direction, and a spring urging the firing lever against the cam.

5,363,711
POWER TRANSMISSION DEVICE
Norio Seto, Tokyo, Japan, assignor to Osada Research Institute, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 25,305, Mar. 2, 1993, Pat. No. 5,301,562, which is a division of Ser. No. 871,421, Apr. 21, 1992, Pat. No. 5,237,884. This application Aug. 23, 1993, Ser. No. 110,600
Claims priority, application Japan, Apr. 22, 1991, 3-036958; Apr. 22, 1991, 3-036959; Apr. 26, 1991, 3-038826; Apr. 26, 1991, 3-124894
Int. Cl.[5] F16D *1/10*; F16H *21/16*
U.S. Cl. 74—25 4 Claims

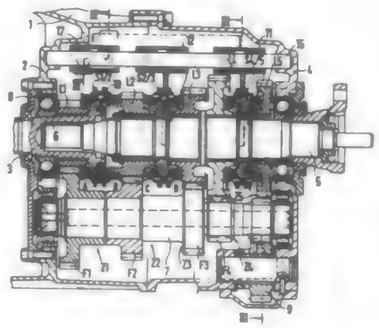


1. A power transmission device for connection of a rotation shaft with a mechanism for converting rotational movement of the rotation shaft into reciprocal movement in an axial direction of the rotation shaft, the rotation shaft being concentrically accommodated in a rotation shaft sleeve having an outer wall with a groove circumferentially formed therein, said device comprising:
- a connecting sleeve for slidably receiving the rotation shaft sleeve therein, said connecting sleeve including a wall having a plurality of through-holes extending therethrough and circumferentially arranged therearound;
- a ball mounted in each of said through-hole;
- a sliding sleeve mounted over the connecting sleeve and having a circularly formed internal recess of an inner diameter larger than an outer diameter of the connecting sleeve, the sliding sleeve being freely slidable without any external biasing force thereon in an axial direction thereof with respect to said connecting sleeve between a first position with the balls placed in the recess and the rotation shaft sleeve inserted in the connecting sleeve and a second position having an inner wall thereof pressing the balls in the circumferential groove of the rotation shaft sleeve so as to prevent disconnection of the connecting sleeve from the rotation shaft sleeve without any said external biasing force on said sliding sleeve.

5,363,712
MANUAL TRANSMISSION OF A MOTOR VEHICLE
Robert Müller, Mönsheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Germany
Filed Feb. 25, 1993, Ser. No. 22,107
Claims priority, application Germany, Feb. 25, 1992, 4205670
Int. Cl.[5] F16H *5/06*
U.S. Cl. 74—337.5 10 Claims

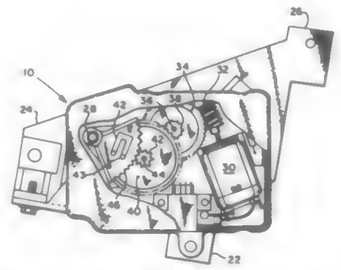
1. A manual transmission of a motor vehicle, comprising:
- a plurality of transmission gears with gearwheel pairs formed by mutually meshing loose wheels and fixed wheels;
- synchronizer clutches coupleable to the transmission gears such that the transmission gears are shifted by the simultaneous closing of two of said synchronizer clutches, the synchronizer clutches having sliding sleeves; and
- a shift roller coupleable to the synchronizer clutches to actuate the synchronizer clutches;

wherein at least one of said sliding sleeves is adjustable independently of the position of the shift roller into a



neutral position and from the neutral position into a position determined by the shift roller.

5,363,713
QUIETED SERVOACTUATOR
James E. Pearson, Downers Grove, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 29, 1993, Ser. No. 55,467
Int. Cl.[5] F16H *1/16*
U.S. Cl. 74—425 16 Claims

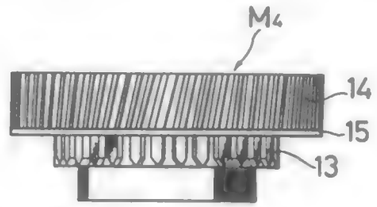


1. A quieted motorized servoactuator comprising:
(a) housing means having a motor therein with a shaft having a metal worm thereon;
(b) a first stage gear driven by said metal worm, said first stage spur gear formed of resilient elastomeric material having a hardness not greater than 72 on the Shore "D" scale and having an output pinion formed integrally therewith; and,
(c) a second stage spur gear meshing with said first stage pinion and formed of rigid plastic having a hardness greater than said elastomeric first stage gear; said second stage gear having an output pinion formed integrally thereon.

5,363,714
GEAR PRODUCT
Tetsuya Hoguchi, Toyota, Japan, assignor to O-Oka Forge Co., Ltd., Nagoya, Japan
Filed Jan. 12, 1993, Ser. No. 3,462
Claims priority, application Japan, Jan. 14, 1992, 4-024819
Int. Cl.[5] F16D *23/06*; B21K *1/30*
U.S. Cl. 74—432 12 Claims

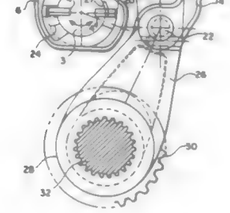
1. A gear product comprising a plurality of gear members

having different tooth profiles around a periphery thereof and a flange, said gear members and said flange being coaxially



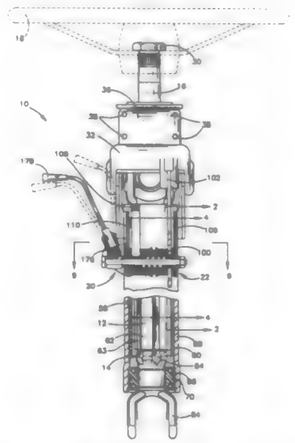
arranged and integrally forged, and in intimate contact with each other and free of a clearance therebetween.

5,363,715
TRANSMISSION X-CONTROL MECHANISM AND PIVOT PIN THEREFORE
Michael J. Huggins, and William R. Chene, both of Kalamazoo, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 28, 1993, Ser. No. 82,571
Int. Cl.[5] F16H *59/10*
U.S. Cl. 74—473 R 3 Claims



1. An improved pivot pin for mounting a pivot arm of an X-control mechanism to a change gear transmission housing,
- said pivot arm engaged with an X-control block on one side of the pivot pin that is movable in opposite directions upon corresponding movement of a primary shaft selectively engageable there with,
- said pivot arm engaged with a X-control yoke on the opposite side of the pivot pin having one end operatively connected to a mainshaft gear clutching mechanism and an opposite end slidably movable along an X-control shaft that is in substantial parallel alignment with the primary shaft,
- said mechanism operative such that movement of the X-control block in one direction causes the pivot arm to pivot about the pivot pin and slide the X-control yoke in an opposite direction along the control shaft for effecting clutched engagement between the transmission mainshaft and the mainshaft gear by the clutching mechanism, and said improvement characterized by said pivot pin having a substantially cylindrical pivot surface disposed intermediate an enlarged head and an annular groove and operative to extend through aligned openings through the transmission housing and pivot arm with the pivot arm held in a pivotable condition against the transmission housing between the head of the pivot pin and a retaining ring extending radially outwardly from the groove.

5,363,716
TILT-TELESCOPE STEERING COLUMN
John A. Budzik, Jr.; Mark A. Cartwright, both of Lafayette; Mark A. Hoagland, Newtown; Samuel G. Johnson, III; Murthy N. Nemani, both of West Lafayette; Gerald K. Oxley; Philip S. Peterson, both of Lafayette; Gerald W. Thomas, West Lafayette; Frederick D. Venable, Lafayette, and Daniel L. White, Covington, all of Ind., assignors to TRW Inc., Lyndhurst, Ohio
Filed Apr. 1, 1993, Ser. No. 41,729
Int. Cl.[5] B62D *1/18*
U.S. Cl. 74—493 16 Claims

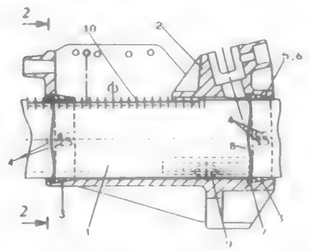


1. A steering column comprising:
first and second coaxial steering column members, said first steering column member being movable axially relative to said second steering column member;
an input shaft connectable with a steering wheel and supported on said first steering column member for pivotable movement relative to said first steering column member about an axis extending transverse to the direction of relative axial movement between the first and second steering column members;
a first means for locking said first steering column member in any one of an infinite number of axial positions relative to said second steering column member;
a second means for locking said input shaft in any one of an infinite number of pivot positions relative to said first steering column member; and
a member movable to unlock said first and second locking means, said member having one position in which said first locking means is unlocked and said second locking means is locked, said member having another position in which said second locking means is unlocked and said first locking means is locked.

5,363,717
BEARING MOUNT OF THE STEERING COLUMN TUBE OF A TELESCOPING STEERING COLUMN
Raimund Eichholz, Osnabrück, and Klaus Schüller, Belm, both of Germany, assignors to Lemforder Metallwaren AG, Lemforde, Germany
Filed Feb. 19, 1993, Ser. No. 21,532
Claims priority, application Germany, Feb. 28, 1992, 4206178
Int. Cl.[5] B62D *1/18*
U.S. Cl. 74—493 7 Claims

1. A bearing mount of a steering column tube of a telescoping steering column, comprising:
- a steering column tube supported in a housing, said steering column tube being slidable in an axial direction;

at least one bearing bushing through which said steering column tube passes, said bearing bushing being formed of non-metallic material formed with a slot extending in a longitudinal direction, said bearing bushing being axially mobile and being supported on an outer contour, conical



in cross section with frictional adhesion against an inner cone formed in said housing; and

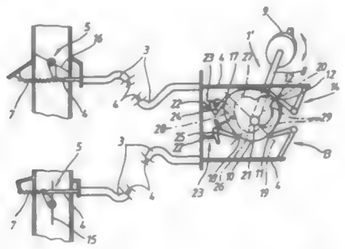
spring means for applying an axial spring load on said bearing bushing said spring means is supported positioned against a face of said bearing bushing having a larger cone diameter and against said housing.

5,363,718

CONTROL DEVICE FOR A REMOTE-CONTROLLABLE ACTUATION DEVICE

Martin Ganser, Weil der Stadt, and Alfred Klink, Horb, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Oct. 23, 1992, Ser. No. 965,926
Claims priority, application Germany, Oct. 25, 1991, 4135263
Int. Cl.[5] F16C *1/12*
U.S. Cl. 74—501.5 R **3 Claims**



1. A control device for a remote-controllable actuation device comprising:

a first energy accumulator that is a metal spring which acts on an actuation device and loads the actuation device with a first instantaneous force in a direction of a first limit position;

a flexurally weak transmission means that is a cable which couples the control device to the actuation device and that moves the actuation device to a second limit position in a direction counter to the loading of the actuation device by the first energy accumulator:

a second energy accumulator that is a metal spring that acts with a second instantaneous force on the control device that compensates the action of the first instantaneous force acting on the actuation device, the second instantaneous force is equal to the first instantaneous force such that a force equilibrium is established when the control device positions the actuation device in a position between the first limit position and the second limit position;

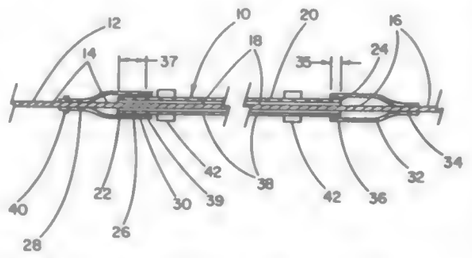
wherein the control device includes a cam plate having a contact cam edge, and wherein the second instantaneous force acts at a first contact point on the contact cam edge which lies about the cam plate opposite an activation contact point, such that the first contact point and activation contact point are fixed on a straight line that passes through the axis of rotation of the cam plate.

5,363,719

MECHANICAL CONTROL CABLE SYSTEM HAVING AN UMBRELLA SEAL

Jerry L. Johnson; Vincent L. Perko, and Melanee J. Williams, all of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Mar. 10, 1993, Ser. No. 29,261
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.4 **30 Claims**



1. A mechanical control cable system comprising:

a) a length of flexible cable having first and second ends and having a middle portion disposed between the first and seconds ends;

b) a length of tubular housing having first and second ends, wherein said length of tubular housing is shorter than said length of flexible cable and wherein said length of tubular housing coaxially surrounds the middle portion of the length of flexible cable, whereby the first and second ends of the length of flexible cable are first and second exposed ends extending beyond the first and second ends of the length of tubular housing; and

c) a first tubular umbrella seal having first and second ends, wherein the first end of the first tubular umbrella seal is coaxially and rigidly affixed to the first exposed end of the length of flexible cable and the second end of the first tubular umbrella seal coaxially surrounds the first end of the length of tubular housing with sufficient clearance to allow for a desired amount of axial movement between the length of tubular housing and the length of flexible cable.

5,363,720

STOVE KNOB SAFETY CAP

Jesse Sanchez, 4222 W. Alamos, Ste. 109W, Fresno, Calif. 93711

Continuation-in-part of Ser. No. 750,836, Aug. 27, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,075
Int. Cl.[5] G05G *1/10*
U.S. Cl. 74—553 **5 Claims**

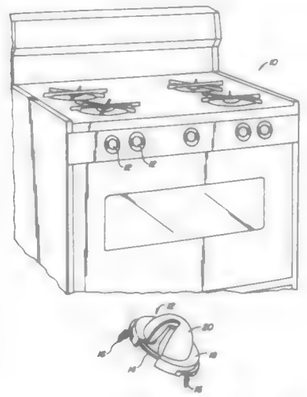
1. A stove knob safety cap for placement over a stove knob on a stove to prevent turning of the stove knob, the safety cap comprising:

a dome-shaped cap with a hollow interior for fitting over said stove knob;

a circular skirt extending outwardly around and below the cap; and

a pair of latches pivotally attached to the skirt on opposite sides of the skirt, each latch including a pin secured to an underside of the skirt and a pivoting member pivotally

mounted around said pin, said pivoting member having an inside member for engaging between the stove knob and



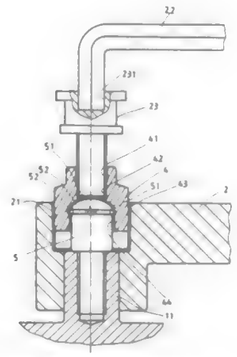
the stove in a first position, and being clear of the stove knob in a second position.

5,363,721

BICYCLE PEDAL CRANK DISMOUNTING DEVICE

Chia-Yuan Hsiao, No. 4, Lane 11, Tze-Chiang St., Tu-Cheng City, Taipei Hsien, Taiwan, Prov. of China

Filed Aug. 23, 1993, Ser. No. 110,518
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.1 **1 Claim**



1. A bicycle pedal crank dismounting device comprising:

a hollow, internally threaded screw member, said screw member comprising a hexagonal head on one end, an outer thread on an opposite end, a hexagonal hole and a bottom hole linked by an inner thread thereof and longitudinally aligned through the center in the axial direction, the diameter of said bottom hole of said screw member being bigger than said inner thread and hexagonal hole of said screw member, said hexagonal hole being disposed within said hexagonal head, said bottom hole being disposed within said outer thread of said screw member;

a stop rod having one end fastened inside said bottom hole of said screw member and an opposite end extended out of said screw member, said stop rod having an annular groove around the periphery;

a C-shaped retainer ring mounted around said annular groove of said stop rod to fasten said stop rod in said bottom hole of said screw member; and

a crank lock screw engaged in a screw hole on a bicycle pedal crank and threaded into a screw hole on a bottom bracket bearing axle of a bicycle to fasten said bicycle pedal crank to said bottom bracket bearing axle, said crank lock screw having a hexagonal hole on a head thereof in size equal to the hexagonal hole on said screw member;

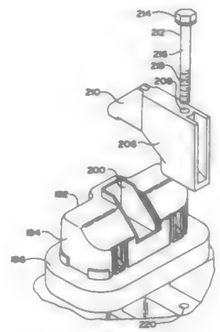
whereby said crank is dismounted from said bottom bracket bearing axle by: using a L-shaped hexagonal wrench to remove said crank lock screw from said bottom bracket bearing axle, then using said L-shaped hexagonal wrench to drive said outer thread of said screw member into the screw hole of said crank for allowing said stop rod to stop against said bottom bracket bearing axle, and then using said L-shaped hexagonal wrench to drive said crank lock screw into the inner thread of said screw member and turn it round and round so as to drive said crank out of said bottom bracket bearing axle in the reverse direction.

5,363,722

CONNECTOR ASSEMBLY FOR A NORTH-SOUTH AUTOMATIC TRANSAXLE

James R. Klotz, Mt. Clemens, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1992, Ser. No. 993,162
Int. Cl.[5] F16H *57/02;* H01R *33/00;* F16C *11/00*
U.S. Cl. 74—606 R **9 Claims**



1. A transaxle assembly comprising:

a transaxle case;

a solenoid assembly;

a connector extending through a first aperture in said transaxle case for connection to said solenoid assembly; and

a retainer bracket having a generally inverted L shape and a projection extending from an upper end thereof engaging a recess in said connector and a fastener to secure said retainer bracket to said transaxle case.

5,363,723

ANGLE GEAR DRIVE

Ronald J. Hoffman, Phoenix, Ariz., assignor to Ryobi Outdoor Products, Inc., Chandler, Ariz.

Filed Feb. 23, 1993, Ser. No. 21,057
Int. Cl.[5] F16H *57/02, 1/12*
U.S. Cl. 74—606 R **5 Claims**

1. An angle gear drive for a portable lawn care implement comprising:

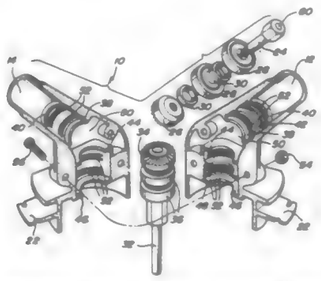
a pair of housing portions;

an input shaft supporting an input gear and at least one sealed bearing;

an output shaft supporting an output gear and at least one sealed bearing, said output gear meshing with said input gear in a driving relationship;

said housing portions being fastened together and defining a sealed gear cavity, an input gear collar and an output shaft retainer, said input shaft collar and said output shaft retainer acting in conjunction with said sealed bearing on

said input shaft and said sealed bearing on said output shaft; and



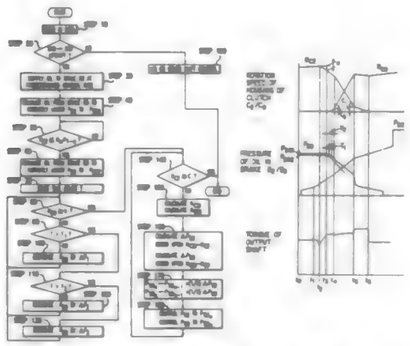
means for supplying grease to said sealed gear cavity comprising a coaxial bore through a central axis of the input shaft.

5,363,724

SPEED STAGE SHIFTING OF AUTOMATIC TRANSMISSION BY REDUCTION OF SERVO OIL PRESSURE TO SLIP LIMIT STAND-BY PRESSURE AND SUBSEQUENT DECREMENTS

Norimi Asahara, Aichi; Yasuo Hojo, Nagoya, and Hideaki Ohtubo, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1992, Ser. No. 952,981
Claims priority, application Japan, Oct. 7, 1991, 3-287142
Int. Cl.[5] F16H *61/06, 61/08*
U.S. Cl. 477—143 **3 Claims**



1. A method of speed stage shifting of an automatic transmission of a vehicle driven by an engine, said transmission comprising a speed change gear mechanism including rotary members such as gears and gear carriers and hydraulically operated friction engaging means and adapted to provide various speed stages according to selective engagement and disengagement of said friction engaging means, including a certain speed stage shifting during which a first one of said friction engaging means is disengaged, while a second one of said friction engaging means changes a transition state thereof, comprising the steps of:

detecting a rotation speed of a first one of said rotary members which changes rotation speed thereof according to a state of disengagement of said first friction engaging means during said certain speed stage shifting:

detecting a rotation speed of a second one of said rotary members which changes rotation speed thereof according to a state of change of transition state of said second friction engaging means during said certain speed stage shifting;

changing hydraulic pressure of said second friction engaging means at a gradual rate;

provisionally lowering hydraulic pressure of said first friction engaging means to a predetermined stand-by pressure with a start of said change of hydraulic pressure of said second friction engaging means, said stand-by pressure being such a pressure level marginally higher than a threshold pressure across which said first friction engaging means is changed from a nonsliding state to a sliding state;

further lowering the hydraulic pressure of said first friction engaging means from said stand-by pressure across said threshold pressure when it is detected that the rotation speed of said second rotary member has changed across a first predetermined threshold value therefor, with further subsequent periodical lowering of the hydraulic pressure of said first engaging friction means until it is detected that the rotation speed of said first rotary member has changed across a second predetermined threshold value therefor; and

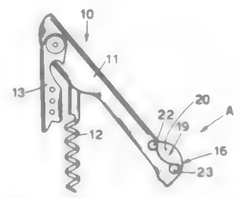
further lowering the hydraulic pressure of said first friction engaging means in coordination with said change of hydraulic pressure of said second friction engaging means toward a completion of the speed stage shifting.

5,363,725

CORKSCREW WITH FITTING TO SHEAR THE TINFOIL, PLASTIC OR OTHER CAPS ON THE NECK OF BOTTLES

Ferdinando Cellini, Via Percoto 11, 33085 Maniago (PN), Italy

Filed May 24, 1993, Ser. No. 64,926
Claims priority, application Italy, Jun. 11, 1992, UD92U000023; Jun. 30, 1992, UD92U000027
Int. Cl.[5] B67B *7/44*
U.S. Cl. 81—3.09 **10 Claims**



1. Corkscrew with a fitting to shear a cap on an upper part of a neck of a bottle comprising:

an at least partly flat grip;

a drawing screw anchored to the grip;

a short supporting element anchored to the grip;

at least one small shearing wheel cooperating with a recess provided on an outer edge of the grip, the recess being shaped so as to cooperate with the outer diameter of the neck of the bottle; and

positioning and guide means associated with said recess and cooperating with the upper part of the neck of the bottle.

5,363,726

HAND OPERATED TOOL DRIVER

Gary A. Smith, 8038½ Harrison St., Paramount, Calif. 90723

Filed Nov. 15, 1993, Ser. No. 152,732
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.29 **10 Claims**

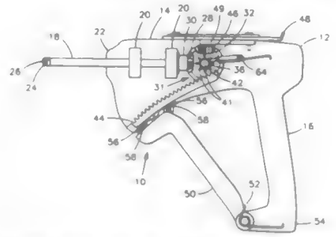
1. A hand operated tool drive device comprising:

a generally pistol-shaped housing having a barrel portion with a hand grip extending substantially perpendicularly from one end thereof and terminating in a lower end;

a drive shaft rotatably mounted in the barrel portion and projecting from an opposite end thereof;

a differential gear means coupling driving force to the drive shaft for rotation of same, and

a triggering lever pivotally connected to the lower end of the hand grip for movement of the lever toward, and alternately, away from the hand grip, the lever extending therefrom toward the barrel portion and terminating with an arcuate drive gear for movement therewith, the drive gear pivotally attached to the lever such that the move-



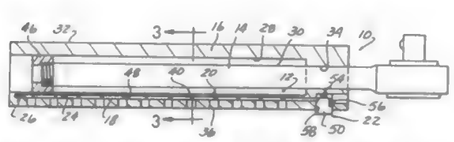
ment of the lever toward, and alternately away, from the hand grip forces the drive gear to move radially for engaging and alternately disengaging respectively the differential gear means for providing driving force on each cycle of movement of the triggering lever between drive and return strokes.

5,363,727

TELESCOPIC HAND TOOL APPARATUS WITH LOCKING MECHANISM

Pat Barth, 1582 Jones Dr., Ann Arbor, Mich. 48105, and Guy Dardenne, 410 Maple, Ypsilanti, Mich. 48198

Filed Jun. 25, 1993, Ser. No. 83,495
Int. Cl.[5] B25G *1/04*
U.S. Cl. 81—177.2 **15 Claims**



1. In a telescopic hand tool apparatus having locking means for releasably holding an elongated first member sheathed within an elongated second member at selected positions of telescopic extension and retraction between first and second end limits of travel, the improvement of said locking means comprising:

said second member having a longitudinally extending aperture disposed therein offset from and parallel to a longitudinally extending central axis of the second member, an elongated lock member disposed within said longitudinally extending aperture of said second member; and

at least one obstructive projection movable between a first position preventing relative movement between said first and second members and a second position allowing relative movement between said first and second end members.

5,363,728

TWO ROLL WEB CUTTER AND METHOD

Bertram F. Elsner, and Robert E. Molison, both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

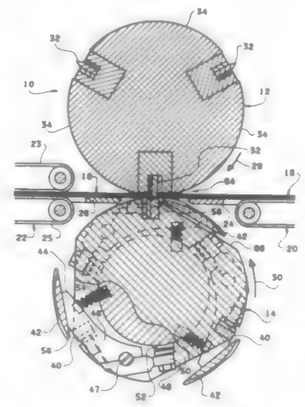
Filed Oct. 22, 1992, Ser. No. 964,728
Int. Cl.[5] B65H *29/54*
U.S. Cl. 83—23 **23 Claims**

5. A method of severing a lead end of a continuously moving sticky web into a plurality of web segments comprising the steps of:

a) moving a web through a nip between rotating anvil and knife rolls of a web cutter to cut successive segments from an end of the web and adhere ends of the segments and each successive lead end of web to the anvil roll;

b) breaking each segment away from the anvil roll and moving each segment away from the nip;

c) moving a plate on the anvil roll radially above the anvil roll immediately after forming each cut to strip each



successive lead end of the web from the anvil roll and thereby lift each such end above the anvil roll;

d) moving a lead edge of the plate on the anvil roll adjacent to a guideplate located downstream from the nip to define a web support surface extending away from the nip; and

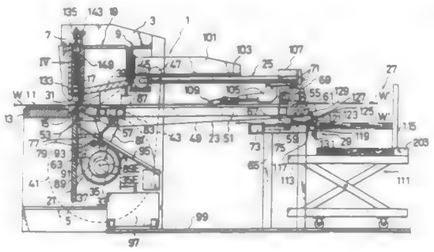
e) moving each of said elevated lead ends of the web along such surface and away from the web cutter.

5,363,729

SHEARING MACHINE

Kazui Ogasawara, Kanagawa, Japan, assignor to Amada Company, Ltd., Japan

Division of Ser. No. 754,748, Sep. 4, 1991, Pat. No. 5,195,414, which is a continuation of Ser. No. 285,396, Dec. 15, 1988, Pat. No. 5,062,333, which is a continuation-in-part of Ser. No. 227,133, Aug. 2, 1988, abandoned. This application Feb. 1, 1993, Ser. No. 11,756
Claims priority, application Japan, Aug. 3, 1987, 62-118130; Aug. 3, 1987, 62-192603; Aug. 5, 1987, 62-119307
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] B26D *1/08, 7/32*
U.S. Cl. 83—389 **1 Claim**



1. A shearing machine for shearing a plate workpiece comprising:

a frame;

a ram having an upper cutting blade and being mounted on the frame in a vertically movable manner;

a worktable being fixedly mounted on the frame and having a lower cutting blade to define an opening between the

upper cutting blade and the lower cutting blade so that a plate workpiece is placed so as to be sheared on the worktable;

an upper connecting plate being mounted on the frame adjacent to, and in parallel with, the ram;

a plate restraint means having a plurality of elastic bodies, which restraint means are supported by the upper connecting plate in a vertically movable manner and are urged resiliently to the lower direction for securing the workpiece on the worktable, said plate restraint means being in engageable contact with the ram so as to be raised by the upward movement of the ram, said plate restraint means including a plurality of elevating rods each having a flange member mounted on the respective upper ends thereof, said flange member cooperating with a fork member mounted on the upper section of the rain; and

a pressure adjusting means being mounted on the upper connecting plate and having a seat plate engageable with the elastic bodies to push the upper ends thereof by a hydraulic piston-and-cylinder, so that the resilient forces of the elastic bodies are adjustable.

5,363,730

APPARATUS FOR MANIPULATING SHEETS OR WEBS OF PAPER

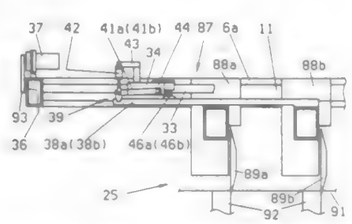
Alfred Besemann, Halstenbek, Germany, assignor to E.C.H. Will GmbH, Hamburg, Germany

Filed Jul. 29, 1992, Ser. No. 922,054

Claims priority, application Germany, Aug. 3, 1991, 4125805; Oct. 18, 1991, 4134458

Int. Cl.[5] B26D *1/22*

U.S. Cl. 83—425.3 **7 Claims**



1. Apparatus for manipulating sheet-like products comprising means for transporting the products in a predetermined direction along a predetermined path; tool positioning means including at least one movable holder adjacent said path; product engaging means including at least two tools movable with said at least one holder; and means for automatically adjusting said at least two tools relative to said path, said adjusting means comprising at least one guide, a locating device, means for moving said device along said at least one guide relative to said path, and means for coupling said device with said at least two tools, said coupling means comprising a distancing element for each of said at least two tools, said distancing elements having different lengths and said coupling means further comprising means for releasably mounting said distancing elements between said device and the respective tools to thus maintain said at least two tools at different distances from said device.

5,363,731

APPARATUS FOR DISPLACING AND ADJUSTING POWERED ROLLS SUPPORTED IN CROSSBEAMS FOR CONVEYING METAL PLATES

Horst Grafe, Hilchenbach, Germany, assignor to SMS Schloemann-Siegmag Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 5, 1991, Ser. No. 740,318

Claims priority, application Germany, Aug. 4, 1990, 4024824

Int. Cl.[5] B23D *19/00*

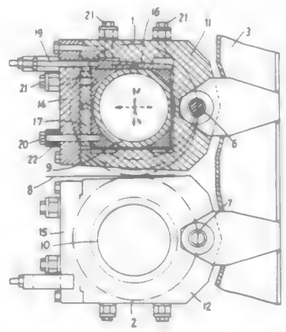
U.S. Cl. 83—436 **4 Claims**

1. An apparatus for moving and adjusting powered rolls for conveying metal plates and supported in tubular crossbeams, comprising:

a shear stand;

bearing brackets which suspend the crossbeams at the shear stand so as to be pivotable around a stationary axis essentially transverse to a principal plane of a passing metal plate;

separate means for adjusting each of the crossbeams relative to the metal plate;



moving means and adjustment means provided at at least one bearing bracket for at least one of horizontally adjusting and vertically adjusting the crossbeam of a powered roll, the moving means including wedges within a bearing bracket to be displaceable between the crossbeam of the powered roll and the bearing bracket, and to be in operative connection with adjustment elements; and

a horizontal wedge as part of the wedge for vertically adjusting the powered roll and a vertical wedge (17) for horizontally adjusting the powered roll.

5,363,732

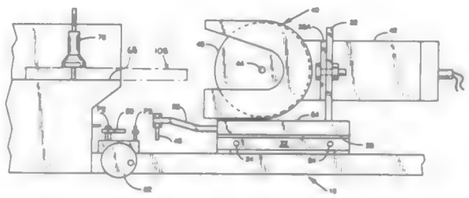
COPING APPARATUS

Raymond E. Heasley, 38 Silver La., McKees Rocks, Pa. 15136

Filed Mar. 19, 1993, Ser. No. 34,489

Int. Cl.[5] B27B *5/02, 5/18*

U.S. Cl. 83—471.2 **10 Claims**



1. Apparatus to cope molding including the combination of:

saw means essentially including a circular saw blade driven about a rotational axis by a motor for defining a predetermined cut width by the saw blade in a molding portion of a length of molding;

a template defining a predetermined profile for coping in said molding portion;

support means engageable with said length of molding to present said molding portion for coping by said saw means;

a stylus having a predetermined width substantially corresponding to said predetermined cut width for traversing the predetermined profile defined by said template; and

base means for positioning said saw blade in a confronting relation to cut said molding portion while said stylus operatively confronts said template, said base means further including a moveable base portion relative to a stationary portion for causing relative displacement between the saw blade and the stylus simultaneously with respect to said molding and said template, respectively, to cope said molding portion with the saw blade with the profile of the template as transversed by the stylus.

5,363,733

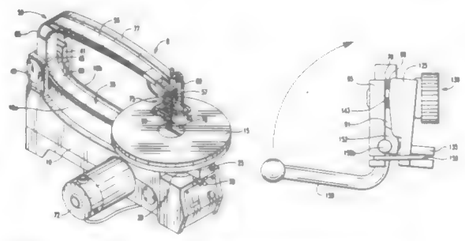
QUICK RELEASE SAW BLADE CHUCK AND SAW INCLUDING THE SAME

Charles J. Baird; Barry D. Wixey, and Louis C. Brickner, all of Pittsburgh, Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.

Filed Nov. 18, 1992, Ser. No. 978,107

Int. Cl.[5] B27B *19/02*

U.S. Cl. 83—786 **29 Claims**



16. A quick release saw blade chuck, comprising:

a blade holder having a first end including means for connecting said blade holder to a saw frame and a second end including at least a first surface;

b. a clamping member having at least an inner surface;

c. attaching means for attaching said clamping member to said blade holder such that said inner surface of said clamping member opposes said first surface of said blade holder to define a means for holding a blade, said means for holding a blade including a blade-accepting space for receiving an end of a saw blade, said blade accepting space having a length and a width and being disposed between said inner surface and said first surface on one side of said attaching means, said inner surface of said clamping member opposing said first space of said blade holder to also define a second space, said second space disposed between said inner surface and said first surface on an opposite side of said attaching means; and

d. means disposed in said second space for altering the size of said second space so as to pivot said clamping member about said attaching means, thereby varying the size of said blade-accepting space.

5,363,734

GUITAR HOLSTER

Stephen P. Wilenken, 1112 W. Porter, Apt. 4, Fullerton, Calif. 92633

Filed Jul. 1, 1993, Ser. No. 87,987

Int. Cl.[5] G10D *3/00*

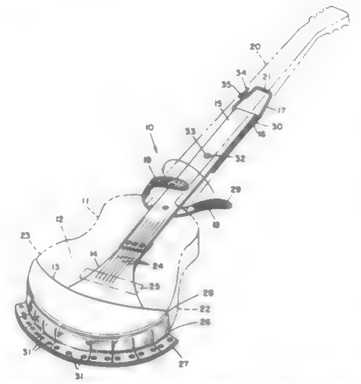
U.S. Cl. 84—327 **7 Claims**

1. A guitar holster for holding the body of a guitar, comprising:

(a) a rearwardly-facing element disposed in intimate relationship with the back side of the guitar;

(b) a forwardly-facing element extending from the bottom of the guitar body up to the guitar strings' anchoring points and peripherally-disposed about the portion of the body of the guitar disposed therebetween, the peripheral portion of the forwardly-facing element being secured to the complementary peripheral portion of the rearwardly-facing element to form a pocket for holstering both sides of the bottom portion of the guitar body therein up to the mediate portion thereof;

(c) means for securing the neck of the guitar to the rearwardly-facing element; and



(d) means for securing the entire combination of elements to a support structure, such as the housing for a guitar amplifier, or a speaker enclosure, or a wall.

5,363,735

ELECTRONIC MUSICAL INSTRUMENT OF VARIABLE TIMBRE WITH SWITCHABLE AUTOMATIC ACCOMPANIMENT

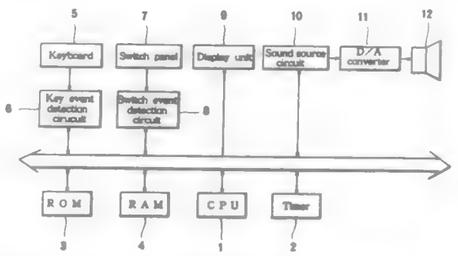
Masao Kondo, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 19, 1992, Ser. No. 979,637

Claims priority, application Japan, Nov. 20, 1991, 3-305141

Int. Cl.[5] G10H *1/06, 1/36, 1/42*

U.S. Cl. 84—622 **16 Claims**



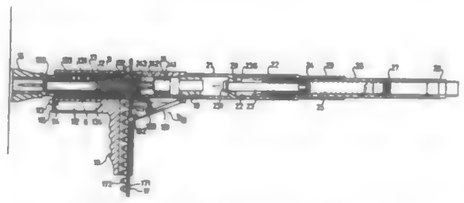
15. An electronic musical instrument comprising: memory means for memorizing first and second performance patterns; reading means for reading out either first and second performance patterns; switching means for switching from the first performance pattern to the second performance pattern during the course of reading operation of the memory means; a manual implement operable to input a manual performance; generating means for generating a musical tone according to the read performance pattern and the inputted manual performance; control means for changing a tone color of the musical tone in response to the switching from the first performance pattern to the second performance pattern; and setting means manually operable prior to start of the manual performance for setting desired tone colors corresponding to the first and second performance patterns.

5,363,736

SEMI-AUTOMATIC ANCHOR SHOOTER

Kuang-Wu Huang, No. 66, Min-Chyuan W. Rd., Taipei, Taiwan, Prov. of China

Filed Jan. 5, 1994, Ser. No. 177,390
Int. Cl.[5] B25C *1/08*
U.S. Cl. 89—1.14 3 Claims



1. A semi-automatic anchor shooter comprising a shooting mechanism and a thrusting mechanism;

said shooting mechanism comprising a main body, an inner tube disposed in a front portion of said main body, a shooting assembly, a dust guard, and a hammer disposed at a rear portion of said main body;

said shooting assembly including a hollow body member, a head member coupled to a front portion of said body member, and a piston rod disposed in said coupled body member and head member to reciprocatingly move therein;

said inner tube being received in said front portion of said main body and said shooting assembly being received in said inner tube and fixed thereto by means of a screw which passes through a hole formed on said main body and extends into said inner tube before being retained in an elongated slot formed on said hollow body member, such that said shooting assembly may reciprocatingly displace inside said inner tube within a predetermined range;

said inner tube being provided at each side of a rear seat thereof a coil spring and a steel ball received in front of said coil spring both of which are fixed to said inner tube by a screw, such that said steel balls protrude into an inner side of said rear seat of said inner tube to springily clamp between them a powder chain by engaging with one of a plurality of continuous recess pairs at two sides of said powder chain, said powder chain extending into said main body from a bottom opening of a front grip of the main body and being moved upward in one direction by means of a springy trigger; said powder chain consisting of a series of powder packs each of which locates between two adjoining recess pairs and is thereby positioned in place by said steel balls; said springy trigger consisting of a lever inclinedly extending between said front grip and said rear portion of said main body and an inclined plate connected to a front end of said lever, said lever connecting at a point near its central portion a first spring to give said lever some extent of spring force so that said trigger may be springily moved to shift the powder chain in one direction;

said hammer being disposed in said rear portion of said main body and having a second spring and a hollow housing put over a front section thereof; said second spring and said hollow housing being fixed in said main body by means of a first connection piece behind said hammer, such that a pointed head of said hammer reaches into said rear seat of said inner tube, pointing to a percussion position of said positioned powder pack; said hammer and said shooting assembly being maintained at a pretermined relative position by means of a restoring bar disposed between said hollow housing of said hammer and said shooting assembly, such that when said shooting assembly restores to it original position, said restoring bar pushes said hammer backward and keep the same in place lest the feeding of said powder chain should be hindered;

said shooting mechanism comprising a coupling, a sliding block, a centre rod, a connection member, a third spring, a hollow push member, an inner hexagon screw, a second connection piece, and a sleeve; said coupling being screwed to a rear end of said first connection piece of said shooting mechanism and having a middle partition therein; said centre rod, said sliding block, and said connection member all being received in said coupling; said centre rod having a front head with larger outer diameter and a threaded rear end to engage with said connection member, said front head of said centre rod being retained at a front side of said middle partition of said coupling and a rear portion of said centre rod being received in said sliding block and said connection member behind said sliding block; and said centre rod being provided near a front end thereof a spring key which has a backward and downward inclined top surface;

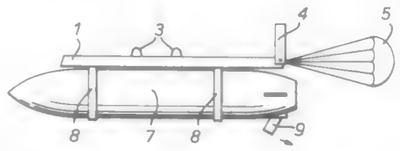
said third spring being put over a rear end of said connection member and said push member being further put over said third spring with a front end thereof screwed to said rear end of said sliding block so that said push member may push said sliding block to move; said inner hexagon screw being internally screwed to a rear end of said push member to abut against a rear end of said third spring such that an adjustment of the position of said inner hexagon screw in said push member may adjust the spring force of said third spring, lest said third spring should fatigue and deform after a long period of use; said sleeve having a front end with internal threads for said sleeve to screw to an externally threaded rear end of said coupling and receiving a part of said push member therein, and thereby preventing said push member from loosely swaying; and said second connection piece being screwed at one end to said rear end of said push member.

5,363,737

AIR-VEHICLE LAUNCHER APPARATUS

Graham Wallis, Stevenage, England, assignor to British Aerospace Public Limited Company, Hampshire, England

Filed Mar. 22, 1993, Ser. No. 35,216
Claims priority, application United Kingdom, Mar. 27, 1992, 9206756
Int. Cl.[5] F41F *3/06;* B64D *1/04*
U.S. Cl. 89—1.54 4 Claims



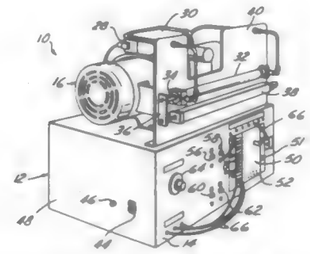
1. Air vehicle launching apparatus comprising an adaptor for releasable attachment to an aircraft-mounted launcher and to an air vehicle, including means for releasing the air vehicle from the adaptor subsequent to release of the adaptor from an aircraft while in flight, said adaptor being provided with a deployable, stabilizing empennage and flight retardation means.

5,363,738

PORTABLE ELECTROHYDRAULIC TRAINER

Richard J. Kotch, Macomb; John A. O'Brien, Waterford, and George A. McConnell, Beverly Hills, all of Mich., assignors to Vickers, Incorporated, Maumee, Ohio

Filed Aug. 2, 1993, Ser. No. 100,389
Int. Cl.[5] F01B *25/26;* F15B *13/044*
U.S. Cl. 91—1 5 Claims



1. Apparatus for training an operator in use of electrohydraulics comprising:

a portable support including a rectangular enclosure having an operator panel on one wall of said enclosure,

an electric-motor/hydraulic-pump integrated within a unitary housing along with an internal fluid sump, said unitary housing being mounted on a second wall of said enclosure contiguous with said one wall,

an electrohydraulic valve on said support preconnected to said pump with at least one solenoid responsive to electronic valve control signals for controlling said valve to supply fluid from said pump,

a hydraulic load on said support preconnected to said valve for mechanical motion as a function of fluid supplied by said valve,

electronic control means on said support within said enclosure and responsive to command signals for generating said valve control signals,

command means on said panel responsive to an operator for generating said command signals,

a plurality of electrical connectors on said operator panel individually preconnected behind said panel within said enclosure to said command means, said control means and said at least one solenoid,

means for selectively interconnecting said connectors externally of the enclosure, and

a second panel on said enclosure adjacent to, parallel to and extending from said operator panel, said electric-motor/hydraulic-pump housing and said valve being disposed behind said second panel and preconnected to each other by means inaccessible at said operator panel and said second panel, said load comprising a hydraulic cylinder mounted in front of said second panel above said operator panel.

5,363,739

REDUCED ICING LOW FRICTION AIR VALVE

Chris W. Sydow, Champlin, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Oct. 12, 1993, Ser. No. 134,052
Int. Cl.[5] F01L *31/02;* F16K *31/44*
U.S. Cl. 91—346 9 Claims

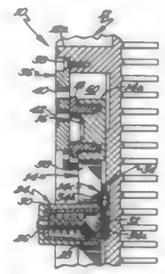
1. An air valve in combination with an air motor having a reciprocating piston and first and second piston chambers, said air valve comprising:

a housing having first and second ends and forming a valve chamber therein, said chamber being connected to an incoming source of pressurized air;

a slide having first and second ends and being slideably located in said chamber for reciprocation;

first and second port plates, each of said port plates comprising first and second exhaust ports and first and second piston chamber ports;

first and second valve cups located in said slide, each of said cups having a sealing surface around the periphery thereof, proximal ends facing one another and distal ends, said cups alternately directing said incoming pressurized air first from said valve chamber into each said piston



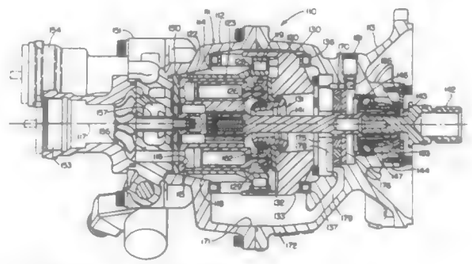
chamber and thence from each said piston chamber into said exhaust ports as said slide reciprocates, such that when one of said cups connects one of said piston chamber ports and said exhaust ports, said other valve cup distal end substantially obstructs said other piston chamber port so as to meter air inflow thereto and thereby maintaining air pressure in said valve chamber and balance the force on the plate thereby enhancing durability.

5,363,740

FLUID MOTOR/PUMP WITH SCAVENGED CASE

Kim L. Coakley, Camarillo, Calif., assignor to Pneumo Abex Corporation, Kalamazoo, Mich.

Filed Jul. 16, 1993, Ser. No. 93,496
Int. Cl.[5] F01B *3/00*
U.S. Cl. 91—499 20 Claims



1. A fluid device comprising

a case having a closed chamber,

a rotating element mounted for rotation within said closed chamber,

a reciprocating piston drivingly connected to said rotating element such that rotation of said rotating element corresponds to reciprocating movement of said piston,

means for admitting and discharging fluid to and from a cylinder in which said piston reciprocates,

at least one path for flow of fluid into said closed chamber all fluid entering said closed chamber collectively at a first rate, and

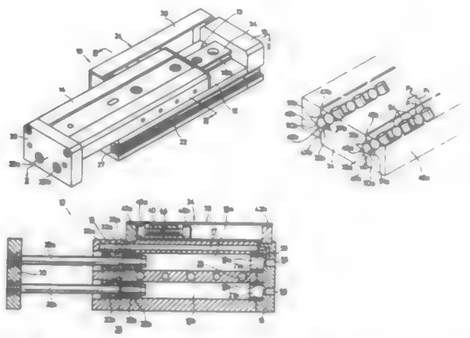
a scavenger pump drivingly connected to said rotating element and operable to pump fluid out of said closed chamber at a second rate greater than said first rate, thereby to maintain the level of fluid within said closed chamber below a predetermined level.

5,363,741

SLIDE ACTUATOR

Susumu Takada; Masayuki Hosono; Kouichirou Ishibashi, and Koichiro Kanda, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1993, Ser. No. 77,608
Claims priority, application Japan, Dec. 24, 1992, 4-088434
Int. Cl.[5] F01B *31/14*
U.S. Cl. 92—13.5 32 Claims



1. A slide actuator comprising:
a cylinder body having first and second chambers and first and second ports for communication between said first and second chambers and an external pressurized fluid source;
first and second pistons respectively reciprocally displaceable within said first and second chambers, in response to the pressurized fluid;
first and second piston rods attached at respective first ends to said first and second pistons, and having respective second ends projecting from said cylinder body;
a guide rail mounted centrally on top of said cylinder body;
a slide table slidable along said cylinder body and guided by said guide rail, said slide table having one end fixed to projecting ends of said first and second piston rods, and having mounted underneath said slide table two guide members which bracket said central guide rail;
said central guide rail having two respective 90° V-shaped grooves on opposed sides thereof, and said guide members having 90° V-shaped grooves opening in an opposed fashion to said two respective 90° V-shaped grooves, to thereby define two channels;
a plurality of cylindrical rollers, alternately inclined by 90°, and fitted in said channels; and
stoppers disposed in said grooves for preventing said rollers from exiting from said grooves.

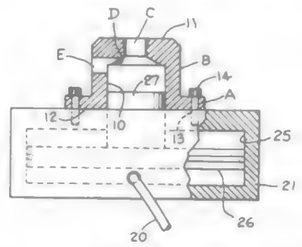
5,363,742

AIR OVER OIL INTENSIFIER

Lawrence F. Yuda, P.O. Box 499, Westminster, S.C. 29693

Continuation of Ser. No. 37,003, Mar. 25, 1993. This application Feb. 7, 1994, Ser. No. 192,789
Int. Cl.[5] F15B *21/04*
U.S. Cl. 92—79 2 Claims

1. An oil chamber for use in an air over oil intensifier comprising:
a base mounting member having a central opening therein;
a cylindrical housing carried by said base mounting member in axial alignment with said central opening;
an inner cylindrical wall in said housing on one side of said base mounting member generating a cylindrical interior volume;
a first port in a central portion of a face member at a head end of said housing opening into said cylindrical interior;
a piston within said cylindrical wall;
an inwardly tapering surface in said face member at said head end within said cylindrical housing opposite said piston converging into said first port generating a volume on one side of said cylindrical wall remote from said base mounting member facilitating the bleeding off of air when the cylindrical housing is in an upright position; and
a second port in a side portion of said housing between said face member and said base mounting member opening into said volume generated by said inwardly tapering surface and into said cylindrical interior volume generated by said inner cylindrical wall for collecting air entrapped in said cylindrical housing at a juncture between said tapering surface and said second port when said cylindrical housing is in horizontal position and said second port is in an uppermost position;
whereby said first port serves to bleed air moved into said volume generated by said inwardly tapering surface responsive to movement of said piston toward said head end from said oil chamber when mounted in a vertical position, and said second port serves to bleed air from said oil chamber collected at said juncture responsive to said movement of said piston when mounted in a horizontal position, said first and second ports bleeding air from a highest collection point of said cylindrical housing both in a vertical position and in a horizontal position.

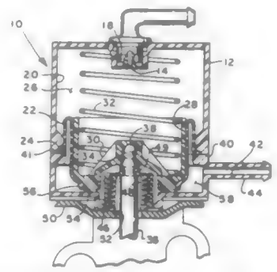


5,363,743

FLUID PRESSURE SERVOMOTOR

Claus D. Raddatz, Bolingbrook; Ronald J. Wojtecki, Naperville, and Norman E. Zerndt, Palatine, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 14, 1993, Ser. No. 48,162
Int. Cl.[5] F16J *3/02*
U.S. Cl. 92—98 D 10 Claims



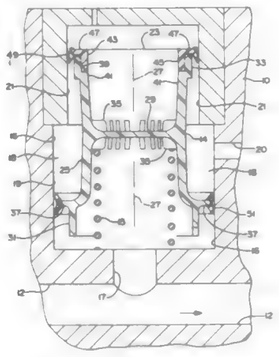
1. A fluid pressure servomotor comprising:
(a) housing means defining an interior cavity and having a fluid pressure port communicating with said cavity;
(b) a flexible diaphragm disposed in said cavity and sealed thereabout to form on one side thereof a fluid pressure chamber communicating with said first fluid port;
(c) rigid insert means disposed through and sealed about the central region of said diaphragm, and movable therewith in response to changes in pressure in said chamber, said insert means defining a pivot surface on the chamber exterior side of said diaphragm and a cup-shaped portion on the interior side;
(d) an elongated actuator member having one end thereof pivotally engaging said pivot surface for movement in the direction of elongation of said insert means in response to movement of said diaphragm;
(e) spring means disposed in said chamber and having one reaction end thereof registered against said housing means and the opposite reaction end thereof registered against the closed end of said cup-shaped surface; and,
(f) said means defining said pivot surface includes means operable to limit rotation of said insert means with respect to said actuator member.

5,363,744

ACCUMULATOR PISTON HAVING MULTIPLE ELASTOMERIC SEALS

Gerald P. Pichler, Dearborn, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 7, 1993, Ser. No. 163,317
Int. Cl.[5] F16J *7/00*; F16L *55/04*
U.S. Cl. 92—242 9 Claims



1. An accumulator piston, comprising:
a molded, rigid plastic body that includes a tubular body portion centered on a central axis, said tubular body portion having first and second ends, a first flange extending radially outwardly from said tubular body portion near said first end, an annular recess formed in said second end, and a partition transversely spanning the tubular body portion at an intermediate point between said first and second ends;
a molded, rigid, annular plastic insert comprising an axial section seated in said annular recess, and a second flange extending radially outwardly from said axial section;
a first annular elastomeric seal mounted on said first flange; and
a second annular elastomeric seal mounted on said second flange.

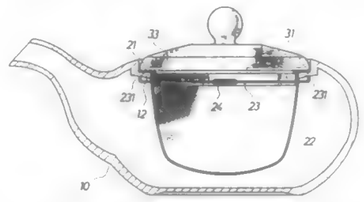
5,363,745

BEVERAGE VESSEL WITH MAGNETIC LID

Hsiang-Cheng Lin, No. 42, Yung-Chih St. Ying-Ko Chen, Taipei Hsien, Taiwan, Prov. of China

Filed Nov. 30, 1993, Ser. No. 159,474
Int. Cl.[5] A47J *31/10*
U.S. Cl. 99—306 8 Claims

1. A beverage vessel comprising a pot, a filter cup and a lid, the pot having at least one outlet spout, a top mouth and an internally flanged rim around the top mouth, the filter cup adapted to fit in the pot, the filter cup having an outwardly flanged magnetic rim to fit on said internally flanged rim of the pot and securement means for holding the rim of the cup in engagement with the rim of the pot, the lid having an outer



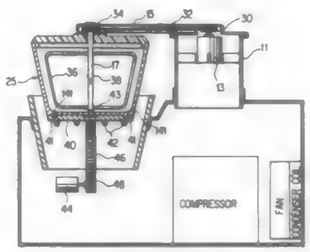
ring with embedded magnet means to fit on the rim of the filter cup and be magnetically held in engagement therewith.

5,363,746

AUTOMATIC FOOD PREPARATION DEVICE

Ellis D. Gordon, c/o Cygnus Appliance Corporation ISIS Center, ISU Research Park, 2501 N. Loop Dr., Ames, Iowa 50010

Continuation of Ser. No. 605,177, Oct. 29, 1990, abandoned. This application Dec. 9, 1992, Ser. No. 988,349
Int. Cl.[5] A23C *9/00*; A23G *9/00*; A47J *27/00*; B01F *15/06*
U.S. Cl. 99—328 28 Claims



1. An automated food preparation device comprising:
a housing;
a container engageable with said housing and adapted to contain a food product;
means in said housing for cooling said container, whereby a food product therein is cooled;
means in said housing for heating said container, whereby a food product therein is heated;
means associated with said housing for mixing a food product in said container; and
means in said housing for automatically actuating at least one of said cooling, heating, or mixing means, whereby the food product may be automatically processed in said container;
wherein said means for cooling said container includes a refrigerator circuit having an evaporator plate.

5,363,747

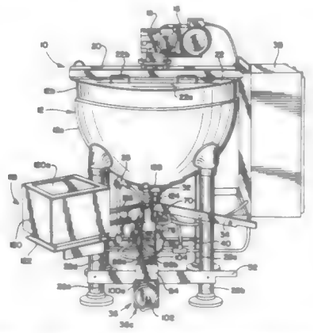
PROCESSING VESSEL HAVING DISCHARGE METERING/MIXING AUGER

Robert A. Clark, Plainfield; Rory R. Puzon, Darien, and James T. Wlodarczyk, Chicago, all of Ill., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Continuation of Ser. No. 27,125, Mar. 5, 1993, abandoned. This application Oct. 20, 1993, Ser. No. 139,611
Int. Cl.[5] A47J *27/14*; B01F *15/02, 15/06*
U.S. Cl. 99—348 29 Claims

1. Processing apparatus comprising, in combination, mixing kettle means defining an internal chamber for receiving one or more mixable products and including means for mixing said products within said chamber, said kettle means having a discharge opening, control valve means cooperative with said kettle means to enable selective discharge of product from said

discharge opening, and metering/mixing auger means operatively associated with said kettle and including housing means defining a metering stage adapted to receive product discharged from said discharge opening, said housing means further defining a mixing stage longitudinally aligned with and downstream from said metering stage, auger means disposed within housing means and extending substantially the longitudinal lengths of said metering and mixing stages, said auger means being operative to convey product from said discharge opening through said metering and mixing stages, said housing



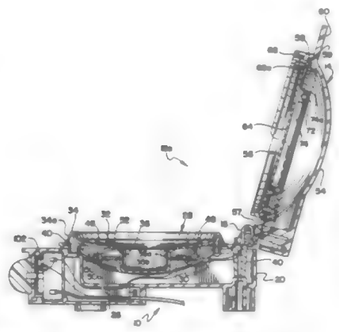
means defining a trough communicating with said auger means disposed within said mixing stage to enable introduction of an additive into product conveyed through said mixing stage, said auger means being operative to admix said additive and product within said mixing stage and convey the mixture to an outlet in said mixing stage at a greater rate then the rate the product is conveyed by said auger means through said metering stage, whereby to accommodate increased product volume within said mixing stage without inhibiting the rate of product conveyance through said metering stage.

5,363,748

ELECTRICAL COOKER

Michael W. Boehm, Batavia, and Robert W. Johnson, Naperville, both of Ill., assignors to Tsann Kuen USA, Inc., Naperville, Ill.

Filed Jan. 15, 1993, Ser. No. 5,232
Int. Cl.[5] A47J *37/00*
U.S. Cl. 99—372 **22 Claims**



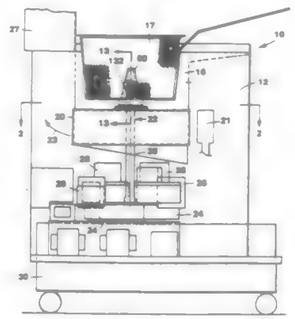
1. A device for cooking foodstuffs comprising:
a first cooking plate;
a second cooking plate movable relative to said first cooking plate to a closed position to form with said first plate a cooking chamber which substantially restrains the escape of vapor therefrom, said first plate having a first surface, a portion of said first surface contacting the food stuffs when said second plate is in said closed position, said first surface also forming well means for containing liquid; within said cooking chamber; and
first heating means for supplying heat to said well means to vaporize at least a portion of the liquid in said well means to supply the vapor to said cooking chamber.

5,363,749

MICROWAVE ENHANCED DEEP FAT FRYER

James R. Hurley, E. Weymouth; Paul J. Childs, Swampscott, and Timothy J. Norman, Wayland, all of Mass., assignors to Tecogen, Inc., Waltham, Mass.

Division of Ser. No. 893,591, Jun. 2, 1992, abandoned, which is a continuation of Ser. No. 494,588, Mar. 16, 1990, abandoned. This application Sep. 7, 1993, Ser. No. 118,122
Int. Cl.[5] A47J *37/12*; A23L *1/025*
U.S. Cl. 99—403 **17 Claims**



1. A cooking vessel for use with a microwave enhanced deep fat fryer wherein microwaves are introduced into said cooking vessel by microwave introducing means within said cooking vessel, said cooking vessel comprising:
an open topped basket having elongated side, end, and bottom oil porous surfaces, said surfaces being substantially impenetrable to microwave energy;
a handle extending from one said end surface; and
an indentation centrally located in said bottom surface for accepting the microwave introducing means.

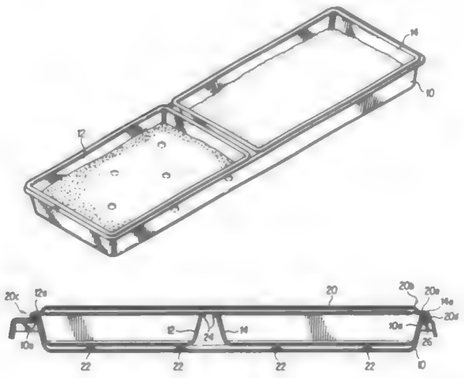
5,363,750

PASTA PAN AND COOKING METHOD

Danny T. Miller, Metamora, and Robert Viviano, Plymouth, both of Mich., assignors to Little Caesar Enterprises, Inc., Detroit, Mich.

Filed Jan. 4, 1993, Ser. No. 116
Int. Cl.[5] A47J *43/18*
U.S. Cl. 99—426 **28 Claims**

1. A pan assembly including:
an outer pan;
a first insert pan received within said outer pan, said first insert pan having a plurality of holes extending through a bottom surface thereof;
a second insert pan received within said outer pan adjacent to said first insert pan;
the pan assembly further including spacing means for spacing said bottom surface of said first insert bottom surface of said outer pan to thereby provide a space between said bottom surface of said outer pan and said bottom surface of said first insert pan, wherein said plurality of holes open into said space such that an interior of said first insert pan is in communication with said space by said plurality of holes, and wherein said bottom surface outer pan is non-



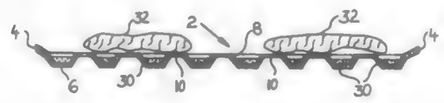
apertured at least in a region disposed below said plurality of apertures of said first insert pan.

5,363,751

FLAME SUPPRESSANT MARINATING GRILL OVERLAY

Nick J. Prestigiacomo, 965 Old Kings Rd., Holly Hill, Fla. 32117

Continuation-in-part of Ser. No. 798,188, Nov. 26, 1991, Pat. No. 5,242,704. This application Jan. 29, 1993, Ser. No. 11,005
Int. Cl.[5] A23L *1/00*; A47J *37/06, 37/07*
U.S. Cl. 99—444 **5 Claims**



1. A flame suppressant marinating grill overlay comprising:
raised outer edges disposed around a perimeter of said flame suppressant marinating grill overlay whereby food juices may be constrained;
gutters comprising a flat continuous surface disposed within said raised outer edges wherein food juices may accumulate;
ridges comprising a flat top surface disposed between said gutters; and
holes disposed within said flat top surface wherethrough excess food juices may escape.

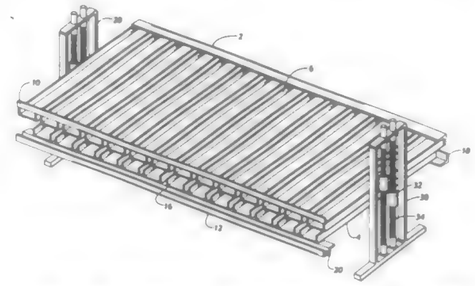
5,363,752

COOKING GRILL

Fred Weil, 1750 Savannah Hwy., Charleston, S.C. 29407

Filed Aug. 31, 1993, Ser. No. 115,426
Int. Cl.[5] A47J *37/06*
U.S. Cl. 99—445 **4 Claims**

1. A cooking grill, comprising:
a. an upper grid having a plurality of parallel channels wherein said channels are spaced apart from each other;
b. a lower grid located below said upper grid in a plane which is generally parallel to a plane of said upper grid, having a plurality of parallel channels wherein said channels are spaced apart from each other, and wherein said channels of said lower grid are horizontally offset from said channels of said upper grid to collect grease which falls from food placed on said upper grid;
c. means for elevating and lowering said upper grid in relation to said lower grid; and
e. means for elevating and lowering said lower grid in relation to said upper grid, wherein the elevating and lowering of said upper grid and said lower grid in relation to



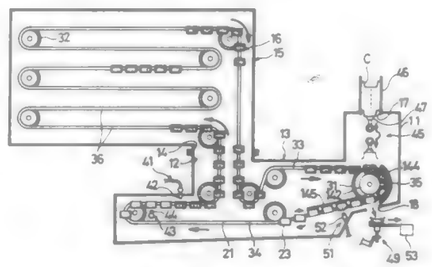
each other controls a flame which is present under said lower grid to allow said flame to reach said food or prevent said same flame from reaching said food.

5,363,753

MACHINE FOR PRODUCING SOYBEAN CURD

Michio Ueda; Yoshihito Kondo, and Hiroaki Umazume, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Nov. 9, 1993, Ser. No. 149,338
Claims priority, application Japan, Nov. 11, 1992, 4-77684[U]
Int. Cl.[5] A23C *3/02*; A23J *1/00*; A23L *1/20*
U.S. Cl. 99—453 **6 Claims**

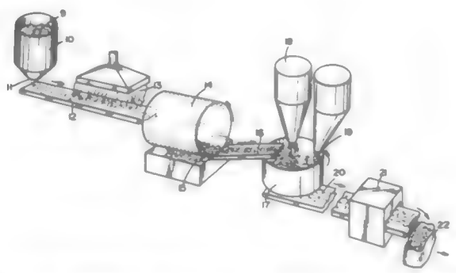


1. a machine for producing soybean curd comprising:
a conveyor having coagulating buckets,
a device for filling a mixture of soybean milk and a coagulant into the coagulating buckets,
means for heating the mixture in the buckets to coagulate the mixture into soybean curd, and
a device for withdrawing the soybean curd from the coagulating buckets,
the machine being characterized in that a preheater for preheating the coagulating buckets to a temperature higher than the temperature of the mixture to be filled is disposed for a path of travel of the buckets at a position upstream from the filling device.

5,363,754
APPARATUS FOR PREPARING ANIMAL FEEDSTUFF FROM COTTON SEED

Richard G. Coles, and Ian J. Broadfoot, both of Toowoomba, Australia, assignors to Grainco Queensland Co-Operative Association Limited, Queensland, Australia

Continuation-in-part of Ser. No. 753,905, Sep. 3, 1991, Pat. No. 5,204,102. This application Dec. 28, 1992, Ser. No. 997,539
Int. Cl.[5] A23L *1/20;* **A61K** *35/78*
U.S. Cl. 99—484 **9 Claims**

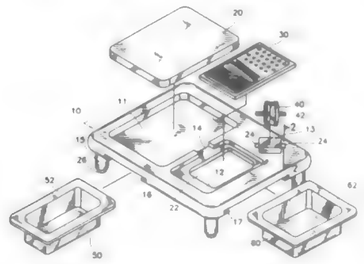


1. An apparatus for preparing a flowable animal feedstuff comprising cotton seed, the apparatus comprising a delinter to at least partially remove lint and/or tails from the cotton seed, the delinter including a heater to burn the fluffy parts of the cotton seed;
first coating means to at least partially coat the delinter cotton seed with a binder;
second coating means to at least partially coat the delinted cotton seed with a filler;
a drier to dry the coated cotton seed to produce a flowable product; and
conveying means to convey the cotton seed between the delinter, first coating means, second coating means and drier.

5,363,755
COMBINATION OF UTENSILS

David Liang, 4Fl., No. 30, Lane 26, Taisun St., Taipei, Taiwan, Prov. of China

Filed Apr. 29, 1994, Ser. No. 235,389
Int. Cl.[5] B02C *19/20;* **A41J** *43/25*
U.S. Cl. 99—484 **5 Claims**

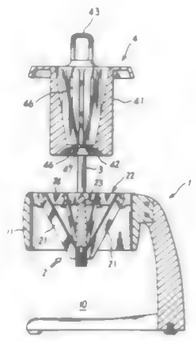


1. A combination of utensils comprising:
a table defining an upperside and an underside, the upperside of the table defining a first recess, a second recess, a cutout being in communication with the first and second recesses, a third recess and two shaft-receiving recesses each defining a narrow entry, the table defining an aperture within the second recess;
a chopping board being receivable in the first recess;
a mandolin/grater being receivable in the second recess;
a shaft and a sharpening wheel formed on the shaft, whereby the sharpening wheel is pivotably receivable in the third recess as two ends of the shaft are retained in the shaft-receiving recesses;
a tool-receiving box being slidably mounted on the underside of the table;
a food-receiving box being slidably mounted on the underside of the table, whereby food which has been processed by means of the mandolin/grater directly fall through the aperture into the food-receiving box when the mandolin/-grater is received in the second recess, whereby food which has been chopped on the chopping board can be moved from the chopping board through the aperture into the food-receiving box when the mandolin/grater is removed from the second recess; and
four feet projecting downwards from the underside of the table near four corners of the table whereby the feet stand on a worksurface.

5,363,756
FRUIT AND VEGETABLE CUTTER

Narahiko Muro, Tokyo, Japan, assignor to Muro Corporation, Tokyo, Japan

Filed May 4, 1993, Ser. No. 56,384
Claims priority, application Japan, May 6, 1992, 4-140931
Int. Cl.[5] A47J *17/00*
U.S. Cl. 99—538 **12 Claims**

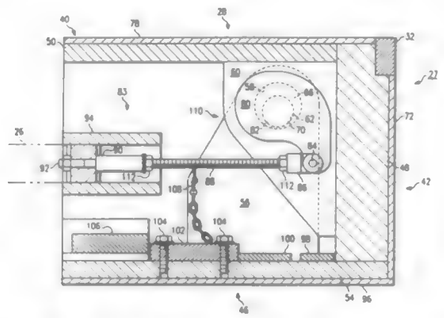


1. A fruit and vegetable cutter, comprising:
(a) a base having a bottom surface adapted to rest on a substantially horizontal surface, said base supporting an annular frame at a sufficient distance above said bottom surface to permit a dish to be inserted thereunder;
(b) a cutter assembly comprising a holding frame mounted in said annular frame, an upwardly projecting cone adapted to fit or stick into a fruit or vegetable centrally located within said holding frame, blades extending radially from an outer end adjacent said holding frame to an inner end adjacent said cone, first means removably fastening the outer ends of said blades to said holding frame and second means removably fastening the inner ends of said blades to said cone;
(c) a press-down member having a concave pressure surface facing the blades of said cutter assembly;
(d) a pair of guide rods extending upward from said base to a level above said annular frame, said press-down member being slidably mounted on said guide rods for movement towards said cutter assembly for forcing a fruit or vegetable over said cone and through said blades and for movement away from said cutter assembly to a position where another fruit or vegetable may be placed on said cutter assembly.

5,363,757
METHOD AND APPARATUS FOR ADJUSTING RAM BALER PLATEN

Horace R. Newsom, Waco, Tex., assignor to Harris Waste Management Group, Inc., Peachtree City, Ga.

Filed Dec. 30, 1992, Ser. No. 998,468
Int. Cl.[5] B30B *13/00, 9/00*
U.S. Cl. 100—39 **14 Claims**

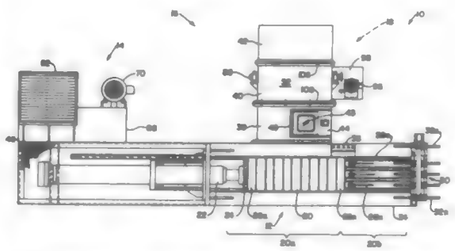


12. A method for adjusting the cutting assembly of a ram baler comprising the steps of:
providing a platen having a top assembly and a bottom assembly;
attaching a bottom cutter to said top assembly;
attaching a top cutter to the ram baler a first vertical distance from said bottom cutter wherein said bottom cutter and said top cutter cooperate for cutting said material within said baler;
adjusting said first vertical distance to compensate for wear of said bottom assembly by varying a second vertical distance between said bottom assembly and said top assembly with a first adjusting mechanism housed inside said platen;
providing said first adjusting mechanism with a rotatable adjusting pin having opposing ends;
supporting said opposing ends from said top assembly;
suspending a shoe from a portion of said adjusting pin; and
rotating said adjusting pin to force said shoe against said bottom assembly.

5,363,758
BALER FOR POLYSTYRENE MATERIAL

Forrest Wildes; Wayne Maki, both of Baxley, and Chris A. Jefferson, Hazlehurst, all of Ga., assignors to Harris Waste Management Group, Inc., Minneapolis, Minn.

Filed Feb. 8, 1992, Ser. No. 831,430
Int. Cl.[5] B30B *15/26, 15/08*
U.S. Cl. 100—43 **2 Claims**
MICROFICHE APPENDIX INCLUDED
(44 Microfiche, 1 Pages)

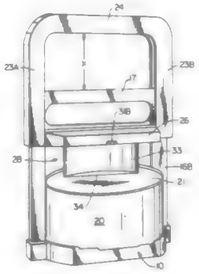


1. A baling system for baling rigid foam material having internal cells comprising:
a. a bale chamber;
b. a ram movable in a horizontal direction for compressing material in the bale chamber;
c. means for repeatedly providing selected amounts of foam material to the baling chamber;
d. means for compressing each of the repeatedly provided amounts of foam material and for collapsing the cells at a predetermined pressure;
e. means for determining when sufficient material is in the baling chamber to comprise a finished bale; and,
f. means for moving the ram to compress the finished bale to a density in the range of 10 to 20 pounds per cubic foot.

5,363,759
HAND-OPERATED CAN PRESS

George A. D'Ambrosio, Peapond Rd., Katonah, N.Y. 10536

Filed Oct. 12, 1993, Ser. No. 133,906
Int. Cl.[5] B30B *9/06, 15/06*
U.S. Cl. 100—110 **10 Claims**



1. A hand-operated can press for forcing a can end axially into moist can contents against an opposite unsevered can end to expel liquid from said contents comprising
a) a base on which the unsevered can end is positionable,
b) a pair of parallel standards extending rigidly and substantially perpendicularly from the base to be alongside the positioned can and parallel to the can axis,
c) a slide element linearly translatable along the standards,
d) a platen mounted on the slide element for linear movement from a retracted position permitting placement of the can on the base to an inserted position engaging and pressing the severed can end into the moist contents within the can, and
e) substantially parallel opposed inner and outer squeezing handles extending substantially perpendicularly from the standards and slide element respectively and spaced sufficiently close to one another in the retracted position of the platen to be grasped by an adult hand and squeezed together to advance the platen toward its inserted position while the entire press with the can may be held in that one grasping hand for appropriate drainage of liquid expelled from the can contents,
f) the inner squeezing handle spanning ends of the pair of standards remote from the base.

5,363,760

ROTOR UNIT FOR A POSTAGE METER MACHINE

Johann Lindenmueller, Maiching, and Alois Wagner, Olching, both of Germany, assignors to Ascom Hasler AG, Bern, Switzerland

PCT No. PCT/CH90/00149, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991, PCT Pub. No. WO90/16047, PCT Pub. Date Dec. 27, 1990

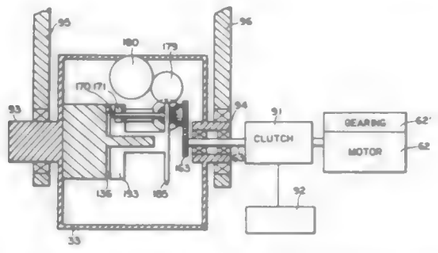
PCT Filed Jun. 21, 1990, Ser. No. 634,218

Claims priority, application Switzerland, Jun. 22, 1989, 02320/89

The portion of the term of this patent subsequent to Sep. 5, 2010, has been disclaimed.

Int. Cl.[5] B41L *47/46*

U.S. Cl. 101—91 11 Claims



1. A rotor unit for a postage meter machine comprising:
a rotatably supported rotor cylinder;
at least one stamp arranged at rotor cylinder, a plurality of adjustable number wheels being assigned to the stamps;
setting elements which can be mechanically coupled to the number wheels and by means of which these wheels can be adjusted according to requirements of a user;
a drive shaft which is rotatable in both directions (a, b) of rotation and which cooperates with the adjusting elements;
a drive motor which drives drive shaft;
locking means which lock all number wheels in their respective position whose setting is not to be changed at the particular time; and
connecting means which, depending on the direction (a, b) of rotation of said drive shaft, act in such a way that this drive shaft can be coupled with any desired number wheel when rotating in direction (b) and a coupled number wheel can be brought into a desired setting position when the shaft rotates in the other rotating direction (a).

5,363,761

PLATE INKING DEVICE

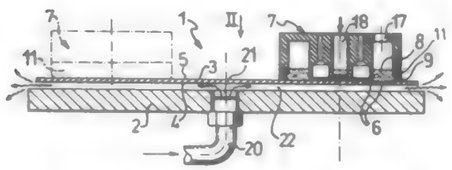
Angelo Galassi, Milan, Italy, assignor to Tampograf S.a.s. di J.E. Taylor & Co., Milan, Italy

Filed Feb. 25, 1993, Ser. No. 22,512

Claims priority, application Italy, Apr. 30, 1992, MI92A001037

Int. Cl.[5] B41F *1/42*

U.S. Cl. 101—163 5 Claims



1. A plate inking device of a type which comprises a sheet-like support for a plate and a fountain cartridge adapted to contain ink and having a lip in liquid-tight doctoring engagement with said plate, said cartridge including a ring of ceramic material having a sharp edge which constitutes said lip, said ring being mounted in a releasable fashion and formed with an oppositely located sharp edge to provide a spare lip.

5,363,762

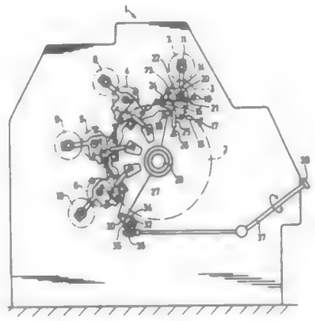
SATELLITE PRINTING PRESS

Roger R. Belanger, 336 Back Rd., Dover, N.H. 03820

Filed Mar. 24, 1993, Ser. No. 36,617

Int. Cl.[5] B41F *5/16*

U.S. Cl. 101—177 15 Claims



1. A printing press, comprising:
a frame;
at least one impression cylinder having a shaft supported at both ends by the frame;
at least one plate cylinder having a shaft defining a central axis and supported at both ends by the frame;
a pair of swivel arms corresponding to each plate cylinder shaft, the pair of swivel arms supported by the frame and pivotal about the central axis of the corresponding plate cylinder shaft;
a transfer cylinder corresponding to each plate cylinder and pair of swivel arms, each transfer cylinder having a shaft and capable of transferring ink from the corresponding plate cylinder to a running web on the impression cylinder; and
each transfer cylinder shaft supported at one end by one of the corresponding pair of swivel arms and at the other end by the other swivel arm, the pair of swivel arms allowing for movement of the corresponding transfer cylinder between a printing position where the transfer cylinder is engaged with the running web and a non-printing position where the transfer cylinder is disengaged from the running web.

5,363,763

INKER MECHANISM

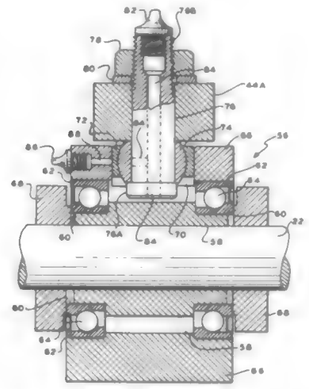
Allan Fiore, Randolph, N.J., assignor to Fury, Ltd., Cedar Knolls, N.J.

Filed Sep. 13, 1993, Ser. No. 120,053

Int. Cl.[5] B41F *31/14, 31/26*

U.S. Cl. 101—349 15 Claims

1. An oscillating inker mechanism comprising:
a frame;
an inking roller rotatably mounted on said frame with freedom to shift axially at least a predetermined amount;
a bearing assembly connected coaxially to said roller, said bearing assembly having a coaxial outer shell, said inking roller being mounted for rotation independently of said outer shell;
a universal joint having a socket attached to said outer shell and a frustro-spherical member mounted in said socket; and
a pivotally mounted lever connecting to said frustro-spherical member to said universal joint, said lever being operable to swing and to oscillate axially said roller, said universal joint having a degree of freedom to accommodate swinging of said lever; and
drive means for swinging said lever.



5,363,764

PRINTING PLATE MOUNTING APPARATUS, PRINTING PLATE REPLACEMENT APPARATUS AND PRINTING PLATE REPLACEMENT METHOD

Takeshi Horiguchi, and Torao Katabira, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

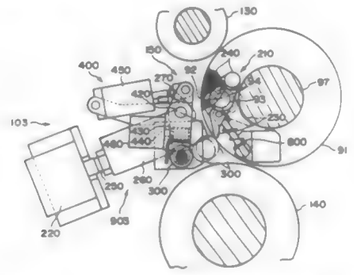
Division of Ser. No. 11,248, Jan. 29, 1993, Pat. No. 5,272,977.

This application Sep. 20, 1993, Ser. No. 123,892

Claims priority, application Japan, Feb. 5, 1992, 4-3967; Mar. 9, 1992, 450966

Int. Cl.[5] B41F *27/00*

U.S. Cl. 101—485 12 Claims



1. A printing plate replacement apparatus for replacing a printing plate mounted on a printing cylinder, comprising:
a lock shaft buried movably in said printing cylinder at a predetermined location near a periphery of said printing cylinder, said lock shaft serving to lock ends of said printing plate to be mounted on said printing cylinder when said lock shaft is in a predetermined lock position and to unlock said ends of said printing plate when said lock shaft is in predetermined unlock position;
lock shaft drive means for moving said lock shaft to said predetermined lock position while said printing cylinder is at a predetermined mounting position and for moving said lock shaft to said predetermined unlock position while said printing cylinder is at a predetermined de-mounting position;
a roller located near a surface of said printing cylinder; and
roller drive means for moving said roller from an urged position, at which position said roller is located proximate to said printing cylinder, to a retreated position, at which position a predetermined gap is formed between said roller and said printing cylinder, said roller pushing said printing plate towards said surface of said printing cylinder when said roller is in said urged position during mounting of said printing plate on said printing cylinder.

5,363,765

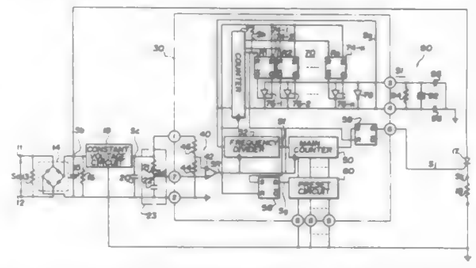
ELECTRONIC DELAY CIRCUIT FOR FIRING IGNITION ELEMENT

Kenichi Aikou, Tokyo; Eiichi Suzuki, and Tugio Goto, both of Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1993, Ser. No. 31,323

Int. Cl.[5] F42C *11/00;* F23Q *21/00*

U.S. Cl. 102—220 26 Claims



1. An electronic delay circuit for firing an ignition element comprising:
means for storing electric energy from an electric blasting machine;
means for oscillating a clock pulse train by using the electric energy stored in said means for storing;
means for over-exciting said means for oscillating;
means for detecting an elapsed time relative to a time when the electric blasting machine begins to supply electric energy, to generate an enable signal;
means for producing a trigger signal in response to a predetermined number of said clock pulses of said clock pulse train occurring after said enable signal; and
means for discharging electric energy stored in said means for storing to said ignition element in response to said trigger signal.

5,363,766

REMJET POWERED, ARMOR PIERCING, HIGH EXPLOSIVE PROJECTILE

Fred J. Brandon, Aberdeen; Miles L. Lampson, Havre de Grace, both of Md., and Fred I. Grace, York, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

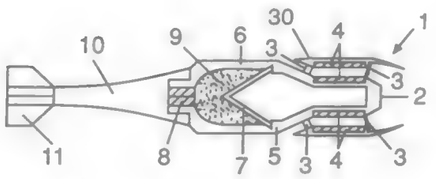
Filed Feb. 8, 1990, Ser. No. 489,932

Int. Cl.[5] F42B *10/34*

U.S. Cl. 102—374 8 Claims

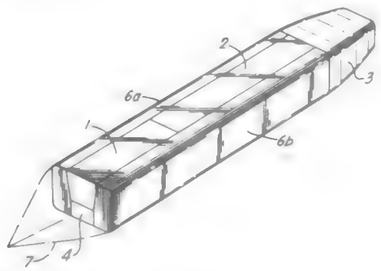
1. A ramjet propelled projectile comprising:
a generally cylindrical warhead located at the center of said projectile;
a ramjet motor located at the forward end of said projectile, said ramjet motor comprising a cowling, a centerbody, a plurality of struts, a fuel, an intake nozzle and a plurality of exhaust nozzles;
said plurality of exhaust nozzles located at or near the center of gravity of said projectile;

said fuel located on an interior surface of said cowling and on an exterior surface of said centerbody;
a fuze located at the rear end of said warhead;



a tail boom attached to the rear of said warhead, said tail boom having a plurality of stabilizing fins.

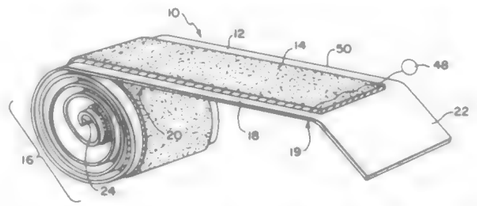
5,363,767
STAND-OFF WEAPONS
Philip I. Robinson, Cheshire, Great Britain, assignor to British Aerospace Public Limited Company, London, England
Filed Dec. 12, 1990, Ser. No. 629,105
Claims priority, application United Kingdom, Dec. 14, 1989, 8928270.1
Int. Cl.[5] F42B *15/10*; B64C *1/28*
U.S. Cl. 102—374 **10 Claims**



1. A fuselage for a flying guided missile said fuselage having a modular construction comprising:
a central fuselage incorporating a fuel tank and nose cone;
and releasably attachable payload carriers positioned on either side of said central fuselage wherein said carriers include munitions ejectable during flight of said guided missile wherein the carriers are provided with frangible panels through which munitions installed in the carriers can be ejected.

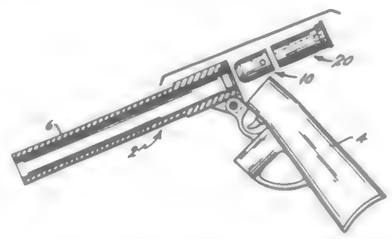
5,363,768
PROPELLANT GAS-GENERATION SYSTEM FOR CANISTER EJECTION
Mark A. Solberg, Edgewood, and James A. Hartwell, Elkton, both of Md., assignors to Thiokol Corporation, Ogden, Utah
Filed Apr. 2, 1991, Ser. No. 679,305
Int. Cl.[5] F42B *5/00*
U.S. Cl. 102—430 **14 Claims**

1. A gas-generating system for ejecting a projectile from a closed-end canister in which the projectile is disposed comprising:
a substrate having opposing surfaces and having dimensions of width and length defining a strip, said strip of substrate having a first end and a second end and opposing lateral edges;
a propellant adhered to at least one of said opposing surfaces of said strip of substrate along said length thereof, with
an adhesive, said adhesive also adhering said strip of substrate to itself at portions along said length, and means for applying a force between said first and second ends, wherein portions of said propellant are concealed and wherein said portions of attachment progressively detach



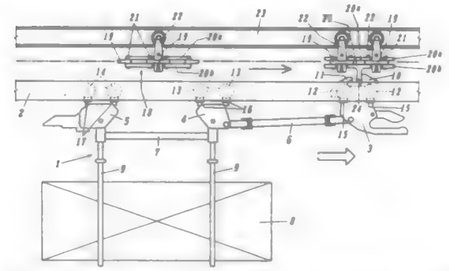
under said force applied between said first and second ends thereby exposing said concealed propellant to progressive combustion.

5,363,769
PRACTICE ROUND HAVING A PROJECTILE AND AN ADAPTER WITH THE SAME CALIBER AS THE PROJECTOR AND AN APPROPRIATE PROPELLING CHARGE
Jerry K. Bellak, 180 Spring St., Johnstown, Pa. 15906, and Joel B. Freidhoff, 150 Freidhoff La., Johnstown, Pa. 15902
Continuation of Ser. No. 928,353, Aug. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 856,656, Mar. 24, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,849
Int. Cl.[5] F42B *8/00*
U.S. Cl. 102—446 **15 Claims**



1. A kit selectively configurable for adapting a projector bore of a particular caliber to receive various selectable rounds for discharge by said projector, said rounds comprising live rounds comprising live cartridges and live shot shells and practice rounds utilizing blank cartridges as propellants, a first set of elements being said live rounds and said blank cartridges having a first caliber which is reduced relative to said particular caliber, and a second set of elements being other of said live rounds and said blank cartridges which are further reduced in caliber relative to said first caliber, said kit comprising:
a main adaptor removably seatable within said projector bore and having an outer diameter of said particular caliber and a bore of said first caliber into which elements of said first set are selectively, individually and removably seatable for discharge by said projector;
an auxiliary adaptor selectively, individually and removably seatable within said main adaptor bore and having an outer diameter of said first caliber and a bore smaller than said first caliber and equal in caliber to at least one of said elements of said second set such that at least one element of said second set is selectively, individually and removably seatable within said auxiliary adaptor bore for discharge;
at least one practice projectile, useable as part of each of said practice rounds only, being situated within said projector bore and at a front end of at least said main adapter just prior to said discharge;
said kit being configurable so that said main adaptor is useable without and with said auxiliary adaptor, selectively and respectively, according to which of said first and second sets of rounds is selected for discharge by said projector, and so that said practice projectile is useable only when said blank cartridges are selected for discharge by the projector.

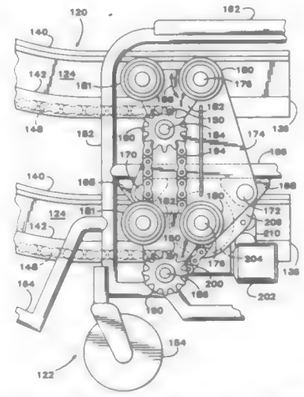
5,363,770
DRIVE UNIT FOR TRANSPORT TROLLEY HAVING PLASTIC CENTER LINK AND DRIVE DOG COVERING FOR NOISE REDUCTION
Katsuyoshi Makimura, Osaka, and Kazuo Yano, Kobe, both of Japan, assignors to Daifuku Co., Ltd., Osaka, Japan
Filed May 17, 1993, Ser. No. 63,893
Claims priority, application Japan, May 19, 1992, 4-125200
Int. Cl.[5] B61B *12/00*
U.S. Cl. 104—172.5 **8 Claims**



1. In a drive for a transport carriage for propelling a transport trolley by engagement of a pusher on a driving chain with a driven dog of the transport trolley, wherein the driving chain is supported from a chain guiding rail by chain supporting trolleys, the driving chain having center links of an elongated annular shape with an interior space, and top, bottom, and bottom pusher links each attached with connecting pins from the center links, the chain supporting trolley having right and left trolley units each with upper ends having wheels thereon, and each with lower ends for insertion into the interior space of one of said center links of the driving chain, a plate shaped spacer of the driving chain disposed between the right and left trolley units and bound together with fastening means, the lower ends of the right and left trolley units having recesses thereon for accommodating the one center link therein, the improvement which comprises a rib extending through the interior space of the center link, an open groove each in the respective lower ends of the right and left trolley units for accommodating said rib therein, the plate shaped spacer having ends and longitudinal edges, said spacer being made of a synthetic material and having a vertical groove open to one end thereof for accommodating said rib therein, and the longitudinal edges of the spacer project outwardly from between the right and left trolley units.

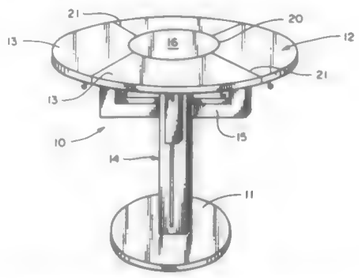
5,363,771
MOTORIZED PORTABLE SYSTEM FOR AIDING PERSONS IN ASCENDING OR DESCENDING STAIRWAYS
Robert C. Warren, P.O. Box 671, Eastsound, Wash. 98245; Stanley E. Farmer, Battle Ground, Wash., and Glenn E. Herz, Portland, Oreg., assignors to Robert C. Warren, Eastsound, Wash.
Division of Ser. No. 860,971, Mar. 31, 1992, Pat. No. 5,269,227. This application Jul. 29, 1993, Ser. No. 99,169
Int. Cl.[5] B61C *11/04*
U.S. Cl. 105—29.1 **10 Claims**

1. Apparatus for assisting a person in moving up or down a stairway with the aid of a vehicle, said apparatus comprising:
(a) an elongate track, having two ends, adapted to slope longitudinally along said stairway;
(b) a vehicle, having mobile ground-engaging members for moving along a direction of travel;
(c) motor means on said vehicle for drivingly engaging said track so as to drive said vehicle along said track;
(d) means at least at one end of said track for selectively detachably engaging and disengaging said motor means drivingly with respect to said track; and



(e) means for maintaining said vehicle at a constant attitude with respect to horizontal while moving along said track regardless of the slope of said track within a predetermined range of slopes, including variable-position engaging means on said vehicle for engaging said track at variable positions relative to said vehicle automatically in response to the slope of said track.

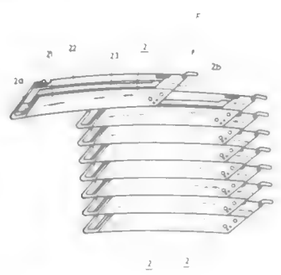
5,363,772
CENTER POST SUPPORTED TABLE WITH A MULTIPLE OF TABLE LEAVES
Ioannis J. Adamidis, 41 N. Adams Dr., Addison, Ill. 60101
Filed Nov. 20, 1992, Ser. No. 979,322
Int. Cl.[5] A47B *1/00*
U.S. Cl. 108—66 **17 Claims**



1. A combination table and rack structure selectively usable as a multi-level display rack and as a table comprising a base, a segmented table top having a plurality of leaves, an upright column fixedly mounted on the base, support arms with each leaf attached to one of said support arms in an array surrounding said upright column, and adjustable connecting means between each of said leaves and said support arms and said upright column and being selectively connected at anyone of various vertical positions along a vertical axis of said upright column, said adjustable connecting means enabling said leaves to be adjustable so as to lie in a common horizontal plane at

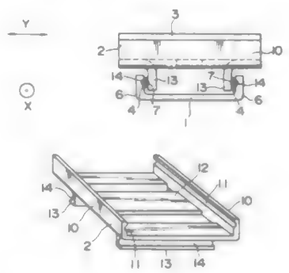
right angles to said vertical axis providing a uni-planar table top, said adjustable connecting means also being selectively adjustable relative to one another to enable said leaves to be adjusted with at least some of said leaves being disposed in different horizontal planes relative to one another, the upright column has a center section secured thereto and mounted in a horizontal plane co-planar with the leaves when the leaves are selectively positioned to act as a table, said center section is circular in shape and said leaves being engaged about an outer circumference of said circular center section.

5,363,773
SLIDABLE FOLDING SHELF
Lai-Yeh Chuang, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan, Prov. of China
Filed Aug. 23, 1993, Ser. No. 110,516
Int. Cl.[5] A47B *11/00*
U.S. Cl. 108—102 **1 Claim**



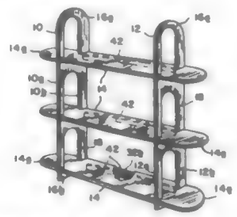
1. A slidable folding shelf comprising:
(a) at least a forwardly and rearwardly slidably connected pair of longitudinally extending shelf units having longitudinally opposing inclined rear and front end surfaces, each of said shelf units having a pair of lower members spaced apart each from the other in a direction normal said longitudinal direction forming a hollow space therebetween and an upper member mounted to an upper section of said lower members and extending contiguous a front section of said lower members forming said front end of each of said shelf units, said upper member and said lower members forming a longitudinally directed hollow space therebetween, said upper member having a longitudinally directed guide track member formed on a lower surface thereof, said rear end of said spaced apart lower members forming an insertion cutout section for insertion therein of an upper member of another shelf unit;
(b) a T-shaped member mounted to a front end of said upper member of each of said shelf units, said T-shaped member having a projection knob formed on a rear end thereof and an inclined frontal surface;
(c) a slide block having a slide block slot formed therein, said guide track member being slidably inserted within said slide block slot, said slide block being threadedly secured to said lower members;
(d) an inclined L-shaped positioning tab mounted to said spaced apart lower members within said insertion cutout section;
(e) a retaining tab having a longitudinally directed tab slot for insert therein of said T-shaped member, said T-shaped member being releasably captured by said retaining tab;
(f) actuating means for contacting an end surface of said retaining tab and displacing said retaining tab, said actuating means including a pair of longitudinally aligned actuating block members having an actuating slot formed within an upper surface thereof for sliding cooperation with a longitudinally directed guiding track formed on a lower surface of said upper member;
(g) a striking pin extending through said pair of lower members and said hollow space for contacting said actuating block members; and,
(h) a positioning pin extending through said pair of lower members and said hollow space for securing said lower members in said spaced apart relation, said upper member of said forwardly directed shelf unit being inserted within said hollow space of said rearwardly directed shelf unit for engagement with said positioning tab of said rearwardly directed shelf unit.

5,363,774
COMPACT X-Y TABLE ASSEMBLY
Katsuya Anada, Gifu, and Yukio Yoshioka, Kawaguchi, both of Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Jul. 10, 1992, Ser. No. 911,608
Claims priority, application Japan, Dec. 7, 1991, 3-198424
Int. Cl.[5] A47B *11/00, 85/00*
U.S. Cl. 108—143 **3 Claims**



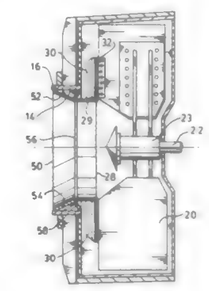
1. A table assembly comprising:
a first table of unitary one-piece construction, which is bent into a first desired shade from a single sheet metal and which is formed with at least one first main guide groove;
a second table of unitary one-piece construction, which is bent into a second desired shape from a single sheet metal and which is formed with at least one first auxiliary guide groove located to and in parallel with said first main guide groove to define a first guide channel therebetween extending in a first direction and formed with at least one second main guide groove;
a third table of unitary one-piece construction, which is bent into a third desired shape from a single sheet metal and which is formed with at least one second auxiliary guide groove located opposite to and in parallel with said second main guide groove to define a second guide channel therebetween extending in a second direction different from said first direction;
a plurality of first rolling members provided in said first guide channel;
a plurality of second rolling members provided in said second guide channel; and
in which said first table has a generally U-shaped cross section including upstanding integral side wall sections each formed with one of said at least one first main guide grooves;
said second table having a pair of integral opposed vertically downwardly extending side wall sections each formed with one of said at least one first auxiliary guide grooves and a pair of integral opposed vertically upwardly extending sections extending perpendicular to said downwardly extending sections, each of said sections being formed with one of said at least one second main guide grooves;
said third table has an inverted U-shaped cross section including depending integral side wall sections each formed with one of said at least one second auxiliary grooves; and
wherein pairs of said first guide channels extend between said first and second tables and pairs of said second guide channels extend between said second and third tables.

5,363,775
KNOCK-DOWN BOOKCASE
Barry Simpson, R.R. 1 Box 156, Warren, Vt. 05674
Filed Sep. 27, 1993, Ser. No. 127,300
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—187 **15 Claims**



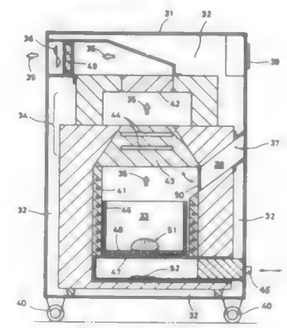
1. A bookcase and shelf unit comprising
a pair of elongated rigid mirror image side members, each side member having
opposite ends,
a plurality of relatively large openings spaced between said ends, each opening having side and bottom edges, and
a plurality of slits, said slits being located adjacent to said openings;
a plurality of elongated rigid shelves, the number of shelves corresponding to the number of openings in each side member, each shelf
having opposite ends, and
at least one slot extending inward from a longitudinal edge of the shelf and spaced from an end of the shelf, each shelf being arranged to extend through corresponding openings in said side members such that the shelf seats on the bottom edges of said openings with each shelf slot receiving a side edge of a said opening;
abutment means at the underside of each shelf;
a plurality of elongated flexible and resilient slats releasably positioned under said shelves between the side members, each slat having opposite ends engaged in corresponding slits in said side members
and a bowed segment between said opposite ends which engages the abutment means of the corresponding shelf to produce a bias which urges the side members apart.

5,363,776
EXHAUSTER INLET VENTURI
Rickey E. Wark, Lake Angeles, Mich., assignor to Sure Alloy Steel Corporation, Warren, Mich.
Filed Aug. 24, 1993, Ser. No. 111,196
Int. Cl.[5] F23K *1/00*
U.S. Cl. 110—106 **13 Claims**



1. In a pulverizer exhauster fan having a housing, a fan mounted to rotate in the housing, a circular inlet coaxial with the fan for delivering pulverized coal flow to the fan for subsequent radial diversion to an outlet in the housing, and structure defining an inlet into the center of the fan, the invention comprising:
an inlet venturi mounted in the circular inlet concentric with the fan inlet, the venturi extending from the intake end of the circular inlet to a throat proximate the intake end of the fan inlet, the venturi further including an annular collar portion extending from the throat to the wall of the circular inlet.

5,363,777
WASTE HEAT TREATMENT APPARATUS
Katsunobu Yoshimoto; Masayoshi Hatta, and Toshio Kumondai, all of Kyoto, Japan, assignors to Towa Corporation; Shashin Kagaku Co., Ltd. and Kabushiki Kaisha I.K.S, all of Kyoto, Japan
Filed Sep. 10, 1992, Ser. No. 942,975
Claims priority, application Japan, Sep. 11, 1991, 3-261173
Int. Cl.[5] F23B *5/00*
U.S. Cl. 110—214 **12 Claims**



1. An apparatus for heat treating waste material, comprising a housing (**31**), a first combustion chamber (**33**) for accommodating waste material in said housing, means (**37, 38, 50**) for introducing waste into said first combustion chamber (**33**), an after burner second combustion chamber (**34**) in said housing, a first flow passage communicating said first and second combustion chambers (**33, 34**) with each other, a ceramic filter (**43**) and a heater (**44**) in said ceramic filter (**43**) forming a unit positioned in said first flow passage between said first and second combustion chambers, a gas exhaust in said housing, a second flow passage in said housing communicating said second combustion chamber (**34**) with said gas exhaust, a catalyzer (**42**) in said second flow passage between said second combustion chamber (**34**) and said gas exhaust, means for removing ash from said housing, and wherein said first combustion chamber (**33**), said ceramic filter and heater unit (**43, 44**), said second combustion chamber (**34**), said catalyzer (**42**), and said exhaust are arranged in series with each other for exhausting gas generated in said first combustion chamber.

5,363,778
HIGH EFFICIENCY EXHAUSTER FOR A SOLID FUEL PULVERIZING AND FIRING SYSTEM
Stanley E. Kmiotek, Tolland, and Peter L. Stanwicks, Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Apr. 15, 1993, Ser. No. 48,144
Int. Cl.[5] F23K *1/00*
U.S. Cl. 110—232 **11 Claims**

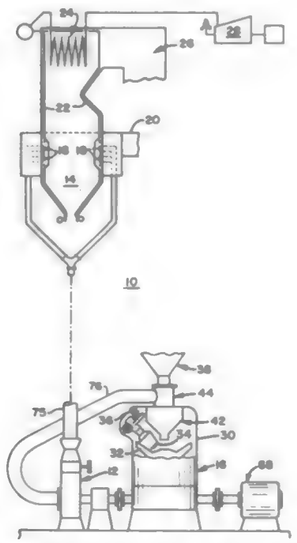
1. A high efficiency exhauster for use in a solid fuel pulverizer firing system comprising:
a. a casing having an end wall and a pair of side walls, said end wall being supported in interposed relation between said pair of side walls so as to provide said casing with a substantially cylindrical configuration and so that the

centerline of said casing extends through the center of each of said pair of side walls;

b. an inlet ring for introducing gas-entrained pulverized solid fuel therethrough into said casing, said inlet ring being supported in mounted relation on one of said pair of side walls so that the centerline of said inlet ring is offset relative to the centerline of said casing;

c. a rotor supported in mounted relation on the other one of said pair of side walls for rotation relative to said casing in a first direction and so that the centerline of said rotor is coaxial with the centerline of said inlet ring and is offset relative to the centerline of said casing;

d. a set of blades preselected for each given application from a multiplicity of blades of differing lengths and of differing widths in order that the high efficiency exhauster may thereby attain through the use thereof operating efficiencies of up to 70%, each of said set of blades embodying an optimum length and an optimum width established for each given application based on the specific quantity of flow, the specific static pressure and the specific horsepower desired from the high efficiency exhauster for that



given application, each of said set of blades having a first end and a second end, said first end of each of said set of blades being mounted at a point on the circumference of said rotor in fixed relation thereto so as to be rotatable therewith and so as to be mounted in spaced relation one to another, said second end of each of said set of blades extending radially outward of said rotor towards said casing in a direction counter to the direction of rotation of said rotor and at an angle relative to an imaginary line drawn perpendicular to the circumference of said rotor through the point at which the corresponding said one end of each of said set of blades is mounted on the circumference of said rotor, said angle being preselected from a multiplicity of differing angles so as to be the optimum angle for each given application based on the specific flow and the specific static pressure desired from the high efficiency exhauster for that given application; and

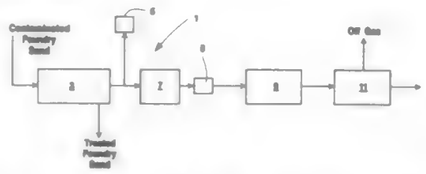
e. an outlet formed in said casing for discharging therethrough from the high efficiency exhauster gas-entrained pulverized solid fuel after the passage thereof through said casing.

5,363,779

SYSTEMS AND PROCESSES FOR PYROLYZING CONTAMINANTS ON FOUNDRY SAND AND COMBUSTING THE RESULTING GAS

Roland P. A. G. Bury, Marcinelle, , assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 1, 1993, Ser. No. 160,532
Int. Cl.[5] B09B *3/00;* **F23G** *5/00*
U.S. Cl. 110—236 **15 Claims**



1. A process for roasting foundry sand contaminated with organic matter in a container capable of rotating about an axis, said process comprising:

(a) feeding said foundry sand contaminated with organic matter into said container;

(b) adjusting said container so that said axis is at an angle ranging about 0° to about ±10°, measured from horizontal;

(c) rotating said container about said axis: and

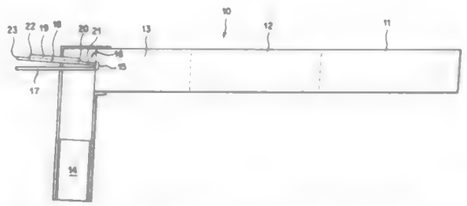
(d) firing at least one flame with excess oxygen in said container at an angle ranging from about 0° to about ±30°, measured from horizontal or said axis to produce an off gas containing oxygen and roasted foundry sand.

5,363,780

APPARATUS AND METHODS FOR BURNING WASTE, AND WASTE SLURRIES

John P. Whitney, Benton, Ark., assignor to Rineco Chemical Industries, Benton, Ark.

Continuation of Ser. No. 788,194, Nov. 5, 1991, Pat. No. 5,271,340. This application Dec. 20, 1993, Ser. No. 169,636
The portion of the term of this patent subsequent to Dec. 21, 2010, has been disclaimed.
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **21 Claims**



1. A burner for burning combustible materials, comprising:

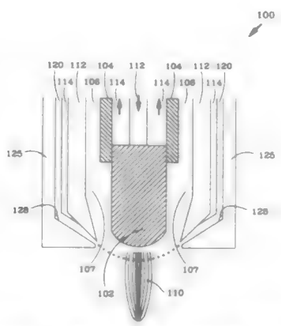
a first fuel nozzle and a second fuel nozzle, said second fuel nozzle comprising a first conduit for conveying a combustion material, a single second conduit for conveying a fluid stream, and an acceleration zone, said acceleration zone comprising a mixing chamber and an acceleration conduit, said first conduit having an inlet and an outlet, said second conduit having an entrance and an exit, said mixing chamber having an intake end and a release end, said acceleration conduit having a receiving end and a discharge end, said intake end of said mixing chamber communicating with said outlet of said first conduit and said exit of said second conduit, said release end of said mixing chamber communicating with said receiving end of said acceleration conduit, said mixing chamber tapering down from said intake end to said release end and said first conduit outlet and second conduit exit being arranged relative to said mixing chamber intake end such that said combustion material and fluid streams are mixed in said mixing chamber into a single combined stream.

5,363,781

PLASMA TORCH-JET LIQUID WASTE TREATMENT DEVICE

Kuo-Ching Chang; Shih-Tsung Tseng, and Jain-Sheng Huang, all of Hsingchu, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Apr. 26, 1993, Ser. No. 52,719
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—250 **11 Claims**



1. An apparatus for processing liquid or gas waste comprising:

a high temperature plasma means for generating a high temperature plasma torch;

a jetting means including a plurality of transporting tubes for directly transporting and jetting said liquid or gas waste to said high temperature plasma torch wherein a high temperature treatment of said waste is performed; and

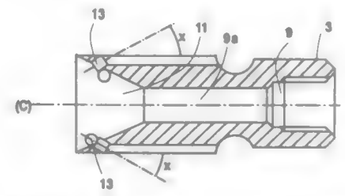
said jetting means including said plurality of transporting tubes is integrated with said high temperature plasma means to form an independently transportable assembly.

5,363,782

APPARATUS AND PROCESS FOR COMBUSTING FLUID FUEL CONTAINING SOLID PARTICLES

Ludo J. C. Couwels, Oelegem-Ranst, , assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Dec. 6, 1993, Ser. No. 161,520
Int. Cl.[5] F23G *7/04*
U.S. Cl. 110—238 **9 Claims**



1. A process for combusting liquid fuel containing solid particles, the process comprising:

(a) ejecting said liquid fuel containing solid particles through a nozzle having an outlet port defined by a diverging conical or trumpet end internal wall surface;

(b) ejecting a liquid fuel atomizing or dispersing fluid at a volumetric rate at sonic velocity ranging from about 30 nm^3/hour to about 70 nm^3/hour from a plurality of bores located at said diverging conical or trumpet end internal wall surface of said outlet port;

(c) thrusting or pushing said liquid fuel containing solid particles just before said liquid fuel leaves said outlet port, thus enhancing atomization or dispersement of said liquid fuel containing solid particles; and

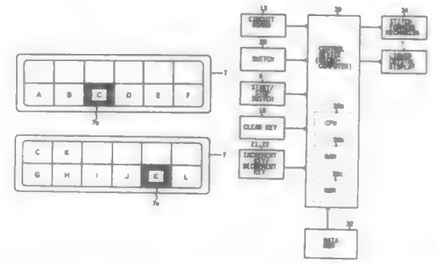
(d) combusting the resultant atomized or dispersed liquid fuel containing solid particles with oxidant.

5,363,783

SEWING MACHINE HAVING A DIAL FOR SCROLLING DISPLAY SCREEN IMAGE TO SELECT DESIRED PATTERN OF STITCHES

Masayuki Hori, Gifu, and Yoshiyuki Uyama, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 17, 1993, Ser. No. 61,564
Claims priority, application Japan, Jun. 3, 1992, 4-142593
Int. Cl.[5] D05B *19/00, 3/02*
U.S. Cl. 112—121.11 **21 Claims**



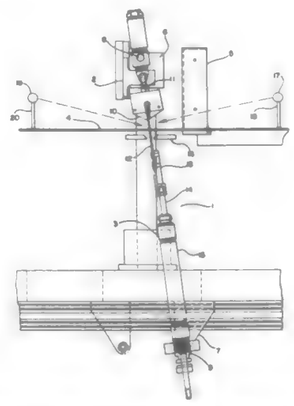
15. The sewing machine of claim **14**, wherein each band of icons represents a plurality of characters.

5,363,784

SEWING CLOTH HANDLING DEVICE

Maximilian Adamski, Jr., Palatine, and Paul A. Berg, Crystal Lake, both of Ill., assignors to Union Special Corporation, Charlotte, N.C.

Continuation of Ser. No. 783,275, Oct. 28, 1991, Pat. No. 5,197,722. This application Mar. 26, 1993, Ser. No. 37,306
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] D05B *35/00*
U.S. Cl. 112—121.12 **18 Claims**



1. A device for folding and turning over a cloth that is

continuously carried by a moving conveyor, said device comprising:

a) a jaw located above the upper surface of the conveyor;

b) means for sensing an edge of the cloth;

c) a lifting blade located below the lower surface of the conveyor;

c) a first blower located before the jaw in the line of feed for the conveyor to assist in starting and maintaining a smooth rolling action of the cloth; and

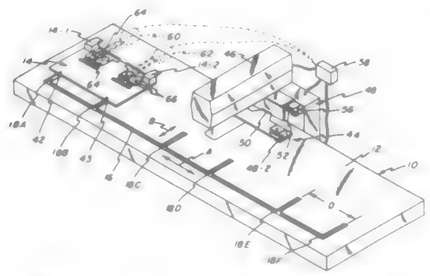
d) a second blower located after the jaw in the line of feed for the conveyor for uncurling the leading portion of the cloth.

5,363,785

NON-INTRUSIVE WORKPIECE PALLET LOCATOR

Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to MIM Industries, Inc., Miamisburg, Ohio

Filed Aug. 24, 1992, Ser. No. 934,715
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.15 **29 Claims**



1. A workpiece pallet locator system comprising:

a support surface for supporting a workpiece pallet; and

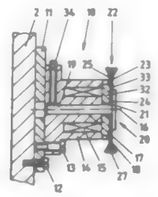
locator means for operatively coupling to a workpiece pallet on said support surface, including means to move said locator means in at least three orthogonal directions in a predetermined sequence of operations.

5,363,786

THREAD TENSIONING DEVICE HAVING AN ELECTROMAGNET FOR APPLYING A VARIABLE FORCE OPPOSING ROTATION OF A TENSIONING ELEMENT

Klaus Hampel, Bielefeld; Gunter Pries, Leopoldshohe, and Wilfried Goldbecker, Steinhagen, all of Germany, assignors to Dürkopp Adler Aktiengesellschaft, Germany

Filed Dec. 15, 1992, Ser. No. 990,739
Claims priority, application Germany, Dec. 19, 1991, 4141945
Int. Cl.[5] D05B *47/04*
U.S. Cl. 112—255 **19 Claims**



1. A thread tensioning device for a sewing machine comprising:

a tensioning element of low mass for applying a tensioning force to a sewing thread, the tensioning element being mounted on the sewing machine, the sewing thread passing circumferentially around the tensioning element so as to rotate the tensioning element as the sewing thread is fed to the sewing point during operation of the sewing machine,

mounting means mounted on the sewing machine and defining a rotational axis for the tensioning element,

the tensioning element being rotatably mounted on the mounting means such that the tensioning element has a slight predetermined amount of axial movement with respect to the sewing machine along an axial direction extending through the mounting means; and

means including an electromagnet having an excitation winding, the electromagnet being mounted on the sewing machine, for applying a variable force opposing rotation of the tensioning element in response to varying current in the excitation winding, thereby applying a variable thread tensioning force to the sewing thread,

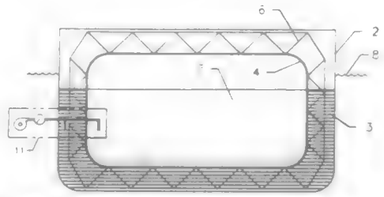
wherein the low mass and slight axial movement of the tensioning element permit the variable thread tensioning force to be applied to the sewing thread substantially without any inertial interference caused by said tensioning element.

5,363,787

LIQUID CARGO CONTAINER FOR MARINE TRANSPORT

James L. Konopasek, 1800 The Greens Way Apt. 806, Jacksonville Beach, Fla. 32250, and Cyrus C. Marshall, Jr., 1200 Oriental Garden Rd., Jacksonville, Fla. 32207

Filed Jun. 30, 1993, Ser. No. 84,070
Int. Cl.[5] B63B *25/08*
U.S. Cl. 114—74 A **4 Claims**



1. A liquid cargo container for marine transport which consists of a marine transport vessel, a membrane consisting of an elastic synthetic compound impregnated on a reinforcing woven fabric positioned within the marine transport vessel forming an oiltight envelope, a plurality of flexible tensile restrains, each incorporating load sensitive release means, and a bed of water between the ship's structure and membrane, maintained approximately equilevel to the liquid cargo level, comprised of water drawn and disposed of from and to the sea.

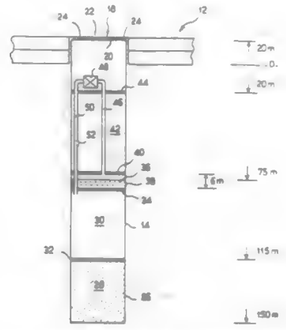
5,363,788

FLOATING OIL RIG WITH CONTROLLABLE HEAVE

Jean-Luc Delrieu, Pau, France, assignor to Elf Aquitaine Production, France

PCT No. PCT/FR92/00889, § 371 Date May 24, 1993, § 102(e) Date May 24, 1993, PCT Pub. No. WO93/06002, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 25, 1992, Ser. No. 64,033
Claims priority, application France, Sep. 26, 1991, 91 11865
Int. Cl.[5] B63B *43/06*
U.S. Cl. 114—125 **6 Claims**

1. Floating oil rig with controllable heave, comprising a deck and a flotation unit which, in order to control the response of the rig to the motion of the sea in which it is installed, comprises a tidal chamber which is open to the sea and connected to a gas tank by a circulation conduit fitted with a restriction device wherein the flotation unit comprises two gas



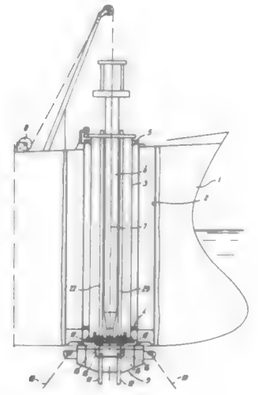
tanks arranged on either side, in the vertical plane, of the tidal chamber and connected to it by the circulation conduit.

5,363,789

DISCONNECTABLE MOORING SYSTEM

Jean-Phillippe R. L. Laurie, and René Perratone, both of Menton, France, assignors to Single Buoy Moorings Inc., Marly, Switzerland

Filed Sep. 15, 1993, Ser. No. 120,926
Int. Cl.[5] B63B *21/50*
U.S. Cl. 114—293 **7 Claims**



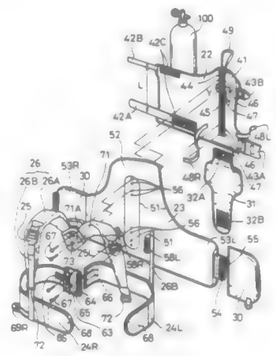
1. A disconnectable mooring system comprising a mooring buoy member and a receiving member, the mooring buoy member having a plurality of spaced-apart fluid passages therethrough fixedly connected to subsea fluid conduits, the receiving member having a central passageway therethrough and a plurality of fluid passages therethrough about said central passageway, fluid conduits connected to said fluid passages of said receiving member, said fluid passages of said receiving member matching in number and spacing said fluid passages of said mooring buoy member when said mooring buoy member and said receiving member are juxtaposed, lifting means connected to said mooring buoy member and extending upwardly through said central passage of said receiving member to raise said mooring buoy thereby to juxtapose said mooring buoy member and said receiving member, and sealing members surrounding said passages and sealing between said mooring buoy member and said receiving member when said mooring buoy member and said receiving member are juxtaposed.

5,363,790

BUOYANCY COMPENSATOR FOR DIVERS

Matsushiro Matsuoka, Hadano, Japan, assignor to Tabata Co. Ltd., Tokyo, Japan

Filed Oct. 21, 1992, Ser. No. 964,016
Claims priority, application Japan, Oct. 23, 1991, 3-304125
Int. Cl.[5] B63C *9/02*
U.S. Cl. 114—315 **5 Claims**



1. A buoyancy compensator for divers comprising in combination

(a) an air cylinder holder (22) having an inner side and an outer side,

(b) a buoyancy compensating bag (23) having an air inlet for inflation,

(c) a waist belt (24) connected to said buoyancy compensator bag (23), said belt being length adjustable so as to fit said bag (23) about the body of a diver,

(d) the outer side of said air cylinder holder (22) including a back pad zone (41) having an inner side and an outer side which is adapted to hold an air cylinder,

(e) right and left shoulder straps (26) having upper ends that are both connected to a first coupling member (71) that is separable from both said air cylinder holder (22) and said buoyancy compensating bag (23),

(f) height adjustment means (44–47) incorporated in said air cylinder holder (22), said height adjustment means (44–47) including a longitudinally extending dovetail groove (45) on said inner side of said back pad zone (41) and at least one slide member (46) adapted to slidably engage with said dovetail groove (45), and each slide member (46) being adapted to be connected to a connector means (67), and

(g) connector means (67) passing through said buoyancy compensating bag (23) and connecting said first coupling member (71) at various levels on said height adjustment means (44–47) and thereby sandwiching said buoyancy compensating bag (23) between said first coupling member (71) and said air cylinder holder (22).

5,363,791

WEAPONS LAUNCH SYSTEM

Clinton W. Stallard, III, Hampton, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

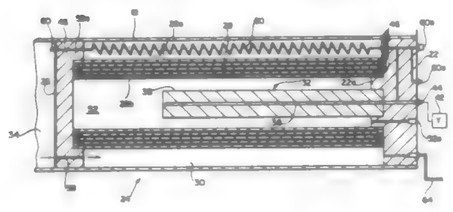
Filed May 11, 1993, Ser. No. 62,812
Int. Cl.[5] B63G *8/28*
U.S. Cl. 114—318 **50 Claims**

1. A system for launching a weapon from a submersible vessel, comprising:

a tube for receiving said weapon;

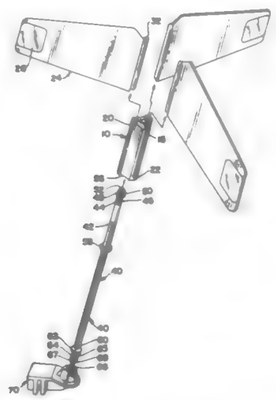
a ram assembly for launching said weapon, said ram assembly including a ram head for transmitting a launching force to said weapon and a plurality of telescoping cylin-

ders positioned within said tube, said telescoping cylinders extending within said tube when said weapon is launched;
an ejection means within said ram assembly generating said launching force to extend said telescoping cylinders;



a volume formed between said tube and said telescoping cylinders in their extended position; and
access means for receiving water within said volume after said weapon is launched.

5,363,792
SAFETY SIGNAL KIT
Charles R. Petechik, 4252 West 214th St., Fairview Park, Ohio 44126
Filed Sep. 2, 1993, Ser. No. 116,407
Int. Cl.[5] B60Q *7/00*
U.S. Cl. 116—28 R **21 Claims**



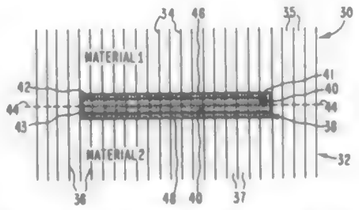
13. A rotating warning signal kit for vehicles comprising:
a hub having a plurality of sockets and a central aperture for rotatably receiving a shaft;
a plurality of vanes each selectively mounted in a respective socket of said hub;
the shaft having a first end, on which said hub is selectively and rotatably mounted, and a second end; wherein said shaft first end comprises a pair of resilient fingers and a flange spaced from said fingers, said hub being mounted on said shaft between said pair of fingers and said flange; and,
a bracket to which said shaft second end is selectively secured, said bracket comprising a mounting means for securing said bracket to an associated support member.

5,363,793
METHOD FOR FORMING CRYSTALS
Nobuhiko Sato, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 669,778, Mar. 14, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,188
Claims priority, application Japan, Apr. 6, 1990, 2-090442
Int. Cl.[5] C30B *25/02*
U.S. Cl. 117—2 **5 Claims**



1. A method for forming a single crystal on a substrate comprising:
(a) providing a substrate having an amorphous nucleation surface and a non-nucleation surface arranged adjacent to each other wherein said amorphous nucleation surface has an area of 10 μm or less in maximum diameter and a nucleation density sufficiently larger than the nucleation density of said non-nucleation surface to selectively form a single nucleus; and said non-nucleation surface is composed of a material of greater etching rate than that of said nucleation surface;
(b) implanting ions over the entire surface of said substrate so as to implant ions in said amorphous nucleation surface and said non-nucleation surface, said ions being capable of increasing the nucleation density of said nucleation surface;
(c) etching said substrate such that only the non-nucleation surface implanted with ions is selectively etched to remove the ion-implanted portions on said non-nucleation surface, thereby preventing the nucleation density of said non-nucleation surface from increasing;
(d) growing by vapor deposition a single crystal from a single nucleus deposited on said nucleation surface, said single crystal being overgrown on said non-nucleation surface.

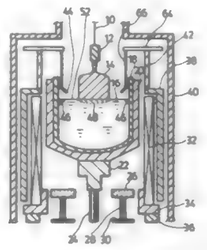
5,363,794
UNIAXIAL THIN FILM STRUCTURES FORMED FROM ORIENTED BILAYERS AND MULTILAYERS
Bruce M. Lairson; Bruce M. Clemens, both of Mountain View, and Mark R. Visokay, Stanford, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Dec. 2, 1992, Ser. No. 984,888
Int. Cl.[5] C30B *1/10*
U.S. Cl. 117—7 **21 Claims**



1. A method for making oriented thin films of an intermetallic compound having generally uniaxial magnetic, optical, electronic, and mechanical properties, the method comprising the steps of:
selecting a substrate material having an alignment suitable for biasing the orientation of deposited materials;

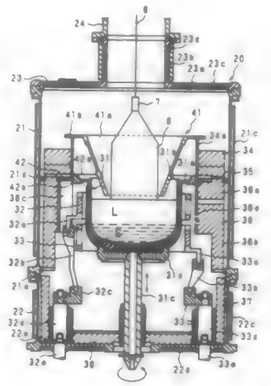
depositing a plurality of layers of a first metal having a first crystal structure onto the substrate material;
depositing a plurality of layers of a second metal on top of the plurality of layers of the first metal, to form an interface between the first and second metals, the second metal having a second crystal structure such that an intermetallic compound formed by combining the first and second metals has a preferred orientation with respect to the interface;
repeating the deposition of alternating pluralities of layers of first and second metals a selected number of times to produce a plurality of interfaces; and
annealing the deposited layers to coherently precipitate an oriented thin film of the intermetallic compound formed from the combined first and second metals at each of the interfaces between the pluralities of first and second metal layers.

5,363,795
CZOCHRALSKI CRYSTAL PULLING PROCESS AND AN APPARATUS FOR CARRYING OUT THE SAME
Hiroshi Kanada; Katsumi Nishizaki; Masahiro Murakami; Teruyuki Sekine; Yasuyuki Seki, all of Chiba, Japan; Kazuhiko Echizenya, and Yusei Hidaka, both of Santa Clara, Calif., assignors to Kawasaki Steel Corporation, Japan
Continuation of Ser. No. 755,011, Sep. 4, 1991, abandoned. This application Jun. 3, 1993, Ser. No. 71,591
Int. Cl.[5] C30B *15/12*
U.S. Cl. 117—13 **13 Claims**



1. A Czochralski crystal pulling process having improved pulling speed comprising: in a molten material in a crucible lowering the temperature of the crystal and that of the molten material near the crystal while maintaining the temperature at a contact region of the surface of the molten material contiguous with a side wall of the crucible slightly above its solidifying point by suspending an open reflecting plate above said molten material and thereby reflecting a portion of radiation heat radiated from the surface of the molten material contained in the crucible toward a contact region of the surface of the molten material contiguous with the side wall of the crucible, said open reflecting plate being oriented toward said contact region, thereby permitting a remaining portion of the radiation heat from the surface of the molten material and heat radiating from the crystal to radiate around said open reflecting plate and from said crucible without obstruction to facilitate cooling and pulling a single crystal upwardly from the molten material.

5,363,796
APPARATUS AND METHOD OF GROWING SINGLE CRYSTAL
Sumio Kobayashi, Yamatokohriyama; Shunji Miyahara, Itami; Toshiyuki Fujiwara, Nishinomiya; Takayuki Kubo; Hideki Fujiwara, both of Amagasaki, and Shuichi Inami, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan
Filed Feb. 18, 1992, Ser. No. 837,202
Claims priority, application Japan, Feb. 20, 1991, 3-026163; Feb. 20, 1991, 3-026261; Feb. 20, 1991, 3-026387; Nov. 22, 1991, 3-0355510
Int. Cl.[5] C30B *15/10*
U.S. Cl. 117—30 **24 Claims**

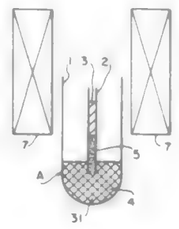


1. An apparatus for growing a single crystal by pulling up molten material while solid material in the lower part of a crucible is being melted from the upper portion of the solid material toward the lower portion, comprising:
a crucible;
multiple heating means, arranged at the outside of the crucible and along the vertical direction, for heating the crucible; and
heat shielding means, in which the lower portion is thinner than the upper portion, placed at the outside of the heating means, the lower portion of the heat shielding means having a larger inner diameter than the upper portion thereof.

5,363,797
METHOD FOR PRODUCING ORGANIC CRYSTAL AND CRYSTAL GROWTH CELL THEREFOR
Naota Uenishi; Takafumi Uemiya; Yo Shimizu; Akira Mizoguchi; Yasuji Oogaki; Yasuhiro Hattori, all of Osaka, and Shinsuke Umegaki, Kanagawa, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 431,104, Nov. 3, 1989, abandoned. This application May 4, 1992, Ser. No. 879,105
Claims priority, application Japan, Nov. 5, 1988, 63-280118; Jan. 19, 1989, 1-11449; Aug. 21, 1989, 1-215191
Int. Cl.[5] C30B *7/02*
U.S. Cl. 117—68 **21 Claims**

1. A method for producing an organic crystal which comprises maintain a capillary tube having an inner wall with one side and a side on the opposite side of said one side and having an inner diameter of 1 to 5 μm containing a fused liquid of an organic crystal material and having a fused liquid reservoir at one end thereof at a temperature not less than the fusion point of said organic crystal material together with the fused liquid reservoir, reducing the temperature of the fused liquid in said fused liquid reservoir to precipitate seed crystals, and then slowly cooling the capillary tube successively from said end toward the other end to allow a single crystal to grow from the

seed crystal in the capillary tube, wherein during said slowly cooling a temperature gradient is provided from the inner wall



of the capillary tube on said one side toward the inner wall of the capillary tube on said opposite side of said one side to thereby allow the single crystal to grow.

5,363,798

LARGE AREA SEMICONDUCTOR WAFERS

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1993, Ser. No. 128,502
Int. Cl.[5] H01L *21/20*
U.S. Cl. 117—89 9 Claims



1. A method of synthesizing a large area wafer of single crystalline semiconductor material, which comprises the steps of:

(a) selecting a foreign substrate for said semiconductor material, said substrate having

(1) a lower melting temperature than does the semiconductor material to be synthesized,

(2) a higher specific gravity than does the semiconductor material to be synthesized,

(3) immunity to etching under the conditions typical for growth of the semiconducting material to be synthesized, and

(4) low diffusivity in the semiconductor material to be synthesized;

(b) disposing said substrate in a substrate holder which

(1) melts at a temperature higher than does the substrate and also higher than the expected growth temperature of the semiconductor material,

(2) has a recessed region having bottom planar dimensions greater than the substrate and a depth greater than the combined thickness of the substrate and the thickest film of semiconductor material to be synthesized, and

(3) is positioned horizontally with the recess upward facing;

(c) growing an epitaxial layer of the semiconductor material onto the substrate to a thickness of nominally three times that of the pseudomorphic limit of the semiconductor material;

(d) raising the temperature of the substrate to a first selected temperature within a temperature range exceeding the melting temperature of the substrate, but below the boiling temperature of the substrate, the melting temperature of the substrate holder, and the melting temperature of the semiconductor material, for a sufficient time to melt the substrate and anneal the synthesized solid nascent layer of the semiconductor material floating on the molten substrate;

(e) maintaining the molten substrate at a second selected temperature within said temperature range while resuming the growth of said epitaxial layer of the semiconductor material floating on the molten substrate until the desired thickness of semiconductor material is reached; and

(f) reducing the temperature of the substrate holder and material disposed therein to room temperature and removing the wafer comprising said semiconductor material from the substrate holder.

5,363,799

METHOD FOR GROWTH OF CRYSTAL

Takao Yonehara, Atsugi; Yuji Nishigaki, Odawara, and Kenji Yamagata, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,527, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 228,608, Aug. 5, 1988, abandoned. This application Nov. 19, 1992, Ser. No. 979,376
Claims priority, application Japan, Aug. 8, 1987, 62-198690
Int. Cl.[5] C30B *25/02*
U.S. Cl. 117—94 10 Claims



1. A method for crystal growth wherein monocrystalline seeds are arranged on a substrate and a monocrystal is permitted to grow with the seed as the originating point, comprising the steps of:

(a) providing a substrate having a surface of smaller nucleation density;

(b) arranging on the surface of the substrate a plurality of amorphous or polycrystalline primary seeds each having a thickness no greater than 0.1 μm, a diameter of 7 μm or less and sufficiently fine surface area to be agglomerated to form a single agglomerated product at a desired position on said substrate;

(c) applying heat treatment to said plurality of primary seeds to cause agglomeration to occur, thereby forming single monocrystalline seeds with a controlled face orientation; and

(d) applying crystal growth treatment selected from vapor deposition and liquid phase growth to permit monocrystals to grow with monocrystalline seeds as originating points.

5,363,800

PROCESS FOR THE CONTROLLED GROWTH OF SINGLE-CRYSTAL FILMS OF SILICON CARBIDE POLYTYPES ON SILICON CARBIDE WAFERS

David J. Larkin, Fairview Park, and Powell, J. Anthony, North Olmsted, both of Ohio, assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 718,315, Jun. 12, 1991, abandoned. This application Nov. 9, 1992, Ser. No. 973,505
Int. Cl.[5] H01L *21/306, 21/20*
U.S. Cl. 117—95 36 Claims

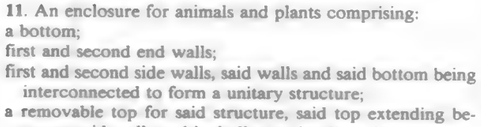
1. A method of producing device quality, single crystal, SiC film on a SiC substrate, wherein the film is a different selected polytype on selected areas of the substrate and the same polytype on the remaining area of the substrate, said method comprising:

lapping and polishing a SiC substrate crystal to expose a planar surface, either Si-face or C-face, that is tilted in any direction by any non-zero angle up to 1° with respect to a basal plane;

defining selected areas on the planar surface wherein heteroepitaxial film growth is desired by introducing grooves on the planar surface by a suitable means along the boundaries of said selected areas;

removing all unintentional sites of heterogeneous nucleation by a pregrowth etch of the grooved panar surface in an HCl/H_2 mixture at a temperature in the range of 1300° C. to 1450° C.;

introducing a site for intentional heterogeneous nucleation of a hetroepitaxial film at a location within each selected area of desired heteroepitaxial film growth by generating



a prescribed localized alteration of the crystal substrate surface;

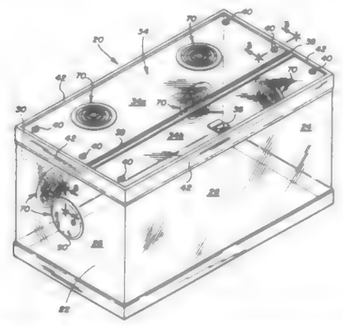
depositing an epataxial film over the whole planar surface wherein growth proceeds by a lateral growth at atomic-scale growth steps on the planar surface such that initial growth will be homoepitaxial except at sites of heterogeneous nucleation within the areas selected for heteroepitaxial growth, and such that the areas of heteroepitaxial film will expand as lateral growth continues, and such that the lateral growth of heteroepitaxial films will expand in fan-shaped regions emanating from the sites of heterogeneous nucleation, and such that the general direction of the fan-shaped lateral growth is in the direction of the lateral growth from the growth steps.

5,363,801

ENCLOSURE SYSTEM FOR ANIMALS AND PLANTS

Jeffrey R. Watters, Rowlett, and Anthony M. Thoes, Dallas, both of Tex., assignors to Oceanic Systems, Inc., Dallas, Tex.

Filed Aug. 16, 1993, Ser. No. 107,209
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—15 27 Claims



11. An enclosure for animals and plants comprising:

a bottom;

first and second end walls;

first and second side walls, said walls and said bottom being interconnected to form a unitary structure;

a removable top for said structure, said top extending between said walls and including a plurality of apertures;

a molding interconnected to said walls adjacent said top;

locking means disposed within said top plurality of apertures for selectively engaging said molding to thereby lock said top to said structure;

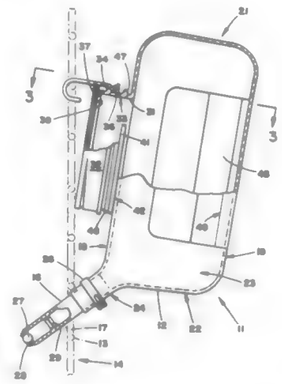
said locking means includes a portion extending above said top and said locking means includes a portion extending below said top, said portion extending below said top including means for engaging said molding upon rotation of said locking means portion extending above said top.

5,363,802

GNAW RESISTANT ANIMAL WATERING BOTTLE

Marvin E. Huff, Union City, Calif., assignor to Novalek, Inc., Hayward, Calif.

Filed Apr. 11, 1994, Ser. No. 225,957
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—18 17 Claims



1. A water dispenser for attachment to an animal cage or the like, said dispenser having a bottle which has a front wall that faces said cage or the like when said dispenser is attached thereto and wherein said bottle has a closable access opening for enabling filling of the bottle, said dispenser further having a tubular drinking tube spaced from said access opening which extends out from said bottle and which communicates with the interior thereof and means for attaching said bottle to said cage or the like, wherein the improvement comprises:

said access opening being situated at said front wall of said bottle which faces said cage or the like when said dispenser is attached thereto.

5,363,803

PERSONAL BIRD PERCH

Tony Serro, P.O. Box 2592, Telluride, Colo. 81435

Filed Sep. 24, 1993, Ser. No. 126,483
Int. Cl.[5] A01K *31/12*
U.S. Cl. 119—26 9 Claims

9. A personal bird perch for supporting a bird upon the shoulder of the user, comprising:

a main base having a forward end, a rear end, a top face, a bottom face, and first and second side edges, said main base having a generally radially configured bottom face;

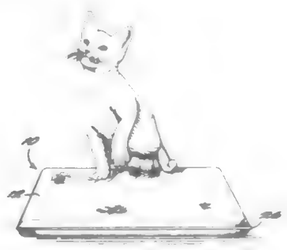
a generally horizontally disposed catch basin at or near the rear end of said main base, said catch basin situated above the back of the user;

a perch grid situated on said top face of said main base, said perch grid comprising a frictional surface juxtaposed



between the forward end of the main base and the catch basin.

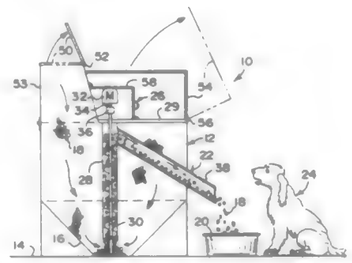
5,363,804
CUSHION FOR A HOUSEHOLD PET
John McAlister, 216 Olin Slice Rd., Chapin, S.C. 29036
Filed Jul. 23, 1993, Ser. No. 97,400
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—25.5 **27 Claims**



1. An article for use as a cushion for a pet, said article consisting essentially of:
a pad made of matted, resilient fibers formed in layers, said pad being approximately one-and-one-half to approximately two inches thick and having an edge; and
a binding carried by said edge.

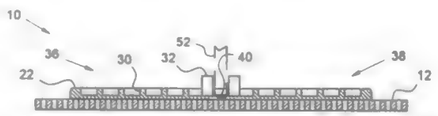
5,363,805
AUTOMATIC PET FEEDER
Lewis O. Wing, P.O. Box 785, Salem, Ark. 72576-0785
Filed Nov. 29, 1993, Ser. No. 158,459
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—51.11 **6 Claims**

1. An automatic pet feeder which comprises:
a) a cabinet to sit upon a flat supporting surface so a bowl can be placed adjacent thereto;
b) a hopper built into said cabinet for storing solid food therein;
c) means for dispensing some of the solid food from said hopper directing into said bowl, so that a pet can feed from said bowl; comprising a vertical pipe suspended from the top of said cabinet to extend through the center of said hopper in which a bottom end of said vertical pipe is spaced above the bottom of said hopper;
an auger rotatively positioned through said vertical pipe to the bottom of said hopper;
an electric motor having a drive shaft, said motor mounted onto the top of said cabinet, with said drive shaft coupled to said auger; and
an outlet feed tube extending at an angle downwardly from a top end of said vertical pipe and outwardly from one side of said cabinet to a location adjacent the level of the flat supporting surface$_d$ so that when said motor



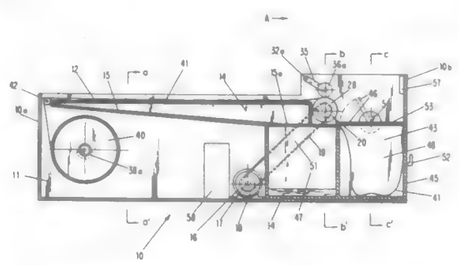
is activated the drive shaft will rotate said auger to lift some of the solid food up through said vertical pipe and into said outlet feed tube so that the solid food falls down said outlet feed tube into said bowl; and
d) means for programming said dispensing means to control the frequency of delivery of the solid food into said bowl.

5,363,806
PIG FEEDING MAT
Carl W. Van Gilst, Goshen, Ind., assignor to Agri-Engineering, Inc., Goshen, Ind.
Filed Aug. 2, 1993, Ser. No. 100,393
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—61 **16 Claims**



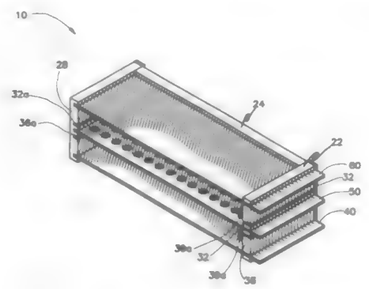
1. A pig feeding mat (**10**) for use over a grated floor (**12**), which mat comprises:
a rectangular surface (**14**) having first and second ends (**16** and **18**) and a perimeter (**20**);
means, comprising a rim (**22**) around said perimeter, for restraining movement of solid material transversely over said perimeter;
means, comprising a plurality of spaced-apart gaps (**24**) in said rim, for draining liquid from said mat while said mat is disposed in a substantially horizontal position; and
means, including first and second paired lugs (**26** and **28**) being proximal to said first and second ends (**16** and **18**), respectively, for positioning said mat on said grated floor (**12**) between first and second feeding stalls (**44** and **44A**) by said lugs invertedly straddling a side partition (**50**, **50A**, **52**, or **52A**).

5,363,807
AUTOMATED PORTABLE PET TOILET
Kihachiro Kakuta, 4-Chome 74 Banchi, Apartment 711 Sueyoshi-cho, Kanka-Ku, Yokohama-shi Kanagawa-ken, Japan
Continuation of Ser. No. 840,075, Feb. 20, 1992, Pat. No. 5,279,258. This application Dec. 30, 1993, Ser. No. 175,615
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] A01K *1/01*
U.S. Cl. 604—164 **20 Claims**



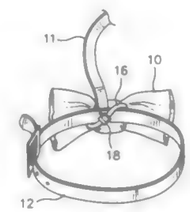
1. A portable pet toilet comprising:
a platform;
a reel;
a strip of waste-receiving material rolled upon said reel and movable across said platform;
a solid waste receptacle below said platform;
a free end of said strip disposable into said solid waste receptacle;
motorized means for moving said strip across said platform and into said solid waste receptacle; and
a liquid waste receptacle below said platform to collect liquid waste that passes through said platform.

5,363,808
PET LITTER BOX
Richard A. Edwards, 4819 N. 7th St., Philadelphia, Pa. 19120
Filed Feb. 28, 1994, Ser. No. 203,040
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—166 **11 Claims**



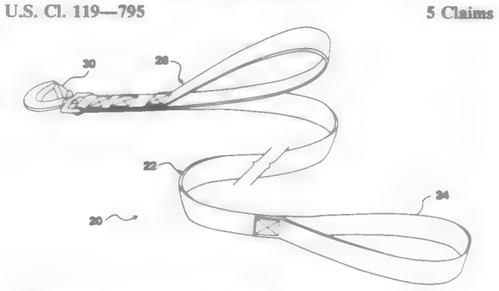
1. A pet litter box comprising:
a housing including a first opening, a second opening, and defining a plurality of grooves within an interior surface of said housing and a plurality of slots, each of said slots connected to and associated with one of said grooves;
a plurality of planar elements, each of said planar elements configured to slide through one of said slots and within one of said grooves; and
a cleaning element connected to said housing wherein said cleaning element is a brush extending substantially the entire length of one of said slots.

5,363,809
PET SANITATION ARTICLE ATTACHABLE TO A LEASH ASSEMBLY
Frances L. Roe, 4166 Oregon St., San Diego, Calif. 92104
Filed Feb. 22, 1994, Ser. No. 199,496
Int. Cl.[5] A01K *23/00, 27/00*
U.S. Cl. 119—792 **6 Claims**



1. An article for pet sanitation comprising:
a piece of fabric joined at the edges to form a substantially hollow sheath having two ends, each end opening into the interior of said sheath;
said ends being looped and interlaced to form at each said end a pouch joined to a central knot;
each said end having interlocking pieces of nylon fabric including a first said piece consisting essentially of a dense uncut pile in opposition with a second said piece consisting essentially of an array of tiny hooks such that said interlocking pieces of nylon fabric hold firmly to one another when pressed together, thereby holding closed said pouch at said each end.

5,363,810
TWO HANDLED ANIMAL CONTROL TETHER
Lawrence Kraus, 37 Cedarwood Dr., Pomona, Calif. 91766
Filed Jul. 12, 1993, Ser. No. 90,288
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—795 **5 Claims**



1. An animal control tether, comprising:
a) an elongated body having a first end section and a second, opposite end section;
b) first handle means located at said first end section of said elongated body for providing relatively distant control over an animal;
c) a clasping device affixed to said second end section of said elongated body; and,
d) second handle means located at said second end section, said second handle means being so constructed so as to remain slack, regardless of any tension exerted on said elongated body by an animal during use, until said second handle is grasped by an animal handler desiring close control over said animal's movements, wherein said second end section of said elongated body comprises:
a penultimate portion being provided by passing a section thereof through an aperture of said clasping device and being secured unto itself,

said penultimate portion terminating with an ultimate end portion, said ultimate end portion comprising an ultimate end of said elongated body secured to said penultimate portion so as to provide a loop serving as said second handle means.

5,363,811

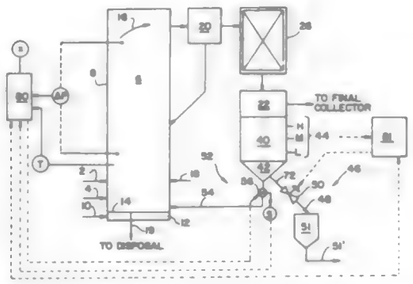
Patent Not Issued For This Number

5,363,812

METHOD AND APPARATUS FOR CONTROLLING THE BED TEMPERATURE IN A CIRCULATING FLUIDIZED BED REACTOR

Felix Belin, Brecksville; Kiplin C. Alexander, Wadsworth, and David E. James, Barberton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 18, 1994, Ser. No. 198,694
Int. Cl.[5] F22B *1/00*
U.S. Cl. 122—4 D **22 Claims**



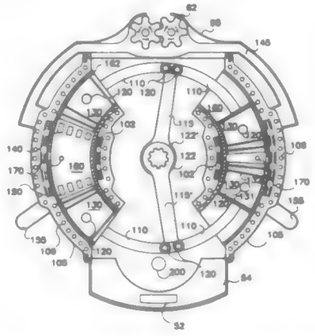
1. A circulating fluidized bed reactor, comprising:
a reactor enclosure for containing and conveying a circulating fluidized bed of material, said enclosure having a lower portion and an upper portion;
primary particle separator means for collecting particles entrained within a gas flowing through and from said reactor enclosure;
means for returning the particles collected by said primary particle separator means back to the lower portion of said reactor enclosure;
secondary particle separator means for further collecting particles entrained and still remaining within the gas flowing from said reactor enclosure after the gas has passed through said primary particle separator means;
particle storage means, having a storage capacity determined by a range of variation of a circulating solids inventory in said reactor enclosure required for bed temperature control, considering expected variability of fuel and sorbent properties and load changes of said reactor, for storing particles collected by said secondary particle separator means;
a recirculating system for controllably recirculating the particles collected by said secondary particle separator means and stored in said particle storage means back into the lower portion of said reactor enclosure;
a bed temperature control system for controlling recirculation rate of solids from said particle storage means into said reactor enclosure to change an inventory of circulating solids in the circulating fluidized bed reactor as required to control a temperature of the circulating fluidized bed in said reactor enclosure; and
a solids storage level control system, interacting with said bed temperature control system, for controlling the inventory of solids in said particle storage means as required for bed temperature control.

5,363,813

DUAL ROCKER SHAFT INTERNAL COMBUSTION DIESEL ENGINE

Conrad Paarlberg, 7553 W. State Rd. 8, La Creosse, Ind. 46348

Filed Jun. 30, 1993, Ser. No. 88,149
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—18 R **18 Claims**



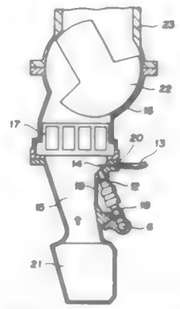
1. A dual rocker shaft internal combustion diesel engine comprising:
a) a first means for generating a rocker to and fro motion; and
b) a second means for converting said rocker to and fro motion to rotary motion connected to said first means for generating a rocker to and fro motion, wherein further;
c) said first means for generating a rocker to and fro motion comprises a dual rocker shaft in turn comprising a first shaft within a second shaft; and
d) said second means for converting said rocker to and fro motion to rotary motion comprises a single dual throw crank shaft connected to said dual rocker shaft.

5,363,814

FUEL INJECTION TYPE MULTIPLE CYLINDER ENGINE UNIT

Keisuke Daikoku, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 477,294, Feb. 7, 1990, Pat. No. 5,103,777. This application Mar. 3, 1992, Ser. No. 845,029
Claims priority, application Japan, Feb. 7, 1989, 1-27889; Mar. 16, 1989, 1-62312
Int. Cl.[5] F02M *35/10*; F01M *3/02*
U.S. Cl. 123—73 AD **11 Claims**



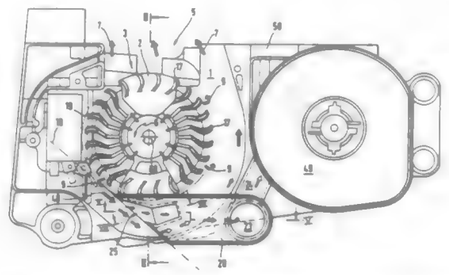
1. An internal combustion engine, comprising: at least one cylinder; a piston mounted to undergo reciprocating movement in the cylinder and defining therewith a combustion chamber; an intake pipe in communication with the cylinder for admitting air into the combustion chamber; fuel injecting means for injecting fuel into the intake pipe for mixing with air drawn in through the intake pipe to form an air-fuel mixture, the fuel injecting means being located to inject the fuel into the intake pipe from a point on the inner sidewall of the intake pipe so that the fuel is injected in an oblique direction with respect to the direction of primary air flow through the intake pipe at the cross-section thereof where the fuel is injected; and oil feeding means for feeding oil into the intake pipe in the region where the fuel is injected to effect atomization of the oil in the intake pipe to form an oil-fuel mixture.

5,363,815

COOLING AIR BLOWER WITH COMBUSTION AIR CHANNEL

Peter Pretzsch, Schorndorf; Michael Kein, Korb, and Peter Linsbauer, Remshalden, all of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Aug. 25, 1993, Ser. No. 112,663
Claims priority, application Germany, Aug. 26, 1992, 4228450
Int. Cl.[5] F01P *1/02*
U.S. Cl. 123—41.7 **14 Claims**



1. A cooling air blower for a combustion engine comprising:
a cooling air channel for supplying cooling air to a combustion engine for cooling;
a blower fan for conveying air into said cooling air channel, wherein a cooling air flow is established having a main flow direction in said cooling air channel tangential to said blower fan;
a combustion air channel branching off said cooling air channel for guiding air for combustion to an intake member of the combustion engine;
said combustion air channel having a section extending adjacent to said cooling air channel; and
said combustion air channel having an air intake socket within said section, said air intake socket being narrower than said cooling air channel and, in a radial plane of said blower fan, extending transverse to said main air flow direction of the cooling air in said cooling air channel, said air intake socket positioned at a slant relative to said radial plane of said blower fan and having an inlet opening, located on a side of said intake socket facing away from said blower fan, for allowing passage of air from said cooling air channel into said combustion air channel.

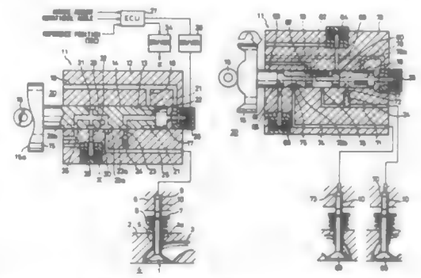
5,363,816

VALVE DRIVE DEVICE

Hiroshi Yorita, Kariya; Toshihiko Igashira, Toyokawa; Yasuyuki Sakakibara, Nishio; Moriyasu Gotoh, and Kazuhide Watanabe, both of Toyohashi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 21, 1994, Ser. No. 184,060
Claims priority, application Japan, Jan. 21, 1993, 5-008286; Apr. 2, 1993, 5-076969
Int. Cl.[5] F01L *9/02*
U.S. Cl. 123—90.12 **12 Claims**

1. A valve drive device provided with:
a plunger which is driven to rotate with respect to a longitudinal axis of the plunger by an internal combustion engine and moves reciprocatingly in the axial direction of rotation as well,
a cylinder which is formed in a cylinder block and receives the plunger fluid-tightly,
at least one low pressure side chamber which can store hydraulic fluid in it,
a pressure chamber which is formed in the cylinder block at the end of the plunger, takes in and pressurizes the hydraulic fluid of the low pressure side chamber,
a discharge passage which is formed in the plunger and communicates with the pressure chamber and has at least one opening at the columnar surface of the plunger,
a discharge port which is formed in the cylinder block so as to receive the hydraulic fluid pressurized in the pressure chamber when in register with the opening of the discharge passage by the rotational drive of the plunger,
a valve driving hydraulic cylinder which is connected to the discharge port through a high pressure passage,



a hydraulic piston which is inserted fluid-tightly in the hydraulic cylinder and generates a force for opening at least one of an intake and an exhaust valve of the internal combustion engine when receiving pressurized hydraulic fluid from the high pressure passage,
at least one relief channel which is formed in the plunger and is able to communicate the high pressure passage to the low pressure side chamber by having at least one opening in the columnar surface of the plunger so as to discharge the pressurized hydraulic fluid in the high pressure passage to the low pressure side chamber and closes at least one of the intake and the exhaust valve,
at least one relief port which is formed in the cylinder block and opens to a position able to communicate with the opening of the relief channel by rotational motion of the plunger, and
a pressure reduction mechanism which is inserted between at least one relief port and the low pressure side chamber and controls the timing of closing of at least one of the intake and the exhaust valve.

5,363,817

VALVE OPERATION TIMING REGULATION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Hiroshi Ikeda, and Katsuhiko Kawai, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 23, 1994, Ser. No. 216,544
Claims priority, application Japan, Mar. 25, 1993, 5-066898
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.15 **5 Claims**

1. A valve operation timing regulation apparatus for changing the rotational phase between the crankshaft and the camshaft in the internal combustion engine by driving a member interposed between said two shafts by an actuator and thereby changing the operation timing of a valve driven by the camshaft, comprising:
various sensors for detecting various conditions of various parts of the internal combustion engine;
means for determining the operating conditions of the inter-

nal combustion engine in response to detection signals from said sensors and determining a current target value of the rotational phase in accordance with said operating conditions;

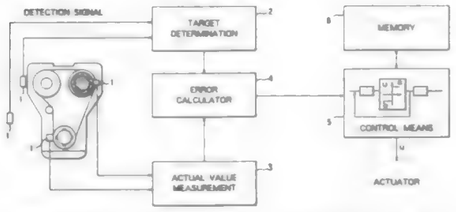
means for measuring an actual value of the rotational phase on the basis of the detection signals from said sensors;

error detection means for computing phase difference between said current target value and said actual value;

control means for selecting a current control value from a plurality of control values predetermined in a stable operation region of said actuator and applying said control value to said actuator; and

means for storing selected one of the generated control value thus generated and control amount corresponding to said control value;

wherein said control means determines current control condition using the computed phase difference, previous control amounts stored in said storing means and selectively produces the control value on the basis of the current control condition.



5,363,818

VALVE OPERATING APPARATUS IN INTERNAL COMBUSTION ENGINE

Takeshi Iwata, and Takatoshi Aoki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

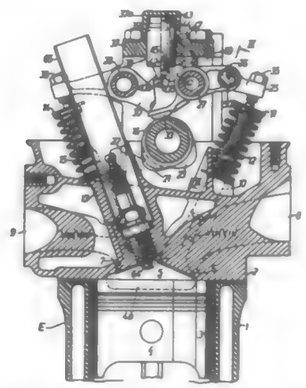
PCT No. PCT/JP91/00484, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO91/16527, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 960,001

Claims priority, application Japan, Apr. 13, 1990, 2-40026[U]

Int. Cl.[5] F01L *1/04, 1/34*

U.S. Cl. 123—90.16 **3 Claims**



1. A valve operating apparatus comprising a drive rocker arm (24, 25) which is interposed between a cam shaft (16) and at least an intake valve (V_{I1}, V_{I2}) of intake and exhaust valves (V_{I1}, V_{I2}; V_{E1}, V_{E2}) disposed in a cylinder head (2) of an engine body (E) and spring-biased in closing directions and which is operatively connected to the intake valve (V_{I1}, V_{I2}), a free rocker arm (26) also interposed between the cam shaft (16) and at least the intake valve (V_{I1}, V_{I2}) and capable of being liberated from said intake valve (V_{I1}, V_{I2}), a connection switchover mechanism (50) provided in said rocker arms (24 to 26) and capable of switching-over the connection and disconnection of said rocker arms (24 to 26), and a lost motion mechanism (38) provided in the engine body (E) for resiliently biasing said free rocker arm (26) toward the cam shaft (16), wherein said lost motion mechanism (38) is disposed in a support member (37) disposed above the cylinder head (2), and said free rocker arm (26) is disposed below the support member (37).

5,363,819

PNEUMATIC-INJECTION TWO-STROKE ENGINE WITH FIRST ORDER BALANCING OF THE RECIPROCATING MASSES

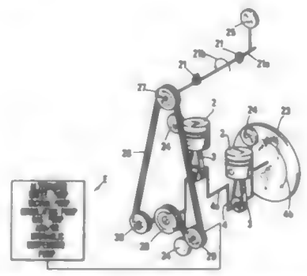
Stéphane Venturi, Choisy Le Roi, and Pierre Duret, Sartrouville, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Sep. 10, 1993, Ser. No. 118,644

Claims priority, application France, Sep. 11, 1992, 9210869

Int. Cl.[5] F02B *75/06*

U.S. Cl. 123—192.2 **6 Claims**



1. A two-stroke engine comprising a crankshaft rotatable around a first axis of rotation and having at least one balancing mass, a system for pneumatic injection of fuel utilizing a portion of an air charge of the engine to spray fuel into at least one combustion chamber of the engine at predetermined times of a working cycle of the engine, means for controlling a feeding of fuel by the pneumatic injection system including a second shaft rotatable around a second axis of rotation parallel to said first axis of rotation and driven in rotation by the crankshaft, at least one balancing mass connected in rotation to said feeding controlling means so as to achieve a first order balancing of reciprocating masses of the engine, and a two-faced toothed belt for providing a counter rotating drive of the feeding controlling means by said crankshaft.

5,363,820

COMBUSTION CHAMBER FOR AIR COMPRESSING, SELF-IGNITING INTERNAL COMBUSTION ENGINES

Alfred Neitz, Wendelstein, Germany, assignor to Man Nutzfahrzeuge AG, München, Germany

Filed Aug. 25, 1993, Ser. No. 112,696

Claims priority, application Germany, Aug. 27, 1992, 4228518

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—193.1 **4 Claims**

1. An air-compressing, self-igniting internal combustion engine comprising:

a multiport injection system;

a combustion chamber comprised of:

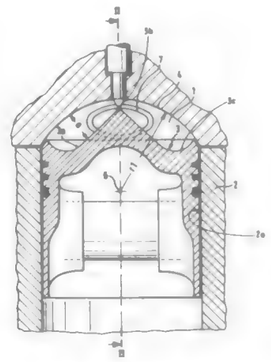
a first delimiting surface in the form of an inner cylinder wall of a cylinder;

a second delimiting surface in the form of a cylinder head bottom having openings for one intake valve and one exhaust valve;

a third delimiting surface in the form of a piston bottom;

said second delimiting surface shaped as a spherical segment with a radius of curvature, wherein a point of origination of said radius is on a cylinder axis of the cylinder;

said third delimiting surface shaped partially as a rotation-symmetrical surface, wherein a slant of said rotation-symmetrical surface is such that, beginning at an end of said rotation-symmetrical surface proximal to said second delimiting surface and proceeding in a direction toward a distal end of said rotation-symmetrical surface, a distance a between said rotation-symmetrical surface and said



second delimiting surface increases corresponding to a widening of a contour of an injected fuel jet ejected from the multiport injection system;

said openings, when viewed in a direction of the cylinder axis, arranged diagonally to a longitudinal axis of the internal combustion engine; and

wherein said third delimiting surface, viewed in a direction toward said cylinder axis, has radially extending depressions, with a cross-section of said radially extending depressions being shaped according to a shape of the injected fuel jets ejected from the multiport injection system.

5,363,821

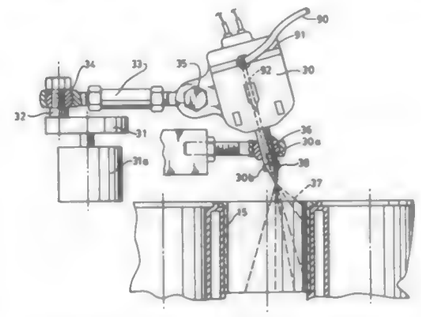
THERMOSET POLYMER/SOLID LUBRICANT COATING SYSTEM

V. Durga N. Rao, Bloomfield Hills; Daniel M. Kabat, Oxford, and Brian M. Lizotte, Howell, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1993, Ser. No. 88,686

Int. Cl.[5] F22B *5/00*

U.S. Cl. 123—193.2 **22 Claims**



18. A cylinder block for an internal combustion engine having one or more anti-friction coated cylinder bores, comprising:

(a) a cast aluminum-based cylinder block having at least one cylinder bore surface;

(b) a hard load-supporting face-on said bore surface; and

(c) a coating on said face comprised of an oil-attracting solid lubricant mixture and a thermoset polymer that supports loads of at least 10 psi at temperatures of 600°–800° F. and is stable at such temperatures, the mixture having at least two elements selected from the group consisting of graphite, molybdenum disulfide, and boron nitride, the thermoset polymer having inherently high hydrocarbon chemical attraction and being adhereable to said face upon flowing thereagainst with temperature stability at 600°–800° F.

5,363,822

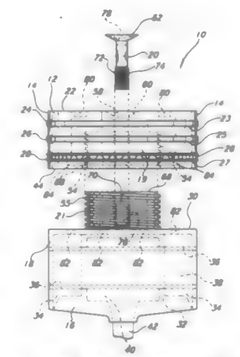
ASSEMBLY AND METHOD OF USING A MULTI-PART PISTON WITH A REMOVABLE HEAD

Matthew J. Tuohy, P.O. Box 785, Kent, Wash. 98035-0785

Filed Jul. 9, 1993, Ser. No. 89,301

Int. Cl.[5] F02F *3/16*

U.S. Cl. 123—193.6 **25 Claims**



1. A piston assembly for an internal-combustion engine having at least one cylinder, the engine having a piston rod that extends into the cylinder, the assembly comprising:

a base portion connectable to the piston rod and positionable in the cylinder, said base portion being adapted for reciprocal movement within the cylinder;

a cylindrical head portion removably connected to said base portion to allow disconnection of said head portion from said base portion and removal of said head portion from the top of the cylinder without requiring disconnection of said base portion from the piston rod, said head portion being positionable in the cylinder for reciprocal movement with said base portion when connected together, said head portion carrying at least one ring for sealing with the cylinder as said head portion reciprocates; and

a removable locking device that locks said head and base portions together against rotation relative to each other.

5,363,823

OIL COOLER

Michael Gittlein, 17442 W.C.R. 53, LaSalle, Colo. 80645

Filed Jul. 2, 1993, Ser. No. 87,203

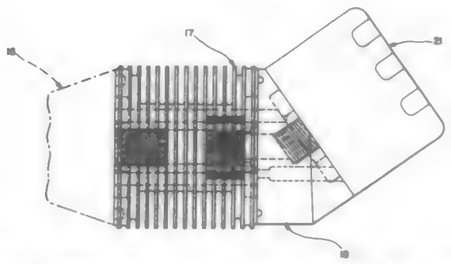
Int. Cl.[5] F01M *5/00*

U.S. Cl. 123—196 AB **5 Claims**

1. An oil cooler comprising:

(a) a body member having a central axis, first and second ends and a plurality of longitudinal conduits extending through said body member parallel to said central axis; wherein each said end of said body member includes a threaded attachment aperture; and wherein each said end

of said body member includes a cavity which communicates with said conduits;



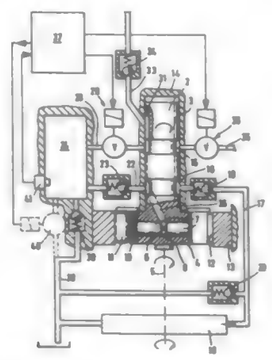
(b) a plurality of spaced-apart fin members secured to said body member and extending outwardly from said body member for dissipating heat from heated fluid passing through said conduits.

5,363,824

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Bernhard Bosse, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE93/00330, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO93/22554, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 10, 1993, Ser. No. 133,027
Claims priority, application Germany, Apr. 25, 1992, 4213720
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—506 8 Claims



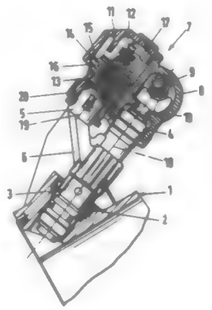
1. A fuel injection device for internal combustion engines, comprising a plurality of injection lines leading to various injection valves at an engine; a high pressure reservoir; a high pressure pump having a pump working space and drawing fuel into said pump working space and delivering the pressurized fuel into said high pressure reservoir; a distributor having a distributor aperture and driven synchronously with the engine so that during its rotation said distributor successively controls said injection lines through said distributor aperture; a fuel line leading from said high pressure reservoir to said distributor aperture; a relief line leading from said distributor aperture; a first electrically controlled valve arranged in said fuel line leading from said high pressure reservoir to said distributor aperture; and a second electrically controlled valve provided downstream of said first electrically controlled valve in said relief valve leading from said distributor aperture and formed so that, for controlling an injection time and volume, an injection start is determined by opening of said first electrically controlled valve while said second electrically controlled valve is closed, and an injection termination is determined by opening of said second electrically controlled valve.

5,363,825

FUEL INJECTION ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE HAVING A PLURALITY OF ELECTRIC FUEL INJECTION VALVES

Norbert Becker, Gifhorn, Germany, assignor to Volkswagen AG, Wolfsburg

Filed Dec. 14, 1993, Ser. No. 166,551
Claims priority, application Germany, Jan. 27, 1993, 4302186
Int. Cl.[5] F02M *61/14*
U.S. Cl. 123—456 3 Claims



1. A fuel injection arrangement for an internal combustion engine comprising a plurality of electric fuel injection valves, a distributor rail for supplying fuel and electric power to the valves, a plurality of hydraulic couplings and a corresponding plurality of electrical plug connections, each having two component parts, associated with the distributor rail and with a valve, respectively, which are aligned for parallel engaging motions, the distributor rail components of the plug connections being individually detachable from the distributor rail, and a common cover for the distributor rail components movable to an open position with respect to the distributor rail components of the plug connections.

5,363,826

AIR-FUEL RATIO CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Toshio Takaoka, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 10, 1993, Ser. No. 15,790
Claims priority, application Japan, Feb. 14, 1992, 4-028198
Int. Cl.[5] F02D *41/04*
U.S. Cl. 123—486 10 Claims

1. An intake system for an internal combustion engine, comprising:

an intake passageway for introducing intake air into the engine;

a throttle valve arranged in the intake passageway for controlling an amount of intake air introduced into the engine;

a fuel supply device for supplying a fuel which, together with the intake air, constitute an air-fuel combustible mixture that is introduced into the engine for combustion therein;

means for setting a desired air fuel ratio of the air-fuel combustible mixture introduced to the engine, and;

mean for controlling an amount provided by the fuel supply device so as to achieve the air fuel ratio set by the setting means,

the setting means comprising:

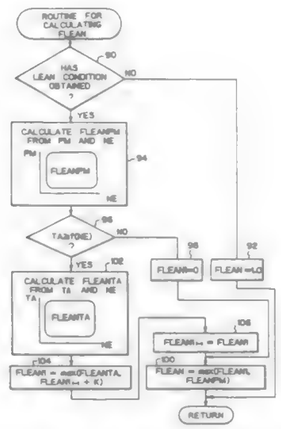
means for detecting a load acting on the engine;

first setting means for setting the air fuel ratio to an ultra lean air fuel ratio when a low load is acting on the engine so that the emission of nitrogen oxide components in exhaust gas output from the engine is small;

second setting means for setting the air fuel ratio to a medium lean air fuel ratio when a medium load is acting on the engine;

third setting means for setting the air fuel ratio to a third air fuel ratio when the load acting on the engine is larger than the medium load, wherein the third air fuel ratio is an air fuel ratio other than a lean air fuel ratio;

the medium lean air fuel ratio set by the second setting means being less than the ultra lean air fuel ratio set by



the first setting means and greater than the theoretical air fuel ratio set by the third setting means, and the medium lean air fuel ratio being reduced in accordance with an increase in the engine load;

means for selecting one of the first, second and third setting means based on the load detected by the load detecting means; and

means for gradually reducing the air fuel ratio toward an air fuel ratio other than the lean air fuel ratio when the engine operates under the medium lean air fuel ration for a prescribed period of time.

5,363,827

FUEL PUMP ASSEMBLY

James M. Siekmann, Crystal City, Mo., assignor to Carter Automotive Company, Inc., Southfield, Mich.

Filed Oct. 14, 1993, Ser. No. 136,526
Int. Cl.[5] F02M *37/04*; E03B *11/00*
U.S. Cl. 123—509 16 Claims

1. A fuel supply system for an engine, comprising:

a fuel container positionable in a fuel tank;

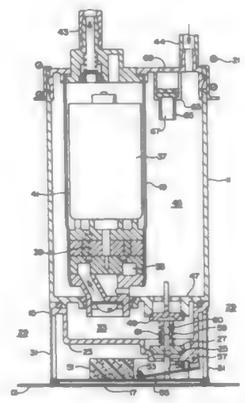
a fuel pump for supplying fuel to an engine, the fuel pump having an inlet chamber selectively communicating with the fuel tank and the fuel container;

a return line connected to the fuel container for returning unused fuel to the fuel container;

an upper valve for controlling fuel flow from the fuel container to the pump inlet chamber;

a lower valve for controlling fuel flow from the fuel tank to the pump inlet chamber:

float means for opening the lower valve when the fuel level in the tank is above a predetermined minimum value; and



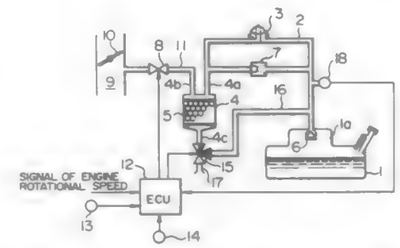
lost motion means interconnecting the lower valve and the upper valve.

5,363,828

FUEL VAPOR PROCESSING APPARATUS OF INTERNAL COMBUSTION ENGINE

Osao Yamashita, Tokai, and Yasunori Nakatsu, Aichi, both of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Jul. 19, 1993, Ser. No. 92,821
Claims priority, application Japan, Jul. 22, 1992, 4-195221
Int. Cl.[5] F02M *25/08*
U.S. Cl. 123—520 2 Claims



1. A fuel vapor processing apparatus of a fuel tank for an internal combustion engine, in which fuel vapor in the fuel tank is supplied to a fuel vapor collecting canister filled with an absorbent, and is absorbed and collected therein, and the absorbed fuel in the canister is introduced into the downstream of a suction air throttle valve in a suction air passage through a control valve,

said fuel vapor processing apparatus comprising:

a three-way valve having three openings which are connected to an air port of the canister, an upper air chamber of the fuel tank, and an air release port;

a pressure sensor provided in such a manner that the pressure sensor is closer to the fuel tank than said control valve is; and

a control unit which operates said three-way valve so as to communicate the air port of the canister with the upper air chamber of the fuel tank and to introduce a suction negative pressure into piping portions of the fuel vapor processing apparatus through said control valve, so that when the pressure in said piping portions reaches a predetermined value, the control unit closes the control valve, and that when a change of signals transmitted from the pres-

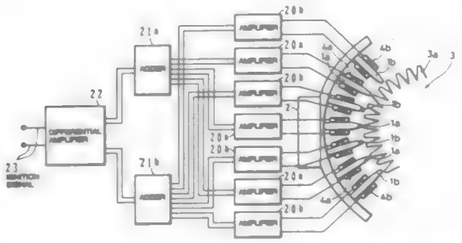
sure sensor in accordance with time thereafter exceeds a predetermined range, the control unit judges it as abnormality.

5,363,829

IGNITION DISTRIBUTOR OF INTERNAL COMBUSTION ENGINE

Makoto Onisawa, Hitachi; Ken Yoshioka, Hitachiohta; Makoto Koizumi, Ibaraki; Hiromitsu Nagae, and Ryoichi Koshida, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1993, Ser. No. 94,295
Claims priority, application Japan, Jul. 23, 1992, 4-197143
Int. Cl.[5] F02F *9/00*
U.S. Cl. 123—617 **20 Claims**



1. An ignition distributor of an internal combustion engine comprising:

magnetic flux generating means;

a rotary body rotating in proportion to the number of the rotations of the internal combustion engine, said rotary body having a plurality of protrusions on its peripheral portion;

a magnetic flux passing member arranged opposite to said rotary body, the magnetic flux from said magnetic flux generating means passing through said magnetic flux passing member; and

magnetic flux change detecting means for detecting the change of the magnetic flux passing through said magnetic flux passing member,

wherein said magnetic flux passing member includes a plurality of protruded portions disposed on the portion opposite to said rotary body, the plural protruded portions including a detection protruded portion having said magnetic flux change detecting means and bypass protruded portion having no magnetic flux change detecting means, the distance between the detection protruded portion and the bypass protruded portion in the circumferential of said rotary body being (n+m) times as long as the distance between the protrusions of said rotary body, the n being a natural number including 0, the m being a number which is larger than 0 and smaller than 1.

5,363,830

AIR-FUEL RATIO CONTROLLER OF INTERNAL-COMBUSTION ENGINE

Junya Morikawa, Kasugai, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 5, 1993, Ser. No. 145,856
Claims priority, application Japan, Nov. 10, 1992, 4-299926
Int. Cl.[5] F02M *25/08;* **F02D** *41/14*
U.S. Cl. 123—674 **3 Claims**

1. An air-fuel ratio controller of an internal combustion engine which stores evaporated fuel produced within a fuel tank in a canister and discharges the evaporated fuel stored in the canister into an air intake side of the internal combustion engine through a discharge path together with air, comprising:

air-fuel ratio detection means for detecting an air-fuel ratio of the internal combustion engine;

air-fuel ratio feedback means for feedback controlling an air-fuel ratio of an air-fuel mixture supplied to the internal combustion engine in accordance with the air-fuel ratio detected by said air-fuel detection means;

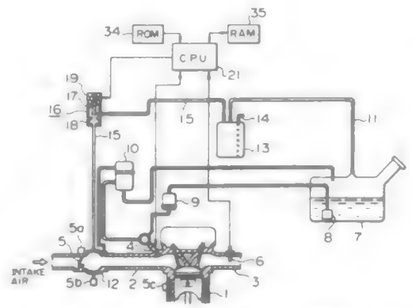
a flow rate control valve for changing a purge ratio of air containing the evaporated fuel discharged into the air intake side of the internal combustion engine through the discharge path from the canister;

purge ratio control means for controlling the purge ratio by said flow rate control valve in accordance with a condition of the engine;

concentration detection means for detecting a concentration of the evaporated fuel on the basis of the feedback value of the air-fuel ratio by said feedback means;

purge responsive fuel amount correction means for correcting a fuel amount so that the air-fuel ratio is equal to a predetermined value in accordance with the concentration of the evaporated fuel detected by said concentration detection means and the purge ratio controlled by said purge ratio control means; and

air-fuel ratio responsive concentration updating means for increasing an update amount of the concentration of said concentration detection means as compared with a usual amount when it is judged that the air-fuel ratio is excessive on the basis of at least one of an output of said air-fuel ratio detection means and the feedback value of the air-fuel ratio during the purging operation by said flow rate control valve.



2. An air-fuel ratio controller of an internal combustion engine which stores evaporated fuel produced within a fuel tank in a canister and discharges the evaporated fuel stored in the canister into an air intake side of the internal combustion engine through a discharge path together with air, comprising:

air-fuel ratio detection means for detecting an air-fuel ratio of the internal combustion engine;

air-fuel ratio feedback means for feedback controlling an air-fuel ratio of an air-fuel mixture supplied to the internal combustion engine in accordance with the air-fuel ratio detected by said air-fuel detection means;

a flow rate control valve for changing a purge ratio of air containing the evaporated fuel discharged into the air intake side of the internal combustion engine through the discharge path from the canister;

purge ratio control means for controlling the purge ratio by said flow rate control valve in accordance with a condition of the engine and increasing the purge ratio gradually in the beginning of the purging of said flow rate control valve; and

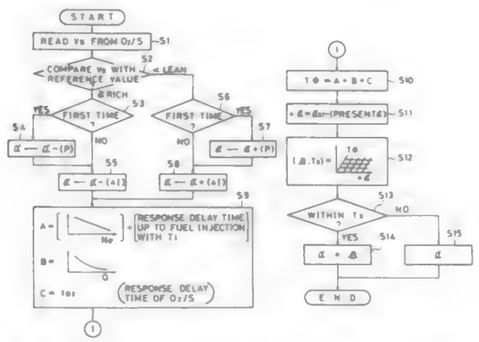
air-fuel ratio responsive purge ratio suppressing means for suppressing increase of the purge ratio by said flow rate control valve when it is judged that the air-fuel ratio is excessive on the basis of at least one of an output of said air-fuel ratio detection means and the feedback value of the air-fuel ratio during the purging operation by said flow rate control valve.

5,363,831

METHOD OF AND AN APPARATUS FOR CARRYING OUT FEEDBACK CONTROL ON AN AIR-FUEL RATIO IN AN INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, and Satoru Watanabe, both of Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Nov. 16, 1993, Ser. No. 152,494
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—695 **12 Claims**



1. An apparatus for carrying out feedback control on an air-fuel ratio in an internal combustion engine, comprising:

an air-fuel ratio sensor providing an output that changes in response to the concentration of a specific gas component in exhaust, the concentration of the specific gas component changing in response to the air-fuel ratio of an air-fuel mixture supplied to the engine;

air-fuel ratio feedback control means for controlling an air-fuel ratio feedback correction value for correcting the quantity of fuel supplied by fuel supply means to the engine to bring the air-fuel ratio detected according to the output value of the air-fuel ratio sensor close to a target air-fuel ratio;

response delay time calculation means for calculating a response delay time involved in the feedback control system carried out by the air-fuel ratio feedback control means;

air-fuel ratio deviation calculation means for calculating a value representing a deviation of the air-fuel ratio of the intake air-fuel mixture to the engine from the target air-fuel ratio according to at least one of the output value of the air-fuel ratio sensor and the air-fuel ratio feedback correction value;

response delay correction means for correctively setting the air-fuel ratio feedback correction value controlled by the air-fuel ratio feedback control means according to the value indicating the air-fuel ratio deviation calculated by the air-fuel ratio deviation calculation means and the response delay time calculated by the response delay time calculation means; and

fuel supply quantity correction means for correcting and controlling the quantity of fuel supplied by the fuel supply means to the engine according to the air-fuel ratio feedback correction value.

7. A method of carrying out feedback control on an air-fuel ratio in an internal combustion engine, comprising the steps of:

reading an output of an air-fuel ratio sensor, the output changing in response to the concentration of a specific gas component in exhaust, the concentration of the specific gas component changing in response to the air-fuel ratio of an air-fuel mixture supplied to the engine;

controlling an air-fuel ratio feedback correction value for correcting the quantity of fuel supplied by fuel supply means to the engine such that the air-fuel ratio detected according to the output value of the air-fuel ratio sensor is brought close to a target air-fuel ratio;

calculating a response delay time in the step of controlling the air-fuel ratio feedback correction value;

calculating a value indicating a deviation of the air-fuel ratio of the air-fuel mixture to the engine from the target air-fuel ratio, according to at least one of the output value of the air-fuel ratio sensor and the air-fuel ratio feedback correction value;

correctively setting the air-fuel ratio feedback correction value according to the value indicating the air-fuel ratio deviation and the response delay time; and

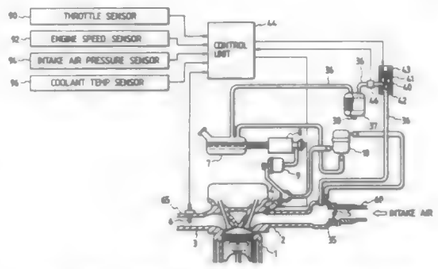
correcting and controlling the quantity of fuel supplied by the fuel supply means to the engine according to the air-fuel ratio feedback correction value.

5,363,832

FUEL VAPOR PURGING CONTROL SYSTEM WITH AIR/FUEL RATIO COMPENSATING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Toshihiro Suzumura, Nagoya; Hisashi Iida, Aichi; Toshio Kondo, and Shigenori Isomura, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 13, 1993, Ser. No. 60,552
Claims priority, application Japan, May 14, 1992, 4-121764; May 15, 1992, 4-123304
Int. Cl.[5] F02D *41/04;* **F02M** *33/02*
U.S. Cl. 123—704 **5 Claims**



1. A fuel vapor purging control system for an internal combustion engine comprising:

a purge passage communicating between a fuel tank and an induction system of said internal combustion engine;

purge control means including valve means for providing a variable flow restriction in said purge passage so as to control a purge flow rate of an air-fuel vapor mixture, which flows through said purge passage and into said induction system;

fuel mass determining means for performing the functions of: a) determining, based upon an opening degree of said valve means and a preselected engine operating condition parameter, said purge flow rate, b) determining an oxygen concentration of said air-fuel vapor mixture, c) determining, based upon said oxygen concentration, a fuel density of said air-fuel vapor mixture, and d) determining, based upon said purge flow rate and said fuel density, a fuel mass; and

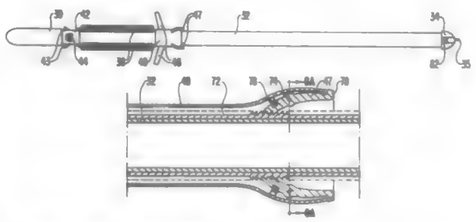
air/fuel ratio controlling means for modifying, based upon said fuel mass, an amount of fuel in an air/fuel mixture, which is injected through a fuel injection system of said internal combustion engine, thereby assuring a desired air/fuel ratio of said air/fuel mixture entering a combustion chamber of said internal combustion engine.

5,363,833

LEG-LOADING SPEAR GUN

Paul Measud, 24 Woralul Street, Warramanga, ACT 2611, Australia

PCT No. PCT/AU91/00456, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO92/07229, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 4, 1991, Ser. No. 39,170
Claims priority, application Australia, Oct. 15, 1990, PK2801
Int. Cl.[5] F41B *7/04*
U.S. Cl. 124—26 16 Claims



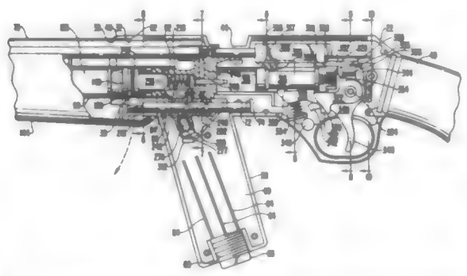
1. A spear gun comprising:
an elongate tubular barrel for supporting and aligning a spear;
a hand grip fixed to the rear end of the barrel containing a trigger mechanism for effecting the release of the spear;
extensible spring means generally aligned with the barrel arranged so that its rear end is operatively connected to the spear for imparting a forward propulsive force to the spear supported and aligned with the barrel;
a front slider attached to the front end of the spring means and adapted to slide forward on or in the barrel to extend the spring means when the spear gun is being loaded; and
ratchet-like non-return means operable between the slider and the barrel to permit the slider to be moved forward incrementally against the force of the spring means while preventing return of the slider by the spring means, the nonreturn means being manually releasable to allow the slider to be returned rearward along the barrel.

5,363,834

GUN POWERED BY EITHER COMPRESSED GAS CARTRIDGE OR HAND-PUMPED AIR

William R. Stuchlik, Rogers, Ark., assignor to Daisy Manufacturing Company, Inc., Rogers, Ark.

Filed Mar. 30, 1993, Ser. No. 39,994
Int. Cl.[5] F41B *11/06, 11/26, 11/28, 11/32*
U.S. Cl. 124—76 24 Claims



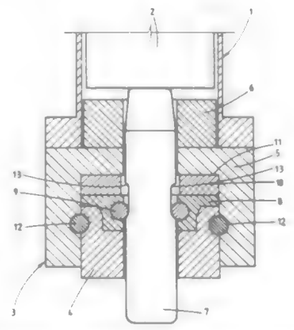
1. A gun for propelling a projectile using compressed gas comprising:
a gun body;
a barrel attached to said gun body and having a bore through which the projectile is propelled;
a compressed gas storage chamber disposed in said gun body and in fluid communication with said barrel bore through a passage when the gun is fired;
a firing valve for allowing the compressed gas in said storage chamber to pass through said passage to said barrel bore to propel the projectile, said firing valve opening in response to the firing of the gun;
a compression chamber in fluid communication with said storage chamber through a check valve and having a piston disposed therein, said piston reciprocable in said compression chamber to compress atmospheric air, said check valve allowing air compressed in said compression chamber by the reciprocation of said piston to pass into said storage chamber;
an access port disposed in said storage chamber;
a compressed gas cartridge holder adapted to hold a compressed gas cartridge;
an entry port in fluid communication with the compressed gas cartridge when the cartridge is held in said cartridge holder, said access port in fluid communication with said entry port; and
a switching valve disposed in said gun body and actuatable by a gun operator between a first and second positions, said first position allowing fluid communication between said entry port and said access port such that compressed gas continuously flows from the cartridge to said storage chamber when the compressed gas cartridge is disposed in said cartridge holder and such that the flow of gas from the cartridge to the storage chamber is uninterrupted whenever the switching valve is in its first position, said second position preventing fluid communication between said entry port and said access port.

5,363,835

NOSE BLOCK ASSEMBLY

Angus P. Robson, Matamata, New Zealand, assignor to Rocktec Limited, Matamata, New Zealand

Filed Aug. 31, 1992, Ser. No. 938,363
Int. Cl.[5] B28D *1/26*
U.S. Cl. 125—40 6 Claims



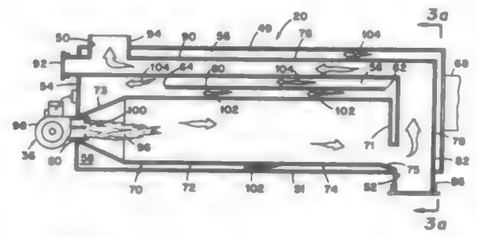
1. A nose assembly for a rock breaking apparatus comprising a housing having inner and outer pin passages, a striker pin chamber accommodating a striker pin and retainer, shock absorbing means positioned within the housing on opposite sides of the retainer, said striker pin being restrained by said retainer between extended and withdrawn positions and being slidable with respect to said pin passages, an inner end of the striker pin extending into a hammer chamber to which the nose block assembly is fixed whilst the other end of the striker pin extends outside the striker pin chamber, in which when said striker pin is struck by a hammer within the hammer chamber and penetrates an object the pin advances from a withdrawn to extended position, and in the event of a miss-hit or ineffective hit, shock absorbing means on one side of the retainer absorbs shock loads.

5,363,836

FURNACE WITH SUPPLEMENTARY HEAT EXCHANGE MEANS

Eugene C. Briggs, Bowling Green, Ky., assignor to Black Gold Corporation, Nashville, Tenn.

Filed Aug. 26, 1993, Ser. No. 112,702
Int. Cl.[5] F24H *3/02*
U.S. Cl. 126—109 18 Claims



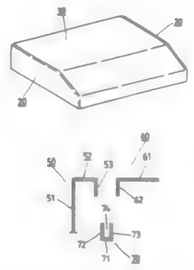
1. A furnace comprising:
substantially enclosed housing means having opposite first and second ends, sidewalls extending between the first and second ends, and partition means extending between the first and second ends so as to separate the interior of the housing means into a first zone and a second zone, the partition means providing a first and a second opening within the housing means through which the first and second zones are permitted to communicate with one another wherein the first opening is disposed adjacent the first end of the housing means and the second opening is disposed adjacent the second end of the housing means, the housing means also including an air intake associated with the first end and an air discharge vent associated with the second end and opening out of the at least the first zone;
a heat exchanger having a body including two elongated leg sections mounted within the housing means and a bridge section joining the leg sections, one of the leg sections being positioned within so as to extend along the length of the first zone and providing an inlet for the heat exchanger body, the bridge section being positioned through the first opening so as to extend between the first and second zones, and the other leg section being positioned within so as to extend along the length of the second zone and providing an outlet end for the heat exchanger body;
a fuel burner assembly associated with the heat exchanger body for directing a flame and attending combustion products into the inlet end of the heat exchanger body and means for moving the combustion products in sequence through the one leg section then through the other leg section to the outlet end of the heat exchanger body so that the heat generated by the flame and combustion products are absorbed through the inside surfaces of the heat exchanger body; and
means for moving air from the air intake to the air discharge vent so that a fraction of the amount of air moved by the air moving means flows along the length of the first zone and absorbs heat from the outer surface of the one leg section of the heat exchanger body and the remainder of the amount of air moved by the air moving means flows along the length of the second zone, absorbs heat from the outer surface of the other leg section of the heat exchanger body and then is permitted to mix with the fraction of the amount of air through the second opening before exiting the housing means through the air discharge vent with the fraction of the amount of air.

5,363,837

OUTER HOUSING OF KITCHEN SMOKE EXHAUSTER

Sun-Sing Jang, 650, Yuan-Huan E. Rd., Fong-Yuan, Taichung, Taiwan, Prov. of China

Filed Mar. 10, 1994, Ser. No. 208,297
Int. Cl.[5] F24C *15/20*
U.S. Cl. 126—299 D 8 Claims



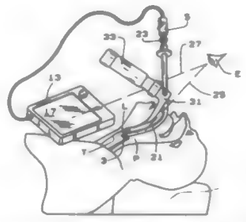
1. An outer housing of a kitchen smoke exhauster comprising:
a left-right side plate having a main plate portion provided with a horizontal plate portion extending inwards from a top edge thereof, said horizontal plate portion having a first upright strip portion curving downwards from a side edge thereof;
a top plate having a base plate portion provided respectively at both left and right sides thereof with a second upright strip portion extending downwards in a curved manner, for being disposed side by side with said first upright strip portion of said left-right side plate; and
a plurality of U-shaped members, each of which has horizontally a middle plate portion provided respectively at both left and right sides thereof with a first wall plate portion and a second wall plate portion, which extend upwards in a curved and corresponding manner, said U-shaped members being inserted upwardly such that said first and said second upright strip portions are held with an appropriate tightness in a middle slot of each of said U-shaped members, said second wall plate portion, said second upright strip portion, said first upright strip portion and said first wall plate portion being punched sequentially with a punching tool.

5,363,838

FIBEROPTIC INTUBATING SCOPE WITH CAMERA AND LIGHTWEIGHT PORTABLE SCREEN AND METHOD OF USING SAME

Gordon P. George, 255 S. Alpine Dr., Alpine, Utah 84004

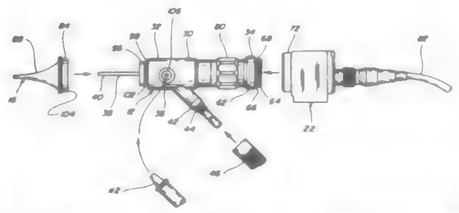
Filed Dec. 9, 1992, Ser. No. 987,673
Int. Cl.[5] A61B *1/04*
U.S. Cl. 128—6 25 Claims



1. An intubating scope including a handle, a tube depending from said handle for insertion into a cavity in the human body, camera means operatively connected to record the visual field at the distal end of said tube, and display means operatively

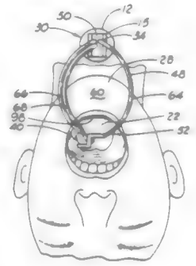
connected to said camera means for displaying the output of said camera means at a location adjacent said tubed said display means being separately portable from said handle, whereby the display means is disposed substantially along the line of sight of the user inserting the scope into the human body during use.

5,363,839
VIDEO OTOSCOPE
James D. Lankford, St. Louis, Mo., assignor to JEDMED Instrument Company, St. Louis, Mo.
Filed Sep. 21, 1992, Ser. No. 948,097
Int. Cl.[5] A61B *1/22, 1/06*
U.S. Cl. 128—9 **20 Claims**



1. A video otoscope head comprising a body member having first and second opposite end portions, an elongated rod lens extending outwardly from the first end portion of said body member and terminating at a distal rod end, the second end portion of said body member having a rear aperture through which an image from said rod lens can be transmitted, means for mounting a video camera on the second end portion of said body member in position to enable directly receiving an image from said rod lens through said rear aperture, means for attaching a light source to said body member at an intermediate location between said first and second opposite end portions, means in said body member and adjacent said rod lens for communicating light from said means for attaching a light source to the distal rod end of said rod lens, a fitting for attaching a pneumatic bulb to said body member at an intermediate location between said first and second opposite end portions, said body member having a passageway extending between a first opening communicating said passageway with said fitting and a second opening communicating with the first end portion of said body member, said fitting enabling air under pressure exhausted from a pneumatic bulb attached thereto to pass into the first opening and into said passageway, and said body member including means for mounting a speculum adjacent the first end portion of said body member and a speculum, having a tip end opening of known size, mounted to said mounting means in overlaying relationship to both said elongated rod lens and said second opening, said speculum mounting means including surface means engageable with a surface on the speculum located a known distance from the tip end opening thereof, said surface means being located a distance from the distal rod end of said rod lens corresponding to said known distance such that the distal rod end will be located substantially coterminous with the tip end opening of the speculum when the speculum is mounted over the rod lens, said distal rod end having a size which is sufficiently smaller than the known size of the speculum tip end opening such that the tip end opening will form a space around the distal rod end when the speculum is mounted over the rod lens, air under pressure from a pneumatic bulb introduced into said passageway through the first opening being capable of passing through the passageway, through the second opening and through a speculum mounted on the body member and exiting the speculum through the space around the distal rod end.

5,363,840
PARALLEL LARYNGOSCOPE WITH ACCESS OPENING
Rafael E. Silva, 812 Glenridge Dr., Edmond, Okla. 73013
Filed Feb. 4, 1994, Ser. No. 192,236
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—11 **20 Claims**



14. A laryngoscope connecting member for removably connecting a laryngoscope handle and a laryngoscope wherein the laryngoscope handle and the laryngoscope blade have interconnecting hook connector means, wherein the laryngoscope blade includes a light, and wherein the laryngoscope handle comprises a housing for a battery to activate the light, the laryngoscope connecting member comprising:

a first end comprising a hook connector means for removably connecting the first end to the hook connector means on the laryngoscope blade and for providing an electrical connection therebetween when the hook connector means on the first end of the connecting member is connected to the hook connector means on the laryngoscope blade;

a second end comprising a hook connector means for removably connecting the second end to the hook connecting means on the laryngoscope handle and for providing an electrical connection therebetween when the hook connector means on the second end is connected to the hook connector means on the laryngoscope handle;

a body portion extending between the first and second ends shaped to support the laryngoscope blade generally parallel to the laryngoscope handle when the connecting member is connected to the laryngoscope blade and the laryngoscope handle,

the body portion including an access opening between the first end and the second end, the access opening being shaped and sized to permit manipulation of the tip of the tongue and to avoid the lower teeth during use of the laryngoscope, the body portion further including electrical conductor means for permitting the passage of electrical current from a battery housed in the handle to the blade.

5,363,841
RETRACTOR FOR SPINAL SURGERY
Wesley L. Coker, 601 Enquirer Ave., Nashville, Tenn. 37205
Filed Jul. 2, 1993, Ser. No. 86,941
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **16 Claims**

1. A surgical retractor including:

a. a pair of arms defining a first plane,

b. means for maintaining said arms within said first plane and substantially parallel to each other,

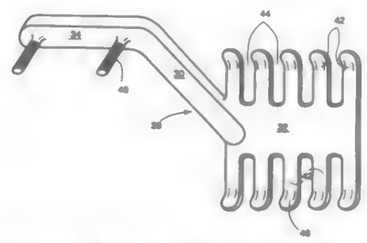
c. means for moving one of said arms relative to the other of said arms and for holding said one arm apart from said other arm against collapsing pressure,

d. each of said arms having a proximal end and a distal end,

e. a pair of retractor blades,

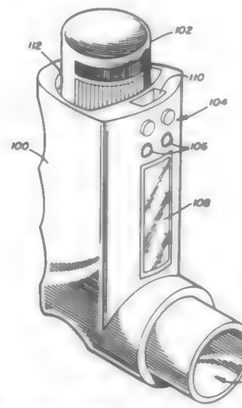
f. each of said retractor blades having a connector section, an angle arm and a retractor plate,

g. one of said retractor blades being connected at said connector section to the distal end of one of the arms and the other of said retractor blades connected to the distal end of the other of said arms, said connector sections being substantially coplanar with said first plane, said angle arms being fixedly attached to said connector section, and said retractor plate extending in a plane substantially transverse to said first plane; and



h. wherein said angle arms cause said retractor plates to be off-set from said connector sections whereby said retractor plates extend beyond the distal end of the arm to which the said retractor blade is attached and down into a wound created by an incision when the retractor is employed in a surgical procedure.

5,363,842
INTELLIGENT INHALER PROVIDING FEEDBACK TO BOTH PATIENT AND MEDICAL PROFESSIONAL
David J. Mishelevich, Cupertino; Ted W. Lanpher, Atherton; Gregory B. Lanpher, York, and James Long, Sunnyvale, all of Calif., assignors to Circadian, Inc., San Jose, Calif.
Filed Dec. 20, 1991, Ser. No. 811,398
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **33 Claims**



1. A portable hand-held inhaler device comprising:

a housing adapted to be hand-held by a user;

a canister of inhaled medication received within the housing;

delivery means incorporated in said housing for delivering a desired unit dose of said inhaled medication from said canister;

electronic sensor means incorporated in said housing for measurement of air flow through said delivery means;

microprocessor means incorporated in said housing, comprising means for storage of data including relative time of activation of said delivery means, and for storing data representative of duration and pattern of inspiration through said delivery means for each activation event;

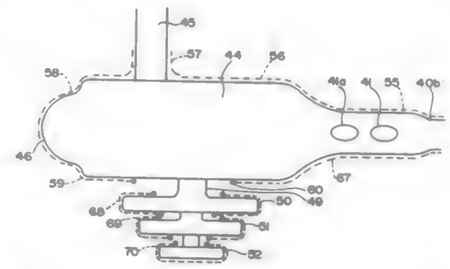
said microprocessor means further comprising means for performing logical operations or interpretative calculations upon said data;

signaling means responsive to said microprocessor means for providing feedback to said user, said feedback expressing to the user whether the delivery of medication has been done correctly;

motion sensor means for detecting if said medicine canister is shaken prior to each activation event and for producing an output signal representative of the magnitude and duration of the shaking to said microprocessor means; and

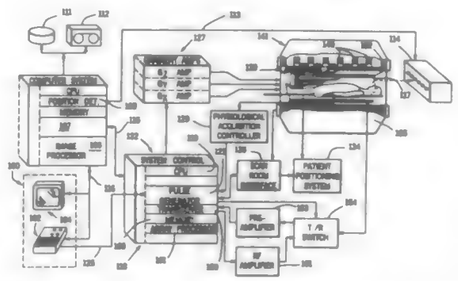
means responsive to said motion sensor means for signaling the user that the canister of medication was not shaken prior to activation.

5,363,843
SPECIAL INSTRUMENT COVERS
Yousef Daneshvar, 21459 Woodfarm, Northville, Mich. 48167
Filed Mar. 16, 1993, Ser. No. 31,890
Int. Cl.[5] A61B *1/00, 5/00*
U.S. Cl. 128—630 **26 Claims**



18. A cover system for an endoscope as set forth in claim 17 in which said strip is held wrapped around the knob by adhesive means.

5,363,844
BREATH-HOLD MONITOR FOR MR IMAGING
Stephen J. Riederer; Yu L. Liu, and Richard L. Ehman, all of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.
Filed Aug. 13, 1993, Ser. No. 106,178
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **9 Claims**



1. In an NMR system for performing an image scan in which a series of NMR imaging pulse sequences are executed to acquire a corresponding series of NMR signals from which an image of a patient is reconstructed, the improvement comprising:

a respiration monitor for producing a respiration signal indicative of the position of the patient's diaphragm during patient respiration;

feedback means for receiving the respiration signal and providing the patient with an indication which enables the patient to initiate a breath-hold at a diaphragm reference position; and

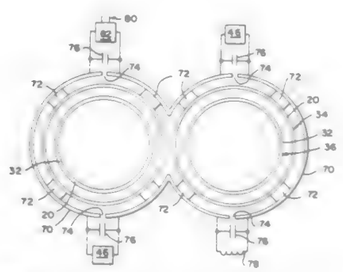
means for producing a respiration trigger signal after the patient initiates a breath-hold near the diaphragm reference position to enable the execution of NMR imaging pulse sequences during the breath-hold.

5,363,845

BREAST COIL FOR MAGNETIC RESONANCE IMAGING

Sruba Chowdhury, Milwaukee, and Eddy B. Boskamp, Menomonee Falls, both of Wis., assignors to Medical Advances, Inc., Milwaukee, Wis.

Filed Aug. 13, 1993, Ser. No. 106,294
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.5 **3 Claims**



1. An MRI radio frequency coil suitable for imaging a first and second human breast comprising:

a first and second coil form defining adjacent volumes disposed and sized for receiving, respectively, the first and second breast through open first ends of the first and second coil forms;

a first and second coil attached to the first and second coil forms, respectively, so as to receive a first and second RF signal from the volumes of the first and second coil forms, respectively,

a radio frequency shield positioned between the first and second coil to limit the sensitivity of the first coil to the second RF signal in the second volume and to limit the sensitivity of the second coil to the first RF signal in the first volume and;

a third coil surrounding the first and second coil forms so as to receive the combined first and second RF signal from the volumes of the first and second coil forms, respectively.

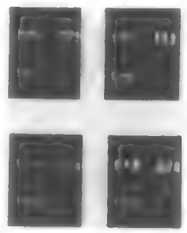
5,363,846

METHOD FOR THE DIAGNOSIS AND TREATMENT OF INFLAMMATION

Robert H. Rubin, Brookline, and H. William Strauss, Newton, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 93,500, Nov. 13, 1987, Pat. No. 4,926,869. This application May 21, 1990, Ser. No. 526,002
Int. Cl.[5] A61B *5/00;* **G01N** *33/563*
U.S. Cl. 128—654 **8 Claims**

1. An immunoglobulin comprising pooled, human, polyclonal IgG conjugated to a diagnostically detectable label, wherein said detectable label is a radioactive isotope selected from the group consisting of ^{123}I, ^{131}I, ^{111}In, ^{97}Ru, ^{67}Cu, ^{67}Ga, ^{68}Ga, ^{72}As, ^{89}Zr, and ^{201}Tl or a paramagnetic label selected from the group consisting of ^{157}Gd, ^{55}Mn, ^{162}Dy, ^{52}Cr, and ^{56}Fe, wherein said immunoglobulin is not IgG conjugated to EDTA and labeled with ^{111}In, and wherein said immunoglobulin accumulates at a site of inflammation and said immunoglobulin has substantially no epitopic specificity for said site of inflammation.

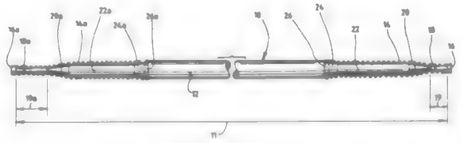


5,363,847

GUIDEWIRE HAVING DOUBLE DISTAL PORTIONS

Fernando M. Viera, Hialeah, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Oct. 27, 1993, Ser. No. 144,058
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—657 **6 Claims**



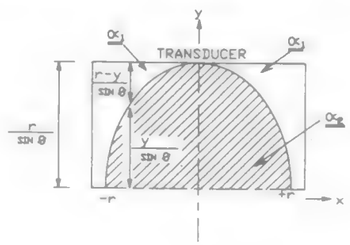
1. An intravascular guidewire which comprises a length of wire having a pair of opposed end wire portions, the end wire portions of said guidewire each having a different stiffness relative to each other, to exhibit differing dynamic characteristics during use, a central portion being present in said guidewire, said central portion being of greater diameter than said end wire portions, said central portion comprising the majority of the length of said guidewire.

5,363,848

VARIABLE ILLUMINATION OF A LUMEN FOR ACOUSTIC BLOOD FLOW MEASUREMENT

Wayne M. Spani, and William S. Kemper, both of San Diego, Calif., assignors to Triton Technology, Inc., San Diego, Calif.

Filed Nov. 16, 1992, Ser. No. 977,142
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.09 **27 Claims**



1. An acoustic flowmeter for measuring a flow of a fluid within a lumen that is surrounded by material that attenuates acoustic waves differently than does the fluid, the flowmeter comprising:

an elongate acoustic transducer means, having a length subtending the width of the lumen and the material surrounding the lumen, and having a predetermined electro-acoustic/acousto-electric gain that varies in magnitude along its length,

for, at times responsive to electrical energization, acoustically illuminating both the lumen and the lumen's surrounding material at an acoustic intensity that is spatially variable substantially in accordance with differing acoustic attenuations of different acoustic paths that pass through differing amounts of the lumen and the material surrounding the lumen, and

for, at other times, producing an electrical signal responsive to receipt of the spatially variable acoustic illumination via the acoustic paths of differing acoustic attenuation passing through both the lumen and the lumen's surrounding material; and

electrical energizing means for electrically energizing the transducer means so that, responsively thereto, the transducer means will both spatially variably acoustically illuminate the lumen and its surrounding material and, resultant to such illumination, produce the electrical signal;

wherein, because of the electro-acoustic/electro-acoustic gain that is of a predetermined variable magnitude along the length of the transducer means, the produced electrical signal will be of substantially equal amplitude at all points along the length of the transducer means nonetheless that different acoustic paths both pass through differing amounts of the flowing fluid and surrounding material and are, in accordance with such passages, differently acoustically attenuated;

wherein the electro-acoustic/acousto-electric gain that is of a predetermined variable magnitude along the length of the transducer means compensates for the differing acoustical attenuations of the different acoustic paths;

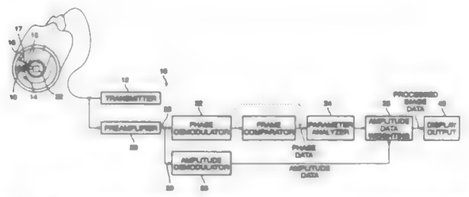
wherein the transducer means is attenuation-compensated.

5,363,849

ENHANCING INTRAVASCULAR ULTRASONIC BLOOD VESSEL IMAGE

Veljo Suorsa, and Axel Brisken, both of Fremont, Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Filed Jan. 26, 1994, Ser. No. 188,173
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.08 **8 Claims**



1. A method for enhancing an intravascular ultrasonic blood vessel image comprising the steps of:

a) illuminating an intravascular target with ultrasonic energy to generate ultrasonic echoes from said intravascular target; thereafter

b) intercepting the ultrasonic echoes from the intravascular target;

c) transforming the ultrasonic echoes into an electrical signal;

d) separating in-phase components and quadrature phase components of the electrical signal to produce an in-phase signal and a quadrature-phase signal;

repeating process steps a) to d) to obtain a second or more in-phase and quadrature-phase signals from acoustic vectors in close temporal or spatial proximity to the first;

e) extracting phase difference information from the in-phase signal and the quadrature-phase signal between two or a multitude of acoustic beams in close temporal or spatial proximity;

f) deriving weighting information from the phase difference information;

g) detecting amplitude data from the electrical signal;

h) weighting the amplitude data with the weighting information to produce processed image data, said processed image data representative of an intravascular image wherein blood images are suppressed; and

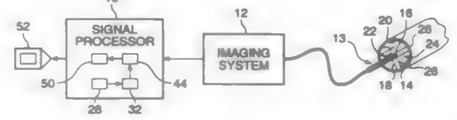
i) outputting the processed image data.

5,363,850

METHOD FOR RECOGNITION AND REDUCTION OF BLOOD SPECKLE IN BLOOD VESSEL IMAGING SYSTEM

Bobby Soni, Campbell; Richard Didday, Soquel, and Kean Hurley, Watsonville, all of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Filed Jan. 26, 1994, Ser. No. 187,584
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.08 **6 Claims**



1. A method for enhancing an intravascular ultrasonic blood vessel image comprising the steps of:

a) illuminating an intravascular target from within a blood vessel with ultrasonic energy to generate ultrasonic echoes from said intravascular target; thereafter

b) intercepting the ultrasonic echoes from the intravascular target;

c) transforming the ultrasonic echoes into electrical signals;

d) forming and constructing an image based on amplitude of each said electrical signals, by illuminating and sweeping said intravascular target and by circumferentially and radially sampling the electrical signals, assigning an initial gray scale value to each increment (pixel) in said image;

e) computing a distance metric for each pixel using seed values for each said pixel;

f) sampling said image to obtain a sampled image;

g) growing a first interior classification for points in said a sampled image from a first seed pixel preselected to be entirely within a first region of a first known class;

h) growing a second exterior classification for exterior points from a second seed pixel in a second region of a second known class;

i) identifying and classifying other pixels in the a sampled image by searching for points between interior classified pixels and exterior classified pixels and tagging said other pixels as said edge pixels;

j) remapping all interior pixels, exterior pixels and edge pixels so classified into a full resolution image 1) by mapping exterior pixels with first gray scale values, 2) by mapping interior pixels with second gray scale values and 3) by mapping edge pixels according to a high resolution Fisher classification for said edge pixels; and

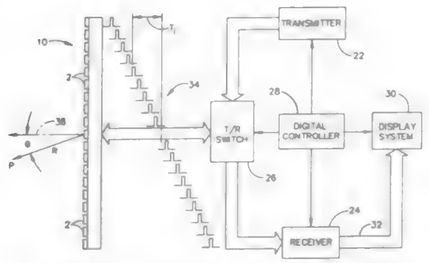
k) outputting said full resolution image for display.

5,363,851

ULTRASOUND COLOR FLOW EXTENDED VELOCITY ESTIMATION

Anne L. Hall, New Berlin, Wis., and Richard B. Bernardi, Strafford, Pa., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 26, 1993, Ser. No. 158,139
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—661.09 **20 Claims**



1. A method for estimating the velocity of flow containing a cloud of ultrasound scatterers, comprising the steps of:

firing a plurality of ultrasound pressure wave beams in succession at a predetermined pulse repetition frequency, all of said plurality of ultrasound beams being directed along a path of propagation through said flow;

detecting the ultrasound pressure wave reflected by said scatterers at a predetermined range for each of said firings and converting said pressure waves into a plurality of echo signals, said echo signals being the result of scattering in a range cell at said predetermined range along said path of propagation;

converting said plurality of echo signals into basebanded data for each of said firings;

determining a first predetermined order by correlating a first predetermined lay with said firings, selecting said basebanded data in said first predetermined order;

computing the velocity estimate with said basebanded data in said first predetermined order to form a high-velocity estimate;

determining a second predetermined order by correlating a second predetermined lag with said firings, selecting said basebanded data in said second predetermined order, said second predetermined lag being greater than said first predetermined lag;

computing the velocity estimate with said basebanded data in said second predetermined order to form a low-velocity estimate; and

deciding which one of said high-velocity estimate and said low-velocity estimate to adopt as the estimated velocity of ultrasound scatterers in said predetermined range cell.

5,363,852

FLOW MONITOR AND VASCULAR ACCESS SYSTEM WITH CONTINUOUSLY VARIABLE FREQUENCY CONTROL

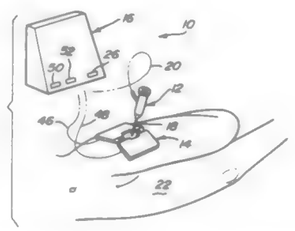
Ahmed Sharkawy, Mountain View, Calif., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 901,466, Jun. 19, 1992, Pat. No. 5,259,386. This application Oct. 25, 1993, Ser. No. 142,151
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.05 **11 Claims**

1. An ultrasonic assembly comprising:

a flux panel having at least two sections that are movable relative to each other about a pivot point;

each panel section including a piezoelectric transducer, each piezoelectric transducer having a varying thickness along its length; and



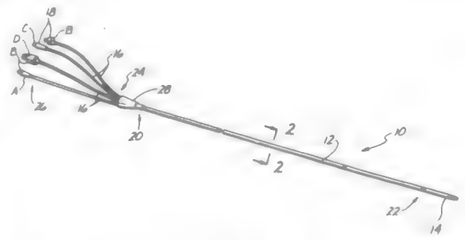
means for transmitting variable frequencies for activating at least one of said piezoelectric transducers.

5,363,853

ULTRASOUND PROBE FOR USE WITH TRANSPORT CATHETER AND METHOD OF MAKING SAME

Clement E. Lieber, Yorba Linda; Miriam H. Taimisto, Sierra Madre; David L. Swendson, Garden Grove; Mark A. Konno, Costa Mesa, all of Calif.; Lawrence J. Busse, Littleton, Colo., and Robert Skidmore, Bitton, United Kingdom, assignors to Baxter International Inc., Irvine, Calif.

Division of Ser. No. 865,163, Apr. 8, 1992, abandoned, which is a continuation-in-part of Ser. No. 790,724, Nov. 8, 1991, Pat. No. 5,246,016. This application Jun. 22, 1993, Ser. No. 80,884
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—662.06 **39 Claims**



1. An ultrasound probe for use within a transport catheter, comprising:

a probe body having a distal and a proximal end; and

a transducer portion attached to the probe body distal end, the transducer portion further comprising;

a piezoelectric crystal hollow cylinder having a distal end and a proximal end, and further defining an inner surface and an outer surface,

an inside lead connected to the inner surface of the crystal cylinder,

a conductive material having an inner surface and an outer surface coupled to the outer surface of the crystal cylinder and extending proximally in a plane substantially tangential to the cylinder outer surface; and

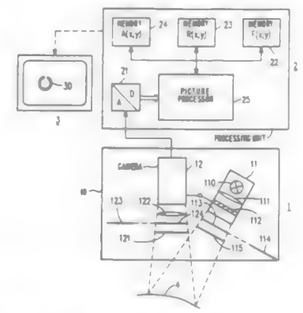
an L-shaped outside lead coupled to the inner surface of the conductive material, wherein the L-shaped outside lead has a short portion and a long portion, wherein the short portion of the L-shape is positioned in close proximity to the proximate end of the crystal cylinder in the plane substantially tangential to the cylinder outer surface, such that the long portion of the L-shape extends toward the probe body and is positioned within the cylindrical volume defined by the crystal cylinder and extending proximally thereto.

5,363,854

METHOD OF DETECTING ANOMALIES OF THE SKIN, MORE PARTICULARLY MELANOMAE, AND APPARATUS FOR CARRYING OUT THE METHOD

Gerhard Martens, Henstedt-Ulzburg, and Erhard P. H. Günzel, Westerwalsede, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1991, Ser. No. 745,023
Claims priority, application Germany, Aug. 24, 1990, 4026821
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—665 **21 Claims**



1. An apparatus for detecting anomalies of the skin comprising light illumination means for illuminating a two-dimensionally extending examination region of said skin, via a beam between said illuminating means and said examination region with light in an ultraviolet wavelength range during a first time interval and with light in a visible wavelength range during a second time interval different from said first time interval; a camera means for recording a fluorescence picture of fluorescent light from the examination region during the first time interval produced by said skin in response to said light in the ultraviolet wavelength range, said fluorescence picture having signal values F(x,y) at its picture points x,y and for recording a reference picture of the examination region during the second time interval in response to said light in the visible wavelength range, said reference picture having signal values R(x,y) at its picture points x,y during the second time interval; memory means for storing the signal values of at least one of the fluorescence picture and said reference picture; and processing means responsive to said memory means for producing an output picture having respective signal values A(x,y) at its picture points x,y which are formed from respective quotients F(x,y)/R(x,y) of the signal values of the fluorescence and reference pictures at the same picture points.

5,363,855

PRESSURE WAVEFORM MONITOR

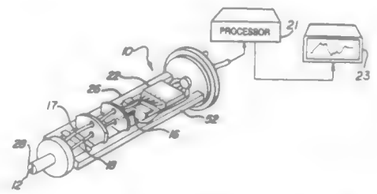
Gary M. Drzewiecki, Princeton, N.J.; Robert D. Butterfield, Poway, Calif., and Edward J. Ciaccio, Cherry Hill, N.J., assignors to Rutgers University, Pizcataway, N.J.

Continuation of Ser. No. 500,063, Mar. 27, 1990, Pat. No. 5,154,680. This application Aug. 25, 1992, Ser. No. 935,064
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—672 **8 Claims**

1. A pressure waveform monitor for noninvasively monitoring the blood pressure waveform inside a blood vessel having, a lumen, comprising:

a continuous, stress sensitive diaphragm for pressing against tissue covering the blood vessel, said diaphragm having a first length, said first length being greater than the lumen of said blood vessel, said diaphragm being continuously deformable along said first length in response to stresses in said tissue,

sensor means displaced from said diaphragm for sensing deformations from predetermined portions along said first length of said diaphragm and for producing a vessel stress signal representing the deformation along each predetermined portion of said diaphragm, wherein said sensor means uses electromagnetic radiation reflected from said diaphragm for producing said stress signal, means for determining blood pressure from said vessel stress signal.

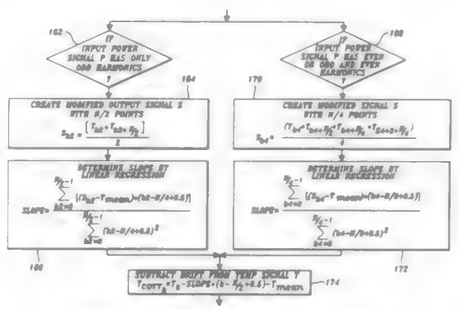


5,363,856

CORRECTING THERMAL DRIFT IN CARDIAC OUTPUT DETERMINATION

Timothy J. Hughes, Palo Alto, Calif., and David N. Swingler, Halifax, Nova Scotia, Canada, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 13, 1993, Ser. No. 106,206
Int. Cl.[5] A61B *5/029*
U.S. Cl. 128—713 **25 Claims**



11. A method for determining a cardiac output of a heart with reduced dependence on thermal drift, comprising the steps of:

(a) providing an input signal that changes a temperature of blood within the heart so that it varies periodically;

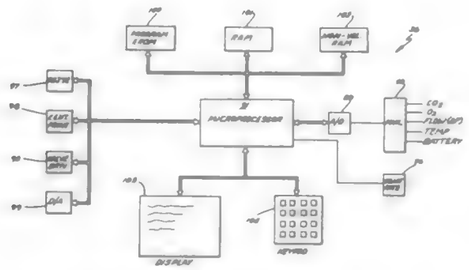
(b) sensing a temperature of blood leaving the heart, producing a blood temperature output signal that varies periodically;

(c) using the blood temperature output signal, producing a corresponding output signal in the frequency domain;

(d) producing a frequency spectrum due to thermal drift using the corresponding output signal in the frequency domain; and

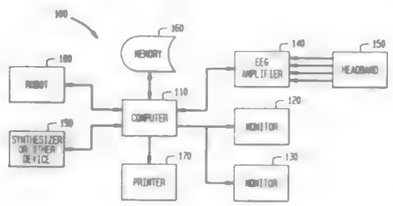
(e) subtracting the frequency spectrum due to thermal drift from the corresponding output signal in the frequency domain, thereby producing a corrected output signal that is compensated for thermal drift.

5,363,857
METABOLIC ANALYZER
Charles P. Howard, Ann Arbor, Mich., assignor to AeroSport, Inc., Ann Arbor, Mich.
Continuation-in-part of Ser. No. 20,663, Feb. 22, 1993, which is a continuation of Ser. No. 751,550, Aug. 29, 1992, abandoned, which is a division of Ser. No. 527,106, May 22, 1990, Pat. No. 5,060,656. This application Jun. 1, 1993, Ser. No. 69,513
Int. Cl.[5] A61B 5/08
U.S. Cl. 128—718 32 Claims



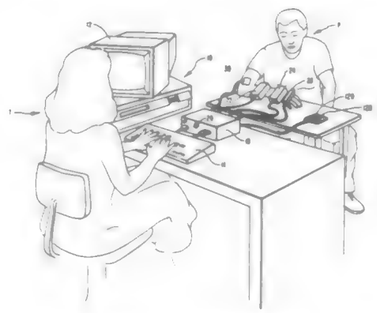
1. A metabolic analyzer comprising:
CO_2 detector means for determining a CO_2 content of a respired gas;
O_2 detector means for determining an O_2 content of the respired gas;
flow detector means for providing a flow signal representative of the flow of the respired gas;
flow proportioning valve means for delivering a small, representative and proportional sample of the respired gas having a known volumetrically-proportional relationship with a total volume of the respired gas;
pump means for drawing the sample of the respired gas from said flow proportioning valve means and delivering the sample to said CO_2 and said O_2 detector means; and
processor means for converting said flow signal into a sampling signal that is applied to said flow proportioning valve means to provide a sample of respired gas having a known volumetrically-proportional relationship with the total volume of respired gas, said processor means determining the total volume of respired gas and said processor means correlating total volume, CO_2 content and O_2 content to provide a measure of metabolic rate.

5,363,858
METHOD AND APPARATUS FOR MULTIFACETED ELECTROENCEPHALOGRAPHIC RESPONSE ANALYSIS (MERA)
Lawrence A. Farwell, Potomac, Md., assignor to Francis Luca Conte, Swampscott, Mass.
Continuation-in-part of Ser. No. 16,215, Feb. 11, 1993. This application May 5, 1993, Ser. No. 57,607
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—731 57 Claims



1. A method of detecting concealed information stored in the human brain through multifaceted electroencephalographic response anaysis (MERA) comprising the steps of:
1) Presenting stimuli to a subject;
2) Recording electrical brain responses to the stimuli;
3) Analyzing said electrical brain responses for uncovering as a first facet an electrically positive P3 component thereof, and as a second facet at least one of a phasic shift in frequency power spectrum thereof, and an electrically negative component thereof following in time said P3 component.

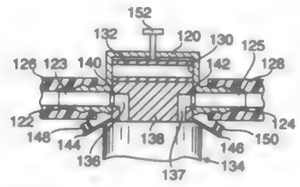
5,363,859
TACTILE TESTING DEVICE AND METHODS
Robert P. Tuckett; Kenneth W. Horch; John H. Fisher, all of Salt Lake City, and Barry L. Evans, Murray, all of Utah, assignors to Topical Testing, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 469,280, Jan. 24, 1990, Pat. No. 5,022,407. This application Jun. 10, 1991, Ser. No. 713,397
The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—739 29 Claims



1. An apparatus for automatically testing the cutaneous sensory response of a patient, the apparatus comprising:
at least one stimulation means for cutaneous stimulation of the patient, said stimulation means comprising means for applying a constant current stimulus;
control means for accurately controlling the amplitude of stimulus administered by operation of the at least one stimulation means, such that stimuli of precise predetermined amplitude are administered;
means for receiving direct patient response to the stimulus administered by the stimulation means, said means for receiving direct patient response comprising means for measuring delay between stimulus and sensation;
means for recording said patient response to the stimuli; and
computer means for generating additional stimuli in response to the record of the patient response to the stimuli such that a predetermined set of data can be collected.

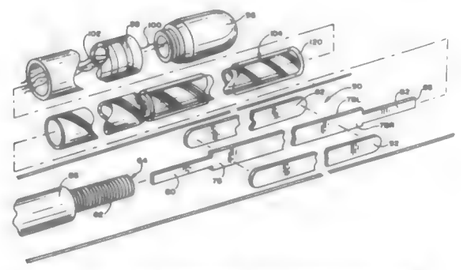
5,363,860
SUCTION TRAP AND ASSOCIATED METHOD
Naomi L. Nakao, 303 E. 57th St., New York, N.Y. 10022; Michael A. Nakao, 284 Hudson Ave., Albany, N.Y. 12210, and John V. Mizzi, 30 Cramer Rd., RFD #3, Poughkeepsie, N.Y. 12603
Continuation-in-part of Ser. No. 963,846, Oct. 20, 1992. This application Aug. 13, 1993, Ser. No. 106,402
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—760 19 Claims

1. A method for use in obtaining medical specimens, comprising the steps of:
providing a suction line, said suction line being provided with a port member having a recess and a shiftable tubular member mounted to said port member in said recess, said port member also having an inlet port and an outlet port communicating with said recess;
inserting said suction line into a patient;
inserting a specimen vial into said recess in said port member;
during said step of inserting said vial, shifting said tubular member in said recess from a first position to a second position, thereby disconnecting said tubular member from said inlet port and said outlet port and enabling a connection of said vial to said inlet port and said outlet port;



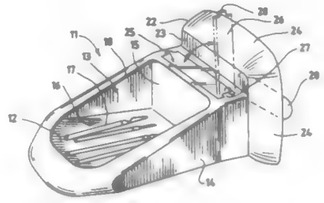
detachably locking said vial to said port member upon insertion of at least a portion of said vial into said recess;
applying a vacuum to said suction line to draw a fluid specimen into said vial;
upon drawing of said fluid into said vial, detaching said vial from said port member; and
returning said tubular member to said first position, thereby connecting said inlet port to said outlet port via said tubular member.

5,363,861
ELECTRODE TIP ASSEMBLY WITH VARIABLE RESISTANCE TO BENDING
Stuart D. Edwards, Los Altos, and Russell B. Thompson, San Leandro, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.
Filed Nov. 8, 1991, Ser. No. 789,260
Int. Cl.[5] A61B 5/00; A61M 25/00, 37/00
U.S. Cl. 128—772 7 Claims



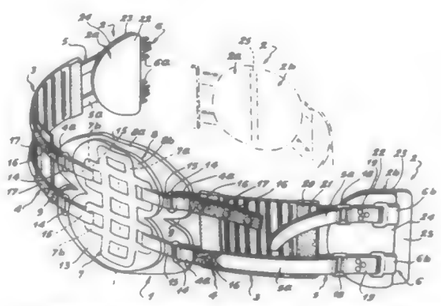
1. An electrode tip assembly for a catheter including
a support wire having a stiffness and being bendable in response to external forces, the support wire having proximal and distal opposite end portions, the proximal end portion being carried by the catheter body,
a stiffening spring contiguous to the wire and being attached to a side thereof for varying the stiffness of the support wire between its proximal and distal opposite end portions so that one of said end portions is more resistant to bending than the other of said end portions in response to an applied bending force, and
at least one steering wire attached to a side of said support wire for applying a bending force thereto.

5,363,862
DISPOSABLE SURGICAL INSTRUMENT PASSER
Charles W. Mercier, 695 Buena, Lake Forest, Ill. 60045
Filed May 24, 1993, Ser. No. 66,506
Int. Cl.[5] A61F 5/37
U.S. Cl. 128—846 25 Claims



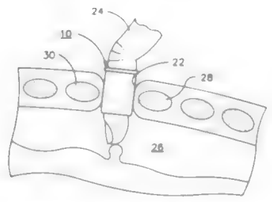
1. A disposable instrument passer for protecting a holder's hand from possible injury and transmission of infectious disease while handling sharp instruments, said passer comprising:
receptacle means for receiving sharp instruments;
handle means connected to said receptacle means for hand-carrying said receptacle means; and
guard means positioned adjacent said handle means for shielding a holder's hand from contact with said instruments while said instruments are being placed into said receptacle means, said guard means including a shield having a plate portion positioned transverse to a longitudinal axis of said receptacle means.

5,363,863
LUMBAR SUPPORT BELT
Charles Lelli, 45, rue Rébeval, 75019 Paris, and Marc L. Lelli, 7, rue Tardieu, 75018 Paris, both of France
Filed Apr. 23, 1993, Ser. No. 51,225
Int. Cl.[5] A61F 5/37, 5/00
U.S. Cl. 128—876 12 Claims



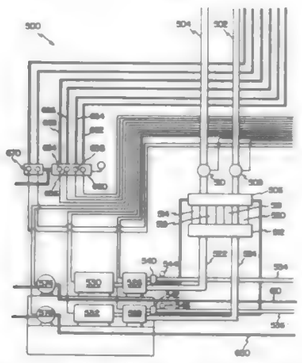
1. A lumbar support belt comprising a rear lumber support piece, a front abdominal support piece made up of two independent portions having closure means for connecting said portions together, two independent lateral hip support pieces, one lateral support piece being located between a first side of the rear support piece and one of the two portions of the front support piece and the other lateral support piece being located between the opposite side of the rear support piece and the other of the two portions of the front support piece, length adjustment means connecting each lateral support piece to the rear support piece and separate length adjustment means connecting each lateral support piece to one of the portions of the front support piece.

5,363,864
SURGICAL METHOD USING FINGER PROTECTING SHEATH
Larry R. Kaiser, Wynnewood, Pa., assignor to The Trustees of the University of Pennsylvania, University of Pa.-Center for Technology Transfer, Philadelphia, Pa.
Filed Apr. 27, 1993, Ser. No. 53,949
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 **3 Claims**



1. A method of thoracoscopic surgery comprising:
forming an incision in the chest wall of a patient between two adjacent ribs; and
palpating, with a finger, an anatomical structure within the patient's thoracic cavity, with a rigid tube surrounding the finger and located between said two adjacent ribs;
whereby pressure exerted by said ribs is exerted on the rigid tube instead of on the surgeon's finger.

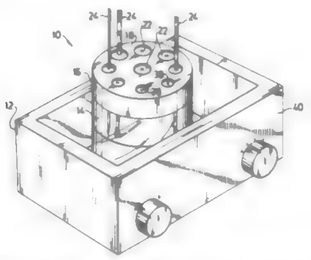
5,363,865
VEHICLE WASHING MACHINE
Shadley F. Brand, Chaska, Minn., assignor to Anderson Chemical Company, Litchfield, Minn.
Division of Ser. No. 797,458, Nov. 22, 1991, Pat. No. 5,266,123.
This application Sep. 27, 1993, Ser. No. 126,925
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—56 R **5 Claims**



cover projecting inwardly through said opening entirely within said enclosure; and

jet means supported within said enclosure for spraying a suitable solvent onto the roller cover, including an inlet tube having a fitting to couple to a source of said solvent, and two pipes disposed parallel with a rotation axis of the roller cover, said two pipes extending from said inlet tube within said enclosure on opposite sides thereof, and said two pipes having jet outlets at spaced intervals therealong directing jets of said solvent onto the roller cover; wherein and said two pipes are biased resiliently outwards in contact with an interior of said enclosure so that said jet means is held in place in said enclosure by an interference fit of said two pipes against the interior of the enclosure.

5,363,870
BRUSH CLEANER
Roger L. Doyon, Scottsville, N.Y., assignor to RKS Marketing Corporation, Rochester, N.Y.
Filed Nov. 12, 1993, Ser. No. 152,311
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—184 **18 Claims**



1. An apparatus for cleaning and reforming a brush, wherein said apparatus is comprised of a base, and a cover removably attached to said base, and wherein:

(a) said cover is comprised of a top wall, an intermediate layer, and a bottom wall, wherein:

1. said top wall is comprised of a first orifice, a second orifice, and a third orifice, wherein at least two of said first orifice, said second orifice, and said third orifice have a maximum dimension which differs from the maximum dimension of at least one of said first orifice, said second orifice, and said third orifice,

(b) said intermediate layer consists essentially of elastmeric material and is comprised of a fourth orifice, a fifth orifice, and sixth orifice, wherein the maximum dimension of each of said fourth orifice, said fifth orifice, and said sixth orifice is smaller than the maximum dimension of any of said first orifice, said second orifice, and said third orifice,

(c) said bottom wall is comprised of a seventh orifice, an eighth orifice, and a ninth orifice, wherein at least two of said seventh orifice, said eighth orifice, and said ninth orifice has a maximum dimension which differs from the maximum dimension of at least one of said seventh orifice, said eighth orifice, and said ninth orifice.

5,363,871
INFANT SUN SHIELD
Michael L. Garrand, Rte. 1, Box 111B, and Margo A. Garrand, Rte. 1, Box 112B, both of Stephens City, Va. 22655
Filed Mar. 31, 1992, Ser. No. 861,004
Int. Cl.[5] E04H *15/04*
U.S. Cl. 135—90 **16 Claims**

1. A sun shield which comprises:

(a) a substantially rigid sheet having

(i) a top surface and a bottom surface;

(ii) a pair of opposing end portions containing a portion of said top surface and said bottom surface; and

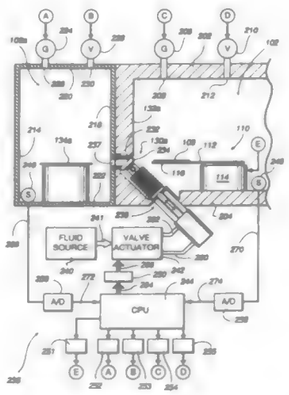
(iii) a region intermediate said opposing end portions containing a portion of said top surface and said bottom surface secured to each of said end portions along a first line, forming an obtuse angle with each of said end portions in said bottom surface and easily foldable along said first line relative to said end portions, said region comprising a pair of planar regions, each of said planar regions extending from and contacting a different one



of said end portions, said planar regions meeting along a second line and easily foldable along said second line relative to the remaining portions of said planar regions, said planar regions making an angle of less than 180 degrees with each other at said second line at said bottom surface; and

(b) first fastening means disposed on each of said opposing end portions and on bottom surface of said sheet.

5,363,872
LOW PARTICULATE SLIT VALVE SYSTEM AND METHOD FOR CONTROLLING SAME
D'Arcy H. Lorimer, Pismo Beach, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Mar. 16, 1993, Ser. No. 32,041
Int. Cl.[5] F16K *39/02*
U.S. Cl. 137—1 **14 Claims**



9. A variable closure pressure slit valve system for use in semiconductor processing chamber comprising:

barrier means provided with an aperture;

seat means surrounding said aperture;

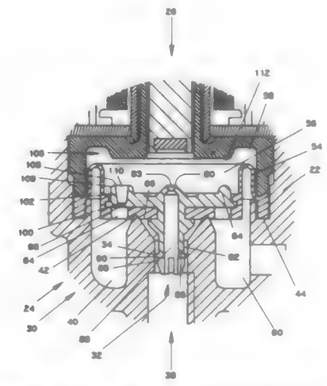
closure means movable toward and away from said seat means;

means for determining a first fluid pressure on a first side of said barrier means and for determining a second fluid pressure on a second side of said barrier means;

actuator means for selectively moving said closure means toward and away from said seat means; and

control means responsive to said first fluid pressure and said second fluid pressure and operative to develop discrete actuator control signals for controlling said actuator means and causing it to apply a closure force to said closure means which is related in a predetermined manner to the pressure differential between said first fluid pressure and said second fluid pressure.

5,363,873
ANTI-CLOG WATER VALVE
James W. Richmond, Carmel, Ind., assignor to Emerson Electric Co., St. Louis, Mo.
Division of Ser. No. 52,008, Apr. 22, 1993, Pat. No. 5,269,333.
This application Sep. 30, 1993, Ser. No. 129,903
Int. Cl.[5] F16K *31/04, 31/40, 31/385*
U.S. Cl. 137—1 **9 Claims**



8. A method of reducing internal contamination in an anti-clog water valve bleed passage comprising the steps of:

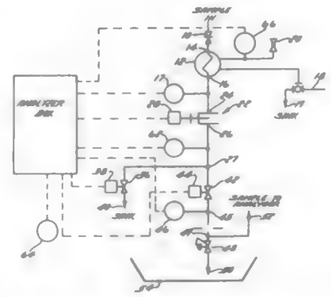
(a) providing a sharply widening portion of the bleed passage adjacent to a bleed passage main chamber opening for decreasing the potential for contaminates to be deposited in the bleed passage main chamber opening;

(b) decreasing the potential for contamination becoming deposited in the bleed passage main chamber opening through urging contaminates that enter the bleed passage main chamber opening to pass into the sharply widening portion due to decreased water pressure and through providing greater mobility to contaminates partially in the bleed passage main chamber opening and partially in the sharply widening portion with an increased open volume immediately after the bleed passage main chamber opening;

(c) providing a gradually widening bleed passage portion immediately after the sharply widening portion and continuing to a bleed passage actuation chamber opening decreasing the potential for contaminates to become deposited in the bleed passage; and,

(d) decreasing the potential for depositing contamination in the bleed passage by providing a bleed passage with an increasing volume in the direction of water flow so contaminates that enter the bleed passage are given increased mobility to urge the contaminate to continue moving through the bleed passage and into an actuation chamber.

5,363,874
AUTOMATED SAMPLE CONDITIONING MODULE
Richard R. Henszey, Oconomowoc, and Bruce Weiss, Whitefish Bay, both of Wis., assignors to Sentry Equipment Corp., Oconomowoc, Wis.
Filed Oct. 8, 1992, Ser. No. 958,002
Int. Cl.[5] F16K *31/64*
U.S. Cl. 137—14 **34 Claims**



25. A method of conditioning a high pressure steam or hot water sample comprising:

cooling the sample;

reducing pressure of the sample;

monitoring the pressure of the sample after it has been cooled and depressurized;

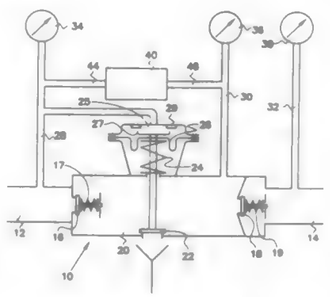
metering the sample flow past an orifice;

providing a set pressure value downstream from the orifice;

comparing the monitored pressure of the sample with a stored set of flow rate data; and,

adjusting the pressure reduction of the sample in response to a change in the monitored pressure of the sample.

5,363,875
HYDRAULIC DISCONNECTOR
Rudolf Vollmer, Mosbach, Germany, assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 12, 1993, Ser. No. 16,640
Claims priority, application Germany, Feb. 14, 1992, 4204386
Int. Cl.[5] E03C *1/10*
U.S. Cl. 137—218 **13 Claims**



1. In a hydraulic disconnector having an input port and an output port, and comprising: a first check valve having an output port and an input port serving as the input port for the disconnector; a second check valve having an input port and an output port serving as the output port for the disconnector; an intermediate chamber connected between the output port of the first check valve and the input port of the second check valve; and a venting valve for venting the intermediate chamber to the atmosphere and controlled by the pressure differential between the input port of the disconnector and the intermediate chamber, the improvement comprising a differential

pressure stabilizer connected between the input port of the disconnector and the intermediate chamber.

5,363,876

FLOW CONTROL DEVICES

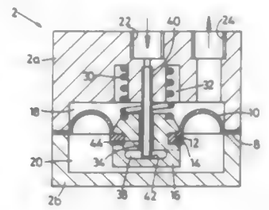
John V. Nash, Farnham, England, assignor to Kinetrol Limited, Surrey, United Kingdom

Filed Aug. 19, 1993, Ser. No. 109,093

Claims priority, application United Kingdom, Sep. 2, 1992, 9218593

Int. Cl.[5] G05D *7/01*

U.S. Cl. 137—501 **19 Claims**



1. A fluid flow control device comprising inlet means for admitting a pressure fluid, a flow path through the device for said fluid and an outlet communicating with the flow path for the exit of said fluid from the device, said flow path comprising an intermediate space, blocking means in said flow path for reducing the pressure of the fluid flow into said space, the flow path further comprising a restricted cross-section passage for the fluid flow from said intermediate space to a downstream region whereby the flow rate through said passage is dependent on a pressure difference between said intermediate space and said downstream region, means responsive to said fluid pressure difference for causing a relative displacement between the flow path and said blocking means in such manner that an increase of said fluid pressure difference increases the pressure reduction produced by said blocking means and vice versa, whereby said variation of the pressure reduction effected by the blocking means tends to reduce variations in the flow rate due to changes of the fluid pressure difference between said inlet means and said downstream region, a pair of members having opposed walls forming said passage and said opposed walls being relatively movable parallel to each other with said relative displacement.

5,363,877

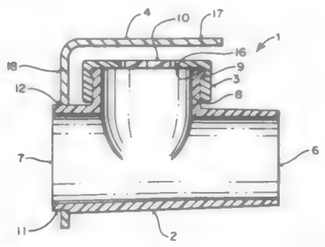
SUCTION REGULATING VALVE

Herman E. Frentzel, 424 Bee St., Sausalito, Calif. 94965, and Dieter J. Rief, 8016 Mitchell, Rohnert Park, Calif. 94928

Filed Oct. 26, 1993, Ser. No. 141,074

Int. Cl.[5] F16K *15/14*

U.S. Cl. 137—526 **20 Claims**



1. In combination with a swimming pool filter system joined in fluid communication with a suction type automatic pool cleaner by a swimming pool cleaner hose, suction regulator valve apparatus including:

a first portion of the hose;

a second portion of the hose;

a body of rigid molded plastic, the body having an exterior and a hollow interior and having a generally conical shape;

an open male end on the body, the male end insertable into the first portion of the hose;

an open female end on the body which is larger than the male end, the second portion of the hose insertable into the female end;

a cup-shaped cap removably attached to the body, which cap is at least partially comprised of material capable of deforming readily under pressure;

a deformable planar top of the at least partially deformable cap;

an orifice formed of at least one slit in the planar top, the orifice capable of opening and closing as the deformable cap top flexes at least partially out of its plane in response to changes in water pressure differential between the interior and exterior of the body;

and

an anti-vortex plate of rigid molded plastic on the exterior of the body, the anti-vortex plate having a panel oriented a fixed distance away from the planar cap top and parallel thereto to prevent air vortices from entering through the orifice.

5,363,878

RELIEF VALVE

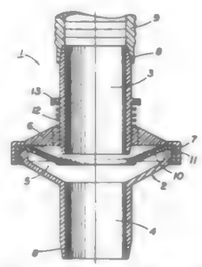
David S. Atkins, Broederstroom, South Africa, assignor to Zarina Holdings C.V., Amsterdam, Netherlands

Filed Aug. 13, 1993, Ser. No. 106,366

Claims priority, application South Africa, Aug. 18, 1992, 92/6206; Jul. 6, 1993, 93/4832

Int. Cl.[5] F16K *15/14*

U.S. Cl. 137—526 **5 Claims**



1. A relief valve for connection in a liquid flow line comprising a body having an inlet in the form of a tube opening into the body and an outlet and an annular flexible diaphragm with its outer periphery secured to the wall of the body and its inner periphery aligned for frictional engagement around the inlet, and in which the diaphragm is flexible into the body only and the inlet is supported for axial movement in the body against a resilient bias and disengaged from the diaphragm when there is no flow through the valve.

5,363,879

CRYOGENIC COUPLING

George D. Rhoades, LaGrange, Ill., assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Feb. 15, 1994, Ser. No. 196,318

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.05 **11 Claims**

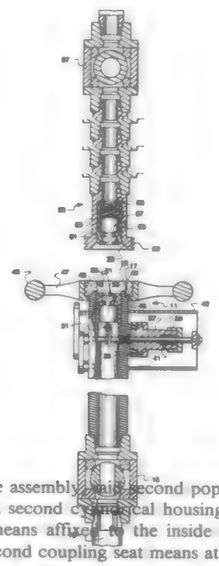
1. A coupling assembly for dispensing cryogenic fluids comprising:

(a) a dispensing conduit having a downstream terminus coupled to a source of a cryogenic fluid and an upstream dispensing terminus;

(b) a first poppet valve assembly comprising a first cylindrical housing coupled to said upstream dispensing terminus, said first poppet valve assembly having valve seat means affixed to the inside diameter of said first housing, first coupling seat means at the upstream terminus of said housing, a first poppet valve slidably disposed within said first seat means and mechanical actuator means for moving said poppet valve from an upstream closed position to a downstream open position;

(c) an outwardly extending circumferential flange from said housing at the downstream terminus of said first poppet valve assembly housing for receiving a closure section of said closure section having an upstream circumferential flange which mates with said housing flange to retain said closure section on said housing to prevent lateral movement of said closure section, said closure section having a lateral, internally threaded section extending downstream past said poppet housing;

(d) a second poppet valve assembly having a downstream terminus coupled to a receiving tank for said cryogenic fluid and an upstream terminus for coupling with said first



poppet valve assembly, said second poppet valve assembly having a second cylindrical housing, second poppet valve seat means affixed to the inside diameter of said housings, second coupling seat means at the downstream terminus of said house, a second poppet valve slidably disposed within said second seat means, spring retaining means at the downstream terminus of said second poppet valve seat means, spring means disposed between the downstream terminus of said second poppet valve means and said spring retaining means, said spring means being under compression to retain said second poppet valve in a closed position, said housing having an external threaded section which mates with the internal threaded section of said closure wheel so that the terminal ends of said first poppet valve assembly housing and said second poppet valve assembly housing are drawn into a liquid tight closed relationship when said closure wheel is turned and whereby after said liquid tight closed relationship is established and said first poppet valve is mechanically moved to an open position, the pressure of said cryogenic fluid acting against said spring means to cause said second poppet valve to move from its seat so as to open said second poppet valve.

5,363,880

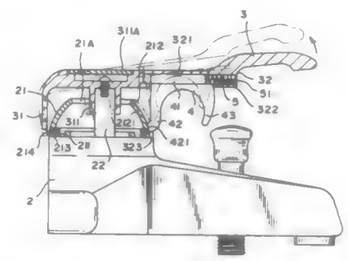
HOT/COLD WATER MIXING FAUCET WITH WATER TEMPERATURE CONTROL

Yung-Li Hsieh, No. 29 Pyi-Tou Lane, Ding-Fan Li Lu Kang Cheng, Chang Hwa Hsien, Taiwan, Prov. of China

Filed Jan. 24, 1994, Ser. No. 185,002

Int. Cl.[5] F16K *11/076*

U.S. Cl. 137—625.17 **1 Claim**



1. A hot/cold water mixing faucet comprising a faucet body having a cold water inlet and a hot water inlet, a valve stem disposed inside said faucet body, a conical bonnet fastened to the top of the faucet body surrounding the valve stem, a handle fastened to said valve stem at the top and moved to lift and turn said valve stem in controlling the flow rate of hot/cold water being driven from said hot and cold water inlets out of said faucet body, and a stop member mounted on said handle to limit the rotary motion of said handle on said conical bonnet, wherein:

said conical bonnet is made gradually bigger toward the bottom, comprising an inner thread at the bottom threaded onto an outer thread on said faucet body at the top, a top opening in the center, through which said valve stem passes, a longitudinal low-level surface facing said cold water inlet, a curved, longitudinal stop edge raising from said low-level surface at right angles, a screw hole spaced from said curved, longitudinal stop edge at an opposite location, and a flush bolt threaded into the screw hole on said conical bonnet to fix said conical bonnet in position on said faucet body;

said handle comprises a unitary, cylindrical socket vertically disposed at one end thereof at the bottom and mounted around said conical bonnet, a valve stem holder inside said socket, which receives said valve stem permitting said valve stem to be lifted or turned by said handle, a longitudinal bottom block perpendicularly extended from said socket, and a vertical bottom plate perpendicularly and downwardly extended from said longitudinal bottom block at an inner side and spaced around said socket, said longitudinal bottom block comprising a longitudinal sliding hole extended to an outer end thereof, a spring element received inside said longitudinal sliding hole, a fastening element fastened to said longitudinal sliding hole at an outer side to stop said spring element inside said longitudinal sliding hole, and a longitudinal gap at the bottom communicated with said sliding hole;

said stop member comprises an elongated rail received inside said longitudinal sliding hole and supported on said spring element, a front stop bar and a rear projecting bar at two opposite ends of said rail respectively extended out of said longitudinal bottom block through said longitudinal gap, said front stop bar having a curved bottom end stopped against said low-level surface of said conical bonnet and moved by said handle to slide on said low-level surface;

the range of turning angle of said handle on said conical bonnet being adjustable by changing the position of said conical bonnet on said faucet body by loosening said flush bolt for permitting said conical bonnet to be turned on said outer thread of said faucet body in either direction;

said handle being turned on said conical bonnet permitting said curved bottom end of said stop member to pass from

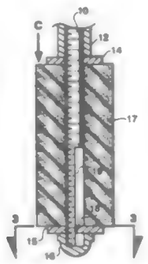
said low-level surface over said longitudinal stop edge when said rear projecting bar of said stop member is pulled backwards to move said curved bottom end of said front stop bar away from said conical bonnet.

5,363,881

PLUMBING TOOL FOR TEMPORARILY PLUGGING A PIPE WITH FIELD-REPLACEABLE GASKET

Brent H. Larkin, 6749 W. Quinella Dr., Las Vegas, Nev. 89103

Filed Sep. 27, 1993, Ser. No. 126,405
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 **1 Claim**



1. In a plumbing tool for temporarily plugging a pipe which normally contains a fluid under pressure, said tool including
an elongate threaded rod having proximal and distal ends,
a hollow elongate sleeve, coaxially disposed around said elongate threaded rod, intermediate said proximal and distal ends,
a first nut threadedly engaged on said elongate threaded rod, proximal of said hollow elongate sleeve,
gasket stop on said rod, distal of said hollow elongate sleeve, and
a cylindrical gasket coaxially disposed around said elongate threaded rod between said hollow elongate sleeve and said stop which expands radially when longitudinally compressed,
the improvement in said plumbing tool in which said gasket stop comprises:
(a) a washer, keyed to said elongate threaded rod, to prevent relative rotational motion of said washer and said elongate threaded rod, located on said threaded rod distal of said gasket; and
(b) a second nut threadedly engaged on said threaded rod distal of said washer for free relative rotational movement between said second nut and said threaded rod, to permit field removal of said washer and said second nut from said threaded rod for replacement of said cylindrical gasket.

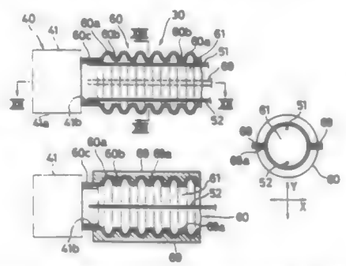
5,363,882

BENDING DEVICE HAVING A BELLOWS

Toshio Chikama, Tokyo, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Division of Ser. No. 594,118, Oct. 9, 1990, Pat. No. 5,203,380.
This application Mar. 26, 1993, Ser. No. 37,559
Claims priority, application Japan, Oct. 13, 1989, 1-264960; Oct. 13, 1989, 1-264961
Int. Cl.[5] F16L *11/00*
U.S. Cl. 138—118 **3 Claims**

1. A bending device comprising:
(a) a bellows having an internal space therein, and having a corrugated peripheral wall defined by first and second portions arranged alternately in a direction of an axis of said bellows, said first portions being bulged radially outwardly whereas said second portions are bulged radially inwardly;
(b) means for bending said bellows comprising a wire, said means for bending having a proximal end portion adapted to receive a force, said means for bending having a distal end portion substantially fixed to a distal end portion of said bellows; and
(c) at least one pair of independent limitation means for limiting an axial compression of said bellows, said pair of limitation means being arranged in an axial direction of said bellows and mounted respectively on diametrically-



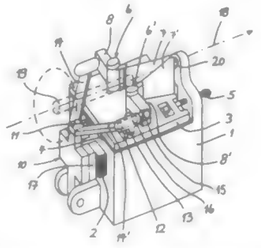
opposite portions of said peripheral wall of said bellows, each of said pair of limitation means including insertion portions fitted respectively in at least one of said first portions and second portions of said bellows, and said bellows being bendable in a direction perpendicular to a plane in which said pair of limitation means are disposed.

5,363,883

THREAD BRAKING DEVICE HAVING MAGNETICALLY DRIVEN SPRING BRAKING MEMBERS

Erich Weidmann, Wetzikon, Switzerland, assignor to Gebruder Loepfe AG, Kempten, Switzerland

Filed Feb. 18, 1993, Ser. No. 19,027
Claims priority, application Switzerland, Mar. 16, 1992, 834/92-4
Int. Cl.[5] D03D *47/34*
U.S. Cl. 139—450 **9 Claims**



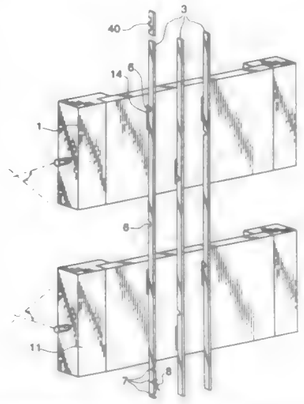
1. A thread braking apparatus for braking a thread running along a thread path into a thread direction, said thread braking apparatus comprising:
at least one pair of braking members, each of said braking members comprising a spring member, wherein said spring members are arranged on opposite sides of said thread path and wherein each said braking member is pivotal for compressing said thread between said spring members, and
a common actuating member being magnetically driven and displaceable against said braking members for pivoting said braking members.

5,363,884

SELECTION BAR DESIGN IN AN ELECTRONIC WARP SELECTOR

Pier L. Migliorini, Terranuova Bracciolini; Pier C. Molta, Prato, and Giorgio Torelli, Pisa, all of Italy, assignors to Tecnotessile Centro Di Ricerche S.R.L., Prato, Italy

Filed Feb. 11, 1993, Ser. No. 16,693
Claims priority, application Italy, Feb. 12, 1992, F192A36
Int. Cl.[5] D03C *13/00*
U.S. Cl. 139—455 **9 Claims**



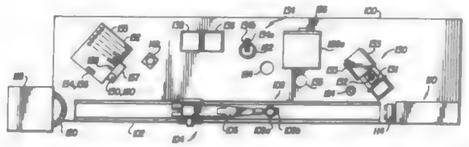
1. Apparatus for selecting and controlling warp thread moving elements in weaving preparation and weaving operations, comprising:
a plurality of pairs of selection bars;
means for moving the bars of each of said pairs with a reciprocating lifting and lowering motion with bars of each pair moving in opposition of phase to each other;
rods received in each of said pairs of selection bars for moving warp threads;
hooking elements for hooking the rods to the selection bars;
electronic logic and control circuit means for operating said hooking devices, each of said selection bars receiving said rods for moving the warp threads and supporting said hooking elements and said electronic logic and control circuit means.

5,363,885

ROBOTIC SAMPLE PREPARATION SYSTEM AND METHOD

Bain C. McConnell, Winston-Salem; Robert J. Fix, Sr., Kernersville; Philip A. Deal, Winston-Salem; Timothy A. Hobbs, Greensboro; Larry S. Jordan, Lexington, and Harold L. Steelman, Yadkinville, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 2, 1993, Ser. No. 71,145
Int. Cl.[5] B65B *1/04, 3/04*
U.S. Cl. 141—1 **44 Claims**



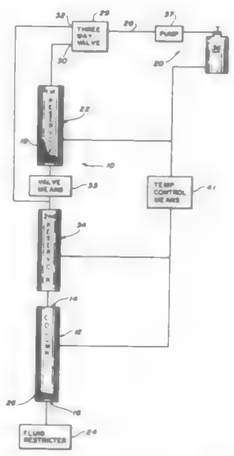
1. A method for operating a robotic sample preparation system for preparing product samples to be analyzed at a later time, comprising the steps of:
filling an empty sample solution container with a predetermined amount of product sample to be analyzed;
moving said sample solution container containing said product sample to a dispensing station using said robotic system;
dispensing at said dispensing station an extraction fluid into said sample solution container containing said product sample to form a sample solution in said sample solution container;
moving said sample solution container containing said sample solution to an extraction station using said robotic system;
extracting components of said product sample into said sample solution so as to form an extracted solution in said sample solution container;
removing and filtering a predetermined amount of said extracted solution from said sample solution container using said robotic system and an extracted solution container; and
using said robotic system to dispense said predetermined amount of extracted solution from said extracted solution container into one of a plurality of sample preparation cups which are included in a sample container for later analysis of said extracted solution.

5,363,886

APPARATUS AND METHOD FOR PACKING PARTICLES

Mehdi Ashraf-Khorassani, Pittsburgh, Pa., assignor to Suprex Corporation, Pittsburgh, Pa.

Division of Ser. No. 784,768, Oct. 30, 1991, Pat. No. 5,241,998.
This application Aug. 25, 1993, Ser. No. 111,999
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—5 **24 Claims**



1. A method of packing an analytical chromatography column with packing particles comprising the steps of:
pressurizing a first reservoir having packing particles disposed therein with a solvent until the density of the solvent equals the density of the particles and forms a slurry where the particles are suspended in the solvent and agglomeration of the packing particles is essentially absent when the slurry is introduced into the analytical chromatography column;
fluidically connecting the first reservoir to the analytical column at essentially the same pressure as the first reservoir such that the slurry flows into the analytical column.

5,363,887

PROCESS AND MACHINE FOR FILLING CONTAINERS WITH COSMETIC PRODUCTS

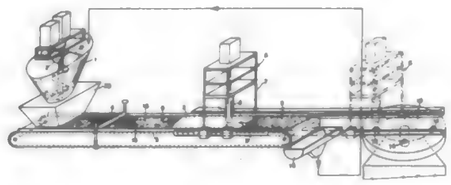
Adrian Haeberli, Zurich, Switzerland, assignor to Aktiengesellschaft Für Geld-Und Kapitalanlagen, Samedan, Switzerland

Filed Mar. 18, 1993, Ser. No. 33,885

Claims priority, application Italy, Mar. 18, 1992, MI92A000628

Int. Cl.[5] B65B *1/20*

U.S. Cl. 141—12 14 Claims



1. A machine for filling containers with cosmetic products comprising:

support means having a cosmetic powder receiving station and an outlet;

means for homogenizing and feeding said cosmetic powder onto said support means at said receiving station;

means for forming said cosmetic powder into a layer having a predetermined height;

a tablet formation station;

a tablet forming device movably mounted relative to said support means for pressing portions of said layer to form tablets of cosmetic product and withdrawing said formed tablets from said layer at said tablet forming station;

a discharge station for receiving said tablets in respective tablet containers;

means for supporting said tablet forming device for movement thereof between said tablet forming station and said discharge station;

means for discharging said tablets from said tablet forming device into said respective containers at said discharge station;

collection sump means at said outlet of said support means for receiving excess cosmetic powder from said support means after said forming of said tablets; and

means operatively connected between said collection sump means and said homogenizing and feeding means for conducting said excess cosmetic powder from said collection sump means to said homogenizing and feeding means.

5,363,888

DISPENSING METHOD AND APPARATUS

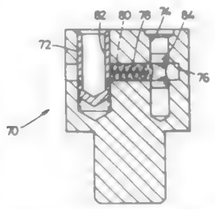
David A. Armitage, and John Peacock, both of Leicester, United Kingdom, assignors to Roussel Uclaf, France

Division of Ser. No. 937,910, Dec. 1, 1992, Pat. No. 5,326,228. This application Mar. 16, 1994, Ser. No. 213,679

Claims priority, application United Kingdom, Feb. 1, 1991, 91300829

Int. Cl.[5] B65B *1/04, 3/04;* B67C *3/02*

U.S. Cl. 141—98 2 Claims



1. A container for a liquid concentrate of an active ingredient, the container having a connecting top piece (**70**) comprising a first bore (**72**); a second bore (**74**); a transverse bore (**76**) extending between the first and second bores and opening into them; a slidable plug (**78**) located in the transverse bore between the first and second bores, the slidable plug being urged towards one of said bores but being prevented from entering said one of said bores by a blocking plug disposed therein; a first sealed conduit (**38**) opening into the container adjacent the top thereof; and a second sealed conduit (**42**) opening into the container adjacent the bottom thereof; the container top being arranged such that a pin may be inserted into the bore which accommodates the blocking plug **84** to dislodge the blocking plug (**84**) such that subsequent removal of the pin allows the slidable plug (**78**) to enter the said bore which accommodates the blocking plug and thereby prevent readmission of the pin.

5,363,889

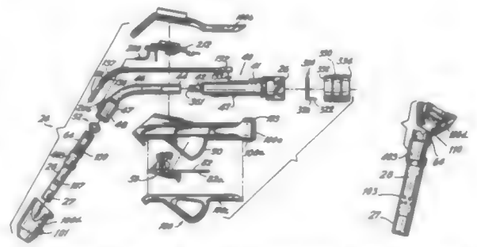
FUEL DISPENSING NOZZLE ASSEMBLY

W. Dwain Simpson, Wilton, and James H. Pyle, Weston, both of Conn., assignors to Saber Equipment Corporation, Fairfield, Conn.

Continuation-in-part of Ser. No. 931,696, Aug. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 496,219, Mar. 20, 1990, Pat. No. 5,184,309. This application Aug. 11, 1993, Ser. No. 105,375

Int. Cl.[5] B67D *5/373*

U.S. Cl. 141—208 36 Claims



31. A fuel dispensing nozzle comprising a house having at least one aperture located at a first end thereof, a dispensing valve selectively removable from within said housing through said at least one aperature, and a spout member for dispensing fuel located at a second end of said housing, said spout member having a substantially annular location therealong defined by a series of circumferentially disposed aperatures and adapted to selectively fracture along said annular location defined by said aperatures upon application of a torque greater than a predetermined torque.

5,363,890

NONSPILL BOTTLED WATER REPLACEMENT SYSTEM WITH DISPOSABLE SEAL MEMBER

Michael Yeung, Newark; Robert N. Lee, Palo Alto, and Chein-Hwa Tsao, San Jose, all of Calif., assignors to Innostar, Inc., San Jose, Calif.

Filed Feb. 5, 1993, Ser. No. 13,778

Int. Cl.[5] B65D *47/00*

U.S. Cl. 141—364 5 Claims

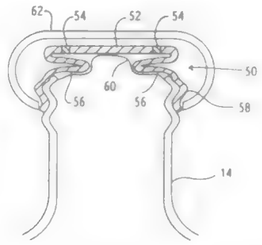
1. For use with a water bottle which, when installed in a water cooler, is placed in an inverted position over an opening in the water cooler tank, a device for controlling the flow of water from an opening in the water bottle comprising:

a membrane closure sealingly attached to said opening in said water bottle, said membrane closure being formed of a water-impermeable material and a moisture-sensitive material which forms a preferred rupture pattern within said water-impermeable material,

said membrane closure initially providing a water tight seal to said opening in said water bottle when said bottle is stored in an upright position,

when said bottle is inverted for installation, water penetrates said moisture-sensitive material within said water-impermeable material, thereby weakening said membrane closure such that said membrane closure ruptures after a time delay releasing the water through said opening in said bottle,

a water-impermeable frangible membrane liner which protects said membrane closure from contacting the water inside said water bottle when said bottle is stored, and, when said bottle is inverted for installation, said frangible membrane liner ruptures allowing the water inside said bottle to contact said membrane closure,



and at least one fold in said membrane closure which allows said membrane closure to expand under hydrostatic pressure when said water bottle is inverted thereby causing said frangible membrane liner to rupture allowing the water inside said bottle to contact said membrane closure.

5,363,891

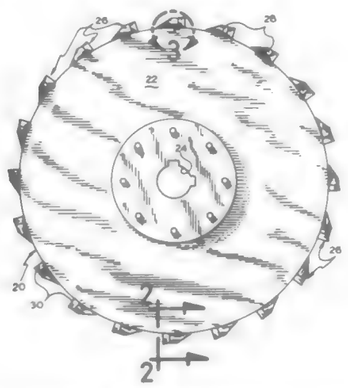
TUBULAR SAW TOOTH AND MOUNT ASSEMBLY

Fernand Plante, 700 Laurier, Malartic, Quebec, Canada J0Y 1Z0

Filed Nov. 8, 1993, Ser. No. 148,339

Int. Cl.[5] B27L *1/00;* B27G *13/00*

U.S. Cl. 144—218 4 Claims



1. A tree delimbing circular saw including in combination:

(a) a rotatable discoid plate member, to be power driven into rotation, said plate member defining an arcuate peripheral edge;

(b) a number of hollow, rigid, tubular teeth members, each defining a free leading edge for tangentially shearing wood;

(c) a corresponding number of hollow, rigid, tubular support members each support member for supporting a corresponding one of said teeth members, and defining a free trailing edge located opposite the leading edge of said tooth member;

(d) anchoring means, fixedly anchoring said tubular support members to said peripheral edge of said discoid plate member tangentially thereof and in successively spaced fashion;

(e) securing means, releasably interconnecting each said tooth member to the corresponding said support member into an operative position,; and

(f) channel means, extending through the hollow of each thus formed pair of associated tooth member and support member, and defining an upstream mouth, being circumscribed by said tooth member leading edge, and a downstream mouth, being circumscribed by said support member trailing edge; said channel means extending through the plane of said discoid plate member tangentially thereof;

wherein said upstream mouth constitutes an intake port, for entry of wood chips generated by the shearing action of said teeth members, said channel means constituting a through-passage for free passage of said wood chips through each pair of tooth member and support member, and said downstream mouth constitutes an outlet port for escape of said wood chips outwardly from said pair of tooth member and support member; wherein each said tooth member in its said operative position is so located that said channel upstream mouth extends completely radially outwardly from said peripheral edge of said discoid plate member.

5,363,892

HAND PLANING TOOL WITH A ROTATING BLADE MOUNT

Eugen Hild, Aichtal, and Kai-Uwe, Floettmann, Guetersloh, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

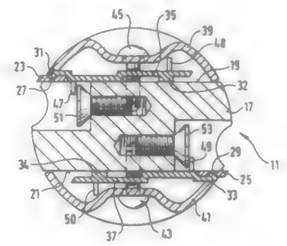
PCT No. PCT/DE92/00932, § 371 Date Jul. 15, 1993, § 102(e) Date Jul. 15, 1993, PCT Pub. No. WO93/09924, PCT Pub. Date May 27, 1993

PCT Filed May 27, 1993, Ser. No. 94,040

Claims priority, application Germany, Nov. 15, 1991, 4137623

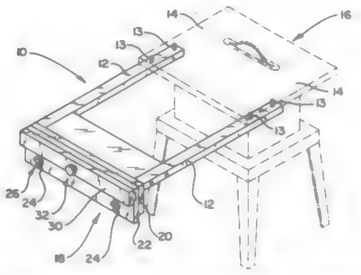
Int. Cl.[5] B27C *1/10;* B27G *13/04*

U.S. Cl. 144—225 19 Claims



1. A hand-operated planer, comprising a rotating blade holder having a base body; at least one planing blade; and a reversible pressing plate having one side which presses said planing blade against said base body in one clamping position and another side which is formed differently from said one side so that when said pressing plate is reversed to assume another clamping position said another side can press another planing blade which is different from said one planing blade against said base body, said one side of said pressing plate having a first gripping formation engageable only with said one planing blade while said another side of said pressing plate has a second gripping formation which is different from said first gripping formation and engages said another planing blade.

5,363,893
TABLE SAW EXTENSION APPARATUS
Sebastian F. Grochowicz, 2047 Charleston Ave., Erie, Pa. 16509
Filed Dec. 13, 1993, Ser. No. 165,636
Int. Cl.[5] B25H *1/00*
U.S. Cl. 144—287 **6 Claims**

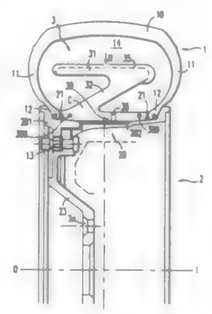


1. A new and improved table saw extension apparatus, comprising:
- a pair of support arm assemblies attachable to respective ends of a table saw, and
- a cross member assembly supported by said support arm assemblies, said cross member assembly including means for relative vertical adjustment of said cross member assembly with respect to said support arm assemblies, and said cross member assembly including means for relative horizontal adjustment of said cross member assembly with respect to said support arm assemblies,

wherein said cross member assembly includes,
- a vertically oriented base member attached to said support arm assemblies,
- a vertically oriented first adjustment member adjustably connected to said base member, said first adjustment member including a plurality of vertical channels permitting said first adjustment member to be adjusted vertically with respect to said base member, said first adjustment member also including a horizontal channel,
- a first securing assembly for securing said first adjustment member with respect to said base member at a selected vertical adjustment position with respect to said base member,
- a second adjustment member supported by said horizontal channel in said first adjustment member, wherein said second adjustment member can be slid horizontally in said horizontal channel in said first adjustment member for permitting said second adjustment member to be adjusted horizontally with respect to said first adjustment member and said support arm assemblies, and
- a second securing assembly for securing said second adjustment member with respect to said first adjustment member.

5,363,894
SAFETY SUPPORT TO BE INCORPORATED INSIDE A TIRE
Jacques Gouttebessis, Volvic, and Guy Jouve, Cournon-D'Auvergne, both of France, assignors to Compagnie Generale des Etablissements Michelin-Michelin & Cie, Clermont-Ferrand, France
Continuation of Ser. No. 700,878, May 10, 1991, abandoned, which is a continuation of Ser. No. 405,325, Sep. 11, 1989, abandoned. This application Feb. 17, 1993, Ser. No. 22,595
Claims priority, application France, Sep. 15, 1988, 88 12299
Int. Cl.[5] B60C *5/00*
U.S. Cl. 152—158 **12 Claims**

1. A safety support mounted to a vehicle wheel for supporting the tread of a vehicle tire in case of loss of inflation pressure of the vehicle tire, comprising:
- a base fixed to a rim of the wheel, said wheel being configured so as to be mounted to a vehicle such that an inside axial side of the wheel faces toward the vehicle and an outside axial side of the wheel faces away from the vehicle;
- a substantially cylindrical top normally positioned radially outside of said base in substantial axial alignment with said base and with an axis substantially coaxial with the wheel axis, wherein said top is normally radially spaced from said base such that when said support is positioned within an inflated tire mounted to the wheel rim, a radial clearance exists between said top and the tire tread; and



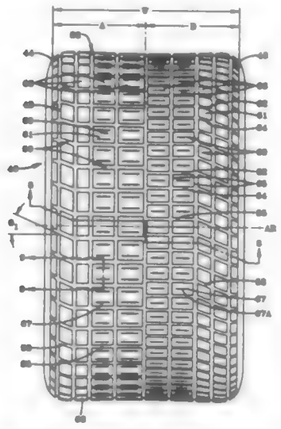
- a connection between said base and said top, comprising means for permitting a relative movement between said base and said top, wherein said connection joins said base substantially only at an axially outer side thereof and joins said top substantially only at an axially inner side thereof, relative to a plane perpendicular to the wheel axis and passing through an axial middle of said top, said axial outer side being axially offset from said axial inner side;

whereby a resultant of forces acting on said top moves axially toward the inside side of the wheel during relative movement of the top towards the base.

5,363,895
BIAS PLY PNEUMATIC TIRE
Thomas H. Wells, and James A. Bukowski, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jun. 23, 1993, Ser. No. 81,768
Int. Cl.[5] B60C *11/11*
U.S. Cl. 152—209 R **4 Claims**

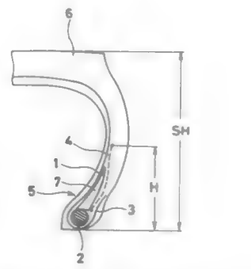
1. A pneumatic tire having an axis of rotation and an annular tread, the tread comprising
- a plurality of circumferentially continuous grooves and a plurality laterally extending grooves, each groove having a radially inner base; and
- a plurality of tread elements of parallelogram shape defined by the circumferential and lateral grooves, each tread element having four radially extending groove walls, each wall having an outer portion inclined less than 10° relative to the radial direction and an inner portion extending between the outer portion and the groove base being inclined at least 30° relative to the radial distance wherein the radial extent of the inner portion is equal to or greater than the radial extent of the outer portion;

and the tread has a first and a second tread edge, the distance between the edges defining the tread width (W) and wherein each lateral groove has a first portion of the groove extending angularly from a tread edge and a second centered portion being parallel to the axis of rotation, the lateral groove first portions adjacent the first edge being substantially parallel to the lateral groove first portions adjacent the second edge, the first portions adjacent



a tread edge are inclined about 25° relative to a plane passing through the axis of rotation.

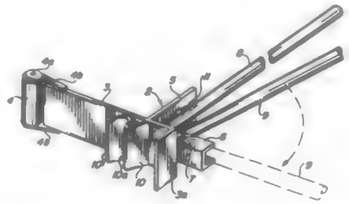
5,363,896
PNEUMATIC TIRE WITH REINFORCING LAYER EMBEDDED IN A DEFINED RUBBER
Tomohiko Kogure; Takao Muraki, and Issey Nakakita, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Jun. 9, 1993, Ser. No. 73,489
Claims priority, application Japan, Jun. 19, 1992, 4-160841
Int. Cl.[5] B60C *15/06*
U.S. Cl. 152—543 **6 Claims**



3. A pneumatic tire according to claim 1, wherein the height H of a radially outer end point of said reinforcing layer and the height SH of a cross section of said tire have the relation of H/SH=0.2–0.8, an angle of inclination of said cords in said reinforcing layer with respect to the circumferential direction of said tire being in the range of 20°–90°.

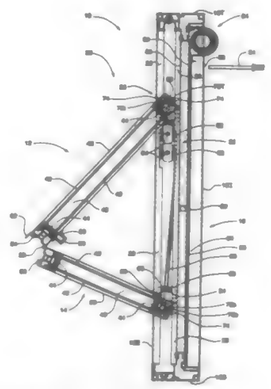
5,363,897
TUBELESS TIRE DEMOUNTING TOOLS
Gary E. Branch, Rte. 4, Box 216A, Rayville, La. 71269
Filed Mar. 16, 1993, Ser. No. 33,186
Int. Cl.[5] B60C *25/06*
U.S. Cl. 157—1.3 **8 Claims**

1. Tools for demounting a deflated tire from a wheel rim having an upper flange and a lower flange, comprising a bracket having a bracket base and a pair of generally U-shaped bracket hooks projecting from said bracket base in fixed relationship, said bracket base positioned inside the periphery of the wheel rim and said bracket hooks extending around the upper flange of the wheel rim and outside of the wheel rim between the upper flange and the tire at a first selected location on the wheel rim and the tire; a roller tool having an elongated, flat base, a roller rotatably mounted on one end of said flat base, a fixed handle and a pivoting handle carried by said flat base in spaced, fixed and pivoting relationship, respectfully, with respect to said roller, and a cradle shaped in said flat base on the opposite side of said flat base from said fixed handle and said pivoting handle, with said base extended between said bracket and the tire, said roller engaging the inside surface of the tire and said cradle engaging the top flange of the wheel



rim between said bracket hooks, whereby the tire is partially released from the wheel rim responsive to manipulation of said fixed handle and said pivoting handle over the tire and the wheel rim; and a shoe tool having a curved plate and a shoe tool handle fixedly carried by said curved plate, wherein said bracket is relocated on the wheel rim at a second selected location between the tire and the wheel rim and spaced from said first selected location, said curved plate is extended between said bracket hooks and the tire at said second selected location and the tire is removed from the wheel rim responsive to manipulation of said shoe tool handle over the tire and the wheel rim.

5,363,898
COUNTERBALANCED FLEX WINDOW
Harry F. Sprague, 10 Wapping Rd., Kingston, Mass. 02364
Filed Aug. 9, 1993, Ser. No. 103,566
Int. Cl.[5] E06B *3/32*
U.S. Cl. 160—98 **6 Claims**



1. A counterbalanced flex window having a frame structure with an interior side and an exterior side within which are assembled a top sash and a bottom sash pivotally joined one to the other at the respective abutting ends thereof by an elongated sash frame joining hinge, said top sash and said bottom sash adapted to flex and fold one toward the other when said window is opened, said counterbalance flex window further comprising in combination a coil spring counterbalance assembly connected to said frame structure and in turn being inter-

connected to a bottom sash sash shoe which is adapted to be vertically slidable within a pair of frame structure tracks and automatically counterbalance said bottom sash when the same is profiled in a randomly opened disposition within said frame structure, a cam operated frictional balance shoe interconnected to said top sash and adapted to also be vertically slidable within said pair of frame structure tracks to automatically fix the adjusted placement set of said top sash in an opened disposition position within said frame structure, a latching mechanism adapted to release said top and bottom sashes for pivotal articulation, and a top sash retaining pintle adapted to be withdrawn and release said cam operated frictional balance shoe for vertically slidable displacement thereof within said pair of frame structure tracks.

5,363,899

METHOD OF DISCRIMINATING QUALITY OF DIE-CAST ARTICLE AND DIE-CASTING PROCESS USING SAME

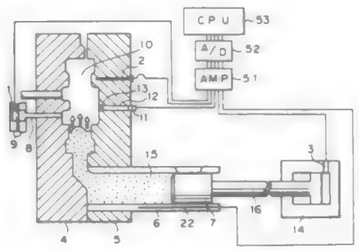
Hiromi Takagi; Fumitaka Takehisa, both of Anjo, and Mitsuyoshi Yokoi, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 774,110, Oct. 15, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,269

Claims priority, application Japan, Oct. 15, 1990, 2-273197; Nov. 9, 1990, 2-302528

Int. Cl.[5] B22D *17/32*

U.S. Cl. 164—4.1 **7 Claims**



1. A pressure die-casting process comprising the steps of:

introducing a molten metal into a die cavity of a die through an injecting port of the die;

primary-pressurizing said introduced molten metal in said die cavity with a pressure through said injecting port;

secondary-pressurizing said molten metal in said die cavity with a pressure through a pressurizing port other than said injecting port;

predetermining a relationship between a first group of operational parameters of a die temperature and a duration period of said primary pressurization and a second group of operational parameters of a initiation time and speed of said secondary pressurization, to provide an optimum relationship for preventing a shrinkage cavity of a cast product;

measuring a die temperature and a duration of said primary pressurization;

determining preset values of a secondary pressurization initiation time and a secondary pressurization speed, by using said measured values on a basis of said optimum relationship; and

effecting said secondary pressurization based on said preset values of the secondary pressurization initiation time and the secondary pressurization speed.

5,363,900

STEEL MOLD ESPECIALLY FOR PERMANENT MOLD CASTING OF METAL

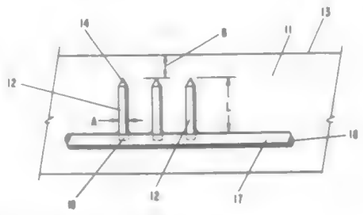
Gerhard Betz, Mülheim a.d. Ruhr, Germany, assignor to Thyssen Guss AG, Mülheim, Germany

Filed Apr. 16, 1993, Ser. No. 48,813

Claims priority, application Germany, Apr. 16, 1992, 4212787

Int. Cl.[5] B22C *9/06*; **B22D** *17/22, 27/04*

U.S. Cl. 164—348 **19 Claims**



1. A steel mold comprised of:

a mold body with a molding surface;

heat-conducting members with a first and a second end embedded in said mold body, wherein said heat-conducting members have a length L and a thickness A and are made of a material having a melting point above 950° C.;

said heat-conducting members being spaced at a distance B from said molding surface, wherein a ratio of said thickness A to said distance B is A:B=1:1 to 1:3 and wherein said length L is 3 to 10 times said thickness A; and

a cooling system embedded within said mold body, with one of said ends of said heat conducting members connected to said cooling system.

5,363,901

METHOD FOR DETECTING PINHOLES IN CONTINUOUSLY CAST BILLETS

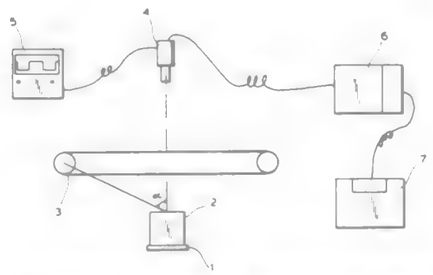
Karl O. Bjornestol, Kristiansand; Jan T. Malmo, Trondheim; Yngve Strom, Oslo, and Eiolf Vikhagen, Trondheim, all of Norway, assignors to Elkem Technology a/s

Filed Nov. 19, 1992, Ser. No. 979,616

Claims priority, application Norway, Nov. 22, 1991, 914574

Int. Cl.[5] B22D *11/00*; **G01N** *21/89*

U.S. Cl. 164—451 **14 Claims**



1. A method for detecting a pinhole in a continuous cast metal billet comprising the steps of:

(a) moving a continuous cast metal billet in a direction under a light source and a linescan camera, said light source being symmetrically arranged above said billet so as to cause light to illuminate a surface area of said billet in a substantially symmetrical manner;

(b) illuminating a surface area of said billet with said light source as said billet moves under said light source such that light reflected from that portion of said surface area of said billet that has a pinhole has an intensity lower than the intensity of light reflected from that portion of said surface area of said billet that has no pinhole;

(c) scanning said surface area of said billet illuminated by said light source with said linescan camera in a direction which is normal to the direction of movement of said billet, said linescan camera being centrally positioned in relation to said light source, and said camera scanning at a speed such that said billet moves a distance under said linescan camera less than a preset minimum pinhole diameter from the start of one scan to the start of the next scan;

(d) adjusting said camera by means of an oscilloscope connected to said camera such that the intensity of the light reflected from that portion of said surface area of said billet that has a pinhole is below a preset threshold level and the intensity of the light reflected from that portion of said surface area of said billet that has no pinhole is above said preset threshold level; and

(e) detecting said pinhole in said billet by means of a computer by determining those portions of said billet where the light reflected from said surface area of said billet is below said threshold level.

5,363,902

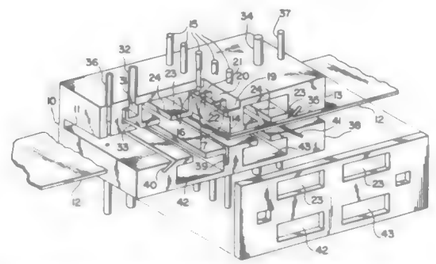
CONTAINED QUENCH SYSTEM FOR CONTROLLED COOLING OF CONTINUOUS WEB

Donald C. Kush, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Pleasanton, Calif.

Filed Dec. 31, 1992, Ser. No. 998,675

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—485 **18 Claims**



1. Apparatus for continuously cooling a moving web having opposing faces by means of a cooling fluid while removing the cooling fluid from the web comprising a quench box positioned adjacent and enveloping the web, first passage means in said quench box for providing a stream of quenching fluid substantially transversely across each face of said web to cool said web, first containment passage means in said quench box on either side of the first passage means and positioned to direct a containment fluid toward said first passage means to establish continuous containment fluid curtain streams to prevent passage of said quenching fluid longitudinally beyond said first containment passage means and exit means to remove the quenching fluid and containment fluid from the quench box.

5,363,903

PERIMETER SEAL FOR AIR HEATER

Donald K. Hagar, Emmaus, Pa., assignor to Damper Design, Inc., Bethlehem, Pa.

Filed Jul. 19, 1993, Ser. No. 92,902

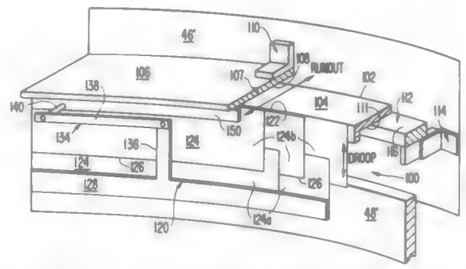
Int. Cl.[5] F23D *19/04*

U.S. Cl. 165—9 **7 Claims**

1. A seal for an air heater, the air heater having first and second main elements, the main elements including a rotatable element which rotates about a central axis of the air heater and a stationary element which is coaxially disposed with respect to the rotatable element, the air heater having a leak path between the elements, the seal comprising:

a. a seal member circumscribing the central axis of the air heater, said seal member having a seal face disposed in a plane perpendicular to the central axis of the air heater, said seal member being coupled with the first main element of the air heater;

b. a seat also circumscribing the central axis of the air heater, said seat having a seat face disposed in a plane perpendicular to the central axis of the air heater, said seat being coupled with the second main element of the air heater, said seat face and said seal face being disposed in mutually opposed, face-to-face, cooperating relationship to effect sealing of the leak path of the air heater while also accommodating radial displacements and radial position variations between the rotatable and stationary main elements of the air heater; and



c. an axially moveable joint coupled with said seal member and disposed axially between said seal member and the first main element of the air heater, said joint being sealed against gas flow across said joint in a radial direction with respect to the central axis of the air heater, said joint having freedom of axial movement to accommodate axial displacements and axial position variations as between said seal member and the first main air heater element, which axial freedom of movement in turn facilitates maintenance of the face-to-face sealing relationship between said seal face and said seat face.

5,363,904

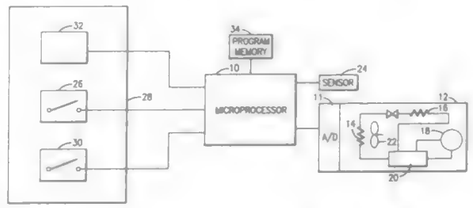
SETBACK CONTROL FOR HVAC SYSTEM

Peter G. Pierret, 115 Shady La., Fayetteville, N.Y. 13066; Laurie L. Werbowsky, 137 Darlington Rd., Syracuse, N.Y. 13208; A. Bruce Buchholz, 8155 McCamidge Dr., Cicero, N.Y. 13039, and Glenn D. Goodnough, 1506 Grant Blvd., Syracuse, N.Y. 13208

Filed Jul. 30, 1993, Ser. No. 99,796

Int. Cl.[5] F23N *5/20*

U.S. Cl. 165—2 **12 Claims**



1. A system for controlling the temperature of an interior space, said system including a setpoint temperature control comprising:

a clock timer for clocking a predetermined period of time which must elapse;

triggering logic for triggering said clock timer to begin the clocking of the predetermined period;

a counter for counting the number of times the predetermined period of time has elapsed;

temperature changing logic for changing the current set-

point temperature by a predefined amount each time a change occurs in the count of the number of times the predetermined period of time has elapsed; and

logic for suspending said temperature changing logic from changing the current setpoint temperature by a predetermined amount when the count of the number of times the predetermined period of time has elapsed reaches a predetermined number.

5,363,905

METHOD OF CONTROLLING HEAT EXCHANGERS USING ENTHALPY FLOW AS THE CORRECTING VARIABLE

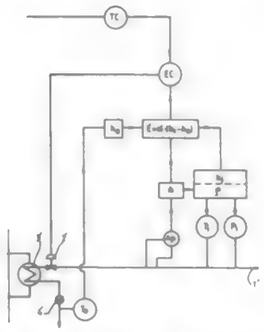
Franz F. Rhiel, Dormagen-Delhoven; Heinrich Steude; Günther Weymans, both of Leverkusen, and Klaus Elgeti, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 1, 1993, Ser. No. 24,551

Claims priority, application Germany, Mar. 6, 1992, 4207144

Int. Cl.[5] F28F *27/00;* **G05D** *27/00;* **G01K** *17/08*

U.S. Cl. 165—1 **5 Claims**



1. A method for controlling a heat exchanger, wherein a process controller maintains a process parameter on a process side of the heat exchanger at a set point, the heat exchanger is operated by a heating medium flowing therethrough from a feed line including a valve controlled by an enthalpy controller which is controlled by the process controller, comprising the steps of:

a) measuring mass flow, pressure and temperature of the heating medium input in the feed line to the heat exchanger and temperature of the heating medium output of the heat exchanger;

b) determining from the measurements in step a) and a time response of the heat exchanger, the enthalpy of the heating medium input into the heat exchanger and the enthalpy of the heating medium output from the heat exchanger and forming a difference between the enthalpies to determine the enthalpy flow into the heat exchanger; and

c) controlling the enthalpy flow into the heat exchanger by controlling the valve in the feed line such that the enthalpy flow is maintained at a set point, whereby the enthalpy flow into the heat exchanger is changed in response to the process controller.

5,363,906

AIR HEATER SEALS

William J. Borowy, 3514 Traylor Dr., Richmond, Va. 23235

Division of Ser. No. 522,136, May 11, 1990, Pat. No. 5,137,078. This application Jul. 21, 1992, Ser. No. 915,610

Int. Cl.[5] F28D *19/00*

U.S. Cl. 165—9 **11 Claims**

1. A circular seal arrangement for an air heater, comprising:

an air heater housing having substantially a cylindrical shape and an inner circumferential surface;

an air heater rotor contained within said housing, said rotor having substantially a cylindrical shape and an outer circumferential surface, said rotor rotating about a center axis with respect to said housing;

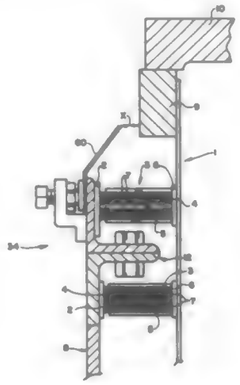
said inner and said outer circumferential surfaces defining a gap therebetween;

said gap varying in size due to differential expansion in said rotor and said housing;

a plurality of flexible sealing elements fixedly attached to said inner circumferential surface and extending around at least a portion of a circumference of said housing;

said sealing elements being in close proximity to each other and defining at least one cavity therebetween;

at least one seal leaf fixedly attached to said inner circumferential surface at a position adjacent each of said sealing elements and extending along at least a portion of said inner circumferential surface;



said sealing elements projecting radially inwardly from said inner circumferential surface a distance at least substantially equal to a maximum distance for said gap;

said at least one seal leaf projecting radially outwardly from said outer circumferential surface, into a corresponding one of said at least one cavity, a distance substantially equal to or less than a minimum distance for said gap;

said combination of said flexible seals and said at least one seal leaf projecting across at least a portion of said gap, providing a tortuous path for fluid flow therethrough; and

a wear resistant pad placed opposite said plurality of sealing elements, at a moving interface of said at sealing elements and said outer surface, so as to prevent wear of said outer surface by said flexible sealing elements.

5,363,907

HOSE COVER AND HOSE ASSEMBLY

Dave Dunning, 37894 Lakeville Dr., Mt. Clemens, Mich. 48045, and William Cline, 6417 Basswood, Troy, Mich. 48098

Continuation-in-part of Ser. No. 890,178, May 29, 1992, Pat. No. 5,287,913. This application Oct. 29, 1993, Ser. No. 145,776

Int. Cl.[5] F28F *71/06*

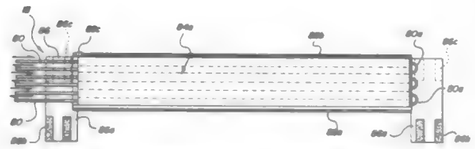
U.S. Cl. 165—46 **9 Claims**

1. A hose cover assembly comprising:

an elongated strip of flexible material including generally parallel opposite longitudinal edges;

a plurality of tubes embedded in the strip and running longitudinally through the strip; and

coacting interengagable quick release means on said opposite longitudinal edges to enable the strip to be wrapped



around a hose and secured in position around the hose by releasable interengagement of the quick release means.

5,363,908

HEATING AND COOLING ARRANGEMENT IN PARTICULAR OF A STRUCTURE SUSPENDED FROM A ROOM CEILING

Helmut Köster, Karl-Bieber-Höhe 15, D–6000 Frankfurt (Main) 56, Germany

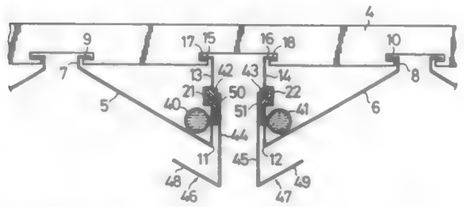
PCT No. PCT/EP91/00334, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13294, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 22, 1991, Ser. No. 924,055

Claims priority, application Germany, Feb. 24, 1990, 4005914; Oct. 2, 1990, 4031062; Oct. 10, 1990, 4032113

Int. Cl.[5] F24F *5/00, 13/22;* **E04B** *9/02;* **F24D** *3/16*

U.S. Cl. 165—49 **43 Claims**



1. A cooling arrangement, in particular in the form of a structure suspended from a ceiling comprising:

a pipe or tube system (**46,76**) in which a fluid flows which serves for the transport of heat;

a large surface heat conducting means (**12**), said large surface heat conducting means being in good thermal contact with said pipe or tube system;

a sweat water drip collector (**14, 22, 70**) arranged below the lowest position of said large surface heat conducting means (**12**);

a carrier (**15**) for the cooling arrangement which is immovably coupled with the cooling arrangement with respect to at least a vertical coordinate and one of two horizontal coordinates;

said cooling arrangement further characterized in that:

a thermal resistance is provided between said pipe or tube system and said sweat water drip collector, said thermal resistance being directly or indirectly connected between at least one surface of said sweat water drip collector and said large surface heat conductor means, said thermal resistance having a heat insulation value so that at least on the underside of the sweat water drip collector, a falling below the dew point is prevented;

said large surface heat conducting means is at least partly provided between said pipe or tube system and said sweat water drip collector; and

the sweat water drip collector is mounted at a portion of said large surface heat conducting means.

5,363,909

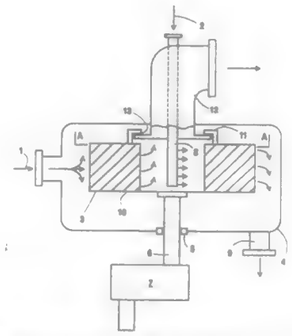
COMPACT CONTACTING DEVICE

Arun Acharya, East Amherst; Christian F. Gottzmann, Clarence; Michael J. Lockett, Grand Island; James S. Schneider, Akron; Richard A. Victor, Grand Island, and Robert Zawierucha, East Aurora, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Nov. 27, 1991, Ser. No. 799,279

Int. Cl.[5] F28C *3/06*

U.S. Cl. 165—111 **6 Claims**



1. An apparatus for mass or heat transfer between two contacting fluids of different densities comprising a rotatable mass of structured packing which provides distribution of one fluid in at least the direction parallel to the axis upon rotation as said one fluid is directed outwardly by means from the center of said mass of structured packing and is expelled by rotation of said mass outwardly through said mass in counter-current contact with a fluid of lesser density moving inwardly through said mass from means on the outside of said mass wherein the packing mass is made up of corrugated sheets of involute shape relative to the axis of the packing mass and form a logarithmic spiral curved counter to the direction of rotation of the mass of structured packing, said corrugated sheets having corrugations in crossing relationship to each adjacent corrugated sheet.

5,363,910

HEAT EXCHANGER

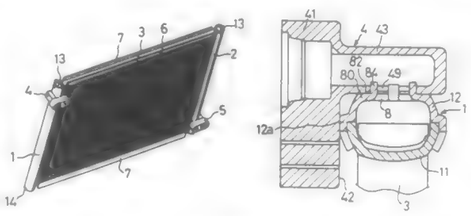
Norimasa Baba, Nagoya; Ken Yamamoto, Obu; Michiyasu Yamamoto, Chiryu; Ryouichi Sanada, Obu; Eiichi Torigoe, and Mitsugu Nakamura, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 13, 1992, Ser. No. 974,724

Claims priority, application Japan, Nov. 15, 1991, 3-300626

Int. Cl.[5] F28F *9/04*

U.S. Cl. 165—153 **10 Claims**



1. A heat exchanger, comprising;

a pair of header tanks adapted to carry a refrigerant therein, at least one of said header tanks being provided with curled tongue members;

at least one tube connected to said header tanks and enabling said header tanks to be in fluid communication with one another; and

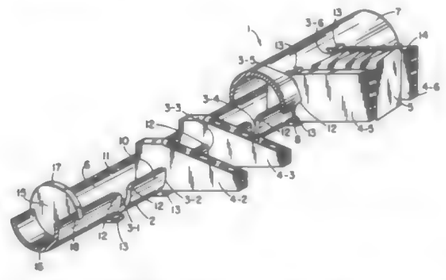
a pair of joint pipes each connected to a respective one of the header tanks and adapted to communicate said header tanks with a refrigerant pipe, said joint pipes each having an opening therein, and said at least one header tank having the curled tongue members thereof being disposed within the opening of the respective joint pipe to which it is connected, said curled tongue members of said at least one header tank being in contact with portions of said respective joint pipe in a manner which secures said at least one header tank to said respective joint pipe.

5,363,911

TWO-PART TUBULAR WALL, AND A METHOD FOR MAKING A MOTOR VEHICLE AIR CONDITIONING CONDENSER HAVING SUCH A TUBULAR WALL

Pascal Vellnet, Cernay la Ville, and Jean-Pierre Tournebize, Auxay Sous Crecy, both of France, assignors to Valeo Thermique Moteur, Le Mesnil-Saint-Denis, France

Filed Oct. 14, 1993, Ser. No. 136,451
Claims priority, application France, Oct. 14, 1992, 92 12302
Int. Cl.[5] F28F *9/04*
U.S. Cl. 165—173 **10 Claims**



1. A heat exchanger fluid header having a tubular wall defining an axis thereof and a plurality of apertures in the tubular wall, each said aperture being elongated transversely to the said axis and the apertures being aligned with each other along the tubular wall, together with a plurality of fluid flow tubes of elongate transverse cross section, each tube being received in a respective said aperture, wherein the tubular wall comprises a first wall member and a second wall member assembled together sealingly against escape of fluid from within the tubular wall, with each said wall member extending over part of the circumference of the tubular wall, each said tube defining a longitudinal tube axis, and each said aperture being cut from the tubular wall so as to define bent lugs at the two respective ends of each said aperture, said lugs extending substantially parallel to the longitudinal axis of the corresponding said tube.

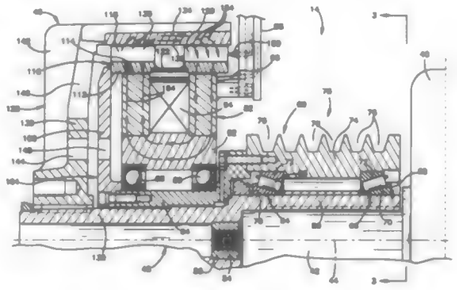
5,363,912

ELECTROMAGNETIC COUPLING

John H. Wolcott, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 18, 1993, Ser. No. 63,516
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—72 **30 Claims**

1. An electromagnetic coupling comprising a rotatable inner shaft, a rotatable outer shaft disposed in a coaxial relationship with said inner shaft and circumscribing said inner shaft, a stationary circular coil disposed in a coaxial relationship with said inner and outer shafts, a rotatable pole piece drum disposed in a coaxial relationship with and circumscribing said stationary circular coil, said pole piece drum including a generally cylindrical drum wall extending around said stationary circular coil and having means to concentrate magnetic flux conducted from said stationary circular coil, a rotatable eddy current drum disposed in a coaxial relationship with and circumscribing said pole piece drum and said stationary circular coil, said eddy current drum including a generally cylindrical drum wall which circumscribes said generally cylindrical pole piece drum wall and is effective to conduct magnetic flux, said pole piece drum being connected with one of said inner and outer shafts for rotation therewith relative to said stationary circular coil, said eddy current drum being connected with the other of said inner and outer shafts for rotation therewith



relative to said stationary circular coil, said inner and outer shafts extending in the same axial direction from said pole piece drum and said eddy current dry, and bearing means disposed between said inner and outer shafts for at least partially supporting said inner and outer shafts for rotation relative to each other, said bearing means having an annular configuration and extending around said inner shaft, said bearing means being circumscribed by said outer shaft.

5,363,913

INJECTION OF SEQUESTERING AGENTS FOR SUBTERRANEAN MICROBIAL PROCESSES

Gary E. Jenneman, and James B. Clark, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1993, Ser. No. 114,040
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—246 **10 Claims**

1. In a process for sustaining microbial activity in subterranean formations comprising the steps of injecting a substantially carbon-nutrient-free first nutrient solution comprising a phosphorus nutrient source into said subterranean formation; and thereafter, injecting a substantially phosphorus-nutrient-free second nutrient solution comprising a carbon nutrient source into said subterranean formation, the improvement which comprises additionally introducing into said formation, at leas t one sequestering agent capable of complexing with multivalent cations present in said formation.

5,363,914

INJECTION PROCEDURE FOR GAS MOBILITY CONTROL AGENTS

Gary F. Teletzke, Sugar Land, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Mar. 25, 1993, Ser. No. 37,980
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—272 **12 Claims**

1. A method for recovering oil from a subterranean oil-containing formation comprising sequentially injecting into the formation through an injection well in communication therewith;

a) a slug of an aqueous solution containing a high concentration of a gas mobility control agent wherein said slug is of sufficient size to satisfy retention of the agent within pore spaces contacted by said high concentration solution;

b) a slug of an aqueous solution containing a low concentration of said gas mobility control agent; and

c) gas as the primary oil displacing fluid selected from the group consisting of carbon dioxide, hydrocarbon gas, inert gas and steam

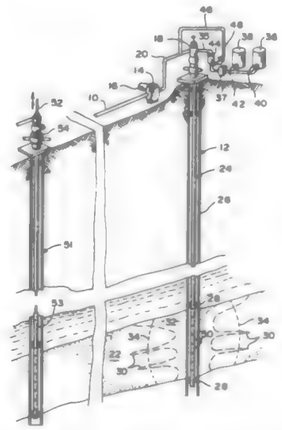
whereby said gas and said slugs of aqueous solution containing the gas mobility control agent form a mixture in the formation that significantly reduces gas mobility in more permeable regions of the formation; and recovering oil at a spaced apart producing well.

5,363,915

ENHANCED OIL RECOVERY TECHNIQUE EMPLOYING NONIONIC SURFACTANTS

David M. Marquis, Lafayette, and Donald L. Kuehne, Hercules, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Jul. 2, 1990, Ser. No. 546,841
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—274 **28 Claims**



1. A method of enhancing recovery of petroleum from an oil bearing formation during injection of non-condensible gas comprising at least periodically injecting a foam into said oil bearing formation,

said foam comprises a mixture of a gas phase consisting essentially of non-condensible gas and a water phase containing an effective amount of at least one non-ionic surfactant having an HLB value of about 14 to less than 20 and which is selected from among ethoxylated alkyl phenols; ethoxylated linear secondary alcohols; propoxylated, ethoxlated primary alcohols and mixtures thereof.

5,363,916

METHOD OF GRAVEL PACKING A WELL

Ronald E. Himes; Marlin D. Holtmyer; Charles V. Hunt, and Mary A. H. Laramay, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 994,248, Dec. 21, 1992, abandoned. This application Jun. 16, 1993, Ser. No. 78,946
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—276 **20 Claims**

7. A method of gravel packing a wellbore penetrating a subterranean formation comprising:

preparing a gravel packing slurry by admixing (i) an aqueous liquid containing at least a trace amount of at least one divalent cation with (ii) a polymer derivative that is chemically modified by reacting at least one member selected from hydroxyethyl cellulose and hydroxypropyl cellulose with a vinyl phosphonic acid in the presence of a redox system, (iii) a crosslinking activator comprising a Lewis base or a Bronsted-Lowry base and (iv) a particulate agent,

introducing said slurry into a zone to be gravel packed within said wellbore penetrating said subterranean formation;

introducing an acidic fluid into said zone to be gravel packed within said wellbore;

contacting said slurry with said acidic fluid whereby the pH of said slurry is reduced whereby the viscosity of said slurry decreases; and,

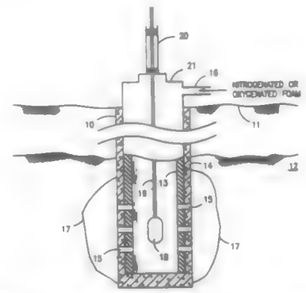
depositing said particulate agent within said zone within said formation to form a permeable pack.

5,363,917

METHOD OF SAND CONSOLIDATION

Alfred R. Jennings, Plano; Eve S. Sprunt, Farmers Branch, both of Tex., and Robert S. Timmer, Bakersfield, Calif., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 19, 1993, Ser. No. 47,986
Int. Cl.[5] E21B *33/13, 43/243*
U.S. Cl. 166—288 **5 Claims**



1. A method for sand consolidation of a loosely consolidated, clay-containing sandstone formation surrounding a well penetrating a hydrocarbon-bearing reservoir, comprising the steps of;

a) injecting a combustion-supporting oxygenated foam through said well into said formation surrounding said well, and

b) initiating combustion between said oxygenated foam and hydrocarbons within said reservoir to burn hydrocarbons in the formation and create a sand consolidation zone that acts as a barrier to the passage of sand into the well along with produced hydrocarbons.

5,363,918

WELLBORE SEALING WITH UNSATURATED MONOMER SYSTEM

Kenneth M. Cowan, Sugar Land, and Arthur H. Hale, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 4, 1993, Ser. No. 102,035
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—295 **17 Claims**

1. A method for drilling and cementing a well, comprising:

combining constituents comprising water and a proton acceptor metal compound to produce a drilling fluid;

thereafter utilizing said drilling fluid in a well drilling operation to form the well, thus producing a used drilling fluid;

thereafter combining said used drilling fluid with 10 to 200 weight percent based on the weight of said metal compound, of at least one water-soluble monomeric component having polymerizable unsaturated groups to produce a cementitious slurry; and

utilizing said cementitious slurry to cement the well.

14. A method for drilling and cementing a well, comprising:

combining constituents comprising water and a proton acceptor metal compound to produce a drilling fluid;

utilizing said drilling fluid in a well drilling operation to form a borehole, thus laying down a filter cake and producing a used drilling fluid;

contacting said filter cake with a water-soluble monomeric component having polymerizable unsaturated groups;

disposing a pipe in said borehole;

passing a cementitious slurry down said pipe; and

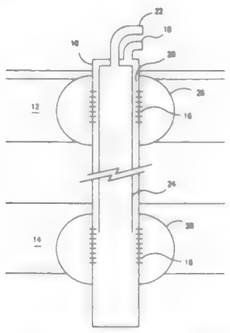
displacing said cementitious slurry out of said pipe and into an annulus surrounding said pipe with a displacement fluid.

5,363,919

SIMULTANEOUS HYDRAULIC FRACTURING USING FLUIDS WITH DIFFERENT DENSITIES

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 15, 1993, Ser. No. 151,628
Int. Cl.[5] E21B *43/26*
U.S. Cl. 166—308 **6 Claims**



1. A method for simultaneously hydraulically fracturing two spaced apart zones of a formation comprising:

a) injecting a lower density fracturing fluid into an upper zone of said formation via an annulus of a perforated wellbore communicating with said upper zone which fluid is injected at a pressure sufficient to initiate and propagate a first fracture within said upper zone; and

b) simultaneously injecting with the fracturing fluid of step a), a higher density fracturing fluid into a lower spaced apart zone of said formation via an injection tube within the perforated wellbore that communicates fluidly with said lower zone which fluid is injected at a pressure sufficient to simultaneously initiate and propagate another fracture within said lower zone without mechanically isolating the zones from each other.

5,363,920

ELASTOMERIC PASSIVE TENSIONER FOR OIL WELL RISERS

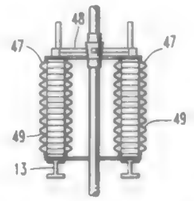
John V. Alexander, Santa Clara; Jerome T. Uchiyama, San Jose, and Arthur F. Penner, Sunnyvale, all of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 5, 1993, Ser. No. 27,136
Int. Cl.[5] E21B *17/01*
U.S. Cl. 166—350 **31 Claims**

1. A passive tensioner for absorbing loading resulting because of relative motion between a floating platform and a riser or the like which has either no, or a defined, motion relative to wave or other liquid action on the platform, comprising:

a) a stack of strut elements arranged in layers, each element of which includes at least two struts of elastomeric material which are individually configured to respond to a compressive load by buckling in a predetermined direction;

b) means for constraining said stack during said buckling in a direction generally orthogonal to the direction of said compressive load; and



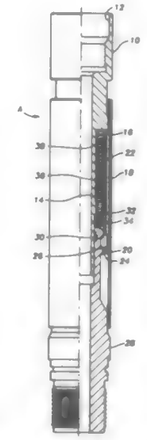
c) means for translating said wave or other liquid action into a compressive load and applying the same to said stack.

5,363,921

WIRELINE PULL DISCONNECT

Luis E. Mendez, Houston, Tex., assignor to Baker Hughes, Inc., Houston, Tex.

Filed Apr. 30, 1993, Ser. No. 55,848
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—377 **15 Claims**



1. A release apparatus for use downhole to allow release from a stuck object, comprising:

a housing;

retaining means on said housing for selectively retaining the object to said housing;

release means on said housing selectively movable with respect to said retaining means for selective defeat of said retaining means for release from the object;

biasing means mounted to said housings, said biasing means preventing operation of said release means to release from the object until a predetermined force applied to said housing is exceeded;

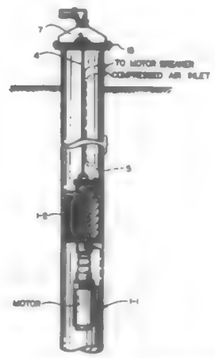
said biasing means, upon application of a predetermined force, changes sufficiently in dimension to allow movement of said release means with respect to said retaining means for release from the object.

5,363,922

DEVICE AND METHOD FOR INSTALLING A SUBMERGED WATER PUMP IN AN ARTESIAN WELL

Abdulaziz A. Al-Megren, P.O. Box 5789, Riyadh 11432, Saudi Arabia

Filed Mar. 15, 1993, Ser. No. 31,556
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—380 **10 Claims**



1. A device for installing a submerged pump in an artesian well at a desired depth and lifting the pump therefrom, the device comprising:

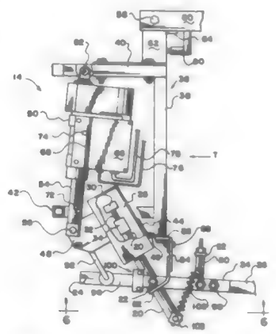
fitting means which has the general shape of an iron core of a car wheel for releasably installing a pump at a desired depth in an artesian well and slinging and lifting means for lifting the fitting means from the well.

5,363,923

FLIP UP ROW FOLLOWER

H. Wayne Mathews, Denison, and Roany L. Barnes, O'Donnell, both of Tex., assignors to Gar Bar Corporation, O'Donnell, Tex.

Filed May 13, 1993, Ser. No. 60,868
Int. Cl.[5] A01B *69/00*
U.S. Cl. 172—6 **19 Claims**



1. The method of attaching and operating a row follower assembly to an agricultural tractor having a direction of travel comprising the following steps:

a) connecting a mounting bracket to the tractor,

b) forming the row follower assembly by

i) attaching a row follower to a row follower shank,

ii) pivoting the shank to an encoder shaft,

iii) attaching the encoder shaft to an encoder,

iv) encasing the encoder within an encoder housing, and

c) hinging said encoder housing to said bracket, thereby

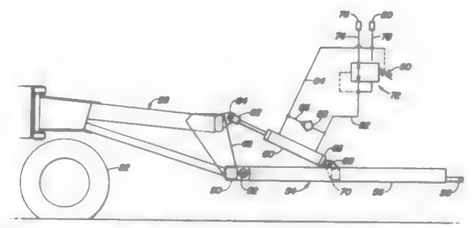
c') hinging said assembly to the bracket about a hinge axis normal to the direction of travel.

5,363,924

WEIGHT TRANSFER SYSTEM FOR AN AGRICULTURAL MACHINE

Daniel M. Foley, Geneseo, Ill., and Michael D. Snyder, Bettendorf, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 29, 1993, Ser. No. 38,316
Int. Cl.[5] A01B *59/042*
U.S. Cl. 172—326 **8 Claims**



1. In an agricultural seeding machine having a plurality of seeding units with each unit having a frame and ground engaging wheel means mounted on the frame for supporting at least a portion of the weight of the seeding unit, an improved hitch mechanism for connecting the seeding units to the drawbar of a towing tractor having a source of hydraulic pressure, the hitch mechanism comprising:

a rear hitch member;

means connecting the rear hitch member to the frames of the respective seeding units;

a tongue having a forward end connectable to the tractor drawbar;

pivot means operatively connecting the rearward end of the tongue to the rear hitch member for vertical adjustment about a horizontal axis generally transverse to the direction of machine travel;

a hydraulic cylinder having one end connected to the tongue forwardly of the pivot means and its other end connected to the rear hitch member offset from the pivot means; and

control means for connecting the source of fluid pressure to the cylinder whereby extension of the cylinder exerts a downward force on the tongue to increase the downward force on the tractor drawbar, so that a portion of the weight of the seeding unit is transferred from the seeding unit wheel means to the tractor drawbar, the control means including a pressure control valve means operative to supply fluid under pressure to the cylinder at a predetermined pressure less than the output pressure of the fluid pressure source.

5,363,925

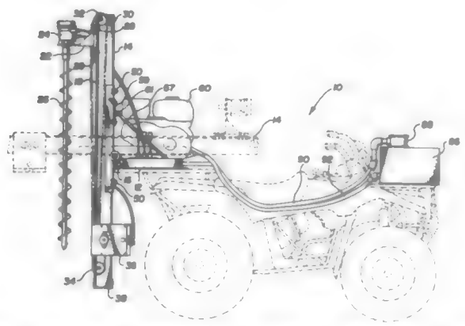
MOBILE DRILLING MACHINE

Alton V. Gallagher, 1576 S. Robb Way, Lakewood, Colo. 80232

Filed Feb. 9, 1993, Ser. No. 15,645
Int. Cl.[5] E21C *11/02*
U.S. Cl. 173—186 **6 Claims**

3. A portable drilling machine to be carried on a mobile steerable support vehicle, comprising, a drill and a light weight drill beam manually moveable from a horizontal travel position to an approximate vertical position for drilling, means for pivotally mounting said drill beam on one end of the vehicle at a pivot point intermediate opposite ends of the beam to permit said manual movement, means for slidably mounting the drill beam relative to the pivot point a bi-directional hydraulic motor for rotating a drill, a carriage supporting said motor, said carriage being slidably mounted on said drill beam for vertical movement therealong, a base fixed at a bottom of said

drill beam, and a hydraulic cylinder having an end connected to said base and including a piston rod mechanically mounted to said means for pivotally mounting said drill beam where-



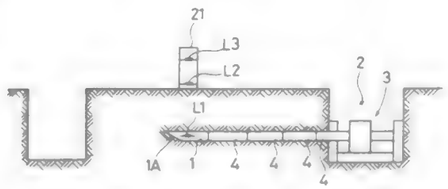
upon actuation of said hydraulic cylinder will lower said base to contact the earth's surface and place a portion of the weight of the vehicle upon said drill beam.

5,363,926

DEVICE FOR DETECTING INCLINATION OF BORING HEAD OF BORING TOOL

Morio Mizuno, Iwakura, Japan, assignor to Takachiho Sangyo Kbushiki Kaisha, Nagoya, Japan

Filed Jan. 3, 1994, Ser. No. 176,423
Claims priority, application Japan, Sep. 21, 1993, 5-234843
Int. Cl.[5] E21B *47/00*
U.S. Cl. 175—45 **4 Claims**



1. A device mounted on a boring head of a boring tool for boring the ground and adapted for detecting inclination of the boring head, comprising:

a roll angle sensor for detecting an angular position of the boring head in a roll direction and for outputting a roll angle detecting signal;

a pitch angle sensor for detecting an angular position of the boring head in a pitch direction and for outputting a pitch angle detecting signal;

signal modulating means for converting said roll angle detecting signal and said pitch angle detecting signal into a serial signal and for modulating said serial signal; and

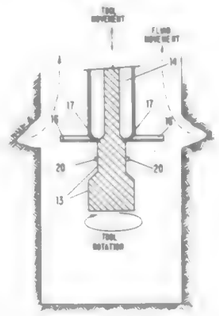
output means for receiving said modulated serial signal and for outputting a magnetic field which is receivable by a receiver located on the ground and which permits determination of the roll angle and the pitch angle of the boring head.

5,363,927

APPARATUS AND METHOD FOR HYDRAULIC DRILLING

Robert C. Frank, 4705 Caspian St., Farmington, N. Mex. 87402

Filed Sep. 27, 1993, Ser. No. 127,690
Int. Cl.[5] E21B *7/18, 10/60*
U.S. Cl. 175—67 **17 Claims**



1. Hydraulic drilling apparatus comprising:

means comprising a drill head having a longitudinal axis;

means parallel to said longitudinal axis for channeling high pressure fluid through said drill head means; and

annular means surrounding said drill head for diverting said high pressure fluid to and through a plurality of horizontally extendable nozzle arms, wherein said high pressure fluid horizontally extends said nozzle arms, and flows through said nozzle arms.

5,363,928

METHOD OF DRILLING WITH FLUID INCLUDING BEES WINGS AND FLUID LOSS ADDITIVE THEREFOR

James R. Wittliff, Lufkin, Tex., assignor to Grinding & Sizing Co., Inc., Lufkin, Tex.

Continuation-in-part of Ser. No. 877,473, May 1, 1992, abandoned. This application May 4, 1993, Ser. No. 57,111
Int. Cl.[5] E21B *33/138;* **C09K** *7/02*
U.S. Cl. 175—72 **17 Claims**

1. A method of carrying out oil well drilling operations wherein a drilling fluid is circulated in a well being drilled in the ground comprising the steps of:

taking bees wings and grinding said bees wings to a powder form,

adding said ground bees wings to a drilling fluid, and

circulating said drilling fluid, with said ground bees wings added thereto, in said well while drilling operations are being carried out.

5,363,929

DOWNHOLE FLUID MOTOR COMPOSITE TORQUE SHAFT

Jerry G. Williams, Ponca City, Okla.; Monib M. Monib, Newark, Del.; Mamdouh M. Salama, Ponca City, Okla.; David H. Schwartz, Katy, Tex., and Edward G. Dew, The Woodlands, Tex., assignors to Conoco Inc., Ponca City, Okla.

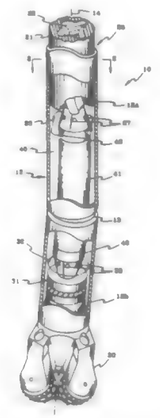
Continuation-in-part of Ser. No. 725,695, Jul. 3, 1991, abandoned, which is a continuation of Ser. No. 534,892, Jun. 7, 1990, abandoned. This application Jul. 1, 1992, Ser. No. 907,790
Int. Cl.[5] E21B *4/02*
U.S. Cl. 175—107 **31 Claims**

1. A downhole fluid motor composite torque shaft for connecting a downhole fluid motor to a drill bit at the distal end of a drill string, wherein the fluid motor is of the type positioned adjacent to the end of a drill string and includes a rotor which rotates and gyrates about a common axis of the drill string under the force of drilling fluid being pumped down through the drill string to the bit to flush drill cuttings up through the

annulus around the drill string, and wherein the composite torque shaft converts the rotating and gyrating motion to pure rotation for the drill bit, the composite torque shaft comprising:

an elongate body having a longitudinal axis and comprising a plurality of overlying layers of fibers fixed in a matrix binder wherein each fiber layer includes a plurality of fibers oriented in a predetermined angle with respect to said longitudinal axis to provide said elongate body with high torsional strength and stiffness while allowing bending flexibility;

a first coupling member at one end of said elongate body for providing a drive connection with the rotor of the downhole fluid motor; and



a second coupling member at the other end of said elongate body for providing a drive connection with the drill bit;

wherein at least some of said fiber layers have a predetermined orientation of between 30 and 60 degrees with respect to said longitudinal axis and at least a substantial portion of the immediately aforementioned layers include additional fibers which are oriented at a reciprocal angle of the predetermined angle with respect to said longitudinal axis so that such fiber layers have cross-plying fibers, and further wherein at least one of said fiber layers includes fibers oriented at approximately 80 degrees or greater with respect to said longitudinal axis of said elongate body and said approximately 80° degree or greater oriented fibers extend substantially along the length of said elongate body between said coupling members.

5,363,930

DUAL-DIAPHRAGM LUBRICANT COMPENSATOR FOR EARTH-BORING BITS

Gregory L. Hern, Auburn, Wash., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Oct. 15, 1993, Ser. No. 137,651
Int. Cl.[5] F21B *10/22*
U.S. Cl. 175—228 **19 Claims**

1. An improved earth-boring bit comprising:

a bit body;

at least one journal member having a pair of ends;

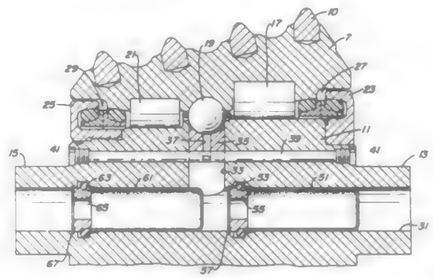
at least one saddle member secured to the bit body to receive and support each end of the journal member;

a cutter mounted for rotation on the journal member, the cutter and journal member defining a bearing therebetween;

a lubricant reservoir formed in the journal member to receive a quantity of lubricant, the lubricant reservoir being in fluid communication with the bearing;

seal means between the cutter and journal member to retain the lubricant in the bearing;

a hydrostatic-pressure compensator disposed in the lubricant reservoir and in communication with hydrostatic pressure in a borehole in which the earth-boring bit operates, the hydrostatic-pressure compensator being responsive to the



hydrostatic pressure to equalize a pressure differential across the seal means; and

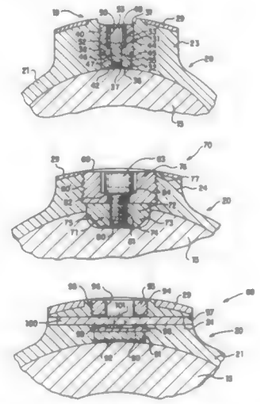
an internal-pressure compensator disposed in the lubricant reservoir, the internal-pressure compensator being responsive to internal pressure of the lubricant to prevent the lubricant from being extruded past the seal means.

5,363,931

DRILLING STABILIZER

Keith A. Moriarty, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jul. 7, 1993, Ser. No. 88,272
Int. Cl.[5] E21B *17/10;* **F16L** *21/00, 25/04*
U.S. Cl. 175—325.5 **17 Claims**



1. A stabilizer adapted to be mounted on a drill collar, comprising: a circumferentially continuous tubular body member having a plurality of outwardly extending blades; and radially energized means on said stabilizer for gripping the drill collar to positively prevent movement of said stabilizer relative thereto, said radially energized means including inner and outer members, said inner member having means for biting into surfaces of the drill collar to grip the same, said outer member and body member having rotary cam means for causing inward radial movement of said inner member and operation of said biting means.

14. A stabilizer adapted to be slidably positioned on a drill collar and then fixedly mounted thereon, comprising: a circumferentially continuous tubular body having a plurality of outwardly extending, circumferentially spaced blades; radially

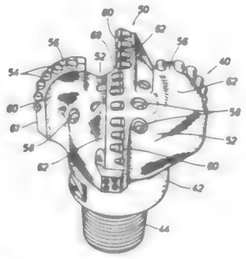
energized means on at least some of said blades for gripping the drill collar to prevent movement of said stabilizer relative thereto; recess means in said collar underneath at least some of said blades; and means on at least some of said blades and cooperable with said recess means for providing additional prevention of longitudinal and rotational movement of said stabilizer relative to said collar.

5,363,932

PDC DRAG BIT WITH IMPROVED HYDRAULICS

Michael G. Azar, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed May 10, 1993, Ser. No. 59,922
Int. Cl.[5] E21B *10/60*
U.S. Cl. 175—417 **6 Claims**



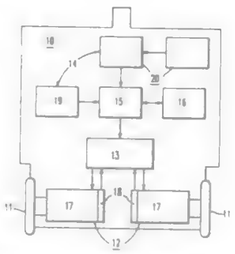
1. A drag type drilling bit comprises;
a bit body that forms a first pin end and a second cutting end, said pin end is opened to a source of drilling fluid that is transmitted through an attachable drillstring, said pin end communicates with a fluid plenum formed by said bit body;
two or more raised blades are formed by said second cutting end and are radially disposed thereon, said blades form a first leading edge, a crest, a second tapered trailing edge and a root at the base of each blade, said second tapered trailing edge terminates substantially at the root of a following cutter blade, said first leading edge of said blade is substantially parallel with an axis formed by said body,
a multiplicity of polycrystalline diamond compact elements are strategically mounted along said crest of each of said cutter blades;
drilling fluid channels are formed by said second cutting end between the blades, each channel originating proximate said axis of said body and terminates at the bit outer diameter, said second tapered trailing edge terminating at the root of a following cutter blade being adapted to create a more uniform fluid volume flow in each of said fluid channels, and
two or more fluid discharge ports communicate with said fluid plenum and exit into each of said fluid channels substantially parallel and in close proximity to said first leading edge formed by said blade, the vortices created by the fluid exiting the discharge ports in each of said fluid channels inter-act to produce a highly turbulent radial flow that inhibits the accumulation of debris adjacent the cutting end of the bit while cleaning and cooling the second cutting end of the bit.

5,363,933

AUTOMATED CARRIER

Foung-Hsoung Yu; Chien-Hsing Lin; E-Chang Hsu, and Huann-Jen Yaung, all of Chutung, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan, Prov. of China

Filed Aug. 20, 1992, Ser. No. 932,589
Int. Cl.[5] B62D *11/04*
U.S. Cl. 180—6.5 **13 Claims**



1. An automated carrier comprising:
a carrying body;
two motors mounted on said carrying body for driving said carrying body;
a controller electrically connected to said two motors;
two encoders respectively electrically connected to said motors for sending speed feedback signals to said controller;
a manual commanding means electrically connected to said controller for controlling a moving speed and a moving direction of said carrying body;
a microcomputer electrically connected between said controller and said manual commanding means and being so programmed that said carrying body is immovable when said microcomputer is hanged up;
a phonetic recognition device electrically connected to said controller for controlling said moving speed and said moving direction of said carrying body and for allowing said controller to enable said carrying body to smoothly slow down an original speed thereon when said phonetic recognition device is actuated; and
a protecting means electrically connected to said microcomputer and capable of resulting in a desired response when said body is within a predetermined distance from an obstacle, said protecting means being one of an infrared detector and a supersonic detector, said infrared detector being capable of emitting therefrom a warning signal when said body is within said distance from said obstacle and said supersonic detector being capable of sending a detected result to said microcomputer capable of sending first speed control signals to said controller for allowing said controller to enable said carrying body to smoothly slow down said original speed thereof.

5,363,934

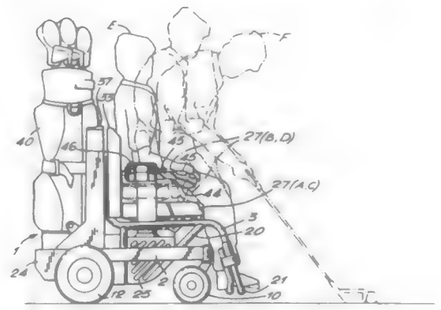
WHEELCHAIR

Nicholas E. Edmund, 4, Dartmouth Terrace, London SE10 8AX, and Steven H. M. Kyffin, London, both of United Kingdom, assignors to Nicholas E. Edmund, United Kingdom

PCT No. PCT/GB91/01827, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/07539, PCT Pub. Date May 14, 1992
PCT Filed Oct. 18, 1991, Ser. No. 50,088
Claims priority, application United Kingdom, Nov. 1, 1990, 9023750
Int. Cl.[5] A61G *5/04, 5/14*
U.S. Cl. 180—6.5 **26 Claims**

1. A wheelchair for aiding a disabled user to play the game of golf comprising
a chassis having a fore and aft extending centerline,

a pair of rear wheel units rotatably mounted on said chassis on a common axis at locations laterally spaced from the centerline by equal distances, each having a width of at least 8 cm,
a pair of front wheel units rotatably mounted on said chassis substantially on a common axis at locations laterally spaced from the centerline by equal distances, said front wheel units having a track which is greater than the track of said rear wheel units, each having a width of at least 8 cm,



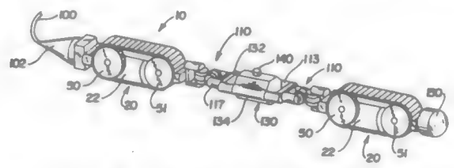
first prime mover means for driving at least one of the wheel units,
a seat mounted on said chassis and movable between a first position for supporting the user in a seated position and a second position above the first position for supporting the user in a standing position and permitting lateral movement of the user without obstruction, and
second prime mover means for driving the seat between its two positions.

5,363,935

RECONFIGURABLE MOBILE VEHICLE WITH MAGNETIC TRACKS

Hagen Schempf, and Brian Albrecht, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed May 14, 1993, Ser. No. 62,797
Int. Cl.[5] B62D *55/265*
U.S. Cl. 180—9.1 **21 Claims**



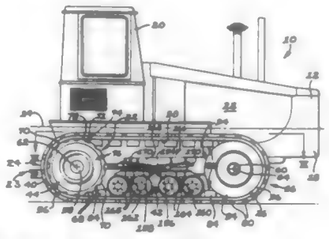
1. A vehicle for use in a vessel having walls with interior surfaces capable of supporting a magnetic circuit, comprising:
a frame member;
an endless driven member received on said frame member and adapted for travel on the interior surfaces of the vessel walls;
means for driving said endless driven member;
a magnetic system attached to said frame member and comprising a magnet, fixed magnetic circuit means, and movable magnetic circuit means for establishing first and second magnetic circuits; and
means for selectively connecting said movable magnetic circuit means to said means for driving to move said movable magnetic circuit means between a first position wherein said first magnetic circuit is established between said endless driven member, said magnet, said fixed magnetic circuit means and said movable magnetic circuit means such that said endless driven member is caused to magnetically engage one of the interior surfaces of the vessel, and a second position wherein said second magnetic circuit is established between said magnet, said fixed magnetic circuit means, and said movable magnetic circuit means such that said endless driven member does not magnetically engage one of the interior surfaces of the vessel.

5,363,936

FRICTIONALLY DRIVEN BELTED WORK VEHICLE

Charles R. Grawey; Robert J. Grob, and Cullen P. Hart, all of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 938,685, Dec. 3, 1986, Pat. No. 5,279,378, which is a continuation-in-part of Ser. No. 563,338, Dec. 20, 1983, abandoned. This application Oct. 18, 1993, Ser. No. 136,837
Int. Cl.[5] B62D *55/088, 55/104, 55/24*
U.S. Cl. 180—9.21 **10 Claims**



1. A belt laying work vehicle comprising:
a frame having opposed lateral sides;
a pair of longitudinally separated wheel structures having radially outwardly facing outer peripheral surfaces and being mounted in supporting relation to said frame on each lateral side thereof and at least one of each pair including a driver;
a pair of endless, inextensible belts each having opposite lateral sides and an interior surface and each being entrained about a respective pair of said wheel structures, a plurality of laterally extending grooves being disposed on one of said interior surface and said outer peripheral surface of each belt and entrained driver, respectively, for removing debris from therebetween;
means for controllably tensioning and urging each belt's interior surface and said outer peripheral surface of the associated driver into frictional driven engagement;
means for distributing a predetermined portion of the weight of said frame to the interior surface of each belt longitudinally between said wheel structures of each pair;
means for rotating each of said drivers;
guiding means including interengaging portions of said wheel structures and entraining belt for minimizing lateral movement of each belt relative to the respective entrained wheel structures and for radially localizing lateral engagement of each belt and the respective entrained driver to locations substantially adjacent said outer peripheral surface; and
said driver wheel structure having a circumference which is maintained substantially constant during rotation and under driving load.

5,363,937

BATTERY OPERATED TRACKED VEHICLE

M. Elmer James, Mendon, Utah, assignor to LMC Operating Corp., Logan, Utah

Filed Oct. 19, 1992, Ser. No. 962,922
Int. Cl.[5] B62D *11/04;* **B60L** *11/10*
U.S. Cl. 180—192 **5 Claims**

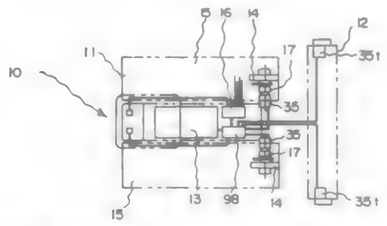
1. An electrically powered drive system for an off road vehicle having a pair of endless tracks each driven by an asso-

ciated sprocket to propel the vehicle over snow, said drive system comprising:

a single pair of electronically commutated, brushless, permanent magnet, alternating current traction motors, each motor associated with one of the tracks;

a source of direct current electrical voltage carried by the vehicle;

a current controller including electronic switching means converting direct current into alternating current, and



means for controlling the alternating current voltage output for application to the motors;

electrical circuit means connecting the direct current electrical voltage source, the current controller and the traction motors, said circuit means including control switching means independently controlling current to each of said motors; and

a single pair of power trains each power trainer connecting one of the motors to the sprocket of its associated endless track.

5,363,938

POWER TRANSFER SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

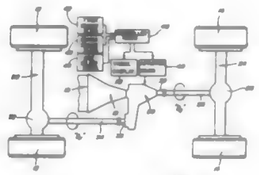
Robert J. Wilson, Warners; David Sperduti, Auburn; Richard E. Eastman, Central Square; Randy W. Adler, Seneca Falls, and Joseph A. Winks, West Monroe, all of N.Y., assignors to New Venture Gear, Inc., Troy, Mich.

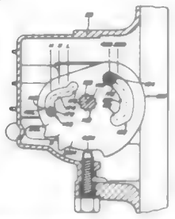
Filed Mar. 9, 1993, Ser. No. 28,299

The portion of the term of this patent subsequent to Jul. 19, 2011, has been disclaimed.

Int. Cl.[5] B60K *17/34*

U.S. Cl. 180—233 **23 Claims**





21. A power transfer system for a motor vehicle having an engine and first and second sets of wheels, the power transfer system comprising:

a transfer mechanism for transmitting drive torque from the engine to the first set of wheels and selectively transmitting drive torque to the second set of wheels through a transfer clutch capable of varying the torque transmitted therethrough by continuously varying a clutch engagement force;

a drive mechanism for generating said clutch engagement force, said drive mechanism being movable between a first position whereat a minimum clutch engagement force is generated and a second position whereat a maximum clutch engagement force is generated;

speed sensors for sensing the rotational speed of the first and second sets of wheels and respectively generating first and second speed signals indicative thereof;

a speed reduction apparatus for establishing a direct-drive high speed range and a reduced-ratio low speed range, said speed reduction apparatus having a shift member movable between a high-range position for establishing said high speed range and a low-range position for establishing said low speed range;

a movement coordination mechanism for coordinating movement of said drive mechanism and said shift member, said movement coordinating mechanism being movable between a 2WH position whereat said drive mechanism in said first position and said shift member in said high-range position, a 4WH position whereat said drive mechanism in said second position and said shift member in said high-range position, and a 4 WL position whereat said drive mechanism in said second position and said shift member in said low-range position;

an actuator for selectively moving said movement coordinating mechanism;

a mode select mechanism for enabling a vehicle operator to intentionally select one of a two-wheel high-range drive mode, a four-wheel high-range drive mode, a four-wheel low-range drive mode and an on-demand drive mode, said mode select mechanism further operable for generating a mode signal indicative of the particular drive mode selected; and

control means for receiving said first and second speed signals and generating a speed differential signal that is indicative of a speed differential between the first and second sets of wheels, said control means operable for controlling actuation of said actuator in response to said mode signal such that said actuator moves said movement coordinating mechanism to said 2 WH position when said two-wheel high-range drive mode is selected, said actuator moves said movement coordinating mechanism to said 4WH position when said four-wheel high-range drive mode is selected, and said actuator moves said movement coordinating mechanism to said 4 WL position when said four-wheel low-range drive mode is selected, said control means is further operable for causing said actuator to modulate the position of said movement coordinating mechanism between said 2WH and 4WH positions as a function of said speed differential signal for continuously varying the amount of drive torque delivered to the second set of wheels when said on-demand drive mode is selected.

5,363,939

SAFE, LOW EMISSIONS, LOW COST, AUTOMOBILE

Christopher S. Catlin, Beverly Hills, Calif., assignor to Xcorp, Inc., Beverly Hills, Calif.

Filed Nov. 20, 1992, Ser. No. 979,309

Int. Cl.[5] B60K *5/00*

U.S. Cl. 180—291 **4 Claims**

1. An ultra safe, low cost, ultra-low emissions automobile providing high survivability in case of an accident, said automobile comprising:

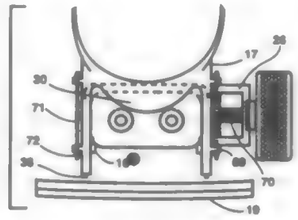
a monocoque inner chassis body having a front and a rear;

a stylized outer body encasing said inner body;

means for attaching said outer body to said inner chassis body; and

a combination rear wing and universal engine mount attached at the rear of said inner chassis body, said wing

providing negative lift for said automobile while moving, cooling for an engine mounted on said engine mount, a flame shield between an engine mounted on said engine mount and said inner chassis body, and rear collision protection for said inner body, one of said inner chassis



body and said wing/engine mount combination comprising a plurality of projecting pins, and the other of said inner chassis body and said wing/engine mount combination having mating holes for joining said inner chassis body and said wing/engine mount combination together.

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AIRCRAFT WORK DOCK

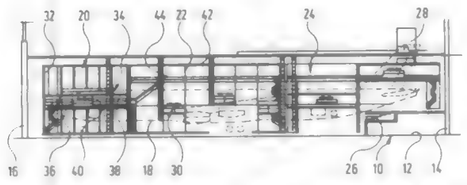
Otmar Fahrion, Dürerstr. 9,, D-70806 Kornwestheim, Germany

Filed Aug. 5, 1993, Ser. No. 102,256

Claims priority, application Germany, Aug. 11, 1992, 4256501

Int. Cl.[5] E04G *1/00*

U.S. Cl. 182—62.5 **15 Claims**



1. A dock for carrying out work on an aircraft (**18**), having support frameworks (**20–24, 28**) which are disposed on either side of the fuselage and of which at least selected frameworks are movable far enough to allow the wing tips of the aircraft to run past them, having support slides (**34**) which are movable in a vertical and/or horizontal direction on the support frameworks, and having work platforms (**30**) which are mounted in each case via a length-adjustable strut arrangement (**54, 56**) on the support slides (**34**) and are movable by the strut arrangement (**54, 56**) in a direction substantially perpendicular to the plane of motion of the support slides (**34**), wherein the support slides (**34**) have guideways (**36, 38**), in which bottom sections (**40**) for the strut arrangements (**54, 56**) run, and wherein the guideways (**36, 38**) of adjacent support slides (**34**) are movable into an aligned, substantially continuous position.

5,363,941

HUNTER'S TREE STAND

Roger Richard, 105 Arthur La., Hackberry, La. 70645

Filed Dec. 10, 1993, Ser. No. 164,816

Int. Cl.[5] A01M *31/02*

U.S. Cl. 182—187 **14 Claims**

1. A lightweight collapsible hunter's tree stand comprising:

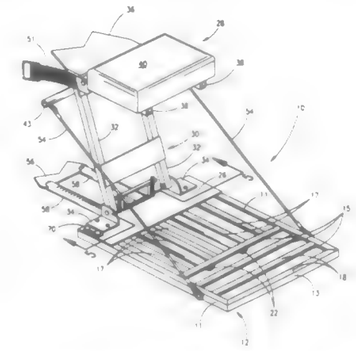
a) a base frame;

b) a seat pedestal pivotally attached at one end to said base frame;

c) an upper stand-off plate, parallel to said base frame attached to the opposite end of said pedestal and at an oblique angle to said pedestal;

d) a seat frame pivotally attached at an oblique angle to said pedestal adjacent said upper stand-off plate, having an operable position whereby said seat frame remains parallel to said base frame regardless of a tree's incline;

e) flexible restraining means attached to said pedestal and said base frame for maintaining a fixed angular displace-



ment between said pedestal and said base frame greater than 90 degrees;

f) a lower stand off means attached to said base frame for telescopically compensating for a tree's incline; and

g) a belt means attached to said pedestal, adjacent said upper stand-off plate, for securing said pedestal to a tree.

5,363,942

BRAKING DEVICE FOR AN ELEVATOR

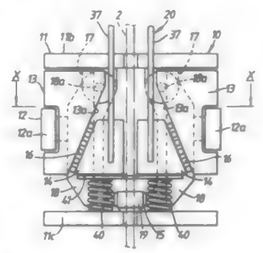
Akira Osada, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 6, 1993, Ser. No. 86,203

Claims priority, application Japan, Mar. 5, 1993, 5-045086

Int. Cl.[5] B66B *5/22*

U.S. Cl. 187—376 **7 Claims**



1. A braking device for an elevator, wherein a cage moves along guide rail provided vertically, said braking device comprising:

wedge braking means provided at said cage;

speed governor means provided at said cage for detecting a running speed of said cage; and

linking means for linking said wedge braking means and said speed governor means;

said wedge braking means including,

a resilient support member,

a pair of wedge guide means provided inside said resilient support member,

a pair of wedge members, each being provided between said guide rail and one of said wedge guide means, respectively, said pair of wedge members being pressed against said guide rail by said pair of wedge guide means by means of biasing force generated by said resilient support member, thereby stopping said cage by means of a first fric-

tional force resulted between said guide rail and said wedge members, and

releasing means for releasing said resilient support member such that said wedge members separate from said guide rail when releasing force is generated; and

said linking means being linked such that said speed governor means pulls up said wedge members of said wedge braking means along said wedge guide means when said speed governor means detects that a speed of said cage is larger than a rated speed, thereby pressing said wedge members against said guide rail and effecting emergency stop of said cage by means of a second frictional force resulted between said guide rail and said wedge members.

5,363,943

DISK BRAKE APPARATUS FOR VEHICLE

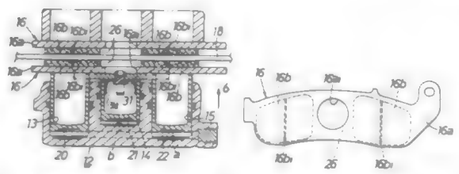
Kanan Iwashita, Saitama; Yukimasa Nishimoto, Tokyo; Yoshiaki Sawano, and Tetsuo Tsuchida, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,213

Claims priority, application Japan, Oct. 15, 1991, 3-266399

Int. Cl.[5] F16D *55/228;* B60T *11/00*

U.S. Cl. 188—72.5 3 Claims



1. A disk brake apparatus for a vehicle comprising a brake disk plate; a brake pad having a lining; a brake actuator; a plurality of at least three pistons positioned to press said lining of said brake pad against said disk plate, a central one of said plurality of pistons being operated independently of adjacent ones of said plurality of pistons by said actuator; characterized in that said brake pad has a recessed portion on the portion thereof adjacent said brake disk plate which overlies said central one of said plurality of pistons, and the area of said recessed portion is larger than the area of said central one of said plurality of pistons.

5,363,944

FLOATING-FRAME SPOT-TYPE DISC BRAKE FOR HIGH-TORQUE AUTOMOTIVE VEHICLES

Rudolf Thiel, Frankfurt am Main; Ulrich Klimt, Gross-Umstadt, and Andreas Doell, Frankfurt am Main, all of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany

Filed Aug. 4, 1992, Ser. No. 925,708

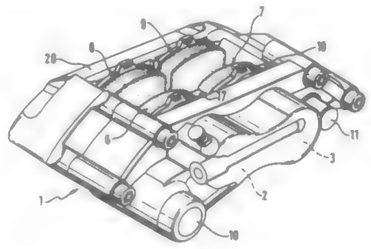
Claims priority, application Germany, Aug. 8, 1991, 4126196

Int. Cl.[5] F16D *65/092*

U.S. Cl. 188—73.31 11 Claims

1. A spot-type disc brake for an automotive vehicles having a brake disc, and a steering knuckle comprising:

a brake carrier fixed to said steering knuckle of said automotive vehicle on an inner side of said brake disc, a floating frame comprised of a pair of spaced arm sections and inner and outer sides connecting said arm sections at respective ends thereof, together defining an opening, said arm sections extending across an outer edge of said brake disc, said frame guided on said brake carrier in an axillary displaceable manner, said floating frame having two brake cylinders mounted to the inner side thereof and two brake pistons respectively disposed therein , two inner brake shoes on said inner side of said brake disc and at least one outer brake shoe on the outer side of said brake disc, all of said brake shoes enclosed within said opening of said floating frame, means mounting said two inner brake shoes on said brake carrier to transmit circumferential braking reaction forces thereinto, means mounting said at least one



outer brake shoe to said outer side of said floating frame to transmit circumferential reaction forces exerted thereon to said brake carrier, said brake carrier is disposed completely on the said inner side of said brake disc.

5,363,945

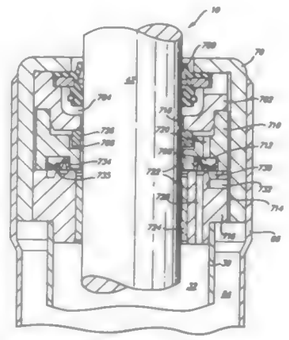
CONTROL VALVE FOR SHOCK ABSORBERS

Magnus B. Lizell, Stockholm, Sweden, and Bert Vanroye, Borgloon, , assignors to Monroe Auto Equipment Company, Monroe, Mich.

Division of Ser. No. 550,160, Jul. 9, 1990, Pat. No. 5,211,268, which is a continuation of Ser. No. 322,542, Mar. 13, 1989, Pat. No. 4,955,460, which is a continuation-in-part of Ser. No. 227,113, Aug. 1, 1988, abandoned. This application May 7, 1993, Ser. No. 59,465

Int. Cl.[5] F16F *9/50*

U.S. Cl. 188—281 18 Claims



1. A shock absorber comprising:

a pressure tube symmetrically disposed about an axis, said pressure tube forming a working chamber having upper and lower portions;

a fluid reservoir tube for storing hydraulic fluid, said reservoir tube disposed concentric to and radially extended from said pressure tube and having a closed end and an open end;

first valve means for allowing the flow of hydraulic fluid from said upper portion of said working chamber into said reservoir and for preventing flow of fluid from said reservoir tube into said upper portion of said working chamber through said first valve means, said first valve means disposed between said upper portion of said working chamber and said reservoir tube;

second valve means for allowing flow of said hydraulic fluid from said reservoir tube into said lower portion of said working chamber and for preventing flow of said fluid from said lower portion into said reservoir tube through said second valve means, said second valve means being

disposed between said lower portion of said working chamber and said reservoir tube;

a piston slidably disposed between and separating said upper and lower portions of said working chamber, said piston allowing restricted flow of hydraulic fluid between said upper and lower portions of said working chamber;

an elongated piston rod having first and second ends, said first end being attached to said piston, said second end of said elongated piston rod extending along the axis of said pressure tube through said upper portion of said working chamber and out one end of said pressure tube;

a rod guide between said piston rod and said pressure tube at an end of said pressure tube;

an annular seal around said piston rod;

an annular seal retainer disposed concentrically about said piston rod and axially against said rod guide, said seal retainer and said seal closing said open end of said reserve tube and forming a first annular cavity between said piston rod, said seal, and said seal retainer, said seal retainer having a first and second flow passage therethrough;

an upper annular sleeve section disposed on said guide rod having a radial passage therethrough, said upper annular sleeve section spaced radially outward from said piston rod and abutting said seal retainer so as to form a second annular cavity adjacent said piston rod;

a slip ring frictionally mounted to said piston rod within said second cavity; and

a tubular sleeve member concentric to said rod guide and spaced radially outward from said upper annular sleeve section of said rod guide, said tubular sleeve member having a first end abutting said rod guide and a second end abutting said seal retainer to thereby form a third annular cavity.

5,363,946

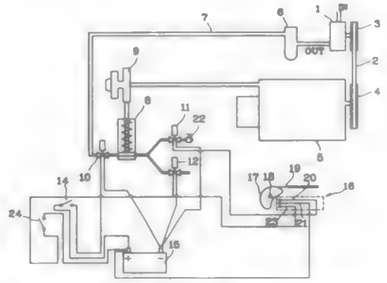
AUTOMATION DEVICE FOR AUTOMOBILE MANUAL SHIFT SYSTEM

Shih-Hung Chang, No. 11-4, Alley 45, Lane 312, Sec. 2, Chung San Rd., Chung Ho City,

Filed Jun. 2, 1993, Ser. No. 71,446

Int. Cl.[5] B60K *41/22*

U.S. Cl. 192—3.58 1 Claim



1. An automation device for use with a manual shift system of an automobile, said automobile having an engine, a clutch and a power transmission assembly, said automation device comprising:

an air compressor coupled with an engine of an automobile; said air compressor is driven by the engine to produce a high pressure air;

a clutch pump connected to a clutch to disengage and engage the engine from a transmission assembly;

an air tank connected with a power cylinder via a compressed-air pipe; wherein said power cylinder is connected to said clutch pump for driving said clutch pump; an intake electric valve connected to said air tank and said power cylinder therebetween;

two exhausting electric valves connected with said power cylinder; said intake electric valve is connected with a shift key through a circuit; wherein when said shift key is turned on, said intake electric valve opens to let a compressed air enter said power cylinder so as to actuate said clutch pump to disengage the clutch;

one of said two exhausting electric valves connected with a choke valve; said two exhausting electric valves are connected with a contact switch which is connected with a coupling member attached to an accelerator cable;

said coupling member touches said contact switch when an accelerator pedal is pushed so as to open one of said two exhausting electric valves;

wherein when said accelerator pedal is pushed to a first level, said exhausting electric valve with said choke valve is opened for exhausting said compressed air at a slow rate; and when said accelerator pedal is pushed to a second level beyond said first level, said exhausting electric valve without said choke valve is opened so as to have said compressed air exhausted from said power cylinder at a quicker rate to deactuate said clutch pump; and

a shift-removing key is mounted on a shift rod, and connected with said exhausting electric valve without said choke valve via a circuit; wherein when said shift-key and said shift-removing key are turned on; said exhausting electric valve is opened so as to exhaust the compressed air in said power cylinder so as to deactuate said clutch pump to engage said clutch.

5,363,947

SPRING FOR ONE-WAY CLUTCH HAVING ADJUSTING OPENINGS OF A SPECIAL SHAPE

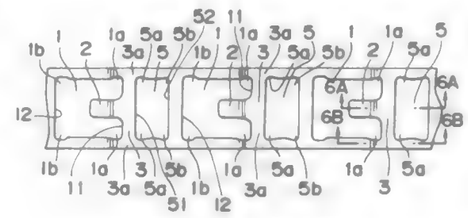
Takaaki Ikeda, Nara, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Apr. 22, 1993, Ser. No. 50,644

Claims priority, application Japan, Aug. 31, 1992, 4-060886[U]

Int. Cl.[5] F16D *41/06;* F16F *1/18*

U.S. Cl. 192—45.1 5 Claims



1. An elongated spring for a one-way clutch, said spring being adapted to be assembled in an annular shape into the one-way clutch to urge engagement members disposed between inner and outer races of the one-way clutch in one direction, said elongated spring comprising:

first and second transverse sections extending transverse relative to a longitudinal direction of said elongated spring, said first and second transverse sections being alternately provided;

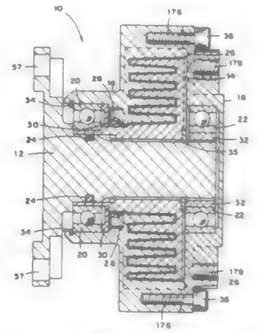
receiving openings defined between said first and second transverse sections and having a generally rectangular shape adapted to receive the engagement members therein;

tabs adapted to urge the engagement members in the one direction, said tabs being integral with said first transverse sections and projecting into respective ones of said receiving openings; and

adjusting openings defined between said first and second transverse sections and provided alternately with said receiving openings, wherein each adjusting opening is of a generally rectangular shape and is provided with curved

fillets protruding outwardly in a direction transverse to the longitudinal direction of said elongated spring.

5,363,948
SELECTIVE DRIVE FLUID COUPLING
Richard E. Aho, Fort Lauderdale, and Martin Baker, Moore Haven, both of Fla., assignors to MileMarker, Inc., Pompano Beach, Fla.
Filed Jan. 19, 1993, Ser. No. 5,562
Int. Cl.[5] F16D *3/80, 35/00, 7/00*
U.S. Cl. 192—58 R **12 Claims**



1. A fluid coupling for use in a drive train to couple a first rotatable member to a second rotatable member to provide rotation of the first and second rotatable members without substantial relative movement of the members during normal operation of the vehicle when the torque in the drive train exerted upon the coupling does not exceed a predetermined break-away torque; said coupling comprising:

reservoir means positioned between said first and second rotatable members for containing a highly viscous fluid, said fluid having a viscosity sufficiently great so that the first rotatable member and the second rotatable member rotate substantially in unison when the torque exerted upon the coupling is below the break-away torque;

pump means associated with said reservoir means for exerting pumping forces on said yiscous fluid to transfer torque from said first rotatable member to said second rotatable member, said pump means comprising:

a first rotatable body having a first pump surface rotatable at a first rate in response to rotation of said first rotatable member for exerting pumping forces on said fluid when the break-away torque is exceeded,

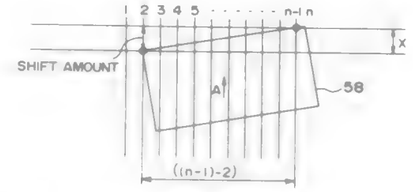
a plurality of substantially cylindrical substantially concentric first fins extending outwardly from said first rotatable body in an axial direction, said first pump surface being defined on said first fins, wherein at least one of said first fins has a first cross-sectional area adjacent the first rotatable body and a second cross-sectional area at a location spaced outwardly from said first rotatable body in an axial direction that is different from the first cross-sectional area,

a second rotatable body having a second pump surface rotatable at a second rate in response to the pumping forces and associated with said second rotatable member for transmitting pumping forces from said fluid to said second rotatable member when the break-away torque is exceeded,

a plurality of substantially cylindrical substantially concentric second fins extending outwardly from said second rotatable body in an axial direction, said second pump surface being defined on said second fins,

said first and second fins being disposed in an interleaved substantially concentric relationship in which each of said first fins is adjacent one of said second fins and said highly viscous fluid is disposed between adjacent first and second fins.

5,363,949
BILL RECOGNIZING APPARATUS
Katsuyoshi Matsubayashi, Yamanashi, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 992,723
Claims priority, application Japan, Dec. 18, 1991, 3-353878
Int. Cl.[5] G07D *7/00*
U.S. Cl. 194—206 **2 Claims**



1. A bill recognizing apparatus comprising:

storage means to store an image data read from a transferred bill in response to a sampling clock;

generation means to generate a master clock faster than the sampling clock;

calculation means operable in synchronism with the master clock generated from said generation means to calculate the skew of the bill;

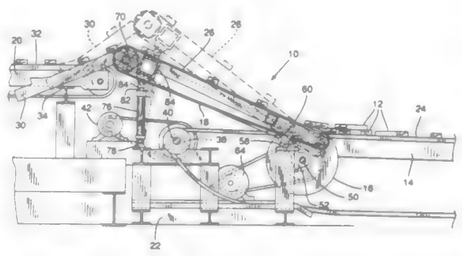
skew correction means operable in synchronism with the master clock to perform skew correction of the image data stored in said storage means in response to the calculation result from said calculation means;

compression means operable in synchronism with the master clock to compress the image data skew corrected by said skew correction means; and

reference means operable in synchronism with the master clock to compare the image data compressed by said compression means and a preset dictionary data;

thereby recognizing the particular bill from the comparison result of said reference means in synchronism with the master clock.

5,363,950
LUMBER ORGANIZER
Ricardo F. Lacuna, Oregon City; Gaylan J. Curry, Estacada, and Dale E. Campbell, Oregon City, all of Oreg., assignors to U.S. Natural Resources, Inc., Vancouver, Wash.
Filed Nov. 17, 1993, Ser. No. 153,636
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—382 **6 Claims**



1. A lumber aligning machine for aligning lumber into an orientation suited for a subsequent processing station, the lumber aligning machine comprising:

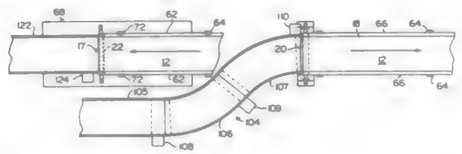
a first carrier, a drum, and a second carrier mounted sequentially and defining a path of conveyance;

said first carrier receiving lumber deposited thereon in a disarrayed arrangement and transporting the lumber at a determined rate of conveyance to the drum;

said drum having a circumferential surface surrounding an axis, said drum rotatably mounted for rotation about said axis with a portion of the drum surface extending above said first carrier and adapted to receive lumber from said first carrier;

said second carrier positioned at an angle inclined upwardly from said drum surface and positioned to receive lumber transferred to it from said drum surface and for transporting the lumber at a given rate of conveyance, said drum rotating at a rate whereby the surface speed of said drum surface is faster than the rate of conveyance of the first and second carriers whereby the lumber is engaged by the surface of the drum and carried at an accelerated rate to be deposited onto the angled second carrier so as to force alignment of the lumber.

5,363,951
OVER AND UNDER BELT CONVEYOR SYSTEM
William A. Mensch, Farmington, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.
Filed May 17, 1993, Ser. No. 62,425
Int. Cl.[5] B65G *15/24*
U.S. Cl. 198—606 **22 Claims**



1. An over-and-under belt conveyor system comprising:

an endless belt;

means supporting said belt for travel on an upper load carrying run having an entrance end and an exit end, and on a lower load carrying run spaced vertically below said upper run, said lower run having entrance and exit ends facing oppositely to said upper run entrance and exit ends;

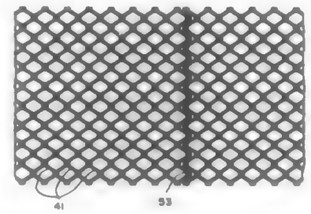
a lower run feed conveyor converging laterally into alignment with said lower run at the entrance end thereof, and a lower run take away conveyor diverging laterally from alignment with said lower run at the exit end thereof;

a first series of roller means for directing said belt downwardly from said upper run exit end, horizontally below said lower run feed conveyor, and upwardly to said lower run entrance end;

a second series of roller means for directing said belt downwardly from said lower run exit end, horizontally below said lower run take away conveyor, and upwardly to said upper run entrance end; and

at least one of said first and second series of roller means including a belt drive roller, a drive unit coupled thereto, and dynamic takeup roller means on the downstream side of said drive roller for applying tension to said belt.

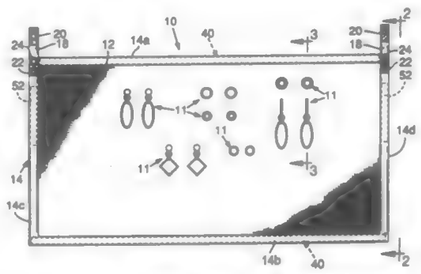
5,363,952
HIGH TEMPERATURE TRANSPORT BELT FOR MATERIALS TREATING FURNACE
Charles W. Miller, Jr., Goffstown; John Currier, Belmont; Larry Ducloe, Epsom, and Thomas Ayer, Allenstown, all of N.H., assignors to Centorr/Vacuum Industries, Inc., Nashua, N.H.
Filed Sep. 10, 1993, Ser. No. 119,709
Int. Cl.[5] B65G *15/54*
U.S. Cl. 198—848 **6 Claims**



1. In a materials treating furnace producing, a heat treating zone, a treatment temperature in the order of 1200°–2200° C., a belt for transporting articles to be treated through said zone; said belt comprising;

a succession of interwoven links, the interweaving providing a multiplicity of interlocking contract points, each link comprising a length of tungsten wire which has been heated to a temperature of at least 400° C. and wound around an elliptical mandrel to provide, when cooled, a link which over the majority of its length, is in the form of a slightly flattened helix having no sharp bends.

5,363,953
FLEXIBLE JEWELRY DISPLAY AND STORAGE DEVICE
Sandy Carter, 10730 SW. Black Diamond Way, Tigard, Oreg. 97223
Filed Jun. 12, 1992, Ser. No. 897,440
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—6.1 **6 Claims**



1. A jewelry display and storage device comprising:

a flexible screen panel suitable for mountably receiving an inventory of jewelry items in secure and organized fashion by coupling of hook or shaft structures of said jewelry items to said screen;

a flexible fabric frame surrounding and attached to said screen panel, said frame including at least one stiffening member for resisting sagging of said screen panel under the weight of an inventory of jewelry items mounted thereon;

first and second tab elements extending from said frame, each carrying respective ones of first and second tab fasteners;

first and second complementary fasteners mounted to said display and storage device proximate to and selectively attachable to said first and second tab fasteners, respec-

tively, whereby said first tab fastener may join with said first complementary fastener forming by said first tab element a first loop and said second tab fastener may join with said second complementary fastener forming by said second tab element a second loop such that said device may depend from a rod-like structure from said first and second loops; and

third and fourth complementary fasteners mounted to said display and storage device on a face thereof opposite that of said first and second tab fasteners, whereby said device may brought into a rolled cylindrical configuration and said first and second tab fasteners selectively attached to said third and fourth complementary fasteners, respectively, such that said device is maintained in said rolled cylindrical configuration.

5,363,954

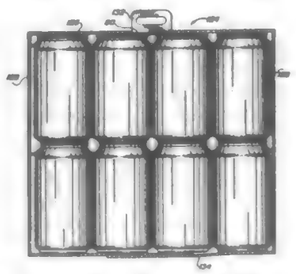
CLIP-TYPE ARTICLE CARRIER AND METHOD OF MANUFACTURE

Clayton Dampier, Marietta, and Octavio Orta, Atlanta, both of Ga., assignors to Riverwood International Corporation, Atlanta, Ga.

Division of Ser. No. 899,192, Jun. 16, 1992, Pat. No. 5,282,348. This application Sep. 24, 1993, Ser. No. 125,898

Int. Cl.[5] B65D *71/00*

U.S. Cl. 206—144 **6 Claims**



1. A carrier containing a plurality of articles each of which has an outwardly extending flange in an upper portion thereof, comprising:

an article support body including a plurality of apertures and adjacent support surfaces, at least portions of the flanges of the articles protruding through the apertures and being supported on the underside thereof by the support surfaces, said article support body and said articles supported thereby forming a carrier unit and said carrier including a plurality of adjacent carrier units; and

an outer carrier wrap comprising a top panel overlying the article support body and being connected thereto, opposite side panels connected to the top panel and at least one additional panel connecting the opposite side panels, said top panel overlying said adjacent carrier units, said article support bodies of said carrier units including handles and said top panel including openings for providing access to said handles.

5,363,955

HINGED LID BOX WITH ATTACHED COUPON

J. Jerome Fleenor, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 12, 1993, Ser. No. 133,946

Int. Cl.[5] B65D *85/10, 43/16*

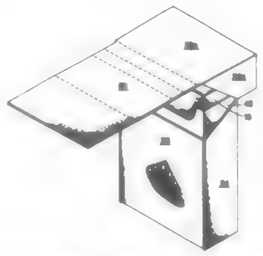
U.S. Cl. 206—273 **19 Claims**

1. A cigarette pack for packaging cigarettes comprising:

a lower portion comprising a bottom wall, a front wall, a back wall, and two side walls which define a receptacle for containing cigarettes;

a hinged lid portion comprising a top wall, a front wall, a back wall, and two side walls, said hinged lid portion hingably connected at its back wall to said lower portion at the back wall of said lower portion, wherein said hinged lid portion is closable over the receptacle for containing cigarettes defined by said lower portion such that respective front and side walls of said hinged lid portion mate with respective front and side walls of said lower portion at respective mating edges; and

a tab comprising a front tab panel and a top tab panel foldably connected to the front tab panel via a first tab fold line, said tab detachably attached at the front tab panel to the mating edge of the front wall of said hinged lid portion via a detachment line located opposite to the first tab fold



line, wherein said tab is folded about the detachment line such that the front tab panel is in face- to-face contact with an inner side of the front wall of said hinged lid portion and wherein said tab is folded about the first tab fold line such that the top tab panel is in face-to-face contact with an inner side of the top wall of said hinged lid portion when said hinged lid portion is closed over the receptacle for containing cigarettes defined by said lower portion, wherein said tab is extendable from the mating edge of the front wall of said hinged lid portion and wherein said tab is detachable via the detachment line when said hinged lid portion is open.

5,363,956

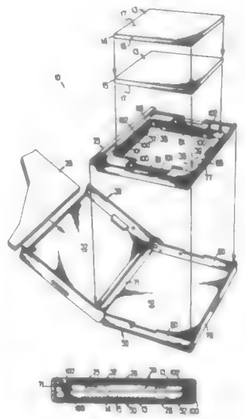
CONTAINER FOR PLURALITY OF STACKABLE OBJECTS

Yoshihiko Taniyama, 9380 Old Southwick Pass, Alpharetta, Ga. 30202

Filed Feb. 22, 1993, Ser. No. 21,476

Int. Cl.[5] B65D *85/30, 85/57*

U.S. Cl. 206—312 **16 Claims**



1. A receiving apparatus for use in a container for stackable objects, said receiving apparatus comprising:

a bottom surface; and

a plurality of protrusions coupled to said bottom surface for securing the stackable objects, wherein each said protrusion is laterally resilient for accepting stackable objects which are vertically placed into said receiving apparatus and further includes;

a vertical bottom portion having a first end and a second end, wherein said first end is integrally formed to said bottom surface, and

a top portion for engaging an uppermost stackable object, wherein said top portion is formed on said second end and includes a thickness greater than a thickness of said bottom portion.

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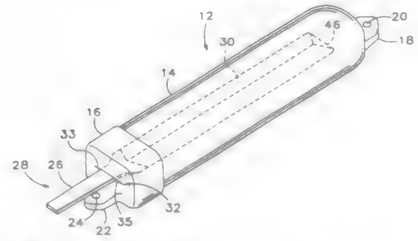
TOOL HOLDER

Patrick E. Reichner, Gladstone, Oreg., assignor to Adventures Northwest Ltd., Gladstone, Oreg.

Filed Jul. 26, 1993, Ser. No. 98,131

Int. Cl.[5] A45C *11/26*

U.S. Cl. 206—349 **20 Claims**



1. A tool holder, comprising:

a unitary piece of flexible molded material formed into a cover having front and back walls joined together by side walls; the front, back and side walls each having a bottom end joined together by an end section thereby defining an elongated water impervious cavity open at a top end; and

two compressible retainer sections extending substantially the entire length of the cavity and sized larger than the cavity so that said retainer sections when inserted inside the cover cavity are held together in constant compression solely by force of the front and back walls of the cover independent of external forces, the retainer sections having opposed inside faces for holding a tool inserted therebetween.

5,363,958

BLADE ARMING CARTRIDGE

Robert T. Horan, Northridge, Calif., assignor to Devon Industries, Inc., Chatsworth, Calif.

Filed Apr. 14, 1993, Ser. No. 48,463

Int. Cl.[5] B65D *83/10*

U.S. Cl. 206—356 **13 Claims**

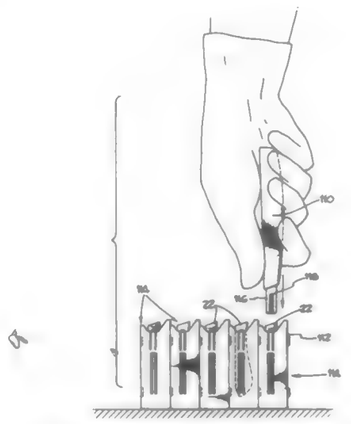
1. A tool arming cartridge for holding a blade and facilitating mounting of the blade onto a tool handle having a blade supporting portion, the blade defining an opening adapted to receive the blade supporting portion, the tool arming cartridge comprising:

a housing defining an interior and an open longitudinal end;

blade engaging means, associated with the interior of the housing and movable between an engaged position and a disengaged position, for releasably engaging the opening in the blade; and

biasing means for biasing the blade engaging means into the engaged position;

wherein the blade engaging means are reoriented from the engaged position to the disengaged position when the



blade supporting portion of the tool handle is inserted into the open longitudinal end of the housing.

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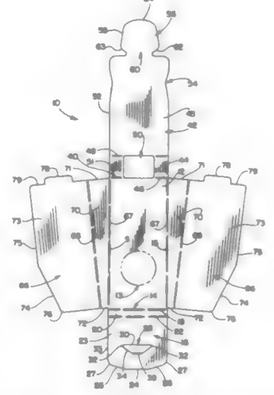
BRUSH KEEPERS

Everett A. Crosby, Homerville, and William P. Camp, Jr., Wooster, both of Ohio, assignors to The Wooster Brush Company, Wooster, Ohio

Filed Jan. 27, 1994, Ser. No. 187,348

Int. Cl.[5] B65D *75/14, 5/50*

U.S. Cl. 206—362.4 **24 Claims**



1. A brush keeper for housing the bristles and bristle holding portion of a brush comprising,

a main front panel dimensioned to cover a front face of the bristles and bristle holding portion of the brush,

lateral panels extending from opposite lateral side edges of said main front panel to be folded around opposite lateral sides of the brush and overlappingly cover a back face of the bristles and bristle holding portion,

an upper end panel extending from a top edge of said main front panel to be folded over a top of the bristle holding portion and extend over said lateral panels and the back face of the bristles and bristle holding portion, said upper end panel having a tapered locking tab extending from a distal end opposite said top edge of said main front panel, and

a lower end panel extending from a bottom edge of said main front panel to be folded around tips of the bristles and extend over the back face, said lower end panel having an aperture for receiving said locking tab whereby the keeper is secured about the brush by insertion of said locking tab into said aperture.

5,363,960

CONTAINER FOR MAGNETIC TAPE CASSETTE

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Landquart, Switzerland

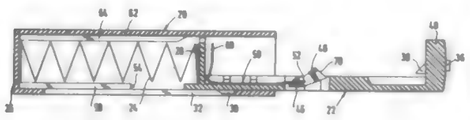
PCT No. PCT/EP92/01226, § 371 Date Feb. 11, 1993, § 102(e) Date Feb. 11, 1993, PCT Pub. No. WO92/22899, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 3, 1992, Ser. No. 988,124

Claims priority, application Germany, Jun. 19, 1991, 4120280; Sep. 26, 1991, 4132135

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387 **10 Claims**



1. A device having at least one cassette receiving compartment for storing two types of magnetic tape cassettes, a first type of magnetic tape cassette having accessible tape reels and a second type of magnetic tape cassette having inaccessible tape reels, said compartment being capable of receiving for storage only one of said cassettes at any one time, said device comprising:

a substantially parallelepipedic housing part having an opening;

a cassette transporter part reciprocable relative to said housing part through said housing part opening, said parts defining said at least one cassette receiving compartment;

a displaceable sensor mounted on one of said parts for sensing which of said first and second cassette types said one of said cassettes is;

an elastic member for biasing said sensor into a sensing position;

blocking members responsive to said sensor for assuming a first position when said sensor senses that one of said first type of magnetic tape cassette is received for storage in said compartment, and assuming a second position when said sensor senses that one of said second type of magnetic tape cassette is received for storage in said compartment; whereby:

when one of said first type of magnetic cassette is received for storage in said compartment, said blocking members in said first position engage into said accessible tape reels, and when one of said second type of magnetic tape cassette is received for storage in said compartment, said blocking members remain in said second position out of engagement with said one of said second type of magnetic tape cassette.

5,363,961

DEVICE FOR STORING MAGNETIC TAPE CASSETTES

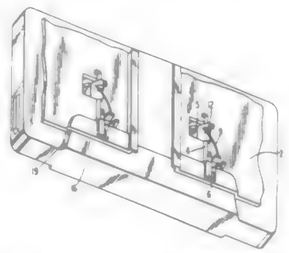
Torsten Bieck, Dornstetten/Hailwangen; Eduard Kaupp, Salzstetten; Christoph Stephan, deceased, late of Sindelfingen by Dorothea Stephan, heir ; Otto Stephan, heir, and Isle Stephan, heir, both of Böblingen-Dagersheim, all of Germany, assignors to fischerwerke, Artur Fischer GmbH & Co. KG, Waldachtal/Tumlingen, Germany

Filed Jun. 11, 1993, Ser. No. 75,818

Claims priority, application Germany, Jun. 12, 1992, 4219232

Int. Cl.[5] B65D *85/672; G11B 23/023*

U.S. Cl. 206—387 **3 Claims**



1. A device for storing magnetic tape cassettes, comprising locking members engageable with two tape reel hubs of a compact cassette; a supporting surface on which the compact cassette is placed in the device; spring means against which said locking members are pivotable into a locking position for locking the tape reel hubs; a recess with actuating elements located in it and connected with respective locking members to pivot the latter into the locking position, said recess being formed so that an elevation on the inserted compact cassette projects into said recess and presses there against said actuating elements, and when the compact cassette is removed said locking members are lying below said supporting surface and said actuating elements being lifted from a base of said recess at most to a level of said supporting surface; a shaft having a first end from which said locking members associated with the tape reel hubs project laterally and another end from which said actuating elements project laterally and form an eccentric extension of said shaft, said locking member and said actuating element on said shaft being arranged so that they are offset relative to one another by an angle of 120°–180°; a slide member on which said locking members, said actuating elements and said recess are arranged; a housing, said slider member being arranged to be pushed out of said housing into a removal position and having a top side which forms said supporting surface for a compact cassette or a digital cassette to be stored in the device, said shaft having a projection which projects radially from it, said spring means including a prestressed spring wire which has a root end fixed beneath said supporting surface, said spring wire having a free end acting on said projection of said shaft.

5,363,962

MULTIPACK FOR MAGNETIC TAPES WOUND ONTO HUBS

Jose Toral; Hermann Brandstetter, both of Munich; Gottfried Lutz, Seefeld; Hartmut Thiele, and August Liepold, both of Munich, all of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Division of Ser. No. 38,083, Mar. 29, 1993, abandoned, which is a continuation of Ser. No. 744,742, Aug. 14, 1991, abandoned.

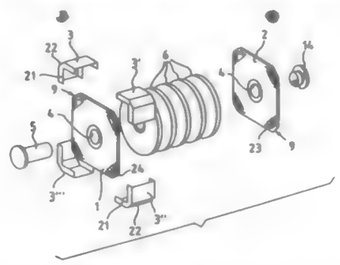
This application Aug. 30, 1993, Ser. No. 113,356

Claims priority, application Germany, Aug. 16, 1990, 4025906; Aug. 16, 1990, 9011867[U]

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—394 **5 Claims**

1. A parallelepipedal packaging container, defining an inner space, for a number of magnetic recording media wound-up onto hubs with each hub having a central bore, said container comprising a bottom part and a top part, each said part having a central opening, and a central support means, having one closed end with a protruding rim and one open end, for penetrating through said central openings of said bottom and top parts and said central bores of said number of wound-up recording media when being positioned one on top of the other between said bottom and top parts, said central support means accepting at its open end a fastening ring so that, when the central support means and fastening ring are fastened to each other, they hold the bottom and top parts and recording media hubs together, in which packaging container said bottom and top parts are square-form panels having four corners and said



central openings, and wherein means for peripherally holding together said number of wound-up recording media and said bottom and top parts are provided, comprising four identically shaped container side parts, each side part consisting of two legs of an orthogonal open angle with an edge where the legs join, and each of the two legs being provided with upper and lower tabs extending perpendicular to said leg and in parallel to the bottom part and top parts, said four side parts having a width corresponding to the height of said assembled packaging container and, after being pushed with said tabs of their legs over the bottom and top parts with said magnetic recording media between them, holding the packaging container together peripherally.

5,363,963

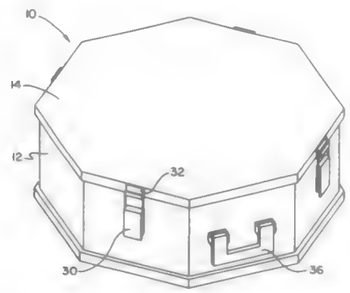
DEVICE FOR STORING PHOTOS

Tracy L. Allen, 6101 Ivy Glen Dr., Arlington, Tex. 76017

Filed Oct. 18, 1993, Ser. No. 137,428

Int. Cl.[5] B65D *85/00, 45/16*

U.S. Cl. 206—425 **3 Claims**



1. A container system for the storage of photographs and like articles comprising, in combination:

a container having a lower wall in an octagonal configuration with upstanding rectangular side walls;

a cover having an octagonal configuration of a size and shape to overly the container and seal it;

a plurality of similarly sized and shaped octagonal support plates, each with eight similar linear segments, each of the segments having a pair of spaced, upstanding pins, the plates adapted to overlie each other in a stacked orientation within the container;

a plurality of books of transparent sheets to receive photographs, each book having a spine coupling the sheets, each spine having spaced apertures receivable upon a pair of pins whereby eight books may be positioned and coupled to the pins of the eight segments of each support plate; and a plurality of locking posts equal in number to the segments, each locking post being of a size and shape to correspond to the segments, each locking post having a pair of recesses adjacent to its ends to receive the pins with the spine of a book therebetween.

5,363,964

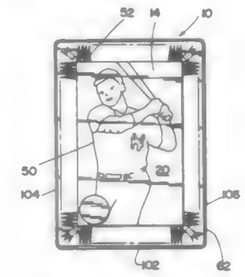
EMBOSSED METAL TRADING CARD AND CONTAINER THEREFORE

Peter K. Hexter, Jr., Wilmington, N.C., assignor to CUI, Inc., Wilmington, N.C.

Filed Sep. 14, 1993, Ser. No. 121,267

Int. Cl.[5] B65D *85/48; G09F 1/12*

U.S. Cl. 206—449 **11 Claims**



1. A metallic trading card comprising:

a generally rectangular metal substrate having a front side, a rear side, a main portion, four edge marginal portions terminating in respective substrate edges, four corner marginal portions, said edge marginal portions and said corner marginal portions surrounding said main portion and sharing respective boundaries with said main portion, and substrate indicia on said front side;

an insert sheet adjacent said rear side, said insert sheet having an indicia side facing away from said rear side with insert sheet indicia thereon;

said edge marginal portions and said corner marginal portions being rolled towards said rear side such that said substrate edges contact said indicia side of said insert sheet so as to retain said insert sheet in position; and

said rolled edge marginal portions and said rolled corner marginal portions together defining a continuous bead around the periphery of said card without any exposed sharp edges.

7. A boxed set comprising:

a plurality of metallic trading cards, each orientable so as to have a lower edge and two side edges, and each of said metallic trading cards comprising

a generally rectangular metal substrate having a front side, a rear side, a main portion, four edge marginal portions terminating in respective substrate edges, four corner marginal portions, said edge marginal portions and said corner marginal portions surrounding said main portion and sharing respective boundaries with said main portion, and substrate indicia on said front side,

an insert sheet adjacent said rear side, said insert sheet having an indicia side facing away from said rear side with insert sheet indicia thereon,

said edge marginal portions and said corner marginal portions being rolled towards said rear side such that said substrate edges contact said indicia side of said insert sheet so as to retain said insert sheet in positions, and

said rolled edge marginal portions and said rolled corner marginal portions together defining a continuous bead around the periphery of said card without any exposed sharp edges; and

a storage tin for said trading cards, said storage tin including a generally rectangular receptacle having a bottom and four upright sides; a cover for said receptacle; a lower card support member in said receptacle on the bottom thereof, said lower card support member having a plurality of channels for receiving the lower edges of said trading cards; and a pair of side card support members in said receptacle along two opposite sides thereof, said side card support members having corresponding pluralities of channels for receiving the side edges of said trading cards.

5,363,965

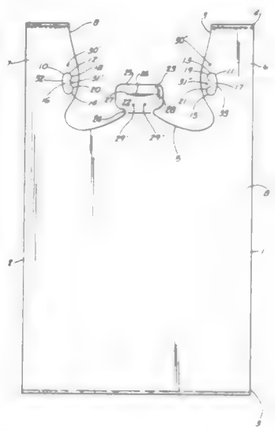
SELF-OPENING THERMOPLASTIC BAG SYSTEM

Tai H. Nguyen, 83 Monterrey Dr., Kenner, La. 70065

Filed Sep. 20, 1993, Ser. No. 124,278

Int. Cl.[5] B65D *33/14*

U.S. Cl. 206—554 **5 Claims**



1. A thermoplastic bag pack having first and second sides and bottom and top ends, said bag pack comprising a plurality of stacked, aligned bags, each of said bags comprising:

a bag mouth (5) having opposing ends and a medial area;

first (7) and second (6) handles emanating from said bag mouth, each of said handles having an upper end, a lower end, an inner side edge (8,9), and a medial area therebetween; each of said handles further having a handle support cut (10, 11) formed in the medial area of said handles;

said bag pack further comprising first and second punch stamps formed in each of said first and second handles, said first punch stamp formed between said upper end of said handle and said handle support cut, said second punch stamp formed in the medial area of said handle, generally adjacent to the handle support cut formed in said handles;

said first and second punch stamps formed by first and second punches, each having a tip including a plurality of linear punch members tapered to a generally linear, relatively blunt intersection formed at the general center of the punch.

5. The method of dispensing individual bags from a bag pack on a rack by a user, the rack having first and second somewhat horizontally situated handle support members, and a tab support member, comprising the steps of:

a. providing a bag pack comprising a plurality of stacked bags, said bag pack further comprising binding means for releasably binding said bags to one another in stacked fashion, forming said pack, each of said bags having front and rear walls, first and second sides and bottom and top ends, each of said bags further comprising:

a bag mouth (5) having opposing ends and a medial area;

first (7) and second (6) handles emanating from said bag mouth, each of said handles having an upper end, a lower end, an inner side edge (8,9), and a medial area therebetween; each of said handles further having a handle support cut (10, 11) formed in the medial area of said handles;

a tab having a top edge, said tab emanating from said bag mouth, said tab comprising a bulbous section having formed therein a generally linear tab cut, forming a rupture zone;

said tab cut and said handle support members configured to cooperate in supporting said thermoplastic bag pack on said rack, said tab cut configured to accept the tab support member of the rack in such a fashion as to support the bag mouth, said handle support cut of each of said first and second handles configured to spread and accept the first and second handle support members of the rack, respectively;

said binding means further comprising first and second punch stamps formed in each of said first and second handles, in both the front and rear walls of each bag in said pack, said first punch stamp formed between said upper end of said handle and said handle support cut, said second punch stamp formed in the medial area of said handle, generally adjacent to the handle support cut formed in said handles;

said first and second punch stamps formed by first and second punches, respectively, each of said punches having tips comprising a plurality of linear punch members tapered to a generally linear, relatively blunt intersection formed at the general center of the punch;

said first and second punch stamps partially melding the rear wall of the lead bag on said bag pack with the front wall of a next bag on said stack;

b. spreading the handle support cut of each of said first and second handles or each of said bags in said bag pack to form a handle opening for each of said first and second handles;

c. directing the handle opening of the first handle of each of said bags in said bag pack about the first handle support member, supporting said first handle on the rack;

d. directing the handle opening of the second handle of each of said bags in said bag pack about the second handle support member, supporting said second handle on the rack;

e. directing the tab cut of said tab of each of said bags in said bag pack about the tab support member, supporting said tab on the rack;

f. dispensing a bag, comprising the steps of pulling the front wall of the lead bag away from the rack, spacing said front wall of said bag in a spaced, removed position relative the rear wall of said bag, opening said bag mouth;

g. loading said lead bag with goods;

h. grasping the handles of the lead bag, and directing same away from the rack;

i allowing the partially melded bag walls formed in the rear wall of said lead bag to pull the front wall of the next bag on the pack away from the pack, as the user pulls the front wall of the lead bag away from the rack, such that front wall of said next bag is separated from the rear wall, and said next bag is dispensed in an open position;

j. separating the partially melded rear wall of the lead bag on said bag pack from the front wall of a next bag on said stack as the lead bag is removed from said rack.

5,363,966

APPARATUS FOR ATTACHING ARTICLES TO A PLASTIC BAG WALL

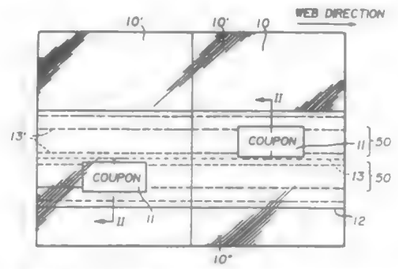
Norberto Czech, and Robert Lauzon, both of Montreal, Canada, assignors to Glopak Inc., Montreal, Canada

Division of Ser. No. 969,371, Oct. 30, 1992, Pat. No. 5,290,391.

This application Oct. 12, 1993, Ser. No. 134,735

Int. Cl.[5] B65D *69/00*

U.S. Cl. 206—554 **4 Claims**



1. A plastic bag bundle comprising a plurality of juxtaposed flat plastic bags, each bag having a front and rear wall panel and a mouth opening for inserting one or more articles in said bag, at least one flat article retained captive in one of said front and rear panels, said bundle being formed of bags having said flat article in some of said bags disposed offset from said flat article in others of said bags, said bags with said offset flat article being interposed in a predetermined sequence with said others of said bags so as to form a bundle having a generally constant thickness in the area of said juxtaposed panels.

5,363,967

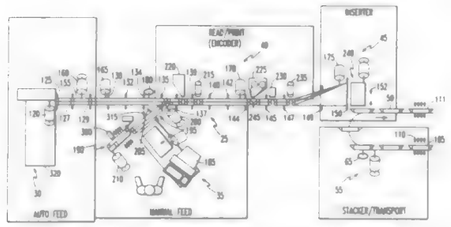
MODULAR MAIL PROCESSING METHOD AND CONTROL SYSTEM

David J. Tilles, Baltimore; Frank J. San Miguel, Catonville; Thomas F. Grapes; Diane L. Deemer, both of Columbia; Stanley K. Wakamiya, Ellicott City; James D. Mullenix, Elkridge; Mark W. Westerdale, Millersville, and David Bialik, Towson, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 742,751, Aug. 9, 1991, abandoned. This application Sep. 23, 1993, Ser. No. 126,137

Int. Cl.[5] B07C *5/00*

U.S. Cl. 209—539 **22 Claims**



1. A method of processing pieces of mail in a system including a stacker module having a number of carriers and bins, a plurality of serially connected induction transfer modules, including a feeder module, that are positioned to transport the pieces of mail from the feeder module to the stacker module, the method comprising the sequentially performes steps of:

(a) monitoring the position of each carrier;

(b) pre-selecting an empty carrier;

(c) feeding a piece of mail from the feeder module to another induction transfer module at a desired time based on the position of the pre-selected carrier;

(d) tracking the position of the piece of mail through the induction transfer modules;

(e) obtaining address information from the piece of mail;

(f) selecting a bin for the piece of mail based on said address information;

(g) transferring the piece of mail from a last induction transfer module to the pre-selected carrier; and

(h) diverting the piece of mail from the pre-elected carrier to the selected bin.

5,363,968

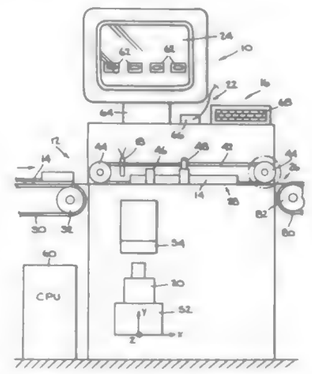
AUTOMATIC BLISTER INSPECTION SYSTEM

Sabrie B. Soloman, Ridgewood, N.J., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,098

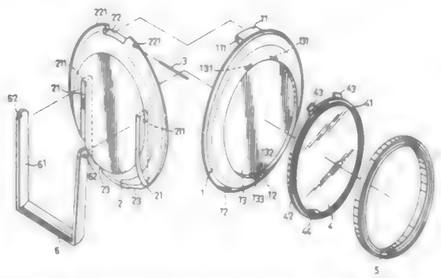
Int. Cl.[5] B07C *5/00;* **G01B** *11/00*

U.S. Cl. 209—546 **22 Claims**



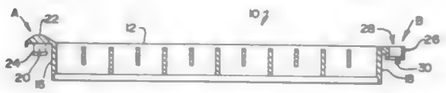
1. An automatic vision blister inspection system for inspecting a blister and product included within the blister comprising an inspection station; a delivery conveyor for delivering blisters seriatim to said inspection station; a discharge conveyor for removing the blisters away from said inspection station; transport means for transporting the blisters though said inspection station from said delivery conveyor to said discharge conveyor, said transport means comprising a pair of spaced rails for supporting each monitored blister; a sensor in said inspection station directed at the path of travel of the blister on said transport means for detecting the moving blister; a high speed camera system in said inspection station activated by said sensor for capturing a picture of the blister, said high speed camera comprising a frame grabber camera, and said high speed camera being mounted on a support capable of moving in the X and Y and Z directions; and monitor means for monitoring the characteristics of the blister in said picture, said monitor means including computer means for determining quantitative and qualitative characteristics of the blister by analyzing said picture of the blister captured by said high speed camera system and comparing said quantitative and qualitative characteristics to nominal quantitative and qualitative characteristics for the blister.

5,363,969
COMBINED COSMETIC CASE AND PICTURE STAND
Wen-Chang Shen, Tainan City, Taiwan, Prov. of China, assignor to Mei Shuai Cosmetics Co., Ltd., Tainan City, Taiwan, Prov. of China
Filed Aug. 3, 1993, Ser. No. 100,973
Int. Cl.[5] A45D *42/02*; B65D *69/00*
U.S. Cl. 206—581 4 Claims



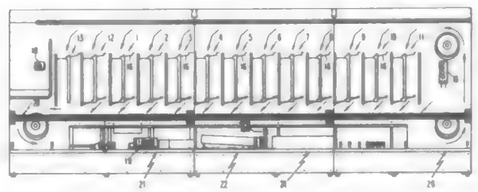
1. A combined cosmetic case and picture stand, comprising first and second cosmetic casing halves which are hinged to one another and which are provided with a catch means for retaining releasably said first and second cosmetic casing halves in a closed position, said first cosmetic casing half having an outer side which is formed with a central recess for receiving a picture therein, said outer side of said first cosmetic casing half having an inner periphery which confines said central recess and which is formed with a radial insert hole and a fastening groove, said second cosmetic casing half having an inner side which confines a space for receiving cosmetics therein and an outer side which is formed with a groove unit;
a transparent pane member having a shape which corresponds to that of said central recess, said pane member being received in said central recess and being formed with a peripheral frame unit that is mounted detachably to said outer side of said first cosmetic casing half, said frame unit of said pane member being provided with a radial insert projection that extends into said insert hole and a fastening unit that engages releasably said fastening groove; and
a stand member mounted pivotally to said outer side of said second cosmetic casing half, said stand member being movable between a first position, wherein said stand member is received in said groove unit, and a second position, wherein said stand member forms an angle with said outer side of said second cosmetic casing half.

5,363,970
SCREENING ARRANGEMENT
Manfred F. A. Freissle, 15 Oak Ave., Oakdene, Johannesburg, Transvaal Providence, South Africa
Filed Aug. 25, 1993, Ser. No. 111,604
Int. Cl.[5] B07B *1/46*
U.S. Cl. 209—399 9 Claims



1. A sieve bend panel which is of a synthetic plastics material and which has a screening surface and a plurality of sides and which further has fastening means along two of its sides, the fastening means being complementary to each other so that fastening means on similar panels placed adjacent to the panel can engage with the fastening means on the two sides to thereby locate the panels side-by-side and to fasten the panels to each other, the fastening means including interengageable protrusions and sockets, the protrusions being provided along one. Side of the panel and the sockets being provided on another side of the panel so that the protrusions on one panel are engageable with the sockets on a similar adjacent panel, the protrusions being provided on spaced formations projecting from the periphery of the panel and the sockets being provided in spaced formations projecting from the periphery of the panel.

5,363,971
AUTOMATIC CARRIER SEQUENCE BAR CODE SORTER
Horace W. Weeks, Towson; James J. Strohmeyer, Hampstead, and Jeffrey R. Nice, Sykesville, all of Md., assignors to United States Postal Service, Washington, D.C.
Filed Oct. 16, 1992, Ser. No. 961,980
Int. Cl.[5] B07C *5/00*; B65H *5/22*
U.S. Cl. 209—584 24 Claims

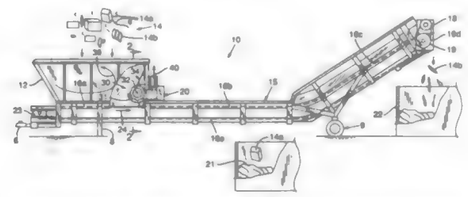


1. A document sorting machine for sorting documents to at least 1000 different stops and arranging said documents in a predetermined sequence comprising:
11 vertical stacker elements, each element having a top and a bottom and adapted to receive documents through the top, form a stack therein and dispense documents from the bottom either sequentially or simultaneously; feed transport means communicating with the bottom of each stacker for receiving a flow of documents therefrom; singulator and leveler means intercepting said flow for spacing each individual document from adjacent documents to form a singular flow and for orienting each of said documents in a predetermined configuration;
reader means for reading indicia on each document and relating the same to the predetermined sequence; and top conveyor means for conveying each document from the reader to the corresponding stacker for admission thereto; and means for cycling said documents a total of three times through said machine until said documents are arranged in said sequence each of said stacker elements mounting a paddle therein which is adapted to support a stack thereon as the stacker fills and to deposit said stack at the bottom of said stacker said paddle having an upper document supporting surface with three coplanar sections disposed at an acute angle to the horizontal with two intermediate substantially horizontal sections to form a zig-zag profile said machine further comprising means for withdrawing said paddle horizontally from said filled vertical stacker and for translating said paddle vertically upwardly and then horizontally into said stacker to receive a new stack of documents.

5,363,972
CONVEYOR APPARATUS WITH POWERED LEVELING ROLL
Larry J. Gilmore, 17555 SE. Braden Ct., Gladstone, Oreg. 97027
Filed Feb. 14, 1992, Ser. No. 836,794
Int. Cl.[5] B07C *7/04*
U.S. Cl. 209—705 21 Claims

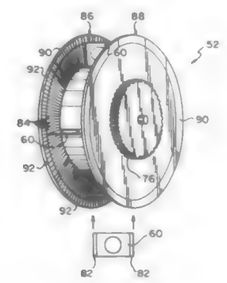
1. A composite material processing conveyor arrangement comprising:

a body of composite material of given condition comprising components of different size and shape and composition;
a collection bin having an output gate, the bin receiving and holding said body of composite material therein;
a conveyor belt defining a floor of the collection bin and moving in a forward direction from within the collection bin, toward the output gate, through the output gate, defining a manual hand picking station exterior of the bin, and continuing to a dumping point whereby said body of composite material may be deposited in the bin and passed



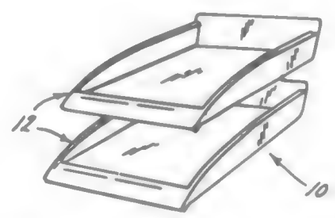
through the manual hand picking station whereat undesirable elements may be manually separated from desirable elements, one of said undesirable elements and said desirable elements continuing to the dumping point for deposit in an output bin; and
metering apparatus at said output gate for controlling a flow of the body of composite material through said gate in response to said belt forward movement, said metering apparatus being non-destructive and substantially maintaining said given condition of said composite material in said flow.

5,363,973
TEST SAMPLE CHANGER
Christopher Sieg, 96 W. Main St., Hillsborough, N.H. 03244
Division of Ser. No. 704,088, May 22, 1991, Pat. No. 5,297,922.
This application Dec. 30, 1993, Ser. No. 175,746
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—41 4 Claims



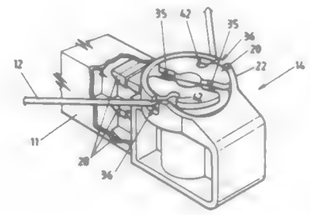
1. An annular cassette for receiving a plurality of standardized objects, comprising:
substantially parallel annular planar members having positions provided thereon radially disposed from an axis, for receiving opposite edge portions of said standardized objects;
a locking ring disposed on one of said annular planar members and rotatable relative thereto having a first position for retaining said standardized objects within said cassette and a second position releasing at least a plurality of said standardized objects.

5,363,974
STACKABLE DESK TRAY ASSEMBLY
Eric P. Chan, New York, N.Y., assignor to American Trading and Production Corporation, Baltimore, Md.
Continuation of Ser. No. 814,282, Dec. 26, 1991, Pat. No. D. 335,505, Ser. No. 814,278, Dec. 26, 1991, Pat. No. D. 335,504, Ser. No. 814,284, Dec. 26, 1991, Pat. No. D. 335,684, Ser. No. 814,914, Dec. 26, 1991, Pat. No. D. 340,068, Ser. No. 814,285, Dec. 26, 1991, Pat. No. D. 336,753, Ser. No. 814,277, Dec. 26, 1991, Pat. No. D. 335,895, Ser. No. 814,919, Dec. 26, 1991, Pat. No. D. 337,618, Ser. No. 814,918, Dec. 26, 1991, Pat. No. D. 341,077, and Ser. No. 814,279, Dec. 26, 1991, Pat. No. D. 349,234. This application Dec. 18, 1992, Ser. No. 992,786
Int. Cl.[5] A47F *3/14*
U.S. Cl. 211—128 24 Claims



1. A stackable tray assembly comprising:
a first tray including a bottom wall having connection means,
a second tray disposed above the first tray including a bottom wall having connection means, and
a first U-shaped bracket including a bottom leg, a top leg and a bight portion,
1) said bottom leg having connection means cooperating with the connection means of said first tray to connect said bottom leg to said first tray,
2) said top leg having connection means cooperating with the connection means of the second tray to connect said top leg to said second tray, and
3) said bight portion selectively spacing said second tray above said first tray said bight portion being disposed at one end only of said trays to provide clear access at the other end of said trays,
said first and second trays having a front end and a rear end and said bottom and top legs of said first bracket extending from said rear end toward said front end of said connected trays.

5,363,975
CLOTHES DRYER LINE TENSIONING DEVICE
Ronald G. Meade, Seaton, Australia, assignor to Hills Industries Limited, Edwardstown, Australia
Filed Jan. 25, 1993, Ser. No. 8,456
Claims priority, application Australia, Jan. 24, 1992, PL0544
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—197 11 Claims



1. A clothes dryer having adjustable line tension, comprising:
at least two frame members,

a line extending between said frame members that is fixed at least to one location on one said frame member,

a plurality of line guide members located on at least each of said frame members other than said one said frame member, which line guide members substantially hold said line with respect to each said frame member and allow said line to extend between said frame members at intervals spaced along said frame members, but which allow longitudinal movement of said line therethrough, and

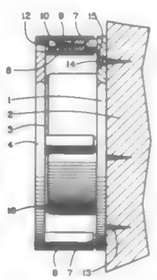
at least one tensioning means engaging said line so as to shorten its length thereby creating a desired tension in said line.

5,363,976

SMOKE DETECTOR SECURITY COVER

John J. Kapka, 1191 Creekwood Cove, Lawrenceville, Ga. 30245

Filed Mar. 1, 1994, Ser. No. 204,625
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—3.8 **23 Claims**



1. A smoke-detector security cover comprising:

a toroidal base plate attachable to an internal surface of a room at a position surrounding a smoke detector on an internal surface of the room;

a toroidal cover plate having a plurality of retainer appendages extended inward radially from the toroidal cover plate to positions at which select portions of the retainer appendages cover select portions of the smoke detector circumferentially external from a central smoke-detection section of the smoke detector;

a plurality of attachment rods extended perpendicularly from the toroidal base plate a select distance relative to positioning of the toroidal cover plate;

a plurality of attachment sleeves extended perpendicularly from the toroidal cover plate a select distance relative to positioning of the toroidal base plate;

the plurality of attachment rods and the plurality of attachment sleeves being sized, shaped and positioned for fitting of one each of the plurality of attachment rods in sliding contact with an inside periphery of one each of the plurality of attachment sleeves telescopically; and

an anti-theft locking means in locking relationship between at least one of the plurality of attachment rods and at least one of the plurality of attachment sleeves.

5,363,977

PORTABLE BARBECUE AND COOLER CARRYING APPARATUS

Murray Hoff, 224 San Benancio Rd., Salinas, Calif. 93908

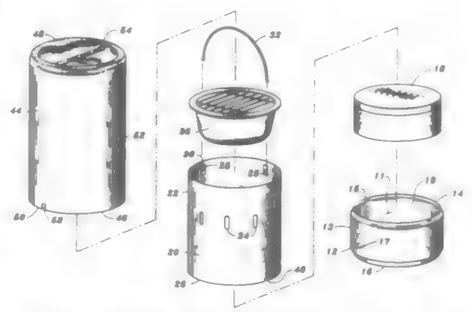
Continuation-in-part of Ser. No. 850,907, Mar. 13, 1992, abandoned. This application Oct. 28, 1993, Ser. No. 145,027
Int. Cl.[5] A47J *37/07*
U.S. Cl. 220—4.27 **4 Claims**

1. A combined barbecue and cooler carrying apparatus allowing for safe, clean, and minimal environmental impact barbecues and picnics, comprising:

a hollow base element including a cup-shaped cooler removably connected thereto;

an essentially tubular central housing member removably secured to said hollow base element and including means for removably supporting a barbecue kettle within said tubular central housing member; and

a cover element removably connected to said hollow base



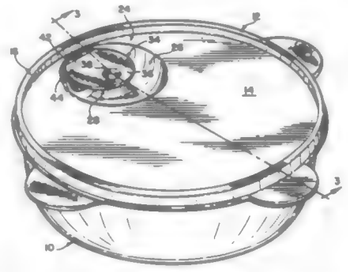
element including handle means secured to said cover element for transporting said combined barbecue and cooler carrying apparatus; said cover element includes a plurality of notches in a wall thereof to receive and secure a plurality of studs on the base element.

5,363,978

SEAL WITH VENT

Nicholas J. Molo, Kissimmee, Fla., assignor to Dart Industries Inc., Deerfield, Ill.

Filed Jul. 9, 1993, Ser. No. 86,561
Int. Cl.[5] B65D *51/18*
U.S. Cl. 220—254 **12 Claims**



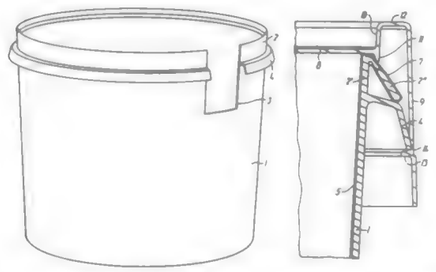
1. A vented seal for a container, said seal comprising a panel having an outer face and an inner face, a vent hole defined through said panel between said outer and inner faces, a portion of said panel laterally adjacent said hole being depressed inwardly relative to said outer face and defining an outwardly opening recess, a reclosable cover for said vent hole, means for releasably retaining said cover in a closed position overlaying and closing said hole, said cover being outwardly releasable from said closed position, said cover, in said closed position, extending laterally beyond said hole and partially overlaying said recess, said recess, beyond said cover, providing access to said cover inward thereof for manual engagement with and outward release of said cover, and said cover including an outer surface which, in said closed position, is in substantially a common plane with said outer face of said seal panel, means hingedly mounting said cover to said seal panel for pivotal movement toward and away from said closed position, said recess being substantially annular with said hole defined generally centrally thereof and at a level inward of said outer face of said seal panel.

5,363,979

CONTAINER HAVING A LOOSE INNER LINING

Holger Thorso, Esbjerg, Denmark, assignor to Superfos Emballage A/S, Vipperod, Denmark

PCT No. PCT/DK92/00083, § 371 Date Jul. 22, 1993, § 102(e) Date Jul. 22, 1993, PCT Pub. No. WO92/16421, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 16, 1992, Ser. No. 90,186
Claims priority, application Denmark, Mar. 19, 1991, 0493/91
Int. Cl.[5] B65D *25/16*
U.S. Cl. 220—404 **3 Claims**



1. A container for paint and solvents comprising: a circular container of a resiliently deformable plastics material, an inner lining in the form of a bag of plastics material having barrier properties to protect the plastic container against the influences from its contents being placed in the container, the container close to an upper circumference thereof being provided on an outside thereof with a flange of plastics material and moulded in one piece with the plastics container, and a resiliently deformable plastic lid secured to the container, wherein

a portion of a side wall of the container protruding above the flange is divided into two portions, a first portion and a second portion, by a folding and bending arrangement, the first portion forming an unbroken extension of the side wall of the container, whereas the second portion bends outwardly and downwardly towards an upper edge of the flange due to the bending arrangement to abut on the upper edge of the flange,

at a top thereof the side wall of the container is provided with a cut-out which ensures a sufficient extra resiliency of the second side wall portion, and the bag has a sufficient length to bend outwardly and downwardly together with the second portion towards the upper edge of the flange, thereby causing a ring tension in the second portion and in the portion of the bag which bends with the second portion of the side wall, the ring tension contributing in securing the bag portion around the second wall portion.

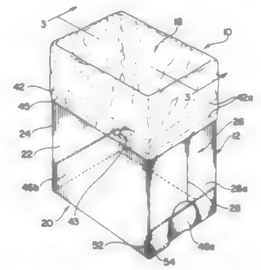
5,363,980

COMBINATION DISPOSABLE WASTE CONTAINER

Stephen J. Mulcahy, 115 Norfolk St., Cranston, R.I. 02910

Filed Sep. 22, 1993, Ser. No. 124,584
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—404 **8 Claims**

1. A combination disposable package comprising a substantially rigid yet foldable outer container shell having a stack of a plurality of collapsible nested bags attached thereto and in turn disposed for serial detachment therefrom, said outer shell having a pair of opposed primary panels interconnected along vertically oriented primary fold lines to a pair of secondary sides panels each in turn having a centrally disposed vertically oriented secondary fold line such that the shell can be substantially flattened upon itself in a storage position wherein the side panels are folded along said secondary fold lines and then unfolded to an open position wherein the shell defines an open upper top peripheral edge, said collapsible bags each having a closed body and an open upper lip, said bags nested together and interconnected to adjacent bags along a line at their upper lips to form a nested bag stack, said upper lips of said nested bag stack folded over said open upper top peripheral edge of said shell and the nested bodies of said bags disposed adjacent the inside surfaces of said shell panels such that trash may be placed into the body of the innermost bag of said nested stack



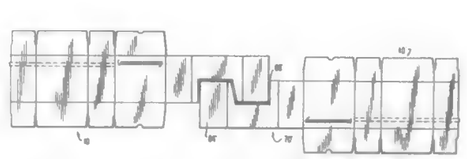
and then said innermost bag detached from the bag stack and serially disposed of until only said outermost bag and said shell remain as the combination package and may be disposed of as a unit said outermost bag permanently attached to said shell.

5,363,981

BRIDGED INTEGRAL LINER

Edward Giblin, Finksburg; Kymberly Moran, Baltimore, and Jeannine Griffiths, Reisterstown, all of Md., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,305
Int. Cl.[5] B65D *5/50, 5/56*
U.S. Cl. 220—416 **23 Claims**



1. An erected carton comprising a first side panel, a front panel adjacent thereto, a second side panel adjacent to the front panel and opposite the first side panel, a rear panel between said first and second side panels, bottom closure flaps, top closure flaps, a tear tape suitable for separating portions of the panels from each other and extending from at least said first side panel through said front panel to said second side panel, said tear tape not functionally traversing all of the rear panel, whereby said rear panel acts as a hinge when said tear tape is removed from said first and second side panels and said front panel, an integral liner including at least three walls, one of which is separated from one of said panels by a score line, at least one of said integral liner walls being in the shape of a rectangle or square having material excised therefrom to form an area of excision at a bottom edge thereof, a portion of the liner distal to said area of excision being at least 80% of the height of one of said carton panels.

5,363,982

MULTI-LAYERED INSULATED CUP FORMED OF ONE CONTINUOUS SHEET

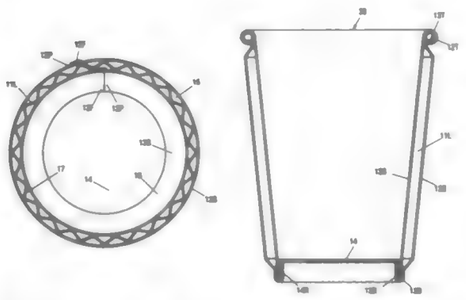
Claus E. Sadlier, 2295 Francisco St., #303, San Francisco, Calif. 94123

Filed Mar. 7, 1994, Ser. No. 206,716
Int. Cl.[5] B65D *3/22*
U.S. Cl. 220—441 **23 Claims**

1. A thermally insulated container, comprising:

a smooth outer shell,

a smooth inner shell concentrically positioned within said smooth outer shell,
a corrugated layer sandwiched between said smooth outer shell and said smooth inner shell, and
a bottom closure attached to a bottom portion of said smooth inner shell,



said smooth outer shell, said smooth inner shell, and said corrugated layer all formed of one continuous elongated sheet wound in a spiral,
whereby said smooth outer shell, said corrugated layer, and said smooth inner shell cooperate to define plural air pockets therebetween for providing thermal insulation for any material disposed within said container, yet said container is easy and economical to fabricate.

5,363,983

DETACHABLE CAP FOR DISPOSABLE CONTAINERS OF LIQUID

Mary-Elizabeth Proshan, Suite 194, 301 N. Harrison St., Princeton, N.J. 08540

Filed Apr. 7, 1994, Ser. No. 224,158
Int. Cl.[5] A47G *19/22*
U.S. Cl. 220—717 **8 Claims**



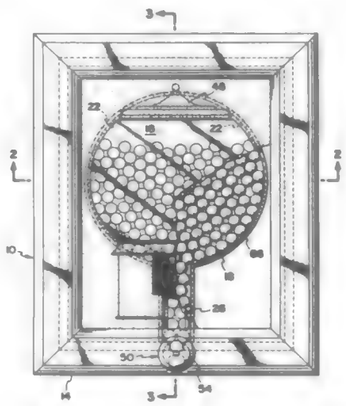
1. A cap for detachably enclosing an upper open end of a hollow vertical disposable container with liquid therein, the container having a closed lower end, said cap comprising:
a flat horizontal disc having first and second openings disposed in spaced apart positions therein, the first opening being a pin hole, the second opening being relatively large, the disc having a peripheral socket adapted to engage the periphery of the upper end of the container in such manner that liquid cannot flow out therebetween;
a hollow vertical hollow spout for delivery of said liquid, said spout tapering upwardly from the disc and having an open lower end coincident with said second opening, the spout having an open upper end, the upper end being smaller in area than the lower end; and
a member is disposed within the spout with an upper permanently open end having a constant area and coincident with the upper end of the spout, the member having walls which are immobile with respect to each other and which extend downwardly and inwardly from the upper end of the spout, the member having a lower end with at least one permanently open hole having a constant area therein, the lower end of the member being disposed intermediate the upper and lower ends of the spout;
the disc, spout and member constituting a single integral unit which when positioned in place on the container will not exhibit any substantial leakage of liquid when the liquid in the container surges therein because of sudden movement of the container or when the container is disposed horizontally on its side.

5,363,984

DISPLAY DEVICE HAVING AN ARTICLE DISPENSER THEREIN

Jesse D. Laird, III, Mapleton Depot, Pa., assignor to Gldrj Company, Georgetown,

Filed Jul. 23, 1993, Ser. No. 95,386
Int. Cl.[5] A24F *15/04*
U.S. Cl. 221—24 **10 Claims**



1. An article dispensing display device, comprising:
a) a picture frame;
b) an article-holding reservoir disposed substantially within said picture frame;
c) an article-dispensing chute associated with said picture frame; and
d) an article-metering device disposed between said article-holding reservoir and said article dispensing chute wherein the substantially flat configuration of the article dispensing display device is substantially contained within the picture frame.

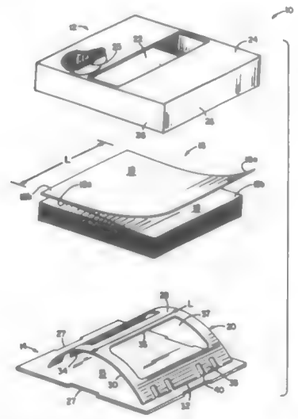
5,363,985

PAPER ARTICLE DISPENSER

Robert G. Cornell, 200 Crescent St., Duxbury, Mass. 02332

Continuation of Ser. No. 126,667, Sep. 21, 1993, abandoned, which is a continuation of Ser. No. 654,235, Feb. 12, 1991, abandoned. This application Mar. 28, 1994, Ser. No. 219,814
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—46 **44 Claims**

1. A paper article dispenser comprising
a housing for storing therein a stack of paper articles, said stack being having a generally rectangular shape and a selected width dimension, and
a spring for contacting and urging said stack toward an opening in said housing to facilitate removal of one of said paper articles through said opening, said spring comprising a layer of resilient material that is configured and positioned in said housing to lie substantially flat within said housing in a plane of said layer when fully compressed, said layer of resilient material including:
a pair of opposing arm portions having end regions that are spaced by a pair of opposing side portions to define a generally rectangular shape, said arm portions being configured to expand out of a plane of said layer to urge said stack toward said opening, and



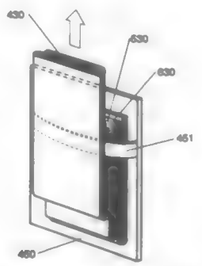
a band portion disposed between said arm portions at intermediate regions thereof, said band portion and said intermediate regions being configured to contact said stack over substantially the selected width thereof as said arm portions expand out of said plane.

5,363,986

PACKAGES FOR SINGLE-USE FOLDED TOWELS WHICH PROVIDE FOR UNFOLDING OF THE TOWEL UPON REMOVAL FROM THE PACKAGE

Charles D. Cook, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 35,346, Mar. 22, 1993, Pat. No. 5,328,053. This application Mar. 18, 1994, Ser. No. 215,066
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—63 **21 Claims**



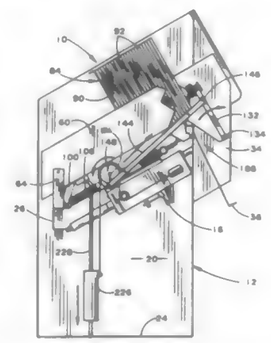
1. A flexible package for dispensing a folded sheet, said package comprising:
(a) at least one folded sheet, said sheet being first folded longitudinally to define a predetermined folded width and a first predetermined folded thickness and then folded laterally to define a predetermined folded length and a second predetermined folded thickness such that said sheet has longitudinal folds generally parallel to its length and lateral folds generally parallel to its width, said longitudinal folds and said lateral folds being generally orthogonal to one another, said second folded thickness being greater than said first folded thickness, said sheet further having a grasping portion for grasping by a consumer, said grasping portion extending lengthwise beyond a remainder of said sheet;
(b) a package formed of a thin, flexible material, said package entirely surrounding and containing said sheet, said package further having a front side and a back side, said package further having two opposing side edges, a bottom edge, and a dispensing edge opposing said bottom edge, each of said edges joining said front side and said back side, said dispensing edge being adapted to be opened by a consumer for access to said sheet, said dispensing edge and said grasping portion of said sheet being adjacent to one another; and
(c) said package further comprising a flexible bar formed of a flexible material, said flexible bar being disposed inside said package between said front side and said back side, said flexible bar being interleaved between said lateral folds of said sheet such that a portion of said sheet between said grasping portion and a first lateral fold is on an opposite side of said flexible bar from said remainder of said sheet, said flexible bar having a width which is smaller than said folded length, said flexible bar further having a length sufficient to fully extend from one of said side edges to the other of said side edges, said flexible bar being located up to about one-half of said folded length from said grasping portion toward said first lateral fold, and said flexible bar being firmly affixed to said side edges;
whereby when said consumer opens said dispensing edge said grasping portion of said sheet is presented for grasping, and whereby upon grasping said grasping portion and withdrawing said sheet from said package through said dispensing edge, said flexible bar automatically causes said lateral folds of said sheet to substantially unfold.

5,363,987

NEWSPAPER VENDING UNIT

Danny E. Crawford; Gene A. Hall; Dennis A. Jendro; Dennis P. Rolph; Danny L. Nelson, both of Charles City, Iowa; Paul D. Elst, Green Bay, Wis.; Gregory E. Erlandson, Brooklyn Center, Minn.; Jack T. Mowry, N.W. Ramsey, Minn.; Robert L. Neiss, St. Michael, Minn.; Craig K. Loebig, and Richard A. Helms, both of Elk River, Minn., assignors to Seven, Ltd., Charles City, Iowa

Filed Feb. 17, 1993, Ser. No. 18,778
Int. Cl.[5] G07F *11/00*
U.S. Cl. 221—195 **10 Claims**



1. A vending machine designed to be actuated by a user and dispense multiple copies of a publication one at a time, said machine comprising:
(a) a storage means adapted to temporarily store multiple copies of the publication in a face-to-face relationship and support the same in a generally upright orientation;
(b) a feeder assembly adapted to seize and transport the front most copy of the publication from said storage means and dispense such publication into a delivery chute, said feeder assembly includes a suction means located directly in front of the front most copy of the publication and including at least one suction cup for seizing said copy;

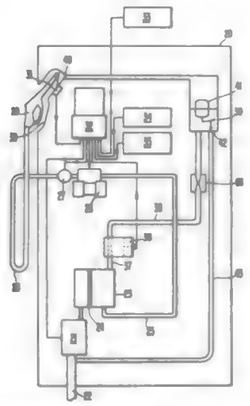
(c) means actuated by the user to initiate operation of the feeder assembly;
(d) an advancement means adapted to continuously urge the remaining copies of the publication forward in a manner so that each successive front most publication is in relatively the same position that the prior front most publication was in prior to being dispensed; and
(e) a release valve assembly associated with said suction cup to cause the suction cup to release said copy to dispense same.

5,363,988

FUEL DISPENSER CONTROLLED IN DEPENDENCE ON AN ELECTRICAL SIGNAL FROM A GAS DETECTOR OF THE DISPENSER

John E. Saxton, Ingatestone; Michael L. Jennings, Billericay; Jack F. Bartlett, Mayland; James R. Dormer, Rochford, and Peter D. G. Massingberd-Mundy, Billericay, all of United Kingdom, assignors to Gilbarco Limited, Essex, United Kingdom

Continuation-in-part of Ser. No. 940,243, Sep. 8, 1992, abandoned. This application Mar. 3, 1993, Ser. No. 26,452
Claims priority, application United Kingdom, Sep. 13, 1991, 9119605
Int. Cl.[5] B67D *5/30*
U.S. Cl. 222—14 **33 Claims**



1. A fuel dispenser comprising:
a gas detector for producing an electrical signal in dependence upon the presence of gas in fuel flowing through the chambers separated by a movable member, said first closed chamber having an inlet and an outlet, said second chamber being connected to said outlet by a passage, whereby fuel passing through said inlet and said outlet produces a reduction in pressure in said first chamber by the Venturi effect; and
processing means for receiving the electrical signal and controlling the dispensing of fuel at least in part in dependence upon the electrical signal received.

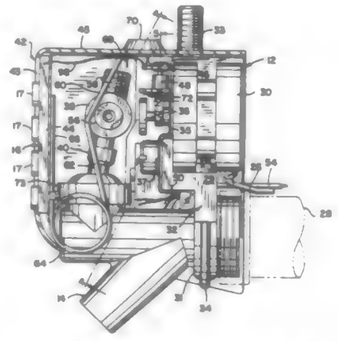
18. A method of dispensing fuel comprising producing an electrical signal in dependence upon the presence of gas in fuel flowing through a gas detector, processing the electrical signal and controlling dispensing of fuel at least in part in dependence upon the electrical signal received.

5,363,989

AUTOMATIC CONTROL APPARATUS FOR A BEVERAGE TAP

Paul Zeamer, Madison, and Delbert E. Lins, Spring Green, both of Wis., assignors to DEC International, Inc., Madison, Wis.

Filed Jul. 9, 1993, Ser. No. 89,010
Int. Cl.[5] B56D *5/30*
U.S. Cl. 222—16 **22 Claims**



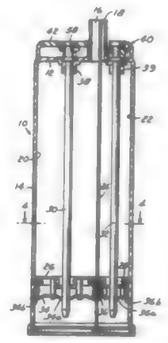
15. An apparatus for controlling a beverage tap comprising:
a base with a fastener for attaching to the beverage tap;
a pneumatically-operated cylinder mounted on said base and having a piston which when said cylinder is pressurized forces a lever of the beverage tap into an open position to cause a beverage to flow from the beverage tap;
a cover releasably attached to said base and extending around said base and said cylinder; and
a torsion spring attached to said cover for biasing the lever to close the beverage tap when said cylinder is not pressurized.

5,363,990

DUAL CHAMBERED PUMP PACKAGE FOR VISCOUS PRODUCTS

William E. Fillmore, Toledo, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Feb. 25, 1994, Ser. No. 201,589
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—135 **6 Claims**



1. A dual chambered pump for viscous products comprising
a plastic body having a top wall and a side wall,
said top wall having spaced discharge openings,
said body comprising spaced parallel cylinders,
a piston associated with each cylinder,
a piston rod associated with each piston,

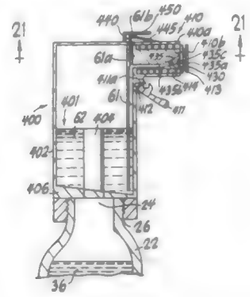
one way spring means between each said rod and its respective piston,
each said rod extending through the top wall of said body,
a plastic lever having a top portion and a side portion,
said top portion of said lever having integral means interengaging integral means on said top wall for pivotally mounting said top portion of said lever on said top wall of said body such that the side portion of said lever extends along the side wall of said body,
said top portion of said lever having integral means engaging integral means on said rod, and
spring means on said side portion of said lever engageable with the side wall of said body for urging said lever away from said body.

5,363,991

DEVICE FOR THE CONTROLLED MEASURING AND DISPENSING OF A FLUID

Mark E. Reyman, 246 Centre Ave., Apt. 5N, New Rochelle, N.Y. 10805

Division of Ser. No. 991,140, Dec. 16, 1992, Pat. No. 5,259,140, which is a continuation-in-part of Ser. No. 821,798, Jan. 16, 1992, Pat. No. 5,174,478, which is a division of Ser. No. 640,527, Jan. 10, 1991, Pat. No. 5,119,971, which is a continuation of Ser. No. 410,157, Sep. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 117,356, Oct. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 821,781, Feb. 7, 1986, abandoned. This application Nov. 2, 1993, Ser. No. 147,145
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—207 **8 Claims**



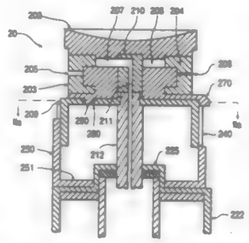
1. A device for dispensing measured quantities of liquid from a supply of same comprising, in combination:
a container having at least one flexible wall and a discharge opening;
a measuring means adapted to fit said discharge opening, said measuring means defining a measureing chamber adapted for dispensing therefrom a measured quantity of liquid held therein;
a fluid conduit tube disposed in communication with said discharge opening and said measuring chamber for conducting said liquid between said container and said measuring chamber;
nozzle support means defining a fluid exit orifice and affixed to the exterior of said measuring means;
a nozzle tip removable affixed to said nozzle support means;
said measuring means defining a conduit means extending from a location within said measuring chamber and extending to a valve opening formed in the exterior of said measuring means, said conduit means in fluid communication with said fluid exit orifice;
first valve means located within said fluid exit orifice for selectively sealing said orifice; and
second valve means adjacent said valve opening for selectively sealing said conduit means.

5,363,992

VARIABLE SPRAY AND DOSAGE PUMP

Philip Meshberg, 2770 S. Ocean Blvd., Apt. 602, Palm Beach, Fla. 33480

Filed Dec. 31, 1992, Ser. No. 999,331
Int. Cl.[5] B65D *47/34*
U.S. Cl. 222—309 **18 Claims**



1. A dispensing pump comprising:
a pump housing;
a pump piston slidably mounted for axially reciprocal movement in said pump housing, said pump piston comprising a piston flow passage;
a mounting cup connected to said pump housing, said mounting cup having an axially-outwardly facing stop surface; and
a dispensing actuator mounted to said pump piston, said dispensing actuator comprising:
a first spray nozzle and a second spray nozzle;
a first actuator flow passage leading to said first spray nozzle and capable of communication with said piston flow passage in one position of said dispensing actuator, and a second actuator flow passage leading to said second spray nozzle and capable of communication with said piston flow passage in another position of said dispensing actuator; and
an adjustable stop member movable to a plurality of positions, wherein in a first position of said stop member, downward movement of said dispensing actuator allows said pump piston to move axially inwardly in said pump housing a first predetermined distance before said adjustable stop member contacts said stop surface, and wherein in a second position of said stop member, downward movement of said dispensing actuator allows said pump piston to move axially inwardly a second predetermined distance before said adjustable stop member contacts said stop surface, said second predetermined distance being smaller than said first predetermined distance.

5,363,993

PLASTIC DISPENSER FOR LIQUIDS OR OTHER SUBSTANCES

Francesco Mascitelli, Pescara; Enrico Bonelli, Casalincontrada, and Berardinucci Donato, Pescara, all of Italy, assignors to SAR S.p.A., Italy

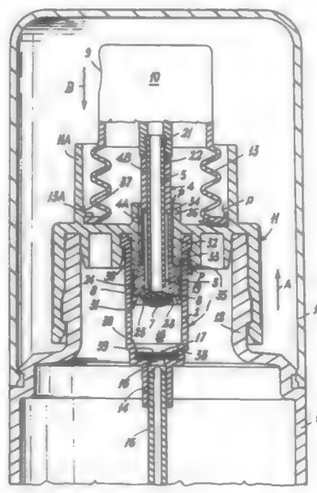
Filed Dec. 15, 1992, Ser. No. 990,411
Claims priority, application Italy, Dec. 16, 1991, MI91 A 003357
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—321 **17 Claims**

1. A dispenser for dispensing liquid substances or substances in the form of cream or paste including a plurality of components, comprising
a bottle for containing the substance to be dispensed and having an interior and a mouth,
a manual pump for dispensing a predetermined quantity of substance, and
a socket ring for fixing the pump to the bottle mouth,
the pump comprising:

a substantially cylindrical hollow body having first and second open ends, said body having an interior,

a flexible non-return valve arranged at said first end,

a substantially cylindrical hollow shaft having an interior, said shaft situated substantially coaxial to the hollow body and partly enclosed within said bottle interior, one end of said shaft projecting out of said bottle interior through the second end of the hollow body, the shaft being movable axially in both directions relative to the hollow body, the projecting end of the shaft carrying a plastics dispensing knob provided with a dispensing nozzle which communicates with the interior of the shaft, the other end of the shaft comprising at least one aperture for communication between the interior of the shaft and the interior of the hollow body, a piston unit comprising a piston movable in both directions under fluid-tight conditions within the hollow body, a portion of the interior of the hollow body situated between the piston and the non-return valve defining a pressure chamber, the piston being mounted on the shaft and being movable in both directions relative to the shaft to open or close said at least one aperture in the shaft;



first return means for returning the piston to a rest position in which said at least one aperture in the shaft is closed;

second return means for returning the shaft into the position in which it projects from the hollow body when pressure on the dispensing knob ceases;

an annular closure element for the second end of the hollow body, said closure element constituting a guide for the shaft; and

connection means provided within the pump for connecting the interior of the bottle to the atmosphere, said connection means being interrupted when the piston is in its rest position;

said first return means including a shank comprising a skirt which deforms elastically when the dispensing knob is pressed,

said second return means being made of an elastically deformable material, said second return means comprising an annular bellows element formed with the dispensing knob,

all of said components of the dispenser being formed from a plastic material, which is of a type which enables both substantially rigid components and substantially elastic components to be formed.

5,363,994

AQUEOUS SILANE COUPLING AGENT SOLUTION FOR USE AS A SEALANT PRIMER

Barry D. Angeline, Cleveland Heights, Ohio, assignor to Tremco, Inc., Beachwood, Ohio

Filed Jun. 26, 1992, Ser. No. 904,422
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—529 **9 Claims**

1. An aqueous primer composition for facilitating adhesion across an interface between a nonporous substrate and a polymeric composition, comprising:

a) 100 parts by weight of water;

b) from about 0.05 to about 0.3 parts by weight of a silane coupling agent, the silane coupling agent being represented by the formula

$$A—R^1—Si(R^3)_a(X)_{3-2}$$

where A is an amino or mercapto functional group, R^1 is an alkylene radical having from 1 to about 8 carbon atoms, each R^2 is independently an alkyl having from 1 to about 8 carbon atoms, each X is independently an alkoxy radical having from 1 to about 8 carbon atoms or chlorine, and a is 0, 1 or 2; and

c) from about 0.1 no about 0.4 parts by weight of a hydrophobic silane per 100 parts of the aqueous solution containing the silane coupling agent, the hydrophobic silane being represented by the formula

$$(R^3)_bSi(Y)_{4-b}$$

where each R^3 is independently an alkyl, alkenyl or aryl radical having up to about 8 carbon atoms, each Y is independently an alkoxy radical having up to about 8 carbon atoms or chlorine, and b is 1 or 2.

5,363,995

SLIDE GATE PLATE AND METHOD

Lawrence D. Fitch, Pittsburgh, Pa., assignor to Indresco Inc., Dallas, Tex.

Filed Dec. 14, 1993, Ser. No. 167,318
Int. Cl.[5] B22D *41/32*
U.S. Cl. 222—600 **20 Claims**

1. A slide gate plate comprising a burned refractory that is impregnated with tar and baked, said refractory made from a composition consisting essentially of about 70 to 95 wt. % alumina, 1 to 10 wt. % reactive alumina, 1 to 5 wt. % volatilized silica, and, 3 to 15 wt. % silicon carbide, and up to 30 wt. % of a spall inhibitor, the amount of alumina utilized being reduced by the amount of spall inhibitor used.

5,363,996

BICYCLE CARRIER ADAPTED TO BE MOUNTED ON THE BACK OF A VEHICLE

Raymond R. Raaber, Woodbury, and Thomas A. Chimenti, New Canaan, both of Conn., assignors to Industri AB Thule, Hillerstorp, Sweden

Filed Sep. 1, 1993, Ser. No. 114,172
Int. Cl.[5] B60R *9/10*
U.S. Cl. 224—314 **23 Claims**

1. A bicycle carrier adapted to be mounted on the rear of a vehicle, comprising:

first and second mounting members each including a pair of end portions;

bicycle supporting means including a pair of support arms for supporting at least one bicycle, each of said support arms including an end portion;

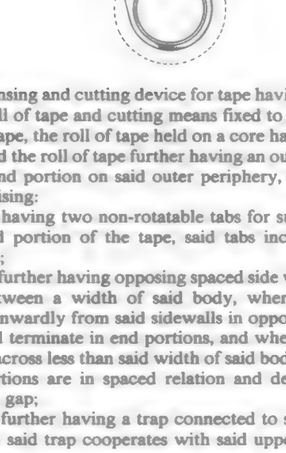
a pair of pivot forming means each including a housing connected to:

an end portion of said first mounting member,

an end portion of said second mounting member, and

an end portion of one of said support arms, said end portions of said first mounting member being rotatably mounted to respective ones of said housings for rotation relative thereto about an axis of rotation to selected rotational positions;

one of said second mounting member and said bicycle supporting means defining locking means for said first mounting member, said locking means being movable



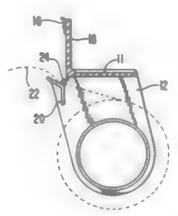
relative to said housings such that said end portions thereof move into locking engagement with said end portions of said first mounting member in a direction extending transversely of said axis of rotation for locking said first mounting member in a selected rotational position.

5,363,997

TAPE DISPENSING DEVICE

Rod W. Harris, 2106-C Gallows Rd., Vienna, Va. 22182

Filed Apr. 1, 1993, Ser. No. 40,447
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—25 **15 Claims**



1. A dispensing and cutting device for tape having a body for holding a roll of tape and cutting means fixed to said body for cutting the tape, the roll of tape held on a core having an outer diameter, and the roll of tape further having an outer periphery and a free end portion on said outer periphery, the improvement comprising:

said body having two non-rotatable tabs for supporting the free end portion of the tape, said tabs including upper surfaces;

said body further having opposing spaced side walls defining therebetween a width of said body, wherein said tabs extend inwardly from said sidewalls in opposing relationship and terminate in end portions, and wherein said tabs extend across less than said width of said body so that said end portions are in spaced relation and define therebetween a gap;

said body further having a trap connected to said body, wherein said trap cooperates with said upper surfaces of said tabs to restrain the free end portion of the tape therebetween and thereby prevent the free end portion from being withdrawn onto the roll of tape;

further wherein said upper surfaces of said tabs are positioned at a predetermined angle, and wherein said predetermined angle is such that said upper surfaces of said tabs are located on a line tangent to the outer diameter of the tape core that holds a roll of tape being held by the body, said predetermined angle thereby allowing said trap to cooperate with said upper surfaces of said tabs to restrain the free end portion of the tape therebetween, and said predetermined angle further allowing the tape to move over said tabs without binding on said tabs; and

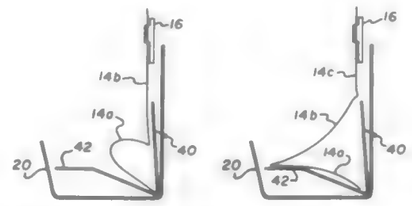
further wherein said tape core rotates about a first axis, wherein said tabs include downwardly extending leg portions, wherein said downwardly extending leg portions include bottom edges, and wherein said respective bottom edges of said downwardly extending leg portions are rounded about a second axis disposed perpendicularly to said first axis to thereby facilitate threading the free end portion of the tape through the gap between said end portions of said tabs onto said upper surfaces of said tabs.

5,363,998

RESTACKING TRAY FOR FAN FOLD PAPER FEEDER

Paul E. Tschiderer, Geneseo, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,664
Int. Cl.[5] B65H *31/22*
U.S. Cl. 226—200 **5 Claims**



1. A mechanism for feeding fan fold paper in a generally vertical downward direction, which fan fold paper has spaced transverse alternating folds, first and second opposite sides, and a tendency of the leading edge of the paper adjacent to every other transverse alternating fold to curl toward the first side, said mechanism comprising:

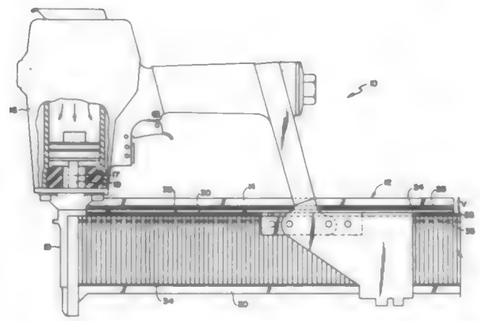
a tray for stacking such fan fold paper, said tray said tray including an upstanding wall member defining a vertically oriented wall positioned to engage the leading edge of the paper with the first side and the curl of the paper toward the wall, and a floor member forming an acute angle corner with said upstanding wall member, said angle being sufficiently acute to maintain the leading edge of the paper in the corner as the paper is driven downward by a drive means forcing the paper to bend away from said upstanding wall member and stack neatly with respect to the corner with the second side of the paper resting on the floor member.

5,363,999

FASTENER FEEDER HAVING VIBRATORY BRUSH

Phillip M. Braun, Exeter, and David J. Simonelli, Coventry, both of R.I., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Aug. 26, 1993, Ser. No. 112,149
Int. Cl.[5] B25C 1/04
U.S. Cl. 227—119 23 Claims



1. In a fastener driving apparatus including a nose piece assembly defining an elongated drive track receiving a fastener driving element therein movable through an operating cycle including a drive stroke and return stroke, a fastener feeding assembly for supporting a fastener package within the fastener driving apparatus and for moving successive leading fasteners of the fastener package in a feeding direction into the drive track to be driven by the fastener driving element during the drive stroke thereof outwardly of the drive track into the workpiece, the fastener feeding assembly comprising:

a pair of spaced support structures disposed in an opposed relation to one another along a feed path for the fastener package, the feed path having a proximal end leading laterally into the drive track; and

a multiplicity of resilient bristles supported at one of the ends thereof by one of said support structures and extending transversely and toward said proximal end within said feed path,

one of said support structures defining a feed track extending along said feed path for supporting the fastener package in a position therealong for movement thereon so that (1) when a leading fastener is disposed in the drive track the remaining fasteners are supported on the feed path so as to permit the leading fastener to be moved from the remaining fasteners through the drive track and driven by the fastener driving element during the drive stroke thereof outwardly of the drive track into the workpiece and (2) the fastener package is engaged by free ends of said multiplicity of bristles sufficient to maintain the fastener package on said feed track against movement in a direction away from said proximal end,

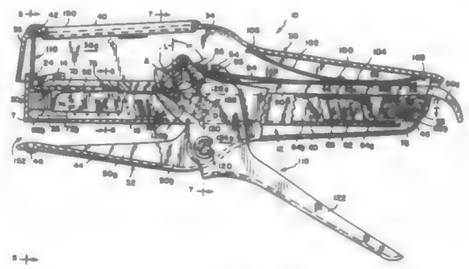
one of said support structures being mounted to said apparatus in such a manner as to vibrate in a direction toward and away from the other support structure in response to a vibratory pulse generated by the apparatus during the operating cycle thereof causing the fasteners of the fastener package to repeatedly resiliently flex the bristles in the feeding direction thereby feeding the fasteners toward the drive track and holding a leading fastener of the fastener package in the drive track to be driven therefrom by the driving element into the workpiece.

5,364,000

STAPLING PLIER

William S. Fealey, Jamestown, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Apr. 14, 1993, Ser. No. 48,427
Int. Cl.[5] B25C 5/11
U.S. Cl. 227—124 31 Claims



1. A stapling plier for stapling a work element, said plier comprising:

a magazine adapted to contain a supply of U-shaped staples detachably interconnected and arranged in an inverted channel-shaped assembly, each of said staples having a pair of legs joined by an integral crown;

a driver arm overlying said magazine;

a clincher arm underlying said magazine, each said magazine, driver arm and clincher arm having forward and rearward ends;

first pivot means for interconnecting the rearward ends of said driver arm and said clincher arm to the rearward end of said magazine, said first pivot means establishing a single axis about which the forward ends of both said driver arm and said clincher arm are pivotally movable between open and closed positions with respect to the forward end of said magazine;

means defining a throat at the forward end of said magazine;

pusher means associated with said magazine for urging an assembly of staples contained therein towards the forward end of said magazine to thereby position an end most staple of said assembly at said throat;

a driver carried by said driver arm at the forward end thereof at a position aligned with said throat, said driver being retracted from said throat when said driver arm is in said open position, and being movable into said throat in response to pivotal movement of said driver arm into said closed position to eject said end most staple from said magazine;

a clincher carried by said clincher arm at the forward end thereof, said clincher being spaced from said magazine to define a work element receiving gap when said clincher arm is in said open position, and being movable towards said magazine in response to pivotal movement of said clincher arm into said closed position to grip a work element received in said gap and to coact with said driver in clinching a staple being ejected from said magazine and driven through said work element by said driver;

first spring means for yieldably biasing said clincher arm into said open position;

second spring means for yieldably biasing said driver arm into said open position;

bearings carried on said driver arm for rotation about an axis fixed in relation to the single axis of said first pivot means;

an operating lever;

second pivot means for connecting said operating lever to said clincher arm for pivotal movement between first and second positions, said operating lever and said bearings having complimentary arcuate surfaces which coact in sliding engagement in response to pivotal movement of said operating lever from said first position to said second position to accommodate relative movement between said bearings and said second pivot means with an accompanying exertion of a closing force overcoming the biasing forces of said first and second spring means and causing said clincher arm and said driver arm to pivot sequentially relative to said magazine into their respective closed positions.

27. A stapling plier for stapling a work element, said plier comprising:

a magazine adapted to contain a supply of U-shaped staples detachably interconnected and arranged in an inverted channel-shaped assembly, each of said staples having a pair of legs joined by an integral crown, said magazine having a bottom wall, parallel outer side walls extending upwardly from said bottom wall to a top opening, and front wall segments extending inwardly from said side walls, said bottom and side walls and said front wall segments coacting in spaced relationship to define a throat;

a core member movable longitudinally within said magazine, said core member being adapted to support said supply of staples received in said magazine via said top opening;

a driver arm overlying said magazine, said driver arm having parallel side walls with aligned apertures extending therethrough;

a clincher arm underlying said magazine, each said magazine, driver arm and clincher arms having forward and rearward ends;

first pivot means for pivotally connecting the rearward ends of said driver arm and said clincher arm to the rearward end of said magazine, the forward ends of said driver arm and clincher arm being pivotally movable between open and closed positions with respect to the forward end of said magazine;

means defining a throat at the forward end of said magazine;

pusher means associated with said magazine for urging an assembly of staples contained therein towards the forward end of said magazine to thereby position an endmost staple of said assembly at said throat;

a driver carried by said driver arm at the forward end thereof at a position aligned with said throat, said driver being retracted from said throat when said driver arm is in said open position, and being movable into said throat in response to pivotal movement of said driver arm into said closed position to eject said endmost staple from said magazine;

a clincher carried by said clincher arm at the forward end thereof, said clincher being spaced from said magazine to define a work element receiving gap when said clincher arm is in said open position, and being movable towards said magazine in response to pivotal movement of said clincher arm into said closed position to grip a work element received in said gap and to coact with said driver in clinching a staple being ejected from said magazine and driven through said work element by said driver;

first spring means for yieldably biasing said clincher arm into said open position;

second spring means for yieldably biasing said driver arm into said open position;

third spring means for biasing a forward end of said core member against the front wall segments of said magazine, said third spring means comprising a leaf spring having first and second resilient leaf segments and resilient ear segments, said ear segments being engageable in a snap fit with openings in the side walls of said core member to detachably secure said third spring means to said core member;

fourth spring means for biasing said pusher means forwardly, said fourth spring means comprising a coiled spring axially confined between said pusher means and the first leaf segment of said third spring means;

bearings carried on said driver arm;

an operating lever;

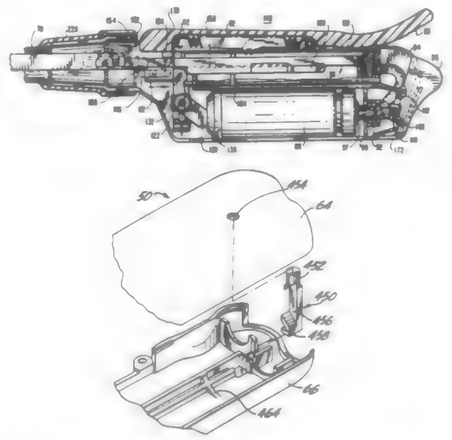
second pivot means for connecting said operating lever to said clincher arm for pivotal movement between first and second positions, said operating lever and said bearings having complimentary arcuate surfaces which coact in sliding engagement in response to movement of said operating lever from said first position to said second position to thereby generate a closing force overcoming the biasing forces of said first and second spring means and pivoting said clincher arm and said driver arm relative to said magazine into their respective closed positions.

5,364,001

SELF CONTAINED GAS POWERED SURGICAL APPARATUS

Graham W. Bryan, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 915,425, Jul. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 781,012, Oct. 18, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 130,606
Int. Cl.[5] A61B 17/068
U.S. Cl. 227—175 7 Claims



1. In a surgical instrument having a pneumatic actuation system disposed within a housing and including a canister containing compressed gas and a valve assembly, the improvement comprising: means for selectively controlling relative approximation of said canister and said valve assembly within said housing to prevent premature actuation of said instrument during shipment, said means being movable between a first position in which relative approximation of said canister and said valve assembly is inhibited and a second position in which relative approximation of said canister and said valve assembly is permitted, said means comprising a blocking member configured to occupy a space between said canister and said valve assembly when disposed in said first position so as to inhibit relative approximation of said canister and said valve assembly, said blocking member permitting said relative approximation when disposed in said second position.

5,364,002

APPARATUS AND METHOD FOR APPLYING SURGICAL STAPLES TO ATTACH AN OBJECT TO BODY TISSUE

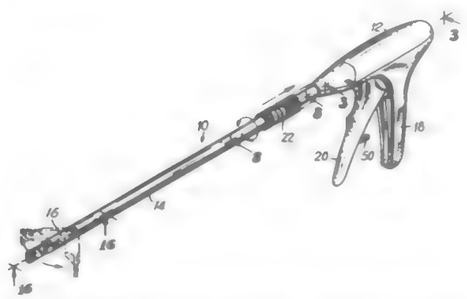
David T. Green, Westport; Henry Bolanos, East Norwalk, both of Conn.; Wayne Young, Brewster, N.Y.; Stephan A. DeFonzo, Bridgeport, Conn.; Richard A. McGarry, Norwalk, Conn., and Dominick L. Mastri, Bridgeport, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 782,290, Oct. 18, 1991, Pat. No. 5,289,963. This application Mar. 31, 1992, Ser. No. 861,065

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/00*

U.S. Cl. 227—177 **60 Claims**



1. Apparatus for endoscopic application of surgical staples adapted to attach an object to body tissue, which comprises:

a) frame;

b) generally elongated endoscopic portion connected to said frame and extending distally therefrom, said endoscopic portion defining a generally longitudinal axis and having a proximal end portion and a distal end portion;

c) cartridge means cooperating with said distal end portion of said endoscopic portion for storing a plurality of surgical staples, such staples configured and dimensioned to attach an object to body tissue;

d) actuating means spaced from said distal end portion of said endoscopic portion for moving said distal end portion front a first position to a second position angularly oriented relative to said generally longitudinal axis;

e) means for individually advancing such staples distally for positioning adjacent the body tissue, said advancing means operable to advance a staple in said first position and said second position of said distal end portion; and

f) means for closing each staple in a manner at least sufficient to encompass at least a portion of the object and to penetrate the body tissue to attach the portion of the object to the body tissue.

5,364,003

STAPLE CARTRIDGE FOR A SURGICAL STAPLER

Warren P. Williamson, IV, Loveland, Ohio, assignor to Ethicon Endo-Surgery, Cincinnati, Ohio

Filed May 5, 1993, Ser. No. 58,393

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—178 **5 Claims**

1. A surgical stapler comprising:

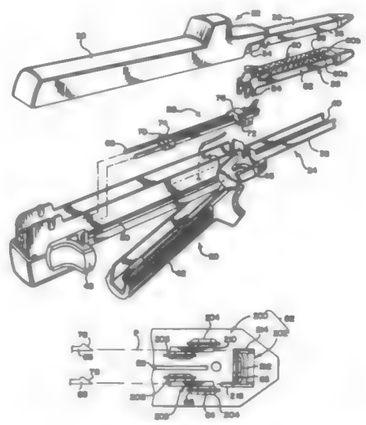
cam means comprising a pair of pusher bars each having a cam surface;

means for actuating said cam means for a longitudinal firing movement of said cam surfaces;

a plurality of staple drive members driven by the longitudinal movement of said cam surfaces, said staple drive members being arranged on respective opposite sides of a longitudinal knife slot;

a plurality of surgical staples respectively associated with said drive members for being fired by the longitudinal movement of said cam surfaces, for forming at least one row of staples on each side of said slot;

knife means operatively connected to said actuating means for movement along said knife slot for cutting tissue be-



tween said rows of staples on opposite sides of said slot, and

means for applying a staple generally transversely and distally of said knife slot.

5,364,004

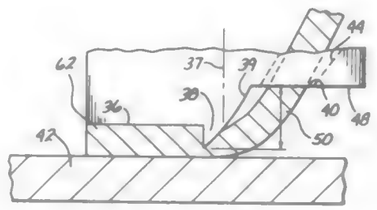
WEDGE BUMP BONDING APPARATUS AND METHOD

R. Paul Davidson, Plymouth, Minn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 10, 1993, Ser. No. 60,085

Int. Cl.[5] H01L *21/607*

U.S. Cl. 228—1.1 **1 Claim**



1. A bonding tool for use with a wedge bonder assembly for applying interconnect bumps to an integrated circuit, which bonding tool comprises:

a tool body having a longitudinal axis and a distal end;

a bonding portion on said distal end having a flat bonding face perpendicular to said longitudinal axis;

a distal surface on said distal end perpendicular to said longitudinal axis, wherein said distal surface is parallel to and situated more proximally than said bonding face;

a through passage having an outlet in said distal surface and defined by said tool body through which wire or ribbon is passed into proximity to the integrated circuit; and

an edge element positioned between said bonding face and said outlet in said distal surface that terminates more distally than said bonding face, said edge element having a surface adjacent to and perpendicular to said bonding face and a convex surface adjacent to and extending proximally to said distal surface,

wherein said edge element is adapted to weaken wire or ribbon located between said edge element and the integrated circuit that is in contact with said edge element and said convex surface is configured to facilitate the passage of wire or ribbon around said edge element below said bonding face; and

wherein said bonding face is parallel to the integrated circuit and passes ultrasonic force is passed to bond wire or ribbon in contact with said bonding face and the integrated circuit.

5,364,005

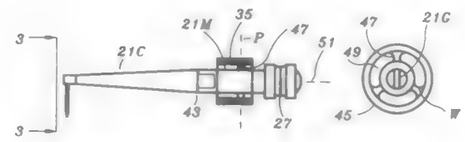
ULTRASONIC TRANSDUCER AND MOUNT

Paul Whelan, Addison, and Mike Whelan, Coppell, both of Tex., assignors to Verity Instruments Inc., Dallas, Tex.

Filed Nov. 8, 1993, Ser. No. 148,285

Int. Cl.[5] H01L *21/60*

U.S. Cl. 228—1.1 **9 Claims**



1. An ultrasonic transducer for welding purposes comprising:

a metal body having a welding end, an opposite end for supporting a source for causing said body and said welding end to vibrate at ultrasonic frequency for welding purposes and intermediate mounting means for supporting said body for welding purposes,

said mounting means comprising mounting structure spaced from and surrounding said body and at least two spaced apart spokes connected between said body and said mounting structure for reducing the loss of energy to said mounting structure and increasing the welding efficiency of said transducer.

5,364,006

DEVICE FOR POSITIONING SHEET BLANKS IN AN INSTALLATION FOR THE CONTINUOUS BUTT WELDING OF SAID SHEET BLANKS

Peru Gilles; Francis Sauvage, both of Dunkerque; Yvon Le Roy, Le Doulieu, and Charles Sion, Camphin-En-Carembault, all of France, assignors to Sollac, Puteaux, France

Filed Oct. 14, 1993, Ser. No. 135,619

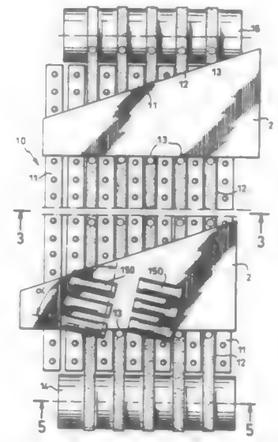
Claims priority, application France, Nov. 30, 1992, 92 14409

Int. Cl.[5] B23K *26/00*

U.S. Cl. 228—4.1 **11 Claims**

1. A device for positioning sheet blanks in an installation for a continuous butt welding of at least two of said sheet blanks by means of a laser beam, said device comprising in combination:

means for supporting in a horizontal reference plane and for feeding said sheet blanks in a direction toward said laser beam, means for laterally positioning edges to be welded of said sheet blanks on the axis of said laser beam, said supporting and feeding means for said sheet blanks comprising a conveyor table comprising an alternating arrangement of rails having balls and bands provided with projecting studs evenly spaced apart, and friction means combined with said conveyor table and adapted to be applied against an upper face of said sheet blanks and impart to said sheet blanks a movement in translation substantially perpendicular to the direction of feed of said sheet blanks, said ball rails and said bands extending in a direction parallel to the direction of feed of said sheet blanks and said bands being horizontally movable, and releasable driving means connected to said bands for adjusting the position of said studs of each band with



respect to studs of the other bands as a function of the contour of said sheet blanks.

5,364,007

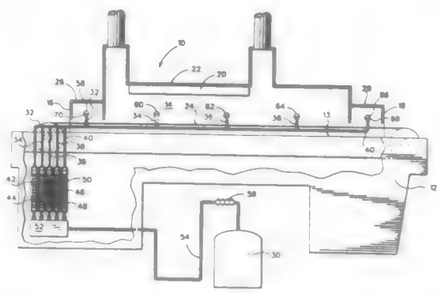
INERT GAS DELIVERY FOR REFLOW SOLDER FURNACES

Stephen W. Jacobs, Fleetwood; Gregory K. Arslanian, Chalfont; Bruce M. Adams, Macungie; John C. Ivankovits, Allentown, and Donald J. Bowe, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 12, 1993, Ser. No. 135,383

Int. Cl.[5] B23K *3/00, 31/02*

U.S. Cl. 228—42 **16 Claims**



1. A reflow solder furnace apparatus for soldering electronic components conveyed through said furnace in a hooded heating chamber, comprising:

(a) a furnace frame for supporting means for conveying electronic components through said heating chamber and to support a source of heat for reflow soldering;

(b) a heating chamber on said furnace frame with an inlet and an outlet to introduce electronic components to be soldered by heating including said source of heat and a hood constituting at least a cover for the top of said heating chamber;

(c) conveying means situated on said furnace frame to support electronic components and to convey them through said hooded heating chamber;

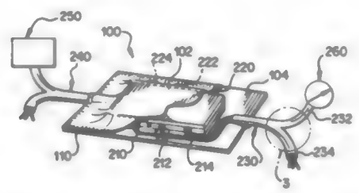
(d) a first baffle compartment at said inlet of said heating chamber and a second baffle compartment at said outlet of said heating chamber;

(e) a source of an inert gas for inerting said heating chamber;
(f) paired distribution lines juxtaposed to each of two opposing sides of said conveying means for delivering inert gas to said heating chamber;
(g) one or more porous diffuser tubes connecting said paired distribution lines across said conveying means and situated above said conveying means for dispensing inert gas into said heating chamber; and
(h) an inert gas knife situated in each of said first and second baffle compartments for dispensing inert gas onto said conveying means and to prevent outside atmosphere from entering said heating chamber.

5,364,008
METHOD FOR TEMPERATURE MEASUREMENT INSIDE A RETORT

George W. Stacher, Westminister, and Murray W. Mahoney, Camarillo, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Apr. 12, 1993, Ser. No. 45,289
Int. Cl.[5] B23K *20/14*
U.S. Cl. 228—103 5 Claims



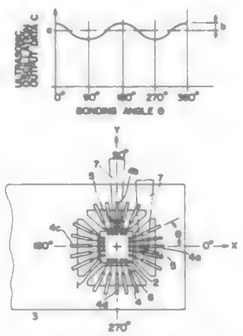
1. A method for obtaining thermal parameters associated with a reactive metal workpiece disposed in a retort during diffusion bonding of the workpiece, where the parameters are used in carrying out subsequent diffusion bonding of similar workpieces, said method comprising:
(a) locating temperature measuring instruments in contact with various portions of said workpiece in said retort, and connecting conducting leads between said instruments and display devices located outside said retort,
(b) providing conduit means for at least one end of said retort, each said conduit means communicating the interior of said retort with at least vacuum applying means,
(c) disposing said conducting leads in said conduit means,
(d) sealing said conduit means about said conducting leads,
(e) impressing a vacuum on said retort while heating said retort and contents to a diffusion bonding temperature,
(f) measuring the temperature at said various portions on said workpiece,
(g) determining temperature related control parameters associated with the diffusion bonding process being carried out, and
repeating steps (a)–(e) for each subsequent diffusion bonding process carried out in a retort for workpieces of similar materials, while controlling the temperature applied during said diffusion bonding process.

5,364,009
ULTRASONIC WIRE BONDING METHOD

Kuniyuki Takahashi, Musashimuryama, and Tooru Mochida, Ome, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 89,795
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—110.1 2 Claims

1. An ultrasonic wire bonding method in which bonding is performed by an ultrasonic vibration applied to a capillary via an ultrasonic oscillation output which is outputted from a horn that is not rotatable, said method being characterized in that bonding to .leads extending in an X direction which is perpendicular to an axial direction of said horn is performed by an ultrasonic oscillation output which is larger than an ultrasonic

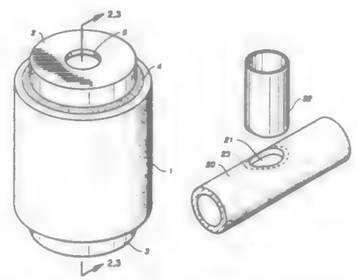


oscillation output used for bonding leads extending in a Y direction which coincides with the axial direction of said horn.

5,364,010
JOINING OF METAL TO CERAMIC BODIES BY BRAZING

Howard Mizuhara, Hillsborough, Calif., assignor to The Morgan Crucible Company, plc, Windsor, England

Continuation-in-part of Ser. No. 548,394, Jul. 5, 1990, Pat. No. 5,152,449. This application Sep. 11, 1992, Ser. No. 943,884
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—124.6 26 Claims

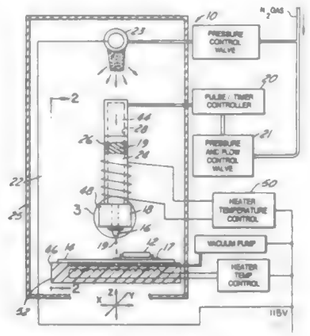


1. A method of joining a metal tube to a ceramic body, the metal tube and ceramic body having joint bonding surfaces of substantially identical curvature, the ceramic body joint bonding surface being larger in extent than the metal tube joint bonding surface and the metal tube joint bonding surface comprising a lip to an open end of the tube, the method comprising the steps of:
(a) applying a brazing paste consisting of a finely powdered combination of an active metal and a brazing filler metal in a liquid vehicle to the ceramic body joint bonding surface over an area larger than the metal tube joint bonding surface to form a brazing paste covered area of the ceramic body bonding surface;
(b) contacting the metal tube joint bonding surface with the brazing paste covered area so as to form an assembly of metal tube, brazing paste, and ceramic body;
(c) heating the assembly to a temperature to melt the brazing paste whereby the melted brazing paste wets the ceramic body joint bonding surface and the metal tube joint bonding surface to form a braze fillet between the metal tube joint bonding surface and the ceramic body joint bonding surface, the braze covering and bonding to the ceramic body joint bonding surface; and
(d) cooling the assembly.

5,364,011
MICRO SOLDERING SYSTEM FOR ELECTRONIC COMPONENTS

Jay D. Baker, West Bloomfield; Myron Lemecha; Richard K. McMillan, II, both of Dearborn; Kenneth A. Salisbury, Livonia, all of Mich.; Paul E. Stevenson, Colorado Springs, Colo.; Thomas B. Merala, Canton, Mich.; Wells L. Green, Garden City, Mich.; Matti Mikkor, Ann Arbor, Mich., and Bernard A. Meyer, Taylor, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 43,060, Apr. 5, 1993, abandoned. This application Apr. 6, 1994, Ser. No. 223,569
Int. Cl.[5] B23K *3/00*
U.S. Cl. 228—180.21 20 Claims

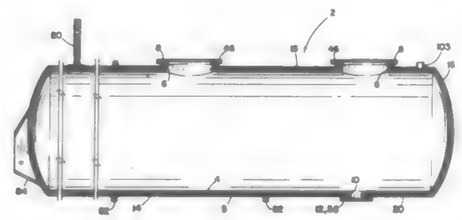


1. An micro soldering system for attaching an electronic component to a substrate, comprising:
a soldering tool including a dispensing orifice assembly for dispensing a controlled quantity of molten solder at one or more sites on the component or the substrate or both so that the component is attached to the substrate mechanically and electrically upon solidification of the molten solder without physical contact between the dispensing orifice assembly and the one or more sites; and
means for controlling the soldering tool in response to process control parameters so that the controlled quantity of molten solder is dispensed by a pressure pulse through a non-oxidizing atmosphere.

5,364,012
METHOD OF PRODUCING METAL ENCAPSULATED PLASTIC TANK SYSTEMS

Gail F. Davis, and Joe B. Kersey, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 16, 1993, Ser. No. 48,449
Int. Cl.[5] B23K *5/22, 101/12;* B65D *25/18*
U.S. Cl. 228—184 18 Claims

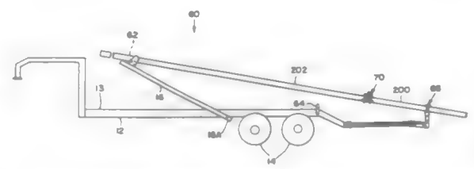


1. A method of forming a tank system wherein said tank system comprises a plastic tank covered by a metal shell and said plastic tank has an exterior surface and an exterior shape, said method comprising the steps of:
(a) covering a first portion of said plastic tank with a first metal shell piece, said first metal shell piece having an interior shape and an interior surface, said interior shape of said first metal shell piece corresponding to the exterior shape of said first portion of said plastic tank such that the exterior surface of said first portion of said plastic tank is in close proximity to said interior surface of said first metal shell piece, and said first metal shell piece having a first edge;
(b) covering a second portion of said plastic tank with a second metal shell piece, said second metal shell piece having an interior shape and an interior surface, said interior shape of said second metal shell piece corresponding to the exterior shape of said second portion of said plastic tank such that the exterior surface of said second portion of said plastic tank is in close proximity to said interior surface of said second metal shell piece, and said second metal shell piece having a second edge corresponding to said first edge such that, when said first and second shell pieces are placed over said plastic tank, said second edge is positioned adjacent said first edge; and
(c) after steps (a) and (b), welding said first and second shell pieces together along said first and second edges,
said plastic tank having a plastic fitting integrally formed in said second portion thereof,
said second shell piece having an aperture formed therein for receiving said plastic fitting,
said second shell piece having an external radial surface,
said aperture extending through said external radial surface, and
wherein said second portion of said plastic tank is covered with said second shell piece in accordance with step (b) when said plastic tank and said plastic fitting are formed such that said plastic fitting is a continuous fitting extending through said aperture and over said external radial surface.

5,364,013
APPARATUS FOR CONNECTING PIPE SECTIONS

Robert Scheuerman, 7257 Richard St., Ft. Lupton, Colo. 80621

Continuation-in-part of Ser. No. 941,525, Sep. 8, 1992, Pat. No. 5,230,461. This application Jul. 15, 1993, Ser. No. 92,005
Int. Cl.[5] B23K *37/053*
U.S. Cl. 228—212 4 Claims



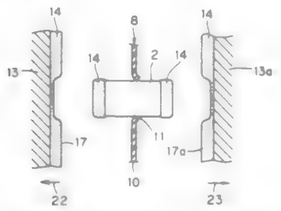
1. A method for transporting sections of pipe and connecting said sections together in end-to-end fashion by welding; wherein said method comprises the steps of:
(a) providing a wheeled frame for carrying said sections of pipe;
(b) providing alignment means for stationarily supporting a first pipe section and one end of a second pipe section in axial alignment with each other;
(c) temporarily clamping the opposed ends of said first and second pipe sections in close proximity to each other with a single clamp engaging and aligning said opposed ends; and
(d) connecting said opposed ends of said pipe sections by welding thereof.

5,364,014

METHOD OF AND APPARATUS FOR MANUFACTURING ELECTRONIC COMPONENT

Mitsuro Hamuro; Shigeyoshi Matsuda, and Shoichi Kawabata, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 29, 1993, Ser. No. 158,605
Claims priority, application Japan, Nov. 27, 1992, 4-318836
Int. Cl.[5] H01G *13/00;* **H01C** *17/00*
U.S. Cl. 228—248.1 **14 Claims**



1. A method of manufacturing an electronic component, comprising the steps of:
- preparing at least one component body having two end portions in opposite positions;
- preparing a holder for holding said component body in a position between said end portions of said component body while projecting said end portions respectively;
- preparing two applicators being provided with films of paste materials to be applied to said end portions of said component body respectively;
- holding said component body by said holder while projecting said end portions respectively;
- simultaneously approaching said two applicators toward related said end portions of said component body while directing said applicators to said end portions of said component body being held by said holder, thereby locating said end portions of said component body in respective said paste films; and
- separating said applicators from said component body, thereby obtaining said component body being coated with said paste materials on said end portions.

14. An apparatus for manufacturing electronic components, comprising:
- a long tape-type holder having a plurality of receiving holes for resiliently receiving a plurality of component bodies;
- means for feeding said tape-type holder along a prescribed path in its longitudinal direction;
- means for inserting said component bodies in said plurality of receiving holes respectively for projecting end portions of said component bodies on a first position of said prescribed path to make said tape-type holder hold said plurality of component bodies;
- two applicators being provided to be simultaneously approached to and separated from each other for applying paste materials to said end portions of said component bodies on a second position of said prescribed path downstream said first position, said applicators being provided with films of said paste materials to be applied to said end portions of said component bodies; and
- means for drying said paste materials being applied to said end portions of said component bodies on a third position of said prescribed path downstream said second position.

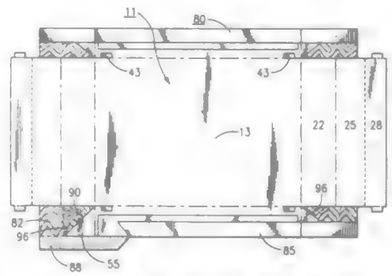
5,364,015

BOX WITH SIMULATED LOOSE WRAP

Urban C. Hirschey, Carthage, N.Y., assignor to Climax Manufacturing Company, Castorland, N.Y.

Filed Sep. 1, 1993, Ser. No. 115,887
Int. Cl.[5] B65D *5/62*
U.S. Cl. 229—116.5 **9 Claims**

1. A box member for a folding box of a type having a pair of telescoping box sections said box member being formed from a composite blank including a sheet of foldable stiff material and a sheet of flexible material attached to said stiff sheet, said stiff material forming a first surface and said flexible material forming a second surface, said box member comprising:
- a base panel having a pair of opposed side edges and a pair of opposed end edges;
- a pair of end panels, each said end panel having a first section connected to one of said pair of opposed end edges of the base panel, a third section defined by a free edge and a second section that is intermediate said first section and said third section and connected along a first fold line to said first section and along a second fold line to said third



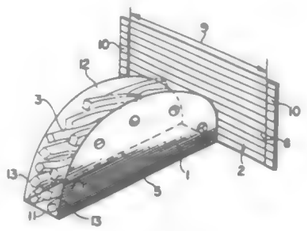
section, said free edge, said end edge, said first fold line and said second fold line all being mutually parallel;
- a pair of side panels, each said side panel having no more than two sections, and each said side panel having a section connected to one of said side edges of the base panel along a side fold line, and having a side panel side edge;
- a flap attached to each end of each of said side panels along a flap fold line, each said flap being folded along said flap fold line so that it rests against said first and said second sections of one of said end panels and is sandwiched therebetween; and
- retaining means for retaining said third section of said end panel against a first surface of said base panel.

5,364,016

PLEATED WRAPPER FOR SOLID LOOSE ARTICLES

Gilbert Capy, and Akiva Buchberg, both of Jarnioux, France, assignors to Wrapco International B.V., Rotterdam, Netherlands

Filed Sep. 17, 1992, Ser. No. 946,766
Claims priority, application France, Sep. 24, 1991, 91-11965
Int. Cl.[5] B65D *65/04*
U.S. Cl. 229—87.03 **6 Claims**



1. A wrapper comprising:
- a pleated section formed of a thin and flexible sheet folded along pleat lines to form pleats, wherein said pleated section has two opposed fixed edges perpendicular to said pleat lines which prevent said pleats from unfolding at said fixed edges;
- an unpleated section separately formed of a semi-rigid material and having score lines arranged to form said unpleated section into a semi-rigid container for loose products when said unpleated section is folded along said fold lines, said container having two lateral zones, and a central zone disposed in between said lateral zones, said zones being defined by said score lines, said central zone having a central zone edge, said pleated section having one side attached to said central zone edge with said side and edge being generally parallel to said pleat lines, attachment means attaching the one side to said central zone edge, said pleated section when deployed around said container forming a cover closing said container;
- wherein said fixed edges are disposed adjacent to said lateral zones as said pleated section is deployed around said container; and
- wherein each said lateral zone has a curved lateral zone edge, said pleated section when deployed around said container having open pleat portions adjacent to said lateral zone edges.

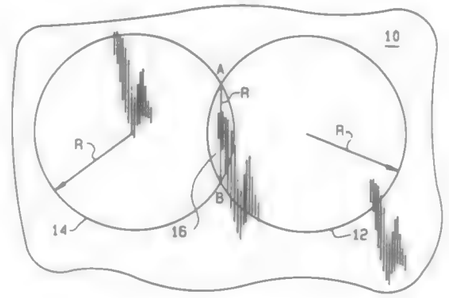
5,364,017

THREE DIMENSIONAL OBJECTS AND METHODS OF MAKING THE SAME

Herbert G. Bennett, 195 E. 31st St., Brooklyn, N.Y. 11226

Continuation-in-part of Ser. No. 94,055, Sep. 4, 1987, Pat. No. 4,871,080, which is a continuation-in-part of Ser. No. 928,613, Nov. 4, 1986, abandoned, which is a continuation of Ser. No. 704,751, Feb. 25, 1985, abandoned
Filed Jun. 27, 1989, Ser. No. 371,962
Int. Cl.[5] A63H *33/16*
U.S. Cl. 229—107 **10 Claims**

1. A method for making an element capable of forming a three dimensional object, which comprises:
- a) inscribing a first set of two cables, having the same radius, on a flat flexible material, said circles intersecting at a first point A and a second point B and producing a common area therebetween; such that the width of the common area along a straight line from point A to point B equals the length of the radius of the circles;
- b) inscribing a second set of two intersecting circles, each of the same radius as the circles in step a) in a manner such that they each intersect the circles of step a) and each other at a common first point C and a common second point D, midway along each arc AB which defines the common area of the intersecting circles of step (a);
- c) inscribing an additional four circles each having the same radius as the circles in step a) in a manner such that an arc of a first circle intersects points A and C; an arc of a second circle intersects points C and B; an arc of a third circle intersects points A and D; and an arc of a fourth circle intersects points D and B; said arcs of each of said four additional circles extending into the common area of the circles of step a); thus forming two trigonal face components, one by the inwardly extending arcs between points A and C, C and D, and D and A, respectively, and one by the inwardly extending arcs between points C and D, D and B, and B and C, respectively, and five side components by the area between the inwardly and outwardly extending arcs between points A and C, C and D, D and A, D and B, and B and C, respectively; and
- d) separating the inscribed portion of said flat, flexible material along a perimeter formed by the outermost arcs of the inscribed circles which perimeter completely surrounds each of the trigonal face and side components to obtain an element having at least two trigonal face components and at least five side components, which element is capable of



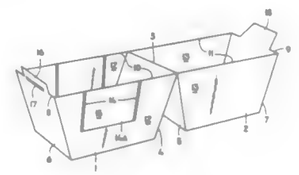
forming a three dimensional object by folding said element along the arcs thereof.

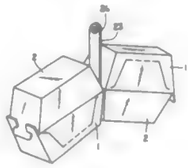
5,364,018

DISPOSABLE PACKAGE

Ingmar Carlsson, Sundbyberg, Sweden, assignor to Eson Pac AB, Veddige, Sweden

PCT No. PCT/SE91/00677, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO92/09487, PCT Pub. Date Jun. 11, 1992
PCT Filed Sep. 20, 1992, Ser. No. 66,019
Claims priority, application Sweden, Nov. 27, 1990, 90 03778-9
Int. Cl.[5] B65D *5/20, 5/46, 5/48*
U.S. Cl. 229—120.17 **3 Claims**





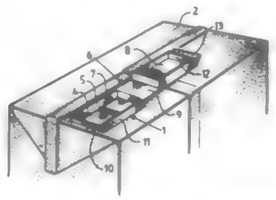
1. A disposable package comprising two deep bowl-shaped sections having an adjacent pair of end walls with a common edge along which the sections are interconnected, the sections further having opposite end walls and side walls each with an edge in a plane containing said common edge, the package being foldable along said common edge to bring the sections together, the opposite end walls having outwardly extending tongues providing respective male and female connectors for securing the sections when brought together and for attachment thereon of another identical upside down package when the sections are opened out, wherein the side walls of at least one of the package sections are each provided with a pair of spaced separation lines extending downwardly from the edge of the respective side wall to define a fold-in flap therebetween.

5,364,019

OPENING ARRANGEMENT

Bengt Björck, Bjärred, and Lars Carlsson, Blentarp, both of Sweden, assignors to Tetra Laval Holdings & Finance SA, Pully, Switzerland

Filed Feb. 5, 1993, Ser. No. 14,256
Claims priority, application Sweden, Feb. 11, 1992, 9200391
Int. Cl.[5] B65D 5/72
U.S. Cl. 229—125.09 18 Claims



1. An arrangement for opening and discharging the contents of a package that is manufactured from a material web, the arrangement comprising:

a hole in the material web through which contents of the package may be poured;

a sealing strip, the sealing strip being sealed to a first side of the material web over the hole;

a pouring element, the pouring element having a side wall, a bottom end of the side wall extending around the hole, the pouring element being sealed to the first side of the material web, the sealing strip being at least partially positioned within the side wall; and

a sealing element, the sealing element being movable to seal and unseal a top end of the pouring element;

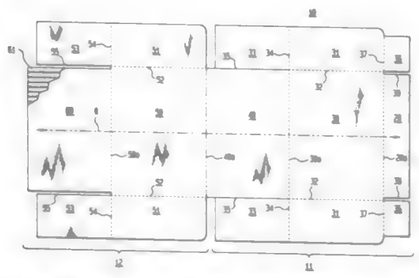
whereby the sealing strip may be grasped through the pouring element within the side wall and pulled to unseal the hole after the sealing element is moved to unseal the top end of the pouring element.

5,364,020

SECOND GENERATION CLAMPAK EASY DISPLAY SHIPPER

Vinod Bansal, Edison, N.J., assignor to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Mar. 22, 1993, Ser. No. 34,038
Int. Cl.[5] B65D 5/54, 5/66
U.S. Cl. 229—145 6 Claims



1. A case blank having a longitudinal axis and adapted to form a container comprising:

a) a front panel connected to a bottom panel, said bottom panel also being connected to a rear panel;

b) said bottom panel, having integral bottom side panels connected along their length to said bottom panel by longitudinal fold lines, each of said integral bottom side panels having first bottom side flaps extending longitudinally therefrom along said rear panel and each of said integral bottom side panels having second bottom side flaps extending longitudinally therefrom along said front panel, each of said first bottom side flaps being connected along their width to each of said integral bottom side panels by transverse fold lines and being separated from said rear panel by longitudinal cuts, each of said second bottom side flaps being connected along their width to each of said integral bottom side panels by transverse fold lines and being separated from said front panel by longitudinal cuts;

c) a top panel connected to said rear panel and having integral top side panels connected along their length to said top panel by longitudinal fold lines, each of said integral top side panels having top side flaps extending longitudinally therefrom and each of said top side flaps being connected along their width to each of said integral top side panels by transverse fold lines;

d) a second front panel connected to said top panel;

e) fastening means adapted for fastening said second front panel to said front panel;

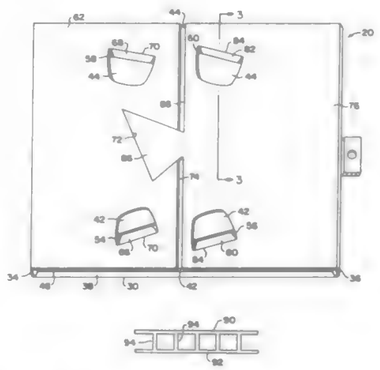
f) said blank being characterized by having the dimensions of said integral bottom side panels and integral top side panels such that when said blank is folded to form a container the sum of the width of an opposing pair of one of said integral bottom side panels and one of said integral top side panels is equal to the width of the second front panel or the width of the rear panel so that when the blank is folded into a container the dimensions of the side of the container formed from the opposing pair of said integral bottom side panel and said integral top side panel is equal to the width of the second front panel or the rear panel.

5,364,021

MAILING PACK

Marvin R. Munk, New City, N.Y., assignor to Amdurables, Inc., Saddle Brook, N.J.

Filed Aug. 23, 1993, Ser. No. 110,387
Int. Cl.[5] B65D 5/20, 65/22
U.S. Cl. 229—157 21 Claims



1. A mailing pack comprising:

a bottom panel;

first and second side flaps hingedly connected with first and second opposite edges of said bottom panel;

first and second end flaps hingedly connected along hinge edges thereof with third and fourth opposite edges of said bottom panel, between said first and second opposite edges, said first end flap extending in a first direction from the hinge edge thereof and forming an outer surface of said mailing pack;

said bottom panel, said first an second side flaps and said first and second end flaps being constructed from a fluted material having flutes extending in a second direction; and

securing means for securing said first and second end flaps in substantially parallel covering relation to said first and second side flaps and said bottom panel, said securing means including:

at least one slit in one of the following:

said side flaps, and

said second end flap; and

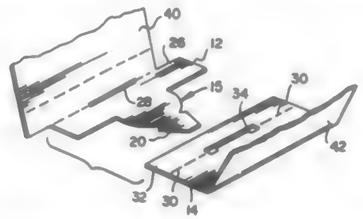
tab means hingedly connected with said first end flap for slidable engagement within said at least one slit, said tab means being cut-out from said first end flap at a position spaced inwardly from edges of said first end flap, and said tab means extending substantially in said second direction of said flutes and in a direction different from said first direction of said first end flap.

5,364,022

CLOSURE PANEL LOCK MECHANISM

Robert H. Ganz, Saddle River, N.J., assignor to Riverwood International, Inc., Atlanta, Ga.

Filed Jul. 19, 1993, Ser. No. 93,484
Int. Cl.[5] B65D 5/30
U.S. Cl. 229—198.2 14 Claims



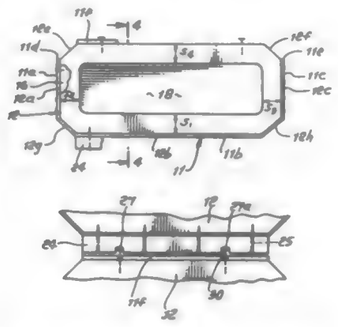
1. A panel lock comprising a male panel and a female panel, said male panel having a free edge terminating in a projecting tab, said female panel having a terminal portion connected to a remainder of said female panel along a fold line, and said female panel having a cutout formed in said female panel terminal portion along said fold line, said projecting tab passing through said cutout and being reversely folded against said female panel terminal portion to clamp said female panel terminal portion against said male panel in face to face relation.

5,364,023

PRODUCE BOX

Gary L. Vollers, 11471 Tampa Ave., #149, Northridge, Calif. 91326

Filed Oct. 4, 1993, Ser. No. 130,872
Int. Cl.[5] B65D 5/32
U.S. Cl. 229—199 8 Claims



1. In a box structure, the combination comprising

a) box side walls, a bottom wall, and two end walls, said two end walls each having substantially greater thickness than said side walls, and said bottom wall,

b) the end walls having peripheral edges, said bottom wall and side walls having edge portions overlapping certain of said peripheral edges of the end walls,

c) there being fasteners attaching said bottom wall and side wall edge portions to said end wall peripheral edges, said fasteners penetrating through said bottom wall and side wall edge portions and into said end walls via said certain peripheral edges thereof,

d) said end walls consisting essentially of cellular foamed polyethylene,

e) said bottom wall and side walls forming a continuous strip which is folded to fit against said certain peripheral edges of said end walls, said certain peripheral edges being flat, said end walls being generally rectangular and having beveled corners flatly engaged by said continuous strip, said strip comprising paperboard and including two parallel sheets and a corrugated sheet located therebetween and bonded thereto,

f) there being recesses in said end walls in spaced relation to said fasteners,

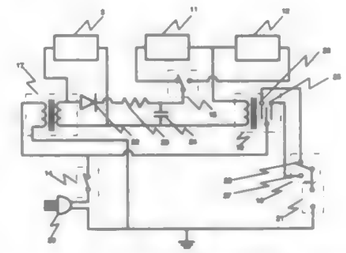
g) said fasteners comprising nails driven into portions of said cellular polyethylene free of said recesses, said portions being substantially solid, said nails having shanks which throughout their lengths in said portions are entirely and closely surrounded by said cellular polyethylene.

5,364,024

APPLICATION INDEPENDENT, PORTABLE ROOM TEMPERATURE AND HUMIDITY CONTROLLER

Feng Lin, 29176 Hemlock Ct., Farmington Hills, Mich. 48336

Filed May 7, 1993, Ser. No. 57,873
Int. Cl.[5] B01F 3/02; G05D 21/00
U.S. Cl. 236—44 C 15 Claims



1. A temperature and humidity controller operating at first mode, second mode, third mode, or fourth mode, comprising:

a temperature unit having temperature sensing means, setable adjustable temperature setting means, and temperature switching means responsive to said temperature sensing means and temperature setting means to provide a connection between two terminals of said temperature unit for a temperature above said temperature set;

a humidity unit having humidity sensing means, setable adjustable humidity setting means, and humidity switching means responsive to said humidity sensing means and humidity setting means to provide a connection between two terminals of said humidity unit for a humidity above said humidity set;

means for displaying the temperature of surrounding air;

means for displaying the humidity of surrounding air;

a male receptacle to be connected to a conventional AC outlet for supplying a high AC voltage;

a transformer transforming said high AC voltage to a low AC voltage;

an AC/DC converter converting said low AC voltage to a low DC voltage;

a relay having first and second input terminals, first, second and third output terminals, closed switching means to

provide connection between said first output terminal and said second output terminal when said low DC voltage is applied between said first input terminal and said second input terminal, and open switching means to provide connection between said first output terminal and said third output terminal when no voltage is applied between said first input terminal and said second input terminal;

means for connecting said low DC voltage to said first and second input terminals, controlled by said temperature switch means, when operating at said first mode or said second mode;

means for connecting said low DC voltage to said first and second input terminals, controlled by said humidity switch means, when operating at said third mode or said fourth mode;

a female receptacle for supplying said high AC voltage to a load;

means for connecting said high AC voltage to said female receptacle, controlled by said open switching means, when operating at said first mode or said third mode;

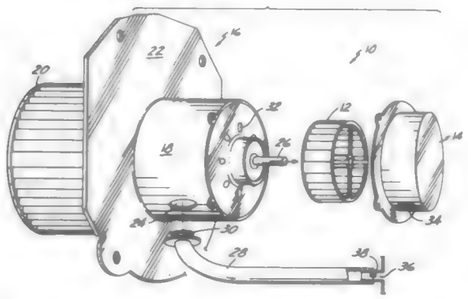
means for connecting said high AC voltage to said female receptacle, controlled by said closed switching means, when operating at said second mode or said fourth mode.

5,364,025

COMBINATION MOTOR COOLER AND AIR ASPIRATOR FOR CLIMATE CONTROL SYSTEM

Joseph L. Terry, Brighton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 27, 1992, Ser. No. 874,452
Int. Cl.[5] F24F *7/06*
U.S. Cl. 236—49.1 **10 Claims**



1. A combined motor cooler and air aspirator for a motor vehicle climate control system, comprising:

A) a motor for driving a climate control system air blower, the motor including a motor housing inlet port for admitting a flow of cooling air to the interior of the motor, the motor further including a plurality of housing apertures for allowing cooling air to exit from the interior of the motor;

B) a conduit for communicating air from the passenger compartment of a motor vehicle to the motor housing inlet port; and

C) means for aspirating air consecutively through the conduit, then the motor.

5,364,026

VENTILATION FAN CONTROL

Warren R. Kundert, Harvard, Mass., assignor to Control Resources, Inc., Harvard, Mass.

Filed Nov. 14, 1991, Ser. No. 792,236
Int. Cl.[5] F24F *7/02, 7/007, 11/053*
U.S. Cl. 236—49.3 **4 Claims**

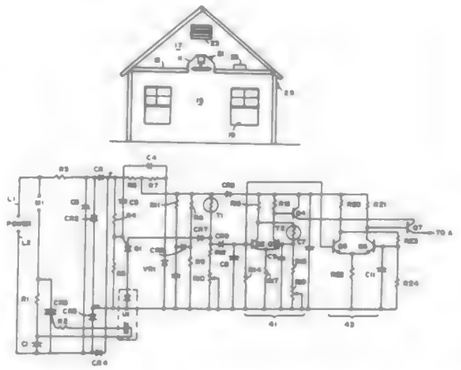
1. Apparatus for ventilating a structure comprising:

a variable speed exhaust fan mountable in an exhaust port in the structure, said structure permitting the admission of external environmental air;

means including a triggerable semiconductor switching device for energizing said fan from a.c. supply means;

means for sensing air temperature at said exhaust port;

first control means including a comparator responsive to said sensing means and including analog feedback providing hysteresis for enabling triggering of said switching device when the sensed air temperature rises above a first preselectable temperature and for disabling triggering of said switching device when the sensed air temperature



falls below a second preselected temperature lower than said first temperature; and

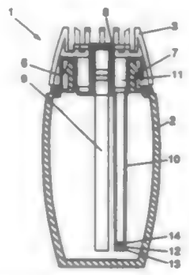
second control means for varying the phase angle of triggering of said switching device responsive to said sensing means for varying the speed of said fan for sensed air temperatures between said first temperature and a third preselectable temperature, said fan speed increasing progressively from about one-half full speed at said first temperature to full speed at said third temperature, said fan speed being essentially constant between said first and second temperatures.

5,364,027

DISPENSER ADAPTED FOR COMBINED CONTINUOUS AND INSTANT OPERATION

Petrus H. A. N. Kuhn, Den Haag, Netherlands, assignor to Sara Lee/DE N.V, Utrecht, Netherlands

PCT No. PCT/NL92/00009, § 371 Date Sep. 16, 1993, § 102(e) Date Sep. 16, 1993, PCT Pub. No. WO92/12802, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 16, 1992, Ser. No. 90,213
Claims priority, application Netherlands, Jan. 17, 1991, 9100089
Int. Cl.[5] B05B *9/04, 11/04;* **A45D** *34/02*
U.S. Cl. 239—44 **6 Claims**



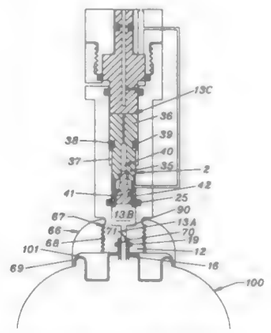
1. A dispenser comprising a container which is to be partly filled with liquid active substance and has a wall that is at least locally resiliently deformable, said dispenser further comprising two immersion tube channels extending from a point adjacent the bottom of the container up to the top of the container, one channel terminating in a spray nozzle and the other channel containing a wick and terminating in an evaporation space that communicates with the atmosphere.

5,364,028

PNEUMATIC TIMED SPRAY DISPENSER

Walter E. Wozniak, 18606 Oakwood Dr., Prairieville, La. 70769

Filed Mar. 3, 1994, Ser. No. 205,862
Int. Cl.[5] B65D *83/26*
U.S. Cl. 239—70 **5 Claims**



1. A spray dispenser operably attachable to a pressurized container containing liquid or gaseous material to permit timed discharges of discrete quantities of the material into the atmosphere, said dispenser comprises:

(a) an elongated body having a passageway with a central axis extending through and connecting opposite first and second ends of the elongated body; the passageway comprising a fluid entry passageway section, a lower passageway section, a timing passageway section, and a valve piston passageway section, the first end of the elongated body having the fluid entry passageway section shaped to receive the liquid or gaseous material from the pressurized container;

(b) a timing piston positioned in the passageway and shaped to slide within a portion of the passageway wherein a first end of the timing piston, along with the first end of the elongated body, form the lower passageway section within the passageway to receive the contents from the presurized container;

(c) a valve piston having first and second ends positioned in the passageway, the first end of the valve piston, along with the second end of the timing piston, form the timing passageway section within the passageway, and the second end of the valve piston, along with the second end of the elongated body, form the valve piston passageway section within the passageway, and wherein the second end of the elongated body is provided with a valve passageway connecting the valve piston passageway to the atmosphere; and

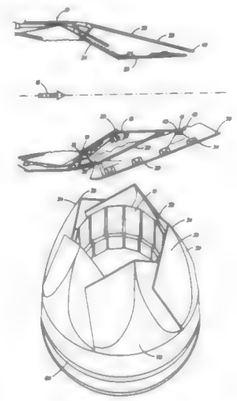
(d) an exhaust tube operatively connected at one end to the elongated body to receive the liquid or gaseous material from the lower passageway section when the lower passageway section is at approximately its minimum volume and operatively connected at an opposite end to the valve passageway formed in the elongated body which opens to the atmosphere, and wherein the lower passageway section and the timing passageway section are only connected to one another by a timing passageway to maintain a substantially constant pressure drop between the timing passageway section and the lower passageway section during operation of the spray dispenser; wherein the cross-sectional area of the passageway increases from the lower passageway section to the timing passageway section, and then to the valve piston passageway section; and wherein the cross-sectional areas of the passageway sections and the cross-sectional area of the valve passageway are sized to cause the timing piston to move along the central axis of the passageway in a manner to periodically operatively connect the lower passageway section to the exhaust tube permitting the contents to pass through the exhaust tube and into the valve passageway leading to the atmosphere.

5,364,029

AXISYMMETRIC CONVERGENT/DIVERGENT NOZZLE WITH EXTERNAL FLAPS

M. Kevin Barcza, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 30, 1993, Ser. No. 114,121
Int. Cl.[5] B64C *15/02*
U.S. Cl. 239—127.3 **29 Claims**



1. An axisymmetric convergent/divergent nozzle for a gas turbine engine comprising:

a static structure for the conveyance of exhaust gas therethrough;

a plurality of N convergent flaps circumferentially disposed adjacent one another, aft of said static structure and pivotally secured to said static structure;

a plurality of N divergent flaps, each secured at the forward end to the aft end of a convergent flap;

adjustment means for adjusting position of said divergent flaps; and

a plurality of N/X external flaps in overlapping relationship with adjacent external flaps where X is equal to one of 2 or 3, and located outboard of said divergent flaps, each pivotally secured at the forward end of the said static structure and slidably secured to a divergent flap at the aft end.

5,364,030

SOLUTION INJECTOR FOR UNDERGROUND SPRINKLER SYSTEMS

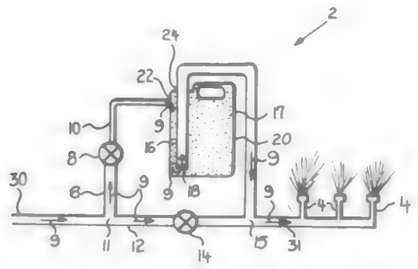
James L. Murdock, 1300 Northside Dr., Ormond Beach, Fla. 32174, and Charles A. Compton, 116 Sea Sparrow Ct., Daytona Beach, Fla. 32119

Filed Jul. 29, 1993, Ser. No. 99,133
Int. Cl.[5] B05B *7/26*
U.S. Cl. 239—310 **3 Claims**

1. A solution injector consisting of an intake pipe connected to an intake hose through an intake valve, the end of said intake

hose opposite said intake valve having means for removably connecting said intake hose to a tank;

an outflow pipe connected to said tank and extending to a bottom of said tank; and



a bypass pipe connected at one end to said intake pipe and at the other to said outflow pipe, said bypass pipe being connected through a bypass valve whereby flow through said bypass pipe is regulated by means of said bypass valve.

5,364,031

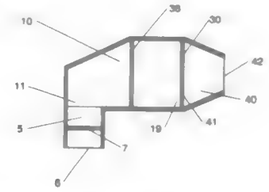
FOAM DISPENSING NOZZLES AND DISPENSERS EMPLOYING SAID NOZZLES

Tatsuya Taniguchi, Nishinomiya, Japan, and Dimitris I. Collias, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 10, 1993, Ser. No. 75,190

Int. Cl.[5] B05B *1/14*

U.S. Cl. 239—330 **10 Claims**



1. A foam dispensing nozzle for dispensing a final foam from an incoming intermediate foam, said nozzle comprising:

(a) an inlet conduit for receiving the incoming intermediate foam from an initial foam refining means, the incoming intermediate foam consisting of a foamed mixture of a foamable liquid and a gas at an intermediate foam velocity;

(b) a final foam refining means for converting the intermediate foam into a final foam located in fluid communication with the inlet conduit and having a plurality of substantially uniformly-sized and evenly distributed passageways therethrough, the passageways having a dimension from about 0.020 mm to about 0.120 mm; and

(c) a velocity decreasing means for reducing the intermediate foam velocity to a velocity no greater than 300 cm/sec through the foam refining means, the velocity decreasing means being located between and in fluid communication with the inlet conduit and the foam refining means.

5,364,032

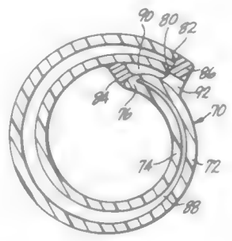
SELF-PROTECTING IRRIGATION HOSE AND METHOD

Michael P. De Frank, Temecula, Calif., assignor to T-Systems International, Inc., San Diego, Calif.

Continuation of Ser. No. 14,779, Feb. 8, 1993, Pat. No. 5,282,578. This application Jan. 26, 1994, Ser. No. 187,748

Int. Cl.[5] A01G *25/02*

U.S. Cl. 239—542 **14 Claims**



1. A method for making an irrigation hose comprising the steps of:

bending an elongated flat sheet of flexible water imperious plastic material having longitudinal edges along its length to form an outer layer, an inner layer, and a longitudinal fold line and to place the longitudinal edges adjacent to each other;

sealing the sheet in the region of the fold line to an interior surface of the inner layer near, but spaced from, the longitudinal edges; and

sealing the longitudinal edges of the sheet and an exterior surface of the outer layer near, but spaced from, the longitudinal fold line to form a relatively narrow flow regulating channel between the fold line and the interior surface of the inner layer and a relatively wide liquid storage channel between the outer and inner layers.

5,364,033

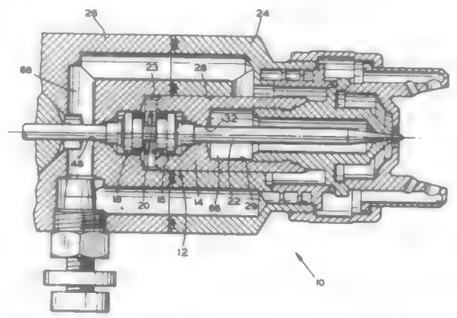
SEAL FOR SPRAY GUN

Roger T. Cedoz, Curtice, and John F. Schaupp, Toledo, both of Ohio, assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jul. 6, 1993, Ser. No. 87,489

Int. Cl.[5] B65D *53/02*

U.S. Cl. 239—526 **7 Claims**



2. A multiple-stage seal for sealing the periphery of a cylindrical shaft comprising:

a tubular packing member disposed about a periphery of the shaft, said packing member having a cylindrical outer surface, a first end forming a first edge with said outer surface and a second end forming a second edge with said outer surface;

an annular collar defining an axial bore through which the shaft extends, said axial bore having a first portion disposed about said packing member, said axial bore having a radially constructed second portion positioned in contact with said second edge of said packing member;

a sealing surface positioned in contact with said first edge of said packing member;

means for urging said first end of said packing member into simultaneous sealing engagement with said sealing surface and the periphery of the shaft; and

means for moving said collar relative to said packing member in a direction to urge said second end of said packing member into sealing engagement with the periphery of the shaft.

5,364,034

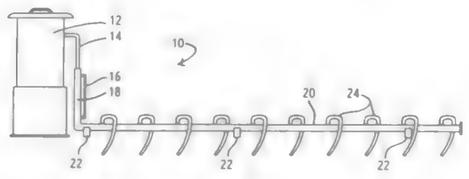
CONTROLLED LOW VOLUME IRRIGATION SYSTEM

Katsuji Hirahara, 771 Pomeryo Ave., Santa Clara, Calif. 95051

Filed Feb. 17, 1994, Ser. No. 197,859

Int. Cl.[5] F04F *10/02*; B05B *1/14*

U.S. Cl. 239—565 **14 Claims**



1. An irrigation system comprising:

a water storage reservoir,

a siphon tube, said siphon tube being in the shape of an inverted U, said siphon tube having a first end and a second end, said siphon tube having a bend intermediate said first end and said second end, said siphon tube having an ascending portion extending from said first end to said bend and a descending portion extending from said bend to said second end, said first end of said siphon tube being in fluid connection with said water storage reservoir, said second end being lower in elevation than said first end,

a header pipe, said header pipe comprising a substantially horizontal leg and a vertical leg, said vertical leg extending upward from said substantially horizontal leg, said vertical leg having an upper end, said second end of said siphon tube being nonsealingly positioned within said vertical leg of said header pipe, said upper end of said vertical leg being position around said descending portion of said siphon tube proximate said bend such that substantially all of said descending portion of said siphon tube is positioned within said vertical leg, said upper end of said vertical leg being open to the atmosphere,

and a plurality of discharge tubes, each of said plurality of discharge tubes being in fluid communication with said horizontal leg of said header pipe.

5,364,035

HIGH VOLTAGE SEALING AND ISOLATION VIA DYNAMIC SEALS

Yamin Ma, Roseville; Lawrence J. Lanzer, St. Louis Park, both of Minn., and Norman N. Fender, Farmington Hills, Mich., assignors to Graco Inc., Golden Valley, Minn.

Filed Dec. 20, 1993, Ser. No. 170,538

Int. Cl.[5] B05B *5/025*

U.S. Cl. 239—690 **13 Claims**

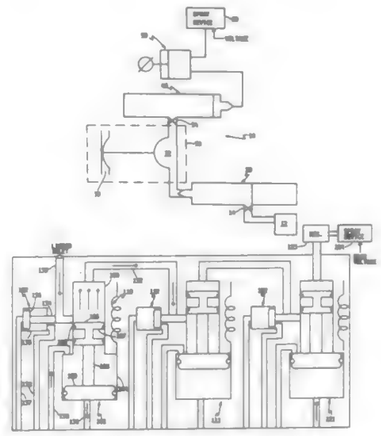
1. An apparatus for conveying conductive liquids to an electrostatic spraying device for providing electrical isolation of the liquid source from the spraying device, comprising:

a) a first metering valve in liquid flow communication with said liquid source, said first metering valve having an outlet port;

b) a liquid pump having an inlet in flow communication with said first metering valve outlet port, and having an outlet check valve;

c) a second metering valve in liquid flow communication with said pump outlet check valve, said second metering valve having an outlet port;

d) an electrostatic spray device in flow communication with said second metering valve outlet port; and



e) control means for sequentially filling said first metering valve with a predetermined volume of said liquid, and for transporting said predetermined volume to said pump, said second metering valve and said spray device, so that said predetermined volume does not simultaneously contact said first and second metering valves.

5,364,036

COMMINUTION IN A PLANETARY MILL

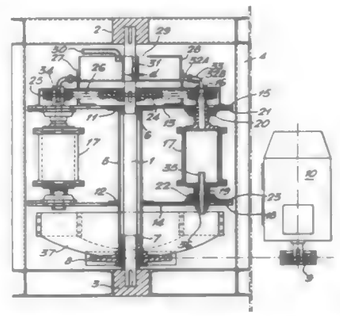
Hugh R. Falcon-Steward, St. Austell, Great Britain, assignor to ECC International Limited, United Kingdom

Filed Jul. 9, 1992, Ser. No. 910,211

Claims priority, application United Kingdom, Jul. 9, 1991, 9114792

Int. Cl.[5] B02C *17/08*

U.S. Cl. 241—21 **5 Claims**



1. Apparatus for wet grinding a material, which apparatus comprises a support which is rotatable about a primary axis and a grinding vessel, defining a grinding chamber, which is mounted on the support for rotation about a secondary axis which is substantially parallel to the primary axis, the grinding vessel being provided with an inlet for a feed suspension of a particulate solid material and an outlet for a suspension of a fine product, the grinding chamber communicating with the

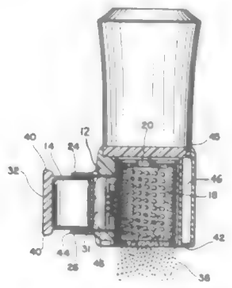
outlet through a removable wire screen cage, the aperture size of the screen being not greater than 0.3 mm.

5,364,037

ELECTRIC CHEESE GRATER WITH SPRING-LOADED CHEESE COMPARTMENT

George Bigelow, Chai Wan, Hong Kong, assignor to Nor-Wol Products, Inc., Canada

Filed Jun. 22, 1993, Ser. No. 80,316
Int. Cl.[5] A01D *55/00*
U.S. Cl. 241—93 **10 Claims**



1. An electric hand-held cheese grater, comprising an upper portion housing a power unit, an actuator for engaging the power unit, and a lower portion, the lower portion comprising

a grater housing having a hollow vertical cylindrical opening, said grater housing being open at a bottom end thereof for permitting the emergence of freshly grated cheese, said cylindrical opening accommodating conformingly therein a hollow cylindrical grater blade, the grater blade being attached at its upper end to a vertical rotatable shaft extending from the power unit, which rotatable shaft rotates upon actuation of the power unit to thereby rotate the grater blade,

a cheese compartment extending laterally from the grater housing at an open side thereof, the cheese compartment comprising a lower shelf and a side wall, the cheese compartment having a hinged door attached to the cheese compartment at a pivot point, the pivot point being located on a side of the cheese compartment opposite the cheese compartment side wall, the pivot point comprising a unidirectional spring means which biases the door in a closing direction to automatically retain a piece of cheese placed within the cheese compartment and continually force the cheese against the grater blade, the door having an inside face in the shape of a concave cylindrical arc with a radius substantially equal to that of the cylindrical grater blade, the door further having a lateral face which conforms to and abuts the cheese compartment side wall when the door is in the closed position, the door being shaped as a conforming plug which resides within the cheese compartment in a door closed position, and a door stop means which prevents grating contact between the grater blade and the inside face of the door.

5,364,038

SCREENLESS HAMMERMILL

Stanley R. Prew, Williamsport, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.

Filed May 11, 1993, Ser. No. 60,319
Int. Cl.[5] B02C *13/04*
U.S. Cl. 241—189.1 **25 Claims**

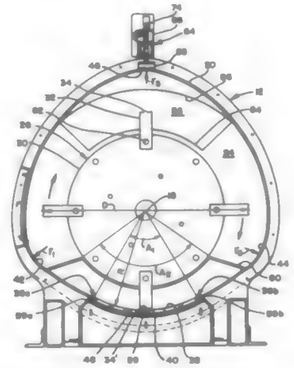
1. A hammermill comprising:

a casing having an inlet end, a discharge end, a longitudinal axis passing between the inlet and discharge ends, and a sidewall substantially encapsulating the axis between the inlet and discharge ends, such that an enclosed grinding space is defined within the casing;

a rotor assembly situated within the casing for rotation about the axis, and including a rotatable shaft on the axis, support means extending radially from the shaft for co-rotation therewith, and hammer elements attached to the support means, the hammer elements each having a radially outer tip which defines a hammer rotation diameter;

at least one grinding plate at the inside of the sidewall for defining a grinding surface in the grinding space having a radius of curvature centered on the axis, a length dimension parallel to the axis, and a width dimension defined by an arc A_1 of less than about 90 degrees about the axis, the grinding plate being arranged such that each hammer tip passes along the width dimension of the grinding plate with a clearance in the range of about 0.30 to 1.50 inch defining a grinding gap;

wherein the sidewall other than at the grinding plate has a non-uniform curvature which defines a non-uniform clearance from the hammer rotation diameter that is greater than the grinding gap clearance, said non-uniform curvature including at least one sidewall portion having a radius of curvature less than that of the grinding surface.

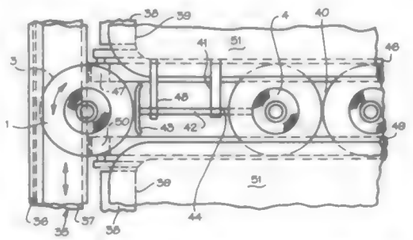


5,364,039

TRANSPORT SYSTEM FOR TRANSPORTING TEXTILE BOBBINS TO WINDING STATIONS

Dieter Möhrke, Mönchengladbach, and Jürgen Backhaus, Wegberg, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Feb. 22, 1993, Ser. No. 20,554
Claims priority, application Germany, Feb. 22, 1992, 4205499
Int. Cl.[5] B65H *67/06*
U.S. Cl. 242—35.5 A **10 Claims**



1. A transport system for transporting textile bobbins to winding stations of a textile winder on individual bobbin tube support members, comprising:

a reciprocating supply conveyor extending along the winding stations for supplying bobbins on tube support members to the winding stations;

a plurality of generally parallel winding station conveyors having entrances at the supply conveyor for receiving tube support members reciprocating on said supply conveyor; and

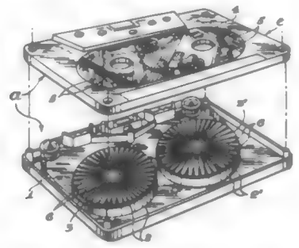
a plurality of control members disposed for engagement by tube support members, at least one control member being associated with a respective one of the winding station conveyors, each control member having a first portion normally disposed in the path of tube support members being conveyed on said winding station conveyor for engagement by tube support members being transported therepast and being displaced by said engagement, and a second portion adjacent said winding station conveyor entrance normally disposed out of engagement with tube support members and being connected to said first portion for movement into a position for engaging tube support members reciprocating on said supply conveyor to guide the tube support members past said winding station conveyors upon said first portion being displaced by a tube support member on said winding station conveyor.

5,364,040

VISUAL EFFECTS FOR RECORDING TAPE CASSETTES

Osvaldo Kaplan, Av. del Libertador 3672, 9th floor, Buenos Aires, Argentina

Continuation of Ser. No. 563,247, Aug. 6, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 876,122
Claims priority, application Argentina, Aug. 8, 1989, 314612; Aug. 1, 1990, 317513
Int. Cl.[5] G11B *23/087*
U.S. Cl. 242—347 **20 Claims**



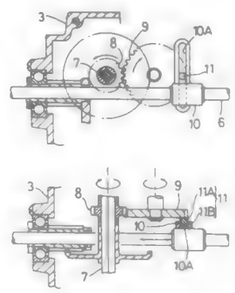
1. A tape cassette comprising first and second bodies having first and second walls respectively, said first and second walls being parallel to each other, said first and second bodies being connected together defining a six sided cassette which is open on one side which forms a passage for recording tape which may be brought opposite an element head of a recording/-playback device, first and second spaced tape reels mounted in said cassette rotatably about respective axes extending perpendicular to said first and second walls, each of said tape reels being provided with a disk laterally disposed thereon and having corresponding hollow spindles with inner teeth which can be coupled to drive spindles of said recording/playback device which confers on said reels a rotational activation about their respective spindles, on one of the walls of the cassette there is a partly opaque drawing having visual fields therethrough which correspond to portions of said drawing which show an object in motion, an outer surface of at least one of the disks having a printed material comprising a plurality of lines a portion of which can be observed through and cross obliquely with said visual fields such that when the reels are rotating the plurality of lines and the visual fields interact with each other to produce optical motion effect zones with complements the drawing and corresponds to portions of the rotating plurality of lines that can be observed through the visual fields.

5,364,041

OSCILLATING MECHANISM FOR A SPINNING REEL

Yasuhiro Hitomi, Hashimoto, Japan, assignor to Shimano Inc., Osaka, Japan

Filed Sep. 2, 1992, Ser. No. 939,602
Claims priority, application Japan, Sep. 9, 1991, 3-071902[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—242 **3 Claims**



1. A spinning reel comprising:

a first gear rotatable in accordance with rotation of a handle;

a second gear having an axis of rotation, said second gear being engaged with said first gear, said second gear having a side face, said second gear having radially outwardly projecting teeth, with spaces defined between said teeth, said teeth having radially outer portions, said spaces having radially inner portions, the distance between said inner portions of said spaces and said axis of rotation being less than the distance between said outer portions of said teeth and said axis of rotation;

a reciprocatable spool shaft; and

a reciprocating mechanism for reciprocating said spool shaft, said reciprocating mechanism comprising:

a drive pin formed on said side face of said second gear, said drive pin including a proximal portion and a distal portion, said proximal portion being located adjacent to said side face; and

a driven member fixed on said spool shaft, said driven member defining an engaging slot for receiving said drive pin, said distal portion of said drive pin being slidable in said engaging slot while remaining engaged within said slot, such that rotation of said second gear is converted to reciprocating movement of said spool shaft; and

wherein said distal portion of said drive pin has a radially outermost portion, the distance between said axis of rotation of said second gear and said radially outermost portion of said distal portion of said driving pin being greater than the distance between said axis of rotation and said inner portions of said spaces between said teeth.

5,364,042

SPOOL ADAPTER

Stuart J. Wyman, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 5, 1993, Ser. No. 506
Int. Cl.[5] B65H *75/24*
U.S. Cl. 242—348 **22 Claims**

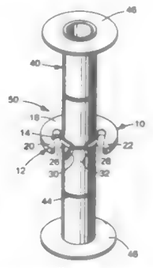
1. A unitary adapter formed as a single, molded component for mounting on a spool on which a web of material is to be wound wherein the adapter shortens the effective winding width of the spool and comprises:

a web-blocking portion having a maximum width dimension greater than the maximum diameter of a web to be wound on the spool to form a flange for the web;

a holding portion which positions the adapter on the spool, wherein the holding portion is connected to and extends

away from the web-blocking portion to form a channel between the holding portion and the web-blocking portion;

means for connecting the web-blocking portion to the holding portion; and



means for securing the holding portion on the outside of the spool without any substantial axial movement along the spool.

5,364,043

ARRANGEMENT IN A COIL WINDING MACHINE FOR A CABLE OR A SIMILAR STRANDLIKE PRODUCT

Gustaf Linderoth, Enköping, Sweden, assignor to Nokia-Mailefer Oy, Vantaa, Finland

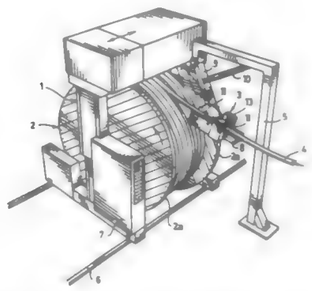
PCT No. PCT/FI91/00188, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO91/19664, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 13, 1991, Ser. No. 949,254

Claims priority, application Sweden, Jun. 15, 1990, 9002141-1

Int. Cl.[5] B65H *75/34*

U.S. Cl. 242—397 **8 Claims**



1. Apparatus in a coil winding machine for winding a strandlike product on a reel provided with flanges, comprising:

a support stand for supporting the reel for rotation around an axis thereof;

a guide for supplying the strandlike product to be wound on the reel to form superimposed layers of product turns wound adjacent to each other between the flanges of the reel;

distribution machinery for displacing the support stand and the guide in relation to each other by a pitch corresponding to the thickness of the strandlike product per product turn;

detectors for detecting the reel flanges and generating a signal responsive thereto, said detectors being coupled to the distribution machinery and the machinery being responsive to said signal to cause a reversal of displacement direction between the reel and the guide as the product turn contacts a reel flange; and

movable measuring means for continuously detecting the thickness of the strandlike product and for controlling the distribution machinery so that the pitch of the product turns on the reel is varied in accordance with the thickness measurement of the measuring means, said detectors being arranged for mechanical displacement in a direction parallel with the axis of the reel in response to movement of said measuring means over a distance corresponding to the displacement of the measuring means from a determined thickness position due to deviations in the strandlike product thickness.

5,364,044

AIR-CUSHION ROLL SUPPORT IN ROLL-MAKING MACHINE

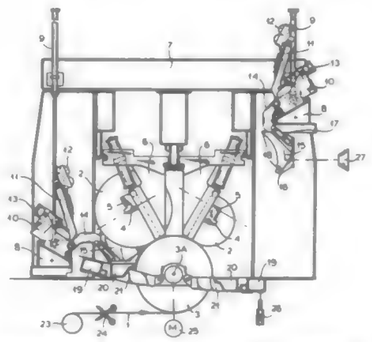
Ewald G. Welp, Erkrath, and Erhard Milke, Langenfeld, both of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

Filed Jun. 14, 1993, Ser. No. 77,209

Claims priority, application Germany, Jun. 13, 1992, 4219415

Int. Cl.[5] B65H *18/16, 19/30*

U.S. Cl. 242—530.4 **7 Claims**



1. An apparatus for making a plurality of relatively narrow rolls of paper from a relatively wide band of paper, the apparatus comprising:

a relatively wide main roller rotatable about and centered on a main axis;

means for longitudinally slitting the wide paper band into relatively narrow strips and for feeding same to the main roller with the strips axially closely juxtaposed;

a plurality of pairs of support heads arranged in two rows extending along the main roller with the rows spaced angularly from each other relative to the main axis, each pair of support heads being spaced in the respective row axially from the other support heads of the respective row and each pair of support heads being adapted to engage in an end of a respective roll core about which a respective one of the strips is wound;

drive means for rotating the main roller and thereby winding the strips up on the respective roll cores;

two respective elongated supports extending axially along the main roller adjacent the respective rows of support heads;

means for raising and lowering the supports;

a respective blower box at each of the rolls and having an upwardly open mouth snugly engageable with the respective roll held in the respective pair of holders;

means including respective structures carrying the blower boxes on the respective supports for displacing each of the boxes between a use position engaging vertically upward beneath the respective roll and an out-of-use position laterally offset outward from the use position; and

means for ejecting air from the mouths of the blower boxes and thereby at least partially supporting the respective rolls via respective air cushions on the respective blower boxes.

5,364,045

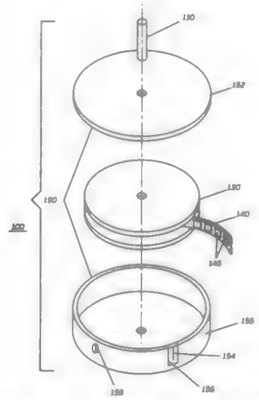
METHOD AND APPARATUS FOR DISPENSING ELECTRONIC COMPONENTS

Everett A. Clayton, Wilton Manors, and Kiron Gore, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 7, 1993, Ser. No. 71,826

Int. Cl.[5] B65H *75/16*

U.S. Cl. 242—588.6 **9 Claims**



1. A method for dispensing substantially moisture free electronic components from a canister for use in a parts feeding system, wherein the components are mounted on a component carrier, comprising the steps of:

filling the canister with pressurized gas;

dispensing the components through an opening within the canister;

conforming said opening to the components and to the component carrier as the components are being dispensed, thereby reducing the amount of gas loss through said opening; and

maintaining sufficient gas pressure within the canister to prevent air from entering into the canister.

5,364,046

AUTOMATIC COMPLIANT CAPTURE AND DOCKING MECHANISM FOR SPACECRAFT

Michael E. Dobbs, Brighton; Peter Tchoryk, Jr., Whitmore Lake, and Donald B. Jones, Ann Arbor, all of Mich., assignors to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 24, 1992, Ser. No. 839,996

Int. Cl.[5] B64G *1/62*

U.S. Cl. 244—161 **30 Claims**

1. An automatic capture mechanism for a spacecraft comprising:

a concave cone section having a first end with a first diameter and a second end with a second diameter smaller than said first diameter, said second diameter selected for admission of a ball of a predetermined diameter;

an end cylinder having a first end connected to said second end of said concave cone section and a second end;

a capture device disposed at said first end of said end cylinder having a capture position intruding into said end cylinder and restricting the diameter of passage for capture of a ball of said predetermined diameter, and a release position retracted from said end cylinder permitting unrestricted passage of a ball of said predetermined diameter;

a capture biasing device coupled to said capture device for urging said capture device toward said capture position; and

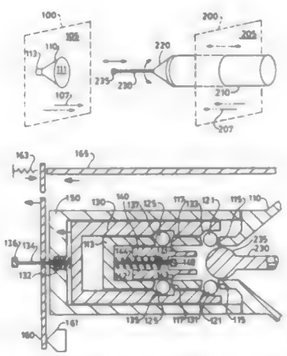
a trip mechanism disposed within said end cylinder at said second end for normally holding said capture device in said release position by restraining said capture biasing device, said trip mechanism capable of being tripped by a ball of said predetermined diameter to permit said capture biasing device to urge said capture device toward said capture position;

said end cylinder including a plurality of capture holes disposed said first end;

said capture device including a plurality of capture balls equal in number to the number of capture holes in said end cylinder, each capture ball disposed in a corresponding one of said plurality of capture holes in said end cylinder, each capture ball intruding into said end cylinder when said capture device is in said capture position and withdrawing into said capture hole when said capture device is in said release position;

said capture device further including an outer sliding cylinder disposed outside of and concentric with said end cylinder, said outer sliding cylinder having a capture ball groove for receiving said balls in said release position, said capture groove having a sloped edged that is urged toward said capture balls by said capture biasing device whereby upon tripping of said trip mechanism said capture biasing device urges said sloped edge of said capture groove into said capture balls thereby intruding each capture ball into said end cylinder;

said end cylinder including a plurality of trip holes disposed rearwardly of said plurality of capture holes;



said capture device including a plurality of trip balls equal in number to the number of trip holes in said end cylinder, each trip ball disposed in a corresponding one of said plurality of trip holes in said end cylinder, each trip ball intruding into said end cylinder when said capture device is in said capture position and withdrawing into said trip hole when said capture device is in said release position;

said outer sliding cylinder further including a release groove for receiving said trip balls in said release position, said release groove having a sloped edge that is urged toward said trip balls by said capture biasing device;

said trip mechanism including an inner sliding cylinder disposed within and concentric with said end cylinder opposite said trip holes having a trip shoulder for retaining said trip balls in said release position and a trip groove for receiving said trip balls in said capture position, said trip groove having a sloped edge facing towards said first end of said end cylinder and a trip biasing device for urging said sloped edge of said inner sliding cylinders toward said trip balls,

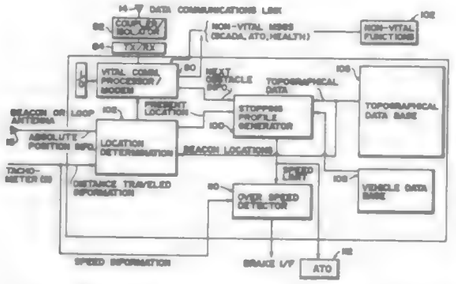
wherein in said release position said trip shoulder of said inner sliding cylinder retains each of said trip balls in said release grooves of said end cylinder retaining said end cylinder in said release position and pressure on said inner sliding cylinder toward said second end of said end cylinder of a force to overcome said trip biasing device permits said trip balls to

intrude into said end cylinder at said trip groove of said inner sliding cylinder thereby permitting said capture biasing device to force said capture balls into said end cylinder.

5,364,047
AUTOMATIC VEHICLE CONTROL AND LOCATION SYSTEM

William A. Petit, Spencerport; George G. Maderer, Rochester; Samuel J. Macano, Macedon, and James R. Hoelscher, Rochester, all of N.Y., assignors to General Railway Signal Corporation, Rochester, N.Y.

Filed Apr. 2, 1993, Ser. No. 41,953
Int. Cl.[5] B61L *27/00*
U.S. Cl. 246—122 R **15 Claims**

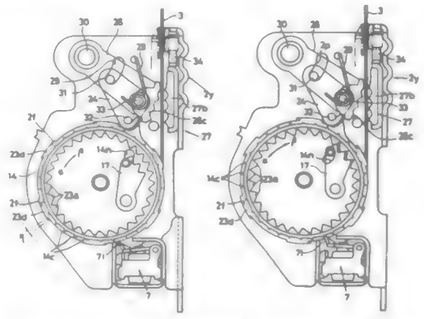


1. A signaling and traffic control system which comprises:
a vehicle-based control means capable of determining the location of a vehicle as it traverses along a guideway, said vehicle-based control means having an onboard computer means with a topographical database and a vehicle database, and means for measuring the speed of said vehicle and the distance which said vehicle has traveled;
wayside control means disposed within each sector of said guideway, said wayside control means capable of communicating with all vehicles within its sector of control and with other wayside control means outside its sector of control;
means for communicating from said vehicle to said wayside control means and from said wayside control means to said vehicle;
a plurality of vehicle location information means disposed along said wayside, so that said vehicle can determine its absolute location along said wayside;
means for communicating from each vehicle location information means to said vehicle, including means on said vehicle for responding to signals received from said vehicle location information means so as to determine said absolute location of said vehicle; and
means for controlling the speed/stopping profile of said vehicle of said vehicle in accordance with inputs received form said onboard computer means, said inputs being generated based on information received from said topographical database and said vehicle database, and based on information communicated to said vehicle-based control means from said wayside control means, from said vehicle location information means, and from said means for measuring the speed of said vehicle and the distance which said vehicle has traveled.

5,364,048
SEAT BELT RETRACTOR

Yoshiichi Fujimura, Shiga, and Shizutaka Matsuura, Hikone, both of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,099
Claims priority, application Japan, Apr. 6, 1992, 4-082582
Int. Cl.[5] B60R *22/38, 22/42*
U.S. Cl. 242—381.1 **3 Claims**

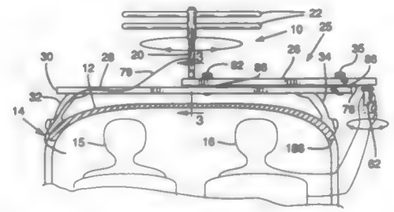


3. A seat belt retractor including a reel shaft for winding a webbing on it, a frame for rotatably supporting both ends of said reel shaft, lock means that is located between said frame and said reel shaft, and permits the rotation of said reel shaft in the normal state and is actuated, as occasion demands, to lock said reel shaft against at least its rotation in the webbing unwinding direction, deceleration sensor means that is actuated when deceleration larger than a predetermined value is applied to a vehicle, lock actuator means that turns in synchronism with the rotation of said reel shaft in the normal state, and rotates relative to said reel shaft in operable association with the actuation of said deceleration sensor means, thereby actuating said lock means, clamp means for locking said webbing, and an operably member that operates in operable association with the actuation of said lock means to actuate said clamp means, characterized in that:
said lock means including a lock ring having a first portion to be engaged, said first portion being provided at one end of said reel shaft of said frame and designed to be rotatably by a given amount; a first engaging member having a first engaging portion that is rotatably supported at one end by one end of said reel shaft and can be engaged at the other end with said first portion to be engaged, said first engaging portion being designed such that, in the normal state, it is held at a position where it is not engaged with said first portion to be engaged and, as occasion demands, it turns to a position where it is engaged with said first portion to be engaged; a second portion to be engaged, that is provided at the other end of said reel shaft; and a second engaging member having a second engaging portion that is rotatably supported at one end by the other end of said reel shaft and can be engaged at the other end with said second portion to be engaged, said second engaging portion being designed such that, in the normal state, it is held at a position where it is not engaged with said second portion to be engaged and, as occasion demands, it turns to a position where it is engaged with said second portion to be engaged,
said clamp means including a clamp member for having clamping force on said webbing and a member for bearing the clamping force of said clamp member, said webbing being clamped between said clamp member and said force bearing member under the clamping force of said clamp member, thereby locking up said webbing, said clamp member including a lever comprising a toggle link mechanism and a toothed member provided at the end of said lever and having a given number of teeth, and having automatic locking up means which said clamp member is constructed such that, after the said lever is turned in the locking direction to allow said teeth to bite into said webbing, said lever is allowed to turn in the locking direction only by unwinding force on said webbing, thereby locking up said webbing automatically, and
said operable member comprising an arm that is engaged with said lock ring and said clamp member, thereby transmitting the rotational force of said reel shaft transmitted to said lock ring to said clamp member and turning said lever in the locking direction.

5,364,049
VEHICULAR MOUNTING SYSTEM FOR DIRECTIONAL ANTENNAS

Scott B. Long, Portland, Oreg., assignor to Radar Engineers, Portland, Oreg.

Filed Jul. 15, 1992, Ser. No. 915,456
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 248—205.1 **13 Claims**



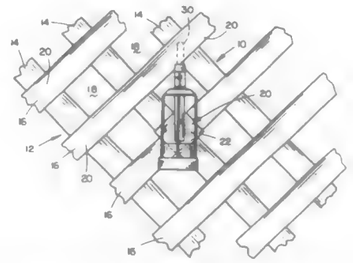
1. An antenna mounting system for supporting a rotatable antenna on a vehicle and for permitting selective rotation of the antenna about a generally vertical axis by an occupant of the vehicle, the mounting system comprising:
a support frame for mounting above the roof of a vehicle,
a rotatable mast holder supported on the frame for holding a mast of an antenna, the mast holder being rotatable about a generally vertical first axis to turn the antenna about the first axis,
a direction controller including a longitudinal handle rotatably supported on the frame for axial rotation about a generally vertical second axis which extends lengthwise through the handle, said second axis being stationary relative to the support frame, the handle being positionable adjacent a window of the vehicle wherein an occupant of the vehicle axially rotates the handle by reaching through the window, and
an endless transmission which extends between the mast holder and the handle and transmits endless rotary motion from the handle to the mast holder, wherein changes in the rotational orientation of the handle produces a responsive rotation of the mast holder.

5,364,050
HANGER FOR LATTICE

Harold C. Smith, 1101 Birchcrest Rd., Bellevue, Nebr. 68005

Filed Nov. 29, 1993, Ser. No. 158,951
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—227 **9 Claims**

1. A hanger for removable engagement on a lattice, comprising:
a bracket having a forward panel, a rearward panel, and an upper connecting panel connecting upper ends of the forward and rearward panels;
said forward and rearward panels being generally parallel to receive a portion of the lattice therebetween;
said connecting panel having a generally V-shaped lower surface formed of a pair of sloped leg surfaces connected along a single, common edge;
said connecting panel common edge oriented perpendicularly to the forward and rearward panels such that the sloped leg surfaces closely fit an intersection of straps on the lattice; and

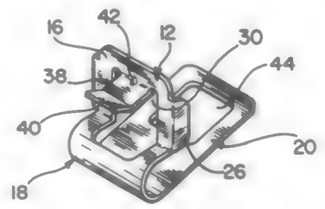


support means connected to the forward panel, to suspend an object from the lattice.

5,364,051
LOCATOR CLIP

James E. Philpot, Cookeville, Tenn., assignor to Teledyne Industries Inc., Cookeville, Tenn.

Filed Apr. 29, 1993, Ser. No. 53,684
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—229 **3 Claims**



1. In an electrically heated appliance, spaced first and second wall portions, a heating element having a tubular sheath with opposed contact ends, means mounting said contact ends to said first wall portion, a temperature probe extending from said second wall portion, and a locator clip mounting said heating element sheath, intermediate said contacts, to said temperature probe, said clip comprising first means for receiving and retaining the heating element sheath, second means adjacent said first means for slidably receiving the temperature probe therein and supporting said clip on said probe with said sheath in contact with said probe, and means for resiliently biasing said probe and said sheath relatively toward engagement with each other.

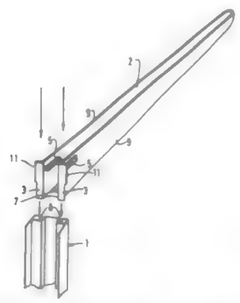
5,364,052
SHELF SUPPORT SYSTEM

Costanzo De Gruttis, 7 Sheen Park, Richmond SY TW91UN, England

PCT No. PCT/GB91/02090, § 371 Date May 26, 1993, § 102(e) Date May 26, 1993, PCT Pub. No. WO92/09222, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 64,132
Claims priority, application United Kingdom, Nov. 26, 1990, 9025641; Jul. 24, 1991, 9115939
Int. Cl.[5] E04G *3/08*
U.S. Cl. 248—245 **8 Claims**

1. A shelf support system comprising a shelf support arm adapted to be mounted horizontally and a support bar adapted to be disposed vertically and means for mounting the support bar to a vertical wall or other support surface, sliding means enabling the arm to slide up and down the support bar and retaining means to secure the support arm to the support bar at

any desired position, wherein the support arm is a two sided member with an external flange at the end of each side and the support bar has a profiled section that provides spaced apart and opposed recesses to accommodate the said external flanges of the support arm, the retaining means including expandable means held by the support arm and located within and between the two sides of the support arm and operable by actuating means to urge the said flanges of the support arms apart laterally and to engage the said support bar recesses sufficiently to secure the support arm in a desired position,



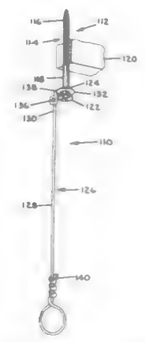
said expandable means including a bolt passing upwardly through a hole in a bottom portion of said arm adjacent to said flanges, a nut spanning the gap between the sides of said arm engageable with said bolt, said flanges being caused to separate laterally from one another by tightening of said bolt to cause said nut to ride over opposed protrusions provided on the inner surfaces of the arms and thereby increasing the gap between said flanges.

5,364,053

HANGER DEVICE

Robert A. Rodgers, R.D. #6 Vetrans Rd., Mercer, Pa. 16137

Continuation-in-part of Ser. No. 565,721, Aug. 13, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,286
Int. Cl.[5] A47H *1/16*
U.S. Cl. 248—302 **2 Claims**



1. An improved apparatus for hanging suspended ceiling structures from an overhead surface, such as a transversely-extending ceiling joist or beam, comprising:

an elongated screw fastener having a shank with a threaded end, a non-threaded portion, a neck portion, and an end adjacent the threaded end which defines a head adapted to be engaged by a tool to rotationally drive the fastener, and the neck portion having a width substantially less than the transverse dimension of the head;

a wire member, for vertical disposition and operative cooperation with the fastener, having an elongated body portion, means at a first end of the body portion for connection to part of a suspended ceiling structure, and an opposite second end having a ring-like shape defining an aperture to accommodate extension therethrough of the fastener, the aperture being disposed relative to the wire body portion whereby an imaginary straight line taken on the aperture's central axis is substantially coextensive to and laterally spaced from the longitudinal axis of the wire member, and the aperture being of sufficient width to permit free axial rotation during selective vertical adjustment of the fastener when the fastener is inserted into the overhead surface or removed therefrom;

the aperture having sufficient width so that the free axial rotation of the fastener during vertical adjustment into or out of the overhead surface does not twist the wire;

the lateral spacing between the imaginary straight line taken on the aperture's central axis and the wire body portion is at least as large as one-half the transverse dimension of the fastener head; and

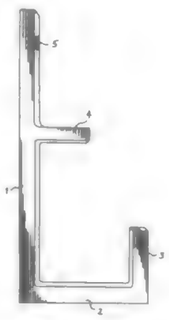
the wire member further characterized by the second end being an integral extension of the wire body portion.

5,364,054

HOOK FOR ATTACHING A BOAT COVER

Ricky D. Miller, 7620 Iverson St., Cottage Grove, Minn. 55016, and Bruce A. Reeve, 1429 E. 6th St., St. Paul, Minn. 55106

Filed Feb. 1, 1993, Ser. No. 11,877
Int. Cl.[5] F16B *45/00*
U.S. Cl. 248—304 **1 Claim**



1. A hook for attaching a boat cover to the bar of a boat trailer, said hook comprising:

a first, long, vertical member which has an opening formed through it near the upper end of said member, said opening being of sufficient size for a cord or rope to be passed therethrough and attached to said boat cover;

a first horizontal member projecting perpendicularly from the bottom end of said first vertical member;

a second, short, vertical member projecting perpendicularly from the end of said first horizontal member which is distal to said first vertical member, said second vertical member being positioned parallel and in spaced relation to said first vertical member at a distance approximately equal to the width of said bar of said boat trailer;

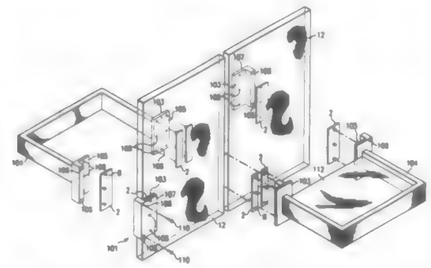
a second, cantilevered, horizontal member projecting perpendicularly from said first vertical member, said second horizontal member being positioned parallel and in spaced relation to said first horizontal member at a distance approximately equal to the height of said bar of said boat trailer.

5,364,055

REPLACEABLE CUSHIONS FOR FIXTURES/HARDWARE SUPPORTING GLASS PANELS

T. Michael Abinanti, Palatine, Ill., assignor to Met Displays, Inc., Chicago, Ill.

Filed Mar. 30, 1992, Ser. No. 859,895
Int. Cl.[5] A47G *1/10*
U.S. Cl. 248—316.1 **20 Claims**



1. A mounting structure for a display or storage fixture comprising:

a frame structure having an abutting surface, the abutting surface having an orifice provided therein;

a fastening device attached to the frame structure;

a replaceable cushion having a first surface and substantially flat second surface, the first surface having a projecting member inserted within the orifice of the abutting surface and operable to prevent vertical or lateral movement of the replaceable cushion with respect to the abutting surface;

a substantially vertically oriented glass panel supported by the frame structure and in contact with the substantially flat second surface of the replaceable cushion; and

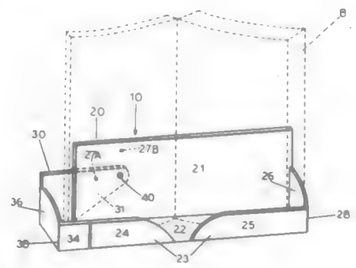
the replaceable cushion being compressibly urged against the glass panel by the abutting surface of the frame structure in conjunction with the fastening device.

5,364,056

COMBINED BOOK HOLDER AND BOOKMARK

Curtis T. Jiang, San Francisco, Calif., assignor to QLH USA, Inc., San Francisco, Calif.

Filed Aug. 2, 1993, Ser. No. 99,747
Int. Cl.[5] A47B *97/04*
U.S. Cl. 248—447 **6 Claims**



1. A holder and carrier for a book, comprising:

a. a short rack member and a long rack member, the short rack member having one closed left end and an open right end, the long rack member having one closed right end and an open left end;

b. pivoting means pivotally securing the short rack member to the long rack member;

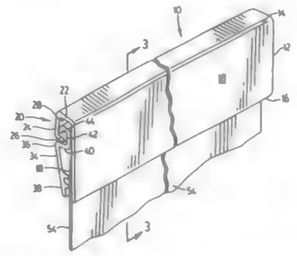
c. detent means located on both rack members; wherein when the short rack member pivots toward the long rack member, with the closed end of the short rack member moving toward the open end of the long rack member, forms a first closed-end structure to hold and support the book in an open position, and when the short rack member pivots away from the long rack member, forms a second diagonally enclosed rack structure to enclose the book and being used as a carrier and bookmark.

5,364,057

SNAP CLOSING PANEL HOLDER

Adrian W. Pynenburg, 57 Golfdale Road, Brantford, Ontario, Canada N3T 5H6

Filed Feb. 4, 1992, Ser. No. 830,890
Claims priority, application Canada, Feb. 5, 1991, 2035706
Int. Cl.[5] G09F *3/20*
U.S. Cl. 248—475.1 **11 Claims**



1. A panel holder, comprising:

a) a first longitudinal panel provided with a first planar portion and a first longitudinal, C-shaped flange attached to and running along a first peripheral edge thereof, wherein the C-shaped flange includes an outer wall and an inturned tongue attached to the outer wall and disposed toward and spaced from the first planar portion, and wherein the outer wall is spaced from the first planar portion a first predetermined distance;

(b) a second longitudinal panel provided with a second planar portion and a second longitudinal C-shaped flange attached to and running along a first peripheral edge thereof, wherein the second C-shaped flange includes an inner wall portion having an outer surface, an upper wall attached to the inner wall portion and a peripheral lip attached to the upper wall, wherein the outer extremity of the peripheral lip is spaced from the outer surface a second predetermined distance, and wherein the peripheral lip extends transversely from the upper wall portion a third predetermined distance; and

c) the second flange being slidingly received within the first flange, wherein the first predetermined distance is slightly smaller than the second predetermined distance and the third predetermined distance is less than the first predetermined distance, and wherein one of the flanges is resilient such that transverse rotation of one panel with respect to the other panel causes the panels to snap between an open and closed position.

5,364,058

SPRING-LOADED BRACKET

Charles G. Shepherd, Oakville, Canada, assignor to Metagal North America Ltd., Oakville, Canada

Filed Sep. 30, 1993, Ser. No. 134,761
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—479 **2 Claims**

1. A spring-loaded bracket comprising a first part securable to a support, a second part mounted on the first part for angular movement relative thereto in opposite directions from a neutral position and a spring assembly biasing the second part to the neutral position,

said spring assembly comprising a helical torsion spring

carried by the first part and having first and second end portions at opposite ends,

a first stop carried by the first part to limit movement of the first spring end portion in a spring unwinding direction, and

a second stop carried by the first part to limit movement of the second spring end portion in a spring unwinding direction,

said second part having a first abutment engaging the first spring end portion so as to deflect the first spring end portion in a spring winding direction when the second part is moved angularly relative to the first part in one direction from the neutral position, and said second part having a second abutment engaging the second spring end portion so as to deflect the second spring end portion in a spring winding direction when the second part is moved angularly relative to the first part in the opposite direction from the neutral position.

said first part comprising a tubular sleeve containing said helical coil spring, said tubular sleeve carrying said first and second stops within said sleeve,

said second part having a portion adjacent a first end of the sleeve and a first spindle member projecting therefrom into the first end of the sleeve and rotatably mounted therein, said first spindle member carrying the first abutment, and

said second part also having a portion adjacent a second end of the sleeve and a second spindle member projecting therefrom into the second end of the sleeve and rotatably mounted therein, said second spindle member carrying the second abutment.

5,364,059

EQUIPMENT SUPPORT STRUCTURE

Shigeo Kinoshita, Ohmiya; Takahiro Asano, Urawa; Sadamu Matsuda, Tokyo, and Wataru Watanabe, Ageo, all of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1990, Ser. No. 610,516

Claims priority, application Japan, Nov. 8, 1989, 1-130225[U]

Int. Cl.[5] G11B *33/02*

U.S. Cl. 248—584 **35 Claims**

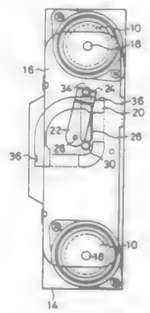
1. An audio electronic equipment supporting structure for mounting audio electronic equipment in a vehicle to be relatively free from the adverse effects of vibrations, comprising:

a damper assembly for absorbing vibration;

a damper plate connected to the damper assembly for extending along a side of the audio electronic equipment;

a link member pivotally connected to the damper plate and movable over a predetermined range of travel;

spring means capable of connecting the link member to the audio electronic equipment, whereby a spring force lessens any weight of the audio electronic equipment that could act on the damper assembly, and



means for positioning the link member to apply the force of the spring means in a vertical axis to counter any weight of the audio electronic equipment regardless of either an upright vertical mounting or a horizontal mounting of the audio electronic equipment.

5,364,060

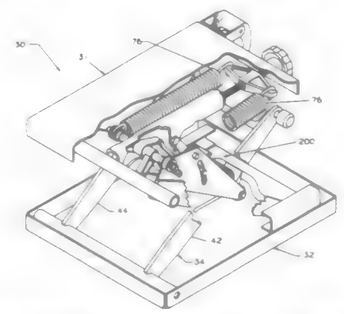
ADJUSTABLE MECHANIZED SEAT SUSPENSION

Kyle P. Donovan, Milwaukee, and Bradley S. Boyles, Mequon, both of Wis., assignors to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Mar. 19, 1993, Ser. No. 33,820

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—588 **30 Claims**



1. A seat suspension system for adjustably supporting a first support member on a second support member thereof, said system comprising:

a. a mounting mechanism swingably connected to one of said first and second support members;

b. a support arm assembly including a first end portion pivotally connected to said mounting mechanism and supported on said one support member by said mounting mechanism, said support arm assembly further including a second end portion operatively connected to the other of said first and second support members, said support arm assembly including a first support arm having a cam provided thereon; and

c. a cam follower which engages said cam, said cam and said cam follower interacting with said mounting mechanism to suspend said first support member with respect to said second support member when a load is imposed on said first support member.

5,364,061

TORQUE TAKE-UP LINK FOR A VEHICLE ENGINE

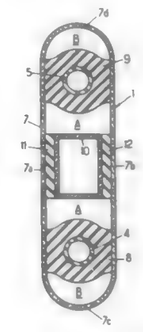
Jean-Pierre Ciolczyk, Chalette S/Loing, and Olivier Nicolas, Montargis, both of France, assignors to Hutchinson, Paris, France

Filed Aug. 10, 1993, Ser. No. 103,672

Claims priority, application France, Aug. 14, 1992, 92 10047

Int. Cl.[5] F16M *13/00*

U.S. Cl. 248—610 **7 Claims**



1. A torque take-up link for a vehicle engine, the link being of the type comprising two rigid inside tubes (**4**, **5**) for connection firstly to the chassis (**3**) of the vehicle and secondly to its engine (**2**), a rigid hollow outer strength member (**7**) made of composite material constituted by a synthetic resin reinforced by fibers having a high modulus of elasticity, said strength member (**7**) thus having two opposite walls (*7a*, *7b*) extending lengthwise and interconnected by a rigid inner strength member (**10**), and two inside resilient pads (**8**, **9**) of low stiffness interconnecting said opposite walls (*7a*, *7b*) of the outer strength member at respective ones of said inside tubes (**4**, **5**), the link being characterized in that a gap (**B**) is provided at at least one end of the link between the corresponding resilient pad (**8** or **9**) and the corresponding end (*7c* or *7d*) of the outer strength member (**7**), and in that said fibers having a high modulus of elasticity in said outer strength member are crossed and at least a fraction of them extend at an angle (θ) greater than $\pm 30°$ relative to the axis of the link.

5,364,062

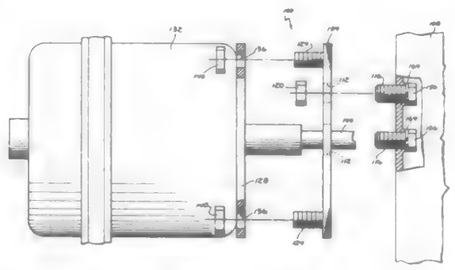
MOUNTING APPARATUS FOR A RAILROAD AIR BRAKE CYLINDER

James J. Doyle, Jr., Dracut, Mass., and Scott G. Comstock, Amherst, N.H., assignors to Controlair, Inc., Amherst, N.H.

Filed Aug. 2, 1993, Ser. No. 100,362

Int. Cl.[5] F16M *3/00*

U.S. Cl. 248—674 **13 Claims**



1. Apparatus for mounting a railroad air brake cylinder to a bolster casting of a railroad car, comprising:

a. a flange attached to the cylinder;

b. a mounting plate disposed between the flange and the bolster casting;

c. means for attaching the flange to the mounting plate; and

d. means for attaching the mounting plate to the bolster casting.

5,364,063

ICE CUBE TRAY

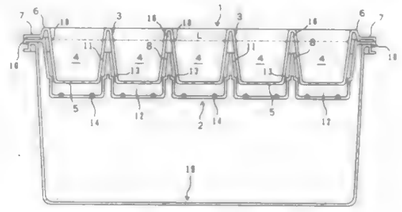
Eichi Nishimura, Kohshoku; Shoichi Takeda, Togura; Tohru Fujiwara, Omi, and Nobushige Kobayashi, Nagano, all of Japan, assignors to MK Seiko Co., Ltd., Nagano, Japan

Filed Jan. 10, 1994, Ser. No. 179,236

Claims priority, application Japan, Aug. 5, 1993, 5-214969

Int. Cl.[5] F25C *1/24*

U.S. Cl. 249—52 **3 Claims**



1. An ice cube tray comprising in combination an inner tray divided lengthwise and breadthwise into a plurality of pockets with an open top and an outer bottom, and an outer tray having an inner bottom, and divided into a configuration that substantially corresponds to the shape of said inner tray, wherein the inner tray is seated within the outer tray thereby forming a space between the outer bottom of the inner tray and the inner bottom of the outer tray, with means defining openings in the outer bottom of the inner tray to adjoin said space so as to make transparent ice in the said pockets, and means defining curved expansion protruding points on the inner bottom of the outer tray so as to allow the said space to expand.

5,364,064

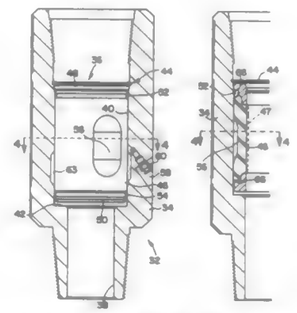
SAFETY SUB WITH ASYMMETRICAL WALL ELASTOMERIC CLOSURE FOR RETAINING DRILLING FLUIDS

Douglas W. Carlson, and Stephen P. Simons, both of Kingwood, Tex., assignors to Hydril Company, Houston, Tex.

Filed Mar. 15, 1994, Ser. No. 213,623

Int. Cl.[5] F16K *7/07*

U.S. Cl. 251—5 **35 Claims**

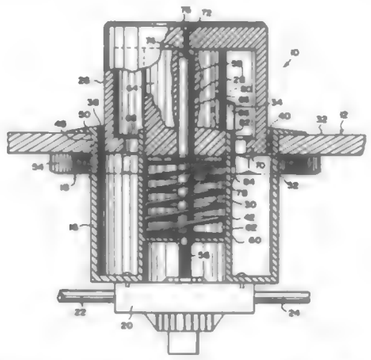


1. A safety sub for retaining drilling fluid in the external fluid supply above a drill string in the event of reduction or loss in operating fluid pressure in the drill string, comprising

an elastomeric cartridge having a longitudinal axis, including

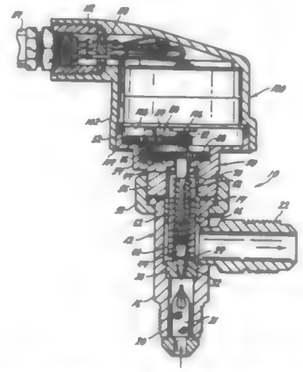
a molded elastomeric central closure and
two metallic end pieces longitudinally fixedly connected to the respective ends of said molded closure,
said elastomeric cartridge having a central bore sized consistently in internal diameter with the size of the internal bore of the drill string,
a receiving drill stem sub connectable at its upper end to the external fluid supply and at its lower end to the pressurized drill string,
said drill stem sub having an internal central bore sized consistently with the size of the internal bore of the drill string, the drill stem sub central bore including an enlarged portion suitable for receiving in a fixed location therein said elastomeric cartridge,
the wall of said elastomeric closure having an area on one side that is substantially thinner in dimension than the remainder of the wall along a substantial length of said closure, and
a charge valve in the side of said drill stem sub for pneumatically pre-charging said elastomeric cartridge at a level less than the operating fluid pressure in the drill string so that normal operating fluid pressure maintains open the central bore of said elastomeric cartridge and fluid pressure less than normal operating fluid pressure results in the pneumatic pre-charge closing of said elastomeric cartridge by inwardly collapsing said thinner area of said elastomeric closure to prevent further drill fluid flow from the external fluid supply until normal operating fluid pressure is restored in the drill string.

5,364,065
PUSH CONTROL FAUCET HANDLE
Reef L. Tanati, 504 A Haihai Street, Hilo, Hi. 96720
Filed Sep. 9, 1993, Ser. No. 118,516
Int. Cl.[5] F16K *35/02, 11/20*
U.S. Cl. 251—96 **9 Claims**



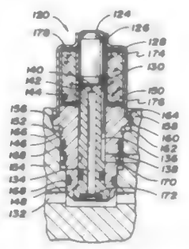
1. A push control faucet handle for a sink having a spout which comprises:
a) a housing;
b) means for mounting said housing to the sink;
c) a water control valve connected to bottom of said housing, said water control valve having a first pipe line connected to a water supply and a second pipe line connected to the spout in the sink;
d) a knob which rides within said housing;
e) means for adjustably coupling said knob to said water control valve;
f) means for biasing said knob to a raised position above a top surface of the sink, so that said knob can be manually rotated to open and close said water control valve to control the flow of water from the water supply to the spout in the sink;
g) a stop member affixed to an inner frame in said housing, and an inwardly facing collar on said knob below said stop member, so that said stop member will prevent said knob from being forced out of said housing due to pressure from said biasing means; and
h) means for retaining said knob in a lowered position flush with the top surface of the sink, when said knob is pressed down into said housing and for releasing said knob so it will return to the raised position when said knob is pressed again, wherein said retaining means includes:
1) said bushing having a lock valley formed in one side thereof; and
2) a lock spring pin mounted at a first end to a side of said inner frame with a second end extending upwardly to engage with said lock valley, so that when said knob is pressed down, said lock spring pin will follow a pre-determined path within said lock valley to reach a locked point in the lowered position and when said knob is pressed again said lock spring pin will become released from the locked point, to allow said knob to travel back to the raised position, whereby when said knob is in the lowered position a young child will have difficulty in reaching and operating said knob.

5,364,066
DUAL PORT VALVE WITH STEPPER MOTOR ACTUATOR
David C. Dorste, Frontenac; Dennis L. Hoehne, St. Louis; John W. Friend, Rock Hill, and Donald L. Tillotson, St. Charles, all of Mo., assignors to Sporlan Valve Company, St. Louis, Mo.
Filed Jul. 15, 1993, Ser. No. 92,324
Int. Cl.[5] F16K *1/06, 1/38*
U.S. Cl. 251—122 **12 Claims**



1. An expansion valve for a refrigeration system, the valve comprising:
(a) a valve body including an inlet means and an outlet means,
(b) valve means disposed within the body between the inlet means and the outlet means and including port means and pin means cooperating with the port means to control refrigerant flow through the valve,
(c) the port means having a first port communicating with the inlet means and a second port communicating with the outlet means and the pin means having a first portion received by the first port and a second portion received by the second port, said ports being of different size and said pin portions being of a different included angle, the first port being smaller than the second port and the first pin portion having an included angle greater than the included angle of the second pin portion, and
(d) means actuating the pin means.

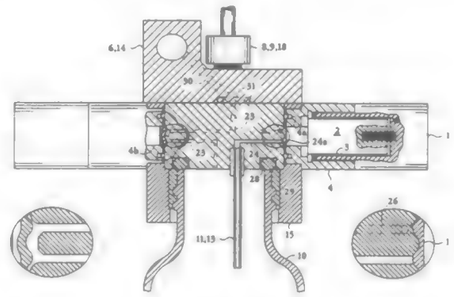
5,364,067
VEHICULAR ANTI-LOCK BRAKE SYSTEM HYDRAULIC CONTROL VALVE AND METHOD OF MAKING SAME
Herbert L. Linkner, Jr., Dexter, Mich., assignor to Kelsey-Hayes Corporation, Romulus, Mich.
Filed Feb. 18, 1994, Ser. No. 198,518
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.02 **13 Claims**



1. A control valve for a vehicle anti-lock brake system control unit having a housing with a control valve bore therein, the control valve comprising:
a sleeve having a moveable armature therein;
a coil surrounding the sleeve for moving the armature, the coil having an inner diameter and an outer diameter; and
a valve body having a first and a second end, the second end attached to the sleeve and the first end seated within the control valve bore of the housing,
said valve body including a coaxially extending throughbore,
a cylindrical pole piece received within said bore and having a first end and a second end, and a flow passage extending coaxially of said pole piece from one said end to the other,
said flow passage being restricted at said first end adjacent said armature and terminating in a valve seat,
said pole piece further including an axially extending second flow passage located in the outer circumference of said pole piece and extending from said first end to an outlet port located within said valve body,
said armature being biased in a normally open position clearing said valve seat whereby fluid communication is provided from said inlet port, through said pole piece, across the first end of said pole piece, through said second flow passage and thence to said outlet port, and whereby open energizing said coil, the armature closes on said valve seat and interrupts any through flow,
said pole piece being fixedly held within said valve body by means of said valve body first end being swaged over a portion of said pole piece to provide a swage joint.

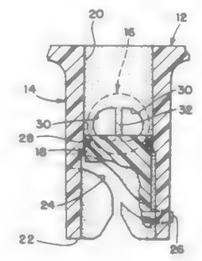
5,364,068
VALVE BLOCK ASSEMBLY
Vincent R. Farnsworth, Agoura, and Paul F. Cartier, III, Arcadia, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.
Continuation of Ser. No. 964,297, Oct. 21, 1992, abandoned, which is a division of Ser. No. 820,468, Jan. 14, 1992, Pat. No. 5,316,034, which is a continuation of Ser. No. 396,684, Aug. 22, 1989, Pat. No. 5,082,788, which is a division of Ser. No. 205,772, Jun. 13, 1988, Pat. No. 4,911,195, which is a continuation-in-part of Ser. No. 901,327, Aug. 27, 1986, Pat. No. 4,773,446. This application Dec. 22, 1993, Ser. No. 171,877
Int. Cl.[5] F16K *31/10*
U.S. Cl. 251—129.17 **3 Claims**

1. A diaphragm valve for use in a valve assembly which comprises a valve block defining fluid passageways having openings in an upper surface of the block, a diaphragm means supported on the upper surface and having a central portion disposed over said openings, a peripheral portion surrounding the central portion apart from said openings, movable plunger means spaced apart from the upper surface of the block for selectively compressing the central portion, a plunger seat supporting the movable plunger means and disposed over the peripheral portion of the diaphragm and having a gripping surface means for gripping and thereby compressing the peripheral portion of the diphragm, whereby the central portion is urged away from said openings, tending to bulge toward the movble plunger means in an open valve position in the absence



of fluid pressure, said plunger means being adapted to maintain said central portion in a compressed position, the valve being closed when the central diaphragm portion is compressed, and a relief groove means, isolated from said fluid passageways, located in contact with said peripheral portion of the diaphragm means between the plunger seat and the valve block, into which diaphragm material may flow under stress.

5,364,069
DRAINCOCK ASSEMBLY FOR VEHICLE RADIATOR
Jeffrey L. Minner, Lockport, and Frank J. Farkas, Gentzville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 25, 1993, Ser. No. 140,939
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 **3 Claims**



3. A draincock assembly for a tank, comprising,
a valve body having a generally cylindrical inner surface and protruding from said tank proximate a lower end thereof, said valve body having an outer end spaced axially from said tank,
a drain tube protruding from said valve body between said tank and valve body outer end and opening through said valve body inner surface across an aperture,
a valve movable axially within said valve body from a closed position covering said aperture to an open position exposing said aperture,
a generally circular O-ring seal carried by said valve and continually compressed tightly against said valve body inner surface so as to prevent flow out of said tank when

said valve is closed and to prevent flow out of said valve body outer end when said valve is open, and,

a guiding web extending generally axially of said valve body and bifurcating said aperture, said web having an inner surface substantially coextensive with said valve body inner surface,

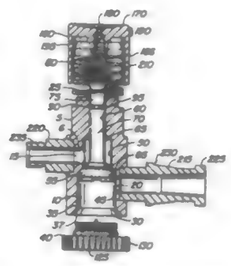
whereby, as said compressed O-ring crosses said aperture, it is substantially prevented from bulging into said aperture.

5,364,070

HIGH PRESSURE MICRO VALVE

Lowell Crow, Danville, Calif., assignor to Transamerican Technologies International, Pleasanton, Calif.

Filed Jul. 22, 1993, Ser. No. 95,887
Int. Cl.[5] F16K *1/48*
U.S. Cl. 251—322 14 Claims



1. A bi-directional flow valve in combination with a laparoscopic surgical instrument connected to a vacuum source, comprising:

a bi-directional flow valve having a valve body;

a laparoscopic surgical instrument having a cannula connected to said flow valve;

said valve body having a generally cylindrical bore with an open end and first and second ports between said bore and exterior of the valve body, the first port being proximal to the open end with the radial projection of the internal opening of the first port onto the axis of said bore being separated axially along the bore by a constriction in the radius of said bore from the radial projection of the internal opening of the second port onto the axis of said bore said valve operable with a vacuum source connected to said first port;

a plunger disposed along the axis of said bore, having a generally cylindrical shaft of radius less than the constriction in bore, said shaft projecting through said constriction and said open end of said bore and having a generally circularly symmetric radial flange disposed in said bore on the side of said constriction opposite said open end, said flange being solid and said flange having a radius greater than the inside radius of the constriction in the bore and less than the radius of the bore adjacent to the constriction on the side thereof which the flange is disposed, said plunger being disposed in said bore so as to move axially along said bore so that said flange may abut said constriction at one extreme of axial displacement making substantially continuous circumferential contact thereto;

a spring to resiliently urge said flange against said constriction so as to interrupt flow between the two said ports said spring means having sufficient resiliency to counteract the force exerted through said vacuum source applied through said first port and acting on said plunger;

a circumferential sealing means to seal the gap, if any, between inside of said bore and outside of said plunger shaft, said seal occurring at some location between the open end of said bore and the closest edge thereto of the first port;

a displacement means to move said plunger in said bore to create an open path of flow between the two said ports by moving said flange away from said constriction; and

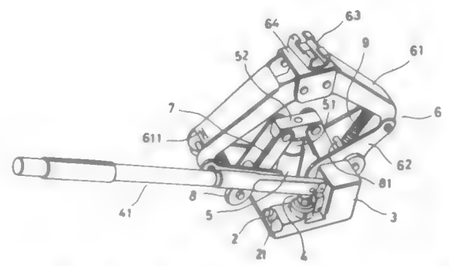
wherein said cannula and said bi-directional flow valve allow fluid to flow in either direction through the first and second ports.

5,364,071

SCISSOR JACK

Chung-Tai Lu, No. 1, I-Hsin Street, Shui Shang Hsiang, Chia-I Hsien, Taiwan, Prov. of China

Filed Nov. 24, 1993, Ser. No. 156,739
Int. Cl.[5] B66F *3/00*
U.S. Cl. 254—8 B 2 Claims



1. A scissor jack having a base member, an oil reservoir mounted on said base member, a pumping unit for pumping oil from the oil reservoir to an oil pressure cylinder having a piston rod, a pair of lift arm units rotatably mounted to said base member, each of said pair of lift arm units including a pair of lift arm upper members and a pair of lift arm lower members, said lift arm upper members rotatably secured to respective lift arm lower members and said lift arm lower members being rotatably secured to said base member, a pair of connecting units, each of said connecting units having a pair of linking rods rotatively coupled on opposing ends rotatively coupled to an upper section of said piston rod and said lift arm lower members, wherein the improvement comprises:

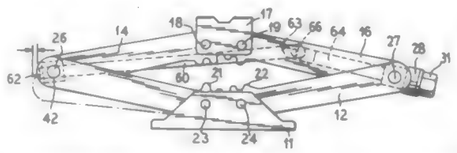
a pair of roller units rotatively mounted to said lift arm lower members, each of said roller units having a pair of roller members joined each to the other by a roller member shaft, and a pair of spring members, each of said spring members having opposing ends respectively coupled to a detent in said lift arm upper member and said roller member shaft.

5,364,072

SCREW DESIGNS FOR A SCISSORS JACK

Darryl L. Engel, LaOtto, Ind., assignor to Universal Tool & Stamping Company, Inc., Butler, Ind.

Division of Ser. No. 32,096, Mar. 17, 1993, abandoned. This application May 26, 1993, Ser. No. 67,129
Int. Cl.[5] B66F *3/12*
U.S. Cl. 254—126 1 Claim



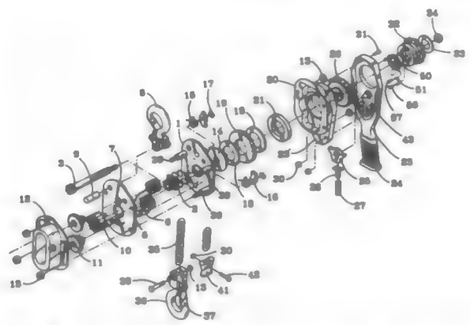
1. A scissors jack which can be stored in a minimum space comprising, a base member, first and second lower channel members pivotally attached to said base member, the lower ends of said first and second lower channel members formed with gear teeth which mesh together, a load supporting cap, first and second upper channel members pivotally attached to said cap, a threaded trunnion formed with pivot pin portions which pivotally connect the upper end of said first lower channel member to the lower end of said first upper channel member, a plain trunnion formed with pivot pin portions which pivotally connect the upper end of said second lower channel member to the lower end of said second upper channel member, a threaded screw with one end threadedly received through said threaded trunnion, and the other rotatably extending through said plain trunnion and said threaded screw formed of first and second portions which are pivotally connected together between said threaded trunnion and said plain trunnion, and when said jack is in a stored position that one end of said first portion of said threaded screw is substantially flush with the upper end of said first lower channel member and the lower end of said first upper channel member, and said second portion of said threaded screw moves into the confines of said second upper channel member.

5,364,073

FREE-CHAIN DEVICE FOR A LEVER HOIST

Leslie J. Sell, Bothell, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 21, 1992, Ser. No. 993,579
Int. Cl.[5] B66D *1/14*
U.S. Cl. 254—369 11 Claims



1. A free chain device for a lever operated hoist including:

a change gear threadingly engaged on a pinion shaft for driving a load sheave winding up thereabout a chain, rope, or the like for a load, a hand operated lever rockable about said change gear, a first driving pawl selectively engageable with said change gear and driven by said operating lever in a winding-up direction for load, and a braking assembly preventing said change gear from being driven by said load on said load sheave, said device comprising:

a stop fixed to an end of said pinion shaft on an opposite side of said braking assembly with respect to said change gear, a manually operable knob disposed for limited rotation about said stop, said stop being provided with a stop dog means engaging said driving member for limiting excessive rotation of said driving member within a desired range relative to said pinion shaft, said manually operable knob being provided with a biasing dog means for selectively effecting rotation of said driving member into a brake clamping direction and oppositely a brake releasing direction;

biasing means disposed between said stop and said manually operable knob for alternatively urging rotation of said manually operable knob in a first direction relative to said stop wherein said biasing dog means rotates said sheaving member in said brake clamping direction and a second direction relative to said stop wherein said biasing dog means rotates said driving member in said brake releasing direction; and

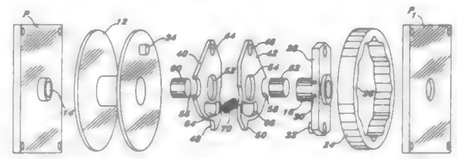
wherein said manually operable knob rotates about said stop in an axial restrained groove formed on said stop and said biasing means disposed between said stop and said manually operable knob further comprises an over center spring device for effecting and retaining relative position and biasing between said stop and said manually operable knob.

5,364,074

LATCHING WINCH SUITABLE FOR FLAGPOLES

Charles A. Gourley, 12 Grassy Plain Ter., Bethel, Conn. 06801

Filed May 6, 1993, Ser. No. 57,567
Int. Cl.[5] B66D *5/20, 5/06*
U.S. Cl. 254—375 3 Claims



1. A latching winch comprising:

a. a winch spool having an axis and a drive pin extending outward from one end of the spool and parallel to and spaced from the axis,

b. a drive/latch assembly adjacent the spool and comprising:

1) a drive plate formed with an opening coaxial with the spool and fixedly carrying in the opening a bushing adapted to be driven by a crank and having a lateral drive lug secured to the plate at a position spaced from the bushing,

2) a pair of mirror-image pawl plates overlapping each other and positioned against the drive plate, the pawl plates each having an aperture in a first end pivotally receiving the spool drive pin, a large central opening loosely receiving the bushing, pawl means outward from the large openings on opposite edges of the respective plates, the pawl plates being formed opposite the first ends with projections, the projections being disposed respectively on opposite sides of and being adapted to be selectively engaged by the lateral drive lug on the drive plate, and the pawl plates having opposed spring-engaging surfaces respectively,

3) a spring compressively disposed between the spring-engaging surfaces urging the respective pawl plates outward, and

4) a stationary ring-gear-like cam concentric with the axis and surrounding the drive and pawl plates and having inwardly facing alternate peaks and valleys,

whereby the spring urges the pawl plates outward with the pawl means on at least one of the pawl plates engaging a valley in the cam to latch the rotation of the spool in one direction, and, when the bushing is cranked, the lug on the drive plate will engage the projection on the said pawl plate to retract said pawl means out of the valley and that pawl plate will be fulcrumed about the bushing to crank the drive pin and rotate the spool, and when the cranking stops, the said pawl plate will move outward and its pawl means will engage the cam.

5,364,075

RETRACTABLE MOUNT FOR A MOORING LINE GUIDE AND PROCESS FOR OPERATING THE SAME

James L. Montgomery, Seattle, Wash., assignor to Smith Berger Marine, Inc., Seattle, Wash.

Filed Sep. 3, 1992, Ser. No. 940,105
Int. Cl.[5] B66D *3/04;* B65H *23/32;* B63B *21/00*
U.S. Cl. 254—415 12 Claims

1. In a retractable mount for a mooring line guide for a mooring line for a vessel including a carriage carrying the mooring line guide and guide means mounted on the vessel guiding the carriage for elevational movement between a lower position in which the mooring line guide is submerged

beneath the surface of water and a retracted position elevated above the surface of the water in which the mooring line guide can be serviced or in which the mooring line guide can be removed from the carriage for servicing, the improvement comprising retaining means separate from said guide means including socket means and projection means, said projection



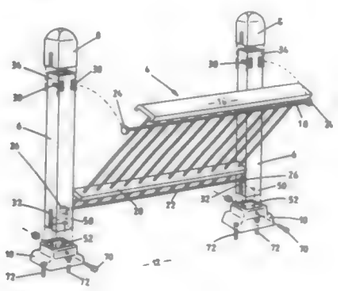
means being interengageable with said socket means only when the carriage is in its lower position, one of said socket means and projection means being elevationally fixed with respect to the vessel at a location adjacent to the lower position of the carriage and the other of said socket means and projection means being carried by the carriage.

5,364,076

BARRIER STRUCTURE

Oswald C. J. Nicholls, 21 Ingleside Crescent, Glen Waverley, Victoria, 3150, Australia

PCT No. PCT/AU90/00448, § 371 Date Jul. 10, 1992, § 102(e) Date Jul. 10, 1992, PCT Pub. No. WO91/04383, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 24, 1990, Ser. No. 859,383
Claims priority, application Australia, Sep. 22, 1989, PJ6516/89
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—22 12 Claims



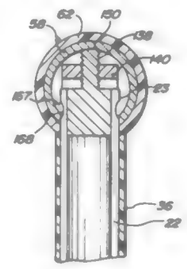
1. A barrier structure comprising:
barrier means including upper and lower engaging parts;
elongate support members having engaging portions adapted to receive said engaging parts;
securing means adapted to fit on said support members so as to secure said upper engaging parts to their respective engaging portions; and
a base; and wherein:
said support members are inserted into said base so as to secure said lower engaging parts to their respective engaging portions;
said engaging portions comprise slots, said slots including upper slots adjacent a first end of said members to receive said upper engaging parts, and lower slots adjacent a second end of said members to receive said lower engaging parts;
said engaging parts comprise protrusions disposed on the sides of said barrier means, said protrusions each including a stem portion which can be slidably moved in a respective one of said slots, and a flange portion which inhibits movement of the protrusion from the respective slot when inserted therein; and
said upper slots each include a vertical slot portion disposed on the front of a respective one of said support members for receiving the flange portion of a respective one of said upper protrusions and a horizontal slot portion disposed on the side of said support member for receiving the stem portion of the respective upper protrusion.

5,364,077

HANDRAIL ASSEMBLY

Frank Venegas, Jr., 4165 Homestead, Howell, Mich. 48843, and Wayne A. Damitz, Union Lake, Mich., assignors to Frank Venegas, Jr., Howell, Mich.

Continuation-in-part of Ser. No. 799,338, Nov. 27, 1991, Pat. No. 5,170,996. This application Aug. 28, 1992, Ser. No. 938,446
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—69 6 Claims



1. A rail assembly comprising: a vertical stanchion; at least one horizontal, tubular rail, said rail defining an aperture, said stanchion extending into said aperture; and
fastener means on said horizontal tubular rail and said stanchion for threadably fastening said rail to said stanchion, said fastener means comprising:
a threaded fastener on said stanchion, said fastener threadingly engaging said rail, said rail including a nut having a threaded aperture, said nut positioned within said rail in-line with said rail aperture;
wherein said threaded fastener abuts the interior of said tubular rail opposite said rail aperture after threading said fastener completely into said threaded aperture.

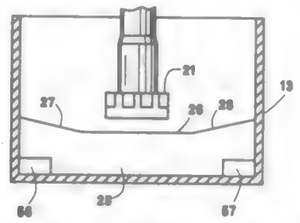
5,364,078

GAS DISPERSION APPARATUS FOR MOLTEN ALUMINUM REFINING

John F. Pelton, Yorktown Heights, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 656,849, Feb. 19, 1991, Pat. No. 5,234,202. This application Feb. 19, 1993, Ser. No. 21,533
Int. Cl.[5] C22B *9/05*
U.S. Cl. 266—233 15 Claims

1. In an insulated refractory lined refining chamber for aluminum refining, adapted for the positioning of a spinning nozzle assembly in a central region thereof for the injection of sparging gas into molten aluminum present in the refining chamber during aluminum refining operations, the improvement comprising vertical baffle means positioned at the floor of and extending across said refining chamber in the portion of the floor under said central region of the refining chamber, said baffle means being adapted to provide an open space in the vicinity of one or both side walls of the refining chamber to



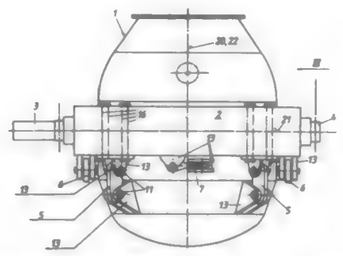
enable molten aluminum to pass through during draining operations and to allow debris to be scraped into one section of the floor of the refining chamber for removal during cleaning operations, whereby said baffle means serves to change the flow pattern of molten aluminum within the refining chamber upon the use thereof for refining operations so as to enable higher gas flows and/or nozzle rotating speeds to be employed without excessive surface turbulence of said molten aluminum, while facilitating draining and cleaning operations in the refining chamber.

5,364,079

TILTABLE CONVERTER

Rudolf Gruber; Rupert Berger; Bernhard Enkner, all of Linz, and Gerhard Losbichler, St. Marien, all of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Filed Aug. 31, 1993, Ser. No. 115,301
Claims priority, application Germany, Sep. 4, 1992, 9211926
Int. Cl.[5] C21C *5/50*
U.S. Cl. 266—246 25 Claims



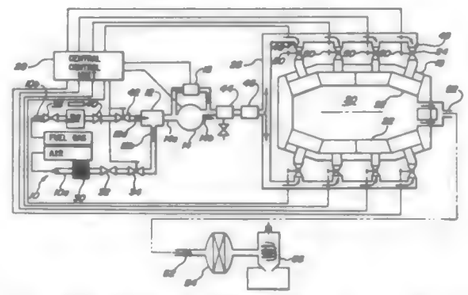
1. In a tiltable converter arrangement comprising a converter vessel having a longitudinal axis, including a carrying ring surrounding and spaced from said converter vessel, said carrying ring disposed in a plane and having an upper side and a lower side and including two diametrically oppositely arranged carrying trunnions therefor, and a plurality of guide rods, said converter vessel being supported on said carrying ring exclusively by said plurality of guide rods, said converter being movable to an upright position, the improvement wherein each of said guide rods is designed as a pendulum rod having a first end and a second end, wherein a first spherical bearing means is provided to connect said first end with said carrying ring and wherein a second spherical bearing means is provided connecting said second end with said converter vessel, thereby providing an articulated universal joint therebetween, said pendulum rods being spaced one from the other and disposed solely on the lower side of said carrying ring relative to said converter vessel in the upright position.

5,364,080

HIGH EFFICIENT HEAT TREATING AND DRYING APPARATUS AND METHOD

William E. Kraemer, Sterling Heights, and Manouchehr Danesh var, Novi, both of Mich., assignors to Combustion Concepts, Inc., Detroit, Mich.

Continuation of Ser. No. 777,018, Oct. 16, 1991, abandoned.
This application Jun. 24, 1993, Ser. No. 83,196
Int. Cl.[5] C21D *1/00*
U.S. Cl. 266—262 32 Claims



1. A clean burning gas flame heating apparatus for heat treating metal stock, said apparatus comprising:
a furnace having a heating chamber;
a plurality of burner assemblies disposed adjacent to said heating chamber for combusting a pressurized fuel gas and air mixture for providing heat to said heating chamber, said pressurized fuel gas and air mixture being selectively supplied to each of said plurality of burner assemblies at a specified pressure;
means for supplying air to said plurality of burner assemblies;
means for supplying fuel gas to said plurality of burner assemblies;
a mixing unit for said air and said fuel gas, said mixing unit operable to create a fuel gas and air premixture, said mixing unit disposed between said plurality of burner assemblies and said air and fuel gas supply means;
means for compressing said fuel gas and air premixture to provide said pressurized fuel gas and air mixture, said compressing means disposed between said mixing unit and said plurality of burner assemblies;
means for exhausting the products of said combustion, said exhausting means mated with said heating chamber; and
means for selectively controlling the supply of said pressurized fuel gas and air mixture to each of said plurality of burner assemblies.

5,364,081

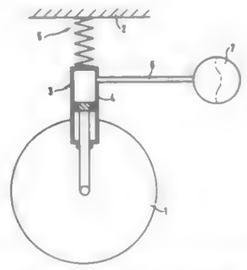
MOTOR VEHICLE SUSPENSION SYSTEM

Mathias Hartl, Winnenden, Germany, assignor to Mercedes-Benz AG, Germany

Filed Jan. 30, 1992, Ser. No. 828,223
Claims priority, application Germany, Jan. 31, 1991, 4102787
Int. Cl.[5] B60G *15/10*
U.S. Cl. 267—64.25 5 Claims

1. A motor vehicle suspension system, comprising a hydropneumatic spring unit configured as a hydraulic displacement unit containing hydraulic fluid operatively between a sprung mass and an unsprung mass, at least one pneumatic spring accumulator operatively connected hydraulically to the hydraulic displacement unit, and a compensating arrangement for suppressing critical relative vibrations between the sprung

mass and the unsprung mass such that a portion of the hydraulic medium can be excited, in relation to the sprung mass, by vibrations whose natural frequency coincides at least approximately with a frequency of critical relative vibrations wherein the displacement unit is connected in series to the sprung mass via an elastic bearing part and to the associated spring accumulator via a hydraulic line, and the spring constant (C_L) of the



bearing part, the mass (M_R) of one of the displacement unit and the elastic bearing part, the cross-section (A_L) of the hydraulic line, the length (l) of the hydraulic line, the effective cross-section (A_D) of the displacement unit and the density (ρ) of the hydraulic medium are so selected that the resonant frequency ω_o is approximately equal to

$$[C_L/(m_R+\rho lA_D^2/A_L)]^{\frac{1}{2}}.$$

5,364,082

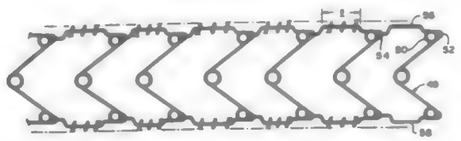
SPRING ASSEMBLY FOR SEATING AND BEDDING

John E. Miller, Tupelo, Miss., assignor to Parma Corporation, Denton, N.C.

Continuation of Ser. No. 983,764, Dec. 1, 1992, abandoned, which is a division of Ser. No. 729,734, Jul. 15, 1991, Pat. No. 5,184,809. This application Jan. 21, 1994, Ser. No. 184,776

Int. Cl.[5] F16F *3/00*

U.S. Cl. 267—108 **7 Claims**



1. A spring for use in a body support for bedding or seating, comprising a flexible and resilient wire having upper and lower runs and a generally upright intermediate run between said upper and lower runs, each of said upper and lower runs including a generally upright coil and a hook spaced away from said coil at opposite ends thereof, each of said coils extending along a circular path but having a portion projecting outwardly of the path and defining an aperture for receiving a hook in the run of an adjacent spring.

5,364,083

UNIVERSAL HOLDING FIXTURE END EFFECTOR

Richard G. Ross, Quarryville, and George T. Gannon, Aston, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 32,168, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 913,467, Jul. 15, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 148,418

Int. Cl.[5] B25B *11/00*

U.S. Cl. 269—21 **8 Claims**

1. A holding rod for holding a workpiece comprising:

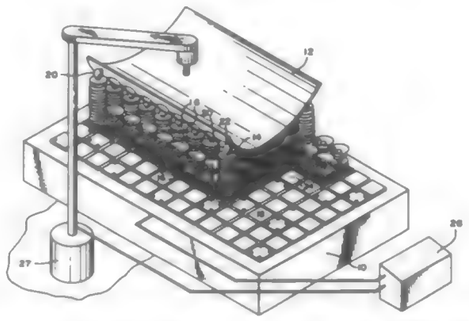
a base member;

a support rod, said support rod having an internal chamber and an opening in the surface of said rod, said opening communicating with the internal chamber of said rod;

a vacuum source;

means for connecting the internal chamber of said rod with said vacuum source;

actuator means attached to said base member and said support rod for adjusting the height of said support rod;



control means connected to said actuator for controlling the height of said rod according to a pre-set program; and

a cup-shaped end effector of pliable material formed in a vertical bellows form attached to the upper end of said support rod, the internal opening of said cup-shaped vertical bellows end effector being in communication with the opening in said support rod.

5,364,084

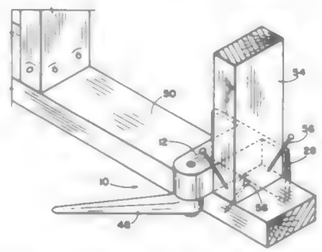
CARPENTER'S TOE-NAIL BACKUP CLAMP

L. Stanley Karash, Hastings, Nebr., assignor to Karding, Inc., Grand Island, Nebr.

Filed Sep. 9, 1993, Ser. No. 119,971

Int. Cl.[5] B25B *5/14*

U.S. Cl. 269—41 **5 Claims**



1. A carpenter's toe-nail backup clamp for use in positioning a first board at right angles to a second board to facilitate attaching the first board to the second board with nails, comprising:

a base member formed of a solid block of metal having a longitudinal axis, a first end, a second end, sides, a top surface and a bottom surface which rests upon said second boards, said base member extending substantially upward from said bottom surface to said top surface whereby a relative large flat surface area and mass extends from said first to said second end to provide substantial planar backup surface with said first board;

an end plate integrally affixed to said first end of said base member and extending from said top surface transversely outward on both sides of said base member, and extending below said base member;

a cam member secured to said base member bottom surface at said second end thereof and rotatable about an axis that is parallel to said end plate, the cam member having a cam surface that provides variable spacing from said end plate according to the rotational position of the cam member; and

an elongated handle attached to said cam member for rotating said cam member whereby a second board may be grasped between said end plate and said cam member with said base member resting on and extending across the second board to provide a clamped backup against which said first board may be positioned.

5,364,085

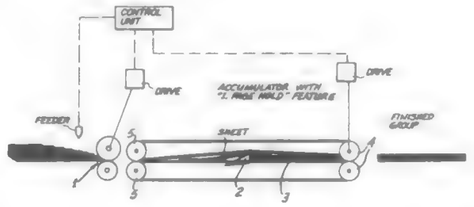
ACCUMULATOR WITH "FIRST PAGE HOLDER" FEATURE

James R. Keanish, Chester, Conn., assignor to GBR Systems Corporation, Chester, Conn.

Filed Mar. 22, 1993, Ser. No. 35,086

Int. Cl.[5] B65H *43/06, 39/10*

U.S. Cl. 270—58 **2 Claims**



1. An accumulator comprising an accumulating area, said accumulating area defined by a rear stop means and front stop means, means for feeding sheets of a first group of sheets to said accumulating area, said feeding means and said accumulating area being on substantially the same plane, each sheet fed by the feeding means adapted to move over said rear stop means and adapted to be deposited over any previously deposited sheet in said accumulating area, means for identifying the first sheet of a second group of sheets, means for feeding said first sheet of said second group toward said accumulating area, means for stopping the feeding of said first sheet of the second group before said first sheet reaches said accumulating area, means for releasing the first group of sheets from said accumulating area, means for releasing the said first sheet of said second group from said stopped position and feeding it to said accumulating area, said stopped position being an area overlying said rear stop means.

5,364,086

COMPOSITE ELASTOMERIC AIR SPRING AND SEALING STRUCTURE

H. Neil Paton, 410 16th E., Seattle, Wash. 98112

Continuation of Ser. No. 758,849, Sep. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 692,942, Apr. 29, 1991, abandoned. This application Dec. 2, 1993, Ser. No. 161,058

Int. Cl.[5] F16F *3/10;* **B60G** *11/46;* **F16J** *3/04*

U.S. Cl. 267—140.4 **24 Claims**

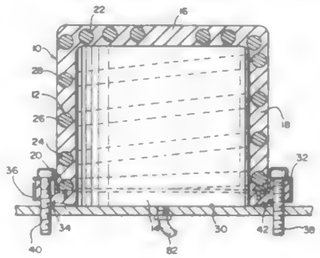
1. A composite spring comprising:

a hollow body of homogenous elastomeric material and having a closed annular wall extending longitudinally between opposite body ends, at least one of the body ends being open;

a coil spring embedded in said body and extending from a bearing end proximate to and spaced from the open body end to provide a sealing portion of said homogenous elastomeric material in said body adjacent the open body end;

an annular ring having a radial portion embedded in said annular wall and an exterior portion extending laterally from said radial portion to the outside of the annular wall, said radial portion being positioned between the bearing end of the spring and said sealing portion; and

means for retaining the annular ring relative to a planar surface to maintain the sealing portion under a compressive force, said sealing portion including at least one continuous annular sealing rib projecting from the open body end to engage and effect a fluid tight seal with the planar surface.



5,364,087

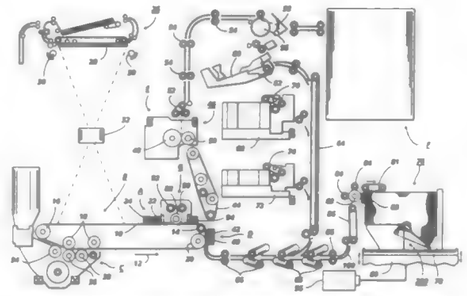
TILTING TRAY FOR FEEDING AND STACKING SPECIALIZED FORMS

Richard A. Schieck, Rochester; Henry T. Kremers, Fairport, and Douglas W. Gates, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1993, Ser. No. 131,248

Int. Cl.[5] B65H *1/08*

U.S. Cl. 271—148 **4 Claims**



1. An electrophotographic printing machine of the type in which a latent image is developed on a photoconductive member and the developed image transferred to a copy sheet with successive copy sheets being supplied from a supply source thereof, said supply source including an insertable tray arranged to be inserted on top of a support surface of the supply source to have a stack of copy sheets disposed thereon with the copy sheets having leading edge portions and a trail edge portions, said insertable tray being adapted such that when said trail edge portions of the stack of copy sheets have a greater thickness than said lead edge portions thereof, the stack of copy sheets are supported so that said lead edge portions of the uppermost sheets of the stack of copy sheets are at substantially about the same level while a majority of said trail edge portions of the copy sheets having the greater thickness are supported downwardly at an acute angle with respect to the uppermost sheets of the stack, said insertable tray including a support member which supports a planar sheet support surface having a fixed, stationary first portion adapted to support said leading edge portions including the bottommost of the copy sheets substantial level and a movable second portion adapted to support said trail edge portions of the copy sheets, said support member having a shaft mounted therein transverse to a sheet feed direction and adjacent an end of said fixed, stationary first portion of said planar surface that is remote from said lead edge

portions of the copy sheets, first and second torsion springs mounted on said shaft and adapted to pivotally connect said second planar portion to said fixed, stationary first planar portion, said first and second torsion springs being selected to have a spring constant which maintains said lead and trail edges of the uppermost sheet in the stack of copy sheets substantially level.

5,364,088

PAPER HOLDING APPARATUS

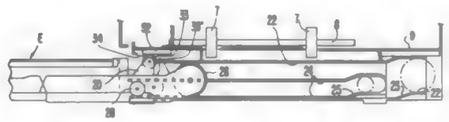
Hiroyoshi Maruyama, Yokohama, Japan; Luigi Dantonio, Grange Di Front, and Felice Giacometto, Caluso, both of Italy, assignors to Olivetti-Canon Industriale S.p.A., Ivrea, Italy and Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 10,758

Claims priority, application Italy, Jan. 30, 1992, TO92A000068

Int. Cl.[5] B65H *1/22*

U.S. Cl. 271—164 **23 Claims**



1. A paper holding apparatus for use in an office machine, comprising:

a container for a plurality of sheets of paper;

a plurality of guides mounted on said machine, along which said container is movable relative to the machine, between a first closed position and a second open position; and

drive means to move said container at a predetermined speed from said first position to said second position;

wherein said drive means exert a substantially constant force on said container in a direction parallel to the guides, as said container moves between said first and said second positions.

5,364,089

INDIVIDUAL-SHEET STACKING APPARATUS FOR PRINTERS TO BUILD UP A STACK OF INDIVIDUAL SHEETS

Hans Maurer, Seefeld, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Germany

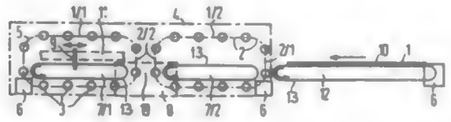
PCT No. PCT/EP92/00256, § 371 Date Aug. 25, 1993, § 102(e) Date Aug. 25, 1993, PCT Pub. No. WO92/14668, PCT Pub. Date Sep. 3, 1992

PCT Filed Feb. 5, 1992, Ser. No. 108,669

Claims priority, application European Pat. Off., Feb. 25, 1991, 91102704.3

Int. Cl.[5] B65H *29/38*

U.S. Cl. 271—177 **11 Claims**



1. A stacking apparatus to build up a stack of individual sheets, comprising:

two transport systems including roller cages, said two transport systems being operable to transport individual sheets and being arranged axially parallel next to each other,

roller-shaped transport elements on a periphery of each of said roller cages and extending in an axial direction of said roller cages and spaced apart by gaps;

a drive device coupled to said roller cages,

at least one separate partial depositing surface in each of said roller cages, each of said at least one separate partial depositing surfaces forming a common, inner depositing surface which crosses through said roller cages and is disposed for receiving individual sheets to be stacked;

means for feeding individual sheets to be stacked through the gaps between said roller-shaped of transport elements to said common, inner depositing surface in such a way that the individual sheets are supported on said separate partial depositing surfaces and

said roller cages being drivable in opposite directions by said drive device so that said transport elements of said roller cages take up individual sheets in a region of said depositing surface between said partial depositing surfaces and guide the individual sheets into a depositing position relative to said roller cages.

5,364,090

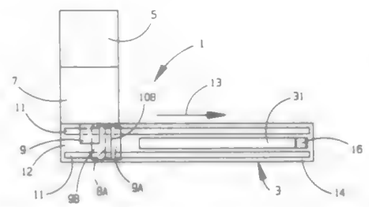
SEQUENCE STACKER

Jeffrey C. Hollis; Chad Bones, both of Modesto, and Troy M. York, Manteca, all of Calif., assignors to Tab Products Company, Turlock, Calif.

Filed Jul. 22, 1993, Ser. No. 94,743

Int. Cl.[5] B65H *29/66*

U.S. Cl. 271—216 **10 Claims**



1. A sequence stacker comprising:

a. an elongated deck having a horizontal surface that defines a deck plane and that defines and extends between a deck upstream end and a downstream end;

b. a plurality of belts having thicknesses defined by top and bottom surfaces that lie in respective planes parallel to the deck horizontal surface, the top surfaces of the belts being spaced a first predetermined distance above the deck horizontal surface, the bottom surfaces of the belts cooperating with the deck plane to define respective generally rectangular spaces therebetween that extend substantially continuously between the deck upstream and downstream ends;

c. pulley means located at the deck upstream and downstream ends for driving the belts in a downstream direction;

d. at least one elongated first spacer attached to the deck horizontal surface proximate the belts and located outside of the rectangular spaces defined by the bottom surfaces of the belts and the deck plane, the first spacer having a downstream end and a thickness greater than the thickness of the belts, the first spacer having an upper surface that is at a second predetermined distance above the deck horizontal surface less than the first predetermined distance; and

e. an angled stop at the downstream end of the first spacer, so that the belts can carry shingled envelopes in the downstream direction and stack them against the angled stop with the weight of the stack being sufficient to deflect the belts until the top surfaces thereof become aligned with the upper surface of the first spacer to thereby transfer the weight of the stack from the belts to the first spacer and cause the belts to decrease downstream driving force on the stack.

5,364,091

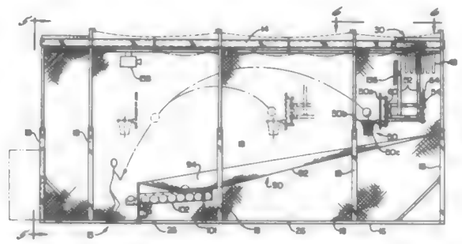
SKILL BUILDING APPARATUS FOR BASKETBALL PLAYERS

Robert M. Sebek, 6528 Chestnut Grove La., Charlotte, N.C. 28210, assignor to Robert M. Sebek, Charlotte, N.C.

Filed Sep. 8, 1993, Ser. No. 96,544

Int. Cl.[5] A63B *63/08, 69/00*

U.S. Cl. 273—1.5 A **23 Claims**



1. A skill building apparatus for basketball players comprising

a frame defining a substantially rectangular configured and enclosed cage in which a player stands substantially stationary therein at a ball throwing position, said frame including a pair of spaced, longitudinally extending, parallel frame members extending along the upper portion of the frame and substantially along the length thereof,

a bridge assembly mounted transverse on the parallel frame members,

means for moving the bridge assembly longitudinally along the frame members,

a basketball backboard and goal assembly supported by the bridge,

means for pivotally rotating the backboard and goal assembly about a vertical axis,

means for controlling longitudinal movement of the bridge assembly to and from the ball throwing position and for controlling pivotal rotation of the backboard and goal assembly about the vertical axis, and

ball return means positioned under the bridge assembly and the backboard and goal assembly and extending downwardly from one end of the frame to a ball return area positioned in close proximity to where a player stands for returning balls shot at the basketball goal to the player.

5,364,092

BASKETBALL SHOOTING ACCURACY PRACTICE RIM

Addison E. Riepe, 1046 Green Meadow Rd., and Stephen S. Riepe, 5219 Monroe Ave., both of Evansville, Ind. 47715

Filed Nov. 18, 1993, Ser. No. 154,097

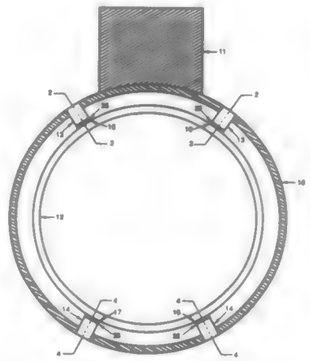
Int. Cl.[5] A63B *63/08, 69/00*

U.S. Cl. 273—1.5 A **3 Claims**

1. A practice device composed of an annular rim smaller than a basketball goal with a plurality of outwardly extending brackets of one or more types which can be mounted on said basketball goal for practice and dismounted for an actual game, said brackets comprising:

(a) a first type of bracket being composed of a top of a certain length and a bottom extending at an angle beneath said top so as to enable said bracket to be attached to said rim so as to fit snugly against said basketball goal, and

(b) a second type of bracket being formed of at least one piece, being so constructed that the top portion extends from said rim and being so formed that the bottom portion of said bracket is of a length permitting it to have a means suitable for accepting a type of fastener enabling said bracket to be slipped over the front of said basketball goal prior to snugging up said first type of bracket described in (a) above, and when said first type of bracket is in its proper position, said fastener on said second type of



bracket should be tightened to hold said annular rim in a secure and tight position to said basketball goal.

5,364,093

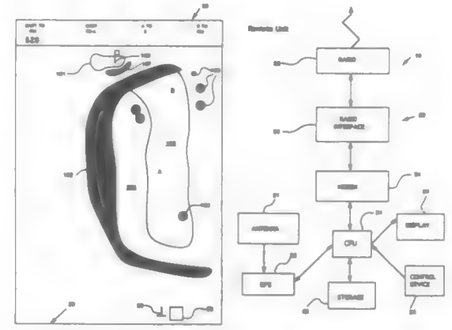
GOLF DISTANCE MEASURING SYSTEM AND METHOD

Charles D. Huston, 4607 Trail West Dr., Austin, Tex. 78735, and Darryl J. Cornish, 8017 Davis Mountain Pass, Austin, Tex. 78726

Filed Dec. 10, 1991, Ser. No. 804,368

Int. Cl.[5] G01S *5/14;* **A63B** *71/06*

U.S. Cl. 273—32 R **26 Claims**



1. A method for determining the approximate distance of a golf ball to a golf cup using a global positioning satellite system comprising the steps of:

locating the position of the cup;

storing the position of the cup;

positioning a remote global positioning satellite receiver near the golf ball;

determining a position of the remote receiver using the global positioning satellite system; and

determining the distance from the remote receiver to the cup using the stored cup position and the position of the remote receiver.

5,364,094

GOLF BALL POSITION MARKING AID

Richard P. Mustion, 1287 Calle Ultimo, Oceanside, Calif. 92056

Filed Jun. 15, 1993, Ser. No. 77,885

Int. Cl.[5] A63B *57/00*

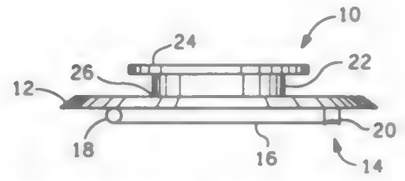
U.S. Cl. 273—32 A **9 Claims**

1. A golf ball marking device securable a user's clothing comprising:

a button, said button being disc-shaped having front and back sides, and having a first diameter;

a means for securing the button to said user's clothing, the means for securing being attached to the back side of the button;

a disc-shaped magnet having front and back sides, permanently secured at its back side to said front side of the button, said magnet having a second diameter which is smaller than said first diameter; and



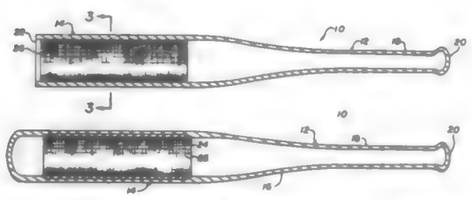
a ferromagnetic disc-shape ball marker magnetically and removably attached to said front side of the magnet, said ball marker having a third diameter which is larger than said second diameter but smaller than said first diameter, whereby the ball marker is easily removable from the magnet when used to mark a golf ball and is easily reattachable to the magnet when the ball marker is not being used.

5,364,095

TUBULAR METAL BALL BAT INTERNALLY REINFORCED WITH FIBER COMPOSITE

James L. Easton, Los Angeles; Gary W. Filice, Moorpark; Roger Souders, Poway, and Charles Teixeira, Littlerock, all of Calif., assignors to Easton Aluminum, Inc., Van Nuys, Calif.

Continuation of Ser. No. 320,594, Mar. 8, 1989, abandoned. This application May 21, 1991, Ser. No. 704,678
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—72 A 8 Claims



1. In a ball bat having an impacting portion for contacting a ball to be batted, the improvement wherein said impacting portion is comprised of an elongated metal tube, said metal tube having an inside wall, and a hollow sleeve of reinforcing fibers oriented in a bi-directional pattern in a resin matrix, said sleeve being compressively restrained inside said metal tube by compressive forces in the order of several thousand pounds per square inch between said inside wall of said metal tube and the outer wall of said sleeve.

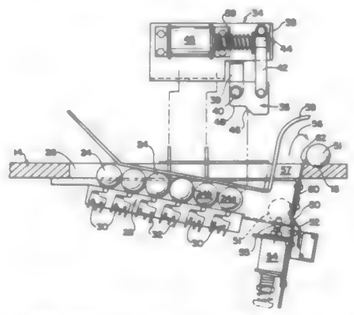
5,364,096

MULTIPLE BALL FEED UNIT FOR PINBALL MACHINE

Edwin Cebula, West Chicago, and Joseph E. Kamikow, Arlington Heights, both of Ill., assignors to Data East Pinball, Inc., Melrose Park, Ill.

Filed Jun. 18, 1993, Ser. No. 79,458
Int. Cl.[5] A63F *7/34*
U.S. Cl. 273—121 A 17 Claims

1. A pinball machine which comprises a frame which carries a playfield; a chute and driver for launching balls onto the playfield; a spent ball-receiving aperture in the playfield communicating with a sloped trough positioned under the playfield, said trough being of a length to hold a plurality of balls; an upper end of said trough communicating with said aperture, and a trough lower end positioned adjacent to and below said chute and driver; a device for elevating a ball occupying said trough lower end, to place said ball into the chute; sensors to



determine the number of balls in said trough; and electronic circuitry for actuating said elevating device for automatically providing balls to the chute and driver; and a member upstanding from the playfield, positioned to prevent balls in the chute from rolling back to said trough.

5,364,097

BATON WITH INTEGRAL PROJECTILE LAUNCHER

David Lyon, Belcamp, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1993, Ser. No. 62,261
Int. Cl.[5] F41C *9/00*
U.S. Cl. 273—84 R 9 Claims



1. In a police baton sidearm having a baton main body with a interior hollow and geometric center therein, a cross handle, and means disposed within said main body for launching a projectile, wherein said cross handle is attached perpendicularly to the main baton body and longitudinally displaced from the geometric center of said main body, the launching means comprising a through hole in the main body communicating with the interior hollow, a recessed, trigger plate slidably mounted in the interior hollow adjacent to said through hole, a double action only firing means connected to said trigger, a breech, firing chamber and gun barrel disposed within said baton main body, the double firing means having a firing pin located between the trigger and the breech, wherein the improvement comprising structural arrangement of liner acting trigger means in line with the firing pin that slides in the interior hollow of the main body.

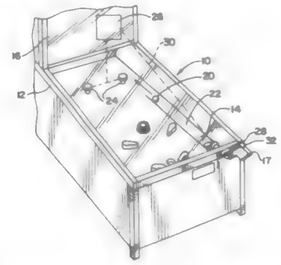
5,364,098

ROLLING BALL GAME WITH AUXILIARY CONTROL

Joseph E. Kaminkow, Arlington Heights, Ill., assignor to Data East Pinball, Inc., Melrose Park, Ill.

Filed Sep. 8, 1993, Ser. No. 118,508
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—119 R 11 Claims

1. A rolling ball entertainment device which comprises a frame which carries a playfield, and means for shooting a rolling ball onto said playfield, said device also including signaling means, an auxiliary control, means for activating said signaling means, a timer for defining a period of time beginning with the activating of said signalling means, and means con-



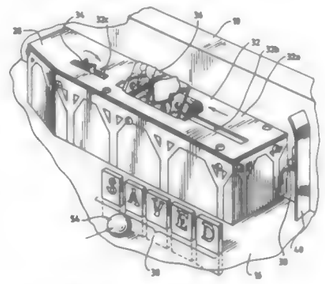
nected to a feature of said device permitting said auxiliary control to activate said feature during said period of time, said shooting means having a manual control which also carries said auxiliary control.

5,364,099

PINBALL MACHINE WITH NOVEL TARGET ASSEMBLY

Joseph E. Kaminkow, Arlington Heights, and Norman R. Wurz, Chicago, both of Ill., assignors to Data East Pinball, Inc., Melrose Park, Ill.

Filed Jan. 18, 1994, Ser. No. 181,905
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—127 R 17 Claims



1. A pinball machine which comprises;

a housing which carries a playfield;

a movable assembly within said housing;

a plurality of targets on said playfield;

moving means, within said housing, electronically adapted to respond to a first actuating of a target, said moving means being movably connected to said movable assembly and actuatable to move said movable assembly from a first position towards a second position;

said moving means being operable to return said movable assembly to said first position in response to a second actuation of a target.

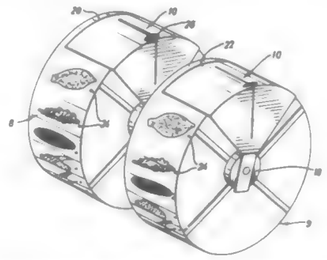
5,364,100

GAMING APPARATUS

Roy A. G. Ludlow, and Ramon De Beneducci, both of Langley Mill, England, assignors to Project Design Technology Limited, Nottingham, England

Filed Jan. 8, 1993, Ser. No. 1,832
Int. Cl.[5] A63F *5/04*
U.S. Cl. 273—143 R 4 Claims

1. Apparatus for playing a game of chance, said apparatus including a plurality of symbol presentation means, each having a plurality of symbols, at least one of which, in use, is randomly selected to be positioned for viewing by a player of the game, identification means provided on at least one of the symbol presentation means, shield means operatively associated with said one symbol presentation means and positioned to shield said one symbol when the latter is in the viewing position but adapted to enable viewing of the identification



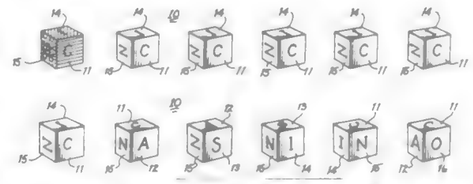
means, the shield means being movable by the player to reveal said one symbol to the player, whereby the player can ensure that no movement of the shielded symbol takes place during movement of the shield means, the combination of the revealed symbol and some or all of those symbols of the other symbol presentation means in their viewing positions determining whether the player is entitled to a prize.

5,364,101

CASINO DICE GAME METHOD

James J. Spooner, and Kelley A. Spooner, both of 16203 E. Glendora Dr., Fountain Hills, Ariz. 85268-3108

Filed Apr. 22, 1993, Ser. No. 52,128
Int. Cl.[5] A63F *9/04*
U.S. Cl. 273—146 12 Claims



1. A method of playing a dice game for at least two players comprising the steps of:

(a) providing a set of six identical dice with a different symbol on each face of each die and a predetermined scoring system assigning a point value to individual and combined symbols appearing on predetermined rolls of the dice, and assigning no point values to selected ones of the other individual and combined symbols appearing on selected ones of the remaining possible rolls of the dice,

(b) determining the order of play by the value of the roll of the dice by each player,

(c) accumulating points for each player during his roll of the dice according to the scoring system which includes:

(1) beginning to record scores for each player in turn only after the player reaches a first predetermined number of points and surrenders his turn before he rolls nothing of value, without having to exceed the score of a previous player by a predetermined number of points, by first rolling all six of the dice and secondarily rolling only those dice that show no point value after the first roll, forefulling his turn and losing all his points for that turn if he rolls nothing of value during any roll during that turn,

(d) allowing a player who reaches a second predetermined

number of accumulated points to choose between ending his turn which establishes a winning score that needs to be exceeded by the remaining players in order for them to win and continuing his turn by rolling the dice to further increase his score, however losing his turn and losing his points accumulated during this turn if he rolls nothing of value and risking losing the establishment of the winning score,

(e) allowing each of the succeeding players to finish their turn after a winning score has been established wherein they are provided the opportunity to exceed the winning score and, if the score is exceeded, then to choose between ending his turn which establishes a new winning score and continuing his turn to further increase his score to establish a new winning score wherein he risks losing the game, and

(f) determining a winner of the game by the player who has the winning score that was not exceeded by any other player.

5,364,102

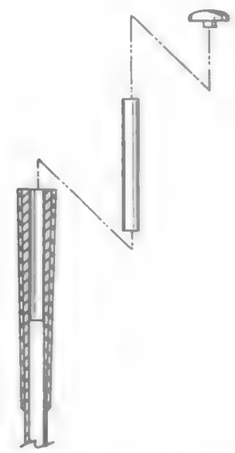
WEIGHTED GOLF PUTTER

James B. Appledorn, 4832 Palm Aire Dr., Sarasota, Fla. 34243

Filed Sep. 22, 1993, Ser. No. 124,594

Int. Cl.[5] A63B *53/14*

U.S. Cl. 273—162 R **5 Claims**



1. A golf putter weighted to be swing balanced comprising: in combination;

a hollow tubular shaft having an interior surface and an exterior surface with a lower head end and an upper handle end;

a head fabricated of solid brass with an enlarged toe and an enlarged heel for creating an increased sweet spot therebetween, said head having a lower end and an upper end, the head having a sole at said lower end and a hosel at said upper end with the lower head end of the shaft coupled to the head at the HOSEL;

a grip adapted to be held by two hands of a user and having a generally cylindrical exterior surface and a cylindrical interior surface secured over the shaft with an upper end of the grip located adjacent to the upper handle end of the shaft and with a lower end of the grip located therebeneath;

a weight fabricated of lead having a cylindrical configuration with a length of about 5½ inches and weighted about 8 ounces with an interior surface and an exterior surface and with an internal diameter of about 9/16 inches, the weight being press fit into the shaft, an adhesive securing the weight to the shaft, an upper end of the weight being located coplanar with the upper end of the grip and the upper handle end of the shaft; and

a cap having an upper exterior end and a lower interior end, the lower interior end having a planar peripheral surface in contact with the upper end of the weight, the upper handle end of the shaft and an upper end of a radial interior of the lower interior end of the cap having a projection press fit into the upper end of the weight.

5,364,103

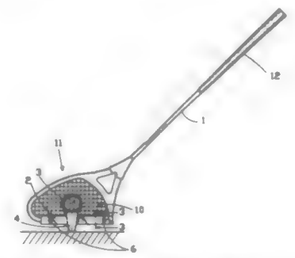
SPORTS EQUIPMENT FOR GOLF-LIKE GAME

Mao-Lan Chen, and De-Chung Chen, both of Kaohsiung, Taiwan, Prov. of China, assignors to Love-Blue Enterprise Co., Ltd., Kaohsiung, Taiwan, Prov. of China

Filed Nov. 16, 1993, Ser. No. 152,235

Int. Cl.[5] A63B *53/00, 49/00*

U.S. Cl. 273—193 R **5 Claims**



1. Improved sports equipment for a player of a game, said sports equipment comprising:

a club in combination with at least one fluffy ball,

said club including a shaft fixed to a periphery of a racket head having a ball striking surface for striking said fluffy ball,

an axis of said shaft being in the same plane as said racket head,

a putting block secured to said periphery;

a longitudinal axis of said putting block being at an acute angle to said axis of said shaft when said putting block is secured to said periphery,

said putting block having a height which allows a player to strike said fluffy ball with said ball striking surface when set on a tee and with said putting block when set on the ground,

said fluffy ball having a ball shaped cover with soft material stuffed inside.

5,364,104

APPARATUS FOR PROGRESSIVE JACKPOT GAMING

Daniel A. Jones, and James P. Suttle, both of Las Vegas, Nev., assignors to D&D Gaming Patents, Inc., Pompano Beach, Fla.

Division of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Mar. 31, 1993, Ser. No. 40,925

Int. Cl.[5] A63F *1/00*

U.S. Cl. 273—292 **25 Claims**

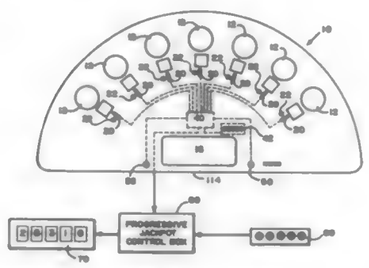
1. An apparatus for including a jackpot component as an additional feature in a live casino table game comprising:

a) a gaming table having a plurality of player locations at which a player receives playing cards from a dealer;

b) means associated with each player location for receiving a gaming token by which the player makes a wager to participate in the additional jackpot component of the live casino table card game;

c) means for indicating on a jackpot meter the amount in the jackpot;

d) means for increasing the amount shown on the jackpot meter a preselected amount for each gaming token wagered; and



e) means for decrementing the amount shown on the jackpot meter by the amount won by a player if the player achieves a predetermined arrangement of the playing cards.

5,364,105

METHOD OF PROGRESSIVE JACKPOT TWENTY-ONE

Daniel A. Jones, Las Vegas, Nev., assignor to D & D Gaming Patents, Inc., Pompano Beach, Fla.

Continuation of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Jun. 16, 1993, Ser. No. 78,602

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] A63F *1/00*

U.S. Cl. 273—292 **36 Claims**

1. A method of including a jackpot component in a live casino table card game comprising the steps of:

(a) a player making a first wager to participate in the live casino table card game;

(b) a player optionally making a second wager to participate in the jackpot component;

(c) a dealer dealing a hand of playing cards to the player; and

(d) if the player's hand comprises a predetermined arrangement of cards, the player wins a predetermined percentage of the jackpot if the player has optionally made the second wager.

5,364,106

CARD MARK SENSOR AND METHODS FOR BLACKJACK

Donald J. Laughlin, and Lawrence E. Wagoner, both of Laughlin, Nev., assignors to No Peek 21, Laughlin, Nev.

Continuation of Ser. No. 866,582, Apr. 10, 1992, Pat. No. 5,224,712, which is a continuation of Ser. No. 662,690, Mar. 1, 1991, Pat. No. 5,110,134. This application Nov. 4, 1992, Ser. No. 971,375

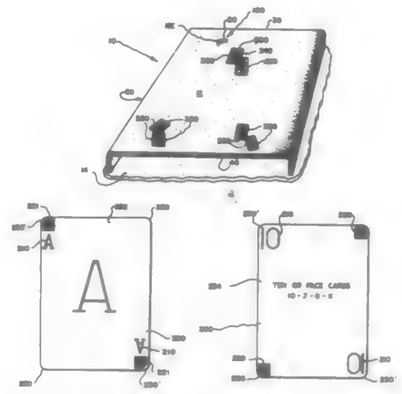
Int. Cl.[5] A63F *1/06*

U.S. Cl. 273—304 **20 Claims**

14. A method of playing a game of twenty-one comprising the steps of:

during a game of blackjack, placing at least a portion of a dealer's down card having a sensor detectable indicia thereon while face down over a sensor site on a blackjack table;

sensing by said sensor when the down card has an indicia thereon representing a blackjack value of ten;



when the value of the down card is ten, ending the game when the dealer's up card is a card having a blackjack value of eleven.

5,364,107

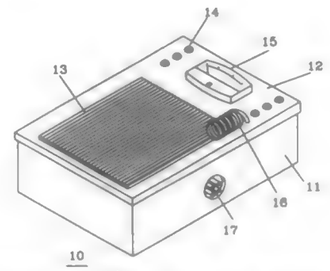
SIMULATED LIE DETECTOR APPARATUS

Farrell G. Kinkead, 3203 Squireswood, Carrolton, Tex. 75006

Filed Aug. 27, 1993, Ser. No. 112,346

Int. Cl.[5] A63F *9/00*

U.S. Cl. 273—430 **15 Claims**



1. A simulated lie detector apparatus for indicating the truthfulness of an answer asked of a player, comprising:

a detector housing;

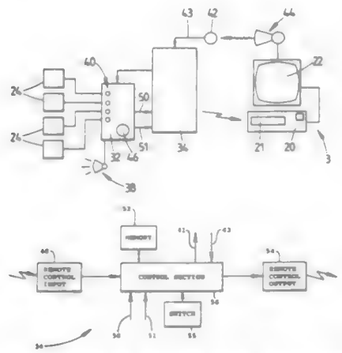
a pad on the surface of said housing for receiving a player's hand;

a radio receiver inside said housing for receiving a signal;

an audio amplifier and speaker connected to an output of said receiver for producing an audio signal, indicative of the truthfulness of question asked a player, upon receipt of a signal transmitted to said radio receiver; and

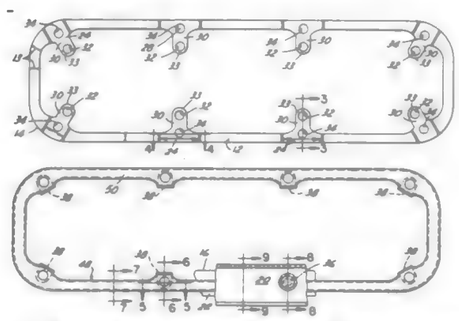
a small remote transmitter, capable of being hidden on a person for transmitting a signal to said radio receiver to indicate the answer from the player in response to a question is not true regardless whether the answer to the question is the truth or not.

5,364,108
GAME APPARATUS
Philip S. Esnouf, 78 Power Street, Hawthorn, Victoria, 3211, Australia
Filed Apr. 8, 1993, Ser. No. 46,867
Claims priority, application Australia, Apr. 10, 1992, 1842/92
Int. Cl.[5] A63F 9/22; G09B 7/02
U.S. Cl. 273—430 22 Claims



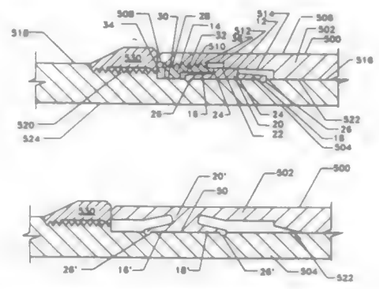
1. A game apparatus for use with video and/or audio reproduction apparatus having at least one function of video or audio reproduction which is controllable remotely by way of remote control signals, said game apparatus comprising control means for issuing a first said remote control signal and a plurality of switch means coupled to said control means by way of selection means, wherein when one of said switch means is actuated said selection means causes said control means to issue said first remote control signal, and thereafter said selection means prevents the actuation of any of said switch means from causing the issuance of a said remote control signal until said game apparatus has been reset, the control means being programmable to issue different remote control signals corresponding to different reproduction apparatus.

5,364,109
SEALING GASKET WITH HARD INTERIOR BACKBONE AND INTEGRAL CRUSH LIMITERS
Tanas M. Sibon, Monroe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 13, 1992, Ser. No. 976,096
Int. Cl.[5] F16J 15/12
U.S. Cl. 277—9 3 Claims



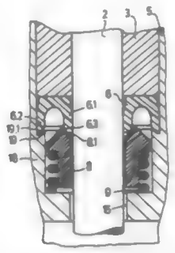
1. A gasket assembly for fluid sealing the interfacing surface areas of two components to be joined together under compression loads by fasteners, said gasket assembly having a backbone of metallic material, said backbone including a main body with top and bottom sides disposed primarily in a first plane, the improvement comprising a plurality of stations in said main body spaced from one another and offset from said first plane, a fastener receiving hole formed in each of said stations, tab means integral with said main body and associated with each of said stations and extending therefrom, each of said tab means having an end portion and having a fastener receiving hole near the end portion thereof and having a reverse bend therein so that the end portion of each said tab means closely overlies at least a portion of said associated station of said main body and so that the fastener receiving hole therein is in substantial alignment with the corresponding fastener hole in said station and elastomer sealing means molded on said main body of said backbone to sealingly cover said backbone including said spaced stations and said tab means whereby said tab means and said spaced stations of said main body cooperate to provide stop means for limiting the compression loads applied to said gasket assembly by the fasteners that extend through the holes in the gasket assembly when connecting the two components together while said elastomer sealing means is operative to cover the top and bottom sides of said body and said stations and said tab means to seal the interfacing surfaces of the two components.

5,364,110
DOWNHOLE TOOL METAL-TO-METAL SEAL
Steven G. Streich; John T. Brandell; David D. Szarka, and Bobby L. Sullaway, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Dec. 11, 1992, Ser. No. 990,336
Int. Cl.[5] F16J 15/08
U.S. Cl. 277—115 6 Claims



1. A sealing arrangement for a downhole tool, said sealing arrangement comprising:
a first member of said downhole tool having an annular cavity formed in one end thereof, the annular cavity having a threaded portion and having a frusto-conical annular surface;
a second member of said downhole tool having a cylindrical sealing surface thereon;
an annular sealing member having a first frusto-conical annular lip and having a second frusto-conical annular lip extending from a body portion having, in turn, a frusto-conical outer surface which is adapted to engage the frusto-conical annular surface of the annular cavity of the first member of said downhole tool, the first frusto-conical annular lip and the second frusto-conical annular lip each having an annular rib thereon; and
a seal energizing member having, on the exterior thereof, a threaded surface which threadedly engages the threaded portion of the annular cavity of the first member of the downhole tool and an annular lip which abuts a shoulder of the annular sealing member when the annular sealing member and seal energizing member area assembled in said downhole tool such that said frusto-conical outer surface of said annular sealing member engages said frusto-conical annular surface of the annular cavity of said first member.

5,364,111
SEALING ARRANGEMENT
Eckart Wunsch, Buchenstrasse 5, D-Schomberg-Langenbrand, Germany
Filed Aug. 26, 1992, Ser. No. 935,559
Int. Cl.[5] F16J 15/32
U.S. Cl. 277—117 11 Claims



1. Apparatus comprising a rotating shaft extending through a bore of a housing defined by a generally cylindrical wall, a motor operatively connected to said shaft, a shaft bearing surrounding said shaft and disposed between said motor and a seal assembly, said seal assembly including:
a sealing member located in said bore encircling said shaft, said sealing member having a radially inner lip contacting said shaft and a radially outer lip in contact with said bore wall, said housing including a ring-shaped shoulder surface extending inwardly from said bore wall and engaging said outer lid to thereby urge said outer lid outwardly against said bore wall;
a thrust member encircling said shaft, said thrust member having a wedge-shaped element and an integrally formed tubular portion extending from said wedge-shaped element and surrounding said shaft, said inner lip having an angled surface at an axially inner end thereof and said wedge-shaped element having an opposed angled surface at an axially outer end thereof, said angled surfaces being in contact with each other when said thrust member is urged toward said sealing member with the angle between said shaft surface and said angled surface of said wedge-shaped element being greater than the angle between said shaft surface and said angled surface of said inner lid such that said wedge-shaped element makes line contact with said inner lid; and,
a coil spring surrounding said tubular portion and biasing said thrust member axially toward said sealing member to cause said wedge-shaped element to urge said inner lip radially inwardly against said shaft, said thrust member applying no substantial radially outward force to said outer lip when urged toward said sealing member by said coil spring whereby the sealing action of said inner lip is independent of the sealing action of said outer lip.

5,364,112
WHEEL ASSEMBLY FOR COMBINATION FOLDING LAWN CHAIR AND CART
William S. Jackson, 227 N. Grove St., Ypsilanti, Mich. 48198
Filed Nov. 30, 1992, Ser. No. 982,858
Int. Cl.[5] B62B 3/02
U.S. Cl. 280—30 1 Claim

1. A pair of substantially identical wheel assemblies adapted to be removably attached to a pair of tubular rear legs, having central axes, of a non-reclining folding lawn chair, each assembly comprising:
means for securing said assembly to one leg of said rear legs to restrict motion of the assembly in the direction of said central axis of the leg, allow rotation of the assembly about the axis of such leg and selectively preclude rotation of the assembly about the axis of such leg at a plurality of positions so that said each assembly may be rotated about the axis of the leg between said positions, said means comprising a hollow shaft having opposite ends which surrounds the leg, two collars which abut each end of the hollow shaft and are secured to the leg, a sleeve which encloses the leg and joins said two collars, and a plurality of detentes supported at the point of abutment of each collar and said hollow shaft;
an elongated bracket having two ends connected by a central axis, one end connecting to said hollow shaft so that the central axis of said bracket projects downwardly and rearwardly at an acute angle to the leg when the assembly is secured to the leg;
a wheel rotatably mounted at the end of the bracket opposite the end of the bracket which is connected to said shaft, the

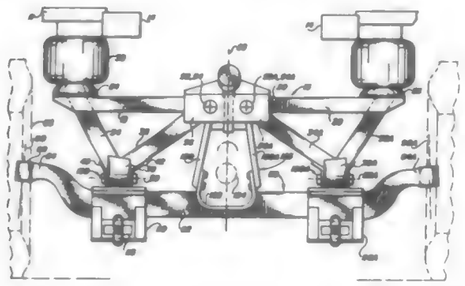


wheel's axis of rotation lying parallel to a supporting surface for the chair at such time as the chair is unfolded, and parallel to a plane containing both rear legs whereby said wheel is aligned rearwardly from the chair with the point on the circumference of the wheel closest to said supporting surface being closely spaced above said supporting surface when the assembly is locked into a position which renders the assembly useable,
whereby the chair may be used for normal seating purposes while unfolded, or may be tilted rearwardly to bring a point on the circumference of each said wheel in contact with said supporting surface so that the chair may be rolled on said wheel assemblies, and the assemblies may be rotated about the respective axe of said legs and locked in a position whereby the axis of each wheel lies in a plane perpendicular to the plane containing both rear legs so the chair may be folded and stowed.

5,364,113
SELF-STEERING AXLE FOR VEHICLES
William Goertzen, Winnipeg, Canada, assignor to Motor Coach Industries, Winnipeg, Canada
Filed Oct. 23, 1992, Ser. No. 965,731
Int. Cl.[5] B60G 7/00
U.S. Cl. 280—81.6 18 Claims

1. A self steering axle assembly for a vehicle having a frame and a back-up system for effecting a caster angle change from positive to negative upon the vehicle being shifted from forward travel to reverse travel, said axle comprising:
(a) a suspension truss member extending transversely of the vehicle and being secured thereto;
(b) an axle beam extending transversely of said vehicle and being hinged to said truss member for rocking movement relative thereto between a positive and a negative caster angle, said axle beam having opposite ends for receiving a king pin assembly and associated wheel assemblies;

(c) arm means extending from said axle beam at a central location; and



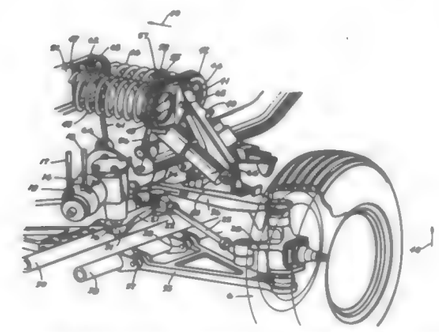
(d) actuator means operably connected to said arm means at connector means for selectively rocking said axle beam to effect a predetermined change of caster angle.

5,364,114

VEHICLE STEERING AND SUSPENSION SYSTEM

Walter J. Petersen, Hennepin County, Minn., assignor to The Toro Company, Bloomington, Minn.

Filed Jan. 29, 1993, Ser. No. 11,285
Int. Cl.[5] B60G *11/08*
U.S. Cl. 280—95.1 3 Claims



1. An apparatus for controlling the motion of vehicle wheels, comprising:

(a) a pair of coaxially mounted wheels, the wheels being pivotably mounted so as to permit motion in a direction substantially perpendicular to a mounting axis;

(b) a pair of struts, the struts being pivotably affixed to the wheels so as to convert perpendicular motion of the wheels into a motion having a component parallel to the mounting axis;

(c) a spring supporting cradle, the cradle being formed so as to have two substantially planar end caps, each end cap being pivotably mounted on a free end of each strut, the end caps further comprising:

(i) a first outer surface and a second inner surface; and

(ii) a first flange, the first flange being rigidly attached to the outer surface of the end cap, the first flange being adapted to pivotably retain the free end of the strut;

(d) end cap stabilizing linkages, the stabilizing linkages being adapted to maintain the end caps in a substantially parallel relationship when subjected to mechanical forces imparted by the struts;

(e) a second flange, the second flange being rigidly affixed to the inner surface of the end cap, the second flange being adapted to pivotably retain an end of the stabilizing linkage; and

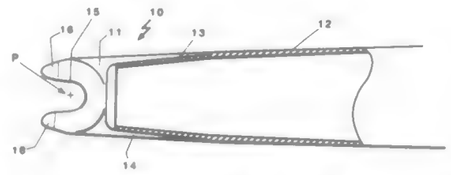
(f) an elastic energy storage device, the elastic energy storage device being at least one coil spring, the elastic energy storage device being adapted to reside between the end caps.

5,364,115

DROPOUT AND DROPOUT JOINTS FOR BICYCLES

Gary G. Klein, and Darrell W. Voss, both of Chehalis, Wash., assignors to Klein Bicycle Corporation, Chehalis, Wash.

Filed Aug. 13, 1993, Ser. No. 105,580
Int. Cl.[5] B62K *19/22*
U.S. Cl. 280—288 5 Claims



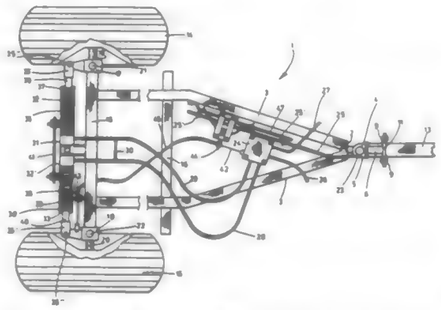
1. In a bicycle dropout-fitting for hollow fiber reinforced composite and metal hollow tube structures, the improvement wherein said hollow tube structure is joined to said dropout-fitting by an adhesive bonded joint wherein a bonded surface is external to said hollow tube structure and said adhesive bonded joint is in compressive stress and wherein said dropout-fitting is metal and has integral walls forming a socket thereon for receiving said hollow tube structure, and the thickness of said walls forming said socket is outwardly tapered to maintain stiffness compatibility with said hollow tube structure.

5,364,116

AUTOMATIC STEERING ASSEMBLY FOR TOWED VEHICLE

Michel Houle, Wickham; Alain Courtemanche, St-Nicephore, and Denis Courtemanche, St-Theodore d'Acton, all of Canada, assignors to J. Houle Et Fils Inc., Drummondville, Canada

Filed Nov. 30, 1993, Ser. No. 159,173
Int. Cl.[5] B62D *13/00, 5/06*
U.S. Cl. 280—442 20 Claims



1. An automatic, hydraulically-operated steering assembly for a towed vehicle of the type comprising a frame having a longitudinal axis; a hitching bar projecting forwardly from the frame, said hitching bar having a front end connectable to a towing vehicle; and at least one set of steerable wheels, said wheels being symmetrical with respect to said longitudinal axis and pivotally mounted onto said frame with suitable mounting means so as to be steerable to the right or to the left with respect to a straight position in which said wheels are aligned with the longitudinal axis of said frame, said steering assembly comprising:

(a) an hydraulic cylinder for each set of steerable wheels, said cylinder being transversal to said longitudinal axis;

(b) a double-action piston housed in said cylinder, said piston dividing said cylinder into two opposite chambers and having piston rods projecting out of said chambers on either side of said cylinder, each piston rod having a free end connected to the mounting means of one of said wheels so as to steer said one wheel;

(c) a hydraulic system operatively connectable to a source of pressurized fluid carried by said towing vehicle so as to actuate said piston housed in the cylinder and thus cause said wheels to pivot in unison, said hydraulic system including a directional valve and a pair of hydraulic hoses, each of said hoses being operatively connected at one end to said directional valve and at the other end to one of the chambers of said cylinder, respectively;

(d) a control system for said hydraulic system, said control system actuating said directional valve as soon as the towing vehicle starts turning and thus causing said pressurized fluid to be injected into one of said hoses so as to steer said wheels in such a direction as to substantially follow said towing vehicle;

(e) resilient biasing means to return said wheels to their straight position; and

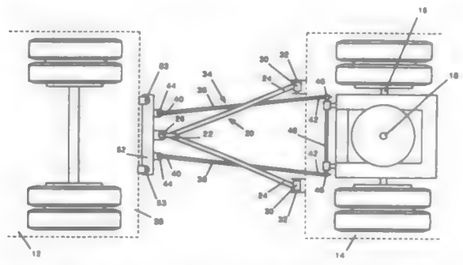
(f) a by-pass joining said two hoses between said valve and said cylinder, whereby hydraulic pressure can slowly equilibrate automatically in said two hoses and accordingly in the two opposite chambers of said cylinder to prevent jamming of the wheels and to allow the same to return to their straight position automatically under the action of the resilient biasing means when the source of pressurized fluid is disengaged or in the case of a failure of said hydraulic system.

5,364,117

METHOD AND APPARATUS FOR CONNECTING A TOW VEHICLE TO A TRAILER HAVING A FRONT AXLE ASSEMBLY WHICH PIVOTS ABOUT A VERTICLE AXIS

Peter G. Keith, 1059 Edgemont Road NW., Calgary, Alberta, Canada T3A 2J5

Filed Aug. 10, 1993, Ser. No. 105,290
Int. Cl.[5] B60D *1/173*
U.S. Cl. 280—459 22 Claims



1. A method of connecting a tow vehicle to a trailer having a front axle assembly which pivots about a vertical axis, the method comprising the steps of:

a. firstly, positioning a drawbar assembly between the tow vehicle and the trailer, the drawbar assembly having a tow vehicle end mounted to a single articulation point at a rear of a tow vehicle and a trailer end pivotally mounted to a front of a trailer on a substantially horizontal transverse axis thereby accommodating up and down movement and precluding side to side movement of the drawbar assembly; and

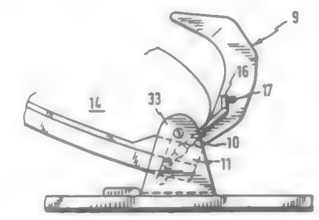
b. secondly, positioning a steering arm assembly between the tow vehicle and the front axle assembly of the trailer, the steering arm assembly including a pair of steering arms having tow vehicle ends omni-directionally attached to the tow vehicle equidistant from the single articulation point and trailer ends omni-directionally attached to the front axle assembly of the trailer equidistant from the vertical pivot axis of the front axle assembly, thereby accommodating relative movement of the tow vehicle and the front axle assembly of the trailer while causing a proportionate change in the angular positioning of the front axle assembly of the trailer to maintain correct steering geometry of the trailer relative to the tow vehicle as the tow vehicle turns, the steering arm assembly including means to accommodate simultaneous fore movement and simultaneous aft movement of the trailer ends of the steering arms relative to the trailer.

5,364,118

FRONT SOLE HOLDING DEVICE

Simon Burger, and Norbert Eugler, both of Karlsfeld, Germany, assignors to silvretta-sherpas Sportartikel GmbH & Co. KG, Karlsfeld/Rothschwaige, Germany

Continuation of Ser. No. 666,239, Mar. 8, 1991, Pat. No. 5,249,820. This application Apr. 5, 1993, Ser. No. 42,724
Claims priority, application Germany, Mar. 10, 1990, 4007667
Int. Cl.[5] A63C *9/00*
U.S. Cl. 280—614 4 Claims



1. In a front sole holding device which can be used optionally for cross-country skiing and downhill skiing and can be used in combination with a ski boot which comprises a sole overlapping the ski boot in the front toe area, wherein the ski boot is connected only with the front sole holding device for cross-country skiing, a support bearing holding the ski boot in said front sole holding device at a distance from the surface of the ski, said front sole holding device being swivelable around an axis extending transversely relative to the longitudinal direction of the ski and in which the ski boot is detachably pressed against the front sole holding device by a rear sole holding device for downhill skiing, wherein the support bearing absorbs upwardly directed forces at the overlapping sole, the improvement comprising that said support bearing includes a portion thereof arranged to support the ski boot from underneath the ski boot for cross country skiing, said support bearing being swivelable and said ski boot being placeable on the swivelable support bearing from above the support bearing said swivelable support bearing comprising a pair of bearing pins with two downwardly extending legs with a connecting base portion between the lower ends of said legs; said support bearing including a swivelable clamping device and a supporting member; said supporting member being connected with the ski and having an element about which said clamping device is swivelable; said supporting member having elements which function with the shape of the boot for restraining the boot in a form-contrained manner, said clamping member retaining the boot sole on the support bearing and assuring the formed-constrained connection by pressing the boot on the support bearing to prevent upward raising of the boot; said clamping device being arranged to act from above an edge of the overlapping sole of the ski boot for clamping the ski boot on the support bearing and wherein said clamping device also clamps said boot toe portion during downhill skiing and wherein said axis

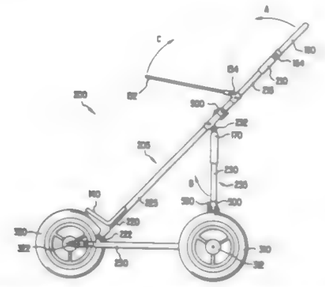
about which said front sole holding device is swivelable lies behind the front tip of the boot when the boot is inserted for cross country skiing.

5,364,119

COLLAPSIBLE FRAME ASSEMBLY AND STROLLER

Sammy W. Lee, Tujunga, Calif., assignor to Reebok International Ltd., Stoughton, Mass.

Filed Oct. 12, 1993, Ser. No. 134,792
Int. Cl.[5] B62B *7/08*
U.S. Cl. 280—647 **20 Claims**



1. A frame transformable between a collapsed position and an upright position, comprising:
- a base;
- an upper support having a proximal end;
- a lower support having a distal end, said distal end connected to said base;
- an upper brace having top and bottom ends, said top end connected to said lower support;
- a lower brace having top and bottom ends, said bottom end of said lower brace connected to said base;
- a first hinge connecting said upper support to said lower support so that said upper support and said lower support are movable from said collapsed position wherein said upper support is disposed substantially parallel to said lower support, to said upright position wherein said upper support is disposed rearward of and substantially aligned with said lower support;
- a second hinge connecting said upper brace to said lower brace so that said upper brace and said lower brace are movable from said collapsed position wherein said lower brace is disposed substantially parallel to said upper brace, to said upright position wherein both said upper brace and said lower brace are substantially vertically disposed;
- wherein said frame is transformed from said collapsed position to said upright position by pulling said upper support upwardly and rearwardly from said lower support.

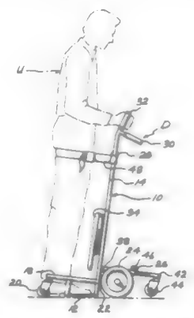
5,364,120

MOBILITY AID FOR PHYSICALLY DISABLED PEOPLE

David Shimansky, 5622 McAlear Ave., Côte St. Luc, Quebec, Canada H4W 2G7

Filed Apr. 22, 1993, Ser. No. 50,771
Int. Cl.[5] B62B *7/06*
U.S. Cl. 280—650 **16 Claims**

1. A mobility device for physically disabled people, comprising a body means including a support means located at a lower end thereof and adapted to receive a user, said body means including a substantially upwardly extending frame means and further including front, middle and rear wheel means, said middle wheel means supporting said body means on a support surface onto which said mobility device is intended to be displaced, said middle wheel means being located proximate said frame means and in front of a center of gravity of said mobility device and of the user carried thereby with the user being positioned on said support means and facing towards said frame means, said front and rear wheel means being located respectively in front of and behind said middle wheel means; wherein, in an at rest position with the user being positioned on said support means, said middle and rear wheel means contact the support surface with said front wheel means being spaced above the support surface, whereby, to operate said mobility device, a sufficient force is exerted by the user on said frame means substantially in a forward direction thereby producing a pivot of said body means substantially about said middle wheel means and a rotation of said middle wheel means thus resulting in a forward displacement of said mobility device and of the user carried thereby, said pivot of said body means being



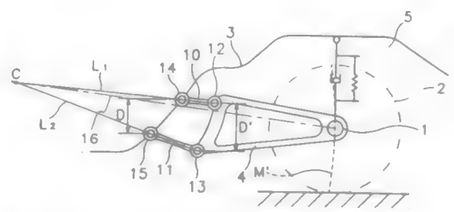
forwardly limited by said front wheel means engaging the support surface whereat said mobility device and the user carried thereby can displace on said front and middle wheel means with said rear wheel means being slightly spaced above the ground surface, wherein after a certain forward displacement said body means returns to a position where said body means is supported by said middle and rear wheel means, whereby the user can displace in translation by way of a substantially rocking reciprocating motion of said mobility device resulting from forces being periodically applied by the user on said frame means.

5,364,121

REAR SUSPENSION FOR VEHICLE HAVING INCREASED FREE LAYOUT

Unkoo Lee, Kyungki, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Aug. 20, 1993, Ser. No. 109,262
Claims priority, application Rep. of Korea, Aug. 20, 1992, 92-14975
Int. Cl.[5] B06G *1/00*
U.S. Cl. 280—688 **12 Claims**



1. A rear suspension for a vehicle comprising:
- an axle beam transversely arranged with respect to a car body and including wheels mounted on both ends of said axle beam;
- a trailing arm projecting forward form said axle beam, said trailing arm having a front end portion connected to the car body;
- upper and lower control links connecting the front end

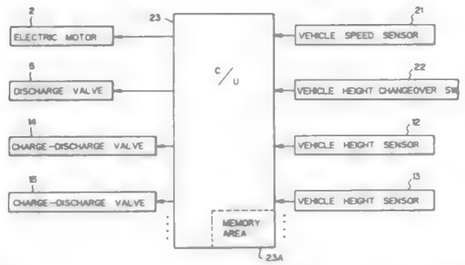
portion of said trailing arm to the car body, said upper and lower control links having a predetermined spacing therebetween, wherein an interval between the front end coupling portion of the upper control link and the front end coupling portion of the lower control link is narrower than that between the rear end coupling portion of the upper control link and the rear end coupling portion of the lower control link; and
- spring-damper assemblies mounted perpendicularly to both ends of said axle beam, an upper portion of said spring-damper assemblies being connected to the car body.

5,364,122

VEHICLE SUSPENSION CONTROL SYSTEM WITH SEQUENTIAL CONTROL FLOW

Nobuyuki Ichimaru, Kanagawa, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Apr. 1, 1993, Ser. No. 41,196
Claims priority, application Japan, Apr. 3, 1992, 4-110663
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—709 **6 Claims**



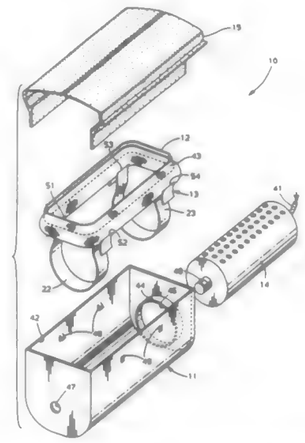
1. A suspension control system for a vehicle, said system comprising:
- a plurality of vehicle height control members to be interposed between a body of the vehicle and respective axles of front right, front left, rear right and rear left wheels to control height of the vehicle by the action of a fluid charged into and discharged from said vehicle height control members;
- a pump;
- a main fluid line connected to said pump;
- a discharge valve provided in said main fluid line and adapted to discharge fluid from said main fluid line when said discharge valve is opened;
- a plurality of branch lines connecting said main fluid line to respective said vehicle height control members;
- each said branch line having therein a respective charge-discharge valve, each said charge-discharge valve being normally closed to isolate the respective said vehicle height control member from said main fluid line, and each said charge-discharge valve being opened so that the fluid is charged into the respective said vehicle height control member when said pump is operated and discharged from the respective said vehicle height control member when said discharge valve is opened; and
- a control unit for controlling charge and discharge of the fluid into and from said vehicle height control members, said control unit controlling said charge-discharge valves such that with respect to at least one of a set of said charge-discharge valves associated with the front wheels and a set of said charge-discharge valves associated with the rear wheels, said charge-discharge valves associated with the right and left wheels are never open at the same time.

5,364,123

AIR BAG MODULE

William M. Abramczyk, Rochester Hills, Mich., and Kimberly L. Ikirt, Springboro, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 31, 1994, Ser. No. 188,862
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **10 Claims**



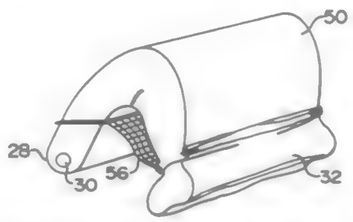
6. An air bag module for installation in a vehicle comprising:
- a retainer including a substantially planar frame and a plurality of legs extending from the frame, substantially perpendicular to the frame;
- an air bag cushion connected to the frame of the retainer;
- an inflator engaging the legs of the retainer and secured to the vehicle to capture the retainer; and
- means for directing the air bag cushion into the vehicle when the inflator discharges.

5,364,124

AIR BAG ASSEMBLY WITH DEPLOYMENT CHUTE

Michael W. Donegan, Bellbrook; John L. Volz, Dayton, both of Ohio, and Thomas C. Brown, Bellevue, Ky., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1992, Ser. No. 967,909
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 R **9 Claims**



7. A deployment chute for an air bag which is mounted beneath a deployment opening of an air bag container, said chute comprising an elongated, open-ended fabric tube with a rectangular cross-section and a cross-sectional area significantly smaller than the cross-sectional area of the fully-inflated air bag and having an inner end secured to the container about the periphery of its deployment opening and an outer end, said chute being extendible from a position folded atop the air bag to an extended position outwardly of the opening, and a tether

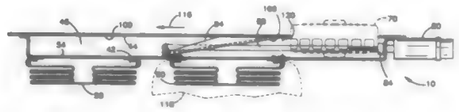
connecting the chute outer end to the container to position the outer end upon deployment to guide deployment of the air bag through a passage to emerge from the chute outer end.

5,364,125

APPARATUS FOR PROTECTING AN OCCUPANT OF A VEHICLE UPON A SIDE IMPACT TO THE VEHICLE

Louis R. Brown, Oxford; Charles E. Steffens, Jr., Washington; Thomas H. Vos, Rochester, and Edward J. Burley, Romeo, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 19, 1993, Ser. No. 139,215
Int. Cl.[5] B60R *21/22*
U.S. Cl. 280—730 A **20 Claims**



1. Apparatus for restraining movement of a vehicle occupant in the event of a side impact to the vehicle, said apparatus comprising

first and second inflatable occupant restraints for, when inflated, restraining movement of the vehicle occupant,

an inflation fluid source associated with said first and second inflatable occupant restraints for providing inflation fluid for said inflatable occupant restraints,

means for mounting said inflatable occupant restraints for inflation between a lateral side of the vehicle and the side of a vehicle occupant,

flow control means associated with said inflation fluid source and actuatable between a first condition for directing inflation fluid from said inflation fluid source into said first inflatable occupant restraint and a second condition for directing inflation fluid from said inflation fluid source into said second inflatable occupant restraint,

sensor means for sensing the position of the vehicle occupant and for providing a position signal indicative of the vehicle occupant's position, and

actuator means responsive to the position signal for actuating said flow control means between the first and second conditions.

5,364,126

SPECIALLY FOLDED AIR BAG AND SPECIAL INFLATOR FOR INFLATING AIR BAG

Masato Kuretake; Motonobu Kitagawa; Kazuhiko Yamakawa; Yoshimi Yoshida; Sawayo Uda, and Takayasu Zushi, all of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

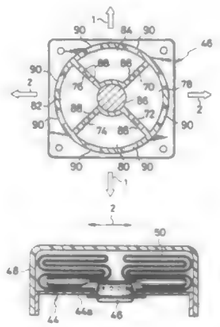
Filed Oct. 8, 1993, Ser. No. 131,963
Claims priority, application Japan, Oct. 30, 1992, 4-292920
Int. Cl.[5] B60R *21/22, 21/26*
U.S. Cl. 280—730 R **5 Claims**

1. An air bag device comprising,

a retainer having a main plate and an inflator mounting opening formed in a central portion of the main plate,

an inflator fixed to said retainer and having a leading end situated in the inflator mounting opening of said retainer, a side periphery, a plurality of gas injection ports formed in the side periphery, and means for injecting gas from the inflator into a second direction immediately after the inflator is activated and then in a first direction, said first direction extending along the main plate of the retainer and the second direction extending perpendicular to said first direction,

an air bag fixed to the retainer and arranged on the retainer such that the air bag is folded along the first direction and then along the second direction, said air bag being inflated by the gas injected by the inflator, and



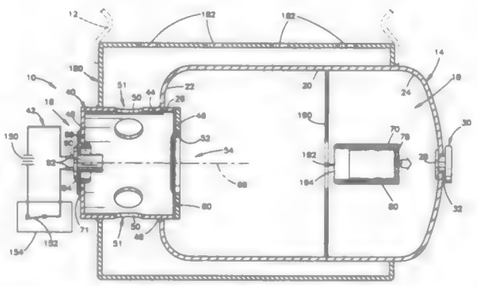
a module cover attached to the retainer, said module cover covering the air bag and being torn by the air bag when the air bag is inflated.

5,364,127

INFLATOR ASSEMBLY

Jess A. Cuevas, Scottsdale, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jun. 11, 1993, Ser. No. 76,112
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—741 **13 Claims**



1. Apparatus for inflating an inflatable device, said apparatus comprising:

pressure vessel means for defining a sealed chamber, said chamber being filled with inflation fluid that is essentially free of components that would be combustible within said chamber;

means for directing said inflation fluid from said pressure vessel means into the inflatable device;

ignitable means for increasing the temperature and pressure of said inflation fluid within said chamber, said ignitable means including an ignitable material being contained in a canister which, when ignited, produces combustion products including heat for heating and pressurizing said inflation fluid;

igniter means for igniting said ignitable material in response to an actuating signal; and

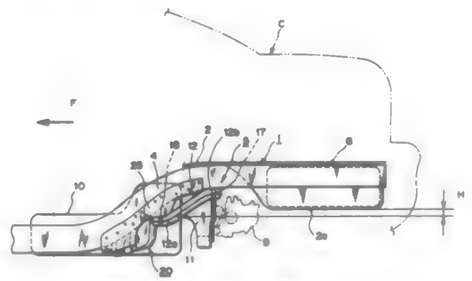
dispersing means for dispersing said combustion products in said inflation fluid within said chamber, said dispersing means moving said canister containing said ignitable material within said chamber when said ignitable material is burning.

5,364,128

REAR PORTION STRUCTURE OF VEHICLE

Yoshikazu Ide, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 26, 1992, Ser. No. 903,922
Claims priority, application Japan, Jan. 29, 1991, 3-185313
Int. Cl.[5] B62D *21/15, 25/08*
U.S. Cl. 280—784 **9 Claims**



1. A rear portion structure of a vehicle having a multi-link rear suspension, comprising:

a pair of right and left rear side frames extending along right and left side portions, respectively, of a rear portion of the vehicle, each side frame having a kick-up portion which is inclined upward toward a back of the vehicle;

a rear suspension cross member having attaching portions attached to intermediate portions of said kick-up portions of said rear side frames, said rear suspension cross member extending in a direction substantially perpendicular to a longitudinal direction of said rear side frames, wherein each of said attaching portions of said rear suspension cross member includes a forward and a backward arm portion integrated to form a longitudinal frame portion, and said longitudinal frame portion is integrally formed with said rear suspension cross member; and

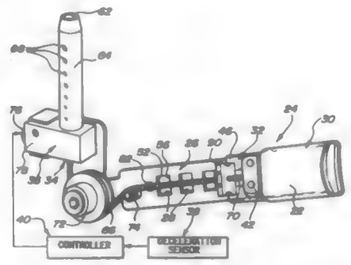
reinforcement brackets attaching said forward arm portions to said rear side, frames at almost the middle of the intermediate portions of said kick-up portions, said reinforcement brackets extending from said intermediate portion to a back portion of said kick-up portions.

5,364,129

VEHICLE SAFETY BELT TENSIONING MECHANISM

Cecil A. Collins, Shelby, and Dagoberto Krambeck, Troy, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Filed Oct. 26, 1993, Ser. No. 143,299
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 **26 Claims**



1. A belt tensioning mechanism for use in a motor vehicle to retract a belt buckle from a normal position to a retracted position, said belt tensioning mechanism comprising:

sensing means for sensing the magnitude of a vehicular deceleration and generating a deceleration signal indicative thereof;

an elongated lock plate defining substantially parallel side edge and having a series of locking apertures formed therein at spaced locations therealong;

a drive mechanism coupled to said belt buckle;

a stored energy device operable for forcibly displacing said drive mechanism so as to cause concurrent movement of said belt buckle from said normal position toward said retracted position;

actuation means for actuating said stored energy device in response to said deceleration signal indicating a vehicular deceleration exceeding a predetermined critical value; and

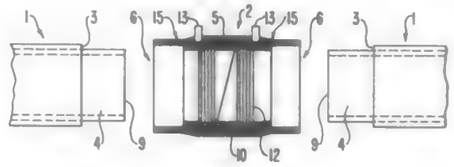
a latch assembly coupled to said belt buckle for lockingly retaining said belt buckle in said retracted position, said latch assembly including a slide bracket mounted for slidable movement along said lock plate and defining a pair of channels for slidably engaging the side edges of said lock plate and a latch tab adapted to sequentially ratchet over said locking apertures in said lock plate during movement toward said retracted position and to lockingly engage a locking aperture to prevent subsequent return movement of said latch assembly and belt buckle toward said normal position from said retracted position.

5,364,130

COUPLING FOR TUBULAR PLASTIC PIPES WITH LINER OF SOCKET AND LINER OF PIPES BEING HEAT WELDABLE

Alfred Thalmann, Uhwiesen, Switzerland, assignor to Streng Plastic AG, Niederhasli, Switzerland

Filed Feb. 22, 1994, Ser. No. 199,066
Claims priority, application Switzerland, Feb. 22, 1993, 00543/93
Int. Cl.[5] F16L *13/02*
U.S. Cl. 285—21 **6 Claims**



1. A pipe coupling comprising

first and second compound pipes having ends to be joined, each of said pipes having an inner layer (4) and an outer layer (3);

a socket assembly (2) having an inner liner (10) and an outer sleeve (5) for joining said pipes,

said inner liner of said socket assembly and said inner layers of said compound pipes being made of materials which are heat-weldable to each other, and

said outer sleeve of said socket assembly and said outer layers of said compound pipes being made of high-strength materials which are frictionally joinable to each other;

means (12, 13) for heating said inner layers and liner to form a welded connection of said inner liner of said socket assembly to said inner layers (4) of said pipes; and

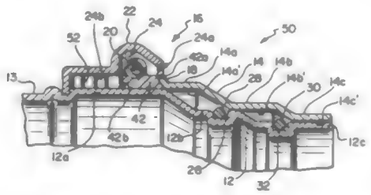
said socket assembly (2) including means at opposite ends of said sleeve for forming frictional connections (7) with said outer layers of said pipes.

5,364,131

QUICK-CONNECT TUBULAR COUPLING

Dale L. Hartsock, Livonia; John C. Caverly, Dearborn; Fred G. Schroeder, Grosse Ile; Claudia M. Anderson, Southfield, and Ronald G. Breuhan, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 1, 1993, Ser. No. 11,916
Int. Cl.[5] F16L *37/22, 37/084*
U.S. Cl. 285—23 **17 Claims**



1. A tubular coupling comprising:

a first tubular element including first and second sections, said first section having a first outer diameter and said second section having a second outer diameter;

a second tubular element including first and second portions, said first portion having a first inner diameter and said second portion having a second inner diameter, said second tubular element being adapted to be assembled with said first tubular element such that said first section is positioned substantially adjacent to said first portion and said second section is positioned substantially adjacent to said second portion;

means for securing said first and second tubular elements in assembly, said securing means including an end part extending from said first portion of said second tubular element, a contractible garter spring, an annular cage fixedly mounted on the outer surface of said first section of said first tubular element for defining a chamber with said first section for housing said garter spring, said chamber having an annular passage through which said end part passes during assembly of said first and second tubular elements to permit said garter spring to pass over said end part and contract about said first portion of said second tubular element for securing said first and second tubular elements in assembly;

means for sealing said first tubular element to said second tubular element, said sealing means being retained on one of said first and second tubular elements and engaging with the other of said first and second tubular elements just before said securing means secures said first and second tubular elements in assembly; and,

expander means positioned between said garter spring and said first section for expanding said garter spring prior to the assembly of said first and second tubular elements to permit easy assembly of said first and second tubular elements and being disengageable with said garter spring to permit said garter spring to contract about and engage substantially only said second tubular element for securing said first and second tubular elements in assembly.

5,364,132

METHOD FOR ASSEMBLY AND ACTIVATION OF A REUSABLE SECURITY IDENTIFICATION BADGE

David J. Haas, and Sandra F. Haas, both of Suffern, N.Y., assignors to S.J.A. Trust, Suffern, N.Y.

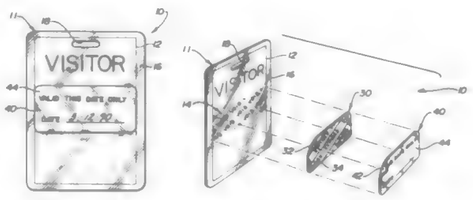
Continuation-in-part of Ser. No. 650,221, Feb. 4, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 45,552
Int. Cl.[5] B42D *15/10;* **A44C** *3/00*
U.S. Cl. 283—67 **7 Claims**

1. A method for assembly and activation of a reusable security identification badge comprising the steps of:

(a) providing a reusable base substrate having a visible void indicia area on one surface there of;

(b) removably adhesively attaching an inked substrate to said one surface containing said visible void indicia area of the reusable base substrate to cover the void indicia area, the inked substrate having an expired indicia area of a soluble ink on one surface and an adhesive on the other surface, wherein the adhesive surface of said inked substrate is attached onto said base substrate;

(c) adhesively attaching an overlay substrate to the inked substrate, the overlay substrate having an ink dissolver on one surface and a display surface on the other surface, the ink dissolver surface of said overlay substrate is attached onto the soluble ink surface of said inked substrate;



wherein the ink dissolving adhesive of the overlay substrate contacts and coacts with the soluble ink of the inked substrate to dissolve the ink, the ink migrating through the overlay substrate to the display surface, where it can be visually perceived through the display surface of said overlay substrate in a selected time interval, to indicate the expiration of the badge;

(d) after indication of expiration, removing the removably adhesively attached inked substrate having attached thereto the overlay substrate, from the reusable base substrate to expose the void indicia area; and

(e) repeating, at least once, steps (b) and (c).

5,364,133

IDENTIFICATION BRACELET

Gene A. Hofer, Lake Zurich, and Karen M. Longe, Chicago, both of Ill., assignors to Zebra Technologies Corporation, Vernon Hills, Ill.

Filed Jan. 12, 1994, Ser. No. 180,440
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—75 **17 Claims**



1. An identification bracelet comprising:

a. an upper layer of transparent flexible material for displaying identifying data, said upper layer having top and bottom opposed surfaces;

b. a transparent release layer comprising predetermined printed portions applied to said bottom surface of said upper layer;

c. a pigmented, adhesive layer applied to said bottom surface of said upper layer over said release layer, the adhesive layer forming a relatively strong adhesive bond to the upper layer in areas between the printed portions of the release layer, and forming a relatively weak adhesive bond to the printed portions themselves; and,

d. a lower layer of flexible material removably laminated to the upper layer by the adhesive layer;

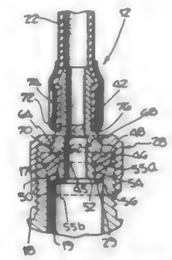
e. wherein, upon any separation of said upper layer from said adhesive layer, a first portion of said pigmented adhesive layer located between said predetermined printed portions of said release layer remains adhered to said bottom surface of said upper layer and forms a border surrounding said printed portions, and a second portion of said adhesive layer detaches therefrom, thereby causing said predetermined printed portions of said release layer to become visually distinguishable from said upper layer and thus providing an indication that the identification bracelet has been altered.

5,364,134

END FITTING FOR FLEXIBLE CONDUIT

Neill E. Anderson, Valencia, Calif., assignor to Anderson Barrows Metal Corporation, Palmdale, Calif.

Filed Apr. 26, 1991, Ser. No. 691,700
Int. Cl.[5] F16L *55/07*
U.S. Cl. 285—38 **25 Claims**



25. An end fitting for a flexible conduit to be threaded onto an externally threaded male fitting having an internally beveled bore open end, said end fitting comprising:

a conduit insert to be inserted at the end of a conduit and having a force flange and a tip;

a cone washer having a washer bore to fit said washer onto said insert tip on one side of said force flange, said cone washer including a disk-shaped back portion seated against said force flange, a smaller front end facing away from said flange and a conical sealing surface extending between said front end back portions;

a threaded cap having an end wall to engage said force flange on another side thereof; and

a crimp ring about said conduit to hold the assembled washer and insert to said conduit whereby rotation of said cap onto said male fitting will push said insert against said cone washer and thereby push said cone washer conical sealing surface into engagement with said internal beveled bore open end in a fluid tight wedging seal therebetween in response to manual rotation of said cap onto said fitting.

5,364,135

END FITTING FOR FLEXIBLE CONDUIT

Neill E. Anderson, Valencia, Calif., assignor to Anderson-Barrows Metal Corporation, Palmdale, Calif.

Continuation of Ser. No. 691,700, Apr. 26, 1991. This application Jul. 28, 1993, Ser. No. 99,661
Int. Cl.[5] F16L *55/07*
U.S. Cl. 285—38 **25 Claims**

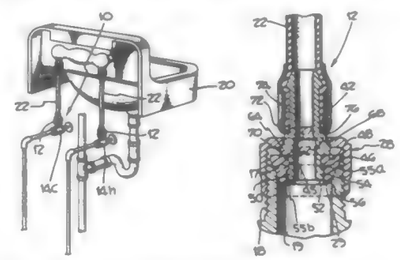
23. A faucet supply line assembly to interconnect a shut-off valve to a faucet valve fitting having an internally beveled open end, said assembly comprising:

a flexible conduit having a pair of ends;

a pair of end fittings, each of said end fittings being disposed at a respective one of said ends, each of said end fittings including a conduit insert, a threaded cap mounted on the insert and having an internal thread to engage a male threaded fitting on said valves, a digitally engageable surface to manually grip said cap for installation and removal of said supply line from said valves and a coaxial bore defining an edge;

a force flange and a base ring on the conduit insert of each of said pair of end fittings, the base ring rotatably engaged by the edge of the coaxial bore of the associated cap; and

a cone washer mounted on each insert, each such cone washer having a front portion to fit into said fitting open end, a back portion being too large to fit into said fitting open end and a conical external sealing surface tapering downwardly from said back portion to said front portion which is smaller in diameter than said back portion, each



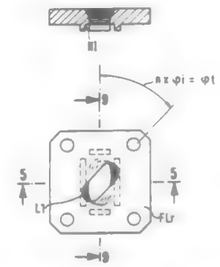
said cone washer being mounted on each insert with said back portion being against the associated force flange and said front portion facing axially outwardly of the associated one of said end fittings whereby interconnection of each of said end fittings to each of said valves causes each cap to force the associated insert force flange against the associated cone washer to push said washer partially into said fitting open end to effect a water tight seal between said washer conical external sealing surface and said fitting open end through a wedging of said conical external sealing surface of said cone washer against said internally beveled open end.

5,364,136

FLANGES AND BODIES FOR MICROWAVE WAVEGUIDES COMPONENTS

Adriano Forti, and Enrico Brambilla, both of Vimercate, Italy, assignors to Alcatel Italia S.p.A., Milan, Italy

Filed Oct. 30, 1992, Ser. No. 968,069
Claims priority, application Italy, Nov. 12, 1991, MI91A003009
Int. Cl.[5] F16L *55/045*
U.S. Cl. 285—176 **25 Claims**



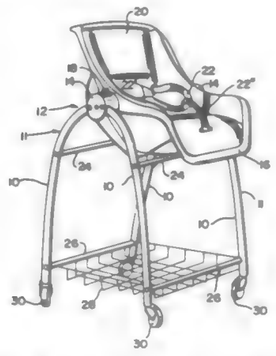
3. Joining members for fluid duct components, said joining members comprising a plurality of spot-faced cavities rotated with respect to each other, wherein said members do not produce appreciable losses and disturbances on transmission of conveyed fluids therethrough.

5,364,137

INFANT HIGHCHAIR

Christine R. Shimer, Mahwah, N.J., assignor to Safe-Strap Company, Inc., Old Tappan, N.J.

Filed Apr. 5, 1993, Ser. No. 42,543
Int. Cl.[5] A47D *1/00, 1/06*
U.S. Cl. 297—327 37 Claims



1. A highchair for supporting an infant who is too young to be able to sit up without support with the infant's back in an erect position comprising:

a support structure having four legs, respective pairs of said legs forming two inverted generally U-shaped members, the U-shaped members each having an apex region;

an infant seat adapted to cradle an infant's body so as to provide support for the infant's back from below and to conform to the contour of the body of an infant who is too young to be able to sit up without support with the infant's back in an erect position, the infant seat having bottom and back portions and having a vertical height measured from a lowest point of the bottom portion to a highest point of the back portion, the support structure having a height which enables the infant to be supported in the infant seat at a height substantially above floor level, said height of the support structure being greater than the vertical height of the infant seat, whereby the infant seat is supported at a height allowing the infant in the infant seat to be drawn up to a dining table at substantially dining table height for feeding;

a pair of hubs, each hub coupled to a side of said infant seat, said hubs each enclosing means for pivotally attaching said infant seat to the apex region of respective ones of said U-shaped members, said means for pivotally attaching defining at least two positions of said infant seat, said positions including an upright position and a reclined position; and

means for locking said infant seat in each of said positions.

5,364,138

DOOR LATCH ASSEMBLY WITH BACKSET ADJUSTMENT

Hagen Dietrich, White Rock, and Graham Wheatland, Richmond, both of Canada, assignors to Masco Corporation of Indiana, Taylor, Mich.

Filed May 10, 1993, Ser. No. 60,102
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—1.5 10 Claims

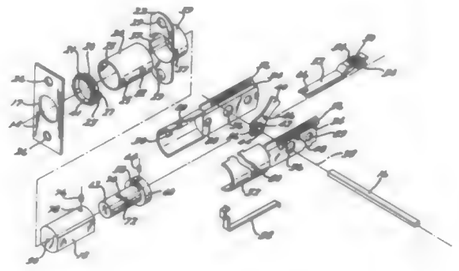
1. A latch assembly having a backset adjustment for mounting within a bore extending in from a side edge of a door and operable by a handle or keylock on a side of the door, the handle or keylock positioned on a rotational axis, the latch assembly comprising:

a casing assembly for mounting in the bore of a door, the casing assembly having a bolt assembly longitudinally reciprocal therein between a retracted position and an extended position;

the bolt assembly including a bolt with a cylindrical aperture therein, the bolt rotatable and reciprocal relative to a non-rotational cylindrical bolt adjuster and having a sliding fit thereon, a groove extending for at least 180° around the surface of the bolt adjuster, the bolt having an internal projection engageable in the groove of the bolt adjuster;

a bolt extension connected at one end to the bolt adjuster and reciprocal with the bolt assembly;

a cam actuating means connected to the other end of the bolt extension, the cam actuating means having a pivot connection coaxial with the rotational axis of the handle or keylock;



the casing assembly including a rear casing with a back portion containing retaining means for rotatably constraining the cam actuating means, the back portion of the rear casing integral with a front hollow cylindrical portion with a non-helical substantially serpentine shaped slot extending about a portion of the circumference thereof;

a forward hollow cylindrical casing rotatable and slidable about the front portion of the rear casing, the forward casing having an internal protrusion engageable in the non-helical substantially serpentine shaped slot of the front portion of the rear casing; and

the forward casing engaging the bolt with the forward casing and bolt simultaneously rotatable through significantly different patterns of movement at least 180° to change the backset.

5,364,139

DOOR LATCH ASSEMBLY

Gary R. Bergen, Yorba Linda, and Thomas J. Ghostley, Anaheim, both of Calif., assignors to Kwikset Corporation, Irvine, Calif.

Continuation of Ser. No. 566,191, Aug. 10, 1990, abandoned. This application Jul. 13, 1992, Ser. No. 911,368
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—169 5 Claims

1. A door latch assembly, which comprises:

a latch bolt mechanism;

a bolt contained with the latch bolt mechanism and movable between an extended door latching position and a retracted door unlatching position;

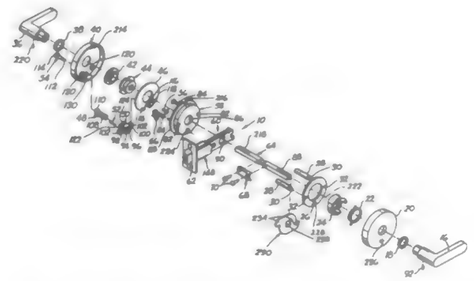
a drive system extending from outside the latch bolt mechanism to a location within the latch bolt mechanism to facilitate movement of the bolt between the latching position and the unlatching position;

a door operator coupled to the drive system at a location spaced from the latch bolt mechanism for facilitating operation of the drive system to move the bolt;

the drive system including a spindle having a spindle axis which extends between the door operator and the latch bolt mechanism for coupling the door operator to the latch bolt mechanism;

a locking plate mounted on the spindle at a location intermediate of and spaced from the door operator and the latch bolt mechanism for rotation with the spindle;

the locking plate formed with a slot in the periphery thereof so that the slot is located in a plane which includes the locking plate;



a locking dog mounted within the door latch assembly in a position for reciprocal movement along a dog axis which is parallel to and spaced from the spindle axis, and

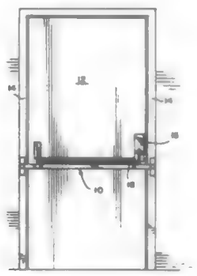
means for moving the locking dog into the peripheral slot of the locking plate at a location spaced from and independently of the latch bolt mechanism and the portion of the drive system associated therewith.

5,364,140

DOOR SECURITY DEVICE

Brian J. Rice, Columbia City, Ind., assignor to Richard J. Bagan, Inc., Columbia City, Ind.

Filed Apr. 8, 1993, Ser. No. 45,363
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—259 R 32 Claims



1. A security device for a door mounted within a frame, comprising:

a generally elongate support bar having first and second ends, said support bar having a length which exceeds a width of said door;

means mounted to said support bar for removably attaching said device to a portion of said door in a substantially horizontal orientation such that said first and second ends of said support bar are disposed adjacent opposing vertical members of said door frame;

a first blocking member attached to said first end of said support bar and a second blocking member attached to said second end of said support bar, said blocking members being positionable against said door frame; and

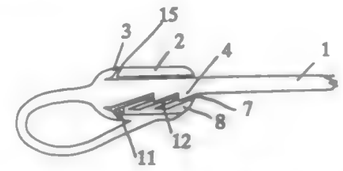
a handle assembly mounted to said attaching means adjacent said support bar, such that said handle assembly is pivotable with respect to said support bar so as to engage said attaching means to said portion of said door.

5,364,141

TAMPER-PROOF SECURITY SEAL

F. Wayne King, 3420 NW. 71st St., Gainesville, Fla. 32606

Continuation of Ser. No. 11,048, Jan. 29, 1993, abandoned. This application Mar. 8, 1994, Ser. No. 207,819
Int. Cl.[5] B65D *55/06*
U.S. Cl. 292—318 4 Claims



1. A security seal adapted to be looped upon itself in self-locking, irreversible relation, comprising:

a strap having a tongue portion at one end and a locking head at the other with a stop plate disposed therebetween, said locking bead having an aperture therethrough such that said locking head has a tongue-receiving orifice and an exit opening through which to pass said tongue, wherein surfaces of said locking head which define said tongue-receiving orifice are sloped from external edges of said surfaces inward toward said stop plate when said stop plate is in a locked configuration, abutting the surfaces defining said tongue-receiving orifice, and wherein said stop plate has sloped surfaces which are complementary to those defining said tongue-receiving orifice such that when said stop plate is in its locked configuration, the sloped surfaces which define said tongue-receiving orifice and the complementary sloped surfaces of said stop plate together define a sloped slot which slopes away from said locking head and in towards said stop plate;

a key integrally connected to said strap adjacent to said stop plate disposed on the tongue side of said stop plate, said key comprising a plurality of key teeth longitudinally spaced relative to said strap and a pair of side panels rising vertically from said strap, enclosing the lateral ends of the spaces between said teeth, each of said teeth being defined by a gradually sloping surface and substantially vertical surface oriented such that said vertical surface faces said stop plate; and

a lock plate disposed in said aperture, said lock plate comprising a plurality of cantilevered pawl teeth sloped such that the crests of said pawl teeth are oriented toward the exit opening and configured in correspondence to and for cooperative engagement with said key teeth, such that when said tongue is passed through said aperture and pulled tight, said key is pulled into said locking head whereby said pawl teeth engage said key teeth, said stop plate abuts said locking head, and the seal is thereby irreversibly locked.

5,364,142

HEAVY DUTY VEHICLE BUMPER WITH STORAGE COMPARTMENT AND ACCESSORIES

Robert A. Coiner, 2620 Paul Bunyan Dr. SE., Bemidji, Minn. 56601

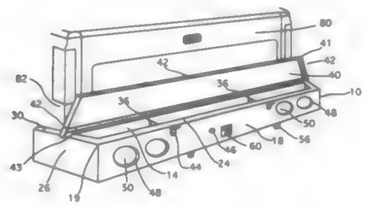
Filed Jul. 19, 1993, Ser. No. 92,777
Int. Cl.[5] B60R *19/48*
U.S. Cl. 293—117 8 Claims

1. A heavy duty protective vehicle bumper suitable for attachment to the front or rear of a vehicle comprising:

(a) an elongated storage compartment having aligned transverse sidewalls formed by spaced oppositely disposed structural inner and outer sidewall members having inward facing upper and lower flanges, endwalls formed by oppositely disposed structural endwall members having inward facing upper and lower flanges forming end clo-

sures spanning said sidewalls members, and a bottom plate member spanning the lower flanges of the structural sidewall and endwall members and thereby defining a storage compartment volume;

(b) lid means hinged to the top flange of one of said sidewall members and forming a top closure for said storage compartment;



(c) a pair of wrap-around extensions formed by said endwall structural members extending beyond the inner sidewall member in a direction along the body of said vehicle at a slight outwardly directed angle and wherein each said extension further comprises a sidewall member joining the inward directed flanges of said extension of said endwall structural members to provide a box structure; and

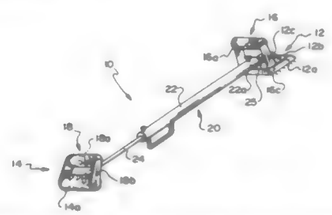
(d) a plurality of attachment means for securing the bumper to a vehicle frame.

5,364,143

METHOD AND APPARATUS FOR CARPET STRETCHING

Eugene J. Grady, 5 Pheasant Run, East Bridgewater, Mass. 02333

Filed Sep. 30, 1993, Ser. No. 129,268
Int. Cl.[5] A47G *27/04*
U.S. Cl. 294—8.6 **10 Claims**



1. A hand-operated, carpet stretching tool comprising:

A) gripping head engagable with a carpet;

B) a drive member;

C) an elongated shank for interconnecting said gripping head and said drive member; said shank including first and second members capable of telescoping motion of one relative to the other, said first member being connected proximate one end thereof to said gripping head, and said second member being connected proximate one end thereof to said drive member;

D) a first handle connected to said drive member for moving said drive member by hand in a first direction towards said gripping head;

E) a strike surface disposed adjacent said gripping head, against which said second member strikes during stretching of said carpet; and

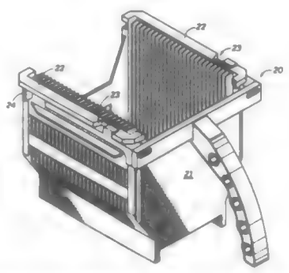
F) a second handle connected to said gripping head for holding said gripping head while said drive member is moved by said first handle towards said gripping head during telescoping of said first and second members so as to develop momentum before said first member hits said strike surface.

5,364,144

CASSETTE TRANSPORTING APPARATUS

Michael J. Satterfield, Round Rock; Theodore C. Caramberis, Austin, and Glenn T. Tharp, Taylor, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 936,465, Aug. 28, 1992, abandoned.
This application Jan. 25, 1994, Ser. No. 186,832
Int. Cl.[5] B65D *25/28*
U.S. Cl. 294—27.1 **23 Claims**



1. A semiconductor cassette transporting apparatus comprising a first fork member and a second fork member, wherein each fork member is generally rigid and has:

a flange;

a shaft having:

a first end and a second end that is opposite the first end, wherein the first end of the shaft is adjacent to the flange;

a beveled section that lies adjacent to the second end of the shaft; and

a first side and a second side that is opposite the first side; and

a tab located adjacent to the first side of the shaft and spaced away from the beveled section, wherein the tab includes:

a main body section extending from the shaft in a direction away from the second side; and

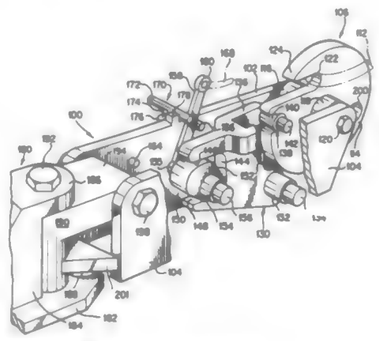
a locking section that extends from the main body section in a direction towards the first end of the shaft, wherein the locking section is spaced away from the first side of the shaft.

5,364,145

SINGLE ACTION ROTARY RELEASE HOOK

Irving Epstein, 4216 Shore Club Dr., Mercer Island, Wash. 98115

Filed May 20, 1993, Ser. No. 63,728
Int. Cl.[5] B66C *1/38*
U.S. Cl. 294—82.27 **4 Claims**



1. A single action rotary release hook apparatus comprising:

a. a rotatable release hook of a generally circular configuration and having a main body;

b. a recess in said hook for receiving a cable;

c. said hook having a first part of a first locking means;

d. a rotatable pawl;

e. said pawl having a second part of said first locking means;

f. said first part and said second part of said first locking means are juxtapositioned to prevent the rotation of said hook;

g. said pawl having a first part of a second locking means;

h. with said pawl in operative contact with said hook and a rotatable member being in a first position and having a second part of said second locking means in contact with said first part of said second locking means for preventing rotation of said pawl and with said first part of said first locking means and with said second part of said first locking means operatively in contact with each other, said rotatable member prevents rotation of said hook, and with said rotatable member in a second position with said pawl being away from said hook and with said first part of said first locking means and with said second part of said first locking means not in operative contact with each other said rotatable member, having a second part of said second locking means in contact with said first part of said second locking means, prevents rotation of said pawl toward said hook;

i. release lever means for rotating said rotatable member;

j. said rotatable member being capable of being rotated to allow said pawl to rotate away from said release hook to inactivate said first locking means to allow said release hook to rotate;

k. said rotatable member operatively connecting with said pawl to restrict movement of said pawl toward said release hook;

l. said release hook having a notch being said first part of said first locking means;

m. said pawl having a first finger apparatus being said second part of said first locking means;

n. said pawl having a second finger and a third finger defining a second notch in the pawl and being a first part of said second locking means;

o. said rotatable member having a bearing surface, being said second part of said second locking means, against which said second finger of said pawl can bear;

p. said second notch in said pawl allows said rotatable member to rotate and to bear against said third finger to allow said pawl to move said first finger away from said recess in said release hook to allow said release hook to rotate;

q. said apparatus having a moveable arm;

r. said moveable arm operatively connecting with said rotatable member;

s. with said pawl in a position away from said release hook so as to allow said release hook to rotate, said rotatable member bears against said third finger to position and maintain said pawl away from said release hook to prevent said pawl contacting said release hook; and,

t. stop means operatively connecting with said release lever means to restrict movement of said release lever means.

5,364,146

ROBOTIC GRIPPER FOR HANDLING OBJECTS OF VARIOUS SIZES

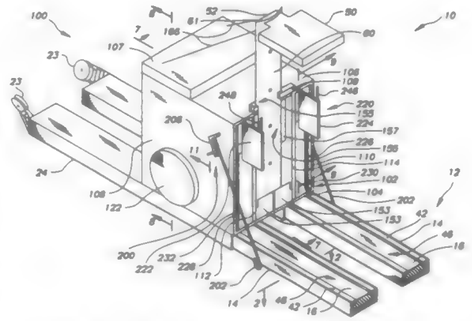
Alexander Brandorff, New Milford, and Steven L. Smith, Oxford, both of Conn., assignors to United Parcel Service of America, Inc., Atlanta, Ga.

Filed Aug. 4, 1992, Ser. No. 925,601
Int. Cl.[5] B25J *15/08*
U.S. Cl. 294—86.4 **21 Claims**

1. A robotic gripper for handling objects of various sizes, comprising:

(a) means for supporting an article; and

(b) means for engaging an upper horizontal surface of an article supported on said article supporting means, said engaging means being mounted on an upper free end of means, vertically-deployable above said article supporting means, for supporting said engaging means, said engaging means being so mounted as to move freely in a vertical direction by movement of said engaging means supporting



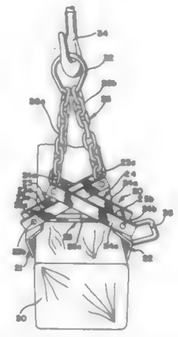
means, wherein said engaging means supporting means comprises a band of sheet-like material, said band being curved about a vertical axis, whereby said band is substantially rigid in a vertical direction and substantially flexible horizontally in a rearward direction.

5,364,147

DEVICE FOR HANDLING RAILROAD TIMBER

Thomas E. Dickey, Manchester, Mo., and Thomas Y. Gehr, Jr., Northbrook, Ill., assignors to ESCO Equipment Service Company, Palatine, Ill.

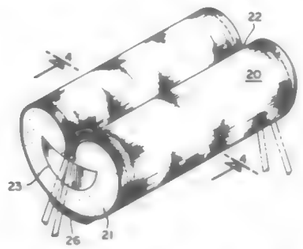
Filed Mar. 11, 1993, Ser. No. 30,598
Int. Cl.[5] B66C *1/32*
U.S. Cl. 294—118 **32 Claims**



11. A device for handling a railroad tie for use in combination with a lifting machine, said tie having top, bottom, and side walls, said device comprising: a crossbar means having bearings at each end, a first actuating lever means pivotally mounted in a bearing at one end of said crossbar means, a second actuating lever means pivotally mounted in a bearing at the other end of said crossbar means, a first gripping jaw carried by said first actuating lever means, a second gripping jaw carried by said second actuating lever means, said gripping jaws having means for engaging the side walls of the tie along longitudinal areas thereof and means for engaging said top wall of said railroad tie when placing said device on said tie prior to handling said tie to correctly position the gripping jaws, said actuating lever means including long arms crossing each other, and a lifting harness connected to the free ends of said arms and to the lifting machine, whereby application of a lifting force by said lifting machine causes said actuating lever means to close

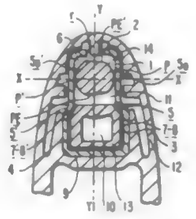
the first and second gripping jaws into gripping engagement with the side walls of said tie.

5,364,148
CARRYING HANDLE
Anna Bartocci, 605 W. 113th St., Apartment 42, New York, N.Y. 10025
Filed Jan. 19, 1993, Ser. No. 5,292
Int. Cl.[5] A45C *13/26*; B65D *33/06*
U.S. Cl. 294—171 **8 Claims**



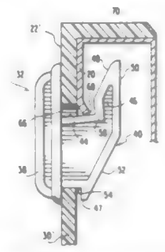
1. A handle grip device comprising a tubular grip member formed of a soft, resiliently compressible material and having a longitudinal slot formed along the length of an upper part thereof and a core member formed of a relatively stiff material nesting in said grip member along the lengths thereof and having a top surface space below and registering with said slot; a flexible web sheath extending above a peripheral surface of said grip member and through said slot to said core top surface.

5,364,149
RETAINING SPRING FOR AUTOMOBILE SUNVISOR HINGES
José Aymerich, and Jesûs Prat, both of Rubi, Spain, assignors to Industrias Techno-Matic, S.A., Barcelona, Spain
PCT No. PCT/ES92/00012, § 371 Date Sep. 18, 1992, § 102(e) Date Sep. 18, 1992, PCT Pub. No. WO92/14624, PCT Pub. Date Sep. 3, 1992
PCT Filed Jan. 30, 1992, Ser. No. 924,012
Claims priority, application Spain, Feb. 15, 1991, P 9100402
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.12 **4 Claims**



1. A retaining spring for automobile sun visor hinges comprising a body member symmetrical about a center plane, said body member having one transverse side and two longitudinal sides, said one side being provided with a slot extending longitudinally and centrally coextensive with said one side, said two sides being provided with longitudinally arranged recesses coextensive with said sides and being formed with inclined resilient tabs which are converging toward said center plane, separated by said slot and flexible inside a sun visor within a range between said body and a pivot pin of a bent support of a sun visor, said resilient tabs being internally provided with positioning flats, said resilient tabs of said body member defining therebetween an inner recess for grippingly receiving the pivot pin of the bent support of a sun visor, said body member having a remaining transverse side which together with said two longitudinal sides define a chamber for snugly receiving means setting a position occupied by the spring within the sun visor.

5,364,150
TRUCK BEDLINER LOCKING DEVICE
James Cochran, Virginia Beach, Va., and Wayne Rollins, Greenville, N.C., assignors to Atwell Industries, Inc., Ayden, N.C.
Filed Apr. 30, 1993, Ser. No. 54,212
Int. Cl.[5] B62D *33/02*
U.S. Cl. 296—39.2 **2 Claims**



1. The combination of a truck cargo bed having a base wall and at least one side wall terminating in an upper horizontally and inwardly extending flange having a downwardly extending vertical flange spaced inwardly from said side wall, a protective bedliner for said cargo bed having a configuration substantially complementary to said cargo bed, said bedliner having a vertically extending side wall disposed adjacent said cargo bed side wall with an upper marginal edge portion overlying said vertical flange in superimposed relation and at least one circular aperture extending through said bedliner side wall in partial overlapping relation with said vertical flange of said cargo bed and at least one locking device for mechanically securing said bedliner side wall to said cargo bed vertical flange wherein said locking device comprises a base plate having a base surface for engagement with an inner surface of said bedliner wall, a substantially flat planar locking tongue secured to said base surface of said base plate and extending substantially perpendicular thereto, said locking tongue having a shank portion with substantially parallel first and second opposite edges disposed substantially perpendicular to said base plate and a retainer portion disposed at an end of said shank portion remote from said base plate and extending away from said shank portion at substantially right angles thereto, said second edge of said shank portion having a notch therein adjacent said base surface and said aperture having a diameter slightly greater than a distance between said first and second edges to allow for the passage of the locking tongue through the aperture with the tongue disposed substantially parallel to a lower edge of said vertical flange, whereby upon rotation of the locking device 90° the first edge of said shank portion will engage said lower edge of said vertical flange to shift the locking device and engage a lower edge of the aperture in said notch and locate said retainer portion behind said vertical flange to secure the bedliner in said cargo bed.

5,364,151
ADJUSTABLE SEAT APPARATUS FOR UTILITY VEHICLE
James J. Yurasits, Allentown, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed Apr. 21, 1993, Ser. No. 49,372
Int. Cl.[5] B60N *2/04*
U.S. Cl. 296—65.1 **17 Claims**

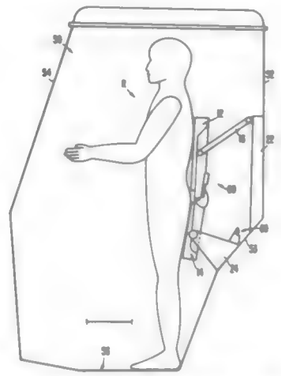
11. A seat apparatus for placement in an operating cab of a vehicle, the seat apparatus being capable of supporting a driver

of the vehicle during standing operation of the vehicle, the seat apparatus comprising:

a substantially vertically oriented back support member having means for securing the back support member to an interior rear wall of said operating cab of the vehicle;

a buttocks support member having means for securing buttocks support member to the interior rear wall of said operating cab at a location below the back support member;

said means for securing the back support member to the interior rear wall including a bar member with one end pivotally connected to the back support member and another end with means for pivotal connection to the interior rear wall, such that upon moving the seat appara-



tus from a sitting position to a standing position, the entire back support member and said one end of the bar member move away from and are spaced from said other end of the bar member; and

means pivotally connecting the back and buttocks support members together so as to permit the seat apparatus to be placed in the sitting position in which the back support member is substantially vertically oriented and the buttocks support member is substantially horizontally oriented to permit sitting in the seat apparatus, and to also permit the seat apparatus to be placed in the standing position in which both support members are substantially vertically oriented, whereby the driver can lean against the support members while operating the vehicle in a standing position.

5,364,152
ADJUSTABLE SEAT FOR VAN-TYPE VEHICLES
James J. Mastrangelo, Troy; Michel L. Duchesneau, Novi, and Richard A. Hayden, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 24, 1993, Ser. No. 65,208
Int. Cl.[5] B60N *1/08*
U.S. Cl. 296—65.1 **10 Claims**

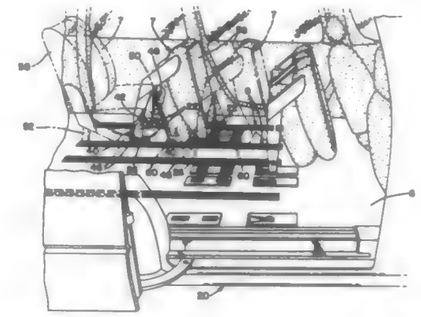
1. An arrangement of a vehicle seat for placement on a vehicle floor having a seat in a storage position comprising:

an elongated rail means connected to the vehicle floor, the rail means having a first hook means and a locking aperture means;

a slider means having a second hook means interlocked with the first hook means;

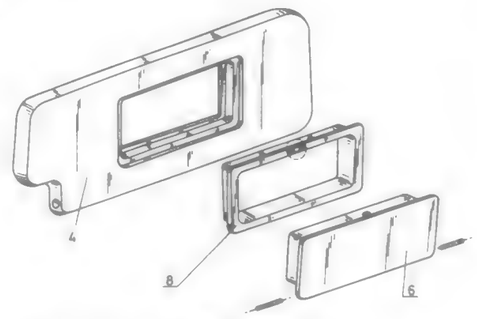
locking pin means for selective engagement with the locking aperture means, the locking pin means being connected with the slider means to selectively set the position of the slider means with respect to the rail means;

a riser pivotally connected with the slider means; and



a seat bun or cushion connected with the riser, the seat bun assuming a storage position by forward pivotal movement of the riser.

5,364,153
SUN VISOR FOR VEHICLES WITH MIRROR AND ARTICLE STORAGE
Francis Vaxelaire, Lure, France, assignor to Gebr. Happich GmbH, Germany
Filed Apr. 19, 1994, Ser. No. 230,082
Claims priority, application Germany, Apr. 24, 1993, 4313525
Int. Cl.[5] B60R *7/08*
U.S. Cl. 296—97.5 **13 Claims**



1. A sun visor for a vehicle, comprising

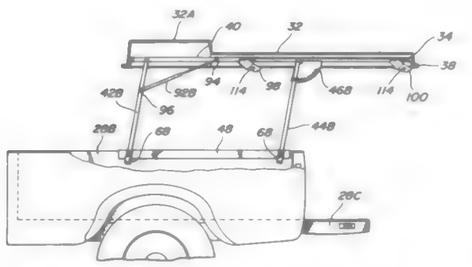
a sun visor body having first and second opposite wide sides with respective first and second surfaces;

the first side having a first recess defined therein, and countersunk into the first surface, for receiving a mirror; a mirror supported in the first recess;

the second side having a second recess defined therein, and countersunk into the second surface, for receiving a storage compartment for articles; a frame around, and defining and being seated in the second recess;

a storage compartment in the second recess, the storage compartment including a bottom and walls upstanding from the bottom, the storage compartment having an edge mounted for swinging the storage compartment on the frame.

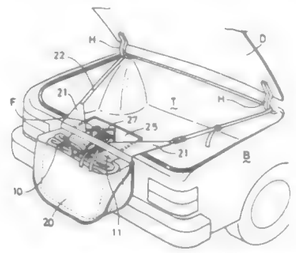
5,364,154
LIFTABLE RIGID TRUCK BED COVER
Robert Kaiser, Mt Laurel, N.J., assignor to Sierra Line Products, Inc., Cherry Hill, N.J.
Filed Jul. 9, 1993, Ser. No. 90,341
Int. Cl.[5] B60P *7/02, 3/34*
U.S. Cl. 296—100 **16 Claims**



1. A liftable cover assembly for the bed of a truck, the truck having sidewalls and a tail gate, said cover assembly comprising a cover member, plural support legs for said cover member, height establishing means, first coupling means, second coupling means, and locking means, each of said support legs being an elongated member arranged to be pivoted to an inclined angular orientation and having a lower end pivotally connected about a horizontal axis to a respective one of the sidewalls by said first coupling means, said elongated member having an upper end pivotally connected by said second coupling means to said cover member at a fixed position on said cover member to enable said cover member to be lifted horizontally from a closed position to an open position, said cover member when in said closed position being horizontally disposed over said bed on said sidewalls and said tailgate with said support legs being positioned substantially parallel to said cover member so that they do not extend substantially into the bed, said cover member when in said open position, being disposed and held horizontally at a selected one of a plurality of predetermined distances above the sidewalls, said height establishing means being coupled by means to at least one of said support legs to releasably secure said at least one support leg in a predetermined desired angular orientation to establish said selected one of said plurality of predetermined distances, said locking means being actuatable to lock said cover member in said closed position and to unlock said cover member from said closed position so that it can be raised to said open position.

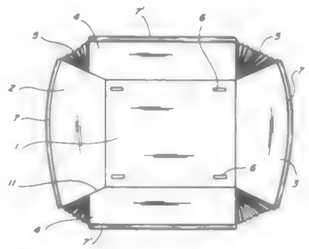
5,364,155
CAR COVER
Kiyoshi Kuwahara; Akira Yoshida, and Masako Kuwahara, all of Osaka, Japan, assignors to Perfect Shoji Kabushiki Kaisha, Osaka, Japan
Filed Nov. 24, 1993, Ser. No. 156,636
Claims priority, application Japan, Nov. 30, 1992, 4-082410[U]
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—136 **8 Claims**

1. A car cover, comprising:
a cover member having a back side;
a bag for storing said cover member, said bag having an opening edge and a gusset securing said bag to said back side of said cover member;
two triangular sheet members having bottom edges and free ends, said bottom edges being secured to said opening edge of said bag such that said triangular sheet members are spaced apart a predetermined distance from each other; and



a fastening arrangement for fastening said bag to the trunk room of a car, said fastening arrangement being secured to said free ends of said triangular sheet members.

5,364,156
WEIGHTED, FOLDABLE VEHICLE COVER
Danne J. Zerow, 7504 Montclaire, Godfrey, Ill. 62035
Filed Aug. 30, 1993, Ser. No. 112,974
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—136 **3 Claims**

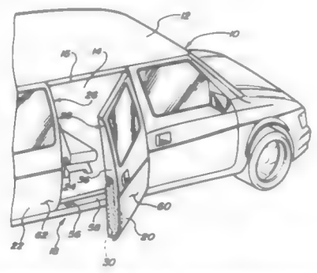


1. A weighted protective cover for a vehicle, comprising:
(a) an essentially rectangular top; and
(b) essentially rectangular front, rear and side flaps, each flap having upper and lower essentially horizontal edges and essentially vertical sides, wherein the upper edge of each flap is attached to a separate side of said rectangular top;
wherein the essentially vertical sides of adjacent flaps are connected by elasticized accordion connectors; and
wherein each essentially horizontal lower edge of said flap has a hollow sleeve for receiving a weighted object.

5,364,157
REINFORCED CARGO DOOR ASSEMBLY
Tadeusz J. Siedlecki, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1993, Ser. No. 172,967
Int. Cl.[5] B60J *5/04*
U.S. Cl. 296—146.6 **11 Claims**

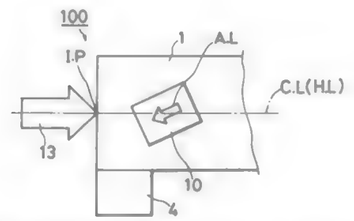
1. A cargo door assembly for closing an aperture in the side of a vehicle body comprising:
a first door hingedly connected to the body for movement about a hinge between an open position and a closed position;
a second door hingedly connected to the body for movement about a second hinge between an open position and a closed position;
a latch carried on one of the doors;
a striker carried on the other of the doors for engagement with the latch;
a reinforcing beam carried with the one door and extending vertically from the latch in longitudinal registration therewith to the bottom of the one door, the beam having a

hook portion formed at its lower end projecting laterally inwardly toward the vehicle body; and



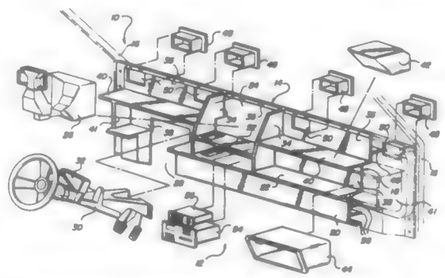
means defining an aperture in the body in juxtaposition with the hook portion operative to resist inward movement of the door from the closed position with respect to the vehicle body.

5,364,158
IMPACT-SENSOR MOUNTING STRUCTURE FOR AN AUTOMOTIVE VEHICLE
Shigeaki Watanabe; Shuichi Nakagami; Yoshie Watanabe, and Hidemitsu Yamatoya, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 742,382, Aug. 8, 1991, abandoned. This application Aug. 12, 1993, Ser. No. 104,939
Claims priority, application Japan, Aug. 9, 1990, 2-212022; Jan. 30, 1991, 3-009629; Jul. 12, 1991, 3-198570
Int. Cl.[5] B62D *23/00;* **B60R** *21/16*
U.S. Cl. 296—189 **4 Claims**



1. An impact-sensor mounting structure for an automotive vehicle comprising:
a front frame disposed at a front portion of a vehicle body and extending in a longitudinal direction of the vehicle body,
an impact sensor mounted to a front end portion of the front frame,
a bumper mounted to the front end portion of the front frame in a position that is located forward of a position in which said impact sensor is mounted, and
means for causing deformation of the front frame in a vertical direction at an initial stage of a crash with respect to an input point of an impact load which is transferred to the front frame from the bumper,
said means for causing deformation of the front frame in the vertical direction having a cross member connected to the front end portion of the front frame at a location vertically spaced from a portion of the bumper extending in the longitudinal direction of the vehicle body and at a location forward of the position in which said impact sensor is mounted,
said impact sensor being mounted to the front frame in a position vertically spaced from the cross member at the front end portion of the front frame,
said front frame being so arranged as to be distorted and inclined in the vertical direction on a collision, by mounting the cross member in the location vertically spaced from the bumper and by setting the bumper mount to the front end portion, at the center of the vertical dimension of the front frame, and
said impact sensor being mounted to the front frame in an inclined position to a horizontal direction to allow said impact sensor to sense a substantially horizontally directed component of the impact forces of the crash as the front frame is deformed in the vertical direction.

5,364,159
STRUCTURAL INSTRUMENT PANEL CARRIER ASSEMBLY
Josh Kelman, Dover; John Gray, Union, both of N.H., and Michael Gorman, Bloomfield Township, Oakland County, Mich., assignors to Davidson Textron Inc., Dover, N.H.
Filed Jun. 15, 1993, Ser. No. 78,140
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—192 **12 Claims**

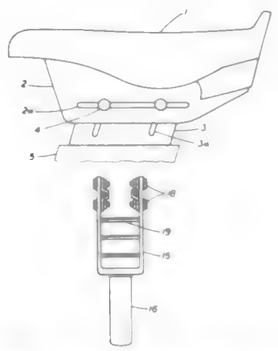


1. An instrument panel construction comprising;
a structural instrument panel carrier of one piece plastic construction having upper and lower generally vertical back panels that extend across a motor vehicle body for attachment to side pillars located on opposite sides of a vehicle body so as to act as a cross beam connecting the side pillars,
the instrument panel carrier having a shelf panel for supporting various instrument panel components and carrying a plurality of facial instrument panel coverings for effecting the external appearance of the instrument panel construction, and
the structural instrument panel carrier of one piece plastic construction being the only cross beam forming part of the instrument panel construction.

5,364,160
OPEN AIR DUCT BICYCLE SADDLE MOUNT
Thomas M. Fritschen, 8301 28th Ave. NE., Seattle, Wash. 98115, and Richard L. Gerhards, 7205 N. Stanford, Portland, Oreg. 97203-4337
Filed Feb. 26, 1993, Ser. No. 22,944
Int. Cl.[5] B62J *1/08*
U.S. Cl. 297—195.1 **9 Claims**

1. An open air duct bicycle saddle adjustable mounting device including; a base mounting support means; vertical support means comprised of two vertical structural elements extending perpendicularly upwards from outside edges of said base mounting support means, said vertical structural elements supporting a bicycle saddle at their upper ends, and being spaced and shaped to form a hollow air duct when viewed from a frontal cross-section view, specifically to receive and direct forward air flow into the turbulent wake of a rider; said

vertical structural elements having at their upper ends a mounting surface for said bicycle saddle, fastening means for



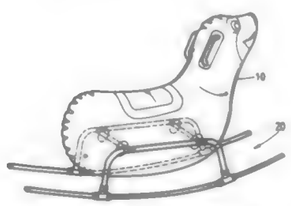
said bicycle saddle, and adjustment means for vertical, horizontal, and inclination adjustment of said bicycle saddle.

5,364,161

INFLATABLE ROCKING CHAIR

Chang-Hsiung Liu, 2 Fl. No. 6-2 Lane 269 Nan Chiung Rd. Sec. 3, Taipei, Taiwan, Prov. of China

Filed May 13, 1993, Ser. No. 60,642
Int. Cl.[5] A63G *19/00*
U.S. Cl. 297—195.11 **1 Claim**



1. An inflatable rocking chair comprising:

(a) an inflatable chair body defining a closed internal chamber having a seating section and at least one handle member, said inflatable body further having a pair of longitudinally spaced and transversely extending body through openings passing therethrough;

(b) a valve member secured to said chair body for insert of an inflating medium into said internal chamber;

(c) a frame body including a pair of inverted U-shaped tubular members mounted on opposing transverse sides of said inflatable chair body, a pair of connecting tubes enveloped by a pair of respective tubular members, each of said connecting tubes extending through a respective one of said body through openings and threadedly connected on opposing ends thereof to a base portion of each of said inverted U-shaped tubular members, and a plurality of arch-shaped tubular frame members secured to a leg portion of each of said inverted U-shaped tubular members by a respective plurality of T-shaped joint members.

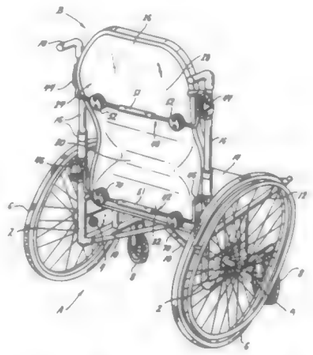
5,364,162

BACKREST ASSEMBLY FOR A WHEELCHAIR

Christopher Bar, Roath, Great Britain, and Calvin L. Guthrie, Belleville, Ill., assignors to Roho, Inc., Belleville, Ill.

Filed Mar. 1, 1991, Ser. No. 663,098
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—284.8 **28 Claims**

1. A backrest assembly for a chair for seating an individual, said chair having a seat and upright posts which are spaced apart generally behind the seat of the chair and rise above that seat, said backrest assembly comprising: a backrest adapted to be located generally between the spaced apart chair posts so as to provide a surface for positioning the back of an individual who sits upon the chair seat; a first positioning member having a cross portion mounted on the backrest and being rotatable about a generally horizontal axis, the first positioning member having portions which are offset from the axis of rotation; first



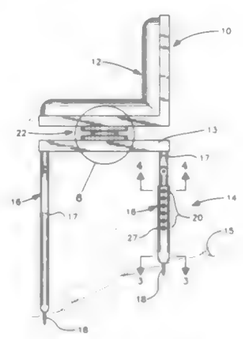
connecting means adapted to be mounted on the posts for engaging the offset portions of the first positioning member; a second positioning member mounted on the backrest below the first positioning member, the second positioning member being rotatable about a second generally horizontal axis that is fixed with respect to the backrest and having portions which are offset from said second horizontal axis; and second connecting means adapted to be mounted on the posts for engaging offset portions of the second positioning member.

5,364,163

ADJUSTABLE LEG FISHING CHAIR

Michael D. Hardison, 1031 N. Indiana Ave., Griffith, Ind. 46319

Filed Jul. 12, 1993, Ser. No. 89,474
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—344.21 **10 Claims**



1. A new and improved adjustable leg chair apparatus, comprising:

a seat assembly,

a leg assembly supporting said seat assembly, wherein said leg assembly includes a seat support member supporting said seat assembly, said leg assembly includes leg members supporting said seat support member, said leg assembly including spike members connected to said leg members, said spike members projecting from said leg members in a direction opposite of said seat support member, said spike members being capable of penetrating into a ground surface, and

a swivel assembly located between said seat assembly and said leg assembly, said swivel assembly supporting said seat assembly and said swivel assembly being supported by said leg assembly,

wherein said leg members include two vertical portions connected to said seat support member and a transverse member connected between said two vertical portions,

wherein said spike members are supported by and project from said transverse members, and

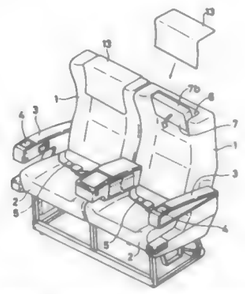
wherein only two of said leg members include a length adjusting assembly capable of adjusting an effective length of said leg members.

5,364,164

HEADREST FOR SEATS

Shunji Kuranami, Kanagawa, Japan, assignor to Koito Industries, Ltd., Kanagawa, Japan

PCT No. PCT/JP91/01541, § 371 Date Aug. 25, 1992, § 102(e) Date Aug. 25, 1992, PCT Pub. No. WO92/10963, PCT Pub. Date Jul. 9, 1992
PCT Filed Nov. 11, 1991, Ser. No. 920,435
Claims priority, application Japan, Dec. 25, 1990, 2-412896
Int. Cl.[5] A47C *7/36*
U.S. Cl. 297—408 **3 Claims**



1. A headrest for a seat including a main frame, a seat back (1), a seat bottom (2), and arm rests (3), all supported on said main frame, said seat back includes an upper recessed portion (6) positioned in said seat back at a location corresponding to a rear head region of a person seated on said seat bottom, said headrest includes a supporting frame which is swingably supported on said main frame by a hinge mechanism equipped with a ratchet mechanism and said headrest is in an original position when the headrest is at a back-most position within said upper recessed portion (6),

said hinge mechanism includes a movable hinge portion (11) which is secured to said headrest supporting frame, a hinge main body (10) which is fixedly secured to said main frame, a rotational shaft (12) about which said movable hinge portion is movable, and a return spring (18) mounted around said rotational shaft which biases said headrest toward said recessed portion of said seat back;

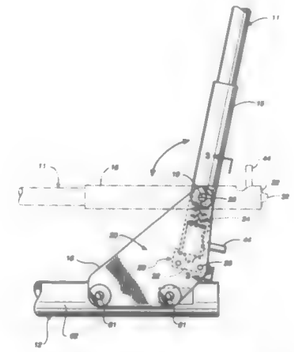
said ratchet mechanism includes a ratchet gear and a ratchet claw member and is constituted in such a manner that when the headrest is tilted forward beyond a predetermined angle, said ratchet gear is disengaged from said ratchet claw member by a cam plate (19) so that the headrest can be returned to the original position by a pulling force of said return spring.

5,364,165

LATCH ASSEMBLY FOR A WHEELCHAIR

James Okamoto, Clovis, Calif., assignor to Quickie Designs Inc., Fresno, Calif.

Filed Oct. 26, 1992, Ser. No. 966,456
Int. Cl.[5] A47C *4/00*; B62M *1/00*
U.S. Cl. 297—364 **20 Claims**



17. In a movable backrest latch assembly for a wheelchair apparatus including a wheelchair frame supporting a seat assembly and a backrest mounted for articulation between a deployed position and a collapsed position, said latch assembly including a latch mechanism operably coupled between said wheelchair frame and said backrest for releasably latching said backrest in said deployed position, the improvement in said backrest latch assembly comprising:

said latch mechanism includes a slidable bolt having a first surface, and a base member having a second surface, said bolt being manually movable between a latched condition with said first surface oriented in an angularly aligned orientation and cooperating with said second surface to releasably latch said backrest to said wheelchair frame in said deployed position, and an unlatched condition with said first surface disengaged from said second surface and angularly misaligned with respect to said second surface such that said backrest is free to articulate from said deployed position to said collapsed position;

a biasing device biasing said bolt toward said latched condition, and

a retaining mechanism retaining said bolt in said unlatched condition while said backrest is maintained in said deployed position; and

said bolt being further mounted and said biasing device further biasing in said bolt for automatic movement of said bolt back to said latched condition upon articulation of said backrest from said deployed position to said collapsed position.

5,364,166

ARM REST FOR CHAIRS, CHAISE LOUNGES AND THE LIKE

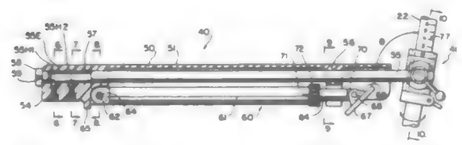
Peggy C. Zegeer, 392 Kenna Dr., South Charleston, W. Va. 25309

Filed Jul. 10, 1990, Ser. No. 550,402
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.39 **12 Claims**

1. A sun bathing arm rest attachment for a chaise lounge chair having an adjustable back rest member and a seat panel member and a ground engaging frame comprising:

an arm support member having an arm support surface and a surface facing the ground, a linkage pivotally secured to said surface facing the ground,

means on said linkage adapted to connect said linkage to said ground engaging frame member, and



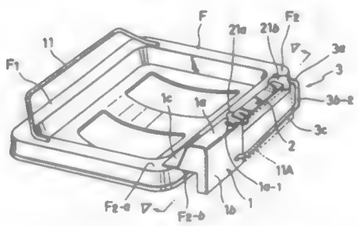
a lateral bar on said linkage and engaging the ground to prevent rocking of said arm rest.

5,364,167

STRUCTURE OF SEAT CUSHION FRAME IN A VEHICLE SEAT

Akira Aoki; Takashi Yasui; Yoshihiro Mizushima, and Mitsuru Fukushima, all of Akishima, Japan, assignors to TACHI-S Co. Ltd., Akishima, Japan

Filed Oct. 19, 1993, Ser. No. 138,628
Int. Cl.[5] B60N *2/00*
U.S. Cl. 297—452.18 **5 Claims**



1. A structure of seat cushion frame in a seat of a vehicle, comprising a pair of side frames which are provided at both lateral frame portions of said seat cushion frame, respectively, in such a manner as to project upwardly from a plane of said seat cushion frame and extend along a longitudinal direction thereof, and one of said pair of side frames is disposed at a side of a door of said vehicle,

a cut-away portion formed in a rearward area of said one of said pair of side frames;

a forward side frame which is defined at a forward area of said one of said pair of side frames by forming said cut-away portion;

a means for defining area, reward frame portion at a rearward end portion of said one of said pair of side frames: and

an expandable means extended between said forward side frame and said means for defining a rearward frame portion provided at a higher level than said plane of said seat cushion frame.

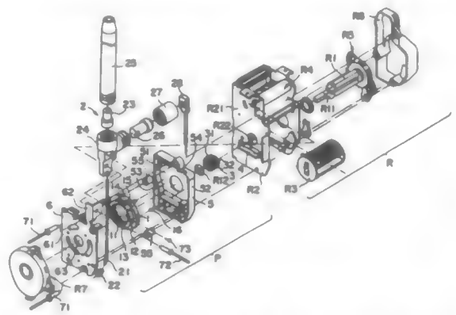
5,364,168

RETRACTOR SHAFT-ROTATING TYPE SEAT BELT PRETENSIONER

Muneo Nishizawa, and Tetsuya Hamane, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Dec. 14, 1992, Ser. No. 990,637
Claims priority, application Japan, Dec. 17, 1991, 3-353002
Int. Cl.[5] B60R *22/46*
U.S. Cl. 297—476 **2 Claims**

1. A retractor shaft-rotating type seat belt pretensioner for imparting pretension to a seat belt by rotating a take-up shaft of a belt retractor, the pretensioner including a driving member engageable with a driven member on the take-up shaft and a power source coupled to the driving member and adapted to rotate the driving member about an axis of rotation by applying an operating force to the driving member at an operating point, the driving member being engageable with the driven member on the take-up shaft at an engaging point by translational movement of the axis of rotation of the driving member by the operating force of the power source, characterized in that the driving member is annular and has an inner surface engageable with an outer surface of the driven member on the take-up shaft, and the pretensioner includes guide means for supporting an outer surface of the driving member when the driving member is engaged with the driven member on the



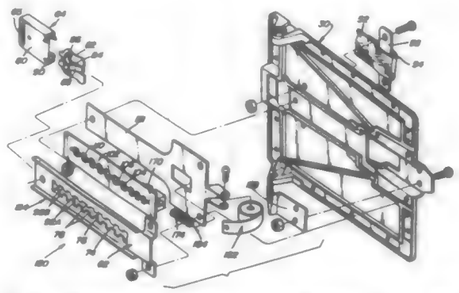
take-up shaft at a support point against the reaction force due to a rotary moment applied to the driving member by the operating force at the engaging point where the driving member engages the driven member on the take-up shaft, the support point being on the opposite side of the engaging point from the operating point where the operating force of the power source acts on the driving member and the guide means being in a position such that the guide means does not impede movement of the axis of rotation of the driving member or of the driving member prior to engagement of the driving member with the driven member on the take-up shaft.

5,364,169

LINEAR SAFETY BELT RETRACTOR

Cecil A. Collins, Shelby Township, Utica County, and Cecil L. Champion, Madison Heights, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Filed Nov. 25, 1992, Ser. No. 981,874
Int. Cl.[5] B60R *22/34*
U.S. Cl. 297—479 **43 Claims**



25. A linear-type belt retractor for use with a safety belt restraint comprising:

a frame member;

an elongated lock plate fixed to said frame member;

a latch assembly supported for reciprocal longitudinal movement on said lock plate;

a safety belt restraint having a belt buckle that is releasably engageable with a tongue plate, and a belt member having a first end fixed to the safety belt restraint, a second end fixed to said frame member, and an intermediate portion slidably secured to said latch assembly such that movement of said latch assembly in a first direction permits withdrawal of the safety belt restraint and movement in a second direction permits retraction of the safety belt restraint;

a latch member retained on said latch assembly for movement between a first position lockingly engaging said lock plate to inhibit movement of said latch assembly in said first direction and a second position displaced from said lock plate for permitting movement of said latch assembly in both of said first and second directions;

first biasing means for normally urging said latch member toward said first position; and

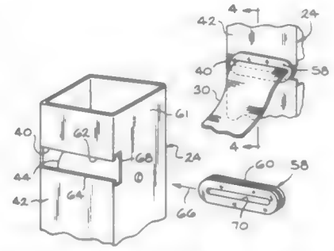
actuation means for moving said latch member from said second position to said first position in response to locked engagement of said belt buckle with said tongue plate.

5,364,170

SEAT BELT WEBBING GUIDE

Gary L. West, Romulus, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Jan. 25, 1993, Ser. No. 8,479
Int. Cl.[5] B60R *22/00*
U.S. Cl. 297—483 **9 Claims**



1. A passenger restraint system for attachment to a vehicle structure having an opening, said system comprising:

an elongated seat belt webbing having first and second ends;

first and second seat belt mounting structures attached to said first and second ends of said webbing respectively for mounting said webbing to the vehicle structure, said seat belt mounting structures being larger than said webbing;

a guide for said webbing, said guide having a one piece body having a slot for the seat belt webbing to pass through, said body being closely fitted to and completely surrounding said webbing passing through said slot to prevent folding of said belt webbing into a double thickness in said slot, said slot being smaller than said mounting structures whereby said webbing must be passed through said slot prior to attachment of one of said mounting structures to one of said webbing ends, said body having an external shape and size to fit within said opening in the vehicle structure; and

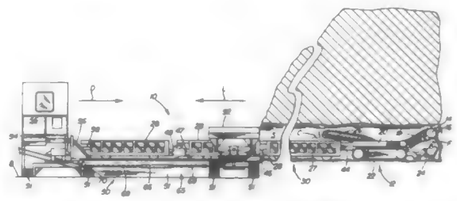
means formed in said body for mounting said body in said opening with the seat belt webbing passing through said slot.

5,364,171

APPARATUS AND METHOD FOR CONTINUOUS MINING

Larry C. Addington; Robert R. Addington; Larry M. Addington, all of Catlettsburg; Albert E. Lynch, Flatwoods, all of Ky.; John Susla, Charleston; David L. Conley, Huntington, both of W. Va.; John J. Sartaine, Russell, and David E. Price, Solder, both of Ky., assignors to Mining Technologies, Inc., Ashland, Ky.

Continuation of Ser. No. 795,314, Nov. 20, 1991, Pat. No. 5,261,729, which is a continuation-in-part of Ser. No. 625,211, Dec. 10, 1990, Pat. No. 5,112,111. This application Oct. 21, 1993, Ser. No. 140,368
The portion of the term of this patent subsequent to Nov. 16, 2010, has been disclaimed.
Int. Cl.[5] E21C *29/00, 35/20*
U.S. Cl. 299—18 **29 Claims**



29. A method of continuously mining aggregate material from a seam utilizing a mining means and conveying means, comprising the steps of:

cutting aggregate material from the seam;

conveying aggregate material cut from the seam to a recovery location;

advancing the mining means and conveying means into the seam by actively pulling said conveying means from a forward end and actively pushing said conveying means at a rearward end; and

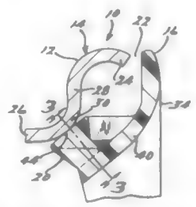
extending said conveying means without interrupting conveying of aggregate material.

5,364,172

WHEEL AND COVER ASSEMBLY WITH RADIUSED STANDOFF

Gary M. Sopko, Livonia; Gerald F. Herbert, Dearborn Heights, and Syed H. Sarmast, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 18, 1993, Ser. No. 136,862
Int. Cl.[5] B60B *7/00*
U.S. Cl. 301—37.42 **14 Claims**



1. A wheel and cover assembly for an automotive vehicle comprising:

a road wheel having a rotational axis and a laterally outturned outer peripheral flange portion, a generally vertically extending annular first wall projecting radially inwardly toward the wheel rotational axis from the outer peripheral flange portion, laterally inwardly projecting second wall portion, and a circumferentially extending curved portion interconnecting the first wall portion and the second wall portion;

a cover member overlying the road wheel in juxtaposition with the outer peripheral flange portion and the curved portion, the cover member having laterally inwardly canted walls; and

a plurality of circumferentially spaced standoff ribs, each carried with the cover member and projecting therefrom along a perpendicular axis from the canted walls into substantially perpendicular abutting engagement with the wheel curved portion and having a free end defining a surface limited by a radius.

5,364,173

PRESSURE SOURCE FOR PRESSURE DEVICE

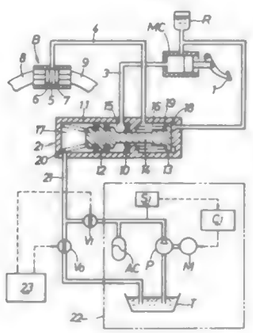
Masayoshi Wada; Shobei Matsuda; Toshio Yahagi, and Shinichi Inagawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 817,490, Jan. 7, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 201,713

Claims priority, application Japan, Jan. 9, 1991, 3-001107

Int. Cl.[5] B60T *8/40, 8/94*

U.S. Cl. 303—11 **10 Claims**



1. A pressure source for a pressure device, comprising:

a pump for pumping fluid,

a pressure tank connected to said pump and to a pressure device,

a pressure detecting means for detecting the fluid pressure in said pressure tank, and

a controller for controlling the operation of said pump in an ON-OFF manner on the basis of a result of detection by said pressure detecting means, wherein

said controller includes first and second drive signal generating circuits each capable of independently generating a drive signal for determining the ON-OFF operation of said pump, and a judging circuit which is connected to at least said pressure detecting means, said judging circuit judges whether the pump is required to be driven or not and to determine a time duration in which the pump is driven based on a condition of said pressure detecting means, said judging circuit being connected to said first drive signal generating circuit, and said pressure detecting means being connected to said second drive signal generating circuit.

5,364,174

ANTILOCKING SYSTEM

Rolf Becker, Ditzingen; Thomas Michel, Weil-der-Stadt; Manfred Meissner, Unterriexingen, and Bernd Gutöhrlein, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

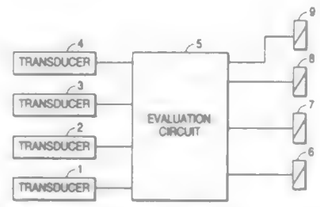
PCT No. PCT/EP91/00098, § 371 Date Sep. 4, 1992, § 102(e) Date Sep. 4, 1992, PCT Pub. No. WO91/14604, PCT Pub. Date Oct. 3, 1991

PCT Filed Jan. 19, 1991, Ser. No. 927,638

Claims priority, application Germany, Mar. 22, 1990, 4009195

Int. Cl.[5] B60T *8/66*

U.S. Cl. 303—97 **9 Claims**



1. In a method for controlling brake pressure in a vehicle anti-lock brake system having a slip control facility, said method including: deriving a reference speed signal and an auxiliary reference speed signal, having a time domain slope which determines characteristics of the reference speed signal in a case of instability of at least one wheel, from wheel speed signals produced by a wheel sensor means for measuring the speed of a fastest, second-fastest, third-fastest, and slowest wheel, respectively; varying the course of the reference speed signal according to the time domain slope of the auxiliary speed signal in the case of instability of at least one of the vehicle wheels; forming respective slip signals for the vehicle wheels from the reference speed signal and respective measured wheel speed signals; and using the slip signals to control the brake pressure at the vehicle wheels; the improvement wherein, when used on a vehicle with four driven wheels, said step of deriving includes: increasing the auxiliary reference speed with the speed signal of the third-fastest wheel, decreasing the auxiliary reference speed signal with the speed signal of the fastest wheel, and between the end of the increase and the beginning of the decrease, holding the auxiliary reference speed signal at the last speed signal value attained during the increase; and, increasing the reference speed signal with the speed signal of the slowest wheel, decreasing the reference speed signal with the speed signal of the third-fastest wheel, and between the end of the increase and the beginning of the decrease, holding the reference speed signal at the last speed signal value attained during the increase.

5,364,175

ANTI-SKID BRAKE SYSTEM FOR WHEELED VEHICLE

Shinsuke Sakane, Toyota; Hiroyuki Ichikawa, Okazaki; Satoru Fukushima, Chiryu, and Chiaki Hamada, Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Feb. 4, 1993, Ser. No. 13,426

Claims priority, application Japan, Feb. 4, 1992, 4-019187

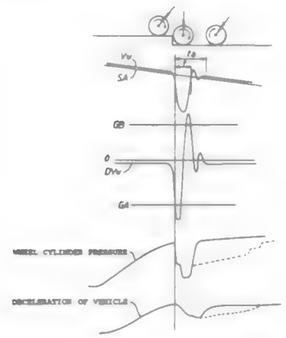
Int. Cl.[5] B60T *8/74, 8/70*

U.S. Cl. 303—97 **2 Claims**

1. An anti-skid brake system for a wheeled vehicle having road wheels and a brake cylinder associated with each road wheel, comprising speed detection means for detecting a speed of the road wheels of the vehicle and for producing an electric signal indicative of the detected speed of the road wheels, an electronic control apparatus which receives the electric signal from said speed detection means for producing a control signal in accordance with conditions of a travel road of the vehicle during a braking operation, and an electrically operated actuator that is actuable under control of said control apparatus for controlling a hydraulic braking pressure applied to each brake cylinder of the road wheels in response to the control signal, said electronic control apparatus comprising:

first means responsive to the electric signal from said speed detection means for calculating an acceleration of the road wheels based on the detected speed of the road wheels;

second means responsive to the electric signal from said speed detection means for detecting a stepped portion on



the travel road by determining that the detected speed of the road wheels has become higher than a predetermined reference speed within a predetermined time immediately after activation of said actuator and that the calculated acceleration of the road wheels has become smaller than a predetermined negative value and larger than a predetermined positive value within the predetermined time; and

third means for deactivating said actuator upon detection of the stepped portion on the travel road by said second means.

5,364,176

BRAKING PRESSURE CONTROL APPARATUS IN A WHEEL SLIP CONTROL SYSTEM

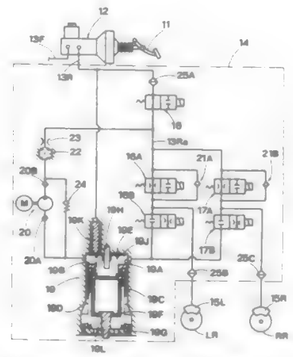
Masashi Sawada, Chiryu, and Hiroaki Takeuchi, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 26, 1993, Ser. No. 111,956

Claims priority, application Japan, Aug. 28, 1992, 4-230282

Int. Cl.[5] B60T *8/58*

U.S. Cl. 303—113.2 **12 Claims**



1. A braking pressure control apparatus disposed in a vehicle braking system having a master cylinder and a wheel brake cylinder communicated with said master cylinder through a fluid passage and operatively connected to a driven wheel, for controlling the wheel slip of said driven wheel during braking and driving operations, comprising;

braking pressure control valve means disposed in the fluid passage between said master cylinder and said wheel brake cylinder, and selectively placed in one of at least a first position for supplying a brake fluid from said master cylinder to said wheel brake cylinder, and a second position for discharging the brake fluid from said wheel brake cylinder, said braking pressure control valve means normally placed in said first position;

changeover valve means disposed in the fluid passage between said master cylinder and said braking pressure control valve means, said changeover valve means normally placed in an open position for allowing the flow of the brake fluid therethrough, and changed over to be placed in a closed position for blocking the flow of the brake fluid when the wheel slip of said driven wheel is controlled during the driving operation;

first reservoir means having a first variable volume chamber for storing the brake fluid discharged from said wheel brake cylinder through said braking pressure control valve means, said first variable volume chamber normally urged to be of the minimum volume thereof;

second reservoir means having a second variable volume chamber for storing the brake fluid discharged from said wheel brake cylinder through said braking pressure control valve means, said second variable volume chamber normally urged to expand for storing a predetermined amount of the brake fluid; and

pump means for pumping the brake fluid from said first reservoir means and second reservoir means, and supplying the pumped brake fluid to the fluid passage between said braking pressure control valve means and said changeover valve means, said pump means operated when the wheel slip of said driven wheel is controlled during braking and driving operations.

5,364,177

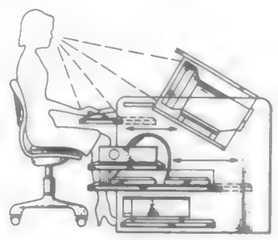
CONVERTIBLE COMPUTER WORKSTATION

Carlos V. Ugalde, San Dimas, Calif., assignor to Continental Engineering Group, Inc., Irwindale, Calif.

Filed May 23, 1991, Ser. No. 704,462

Int. Cl.[5] A47B *21/00*

U.S. Cl. 312—194 **11 Claims**



1. A computer workstation comprising:

a desk, said desk comprising:

a first horizontal working surface,

a desk front panel,

a desk rear panel,

a first vertical desk side panel located at one end of the working surface to support the working surface,

a second vertical desk side panel located at the opposite end of the first working surface to support the first working surface,

a vertical desk support panel located intermediate the first and second desk side panels,

a plurality of computer component shelves located between the second vertical desk side panel and the desk support

panel, and a retractable keyboard located between the first vertical desk side panel and the desk support panel;

a retractable keyboard drawer with a rear panel located between the opposite side panel and the third support panel;

a monitor housing for supporting a computer monitor hingedly mounted to the desk and located behind the keyboard drawer and below the first horizontal working surface in a closed position, said monitor housing comprising:

a second horizontal working surface located within the first horizontal working surface,

a first monitor housing side panel with a front surface,

a second monitor housing side panel with a front surface,

a bottom monitor housing panel, and

a rear monitor housing panel,

the monitor housing panels each being joined together and the monitor housing being attached to an underside surface of the second horizontal working surface;

at least one aperture formed in the front surface of either the first side panel or the second side panel of the monitor housing;

at least one engagement means protruding the rear of the keyboard drawer for engagement with the aperture to hold the monitor housing in the closed position; and

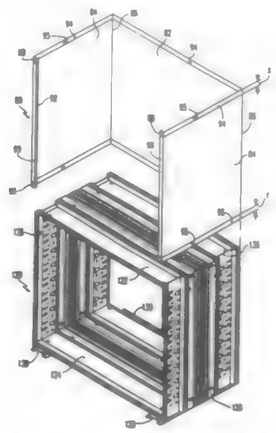
mechanical means for biasing the monitor housing into an open position whereby the monitor housing automatically moves to the open position in response to disengagement of the engagement means from the aperture.

5,364,178

FILE CABINET HAVING A CORREGATED INNER FRAMEWORK CONSTRUCTION

William K. Hofman, Coopersville; Jerry J. Mayette, Muskegon, and David F. Bach, Walker, all of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 23, 1992, Ser. No. 872,476
Int. Cl.[5] A47B *47/00*
U.S. Cl. 312—263 **11 Claims**



1. A file cabinet having an inner framework comprising:

a plurality of vertically oriented corrugated metal side panels which extend substantially the depth of said cabinet;

a plurality of horizontally oriented corrugated metal panels which extend substantially the length of its corresponding side, wherein said horizontally oriented panels comprise a top panel and a bottom panel of said cabinet;

said corrugated top, bottom and side panels including ridges and troughs, said ridges located near the outer edge of each panel and said troughs located between said ridges wherein said troughs of said top and bottom panels complementarily mate with and are welded to said troughs of said side panels, thereby forming a box-like structure; and

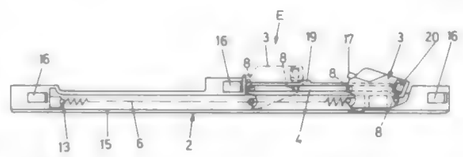
a substantially one-piece metal outer wrapper disposed around a portion of at least one of said side panels and an adjacent side.

5,364,179

CLOSING DEVICE FOR DRAWERS

Klaus Brüstle, Höchst, and Helmut Hollenstein, Lustenau, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Dec. 15, 1992, Ser. No. 991,552
Claims priority, application Austria, Dec. 24, 1991, 2563/91
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—333 **17 Claims**



1. A closing device, for use in an article of furniture having furniture components including a furniture body and a drawer slidable in opposite directions into and out of the body, for moving the drawer into a fully inserted position within the body, said device comprising:

a guide housing having a first side to face a mounting surface of one of the furniture components on which said guide housing is to be mounted, a second side remote from said first side, and a guide groove formed in said first side;

a plate-shaped tiltable member having guide pegs, said tiltable member being positioned on said first side of said guide housing with said guide pegs extending into said guide groove, such that said tiltable member is displaceable relative to said guide housing in opposite directions along said guide groove between opposite end positions of said tiltable member;

a restoring member operable between said guide housing and said tiltable member to urge said tiltable member in a first said direction to a first said end position, whereby said tiltable member is movable in a second said direction along said guide groove against the urging force of said restoring member upon movement of the drawer outwardly of the furniture body; and

said tiltable member having a portion projecting laterally of said guide housing, said portion having extending therefrom at least one stabilizing projection that, at least at one said end position of said tiltable member, fits over and abuts a support surface on said second side of said guide housing, thereby stabilizing said tiltable member relative to said guide housing.

5,364,180

DRAWER SIDE WALL FORMED OF AN UPPER DOUBLE-WALLED PROFILE SECTION AND A BOTTOM PROFILE SECTION INSERTED INTO THE OPEN BOTTOM OF THE UPPER PROFILE SECTION

Horst Berger, Bielefeld, Germany, assignor to Mepla-Werke Lautenschläger GmbH & Co. KG, Reinheim, Germany

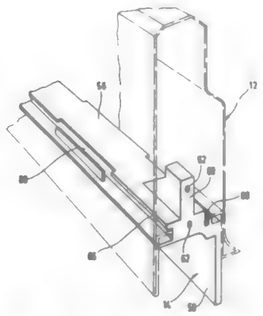
Filed Jan. 8, 1993, Ser. No. 1,790
Claims priority, application Germany, Jan. 11, 1992, 4200581
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—334.14 **12 Claims**

1. A drawer side, comprising:

a double-walled upper profile section bent from sheet metal and having an open bottom;

a bottom profile section joined to the upper profile section by insertion into the open bottom of said upper profile section, so that the drawer side is formed by a closed hollow profile;

said upper profile section comprising vertical walls, said walls having inner confronting sides, said upper profile section having margins defining said open bottom, and having, at a distance from said margins, a pair of connection flanges, each flange extending substantially over an entire length of said upper profile section from the inner confronting sides of said vertical walls forming said drawer side, each said connection flange being formed in each case by a strip-like web section and a dependent section bent substantially at right angles from a defining edge of the web section turned away from one of said



vertical walls, and said bottom profile section having receiving grooves therein which are each associated with one of said connecting flanges, extending substantially over the entire length of said bottom profile section; and

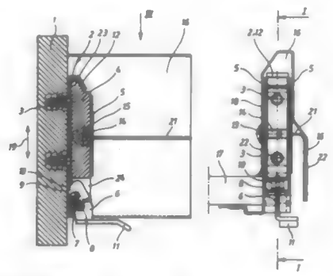
said bottom profile section having an opening in at least one end in an end face for each of the connecting flanges so that said connecting flanges are closely fitted therein, wherein each of said receiving grooves is formed by a plurality of successive groove sections which are open alternately toward an associated vertical wall of said upper profile section and at right angles thereto toward a respective one of said web sections of said connecting flanges.

5,364,181

FRONT ADJUSTMENT FOR A PANEL WITH SNAP-ON MECHANISM FOR A DRAWER

Adolf Scheible, Lauterach, Austria, assignor to Grass AG, Hochst/Vlbg., Austria

Filed Oct. 12, 1993, Ser. No. 134,058
Claims priority, application Germany, Oct. 12, 1992, 9213683[U]
Int. Cl.[5] A47B *95/00*
U.S. Cl. 312—348.4 **4 Claims**



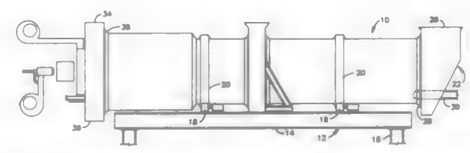
1. An adjustable front panel snap-on mechanism for a drawer having two concealed drawer sides comprising: snap-on hangers affixed to the front panel; an adjustment part secured to each of the snap-on hangers; a glide profile secured to each of the concealed drawer sides and adjustably affixed to each of the adjustment parts; means adjustably affixing each glide profile to each adjustment part to enable vertical positioning of the front panel with respect to the drawer sides; and pawl means secured to each adjustment part and operable with the snap-on hangers to enable horizontal adjustment between the front panel and the drawer sides and to secure the snap-on hangers to the front panel.

5,364,182

COUNTER-FLOW ASPHALT PLANT WITH MULTI-STAGE COMBUSTION ZONE OVERLAPPING THE MIXING ZONE

Michael Hawkins, 10735 NE. 112th St., Kansas City, Mo. 64157

Filed Nov. 16, 1993, Ser. No. 153,604
Int. Cl.[5] B28C *5/46*
U.S. Cl. 366—25 **25 Claims**



1. A drum mixer for producing an asphaltic composition from asphalt and aggregates, said mixer comprising:

a rotatable cylinder having inlet and discharge ends with an internal passageway communicating therebetween, said passageway being separated into a first region including a heating/drying zone and into a second region including a mixing zone surrounding a multi-stage combustion zone, said mixing and combustion zones having equal lengths and extending throughout said second region;

drive means to rotate said cylinder about a central longitudinal axis thereof;

aggregate feed means adjacent said inlet end of said cylinder for delivering aggregate material to said heating/drying chamber;

liquid asphalt feed means, positioned intermediate said inlet and discharge ends of said cylinder, for delivering liquid asphalt to said mixing zone;

flighting means, in said mixing zone, for mixing said liquid asphalt and aggregate to form an asphaltic composition product; and

a combustion assembly penetrating said discharge end of said cylinder and extending into said second region to form said multistage combustion zone, said combustion assembly including a burner head, positioned at said discharge end, to deliver a hot gas stream to said heating/drying chamber to heat and dry said aggregate, said combustion assembly isolating said hot gas stream from said mixing chamber; and

discharge means for directing said asphaltic composition product from said mixing zone.

5,364,183

DRIVING MECHANISM FOR KNEADING BLADE OF A BREAD PRODUCTION DEVICE

Masaharu Shibata, Daito, Japan, assignor to Funai Electric Co., Ltd., Daito, Japan

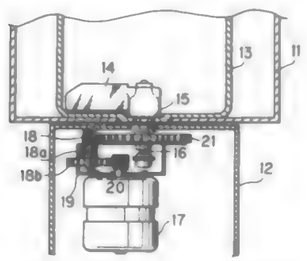
Filed Oct. 15, 1992, Ser. No. 961,468
Claims priority, application Japan, Oct. 16, 1991, 3-267803
Int. Cl.[5] B01F *7/16*
U.S. Cl. 366—98 **6 Claims**

1. A driving mechanism for a kneading blade of a bread making device, comprising:

a motor having a rotating shaft and axis associated therewith;

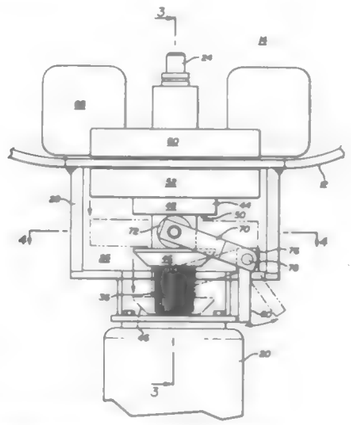
a revolving shaft, and axis associated therewith, extending from one side of said kneading blade;

a first driving member positioned on said rotating shaft;
a first driven member linked with said first driving member and rotating at a speed slower than a speed of said first driving member, and said first driven member having a longitudinal axis;
a second driving member connected to said first driven member;
a second driven member linked with said second driving member, said second driven member rotating with a speed slower than a speed of said second driving member;



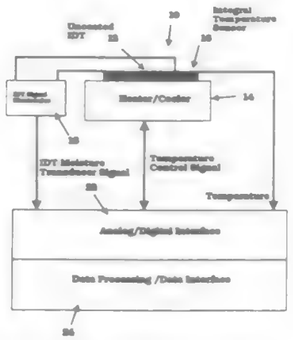
said revolving shaft and said kneading blade are driven by said second driven member; and said axes of said revolving shaft, rotating shaft and at least said first driven member are substantially parallel to each other; and
wherein said motor having a body with an outside periphery, and wherein said outside periphery projects within an imaginary circle having a diameter substantially equal to a sum of a diameter of said second driven member, a radius of said first driven member and a radius of said driving member.

5,364,184
COUPLING METHOD FOR HIGH POWER MAGNETIC DEVICES
Robert L. Raina, Oxnard, Calif., assignor to General Signal Corporation, Stamford, Conn.
Filed Feb. 23, 1993, Ser. No. 21,025
Int. Cl.[5] B01F *13/08*
U.S. Cl. 366—273 **7 Claims**



7. An agitator tank assembly, comprising:
a tank that has an inner cavity;
an impeller located within said inner cavity;
a driven magnet operatively connected to said impeller;
a drive magnet magnetically coupled to the driven magnet;
a drive shaft coupled to said drive magnet;
a stirrer motor connected to said drive shaft for rotating said drive shaft and said drive magnet;
a yoke attached to said drive magnet and coupled to said drive shaft, said yoke having a groove and being adapted to move relative to said shaft; and
a lever which has a wheel located within said groove of said yoke, said lever being adapted to rotate and move said yoke between a first position and a second position thereby coupling and decoupling said drive magnet and said driven magnet.

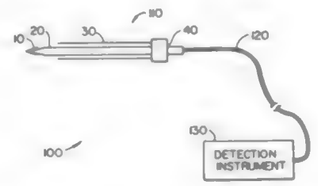
5,364,185
HIGH PERFORMANCE MINIATURE HYGROMETER AND METHOD THEREOF
Thomas R. VanZandt, Redondo Beach; William J. Kaiser, West Covina; Thomas W. Kenny, Glendale, and David Crisp, Durate, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.
Filed Apr. 16, 1993, Ser. No. 46,760
Int. Cl.[5] G01N *25/68, 25/02*
U.S. Cl. 374—28 **6 Claims**



1. An apparatus for measuring dew point;
the apparatus comprising:
an interdigitated transducer configured for generating a moisture sensitive signal;
a temperature-control device for varying the temperature at said transducer;
a temperature sensor at said transducer for precisely monitoring the temperature adjacent a surface of said transducer;
a signal detector connected to said transducer for monitoring a parameter of said signal;
a controller means connected to said temperature-control device and to said detector for reducing the temperature at said transducer from a selected point above dew point to a selected point below dew point while concurrently monitoring said parameter of said signal;
processing means for determining the second derivative of said parameter with respect to temperature of said transducer;
an indicator means for reporting a measured dew point based upon an abrupt change in a variation of said, second derivative.

4. A method for measuring dew point comprising the steps of:
a) providing an interdigitated transducer configured for generating a signal responsive to moisture;
b) controlling the temperature at said transducer;
c) measuring the temperature at said transducer;
d) measuring a parameter of said signal while reducing the temperature at said transducer from a point above dew point to a point below dew point;
e) measuring the second derivative of a variation of said parameter of said signal with respect to temperature at said transducer;
f) reporting a measured dew point based upon an abrupt change in a variation of said second derivative of said variation of said parameter of said signal with respect to temperature at said transducer, and identifying the dew point as a temperature at which said abrupt change of said variation of said second derivative occurs.

5,364,186
APPARATUS AND METHOD FOR MONITORING A TEMPERATURE USING A THERMALLY FUSED COMPOSITE CERAMIC BLACKBODY TEMPERATURE PROBE
Zhihai Wang, Beaverton, and Bruce Adams, Portland, both of Oreg., assignors to Luxtron Corporation, Santa Clara, Calif.
Filed Apr. 28, 1992, Ser. No. 874,829
Int. Cl.[5] G01J *5/08;* **G01K** *11/00*
U.S. Cl. 374—126 **5 Claims**

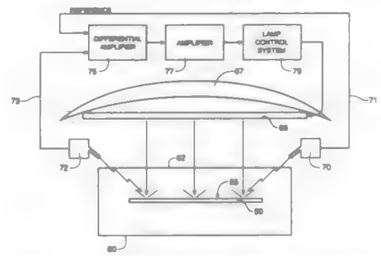


1. A temperature probe for monitoring the temperature of a high temperature environment, comprising:
an optical lightpipe or fiber formed from a material having a high melting point and being transparent to radiation detectable by an external detecting device; and
an optical cavity forming a blackbody or greybody emissive element for sensing the temperature of said environment, said blackbody or greybody emissive element being characterized by emitting radiation as a given function of the temperature, and being formed by a thermally fused coating of composite ceramic material surrounding a tip of said optical lightpipe or fiber.

2. A method of monitoring the temperature of a high temperature environment, comprising the steps of:
positioning an optical cavity forming a blackbody or greybody emissive element in thermal communication with said environment, said blackbody or greybody emissive element being characterized by emitting radiation as a given function of the temperature and being formed by a thermally fused coating of composite ceramic material surrounding a tip of an optical lightpipe or fiber, and said lightpipe or fiber being formed from a material having a high melting point and being transparent to radiation detectable by an external detecting device; and
guiding the radiation from the blackbody or greybody emissive element via said lightpipe or fiber to the external detecting device, thereby to effect monitoring of temperatures having variations with a characteristic frequency between zero and 8000 Hz.

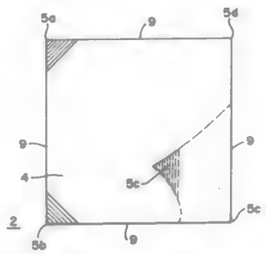
5,364,187
SYSTEM FOR REPEATABLE TEMPERATURE MEASUREMENT USING SURFACE REFLECTIVITY
Randhir P. S. Thakur; Gurtej S. Sandhu, and Annette L. Martin, all of Boise, Id., assignors to Micron Semiconductor, Inc., Boise, Id.
Filed Mar. 8, 1993, Ser. No. 28,040
Int. Cl.[5] G01K *11/00*
U.S. Cl. 374—161 **25 Claims**

1. A system for measuring the temperature of a substrate, said substrate having a reflective surface, said system comprising:
a. means for sensing changes in the reflectivity of said surface while a layer is formed on said surface as said surface is exposed to light energy and a gas:



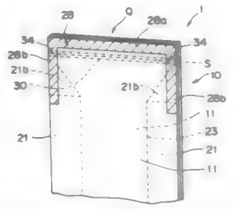
b. a first light source for bombarding said reflective surface with photons;
c. means for exposing said surface to a gas thereby forming said layer superjacent said substrate; and
d. means for controlling said first light source in response to said sensing means.

5,364,188
CORNER GATHERED LAWN AND LEAF BAG WITH ADHESIVE ATTACHMENT MEANS
Alan Godfried, 2 Cranbury Rd., Westport, Conn. 06880, and Peter J. Dronzek, Jr., 6 Poe Rd., Thornwood, N.Y. 10594
Continuation-in-part of Ser. No. 7,488, Jan. 25, 1993. This application Nov. 17, 1993, Ser. No. 153,621
Int. Cl.[5] B65D *33/18*
U.S. Cl. 383—4 **9 Claims**



1. A bag for containing lawn debris comprising a flat sheet of regular polygonal shape, said sheet comprising one face and an opposite face, a plurality of corners and a plurality of edges connecting said corners, wherein at least one of said corners is disposed with adhesives on said one face thereof and another of said corners is disposed with adhesive on said opposite face and the remainder of said one face and said opposite face are free of adhesive, said bag being formed by gathering and adhering said corners together wherein a handle is formed by the gathered and adhered corners and open areas are formed by the non-adhered edges such that a user's hand may be inserted through any of the open areas between adjoining non-adhered edges and may grasp said handle to effect transport of the formed bag.

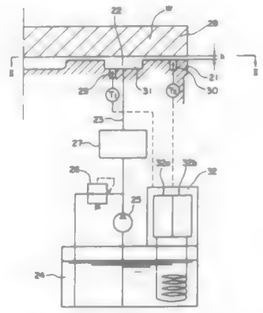
5,364,189
ZIPPERED BAG AND METHOD OF FORMING THE SAME
Raizo Kuge, Hannou, and Yoshiji Moteki, Saitama, both of Japan, assignors to Kabushiki Kaisha Hosokawa Yoko, Tokyo-to, Japan
Filed Oct. 27, 1993, Ser. No. 144,182
Claims priority, application Japan, Jul. 9, 1993, 5-170547
The portion of the term of this patent subsequent to Jan. 4, 2011, has been disclaimed.
Int. Cl.[5] B65D *33/24*
U.S. Cl. 383—61 6 Claims



1. A gusset bag having one end to be formed as a bottom end and another end to be formed as an end opening through which a content packed in the gusset bag is taken out, the gusset bag comprising:
a bag body having a tubular structure and composed of a pair of opposing flat portions constituting front and back surface portions of the bag body, said front and back surface portions having respectively two side edges, and two side surface portions connecting the front and back surface portions at both side edges thereof and respectively having lines folded inward which extend along longitudinal direction of the side surface portions an along which the side surface portions are folded inwardly
a zipper element mounted on inner surfaces of the flat portions at portions near the end opening of the bag body; and
a fused seal portion formed to and near the end opening portion of the bag body to substantially entirely seal the end opening portion said fused seal portion including an end seal portion having two ends and extending substantially along an entire length of the end opening and side seal portions extending from both ends of the end seal portion along the side edges of the flat portions of the bag body, said side seal portions each extending beyond the portions on which the zipper element is mounted, wherein a sealing process is carried out integrally with portions of the side surface portions near the end opening of the bag body, which are once inwardly folded along the folding lines and then drawn out and folded outward from the end opening of the bag body for once opening in the end opening and wherein the zipper element is mounted to the portions near the end opening portion of the bag body between the end opening portion and the once folded and then drawn out side surface portions.

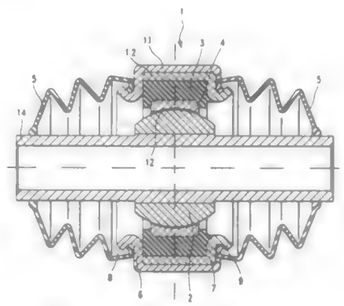
5,364,190
HYDROSTATIC BEARING APPARATUS
Akira Ochiai, Susono; Katsuji Takahashi, Mishima, and Kouya Watanabe, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 14, 1993, Ser. No. 4,249
Claims priority, application Japan, Jan. 14, 1992, 4-005164; Mar. 2, 1992, 4-044940
Int. Cl.[5] F16C *32/06*
U.S. Cl. 384—100 8 Claims

1. A hydrostatic bearing apparatus comprising:
a base member having a static pressure guide surface to which a static pressure pocket means is formed;
a temperature detection means for detecting a temperature of an operation oil in the static pressure pocket means at an outlet portion thereof and generating a signal representing the detected outlet temperature of the operation oil;
a temperature control means for controlling a temperature of the operation oil to be supplied in the static pressure pocket means in response to the signal from the outlet temperature detection means;
a pressure control means for controlling a pressure in the static pressure pocket means by controlling a flow rate of



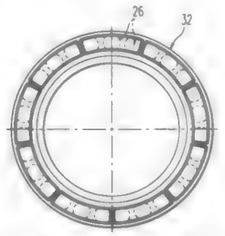
the operation oil supplied to the static pressure pocket means; and
an operation oil source storing the operation oil to be supplied to the static pressure pocket means,
wherein a gap between the static pressure guide surface and a member to be supported on the hydrostatic bearing apparatus is maintained constant in accordance with the control of the operation oil temperature and the operation oil pressure.

5,364,191
PIVOT BEARING
Walter Gruber, Weinheim, Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstr., Germany
Filed Mar. 9, 1993, Ser. No. 28,416
Claims priority, application Germany, May 2, 1992, 4216559
Int. Cl.[5] F16C *23/04, 27/06, 33/74*
U.S. Cl. 384—203 10 Claims



1. Pivot bearing comprising
a case comprising two parts, each part having a cylindrical inside surface and a cylindrical outside surface, the inside surface of one of said parts being fit on the outside surface of the other of said parts,
a rubber cushion of annular shape positioned against the inside surface of the other of said parts, said cushion having a central axis,
a guiding ring coaxially inside said rubber cushion, said guiding ring having a spherical inner surface, and
a body having a spherical outer surface which cooperates with said inner surface of said ring to permit rotational movement.

5,364,192
DIAMOND BEARING ASSEMBLY
Oliver F. R. A. Damm, 633 Turf Street, Wingate Park, Pretoria, Transvaal, and Klaus Tank, 9 Warbleton Avenue, Essexwold, Johannesburg, Transvaal, both of South Africa
Filed Oct. 28, 1993, Ser. No. 142,041
Claims priority, application South Africa, Oct. 28, 1992, 92/8326; Oct. 28, 1992, 92/8327
Int. Cl.[5] F16C *17/04*
U.S. Cl. 384—420 17 Claims

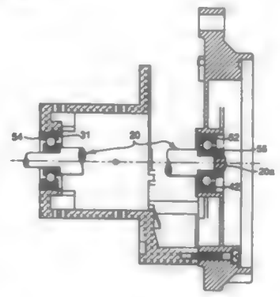


1. A diamond thrust bearing assembly for a downhole motor, the assembly comprising at least one set of opposing bearing rings, each bearing ring comprising an annular support element and a plurality of PCD compacts carried in circumferentially spaced relationship by the support element, the PCD compacts presenting opposing bearing surfaces with the bearing surfaces of the compacts of one bearing ring in each set being circumferentially longer than the bearing surfaces of the compacts of the other bearing ring of the set.

5,364,193

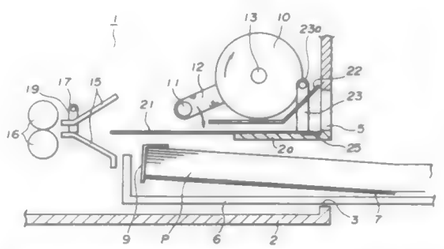
Patent Not Issued For This Number

5,364,194
AXIALLY DISPLACED FLEXURAL BEARING SUPPORT
James K. Lubin, Pacifica, Calif., assignor to Ampex Systems Corporation, Redwood City, Calif.
Filed Jan. 4, 1993, Ser. No. 67
Int. Cl.[5] F16C *17/22, 27/00*
U.S. Cl. 384—493 10 Claims



1. A bearing and spindle support assembly comprising a monolithic bearing support base member having a bearing receiving tube of a given length supported by a first and second generally parallel sets of flexural spoke members configured, dimensioned and arranged to minimize radial displacement of the spindle or shaft supported within the tube while allowing axial compliance and pre-load control due to thermal differential expansion, one set of said spoke members being attached at first ends thereof to said tube adjacent one end thereof; said other set of said spoke members being attached at first ends thereof to said tube at a point displaced from the other end of said tube a distance of about one quarter said length.

5,364,195
SHEET CONVEYING APPARATUS WITH DISPLACEABLE GUIDE BETWEEN CASSETTE AND FEED ROLLER
Shinji Kanemitsu; Shigeyoshi Onoda, both of Yokohama; Keiko Okuma, Tokyo, and Hiroshi Nakai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 992,768
Claims priority, application Japan, Jan. 7, 1992, 4-018487; Jan. 7, 1992, 4-018488; Jan. 7, 1992, 4-018489
Int. Cl.[5] B41J *11/50*
U.S. Cl. 347—4 12 Claims



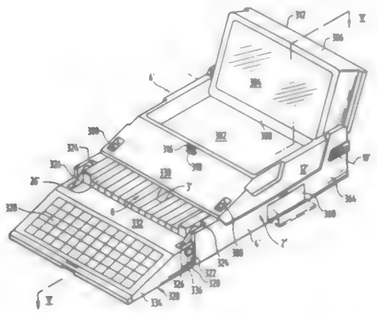
11. An image forming apparatus, comprising:
sheet accommodating means for accommodating a plurality of sheets;
sheet feeding means for feeding sheets from said sheet accommodating means;
separation pawls for individually separating the sheets fed from said sheet feeding means;
a manual feeding port for manually feeding a sheet to a position between said sheet accommodating means and said sheet feeding means;
manually-fed-sheet guiding means disposed between said sheet accommodating means and said sheet feeding means for guiding the sheet manually fed from said manual feeding port; and
image forming means for forming an image on sheets fed from said sheet accommodating means and said manual feeding port,
wherein said manually-fed-sheet guiding means is displaceable an amount sufficient to allow formation of a loop in a sheet during the separation by said separation pawls.

5,364,196
PORTABLE COMPUTER WITH INTEGRAL PRINTER
Günter Baitz, Berlin, and Joachim Burchart, Schlangen, both of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiegesellschaft, Paderborn, Germany
PCT No. PCT/EP90/01610, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/14221, PCT Pub. Date Sep. 19, 1991
PCT Filed Sep. 21, 1990, Ser. No. 927,526
Claims priority, application Germany, Mar. 16, 1990, 4008541
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—691 22 Claims

1. A portable laptop computer, having a base housing with an input keyboard, a screen and a printer, comprising:
the base housing having a through transport channel which extends essentially parallel to a bottom side of the base housing and has a width corresponding essentially to a length of one edge of the base housing for the passage of a printing medium, a printing head being arranged on one side of a transport plane and a pressure abutment of the printer being arranged on the other side;
the base housing being divided in the transport plane into a

lower housing part and an upper housing part that can be placed on, or lifted off from, the lower housing part, the lower housing part accommodating a first group of function components with a printing head which can be moved in the direction of print lines, lower printing medium transport rollers, and a ribbon system, with their respective drive apparatus, and wherein in the upper housing part on top a second group of function components with a pressure abutment and with upper abutments for the lower transport rollers is arranged;

the lower housing part having an electrical or electronic drive and control module arrangement for the printer, to



which substantially all electrical and electronic function components of the printer are plug-connected;

a ribbon cassette having a ribbon, said ribbon cassette positioned flat on the top side of the lower housing part, in such a way that a flat top side of the ribbon cassette is flush with a plane of the printing medium, transport rollers arranged in the ribbon cassette being coupled to at least one drive journal protruding through a bed surface for the ribbon cassette; and

at least one of the input keyboard and the screen being units which can be adjusted between a non-operating position lying against the base housing and an operating position.

5,364,197

COSMETIC PENCIL WITH DESCENDING SHEATH

Ronald J. Powers, 4010 Ischia Dr., Oxnard, Calif. 93035

Filed Dec. 20, 1993, Ser. No. 169,210
Int. Cl.[5] A45D *40/06, 40/12, 40/20*
U.S. Cl. 401—75 **3 Claims**



1. A cosmetic pencil for dispensing a soft cosmetic mass, said cosmetic pencil comprising:

an elongated hollow barrel having a bottom, a top, an outer surface and an inner surface, said inner surface having at least one longitudinally directed notch;

an elongated push rod having a bottom and a top and being affixed at the bottom to the bottom of the barrel and said push rod being threaded;

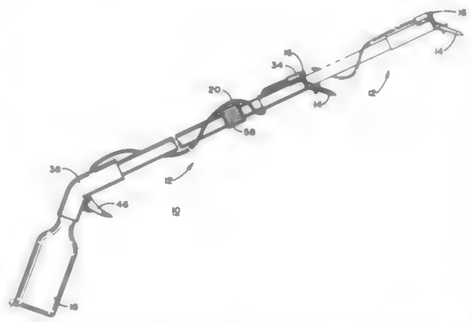
a hollow sheath having a bottom, a top, an outer surface and an inner surface, said sheath having a threaded portion which mates with the threaded push rod, and said sheath being at least partially filled with a cosmetic mass, and wherein said sheath has at least one outwardly and radially directed angled pawl, said pawl extending radially outwardly so that the at least one angled pawl will pass freely in and out of said longitudinally directed notch as the sheath is turned in a first direction with respect to the barrel but will abut and catch the longitudinally directed notch when the sheath is turned in a direction opposite of said first direction with respect to the barrel whereby when said push rod and sheath are turned in said first direction with respect to each other, the sheath moves downwardly into the barrel and the push rod extends into the sheath and pushes the cosmetic mass out of the top end of the sheath but when the push rod and sheath are turned in said direction opposite of said first direction, the turning will stop when said at least one angled pawl enters said at least one longitudinally directed notch.

5,364,198

SELF CONTAINED WINDOW CLEANING IMPLEMENT

Sabaudin Skenderi, 475 Lincoln Ave., Wyckoff, N.J. 07481

Filed May 28, 1993, Ser. No. 68,858
Int. Cl.[5] A47L *1/08*
U.S. Cl. 401—138 **6 Claims**



1. A self contained window cleaning implement, said window cleaning implement comprising:

an elongated handle member;

a squeegee member disposed on one end of said elongated handle member;

spray means for dispensing a spray, said spray means being disposed on said one end of said elongated handle member adjacent said squeegee member;

said squeegee member extending at an oblique angle downward from said elongated handle member, wherein said spray means is disposed above said squeegee member;

a cleaning fluid reservoir for holding a supply of a cleaning fluid, said cleaning fluid reservoir being attached to the other end of said elongated handle member opposite said one end of said handle member;

a fluid passageway for transferring the cleaning fluid from said cleaning fluid reservoir, to said spray means;

said fluid passageway comprising a tube extending from said cleaning fluid reservoir to said spray means, wherein said tube is disposed in a spiral fashion about said handle member;

fluid pump means for forcing the cleaning fluid from said cleaning fluid reservoir, through said fluid passageway and to said spray means, said fluid pump means being disposed on said other end of said elongated handle member;

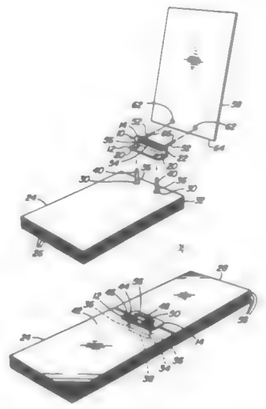
said fluid pump means comprising manually actuable pump means, said manually actuable pump means further comprising a digitally depressable trigger member, said digitally depressable trigger member extending outward from said elongated handle member.

5,364,199

SHEET FASTENER HINGE DEVICE

Eric W. Hillmer-Mann, Kelowna, Canada, assignor to R. Dale McKenzie, Kelowna, Canada

Continuation of Ser. No. 75,898, Jun. 14, 1993, abandoned. This application Mar. 21, 1994, Ser. No. 210,736
Int. Cl.[5] B42F *3/00, 13/02*
U.S. Cl. 402—68 **3 Claims**



1. A sheet filing assembly comprising:

(a) a first stack of matching flexible sheets having a front and a back, the sheets in the first stack each having a first pair of apertures spaced a first predetermined distance apart, the first pairs of apertures being aligned adjacent one edge of the first stack of sheets,

(b) a first sheet fastener having a first pair of flexible prongs extending forwardly from a first elongated base, the elongated base extending along the back of the first stack of sheets, the first pair of prongs extending the first predetermined distance apart through the first pair of aligned apertures,

(c) a first panel substantially smaller than the flexible sheets and having at least one prong receiving hole therethrough to receive the first pair of prongs of the first sheet fastener therethrough, the first pair of prongs of the first sheet fastener each having an outer portion which is manually bent over the first panel to removably mount the first panel on the front of the first stack of sheets along said one edge thereof, whereby said first stack of sheets are cumulatively bound together adjacent the said one edge thereof.

(d) a second stack of matching flexible sheets having a front and a back, the sheets in the second stack each having a second pair of apertures spaced a second predetermined distance apart, the second pair of apertures being aligned adjacent one edge of the second stack of sheets,

(e) a second panel substantially smaller than the flexible sheets, the second panel extending on the back of the second stack of sheets along said one edge of the second stack of sheets, the second panel having a second pair of flexible prongs extending forwardly the second predetermined distance apart through the second pair of apertures, the second pair of flexible prongs each having an outer portion which is manually bent over the front of the second stack of sheets, whereby the second stack of sheets are cumulatively bound together adjacent the said one edge thereof, and

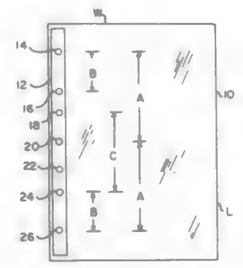
(f) narrow hinge means extending parallel to said one edge of the first stack of sheets and to said one edge of the second stack of sheets and connecting the second panel to the first panel, whereby the second stack of sheets is pivotable between a closed position in which the back of the second stack of sheets lies against the front of the first stack of sheets and an open position in which the first and second stacks of sheets lie adjacent each other substantially in a common plane.

5,364,200

REINFORCEMENT TAPE FOR LOOSE LEAF SHEET

Kenneth J. Russo, Villa Park, and George Block, Park Ridge, both of Ill., assignors to Carsten Health Industries, Inc., Chicago, Ill.

Filed Dec. 28, 1992, Ser. No. 997,212
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—79 **13 Claims**



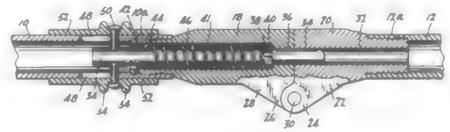
1. A reinforcement strip for a loose leaf sheet comprising a thin plastic strip having preselected holes punched therein, a first side of said plastic strip having a pressure sensitive adhesive applied thereto, the second side of said plastic strip having an adhesive-repellant coating applied thereto, said adhesive-repellant coating comprising an acrylic polymer primer coat and a silicone-containing top coat.

5,364,201

HINGED STRUT CONSTRUCTION

Berger A. LaBarre, Bethel, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed Feb. 8, 1993, Ser. No. 14,535
Int. Cl.[5] F16C *11/00;* **F16B** *17/00*
U.S. Cl. 403—322 **1 Claim**



1. A hinged strut construction comprising, in combination:

a) a pair of elongate, rigid strut members,

b) hinge means hingedly connecting adjoining ends of the strut members to each other to enable the members to be either aligned or else angularly disposed with respect to each other,

c) slide means for releasably locking the strut members in an aligned position, comprising an extendable and retractable locking pin axially movable on one member and an axially

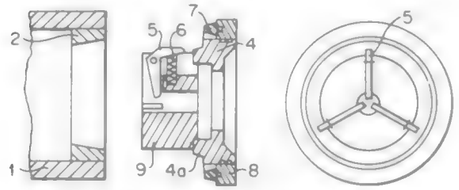
extending socket on said other member, adapted to receive said locking pin,
d) said slide means comprising a manually engageable release collar axially movable on the said one strut member, and means for operatively connecting said release collar to the said locking pin,
e) said one strut member having a tubular end,
f) an end fitting being carried in said tubular end of the strut member,
g) said release collar being slidably carried on and surrounding said tubular end,
h) said locking pin being movable and held captive in said end fitting,
i) said axially movable locking pin having an annular groove,
j) said end fitting having an annular internal groove,
k) washers disposed in said annular grooves, and
l) a compression spring located between the said washers and disposed on the axially movable locking pin.

5,364,202

HOLDING DEVICE FOR HOLLOW-CYLINDER PRINTING FORMES

Ruediger Ettelbrueck, Aschheim, Germany, assignor to Maschinenfabrik Kaspar Walter GmbH & Co., KG, Germany

Filed Jun. 30, 1993, Ser. No. 83,573
Claims priority, application Germany, Jul. 22, 1992, 4224252
Int. Cl.[5] F16D *1/10*
U.S. Cl. 403—322 **3 Claims**



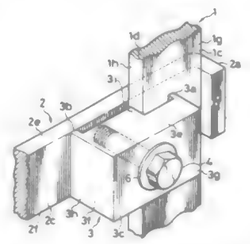
1. A holding device for printed formes of hollow cylinders during the forme production, in particular in an electroplating shop, the holding device comprising:
a pair of round plates each having an inner diameter with a conical axial bore and an outer diameter inserted into the hollow cylinder, one of said pair of plates at each of two free ends of the hollow cylinder, the outer diameter of the round plate firmly joined to the inside wall of the hollow cylinder;
a pair of adaptor rings, each having a annular flange shoulder, an annular seal, and a conical axial shoulder, the conical axial shoulder of one adaptor ring inserted into the conical axial bore of each round plate, the annular seal being between the annular flange shoulder and the conical axial shoulder, the annular seal being pressed against the end wall of the hollow cylinder; and
a pair of latching devices, one of said pair of latching devices mounted at the end of each adaptor ring facing the inside of the hollow cylinder, each latching device having a plurality of spring-preloaded latches arranged in a predetermined configuration, such that when the adaptor ring is pressed into the respective ends of the hollow cylinder, the latches fit behind the inside end face of the round plate.

5,364,203

BUS BAR CONNECTING DEVICE

Masahiro Ishikawa, Marugame, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,757
Claims priority, application Japan, Jan. 24, 1992, 4-011064
Int. Cl.[5] F16B *7/18*
U.S. Cl. 403—403 **17 Claims**



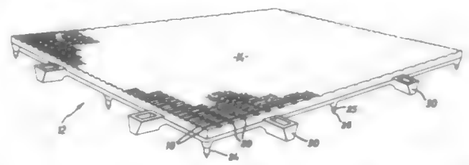
1. A bus bar connecting device comprising:
a first bus bar;
a second bus bar oriented at an angle with respect to said first bus bar, said second bus bar having a hole;
a clamper for clamping the bus bars, and having a hole;
a bolt inserted through the hole of the clamper and the hole in said second bus bar;
a nut screwed with the bolt to press the clamper against the bus bars; and
means for restricting shift of said second bus bar in a lateral direction of said first bus bar, said shift restricting means comprises a step formed on said clamper and engaging with a first side surface on the first bus bar, and an engaging member formed on said second bus bar and engaging with a second side surface of said first bus bar to restrict shift of said second bus bar in the lateral direction of said first bus bar.

5,364,204

COVER FOR AN AREA OF GROUND

Iain M. MacLeod, Derby, England, assignor to Terraplas Limited, South Normanton, England

PCT No. PCT/GB91/00303, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/13208, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 27, 1991, Ser. No. 934,674
Claims priority, application United Kingdom, Mar. 2, 1990, 9004795
Int. Cl.[5] E01C *5/20*
U.S. Cl. 404—35 **29 Claims**



16. Apparatus for temporarily covering an area of ground and which is reusable at the same or another location, said apparatus comprising:
(a) covering means for defining a surface capable of supporting one or more persons thereon above the area of ground;
(b) said covering means defining therein a plurality of holes extending therethrough to permit air to reach plants covered by said apparatus, said holes being of a size sufficiently small to be bridged by footwear;
(c) locating means for locating said apparatus on the ground,

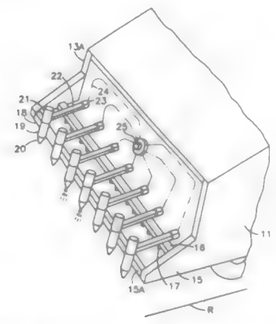
said locating means comprising a downwardly extending member for locating said-covering means in spaced apart relation to the ground, said locating means further including a flange extending transversely from said downwardly extending member to be capable of spreading load applied to said covering means away from said downwardly extending member;
(d) light-admitting means for enabling continued growth of plants in said area when covered by said apparatus.

5,364,205

METHOD AND APPARATUS FOR ROAD HOLE REPAIR

Jerome Lemelson, 868 Tyner Way, Call Box 14-286, Incline Village, Nev. 89450

Division of Ser. No. 901,265, Jun. 19, 1992. This application Sep. 3, 1993, Ser. No. 115,819
Int. Cl.[5] E01C *23/07*
U.S. Cl. 404—72 **28 Claims**



1. A method for repairing road holes and the like utilizing a wheeled vehicle, means for containing a supply of repair material and sensing means arranged on said vehicle, said method comprising the steps of:
(a) moving said vehicle over a surface;
(b) operating said sensing means for detecting irregularities in the surface being traversed by said vehicle; and
(c) dispensing repair material from said containing means responsive to the irregularities detected;
said containing means further comprising a plurality of dispensing means each having a movable outlet, said method further comprising the steps of:
moving at least two of said outlets responsive to a detected irregularity for positioning the outlets above the detected irregularity; and
dispensing the same filler material from each outlet.

5,364,206

SOIL STABILIZATION SYSTEM

Mark L. Marienfeld, 4821 Thornhill Dr., Acworth, Ga. 30101

Filed Sep. 29, 1993, Ser. No. 128,534
Int. Cl.[5] E02B *3/12*
U.S. Cl. 405—16 **1 Claim**

1. A mat for erosion control, structural reinforcement and stabilization of soil comprising:
a plurality of flat elongated generally rectangular tread strips comprising the tread portion of tires from which the sidewalls have been removed, each of said tread strips having the original tread reinforcing belts extending the full length thereof and disposed internally thereof, said tread strips being oriented in a planar array with a first plurality of said tread strips extending parallel to one another in spaced relation and a secondary plurality of said tread strips extending in parallel relation to one another in spaced relation and at right angles to said first plurality of strips so as to form a flexible mat having discrete openings therein, and



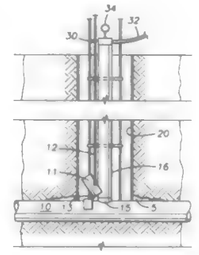
means for mechanically connecting said tread strips to one another for maintaining said planar array.

5,364,207

METHOD FOR MAKING SERVICE CONNECTIONS TO POLYETHYLENE PIPE

Cleve C. Reber, P.O. Box 417, Deer Park, Tex. 77536, and Kurt S. Myers, 7634 Braesdale, Houston, Tex. 77071

Filed Mar. 26, 1993, Ser. No. 38,148
Int. Cl.[5] F16L *1/028, 55/18*
U.S. Cl. 405—303 **4 Claims**



1. A method for making a service connection to polyethylene replacement sewer pipe for connection to a service line which comprises:
(1) locating said service line;
(2) excavating an opening from the surface to the polyethylene replacement pipe at said service line, said opening being of sufficient size to introduce a heat fusing apparatus;
(3) introducing the heat fusing apparatus on top of the polyethylene pipe and fusing a stack to the polyethylene pipe; and
(4) drilling an opening into the polyethylene pipe through the fused stack.

5,364,208

METHOD OF TRANSFERRING OBJECTS WITH COMPRESSED AIR

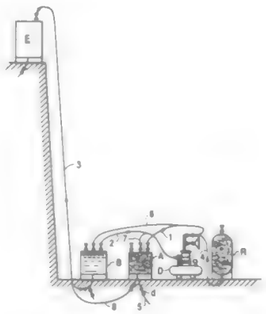
Akira Taguchi, Osaka, Japan, assignor to Mori-Gumi Co., Ltd., Osaka, Japan

Continuation of Ser. No. 919,391, Jul. 29, 1992, abandoned, which is a continuation of Ser. No. 476,425, Jun. 6, 1990, abandoned. This application May 3, 1993, Ser. No. 55,790
Claims priority, application Japan, Sep. 19, 1988, 63-234588
Int. Cl.[5] B65G *53/36*
U.S. Cl. 406—85 **4 Claims**

1. A method of transferring material, comprising:
a. providing two pressure tanks having the same volume;
b. providing a transfer pipe connected to both said tanks;
c. providing an air compressor;
d. filling material to be transferred into one said tank;
e. providing compressed air in the other said tank;
f. using said compressor to incorporate the compressed air from said tank having the compressed air therein into said

tank having the material therein so that the compressed air replaces the material and transfers the material through said pipe by air pressure;

g. retaining the compressed air in said tank from which the material was transferred;



h. filling further material to be transferred into said tank from which the compressed air was incorporated in step f; and

i. repeating steps f–h at least once that the compressed air cyclically and continuously replaces the material in said tanks and continuously and repeatedly transfers the material through said pipe.

5,364,209

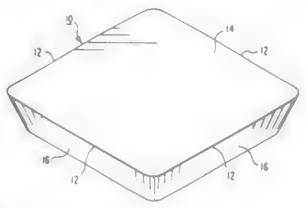
CVD AND PVD COATED CUTTING TOOLS

Anakkavur T. Santhanam, Monroeville; Rajendra V. Godse, Greensburg; Dennis T. Quinto, Greensburg; Kenneth E. Undercoffer, Greensburg, and Prem C. Jindal, Greensburg, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 925,890, Aug. 6, 1992, abandoned, which is a continuation of Ser. No. 583,889, Sep. 17, 1990, abandoned. This application Jan. 14, 1994, Ser. No. 183,445

Int. Cl.[5] B23B *27/14, 27/16*

U.S. Cl. 407—119 **17 Claims**



1. A cutting tool comprising:

a rake face and a flank face;

a cutting edge at a junction of said rake face and said flank face;

said cutting tool having a coating and a substrate;

wherein said substrate is a nonbinder enriched tungsten carbide based cemented carbide having a bulk composition of:

0–12 weight percent Ta;

0–6 weight percent Nb;

0–10 weight percent Ti;

8–12 weight percent Co;

said coating having a number of layers;

said layers including at least one chemical vapor deposition layer and at least one physical vapor deposition layer;

wherein the outermost layer of said chemical vapor deposition layer and said physical vapor deposition layer is said physical vapor deposition layer;

wherein said chemical vapor deposition layer is adjacent to said substrate;

and wherein said physical vapor deposition layer is in a state of residual compressive stress.

5,364,210

MACHINE TOOL

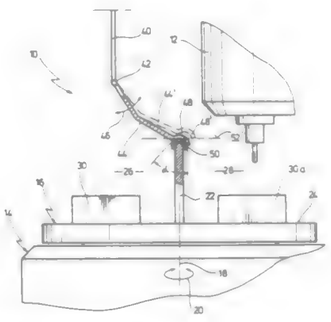
Eugen Rütschle, Mühlheim/Donau, and Rudolf Haninger, Seitingen, both of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Germany

Filed Jan. 4, 1994, Ser. No. 177,283

Claims priority, application Germany, Feb. 27, 1993, 4306093

Int. Cl.[5] B23Q *11/08*

U.S. Cl. 409—134 **8 Claims**



1. Machine tool, comprising:

a workpiece table means having a diameter and an upper surface, which workpiece table means is rotatable about a vertical axis,

a first splash protecting wall means rigidly attached to said workpiece table means and oriented substantially along said diameter of said workpiece table means, whereby said upper surface of said workpiece table means is divided into a placement region for receiving fresh workpieces to be machined next and into a machining region for receiving workpieces to be machined first, such that said first splash protecting wall means shields said placement area against particles originating from said machining area,

a stationary second splash protecting wall means fixed to a part of the machine tool and arranged above of said first splash protecting wall means, such that it runs substantially parallel to said first splash protecting wall means, and

an articulated third splash protecting wall means between said first and second splash protecting wall means, said third splash protecting wall means being connected at its top portion in a hinged manner to said second splash protecting wall means and resting at its bottom portion loosely on an upper edge portion of said first splash protecting wall means, such that said third splash protecting wall means can pivot with respect to said second splash protecting wall means while grasping onto said upper edge portion of said first splash protecting wall means.

5,364,211

SIDE RAIL ANCHOR BAR

Gary J. Lund, P.O. Boz 22, Lodi, Calif. 95241-0022

Filed Mar. 3, 1994, Ser. No. 205,088

Int. Cl.[5] B60P *7/08*

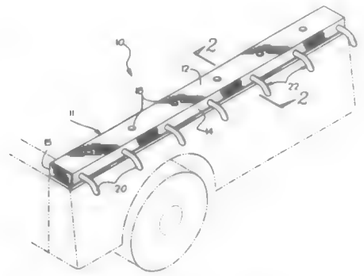
U.S. Cl. 410—108 **2 Claims**

1. A side rail anchor bar arranged for mounting to a vehicle bed rail, said anchor bar comprising:

a rigid tube rail, the tube rail including a top wall spaced from and parallel to a bottom wall, a first side wall spaced from a second side wall, said first and second side walls being attached to the top and bottom walls to form an open tube;

a cushion web arranged for coextensive and contiguous communication with the bottom wall to protect the vehicle bed rail from direct contact with the tube rail;

a plurality of fasteners directed orthogonally through the top wall and the bottom wall and through the cushion web for securement to the bed rail;



and,

a plurality of hook members arranged in a parallel relationship through the tube rail, wherein the hook members each include a support rod extending fixedly from the second side wall through the first side wall and projecting beyond the first side wall, each support rod having an arcuate outer end portion projecting from the first side wall to an orientation beyond the bottom wall.

5,364,212

FASTENING MEMBER HAVING THREADS, PARTICULARLY A SCREW AND SCREWING TOOL

Peter J. Gill, Wolverhampton, Great Britain, assignor to Richard Bergner GmbH & Co., Schwabach, Germany

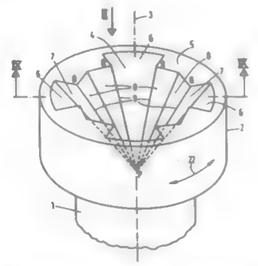
PCT No. PCT/DE92/01078, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO93/13323, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 22, 1993, Ser. No. 117,018

Claims priority, application United Kingdom, Jan. 4, 1992, 9200093

Int. Cl.[5] F16B *23/00, 35/06;* **B25B** *23/00*

U.S. Cl. 411—404 **9 Claims**



1. A threaded fastening member including an actuating end having a head, the head having a diameter projecting beyond a diameter of the thread of the fastening member and being co-axial with a thread axis, and a centrally located recess within the head for the application of interior forces, the recess comprising:

radial outwardly projecting slots each having two flanks lying in respective planes, each flank plane being essentially tangential to an imaginary cone being co-axial with the thread axis;

a pair of segmented circumferential faces separating each slot from an adjacent slot; and

a transitional linear inner edge formed between each pair of segmented circumferential faces and each flank of a respective slot, wherein each said inner edge converges towards a common point on the thread axis at a position within said fastening member, and each said face of each said pair is inclined relative to the other face of said pair at an angle, whereby said inner edges define the radially innermost limits of said recess and are for the reception of the interior forces.

5,364,213

CAP FOR FASTENING DEVICES FOR MOTOR VEHICLE WHEELS AND THE LIKE

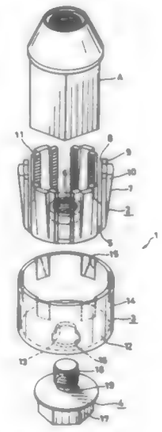
Koji Teramura, Osaka, Japan, assignor to Kyo-Fi Industrial Corporation, Osaka, Japan

Filed Oct. 25, 1993, Ser. No. 140,492

Claims priority, application Japan, Oct. 27, 1992, 4-074757

Int. Cl.[5] F16B *37/14*

U.S. Cl. 411—431 **19 Claims**



1. A cap for a fastening device, comprising:

an inner cap member fittable over a polygonal engageable portion of the fastening device and having a top wall centrally formed with a threaded bore, an outer cap member fittable over the inner cap member and having a bolt hole formed in a top wall thereof and corresponding to the threaded bore, and a bolt to be screwed into the threaded bore through the bolt hole, the inner cap member having a peripheral wall formed with at least one deformation promoting slit extending longitudinally of the peripheral wall, at least one of an outer surface rear end portion of the peripheral wall of the inner cap member and an inner surface rear end portion of a peripheral wall of the outer cap member having a projecting tapered portion for inwardly moving the rear end portion of the inner cap member when the outer cap member is slidingly moved relative to the inner cap member by rotating the bolt relative to the inner cap member in a screwing-in direction;

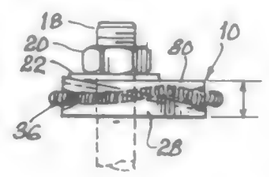
and wherein the peripheral wall of the inner cap member has a plurality of radially resilient and separated plate portions which together form the tapered portion, and the outer cap has a hollow center and is formed on an inner rear peripheral surface facing said hollow center with a plurality of slant grooves (15) inclined outward towards the rear end of the cap and each corresponding to a respective one of said plate portions of the tapered portion.

5,364,214

SELF ADJUSTING CONSTRUCTION TIE-DOWN

Scott Fazekas, 15583 Harrow La., Poway, Calif. 92064

Filed Apr. 28, 1993, Ser. No. 54,598
Int. Cl.[5] F16B *19/00, 43/00*
U.S. Cl. 411—536 **15 Claims**



1. A unidirectional expansion sleeve engageable on a bolt defining an axial direction and said bolt spanning and holding together at least two structural members, said sleeve comprising;

(a) at least one ramp element defining an inclined ramp surface defining a ramp angle measured with reference to a plane orthogonal to said bolt and having an axial component and a transverse component and defining a ramping direction in which direction the axial component of said ramp element is progressively thicker;

(b) at least one block element cooperating with said ramp element, said elements having mutual freedom of motion at least in said ramping direction such that mutual motion of said elements in said ramping direction causes said elements to assume an increasing effective combined axial size;

(c) bias means exerting a bias force mutually urging said elements together in said ramping direction to increase the effective combined axial size, whereby in the event said structural members shrink and said bolt has slack along its length, said axial size increases to occupy said slack; and,

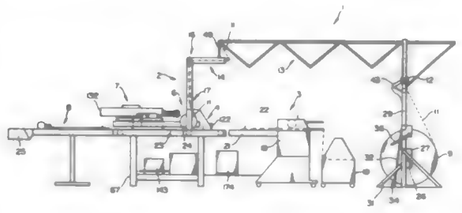
(d) said elements defining a ramping interface at which said elements have a mutual coefficient of frictional engagement sufficient when taking into account said ramp angle to prevent reverse-ramping-directional mutual motion between said elements independently of said bias means in response to said axial compression exerted on said elements.

5,364,215

METHOD AND APPARATUS FOR PREPARING BOOK COVERS

Donald L. Snellman, and Dean G. Tonkin, both of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.

Filed Sep. 28, 1992, Ser. No. 952,604
Int. Cl.[5] B42C *7/00*
U.S. Cl. 412—3 **45 Claims**



36. A method of preparing book covers for binding to book blocks comprising the steps of;

conveying individual book covers seriatim in spaced relation in a continuous stream at a predetermined speed,

feeding a continuous attachment strip at said predetermined speed,

pressing said attachment strip and said covers together at a predetermined location on each cover,

applying adhesive to bond one side of said attachment strip and said covers together to form a continuous moving string, and

then repeatedly severing said attachment strip between successive covers during continued movement of the string to separate said covers,

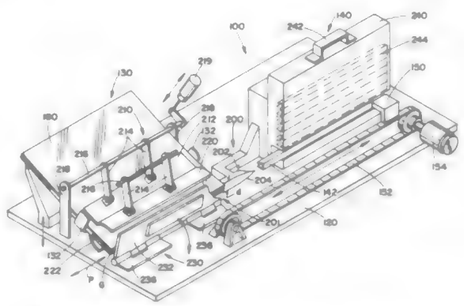
whereby each of said covers has one side only of a segment of said strip adhesively bonded thereto, the opposite side of said strip being free of adhesive and adapted for attachment directly to the spine area of a book block.

5,364,216

APPARATUS FOR APPLYING A BINDING STRIP TO DOCUMENT SETS

Barry P. Mandel, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 7, 1993, Ser. No. 58,596
Int. Cl.[5] B42B *5/00*
U.S. Cl. 412—34 **27 Claims**



1. Apparatus for applying a U-shaped spline binder strip to a plurality of sheets comprising:

an alignment member forming the plurality of sheets into an aligned stacks by contacting an edge of each of the plurality of sheets thereby defining a first stack edge in contact with the alignment member;

a clamp assembly for clamping the aligned stack of sheets at a first location with the first stack edge substantially exposed along a first path;

a supply assembly for positioning a U-shaped spline binder strip at a second location in alignment with the first stack edge of the aligned stack of sheets, the supply assembly including a selectively operable pusher movable along said first path for moving the binder strip along said first path from the second location to said first location onto said first stack edge; and,

a spreader means, located along the path between the first and second locations, for opening the U-shaped spline binder strip as it moves along said first path from the second location to the first location to allow the binder strip to receive the first stack edge.

5,364,217

SYSTEM FOR MAINTAINING SECURITY OF FACSIMILE MESSAGES

Seymour Bath, Astro Systems 6 Nevada Dr., Lake Success, N.Y. 11040

Filed Jan. 25, 1993, Ser. No. 14,822
Int. Cl.[5] B42C *9/00*
U.S. Cl. 412—37 **9 Claims**

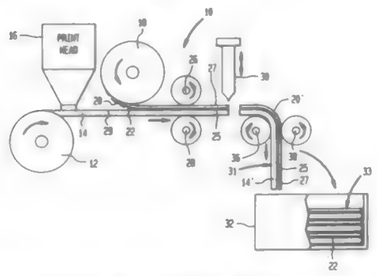
1. A system for producing a laminated facsimile sheet assembly and conceal a facsimile message on a message sheet, comprising:

a supply of message sheet material;

means for printing said message on one side of said sheet material to constitute a recorded message sheet;

a supply of opaque cover sheet material;

means for taking a cover sheet from said supply thereof and superimposing said cover sheet on said recorded message sheet to cover and conceal said message printed thereon;



attachment means for removably attaching said cover sheet to said recorded message sheet and form a laminated assembly, so that said message is exposed when said cover sheet removed from said message sheet; and

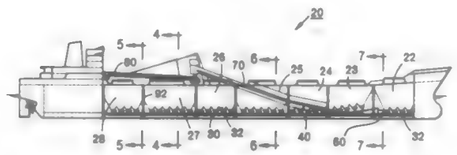
cutter means disposed for separating said laminated assembly of of said cover sheet an said message sheet from stud supplies thereof respectively.

5,364,218

BULK MATERIAL CONVEYOR UNLOADING SYSTEM FOR SHIPS

James H. Hara, Ridgefield, Conn., assignor to Skarhar, Inc., Greenwich, Conn.

Filed Jun. 16, 1993, Ser. No. 79,076
Int. Cl.[5] B63B *27/22*
U.S. Cl. 414—142.4 **3 Claims**



1. A system for unloading bulk material from a ship, comprising:

(a) a continuous elevating conveyor disposed in said ship, said elevating conveyor having a first, inclined section to raise said bulk material from a lower space in the hull of said ship to a point above the deck of said ship at the distal end of said elevating conveyor;

(b) said elevating conveyor having at the proximal end thereof a second, generally horizontal, section over which is disposed a single row of discharge gates generally parallel to the centerline of said ship and connected to the bottoms of a first plurality of hoppers which contain a first portion of said bulk material, so as to selectively discharge said first portion of said bulk material onto said second section of said elevating conveyor;

(c) cross conveyors disposed in said ship to discharge a second portion of said bulk material onto said second section of said elevating conveyor;

(d) parallel conveyors disposed in said ship generally parallel to said centerline of said ship to discharge said second portion of said bulk material onto said cross conveyors;

(e) each of said parallel conveyors being disposed underneath a row of discharge gates connected to bottoms of a second plurality of hoppers containing said second portion of said bulk material, so as to selectively discharge said second portion of said bulk material onto said parallel conveyors; and

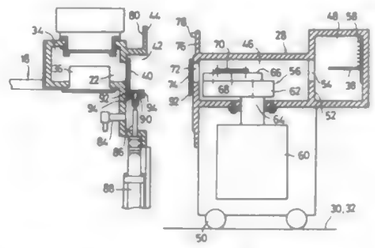
(e) said cross conveyors being disposed at a location along said centerline of said ship between said first plurality of hoppers and said second plurality of hoppers.

5,364,219

APPARATUS FOR CLEAN TRANSFER OF OBJECTS

Tetsuo Takahashi; Eisaku Miyauchi, both of Akita; Toshihiko Miyajima, Saku, and Hideaki Watanabe, Akita, all of Japan, assignors to TDK Corporation, Japan

Filed Jun. 23, 1992, Ser. No. 902,720
Claims priority, application Japan, Jun. 24, 1991, 3-177803
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—217 **11 Claims**



1. A clean transfer system, comprising:

a first vacuum chamber having a first transfer port, a first movable shutter for opening and closing said first transfer port, a first connecting member surrounding said first transfer port, said first connecting member having at least an exterior portion;

a second vacuum chamber having a second transfer port, a second movable shutter for opening and closing said second transfer port, a second connecting member surrounding said second transfer port, said second connecting member having at least an exterior portion;

means for moving said first and second shutters so as to open or close said first and second transfer ports; and

said first and second connecting members having at least a connected position, in said connected position a closed space being formed between said first and second connecting members, so that said exterior portions of said first and second connecting members are separated by said closed space and said first and second shutters are movable within said closed space.

5,364,220

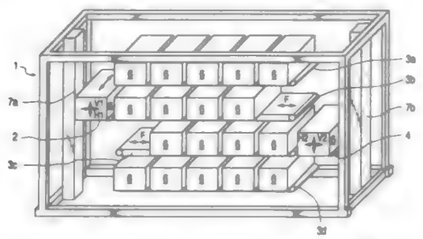
SHELF SERVICING APPARATUS

Erich Killinger, Gaggenau, Germany, assignor to DAMBACH-Industrieanlagen GmbH, Gaggenau, Germany

Filed Feb. 12, 1993, Ser. No. 16,921
Claims priority, application Germany, Feb. 19, 1992, 4205001
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—272 **24 Claims**

1. Shelf servicing apparatus for a shelf store including a cabin adapted to be vertically movable with respect to the shelf store, a loading mechanism for placing containers in or removing said containers from shelf locations of the shelf store, the cabin comprising a conveyor mechanism with a plurality of positioning locations for containers to be placed in or removed from said shelf store, whereby the containers in the cabin can be transferred from one positioning location to another,

wherein the conveyor mechanism includes at least two superimposed horizontal conveyors for transferring the containers



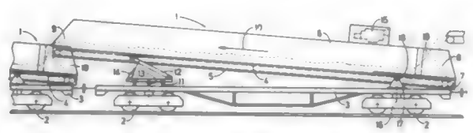
to or removed from the loading mechanism vertically movable within the cabin.

5,364,221

TRACK-BOUND FREIGHT CAR

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 806,873, Dec. 12, 1991, abandoned. This application Mar. 22, 1994, Ser. No. 216,098
Claims priority, application Austria, Feb. 27, 1991, A411/91
Int. Cl.[5] B65G *67/00*
U.S. Cl. 414—339 **13 Claims**



1. A track-bound freight car in combination with a like adjoining freight car and comprising

(a) a machine frame having opposite ends and extending in a longitudinal direction,

(b) a wheeled undercarriage at each machine frame end and supporting the machine frame on a track defining a plane,

(c) a conveyor band extending obliquely with respect to the track plane and above the machine frame in the longitudinal direction,

(1) the conveyor band having a conveying surface for conveying bulk material,

(2) a lower input end above one of the undercarriages for receiving the bulk material, and

(3) a higher output end above the other undercarriage for discharging the bulk material, the higher output end projecting from one of the machine frame ends in the longitudinal direction a sufficient distance to overly the lower conveyor band input end of the adjoining freight car,

(d) drive means for driving the conveyor band for conveying the bulk material from the input end to the output end,

(e) a separate carrier frame for the conveyor band, the separate carrier frame being mounted on the machine frame and including

(1) parallel side walls extending in the longitudinal direction alongside the conveyor band,

(2) the conveyor band constituting a bottom of a storage space for the bulk material defined between the side walls,

(f) means for mounting respective ends of the carrier frame on the machine frame at the conveyor band ends,

(1) the carrier frame and the conveyor band being horizontally displaceable transversely to the longitudinal direction at least at one of the ends with respect to the undercarriage at said one end, and

(2) the carrier frame end at the lower input end of the conveyor band being mounted on the machine frame for rotation about a substantially vertical axis,

(g) a transverse displacement drive connected to the one end for effectuating the displacement, and

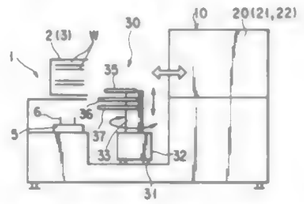
(h) a coupling of fixed length in the longitudinal direction for coupling the freight car to the adjoining freight car.

5,364,222

APPARATUS FOR PROCESSING WAFER-SHAPED SUBSTRATES

Masami Akimoto; Kazutoshi Yoshioka, and Naruaki Iida, all of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Kyushu Limited, Kumamoto, both of Japan

Filed Feb. 5, 1993, Ser. No. 14,161
Claims priority, application Japan, Feb. 5, 1992, 4-047738
Int. Cl.[5] B65G *1/00*
U.S. Cl. 414—416 **21 Claims**



1. An apparatus for processing a wafer-shaped substrate, comprising:

(a) a section arranged in the apparatus, for placing a container containing the substrate;

(b) a processing unit arranged in the apparatus for processing the substrate;

(c) a transfer station arranged in the apparatus for transferring the substrate; and

(d) a transfer robot arranged in the apparatus for transferring the substrate, the robot including

a first handler for transferring the substrate between the container and the transfer station, the first handler being able to advance and retreat in a horizontal direction, and the first handler having such a width that the first handler can advance into the container,

a second handler for transferring the substrate between the processing unit and the transfer station, the second handler being able to advance and retreat in a horizontal direction, and the second handler being designed such that the second handler holds the substrate with a bottom surface of the substrate being substantially exposed, and

a robot body for supporting and driving the first and second handlers to advance and retreat in horizontal directions, the robot body being movable such that the first and second handlers face the container, the processing unit and the transfer station.

5,364,223

MOBILE METERING STORAGE APPARATUS

Karl A. Bissex, Plainfield, Vt., assignor to DMS, Inc., Barre, Vt.

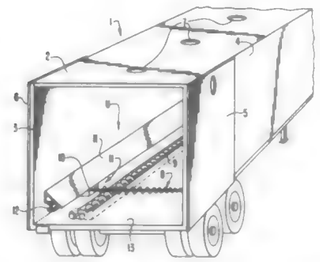
Continuation-in-part of Ser. No. 726,919, Jul. 8, 1991. This application Apr. 30, 1992, Ser. No. 876,100
Int. Cl.[5] B60P *1/42*
U.S. Cl. 414—526 **27 Claims**

1. A mobile metering and storage apparatus comprising:

a mobile unit for transporting, storing and metering material accommodated therein, said mobile unit including at least a pair of spaced side walls and a floor interconnecting said spaced side walls;

a discharge conveyor provided at a floor level of the mobile unit for receiving and discharging material from the mobile unit;

a feed conveyor for feeding the material to the discharge conveyor including a head assembly, at least one screw conveyor for feeding material from respective sides of the mobile unit toward the discharge conveyor, and a drive



mounted on said head assembly for driving said at least one screw conveyor; and

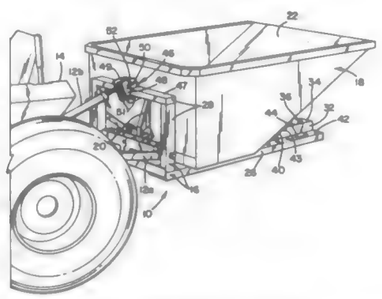
means extending along only one of said side walls in a longitudinal direction of the mobile unit for solely supporting said feed conveyor in said mobile unit.

5,364,224

PORTABLE TILTABLE HOPPER ASSEMBLY

James R. Padgett, 2650 French Creek Rd., New Albany, Ind. 47150

Continuation of Ser. No. 961,668, Oct. 16, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,806
Int. Cl.[5] B66F *9/12*
U.S. Cl. 414—703 **13 Claims**



10. A tiltable hopper assembly comprising

a hopper support frame adapted for ground mounting and for releasable attachment to a vertically movable three point hitch mechanism of a vehicle, including a tractor,

a material storage hopper supported on said frame and being tiltable thereon between an upright material storing position and a material dumping position, said hopper including a pair of spaced apart, rounded rocker sections for enabling said hopper to tilt on said frame between said positions, said sections being rollable along an upwardly facing surface portion of said frame during the entire tilting movement of said hopper between said upright and dumping positions,

means for releasably attaching said support frame to said hitch mechanism for permitting said support frame to assume a selected vertical tilt angle relative to horizontal which is between zero degrees and a preselected maximum vertical tilt angle, inclusive, when said support frame is located at a selected height above its ground mounted position within the lifting range of said mechanism and for permitting said support frame to fully seat when returned by said mechanism from an elevated position to a ground mounted position, and

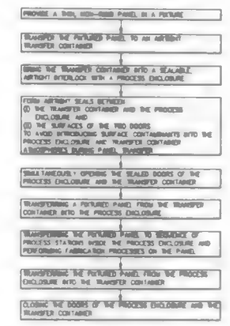
latch means attached to said support frame for releasably securing said hopper in said material storing position.

5,364,225

METHOD OF PRINTED CIRCUIT PANEL MANUFACTURE

Lewis C. Hecht, 2612 Lynnhurst Dr., Vestal, N.Y. 13850; Merritt P. Sulger, deceased, late of Brackney, Pa.; by Ellen Sulgar, executrix, Brittan Rd., R.D. 1 Box 346R, Brackney, Pa. 18812; Ernst E. Thiele, 265 Ridgefield Rd., Endicott, N.Y. 13760; Mark V. Pierson, 65 Hospital Hill Rd., Binghamton, N.Y. 13901, and Lawrence E. Williams, 6 Krager Rd., Binghamton, N.Y. 13904

Filed Jun. 19, 1992, Ser. No. 901,042
Int. Cl.[5] B65G *65/02*; C23C *13/08*
U.S. Cl. 414—786 **4 Claims**



1. A method of manufacturing a printed circuit panel comprising the steps of:

a. providing a thin, non-rigid panel in a fixture;

b. placing the fixture in an air tight transfer container having a substantially contaminant free atmosphere, and a sealed door at one end;

c. bringing the transfer container into a sealable, substantially airtight interlock with a process enclosure having a substantially contaminant free atmosphere, and a sealed door at one end;

d. forming an airtight seal between the transfer container and the process enclosure;

e. forming an airtight seal between the surfaces of the two doors to avoid introducing surface contaminants into the process enclosure and transfer container atmospheres, and thereafter simultaneously opening the sealed doors of the process enclosure and the transfer container;

f. transferring at least one panel and its fixture from the transfer container into the process enclosure;

g. transferring the at least one panel to a process station inside the process enclosure and performing a process on the panel;

h. thereafter transferring the at least one panel and its fixture from the process enclosure into the transfer container;

i. closing the doors of the process enclosure and the transfer container.

5,364,226

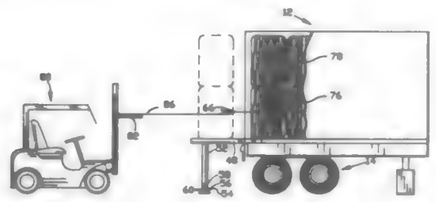
METHOD OF UNLOADING NON-PALLETIZED UNITS OF CARGO

John M. Gombos, Bakersfield, and Moshe Leashno, Long Beach, both of Calif., assignors to A.C.X. Trading, Inc., Bakersfield, Calif.

Division of Ser. No. 712,977, Jun. 10, 1991, Pat. No. 5,236,297, which is a continuation-in-part of Ser. No. 701,604, May 14, 1991, Pat. No. 5,090,177, which is a continuation-in-part of Ser. No. 526,186, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 353,811, May 17, 1989, Pat. No. 5,001,974. This application Aug. 11, 1993, Ser. No. 105,035

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—786 **18 Claims**



8. A method of unloading a non-palletized unit of cargo from a cargo container, said cargo unit comprising multiple rows of bales of hay bound together to form a unit by means comprising an elongated sheet of a polymer film pre-stretched and wrapped in multiple layers solely and snugly around and in direct engagement with the peripheral sides of said cargo unit for applying continuous laterally inwardly directed force biasing said bales inwardly, thereby at least partially compressing and forcing the vertical surfaces of the laterally adjacent bales into partially interlocking binding engagement, said cargo unit being capable of being handled by direct engagement of a bottom surface thereof by the tines of a forklift truck, comprising the steps of:

attaching towing means to said cargo unit:

towing said cargo unit to an opening in said cargo container;

engaging the bottom surface of said cargo unit by the times of a forklift truck for lifting and removing said cargo unit from said container, wherein said unit of cargo comprises multiple layers of said bales of hay, and separate ones of said layers are separately bound together by first multiple layers of said film, said multiple layers of bales of hay are bound together by second multiple layers of said film extending around the periphery of said cargo unit; and

said step of attaching towing means to said cargo unit is carried out during forming of said cargo unit.

5,364,227

CONTROLLABLE DENTAL TURBINE

Manfred Franetzki, Bensheim, and Juergen Wohlgemuth, Darmstadt, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

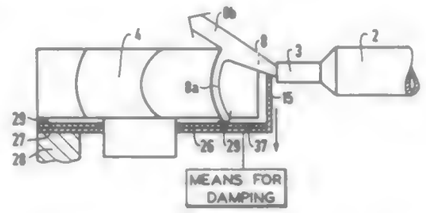
Filed Dec. 3, 1992, Ser. No. 985,266

Claims priority, application Germany, Dec. 17, 1991, 4141673

Int. Cl.[5] F01D *17/06*

U.S. Cl. 415—35 **10 Claims**

1. A regulatable dental turbine comprising a turbine wheel, a nozzle for a drive fluid being directed at said turbine wheel on a shaft, said nozzle providing essentially a constant volume stream, and actuator means for regulating the speed of the turbine wheel by acting to vary the effectiveness of the essentially constant volume stream engaging the turbine wheel by deflecting the stream in a new direction with a different portion of the stream engaging the turbine, said actuator means including a flexible elastic part having a deflecting vane, said elastic part being mounted adjacent the nozzle and the turbine, said deflecting vane being movable between a first position



completely clear of the nozzle to a second position with the nozzle being partially occluded by the vane.

5,364,228

TURBINE FOR GAS COMPRESSION

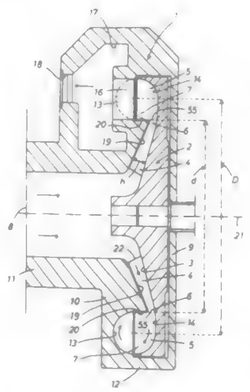
Hans-Heinrich Henning, Ennepetal; Dieter Frohn, Wuppertal; Carldieter Hollmann, Witten; Walter Winkelströter, and Frank Diedrichsen, both of Wuppertal, all of Germany, assignors to Gebr, Becker GmbH & Co., Wuppertal, Germany

Filed Apr. 27, 1993, Ser. No. 52,687

Claims priority, application Germany, Apr. 27, 1992, 4213765; Sep. 15, 1992, 4230770

Int. Cl.[5] F04D *5/00*

U.S. Cl. 415—55.1 **20 Claims**



1. Turbine with a radial compressor rotor having radial blades, said radial compressor rotor feeding a side channel compressor, said side channel compressor having a ring of chambers separated by chamber blades mounted on the rotor, with an annular diameter of a side channel of the side channel compressor being equal to or larger than the diameter of a part of the rotor bearing the radial blades, with chambers having openings on their sides abutting outer ends of the radial blades, and with the radial blades making a uniform transition in a flow direction to the chamber blades, characterized by the turbine being designed as a gas compressor, by the chamber blades and the radial blades each having opposite curvatures in an end view, by the chamber blades and the radial blades having a curvature change point at their transition point, and by the chamber and the radial blades being inclined at an angle that is uniform and less than 30° relative to a circumferential tangent at the transition point.

5,364,229

HYDROELECTRIC MACHINES AND THEIR INSTALLATION

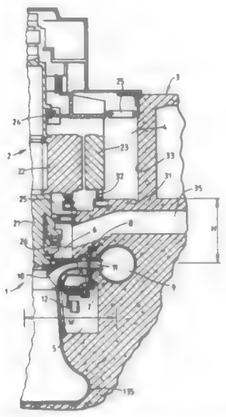
Tetuo Fujihara, Katsuta; Takashi Ito; Fuminori Iwaki, both of Hitachi, and Hitoshi Ichikawa, Iwaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 34,392

Claims priority, application Japan, Mar. 19, 1992, 4-063145; Sep. 1, 1992, 4-233320

Int. Cl.[5] F01D *17/12*

U.S. Cl. 415—163 **21 Claims**



1. A hydroelectric installation comprising an electric machine and a hydraulic machine, the electric machine being installed above the hydraulic machine in an installation pit;

the hydraulic machine comprising a spiral case, an upper cover, a lower cover below the upper cover, a runner rotatable between the upper cover and the lower cover, a guide vane assembly including plural guide vanes for controlling water flow between the upper and lower covers to the runner, and a guide vane operating unit for adjusting the guide vanes;

the electric machine comprising a stator, an upright shaft having a longitudinal axis and connected to rotate with the runner of the hydraulic machine about the shaft axis, and a rotor on the shaft; and

a vertical thrust bearing engaging between the shaft and the upper cover;

said installation having a lower assembly space defined in the installation pit around the hydraulic machine, and the guide vane operating unit extending downwardly in said lower assembly space.

5,364,230

ROTOR BLADE SUBASSEMBLY FOR A ROTOR ASSEMBLY HAVING DUCTED, COAXIAL COUNTER-ROTATING ROTORS

Timothy A. Krauss, Harwinton; David H. Hunter, Cheshire, and Robert D. Beatty, Trumbull, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 22, 1992, Ser. No. 903,061

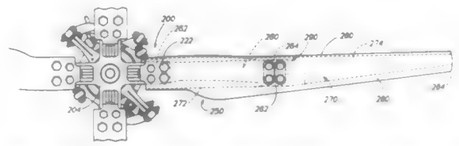
Int. Cl.[5] B64C *27/33*

U.S. Cl. 416—134 A **18 Claims**

1. A rotor blade subassembly for a rotor assembly having ducted, coaxial counter-rotating rotors, the rotor assembly including a rotor hub, comprising:

flexbeam means for reacting centrifugal and bending loads of one of the ducted, coaxial counter-rotating rotors, said flexbeam means having an inboard end and an outboard end, said flexbeam means being secured in combination with the rotor hub by means of said inboard end, said flexbeam means having a predetermined linear twist along the span thereof from said inboard end to said outboard end;

spar means for reacting bending, torsional, shear, and centrifugal loads of the one ducted, coaxial counter-rotating rotor, said spar means functioning as a primary structural member of said rotor blade subassembly;



torque tube means for reacting torsional and bending loads of the one ducted, coaxial counter-rotating rotor; and

a rotor blade;

said rotor blade, said torque tube means, said spar means, and said flexbeam means being secured in combination at said outboard end of said flexbeam means.

5,364,231

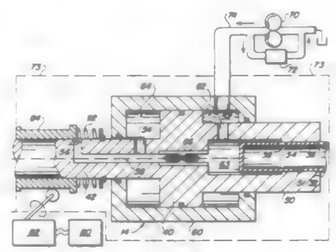
FULL AUTHORITY PROPELLER PITCH CONTROL

Christopher D. Eick, Phoenix; Paul J. Powers, Glendale, and John R. Williamson, Scottsdale, all of Ariz., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Dec. 22, 1992, Ser. No. 994,741

Int. Cl.[5] B64C *11/40*

U.S. Cl. 416—157 R **18 Claims**



1. A variable pitch propeller assembly comprising:

a hub carrying a plurality of radially extending propeller blades, said propeller blades mounted to rotate within said hub to adjust blade pitch;

a propeller pitch piston positioned to translate within said hub and connected to said propeller blades such that translation of said propeller pitch piston rotates said propeller blades, said propeller pitch piston having two opposing faces and biased on one face by a spring and biased on the opposing face by a supply of hydraulic fluid;

a tube secured to said propeller pitch piston to translate therewith and to supply said hydraulic fluid;

a servo piston positioned to translate within a housing, said servo piston dividing said housing into first and second chambers and having a first opposing surface and a second opposing surface, said first and second opposing surfaces being biased by hydraulic fluid in said first and second chambers respectively;

a first bored shaft secured to translate with and extending from said first opposing surface of said servo piston, said first bored shaft extending from said housing to receive said tube such that said tube is translatable relative to said first bored shaft;

a second bored shaft secured to translate with and extending from said second opposing surface of said servo piston,

said second bored shaft extending out of said housing and containing a fluid exhaust port; and

means for opening and covering said fluid exhaust port to a low pressure return to adjust blade pitch.

5,364,232

VARIABLE DISPLACEMENT COMPRESSOR

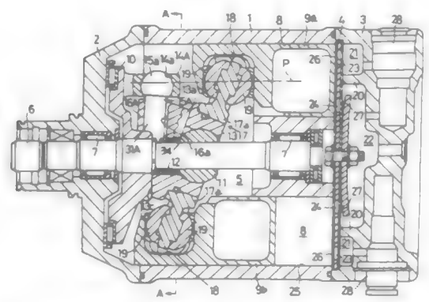
Kazuya Kimura; Hiroaki Kayukawa; Kenji Takenaka, and Yoshihiro Makino, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 952,836, Mar. 3, 1992. This application Sep. 30, 1993, Ser. No. 129,596

Claims priority, application Japan, Oct. 1, 1992, 4-263319

Int. Cl.[5] F04B *1/12*

U.S. Cl. 417—222.1 **12 Claims**



1. A variable displacement compressor comprising:

a housing having a crank chamber therein;

a cylinder block having a plurality of cylinder bores;

a plurality of pistons slidably fitted within each of said cylinder bores;

a drive shaft rotatably mounted in said housing;

a drive plate mounted on said drive shaft for integral rotation therewith, said drive plate having at least a pair of support arms formed integrally with said drive plate and protruding therefrom, each of said support arms having a u-shaped cutaway portion defining a channel having an open surface of a predetermined opening width, said u-shaped surface being formed within said support arm defining a socket area;

a swash plate tiltably mounted on said drive shaft, said swash plate having a bracket projecting toward said drive plate and operating to drive said pistons in a reciprocal motion for generating fluid compression and suction pressures within said cylinder bore, said swash plate further having an angle of inclination controlled by varying the pressure within said crank chamber;

hinge means for connecting said swash plate with said drive plate, said hinge means including a ball pivotably disposed within said socket area, a guide pin connecting said ball to said bracket, said pin being slidable with respect to at least one of said ball and said bracket;

said ball being held in said channel such that the rotational force of said drive plate and the reaction force of said compressed fluid and suction pressure applied to said pistons are transmitted by said ball of said hinge means to preselected inner portions within said channel, said preselected portions being chosen to prevent the disengagement of said ball from said socket area and to increase the motility of said guide pin with respect to said bracket and said ball.

5,364,233

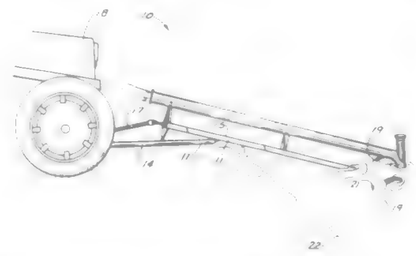
IRRIGATION PUMP APPARATUS

Terry J. Benoit, Rte. 2, Box 214 E., Rayne, La. 70578

Filed Aug. 30, 1993, Ser. No. 114,440

Int. Cl.[5] F04B *17/06*

U.S. Cl. 417—231 **8 Claims**



1. A pump apparatus comprising;

a) an elongated frame having a proximate end portion and a distal end portion;

b) an elongated drive shaft that extends along the frame between the proximal and distal end portions;

c) a pump housing mounted at the distal end of the elongated frame, the pump housing having a curved, transversely extending peripheral wall portion connected to a pair of opposed sidewalls, the sidewalls being generally perpendicular to the drive shaft, each sidewall having a sidewall opening defining a flow inlet for the intake of fluid to be pumped when the pump housing is submerged at least sufficiently to submerge each of the flow inlets;

d) the housing having a discharge outlet with an outlet periphery that is positioned between the sidewalls and communicating with the transversely extending wall portion;

e) the drive shaft extending through the pump housing at the sidewall openings, defining a pump housing impeller axis;

f) an impeller having an impeller periphery, the impeller mounted for rotation with the pump shaft;

g) the transverse wall including a curved portion that extends around the impeller and a pair of straight portions that extend away from the impeller to define an open space in the housing, near the outlet;

h) a baffle plate with first and second end portions supported within the housing adjacent the outlet, one end portion of the baffle being positioned adjacent the transverse wall at the outlet periphery, the baffle forming an acute angle with the adjacent transverse wall, the baffle plate second end portion being a free end portion positioned closely adjacent the periphery of the impeller, and spaced radially from the impeller, occupying a position that is between the impeller periphery and the transverse wall.

i) the baffle extending transversely between the side walls wherein the baffle is connected to each of the side walls and to the transverse wall to rigidify the housing at the discharge outlet.

5,364,234

HIGH PRESSURE DEVICES

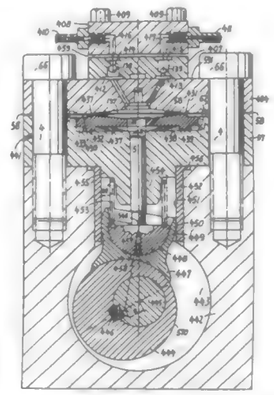
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken 24001, Japan

Filed May 20, 1992, Ser. No. 820,831

Int. Cl.[5] F04B *1/04, 27/04*

U.S. Cl. 417—273 **9 Claims**

1. A high pressure device with its volume periodically varying fluid handling chamber **(11,35,37,135,137)** which is located in a fluid flow handling means **(38,39,138,139,5,11)** containing body **(57,44)**, wherein said body forms a thrust chamber **(438,650)** which communicates to said fluid handling chamber and is closed by a plate **(58,404,57)**, while a thrust body **(432,651)** is axially moveably sealingly fitted in said thrust-chamber and provided with an annular seal face **(431)** which meets and seals along a portion of the adjacent face of said plate **(58,404,57,471)**, and wherein an unloading recess **(430)** is formed around said seal face **(431)** and communicated to an unloading passage **(441)** to keep the cross sectional area which



is given by the outer diameter "d" of said seal face smaller than the cross-sectional area of said thrust-chamber, and, or; wherein a bore **(111,656)** is provided in said thrust-chamber **(438,650)** for the reception of at least a fluid from said thrust-chamber.

5,364,235

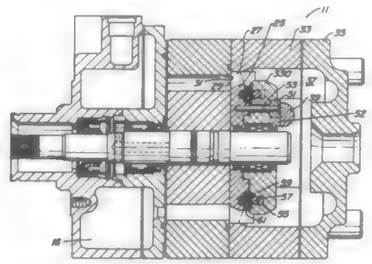
VARIABLE CAPACITY VANE COMPRESSOR WITH AXIAL PRESSURE DEVICE

David E. Bearint, Decatur, Ill., assignor to Zexel USA Corporation, Decatur, Ill.

Filed Sep. 27, 1993, Ser. No. 126,927

Int. Cl.[5] F04C *18/344*

U.S. Cl. 417—295 **15 Claims**



1. In a compressor having a compression housing defining a compression chamber with an axis, a rotatably driven rotor having a plurality of radial vanes and extending axially through the compression chamber, an intake chamber on one end of the compression chamber and a discharge chamber on the other end of the compression chamber, the compression housing having a compression housing shoulder that is substantially perpendicular to the axis and facing the intake chamber, a rotary valve housing mounted to the compression housing in the intake chamber, a rotary valve plate rotatably carried in the valve housing and having a rotary valve face in sliding contact with the compression housing shoulder and configured to vary the position of an opening from the intake chamber to the compression chamber, an actuator member for rotating the rotary valve plate, and a control valve for supplying a variable control pressure to the actuator member for moving the actuator member and rotary valve plate in response to varying pressures in the intake chamber and discharge chamber, the improvement comprising:

an annular axial pressure chamber located rotary valve housing and the rotary valve plate; and

a control pressure port leading from the control valve to the axial pressure chamber to supply pressurized fluid to the axial pressure chamber to provide a variable axial force on the rotary valve plate to enhance sealing between the rotary valve face and the compression housing shoulder; and

wherein at least a portion of the axial pressure chamber is located within the rotary valve housing.

5,364,236

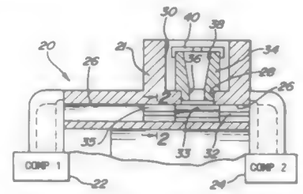
PULSE DAMPER

Ross W. Herron, 24110 Bingham Pointe Dr., Bingham Farms, Mich. 48025, and Garry E. Beard, 34024 Burton La., Livonia, Mich. 48154

Filed Aug. 3, 1993, Ser. No. 101,256

Int. Cl.[5] F04B *11/00*

U.S. Cl. 417—312 **12 Claims**



1. A dual compressor system comprising:

a compressor housing body having a passage centered on a first axis and extending between first and second ends, said housing body, receiving a first compressor having an outlet leading to said first end, said compressor housing body also receiving a second compressor having an outlet leading to said second end, and fluid from said first and second compressors extending in opposed directions ■ said passage such that pulses in flow from first and second compressors are directed into each other; and

a pulse damper bore positioned in said passage and intermediate said first and second ends, and directing flow along a second axis extending at a 90° angle relative to said first axis, said pulse damper bore having an inlet cross section of a first cross-sectional area centered on said second axis and an outlet cross section downstream of said inlet cross section of a second cross-sectional area, also centered on said second axis, said second cross-sectional area being greater than said first cross-sectional area such that a cross-sectional area of said pulse damper bore expands from said inlet cross-section to said outlet cross-section.

5,364,237

COMPRESSOR ASSEMBLY HAVING A CLUTCH TRIGGERED BY A SMALL COMPRESSOR AND ACTUATED BY DISCHARGE PRESSURE

James C. Swain, Columbus, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1993, Ser. No. 64,309

Int. Cl.[5] F04B *9/00;* **F16D** *25/0635*

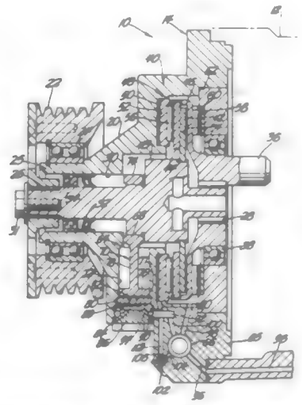
U.S. Cl. 417—319 **4 Claims**

1. A compressor assembly for pumping a recirculating refrigerant, said assembly comprising;

a compressor housing defining a suction chamber for receiving refrigerant at a first predetermined pressure and a discharge chamber for receiving compressed refrigerant at an elevated second predetermined pressure;

an input shaft and an output shaft, said shafts rotatably supported within said housing and a clutch means disposed

therebetween for selectively translating torque from said input shaft to said output shaft to drive said compressor;
said clutch means being responsive to refrigerant pressure to translate torque from said input shaft to said output shaft to drive said compressor;
said assembly further including an auxiliary clutch compressor means for generating an auxiliary refrigerant discharge pressure and a valve means moveable between a first position to route said auxiliary refrigerant discharge pressure away from said clutch means and a second position to route said auxiliary refrigerant discharge pressure to bear upon said clutch means so as to translate torque between said input and output shafts to drive said compressor;
said input shaft including an eccentric portion, said auxiliary compressor means including a piston and a cylinder, said piston operatively mounted to said eccentric portion and driven by said shaft for reciprocal motion within said cylinder to generate said auxiliary refrigerant discharge pressure.

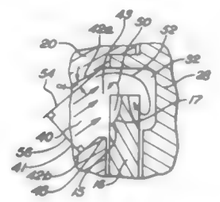


5,364,238

DIVERGENT INLET FOR AN AUTOMOTIVE FUEL PUMP

Dequan Yu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 7, 1993, Ser. No. 116,842
Int. Cl.[5] E04D *5/00*
U.S. Cl. 417—423.14 **6 Claims**



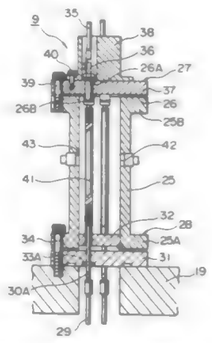
1. A fuel pump for supplying fuel from a fuel tank to an automotive engine, comprising:
a pump housing;
a motor mounted within said housing having a shaft extending therefrom, said motor able to rotate said shaft upon application of an electrical current to said motor;
an impeller attached to said shaft for rotatably pumping fuel, said impeller having a plurality of vanes separated by a plurality of angularly shaped vane grooves;
a pump bottom mounted to said housing having an outlet therethrough in fluid communication with a motor chamber surrounding said motor, said pump bottom having an opening for allowing said shaft to pass through to connect to said impeller; and
a pump cover mounted on an end of said housing and attached to said pump bottom with said impeller therebetween such that a pumping chamber is formed radially along an outer circumference of said pump cover and said pump bottom, and along the periphery of said impeller, said pumping chamber having a first section in said pump cover and a second section in said pump bottom in which primary vortices are formed when said impeller rotatably pumps fuel;
said pump cover having a fuel inlet therethrough in fluid communication with said fuel tank and with said pumping cheer, said inlet having a lower side and an upper side, said lower side angled tangentially to an arc formed by said angularly shaped vane grooves at a lowest point on said vane grooves, said upper side angled at approximately 10 to 12 degrees from a line parallel to said lower side such that said sides diverge at an end of said inlet which communicates with said fuel tank so that fuel flow is routed radially outwardly of primary vortices formed in said first section of said pumping chamber to said second section of said pumping chamber.

5,364,239

TERMINAL STRUCTURE FOR MOTOR-DRIVEN PUMP

Kazuo Ishikura, Tokyo, Japan, assignor to Nikkiso Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 20,123, Feb. 19, 1993, abandoned. This application Aug. 16, 1993, Ser. No. 106,794
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—423.3 **6 Claims**



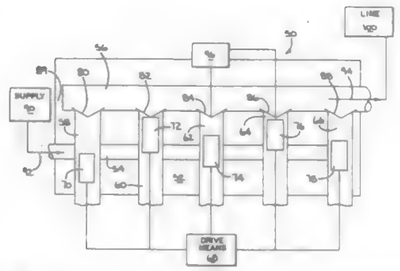
1. A terminal structure adapted to be provided on a casing of a motor-driven pump to be disposed in a storage tank for a corrosive liquid such as liquefied ammonia, said terminal structure designed to interconnect a conductor cable for supplying electric power to a motor of said motor-driven pump with an electric power supply cable for receiving electric power from an electric power source, said terminal structure comprising
a housing including
a lower base disposed of said housing,
a hollow tubular member having a first open end and a second open end,
said first open end hermetically closed by said lower base,
an upper closure member hermetically closing said second open end of said tubular member,
a gas inlet formed in a peripheral wall of said hollow tubular member;
said housing made of an anticorrosive material suitable for connection by welding;
a motor-side terminal element having first and second ends;
said first end of said motor-side terminal element adapted to be electrically connected to the conductor cable and extending through a through-hole in said lower base and connected to said lower base hermetically by molten metallic sealing and in an electrically insulated manner;
an aluminium power source-side terminal element having first and second ends;
first end of said aluminium power source-side terminal element adapted to be electrically connected to an end of the electric power supply cable which end is remote from the power source;
said power source-side terminal element extending through a second through-hole in said upper closure member and connected to said upper closure member through gaskets and in a hermetic and electrically insulated manner;
a conductor member disposed in said housing and electrically interconnecting said second end of said motorside terminal element and said second end of said aluminium power source-side terminal element;
means for supplying an inert gas into said housing through said gas inlet;
wherein space in said housing is filled with said inert gas with the gas pressure higher than an inner pressure of the storage tank.

5,364,240

FLUID PUMP WITH PULSING FEATURE

Roy W. Salecker, Mendota, Ill., assignor to Spartan Tool Div. of Pettibone Corp., Mendota, Ill.

Filed Oct. 14, 1993, Ser. No. 137,288
Int. Cl.[5] F04B *23/00*
U.S. Cl. 417—427 **22 Claims**



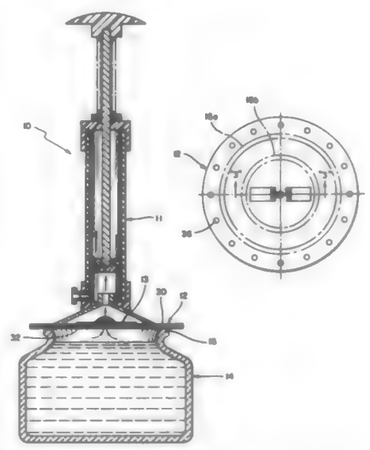
1. A fluid pump comprising:
a casing defining a fluid inlet manifold, a fluid outlet and first and second cylinders;
a first piston;
first means for mounting the first piston to the casing for movement in first and second directions within the first cylinder;
first means cooperating between the casing and first piston for a) causing a first predetermined amount of fluid in the inlet manifold to be drawn into the first cylinder as the first piston moves in the first direction and b) causing a second predetermined amount of fluid in the first cylinder to be discharged from the first cylinder toward the outlet as the first piston moves in the second direction;
a second piston;
second means for mounting the second piston to the casing for movement in third and fourth directions;
means for driving a) the first piston reciprocatively in the first and second directions and b) the second piston reciprocatively in the third and fourth directions; and
second means cooperating between the casing and second piston for controlling movement of fluid into and out of the second cylinder as the second piston is operated,
said second cooperating means having first and second states,
said second cooperating means in said first state a) allowing a third predetermined amount of fluid to be drawn from the inlet manifold into the second cylinder as the second piston moves in the third direction and b) causing a fourth predetermined amount of fluid to be discharged toward the outlet as the second piston moves in the fourth direction with the third predetermined amount of fluid in the second cylinder,
wherein movement of the first and second pistons is synchronized so that with the second cooperating means in the first state fluid is discharged in a continuous stream at the fluid outlet,
said second cooperating means in said second state allowing no more than a fifth predetermined amount of fluid to be drawn from the inlet manifold into the second cylinder as the second piston moves in the third direction,
said fifth predetermined amount of fluid being less than the fourth predetermined amount of fluid whereby with the second cooperating means in the second state and the fifth predetermined amount of fluid in the second cylinder, movement of the second piston in the fourth direction causes a sixth predetermined amount of fluid to move towards the outlet after the fourth predetermined amount,
said sixth predetermined amount being sufficiently less than the fourth predetermined amount that there is a pressure reduction at the outlet that causes a pulsed delivery of fluid at the outlet.

5,364,241

EVACUATION SYSTEM WITH UNIVERSAL LID FOR RIGID CONTAINERS

Glen R. Schultz, Yorkville, Ill., assignor to Pioneering Concepts Incorporated, Yorkville, Ill.

Filed Feb. 22, 1994, Ser. No. 199,786
Claims priority, application 786022294,
Int. Cl.[5] F04B *39/12;* **B65B** *31/00;* **B65D** *51/16*
U.S. Cl. 417—442 **8 Claims**



2. An evacuation system for rigid containers having a generally annular upper lip, comprising: an evacuation pump including a cylindrical housing having a pumping chamber with a lid seal at one end, a reciprocating piston in the pumping chamber movable in a suction stroke and a pressure stroke, valve means in the pump for releasing pressure during the pumping stroke of the piston, and a reusable vacuum lid to accommodate a variety of diameter container lips including generally annular disc means, said disc means having a generally central aperture therethrough communicating the container interior with the pumping chamber with the pump lid seal engaging one side of the vacuum lid, a check valve on the pump side of the disc means preventing air flow into the container even after removal of the pump from the disc means, seal means on the other side of the disc means to seal the disc means to the container lip, and means for assuring approximate disc means

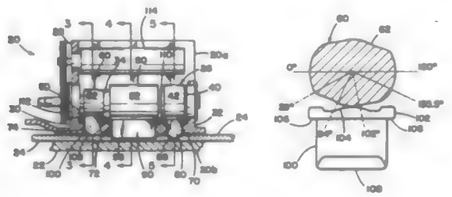
centering on the container lip as the evacuation process begins including a plurality of apertures in the disc means spaced radially outwardly from the center of the disc means beyond the diameter of the lip on the largest diameter container for which the disc means is designed.

5,364,242

PUMP APPARATUS AND METHOD INCLUDING DOUBLE ACTIVATION PUMP APPARATUS

James M. Olsen, Plymouth, Minn., assignor to Pharmacia Deltec, Inc., St. Paul, Minn.

Filed Nov. 25, 1992, Ser. No. 981,832
Int. Cl.[5] A61M *5/00*
U.S. Cl. 417—474 **7 Claims**



1. A pump apparatus comprising:
a rotatably mounted camshaft having a first cam having a cam surface, the camshaft having an axis of rotation, the cam surface of the first cam defining two lobes;
a compressible tube;
a reciprocally mounted first follower having a follower surface engageable with the cam surface of the first cam, the first follower including a tube surface engageable with the tube, the first follower being reciprocally movable in response to rotation of the first cam to compress the tube, the tube exerting a non-linear tube load on the tube surface of the first follower during rotation of the first cam;
wherein the follower surface of the first follower has a convex shape relative to the axis of rotation;
wherein the cam surface of the first cam has a shape which minimizes the energy consumed in rotating the first cam a predetermined amount based on the non-linear tube load, the energy consumed being directly related to the tube load, and wherein the shape of the cam surface of the first cam minimizes the maximum torque applied to the cam in rotating the first cam the predetermined amount based on the non-linear tube load, the maximum torque being directly related to the tube load;
wherein the cam surface of the first cam has an irregular shape which provides the lowest energy consumed requirements and the lowest maximum torques for the non-linear tube load property; and
wherein the camshaft is rotatable 180° to complete one activation of the pump apparatus to pump fluid through the tube.

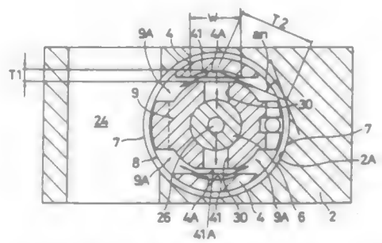
5,364,243

FUEL INJECTION PUMP

Masayori Ishimoto, Saitama, Japan, assignor to Diesel Kiki Co., Ltd., Japan

Continuation of Ser. No. 845,860, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 553,102, Jul. 13, 1990, abandoned. This application Feb. 10, 1993, Ser. No. 16,665
Claims priority, application Japan, Aug. 2, 1989, 1-99155[U]
Int. Cl.[5] F04B *7/04*
U.S. Cl. 417—499 **4 Claims**

1. A fuel injection pump comprising:
a pump housing having an inside wall,
a plunger barrel positioned within the pump housing facing the inside wall of the pump housing and having a fuel pressure chamber and an inside wall,
a plunger which reciprocates within this plunger barrel to take in fuel from a fuel reservoir chamber and deliver this fuel from the fuel pressure chamber under pressure, and
a timing sleeve, positioned between the plunger and the plunger barrel such that it slidably mates with the plunger, the timing sleeve having a spill port and a peripheral surface facing the inside wall of the plunger barrel;
an impingement-cushioning cavity formed in the inside wall of the plunger barrel in a position opposite the spill port of the timing sleeve, the impingement-cushioning cavity having a curved portion with an open end of a width, W, and having flat surfaces extending in opposite directions from said open end and the peripheral surface of the timing sleeve in which the spill port is formed having flat and curved portions, the flat portion facing the open end of the impingement-cushioning cavity and being substantially



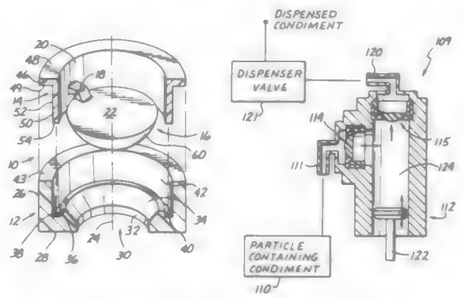
parallel to the flat surfaces of the impingement-cushioning cavity and having a length no greater than the width W of said open end and the curved portions having a curvature generally corresponding in shape to this impingement-cushioning cavity;
the shapes of said impingement-cushioning cavity and the peripheral surface of the timing sleeve being such as to provide a sufficiently large distance from the spill port to the inside wall of the plunger barrel and a sufficiently large distance from a point of collision of the fuel sprayed out from the spill port on the inside wall of the plunger barrel to the inside wall of the pump housing to reduce the force of the fuel impinging on the inside wall of the plunger barrel and the inside wall of the pump housing to a level insufficient to cause erosion.

5,364,244

PUMP ARRANGEMENT INCLUDING FLAG TYPE INLET VALVES WITH SPHERICAL SEATING

Christopher J. Taylor-McCune, Mission Viejo; Brian J. Kurth, Anaheim, and Lloyd D. Golobay, Huntington Beach, all of Calif., assignors to Carr-Griff, Inc., Santa Ana, Calif.

Filed Aug. 26, 1993, Ser. No. 112,617
Int. Cl.[5] F04B *21/02;* **F16K** *15/16*
U.S. Cl. 417—536 **21 Claims**



1. A pump assembly for pumping a material comprising:

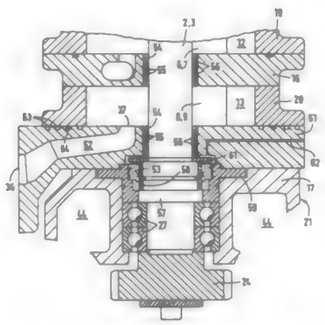
a pump housing partially defining a chamber, an inlet to said chamber and an outlet from said chamber;
a reciprocating member positioned to increase and to reduce the volume of said chamber;
an inlet valve positioned in said inlet to allow material flow through said inlet into said chamber as the volume of said chamber is increased and to prevent material flow through said inlet from said chamber as the volume of said chamber is reduced;
an outlet valve positioned in said outlet to allow material flow through said outlet from said chamber as the volume of said chamber is reduced and to prevent material flow through said outlet into said chamber as the volume of said chamber is increased, each of said inlet valve and said outlet valve comprising;
a valve seat element having a longitudinal axis, defining a through opening and including a seating surface which defines a portion of said through opening;
a valve body element positioned in said inlet or said outlet and operatively coupled to said valve seat element and located at least partially in said through opening, said valve body element including an inwardly facing interior sidewall; and
a valve element secured to said valve body element at said inwardly facing interior sidewall and being movable relative to said valve body element, said valve element including a sealing surface which is curved in at least one plane including the longitudinal axis of said valve seat element and is adapted to contact said seating surface to prevent material flow through said through opening.

5,364,245

DRY-RUNNING TWIN-SHAFT VACUUM PUMP

Hartmut Kriehn, Köln, and Lothar Brenner, Bad-Münstereifel Eicherscheid, both of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

PCT No. PCT/EP92/00211, § 371 Date Jun. 8, 1993, § 102(e) Date Jun. 8, 1993, PCT Pub. No. WO92/14060, PCT Pub. Date Aug. 20, 1992
PCT Filed Jan. 31, 1992, Ser. No. 74,858
Claims priority, application European Pat. Off., Feb. 1, 1991, 91101331.6
Int. Cl.[5] F01C *1/30*
U.S. Cl. 418—9 **8 Claims**



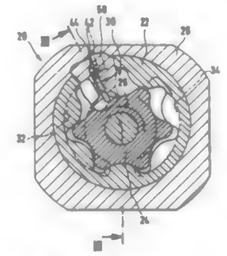
1. Dry-running twin-shaft pump of a claw type comprising:
at least one pumping chamber having two ends;
two shafts bearing at least one rotor pair of a claw type situated in the at least one pumping chamber;
a drive housing associated with one of the two ends of the pumping chamber;
a wall portion of said drive housing facing the pumping chamber;
bearings which are situated in the wall portion and support the two shafts which pass through the wall portion;
between the drive housing and the pumping chamber which is adjacent thereto, an intermediate plate removable from the wall portion and containing an axial exhaust opening and a lateral exhaust duct communicating with the exhaust opening and through which intermediate plate the two shafts pass.

5,364,246

AGGREGATE FOR FEEDING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

Kurt Frank, Schorndorf-Haubersbronn; Uwe Liskow, Kornwestheim; Jochen Thoenissen, Stuttgart; Uwe Loistl, Unterriexingen, and Oliver Wahl, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 23, 1993, Ser. No. 126,074
Claims priority, application Germany, Dec. 3, 1992, 4240593
Int. Cl.[5] F04C *2/10, 15/00;* **F03B** *11/04*
U.S. Cl. 418—15 **11 Claims**



1. An aggregate for feeding fuel from a supply tank to an internal combustion engine of a motor vehicle, comprising a feeding pump having two end walls forming a pump chamber with a suction opening and a pressure opening and a feeding element rotatable in said pump chamber so as to supply fuel from said suction opening to said pressure opening, at least one of said end walls being provided with a groove-shaped unloading passage in a region between an end surface of said feeding element and a sealing surface of said one end wall and communicating through a further opening said pump chamber with a low pressure region, said suction opening having an end facing in a rotary direction of said feeding element, said unloading passage being located near said end of said suction opening, said unloading passage extending substantially radially with respect to a rotary axis of said feeding element, said unloading passage being arranged closer to said end of said suction opening than a beginning of said pressure opening facing opposite to a rotary direction of said feeding element.

5,364,247

SEALING STRUCTURE FOR SCROLL TYPE COMPRESSOR

Tetsuhiko Fukanuma; Hisao Kobayashi; Tetsuo Yoshida, and Yoshitami Kondo, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

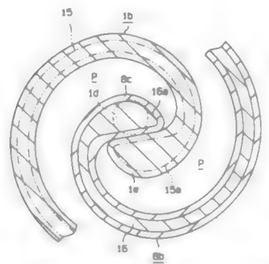
Filed May 18, 1993, Ser. No. 63,438
Claims priority, application Japan, May 21, 1992, 4-129111
Int. Cl.[5] F04C *18/04, 27/00*
U.S. Cl. 418—55.2 **11 Claims**

1. A sealing structure for a scroll type compressor comprising:
a fixed scroll having a fixed spiral element and a fixed end plate;
an orbiting scroll having an orbiting spiral element and an orbiting end plate, and being revolvable in opposition to the fixed scroll;
a plurality of compression chambers defined between the fixed and orbiting scrolls, the volumes thereof being decreased in response to said revolving of the orbiting scroll;
a discharge port through and centrally located with respect to said fixed end plate, each said compression chamber

opening to said discharge port periodically during said revolving of said orbiting scroll;

said fixed and orbiting spiral elements each having an initiating section adjacent to said discharge port, each said initiating section having a thickness which is greater than the thicknesses of remaining sections thereof, respectively, said initiating section of the orbiting spiral element periodically closing said discharge port during said revolving of the orbiting scroll;

each said fixed and orbiting spiral elements having respective spiral sealing members thereon and respectively inter-



posed in sliding contact with said fixed and orbiting end plates; and

at least said sealing member on said orbiting spiral element having an initiating section adjacent to said initiating section of said orbiting spiral element and movable with the orbiting spiral element, said sealing member initiating section having a cross-sectional area which is lager than the cross-sectional area of remaining sections thereof, said initiating section of the sealing member covering a part of the area of said discharge port when said initiating section of the orbiting spiral element periodically closes said discharge port.

5,364,248

SLIDING MEMBER, A METHOD FOR PRODUCING SAME, AND USAGES OF SAME

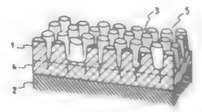
Shoichi Nakashima, Hitachi; Yukiko Fukaya, Tokyo; Katsuhiro Komuro, Hitachi, and Tadashi Iizuka, Ashikaga, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

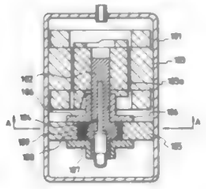
Filed Mar. 23, 1993, Ser. No. 36,021

Claims priority, application Japan, Mar. 23, 1992, 4-64740

Int. Cl.[5] F01C *21/02*

U.S. Cl. 418—178 **13 Claims**





1. A sliding member having a columnar texture composed from at least one of metal nitrides, metal oxides, metal carbides, and metals at least on a surface of a sliding portion of a base member, wherein

said columnar texture is composed of an assembly of fine columnar asperities,

intervals formed among said columnar asperities are connected to each other and are composed to be a mesh structure, and

gas/air or a lubricant is retained among the intervals.

5,364,249

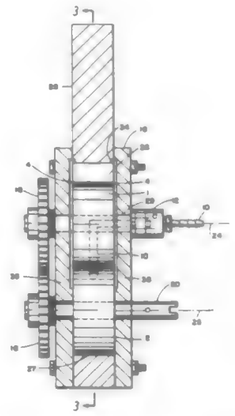
ROTARY STEAM ENGINE HAVING ROTOR SIDE PLATES

Donald M. Link, 4881 Lake Cecile Dr., Kissimmee, Fla. 34746

Filed Oct. 28, 1993, Ser. No. 142,857

Int. Cl.[5] F01C *1/08*

U.S. Cl. 418—191 **2 Claims**



1. In a rotary steam engine including a housing having a chamber wall defining an inner working chamber therein, first and second rotors mounted in the chamber for rotation about respective parallel axes and having respective circumferential surfaces and opposite faces, and means for synchronizing rotation between said rotors, with said first rotor having at least one pusher extending radially outwardly of said first rotor circumferential surface, and said second rotor circumferential surface having at least one indenture shaped to receive said pusher during rotation of said first and second rotors, the improvement comprising said engine further having:

seals located at said chamber wall;

side plates respectively attached to said opposite faces of said first rotor, said side plates pressing against said opposite faces of said second rotor and against said seals at said chamber wall;

an intake for directing steam through said first rotor and out of said pusher; and

an exhaust for discharging steam from said working chamber.

5,364,250

OIL-FREE SCREW COMPRESSOR AND METHOD OF MANUFACTURE

Masakazu Aoki, Shimizu; Tatsuo Natori, Kashiwa, and Hidetomo Mori, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 14, 1993, Ser. No. 120,521

Claims priority, application Japan, Sep. 18, 1992, 4-249828

Int. Cl.[5] F01C *1/16;* **B05D** *1/18*

U.S. Cl. 418—201.1 **15 Claims**

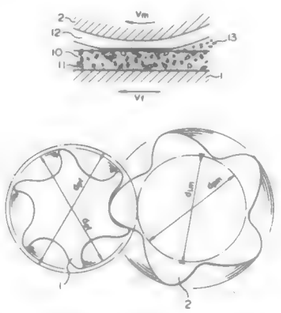
1. A method of manufacturing an oil-free screw compressor which includes a rotor casing, male and female rotors both housed in said casing and having spiral profiles meshing with each other, bearing means for rotatably supporting said rotors in said rotor casing, driving means for driving one of said rotors, and timing gears through which the rotation of said one

of said rotors is transmitted to the other of said rotors in a timed relationship, the compressor being operable without any cooling oil supplied to said rotors, said method including the steps of:

preparing a semi-finished metallic female rotor which has a spiral profile, and a semi-finished metallic male rotor which also has a spiral profile, and also preparing said rotor casing, said bearing means, said driving means and said timing gears;

forming a metallic coating film containing particles of a grinding material on a surface of one of said semi-finished rotors;

mounting said semi-finished rotor having said coating film formed thereon and the other semi-finished rotor in said rotor casing so that said semi-finished rotors are assembled in said rotor casing with a substantially constant spacing held by said bearing means between the axes of said semi-finished rotors;



mounting said timing gears on said semi-finished rotors so as to drivingly connect said semi-finished rotors with each other; and

driving said semi-finished rotors by said driving means while restraining a back lash in the rotating direction by said timing gears and applying a compression load to said semi-finished rotors so that said coating film on said one semi-finished rotor grinds and generates the surface of the other semi-finished rotor, thereby completing profiling of the other rotor and establishing a desired minimum gap between both rotors, and

wherein said other semi-finished rotor has a deddendum circle diameter and a first pitch circle diameter less than said deddendum circle diameter, and said one semi-finished rotor has an addendum circle diameter and a second pitch circle diameter greater than the addendum circle diameter of said one semi-finished rotor, whereby relative slip motion takes place over entire regions of both semi-finished rotors when said semi-finished rotors are rotated in meshing engagement with each other.

5,364,251

WORM PUMP FOR THICK MEDIA AND/OR MEDIA CONTAINING LUMPS, E.G. MEAT

Knud Simonsen, Slagelse, Denmark, assignor to Simo Industries A/S, Slagelse, Denmark

Filed May 14, 1993, Ser. No. 61,035

Claims priority, application Denmark, May 14, 1992, 0636/92

Int. Cl.[5] F04C *2/00, 3/04;* **A22C** *11/08*

U.S. Cl. 418—220 **5 Claims**

1. A worm pump comprising:

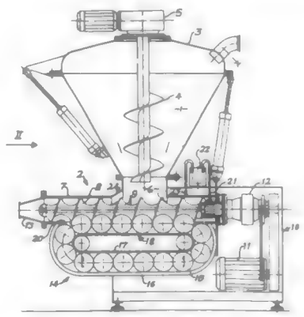
a worm pump housing having a generally rotationally symmetrical worm chamber with an inlet and an outlet;

a worm rotor rotably supported in the worm chamber, said worm rotor having convolutions for pumping material from said inlet to said outlet; and

means for blocking said convolutions, said convolution blocking means comprising:

a track housing situated laterally of the worm chamber and containing at least part of an endless track limited inwardly by a guide member surrounded by the track and outwardly partly by an inside wall of the track housing and partly by the worm rotor;

a plurality of loose gate members supported for movement along said endless track, the loose gate members which are located in the part of the endless track not limited by the inside wall of the track housing engaging sealingly with the convolutions of the worm rotor, at least part of



the width of said endless track extending outside of the worm pump housing to enable said gate members to sealingly engage the convolutions of the worm rotor;

said track housing further comprising a tray-shaped or pan-shaped lower part permanently secured to said worm-pump housing and to which said guide member ■ shaped or secured, respectively, and a cover securable to said lower part close said lower part substantially fluid-tight against the surroundings;

whereby the track housing is adapted to be opened, by opening said cover, such that the gate members may be removed from and inserted into the endless track transversely of the operational direction of the endless track.

5,364,252

GAS INJECTOR WITH RETRACTABLE NOZZLE FOR ASSIST OF PLASTICS INJECTION MOLDING

David G. Hlavaty, Allen Park; Suresh D. Shah, Rochester Hills, and David E. Compeau, Oxford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

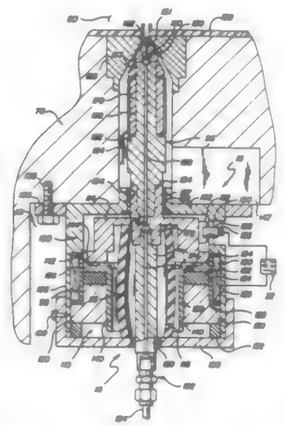
Filed Aug. 26, 1992, Ser. No. 935,315

Int. Cl.[5] B29L *45/00, 45/34;* **B29D** *22/00*

U.S. Cl. 425—3 **9 Claims**

1. A gas injector for feeding pressurized gas to assist the plastics injection molding of a part in a cavity of a mold in which heated viscous plastics material is supplied thereto, the pressurized gas forcing the plastics material into a hollow molded part conforming to the contours of the cavity of the mold, said mold having an opening therein leading from an outer surface thereof to the cavity therein for receiving at least part of said gas injector, said mold having a seat surface defining a portion of said opening, said injector comprising a housing having an inner end wall adapted to be secured in a fixed position on said mold and having a side wall extending from said end wall and having an outer end cap to define a chamber, said gas injector having base means mounted for linear movement between first and second positions in said chamber, an elongated gas injector nozzle body affixed for movement with said base means and extending through an opening in the inner end wall, into the opening in said mold, and toward said cavity, said nozzle body terminating in a nozzle attachment end, a gas delivery nozzle having an exterior surface, said gas delivery nozzle secured to said attachment end of said nozzle body and

movable therewith between a gas injection position wherein said exterior surface mates with said seat surface when said base means is in said first position for feeding pressurized gas into said cavity and a gas exhaust position away from said cavity wherein said exterior surface is spaced from said seat surface to establish a gas exhaust passage extending around the exterior surface of said nozzle and through the opening in said mold to exhaust gas from said cavity when said base means is in said second position, spring means of a first height operatively mounted in said housing for forcing said base means into said first position and magnetic means mounted within said housing, said magnetic means including a permanent magnet and electrically energizable coil means selectively energizable with electrical current flow therethrough in a first direction to produce a magnetic force field which combines with a mag-



netic force field of the permanent magnet to move said base means from said first position to said second position to compressively load and deflect said spring means to a second height less than said first height while moving said nozzle from said gas injection position to said gas exhaust position in which gas is exhausted from said cavity through said gas exhaust passage, and internal gas feed passage means extending through said housing and said base means and said nozzle body and said nozzle for feeding a pressure gas into said mold through said gas delivery nozzle when in said gas injection position, said coil means being further selectively energizable with electrical current flow therethrough in a second direction opposite to said first direction to produce a magnetic force field to negate the magnetic force field of said permanent magnet so that said spring means recovers to said first height to move said nozzle to said gas injection position.

5,364,253

MAGNETIC CIRCUIT COMPONENT MOLDING DEVICE

Kiyoshi Kojima, Ikoma; Kazuyoshi Amami, Minamikawachi; Hiroshi Ueda, Takarazuka; Shizuo Furuyama, Katano; Yoshihiro Hara, Kameoka; Kyoichi Hasegawa, Moriguchi, and Tadashi Kawamata, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1993, Ser. No. 62,956

Claims priority, application Japan, May 14, 1992, 4-121605

Int. Cl.[5] B22F *3/00*

U.S. Cl. 425—78 **5 Claims**

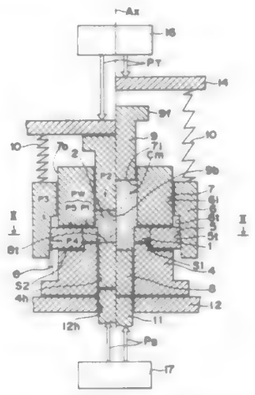
1. A magnetic circuit component molding device for integrally molding a magnetic circuit component having a ring-shaped magnet and a center yoke, said center yoke being molded by a compound, said device comprising:

supporting means for supporting said ring-shaped magnet thereon;

compressing means for compressing said compound and expanding said compound radially outward against said ring-shaped magnet;

a plurality of holder segments surrounding said ring-shaped magnet and movable radially inward to radially compress said ring-shaped magnet;

holder segment pressing means located adjacent each of said holder segments; and



pressure means acting on said compressing means and said holder segment pressing means for simultaneously compressing said compound and expanding said compound radially outward against said ring-shaped magnet and pressing said holder segments toward a center of said ring-shaped magnet.

5,364,254

DIE FOR MANUFACTURING CO-EXTRUDED STRUCTURAL SHAPES

Annibale Vezzoli, Carugo; Marino Lamperti, Carugate; Antonio Addeo, Novara; Francesco Milani, and Bruno Albrisi, both of Lonate Pozzolo, all of Italy, assignors to Centro Sviluppo Settori Impiego S.r.l. and Milani Resine S.p.A., both of Milano, Italy

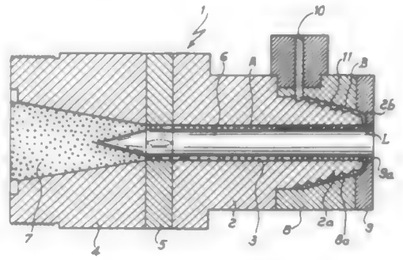
Continuation of Ser. No. 981,825, Nov. 25, 1992, abandoned.

This application Feb. 28, 1994, Ser. No. 203,508

Claims priority, application Italy, Nov. 28, 1991, MI91A003194

Int. Cl.[5] B29C *47/06*

U.S. Cl. 425—133.1 **4 Claims**



1. A die for producing co-extruded structural shapes, the structural shapes comprising a hollow core comprising a mixture of polymeric materials, and a polymeric coating; the die comprising:

(a) a main body for receiving a molten flow of the mixture of polymeric materials and for forming the hollow core, the main body comprising:

(i) an interior cylindrical wall defining a cylindrical aperture extending through the main body along a longitudinal axis of the main body, the cylindrical aperture having a radius,

(ii) a nozzle disposed in the aperture along the longitudinal axis of the main body, the nozzle comprising an exterior cylindrical surface concentric with the longitudinal axis, the nozzle exterior cylindrical surface having a radius less than the radius of the cylindrical aperture;

(iii) a cylindrical internal duct defined between the interior cylindrical wall of the aperture and the exterior cylindrical surface of the nozzle, the cylindrical internal duct having a fixed cross-section throughout its entire length, the cylindrical internal duct having an input end for receiving the molten flow of the mixture of polymeric materials and an output end, and

(iv) an exterior generally conical surface tapering inwardly toward the output end and concentric with the longitudinal axis of the main body, the exterior generally conical surface having an undulated longitudinal outline with a sinusoidal shape;

(b) an auxiliary body mounted to the main body exterior surface, the auxiliary body comprising a conical interior face sized and shaped to receive a first portion of the generally conical exterior surface of the main body, a second portion of the main body exterior surface adjacent to the output end remaining exposed, the auxiliary body conical interior face cooperating with the generally conical exterior surface of the main body to define a generally conical gap, whereby the generally conical gap comprises a plurality of parallel ring chambers defined between the exterior generally conical surface of the main body and the interior face of the auxiliary body, the generally conical gap having an input end for receiving a flow of the polymeric coating, whereby the polymeric coating may be communicated between successive chambers by annular passage openings defined between crests of the sinusoidal shape of the main body exterior surface and the interior face of the auxiliary body to an output end of the gap; and

(c) an end-plate mounted adjacent to the output end of the cylindrical internal duct and of the gap and having an aperture aligned with the main body aperture, the end plate comprising a passage forming surface shaped to correspond to the shape of the second portion of the exterior surface of the main body between the output end of the gap and the output end of the cylindrical internal duct, the passage forming surface spaced from and cooperating with the second portion for forming a passage between the output end of the gap and the output end of the cylindrical internal duct for depositing the polymeric coating on the mixture of polymeric material, the main body nozzle extending through the end-plate aperture.

5,364,255

SCREW POSITION ADJUSTING DEVICE FOR AN INJECTION MOLDING MACHINE

Koichi Yokoyama, Matsuto, Japan, assignor to Sodick Co., Ltd., Kanagawa, Japan

Filed Jul. 14, 1993, Ser. No. 91,203

Claims priority, application Japan, Jul. 15, 1992, 210800/1992

Int. Cl.[5] B29C *45/54*

U.S. Cl. 425—171 **6 Claims**

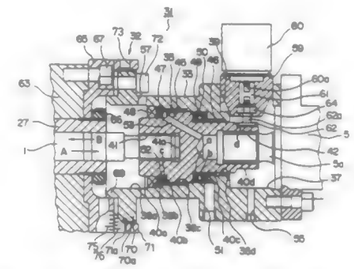
1. An apparatus, comprising:

an injection part having an injection chamber;

a plasticizing part comprising a cylindrical screw casing, a plasticizing screw disposed inside and coaxial with said screw casing, a cylinder member, a hydraulic piston member disposed inside and coaxial with said cylinder member and connected to said plasticizing screw, and a rotary motor secured to said cylinder member and operably connected with said hydraulic piston member;

a path communicating a front tip of said screw casing with said injection chamber; and

a screw position adjusting device comprising a first flange connected to said screw casing, a second flange connected to said cylinder member, a fastening arrangement coupling said first and second flanges with each other, a male screw on an outer surface of one of said first and second



flanges, and a position adjusting ring member having a female screw engaging said male screw and a projecting side;

wherein said plasticizing screw is coaxial with said hydraulic piston member and said rotary motor; and

wherein said projecting side of said adjusting member projects into contact with the other of said first and second flanges.

5,364,256

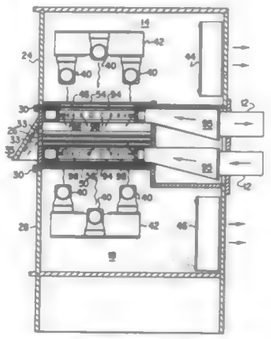
APPARATUS FOR THE PRODUCTION OF PLASTIC LENSES

N. Thornton Lipscomb; Omar M. Buazza; Stephen C. Luetke, all of Louisville, Ky., and John J. Robinson, Cincinnati, Ohio, assignors to Ophthalmic Research Group International, Inc., Louisville, Ky.

Continuation of Ser. No. 642,614, Jan. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 425,371, Oct. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 273,428, Nov. 18, 1988, Pat. No. 4,879,318, which is a continuation-in-part of Ser. No. 21,913, Mar. 4, 1987, abandoned, which is a continuation-in-part of Ser. No. 823,339, Jan. 28, 1986, Pat. No. 4,728,469. This application Jan. 13, 1994, Ser. No. 180,836

Int. Cl.[5] B29C *33/04, 35/08, 35/16;* **B29D** *11/00*

U.S. Cl. 425—174.4 **33 Claims**



1. Apparatus for making a plastic eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the

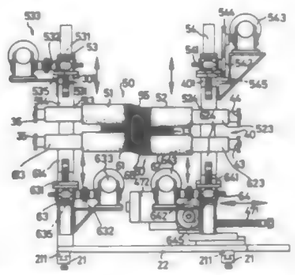
casting faces of the first mold member and the second mold member define a mold cavity;
a light generator for generating and directing ultraviolet light against at least one of the first and second mold members during use;
an air distributor comprising an air jet having a substantially cylindrical bore, the bore having a plurality of openings disposed about the circumference thereof, and the bore position in relationship to the first mold member so as to direct air from the openings to the non-casting face of the first mold member during use; and wherein the apparatus is adaptable to make a plastic eyeglass lens during use.

5,364,257

MIDDLE SOLE SLOPING MACHINE WITH LENGTH/WIDTH ADJUSTABLE ROLLS

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Filed Oct. 7, 1993, Ser. No. 133,620
Int. Cl.[5] B29C *53/00;* **B29D** *7/00*
U.S. Cl. 425—367 **7 Claims**



1. A middle sole sloping machine comprising:
a base plate;
upper and lower rolls each comprising first and second roll sections and a flexible sloping section which interconnects the first and second roll sections;
a fixed mount plate and a movable mount plate extending upward from the base plate, the movable mount plate being movable relative to the fixed mount plate in a direction parallel to the extending direction of the upper and lower rolls, the first roll sections being movably attached to the fixed mount plate, the second roll sections being movably attached to the movable mount plate;
means for effecting relative movements between the fixed and movable mount plates along the extending direction of the upper and lower rolls;
means for effecting vertical movements of the first and second roll sections of the upper and lower rolls relative to the flexible sloping sections; and
means for rotating the upper and lower rolls.

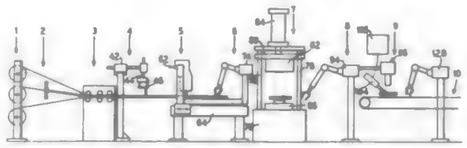
5,364,258

APPARATUS FOR MAKING STRUCTURAL REINFORCEMENT PREFORMS INCLUDING ENERGETIC BASTING OF REINFORCEMENT MEMBERS

Daniel T. Buckley, Shrewsbury, Vt., and Siegfried W. Horn, DePere, Wis., assignors to C.A. Lawton Company, DePere, Wis.

Division of Ser. No. 552,253, Jul. 12, 1990, Pat. No. 5,217,656. This application Feb. 25, 1993, Ser. No. 22,084
Int. Cl.[5] B29C *65/14, 63/06, 45/14*
U.S. Cl. 425—501 **18 Claims**

1. Apparatus for making a rigid three-dimensional preform, comprising:
means for moving a plurality of webs of fibrous reinforcing material along respective paths and guiding the webs superposed such that they superpose coplanar to extend parallel to one another and travel parallel to and in contact with one another;
means applying an uncured electromagnetic energy-curable binder to at least one surface of facing surfaces of the webs;
means for pressing the parallel contacting, moving webs together to spread the binder and increase the permeation thereof into the webs;
means for locally applying electromagnetic radiation into selected spaced locations of the pressed contacting webs



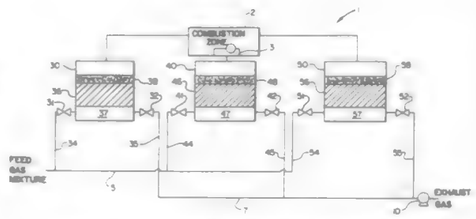
to cure the binder and thereby tack the webs together at said selected spaced locations;
means for cutting blanks of a predetermined shape from the webs of fibrous reinforcing material;
means for forming the blank into a desired three-dimensional shape of the preform; and
means for applying electromagnetic radiation to the shaped blank to cure the remaining uncured binder and rigidize the shaped blank into the desired rigid three-dimensional preform.

5,364,259

PROCESS AND APPARATUS FOR GAS PHASE REACTION IN A REGENERATIVE INCINERATOR

Yurii S. Matros, St. Louis, and David E. McCombs, Chesterfield, both of Mo., assignors to Monsanto Enviro-Chem Systems, Inc., St. Louis, Mo.

Filed Mar. 10, 1993, Ser. No. 29,008
Int. Cl.[5] F23D *14/00*
U.S. Cl. 431—5 **15 Claims**



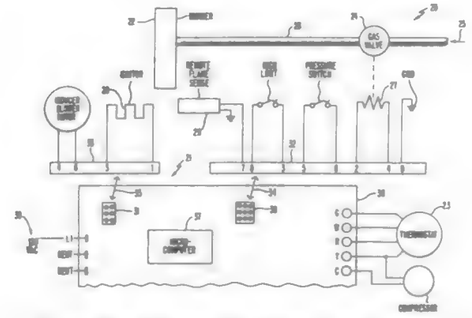
1. In a process for gas phase reaction of a feed gas mixture in a regenerative incinerator, the incinerator comprising a combustion zone in fluid communication with at least three chambers, each chamber having a separate housing and containing a layer of solid heat exchange material, the chambers being in selective fluid communication with an inlet manifold and an exhaust manifold such that each chamber is selectively operable in an intake mode and an exhaust mode, each chamber having a layer of catalyst disposed therein, the amount of catalyst material disposed in each of the chambers being such that the ratio of the volume of catalyst material to the volumetric flowrate of feed gas mixture through the chamber when operating in the intake mode is between about 0.05 and about 2 seconds, the process comprising:
introducing the feed gas mixture into a selected one of the chambers when said selected chamber is operating in the intake mode;
flowing the feed gas through said selected chamber such that the feed gas contacts the layer of heat exchange material before contacting the layer of catalyst material, the feed gas being substantially reacted in said catalyst layer; and
discharging the reacted gas from said selected chamber and into the combustion zone, the combustion zone being operated at a temperature not in excess of 850° C.

5,364,260

FUEL CONTROL SYSTEM, CONTROL MEANS THEREFOR AND METHODS OF MAKING THE SAME

Dwain F. Moore, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 28, 1993, Ser. No. 68,755
Int. Cl.[5] F23N *5/20*
U.S. Cl. 431—6 **20 Claims**



1. In a fuel control system comprising a burner means, valve means for controlling the flow of fuel to said burner means, an electrical resistance igniter means for being connected across a power source for igniting fuel at said burner means, flame detecting means for detecting flame at said burner means, and control means operatively interconnected to all of the other said means for connecting said igniter means across said power source for a warm-up time period at the start of each burner cycle and then operating said valve means to supply fuel to said burner means for a valve trial time period that begins upon the lapse of said warm-up time period, said flame detecting means causing said control means to tend to continue to operate said valve means to supply said fuel to said burner means during that particular burner cycle if said flame detecting means detects flame at said burner means before the lapsing of said valve trial time period, the time period it takes to detect flame by said flame detecting means beginning from the start of said valve trial time period to when flame is detected in any burner cycle comprising a flame detecting time period for that particular burner cycle, said control means reducing the length of said warm-up time period in subsequent successive burner cycles in which ignition is successful until said control means detects a certain event in a particular successive burner cycle at which time said control means then increases the length of the previously reduced warm-up time period a certain amount, the improvement wherein said certain event is an increase in the length of said flame detecting time period in that particular successive burner cycle over the length of said flame detecting time period on a previous burner cycle.

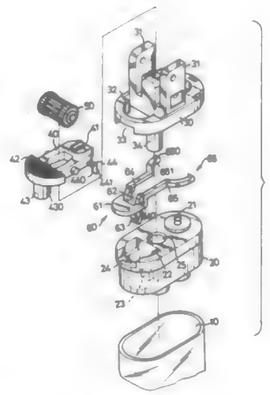
5,364,261

SAFETY DEVICE FOR A LIGHTER

Yiang F. Huang, No. 2, Lane 22, Sec. 2, Shan Hsi Rd., Taichung, Taiwan, Prov. of China

Filed Oct. 29, 1993, Ser. No. 142,916
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **1 Claim**

1. A lighter comprising:
a container for containing liquefied gas therein, a base having a first end and a second end being mounted on top of the container, a nozzle mounted in the first end of the base and having a nozzle head protruding upwardly therefrom, a cap mounted above the base, and a lever means pivotally mounted to the cap and having a first end engaging with the nozzle head and a second end on which the user may press to operate the nozzle, the improvement comprising:
a compartment defined in the second end of the base, a block formed in the compartment, and a first recess defined in the second end of the base and communicating with a top of the compartment;
a safety piece extending downwardly from an underside of the second end of the lever means and having a first beveled surface facing the first end of the lever means, the lever means first including an L-shaped engaging member which has a horizontal section laterally projecting from each of two sides of the first end of the layer means, each engaging member having a vertical section which extends downwardly from the horizontal section and has second beveled surface facing the second end of the lever means;
the cap including a passage defined in one end thereof for communicating with the compartment and through which the safety piece of the lever means extends and including a second recess defined in an underside of the end; and
a safety member mounted between the base and the cap and including a substantially U-shaped pressing section having a pair of ends which are parallel to each other and having



a mediate section received in the first recess in the base and the second recess in the cap, a stop formed on each of the pair of parallel ends of the pressing section, each of the stops having a third beveled surface facing the pressing section for detachably engaging with the first beveled surface of the safety piece, a flexible member projecting downwardly from the pressing section for cooperating with the block in the compartment to provide a returning force for the safety member, a member extending from each of the pair of parallel ends of the U-shaped pressing section and having a distal end with a fourth beveled surface facing opposite to the pressing section for slidably engaging with the second beveled surface of the engaging member;
whereby in a normal position of the lighter, the flexible member rests on a bottom of the compartment and contacts with the block, the first beveled surface of the safety piece contacts with the third beveled surfaces of the stops, and the second beveled surfaces of the engaging member contact with the fourth beveled surfaces of the distal ends, thereby prohibiting downward movement of the second end of the lever means, and thus preventing from gas leakage; and
a lateral movement of the safety member toward the first end of the lever means upon laterally pressing the pressing section causes the third beveled surfaces of the stops to

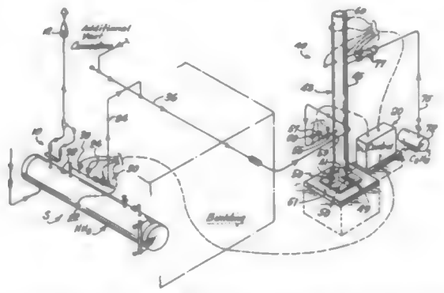
disengage from the first beveled surfaces of the safety piece, allowing downward movement of the second end of the lever means to perform the normal lighter function.

5,364,262

APPARATUS FOR THE EARLY DETECTION AND RELIEF OF UNSAFE CONDITIONS IN A GASEOUS SYSTEM

Douglas E. Phillips, Post Office Box 348, Springville, Calif. 93265

Filed Jan. 22, 1993, Ser. No. 7,724
Int. Cl.[5] F23D *14/00*
U.S. Cl. 431—202 **14 Claims**



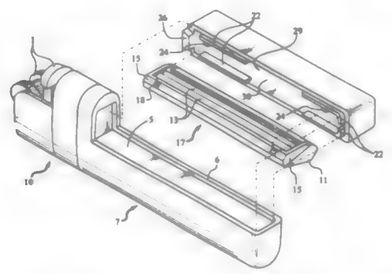
1. Apparatus for early detection and relief of unsafe conditions in a closed pressurized gaseous storage and transportation system, comprising, in combination:
- a plurality of temperature sensing means strategically located throughout the system;
- a plurality of pressure sensing means strategically located throughout the system;
- a monitor system for receiving information from said temperature and pressure sensing means, and generating a response thereto;
- and means for venting and dissipating controlled amounts of system gasses from said system in response to said signal from said monitor system, including:
- means for measuring, and conveying to said monitor, the quantity of gasses released from said system at any given time; and
- means for combusting system gasses so released.

5,364,263

GAS LIGHTER EQUIPPED WITH DISPOSABLE RAZOR

Kee Doo-Seok, 402 ho, 4 Floor, Duckchang Building 24-1, Suhadong Chung-ku, Seoul, Rep. of Korea

Filed Oct. 6, 1993, Ser. No. 132,361
Int. Cl.[5] B26B *19/00*
U.S. Cl. 431—253 **5 Claims**



1. A gas lighter equipped with a disposable razor which is characterized in that said gas lighter comprises:

(a) a gas lighter comprising an elongated casing having a longitudinal axis, an outer surface having a recess formed along with said longitudinal axis and a conventional igniter at one end of said elongated casing; and

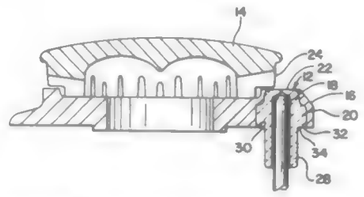
(b) a housing which has a longitudinal compartment therein for containing a conventional, disposal razor blade assembly therein, a longitudinal opening through which the disposal razor blade assembly can be inserted and removed, a connector on an upper end of a brim of said of longitudinal opening, the connector being able to connect the housing with and be removed from the razor blade assembly whereby said housing can be used as a handle of the razor is shaving, and a fixer for fixing on the brim of longitudinal direction of the housing so formed as to fix and remove said housing with said longitudinal recess of the lighter.

5,364,264

ELECTRODE ASSEMBLY FOR GAS BURNER SPARK IGNITION

David J. Kwiatek, LaGrange, Ill., assignor to Harper-Wyman Company, Aurora, Ill.

Filed Nov. 15, 1993, Ser. No. 152,843
Int. Cl.[5] F23Q *3/00*
U.S. Cl. 431—266 **7 Claims**



1. A method for manual spark ignition of a gas burner comprising the steps of:
- providing at least a portion of the gas burner at ground potential;
- providing an electrically conductive electrode contained within and positioned by an electrically insulative support member proximate to said gas burner portion; including the step of:
- providing said electrically insulative support member with a predetermined wall thickness proximate to said gas burner portion; and
- applying a high voltage potential to said electrically conductive electrode responsive to a user's manual operation.

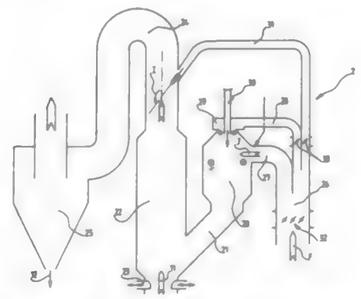
5,364,265

EQUIPMENT FOR AND METHOD OF PRECALCINING ANY MINERAL MATERIALS WHATSOEVER

Maurice Paliard, Saint Etienne, France, assignor to CLE, France

Filed May 26, 1993, Ser. No. 67,357
Claims priority, application France, May 29, 1992, 92 06579
Int. Cl.[5] F27B *7/02*
U.S. Cl. 432—106 **12 Claims**

1. An apparatus for precalcining a powdered mineral material, comprising
- a combustion chamber,
- a burner for feeding fuel into said combustion chamber,
- means for feeding a mineral material into said combustion chamber,
- a reaction chamber in which precalcination occurs,
- a passageway connecting said combustion chamber and said reaction chamber and through which combustion gas and the mineral material are passed from said combustion chamber to said reaction chamber,
- a separation cyclone for separating the combustion gas from the mineral material precalcined in said reaction chamber,
- a post-combustion duct arranged between said reaction chamber and said cyclone through which gases and precalcined mineral material are passed from said reaction chamber to said cyclone,
- a firing furnace into which the precalcined material is passed from said cyclone,
- means for feeding gases to said reaction chamber, said gases



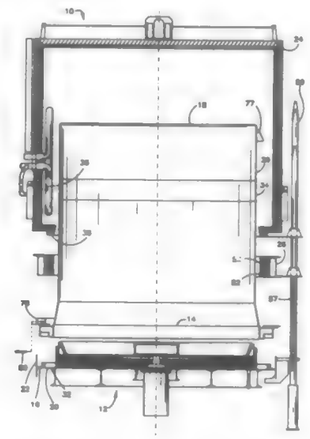
having a high nitrogen oxide content and being discharged from said firing furnace,
- a first duct arranged to pass hot air into said combustion chamber,
- a second duct for feeding hot air into said combustion chamber in proximity to said burner, and
- a third duct arranged to pass hot air into said post-combustion duct between said reaction chamber and said cyclone.

5,364,266

METHOD AND APPARATUS FOR INCREASING FURNACE CAPACITY

Bradley C. Andrews, Parma, Ohio, assignor to Metal Processing Corporation, Maple Heights, Ohio

Filed Dec. 14, 1993, Ser. No. 167,566
Int. Cl.[5] C21D *9/00*
U.S. Cl. 432—254.1 **20 Claims**



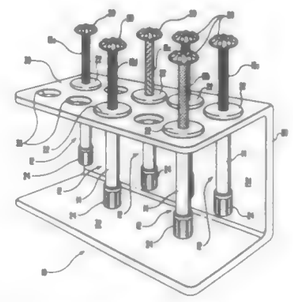
10. A ring configured to surround a first portion of an inner cover and detachably supporting a furnace member surrounding an inner cover in a furnace installation;
- said ring having insulation being configured to encircle a portion of said inner cover and comprising:
- a first member adapted for detachably supporting said furnace member;
- a second member adapted to detachably engage a base;
- at least one wall member connected to said first member and to said second member;
- wherein the furnace member when positioned on said ring is raised a predetermined distance from said base.

5,364,267

SYRINGE SYSTEM FOR MATCHING TOOTH COMPOSITE COLORS

Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products, Inc., South Jordan, Utah

Filed Feb. 16, 1993, Ser. No. 19,266
Int. Cl.[5] A61C *19/10*
U.S. Cl. 433—26 **14 Claims**



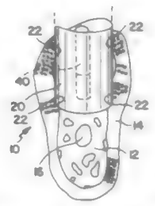
1. A syringe system for conveniently and efficiently matching tooth composite colors to natural tooth colors comprising:

a) a plurality of delivery syringes, each delivery syringe containing therein a different colored tooth composite, and each said delivery syringe comprising at least the following parts:
- a barrel in which the tooth composite is contained and which is constructed of an opaque material to prevent light activation of the tooth composite, said barrel comprising a disk outwardly protruding from the barrel;
- a plunger longitudinally slidable within the barrel for extruding the tooth composite from the barrel; and
- a removable cap for enclosing the end of the barrel until such time as the tooth composite is to be extruded from the barrel;

b) organizing means for displaying the plurality of delivery syringes such that each delivery syringe is prominently visible and wherein the organizing means is configured such that at least some of the plurality of delivery syringes are displayed in horizontal alignment such that the colored part of each delivery syringe is held immediately adjacent to the colored part of each adjacent delivery syringe and wherein the organizing means comprises a lower support and an upper display shelf said upper shelf being comprised of a plurality of openings, each opening being sized so as to easily allow passage of the barrel of each delivery syringe, but prohibit passage of the disk, such that when each delivery syringe is inserted downward into one of the plurality of openings, the disk of each delivery syringe is barred from passage through the opening so that each delivery syringe is suspended between said upper shelf and said lower support and

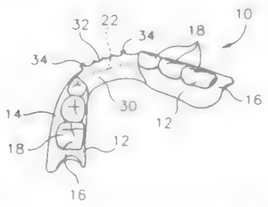
c) wherein at least one of said parts of each delivery syringe is colored so as to match the color of the tooth composite contained in the barrel, whereby the color of the tooth composite in each syringe can be visually perceived simply by looking at the delivery syringes held by the organizing means so that the plurality of delivery syringes together provides a palette of colors from which to match a patient's tooth color.

5,364,268
METHOD FOR INSTALLING A DENTAL IMPLANT FIXTURE IN CORTICAL BONE
Richard J. Lazzara, Lake Worth, and Keith D. Beaty, West Palm Beach, both of Fla., assignors to Implant Innovations, Inc., West Palm Beach, Fla.
Filed Mar. 3, 1992, Ser. No. 845,138
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **6 Claims**



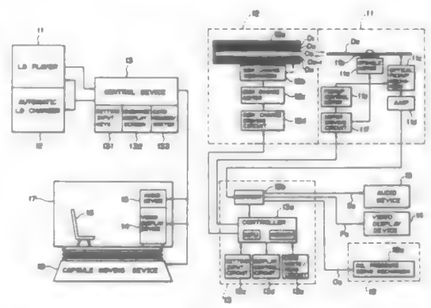
1. A method of installing a dental implant in a posterior region of a living human jawbone where said jawbone is cancellous internally and cortical externally and is characterized by lingual and buccal cortical plates bounding a relatively large mass of cancellous bone occupying a major portion of the buccal-to-lingual thickness of said jawbone, comprising the steps of preparing an implant receiving bore in said jawbone at a selected site ins aid region, the diameter of said bore being large enough to reach both of said plates, stopping said bore short of the mandibular canal or the maxillary sinus, as the case may be, choosing an implant having a diameter W at least as large as the diameter of said bore and a length L not larger than the depth of said bore, and installing said implant in said bore so as to make bone-to-implant contact with each of said plates and thereby to effect initial stabilization of said implant in said bore.

5,364,269
PARTIAL DENTURE
William G. Willits, and Thomas P. Schmitt, Jr., both of Norfolk, Va., assignors to Lab One Enterprises, L.C., Norfolk, Va.
Filed Mar. 4, 1994, Ser. No. 205,782
Int. Cl.[5] A61C *13/225*
U.S. Cl. 433—178 **6 Claims**



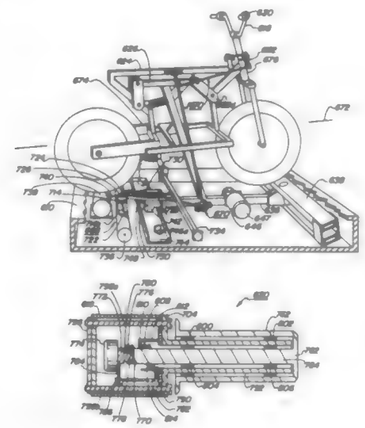
1. An integral-acrylic metal partial denture comprising: a denture base including buccal and lingual flanges shaped to form a ridge for supporting a selected number of artifical teeth; an existing tooth opening formed in the ridge for permitting one or more existing teeth to project from the patient therethrough; the denture base being formed in part by a molded relatively hard acrylic material that is disposed adjacent the artifical teeth; an elastic retainer strip integrally formed with the relatively hard acrylic material and disposed along the buccal flange adjacent the existing tooth opening, the elastic strip engaging the gum of the patient in front of the existing opening and bearing against the gum of the patient when the denture base is disposed within the patient's mouth; a metal filler panel integrally formed with the relatively hard acrylic material and disposed along the lingual flange adjacent the existing tooth opening, the metal filler panel having an upper terminal edge; and at least one metal tooth clamp extending from the upper terminal edge of the metal filler panel and extending over at least one existing tooth of the patient and engaging and clamping a top portion of the existing tooth so as to assist in securing the entire partial denture in the patient's mouth.

5,364,270
APPARATUS HAVING VIDEO DISPLAY AND DISPLAY-SYNCHRONIZING MOTION MECHANISM
Akihiro Aoyama; Hitoshi Kaneko; Akira Tajiri; Iwao Okamura, and Yuzo Tanaka, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jun. 8, 1992, Ser. No. 895,093
Claims priority, application Japan, Jun. 25, 1991, 3-153382
Int. Cl.[5] G09B *9/08, 19/16*
U.S. Cl. 434—55 **12 Claims**



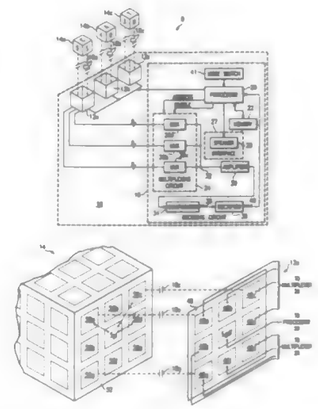
1. An apparatus comprising:
a storage medium storing a plurality of video and motion information pieces, each including at least one of a video information, a motion information associated with said video information and an identification information for identifying the video information;
information select means for specifying the identification information about a video and motion information piece which is one of the vide and motion information pieces and which is to be read;
information read means for reading, from said storage medium, the video and motion information piece related to the identification information specified by said information select means;
display means for displaying the video information included in the video and motion information piece read by said information read means;
motion means for performing a predetermined motion based n the motion information included in the video and motion information piece read by said information read means; and
monitor means for monitoring the identification information included in the video and motion information piece read by said information read means and for stopping a read operation of said information red means when the identification information included in said video and motion information piece is different from the identification information specified by said information select means, wherein:
said video and motion information stored in said storage medium includes a plurality of divided video and motion information sections, each including a divided identification information piece for identifying one of said divided video and motion information sections;
said information select means comprises means for sequentially specifying divided identification information sections of the video and motion information which is to be read;
said information read means comprises means for sequentially reading the divided video and motion information sections related to the divided identification information pieces sequentially specified by said information select means; and
said monitor means comprises means for monitoring the divided identification information pieces relating to the divided video and motion information sections read by said information read means and for stopping a read operation of said information read means when the divided identification information pieces monitored are different from the respective, divided identification information pieces specified by said information select means.

5,364,271
BICYCLE AND MOTORCYCLE RIDING SIMULATION SYSTEM
Jack Aknin, San Carlos; Wade Winblad, Hayward, and Dennis Harper, Campbell, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.
Continuation-in-part of Ser. No. 670,268, Mar. 13, 1991, Pat. No. 5,240,417. This application Oct. 2, 1992, Ser. No. 956,035
Int. Cl.[5] G09B *9/04, 19/16*
U.S. Cl. 434—61 **38 Claims**



1. A vehicle simulator, comprising:
a frame on which a person can sit;
a coupler movably connected to the frame;
a beam movably connected to the coupler;
a video monitor;
a computer having a predetermined computer program stored therein, the computer being electrically connected to the video monitor for displaying a changing video image on the monitor in response to the predetermined computer program, the computer also being operably engaged with the frame;
a control electrically connected to the computer, the control being manipulable by a person sitting on the frame for generating a control signal and sending the control signal to the computer for causing the computer to move the frame relative to the beam in response to the control signal and to change the video display on the monitor in response to the control signal;
a wheelie motor, responsive to signals from the computer; and
a cam operably connected to the wheelie motor, the cam also being operably connected to the frame for translating rotational motion of the wheelie motor into translational motion of the frame relative to the beam.
22. A vehicle simulator, comprising:
a frame having a longitudinal axis on which a person can sit;
a handlebar rotatably attached to the frame at substantially one end of the longitudinal axis of the frame
a slew generator including an elongated rolling pin rotatably disposed adjacent a rear portion of the frame distanced from the handlebar and oriented such that the longitudinal axis of the rolling pin is generally perpendicular to the axis of the frame, a motor coupled to the rolling pin for causing the rolling pin to rotate about the longitudinal axis of the rolling pin and a pallet roller mounted on the frame and disposed on the rolling pin; and
a linkage system interconnecting the handlebar and pallet roller of the slew generator for causing the pallet roller to be disposed on the rolling pin so that the rotational motion of the rolling pin causes the frame to move in response to rotational movement of the handlebar.
36. A throttle handle for a vehicle simulator, comprising:
an annular hollow grip having a wall, a closed end, and an open end, and defining a longitudinal axis;
an elongated shaft disposed within the annular grip coaxially with the grip, the shaft having a first end attached to the closed end of the grip and a second end;
a handlebar having an open end, wherein the second end of the shaft extends into the open end of the handlebar, the handlebar being attached to the vehicle simulator;
a potentiometer mounted on the handlebar and operably connected to the second end of the shaft for generating a control signal in response to rotational movement of the grip indicative of rotational movement of the grip; and
a support tube positioned in the grip between the wall of the grip and the shaft, the support tube having an end, the end of the support tube being connected to the handlebar.

5,364,272
APPARATUS AND METHOD FOR TEACHING
Susan J. Herman, Dallas; Richard H. Wallace, Plano; Michel Stella, Dallas, all of Tex., and George L. Brantingham, Avezzano, Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 9, 1993, Ser. No. 104,298
Int. Cl.[5] G09B *1/00*
U.S. Cl. 434—159 **20 Claims**



1. A teaching toy comprising:
at least one receptacle with a conductive signal-out pad at an inner surface and a plurality of conductive code-in pads at said inner surface;
at least one remote unit removable from said receptacle having multiple sides and a conductive signal-in pad for capacitive coupling to said signal-out pad and at least one conductive code-out pad electrically connected to said signal-in pad for capacitive coupling to one of said code-in

pads, said signal-in pad and said code-out pad being disposed on a first of said multiple sides of said remote unit, said remote unit also having a datum disposed on a second of said multiple sides;

a processor for generating a control signal to said signal-out pad, for detecting data signals from said code-in pads, for associating said data signals with said datum and for generating response data representing said datum;

a memory, in data communication with said processor, for storing instructions for operating said processor; and

an interface device for receiving said response data from said processor and for communicating said datum to a user.

10. A teaching toy comprising:

at least one receptacle with at least one conductive code-in pad at an inner surface;

at least one of a first remote unit, removable from said receptacle, having multiple sides and at least one conductive code-out pad disposed on a first of said sides for capacitively coupling a code signal to said code-in pad, said remote unit having an event signal generator for generating an event signal in response to the occurrence of an event, said remote unit having a remote processor in electrical communication with said code-out pad and said generator for generating said code signal to said code-out pad in response to said event signal;

a processor, in a first mode of operation, for detecting said code signal from said code-in pad, for associating said code signal with said event and for generating data representing said event;

a memory, in data communication with said processor, for storing instructions for operating said processor; and

an interface device for receiving said data from said processor and for communicating said event to a user.

16. A method of teaching comprising the steps of:

inserting a remote unit having multiple sides into a receptacle formed in a base, said unit having a datum recorded on a first side;

generating a control signal;

capacitively coupling said control signal from said base via a conductive signal-out pad to a conductive signal-in pad disposed on a second side of said remote unit;

electrically connecting said control signal from said signal-in pad to a conductive code-out pad disposed on said second side to generate a data signal corresponding to said datum;

capacitively coupling said data signal from said code-out pad to one of a plurality of conductive code-in pads disposed on said receptacle;

delivering said data signal as a code signal to a processor;

using said processor and a memory to associate said code signal with said datum; and

communicating a message representing said datum to a user.

5,364,273

Patent Not Issued For This Number

5,364,274

PROCESS FOR PRODUCING A DISPLAY WITH MOVEABLE IMAGES

Yoshi Sekiguchi, 437 Marshman, Highland Park, Ill. 60035

Continuation-in-part of Ser. No. 815,420, Dec. 31, 1991, Pat. No. 5,197,886, which is a division of Ser. No. 447,064, Dec. 7, 1989, Pat. No. 5,098,302. This application Mar. 2, 1993, Ser. No. 25,149

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—365 **10 Claims**

1. A process for producing a display, comprising the steps of:

generating a first intermediate image with a central processing unit;

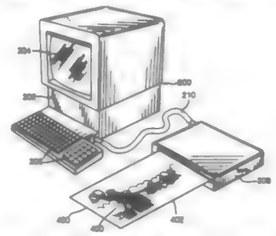
displaying said first intermediate image on a display screen of said central processing unit;

generating a second intermediate image on said central processing unit by electronically copying said first intermediate image, moving said copied image to a different location on said screen than said first intermediate image, and electronically altering and modifying at least part of the overall appearance and shape of said copied second intermediate image so that a substantial portion of said second intermediate image is substantially different than said first intermediate image;

masking and striping said first intermediate image by substantially removing and deleting portions of said first intermediate image to form a striped first image having an array of aliquot spaced obstructed first spacer portions defining a first set of spaces and an array of aliquot spaced first stripes comprising first opaque portions;

masking and striping said second intermediate image by substantially removing and deleting portions of said second intermediate image to form a striped second image having an array of aliquot spaced obstructed second spacer portions defining a second set of spaces and an array of aliquot spaced second stripes comprising second opaque portions;

superimposing, aligning, and moving said second striped image in offset relationship upon said first striped image so



that at least part of said first opaque portions of said first striped image are aligned in registration with and superimposed upon part of said spacer portions of said second striped image and at least part of said first spacer portions of said first striped image are aligned in registration with and superimposed upon part of said second opaque portions of said second striped image;

printing said superimposed images on a rearward web comprising a member selected from the group consisting of a container, cup, glass, mug, bottle, box, package, wrapper, carton, greeting card, compact disc case, laser disc case, and lampshade; and

placing an array of substantially transparent rods in front of said superimposed images on said rearward web so that only one of said images can be viewed from a first angle of observation and a different one of said images can be viewed from another angle of observation.

5,364,275

MEMORY CARD CONNECTOR

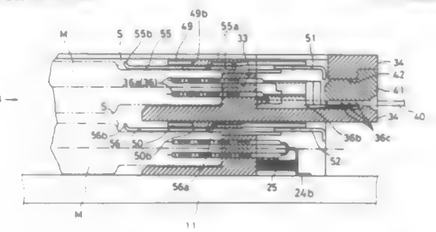
Yoshiyuki Ota, and Masaki Sakaoka, both of Kanagawa, Japan, assignors to Kyocera Elco Corporation, Kanagawa, Japan

Filed Apr. 26, 1993, Ser. No. 51,856

Claims priority, application Japan, Jul. 20, 1992, 4-192243

Int. Cl.[5] H05K *1/00*

U.S. Cl. 439—65 **11 Claims**



1. A memory card connector assembly having a plurality of memory card connectors that are stacked on a substrate, whose contacts are to be connected to corresponding terminals of associated memory cards, wherein the contacts of a lowermost memory card connector are soldered to the substrate and the contacts of at least one upper memory card connector are connected to an FPC board, and an insulation frame which is provided with an FPC board holder which supports the FPC board.

5,364,276

MICROPIN ARRAY AND PRODUCTION THEREOF

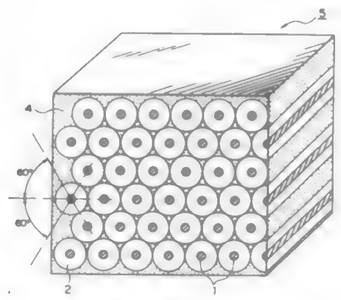
Jun Inasaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 738,135, Jul. 30, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 54,834

Claims priority, application Japan, Jul. 30, 1990, 2-202936

Int. Cl.[5] H01R *9/09;* **H05K** *1/11*

U.S. Cl. 439—66 **5 Claims**



1. A micropin array including,

a plurality of micropins arranged in parallel to one another,

insulating coatings provided to cover individual micropins, and

an adhesive provided to fill spacings among said insulating coatings,

wherein three center points of cross sections of adjacent three micropins covered with said insulating coatings are positioned at respective vertices of an equilateral triangle.

5,364,277

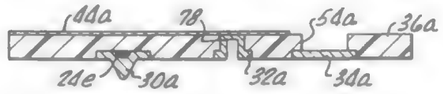
THREE-DIMENSIONAL ELECTROFORMED CIRCUITRY

William R. Crumly, Anaheim; Christopher M. Schreiber, Newport Beach, and Haim Feigenbaum, Irvine, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 849,849, Mar. 12, 1992, abandoned, which is a division of Ser. No. 580,759, Sep. 11, 1990, Pat. No. 5,197,184. This application Aug. 16, 1993, Ser. No. 106,975

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—67 **6 Claims**



1. An electrical circuit comprising:

a dielectric substrate;

a pattern of conductive traces on one side of said substrate and positioned substantially on the surface of said one side, said traces collectively lying in and defining a trace surface and being made of a conductive material; and

at least one of said conductive traces having a three-dimensional conductive circuit feature formed integrally therewith and projecting from said trace surface in a first direction for providing a readily connectable and disconnectable pressure interconnection to another element at said one side of said substrate, said three-dimensional conductive circuit feature consisting essentially of the conductive material of said conductive trace shaped to form a back side depression, and a rigid high strength material filling said depression, one of said traces including a second three-dimensional conductive circuit feature formed integrally therewith and projecting at least partly through said dielectric substrate in a direction opposite said first direction for connection to another element at a second side of said substrate.

5,364,278

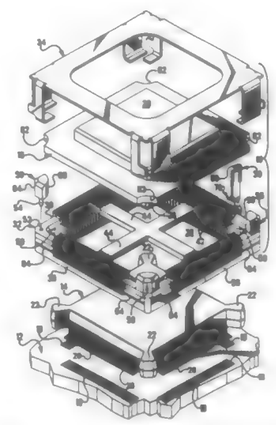
ELECTRONIC COMPONENT UPGRADE CONNECTOR AND CONTACT

Michael F. Laub, Etters, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 8, 1993, Ser. No. 27,994

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—69 **7 Claims**



1. A connector for electrically interconnecting terminals of a circuit module located above a pre-existing electronic component to respective leads extending from the pre-existing electronic component, where the leads are affixed to respective contact pads on a substrate, the connector comprising:

a frame that generally encompasses the pre-existing electronic component;

a plurality of contacts, received by said frame, and

a mechanism for maintaining the circuit module, the connector, and the pre-existing electronic component in proper mating relation;

whereby, an electrical interconnection is established between respective terminals and contact pads by way of the leads and the contacts, wherein

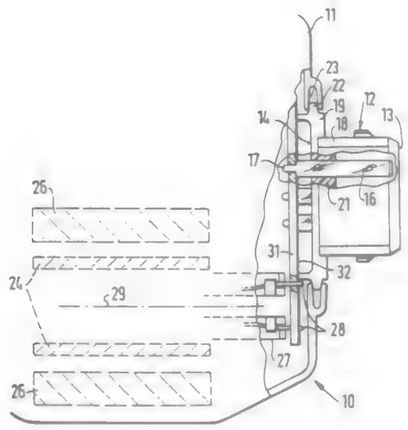
said mechanism comprises a clip disposed about the module and having a plurality of first grippers extending therefrom to hold said frame tightly to the module and a plurality of second grippers to hold the pre-existing electronic component tightly to said frame.

5,364,279

FASTENING ARRANGEMENT FOR CONNECTIONS AT IGNITION COILS FOR MOTOR VEHICLES

Dieter Betz, Vaihingen/Enz; Karl-Heinz Nuebel, Schwieberdingen; Werner Grewe, Leonberg, and Oskar Balcarek, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00813, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/13354, PCT Pub. Date Aug. 6, 1992
PCT Filed Oct. 17, 1991, Ser. No. 941,445
Claims priority, application Germany, Jan. 25, 1991, 4102145
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 7 Claims



1. A fastening arrangement for electrical connections to an ignition coil of a motor vehicle, said ignition coil including at least one secondary winding and at least one primary winding, each of said primary windings having two end portions, said fastening arrangement comprising

a housing;

a printed circuit board having a plurality of conductor paths electrically insulated from each other, each of said conductor paths having at least two bore holes for electrical connection to said at least one primary winding; and

a connection plug having an exterior side and an interior side and comprising means for fixing said connection plug to said housing and a plurality of electrical contacts extending from said exterior side and into said housing on said interior side,

wherein said printed circuit board is an epoxy resin circuit board, said housing is provided with a recess to accommodate said connection plug, said recess having a guide groove, and said means for fixing said connection plug to said housing comprises an outer peripheral flange provided on said connection plug, said outer peripheral flange having a projecting guide element fitting in said guide groove to hold said connection plug to said housing when said connection plug is pressed into said recess in said housing, and

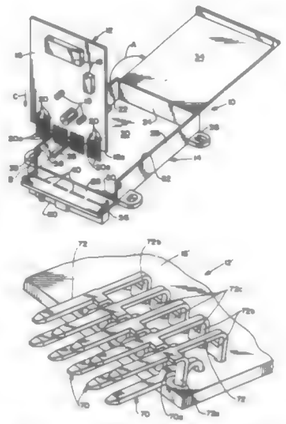
wherein said electrical contacts are electrically insulated from each other and each of said electrical contacts includes a pin on its interior end and said pins of said electrical contacts project through respective ones of said bore holes and are soldered with respective ones of said conductor paths so that said connection plug and said printed circuit board form a primary plug unit for making electrical connection to said at least one primary coil.

5,364,280

PRINTED CIRCUIT BOARD CONNECTOR ASSEMBLY

Stephen A. Colleran, Lisle, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Jul. 16, 1993, Ser. No. 93,122
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—76 17 Claims



1. In an electrical connector assembly which includes a circuit board, a plurality of terminals mounted on the circuit board, and a header housing adapted for receiving an edge of the circuit board with the terminals in position for engaging terminal contacts of a complementary mating connector,

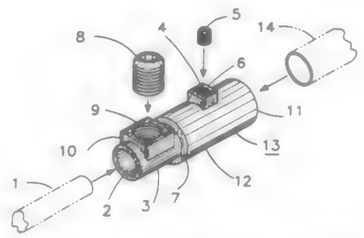
the improvement wherein said header housing comprises one wall of an enclosure for said circuit board, the wall being hingedly connected to a base portion of the enclosure.

5,364,281

ELECTRICAL CONNECTOR SYSTEM FOR GROUNDING MEMBER AND GROUND WIRE

Salvadore Leto, Metairie, La., assignor to Philly D. Harrison; Paul R. Leto and Francis T. Leto, all of Metairie, La.

Filed Jun. 1, 1993, Ser. No. 70,737
Int. Cl.[5] H01R *4/36, 4/66*
U.S. Cl. 439—100 15 Claims



1. A connector for electrically and mechanically connecting a ground wire having an outer surface to an elongated grounding member, such as a grounding pipe or rod in the ground or electrical conduit, having an exposed end and an outer, exterior surface, comprising:

a connector body of electrically conductive material positionable over the exposed end of the grounding member and including

a larger, grounding member section having a first, open, interior chamber defined by a first surrounding, inner wall, which is larger in its interior dimensions than the outer dimensions of the grounding member, allowing the connector body to be slipped over the end of the elongated grounding member; and

a smaller, wire section adjacent to said grounding member section having a second, open, interior chamber defined by a second, surrounding, inner wall for the interior insertion of the wire, said body having at least in part a ridge area having smaller interior dimensions than said first inner wall, forming a laterally directed, interior blocking area, said interior dimensions of said ridge area being less than the outer dimensions of the grounding member, preventing the ground wire and the grounding member from passing one another due to the presence of said ridge area; said sections being generally cylindrical with cylindrical interiors, with the inner diameter and the outer diameter of said wire section being less than the inner diameter and outer diameter, respective, of said grounding section;

a first, laterally directed, set screw lug having an interior tip for the grounding member being screwable laterally into said first interior chamber until it contacts and drives itself down against the outer surface of the grounding member, holding the grounding member under compression between its interior tip and said interior wall of said first, interior chamber; and

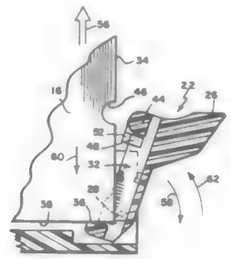
a second, laterally directed, set screw lug having an interior tip for the ground wire being screwable laterally into said second chamber until it contacts and drives itself down against the outer surface of the ground wire located in said second, interior chamber, holding it under compression between its interior tip and said interior wall of said second, interior chamber; the connector body electrically connecting and mechanically securing the ground wire to the grounding member.

5,364,282

ELECTRICAL CONNECTOR SOCKET WITH DAUGHTERCARD EJECTOR

Robert J. Tondreault, Louisville, Ky., assignor to Robinson Nugent, Inc., New Albany, Ind.

Filed Aug. 16, 1993, Ser. No. 107,274
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—157 25 Claims



1. An electrical connector for receiving a daughtercard having an end edge formed to include a notch therein and having a plurality of conductive surfaces formed thereon, the connector comprising:

a socket formed to include an elongated slot for receiving the daughtercard therein and including a plurality of electrical terminals for engaging the plurality of conductive surfaces formed on the daughtercard for electrically coupling the daughtercard to the socket; and

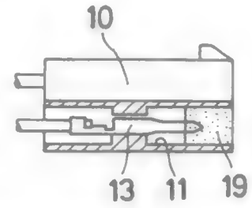
an ejector coupled to an end of the socket, the ejector including means for engaging opposite sides of the daughtercard upon insertion of the daughtercard into the socket to retain the daughtercard within the socket, means for engaging the notch formed in the end edge of the daughtercard to provide a further retention force to the daughtercard, and means for ejecting an end of the daughtercard adjacent the ejector out of the elongated slot upon movement of the ejector relative to the socket.

5,364,283

CONNECTING DEVICE

Kiyokazu Katoh, Nagoya; Kenichi Kaneko, Kariya; Osamu Matsubara, Anjo, and Takashi Niwa, Nishikamo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 29, 1993, Ser. No. 38,866
Claims priority, application Japan, Mar. 30, 1992, 4-074422
Int. Cl.[5] H01R *4/60*
U.S. Cl. 439—201 4 Claims



1. A connecting device comprising:

a first housing having therein a pair of parallely spaced first passages each of which has a proximal end and a distal end;

a male terminal accommodated in each of the first passages and having a proximal end to which a first wire is connected and a distal end, said first housing and each male terminal forming a first clearance therebetween to provide communication between said distal end and said proximal end;

a second housing having therein a pair of parallely spaced second passages each of which has a proximal end and a distal end fitted into the distal end of the corresponding first passage;

a female terminal accommodated in each of the second passages, having a proximal end to which a second wire is connected and a distal end engageable with the distal end of the corresponding male terminal, said second housing and each said female terminal forming a second clearance therebetween to provide communication between said distal end and said proximal end;

an amount of viscous oily substance positioned in at least one of said housings adjacent the distal end of the terminal therein, said amount of viscous oily substance not insulating at least one of said proximal ends before said distal ends of said male and female terminals are engaged, said amount of viscous oily substance being sufficient that said viscous oil substance is forced through said at least one of said first and second clearances so as to insulate the relevant proximal end when said distal ends of said male and female terminals are engaged.

5,364,284

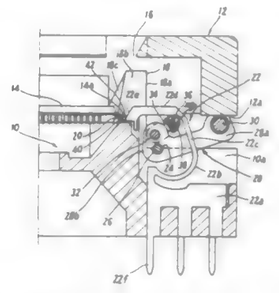
SOCKET

Masao Tohyama, Gotenba, and Kiyokazu Ikeya, Shizuoka, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 6, 1993, Ser. No. 88,234
Claims priority, application Japan, Jul. 16, 1992, 4-212001
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 15 Claims

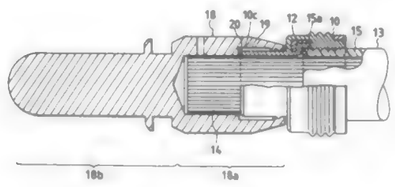
1. Socket apparatus for mounting an IC package having a plurality of terminals, the socket apparatus comprising a base, a seat formed on the base for mounting an IC package thereon,

the socket having a plurality of contact elements mounted on the base, the contact elements each having an arm having a contact section movable into and out of engagement with a respective terminal of an IC package when mounted on the seat, a connection assembly having first and second connection members, the first connection member having one end rotatably mounted on the base, the second connection member having first and second end portions and being rotatably connected at the first end portion to the first connection member, the second end portion being disposed adjacent one of said



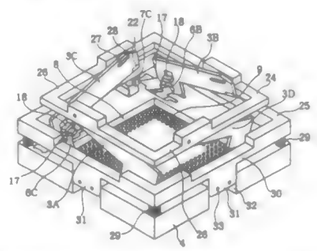
plurality of contact elements and said plurality of terminals and being movable into and out of engagement with the one of said plurality of contact elements and said plurality of terminals and means to move the first connection member between a first position in which the second end portion of the second connection member is in engagement with the one of the contact element and the terminal and a second position in which the second end portion of the second connection member is out of engagement with the one of the contact element and the terminal.

5,364,285
WATERPROOF CONNECTOR
Kazuaki Sakurai, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Nov. 23, 1993, Ser. No. 155,756
Claims priority, application Japan, Nov. 24, 1992, 4-086126[U]
Int. Cl.[5] H01R *4/70*
U.S. Cl. 439—275 **3 Claims**



1. A waterproof packing comprising:
a larger-diameter member including:
a retaining step portion defined on an inner peripheral surface of the larger diameter member, the step portion being abutted against an end surface of an insulative sheath of a wire;
a plurality of projections formed on the inner surface of inner periphery of the larger-diameter member to hold the wire;
a plurality of flanges formed on an outer peripheral surface of the large-diameter member, the flange adapted to be attached to a connector housing; and
a unitary smaller diameter member extending forwardly from the large diameter member.

5,364,286
CONTACTING CONDITION MAINTAINING DEVICE FOR USE IN AN ELECTRIC PART SOCKET
Noriyuki Matsuoka, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan
Filed Apr. 29, 1993, Ser. No. 54,031
Claims priority, application Japan, May 1, 1992, 4-139974
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—330 **19 Claims**

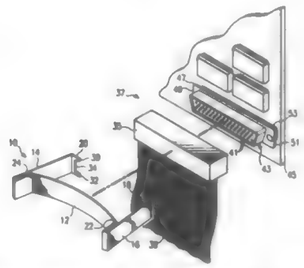


1. In an electric part socket which includes a socket body having a plurality of contacts and in which an electric part having a body and a plurality of terminals, is mountable in the socket body such that the terminals are brought into contact with the contacts, respectively, when a press-down force is applied to the body of the electric part, an apparatus constitutes a means for pressing down and maintaining the electric part body in a contacting position in the socket body such that the terminals of the electric part are in contact with the contacts of the socket, and said apparatus comprises: pressing levers pivotably mounted on each of at least two opposite sides of the socket body for pivotal movement upwardly and downwardly along said opposite sides between upper positions and lower positions, respectively; latches corresponding to said pressing levers and being respectively engageable with edge portions of the electric part body when said pressing levers are pivoted downwardly, so as to press the electric part body down into the contacting position; lock members positioned in the socket body corresponding to said pressing levers for preventing said pressing levers from being pivoted upwardly from their lower positions and thereby maintaining said latches in positions in which they engage with and press down on the electric part body; and an actuator, connected to said pressing levers for movement upwardly and downwardly relative to the socket body, for pressing said pressing levers downwardly when said actuator is moved downwardly.

5,364,287
CONNECTOR RESTRAINING APPARATUS
William F. Weber, Allen, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.
Filed Jul. 7, 1993, Ser. No. 88,158
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—358 **8 Claims**

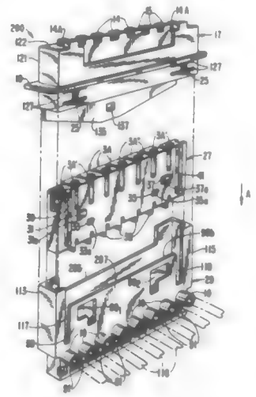
1. The method of securing and removing a ribbon cable connector having a cover portion to and from a complementary mounted cable connector having a first and second end and an accessible back portion at each of the first and second ends, comprising the steps of:
clamping the end and back portion of each of the first and second ends of the mounted connector with tangs located at corresponding engagement ends of a pair of spring loaded levers, the spring loaded levers each having an extension located at an operational end opposite the engagement ends and having a pivotal point;
simultaneously pressing against the cover of the ribbon cable connector with a member interconnecting said spring loaded levers substantially at their pivotal points to secure the ribbon cable connector to the complementary mounted cable connector; and

subsequently removing the tangs from the end and back portion of each of the first and second ends of the



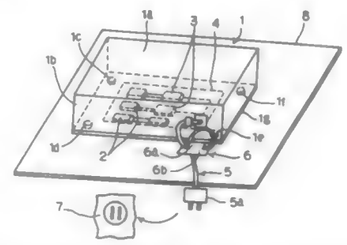
mounted connector by applying a force urging the extensions toward each other.

5,364,288
ELECTRICAL CONNECTING DEVICE
Andreas Drewanz, Mundelein; Robert L. Holmes, Mt. Prospect, both of Ill.; Edward Key, Hummelstown, Pa., and Allan J. Reinken, Skokie, Ill., assignors to North American Philips Corporation, New York, N.Y.
Filed Jul. 24, 1992, Ser. No. 919,473
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—404 **24 Claims**



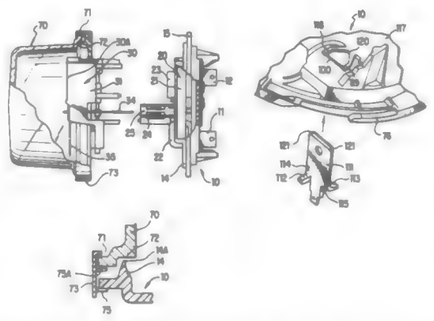
1. An electrical connecting device, comprising:
inner plug means including a housing and a plurality of electrical contacts having ends electrically isolated from each other within said housing, said housing characterized by top surface means having a plurality of apertures, bias means integrally connected to and within said housing and an open bottom, said bias means for biasing said ends toward said apertures; and
outer plug means for insertably receiving said inner plug means and a plurality of wires and having bottom surface means and an open top through which said inner plug means is received;
wherein each of said top surface means and bottom surface means being operable for transmitting pressure applied thereto to said respective inner plug means and outer plug means for biting engagement of each wire by a corresponding electrical contact as said inner plug means is inserted within said outer plug means.

5,364,289
RETRACTABLE WIRE HOLDER FOR ELECTRIC UNIT
Yoshitaka Noguchi, and Masaaki Mizuguchi, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan
Filed Nov. 18, 1993, Ser. No. 154,184
Claims priority, application Japan, Nov. 27, 1992, 4-341158
Int. Cl.[5] H01R *13/72*
U.S. Cl. 439—501 **5 Claims**



1. An electric unit powered by an external power source, comprising:
a case housing electric components therein, and having a front surface and a rear surface;
a flexible wire plugged into said external power source, and supplying electrical power to said electric components; and
a wire holder projecting from said rear surface for holding said flexible wire, and retractable into a predetermined space occupied by said case.

5,364,290
ELECTRIC UTILITY REVENUE METER POLYCARBONATE BASE
Marinus Hartman, Pickering, Canada, assignor to Schlumberger Canada Limited, Ontario, Canada
Filed Mar. 18, 1993, Ser. No. 33,945
Claims priority, application Canada, Mar. 20, 1992, 20636181
Int. Cl.[5] H02B *9/00*
U.S. Cl. 439—517 **5 Claims**



1. An electric utility revenue meter having base integrally formed from a polycarbonate material, said meter base having a knife-edge seal projecting therefrom and formed integral therewith, said seal extending about the base adjacent the outer periphery to sealingly engage a flange of a cup shaped cover for an electro-mechanical induction meter.

5,364,291

CONNECTOR COVERED WITH CONDUCTIVE FRONT AND BACK SHELLS AND COMPRISING A RESILIENT CONDUCTIVE MEMBER BETWEEN THE SHELLS

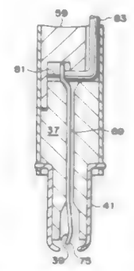
Osamu Hashiguchi, Tokyo, Japan, assignor to Japan Aviation Electronics Industry, Ltd., Japan

Filed Aug. 16, 1993, Ser. No. 107,966

Claims priority, application Japan, Sep. 28, 1992, 4-067308[U]; Sep. 29, 1992, 4-067729[U]; Sep. 30, 1992, 4-068245[U]

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 15 Claims



1. A connector covered with a conductive housing and comprising an insulator body and a plurality of conductive contacts extended forwardly from said insulator body, said conductive housing comprising a front shell having a pair of opposing portions and protecting said conductive contacts and first and second back shells put in electric contact with each other and having first and second inside surfaces in mechanical contact with said insulator body and in electric contact with said opposing portions, wherein said front shell comprises a resilient conductive member backwardly extended from a predetermined one of said opposing portions and resiliently deformed into mechanical contact with either said first or said second of said inside surfaces that is in electric contact with said predetermined one of the opposing portions, said resilient conductive member reinforcing the electric contact between said predetermined one of the opposing portions and said one of the first and the second inside surfaces for forming an interconnected shield substantially surrounding said insulator body.

5,364,292

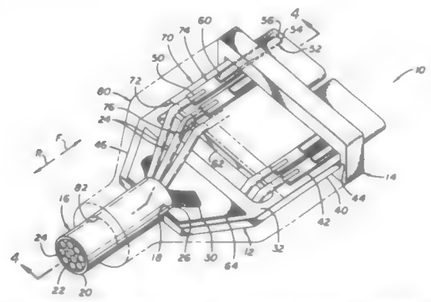
CABLE HARNESS ASSEMBLY FOR IC CARD

Gary C. Bethurum, Laguna Niguel, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed Dec. 15, 1993, Ser. No. 168,115

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—610 12 Claims



6. A cable harness assembly which comprises a board with front and rear end portions, a connector frame coupled to said board front end portion and having a plurality of passages holding contacts with rear ends forming tails lying on said board front portion, and a cable having a forward end portion that includes a cable shield with an exposed shield portion and a plurality of insulated wires extending forward of said shield end portion and having bared front end connected to said contact tails, characterized by:

an underlayer of insulative material lying over said tails and said wire bared front ends;

a molded overlayer of electrically conductive largely polymeric material, molded around said underlayer and around said board and around said shield exposed portion, with said overlayer having a rear end lying around a cable location, with said overlayer substantially defining the outside shape of said cable harness forward of said cable location and rearward of said connector frame, and with said underlayer electrically isolating said tails and wire bared front ends from said overlayer.

5,364,293

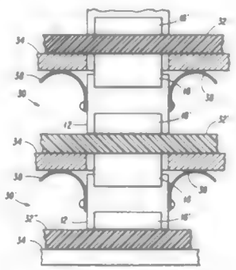
SHIELDED STACKABLE SOLDERLESS CONNECTOR/FILTER ASSEMBLY

Kevin T. Peterson, Cedar Rapids, Iowa, assignor to Rockwell International Corp., Seal Beach, Calif.

Filed Jul. 23, 1993, Ser. No. 97,338

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 14 Claims



1. A shielded stackable solderless connector apparatus for use in electronic devices comprising:

housing means of generally elongated shape and of semi-rigid material;

filter means disposed within the housing means; and

identical paired resilient coupling means transferring signals through filtered connector pins between upper and lower circuits.

5,364,294

ELECTRICAL DEVICE FOR SURFACE MOUNTING ON A CIRCUIT BOARD AND MOUNTING COMPONENT THEREOF

David Hatch, Seven Valleys; Don McClune, York; Mervin Fair, Glen Rock; Jeff Fleming, York, all of Pa., and Louis Csanko, Yonkers, N.Y., assignors to Stewart Connector Systems, Inc., Glen Rock, Pa.

Division of Ser. No. 814,416, Dec. 24, 1991, Pat. No. 5,244,412.

This application Jun. 1, 1993, Ser. No. 69,760

Int. Cl.[5] H01R *9/09*

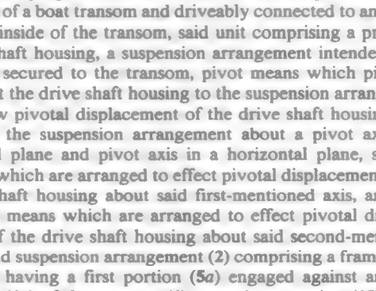
U.S. Cl. 439—676 20 Claims

1. A device intended to be surface mounted on a printed circuit board, comprising:

a housing formed of insulative material;

a plurality of contacts formed of electrically conductive material, each of said contacts including a pad-engaging portion intended to electrically engage a respective terminal pad on the printed circuit board, a mating portion, and a substantially L-shaped intermediate portion including a first leg to which said pad-engaging portion is connected and a second leg having a forward end to which said mating portion is connected; and

said housing including means for permitting each of said contacts to deflect with respect to a fulcrum point located on said second leg of said L-shaped intermediate contact portion upon engagement of said pad-engaging contact portion with a terminal pad on the printed circuit board,



said housing further including a first wall having surfaces for supporting said second legs of said contacts, and means for fixing a forward portion of said second leg of each of said contacts forward of said fulcrum point to respective supporting surfaces such that said forward portion is clamped between upper and lower supporting surfaces in said housing, a rearward portion of said second leg of each of said contacts rearward of said fulcrum point being movable with respect to said forward portion.

5,364,295

BOAT PROPULSION UNIT

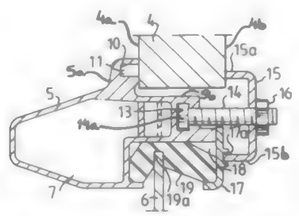
Christian Rodskier, Torslanda, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Jun. 22, 1993, Ser. No. 79,802

Claims priority, application Sweden, Jun. 22, 1992, 9201907-4

Int. Cl.[5] B63H *5/12*

U.S. Cl. 440—61 2 Claims



1. Boat propulsion unit intended to be suspended on the outside of a boat transom and driveably connected to an engine on the inside of the transom, said unit comprising a propeller drive shaft housing, a suspension arrangement intended to be fixedly secured to the transom, pivot means which pivotally connect the drive shaft housing to the suspension arrangement to allow pivotal displacement of the drive shaft housing relative to the suspension arrangement about a pivot axis in a vertical plane and pivot axis in a horizontal plane, steering means which are arranged to effect pivotal displacement of the drive shaft housing about said first-mentioned axis, and trim and tilt means which are arranged to effect pivotal displacement of the drive shaft housing about said second-mentioned axis, said suspension arrangement (2) comprising a frame member (5) having a first portion (5*a*) engaged against an outer surface (4*a*) of the transom (4) around an opening (12) in the transom and a second portion (5*b*) radially inwardly of the edge of said opening, said second portion being provided with at least one slot (13) having a T-shaped cross-section opening towards a space in front of the transom and accommodating the heads (14*a*) of a plurality of threaded elements (14), each of said elements extending through a respective yoke (15), with one radially outer portion (15*a*) of the yoke, in a clamping position of the yoke, pressing against an inner surface (4*b*) of the transom around the opening to clamp the portion of the transom around the opening between the first portion (5*a*) of the frame member and said radially outer portions (15*a*) of the yokes, the yokes being arranged such that, when turned to a position different from said clamping position, their outer portions (15*a*) will be positioned radially inwardly of the edge of the opening.

5,364,296

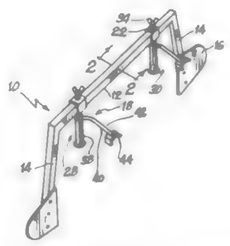
SIMULTANEOUS DOUBLE-BLADED KAYAK PADDLE

Harry R. Ceray, P.O. Box 1251, Dubois, Wis. 82513

Filed Dec. 7, 1992, Ser. No. 986,348

Int. Cl.[5] B63H *16/04*

U.S. Cl. 440—101 18 Claims



1. A watercraft paddle comprising:

(a) an arched, generally U-shaped crossbar having a central transverse portion and downwardly extending left and right end portions;

(b) a paddle blade defined on each of said end portions and being substantially immobile relative to said crossbar;

(c) gripping means defined on said crossbar comprising:

(i) a left and right handgrip region defined generally centrally of said crossbar enabling a paddler to grip said paddle with both hands;

(ii) left and right forearm braces mounted on said crossbar, said forearm braces corresponding to said left and right handgrip region and being rigid and non-rotationally mounted relative to said crossbar, and configured to brace against the tops of the forearms as the paddler grips said handgrip region;

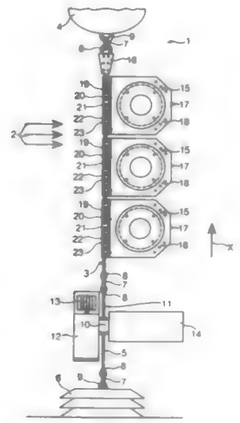
(d) said paddle being integrally constructed and of lightweight compact design capable of being operated by a single paddler as a complete self-contained unit independent of all structure including support structure of a watercraft with which it is used, such that the user can grip said gripping means, insert both paddle blades into the water on both sides of a watercraft at substantially the same time, and with said forearm braces resting against the forearms, repeatedly raise said paddle substantially completely clear of the water and then forcibly lower said paddle driving said blades downwardly and rearwardly into and through the water in a paddling motion to deliver a power stroke to both of said blades substantially simultaneously, propelling the watercraft forwardly by reacting off the water on both left and right sides of the watercraft substantially simultaneously, such that a paddling-type action is achieved but the yaw-inducing moments inherent in traditional paddling strokes are substantially mutually cancelling.

5,364,297

MOORING SYSTEM FOR THE STATIONARY POSITIONING OF MEASUREMENT DEVICES IN CURRENTS OF WATER

Gerd Rohardt, Hipstedt, Germany, assignor to Alfred-Wegener-Institut fur Polar- und Meeresforschung, Bremerhaven, Germany

Filed Aug. 9, 1993, Ser. No. 103,840
Claims priority, application Germany, Aug. 8, 1992, 4226614
Int. Cl.[5] B63B *22/18*
U.S. Cl. 441—23 **15 Claims**



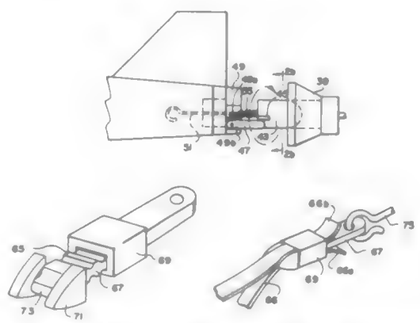
1. A mooring system for the stationary positioning of measurement devices in a body of water, the body of water having a surface and a bottom disposed a distance below the surface, said mooring system comprising:
anchor means for anchoring said system in a substantially fixed position at the bottom of the body of water;
cable means, said cable means having a first end attached to said anchor means and a second end disposed opposite to the first end;
buoy means attached to the second end of said cable means for maintaining the second end of said cable means a distance above the first end of said cable means towards the surface of the body of water;
means for attaching at least one measuring device to said cable means;
at least one additional buoyant body disposed on said cable means at a position between said buoy means and said anchor means;
means for inhibiting movement of said at least one buoyant body in a direction towards the second end of said cable means;
said buoy means and said at least one additional buoyant body being configured for maintaining said cable means taut between the first end and the second end of said cable means;
said at least one additional buoyant body comprising:
buoyant material; and
cover means,
said cover means having an external surface, and said cover means comprising:
a first portion for enclosing the buoyant material; and
a second portion for being disposed about said cable means to retain said at least one buoyant body on said cable means, said second portion having a first end for being disposed towards said buoy means, a second end opposite to said first end, said second end for being disposed towards said anchor means, and a length between said first end and said second end;
said second portion having an opening therethrough for receiving said cable means therein, said opening extending from said first end of said second portion to said second end of said second portion along the length of said second portion;
said cover means having slot means extending from said external surface to said opening in said second portion, said slot means extending from said first end of said second portion to said second end of said second portion along the length of said second portion, and said slot means being configured for threading said cable means through said slot means and into said opening of said second portion; and
first sleeve means configured for being disposed about said second portion of said cover means to close said slot means for retaining said cable means in said opening of said second portion after said cable means is threaded through said slot means.

5,364,298

TOY AIRPLANE LAUNCHER AND WINDER

Louis Crisci, Lindenhurst, and Martin Mallin, Merrick, both of N.Y., assignors to Lake Grove Toy Corporation, Lake Grove, N.Y.

Continuation-in-part of Ser. No. 755,091, Sep. 5, 1991, Pat. No. 5,129,852. This application May 12, 1992, Ser. No. 881,796
Int. Cl.[5] A63H *27/14, 27/22*
U.S. Cl. 446—59 **7 Claims**



1. A toy airplane plus launcher apparatus, comprising:
a toy airplane;
a prop mounted for rotation to said airplane and in a path;
energy storage means onboard said airplane for storing energy which is releasable to said prop for rotating said prop to propel said airplane;
a launcher guide rail;
a front launcher section engaged to a front end of said guide rail;
a rear launcher section engaged with and slidable along said rail for movement into engagement with said front launcher section, said rear launcher section being engaged with said airplane for moving said airplane along said guide rail with movement of said rear launcher section, said path being intersected by said guide rail as said airplane moves with said rear launcher section along said guide rail, for preventing said prop from rotating until said airplane has left said guide rail;
biasing means connected between said front and rear launcher sections for urging said rear launcher section toward said front launcher section;
trigger means movably mounted to said guide rail and engageable with said rear launcher section for retaining said rear launcher section at a spaced location away from said front launcher section, and for releasing said rear launcher section with movement of said trigger means so that said rear launcher section moves toward said front launcher section under the influence of said biasing means;

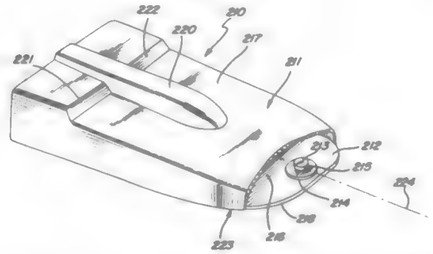
charging means connected to said energy storage means for storing energy in said energy storage means, so that when the trigger means is moved, the airplane is launcher with full energy storage in said energy storage means until the airplane leaves the guide rail whereupon the prop is allowed to rotate, having cleared the guide rail, the airplane being launched in proper direction by aiming the guide rail and with full power for prolonged flight;
said energy storage means comprising a resilient member connected to said prop and windable to store energy for rotation of said prop, said charging means comprising a winder detachably connected to said resilient member for winding said resilient member;
said winder being fixable to said guide rail, said winder having a rotatable hub engageable with said prop for winding said prop to wind said resilient member, said prop being disengaged from said hub when said trigger means is moved to move said rear launcher section with said airplane away from said hub; and
clutch means for deactivating the winder when the resilient member has been wound to a maximum extent.

5,364,299

SURFACE SKIMMING TOY

Peter C. Hill, Anaheim; Gary M. Saffer, Rancho Palos Verdes; Robert V. Pugh, Newhall, and Ahmed Asbaghi, Hawthorne, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Jan. 29, 1992, Ser. No. 827,259
The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.
Int. Cl.[5] A63H *27/00*
U.S. Cl. 446—176 **9 Claims**



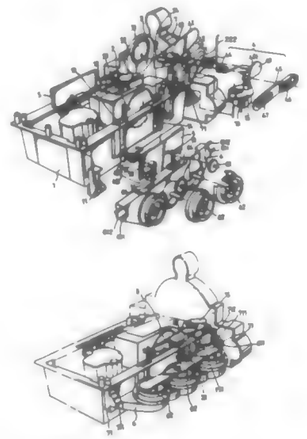
1. For use upon an extended smooth play surface, a surface skimming toy comprising:
a toy body defining a front edge, a rear edge, a front-to-back center line, a lower base portion having a lower surface, a hollow convex upper portion having an upper surface, said upper surface and said lower surface being joined in such a manner as to from a cavity between said lower base portion and said upper portion;
a weight supported upon said lower base portion of said body proximate said front edge and symmetrically disposed with respect to said center line; and
means for causing said surface skimming toy to assume a skimming travel when launched across a playing surface in which said lower surface is generally parallel to and closely spaced from the play surface, said means for causing including said body defining a generally flat planar surface for said undersurface.

5,364,300

TOY TRAIN

Jin-Long Jow, 2F., No. 56, Sec. 5, Nan Ching E. Rd., Taipei, Taiwan, Prov. of China

Filed Feb. 11, 1993, Ser. No. 16,274
Int. Cl.[5] A63H *17/00, 17/267*
U.S. Cl. 446—437 **6 Claims**



1. A toy train comprising:
a body;
a motor mounted on said body;
a driving mechanism having a gear box, said driving mechanism being mounted to said body and being coupled to said motor;
a first driving wheel coupled to said driving mechanism and disposed on a first lateral side of said driving mechanism;
a second driving wheel also coupled to said driving mechanism but disposed on an opposite lateral side of said driving mechanism;
a first transmission mechanism coupled to said first driving wheel;
a second transmission mechanism coupled to said second driving wheel;
a first slide plate slidably mounted to a first lateral side of said body and coupled to said first transmission;
a second slide plate slidably mounted to an opposite lateral side of said body and coupled to said second transmission;
a first driven mechanism movably disposed against said first lateral side of said body and connected to said first slide plate so as to move in response to sliding of said first slide plate;
a second driven mechanism movably disposed against said opposite lateral side of said body and connected to said second slide plate so as to move in response to sliding of said second slide plate;
a hood disposed at a forward longitudinal end of said body, said hood having a first channel disposed at the first lateral side of said body and a second channel disposed at said opposite lateral side of the body;
a first rear channel disposed at a rearward longitudinal end of said body and at the first lateral side of said body; and
a second rear channel disposed at said rearward longitudinal end of said body but at the opposite lateral side of the body, said first and second rear channels being disposed symmetrically on said body with respect to said first channel and second channel of said hood,
said first driven mechanism having a front pair of pins which engage the first channel of said hood, and a rear pair of pins which engage the first rear channel, thereby permitting the first driven mechanism to be moved from a sub-

stantially vertical orientation to a substantially horizontal orientation in response to sliding of said first slide plate;

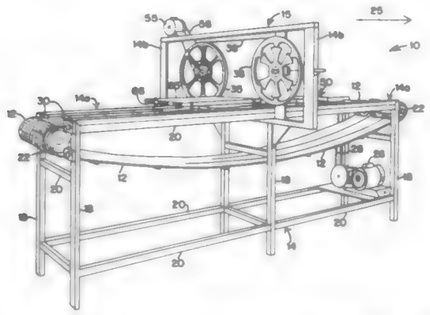
said second driven mechanism having a front pair of pins which engage the second channel of said hood, and a rear pair of pins which engage the second rear channel, thereby permitting the second driven mechanism to be moved from a substantially vertical orientation to a substantially horizontal orientation in response to sliding of said second slide plate.

5,364,301

PROCESSING SEA URCHINS FOR EXTRACTING GONADS

Michael T. Kestner, Bernard, and Benjamin A. Baxter, Ellsworth, both of Me., assignors to Marine Machines, Inc., Bernard, Me.

Filed Nov. 22, 1993, Ser. No. 156,093
Int. Cl.[5] A22C *29/00*
U.S. Cl. 452—18 **27 Claims**



1. A machine for processing sea urchins, said sea urchins having a sea urchin shell with a posterior domed side and an anterior mouth side, and sea urchin spines, comprising:

a conveyor constructed for receiving sea urchins with the mouth side of the sea urchin shells facing away from the conveyor, and for transporting sea urchins through a cutting location;

a cutter mounted over the conveyor at the cutting location, said cutter comprising a cutting element constructed for producing a transverse cut across the mouth side of the sea urchin shells generally transverse to the conveyor, said cutting element being spaced from the conveyor;

an extended aligning plane oriented generally parallel to the conveyor at the cutting location on the opposite side of the cutting element from the conveyor, said aligning plane being arranged for contacting the mouth side of the sea urchin shells and for aligning and maintaining orientation of the sea urchins on the conveyor with the mouth side of the sea urchin shells facing and contacting the aligning plane as the sea urchins are transported through the cutting location;

said cutting element being spaced a selected cutting distance from the aligning plane for cutting a disk from the mouth side of the sea urchin shells having sufficient thickness to expose the gonad lobes for removal from the sea urchin shells;

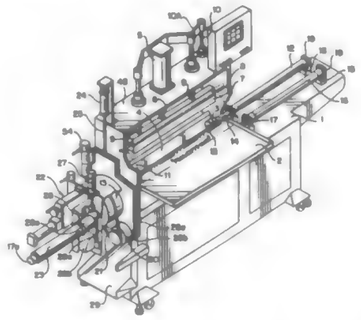
and spring means mounted on the side of the conveyor opposite the aligning surface, said spring means being constructed to spring load the conveyor in the direction of the aligning plane for pressing the mouth side of sea urchin shells against the aligning plane as the sea urchins are transported through the cutting location.

5,364,302

APPARATUS FOR MANUFACTURING HAMS OR THE LIKE

Chiyoji Shibata, Yokohama, and Minoru Nakamura, Tokyo, both of Japan, assignors to Hitec Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00597, § 371 Date Dec. 30, 1992, § 102(e) Date Dec. 30, 1992, PCT Pub. No. WO92/20242, PCT Pub. Date Nov. 26, 1992
PCT Filed May 11, 1992, Ser. No. 962,575
Claims priority, application Japan, May 13, 1991, 3-138173
Int. Cl.[5] A22C *7/00*
U.S. Cl. 452—174 **18 Claims**



1. An apparatus for manufacturing meat products comprising a displacement body having a metering port into which a meat mass is filled, a placing table for placing the meat mass thereon, a lower die into which a meat mass on said placing table is dropped, an upper die which is fitted to said lower die, means for forcing the meat mass formed by said upper die and said lower die into a metering port in said displacement body, means for displacing said displacement body from a predetermined position to another position, and means for extruding the meat mass in said metering port in said displacement body when displaced to said another position, wherein said apparatus is provided with an openable safety cover for covering said placing table and said lower die, said placing table forming an inclined surface between said safety cover and said lower die, said upper die fitted to said lower die having a stopper portion for preventing a downward movement of the meat mass arranged in advance of said inclined surface, and said upper die being moved upward with said safety cover closed, thereby to automatically feed the meet mass to an interior of said lower die.

5,364,303

AIR VENT ADJUSTABLE VANES FOR CONTROLLING AIR FLOW DIRECTION

Warren W. Terry, Lawton, Mich., assignor to Summit Polymers, Inc., Kalamazoo, Mich.

Filed Jul. 9, 1993, Ser. No. 89,432
Int. Cl.[5] B60H *1/34*; F24F *13/15*
U.S. Cl. 454—155 **17 Claims**

1. An air vent for a motor vehicle heating and cooling system comprising:

a housing having an outlet opening;

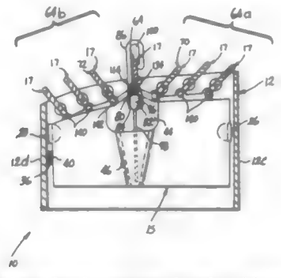
a first row of vanes pivotally mounted to the housing to control the direction of the flow of air emitted from the outlet opening, the first row of vanes comprising two sets of end vanes located at opposite ends of the first row of vanes and a control vane positioned between the two sets of end vanes;

a linkage for rotating the first row of air vanes in parallel to direct the air flow through the housing outlet and for rotating the two sets of end vanes transversely with respect to the control vane to diffuse the air passing through the outlet;

the improvement comprising:

an actuator slidably mounted to the control vane for movement in a direction outwardly of the housing outlet opening;

a first linkage having opposed ends with one end pivotally mounted to the actuator and the other end pivotally mounted to one set of the end vanes at one end of the first row of vanes;



a second linkage having opposed ends with one end pivotally mounted to the actuator and the other end to the other set of end vanes at the other end of the first row;

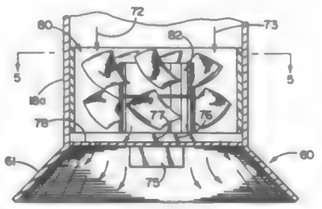
whereby movement of the actuator in a direction outwardly of the housing outlet opening rotates the two sets of end vanes in opposite directions to diffuse the air passing through the housing outlet.

5,364,304

REMOTELY CONTROLLED ELECTRICALLY ACTUATED AIR FLOW CONTROL REGISTER

Brian Hampton, Rockford, Ill., assignor to Hampton Electronics, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 6,459, Jan. 21, 1993, Pat. No. 5,271,558. This application Dec. 17, 1993, Ser. No. 170,090
Int. Cl.[5] F24F *7/00*
U.S. Cl. 454—258 **12 Claims**



1. A method of controlling air flow in an air circulating system, comprising the steps of:

(a) initially restricting air flow in a portion of said system at system startup by means of an air driven blade pitch controlled turbine positioned in said air flow of said air circulating system,

(b) reducing said air flow restriction caused by said air driven blade pitch controlled turbine in said air flow in response to an increase in rotary speed of said air turbine induced by passage of air flow through said air flow turbine after initial staff-up, and

(c) braking said air driven turbine to reduce rotary speed and return to a condition of initial air flow restriction in said portion of the system as that of system at start-up.

5,364,305

AIR MIXER

Edward R. Zieve, 500 Camp Brosius Rd., Elkhart Lake, Wis. 53020

Filed Jun. 14, 1993, Ser. No. 76,331
Int. Cl.[5] F24F *13/04*
U.S. Cl. 454—261 **3 Claims**



1. An air mixer within a frame having inner and outer rectangular regions for mixing air streams, comprising:

four sets of vanes;

a plurality of rectangular apertures;

a center region within said inner rectangular region of said frame;

a pyramid shaped deflector having solid sides, a base, and an apex;

an opening;

a plurality of structural members;

a mixing region;

said inner rectangular region having two parallel and equal long sides and two parallel and equal short sides;

said long sides being a maximum of twice as long as said short sides;

said pyramid shaped deflector located in said center region;

said apex of said pyramid shaped deflector lying in the same plane as said frame and expanding radially outward beyond said frame;

said opening being between said solid sides of said pyramid shaped deflector and said inner rectangular region of said frame;

said sets of vanes comprising a plurality of vanes with curved cross-sections and discharge angles positioned at proportional distances from one another forming said rectangular apertures;

said rectangular apertures between said plurality of vanes being proportional to one another;

said inner rectangular region having an edge;

said first and second sets of vanes parallel and paralleling and spanning the longest sides of said inner rectangular region and extending from said edges of said long sides of said inner rectangular region to said base of said deflector;

said second and third sets at right angles to said first and second sets and spanning the spaces not occupied along the short sides of said inner rectangular region and extending from said edges of said short sides of said inner rectangular region to said base of said deflector;

each set of vanes discharge angle being directed inwardly;

said plurality of structural members each having a first and a second end;

said first end of said structural member being attached to said base of said pyramid shaped deflector;

said second end of said structural member being attached to said frame;

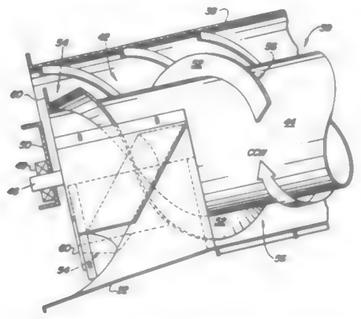
said mixing region located around said base of said pyramid shaped deflector where air streams divided and directed by said vanes, rectangular apertures, and pyramid shaped deflector converge.

5,364,306

NOTCHED HELICAL VANES IN THE FEEDING SECTION OF AN AXIAL AGRICULTURAL COMBINE

Daniel L. Soots, East Moline, Ill., and Klaus A. Braunhardt, Bettendorf, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1993, Ser. No. 53,033
Int. Cl.[5] A01F *12/10*
U.S. Cl. 460—68 **3 Claims**



1. An axial flow agricultural combine comprising:
a supporting structure;
ground engaging means extending from the supporting structure for transporting the supporting structure across a field;
an axial rotor housing having a forward open inlet for receiving harvested crop material, grates through which threshed and separated grain is removed from the housing, and a rear open outlet through which non-grain crop material is removed from the housing;
an axial rotor for threshing and separating a harvested crop, the axial rotor being housed in the axial rotor housing, the axial rotor having a feeding section, the feeding section of the rotor is provided with at least one helical vane, each vane having an upstream end, the upstream end of the helical vane is tapered and is provided with a transverse leading blade, the transverse leading blade and the tapered helical vane forming a notch, the transverse leading blade is provided with a tapered leading edge having a point and a base edge, the tapered helical vane merges with the transverse leading blade between the point and the base edge of the transverse leading blade.

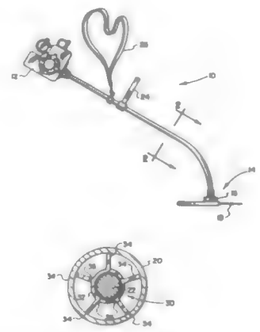
5,364,307

COAXIAL DRIVE CABLE CENTERING APPARATUS

John E. Shaulis, Carrollton, Tex., assignor to Vinylex Corporation, Knoxville, Tenn.

Continuation-in-part of Ser. No. 212,077, Jun. 22, 1988, abandoned, which is a continuation of Ser. No. 786,146, Oct. 8, 1985, abandoned, which is a continuation of Ser. No. 496,826, May 23, 1983, abandoned. This application Apr. 16, 1990, Ser. No. 509,893
Int. Cl.[5] A01G *3/06;* **F16C** *1/06*
U.S. Cl. 464—52 **7 Claims**

1. In combination with rotary power transmitting apparatus of the type including drive means, means to be rotatably driven, and a flexible, torque transmitting cable between said drive means and said rotatably driven means mounted for rotation within a generally cylindrical shaped cable housing, a flexible centering device extending through said cable housing for concentrically centering said cable with respect to said cable housing, said centering device comprising:
an elongated sleeve defining a cylindrical passageway through which said cable passes, the interior wall portion of said passageway having a continuous, circular cross-section, and
a plurality of radially extending fins integrally formed with said elongated sleeve and extending radially outward from said elongated sleeve a sufficient distance to contact the interior surface of said cable housing solely at the outer ends of said fins and to concentrically center said cylindrical passageway with respect to the interior of said cable housing,
said fins defining spaces between each other and between the interior surface of said cable housing and said elongated sleeve,



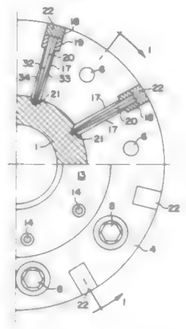
the wall thickness of said fins being approximately equal to the wall thickness of said elongated sleeve, and
said fins being unconnected with one another at their outer ends;
said centering device being dimensionally formed to be constrained against rotational movement within said cable housing.

5,364,308

TORSIONAL VIBRATION DAMPER

Eric M. Vollet, Netherthong, England, assignor to Holset Engineering Company, Ltd., Turnbridge, United Kingdom

Filed Dec. 9, 1991, Ser. No. 805,346
Claims priority, application United Kingdom, Dec. 7, 1990, 9026693
Int. Cl.[5] F16D *3/12, 3/50*
U.S. Cl. 464—82 **11 Claims**



1. A torsional vibration damper comprising:
an inner annular element;
a pair of outer annular rings encircling said inner annular element;
means for fastening said outer annular rings in abutting relationship, said rings having generally radially extending recesses cooperating to form a plurality of chambers;
spring means for damping torsional vibration received in each chamber and having a radially inner end connected to said inner annular element;

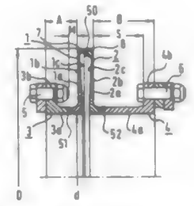
clamping means at the radially outer end of said spring means for clamping the spring means to the outer annular rings with the walls of said chamber in which said spring means is received;
the radially outer portion of said outer annular rings having axially extending enlarged slots intersecting each of said chambers at the radially outer portion thereof; and,
retaining means comprising a retaining clamp extending through each said enlarged slot and secured to said rings for retaining said spring means in place.

5,364,309

RESILIENT-MEMBRANE COUPLING ELEMENT FOR USE IN A TORQUE TRANSMISSION PATH, AND METHOD OF MANUFACTURE

Guenther Heidrich, Burgberg, and Siegfried Muller, Kempten, both of Germany, assignors to BHS-Bayerische Berg-Hutten- und Salzwerke AG, Munich, Germany

Filed Nov. 5, 1991, Ser. No. 761,972
Claims priority, application Germany, Mar. 10, 1989, 3907855
Int. Cl.[5] F16D *3/79*
U.S. Cl. 464—99 **22 Claims**



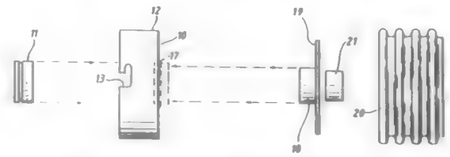
1. A resilient coupling element for use in a torque transmission path and adapted for allowing at least one of axial, radial and angular displacement of adjacent sections of said torque transmission path, said resilient coupling element having an axis and comprising two membrane components (1,2),
each of said membrane components (1,2) having a radially outer circumference (D), a radially inner circumference (d) and an annular membrane wall portion (1*a*,2*a*) extending radially between said radially outer circumference (D) and said radially inner circumference (d) substantially along a respective plane perpendicular to said axis and having a respective radial length,
said membrane components (1,2) being connected with each other at their respective radially outer circumferences (d) by spacer rim means (7,8) extending in axial direction between said two membrane components (1,2) and defining a gap between respective axially opposite faces (1*c*,2*c*) of said membrane wall portions (1*a*,2*a*) of said two membrane components (1,2), said gap having an axial gap width in an unloaded condition of said coupling element, at least one (2) of said membrane components (1,2) having at its radially inner circumference (d) a connector hub portion, said connector hub portion being welded by an annular radially inner weld (52) to an annular shaft section (4*a*) of said torque transmission path,
said connector hub portion having a radially inward directed, radially inner circumferential face having a diameter corresponding to the diameter of said radially inner circumference (d) of the respective membrane component (2), said shaft section (4*a*) having a radially inward directed, radially inner circumferential face, said radially inward directed, radially inner circumferential face of said connector hub portion and said radially inward directed, radially inner circumferential face of said shaft section (4*a*) being in substantial axial alignment with each other,
said membrane wall portions (1*a*,2*a*) of said membrane components (1,2) having respective wall thicknesses such that said axial gap width is increasable in response to axially opposite pulling forces acting onto said membrane components (1,2) along said respective radially inner circumferences (d) thereof, the increase of axial gap width under action of said axially opposite pulling forces being dependent on the radial location of gap width measuring points along a radial line extending between said radially inner circumferences (d) and said spacer rim means (7,8), the increase of axial gap width being larger at said radially inner circumferences (d) and smaller at said spacer rim means (7,8),
said spacer rim means (7,8) having a predetermined rim stiffness against elastic reduction of a radially outer diameter (D) thereof corresponding to said radially outer circumferences (D) of said two membrane components (1,2), said connector hub portion providing a predetermined stiffness against elastic increase of a diameter (d) thereof corresponding to said radially inner circumference (d) of said at least one membrane component (2), said radial length of said membrane wall portion of said at least one membrane component (2) as measured along a radial line in the respective plane perpendicular to said axis being reducible in response to said increase of axial gap width resulting from said axially opposite directed pulling forces, said predetermined rim stiffness of said spacer rim means (7,8) against elastic reduction of its radially outer diameter (D) and said predetermined stiffness against the increase of the inner diameter (d) of said connector hub portion being such that, in response to said increase of axial gap width, both an appreciable diameter reduction (2ΔR) occurs at said spacer rim means (7,8) and an appreciable diameter increase (2ΔR) occurs at said hub portion.

5,364,310

AGRICULTURAL AND OTHER POWERED EQUIPMENT

William Taylor, 55 Letterloan Road, Coleraine, Ireland BT51 4PP

PCT No. PCT/GB91/02055, § 371 Date May 12, 1993, § 102(e) Date May 12, 1993, PCT Pub. No. WO92/09189, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 20, 1991, Ser. No. 50,094
Claims priority, application Ireland, Nov. 22, 1990, 9025479
Int. Cl.[5] A01B *71/08;* **F16D** *3/84;* **F16C** *1/28*
U.S. Cl. 464—170 **12 Claims**



1. A connector for a PTO shaft guard attachment, comprising:
a base plate having a bearing located therein, said bearing having a central aperture sized to be closely locatable about a PTO output/input stub of a device, the base plate having a tubular portion extending from one face thereof and formed to provide one part of a connector mateable with a further part carried on an attachment that is separate from the device, and means for preventing rotation of the base plate and tubular portion with rotation of said output/input stub.

5,364,311

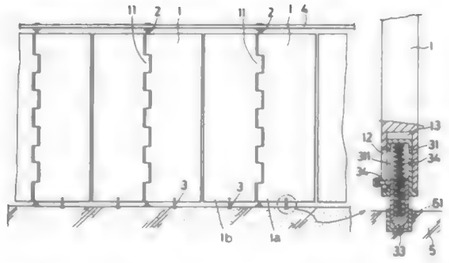
COLLAPSIBLE LABYRINTH

Hung-Tu Chou, No. 62, Chin Hsueh Road, Shan Hua Chen, Tainan Hsien, Taiwan, Prov. of China

Filed May 14, 1993, Ser. No. 61,045
Int. Cl.[5] A63J *11/00*
U.S. Cl. 472—62 **1 Claim**

1. A reconfigurable amusement labyrinth system comprising:

(a) a plurality of collapsible wall members, each of said collapsible wall members having at least a first wall section, at least a second wall section, and an elongated securing post having a cylindrical contour, each of said first and second wall sections having opposing sides forming a first surface and a second surface defining a thickness dimension, each of said first and second surfaces forming a planar contour extending in a longitudinal direction, said first wall section having a longitudinally extended first coupling edge having formed thereon a plurality of planar projections projecting substantially orthogonal to said longitudinal direction, said second wall section having a longitudinally extended second coupling edge having formed thereon a plurality of planar projections projecting substantially orthogonal to said longitudinal direction for insert between planar projections of said first coupling edge for releasable coupling therewith, said planar projections of each of said first and second coupling edges having longitudinally aligned openings for passage therethrough of said securing post, each of said first and second wall sections having a bottom edge which has formed therein a mortise cavity extending in a longitudinally upward direction, each of said first and second wall sections having formed therein a longitudinally extended first handle slot formed into said first surface adjacent said mortise cavity of said bottom edge;



(b) a plurality of securing tenon assemblies, each of said securing tenon assemblies having an inverted U-shaped support member for insert into said mortise cavity of said bottom edge of either of said first or second wall sections, a longitudinally extended spring biased support peg member captured within said support member for insert into a support cavity formed in a ground surface, and a release handle for said support peg member, said support member having formed therein a longitudinally extended second handle slot, said support member being inserted into said mortise cavity of said bottom edge of either first or second wall section whereby said second handle slot is substantially aligned with said first handle lot of said first surface of either said first or second wall section, said release handle being inserted through both said first and second handle slots and affixed to said support peg member; and,

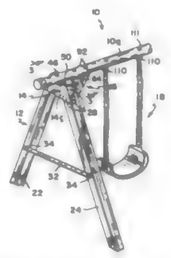
(c) a plurality of locking bars for aligning and transversely locking together a plurality of said securing posts of said collapsible wall members, each of said locking bars being elongated and releasably coupled to a first end of at least two of said securing posts.

5,364,312

PLAY GYM CONSTRUCTION

Joel C. Cunard; Robert J. Boudreau, and William H. Ziegler, Jr., all of Bedford, Pa., assignors to Hedstrom Corporation, Bedford, Pa.

Filed Feb. 17, 1993, Ser. No. 18,867
Int. Cl.[5] A63G *9/00*
U.S. Cl. 472—118 **15 Claims**



1. A children's play gym comprising

a cross beam consisting of at least one member;

wood legs forming at least one A-frame to support the cross beam

a rigid frame bracket having inclined side edges;

fasteners extending through the frame bracket and into said crossbeam and said legs for securing the legs to each other to form the A-frame and for connecting the A-frame to the cross beam;

a rigid frame brace positioned at the inside corner between said crossbeam and said A-frame, said frame brace including

a top wall for engaging the underside of the cross beam, said top wall having first portions defining a first set of holes spaced apart along the longitudinal centerline of the top wall, there being at least two holes in the first set and second portions defining a second set of holes, said second set containing at least two holes spaced along the top wall on each side of said centerline,

a pair of laterally spaced apart inclined side walls extending down from the top wall with substantially the same slope as the side edges of the frame bracket, and

a pair of flanges extending laterally from said side walls at one end of the frame brace, said flanges having portions defining openings for receiving fasteners;

first fastener means extending through selected ones of said openings into said legs to secure said flanges flat against said legs, and

second fastener means extending through the first set of holes into the crossbeam when the crossbeam is a single member and extending through the second set of holes into the crossbeam when the crossbeam consists of a plurality of members so that the frame brace braces the inside corner between the cross-beam and the A-frame.

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CHILD ENTERTAINMENT DEVICE

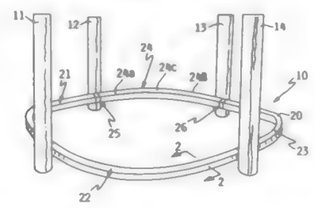
David Nickelson, P.O. Box 68, 21279 Olinda Tr. N., Scandia, Minn. 55073

Filed Sep. 13, 1993, Ser. No. 120,047
Int. Cl.[5] A63G *1/32*
U.S. Cl. 472—135 **12 Claims**

1. A child's amusement device comprising:

a torsible beam having sufficient rigidity to remain in a rigid condition when no external force is applied, said torsible beam having sufficient resiliency so that the entire torsible beam can flex and twit in response to an external force on said torsible beam, said torsible beam having a child-support surface;

a plurality of pivotal supports carrying said torsible beam, said plurality of pivotal supports spaced about said torsible beam, said pivotal supports coacting to restrain said torsible beam from pivoting motion about the pivotal supports unless an external force is applied to said child-support surface which is sufficient to both flex and twist the torsible beam, said torsible beam having sufficient flexibility and resiliency so that when an external force deflects a portion of said torsible beam, other portions of said torsible beam flex and twist in response thereto causing the other portions of the torsible beam to flex and twist as the torsible beam oscillates about the pivotal supports to thereby provide a ride for a child located thereon.

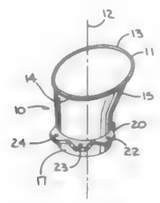


5,364,314

MULTI-POSITION RUBBER PINSETTER DECK CHUTE

Roy A. Burkholder, Whitehall, and Anthony J. Gretzky, Norton Shores, both of Mich., assignors to Brunswick Bowling & Billiards Corporation, Muskegon, Mich.

Filed Jul. 12, 1993, Ser. No. 90,303
Int. Cl.[5] A63D *5/00*
U.S. Cl. 473—94 **2 Claims**



1. An improved universal pin deck chute for an automatic pinsetter having a pin deck with a plurality of pin receiving apertures therein, means for delivering pins to said pin receiving apertures and a deck chute associated with each pin receiving aperture to guide a delivered pin into the aperture, said pin deck having three shoulder means positioned adjacent to an spaced at 120° intervals around the periphery of each pin receiving aperture for attachment to said deck chute, and means for attaching said deck chute to said shoulder attachment means;

said deck chute having a cylindrical lower portion adapted to fit within said pin receiving apertures and a frustoconical upper portion, the vertical axis of which intersects the axis of the lower portion at an acute angle;

the improvement comprising:

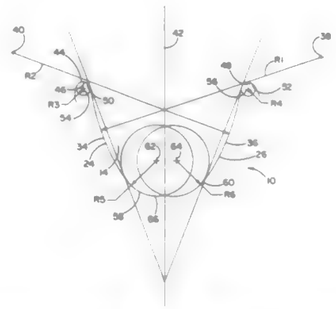
a retaining flange extending outwardly and disposed substantially around the cylindrical portion of the deck chute, said flange having at least six passages extending axially therethrough and spaced at 60° radial intervals around the flange, whereby the chute may be attached to the pin deck at any of the pin receiving apertures in six different pin receiving radial positions with three of said axial passages aligned with said three shoulder means.

5,364,315

V-RIBBED BELT

Toshimi Kumazaki, Hyogo, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed May 14, 1993, Ser. No. 61,916
Claims priority, application Japan, May 18, 1992, 39831[U]
Int. Cl.[5] F16G *5/20*
U.S. Cl. 474—242 **25 Claims**



1. An improved power transmission belt of the type having at least one longitudinally extending rib with a side surface to engage a drive surface on a cooperating pulley, the improvement comprising:

said rib side surface having at least a portion that is convex with a curvature at least approximated by a first arc with a radius having a first center at a point outside of said at least one rib,

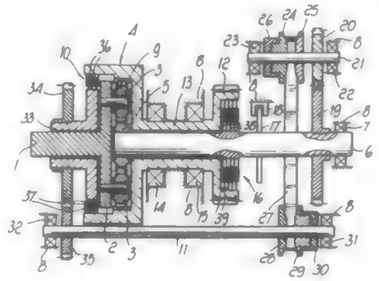
said convex surface portion being engagable with a drive surface on a pulley.

5,364,316

POWER DISTRIBUTOR UNIT PARTICULARLY FOR AGRICULTURAL, INDUSTRIAL AND SIMILAR MACHINE

Alberto Brambilla, Rodengo Saiano, Italy, assignor to Clark-Hurth Components S.p.A., Arco, Italy

Filed Feb. 17, 1993, Ser. No. 18,598
Claims priority, application Italy, Mar. 2, 1992, MI92A000462
Int. Cl.[5] F16H *47/04*
U.S. Cl. 475—80 **9 Claims**



1. Power distributor unit particularly for agricultural, industrial and similar machines, comprising an input drive shaft, said drive shaft being connected to a spider for planetary gears of an epicyclic train including a sun gear and a ring gear, said sun gear being keyed to a transmission shaft, locking means being keyed to said transmission shaft for locking said sun gear with respect to said ring gear of said epicyclic train, transmission means being keyed to said transmission shaft for connecting said sun gear to a continuously-variable transmission, a first

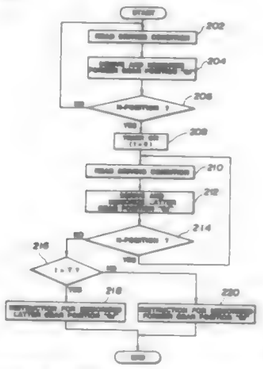
clutch for connecting said ring gear to a first countershaft, said first countershaft being connected to said continuously-variable transmission, said first clutch acting as a power-adder train, said ring gear being rigidly connected to an output gear of said power distributor unit.

5,364,317

CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

Satoshi Amemiya, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Feb. 18, 1993, Ser. No. 19,352
Claims priority, application Japan, Feb. 18, 1992, 4-069145
Int. Cl.[5] F16H *59/04*
U.S. Cl. 475—132 **5 Claims**



1. In an automotive automatic transmission which permits a return movement of a shift lever from Neutral (N)-position to a Forward-position after a movement of the same from the Forward-position to N-position,

a control system comprising:

first means for deriving and memorizing a suitable gear position of the transmission which is to be selected under a driving condition which has been assumed by the vehicle just before said return movement of the shift lever; and

second means for forcing said transmission to take the memorized gear position upon completion of said return movement of the shift lever.

5,364,318

Patent Not Issued For This Number

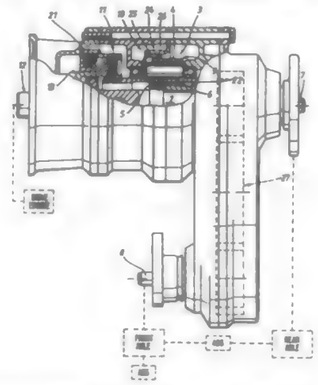
5,364,319

DRIVING METHOD AND ARRANGEMENT WITH EPICYCLIC GEARBOX HAVING A CENTRIFUGAL BRAKE AND ABS FOR MOTOR VEHICLE AXLES

Wolf Boll, Weinstadt, and Axel Fedeler, Sindelfingen, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Nov. 27, 1992, Ser. No. 982,686
Claims priority, application Germany, Nov. 26, 1991, 4138738
Int. Cl.[5] B60K *23/08;* **F16H** *1/42*
U.S. Cl. 475—224 **8 Claims**

1. An epicyclic gearbox arrangement for driving two vehicle axles of a motor vehicle, comprising two inner central wheels with different numbers of teeth and engaging with a planet wheel are in permanent drive connection with a front vehicle axle and a rear vehicle axle, respectively, and a planet carrier of the planet wheel can be locked securely to be a gearbox housing via a centrifugal brake, wherein the planet carrier is operatively connected to one of the inner central wheels by a friction clutch controlled as a function of slip occurring at one wheel of one of the vehicle axles and, with an automatic lock preventer operatively connected with wheels of the front and rear axles having slip threshold values, the centrifugal brake is configured such that a response rotational speed of the centrifugal brake for locking the planet carrier is sufficiently higher than rotational speeds at which slip threshold values of the automatic lock preventer occur but sufficiently lower than a



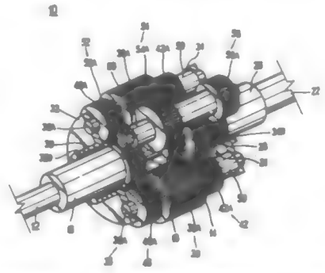
critical rotational speed range at which bursting of the epicyclic arrangement occurs to prevent excessive rotational speed of the planet carrier.

5,364,320

CONTINUOUSLY-GEARED AUTOMATIC TRANSMISSION WITH CONTROLLING BRAKES

Jong O. Ra, 24/1,265-154 Bokwang-Dong, Yongsan-Gu, Seoul; Joon Y. Lim, Duckyong, Villa Ka-204, 141-2, Duckjeong-Ri, Hoecheon-Uep, Yangju-Gun, Kyungki-Do, and Wan M. Yoo, Incheon, all of Rep. of Korea, assignors to Jong Oh Ra and Joon Young Lim, both of Rep. of Korea

Filed Mar. 10, 1993, Ser. No. 28,824
Int. Cl.[5] F16H *3/62*
U.S. Cl. 475—280 **21 Claims**



1. An automatic variable speed transmission, comprising:

an input shaft (12) with a first end (12A) and a second end (12B) for receiving rotational input and further including an input sun gear (14) secured to said input shaft between said first end (12A) and said second end (12B) of said input shaft to enable simultaneous rotation with said input shaft;

a reverse rotation control shaft (16) rotatably and coaxially mounted on said input shaft to enable independent rotation about said input shaft (12) and further including a reverse rotation sun gear (18) secured to said shaft (16) to enable simultaneous rotation with said reverse rotation control shaft (16);

an output shaft (22) having a first end (22A) and a second end (22B) with an output sun gear (24) secured to said first end (22A) of said output shaft (22) and with an axial bore (20) formed in said first end of said output shaft to coaxially receive therein said second end (12B) of said input shaft (12) to enable independent axial rotation of said output shaft (22) and said input shaft (12);

a medium speed control shaft (26) having a first end (26A) and a second end (26B) with a medium speed sun gear (28) secured to said first end (26A) of said shaft (26) with said shaft (26) being rotatably and coaxially mounted on said output shaft (22) to enable independent rotation about said output shaft (22);

a low speed control shaft (30) having a first (30A) end and a second (30B) end with a first carrier (32) formed at said first end (30A) and with said low speed control shaft being rotatably and coaxially mounted on said reverse rotation control shaft (16) to enable independent rotation about said reverse rotation control shaft;

a second carrier (34) rotatably and coaxially mounted on said medium speed control shaft (26) to enable independent rotation about said medium speed control shaft (26);

a plurality of locking pins (36,52) with each locking pin (36A,52A) of said plurality of locking pins (36,52) secured to and interlinking said first and said second carriers (32,34) to enable simultaneous rotation of said carriers (32,34);

a plurality of reverse rotation differential gears (46) with each said reverse rotation differential gear (46A) being in mechanical communication with said reverse rotation sun gear (18);

a plurality of output differential gears (42) with each said output differential gear (42A) being in mechanical communication with said output sun gear (24);

a plurality of input differential gears (38) with each said input differential gear (38A) interconnected to a reverse rotation differential gear (46A) of said plurality of reverse rotation differential gears (46) and interconnected to an output differential gear (42A) of said plurality of output differential gears (42) with said interconnected input differential gear (38A), said output differential gear (42A) and said reverse rotation differential gear (46A) rotatably mounted on a locking pin (36A) of said plurality of locking pins (36) to enable simultaneous rotation about locking pin (36A) and each said input differential gear (38A) being in mechanical communication with said input sun gear (14);

a plurality of transmission differential gears (54) with each said transmission differential gear (54A) being in mechanical communication with each said input differential gear (38A);

a plurality of medium speed differential gears (58) with each said medium speed differential gear (58A) interconnected to a transmission differential gear (54A) of said plurality of differential gears (54) and said interconnected medium speed differential gear (58A) and said transmission differential gear (54A) rotatably mounted on a locking pin (52A) of said plurality of locking pins (52) to enable simultaneous rotation about said locking pin (52A) and each said medium speed differential gear (58A) being in mechanical communication with said medium speed sun gear (28);

a low speed brake means (62) for applying rotational resistance to said low speed control shaft (30) to provide low speed rotation of said output shaft (22);

a medium speed brake means (64) for applying rotational resistance to said medium speed control shaft (26) to provide medium speed rotation of said output shaft (22);

an interlocking means (70) for coupling rotation of said input shaft (12) to said reverse rotation control shaft (16) to provide increased rotation of said output shaft upon complete interlocking such that said input shaft and said reverse rotation control shaft (16) rotate at the same speed; and

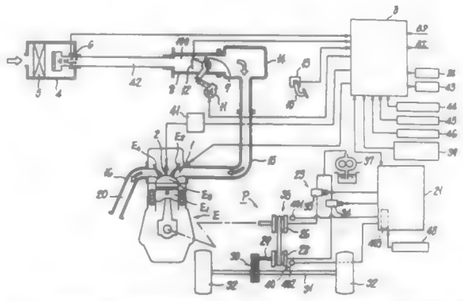
a reverse rotation brake means (66) for applying rotational resistance to said reverse rotation control shaft (16) to provide reverse rotation of said output shaft (22).

5,364,321

CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE AND A CONTINUOUSLY VARIABLE TRANSMISSION

Kazuhide Togai, Takatsuki; Takashi Takatsuka, Kyoto; Makoto Shimada, Okazaki; Junji Kawai, Anjo, and Kazuya Hayafune, Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00407, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993
PCT Filed Apr. 2, 1992, Ser. No. 938,151
Claims priority, application Japan, Apr. 2, 1991, 3-070131
Int. Cl.[5] F16H *59/14*
U.S. Cl. 477—42 **7 Claims**



1. A control device for controlling an internal combustion engine and a continuously variable transmission of a vehicle, said continuously variable transmission transmitting power between the internal combustion engine and driving wheels, and having a continuously changeable transmission ratio, said control device comprising:

driving torque detecting means for detecting driving torque applied to the vehicle;

transmission ratio changing speed detecting means for detecting transmission ratio change speed which is a changing rate of the transmission ratio of said continuously variable transmission;

transmission torque fluctuation correcting amount setting means for setting a transmission torque fluctuation correcting amount as a first running resistance which is consumed for the transmission operation of said continuously variable transmission in accordance with the transmission ratio changing speed detecting by said transmission ratio changing speed detecting means;

vehicle speed detecting means for detecting an actual speed of said vehicle;

vehicle speed correcting torque setting means for setting vehicle speed correcting torque, which is necessary for eliminating a deviation between an objective vehicle speed for allowing the vehicle to be traveled at a constant speed and the actual vehicle speed detected by said vehicle speed detecting means, in accordance with said deviation;

objective driving torque setting means for setting objective driving torque in accordance with the driving torque detected by said driving torque detecting means, the transmission torque fluctuation correcting amount set by said transmission torque fluctuation correcting amount setting means, and the vehicle speed correcting torque set by said vehicle speed correcting torque setting means; and

output controlling means for controlling output of said internal combustion engine in accordance with the objective driving torque set by said objective driving torque setting means.

5,364,322

CONTROL APPARATUS FOR A MARINE ENGINE

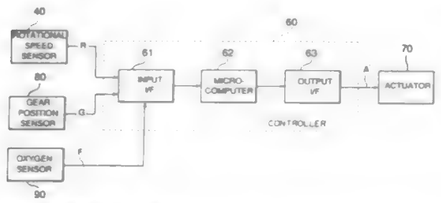
Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 870,913, Apr. 20, 1992. This application Dec. 15, 1993, Ser. No. 167,348

Claims priority, application Japan, Apr. 22, 1991, 3-90320; Apr. 22, 1991, 3-90321; Apr. 25, 1991, 3-95195

Int. Cl.[5] F16H *59/74*

U.S. Cl. 477—108 **6 Claims**



1. A control apparatus for a marine engine having a transmission comprising:

a rotational speed sensor for sensing the number of revolutions per minute of the engine and generating a corresponding output signal;

a gear position sensor for sensing a gear position of the transmission and generating a corresponding output signal;

an air/fuel ratio sensor for sensing an air/fuel ratio of a mixture supplied to the engine and generating a corresponding output signal;

a controller connected to receive the output signals from said rotational speed sensor, said gear position sensor and said air/fuel ratio sensor for generating a drive signal which controls an engine control parameter, based on at least the number of revolutions per minute of the engine, the gear position and the air/fuel ratio as sensed by said sensors; and

actuator means connected to receive the drive signal from said controller for controlling the engine control parameter based on said drive signal;

said controller comprising:

a trolling determinor for determining, based on the number of revolutions per minute of the engine and the gear position, whether the engine is trolling; and

power control means for controlling said actuator means such that output power of the engine is made to be at a constant value when the engine is trolling.

5,364,323

MULTI-DIRECTIONAL ROTATABLE WRIST EXERCISER

Tony Liu, No. 460, Guang-Fuh Road, Beei-Doou Jenn, Jang Hsien, Taiwan, Prov. of China

Filed Sep. 9, 1993, Ser. No. 118,274

Int. Cl.[5] A63B *23/14*

U.S. Cl. 482—45 **1 Claim**

1. A multi-directional rotatable wrist exerciser comprising:

an arm covering body;

a movable base;

a plurality of bolts; and

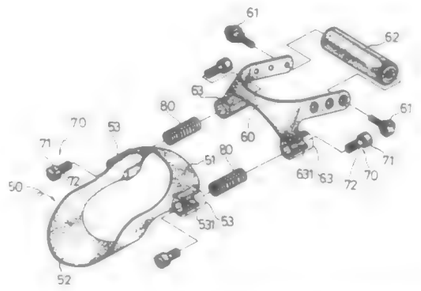
a plurality of spiral springs;

wherein said arm covering body has an elongated frame body with two semi-arc portions opposing each other, a forward end of the arm covering body has an open end substantially circular positioning housing cover on each edge, said positioning housing cover has an internal annular member which is used to split up the inside of the positioning housing cover into two containing spaces;

the movable base is configured to have a 'U' shape, in which a handle is attached to an open end of the U-shaped movable base by means of connecting components, each side of a bottom edge of the movable base has a substantially circular positioning housing, which has an internal annular member for splitting up the positioning housing into two containing spaces;

the bolts have threads in their shanks, the diameters of the bolts' heads are equal to the inside diameters of the positioning housing cover and the positioning housing, the diameters of the shanks are equal to the inside diameters of the annular members of the positioning housing cover and the positioning housing;

the spiral springs are made from harden material, the pitches of the ends of the spiral springs are equal to the pitches of the threads of the bolts, the pitches at the center portion of the spiral springs are greater than the pitches at both ends of each spiral spring;



both ends of each spiral spring are respectively fitted into the positioning housing cover and the positioning housing, one end of each spiral spring butts against a bottom of the annular member of the positioning housing cover while the other end butts against a bottom of the annular member of the positioning housing, the other containing spaces of the positioning housing cover and the positioning housing accepts said bolts, the bottom surfaces of the head of each of the bolts butts against top of the annular member and the shank of the bolts feed through the annular member, reach to the other containing space and secure to the spiral spring; and

whereby tightening the bolt the spiral spring can be secured and positioned in between the positioning housing cover and the positioning housing, allowing the covering body and the movable base to be fastened together in a multi-directional movable manner.

5,364,324

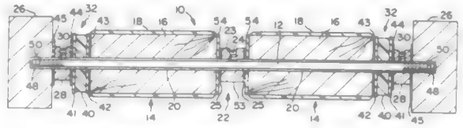
EXERCISE DEVICE

Walter W. Boettiger, Jr., 227 S. Ivy La., Glen Mills, Pa. 19342

Continuation-in-part of Ser. No. 990,087, Dec. 14, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 83,479

Int. Cl.[5] A63B *23/14*

U.S. Cl. 482—46 **13 Claims**



1. An exercise device comprising:

an elongated mounting bar with first and second end portions;

first and second grip members rotatably mounted on said elongated mounting bar;

center stop apparatus fixedly mounted on said mounting bar midway between said first and second end portions and between said first and second grip members whereby axial movement of one of said grip members is prevented from causing axial movement of the other of said grip members;

first and second adjustable end members mounted on said end portions of said mounting bar for axial movement toward and away from said first and second grip members;

first and second adjustable tension apparatus positioned on said mounting bar between each of said first and second grip members and said first and second adjustable end members and comprising first and second compression bias members respectively mounted on said elongated mounting bar between each of said first and second grip members and said first and second adjustable end members;

first and second end stop members mounted on said elongated mounting bar between each of said first and second adjustable end members and said first and second adjustable tension apparatus, said first and second end stop members being fixed against rotation about said elongated mounting bar; and

friction members mounted on said elongated mounting bar between said first compression bias member and said first end stop member and between said second compression bias member and said second end stop member;

whereby, said grip members, said center stop apparatus, said adjustable end members, said adjustable tension apparatus, said compression bias members, said end stop members and said friction members cooperate to provide a mechanism whereby resistance to rotation of said grip members is selectively variable in response to adjustment of said adjustable end members relative to said grip members, said compression bias members provide friction enhancing bias against said respective grip members upon inward adjustment of said adjustable end members, and whereby said friction members comprise means providing both friction and lubrication between said tension apparatus and said end members whereby a variable coefficient of friction is provided between said compression bias members and said end stop members whereby resistance to rotation of said first and second grip members with respect to said end stop members is variable with adjustment of said adjustable end members and relative rotation of said grip members occurs with a smoothness of motion at all levels of tension, and whereby resistance to rotation of each grip member is independently adjustable.

5,364,325

LEVERAGED WEIGHT COMPOUNDING SYSTEM

Douglas R. Matthews, 50 E. Wyoming St., St. Paul, Minn. 55107

Filed Jun. 18, 1993, Ser. No. 79,988

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—111 **16 Claims**

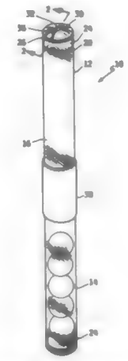
1. A leveraged weight compounding system device comprising:

(a) a cell tube having a first diameter, and a length;

(b) a plurality of weighted spheres disposed inside the cell tube each of said weighted spheres having a diameter approximately equal to, but smaller than, said first diameter, said weighted spheres having rotational and linear movement along said entire length of said cell tube, said weighted spheres providing for the linear-transition of a confined mass within said cell tube;

(c) a fluid-buffering means completely filling said cell tube, said fluid-buffering means for providing resistance to movement of said plurality of weighted spheres, said fluid buffering means slowing said linear-transition of confined mass within said cell tube; and

(d) a means for sealing said cell tube confining said plurality of weighted spheres and said fluid-buffering means inside said cell tube whereby the duration of said linear-transition of confined mass within said cell tube is increased.



5,364,326

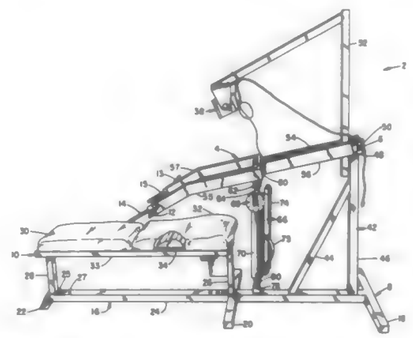
HYDRAULIC EXERCISE APPARATUS

Warren Smith, Box 85A, and Donald Pank, Box 85B, both of Wentworth, Wis. 54874

Filed Jul. 6, 1993, Ser. No. 85,722

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—113 **23 Claims**

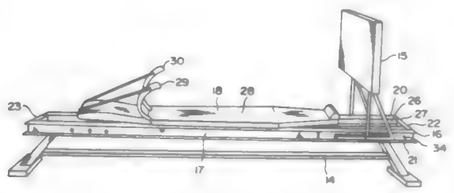


1. Exercise apparatus comprising:

(a) a stationary frame, a carriage frame, support means for supporting a user to manipulate said carriage frame and including scale means for determining a relative magnitude of physical exertion expended by the user to move said carriage frame and for displaying expended energy, and means for retaining said carriage frame to said stationary frame to permit movement of said carriage frame over a predetermined travel path; and

(b) hydraulic means coupled to said stationary and carriage frames for directing a fluid media in a closed loop flow path with movement of said carriage frame, such that a greater resistance to flow is obtained over an exercise portion of said travel path than over a return portion of said travel path.

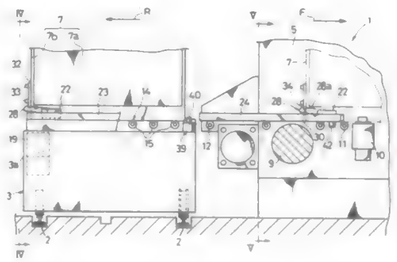
5,364,327
EXERCISE APPARATUS COMPRISING AN ADJUSTABLE KICKPLATE ASSEMBLY
Gary A. Graham, Box 2000, Glacier, Wash. 98244
Filed Jan. 6, 1993, Ser. No. 1,958
Int. Cl.[5] A63B *21/02*
U.S. Cl. 482—122 **2 Claims**



1. An exercise apparatus comprising:
a kick plate assembly,
a carriage, said carriage further including a support for a user, a track assembly having a length, first and second ends further comprising first and second rails and being interconnected by said cross members and configured to be supported on a horizontal surface,
means for mounting said carriage on said track assembly such that said carriage is slidably movable along said track assembly,
means for resiliently restraining said carriage to move toward said first end of said track,
said kick plate assembly comprising:
a support assembly,
a kick plate,
means for attaching said kick plate to said support assembly such that said kick plate is mounted a distance above said track assembly and said distance being adjustable and;
means for adjustably attaching said kick plate to said track such that it can be positioned anywhere along said track assembly and immovably fastened to at least the first and second ends of said track to resist a pushing force exerted on it by a user said kick plate being mounted substantially perpendicular to said track assembly,
whereby with said kick plate assembly attached to said track assembly near said first end of said track, a user can lie face upon on said support and push on said kick plate with at least one of the users feet to move the user, carriage and support away from said kick plate against said means for resiliently restraining and then cease pushing to allow the user, carriage and support to be moved toward said kick plate by said means for resiliently restraining.

5,364,328
METAL MOULD REPLACING APPARATUS
Yo Takahama, and Keitaro Yonezawa, both of Kobe, Japan, assignors to Kabushiki Kaisha Kosmek, Kobe, Japan
Filed May 18, 1993, Ser. No. 62,756
Claims priority, application Japan, Jun. 8, 1992, 4-174968
Int. Cl.[5] B23Q *3/10;* **B30B** *15/00;* **B29C** *45/00*
U.S. Cl. 483—28 **10 Claims**

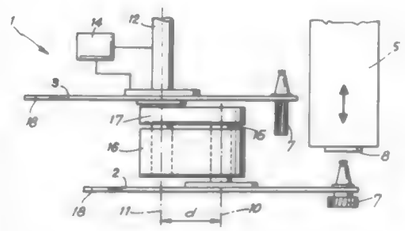
1. A metal mould replacing apparatus comprising:
a metal mould replacing stand (3);



a metal mould (7) having an engaged portion (34), said mould being placed on said stand forming an area therebetween;
a metal mould moving path (14) provided in said metal mould replacing stand (3) and extending to a moulding machine (1);
a push/pull drive device (19) provided in said metal mould replacing stand (3);
a transmission member (21) having a front end and a rear end, said rear end being connected to said drive device (19);
an advancing/retreating member (22) to which the front end of said transmission member (21) is connected;
a guide rail (23) disposed in said metal mould replacing stand (3) along said moving path (14) for guiding said transmission member (21) and said advancing/retreating member (22); and
a hook (28) having a first portion extending into the area between the stand and the metal mould and a second portion extending opposite said first portion, said first portion being pivotally supported by said advancing/retreating member (22) and said second portion being provided with an engaging portion (30) adapted to be engaged with said engaged portion (34) from below,
wherein said first portion of the hook, when the hook is engaged with said engaged portion, is positioned entirely within the area between the stand and the mould and said transmission member being at least partly within the area between the stand and the mould thus enabling the replacing stand to be smaller.

5,364,329
MACHINE TOOL FITTED WITH A TOOL MAGAZINE HAVING DISKS
Henri Liné, Peymeinade, France, assignor to Helis S.A., Peymeinade, France
Filed Dec. 14, 1993, Ser. No. 166,719
Claims priority, application France, Dec. 15, 1992, 92 15108
Int. Cl.[5] B23Q *3/157*
U.S. Cl. 483—56 **7 Claims**

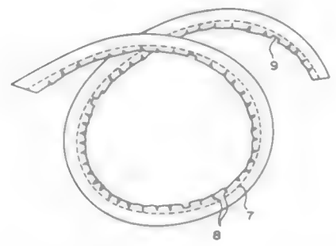
1. A machine tool having a vertically movable machining head and an automatic tool changer, and fitted with a tool magazine including two same-diameter superposed disks, namely an upper disk and a lower disk, with tools being distributed around the peripheries thereof, and automatic rotary drive and indexing means for said disks, said machining head and said tool magazine being capable of moving relative to each other to enable a tool to be changed,



wherein the lower disk is offset relative to the upper disk towards the machining head through a distance d leaving room for the machining head to take tools from said lower disk or to deposit them thereon.

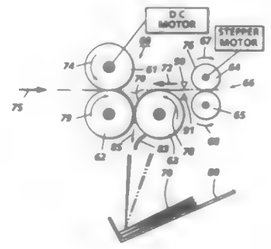
5,364,330
Patent Not Issued For This Number

5,364,331
HEAT RESISTANT ROLL FOR USE IN STEEL PLATE MANUFACTURING EQUIPMENT
Tetsuo Higashino, Omihachiman; Shosaku Nakamura, Echi; Akira Iimurou; Misao Maeyama, both of Uzi; Yoshimi Fukushige, Itami, and Tomoyuki Harada, Yahatanishi, all of Japan, assignors to Tohoyogyo Co., Ltd., Shiga, Japan
Filed Mar. 18, 1993, Ser. No. 34,749
Claims priority, application Japan, Aug. 31, 1992, 4-67186[U]
Int. Cl.[5] B32B *15/08*
U.S. Cl. 492—43 **8 Claims**



1. A heat resistant roll for use in steel plate manufacturing equipment, the roll having an outer periphery comprising a para aromatic polyamide fiber, said outer periphery coming into contact with the steel plate heated to a high temperature.

5,364,332
SOFT NIP FOLDER
Gary A. Gray, Jr., Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jul. 1, 1993, Ser. No. 84,722
Int. Cl.[5] B41F *13/60;* **B65H** *45/14, 45/20*
U.S. Cl. 493—23 **5 Claims**



1. A folder assembly, comprising:
first nip means positioned to drive a sheet in a predetermined plane including a first idler roll and a drive roll in contact with said first idler roll and adapted to initially accept a sheet from a source and transport it in a first direction in said predetermined plane;
second nip means including said first idler roll and a second idler roll positioned adjacent to and in contact with said first idler roll, said drive roll being adapted to drive both said first and second idler rolls so as to transport the sheet in said first direction in said predetermined plane before folding of the sheet takes place and in a second direction orthogonal to said predetermined plane when folding of the sheet takes place;
third nip means positioned in substantially the same plane as said first nip means and adapted to receive the sheet driven thereinto in said predetermined direction and predetermined plane by said first nip means; and
control means for reversibly driving said third nip means such that the sheet driven into said third nip means by said first nip means is initially driven in said first direction and after a predetermined period of time is driven in a reverse direction, and wherein the driving of the sheet in said reverse direction against the driving of the sheet by said first nip means causes a buckle to form in the sheet with said buckle being captured by said second nip means and forming a crease in the sheet.

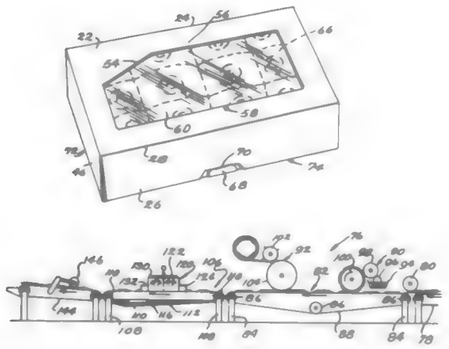
5,364,333
TAMPER EVIDENT CONSUMER PRODUCT PACKAGE, WINDOWED FLAT BLANK USED THEREIN, AND METHOD AND APPARATUS FOR MAKING THE SAME
Richard F. Gulliver, Tuscaloosa, Ala., and Michael C. Linder, Monroe, La., assignors to Gulf States Paper Corporation, Tuscaloosa, Ala.
Continuation of Ser. No. 703,734, May 21, 1991, abandoned, which is a division of Ser. No. 554,670, Jul. 19, 1990, Pat. No. 5,060,853. This application Jul. 15, 1993, Ser. No. 91,887
Int. Cl.[5] B31B *1/82*
U.S. Cl. 493—84 **8 Claims**

1. Apparatus for forming carton blanks each comprising a sheet of carton material having an opening therein and a sheet

of clear film having a central portion sufficient to extend over said opening and a marginal peripheral portion sufficient to extend over a marginal peripheral portion of said carton sheet defining said opening, said apparatus comprising

means for moving successive carton sheets (1) into and out of an adhesive-applying station (2) into and out of an assembly station and (3) into and out of an ultraviolet wave energy applying station,

means for applying an amount of ultraviolet wave energy curable adhesive to one surface of the marginal peripheral portion of each successive carton sheet while in said adhesive-applying station,



means for cutting successive clear film sheets from a roll supply of clear film material and for mounting each successive clear film sheet on a mating carton sheet while in said assembly station for movement by said moving means with the mating carton sheet in an assembled relation therewith wherein the central portion of the clear film sheet extends over the opening and the marginal peripheral portion of said clear film sheet is disposed in lapped relation with the marginal peripheral portion of the mating carton sheet and one surface of the marginal peripheral portion of the clear film is engaged with the adhesive on the one surface of the marginal peripheral portion of the mating carton sheet, and

means, constructed and arranged with respect to said moving means, for subjecting each successive clear film sheet, while in assembled relation with a mating carton sheet add moving through said ultraviolet wave energy applying station, with sufficient ultraviolet wave energy to cure the ultraviolet wave energy curable adhesive, thereby bonding each successive clear film sheet to a mating carton sheet so that the bond cannot be rebonded by the cured adhesive once the bond provided by the cured adhesive between the sheets has been broken.

5,364,334

CONTINUOUS PAPER FOLDING DEVICE FOR USE WITH PRINTER

Kiyoshi Inomata, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 8, 1993, Ser. No. 118,436

Claims priority, application Japan, Mar. 19, 1993, 5-60003

Int. Cl.[5] B65H *45/20*

U.S. Cl. 493—410 **8 Claims**

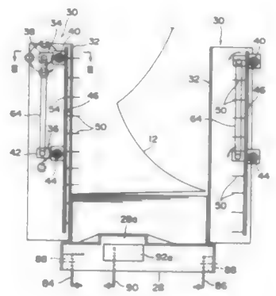
1. A continuous paper folding device for folding a continuous paper having perforations along which said paper is to be folded, comprising:

a frame;

a table movable between a storing position where said continuous paper is to be received by said table and a drawn position where said table is drawn from said storing position; and

a pair of rotational tapping mechanisms provided on both sides of said table, for rotationally tapping said continuous paper received by said table to forcibly fold said continuous paper along said perforations;

each of said rotational tapping mechanisms comprising:



an upper crank comprising a pair of first arms spaced from each other and a first shaft connecting said first arms;

a lower crank comprising a pair of second arms spaced from each other and a second shaft connecting said second arms;

a blade assembly vertically extending and having a plurality of elastic blades vertically spaced from each other, said blade assembly being rotatably mounted on said first shaft of said upper crank and said second shaft of said lower crank; and

driving means for synchronously rotating said upper crank and said lower crank.

5,364,335

DISC-DECANTER CENTRIFUGE

Paul H. Franzen, Stamford, Conn.; Ken J. Alit, Katonah, N.Y.; Richard R. Michand, Waterbury, Conn.; Helmuth Probstmeyer, Bridgeport, Conn., and Michael R. Tammone, Monroe, Conn., assignors to Dorr-Oliver Incorporated, Milford, Conn.

Filed Dec. 7, 1993, Ser. No. 162,994

Int. Cl.[5] B04B *1/04, 1/20, 9/00, 9/12*

U.S. Cl. 494—15 **16 Claims**

1. A centrifuge having a vertical axis of rotation and supported by a support structure for effecting the separation of a feed mixture into multiphase fractions, said centrifuge comprising:

a shaft positioned upon and rotatably attached to said support structure;

a bowl coaxially attached to and rotatable with said shaft;

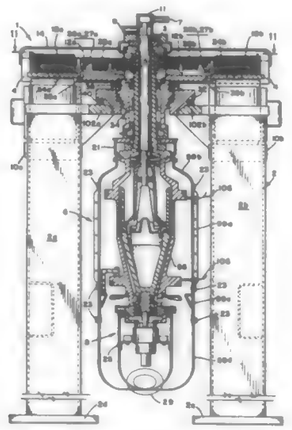
a heavy fraction chamber adjacent one end of said bowl in communication with the interior of said bowl through a heavy fraction discharge opening;

an inlet in communication with said bowl for introducing said mixture into said bowl;

a rotatable screw conveyor longitudinally disposed within and coaxial with said bowl;

a hub member disposed within the upper portion of said screw conveyor, said hub member being coaxially attached to and rotatable with said bowl, the space intermediate said conveyor and said hub member defining a separation chamber;

a plurality of separating discs disposed in said separation chamber and stacked in superimposed layers upon said hub member;



a distributor disposed within said hub and in communication with said inlet means so as to receive the feed mixture, said distributor being attached to said conveyor, said hub having a plurality of passages in the lower portion thereof which lead into said separation chamber;

an accelerator attached to said distributor for impelling the feed mixture through said passages of said hub and into said separation chamber;

means coupled to said shaft and conveyor for rotating said bowl and conveyor at different speeds; and

a light fraction discharge outlet in communication with said separation chamber for discharging a light fraction from said bowl.

5,364,336

THERAPEUTIC PROBE FOR RADIATING MICROWAVE AND IONIZING RADIATION

Kenneth L. Carr, Harvard, Mass., assignor to Microwave Medical Systems, Inc., Littleton, Mass.

Continuation of Ser. No. 995,326, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 628,579, Dec. 17, 1990, abandoned. This application Sep. 23, 1993, Ser. No. 126,106

Int. Cl.[5] A61N *5/02*

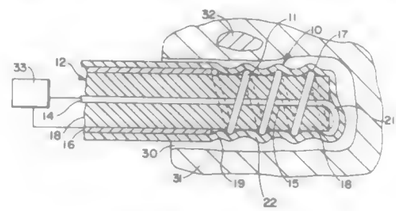
U.S. Cl. 600—2 **12 Claims**

1. A probe to invade a living organism, said probe comprising

antenna means defining an antenna;

a radioactive substance within said antenna means, and

means for connecting said antenna means to a source of energy so that said probe can simultaneously deliver to



said organism thermo-radiation from said antenna means and ionizing radiation from said substance.

5,364,337

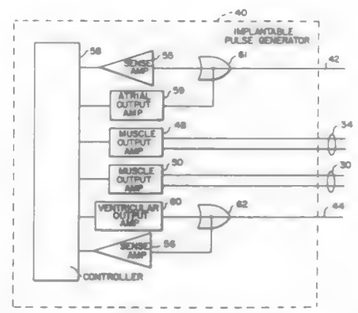
MUSCLE POWERED CARDIAC ASSIST SYSTEM

Gerard M. Guiraudon, London, Canada, and Ivan Bourgeois, Verviers, , assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 597,316, Oct. 15, 1990, Pat. No. 5,205,810. This application Apr. 14, 1993, Ser. No. 47,722

Int. Cl.[5] A61M *1/12*

U.S. Cl. 600—16 **4 Claims**



1. A cardiac assist system operatively coupled to a first skeletal muscle mass wrapped about the atria of a heart and a second skeletal muscle mass wrapped about the ventricles of the heart, said system comprising:

a. contraction detection means coupled to said atria and said ventricles for detecting contractions of said atria and said ventricles; and

b. stimulation means coupled to said contraction detection means and adapted to be coupled to said first and second skeletal muscle masses for stimulating said first skeletal muscle mass to contraction in response to the detection of an atrial contraction, and for stimulating said second skeletal muscle mass to contraction in response to the detection of a ventricular contraction.

5,364,338

ROLLING MASSAGER

Katsu Terashima, 8-2, Yahiro 3-chome, Sumida-ku, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 917,298

Claims priority, application Japan, May 22, 1992, 4-41039[U]

Int. Cl.[5] A61H *15/00*

U.S. Cl. 601—120 **12 Claims**

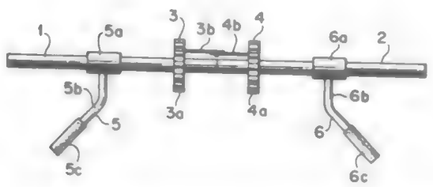
1. A massager comprising:

an elongate rigid support rod having opposed terminal end portions;

flexible extension rods joined to each said terminal end portion of said rigid support rod;

at least one pair of separated pressers mounted to said support rod for massaging a person's body; and

a pair of handles each joined to and transversely extending from said elongate support rod at a location laterally outside of a respective one of said pressers, wherein said handles include rigid extension arm members which



are each canted away from said pressers in a direction of a respective adjacent terminal end portion of said support rod, whereby said massager may be held by a person pinching each said terminal end portion of said support rod at a bend of that person's elbows while also manually grasping each said extension arm with that person's hands.

5,364,339

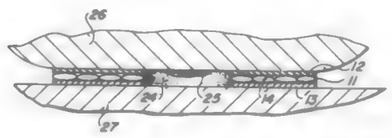
BED SORE PAD

Juanita Carver, 9866 Reagan Rd. #126, San Diego, Calif. 92126

Filed Apr. 7, 1993, Ser. No. 44,231

Int. Cl.[5] A61F *13/00, 15/00*

U.S. Cl. 602—47 **15 Claims**



1. A stratiform pad for surrounding and protecting a bed sore on a person's body when in bed, said pad having component layers bonded together to form a unified pad, comprising:

a median layer comprising a closed cell air bubble film for absorbing and distributing the pressure of said person's body and providing lift of said body away from said bed in the area of said bed sore; a body-contacting layer bonded to a first surface of said median layer and adapted to adhere to said person's body, said body-contacting layer being formed as an integral part of said pad to assist in preventing lateral movement of said median layer when pressed between body and bed; and

a bed-contacting layer bonded to a second surface of said median layer and adapted to adhere to said bed, said bed-contacting layer being formed as an integral part of said pad to assist in preventing lateral movement of said median layer, said pad being further characterized by having an interior aperture for receiving said bed sore and avoiding contact of the sore with the pad.

5,364,340

URETERAL STENT-CATHETER HAVING VARYING INTERNAL DIAMETER AND METHOD OF USE

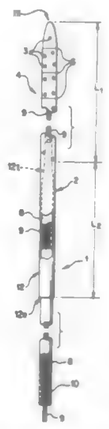
Milton E. Coll, 6 Pear Tree La., Lafayette Hill, Pa. 19444

Continuation-in-part of Ser. No. 78,816, Jun. 21, 1993, which is a continuation-in-part of Ser. No. 885,789, May 20, 1992, which is a continuation of Ser. No. 704,718, May 20, 1991, Pat. No. 5,116,309, which is a continuation of Ser. No. 301,090, Jan. 25, 1989, abandoned. This application Jul. 2, 1993, Ser. No. 84,990

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—8 **24 Claims**



1. A unitary, flexible ureteral stent for implantation in a ureteral meatus, comprising:

a flexible tubular drain passage segment having a plurality of drain passages and a first fluid passage channel extending substantially the entire length of said drain passage segment, said channel communicating with the outside of said drain passage segment, said first fluid passage channel having a first channel width, one end of said drain passage segment being closed and a portion of said passage segment forming a preformed curl; and

a flexible tubular ureteral catheter receiving segment having a second fluid passage channel extending the entire length thereof, said catheter receiving segment being collinearly integral with said passage segment, with said second fluid passage channel also being collinear with said first fluid passage channel, said second passage channel having a second channel width, said second channel width being larger than said first channel width,

wherein a portion of said catheter receiving segment forming another preformed curl, and

wherein said length of said drain passage segment being substantially longer than said catheter receiving segment.

5,364,341

IRRIGATION/ASPIRATION VALVE AND PROBE FOR LAPAROSCOPY

John D. Cook, Prior Lake, Minn., assignor to Inlet Medical, Eden Prairie, Minn.

Division of Ser. No. 911,764, Jul. 10, 1992, Pat. No. 5,241,990. This application May 19, 1993, Ser. No. 64,827

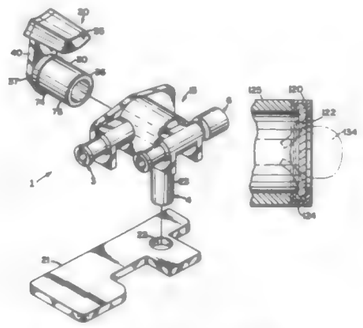
Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—30 **19 Claims**

1. A laparoscopic probe comprising a channel, said channel comprising:

(a) a wall defining first and second open ends;

(b) a flexible valve for aspirating and entrapping debris drawn into said channel while allowing the passage of fluid out of the channel during irrigation, said valve positioned within said wall first open end, said valve comprising silicone rubber and having a thickness ranging from about 0.015 to 0.05 inches, wherein said valve is patterned to open inwardly allowing the aspiration and entrapment of debris, and valve patterning selected from the group



consisting of low diameter holes, slits, and mixtures thereof;

(c) a sump in fluid communication with said channel wall second open end, said sump comprising an outer wall defining a containment area, said sump outer wall having a greater diameter than said channel wall; and

(d) a port, said port in fluid communication with said sump.

5,364,342

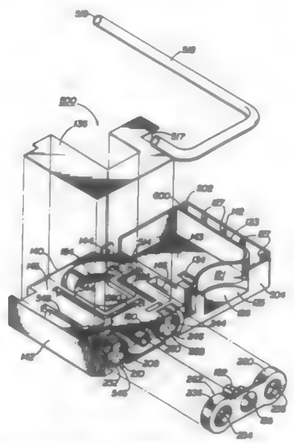
MICROSURGICAL CASSETTE

Charles E. Beuchat, Irvine; Roger Etherington, Newport Beach; Harold J. Walbrink, Laguna Niguel, all of Calif., and John W. Berkman, Grants Pass, Oreg., assignors to Nestlé S.A., Vevey, Switzerland

Continuation of Ser. No. 831,766, Feb. 5, 1992, abandoned. This application Oct. 13, 1993, Ser. No. 135,865

Int. Cl.[5] A61M *1/00;* **B01D** *13/00*

U.S. Cl. 604—30 **3 Claims**



1. A cassette for use in combination with a surgical handpiece and a control console for controlling irrigation or aspiration fluid flows in the handpiece, comprising:

a) a housing having an external surface the housing adapted to be held in operative association with the control console;

b) at least one fluid coupling integrally formed in the housing;

c) a means for generating a partial vacuum through interaction with a motive force in the control console;

d) at least one fluid flow passage in the housing in fluid communication with the fluid coupling and the means for generating a partial vacuum, the fluid flow passage being formed as an open channel integrally molded into the external surface of the housing and sealed fluid tight by a gasket having an interior surface and an exterior surface, the interior surface adhered to the external surface of the housing and the exterior surface of the gasket exposed to the atmosphere external to the cassette; and

e) a valve face in the fluid flow passage, the valve face being integrally molded into the external surface of the housing and sealed by a resilient molding.

5,364,343

IRRIGATION DEVICE FOR USE IN EAR CANALS FOR THERAPEUTIC OR HYGIENIC PURPOSES

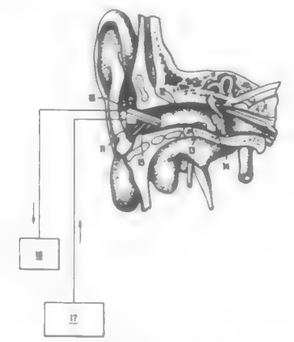
Josef Apolet, Milan; Romano Ballotta, Soragna, and Giovanni Cavallo, Acqui Terme, all of Italy, assignors to D.D. S.R.L., Milan, Italy

Continuation-in-part of Ser. No. 844,858, Mar. 3, 1992, abandoned. This application Nov. 30, 1992, Ser. No. 983,317

Claims priority, application Italy, Mar. 6, 1991, MI91 A 000582

Int. Cl.[5] A61M *3/00*

U.S. Cl. 604—43 **6 Claims**



1. An irrigation device for use in an ear canal comprising:

a main body of substantially conical shape having a central axis and providing one duct divided by a separating wall into two parts, comprising a first irrigating part connecting to a lavage liquid delivery apparatus for the injection of said lavage liquid into said ear canal and a second drainage part allowing the continuous drainage of the used lavage liquid, wherein said input duct has an axis which is inclined relative to said central axis of said main body to direct impingement of said lavage liquid against wall surfaces of said ear canal without direct impingement of a stream against said eardrum.

5,364,344

DUAL LUMEN CATHETER

David Beattie; John Miller, and Victor Gamble, all of Salt Lake City, Utah, assignors to The Kendall Company, Mansfield, Mass.

Filed Oct. 22, 1993, Ser. No. 139,677

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—43 **4 Claims**

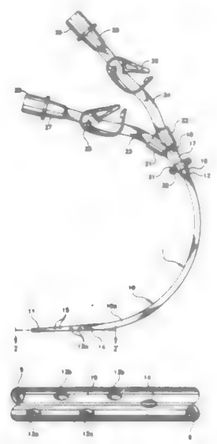
1. A dual lumen catheter comprising:

an elongated flexible catheter tube having a generally circular cross-section;

the catheter having an outer wall member having a proximal

end and an opposed distal end terminating in a tip for insertion within a patient's blood vessel;

the catheter having inner wall members trifurcating the catheter tube into a first, a second and a third longitudinally extending conduit, the inner wall members consisting of a first wall member common to and separating the first and second conduits, a second wall member common to and separating the first and third conduits, and a third wall member common to and separating the second and third conduits;



the common wall member separating the first and second conduits being perforated to provide a side port which extends laterally through the outer wall of the catheter tube in the distal end section of the catheter, the first and second conduits thereby forming a first lumen wherein fluid introduced into the first and second conduits through the proximal end of the catheter can together infuse into the blood vessel where the catheter has been introduced through the side port; and

the third conduit defined by the outer wall and the second and third inner wall members forming a second lumen having an end port at the tip of the catheter.

5,364,345

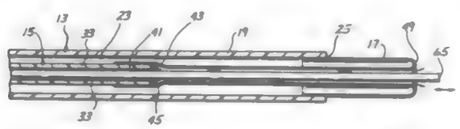
METHOD OF TUBAL RECANALIZATION AND CATHETER SYSTEM THEREFOR

Guy R. Lowery, Mission Viego; Steven R. Bacich, Laguna Niguel, and Keith Tholin, Irvine, all of Calif., assignors to Imagyn Medical, Inc., Laguna Niguel, Calif.

Continuation-in-part of Ser. No. 780,871, Oct. 18, 1991, abandoned. This application Apr. 26, 1993, Ser. No. 53,152

Int. Cl.[5] A61B *1/00*; A61M *31/00*

U.S. Cl. 604—49 **20 Claims**



1. A method of tubal recanalization comprising:

advancing an everting catheter capable of dilatation and an endoscope to a position adjacent the site of a stenosis in an internal tubal passage of a patient, said everting catheter including an endoscope lumen receiving the endoscope and an everting element which is inflatable to grip the endoscope;

everting the everting element to a location within the stenosis;

expanding the everting element to reduce the stenosis;

retracting the everting element from said location;

viewing said site using the endoscope; and

introducing a solution between the everting element and the endoscope where the everting element grips the endoscope, and moving the endoscope relative to the everting element while the solution is between the everting element and the endoscope to position the endoscope.

5,364,346

PROCESS FOR THE CONTINUOUS AND DISCONTINUOUS ADMINISTRATION OF INSULIN TO THE HUMAN BODY

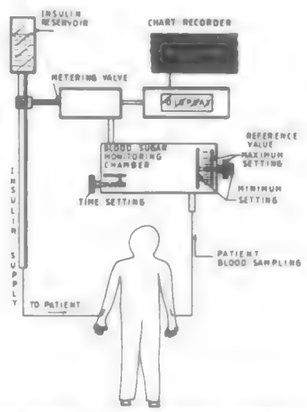
Jürgen Schrezenmeir, Backhaushohl 24, 6500 Mainz 1, France

Continuation of Ser. No. 931,291, Aug. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 549,374, Jul. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 95,534, Oct. 16, 1987, abandoned. This application Mar. 16, 1994, Ser. No. 210,089

Claims priority, application Germany, Dec. 20, 1985, 3545260

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—50 **1 Claim**



1. A process for the administration of insulin to a patient based upon a determination of a blood carbohydrate level of the patient, comprising the steps of:

(a) administering an initial series of dosages of insulin to the patient;

(b) measuring the blood carbohydrate level of the patient during said administering step;

(c) recording and storing the blood carbohydrate levels obtained during said measuring step;

(d) determining a new quantity of insulin to be administered based upon an insulin carbohydrate equivalent level of the patient obtained in said measuring step in accordance with the formula:

$$ICOHE(M, I) = \frac{IBO\,(M, I-1) - CORI\,(M, I-1) + CORI\,(M+1, I-1)}{COH\,(M, I-1)}$$

wherein,

M is the patient's initial meal;

I is the initially considered day;

IBO (M, I−1) is the corrected insulin dose on the day preceding the M-th meal, so that the IBO (M, I−1) value is the quantity of insulin administered to the patient at meal M on a preceding day I−1;

CORI (M, I−1) is the corrected insulin dose on the basis of deviation from a reference carbohydrate level determined from a blood sugar level measured directly before the M-th meal on the previous day using an insulin-blood sugar equivalent so that the CORI (M, I−1) value is the product of said insulin-blood sugar equivalent and the difference between the blood sugar level and the reference carbohydrate level, with the reference carbohydrate level being an optimal blood sugar level for the patient necessary for determining the initial insulin dose, and the insulin-blood sugar equivalent being the quotient of a value of insulin given to the patient and a resulting change in the blood sugar level of the patient;

COH (M, I−1) is the quantity of carbohydrate in the food consumed in the M-th meal on the previous day; and,

CORI (M+1, I−1) is the correcting insulin dose administered on the previous day at the beginning of the (M+1) meal because of the deviation of the blood carbohydrate level from the reference value, so that a quantity of insulin IBO (M, I), at meal M and day I is determined from the product COH (M, I) and the insulin carbohydrate equivalent level ICOHE (M, I), with COH being the quantity of carbohydrate in food consumed in the meal M on the day I;

and,

(e) administering to the patient the new quantity of insulin, as determined by the insulin carbohydrate equivalent level in said determining step, based upon a desired insulin per unit of carbohydrate for the blood of the patient following treatment.

5,364,347

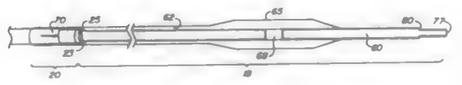
CATHETER SYSTEM HAVING A BALLOON ANGIOPLASTY DEVICE DISPOSED OVER A WORK ELEMENT LUMEN AND METHOD OF USE

Yue-Teh Jang, Fremont, Calif., assignor to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 975,752, Nov. 13, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 100,642

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—53 **11 Claims**



1. A vascular catheter system comprising:

a catheter body having proximal and distal ends, and a proximal and a distal region, the proximal region having at least two lumens and the distal region having a common lumen connected to and in communication with both lumens of the proximal region;

a balloon disposed about the common lumen; and

a balloon inflation lumen disposed within the proximal region of the catheter body and coaxially about the common lumen of the distal region of the catheter body.

5,364,348

DEVICE FOR SUPPLYING FOOD TO A PERSON WHILE AVOIDING CHOKING

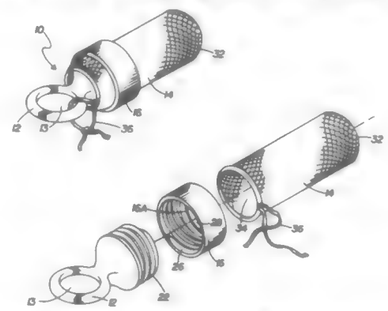
Donald P. Berry, Sr., 391 Magnolia Pl., DeBary, Fla. 32713

Filed Oct. 4, 1993, Ser. No. 130,763

Int. Cl.[5] A47G *19/22*

U.S. Cl. 604—77 **17 Claims**

1. A device for feeding a young child or impaired adult without the threat of the person choking, said device comprising a handle member in combination with a food dispensing member, said handle member having a generally circularly configured end thereon, upon which circular end, ring mounting means are disposed, a ring utilized with said handle member, the inner surface of said ring being equipped with internal means for being tightly interfitted with said ring mounting means, said ring having a circularly-shaped aperture therein, said internal means on said ring being configured to operably engage said ring mounting means disposed around said circular end of said handle member, said food dispensing member being in the form of an elongate container of fine mesh material having approximately a minimum of 144 openings per square inch, said container having an aperture therein through which



semi-solid food can be inserted, with such food intended to at least partially dissolve in the mouth of the person, said aperture in said container being of a size that can be readily accommodated in said circularly-shaped aperture of said ring as well as being able to fit over said ring mounting means of said handle member, whereby upon food being placed in said container and the open end of said container placed over said ring mounting means, said ring can be tightened upon said handle member so as to form a unitary device that can be held by the person and said container placed in the mouth of the person.

5,364,349

Patent Not Issued For This Number

5,364,350

TWIN-CHAMBER SYRINGE FILLED WITH A CHARGE OF ACTIVITY-SENSITIVE HUMAN PROTEIN

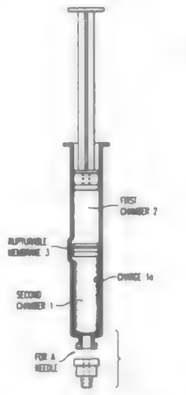
Otto Dittmann, Breusbach-Wallbach, Germany, assignor to Alpha-Terapeutic GmbH, Langen, Germany

Continuation of Ser. No. 455,344, Dec. 6, 1989, Pat. No. 5,176,635. This application Aug. 18, 1992, Ser. No. 931,380

Claims priority, application Germany, Mar. 1, 1988, 3806562

Int. Cl.[5] A61K *9/00*

U.S. Cl. 604—89 **7 Claims**



1. A twin-chamber syringe comprising a first chamber and a second chamber, said first and second chambers being sepa-

rated by a rupturable membrane and said second chamber being in fluid communication with an injection needle, said first chamber containing a pyrogen-free sterile solvent and said second chamber containing a charge of activity-sensitive human protein which has been introduced into said chamber and lyophilized in said chamber wherein said charge is a single therapeutically effective dose of said protein selected from the group consisting of at least 2–3 million units of urokinase, pro-urokinase, tissue plasminogen activator, or streptokinase; at least about 1000 units of factor VIII or factor IX; and at least about 500–1000 units of antithrombin III.

5,364,351

CATHETER STEERING MECHANISM

Bert D. Heinzelman, Tenafly, N.J., and Christopher J. Brooks, Glen Head, N.Y., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Nov. 13, 1992, Ser. No. 976,693
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **6 Claims**



1. A catheter steering mechanism for retracting a first catheter steering wire while simultaneously permitting a second catheter steering wire to remain static and for retracting said second steering wire while permitting said first steering wire to remain static comprising:

a rotatable gear;

means for manually rotating said gear;

a first linearly slidable toothed rack attached to the proximal end of said first steering wire;

a second linearly slidable toothed rack attached to the proximal end of said second steering wire, and

a toothed gear rotatable by engaging said manual rotating means engaging each of said toothed racks to move said racks linearly in opposite directions in response to rotation of said gear.

5,364,352

CATHETER FOR ELECTROPHYSIOLOGICAL PROCEDURES

William W. Cimino, Temecula; Robert Abrams, Carlsbad; Miriam H. Taimisto, Anaheim Hills; Marc Jensen, San Marcos, and Patrick E. Macaulay, Murrieta, all of Calif., assignors to Heart Rhythm Technologies, Inc., Temecula, Calif.

Filed Mar. 12, 1993, Ser. No. 31,249
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **37 Claims**

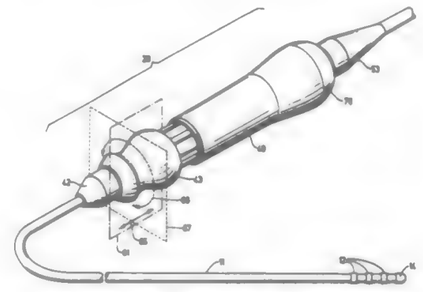
1. A catheter for performing an electrophysiological procedure, the catheter comprising:

a body member having a distal end and a proximal end;

a manipulation handle attached to the proximal end of the body member such that when the handle is rotated about its longitudinal axis, the body member rotates about its longitudinal axis in response, the handle having a moveable control device adapted for selective simultaneous sliding and rotating movement;

a deflection control line slidable in a direction parallel to the longitudinal axis of the body member, the control line having a distal end fixedly attached to the distal portion of the catheter and the proximal end attached to the control device of the handle so that tension applied to the control line by selective movement of the control device will cause the deflection of the distal portion of the catheter; and

a stiffening member disposed within the body member and slidable in a direction parallel to the longitudinal axis of the body member, said stiffening member providing increased rigidity to the portion of the body member in which the stiffening member is located, the stiffening member connected at its proximal end to the control device of the handle such that selective movement of the control device controls the position of the stiffening member in the body member.

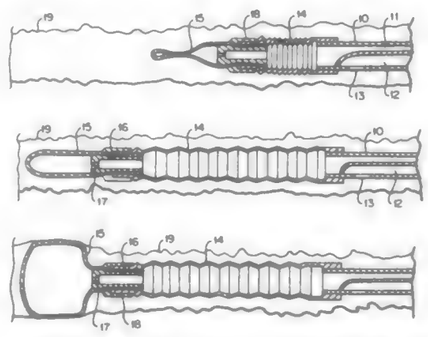


5,364,353

APPARATUS FOR ADVANCING AN OBJECT THROUGH A BODY PASSAGE

Mogens T. Corfitsen, Skodsborg Strandvej 220A, DK-2942 Skodsborg; Henrik Harboe, Tollosevej 39, DK-2700 Bronshoj, and Erik Othel-Jacobsen, Turbinevej 7, DK-3150 Helebaek, all of Denmark

PCT No. PCT/DK92/00054, § 371 Date Nov. 24, 1993, § 102(e) Date Nov. 24, 1993, PCT Pub. No. WO92/14507, PCT Pub. Date Sep. 3, 1992
PCT Filed Feb. 24, 1992, Ser. No. 104,044
Claims priority, application Denmark, Feb. 25, 1991, 320/91
Int. Cl.[5] A61M *37/00*; A61B *1/00*
U.S. Cl. 604—95 **7 Claims**



1. An apparatus for advancing an object through a body passage comprising:

an axially expandable hollow member having a proximal end and a distal end, wherein said axially expandable hollow member is capable of changing dimensions reversibly in its axial direction dependent on the pressure in its interior;

a radially expandable hollow member having a proximal end which is connected to said distal end of said axially expandable hollow member;

a tube connected to said proximal end of said axially expandable hollow member, said tube having a lumen for the supply and removal of inflation medium to said axially expandable hollow member; and

throttling means interconnecting said axially expandable hollow member and said radially expandable hollow member for restricting flow of inflation medium between each of said members, whereby pressure equalization between said members is delayed.

5,364,354

EXCHANGEABLE INTEGRATED-WIRE BALLOON CATHETER

Blair D. Walker, Long Beach, and Sheryl W. Higgins, Silverado, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 690,447, Apr. 24, 1991, abandoned.
This application Oct. 22, 1992, Ser. No. 970,581
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—96 **21 Claims**



1. A dilation catheter and guide wire combination comprising:

a flexible, small diameter guide wire having an enlarged diameter distal end portion;

a flexible elongated tubular shaft having a proximal end and a distal end and one axially extending fluid conducting lumen adapted to receive said guide wire extending therethrough; and

an expandable balloon connected to said distal end of said tubular shaft in fluid conducting communication with said lumen and having a distal orifice coaxially aligned with said lumen and adapted to receive said guide wire, said distal orifice provided with means for releasably engaging in sealing relationship said enlarged diameter distal end portion of said guide wire;

wherein said means for releasably engaging in sealing relationship comprises a resilient sleeve extending from said distal orifice and dimensioned to slidingly engage said enlarged diameter distal end portion of said guide wire.

5,364,355

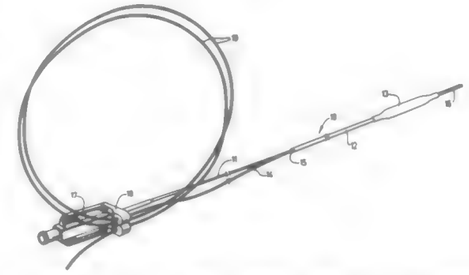
HOLDING SYSTEM FOR COILED INTRAVASCULAR PRODUCTS

Donald L. Alden, Sunnyvale; Isidro M. Gandionco, Fremont; Troy L. Thornton, Foster City, and August R. Yambao, Fremont, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Jun. 18, 1993, Ser. No. 79,168
Int. Cl.[5] A61M *29/02*; A44B *21/00*
U.S. Cl. 604—96 **11 Claims**

1. An elongated intravascular device comprising:

a) a flexible elongated shaft having a distal portion which is configured to be advanced through a patient's vascular system and a proximal portion which extends out of the patient when the distal portion is advanced through the patient's vascular system; and



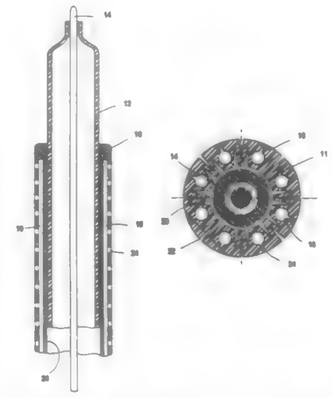
b) means secured on the proximal portion if the flexible elongated shaft to releasably secure at least one turn of a coiled elongated element to maintain a coiled structure.

5,364,356

SLEEVE CATHETER

Berthold Höfling, Wessling, Germany, assignor to Bavaria Medizin Technologie GmbH, Wessling/Oberpfaffenhofen, Germany

Filed Oct. 7, 1993, Ser. No. 132,877
Claims priority, application Germany, Jul. 19, 1993, 4324218
Int. Cl.[5] A61M *29/00, 25/00*
U.S. Cl. 604—96 **5 Claims**



1. A sleeve catheter for the wetting and infiltration of a vessel wall or other tubular organ by a fluid, particularly a liquid medicine, said sleeve catheter comprising a head portion with a central lumen and a number of outer lumina extending, in cross-section, in a circle around said central lumen, each having discharge openings formed in the head portion thereof,

said sleeve catheter having, during operation, a balloon catheter arranged therewithin so as to be disposed at lead partially on the balloon of said balloon catheter,

said head portion of said sleeve catheter including, at its outside, longitudinally extending radial grooves arranged between said discharge openings and extending to a limited depth so as to provide adjacent the inner wall of said sleeve catheter for a hinge structure allowing said radial grooves to open so as to facilitate expansion of said sleeve catheter for engaging the inner wall of a vessel to be expanded upon inflation of said balloon, and said discharge openings being preformed such that they open only upon expansion of said sleeve catheter by the application of the balloon pressure,

and means for supplying said fluid to said outer lumina under pressure so as to be applied to said vessel wall via said discharge openings when said head portion is expanded into engagement with the inner vessel wall to be treated.

5,364,357

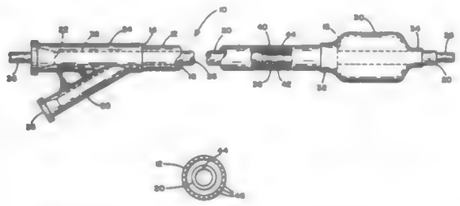
SMALL DIAMETER DILATATION CATHETER HAVING WIRE REINFORCED COAXIAL TUBULAR BODY

Brenda L. Aase, Eagan, Minn., assignor to Schneider (USA) Inc., Plymouth, Minn.

Continuation of Ser. No. 769,576, Oct. 2, 1991, abandoned, which is a continuation of Ser. No. 639,723, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 411,815, Sep. 25, 1989, abandoned. This application Feb. 7, 1994, Ser. No. 192,791

Int. Cl.[5] A61M *25/00, 29/00, 29/02*

U.S. Cl. 604—96 **15 Claims**



1. An intravascular balloon catheter comprising:

(a) a first elongated, flexible tubular member consisting substantially of a first plastic material having a proximal end, a distal end and describing a lumen and a longitudinal axis extending from the proximal end to the distal end, the first tubular member having reinforcing means comprising at least one strand of wire extending parallel to the longitudinal axis of the first tubular member embedded in a wall thereof along substantially the entire length of the first tubular member, said wall having a thickness in the range of about 0.001–0.006 inch, said at least one strand of wire being elastic to allow bending of the first tubular member while being substantially rigid in the longitudinal direction;

(b) a second elongated, flexible tubular member consisting substantially of a second plastic material having a proximal end, a distal end and describing a lumen and a longitudinal axis extending from the proximal end to the distal end, the second tubular member being disposed in the lumen of the first tubular member such that a distal end portion of the second tubular member extends out beyond the distal end of the first tubular and such that an annular space is formed within the lumen of said first flexible tubular member and external to and containing said second flexible tubular member;

(c) an inflatable expander member having a proximal end and a distal end, the proximal end being circumferentially bonded to the first tubular member near the distal end thereof and the distal end of the expander member being circumferentially bonded to the distal end portion of the second tubular member; and

(d) a hub member affixed to the proximal ends of the first and second tubular members and including an inflation port in fluid communication with said annular space in the lumen of the first tubular member external to the second tubular member.

5,364,358

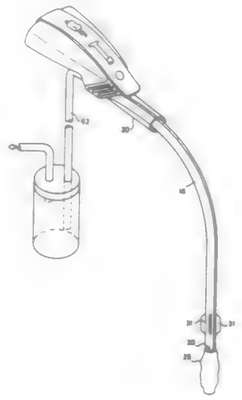
DEVICE FOR CONTROLLING THE INFLATION OF A BALLOON CATHETER

Geoffrey A. Hewitt, Dundas; Andrew K. Rath, and Harvey K. McQuarrie, both of Kitchener, all of Canada, assignors to Cardio-Search Limited, Dundas, Canada

Filed Nov. 5, 1991, Ser. No. 787,888

Int. Cl.[5] A61M *29/00*

U.S. Cl. 604—99 **17 Claims**



1. A device to control the inflation of a balloon catheter comprising;

a support frame;

a flexible bladder located within said support frame and having an outlet for connection to a lumen of a balloon catheter;

an actuator mounted on said frame and operable upon and movable relative to said bladder to decrease the volume of and expel fluid from the bladder to inflate said balloon catheter;

a releasable latch means for operating upon said actuator to hold said actuator in a latched position and thereby inhibit movement of the actuator in a direction to decrease the volume of the bladder and thereby prevent inflation of the balloon catheter; and

an abutment means operable upon release of said latch means for limiting movement of the actuator from said latched position in a direction to decrease the volume of the bladder to thereby limit the change in the volume of the bladder, said abutment means being adjustable relative to said latched position of the actuator to vary the volume of fluid expelled in moving said actuator between said latched position and said abutment means to inflate said catheter may be varied.

5,364,359

SYRINGE WITH RETRACTABLE NEEDLE

Abraham van den Haak, Eesergroen, Netherlands, assignor to Advanced Protective Injection Systems Medical B.V., Esserogroen, Netherlands

PCT No. PCT/NL91/00035, § 371 Date Oct. 19, 1992, § 102(e) Date Oct. 19, 1992, PCT Pub. No. WO91/12842, PCT Pub. Date Sep. 5, 1991

PCT Filed Mar. 1, 1991, Ser. No. 934,623

Claims priority, application Netherlands, Mar. 1, 1990, 9000487

Int. Cl.[5] A61M *5/50, 5/32, 5/315*

U.S. Cl. 604—110 **4 Claims**

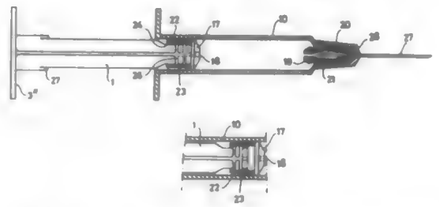
1. An injection syringe assembly comprising:

a casing having a first end and a second end;

a piston and a piston rod assembly capable of being inserted in said first end of said casing and shiftable in said casing;

a needle foot for supporting an injection needle and a latch for retaining said needle foot at said second end of said casing, wherein said needle foot is shiftable into said casing once said latch is unlatched;

means for unlatching said needle foot and for coupling said assembly to said needle foot at the end of a second inward stroke of said assembly;



means for restricting an inward stroke of said assembly, so that at the end of a first inward stroke said assembly stops a short distance from said needle foot so that said needle foot remains latched, and

means for decreasing said distance before a second inward stroke of said assembly so that at the end of said second inward stroke said needle foot is coupled to said assembly.

5,364,360

NEEDLE FOR MEDICAL USE WITH SAFETY PROTECTION

Antonio G. Flumene, Via Garavetti, 6, and Giuseppe Pilo, Via Muroni, 22, both of 07100 Sassari, Italy

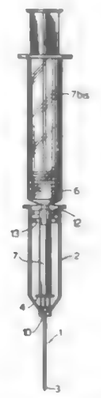
PCT No. PCT/EP92/00156, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO92/14502, PCT Pub. Date Sep. 3, 1992

PCT Filed Jan. 25, 1992, Ser. No. 94,158

Claims priority, application Italy, Feb. 19, 1991, MI91A000422

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—110 **15 Claims**



1. A needle for medical use, provided with a protective cap (2) substantially cylindrical in shape, with one open end (9) and an opposite opening (10), the diameter of the cap (2) being such that it can slide on a cylindrical body provided at the back of the needle to move from a needle covering position to a position in which the needle is uncovered and vice versa, wherein said cylindrical body (7, 7′, 7″, 7‴) is integral with the needle (1) and inside the cap (2), near the open end (9) a seating (14) is provided, suitable for receiving a substantially oval widened base or collar (4) of the needle (1), the seating (14) being limited at the top by a continuous or broken annular projection (12) forming an insurmontable ledge for the base of the needle, and at the bottom by two opposed "half-moon" projections (13), shaped in such a way as to allow the base (4) of the needle (1) to pass, after correct positioning.

5,364,361

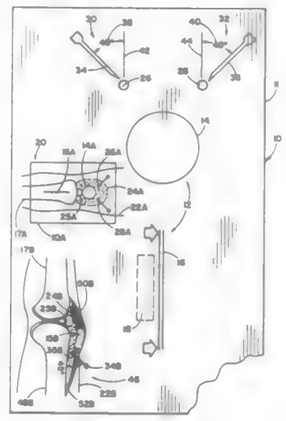
KNEE BURSA DRAINING TEMPLATE AND CANNULATED NEEDLE FOR USE THEREWITH

Harold L. Battenfield, 4414 S. Zunis, Tulsa, Okla. 74105

Filed Oct. 26, 1993, Ser. No. 145,062

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—116 **13 Claims**



1. A template for instructing proper insertion of a means for draining a distended bursa, comprising:

a flexible sheet;

indicia on said flexible sheet illustrating anatomical features of the human leg so that the flexible sheet may be overlaid upon the leg;

means for identifying proper insertion of the draining means.

5,364,362

FRONT SYRINGE ATTACHMENT FOR HYPODERMIC SYRINGES FOR SUBCUTANEOUS INJECTION IN VETERINARY MEDICINE

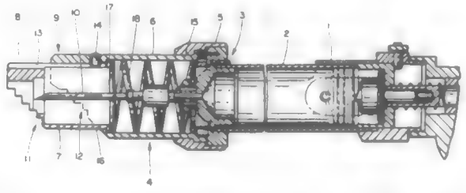
Dieter Schulz, Mühlheim, Germany, assignor to Henke-Sass, Wolf GmbH, Tuttlingen, Germany

Filed Feb. 17, 1993, Ser. No. 18,698

Claims priority, application Germany, Feb. 19, 1992, 4205036

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—115 **5 Claims**



1. In a front attachment for mounting on a syringe cylinder of a hypodermic syringe for subcutaneous injection, the improvement comprising:

a first hollow-cylindrical barrel having a first diameter and a first end, said first end being removably connected to the syringe cylinder;

a second hollow-cylindrical barrel having a diameter smaller

than said first diameter, said first barrel in telescopic relation with said second barrel, said second barrel having a second end, said second end facing the syringe cylinder, said second barrel being retractable from a rest position within said first barrel; and

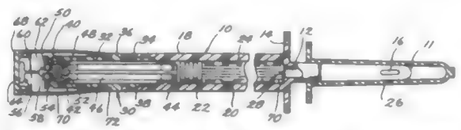
spring means in said first barrel, said first and second barrels each having an opposite end on an injecting side, said opposite ends having a steplike construction, wherein said opposite end of said second barrel projects beyond said opposite end of said first barrel and completely covers a hypodermic needle while occupying said rest position.

5,364,363

RECTAL ADMINISTRATOR

William R. Pearson, Laurel, Md., and N. Lawrence Dalling, Cross Junction, Va., assignors to Survival Technology, Inc., Rockville, Md.

Filed Jul. 8, 1993, Ser. No. 87,968
Int. Cl.[5] A61M *5/20*
U.S. Cl. 604—136 **25 Claims**



1. A rectal administrator for dispensing anti-convulsant medication comprising:

a body having an administrative portion adapted to be inserted into a subject's rectum;

a charge of anti-convulsant medicament normally stored within said body, said administrative portion having at least one passage through which said anti-convulsant medicament can exit said body;

a seal for normally obstructing communication between said stored charge of anti-convulsant medicament and air external to said body through said at least one passage, said seal being conditionable to permit said communication to facilitate administration of said medicament to said subject through said at least one passage;

a plunger disposed in said body, said plunger being movable from a first position to a second position within said body to dispense said medicament from said body through said at least one passage;

a releasable energy source mounted within said body for moving said plunger from said first position to said second position to dispense said medicament from said body through said at least one passage; and

an actuating assembly constructed and arranged to release said releasable energy source so that said energy source moves said plunger from said first position to said second position to dispense said medicament.

5,364,364

AUTOMATIC FLOW CONTROL VALVE SYSTEM

Spyros Kasvikis, Escondido, Calif.; Richard W. Herrmann, Raleigh, N.C., and Simon E. Finburgh, San Diego, Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Aug. 4, 1993, Ser. No. 101,988
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—151 **28 Claims**

1. An apparatus for controlling the flow of fluid through a conduit which is operated on by a fluid infusion device to infuse a medical fluid to a patient, the apparatus comprising:

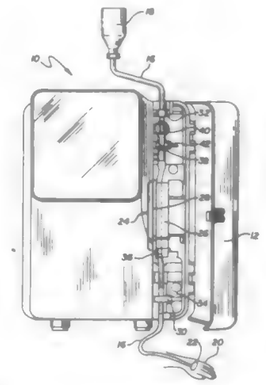
a valve disposed in line with and in fluid communication with the conduit such that fluid flowing through the conduit flows through the valve, the valve comprising:

a passage through which the fluid may flow;

a movable flow control member mounted in the valve and being

movable into a first position in which the flow control member is disposed in the passage to block flow through the passage, and a second position in which the flow control member does not block flow through the passage;

an infusion engagement member having an engaged position at which it controls the fluid infusion device to engage the conduit for infusing fluid to the patient and having a disengaged position at which the infusion engagement



member controls the fluid infusion device to be disengaged from the conduit; and

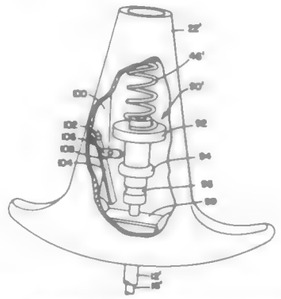
a positioning device mounted to the fluid infusion device which controls the position of the flow control member and which interacts with the infusion engagement member so that the positioning device is restricted from setting the flow control member to the second position until after the infusion engagement member is in the engaged position.

5,364,365

SAFETY DEVICE FOR LAPAROSCOPIC INSTRUMENTS

Theodore S. Wortrich, Long Beach, Calif., assignor to Surgin Surgical Instrumentation, Inc., Tustin, Calif.

Filed Aug. 30, 1993, Ser. No. 114,207
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **14 Claims**



1. A mechanism for controlling an obturator axially movable within a cutting cannula used for insertion into tissue forming part of a body wall, to permit proximal movement of the obturator during insertion and to lock the obturator in extended position when the cutting end of the cannula has cut through the body wall into a body cavity, to protect against inadvertent contact as surgical support functions are performed, comprising:

an obturator axially disposed and movable within the cutting cannula, the obturator having a length such that the obturator extends beyond the cutting end of the cannula in the distally locked position, and including a blunt tip and means adjacent the blunt tip for performing a surgical support function;

handle means coupled to the proximal end of the cannula, the handle means including first interior spring means engaging the obturator for biasing the obturator toward a distal position, and lock means, including second interior spring means, for engaging a proximal portion of the obturator to maintain the obturator in a distally locked position; and

control means coupled to the handle means for disengaging the lock means from the obturator to allow axial movement of the obturator during insertion.

5,364,366

APPARATUS FOR REMOVING AN INDWELLING TUBE

Paul F. Rom, Kentwood; Russell A. Corace, Grand Rapids, and Roderick E. Briscoe, Rockford, all of Mich., assignors to DLP, Inc., Grand Rapids, Mich.

Filed Jun. 22, 1993, Ser. No. 81,788
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—163 **14 Claims**



1. An apparatus for the sanitary removal of an indwelling tube from an implantation site in a patient while isolating the tube and the implantation site from an environment thereabout, comprising:

a tube adapter having a distal end that is connectable to said indwelling tube;

an extensible impervious sleeve folded around said tube adapter, said sleeve having a closed proximal end, and further having an open distal end for receiving said indwelling tube therethrough, said distal end being dimensioned to encompass said implantation site; and

a hub, disposed in sealing contact about said tube adapter, said hub having means for containing said unextended sleeve;

whereby said sleeve isolates said indwelling tube and said implantation site from said environment when said distal open end of said sleeve is applied about said implantation site and said indwelling tube is withdrawn into said sleeve.

5,364,367

CANNULA ANCHOR

Thomas F. Banks; Claude Vidal, both of Santa Barbara, Calif.; Randall L. Knoll, Stillwater, Minn., and Russell J. Redmond, Goleta, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

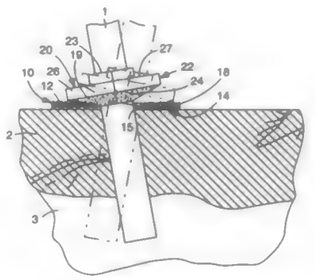
Filed Apr. 30, 1993, Ser. No. 55,820
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—174 **32 Claims**

1. An anchor sheet for use with a cannula that is adapted to be inserted within the abdominal cavity of a patient during a laparoscopic surgical procedure, the cannula having an anchor body attached thereto, the anchor body having a distal surface, the sheet comprising:

first and second major side surfaces and surfaces defining a hole extending between the first and second major side surfaces which afford passage of the cannula,

the second major side surface having an adhesive adhered thereto for removably adhering the sheet to the skin of the patient, and

an attachment means, associated with the first major side surface, for attaching the sheet to the distal surface of the anchor body, wherein the attachment means is a releasable and reusable attachment means that affords attachment of the sheet to the distal surface of the anchor body, a subsequent release in which the distal surface of the anchor body is spaced from the sheet, and then a subsequent



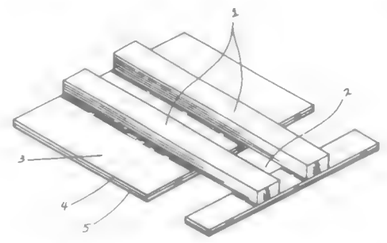
attachment of the sheet to the distal surface of the anchor body.

5,364,368

STABILIZATION DEVICE FOR INTRAVASCULAR CATHETERS

Kathryn M. Kauffman, and Edward L. Yancy, both of 271 West Short St., Suite 500, Lexington, Ky. 40507

Filed Jul. 1, 1993, Ser. No. 85,777
Int. Cl.[5] A61M *25/02*
U.S. Cl. 604—180 **4 Claims**



1. A stabilization device for intravascular catheters, comprising:

a sheet of fiber reinforced material defined by a first sheet member in spaced relation with a second sheet member,

said first and second sheet members each having a predetermined size and shape; and

at least two fiber reinforced side bolsters bridging said first and second sheet members and having a thickness dimension greater than the thickness dimension of both of said sheet members,

said side bolsters cooperating to provide lateral support for an intravascular catheter disposed therebetween and further cooperating with said first and second sheet members to define a framing window for unobstructed observation of an insertion site of said catheter.

5,364,369

SYRINGE

David L. Reynolds, 305 Knowlton Road, P.O. Box 600, (Knowlton) Lac Brome, Quebec, Canada J0E 1V0

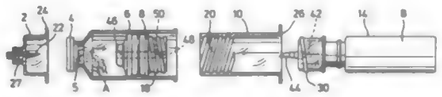
Continuation-in-part of Ser. No. 437,203, Nov. 16, 1989, Pat. No. 5,137,511, which is a continuation-in-part of Ser. No. 72,015, Jul. 8, 1987, Pat. No. 4,886,495. This application Nov. 14, 1991, Ser. No. 791,399

Claims priority, application United Kingdom, Nov. 14, 1990, 9024710.7

Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—187 **2 Claims**

1. In a method of packaging a pharmaceutical in a pharma-

ceutical vial formed of rigid transparent material with a cylindrical body and a comparatively wide open neck at the top of the body, which method comprises conveying uncapped vials, empty of pharmaceutical, in a free-standing upright position through vial filling and capping machinery which fills the pharmaceutical into the body through the open neck, applies an elastomeric closure to the open neck, and applies a cap overlaying the closure to secure the closure to the neck to produce filled and capped vials, the improvement in which, in order to permit subsequent administration via injection direct from the vial, a cylindrical side wall of each uncapped empty vial is formed so as to define a bottom opening at the base of



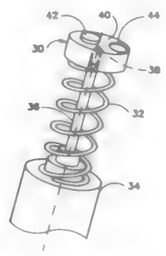
the vial with a bead adjacent to the bottom opening, the outer wall of the vial being free of any external projection of the bead relative thereto sufficient to cause substantial instability of the vial when conveyed upright and free-standing adjacent to other similar vials during filling and capping, and a cylindrical substantially solid piston of resilient material is slidably lodged prior to filling of the vial wholely within the cylindrical side wall above said bottom opening so as to form a hermetic seal with the side wall, so that an internal and axial extension from the piston, of lesser diameter than the piston and adapted for subsequent coupling to a syringe plunger, is oriented so as to extend downwardly within the vial towards the bottom opening.

5,364,370

HYPRODERMIC NEEDLE ASSEMBLY WITH SAFETY CAP

Gregg M. Szerlip, 224-17 59th Ave., Bayside, N.Y. 11364, and Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jun. 2, 1993, Ser. No. 71,503
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **17 Claims**



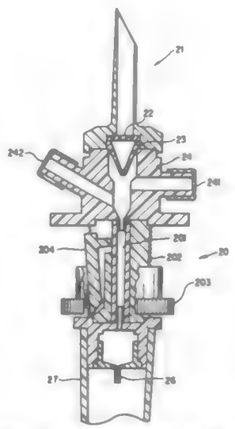
1. A hypodermic device comprising:
a hollow needle having a sharp distal end and a proximal end opposite thereto;
a spring connected to said needle;
cover means connected to said spring for covering said distal end of said needle in a low potential configuration of said spring and for enabling an uncovering of said distal end of said needle in a second, relatively high potential configuration of said spring, said cover means including a cap member provided with an aperture, said cap member being connected to said needle via said spring, said cap member being fixed to said spring; and
an adhesive layer on an outer surface of said cap member for temporarily adhering said cap member to a skin surface of a patient during removal of said distal end of said needle from the patient.

5,364,371

INTRAVENOUS FLUID DELIVERY DEVICE

Dean L. Kamen, Bedford, N.H., assignor to Deka Products Limited Partnership, Manchester, N.H.

Division of Ser. No. 908,524, Jun. 29, 1992, Pat. No. 5,195,986, and a continuation-in-part of Ser. No. 792,877, Nov. 15, 1991, and a continuation-in-part of Ser. No. 792,483, Nov. 15, 1991, Pat. No. 5,211,201, and a continuation-in-part of Ser. No. 70,408, Nov. 19, 1992, abandoned, which is a continuation of Ser. No. 674,813, Mar. 22, 1991, said Ser. No. 908,524, is a continuation of Ser. No. 614,806, Nov. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,801, May 15, 1990, Pat. No. 5,088,515, and a continuation-in-part of Ser. No. 345,387, May 1, 1989, Pat. No. 4,976,162, which is a continuation-in-part of Ser. No. 92,481, Sep. 3, 1987, Pat. No. 4,826,482, which is a continuation-in-part of Ser. No. 22,167, Mar. 5, 1987, Pat. No. 4,808,161, and a continuation-in-part of Ser. No. 836,023, Mar. 4, 1986, Pat. No. 4,778,451. This application Dec. 17, 1992, Ser. No. 993,719
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—251 **6 Claims**



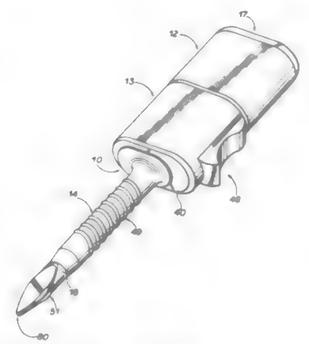
1. An intravenous fluid delivery device for connecting a patient to first and second intravenous fluid sources, the device comprising:
a spike for connecting the device to the first intravenous fluid source, wherein the spike defines a portion of a fluid passageway passing from the first fluid source to the patient;
a connection site for providing fluid communication between the second intravenous fluid source and the fluid passageway, the connection site being rigidly attached to the spike so as to maintain the connection site and the spike in fixed relation to each other;
a drip chamber rigidly attached to the spike and the connection site and defining another portion of the fluid passageway;
an intravenous fluid line defining another portion of the fluid passageway, the intravenous fluid line being mounted on the drip chamber, such that the fluid may flow from the drip chamber into the intravenous fluid line to the patient; and
a one-way valve mounted in the fluid passageway between the spike and the connection site, so that intravenous fluid may flow from the first fluid source through the spike, the one-way valve and the drip chamber to the intravenous fluid line, and so that fluid from the second fluid source may flow through the connection site and the drip chamber to the intravenous fluid line, but is prevented from flowing through the spike, the one-way valve being rigidly mounted so as to maintain the one-way valve in fixed relation to the connection site and the spike.

5,364,372

TROCAR AND CANNULA

John K. Danks, San Francisco, Calif., and Richard V. Mazzola, Bloomfield, N.J., assignors to Endoscopic Concepts, Inc., Boca Raton, Fla.

Filed Mar. 29, 1993, Ser. No. 38,904
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—264 **19 Claims**



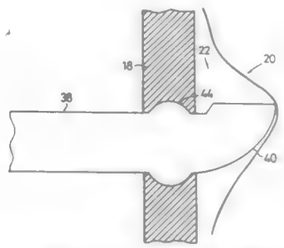
1. A shielded obturator comprising:
(a) an obturator sheath having a distal end and a proximate end;
(b) a handle mounted to the proximate end of said obturator sheath;
(c) a substantially planar pointed blade on the distal end of the obturator sheath;
(d) a shield slideably mounted relative to the obturator sheath and moveable between an extended protective position and a retracted unprotected position; and
(e) a biasing means tending to bias the shield into the extended protective position.

5,364,373

EPIDURAL CANNULA

Wilhelm Waskönig, Aguadulce, and José J. Rodiera Olive, Barcelona, both of Spain, assignors to te me na Logistics, Almeria, Spain

Filed May 5, 1993, Ser. No. 50,074
Claims priority, application Spain, Nov. 5, 1990, 9002795
Int. Cl.[5] A61M *5/32, 5/00*
U.S. Cl. 604—272 **9 Claims**



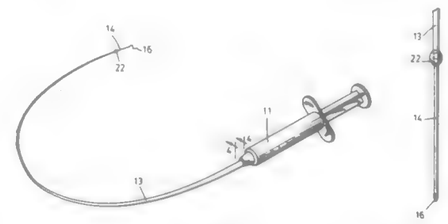
1. An epidural cannula for anesthesia, comprising a cannula point having a microsection and with a lateral opening therein and a central, cylinder-shaped cannula body of which the end away from said point is connectable to that of a holding means, said point lateral opening being in a plane parallel to the longitudinal axis of said cannula, where said lateral opening of said cannula is positionable during the use of said epidural cannula between the ligamenta flava and the dura mater,
wherein said cannula body has a cross-sectional enlargement at a distance from said cannula point and in the form of a bulge-like enlargement having at least one area toward said cannula point that describes an angle α with $\alpha > 30°$ in relation to said epidural cannula longitudinal axis, seen in the direction of said cannula point, and wherein the distance (B) between the proximal point of said cannula microsection and the end of said bulge-like enlargement away from said cannula point is approximately as thick as said ligamenta flava.

5,364,374

MICRONEEDLE FOR INJECTION OF OCULAR BLOOD VESSELS

John C. Morrison, and Chester G. Moore, both of Portland, Oreg., assignors to State of Oregon, Portland, Oreg.

Continuation of Ser. No. 866,561, Apr. 10, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,683
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—272 **11 Claims**



1. A device for microvascular injection of a solution into a small blood vessel in vivo, comprising in combination:
a) a reservoir comprising a syringe and a hypodermic needle;
b) a flexible tubing having a continuously tapered bore and a first end and a second end, the first end of the flexible tubing being operatively linked to the hypodermic needle, wherein the bore of the flexible tubing is at least about 300 microns in inner diameter at the first end and is sufficient to fit over the hypodermic needle; and
c) a microneedle having a length of about 1 to about 5 millimeters and an outer diameter of about 20 microns to about 100 microns, and a first end and a second end, the first end of the microneedle being operatively linked to the second end of the flexible tubing, wherein the bore of the flexible tubing is from about 20 microns to about 100 microns in width at said second end and is sufficient to fit over the first end of the microneedle, wherein the microneedle is further characterized by having sides that are not tapered.

5,364,375

CATHETER DEVICE FOR THE LOCALIZED INTRODUCTION AND MAINTENANCE OF PHARMACEUTICAL MATERIAL IN THE UTERINE CERVIX AND UPPER VAGINA

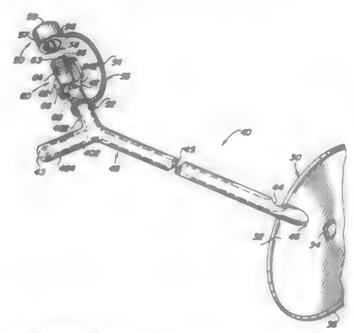
G. Michael Swor, Sarasota, Fla., assignor to Surgical Safety Products, Inc., Sarasota, Fla.

Filed Sep. 24, 1993, Ser. No. 125,783
Int. Cl.[5] A61M *31/00;* **A61F** *6/14*
U.S. Cl. 604—278 **16 Claims**

1. A catheter device for the localized introduction of labor-inducing material into a uterine cervix and an upper vagina, the device comprising:
a tubular member having a distal end and a proximal end, the distal end having a closed tip and an aperture proximal to the tip, the proximal end having a port into which a material to be introduced into a uterine cervix and an upper vagina may be inserted, the tubular member further having a diameter dimensioned to pass easily into a human vagina having a long axis; and
a disk, comprising:
a central portion; and

a periphery capable of forming a liquid-impervious seal with a uterine cervix;

the disk having a diameter dimensioned to fit inside the vagina such that the long axis of the vagina is substantially perpendicular to the plane of the disk;



the disk further having a hole substantially in the center of the disk, dimensioned to enable the distal end of the tubular member to pass therethrough and form a connection sufficiently tight to retain the material to be introduced into the uterine cervix and the upper vagina in a leakproof manner.

5,364,376

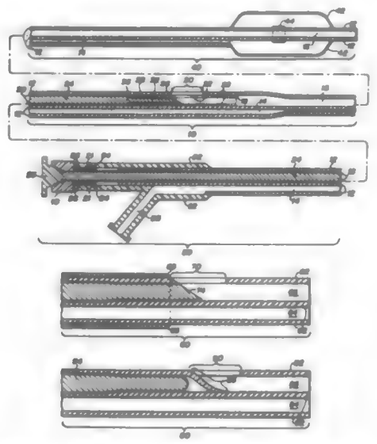
CONVERTIBLE CATHETER

Michael J. Horzewski, and Jeffrey L. Kraus, both of San Jose, Calif., assignors to Danforth Biomedical Incorporated, Menlo Park, Calif.

Filed Aug. 4, 1992, Ser. No. 926,530

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—280 **25 Claims**



1. A catheter adapted for reversible conversion from a rapid exchange configuration to an over-the-wire configuration, comprising:

(a) a catheter having a guidewire lumen with proximal and distal apertures and an intermediate aperture situated between the proximal and distal apertures, whereby a guidewire may be loaded through the distal and intermediate apertures; and

(b) movable means for closing the intermediate aperture, thereby permitting a guidewire to be loaded through the proximal aperture to the distal end of the guidewire lumen while preventing exit of the guidewire through the intermediate aperture.

5,364,377

FLUID COUPLING AND THE METHOD OF MANUFACTURE

Alexander G. B. O'Neil, 102 Lawler Street, Subiaco 6008, Perth, Australia

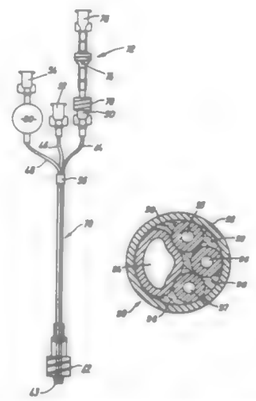
PCT No. PCT/GB90/02012, § 371 Date Sep. 2, 1992, § 102(e) Date Sep. 2, 1992, PCT Pub. No. WO91/10861, PCT Pub. Date Jul. 25, 1991

PCT Filed Dec. 21, 1990, Ser. No. 910,312

Claims priority, application Australia, Jan. 18, 1990, PJ8242; Jun. 29, 1990, PK0893; Aug. 30, 1990, PK2021

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—283 **3 Claims**



1. A method of manufacturing a fluid coupling for connecting a plurality of fluid sources to a cannula, said method comprising the steps of:

providing a connector having a single lumen,

providing at least three tubes wherein at least one of said tubes is of a relatively large bore size as compared with at least one of said remaining tubes,

passing each said tube through the lumen of said connector to project beyond the end of said lumen, which will be substantially adjacent to said cannula in use of said coupling, the bore of each said tube being mutually isolated by the tube walls until the termination of the tubes,

inserting adhesive or resin into said lumen of said connector to surround said tubes passing therethrough, and

when said adhesive or resin has substantially cured, severing said tubes and any overflowed adhesive or resin where they project from said end of said lumen whereby, in use of said fluid coupling with said cannula connected thereto, fluid passing down any of said tubes discharges from the end of said respective tube substantially directly into the bore of said cannula.

5,364,378

ANTI-BACK FLOW BAG FOR WASTE

Ruthie Denard, 74 Garfield, No. 305, Detroit, Mich. 48201

Filed Jul. 1, 1993, Ser. No. 86,244

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—335 **1 Claim**

1. A bag assembly for receiving wastes from a patient through an opening in the patient comprising:

a bag for receiving and storing the waste having a selectively openable bottom which may be rolled to a closed position and secured at the closed position;

a patch positioned between the bag and a seal, the patch adhesively contacting the patient and surrounding the opening in the patient, the bag fixed relative to the patch;

the seal being fixed to the patch and disposed between the patient and the patch and defining an internal bore and having a substantially planar annular region extending beyond the patch pressing against the patient immediately around the opening in the patient;

an anti-back flow member received within the bag, and positioned within the bag and extending from the seal, the anti-back flow member being in the form of a thin plastic tube and being formed of thin plastic film, such that it presents little resistance to waste moving therethrough, the thin plastic tube having an internal diameter greater than the internal diameter of the bore through the seal and



surrounding the bore, such that waste which moves from the opening in the patient through the seal and into the thin plastic tube tends not to contact the thin plastic tube adjacent the opening at the seal, the waste moves through the thin plastic tube and into the bag with moisture between sides of the tube from the waste passing therethrough causing sides of the tube to adhere to each other;

a flat spacer surrounding the anti-back flow member and also contacting the patch, the spacer supporting an entrance to both the bag and the anti-back flow member, the spacer defining belt loops positioned on each side of the bag;

a deformable member securing the rolled bag in the closed position; and

a belt secured around the patient and engaging the belt loops to secure the bag on the patient.

5,364,379

STOMA EQUIPMENT

Jean-Pierre Ozenne, Coye la Foret, and Henri Holtermann, St. Jean De Luz, both of France, assignors to Laboratoires Biotrol, Paris Cedex, France

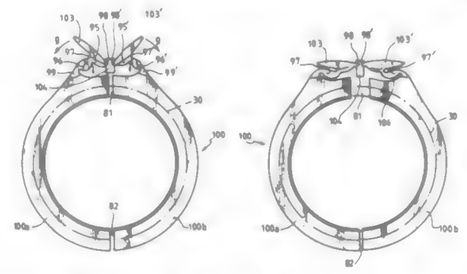
Filed Jun. 6, 1991, Ser. No. 711,327

Claims priority, application France, Jun. 8, 1990, 90 07140

Int. Cl.[5] A61F *5/448*

U.S. Cl. 604—342 **32 Claims**

1. Stoma equipment comprising a bag-carrier for fixing around an artificial opening in the body of a user by means of a base plate provided with an adhesive or with a pressure-sensitive adhesive rubber or with any equivalent means, together with a bag for collecting body wastes and/or fluids and suitable for being removably assembled to a sleeve or collar of the bag carrier by means of a rim on the bag, wherein the bag is fixed on the bag-carrier by deforming sealing means whose



radial size is increased by operating an appropriate actuator device connected to said rim of the bag.

5,364,380

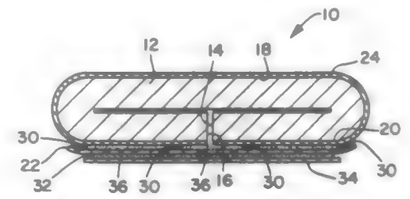
ABSORBENT ARTICLE CONTAINING AN ANHYDROUS DEODORANT

Richard W. Tanzer; Mary A. Bruemmer, and Anthonette A. Gossens, all of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 20,027, Feb. 18, 1993, which is a continuation of Ser. No. 685,363, Apr. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 428,085, Oct. 27, 1989, Pat. No. 5,037,412, which is a continuation-in-part of Ser. No. 354,337, May 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 213,399, Jun. 30, 1988, abandoned. This application Apr. 11, 1994, Ser. No. 226,210

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—359 **13 Claims**



1. An absorbent article comprising:

a) an absorbent having a first surface and a second surface aligned approximately opposite to said first surface;

b) a liquid-impermeable baffle positioned adjacent to at least said second surface of said absorbent;

c) a fluid-permeable cover positioned adjacent to at least said first surface of said absorbent;

d) a vapor-permeable member positioned between said baffle and said absorbent; and

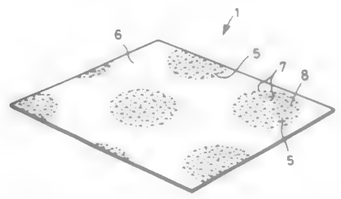
e) deodorizing means for absorbing malodors emanating from said absorbent, said deodorizing means being an anhydrous mixture of odor absorbing particles including basic odor absorbing particles in the form of sodium bicarbonate and pH neutral odor absorbing particles in the form of a zeolite wherein a substantial amount of said sodium bicarbonate particles have a size of between about 25 and 250 micrometers and a substantial amount of said zeolite particles have a size of less than about 20 micrometers, said particles positioned between said baffle and said vapor-permeable member wherein said vapor-permeable member is liquid impermeable and serves to keep said mixture dry while said absorbent article is being used.

5,364,381

AIR-PERMEABLE AND LIQUID-IMPERMEABLE BACKSHEET FOR USE IN BODY FLUID ABSORBENT ARTICLES, AND ITS MANUFACTURING METHOD

Hiroyuki Soga, Kawanoe, and Michiyo Matsushita, Iyomishima, both of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Jan. 22, 1993, Ser. No. 8,364
Claims priority, application Japan, Jan. 28, 1992, 4-038829
Int. Cl.[5] A61F 13/15, 13/20
U.S. Cl. 604—366 1 Claim



1. An article for absorbing body fluid comprising a layer of absorbent material and a backsheet that is liquid-impermeable, the improvement comprising

(1) said backsheet being composed of a stretched polyolefin plastic containing 30 to 80% by weight of embedded inorganic filler particles based on the weight of the backsheet,

(2) said backheet contains at least one roughened portion that includes a large number of air-permeable fine pores and a large number of fine projections rising upwardly and formed from the rising up of said filler particles when the backsheet is stretched, and

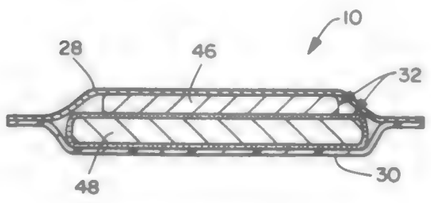
(3) the remainder of said backsheet being composed of a smooth thermo-embossed surface containing air-permeable fine pores that is substantially free of fine projections which rise up and which thermo-embossed surface has a higher transparency than said at least one roughened portion.

5,364,382

ABSORBENT STRUCTURE HAVING IMPROVED FLUID SURGE MANAGEMENT AND PRODUCT INCORPORATING SAME

Margaret G. Latimer, Roswell; Billie J. Matthews, Woodstock, both of Ga., and Ann M. Shershin, Kansas City, Mo., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation of Ser. No. 446,251, Dec. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 349,390, May 8, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 824,766
Int. Cl.[5] A61F 13/15
U.S. Cl. 604—378 81 Claims



1. An absorbent article, comprising:

retention means for holding liquid;

a fibrous surge management means located in liquid communication with said retention means for receiving said liquid and releasing said liquid to said retention means, said surge management means having a basis weight of at least about 60 gm/m^2, an uptake time value of not more than about 12 seconds and a liquid residual value of not more than about one gram per gram of said surge management means, and wherein said surge management means is constructed and arranged to provide said uptake time value and said liquid residual value over at least three uptake and desorption cycles.

5,364,383

TAMPON

Harry Hayes, Wilbraham, Mass., and Charlotte C. Wakeham, Hayling Island, England, assignors to Tambrands, Inc., White Plains, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,254
Int. Cl.[5] A61F 13/15, 13/20
U.S. Cl. 604—384 34 Claims



1. A tampon, shaped for insertion into a body cavity, comprising a compressed pledget, the pledget comprising, prior to compression:

a portion of absorbent material having a predetermined length, derived from a filament tow and

a withdrawal cord attached to the filament tow,

the filament tow comprising a bundle of continuous substantially hydrophilic filaments, each of a major portion of said filaments having a length which is at least substantially equal to said predetermined length,

the filaments having a substantially permanently crimped configuration, and

each of a major portion of said filaments having a sinuous configuration that is out-of-phase with respect to that of neighboring filaments.

5,364,384

FLEXIBLE CONTAINER WITH INTERGRAL PROTECTIVE COVER

Richard W. Grabenkort, Barrington, and Thomas P. Joyce, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 636,635, Dec. 31, 1990, abandoned. This application Jun. 14, 1993, Ser. No. 77,754
Int. Cl.[5] A61J 1/05
U.S. Cl. 604—408 6 Claims

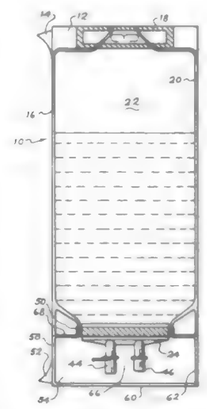
1. A flexible container for medical fluids, comprising:

a longitudinally extending pouch having an open end, the pouch constructed of first and second multiple layered film sheets, each sheet having concurrent perimeter edges and a bondable interior layer, the interior layers sealingly bonded together along a first portion of the perimeter edges of said film sheets so as to form the pouch;

an end member sealed transversely across the open end of the pouch at an intermediate longitudinal position, the end member sealed to the interior layer of the first and second film sheets to enclosably define a sealed interior chamber of the container, said end member having at least one integrally-formed port constructed and arranged for fluid

communication with the sealed interior chamber of the container;

a protective cover constructed of an extension portion of each of said first and second film sheets extending beyond said end member, the interior layers of said extension portions being sealingly bonded together along a second



portion of the perimeter edges of said extension portions of the film sheets so as to form the protective cover for enclosing said at least one port of said end member; and

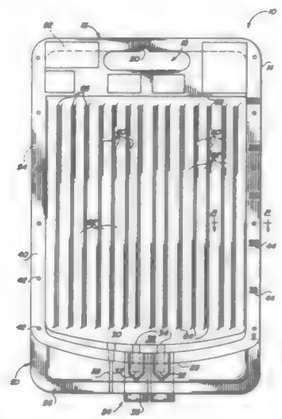
means for detaching said protective cover from the container so as to provide access to said at least one port of said end member.

5,364,385

STORAGE BAG FOR BLOOD AND BLOOD COMPONENTS

Frank H. Harms, Marietta, Ga.; John R. Beard, Memphis, Tenn., and Alexander Duncan, Dunwoody, Ga., assignors to LifeSource Advanced Blood Bank Systems, Inc., Atlanta, Ga.

Filed May 9, 1990, Ser. No. 521,248
Int. Cl.[5] A61M 1/00
U.S. Cl. 604—410 17 Claims



1. A bag for the collection, freezing, storage, and rapid thawing of a fluid, comprising:

front and back sheets of fluid impervious material bonded to one another along edge portions thereof to define a reservoir;

said front and back sheets further being fastened together at a plurality of locations intermediate said edge portions to constrain the expansion of said bag, said fastening locations being disposed to permit uniform filling of said reservoir; and

port means for introducing and discharging fluid into and out of said reservoir,

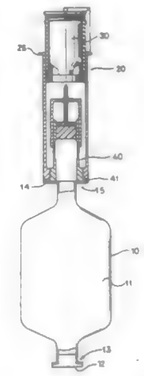
whereby when a fluid is introduced into said reservoir, said front and back sheets are constrained from separating in response to a pressure exerted by said fluid by said front and back sheets being fastened together at said plurality of locations intermediate said edge portions so as to constrain the expansion of said bag when filled with said fluid, thereby to increase the surface to volume ratio of said bag.

5,364,386

INFUSION UNIT

Hisaji Fukuoka, Soka; Tatsuji Yoshida, Washinomiya; Suminori Kobayashi, Yachiyo, and Toshikazu Sakurai, Noda, all of Japan, assignors to Hikari Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1993, Ser. No. 58,544
Int. Cl.[5] A61B 19/00
U.S. Cl. 604—411 11 Claims



1. An infusion unit, adapted for use with a vial having a pierceable mouth stopper, comprising:

a flexible container;

an open-ended pipe having an axis, a first opening of the pipe in communication with the container, a second opening axially opposite the first opening and at least two portions of different internal diameters, a larger diameter portion, and a smaller diameter portion, said smaller diameter portion being located between the second opening and the larger diameter portion;

an axially moveable plug disposed in said smaller diameter portion for sealing the second opening of the pipe; and

an engaging member having one end for engaging the plug and another end having a needle for piercing the mouth stopper of the vial, said engaging member being axially moveable within the pipe.

5,364,387

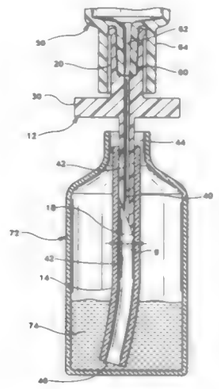
DRUG ACCESS ASSEMBLY FOR VIALS AND AMPULES

Niall Sweeney, Rutherford, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 2, 1993, Ser. No. 101,126
Int. Cl.[5] A64M 1/00
U.S. Cl. 604—411 22 Claims

1. A vial access pin for use with a hypodermic syringe to access fluid in a vial having a resilient piercable seal, comprising: an elongate body having a proximal end with mounting means for mounting said pin directly to a hypodermic syringe,

a sharp distal end for piercing said seal, a cannula portion of said body extending proximally from said distal end and including a lumen extending axillay therethrough and communicating with said proximal end, a fluid flow aperture extending through said cannula at a location disposed proximally of said sharp distal end, said fluid flow aperture enabling fluid flow into said lumen from locations on said cannula proximally of



said distal end, a flange extending generally radially outwardly from a location between a distal end of said mounting means and a proximal end of said fluid flow aperture, said flange having an outer circumferential configuration for facilitating engagement of said vial access pin with said hypodermic syringe, said flange extending more radially outwardly than said mounting means.

5,364,388

BEAM DELIVERY SYSTEM FOR CORNEAL SURGERY

Jeffrey E. Koziol, 1211 S. Arlington Heights Rd., Arlington Heights, Ill. 60005

Continuation-in-part of Ser. No. 812,163, Dec. 23, 1992, which is a continuation of Ser. No. 598,793, Oct. 17, 1990, Pat. No. 5,074,859, which is a continuation of Ser. No. 464,637, Jan. 5, 1990, abandoned, which is a continuation of Ser. No. 176,765, Apr. 1, 1988, abandoned. This application Sep. 14, 1992, Ser. No. 944,431

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] A61N *5/02*

U.S. Cl. 606—5 **53 Claims**

1. An apparatus for delivering radiant energy beams onto an area of a cornea of an eye centered on a main optical axis, the combination comprising:

a source of radiant energy beam aimed along the main optical axis;

a support;

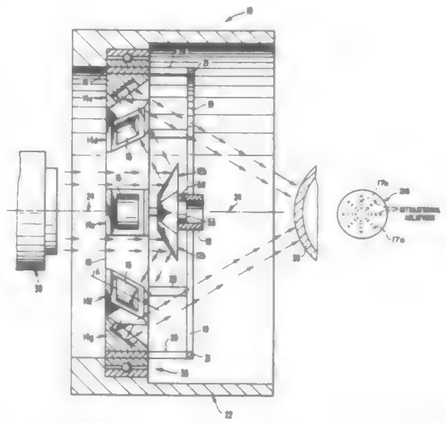
an array of discrete central reflector means, arranged about the main optical axis, for intercepting the radiant energy beam incident thereon, splitting the beam into a plurality of beam portions, and reflecting each beam portion outwardly of the main optical axis;

first means, coupled to said support and said array of central reflector means, for coupling said central reflector means to said support;

an assembly of discrete peripheral reflector means, outwardly spaced from said central reflector means, each peripheral reflector means for intercepting one of said reflected beam portions from an associated central reflector means and for directing said intercepted beam portion generally along the main optical axis and for incidence onto an area of the cornea; and

second means, coupled to said support and said peripheral reflector means, for coupling said peripheral reflector means to said support,

each of said peripheral reflector means including means for



focusing said intercepted beam portion onto an area of the cornea separate and discrete from the incidence of remaining said intercepted beam portions reflected onto areas of the cornea and in a linear configuration.

5,364,389

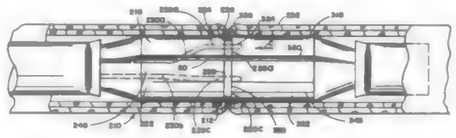
METHOD AND APPARATUS FOR SEALING AND/OR GRASPING LUMINAL TISSUE

Dallas W. Anderson, The Woodlands, Tex., assignor to Premier Laser Systems, Inc., Irvine, Calif.

Filed Nov. 25, 1992, Ser. No. 981,197

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—8 **11 Claims**



7. The apparatus as recited in claim 1 wherein said inner portion is constructed from a material transmissive to energy from said source that heats tissue to the nondestructive range.

5,364,390

HANDPIECE AND RELATED APPARATUS FOR LASER SURGERY AND DENTISTRY

John Taboada, and Robert H. Poirier, both of San Antonio, Tex., assignors to Refractive Laser Research and Development, Inc., Fremont, Calif.

Continuation of Ser. No. 715,014, Jun. 13, 1992, abandoned, which is a continuation of Ser. No. 571,822, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 195,843, May 19, 1988, abandoned. This application Apr. 16, 1992, Ser. No. 869,834

Int. Cl.[5] A61K *5/06*

U.S. Cl. 606—10 **30 Claims**

1. Apparatus for performing surgery upon a subject body comprising:

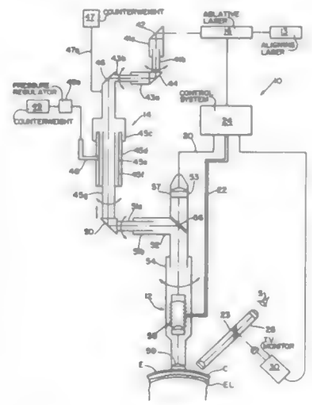
means for emitting leaser radiation,

a handpiece,

means comprising a variable focus lens in said handpiece for receiving laser radiation from said laser radiation emitting

means and for sharply focussing said laser radiation to a localized spot at a position beyond said handpiece,

means for sensing through said variable focus lens an image of an object beyond said handpiece and a focus of the image and for generating a control signal representative of



the focus of an a image sensed by said focus sensing means, and

means for adjusting said variable focus lens in response to said control signal for changing the position of said localized spot towards or from said object.

5,364,391

LASER BEAM DELIVERY SYSTEM

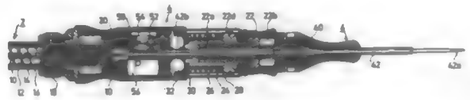
Ellie Konwitz, Ramat Gan, Israel, assignor to Laser Industries Ltd., Neve Sharet, Israel

Filed Jun. 3, 1993, Ser. No. 70,816

Claims priority, application Israel, Jun. 3, 1992, 102083

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—16 **16 Claims**



1. A laser beam delivery system adapted to deliver a laser beam, comprising:

a fiber cord assembly connectable at one end to a laser beam source;

a probe connector assembly connected at one end to said fiber cord assembly and having a socket at its opposite end;

a fiber probe received in said socket in a quickly attachable/-detachable manner to deliver a laser beam from said source to a working site;

and a mechanical shutter within said probe connector assembly normally biased to a blocking position to block the passage of the laser beam, but movable to an unblocking position upon the insertion of the fiber probe into said socket.

5,364,392

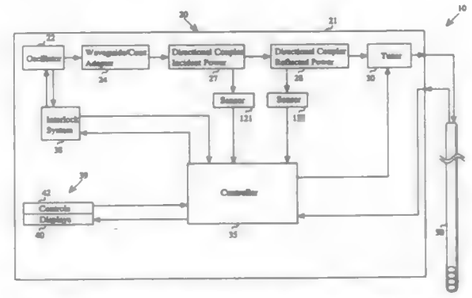
MICROWAVE ABLATION CATHETER SYSTEM WITH IMPEDANCE MATCHING TUNER AND METHOD

Glen G. Warner, Morgan Hill, and David A. Grundy, Fremont, both of Calif., assignors to Fidus Medical Technology Corporation, Fremont, Calif.

Filed May 14, 1993, Ser. No. 62,637

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—34 **12 Claims**



1. A power supply for use in a microwave ablation catheter system that includes an ablation catheter having a waveguide that takes the form of a coaxial cable and an antenna carried by the waveguide, the ablation catheter being coupled to the power supply by a connector arrangement, the power supply comprising:

a microwave energy generator for generating electromagnetic energy having a frequency in the microwave range, the microwave energy generator being coupled to the catheter waveguide through a coaxial transmission line and said connector;

a reflected power monitor including a directional coupler in communication with one of said catheter waveguide and said transmission line, for diverting a small portion of the power that is reflected from the catheter during use, and a power sensor that monitors the magnitude of the power diverted by the directional coupler, the reflected power monitor being arranged to monitor the amount of power that is reflected from the catheter during use and outputting a signal indicative of the reflected power; and

a tuner in communication with one of said transmission line, said catheter waveguide and said antenna, the tuner being arranged to facilitate matching the impedance of a power generator side portion of the catheter system with the impedance of a catheter side portion of the catheter system; and

whereby the output signal indicative of the reflected power is available for use in adjusting the tuner to minimize reflected power.

5,364,393

TISSUE DISSIPATIVE RECANALIZATION CATHETER

David C. Auth, Kirkland; Thomas J. Clement, Redmond, and Michael J. Intlekofer, Bellevue, all of Wash., assignors to Heart Technology, Inc., Redmond, Wash.

Continuation of Ser. No. 973,584, Nov. 6, 1992, abandoned, which is a continuation of Ser. No. 547,473, Jul. 2, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,943

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—34 **23 Claims**

1. A catheter system for penetrating occlusive tissue in an arterial lumen, consisting essentially of:

a substantially tubular insulating sheath having proximal and distal ends and having a lumen extending therethrough;

an electrically conductive guidewire, wherein said guidewire has a proximal end and an electrosurgical distal tip

and extends through said lumen such that the tubular sheath is an insulator for said guidewire wherein said guidewire has an insulative coating proximally adjacent to the electrosurgical distal tip; and



a voltage generating means electrically connected to said electrically conductive guidewire to activate said electrosurgical distal tip in monopolar fashion.

5,364,394

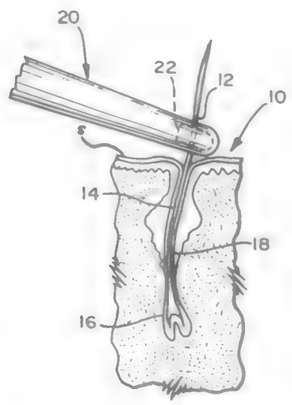
METHOD OF REMOVING HAIR FROM THE BODY AND INHIBITING FUTURE GROWTH

Thomas L. Mehl, 1015 Rte. 1 Hwy. 337, P.O. Box 1019, Newberry, Fla. 32669

Continuation of Ser. No. 917,662, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 794,364, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 454,622, Dec. 21, 1989, abandoned. This application Oct. 21, 1993, Ser. No. 140,336

Int. Cl.[5] A61B *17/41*

U.S. Cl. 606—36 **22 Claims**



1. The method of removing a hair from a skin surface of an individual and inhibiting future growth by causing said hair to be sufficiently damaged at its root so as to be more readily releasable at its root and removable by a very gentle force rather than the normal force required to pluck a non-treated hair from the skin surface, comprising the steps of:

a) treating the outer surface of the hair which has a longitudinally extending inner central core to reduce RF resistance between the outer hair surface and said inner central core of the hair to permit more RF energy during an entire treatment time to enter the inner central core and travel therealong within the hair interior to reach the hair root;

b) firmly grasping the hair between a pair of opposed RF insulated hair engaging surfaces at a point relatively close to but clear of and above the skin surface of the grasped hair;

c) applying RF energy to at least said one of said hair engaging surfaces;

d) holding said hair engaging surfaces in firm engagement with said hair while applying focussed RF energy to said hair for a period of time sufficient to cause the RF energy to travel across the hair and into the inner core of the hair and to damage the hair root sufficiently to permit the hair to be removed by a very gentle upward lift;

e) applying a gentle upward lift to the hair by the hair engaging surfaces during application of said RF energy, without exerting the tug ordinarily required for removal of non-treated hair.

5,364,395

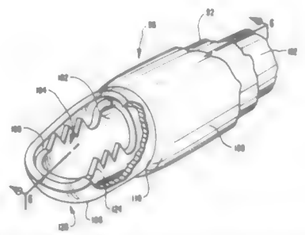
ARTHROSCOPIC SURGICAL INSTRUMENT WITH CAUTERIZING CAPABILITY

Hugh S. West, Jr., 1373 Harvard Ave., Salt Lake City, Utah 84105

Filed May 14, 1993, Ser. No. 62,349

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—46 **53 Claims**



1. An instrument utilizing an electrical power source in a surgical procedure to cut tissue of a patient, said instrument comprising:

(a) a handle;

(b) an elongated electrically conductive probe having a proximal end and a distal end and being attached at said proximal end thereof to said handle, said probe having formed in the interior thereof a longitudinally extending lumen communicating with said handle, said distal end of said probe having an aperture formed therethrough permitting said lumen to communicate with the exterior of said probe;

(c) an elongated drive shaft longitudinally disposed within said lumen extending from said proximal end of said probe to at least said aperture, said drive shaft being rotatably mounted within said lumen of said probe for rotation about the longitudinal axis of said drive shaft;

(d) a cutting tool positioned on said drive shaft opposite said aperture of said probe, thereby to pass in close proximity to said aperture during each rotation of said shaft and sever any tissue of the patient urged against said exterior of said probe at said aperture; and

(e) versatility means for selectively electrically cauterizing tissue of the patient contacting a preselected region on said exterior of said distal end of said probe, said versatility means comprising:

i) an electrically insulative layer disposed on and encircling said exterior of said probe, said layer extending from said proximal end of said probe to the periphery of said preselected region on said exterior of said distal end of said probe; and

ii) energization means for effecting selective electrical coupling of said probe with the power source.

5,364,396

DISTRACTION METHOD AND APPARATUS

Randolph C. Robinson, 7144 S. Chapparal Cir. East, Aurora, Colo. 80016, and David A. Hendrick, 4604 Kalispell Way, Aurora, Colo. 80015

Filed Mar. 29, 1993, Ser. No. 38,786

Int. Cl.[5] A61F *5/04*

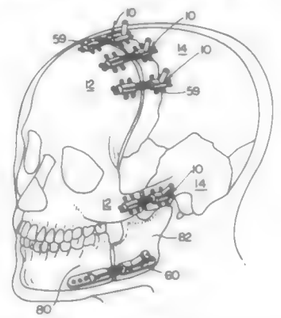
U.S. Cl. 606—53 **9 Claims**

6. An implantable bone distraction device for distracting osteotomically separated bone sections, said bone distraction device comprising:

first low profile block means for subcutaneous implantation and attachment to a first bone section, said first block means defining a drive chamber bore;

second low profile block means spaced from said first low profile block means for subcutaneous implantation and attachment to a second bone section separated from the first bone section by an osteotomy located between the bone sections, said second block also defining a threaded bore;

a rotatable drive rod having a first drive end received in said drive chamber bore of said first block means and a



threaded distal end threadably received in said threaded bore of said second block means;

drive rod actuation means located in said drive chamber bore for cooperating with said first drive end of said drive rod to rotate said drive rod so that the inherent depth to which said rod's threaded distal end is threadably received within said threaded bore can be adjusted, the adjustment of which adjusts the spacing between the first and section block means which enables distraction between the first and second bone sections to be controlled so that bone growth therebetween can be enhanced; and

remote control means for remotely controlling said drive rod actuation means so that spacing between said first and second block means can be externally adjusted.

5,364,397

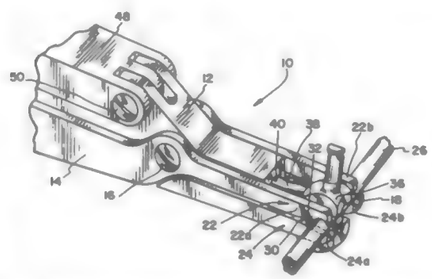
SPINAL COUPLER SEATER WITH DUAL JAWS AND AN INDEPENDENT PLUNGER

S. Kyle Hayes, Laguna Niguel, Calif.; and Randall N. Allard, Plymouth, both of Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Jun. 1, 1993, Ser. No. 69,497

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—61 **8 Claims**



1. A surgical device for engaging a spinal rod and for coupling a spinal rod coupler to said rod, said device comprising:

attaching means for temporarily securing said surgical device on the spinal rod and locating the spinal rod coupler against the spinal rod; and

compression means for coupling the spinal rod coupler to the spinal rod by compressing the spinal rod coupler onto the spinal rod whereby an interference fit is formed therebetween, the compression means being pivotally connected to the attaching means by a pivot pin and operating independently from the attaching means.

5,364,398

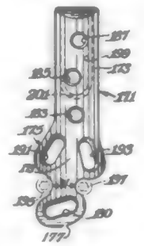
MODULAR FEMORAL FIXATION SYSTEM

Michael W. Chapman; Charles C. Edwards, and Dana C. Mears, all of New York, N.Y., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.

Division of Ser. No. 670,839, Mar. 18, 1991, Pat. No. 5,190,544, which is a division of Ser. No. 232,188, Aug. 15, 1988, Pat. No. 5,041,114, which is a division of Ser. No. 877,626, Jun. 23, 1986, Pat. No. 4,776,330. This application Sep. 21, 1992, Ser. No. 948,193

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—69 **9 Claims**



1. A distal buttress plate adapted to be secured to the outer cortical wall of the lateral distal femur by means of bone fasteners received in apertures in said plate, said plate including a relatively flat elongated proximal portion adapted to be secured to the lateral distal femoral shaft and a relatively curved distal portion curved out of the plane of said proximal portion adapted to be secured to the lateral distal femoral condyle,

with said distal portion being three dimensionally-contoured to replicate the mean geometry of the lateral femoral condyle of adult humans, wherein said distal portion includes a generally rounded head at the distal end of said buttress plate and includes located adjacent to said generally rounded head, a generally widened body, and wherein said generally widened body and said generally rounded head are separated by a neck portion.

5,364,399

ANTERIOR CERVICAL PLATING SYSTEM

Gary Lowery, Gainesville, Fla.; Michael C. Sherman, Memphis, Tenn.; Eddie F. Ray, III, and Bradley J. Coates, both of Cordova, Tenn., assignors to Danek Medical, Inc., Memphis, Tenn.

Filed Feb. 5, 1993, Ser. No. 14,415

Int. Cl.[5] A61B *17/58*

U.S. Cl. 606—69 **13 Claims**

1. A system for anterior fixation of the spine, comprising:

an elongated fixation plate having a longitudinal axis and a length along said axis sufficient to span between at least two vertebrae, and including;

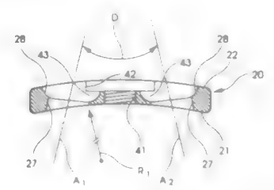
a lower surface adapted to engage the anterior portion of the vertebrae and an opposite upper surface;

a first end and a longitudinally opposite second end; and

a pair of screw bores defined at both of said first and second ends between said lower and upper surfaces and displaced from each other transverse to said longitudinal axis of said plate, said pair of screw bores having

centerlines that diverge relative to each other below said lower surface of said plate; and

several bone engaging screws, one each for each of said pair of screw bores at both of said first and second ends, each of said screws including;



an elongated shank with bone engaging threads; and

an enlarged head for engaging a corresponding one of said screw bores at said upper surface of said plate when said shank extends therethrough.

5,364,400

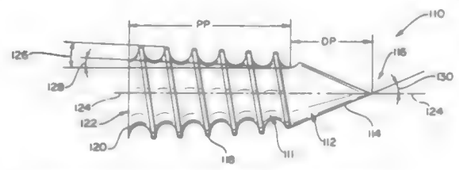
INTERFERENCE IMPLANT

Richard P. Rego, Jr., Mansfield, and Bernard J. Bourque, Taunton, both of Mass., assignors to American Cyanamid Co., Wayne, N.J.

Continuation-in-part of Ser. No. 836,674, Feb. 14, 1992. This application Jun. 23, 1993, Ser. No. 81,596

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—72 **19 Claims**



1. A surgical interference implant comprising:

an elongated body formed of a biocompatible material, having a distal end and a proximal end, and having a longitudinal axis extending between said distal and proximal ends;

said proximal end defining means for engaging a driver and lacking an enlarged head member;

said body defining a conical region having a smooth outer surface and extending proximally from said distal end along a first, distal portion of said body to enable initial linear insertion of said body into a bone tunnel between a wall of the bone tunnel and an object to be secured therein;

a helical thread disposed about a second, proximal portion of said body to enable subsequent rotational insertion of said body deeper into the bone tunnel, said proximal portion extending from said conical region to said proximal end, and said body having a body major diameter and a body minor diameter in said second, proximal portion; and

said first, distal portion being inclined at a first angle relative to said longitudinal axis, and said body major diameter and said body minor diameter of said second, proximal portion each being inclined at a second, more acute angle along a substantial length of said proximal portion.

5,364,401

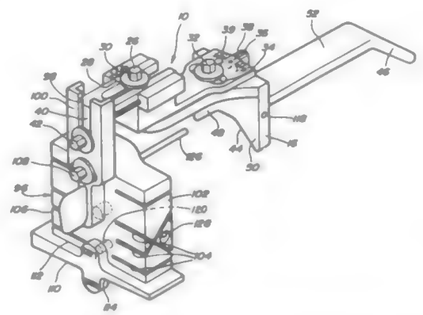
EXTERNAL ALIGNMENT SYSTEM FOR PREPARING A FEMUR FOR AN IMPLANT

Joseph M. Ferrante, Cordova, and Dennis J. Buchanan, Memphis, both of Tenn., assignors to Wright Medical Technology, Inc., Arlington, Tenn.

Filed Oct. 8, 1992, Ser. No. 957,991

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—84 **15 Claims**



1. An external alignment system for preparing a bone to receive a distal implant, said system comprising:

a base having a longitudinal axis;

mounting means for mounting said base on the external surface of the bone aligning said longitudinal axis of said base parallel with a long axis of the bone;

single point connecting means for connecting a plurality of bone preparing devices to said base at a single point reference;

a cutting guide component for guiding a blade of a cutting tool to make cuts on the distal end of the bone, said cutting guide component including a guide member having a slot for receiving a blade of a cutting tool and including a cutting guide component connecting means for connecting said guide member relative to said single point connecting means and for allowing said guide member to rotate relative to said base about an axis substantially parallel to said longitudinal axis of said base;

axial adjustment means for axially adjusting said single point connecting means relative to said base along said longitudinal axis of said base and the long axis of the bone; and

radial adjustment means for radially adjusting said single point connecting means relative to said base and the distal end of the bone.

5,364,402

TIBIAL SPACER SAW GUIDE

Charles W. Mumme, and John D. Vinciguerra, both of Austin, Tex., assignors to Intermedics Orthopedics, Inc., Austin, Tex.

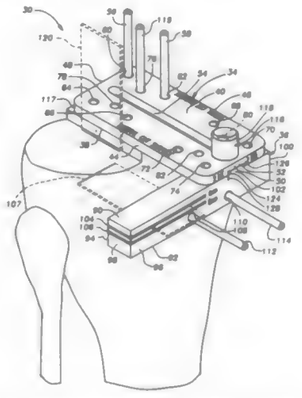
Filed Jul. 29, 1993, Ser. No. 99,157

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—88 **12 Claims**

1. A saw guide for guiding at least one saw blade for resecting a bony defect of a medial or lateral side of a proximal end of a tibia, said proximal end having a resected planar proximal end surface oriented substantially perpendicular to said tibia, a first pair of drill holes oriented substantially parallel to said tibia and located on the medial side of said proximal end, and a second pair of drill holes oriented substantially parallel to said tibia and located on the lateral side of said proximal end, to accomodate a spacer to be implanted between an inferior surface of a tibial baseplate prosthesis and said proximal end, said tibial baseplate prosthesis having first and second pairs of pegs extending from said inferior surface adapted to be received in said first and second pairs of drill holes, respectively, said saw guide comprising:

a plate, said plate including means for engaging said planar proximal end surface in alternate first and second positions, first alignment means for aligning said plate with said first pair of drill holes, and second alignment means for aligning said plate with said second pair of drill holes, wherein when said means for engaging engages said planar proximal end surface in said first position, said first alignment means is aligned with said first pair of drill holes and when said means for engaging engages said planar proximal end surface in said second position, said second alignment means is aligned with said second pair of drill holes, first saw guide means spaced and oriented relative to said first alignment means for guiding said at least one saw blade for making a sagittal osteotomy of said proximal end when said means for engaging engages said planar proximal end surface in said first position, and second saw guide means spaced and oriented relative to said second alignment means for guiding said at least one saw blade for



making a sagittal osteotomy of said proximal end when said means for engaging engages said planar proximal end surface in said second position; and

a block attached to said plate, said block being disposed anteriorly of said tibia when said means for engagement engages said planar proximal end surface, said block including third saw guide means for guiding said at least one saw blade for making a generally horizontal osteotomy of one of said medial and lateral sides of said proximal tibia, said third saw guide means being displaced from said means for engaging in a direction parallel to said tibia a distance substantially equal to a thickness of the spacer to be accomodated;

whereby said first and second pairs of drill holes in the proximal tibia serve as references for locating the sagittal osteotomy, and whereby the resected planar proximal end surface of the tibia serves as a reference for locating the generally horizontal osteotomy.

5,364,403

ACETABULAR CUP POSITIONER

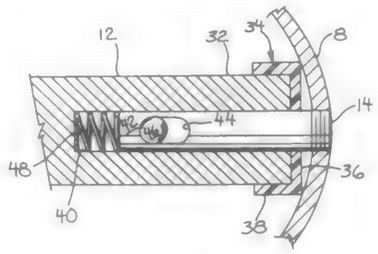
Thomas D. Petersen, San Diego, Calif., and Richard A. Lane, Ft. Wayne, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Sep. 20, 1993, Ser. No. 123,240

Int. Cl.[5] A61F *2/34*

U.S. Cl. 606—91 **4 Claims**

1. A positioner configured for connection to a prosthetic acetabular cup, said positioner including a main shaft having a means for connecting the positioner to a prosthetic acetabular cup, said connecting means being shiftable from an extended position toward a retracted position in response to the shaft being impacted toward an acetabular cup carried by the connecting means, wherein said shaft carries a resilient collar adjacent the connecting means, the collar being configured for contact with the acetabular cup, the connecting means includes a partially threaded stud positioned within a longitudinal cavity formed in a distal end of the shaft, a spring member



positioned between an end wall of the longitudinal cavity and the threaded stud so as to bias the stud outwardly from the cavity toward the extended position.

5,364,404

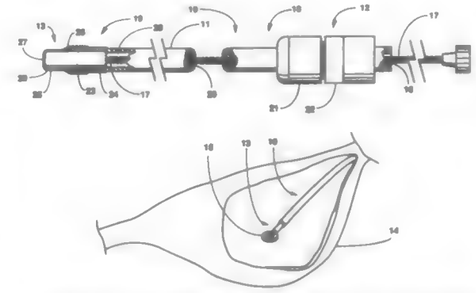
NEODYMIUM-BASED MAGNETIC RETRIEVAL CATHETER

Richard B. Jaffe, Salt Lake City, Utah, and Frank A. Parrish, Ellettsville, Ind., assignors to Cook Incorporated, Bloomington, Ind.

Continuation of Ser. No. 632,336, Dec. 21, 1990, abandoned. This application Sep. 4, 1992, Ser. No. 940,765

Int. Cl.[5] A61B *17/52*

U.S. Cl. 606—106 **18 Claims**



1. A magnetic retrieval catheter for retrieving large, heavy, or irregularly shaped magnetically attractable objects, comprising:

an elongated member having a distal end, a proximal end, and a passageway extending longitudinally therethrough and being totally enclosed about said distal end;

a handle positioned about said proximal end of said member;

a neodymium magnet having an elongated body including a distal portion, a proximal portion positioned stationarily in said passageway about said distal end of said member, and a maximum cross-sectional dimension no greater than that of said elongated member, said distal portion of said magnet extending from said passageway about said distal end of said member, said neodymium magnet also having a magnetic field strength that maintains attachment to a large, heavy, or irregularly shaped magnetically attractable object when pulled through a narrow esophagus;

an adhesive securing said proximal portion of said magnet in said passageway of said member; and

a nonferrous coating material forming a smooth surface on and surrounding said distal end of said member and said distal portion of said magnet extending from said passageway, said nonferrous coating material minimally affecting

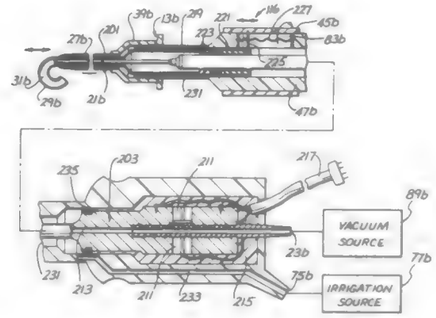
said magnetic field strength of said neodymium magnet and protecting said neodymium magnet from oxidation.

5,364,405

OPHTHALMIC INSTRUMENT WITH CURVED SUCTION CONDUIT AND INTERNAL ULTRASOUND NEEDLE

Edward R. Zaleski, Santa Ana, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 869,630, Apr. 16, 1992, Pat. No. 5,242,449, which is a continuation-in-part of Ser. No. 690,808, Apr. 23, 1991. This application Jul. 30, 1993, Ser. No. 99,707
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—107 **11 Claims**



1. An ophthalmic instrument comprising:
an elongated tube having proximal and distal end portions, a distal end and an elongated passage opening at a distal opening at the distal end;
said distal end portion being sized to be received through an incision into the eye;
an elongated inner member having a resiliently deformable distal end portion which has an arc of curved configuration in a relaxed condition and sized to be received through an incision into the eye, said distal end portion of the elongated inner member being capable of performing a function within an eye;
said elongated inner member being at least partially received in the elongated passage of the elongated tube, said distal end portions of the elongated tube and elongated inner member being relatively movable longitudinally so that the distal end portion of the elongated inner member can be caused to project through the distal opening a variable amount to change the length of the arc of the curved configuration projecting from the distal opening;
said elongated inner member having a distal end and an elongated passage opening at the distal end of the elongated inner member;
an elongated ultrasound needle in the elongated passage of the elongated inner member; and
means for imparting elongated ultrasonic energy to the ultrasound needle.

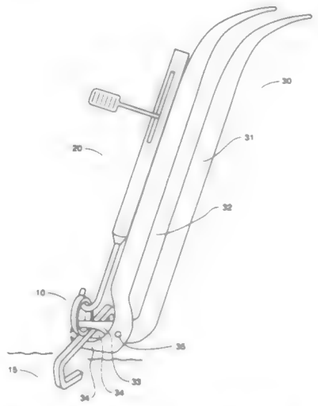
5,364,406

LAPAROSCOPIC SURGICAL STAPLE

Frank Sewell, Jr., 1413 North Elm, Henderson, Ky. 42420

Division of Ser. No. 734,246, Jul. 22, 1991, Pat. No. 5,236,435. This application Aug. 16, 1993, Ser. No. 107,271
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—138 **13 Claims**

1. A method of applying a staple to body tissue of a patient, comprising the steps of:
providing a laparoscopic surgical staple comprising
first and second downwardly extending legs,
an extraction member formed to define a substantially closed hole,
the extraction member being connected to the downwardly extending legs; and



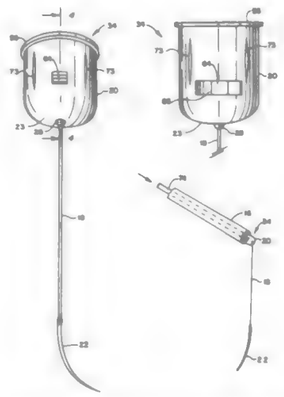
inserting the legs of the staple into the body tissue of the patient such that the closed loop remain above the body tissue; and grasping the closed loop of the staple.

5,364,407

LAPAROSCOPIC SUTURING SYSTEM

Wayne L. Poll, 1139 Sleeping Meadow Dr., New Albany, Ohio 43054

Filed Mar. 21, 1994, Ser. No. 215,422
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—139 **20 Claims**



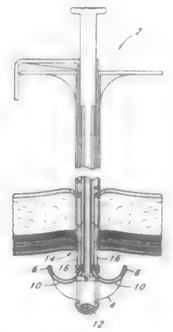
1. An intracorporeal laparoscopic suture and lock including,
a suture having a needle secured to one end and a suture lock secured to the other end,
said suture lock comprising a housing and a piston, said piston being mounted to move into a cavity in said housing, said cavity being defined by a sidewall and a bottom,
two openings in said sidewall, said openings being spaced apart and configured to receive said needle in a passage extending through said cavity and both openings,
said piston being movable into engagement with said bottom to clamp said suture against said bottom after said needle has passed through both openings.

5,364,408

ENDOSCOPIC SUTURE SYSTEM

Norman S. Gordon, Irvine, Calif., assignor to Laurus Medical Corporation, Irvine, Calif.

Filed Sep. 4, 1992, Ser. No. 941,382
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 **13 Claims**



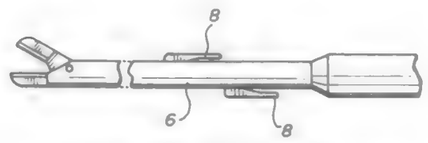
3. A suture device comprising:
a first needle and a second needle attached to opposite ends of a length of suture material contained within a tubular body member; and
a needle deployment means contained within said tubular body member for moving said first and second needles along first and second substantially semi-circular paths which traverse regions external to said body member and return to a catch mechanism on said body member, said needle deployment means further comprising substantially semi-circular shaped first and second needle guides which define the substantially semi-circular shape of said first and second substantially semi-circular paths traversed by said first and second needles.

5,364,409

ENDOSCOPIC NEEDLE HOLDER

Masayoshi Kuwabara, Ibaragi; Tomohiko Asahara, Tokyo; Noboru Ujiie, and Nobuhiro Kaganinuma, both of Koriyama, all of Japan, assignors to Ethicon, Inc., Somerville, N.J.

Filed May 4, 1993, Ser. No. 57,235
Claims priority, application Japan, May 8, 1992, 4-037365[U]
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—148 **3 Claims**



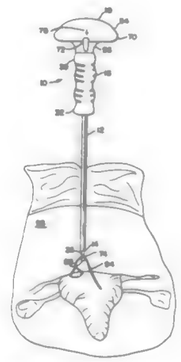
1. An endoscopic needle holder comprising:
an elongated shaft having proximal and distal ends;
a pair of needle holding jaws extending from the distal end of said shaft;
an actuation mechanism for operating the needle holding jaws, extending from said shaft proximal end; and
a suture holding mechanism extending from said shaft, said suture holding mechanism comprising a pair of hooks spaced diametrically apart on said shaft and extending toward said shaft proximal end.

5,364,410

PERCUTANEOUS SUTURE EXTERNALIZER

Stephen J. Failla; Charles M. Rarey, and Michael J. Stokes, all of Cincinnati, Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Filed May 28, 1993, Ser. No. 74,321
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—148 **19 Claims**



1. A suture externalizer comprising:
(a) a sheath having a proximal end portion and a distal end portion, said distal end portion having a sharp penetrating point;
(b) a hook rod having a proximal end portion and a distal end portion, said distal end portion having grasping means for grasping a suture;
(c) a housing having a proximal end and a distal end, said proximal end portion of said sheath being positioned in said housing and extending from said distal end thereof;
(d) a retracting knob having a proximal end portion and a distal end portion, said proximal end portion of said hook rod being fixedly mounted to said distal end portion of said retracting knob, said distal end portion of said retracting knob being slidably received within said housing;
(e) said hook rod being slidably received within said sheath for moving between a first position, wherein said grasping means extends beyond said penetrating point for grasping a portion of a suture and protecting said penetrating point, and a second position, wherein said grasping means and at least a portion of a suture retract within said sheath; and
(f) biasing means for biasing said hook rod into its first position, said biasing means being contained within said housing.

5,364,411

METHOD FOR SETTING DYES ON FABRICS, BY A TWO-STEP PROCESS, AND SYSTEM THEREFOR

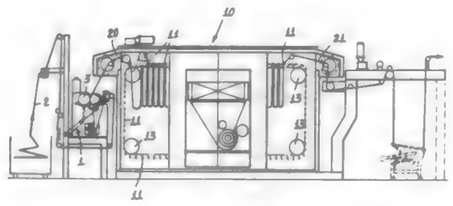
Mario Beretta, Via G.P. Clerici, 2, 21040 Gerenzano (Varese), Italy

Filed Oct. 27, 1993, Ser. No. 144,051

Claims priority, application Italy, Apr. 5, 1993, MI93 A 00674

Int. Cl.[5] D06P *5/00*

U.S. Cl. 8—476 5 Claims



1. A method for setting dyes on fabrics in general, by the two-step process, said method comprising, upon printing and drying a textile support, a step of impregnating said textile support with an alkali solution, characterized in that said method further comprises the step of vaporizing said impregnated textile support, by arranging said impregnated textile support with a free-lap arrangement on a plurality of supporting rods, inside a lap-processing vaporizer apparatus.

5,364,412

PROCESS FOR PRODUCING DYED LAMINATED PRODUCTS

Kenichi Furukawa, 6-7-2, Ohjidai, Sakura-Shi, Chiba-Ken, Japan

Filed Dec. 16, 1992, Ser. No. 992,841

Int. Cl.[5] D06P *1/00*; B32B *27/00*

U.S. Cl. 8—471 8 Claims

1. A process for producing a dyed article, comprising the steps of:

providing a substrate having laminated thereon a fluororesin film by means of an adhesive layer, said adhesive layer being disposed between said substrate and said fluororesin film;

said fluororesin film including, polyvinylidene fluoride, polytetrafluoroethylene, tetrafluoroethylene/perfluoroalkyl vinyl ether copolymer, tetrafluoroethylene/hexafluoropropylene copolymer, tetrafluoroethylene/ethylene copolymer, polychlorotrifluoroethylene or mixtures thereof;

contacting an exposed surface of said fluororesin film with a transfer means having a design formed thereon with a sublimating dye;

heating said transfer means to a temperature of about 100 degrees Celsius to 180 degrees Celsius for about 10 to 60 seconds to allow said dye to permeate said fluororesin film; and

allowing said dye to be absorbed into said adhesive layer to thereby transfer the design of the transfer means thereto;

whereby said fluororesin film overlies said adhesive layer and protects said adhesive layer from abrasion.

5,364,413

3-SUBSTITUTED PARA-AMINOPHENOLS, PROCESS FOR PREPARING THEM, THEIR USE FOR DYEING KERATINOUS FIBRES AND THE INTERMEDIATE COMPOUNDS USED IN THE PREPARATION PROCESS

Alex Junino, Livry Gargan; Alain Genet, Aulnay sous Bois, and Gerard Lang, Saint Gratien, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 737,413, Jul. 29, 1991, abandoned, which is a division of Ser. No. 316,921, Feb. 28, 1989, Pat. No. 5,084,067. This application Nov. 12, 1992, Ser. No. 974,903

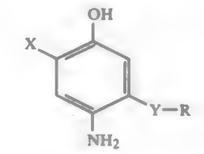
Claims priority, application France, Mar. 3, 1988, 88 02713

Int. Cl.[5] A61K *7/13*; C07C *211/00, 215/00*

U.S. Cl. 8—421 9 Claims

1. A process for dyeing human hair comprising

(a) mixing at the time of dyeing said hair an effective amount of a hair dyeing composition to dye said hair, said hair dyeing composition comprising an aqueous vehicle, one or more oxidation dye precursors having the formula (I):



(I)

in which X represents a hydrogen or halogen atom, Y represents an oxygen or sulfur atom and R represents C_1–C_4 hydroxyalkyl, C_3–C_6 polyhydroxyalkyl or C_1–C_4 aminoalkyl; or the salts thereof, with an oxidizing solution in an amount sufficient to oxidize said oxidation dye precursor,

(b) applying the mixture from (a) to said hair and permitting said mixture to remain in contact with the hair for a period of time ranging from 10 to 40 minutes at a temperature ranging from room temperature to 40° C.,

(c) rinsing said hair,

(d) shampooing said hair,

(e) rinsing said hair and

(f) drying said hair.

5,364,414

TINCTORIAL COMPOSITION FOR KERATINOUS FIBRES CONTAINING OXIDATION DYE PRECURSORS AND AMINOINDOLE COUPLERS, METHODS FOR DYEING USING THESE COMPOSITIONS AND NEW COMPOUNDS

Gerard Lang, Saint-Gratien; Alex Junino, Livry-Gargan; Jean Cotteret, Verneuil-sur-Seine, and Jean J. Vandenbossche, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 599,808, Oct. 22, 1990, abandoned. This application Jul. 22, 1992, Ser. No. 916,706

Claims priority, application Luxembourg, Oct. 20, 1989, 87611

Int. Cl.[5] A61K *7/13*

U.S. Cl. 8—409 20 Claims

1. An oxidation tinctorial composition for dyeing keratinous fibers comprising, in a solvent medium suitable for dyeing said fibers, at least one para oxidation dye precursor, said para oxidation dye precursor being selected from the group consisting of a paraphenylenediamine, a para-aminophenol, a para heterocyclic precursor derived from an amino or hydroxy substituted pyridine or pyrimidine and a bis-phenylalkylenediamine, and at least one heterocyclic coupler having formula (I)

(I)

wherein

R_1 and R_3, each independently, represent hydrogen or C_1–C_4 alkyl,

R_2 represents hydrogen, C_1–C_4 alkyl, carboxyl or alkoxycarbonyl with the proviso that at least one of R_2 and R_3 represents hydrogen,

R_4 represents hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl or C_2–C_4 polyhydroxyalkyl; and

the NHR_4 group occupies positions 4, 6 or 7 of the benzene ring,

or a salt thereof,

said heterocyclic coupler being present in an amount ranging from 0.05 to 3.5 weight percent based on the total weight of said composition and said para oxidation dye precursor and said heterocyclic coupler, as a whole, being present in an amount ranging from 0.3 to 7 percent by weight based on the total weight of said composition.

5,364,415

OXIDATIVE HAIR DYE COMPOSITIONS AND PROCESSES UTILIZING LEUCO VAT DYES

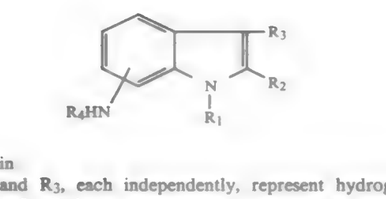
David M. Lewis, Otley, United Kingdom, assignor to Clairol Inc, New York, N.Y.

Filed May 27, 1993, Ser. No. 67,894

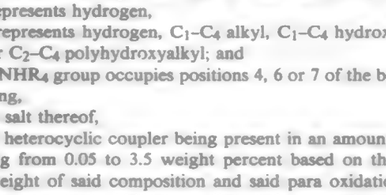
Int. Cl.[5] **A61K** *7/13*; **C09B** *9/00*

U.S. Cl. 8—406 **11 Claims**

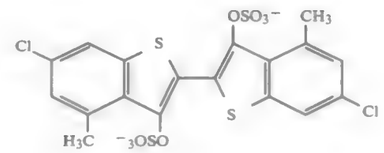
3. In a process wherein hair is colored by contact with a mild oxidative haircoloring system comprising a coupler and a primary intermediate, the improvement consisting essentially of contacting the hair with a color brightening amount of a solubilized vat dye in leuco vat pigment form selected from the group consisting of CI Solubilized Vat Brown 5



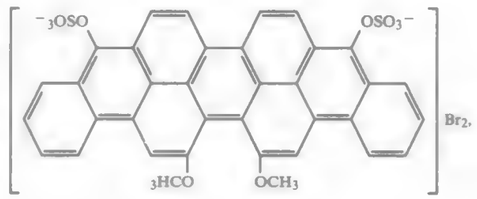
CI Solubilized Vat Black 1,



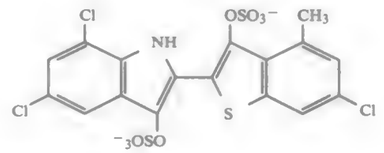
CI Solubilized Vat Red 1,



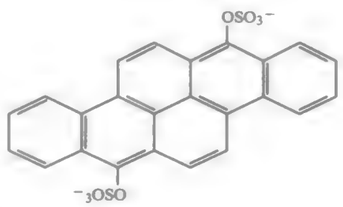
Solubilized Vat Green 2



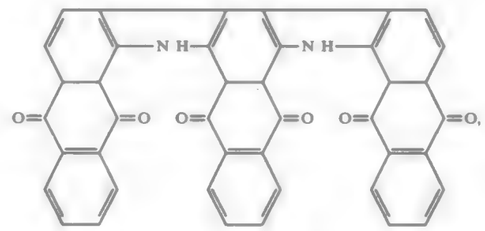
CI Solubilized Vat Violet 8



CI Solubilized Vat Yellow 4



and CI Solubilized Vat Brown 1



said coupler, primary intermediate, and vat pigments being the sole dyes and pigments present in the haircoloring system.

5,364,416

REACTIVE DYESTUFF MIXTURES

Max Schwarz, Leverkusen; Joachim Grütze, Odenthal; Dietrich Hildebrand, Odenthal; Joachim Wolff, Odenthal, and Frank-Michael Stöhr, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 24, 1992, Ser. No. 981,030

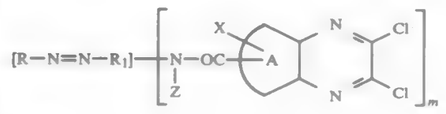
Claims priority, application Germany, Dec. 4, 1991, 4139954

Int. Cl.[5] **C09B** *67/22, 67/24*; **D06P** *1/382, 3/66*

U.S. Cl. 8—549 . **9 Claims**

1. Dyestuff mixture consisting essentially of at least two reactive dyestuffs, characterised in that it comprises at least one dyestuff having a dichloroquinoxaline reactive radical, of the formula

(I)



wherein

A denotes six-membered carbocyclic,

X denotes hydrogen,

Z denotes hydrogen or an alkyl group,

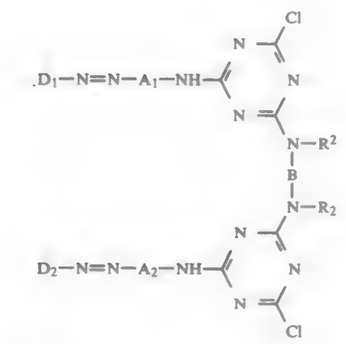
R denotes the radical of a diazo component of the benzene or naphthalene series,

R_1 denotes the radical of an azo component,

m denotes 1,

and a chlorotriazine dyestuff of the general formula (II)

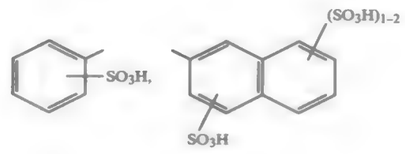
(II)



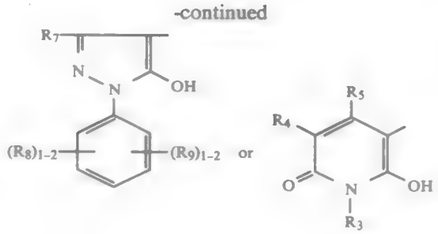
wherein

R_2 independently of one another denotes H or C_1–C_4-alkyl,

D_1 and D_2 denote components having the structure



-continued



where

R_3=CH_3 or C_2H_5,

R_4=COOH or $CONH_2$,

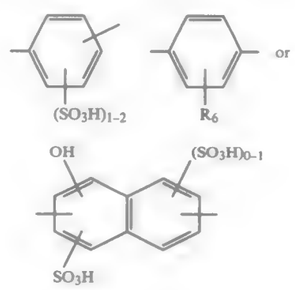
R_5=CH_3,

R_7=CH_3 or COOH,

R_8=H or SO_3H and

R_9=H, Cl or CH_3,

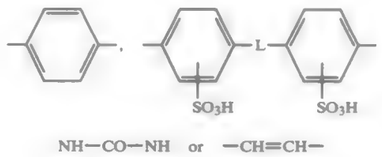
A_1 and A_2 independently of one another denote



where

R_6=CH_3, C_2H_5, NHCO—NH_2 or NH—CO—CH_3, and

B denotes



where

L=a single bond, NH—CO—NH or —CH=CH—.

5,364,417

METHOD OF DYEING NYLON FIBER WITH ACID DYE: SULLFAMIC ACID

David E. Wenstrup, Easley, and Sammy L. Roe, Wellford, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 16, 1992, Ser. No. 976,946

Int. Cl.[5] **C09B** *67/00*

U.S. Cl. 8—592 **14 Claims**

1. In a process for dyeing nylon fiber with an acid dye in an aqueous dye bath, having a first step of bringing said dye bath to a pH of between 5.5 and 4.0, and a temperature of between 160° F. and 230° F., an improvement comprising a second step of adding sulfamic acid to said dye bath to lower the pH of said dye bath to between 3.75 and 2.25.

5,364,418

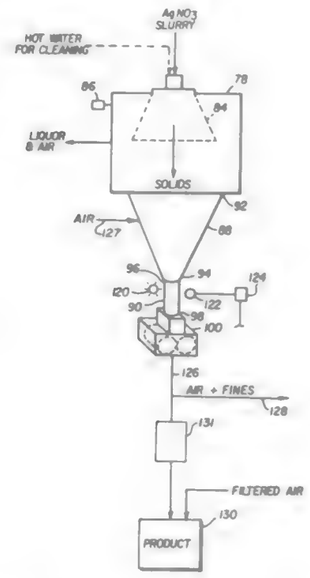
PROCESS FOR COMPACTING SILVER NITRATE

Ralph H. Pelto, Rochester; Brian L. Simpson, Hamlin; Theodore E. Walker, Spencerport; John W. Crevelling, Rochester; Kevin M. Logsdon, Holley; Paul C. Drake, Brockport, and Jeffrey R. Hennenkamp, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 848,446, Mar. 9, 1992, abandoned. This application Oct. 12, 1993, Ser. No. 135,115

Int. Cl.[5] C01G *5/00;* **C05B** *19/00*

U.S. Cl. 23—313 R **4 Claims**



1. A process for forming compacted silver nitrate bodies comprising:

introducing a feed solution of an aqueous silver nitrate solution to an evaporative crystallizer, the silver nitrate solution having a concentration of silver nitrate of approximately 60 to 90 percent by weight;

heating and concentrating by evaporation the aqueous silver nitrate solution in a crystallization zone of the evaporative crystallizer while maintaining a vacuum in the crystallizer to form a supersaturated slurry comprising silver nitrate crystals, wherein the temperature of the slurry is approximately 100°–149° .F and the vacuum is maintained from about 23 mm Hg to about 200 mm Hg absolute;

establishing a mean residence time of the slurry in the crystallization zone of approximately 60 to 180 minutes;

controlling the slurry density to approximately 2.7 gm/cc to 3.2 gm/cc;

agitating the slurry;

obtaining silver nitrate crystals having a size in the range of 200 μm to about 600 μm and having an aspect ratio of from about 1:2:3 to about 1:1:1;

withdrawing slurry from the crystallizer at a rate approximately equal to the rate of the introducing of the feed solution;

separating and drying from the withdrawn slurry silver nitrate crystals via a centrifuge;

feeding the separated dried crystals from the centrifuge to a compactor; and

compacting the separated dried crystals to form a plurality of compacted silver nitrate pellets.

5,364,419

FUEL OIL ADDITIVES

Robert D. Tack, Abingdon; Darryl R. T. Smith, and David P. Gillingham, both of Swindon, all of United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 265,623, Nov. 1, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 123,307

Claims priority, application United Kingdom, Nov. 2, 1987, 8725613

Int. Cl.[5] C10L *1/24;* **C10M** *135/10*

U.S. Cl. 44—371 **19 Claims**

1. A composition comprising a major proportion by weight of a liquid hydrocarbon and a minor proportion by weight of an amine or diamine sulphosuccinicate derivative of the following formula:

$$[R^3, R^4, R^5, NH]+-[O_3S-C(R^2, COY)-C(R, R^1)-COX]$$

where:

R, R^1 and R^2 are hydrogen or a hydrogen-and-carbon containing group,

R^3, R^4 and R^5 are selected from hydrogen and a hydrogen-and-carbon containing group of at least 12 carbon atoms, at least one of them being a said hydrogen-and-carbon containing group containing at least 12 carbon atoms,

X is $—OR^6$,$—NR^7R^8$, or $[O—]^-+[NHR^9R^{10}R^{11}]$ or an alkylene glycol linkage group, and

Y is $—OR^{12}$, $—NR^{13}R^{14}$, or $[—O]^-+[NHR^{15}R^{16}R^{17}]$

where R^6, R^7, R^8, R^9, R^{10}, R^{12}, R^{13}, R^{14}, R^{15} and R^{16} are hydrogen or a hydrogen-and-carbon containing group, and R^{11} and R^{17} are hydrogen-and-carbon containing groups.

5,364,420

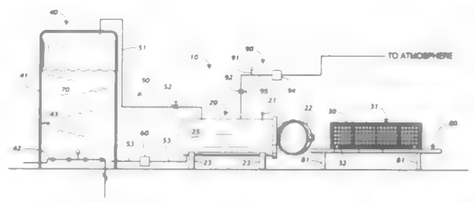
COMBUSTIBLE MATERIAL TREATMENT PROCESS AND PRODUCT

Oma L. Herndon, P.O. Box 117, Hatcheechubbee, Ala. 36858

Filed Jun. 7, 1993, Ser. No. 72,445

Int. Cl.[5] C10L *11/00*

U.S. Cl. 44—542 **12 Claims**



1. A method of treating natural wood with a paraffin-based flammable substance in order to produce a high quality kindling material or combustion catalyst having the burn characteristics of naturally occurring pine resin kindling, comprising the steps of:

loading a volume of said wood into a pressure chamber;

substantially evacuating the air from within the pressure chamber;

releasing the vacuum while substantially filling the pressure chamber with hot liquid paraffin;

allowing the wood to remain within the pressure chamber under atmospheric or slightly negative pressure for a period of time in order to absorb heat from the liquid paraffin;

increasing the pressure within said pressure chamber to a level which causes the liquid paraffin to begin to permeate and saturate the wood;

holding the pressure within said pressure chamber for a period of time sufficient to ensure proper penetration and permeation of the wood with the liquid paraffin;

reducing the pressure within the pressure chamber to atmospheric or ambient pressure;

removing the unused liquid paraffin from the pressure chamber; and,

removing the pressure treated, paraffin saturated wood from the pressure chamber for cooling.

5,364,421

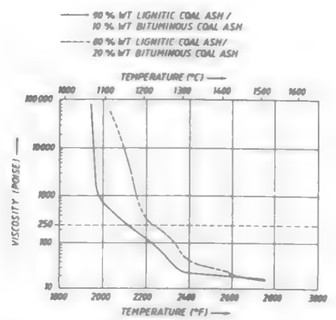
COAL BLENDS HAVING IMPROVED ASH VISCOSITY

Timothy S. Westby; Thomas G. McCord, and Lynton W. R. Dicks, all of Houston, Tex., assignors to Ziegler Coal Holding Company, Fairview Heights, Ill.

Filed Jul. 31, 1991, Ser. No. 738,406

Int. Cl.[5] C10L *9/00;* **F23K** *1/00*

U.S. Cl. 44—608 **16 Claims**



1. A method of operation of a slagging-type coal fired combustion apparatus comprising: feeding to the combustion apparatus a blend of coals, the blend comprising

(a) coal having bituminous ash wherein ash slag from the coal having a bituminous ash has a viscosity above 250 poise at 2600° F.; and

(b) coal having a lignitic ash wherein ash slag from the coal having a lignitic ash has a viscosity at or below 250 poise at 2600° F. wherein the blend has an ash content of at least about 6% w, wherein ash slag from the blend has a viscosity of 250 poise or less at 2600° F., and wherein about 50 to about 5% w of the ash from the blend is from the coal having bituminous ash and about 50 to about 95% w of the ash from the blend is from the coal having the lignitic ash; and

withdrawing slag from the apparatus.

5,364,422

CBN GRINDING WHEEL

Masato Kitajima, Hekinan; Shinji Soma, Handa; Akimitsu Kamiya; Akira Suzuki, both of Okazaki; Yasuhisa Sekiya, Toyohashi, and Tomohiro Inagaki, Anjo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya and Toyoda Van Moppes Kabushiki Kaisha, Okazaki, both of Japan

Filed Feb. 9, 1993, Ser. No. 15,338

Claims priority, application Japan, Feb. 20, 1992, 4-033321

Int. Cl.[5] B24D *3/04*

U.S. Cl. 51—307 **5 Claims**



1. A grinding wheel having an abrasive layer which comprises:

first single crystal CBN grains having a predetermined toughness;

second single crystal CBN grains having a different toughness compared to said first single crystal CBN grains; and

a vitrified bond for bonding said first single crystal CBN grains and second single crystal CBN grains,

wherein said first single crystal CBN grains have a toughness larger than the toughness of said second single crystal CBN grains.

5,364,423

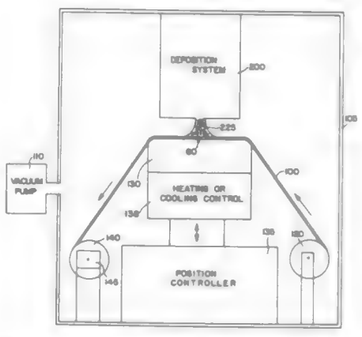
METHOD FOR MAKING DIAMOND GRIT AND ABRASIVE MEDIA

Louis K. Bigelow, Harvard, Mass.; Frank J. Csilling, Salt Lake City, Utah, and James T. Hoggins, Plano, Tex., assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 614,900, Nov. 16, 1990, abandoned. This application May 6, 1993, Ser. No. 59,014

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—293 **19 Claims**



9. A method of making an abrasive medium, comprising the steps of:

producing a diamond film by chemical vapor deposition;

crushing the film to obtain diamond grit;

providing a matrix; and

bonding the grit to the matrix.

5,364,424

FILTER FOR WASHING AND RETENTION OF EXHAUST GASES IN MOTORIZED VEHICLES

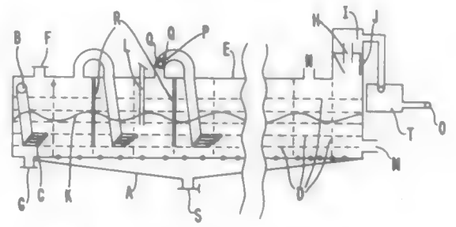
Antônio Teles De Menezes Júnior, Rua da Constituicao, n°. 1.479 - 3°. Esq°., 4200 Porto, Portugal

Filed May 12, 1993, Ser. No. 59,755

Claims priority, application Portugal, May 15, 1992, 100490

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—228 **7 Claims**



1. A filter arrangement adapted to wash and retain exhaust gases of a motor vehicle, said filter arrangement comprising:

a filter body defining a chamber containing a filtering liquid therein;

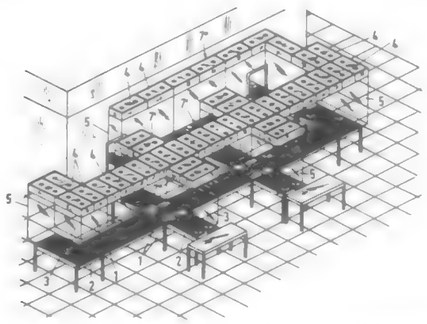
an exhaust gas diffuser extending into said chamber and having a diffuser outlet immersed in said filtering liquid;
a plurality of perforated plates in said chamber, at least one of said perforated plates being located above the level of said filtering liquid;
a cooling circuit located externally of but being fluidly connected to said chamber for cooling said filtering liquid;
at least one fan fluidly communicating with said chamber and being located above the level of said filtering liquid, said at least one fan having at least one filtering liquid injector associated therewith for cooling and filtering of exhaust gases moved by said fan with jets of filtering liquid from said filtering liquid injector; and
an exhaust gas outlet in said chamber located such that said perforated plates are between said exhaust gas outlet and said diffuser outlet.

5,364,425

CLEANING DEVICE FOR A CLEAN ROOM

Rudolf Simon, Korntal-Münchingen, Germany; John C. Dryden, San Jose, Calif., and Franz Schlitz, Böblingen, Germany, assignors to Meissner + Wurst GmbH + Co. Lufttechnische Anlagen Gebäude- Und Verfahrenstechnik, Stuttgart, Germany

Filed Jun. 11, 1993, Ser. No. 76,021
Claims priority, application Germany, Jun. 11, 1992, 4219125; Sep. 18, 1992, 4231264
Int. Cl.[5] B01D *46/12*
U.S. Cl. 55—385.2 **47 Claims**



1. A cleaning device for a clean room; said cleaning device comprising:
at least two filter-fan units each comprising at least one filter and at least one fan; and
connecting elements for connecting said filter-fan units to one another to form a self-supporting construction unit.

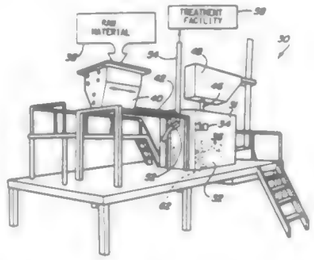
5,364,426

HIGH SHEAR MIXER AND GLASS MELTING METHOD

Ray S. Richards, Sylvania, Ohio, assignor to Stir-Melter, Inc., Perrysburg, Ohio

Division of Ser. No. 862,328, Apr. 2, 1992, Pat. No. 5,273,567, which is a division of Ser. No. 665,894, Mar. 7, 1991, Pat. No. 5,120,342. This application Sep. 16, 1993, Ser. No. 122,914
Int. Cl.[5] C03B *5/027*
U.S. Cl. 65—474 **13 Claims**

1. A method of recycling coated mineral fibers having an organic coating comprising the steps of:
depositing coated mineral fibers into a vessel containing a molten glass bath;
stirring the molten glass bath at a speed sufficient to create a surface currents which convey the coated mineral fibers along with the surface currents;
heating the coated mineral fibers while being conveyed by the surface currents to decompose said organic coating on the mineral fibers leaving a residue and mineral fibers, said residue comprising carbon;
oxidizing a first portion of said residue as said mineral fibers are conveyed by said surface currents across a portion of the surface of said molten glass bath;
dispersing the mineral fibers and a second portion of the



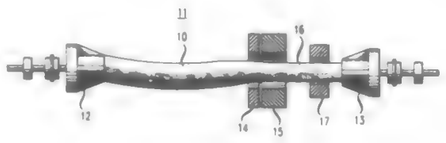
residue into the molten glass bath with a stirrer rotating at a speed sufficient to make a mineral fiber and residue dispersion in the molten glass bath; and
heating the mineral fiber and residue dispersion to melt the mineral fibers with said second portion of said residue to create a carbon/glass melt as carbon from said second portion of residue is released into said molten glass bath.

5,364,427

MANUFACTURE OF OPTICAL FIBER USING SOL-GEL

James W. Fleming, Jr., Westfield, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1993, Ser. No. 93,226
Int. Cl.[5] C03B *37/016*
U.S. Cl. 65—395 **11 Claims**



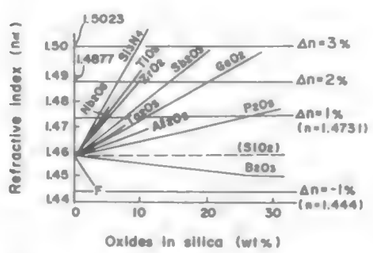
1. Process for making optical fiber by drawing from a composite preform consisting essentially of a rod enclosed within a near-net shape tubular body of critical straightness along its functional length, comprising introducing a sol into a tubular mold, at least partially gelling the sol while in the mold, drying and sintering, inserting the rod into the sintered tubular body, and shrinking the tube about the rod to result in a tightly fitting composite preform,
characterized in that in a process step prior to inserting the rod, the sintered tubular body is subjected to a separate drawing step in which it is placed under tensile force and heated to a temperature sufficient to result in plastic flow, in which the force and time of application are such as to reduce the cross-sectional area of the body of a maximum of up to 10%, in which the cross-sectional area is measured in a direction orthogonal to the tensile force, whereby the sintered tubular body is straightened to permit insertion of the rod.

5,364,428

METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER

Michihisa Kyoto; Yoichi Ishiguro; Akira Urano, and Hideo Kakuzen, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 937,731, Nov. 2, 1992, abandoned, which is a division of Ser. No. 832,330, Feb. 7, 1992, Pat. No. 5,203,899, which is a division of Ser. No. 640,556, Jan. 14, 1991, Pat. No. 5,145,507, which is a continuation of Ser. No. 221,432, Jul. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 839,336, Mar. 13, 1986, abandoned. This application Mar. 1, 1994, Ser. No. 203,750
Claims priority, application Japan, Mar. 18, 1985, 60-52180; Oct. 3, 1985, 60-219090
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—397 **3 Claims**



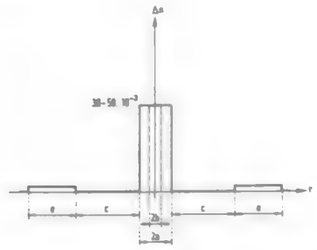
1. A method for producing a glass preform for use in fabrication of an optical fiber, which comprises steps of:
forming a glass soot composite body having a core portion consisting of a solid glass and a peripheral portion consisting of a porous glass mass,
removing trapped gas and water from pores of the soot composite body by heating the soot composite body under a pressure lower than several ten Torr. at a temperature at which the porous glass mass is not vitrified,
filling the pores in the porous glass mass of the soot composite body by introducing a gas containing SiF_4 at a pressure of 10^{-2} Torr. at the beginning increasing to 1 atmosphere at the end, uniformly adding fluorine to the soot glass mass, and
vitrifying the fluorine-added soot glass mass into a transparent glass mass to form a glass preform.

5,364,429

METHOD OF MANUFACTURING ACTIVE OPTICAL FIBERS

Christian Le Sergent, Marcoussis, France, assignor to Alcatel Fibres Optiques, Bezons Cedex, France

Filed Jul. 23, 1992, Ser. No. 917,382
Claims priority, application France, Jul. 25, 1991, 91 09429
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—399 **5 Claims**



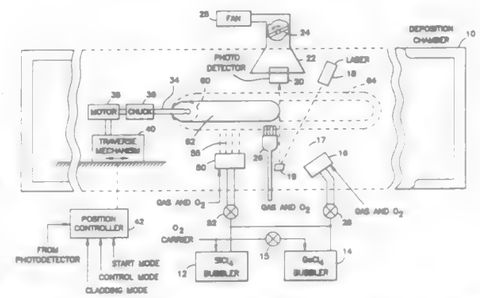
1. A preform for drawing an active optical fiber, said preform comprising an inner zone for constituting a core of the optical fiber and an outer zone for constituting the optical cladding of the fiber, said preform including primary optical doping to confer a large index difference between the core and the optical cladding of the fiber, secondary doping of said inner zone enabling an active species to be concentrated in the center of the core of the fiber, and the outer peripheral portion of the outer zone being doped to impart thereto a difference in softening temperature relative to the inner zone that is smaller than a difference which exists if said outer zone were not doped.

5,364,430

METHODS OF MAKING OPTICAL WAVEGUIDES

Arnab Sarkar, West Hills, Calif., assignor to Cal-Optics, Inc., Sturbridge, Mass.

Continuation of Ser. No. 772,696, Jun. 28, 1991, abandoned, which is a division of Ser. No. 308,986, Feb. 8, 1989, Pat. No. 5,028,246, which is a continuation of Ser. No. 825,444, Feb. 3, 1986, abandoned. This application Jan. 8, 1993, Ser. No. 2,077
Int. Cl.[5] C03B *37/018*
U.S. Cl. 65—416 **5 Claims**



1. A method of making a soot core cylinder for an optical waveguide preform comprising the steps of:
directing a particulate stream along a linear path toward a target area, the stream comprising an inner cross-section at a predetermined first velocity and an encompassing gas stream at a second velocity lower than the first velocity; and
withdrawing gases and particulate that bypass the target area at a third velocity lower than the second velocity, the direction of withdrawal being along the linear path.

5,364,431

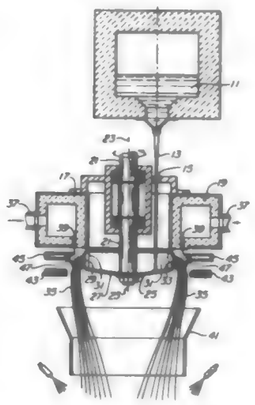
APPARATUS FOR PRODUCTION OF GLASS FIBERS UTILIZING SPINNING CUP STRUCTURE

Albert Lewis, Covina, Calif., and Cenek A. Kottnauer, W. Vancouver, Canada, assignors to Glass Incorporated International, Chino, Calif.

Division of Ser. No. 905,456, Jun. 29, 1992, Pat. No. 5,314,521. This application Apr. 22, 1994, Ser. No. 231,110
Int. Cl.[5] C03B *37/04*
U.S. Cl. 65—488 **2 Claims**

1. The combination comprising:
a multiplicity of glass fiber-producing machines, each comprising a spinning cup structure and an induction heater for heating localized areas of the spinning cup structure to a desired operating temperature, and
means for electrically energizing the induction heaters to provide a desired operating temperature for each cup structure, said energizing means comprising a common power supply, controllable rectifier means associated with

each induction heater for cyclically turning on and off the power to that heater, and sequencer means for cyclically



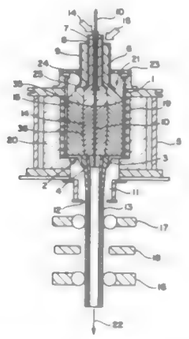
energizing the plurality of rectifier means on a time share basis.

5,364,432

METHOD FOR PRODUCING A COMPOSITE GLASS BODY WITH DRAWING OF CONCENTRIC MELTS

Helmut Leber, Hanau, Germany, assignor to Heraeus Quarzglas GmbH, Hanau, Germany

Filed Apr. 9, 1993, Ser. No. 44,595
Claims priority, application Germany, Apr. 10, 1992, 4212099
Int. Cl.[5] C03B *17/04*
U.S. Cl. 65—17.3 **11 Claims**



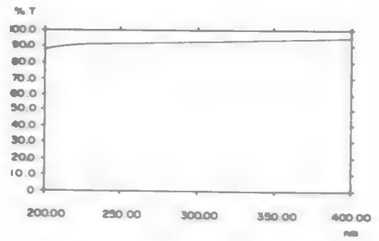
1. A method for producing a multilayered elongated composite glass body of at least two different materials laminated together along an interface that extends in the elongated direction of the body, said body being made from at least two starting materials of different glass compositions, comprising continuously feeding the starting materials in particle form to the top of the interior of a single, externally heated melting crucible to heap said starting materials in the crucible to form a preformed composite mass therein in which the starting material of one composition in the composite mass lies directly next to the starting material of another composition along an interface extending substantially vertically, heating the composite mass to form melts from each starting material, and continuously drawing the melts vertically out of a drawing die located at the bottom of the crucible to form said multilayered elongated composite glass body.

5,364,433

OPTICAL MEMBER OF SYNTHETIC QUARTZ GLASS FOR EXCIMER LASERS AND METHOD FOR PRODUCING SAME

Hiroyuki Nishimura; Akira Fujinoki; Toshikatsu Matsuya; Kyoichi Inaki; Toshiyuki Kato, and Atsushi Shimada, all of Fukushima, Japan, assignors to Shin-Etsu Quartz Products Company Limited, Tokyo, Japan

PCT No. PCT/JP92/00821, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO93/00307, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 29, 1992, Ser. No. 977,397
Claims priority, application Japan, Jun. 29, 1991, 3-182858; Aug. 31, 1991, 3-299997
Int. Cl.[5] C03C *3/06*
U.S. Cl. 65—17.4 **4 Claims**



1. A method for producing an optical member for excimer lasers made from synthetic quartz glass which has an OH group-content ranging from 10 to 100 ppm, a chlorine-content of not more than 200 ppm, a hydrogen molecule-content of not more than 1×10^{16} molecules/cm^3, a uniformity of refractive index distribution of not more than 5×10^{-6} as expresses in terms of Δn wherein Δn represents the refractive index difference between the maximum index and the minimum index, and a birefringence of not more than 5 nm/cm, comprising the steps of:

flame-hydrolyzing a volatile silicon compound using an oxyhydrogen flame to form fine silica particles;

depositing the fine silica particles on a heat-resistant substrate to give a porous silica ingot;

dehydrating and degasifying by heating the porous silica ingot at a temperature of not less than 1400° C. and a high degree of vacuum on the order of not less than 1×10^{-2} Torr, wherein said dehydrating and degasifying steps occur either sequentially or simultaneously;

uniformizing the dehydrated and degasified transparent quartz glass to give highly uniform quartz glass free of stria in at least on direction thereof;

molding the resulting highly uniform quartz glass; and

annealing the molded quartz glass article.

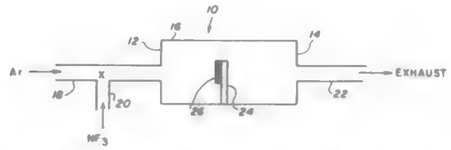
5,364,434

PLASMA TREATMENT OF GLASS SURFACES TO REMOVE CARBON

Jasbinder S. Sanghera, Greenbelt, Md.; Pablo C. Pureza, Burke, and Ishwar D. Aggarwal, Fairfax Station, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 953,390
Int. Cl.[5] C03C *23/00*
U.S. Cl. 65—30.1 **13 Claims**

6. A process for removing carbon from the surface of a glass article comprising the steps of contacting the glass article with a plasma generated by microwave energy and taking out the glass article free of carbon on its surface from the plasma, the



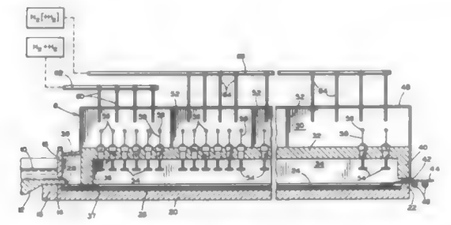
plasma comprising an active species that reacts with carbon to form a gaseous reaction product.

5,364,435

METHOD OF INTRODUCING PROTECTIVE ATMOSPHERE GASES INTO A GLASS FORMING CHAMBER

Douglas M. Nelson, Curtice, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Nov. 20, 1992, Ser. No. 979,662
Int. Cl.[5] C03B *18/20*
U.S. Cl. 65—32.5 **12 Claims**



1. A method of introducing a reducing gas and an inert gas into a glass forming chamber having an inlet end, an outlet end and a length therebetween, wherein a continuous glass ribbon is conveyed on a bath of molten tin, oxidation of said molten tin being prevented by a protective gaseous atmosphere created in a head space provided above the molten tin bath within said chamber, said gases being introduced at a plurality of locations along the length of the glass forming chamber by means of a system which permits delivery of a mixture of the reducing and inert gases to all of said plurality of locations, or delivery of only the inert gas at certain of said locations, the improvement comprising the steps of:

a. introducing a first protective gas comprised of a reducing gas and an inert gas into a service space provided above a permeable roof of the glass forming chamber proximate the inlet end of said chamber at sufficient pressure to create a positive pressure in said service space, causing said first protective gas to flow through the permeable roof and into said head space; and

b. introducing a second protective gas comprised of an inert gas into the glass forming chamber proximate the outlet end thereof, wherein said first protective gas has a greater proportion of reducing gas than does said second protective gas.

5,364,436

METHOD OF SAGGING AND BENDING GLASS SHEETS

Jori Montonen, Tampere, Finland, assignor to Tamglass Engineering Oy, Tampere, Finland

Filed Feb. 3, 1993, Ser. No. 12,751
Claims priority, application Finland, Sep. 18, 1992, 924183
Int. Cl.[5] C03B *23/025, 23/03*
U.S. Cl. 65—107 **6 Claims**

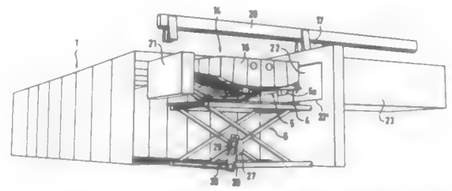
1. A method for bending glass sheets, said method comprising:

placing a glass sheet on a ring mould at a loading station;

heating the glass sheet carried by the ring mould to a bending temperature in successive heating stations;

allowing the heated glass sheet carried by the ring mould to sag by gravity a predetermined amount in a first bending station;

transferring the ring mould and the sagged glass sheet into a final bending station;



transferring a press-bending mould into the final bending station from a position outside the final bending station to a position above the ring mould; and,

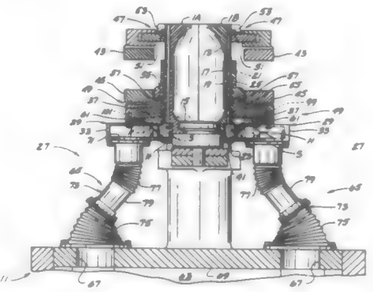
lifting the ring mould and sagged glass sheet upwards to press the glass sheet against the press-bending mould while the glass sheet is supported on the ring mould for bending said glass sheet to a final shape.

5,364,437

GLASSWARE FORMING MACHINE WITH SPRING-BIASED PLENUM

James A. Bolin, Tulsa, Okla., assignor to I.M.T.E.C. Enterprises, Inc., Tulsa, Okla.

Filed Mar. 10, 1993, Ser. No. 29,036
Int. Cl.[5] C03B *9/38, 11/12*
U.S. Cl. 65—265 **13 Claims**



1. A glassware forming machine comprising:

a pair of carriers movable toward and away from each other between an open and a closed position;

at least one mold member carried by each carrier, the mold member on one carrier being related to the mold member on the other carrier so that, with the carriers in their said closed position, the mold member on the one carrier mates with the mold member on the other carrier to define a mold cavity for molding an item of glass, each mold member having a bottom-facing surface and air passages extending upwardly from said bottom-facing surface for passage of air therethrough for cooling, each mold member being movable downward with respect to its respective carrier to a lower limit wherein its said bottom-facing surface is at a predetermined elevation;

a plenum for each carrier having an upper surface portion engageable by said bottom-facing surface of the mold member and having an opening for passage of air through the opening for cooling of the mold member, said upper surface portion of the plenum being movably biased up-

wardly toward a position above said predetermined elevation, said upper facing surface portion further being resiliently yieldable downwardly when engaged by said bottom-facing surface of said mold member thereby maintaining a substantially airtight seal with the mold member;

a chamber below said carriers for air to be blown into the plenums and thence up through said air passages; and

means for delivery of air from said chamber to each plenum.

5,364,438

FLUID UREA-CONTAINING FERTILIZER

Charles W. Weston, Prairieville; Lawrence A. Peacock, New Orleans, and Willis L. Thornsberry, Jr., Gretna, all of La., assignors to Freeport-McMoRan Resource Partners, Limited Partnership, New Orleans, La.

Filed Nov. 12, 1993, Ser. No. 151,280
Int. Cl.[5] C05C *9/00*
U.S. Cl. 71—29 **23 Claims**

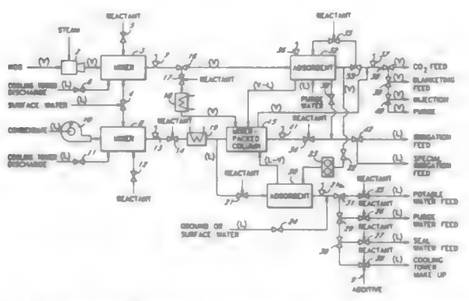
1. A fluid fertilizer composition comprising as components an aqueous solution of urea, ammonium nitrate, N-(n-butyl) thiophosphoric triamide, and dicyandiamide, wherein said urea is present in said aqueous solution in an amount between about 24% and about 32% by weight, said ammonium nitrate is present in an amount between about 34% and about 42% by weight, said N-(n-butyl) thiophosphoric triamide is present in an amount between about 0.01% and about 0.4% by weight, and said dicyandiamide is present in an amount of about 0.01% to about 2.0% by weight.

5,364,439

METHOD TO TREAT GEOTHERMAL FLUID STREAMS

Darrell L. Gallup, Chino Hills; Kevin R. Kitz, El Cerrito; Manuel E. Obando, Whittier; Donald M. Fenton, Anaheim; Paul A. Peaden, Fullerton; Dennis L. Saunders, Yorba Linda, and Brian J. Kelly, Corona, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Apr. 29, 1992, Ser. No. 875,344
Int. Cl.[5] C05C *3/00;* **C01C** *1/00;* **C01B** *17/02;* **B01D** *53/34*
U.S. Cl. 71—57 **27 Claims**



1. A process for treating geothermal steam stream comprising H_2O, H_2S, and ammonia or ammonium ion constituents, said process comprising:

condensing less than all of said geothermal steam stream at a first pressure, producing a non-condensed gas stream and a condensate liquid stream, said non-condensed stream comprising a portion of said H_2S and ammonia or ammonium ion constituents and said condensate stream comprising the remaining constituents;

increasing the pressure to a second pressure on said non-condensed stream;

adding an H_2S reactant to at least a portion of the pressurized non-condensed stream in an amount sufficient to react with a substantial amount of the H_2S therein, forming a reacted vapor stream; and

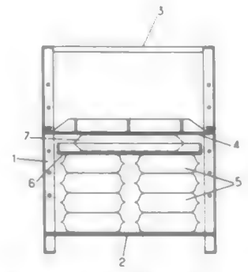
contacting at least a portion of said reacted vapor stream with an absorptive material for removing at least a portion of said ammonia or ammonia ions, thereby forming a treated vapor stream wherein said contacting step also comprises contacting at least a portion of said reacted vapor stream with at least a portion of said condensate stream, said contacted condensate stream forming an ammonia- or ammonium ion-enriched aqueous stream suitable for irrigation of crops.

5,364,440

ANTI-CLUMPING PRODUCTS, COMPOSITIONS CONTAINING THE SAID PRODUCTS AND TREATMENTS IN WHICH THE SAID PRODUCTS ARE USED

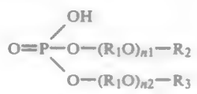
Joseph Schapira, Paris; Jean-Claude Cheminaud, Herblay; Pascal Petitbon, Gennevilliers, and Dominique Imbert, Courbevoie, all of France, assignors to C F P I, France

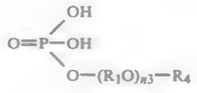
Filed Mar. 1, 1993, Ser. No. 24,250
Claims priority, application France, Feb. 28, 1992, 92 02409
Int. Cl.[5] C05G *3/10*
U.S. Cl. 71—64.12 **12 Claims**



1. Anti-clumping composition for salts, simple and complex fertilizers as well as for nitrogenous derivatives on the basis of ammonium nitrate an adapted to be used in connection with explosives, comprising

from 2–50% by weight of the composition of a metallic salt of an acid phosphate ester having the general formulas I and II:


(I)


(II)

wherein:

R_1 designates an alkylene group having from 2 to 4 carbon atoms,

R_1, R_2 and R_3 designate each an alkyl group having from 2 to 24 carbon atoms, or an alkylaryl group whose alkyl part has from 1 to 18 carbon atoms, and

n_1, n_2 and n_3 designate an integer from 0 to 15,

the cation which is part of the constitution of the abovesaid metallic salt being selected from the divalent cations selected from the group consisting of magnesium, copper, zinc and manganese, from the trivalent cations consisting of aluminum and from monovalent cations selected from the group consisting of sodium and lithium,

0–15% by weight of at least one other anti-clumping product selected from the group consisting of fatty acids and their salts,

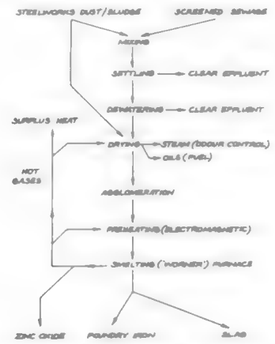
and the balance a formulation agent selected from the group consisting of oils and waxes from natural or synthetic origin and mixtures thereof.

5,364,441

COTREATMENT OF SEWAGE AND STEELWORKS WASTES

Howard K. Worner, Wollongong, Australia, assignor to Illawarra Technology Corporation Limited, Wollongong, Australia

PCT No. PCT/AU91/00048, § 371 Date Aug. 13, 1992, § 102(e) Date Aug. 13, 1992, PCT Pub. No. WO91/12210, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 13, 1991, Ser. No. 916,983
Claims priority, application Australia, Feb. 13, 1990, PJ8617
Int. Cl.[5] C22B *7/02*
U.S. Cl. 75—10.1 **15 Claims**



1. A method of processing sewage having a liquid portion including water and a solid portion including carbon-containing compounds and steelworks dusts having metal values, said method comprising the steps of mixing the steelworks dusts and the sewage to form a mixtures, processing the mixture to separate out the water from the liquid portion of said sewage and leaving a wet sludge containing substantially all of the carbon containing compounds from the solid portion of said sewage and substantially all of the metal values of said steelworks dusts, dewatering and drying the sludge to provide a solid composite material, supplying the composite material to a smelt reduction furnace and smelting the material to reduce the metal values in the sludge to molten metal and to combust the carbon-containing compounds in the sludge to produce an off gas and collecting the metal values.

5,364,442

COMPOSITE ELECTRODE FOR ELECTROCHEMICAL PROCESSING HAVING IMPROVED HIGH TEMPERATURE PROPERTIES AND METHOD FOR PREPARATION BY COMBUSTION SYNTHESIS

Jainagesh A. Sekhar, Cincinnati, Ohio, assignor to Moltech Invent S.A., Luxembourg

Division of Ser. No. 715,547, Jun. 14, 1991, abandoned. This application Oct. 26, 1993, Ser. No. 143,448
Int. Cl.[5] B22F *5/00*
U.S. Cl. 75—229 **17 Claims**

1. A combustion synthesis product manufactured using composition comprising from about 40% to about 90% by weight of a particulate or fibrous combustible mixture which, when ignited, is capable of forming an interconnecting network of a ceramic or metal-ceramic composite, said composite being designed to cause the formation of an adherent oxide layer on the surface of said product during said electrochemical processing, and from about 10% to about 60% by weight of a particulate or fibrous filler material capable of providing said electrode with improved oxidation resistance and maintenance of adequate electrical conductivity at temperatures above 1000° C., said filler material being chosen from the group consisting of molybdenum silicide, silicon carbide, titanium carbide, boron carbide, boron nitride, zirconium boride, cerium oxide, cerium oxyfluoride, and mixtures thereof, said filler material being chosen so as to provide said electrode with improved oxidation resistance and thermal and electrical conductivity above 1000° C.; and

said product having an adherent oxide layer on the surface thereof, said layer being formed after said product is put into service, said oxide layer lending to said product, a high resistance to oxidation and stable electrical and thermal conductivity at temperatures above 1000° C.

15. In a process for producing metallic aluminum by electrolysis of molten cryolite-alumina, the improvement which comprises providing nonconsumable electrodes which minimize carbon consumption and eliminate formation of carbon dioxide at the anode, said electrodes comprising from about 40% to about 90% by weight of a ceramic composite or a metal-ceramic composite in the form of a dimensionally stable interconnected network, said composite being designed to cause the formation of an adherent the surface of said product during said eletrochemical processing, and from about 10% to about 60% by weight of a filler material uniformly dispersed in said network, said filler material being chosen from the group consisting of molybdenum silicide, silicon carbide, titanium carbide, boron carbide, boron nitride, zirconium boride, cerium oxide, cerium oxyfluoride, and mixtures thereof, said filler material being chosen so as to provide said electrode with improved oxidation resistance and thermal and electrical conductivity above 1000° C.; and

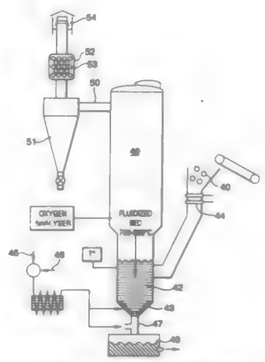
said electrodes having an adherent oxide layer on the surface thereof, said layer being formed after said electrode is put into service, said oxide layer lending to said electrode, said high resistance to said oxidation and said stable electrical conductivity at temperatures above 1000° C.

5,364,443

PROCESS FOR COMBINED DECOATING AND MELTING OF ALUMINUM SCRAP CONTAMINATED WITH ORGANICS

Francois Tremblay; Gilles R. Turcotte; Serge Lavoie; Ghyslain Dubé; Sylvain P. Tremblay, and Jean-Yves Fortin, all of Québec, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Dec. 1, 1993, Ser. No. 160,435
Int. Cl.[5] C22B *9/16, 21/00*
U.S. Cl. 75—403 **30 Claims**



30. A method of recovering a metal from a scrap material containing said metal and an organic contaminant, comprising:

creating a fluidized bed of solid particles containing a mixture of AlF_3 and a fluoride selected from the group consisting of NaF and cryolite;

maintaining a zone of said bed at a temperature in the range of a melting point of said metal and 1000° C.;

introducing said scrap material into said zone thereby to cause decoating of said scrap and at least partial melting of said metal to form recoverable metal; and

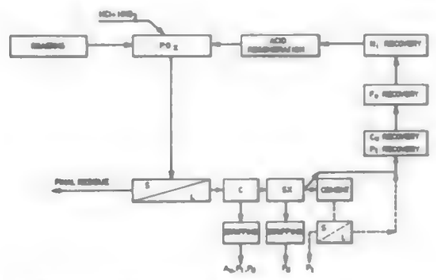
removing said recoverable metal from said fluidized bed.

5,364,444

METAL LEACHING AND RECOVERY PROCESS

C. Dale McDonlett, Jr., Tulsa, Okla., and George W. Reschke, Oakville, Canada, assignors to North American Palladium Ltd., Toronto, Canada

Filed Jul. 8, 1993, Ser. No. 89,088
Int. Cl.[5] C22B *3/46*
U.S. Cl. 75—421 14 Claims



2. A process for recovering platinum group metals from an ore concentrate containing at least platinum group metals and sulfur, said process comprising the steps of:

1) roasting said concentrate in the presence of oxygen at a temperature of from 900° F. to 1200° F. until the content of said sulfur is reduced to approximately 2% and thereby forming a roasted concentrate;

2) mixing said roasted concentrate with hydrochloric and nitric adds in a proportion of from 100 to 3 parts hydrochloric add per part of nitric add;

3) heating said mixture of roasted concentrate and hydrochloric and nitric acids to a temperature from about 100° F. to 288° F.;

4) maintaining said heated acid and roasted concentrate mixture in an oxygen environment having an oxygen gas pressure sufficient to regenerate at least some of said nitric acid for a period of time sufficient to allow substantial dissolution of said metals in said roasted concentrate to form a solution of said metals and said acids;

5) separating said metals from said solution.

5,364,445

RECOVERY METHOD OF RHODIUM

Masaharu Sakamoto, Numazu; Tomoyuki Mori, and Akio Tsuboi, both of Kurashiki, all of Japan, assignors to N.E. Chemcat Corporation and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Filed Aug. 4, 1993, Ser. No. 102,153
Claims priority, application Japan, Aug. 4, 1992, 4-228004
Int. Cl.[5] C22B *11/00*
U.S. Cl. 75—426 16 Claims

1. A method for recovering ash containing elemental rhodium and rhodium compounds from a first organic solution, said first organic solution comprising (1) a rhodium complex containing at least one type of organo-phosphorous compound as a ligand and (2) an organo-phosphorous compound, the method comprising the steps of:

adding a basic reactant to said first solution producing a resultant organic solution; and

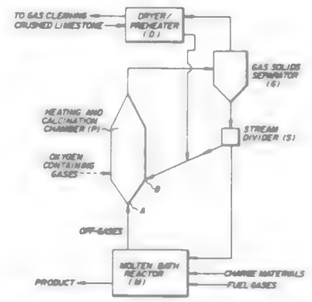
combusting said resultant organic solution to ash.

5,364,446

HEATING AND TREATMENT OF PARTICULATE MATERIAL

Robin J. Batterham, Sandringham; Roderick M. Grant, Doncaster; James V. Happ, Ringwood, and Glenn A. Thiele, Box Hill North, all of Australia, assignors to CRA Services Ltd., Australia

PCT No. PCT/AU90/00330, § 371 Date Apr. 8, 1992, § 102(e) Date Apr. 8, 1992, PCT Pub. No. WO91/01799, PCT Pub. Date Feb. 21, 1991
PCT Filed Aug. 3, 1990, Ser. No. 847,075
Claims priority, application Australia, Aug. 9, 1989, PJ5700
Int. Cl.[5] B01J *6/00;* C04B *2/10*
U.S. Cl. 75—434 24 Claims



1. A process for heating a solid non-reducible particulate material with a hot gas containing sticky particulate material which process comprises forming a stream of the solid non-reducible particulate material and the hot gas containing sticky particulate material, wherein the hot gas has a temperature in excess of that at which the sticky particulate material contained in the hot gas exhibits sticky characteristics.

5,364,447

METHOD OF RECYCLING HAZARDOUS WASTE

Carl T. Philipp, Hot Springs, and Bobby H. Sims, Lonsdale, both of Ark., assignors to Enviroscience, Inc., Hot Springs, Ark.

Continuation-in-part of Ser. No. 632,000, Dec. 21, 1990, Pat. No. 5,198,190. This application Mar. 29, 1993, Ser. No. 38,464
The portion of the term of this patent subsequent to Mar. 30, 2010, has been disclaimed.
Int. Cl.[5] C21B *11/00*
U.S. Cl. 75—500 20 Claims

1. A process for recycling hazardous and non-hazardous wastes comprising the steps of:

(a) collecting waste metal oxides to be reduced, said metal oxides selected from the group consisting of oxides of iron, chromium, copper, nickel, zinc, lead and cadmium;

(b) collecting waste to be used as reducing agents, the reducing agents selected from the group consisting of fixed carbon and aluminum;

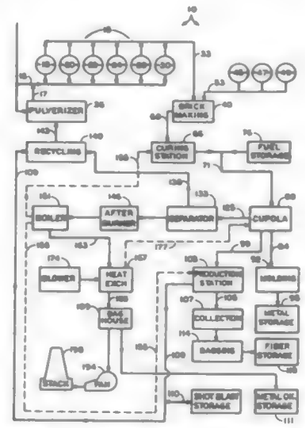
(c) collecting waste to be used as primary fluxing agents, the fluxing agents selected from the group consisting of calcium oxide, calcium hydroxides, and silica dioxide;

(d) blending the wastes of steps (a)–(c) with at least one liquid into a homogeneous mass;

(e) forming the mass of step (d) into briquettes or pellets;

(f) curing and drying the briquettes or pellets of step (e); and,

(g) heating and melting the briquettes or pellets of step (e) thereby reducing the iron, chromium, copper, lead, and nickel of said wastes of step (a) with said wastes of step (b) to a metallic state suitable for release.

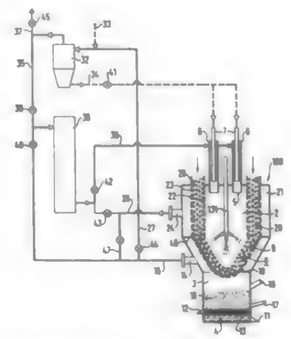


5,364,448

PROCESS FOR THE PRODUCTION OF LIQUID METAL FROM FINE-GRAIN METAL OXIDE PARTICLES AND REDUCING AND SMELTING FURNACE FOR CARRYING OUT THE PROCESS

Ralph Weber, Rio de Janeiro, Brazil, assignor to Kortec AG, Zug, Switzerland

PCT No. PCT/EP92/00551, § 371 Date May 3, 1993, § 102(e) Date May 3, 1993, PCT Pub. No. WO92/16663, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 13, 1992, Ser. No. 949,837
Claims priority, application Germany, Mar. 14, 1991, 4108283
Int. Cl.[5] C22B *4/00*
U.S. Cl. 75—444 16 Claims



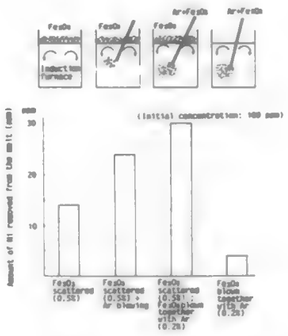
1. A process for the production of liquid metal from metal oxide particles, wherein the metal oxide particles are blown together with hot reducing gas into a final reducing space of a final reducing stage, said process comprising the steps of passing the hot reducing gas which is loaded with the particles through a heated bulk material filter layer of solid lump form material, retaining a substantial proportion of the particles on and in the filter layer, finishing reducing the particles by subjecting the particles to the reducing gas, a flame in front: of the filter layer by blowing an oxygen-bearing gas against the filter layer, to melt the metallised particles which are retained on and in the filter layer, to pass the melted particles in the liquid condition through the filter layer and into a receiving space for liquid metal and at the same time heating the filter layer above the liquidus temperature of the metal to clean the filter layer.

5,364,449

PROCESS FOR REFINING CRUDE MATERIAL FOR COPPER OR COPPER ALLOY

Takashi Nakamura, Fukuoka; Kenji Oosumi, Kobe; Kiyomasa Oga, Kobe; Motohiro Arai, Kobe; Ryukichi Ikeda, Shimonoseki; Eiji Yoshida, Shimonoseki; Hirofumi Okada, Shimonoseki, and Ryusuke Hamanaka, Shimonoseki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

PCT No. PCT/JP92/00358, § 371 Date Mar. 15, 1993, § 102(e) Date Mar. 15, 1993, PCT Pub. No. WO93/02219, PCT Pub. Date Feb. 4, 1993
PCT Filed Mar. 25, 1992, Ser. No. 988,960
Claims priority, application Japan, Jul. 15, 1991, 3-199985; Oct. 28, 1991, 3-308534; Oct. 28, 1991, 3-308535; Oct. 28, 1991, 3-308536
Int. Cl.[5] C22B *15/14*
U.S. Cl. 75—650 24 Claims



1. A process for refining a crude material for copper or copper alloy which contains at least one species selected from the group consisting of Pb, Ni, Sb, S, Bi, and As which comprises the sequential steps of

(1) melting a crude material for copper or copper alloy,

(2) increasing the oxygen concentration in the melt and adding to the melt at least one species selected from the group consisting of Fe, Fe oxide, Mn, and Mn oxide, thereby causing said at least one species selected from the group consisting of Pb, Ni, Sb, S, Bi, and As in the melt to slag in the form of compound oxide of Fe and/or Mn,

(3) removing the thus formed slag from the melt, and

(4) subjecting the melt to reduction.

5,364,450

MOLTEN METAL TREATMENT

C. Edward Eckert, 260 Lynn Ann Dr., New Kensington, Pa. 15068

Filed Jul. 13, 1993, Ser. No. 91,608
Int. Cl.[5] C22B *9/05, 21/06*
U.S. Cl. 75—678 47 Claims

1. An improved method for dispersing a treatment media in a body of molten metal using an impeller to disperse the media in the body of molten metal, the method producing increased forces in the body of molten metal and reducing vortex formation, the method comprising the steps of:

a) providing a body of molten metal;

b) providing an impeller on a shaft in said body;

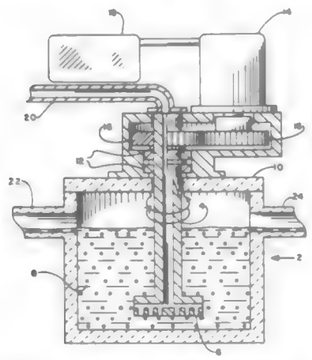
c) adding treatment media to said body;

d) dispersing said media by:

(i) rotating said impeller in one direction; and thereafter

(ii) reversing the direction of rotation of said impeller to a counter direction;

(iii) the direction of rotation of said impeller being reversed periodically to substantially reduce formation of a vortex around the shaft of said impeller and to provide



increased shear forces in said body for purposes of improving treatment of said molten metal by improved dispersion of said media therein.

5,364,451

PHYTOREMEDIATION OF METALS

Ilya Raskin, Manalapan; Nanda P. B. A. Kumar, New Brunswick, and Slavik Dushenkov, East Brunswick, all of N.J., assignors to PhytoTech, Inc., Morristown, N.J.

Filed Jun. 4, 1993, Ser. No. 73,258

Int. Cl.[5] C21B *9/00*; C22B *9/00*

U.S. Cl. 75—710 **15 Claims**

1. A method of removing an amount of metal from a metal-containing soil environment, comprising:

identifying a metal-containing soil environment;

altering metal uptake capability of members of the family Brassicaceae by transforming said members with a vector containing a cDNA sequence encoding metallothionein;

screening a plurality of said altered members of the family Brassicaceae for at least one altered member having an ability to accumulate metal in shoots thereof;

maintaining said at least one altered member in said metal containing soil environment under conditions sufficient for said at least one altered member to accumulate said metal from said metal containing soil environment.

5,364,452

CHEMICAL PROCESS FOR THE RECOVERY OF METAL FROM AN ORGANIC COMPLEX

Domenico C. Cupertino, 30 Derwent Drive, Pensby, Wirral, Merseyside L615XU, and Peter A. Tasker, 25 Woods Lane, Dobeross, Oldham, Lancashire 0L35AL, both of England

Continuation-in-part of Ser. No. 21,901, Feb. 24, 1993. This application Aug. 19, 1993, Ser. No. 108,814

Claims priority, application United Kingdom, Feb. 25, 1992, 9204018.7; Feb. 25, 1992, 9204020.3; Aug. 11, 1993, 9316641.1

Int. Cl.[5] C22B *11/00*

U.S. Cl. 75—710 **10 Claims**

1. A method for separating a metal selected from the group consisting of chromium, manganese, cobalt, copper, titanium, iron, zinc, germanium, arsenic, zirconium, niobium, molybdenum, ruthenium, palladium, silver, tin, tellurium, tantalum, tungsten, osmium, platinum,.gold, mercury, lead, antimony and bismuth from an organic complex thereof, said method comprising treating the complex with a weakly acid aqueous solution of an alkali metal, an alkaline earth metal or ammonium chloride having a chloride content of at least 4 molar and an acid strength of up to 0.5 molar above the stoichiometric requirement for stripping the metal whereby said complex is decomposed and metal ions are transferred to the aqueous solution.

5,364,453

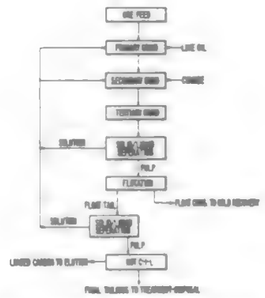
METHOD FOR RECOVERING GOLD AND OTHER PRECIOUS METALS FROM CARBONACEOUS ORES

William J. Kohr, San Mateo, Calif., assignor to Geobiotics, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 950,576, Sep. 22, 1992. This application May 3, 1993, Ser. No. 57,300

Int. Cl.[5] C01G *7/00*; C22B *11/04*

U.S. Cl. 75—711 **17 Claims**



1. A process for recovering a precious metal from carbonaceous ores comprising:

a. leaching the carbonaceous ore with a lixiviant;

b. preg-robbingly sorbing precious metal-lixiviant complexes from the lixiviant to the native carbonaceous component of said ore;

c. separating the precious metal containing carbonaceous component from the ore to thereby form (1) a concentrate of the precious metal containing carbonaceous component and (2) a tail;

d. recovering precious metal from the precious metal containing carbonaceous component concentrate;

e. further treating the tail in a carbon in leach process, wherein the temperature of the leach solution of the carbon in leach process is between 30° C. and 83° C.;

f. separating the activated carbon used in the carbon in leach process from the tail; and

g. recovering gold from the activated carbon.

5,364,454

FLUID SEPARATION COMPOSITE MEMBRANES PREPARED FROM SULFONATED AROMATIC POLYMERS IN LITHIUM SALT FORM

Benjamin Bikson, Brookline, and Joyce K. Nelson, Lexington, both of Mass., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Jun. 30, 1993, Ser. No. 83,598

Int. Cl.[5] B01D *53/22, 69/12*

U.S. Cl. 95—45 **14 Claims**

1. A process for separating at least one gas component from a gas mixture, said process comprising: bringing said gas mixture into contact with a composite membrane at a pressure sufficient to permeate said at least one gas component from said gas mixture, said composite membrane comprised of at least one sulfonated aromatic polymer in lithium salt form separation layer deposited on a porous support, wherein said at least one sulfonated aromatic polymer in lithium salt form comprises sulfonic acid groups attached to aromatic rings which are part of the polymeric backbone, with at least 25 percent of said sulfonic acid groups containing lithium ion as a counterion and wherein said composite fluid separation membrane is produced by a process comprising:

(a) providing sulfonated aromatic polymer in lithium salt form with sulfonic acid groups attached to aromatic rings which are part of the polymeric backbone, with at least 25 percent of said sulfonic acid groups containing lithium ion as a counterion;

(b) dissolving said sulfonated aromatic polymer in lithium salt form in solvent to form a solution;

(c) coating or applying said resulting solution on the surface of a porous substrate; and

(d) drying or coagulating the coated substrate.

5,364,455

SILICA GELS OF CONTROLLED PORE SIZE AS DESICCANT MATERIALS AND PROCESSES FOR PRODUCING SAME

Sridhar Komarneni, and Prakash B. Malla, both of State College, Pa., assignors to Gas Research Institute, Chicago, Ill.

Filed Sep. 22, 1992, Ser. No. 949,381

Int. Cl.[5] B01D *53/04*

U.S. Cl. 95—117 **1 Claim**

1. In a desiccant cooling system process wherein a moving stream of air is progressively and sequentially adiabatically dehumidified by passing it through a desiccant material to produce warm dry air, cooled to produce cool dry air, and adiabatically humidified to produce cool nearly saturated air for introduction into the space to be cooled, the improvement which comprises utilizing as a desiccant material particles of a microporous, amorphous silica gel having pore diameter between about 6 and 8.7 angstroms and having a predetermined water sorption isotherm of moderate Type I shape and having an isotherm separation factor within the range of from about 0.07 to about 0.1.

5,364,456

FILTRATION ARRANGEMENT AND METHOD

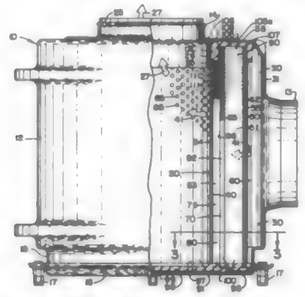
Brad E. Kahlbaugh, Roseville; Susan B. Reinhart, Minneapolis; Denis J. Dudrey, Bloomington, and John T. Herman, Dellwood, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 759,445, Sep. 13, 1991, abandoned, which is a division of Ser. No. 601,242, Oct. 19, 1990, Pat. No. 5,082,476. This application Mar. 3, 1993, Ser. No. 25,893

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] B01D *46/10*

U.S. Cl. 95—287 **18 Claims**



1. A filter construction comprising:

(a) an upstream region of substantially constant density depth media constructed and arranged for collection therein of at least 65% by weight of total solids loaded on said filter construction, in use; and,

(b) a downstream region of gradient density depth media;

(i) said region of gradient density depth media having a percent solidity increasing from about 1–2% up to at least about 2–5% in transition from a most upstream portion to a most downstream portion.

5,364,457

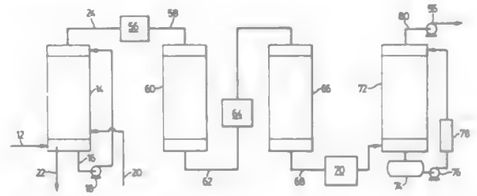
ELECTROSTATIC GAS CLEANING APPARATUS

Gordon M. Cameron, Willowdale, Canada, assignor to Cecebe Technologies Inc., Willowdale, Canada

Division of Ser. No. 824,127, Jan. 22, 1992, Pat. No. 5,282,885. This application Nov. 29, 1993, Ser. No. 159,602

Int. Cl.[5] B03C *3/16*

U.S. Cl. 96—27 **9 Claims**



3. A heat exchanger for cleaning water saturated smelter and other furnace gases comprising: a housing and a plurality of tubes extending through said housing, said tubes being divided into at least first and second sets, said first set having an inlet, means for directing saturated charged gas into said inlet, gas connection means connecting said tube sets together, said connection means including electrostatic charging means therein, said second set having an outlet for cooled cleaned gas, there being no precipitator collecting surface between said means for directing saturated charged gas into said inlet and said first set nor between said electrostatic charging means and said second set.

5,364,458

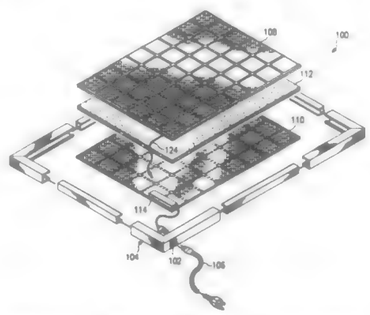
ADJUSTABLE AIR FILTERING DEVICE

Gilbert W. Burnett, Rockwall, and Robert B. Holland, Rowlett, both of Tex., assignors to Dust Free, Inc., Royse City, Tex.

Filed Mar. 18, 1993, Ser. No. 33,041

Int. Cl.[5] B03C *3/14*

U.S. Cl. 96—55 **8 Claims**



1. An adjustable air filtration system comprising:

four corner frame members, each corner member having two side portions forming a ninety degree angle; and

four side frame members, each side member connectable to two side portions of respective corner frame members;

said frame members connectable to one another at a plurality of points to form a frame of desired dimensions;

dimension markings disposed on at least one of the frame members for alignment with another of said frame members to aid a user in connecting the frame members at a proper point to form the frame at the desired dimensions;

a filtering medium for disposal within the frame; and

at least one panel for holding the filtering medium within the frame, said panel including a grid comprising:

a plurality of equally spaced apart first crossbars aligned

perpendicular to a plurality of equally spaced apart second crossbars; and

a rectangular border encompassing said first and second crossbars, said border having a first edge parallel to the first crossbars and spaced from the nearest first crossbar by a first distance and a second edge parallel to the second crossbars and spaced from the nearest second crossbar by a second distance, said first distance is approximately 50% greater than said second distance.

5,364,459

ELECTROLESS PLATING SOLUTION

Atsuo Senda; Kazuhiro Morita, and Yoshihiko Takano, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 9, 1994, Ser. No. 208,962
Claims priority, application Japan, Mar. 12, 1993, 5-51619
Int. Cl.[5] C23C *18/34, 18/40, 18/44*
U.S. Cl. 106—122 **8 Claims**

1. In an electroless plating solution, the improvement comprising trivalent titanium ions for serving as a reductant, and carbonate.

5,364,460

ELECTROLESS GOLD PLATING BATH

Keizin Morimoto; Masanobu Tsujimoto; Tomomi Yaji, and Tooru Murakami, all of Hirakata, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Mar. 25, 1994, Ser. No. 217,717
Claims priority, application Japan, Mar. 26, 1993, 5-092203
Int. Cl.[5] C23C *18/44*
U.S. Cl. 106—1.23 **8 Claims**

1. An electroless gold plating bath comprising

a gold sulfite,

a sulfite as a complexing agent for gold ion,

at least one reducing agent selected from the group consisting of a hydrazine, ascorbic acid, a salt of ascorbic acid, trimethylamineborane, and dimethylamineborane, and

an organic phosphonic acid or a salt thereof.

5,364,461

INKS USED IN MULTI-COLOR PRINTING

Bradley L. Beach; Kathryn E. Burns; Terence E. Franey; Ann M. Piekunka, all of Lexington; Paul T. Spivey, Winchester, and Agnes K. Zimmer, Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Oct. 28, 1993, Ser. No. 142,037
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 R **9 Claims**

1. An ink for inkjet printing comprising a polar vehicle, a dye soluble in said vehicle and a 1,2-alkyl diol of from 4 to 10 carbon atoms forming the alkyl; said diol being in an amount of at least in the order of magnitude of 0.1% by weight when said carbon atoms are 10 and 12.5% by weight when said carbon atoms are 4 and intermediate said amounts when said carbon atoms are from 5 to 9.

5,364,462

WATERFAST INKS

Richard Crystal, Los altos, Calif., and Raymond Geffre, Fort Fairfield, Me., assignors to Graphic Utilities, Incorporated, Waltham, Mass.

Continuation of Ser. No. 31,074, Mar. 11, 1993, abandoned, which is a continuation of Ser. No. 745,067, Aug. 14, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 151,576
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 R **61 Claims**

1. A dye solution suitable for ink let printing comprising:

a dye component; and

a polyethylene imine polymer having an average molecular weight of less than approximately 3000 selected from the group consisting of

(a) a hydroxyethylated polyethylene imine polymer having incorporated therein approximately 10–55% hydroxyethyl groups by weight,

(b) a hydroxypropylated polyethylene imine polymer formed from an polyethylene imine polymer having an average molecular weight less then 1000,

(c) an epichlorohydrin-modified polyethylene imine polymer,

(d) a hydroxybutylated polyethylene imine polymer and

(e) a glycidol-modified polyethylene imine polymer.

5,364,463

TIRE BALLAST AND SEALANT

Jack L. Hull, 2738 Hillcrest Dr., Thousand Oaks, Calif. 91362

Filed Jun. 2, 1992, Ser. No. 892,178
Int. Cl.[5] C09K *3/12*
U.S. Cl. 106—33 **9 Claims**

1. A tire sealant/ballast composition consisting essentially of an aqueous suspension containing in parts by weight based on 50 gallons:

at least 100 pounds of hydratable, heavy metal inorganic salts and crystalline silicate clays capable of forming a viscous gel, the heavy metal inorganic salts being at least 60% by weight of said salts and clays;

25 to 200 pounds of mica particles which pass through a 40 mesh screen; and

0.01 to 100 ounces of an anionic polyelectrolyte thickening agent.

5,364,464

MOISTURE ABSORBING AND FRICTIONAL GRIP ENHANCING COMPOSITION AND METHOD OF FORMING SAME

Aaron P. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117

Filed Jan. 5, 1994, Ser. No. 177,369
Int. Cl.[5] C09K *3/14*
U.S. Cl. 106—36 **14 Claims**

1. A moisture absorbing and frictional grip enhancing composition comprising:

(a) powdered magnesium silicate particulates; and,

(b) sawdust particulates, said powdered magnesium silicate particulates being mixed with said sawdust particulates in a dry state to form said moisture absorbing and frictional grip enhancing composition.

5,364,465

METHOD OF PRODUCING PROTEIN PRODUCTS FOR BRIGHT PAPER COATING APPLICATIONS

George Poppe; Denise Ciesielski, both of Decatur, and Mark Matlock, Mt. Zion, all of Ill., assignors to Archer Daniels Midland Company, Decatur, Ill.

Filed Dec. 7, 1992, Ser. No. 986,590
Int. Cl.[5] C08L *89/00*
U.S. Cl. 106—124 **23 Claims**

1. In a method of producing a modified vegetable protein binder for paper coatings comprising:

providing a vegetable protein material extract; and

bleaching the vegetable protein material extract with an oxidizing agent and a magnesium compound to provide a bleached vegetable protein material.

5,364,466

POLYMER SCALE PREVENTIVE AGENT, POLYMERIZATION VESSEL EFFECTIVE IN PREVENTING POLYMER SCALE DEPOSITION, AND PROCESS OF PRODUCING POLYMER USING SAID VESSEL

Toshihide Shimizu, Urayasu, and Minoru Shigemitsu, Kamisu, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 865,265
Claims priority, application Japan, Apr. 8, 1991, 3-103111; Jul. 26, 1991, 3-210312
Int. Cl.[5] A61K *31/73;* **A01N** *43/04;* **C08F** *2/18*
U.S. Cl. 106—162 **6 Claims**

1. A polymer scale preventive agent for use in polymerization of a monomer having an ethylenically unsaturated double bond, comprising:

(A) a nitrogen-containing organic compound having at least five continuous conjugated π bonds but containing neither a sulfonic acid group nor a carboxyl group,

(B) an anionic organic compound having at least one group selected from the group consisting of a sulfonic acid group and a carboxyl group and having at least five continuous conjugated π bonds, and

(C) a water-soluble basic polysaccharide selected from the group consisting of inorganic acid salts and organic acid salts of chitosans.

5,364,467

LUSTER PIGMENTS BASED ON MULTIPLY COATED PLATELETLIKE METALIC SUBSTRATES

Raimund Schmid, Neustadt, and Norbert Mronga, Dossenheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 30, 1993, Ser. No. 54,091
Claims priority, application Germany, May 27, 1992, 4217511
Int. Cl.[5] C09C *1/62*
U.S. Cl. 106—404 **14 Claims**

1. A luster pigment, comprising a platelet-shaped metallic substrate, coated with:

(A) a first colorless or selectively absorbing layer of metal oxide, and

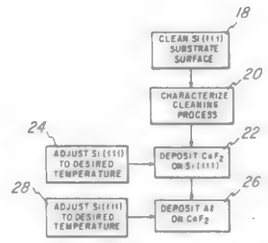
(B) a nonselectively absorbing layer selected from the group consisting of carbon, iron, molybdenum, chromium, tungsten, magnetite, nickel oxide, cobalt oxide, vanadium oxide and mixtures thereof.

5,364,468

METHOD FOR THE GROWTH OF EPITAXIAL METAL-INSULATOR-METAL-SEMICONDUCTOR STRUCTURES

Chih-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 841,172, Feb. 25, 1992, Pat. No. 5,229,332. This application Jun. 21, 1993, Ser. No. 48,406
Int. Cl.[5] H01L *29/12*
U.S. Cl. 148—33.3 **22 Claims**



1. An epitaxial insulator-metal-semiconductor structure comprising:

a semiconductor substrate;

a first epitaxial elemental metal layer atop said substrate; and

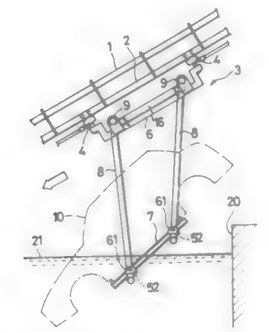
an epitaxial CaF_2 layer atop said first epitaxial metal layer.

5,364,469

HANGER FOR USE IN CONVEYORS

Takao Wakabayashi, Osaka, Japan, assignor to Nakanishi Metal Works Co. Ltd., Osaka, Japan

Filed Jan. 21, 1993, Ser. No. 7,127
Claims priority, application Japan, Jan. 21, 1992, 4-008737; Jul. 24, 1992, 4-052220[U]
Int. Cl.[5] C25D *17/06*
U.S. Cl. 118—423 **11 Claims**



1. A hanger for use in a conveyor, comprising:

an upper frame suspendable from a trolley,

a lower frame, said lower frame having means for attaching thereon an article to be transported with the article located over said lower frame between said upper and lower frames,

a front arm and a rear arm interconnecting the upper and lower frames and inclined towards each other so as to be closer to one another towards the lower ends of the arms,

the front arm having an upper end pivotally frame, the rear arm having an upper end pivotally connected to the upper frame at a second location on said upper frame, the front arm having a lower end pivotally connected to the lower frame at a first location on said lower frame, the rear arm having a lower end pivotally connected to the lower

frame at a second location on said lower frame, said upper frame extending between said upper first and second locations such as to maintain said upper ends of said arms at said first and second locations, respectively, a fixed distance from one another,

said hanger being capable of being suspended from the trolley in a horizontal state wherein a line between said upper first and second locations extends horizontally,

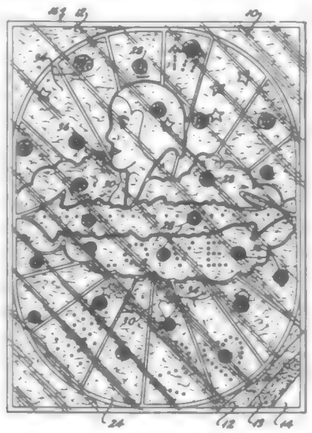
whereby said first and second locations on both said upper and lower frames delineate four corners of generally a trapezoid shape which is shorter at its lower side than at its upper side when the upper frame is situated in the horizontal state.

5,364,470

COLOR BLOOM PAINTING SYSTEM

Allen Greenberg, 3531 N. 47th Ave., Hollywood, Fla. 33021

Filed Jun. 16, 1993, Ser. No. 77,074
Int. Cl.[5] B05C *5/00*
U.S. Cl. 118—500 **6 Claims**



1. A painting system which comprises:

1) a porous substrate sheet having thereon a picture, said picture being outlined;

2) a backing support for said porous sheet, a water insoluble barrier layer interposed between said porous sheet and said backing support adhesively laminating said porous sheet to said backing support; and

3) a frame to which said porous sheet and said backing member are secured, whereby water applied to said porous sheet is contained within said frame on said porous sheet;

said porous sheet having impregnated therein a multiplicity of bands formed from a water insoluble impregnant substance whereby said porous sheet is divided by said bands into a multiplicity of self-contained segments which together outline a painting and,

a dye spot of concentrated water soluble dye on said porous sheet in every segment colored in the ultimate painting, whereby when water is added to a segment in said porous substrate sheet the water dissolves dye from the dye spot therein and a color blot spreads from the dye spot to the bands bounding such segment so that segment by segment addition of water colors the painting outlined in said porous sheet.

5,364,471

PROCESS FOR FRACTIONATING LEGUMES TO OBTAIN PURE STARCH AND A PROTEIN CONCENTRATE

Zuzanna Czuchajowska, Moscow, Id., and Yeshajahu Pomeranz, Pullman, Wash., assignors to Washington State University Research Foundation, Pullman, Wash.

Filed Aug. 17, 1993, Ser. No. 108,040
Int. Cl.[5] C08B *30/00;* **B02B** *5/00, 3/12*
U.S. Cl. 127—65 **4 Claims**

1. A method for obtaining essentially pure starch from legumes containing starch and protein, said method comprising:

(a) milling a dehulled legume to produce a powder comprising particles of different sizes;

(b) dry-separating the particles in the powder of step (a) to substantially separate the protein from the starch so as to obtain fine pulverized starch-rich particles (below about 86 μm) from the center of the cotyledon but not from an external layer of the kernel; and

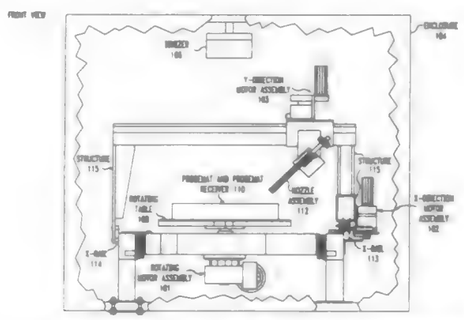
(c) wet-processing said fine pulverized starch-rich particles from the center of the cotyledon to obtain essentially pure starch.

5,364,472

PROBEMAT CLEANING SYSTEM USING CO_2 PELLETS

Garrett J. Heyns, Boulder; Terry R. McClure, Kersey; Hugh Nicholl, Berthoud, all of Colo.; Peter H. Read, Morrisville, Pa.; Steven M. Schulte, and Mohammad F. Tabrizi, both of Westminster, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 21, 1993, Ser. No. 95,646
Int. Cl.[5] B08B *7/00;* **B24C** *1/00, 3/22, 3/32*
U.S. Cl. 134—7 **6 Claims**



1. An apparatus for cleaning electrical test probes attached to a testing fixture, comprising:

a controller for controlling the operation of the apparatus;

a fixture receiver for mechanically securing the testing fixture and for electrically connecting all electrical connections of the testing fixture to ground thereby providing electrostatic protection for the testing fixture;

a rotating table moved by a first motor that is controller by the controller to rotate the rotating table and the fixture receiver is mechanically secured to the rotating table;

a first structure adapted for being propelled along two rails in a first axis by a second motor under control of the controller;

a second structure adapted for being propelled along a rail attached to the first structure in a second axis by a third motor under control of the controller;

a nozzle attached to the second structure with the nozzle, second structure and first structure being positioned with respect to the rotating table such that the nozzle is pointed at the testing fixture secured to the rotating table;

means for propelling CO_2 pellets from the nozzle onto the testing fixture under control of the controller;

the controller adapted to impinge all test probes on a plurality of sides with CO_2 pellets by controlling the propelling means, first motor, second motor, and third motor;

an ionizer for reducing electrostatic charge build up on the testing fixture by directing ions at the testing fixture under control of the controller

the propelling means further capable of propelling only air from the nozzle onto the testing fixture under control of the controller; and

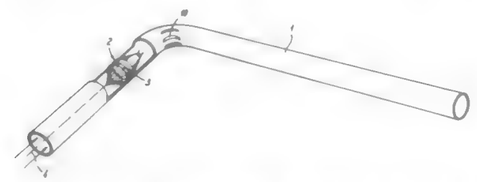
the controller further adapted for propelling air onto the plurality of sides of all test probes to remove condensation from the test probes by controlling the propelling means, first motor, second motor, and third motor.

5,364,473

TREATMENT ELEMENT AND METHOD FOR TREATING THE INSIDE OF PIPES

Hendrik J. Van Der Does, Rheden, Netherlands, assignor to Milieu Diensten Combinatie B.V., Arnhem, Netherlands

PCT No. PCT/NL91/00160, § 371 Date Feb. 25, 1993, § 102(e) Date Feb. 25, 1993, PCT Pub. No. WO92/04136, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 29, 1991, Ser. No. 982,735
Claims priority, application Netherlands, Aug. 29, 1990, 9001894
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 **13 Claims**



1. A collapsible, foldable, pipeline treatment element for treatment of an airflow pipeline, said airflow pipeline having an inner wall with an internal cross-section and a restricted-access aperture through which said treatment element is insertable into said pipeline, said treatment element comprising:

a) a flexible bag having front and rear ends with a front opening at said front end and shaped with an outer periphery engageable with said pipeline inner wall said outer periphery being surface textured to abrade said pipeline inner wall;

b) a group of flexible pulling elements connected to said flexible bag at regular intervals around said front opening and meeting one another at a fixed position in front of said flexible bag;

wherein said outer periphery is provided by a lengthwise extending portion of said bag, said bag having a constant cross-section throughout said lengthwise extending portion, said constant cross section of said bag corresponding with said internal cross-section of said airflow pipeline whereby said outer periphery is engageable with said pipeline inner wall continuously around said inner wall.

5,364,474

METHOD FOR REMOVING PARTICULATE MATTER

John F. Williford, Jr., 7155 NE. 126th St., Kirkland, Wash. 98034

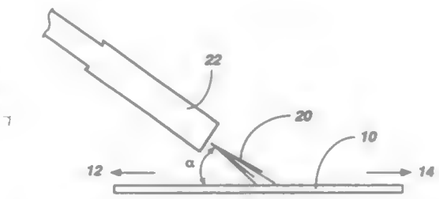
Filed Jul. 23, 1993, Ser. No. 97,172
Int. Cl.[5] B08B *7/00, 7/02, 3/02*
U.S. Cl. 134—32 **8 Claims**

1. A method for removing particulate matter from a workpiece, comprising the steps of:

placing the workpiece on a support plate;

rotating the support plate in a first direction; and

directing a stream of a cleaning material towards the workpiece to impact on the workpiece in a region radially displaced from a center of the support plate and disposed between said center and an edge of the workpiece, said stream of cleaning material having a lateral component of velocity that is directed in a second direction, opposite the first direction,



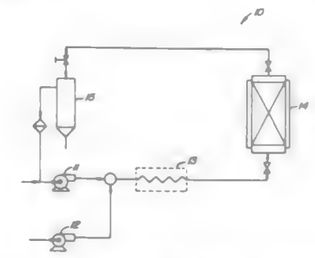
rotation of the workpiece in the first direction increasing an effective velocity with which the cleaning material impacts the workpiece.

5,364,475

PROCESS FOR REMOVING CHEMICAL PRESERVATIVES FROM WOOD USING SUPERCRITICAL FLUID EXTRACTION

Keith L. Levien; Jeffrey J. Morrell; Satish Kumar, and Endalkachew Sahle-Demessie, all of Corvallis, Oreg., assignors to State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Filed Jul. 30, 1993, Ser. No. 100,647
Int. Cl.[5] B08B *7/00, 3/14;* **D21B** *1/02*
U.S. Cl. 134—42 **15 Claims**



1. A process for remediating pentachlorophenol containing wood comprising the steps of:

(a) subdividing said wood; and

(b) contacting said wood with a fluid, under a pressure and at a temperature such that said fluid is in a supercritical state, for a period of time sufficient to remove a portion of said pentachlorophenol from said wood to obtain a Toxicity Characteristic Leaching Profile level of less than 0.1 ppm for said pentachlorophenol remaining in said wood.

5,364,476

INDUSTRIAL VARIABLE CARBON POTENTIAL GAS GENERATOR

Ralph P. Poor, and Michael J. Huber, both of Toledo, Ohio, assignors to Surface Combustion, Inc., Maumee, Ohio

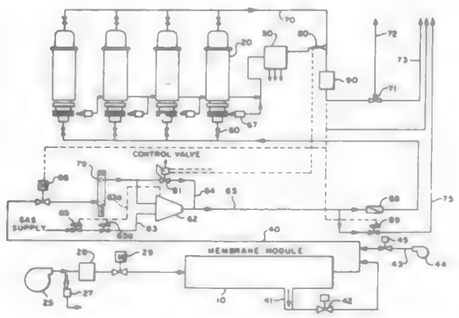
Filed Nov. 8, 1993, Ser. No. 148,871
Int. Cl.[5] B23K *35/24*
U.S. Cl. 148—27 **32 Claims**

1. A gas generator for producing industrial gas mixtures suitable for use in a number of industrial heat treat processes using heat, said generator comprising:

i) air membrane module means for producing from atmospheric air a variable mixture of nitrogen and oxygen gases as a nitrogen-oxygen output stream;

ii) a source of hydrocarbon fuel;

iii) means for mixing said fuel and said output stream; and
iv) gas generator means for reacting said hydrocarbon fuel



mixed with said output stream to form a gas generator feed stream in the presence of heat to produce said industrial gas mixture.

5,364,477

IRON RICH METALLIC GLASSES HAVING HIGH SATURATION INDUCTION AND SUPERIOR SOFT FERROMAGNETIC PROPERTIES AT HIGH MAGNETIZATION RATES

V. R. V. Ramanan, Dover, and Carl H. Smith, Chatham, both of N.J., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 880,310, May 5, 1992, abandoned, which is a continuation of Ser. No. 710,232, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 469,667, Jan. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 379,763, Jul. 14, 1989, abandoned. This application Dec. 23, 1992, Ser. No. 995,563
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—304 7 Claims

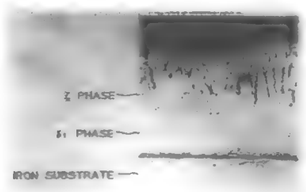
1. A magnetic metallic glass alloy that is at least about 80% glassy, having a composition consisting of the elements $Fe_aCo_bB_cSi_dC_e$, where "a"–"e" are in atom percent, "a" ranges from about 72 to about 84, "b" ranges from about 2 to about 8, "c" ranges from about 11 to about 16, "d" ranges from about 1 to about 4, and "e" ranges from about 3 to about 4, with the proviso that the sum ("a"+"b"+"c"+"d"+"e") equals 100.

5,364,478

METHOD FOR PRODUCING A COLOR-COATED ARTICLE

Hiroshi Tasaki; Eiji Nishimura, both of Saitama, and Yasunori Yamamoto, Kanagawa, all of Japan, assignors to Nippon Mining & Metals Company, Limited, Tokyo, Japan

Division of Ser. No. 914,013, Jul. 15, 1992, Pat. No. 5,200,276, which is a continuation of Ser. No. 595,515, Oct. 11, 1990, abandoned. This application Jan. 14, 1993, Ser. No. 4,255
Claims priority, application Japan, Oct. 18, 1989, 1-269047; May 17, 1990, 2-125486; May 23, 1990, 2-131207
Int. Cl.[5] C23C *2/06, 2/28*
U.S. Cl. 148—533 3 Claims



1. A method for producing a brown coated article having a brown color designated as one of 5Y/DK, 5YR/DK or 5GY/DK of Hue and Tone Graph of the Color Image Dictionary published by Kodansha on May 20, 1989, page 186, wherein an iron substrate is dipped at a temperature of from 430° to 600° C. in a molten Zn plating bath containing from 0.05 to 1% by weight of Mn, so as to zinc hot-dip galvanize the same, a heat treatment is carried out to convert a Zn-Mn phase formed by the zinc-hot dip galvanizing to a Zn-Mn-Fe phase, and, subsequently the zinc hot-dip galvanizing layer is brought into contact with an acidic aqueous solution containing an oxidizing agent.

5,364,479

PROCESS FOR THE MANUFACTURE OF DECORATED SHEETS OF LAMINATED SAFETY GLASS

Pier P. Boattini, Vasto; Carlo D'Angio', Monteodorisio, and Ciro Paudice, Vasto, all of Italy, assignors to Societe Italiana Vetro-SIV-S.p.A., San Salvo CH, Italy

Continuation of Ser. No. 774,231, Oct. 10, 1991, abandoned. This application May 12, 1993, Ser. No. 60,515
Claims priority, application Italy, Oct. 11, 1990, 48354-A/90
Int. Cl.[5] B32B *17/10*
U.S. Cl. 156—100 3 Claims

1. A process for the manufacture of decorated sheets of laminated safety glass by decorating a polyvinylbutyral film having a roughened surface by transferring the decoration onto said polyvinylbutyral film making sole use of the adhesive capacity of said polyvinylbutyral film to said decoration, forming an assembly consisting of two sheets of glass having said decorated polyvinylbutyral film interposed between them, and laminating said assembly, consisting essentially of the steps of:
a) preparing a support consisting of a substrate of cellulose paper and a layer of polyethylene joined thereto,
b) depositing on said layer of polyethylene a decoration made of inks based on polyvinylbutyral and inorganic pigments,
c) transferring said decoration from the layer of polyethylene onto the polyvinylbutyral film in a heat transfer calendar at a temperature not exceeding 60° C. to prevent destruction of the roughened surface of said polyvinylbutyral film and under a pressure only sufficient to keep said layer and said film together,
d) immediately, without any successive treatments, forming a glass/decorated film/glass assembly by interposing the decorated polyvinylbutyral film between two sheets of glass, and
e) laminating the assembly thus obtained.

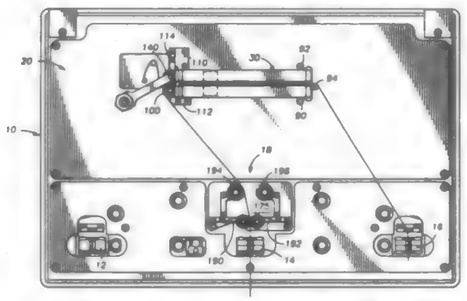
5,364,480

RIBBON LOADING CONTAINER

Paul E. Becking, P.O. Box 3200, Monterey, Calif. 93940

Continuation of Ser. No. 608,563, Nov. 2, 1990, which is a continuation-in-part of Ser. No. 324,941, Mar. 17, 1989, Pat. No. 4,982,636. This application Nov. 16, 1992, Ser. No. 977,749
Int. Cl.[5] B26D *7/00*
U.S. Cl. 156—159 29 Claims

1. A ribbon loading container for loading a pre-selected length of printer ribbon in a cartridge, comprising:
an elongated housing forming an envelope and having front and rear open ends;
a ribbon dam slidingly received within said envelope of said housing and having a slot therethrough for the passage of the ribbon; and
said ribbon dam further including first tension means for maintaining frictional engagement with the ribbon and second tension means for maintaining frictional engagement with said housing whereby the ribbon may be introduced into said front open end and become housed within



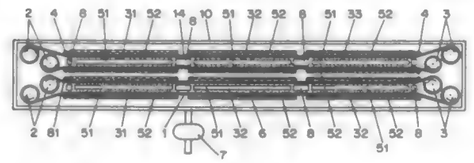
said housing against the back pressure of said ribbon dam due to said second tension means.

5,364,481

APPARATUS FOR MANUFACTURING A THIN-FILM PHOTOVOLTAIC CONVERSION DEVICE

Toshiaki Sasaki, and Hitoshi Shimizu, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 21, 1993, Ser. No. 95,721
Claims priority, application Japan, Jul. 24, 1992, 4-197321; Oct. 23, 1992, 4-284791; Feb. 4, 1993, 5-017124
Int. Cl.[5] C23C *16/50, 16/54*
U.S. Cl. 118—718 19 Claims



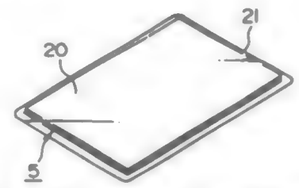
1. An apparatus for manufacturing a photovoltaic conversion device having thin-film layers formed on a belt-shaped flexible substrate, comprising:
a plurality of film-forming chambers through which the flexible substrate, simultaneously passes and within which chambers the thin-film layers are formed;
means for moving the substrate through each film-forming chamber:
means operatively associated with each of the film-forming chambers for introducing reaction-gas mixtures into each of the film-forming chambers;
means for depositing the thin-film layers on the substrate while the substrate remains stationary by transforming the reaction-gas mixtures within the film-forming chambers;
means for sealing the individual film-forming chambers airtight while the substrate remains stationary, said sealing means operatively associated with walls of the individual film-forming chambers and the means for depositing the thin-film layers, said sealing means contacting the substrate while the substrate remains stationary, and said sealing means being removed from the substrate while the substrate is moving; and
means for substantially preventing contamination of the reaction-gas mixture in any one of the film-forming chambers and controlling the film-forming conditions of each film-forming chamber independent of the rest of the film-forming chambers.

5,364,482

COMPOSITE CARDS

Masaki Morikawa; Naoyuki Hosoda, and Naoki Uchiyama, all of Osaka, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Division of Ser. No. 614,116, Nov. 16, 1990, Pat. No. 5,120,589, which is a continuation-in-part of Ser. No. 536,996, Jun. 13, 1990, abandoned, which is a continuation of Ser. No. 219,263, Jul. 15, 1988, abandoned. This application Apr. 6, 1992, Ser. No. 863,754
Claims priority, application Japan, Feb. 10, 1988, 63-29118; Mar. 1, 1988, 63-27298; Mar. 1, 1988, 63-27299; Apr. 13, 1988, 63-91069; Apr. 14, 1988, 63-92315; Apr. 28, 1988, 63-106710; Apr. 28, 1988, 63-106711; Apr. 28, 1988, 63-106712
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—182 18 Claims



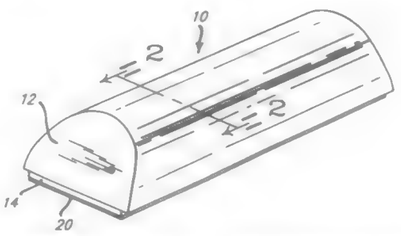
1. A process of manufacturing a precious metal composite card comprising:
providing a precious metal foil element to define a substantially planar element having first and second planar surfaces;
providing a first layer of protective transparent material in parallel facing relation to said first planar surface; and
encapsulating the combination of said first layer of protective transparent material and said metal foil element in polymeric material, said step of encapsulating comprising providing first and second polymeric cover elements each having a size slightly larger than the combination, laminating the combination between said first and second polymeric cover elements and thermal bonding the same, wherein each of said cover elements comprises a triple-layer structure.

5,364,483

THICK BODIED HEAT SET MOLDING

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Jul. 7, 1992, Ser. No. 909,704
Int. Cl.[5] B29C *41/02*
U.S. Cl. 156—242 5 Claims



1. A method of forming a thick trim strip comprising:
providing a mold having at least one deep cavity;
adding a desired amount of heat settable material into said mold;
heating said mold containing said desired amount of heat settable material;
fusing an outer perimeter of said heat settable material such that material surrounded by said outer perimeter is incompletely fused;

forming a trim strip from said heat settable material; and removing said trim strip from said mold.

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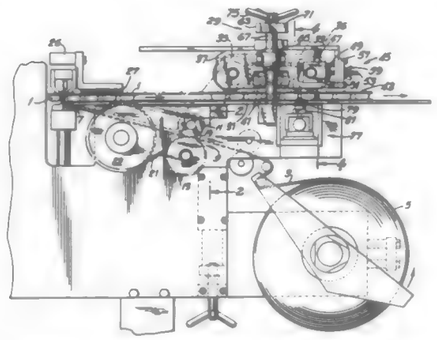
METHOD AND APPARATUS FOR COLLATING AUTOMATICALLY PRODUCED PACKAGES OR OTHER PRODUCTION UNITS

Sanford Redmond, Stamford, Conn., assignor to Sanford Redmond inc., Bronx, N.Y.

Continuation of Ser. No. 810,562, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 421,257, Oct. 13, 1989, abandoned. This application Sep. 21, 1992, Ser. No. 947,944

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—250 **7 Claims**



1. A method for collating a plurality of articles supplied in a regular, repeating orientation, including the steps of:

positioning a movable collating web of thin sheet material adjacent and directly beneath said supply of said articles;

moving said collating web in a direction laterally away from said supply of said articles;

passing said articles and said web beneath a first pressure location and applying pressure onto said articles at said first pressure location to place said articles in a discrete, spaced relationship to one another onto said movable collating web;

removably holding said articles in said discrete, spaced relationship during movement of said collating web to thereby transport said articles from said supply in a collated arrangement;

passing said articles and said web beneath a second pressure location downstream of said article supply and applying pressure onto said articles and said web at said second pressure location to urge said articles and said web away from said article supply; and further including the step of;

forming locating positions in said collating web adapted to receive and removably hold said articles in said discrete, spaced relationship.

5,364,485

METHOD OF MANUFACTURING LAMINATE FOR HONEYCOMB STRUCTURE

Noriyasu Miura, Tomakomai, Japan, assignor to Oji Kenzai Kogyo Co., Ltd., Hokkaido, Japan

PCT No. PCT/JP91/00142, § 371 Date Oct. 6, 1992, § 102(e) Date Oct. 6, 1992, PCT Pub. No. WO92/13705, PCT Pub. Date Aug. 20, 1992

PCT Filed Feb. 6, 1991, Ser. No. 930,689

Int. Cl.[5] B31D *3/02;* **B32B** *31/00*

U.S. Cl. 156—264 **5 Claims**

1. A method for manufacturing a laminate for a honeycomb structure by longitudinally reciprocating a frame on a trestle between first and second sheet supply rolls located at opposite longitudinal ends of the trestle, the frame moving in a first direction from the first supply roll toward the second supply roll and moving in a second opposite direction from the second supply roll toward the first supply roll, the frame including adhesive coating means and a pressing roll, the method comprising the steps of:

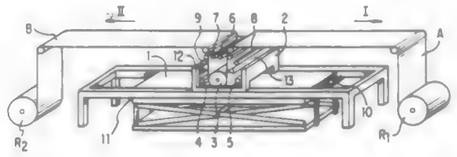
(a) locating a first sheet on a flat surface of the trestle and a second sheet drawn from the second supply roll on the trestle, the first sheet being cut to a predetermined length;

(b) coating a top surface of the first sheet or a bottom surface of the second sheet with a first plurality of parallel stripes of adhesive using the adhesive coating means by moving the frame in the first direction;

(c) stacking the second sheet onto the first sheet when the frame is moved in the first direction so that the bottom surface of the second sheet faces the top surface of the first sheet;

(d) pressing the second sheet onto the first sheet using the pressing roll when the frame is moved in the first direction;

(e) drawing a third sheet from the first supply roll as the frame is moved in the first direction;



(f) cutting the second sheet to the predetermined length;

(g) coating a top surface of the second sheet or a bottom surface of the third sheet with a second plurality of parallel stripes of adhesive using the adhesive coating means by moving the frame in the second direction, wherein the second plurality of parallel stripes is longitudinally offset from the first plurality of parallel stripes;

(h) stacking the third sheet onto the second sheet when the frame is moved in the second direction so that the bottom surface of the third sheet faces the top surface of the second sheet;

(i) pressing the third sheet onto the second sheet using the pressing roll as the frame is moved in the second direction;

(j) drawing a fourth sheet from the second supply roll when the frame is moved in the second direction;

(k) cutting the third sheet to the predetermined length; and

(l) sequentially repeating steps (b)–(k) a predetermined number of times.

5,364,486

POUCH FOR PACKAGING FLOWABLE MATERIALS

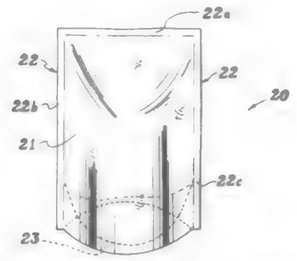
Daniel J. Falla; Allen W. Ross, and Robert S. Elliott, all of Sarnia, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 742,800, Aug. 9, 1991, Pat. No. 5,288,531. This application Nov. 17, 1993, Ser. No. 154,046

Int. Cl.[5] B32B *31/20*

U.S. Cl. 156—308.4 **3 Claims**

1. A process for preparing a pouch containing a flowable material comprising forming a film structure by either blown tube extrusion or cast extrusion, forming the film structure into a tubular member and transversely heat-sealing opposite ends of the tubular member, said tubular member comprising a film structure for a pouch container comprising (a) from 10 to 100 percent by weight of at least one polymeric seal layer of an ultra low density linear ethylene copolymer interpolymerized from ethylene and at least one alpha-olefin in the range of C_3–C_{10} and having (1) a density of from about 0.89 g/cm^3 to less than 0.915 g/cm^3, (2) a melt index of less than about 10.0 g/10 minutes and (3) (i) a hot tack or heat seal initiation temperature of less than 100° C. at a force of at least 1N/inch (39.4N/m) or (ii) achieving a hot tack strength of at least 1N/inch (39.4N/m) at a seal bar temperature of about 110° C. at less than 0.2 seconds using the DTC Hot Tack Strength Method or achieving a heat seal strength of at least 1 lb$_f$/inch (175N/m) at a seal bar temperature of about 110° C. at less than 0.25 seconds using the DTC Heat Seal Strength Method; and (b) from 0 to 90 percent by weight of at least one polymer



selected from the group consisting of a linear copolymer of ethylene and a C_3–C_{18}-alpha-olefin having a density of greater than 0.916 g/cm^3 and a melt index of from 0.1 to 10 g/10 minutes, a high-pressure low density polyethylene having a density of from 0.916 to 0.930 g/cm^3 and a melt index of from 0.1 to 10 g/10 minutes and ethylene-vinyl acetate copolymer having a weight ratio of ethylene to vinyl acetate from 2.2:1 to 24:1 and a melt index of from 0.2 to 10 g/10 minutes.

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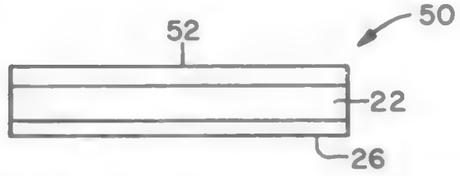
GLASS-PLASTIC COMPOSITE

Mark S. Friske, Campbell, N.Y.; Ronald E. Johnson, Tioga, Pa.; Christine M. Reagan; Theresa A. Winer, both of Corning, N.Y., and Lung-Ming Wu, Horseheads, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Sep. 15, 1993, Ser. No. 120,921

Int. Cl.[5] B32B *31/20;* **C09J** *4/00*

U.S. Cl. 156—309.9 **27 Claims**



1. A method of adhering a tough, abrasion-resistant, adhesive, organic film to the back surface of a thin, glass body wherein the film and the glass body are positioned adjacent each other and are pressed together to adhere the film to the glass and wherein the film contains volatile materials, the improvement comprising preheating the film to a temperature within the temperature range in which the volatile materials are volatile and for a period of time sufficient to eliminate the volatile materials from the film, preheating a presshead to facilitate heat control during pressing, pressing the film and the glass together to form a glass-plastic composite, the pressing step being performed at a pressure and an elevated temperature for an extended period of time to sufficiently soften the film to wet the glass surface with the organic adhesive and cooling the composite to the solidification temperature of the organic adhesive to solidify the organic adhesive and adhere it to the glass surface.

5,364,488

COAXIAL PLASMA PROCESSING APPARATUS

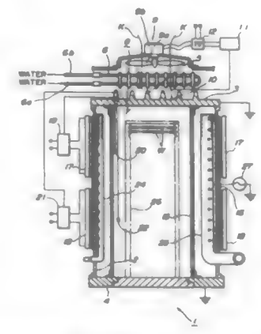
Mitsuaki Minato; Akira Uehara, and Atsushi Matsushita, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Sep. 30, 1992, Ser. No. 954,210

Claims priority, application Japan, Sep. 30, 1991, 3-278837

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—345 **16 Claims**



1. A plasma processing apparatus comprising:

a chamber for generating a plasma for processing a workpiece housed therein with heat applied thereto;

cooling means for cooling only an upper end of said chamber, means including a cooling coil positioned adjacent to an upper end of said chamber;

a fan unit for forcing an air flow over said cooling coil to the upper end of said chamber; and

control means for controlling said fan unit to keep the temperature in said chamber within a predetermined range while the workpiece is being heated.

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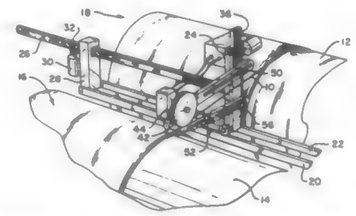
APPARATUS FOR APPLYING ADHESIVE TO AN OPTICAL FIBER DURING WINDING

Wilbur M. Bailey; George H. Hulderman, and Daniel K. Schotter, all of Tucson, Ariz., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 789,491, Nov. 8, 1991, abandoned, which is a continuation of Ser. No. 413,360, Sep. 27, 1989, abandoned. This application Apr. 8, 1993, Ser. No. 46,347

Int. Cl.[5] B65H *81/06*

U.S. Cl. 156—356 **14 Claims**



1. Apparatus for applying a liquid adhesive only between adjacently disposed layers of a filament pack formed by winding an optical fiber onto a drum from a storage spool, comprising:

a support drum;

a frame assembly positioned adjacent the drum and movable along a path extending parallel to a longitudinal axis through the drum;

a pulley wheel guiding an optical fiber to a precise location on the drum;

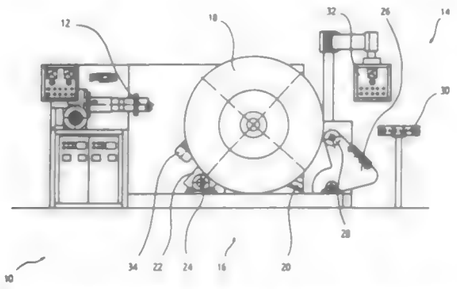
means extending from the frame for moveably supporting said pulley wheel relative to the drum;
a hollow tube having a first end facing the drum and located between the optical fiber and the drum at a point after the fiber has engaged the pulley wheel and before the fiber is wound onto the drum;
means extending from the frame for moveably supporting said hollow tube relative to the drum; and
a source Of pressurized liquid adhesive connected to a second end of the tube, providing a minimal amount of adhesive from the hollow tube to continuously wet only a layer of optical fiber previously wound about the drum, thereby only creating a releasable bond between the previously wound layer and a succeeding layer of the filament pack.

5,364,490

RETREADING DEVICE FOR TIRES

Rainer Hilke, and Gerhard Schmaderer, both of München, Germany, assignors to A-Z Formen- und Maschinenbau GmbH, München, Germany

Filed Feb. 3, 1993, Ser. No. 16,986
Claims priority, application Germany, Feb. 3, 1992, 4203027
Int. Cl.[5] B29D *30/54*
U.S. Cl. 156—396 **19 Claims**



1. A retreading device for tires, in which a tread strip is applied to a carcass, said retreading device comprising:
a tread strip feeding device for feeding the tread strip to the carcass;
an extruder for extruding a rubber binding layer onto the carcass;
a support for displaceably supporting the carcass relative to said extruder and said tread strip feeding device, said support being an inclined lifting device for moving said carcass between said tread strip feeding device and said extruder;
said inclined lifting device comprising a pivot arm and a pivot fixedly connected to the ground, the pivot arm connected to said pivot; and
wherein said pivot, when viewing said retreading device in a plan view, is located between said extruder and a center of the carcass in any carcass position.

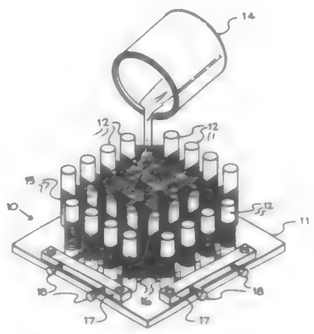
5,364,491

GRID STRUCTURES

Tak Aochi, Morgan Hill, and Robert J. Pyle, Campbell, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 286,120, Dec. 19, 1988. This application Oct. 31, 1989, Ser. No. 429,434
Int. Cl.[5] B65C *3/12;* **B32B** *31/06*
U.S. Cl. 156—446 **8 Claims**

1. An apparatus for fabricating a grid structure of desired configuration from a composite material substantially consisting of fibers embedded in a matrix, said fibers extending in at least three different directions, said apparatus comprising:
a) a loom, said loom comprising a plurality of posts arranged with respect to each other on a frame so that a filament made of said fibers can be woven around said posts according to a predetermined pattern so as to form intersecting surfaces that define interstices for said grid structure;
b) a plurality of mandrels, each of said mandrels being configured to receive a covering that consists of a filamentary material made of said fibers extending predominantly in a single direction, said mandrels conforming in cross-sectional configuration to said interstices defined by said intersecting surfaces so that, when said mandrels are inserted into corresponding interstices, said fibers of said filamentary material covering said mandrels are in contact



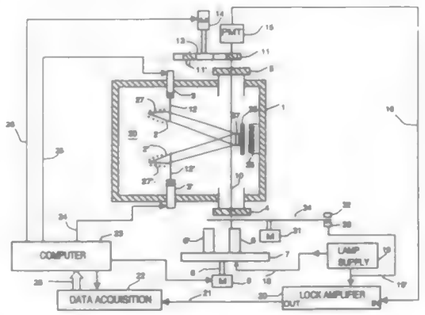
with and extend predominantly transversely with respect to said intersecting surfaces defining said interstices;
c) means for causing said filament that is woven around said posts on said frame and said filamentary material that covers said mandrels to be impregnated with a matrix material; and
d) means for applying compressional forces between adjacent mandrels to said filamentary material impregnated with said matrix material, said compressional forces being applied substantially entirely perpendicularly to said fibers of said filamentary material covering said mandrels when said mandrels have been inserted into said interstices.

5,364,492

METHOD OF DEPOSING BY MOLECULAR BEAM EPITAXY

James N. Eckstein, Cupertino; Ivan Bozovic, Palo Alto; Martin E. Klausmeier-Brown, San Jose; and Gary F. Virshup, Cupertino, all of Calif.

Filed Sep. 17, 1992, Ser. No. 947,003
Int. Cl.[5] H01L *21/20*
U.S. Cl. 117—105 **12 Claims**



1. In a method for controlling layer growth on a substrate in an MBE growth chamber, including:
(a) mounting in the path of a selected first and second atomic beams from a first and second thermal effusion source of atoms in said MBD growth chamber a substrate to be layered with a first layer of a first thickness of atoms from said first effusion source and a second layer of a second thickness of atoms from said second effusion source;
(b) opening a first shutter between said first source and said substrate to commence depositing a first layer;
(c) performing a first measurement of the intensity of a probe beam after said probe beam transits through said selected atomic beam, said probe beam being light from a lamp containing the same atoms as in said selected atomic beam;
(d) shutting off said first atomic beam by closing said first shutter between said first effusion source and said substrate;
(e) performing a second measurement of the intensity of said probe beam after said probe beam transits exactly the same path in said growth chamber as in said first measurement except that the said first atomic beam is closed during said second measurement;
(f) comparing said first and second measurement;
(g) calculating the thickness of the first layer deposited on said substrate using the result of said comparing step;
(h) responsive to said calculating step, if said thickness is within a selected tolerance of said first thickness said shutter shall remain closed, but if the thickness of the first deposited layer on said substrate is less than said first thickness, repeat steps (b) through (h); and
(i) after completion of step (h) and said first layer thickness is within said selected tolerance of said thickness, undertaking the steps of,
(j) changing the lamp emitting said probe beam to a lamp containing the same atoms as in a second thermal effusion source;
(k) opening said second shutter which is interposed in said second atomic beam path between said second thermal effusion source containing a second selected atom and said substrate,
(l) performing a third intensity measurement of the intensity of said probe beam after said probe beam through said second atomic beam;
(m) shutting off said second atomic beam by closing said second shutter between said second effusion source and said substrate;
(n) performing a further measurement of the intensity of said probe beam after said probe beam transits exactly the same path in said growth chamber as said third intensity measurement except that the said second atomic beam is shuttered;
(o) comparing said third and fourth intensity measurement;
(p) calculating said thickness of the second layer deposited on said substrate using the results of said comparing step of said third and fourth intensity measurements;
(q) responsive to said calculating step (o) causing the said second shutter to move to said open position only if the thickness of said second deposited layer on said substrate is less than said second amount; and
(r) wherein said calculations steps (g) and (p) includes a correction for non-linearity due to the fact that the probe beam line width is on the same order of magnitude as the line width of the absorption line spectra of atoms in said atomic beam path.

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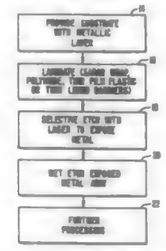
APPARATUS AND PROCESS FOR THE PRODUCTION OF FINE LINE METAL TRACES

Robert O. Hunter, Jr., Rancho Santa Fe; Adlai H. Smith, and Bruce B. McArthur, both of San Diego, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Filed May 6, 1993, Ser. No. 58,906
Int. Cl.[5] B44C *1/22;* **C23F** *1/00;* **B29C** *37/00*
U.S. Cl. 156—630 **23 Claims**

1. A process for forming a collection of fine metallic features comprising the steps of:

providing a mask;
providing said mask with gratings in a pattern to produce in light projected through said mask which is selected from a class including the positive and negative of said collection of metal features, said mask including first areas for transmitting light and second areas for scattering light transmitted through said mask;
providing a substrate having an exposed metal layer;



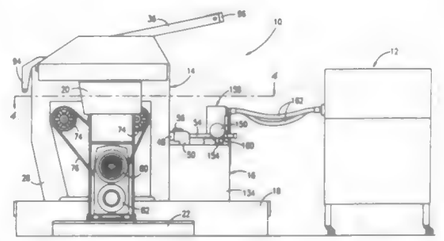
applying an etch barrier over said exposed metallic layer;
passing light through said mask with sufficient energy to remove said barrier at locations corresponding to said first areas of said mask exposing said metallic layer underneath said barrier in a pattern which is selected from a class including the positive and negative of said collection of fine metal features.

5,364,494

METAL DIE ACID ETCH APPARATUS AND PROCESS

Glenn E. Hutchison, Prairie Village, and Richard L. Riddle, Overland Park, both of Kans., assignors to Universal Engraving, Inc., Overland Park, Kans.

Filed Nov. 29, 1993, Ser. No. 159,081
Int. Cl.[5] B44C *1/22;* **C23F** *1/00*
U.S. Cl. 156—642 **15 Claims**



12. A method of acid etching a metal die comprising the steps of:
positioning a metal die above a bath of acid etch solution;
exposing the metal die to the acid etching solution that is in the bath;
allowing acid solution to overflow at a level from the top of the bath;
recirculating at least a portion of the acid etch solution which overflows from the bath back into the bath; and
maintaining the temperature of the acid etch solution at a temperature.

5,364,495

METHOD OF MANUFACTURING SHARP WAVEGUIDE BRANCHES IN INTEGRATED OPTICAL COMPONENTS

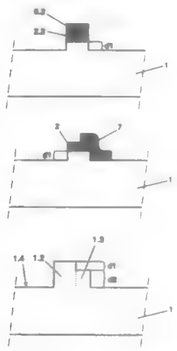
Johannes J. G. M. Van Der Tol, Zoetermeer; Eduard G. Metaal, The Hague, and Jorgen W. Pedersen, Delft, all of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Nov. 19, 1993, Ser. No. 154,958

Claims priority, application Netherlands, Nov. 26, 1992, 9202059; Jun. 18, 1993, 9301071

Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C03C** *15/00*

U.S. Cl. 156—643 **13 Claims**



1. Method of manufacturing branching or mutually intercepting channel-type waveguides on a substrate comprising a light-guiding layer, to which substrate at least one auxiliary mask layer has bean applied, which method comprises the following steps:

the application of a first mask pattern of photosensitive material to the auxiliary mask layer, which first mask pattern comprises a subpattern for a first channel-type waveguide,

a first etching step for etching the auxiliary mask layer not covered by the first mask pattern using first etchants,

the removal of the photosensitive material of the first mask pattern, residues of the auxiliary mask pattern being left which correspond to the first mask pattern,

the application of a second mask pattern of photosensitive material partially over the residues of the auxiliary mask layer, which second mask pattern comprises a subpattern for a second channel-type waveguide, which makes an acute angle with the first waveguide,

a second etching step for etching parts not covered by the second mask pattern using second etchants,

the removal of the photosensitive material of the second mask pattern,

characterized in that the second etching step is carried out using dry etchants, the substrate being provided with only one auxiliary mask layer of a material which is resistant in the second etching step.

5,364,496

HIGHLY DURABLE NONCONTAMINATING SURROUND MATERIALS FOR PLASMA ETCHING

Lynn D. Bollinger, Ridgefield; Michael P. Power, Newtown; Richard R. Poole, Norwalk, and George J. Gardopee, Southbury, all of Conn., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 20, 1993, Ser. No. 110,021

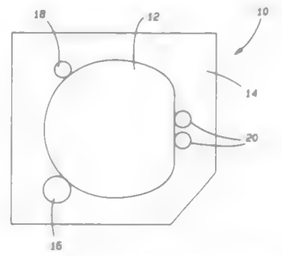
Int. Cl.[5] H01L *21/306;* **B44C** *1/22*

U.S. Cl. 156—643 **18 Claims**

13. A method of positioning and supporting an article in a plasma etching process employing a plasma tool, wherein the plasma etching process effects removal of surface material from the article, said method comprising the steps of:

providing a support for accepting the article; and

providing a surround adjacent the support, said surround defining at least one surround component having an outer



surface comprised of a magnesium material such that as the plasma tool employed in the plasma etching process traverses an edge portion of the article, chemically reactive and excited species generated by a feed gas from the plasma tool impinge upon the surround component.

5,364,497

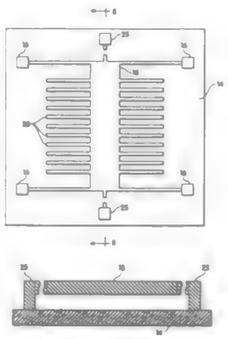
METHOD FOR FABRICATING MICROSTRUCTURES USING TEMPORARY BRIDGES

Kevin H. L. Chau, North Andover, Mass.; Michael P. Saltmarsh, Concord, N.H., and Deborah A. Church, Pepperell, Mass., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Aug. 4, 1993, Ser. No. 101,633

Int. Cl.[5] B44C *1/22;* **H01L** *21/306*

U.S. Cl. 156—645 **10 Claims**



1. A method for fabricating a suspended, resilient microstructure of a first shape on a die, comprising the steps of:

forming said microstructure in a second shape, said second shape comprising said first shape and at least one bridge for supporting said microstructure in a less than fully resilient condition during fabrication of said microstructure; and

cutting said at least one bridge.

5,364,498

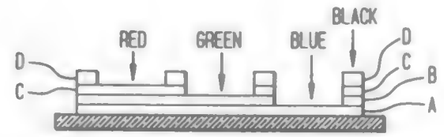
ETCH METHOD FOR MANUFACTURING A COLOR FILTER

Kun-Ti Chen, Ren-Der Village, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan, Prov. of China

Filed Jul. 21, 1993, Ser. No. 95,262

Int. Cl.[5] B44C *1/22;* **C03C** *15/00*

U.S. Cl. 156—650 **5 Claims**



1. A method for making a color filter comprising

depositing a predetermined sequence of dielectric interference films on a substrate so that the films are one on top of the other, and

selectively etching the films to remove different numbers of films from different locations to obtain different colors at said different locations, the color at each location depending on the number of films said etching step removes at the location.

5,364,499

DRY ETCHING PROCESS FOR GALLIUM ARSENIDE EXCELLENT IN SELECTIVITY WITH RESPECT TO ALUMINUM GALLIUM ARSENIDE

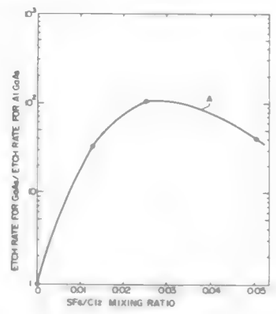
Hironobu Miyamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 23, 1991, Ser. No. 811,679

Claims priority, application Japan, Dec. 24, 1990, 2-413331

Int. Cl.[5] H01L *21/00*

U.S. Cl. 156—662 **4 Claims**



1. A dry etching process comprising the steps of:

a) preparing a plasma etching system having an etching chamber and assisted by means of electron cyclotron resonance, preparing a semiconductor structure having an aluminum gallium arsenide film and a gallium arsenide film, and supplying an etchant containing chlorine gas and sulfur hexafluoride gas, said etchant having a mixing ratio of said hexafluoride gas to said chlorine gas ranging from 0.01 to 0.05;

b) placing said semiconductor structure in said etching chamber of said dry etching system; and

c) supplying said etchant to said etching chamber for selectively etching said gallium arsenide film in regard to said aluminum gallium arsenide film.

5,364,500

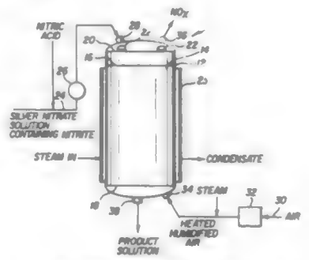
PROCESS FOR REMOVING NITRITES FROM A SILVER NITRATE SOLUTION

Patrick M. Chefalo, Rochester; Andrius A. Naujokas, Webster; Stephen M. Popham, Rochester; Gary M. DiStefano, Greece, and Robert J. Buesing, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 821,666, Jan. 16, 1992, abandoned, which is a continuation-in-part of Ser. No. 650,145, Feb. 4, 1991, abandoned. This application Jan. 12, 1994, Ser. No. 180,944

Int. Cl.[5] B01D *1/14*

U.S. Cl. 159—49 **22 Claims**



1. A process of treating an aqueous silver nitrate feed solution containing nitrites and nitric acid, the concentration by weight of nitrites in said feed solution being in the range of 52 μg/ml to 21,000 μg/ml, the concentration by weight of silver nitrate in said feed solution being in the range of 4.0% to 63.6% and the concentration by weight of nitric acid in said feed solution being in the range from about 0.5% to about the percent at which silver nitrate starts to precipitate from said feed solution, to decrease the nitrite concentration of said feed solution, said process comprising contacting said feed solution, at a temperature in the range of from about 80° C. up to the boiling point of said feed solution, with a counter flow of motive gas in a stripping zone of a vessel having a contacting element therein, such that the flows of said feed solution and said motive gas over said contacting element are sufficient to strip nitrites from said feed solution, and thereby decrease the concentration of nitrites of said feed solution to form a low-nitrite product solution, the concentration by weight of nitrites in said product solution being as low as 0.1 μg/ml; and subsequently recovering said product solution from said vessel.

12. A process of treating an initial aqueous silver nitrate solution containing nitrites to decrease the concentration of said nitrites in said initial solution, said process comprising the steps of:

contacting said initial solution with nitric acid to form a feed solution containing nitrites and nitric acid, the concentration by weight of nitrites in said feed solution being in the range of 52 μg/ml to 21,000 μg/ml, the concentration by weight of silver nitrate in said feed solution being in the range of 4.0% to 63.6% and the concentration by weight of nitric acid in said feed solution being in the range from about 0.5% to about the percent at which silver nitrate starts to precipitate from said feed solution;

establishing the temperature of said feed solution in the range of from about 80° C. up to the boiling point of said feed solution;

introducing said feed solution into a vessel, said vessel having a stripping zone containing a contacting element therein, at a first location upstream of said stripping zone;

introducing a counter flow of motive gas into said vessel downstream of said first location at a second location so located that said motive gas can contact at least some of the feed solution in the stripping zone as said motive gas flows through said vessel;

dispersing said feed solution over said contacting element and permitting said feed solution to intimately contact said gas to thereby strip nitrites from said feed solution to form

a low-nitrite product solution, the concentration by weight of nitrites in said product solution being as low as 0.1 μg/ml;
removing exhaust gases from said vessel; and
collecting said product solution from said vessel.

5,364,501

ENZYMATIC DEINKING PROCESS WITH PH SHIFT AND ADDITION OF ALKALINE CELLULASE

Jean-Luc A. G. Baret, Moret-sur-Loing; Marc Leclerc, Fontenay-aux-Roses, and Jean-Pierre Lamort, Vitry-le-Francois Cedex, all of France, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK91/00090, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO91/14819, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 21, 1991, Ser. No. 934,697
Claims priority, application Denmark, Mar. 29, 1990, 802/90
Int. Cl.[5] D21C *5/02*
U.S. Cl. 162—5 **17 Claims**

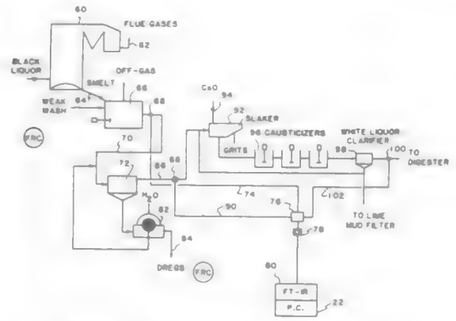
1. An enzymatic process for deinking of waste paper, comprising the following sequential steps:
a) pulping said waste paper at a consistency above 8% in the presence of deinking chemicals at a pH above 9.5,
b) lowering the pH to 6–9.5 by addition of an acidifying agent and adding alkaline cellulase,
c) continuing the pulping and/or macerating at a consistency above 8%,
separating ink particles from the pulp.

5,364,502

CONTROL OF RECOVERY BOILER OPERATION BY IR SPECTROSCOPY

Denys F. LeClerc, Surrey, and Robert M. Hogikyan, Burnaby, both of Canada, assignors to Pulp & Paper Research Institute of Canada, Quebec, Canada

Division of Ser. No. 910,379, Jul. 8, 1992, Pat. No. 5,282,931. This application Sep. 17, 1993, Ser. No. 124,055
Int. Cl.[5] D21C *7/12, 11/12*
U.S. Cl. 162—49 **7 Claims**



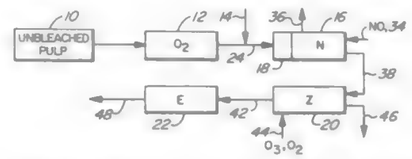
1. A method for controlling the operation of a recovery boiler in the preparation of kraft pulp wherein smelt is produced in a recovery furnace and fed to a smelt dissolving tank to form green liquor, which comprises the steps of:
withdrawing samples of a green liquor after the smelt dissolving tank;
subjecting the samples to infrared spectrophotometry at a wave number of about 1100 cm^{-1} for sulfate and at a wave number of about 1000 cm^{-1} for thiosulfate to produce peak-absorbance measurements relative to a background spectrum of water;
subjecting samples of sulfate and thiosulfate solutions of different known concentrations to infrared spectrophotometry at the same wave numbers in order to establish sulfate and thiosulfate calibration curves;
correlating relationships between the peak-absorbance measurements of the samples with the peak absorbances of the samples of sulfate and thiosulfate solutions to determine optimum sulfate and thiosulfate concentrations in the samples; and
adjusting the recovery boiler operation as required to bring the sulfate and thiosulfate concentrations in the green liquor from the concentration thereof in the withdrawn samples, as determined by the peak-absorbance measurement thereof, to optimum concentration.

5,364,503

NITRIC OXIDE TREATMENT FOR OZONE BLEACHING

Marco Solinas, Vancouver, and Thomas H. Murphy, Burnaby, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Feb. 20, 1992, Ser. No. 838,169
Int. Cl.[5] D21C *9/153*
U.S. Cl. 162—65 **30 Claims**



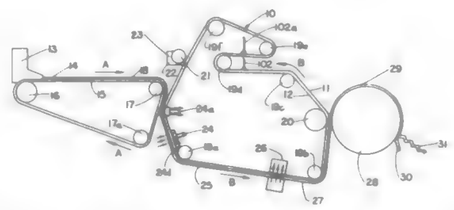
1. A method of bleaching pulp comprising adjusting the pH of the pulp to 1.5–3.5, chelating the pulp and reacting the chelated pulp in an N stage with nitric oxide in an amount of at least 1.5% by weight of NO based on the oven dry weight of the pulp and at a temperature of less than 35° C. passing said pulp from said N stage directly into a Z stage wherein said pulp is treated with ozone to consume 0.1 to 2% ozone based on the oven dry weight of the pulp, said Z stage being carried out at a temperature of less than 35° C. to produce a bleached pulp with a higher viscosity at a given permanganate number of less than 10 compared with a pulp similarly bleached but without an N stage.

5,364,504

PAPERMAKING BELT AND METHOD OF MAKING THE SAME USING A TEXTURED CASTING SURFACE

John A. Smurkoski, Meshoppen; Gary L. Leggitt, Springville, both of Pa., and Gregory L. Wilson, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 812,193, Dec. 20, 1991, Pat. No. 5,260,171, which is a division of Ser. No. 546,350, Jun. 29, 1990, Pat. No. 5,098,522. This application Apr. 12, 1993, Ser. No. 89,366
Int. Cl.[5] D21F *11/00*
U.S. Cl. 162—116 **2 Claims**



1. A process for making a strong, soil, absorbent paper web comprising the steps of:
(a) providing an aqueous dispersion of papermaking fibers;
(b) forming an embryonic web of papermaking fibers from said dispersion on a foraminous surface;
(c) contacting said embryonic web with the paper-contacting side of a papermaking belt having a paper-contacting side and a textured backside opposite said paper-contacting side, said papermaking belt comprising:
a framework having a first surface defining said paper-contacting side of said belt, a second surface opposite said first surface defining said textured backside of said belt, and conduits extending between said first surface and said second surface said first having a paper side network formed therein defining said conduits, and said second surface boxing a backside network with passageways, distinct from said conduits, that provide surface texture irregularities in said backside network;
a reinforcing structure positioned between said first surface and said second surface, said reinforcing structure having a paper-facing side, a machine-facing side opposite said paper-facing side, interstices, a reinforcing component, a projected open area defined by the projection of the areas defined by said interstices and a projected reinforcing area defined by the projection of said reinforcing component; and
wherein nil of said passageways, are positioned outward from the plane defined by the machine-facing side of the reinforcing structure, and said backside surface has sufficient fluid passage capacity to permit at least about 1,800 standard cubic centimeters/minute of air to escape across said textured surface;
(d) traveling said papermaking belt and embryonic web over a vacuum source and applying a fluid pressure differential to said embryonic web with said vacuum source such that the fluid pressure differential is applied from the backside of said papermaking belt through the conduits" of said papermaking belt to deflect at least a portion of the papermaking fibers in said embryonic web into the conduits of said papermaking belt, and to remove water from said embryonic web through said conduits, and rearrange said papermaking fibers in said embryonic web to form an intermediate web from said papermaking fibers under such conditions that said deflecting is initiated no later than the initiation of the water removal from the embryonic web;
(e) impressing said paper side network into said intermediate web by interposing said intermediate web between said papermaking belt and an impression surface to form an imprinted web of papermaking fibers; and
(f) drying said imprinted web.

5,364,505

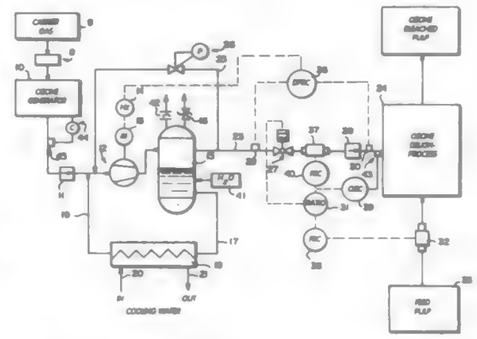
PRESSURIZED OZONE PULP DELIGNIFICATION REACTOR AND A COMPRESSOR FOR SUPPLYING OZONE TO THE REACTOR

Erwin D. Funk, Glens Falls, N.Y.; Kaj Henricson, Kotka, Finland, and Stephen J. Dunn, Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Filed Dec. 7, 1992, Ser. No. 989,932
Int. Cl.[5] D21C *7/12, 9/153*
U.S. Cl. 162—238 **23 Claims**

1. Apparatus for effecting ozone delignification of cellulose pulp, comprising:
a source of ozone gas in carrier gas;
a reactor for combining ozone in carrier gas, under superatmospheric pressure, with cellulose pulp to effect delignification of the pump with ozone;
a water ring compressor connected between said source and said reactor, for compressing the ozone and carrier gas and supplying the compressed ozone containing gas to said reactor;
means for sensing the pressure between the compressor and the reactor; and
speed control means for controlling the speed of said water ring compressor in response to said sensing means so that said compressor compresses as much ozone per unit time

at desired superatmospheric pressure as said reaction utilizes, which essentially no excess, and so that said superatmospheric pressure is maintained above the pressure in the reactor.

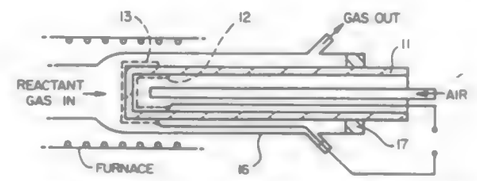


5,364,506

METHOD AND APPARATUS FOR PARTIAL OXIDATION OF METHANE AND COGENERATION OF ELECTRICAL ENERGY

Turgut M. Gür, Santa Clara County; Henry Wise, San Mateo County, both of Calif., and Robert A. Huggins, Ulm, Germany, assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 28, 1993, Ser. No. 55,231
Int. Cl.[5] C25B *3/02, 5/00, 9/00, 11/04*
U.S. Cl. 204—59 R **9 Claims**



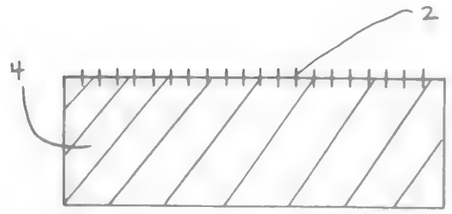
4. The method of simultaneously generating electrical energy and partially oxidizing methane to produce chemical products in a reactor cell having a first cathode electrode and a second perovskite-type catalytic anode electrode having wide oxygen nonstoichiometry in electrical contact with an oxygen ion conducting solid electrolyte, the steps of
contacting said first electrode with a source of oxygen to form oxygen ions which are conducted from the first electrode to the second electrode to generate an electrical potential,
chemically diffusing oxygen formed at the interface between the oxygen ion conducting electrode and the perovskite electrode through the perovskite electrode, and
contacting said second electrode with methane to thereby partially oxidize said methane and produce chemicals.

5,364,507

PROCESS FOR THE PRODUCTION OF PERFLUOROALKYLSULPHONYL FLUORIDES AND ELECTRODES FOR PERFORMANCE OF THE PROCESS

Andreas Bulan, Langenfeld; Rainer Weber, Odenthal; Zbigniew Muziol, Cologne; Hartmut Schlecker, and Hans-Heinrich Moretto, both of Leverkusen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Aug. 2, 1993, Ser. No. 100,241
Claims priority, application Germany, Aug. 13, 1992, 4226758
Int. Cl.[5] C25B *3/08*
U.S. Cl. 204—59 F **9 Claims**



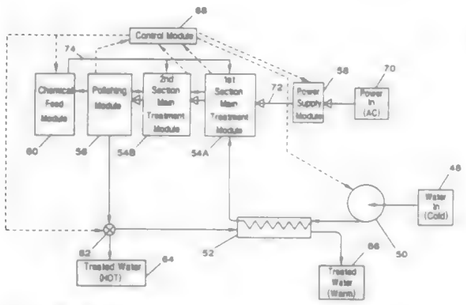
1. Process for the production of perfluoroalkylsulphonyl fluorides of the formula $C_nF_{2n+1}SO_2F$ with n=6−10 by electrochemical fluorination of alkylsulphonyl halides of the formula $C_nH_{2+1}SO_2X$ with n=6−10 and with X=F, Cl, Br or I in hydrogen fluoride, wherein electrodes are used which consist of nickel with a columnar structure or which are coated with nickel with a columnar structure.

5,364,508

ELECTROCHEMICAL METHOD AND DEVICE FOR GENERATING HYDROXYL FREE RADICALS AND OXIDIZING CHEMICAL SUBSTANCES DISSOLVED IN WATER

Oleh Weres, P.O. Box 116, Vineburg, Calif. 95487, and Michael R. Hoffmann, 1625 Laurel St., South Pasadena, Calif. 91030

Continuation-in-part of Ser. No. 975,059, Nov. 12, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 213,980
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—128 **20 Claims**



1. A method for producing hydroxyl free radicals, comprising the steps of:

(a) providing an electrochemical cell including at least one cathode and at least one anode, wherein said anode having a surface and including a surface part and an internal part, wherein said surface part has a semiconducting metal oxide composition,

wherein said anode has adequate resistance to corrosion when said anode is utilized in said method, and wherein said semiconducting metal oxide composition includes an additive metal

wherein at least part of said additive metal is in an oxidation state which n-dopes said semiconducting metal oxide composition, and

wherein mole fraction of said additive metal in said oxidation state relative to total metal in said semiconducting metal oxide composition is sufficient to impart conductivity to said semiconducting metal oxide composition adequate for operation of said method, and

wherein said semiconducting metal oxide composition does not favor the generation of oxygen at said surface of said anode when said anode is utilized in said method, and

(b) contacting said anode and cathode with an electrically conductive aqueous medium having a pH value,

wherein said pH value is not less than 2, and

wherein said pH value is not greater than 11.5, and

(c) polarizing said anode to an anode potential

wherein said anode potential is not less than 3.06−0.00247 T−0.0001984 pH T relative to the normal hydrogen electrode, and

wherein said anode potential is not more than 6.2−0.0001984 pH T relative to the normal hydrogen electrode,

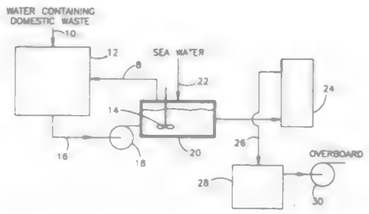
thereby inducing a useful current density at said surface of said anode and producing hydroxyl free radical.

5,364,509

WASTEWATER TREATMENT

Jospeh J. Dietrich, Painesville, Ohio, assignor to Eltech Systems Corporation, Chardon, Ohio

Filed Jan. 21, 1993, Ser. No. 7,296
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—149 **9 Claims**



1. A method for the on-site treatment at a marine location of domestic waste, said waste containing suspended solids in liquid media, comprising the steps of:

(a) macerating said domestic waste on site for reducing the particle size of solids in such liquid media;

(b) mixing a salt-containing substance on site with said domestic waste forming a reaction mixture;

(c) introducing at said marine location said reaction mixture into an electrolyzer, said electrolyzer comprising:

(i) a reaction chamber containing said reaction mixture;

(ii) an anode in said reaction chamber;

(iii) a cathode in said reaction chamber;

(iv) means for passing a direct current between said anode and said cathode;

(v) said anode comprising an electro-chemically active coating top coated with a tin dioxide surface coating, said electrolyzer generating oxygenated species and hypochlorite; and

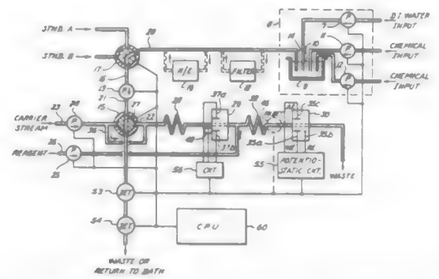
(d) passing treated reaction mixture on site from said electrolyzer to a holding tank, such sequence compared to the same treatment using a control cell having an anode with an electrochemically reactive coating of tantalum oxide and iridium oxide, achieving a reduction in BOD of at least about 30%, and a reduction in total suspended solids of at least about 30%.

5,364,510

SCHEME FOR BATH CHEMISTRY MEASUREMENT AND CONTROL FOR IMPROVED SEMICONDUCTOR WET PROCESSING

Ronald A. Carpio, Austin, Tex., assignor to Sematech, Inc., Austin, Tex.

Filed Feb. 12, 1993, Ser. No. 17,224
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 **11 Claims**



1. A method for monitoring concentration levels of hydrogen peroxide (H_2O_2) and a chemical specie, which is either an acid or a base, in a multi-component aqueous bath utilized in semiconductor processing, in order to provide automated feedback to control an amount of said H_2O_2 and said chemical specie present in said bath comprising the steps of:

sampling said bath to obtain a solution sample;

mixing a set volume of said sample with a diluting agent in order to provide a diluted sample;

performing a conductivity detection of said diluted sample to measure concentration of said chemical specie in said diluted sample;

performing an amperometric detection of said diluted sample to measure concentration of said H_2O_2 said diluted sample;

analyzing concentration measurements of said diluted sample by use of a processor to determine if said H_2O_2 and said chemical specie in said bath are within desired concentration levels;

introducing additional H_2O_2, chemical specie, other compensating chemical or diluting agent into said bath under control of said processor to adjust said bath to within said desired concentration levels, if adjustment is needed;

wherein said bath is monitored and automatically compensated by said processor to maintain said desired concentration levels of H_2O_2 and chemical specie in said bath.

5,364,511

CATHODIC PROTECTION SYSTEM AND A COATING AND COATING COMPOSITION THEREFOR

Peter J. Moreland, Frodsham, England, and Frans L. Jozef de Peuter, Mol, , assignors to Zeneca Limited, London, England

Filed Jul. 21, 1993, Ser. No. 94,291
Claims priority, application United Kingdom, Jul. 21, 1992, 9215502
Int. Cl.[5] G23F *13/00*
U.S. Cl. 204—196 **10 Claims**

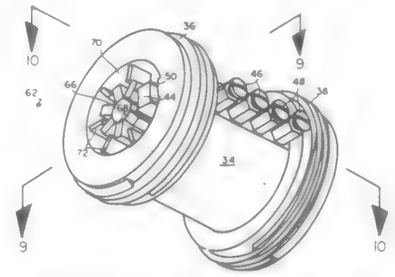
1. Cathodic protection system for the cathodic protection of a reinforced concrete structure, which system comprises a concrete structure containing steel reinforcement bars and an electrically-conductive coating bonded to an external surface of and in electrical contact with the structure, and wherein said electrically conductive coating is a non-cementitious coating comprising a matrix of an organic polymer containing electrical conductivity - providing particles of carbon coated with a conductive metal of a type possessing a natural passive oxide film which is itself electrically conductive, and an alkaline buffer material or a mixture thereof which functions to inhibit or prevent the build up of acidity in the coating when the cathodic protection system is in operation.

5,364,512

ELECTROCHEMICAL IONIZATION APPARATUS SYSTEM FOR PURIFYING WATER

Floyd Earl, Bedford, Mass., assignor to Pure The Ionizer Inc., North Chelmsford, Mass.

Filed Oct. 15, 1992, Ser. No. 961,462
Int. Cl.[5] C25B *15/00;* **C02F** *1/461*
U.S. Cl. 204—228 **19 Claims**



1. An ion-generation chamber apparatus for the generation of metallic ions in water for purification purposes, which apparatus comprises:

a) a housing having an inner and outer surface composed of electrically insulating material and having an inlet for the introduction of water to be purified and an outlet aligned with the inlet for the withdrawal of purified water;

b) a first outer tubular electrode composed of a metal material within the housing and spaced apart from the inner surface of the housing, the first electrode having a plurality of generally uniformly spaced apart, inwardly extending radial rib elements;

c) a second inner tubular electrode within the outer electrode and concentrically spaced apart therefrom, composed of a metal material, the second electrode having a plurality of generally uniformly spaced apart, outwardly extending radial rib elements and positioned generally between the inwardly extending rib elements of the first electrode, both electrodes capable of serving as an anode or a cathode to generate metallic ions to purify water;

d) insulating and interlocking means extending between the inner and outer electrodes to insulate the spaced apart first and second electrodes from each other, and to interlock the first and second electrodes together into the housing;

e) means to secure the first and second electrodes and the intervening insulating and interlocking means within the housing; and

f) electrical connector means to provide for electrical connections between the first and second electrodes to the outside of the housing, the said connector means adapted to be connected to a power supply to provide an anode electrode and a cathode electrode within the housing.

5,364,513

ELECTROCHEMICAL CELL COMPONENT OR OTHER MATERIAL HAVING OXIDATION PREVENTIVE COATING

Jainagesh A. Sekhar, Cincinnati, Ohio, and Vittorio de Nora, Nassau, Bahamas, assignors to Moltech Invent S.A., Luxembourg

Filed Jun. 12, 1992, Ser. No. 898,052
Int. Cl.[5] C25C *3/08, 3/16;* **B05D** *5/12, 1/36*
U.S. Cl. 204—243 R **47 Claims**

1. A body of carbonaceous material for use in corrosive environments such as oxidising media or gaseous or liquid corrosive agents at elevated temperatures, coated with a non-glassy protective surface coating which improves the resistance of the body to oxidation or corrosion and which may also enhance the body's electrical conductivity and/or its electrochemical activity, the protective coating being applied from a colloidal slurry containing particulate reactant or non-reactant, said slurry forming said non-glassy protective coating by reaction sintering and/or sintering without reaction when the body is heated to a sufficiently elevated temperature.

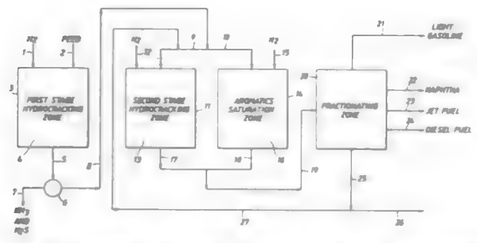
20. The coated body of claim 1, which is a component of an electrochemical cell for molten salt electrolysis which component in use is exposed to a corrosive atmosphere, or to a molten salt electrolyte and/or to a product of electrolysis in the cell, the component comprising a substrate of carbonaceous material coated with a non-glassy protective surface coating which improves the resistance of the component to oxidation or corrosion and which may also enhance the electrical conductivity and/or electrochemical activity, the protective coating being applied from a colloidal slurry containing particulate reactant or nonreactant substance, or a mixture of particulate reactant and non-reactant substances, said slurry forming said non-glassy protective coating by reaction sintering and/or sintering without reaction when the component is heated to a sufficiently elevated temperature.

5,364,514

HYDROCARBON CONVERSION PROCESS

Laura J. Sanborn, Sugar Land; Stanley N. Milam, Spring, both of Tex., and Woodrow K. Shiflett, Alta Loma, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 868,611, Apr. 14, 1992, abandoned. This application Apr. 13, 1993, Ser. No. 46,537
Int. Cl.[5] C10G *37/06, 23/04*
U.S. Cl. 208—58 **21 Claims**



1. An integrated process for converting a hydrocarbon feedstock having components boiling above 300° F. into liquid fuel products boiling in the range of from about 80° F. to about 700° F., which process comprises:

a) passing said hydrocarbon feedstock in the presence of a hydrogen source and at least one first stage hydrocracking catalyst through a first stage hydrocracking zone at an elevated temperature and pressure to effect decomposition of organic sulfur and/or nitrogen compounds contained therein with limited cracking of hydrocarbons,

b) passing a portion of the product from said first stage hydrocracking zone to a second stage hydrocracking zone wherein said portion of the product is contacted at elevated pressure and a temperature in the range of from about 400° F. to about 1000° F. with a hydrogen source and at least one second stage hydrocracking catalyst comprising one or more hydrogenating components selected from the group consisting of Group VIB metals, oxides, sulfides, Group VIII metals, oxides, sulfides and mixtures thereof supported on a carrier having hydrocracking activity,

c) passing the remaining portion of said product from said first stage hydrocracking zone to an aromatics saturation zone wherein said remaining portion of the product is contacted at elevated pressure and a temperature in the range of from about 300° F. to about 700° F. with a hydrogen source and an aromatics saturation catalyst comprising one or more Group VIII noble metal hydrogenation components on a support selected from an amorphous support and a zeolitic support,

d) passing the products from said second stage hydrocracking zone and said aromatics saturation zone to one or more fractionating zones wherein said products are separated into a tops fraction and a bottoms fraction, and

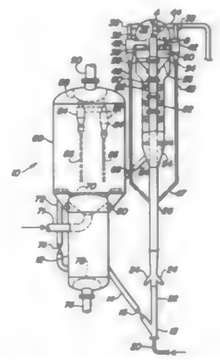
e) recovering liquid fuel products boiling in the range of from about 80° F. to about 700° F. from the tops fraction.

5,364,515

FLUIDIZED CATALYTIC CRACKING OF HYDROCARBONS UTILIZING A VENTED RISER

David A. Lomas, Barrington; Paul A. Sechrist, Des Plaines, and Edward C. Haun, Glendale Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 785,956, Oct. 31, 1991, Pat. No. 5,182,085, which is a division of Ser. No. 524,525, May 17, 1990, Pat. No. 5,104,517. This application Jan. 25, 1993, Ser. No. 8,274
Int. Cl.[5] C10G *11/18*
U.S. Cl. 208—113 **14 Claims**



1. A process for the fluidized catalytic cracking (FCC) of an FCC feedstock, said process comprising:

a) passing said FCC feedstock and regenerated catalyst particles to a reactor riser and transporting said catalyst and feedstock upwardly through said riser thereby converting said feedstock to a gaseous product stream and producing spent catalyst particles by the deposition of coke on said regenerated catalyst particles;

b) discharging a first mixture of spent catalyst particles and gaseous products directly into the dilute phase of a reactor vessel in an upward direction from a discharge end of said riser located less than 12 riser diameters below the upper end of said reactor vessel thereby providing an initial separation of the spent catalyst from the gaseous products;

c) passing separated catalyst downward through said vessel;

d) maintaining said separated catalyst in said reactor vessel as a dense catalyst bed and passing a stripping gas upward through the reactor vessel;

e) maintaining the upper surface of said dense catalyst bed below said riser outlet end;

f) passing said spent catalyst downwardly through said reactor vessel into a first stripping zone and contacting said spent catalyst with said stripping gas;

g) passing spent catalyst from said stripping zone into a regeneration zone and contacting said spent catalyst with a regeneration gas in said regeneration zone to combust coke from said catalyst particles and produce regenerated catalyst particles for transfer to said reactor riser; and,

h) withdrawing a second mixture of gaseous products, stripping fluid, and spent catalyst particles from said reactor vessel through a collector located in said reactor vessel above said dense catalyst bed about the periphery of the outlet end of the riser and transferring said mixture to a particle separator located outside of the reactor vessel, separating gaseous components from said spent catalyst in said separator, and returning spent catalyst from said separator directly to at least one of said reactor riser or a second stripping zone.

5,364,516

CATALYTIC CRACKING CATALYSTS AND ADDITIVES

Ranjit Kumar, Columbia; Ronald E. Ritter, Ellicott City, and Howard J. Schaeffer, III, Baltimore, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 928,391, Aug. 12, 1992, Pat. No. 5,248,642, which is a continuation-in-part of Ser. No. 877,568, May 1, 1992, abandoned. This application Jun. 21, 1993, Ser. No. 78,332
Int. Cl.[5] C10G *11/05*
U.S. Cl. 208—120 **8 Claims**

1. A method for the catalytic cracking of hydrocarbons which comprises reacting a vanadium-containing hydrocarbon under catalytic cracking conditions in the presence of a catalyst comprising a zeolite/molecular sieve-containing cracking catalyst admixed with discrete particles of a rare-earth compound selected from the group consisting of a rare-earth oxide, oxychloride and mixtures thereof dispersed in an acid reacted metakaolin matrix.

5,364,517

PEROVSKITE-SPINEL FCC NO_x REDUCTION ADDITIVE

Gunther H. Dieckmann, Concord, and Elena Q. Labrador, Richmond, both of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Feb. 19, 1993, Ser. No. 19,732
Int. Cl.[5] C10G *11/04*
U.S. Cl. 208—121 **30 Claims**

1. A process for reducing the NOx content of an FCC regenerator flue gas comprising contacting said flue gas at FCC regeneration conditions with an effective amount of an NOx reducing additive comprising:

(a) a copper-contaiing perovskite having the general formula $LnCu_xMn_{1-x}O_3$, wherein "Ln" represents at least one element selected from the group consisting of lanthanum, cerium, neodymium, and praseodymium, and wherein "x" has a value of at most about 0.6;

(b) a spinel containing at least one Group IIA element and at least one Group IIIA element; and

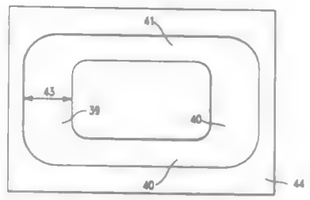
(c) at most about 10 weight percent of a stabilization component distinct from the perovskite and the spinel and comprising an element or compound thereof selected from the group consisting of copper, zinc and mixtures thereof.

5,364,518

MAGNETRON CATHODE FOR A ROTATING TARGET

Klaus Hartig, Brighton, Mich.; Anton Dietrich, Liechtenstein, and Joachim Szczyrbowski, Goldbach, both of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Germany

Continuation-in-part of Ser. No. 744,280, Aug. 13, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,960
Claims priority, application Germany, May 28, 1991, 4117367
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.22 **6 Claims**



1. Apparatus for coating a substrate, comprising

a tubular cathode on which a tubular target is fixed, said cathode being rotatable about a central axis,

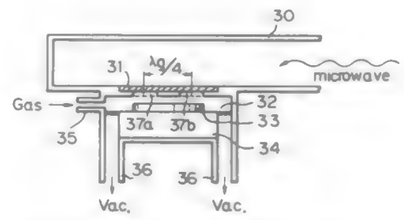
magnet means arranged inside said cathode to form an arcuate magnetic field which encloses a racetrack shaped plasma over said target, said plasma having two straight stretches parallel to said axis and two end stretches connecting said straight stretches, said magnet means being arranged to shape said magnetic field over said end stretches so that said plasma is wider in said end stretches than in said straight stretches.

5,364,519

MICROWAVE PLASMA PROCESSING PROCESS AND APPARATUS

Shuzo Fujimura, Tokyo; Toshimasa Kisa, Kawasaki, and Yasunari Motoki, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 604,343, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 532,234, Jun. 4, 1990, abandoned, which is a continuation of Ser. No. 416,002, Oct. 2, 1989, abandoned, which is a continuation of Ser. No. 150,446, Feb. 1, 1988, abandoned, which is a continuation of Ser. No. 16,513, Feb. 17, 1987, abandoned, which is a continuation of Ser. No. 802,332, Nov. 27, 1985, abandoned. This application Apr. 30, 1993, Ser. No. 54,609
Claims priority, application Japan, Nov. 30, 1984, 59-252909
Int. Cl.[5] C23C *16/50;* **H01L** *21/00*
U.S. Cl. 204—298.38 **1 Claim**



1. A microwave plasma processing apparatus for processing a material, comprising:

a reaction gas source for supplying a reaction gas;

a microwave generator generating microwaves having a wavelength λ;

a waveguide, connected with said microwave generator, having a rectangular prism shape with a longitudinal axis and side-walls extending in parallel to the longitudinal axis, said waveguide receiving the microwaves propagat-

ing in a first direction parallel to the side-walls and for transferring the microwaves along the longitudinal axis of said waveguide;

a dielectric window, formed of at least two rectangular elements parallel to each other, superposed over an opening in a first side-wall of said waveguide, for transmitting the microwaves therethrough to an exterior surface thereof, the distance between the two rectangular elements being $\lambda g/4$, where λg is a wavelength of the microwaves in the waveguide;

a plasma processing chamber connected to said reaction gas source and formed adjacent to the first side-wall of said waveguide to entirely enclose the exterior surface of said dielectric window, said plasma processing chamber offset on the exterior of said waveguide from the first side-wall of said waveguide in a second direction perpendicular to the longitudinal axis of said waveguide, said plasma processing chamber receiving the microwaves transmitted through said dielectric window and the reaction gas supplied from said reaction gas source to generate plasma therein; and

a stage for holding the material to be processed thereon, said stage disposed in said plasma processing chamber with a top surface of said stage substantially in parallel with said dielectric window.

5,364,520

CAPILLARY COLUMN PACKED WITH GLUCOMANNAN GEL FOR CAPILLARY ELECTROPHORESIS AND METHODS FOR MAKING AND USING SAME

Tsuneo Okuyama, Kanagawa; Tomonori Izumi, and Masato Yamaguchi, both of Tokyo, all of Japan, assignors to Kurita Water Industries, Ltd., Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 987,758
Claims priority, application Japan, Dec. 10, 1991, 3-350146
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **11 Claims**

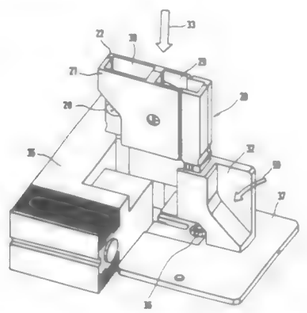
1. In a gel-packed capillary column adapted for capillary electrophoresis, the improvement wherein the column is packed with a glucomannan gel.

5,364,521

APPARATUS FOR PERFORMING CAPILLARY ELECTROPHORESIS

Hans-Peter Zimmermann, Karlsbad, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1993, Ser. No. 83,731
Claims priority, application European Pat. Off., Aug. 4, 1992, 92113244.5
Int. Cl.[5] B01D *61/42*
U.S. Cl. 204—299 R **12 Claims**



1. An apparatus for performing capillary electrophoresis, comprising:

a removable cassette including a capillary, the capillary having an inlet end and an outlet end, with the inlet end and the outlet end projecting from the cassette,

a housing for receiving the cassette to enable electrophoresis action through said capillary,

said housing including a sealing arrangement for forming a seal around an end of the capillary when the cassette is inserted in the housing, said housing further including positioning means for enabling said cassette to cause engagement between said end of the capillary and said sealing arrangement, said sealing arrangement actuated to provide a seal between said end of the capillary and said housing when said cassette is in a final position of said engagement.

5,364,522

BORIDE, CARBIDE, NITRIDE, OXYNITRIDE, AND SILICIDE INFILTRATED ELECTROCHEMICAL CERAMIC FILMS AND COATINGS AND THE METHOD OF FORMING SUCH

Liang Wang, 5129 Maddox Rd., Tallahassee, Fla. 32303

Filed Mar. 22, 1993, Ser. No. 35,424
Int. Cl.[5] C25D *5/50, 3/02*
U.S. Cl. 205—50 **24 Claims**

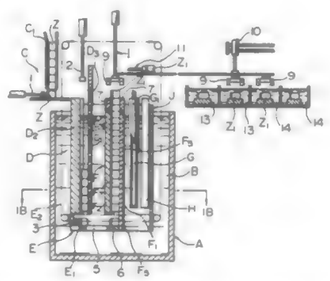
1. A method for forming on a conductive substrate, a single-layered or multi-layered ceramic coating that is infiltrated with at least one of the compounds selected from the group consisting of boride, carbide, nitride, oxynitride, silicide, and a mixture thereof, in which the method comprises: (A) immersing said substrate serving as an anode and a counter electrode serving as a cathode in a bath medium containing at least one of the ionic species to form a ceramic precursor; (B) forming said ceramic precursor on the surface of said substrate by supplying a constant or an amplitude-modulated electric voltage having a direct current component to said substrate serving as an anode and said counter electrode serving as a cathode; and (C) heating said ceramic precursor on said substrate by heating means in a medium containing at least one of the compounds selected from the group consisting of boron-containing compounds, carbon-containing compounds, ammonia, amines, urea, silicon-containing compounds, and a mixture thereof.

5,364,523

METHOD OF ELECTROPLATING HALF SLIDING BEARINGS

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Motomu Wada, Owariasahi; Takayoshi Sasaki, Tajimi, and Masaki Tanimoto, Gifu, all of Japan, assignors to Daido Metal Company, Ltd., Nagoya, Japan

Continuation of Ser. No. 667,905, Mar. 12, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 75,341
Claims priority, application Japan, Mar. 16, 1990, 2-065691
Int. Cl.[5] C25D *5/12, 7/10*
U.S. Cl. 205—128 **11 Claims**



1. A process for electrodepositing a metallic layer on half sliding bearings in an electroplating tank comprising,

introducing the half sliding bearings into the electroplating tank separately from a position above the electroplating tank,

passing the half sliding bearings through the electroplating tank wherein the half sliding bearings are moved step-wise downwards by means of a first vertical conveyor, passed on from the first vertical conveyor to a horizontal conveyor which passes the half sliding bearings to a second vertical conveyor, and conveying the half sliding bearings upwards by means of the second vertical conveyor, and

removing the half sliding bearings from the electroplating tank,

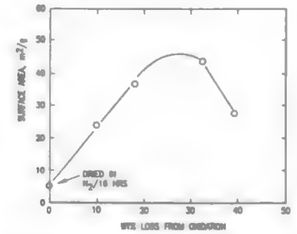
wherein the electrodeposition of the metallic layer is carried out while the half sliding bearings are moved vertically in at least one of the two vertical conveyors on a sliding plate on which the half sliding bearings are arranged in mutual contact with one another and connected to a cathode.

5,364,524

PROCESS FOR TREATING HEAVY OIL

Randall D. Partridge, W. Trenton, and Lillian A. Rankel, Princeton, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 728,663, Jul. 11, 1991, abandoned, and a continuation-in-part of Ser. No. 747,829, Aug. 21, 1991, abandoned. This application Jun. 24, 1992, Ser. No. 903,391
Int. Cl.[5] C10G *45/00, 45/04*
U.S. Cl. 208—251 H **21 Claims**



1. A process for hydrotreating a hydrocarbon oil feedstock, said process comprising hydrotreating said feedstock at a temperature of from about 500° F. to about 1200° F., a pressure of from about 0 psig to about 4000 psig, and a space velocity of from about 0.1 to about 10 hr^{-1} WHSV in the presence of a carbon-reactive oxidant and a catalyst composition comprising activated carbon possessing a pore volume in the 100 A to 400 A pore diameter range of at least about 0.08 cc/g and an average pore diameter of from about 15 A to about 100 A, wherein said oxidant reacts with the activated carbon to form at least 1% additional carbon surface area during said hydrotreating.

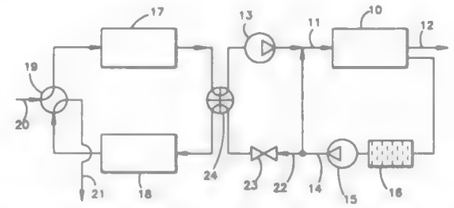
5,364,525

DEVICE FOR PURIFYING WATER

Peter Hagqvist, Älvsjö ; Per Fonser, Stockholm, and Fredrik Dellby, Enskede, all of Sweden, assignors to Aktiebolaget Electrolux, Sweden

Filed Oct. 29, 1992, Ser. No. 953,549
Claims priority, application Sweden, Oct. 31, 1991, 9103196-3
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—190 **4 Claims**

1. Device for purifying water by means of reverse osmosis, said device comprising a raw water inlet (**20**), a filter unit (**10**) containing an osmotic membrane and having an inlet (**11**) for water to be filtered, a filtrate outlet (**12**) for purified water, and a return conduit (**14**) for unfiltered water and having a reject outlet (**22**) whereby a relatively large flow is returned to the inlet and a small flow is discharged from said reject outlet, said device further comprising two ion exchange units (**17, 18**) arranged in parallel and Connected to the filter unit (**10**) in such a way that said raw water entering the device is first passed through one of said ion exchange units to be softened, and that said flow discharged via the reject outlet (**22**) is passed in an opposite direction through the other of said ion exchange



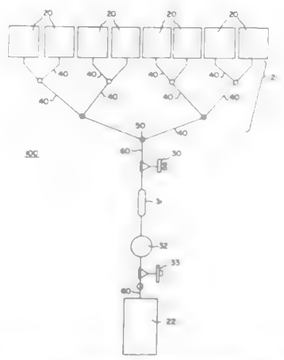
units to regenerate the same, and valve means (**19, 24**) for alternately shifting the ion exchange units between functions of softening and regeneration.

5,364,526

SYSTEM FOR PROCESSING SEPARATE CONTAINERS OF BIOLOGICAL FLUID

Vlado I. Matkovich, Glen Cove; Thomas J. Bormann, Melville; Thomas C. Gsell, and Frank R. Pascale, both of Glen Cove, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 795,480, Nov. 21, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,033
Int. Cl.[5] B01D *36/00, 61/00*
U.S. Cl. 210—206 **8 Claims**



1. A system for processing biological fluid comprising:

a pooling assembly;

a plurality of biological fluid source containers in fluid communication with the pooling assembly;

a receiving container in fluid communication with the pooling assembly; and

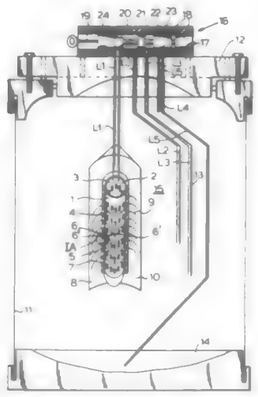
a leucocyte depletion assembly and a gas inlet interposed between the biological fluid source containers and the receiving container.

5,364,527

APPARATUS AND PROCESS FOR TREATING WATER

Heinz Zimmermann, Am Park 22, D-4156 Willich, and Hans J. M. Manteuffel, Am alten Broich 213A, Langenfeld, both of Germany

Continuation-in-part of Ser. No. 717,017, Jun. 18, 1991, Pat. No. 5,183,565. This application Dec. 1, 1992, Ser. No. 984,297
Claims priority, application Germany, Jun. 20, 1990, 4019580
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—243 **17 Claims**



16. A method for operating an apparatus for purifying a liquid comprising:

an elongated container having an inner peripheral wall;

a tube formed with a perforated periphery and provided with an anode mounted on said tube in said container;

a layer of ion exchange material in said container spaced radially outwardly from said anode, and

a cathode spaced radially outwardly from said layer in said container, said cathode forming an outer space with said container and a treatment chamber with said layer, said chambers being in a flow communication with each other; said method comprising the steps of: (a) selectively: (a_1) introducing said liquid into said tube, treating thereby the liquid by exchanging calcium ions precipitated on said layer for hydrogen ions upon circulating said liquid between said chambers and extracting the liquid from said container, (a_2) introducing the liquid into said tube and into said outer space, treating thereby said liquid and extracting the liquid from said container, and (a_3) introducing said liquid into said outer space, treating thereby said liquid and extracting the liquid from said container; (b) thereafter interrupting introducing of the liquid into said outer space; and (c) thereafter applying an electric field to said anode and cathode, regenerating thereby said layer by displacing calcium ions in said layer with hydrogen ions migrating from said anode to said cathode in said field.

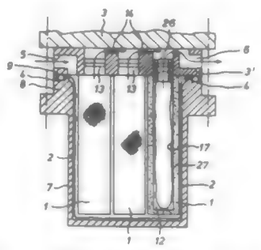
5,364,528

FILTER APPARATUS INCLUDING FILTER CARTRIDGES AND AN INPERMEABLE FILM BAG

Lothar Schwarz, Oberkirch, and Guenther Kuntz, Munich, both of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Filed Feb. 11, 1993, Ser. No. 16,278
Claims priority, application Germany, Feb. 14, 1992, 4204354
Int. Cl.[5] B01D *29/52*
U.S. Cl. 210—323.2 **12 Claims**

1. A filter apparatus for the filtration of liquids or dispersions, having a filter housing with a flange at its upper end, a filter cover, having filter cartridges suspended from the cover, having a media-impermeable film bag which is open at its upper end, the length and width of which are greater than the corresponding dimension of the filter housing and which surrounds the filter cartridges and bears at least indirectly against the filter housing, having a feed nozzle for the liquid, which communicates with the interior of the film bag and having a



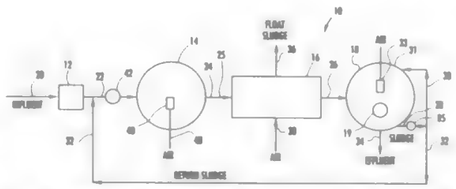
discharge nozzle extending outward from the interior of the filter cartridges, wherein the upper open end of the film bag is connected to an O-ring, which is seated on an annular recess of the upper flange of the filter housing, which is firmly connected to the cover by screwing, the diameter of the O-ring being equal to the diameter of the film bag, and compressible volume displacers being arranged in the inner space of the filter cartridges.

5,364,529

WASTEWATER TREATMENT SYSTEM

Raymond N. Morin, and Michael J. Weir, both of West Bend, Wis., assignors to Level Valley Dairy Company, West Bend, Wis.

Continuation-in-part of Ser. No. 694,982, May 1, 1991, abandoned. This application Dec. 18, 1992, Ser. No. 993,714
Int. Cl.[5] C02F *3/20*
U.S. Cl. 210—608 **59 Claims**



29. A method of treating a contaminated wastewater to provide a treated wastewater, which has a substantially lower concentration of suspended solids and substantially lower BOD than the contaminated wastewater, said method comprising passing the contaminated wastewater into a wastewater treatment apparatus, said apparatus comprising: a first chamber, a float-sludge-separating means, a float-sludge-removing means, a second chamber, an activated-sludge-separating means, a first activated-sludge-return means; a second activated-sludge-return means; and a fluid discharging means;

said first chamber (i) wherein wastewater from a wastewater source is received, (ii) and wherein fluid that enters said first chamber for a first detention period is detained, (iii) comprising a first aerating means for aerating fluid in said first chamber, and (iv) holding a first aerobic culture of a first biological oxidizing means, said first culture employing constituents of wastewater received into said first chamber as nutrients and receiving as seed microorganisms in activated sludge returned to said first chamber via said first activated-sludge-return means from said activated-sludge-separating means;

said float-sludge-separating means receiving said first aerobic culture from said first chamber and comprising (i) means for combining a flocculating polymer with first aerobic culture received into said float-sludge-separating means, and (ii) a second aerating means for aerating fluid in said float-sludge-separating means and for providing air bubbles for separation of a float sludge from said combination of first aerobic culture and said flocculating polymer in said float-sludge-separating means, with the production of said float sludge from said combination, leaving a first effluent;

said float-sludge-removing means being a means for removing said float sludge from said float-sludge-separating means to outside the apparatus;

said second chamber (i) wherein said first effluent from said float-sludge-separating means is received, (ii) and wherein fluid that enters said second chamber for a second detention period is detained, (iii) comprising a third aerating means for aerating fluid in said second chamber, and (iv) holding a second aerobic culture of a second biological oxidizing means, said second culture employing constituents of said first effluent received into said second chamber as nutrients and receiving as seed microorganisms in activated sludge returned to said second chamber via said second activated-sludge-return means from said activated-sludge-separating means;

said activated-sludge-separating means receiving said second aerobic culture from said second chamber, said activated sludge formed from separation in said activated-sludge-separating means by settling from said second aerobic culture in said activated-sludge-separating means, leaving a second effluent;

said first return means being a means for returning a first portion of the activated sludge from said activated-sludge-separating means to said first chamber to provide microorganisms as seed for said first aerobic culture in said first chamber;

said second return means being a means for returning a second portion of the activated sludge from said activated-sludge-separating means to said second chamber to provide microorganisms as seed for said second aerobic culture in said second chamber; and

said fluid discharging means being a means for discharging at least a portion of said second effluent from said activated-sludge-separating means to outside the apparatus, said second effluent so discharged to outside the apparatus being the treated wastewater.

5,364,530

PROCESS FOR THE BIOLOGICAL PURIFICATION OF SEWAGE

Edward S. Gaddis, Clausthal-Zellerfeld, Germany, assignor to Otto Oeko-Tech GmbH & Co. KG, Cologne, Germany

Continuation of Ser. No. 830,982, Feb. 4, 1992, abandoned, which is a continuation of Ser. No. 437,798, Nov. 17, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 163,198
Claims priority, application Germany, Nov. 17, 1988, 3838846
Int. Cl.[5] C02F *3/22*
U.S. Cl. 210—621 **9 Claims**

1. A process for the biological purification of sewage containing dissolved pollutants in an essentially vertically extending reactor tank, the process comprising:

conducting sewage and air to first and second identically designed nozzles;

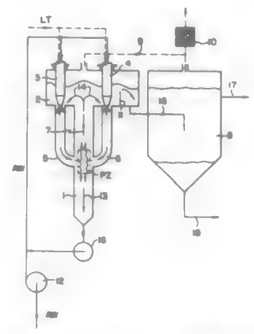
dispersing the air on account of the shearing field of the sewage at outlet openings of the nozzles;

introducing the sewage and air under pressure as a two-substance mixture stream from the outlet opening of each of the first and second parallel nozzles into a first end of first and second generally vertical conduits, respectively, each conduit having a second end connected to the reactor tank, the two-substance mixture streams of the first and second nozzles being almost uniform;

entraining gas bubbles produced with the sewage;

conducting the two-substance mixture streams through the first and second conduits and introducing the streams at the second ends of the conduits into the reactor tank such that the streams impact each other, in an impact zone which is central in the reactor tank;

further dispersing the gas bubbles such that increased substance exchange takes place;



leading the two-substance flows from the first and second conduits in two opposite directions within the reactor;

keeping a large part of the gas bubbles in the impact zone in suspension and constantly dispersed;

conducting the sewage from the reactor tank into a settling tank.

5,364,531

PROCESS FOR AFFINITY PURIFICATION BY IMMUNOADSORPTION IN NON-AQUEOUS SOLVENT

Gary S. Bignami, Waialua, and Paul G. Grothaus, Mililani, both of Hi., assignors to Hawaii Biotechnology Group, Inc., Aiea, Hi.

Continuation of Ser. No. 532,631, Jun. 1, 1990, abandoned. This application Nov. 10, 1992, Ser. No. 974,338
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 **13 Claims**

3. A method for purifying hydrophobic substances comprising:

contacting a sample mixture comprising a hydrophobic compound of interest, a hydrophobic non-aqueous solvent selected from the group consisting of aliphatic hydrocarbons of from 5 to 18 carbon atoms and halohydrocarbons of from 2 to 6 carbon atoms and capable of dissolving less than 10 volume percent water, less than two volume percent of an aqueous buffer solution at a pH of from about 5 to 10, and less than about 5 mM of a surfactant, wherein said aqueous buffer solution is either (i) of an amount and composition capable of dispersion in said hydrophobic non-aqueous solvent, or (ii) a solvent substantially miscible with said hydrophobic non-aqueous solvent, with a solid-phase bound protein receptor for said compound of interest, whereby said compound of interest becomes specifically bound to said receptor;

separating said solid-phase from said sample mixture; and

releasing said compound of interest from said solid-phase bound receptor.

5,364,532

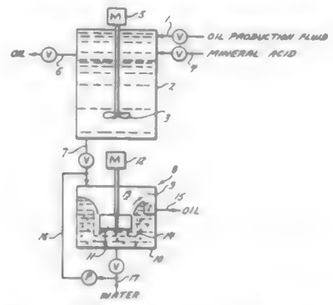
METHOD OF REMOVING WATER SOLUBLE ORGANICS FROM OIL PROCESS WATER

Thomas J. Bellos, St. Louis, and Gregory P. Noelken, St. Peters, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 939,771, Sep. 3, 1992, abandoned. This application Mar. 2, 1993, Ser. No. 25,348

Int. Cl.[5] C02F *1/26;* **B01D** *17/05*

U.S. Cl. 210—639 **17 Claims**



1. A method of removing water soluble organics from oil process water containing cations that form water insoluble salts with phosphoric acid, comprising the steps of

a) adjusting the pH of the water to within the range of about 2–6 by incorporating in the water an organic acid and phosphoric acid in an organic acid to phosphoric acid molar ratio of from about 3:1 to about 1:1, the organic acid being added in an amount sufficient to form water soluble salts with said cations and reduce scale formation in the water, the organic acid being incorporated into the water simultaneously with or prior to the incorporation of the phosphoric acid into the water;

b) thereafter or simultaneously contacting the acidified water intimately with oil with the result that the content of water soluble organics in the water is substantially reduced by migration from the water to the oil; and

c) separating the oil and the water.

5,364,533

PROCESS FOR SEPARATING SERUM AND PLASMA

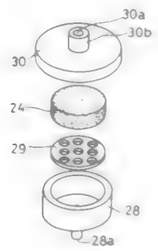
Shinji Ogura; Hiroshi Okada; Shizuo Uno; Takashi Iida; Hiromoto Asai; Masayasu Kurono, and Kiichi Sawai, all of Nagoya, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Nagoya, Japan

Filed Jul. 14, 1992, Ser. No. 913,169

Claims priority, application Japan, Jan. 10, 1992, 4-3215

Int. Cl.[5] B01D *61/00, 39/06*

U.S. Cl. 210—645 **2 Claims**



1. A process for separating and recovering serum and plasma components from a whole blood sample, which comprises passing said whole blood sample through a separating filter formed of a blood cell separating layer composed mainly of fibers impregnated with a coating agent wherein said blood cell separating layer is made up of glass fibers having an average diameter 0.5 to 2.5 μm and said coating agent comprises a polyacrylic ester derivative and polyethylene glycol.

5,364,534

PROCESS AND APPARATUS FOR TREATING WASTE LIQUIDS

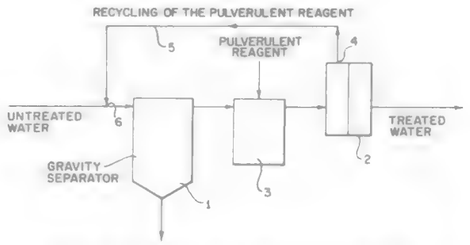
Christophe Anselme, Le Vesinet, and Isabelle Baudin, Nanterre, both of France, assignors to Lyonnaise Des Eaux - Dumez, Nanterre, France

Filed Sep. 30, 1993, Ser. No. 129,387

Claims priority, application France, Oct. 2, 1992, 92 11699

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—650 **7 Claims**



4. A process for purifying water comprising the steps:

performing gravity separation for initially untreated water, having suspended contaminants, thereby clarifying the untreated water;

temporarily containing the clarified water;

introducing a pulverulent reagent into the contained clarified water and mixing with the clarified water;

allowing reagent mixed water to flow along a treatment path;

filtering the flowing reagent mixed water for separating particles therefrom;

tapping a first portion of the filtered water to provide treated water flow;

recycling the remaining treated water, containing partially spent pulverulent reagent, to mix with initially untreated water thereby increasing contact time between the pulverulent reagent and the water being treated; and

completely purging recycled pulverulent reagent from the clarified water.

5,364,535

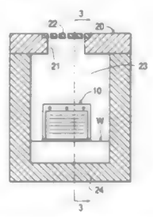
METHOD FOR SEPARATING OILY POLLUTANTS FROM WATER RUNOFF

Charles O. Buckalew, Unit 3A, 302 New Hampshire St., Hollywood, Fla. 33019

Filed Mar. 9, 1992, Ser. No. 848,236

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—671 **8 Claims**



1. A method for removing oily pollutants from storm water runoff from a street or parking area comprising:

(a) receiving the storm water runoff in a basin of a storm sewer system;

(b) attaching to the basin a member made of oily pollutant separating and retaining material, wherein the step of attaching comprises attaching the member of oily pollutant separating and retaining material such that said member floats on the surface of the water in the basin by securing a first end of an attaching device to the basin and by securing a second end of the attaching device to the member of oily pollutant separating and retaining material.

5,364,536

PROCESS AND DEVICE FOR THE MAGNETIC TREATMENT OF A FLUID

Dominique Mercier, Résidence Le Lac 4, rue Georges Millandy -Esc. 1-, 92360- Meudon-la-Foret, France

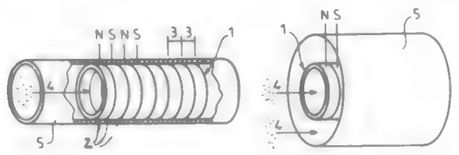
PCT No. PCT/FR90/00733, § 371 Date Apr. 3, 1992, § 102(e) Date Apr. 3, 1992, PCT Pub. No. WO91/05739, PCT Pub. Date May 2, 1991

PCT Filed Oct. 12, 1990, Ser. No. 844,669

Claims priority, application France, Oct. 13, 1989, 89 13386; Apr. 11, 1990, 90 04680

Int. Cl.[5] C02F *1/48*

U.S. Cl. 210—695 **5 Claims**



1. A device for the magnetic treatment of a fluid flowing through a volume comprising:

a cylindrical tube for defining said volume, said tube having a central axis;

a flexible cylindrical sheet means coaxially positioned within said tube having radially inner and outer surfaces, said sheet means including adjacent magnetized bands extending coaxially about said axis, said adjacent bands forming part of said sheet means and being regularly spaced apart from each other and being each of the same width as measured in a direction parallel to said axis;

wherein each of said bands contain a plurality of small magnets polarized in a single direction normal to said inner and outer surfaces of said sheet means, each said band including a cylindrical inner polar face of a first polarity and a cylindrical outer polar face of a second polarity opposite said first polarity, wherein the polarity of the inner polar face of one of said bands is opposite to that of the polarity of the inner polar face an adjacent band and the polarity of the outer polar face of said one band is opposite to that of the polarity of the outer polar face of said adjacent band;

each pair of two adjacent bands being related to each other such that a width of one band of said pair of two adjacent bands is equivalent to a half wavelength, and said one band which is adjacent to the other band is the same width as that of the other band and the width of said one band plus a width of said other band is equivalent to a full wavelength of alternately encountered magnetic fields with a polarity varying periodically, of which the half wave length is equal to the distance between a center point on each said width of each said one or said other of said two adjacent bands of successive bands of opposite polarities when particles are circulated in a fluid relative to said bands whereby relative displacement of the particles with respect to said sheet means subjects said particles to magnetic fields which alternate in time of which the frequency increases with relative speed; and

whereby said fluid when being displaced in relative movement with respect to said sheet means and said magnetized bands provides trajectories of particles in the fluid substantially at right angles to loop lines of force of the fluid, and magnetized fields created by magnetized lines of said adjacent bands of alternate polarities spaced apart from one another by said half wave length which is equal to said width and to the distance between successive N-S poles.

5. A method for magnetically treating a fluid comprising the steps of:

providing the device according to any one of claims 1 to 4;

passing said fluid through said tube and along said sheet means to magnetically treat said fluid.

5,364,537

PROCESS FOR THE OXIDATION OF ORGANIC MICROPOLLUTANTS IN WATER USING THE O_3/H_2O_2 COMBINATION

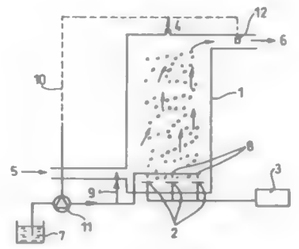
Hervé Paillard, Chatou, France, assignor to OTV (Omnium de Traitements et de Valorisation), Courbevoie, France

Filed Jan. 16, 1992, Ser. No. 821,527

Claims priority, application France, Jan. 16, 1991, 91 00412

Int. Cl.[5] C02F *1/58, 1/78*

U.S. Cl. 210—743 **7 Claims**

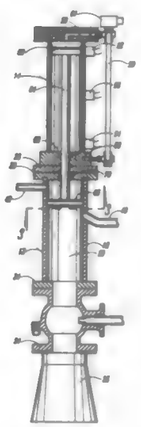


1. In a process for the combined oxidation of atrazine or simazine in polluted water using ozone in pure gaseous form, ozonized air, or ozonized oxygen, and a pure or diluted aqueous hydrogen peroxide solution, the improvement wherein the hydrogen peroxide and ozone are separately injected simultaneously into the water to be treated at substantially the same location of the water to be treated and in a co-current flow direction to the circulation of the water to be treated, at the inlet of an oxidation reactor.

5,364,538

Patent Not Issued For This Number

5,364,539
METHOD AND MEANS FOR SCREENING SOLIDS FROM A LIQUID MEDIUM
Leo L. Castagno, and Christopher L. Hudson, both of Creston, Iowa, assignors to Vanmark Corporation, Creston, Iowa
Filed Feb. 16, 1994, Ser. No. 17,754
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—768 **19 Claims**



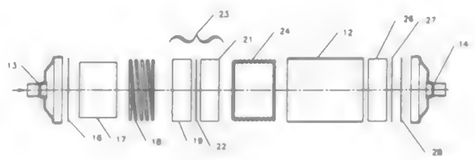
13. A method of screening solids from liquid, comprising: introducing a liquid into a first compartment of a chamber having an inlet, a liquid outlet, and a solid discharge, the liquid containing suspended solids therein; forcing the liquid through a movable filter located in the chamber and into a second compartment of the chamber so as to remove solids from the liquid, the solids remaining in the first compartment of the chamber; moving the filter between first and second positions within the chamber; and releasing liquid from said second compartment through said outlet.

5,364,540
FILTER DRIER AND METHOD OF FILTERING A FLUID STREAM
George J. Sciuto, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Feb. 11, 1993, Ser. No. 16,453
Int. Cl.[5] B01D *27/03;* **F25B** *43/00*
U.S. Cl. 210—806 **10 Claims**

8. A method of filtering and drying fluids of a fluid stream comprising:

passing said fluid stream to be filtered and dried through a first enclosed filtering zone including filter pad means having a preselected density of one pound per cubic feet and extending transversely to said fluid stream in a preselected compressed state of approximately sixty-six (66) percent of the original thickness to remove particulate material above a first preselected micron size of fifty (50) microns from said fluid stream;

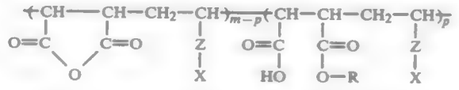
passing said filtered fluid stream through a second enclosed zone including desiccant materials to dry said fluid stream by absorption of moisture, acid and other undesirable contaminants from said fluid stream; and,



passing said filtered and dried fluid stream through a third enclosed zone including filter pad means of similar density as said first filter pad means and extending transversely to said filtered and dried fluid stream in a preselected compressed state of approximately eighty (80) percent of the original thickness to remove particulate material below said first preselected micron size and above a second preselected micron size of twenty (20) microns to include the filtering of loose particulates of said filter pad means in said first zone and desiccant particles of the second zone.

5,364,541
METHOD TO IMPART COFFEE STAIN RESISTANCE TO POLYAMIDE TEXTILE SUBSTRATES
Lidia T. Calcaterra, 1302 S. Walnut; Mathias P. Koljack, 2150 S. Goebbert Rd. Apt. 113, both of Arlington Heights, Ill. 60005; Qamardin Farishta, 100 E. George St., #410, Bensenville, Ill. 60106; Michael G. Koehler, 4330 N. Leavitt St., Chicago, Ill. 60618; William B. Bedwell, 5441 N. East River Rd. Apt. 1511, Chicago, Ill. 60656; Dale A. Hangey, 629 Glenmeadow Rd., Midlothian, Va. 23113, and George D. Green, 2741 Mayfield Dr., Park Ridge, Ill. 60068
Division of Ser. No. 500,813, Mar. 27, 1990, Pat. No. 5,135,774.
This application Jun. 5, 1992, Ser. No. 894,702
Int. Cl.[5] D06M *15/00*
U.S. Cl. 252—8.6 **9 Claims**

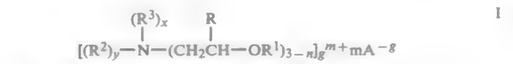
1. A composition useful in imparting coffee stain resistance to textile substrates, said composition comprising a half ester of an aromatic-containing vinyl ether maleic anhydride copolymer, said copolymer having a weight average molecular weight between about 1,200 and 23,000 and the formula



wherein m is 4 to 100, p is 0.5 m to 0.7 m, X is selected from the group consisting of phenyl, naphthyl, and a partially saturated naphthyl ring, R is alkyl and Z is either —O— or —O—CH_2—CH_2—O—.

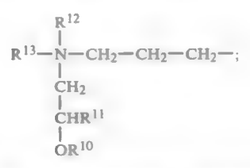
5,364,542
FABRIC SOFTENER RINSING AGENTS
Horst Birkhan, Steinau-Ulmbach; Hans-Juergen Köhle, Schlüchtern; Joachim Welgand, Freigericht, and Winfried Wehner, Neuhof, all of Germany, assignors to Rewo Chemische Werke GmbH, Germany
Continuation of Ser. No. 564,873, Aug. 9, 1990, Pat. No. 5,180,508. This application Aug. 27, 1992, Ser. No. 936,609
Claims priority, application Germany, Aug. 12, 1989, 3926740
Int. Cl.[5] D06M *13/46*
U.S. Cl. 252—8.8 **51 Claims**

1. An aqueous soft rinsing agent comprising as an active ingredient an effective amount of a mixture of two soft-rinsing components, (a) the first component being a quaternary compound of the formula:



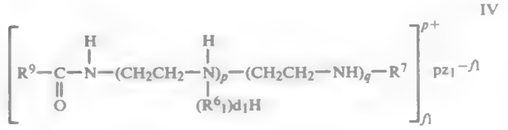
I

wherein
each R is independently hydrogen or alkyl containing 1–6 carbon atoms;
each R^1 is hydrogen or an alkylcarbonyl group containing 15–23 carbon atoms, provided that at least one of R^1 is an alkylcarbonyl group;
each R^3 is an alkyl group containing 1–4 carbon atoms which is unsubstituted or substituted with 1, 2, or 3 hydroxy groups;
each R^2 is an alkyl group containing 1–4 carbon atoms which may be unsubstituted or substituted with 1, 2, or 3 hydroxy groups, or is a group of the formula



II

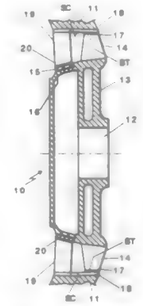
R^{13} is an alkyl group containing 8–22 carbon atoms;
R^{12} is an alkyl group containing 1–4 carbon atoms which is unsubstituted or substituted with 1, 2, or 3 hydroxy groups;
R^{11} is hydrogen or alkyl containing 1–6 carbon atoms;
R^{10} is hydrogen or alkylcarbonyl group containing 14–22 carbon atoms;
A is an anion of a quaternizing agent;
n is 0 or 1;
x and y are independently 0 or 1 with $(x+y)+(3-n)=4$;
m is 1 or 2; and
g is 1, 2 or 3;
and (b) the second component comprising a compound of the formula:



IV

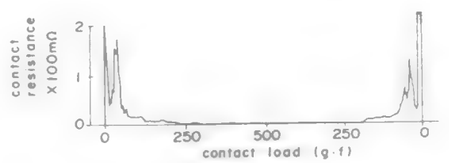
wherein X and Y are independently hydrogen or alkyl containing 1–6 carbon atoms with the proviso that X and Y cannot simultaneously be alkyl;
$R^6{}_1$ is CHX—CHY—O;
R^7 is alkylcarbonyl group containing 14–22 carbon atoms or H;
R^9 is an alkyl group containing 14–22 carbon atoms;
Z_1 is a water-soluble monobasic or polybasic anion;
d_1 is 0–6;
f_1 is 1, 2, or 3;
q is 0 or 1;
p is 1–3; and
p+q is ≧2.

5,364,543
ABRADABLE NON-METALLIC SEAL FOR ROTATING TURBINE ENGINE
Alexander A. Bosna, 135 Summit Rd., Malvern, Pa. 19355, and Louis M. Riccio, 161 Hollow Rd., Malvern, Pa. 19355
Division of Ser. No. 733,559, Jul. 22, 1991, Pat. No. 5,304,032.
This application Jan. 19, 1993, Ser. No. 5,968
The portion of the term of this patent subsequent to Apr. 19, 2011, has been disclaimed.
Int. Cl.[5] C10M *125/28, 125/18*
U.S. Cl. 252—12.2 **5 Claims**



1. An abradable non-metallic gas turbine engine seal for a gas turbine engine having rotating turbine blades and one or more sealing annular rings, comprising, at least one annular ring having the following composition: a high temperature resin, hollow inorganic non-metallic microspheres, fractured hollow non-metallic microspheres, a non-metallic solid lubricant impregnating said resin and a fiber filler enabling said seal to withstand high hoop stresses induced by high rotational speeds in said turbine.

5,364,544
GREASE FOR A SLIDE CONTACT
Sugako Otake; Takeshi Kojima; Michio Aoki, all of Aichi; Eigo Mukasa, Fujisawa, and Kikuo Hosaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan
Continuation of Ser. No. 753,374, Aug. 30, 1991, abandoned.
This application Mar. 9, 1993, Ser. No. 29,962
Claims priority, application Japan, Aug. 31, 1990, 2-232201
Int. Cl.[5] C10M *169/06, 117/02, 125/30*
U.S. Cl. 252—28 **3 Claims**



1. A grease for a slide contact which comprises:
(a) 100 parts by weight of a synthetic base oil, comprising a low viscosity synthetic poly-α-olefin oil having a viscosity of from 8 to 30 cSt (40° C.) as a main ingredient and a high viscosity synthetic poly-α-olefin oil having a viscosity of 470 cSt (40° C.);
(b) 0.1–10 parts by weight of a fine clay particulate having

micropores or a monolayer which intercalates water or anions;

(c) 5–25 parts by weight of a thickener consisting of lithium 12-hydroxy stearate and lithium stearate in a weight ratio of from 20:1 to 5:1; and

(d) 0.1–2.0 parts by weight of a phenolic primary antioxidant.

5,364,545

LUBRICATING OIL COMPOSITION CONTAINING FRICTION MODIFIER AND CORROSION INHIBITOR

Katsuya Arai; Toshikazu Tsukada, both of Ohi, and Hirotaka Tomizawa, Tokorozawa, all of Japan, assignors to Tonen Corporation, Saitama, Japan

Filed Jul. 9, 1993, Ser. No. 89,130

Int. Cl.[5] C10M *137/00*

U.S. Cl. 252—32.7 R **6 Claims**

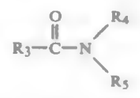
1. A lubricating oil composition having a low coefficient of friction, reduced copper corrosivity and which exhibits a low coefficient of friction from an early operating stage which consists essentially of:

a) a lubricating oil basestock:

b) from 0.01 to 10% by weight, based on the oil composition, of at least one organomolybdenum compound selected from the group consisting of oxymolybdenum monoglyceride and oxymolybdenum diethylateamide;

c) from 0.5 to 7% by weight, based on the oil composition, of at least one organozinc compound selected from the group consisting of zinc dithiophosphate and zinc dithiocarbamate; and

d) from 0.01 to 5% by weight, based on the oil composition, of an organic amide having a general formula;



wherein R_4 and R_5 are different and each is independently a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 6 to 26 carbon atoms, an aryl group, an alkylaryl group or an arylalkyl group containing from 6 to 26 carbon atoms; or an alkylene oxide containing from 2 to 30 carbon atoms; and R_3 is a hydrogen atom; an alkyl group containing from 1 to 20 carbon atoms, a cycloalkyl group containing from 6 to 26 carbon atoms; an aryl group, an alkylaryl group or an arylalkyl group containing from 6 to 26 carbon atoms; a hydrocarbon group having from 3 to 20 carbon atoms and containing an ester group, an ether group, an alcohol group, or a carboxyl group.

5,364,546

LUBRICATING OIL COMPOSITIONS CONTAINING VERY LONG CHAIN ALKYLPHENYL POLY(OXYALKYLENE) AMINOCARBAMATES

Thomas F. Buckley, III, Hercules, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 112,902, Oct. 23, 1987, Pat. No. 4,933,485. This application Apr. 19, 1990, Ser. No. 511,147

Int. Cl.[5] C10M *133/00, 149/00*

U.S. Cl. 252—51.5 A **40 Claims**

1. A lubricating oil composition comprising an oil of lubricating viscosity and a dispersant effective amount of an alkylphenyl poly(oxyalkylene) aminocarbamate having at least one basic nitrogen and an average molecular weight of about 800 to 6,000 and wherein the alkyl group of said alkylphenyl poly(oxyalkylene) aminocarbamate contains at least 40 carbon atoms and the poly(oxyalkylene) polymer is derived from C_2 to C_5 oxyalkylene units with the proviso that if the poly(oxyalkylene) polymer is a homopolymer of oxyethylene then the poly(oxyethylene) polymer does not contain more than 25 oxyethylene units.

5,364,547

LUBRICANTS CONTAINING PERFLUOROCYCLOBUTANE RINGS

David A. Babb, Lake Jackson, Tex., and Ted A. Morgan, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 929,742, Aug. 13, 1992, abandoned, which is a division of Ser. No. 673,882, Mar. 22, 1991, Pat. No. 5,159,038, which is a division of Ser. No. 364,667, Jun. 9, 1989, Pat. No. 5,037,917, and Ser. No. 625,588, Dec. 10, 1990, Pat. No. 5,246,782. This application Apr. 26, 1993, Ser. No. 54,647

The portion of the term of this patent subsequent to Apr. 26, 2010, has been disclaimed.

Int. Cl.[5] C10M *105/50, 105/18*

U.S. Cl. 252—54 **39 Claims**

1. A lubricant comprising at least one compound having a perfluorocyclobutane group, hydrocarbyl group, and at least one non-carbon atom in the backbone.

5,364,548

BLADE-SKATING PAVEMENT

Vittorio Di Stefano, and Paolo Marini, both of Rome, Italy, assignors to Skitech S.r.l., Rome, Italy

Filed Mar. 4, 1992, Ser. No. 846,794

Claims priority, application Italy, Mar. 5, 1991, RM91 A 000153

Int. Cl.[5] A63C *19/10;* **C10M** *171/00*

U.S. Cl. 252—58 **17 Claims**

1. Composition for blade-skating pavements comprising one or more organic paraffinic material characterized by:

a) penetration index measured with needle penetrometer ranging between 2 and 20 at operating temperature;

b) glass transition temperature higher than operating temperature;

c) dielectric constant lower than 2.5 at 10^6 Hz;

d) viscosity at 200° C. not exceeding 3000 cps.

5,364,549

HYDROGEN PEROXIDE SOLUTIONS

Colin F. McDonogh, Widnes, England, assignor to Interox Chemicals Limited, London, England

PCT No. PCT/GB90/01450, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO91/05079, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 20, 1990, Ser. No. 768,538

Claims priority, application United Kingdom, Oct. 5, 1989, 8922504.9

Int. Cl.[5] C09K *13/06;* **C01B** *15/01;* **B44C** *1/22*

U.S. Cl. 252—79.4 **24 Claims**

1. In a method of treating a surface of steel and like alloys which comprises contacting said surface with a stabilized aqueous acidic hydrogen peroxide solution to alter the appearance of the surface and to impart thereto a sheen or polish, said solution containing hydrogen peroxide, sulfuric acid, and a stabilizer for reducing decomposition of the hydrogen peroxide, the improvement wherein the stabilizer comprises hydrofluoric acid, hydroxybenzoic acid and an N-alkoxyphenyl-acetamide, the amount of each of the hydrofluoric acid, the hydroxybenzoic acid and the N-alkoxyphenyl-acetamide being such that said stabilizer is effective to reduce decomposition of the hydrogen peroxide to an extent which is greater than the simple additive effect of the hydrofluoric acid, the hydroxybenzoic acid and the N-alkoxyphenyl-acetamide.

5,364,550

LIQUID DETERGENT COMPOSITION

Robert P. Manzo, Chester, N.Y., and James Cavanagh, Ramsey, N.J., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1992, Ser. No. 991,120

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] C11D *3/395, 11/00, 17/08;* **D06L** *3/06*

U.S. Cl. 252—102 **5 Claims**

1. A liquid laundry detergent composition comprising an aqueous dispersion of particles of at least one halogen donating compound wherein said particles have at least about 0.1 mg, per square meter surface area of the halogen donating compound of a surface modifier adsorbed on the surface thereof in an amount sufficient to achieve a particle size of less than about 400 nanometers (nm) wherein said particles are present in an amount of from 1 to 6 weight percent of the composition and the water is present in an amount of from 55 to 80 weight percent of the composition and said surface modifier physically adjeres to the surface of the halogen donating compound but does not chemically bond to the halogen donating compound.

5,364,551

REDUCED MISTING OVEN CLEANER

Steven E. Lentsch; Cynthia A. Keller, both of St. Paul; Gregory T. Bona, New Brighton, and Victor F. Man, Minneapolis, all of Minn., assignors to Ecolab Inc., St. Paul, Minn.

Filed Sep. 17, 1993, Ser. No. 123,437

Int. Cl.[5] C11D *1/86, 1/32;* **A21B** *3/16*

U.S. Cl. 252—156 **31 Claims**

1. A thixotropic sprayable strongly alkaline cleaner composition, formulated to reduce the formation of a choking aerosol when sprayed, the composition comprising:

(a) an effective cleaning amount of an alkali metal hydroxide;

(b) an effective amount of organic surfactant;

(c) an effective thickening amount of an organic polymer thickener; and

(d) water;

wherein the alkaline composition obtains a median airborne aerosol particle size of greater than about 170 μm when sprayed.

5,364,552

LIQUID NONIONIC SURFACTANT COMBINATION HAVING IMPROVED LOW-TEMPERATURESTABILITY

Thomas Merz, Hilden; Khalil Shamayeli, Duesseldorf, and Werner Kuhlmann, Monheim, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/01722, § 371 Date Mar. 22, 1993, § 102(e) Date Mar. 22, 1993, PCT Pub. No. WO92/05235, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 10, 1991, Ser. No. 30,011

Claims priority, application Germany, Sep. 20, 1990, 4029777

Int. Cl.[5] C11D *1/825, 1/72, 1/722, 17/00*

U.S. Cl. 252—174.22 **20 Claims**

1. A liquid nonionic surfactant combination having improved low temperature stability which consists essentially of:

(a) from about 20% to about 50% by weight of an alcohol ethoxylate derived from primary linear C_{12-15} alcohols having an average degree of ethoxylation equal to from about 2 to 7;

(b) from about 20% to about 50% by weight of an alcohol alkoxylate derived from primary saturated alcohols containing 12 to 15 carbon atoms in which the alcohol radical can be linear, methyl-branched in the 2-position, or a mixture of said linear and said methyl-branched radicals, having an average degree of ethoxylation equal to from about 3 to about 7 and an average degree of propoxylation equal to from about 2 to about 8; and

(c) from about 5% to about 50% by weight of an alcohol ethoxylate derived from oxoalcohol mixtures of primary, linear, and 2-methyl-branched C_{12-15} alcohols having an average degree of ethoxylation equal to from about 2 to about 8 the balance comprising not more than 20% by weight water.

5,364,553

STABILIZED BUILT AQUEOUS LIQUID SOFTERGENT COMPOSITIONS

Hoai C. Cao, Liege, , assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 915,210, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 684,149, Apr. 12, 1994, Pat. No. 5,221,495, which is a continuation of Ser. No. 509,549, Apr. 13, 1990, abandoned. This application Aug. 16, 1993, Ser. No. 106,972

Int. Cl.[5] C11D *3/386, 3/04, 3/12, 3/16*

U.S. Cl. 252—174.12 **9 Claims**

1. An enzyme-containing liquid detergent composition comprising:

A) from about 5 to about 75% by weight, of one or more surface active detergent compounds;

B) from about 5 to about 30%, by weight, of one or more detergency builders comprising a zeolite;

C) from about 0.01 to about 5%, by weight, of protease enzymes;

D) an enzyme stabilization system comprising:

(i) from about 0.25 to about 10%, by weight, of a boron compound selected from the group consisting of boric acid, boric oxide, and alkali metal borates;

(ii) from about 1 to about 3%, by weight, of an hydroxypolycarboxylic acid selected from the group consisting of alphatic di- and tri-carboxylic acids with from 1 to 4 hydroxyl groups and with from 4 to 8 carbon atoms; and

(iii) a water soluble calcium salt in an amount sufficient to provide from about 18 to 50 millimoles of calcium ion per liter of the composition; and

E) water.

5,364,554

PROTEOLYTIC PERHYDROLYSIS SYSTEM AND METHOD OF USE FOR BLEACHING

Anna G. Stanislowski, Walnut Creek; Fred A. Heitfeld, Castro Valley; Richard J. Wiersema, Tracy, and Ayyookaran J. Poulose, San Bruno, all of Calif., assignors to The Clorox Company, Oakland, Calif.

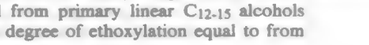
Continuation of Ser. No. 697,534, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 243,331, Sep. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 872,252, Jun. 9, 1986, abandoned. This application Sep. 30, 1992, Ser. No. 954,438

The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.

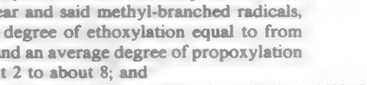
Int. Cl.[5] C09K *3/00;* **C01B** *15/00;* **C11D** *1/00*

U.S. Cl. 252—186.38 **4 Claims**

1. A method of improving the in situ production of peracid by proteolytic perhydrolysis from an aqueous medium containing a combination of an effective amount of a source of hydrogen peroxide and a substrate having the structure:



wherein R′ = C_{1-10} alkyl; Z = 0, $(CH_2CH_2O)_m$—,



NH, SO_2 or NR″ (wherein m = 0–10 and R″ = phenyl or C_{1-4} alkyl); n = 0–10; X = H, OH, —OR″ or NR″$_2$; and X may be pendent on or terminate the hydrocarbon chain;

wherein the improvement comprises the addition of a non-stoichiometric amount of protease enzyme, said protease acting to catalyze the production of peracid enzymatically.

5,364,555

POLYMER COMPOSITIONS CONTAINING SALICYLIC ACID CHELATES AS OXYGEN SCAVENGERS

Bruce D. Zenner, Alameda, Calif.; Fred N. Tenmac, Conyngham, Pa.; Larrie A. Deardurff, Alameda, Calif., and Bert A. Ross, Conyngham, Pa., assignors to Advanced Oxygen Technologies, Inc., Alameda, Calif.

Continuation of Ser. No. 37,497, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 693,462, Apr. 30, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 124,993

Int. Cl.[5] C09K *15/04*

U.S. Cl. 252—188.28 **22 Claims**

1. An oxygen scavenging composition consisting essentially of: a polymer carrier which is permeable to both oxygen and water or water vapor, an oxygen scavenging material of a transition metal chelate or complex of a salicylic acid or a salt thereof, and an ascorbate compound; the oxygen scavenging materials and the ascorbate compound being dispersed relatively uniformly throughout the polymer carrier in an amount effective to act as an oxygen scavenger, wherein the salicylic acid transition metal chelate or complex is activated for scavenging oxygen by contact with water or water vapor which is present in or permeates through or into the polymer carrier, and wherein the salicylic acid transition metal chelate or complex is present in an amount of about 0.01 to 20 parts by weight based on 100 parts by weight of the polymer carrier, and the ascorbate compound is present in an amount of about 0.001 to 33 parts by weight based on 100 parts by weight of the polymer carrier.

5,364,556

HALOVINYL-DERIVATIVES

Martin Schadt, Seltisberg, Switzerland, and Frank Seils, Wiesbaden, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

PCT No. PCT/EP92/02131, § 371 Date May 18, 1993, § 102(e) Date May 18, 1993, PCT Pub. No. WO98/07234, PCT Pub. Date Apr. 15, 1993

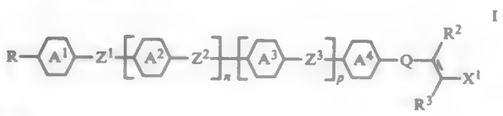
PCT Filed Sep. 16, 1992, Ser. No. 50,477

Claims priority, application Switzerland, Sep. 30, 1991, 2887/91; Sep. 30, 1991, 2888/91; Apr. 8, 1992, 1139/92

Int. Cl.[5] C09K *19/52, 19/34, 19/30*

U.S. Cl. 252—299.01 **17 Claims**

1. Compounds of the formula



I

wherein

R signifies hydrogen, halogen, cyano, isothiocyanato, or alkyl, alkenyl or alkynyl with 1 to 15 carbon atoms, which is unsubstituted or substituted with at least one of halogen, cyano and/or trifluoromethyl and in which one or more non-adjacent $-CH_2-$ groups can be replaced by —O—, —S—, —CO—, —COO— and/or —OOC—;

Q represents alkylene with 2 to 10 carbon atoms, which is unsubstituted or substituted with at least one fluorine and in which one $-CH_2-$ group can be replaced by —O—, —S—, —COO— or —OOC—, or $-CH_2-$, $-CF_2-$, —CHF— or a single covalent bond;

A^1,A^2, A^3 each independently signify 1,4-phenylene, which is unsubstituted or substituted with at least one of halogen, cyano and/or methyl and in which, when it is unsubstituted, one or more —CH— groups can be replaced by nitrogen, or unsubstituted or cyano- or fluoro-substituted trans-1,4-cyclohexylene, or 1,4-cyclohexenylene, trans-1,3-dioxane-2,5-diyl or trans-1,3-dithiane-2,5-diyl;

A^4 represents unsubstituted or cyano- or fluoro-substituted trans-1,4-cyclohexylene, or 1,4-cyclohexenylene, trans-1,3-dioxane-2,5-diyl, trans-1,3-dithiane-2,5-diyl or, when Q is different from a single covalent bond, also 1,4-phenylene, which is unsubstituted or substituted with at least one of halogen, cyano and/or methyl and in which when it is unsubstituted, one or more —CH— groups can be replaced by nitrogen;

X^1 represents bromine or chlorine;

Z^1,Z^2,Z^3 each independently denote a single covalent bond, $-CH_2-$, $-OCH_2-$, $-CH_2CH_2-$, —COO—, —OOC—, —C≡C—, $-(CH_2)_4-$, $-(CH_2)_3O-$, $-O(CH_2)_3-$, the trans form of —CH=CH—, $-CH=CHCH_2O-$, $-OCH_2CH=CH-$, $-CH=CH(CH_2)_2-$ or $-(CH_2)_2CH=CH-$;

n, p each independently signify 0 or 1;

R^2,R^3 each independently represent hydrogen or fluorine.

5,364,557

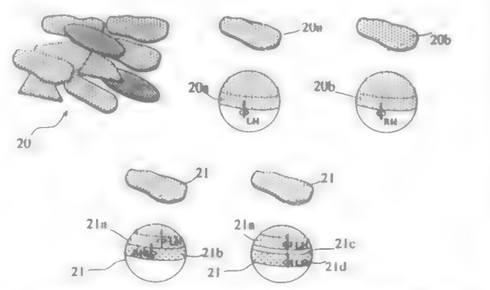
ALIGNED CHOLESTERIC LIQUID CRYSTAL INKS

Sades M. Faris, 24 Picantico River Rd., Pleasantville, N.Y. 10570

Filed Nov. 27, 1991, Ser. No. 798,881

Int. Cl.[5] C09K *19/52*

U.S. Cl. 252—299.01 **48 Claims**



1. A cholesteric liquid crystal (CLC) image forming product comprising:

prealigned CLC solid state platelets or flakes wherein the CLC molecules maintain a helical structure with a helix axis perpendicular to the surface of said platelets, a helix pitch pretuned to give said platelets a selective reflection property at a desired additive primary color (wavelength) band; and

a host material in which said pro-aligned CLC platelets are suspended.

5,364,558

ESTER DERIVATIVES

Yumiko Sakamaki, Saitama; Tomijiro Naito, Tokyo, and Toshiro Yukinari, Yamanashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

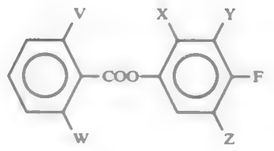
Filed Jul. 20, 1993, Ser. No. 94,569

Claims priority, application Japan, Jul. 20, 1992, 4-214536

Int. Cl.[5] C09K *19/52;* **C07C** *69/76*

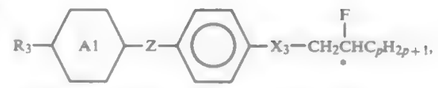
U.S. Cl. 252—299.01 **11 Claims**

1. A liquid crystal composition consisting essentially of an ester derivative which does not exhibit liquid crystal properties and is represented by the following formula (I), and at least one liquid crystal compound



(I)

wherein V, W, X, Y and Z represent a hydrogen atom or a halogen atom, respectively.

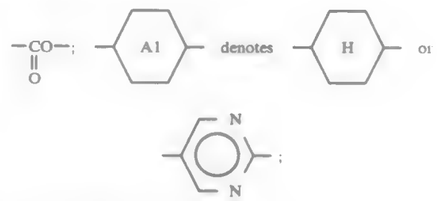


(II)

wherein R_3 denotes a linear or branched alkyl group having 1–18 carbon atoms wherein R_3 is optionally substituted with alkoxy group; X_3 denotes a single bond, —O— or



Z denotes a single bond or



and p is an integer of 1–12.

5,364,559

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

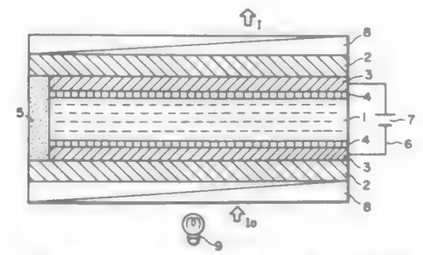
Kenji Shinjo, Atsugi; Takao Takiguchi, Tokyo; Hiroyuki Kitayama, Sagamihara; Kazuharu Katagiri, Tama; Masataka Yamashita, Hiratsuka; Takeshi Togano, Yokohama; Masahiro Terada, Atsugi; Junko Sato, Hiratsuka; Masanobu Asaoka, Yokohama; Takashi Iwaki, Isehara, and Yoshiko Kimura, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 370,981, Jun. 23, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 94,927

Claims priority, application Japan, Jun. 24, 1988, 63-157675; Jul. 13, 1988, 63-175786; Jul. 27, 1988, 63-187478; Jul. 28, 1988, 63-189705; Jul. 29, 1988, 63-188111; Jun. 9, 1989, 1-147983

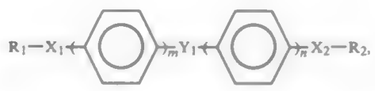
Int. Cl.[5] C09K *19/06, 19/34, 19/30;* **G02F** *1/13*

U.S. Cl. 252—299.60 **13 Claims**



1. A ferroelectric chiral smectic liquid crystal composition, comprising:

at least one compound represented by the following formula (I):



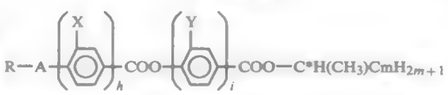
(I)

wherein R_1 and R_2 denote a linear or branched alkyl group having 1–18 carbon atoms wherein R_1 and R_2 are individually optionally substituted with halogen or alkoxy group; X_1 and X_2 denote a single bond, —O—,



Y_1 denotes $-CH_2O-$ or $-OCH_2-$; and m and n are 1 or 2 with the proviso that m+n=2 or; and

at least one compound represented by the following formula (II);



(I-a)

wherein C* denotes an asymmetric carbon atom, and wherein the compound is a member selected from the group consisting of compounds in which the substituents have the following values:

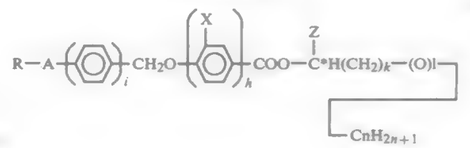
(a) R=n-C_8H_{17}, A=0, h=2, i=1, X=H, Y=F, m=4, 6 or 8

(b) R=n-$C_{11}H_{23}$, A=0, h=2, i=1, X=H, Y=F, m=6

(c) R=n-$C_{14}H_{29}$, A=0, h=2, i=1, X=H, Y=F, m=6

or

(2) formula (I-b)



(I-b)

wherein C* denotes an asymmetric carbon atom, and wherein the compound is a member selected from the group consisting of compounds in which the substituents have the following values:

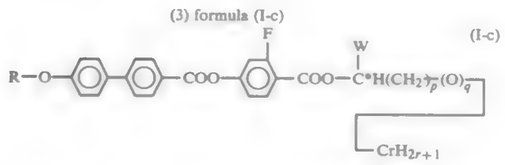
(a) R═n-C_8H_7, A═0, i═1, h═2, X═H, Z═CF_3, k═5 or 7, l═1, n═2

(b) R═n-C_8H_{17}, A═0, i═2, h═1, X═H or F, Z═CF_3, k═5, l═1, n═2

(c) R═n-C_8H_{17}, A═0, i═2, h═1, X═H or F, Z═CH_3, k═0, l═0, n═4

or

(3) formula (I-c)



(I-c)

wherein C* denotes an asymmetric carbon atom, and wherein the compound is a member selected from the group consisting of compounds in which the substituents have the following values:

(a) R═n-C_7H_{15}, W═CH_3, p═0, q═0, r═8

(b) R═n-C_8H_{17}, W═CH_3, p═0, q═0, r═8

(c) R═n-C_8H_{17}, W═CF_3, p═5 or 7, q═1, r═2.

5,364,561

LIQUID CRYSTAL COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING THEM

Tadaaki Isozaki; Hiroyuki Mogamiya; Yoshihiko Aihara, and Takashi Hagiwara, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 727,250, Jul. 11, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 52,754

Claims priority, application Japan, Jul. 13, 1990, 2-185740

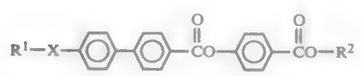
Int. Cl.[5] C09K *19/12, 19/52*

U.S. Cl. 252—299.65 **9 Claims**

9. A liquid crystal composition which exhibits the S*(3) phase with optically tristable states which comprises

(a) at least one antiferroelectric liquid crystal compound; and

(b) at least one liquid crystal compound represented by the formula (I)



(I)

wherein R^1 means an alkyl group having 3–20 carbon atoms, R^2 means a straight chain C_3 to C_{20} alkyl group, and X represents carbonyloxy, carbonyl, oxy, or a single bond.

5,364,562

AEROSOL-PLASMA DEPOSITION OF INSULATING OXIDE POWDER

Xingwu Wang, 113 N. Main St., Alfred, N.Y. 14802

Continuation-in-part of Ser. No. 871,278, Apr. 20, 1992, Pat. No. 5,260,105, which is a continuation-in-part of Ser. No. 510,011, Apr. 17, 1990, Pat. No. 5,120,703. This application Sep. 13, 1993, Ser. No. 120,565

Int. Cl.[5] C09K *3/30*

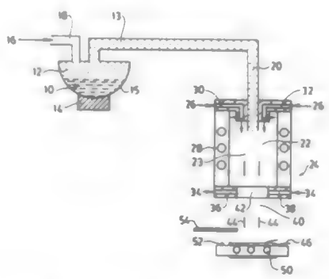
U.S. Cl. 252—305 **10 Claims**

1. A process for preparing an insulating powder with a particle size of less than 100 nm, consisting essentially of a material of the formula R_2BaCuO_5, wherein R is a rare earth element selected from the group consisting of yttrium, gadolinium, lanthanum, europium, and holium, comprising the steps of: ═9

(a) providing a solution comprised of a first compound, a second barium compound, and a third copper compound, wherein:

1. said first compound is selected from the group consisting of an yttrium compound, a gadolinium compound, a lanthanum compound, a europium compound, a holmium compound, and mixtures thereof,

2. said first compound, said barium compound, and said copper compound are present in said solution in the molar ratio of 2:1:1 of R/barium/copper, wherein said solution is comprised of from about 0.01 to about 1,000 grams of a mixture consisting essentially of said first compound, said barium compound, and said copper compound per liter of said solution;



(b) subjecting said solution to ultrasonic sound waves at a frequency in excess of 20,000 hertz, and to a substantially atmospheric pressure of at least about 600 millimeters of mercury, thereby causing said solution to form into an aerosol;

(c)providing a radio frequency plasma reactor;

(d)generating a plasma gas within said radio frequency reactor;

(e)contacting said aerosol with said plasma gas within said plasma reactor while subjecting said aerosol to a substantially atmospheric pressure of at least about 600 millimeters of mercury and to a radio frequency alternating current at a frequency of from about 100 kilohertz to about 30 megahertz, thereby forming a vapor;

(f) flowing said vapor downwardly onto the surface of a collector; and

(g) condensing said vapor onto said surface of said collector.

5,364,563

POWDERED AQUEOUS CAROTENOID DISPERSIONS

Ernst Cathrein, Aesch; Hermann Stein, Liestal; Hansjörg Stoller, Reinach, and Klaus Viardot, Riehen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

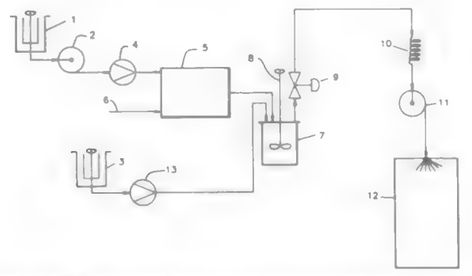
Continuation of Ser. No. 16,483, Feb. 10, 1993, abandoned, which is a continuation of Ser. No. 551,830, Jul. 12, 1990, abandoned. This application Jan. 25, 1994, Ser. No. 187,355

Claims priority, application Switzerland, Jul. 25, 1989, 2778/89

Int. Cl.[5] A61K *31/015, 9/14, 47/44;* **A23L** *1/275*

U.S. Cl. 252—311 **7 Claims**

1. A process for producing a powdered carotenoid preparation comprising forming a suspension of a carotenoid in a high boiling oil without the presence of an organic solvent, contacting said suspension with superheated steam for a maximum period of thirty seconds to form a solution of said carotenoid in said oil, emulsifying said solution in an aqueous solution of a



colloid and thereafter spraying and drying said emulsion to form said powder.

5,364,564

PHOSPHATIDYL CHROMANOL DERIVATIVE, THE PRODUCTION METHOD THEREOF, ANTIOXIDANT AND EMULSIFIER

Takuro Koga, Noda, Japan, assignor to Noda Institute for Scientific Research, Japan

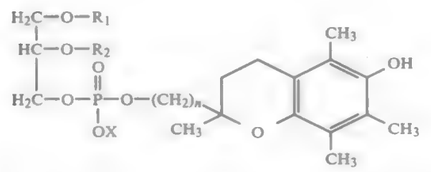
Filed Feb. 2, 1994, Ser. No. 190,479

Claims priority, application Japan, Feb. 4, 1993, 5-039269

Int. Cl.[5] C07F *9/10, 9/12*

U.S. Cl. 252—351 **11 Claims**

1. A phosphatidyl chromanol derivative of the formula (3):



(3)

wherein R_1 and R_2, which may be identical or different, represent a hydrogen atom or, a saturated or unsaturated fatty acid residue having 2–24 carbons, X is a monovalent cation and n is an integer of 1–5, .

5,364,565

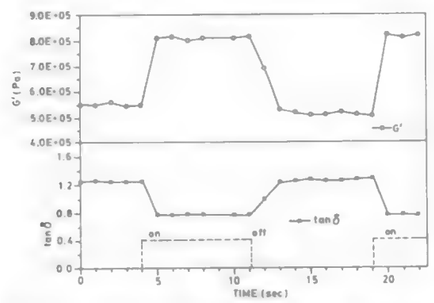
ELECTROVISCOELASTIC GEL-LIKE SOLIDS

Chi Li, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1991, Ser. No. 753,251

Int. Cl.[5] H01B *1/20*

U.S. Cl. 252—500 **17 Claims**



1. An electroviscoelastic solid comprising: electrically polarizable particles substantially uniformly dispersed in a partially crosslinked non-conductive polymer matrix which is the reaction product of (a) liquid prepolymer being a reactive oligomer selected from the group consisting of α, ω-hydroxylpropyl polybutadiene and crosslinkable polydimethylsiloxanes and (b) curative in an amount sufficient to crosslink a portion of said liquid prepolymer, said solid being capable of undergoing at least about 10% repeated reversible changes in shear modulus and damping factor in a variable electric field.

5,364,566

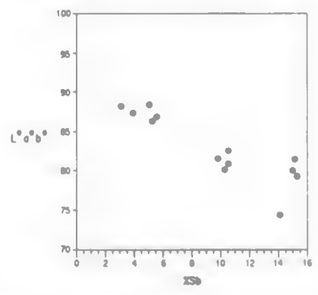
PROCESS FOR MAKING ELECTROCONDUCTIVE POWDERS

Howard W. Jacobson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1993, Ser. No. 17,078

Int. Cl.[5] H01B *1/00, 1/06, 1/08*

U.S. Cl. 252—518 **9 Claims**



1. A method for making an electroconductive powder composition comprising an amorphous silica shell or an amorphous silica coated particle in association with a surface coating comprising a conducting network of antimony-containing tin oxide crystallites, said method comprises the steps of:

(a) providing an aqueous suspension comprising a particulate substrate;

(b) preparing separate aqueous solutions comprising hydrolyzable tetravalent tin and trivalent antimony salts, optionally adding at least one cation selected from Groups IA, IIA and IIIA;

(c) combining the tin and antimony salt solutions, and adjusting the pH of the combined solution to about −0.5;

(d) applying a coating layer comprising hydrous oxides of antimony and tin onto the substrate surface of said particulate substrate by adding the combined salt solution to the suspension;

(e) recovering solids from step (d), optionally washing the recovered solids substantially free from water soluble species and drying; and

(f) calcining the recovered solids thereby obtaining said powder composition, wherein the quantity of antimony in said powder composition is less than about 3 weight % based upon tin oxide.

5,364,567

SOLUTION FOR PREPARING A CONDUCTIVE FILM FOR A FLAT BROWN TUBE

Dong-Sik Chang, Gwachon, and Su-Min Chung, Suwon, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Hwasung, Rep. of Korea

Filed Apr. 23, 1993, Ser. No. 51,374

Claims priority, application Rep. of Korea, Apr. 24, 1992, 92-6998

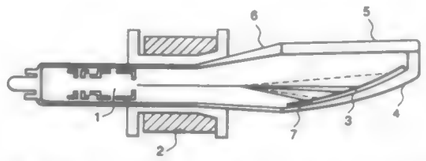
Int. Cl.[5] H01B *1/00, 1/06, 1/08, 1/10*

U.S. Cl. 252—518 **9 Claims**

1. A solution which can be applied to a surface of a Braun tube, and dried, to produce a transparent electrically conduc-

tive layer having a surface resistance of from 5kΩ/cm to about 20kΩ/cm, said solution comprising:

an aqueous solution containing one constituent selected from



the group consisting of indium chloride, indium nitride and indium sulfide, and a sufficient quantity of an organo amine silane to adjust the pH of said aqueous solution to be within the range of 1.5 to 4.

5,364,568

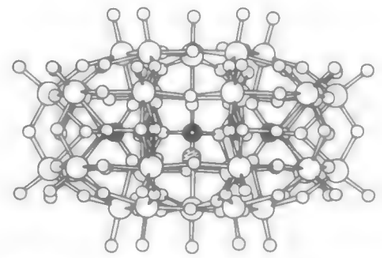
COMPOUNDS AND METHODS FOR SEPARATION AND MOLECULAR ENCAPSULATION OF METAL IONS

Michael T. Pope, Washington, D.C.; Inge I. Creaser, Scott Creek, Australia, and Mark C. Heckel, East Hampton, Mass., assignors to Georgetown University, Washington, D.C.

Filed Jul. 8, 1992, Ser. No. 910,532

Int. Cl.[5] G21F *9/16*

U.S. Cl. 588—18 **21 Claims**



1. A method of encapsulating a cation, comprising (i) contacting, in an aqueous solution, an anion of formula (I):

$$[DA_5M_{30-x}O_{110-x}(M'L)_x]^{m-} \quad (I)$$

wherein D is Na^+ or Ca^+; M is W^{6+}, W^{5+}, or mixtures thereof; M′ is a metallic element selected from the group consisting of Mo, V, Nb, Ta, and combinations thereof; L is O^{2-}, OH^-, or H_2O; A is P, As, Sb, Si, Ge or combinations thereof; x is 0–10; and m is an integer of 10 to 20; with a cation Z^{n+} to obtain an anion of the formula (II):

$$[ZA_5M_{30-x}O_{110-x}(M'L)_x]^{(m+1-n)-} \quad (II)$$

wherein n is 3 or 4, Z=Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Bi, when n=3, and Z=Ce, U, Np, Pu, or Am, when n=4; and (ii) separating said anion of formula (II) from said aqueous solution.

5,364,569

RELIEVED INLET STRUCTURE FOR COUNTERFLOW WATER COOLING TOWER

Thomas W. Bugler, III, Prairie Village, Kans., assignor to The Marley Cooling Tower Company, Mission, Kans.

Continuation of Ser. No. 847,377, Mar. 6, 1992, abandoned. This application Aug. 18, 1993, Ser. No. 108,901

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—109 **6 Claims**

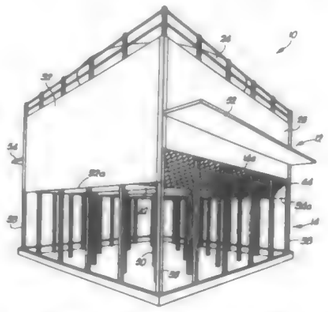
1. A counterflow water cooling tower comprising:

a generally horizontal cold water collection basin;

an upright casing above the collection basin and including an upper horizontal wall provided with an air outlet, and a plurality of upstanding walls, at least one of which includes a lower edge that is vertically spaced from the collection basin to define an air inlet;

a means for inducing inflow of initially cool, ambient-derived air currents through said air inlet and upwardly through said casing for discharge through said air outlet;

a fill structure supported within the upright casing above the collection basin and including a plurality of fill packs each formed of a series of parallel upright film-type fill sheets of similar shape and size so that each fill pack is of rectangular parallelepiped shape, the fill packs being arranged side-by-side to present a generally planer upper surface



above the air inlet and adjacent the air outlet, and an opposed generally planer lower surface disposed beneath the lower edge defining the air inlet and overlying the collection basin, the fill sheets extending vertically between the upper and lower surfaces;

wherein at least one of the fill packs is an edge region pack supported against the upstanding wall in which the air inlet is provided, the edge region pack including a lower edge region that is relieved to present an angled marginal air entrance surface extending both downward and inward from the lower edge toward the planer lower surface of the edge region pack, the marginal air entrance surface being angled from the planer lower surface of the edge region pack by between about 15° to 45°.

5,364,570

CERAMIC MATERIAL

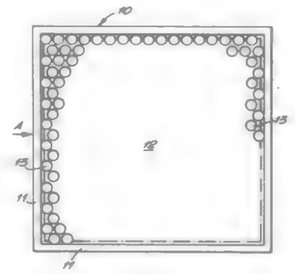
Robert Chadwick, Stoke-on-Trent; Carl Siviter, Halesowen, and Anthony D. Farmer, Birmingham, all of England, assignors to Foseco International Limited, Birmingham, England

Filed Nov. 9, 1992, Ser. No. 973,749

Claims priority, application United Kingdom, Nov. 16, 1991, 9124403.8

Int. Cl.[5] C04B *38/08*

U.S. Cl. 264—28 **11 Claims**



1. A method of making a lightweight fired shaped ceramic product in which a freeze-gellable ceramic sol composition is formed containing hollow microspheres, the composition is placed in a mould having a cavity of the desired shape of said product, the mould comprising a tool of high thermal conductivity made by flame-spraying metal onto a replica of the desired shape, and the tool is cooled at a rate sufficient to irreversibly gel the sol composition to form a monolith, the monolith is demoulded, thawed and fired to form a product comprising the microspheres bonded in a ceramic matrix.

5,364,571

METHOD OF MAKING A COMPOSITE MATERIAL

Thomas J. O'Connor, Chelmsford, Mass.; Mark J. Pistorino, Pelham, N.H.; John J. Gaffney, N. Chelmsford, and William T. Foulds, North Andover, both of Mass., assignors to Avco Corporation, Providence, R.I.

Filed Feb. 17, 1993, Ser. No. 19,366

Int. Cl.[5] C04B *35/52, 35/64;* **B32B** *18/00*

U.S. Cl. 264—29.5 **13 Claims**

1. A method of making golf club head comprising the steps of:

a. molding a mixture comprising carbon fibers and a carbon-containing resin into the shape of the golf club head;

b. curing the molded carbon-containing resin;

c. converting the molded carbon-containing resin to a porous carbonaceous matrix by gradually heating said molded resin up to its pyrolysis temperature over a broad temperature range including first predetermined temperature range increments at which gas is evolved therefrom more rapidly than at second predetermined temperature range increments within said broad range;

d. controlling the heating rate during step (c) so that the temperature is gradually increased at a reduced rate of up to about 10° F. per hour over said first predetermined temperature range increments, during periods of more rapid gas evolution, and at a higher rate of at least about 18° F. per hour over said second predetermined temperature range increments, and

e. impregnating the porous carbonaceous matrix with a secondary material imparting properties different than the carbonaceous matrix.

5,364,572

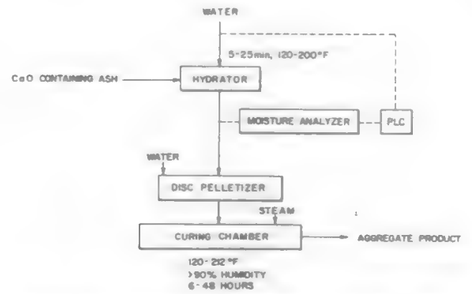
PROCESS FOR MAKING HIGH-STRENGTH SYNTHETIC AGGREGATES

Muh-Cheng M. Wu, Pittsburgh, and George E. Wasson, Eighty Four, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Jan. 28, 1993, Ser. No. 10,241

Int. Cl.[5] B29C *67/02*

U.S. Cl. 264—40.1 **4 Claims**



1. Method of producing high-strength aggregates from calcium oxide (CaO) containing coal combustion ash comprising:

a.) hydrating the ash in a hydrator for 5 to 25 minutes at a temperature between 120° F. and 200° F. so that at least 80% of the calcium oxide is hydrated to calcium hydroxide,

b.) adding enough water to the ash in the hydrator to densify the ash such that only a small amount of additional water is added during pelletization with a rotary disc with the hydrated ash from the hydrator having a moisture content between 10 and 20 weight percent,

c.) pelletizing the hydrated ash from the hydrator with a rotary pelletizing disc.; and,

d.) curing the pelletized products at a temperature between 120° and 212° F. in a curing chamber at a high humidity, greater than 90%, for 6 to 48 hours to develop high pellet strength.

5,364,573

PROCESS AND APPARATUS FOR PRODUCING A FILTER IN THE FORM OF A MONOLITHIC HONEYCOMB BODY

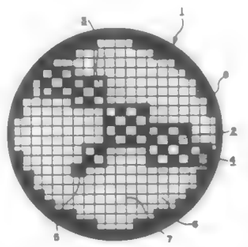
Werner Noky, Mainz-Gonsenheim, Germany, assignor to Schott Glaswerke, Mainz, Germany

Filed Apr. 8, 1993, Ser. No. 46,865

Claims priority, application Germany, Apr. 8, 1992, 4211787

Int. Cl.[5] C04B *41/87*

U.S. Cl. 264—40.1 **4 Claims**



1. Process for the production of a filter in the form of a ceramic honeycomb body monolith (1) with a plurality of through ducts (6) sealed on the end faces (19, 20) of the monolith (1) alternatingly with a plug of a viscous plugging compound starting with a blank of the honeycomb body monolith of a ceramic-producing material with bilaterally open ducts (6) wherein

zones (2, 3, 4, 5) of ducts (6) are determined on both end faces (19, 20), corresponding within predeterminable tolerances to the desired geometry of an idealized honeycomb body monolith, with the proviso that the zones contain a maximally high number of ducts (6),

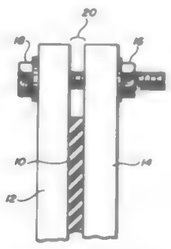
metering heads (17, 18) of a metering device with differing numbers of nozzles which are lowered into the ducts (6) to be sealed and introduce the viscous plugging compound into the end region of these ducts are moved and controlled in motorized fashion in such a way that, in correspondence with the aforementioned determination of the zones of ducts (6), the metering head (17) having the highest number of nozzles (22, 23) is utilized with greatest frequency, and thereafter the metering head (18) with the next-lower number of nozzles is utilized until all provided ducts (6) have been sealed, and the thus-prepared honeycomb body monolith (1) is subsequently subjected to a ceramic-producing process.

5,364,574

METHOD OF FORMING A CORROSION-RESISTANT EMI SHIELDING GASKET BETWEEN GRAPHITE AND METAL COMPONENTS

Ramanathan Panayappan, North Potomac, Md., and John C. Cooper, deceased, late of Burke, Va. by Linda Cooper, legal representative , assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1992, Ser. No. 864,812
Int. Cl.[5] H01Q *17/00*; F16J *15/14*
U.S. Cl. 264—46.5 **3 Claims**



1. A method of installing a removable EMI shielding gasket between a graphite skin panel and a metallic frame component in an aircraft, comprising the steps of:

loosening means for connecting the graphite skin panel and the metallic frame component;

separating the graphite skin panel and the metallic frame component to provide a space therebetween;

introducing into said space a liquid composition capable of polymerizing to form a gasket, said liquid composition comprising:

a prepolymer composition of a polyurethane present in a range of from 75–92% by weight,

from 2 to 10% by weight of zinc chloride, and

from 6 to 15% by weight of water;

permitting the composition to at least partially polymerize whereby a gasket is formed between the graphite skin panel the metallic frame component, said gasket being removable from said metallic frame component by peeling.

5,364,575

METHOD AND SYSTEM FOR PROCESSING SOAP AND SOAP-LIKE MATERIALS

Lewis Doom, Sr., 25 Meadow Farm Rd., East Islip, N.Y. 11730, and Lewis Doom, Jr., 28 Acorn La., Stony Brook, N.Y. 11799

Filed Sep. 2, 1992, Ser. No. 938,866
Int. Cl.[5] B29C *47/10*; C11D *9/24*
U.S. Cl. 264—50 **25 Claims**

1. Method for the preparation of soap of white color having no dyes or oxidants present therein by a continuous flow process comprising the steps of:

a) heating a soap composition in a suitable container to a temperature sufficient to yield soap of pliable consistency;

b) transporting the resultant heated soap at a constant flow rate through a conduit connecting the container with a continuous mixer, a gas having been introduced into said conduit under pressure during transport of the soap therethrough, in an amount sufficient to cause the soap to float, and mixing the heated soap gas mixture to homogeneity continuously in said mixer;

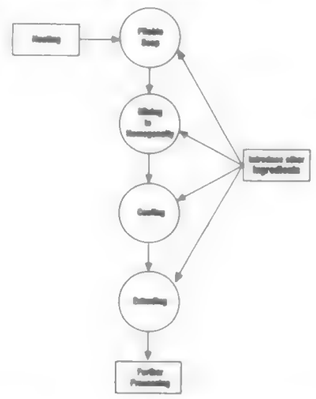
c) transporting the homogenized soap mixture through a second conduit continuously to a continuous heat exchanger wherein the mixture is cooled, and

d) transporting the cooled soap mixture through a third conduit to an extruder wherein the soap is extruded continuously.

17. A system for the continuous preparation of soap of white color having no dyes or oxidants present therein including:

a) means for heating soap to a pliable consistency,

b) first conduit means for transporting the heated soap to a continuous mixer means, said first conduit being adapted with an inlet means for the continuous introduction of gas thereto during transport of soap therethrough, said introduction of gas in an amount sufficient to cause the soap to float,



c) continuous mixer means for effecting homogenization of the mixture of soap and gas,

d) second conduit means for transporting the homogenized mixture to a cooling means,

e) means for cooling the homogenized mixture, and

f) third conduit means for transporting the cooled soap mixture, and

g) means for continuously extruding the cooled soap.

5,364,576

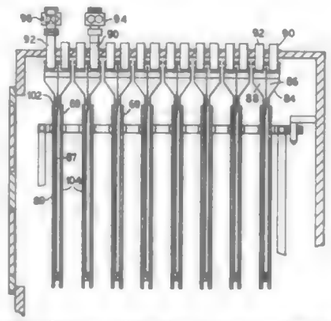
Patent Not Issued For This Number

5,364,577

VACUUM PANEL MANUFACTURING PROCESS

Nihat O. Cur, Royalton Township, Berrien County, and Richard W. Kruck, Sodus Township, Berrian County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 23, 1993, Ser. No. 35,824
Int. Cl.[5] B29C *43/22*; B65B *1/22, 31/00*
U.S. Cl. 264—69 **20 Claims**



1. A method for manufacturing a vacuum insulation panel using a gas impervious barrier bag having walls formed of flexible film material joined along all but one side so as to leave one open side comprising the steps:

1) loading a quantity of microporous powder into a storage hopper;

2) removing moisture from said powder;

3) evacuating gases from said powder;

4) evacuating gases from said barrier bag;

5) grasping and holding open said one side of said gas evacuated bag with said bag in a vertical orientation and with said open side facing upwardly;

6) subsequently filling said gas evacuated bag with said gas evacuated powder;

7) horizontally supporting said film material walls as said gas evacuated bag is filled with said gas evacuated powder;

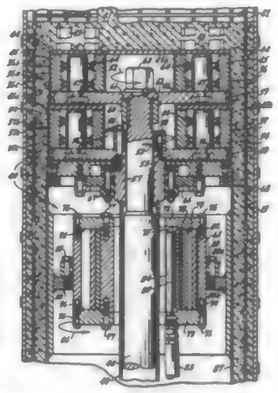
8) subsequently sealing said gas evacuated bag with said gas evacuated powder therein to form a vacuum insulation panel.

5,364,578

AN IMPROVED COMBINATION COUNTER ROTATING PACKERHEAD AND VIBRATOR ASSEMBLY AND METHOD OF OPERATION THEREOF

Thomas D. Grau, South Sioux City, Nebr., assignor to International Pipe Machinery Corp., Sioux City, Iowa

Filed Nov. 23, 1992, Ser. No. 980,398
Int. Cl.[5] B28B *21/28*
U.S. Cl. 264—71 **18 Claims**



17. A high speed method of making reinforced concrete pipe, the method comprising the steps of:

traversing a combination counter rotating packerhead and vibrating core assembly upward through a reinforcing wire cage located within a concrete pipe mold while dry cast concrete is being poured into the concrete pipe mold,

applying a first radially outward force to the dry cast concrete while the packerhead and core assembly transverses through the cage, the first radially outward force being applied by rotating an upper concrete forming assembly of the packerhead and core assembly in a first direction to force the dry cast concrete into the reinforcing wire cage and against the concrete pipe mold, the upper concrete forming assembly being disposed at the upper end of the combination counter rotating packerhead and vibrating core assembly,

applying a second radially outward force to the dry cast concrete while the packerhead and core assembly transverses through the cage, the second radially outward force being applied by rotating a lower concrete forming assembly of the packerhead and core assembly in a second direction to further force the dry cast concrete into the reinforcing wire cage and against the concrete pipe mold, the second direction being opposite to the first direction so that any twist tended to be applied to the reinforcing cage imposed by rotating the upper concrete forming assembly in the first direction is counteracted by rotating the lower concrete forming assembly in the second, opposite direction, the lower concrete forming assembly being disposed immediately below the upper concrete forming assembly,

isolating the upper and lower concrete forming assemblies from vibrations imparted by a vibrator of the packerhead and core assembly with an isolation section of the packerhead and core assembly disposed between the lower concrete forming assembly and the vibrator while the packerhead and core assembly transverses through the cage,

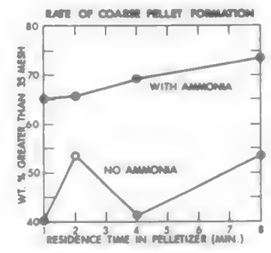
vibrating the dry cast concrete with the vibrator and a core skin of the packerhead and core assembly while the packerhead and core assembly transverses through the cage, the vibrator being mounted on the core skin, the vibrator and core skin being disposed below and in juxtaposition to the lower concrete forming assembly, the first and second radially outward forces imparted by the upper and lower concrete forming assemblies being supplied by a drive means disposed through the vibrator.

5,364,579

METHOD FOR PELLETIZING CALCINED CLAY

Weyman H. Dunaway, Sandersville; Elizabeth H. Garrett, Bartow, and Dudley C. Rowe, Alpharetta, all of Ga., assignors to ECC International Inc., Atlanta, Ga.

Filed Oct. 10, 1989, Ser. No. 419,198
Int. Cl.[5] B28C *3/00*
U.S. Cl. 264—82 **6 Claims**



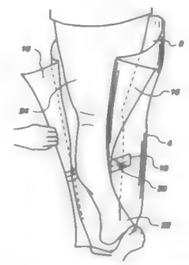
1. A process for treating kaolin clay which has been calcined by heating to a temperature of at least 900° C., to improve the bulk handling and flow characteristics, which comprises: adding ammonia to said calcined kaolin clay in the form of gaseous anhydrous ammonia or of vaporized concentrated ammonium hydroxide, and thereafter pelletizing the ammonia-treated product.

5,364,580

BODY PART MOLD SYSTEM

Mark Prent, 35 Bank St., St. Albans, Vt. 05478

Filed May 19, 1992, Ser. No. 885,458
Int. Cl.[5] B29C *33/38*
U.S. Cl. 264—138 **11 Claims**



1. A method of fabricating replicas of body parts of a model or patient, comprising the steps of:

(a) inserting the body part into a one-piece flexible support form shaped to enclose the body part, with one portion of the form having an opening to allow insertion of the body part therethrough, the support form being large enough to leave a substantially uniform space of about 1.5 inches between the exterior of the body part and the interior of the support form and having a slit formed on a side of the form to extend from the opening the length of said side, with overlapping flaps located on opposing sides of the slit to selectively spread apart and allow sliding out of the body part and to seal and enclose the body part;
(b) forming a negative impression mold of the body part by pouring a liquid molding material of alginate and water into the space between the body part and the support form, and permitting the material to set into a gelatinous matrix;
(c) removing the body part from the mold;
(d) casting a positive replica of the body part by pouring a replica-forming material into the negative impression left in the mold; and
(e) removing the positive replica from the alginate mold and support form.

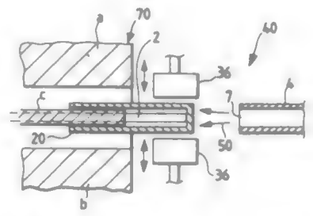
5,364,581
PROCESS OF MAKING POLYACRYLONITRILE FIBERS
Kenneth Wilkinson, 1010 Glenwood Blvd., Waynesboro, Va. 22980
Filed May 6, 1993, Ser. No. 57,470
Int. Cl.[5] D01D *5/06*; D01F *6/18*
U.S. Cl. 264—182 **3 Claims**

1. A process for preparing acrylonitrile fibers comprising:
maintaining in a reaction zone a substantially metal-ion free solvent system comprising water and an organic solvent capable of dissolving acrylonitrile copolymer,
adding to the reaction zone a vinyl sulfonic acid comonomer-free feedstock comprising a major amount of acrylonitrile monomer and a minor amount of a vinyl carboxylic acid comonomer,
adding to the reaction zone an initiator system comprising a peroxide, a low molecular weight organic mercaptan, and a catalytic amount of metal ion,
polymerizing the acrylonitrile monomer and vinyl carboxylic acid monomer under suitable precipitation polymerization conditions of temperature and pressure to obtain an acrylonitrile copolymer,
stripping off water and excess monomer and comonomer to obtain a spinnable solution of acrylonitrile copolymer, and
wet spinning the solution to produce round fibers.

5,364,582
METHOD FOR PRODUCING POLYMERIC FIBERS WITH IMPROVED ANTI-STATIC PROPERTIES AND FIBERS AND FABRICS PRODUCED THEREBY
Robert L. Lilly, Asheville, N.C., assignor to BASF Corporation, Parsippany, N.J.
Filed Aug. 30, 1993, Ser. No. 113,943
Int. Cl.[5] D01F *1/09*
U.S. Cl. 264—211 **7 Claims**

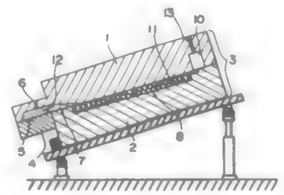
1. A method for producing extruded polymeric fibers with anti-static properties and deep dyeability, comprising introducing an anti-static agent into fiber forming polymer by the steps of
a) forming a dispersion of a pulverized polyoxyethylene alkylamine anti-static agent which anti-static agent is a solid waxy material at room temperature with a carrier which carrier comprises organic rosin materials and a surfactant;
b) injecting the anti-static agent and carrier dispersion into a spinning extruder;
c) adding fiber forming polymer to the spinning extruder;
d) heating together the dispersion and polymer to form a melt in the extruder; and
e) extruding the melt to form a polymeric fiber containing anti-static agent.

5,364,583
METHOD AND DEVICE FOR REMOVING AN INJECTION-MOLDED PIECE FROM A MOLD
Yoichi Hayashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Feb. 17, 1993, Ser. No. 18,707
Claims priority, application Japan, Feb. 28, 1992, 4-075857
Int. Cl.[5] B29C *45/43*
U.S. Cl. 264—335 **14 Claims**



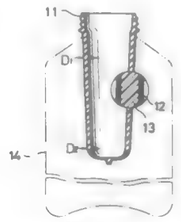
1. A method for removing an injection molded piece from a molding die unit in which movable mold members of said molding die unit are moved away from each other, after molding material has been injected into said molding die unit, so as to open said molding die unit, said method comprising the steps of:
moving at least one thrust pin through a predetermined distance so as to push the molded piece away from a space defined between said movable mold members when said molding die unit is opened; and
jetting a fluid toward a surface of the piece so as to push the molded piece against said at least one thrust pin and hold the molded piece in a predetermined position with respect to said at least one thrust pin.

5,364,584
PROCESS FOR PRODUCING FIBER-REINFORCED RESIN MOLDINGS
Tohru Imanara, Atsugi; Shoichi Satou, Sagamihara, and Naomi Yamashita, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Filed Oct. 16, 1992, Ser. No. 961,248
Claims priority, application Japan, Oct. 25, 1991, 3-306628
Int. Cl.[5] B29C *45/02, 45/14, 45/34*
U.S. Cl. 264—510 **5 Claims**



1. A process for producing fiber-reinforced resin moldings, which comprises the steps of:
placing a fiber reinforcement in a cavity-forming portion formed inside a bottom force;
closing a top force having in the inside thereof a runner-forming portion, a gate-forming portion and a liquid reservoir space-forming portion, a bottom force having in the inside thereof a cavity-forming portion so disposed as to communicate at one end thereof with the gate-forming portion of the top force when closed, a liquid reservoir space-forming portion disposed at the other end of the cavity-forming portion so as to form a liquid reservoir space when closed, and a liquid resin material discharge port so disposed as to communicate with the runner-forming portion when closed, thereby forming a mold;
slanting the mold at an angle of 15° to 90° so as to incline the liquid resin material discharge port downwardly and to position the liquid reservoir space at upper level;
injecting a liquid thermosetting or thermoplastic resin material into a cavity formed by closing the top force and bottom force, from a gate through a runner formed by closing the top force and bottom force and the liquid resin material discharge port positioned above a mixing head, while flowing upwardly the liquid resin material from the liquid resin material discharge port, so as to gather cells and vapors contained in the liquid resin material in the upper portion in the cavity and liquid reservoir space;
introducing an inert gas at a liquid reservoir space into the inside of the mold during the period after completion of injection of the liquid resin material until gelation of the liquid resin materials, so as to pressurize the inside of the cavity and maintaining the pressurized state until completion of curing; and
after curing, opening the mold to withdraw the molded product from the mold.

5,364,585
INJECTION ORIENTATION BLOW MOLDING METHOD
Setsuyuki Takeuchi, Toguramachi, Japan, assignor to A. K. Technical Laboratory, Inc., Nagano, Japan
Continuation of Ser. No. 676,849, Mar. 28, 1991, abandoned.
This application Oct. 27, 1992, Ser. No. 967,529
Claims priority, application Japan, Mar. 30, 1990, 2-85594; May 22, 1990, 2-132325; Mar. 7, 1991, 3-068036
Int. Cl.[5] B29C *49/06, 49/64*
U.S. Cl. 264—520 **16 Claims**



1. An injection orientation blow molding method comprising the steps of:
injecting and filling molten resin into an injection mold to form a preform;
holding a mouth portion of said preform by a lip mold cooperating with said injection mold for forming said mouth portion;
transferring a preform by said lip mold from the injection mold to a blow mold; and
orientation blow molding the preform into a thin-wall hollow molded article, the method being characterized by further comprising:
quick cooling the preform in said injection mold by an amount sufficient to form a skin layer on a surface of the preform which enables the preform to maintain its shape;
removing the preform from the injection mold when an internal portion of the preform lying inward from the skin layer is at a higher temperature than the skin layer; and
orientation blow molding the preform within a given time interval which terminates before a surface temperature of the preform, which rises due to the elevated internal temperature, reaches a predetermined peak temperature.

5,364,586
PROCESS FOR THE PRODUCTION OF POROUS MEMBRANES
Lev I. Trusov; Vladimir N. Lapovok, and Victor I. Novikov, all of Moscow, , assignors to Ultram International L.L.C., Denver, Colo.
Filed Aug. 17, 1993, Ser. No. 107,515
Int. Cl.[5] B22F *3/12*
U.S. Cl. 419—2 **39 Claims**

1. A process for the fabrication of a composite membrane, comprising the steps of:
(a) dispersing metallic particles having a particle size of less than about 50 μm on a porous metallic substrate to form a sublayer;
(b) pre-sintering said sublayer to adhere said sublayer to said metallic substrate;
(c) covering at least a portion of said sublayer with ultra-fine ceramic particles having an average particle size of less than about 500 nm;
(d) applying shear force to said ultra-fine particles to plastically deform said particles; and
(e) sintering said ultra-fine particles to form a composite membrane comprising a filtering layer and a metallic substrate.
33. A filter element, comprising:
(a) a top layer comprising sintered ultra-fine ceramic particles and having an average pore size of from about 30 nanometers to about 200 nanometers;
(b) a middle layer comprising sintered metallic particles having an average particle size of from about 5 μm to about 20 μm; and
(c) a bottom layer comprising a porous metallic substrate;
wherein said middle layer has a higher total porosity than said top layer and said bottom layer such that thermal stresses between said top layer and said bottom layer are reduced.

5,364,587
NICKEL ALLOY FOR HYDROGEN BATTERY ELECTRODES
Frederick H. Perfect, deceased, late of Wyomissing, Pa. by Marjorie L. Perfect, executor , assignor to Reading Alloys, Inc., Robesonia, Pa.
Filed Jul. 23, 1992, Ser. No. 919,171
Int. Cl.[5] B22F *3/12*
U.S. Cl. 419—31 **20 Claims**

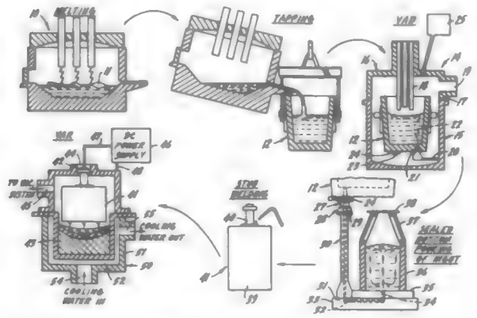
1. A process for preparing a master alloy for use in hydrogen storage battery electrodes, comprising the steps of:
(a) preparing a first mixture of at least one metal and at least one metal oxide, both in powdered form, and Al in powdered or granular form, wherein said at least one metal and said at least one metal oxide are each independently selected from the group of metals consisting of Ni, V, Cr, Co, and Fe;
(b) alloying said at least one metal and at least one metal oxide to produce an intermetallic compound in an aluminothermic reaction;
(c) size reducing said intermetallic compound into powdered form;
(d) preparing a second mixture of said powdered intermetallic compound and at least one additional metal or alloy in powdered form, wherein said at least one additional metal or alloy is selected from the group of metals consisting of Ni, Ti, Mn, Zr, Cr, Co, V and Fe;
(e) pressing said second mixture in powdered form to produce a compact; and,
(f) fusion heating said compact to produce a master alloy for use in hydrogen storage battery electrodes selected from the group of metals consisting of Ni, V, Cr. Co, Fe, Ti, Mn, and Zr.

5,364,588

DOUBLE STABILIZED STAINLESS-TYPE STEEL DIE BLOCK

Charles W. Finkl, Evanston; Guy A. Brada, Chicago, and Algirdas A. Underys, Arlington Heights, all of Ill., assignors to A. Finkl & Sons Co., Chicago, Ill.

Filed Oct. 26, 1992, Ser. No. 966,272
Int. Cl.[5] C22C *38/44*
U.S. Cl. 420—67 **4 Claims**



1. A stainless-type steel die block having:

C	from	about	.3	to	about	.4
Mn	"	"	.3	"	"	1.0
P					"	.05 max
S					"	.010 max
Si	"	"	.2	"	"	.6
Ni					"	.5 max
Cr	"	"	12	"	"	15
Mo	"		.35	"	"	1.10
Al					"	.030 max
Ca					"	.004 max

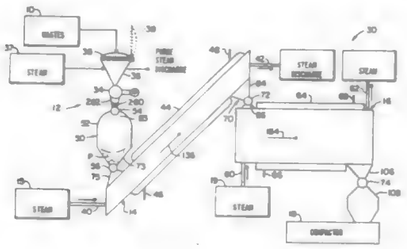
together with V, in the virtual absence of Nb, to 0.1 max, or Nb in the virtual absence of V, to 0.1 max, or V and Nb combined to 0.1 max, Fe—balance.

5,364,589

METHOD AND APPARATUS FOR STERILIZING BIOLOGICAL WASTE

James A. Buehler, Ft. Myers, and Lynnford W. Claypoole, Naples, both of Fla., assignors to Sterile Systems, Inc., Sanibel, Fla.

Filed Apr. 1, 1991, Ser. No. 677,999
Int. Cl.[5] A61L *2/16*
U.S. Cl. 422—26 **17 Claims**



1. An apparatus for sterilizing biological waste material comprising:

a shredder mechanism;

means for introducing waste material into said shredder mechanism, which shredder mechanism chops the waste material into particles of reduced size;

a preheating chamber;

first transmittal means communicably interconnected between said shredder mechanism and said preheating chamber;

controller means for directing said first transmittal means to selectively transmit particles from said shredder mechanism to said preheating chamber;

means responsive to said controller means, for introducing free-flowing steam of at least 140 degrees Fahrenheit into said preheating chamber to directly contact and preheat said particles;

a sterilization chamber;

a valve assembly interconnected between said preheating chamber and said sterilization chamber and being selectively opened by said controller means to transmit a selected amount of said preheated particles from said preheating chamber to said sterilization chamber; and

means, responsive to said controller means, for introducing into said sterilization chamber hotter free-flowing steam having a temperature that is greater than the temperature of steam that is introduced into said preheating chamber and of at least 248° Fahrenheit to directly contact and heat said preheated particles such that said particles are sterilized.

5,364,590

METHOD FOR STERILIZATION OF OBJECTS

H. William Hillebrenner, Apex, N.C., assignor to American Sterlizer Company, Erie, Pa.

Filed May 7, 1993, Ser. No. 57,755
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—28 **2 Claims**

1. A method of preventing condensation from occurring in a sterilization cassette, prior to, during and after sterilization, the method comprising the steps of:

a) heating an internal atmosphere of a cabinet via an external source to a first predetermined temperature, said temperature being indicated by a first temperature sensing device extended within said cabinet;

b) inserting a sterilization cassette into said cabinet;

c) coupling an inlet gas line to said sterilization cassette's interior;

d) coupling an exit gas line to the cassette and to an exterior surface of said cabinet, said exit gas line having a second temperature sensing device coupled thereto for indicating the temperature of any gas in said exit gas line;

e) heating said sterilization cassette's interior to a second predetermined temperature as indicated by the second temperature sensing device, such that sterilization of the cassette interior and object contained therein will be effective without the sterilant or moisture forming condensation;

f) introducing said sterilant in vapor phase via said inlet gas line into the cassette to effectuate sterilization; and

g) monitoring said first and said second temperature sensing devices to insure that the predetermined temperatures are maintained so that condensation is avoided.

5,364,591

DEVICE FOR MOVING A TARGET-BEARING SOLID THROUGH A LIQUID FOR DETECTION WHILE BEING CONTAINED

Nancy F. Green, Pittsford; Thomas J. Cummins, Rochester, both of N.Y., and Fred T. Oakes, Melvern, Pa., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,517
Int. Cl.[5] G01N *33/537, 33/546*
U.S. Cl. 422—58 **8 Claims**

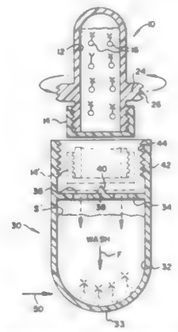
1. A device for reacting while contained, a sample target with (i) a mobilizable particulate solid phase reagent having immobilized thereon a specific binding partner capable of specifically binding the sample target and (ii) a label reagent

comprising a detectable label conjugated to a second specific binding partner capable of specifically binding the sample target in order to bind the label reagent to the mobilizable particulate solid phase reagent in an amount indicative of the sample target, the device comprising:

a) a first confined chamber comprising said mobilizable particulate solid phase reagent, said label reagent, and a pierceable cover capable of completely sealing said first confined chamber;

b) at least a second confined chamber containing at least a wash liquid for washing any unbound label reagent from said mobilizable particulate solid phase reagent, wherein said second confined chamber further comprises an aperture and a piercing means; and

c) confining means for confining and containing said sample



target totally within said device when a sealed passageway is opened between said first and second confined chambers, said confining means comprising threaded means for removably holding together said first and second chambers in two spaced-apart orientations, one orientation being effective to keep said piercing means out of contact with said pierceable cover and the other of said orientations being effective to pierce said pierceable cover with said piercing means;

wherein said sealed passageway is formed when said pierceable cover is pierced by said piercing means when said confining means is in said second orientation and said mobilizable solid phase reagent moves from said first confined chamber to at least said second confined chamber and said wash liquid washes off any unbound label reagent.

5,364,592

CASSETTE FOR STORING AND DISPENSING CUVETTES

Gregory D. Lewis, Cary; Roger G. Roberts, Raleigh, and Thomas B. Givens, Rougemont, all of N.C., assignors to Akzo N.V., Arnhem, Netherlands

Filed Jul. 22, 1992, Ser. No. 916,712
Int. Cl.[5] G01N *21/13;* B65H *1/08*
U.S. Cl. 422—63 **10 Claims**

1. A cassette for storing and dispensing cuvettes comprising:

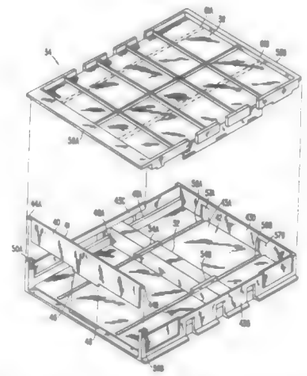
an enclosable frame defining an interior volume for storing a plurality of cuvettes in a plurality of rows, including:

a removable cover for securing the plurality of cuvettes loaded into said frame when said cover is removed,

a side wall including a pivotally mounted door for pivoting between a closed position and an open position through which the cuvettes can be dispensed from said cassette, and

means for locking said door in said closed position to avoid an inadvertent dispensing of cuvettes and,

a transverse guide bar disposed in said frame for pushing cuvettes to be dispensed from said cassette, said frame being provided with at least one opening located for receiving at least one drive element for driving said guide bar and a guide means cooperating with said guide bar for



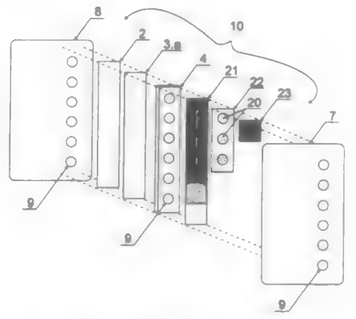
maintaining said guide bar transverse to the direction in which the bar pushes the cuvettes.

5,364,593

DIRECT-READ COLORIMETRIC EXPOSIMETER

Gueorgui M. Mihaylov, 900 Piney Branch Dr., Virginia Beach, Va. 23451; Kirollos S. Kirollos, 1502 Canterford Ct., Virginia Beach, Va. 23464, and Kevin L. Lockerby, 1017 Woodsmans Reach, Chesapeake, Va. 23320

Continuation-in-part of Ser. No. 969,762, Oct. 30, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,303
Int. Cl.[5] G01J *1/48*
U.S. Cl. 422—87 **19 Claims**



8. A direct-read exposimeter for detecting a specified polluting gas in the ambient atmosphere and for providing a visual, graded measurement of color variation corresponding to different ranges of exposure to said polluting gas over a given time period, said direct-read exposimeter comprising: a base composed of a gas-impermeable, inert material; a cover for said base composed of a gas-impermeable, inert material, with said cover secured to said base along preselected edges to form an enclosure; a color-forming member located in said enclosure adjacent to said base, said color-forming member containing a chromophoric reagent which changes color when exposed to said polluting gas; and at least one gas-diffusion control member disposed between said color-forming member and said cover, with said gas-diffusion control member composed of a nonporous medium having multiple pinholes in an arrangement defining a preselected number of separate diffusion zones, with each pinhole in each diffusion zone having a maximum diameter of 0.6 mm, and a length-to-diameter ratio of ≧1, and with each diffusion zone having a diffusion resistance based

upon the number of pinholes and the size of each pinhole in said zone and wherein said cover has a number of openings in alignment with each of said diffusion zones for exposing each of said diffusion zones to the ambient atmosphere.

5,364,594

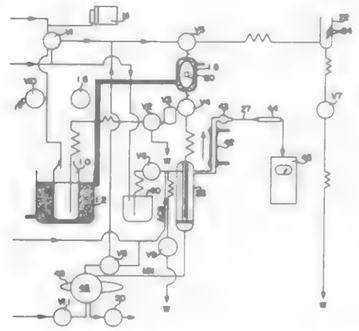
METHOD AND APPARATUS FOR THE COULOMETRIC DETECTION OF DISSOLVED GASES PARTICULARLY TCO_2 IN SEAWATER

Kenneth M. Johnson, Wading River, N.Y., and John M. Sieburth, West Kingston, R.I., assignors to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, Providence, R.I.

Continuation of Ser. No. 591,787, Oct. 2, 1990, abandoned. This application Jun. 3, 1993, Ser. No. 71,525

Int. Cl.[5] G01N *27/04, 35/02, 7/00*

U.S. Cl. 422—90 **7 Claims**



1. An automated system for the coulometric detection of a dissolved carbon dioxide gas which comprises:

a vessel to store a liquid sample containing a dissolved carbon dioxide gas to be analyzed;

a water jacketed pipette to hold liquid sample transferred from the vessel;

means to place a pressurized head-space gas in communication with the sample in the vessel to transfer the sample from the vessel to the pipette, the head-space gas having the same concentration of carbon dioxide in the head-space gas as is present in the liquid sample to be analyzed;

means to place a pressurized pneumatic gas in communication with the sample in the pipette to drive the sample to a stripper where the dissolved carbon dioxide gas is stripped from the sample;

means to introduce a carrier gas into the stripper to carry the stripped gas; and

a detector downstream of the stripper and in fluid flow communication with the stripper whereby the carrier gas carries the stripped gas to the detector.

5,364,595

PIPETTE DEVICE CONSTRUCTED TO PREVENT CONTAMINATION BY AEROSOLS OR OVERPIPETTING

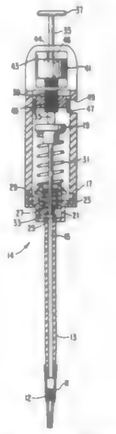
Michael W. Smith, Fairburn, Ga., assignor to Porex Technologies Corp., Fairburn, Ga.

Filed Jul. 2, 1993, Ser. No. 85,330

Int. Cl.[5] B01L *3/02;* **G01N** *1/14*

U.S. Cl. 422—100 **9 Claims**

1. A pipette device having a tubular tip defining a sample reservoir to receive a sample, a porous plastic plug mounted in said tubular tip above said reservoir, means for applying suction to the upper end of said tubular tip to draw air through said porous plastic plug and a liquid sample into said reservoir, said suction means including means for controlling the amount of the sample drawn into said reservoir to a precisely selected volume, the improvement wherein said porous plastic plug is constructed from a hydrophobic material which is non-self sealing and having a median pore size so as to prevent said suction device from drawing said sample through said porous



plastic plug without self-sealing of said pore size of said porous plastic plug, whereby said median pore size ranges from 3 microns to an upper limit which depends upon the hydrophobicity of said porous plastic plug.

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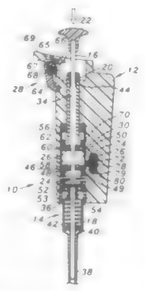
MANUAL PIPETTE WITH PLUNGER VELOCITY GOVERNOR, HOME POSITION LATCH AND TRIGGER RELEASE

Haakon T. Magnussen, Jr., Orinda; William D. Homberg, Oakland, and Kenneth Rainin, Piedmont, all of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Filed Dec. 1, 1992, Ser. No. 983,883

Int. Cl.[5] B01L *3/02;* **G01N** *1/14*

U.S. Cl. 422—100 **19 Claims**



1. A manual pipette for repeatably aspirating and dispensing a predetermined quantity of a liquid, comprising:

a hand holdable pipette body;

plunger means mounted within the pipette body for manual movement by a pipette user away from a first stop position toward a home position, the home position being a predetermined starting position for the plunger means for repeatable aspiration of the predetermined quantity of liquid into a tip extending from the pipette body when the tip is immersed in the liquid;

spring means within the pipette body for generating a spring force opposing movement of the plunger means away from the first stop position and for returning the plunger means from the home position to the first stop position;

means within the pipette body and operative as the plunger means reaches the home position for introducing a user detectable change in a force opposing movement of the plunger means away from the first stop position to indicate to the pipette user that the plunger means has reached the home position; and

latch means operative as the plunger means reaches the home position for releasably maintaining the plunger means in the home position and under control of the pipette user, whereby a release of the latch means with the tip extending from the pipette body immersed in the liquid will affect aspiration of the predetermined quantity of liquid into the tip with a return of the plunger means to the first stop position in response to the spring means.

5,364,597

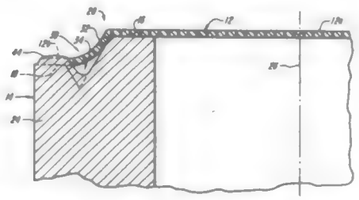
APPARATUS FOR COLLECTION AND TRANSFER OF PARTICLES

Lewis T. Polk, Jr., Bedford; Hugh Vartanian, Littleton; Phillip P. Brown, Westford, and Walker M. Sloan, III, Berlin, all of Mass., assignors to Cytyc Corporation, Mariboro, Mass.

Continuation-in-part of Ser. No. 668,892, Mar. 13, 1991, abandoned. This application Feb. 28, 1992, Ser. No. 843,571

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—101 **7 Claims**



1. Apparatus having a particle-collecting and transferring filter, said apparatus comprising

a tubular body having a planar rim at a first axial end spaced from a second axial end,

a planar annular mounting surface disposed parallel to said planar rim and on the body between the axial ends radially outwardly of the rim,

a filter comprising

a filter portion spanning the first axial end and seated on the rim for disposition in a first plane defined by the rim, the filter portion having an outer screen surface, facing outwardly from the tubular body, for collecting thereon microscopic particles carried in a fluid, and for transferring such collected particles to a planar receiver brought into abutment with the particle carrying outer surface, and

a mounting portion peripheral to the filter portion and extending from the rim and bonded to the annular mounting surface for securing the filter to the tubular support body, and

barrier means for isolating the rim from distorting action developed at the mounting surface during bonding of the mounting portion of the filter to the mounting surface, said barrier means being a portion of the tubular body spanned by said filter mounting portion and defining a trough between the mounting surface and the rim.

5,364,598

SYSTEM FOR SAMPLING FLUID

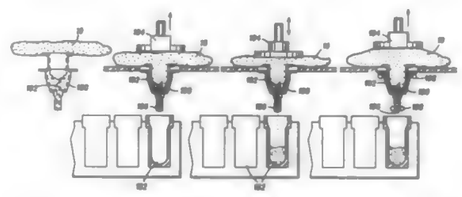
L. Thomas Oxley, Riverwoods, Ill., assignor to T-Systems, Inc., Riverwoods, Ill.

Filed Jul. 30, 1991, Ser. No. 738,071

The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.

Int. Cl.[5] G01N *35/02*

U.S. Cl. 422—102 **7 Claims**



1. A system for sampling a fluid specimen for testing in an analysis station, comprising:

a container for holding said specimen, said container having an access port sealingly coupled to said container;

means for accessing said access port for allowing said fluid specimen to be removed from said container, said means for accessing and said container being positioned one relative to the other;

means for engaging said accessing means to said access port with said accessing means having a single accessing element both for removably engaging said access port to open said access port and for allowing removal of said fluid specimen;

sealing means for reseating said container after accessing said fluid specimen and remaining with said access port after removal of said fluid specimen, said sealing means being an integral part of said means for accessing; and

means for collecting said fluid specimen transferred through said access port for subsequent analysis, said means for collecting including a specimen test receptacle.

5,364,599

METHOD AND MULTI-EJECTOR TYPE OF SYSTEM FOR PURIFYING THE POLLUTED POISONOUS EXHAUST GAS

Bup-Jong Lee, Seoul, Rep. of Korea, assignor to Anico Co. Ltd., Seoul, Rep. of Korea

Filed Mar. 15, 1993, Ser. No. 31,418

Claims priority, application Rep. of Korea, Jun. 27, 1992, 92-11385

Int. Cl.[5] B01D *50/00;* **F01N** *3/10;* **B65G** *11/06*

U.S. Cl. 422—170 **15 Claims**

1. A multi-ejector type of system for purifying polluted poisonous exhaust gas, comprising:

a) first processing means for preliminarily removing pollutants from said exhaust gas and for causing the exhaust gas to be heat-exchanged with cooling water so as to permit the exhaust gas temperature to be reduced to a predetermined degree;

b) second processing means for neutralizing and washing the exhaust gas processed in said first processing means, so as to cause the remaining pollutants to be completely removed from the exhaust gas, said second processing means being connected to said first processing means by a plurality of pipe lines;

c) said first processing means comprising:

i) at least one cyclone for preliminarily removing the floating dust from said polluted poisonous exhaust gas;

ii) two-pass heat exchanging means for gradually lowering the temperature of the exhaust gas, said heat exchanging means comprising at least two water-cooled indirect

heat exchangers each of which is supplied with said cooling water in order to cause heat exchange of the exhaust gas with the cooling water;

iii) a direct heat exchange cooler for providing a cooling water jet of a predetermined pressure for rapidly lowering the temperature of the exhaust gas while extracting a predetermined portion of the pollutants from the exhaust gas;

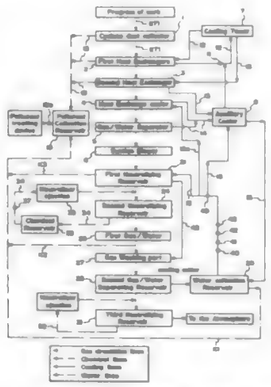
iv) a gas-water separator for separating moisture from the exhaust gas containing the pollutants emitted from said heat exchange cooler;

v) a suction blower for exhausting the exhaust gas to sequentially pass through said members;

vi) a cooling tower for providing the cooling water;

vii) an auxiliary cooler for collecting cooling water from the two-pass heat exchanging means, the heat exchange cooler and the gas-water separator and returning to said cooling tower, said auxiliary cooler further supplying the cooling water to a water collection reservoir of said second processing means and auxiliarily cooling the cooling water outputted from said water collection reservoir;

viii) a gas pipe line for sequentially passing the exhaust gas through the cyclone, the two-pass heat exchanging means, the direct type of heat exchange cooler, the gas-water separator and the suction blower, said gas



pipe line guiding the exhaust gas from the suction blower to a gas distributing pipe connected to a first neutralizing reservoir of said second processing means;

ix) a pollutant output pipe line for draining the pollutants extracted from the exhaust gas to a pollutant collection reservoir and discharging to a pollutant treating device; and

x) a plurality of cooling water circulation pipe lines for circulating the cooling water through the cooling tower, said cooling water circulation pipe lines comprising:

a first pipe line for supplying the cooling water from the cooling tower to one of said water-cooled indirect heat exchangers and returning to the cooling tower;

a second pipe line for sequentially supplying the cooling water from the cooling tower to the other of said water-cooled indirect heat exchangers and said auxiliary cooler, and to return to the cooling tower;

a third pipe line for introducing the cooling water discharged from said heat exchange cooler and said gas-water separator to the auxiliary cooler;

a fourth pipe line for introducing the cooling water discharged from the auxiliary cooler to said water collection reservoir;

a fifth pipe line for introducing the cooling water discharged from the water collection reservoir to said first neutralizing reservoir of said second processing means and the auxiliary cooler; and

a sixth pipe line for connecting said fifth pipe line between the water collection reservoir and the first neutralizing reservoir to the heat exchange cooler, thereby permitting the heat exchange cooler to be supplied with the cooling water discharged from the water collection reservoir and the first neutralizing reservoir;

d) said second processing means comprising:

i) a plurality of first neutralizing reservoirs for firstly neutralizing the exhaust gas emitted from said first processing means, each said first neutralizing reservoir being connected to said first processing means by a gas pipe line and a gas distributing pipe;

ii) a second neutralizing reservoir for secondly neutralizing the exhaust gas, said second neutralizing reservoir being disposed between the first neutralizing reservoirs and connected thereto by a plurality of gas outlet pipes;

iii) a first gas-water separating reservoir for firstly separating the exhaust gas from said cooling water, said first gas-water separating reservoir being vertically disposed below the second neutralizing reservoir and connected by a plurality of connection pipes;

iv) means for washing the exhaust gas using the cooling water, said gas washing means being disposed such that an inlet port thereof is disposed at the middle portion of the first gas-water separating reservoir and provided therein with a plurality of vertically arranged washing bars;

v) a water collection reservoir for collecting the cooling water processed in said second processing means, said water collection reservoir being connected to a second gas-water separating reservoir, said second gas-water separating reservoir being connected to said gas washing part by a lower output port;

vi) a third neutralizing reservoir for final purification, of the exhaust gas, said third neutralizing reservoir being vertically disposed above the second neutralizing reservoir and connected by a plurality of connection pipes;

vii) first chemical ejection means for mixing the exhaust gas in said second neutralizing reservoir with neutralizer, said first chemical ejection means comprising:

at least one chemical ejection nozzle arranged in a gas outlet port of said gas outlet pipe connecting the first and second neutralizing reservoirs and providing a gas ascending passage for the second neutralizing reservoir;

a chemical feed pipe line for connecting a chemical reservoir to said chemical ejection nozzle;

a chemical recovering pipe line connecting a chemical output port of the second neutralizing reservoir to the chemical reservoir; and

a pump means for generating power for the circulating the neutralizer.

viii) at least one cooling water filter and a cooling water circulation pump means for repeatedly circulating the cooling water simultaneously with filtering the pollutants therefrom, said filter and said pump means being sequentially arranged on a fifth pipe line connected between the water collection reservoir and the first neutralizing reservoirs;

ix) a check valve and pump means for circulating the cooling water when said system is nonoperational, thereby preventing system failure due to a low temperature, said check valve and pump means being arranged sequentially between said cooling water filter and said cooling water circulation pump mean;

x) a cooling water circulation pipe line for supplying the cooling water from the first neutralizing reservoirs to the gas washing part, said cooling water circulation pipe line being connected between cooling water output ports of the first neutralizing reservoirs and a cooling water input port of the gas washing means;

xi) pollutant draining means for draining the pollutants removed from the exhaust gas to a pollutant collection reservoir, said pollutant draining means comprising:

a plurality of pollutant extracting chambers for collecting and exhausting the pollutants, one of said pollutant extracting chambers is provided between the second gas-water separating reservoir and the water collection reservoir, and a second of said pollutant extracting chambers is provided between the gas washing means and the first gas-water separating reservoir;

a pollutant output port for draining the pollutants from each of the first neutralizing reservoirs; said pollutant output port being provided at the lower part of the first neutralizing reservoir; and

three pollutant discharging pipe lines for respectively connecting said two pollutant extracting chambers and said pollutant output port to the pollutant collection reservoir;

xii) a temperature sensor and a solenoid valve for controlling the flow of the cooling water, said cooling water being repeatedly circulated between the water collection reservoir and the first neutralizing reservoirs, such that the cooling water is permitted to be introduced to an auxiliary cooler of the first processing means when the cooling water temperature is higher than a predetermined temperature, the temperature sensor and the solenoid valve being sequentially arranged on a branching part of said fifth pipe line; and

xiii) second chemical ejection means for mixing the exhaust gas in said third neutralizing reservoir with neutralizer, said second chemical ejection means comprising:

a chemical circulation pipe line for circulating the neutralizer therethrough, said chemical circulation pipe line being connected between a chemical inlet port and a chemical output port, said chemical inlet port and chemical output port being disposed at upper and lower parts of the third neutralizing reservoir, respectively;

a chemical ejection nozzle for ejecting the neutralizer therefrom, said chemical ejection nozzle being arranged at an inner center of the third neutralizing reservoir connected to the chemical inlet port; and

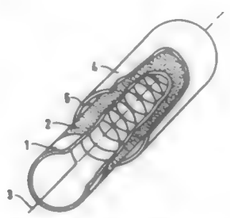
pump means for circulating the neutralizer.

5,364,600

APPARATUS FOR PRODUCING OZONE FROM OXYGEN

Hans-H. Stiehl, and Jürgen Schweckendiek, both of Berlin, Germany, assignors to Sorbios GmbH, Germany

Filed Oct. 31, 1991, Ser. No. 785,542
Claims priority, application Germany, Nov. 2, 1990, 4035272
Int. Cl.[5] B01J *19/12*
U.S. Cl. 422—186.07 **4 Claims**



1. In an apparatus for producing ozone from oxygen including at least one discharge electrode and counterelectrode which are separated by a dielectric of high heat conductivity and which tightly bear on the dielectric that is cooled in direct manner, the discharge electrode, around which oxygen flows, forming a non-closed surface and being in the form of a wire, the discharge electrode triggering a discharge in the gas space, surrounding the same, and on the dielectric by applying an electric field thereto when electric power is applied to the discharge electrode, the improvement characterized in that the discharge electrode is made of one of molybdenum, tungsten, niobium and tantalum and is directly exposed to the oxygen flow.

5,364,601

TREATING OF CONTACT LENSES WITH COMPOSITIONS COMPRISING PVP-H202

Anil Salpekar, Pittsford, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,507
Int. Cl.[5] A61L *2/00, 9/00*
U.S. Cl. 422—28 **11 Claims**

10. A method for disinfecting and cleaning contact lenses, comprising:

contacting said lenses with an aqueous saline solution that includes a preservative; and

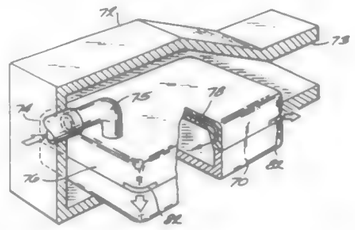
contacting said lenses in said solution with a composition comprising a solid PVP-H_2O_2 complex and a solid neutralizer component for neutralizing H_2O_2, wherein said neutralizer component comprises a gelatin capsule of sufficient integrity for holding said neutralizing component and delaying release of said neutralizer component for a predetermined amount of time determined by said capsule integrity, and said gelatin capsule includes within said capsule a decomposing agent that is activated by moisture passing into said capsule as it swells such that said decomposing agent disintegrates said capsule releasing said neutralizing agent, wherein said lenses are disinfected, residual H_2O_2 is neutralized and said disinfected lenses remain in a preserved solution.

5,364,602

STERILIZATION SYSTEM

Steven Leduc, 10807 E. Harvard Dr., Aurora, Colo. 80014

Filed Aug. 10, 1993, Ser. No. 104,981
Int. Cl.[5] B01J *3/04*
U.S. Cl. 422—307 **4 Claims**



1. A sterilization system comprising in combination

an enclosed tray within which materials to be sterilized are subjected to a pressurized moist atmosphere at an elevated temperature,

an auxiliary unit for causing a volume of air, heated to a temperature of about 160° F. to 550° F., to flow into said tray at a high air flow rate, said auxiliary unit being provided with an opening adapted to receive said tray, said tray being provided with first and second removable covers, said first cover being adapted to enclose said materials during sterilization, and said second cover being adapted to cover said tray for insertion into said auxiliary unit, said second cover having an air flow inlet interfitting with an air flow supply conduit in said auxiliary unit which conduit is connected to a source of heated air and said cover being provided with outflow openings for outflow of air.

5,364,603

MERCURY-FREE DISSOLUTION OF ALUMINUM-CLAD FUEL IN NITRIC AACID

Jerry D. Christian, Idaho Falls, and Philip A. Anderson, Pocatello, both of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 12, 1993, Ser. No. 105,236
Int. Cl.[5] C01G *56/00*
U.S. Cl. 423—104 12 Claims

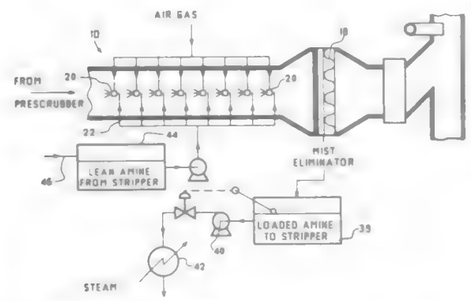
1. A process for dissolution of aluminum comprising:
a. preparing a mixture of nitric acid and fluoboric acid in a makeup vessel;
b. placing an aluminum element in a dissolver vessel having an overflow;
c. transferring a portion of the mixture of nitric acid and fluoboric acid to the dissolver vessel from the makeup vessel;
d. heating the dissolver vessel and mixture to a boiling temperature and holding that temperature until a desired concentration of dissolved aluminum is achieved;
e. adding a constant flow influent of the mixture of nitric acid and fluoboric acid to the dissolver vessel; and
f. collecting an effluent from the dissolver vessel overflow, said effluent containing a mixture of aluminum nitrate, nitric acid, fluoboric acid, and water.

5,364,604

SOLUTE GAS-ABSORBING PROCEDURE

Donald R. Spink, and Kim D. Nguyen, both of Waterloo, Canada, assignors to Turbotak Technologies Inc., Waterloo, Canada

Continuation-in-part of Ser. No. 754,643, Sep. 4, 1991, which is a continuation-in-part of Ser. No. 646,197, Jan. 28, 1991, Pat. No. 5,192,517, which is a continuation-in-part of Ser. No. 438,047, Nov. 20, 1989, Pat. No. 5,023,064, which is a division of Ser. No. 243,720, Sep. 13, 1988, Pat. No. 4,963,329, which is a continuation-in-part of Ser. No. 20,953, Mar. 2, 1987, Pat. No. 4,865,817. This application Nov. 12, 1992, Ser. No. 975,003
Claims priority, application United Kingdom, Nov. 12, 1991, 9123999.6
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] C01B *7/01, 17/16, 17/48, 21/20*
U.S. Cl. 423—210 13 Claims



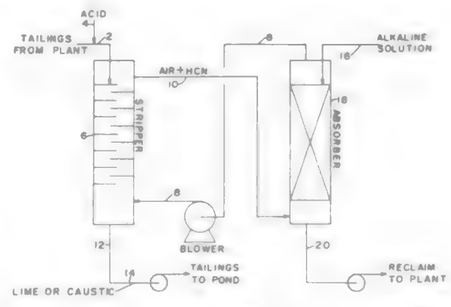
1. A method for the removal of a solute gas from a gas stream containing the same using an absorbing medium for said solute gas, which comprises:
passing said gas stream through an elongate conduit having an inlet thereto and an outlet therefrom;
feeding said absorbing medium in parallel to at least two dual-fluid spray nozzles located in longitudinally spaced-apart relationship in said conduit;
injecting said parallel-fed absorbing medium from each of said spray nozzles by atomizing gas to form a spray pattern of said absorbing medium in said conduit from each nozzle and containing liquid droplets ranging in size from about 5 to about 150 microns;
absorbing solute gas from said gas stream into said liquid droplets of absorbing medium in each said spray pattern in said conduit; and
agglomerating said liquid droplets containing absorbed solute gas at said outlet of said conduit to remove entrained liquid droplets from said gas stream and form a liquid stream containing absorbed solute gas.

5,364,605

RECOVERY OF CYANIDE FROM PRECIOUS METAL TAILINGS

Henry A. Pfeffer, Mercerville, and Gary E. Wolfe, Trenton, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jun. 5, 1991, Ser. No. 710,479
Int. Cl.[5] C01C *3/00*
U.S. Cl. 423—236 15 Claims



1. Process of recovering cyanide values from a mill tailings stream comprising both ore insolubles and a leachant containing cyanide values, by acidifying said stream to a pH of about 4 and below, introducing the acidified stream into a stripping column in which the average residence time of the acidified stream in the stripping column is sufficiently low that the pH of the acidified stream in the stripping column does not rise above about 4, passing a stripping gas into the stripping column in contact with the acidified stream to strip volatile cyanide values evolved from the acidified stream, removing a tailing stream from the stripping column reduced in cyanide values, removing the stripping gas and stripped volatiles cyanide values from the stripping column and introducing them into an absorbing column, absorbing the cyanide values in an alkaline liquor that contacts the cyanide values in the absorbing column and recovering the absorbed cyanide values.

5,364,606

NOX REDUCTION THROUGH THE USE OF METHANE

Stephen L. Hung, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,049
Int. Cl.[5] C01B *21/04;* F01N *3/10;* B01D *53/34*
U.S. Cl. 423—239.2 7 Claims

1. A method for selective catalytic reduction of NO_x from a gas stream, said method comprising the steps of:
providing a flow reactor having a catalyst disposed therein, said catalyst comprising a zeolite impregnated with zinc cations;
introducing methane into said flow reactor; and
introducing said gas stream into said flow reactor so that said methane reacts with said gas stream over said catalyst to catalytically reduce NO_x in said gas stream.

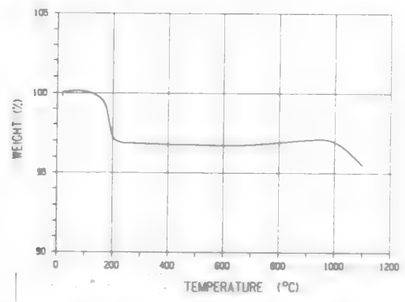
2. The method of claim 1 wherein said zeolite is additionally impregnated with copper cations.

5,364,607

BORIDES AND BORIDE PRECURSORS DEPOSITED FROM SOLUTION

Frederick N. Tebbe, Hockessin, and Ralph T. Baker, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US89/03883, § 371 Date Mar. 4, 1992, § 102(e) Date Mar. 4, 1992, PCT Pub. No. WO91/03420, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 8, 1989, Ser. No. 836,304
Int. Cl.[5] C01B *6/15, 6/23, 35/04*
U.S. Cl. 423—286 15 Claims



1. A metal boride precursor complex comprising the following formula (I)

$$[M(B_2H_6)_x(BH_4)_y]_n \quad (I)$$

wherein
M is zirconium or hafnium;
x is from about 0.5 to about 2;
y is from 0 to about 3, provided that $2x+y$ is 4; and
n is at least about 2.

2. A metal boride precursor complex comprising a mixture of oligomers having the formula (II)

$$[MB_2H_x]_n \quad (II)$$

wherein
M is zirconium or hafnium;
x is from 0 to 9; and
n is at least 4.

8. A process for producing metal boride precursors having the following formula (I)

$$[M(B_2H_6)_x(BH_4)_y]_n$$

wherein
M is zirconium or hafnium;
x is from about 0.5 to about 2;
y is from 0 to about 3, provided that $2x+y$ is 4; and
n is at least about 2;
comprising thermolysis of the corresponding metal borohydride neat or in a hydrocarbon solvent to a temperature of at least about 100° C.

10. A process for producing metal boride precursors wherein said precursor comprises an oligomer having the following formula (II):

$$[MB_2H_x]_n$$

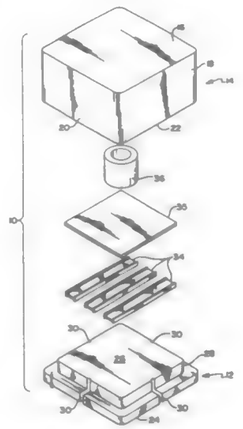
wherein
M is zirconium or hafnium; and
x is from 0 to 9; and
n is at least 4;
comprising contacting a solution of $M(BH_4)_4$ wherein M is zirconium or hafnium with a Lewis base comprising a phosphine, arsine, amine or ether to yield said precursor as a solid precipitate or film.

5,364,608

METHOD OF CONVERTING A SILICON NITRIDE FROM ALPHA-PHASE TO BETA-PHASE, APPARATUS USED THEREFOR, AND SILICON NITRIDE MATERIAL MADE THEREFROM

James P. Edler, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 30, 1993, Ser. No. 100,507
Int. Cl.[5] C04B *35/58*
U.S. Cl. 423—344 20 Claims



1. A method of converting silicon to beta-phase silicon nitride, comprising:
heating, in a furnace having first, second, and third heated zones having pressures above atmospheric pressure, a walled container enclosing silicon while traversing through the first heated zone having a hydrogen atmosphere and a temperature up to about 1000° C. for burning off organic additives in the silicon to form burned-off silicon;
heating the walled container containing burned-off silicon while traversing through the second heated zone having a temperature of from about 1350° to about 1450° C. and a nitriding atmosphere for nitriding the burned-off silicon to form a predominantly alpha-phase silicon nitride mass;
and heating the walled container containing predominantly alpha-phase silicon nitride mass while traversing through the third heated zone for a sufficient length of time to convert the predominantly alpha-phase silicon nitride mass to a predominantly beta-phase silicon nitride mass, the third heated zone having an atmosphere containing nitrogen and temperature of from about 1450° to about 2100° C., the walled container being formed of a silicon nitride-containing material which is stable at temperatures of at least 1700° C., the walled container having an opening therein to allow placement of the silicon therein.

5,364,609

PROCESS FOR THE PREPARATION AND PROCESSING OF A HYDROXYLAMMONIUM SALT SOLUTION

Hendrikus J. H. Roubof, Sittard; Godefridus M. Van Dortmont, Born, and Michael W. M. Boesten, Beek (L.), all of Netherlands, assignors to DSM N.V., Netherlands

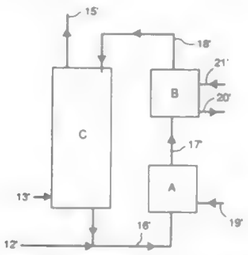
Filed Jun. 15, 1993, Ser. No. 76,904
Claims priority, application Netherlands, Jun. 16, 1992, 9201064
Int. Cl.[5] C01B *21/20*
U.S. Cl. 423—387 5 Claims

1. A process for producing hydroxylammonium salt solution, wherein an aqueous acid reaction medium which contains ammonia ions is continuously circulated between an hydrox-

ylammonium salt synthesis zone and an oxime synthesis zone comprising the steps of:

(i) continuously supplying nitrate ions or nitrogen oxides to be converted into nitrate by a nitrogen source to said aqueous acid reaction medium for formation of hydroxylammonium salt;

(ii) catalytically reducing said nitrate ions with molecular hydrogen to hydroxylamine, wherein ammonium ions are formed as a by-product in reduction of said nitrate ions;



(iii) removing said ammonium ions by conversion with nitrogen oxides by contacting said aqueous acid reaction medium with a gas flow containing 0.01 to 5 wt. % of the nitrogen oxides formed in catalytic combustion of ammonia;

(iv) utilizing remaining nitrogen oxide containing gas flow formed in said catalytic combustion of ammonia for preparation of nitric acid.

5,364,610

PROCESS FOR PREPARATION OF HIGH OPACITY PRECIPITATED CALCIUM CARBONATE BY REACTING SODIUM CARBONATE WITH CALCIUM HYDROXIDE

Charles S. Merris, Jr., Lancaster, Pa., assignor to P. H. Glatfelter Company, Spring Grove, Pa.

Filed Jun. 15, 1993, Ser. No. 76,861

Int. Cl.[5] C01D *7/02*

U.S. Cl. 423—432 **20 Claims**



1. In the process for making calcium carbonate by double decomposition reaction of sodium carbonate and calcium hydroxide in aqueous reaction medium, the improvement of producing calcium carbonate having a scalenohedral particle shape and a rosette aggregate structure comprising adding said sodium carbonate in more than one separate stream to said calcium hydroxide over a period of 1 to 8 hours and maintaining the temperature of said reaction medium in the range of 80° to 140° F.

5,364,611

METHOD FOR THE FIXATION OF CARBON DIOXIDE

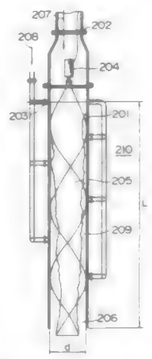
Masaki Iijima; Masakazu Yamada; Fumio Tomikawa, all of Tokyo; Masaaki Negoro, Hyogo; Masaki Minemoto, Hyogo, and Hisao Haneda, Hyogo, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 615,691, Nov. 20, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 28,602

Claims priority, application Japan, Nov. 21, 1989, 1-300807; Dec. 4, 1989, 1-313485; Apr. 9, 1990, 2-92115; Sep. 7, 1990, 2-235754

Int. Cl.[5] C01B *31/22*; B09B *1/00*

U.S. Cl. 423—437 R **3 Claims**



1. A method for the fixation of carbon dioxide in order to reduce the amount of carbon dioxide released into the atmosphere comprising:

a) transporting the CO_2 through a CO_2 pipeline into a container in the seawater where the temperature and pressure conditions required for the formation of carbon dioxide hydrate from carbon dioxide and water are satisfied;

b) supplying seawater or fresh water through another pipe into the container, wherein the CO_2 is supplied to form carbon dioxide hydrate including a slurry of said hydrate on an inner surface of said container and to cool the carbon dioxide and the carbon dioxide hydrate in the container;

c) removing the slurry of carbon dioxide hydrate disposed on the inner surface of said container by means of a motor driven screw; wherein the diameter of the screw is close to the inner diameter of the container;

d) discharging the carbon dioxide hydrate from the container into the seawater such that due to the higher density of the carbon dioxide hydrate than that of the seawater, the hydrate sinks into a deeper location in the seawater.

5,364,612

DETECTION OF CARDIOVASCULAR LESIONS

David M. Goldenberg, Short Hills, N.J., assignor to Immunomedics, Inc., Warren, N.J.

Filed May 6, 1991, Ser. No. 694,977

Int. Cl.[5] A61K *49/02, 39/395*

U.S. Cl. 424—1.53 **45 Claims**

1. A multispecific antibody-agent conjugate for targeting a cardiovascular lesion, comprising an immunoreactive multispecific composite of at least two different substantially monospecific antibodies or antibody fragments, conjugated to at least one imaging agent, wherein at least one of said antibodies or antibody fragments binds specifically to one type of leukocyte and at least one of said antibodies binds specifically to an antigen selected from the group consisting of antigens associated with fibrin, myosin or platelets.

5,364,613

POLYCHELANTS CONTAINING MACROCYCLIC CHELANT MOIETIES

Paul F. Sieving, 3166 Impala Dr. #5, San Jose, Calif. 95117; Alan D. Watson, 262A Rincon Ave., Campbell, Calif. 95008; Steven C. Quay, 428 Oakmead Pkwy., Sunnyvale, Calif. 94086, and Scott M. Rocklage, 255 Cresci Rd., Los Gatos, Calif. 95030

Continuation-in-part of Ser. No. 335,162, Apr. 7, 1989, abandoned. This application Jan. 16, 1990, Ser. No. 464,865

Int. Cl.[5] A61K *49/00, 37/00, 39/00, 49/04*

U.S. Cl. 424—9 **33 Claims**

1. A polychelant comprising a backbone moiety being the residue of an amine group containing molecule with bonded thereto a plurality of macrocyclic chelant moieties capable of complexing metal ions, and metal chelates and salts thereof.

(b) bonded to said backbone moiety through its amine groups a plurality of macrocyclic chelant moieties capable of complexing metal ions,

a metal chelates and salts of said polychelant compound.

5,364,614

CASCADE POLYMER BOUND CHELATING COMPOUNDS, THEIR CHELATES AND CONJUGATES, PROCESSES FOR THEIR PRODUCTION, AND PHARMACEUTICAL AGENTS CONTAINING THEM

Johannes Platzek; Heribert Schmitt-Willich; Heinz Gries; Gabriele Schuhmann-Giampieri; Hubert Vogler; Hanns-Joachim Weinmann, and Hans Bauer, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

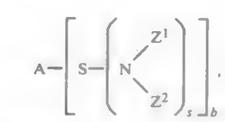
Filed Nov. 21, 1990, Ser. No. 617,077

Claims priority, application Germany, Nov. 21, 1989, 3938992

Int. Cl.[5] A61K *49/00*; G01N *31/00*; C07D *225/00*

U.S. Cl. 424—9 **11 Claims**

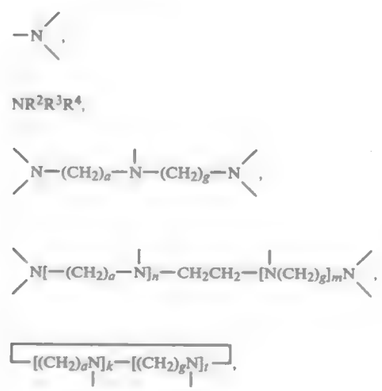
1. A cascade polymer, being either a chelating agent capable of being chelated with at least five ions of an element of atomic numbers 21–29, 39, 42, 44 or 57–83 or a chelate —K, with at least give of said ions, of formula I



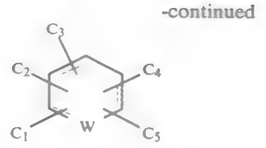
(I)

wherein

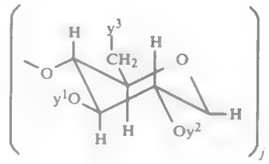
A is a nitrogen-containing cascade nucleus of basis multiplicity b of the formula:



-continued



or



wherein

R^2, R^3 and R^4 are, in each case independently of one another, a covalent bond or

$-(CH_2)_k-(C_6H_4)_r-(CH_2)_l-N<$

g is the number 2, 3, 4 or 5,

t is the number 1, 2, 3, 4, 5, 6, 7 or 8,

l is the number 0, 1, 2, 3, 4 or 5,

r is the number 0 or 1,

n is the number 0, 1, 2, 3 or 4,

m is the number 0, 1, 2, 3 or 4,

k is the number 1, 2, 3, 4 or 5,

a is the number 2, 3, 4 or 5,

W is CH, CH_2, NH or a nitrogen atom,

C_1 is $(CH_2)_k-N<$,

C_2, C_3, C_4 and C_5 are, in each case independently, a hydrogen atom or $(CH_2)_f-N<$,

f is the number 1, 2, 3, 4 or 5,

j is the number 6, 7 or 8,

Y^1 and Y^2 are, in each case independently of each other, a hydrogen atom, $CH_2-CH(OH)-CH_2N<$ or $(CH_2)_a-N<$, and

Y^3 is a nitrogen atom, $O-CH_2-CH(OH)-CH_2N<$ or $O-(CH_2)_9-N<$,

a and g are as defined above,

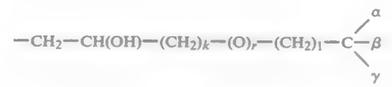
means a single or double bond,

with the proviso that, if Y^3 is a nitrogen atom, Y^1 and Y^2 are hydrogen;

S is a repeating unit of the formula:

$-(CH_2)_2-CONH-(CH_2)_a-$

or



a is 2, 3, 4 or 5,

α and β each independently is a hydrogen atom or $(CH_2)_o$, γ means $(CH_2)_f$,

each f independently is the number 1, 2, 3, 4 or 5, and

r is the number 0 or 1, and

k is 1, 2, 3, 4 or 5,

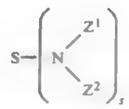
l is 0, 1, 2, 3, 4 or 5,

o is 0, 1, 2, 3, 4 or 5,

with the proviso that l and o are not both zero at the same time;

N is a nitrogen atom,

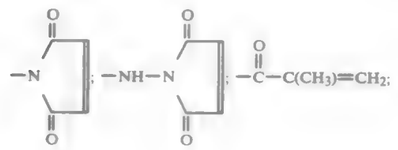
Z^1 and Z^2, for the first to penultimate generation, in each case are

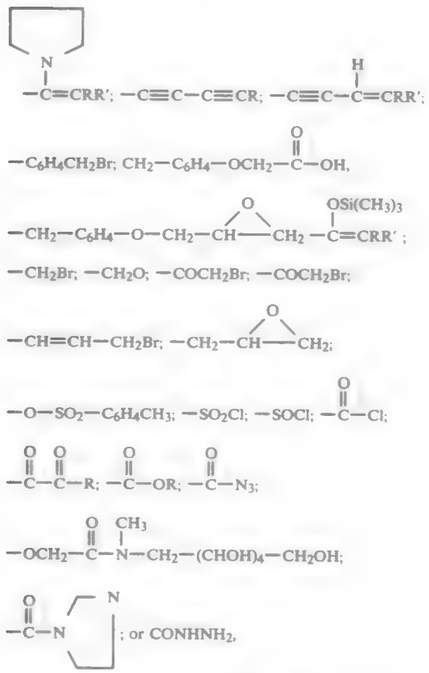


and, for the last generation,

Z^1 is hydrogen, a C_1–C_{10}-alkyl, C_2–C_{10}-carboxylic acyl or C_1–C_{10}-alkylsulfonyl, each optionally containing 1–3 carboxy, 1–3 sulfonic acid, 1–5 hydroxy groups and/or 1–3 oxa atoms, or is the residue of a chelating agent or chelate K, and

Z^2 is, to an extent of 96–100% of the total Z^2 content, the residue of an attached chelating agent or chelate k and, to an extent of 4–0%, V′, wherein V′ is V having at its end a functional group or, linked via this functional group, which is: $—NH_2$; —NHR; $—NHNH_2$; $NRNH_2$; SH; OH; $—COCH_2$; CH=CH—CO_2R; —NCS; NCO;





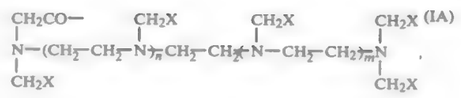
wherein R and R′ are identical or different and in each case are hydrogen, a saturated or unsaturated C_1–C_{20}-hydrocarbyl residue optionally substituted by a phenyl group, or a phenyl group, or, linked via this function group, a bio- or macromolecule, V being a straight-chain, C_1–C_{20}-alkylene group which optionally contains imino, phenylene, phenylenoxy, phenylenimino, amide, hydrazide, uredio, thioureido, carbonyl and/or ester group(s) and/or oxa, sulfur and/or nitrogen atom(s), and is optionally substituted by carboxyl carboxylalkyl, hydroxy, mercapto, imino, epoxy, oxo, thioxo, and/or amino,

b is a number 1 through 50, and

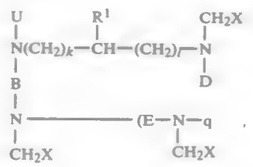
s is a number 1 to 3,

wherein the reproduction units S need be identical only for a given generation, and

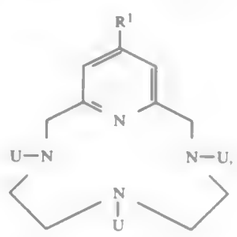
the residue of the chelating agent or chelate is a residue of Formulae I A, I B or I C;



(IA)



(IB)



(IC)

bound to the terminal nitrogen atoms of the final generation by a $—CH_2CO—$ or V group,

n and m in each case independently is 0, 1, 2, 3 or 4, n and m adding up to no more than 4,

k is the number 1, 2, 3, 4 or 5,

l is the number 0, 1, 2, 3, 4 or 5,

q is the number 0, 1 or 2,

U is CH_2X or V,

X is in each case independently —COOH or V′ wherein, if the molecule contains V′, at least 0.1% of the substituents X stand for V′,

B, D and E, being identical or different, are in each case $—(CH_2)_a$ with a being the number 2, 3, 4 or 5,

R^1 is V or a hydrogen atom, with the proviso that R^1 is V only if U is CH_2X at the same time, and that U is V only if R^1 is a hydrogen atom at the same time,

and wherein optionally, a portion of the COOH groups are present in the form of a corresponding ester of a C_1–C_6-alkyl group or amide of a saturated or unsaturated, linear, branched or cyclic hydrocarbon of 1–5 carbon atoms, optionally substituted with 1 to 3 hydroxy or C_1–C_4-alkyoxy or a 5- or 6-membered ring including the amide nitrogen;

or a salt thereof with a cation of an in organic and/or organic base, an amino acid or an amino acid amide.

10. A pharmaceutical agent comprising at least one cascade polymer according to claim 1 and a pharmaceutically acceptable carrier.

5,364,615

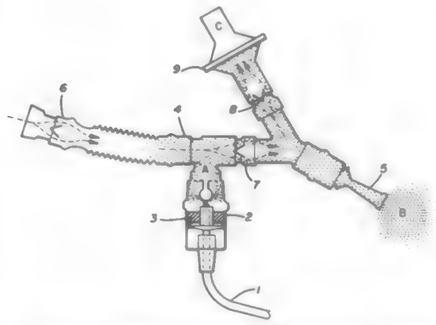
PROPHYLAXIS OF PNEUMOCYSTIS CARINII WITH AEROSILIZED PENTAMIDINE

Robert J. Debs, Mill Valley; Alan B. Montgomery, Redwood City; John E. Conte, Corte Madera, and Jeffrey A. Golden, San Francisco, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 665,332, Mar. 6, 1991, abandoned, which is a continuation of Ser. No. 532,263, Jun. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 485,042, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 355,134, May 16, 1989, abandoned, which is a continuation of Ser. No. 180,414, Apr. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 137,208, Dec. 23, 1987, abandoned. This application Aug. 13, 1992, Ser. No. 928,534

Int. Cl.[5] A61L *9/04;* A61K *31/155*

U.S. Cl. 424—45 **7 Claims**



7. A method for prophylaxis of Pneumonia caused by *Pneumocystis carinii* in human patients by inhalation of an aerosolized pentamidine isethionate, and delivery of said aerosolized pentamidine isethionate into the alveoli in an amount which suppresses the growth of the *Pneumocystis carinii* organisms, comprising the steps of:

(a) preparing a solution consisting of about 300 mg of said pentamidine isethionate in 6 ml of sterile water;

(b) nebulizing said pentamidine isethionate solution into particles having a mean particles diameter from about 0.25 to about 5 μm using a nebulizer which consists essentially of:

(i) a tube providing an oxygen flow into the nebulizer;

(ii) a nebulizer container holding the pentamidine isethionate solution of step (a) for generation of aerosolized particles in a conduit;

(iii) the conduit;

(iv) a mouthpiece;

(v) a one way valve having a baffle for reducing larger particle to particles having a mean diameter from about 0.25 to about 5 μm;

(vi) a one way valve leading to particle filter for removal of residual pentamidine during exhalation; and

(c) administering said pentamidine isethionate nebulized in step (b) for 15–45 minutes to the patients daily for 4–21 days;

wherein oxygen flows through the tube at a rate of 5–7 liters per minute into the nebulizer container filled with the pentamidine isethionate solution and generates particles between 0.5 to 5 microns in conduit of aerosolized pentamidine; and

wherein the patients being treated draws on the mouthpiece drawing the air through the one-way valve, and the airstream entrains the pentamidine particles in the conduit;

wherein the airstream containing the pentamidine isethionate aerosol passes around the baffle of the one-way valve which baffle reduces the particles having a mean particle size larger than about 2 μm to the particles having a mean diameter in the range from about 1 to about 2 μm; and wherein the patient draws the nebulized particles through the mouthpiece into the lungs.

5,364,616

USE OF H-2 ANTAGONISTS FOR TREATMENT OF GINGIVITIS

Robert E. Singer, Fairfield, and James P. Ebel, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 19,782, Mar. 5, 1993, Pat. No. 5,294,433, which is a continuation-in-part of Ser. No. 868,805, Apr. 15, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 171,494

Int. Cl.[5] A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—52 **27 Claims**

1. A method for prevention or treatment of gingivitis or soft tissue aspects of periodontitis comprising topical administration, to gingival tissues of the oral cavity, of a composition comprising a safe and effective amount of a selective H-2 antagonist, wherein the composition is in a form selected from the group consisting of non-fluoride dentifrice, aqueous alcoholic liquid, mouthwash, mouth rinse, mouth spray, and dental treatment solution and controlled release system for placement in a periodontal product.

5,364,617

CHELATOR COMPOSITIONS COMPRISING OXIME COMPOUNDS

Rodney D. Bush, Fairfield; Donald L. Bissett, Hamilton, and Ranjit Chatterjee, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

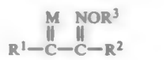
Continuation of Ser. No. 657,847, Feb. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 514,998, Apr. 26, 1990, abandoned. This application Nov. 9, 1992, Ser. No. 973,597

Int. Cl.[5] A61K *7/42, 31/34;* C07D *315/00*

U.S. Cl. 424—59 **17 Claims**

1. A composition for topical application comprising:

(a) a compound having the formula



wherein $—R^1$ and $—R^2$ are each substituted furyl;

=M is =O or =S;

$—R^3$ is hydrogen;

wherein $—R^1$ and $—R^2$ are each independently subtituted with one to three of C_1–C_6 alkyl or C_1–C_6 alkoxy; and

(b) a topical carrier.

5,364,618

METHOD FOR THE CONTROL OF INSECTS

Robert K. V. Meer; Clifford S. Lofgren; David F. Williams, all of Gainesville, Fla.; William E. Meyers, Scottsdale, Ariz., and Danny H. Lewis, Hartselle, Ala., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and Southern Research Institute, Inc., Birmingham, Ala.

Continuation of Ser. No. 497,113, Mar. 21, 1990, Pat. No. 5,177,107, which is a continuation of Ser. No. 256,237, Oct. 11, 1988, Pat. No. 4,921,696, which is a continuation of Ser. No. 758,856, Jul. 26, 1985, abandoned, which is a continuation of Ser. No. 455,727, Jan. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 598,908, Apr. 10, 1984, abandoned, which is a continuation of Ser. No. 361,501, Mar. 25, 1982, abandoned. This application Dec. 2, 1992, Ser. No. 984,877

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] A01N *25/00, 37/00, 37/30*

U.S. Cl. 424—84 **13 Claims**

1. A method for the control of a population of a selected species of arthropods comprising the steps of:

(a) providing to said selected species of arthropods a bait formulation comprising:

(1) an effective amount of a toxicant substance or mixture of substances having the structural formula:

$$CF_3(CF_2)_x—SO_2—OR$$

wherein x=0 to 19; R is selected from the group consisting of H, alkaline earth metal, alkali metal, organic amine cation containing not more than 20 carbon atoms and ammonium cation; and

(2) an attractant bait component for said selected species of arthropods, said attractant bait being in an amount and of a type which when combined with said toxicant substance entices said selected species of arthropods to ingest said toxicant substance and said bait formulation is not substantially odor repellent or taste repellent to said arthropods, said bait formulation being transportable by foraging member of said selected species of arthropods from a location external to said arthropod's nest or harborage back to said population off arthropods, said toxicant substance having delayed action sufficient to permit said foraging arthropods to transport said substance back to their nest or harborage before said foraging arthropods are killed by said toxicant substance; and

(b) permitting said selected species of arthropods to ingest said bait formulation such that said selected species of arthropods are killed by the delayed effect of said ingested toxicant substance and said toxicant substance is distributed to other members of said population of selected species of arthropods.

5,364,619

ONCOIMMUNINS

Beverly Packard, and Akira Komoriya, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 707,136, May 31, 1991. This application Sep. 23, 1991, Ser. No. 764,695

Int. Cl.[5] A61K *37/02*

U.S. Cl. 424—85.1 **15 Claims**

1. A substantially pure oncoimmunin-lymphoid factor, derived from a human tumor cell line, having a molecular weight of about 45 kD by SDS-PAGE analysis and having the ability to stimulate human T-lymphocyte mitogenesis in an interleukin-2 and interleukin-4 free, serum free medium.

5,364,620

CONTROLLED ABSORPTION DILTIAZEM FORMULATION FOR ONCE DAILY ADMINISTRATION

Edward J. Geoghegan; Seamus Mulligan, both of Athlone, Ireland, and Donald E. Panoz, Tuckerstown, , assignors to Elan Corporation, Plc, Westmeath, Ireland

Continuation of Ser. No. 455,544, Dec. 29, 1989, abandoned, which is a continuation of Ser. No. 121,225, Nov. 16, 1987, Pat. No. 4,894,240. This application Jul. 28, 1992, Ser. No. 921,459

Int. Cl.[5] A61K *9/16*

U.S. Cl. 424—497 **6 Claims**

1. A method of treating or controlling blood pressure in a subject suffering from mild to moderate hypertension, comprising administering to said subject on a once per day basis a dose effective to lower the blood pressure of said subject throughout said twenty four hour period, of a diltiazem-containing controlled absorption formulation to provide peak blood pressure lowering levels in the blood 6 to 18 hours following administration, said formulation comprising pellets having a core of diltiazem or a pharmaceutically acceptable salt thereof in association with an organic acid, the diltiazem component and the organic acid being present in a ratio of from about 20:1 to about 1:1, and a multi-layer membrane surrounding said core and containing a major proportion of a pharmaceutically acceptable film-forming, water insoluble synthetic polymer and a minor proportion of a pharmaceutically acceptable film-forming, water soluble synthetic polymer.

5,364,621

Patent Not Issued For This Number

5,364,622

METHODS FOR PREVENTING ADHESIONS TO ORGANS AND PARTS OF ORGANS BY APPLICATION OF TISSUE PLASMINOGEN ACTIVATOR AND HYDROXYETHYLCELLULOSE HYDROGEL

Helmut Franz; Thomas Muller, and Wolfgang Eisert, all of Biberach, Germany, assignors to Dr. Karl Thomae GmbH, Germany

Continuation of Ser. No. 967,567, Oct. 28, 1992, abandoned, which is a continuation of Ser. No. 785,876, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 278,995, Dec. 2, 1988, abandoned. This application Oct. 13, 1993, Ser. No. 196,764

Claims priority, application Germany, Dec. 4, 1987, 3741149

Int. Cl.[5] A61K *37/547*

U.S. Cl. 424—94.64 **16 Claims**

1. A method of preventing adhesions to body organs and/or parts of body organs caused by therapeutic intervention comprising applying to a subject a pharmaceutical composition comprising

natural or recombinant t-PA, and

an aqueous hydroxyethyl cellulose hydrogel

wherein said pharmaceutical composition is applied at the site of said intervention in an amount effective to prevent said adhesions.

5,364,623

ANTIBIOTIC PRODUCED BY *BACILLUS SUBTILIS* ATCC 55422 CAPABLE OF INHIBITING BACTERIA

Pramathesh S. Patel, Ringoes, N.J.; Friedrich Mayerl, Norwalk, Conn., and Edward Meyers, East Brunswick, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Apr. 30, 1993, Ser. No. 55,162

Int. Cl.[5] A61K *35/00;* **C12P** *1/00, 7/00, 1/04*

U.S. Cl. 424—116 **5 Claims**

1. The compound bacillaene having the ^{13}C NMR spectrum in CD_3OD (125 MHz, shifts in ppm) shown in FIG. 1; the ^1HNMR spectrum in CD_3OD (500 MHz, shifts in ppm) shown in FIG. 2; the ultraviolet (UV) spectrum in methanol shown in FIG. 3; the mass spectrum (FAB-mode) shown in FIG. 4; a nominal molecular weight of 580 and the empirical formula $C_{35}H_{48}O_{7}$,or a salt thereof.

5,364,624

WS7622A MONO- OR DI-SULFATE, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Shigehiro Takase, Ishioka; Hiroshi Hatanaka, Katasouma; Masami Ezaki, Tsukuba; Eisaku Tsujii, Tsukuba; Masanori Okamoto, Tsukuba; Nobuharu Shigematsu, Tsukuba, and Masakuni Okuhara, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 713,295, Jun. 11, 1991, Pat. No. 5,292,510. This application Jul. 7, 1993, Ser. No. 87,006

Claims priority, application United Kingdom, Jun. 29, 1990, 9014546.7

The portion of the term of this patent subsequent to Mar. 8, 2011, has been disclaimed.

Int. Cl.[5] A61K *35/74*

U.S. Cl. 424—117 **1 Claim**

1. A method of treating a degenerative disease selected from the group consisting of cystic fibrosis, chronic bronchitis and bronchiectasia in a subject comprising:

administering to said subject a therapeutically effective amount of WS7622A mono or di-sulfate or pharmaceutically acceptable salt thereof, wherein the disodium salt of WS7622A disulfate and the dipotassium salt of WS7622A disulfate have the following physicochemical properties:

Di-sodium salt of WS7622A di-sulfate:

Appearance: colorless crystals

Solubility: soluble; water, methanol insoluble; chloroform, n-hexane

Melting point: 257°–263° C. (dec.)

Specific rotation: $[\alpha]_D^{23}+37.5°$ (C=1.0, methanol)

Molecular formula: $C_{47}H_{61}N_9O_{19}S_2Na_2$

Elemental analysis: calcd. ($C_{47}H_{61}N_9O_{19}S_2Na_2{\cdot}6H_2O$); C 44.30, H 5.77, N 9.89, S 5.03, Na 3.61% found: C 44.98, H 5.90, N 10.06, S 5.00, Na 3.98%

Molecular weight: FAB-MS m/z 1188 $(M+Na)^+$

Thin layer chromatography:

Stationary phase	Developing solvent	Rf value
silica gel (Merck Art 5715)	$CHCl_3$—CH_3OH—H_2O (65:25:4)	0.11
	n-butanol-acetic acid-water (4:2:1)	0.29

Infrared absorption spectrum (attached FIG. 1): ν_{max}^{KBr} 3360, 2960 1735 , 1660, 1640, 1530, 1500, 1380, 1250, 1200, 1060, 1030, 940, 890 cm^{-1}

^1H Nuclear magnetic resonance spectrum (attached FIG. 2): (400 MHz, D_2O) δ

7.50	(1H, s)
7.27	(1H, s)
7.33–7.24	(3H, m)
6.94	(1H, q, J=7Hz)
6.85	(2H, br d, J=8Hz)
5.53	(1H, m)
5.37	(1H, m)
4.80	(1H, br s)
4.63–4.57	(2H, m)
4.53	(1H, m)
4.06	(1H, m)
3.99	(1H, d, J=10Hz)
3.56	(1H, br d, J=14Hz)
3.46	(1H, m)
2.97	(3H, s)
2.97–2.88	(2H, m)
2.72	(1H, m)
2.59	(1H, m)
2.51–2.38	(2H, m)
2.09–1.91	(4H, m)
1.82–1.60	(3H, m)
1.77	(3H, d, J=7Hz)
1.50	(3H, d, J=6.5Hz)

-continued

1.40	(1H, m)
1.11	(6H, d, J=7Hz)
0.99	(3H, d, J=6.5Hz)
0.97	(3H, d, J=6.5Hz)

^{13}C Nuclear magnetic resonance spectrum (attached FIG. 3): (100 MHz, D_2O) δ

183.6	(s)
177.9	(s)
177.7	(s)
174.8	(s)
173.8	(s)
173.3	(s)
172.4	(s)
167.8	(s)
161.5	(s)
145.5	(s)
144.9	(s)
139.6	(d)
139.0	(s)
137.0	(s)
136.0	(s)
132.3	(d) × 2
131.0	(d) × 2
129.6	(d)
127.4	(d)
125.9	(d)
77.4	(d)
75.1	(d)
63.8	(d)
62.7	(d)
59.1	(d)
55.9	(d)
54.9	(d)
51.9	(d)
41.9	(t)
37.2	(d)
36.9	(t)
34.1	(q)
32.3	(d)
31.9	(t)
31.8	(t)
31.2	(t)
27.5	(t)
23.7	(t)
21.7	(q)
21.4	(q) × 2
21.3	(q)
21.1	(q)
15.5	(q)

Amino acid analysis:

Di-sodium salt of WS7622A di-sulfate (1 mg) was hydrolyzed with 6N HCl (1 ml) at 110° C. for 20 hours and the mixture was evaporated to dryness;

The obtained mixture was analyzed on Hitachi 835 automatic amino acid analyzer.

Amino acid standard solution [Type H (Wako Chemicals 013-08391) and Type B (Wako Chemicals 016-08641) were used.] were used as reference;

As the result, threonine, valine, phenylalanine, ornithine, NH_3 and unknown ninhydrin-positive components were detected;

Di-potassium salt of WS7622A di-sulfate:

Appearance: colorless amorphous powder

Solubility: soluble; water, methanol insoluble; chloroform, n-hexane

Melting point: 230°–237° C. (dec.)

Specific rotation: $[\alpha]_D^{23}+34°$ (C=1.0, methanol)

Molecular formula: $C_{47}H_{61}N_9O_{19}S_2K_2$

Elemental analysis: calcd. ($C_{47}H_{61}N_9O_{19}S_2K_2{\cdot}6H_2O$); C 43.21, H 5.63, N 9.65, S 4.91, K 5.99% found: C 43.96, H 5.44, N 9.97, S 5.09, K 4.49%

Molecular weight: FAB-MS m/z 1236 $(M+K)^+$

Thin layer chromatography:

Stationary phase	Developing solvent	Rf value
silica gel (Merck Art 5715)	$CHCl_3$—CH_3OH—H_2O (65:25:4)	0.13

Infrared absorption spectrum (attached FIG. 4): ν_{max}^{KBr} 3360, 2960, 1735, 1660, 1640, 1530, 1500, 1405, 1380, 1250, 1200, 1050, 1030, 940, 890 cm^{-1} ^1H Nuclear magnetic resonance spectrum (attached FIG. 5): (400 MHz, C_2O) δ

7.52	(1H, s)
7.28	(1H, s)
7.34–7.25	(3H, m)
6.96	(1H, q, J=7Hz)
6.87	(2H, br d, J=8Hz)
5.56	(1H, m)
5.40	(1H, m)
4.84	(1H, br s)
4.70–4.55	(3H, m)
4.10	(1H, m)
4.03	(1H, m)
3.60	(1H, br d, J=14Hz)
3.50	(1H, m)
3.00	(3H, s)
3.00–2.85	(2H, m)
2.76	(1H, m)
2.62	(1H, m)
2.55–2.40	(2H, m)
2.12–1.95	(4H, m)
1.90–1.65	(3H, m)
1.79	(3H, d, J=7Hz)
1.53	(3H, d, J=6.5Hz)
1.45	(1H, m)
1.14	(6H, d, J=7Hz)
1.02	(3H, d, J=6.5Hz)
1.00	(3H, d, J=6.5Hz)

Amino acid analysis:

Di-potassium salt of WS7622A di-sulfate (1 mg) was hydrolyzed with 6N HCl (1 ml) at 110° C. for 20 hours and the mixture was evaporated to dryness;

The obtained mixture was analyzed on Hitachi 835 automatic amino acid analyzer;

Amino acid standard solution [Type H (Wako Chemicals 013-08391) and Type B (Wako Chemicals 016-08641) were used] were used as reference. As the result, threonine, vaiine, phenylalanine, ornithine, NH_3 and unknown ninhydrin-positive components were detected.

5,364,625

ALKYLTHIOPOLY (ETHYLIMIDAZOLIUM) COMPOUNDS, PROCESS FOR PREPARING THEM AND THEIR USE AS BIOCIDAL AGENTS

Henri Sebag, and Claude Mahieu, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Jun. 23, 1992, Ser. No. 902,729

Claims priority, application France, Jun. 24, 1991, 91 07735

Int. Cl.[5] A61K *7/48, 7/04;* **C07D** *233/56*

U.S. Cl. 424—401 **9 Claims**

1. A compound of the formula (I):

$$R_1—S—(C_5H_6N_2R^+X^-)_nH \quad (I)$$
$$\|$$
$$(O)_w$$

in which:

R_1 denotes a linear or branched alkyl radical having 12 to 18 carbon atoms;

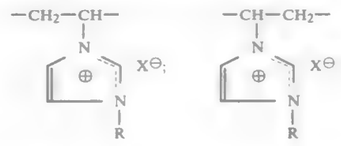
R denotes a methyl, ethyl, hydroxyethyl or benzyl radical;

X^- denotes an inorganic or organic anion;

n is between 2 and 15 or represents a statistical value between 2 and 15;

w equals 0, 1 or 2;

the group ($C_5H_6N_2R^+$) representing the following structures, taken together or separately:



4. A composition for the care or treatment of human keratinous substances comprising the hair, skin, nails and mucosae, which contains an effective amount of at least one compound of formula (I) as claimed in claim 1 in a physiologically acceptable medium.

5,364,626

REPELLING MATERIAL FOR ANIMALS

Masamitsu Hasegawa, Yawata, and Yasuhisa Kuroda, Nara, both of Japan, assignors to Osaka Gas Company Ltd., Japan

PCT No. PCT/JP91/01655, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO92/09196, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 910,332

Claims priority, application Japan, Nov. 29, 1990, 2-128623

Int. Cl.[5] A01N *25/34, 25/26*

U.S. Cl. 424—403 **4 Claims**

1. An article of manufacture comprising active carbon fiber impregnated with a repellant for animals and as a sustained release agent a substance selected from the group consisting of phthalic acid esters, citric acid esters and glycols.

5,364,627

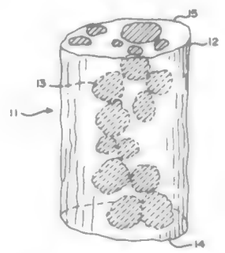
GRADUAL RELEASE STRUCTURES MADE FROM FIBER SPINNING TECHNIQUES

Joo H. Song, Northbrook, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 418,662, Oct. 10, 1989, abandoned. This application Jul. 21, 1992, Ser. No. 918,897

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—443 **29 Claims**



2. A delivery system for the gradual release of an active agent, the delivery system comprising an active agent and a wall material, wherein the delivery system is formed by melt-spinning into a fiber a mixture of active agent and wall material, the mixture having more than about 10 but less than about 55 percent by weight active agent, the resulting fiber having a longitudinal dimension and a cross sectional dimension, wherein the cross sectional dimension is no greater than about 1 mm, the fiber further having an exterior surface, the particles of active agent dispersed throughout the fiber and the exterior surface such that the particles of active agent are gradually released from the fiber when the fiber is contacted with a solvent specific to the active agent.

5,364,628

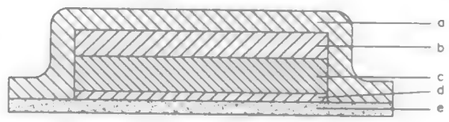
PHARMACEUTICAL COMPOSITIONS

Thomas Kissel, Ehrenkirchen, Germany; Henriette Schrank, Riehen, Switzerland, and Hans-Rainer Hoffmann, Neuwied, Germany, assignors to Sandoz Ltd., Basel, Switzerland and LTS Lohmann Therapie-Systeme GmbH & Co., Neuwied, Germany

Continuation of Ser. No. 804,630, Dec. 9, 1991, abandoned, which is a continuation of Ser. No. 597,470, Oct. 3, 1990, abandoned, which is a continuation of Ser. No. 298,457, Jan. 18, 1989, abandoned, which is a continuation of Ser. No. 96,571, Sep. 3, 1987, abandoned, which is a continuation of Ser. No. 740,917, May 31, 1985, abandoned. This application Oct. 22, 1993, Ser. No. 141,832

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 **8 Claims**



1. A pharmaceutical composition for the transdermal systemic administration of a pharmaceutically active agent in the form of an adhesive plaster or patch comprising a cover layer and a drug reservoir, wherein said composition comprises in a polymer matrix a homogeneous dispersion of active agent particles or a solution of active agent, said active agent being selected from the group consisting of bopindolol, tizanidine, clemastine and ketotifen, and being present in said reservoir comprising an acrylate/methacrylate polymer containing cationic ester groups.

5,364,629

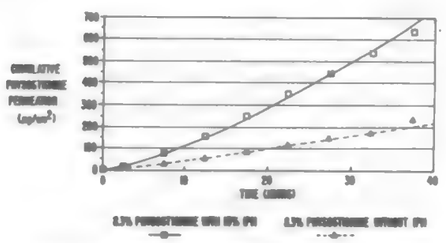
DEVICE AND METHOD FOR ENHANCED ADMINISTRATION OF PHYSOSTIGMINE

F. Kochinke, and Richard W. Baker, both of Menlo Park, Calif., assignors to Pharmetrix Corp., Menlo Park, Calif.

Continuation-in-part of Ser. No. 506,702, Apr. 6, 1990, abandoned. This application Apr. 9, 1991, Ser. No. 682,356

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **12 Claims**



1. A pharmaceutical composition for transdermal application of, as the active ingredient, a drug of high intrinsic specific activity comprising in combination said active ingredient and the ester formed by reaction of a C_1–C_2 monofunctional alcohol and a fatty acid, said active ingredient selected from the group consisting of physostigmine, naloxone, nicotine, tetrahydro-aminoacridine, arecoline, oxotremorine, pilocarpine, acceclidine, scopolamine, atropine, benztropine, aprophen, trihexylphenidyl, and benactyzine.

5,364,630

SUBSATURATED NICOTINE TRANSDERMAL THERAPEUTIC SYSTEM

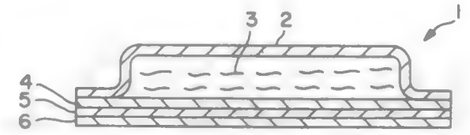
James L. Osborne, Mountain View; Melinda Nelson, Sunnyvale; David J. Enscore, Saratoga; Su I. Yum, and Robert M. Gale, both of Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 662,857, Mar. 1, 1991, which is a continuation of Ser. No. 537,672, Jun. 14, 1990, Pat. No. 5,004,610, and a continuation-in-part of Ser. No. 206,546, Jun. 14, 1988, abandoned. This application Jun. 21, 1993, Ser. No. 80,280

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—449 **18 Claims**



1. A transdermal nicotine delivery device for delivering nicotine over a predetermined administration period and utilizing an in-line adhesive whose adhesive properties are degraded by nicotine comprising, in combination:

a) a nicotine reservoir containing nicotine dissolved therein at an initial equilibrated thermodynamic activity less than 1.0 and at which said adhesive retains adhesive properties and at an initial equilibrated loading sufficient to prevent the thermodynamic activity of nicotine in said reservoir from decreasing by more than 75% during said administration period; and

b) in-line adhesive means for maintaining said nicotine reservoir in nicotine transmitting relationship to the skin.

5,364,631

TOCOPHEROL-BASED PHARMACEUTICAL SYSTEMS

Andrew S. Janoff, Yardley, Pa.; Lawrence Boni; Sharma R. Minchey, both of Monmouth Junction, N.J.; Lois E. Bolcsak, Lawrenceville, N.J., and Steven J. Weiss, Belle Mead, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 259,988, Oct. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 110,261, Oct. 19, 1987, abandoned. This application Feb. 17, 1993, Ser. No. 18,913

Int. Cl.[5] A61K *9/127*

U.S. Cl. 424—450 **27 Claims**

1. A method of making an acidic pH tocopherol composition comprising a bioactive agent, said method comprising admixing in the presence of a stabilizer an organic phase, said organic phase comprising an organic acid having two carboxylic acid moieties, one of said carboxylic acid moieties having an ester linkage with a tocopherol, and the other carboxylic acid moiety being free or as a salt thereof, and an aqueous phase having an acidic pH, wherein the stabilizer allows the formation and/or maintenance of a bilayer state of the tocopherol in an acidic pH environment and is selected from the group consisting of polyoxyethylene alkyl ethers, polyoxyethylene esters, and octoxynol, and wherein the acidic pH is from about 2.0 to about 6.5.

5,364,632

MEDICINAL EMULSIONS

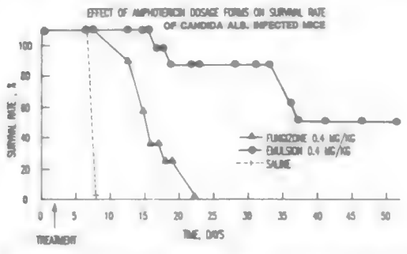
Simon Benita, and Menashe Levy, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Jerusalem, Israel

Continuation-in-part of Ser. No. 795,286, Nov. 19, 1991, abandoned, which is a continuation of Ser. No. 501,266, Mar. 29, 1990, abandoned. This application Mar. 9, 1993, Ser. No. 29,931

Claims priority, application Israel, Apr. 5, 1989, 89856; Feb. 27, 1990, 93558

Int. Cl.[5] **A61K** *9/127;* **B01J** *13/02*

U.S. Cl. 424—450 **32 Claims**



1. In a pharmaceutical composition consisting essentially of a hydrophobic drug and a carrier, the improvement being in a carrier which is an oil-in-water emulsion of droplet sizes of 0.1 to 0.27 μm consisting essentially of:

(i) about 3–50% (w/v) of an oily carrier consisting of a medium chain triglyceride (MCT) oil or

(ii) 0.5–20% (w/v) phospholipids;

(iii) about 0.3–10% (w/v) of a non-ionic surfactant; and

(iv) about 0.5–5% (w/v) of a ionic surfactant selected from the group consisting of cholic acid and deoxycholic acid.

5,364,633

SILICONE VESICLES AND ENTRAPMENT

Randal M. Hill, Midland, and Steven A. Snow, Sanford, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 14, 1994, Ser. No. 212,753

Int. Cl.[5] **A61K** *9/51, 37/22*

U.S. Cl. 424—450 **12 Claims**

1. A method of entrapping a water-soluble substance in a vesicle formed from a siloxane surfactant comprising forming a mixture by dissolving the substance to be entrapped in water, adding a siloxane surfactant, mildly agitating the mixture, and removing excess of the water and the substance from the mixture, the siloxane surfactant being an organosilicon compound having a formula selected from the group consisting of:


(I)


(II)

and

(III)

wherein Me is the methyl group; R is a radical selected from the group consisting of methyl, $-(CH_2)_xO(C_2H_4O)_y(C_3H_6O)_zR'$, and $-(CH_2)_xN^+R_3''A^-$, with the proviso that at least one R radical in the molecule cannot be a methyl radical; R′ is selected from the group consisting of hydrogen, a methyl radical, and an acyl radical; R″ is selected from the group consisting of alkyl radicals having from one to six carbon atoms, a phenyl radical, a benzyl radical, and the radical $-CH_2CH_2OH$; A^- is a counterion selected from the group consisting of chloride, bromide, iodide, cyanide, a methyl sulfate radical, a salicylate radical, and a dodecylsulfate radical; a has a value of 0 to 200; b has a value of 0 to 50; with the proviso that a and b cannot each be zero; x has a value of 3 to 6; y has a value of 4 to 30; and z has a value of 0 to 5.

5,364,634

CONTROLLED-RELEASE PH SENSITIVE CAPSULE AND ADHESIVE SYSTEM AND METHOD

Chel W. Lew, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 8, 1991, Ser. No. 790,639

Int. Cl.[5] **A61K** *9/48*

U.S. Cl. 424—451 **24 Claims**

1. A capsule for adhesion in the oral cavity comprising at least one internal active ingredient;

a non-toxic pH sensitive shell encapsulating said active ingredient and said shell is insoluble in a preselected pH of less than 6;

said shell dissolving at the pH 6.4 and above which is present in the oral cavity; and

a non-toxic adhesive system associated with the outer surface of said shell which permits adhesion of the capsule to selected tissue inside the oral cavity for a period of time to allow for the dissolution of said shell and release of the active ingredient.

5,364,635

SOLID DRUG FORM WITH A HIGH VERAPAMIL CONTENT

Helmut Fricke, Mutterstadt; Thomas Moest, Moorrege, and Ernst Flaig, Heidelberg, all of Germany, assignors to Knoll AG, Ludwigshafen, Germany

Division of Ser. No. 891,921, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 590,138, Sep. 28, 1990, abandoned. This application Jul. 27, 1993, Ser. No. 97,057

Claims priority, application Germany, Sep. 28, 1989, 3932378

Int. Cl.[5] **A61K** *9/16*

U.S. Cl. 424—451 **12 Claims**

1. A process for producing verapamil hydrochloride granules containing not less than 90% by weight verapamil hydrochloride, consisting essentially of the steps of:

mixing verapamil hydrochloride powder with 2–10% by weight water, an aqueous solution of a binder or release-delaying agent, or an aqueous suspension of a binder or release-delaying agent to form a mixture;

vigorously mixing and compacting said mixture for 5 to 30 minutes so that the temperature of said mixture rises to from 30°–55° C., and

drying said compacted mixture to form granules having a particle size distribution such that not less than 70% by weight of said particles are within a 430 micron band within a particle size range of from 0.1 to 1 mm.

5,364,636

INHIBITOR OF ABSORPTION OF DIGESTION PRODUCT OF FOOD AND DRINK

Shigeo Ochi, Tokyo, Japan, assignor to Hanabusa Patent Office, Tokyo, Japan

PCT No. PCT/JP90/01270, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/04751, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 2, 1990, Ser. No. 844,628

Claims priority, application Japan, Oct. 2, 1989, 1-257229

Int. Cl.[5] **A61K** *9/64*

U.S. Cl. 424—456 **6 Claims**

1. A dissolved food material absorption inhibitor, comprising (1) a flocculant selected from the group consisting of sodium polyacrylate, sodium alginate, and gelatin, and (2) an auxiliary additive selected from the group consisting of natural fibers, dietary fibers and adsorbents, said (1) flocculent and (2) auxiliary additive coated with (3) an aquatic enteric material selected from the group consisting of cellulose, chitin and chitosan derivatives.

5,364,637

METHOD AND COMPOSITION FOR CLEANING CONTACT LENSES WITH CYCLODEXTRINS

Nimai C. De, Rochester; David J. Heiler, Avon; David A. Marsh, and Suzanne F. Groemminger, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 602,447, Oct. 22, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,427

Int. Cl.[5] **A61K** *9/20, 31/715*

U.S. Cl. 424—464 **10 Claims**

1. A method for cleaning contact lenses of organic, proteinaceous matter comprising contacting the lenses with a composition containing as a cleaning agent one or more cyclodextrins selected from the group consisting of alpha-cyclodextrins, beta-cyclodextrins and gamma-cyclodextrins for a time sufficient to clean the lenses, wherein said cleaning agent is present in an effective amount of about 0.0001% to about 10% by weight of said composition.

5,364,638

ANTIMICROBIAL MATERIAL FOR BREEDING OR KEEPING FISH AND PROCESS FOR PRODUCING THE SAME

Etsuko Sugo, 186–5, Ushirohikima, Gunmamachi, Gunma-gun, Gunma-Ken, Japan

Filed Apr. 30, 1991, Ser. No. 693,544

Claims priority, application Japan, Mar. 18, 1991, 3-052252

Int. Cl.[5] **A61K** *31/74, 31/75, 31/745;* **A01K** *63/00*

U.S. Cl. 424—78.17 **4 Claims**

1. An antimicrobial fish breeding material which comprises a formed article of a pulp and/or polyolefin base material, bonded on the surface thereof with graft polymerized chains having at least one functional group on said chains, said functional group having a function of removing harmful ions also having antimicrobial activity, wherein said functional group is selected from the group consisting of a monaminomonocarboxyl group, a monoaminodicarboxyl group, and a diaminodicarboxyl group, and is present in an amount of from 0.5 to 8 mmol per gram of said antimicrobial fish breeding material wherein said functional group is formed by after treatment reaction of reactive groups on said grafted chains with hydroxylamine, glycine, phenylalanine, alanine, tryptophane, histidine, valine, leucine, serine, aspartic acid or glutamic acid in a methanol-water solution.

5,364,639

BEER MAKING METHOD

Ian M. MacLennan, 1670 - 138B St., White Rock, British Columbia, Canada, and Clifford B. Hewson, 2251 Bellevue Ave., West Vancouver, British Columbia, Canada V7V 1C5

Continuation of Ser. No. 800,863, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 442,305, Nov. 27, 1989, abandoned. This application Jul. 26, 1993, Ser. No. 95,499

Int. Cl.[5] **C12C** *11/04*

U.S. Cl. 426—16 **12 Claims**

1. In a method of fermenting a fermentable liquid mixture for making beer under pressure and under chilled conditions, the combination of process steps comprising:

a) providing a pressure vessel defining a closed fermentation chamber for containing a bath for effecting a fermentation process and having an amount of fermentable liquid beer mixture sufficient to fit in a usual home refrigerator,

b) said amount of fermentable liquid beer mixture being effective to provide a pressurized atmosphere above the surface of the bath within the closed fermentation chamber during the fermenting process,

c) adding a fermenting yeast to the bath in an amount sufficient to effect the fermentation process in the fermentable liquid mixture thereby increasing the pressure within the pressure vessel,

d) controlling the pressure in the pressurized atmosphere within the closed fermentation chamber at a level sufficient to maintain safety conditions during use of the pressure vessel,

e) placing the pressurized pressure vessel with the bath in a usual home refrigerator to cool the mixture contained within the pressurized closed chamber to a temperature that exists in a usual home refrigerator wherein said temperature is lower than ambient temperature outside the refrigerator,

f) when the beer is ready for consumption, introducing a pressurized gaseous material into the pressure vessel to maintain a preselected pressure above the bath within the chamber,

g) said pressurized gaseous material is selected from the group consisting of carbon dioxide and an inert gas, and

h) removing from the bath beer located adjacent the surface of the bath at a draught pressure that is less than the pressure of the pressurized atmosphere above the surface of the bath.

5,364,640

PROCESS FOR PRODUCING ALKYL-METHYL KETONES

Adrianus M. Van Grinsven, Oss; Alfons L. J. Peters; Robert Roos, both of Bussum, and Andras J. Wieg, Amsterdam, all of Netherlands, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 554,838, Jul. 20, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,732

Claims priority, application European Pat. Off., Jul. 27, 1989, 89201977.9

Int. Cl.[5] **A23D** *9/00;* **A23L** *1/221*

U.S. Cl. 426—33 **8 Claims**

1. A process for producing methyl alkyl ketones comprising the steps of:

a) selecting a species of the genus *Aureobasidium pullulans* that produces at least 0.1% w/w methyl alkyl ketones when subjected to a productivity test;

b) culturing said species in a medium containing a substrate wherein said substrate consists of fatty acids or esters thereof, under conditions such that each methyl alkyl ketone produced contain one less carbon atom than said corresponding fatty acid or ester thereof.

5,364,641

PROCESS FOR MANUFACTURING DAIRY PRODUCTS

Marie-Hélène Saniez, Lambersart, and Michel Serpelloni, Beuvry-les-Bethune, both of France, assignors to Roquette Freres, Lestrem, France

Continuation of Ser. No. 535,196, Jun. 8, 1990, abandoned. This application Feb. 22, 1993, Ser. No. 20,527

Claims priority, application France, Jun. 8, 1989, 89 07602

Int. Cl.[5] **A23C** *9/12*

U.S. Cl. 426—34 **5 Claims**

1. Method for inhibiting the development of specific phages of acidifying lactic ferments during the manufacture of dairy products comprising an acidification step of milk under the acidifying action of said lactic ferments, wherein an effective amount of at least one of gluconic ions and glucoheptonic ions is introduced into the milk at the time of employment of said lactic ferments, at the latest during the acidification step, thus protecting said lactic ferments against phagic attack during the acidification step.

5,364,642

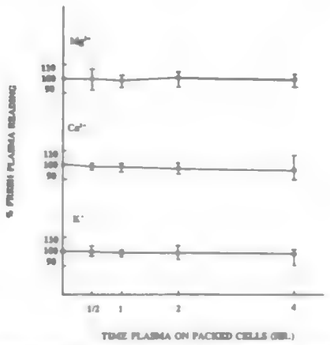
IONIZED MAGNESIUM^{2+} CONCENTRATIONS IN BIOLOGICAL SAMPLES

Belin T. Altura, and Burton M. Altura, both of Beechhurst, N.Y., assignors to Research Foundation of the State University of New York, Albany, N.Y.

Division of Ser. No. 864,646, Apr. 7, 1992, which is a continuation-in-part of Ser. No. 681,940, Apr. 8, 1991. This application Dec. 30, 1992, Ser. No. 998,518

Int. Cl.^{5} A23L *1/304*

U.S. Cl. 426—74 **11 Claims**



1. A composition for prevention or treatment of magnesium deficiencies or magnesium imbalances in an individual, the composition comprising as an active ingredient bioavailable magnesium salt, wherein a concentration of bioavailable magnesium salt in said composition is an amount sufficient to maintain normal concentrations of ionized magnesium in a range of approximately 0.53 to 0.67 mM for the biological sample of whole blood, serum or plasma in the individual.

5,364,643

PROCESS FOR THE INFUSION OF DRIED FRUITS

Keisuke Morimoto, Congers, and Joaquin C. Lugay, Mahopac, both of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.

Filed Sep. 27, 1993, Ser. No. 127,664

Int. Cl.^{5} A23B *7/16*

U.S. Cl. 426—102 **13 Claims**

1. A process for infusing an edible humectant into the dried fruit comprising

(a) preparing an edible gel comprising a uniformly dispersed edible humectant present in amounts ranging from about 70 to about 92% weight percent, water in amounts from about 8 to about 30 weight percent and an edible gel forming substance;

(b) treating said gel to provide a gel paste soft enough to spread evenly on the surface of said dried fruit, said gel paste having a viscosity which will adhere to said dry fruit and stable enough to avoid synersis;

(c) coating said gel paste in a substantially even manner on said dried fruit, which has a moisture content from about 5 to about 50 weight percent;

(d) maintaining said coated dried fruit at temperatures from about ambient temperatures to about 160° F. for a period of time to provide the infusion of said edible humectant into said dried fruit.

5,364,644

FORMULA AND METHOD FOR THE PREVENTION AND TREATMENT OF HYPERCHOLESTEROLEMIA AND CELLULAR HYPERPROLIFERATIVE DISORDERS

Zbigniew Walaszek, Bastrop; Thomas J. Slaga, Austin, and Margaret Hanausek, Bastrop, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 525,384, May 16, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 12,145

Int. Cl.^{5} A61K *31/19*

U.S. Cl. 514—574 **12 Claims**

1. A method for the lowering of cholesterol levels comprising administering to an animal in need thereof a formulation including an effective amount of calcium D-glucarate or potassium hydrogen D-glucarate, said amount being effective for lowering elevated cholesterol levels.

5,364,645

METHOD OF CONTROLLING MICROORGANISMS BY PULSED ULTRAVIOLET LASER RADIATION

Manuel C. Lagunas-Solar, Davis, Calif., and Alvan W. Pyne, Kenmelon, N.J., assignors to The Regents of the University of California, Oakland, Calif.

Filed Oct. 30, 1992, Ser. No. 969,487

Int. Cl.^{5} A23L *3/00*

U.S. Cl. 426—248 **20 Claims**

1. A method of controlling undesired microorganisms on the surface of food, comprising the step of irradiating the surface of a food object containing undesired microorganisms with a plurality of monochromatic, ultraviolet light pulses wherein said microorganisms are reduced or eliminated by destructively altering nucleic acid based structures in said microorganisms with said irradiation without alteration of surface properties of said food object.

5,364,646

ORAL PHARMACEUTICAL FORMS OF PIMOBENDAN

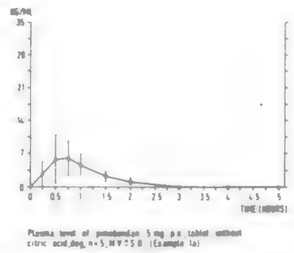
Peter Gruber, Bottmingen; Willy Roth, and Gottfried Schepky, both of Biberach, all of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Germany

Continuation of Ser. No. 907,003, Jul. 1, 1992, abandoned, which is a continuation of Ser. No. 644,161, Jan. 22, 1991, abandoned. This application Mar. 16, 1993, Ser. No. 33,659

Claims priority, application Germany, Jan. 10, 1990, 4001622

Int. Cl.^{5} A61K *9/20, 9/48*

U.S. Cl. 424—464 **9 Claims**



Plasma level of pimobendan 5 mg p.o. tablet without citric acid (mg, n=5, MV ± S.D.) (Example 1a)

1. A pharmaceutical composition of matter consisting essentially of an intimate dry admixture of a therapeutically effective amount of powdered pimobendan and powdered citric acid wherein said admixture is up to about one pad by weight of pimobendan per no less than about five pads by weight of citric acid and a pharmaceutically acceptable carder, said composition being filled into capsules for oral administration.

5,364,647

POWDERED PREPARATIONS OF SURFACE ACTIVE ALKYLGLYCOSIDES

Karlheinz Hill, Erkrath; Franz Foerg, Langenfeld; Hermann Koerner, Duesseldorf, and Josef Penninger, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP90/01226, § 371 Date Feb. 4, 1992, § 102(e) Date Feb. 4, 1992, PCT Pub. No. WO91/02046, PCT Pub. Date Feb. 21, 1991

Continuation of Ser. No. 828,864, Feb. 4, 1992, abandoned. This PCT application Jul. 26, 1990, Ser. No. 171,378

Int. Cl.^{5} C11D *1/66;* **A61K** *7/16*

U.S. Cl. 424—490 **5 Claims**

1. A powder-form preparation of surface-active alkyl glucosides, useful in an oral hygiene preparations, consisting essentially of 5%–65% by weight of surface-active alkyl glucosides, wherein the alkyl group contains from 8 to 22 carbon atoms and 35%–95% by weight of at least one inert support, having a median particle size between 0.1 and 10 μm, selected from the group consisting of silica, dicalcium phosphate, calcium pyrophosphate, water-insoluble sodium metaphosphate, aluminum oxide, and aluminum oxide hydrate.

5,364,648

EXTENDED LIFE PRODUCE

Charles R. Meldrum, 526 University Pl., Grosse Pointe, Mich. 48230

Division of Ser. No. 786,709, Nov. 1, 1991, Pat. No. 5,229,152. This application Jul. 19, 1993, Ser. No. 93,527

Int. Cl.^{5} A23B *7/00*

U.S. Cl. 426—327 **18 Claims**



1. Produce generated by a process of extending the shelf life of produce, said process comprising the steps of:

subjecting the produce to a chilled medium such that the produce is substantially coated with a layer of the medium, wherein the step of subjecting the produce to the chilled medium includes maintaining the produce in the medium for a period of time which is effective to prevent the produce from freezing; and

transferring the produce from the chilled medium to a drying location in order to form nucleation crystals of the medium within surface pores on the produce;

wherein the produce generated by the process results in fresh produce having nucleation crystals formed within the pores of the produce that significantly increase the shelf life of the produce, and wherein the fresh produce substantially maintains its natural organoleptic properties.

5,364,649

ANTIMICROBIAL MIXTURES AND METHOD OF USE

Leonard A. Rossmoore, 25323 Parkwood, Huntington Woods, Mich. 48070, and Harold W. Rossmoore, 4341 Foxpointe Dr., West Bloomfield, Mich. 48323

Filed Mar. 30, 1993, Ser. No. 39,845

Int. Cl.^{5} A01N *59/20, 43/32, 43/68, 43/74*

U.S. Cl. 424—637 **14 Claims**

1. A composition which suppresses growth of microorganisms which comprises:

(a) an antimicrobial agent selected from the group consisting of an isothiazolone and a compound which releases formaldehyde;

(b) copper ion; and

(c) a trilower alkanolamine wherein alkyl is between 1 and 6 carbon atoms and wherein (b) and (c) form a complex in the solution which enhances suppression of the microorganisms in a solution by the antimicrobial agent compared to a complex of the copper ion and citrate.

5,364,650

DISINFECTING PRODUCT

B. Eugene Guthery, 3851 NE. Ralph Powell Rd., Lee's Summit, Mo. 64063

Continuation of Ser. No. 785,772, Oct. 31, 1991, Pat. No. 5,234,703. This application Apr. 22, 1993, Ser. No. 50,975

The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.

Int. Cl.^{5} A23B *4/12*

U.S. Cl. 426—331 **13 Claims**

1. An animal carcass sanitizing solution composition for treating an animal carcass to eradicate bacteria from the carcass wherein:

(a) said composition is substantially surfactant and sodium salt free and said composition comprises:

(b) a quantity of water;

(c) an amount of a medium chain fatty acid suitable for consumption by a human which is soluble in said quantity of water and wherein the concentration of fatty acid in said quantity of water is bacteriocidally effective; and

(d) a sufficient amount of an acid suitable for consumption by a human is utilized to maintain the composition at an acid pH.

5,364,651

PROCESS AND APPARATUS FOR PRESSING AND DRYING PASTA

Josef Manser, Uzwil; Egger Friedrich, Niederuzwil; Werner Seiler, Zueberwangen, and Heinz Resch, Flawil, all of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

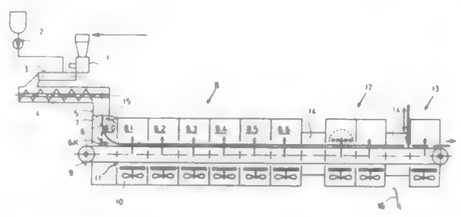
PCT No. PCT/CH92/00166, § 371 Date Apr. 1, 1993, § 102(e) Date Apr. 1, 1993, PCT Pub. No. WO93/03620, PCT Pub. Date Apr. 3, 1993

PCT Filed Aug. 20, 1992, Ser. No. 30,499

Claims priority, application Switzerland, Aug. 21, 1991, 454/91

Int. Cl.^{5} A21D *6/00;* **A21C** *11/00;* **F26B** *15/00*

U.S. Cl. 426—451 **40 Claims**



1. In a process for the production of pasta by extrusion of dough via an extrusion press having a die and subsequent drying in a continuous-flow drier having a predetermined width, the improvement comprising the steps of:

effecting the extrusion of dough over the width of the continuous-flow drier to produce extruded pasta goods and moving the goods substantially horizontally into said drier and drying them in a horizontally-extending fluid bed with said drier.

5,364,652

INDIGESTABLE DEXTRIN

Kazuhiro Ohkuma, Sanda; Yoshio Hanno, Itami; Kazuyuki Inada, Takarazuka; Isao Matsuda, Itami, and Yasuo Katta, Hyogo, all of Japan, assignors to Matsutani Chemical Industries Co., Ltd., Hyogo, Japan

Filed Oct. 27, 1992, Ser. No. 967,119
Claims priority, application Japan, Oct. 29, 1991, 1-311846
Int. Cl.[5] A23L *1/0522*
U.S. Cl. 426—549 14 Claims

1. An indigestible dextrin characterized in that the dextrin is prepared by heat-treating potato starch with addition of hydrochloric acid thereto to obtain a pyrodextrin, hydrolyzing the pyrodextrin with alpha-amylase and glucoamylase and removing at least one-half of glucose formed from the resulting hydrolyzate, and comprises a fraction other than glucose,

(A) said fraction containing at least 80% of an indigestible component,

(B) said Fraction containing 30 to 35% of glucose residues having a 1→4 glycosidic linkage only,

(C) said fraction having a number average molecular weight of 510 to 965,

(D) said fraction having a number average molecular weight Y calculated 1 the equation:

$$Y = -293 + 106.004 \cdot X$$

wherein X is the amount (in % based on said fraction) of glucose residues having both 1→4 and 1→6 glycosidic linkages as quantitatively determined by "Hakomori's methylation method," said calculated value Y being in the range of variations of up to 20% from the number average molecular weight as actually measured,

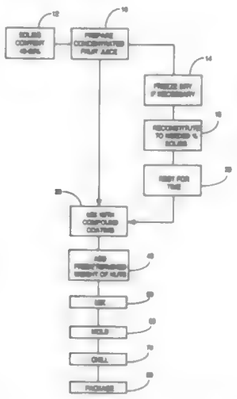
(E) the ratio of the weight average molecular weight of said fraction to the number average molecular weight thereof being at least 25:1.

5,364,653

FRUIT AND NUT-CONTAINING CONFECTIONARY CANDY AND METHOD OF PREPARATION

Raymond M. Nakayama, 120 Opihikao Way, Honolulu, Hi. 96825

Filed Dec. 3, 1992, Ser. No. 987,896
Int. Cl.[5] A23G *3/00*; A23L *3/44*
U.S. Cl. 426—660 9 Claims



2. A method of for preparing a confectionary candy product comprising:

preparing a fruit concentrate by squeezing a natural fruit to form a fruit puree;

freeze drying said fruit puree to a water content of from about 1 to about 3 weight percent;

adding water to the dried concentrate to form a paste of the fruit concentrate of about 40 to 60 weight percent of solids;

mixing 5 to 30 weight percent of a final mixture of said concentrate with from 50 to 90 weight percent of the final mixture of compound coating to form a base mixture;

adding a predetermined weight of nuts to the base mixture;

mixing said nuts and the base mixture to form the final mixture; and

molding portions of the final mixture into desired volumetric shapes.

5,364,654

PROCESS FOR PRODUCTION OF A THIN FILM ELECTRODE AND AN ELECTROLUMINESCENCE DEVICE

Chishio Hosokawa, and Tadashi Kusumoto, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 710,078
Claims priority, application Japan, Jun. 14, 1990, 2-154059
Int. Cl.[5] B06D *5/12*
U.S. Cl. 427—66 16 Claims

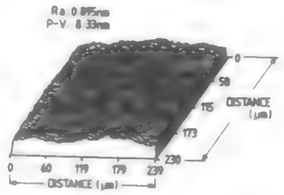
1. A process for production of a thin film electrode for devices which comprises co-vapor depositing an electron-injectable metal and an organic compound having an ability of forming complexes with the electron-injectable metal or an organic compound having an acceptor property at a pressure of not more than 10^{-5} torr, the weight ratio of the organic compound to the electron-injectable metal being in the range from 1 to 30% by weight and the vapor deposition rate of the metal being 0.1 to 10 nm/second.

5,364,655

SIMULTANEOUS DOUBLE SIDES POLISHING METHOD

Takao Nakamura; Nobuya Sekiyama; Tsuneo Kawai, all of Yokohama, and Yoshiki Kato, Nishitama, all of Japan, assignors to Hitachi Ltd., Chiyoda, Japan

Filed Feb. 20, 1992, Ser. No. 838,319
Claims priority, application Japan, Feb. 20, 1991, 3-26351
Int. Cl.[5] H01F *10/02*
U.S. Cl. 427—129 9 Claims



1. A method for simultaneously polishing double sides of a substrate, the method comprising the steps of:

rotatably holding said substrate, which has been processed in advance to a first surface state, in a carrier spaced between an upper surface plate and a lower surface plate, said upper surface plate, said lower surface plate and said carrier being rotatable independent of each other,

supplying a polishing liquid with scattered polishing agent therein through a polishing liquid path provided adjacent to a rotational shaft of at least one of said upper and lower surface plates,

branching the polishing liquid supplied from said polishing liquid path into an upper layer and a lower layer by said carrier,

rotating said upper surface plate and said lower surface plate in directions opposite to each other,

making the polishing liquid branched into said upper layer flow into a first clearance between said upper surface plate and an upper side of said substrate rotatably held through said carrier and the polishing liquid branched into said lower layer flow into a second clearance between a lower side of said substrate rotatably held through said carrier and said lower surface plate by centrifugal forces of the rotation of said upper and lower surface plates, so that said substrate is caused to float in the polishing liquid flowing in said upper and lower layers without contacting said upper and lower surface plates by a dynamic pressure produced by the flow of the polishing liquid branched into said upper and lower layers respectively flowing through said first and second clearances, and,

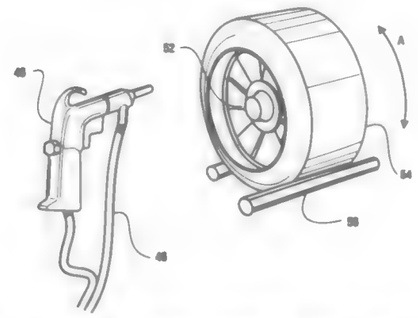
simultaneously polishing the upper and lower sides of said substrate with said polishing liquid without contacting said upper and lower surface plates with said substrate, said polishing liquid branched into said upper and lower layers respectively flowing, through said first and second clearance.

5,364,656

METHOD FOR REFINISHING VEHICLE WHEELS

Daniel P. Koorey, 31337 Walker Rd., Bay Village, Ohio 44140

Filed Sep. 15, 1993, Ser. No. 122,862
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—142 20 Claims



1. A method for refinishing vehicle wheels with the tires mounted thereon comprising the steps of:

removing at least one wheel from a vehicle with a tire thereon, said wheel having an exposed decorative face surface extending adjacent said tire;

marking at least one location of a wheel weight positioned adjacent said face surface on the tire with marking means;

removing the wheel weight from the wheel;

removing a coating from said face surface of the wheel by blasting said face surface with a first abrasive media, said tire remaining mounted on said wheel and exposed to said first abrasive media during said coating removal process;

applying new coating material to the face surface of the wheel;

reinstalling the wheel weight in said original location according to the markings; and

reinstalling the wheel and attached tire on the vehicle.

5,364,657

METHOD OF DEPOSITING AND FUSING POLYMER PARTICLES ONTO MOISTENED CONTINUOUS FILAMENTS

James L. Throne, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

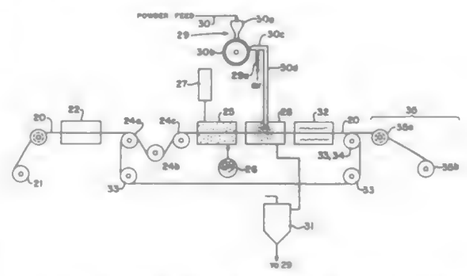
Filed Apr. 6, 1990, Ser. No. 505,519
Int. Cl.[5] B05D *1/24, 3/02*
U.S. Cl. 427—185 18 Claims

1. A process for coating a fiber tow with a thermoplastic resin polymer which comprises:

(a) spreading a continuously moving fiber tow of long continuous fibers;

(b) moistening the spread fiber tow;

(c) contacting a flowing gas stream containing suspended particles of a thermoplastic polymer with the moistened tow of long continuous fibers, the velocity of said gas stream being above the fluidizing velocity of said particles, said gas stream flowing transversely to the longitudinal direction of said fibers, said particles having a mean



particle size in the range of about 0.1 micron to about 40 microns, and said fibers being of essentially uniform diameter in the range of about 5 to about 50 microns;

(d) heating the particles to a temperature sufficiently high to fuse said particles of thermoplastic polymer and thereby form a coating of said thermoplastic polymer on said fibers; and

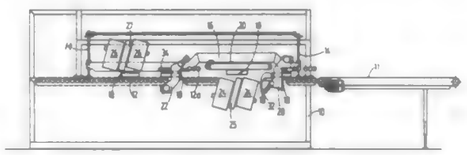
(e) winding up the coated fibers.

5,364,658

METHOD AND APPARATUS FOR THE COATING OF INDIVIDUAL ITEMS

Anders E. H. Jeppesen, Skive, Denmark, assignor to Bodilsen Holding A/S, Denmark

Filed May 20, 1993, Ser. No. 65,020
Claims priority, application Denmark, May 21, 1992, 0667/92
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—209 15 Claims



1. A method for coating individual workpieces in which the individual workpieces are conveyed in a transport direction comprising the following steps:

(a) providing a workpiece having first and second substantially planar and mutually parallel sides, each of which adjoins at least one further side of the workpiece;

(b) supporting the workpiece on the first side;

(c) applying unhardened coating to the second side and the at least one further side by passing the workpiece through a spray box in the transport direction;

(d) hardening the unhardened coating applied to the second side and the at least one further side; then

(e) supporting the workpiece on the second side;

(f) applying unhardened coating to the first side and the at least one further side by passing the workpiece through a spray box in the transport direction; and

(g) hardening the unhardened coating applied to the first side and the at least one further side;

wherein at least one of the supporting steps b and e includes supporting the workpiece by creating a vacuum between the workpiece and a conveyor belt as contact between the workpiece and the conveyor belt is initiated by air jets directed toward the conveyor belt.

5,364,659

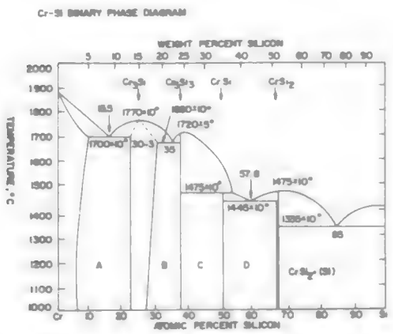
CODEPOSITION OF CHROMIUM AND SILICON DIFFUSION COATINGS IN FE-BASE ALLOYS USING PACK CEMENTATION

Robert A. Rapp, and Mark A. Harper, both of Columbus, Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Continuation of Ser. No. 839,979, Feb. 21, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 116,302

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—253 **10 Claims**



1. A pack cementation method of codepositing chromium and silicon coatings on an iron-base workpiece containing more than 0.08 percent carbon, comprising the steps of:

placing a surface of the workpiece into an inert atmosphere;

surrounding the surface of the workpiece with a chromium-silicon masteralloy in the inert atmosphere, the chromium-silicon masteralloy containing chromium ranging from about 65% to 99% by weight and silicon ranging from about 1% to 35% by weight;

providing a dual halide activator to the chromium-silicon masteralloy in the inert atmosphere, the dual halide activator being by weight from about 75% to 99% sodium fluoride and from about 1% to 25% sodium chloride;

providing a silica filler in the pack;

heating the workpiece surface, chromium-silicon masteralloy, dual halide activator and silica filler in the inert atmosphere to a temperature range between about 800° C. to 1200° C. which is sufficient to vaporize at least some of the coating elements;

reacting sodium from the dual halide activator with the silica filler; and

maintaining the heating temperature range for a period of time sufficient to deposit a coating of chromium and silicon on the surface of the workpiece in one step.

5,364,660

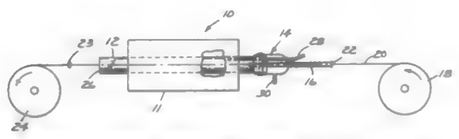
CONTINUOUS ATMOSPHERIC PRESSURE CVD COATING OF FIBERS

Thomas Gabor, Maplewood, and James M. O'Kelly, New Brighton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 21, 1989, Ser. No. 383,923

Int. Cl.[5] C23C *16/00*

U.S. Cl. 427—255.3 **5 Claims**



1. Method of continuously applying CVD coatings onto a long moving length of inorganic fibrous material, said method comprising the steps of

a. continuously carrying the fibrous material lengthwise at atmospheric pressure through a heated gaseous mixture comprising one or more reagents that deposit CVD coatings and any feed carrier gas to provide a flux,

b. freely exhausting the residue of said gaseous mixture along the path of the fibrous material in the direction of its movement while maintaining back diffusion of atmospheric air at an acceptable level by the flux,

c. maintaining the fibrous material within said gaseous mixture for a time to deposit a CVD coating onto the moving fibrous material,

d. removing the coated fibrous material from said gaseous mixture, and

e. periodically removing deposits of fuzz and soot without interrupting the coating process.

5,364,661

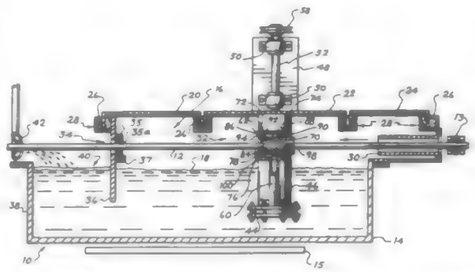
METHOD AND APPARATUS FOR GALVANIZING LINEAR MATERIALS

Kalyan K. Maitra, Flossmoor; Daniel G. McInerney, Chicago, and Carl H. Unger, Oak Lawn, all of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Mar. 4, 1993, Ser. No. 26,432

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—433 **10 Claims**



1. A method of continuously galvanizing a substantially cylindrical linear element of substantially circular cross-section composed of a ferrous metal, the method comprising:

providing an upwardly-open reservoir of molten zinc;

providing an atmosphere of inert gas within an enclosed space above the surface of molten zinc;

providing an annular nozzle within said enclosed space comprising inner and outer annular members defining a frustoconical annular slot therebetween as the nozzle orifice, said inner member having an opening therein and said frustoconical slot having its imaginary apex aligned with said opening;

preheating the linear element to a temperature at least as great as that of said reservoir of molten zinc;

driving the linear element axially through said opening in said inner member and toward said apex at a linear velocity of between about 90 and 1000 feet per minute;

effecting flow of molten zinc upwardly from said reservoir and through said annular nozzle to direct a flow of molten zinc through said atmosphere of inert gas in a converging, conical curtain toward said linear element at a velocity lower than the linear velocity of said linear element so as to apply a coating of molten zinc to said linear element;

maintaining said coating of molten zinc in liquid phase for a reaction time sufficient to form an intermetallic alloy layer at the interface of said linear element and said molten zinc; and

quenching the coating and the intermetallic alloy layer to solidify the coating and the intermetallic alloy layer;

whereby said linear element is galvanized without immersion.

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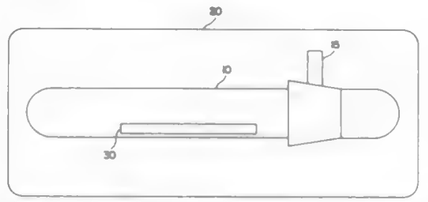
SURFACE TREATMENT OF SILICONE RUBBER

Edward D. Domenico, Anoka; Mark T. Stewart, Brooklyn Center, both of Minn., and Marek W. Urban, Fargo, N. Dak., assignors to Medtronic, Inc. and North Dakota State University, Minneapolis, Minn.

Filed Aug. 14, 1992, Ser. No. 929,937

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—536 **20 Claims**



1. A method for modifying the surface of a polydimethylsiloxane silicone rubber comprising the step of: treating the silicone rubber in a plasma which is substantially free of oxygen and under conditions which do not strip reactive hydrogen groups from the silicone rubber surface to produce Si—H moieties on the surface thereof.

5,364,663

THERMALLY SPRAYING METAL/SOLID LUBRICANT COMPOSITES USING WIRE FEEDSTOCK

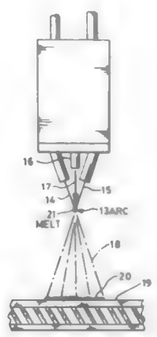
Robert C. McCune, Jr., Birmingham; Larry V. Reatherford, Warren, and Matthew J. Zaluzec, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 909,832, Jul. 7, 1992, Pat. No. 5,194,304. This application Dec. 28, 1992, Ser. No. 998,074

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—449 **2 Claims**



1. A method of thermally spraying a metal matrix coating containing solid lubricant particles, comprising:

(a) creating a flame or electrical arc into which a consummable strand is fed to produce a melt, the strand being constituted as a hollow sheath of metal meltable by said flame or arc and in which is disposed a core containing solid lubricant melt-resistant particles; and

(b) applying a propellant gas to said melt and particles to project a spray thereof while protecting said particles against ablation during transfer of said spray to a target to deposit a coating thereon.

5,364,664

PROCESS FOR NON-SELECTIVELY FORMING DEPOSITION FILM ON A NON-ELECTRON-DONATIVE SURFACE

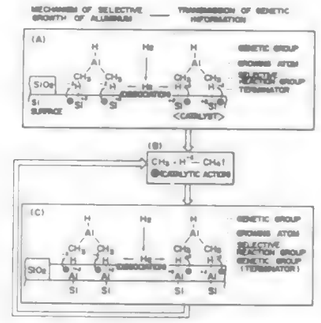
Kazuo Tsubouchi, and Kazuya Masu, both of Sendai, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 811,117, Dec. 20, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 996,875

Claims priority, application Japan, Dec. 21, 1990, 2-405190

Int. Cl.[5] B05D *3/06, 3/00;* **C23C** *16/00*

U.S. Cl. 427—535 **23 Claims**



1. A process for forming a deposition film comprising aluminum, comprising the steps of:

placing a substrate having an electron-donative surface and a non-electron-donative surface in a space for deposition film formation in a chemical vapor deposition apparatus capable of generating plasma:

introducing gas comprising alkylaluminum hydride and hydrogen gas into the space for deposition film formation;

forming a first film comprising aluminum selectively on the electron-donative surface by maintaining the electron-donative surface at a temperature in the range of from not lower than the decomposition temperature of the alkylaluminum hydride to not higher than 450° C.;

modifying the non-electron-donative surface by generating plasma while the gas comprising alkylaluminum hydride and the hydrogen gas are introduced, wherein the electron density of the plasma is in the range of from 1×10^8 to 8×10^{10} cm^{-3} in vicinity of the surface of the substrate; and

forming a second film comprising aluminum on the first film and the non-electron-donative surface.

5,364,665

METHOD FOR RAPID PLASMA TREATMENTS

John T. Felts, Alameda; Hood Chatham, III, Fairfield; Joseph Countrywood, Napa, and Robert J. Nelson, Walnut Creek, all of Calif., assignors to The BOC Group, Inc., Murray Hill, N.J.

Continuation of Ser. No. 52,090, Apr. 22, 1993, which is a division of Ser. No. 767,146, Sep. 27, 1991, Pat. No. 5,224,441. This application Oct. 25, 1993, Ser. No. 142,641

Int. Cl.[5] B05D *3/14, 3/06*

U.S. Cl. 427—571 **8 Claims**

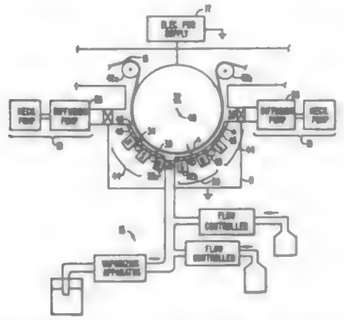
1. A method for preparing a substrate with vapor barrier properties, useful for packaging applications, comprising:

providing a polymer substrate;

establishing a glow discharge plasma derived from a volatilized organosilicon compound, oxygen, and an inert gas within a chamber while maintaining a chamber pressure at less than about 0.1 torr;

confining the plasma to a band having a distance Δ in one

dimension not greater than twelve inches, the distance Δ defined between a plasma-facing, negatively biased surface, and an opposed, cooled shield;



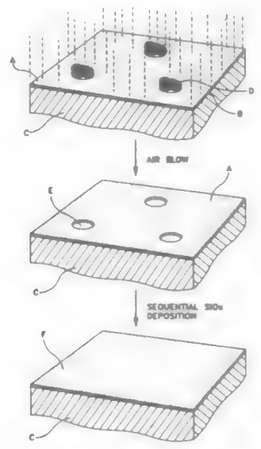
passing at least a portion of the substrate through the confined plasma for a time effective to deposit a silicon oxide based film having vapor barrier properties onto said substrate portion while communicating said negative bias to said substrate portion.

5,364,666

PROCESS FOR BARRIER COATING OF PLASTIC OBJECTS

Joel L. Williams, Cary; Susan L. Burkett, Hillsborough, both of N.C., and Shel McGuire, Omaha, Nebr., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 23, 1993, Ser. No. 125,704
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—579 **20 Claims**



1. A method of sequentially depositing a silicon oxide based film on a plastic substrate in a previously evacuated chamber by glow discharge comprising:

(a) vaporizing an organosilicon component and admixing the volatilized organosilicon component with an oxidizer component and an inert gas component to form a gas stream exterior the chamber;

(b) controllably flowing the gas stream into said chamber;

(c) establishing a glow discharge plasma in the chamber from said gas stream;

(d) controllably flowing the gas stream into the plasma while confining at least a portion of the plasma therein;

(e) depositing a first coating of silicon oxide on said substrate;

(f) removing and/or redistributing foreign surface particles from said substrate; and

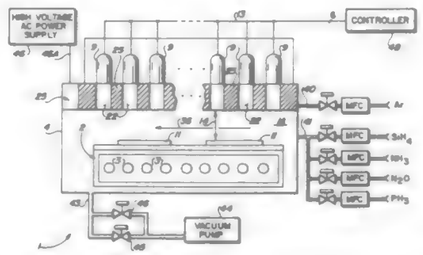
(g) repeating steps (a) through (d) above, thereby depositing a second coating of a silicon oxide on said substrate.

5,364,667

PHOTO-ASSISTED CHEMICAL VAPOR DEPOSITION METHOD

Ji H. Rhieu, Mesa, Ariz., assignor to Amtech Systems, Inc., Tempe, Ariz.

Continuation-in-part of Ser. No. 822,361, Jan. 17, 1992, Pat. No. 5,215,588. This application May 25, 1993, Ser. No. 67,286
Int. Cl.[5] B05D *3/06;* **C23C** *16/48*
U.S. Cl. 427—582 **2 Claims**



1. A method of preventing deposition of material from a reactant gas onto a plurality of spaced transparent surfaces admitting an ultraviolet light into a photo-assisted chemical vapor deposition reaction chamber, comprising the steps of:

(a) introducing the reactant gas into the reaction chamber upstream from a substrate supported in the reaction chamber; and

(b) introducing the ultraviolet light into the reaction chamber through the plurality of spaced transparent surfaces located between a plurality of ultraviolet light emitting elements and a plurality of elongated light pipe passages in a sealed wall bounding the reaction chamber, the plurality of ultraviolet light emitting elements being located in alignment with the elongated light pipe passages, respectively, the transparent surfaces each including a glass bulb of a separate ultraviolet light source containing one of the ultraviolet light emitting elements,

whereby reactant molecules of the reactant gas fail to reach and be deposited on the transparent surfaces.

5,364,668

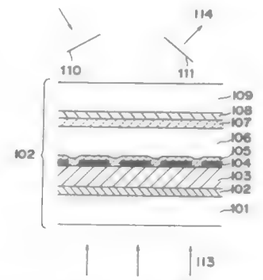
SPATIAL LIGHT MODULATOR AND A NEURAL NETWORK CIRCUIT

Akio Takimoto; Koji Akiyama, both of Neyagawa; Michihiro Miyauchi, Nagoya; Yasunori Kuratomi, Suita; Koji Nomura, Ikoma; Hisahito Ogawa, Ikoma, and Junko Asayama, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

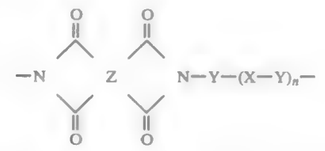
Filed Jan. 3, 1992, Ser. No. 816,734
Claims priority, application Japan, Jan. 9, 1991, 001145
Int. Cl.[5] G02F *1/1337*
U.S. Cl. 428—1 **2 Claims**

1. A reflective spatial light modulator used for a high bright projection display device provided with a larger opening rate and a multi-stage optical processing device in which an output light can be amplified to use it as a next stage input light, which comprises (1) a first laminated plate comprising a transparent dielectric substrate **101**, a transparent electric conductive electrode **102**, a photoconductive layer **103**, plural reflective electrodes **104** separated from each other on the surface of the photoconductive layer **103** for collecting charges generated on the photoconductive layer **103** and reflecting incident lights

from the direction opposite to the photoconductive layer **103** and an alignment layer **105**; (2) a second laminated plate comprising a transparent dielectric substrate **109**, a transparent electric conductive electrode **108** and an alignment layer **105**;



and (3) a ferroelectric liquid crystal **106** inserted between both alignment layers of the first and second plates, wherein the alignment layer comprises polyimide represented by the general formula (I);



(I)

wherein n is 2 or more, X is S, Se or Te, Y is an aromatic group or a substituted aromatic group, and Z is a group containing an aromatic group.

5,364,669

COMPOSITE FILMS

Katsuhiko Sumida; Yuji Iseki, and Masahiko Suzuki, all of Amagasaki, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

PCT No. PCT/JP90/01247, § 371 Date May 28, 1992, § 102(e) Date May 28, 1992, PCT Pub. No. WO92/05954, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 28, 1990, Ser. No. 859,400
Int. Cl.[5] C09K *19/00;* **B32B** *27/00*
U.S. Cl. 428—1 **27 Claims**

1. A composite film comprising, a thermotropic liquid crystal polymer layer, and an adhesive thermoplastic polymer layer laminated on at least one surface of said liquid crystal polymer layer,

said adhesive thermoplastic layer having adhesive properties relative to said liquid crystal polymer layer and heat sealing properties or hot-melt adhesive properties and

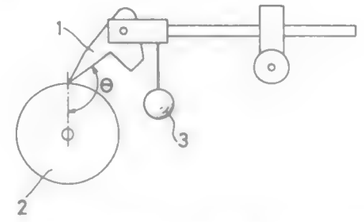
said adhesive thermoplastic polymer layer comprising an adhesive thermoplastic polymer selected from a modified polyolefin having at least one functional group selected from the group consisting of carboxyl group, glycidyl group, and an alkoxysilane group.

5,364,670

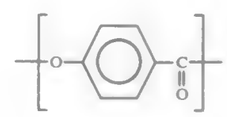
STRIPPING FINGERS FOR COPYING MACHINE

Fuminori Satoji, Yokkaichi; Shoichi Hashimoto, Kuwana; Kuniaki Asai, Tondabayashi, and Tadayasu Kobayashi, Tsukuba, all of Japan, assignors to NTN Corporation and Sumitomo Chemical Co., Ltd., both of Osaka, Japan

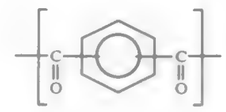
Filed May 29, 1992, Ser. No. 889,699
Claims priority, application Japan, May 31, 1991, 3-129679; Apr. 24, 1992, 4-106781
Int. Cl.[5] C09K *19/00;* **B32B** *23/02, 27/00*
U.S. Cl. 428—1 **3 Claims**



1. Stripping fingers molded of a liquid crystal polyester resin composition comprising a liquid crystal polyester having the repeating structural units expressed by the following formulas (A), (B) and (C):



(A)



(B)



(C)

wherein n is 0 or 1 and having a flow temperature of 340° C. or higher, and about 5 to 50% of aluminum borate whiskers, said flow temperature being the temperature at which the melt viscosity of a resin is 48000 poise when the resin is melted by heating it at a rate of 4° C./min. and extruded through a nozzle of 1 mm in inner diameter and 10 mm in length under a load of 100 kgf/cm^2.

5,364,671

COVER ASSEMBLY FOR USE WITH PHOTOGRAPHS

Donald E. Gustafson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

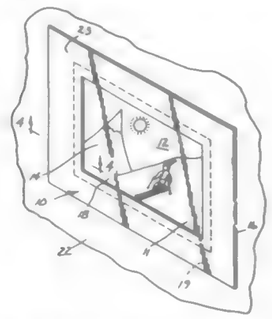
Continuation-in-part of Ser. No. 419,697, Oct. 11, 1989, Pat. No. 5,032,436. This application Jul. 15, 1991, Ser. No. 729,950
The portion of the term of this patent subsequent to Jul. 15, 2008, has been disclaimed.
Int. Cl.[5] A47G *1/06*
U.S. Cl. 428—14 **14 Claims**

1. A photograph cover assembly for use on photographs in a range of sizes, said cover assembly comprising:

a flexible conformable generally planar polymeric sheet having a thickness of up to about 0.2 millimeter, opposite front and rear major surfaces, a peripheral edge between said major surfaces having length and width dimensions

exceeding the length and width dimensions of photographs in said range of sizes by at least 6 millimeters, a generally centrally located viewing portion that is visually transparent between said surfaces, and a frame portion around said viewing portion, said viewing portion having a size and shape adapted to afford viewing of a central portion of a photograph in said range of sizes with edge portions of the photograph around said central portion extending along said frame portion; and

a layer of repositionable pressure sensitive adhesive along said frame portion on the rear surface of said polymeric sheet with the viewing portion of said polymeric sheet



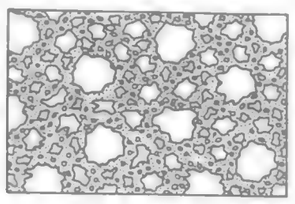
being free of adhesive, said layer of repositionable pressure sensitive adhesive being firmly adhearable to the edge portion of the photograph and to a smooth firm surface of a substrate on the side of the photograph opposite the polymeric sheet to conform said polymeric sheet to the edge portions of the photograph extending along said frame portion, hold the photograph against the polymeric sheet, and support the photograph and polymeric sheet along the surface of the substrate, while the layer of repositionable pressure sensitive adhesive on the polymeric sheet is removable from the surface of the substrate and edge portions of the photograph extending along said frame portion without damage thereto.

5,364,672

ARTIFICIAL STONES

Andreas Schultze-Kraft, Saarstrasse 11 D-6104, Seeheim-Jugenheim, Germany

Filed Nov. 27, 1990, Ser. No. 633,338
Int. Cl.[5] B44F *9/04*
U.S. Cl. 428—15 **9 Claims**



1. Artificial stones from finely divided glass fragments and artificial resins, characterized in that they are closely similar to natural stones in terms of optical, weight-related, touch, and aesthetic properties, wherein said stones comprise

from 15 to 30% by weight of a transparent cured or thermoplastically deformed synthetic resin,

from 10 to 80% by weight of fragmented waste glass of the grain sizes from 0.05 to 3 mm, and

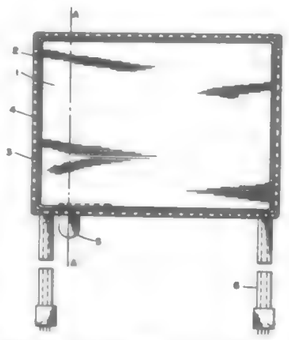
up to 0.5% by weight of dyes or colored pigments.

5,364,673

TRANSPARENT PLATE-SHAPED COMPONENT HAVING A STEPPED EDGE TOTALLY SURROUNDED BY A SEAL

Manfred Schmidt, Deckenpfron; Klaus Staudenmaier, Gechingen; Joachim Schnee, Weil im Schoenbuch2; Walter Mannsdoerfer, Aidlingen, and Volker Weber, Weilheim/Teck, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1992, Ser. No. 920,099
Claims priority, application Germany, Aug. 14, 1991, 4126909
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—34 **10 Claims**



1. A holding fixture and plate arrangement wherein said holding fixture surrounds said plate, said arrangement comprising:

a plate having planar surfaces and a continuous bounding lateral surface that includes a stepped edge, a portion of said stepped edge parallel to a major surface of said plate; and

sealing material adherent to and entirely covering said continuous bounding lateral surface and forming an integral structure therewith, for providing a seal between said lateral surface and said fixture, said sealing material present on and extending from said portion of said stepped edge in the form of a wedge-shaped circumferential elevation, thereby providing improved sealing to said holding fixture.

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PLASTIC FILM WITH FIBER REINFORCEMENT AND TUBULAR CASINGS PRODUCED THEREFROM

Marliese Saal, Heidesheim; Albrecht Harreus, Kelkheim, and Richard Gutte, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 17, 1991, Ser. No. 686,652
Claims priority, application Germany, Apr. 24, 1990, 4012953
Int. Cl.[5] A23L *1/00;* **A22C** *13/00*
U.S. Cl. 428—34.8 **22 Claims**

1. A smoke permeable and water vapor-permeable cylindrical tube casing having a reinforcing planar fiber material having an inner and an outer surface, wherein the planar fiber material exhibits on at least one of its two surfaces an impregnation which forms a substantially continuous film over the entire fiber material surface,

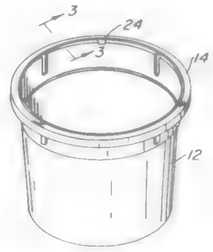
wherein the impregnation comprises a heat-sealable plastic consisting essentially of a copolymer containing at least two different monomeric units selected from the group consisting of a vinyl ester, a maleic ester, a fumaric ester, an acrylic ester, a methacrylic ester, a linear alpha-olefin of from 2 to 8 carbon atoms and a styrene.

5,364,675

REVERSE LIP BLOW MOLDED ARTICLE

Henry J. Guarriello; Joseph A. Guarriello, and Theodore J. Guarriello, all of 9 Woodland Rd., Newtown, Pa. 18940

Division of Ser. No. 462,178, Jan. 8, 1990, Pat. No. 5,051,084, which is a continuation-in-part of Ser. No. 265,163, Oct. 31, 1988, Pat. No. 4,972,963. This application Jun. 19, 1991, Ser. No. 717,736
Int. Cl.[5] B65D *1/46, 51/16*
U.S. Cl. 428—35.7 **4 Claims**



1. An article made using a blow molding process, the article comprising: a substantially circular side wall; a bottom wall; an open top end; and a projecting lip positioned on the outer circumference of the circular side wall adjacent the open top end, the lip formed by a web portion extending outwardly from the periphery of the side wall, a recessed portion having a substantially U-shaped cross-section, and a layer of material folded inwardly over the U-shaped recessed portion and adjacent the web portion, said layer of material is welded to the web portion, enclosing the U-shaped portion, and the article having at least one vent into the enclosed U-shaped portion of the lip.

5,364,676

GASKET-SEALED CASING FOR FIXED DISC MEMORY UNIT

Toshio Takago; Kazuhiko Tomaru; Noboru Shimamoto; Hiroshi Inomata, and Shinichi Sato, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 918,089, Jul. 24, 1992, abandoned. This application Jul. 6, 1993, Ser. No. 86,760
Claims priority, application Japan, Jul. 25, 1991, 3-208520
Int. Cl.[5] B32B *3/14*
U.S. Cl. 428—35.7 **6 Claims**

1. A casing for a fixed disc memory unit comprising a case body and a covering member jointly forming the casing with an air-tight seal of a rubbery gasket along a peripheral flange between the case body and the covering member, wherein the rubbery gasket is an in situ heat cured fluorocarbon-containing organosiloxane-based rubber composition from a uniform blend comprising:

(a) a fluorocarbon-containing at least two organosiloxane polymer containing aliphatically unsaturated groups and recurring units each represented by the formula

$$-[-SiMe_2-CH_2CH_2-Rf-CH_2C-H_2-SiMe_2-O-]-$$

in which Me is a methyl group and Rf is a fluorinated divalent polyether group expressed by the formula

$$-(-CF_2CF_2OCF_2-)_a-[-CF(CF_3)OCF_2-]_b-(-CF_2-)_c-[-CF_2OCF(CF_3)-]_d-(-CF_2OCF_2CF_2-)_e-$$

the subscripts a and e each being 0 or 1, b and d each being a positive integer of 1 to 4 and c being 0 or a positive integer not more than 8;

(b) an organohydrogenpolysiloxane or a fluorocarbon-containing organohydrogensiloxane having, in a molecule, at least two hydrogen atoms directly bonded to the silicon atoms in an amount sufficient to provide from 1.0 to 4.0 moles of the silicon-bonded hydrogen atoms per mole of the aliphatically unsaturated groups in the component (a); and

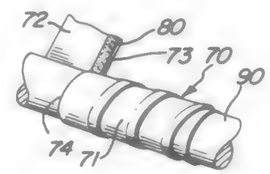
(c) a catalytic compound in an amount sufficient to effect an addition reaction between the components (a) and (b).

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SELF-ADHESIVE WRAP-ON GRIP FOR SPORTS RACQUETS AND OTHER EQUIPMENT HANDLES

Walter Sendziak, Norco, Calif., assignor to Gexco Ent. a division of Tennis Ball Saver, Inc., Huntington Beach, Calif.

Filed Feb. 3, 1993, Ser. No. 12,906
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—40 **23 Claims**



1. For use in combination with an implement having an elongated handle, a wrap-on grip comprising:

a resilient elongated material strip of cushioning material defining a first surface, an adhesive-free second surface, a leading edge and a trailing edge; and

an elongated adhesive strip substantially more narrow than said material strip formed directly upon said first surface adjacent said leading edge,

said elongated material strip being wrappable upon a handle in a helical wrap to form a grip in which said second surface defines an adhesive-free undersurface against said handle and said first surface defines an outer surface and in which said adhesive strip secures said trailing edge.

5,364,678

WINDPROOF AND WATER RESISTANT COMPOSITE FABRIC WITH BARRIER LAYER

Douglas Lumb, Methuen, and Moshe Rock, Andover, both of Mass., assignors to Malden Mills Industries, Inc., Lawrence, Mass.

Continuation-in-part of Ser. No. 9,153, Jan. 26, 1993, Pat. No. 5,268,212, which is a continuation of Ser. No. 788,913, Nov. 7, 1991, Pat. No. 5,204,156, which is a continuation-in-part of Ser. No. 468,027, Jan. 22, 1990, Pat. No. 5,126,182, which is a continuation-in-part of Ser. No. 422,850, Oct. 17, 1989, abandoned. This application Dec. 6, 1993, Ser. No. 163,021
Int. Cl.[5] B32B *5/04, 5/18*
U.S. Cl. 428—96 **34 Claims**

1. A stretchable, drapable, water vapor permeable, windproof and water resistant composite fabric for use in a garment comprising:

an outer layer of fabric;

an inner layer of fabric having a raised inner surface and a plain outer surface and formed from sufficiently hydrophilic material to permit wicking of moisture from the raised inner surface of the inner layer to said plain outer surface thereof;

barrier means for providing resistance to wind and liquid water while providing for water vapor transport through absorption-diffusion-desorption, including a non-porous hydrophilic barrier layer;

a hydrophilic adhesive layer, said adhesive layer affixing at least one of said outer surface of said inner layer of fabric or the inner surface of said outer layer of fabric to said barrier means; and

said other of said outer surface of said inner layer of fabric or said inner surface of said outer layer of fabric being disposed on and adhered to said barrier layer.

27. A stretchable, drapable, water vapor permeable, windproof and water resistant composite fabric for use in a garment comprising:

an outer layer of fabric;

an inner layer of fabric having a raised inner surface and a plain outer surface and formed from sufficiently hydrophilic material to permit wicking of moisture from the raised inner surface of the inner layer to said plain outer surface thereof;

barrier means for providing resistance to wind and liquid water while providing for water vapor transport through absorption-diffusion-desorption including an essentially non-porous hydrophilic first barrier layer disposed on and adhered to said outer surface of said inner fabric layer and an essentially non-porous hydrophilic second barrier layer disposed on and adhered to said inner surface of said outer fabric layer; and

a hydrophilic adhesive layer joining said first and second barrier layers.

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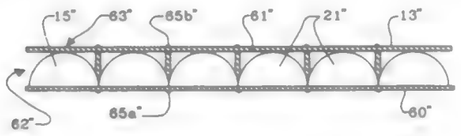
FLEXIBLE ARMOUR WITH ENERGY ABSORBING HALF-SPHERES OR HEMISPHERICALLY-SHAPED BODIES

Trevor K. Groves, Calgary, Canada, assignor to Dorothy Groves, Calgary, Canada

Continuation-in-part of Ser. No. 670,425, Mar. 18, 1991, abandoned, which is a continuation of Ser. No. 135,531, Dec. 17, 1987, Pat. No. 5,087,516, and Ser. No. 136,443, Dec. 17, 1987, Pat. No. 5,110,661. This application Nov. 20, 1992, Ser. No. 978,971

Int. Cl.[5] F41H *1/02, 5/02;* **B32B** *5/16*

U.S. Cl. 428—76 **17 Claims**



1. An armour component comprising:

inner and outer layers of flexible material,

at least the inner layer of flexible material being of high impact-resist material,

at least two juxtaposed internested layers of hard hemispherical beads confined between said two layers of flexible material,

the hemispherical beads in one layer of hard hemispherical beads being disposed in a most compact relation with the beads of an adjacent layer of hard hemispherical beads whereby the hemispherical beads of the adjacent layers of hard hemispherical beads internest in the inter-bead spaces of each other, said hard hemispherical beads being substantially free to vibrate during collision of a bullet with said armour component so that said hemispherical beads of said layers of hard hemispherical beads encounter repeated impact with each other and said bullet to thereby provide an action causing distortion of said bullet and dissipation of bullet energy; and

stitching means passing through said layers of flexible material and between the hemispherical beads in the layers of hard hemispherical beads for drawing the layers of flexible material toward one another and thereby holding said hemispherical beads tightly in said relation, the volume occupied by the layers of hemispherical beads being substantially void of all other material.

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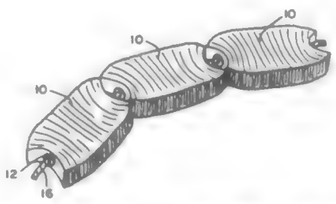
PROCESS FOR SELECTIVELY ABSORBING OILY CONTAMINANTS

James D. Cotton, Marietta, Ga., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 920,968, Jul. 28, 1992, Pat. No. 5,281,463. This application Apr. 6, 1993, Ser. No. 43,643

Int. Cl.[5] B32B *3/06;* **C02F** *1/28*

U.S. Cl. 428—126 **8 Claims**



1. A method for removing or controlling the spread of an oily contaminant from an aqueous environment comprising the step of contacting said oily contaminant with a structure comprising:

a plurality of sheets having major surfaces and edges comprising oleophilic and hydrophobic fibers,

said sheets arranged in superposition to form a generally layered structure having one or more surfaces comprising sheets edges or folds,

means for maintaining said sheets in said generally layered structure,

said layered structure having a surface formed by said sheet folds or edges that is equal to or greater than the other surfaces of the layered structure, and

maintaining said structure so that said oily contaminant contacts at least one said surface comprised of sheet ends or edges.

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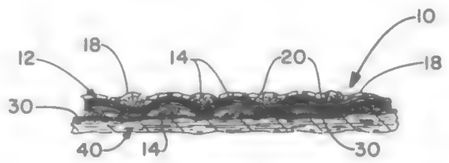
ACOUSTIC LAMINA WALL COVERING

Joseph L. Pate, Columbus, and David L. Fisbel, Caledonia, both of Miss., assignors to GenCorp Inc., Fairlawn, Ohio

Filed Feb. 5, 1993, Ser. No. 13,911

Int. Cl.[5] B32B *5/26, 7/12, 31/20;* **E04B** *1/84;* **E04F** *13/00*

U.S. Cl. 428—137 **13 Claims**



1. A moisture-permeable acoustic lamina comprising; a woven fabric adhered to a fabric backing by a discontinuous thermoplastic polymer layer.

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COMPOSITE SLIDING MEMBER WITH IMPREGNATED MESH LAYER

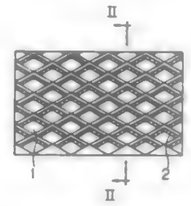
Tadashi Tanaka, Konan; Hidehiko Tamura, Aichi; Nobutaka Hiramatsu, Ichinomiya, and Takuya Tanaka, Nagoya, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

Filed Jan. 15, 1993, Ser. No. 5,131

Claims priority, application Japan, Jan. 17, 1992, 4-006396

Int. Cl.[5] C10M *111/04;* **B32B** *3/24*

U.S. Cl. 428—138 **5 Claims**



1. A composite sliding member, comprising a base composed of a metal wire mesh or expanded metal having a void portion and surface covered and impregnated with a lubricating composition comprising 0.1–50% by volume of at least one kind of resin selected from a group (A) consisting of tetrafluoroethylene-perfluoroalkylvinylether copolymer resin, tetrafluoroethylene-hexafluoropropylene copolymer resin, and fluoroethylene-propyleneether resin, 0.1–50% by volume of at least one kind selected from a group (B) consisting of oxybenzoyl polyester, polyphenylene sulfide, thermosetting resin, metal lubricant, metal oxide, composite metal oxide, metal sulfide, metal fluoride, carbon-based self lubricant, fiber material and ceramics, and the remaining of substantially tetrafluoroethylene resin, wherein the total of the components other than the tetrafluoroethylene resin is 0.2–70% by volume.

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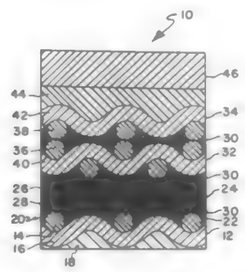
COMPRESSIBLE PRINTING BLANKET AND METHOD OF MAKING SAME

W. Toriran Flint, Spartanburg, and Joseph L. Byers, Inman, both of S.C., assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Filed Feb. 14, 1992, Ser. No. 835,795

Int. Cl.[5] B32B *5/16, 3/26, 7/12, 5/22*

U.S. Cl. 428—141 **16 Claims**



1. A printing blanket comprising, in order:

a first compressible fabric ply comprising a plurality of warp and fill fibers or yarns forming a fabric substrate, said substrate having an upper and a lower surface, wherein said substrate is substantially impregnated on only the upper surface thereof with a binder material containing a plurality of cells therein in an amount sufficient to impart increased compressibility properties to the first fabric ply and wherein said binder material fills the interstices of the fabric substrate substantially in the area nearest the upper surface thereof, and further wherein at least the lower surface of said substrate has a protective coating thereupon to prevent adsorption and wicking of water, inks and solvents through said ply;

an intermediate compressible layer comprising a polymer matrix having a plurality of closed cells distributed substantially uniformly therein such that said layer has substantially uniform compression characteristics;

a first adhesive layer securing said intermediate compressible layer to a second fabric ply;

a second compressible fabric ply, having an upper and a lower surface, said second ply being substantially entirely impregnated with said binder material containing said plurality of cells, wherein said binder material fills the interstices of said second ply substantially entirely throughout said ply;

a second adhesive layer securing said second ply to a third compressible fabric ply;

a third compressible fabric ply, having an upper and a lower surface, said third ply being substantially impregnated only upon said lower surface with said cell-containing binder material, wherein said binder material fills the interstices of said third ply substantially in the area nearest the lower surface thereof;

a subface formed from a high durometer, high tensile, low elongation elastomeric compound; and

an elastomeric printing face having a surface profile with a roughness average of above about 0.6 but below about 0.95 microns.

5,364,684

MAGNETIC RECORDING MEDIUM COMPRISING A POLYETHYLENE-2,6-NAPHTHALATE MULTILAYERED FILM COATED ON BOTH SIDES BY A COATING LAYER

Seiji Sakamoto, Tokyo; Toshifumi Watanabe, Nagahama, and Toshifumi Takisawa, Kawasaki, all of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, Japan

Filed Jul. 6, 1992, Ser. No. 909,400

Claims priority, application Japan, Jul. 10, 1991, 3-170198

Int. Cl.[5] G11B *05/00*

U.S. Cl. 428—141 **13 Claims**

1. A magnetic recording medium comprising:

a stretched polyethylene-2,6-naphthalate multilayered film having a high-roughness surface of a center-line average roughness of 0.001 to 0.010 μm and a low-roughness surface having a center-line average roughness which is less than that of the high-roughness surface and less than 0.004 μm, and wherein the low-roughness surface is on the side of the medium opposite from the high-roughness surface;

a coating layer (A) comprising a polymeric binder and lubricant particles and having characteristics represented by the formulae

$$0.01 \leqq Ha \leqq 0.08 \quad (1)$$

$$10{,}000 \leqq Na \leqq 60{,}000 \quad (2)$$

$$10 \leqq HD \leqq 150 \quad (3)$$

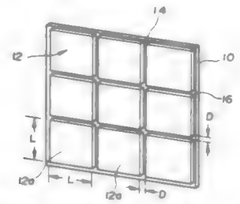
wherein Ha represents a three-dimensional average protuberance height measured in μm in the surface of the coating layer (A); Na represents the number of the protuberances/mm^2 in the surface of the coating layer (A); HD represents a surface hardness in units of μm^{-2} of the coating layer (A) which is obtained by calculating from Vickers hardness measured by using a dynamic ultramicrohardness tester; and wherein coating layer (A) is formed on the high-roughness surface of said multilayered film;

a coating layer (B) comprising a polymeric compound and having characteristics represented by the formula (4),

$$0.00 \leq Hb \leq 0.008 \quad (4)$$

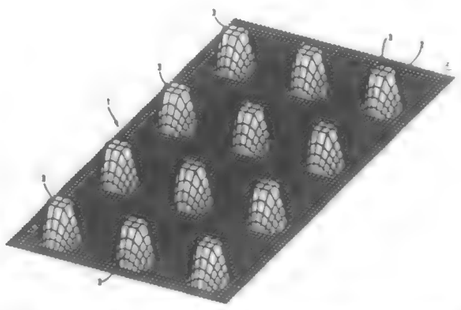
wherein Hb represents a three-dimensional average protuberance height measured in μm in the surface of the coating layer (B); and wherein coating layer (B) is formed on the low-roughness surface of said multilayered film;
and wherein a ferromagnetic metal thin film is formed on said coating layer (B).

5,364,685
LAMINATED PANEL WITH LOW REFLECTANCE FOR RADIO WAVES
Hiroshi Nakashima; Yoshihiro Yano, and Yasunobu Iida, all of Mie, Japan, assignors to Central Glass Company, Limited, Ube, Japan
Filed Aug. 7, 1992, Ser. No. 925,682
Claims priority, application Japan, Aug. 13, 1991, 3-203035; Aug. 27, 1991, 3-215609
Int. Cl.[5] D06N *7/04;* H01Q *15/02*
U.S. Cl. 428—155 25 Claims



1. A laminated panel having a substrate which is low in reflectance for radio waves and a layer disposed on said substrate which is relatively high in reflectance for radio waves, characterized in that said layer is divided into a plurality of discontinuous segments by a series of slits such that the width of each of said segments in a direction parallel to the direction of the electric field of a radio wave which will impinge on the laminated panel is not greater than ½ of the wavelength of said radio wave, whereby the reflectance of said layer for said radio wave reduces.

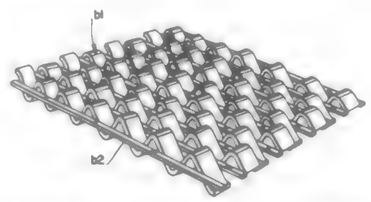
5,364,686
MANUFACTURE OF A THREE-DIMENSIONALLY SHAPED TEXTILE MATERIAL AND USE THEREOF
Dieter Disselbeck, Bad Soden am Taunus, and Elke Gebauer, Bobingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Filed Apr. 30, 1992, Ser. No. 876,862
Claims priority, application Germany, May 4, 1991, 4114571
Int. Cl.[5] B32B *1/00, 7/00;* B29C *67/00*
U.S. Cl. 428—174 10 Claims



1. A process for manufacturing a dimensionally stable, three-dimensionally shaped, textile material, which comprises stacking on top of one another one or more layers of a deep-drawable textile material made of yarns and containing reinforcing fibers and a thermoplastic matrix material in fiber form which melts at a lower temperature than the reinforcing fibers, bringing the stack into the shape desired for the core material by an area-enlarging shaping process, at a temperature at which the fibrous thermoplastic matrix material melts, then reducing the temperature to back down to below the melting point of the thermoplastic matrix material and keeping the shaped material in the mold until the thermoplastic matrix material has sufficiently hardened, and then demolding the resulting shaped textile material.

9. The dimensionally stable, three-dimensionally shaped, textile material manufactured by the process of claim 1.

5,364,687
DOORMAT AND APPARATUS FOR PRODUCING THE SAME
Kee S. Kil; Woon H. Whang, and Kang Y. Lee, all of Choongchungbuk-do, Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea
Filed Aug. 25, 1992, Ser. No. 935,522
Claims priority, application Rep. of Korea, Dec. 27, 1990, 90-21958
Int. Cl.[5] B32B *3/28;* A23G *1/22*
U.S. Cl. 428—184 4 Claims

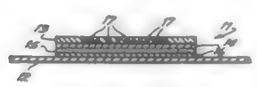


1. A doormat comprising a plurality of continuous corrugated bands each having lateral sides which separate each corrugated band from one another to form a linear array of corrugated bands with each band having multiple undulations which form opposed apexes in an arrangement in which the opposed apexes in any one band alternates in an out of phase relationship with the apexes in the corrugated bands on each opposite lateral side thereof and a plurality of straight bands positioned on each opposite lateral side of each corrugated band and spaced apart from the opposed apexes of each corrugated band for connecting the corrugated bands to one another along their lateral sides with the opposed apexes unconnected to the bands so as to provide open space in each of the corrugated bands on opposite sides of each of the straight bands.

5,364,688
HEAT ACTIVATED TRANSFER FOR ELASTOMERIC MATERIALS
John Mahn, Jr., 6154 Oakhaven Dr., Cincinnati, Ohio 45238
Continuation-in-part of Ser. No. 27,954, Mar. 8, 1993. This application Sep. 20, 1993, Ser. No. 123,570
Int. Cl.[5] B44C *1/16;* B60C *13/00;* B32B *25/00, 27/00*
U.S. Cl. 428—187 8 Claims

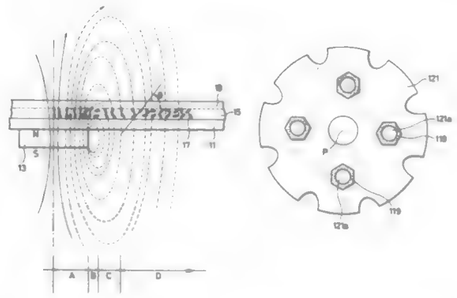
1. An indicia bearing elastomeric article comprising:
an elastomeric layer having a lower surface bonded to said elastomeric article, said elastomeric layer having an upper surface bonded to a clear high melting point polyester





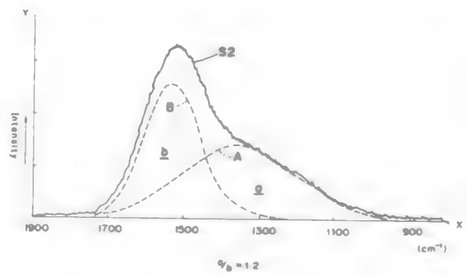
thermoplastic layer, indicia comprising a sublimation dye carried in said polyester thermoplastic layer.

5,364,689
PAINTING WITH MAGNETICALLY FORMED PATTERN AND PAINTED PRODUCT WITH MAGNETICALLY FORMED PATTERN
Takeshi Kashiwagi; Tutsuya Tamura, and Mitsuaki Narita, all of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Yokohama, Japan
Filed Oct. 21, 1992, Ser. No. 964,141
Claims priority, application Japan, Feb. 21, 1992, 4-035220; Feb. 21, 1992, 4-035225; Apr. 10, 1992, 4-090764; May 13, 1992, 4-120667; Jun. 11, 1992, 4-151968; Jun. 11, 1992, 4-152049
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—195 58 Claims



1. A painted product with a desired pattern having a three-dimensional appearance formed thereon, comprising:
a magnetic or non-magnetic product body; and
a paint layer formed on a surface of the product body, wherein the paint layer comprises:
a paint medium capable of transmitting light rays incident on the paint layer, and
a multiplicity of magnetic non-spherical particles mixed into the paint medium,
wherein the magnetic nonspherical particles includes a first group of magnetic nonspherical particles which are predeterminately oriented to be substantially parallel to a surface of the paint layer and arranged in a shape corresponding to the desired pattern to be formed on the painted product,
and a second group of magnetic non-spherical particles which are predeterminately oriented to be substantially non-parallel to the surface of the paint layer and arranged with respect to the first group of magnetic non-spherical particles,
wherein the amount of said first and second group of particles and the spatial relationship of their predetermined orientations are such that the desired pattern having a three-dimensional appearance is visible on the surface of the product body as the light rays incident on the paint layer are influenced differently by one or more of reflection and absorption by the first and second group of magnetic non-spherical particles.

5,364,690
MAGNETIC RECORDING MEDIUM COMPRISING A FERROMAGNETIC METAL FILM AND TWO CARBON PROTECTIVE LAYERS
Kiyoshi Takahashi, Ibaraki; Mikio Murai, Hirakata; Masaru Odagiri, Kawanishi; Hideyuki Ueda, Takatsuki; Yukikazu Ohchi, Kadoma, and Tatsuya Hiwatashi, Kumamoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 22, 1992, Ser. No. 964,861
Claims priority, application Japan, Oct. 25, 1991, 3-279198
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—212 2 Claims



1. A magnetic recording medium comprising:
a non-magnetic substrate;
a ferromagnetic metal thin film which is provided on the non-magnetic substrate;
a first carbon layer which is provided on the ferromagnetic metal thin film; and
a hard and amorphous second carbon layer which is provided on the first carbon layer;
the first and second carbon layers having first and second Raman spectra based on Raman spectrophotometry, respectively;
such that when each of the first and second Raman spectra when depicted in a graph of rectangular coordinates having an x and y axis such that the x axis expressed in cm^{-1} the y axis is indicative of spectral intensity, said Raman spectra being separated into a first band of Gaussian function having a peak of about 1380 cm^{-1} and a second band of Gaussian function having a peak of about 1550 cm^{-1}, a ratio f an area enclosed by the first band and the x axis to an area enclosed by the second band and the x axis represents "relative intensity", said first carbon layer has a relative intensity of 2 to 20 and a Vickers hardness of 50 to 1,000 kg/mm^2, while the second carbon layer has a relative intensity of 0.8 to 3, a Vickers hardness of not less than 1,000 kg/mm^2 and a thickness of 50 to 300 Å.

5,364,691
ALK-1-ENYLOXY CARBONATES
Paul D. Taylor, West Milford; Kolazi S. Narayanan, Palisades Park, both of N.J., and Jeffrey S. Plotkin, Monsey, N.Y., assignors to ISP Investments Inc., Wilmington, Del.
Filed Mar. 9, 1990, Ser. No. 490,854
Int. Cl.[5] C08F *2/50, 18/24, 26/02*
U.S. Cl. 428—220 12 Claims

1. A radiation curable composition containing a cationic photoinitiator, between about 0 and about 75 wt. % of a polymerizable monomer or oligomer which is not normally curable by cationically induced radiation curing and a polymer having the formula



wherein R is a polymeric radical selected from the group of polyester, polyacetal, polyurethane, polyether, and polycarbonate, said polymers containing from about 10 to 50 repeating monomer units;

A′ is a terminating moiety and is hydrogen, lower alkyl or

R′ is hydrogen or lower alkyl;

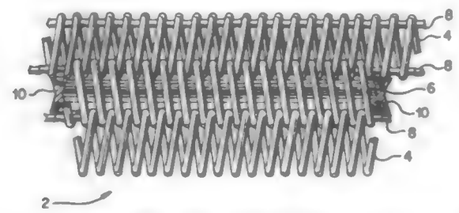
B is a linear, branched or cyclic divalent radical having from 2 to 12 carbon atoms and is selected from the group of alkylene, mono or poly alkoxylated alkylene, alkenylene, alkynylene, arylene, alkarylene and aralkylene radicals, which radicals are optionally substituted with halo, lower alkyl, cyano, nitro or alkoxy; and (m) has a value of from 1 to 10.

5,364,692

HEAT SET SPIRAL LINK FABRIC WITH MODIFIED STUFFER YARNS

David Bowen, Jr., St. Augustine, Fla., and Gerald L. Smith, Summerville, S.C., assignors to Scapa Group, PLC, Blackburn, England

Filed Dec. 28, 1993, Ser. No. 174,543
Int. Cl.[5] D03D *13/00*
U.S. Cl. 428—222 **18 Claims**



1. A heat set stuffed spiral link fabric for providing a supporting surface for transporting a web comprising:

a plurality of synthetic spiral coil members connected together serially by elongated hinge members extending through intermeshed portions of adjacent intermeshing spiral coil members; and

a plurality of elongated monofilament stuffer yarns having a modified X-shaped cross section each extending through a central portion of one of said spiral coil members to form a stuffed spiral link fabric;

wherein said stuffed spiral link fabric is heat set to modify the X-shaped cross section of said elongated monofilament stuffer yarns whereby a stuffer yarn substantially fills a central portion of each said spiral coil member and each said stuffer yarn is locked into place in the spiral link fabric.

5,364,693

ORTHOPEDIC SUPPORT MATERIALS

Dean M. Moren, North St. Paul, and Dean A. Ersfeld, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1993, Ser. No. 8,678
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—263 **38 Claims**



1. An orthopedic support material comprising:

(a) a water-curable resin composition comprising:

(i) a water-reactive liquid organometallic compound having at least one hydrolyzable group per molecule and a viscosity of no greater than about 100,000 centipoise under ambient conditions; and

(ii) an organic polymer, having a number average molecular weight of at least about 400, mixed with the water-reactive liquid organometallic compound; and

(b) a flexible substrate coated with the water-curable resin composition.

5,364,694

POLYETHYLENE TEREPHTHALATE-BASED MELTBLOWN NONWOVEN FABRIC AD PROCESS FOR PRODUCING THE SAME

Hiromasa Okada, and Shoji Asano, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 12, 1992, Ser. No. 928,459
Claims priority, application Japan, Aug. 13, 1991, 3-228708
Int. Cl.[5] D04H *1/58, 3/16;* B29C *47/00*
U.S. Cl. 428—288 **13 Claims**

1. A polyethylene terephthalate-based meltblown nonwoven fabric comprising a mixed polymer comprising 75 to 98% by weight of polyethylene terephthalate and 2 to 25% by weight of a polyolefin, wherein the polyolefin is present, in the cross-section of the fibers, in the form of microfine islands uniformly and nearly homogeneously dispersed in a sea of the polyethylene terephthalate.

5,364,695

THERMOPLASTIC FILM FROM POLYETHYLENE HAVING IMPROVED SURFACE ADHESION AND METHOD OF MAKING THEREOF

Richard M. Gurewitz, 5914 Woodland View Dr., Woodland Hills, Calif. 91367

Filed Jul. 2, 1990, Ser. No. 546,717
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 **25 Claims**

9. In a synthetic thermoplastic monolayer film having two surfaces said film having been extruded through a die wherein said film is composed of a polyethylene having a maximum melt flow of up to 2 decigram per minute and a density in the range of 0.915 to 0.970 grains per cubic centimeter and inorganic lamellar filler particles in proportions of 1–29% by weight wherein the largest particles have a minimum particle diameter to particle thickness ratio of about 5:1 and wherein said film has a thickness of from 20 microns to 250 microns, the improvement comprising:

polycaprolactone intermixed with said polyethylene and said inorganic lamellar filler in proportions of 1–29% by weight of the mixture, said polycaprolactone being concentrated on at least one surface of said film to allow adherence of a glue backed member thereto.

5,364,696

POLYSTYRENE FOAM SHEET USEFUL FOR FORMING DEEP DRAWN ARTICLES, A PROCESS TO PRODUCE THOSE ARTICLES, AND THE DEEP DRAWN ARTICLES

Phillip A. Wagner, Essexville, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 81,043, Jun. 22, 1993. This application Mar. 18, 1994, Ser. No. 210,821
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—318.6 **14 Claims**

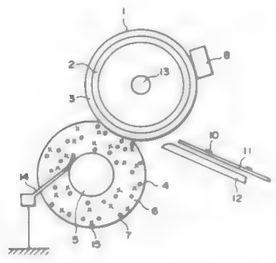
1. A polystyrene foam sheet for thermoforming comprising a polystyrene resin which contains 1 to 15 wt. % of a rubber component, based on the polystyrene resin, having a majority of particle sizes less than about 0.45 microns with the foam sheet having a density of 0.04 to 0116 g/m^3 (2½–10 lb/ft^3) and a thickness of about 0.4 to 6.5 mm.

5,364,697

SILICON COMPOSITION, ELASTIC REVOLUTION BODY AND FIXING DEVICE USING THE COMPOSITION

Toshiyuki Miyabayashi, Okaya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 453,978, Dec. 20, 1989, abandoned. This application Aug. 5, 1992, Ser. No. 924,582
Claims priority, application Japan, Dec. 23, 1988, 63-326520
Int. Cl.[5] B05C *13/02;* B32B *1/08;* G03G *13/20, 15/20*
U.S. Cl. 428—323 **31 Claims**



1. An elastic revolution body comprising an elastic body comprising at least a surface layer thereof formed from a silicon rubber composition, said silicone rubber composition

comprising an addition reaction-type silicone rubber composition prepared from a mixture of

(A) a dimethylpolysiloxane having a vinyl group, a methylhydrogenpolysiloxane and a platinum-based catalyst,

(B) reactive group-containing modified silicic acid powder of which surface has been modified with (i) a compound selected from the group consisting of (a) an alkylsilane, (b) a hexamethyldisilazane, (c) a dimethylsilicone oil and (d) a mixture thereof, and (ii) an unsaturated group-containing silane compound, followed by drying and

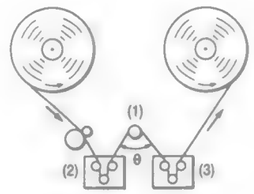
(C) inorganic fine powder impregnated with a surfactant, said inorganic fine powder having a pore diameter of 0.01 to 30 microns, an average particle size of 5 to 70 microns and an oil absorption of 200–800 ml/100 g, wherein said inorganic fine powder is impregnated with an amount of surfactant sufficient to produce said silicone rubber composition containing surfactant in a proportion of 0.1–10 wt % and wherein said surfactant is a fluorine-containing surfactant selected from the group consisting of fluorinated alkyl esters, perfluoroalkylpolyoxyethylene ethanol, perfluoroalkylcarboxylic acid salts, perfluoroalkylammonium salts, perfluoroalkylbetaine, perfluoroalkylamine oxide, perfluoroalkylethylene oxide adducts, perfluoroalkyl phosphates, non-dissociative perfluoroalkyl compounds and perfluoro-ethylene oxide adducts or a silicone-containing surfactant selected from the group consisting of polyether-modified silicone oil, epoxypolyether-modified silicone oil, alkylaralkylpolyether-modified silicone oil and amino-modified silicone oil.

5,364,698

LAMINATED POLYESTER FILM FOR MAGNETIC RECORDING MEDIUM

Tomoyuki Kotani, Machida, Japan, assignor to Diafoil Hoechst Company, Limited, Tokyo, Japan

Filed Nov. 4, 1992, Ser. No. 971,222
Claims priority, application Japan, Nov. 7, 1991, 3-319994
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 **13 Claims**



1. A laminated polyester film for a magnetic recording medium comprising at least three layers, including a top, intermediate and bottom layer, wherein the top layer and the bottom layer have exposed surfaces and contain inorganic particles having a Moh's hardness of at least 8 and an average particle size of 0.005 to 0.5 μm in an amount of 0.25 to 5% by weight based on the weight of the polyester of the respective layer and, in total, not larger than 0.20% by weight based on the total weight of polyester in all the layers including the intermediate layer, and the surface characteristics of said laminated polyester film satisfy the following equations (1) to (3):

$$|\mu d^A - \mu d^B| \leqq 0.100 \quad (1)$$

$$(Ra^A + Ra^B)/2 \leqq 0.030 \quad (2)$$

$$|Ra^A - Ra^B| \leqq 0.010 \quad (3)$$

wherein μd^A and μd^B are coefficients of friction of the exposed surfaces of the top and bottom layers, respectively, and Ra^A and Ra^B are surface roughness (μm) of the top and bottom layers, respectively.

5,364,699

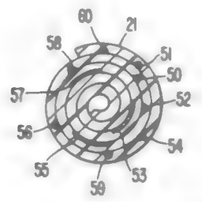
CONTINUOUS POLYTETRAFLOROETHYLENE FIBERS

Donald L. Hollenbaugh, Jr., Northeast, Md.; Gordon L. McGregor, Landenberg, Pa., and Raymond B. Minor, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Division of Ser. No. 778,294, Oct. 17, 1991, Pat. No. 5,281,475, and a division of Ser. No. 1,869, Jan. 8, 1993, Pat. No. 5,288,552, which is a division of Ser. No. 778,294, Oct. 17, 1991, Pat. No. 5,281,475. This application Jan. 25, 1994, Ser. No. 187,442
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—357 **4 Claims**

1. A continuous fiber comprising a helically rolled self-

adhered continuous sheet of polytetrafluoroethylene, said fiber having an outside surface with a substantially round profile and



a single spiralling seam, said rolled self-adhered continuous sheet having a filamentary element disposed longitudinally within the rolls.

5,364,700

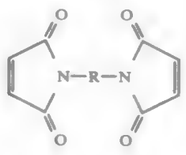
PREPREGABLE RESIN COMPOSITION AND COMPOSITE

Linda A. Domeier, Somerville, N.J., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 27, 1985, Ser. No. 813,839
Int. Cl.[5] B32B *27/14;* **C08F** *22/40, 222/40;* **C08G** *73/10*
U.S. Cl. 428—394 **24 Claims**

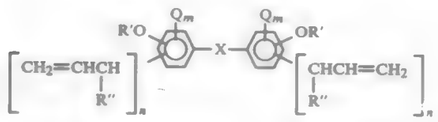
1. As a prepregable resin composition, a bismaleimide resin formulation comprised of:

(a) a bismaleimide of the formula:



wherein R is the residue of an aromatic or aliphatic diamine,

(b) a liquid reactive diluent of the formula:



wherein R′ represents hydrogen, alkyl or aryl; R″ represents hydrogen or methyl; X represents a bivalent radical; Q represents halogen, alkyl or alkoxy; n has a value of from 1–2 and m has a value of from 0–3; and

(c) a rubber modifier.

24. A composite comprising:

(i) a matrix resin comprising:

(a) the bismaleimide resin formulation of claim 1,

(b) one or more liquid coreactants, and optionally other additives, and

(ii) a structural fiber.

5,364,701

MIXED FILAMENT YARN OF POLYESTER FILAMENTS AND NYLON FILAMENTS

Raymond L. Boles, Hixson, Tenn.; Benjamin H. Knox, Wilmington, Del., and James B. Noe, Wilmington, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 786,584, Nov. 1, 1991, Pat. No. 5,223,197, which is a continuation-in-part of Ser. No. 338,251, Apr. 14, 1989, Pat. No. 5,066,447, which is a continuation-in-part of Ser. No. 53,309, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 824,363, Jan. 30, 1986, abandoned, said Ser. No. 786,584, is a continuation-in-part of Ser. No. 541,692, Jun. 21, 1990, abandoned. This application Mar. 23, 1993, Ser. No. 35,988
Int. Cl.[5] D02G *3/02*
U.S. Cl. 428—373 **1 Claim**

1. A mixed filament yarn, suitable for use as a textile yarn, comprised of spin-oriented polyester filaments and of nylon filaments, wherein said spin-oriented polyester filaments are characterized by an intrinsic viscosity (η) about 0.56 to about 0.68, a minimum tenacity at 7% elongation (T_7) of 0.7 g/d, elongation-to-break (E_B) about 60 to about 90%, boil-off shrinkage (S_1) less than about 10%, thermal stability as measured by a (S_2)-value less than about +1%, net shrinkage (S_{12}) less than about 8%, maximum shrinkage tension (ST) less than about 0.3 gpd, density (ρ) about 1.35 to about 1.39 g/cm^3, and crystal size (CS) about 55 to about 90 Angstroms and also at least about a value in Angstroms, expressed in relationship to the density (ρ), of (250ρ–282.5); and wherein said nylon filaments are characterized by relative viscosity (RV) about 40 to about 80, elongation-to-break (E_B) about 60 to about 90%, boil-off shrinkage (S_1) less than about 10%, and dimensional stability as measured by a ($\Delta L_{135\text{-}40}$ *c*)-value less than 0.

5,364,702

INK-JET RECORDING MEDIUM

Kouji Idei, and Hideaki Senoo, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 543,914, Jun. 26, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 143,379
Claims priority, application Japan, Jul. 12, 1989, 1-181007
Int. Cl.[5] B41M *5/00*
U.S. Cl. 428—423.1 **15 Claims**

1. An ink-jet recording medium for forming record images, said medium comprising

an ink-receiving layer coated upon a support, said ink-receiving layer containing (1) at least one compound having one triple bond in the molecule and selected from the group consisting of acetylene glycol, ethylene oxide addition product of acetylene glycol and acetylene alcohol, (2) an adhesive and (3) an inorganic pigment

wherein said support contains from 5 to 30 parts by weight of filler per 100 parts by weight of support and said support has a Stöckight sizing degree of 5 seconds or more;

said ink-jet recording medium being adapted to receive an aqueous ink containing at least one water-soluble dye selected from the group consisting of direct dye, acidic dye, basic dye, reactive dye and dye for food;

and wherein said adhesive is at least one member selected from the group consisting of polyvinyl alcohol, oxidized starch, etherified starch, carboxymethyl cellulose, hydroxyethyl cellulose, casein, gelatin, soybean protein, silanol-modified polyvinyl alcohol, maleic anhydride resin, conjugated diene copolymer, acrylic polymer, polyurethane resin, unsaturated polyester resin, vinyl chlorine resin-vinyl acetate copolymer, polyvinyl butyral, alkyl resin, melamine resin and urea resin.

5,364,703

COPPER-CLAD POLYETHERIMIDE LAMINATES WITH HIGH PEEL STRENGTH

James E. Tracy, Glenford, Ohio, and John T. Bartholomew, Ballston Lake, N.Y., assignors to General Electric Company, Coshocton, Ohio

Filed Jan. 16, 1990, Ser. No. 464,819
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—460 **14 Claims**

1. A method for laminating metal foil having a surface to polyetherimide sheet having a surface which comprises coating said foil surface with an adhesive composition, contacting said adhesive coated foil surface with said sheet surface, and applying heat and pressure to adhesively bind said surfaces together, said adhesive composition comprising between about 49% and 51% by weight on a solids basis of a polyvinyl butyral resin, between about 49% and 51% by weight on a solids basis of a resole resin, and an organic solvent, said heat applied ranging from about 450° to 550° F. and said pressure applied ranging from about 100 to 700 psi.

5,364,704

NONSEALABLE, MATT, HAZY, BIAXIALLY ORIENTED MULTILAYER POLYOLEFIN FILM, METHOD OF PRODUCING IT, AND ITS USE

Ursula Murschall, Nierstein; Angela Speith, Wiesbaden, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 20, 1992, Ser. No. 963,551
Claims priority, application Germany, Oct. 24, 1991, 4135097
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—516 **24 Claims**

1. A non-sealable, matt, hazy, biaxially oriented multilayer film comprising

a) a base layer containing a propylene polymer,

b) at least one outer layer containing a blend of two components (A) and (B),

wherein component (A) is composed of a high density polyethylene (HDPE), and

wherein component (B) is composed of a propylene homopolymer,

c) the film having a haze value, measured in accordance with ASTM D 1003, of greater than about 40, and

d) the film having a gloss, as measured by ASTM D 523-78, of less than about 35 at an angle of 85° C.

5,364,705

HYBRID RESISTANCE CARDS AND METHODS FOR MANUFACTURING SAME

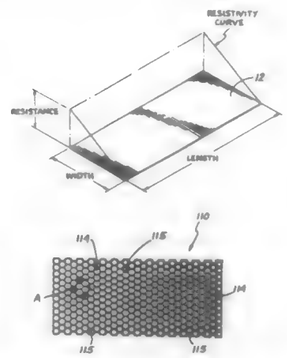
Stephen A. Callahan, Mesa, Ariz., assignor to McDonnell Douglas Helicopter Co., Mesa, Ariz.

Filed Jun. 25, 1992, Ser. No. 904,331
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—601 **17 Claims**

1. A hybrid R-Card having a length and a width, comprising:

an electrically conductive ink layer; and

an electrically resistive ink layer, wherein said conductive ink layer is selectively applied in a pattern to short out portions of said resistive ink layer, such that said card has a predetermined resistive taper across its width thereof according to a desired resistivity curve, said resistive taper



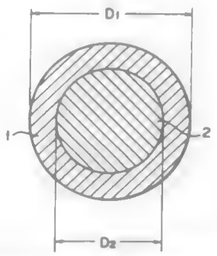
being substantially continuous along the length of the R-Card.

5,364,706

CLAD BONDING WIRE FOR SEMICONDUCTOR DEVICE

Katsuyuki Toyofuku; Ichiro Nagamatsu; Shinji Shirakawa; Hiroto Iga; Takeshi Kujiraoka, and Kensei Murakami, all of Tokyo, Japan, assignors to Tanaka Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1991, Ser. No. 729,226
Claims priority, application Japan, Jul. 20, 1990, 2-192791; Jul. 20, 1990, 2-192792; Jul. 20, 1990, 2-192793; Jul. 20, 1990, 2-192794; Jul. 20, 1990, 2-192795; Jul. 20, 1990, 2-192796; Jul. 20, 1990, 2-192797; Jul. 20, 1990, 2-192798; Jul. 20, 1990, 2-192799; Jul. 20, 1990, 2-192800; Jul. 20, 1990, 2-192801; Jul. 20, 1990, 2-192802
Int. Cl.[5] B32B *15/01;* **B21C** *37/04*
U.S. Cl. 428—607 **10 Claims**

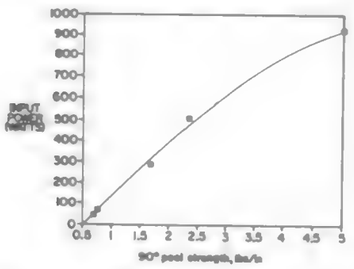


1. A clad bonding wire for a semiconductor device comprising:

a cladding formed of high-purity Au having a purity of at least 99.99% or a Au alloy of high purity Au; and

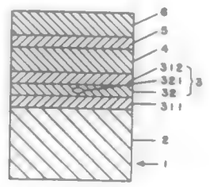
a core wire cladded with said cladding and formed of high-purity Pd having a purity of at least 99.9% or a Pd alloy of high purity Pd.

5,364,707
METAL-FILM LAMINATE RESISTANT TO DELAMINATION
Richard L. Swisher, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.
Division of Ser. No. 681,073, Apr. 5, 1991, Pat. No. 5,137,791, which is a division of Ser. No. 580,505, Sep. 13, 1990, Pat. No. 5,112,462. This application Aug. 4, 1992, Ser. No. 909,058
The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.
Int. Cl.[5] B32B *3/10, 15/08*
U.S. Cl. 428—612 17 Claims



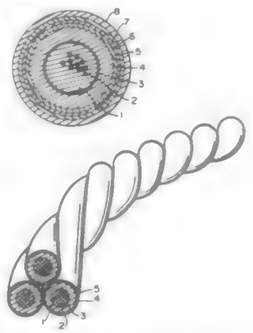
1. A metal-film laminatc, resistant to delamination of the metal from the film, which laminate comprises:
(a) a film layer having at least one surface bearing a non-continuous random distribution of a metal and an oxide of a metal selected from the group consisting of iron, chromium, nickel, molybdenum, manganese, zirconium or mixtures thereof; and
(b) a metal surface adhered to the film through the random distribution, said metal surface comprising:
(i) a first copper layer, formed on the metal-oxide by vapor metallization, having a thickness of about 50 to 500 nanometers; and
(ii) a second metal layer having a thickness of 0.1 to 40 μM formed on the first copper layer;
wherein the laminate is free of a metal tie-coat and a peel strength of the metal-film laminate is at least 3 pounds per inch.

5,364,708
OPTICAL RECORDING MEDIUM
Junji Tominaga, Nagano, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Feb. 14, 1992, Ser. No. 835,897
Claims priority, application Japan, Feb. 20, 1991, 3-047818
Int. Cl.[5] B41M *5/34*
U.S. Cl. 428—626 3 Claims



1. An optical recording medium, comprising
a resin substrate;
a recording layer comprising a hydrogen storage alloy thin film and a shape-memory alloy thin film disposed on at least one side of said hydrogen storage alloy thin film, sad shape-memory alloy thin film is formed of a Cu—Zn—Al base alloy and said hydrogen storage alloy thin film is formed of an Fe—Ti base alloy, information being recorded in said recording layer upon irradiation of recording light thereon by the release of hydrogen gas from said hydrogen storage alloy thin film, and said information being erased in said recording layer by occluding said hydrogen gas in said hydrogen storage alloy thin film upon irradiation of erasing light thereon;
a dielectric thin film and containing an oxide; and
a reflective thin film stacked on a surface of said resin substrate, said reflective thin film comprises silver and an alloy containing at least silver.

5,364,709
INSULATION FOR SUPERCONDUCTORS
Dingan Yu, Shrewsbury, Mass., assignor to Composite Materials Technology, Inc., Shrewsbury, Mass.
Filed Nov. 24, 1992, Ser. No. 980,770
Int. Cl.[5] H01B *12/08, 12/10;* H01L *39/12, 39/24*
U.S. Cl. 428—662 7 Claims



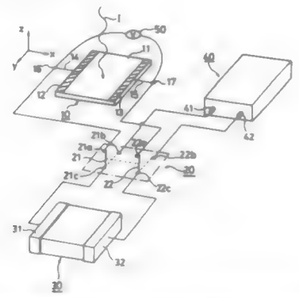
7. An extrusion billet for forming a superconducting article comprising a matrix core containing a Nb_3Sn superconductor, said billet comprising a bronze core containing niobium dispersed therein, a pure copper stabilizer layer disposed about said core, and an insulating niobium layer surrounding said copper stabilizer layer, a tantalum layer surrounding said bronze billet, a high purity copper layer surrounding said tantalum layer, a niobium layer, an iron layer, a titanium layer and a copper extrusion layer in sequence outside said tantalum layer.

5,364,710
APPARATUS FOR CONVERTING LIGHT ENERGY INTO ELECTRIC ENERGY AND STORING THE SAME
Kazuyasu Hikita, Saitama, Japan, assignor to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Jul. 31, 1992, Ser. No. 923,252
Claims priority, application Japan, Aug. 23, 1991, 3-237377
Int. Cl.[5] H01M *12/00, 10/44;* H01L *31/04*
U.S. Cl. 429—9 5 Claims

1. An apparatus for converting light energy into electric energy and storing the same, comprising:
a photoelectric conversion device for generating an electromotive force by irradiation of light, comprising a ferroelectric polycrystal having the formula

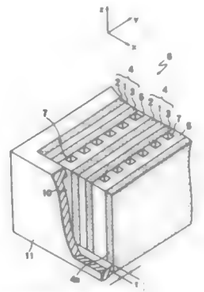
$$(Pb_{1-x}La_x)(Zr_yTi_{1-y})_{1-x/4}O_3$$

wherein $O \leqq x \leqq 0.1$ and $0.45 \leqq y \leqq 0.70$ and containing up to 2.0 atomic percent of an oxide is selected from the group consisting of Nb_2O_5, Ta_2O_5, WO_3, and combinations thereof, having a bulk photovoltaic effect; and



means for storing electrical energy generated by the photoelectric conversion means.

5,364,711
FUEL CELL
Shuji Yamada; Motoya Kanda, both of Yokohama; Masao Yamamoto; Nobukazu Suzuki, both of Tokyo; Yoshiko Kanazawa, Yokohama; Akinori Hongu, Fujisawa; Yuu Kondou, Yokohama; Ken Uchida; Koji Hasimoto, both of Tokyo; Hirokazu Niki, Yokohama; Kunihiko Sasaki, Kawasaki, and Shinji Tsuruta, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Mar. 31, 1993, Ser. No. 41,427
Claims priority, application Japan, Apr. 1, 1992, 4-080009; Sep. 11, 1992, 4-243218; Oct. 19, 1992, 4-279075
Int. Cl.[5] H01M *8/04, 8/10*
U.S. Cl. 429—15 20 Claims

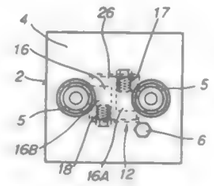


1. A fuel cell comprising:
a stacked body composed of
a fuel electrode composed of porous material having capillaries,
an electrolyte plate stacked on said fuel electrode, and
an oxidizing electrode stacked on said electrolyte plate;
fuel supplying means for supplying liquid fuel to one lateral face of said stacked body, wherein said liquid fuel is diffused into said fuel electrode by capillary attraction; and
oxidizing gas supplying means for supplying oxidizing gas to another lateral face of said stacked body by flowing said oxidizing gas along the other lateral face of said oxidizing electrode.

5,364,712
DUAL POROSITY GAS EVOLVING ELECTRODE
Carl W. Townsend, Los Angeles, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation of Ser. No. 839,521, Feb. 21, 1992, abandoned.
This application Dec. 23, 1993, Ser. No. 173,721
Int. Cl.[5] H01M *4/02*
U.S. Cl. 429—42 17 Claims

1. A dual porosity electrode adapted for use in a thermoelectrochemical system wherein simultaneous transport of gas and liquid into and/or out of said electrode is required, said electrode consisting of:
catalytic electrode particles having diameters ranging from about 25 to 100 angstroms; and
a support network consisting of a hydrophobic material for anchoring said catalytic particles to form clusters of catalytic particles wherein the pores between said catalytic particles range in size from about 25 to 100 angstroms and allow said transport of said liquid therethrough and wherein the pores between said clusters range in size from between about 1 to 20 microns and allow said transport of said gas therethrough.

5,364,713
STORAGE BATTERY CELL BASED ON THE PRINCIPLE OF THE OXYGEN CYCLE
Klaus Von Benda, Nürtingen; Günter Gutmann, Esslingen, and Wolfgang Weger, Benningen, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany
Filed Jun. 3, 1993, Ser. No. 70,531
Claims priority, application Germany, Jun. 4, 1992, 4218381
Int. Cl.[5] H01M *2/26, 2/30, 4/44, 4/00*
U.S. Cl. 429—66 29 Claims



1. Storage battery arrangement based on an oxygen cycle, having a cadmium electrode as negative electrode and containing an alkaline electrolyte, comprising:
a rectangular-shaped gastightly sealed housing;
positive and negative terminal pillars which pass through a terminal leadthrough wall of said housing, and which are electrically connected to respective positive and negative current collector lugs;
a plurality of substantially rectangular positive and negative electrode plates which are stacked in parallel alignment with the terminal leadthrough wall, and with alternating positive and negative polarities, to form an electrode stack;
a plurality of separators, one separator being inserted between each successive pair of said electrode plates;
each of the negative electrode plates having a greater storage capacity than the positive electrode plates;
each of the electrode plates having a mutually coincidentally formed and arranged central hole and being enclosed in an equidistant manner on all four peripheral edges of the electrode plates by a sidewall of said housing situated perpendicular to the terminal leadthrough wall;
each of the positive electrode plates furthermore being provided with a positive current collector lug mounted in a mutually identical location at a periphery of the central hole;
each of the negative electrode plates being provided with a negative current collector lug which is also mounted in a

mutually identical location at the periphery of the central hole, but electrically insulated from, and offset with respect to the location of, the positive current collector lugs;

said current collector lugs being routed in a duct formed inside the electrode stack by the central holes, to the terminal pillars of corresponding polarity;

the current collector lugs and their connection to the terminal pillars being elastically formed, whereby the electrode plates are able to perform small relative movements inside the cell housing without hindrance due to the current collector lugs;

at least first and second pressure plates arranged inside the cell housing at either end of the electrode stack, said first pressure plate being supported on the housing, and

said second pressure plate situated at an end of said electrode stack opposite said first pressure plate and being supported by a plurality of spring elements which are distributed over a surface of said second pressure plate and are themselves supported at least indirectly on an interior surface of a wall of said housing, whereby said spring elements exert a pressure on said second pressure plate which is substantially uniform over said surface thereof; and

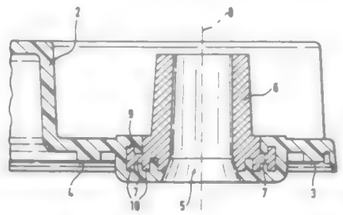
said separators each being formed as individual, contour-matching sheets which project outwardly beyond as least an outside edge of said electrode plates, and are also provided with a central hole, and whose projecting edges are all bent axially in a common direction and overlap in a scale-like manner.

5,364,714

TERMINAL POST FOR A STORAGE BATTERY

Josef Gürtler, Bad Sassendorf, Germany, assignor to Hagen Batterie AG, Soest, Germany

Filed Apr. 7, 1993, Ser. No. 44,291
Claims priority, application Germany, Apr. 8, 1992, 4212214
Int. Cl.[5] H01M 2/3
U.S. Cl. 429—178 **2 Claims**



1. A terminal post for a storage battery comprising:

a body portion having a foot region and a longitudinal axis;

a flange which extends radially outwardly from the foot region substantially perpendicular to the axis of the terminal post, said flange having upper and lower sides; and

a plurality of ribs which project outwardly from both the upper and lower sides of the flange substantially parallel to the axis of the terminal post.

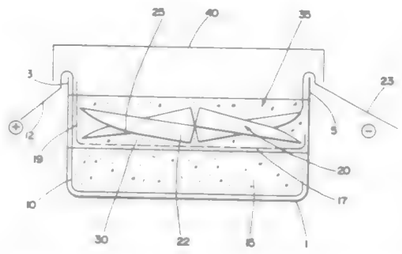
5,364,715

ALKALINE CELLS THAT ARE SUBSTANTIALLY FREE OF MERCURY

Dale R. Getz, North Ridgeville; John C. Nardi, Brunswick, and Robert F. Scarr, Westlake, all of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation of Ser. No. 566,925, Aug. 14, 1990, abandoned.
This application Jun. 25, 1993, Ser. No. 82,147
Int. Cl.[5] G03C 3/00
U.S. Cl. 429—229 **29 Claims**

1. An electrochemical cell comprising an alkaline electrolyte, a cathode comprising manganese dioxide as the active cathode component, an anode gel comprised of zinc as the active anode component, and a burnished brass anode current collector wherein the cell contains less than 50 parts of mercury per million parts by weight of the cell, and said zinc has



a gel expansion of less than 25% after being discharged at 2.88 A for 161 minutes at 15% depth of discharge.

5,364,716

PATTERN EXPOSING METHOD USING PHASE SHIFT AND MASK USED THEREFOR

Kenji Nakagawa; Masao Kanazawa; Tamae Haruki, and Yasuko Tabata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 3, 1992, Ser. No. 940,408
Claims priority, application Japan, Sep. 27, 1991, 3-249276; Oct. 4, 1991, 3-257293; Dec. 13, 1991, 3-329367; Jul. 17, 1992, 4-191125
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **15 Claims**

1. A pattern exposing method for forming a predetermined resist pattern on a substrate, said pattern exposing method comprising the steps of:

(a) exposing a resist layer which is formed on the substrate using a first reticle which includes a first pattern for exposing a first corresponding pattern on the resist layer by use of a phase shift of light transmitted through the first reticle;

(b) exposing the resist layer using a second reticle which has a second pattern for exposing a second corresponding pattern on the resist layer by use of light transmitted through the second reticle, said second corresponding pattern overlapping at least a part of said first corresponding pattern; and

(c) developing the resist layer so that a part of the first corresponding pattern is removed by the second corresponding pattern and the predetermined resist pattern is formed.

5,364,717

METHOD OF MANUFACTURING X-RAY EXPOSURE MASK

Kazuhito Furuya, Yokohama, and Yasuyuki Miyamoto, Higashikurume, both of Japan, assignors to Tokyo Institute of Technology, Meguro, Japan

Filed Oct. 1, 1992, Ser. No. 953,669
Claims priority, application Japan, Apr. 7, 1992, 4-085558
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **5 Claims**

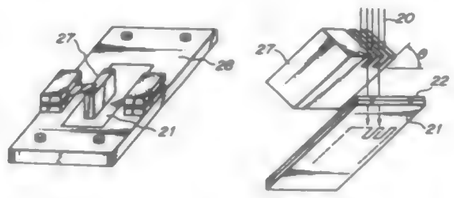
1. A method of manufacturing an X-ray exposure mask comprising the steps of

alternating laminating two kinds of compound semiconductors as a thin film to form a laminate body with controllability of about one atomic layer on a substrate;

selectively etching only one of said semiconductors for forming a periodic structure;

forming an uneven difference of X-ray absorption amounts between adjacent layers of said laminate body; and

manufacturing a mask for exposing streaks on a desired resist with the aid of a difference of X-ray absorption amounts



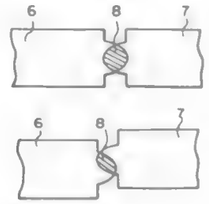
between each layer and by exposing X-rays in parallel to the direction of the laminate layer.

5,364,718

METHOD OF EXPOSING PATTTERN OF SEMICONDUCTOR DEVICES AND STENCIL MASK FOR CARRYING OUT SAME

Yoshihisa Ooe, Kawasaki, and Kiichi Sakamoto, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 814,227, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 403,385, Sep. 6, 1989, abandoned. This application May 5, 1993, Ser. No. 57,017
Claims priority, application Japan, Sep. 6, 1988, 63-222981
Int. Cl.[5] G03F 9/00
U.S. Cl. 430—5 **8 Claims**



1. A method of exposing a device pattern onto a semiconductor substrate by repeatedly exposing in an adjoining arrangement a plurality of unit patterns, thereby connecting pattern lines of the unit patterns to complete the device pattern on the substrate, said method comprising:

(a) dividing at least part of the device pattern into the plurality of unit patterns;

(b) preparing a stencil mask provided with transmitting openings having shapes respectively conforming to the unit patterns, wherein the pattern lines of the unit patterns which are to be connected with each other have at least one connecting end provided with at least one semicircular protrusion having a maximum width less than that of the corresponding pattern lines;

(c) placing the stencil mask in an optical arrangement for projecting the unit patterns onto the substrate;

(d) irradiating a beam of charged particles or light through one of the openings for exposing one corresponding unit pattern onto predetermined sites of the substrate; and

(e) repeating said irradiation through other openings for exposing respective corresponding unit patterns onto respective predetermined sites of the substrate until the device pattern is completely transferred onto the substrate.

5,364,719

TONER FOR DEVELOPING ELECTROSTATIC IMAGES

Hideki Ohta, Ikoma; Tatuo Imafuku, Higashiosaka; Masami Tsujihiro, Katano; Toshiro Tokuno, Takarazuka; Hiroshi Shimoyama, and Nobuhiro Hirano, both of Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 619,577, Nov. 29, 1990, abandoned.
This application Feb. 24, 1993, Ser. No. 23,857
Claims priority, application Japan, Nov. 30, 1989, 1-312506
Int. Cl.[5] G03G 9/09
U.S. Cl. 430—106 **10 Claims**

1. A toner for a two-component developer used for a dry development process with a carrier, comprising a colorant, a charge control dye and a copolymer having a charge control polar group in a binding resin, the binding resin being the main component of the toner; wherein said charge control dye is a metal-containing azo dye; said copolymer is obtained by copolymerizing sodium styrene sulfonate and styrene; the toner having a surface dye density of 1×10^{-5} g/g to less than 5×10^{-3} g/g to prevent a carrier surface contamination; and the toner containing an amount of said sodium styrene sulfonate as a component of said copolymer in a range of 0.01 to 5 parts by weight based on the weight of the toner.

5,364,720

MAGNETIC DEVELOPER FOR DEVELOPING ELECTROSTATIC IMAGES

Akihiko Nakazawa, Kanagawa; Masayoshi Kato, Iruma; Manabu Ohno, Funabashi; Nobuyuki Okubo, and Shunji Suzuki, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,974
Claims priority, application Japan, Oct. 15, 1992, 4-277234; Jan. 22, 1993, 5-026011; Jan. 29, 1993, 5-013560
Int. Cl.[5] G03G 9/083
U.S. Cl. 430—106.6 **25 Claims**

1. A magnetic developer for developing electrostatic images, comprising: magnetic toner particles, each containing a binder resin having a melt viscosity of at most 5.0×10^6 poise at 150° C. and a magnetic material,

wherein said magnetic material is blended with a proportion (C) [wt. %] of inorganic fine particles based on the magnetic material to carry 0.2–5 wt. % of the inorganic fine particles secured to the magnetic material surface, and

said magnetic material has a specific surface area (A) [m^2/g] before securing of the inorganic fine particles and is provided with an increase in surface area (B) [m^2/g] by the securing of the inorganic fine particles;

wherein the parameters A, B and C satisfy the following formulae (1) and (2):

$$0.1 \leqq B/A \leqq 0.8 \quad (1)$$

$$B < 30\times C \quad (2).$$

5,364,721

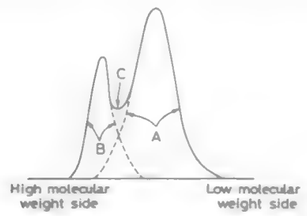
ELECTROPHOTOGRAPHIC TONER

Hidenori Asada, Hirakata; Takeshi Arakawa, Osaka, and Nobuyuki Tsuji, Kakogawa, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 734,453, Jul. 23, 1991, abandoned. This application Dec. 15, 1992, Ser. No. 990,926
Claims priority, application Japan, Jul. 25, 1990, 2-197369
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] G03G 9/087
U.S. Cl. 430—109 **3 Claims**

1. An electrophotographic toner containing, as a fixing resin, a styrene-acrylic copolymer containing styrene in an amount of not less than 80% by weight with respect to the entire amount of said resin and presenting a gel permeation chromatogram of molecular-weight distribution in which the maxi-

mum value is located in each of ranges from 2×10^3 to 1×10^4 and from 1.5×10^5 to 1.9×10^5, and of which upper limit is 2.1×10^5, wherein said styrene-acrylic copolymer comprises a



styrene monomer selected from the group consisting of vinyl toluene, α-methylstyrene and styrene and an acrylic monomer having the formula



wherein R^1 is a hydrogen atom or a lower alkyl group and R^2 is a hydrogen atom, a hydrocarbon group having 1 to 12 carbon atoms, a hydroxyalkyl group, a vinylester group, or an aminoalkyl group.

5,364,722

TONER FOR DEVELOPING ELECTROSTATIC IMAGE AND HEAT-FIXING METHOD COMPRISING A HYDROCARBON WAX

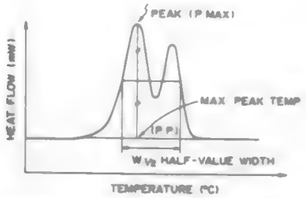
Hirohide Tanikawa; Hiroaki Kawakami; Masatsugu Fujiwara, all of Yokohama; Masashi Jinbo, Asaka, and Tsutomu Onuma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 943,032

Claims priority, application Japan, Sep. 11, 1991, 3-231646; Mar. 4, 1992, 4-081467; Apr. 22, 1992, 4-127984

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—110 **78 Claims**



1. A toner for developing electrostatic image, comprising a binder resin and a hydrocarbon wax, wherein the hydrocarbon wax provides a DSC curve, as measured by a differential scanning calorimeter, showing an onset temperature of heat absorption in the range of 50°–110° C. and at least one heat absorption peak P1 in the range of 70°–130° C. giving a peak temperature T_{P1} on temperature increase, and showing a maximum heat evolution peak giving a peak temperature in the range of $T_{P1}\pm9$° C. on temperature decrease.

5,364,723

TONER COMPOSITIONS WITH STYRENE TERPENE RESINS

Michael K. Georges, Guelph; Nancy A. Listigovers, Oakville; Stephan V. Drappel, Toronto; Maria V. McDougall, Burlington, and Gerald R. Allison, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 16, 1992, Ser. No. 961,961

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—110 **21 Claims**

1. A toner composition comprised of pigment particles and monovinyl aromatic and terpene random copolymer resin particles wherein the terpene content of the copolymer is from about 5 to about 30 weight percent.

5,364,724

TONER AND DEVELOPER COMPOSITIONS WITH COMPATIBILIZER

Hadi K. Mahabadi, Toronto; Sheau V. Kao; Gerald R. Allison, both of Oakville; Paul J. Gerroir, Toronto, all of Canada; Hui Chang, Pittsford, N.Y., and Michael S. Hawkins, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 724,263, Jul. 1, 1991, Pat. No. 5,229,242. This application Feb. 26, 1993, Ser. No. 23,451

The portion of the term of this patent subsequent to Jul. 20, 2010, has been disclaimed.

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—110 **29 Claims**

1. A toner composition consisting essentially of noncrystalline first resin particles, pigment particles, wax component particles, and a compatibilizer, wherein said compatibilizer is present in said toner as a separate component, and wherein the compatibilizer is of the formula A—b—B, A—b—B—b—A, or A—g—B wherein A—b—B is a block copolymer of 2 segments; A and B, A—b—B—b—A is a block copolymer of 3 segments, and A—g—B is a graph copolymer of segments A and B.

5,364,725

TONER AND DEVELOPER CONTAINING ACYLOXY-T-ALKYLATED BENZOIC ACIDS AS CHARGE-CONTROL AGENT

John C. Wilson, Rochester; Steven M. Bonser, Fairport, and Thomas A. Jadwin, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1993, Ser. No. 31,507

Int. Cl.[5] G03G *9/135*

U.S. Cl. 430—110 **21 Claims**

1. A toner comprising binder and charge-control agent, said charge-control agent comprising an acyloxy-t-alkylated benzoic acid.

5,364,726

LIQUID DEVELOPERS HAVING CURABLE LIQUID VEHICLES

Ian D. Morrison; Bing R. Hsieh, and Jerry H. Taylor, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 654,693, Feb. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 501,585, Mar. 30, 1990, abandoned. This application Feb. 2, 1993, Ser. No. 17,055

Int. Cl.[5] G03G *9/125*

U.S. Cl. 430—115 **20 Claims**

1. A liquid developer for the development of electrostatic latent images comprising a colorant, a substantial amount of a curable liquid vehicle having a viscosity of no more than about 500 centipoise and a resistivity of no less than about 10^8 ohm-cm, and solid particles containing an initiator substantially insoluble in the liquid vehicle and capable, upon activation, of iniating polymerization of the curable liquid vehicle.

5,364,727

POSITIVE-CHARGING ORGANIC PHOTOCONDUCTOR FOR LIQUID ELECTROPHOTOGRAPHY

Khe C. Nguyen, Milpitas, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 21, 1993, Ser. No. 81,047

Int. Cl.[5] G03G *13/10*

U.S. Cl. 430—119 **8 Claims**

1. An electrophotographic method comprising:

(a) establishing a uniform positive charge on a positive-charging, organic photoconductor, then;

(b) exposing said positive-charging, organic photoconductor to light, said photoconductor comprising:

a conductive substrate;

a polymeric binder component having both polar and non-polar functional moieties, said binder component forming a layer greater than or equal to about 1 micron thick on said substrate;

a metal-free phthalocyanine component, present at 0.1–39 wt. % relative to said binder component, said phthalocyanine component being uniformly distributed throughout said binder component to make a single photoconductor layer on said conductive substrate; and,

an arylamine sensitizer component, present at 0.001–90 wt. % relative to said binder component, selected from the group of:



i=1,2,3

n=0,5

where Ar=phenyl, naphthyl, biphenyl or ter-phenyl groups, and

R=alkyl and alkoxy groups, and



x=1–10,

said arylamine sensitizer component also being uniformly distributed throughout said binder component in said single photoconductor layer on said conductive substrate, to form a latent image on said photoconductor; and,

(c) developing said latent image with a liquid toner containing pigment components.

5,364,728

METHOD OF MANUFACTURING A TONER

Hideki Ohta, Ikoma; Tatsuo Imafuku, Higashiosaka; Masami Tsujihiro, Katano; Toshiro Tokuno, Takarazuka; Hiroshi Shimoyama, and Nobuhiro Hirano, both of Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 619,578, Nov. 29, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 996,858

Claims priority, application Japan, Nov. 30, 1989, 1-312500

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—137 **8 Claims**

1. A method of manufacturing toner for developing electrostatic images, the toner containing a binding resin, carbon black dispersed in the binding resin and a dispersion stabilizer for the carbon black, comprising:

(a) forming a grafted carbon black with a graft rate of 20 to 200% by prepolymerizing the carbon black and a first portion of a polymerizable monomer constituting the binding resin in the presence of an azoic polymerization initiator the carbon black being present within the range of 2 to 10% by weight on the basis of the weight of polymerizable monomer;

(b) stirring a composition containing the grafted carbon black and an oil-soluble dye as the dispersion stabilizer of carbon black to disperse the grafted carbon black in the form of fine particles, the dispersion stabilizer being present in a ratio of 0.1 to 10% by weight per gram of the carbon black; and

(c) suspending and polymerizing a mixture of the composition, a second portion of the polymerizable monomer constituting the binding resin and a second polymerization initiator in an aqueous medium,

wherein the resultant toner has a conductivity of 5×10^{-11} to 5×10^{-9} S/cm.

5,364,729

TONER AGGREGATION PROCESSES

Grazyna E. Kmiecik-Lawrynowicz, Burlington; Raj D. Patel, Oakville, and Michael A. Hopper, Toronto, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 25, 1993, Ser. No. 82,660

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—137 **48 Claims**

1. A process for the preparation of toner compositions comprising:

(i) preparing a pigment dispersion, which dispersion is comprised of a pigment, an ionic surfactant, and optionally a charge control agent;

(ii) shearing said pigment dispersion with a latex or emulsion blend comprised of resin, a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant and a nonionic surfactant;

(iii) heating the above sheared blend below about the glass transition temperature (Tg) of the resin, to form electrostatically bound toner size aggregates with a narrow particle size distribution; and

(iv) heating said bound aggregates above about the Tg of the resin.

5,364,730

TONER FOR DEVELOPING ELECTROSTATIC IMAGES AND METHOD FOR MANUFACTURING THEREOF

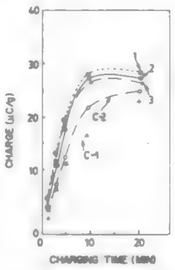
Haruji Kojima; Tsugio Abe; Toru Shoji, and Meizo Shirose, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Continuation of Ser. No. 871,931, Apr. 21, 1992, abandoned. This application Mar. 30, 1994, Ser. No. 219,877

Claims priority, application Japan, Apr. 25, 1991, 3-121808

Int. Cl.[5] G03G *5/00*

U.S. Cl. 430—137 **13 Claims**



1. A process for producing a toner comprising;

mixing colored resin particles having an average particle size of 1 to 30 μm and inorganic fine particles having a primary particle size of 5 to 500 nm to form a premix,

supplying said premix to a vibrating mill, and

stirring said premix in the presence of a mixing medium in said mill to form toner particles comprising said colored resin particles and said inorganic fine particles on a surface of said colored resin particles, wherein said medium is selected from the group consisting of plastics, iron, glass, and aluminum, said medium having a substantially spherical shape in the container, said medium having a ratio of minor axis to major axis of 0.8 to 1.0.

5,364,731

MULTI-COLOR TRANSFER IMAGE FORMING METHOD TO FORM COLOR PROOFS

Kunio Shimizu; Nobumasa Sasa; Manabu Watanabe, all of Hino; Hiroshi Ide, Sagamihara, and Shinya Mayama, Yokohama, all of Japan, assignors to Konica Corporation and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Continuation of Ser. No. 759,654, Sep. 13, 1991, abandoned, which is a continuation of Ser. No. 481,728, Feb. 16, 1990, abandoned, which is a continuation of Ser. No. 395,144, Aug. 16, 1989, abandoned, which is a continuation of Ser. No. 150,022, Jan. 29, 1988, abandoned. This application Oct. 25, 1993, Ser. No. 140,897

Claims priority, application Japan, Jan. 30, 1987, 62-19715; Dec. 8, 1987, 62-309981

Int. Cl.[5] G03C *7/00*

U.S. Cl. 430—143 **22 Claims**

1. A method for forming a color proof having a multi-color transfer image which comprises:

(a) subjecting a colored image forming material to image-wise exposure with an active ray, wherein said colored image forming material has a support, an outermost layer and an inner layer thereon, a photosensitive material being contained in said outermost layer or said inner layer, said outermost layer being adherable to an image receiving member, free of colorant and containing an adhesive, and said inner layer comprising a colorant;

(b) subjecting said colored image forming material to aqueous development thereby leaving only said outermost layer and said inner layer corresponding to a first colored image on the support;

(c) transferring the first colored image to said image receiving member by peel-off of the support by applying heat and pressure so that said outermost layer adheres to said image receiving member; and

(d) transferring at least one second colored image with a hue different from the hue of said first colored image onto said image receiving member having said first colored image, whereby the surface of said image receiving member is left exposed at non-image portions of said multi-color image.

5,364,732

IMAGE FORMING METHOD AND IMAGE FORMING MEDIUM

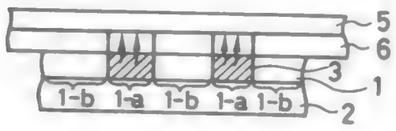
Akihiro Mouri, Kokubunji; Tetsuro Fukui, Kawasaki; Masato Katayama, Yokohama; Kazuo Isaka, Tokyo, and Susumu Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 416,489, Oct. 3, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 863,142

Claims priority, application Japan, Oct. 4, 1988, 63-250163; Jul. 28, 1989, 1-194266

Int. Cl.[5] G03C *5/54, 1/68;* G03F *7/26*

U.S. Cl. 430—201 **6 Claims**



1. An image forming method comprising the steps of:

(a) using an image forming medium having a recording layer coated on a support, said recording layer containing a heat-diffusible coloring matter, a polymerizable polymer precursor and a polymerization initiator, wherein said heat-diffusible coloring matter is present in an amount from about 5.0 to about 20 percent by weight of the recording layer and said polymerization initiator is present in an amount of from about 0.5 to about 20 parts by weight based on 100 parts by weight of said polymerizable polymer precursor;

(b) causing said polymerizable polymer precursor of said image forming medium to selectively polymerize to form a latent image comprised of a polymerized area and an unpolymerized area; and

(c) heating said image forming medium on which said latent image has been formed and which is laid overlapping on an image receiving medium to diffusion-transfer said heat-diffusible coloring matter contained in said image forming medium to said image receiving medium, so as to satisfy the following formula (A):

$$Tg_1 \leqq T\text{trans} \leqq Tg_2$$

wherein Ttrans represents a temperature of said image forming medium during said diffusion-transfer of said heat-diffusible coloring matter, Tg_1 represents a glass transition point of said unpolymerized area, and Tg_2 represents a glass transition point of said polymerized area,

wherein the glass transition point Tga of said unpolymerized area and the glass transition point Tg_2 of said polymerized area is in the relationship of $Tg_2 - Tg_1 \geqq 30°$ C., thereby forming an image comprised of said heat-diffusible coloring matter on said image receiving medium.

5,364,733

PHOTOTHERMOGRAPHIC ELEMENTS WITH NOVEL LAYER STRUCTURES, EACH OF WHICH CONTAINS A THERMALLY-DIFFUSIBLE OXIDIZABLE LEUCO DYE AND PROCESS FOR PRODUCING A COLOR IMAGE FROM LEUCO DYE

Raymond J. Kenney; Takuzo Ishida, both of Woodbury, and Richard C. Cotner, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 913,806, Jul. 16, 1992, Pat. No. 5,264,321. This application Jul. 20, 1993, Ser. No. 94,620

Int. Cl.[5] G03C *8/00, 1/46, 1/00*

U.S. Cl. 430—203 **7 Claims**

1. A photothermographic element consisting essentially of a transparent substrate having one major surface thereof consisting essentially of the following layers sequentially coated thereon: an image-receiving layer; an opacifying layer; a first dry silver layer; an interlayer consisting essentially of a thermoplastic polymer; a second dry silver layer; an interlayer consisting essentially of a thermoplastic polymer, and a third dry silver layer, wherein: said first, second, and third dry silver layers each consist essentially of a light-insensitive, reducible silver source; light-sensitive silver halide; and as a reducing agent for said light-insensitive, reducible silver source, a material oxidizable to a colored dye whose color differs from that capable of being formed in each other dry silver layer, each of said dry silver layers being individually sensitized to light of different wavelengths.

5,364,734

POSTIVE-WORKING RADIATION-SENSITIVE MIXTURE AND RADIATION-SENSITIVE RECORDING MATERIAL PRODUCED THEREWITH

Georg Pawlowski, Wiesbaden; Horst Roeschert, Ober-Hilbersheim; Walter Spiess, Dieburg, and Klaus-Juergen Przybilla, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 9, 1992, Ser. No. 895,649

Claims priority, application Germany, Jun. 19, 1991, 4120173

Int. Cl.[5] G03C *1/52, 3/00*

U.S. Cl. 430—230 **21 Claims**

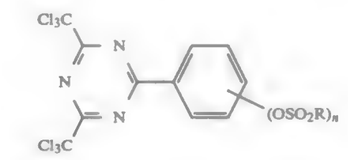
1. A positive-working radiation-sensitive mixture comprising:

(a) a compound that forms strong acid on exposure to actinic radiation,

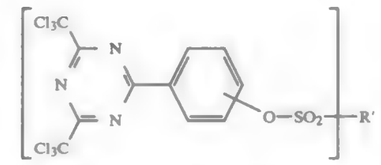
(b) a compound that contains at least one acid cleavable C—O—C or C—O—Si bond, and

(c) a water-insoluble polymeric binder that is soluble or at least swellable in aqueous alkaline solutions,

wherein the compound (a) comprises at least one ester of a sulfonic acid or sulfonic acids of the formula R—SO_3H or R′(SO_3H)$_2$ with 2,4-bistrichloromethyl-6-(mono- or dihydroxyphenyl)-1,3,5-triazine as represented by formulae I and II:



(I)



(II)

where R is an optionally further substituted (C_1–C_{10})alkyl, (C_5–C_{10})cycloalkyl, (C_6–C_{10})aryl, (C_6–C_{10})aryl-(C_1–C_{10})alkyl or (C_3–C_9)heteroaryl radical, R′ is an optionally substituted (C_1–C_{10})alkylene, (C_6–C_{10})arylene or (C_3–C_9)heteroarylene radical, and n is 1 or 2, and wherein if R or R′ is further substituted it is substituted with a substituent selected from the group consisting of (C_1–C_8)alkyl, (C_1–C_8) alkoxy, (C_1–C_8)alkanoyl, (C_1–C_8)alkanoyloxy, (C_6–C_{10})aryl, cyano, and halogen.

5,364,735

MULTIPLE LAYER OPTICAL RECORD MEDIUM WITH PROTECTIVE LAYERS AND METHOD FOR PRODUCING SAME

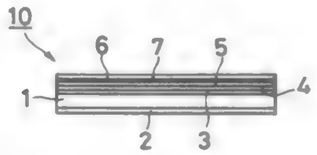
Junichi Akamatsu, Saitama, and Masato Yamamura, Chiba, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 455,400, Feb. 23, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 935,464

Claims priority, application Japan, Jul. 1, 1988, 63-164161; Jul. 1, 1988, 63-164163

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—271 **6 Claims**



1. An optical recording medium comprising:

a light transmissive base plate having a rectangular shape and being of a size for forming into a plurality of smaller, uniform shapes,

a first protective layer formed of UV curing resin provided on a surface of said base plate,

a metal recording layer which is provided on said first protective layer and containing data which may be optically read out,

a second protective layer formed of UV curing resin provided on said recording layer by roll coating, and

a polyester protective film adhered to said second protective layer by means of an adhesive layer applied between said protective film and said second protective layer.

5,364,736

PHOTOIMAGEABLE COMPOSITIONS

Lircdu Eramo, Jr., San Clemente, and William J. Winkler, Tustin, both of Calif., assignors to Morton International, Inc., Chicago, Ill.

Continuation of Ser. No. 766,189, Sep. 26, 1991, abandoned, which is a continuation of Ser. No. 678,898, Mar 28, 1991, abandoned, which is a continuation of Ser. No. 506,516, Apr. 6, 1990, abandoned, which is a continuation of Ser. No. 280,120, Dec. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 130,039, Dec. 7, 1987, abandoned. This application Jun. 10, 1993, Ser. No. 75,356

Int. Cl.[5] G03C *1/73*

U.S. Cl. 430—280 **14 Claims**

1. A photoimageable composition comprising a homogeneous solution of

(a) between about 10 and about 40 wt. percent of a flowable, film-forming polymeric binder which has an acid number of about 100 or greater and is soluble in alkaline aqueous solution, said binder being selected from the group consisting of acrylic polymers and copolymers and saponified styrene-maleic anhydride copolymers,

(b) between about 5 and about 25 wt. percent of a cross-linking agent for said polymeric binder selected from the group consisting of melamine-formaldehyde condensation products, and urea-formaldehyde resins, which cross-linking agent is reactive with complementary group of said polymeric binder,

(c) between about 15 and about 35 wt. percent of a polymerizable acrylic substance,

(d) between about 0.01 and about 15 wt. percent of a photosensitive, free radical-generating initiator chemical system which in the presence of actinic radiation initiates polymerization of said acrylic substance to form a three-dimensional chemical structure that renders actinic radiation-exposed portions of said photoimageable composition insoluble to alkaline aqueous solutions,

(e) between about 20 and about 50 wt. percent of an epoxy resin composition which is curable with heat to harden said photoimageable composition subsequent to exposure to actinic radiation, and

(f) between about 0.01 and about 5 wt. percent of a cure catalyst for said epoxy resin selected from the group consisting of polycarboxylic acid anhydrides, dicyandiamides, complexes of amines with boron trifluoride or boron trichloride, latent boron difluoride chelates, aromatic polyamines and imidazoles, said polymeric binder being sufficiently soluble in alkaline aqueous solution and used at a sufficient level that said photoimageable composition as a whole is developable in alkaline aqueous solution, said components (a)–(f) being selected to be mutually miscible and mixed together to form said homogeneous solution, said cross-linking agent reacting with said polymer binder in a controlled manner, whereby said photoimageable composition may be mildly heated to render said photoimageable composition non-tacky, yet developable in alkaline aqueous solution, said epoxy resin being selected so that any curing of said epoxy resin during said mild heating conditions leaves said photoimageable composition soluble in alkaline aqueous solution.

5,364,737

WATERBONE PHOTORESISTS HAVING ASSOCIATE THICKENERS

Robert K. Barr, Laguna Niguel, Calif., assignor to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 186,875, Jan. 25, 1994, abandoned. This application Feb. 18, 1994, Ser. No. 199,037

Int. Cl.[5] G03C *1/73*

U.S. Cl. 430—281 **6 Claims**

1. A photoimageable composition that can be borne in water comprising

A) between about 30 and about 80 wt % of a latex binder

polymer having carboxylic acid functionality which provides an acid number of between about 50 and about 250;

B) between about 20 and about 50 wt % of a fraction of alpha,beta-ethylenically unsaturated monomers;

C) between about 0.1 and about 25 wt % of a photoinitiator or photoinitiator chemical system which generates free radicals; and

D) between about 1 and about 40 wt % of a polyether polyurethane associate thickener, said weight percentages being based on total weight of components A–D,

the carboxylic acid content of the latex binder polymer being either not neutralized with base or neutralized with base up to about 20% of its carboxylic functionality.

5,364,738

LIGHT-SENSITIVE COMPOSITION

Shunichi Kondo; Akira Umehara; Yoshimasa Aotani, all of Shizuoka, and Tsuguo Yamaoka, Funabashi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 6, 1992, Ser. No. 957,034

Claims priority, application Japan, Oct. 7, 1991, 3-259431; Oct. 7, 1991, 3-259433

Int. Cl.[5] G03C *1/56, 1/72, 1/73;* C08F *2/46*

U.S. Cl. 430—283 15 Claims

1. A positive-working photosensitive composition whose solubility in an aqueous alkaline developer is increased by irradiation of an actinic light ray or a radiant ray, which composition comprises:

(a) a vinyl ether compound having at least one group represented by the following formula (A) bonded to an aromatic nucleus directly or through a connecting group selected from the group consisting of —CO—, —CONH— and $—CH_2)_p$—NHCONH— where p is 1 or 2;

$$CH_2{=}CH{+}O{-}R^3{\rangle}_n O{-} \quad (A)$$

wherein R^3 represents a linear or branched alkylene group having 1 to 10 carbon atoms and n represents 0 or 1;

(b) a photolytically acid-generating agent capable of being decomposed by irradiation of an actinic light ray or a radiant ray and releasing an acid; and

(c) an aqueous alkaline solution-soluble polymer.

5,364,739

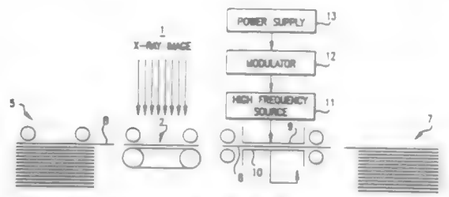
NONSILVER X-RAY RECORDING PROCESS

Jean J. Robillard, El Paso, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Feb. 13, 1992, Ser. No. 835,747

Int. Cl.[5] G03C *5/16*

U.S. Cl. 430—292 8 Claims



1. A process for recording a negative X-ray image, comprising:

providing a substrate having an X-ray sensitive composition distributed thereon, said composition comprising a photocrosslinkable substance, an X-ray activated initiator and a thermochromic substance having a threshold temperature above which a color change is detectable;

exposing said X-ray sensitive composition to X-radiation wherein an object having X-ray transparent areas and non transparent areas is positioned between an X-ray source and said composition thereby causing crosslinking of the photocrosslinkable substance only in those areas corresponding to the transparent areas of said object; and

passing said exposed X-ray sensitive composition through a high frequency electric field to selectively heat crosslinked areas to a temperature above the threshold temperature of the thermochromic substance wherein said thermochromic substance changes from a colorless or weakly colored form to a color stable form.

5,364,740

BLEACHING OF DYES IN PHOTOSENSITIVE SYSTEMS

Elsie A. Fohrenkamm, St. Paul, Minn., and James F. Sanders, Houlton, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 998,443, Dec. 30, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,237

Int. Cl.[5] G03F *7/029, 7/031*

U.S. Cl. 430—294 22 Claims

1. A process for producing an imaged article with little residual dye stain and having a stable color image consisting essentially of the steps of:

(a) exposing a negative-acting photoresist to radiation having a wavelength in the range of from about 300 to 1100 nm, said photoresist consisting essentially of:

(i) free-radically polymerizable monomer containing an acrylate or methacrylate group, and

(ii) a sensitizing dye selected from the group consisting of: coumarin, aminoketone, and thiazole dyes in reactive association with an aromatic iodonium salt or halogenated triazine compound,

thereby forming an image in the exposed or unexposed areas of the photoresist;

(b) subtractively developing said image resulting from step (a); and

(c) bleaching the remaining sensitizing dye in said photoresist by simultaneously heating and exposing said sensitizing dye and aromatic iodonium salt or halogenated triazine compound to radiation having a wavelength in the range of about 300 to about 700 nm at a temperature of at least about 40° C.

11. A process for producing an imaged article with little dye stain and having a stable color dye image consisting essentially of the steps of:

(a) exposing a negative-acting photoresist to radiation having a wavelength in the range of about 300 to 1100 nm, the photoresist consisting essentially of:

(i) free-radically polymerizable monomer containing an acrylate or methacrylate group; and

(ii) a sensitizing dye selected from the group consisting of: coumarin, aminoketone, and thiazole dyes in reactive association with an aromatic iodonium salt or a halogenated triazine compound,

thereby forming an image in the exposed or unexposed areas of the photoresist;

(b) subtractively developing the image resulting from step (a);

(c) bringing the remaining sensitizing dye in the photoresist from step (b) into reactive association with additional aromatic iodonium salt or halogenated triazine compound; and

(d) bleaching the remaining sensitizing dye in the photoresist by simultaneously heating and exposing the sensitizing dye and aromatic iodium salt or halogenated triazine compound to radiation having a wavelength in the range of from about 300 to 700 nm at a temperature of at least about 40° C.

5,364,741

AQUEOUS DEVELOPABLE PHOTOSENSITIVE POLYURETHANE-(METH)ACRYLATE

Truc-Chi T. Huynh-Tran, Burtonsville, Md.; Ronald J. Kumpfmiller, Marietta, Ga., and Cynthia L. Ebner, Mt. Airy, Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 924,264, Aug. 28, 1992. This application Jan. 12, 1993, Ser. No. 3,167

Int. Cl.[5] G03F *7/00, 7/16*

U.S. Cl. 430—300 4 Claims

1. A method of preparing a printing plate, the steps comprising

blending about 50–100 parts by weight of a photocurable polymer made by

(I) reacting together in a solvent for the reactants, in the mole ratios stated,

modified MDI, 12 moles;

ethylene oxide capped polypropylene oxide diol having a molecular weight of about 3,000, 3 moles;

polypropylene adipate diol having a molecular weight of about 2400, 1 mole;

thereby end-capping the diols with isocyanate;

(II) then adding to the reaction mixture of (I), methyl diethanolamine, 7 moles; continuing the reaction to chain extend the isocyanate-capped diols, thereby providing chain-extended isocyanate-capped diols terminated inisocyanate groups;

(III) adding to the reaction mixture of (II), hydroxyethylmethacrylate, 2 moles, and continuing the reaction to react the terminal isocyanate groups of (II) with the hydroxyl group of the hydroxyethylmethacrylate, thereby providing a photocurable polymer;

with 0 to about 25 parts by eight of a diluent selected from the group consisting of polypropylene glycol monomethacrylate, diethylene glycol dimethacrylate, hexanediol dimethacrylate, lauryl methacrylate, ethoxylated trimethylol propane trimethacrylate, aromatic acrylated urethane oligomer, C_{14}–C_{15} methacrylate monomer mixture and mixtures thereof;

about 0.1–10 parts by weight photoinitiator;

about 0.002 to 8 total parts by weight of stabilizers; a UV absorber which is a substituted hydroxyphenyl benzotriazole, and a pigment having a particle size less than 5000 angstroms, and 0 to about 200 parts by weight of an anhydrous organic solvent; casting the blend onto a plate substrate; and drying the plate to remove the solvent.

5,364,742

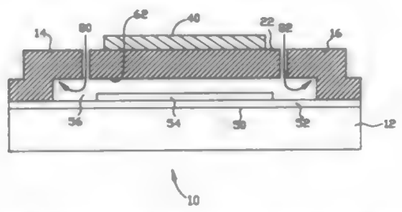
MICRO-MINIATURE STRUCTURES AND METHOD OF FABRICATION THEREOF

Long-Shen Fan, and Hans H. Zappe, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1992, Ser. No. 948,189

Int. Cl.[5] G03C *5/00;* B44C *1/22*

U.S. Cl. 430—317 19 Claims



1. A method for fabricating a method, comprising the steps of:

selecting a substrate material;

depositing on the substrate material a sacrificial layer of material;

patterning the sacrificial layer to define a shape;

depositing on the sacrificial layer a photoresist layer of material;

patterning the photoresist layer by contrast-enhanced photolithography to form a photoresist mold;

plating a metallic layer of material on the photoresist mold, said photoresist layer being patterned to provide a free standing metallic structure having an aspect ratio of at least 9:1; and

dissolving the photoresist mold and the sacrificial layer using etchants to form a free standing metallic structure.

5,364,743

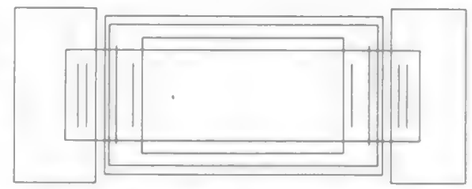
PROCESS FOR FABRICATION OF BUBBLE JET USING POSITIVE RESIST IMAGE REVERSAL FOR LIFT OFF OF PASSIVATION LAYER

James F. O'Neill, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 632,989, Dec. 21, 1990, abandoned. This application Dec. 31, 1992, Ser. No. 999,332

Int. Cl.[5] G03C *5/00;* G01D *15/16*

U.S. Cl. 430—320 10 Claims



7. A method of forming patterned anti-cavitation damage layers in isolated regions in a thermal ink jet print head in order to avoid stress cracking by physical forces that act upon a blanket coated layer, said thermal ink jet print head comprising heaters, said method comprising:

providing a substrate of a thermal ink jet print head; said substrate having a plurality of heaters being equally spaced apart and having a density of between 150 and 1200 heater per inch;

coating said plurality of heaters on said substrate of said thermal ink jet print head with modified photoresist to form a photoresist layer;

exposing said photoresist layer, said heaters and said substrate with electromagnetic radiation through a mask, said mask comprising areas transparent and opaque to said electromagnetic radiation;

baking said substrate, said heaters and photoresist layer for a period of time;

blanket exposing said substrate, said heaters and photoresist layer for a period of time;

developing said photoresist layer sufficiently to form patterned structures in said photoresist layer, said patterned structures having inverted side walls;

depositing metal onto said heater and photoresist layer sufficiently to form a patterned anti-cavitation damage layer in isolated regions of said substrate over each of said heaters such that stress cracking in said anti-cavitation damage layer due to blanket coating said anti-cavitation damage layer over a relatively large area of said substrate is avoided; and

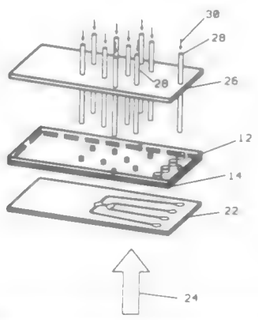
removing said photoresist layer, such that said each patterned anti-cavitation layer remains on said heater.

5,364,744

METHOD FOR THE MANUFACTURE OF AN OPTICAL MANIPULATION CHAMBER

Tudor N. Buican, and Kevin M. Carlson, both of Albuquerque, N. Mex., assignors to Cell Robotics, Inc., Albuquerque, N. Mex.

Filed Jul. 23, 1992, Ser. No. 919,183
Int. Cl.[5] B29C *35/08*
U.S. Cl. 430—321 **27 Claims**



19. The method of manufacture of a structural device having a pair of spaced members, a central core member between said pair of spaced members, and at least one included resin free zone in said core member, at least one of said pair of spaced members being radiation transparent, comprising the steps of;

a) delivering a radiation curable resin into the space between said pair of spaced members,

b) applying radiation to at least one predetermined region of said radiation curable resin while it is being delivered into the space between said pair of spaced members, thereby causing said predetermined region of radiation curable resin to at least partially cure and to prevent uncured resin from being pumped past said at least partially cured region, and

c) exposing all of the radiation curable resin to radiation until all of the radiation curable resin is cured, whereby a structural member is formed having at least one internal included resin free zone.

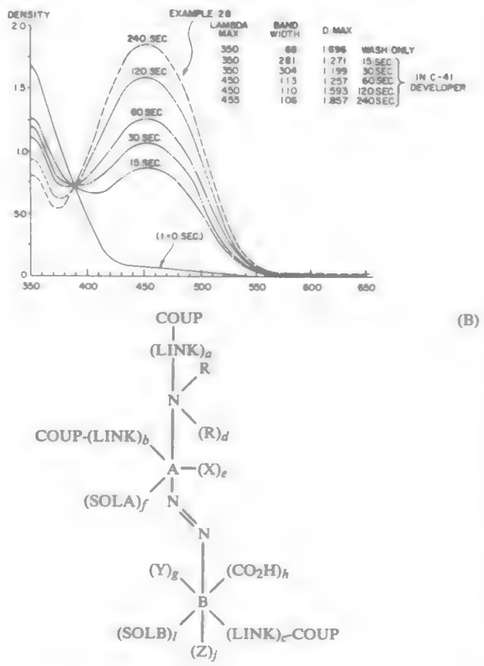
5,364,745

AZOANILINE MASKING COUPLERS FOR PHOTOGRAPHIC MATERIALS

Jared B. Mooberry, Rochester; Stephen P. Singer, Spenceport; James J. Seifert; Robert J. Ross, both of Rochester, and Daniel L. Kapp, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/US91/09640, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO92/11575, PCT Pub. Date Jul. 9, 1992
Continuation-in-part of Ser. No. 629,870, Dec. 19, 1990, abandoned. This PCT application Dec. 19, 1991, Ser. No. 778,828
Int. Cl.[5] G03C *5/54, 7/18, 7/32, 7/34*
U.S. Cl. 430—359 **32 Claims**

1. A photographic element comprising a support bearing a silver halide photographic emulsion, at least one color-forming coupler and a masking coupler which contains a single azo group, wherein the generic chemical structure of said masking coupler is represented by the formula B



(B)

wherein a is 1 when b and c are 0, b is 1 when a and c are 0, or c is 1 when a and b are 0;

d, e, f, g, h, i, j may be 0 or 1;

A and B are the same or different and are an aromatic or heterocyclic group;

R is a hydrogen atom, a branched or unbranched, saturated or unsaturated hydrocarbon group, a heterocyclic group or an aromatic group, or a non-imagewise removable blocking group, wherein the R groups may be the same or different, with the proviso that at least one of the R groups which is present is a non-image-wise releasable blocking group;

X is an alkyl, hydroxy, alkoxy, alkyl carboxyl, amido, sulfonamido, aromatic or heterocyclic group or a halogen atom;

SOLA is a first solubilizing group;

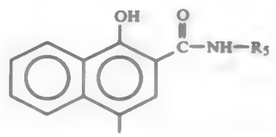
SOLB is a second solubilizing group; and

Y and Z are the same or different and are selected from the group consisting of a halogen atom, an alkyl group, a hydroxy group, an alkoxy group, a carboxyl group, a cyano group, an amido group, a sulfonamido group, a sulfamoyl group, a sulfonyl group, a nitro group, a carboalkoxy group, a carbamoyl group and an acyl group,

wherein LINK is any group releasable or cleavable from COUP by coupling with an oxidized developing agent during photographic processing, and

wherein only one COUP is present in the masking coupler and this COUP is bonded to the LINK which is present and the COUP comprises a coupler moiety represented by the formula C:

(C)



wherein R_5 represents a hydrogen atom, a ballast group, or an alkyl, aryl or heterocyclic group, any of which may be substituted or unsubstituted, and

wherein the element is such that the azo dye is released from COUP and washed out of the element during processing.

5,364,746

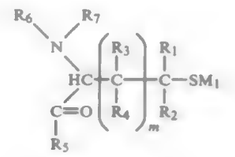
DEVELOPER FOR SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kenichi Inoue, and Tsuyoshi Mitsuhashi, both of Hino, Japan, assignors to Konica Corporation, Japan

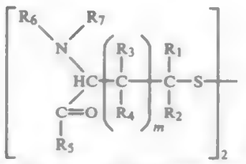
Continuation-in-part of Ser. No. 46,439, Apr. 12, 1993, abandoned. This application Mar. 23, 1994, Ser. No. 216,765
Claims priority, application Japan, Apr. 13, 1992, 4-92947
Int. Cl.[5] G03C *5/305*
U.S. Cl. 430—488 **13 Claims**

1. The developer for developing a silver halide photographic light-sensitive material comprising a 1,4-dihydroxybenzene, a sulfite, and 1×10^{-5} to 3×10^{-2} mol per liter of a compound of Formula 1 or Formula 2, based on said developer, said developer having a pH of 9.0 to 12;

(1)



(2)



wherein R_1 and R_2 are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms provided that both of R_1 and R2 are not hydrogen atoms at the same time; R_3 and R_4 are each a hydrogen atom or an alkyl group having 1 to 3 carbon atoms; R_5 is a hydroxy group, an amino group or an alkyl group having 1 to 3 carbon atoms; R_6 and R_7 are each a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an acyl group having 1 to 18 carbon atoms or a —$COOM_2$ group, provided that both of R_6 and R7 are not hydrogen atoms at the same time, in the above M_1 is a hydrogen atom, an alkali metal atom or an ammonium group; m is an integer of 0, 1 or 2; and M_2 is a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an alkali metal atom, an aryl group or an aralkyl group having not more than 15 carbon atoms.

5,364,747

COLOR CORRECTING LAYERS CONSISTING ESSENTIALLY OF AT LEAST ONE DYE-FORMING COUPLER AND GELATIN IN CHROMOGENIC BLACK-AND-WHITE PHOTOGRAPHIC IMAGING SYSTEMS

James L. Edwards, Rochester; Paul T. Hahm, Hilton, and Joseph E. LaBarca, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,567
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—504 **16 Claims**

1. A photographic element comprising a support having thereon at least one imaging layer comprising at least one silver halide emulsion with grains sensitized with one color and balanced cyan, magenta and yellow dye forming couplers, and at least one color correcting layer consisting essentially of at least one dye forming coupler and gelatin.

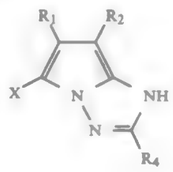
5,364,748

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroyuki Yoneyama, Minami Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1993, Ser. No. 87,330
Claims priority, application Japan, Jul. 9, 1992, 4-221889
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—505 **18 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon a photographic constituent layer comprising a light-sensitive silver halide emulsion layer containing a yellow dye-forming coupler, a light-sensitive silver halide emulsion containing a magenta dye-forming coupler, and a light-sensitive silver halide emulsion layer containing a cyan dye-forming coupler, and non-light-sensitive hydrophilic colloid layers, wherein the above silver halide emulsion layer containing the cyan dye-forming coupler contains at least one cyan dye-forming coupler represented by the following Formula (IIIa) and wherein at least one of the non-light-sensitive hydrophilic colloid layers is provided between the support and the silver halide emulsion layer closest to the support and contains a white pigment at a density of 20 weight % or more: Formula (IIIa)



wherein R_1 and R_2 each represents an electron attractive group having a Hammett's substituent constant σ_p of 0.20 or more, provided that the sum of the σ_p values of R_1 and R_2 is 0.65 or more; R_4 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of splitting off upon a reaction with an oxidation product of an aromatic primary amine color developing agent; the group represented by R_1, R_2, R_4 or X may become a divalent group and combine with a polymer higher than a dimer and a high molecular chain to form a homopolymer or a copolymer.

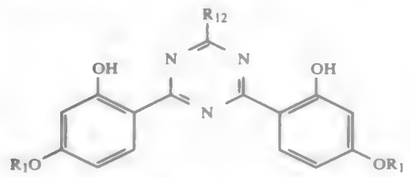
5,364,749

PHOTOGRAPHIC MATERIAL CONTAINING UV ABSORBER

David G. Leppard, Marly; Kurt Burdeska, Basel, and Mario Sloongo, Taffers, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 1, 1992, Ser. No. 891,532
Claims priority, application Switzerland, Jun. 3, 1991, 1643/91-6; Sep. 4, 1991, 2601/91-6
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—507 **42 Claims**

1. A photographic material comprising, on a base, blue-sensitive, green-sensitive and/or red-sensitive silver-halide emulsion layers and an optional protective layer, a layer containing a UV absorber being arranged between the uppermost silver-halide emulsion layer and the optional protective layer or on top of the uppermost silver-halide emulsion layer, wherein the UV absorber conforms to the formula

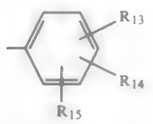


(I)

in which the radicals R_1, independently of one another, are branched alkyl having 1 to 18 carbon atoms and substituted by $—CO_2R_2$,

where R_2 is alkyl having 1 to 18 carbon atoms, or oxygen-, sulfur- or nitrogen-interrupted alkyl or hydroxyalkyl having 3 to 30 carbon atoms, hydroxyalkyl having 2 to 18 carbon atoms, alkenyl having 3 to 18 carbon atoms, glycidyl, cycloalkyl having 5 to 8 carbon atoms, benzyl, alkylphenyl having 1 to 12 carbon atoms in the alkyl moiety, phenyl, furfuryl or a radical of the formula $—CH_2C(OH)R_9$,

where R_9 is phenylalkyl having 1 to 6 carbon atoms in the alkyl moiety or a radical of the formula $—CH_2OR_{11}$, where R_{11} is cyclohexyl, benzyl, phenyl or tolyl, and R_{12} is alkyl having 1 to 18 carbon atoms, benzyl, cyclohexyl or a group of the formula



or OR_{16},

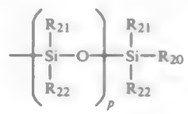
in which R_{13}, R_{14} and R_{15}, independently of one another, are hydrogen alkyl having 1 to 12 carbon atoms or halogen, and R_{16} is alkyl having 1 to 18 carbon atoms, oxygen-interrupted alkyl having 3 to 18 carbon atoms or alkyl having 1 to 12 carbon atoms which is substituted by phenoxy, benzyloxy or $—CO_2R_8$, where R_8 is alkyl having 1 to 12 carbon atoms, phenyl, naphthyl or alkylphenyl having 1 to 18 carbon atoms in the alkyl moiety;

or the radicals R_1, independently of one another, are radicals of the formula $—CH_2—CH(OR_x)R_y$, $—CH_2CH(OR_x)CH_2OR_z$,



$—CH_2COR_y$ or $—CH_2COCH_2OR_z$, where R_x is H, $—COR_s$, $—COOR_w$ or $—SiR_pR_qR_r$, R_y is C_1–C_{18}alkyl or or phenyl-C_1–C_4alkyl, R_z is C_1–C_{18}alkyl, C_2–C_{18}alkenyl, phenyl-C_1–C_4alkyl, $—COR_s$ or oxygen-interrupted C_1–C_{24}alkyl or C_2–C_{24}hydroxyalkyl, R_s is C_1–C_{18}alkyl, C_2–C_{18}alkenyl or phenyl, R_w is C_1–C_4alkyl and R_p, R_q and R_r, independently of one another, are C_1–C_6alkyl or phenyl;

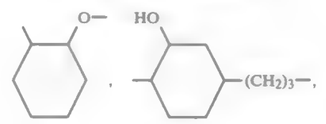
or the radicals R_1, independently of one another, are G-II groups, where II is a group of the formula



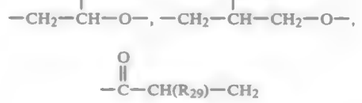
(II)

and G is a direct bond or a divalent group of one of the following formulae:

$—(CH_2)_q—$, $—(CH_2)_q—O—$, $—(CH_2)_q—O—R_{26}—$,
$—(CH_2)_q—CO—X—(CH_2)_r—$,
$—(CH_2)_q—CO—X—(CH_2)_r—O—$,







$—CH_2—CH(OH)—CH_2—Y—(CH_2)_q—$,

in which q and r, independently of one another, are 1–4 and p is 0–50, R_{26} is C_1–C_{12}alkylene, cyclohexylene or phenylene, R_{27} is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, phenyl, C_2–C_{13}alkoxymethyl, C_6–C_9cycloalkoxymethyl or phenoxymethyl, R_{28} is a group of the formula G-II, R_{29} is hydrogen or methyl, X is —O— or $—NR_{23}—$, in which R_{23} is hydrogen, C_1–C_{12}alkyl or a—$(CH_2)_3$—G-II or $—(CH_2)_3—O—$G-II group, Y is —O—or —NH—, and R_{20}, R_{21} and R_{22}, independently of one another, are C_1–C_{18}alkyl, cyclohexyl, phenyl or C_1–C_{18}alkoxy.

5,364,750

DIRECT POSITIVE SILVER HALIDE PHOTOSENSITIVE MATERIAL

Tetsuo Yoshida, and Tatsuo Heki, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation of Ser. No. 790,091, Nov. 5, 1991, abandoned, which is a continuation of Ser. No. 634,967, Jan. 3, 1991, abandoned, which is a continuation of Ser. No. 374,749, Jul. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 171,643, Mar. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 945,883, Dec. 24, 1986, abandoned. This application Oct. 22, 1993, Ser. No. 139,865
Claims priority, application Japan, Dec. 24, 1985, 60-291011; Feb. 20, 1986, 61-36423; Apr. 17, 1986, 61-88627
Int. Cl.[5] G03C *1/09, 1/035*
U.S. Cl. 430—509 **15 Claims**

1. A direct positive photosensitive material having at least one internal latent image-type silver halide emulsion layer on a support, said emulsion layer comprising a binder and core/shell-type silver halide grains, wherein at least two types of core/shell silver halide grains having different grain sizes are contained in the same emulsion layer or in different emulsion layers, the smaller of the two types of grains being substantially

constituted of cubic grains or of tetradecahedron grains mainly of the face (100), wherein the smaller grains (i) are chemically Sensitized on the surface thereof by at least one of a sulfur sensitization process, a reduction sensitization process, or a noble metal sensitization process, (ii) have an average grain size of 0.5 microns or smaller and (iii) have a sensitivity which is 2 to 20% of the sensitivity of the larger grains, and wherein the smaller grains widen the exposure latitude of the photosensitive material.

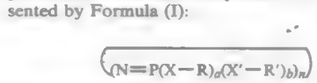
5,364,751

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING ANTISTATIC PLASTIC FILM

Yasuo Kurachi; Kaoru Yaegashi; Yoichi Siato; Yoshihiro Wada, and Akihisa Nakajima, all of Hino, Japan, assignors to Konica Corporation, Japan

Filed Feb. 25, 1994, Ser. No. 201,532
Claims priority, application Japan, Mar. 1, 1993, 5-040048
Int. Cl.[5] G03C *1/85*
U.S. Cl. 430—527 **9 Claims**

1. A silver halide light-sensitive photographic material comprising a support having provided thereon, in order, a subbing layer and a silver halide emulsion layer, wherein said subbing layer contains a mixture of a binder and particles comprising a compound, in an amount of 70% or more, by weight of said particles, wherein said compound is a cyclic compound represented by Formula (I):



formula (I)

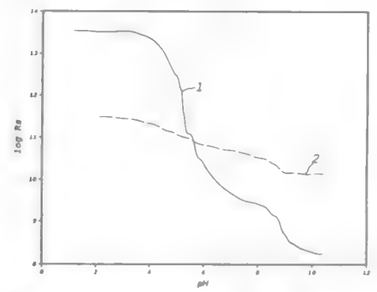
wherein X and X′ each represent —O—, —NH—, or —NR″—; R, R′ and R″ each represent a group comprising at least one element selected from the group consisting of H, B, C, N, O, F, P, S, and Cl; and n is an integer of 3 or more, provided that a+b=2, wherein a and b each represent a positive number.

5,364,752

PHOTOGRAPHIC SILVER HALIDE ELEMENT HAVING ANTISTATIC PROPERTIES

Daniel M. Timmerman, and Hubert Vandenabeele, both of Mortsel, Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Continuation of Ser. No. 842,604, Feb. 27, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 9,731
Claims priority, application European Pat. Off., Mar. 28, 1991, 91200734.1
Int. Cl.[5] G03C *1/85*
U.S. Cl. 430—529 **4 Claims**



1. A photographic element containing a silver halide emulsion layer on a sheet, ribbon or web support, wherein said element comprises an antistatic layer that contains a hydrophilic binder and an ionic crosslinked addition copolymer which includes each of the following recurring units (1), (2), (3) and (4) wherein:

recurring units (1) are formed by acrylic and/or methacrylic acid aliphatic ester groups present up to 19 mole % with regard to the totality of recurring units in the copolymer,

recurring units (2) are formed by acrylic and/or methacrylic acid salt groups present up to 30 mole % with regard to the totality of recurring units of the copolymer, wherein a part of said amount of said groups can be transformed into free acid groups,

recurring units (3) are formed by tetraallyloxyethane as polyfunctional crosslinking monomer in an amount of 1 to 10 mole % with respect to the totality of recurring units of the copolymer, and

recurring units (4) contain a sulphonic acid salt group obtained via a reaction of propane sultone or butane sultone with carboxylic acid salt groups of originally present recurring units (2) in free acid form, wherein the recurring units (4) are present for at least 30 mole % of the recurring units of said copolymer, and contain linked to the polymer backbone the group $—COO—(CH_2)_n—SO_3—.M^+$, wherein n is 3 or 4, and M^+ is a cation selected from the group consisting of an alkali metal cation and onium group, and said antistatic layer contains said copolymer at a coverage in the range of 1.6 to 3 g/m^2 and a weight ratio of up to 50/50 with respect to a hydrophilic binder.

5,364,753

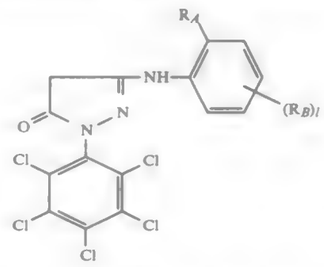
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Katsumasa Yamazaki, Hachioji; Shuichi Sugita, Kunitachi, and Shigeto Hirabayashi, Hino, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 942,468
Claims priority, application Japan, Sep. 25, 1991, 3-273424
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] G03C *7/333, 7/384*
U.S. Cl. 430—549 **7 Claims**

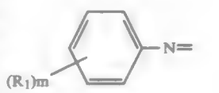
1. A silver halide color photographic light sensitive material comprising a support having thereon a silver halide emulsion layer, wherein said silver halide emulsion layer contains a magenta coupler represented by Formula M-I and a colored magenta coupler represented by Formula CM-I;

Formula M-I

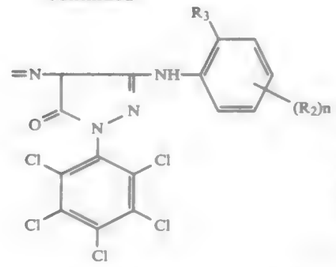


wherein R_A represents a halogen atom or an alkoxy group; R_B represents an acylamino group, a sulfonamido group, an imido group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonyl group, an alkoxycarbonylamino group or an alkoxy group; and l represents an integer of 0 to 4;

Formula CM-I



-continued



wherein R1 represents an alkyl group, an alkoxy group, an aryl group, an acylamino group, a sulfonamido group, a hydroxyl group, a halogen atom, and alkoxycarbonyl group, an acyl group, a carbamoyl group, a sulfamoyl group and a carboxyl group, each of which may have a substituent; R2 represents an acylamino group, a sulfonamido group, an imido group, a carbamoyl group, a sulfamoyl group, an alkoxy group, an alkoxycarbonyl group or an alkoxycarbonylamino group; R_3 represents a halogen atom or an alkoxy group; m represents an integer of 0 to 5; and n represents an integer of 0 to 4.

5,364,754

SILVER HALIDE PHOTOGRAPHIC EMULSIONS PRECIPITATED IN THE PRESENCE OF ORGANIC DICHALCOGENIDES

Sang H. Kim, Pittsford; Anthony Adin; Richard E. Beal, both of Rochester; Jerzy A. Budz, Fairport; Wai K. Lam, and Mark A. Whitson, both of Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 869,670, Apr. 16, 1992, abandoned. This application Oct. 29, 1992, Ser. No. 968,548

The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.

Int. Cl.[5] G03C *1/34, 1/015, 1/005*

U.S. Cl. 430—569 **18 Claims**

1. A method of making a photographic silver halide emulsion comprising:

precipitating a silver halide emulsion; and

adding to the silver halide emulsion before or during precipitation a non-labile chalcogen compound represented by Formula I:

$$R^1—X^1—X^2—R^{2'}$$ (Formula I)

where X^1 and X^2 are independently S, Se, or Te; and R^1 and R^2, together with X^1 and X^2, form a ring system, or are independently substituted or unsubstituted cyclic, acyclic or heterocyclic groups.

5,364,755

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yasushi Miyamoto, and Akihiko Ikegawa, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 16, 1993, Ser. No. 47,496

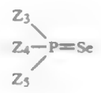
Claims priority, application Japan, Apr. 17, 1992, 4-122971

The portion of the term of this patent subsequent to Mar. 1, 2011, has been disclaimed.

Int. Cl.[5] G03C *1/09, 1/16, 1/18*

U.S. Cl. 430—584 **7 Claims**

1. A silver halide photographic light-sensitive material having at least one silver halide emulsion layer on a support, wherein at least one of said silver halide emulsion layers comprises an emulsion subjected to chemical sensitization with a selenium compound represented by Formula (B) below:



Formula (B)

wherein Z_3, Z_4 and Z_5 each represent an aliphatic group, an aromatic group or —OR_7, and R_7 represents an aliphatic group or an aromatic group, and said emulsion is subjected to spectral sensitization with at least one type of a methine compound represented by Formula (I) below:



Formula (I)

wherein R^1 represents —$(CH_2)_r$—$CONHSO_2$—R^3, —$(CH_2)_s$—SO_2NHCO—R^4, —$(CH_2)_t$—$CONHCO$—R^5, or —$(CH_2)_u$—SO_2—$NHSO_2$—R^6 wherein R^3, R^4, R^5, and R^6 each represent an alkyl group, an alkoxy group, or an amino group, r, s, t, and u each represent an integer from 1 to 5, R^2 has the same meaning as R^1 or represents an alkyl group, Z^1 and Z^2 each represent a nonmetalic atom group required to form a benzothiazole, p and q each represent 0 or 1, L_1, L_2, and L_3 each represent a methine group, m represents 0, 1, or 2, X_1 represents anion, and k represents a number required to adjust the charge in the molecule to 0.

5,364,756

METHOD OF CRYOPRESERVING A SUSPENSION OF BIOLOGICAL MATERIAL

Stephen A. Livesey, Victoria, Australia; Anthony A. del Campo, and Abhijit Nag, Houston, both of Tex., assignors to Lifecell, The Woodlands, Tex.

Continuation of Ser. No. 709,504, Jun. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 581,584, Sep. 12, 1990, abandoned. This application Feb. 16, 1993, Ser. No. 18,357

Int. Cl.[5] A01N *1/02;* **C12N** *7/00, 5/00, 1/04;* **F25D** *25/00*

U.S. Cl. 435—2 **27 Claims**

1. A method for preserving a suspension of biological material comprising:

(a) preparing a cryosolution of a suspension of biological material, said cryosolution comprising a buffer, a cryoprotectant and a biological material;

(b) nebulizing said cryosolution with a low frequency, ultrasonic nebulizer to form microdroplets;

(c) cooling the microdroplets at a rate which results in the formation of amorphous phase ice and/or cubic phase ice with or without hexagonal phase ice in said cryosolution by spraying the microdroplets on a solid cryogenic surface;

(d) continuously removing said cryosolution from said solid cryogenic surface after cooling to replenish said surface for further cooling of additional microdroplets; and

(e) drying the cooled cryosolution to form a dried cryosolution.

5,364,757

METHODS OF SUPPORTING A DIAGNOSIS OF SYSTEMIC LUPUS ERYTHEMATOSUS

Robert F. Garry, Jr., New Orleans; Cesar D. Fermin, Mandeville, both of La., and Steve S. Alexander, Jr., Gaithersburg, Md., assignors to Administrators of the Tulane Educational Fund, New Orleans, La.

Continuation-in-part of Ser. No. 526,349, May 21, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 805,437

Int. Cl.[5] C12Q *1/70, 1/00;* **G01N** *33/564, 33/53*

U.S. Cl. 435—5 **3 Claims**

1. A method of supporting a diagnosis of systemic lupus erythematosus in a patient, comprising testing a sample from the patient for the presence of antibodies directed toward a human intracisternal A-type retroviral particle, having the ATCC accession number VR 2394, which exhibits a density of about 1.2 on a 33–68% sucrose gradient and which comprises a reverse transcriptase that exhibits greater activity in a solution comprising 0.10 mM manganese ions than in a solution comprising 0.10 mM magnesium ions, by determining the ability of antibodies in the patient sample to bind to the human intracisternal A-type retroviral particle, in which the presence of such antibodies correlates positively with the diagnosis of systemic lupus erythematosus.

5,364,758

PRIMERS AND PROCESS FOR DETECTING HUMAN PAPILLOMAVIRUS GENOTYPES BY PCR

Christophorus J. Meijer, Leiden; Adrianus J. van den Brule, 's-Hertogenbosch; Jan M. Walboomers, Amsterdam, and Petrus Snijders, Amstelveen, all of Netherlands, assignors to Stichting Researchfonds Pathologie, Amsterdam, Netherlands

PCT No. PCT/NL91/00009, § 371 Date Jul. 16, 1992, § 102(e) Date Jul. 16, 1992, PCT Pub. No. WO91/10675, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 18, 1991, Ser. No. 910,288

Claims priority, application Netherlands, Jan. 19, 1990, 9000134

Int. Cl.[5] C12Q *1/70;* **C07H** *21/04;* **C12P** *19/34*

U.S. Cl. 435—5 **16 Claims**

1. A primer for use in a polymerase chain reaction for amplifying DNA of genital papillomavirus genotypes, consisting of an oligonucleotide having a length of 20–40 nucleotides consisting of at the 3'-end a sequence selected from the group consisting of:

5'-TTTGTTACTGTGGTAGATAC-3' (SEQ ID NO:3),
5'-GAAAAATAAACTGTAAATCA-3' (SEQ ID NO:4),
5'-TGGTACAATGGGCATATGAT-3' (SEQ ID NO:5), and
5'-AATGGCTTTTGGAATTTACA-3' (SEQ ID NO:6).

5,364,759

DNA TYPING WITH SHORT TANDEM REPEAT POLYMORPHISMS AND IDENTIFICATION OF POLYMORPHIC SHORT TANDEM REPEATS

Charles T. Caskey, and Albert O. Edwards, both of Houston, Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jan. 31, 1991, Ser. No. 647,655

Int. Cl.[5] C12Q *1/68;* **C07H** *15/12;* **G01N** *33/48, 33/566*

U.S. Cl. 435—6 **25 Claims**

1. A DNA profiling assay for detecting polymorphisms in at least one short tandem repeat, comprising the steps of:

extracting DNA from a sample to be tested;

amplifying said at least one short tandem repeat in the extracted DNA, wherein the short tandem repeat sequence is characterized by the formula $(A_wG_xT_yC_z)_n$ wherein A,G,T, and C represent the nucleotides; w, x, y and z represent the number of each nucleotide and range from 0 to 7; the sum of w+x+y+z ranges from 4 to 7; and n represents the repeat number and ranges from about 5 to 50; and

detecting said polymorphisms by identifying said amplified extension products for each different sequence, wherein each different sequence is differentially labelled.

5,364,760

REPLICATIVE RNA REPORTER SYSTEMS

Barbara Chu, Del Mar, Calif.; Fred R. Kramer, New York, N.Y.; Paul Lizardi, Morelos, Mexico, and Leslie E. Orgel, La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif. and The Trustees of Columbia University, New York, N.Y.

Continuation of Ser. No. 516,203, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 852,692, Apr. 16, 1986, Pat. No. 4,957,858. This application Sep. 22, 1992, Ser. No. 949,766

The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **53 Claims**

1. A method of determining the presence of a biopolymer analyte in a sample, which method comprises

(i) exposing the sample to an affinity molecule for said analyte under conditions whereby binding occurs between the affinity molecule and the analyte;

(ii) if said affinity molecule is not itself a replicative RNA, joining, either before or after step (i), a replicative RNA to the affinity molecule employed in step (i);

(iii) employing a RNA-dependent RNA polymerase to catalyze replication of replicative RNA that is or had been joined to affinity molecule bound to analyte or that is affinity molecule that had been bound to analyte; and

(iv) detecting RNA made by the reaction of step (iii).

5,364,761

METHOD FOR ISOLATING A DNA ENCODING AN AUTONOMOUSLY REPLICATING SEQUENCE

Hiroyoshi Ariga, Tokyo, Japan, assignor to Daiichi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 545,675, Jun. 29, 1990, abandoned, which is a continuation of Ser. No. 77,467, Jul. 24, 1987, abandoned. This application Nov. 5, 1992, Ser. No. 972,089

Claims priority, application Japan, Jul. 24, 1986, 61-174036; Sep. 26, 1986, 61-227455

Int. Cl.[5] C12Q *1/68;* **C12N** *5/10, 15/11, 15/88*

U.S. Cl. 435—6 **6 Claims**

1. A method of recovering a DNA fragment consisting of an autonomously replicating sequence which comprises the steps of:

(1) binding a mammalian DNA-binding protein selected from the group consisting of N-myc protein, p53 protein and c-myc protein to a human cell-derived DNA fragment having affinity to the DNA-binding protein,

(2) separating the resulting bound DNA fragment/DNA-binding protein product, and

(3) isolating the DNA having autonomously replicating activity from said bound DNA fragment/DNA-binding protein product.

5,364,762

MAJOR HISTOCOMPATIBILITY COMPLEX (MHC) MOLECULES

Klaus Dornmair, Palo Alto, and Harden M. McConnell, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 21, 1990, Ser. No. 497,009

Int. Cl.[5] C07K *3/12, 15/14;* **G01N** *33/566*

U.S. Cl. 435—7.24 **13 Claims**

1. A process for increasing antigen binding capacity of a major histocompatibility complex (MHC) molecule or chain thereof comprising:

treating an antigen-bound MHC molecule or chain thereof with an effective amount of a reducing agent to release the antigen from the MHC molecule or chain thereof;

removing the unfolding agent and the released antigen; and

treating the antigen-free MHC molecule or chain thereof with an effective amount of an oxidizing agent under

suitable conditions whereby a functional MHC molecule or chain thereof is produced.

5,364,763

TECHNIQUES FOR PREPARING SPECIMENS FOR BACTERIAL ASSAYS

Daniel L. Kacian, San Diego, Calif., assignor to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 173,612, Mar. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 33,435, Apr. 1, 1987, abandoned. This application Jun. 4, 1992, Ser. No. 893,894

Int. Cl.[5] **C12Q** *1/68;* **C12S** *3/24;* **G01N** *33/569*

U.S. Cl. 435—7.32 **44 Claims**

1. A method of liquifying a mucoid secretion specimen, comprising the steps of:

(a) contacting said specimen with a disulfide bond reducing agent so as to cleave disulfide bonds in proteinaceous molecules in said specimen; and

(b) contacting said specimen with a DNA digestion agent so as to cleave phosphodiester bonds in DNA molecules in said specimen, wherein said reducing agent and said DNA digestion agent are provided as separate molecular species, such that said liquifying of said specimen is greater than when each said reducing agent and said DNA digestion agent is used separately, wherein said reducing agent and said DNA digestion agent are provided as separate molecular species, such that said liquifying of said specimen is greater than when each said reducing agent and said DNA digestion agent is used separately.

5,364,764

FLUORESCENT CHLORAMPHENICOL DERIVATIVES FOR DETERMINATION OF CHLORAMPHENICOL ACETYLTRANSFERASE ACTIVITY

Richard P. Haugland; Hee C. Kang, both of Eugene, Oreg.; Steven L. Young, Menlo Park, Calif., and Michael H. Meiner, Aloha, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Division of Ser. No. 722,352, Jun. 18, 1991, Pat. No. 5,262,545, which is a continuation of Ser. No. 321,494, Mar. 9, 1989, abandoned. This application Dec. 21, 1992, Ser. No. 994,992

Int. Cl.[5] **C12N** *9/10, 15/09;* **C12Q** *1/02, 1/48*

U.S. Cl. 435—15 **29 Claims**

1. A method of assaying for chloramphenicol acetyltransferase (CAT) in cell extracts, the method comprising:

a) combining a substrate with a sample that contains a suitable acylation source and CAT, to produce one or more acylated products, where the substrate is a chloramphenicol analog covalently attached to a fluorescent moiety;

b) separating the one or more acylated products; and

c) detecting the fluorescence or absorbance of one or more acylated products to determine the activity of CAT present in the sample.

5,364,765

METHOD AND REAGENT SYSTEM FOR ASSAYING ISOENZYME PROFILES

William A. Abbott, 881 Emerald Ave., Gurnee, Ill. 60031

Continuation of Ser. No. 794,825, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 364,400, Jun. 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 55,107, May 28, 1987, abandoned. This application Jul. 21, 1992, Ser. No. 917,929

Int. Cl.[5] **C12Q** *1/52, 1/50, 1/42, 1/32*

U.S. Cl. 435—26 **22 Claims**

1. An assay method for quantitatively determining the isoenzyme profile of a biologically active enzyme present in a selected biological fluid, the method comprising the steps of:

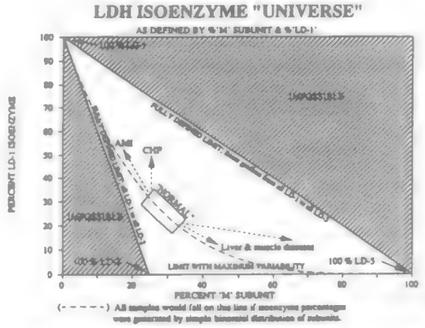
(a) providing a sample of a biological fluid selected from the group consisting of whole blood, blood serum, blood plasma, spinal fluid and urine, said biological fluid suspected of containing an enzyme selected from the group consisting of lactate dehydrogenase, creatine kinase, alkaline phosphatase, maleate dehydrogenase and aspartate aminotransferase, which enzymes comprise at least two enzymatically active subunits and occur as a mixture of isoenzymes in the biological fluid;

(b) dividing the biological fluid into at least three portions and;

(i) performing a first assay on a first portion of the biological fluid with a first reagent having differential subunit efficiencies for measuring the enzymatic activity of a selected first subunit and a selected second subunit to obtain a first measurement;

(ii) performing a second assay on a second portion of the biological fluid with a second reagent having different efficiencies than the first reagent for measuring the enzymatic activity of the selected first subunit and the selected second subunit to obtain a second measurement;

(iii)performing a third assay on a third portion of the



biological fluid with an isoenzyme reagent which quantifies a single selected enzymatically active isoenzyme to obtain a direct measurement;

(c) determining the quantitative value for each of the measured subunits and the sum of the values of the subunits obtained in steps b(i) and b(ii) as a measure of the total enzyme activity in the biological fluid;

(d) determining the total quantitative fractional concentration of the first selected subunit from the summed value for that subunit and the total enzyme activity obtained in step (c) to provide a first calculated parameter;

(e) determining the total quantitative concentration of the one selected isoenzyme from the measurement obtained in step b(iii) and the total enzyme activity obtained in step (c) to provide a second calculated parameter; and

(f) comparing the calculated parameters obtained in steps (d) and (e) to a standard for the selected enzyme to determine the isoenzyme profile of the enzyme present in the biological fluid.

5,364,766

CULTURE MEDIUM FOR RAPID COUNT OF COLIFORM BACTERIA

Patrick A. Mach, Shorewood; Karen E. Hesselroth, South St. Paul; Carl A. Adams, Apple Valley, and Debra L. Schwab, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 14, 1993, Ser. No. 62,311

Int. Cl.[5] **C12Q** *1/04;* **C12N** *1/00;* **G01N** *21/00*

U.S. Cl. 435—34 **19 Claims**

1. A bacterial culture medium which facilitates the early detection and count of coliform bacteria growing in the medium comprising tryptose, lactose, sodium chloride, bile salts, guar gum and an excess amount of phenol red sufficient to provide a high concentration of phenol red in close proximity

to the growing bacteria in order to allow detection and count of the growing bacteria in less than 12 hours.

5,364,767

CHROMOGENIC COMPOUNDS AND METHODS OF USING SAME

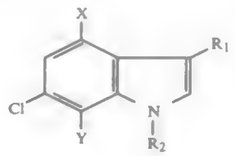
Daniel G. Flowers, Cuyahoga Falls, and Marvin Sternfeld, Pepper Pike, both of Ohio, assignors to Research Organics, In., Cleveland, Ohio

Filed Feb. 11, 1993, Ser. No. 16,511

Int. Cl.[5] **C12Q** *1/06, 1/04, 1/54;* **C07H** *15/00*

U.S. Cl. 435—39 **26 Claims**

1. A chromogenic compound having Formula (I):



(I)

wherein R_1 is a sugar group, propionate group, butyrate group, hexanoate group, octanoate group, hydrocarbyl group containing 1 to about 10 carbon atoms, phosphate group, sulfate group or a salt thereof, with the proviso that R_1 is other than β-D-glucuronic acid or β-D-galactopyranoside, R_2 is H or hydrocarbyl group containing 1 to about 5 carbon atoms, X is Cl or H, and Y is Cl or H.

5,364,768

PROCESS FOR THE PREPARATION OF PENEMS

Maria Altamura; Franco Francalanci, and Marcello Marchi, all of Novara, Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

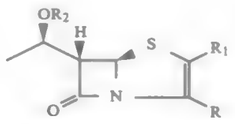
Continuation of Ser. No. 496,054, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 216,232, Jul. 7, 1988, abandoned. This application Sep. 4, 1992, Ser. No. 940,784

Claims priority, application United Kingdom, Jul. 7, 1987, 8715992

Int. Cl.[5] **C12P** *37/00*

U.S. Cl. 435—43 **4 Claims**

1. An in vitro process for preparing a compound of the formula I:



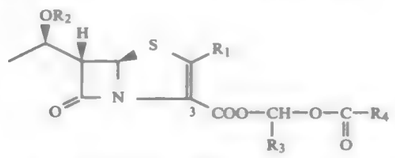
I

wherein R represents a carboxy group or carboxylate anion:

R_1 represents carbamoyloxymethyl or methoxymethyl;

R_2 represents a hydrogen atom or a hydroxy-protecting group selected from the group consisting of p-nitrobenzyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, trimethylsilyl, benzyl, p-bromophenacyl, triphenylmethyl and pyranyl; which process comprises:

a) hydrolyzing a compound of the formula (II):



II

wherein R_1 and R2 are as defined above; R_3 represents a hydrogen atom; and R_4 represents lower alkyl or lower alkoxy; by means of an enzyme capable of selectively hydrolyzing the ester group at the 3-position, said enzyme being selected from the group consisting of porcine liver esterase, Pseudomonas sp. cholesterol esterase, porcine kidney acylase I, *Chromobacterium viscosum* lipase, *Penicillum liliacinum* lipase B, *Rhizopus javanicus* lipase FAP 15, *Aspergillus niger* lipase A 6, wheat germ lipase, *Rhizopus delamar* lipase, Pseudomonas sp., lipase P, porcine kidney lipase SP 225, Pseudomonas sp. lipoprotein lipase, *Candida cylindracea* lipase OF, Pseudomonas sp. lipase CES, *Penicillum cyclopium* lipase 6, *Penicillum roqueforti* lipase R-10, *Candida lipolytica* lipase L-10, *Rhizopus delamar* lipase D-20 and *Candida cylindracea* lipase AY 30; and further wherein said enzymatic hydrolysis is effected at a pH in the range of from 5 to 8 and at a temperature in the range of 20° C. to 40° C., with the proviso that when R_4 is lower alkoxy, the enzyme used is porcine liver esterase; and

b) recovering said compound of the formula (I).

5,364,769

NUCLEIC ACID ENCODING NEUROTROPHIC FACTOR FOUR (NT-4), VECTORS, HOST CELLS AND METHODS OF PRODUCTION

Arnon Rosenthal, Pacifica, Calif., assignor to Genentech, Inc., South San Francisco, Calif.

Filed Sep. 25, 1990, Ser. No. 587,707

Int. Cl.[5] **C12N** *5/10, 15/18, 15/12*

U.S. Cl. 435—69.1 **5 Claims**

1. An isolated nucleic acid which comprises a nucleotide sequence encoding the amino acid sequence shown in FIG. 1 for mature NT-4.

5,364,770

HETEROLOGOUS POLYPEPTIDES EXPRESSED IN ASPERGILLUS

Randy M. Berka, San Mateo, Calif.; Daniel Cullen, Madison, Wis.; Gregory L. Gray, South San Francisco, Calif.; Kirk J. Hayenga, Burlingame, Calif., and Virgil B. Lawlis, San Mateo, Calif., assignors to Genencor International Inc., San Francisco, Calif.

Continuation of Ser. No. 163,219, Feb. 26, 1988, abandoned, which is a continuation of Ser. No. 882,224, Jul. 7, 1986, abandoned, which is a continuation-in-part of Ser. No. 771,374, Aug. 29, 1985, abandoned. This application Sep. 25, 1989, Ser. No. 413,010

Int. Cl.[5] **C12N** *1/15, 15/09, 15/56, 15/80*

U.S. Cl. 435—69.1 **53 Claims**

1. A DNA construct for use in transforming an Aspergillus host to enable secretion of a heterologous polypeptide, said DNA construct comprising promoter DNA from an Aspergillus gene operably linked to coding DNA, said coding DNA comprising DNA coding for a signal peptide and said heterologous polypeptide.

5,364,771

HYBRID HUMAN/PORCINE FACTOR VIII

John S. Lollar, Decatur, and Marschall S. Runge, Atlanta, both of Ga., assignors to Emory University, Atlanta, Ga.

Filed Apr. 7, 1992, Ser. No. 864,004

Int. Cl.[5] **C07K** *13/00;* **C12N** *15/11, 15/12;* **A61K** *37/00*

U.S. Cl. 435—69.1 **19 Claims**

1. A purified hybrid factor VIII molecule comprising porcine and human amino acid sequences, wherein the molecule has procoagulant activity in an in vitro coagulation assay and wherein the molecule is selected from the group consisting of

a molecule consisting essentially of a human factor VIII in which the porcine A2 domain is substituted for the homologous human factor VIII A2 domain;

a molecule consisting essentially of a porcine factor VIII in which the human A2 domain is substituted for the homologous porcine factor VIII A2 domain;

a molecule consisting essentially of a human light chain

factor VIII subunit and a porcine heavy chain factor VIII subunit; and

a molecule consisting essentially of a porcine light chain factor VIII subunit and a human heavy chain factor VIII subunit.

5,364,772

DNA MOLECULE ENCODING THE β_3-ADRENERGIC RECEPTOR

James G. Granneman, Troy; Kristine N. Lahners, Grosse Pointe Woods, both of Mich., and Donald D. Rao, Chicago, Ill., assignors to Wayne State University, Detroit, Mich.

Filed Jul. 20, 1992, Ser. No. 916,901
Int. Cl.[5] C12N *15/12*
U.S. Cl. 435—69.1 12 Claims

1. An isolated and purified DNA molecule which encodes a mammalian β_3-adrenergic receptor, selected from the group consisting of the coding sequence for human (SEQ. ID. NO. 1), and the coding sequence for mouse (SEQ. ID. NO. 8).

5,364,773

GENETICALLY ENGINEERED VACCINE STRAIN

Enzo Paoletti, Delmar, and Marion E. Perkus, Altamont, both of N.Y., assignors to Virogenetics Corporation, Troy, N.Y.

Continuation of Ser. No. 666,056, Mar. 7, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 36,217
Int. Cl.[5] C12P *21/02, 19/34;* C12N *15/00, 7/00*
U.S. Cl. 435—69.1 8 Claims

2. A recombinant vaccinia virus wherein the open reading frames:

for the thymidine kinase gene, the hemorrhagic region, the A type inclusion body region, the hemagglutinin gene, the host range gene region, and the large subunit, ribonucleotide reductase have been deleted therefrom.

5,364,774

TREPONEMA HYODYSENTERIAE VACCINE

Susie Jane Muir; Marcel B. H. Koopman, and Johannes G. Kusters, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Oct. 21, 1992, Ser. No. 965,668
Claims priority, application Netherlands, Oct. 25, 1991, 91202766; Jul. 24, 1992, 92202274
Int. Cl.[5] C12P *21/02, 19/34;* C12N *15/00, 7/00, 5/00/1/21, 1/16/1/18;* C07H *15/12;* C07K *3/00*
U.S. Cl. 435—69.3 2 Claims

1. An isolated polynucelotide selected from the group consisting of:

a. DNA having the nucleotide sequence represented in SEQUENCE ID No. 1 or a fragment thereof wherein said DNA codes for a peptide able to elicit an immune response against *Treponema hydoysenteriae;*

b. polynucleotides which hybridize under stringent conditions to the DNA set forth in SEQUENCE ID No. 1 and which code for a polypeptide having antigenic properties of the hemolysin protein of *Treponema hyodysenteriae;* and

c. "degenerate DNA molecules which code for the amino acid sequence set forth in SEQUENCE ID. No. 2".

5,364,775

PROCESS FOR PRODUCING TRANS-L-HYDROXYPROLINE

Ryoichi Katsumata, Tokyo; Takashi Ohshiro, Tottori, both of Japan; Haruhiko Yokoi, Ottawa, Canada, and Michio Shiomi, Hofu, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1992, Ser. No. 972,824
Claims priority, application Japan, Nov. 13, 1991, 3-296944
Int. Cl.[5] C12P *13/24*
U.S. Cl. 435—107 1 Claim

1. A process for producing trans-L-hydroxyproline, which comprises culturing a microorganism selected from the group consisting of *Proteus mirabilis* IFO 3849 (FERM BP-4604), *Providencia alcalifaciens* ATCC 9886, *Delaya venusta* ATCC 27125 and *Planococcous citreus* ATCC 14404, the microorganism decomposes amino acids comprising alanine, arginine, aspartic acid, cysteine, glutamic acid, glycine, lysine, proline, serine, threonine, valine and tyrosine, but not trans-L-hydroxyproline, in a culture medium containing collagen hydrolyzate until amino acids other than trans-L-hydroxyproline in the culture medium are decomposed, and thereafter recovering said trans-L-hydroxyproline from the resulting culture.

5,364,776

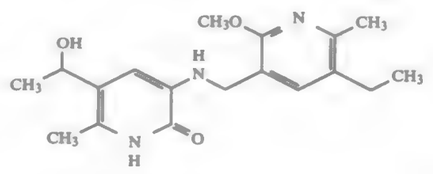
METHOD OF HYDROXYLATING 3-[3-(5-ETHYL-2-METHOXY-6-METHYLPYRIDYL)METHYL]AMINO-5-ETHYL-6-METHYL-2(1H)-PYRIDINONE WITH LIVER SLICES

Suresh K. Balani, Hatfield; Laura R. Kauffman, Jeffersonville, and Anthony D. Theoharides, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 771,676, Oct. 4, 1991, abandoned. This application Feb. 24, 1992, Ser. No. 841,262
Int. Cl.[5] C12P *17/14*
U.S. Cl. 435—118 3 Claims

1. A method of preparing the compound

(Ia)



3-[3-(5-ethyl-2-methoxy-6-methylpyridyl)methyl]amino-5-(1-hydroxy)ethyl-6-methyl-2(1H)-pyridinone, comprising the steps of

(a) providing a quantity of 3-[3-(5-ethyl-2-methoxy-6-methylpyridyl)methyl]amino-5-ethyl-6-methyl-2(1H)-pyridinone,

(b) incubating the compound of step (a) with rat liver slices, and

(c) isolating the compound Ia.

5,364,777

METHOD OF IMPROVING LIPASE ACTIVITY USING NOBLE GASES

Kevin C. Spencer, Hinsdale, Ill., assignor to American Air Liquide, Walnut Creek, Calif.

Filed Apr. 3, 1992, Ser. No. 862,726
Int. Cl.[5] C12P *7/64;* C12N *9/99, 9/88*
U.S. Cl. 435—134 6 Claims

1. A method of using a lipase to act on a lipid substrate wherein the lipase activity is improved, which method comprises contacting at least one lipase with a lipid substrate and during at least part of said contacting, contacting said lipase at a pressure up to about 100 atmospheres with an amount effective to improve lipase activity of a gas consisting essentially of a noble gas selected from the group consisting of argon, neon, xenon, krypton and mixtures thereof.

5,364,778

COPOLYMER PRODUCTION

David Byrom, Cleveland, England, assignor to Zeneca Limited, London, England

Continuation of Ser. No. 624,102, Dec. 10, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 103,155
Claims priority, application United Kingdom, Dec. 8, 1989, 8927791
Int. Cl.[5] C12P *7/62;* C08G *63/06*
U.S. Cl. 435—135 9 Claims

1. A microbiological process for the production of a copolymer comprising HB and HV monomer units so as to improve the conversion efficiency of an HV component into HB/HV copolymer, said process comprising

(i) cultivating a PHB accumulating bacterium of the genus Alcaligenes from which a major metabolic pathway for the conversion of HV component to HB monomer units has been substantially eliminated and which is not capable of significant growth when cultivated under otherwise non growth limiting conditions on a substrate consisting essentially of an HV component, said PHB accumulating bacterium being cultivated in an aqueous medium in which a substrate comprises a water soluble assimilable carbon containing HV component and a water soluble assimilable carbon containing HB component, at a desired weight of dry cells per liter of medium, under growth limitation conditions conducive to said PHB accumulating bacterium synthesizing and accumulating said copolymer, and

(ii) harvesting said copolymer containing bacterium.

5,364,779

PROCESS FOR TRANSFORMING CELLS

Jean De Lafonteyne, Oudenaarde, , assignor to Solvay (Societe Anonyme) and Clovis Matton, N.V., Avelgem/Kerkhove,

Continuation of Ser. No. 209,292, Jun. 20, 1988, abandoned. This application Jan. 18, 1991, Ser. No. 643,145
Claims priority, application Netherlands, Jun. 22, 1987, 8701450
Int. Cl.[5] C12N *15/00, 15/71, 15/72, 15/73*
U.S. Cl. 435—172.3 13 Claims

1. A multifunctional linker for transforming a receptor cell which is a linear DNA molecule comprising:

a. a DNA sequence comprising at least 100 base pairs;

b. an *E. coli* operator DNA sequence, which is the lac operator, the gal operator or the trp operator;

c. a sequence effective for replication in a microorganism or for integrative recombination in a vector, which latter is the attB sequence effective for integration in bacteriophage λ;

d. a regulatory sequence effective for expression of a gene in a microorganism;

a DNA sequence containing at one end a suitable restriction sequence for joining to the multifunctional linker and at the other end a hairpin structure hiding a sequence which forms a substrate for a restriction endonuclease;

f. a DNA sequence which promotes recombination which is a Z DNA sequence or a crossing-over hot spot instigator (chi) sequence; and

g. a sequence of a promotor whose expression can be demonstrated in a microorganism, after recombination of the inserted DNA comprising the multifunctional linker and donor DNA into a suitable bacteriophage λ vector.

5,364,780

EXTERNAL REGULATION OF GENE EXPRESSION BY INDUCIBLE PROMOTERS

Howard P. Hershey, West Chester, Pa.; Carol D. Katayama, Encinitas; Edward J. Ralston, Pleasant Hill, both of Calif.; Timothy D. Stoner, New Freedom, Pa., and James F. Wong, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US90/01210, § 371 Date Jul. 31, 1991, § 102(e) Date Jul. 31, 1991
Continuation-in-part of Ser. No. 327,205, Mar. 17, 1989, abandoned. This PCT application Mar. 14, 1990, Ser. No. 730,853
Int. Cl.[5] C12N *15/92, 15/11*
U.S. Cl. 435—172.3 31 Claims

13. A nucleic acid promoter fragment comprising a nucleotide sequence from the 5' flanking promoter region of a petunia gene inducible by compounds of formula I to IX which when denatured, immobilized on a solid support membrane and hybridized to the promoter region from a gene encoding a cDNA clone P6.1 deposited with the American Type Culture Collection (ATCC) and given the ATCC accession designation 67823, and washed at 42° C. with an aqueous solution of 0.1X SSC and 0.1% SDS shows a detectable autoradiographic signal after 24 trouts of exposure of the solid support to X-ray film for 24 hours at −80° C.

5,364,781

PROCESS FOR PREPARING DAUNORUBICIN

Charles R. Hutchinson, Madison, Wis.; Krishna M. Madduri, Andhra Pradesh, India; Francesca Torti, and Anna L. Colombo, both of Milan, Italy, assignors to Farmitalia Carlo ERBA S.r.l, Milan, Italy

Continuation-in-part of Ser. No. 793,873, Nov. 18, 1991, abandoned. This application Oct. 9, 1992, Ser. No. 959,941
Int. Cl.[5] C12N *9/10*
U.S. Cl. 435—193 1 Claim

1. An isolated and purified carminomycin 4-O-methyl transferase consisting essentially of the amino acid sequence: (SEQ ID NO: 2)

```
  1 MTAEPTVAAR PQQIDALRTL IRLGSLHTPM
                                VVRTAATLRL VDHILAGART
 51 VKALAARTDT RPEALLRLIR HLVAIGLLEE
                                DAPGEFVPTE VGELLADDHP
101 AAQRAWHDLT QAVARADISF TRLPDAIRTG
                                RPTYESIYGK PFYEDLAGRP
151 DLRASFDSLL ACDQDVAFDA PAAAYDWTNV
                                RHVLDVGGGK GGFAAAIARR
201 APHVSATVLE MAGTVDTARS YLKDEGLSDR
                                VDVVEGDFFE PLPRKADAII
251 LSFVLLNWPD HDAVRILTRC AEALEPGGRI
                                LIHERDDLHE NSFNEQFTEL
301 DLRMLVFLGG ALRTREKWDG LAASAGLVVE
                                EVRQLPSPTI PYDLSLLVLA
351 PAATGA.
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5,364,782

MUTANT MICROBIAL α-AMYLASES WITH INCREASED THERMAL, ACID AND/OR ALKALINE STABILITY

Wilhelmus J. Quax, Voorschoten, Netherlands; Yves Laroche, Brussels, , assignors to Gist-Brocades N.V., Delft, Netherlands and Plant Genetic Systems N.V., Brussels,

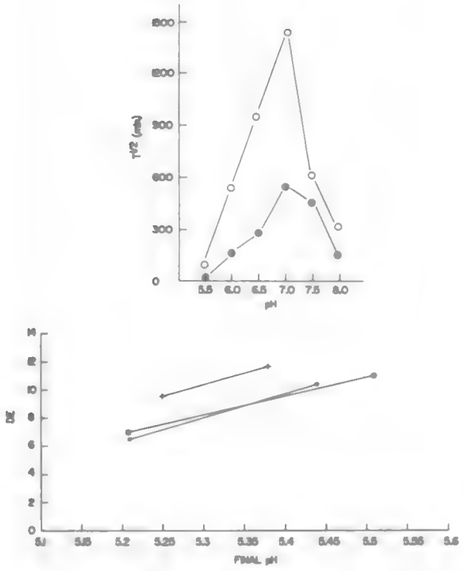
PCT No. PCT/EP90/01042, § 371 Date Dec. 2, 1990, § 102(e) Date Dec. 2, 1990, PCT Pub. No. WO91/00353, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 27, 1990, Ser. No. 623,953

Claims priority, application European Pat. Off., Jun. 29, 1989, 89201735

Int. Cl.[5] C12N *9/28, 15/56, 1/21;* D06M *16/00*

U.S. Cl. 435—202 6 Claims



1. An isolated mutant α-amylase wherein said mutant α-amylase has a replacement of at least one amino acid in a corresponding wild-type α-amylase obtainable from *Bacillus licheniformis* and wherein said mutant α-amylase exhibits one or more improved properties relative to the wild-type α-amylase selected from the group consisting of improved thermostability, improved stability at a pH below 6.5, improved stability at a pH above 7.5, and improved acid stability as a result of said replacement, wherein said replacement is one or more amino acid replacements selected from the group consisting of Ala-111-Thr, His-133-Tyr and Thr-149-Ile.

5,364,783

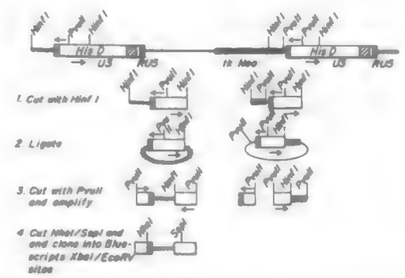
RETROVIRUS PROMOTER-TRAP VECTORS

H. Earl Ruley, Winchester, and Harold von Melchner, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 14, 1990, Ser. No. 523,041

Int. Cl.[5] C12N *7/01, 15/11, 15/65*

U.S. Cl. 435—235.1 14 Claims



1. A retrovirus having a promoterless oligonucleotide coding for a protein located within a U3 or U5 control region of the retrovirus.

5,364,784

METHOD FOR DELIVERING OXYGEN TO A CELL CULTURE MEDIUM

Richard Fike, Clarence, and James M. Kubiak, Lancaster, both of N.Y., assignors to Life Technologies, Inc., Gaithersburg, Md.

Division of Ser. No. 691,801, Apr. 26, 1991, Pat. No. 5,268,298. This application Nov. 5, 1992, Ser. No. 972,366

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.1 7 Claims

1. A method for delivering a selected gas to a cell culture in a culture medium contained within a first vessel, comprising:

(a) submerging a transfer chamber in the culture medium, said transfer chamber having an inlet portion, an outlet portion and a permeable body portion, said permeable body portion being connected between said inlet portion and said outlet portion to form a substantially enclosed flow path therebetween, said permeable body portion allowing the culture medium to enter said flow path;

(b) enriching a liquid chemical with the selected gas;

(c) pumping said enriched liquid chemical into said inlet portion of said transfer chamber such that said liquid chemical enters said flow path;

(d) contacting said enriched liquid chemical in said flow path with the culture medium such that the selected gas is transferred to the culture medium to produce a depleted liquid chemical; and

(e) removing said depleted liquid chemical from said transfer chamber through said outlet portion.

5,364,785

METHOD OF ISOLATING LUNG CELL LINE

Jennie P. Mather, and Penelope E. Roberts, both of Millbrae, Calif., assignors to Genentech, Inc., S. San Francisco, Calif.

Continuation of Ser. No. 919,994, Jul. 27, 1992, abandoned, which is a continuation of Ser. No. 479,130, Feb. 9, 1990, abandoned. This application May 11, 1993, Ser. No. 60,466

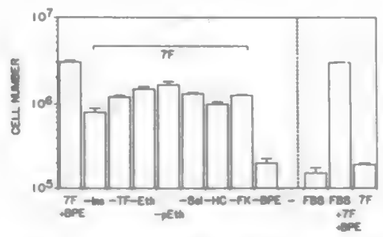
Int. Cl.[5] C12N *5/00, 15/00;* C12P *21/02;* C12Q *1/00*

U.S. Cl. 435—240.2 14 Claims

1. A method of isolating, from a heterogeneous population of lung cells, a lung cell line comprising a normal mammalian bronchiolar epithelial lung cell type, said cell line able to be maintained for multiple passages in the absence of serum without undergoing senescence, said method comprising the steps of:

a) incubating mammalian lung fragments comprising said heterogeneous population of lung cells in serum free defined medium 11F; and

b) changing said medium about every three days; and



c) isolating said lung cell line from said serum free medium 11F, wherein the lung cells are not transformed with viral DNA during said method.

5,364,786

PURE CULTURE OF *AGROBACTERIUM SP.* WHICH DEGRADES FERRIC CHELATES

John Lauff; James Breitfeller, both of Rochester, N.Y.; D. Bernie Steele, Auburn, Ala., and Louise Coogan, Hilton, N.Y., assignors to Genencor International, Inc., Rochester, N.Y.

Division of Ser. No. 603,381, Oct. 26, 1990, Pat. No. 5,252,483, which is a continuation-in-part of Ser. No. 507,931, Apr. 11, 1990, abandoned. This application Jul. 27, 1993, Ser. No. 98,971

Int. Cl.[5] C12N *1/20*

U.S. Cl. 435—252.2 3 Claims

1. A biologically pure culture of the microorganism Agrobacterium sp., ATCC number 55002.

5,364,787

GENES AND ENZYMES INVOLVED IN THE MICROBIAL DEGRADATION OF PENTACHLOROPHENOL

Cindy S. Orser, and Luying Xun, both of Moscow, Id., assignors to Idaho Research Foundation, Moscow, Id.

Continuation-in-part of Ser. No. 856,015, Mar. 23, 1992. This application Jul. 13, 1992, Ser. No. 914,282

Int. Cl.[5] C12N *15/53, 15/63, 1/21*

U.S. Cl. 435—252.33 15 Claims

1. A purified DNA molecule consisting essentially of a DNA sequence encoding pentachlorophenol hydroxylase (PcpB).

5,364,788

PURE CULTURE OF *BACILLUS SUBTILIS* FERM BP-3418

Kazuhiro Kubo, Maebashi, Japan, assignor to AHC Inc., Maebashi, Japan

Filed Jun. 30, 1992, Ser. No. 906,460

Claims priority, application Japan, Jul. 1, 1991, 3-185880; Jan. 8, 1992, 4-018434

Int. Cl.[5] A01N *63/00, 25/00, 25/34;* C12N *1/20*

U.S. Cl. 435—252.5 1 Claim

1. A biologically pure culture of *Bacillus subtilis* FERM BP-3418.

5,364,789

MICROBIAL CLEANER

Lloyd J. Guinn, P.O. Box 176, Marble Falls, and James L. Smith, P.O. Box 8401, Horseshoe Bay, both of Tex. 78654

Filed Jan. 14, 1994, Ser. No. 182,843

Int. Cl.[5] C12N *1/00;* C02F *3/00, 3/34;* C12S *9/00*

U.S. Cl. 435—262.5 6 Claims

1. A microbial cleaner comprising:

one or more hydrocarbon-ingesting microbe strains; and

a biocatalyst comprising a nonionic surfactant, a chlorine-absorbing salt, one or more nutrients for said microbe strains, and water.

5,364,790

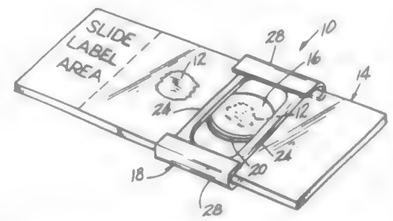
IN SITU PCR AMPLIFICATION SYSTEM

John G. Atwood, West Redding, and Lawrence A. Haff, Wilton, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 16, 1993, Ser. No. 17,721

Int. Cl.[5] C12M *1/40*

U.S. Cl. 435—288 54 Claims



16. A retaining assembly for retaining a fluid against a glass slide comprising a resilient and compliant cover member, an annular seal member around at least a portion of said cover member and at least one clip means for removably retaining said cover and seal members against said slide.

5,364,791

PROGESTERONE RECEPTOR HAVING C. TERMINAL HORMONE BINDING DOMAIN TRUNCATIONS

Elisabetta Vegeto, 7707 Eads Ave., LaJolla, Calif. 92037; Donald P. McDonnell, 10382 Rue Riviere Verte, San Diego, Calif. 92131, and Bert W. O'Malley, 629 Ramblewood, Houston, Tex. 77079

Filed May 14, 1992, Ser. No. 882,771

Int. Cl.[5] C12N *15/00;* C07H *17/00;* G01N *33/53;* C07K *13/00*

U.S. Cl. 435—320.1 17 Claims

1. A mutated progesterone receptor protein, wherein said receptor protein is capable of distinguishing a hormone antagonist from an agonist, wherein said protein is mutated by deletion of about 42 to about 54 carboxyl terminal amino acids.

5,364,792

TEST SWAB AND METHOD OF MAKING AND USING SAME

Marcia J. Stone, Wellesley, Mass., assignor to Hybrivet Systems, Inc., Natick, Mass.

Continuation-in-part of Ser. No. 750,312, Aug. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 709,981, Jun. 4, 1991, abandoned, which is a continuation of Ser. No. 499,488, May 7, 1990, Pat. No. 5,039,618, which is a continuation-in-part of Ser. No. 305,221, Feb. 2, 1989, abandoned. This application Nov. 24, 1993, Ser. No. 156,623

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

Int. Cl.[5] G01N *33/20, 21/78*

U.S. Cl. 436—73 24 Claims

1. A swab device for testing for a metal on a surface, comprising:

a stem;

an absorbent ball of material mounted at one end of the stem; and

a reagent that reacts with the metal in such a manner so as to give a visual indication of the reaction, said reagent being

impregnated in the absorbent ball of material, and said metal selected from the group consisting of lead, cad-



mium, bismuth, mercury, cobalt, arsenic, tin, antimony, iron, selenium, and copper.

5,364,793

METHODS FOR THE DIAGNOSIS OF PERIPHERAL NERVE DAMAGE

Bruce M. Cameron, Sr., Houston, Tex.; Carl R. Merril, Rockville, Md.; Guy J. Creed, Arlington, Va., and Dale VanderPutten, Washington, D.C., assignors to Monoclonetics International, Inc., Houston, Tex. and The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 620,104, Nov. 30, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 983,443

Int. Cl.[5] **G01N** *33/49, 33/487, 27/26;* **C12Q** *1/00*

U.S. Cl. 436—86 **4 Claims**

1. A method of identifying a patient likely to have peripheral nerve damage, comprising

subjecting a body fluid sample of a patient suspected of having peripheral nerve damage to eletrophoresis; and

measuring 1bp13-14.719 to determine any increases in concentration of 1bp13-14.719 in the body fluid sample as compared to control samples from individuals without peripheral nerve damage as determined by the absence of neurological symptoms, wherein increased concentrations of 1bp13-14.719 indicate a likelihood of peripheral nerve damage.

5,364,794

PROCESS FOR PRODUCING SACCHARIDES

Yohji Ezure, Shiga; Shigeaki Maruo, Osaka; Katsunori Miyazaki, Iwate, and Naoyoshi Yamada, Kyoto, all of Japan, assignors to Nippon Shinyaku Company Limited, Japan

PCT No. PCT/JP91/00984, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/01805, PCT Pub. Date Feb. 6, 1992

PCT Filed Jul. 24, 1991, Ser. No. 988,111

Claims priority, application Japan, Jul. 26, 1990, 2-198726; Feb. 5, 1991, 3-036776; Feb. 25, 1991, 3-053908

Int. Cl.[5] **C12P** *19/20, 19/18, 19/02, 19/14*

U.S. Cl. 435—96 **7 Claims**

1. A process for producing a pure oligosaccharide having a chain length of from 2 to 6 glucose units, said process comprising the steps of:

a) forming oligosaccharides of arbitrary chain length of glucose units at least as long as said pure oligosaccharide, with a carrier material attached to an end thereof, from a reaction mixture of said carrier material, saccharide glucose chain donors and glycosyltransferase;

b) cleaving oligosaccharide units of the same chain length as said pure oligosaccharide from said oligosaccharides of arbitrary chain length, with attached carrier material, by means of an exo-cleaving carbohydrolase, suitable for cleaving said oligosaccharide units; and

c) separating the oligosaccharide units from residual material having said carrier material, with said carrier material providing means for substantially completely effecting said separation.

5,364,795

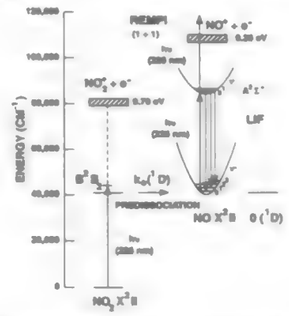
LASER-BASED DETECTION OF NITRO-CONTAINING COMPOUNDS

Rosario Sausa, Bel Air; Josef Simeonsson, Elkridge, and George Lemire, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 11, 1993, Ser. No. 28,088

Int. Cl.[5] **G01N** *33/22*

U.S. Cl. 436—106 **16 Claims**



1. A method for the detection of atmospheric and surface adsorbed nitrocompounds comprising

isolating a sample from an atmosphere or surface;

directing said isolated sample into a sampling chamber;

irradiating said isolated sample within said sampling chamber with a laser having a wavelength output at or near 226 nm so as to photolyze said nitrocompounds to form an NO fragment and excite said fragment by a resonance one or two-photon process via $A^2\Sigma^+ - X^2\Pi_i$ transitions of said fragment to form an excited NO fragment or ion;

detecting said excited NO fragment or ion using an ion detector and/or photodetector; and

recording and monitoring the presence or absence of said nitrocompounds on a data acquisition and processing system.

5,364,796

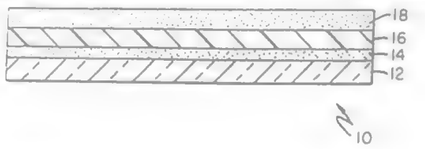
DIAGNOSTIC ASSAY SYSTEM

John J. Blackwood, Foxboro; Shai Inbar, Boston, and James V. Patzke, Millis, all of Mass., assignors to PB Diagnostics Systems, Inc., Westwood, Mass.

Filed Jul. 11, 1989, Ser. No. 378,062

Int. Cl.[5] **G01N** *33/53, 33/563, 33/533, 21/00*

U.S. Cl. 436—500 **13 Claims**



1. A method for assessing the available ligand binding sites on proteins comprising

a) distributing a sample of a fluid containing a protein across the surface of a multilayer diagnostic assay element which comprises:

i. a light-blocking layer which is permeable to said fluid but impermeable to said protein; and

ii. a reagent layer comprising a ligand which is capable of binding to available binding sites on said protein

b) measuring the amount of ligand which is present in said reagent layer or on said protein; and

c. assessing the available ligand binding sites on said protein as a function of the amount of ligand present in said reagent layer or on said protein.

5,364,797

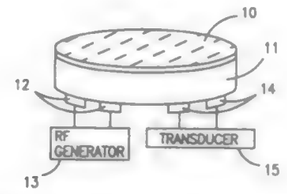
SENSOR DEVICE CONTAINING MESOPOROUS CRYSTALLINE MATERIAL

David H. Olson, Pennington, N.J.; Galen D. Stucky, Santa Barbara, Calif., and James C. Vartuli, West Chester, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 20, 1993, Ser. No. 64,280

Int. Cl.[5] **B01J** *29/00;* **C12Q** *1/00;* **G01N** *21/00, 27/00, 31/00, 33/00, 33/20, 33/53*

U.S. Cl. 436—501 **43 Claims**



17. A method for detecting a compound selected from the group consisting of a gas, hydrogen ions (pH), metal ions, a co-member of a biological affinity pair, a Lewis acid and a Lewis base comprising contacting a medium containing the compound with a sensor device which comprises an inorganic, porous, non-layered crystalline phase material exhibiting, after calcination, an X-ray diffraction pattern with at least one peak at a d-spacing greater than about 18 Angstrom Units with a relative intensity of 100 and having a benzene sorption capacity of greater than 15 grams benzene per 100 grams of anhydrous crystal at 50 torr and 25° C. and detecting the compound in the crystalline material with a means for detecting.

5,364,798

Patent Not Issued For This Number

5,364,799

Patent Not Issued For This Number

5,364,800

VARYING THE THICKNESS OF THE SURFACE SILICON LAYER IN A SILICON-ON-INSULATOR SUBSTRATE

Keith A. Joyner, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 24, 1993, Ser. No. 82,080

Int. Cl.[5] **H01L** *21/265*

U.S. Cl. 437—28 **20 Claims**

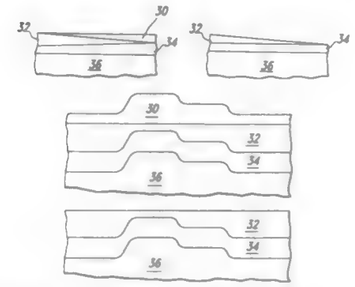
10. A method of forming a modified semiconductor substrate, said method comprising:

A. forming a screen layer on a top surface of a silicon substrate, said screen layer comprising two or more screen materials;

B. modifying said screen layer to form areas with thicker screens and areas with thinner screens;

C. implanting ions into said silicon substrate, wherein said ions are implanted to a lesser depth under said thicker screen areas and to a greater depth in said thinner screen areas;

D. annealing said substrate to form a substantially well-defined buffed insulator layer overlaying said silicon substrate, and to form a surface silicon layer overlaying said buried insulator layer, wherein the portion of said surface silicon layer formed under said thicker screen areas is thinner than the portion of said surface silicon layer formed under said thinner screen areas; and



E. removing any remaining portions of said screen layer, whereby the different surface silicon thicknesses can be used to implement microelectronic devices with varying characteristics based on those thicknesses.

5,364,801

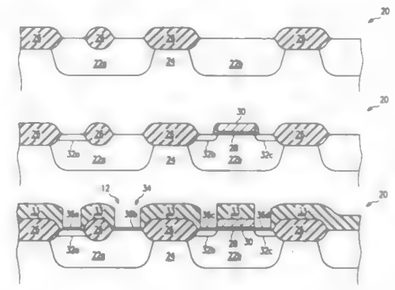
METHOD OF FORMING A CHARGE PUMP CIRCUIT

Michael C. Smayling, Missouri City, Tex., and Luciano Talamonti, Rieti, Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 628,783, Dec. 17, 1990, abandoned. This application May 21, 1993, Ser. No. 65,694

Int. Cl.[5] **H01L** *21/72*

U.S. Cl. 437—39 **11 Claims**



1. A method of forming a stage of a charge pump circuit comprising the steps of:

forming first and second tank regions in a silicon substrate;

forming a first field oxide region between said first and second tank regions and a second field oxide region within said second tank region, said second field oxide region having a first edge and a second edge;

forming a dielectric region over a portion of said first tank region;

forming a polysilicon region over said dielectric region;

forming a first contact region in said first tank region adjacent said polysilicon region and forming a second contact region in said second tank region adjacent said first edge of said second field oxide region, said first contact region more heavily doped than said first tank region and said second contact region more heavily doped than said second tank region;

forming a masking layer over said first and second tank regions;

patterning said masking layer to expose a Schottky diode region in said second tank region adjacent said second edge of said second field oxide region and to expose said first and second contact regions;

forming a metal layer over said Schottky diode region and said first and second contact regions such that said metal layer and said Schottky diode region formed a Schottky diode; and

conductively coupling said first contact region to said metal layer formed over said Schottky diode region.

5,364,802

METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH BURIED ELECTRODE

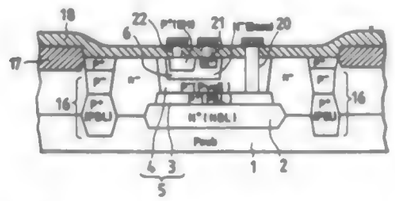
Yuzo Katsuka, Hiratsuka; Toshihiko Ichise; Keiji Ishizuka, both of Kawasaki, and Tetsuo Asaba, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 823,604, Jan. 17, 1992, Pat. No. 5,306,934, which is a continuation of Ser. No. 708,217, May 31, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 130,461

Claims priority, application Japan, May 31, 1990, 2-139622; Nov. 19, 1990, 2-311593

Int. Cl.[5] H01L *21/331*

U.S. Cl. 437—31 **3 Claims**



1. A method for producing a semiconductor device including a bipolar transistor, comprising the steps of:

forming a first semiconductor region of a first conductivity type;

forming a second semiconductor region of the first conductivity type on the first region so that the first and second regions form a collector region, the second region having a higher resistivity than that of the first region;

forming a third semiconductor region of a second conductivity type, for defining a base region, on the second region;

forming a fourth region of a first conductivity type semiconductor, for defining an emitter region, on the third region;

forming a groove in the second region so as to expose a surface portion of the first region;

forming contact holes in the third and fourth regions, the contact holes having depths smaller than a depth of the groove;

forming collector, base and emitter electrodes in the groove and in the contact holes in the third and fourth regions, respectively, by means of a selective deposition process having a first process step in which only the groove is filled with a metal material, and a separate and subsequent step in which the contact holes are filled with a metal material.

5,364,803

METHOD OF PREVENTING FLUORINE-INDUCED GATE OXIDE DEGRADATION IN WSI_x POLYCIDE STRUCTURE

Water Lur, Taipei, and Cheng-Hau Huang, Hsin-Chu, both of , assignors to United Microelectronics Corporation, Hsinchu,

Filed Jun. 24, 1993, Ser. No. 80,304

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—40 **9 Claims**

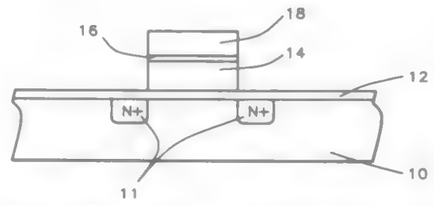
1. The method of fabricating polycide gate structures without fluorine-induced degradation of the gate silicon oxide layer comprising:

providing a gate polysilicon layer overlying said gate silicon oxide layer on the surface of a semiconductor substrate;

depositing a thin conducting diffusion barrier layer having a thickness of between about 150 to 1500 Angstroms overlying said gate polysilicon layer;

depositing a layer of tungsten silicide overlying said thin conducting diffusion barrier layer wherein a reaction gas used in said depositing of tungsten silicide contains fluorine atoms and wherein said fluorine atoms are incorporated into said layer of tungsten silicide;

patterning said gate polysilicon, thin conducting diffusion barrier, and tungsten silicide layers to form said polycide gate structures; and



annealing said substrate at a temperature of between about 800° to 1050° C. for between about 10 to 60 minutes to complete formation of said polycide gate structures wherein the number of said fluorine atoms from said tungsten silicide layer diffusing into said gate polysilicon layer are minimized by the presence of said thin conducting diffusion barrier layer and thereby said gate silicon oxide layer thickness is not increased.

5,364,804

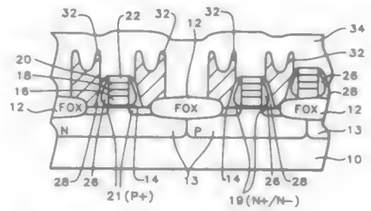
NITRIDE CAP SIDEWALL OXIDE PROTECTION FROM BOE ETCH

Yen-Shyh Ho, Fan-lu, Chayi, and Chien-Yung Chen, Hsin-chu, both of Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manufacturing Company, Hsinchu, Taiwan, Prov. of China

Filed Nov. 3, 1993, Ser. No. 145,160

Int. Cl.[5] H01L *21/335, 21/318*

U.S. Cl. 437—41 **12 Claims**



7. The method of forming a self-aligned contact to regions within a silicon substrate without lithography comprising:

providing a silicon oxide gate dielectric over the surface of said silicon substrate;

depositing a layer of polysilicon to form a gate electrode over the surface of said silicon oxide gate dielectric;

growing a first thermal polyoxide layer over the top of said polysilicon gate electrode layer;

depositing a first silicon nitride layer over said first thermal polyoxide layer;

depositing a silicon oxide layer over said first silicon nitride layer;

etching said silicon oxide, silicon nitride, polyoxide, polysilicon, and gate dielectric layers to form a pattern of polysilicon gate electrode stacks on the surface of said substrate wherein each of said layers has its sides open to the ambient;

implanting inert ions into said substrate which is not covered by said polysilicon gate electrode stack in such a manner

as to reduce the possibility of the oxidation of the surface of said substrate;

subjecting the said pattern of polysilicon gate electrode stack and said surface of said substrate to a thermal oxidizing ambient which causes oxidation of the said sides open to the ambient of said polysilicon layer to form a second polyoxide layer on the sides of said polysilicon layer;

forming a second silicon nitride layer over said pattern of stack and said surface of said substrate;

anisotropically etching said second silicon nitride layer to remove said second silicon nitride from the top of said stack and from over said surface of said substrate while leaving said second silicon nitride layer remaining upon said sides of said stack to form a self-aligned opening to regions within said silicon substrate; and

forming said self-aligning contact to said regions through said opening.

5,364,805

METHOD OF MANUFACTURING AN EEPROM HAVING AN ERASING GATE ELECTRODE

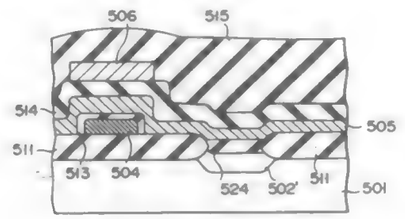
Tadayuki Taura, Kawasaki; Masamichi Asano, Tokyo; Kazunori Kanebako, and Hiroshi Iwahashi, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 461,537, Jan. 5, 1990, abandoned. This application Jul. 8, 1991, Ser. No. 726,881

Claims priority, application Japan, Jan. 13, 1989, 1-7433

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—43 **4 Claims**



1. A method for manufacturing a non-volatile semiconductor memory device, the method comprising the steps of:

forming a field insulating film to define element regions on a major surface of a semiconductor material of a first conductivity type;

forming an oxidation-resistant film on the resulting structure;

forming openings through said oxidation-resistant film to expose portions of said major surface;

implanting impurities of a second conductivity type into said semiconductor material through said openings to form impurity doped regions;

performing thermal oxidation, using said oxidation-resistant film as a mask, to form a first insulating film on said exposed portions of said major surface of said semiconductor material, said first insulating film having a thickness less than a thickness of said field insulating film;

removing said oxidation-resistant film;

forming a gate insulating film on channel regions of said element regions;

forming a first conductive layer on said gate insulating film;

patterning said first conductive layer to form floating gate electrodes which are electrically isolated from said channels regions by said gate insulating film;

forming a second insulating film on the resulting structure;

forming a second conductive layer on said second insulating film;

patterning said second conductive layer to form elongated parallel erasing gate electrodes which are insulated from said floating gates by said second insulating film, and which cross over said impurity doped regions with said first insulating film disposed therebetween;

forming a third insulating film on the resulting structure;

forming a third conductive layer on said third insulating film; and

patterning said third conductive layer for form control gate electrodes, and wherein source and drain regions are formed by implanting impurities of the second conductivity type into said element regions such that said impurity doped regions contact either said source regions or said drain regions to form respective elongated parallel impurity regions in said major surface.

5,364,806

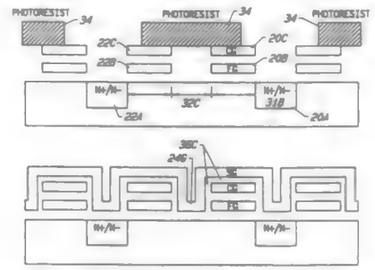
METHOD OF MAKING A SELF-ALIGNED DUAL-BIT SPLIT GATE (DSG) FLASH EEPROM CELL

Yueh Y. Ma, Los Altos, and Kuo-Tung Chang, San Jose, both of Calif., assignors to Hyundai Electronics Industries Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 751,499, Aug. 29, 1991, Pat. No. 5,278,439. This application Oct. 12, 1993, Ser. No. 134,779

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—43 **3 Claims**



1. A method of fabricating a flash EEPROM cell structure comprising the steps of

a) providing a semiconductor substrate having a surface region of a first conductivity type,

b) forming a first dielectric layer on said surface region,

c) forming a first doped polysilicon layer on said first dielectric layer,

d) selectively etching said first doped polysilicon layer,

e) forming a second dielectric layer on said first doped polysilicon layer,

f) forming a second doped polysilicon layer on said second dielectric layer,

g) selectively etching said second doped polysilicon layer, said second dielectric layer, said first doped polysilicon layer, and said first dielectric layer to form a first and a second stacked control gate and floating gate from said second doped polysilicon layer and said first doped polysilicon layer, said first or second stacked control gate and floating gate being spaced apart,

h) selectively implanting dopant of a second conductivity type opposite from said first conductivity type into said surface region using photoresist and said first and second stacked control gate and floating gate as a mask, said dopant forming first and second drains for first and second floating gate transistors, each of said drains being self-aligned with one of said stacked control gate and floating gate,

i) forming a third dielectric layer over said control gates and on said substrate between said first and second stacked control gate and floating gate,

j) forming a third doped polysilicon layer over said third dielectric layer, and

k) selectively etching said third doped polysilicon layer to form a word line over said first and second stacked con-

trol gate and floating gate and between said first and second stacked control gate and floating gate.

5,364,807

METHOD FOR FABRICATING LDD TRANSITOR UTILIZING HALO IMPLANT

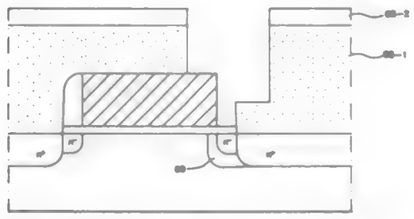
Hyun S. Hwang, Seoul, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Oct. 12, 1993, Ser. No. 134,376

Claims priority, application Rep. of Korea, May 14, 1993, 8297/1993

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—44 3 Claims



1. A method for fabricating a transistor comprising the steps of:

forming a gate insulating film and a gate on a low concentration semiconductor substrate of a first conductivity type;

implanting impurity ions of a second conductivity type in said semiconductor substrate under a condition that said gate is used as a mask so as to symmetrically form low concentration source and drain regions of said second conductivity type in the semiconductor substrate;

forming an insulating film over the entire exposed surface of the resulting structure, and subjecting said insulating to an anisotropic etching to form spacers at respective side walls of the gate;

implanting impurity ions of said second conductivity type in the semiconductor substrate under a condition that said spacers and gate are used as a mask so as to form high concentration source and drain regions of the second conductivity type respectively adjacent to said low concentration source and drain regions;

coating a photoresist film over the entire exposed surface of the resulting structure, and subjecting said photoresist film to a patterning to expose one of the spacers disposed toward the low concentration source region;

removing said exposed spacer; and

implanting impurity ions of said first conductivity type in the semiconductor substrate through an area defined by removal of the spacer so as to form a p type halo region in a region occupied by the low concentration source region.

5,364,808

METHOD OF MAKING A BURIED BIT LINE DRAM CELL

Ming-Tzong Yang; Chen-Chiu Hsue, and Gary Hong, all of Hsin-chu, Taiwan, Prov. of China, assignors to United Micro Electronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Feb. 7, 1994, Ser. No. 192,364

Int. Cl.[5] H01L *21/266*

U.S. Cl. 437—47 10 Claims

1. A method of manufacture of a semiconductor device, comprising the following steps:

a) implanting ions of dopant into a doped semiconductor substrate of said device, said dopant being of sufficient concentration to form a buried conductor region therein,

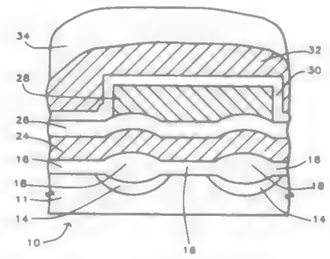
b) forming a dielectric layer on the surface of said doped substrate whereby a thicker dielectric is formed over said implanted ions,

c) forming a first polysilicon layer on said silicon dioxide layer,

d) patterning said first polysilicon layer by forming a mask with openings and etching said polysilicon through said openings in said mask to form conductor lines,

e) forming a second dielectric layer on the surface of said first polysilicon layer on said device,

f) forming a second polysilicon layer on said second dielectric layer,



g) forming a photolithographic mask and etching portions of said second polysilicon layer to form a first capacitor plate therefrom,

h) forming a third dielectric layer on the surface of said second polysilicon layer on said device,

i) forming a third polysilicon layer on said third dielectric layer, and

j) patterning said third polysilicon layer by forming a mask and etching said polysilicon through said mask to form a top capacitor plate.

5,364,809

METHOD OF FABRICATING A CAPACITOR FOR A DYNAMIC RANDOM ACCESS MEMORY CELL

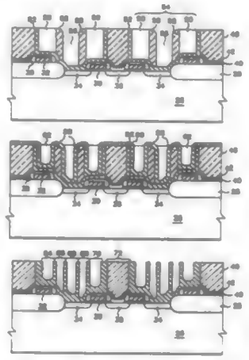
Oh-Hyun Kwon; Taek-Yong Jang; Joong-Hyun Shin, and Kyoung-Seok Oh, all of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 1, 1991, Ser. No. 723,403

Claims priority, application Rep. of Korea, May 23, 1991, 1991-8366

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 38 Claims



1. A method of fabricating a capacitor for a dynamic random access memory cell comprising a transistor and said capacitor, said method comprising the steps of:

consecutively forming a first insulating layer, a second insulating layer, and a first photoresist over a semiconductor substrate having said transistor formed on said semiconductor substrate, and then selectively removing said first photoresist except for portions covering a storage electrode region;

filling a third insulating layer between the remaining portions of said first photoresist and then selectively removing said remaining portions of said first photoresist to form a first concave area circumscribed by said third insulating layer;

after selectively removing said remaining portions of said first photoresist, etching exposed portions of said first insulating layer and said second insulating layer to expose a surface of a diffusion region, and then forming a first conduction layer over said substrate;

after forming said first conduction layer, forming a second photoresist on said first conduction layer and then performing an etch-back process to only partially expose said first conduction layer so that said first conduction layer disposed on top of said third insulating layer is exposed;

removing exposed portions of said first conduction layer to form a storage electrode;

removing exposed portions of said second photoresist to form an opening having first and second sidewalls, then forming a fourth insulating layer over said substrate and performing said etch-back process on said fourth insulating layer to form an insulating spacer layer on inner portions of said first and second sidewalls;

after forming said insulating spacer layer, removing remaining portions of said second photoresist, and then forming a second conduction layer over said substrate; and

after forming said second conduction layer, forming a third photoresist on said second conduction layer and then performing said etch-back process on said third photoresist to expose said second conduction layer and said insulating spacer layer.

5,364,810

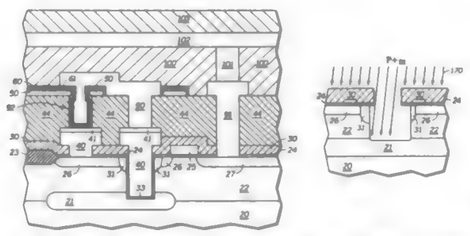
METHODS OF FORMING A VERTICAL FIELD-EFFECT TRANSISTOR AND A SEMICONDUCTOR MEMORY CELL

Yasunobu Kosa, and Howard C. Kirsch, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 28, 1992, Ser. No. 921,039

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 20 Claims



6. A method of forming a vertical field-effect transistor comprising the steps of:

forming a first doped region within a semiconductor substrate, wherein:

the first doped region has a first conductivity type; and

the substrate has a second conductivity type that is opposite the first conductivity type;

forming a silicon layer over the first doped region, wherein:

the silicon layer has a first surface and a second surface that lie on opposite sides of the silicon layer;

the first doped region is adjacent the first surface; and

the silicon layer has the second conductivity type;

forming a second doped region within the silicon layer adjacent the second surface, wherein the second doped region has the first conductivity type;

forming a trench having a bottom, a top, and a wall such that the trench extends through the second doped region and contacts the first doped region;

forming a third doped region from a portion of the silicon layer adjacent the first doped region after forming the trench, wherein:

the third doped region has the first conductivity type;

a graded diffusion junction is formed at the wall and includes the first and third doped regions; and

the graded diffusion junction lies along the wall of the trench;

forming a gate dielectric layer adjacent the wall and bottom of the trench; and

forming a conductive member adjacent the gate dielectric layer that lies along the wall of the trench to form the vertical field-effect transistor having:

a graded diffusion junction lying at the wall adjacent the bottom of the trench; and

a channel region formed along the wall of the trench and adjacent to the graded diffusion junction, wherein the channel region has the second conductivity type.

5,364,811

METHOD OF MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE WITH MULTIPLE DEVICE FORMING REGIONS

Natsuo Ajika; Hideaki Arima; Kaoru Motonami; Atsushi Hachisuka, and Tomonori Okudaira, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

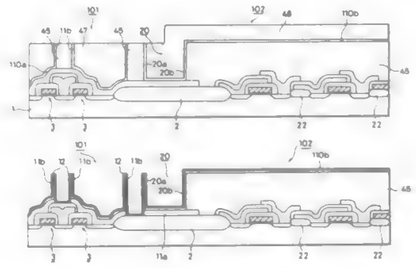
Division of Ser. No. 678,872, Apr. 4, 1991, Pat. No. 5,218,219.

This application Feb. 16, 1993, Ser. No. 17,901

Claims priority, application Japan, Apr. 27, 1990, 2-113633

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 3 Claims



1. A method (i) of forming a semiconductor memory device comprising a first conductive layer formed on a first device forming region of a semiconductor substrate with an insulating film therebetween, and a second conductive layer formed on a second device forming region adjacent to said first device forming region with an insulating film therebetween, wherein the upper surface thereof is substantially equal distance from the substrate surface as the upper surface of the upper portion of said first conductive layer, and (ii) for removing the upper portion of said first conductive layer in a state where said second conductive layer remains, after forming an etch back film on said first and second conductive layers, said method comprising the steps of:

forming said first conductive layer on said first device forming region with an insulating film therebetween;

forming said second conductive layer on said second device forming region, wherein the upper surface of the second conductive layer is substantially equal distance from the substrate surface as the upper surface of the upper portion of said first conductive layer;

forming an opposing pair of peripheral walls with a distance therebetween along the boundary region of said first and second device forming regions, wherein each said wall extends vertically upwards from the substrate surface and has an upper surface substantially equal distance from the

substrate surface as the upper surface of the upper portion of said first conductive layer;

forming an etch back film all over said first and second device forming regions, having thick portions and thin portions of film thickness, and a stepped portion in the region between said pair of peripheral walls, so that the upper surface of the film formed on said second device forming region is further from the substrate surface than the upper surface of the film formed on said first device forming region; and

removing the upper portion of said first conductive layer in a state where said second conductive layer remains.

5,364,812

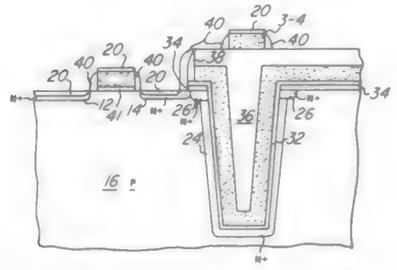
HIGH DENSITY DYNAMIC RAM CELL

Masaaki Yashiro, Piano, Tex.; Shigeki Morinaga, Avezzanoa, Italy, and Clarence W. Teng, Plano, Tex., assignors to Texas Instruments Inc., Dallas, Tex.

Continuation of Ser. No. 765,419, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 550,610, Jul. 10, 1990, abandoned, which is a division of Ser. No. 366,801, Jun. 14, 1989, Pat. No. 5,057,887. This application Jul. 1, 1993, Ser. No. 86,524

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **10 Claims**



1. A method for forming a device, comprising the steps of:

forming a first insulator on a surface of a substrate;

then forming a trench through the first insulator and into the substrate;

doping walls of said trench to form an information storage region;

forming a first insulating layer on the walls of said trench and above the first insulator on the surface of said substrate in an area of said substrate adjacent said trench;

forming a first conductive layer on said first insulating layer;

then depositing a second insulator into a remaining trench opening and flattening a top surface of the second insulator;

next forming an opening in said second insulator, said first conductive layer and said first insulating layer, said opening being adjacent to said trench;

forming a sidewall insulator on exposed sides of the opening through said second insulator, said first conductive layer, and said first insulating layer;

removing from said opening an exposed portion of said first insulator;

thereafter forming a second insulating layer on said substrate as a gate insulator in said opening;

next forming and patterning a second conductive layer to provide a gate electrode covering a portion of said second insulating layer in said opening;

subsequently introducing dopant atoms into the portion of said substrate under said opening and not covered by said gate to form a drain region; and

leaving a portion of the first insulator on said surface of said substrate and interposed between said information storage region and said first conductive layer.

5,364,813

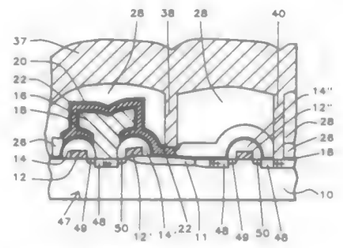
STACKED DRAM POLY PLATE CAPACITOR

Chao-Ming Koh, Hsinchu, , assignor to Industrial Technology Research Institute, Hsinchu,

Filed Sep. 1, 1993, Ser. No. 114,150

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **13 Claims**



1. A method for fabricating a device comprising an integrated circuit capacitor on a semiconductor substrate comprising:

forming a first insulating layer over said substrate;

forming a sacrificial layer on said first insulating layer and forming a pattern having an opening therein;

depositing a first polysilicon conducting structure into said opening in said sacrificial layer, and then removing said sacrificial layer;

forming a second insulating layer over said polysilicon conducting structure;

forming a second polysilicon conducting structure on said second insulating layer;

forming a third insulating layer on said conducting structure;

forming a mask over said first polysilicon conducting structure and a portion of said second polysilicon conducting structure;

oxidizing mask free portions said second polysilicon conducting structure using said mask to form a silicon oxide layer removing said mask;

forming a fourth insulating layer over said silicon oxide layer and said first and second conductive structures;

forming openings through said forth insulating layer to said second polysilicon conducting structure; and

forming contacts to said second polysilicon conducting structure through said openings.

5,364,814

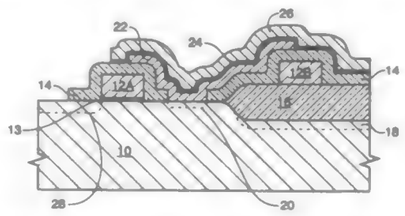
GERMANIUM IMPLANTED STACKED CAPACITOR CELL

Mark A. McQueen, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 911,411, Jul. 9, 1992, abandoned. This application Oct. 6, 1993, Ser. No. 132,682

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **22 Claims**



1. A method of fabricating a stacked capacitor memory cell comprising the steps of:

(a) providing a P-type substrate;

(b) forming a word line that is insulated from the substrate by a thin oxide layer;

(c) forming a thick field oxide layer spaced laterally from the word line;

(d) forming a conformal oxide layer over the P-type substrate, word line and thick field oxide layer;

(e) doping the P-type substrate between the word line and the field oxide through the conformal oxide layer with an N-type dopant to form an N-type diffused region in the P-type substrate;

(f) etching a buried contact window in the conformal oxide layer to expose the N-type diffused region between the word line and the thick field oxide layer;

(g) doping the exposed N-type diffused region with germanium through the buried contact window and to a location bordering the outside edges of the N-type diffused region;

(h) forming a first plate of a capacitor, made of heavily phosphorus doped polysilicon, above the buried contact window in contact with the N-type diffused region; and

(i) diffusing phosphorus, from the more heavily phosphorus doped polysilicon that is in contact with the N-type diffused region, to the lighter phosphorus concentration located in the substrate, and having the diffused phosphorus out-diffusion no further than the outer boundary of the N-type diffused region, wherein the germanium atoms restrict the distance the phosphorus can travel into the substrate.

5,364,815

CRYSTAL ARTICLES AND METHOD FOR FORMING THE SAME

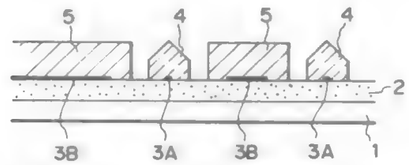
Yoshiyuki Osada, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 735,762, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 414,725, Sep. 28, 1989, abandoned, which is a continuation of Ser. No. 173,653, Mar. 25, 1988, abandoned. This application Feb. 17, 1993, Ser. No. 22,611

Claims priority, application Japan, Mar. 27, 1987, 62-73516

Int. Cl.[5] C30B *25/12*

U.S. Cl. 437—99 **3 Claims**



1. A method for forming a crystal article on a substrate which comprises:

(a) forming on said substrate a free surface having a nonnucleation surface;

(b) forming in said nonnucleation surface at least one amorphous single nucleation surface for forming a monocrystal by ion implanting a material in said nonnucleation surface having a nucleation density substantially larger than the material constituting said nonnucleation surface; and at least one amorphous multiple nucleation surface for forming a polycrystal by implanting a material in said nonnucleation surface having a nucleation density substantially larger than the material constituting said nonnucleation surface; wherein each said amorphous single nucleation surface has an area of sufficient size and a nucleation density sufficiently larger than the nucleation density of said nonnucleation surface to selectively form a single nucleus for growing said monocrystal and each said amorphous multiple nucleation surface has an area of sufficient size and a nucleation density sufficiently larger than the nucleation density of said nonnucleation surface to selectively form plural nuclei thereon for growing said polycrystal;

(c) simultaneously vapor depositing each said single nucleus for forming each said monocrystal on each said amorphous single nucleation surface and each said plural nuclei for forming each said polycrystal on each said multiple nucleation surface; and

(d) simultaneously growing by vapor deposition each said monocrystal from each said vapor deposited single nucleus and each said polycrystal from each said vapor deposited plural nuclei, wherein each said monocrystal is overgrown on said nonnucleation surface.

5,364,816

FABRICATION METHOD FOR III-V HETEROSTRUCTURE FIELD-EFFECT TRANSISTORS

J. Brad Boos, Springfield, and Walter Kruppa, Fairfax, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1993, Ser. No. 10,947

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—133 **11 Claims**

1. A method of fabricating a heterojunction semiconductor device which includes a source, drain, gate and a channel, said method comprising the steps of:

epitaxially growing a sample with a heterojunction, said heterojunction having a first and a second layer of semiconductor material, said first layer being of a smaller bandgap material that of said second layer;

forming a third layer of semiconductor material on said second layer;

forming source and drain metalizations on top of said third layer;

growing a first insulating layer on of said metalizations;

applying a photoresist layer atop said first insulating layer and delineating a gate opening in said photoresist above said first insulating layer;

using said opening as a mask for forming a corresponding gate recess in said first insulating layer;

forming a gate recess in said third layer;

a first widening step, said first widening step being effective to cause said gate opening to be preferentially widened with respect to said gate recess in said third layer in a direction generally parallel to said third layer to increase the width of said gate opening in said first insulating layer;

a second step for widening, said second stop for widening being effective to form a gate recess of a first width in said second layer, and a gate recess of a second width in said third layer, said second width being larger than said first width;

providing gate metalization, said gate metalization comprising a gate stripe and a gate bonding pad, said stripe being disposed in said gate recess in said second layer;

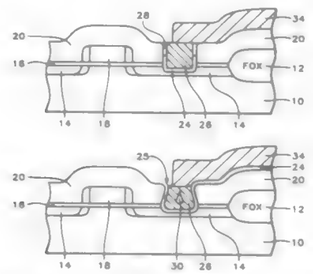
growing a second insulating layer on said source, drain and gate metalizations;

applying a photoresist layer atop said second insulating layer and delineating a mesa photoresist opening above said second insulating layer; and

forming a mesa through each of said layers effective to

dispose an air-gap in said layers between said stripe and said pad.

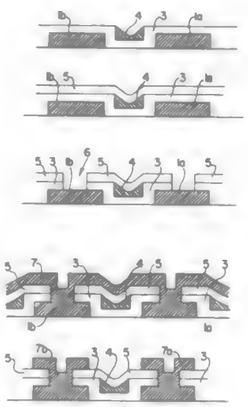
5,364,817
TUNGSTEN-PLUG PROCESS
Water Lur, Taipei; Cheng-Han Huang, Hsin-chu; Shih-Chanh Chang, Taichung, and Liang-Chih Lin, Hsin-chu, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China
Filed May 5, 1994, Ser. No. 238,664
Int. Cl.[5] H01L *21/283*
U.S. Cl. 437—192 20 Claims



1. A method of forming tungsten plug metallization without dog-bone and without junction damage in the fabrication of integrated circuits comprising:
providing semiconductor structures in and on a semiconductor substrate;
providing an insulating layer covering said semiconductor structures wherein a contact hole has been opened through said insulating layer to said semiconductor substrate;
depositing a glue layer conformally over the surface of said insulating layer and within said contact opening;
forming a tungsten plug within said contact opening;
removing said glue layer except for portions of said glue layer underneath said tungsten plug and portions of said glue layer on the lower sides of said tungsten plug wherein ditches are left on the upper sides of said tungsten plug where said glue layer has been removed;
filling said ditches around said tungsten plug with a dielectric material;
depositing a second metallization over said insulating layer and said tungsten plug;
patterning said second metallization wherein said patterned second metallization does not extend over one side portion of said tungsten plug; that is, there is no dog-bone formation; and wherein there is no junction damage through said side portion of said tungsten plug not covered by said second metallization because said dielectric material filling said ditches protects said glue layer from being etched away completing fabrication of said integrated circuit.

12. A method of forming tungsten plug metallization without dog-bone and without junction damage in the fabrication of integrated circuits comprising:
providing semiconductor structures in and on a semiconductor substrate;
providing an insulating layer covering said semiconductor structures wherein a contact hole has been opened through said insulating layer to said semiconductor substrate;
reflowing said insulating layer wherein an overhang forms on either side of said contact hole;
depositing a glue layer conformally over the surface of said insulating layer and within said contact opening;
forming a tungsten plug within said contact opening wherein a keyhole void is formed within said tungsten plug;
depositing a second metallization over said insulating layer and said tungsten plug;
patterning said second metallization wherein said patterned second metallization does not extend over one side portion of said tungsten plug; that is, there is no dog-bone formation; and wherein there is no junction damage through said side portion of said tungsten plug not covered by said second metallization because said overhang of said insulating material protects said glue layer from being etched away; completing fabrication of said integrated circuit.

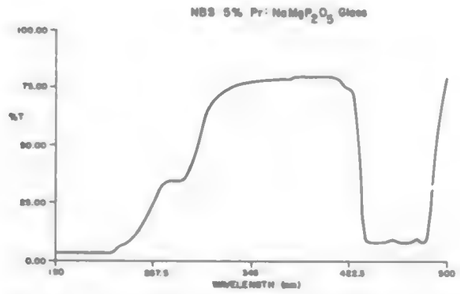
5,364,818
SOG WITH MOISTURE RESISTANT PROTECTIVE CAPPING LAYER
Luc Ouellet, Granby, Canada, assignor to Mitel Corporation, Kanata, Canada
PCT No. PCT/CA91/00177, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO91/19317, PCT Pub. Date Dec. 12, 1991
PCT Filed May 28, 1991, Ser. No. 962,214
Claims priority, application Canada, May 29, 1990, 2017720
Int. Cl.[5] H01L *21/90*
U.S. Cl. 437—195 11 Claims



1. A method of planarizing a semiconductor wafer having interconnect tracks metal of formed thereon, comprising applying a layer of inorganic spin-on glass to the wafer, curing said spin-on glass at a temperature not exceeding about 450° C., then placing the wafer in a dielectric deposition chamber, subjecting the wafer to in situ disconnection and outgassing of water and reaction by-products, and then capping the wafer in a moisture-free environment with a protective dielectric layer resistant to moisture diffusion.

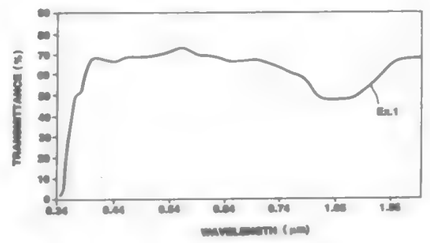
5,364,819
ULTRAVIOLET FARADAY ROTATOR GLASS
James L. Dexter, Alexandria, Va.; David G. Cooper, Riva, Md.; Douglas H. Blackburn, Damascus, Md.; David C. Cranmer, Olney, Md., and Dale A. Kauffman, Frederick, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 28, 1993, Ser. No. 53,287
Int. Cl.[5] C03C *3/32*
U.S. Cl. 501—45 19 Claims

1. A Faraday rotator glass comprising:
(a) at least one member selected from the group consisting of fluoride glass, and fluorophosphate glass, wherein said glass is doped with
(b) at least one lanthanide constituent selected from the group consisting of Ce, Pr and Tm in a concentration sufficient to provide a Verdet constant of at least 2870 degree/Tesla-meter and optical transmission of at least 50 percent in a 25 mm thick polished glass sample at least at one wavelength in the 200 to 400 nm wavelength region;
(c) at least one monovalent non-lanthanide cation selected from the group consisting of Na, Li and K in a concentration sufficient to provide a Verdet constant of at least 2870 degree/Tesla-meter and optical transmission of at least 50 percent in a 25 mm thick polished glass sample at least at one wavelength in the 200 to 400 nm wavelength region;



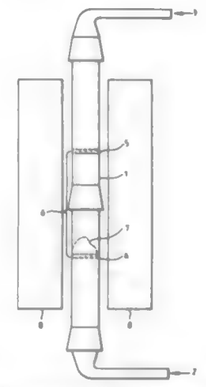
(d) at least one divalent or trivalent non-lanthanide cation selected from the group consisting of Mg, Be, Ca and Al in a concentration sufficient to provide a Verdet constant of at least 2870 degree/Tesla-meter and optical transmission of at least 50 percent in a 25 mm thick polished glass sample at least at one wavelength in the 200 to 400 nm wavelength region; and
(e) 10 to 90 mole percent oxygen.

5,364,820
NEUTRAL GRAY-COLORED INFRARED AND ULTRAVIOLET RADIATION ABSORBING GLASS
Shigeki Morimoto, Ichishi, and Tadashi Noguchi, Matsusaka, both of Japan, assignors to Central Glass Company, Ube, Japan
Filed Mar. 17, 1993, Ser. No. 32,597
Claims priority, application Japan, Mar. 19, 1992, 4-063749; Jul. 14, 1992, 4-187015
Int. Cl.[5] C03C *3/078, 3/087, 4/02, 4/08*
U.S. Cl. 501—71 10 Claims



1. A neutral gray-colored infrared and ultraviolet radiation absorbing glass consisting essentially of, as fundamental components, on a weight basis, 68–74% of SiO_2, 0.1–3.0% of Al_2O_3, 8–11% of CaO, 2–4.5% of MgO, 11.5–16% of Na_2O, 0.5–3.0% of K_2O and 0.1–0.4% of SO_3, and as coloring components, on a weight basis, 0.33%–0.45% of total iron expressed as Fe_2O_3, 0.3–0.6% of CeO_2, 0.2–0.4% of TiO_2, 15–30 ppm of CoO and 3–10 ppm of Se, with provisos that the weight ratio of said ferrous iron to said ferric iron, Fe^{2+}/Fe^{3+}, is in the range from 0.20 to 0.30, that the total of SiO_2 and Al_2O_3 is from 68–74%, that the total of CaO and MgO is from 11–15% and that the total of Na_2O and K_2O is from 12–17%.

5,364,821
PRODUCING ACTIVE CARBON USING MICROWAVE DISCHARGE
Kenneth M. Holland, Ashwood, Wynwoods, Campbell Close Rise Park, Romford, Essex, United Kingdom
PCT No. PCT/GB90/01606, § 371 Date Jun. 18, 1992, § 102(e) Date Jun. 18, 1992, PCT Pub. No. WO91/05735, PCT Pub. Date May 2, 1991
PCT Filed Oct. 17, 1990, Ser. No. 861,886
Claims priority, application United Kingdom, Oct. 17, 1989, 8923361
Int. Cl.[5] B01J *37/34, 20/20;* C01B *31/10*
U.S. Cl. 502—5 9 Claims

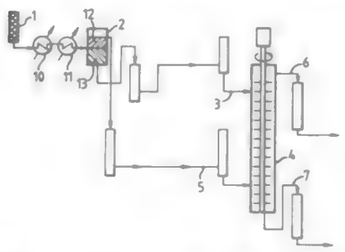


1. A method of production of active carbon, consisting essentially of:
(i) subjecting a carbonaceous material to a first microwave discharge to pyrolyze said material, in an atmosphere wherein flame generation is substantially prevented;
(ii) selectively acid washing said pyrolyzed material to substantially remove sulfur or metal values therefrom;
(iii) subjecting said acid-washed pyrolyzed material to a second microwave discharge to raise the temperature of said acid-washed pyrolyzed material to an elevated temperature sufficient for subsequent activation of said acid-washed pyrolyzed material; and
(iv) treating said acid-washed pyrolyzed material with superheated steam and/or carbon dioxide at said elevated temperature to cause activation of said pyrolyzed material.

5,364,822
PROCESS FOR THE RECOVERY OF GROUP VIII NOBLE METALS
John L. Carey, Humberside, England, assignor to BP Chemicals Limited, London, United Kingdom
Filed Aug. 2, 1993, Ser. No. 101,477
Claims priority, application United Kingdom, Aug. 28, 1992, 9218346.6
Int. Cl.[5] B01J *31/40, 38/68;* C22B *11/04;* C07C *53/12*
U.S. Cl. 502—24 11 Claims

1. A process for the recovery of Group VIII noble metal catalyst from a process stream comprising Group VIII noble metal carbonylation catalyst and tar, said tar having been generated during a carbonylation process for the production of carboxylic acid anhydride in the presence of a Group VIII noble metal carbonylation catalyst, a halide promoter and an iodide salt co-promoter, said recovery process comprising the steps of:
(a) mixing said process stream with alkyl halide to produce a composition comprising alkyl halide, tar and Group VIII noble metal catalyst;
(b) contacting the composition from step (a) with an extract-

ing solution comprising (i) water, (ii) carboxylic acid corresponding to said carboxylic acid anhydride product of said carbonylation process, (iii) iodide salt co-promoter derived from said carbonylation process and (iv) alkyl



halide, to produce an aqueous phase comprising Group VIII noble metal catalyst and an alkyl halide phase comprising tar; and

(c) separating said aqueous and alkyl halide phases.

5,364,823

METHOD FOR MANUFACTURING INORGANIC POROUS LAYERED MEMBER

Koichi Takahama; Shozo Hirao; Masaru Yokoyama; Takashi Kishimoto, and Hiroshi Yokokawa, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

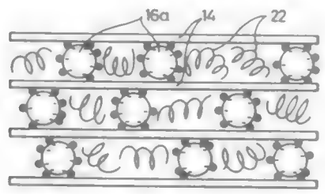
PCT No. PCT/JP87/00317, § 371 Date Jul. 17, 1987, § 102(e) Date Jul. 17, 1987, PCT Pub. No. WO88/02356, PCT Pub. Date Jul. 4, 1988

PCT Filed May 19, 1987, Ser. No. 93,496

Claims priority, application Japan, Sep. 25, 1986, 61-227221

Int. Cl.[5] B01J *21/16, 20/12*

U.S. Cl. 502—62 34 Claims



1. A method for manufacturing an inorganic porous layered member wherein a swelling inorganic layered compound is swelled, and a pillar is intercalated between layers of the inorganic layered compound and dried to form fine gaps between the layers, and further wherein at least one inorganic pillar and at least one organic pillar are intercalated, said at least one inorganic pillar being obtained by carrying out a surface modification with at least one of cationic inorganic compound and metallic alcoholate in which said surface is positively charged or has its negative charge cancelled prior to said at least one inorganic pillar and said at least one organic pillar being intercalated.

5,364,824

CATALYSIS FOR THE PRODUCTION OF MALEIC ANHYDRIDE CONTAINING VANADIUM-PHOSPHORUS OXIDE WITH SELECTED PROMOTER ELEMENTS

William J. Andrews, Hazelwood; Jerry R. Ebner, St. Peters, and Timothy R. Felthouse, St. Louis, all of Mo., assignors to Huntsman Specialty Chemicals Corporation, Salt Lake City, Utah

Filed Dec. 8, 1992, Ser. No. 986,652

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] B01J *27/198, 27/18;* C07D *307/60*

U.S. Cl. 502—209 21 Claims

1. An active, phosphorus vanadium oxide catalyst for the conversion to maleic anhydride of a non-aromatic hydrocarbon having at least four carbon atoms in a straight chain, said catalyst comprising a shaped body having a volume of at least about 0.02 cc, and having been equilibrated to provide a developed surface area of at least about 28 m^2/g, said catalyst containing a promoter selected from the group consisting of bismuth, antimony, germanium, titanium, zirconium, cerium, lanthanum, uranium, nickel, zinc, tin, silicon, and mixtures thereof, in such a proportion as to enable the catalyst to have said developed surface area and to exhibit a weight/area productivity of at least about 3.5 mg maleic anhydride/m^2-hr and/or a weight/weight productivity of at least about 100 g maleic anhydride/kg.cat.-hr. when contacted with a gas containing 2.4% by volume n-butane in air, at a gas flow volume to catalyst weight ratio of 2180 cc/g-min. under a pressure of 1.055×10^2-kPa-G, and at a temperature sufficient to maintain a hydrocarbon conversion of 85 mole percent.

5,364,825

MULTIMETAL OXIDE COMPOSITIONS AND PROCESS OF PREPARING SAME

Hans-Peter Neumann, Mannheim; Hans Martan, Frankenthal; Hermann Petersen, Gruenstadt, and Walter Doerflinger, Oestringen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 21, 1993, Ser. No. 64,428

Claims priority, application Germany, Jun. 25, 1992, 4220859

Int. Cl.[5] B01J *23/31, 23/28, 23/30, 37/04, 21/02, 21/08, 27/18, 27/192*

U.S. Cl. 502—311 13 Claims

1. A composition of the formula I

$$(X^1_aX^2_bO_x)_p(X^3_cX^4_dX^5_eX^6_fX^7_gX^2_hO_y)_q \quad (I)$$

where

X^1 is bismuth, tellurium, antimony, tin and/or copper;

X^2 is molybdenum and/or tungsten;

X^3 is an alkali metal, thallium and/or samarium;

X^4 is an alkaline earth metal, nickel, cobalt, copper, manganese, zinc, tin, cadmium, and/or mercury;

X^5 is iron, chromium, cerium and/or vanadium;

X^6 is phosphorous, arsenic, boron and/or antimony;

X^7 is a rare-earth metal, titanium, zirconium, niobium, tantalum, rhenium, ruthenium, rhodium, silver, gold, aluminum, gallium, indium, silicon, germanium, lead, thorium and/or uranium;

a is from 0.01 to 8;

b is from 0.1 to 30;

c is from 0 to 4;

d is from 0 to 20;

e is from 0 to 20;

f is from 0 to 6;

g is from 0 to 15;

h is from 8 to 16;

x and y are numbers determined by the valency and frequency of the elements in formula I other than oxygen, and p and q are numbers whose ratio p/q is from 0.1 to 10, containing three-dimensional regions with a chemical formula $X^1_aX^2_bO_x$ and a local environment, wherein said regions are delimited from said local environment due to said chemical formula of said regions which is different from said local environment, wherein at least 50% of said regions have a diameter of from 1 to 25 μm.

5,364,826

PROCESS FOR PREPARING ETHYLENE OXIDE CATALYSTS

Richard A. Kemp, Stafford, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 13, 1993, Ser. No. 121,000

Int. Cl.[5] B01J *23/50, 23/78*

U.S. Cl. 502—315 84 Claims

1. A process for preparing an ethylene oxide catalyst for the vapor phase production of ethylene oxide from ethylene and oxygen which process comprises depositing a catalytically effective amount of silver, a promoting amount of alkali metal and a promoting amount of rhenium on a support having a surface area in the range of from about 0.05 m^2/g to about 10 m^2/g, at least partially drying the support, depositing a promoting amount of nickel on the support, and thereafter drying the support.

5,364,827

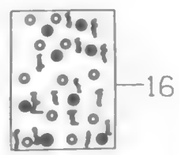
COMPOSITION COMPRISING MAGNETICALLY ACTIVE MOIETIES FOR MAGNETIC BENEFICIATION OF PARTICULATES IN FLUID BED HYDROCARBON PROCESSING

William P. Hettinger, Russell, Ky., and Roger M. Benslay, Fallston, Md., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 771,678, Oct. 4, 1991, Pat. No. 5,230,869, which is a division of Ser. No. 479,003, Feb. 9, 1990, Pat. No. 5,106,486. This application Jun. 8, 1993, Ser. No. 73,834

Int. Cl.[5] B01J *21/16, 23/34, 23/74, 38/72*

U.S. Cl. 502—338 5 Claims



1. A composition of matter comprising catalyst particles comprising on their surface magnetically active materials in 0.5 to 2 times the weight of the nickel equivalents of metal contaminants deposited on said catalyst from metal-containing hydrocarbon feeds.

5,364,828

SPHEROIDAL AGGREGATE OF PLATY SYNTHETIC HYDROTALCITE

Sherman D. Cox, and Kenneth J. Wise, both of New York, N.Y., assignors to Minerals Technologies, New York, N.Y.

Filed Oct. 21, 1992, Ser. No. 964,338

Int. Cl.[5] B01J *20/04, 21/00*

U.S. Cl. 502—341 34 Claims

1. An aggregated synthetic hydrotalcite having a substantially spheroidal shape and an average spherical diameter of up to about 60 μm, composed of individual platy particles.

12. The composition according to claim 1 having the formula I:

$$Mg_wAl_2(OH)_x.yCO_3.zH_2O$$

wherein

w is from about 5 to about 8;

x is from about 14 to about 20;

y is from about 0.5 to about 2; and

z is from about 2 to about 6.

5,364,829

REWRITABLE RECORDING MEDIUM AND A METHOD OF RECORDING IN THE SAME

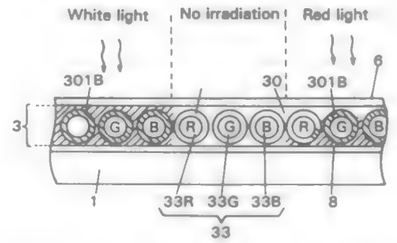
Yoshio Kishimoto, and Masaaki Suzuki, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1992, Ser. No. 936,413

Claims priority, application Japan, Aug. 30, 1991, 3-219536; Aug. 30, 1991, 3-219537

Int. Cl.[5] B41M *5/34, 5/40*

U.S. Cl. 503—201 24 Claims



1. A rewritable recording medium comprising an optical reflection layer and an optically selective absorption layer sequentially stacked on a substrate,

wherein the optically selective absorption layer includes a plurality of colored segments and a reversible thermosensitive recording matrix in contact with the colored segments, the reversible thermosensitive recording matrix being formed so as to cover the colored segments at least on the medium surface side, and changing in light transmittance in a reversible manner by application of heat

wherein the reversible thermosensitive recording matrix is made of a composition comprising organic crystalline microparticles and a transparent matrix polymer,

the colored segments are a plurality of colored particles dispersed in the recording matrix made of the composition, and

the organic crystalline microparticles change in crystalline state depending upon the heating and cooling process of the recording matrix, which changes the light transmittance of the recording matrix.

5,364,830

RECORD MATERIAL USING VINYL CARBINOL COLOR FORMERS

Ivan Shelham, Marlow, and Margaret P. Templey, Thame, both of United Kingdom, assignors to The Wiggins Teape Group Limited, London, England

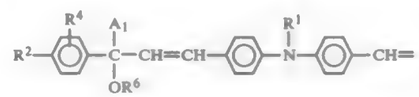
Filed Mar. 19, 1993, Ser. No. 34,461

Claims priority, application United Kingdom, Mar. 20, 1992, 9206132

Int. Cl.[5] B41M *5/20;* C07D *295/00, 401/00;* C07C *211/00*

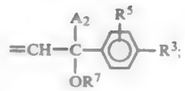
U.S. Cl. 503—224 10 Claims

1. A compound of the structure:



(IIIa)

-continued



or a structural isomer thereof wherein one or both ethylenic links are adjacent to a terminal rather than central aryl group, or corresponding chalcones thereof; where in formula (IIIa) A_1 and A_2, may be the same or different, and each represents a hydrogen or aryl group, R^1 represents hydrogen or an alkyl or aralkyl group, R^2 and R^3, may be the same or different, and each represent hydrogen, a halogen, or an alkyl, alkoxy, aralkoxy, primary amino, secondary amino or N-heterocyclic group, R^4 and R^5, may be the same or different, and each represents hydrogen, a halogen or an alkyl, alkoxy or aralkoxy group, and R^6 and R^7, may be the same or different, and each represents hydrogen or an alkyl, aryl or aralkyl group.

5,364,831

QUINOXALINE DERIVATIVES AND HERBICIDAL COMPOSITION

Yasukazu Ura; Gozyo Sakata; Kenzi Makino; Yasuo Kawamura, all of Funabashi; Yuzi Kawamura, Shiraoka; Takasi Ikai, Shiraoka, and Toshiko Oguti, Shiraoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

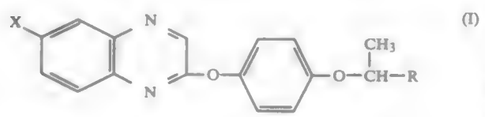
Filed Aug. 6, 1980, Ser. No. 175,706

The portion of the term of this patent subsequent to Dec. 16, 2003, has been disclaimed.

Int. Cl.[5] A01N *43/60, 39/00;* **C07D** *241/52*

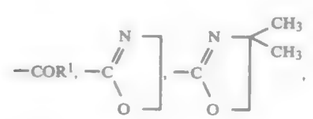
U.S. Cl. 504—235 **20 Claims**

1. Quinoxaline derivatives having the formula

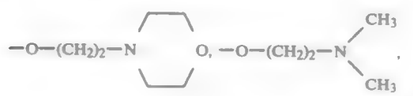


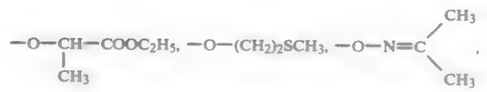
(I)

wherein X represents a halogen atom; R represents



—CN or $—CH_2OH$, and R^1 represents





—S—R^3 (R^3 represents a C_1—C_4 alkyl or alkenyl group or phenyl or chlorophenyl group), —NH—R^4 (R^4 represents a C_1–C_4 alkoxy carbonylalkyl group, hydroxy alkyl group, phenyl group, C_1–C_4 alkoxyl alkyl group or di C_1–C_4 alkyl amino group).

5,364,832

WATER-DISPERSIBLE GRANULES COMPRISING FENOXAPROP-ETHYL AND/OR FENCHLORAZOLE

Hans Röchling, Bad Soden am Taunus; Jean Kocur, Hofheim am Taunus, and Konrad Albrecht, Kelkheim/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 565,666, Aug. 10, 1990, abandoned. This application May 18, 1992, Ser. No. 884,701

Int. Cl.[5] A01N *25/32, 43/76, 43/653*

U.S. Cl. 504—272 **1 Claim**

1. Water-dispersible granules comprising

a) 10 to 90% by weight at least one plant protection agent, selected from the group consisting of fenoxaprop-ethyl, fenchlorazole, and combinations thereof,

b) 10 to 90% by weight at least one solid wetting agent selected from the group consisting of alkanesulfonates, alkyl sulfates, alkylnaphthalenesulfonates, alkylbenzenesulfonates, long-chain olefinsulfonates, alkyl polyglycol ether sulfonates, alkyl ether sulfates, alkyl ether phosphates, alkylsulfosuccinic monoesters, fatty acid isethionates and fatty acid N-methyltaurides, or of an ammonium salt, or of a mixture of an ammonium salt and at least one of the above solid wetting agents, and

c) 0 to 50% by weight of biologically inert customary formulation agents.

5,364,833

CYCLOHEXENONE OXIME ETHERS, THEIR PREPARATION AND THEIR USE AS HERBICIDES

Juergen Kast, Boehl-Iggelheim; Norbert Meyer, Ladenburg; Ulf Misslitz, Neustadt; Albrecht Harreus, Ludwigshafen; Helmut Walter, Obrigheim; Matthias Gerber, Mutterstadt, and Karl-Otto Westphalen, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

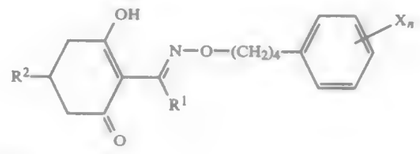
Continuation of Ser. No. 935,359, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 697,057, May 8, 1991, abandoned. This application Feb. 5, 1994, Ser. No. 193,885

Claims priority, application Germany, May 9, 1990, 4014988

Int. Cl.[5] A01N *43/16*

U.S. Cl. 504—289 **5 Claims**

1. A method for controlling undesirable plant growth in the presence of rice or wheat comprising treating the undesirable plants or the locus thereof with a herbicidally effective amount of a cyclohexenone oxime ether of the formula I



(I)

where

R^1 is C_1–C_6-alkyl,

X is halogen,

n is from 1 to 5,

R^2 is C_1–C_4-alkoxy-C_1–C_6-alkyl or C_1–C_4-alkylthio-C_1–C_6-alkyl,

C_3–C_7-cycloalkyl or C_5–C_7-cycloalkenyl, and these groups may additionally carry from one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, hydroxyl or halogen,

a 5-membered saturated heterocyclic structure which contains one or two hereto atoms chosen from oxygen or sulfur and may additionally carry from one to three radicals selected from the group consisting of C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

a 6 -membered or 7-membered saturated or mono- or diunsaturated heterocyclic structure containing one or two

hereto atoms selected from the group consisting of oxygen or sulfur, and the heterocyclic structure may additionally carry from one to three radicals selected from the group consisting of hydroxyl, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkyl,

a 5-membered heteroaromatic structure containing one to three hereto atoms selected from the group consisting of two nitrogen atoms or one oxygen or sulfur atom, and this ring may additionally carry from one to three radicals selected from the group consisting of halogen, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_2–C_6-alkenyl, C_2–C_6-alkenyloxy, C_2–C_6-haloalkenyl or C_1–C_4-alkoxy-C_1–C_4-alkyl, phenyl or pyridyl, and these groups may additionally carry from one to three radicals selected from the group consisting of halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy or $—NR^3R^4$,

where

R^3 is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl and

R^4 is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl, C_3–C_6-alkynyl, C_1–C_6-acyl or benzoyl, and the aromatic ring may additionally carry from one to three radicals selected from the group consisting of nitro, cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-haloalkyl, and its agriculturally usable salts and esters of C_1–C_{10}-carboxylic acids and inorganic acids in combination with an agriculturally acceptable carrier.

5,364,834

USE OF OXIME ETHER DERIVATIVES FOR BIOREGULATION IN PLANTS

Juergen Kirchner, Viernheim; Oskar Schmidt, Heidelberg; Klaus Grossmann; Wilhelm Rademacher, both of Limburgerhof; Michael Hepp, Ladenburg, and Thomas Zierke, Boehl-Iggelheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Feb. 24, 1992, Ser. No. 840,202

Claims priority, application Germany, Mar. 1, 1991, 4106509

Int. Cl.[5] A01N *37/52, 37/44*

U.S. Cl. 504—319 **4 Claims**

1. A method for lowering the endogenous ethylene level in plants, which comprises applying to the plants or their habitats an ethylene-reducing effective amount of an oxime ether derivative of the formula I



I

where R^1 and R^2 independently of one another are each hydrogen or C_1–C_6-alkyl or, together with the carbon atom to which they are bonded, are C_5-or C_6-cycloalkyl and R^3 is hydrogen or C_1–C_6-alkyl.

5,364,835

METHOD OF ADDING A HALOGEN ELEMENT INTO OXIDE SUPERCONDUCTING MATERIALS BY ION INJECTION OR THERMAL DIFFUSION

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 463,920, Jan. 10, 1990, abandoned, which is a division of Ser. No. 190,352, May 5, 1988, Pat. No. 4,916,116. This application Feb. 16, 1993, Ser. No. 22,440

Claims priority, application Japan, May 6, 1987, 62-111614; Jun. 1, 1987, 62-138580

Int. Cl.[5] B05D *3/06, 5/12*

U.S. Cl. 505—461 **20 Claims**

1. A method of forming a copper oxide superconducting material comprising the steps of:

forming a copper oxide superconducting material having a superconducting molecular structure; and

adding a halogen into said copper oxide superconducting material by heat diffusion after the formation of said copper oxide superconducting material.

5,364,836

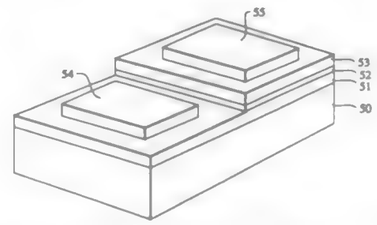
ARTICLE COMPRISING A SUPERCONDUCTOR/INSULATOR LAYER STRUCTURE, AND METHOD OF MAKING THE ARTICLE

Robert C. Dynes, Summit; Elliot H. Hartford, Jr., New Providence; Eric S. Hellman, Montclair; Andrew N. Pargellis, Hoboken, and Fred Sharifi, Scotch Plains, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 630,134, Dec. 19, 1990, abandoned. This application Mar. 8, 1993, Ser. No. 28,738

Int. Cl.[5] B32B *9/00*

U.S. Cl. 505—190 **9 Claims**



1. An article comprising a layer structure disposed on at least a portion of a substrate, said layer structure comprising at least one superconductor layer in contact with an insulator layer, associated with the superconductor material being a transition temperature T_c;

Characterized in that

a) the superconductor material has nominal composition $Ba_{1-x}M_xBiO_{3-y}$, with M selected from the group consisting of K, Rb, and K and Rb, with $0.35 \leqq x \lesssim 0.5$, and with $0 \leqq y \lesssim 0.25$;

b) the insulator material is crystalline material selected from the group consisting of

i) $LiBaF_3$, BaO, $BaZrO_3$, Ba_2PbO_4, LiF, CaO, MgO, BaF_2, SrF_2;

ii) $BaBi_2O_{4+\delta}$, with $0 \leqq \delta \lesssim 0.25$;

iii) $Ba_{1-x}M_xBiO_3$, with M being K, Rb, or K and Rb, and $0 \leqq x \lesssim 0.35$;

iv) $Ba_{1+x}Bi_{1-x}O_{3-\delta}$, with $0 \leqq x \lesssim 0.5$, and $0 \leqq \delta \lesssim 0.25$;

v) $Ba_{1-x}M_xBi_2O_z$, with M being K, Rb, or K or Rb, $0 \leqq x \lesssim 0.35$, and $4 \lesssim z \lesssim 6$;

vi)$Mg_{1-x}Ca_xO$, with $0 \leqq x \lesssim 0.15$; and

vii)$Ba_{1-x}Sr_xF_2$, with $0 \leqq x \lesssim 0.35$;

c) said superconductor layer is substantially epitaxial with the substrate and is intermediate the substrate and the insulator layer; and

d) said insulator layer is substantially epitaxial with the superconductor layer.

5,364,837

METHOD OF MODIFYING SERUM HORMONE LEVELS USING PURIFIED INHIBIN MATERIALS

Henry G. Burger, East Melbourne; David M. de Kretser, Surrey Hills; John K. Findlay, Mont Albert; Francis J. Morgan, North Fitzroy; Milton T. W. Hearn, Balwyn; David M. Milne-Robertson, Glen Waverley, and Robert G. Forage, Mosmah, all of Australia, assignors to Biotechnology Australia Pty. Ltd, East Roseville; Monash University, Clayton; St. Vincent's Institute of Medical Research, Fitzroy and Monash Medical Center, all of Australia

Division of Ser. No. 741,555, Jun. 5, 1985, abandoned. This application Aug. 3, 1989, Ser. No. 389,328

Claims priority, application Australia, Jun. 8, 1984, PG5427; Apr. 4, 1985, PH00031

Int. Cl.[5] A61K *37/24*

U.S. Cl. 514—8 4 Claims

1. A method of modifying mammal serum levels of follicle stimulating hormone by producing antibodies to inhibin in a mammal comprising administering into a mammal a composition of matter consisting essentially of inhibin of a purity sufficient to yield a single band on non-reducing SDS-PAGE, wherein said purified inhibin has an apparent molecular weight of 56,000±1000 as determined by non-reducing SDS-PAGE, consists of two subunits having apparent molecular weights of 44,000±3,000 and 14,000±2,000 as determined by reducing SDS-PAGE, and which suppresses production of the follicle stimulating hormone without suppressing production of luteinizing hormone in said mammal.

5,364,838

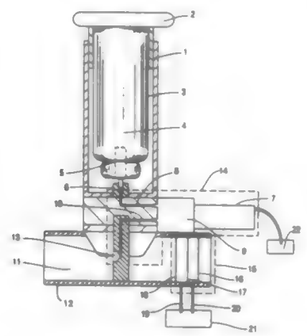
METHOD OF ADMINISTRATION OF INSULIN

Reid M. Rubsamen, Berkeley, Calif., assignor to Miris Medical Corporation, Hayward, Calif.

Filed Jan. 29, 1993, Ser. No. 11,281

Int. Cl.[5] A61K *37/26, 37/18, 37/00*

U.S. Cl. 514—3 15 Claims



1. A method of intrapulmonary administration of insulin, comprising:

measuring the inspiratory flow of a patient and calculating a threshold level in an inhalation cycle at which release of drug is to take place, the threshold level being determined in a manner so as to maximize the repeatability of the amount of insulin delivered to the patient on releasing insulin;

releasing a metered dose of aerosolized insulin from a pressurized canister containing insulin in combination with a low boiling point propellant, the releasing being carried out upon reaching the threshold level generated by the patient inhaling;

inhaling the metered dose of aerosolized insulin into the lungs of a patient; and

monitoring serum glucose levels within the patient;

wherein the measuring, releasing, inhaling and monitoring steps are continuously repeated in a manner so as to maintain a desired serum glucose level in the patient.

5,364,839

OSTEOINDUCTIVE PHARMACEUTICAL FORMULATIONS

Tobin N. Gerhart, Brookline; Elizabeth A. Wang, Carlisle, and Mary J. Kriz, Hudson, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Jun. 18, 1990, Ser. No. 539,756

Int. Cl.[5] A61K *37/36*

U.S. Cl. 514—12 7 Claims

1. A pharmaceutical formulation consisting essentially of

(a) an inhibitor of fibrin clot lysis selected from the group consisting of epsilon amino caproic acid, trans-p-amino methylcyclohexanecarboxylic acid, aprotinin, α_2 antiplasmin, α_2 macroglobulin, and p-amino methyl benzoic acid;

(b) a therapeutically effective amount of an osteoinductive protein; and

(c) autologous blood;

admixed at the time of surgery in a pharmaceutically acceptable vehicle.

5,364,840

SYNTHETIC CALCITONIN PEPTIDES

Channa Basava, San Diego, and Karl Y. Hostetler, Del Mar, both of Calif., assignors to Vical, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 572,674, Aug. 24, 1990, Pat. No. 5,175,146, which is a continuation-in-part of Ser. No. 446,932, Dec. 6, 1989, abandoned. This application Jun. 5, 1991, Ser. No. 711,180

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] A61K *37/00, 37/02, 37/30;* C07K *5/00*

U.S. Cl. 514—12 16 Claims

1. A hypocalcemic peptide having the formula:

Y^0-xCT

wherein Y is a moiety present at position 0, the NH_2-terminus of xCT, and is an aliphatic amino acid selected from the group consisting of L- or D-amino acids having a branched or unbranched alkyl side chain of 1 to 8 carbon atoms; L- or D-methionine; L- or D-threonine; L- or D-serine; L- or D-homoserine; and

xCT represents the amino acid sequence of human, salmon, eel, rat, bovine, ovine, porcine, rabbit, or chicken calcitonin.

5,364,841

TREATMENT OF OBESITY AND ESSENTIAL HYPERTENSION AND RELATED DISORDERS

Garth J. S. Cooper, Solana Beach, Calif., and Brendan Leighton, Eynsham, England, assignors to Amylin Pharmaceuticals, Inc., San Diego, Calif.

Continuation of Ser. No. 737,794, Jul. 18, 1991, Pat. No. 5,280,014, which is a continuation-in-part of Ser. No. 377,652, Jul. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 275,475, Nov. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 142,447, Jan. 11, 1988, abandoned. This application Jun. 21, 1993, Ser. No. 81,033

Int. Cl.[5] C07K *7/06, 7/08, 7/10;* A61K *37/02*

U.S. Cl. 514—12 4 Claims

1. A method for enhancing glycogen synthesis in a mammal comprising administration to said mammal an amount of an amylin receptor antagonist effective to reduce amylin activity in said mammal.

5,364,842

METHOD OF PRODUCING ANALGESIA

Alan Justice, Sunnyvale; Tejinder Singh, Palo Alto; Kishor C. Gohil, Richmond, and Karen L. Valentino, San Carlos, all of Calif., assignors to Neurex Corporation, Menlo Park, Calif.

Continuation of Ser. No. 814,759, Dec. 30, 1991, abandoned. This application Jun. 23, 1993, Ser. No. 81,863

Int. Cl.[5] A61K *37/00, 37/02;* C07K *5/00, 7/00*

U.S. Cl. 514—12 4 Claims

1. A method of producing analgesia in a mammalian subject, comprising

administering to the subject, in the absence of an opiate, an omega conopeptide selected from the group consisting of TVIA (SNX-185), MVIIA (SNX-111) and derivatives thereof, wherein said omega conopeptide is effective (a) to inhibit electrically stimulated contraction of the guinea pig ileum, and (b) to bind selectively to omega conopeptide MVIIA binding sites present in neuronal tissue.

5,364,843

AGENTS FOR POTENTIATING THE EFFECTS OF ANTITUMOR AGENTS AND COMBATING MULTIPLE DRUG RESISTANCE

Ann C. King, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

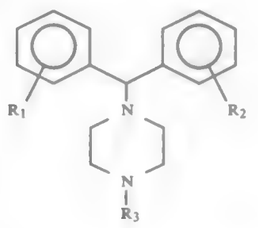
Division of Ser. No. 539,836, Jun. 18, 1990, Pat. No. 5,124,330. This application Jun. 10, 1992, Ser. No. 895,925

Claims priority, application United Kingdom, Jun. 19, 1989, 8914040.4

Int. Cl.[5] A01N *43/40;* A61K *31/44*

U.S. Cl. 514—15 11 Claims

1. A method of increasing the sensitivity of a tumor to an antineoplastic agent, which tumor is harbored in a subject and which tumor is resistant to said antineoplastic agent, comprising concurrently administering to said subject an antineoplastic agent and a potentiating agent, said potentiating agent selected from the class consisting of



I

wherein:

R_1 is halogen;

R_2 is selected from the class consisting of hydrogen, halogen, C_{1-4} alkoxy, $—OCH_2C_6H_5$, and $—CH=CHCO_2R$, wherein R is C_{1-4} alkyl; and

R_3 is selected from the class consisting of C_{1-4} alkyl, $—CH_2CH=CH_2$, and $—CH_2C_6H_4CH_3$;

and the pharmaceutically acceptable salts thereof,

said potentiating agent being administered in an amount effective to increase the sensitivity of said tumor to said antineoplastic agent.

5,364,844

RENIN-INHIBITORY OLIGOPEPTIDES, THEIR PREPARATION AND USE

Yasuhiro Morisawa; Mitsuru Katsuka; Yuichiro Yabe; Hiroyuki Koike; Yasuteru Iijima; Hidekuni Takahagi, all of Hiromachi; Tatsuo Kokubu, Ehimi, and Kunio Hiwada, Ehime, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

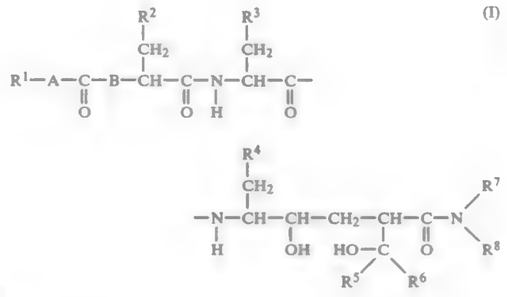
Continuation of Ser. No. 301,793, Jan. 25, 1989, abandoned. This application Aug. 27, 1992, Ser. No. 936,883

Claims priority, application Japan, Jan. 26, 1988, 63-15446; Aug. 22, 1988, 63-207729

Int. Cl.[5] A61K *37/02;* C07K *5/06, 5/08*

U.S. Cl. 514—18 57 Claims

1. A compound of formula (I):



(I)

in which

A represents a single carbon-carbon bond and B represents a methylene group or A represents a methylene group and B represents an imino group;

R^1 represents a C_{1-4} alkyl group, an unsubstituted morpholinyl group; substituted morpholinyl group having methyl substituents; a thiomorpholinyl group; a 2-oxopyrrolidinyl group; a piperazinyl group; or a substituted piperazinyl group substituted by methyl, unsubstituted phenyl or phenyl substituted with methyl, methoxy or halogen atoms,

or a group of formula (II):



(II)

in which

R^9 and R^{10} are independently selected from the group consisting of C_1–C_4 alkyl groups, C_7–C_{10} aralkyl and C_3–C_7 cycloalkyl groups;

R^2 represents a naphthyl group, an unsubstituted phenyl group or a substituted phenyl group having at least one substituent selected from the group consisting of a C_1–C_4 alkyl group, a halogen atom, a hydroxy group, a trifluoromethyl group and a C_1–C_4 alkoxy group;

R^3 represents a thiazolyl group;

R^4 represents an isopropyl group or a cyclohexyl group;

R^5 and R^6 are independently selected from the group consisting of C_1–C_4 alkyl groups, or, together with the carbon atom to which they are attached, form a C_5 or C_6 cycloalkyl group;

R^7 represents a C_1–C_6 alkyl group; and

R^8 represents a hydrogen atom.

5,364,845

GLUCOSAMINE, CHONDROITIN AND MANGANESE COMPOSITION FOR THE PROTECTION AND REPAIR OF CONNECTIVE TISSUE

Robert W. Henderson, Baldwin, Md., assignor to Nutramax Laboratories, Inc., Baltimore, Md.

Filed Mar. 31, 1993, Ser. No. 40,936
Int. Cl.[5] A61K *31/715, 31/70*
U.S. Cl. 514—54 **18 Claims**

1. A therapeutic composition for the treatment and repair of connective tissue in mammals, comprising: therapeutic quantities of glucosamine and salts thereof, in combination with chondroitin sulfate and soluble salts of manganese, for stimulating production of proteoglycans and collagens in mammals in need thereof for treatment and repairing the connective tissue.

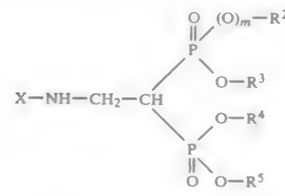
5,364,846

N-CYCLOALKYLAMINOETHANE-1,1-BIS (PHOSPHONIC ACID) USEFUL FOR THE TREATMENT OF OSTEOPOROSIS AND DEGENERATIVE JOINT DISEASE

Hans Lang, Hofheim am Taunus; Christoph Naumann, Niederhausen; Ruth Raiss, Frankfurt am Main, all of Germany; Osamu Komiyama, and Yoshiko Terui, both of Tokyo, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

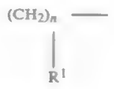
Continuation of Ser. No. 911,041, Jul. 9, 1992, abandoned. This application Nov. 24, 1993, Ser. No. 156,995
Claims priority, application Germany, Jul. 12, 1991, 4123025
Int. Cl.[5] A61K *31/66;* C07F *9/38*
U.S. Cl. 514—102 **5 Claims**

1. A compound of the formula I



(I)

in which
m is the integer 1,
R^1, R^2, R^3, R^4, and R^5 are hydrogen, and
X is a radical of the formula V



(V)

in which n is an integer 8, 9 or 10.

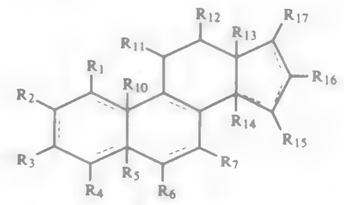
5,364,847

INHIBITORS OF SEX STEROID BIOSYNTHESIS AND METHODS FOR THEIR PRODUCTION AND USE

Fernand Labrie, and Yves Merand, both of Quebec, Canada, assignors to Endorecherche, Canada

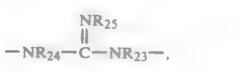
Continuation of Ser. No. 322,154, Mar. 10, 1989, abandoned. This application Oct. 22, 1992, Ser. No. 966,112
The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.
Int. Cl.[5] A61K *31/56, 31/58;* C07J *31/00*
U.S. Cl. 514—182 **11 Claims**

1. A method for inhibiting sex steroid formation comprising administering to a warm-blooded patient in need of such inhibition, a therapeutically effective amount of a compound of the formula:

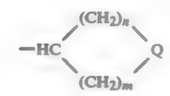


I

wherein the dotted lines represent optional double bonds;
wherein the A-ring is optionally aromatic;
wherein R_1, R_2 and R_4 are independently selected from the group consisting of hydrogen, hyroxyl, alkylsulfonyl(lower)alkoxy, arylsulfonyl(lower)alkoxy, halogen, lower alkyl, lower alkoxy, lower alkylsilyl, amino and nitro;
wherein R_3 is selected from the group consisting of hydrogen, hydroxyl, halogen, lower alkyl, methoxy, ethoxy, propoxy, hydroxyethoxy, lower alkoxy, acetoxy, propionyloxy, butyryloxy, oenanthoyloxy, cypionoyloxy, trans-4-n-butyl-cyclohexanecarbonoyloxy, (C_2–C_{20})alkanoyloxy, lower alkoxy carbonyloxy, carboxy, (C_3–C_{20})alkenoyloxy, (C_3–C_{20})alkynoyloxy, (C_7–C_{10})aroyloxy or a divalent common species formed jointly by $R_{3(\alpha)}$ and $R_{3(\beta)}$, said divalent common speices being selected from the group consisting of =O, =S, $=NR_{36}$ or $=NOR_{36}$ wherein R_{36} is hydrogen or lower alkyl;
wherein R_5 and R_{10} are absent or selected from the group consisting of hydrogen and lower alkyl;
wherein R_6 is selected from the group consisting of hydrogen, halogen, lower alkyl, amino and nitrile;
wherein R_7 is in α position and is hydrogen, hydroxyl, halogen, lower alkyl, lower alkoxy, lower alkylsilyl, amino, nitrile, nitro, nitroso, alkylsulfonyl, arylsulfonyl, lower alkylamino, dilower alkylamino, or is represented by the formula A^1-[Y-A^{11}]$_u$—X—R_{21}, wherein:
u is an integer from 0 to 5; wherein A^1 and A^{11} may be the same or different and are selected from the group consisting of a bond, straight- or branched-chain alkylene, straight- or branched-chain alkynylene, straight- or branched-chain alkenylene, and fluoro-substituted analogs of the foregoing, wherein R^1 and A^{11} together have a total of from 3 to 30 carbon atoms, and Y is selected from the group consisting of —O—, —S—, —Se—, —SO—, —SO_2—, —CO—, —NR_{22}—, —$SiR_{22}R_{22}$—, —$CR_{22}OR_{22}$—$NR_{22}CO$—, —$NR_{22}CS$—, —$CONR_{22}$—, —$CSNR_{22}$—, —COO—, —COS—, —SCO—, —CSS—, —SCS—, —OCO— and phenylene (R_{22} being hydrogen or lower alkyl); R_{21} is selected from the group consisting of hydrogen, straight- or branched-chain lower alkyl, lower alkenyl or lower alkynyl, (C_3–C_7)cycloalkyl, halogeno(lower)alkyl, carboxy(lower)alkyl, (lower)alkoxycarbonyl(lower)alkyl, (C_6–C_{10})aryl, (C_7–C_{11})arylalkyl, di(lower)alkylamino(lower)alkyl and fluoro-substituted analogs of the foregoing, and wherein X is —$CONR_{23}$—, —$CSNR_{23}$—, —$NR_{24}CO$—, —$NR_{24}CS$—, —$NR_{24}CONR_{23}$—,

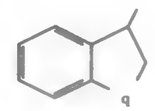


—SO_2NR_{23}—, —CSS—, —SCS—, —NR_{23}—, —(NO)R_{23}—, —(PO)R_{23}—, —$NR_{24}CO$—, —$NR_{24}SO_2$—, —S—, —SO— or —SO_2—, (wherein R_{23} is selected from the group consisting of hydrogen, lower alkyl, and a species which, together with R_{21}, forms a saturated or unsaturated heterocyclic ring having at least one nitrogen atom and, optionally, a second heteroatom selected from the group consisting of oxygen, sulfur, silicon, selenium, nitrogen and fluoro-substituted analogs of the foregoing, wherein R_{24} is hydrogen or lower alkyl and wherein R_{25} is hydrogen, nitrile or nitro) (XR_{21} may form a tetrazole ring);
wherein R_{11} is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, (C_6–C_{10})aryl, alkylsulfonyl, arylsulfonyl, a substituted 5-to-7 member heterocyclic ring having at least one heteroatom (selected from oxygen, sulfur, silicon, selenium, nitrogen), —$(CH_2)_s$W (wherein W is nitrile, hydroxyl, azido, nitroso, nitro, thionitrile, halogen, alkylsulfonyl or arylsulfonyl, and s is an integer from 1 to 6), OR_{26} (wherein R_{26} is hydrogen, lower alkyl or (C_6–C_{10})aryl), DR_{27} (wherein D is —Se—, —NR_{26}, —S— or —O—, and R_{27} is hydrogen, lower alkyl), =O, =S, =Se, $=NR_{28}$ (wherein R_{28} is hydrogen or lower alkyl;
wherein R_{12} and R_{13} are independently hydrogen or lower alkyl;
wherein R_{14} is selected from the group consisting of hydrogen, hydroxyl, nitrile, nitro, nitroso, halogen, lower alkyl, lower alkoxy, lower alkyseleno, lower alkylamino or diloweralkylamino; or R_{14} and R_{15} together are —CH_2—, —CHX—, —CX_2—, (X=halogen, carboxyl or alkoxycarbonyl), —O—, —S—, —Se—, >N-CN, $>NR_{29}$ and $>NCO_2R_{29}$ wherein R_{29} is hydrogen or lower alkyl;
wherein R_{15} is selected from the group consisting of hydrogen, hydroxyl, nitro, nitroso, halogen, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkylseleno, lower alkylamino, di(lower)alkylamino, nitrile, azido, arylseleno, AXR_{21}, A_1-[Y-A^{11}]$_u$-X-R_{21} or R_{15} and R_{16} together are —CH_2—, —CHX—, —CX_2—, (X=halogen, carboxyl or alkoxycarbonyl), —O—, —S—, —Se—, >N-CN, $>NR_{29}$ and $>NCO_2R_{29}$ wherein R_{29} is hydrogen or lower alkyl;
wherein R_{16} is selected from the group consisting of hydrogen, nitroso, halogen, lower alkyl, carboxyl, lower alkoxy, lower alkylseleno, lower alkylamino, nitrile, azido, arylseleno, lower alkylseleno, di(lower)alkylamino, AXR_{21}, or A^1-[Y-A^{11}]$_u$-X-R_{21},
$R_{16(\alpha)}$ and $R_{16(\beta)}$ together are $=CG_2$, where G is hydrogen, halogen, lower alkyl, lower alkenyl, lower alkynyl, nitrile, alkoxycarbonyl, alkylcarbonyl and carboxyl;
wherein $R_{17(\alpha)}$ is selected from the group consisting of hydrogen, hydroxyl, lower alkyl, halogeno(lower)alkyl, AXR_2, A^1-[Y-A^{11}]$_u$X-R_{21}, B^1-T-R_{30} wherein:
B^1 is straight- or branched-chain (C_1–C_{12})alkylene, (C_2–C_{12})alkynylene, (C_2–C_{12})alkenylene; T is —O—, —NR_{31}, —Se—, —S— or S-S and R_{30} and R_{31} are independently hydrogen, lower alkyl, or R_{30} and R_{31}, together are (C3–C_7)cycloalkyl, (C_5–C_7)cycloalkenyl, (C_3–C_7)cycloalkyl or (C_5–C_7)cycloalkenyl having one or more hydrogen atoms replaced by halogen atoms, —HC=CHR_{32} and —C≡CR_{33} wherein:
R_{32} and R_{33} are independently hydrogen, halogen, tri(lower-)alkylsilyl, carboxyl, carbonyl, lower alkoxy, nitrile, sulfinyl lower alkyl, AXR_{21}, A^1-[Y-A^{11}]$_u$-X-R_{21} or a species represented by the formula:



a

wherein n and m are independently 0 to 6 and Q is —Se—, —SiH_2—, —S—, —O— or —NR_{34}— wherein R_{34} is hydrogen, lower alkyl or (C_1–C_7)alkanoyl; or a species represented by the formula:



b

wherein q is —CH_2—, —S—, —O— or —NR_{35}— wherein R_{35} is hydrogen or lower alkyl;
wherein $R_{17(\beta)}$ is selected from the group consisting of hydrogen, hydroxyl, halogen, 1-oxo-2-propoynyl, 1-hydroxy-2-propynyl, alkoxy, (C_1–C_{17})alkanoyloxy, (C_3–C_7)alkenyloxy, (C_3–C_7)alkynoyloxy, alkenyloxy, cycloalkenyloxy, 1-alkyloxy-alkyloxy, 1-alkyloxy cycloalkyloxy, alkylsilyloxy and a divalent common species formed jointly by $R_{17(\alpha)}$ and $R_{17(\beta)}$, said divalent common species being selected from the group consisting of =O, =S, $=NR_{36}$ or $=NOR_{36}$ wherein R_{36} is hydrogen or lower alkyl, wherein at least one or R^7, R^{16} or R^{17} is A^1-[Y-A^{11}-]$_u$XR^{21}.

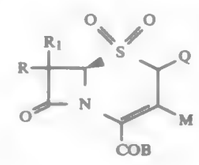
5,364,848

SUBSTITUTED CEPHALOSPORIN SULFONES AS ANTI-INFLAMMATORY AND ANTIDEGENERATIVE AGENTS

James B. Doherty, New Milford; Raymond A. Firestone, Westfield; Paul E. Finke, Milltown; William K. Hagmann, Westfield; Shrenik K. Shah, Metuchen, and Kevan R. Thompson, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 471,320, Jan. 29, 1990, Pat. No. 5,132,301, which is a continuation of Ser. No. 930,193, Nov. 12, 1986, abandoned, which is a continuation-in-part of Ser. No. 774,425, Sep. 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 490,761, May 2, 1983, abandoned. This application May 1, 1992, Ser. No. 877,552
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] C07D *501/20;* A61K *31/545*
U.S. Cl. 514—201 **12 Claims**

1. A compound of Formula I



I

wherein
R is hydrogen;
R1 is alpha —OCH_3;
Q is hydrogen;
M is:
(a) —CH_3,
(b) CH_2—OAc,
(c) chloro, or
(d) ((1,2,5,6-tetrahydro-2-methyl-5,6-dioxo- 1,2,4-triazin -3-yl)thio)methyl;
B is OB_1 or NB_2B_3 wherein B_1 and B_2 independently are:
(a) straight or branched chain alkyl having from 1 to 6 carbon atoms;
(b) alkenyl having from 2 to 6 carbon atoms;
(c) alkoxy alkyl having from 2 to 6 carbon atoms;
(d) phenyl C_{1-6}alkyl or C_{1-6}alkyl phenyl;
(e) C_{1-6}alkanoyloxy C_{1-6}alkyl;
the above groups (a)–(e) can be unsubstituted or substituted with one or more radicals selected from a group consisting of C_{1-6}alkyl, hydroxy, C_{1-6}alkoxy, amino, N—C_{1-6}alkyl or N,N-diC_{1-6}alkylamino, carboxy;
B_3 is B_1 or hydrogen; or
B_2 and B_3 are joined such that together with the nitrogen to which they and attached there is formed a ring of 5 to 7 atoms having one nitrogen atom and optionally one oxygen atom, said ring being optionally substituted with a carboxyl.

5,364,849

1-[3 OR 4-[1-[4-PIPERAZINYL]]-2 ARYLPROPIONYL OR BUTRYL]-HETEROCYCLIC DERIVATIVES

Ian A. Cliffe, Slough, England, assignor to John Wyeth & Brother, Limited, Maidenhead, England

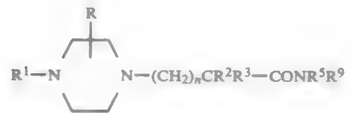
Continuation of Ser. No. 756,932, Sep. 9, 1991, abandoned, which is a continuation-in-part of Ser. No. 511,150, Apr. 19, 1990, abandoned. This application Jul. 10, 1992, Ser. No. 911,996

Claims priority, application United Kingdom, Apr. 22, 1989, 8909209; Oct. 28, 1989, 8924323

Int. Cl.[5] **A61K** *31/55, 31/535;* **C07D** *403/02, 401/00*

U.S. Cl. 514—212 **10 Claims**

1. A compound of the formula



or a pharameutically acceptable acid addition salt thereof wherein

n is one of the integers 1 or 2,

R is hydrogen or lower alkyl,

R^1 is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower) alkylamino or di(lower)alkylamino substituents; or a mono or bicyclic heteroaromatic radical having 5 to 10 ring atoms, the heteroaromatic radical having, as heteroatoms, one or two nitrogen atoms and being optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents,

R^2 is hydrogen or lower alkyl,

R^3 is an aryl radical, or an aryl(lower)alkyl radical, in which the aryl radical is a phenyl or naphthyl radical optionally substituted by one or more lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino or di(lower)alkylamino substituents, and R^5 and R^9 together with the nitrogen atom to which they are attached represent an azetidino, pyrrolidino, piperidino, hexahydroazepino, morpholino or piperazino ring which may be optionally substituted by lower alkyl, aryl or aryl(lower)alkyl where aryl is a phenyl or naphthyl radical optionally substituted by one lower alkyl, lower alkoxy, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino,(lower)alkylamino or di(lower)alkylamino substituent.

5,364,850

SUBSTITUTED TYROSYL DIAMIDE COMPOUNDS

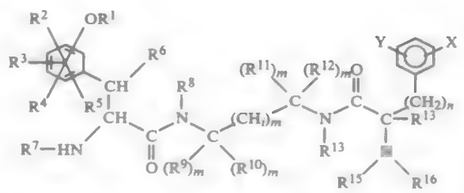
Donald W. Hansen, Jr., Skokie; Nizal S. Chandrakumar; Karen B. Peterson, both of Vernon Hills; Sofya Tsymbalov, Des Plaines, and Robert K. Husa, Gurnee, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 886,276, May 20, 1992, Pat. No. 5,272,175. This application Sep. 24, 1993, Ser. No. 125,897

Int. Cl.[5] **A61K** *31/495, 31/40, 31/165;* **C07D** *241/04*

U.S. Cl. 514—255 **22 Claims**

1. A compound having the structure:



and the pharmaceutically-acceptable salts thereof, wherein:

R^1 is hydrogen, alkyl having from 1 to 4 carbon atoms or acetyl;

R^2, R^3, R^4, R^5, R^6, R^{14}, R^{15} and Y may each be the same or different, and are each independently hydrogen or alkyl having from 1 to 4 carbon atoms;

R^7 is hydrogen or t-butyloxycarbonyl;

R^8 is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^9 or R^{10} when either is alkyl, $—(CH_i)_m—$, R^{11} or R^{12} when either is alkyl and R^{13} when R^{13} is alkyl to form a single-ring, nonaromatic structure;

R^9 is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^8 when R^8 is alkyl, $—(CH_i)_m—$, R^{11} or R^{12} when either is alkyl and R^{13} when R^{13} is alkyl to form a single-ring, aromatic or nonaromatic structure;

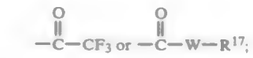
R^{10} is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^8 when R^8 is alkyl, $—(CH_i)_m—$, R^{11} or R^{12} when either is alkyl and R^{13} when R^{13} is alkyl to form a single-ring, aromatic or nonaromatic structure;

R^{11} is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^8 when R^8 is alkyl, R^9 or R^{10} when either is alkyl, $—(CH_i)_m—$, and R^{13} when R^{13} is alkyl to form a single-ring, aromatic or nonaromatic structure;

R^{12} is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^8 when R^8 is alkyl, R^9 or R^{10} when either is alkyl, $—(CH_i)_m—$, and R^{13} when R^{13} is alkyl to form a single-ring, aromatic or nonaromatic structure;

R^{13} is hydrogen or alkyl having from 1 to 4 carbon atoms, and when alkyl is taken together with R^8 when R^8 is alkyl, R^9 or R^{10} when either is alkyl, $—(CH_i)_m—$, and R^{11} or R^{12} when either is alkyl to form a single-ring, nonaromatic structure;

R^{16} is hydrogen, acetyl,



R^{17} is alkyl, alkaryl, alkenyl, alkylcarboalkoxy or sulfonylaryl;

X is hydrogen, halogen or alkyl having from 1 to 4 carbon atoms;

W is $—CH_2—$, oxygen or —NH—;

i is an integer of from 0 to 2; and

m is an integer of from 0 to 6,

with the proviso that when R^1 is hydrogen or alkyl:

(1) R^2 and R^5 are each alkyl having from one to four carbon atoms; and/or

(2) X and Y are each alkyl having from one to four carbon atoms,

and with the proviso that R^8, R^9, R^{10}, $—(CH_i)_m—$, R^{11}, R^{12} and/or R^{13} from a single-ring, aromatic or nonaromatic structure.

5,364,851

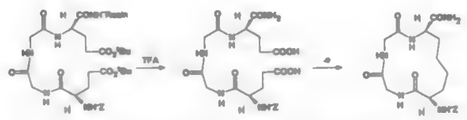
CONFORMATIONALLY RESTRICTED BIOLOGICALLY ACTIVE PEPTIDES, METHODS FOR THEIR PRODUCTION AND USES THEREOF

Alvin D. Joran, New York, N.Y., assignor to International Synthecon, LLC, New York, N.Y.

Filed Jun. 14, 1991, Ser. No. 714,167

Int. Cl.[5] **C07K** *1/00;* **C25B** *3/00*

U.S. Cl. 530—345 **16 Claims**



1. A method for producing a conformationally restricted peptide or peptide isostere, comprising subjecting a peptide or peptide isostere having at least two amino acids or amino acid derivatives,

said amino acids or amino acid derivatives having side chains which can be coupled by means of an electrochemical coupling reaction,

to conditions sufficient to form a covalent bond between said side chains by means of an electrochemical coupling reaction.

5,364,852

PREPARATION OF COMPACT OR CELLULAR ELASTOMERS CONTAINING URETHANE AND UREA GROUPS, AND MOLDINGS PRODUCED THEREFROM

Werner Hinz, Frankenthal; Christian Maletzko, Mannheim; Johannes Becker, Ludwigshafen, and Guenter Matzke, Ketsch, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 29, 1993, Ser. No. 53,759

Claims priority, application Germany, Jun. 6, 1992, 4218791

Int. Cl.[5] **C08J** *9/34;* **C08G** *18/32, 18/60*

U.S. Cl. 521—159 **11 Claims**

1. A process for the preparation of elastomers containing urethane and urea groups, by reacting

a) at least one organic and/or modified organic polyisocyanate with

b) at least one secondary polyoxyalkylene-polyamine and

c) at least one alkyl-substituted aromatic polyamine having a molecular weight of up to 500, in the presence or absence of

d) catalysts,

wherein the secondary polyoxyalkylene-polyamines used are N-propoxylated polyoxyalkylene-polyamines containing at least 50% of secondary amino groups.

5,364,853

THIOFORMAMIDE DERIVATIVES

Malcolm N. Palfreyman, and Nigel Vicker, both of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer Limited, Eastbourne, England

PCT No. PCT/EP91/00019, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO91/10652, PCT Pub. Date Jul. 25, 1991

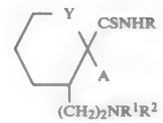
PCT Filed Jan. 8, 1991, Ser. No. 867,709

Claims priority, application United Kingdom, Jan. 8, 1990, 9000342

Int. Cl.[5] **A61K** *31/44;* **C07D** *213/53, 401/12, 411/12*

U.S. Cl. 514—332 **6 Claims**

1. A thioformamide compound of formula (I):



(I)

in which R represents an alkyl group;

A is (1) a phenyl group, which is unsubstituted or substituted by one or more substituents selected from a halogen atom and a cyano, nitro, trifluoromethyl, carbamoyl, carboxyl, alkoxycarbonyl and alkylsulphonyl group, or (2) a heterocyclyl group selected from pyrid-3-yl, pyrid-4-yl, indol-3-yl and thiazol-5-yl, which is unsubstituted or substituted by an alkyl or alkoxy group or a halogen atom;

Y represents an ethylene or methylene group or a direct bond; and either:

(1) R^1 represents hydrogen and R^2 represents:

i) a group of formula $—CXNHR^3$, wherein R^3 is an alkyl group and X is a group of formula $=NSO_2R^4$, wherein R^4 is an alkyl or phenyl group; or

ii) a group of formula $—SO_2R^5$, wherein R^5 is:

(a) a naphthyl or phenyl group optionally substituted by one or more halogen atoms, hydroxy, alkoxy, C_{3-6} cycloalkoxy, alkyl, C_{2-4} alkenyl, cyano, nitro, trifluoromethyl, carboxy, alkoxycarbonyl, amino, alkylamino, dialkylamino, alkoxycarbonylamino, alkanoylamino, dialkanoylamino, benzoylamino, carbamoyl, N-(optionally hydroxyalkyl)carbamoyl or N,N-di(optionally hydroxyalkyl)carbamoyl groups, or amino or carbamoyl groups N,N-disubstituted by a C_{3-6} alkylene chain, one or more of whose methylene groups may have been replaced by an oxygen or sulphur atom or an imino or alkylimino group;

(b) a pyridyl or thienyl group; or

(c) an alkyl group optionally substituted by one or more halogen atoms, phenyl, naphthyl, pyridyl, hydroxy, alkoxy, C_{3-6} cycloalkoxy, alkyl, C_{2-4} alkenyl, cyano, nitro, trifluoromethyl, carboxy, alkoxycarbonyl, amino, alkylamino, dialkylamino, alkoxycarbonylamino, alkanoylamino, dialkanoylamino, benzoylamino, carbamoyl, N-(optionally hydroxyalkyl)-carbamoyl or N,N-di(optionally hydroxyalkyl)carbamoyl groups, or amino or carbamoyl groups N,N-disubstituted by a C_{3-6} alkylene chain, one or more of whose methylene groups may have been replaced by an oxygen or sulphur atom or an imino or alkylimino group; or

(2) R^1 and R^2 both independently represent a group of formula $—SO_2R^5$, as defined above;

wherein all the alkyl groups or moieties are straight-chain or branched and contain 1 to 6 carbon atoms and provided that at least one of A or R^5 is pyridyl; or a salt thereof.

5,364,854

DERIVATIVES OF SUBSTITUTED IMIDAZO BENZOXAZIN-1-ONE AND PROCESS FOR THEIR PREPARATION

Mario Varasi, Milan; Franco Heidempergher, Parabiago; Claudio Arrigoni, Gambolò , and Carla Caccia, Gallarate, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

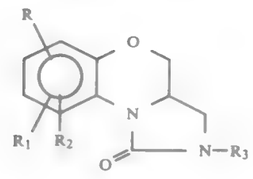
Filed Jun. 3, 1993, Ser. No. 70,860

Claims priority, application United Kingdom, Jun. 12, 1992, 9212486

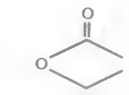
Int. Cl.[5] **C07D** *487/04;* **A61K** *35/00*

U.S. Cl. 514—230.2 **7 Claims**

1. A compound of formula (I)



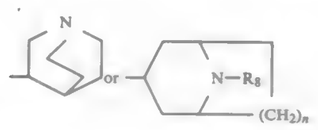
(I)



wherein

each of R, R_1 and R_2, which may be the same or different, is hydrogen, halogen, hydroxy, cyano, C_1–C_6 alkyl, CF_3, C_1–C_6 alkoxy, C_1–C_6 alkylthio, formyl, C_2–C_6 alkanoyl, carboxy, C_1–C_6 alkoxy-carbonyl, nitro, —$N(R_4R_5)$ in which each of R_4 and R_5 independently is hydrogen, C_1–C_6 alkyl, formyl or C_2–C_6 alkanoyl; or a $(R_6R_7)N$—SO_2 group, in which each of R_6 and R_7 independently is hydrogen or C_1–C_6 alkyl;

R_3 is



wherein

n is an integer of 1 or 2 and R_8 is hydrogen, C_1–C_6 alkyl unsubstituted or substituted by phenyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, formyl or C_2–C_6 alkanoyl; and the pharmaceutically acceptable salts thereof.

5,364,855

4-CINNOLINYL- AND 4-NAPHTHYRIDINYL-DIHYDROPYRIDINES, PROCESSES FOR THEIR PREPARATION AND THEIR USE IN MEDICAMENTS

Alexander Straub, Wuppertal; Jürgen Stoltefuss, Haan; Siegfried Goldmann, Wuppertal; Rainer Gross, Wuppertal; Martin Bechem, Wuppertal; Siegbert Hebisch, Wuppertal; Joachim Hütter, Wuppertal, and Howard-Paul Rounding, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

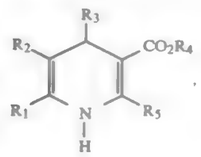
Filed Jan. 21, 1993, Ser. No. 6,592

Claims priority, application Germany, Jan. 30, 1992, 4202526

Int. Cl.[5] A61K *31/495, 31/44;* **C07D** *401/10, 471/04*

U.S. Cl. 514—248 **9 Claims**

1. A dihydropyridine of the formula



(I)

in which

R^1 and R^5 are identical or different and represent straight-chain or branched alkyl having up to 4 carbon atoms,

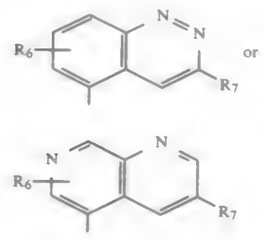
R^2 represents straight-chain or branched alkoxycarbonyl having up to 3 carbon atoms, or methoxyethoxycarbonyl, or represents nitro or cyano,

or

R^1 and R^2 together form a lactone ring of the formula

(I)

R^3 represents a heterocyclic radical of the formula



or

in which

R^6 denotes hydrogen, chlorine or methyl

R^7 denotes phenyl which is optionally substituted by fluorine, chlorine, nitro or trifluoromethyl or by straight-chain or branched alkyl or alkoxy each having up to 4 carbon atoms, and

R^4 represents hydrogen, or represents straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by trifluoromethyl, hydroxyl, carboxyl or cyano or by straight-chain or branched alkoxycarbonyl, alkoxy or acyloxy each having up to 4 carbon atoms,

or a physiologically acceptable salt thereof.

5,364,856

6-HETEROCYCLIC-4-AMINO-1,3,4,5-TETRAHYDROBENZ[CD]INDOLES

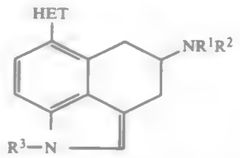
Richard N. Booher, Indianapolis; David E. Lawhorn, Greenfield; Charles J. Paget, Jr., Indianapolis, and John M. Schaus, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 677,016, Mar. 28, 1991, Pat. No. 5,244,912. This application Sep. 30, 1992, Ser. No. 954,105

Int. Cl.[5] C07D *403/04;* **A61K** *31/40*

U.S. Cl. 514—253 **8 Claims**

1. A compound of the formula



wherein:

R^1 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl, cyclopropylmethyl, phenyl(C_1–C_4 alkyl), naphthyl(C_1–C_4 alkyl), phenyl (C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, naphthyl(C_1–C_4 alkyl) substituted with one or two substituents selected from the group consisting of C_1–C_3 alkoxy, halo, hydroxy, C_1–C_3 thioalkyl, nitro, C_1–C_3 alkyl or trifluoromethyl, —$(CH_2)_nS(C_1$–C_4 alkyl), —$C(O)R^4$, or —$(CH_2)_nC(O)NR^5R^6$;

R^2 is hydrogen, C_1–C_4 alkyl, cyclopropylmethyl or C_3–C_4 alkenyl;

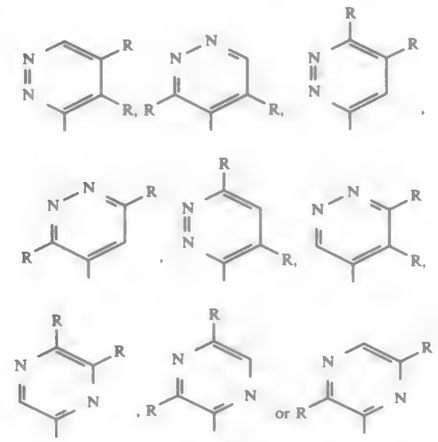
R^3 is hydrogen, C_1–C_4 alkyl or an amino blocking group;

n is 1–4;

R^4 is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy or phenyl;

R^5 and R^6 are independently hydrogen, C_1–C_4 alkyl, or C_5–C_8 cycloalkyl with the proviso that when one of R^5 or R^6 is a cycloalkyl the other is hydrogen;

HET is a heterocyclic ring selected from the consisting of



where each R is independently hydrogen, C_1–C_3 alkyl, halogen, hydroxy, C_1–C_3 alkoxy, C_1–C_3 thioalkyl, NH_2, CN, or phenyl;

or pharmaceutically acceptable salts thereof.

5,364,857

COMBINATION HAVING A NEUROPROTECTIVE EFFECT

Kerstin Bode-Greuel, Lohmar, Germany, assignor to Troponwerke GmbH & Co KG, Cologne, Germany

Filed Nov. 16, 1992, Ser. No. 976,791

Claims priority, application Germany, Nov. 26, 1991, 4138756

Int. Cl.[5] A61K *31/445, 31/425, 31/645, 31/505*

U.S. Cl. 514—259 **3 Claims**

1. A neuroprotective composition comprising at least one aminomethyl-chroman selected from the group consisting of (+)-, (−)- or (±)-2-[N-[4-(1,1-dioxido-3-oxo-2,3-dihydro-benzisothiazol-2-yl)butyl]aminomethyl]-8-methoxy-chroman, (+)-, (−)- and (±)-2-[N-[4-(1,1-dioxido-3-oxo-2,3-dihydro-benzisothiazol-2-yl)butyl]-aminomethyl]-chroman and salts thereof as Component A and ketanserin as Component B wherein 0.01 to 100 parts by weight of Component B is present per part by weight of Component A.

5,364,858

CAMPTOTHECIN ANALOGS AS POTENT INHIBITORS OF TOPOISOMERASE I

Monroe E. Wall, Chapel Hill; Mansukh C. Wani, Durham; Allan W. Nicholas, and Govindarajan Manikumar, both of Raleigh, all of N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Division of Ser. No. 600,825, Oct. 22, 1990, Pat. No. 5,244,903, and a continuation-in-part of Ser. No. 511,953, Apr. 17, 1990, Pat. No. 5,053,512, said Ser. No. 600,825, is a continuation-in-part of Ser. No. 424,910, Oct. 23, 1989, Pat. No. 5,106,742, which is a continuation-in-part of Ser. No. 32,449, Mar. 31, 1987, Pat. No. 4,894,456, said Ser. No. 511,953, is a continuation of Ser. No. 38,157, Apr. 14, 1987, abandoned. This application Dec. 8, 1992, Ser. No. 986,696

The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—279 **4 Claims**

1. A method of inhibiting the enzyme topoisomerase I in a mammal, comprising:

administering to said mammal an effective inhibitory amount of 9-amino-20(S)-camptothecin free of 9-amino-20(R)-camptothecin, 10-amino-20(S)-camptothecin free of 10-amino-20(R)-camptothecin or 10,11-methylenedioxy-20(S)-camptothecin sodium salt free of 10,11-methylenedioxy-20(R)-camptothecin sodium salt.

5,364,859

IMIDAZONAPHTHYRIDINE DERIVATIVES

Fumio Suzuki, Mishima; Takeshi Kuroda, Shizuoka; Shigeto Kitamura, Machida, and Kenji Ohmori, Mishima, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

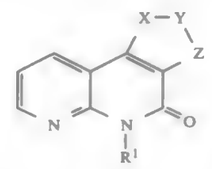
Continuation of Ser. No. 706,852, May 29, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 999,658

Claims priority, application Japan, Jun. 1, 1990, 2-143460; Nov. 30, 1990, 2-334657

Int. Cl.[5] C07D *487/04;* **A61K** *31/53*

U.S. Cl. 514—293 **7 Claims**

1. An imidazonaphthyridine derivative represented by formula (I):

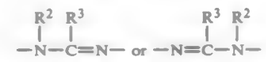


(I)

wherein:

R^1 represents lower alkyl or substituted or unsubstituted aryl; and

X—Y—Z represents



wherein R^2 represents hydrogen, lower alkyl, alkenyl, aralkenyl, or —$C(R^5)H$—$(CH_2)_n$—R^4 (wherein R^4 represents substituted or unsubstituted pyridyl; R^5 represents hydrogen, lower alkyl, or phenyl; and n represents an integer of 0 to 3); and R3 represents hydrogen, mercapto, hydroxy, lower alkyl, or aryl

or a pharmaceutically acceptable salt thereof.

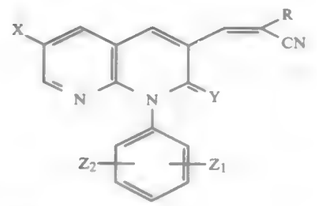
5,364,860

NAPHTHYRIDINE COMPOUNDS WHICH INHIBIT TYROSINE KINASE AND THEIR PHARMACEUTICAL COMPOSITIONS

Nicole Bru-Magniez, Paris; Michèle Launay, Rueil-Malmaison, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires UPSA, Agen, France

Filed Jul. 27, 1993, Ser. No. 97,239
Claims priority, application France, Jun. 25, 1993, 93 07746
Int. Cl.[5] A61K *31/44;* **C07D** *471/02*
U.S. Cl. 514—300 **11 Claims**

1. A naphthyridine compound of formula (I):



Formula (I)

in which:

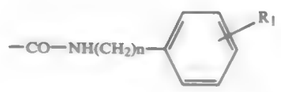
X is:
—the hydrogen atom,
—a halogen atom,
—an OH radical or
—a lower O-alkyl radical having 1 to 6 carbon atoms;

Y is:
—the oxygen atom,
—the sulfur atom or
—an NH Group;

Z_1 and Z_2 are independently:
—the hydrogen atom,
—a lower alkyl radical having 1 to 6 carbon atoms,
—a halogen atom,
—a trifluoromethyl radical,
—an OH radical,
—a lower O-alkyl radical having 1 to 6 carbon atoms,
—a lower S-alkyl radical having 1 to 6 carbon atoms,
—an NO_2 radical or
—a CN radical,

or Z_1 and Z_2 together form a methylenedioxy group; and

R is:
—a pyridine ring,
—an imidazole ring,
—an indole ring,
—a group —$CONH_2$ or —$CSNH_2$,
—a group



in which n is an integer from 0 to 5 and R_1 is the hydrogen atom or a halogen atom, or
—a group $COOR_2$, R_2 being a lower alkyl radical having 1 to 6 carbon atoms, and its addition salts.

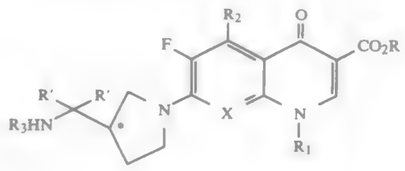
5,364,861

OPTICAL ISOMERS OF 7-[3-(1,1-DIALKYLMETHYL-1-AMINO-1-PYRROLIDINYL]-QUINOLONES AND NAPHTHYRIDONES AS ANTIBACTERIAL AGENTS

Susan E. Hagen, Canton Township, Wayne County, and Mark J. Suto, Whitmore Lake, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 906,260, Jun. 29, 1992, Pat. No. 5,278,317, which is a division of Ser. No. 730,362, Jul. 15, 1991, Pat. No. 5,157,128, which is a continuation-in-part of Ser. No. 621,101, Nov. 30, 1990, Pat. No. 5,072,001. This application Oct. 5, 1993, Ser. No. 132,019
Int. Cl.[5] A61K *31/435, 31/47;* **C07D** *471/04, 215/56*
U.S. Cl. 514—300 **27 Claims**

1. A substantially pure optical isomer of a compound of the formula



wherein
* denotes an asymmetric carbon atom of the R configuration;
X is C—H, C—F, C—Cl, C—CF_3, C—OR″ or N, in which R″ is hydrogen or alkyl of 1 to 3 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof;
R is H, alkyl of 1 to 3 carbon atoms or a cation;
R_1 is cyclopropyl or 2,4-difluorophenyl;
R_2 is hydrogen, methyl or amino;
R_3 is hydrogen, alkyl of 1–3 carbon atoms or an amino protective group;
R′ is alkyl of 1 to 3 carbon atoms.

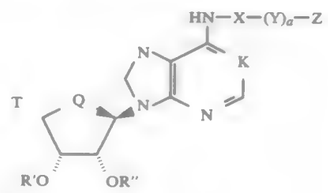
5,364,862

COMPOUNDS HAVING ANTIHYPERTENSIVE AND ANTI-ISCHEMIC PROPERTIES

Alfred P. Spada, Lansdale; Cynthia A. Fink, Doylestown, and Michael R. Myers, Reading, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 587,884, Sep. 25, 1990, abandoned. This application Oct. 2, 1992, Ser. No. 955,783
Int. Cl.[5] A61K *31/44;* **C07D** *471/04*
U.S. Cl. 514—303 **18 Claims**

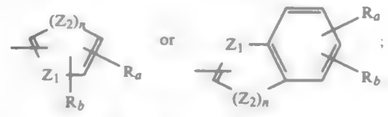
1. A compound of the formula



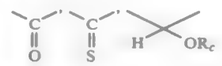
wherein:
K is CH;
Q is CH_2;
T is



or $R_3O—CH_2$;
X is a straight or branched chain alkylene, cycloalkylene or cycloalkenylene group;
Y is NR_4, O or S;
a=0 or 1;
Z is of the formula



Z_1 is N, CR_5, $(CH)_m—CR_5$ or $(CH)_m—N$, m being 1 or 2;
Z_2 is N, NR_6, O or S, n being 0 or 1;
R_1, R_2, R_3, R_4, R_5 and R_6 are independently H, alkyl, aryl or heterocyclyl;
R_a and R_b are independently H, OH, alkyl, hydroxyalkyl, alkyl mercaptyl, thioalkyl, alkoxy, alkyoxyalkyl, amino, alkyl amino, carboxyl, acyl, halogen, carbamoyl, alkyl carbamoyl, aryl or heterocyclyl; and
R′ and R″ are independently hydrogen, alkyl, aralkyl, carbamoyl, alkyl carbamoyl, dialkylcarbamoyl, acyl, alkoxycarbonyl, aralkoxycarbonyl, aryloxycarbonyl, or R′ and R″ together may form



where r_c is hydrogen or alkyl,



where R_d and R_e are independently hydrogen, alkyl, or together with the carbon atom to which they are attached may form a 1,1-cycloalkyl group;
provided that when X is straight chain alkylene and Q is oxygen, then Z represents a heterocyclyl including at least two heteroatoms;
or a pharmaceutically acceptable salt thereof.

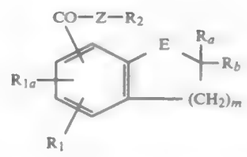
5,364,863

SPECIFIC 5-HT_3 ANTAGONISTS

Marlene L. Cohen; William B. Lacefield, both of Indianapolis, and David W. Robertson, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

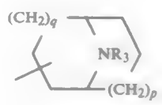
Division of Ser. No. 730,718, Jul. 16, 1991, abandoned, which is a division of Ser. No. 598,297, Jul. 27, 1991, abandoned, which is a division of Ser. No. 471,754, Jan. 24, 1990, Pat. No. 4,997,956, which is a division of Ser. No. 366,343, Jun. 14, 1989, Pat. No. 4,921,982, which is a continuation of Ser. No. 222,466, Jul. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 94,360, Sep. 8, 1987, abandoned. This application Apr. 26, 1993, Ser. No. 53,061
Int. Cl.[5] C07D *451/04;* **A61K** *31/46*
U.S. Cl. 514—304 **12 Claims**

1. A compound of the Formula I

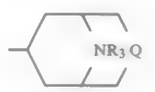


I

and pharmaceutically acceptable acid addition salts thereof: wherein
R_a and R_b are independently methyl, or ethyl, or when taken together with the carbon atom to which they are attached form a C_3–C_6 cycloalkyl ring,
E is S;
R_1 and R_{1a} are independently hydrogen, methyl, halo, C_1–C_3 alkoxy, (C_1–C_3 alkyl)-S(O)$_t$—, trifluoromethyl, amino, hydroxy, $(CH_3)_2NSO_2$—, or (C_1–C_4 alkyl)-CONH—;
m is 1;
t is 0, 1, or 2;
Z is O or NH; and
R_2 is quinuclidine, quinuclidine N-oxide, 1-azabicyclo[3.3.1]-non-4-yl,

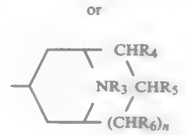


R_{2a}



R_{2b}

or



R_{2c}

wherein
R_3 is C_1–C_3 alkyl, p and q are independently 0–2; Q is O or S; n is 0 or 1; one of R_4 and R_5 when n is 0 is C_1–C_4 alkoxy, C_1–C_4 alkoxycarbonyl, hydroxy, or C_1–C_4 alkyl optionally substituted by hydroxy, C_1–C_4 alkoxy, or C_1–C_4 acyloxy and the other of R_4 and R_5 is hydrogen or C_1–C_4 alkyl; one of R_4, R_5, and R_6 when n is 1 is C_1–C_4 alkyl and the other two of R_4, R_5, and R_6 are independently hydrogen or C_1–C_4 alkyl.

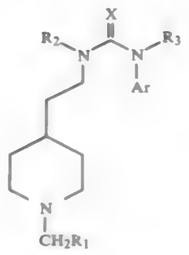
5,364,864

1,4-DISUBSTITUTED PIPERIDINES, THEIR PREPARATION AND THEIR APPLICATION IN THERAPY

Denis Bigg; Jean-Louis Vidaluc, and Francis Calmel, all of Castres, France, assignors to Pierre Fabre Medicament, Boulogne, France

Filed May 26, 1992, Ser. No. 888,969
Claims priority, application France, May 27, 1991, 91 06327
Int. Cl.[5] C07D *211/26, 213/16;* **A61K** *31/445*
U.S. Cl. 514—318 **10 Claims**

1. A 1,4-disubstituted piperidine corresponding to the general formula 1:



in which:
R_1 represents a C_5–C_7 cycloalkyl or phenyl group, said phenyl optionally substituted by a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a nitro group or a halogen atom;
R_2 and R_3 represent, independently of each other, a hydrogen atom or a C_1–C_4 alkyl group;
X represents a sulfur atom, an oxygen atom, a CH—NO_2 group or a group of the general formula N—R_4, where R_4 represents a hydrogen atom, a hydroxyl group, a C_1–C_4 alkoxy group, a C_1–C_4 alkyl group, a cyano group or a C_1–C_4 alkylsulfonyl group;
Ar represents a pyridyl group or a phenyl group, said phenyl group optionally substituted by one or more substituents chosen from a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 alkoxy group, a C_1–C_4 acyl group, a cyano group, a nitro group, a trifluoromethyl group or a trifluoromethoxy group;
as well as therapeutically acceptable organic or inorganic salts of these compounds.

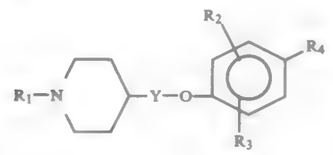
5,364,865

PHENOXY- AND PHENOXYALKYL-PIPERIDINES AS ANTIVIRAL AGENTS

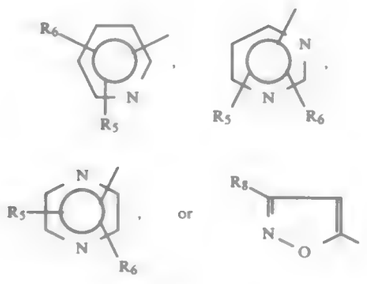
Guy D. Diana, Stephentown, N.Y., assignor to Sterling Winthrop Inc., New York, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,498
Int. Cl.[5] A61K *31/445;* **C07D** *401/04, 401/14, 241/10*
U.S. Cl. 514—318 **24 Claims**

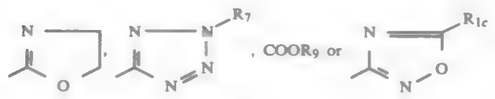
1. A compound of the formula



wherein
R_1 is selected from



Y is a bond or lower-alkylene;
R_2 and R_3 are independently hydrogen, lower-alkyl or halogen;
R_4 is



R_5 is hydrogen, lower-alkyl or halogen;
R_6 is hydrogen, lower-alkyl, or halogen;
R_7 is hydrogen or lower-alkyl;
R_8 is hydrogen, lower-alkyl, or trifluoromethyl;
R_9 is lower-alkyl; and
R_{10} is lower-alkyl, trifluoromethyl or difluoromethyl; or a pharmaceutically acceptable acid addition salt thereof.

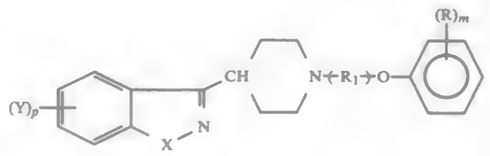
5,364,866

HETEROARYLPIPERIDINES, PYRROLIDINES AND PIPERAZINES AND THEIR USE AS ANTIPSYCHOTICS AND ANALETICS

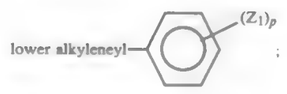
Joseph T. Strupczewski, Flemington; Grover C. Helsley, Stockton; Yulin Chiang, Convent Station, all of N.J.; Kenneth J. Bordeau, Upper Black Eddy, Pa., and Edward J. Glamkowski, Warren, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 788,269, Nov. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 944,705, Sep. 5, 1991, abandoned, which is a continuation of Ser. No. 619,825, Nov. 29, 1990, abandoned, which is a continuation of Ser. No. 456,790, Dec. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 354,411, May 19, 1989, abandoned. This application Oct. 30, 1992, Ser. No. 969,383
Int. Cl.[5] A61K *31/445, 31/495, 31/42;* **C07D** *211/00*
U.S. Cl. 514—321 **86 Claims**

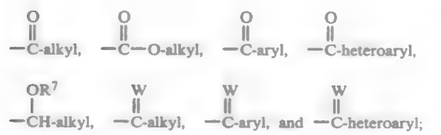
1. A compound of the formula:



wherein
X is —O— or —S—;
p is 1 or 2;
Y is hydrogen, lower alkyl, hydroxy, chlorine, fluorine, bromine, iodine, lower alkoxy, trifluoromethyl, nitro, or amino, when p is 1;
Y is lower alkoxy, hydroxy and halogen when p is 2 and X is —O—;
(R_1) is R_{20}, R_{21}, or R_{22}, wherein:
R_{20} is —$(CH_2)_n$— where n is 2, 3, 4 or 5;
R_{21} is
—CH_2—CH=CH—CH_2—,
—CH_2—C≡C—CH_2—,
—CH_2—CH=CH—CH_2—CH_2,
—CH_2—CH_2—CH=CH—CH_2—,
—CH_2C≡C—CH_2—CH_2—, or
—CH_2—CH_2—C≡C—CH_2—,
the —CH=CH— bond being cis or trans;
R_{22} is R_{20} or R_{21} in which one or more carbon atoms of R_{20} or R_{21} are substituted by at least one C_1–C_6 linear alkyl group, phenyl group or



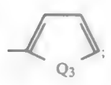
where Z_1 is lower alkyl, —OH, lower alkoxy, —CF_3, —NO_2, —NH_2 or halogen;
R is hydrogen, lower alkyl, lower alkoxy, hydroxyl, carboxyl, chlorine, fluorine, bromine, iodine, amino, lower mono or dialkylamino, nitro, lower alkyl thio, trifluoromethoxy, cyano, acylamino, trifluoromethyl, trifluoroacetyl, aminocarbonyl, monoalkylaminocarbonyl, dialkylaminocarbonyl, formyl,



alkyl is lower alkyl;
aryl is phenyl or



where R_5 is hydrogen, lower alkyl, lower alkoxy, hydroxy, chlorine, fluorine, bromine, iodine, lower monoalkylamino, lower dialkylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy;
heteroaryl is



Q_3 is —O—,



—CH=N—;
W is CH_2 or CHR_8 or N—R_9;
R_7 is hydrogen, lower alkyl, or acyl;
R_8 is lower alkyl;
R_9 is hydroxy, lower alkoxy, or —NHR_{10}; and
R_{10} is hydrogen, lower alkyl, C_1–C_3 acyl, aryl,



where aryl and heteroaryl are as defined above; and
m is 1, 2, or 3;
all geometric, optical and stereoisomers thereof, or a pharmaceutically acceptable acid addition salt thereof.

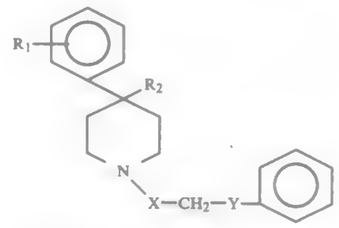
5,364,867

4-PHENYLPIPERDINE AGENTS FOR TREATING CNS DISORDERS

Diane L. DeHaven-Hudkins, Township of Uwchlan, Pa.; John P. Mallamo, Town of Kinderhook, and William F. Michne, Town of Poestenkill, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Nov. 30, 1992, Ser. No. 982,922
Int. Cl.[5] A61K *31/445;* **C07D** *211/32, 401/02*
U.S. Cl. 514—326 **16 Claims**

1. A compound having the formula;



wherein;
R_1 is hydrogen, hydroxy or lower-alkoxy
R_2 is hydrogen, hydroxy, lower-alkanoyl or aroyl, or $CONR_3R_4$; R_3 and R_4 are the same or different lower-alkyl or R_3 and R_4 together represent a lower-alkylene chain;
X is methylene;
or a pharmaceutically acceptable acid addition salt thereof.

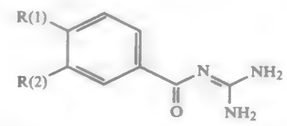
5,364,868

AMINO-SUBSTITUTED BENZOYLGUANIDINES, PROCESS FOR THEIR PREPARATION, THEIR USE AS A MEDICAMENT AND MEDICAMENT CONTAINING THEM

Heinrich Englert, Hofheim am Taunus; Dieter Mania, Königstein/Taunus; Hans-Jochen Lang, Hofheim am Taunus; Wolfgang Scholz, Eschborn; Wolfgang Linz, Mainz, and Udo Albus, Florstadt, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 11, 1993, Ser. No. 16,535
Claims priority, application Germany, Feb. 15, 1992, 4204577
Int. Cl.[5] A61K *31/445;* **C07D** *211/28, 207/06;* **C07C** *279/10*
U.S. Cl. 514—331 **7 Claims**

1. A benzoylguanidine of the formula I



(I)

in which:
one of the two substituents R(1) or R(2) is —NR(3)R(4), where R(3) and R(4) together form a methylene chain $(CH_2)_n$, in which n is 4 or 5; and
the other substituent R(1) or R(2) is chlorine, C_1-C_4-alkyl, C_1-C_4-alkoxy, or phenoxy, in which the phenyl radical is unsubstituted or substituted by one or two substituents selected from the group consisting of methyl, methoxy, fluorine or chlorine;
or its pharmaceutically tolerable salts.

5,364,869

HETEROCYCLE-SUBSTITUTED BENZYAMINOPYRIDINE ANGIOTENSIN II RECEPTOR ANTAGONISTS

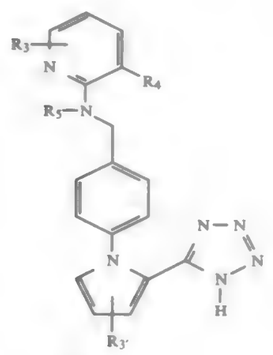
Biswanath De, Cincinnati, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 848,618, Mar. 9, 1992, abandoned. This application Jan. 7, 1993, Ser. No. 1,472

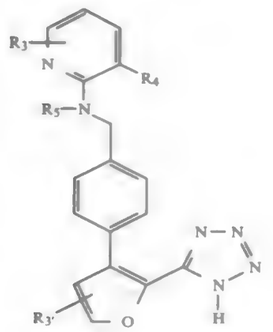
Int. Cl.[5] C07D *401/12, 215/42;* A61K *31/435*

U.S. Cl. 514—340 **8 Claims**

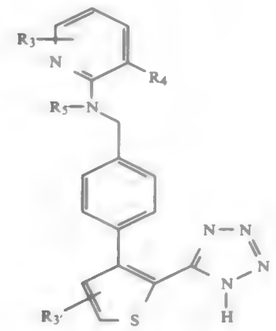
1. A compound of the formula:



or



or



wherein R_3 is hydrogen, loweralkyl, halo or alkoxy, $R_{3'}$ is hydrogen, loweralkyl or halo, R_4 is —$COOR_{24}$ wherein R_{24} is hydrogen or a carboxy-protecting group selected from the group consisting of C_1–C_8 alkyl, benzyl, alkoxybenzyl, nitrobenzyl, dialkylaminoalkyl, alkanoyloxyalkyl, aroyloxyalkyl, alkoxycarbonylalkyl, alkoxycarbonyloxyalkyl, alkoxycarbonylaminoalkyl, alkylaminocarbonylaminoalkyl, alkanoylaminoalkyl, dialkylaminocarbonylalkyl, (5-(loweralkyl)-2-oxo-1,3-dioxolen-4-yl)alkyl and (5-phenyl-2-oxo-1,3-dioxolen-4-yl)alkyl and R_5 is hydrogen, loweralkyl, alkoxy-substituted loweralkyl, halo-substituted loweralkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl; or a pharmaceutically acceptable salt thereof.

. 5,364,870

FUNGICIDAL (2-ARYL-2-SUBSTITUTED)ETHYL-1,2,4-TRIAZOLES

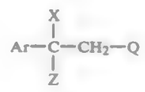
Steven H. Shaber, Horsham, Pa., and Katherine E. Flynn, Loveland, Ohio, assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 900,047, Jun. 17, 1992, Pat. No. 5,252,594. This application Sep. 17, 1993, Ser. No. 97,242

Int. Cl.[5] A61K *31/44, 31/41;* C07D *213/16, 249/08*

U.S. Cl. 514—340 **13 Claims**

1. A compound of the formula



wherein

Ar is pyridyl, thienyl, furyl, phenyl, naphthyl, or phenyl or naphthyl each independently substituted with up to three substituents independently selected from the group consisting of halogen, trihalomethyl, cyano, phenyl, phenoxy, (C_1–C_4)alkyl, halo(C_1–C_4)alkyl, (C_1–C_4)alkoxy and halo(C_1–C_4)alkoxy;

Z is (C_2–C_{12})alkyl, halo(C_1–C_{12})alkyl, cyclo(C_3–C_8)alkyl, cyclo(C_3–C_8)alkyl, (C_1–C_5)alkyl, (C_6–C_{10})aryl, (C_6–C_{10})ar(C_1–C_5)alkyl, or (C_6–C_{10})aryl or (C_6–C_{10})ar(C_1–C_5)alkyl each independently substituted with up to three substituents independently selected from the group consisting of halogen, trihalomethyl, cyano, phenyl, phenoxy, (C_1–C_4)alkyl, halo(C_1–C_4)alkyl, (C_1–C_4)alkoxy and halo(C_1–C_4)alkoxy;

Q is a 1-(1,2,4-triazolyl) or a 4-(1,2,4-triazolyl); and

X is —NC, —$CH_2N{\equiv}C$, —CH_2NHCHO, —NHCHO, —$NHCOCH_3$, —$NHCO_2R$, NHCONHR, —NH_2, —$N{=}C(R)_2$, —NCO, NO_2, —CHO, —CON_3, —$CH{=}NOR$, —$CH{=}C(R)_2$ or



provided that when Ar is phenyl, naphthyl or substituted phenyl or naphthyl, X is not —NC, —$CH_2N{=}C$, —CH_2NHCHO, —NHCHO, —$NHCOCH_3$, —$NHCO_2R$, NHCONHR, —NH_2, —$N{=}C(R)_2$, —NCO or NO_2;

R is H or (C_1–C_5)alkyl;

or the agronomically acceptable enantiomorphs, acid addition salts and metal salt complexes thereof.

5,364,871

NEW THIAZOLE DERIVATIVES, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Hisashi Takasugi, Sakai; Yousuke Katsura, Toyonaka; Tetsuo Tomishi, Minoo, and Yoshikazu Inoue, Amagasaki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

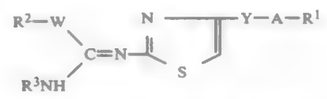
Continuation of Ser. No. 825,832, Jan. 28, 1992, abandoned, which is a continuation of Ser. No. 668,915, Mar. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 571,151, Aug. 23, 1990, abandoned. This application Mar. 10, 1993, Ser. No. 29,359

Claims priority, application United Kingdom, Sep. 15, 1989, 8920977.9; Dec. 19, 1989, 8928610.8; Jun. 11, 1990, 9012962.8

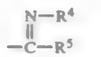
Int. Cl.[5] A61K *31/44;* C07D *417/06*

U.S. Cl. 514—342 **6 Claims**

1. A compound of the formula:



wherein R^1 is amino, ureido, lower alkanoylamino, lower alkoxycarbonylamino, lower alkylsulfonylamino, lower alkoxy(lower)alkanoylamino, mono or di or trihalo(lower)alkanoylamino, hydroxy(lower)alkanoylamino, protected hydroxy(lower)alkanoylamino, lower alkoxycarbonyl(lower)alkoxy(lower)alkanoylamino, lower alkylthio(lower)alkanoylamino, mono or di (lower)alkylamino(lower)alkanoylamino, furyl(lower)alkylthioalkanoylamino, lower alkylureido, (C_3–C_7)-cycloalkanecarbonylamino, (C_3–C_7)-cycloalkanecarbonylamino having oxo, lower alkyl(C_3–C_7)-cycloalkanecarbonylamino, furoylamino, nicotinoylamino, (C_3–C_7)-cycloalkenylamino having amino and oxo, imido, triazolylamino substituted by amino and lower alkyl, benzoisothiazolylamino substituted by oxo, 2-cyano-3-lower alkylguanidino, 2-lower alkanesulfonyl-3-lower alkylguanidino, 2-lower alkanesulfonylguanidino, (1-lower alkylamino-2-nitrovinyl)amino, hydroxy, halogen, cyano, carbamoyl, lower alkoxycarbonyl, benzimidazolylthio or a group of the formula:



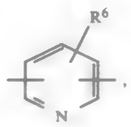
in which R^4 is hydrogen or sulfamoyl, and R^5 is amino or lower alkoxy,

R^2 is hydrogen, lower alkyl, lower alkoxy(lower)alkyl, di(lower)alkylamino(lower)alkyl, (C_3–C_7)-cycloalkyl, lower alkenyl or mono or di or trihalo(lower)alkyl,

R^3 is hydrogen or lower alkyl; or

R^2 and R^3 are linked together to form lower alkylene,

Y is



in which R^6 is hydrogen,

A is lower alkylene, and

W is NH; or

R^2-W is piperidino or morpholino,

or pharmaceutically acceptable salt thereof.

5,364,872

DIHYDROPYRIDINE-3,5-DICARBOXYLIC ACID ESTER DERIVATIVES

Kazuharu Tamazawa; Tadao Kojima, both of Saitama; Hideki Arima, Tokyo; Yukiyasu Murakami, Saitama; Yasuo Isomura, Tokyo; Minoru Okada, Tokyo; Toichi Takenaka, Tokyo, and Kiyoshi Takanobu, Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 600,130, Oct. 17, 1990, abandoned, which is a continuation of Ser. No. 478,724, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 296,919, Jan. 11, 1989, abandoned, which is a continuation of Ser. No. 945,168, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 723,043, Apr. 15, 1985, abandoned. This application Jan. 23, 1992, Ser. No. 826,232

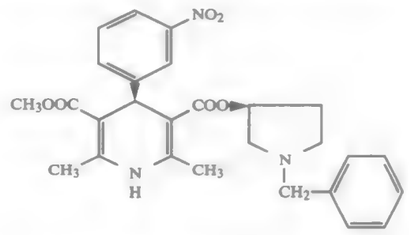
Claims priority, application Japan, Apr. 16, 1984, 59-75998; Jun. 4, 1984, 59-114098; Aug. 7, 1984, 59-165793

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.[5] C07D *401/12;* A61K *31/44*

U.S. Cl. 514—343 **5 Claims**

1. A pure optical isomer of diastereoisomer A of (±)-2,6-dimethyl-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylic acid 3-(1-benzylpyrrolidin-3-yl) ester 5-methyl ester



prepared by subjecting a mixture of diastereoisomers A and B of 2,6-dimethyl-4-(3-nitrophenyl)-1,4-dihydropyridine-3,5-dicarboxylic acid 3-(1-benzylpyrrolidin-3-yl) ester 5-methyl ester to column chromatography using silica gel as a carrier and a mixture of ethyl acetate and acetic acid as an eluant, separating the acetate of diastereoisomer A from the eluate, treating the acetate with a base, and then reacting resulting diastereoisomer A with L-(−) malic acid to deposit the L-(−)-malate of the dextro-rotatory optical isomer of diastereoisomer A, or treating the L-(−)-malate with a base, or further treating the resulting dextro-rotatory optical isomer with a pharmaceutically acceptable acid.

5,364,873

PYRIDINE-2,4- AND DICARBOXYLIC ACID DERIVATIVES, THE USE THEREOF AND PHARMACEUTICAL COMPOSITION BASED ON THESE COMPOUNDS

Martin Bickel, Bad Homburg; Dietrich Brocks, Wiesbaden; Harald Burghard, Schmitten; Volkmar Günzler, Marburg-Cappel, and Stephan Henke, Bad Soden am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

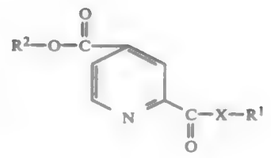
Division of Ser. No. 932,738, Aug. 25, 1992, Pat. No. 5,238,948, which is a continuation of Ser. No. 690,315, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 555,675, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 153,086, Feb. 8, 1988, abandoned. This application Apr. 1, 1993, Ser. No. 21,139

Claims priority, application Germany, Feb. 10, 1987, 3703963

Int. Cl.[5] A61K *31/44;* C07D *213/81*

U.S. Cl. 514—354 **12 Claims**

1. A pharmaceutical composition comprising an amount effective for use in the therapy of a mammal of a compound of the formula I



(I)

in which

R^1 denotes branched or unbranched C_1–C_{12}-alkyl which is optionally monosubstituted or, in the case of the C_2–C_{12}-alkyl radicals, also polysubstituted by halogen, hydroxyl, cyano, carboxyl, alkoxy, alkoxycarbonyl, alkylcarbonyloxy, alkyl- or dialkylamino, the alkyl radicals containing 1–4 carbon atoms and, in the case of the C_3- and C_4-alkyl radicals, it also being possible for them to be branched, phenyl, which is in turn optionally mono-, di- or trisubstituted by halogen, nitro, C_1–C_4-alkyl or C_1–C_4-alkoxy, it also being possible, in the case of polysubstitution, for the substituents to differ independently of one another and it also being possible, in the case of the C_3- and C_4-alkyl radicals, for these to be branched,

or R^1 denotes saturated C_5–C_7-cycloalkyl, which is optionally benzo-fused,

or R^1 denotes aryl or heteroaryl, which in turn is optionally mono-, di- or trisubstituted by halogen, nitro, C_1–C_4-alkyl or C_1–C_4-alkoxy, it also being possible, in the case of polysubstitution, for the substituents to differ independently of one another and it also being possible, in the case of the C_3- and C_4-alkyl radicals, for these to be branched,

or R^1 denotes 2-oxo-1,3-dioxolylmethyl, which is optionally also methyl-substituted,

or R^1 denotes hydrogen, and

R^2 independently of R^1 denotes hydrogen or is selected from the values of R^1 and

X denotes R^3-substituted nitrogen, in which R^3 is hydrogen or C_1–C_6-alkyl or, together with R^1, optionally forms a heterocyclic saturated 5-, 6- or 7-ring, it also being possible for the heterocyclic ring to include a second nitrogen atom and it being possible for the heterocyclic ring in turn to be substituted by phenyl or phenyl-C_1–C_3-alkyl,

or a physiologically tolerated salt thereof, together with a pharmaceutically acceptable carrier.

5,364,874

BIOCIDE COMPOSITION AND USE

Fraser F. Morpeth, Ramsbottom, England, assignor to Zeneca Limited, London, United Kingdom

Continuation of Ser. No. 689,623, Apr. 23, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,422

Claims priority, application United Kingdom, Apr. 27, 1990, 9009529.0

Int. Cl.[5] A01N *43/80, 37/34;* **C14C** *9/00;* **C10M** *133/24;* **C09D** *5/14*

U.S. Cl. 514—373 **8 Claims**

1. A biocide composition having a fractional inhibitory concentration of less than one which comprises an effective amount of (a) 2-methyl-4,5-trimethylene-4-isothiazolin-3-one, and (b) 2-bromo-2-bromomethyl glutaronitrile.

5,364,875

IMIDAZOLES LINKED TO BICYCLIC HETEROCYCLIC GROUPS FOR THE TREATMENT OF ATHEROSCLEROSIS

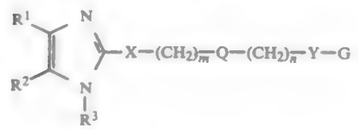
Richard G. Wilde, New Castle, Del., assignor to The Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Filed May 11, 1992, Ser. No. 881,033

Int. Cl.[5] C07D *401/12, 403/12, 411/12;* **A61K** *31/44, 31/415, 31/42*

U.S. Cl. 514—375 **13 Claims**

1. A compound of Formula (I):



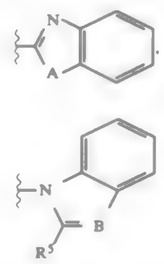
(I)

and stereoisomers and pharmaceutically acceptable salts thereof, wherein:

X and Y are selected independently from the groups $S(O)_p$, CH_2, or NR^4;

Q is selected from either CH_2, or an aromatic ring selected from the group consisting of benzene, pyrrole, furan, or thiophene, said aromatic ring being connected through two ring substitution sites and said aromatic ring being optionally substituted with 1–3 groups independently selected from F, Cl, Br, OH, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3–C_8 branched alkyl, $S(O)_t(C_1$–C_6 alkyl), NO_2, CF_3, or $NR^{15}R^{16}$;

G is selected from the groups



each being optionally substituted at valence-allowed sites with 1–3 groups independently selected from F, Cl, Br, OH, C_1–C_4 alkoxy, C_1–C_4 alkyl, C_3C_8 branched alkyl, $S(O)_t(C^1$–C_6 alkyl), NO_2, CF_3, or $NR^{15}R^{16}$;

wherein A is O, or NH, and B is independently CH or N;

R^1 and R^2 are selected independently from H, C_1–C_8 alkyl, C_3–C_8 branched alkyl, C_3–C_7 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_{7-C14} aralkyl, pyridyl, thienyl, furanyl, or phenyl; each being optionally substituted with 1–3 groups independently selected from F, Cl, Br, OH, C_1–C_4 alkoxy, C_1C_4 alkyl, C_3–C_8 branched alkyl, $S(O)_t(C_1$–C_6 alkyl), NO_2, CF_3, or $NR^{15}R^{16}$;

R^3 is H, C_1–C_6 alkyl, allyl, benzyl, or phenyl; each being optionally substituted with F, Cl, CH_3, OCH_3, or CF_3;

R^4 is H, C_1–C_8 alkyl, C_3–C_{10} alkoxyalkyl, C_5–C_{12}(alkoxy)alkoxyalkyl, C_3–C_8 branched alkyl, C_{7-C14} phenylalkyl, or phenyl, each being optionally substituted with 1–3 groups selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_8 dialkylamino, C_1–C_4 alkylthio, halogen, or NO_2;

R^{15} and R^{16} are selected independently from H, C_1–C_8 alkyl, benzyl, or phenyl;

m and n are independently 0–6, and selected so that the total number of CH_2 groups in the chain between X and G is at least 2; and

p and t are independently 0–2.

5,364,876

OMEGA-[2-(ALKYL)PHENYL]-2-AMINOALKANOIC ACIDS AS ANTAGONISTS OF EXCITATORY AMINO ACID RECEPTORS

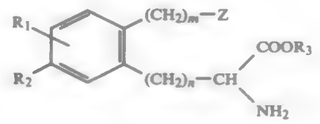
Gregory S. Hamilton, Catonsville, Md., assignor to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Dec. 2, 1992, Ser. No. 984,452

Int. Cl.[5] C07D *257/04;* **A61K** *31/10, 31/195, 31/215*

U.S. Cl. 514—381 **21 Claims**

1. A compound having the general formula:



wherein m and n are independently 0, 1, 2, or 3; R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, halomethyl, nitro, amino, alkoxy, hydroxyl, hydroxymethyl, C1 to C6 lower alkyl, C7 to C12 higher alkyl, aryl and aralkyl; Z is selected from the group consisting of carboxyl, sulfo and 5-tetrazolyl radical; R_3 is selected from the group consisting of hydrogen, and C1 to C6 lower alkyl; and pharmaceutically acceptable salts thereof.

5,364,877

INDOLE DERIVATIVES AS 5-LIPOXYGENASE INHIBITORS

Pierre A. R. Bruneau, Lades, France; Graham C. Crawley, Kerridge, and Keith Oldham, Poynton, both of England, assignors to ICI Pharma, London, United Kingdom and Imperial Chemical Industries, PLC, Cergy Cedex, France

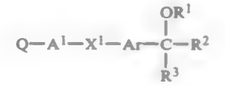
Division of Ser. No. 950,164, Sep. 24, 1992, Pat. No. 5,278,177, which is a division of Ser. No. 717,501, Jun. 19, 1991, Pat. No. 5,179,115. This application Oct. 8, 1993, Ser. No. 133,335

Claims priority, application United Kingdom, Jun. 21, 1990, 90401759

Int. Cl.[5] A61K *31/405;* **C07D** *405/12*

U.S. Cl. 514—414 **9 Claims**

1. A bicyclic heterocyclic derivative of the formula I



I

wherein Q is a indolyl or a hydrogenated derivative thereof which may optionally bear one or two oxo or thioxo substituents and up to four further substituents selected from halogeno, hydroxy, cyano, amino, (1–4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, (1–4C)alkylamino, di[(1–4C)alkyl]amino, amino-(1–4C)alkyl, (1–4C)alkylamino-(1–4C)alkyl, di-[(1–4C)alkyl]amino-(1–4C)alkyl, phenyl and phenyl-(1–4C)alkyl, and wherein said phenyl or phenyl-(1–4C)alkyl substituent may optionally bear a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

wherein A^1 is a direct link to X^1 or is (1–3C)alkylene;

wherein X^1 is oxy, thio, sulphinyl, sulphonyl or imino;

wherein Ar is phenylene which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, carbamoyl, ureido, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylamino, di-[(1–4C)alkyl]amino, fluoro-(1–4C)alkyl and (2–4C)alkanoylamino;

wherein R^1 is (1–4C)alkyl, (3–4C)alkenyl or (3–4C)alkynyl; and

wherein R^2 and R^3 together form a group of the formula $—A^2—X^2—A^3—$ which, together with the carbon atom to which A^2 and A^3 are attached, defines a ring having 5 to 7 ring atoms, wherein A^2 and A^3 which may be the same or different, each is (1–3C)alkylene and X^2 is oxy, thio, sulphinyl or sulphonyl, and which ring may bear one, two or three substituents, which may be the same or different, selected from hydroxy, (1–4C)alkyl and (1–4C-)alkoxy;

or wherein R^1 and R^2 together form a group of the formula $—A^2—X^2—A^3—$ which, together with the oxygen atom to which A^2 is attached and with the carbon atom to which A^3 is attached, defines a ring having 5 to 7 ring atoms, wherein A^2 and A^3 which may be the same or different, each is (1–3C)alkylene and X^2 is oxy, thio, sulphinyl or sulphonyl, and which ring may bear one, two or three (1–4C)alkyl substituents, and wherein R^3 is (1–4C)alkyl, (2–4C)alkenyl or (2–4C)alkynyl;

or a pharmaceutically-acceptable salt thereof.

5,364,878

USE OF SUBSTITUTED 3,4-DIHYDRO-2H-BENZOPYRANS AS REMEDIES FOR OBSTRUCTIVE FUNCTIONAL DISORDERS OF THE LUNGS

Heinrich C. Englert, Hofheim am Taunus; Erik Klaus; Dieter Mania, both of Kelkheim, and Berward Schölkens, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

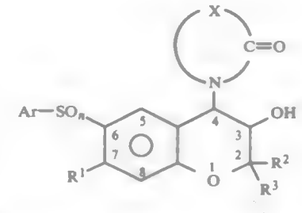
Continuation of Ser. No. 764,966, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 630,436, Dec. 20, 1990, abandoned, which is a continuation of Ser. No. 380,309, Jul. 17, 1989, abandoned. This application Jan. 14, 1993, Ser. No. 4,648

Claims priority, application Germany, Jul. 19, 1988, 3824446

Int. Cl.[5] A61K *31/55, 31/44, 31/40*

U.S. Cl. 514—422 **7 Claims**

1. A method of treating a smooth muscle disorder of the respiratory system, which comprises administering to a host in need of such treatment an effective amount of a compound of the formula I;



I

wherein:

R^1 represents H, OH, $(C_1$–$C_2)$-alkoxy, $(C_1$–$C_2)$-alkyl or NR^4R^5, where R^4 and R^5 are identical or different and represent H, $(C_1$–$C_2)$-alkyl or $(C_1$–$C_3)$-alkyl-carbonyl;

R^2 and R^3 are identical or different and represent alkyl having 1–4 carbon atoms;

Ar represents an aromatic system which is unsubstituted or substituted by 1 to 3 identical or different radicals selected from $(C_1$–$C_2)$-alkyl, $(C_1$–$C_2)$-alkoxy, halogen, trifluoromethyl, CN, NO_2, SO_m—$(C_1$–$C_2)$-alkyl wherein m represents the integers 1 or 2, and CO—$(C_1$–$C_2)$-alkyl radicals;

n represents the integers 1 or 2; and

x represents a $(CH_2)_r$ chain which may be interrupted by O, S or a NR^6 group, wherein R^6 represents H or $(C_1$–$C_4)$-alkyl, and r represents the integers 2, 3, 4, or 5.

5,364,879

MEDICAL USES OF TRIOXOLANE AND DIPEROXIDE COMPOUNDS

Stephen Herman, Jupiter Island, Fla., assignor to Cliveden Ltd., Nassau, Bahamas

Continuation of Ser. No. 996,503, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 813,962, Dec. 24, 1991, abandoned, which is a continuation-in-part of Ser. No. 456,216, Dec. 20, 1989, abandoned, which is a division of Ser. No. 211,378, Jun. 24, 1988, abandoned. This application Feb. 14, 1994, Ser. No. 195,983

Int. Cl.[5] A01N *43/26, 37/02, 31/00*

U.S. Cl. 514—452 11 Claims

1. A pharmaceutical composition for the treatment of a medical condition in a mammal, comprising a pharmaceutically effective amount for treatment of said condition of a diperoxide derivative of a non-terpene unsaturated hydrocarbon in a pharmaceutically acceptable, non-aqueous carrier wherein said derivative is prepared by passing ozone through said hydrocarbon under conditions that provide for intimate contact between said hydrocarbon and said ozone at a temperature of 35° C. or below.

5,364,880

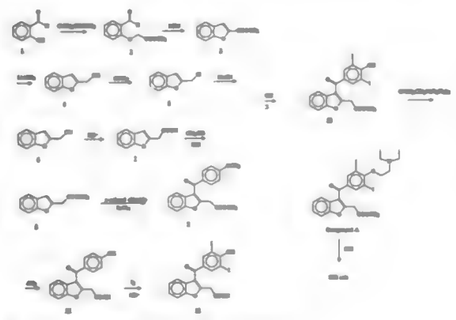
COMPOUND FOR TREATMENT OF CARDIAC ARRHYTHMIA, SYNTHESIS, AND METHODS OF USE

Pascal Druzgala, Gainesville, Fla., assignor to Advanced Therapies, Inc., Cody, Wyo.

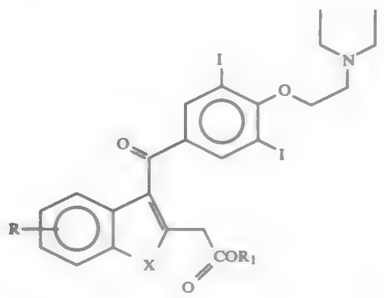
Filed Jun. 16, 1993, Ser. No. 78,371

Int. Cl.[5] A61K *31/34;* C07D *307/80, 307/81*

U.S. Cl. 514—469 11 Claims



1. A compound having the structure



wherein

R is hydrogen;

R_1 is straight or branched-chain alkyl; and

X is O; a derivative of said compound; or a salt of said compound.

5,364,881

S-ALKYL-ISOTHIOUREIDO-AMINO ACIDS AND USE THEREOF

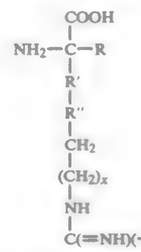
Owen W. Griffith, Milwaukee, and Krishnaswamy Narayanan, Wauwatosa, both of Wis., assignors to The Medical College of Wisconsin Research Foundation, Inc., Milwaukee, Wis.

Filed Nov. 15, 1993, Ser. No. 152,010

Int. Cl.[5] A61K *31/215;* C07C *335/32*

U.S. Cl. 514—506 17 Claims

1. Physiologically active compounds including N^{δ}-substituted ornithine or N^{ϵ}-substituted lysine moieties or monoalkyl carbon-substituted N^{δ}-substituted ornithine or N^{ϵ}-substituted lysine moieties, having the formula



wherein R is $(CH_2)_yCH_3$ or H, R′ is CH_2 or $C(H)(CH_2)_yCH_3$, and R″ is CH_2 or $C(H)(CH_2)_yCH_3$, with y ranging from 0 to 5, and x is 0 or 1 and wherein none or only one of R, R′ and R″ provides an alkyl substituent on ornithine or lysine moiety, and wherein Q is alkyl having 1 to 5 carbon atoms, and physiologically acceptable acid addition salts thereof.

5,364,882

OXYSULFONYL UREA ACAT INHIBITORS

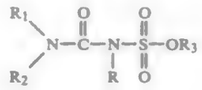
Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 736,678, Jul. 26, 1991, Pat. No. 5,198,466, which is a continuation-in-part of Ser. No. 611,245, Nov. 9, 1990, abandoned. This application Dec. 1, 1992, Ser. No. 984,028

Int. Cl.[5] A61K *31/255;* C07C *309/63*

U.S. Cl. 514—517 11 Claims

1. A compound of the formula



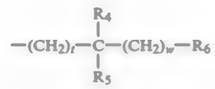
Formula I

wherein R is hydrogen, a straight or branched alkyl group having from 1 to 8 carbon atoms or benzyl;

wherein each of R_1 and R_2 is selected from

(a) hydrogen,

(b) the group



wherein t is zero to 4; w is zero to 4 with the proviso that the sum of t and w is not greater than 5; R_4 and R_5 are independently selected from hydrogen or alkyl having from 1 to 6 carbon atoms, or when R_4 is hydrogen, R_5 is selected from the group defined for R6; and R_6 is phenyl or phenyl substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to 6 carbon atoms, straight or branched alkoxy having from 1 to 6 carbon atoms, phenoxy, hydroxy, fluorine, chlorine, bromine, nitro, trifluoromethyl,

—COOH, COOalkyl wherein alkyl has from 1 to 4 carbon atoms, or $—(CH2)_qNR_7R_8$ wherein R_7 and R_8 are independently hydrogen or alkyl of from 1 to 4 carbon atoms, and q is zero or one;

(c) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds;

(d) an alkyl group having from 1 to 6 carbon atoms wherein the terminal carbon is substituted with hydroxy, $—NR_7R_8$ wherein $R_7$and R_8 have the meanings defined above, or —COOalkyl wherein alkyl is straight or branched and has from 1 to 4 carbon atoms;

(e) $—(CH_2)_pQ$ wherein p is a number from zero to 3 and Q is a 5- or 6-membered monocyclic or fused bicyclic heterocyclic ring having only one nitrogen, oxygen, or sulfur atom as the heteroatom in the heterocyclic ring;

(f) phenyl substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to 6 carbon atoms, alkoxy which is straight or branched and has from 1 to 6 carbon atoms, alkylthio which is straight or branched and has from 1 to 6 carbon atoms, $—(CH_2)_qNR_7R_8$ wherein q, R_7 and R_8 have the meanings defined above, hydroxy, nitro, chlorine, fluorine, bromine, or trifluoromethyl; or

(g) NR_1R_2 taken together form a monocyclic heterocyclic group selected from pyrrolidino, piperidino, morpholino, or piperazino, each of which is unsubstituted or is substituted with one substituent selected from benzhydryl, straight or branched alkyl having from 1 to 6 carbon atoms, phenyl, benzyl, or substituted phenyl or substituted benzyl having 1 to 3 substituents selected from straight or branched alkyl having from 1 to 4 carbon atoms, straight or branched alkoxy having from 1 to 4 carbon atoms, hydroxy, fluorine, chlorine, bromine, trifluoromethyl, or nitro;

wherein R_3 is selected from

(a) phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from:

phenyl,

an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,

an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched,

phenoxy,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,

$—(CH2)_sNR9R10$ wherein s is zero or one, and each of R_9 and R_{10} is selected from hydrogen or a straight or branched alkyl group having 1 to 4 carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or substituted with from 1 to 3 substituents selected from phenyl,

an alkyl group having from 1 to 6 carbon atoms and which is straight or branched;

an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched,

hydroxy,

phenoxy,

fluorine,

chlorine,

bromine,

nitro,

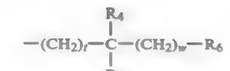
trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,

$—(CH_2)_sNR_9R_{10}$ wherein s, R_9 and R_{10} have the meanings defined above;

(c) the group



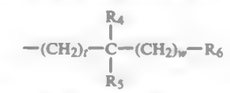
wherein t, w, R_4, R_5, and R_6 have the meanings defined hereinabove;

(d) $—(CH_2)_p—Q$ wherein p and Q have the meanings defined hereinabove;

or a pharmaceutically acceptable salt thereof with the provisos that:

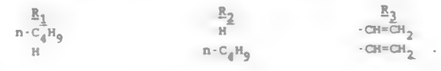
(i) both R_1 and R_2 are not hydrogen at the same time;

(ii) when each of R_1 and R_2 is the group



R_5 is hydrogen or alkyl having from 1 to 6 carbon atoms;

(iii) the following compounds are excluded:



5,364,883

ISOCARBOCYCLINS FOR THE TREATMENT OF LIVER AND KIDNEY DISEASES

Kiyoshi Bannai; Toshio Tanaka; Yoshinori Kato, all of Hino; Tamotsu Koyama, Hachioji; Satoshi Asano, Hino; Akira Ohtsu, Oume; Seizi Kurozumi, Kokubunji; Makoto Ogawa, and Yoshio Mori, both of Chiba, all of Japan, assignors to Teijin Limited, Osaka, Japan

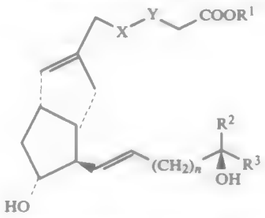
Continuation of Ser. No. 571,542, Aug. 22, 1990, abandoned. This application May 3, 1993, Ser. No. 55,787

Claims priority, application Japan, Dec. 23, 1988, 63-323687

Int. Cl.[5] A61K *31/557*

U.S. Cl. 514—530 10 Claims

1. A method for the treatment of hepatic or nephritic disease in a patient requiring such treatment which comprises administering orally or para-orally to said patient an effective amount of at least one (16S) isocarbacyclin of the following formula:



wherein R^1 denotes a hydrogen atom, a C_1–C_{10} alkyl group, a group $—CH_2COOR^{11}$ in which R^1 is a hydrogen atom or a C_1–C_{10} alkyl group or one equivalent of cation; R^2 denotes a hydrogen atom or a methyl group; R^3 denotes a straight chain or branched chain C_3–C_{10} alkyl group, a straight chain or branch chain C_3–C_6 alkyl group substituted by an optionally substituted phenyl group, phenoxy group or a C_3–C_{10} cycloalkyl group, a straight chain or branched chain C_3–C_{10} alkenyl group, a straight chain or branched chain C_3–C_{10} alkynyl group, an optionally substituted C_3–C_{10} cycloalkyl group, an optionally substituted phenyl group or an optionally substituted phenoxy group; n is 1; and substituents for the above optionally substituted groups are a halogen atom, a hydroxyl group, a C_2–C_7 acyloxy group, a C_1–C_6 alkyl group optionally substituted by a halogen atom, a C_1–C_4 alkoxy group

optionally substituted by a halogen atom, a nitrile group, a carboxyl group or a C_1–C_6 alkoxy carbonyl group, and X and Y each is —CH_2 or one of X and Y is an oxygen or sulfur atom and the other is —CH_2—.

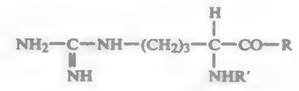
5,364,884

ARGININE COMPOUNDS AS OCULAR HYPOTENSIVE AGENTS

Rajender S. Varma, The Woodlands, and George C. Y. Chiou, College Station, both of Tex., assignors to Baylor College of Medicine, Houston, Tex.

Filed Jan. 21, 1993, Ser. No. 7,347
Int. Cl.[5] A01N *37/12, 37/44*
U.S. Cl. 514—551 **12 Claims**

1. A method of reducing intraocular pressure, comprising administering to a subject experiencing excess intraocular pressure an effective amount of an L-arginine ester selected from a group consisting of compounds having the formula:



where R′ is H, COC_6H_5, C_6H_5 CH_2OCO—, $COCH_3$ or $(CH_3)_3OCO$; R is selected from a group consisting of NH_2 and NHR″ where R″ is lower alkyl or aryl; $COH(CH_3)_2$, $OC(CH_3)_3$, $OCH_2C_6H_5$, OH and OR‴ where R‴ is lower alkyl; and pharmaceutically acceptable salts thereof.

5,364,885

REDUCTION OF HAIR GROWTH

Gurpreet S. Ahluwalia, 8632 Stable View Ct., Gaithersburg, Md. 20879, and Douglas Shander, 16112 Howard Landing Dr., Gaithersburg, Md. 20878

Filed Nov. 13, 1992, Ser. No. 976,446
Int. Cl.[5] A61K *31/195, 31/16*
U.S. Cl. 514—563 **23 Claims**

1. A process of reducing mammalian hair growth, comprising

selecting an area of mammalian skin from which a reduced rate of hair growth is desired; and

applying a composition comprising pantothenic acid or an analog of pantothenic acid in an amount effective to reduce hair growth to said area of mammalian skin to cause a reduction in the rate of hair growth from said area of mammalian skin.

5,364,886

PROCESS FOR PREPARING SYNERGIC ANTIOXIDANT MIXTURE

Jürg Löliger, Corseaux, and Françoise Saucy, Blonay, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 297,120, Jan. 13, 1989, abandoned. This application Oct. 31, 1991, Ser. No. 785,496
Claims priority, application Switzerland, Feb. 3, 1988, 00374/88-3
Int. Cl.[5] A61K *47/00*
U.S. Cl. 514—772 **4 Claims**

1. A process for preparing an antioxidant for protection of a fat against oxidation comprising stirring tocopherol and a lecithin at a temperature not greater than 60° C. to form a mixture, dissolving ascorbic acid in a polar solvent to form a solution, mixing the ascorbic acid solution into the tocopherol and lecithin mixture and then eliminating the solvent from the tocopherol, lecithin and ascorbic acid solution mixture at a temperature not greater than 60° C.

5,364,887

PROCESS OF PRODUCING METHANOL

Peter König, Frankfurt; Friedrich-Wilhelm Möller, Friedrichsdorf, and Emil Supp, Dietzenbach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 27, 1993, Ser. No. 143,807
Claims priority, application Germany, Nov. 27, 1992, 4239904
Int. Cl.[5] C07C *27/06*
U.S. Cl. 518—713 **6 Claims**

1. In the catalytic production of methanol from a synthesis gas which contains the components H_2, CO and CO_2 and which is supplied to are reacted over a catalyst in a synthesis reactor at temperatures from 220° to 300° C. and under a pressure in the range from 20 to 120 bars to produce a product mixture that contains methanol vapor and is withdrawn from the synthesis reactor, the product mixture is cooled to temperatures in the range from 20° to 60° C. to form a condensate which contains water, methanol and methyl formate and to form a gas mixture which contains H_2, CO and CO_2, the gas mixture is recycled at least in part to the synthesis reactor, and methanol is separated by distillation from the condensate, the improvement which comprises separating from the condensate which contains water, methanol and methyl formate a fraction which comprises 10 to 100% by weight methyl formate, and adding said fraction to the synthesis gas which is supplied to the synthesis reactor.

5,364,888

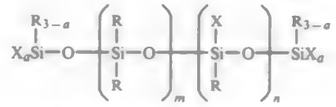
UV LIGHT-CURABLE EPOXY-FUNCTIONAL ORGANOPOLYSILOXANE/POLYETHER COMPOSITION RELEASE

Shunji Aoki, and Yasuaki Hara, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

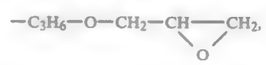
Filed Sep. 6, 1991, Ser. No. 756,009
Claims priority, application Japan, Sep. 17, 1990, 2-246844
Int. Cl.[5] C08F *2/50;* **C08G** *77/04, 77/14*
U.S. Cl. 522—31 **13 Claims**

1. A UV light-curable organopolysiloxane release composition which comprises:

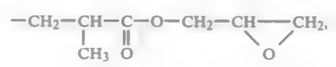
(A) 100 parts by weight of an organopolysiloxane selected from the group consisting of organopolysiloxanes having the following formula



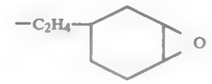
wherein R independently represents an unsubstituted or substituted monovalent hydrocarbon group, X represents an γ-glycidyloxypropyl group of the formula



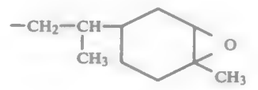
a β-(glycidyloxycarbonyl)propyl group of the formula



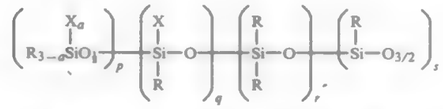
a β-(3,4-epoxycyclohexyl)ethyl group of the formula



and a β-(4-methyl-3,4-epoxycyclohexyl) propyl group of the formula,



a is a value of 0 or 1, and m+n are a value sufficient to provide a viscosity of the organopolysiloxane of from 50 to 3,000 cps., at 25° C., and



wherein R, X and a have, respectively, the same meanings as defined in the above-defined formula, and p+q+r+s is a value sufficient to provide a viscosity of the resultant organopolysiloxane of from 50 to 3,000 cps at 25° C. and the value of (p+q)/(p+q+r+s) is within a range of from 0.01 to 0.20;

(B) from 1 to 100 parts by weight of a polyether compound of the formula, R^1—$(OR^2)_n$—OR^3, wherein R^1 represents an alkyl or alkenyl group having from 1 to 8 carbon atoms, R^2 represents an alkylene group having from 2 to 4 carbon atoms, R^3 represents a hydrogen atom or an alkyl or alkenyl group having from 1 to 8 carbon atoms, and n is an integer of from 1 to 50; and

(C) from 0.01 to 40 parts by weight of an onium salt photoinitiator.

5,364,889

INVESTMENT CASTING PATTERN MATERIAL COMPRISING THERMALLY-COLLAPSIBLE EXPANDED MICROSPHERES

John A. Quinn, Morganville, and Roxy N. Fan, E. Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 655,688, Feb. 14, 1991, Pat. No. 5,176,188. This application Apr. 27, 1992, Ser. No. 873,818
Int. Cl.[5] C08F *2/50;* **C08K** *5/00*
U.S. Cl. 522—71 **4 Claims**

1. A composition for an investment casting pattern comprising:

a) an ethylenically unsaturated monomer

b) a photoinitiator; and

c) thermally-collapsible microspheres.

5,364,890

DENTAL ADHESIVE COMPOSITION

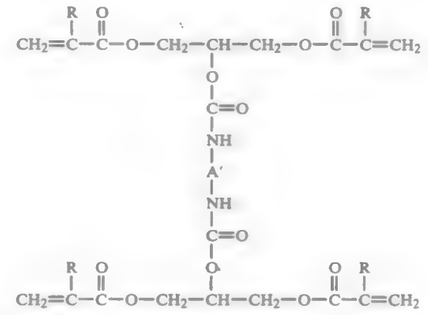
Tetsuro Sakuma, Tokorozawa, and Junichi Okada, Noda, both of Japan, assignors to GC Corporation, Tokyo, Japan

Continuation of Ser. No. 911,512, Jul. 10, 1992, abandoned. This application May 26, 1993, Ser. No. 67,174
Claims priority, application Japan, Oct. 11, 1991, 3-290422
Int. Cl.[5] A61K *6/08*
U.S. Cl. 522—92 **20 Claims**

1. A dental adhesive composition comprising

(a) 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide

(b) at least one methacrylate or acrylate selected from the group consisting of methyl methacrylate, ethyl methacrylate, isopropyl methacrylate, 2-hydroxyethyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, hydroxypropyl methacrylate, tetrahydrofurfuryl methacrylate, glycidyl methacrylate, 2-methoxyethyl methacrylate, 2-ethylhexyl methacrylate, 2,2-bis(methacryloxyphenyl)-propane, 2,2-bis[4-(2-hydroxy-3-methacryloxypropoxy)-phenyl]propane, 2,2-bis(4-methacryloxydiethoxyphenyl)-propane, 2,2-bis(4-methacryloxypropoxy-phenyl)propane, ethylene glycol dimethacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, butylene glycol dimethacrylate, neopentyl glycol dimethacrylate, 1,3-butanediol methacrylate, 1,4-butanediol dimethacrylate, 1,6-hexanediol methacrylate, trimethylolpropane trimethacrylate, trimethylolethane trimethacrylate, pentaerythritol trimethacrylate, trimethylolmethane trimethacrylate, pentaerythritol tetramethacrylate, methacrylates and acrylates containing a urethane bond in their molecules, di-2-methacryloxyethyl-2,2,4-trimethylhexamethylene dicarbamate or its acrylate and compounds having the following structural formula:



wherein:

R, which may be identical or different from each other is H or CH_3, and

A is —$(CH_2)_6$—,



and

(c) a photopolymerization or a chemical polymerization initiator which chemical polymerization initiator is selected from the group consisting of the following combinations:

1) N-phenylglycine and benzoyl peroxide;

2) p-toluenesulfinate and benzoyl peroxide; and

3) p-toluenesulfinate, an aromatic tertiary amine and benzoyl peroxide.

5,364,891

INCORPORATION OF DESIRED GROUPS INTO POLYMERS, THE POLYMERS SO PRODUCED, AND COMPOSITIONS CONTAINING THEM

David A. Pears, Oss, Sweden; John G. Carey, Warrington, England; Paul H. Stenson, Burlington, Mass., and Gerardus C. Overbeek, Sprang-Capelle, Sweden, assignors to Imperial Chemical Industries PLC, London, United Kingdom and ICI Resins BV, Waalwijk, Sweden

Filed Feb. 14, 1991, Ser. No. 654,969

Claims priority, application United Kingdom, Feb. 14, 1990, 9003348; Jun. 15, 1990, 9013480

Int. Cl.[5] C08F *2/50, 265/06, 216/36*

U.S. Cl. 522—149 **22 Claims**

1. Process for the production of a polymer having desired groups, denoted by Y, incorporated therein, which process comprises reacting a precursor polymer having carbon-bound or nitrogen-bound precursor groups selected from the class consisting of —NH_2 and —NH— groups, which groups are reactable with enolic carbonyl groups, with at least one compound having a single enolic carbonyl group and at least one group Y, so that the final polymer resulting from said process is said polymer having said groups. Y, and wherein the basic structure of said polymer having said groups Y is that of, an olefinic addition polymer formed by free radical addition polymerisation, and wherein by an enolic carbonyl group is meant a carbonyl group having enolic character by virtue of being bonded to alpha methylene or methine group which is itself bonded alpha to an electron withdrawing group, said electron withdrawing group being provided by an acid ester group, an acid amide group, an aryl group or a ketonic carbonyl group, and wherein further Y is selected from the group consisting of an olefinically unsaturated double bond, a thiol group, a siloxane group, and an epoxy group.

5,364,892

MODELING DOUGH

Richard E. Miller, Nazareth, and Karen Mariano, Easton, both of Pa., assignors to Binney & Smith, Inc., Easton, Pa.

Continuation-in-part of Ser. No. 734,951, Jul. 24, 1991, Pat. No. 5,171,766. This application Dec. 14, 1992, Ser. No. 990,599

The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.

Int. Cl.[5] C08J *9/32;* **C08K** *3/26, 3/38;* **C08L** *29/04*

U.S. Cl. 523—218 **23 Claims**

1. A water-based moldable modeling dough composition comprising poly(vinyl alcohol), water, a gellant, and a filler, said composition having a pH of about 7.0 or greater, and said filler consisting essentially of plastic microspheres.

5,364,893

COMPOSITION OF POLYEPOXIDE AND PHOSPHOROUS-CONTAINING POLYEPOXIDE

Wolfgang von Gentzkow, Kleinsendelbach; Juergen Huber, Erlangen; Wolfgang Rogler, Moehrendorf, and Dieter Wilhelm, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 2, 1990, Ser. No. 487,627

Claims priority, application European Pat. Off., Mar. 3, 1989, 89103801.0

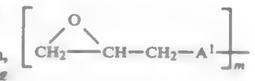
Int. Cl.[5] C08K *5/54;* **C08L** *63/02, 63/04*

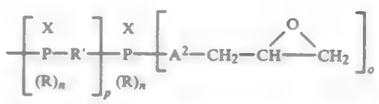
U.S. Cl. 523—429 **17 Claims**

1. An epoxide resin molding composition for protectively covering semiconductor components, comprising:

(A) at least one of an aromatic polyepoxide resin and a heterocyclic polyepoxide resin which are free of phosphorous,

(B) an epoxide group-containing phosphorous compound of the following structure:





with m=0 or 1, n=0, 1 or 2 and o=1, 2 or 3, and wherein the following holds: m+n+o=3, and with p=0, 1 or 2;

X signifies a free electron pair or an O— or S-atom bonded by way of a double bond;

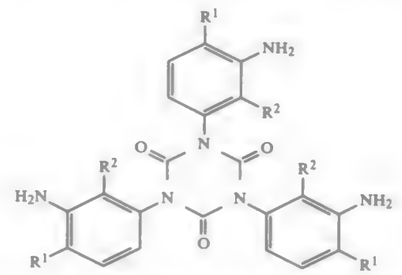
R signifies an alkyl residue having 1 to 4 C-atoms; alkenyl residue having 2 to 3 C-atoms; aryl residue; arylalkyl residue;

dialkyl-amino or alkyl-aryl-amino residue or 3-trialkylsilyl-propyl residue; R being bonded directly or by way of O or S;

R′ denotes a bridge of O, S, phenylene, dioxyphenylene, dioxynaphthylene, $(CH_2)_r$, O—$(CH_2)_r$, O—$(CH_2)_r$—O or O—$(CH_2)_r$—$Si(CH_3)_2$—O_s—$Si(CH_3)_2$—$(CH_2)_r$—O with r=1 to 3 and s=1 to 8, or (O—CH_2—CH_2)$_t$—O, (O—CH(CH_3)—CH_2)$_t$—O or (O—$(CH_2)_4$)$_t$—O with t=2 to 100; and

A^1 and A^2, which can be equal or different, denote a single bond or a bridge according to the grouping R′;

(C) an aromatic polyamine as a curing agent of the following structure:



where on each of the three aromatic partial structures, one of the residues R^1 and R^2 respectively denotes H and the other alkyl; and

(D) filler material.

5,364,894

EMULSIFICATION OF ASPHALT AND MODIFIED ASPHALT WITH PRIMARY EMULSIFIER POLYMERS COMPRISED OF ACRYLIC ACID TYPE MONOMERS

Donald C. Portfolio, Solon, and Fred A. Fensel, Shaker Heights, both of Ohio, assignors to Tremco, Inc., Beachwood, Ohio

Filed Mar. 31, 1993, Ser. No. 40,782

Int. Cl.[5] C08L *95/00*

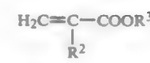
U.S. Cl. 524—60 **27 Claims**

1. An asphalt emulsion comprising:

a) about 20 to about 80 weight percent of asphalt, asphalt-polymer blend, or chemically modified asphalt,

b) about 20 to about 80 weight percent water, and

c) about 0.05 to about 7 weight percent of one or more copolymeric emulsifiers, said emulsifiers made from at least 50 weight percent of one or more carboxylic acid monomers; from 1 to 50 weight percent of one or more acrylate monomers of the formula,



R^2 being hydrogen, CH_3 or C_2H_5 while R^3 is an alkyl group having from 10 to 30 carbon atoms; up to 6 weight percent crosslinking monomers; and optionally other olefinic monomers,

said weight percents of a, b, and c being based on 100 parts by weight of said a, b, and c.

5,364,895

HYDROLYTICALLY STABLE PENTAERYTHRITOL DIPHOSPHITES

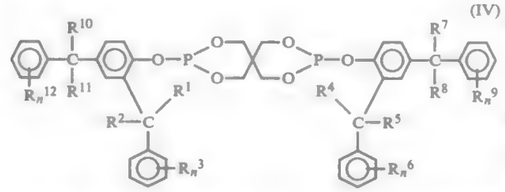
Donald R. Stevenson; Duong N. Nguyen, both of Dover, and Arthur W. McRowe, Bart, all of Ohio, assignors to Dover Chemical Corp., Dover, Ohio

Filed Aug. 30, 1993, Ser. No. 108,658

Int. Cl.[5] C08K *5/527;* **C07F** *9/6578*

U.S. Cl. 524—120 **13 Claims**

1. A diphosphite of formula (IV) with improved resistance to hydrolysis and increased thermal stability comprising:



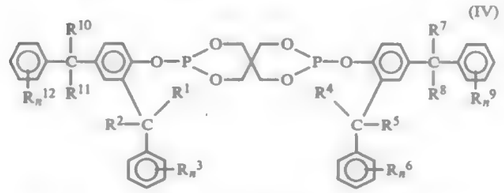
(IV)

and wherein R^1, R^2, R^4, R^5, R^7, R^8, R^{10} and R^{11} are selected independently from the group consisting of hydrogen and alkyl radicals of generic formula C_mH_{2m+1} wherein m ranges from 1 to 4 and R^3, R^6, R^9 and R^{12} are selected independently from the group consisting of hydrogen and alkyl radicals of generic formula C_mH_{2m+1} wherein m ranges from 1 to 4, and further wherein n ranges from 0 to 3.

7. A polymer composition comprising

(a) a polyolefin;

(b) a diphosphite sufficient to stabilize the polyolefin, the diphosphite of formula (IV)



(IV)

and wherein R^1, R^2, R^4, R^5, R^7, R^8, R^{10} and R^{11} are selected independently from the group consisting of hydrogen and alkyl radicals of generic formula C_mH_{2m+1} wherein m ranges from 1 to 4 and R^3, R^6, R^9 and R^{12} are selected independently from the group consisting of hydrogen and alkyl radicals of generic formula C_mH_{2m+1} wherein m ranges from 1 to 4, and further wherein n ranges from 0 to 3; and

(c) a hindered phenol.

5,364,896

METHOD FOR PREPARING SILICA FILLED ORGANOSILOXANE COMPOSITIONS

Tadashi Okawa, and Shuji Yamada, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd, Tokyo, Japan

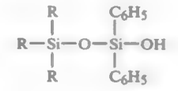
Filed Nov. 10, 1992, Ser. No. 974,053

Claims priority, application Japan, Nov. 26, 1991, 3-336078

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—266 **3 Claims**

1. In a method for preparing a filled organosiloxane composition by blending a curable polyorganosiloxane with an inorganic filler in the presence of a plasticizer selected from the group consisting of organosilicon compounds containing at least one silanol group per molecule, the improvement comprising selecting said plasticizer from among triorganosiloxydiphenyl-silanols of the general formula



where C_6H_5 designates the phenyl radical and each R is individually selected from the group consisting of substituted and unsubstituted monovalent hydrocarbon radicals.

5,364,897

URETONIMINE-MODIFIED EMULSIFIABLE POLYISOCYANATE COMPOSITIONS

Ann E. Knight, Antwerpen, and Godelieve Bourbon, Rotselaar, both of , assignors to Imperial Chemical Industries PLC, London, England

Filed May 28, 1992, Ser. No. 890,738

Claims priority, application United Kingdom, May 29, 1991, 9111559.2

Int. Cl.[5] C08L *75/04, 33/00, 63/00;* **C08K** *3/20*

U.S. Cl. 524—457 **18 Claims**

1. Emulsifiable-polyisocyanate composition having a uretonimine-modified isocyanate content of from 4% to 75% by weight, calculated on the whole composition, comprising a uretonimine-modified polyisocyanate and a non-ionic surface-active agent devoid of hydroxy, amino and carboxylic acid groups.

5,364,898

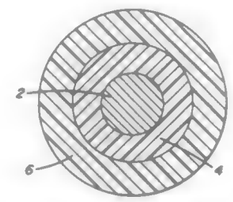
ELECTRICALLY CONDUCTIVE ARTICLE MADE OF POLYPHENYLENE ETHER ELECTRICAL INSULATION COMPOSITIONS

Gim F. Lee, Jr., Albany, N.Y., and Kevin M. Snow, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 883,446, May 15, 1992, Pat. No. 5,294,655. This application Dec. 14, 1993, Ser. No. 167,469

Int. Cl.[5] C08J *5/10;* **C08K** *5/24;* **C08L** *71/12*

U.S. Cl. 524—265 **8 Claims**



1. An improved electrically conductive article, comprising:

(a) an electrical conductor; and

(b) a coating material disposed over the conductor, and formed from an electrically insulative, flame retardant,

thermoplastic, flexible, halogen-free composition which comprises:

(i) 100 parts by weight of a thermoplastic polyphenylene ether resin;

(ii) 5 to 50 parts by weight of a phenylsiloxane fluid, said phenylsiloxane having a weight average molecular weight within the range of from about 800 to 100,000, said phenylsiloxane consisting essentially of chemically combined units of the formulae:

(a) $(C_6H_5)_2SiO$

(b) $(CH_3(C_6H_5)SiO$ and

(c) $(CH_3)_2SiO$ where there is present in the phenylsiloxane fluid from 20 to 40 mol % of (a), or 40 to 80 mole % of (b), and 21 to 79 mole % of the sum of (a) +(b), based on the total moles of (a), (b), and (c); and

(iii) a flexibilizing proportion of an elastomeric block copolymer having a hydrogenated A-B-A′ structure, wherein A and A′ are polymerized vinyl aromatic hydrocarbon blocks, and B is an ethylene-butylene block, and

wherein the block copolymer has a weight average molecular weight of from about 40,000 to 100,000 and the average molecular weight of each block A and A′ is independently in the range of about 4,000 to about 15,000, and the weight average molecular weight of the B block is in the range of about 25,000 to about 90,000.

5,364,899

FLAME-RETARDANT RESIN COMPOSITION

Jyun Watanabe, and Noriak Kudo, both of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,719

Claims priority, application Japan, Jan. 24, 1992, 4-032823; Jul. 2, 1992, 4-197505; Jul. 3, 1992, 4-198930; Aug. 21, 1992, 4-223037

Int. Cl.[5] C08K *5/54, 5/09*

U.S. Cl. 524—268 **8 Claims**

1. A flame-retardant resin composition comprising the following components:

(A) 100 parts by weight of a polycarbonate resin,

(B) from 0.0001 to 1 part by weight of a salt of a carboxylic acid with zinc,

(C) at least one member selected from the group consisting of from 1 to 200 parts by weight of glass fibers, from 0.01 to 5 parts by weight of polytetrafluoroethylene and from 0.01 to 5 parts by weight of polydimethylsiloxane, wherein when said polydimethylsiloxane is present the flame-retardant resin further contains from 1 to 30% by weight of triphenylphosphate.

5,364,900

STABILIZED ACETAL RESIN COMPOSITIONS

Tadashige Hata, and Sadao Ibe, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1994, Ser. No. 219,571

Claims priority, application Japan, Apr. 8, 1993, 5-104930

Int. Cl.[5] C08K *5/13*

U.S. Cl. 524—291 **11 Claims**

1. An acetal resin composition comprising

(A) 100 parts by weight of oxymethylene copolymers generating 500 ppm or less of formaldehyde gas when heated at 230° C. for 60 minutes under nitrogen flow;

(B) 0.05 to 2 parts by weight of hindered phenol type antioxidants generating 5% by weight or less of volatile materials based on the total amount of the hindered phenol type antioxidants when heated at 230° C. for 60 minutes under air flow; and

(C) 0.002 to 0.3 parts by weight of ion adsorbents selected from the group consisting of (i) an ion adsorbent comprising (a) one or more oxides selected from the alkaline metal oxides and the alkaline earth metal oxides and (b) one or more trivalent metallic oxides, and (ii) an ion adsorbent represented by the general formula:

$$M_{1\ 1-X}M_{2X}(OH)_2A^{n-}{}_{X/n}\cdot mH_2O \quad (1)$$

wherein, M_1 is one or more bivalent alkaline earth metal atoms, M_2 is a trivalent metal, A^{n-} is an anion of valence n, $0<X\leqq 0.5$, and m is a positive number.

5,364,901

CURABLE COMPOSITION

Eric Nield, Beaconsfield; Peter D. Palasz, Taplow; Philip L. Taylor, Burnham, and Peter K. H. Lam, Hounslow, all of England, assignors to Imperial Chemical Industries, PLC, London, England

Filed Oct. 30, 1991, Ser. No. 785,007

Claims priority, application United Kingdom, Nov. 5, 1990, 9023979.9

Int. Cl.[5] C08L *43/04*

U.S. Cl. 524—521 **9 Claims**

1. An aqueous silica free curable coating composition comprising:

A) a stable dispersion in an aqueous medium of a First Polymer, which is an addition polymer, a polyurea polymer or a polyurethane polymer, having a weight average molecular weight of at least 50,000, which is insoluble in water and which contains silane groups of the formula:

$$-\underset{\underset{(R^1)_a}{|}}{Si}-(R)_{3-a} \quad (1)$$

in which a is 0 to 2, R^1 is C_{1-6} alkyl, and R is OH or a hydrolysable group, the groups of Formula (1) contributing from 0.05 to 2% by weight of silicon to the weight of the First Polymer, said First Polymer being held in stable dispersion in said aqueous medium by a non-ionic surfactant which enhances the stability of said First Polymer; and

B) a solution or dispersion in the aqueous medium of a Second Polymer, which is an addition polymer, a polyurea polymer or a polyurethane polymer which has a number average molecular weight between 1,000 and 20,000, and which contains at least two silane groups of formula (1), the groups of formula (1) contributing between 0.1 and 8% by weight of silicon to the weight of the Second Polymer, and also comprising covalently bonded acid groups which render it soluble or self-dispersible in the aqueous medium,

the non-volatile weight ratio of the First Polymer to the Second Polymer in the composition being in the range 40:1 to 1:4.

5,364,902

RESORCINOL-GLUTARALDEHYDE RESIN AS AN ACCELERATOR FOR CURING PHENOL-FORMALDEHYDE RESINS

David W. Shiau; William D. Detlefsen, both of Eugene, and Earl K. Phillips, Springfield, all of Oreg., assignors to Borden, Inc., Columbus, Ohio

Filed Dec. 15, 1992, Ser. No. 991,208

Int. Cl.[5] C08L *51/00*

U.S. Cl. 524—541 **16 Claims**

1. A thermosettable resin blend comprising an admixture of a thermosettable phenolic resin and a resorcinol-glutaraldehyde reaction product.

5,364,903

MOLDED PRODUCTS FROM MOLDING COMPOSITIONS CONTAINING THERMOSETTING (METH)ACRYLATE LIQUID RESINS

Yuji Takayama; Hirotaka Wada, and Iwao Komiya, all of Aichi, Japan, assignors to Mitsubishi Rayon Company Limited, Japan

Continuation of Ser. No. 568,610, Aug. 16, 1990, abandoned. This application Aug. 14, 1992, Ser. No. 930,975

Claims priority, application Japan, Aug. 24, 1989, 1-217876; Feb. 26, 1990, 2-45139

The portion of the term of this patent subsequent to Feb. 9, 2010, has been disclaimed.

Int. Cl.[5] C08K *3/22;* **C08F** *220/36, 220/26*

U.S. Cl. 524—555 **10 Claims**

1. A molded product obtained by curing a molding composition containing liquid resin and at least 30 weight parts of inorganic filler per 100 weight parts of said liquid resin, said liquid resin consisting of:

20–80 weight % of unsaturated oligourethane obtained by reaction between 2-isocyanatoalkyl (meth)acrylate and polyhydric alcohol, and

80–20 weight % of alkyl (meth) acrylate.

5,364,904

EMULSION POLYMERIZATION

David B. Farmer, Dorking, and Alistair J. McLennan, Carshalton, both of United Kingdom, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

PCT No. PCT/GB91/00964, § 371 Date Apr. 29, 1992, § 102(e) Date Apr. 29, 1992, PCT Pub. No. WO92/00335, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 14, 1991, Ser. No. 835,438

Claims priority, application United Kingdom, Jun. 29, 1990, 90307147.0

Int. Cl.[5] C08L *31/00*

U.S. Cl. 524—832 **8 Claims**

1. A copolymer emulsion containing from 20% to 70% by weight solids which comprise copolymer particles having a weight mean particle diameter in the range about 0.2 micron to about 1.50 micron, stabilised by a protective colloid, in an amount from about 1% to about 5% by weight of monomer present, said copolymer particles comprising at least about 90% by weight of C1 to C10 alkyl(meth)acrylate monomers to provide a Tg in the range from about 0° C. to about 60° C. and said protective colloid being polyvinyl alcohol.

5,364,905

PROCESS FOR THE IN-SITU FORMATION OF REINFORCING MEMBERS IN AN ELASTOMER AND ELASTOMER MADE THEREBY

Richard G. Baner, Kent; Donald J. Burlett, Wadsworth; Joseph W. Miller, Jr., Fairlawn; Gordon R. Schorr, Uniontown, all of Ohio, and Pradeep M. Bapat, Roswell, Ga., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 26, 1991, Ser. No. 692,338

Int. Cl.[5] C08L *55/02, 75/02, 75/04*

U.S. Cl. 525—53 **6 Claims**

1. A continuous method for the in-situ polymerization of plastic selected from the group consisting of polyaramide, polyamide, polyester, polyurethane, and polyuria in an elastomeric material selected from the group consisting of natural rubber, neoprene rubber, styrene-butadiene rubber, polybutadiene rubber, synthetic polyisoprene rubber, NBR (nitrile butadiene rubber), EPDM (ethylene propylene diene monomer) rubber, and mixtures thereof in a form suitable for reinforcing elastomeric material comprising the steps of:

(a) feeding an elastomer and monomer precursors of said plastic into a twin screw extruder having an extruder screw and barrel sections configured into zones in which the elastomeric material and monomer are continuously fed and/or mixed, wherein said elastomer is fed into said extruder at a rate of 14–16 lbs/hr, and individual monomer precursors are added separately into the same or different mixing zones of said extruder,

(b) mixing said elastomer and said monomer precursors vigorously in said extruder at a temperature of 100°–200° C. to provide a mixture of elastomeric material and monomers,

(c) initiating polymerization of said monomer precursors during the mixing process, by continuously adding initiators to said mixture downstream of the initial mixing step,

(d) controlling the temperature of the mix with reference to the materials used to form domains or fibrils of reinforcing materials having a length of 0.1 to 100 microns, and

(e) mixing said mixture and initiators, whereby said monomer precursors continue to polymerize until the melting point of a polymer produced thereby exceeds the mixing temperature of the elastomer and solidifies to provide an elastomer containing 10 % to 30 % by weight reinforcing polymer.

5,364,906

LOW VISCOSITY POLYMER POLYOLS WITH IMPROVED DISPERSION STABILITY

Frank E. Critchfield, South Charleston; Donald W. Simroth, Charleston, both of W. Va., and Stuart L. Watson, Midlothian, Va., assignors to Arco Chemical Technology, L.P., Greenville, Del.

Filed Aug. 20, 1993, Ser. No. 109,777

Int. Cl.[5] C08F *283/02*

U.S. Cl. 525—53 **15 Claims**

1. A method for producing a stable, low viscosity polymer polyol comprising the steps of

(1) producing a first reaction product by polymerizing a first feed in a first continuous reactor in the presence of an initiator, said first feed comprising less than about 50 wt % of a total monomer proportion in at least about 50 wt % of a total base polyol proportion;

(2) producing a second reaction product by polymerizing a second feed in a continuous reactor in the presence of an initiator, said second feed comprising: (a) said first reaction product; (b) at least about 50 wt % of said total monomer proportion; and (c) any balance of said base polyol proportion.

5,364,907

GRAFT COPOLYMERS AND GRAFT COPOLYMER/PROTEIN COMPOSITIONS

Richard J. Rolando, Oakdale; Patrick L. Coleman, Minneapolis; Steven L. Kangas, Woodbury, and Thomas A. Kotnour, Faribault, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 595,275, Oct. 10, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 71,327

Int. Cl.[5] C08G *63/48, 63/91;* **G08L** *9/00, 47/00*

U.S. Cl. 525—54.1 **8 Claims**

1. A graft copolymer consisting essentially of a uniform, homogeneous thermoplastic of

i) polyethylene and

ii) an amount of a grafted monomer selected from the group consisting of 1-vinylimidazole, hydroxyethyl methacrylate, polyethylene glycol monomethacrylate, N-vinyl pyrrolidone, N,N-dimethylacrylamide and mixtures thereof effective to increase protein binding to the graft copolymer as compared with polyethylene.

5,364,908

PROCESS FOR MAKING RESIN COMPOSITION AND RESIN COMPOSITION

Masafumi Otski, Kyoto; Hiroshi Nishimoto, Otsu; Takao Ando; Yukio Shibata, both of Kyoto; Toshiaki Okamoto, and Katsura Gohda, both of Takatsuki, all of Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Jul. 19, 1991, Ser. No. 732,907

Claims priority, application Japan, Jul. 20, 1990, 2-193367; Nov. 15, 1990, 2-310290

Int. Cl.[5] C08L *27/06, 33/20*

U.S. Cl. 525—64 27 Claims

1. A process for producing a moldable resin composition, which comprises polymerizing a polymerizable compound (A), in situ in a melted thermoplastic resin (B), in the presence of a dispersant (C) reactive or compatible with at least one of the resin (B) and polymerizate of (A),

wherein said resin (B) is at least one resin selected from the group consisting of vinyl polymers, polyesters, polyamides, polyimides, polyethers and polyurethanes, having a number-average molecular weight of about 10,000–about 3,000,000; and wherein said compound (A) is selected from the group consisting of

1) precursors for polyurethane;
2) precursors for epoxy resin;
3) precursors for polyester;
4) precursors for polyamide or polyimide;
5) one or more of vinyl compounds and unsaturated polyesters, or oligomer thereof;
6) a ring-opening polymerizable cyclic ester, cyclic amide or cyclic ether; and
7) precursors for phenolic resin or amino resin.

5,364,909

GRAFT POLYMER COMPOSITIONS CONTAINING MONO-AMINE FUNCTIONALIZED POLYOXYALKYLENE ETHERS

Shao H. Guo, and Roger A. Grey, both of West Chester, Pa., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Continuation of Ser. No. 919,654, Jul. 23, 1992, abandoned. This application Aug. 11, 1993, Ser. No. 106,492

Int. Cl.[5] C08L *35/06, 71/02*

U.S. Cl. 525—69 17 Claims

1. A polymer blend comprised of

(a) polystyrene; and

(b) a graft polymer composition consisting essentially of

(i) 100 parts by weight of a thermoplastic copolymer comprised of polymerized units of an alkenyl aromatic monomer and an α, β-unsaturated carboxylic acid moiety; and

(ii) from 25 to 100 parts by weight of a monoamine functionalized polyoxyalkylene ether, wherein at least a portion of the mono-amine functionalized polyoxyalkylene ether is grafted onto the thermoplastic copolymer through amide linkages.

5,364,910

MATERIAL FOR FORMING COATING FILM

Fumitaka Takinishi, Yokohama; Makiko Togo, Fuchu; Masayuki Endo, and Yasuaki Yokoyama, both of Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

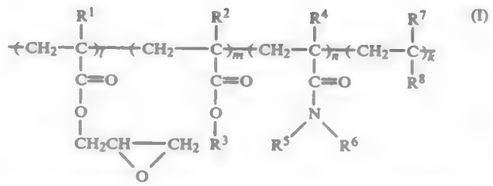
Continuation of Ser. No. 717,655, Jun. 19, 1991, abandoned. This application Dec. 29, 1992, Ser. No. 998,657

Claims priority, application Japan, Jun. 20, 1990, 2-162083

Int. Cl.[5] C08G *59/40, 59/42, 59/50, 59/62*

U.S. Cl. 525—327.3 9 Claims

1. A material for forming a coating film, which comprises (A) at least one compound represented by formula (I):



(I)

wherein R^1, R^2, R^4 and R^7 represent independently hydrogen atoms or methyl groups; R^3, R^5 and R^6 represent independently hydrogen atoms, alkyl groups having 1–12 carbon atoms, or aromatic groups, R^8 represents a phenyl group or a pyrrolidonyl group, l is an integer of 1 or more; and m, n, and k are independently 0 or integers of 1 or more,

said compound of the formula (I) having at least 60% by weight of the glycidyl acrylate or glycidyl methacrylate unit,

(B) a polyfunctional compound, and

(C) an imidazole.

5,364,911

PRODUCTION OF ALKALI METALLATED OLEFIN POLYMERS

Eric J. M. De Boer; Fred F. Hage; Adriaan A. Van Der Huizen, all of Amsterdam, Netherlands, and Carl L. Willis, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 17, 1992, Ser. No. 991,934

Claims priority, application European Pat. Off., Dec. 20, 1991, 91203390.9

Int. Cl.[5] C08F *8/42*

U.S. Cl. 525—333.7 3 Claims

1. An alkali metal metallated derivative of polyolefin, produced by a process comprising the steps of polymerizing an α-olefin of from 2 to 12 carbon atoms inclusive to produce a base polyolefin homopolymer having a molecular weight from about 175 to about 250,000 and having a vinylidene group in the terminal portion thereof, and contacting the base polyolefin homopolymer with an alkyl alkali metal compound in the presence of inert hydrocarbon solvent and an alkali metal t-alkoxide or a tertiary amine.

5,364,912

THERMOPLASTIC RESINS FROM POLYGLYCIDYL ESTERS CONTAINING MESOGENIC MOIETIES

Robert E. Hefner, Jr., and Jimmy D. Earls, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 905,592, Jun. 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 582,048, Sep. 13, 1990, abandoned. This application Aug. 16, 1993, Ser. No. 107,267

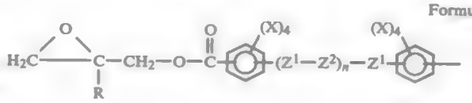
Int. Cl.[5] C08G *59/12, 59/22, 59/42, 59/64*

U.S. Cl. 525—418 4 Claims

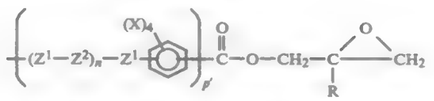
1. A composition comprising an essentially thermoplastic resin prepared by reacting a composition consisting essentially of

(A) one or more polyglycidyl esters containing one or more mesogenic moieties, said polyglycidyl esters being those represented by either Formula I

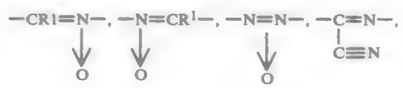
Formula I

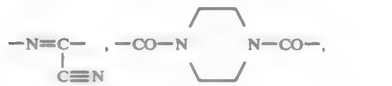


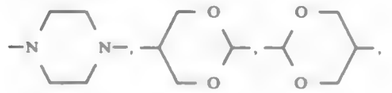
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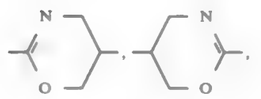


wherein at least about 80 percent of the $-(Z^1-Z^2)_n-Z^1-$ linkages and the glycidyl ester groups are in the pars position with respect to each other; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, $-NO_2$, or $-C\equiv N$; each Z^1 is independently a direct single bond, $-CR^1=CR^1-$, $-CR^1=CR^1-CR^1=CR^1-$, $-CR^1=N-N=CR^1-$, $-CR^1=CR^1-CO-O-(CHR^1)_{p'}-$, $-CR^1=CR^1-O-CO-(CHR^1)_{p'}-$, $-(CHR^1)_{p'}-O-CO-CR^1=CR^1-$, $-(CHR^1)_{p'}-CO-O-CR^1=CR^1-$, $-CR^1=CR^1-CO-O-$, $-O-CO-CR^1=CR^1-$, $-CO-NR^1-$, $-NR^1-CO-$, $-CO-NR^1-NR^1-CO-$, $-C\equiv C-$, $-C\equiv C-C\equiv C-$, $-CO-S-$, $-S-CO-$, $-CR^1=N-$, $-N=CR^1-$, $-O-CO-$, $-CO-O-$, $-CR^1=CR^1-CO-$, $-CO-CR^1=CR^1-$, $-CR^1=CR^1-O-CO-$, $-CO-O-CR^1=CR^1-$, $-CH_2-CH_2-CO-O-$, $-O-CO-CH_2-CH_2-$, $-N=N-$,

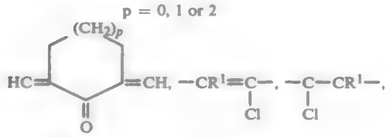








p = 0, 1 or 2

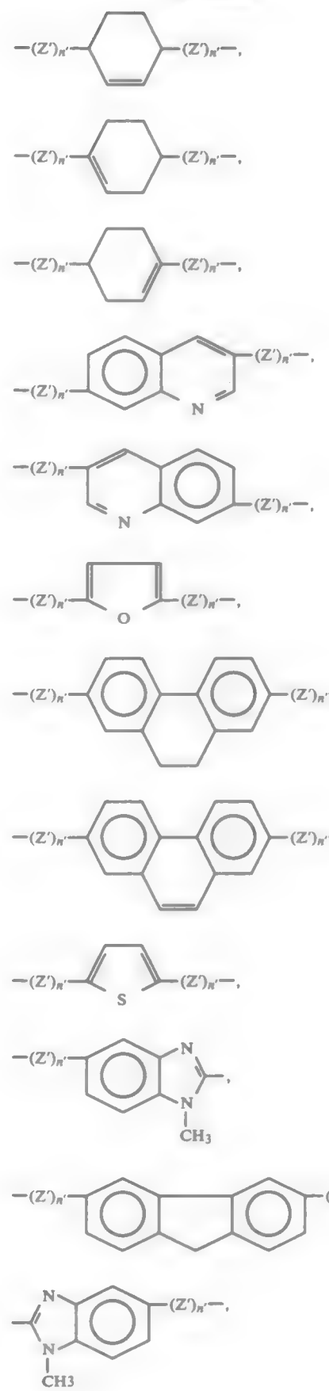




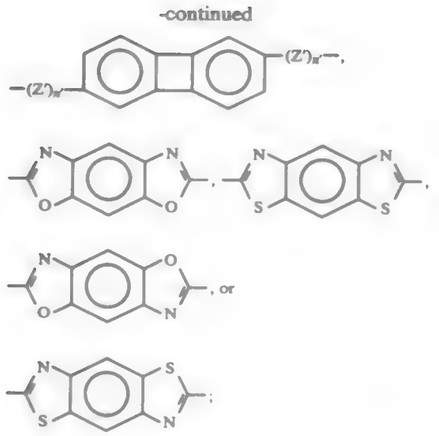




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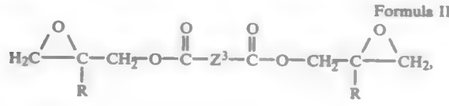


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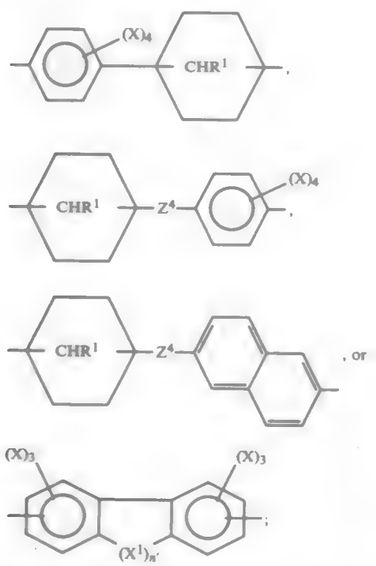


Z^2 is a group represented by a cyclic or bicyclic ring system containing from 5 to about 12 carbon atoms and is cyctoaliphatic, polycycloaliphatic, aromatic or a combination thereof; n is 0 to 2; each n' independently has a value of zero or one; p' is 1 or 2; p'' has a value from zero to 100; add each Z' is independently a —CO—, —O—CO—, —CO—O—, —CO—NR^1—, or —NR^1—CO— group; or Formula II

Formula II



wherein Z^3 is



and Z^4 is —CO—O—, —O—CO—, —NR^1—CO— or —CO—NR^1; X^1 is a divalent hydrocarbyl group having from 1 to about 10 carbon atoms which can contain one or more heteroatoms selected from N, O or S and is saturated or unsaturated; each R and R^1 is independently hydrogen or an aliphatic hydrocarbon group having from 1 to about 4 carbon atoms; each X is independently hydrogen, a hydrocarbyl or hydrocarbyloxy group having from 1 to about 12 carbon atoms, a halogen atom, —NO_2, or —C≡N; and n' is zero or one;

with

(B) at least one compound having an average of more than one active hydrogen atom per molecule selected from the group consisting of biphenols, and dicarboxylic acids;

wherein components (A) and (B) are meltable or soluble under conditions necessary for their derivatization or further reaction and are employed in quantitizes which provide a ratio of active hydrogen atoms per epoxide group of from about 0.96:1 to about 1.05:1.

5,364,913

THERMOSET COMPOSITIONS BASED ON NYLON-1

Aaron D. Meltzer, Carnegie; Douglas A. Wicks, Mt. Lebanon, and Harald Pielartzik, Pittsburgh, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

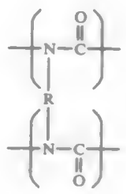
Continuation-in-part of Ser. No. 970,670, Nov. 3, 1992, abandoned. This application Jul. 28, 1993, Ser. No. 98,531

Int. Cl.[5] C08F *283/04;* **C08L** *67/00*

U.S. Cl. 525—440 **9 Claims**

1. A thermosetting composition prepared by reacting

(i) a crosslinked nylon-1 which contains structural units conforming to



where R is an organic radical, with

(ii) an isocyanate-reactive compound, wherein molar ratio of carbonyl groups to isocyanate-reactive groups is about 0.5:1 to 20:1 wherein said nylon-1 is crosslinked to the extent that at least 50 mole-percent of the monomers from which it has been prepared are chemically attached to two distinct polymer backbones.

5,364,914

MOULDING COMPOSITION COMPRISING A THERMOSET COMPONENT AND THERMOPLAST COMPONENT

Martin T. Choate, Winona, Minn.; Patrick McGrail, Saltburn, England; Mark S. Sefton, Northallerton, England, and Jeffrey T. Carter, Redcar, England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 416,236, Oct. 2, 1989, abandoned, which is a continuation-in-part of Ser. No. 253,595, Oct. 5, 1988, Pat. No. 4,972,031. This application Aug. 13, 1991, Ser. No. 747,436

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] C08L *61/10, 63/02, 63/04, 81/06*

U.S. Cl. 525—505 **8 Claims**

1. A curable molding composition in the form of a flowable particulate solid substantially non-self adhesive at temperature up to 60° C., flowable under shear and self-adhesive at temperatures in the range 60°–150° C. and hardenable at temperature over 150° C., said composition comprising a thermosetting component and, mixed intimately therewith, a thermoplastic component, said thermosetting component comprising an uncured or partly cured thermoset resin precursor selected from the group consisting of epoxy resin precursors, phenolic resin precursors and mixtures thereof and a curing agent for said thermoset resin precursor, said thermoplastic component comprising a polyarylsulphone containing the repeating units $(Ph—SO_2—Ph)_n$ and $Ph^1{}_a$ linked through ether and/or thioether, where Ph is paraphenylene, Ph^1 is phenylene, n is 1 to 2, a is 1 to 3 and groups Ph^1 are (when a exceeds 1) linked through a single chemical bond, a divalent group, or are fused together, wherein said divalent group is not SO_2 or alkylene, said composition containing from 5 up to 40 weight percent of polyarylsulphone.

8. In a molding composition comprising a curable resin precursor selected from the group consisting of epoxy resins, phenol-formaldehyde resins and combinations thereof, the improvement which comprises having intimately mixed therewith, polyarylsulphone containing the repeating units $(Ph\ So_2\ Ph)_n$ and $Ph^1{}_a$ linked through ether, where Ph is paraphenylene, Ph^1 is phenylene, n is 1 to 2, a is 1 to 3 and groups Ph^1 are (when a exceeds 1) linked through a single chemical bond, said composition containing from 5 up to 40 weight percent of polyarylsulphone.

5,364,915

ETHYLENE POLYMERIZATION PROCESS

Elizabeth A. Benham, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 25, 1992, Ser. No. 950,525

Int. Cl.[5] C08F *4/78*

U.S. Cl. 526—105 **17 Claims**

1. A process comprising polymerizing ethylene:

in the presence of a trialkylaluminum compound and a diluent that is substantially saturated with ethylene; and

under slurry polymerization conditions that comprise a polymerization temperature from 104° C. to 116° C.; with an activated catalyst system comprising:

(a) a catalyst support that comprises a silica compound, wherein said catalyst support has a pore volume less than 2 cubic centimeters per gram;

(b) a catalyst that comprises a chromium compound, wherein the amount of chromium in said catalyst system is from about 0.1 to about 20 weight percent, wherein said weight percent is based on the total weight of said catalyst and catalyst support; and

(c) a fluorine compound, wherein the amount of fluorine used is from about 0.1 to about 20 weight percent, wherein said weight percent is based on the total weight of said catalyst support.

5,364,916

CATALYST AND PROCESS FOR THE PREPARATION OF AN OLEFIN POLYMER

Jacob Reukema, Sittard; Jeroen H. G. Kouings, Stein, and Bernardus J. Muskens, Geleen, all of Netherlands, assignors to DSM N.V., Heerlen, Netherlands

Filed Sep. 10, 1992, Ser. No. 942,319

Claims priority, application Netherlands, Sep. 11, 1991, 9101536

Int. Cl.[5] B01J *27/24*

U.S. Cl. 526—161 **18 Claims**

1. Process for the preparation of an olefin polymer comprising polymerizing an olefin or mixtures of olefins with the aid of a catalyst, wherein the catalyst comprises a vanadium component and an organometal component, the vanadium component comprises a vanadium atom onto which an imidoaryl ligand is bound to form a complex, the metal in the organometal component is a metal from Group 1, 2, 12 or 13 of the Periodic Table of Elements, and the imidoaryl ligand is an o,o-disubstituted phenyl group.

5,364,917

PERFLUOROCYCLOBUTANE RING–CONTAINING POLYMERS

David A. Babb; W. Frank Richey; Katherine S. Clement, all of Lake Jackson, Tex., and Bobby R. Exzell, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 54,648, Apr. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 929,742, Aug. 13, 1992, abandoned, which is a division of Ser. No. 673,882, Mar. 22, 1991, Pat. No. 5,159,038, which is a division of Ser. No. 364,667, Jun. 9, 1989, Pat. No. 5,037,917. This application Dec. 1, 1993, Ser. No. 159,892

Int. Cl.[5] C08F *14/18, 12/20, 5/00;* **B29B** *7/00*

U.S. Cl. 526—242 **23 Claims**

1. A process of preparing a polymer having perfluorocyclobutane rings comprising the steps of:

(a) contacting oligomers having at least two dimerizable perfluorovinyl end groups, and

(b) exposing the monomers to a temperature of at least about 50° C. for a sufficient time that a resulting polymer containing perfluorocyclobutane rings is formed

wherein the oligomer is an aromatic polyester, aromatic polyamide or polyimide or mixture thereof.

5,364,918

SURFACE MODIFICATION OF POLYMER OBJECTS

Paul L. Valint, Jr., Pittsford; Joseph A. McGee, Dewitt, and Yu-Chin Lai, Pittsford, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 619,282, Nov. 27, 1990, Pat. No. 5,219,965. This application Mar. 29, 1993, Ser. No. 38,384

The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.

Int. Cl.[5] C08F *18/20, 12/30, 20/10*

U.S. Cl. 526—245 **27 Claims**

1. A surface-modified contact lens prepared by adding a polymerizable surfactant to a monomer mix used to form the contact lens.

5,364,919

METHINE OR AZAMETHINE DYE POLYMERS

Karl-Heinz Etzbach, Frankenthal; Ruediger Sens, Mannheim, and Heike Killburg, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed May 25, 1993, Ser. No. 65,905

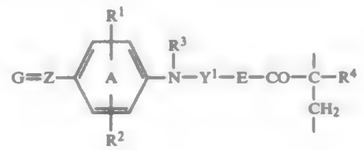
Claims priority, application Germany, Jun. 4, 1992, 4218359

Int. Cl.[5] C08F *226/06, 220/42*

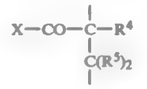
U.S. Cl. 526—265 **2 Claims**

1. Methine or azamethine dye polymers containing as characteristic monomer units radicals of the formulae I, II, III and IV

(I)



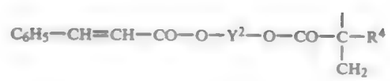
(II)



-continued



(III)



(IV)

where

G is a divalent radical of the benzene, naphthalene, pyridine, quinoline, thiazole, benzothiophene, or triazolopyridine series,

Z is nitrogen or CH,

R^1 and R^2 are each independently of the other hydrogen, C_1-C_6-alkyl or C_1-C_6-alkoxy optionally substituted by phenyl or C_1-C_4-alkoxy,

R^3 is hydrogen, C_1-C_6-alkyl, C_5-C_7-cycloalkyl or C_3-C_4-alkenyl,

R^4 is hydrogen, deuterium, methyl, trideuterated methyl or chlorine,

R^5 is hydrogen or deuterium,

Y^1 and Y^2 are each independently of the other C_2-C_{11}-alkylene optionally interrupted by from 1 to 3 oxygen atoms in ether function or imino or C_1-C_4-alkylimino groups,

E is oxygen, imino or C_1-C_4-alkylimino, and

X is hydroxyl, C_1-C_6-alkoxy, trideuterated methoxy, 2,3-epoxypropoxy, phenoxy, amino or C_1-C_4-mono- or -dialkylamino, and

the ring A can be benzofused, the proportion of monomer units of the formula I being from 1 to 100 mol %, the proportion of monomer units of the formula II being from 0 to 99 mol %, the proportion of monomer units of the formula III being from 0 to 99 mol % and the proportion of monomer units of the formula IV being from 0 to 75 mol %, each percentage being based on the polymer, and the average molecular weight of the polymer being from 1,000 to 100,000.

5,364,920

METHOD OF CROSSLINKING POLYSILAZANE POLYMERS

Duane R. Bujalski, Bay City; Gregg A. Zank, and Thomas D. Barnard, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 1,986, Jan. 8, 1993, Pat. No. 5,262,553. This application Aug. 16, 1993, Ser. No. 106,741

Int. Cl.[5] C08G *77/56*

U.S. Cl. 528—5 **6 Claims**

1. A method of crosslinking a polysilazane having Si—H or N—H bonds comprising:

mixing the polysilazane with a silazane crosslinker having the structure $R_3Si—NR—(SiR_2—NR)_x—SiR_3$, wherein R is independently a hydrogen, a hydrocarbon of 1–20 carbon atoms, a hydrocarbon of 1–20 carbon atoms substituted with silicon, nitrogen or boron, or a substituted silicon, nitrogen or boron atom, and x is 0 to 5, provided the crosslinker contains at least 2 boron groups which comprise a boron atom attached to a group independently selected from hydrogen, a halogen, a hydrocarbon of 1–20 carbon atoms, an alkoxy, or a hydroxy; and

facilitating crosslinking of the polysilazane.

5,364,921

SILICONE RUBBER WITH SELF-ADHESION TO GLASS AND METAL

Thomas E. Gray, Midland, Mich.; Michael E. Kunselman, Ichihara, Japan, and Richard A. Palmer, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 17, 1993, Ser. No. 107,494

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **17 Claims**

1. A silicone composition curable to a rubber comprising

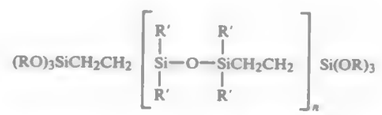
(A) 100 parts by weight of an alkenyl-containing polydiorganosiloxane having an average of at least two silicon-bonded alkenyl radicals per molecule where the alkenyl radical has from 2 to 10 carbon atoms per radical, each organo radical of the polydiorganosiloxane being a monovalent radical selected from the group consisting of hydrocarbon radicals and fluorinated alkyl radicals both having less than 7 carbon atoms per radical, the polydiorganosiloxane having triorganosiloxy endgroups,

(B) an organohydrogensiloxane having an average of at least 3 silicon-bonded hydrogen atoms per molecule and valences of any silicon atom in the organohydrogensiloxane not satisfied by a hydrogen atom is satisfied by a divalent oxygen atom or an organo radical wherein each organo radical is a monovalent radical selected from the group consisting of hydrocarbon radicals and fluorinated alkyl radicals both having less than 7 carbon atoms per radical, the organohydrogensiloxane having no more than one silicon-bonded hydrogen atom on any one silicon atom, the amount of organohydrogensiloxane providing a ratio of silicon-bonded hydrogen atoms to alkenyl groups from the polydiorganosiloxane of 1.2 to 2,

(C) a hydrosilation catalyst containing platinum,

(D) 0.1 to 1 part by weight of an (epoxy-functional organo)-trialkoxysilane where the alkoxy radicals of the (epoxy-functional organo)trialkoxy-silane have 1 to 4 inclusive carbon atoms,

(E) 0.25 to 5 parts by weight of an alkoxy-silicon compound selected from tetraalkyl orthosilicates, alkylpolysilicates or alkoxy-silicon compounds of the general formula



wherein B is 0 or 1, R is an alkyl radical of 1 to 4 inclusive carbon atoms and R′ is a monovalent hydrocarbon radical, where the alkyl groups of the tetraalkyl orthosilicates and the alkylpolysilicates are methyl, ethyl, propyl or butyl, and

(F) 0.01 to 0.5 part by weight of a titanium compound having Ti—O—CH bonds,

where the total amount of ingredient (D) and ingredient (E) is from 0.5 to 6 parts by weight and the molar amount of (E) exceed the molar amount of (D).

5,364,922

CURABLE COMPOSITIONS CONTAINING AN ANAEROBICALLY INACTIVE HYDROSILATION CATALYST AND METHOD FOR PREPARING SAID COMPOSITIONS

Carl J. Bilgrien; Michael A. Lutz, and Binh T. Nguyen, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 7, 1993, Ser. No. 117,458

Int. Cl.[5] C08G *77/08*

U.S. Cl. 528—15 **37 Claims**

1. Curable compositions exhibiting cure inhibition in the absence of oxygen, said composition comprising

A. a first compound containing at least two ethylenically unsaturated or acetylenically unsaturated groups per molecule;

B. an amount sufficient to cure said composition in the presence of an active hydrosilation catalyst of a second compound containing at least two silicon-bonded hydrogen atoms per molecule; and

C. an amount sufficient to promote curing of said composition in the presence of oxygen of an anaerobically inhibited hydrosilation catalyst containing a platinum group metal.

5,364,923

ORGANOPOLYSILOXANE GRAFT EPOXY RESINS AND A METHOD FOR THE PREPARATION THEREOF

Ryozo Mikami, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1993, Ser. No. 127,855

Claims priority, application Japan, Sep. 30, 1992, 4-285577

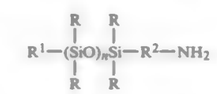
Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—27 **20 Claims**

1. A composition comprising a reaction product of:

(A) an epoxy resin having at least two epoxy groups in its molecule; and

(B) an organopolysiloxane having the general formula



wherein R and R^1 represent monovalent hydrocarbon radicals, R^2 represents a divalent hydrocarbon radical, and n represents a number greater than 3.

5,364,924

SUBSTITUTED UREAS CONTAINING CYCLIC AMINES AS CHAIN EXTENDERS IN POLYMERIC SYSTEMS

Richard M. Gerkin, Cross Lanes, and Forest A. Richey, Jr., Charleston, both of W. Va., assignors to OSi Specialties Inc., Danbury, Conn.

Filed Mar. 31, 1993, Ser. No. 40,642

Int. Cl.[5] C08G *18/32*

U.S. Cl. 528—73 **5 Claims**

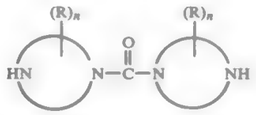
1. A process for making a poly(urethane/urea) or polyurea, comprising the following steps:

a) combining

i) an isocyanate-reactive material containing at least two active hydrogens;

ii) a polyisocyanate; and

iii) a diamino urea having the formula



wherein each ring is saturated and includes 3–5 carbon atoms and n substituents R of 1–4 carbon atoms each, and n for each ring is 1–4; and

b) effecting polymerization of reagents i, ii, iii to produce polymer.

5,364,925

AN EPOXY RESIN ADVANCED WITH A DIHYDRIC PHENOL AND FURTHER CHAIN EXTENDED WITH AN ADDITIONAL DIHYDRIC PHENOL FOR USE IN ELECTRICAL LAMINATES

Masahiko Kohno, Susono, and Takahiko Ohsawa, Gotemba, both of Japan, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 825,696, Jan. 27, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,190

Int. Cl.[5] C08G *59/00*

U.S. Cl. 528—104 **10 Claims**

1. An epoxy resin composition comprising the following components dissolved in a solvent:

(A) an advanced epoxy resin made by reacting:

(A-1) an epoxy resin having on average more than one and less than three epoxy groups per molecule; with

(A-2) a dihydric phenol

in an equivalent ratio of 1:x epoxy group equivalents per phenolic hydroxyl group equivalents, wherein x is at least 0.01;

(B) a dihydric phenol in an equivalent ratio of 1:y epoxy group equivalents per phenolic hydroxyl group equivalents, wherein y is at least 0.01 and x+y is no more than about 0.5;

(C) a catalyst for the reaction of components (A) and (B); and

(D) a curing agent selected from the group consisting of amine curing agents and anhydrides.

5,364,926

PREPARING METHOD OF POLYCARBONATE RESIN COMPOUNDS FOR THE OPTICAL USE

Takeshi Sakashita; Tomoaki Shimoda, both of Iwakuni; Kimiyoshi Miura, Saeki; Kenichi Tominari, Narashino, and Akio Kanezawa, Sodegaura, all of Japan, assignors to GE Plastics, Japan, Ltd. (GEP), Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 22,710

Claims priority, application Japan, Feb. 27, 1992, 4-041470

Int. Cl.[5] C08G *64/00*

U.S. Cl. 528—198 **6 Claims**

1. An improved method for preparing optical-grade polycarbonate compositions by melt-polycondensing an aromatic dihydroxy compound and a diester carbonate in the presence of a catalyst selected from the group consisting of

(a) an alkali metal compound and a nitrogen-containing basic compound,

(b) an alkaline earth metal compound and a nitrogen-containing basic compound,

(c) an alkali metal compound, a nitrogen-containing basic compound and boric acid.

(d) an alkaline earth metal compound, a nitrogen-containing basic compound and boric acid,

(e) an alkali metal compound, a nitrogen-containing basic compound and a boric acid ester and

(f) an alkaline earth metal compound, a nitrogen-containing basic compound and a boric acid ester to give a molten reaction product

and adding to the molten reaction product an additive selected from the group consisting of

(i) a sulfur-containing acidic compound having a pKa value no greater than 3,

(ii) a phosphorus compound,

(iii) an epoxy compound,

(iv) a phenolic stabilizer and

(v) a sulfur-containing acidic compound derivative having a pka value no greater than 3

wherein the improvement comprises filtering the molten reaction product containing an additive with a polymer filter.

5,364,927

WET STRENGTH RESIN COMPOSITION AND METHOD OF MAKING SAME

David I. Devore, Langhorne, and Stephen A. Fischer, Yardley, both of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 740,369, Aug. 5, 1991, Pat. No. 5,239,047, which is a continuation-in-part of Ser. No. 712,327, Jun. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 652,346, Feb. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 573,600, Aug. 24, 1990, Pat. No. 5,189,142. This application Aug. 12, 1993, Ser. No. 106,097

The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.

Int. Cl.[5] C08G *69/26, 69/34*

U.S. Cl. 528—339.3 **3 Claims**

1. A wet strength resin composition comprising from about 10% to about 45% by weight of an aminopolyamide-epichlorohydrin acid salt resin, up to 0.7% by weight total organically bound chlorine based on the weight of said resin, and the remainder water.

5,364,928

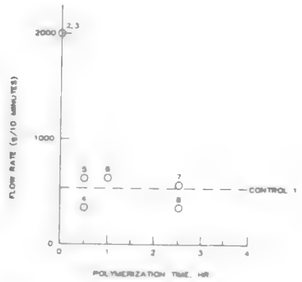
PROCESS FOR PREPARING ARYLENE SULFIDE POLYMERS

Carlton E. Ash, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 699,118, May 13, 1991, Pat. No. 5,239,050. This application May 14, 1993, Ser. No. 62,084

Int. Cl.[5] C08G *75/16*

U.S. Cl. 528—373 **7 Claims**



1. A process for preparing an arylene sulfide polymer comprising the steps of: (a) contacting at least one essentially anhydrous sulfur source, at least one cyclic organic amide, and at least one dihaloaromatic compound to form a polymerization mixture, (b) subjecting said polymerization mixture to polymerization conditions of temperature and time sufficient to form said arylene sulfide polymer, and (c) recovering said arylene sulfide polymer, wherein an aqueous alkali metal carboxylate mixture is added to said polymerization mixture after the conversion of said dihaloaromatic compound is about 40 percent but prior to recovering said arylene sulfide polymer.

5,364,929

DISSOLUTION OF TETRAFLUOROETHYLENE POLYMERS AT SUPERAUTOGENOUS PRESSURE

Gregory T. Dee, Wilmington, and William H. Tuminello, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 13, 1993, Ser. No. 3,762

Int. Cl.[5] C08K *5/20;* **C08F** *6/00*

U.S. Cl. 528—491 **21 Claims**

1. A process for the dissolution of high melting point tetrafluoroethylene polymers, comprising, contacting a halogenated compound with a tetrafluoroethylene polymer, at a first temperature high enough to dissolve said polymer, at a first pressure of 0.1MPa to about 275 MPa above an autogenous pressure of said compound at said first temperature, wherein said halogenated compound:

contains only carbon, fluorine and chlorine, or carbon, fluorine, chlorine and bromine, or carbon, fluorine and bromine, or carbon and fluorine, or carbon and chlorine, and may also contain one or more of hydrogen, ether oxygen or tertiary amino nitrogen;

the total number of hydrogen atoms is equal to or less than the total number of chlorine and fluorine atoms;

no hydrogen atoms are on a carbon atom alpha to a carbon atom bound to a chlorine or bromine atom; and

is a saturated, aromatic or a combined saturated and aromatic compound; and provided that said polymer has a melting point of about 250° C. or more.

5,364,930

SYNTHETIC C1Q PEPTIDE FRAGMENTS

Michael A. Baumann, Baltimore, Md., and Byron E. Anderson, Morton Grove, Ill., assignors to Northwestern University, Evanston, Ill.

Filed Oct. 16, 1990, Ser. No. 598,416

Int. Cl.[5] A61K *37/02;* **C07K** *7/06, 7/08*

U.S. Cl. 530—326 **9 Claims**

1. A binding material for removing immune complexes or aggregated immunoglobulins from a fluid, the binding material comprising plural binding peptides, the binding peptides being fragments of Clq which are characterized in that a plurality of such fragments selectively binds immune complexes or aggregated immunoglobulins in the presence of monomeric immunoglobulin, the Clq fragments comprising the following sequence:

[SEQ ID NO 2]

Leu Glu Gln Gly Glu Asn Val Phe Leu Gln Ala Thr.
1 5 10

5,364,931

PHOSPHONATE-CONTAINING PSEUDOPEPTIDES OF THE HYDROXYETHYLAMINE AND NORSTATIN TYPE

Dieter Häbich; Jutta Hansen, both of Wuppertal, and Arnold Paessens, Haan, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

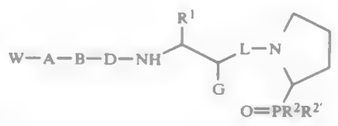
Filed Aug. 15, 1991, Ser. No. 746,271

Claims priority, application Germany, Aug. 24, 1990, 4026703; Nov. 1, 1990, 4034707

Int. Cl.[5] C07F *9/58, 9/60, 9/572*

U.S. Cl. 530—331 **6 Claims**

1. A phosphonate-containing pseudopeptide of the formula:



in which:

W

represents hydrogen, tert-butoxycarbonyl or benzyloxycarbonyl; or

represents R^3—CO; in which

R^3 represents quinolyl, quinolyl-N-oxide, pyridyl, or pyridyl-N-oxide; or represents straight-chain or branched alkyl having up to 13 carbon atoms;

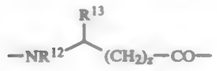
or R^3 represents R^8—Y—CH_2—$CH(R^7)$—; in which

Y represents SO_2;

R^7 represents phenyl or naphthyl;

R^8 represents straight-chain or branched alkyl having up to four carbon atoms;

A, B and D are identical or different and represent a direct bond; or represent a group of the formula:



in which

z represents the number 0 or 1;

R^{12} represents hydrogen or methyl; and

R^{13} represents straight-chain or branched alkyl having up to 4 carbon atoms, which is optionally substituted by methylthio, hydroxyl, mercapto, guanidyl, amino, carboxyl, H_2N—CO—, cyclohexyl, phenyl, naphthyl, or phenyl or naphthyl substituted by a substituent selected from the group consisting of fluorine, chlorine or alkoxy having up to 4 carbon atoms;

R^1 represents straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by cyclopropyl, cyclopentyl, cyclohexyl or phenyl;

R^2 and $R^{2'}$ are identical or different and represent hydroxyl or straight-chain or branched alkoxy having up to 4 carbon atoms;

G represents —SH or —OH; and

L represents —CH_2;

or a physiologically acceptable salt thereof.

5,364,932

PASTEURIZABLE, FREEZE-DRIABLE HEMOGLOBIN-BASED BLOOD SUBSTITUTE

Jen-Chang Hsia, Concord, Canada, assignor to Her Majesty the Queen in Right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Division of Ser. No. 781,671, Oct. 24, 1991, Pat. No. 5,189,146, which is a continuation of Ser. No. 359,396, May 31, 1989, abandoned, which is a division of Ser. No. 187,721, Apr. 29, 1988, Pat. No. 4,857,636. This application Jul. 27, 1992, Ser. No. 918,610

Claims priority, application United Kingdom, May 5, 1987, 8710598

Int. Cl.[5] C07K *15/22*

U.S. Cl. 530—385 **11 Claims**

1. A heat pasteurized, aqueous solution useful for preparation of a hemoglobin blood substitute, said solution comprising conformationally stabilized hemoglobin consisting essentially of tetrameric hemoglobin units which are both stabilized against dissociation into dimeric hemoglobin units, and are also conformationally stabilized against conformational change between the T-conformation and the R-conformation, said tetrameric hemoglobin units containing sub units having globin chains and having secondary amino covalent chemical linkages between the globin chains of the sub units so as to effect the stabilization, the linkages having been formed by reaction of the hemoglobin with a polyaldehyde to form Schiff base linkages, followed by reduction to secondary amino linkages; the hemoglobin having been protected during heat pasteurization by formation of a hemoglobin-carbon monoxide complex; said aqueous solution being free of detectable, transmissible viral infection.

5,364,933

METHODS OF IMUNOPURIFICATION OF ANTIGENS OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 2 (HIV-2)

Luc Montagnier, Le Plessis Robinson; Denise Gaetard, Paris; Francoise Brun-Vezinet, Paris, and Francois Clavel, Paris, all of France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 911,364, Jul. 13, 1992, which is a continuation of Ser. No. 771,893, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 365,117, Jun. 12, 1989, abandoned, which is a division of Ser. No. 835,228, Mar. 3, 1986, Pat. No. 4,839,288. This application Aug. 14, 1992, Ser. No. 929,432

Int. Cl.[5] C07K *3/12, 15/04*

U.S. Cl. 530—412 **2 Claims**

1. A method for purifying antigens of human immunodeficiency virus Type 2 (HIV-2), wherein said antigens comprise protein antigen, glycoprotein antigen, peptide antigen, DNA antigen, RNA antigen, or a mixture thereof of HIV-2, wherein said method comprises:

reacting said antibodies which bind with said antigens to form an immune complex;

separating said antibodies from said antigens; and

recovering said antigens.

5,364,934

PLASMA CARBOXYPEPTIDASE

Dennis T. Drayna, San Francisco, and Dan L. Eaton, San Rafael, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 959,944, Oct. 14, 1992, abandoned, which is a division of Ser. No. 649,591, Feb. 1, 1991, Pat. No. 5,201,161. This application Dec. 15, 1993, Ser. No. 167,727

Int. Cl.[5] C12N *15/57, 1/21, 5/10, 15/63*

U.S. Cl. 536—23.2 **5 Claims**

1. An isolated nucleic acid molecule encoding monomeric human plasma carboxypeptidase B having in its mature form the N-terminal sequence PheGlnSer.

5,364,935

CONTINUOUS HYDROLYSIS OF CELLULOSE ACETATE

Mark K. Cox, and Tim J. Frederick, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Continuation-in-part of Ser. No. 820,742, Jan. 13, 1992, abandoned. This application Apr. 23, 1993, Ser. No. 51,435

Int. Cl.[5] C08B *3/06, 1/02, 3/22*

U.S. Cl. 536—69 **3 Claims**

1. A process comprising continuously flowing a composition through a hydrolysis zone so as to achieve a residence time distribution such that at least 81% of the area under the residence time distribution curve is within plus or minus 50% of the mean residence time, the composition initially comprising cellulose triacetate in the range of 5 to 30%, water in the range of 4 to 25%, and acetic acid in the range of 45 to 91%.

5,364,936

CYCLOISOMALTOOLIGOSACCHARIDES

Tetsuya Oguma; Tatsuo Horiuchi, and Koichiro Tobe, all of Noda, Japan, assignors to Kikkoman Corporation and Noda Institute for Scientific Research, Chiba, Japan

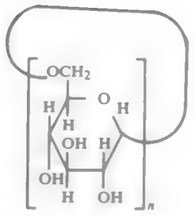
Filed Dec. 28, 1993, Ser. No. 174,596

Claims priority, application Japan, Dec. 28, 1992, 4-349444; Jun. 24, 1993, 5-153456

Int. Cl.[5] C08B *37/16, 37/02*

U.S. Cl. 536—103 **4 Claims**

1. A cycloisomaltooligosaccharide having glucose residues in α-1,6 linkage represented by formula I:



(I)

wherein n stands for an integer of 7–9.

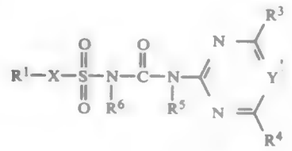
5,364,937

PROCESSES FOR PREPARING SULFONYLUREAS

Günter Schlegel, Liederbach, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 4, 1993, Ser. No. 26,557
Claims priority, application Germany, Mar. 7, 1992, 4207242
Int. Cl.[5] C07D *239/42, 239/47, 251/46, 251/52*
U.S. Cl. 544—194 12 Claims

1. A process for preparing compounds of the formula I or salts thereof,



(I)

in which

X is oxygen, —O—NR[2]— or —SO_2—NR2—,

Y is nitrogen or CH,

$R^1$is (C_1–C_6)alkyl, (C_2–C_6)alkenyl or (C_2–C_6)alkynyl, where each of the latter three radicals, independently of each other, is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, (C_1–C_4)alkoxy and [(C_1–C_4)alkoxy]-carbonyl, or, in the case where X=oxygen, also phenyl, which is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, nitro, (C_1–C_4)alkyl, (C_1–C_4) haloalkyl, (C_1–C_4)alkoxy, (C_1–C_4) haloalkoxy and [(C_1–C_4)-alkoxy]-carbonyl,

R^2 is hydrogen, (C_1–C_4)alkyl, (C_2–C_6)alkenyl, (C_2–C_6)alkynyl or (C3–C_6) cycloalkyl,

R^3 and R^4,independently of each other, are hydrogen, (C_1–C_4)alkyl or (C_1–C_4)alkoxy, where each of the latter two radicals is unsubstituted or substituted by one or more radicals selected from the group consisting of halogen, alkoxy and alkylthio, or is halogen, (C_1–C_4)alkylthio, (C_1–C_4)alkylamino or di[(C_1–C_4)alkyl]-amino and

$R^5$is hydrogen or (C_1–C_4)alkyl and

$R^6$is hydrogen

wherein compounds of the formula II,

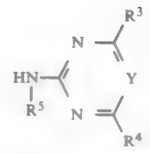
$$R^1—X—R^7 \qquad (II)$$

in which R^1 and X are defined as in formula I and R^7 is hydrogen, a quaternary ammonium ion or one equivalent of a singly, double or multiply charged metal cation, are reacted in a one-pot process or in two or more stages with compounds of the formulae III, IV and V,

$$R^8—OCN \qquad (III)$$

$$SO_2Cl_2 \qquad (IV)$$

(V)



in which R^3, R^4, R^5, X and Y are defined as in formula I and R^8 is hydrogen, a quaternary ammonium ion or one equivalent of a singly, doubly or multiply charged metal cation, and wherein during the process, the compounds of formulae III and IV are reacted resulting in formation of an addition product (adduct 1).

5,364,938

TRIAZOLE ANTIFUNGAL AGENTS

Roger P. Dickinson, Dover, and Kenneth Richardson, Birchington, both of England, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 845,986, Mar. 4, 1992, Pat. No. 5,206,364, which is a division of Ser. No. 392,686, Aug. 11, 1989, Pat. No. 5,116,844. This application Mar. 4, 1993, Ser. No. 26,671
Claims priority, application United Kingdom, Aug. 13, 1988, 8819308
Int. Cl.[5] C07D *403/10*
U.S. Cl. 544—333 8 Claims

1. A compound of the formula

or a pharmaceutically acceptable acid addition salt thereof, wherein R is chlorophenyl, fluorophenyl, dichlorophenyl or difluorophenyl; R^1 is alkyl having one to four carbon atoms; R^2 is hydrogen or alkyl having one to four carbon atoms; and Het is pyrimidinyl, optionally substituted with a fluoro, chloro, bromo, alkyl having from one to four carbon atoms, alkoxy having from one to four carbon atoms, trifluoromethyl, nitro, alkanoylamino having from one to four carbon atoms, alkoxycarbonylamino having from two to five carbon atoms, amino or cyano group.

5,364,939

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID CHLORIDES OF AROMATIC NITROGEN HETEROCYCLES

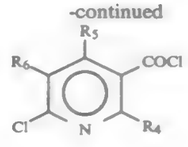
Jean-Paul Roduit, 4 Bois-de-Finges, Sierre, Switzerland

Filed Mar. 17, 1993, Ser. No. 32,328
Claims priority, application Switzerland, Mar. 20, 1992, 899/92
Int. Cl.[5] C07D *241/24, 213/54, 213/55, 213/61*
U.S. Cl. 544—406 11 Claims

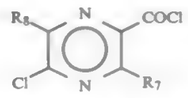
1. A process for the production of a carboxylic acid chloride of an aromatic nitrogen heterocycle of a series of compounds of formulas:

I

-continued

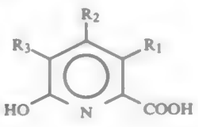


II

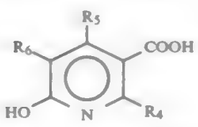


III

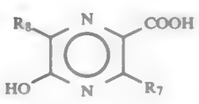
wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are the same or different and each is a hydrogen atom or a halogen atom, comprising chlorinating, respectively, a hydroxy carboxylic acid of an aromatic nitrogen heterocycle of a series of compounds of formulas:



IV



V



VI

wherein R_1 to R_8 have the above-mentioned meanings, the chlorination being performed with a solution of phosphorous pentachloride in phosphoroxy chloride, converting the excess phosphorous pentachloride into phosphoroxy chloride either with a C_1–C_4-carboxylic acid or with a silane of formula:

$$(CH_3)_3—Si—OR_9 \qquad VII$$

wherein R_9 is a C_1–C_4-alkyl group or a tri(C_1–C_4)alkylsilyl group, and then isolating the product according to one of the formulas I to III.

5,364,940

MICROBIOLOGICAL PROCESS FOR HYDROXYLATION OF NITROGEN-HETEROCYCLIC-CARBOXYLIC ACIDS

Andreas Kiener, Visp; Andreas Tschech, Aarau; Andreas Tinschert, Brig, and Klaus Heinzmann, Visperterminen, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 24,768, Mar. 2, 1993, Pat. No. 5,306,630. This application Jul. 13, 1993, Ser. No. 90,951
Claims priority, application Switzerland, Mar. 4, 1992, 672/92
Int. Cl.[5] C07D *241/02, 211/72, 211/84*
U.S. Cl. 544—406 4 Claims

1. A hydroxy-nitrogen-heterocyclic-carboxylic acid of formula:

I

wherein X is a nitrogen atom and R_1 and R_2 are the same or different and each is a hydrogen atom, a halogen atom or a C_1–C_4 alkyl group, with the exception that R_1 and R_2 are not both hydrogen, or wherein X is —CH— and R_1 and R_2 are each a halogen atom.

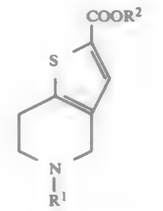
5,364,941

5-ACYL-4,5,6,7-TETRAHYDROTHIENO (3,2-C)PYRIDINE-2-CARBOXYLIC ACID DERIVATIVE AND PROCESS FOR PRODUCING THE SAME

Katsuyoshi Yamakawa; Kozo Sato, both of Minami-ashigara, and Takashi Suginome, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 2, 1993, Ser. No. 70,245
Claims priority, application Japan, Jun. 10, 1992, 4-150306
Int. Cl.[5] C07D *471/04, 495/04*
U.S. Cl. 546—114 16 Claims

1. A compound of the general formula (I):



(I)

wherein R^1 represents an acyl group and R^2 represents a hydrogen atom or an alkyl group.

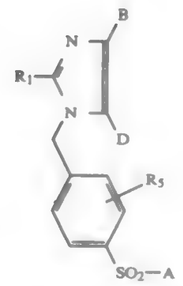
5,364,942

SULPHONYLBENZYL-SUBSTITUTED IMIDAZOPYRIDINES

Rudolf Hanko, Duesseldorf; Jürgen Dressel, Wuppertal; Peter Fey, Wuppertal; Walter Hübsch, Wuppertal; Thomas Krämer, Wuppertal; Ulrich E. Müller, Wuppertal; Matthias Müller-Gliemann, Solingen-Ohligs; Martin Beuck, Erkrath; Stanislav Kazda; Claudia Hirth-Dietrich, both of Wuppertal; Andreas Knorr, Erkrath; Johannes-Peter Stasch, Wuppertal; Stefan Wohlfeil, Hilden, and Özkan Yalkinoglu, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 18, 1993, Ser. No. 18,964
Claims priority, application Germany, Feb. 27, 1992, 4206042
Int. Cl.[5] C07D *471/04, 471/06;* A61K *31/415, 31/44*
U.S. Cl. 546—118 10 Claims

1. A sulphonylbenzyl-substituted imidazopyridine of the formula

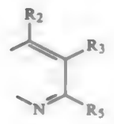


(I)

in which

R^1 represents straight-chain or branched alkyl or alkenyl having in each case up to 8 carbon atoms, which are optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or represents cycloalkyl having 3 to 8 carbon atoms,

B and D together form a heterocyclic radical of the formula



wherein

R^2 and R^3 are identical or different and denote hydrogen, halogen or straight-chain or branched alkyl having up to 8 carbon atoms,

R^4 has the abovementioned meaning of R^2 and R^3 and is identical to or different from these, or denotes a group of the formula —CO—R^6,

wherein

R^6 denotes hydroxyl, straight-chain or branched alkoxy having up to 8 carbon atoms, phenoxy, benzyloxy or a group of the formula —NR^7R^8,

wherein

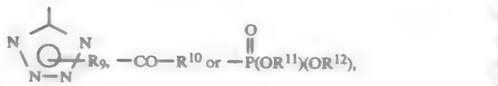
R^7 and R^8 are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,

R^5 represents hydrogen, halogen or straight-chain or branched alkyl having up to 8 carbon atoms, or represents straight-chain or branched perfluoroalkyl having up to 6 carbon atoms, or represents a group of the formula —OX,

wherein

X denotes hydrogen, benzyl, a hydroxy protective group or denotes straight-chain or branched alkyl having up to 8 carbon atoms,

A represents a 3- to 5 membered saturated heterocyclic radical which is bonded via the nitrogen atom, contains up to 2 further heteroatoms selected from the group consisting of S, N and O and is optionally substituted up to twice, in an identical or different manner, by perfluoroalkyl having up to 5 carbon atoms or by a radical of the formula —SO_3H,



wherein

R^9 denotes hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or triphenylmethyl,

R^{10} has the abovementioned meaning of R^6 and is identical to or different from this radical and

R^{11} and R^{12} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl,

and salts thereof.

5,364,943

PREPARATION OF SUBSTITUTED PIPERIDINES

Terry J. Rosen, East Lyme; Dennis M. Godek, Glastonbury; Sally Gut, Madison, and Lewin Wint, Uncasville, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 27, 1991, Ser. No. 800,667

Int. Cl.[5] C07D *213/74, 211/56*

U.S. Cl. 546—223 **4 Claims**

1. A compound of the formula

wherein R^1 is aryl selected from indanyl, phenyl and naphthyl; or cycloalkyl having 3–7 carbon atoms wherein said aryl may optionally be substituted with one or more substituents, and said (C_3–C_7)cycloalkyl may optionally be substituted with one or two substituents, said substituents being independently selected from halo, nitro, amino, cyano, phenyl, hydroxyl, (C_1–C_6)alkylamino, (C_1–C_6)dialkylamino,

(C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms and (C_1–C_{10}) alkyl optionally substituted with from one to three fluorine atoms, wherein the nitrogen atoms of said amino and (C_1–C_6)alkylamino groups may optionally be protected with an appropriate protecting group;

Z is R^2 or Q;

R^2 is thienyl, benzhydryl, naphthyl or phenyl optionally substituted with from one to three substituents independently selected from chloro, bromo, fluoro, iodo, (C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms and (C_1–C_{10})alkyl optionally substituted with from one to three fluorine atoms; and

Q is chloro, fluoro, bromo or iodo;

with the proviso that when Q is chloro, fluoro, bromo or iodo, , R^1 can not be: a) unsubstituted naphthyl unsubstituted phenyl, or unsubstituted cycloalkyl; b) phenyl substituted with halo, nitro, cyano, hydroxyl, (C_1–C_{10})alkoxy optionally substituted with from one to three fluorine atoms or (C_1–C_{10})alkyl optionally substituted with from one to three fluorine atoms; or c) heteroaryl selected from 5-amino-6-chloro-pyridin-2-yl and 5-acetamido-6-chloro-pyridin-2-yl

5,364,944

SUBSTITUTED BENZOYLBENZENE-, BIPHENYL- AND 2-OXAZOLE- ALKANOIC ACID COMPOUNDS

Amedeo A. Failli, Princeton, N.J.; Anthony F. Kreft, III, Langhorne, Pa.; John H. Musser, Alameda, Calif.; Annette L. Banker, Plainsboro, N.J.; James A. Nelson, Washington Crossing, Pa.; Uresh S. Shah, Plainsboro, N.J., and Dennis M. Kubrak, Philadelphia, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 891,537, Jun. 1, 1992, Pat. No. 5,218,124, and a continuation-in-part of Ser. No. 661,733, Feb. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 427,677, Oct. 27, 1989, abandoned. This application Jan. 6, 1993, Ser. No. 1,141

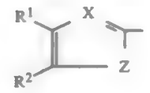
Int. Cl.[5] C07D *233/54*

U.S. Cl. 548—341.1 **4 Claims**

1. A compound having the formula

A(CH$_2$)n O—B

wherein A is a group having the formula



wherein

X is —N—;

Z is

R^1 is hydrogen, lower alkyl or phenyl;

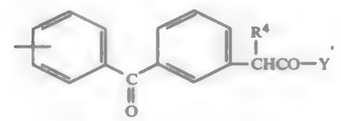
R^2 is hydrogen or lower alkyl; or

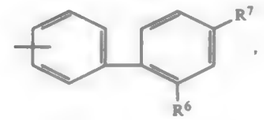
R^1 and R^2 taken together from a benzene ring;

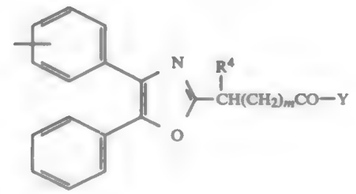
R^3 is hydrogen or alkyl

n is 1–2;

B is

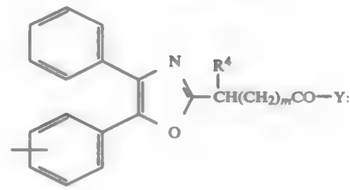






or

-continued



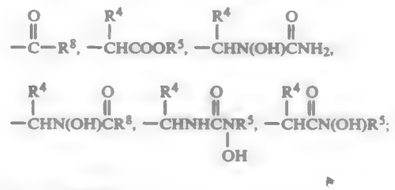
wherein

Y is OR^5 or $N(OH)R^8$;

R^4 and R^5 are each independently hydrogen or lower alkyl;

R^6 is hydrogen, halo or nitro;

R^7 is



R^8 is lower alkyl;

m is 0–3;

and the pharmacologically acceptable salts thereof.

5,364,945

ANHYDRIDE-FUNCTIONAL MONOMERS AND POLYMERS AND REACTIVE COMPOSITIONS PREPARED FROM SAME

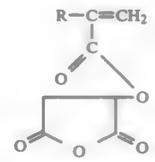
Rubing Cai, and Thomas W. Yokoyama, both of Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Jan. 3, 1994, Ser. No. 176,732

Int. Cl.[5] C07D *307/34*

U.S. Cl. 549—253 **3 Claims**

1. An anhydride-functional monomer having the structure:



wherein R is hydrogen or methyl.

5,364,946

PROCESS FOR THE PREPARATION OF SUBSTITUTED PENTAALKYLCHROMENES

David Laffan, Visp, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland and Sankyo Company Ltd., Tokyo, Japan

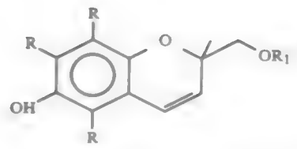
Filed Nov. 16, 1992, Ser. No. 977,157

Claims priority, application Switzerland, Nov. 20, 1991, 3392/91

Int. Cl.[5] C07D *311/04*

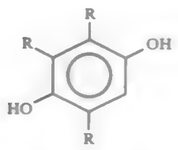
U.S. Cl. 549—407 **16 Claims**

1. A process for the preparation of a substituted pentaalkylchromene of the formula:



I

wherein R denotes a lower alkyl group having 1 to 4 C atoms and R_1 denotes a phenyl group which is unsubstituted or substituted by a lower alkyl group having 1 to 4 C atoms, by halogen or by a nitro group, or an alkanoyl group having 1 to 4 C atoms, comprising (a), in the first step, reacting a trialkylhydroquinone of the formula:



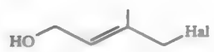
II

wherein R has the above-stated meaning with a butenol of the formula:



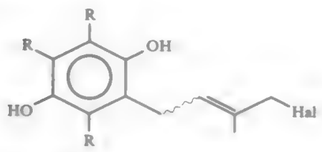
IIIa

or



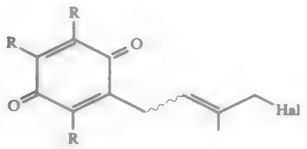
IIIb

wherein Hal denotes chlorine, bromine or iodine, in the presence of a Lewis acid selected from the group consisting of iron chloride, tin trifluoromethanesulfonate, boron trifluoride, and a complex compound of boron trifluoride, to give a teraalkylhydroquinone of the formula:



IV

wherein R and Hal have the above-stated meanings, (b), in a second step, oxidizing the tetraalkylhydroquinone with air or oxygen to give the quinone of the formula:

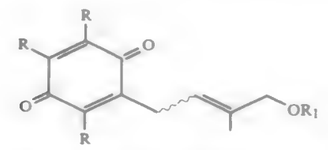


V

wherein R and Hal have the above-stated meanings, (c), in a third step, nucleophilically substituting the halogen atom with a nucleophilic compound of the formula:

$$(R_1\text{—}O)_nM \qquad \text{VI}$$

wherein R_1 has the above-stated meaning, M denotes an alkali metal or alkaline earth metal atom and n is 1 or 2, to give a quinone of the formula:



VII

wherein R and R_1 have the above-stated meanings, and (d), in a fourth step, cyclizing the quinone of the formula I by thermal catalysis, acid catalysis or base catalysis to give the final product of the formula I.

5,364,947

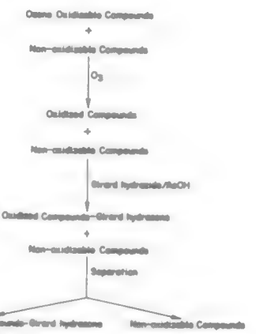
PROCESS FOR SEPARATING CEPHALOMANNINE FROM TAXOL USING OZONE AND WATER-SOLUBLE HYDRAZINES OR HYDRAZIDES

Christopher K. Murray; Jeffrey T. Beckvermit, and Dominick J. Anziano, all of Boulder, Colo., assignors to Hauser Chemical Research, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 120,170, Sep. 10, 1993, Pat. No. 5,334,732, which is a continuation-in-part of Ser. No. 909,080, Jul. 2, 1992, abandoned. This application Apr. 8, 1994, Ser. No. 224,758

Int. Cl.[5] **C07D** *305/00, 407/00, 493/00*

U.S. Cl. 549—510 **7 Claims**



1. A process for separating cephalomannine from a mixture containing cephalomannine and taxol in a solution, comprising the steps of:

(a) oxidizing the cephalomannine by contacting the solution with ozone to form oxidized cephalomannine;

(b) contacting said oxidized cephalomannine in the solution with a water-soluble hydrazide or hydrazine to form a water-soluble hydrazone; and

(c) separating said water-soluble hydrazone from the solution.

5,364,948

BIOLOGICALLY ACTIVE COMPOUNDS ISOLATED FROM AEROBIC FERMENTATION OF TRICHODERMA VIRIDE

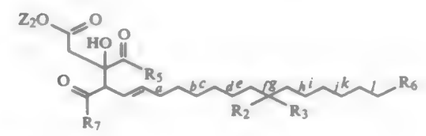
Guy H. Harris, Cranford; Deborah Zink, Manalapan, both of N.J.; E. Tracy T. Jones, Solana Beach, Calif., and Yu L. Kong, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 739,758, Aug. 2, 1991, abandoned, and a continuation-in-part of Ser. No. 907,730, Jul. 9, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,498

Int. Cl.[5] **C07C** *233/00*

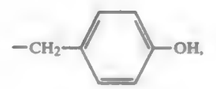
U.S. Cl. 554—36 **11 Claims**

1. A compound of structural formula (I)

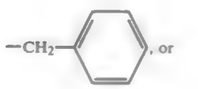


wherein

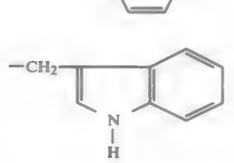
R_1 is



(a)



(b)



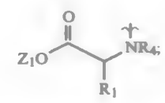
(c)

R_2 and R_3 are each H, or R_2 is H and R_3 is OH, or R_2 and R_3 together are oxo;

R_4 is H and R_5 is OZ_3, or R_4 and R_5 are a single bond forming a 2,5-dioxopyzrolidine;

R_6 is (a) hydrogen, or (b) $C_{1\text{-}3}$ alkyl;

R_7 is: (a) —OZ_1, or



(b)

each of a, b, c, d, e, f, g, h, i, j, k, and l are a single bond or one of a, b, c, d, e, f, g, h, i, j, k, and l is a double bond, provided that when f or g is a double bond, R_2 is absent and R_3 is H; and

Z_1, Z_2 and Z_3 are each independently

a) H,

b) $C_{1\text{-}5}$ alkyl, or

c) $C_{1\text{-}5}$ alkyl substituted with

i) phenyl, or

ii) phenyl substituted with methyl, methoxy, Cl, Br, I, F or hydroxy;

or a pharmaceutically acceptable salt of a compound of formula (I).

5,364,949

PROCESS FOR THE PRODUCTION OF BRANCHED FATTY ACIDS AND ESTERS THEREOF

Michael Neuss, Cologne, and Horst Elerdanz, Hilden, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/00496, § 371 Date Nov. 19, 1992, § 102(e) Date Nov. 19, 1992, PCT Pub. No. WO91/14670, PCT Pub. Date Mar. 15, 1991

PCT Filed Mar. 15, 1991, Ser. No. 927,421

Claims priority, application Germany, Mar. 24, 1990, 4009505

Int. Cl.[5] **C11C** *3/06*

U.S. Cl. 554—161 **20 Claims**

1. A process for the production of branched fatty acids and esters thereof comprising the steps of

A) reacting at least one linear unsaturated fatty acid or ester thereof with at least one aliphatic nonactivated olefin in the presence of a catalyst which is a layer silicate which contains an element of main groups 1 to 3 of the periodic table and which has a crystal lattice with SiO_4 tetrahedrons linked in one plane, and active carbon; and

B) isolating at least one branched fatty acid or ester thereof from the resulting reaction mixture.

5,364,950

PROCESS FOR STABILIZING PHOSPHITE LIGANDS IN HYDROFORMYLATION REACTION MIXTURES

James E. Babin, Hurricane; John M. Maher, Charleston, and Ernst Billig, Huntington, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technolgy Corporation, Danbury, Conn.

Filed Sep. 29, 1992, Ser. No. 953,015

Int. Cl.[5] **C07F** *15/00*

U.S. Cl. 556—2 **13 Claims**

1. A process for stabilizing a phosphite ligand against degradation in a homogeneous hydroformylation reaction mixture containing an olefinic compound, carbon monoxide, hydrogen, a rhodium catalyst and the phosphite ligand, said process comprising adding to the reaction mixture a minor minor amount of an epoxide sufficient to reduce the degradation of the phosphite ligand, said amount of epoxide being in the range of from 0.001 to 5 weight percent based on the total weight of the reaction mixture.

5,364,951

NOVEL TUNGSTEN- OR MOLYBDENUM-BASED, SUPPORTED COMPOSITIONS, PROCESS FOR OBTAINING THEM AND THEIR PROPERTIES AS HETEROGENEOUS OXIDATION CATALYSTS

Paolo Soncini, and Stefanio Bonsignore, both of Novara, Italy, assignors to Enitricerche S.P.A., Milan, Italy

Filed Oct. 14, 1993, Ser. No. 136,973

Claims priority, application Italy, Oct. 16, 1992, MI92 A 002376

Int. Cl.[5] **C07F** *11/00;* **C07C** *51/16, 51/235*

U.S. Cl. 556—9 **26 Claims**

1. Supported tungsten-(VI)- or molybdenum-(VI)-based compound which contain cationic groups from onium salts anchored onto solid inorganic matrices having the general formula (I):

$$(P)\text{ - - - }[(CH_2)_n\text{-}Q^{+}RR'R'']_2[M_2O_{11}]^{2-} \qquad \text{(I),}$$

where

(P) represents a solid inorganic matrix;

n is 1 to 20;

Q represents a pentavalent element from Group VA of the Periodic Table;

R, R′ and R″, which may be the same or different, represent a hydrogen atom or a C_1–C_{20} alkyl group; and

M represents a tungsten or molybdenum metal atom.

5,364,952

VANADIUM(IV) OXIDE BIS(DIALKYLDITHIOCARBAMATES), PROCESS FOR THEIR PREPARATION, AND OIL COMPOSITIONS CONTAINING THEM

Wolfram Spiess, Heinrich-Becker-Strasse 16; Friedrich Franke, Bitzenstrasse 22 A, both of D-6718 both of Grünstadt; Rolf Himmelreich, deceased, late of Grünstadt, Germany by Margot Marie Charlotte Himmelreich, Petra Himmelreich, heirs , and Ralf Himmelreich, heir, Heidelberg-Rohrbach, Germany

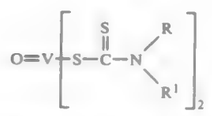
Filed Sep. 25, 1992, Ser. No. 950,502

Claims priority, application Germany, Sep. 25, 1991, 4131920

Int. Cl.[5] C07F *9/00*; C10M *125/00*

U.S. Cl. 556—44 **7 Claims**

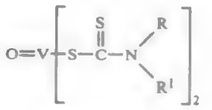
1. A vanadium(IV) oxide bis(dialkyldithiocarbamate) having the formula I



I

in which R denotes a branched or straight-chain, saturated or unsaturated alkyl radical having 1–18 carbon atoms or a cycloalkyl radical having 4–7 carbon atoms and R^1 denotes a branched or straight-chain, saturated or unsaturated alkyl radical having 8–18 carbon atoms.

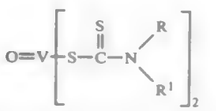
5. A composition of matter comprising an oil selected from the group consisting of permanent gear lubricating oils and hydraulic fluids and a vanadium(IV) oxide bis(dialkyldithiocarbamate) having the formula I



I

in which R and R_1 denote identical or different, branched or straight-chain, saturated or unsaturated alkyl radicals having 1–18 carbon atoms or cycloalkyl radicals having 4–7 carbon atoms, with the proviso that R^1 is not identical to R when R is C_1–C_4-alkyl, cyclobutyl or cyclohexyl.

7. A method of prolonging the life of an oil selected from the group consisting of permanent gear lubricating oils and hydraulic fluids comprising adding to said oil an amount of a vanadium(IV) oxide bis(dialkyldithiocarbamate) having the formula I



I

in which R and R_1 denote identical or different, branched or straight-chain, saturated or unsaturated alkyl radicals having 1–18 carbon atoms or cycloalkyl radicals having 4–7 carbon atoms, with the proviso that R^1 is not identical to R when R is C_1–C_4-alkyl, cyclobutyl or cyclohexyl, sufficient to prolong the life of said oil.

5,364,953

HIGH RELAXIVITY, PARAMAGNETIC, METAL CLUSTERS FOR MAGNETIC RESONANCE IMAGING

Julie A. Beaty, Florissant; Edward A. Deutsch, Maryland Heights, and Dennis L. Nosco, Florissant, all of Mo., assignors to Mallinckrodt Medical, Inc., St. Louis, Mo.

Filed Nov. 5, 1992, Ser. No. 971,789

Int. Cl.[5] A61K *49/00*; C07F *11/00, 13/00, 15/00*

U.S. Cl. 556—46 **7 Claims**

1. A contrast agent for magnetic resonance imaging comprising:

a diagnostically effective amount of a paramagnetic metal cluster selected from the group consisting of

$[Mn_3(OAc)_6(bipy)_2]$

$[Mn_3(OBz)_6(phen)_2]$

$[Mn_3(OBz)_6(bipy)_2]$

$[Mn_3(biphen)_3(OBz)_2(bipy)_2]$

$[Mn_3(DBCat)_4(Py)_4]$ (DBCat = 3,5-di-t-butylcatechol); and

pharmaceutically acceptable carrier solution.

5,364,954

PROCESS FOR THE PREPARATION OF DIORGANOTIN DICARBOXYLATES

Reiner Fuchs, Ober-Ramstadt; Johannes Kaufhold, and Kornelia Malzacher, both of Lindenfels, all of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

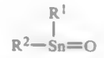
Filed Jun. 24, 1993, Ser. No. 82,185

Claims priority, application Switzerland, Jun. 30, 1992, 2041/92-1

Int. Cl.[5] C07F *7/22*

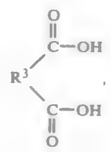
U.S. Cl. 556—90 **14 Claims**

1. A process for the preparation of a pulverulent diorganotin dicarboxylate, which comprises reacting a diorganotin oxide of the formula I,



(I)

in which R^1 and R^2, independently of one another, are C_1–C_1.$_8$alkyl, at a temperature in the range from 45° C. to 70° C. in the absence of solvents and adsorbents with a dicarboxylic acid of the formula II



(II)

in which R^3 is C_1–C_{18}alkylene, cycloalkylene having 5 to 7 carbon atoms, phenylene, C_1–C_{18}alkenylene or C_1–C_8alkylene substituted by 1 or 2 hydroxyl groups, or its anhydride, and subjecting the reaction mixture and the product during the reaction and the subsequent cooling phase down to 40° C. to constant thorough mixing.

5,364,955

COMPOUNDS CONTAINING ALKOXYSILANE AND AMINO GROUPS

Christian Zwiener; Lutz Schmalstieg, and Josef Pedain, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

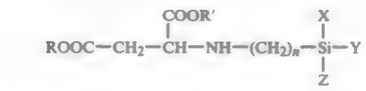
Filed Oct. 27, 1993, Ser. No. 144,090

Claims priority, application Germany, Nov. 6, 1992, 4237468

Int. Cl.[5] C07F *7/10*

U.S. Cl. 556—418 **7 Claims**

1. A compound containing alkoxysilane and amino groups represented by the formula



(I)

in which

R and R′ represent identical or different organic groups that are inert with respect to isocyanate groups at temperatures below 100° C.,

X, Y and Z represent identical or different organic groups which are inert with respect to isocyanate groups at temperatures below 100° C., provided that at least one of these groups is an alkoxy group, and

n represents an integer of from 2 to 4.

5,364,956

DIESTER, COMPOSITE ESTER AND POLYESTER HAVING ETHER-ESTER TERMINAL STRUCTURE

Satoshi Matsumoto, 609, 2-3-1, Komeya-machi, Kumamoto-shi, Kumamoto, 860, Japan

Filed Nov. 18, 1992, Ser. No. 978,394

Claims priority, application Japan, Dec. 5, 1991, 3-348413

Int. Cl.[5] C07C *69/76, 69/34*

U.S. Cl. 560—89 **16 Claims**

1. A process for preparing simple esters, composite esters and polyesters with controlled molecular weight distribution having the formula $R_1(OCH_2CH_2)_nO(COACOOXO)_m$-$COACO(OCH_2CH_2)_kOR_2$ wherein n is 1 to 3; m is 0 to 13; k is 0 to 3 provided that k = 0 when m = 0; R_1 and R_2 are selected from the group consisting of an alkyl group of 1 to 10 carbon atoms and a benzyl group; A is an alkylene group of 2 to 4 carbon atoms or a residual group of an aromatic dicarboxylic acid; X is a straight or branched chain alkylene group, a residual group of a glycol selected from the group consisting of diethylene glycol, triethylene glycol, dipropylene glycol and tripropylene glycol, or a residual group of thiodiethanol; which process comprises the steps of

(1) providing a starting material selected from the group consisting of

(a) when m is not 0, a mixture of at least one dicarboxylic acid of the formula HOCOACOOH, wherein A is as defined above, and at least one diol of the formula HOXOH wherein X is as defined above, and

(b) when m is 0, at least one dicarboxylic acid of the formula HOCOACOOH, wherein A is as defined above,

(2) adding to said starting material an equivalent amount of at least one member selected from the group consisting of the monoalkylethers and benzylethers of ethylene glycol, diethylene glycol and triethylene glycol, or an equivalent amount of said at least one member and a monohydric alcohol having the formula R_3OH wherein R_3 is an alkyl group of 1 to 8 carbon atoms or benzyl, and

(3) carrying out a dehydration esterification reaction during and after steps (1) and (2) in the presence of an alkoxy titanium catalyst or a solid polytitanic acid catalyst prepared from alkoxy titanium, said dehydration esterification reaction being carried out by first adding just enough of the monohydric alcohol or alcohols added in step (2) to esterify the acids and then finally adding a slight excess of the monohydric alcohol or alcohols added in step (2), said excess amount being enough to reduce any remaining acid value.

5,364,957

CARBONYLATION PROCESS USING PALLADIUM PHOSPHINE CATALYST

Peter Arnoldy, and Antoon P. M. Kremers, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 8, 1993, Ser. No. 45,290

Claims priority, application European Pat. Off., Apr. 8, 1992, 92201014.5

Int. Cl.[5] C07C *67/36*

U.S. Cl. 560—207 **10 Claims**

1. In a process for the carbonylation of an olefinically or acetylenically unsaturated hydrocarbon compound by reacting the olefinically or acetylenically unsaturated hydrocarbon compound with carbon monoxide and a hydroxy compound in the presence of a carbonylation catalyst system comprising a source of cationic palladium, a source of phosphine and a protonic acid, the improvement which comprises carrying out the reaction in the presence of a free radical inhibitor and a initial ratio of moles of phosphine to gram atoms of palladium within the range of from about 2.5 to about 50.

5,364,958

PROCESS FOR THE PRODUCTION OF METHYLENE-CROSSLINKED POLYPHENYLENE POLYISOCYANATE

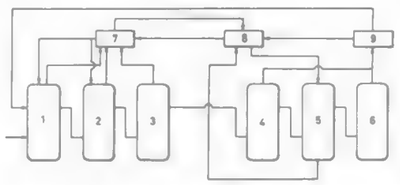
Noritoshi Ishida; Zanzi Tashima; Naoki Sato; Michiya Takasaki; Masaaki Iijima; Kazuyuki Kuroda, and Kazunari Nitta, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jun. 22, 1993, Ser. No. 79,806

Claims priority, application Japan, Jun. 23, 1992, 4-164655; Dec. 17, 1992, 4-337310

Int. Cl.[5] C07C *263/04*

U.S. Cl. 560—359 **6 Claims**



1. A process for continuously producing a methylene-crosslinked polyphenylene polyisocyanate by reacting a polyamine mixture, which has been formed by condensation of aniline and formaldehyde in the presence of an acid catalyst, with phosgene in the presence of an inert solvent, which comprises:

i) removing any remaining phosgene subsequent to the reaction of the polyamine mixture with phosgene; and

ii) conducting heat treatment in the presence of hydrogen chloride gas.

5,364,959

SULFONE PEROXYCARBOXYLIC ACIDS

David R. Dyroff; Daniel P. Getman, both of St. Louis, and Joan K. Glascock, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 610,624, Nov. 8, 1990, abandoned, which is a division of Ser. No. 281,440, Dec. 8, 1988, Pat. No. 5,004,558, which is a continuation-in-part of Ser. No. 168,033, Mar. 14, 1988, Pat. No. 4,824,591, which is a division of Ser. No. 97,274, Sep. 17, 1987, Pat. No. 4,758,369, which is a continuation-in-part of Ser. No. 926,592, Nov. 3, 1986, abandoned. This application Sep. 14, 1992, Ser. No. 944,808

Int. Cl.[5] C11D *3/395*

U.S. Cl. 562—2 **25 Claims**

1. A solid particulate storage stable peracid compound represented by the formula



wherein A and B are peroxycarboxylic acid compatible organic moieties bonded to the sulfur atom by carbon atoms, where only one of A and B at the same time contains from 1 to 4



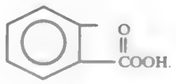
groups bonded to carbon atoms except that when A is



B is not phenyl and when A is



B is not



5,364,960

PROCESS FOR PREPARING SULFONATED PARAFFINS WITH A LARGER CONTENT OF POLYSULFONATED SPECIES

Armando Marcotullio, San Donato Milanese; Laura Tinucci, Cervignano D'Adda, and Massimo Ciali, Milan, all of Italy, assignors to Enitricerche S.p.A. and Enichem Augusta Industriale S.r.l., both of Milan, Italy

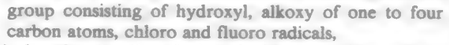
Filed Nov. 16, 1993, Ser. No. 152,704

Claims priority, application Italy, Nov. 20, 1992, MI92 A 002659

Int. Cl.[5] C07C *143/02*

U.S. Cl. 562—121 **8 Claims**

1. A process for preparing a sulfonated paraffin comprising more than 50% by weight of polysulfonates, said process comprising contacting an essentially linear C_{12}–C_{20} paraffin or a mixture of essentially linear C_{12}–C_{20} paraffins with SO_2 and O_2, wherein said contacting is carried out at a temperature within the range of from 55° to 100° C. in the presence of a peroxy dicarbonate having the formula (I)



(I)

wherein R and R′, which may be the same or different, are alkyl or cycloalkyl radicals, with a ratio of SO_2:paraffin, by weight, being higher than 0.8.

5,364,961

PROCESS FOR MAKING OPTICALLY ACTIVE α-AMINO KETONES

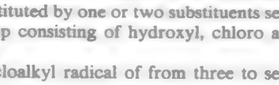
John J. Talley, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 15, 1992, Ser. No. 898,853

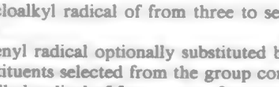
Int. Cl.[5] C07C *233/11;* **C07D** *295/18;* **B01J** *31/24*

U.S. Cl. 562—444 **1 Claim**

1. A process comprising mixing a compound of the formula (II or II_1)



II



II_1

wherein

R_1 is hydrogen, alkyl, lower cycloalkyl, or an aromatic group;

R_2 is CH_2R_9 wherein R_9 is

(a) hydrogen radical,

(b) alkyl of one to four carbon atoms optionally substituted with one or more substituents selected from the group consisting of hydroxyl, alkoxy of one to four carbon atoms, chloro and fluoro radicals,

(c) phenyl optionally substituted with one to three substituents selected from the group consisting of alkyl of one to four carbon atoms, fluoro, chloro, bromo, iodo, hydroxyl, nitro, alkoxy of one to four carbon atoms, and —CO—$N(R_7)_2$ radicals, wherein R_7 is hydrogen or alkyl radical of one to four carbon atoms,

(d) pyridyl, furyl, indolyl or benzisoxazolyl radical,

(e) cycloalkyl radical of one to seven ring members, or

(f) naphthyl radical;

R_3' is CR_6R_8',

wherein R_6 is

(1) hydrogen radical

(2) alkyl radical of from one to six carbon atoms optionally substituted by one or two substituents selected from the group consisting of hydroxyl, chloro and fluoro radicals;

(3) cycloalkyl radical of from three to seven ring members;

(4) phenyl radical optionally substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo radical,

(c) alkoxy radical of from one to three carbon atoms,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical;

(5) tolyl radical;

(6) tolyl radical substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo radical,

(c) alkoxy radical of from one to three carbon atom,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical;

(7) naphthyl radical optionally substituted by one to three substituents selected from the group consisting of

(a) alkyl radical of from one to four carbon atoms,

(b) fluoro, chloro, bromo, and iodo radical,

(c) alkoxy radical of from one to three carbon atom,

(d) nitro radical,

(e) amido radical,

(f) mono- and dialkyl substituted amido radical, wherein the alkyl group is from one to four carbon atoms, and

(g) hydroxy radical; or

(8) idol-3-yl, indol-2-yl, or imidazol-4-yl, indol-3-ylmethyl, indol-2-ylmethyl or imidazol-4-ylmethyl radical;

(9) NHA wherein A is

(a) trityl radical,

(b) hydrogen radical,

(c) alkyl radical of from one to six carbon atoms,

(d) $R_{10}CO$ wherein R_{10} is (A) hydrogen radical, (B) alkyl radical of from one to six carbon atoms optionally substituted with hydroxyl, chloro, or fluoro radicals, (C) phenyl or naphthyl radical each of which is optionally substituted with one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo an iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms, or (D) indolyl, pyridyl, furyl or benzisoxazolyl radical;

(e) phthaloyl radical, wherein the aromatic ring is optionally substituted by one to three substituents selected from the group consisting of (A) alkyl radical of from to three carbon atoms, (B) fluoro, chloro, bromo and iodo radical, (C) hydroxy radical, (D) nitro radical, (E) alkoxy radical of from one to three carbon atoms, and (F) $CON(R_{11})_2$ radical, wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms,

(f) $R_{12}(R_{13}R_{14}C)_mCO$ wherein m is one to three and R_{12}, R_{13} and R_{14} are each independently selected from the group consisting of (A) hydrogen radical, (B) chloro and fluoro radical, (C) alkyl radical of from one to three carbon atoms optionally substituted by chloro, fluoro, or hydroxy radicals, (D) hydroxy radical, (E) phenyl or naphthyl radical each of which is optionally substituted by one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo and iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms, (F) alkoxy radical of from one to three carbon atoms, (G) pyridyl, furyl, and benzisoxazolyl radical, and (H) R_{12}, R_{13} and R_{14} are independently joined to form a monocyclic, bicyclic, or tricycle ring system each ring of which is cycloalkyl of from three to six carbon atoms; except that only one of R_{12}, R_{13} and R_{14} can be hydroxy or alkoxy on the same carbon and are not hydroxy, chloro or fluoro when m is one;

(g) $R_{12}(R_{13}R_{14}C)_mW$ wherein m is one to three and W is OCO or SO_2 and R_{12}, R_{13} and R_{14} are each independently as defined above;

(h) $R_{20}W$ wherein R_{20} is pyridyl, furyl, indolyl or benzisoxazolyl radical;

(i) $R_{21}W$ wherein R_{21} is phenyl or naphthyl radical each of which is optionally substituted by one to three substituents selected from the group consisting of (i) alkyl radical of from one to three carbon atoms, (ii) fluoro, chloro, bromo and iodo radical, (iii) hydroxy radical, (iv) nitro radical, (v) alkoxy radical of from one to three carbon atoms, and (vi) $CON(R_{11})_2$ wherein each R_{11} is independently hydrogen or alkyl radical of from one to four carbon atoms;

(j) $R_{12}(R_{13}R_{14}C)_mP(O)(OR_{22})$ wherein R_{22} is alkyl radical of from one to four carbon atoms or phenyl;

(k) $R_{20}P(O)(OR_{22})$ wherein R_{20} and R_{22} are as defined above; or

(l) $R_{21}P(O)(OR_{22})$ wherein R_{21} and R_{22} are as defined above;

(10) $R_{12}(R_{13}R_{14}C)_mV$ wherein V is O or NH and R_{12}, R_{13} and R_{14} are each independently as defined above;

(11) $N(R_{11})_2$ wherein each R_{11} is independently as defined above;

(12) $NR_{15}R_{16}$ wherein R_{15} and R_{16} are joined to form azetidinyl, pyrrolidinyl, piperidinyl, or morpholinyl radical;

(13) $R_{17}OCH_2O$ wherein R_{17} is

(a) alkyl radical of from one to six carbon atoms,

(b) R_{21} wherein R_{21} is as defined above; or

(c) CH_2Q_1 wherein Q_1 is phenyl, naphthyl, pyridyl, furyl, indolyl or benzisoxazolyl radical;

(14) $R_{17}OCH_2CH_2OCH_2$ wherein R_{17} is as defined above;

(15) alkynyl radical of from two to six carbon atoms optionally substituted with R_{21} wherein R_{21} is as defined above; or

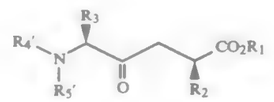
(16) alkenyl radical of from two to six carbon atoms optionally substituted with R_{21} wherein R_{21} is as defined above; and

R_8' is hydrogen alkyl radical of from one to six carbon atoms or cycloalkyl radical of from one to seven ring members; and

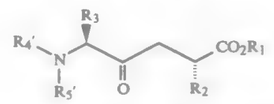
R_4' is alkoxycarbonyl, phenoxycarbonyl, naphthyloxycarbonyl, phenylalkoxycarbonyl, napththylalkoxycarbonyl, alkanoyl, formyl, phenylalkanoyl, napththylalkanoyl, benzoyl, or naphthoyl radical, wherein each alkyl radical, alone or in combination, is from one to ten carbon atoms and wherein each phenyl or naphthyl group is optionally substituted by alkyl radicals; and

R_5' is hydrogen;

with hydrogen in the presence of rhodium (R,R)-(1,2-ethanediyl bis[(ortho-methoxyphenyl)phenylphosphine] (H_2RhDiPAMP) in a deoxygenated solvent to obtain a compound of the formula (I or I_1)



I



I_1

wherein R_1, R_2, R_4', and R_5' are as defined above and R_3 is CHR_6R_8'.

5,364,962

METHOD FOR PURIFICATION OF A BENZOIC ACID

Ubaldus F. Kragten, Beek, and Miriam K. J. Frohn-Schlösser, Kerkrade, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 683,818, Apr. 11, 1991, abandoned. This application Nov. 12, 1992, Ser. No. 974,663

Claims priority, application Netherlands, Apr. 14, 1990, 9000891

Int. Cl.[5] C07C *51/42*

U.S. Cl. 562—494 13 Claims

1. Method for the purification of a benzoic acid obtained through oxidation of a corresponding toluene derivative comprising the steps of:

treating the benzoic acid with a stable heterogeneous purifying agent, the stable heterogeneous purifying agent comprising a support having provided thereon $—NH_2$ or —NHR groups, wherein R is selected from the group consisting of an alkyl, a cycloalkyl, and an aryl group.

5,364,963

SUPPORTED RHODIUM CATALYST, METHOD OF PREPARING SAME AND PROCESS OF PRODUCING ACETIC ACID BY METHANOL CARBONYLATION USING SAME

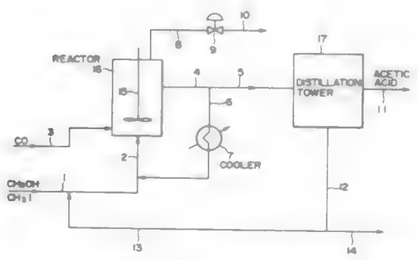
Takeshi Minami; Kenji Shimokawa, both of Yokohama; Kazuhiko Hamato, Kawasaki; Yoshimi Shiroto, Yokohama, and Noriyuki Yoneda, Tokyo, all of Japan, assignors to Chiyoda Corporation, Japan

Filed Dec. 20, 1993, Ser. No. 169,639

Claims priority, application Japan, Apr. 30, 1993, 5-128102; Apr. 30, 1993, 5-128103

Int. Cl.[5] C07C *45/50*; B01J *23/40, 20/26*

U.S. Cl. 562—519 11 Claims



1. A catalyst for the production of acetic acid from methanol and carbon monoxide, comprising a rhodium complex supported on a porous, cross-linked vinylpyridine resin, wherein said vinylpyridine resin has a cross-linking degree of 30–60%, a pore volume of 0.2–0.4 cc/g and an average pore diameter of 20–100 nm.

5,364,964

PROCESS FOR PREPARING 1,2,3,4-BUTANETETRACARBOXYLIC ACID

Eduardo A. Casanova, Ballwin, and Dennis J. Kalota, Fenton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 450,760, Dec. 14, 1989, Pat. No. 5,298,653. This application Nov. 1, 1993, Ser. No. 143,596

Int. Cl.[5] C07C *55/24*

U.S. Cl. 562—590 5 Claims

1. The process of producing 1,2,3,4-butanetetracarboxylic acid containing only low levels of color-causing materials which comprises hydrolyzing tetramethyl 1,2,3,4-butanetetracarboxylate which contains color causing materials present because of the method of preparation, which method comprises subjecting a liquid medium comprising a substantial concentration of dimethyl maleate, a supporting electrolyte salt, and methanol to electrolysis in an electrolysis cell to effect a reductive coupling of the dimethyl maleate to yield tetramethyl 1,2,3,4-butanetetracarboxylate, and thereafter separating the tetramethyl 1,2,3,4-butanetetracarboxylate from the electrolysis medium by cooling and crystallization, the hydrolysis involving treating the tetramethyl 1,2,3,4-butanetetracarboxylate with water and an acid hydrolysis catalyst and heating to a temperature sufficient to hydrolyze the tetramethyl 1,2,3,4-butanetetracarboxylate and distill methanol and distilling methanol as the hydrolysis reaction proceeds, and treating the resulting aqueous mixture containing 1,2,3,4-butanetetracarboxylic acid with aqueous hydrogen peroxide for a time sufficient to remove substantial amounts of the color-causing materials, as characterized by a color development appraisal test.

5,364,965

ANALOGS OF DESFERRIOXAMINE B AND METHOD FOR SYNTHESIS THEREOF

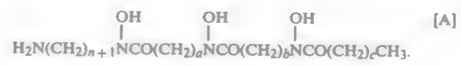
Raymond J. Bergeron, Jr., Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 987,754, Dec. 9, 1992. This application Sep. 1, 1993, Ser. No. 114,166

Int. Cl.[5] C07C *259/06*

U.S. Cl. 562—623 4 Claims

1. A compound of the formula:



5,364,966

AMIDE DERIVATIVES, THEIR PRODUCTION PROCESSES AND THEIR COMPOSITIONS FOR THE CONTROL OF INSECT PESTS

Hiroshi Kisida; Akira Shuto; Noriyasu Sakamoto; Noritada Matsuo, all of Hyogo; Hiroaki Fujimoto, and Kimitoshi Umeda, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

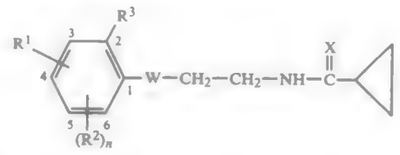
Division of Ser. No. 102,337, Aug. 5, 1993, which is a continuation of Ser. No. 881,470, May 11, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 167,043

Claims priority, application Japan, May 20, 1991, 3-145520

Int. Cl.[5] C07C *233/59*

U.S. Cl. 564—190 11 Claims

1. An amide derivative of the formula:



wherein R^1 is a group of the formula: $—Y—C_6H_{(5-m)}(R^4)_m$ or a group of the formula: $—Z—R^5$; R^2 is a hydrogen atom; R^3 is a chlorine atom; R^4 is, the same or different, a hydrogen atom, a fluorine atom, a chlorine atom or a methyl group; R^5 is a C_3–C_6 alkyl group or an alkoxyalkyl group having 3 to 6 carbon atoms; W is an oxygen atom; X is an oxygen atom or a sulfur atom; Y is an oxygen atom or a methylene group; Z is an oxygen atom or a single bond when R^5 is a C_3–C_6 alkyl group, or a single bond when R^5 is an alkoxyalkyl group having 3 to 6 carbon atoms; n is an integer of 1; m is an integer 1 or 2.

5,364,967

AROMATIC DIAMINE COMPOUNDS, BISMALEMIDE COMPOUNDS, THERMOSETTING RESIN FORMING COMPOSITIONS THEREFROM, RESIN THEREFROM, AND METHODS FOR THEIR PREPARATION

Keizaburo Yamaguchi, Chiba; Tatsuhiro Urakami; Yoshimitsu Tanabe, both of Yokohama; Midori Yamazaki, Hiratsuka; Shoji Tamai; Norimasa Yamaya, both of Yokohama; Masahiro Ohta, Ohmuta, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 601,424, Oct. 23, 1990, Pat. No. 5,206,438. This application Jan. 19, 1993, Ser. No. 5,276

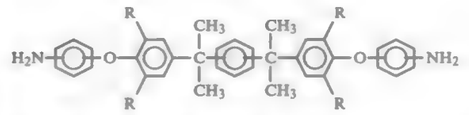
Claims priority, application Japan, Oct. 24, 1989, 1-275050; Mar. 6, 1990, 2-052779; May 11, 1990, 2-119679; May 24, 1990, 2-132711; Jul. 6, 1990, 2-177158; Jul. 6, 1990, 2-177517; Aug. 10, 1990, 2-210246

The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.

Int. Cl.[5] C07C *211/50*

U.S. Cl. 564—315 5 Claims

1. An aromatic diamine compound having a structure represented by formula (I):



wherein the R groups may be the same or different and are selected from the group of H and CH_3.

5,364,968

HERBICIDE INTERMEDIATE O-NITROPHENYL CYCLOPROPYL KETONE AND A METHOD FOR THE PREPARATION THEREOF

Marco P. Burello, Cleveland; Jeffrey G. Stack, Painesville, both of Ohio, and David A. Cortes, Fairless Hills, Pa., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 909,258, Jul. 6, 1992, abandoned. This application Dec. 2, 1993, Ser. No. 161,382

Int. Cl.[5] C07C *209/36*

U.S. Cl. 564—416 11 Claims

1. A method for the intergrated preparation of o-nitrophenyl cyclopropyl ketone which consists essentially of reacting dihydro-3-acetyl-2(3H)-furanone with about 0.50–1.0 molar equivalents of magnesium C_1–C_4alkoxide at about 0°–25° C. to form an intermediate, reacting said intermediate with at least one molar equivalent of o-nitrobenzoyl halide in the presence of a solvent at about 15°–35° C. to form a second intermediate, heating the second intermediate in the presence of water to form dihydro-3-(o-nitrobenzoyl)-2(3H)-furanone, reacting the furanone with a hydrogen halide to form 4-halo-2′-nitrobutyrophenone and cyclizing the butyrophenone in the presence of a base to give o-nitrophenyl cyclopropyl ketone.

5,364,969

METHOD FOR THE STABILIZATION OF A SEX PHEROMONE COMPOUND

Toyohisa Sakurada; Hiroshi Suzuki, and Ryuichi Saguchi, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

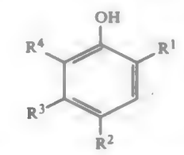
Filed Sep. 3, 1993, Ser. No. 116,334

Claims priority, application Japan, Sep. 9, 1992, 4-266715

Int. Cl.[5] C07C *45/78, 47/21, 39/08*

U.S. Cl. 568—421 4 Claims

1. A method for the stabilization of a higher aliphatic compound having the activity of an insect sex pheromone containing from about 8 to 30 carbon atoms and at least one double bond in the molecule which comprises: admixing the nigher aliphatic compound with (a) a phenolic compound represented by the general formula



in which R^1 is a methyl group, a ter-butyl group or a tert-amyl group, R^2 is hydroxy group, a methyl group or a methoxy group and R^3 and R^4 are, each independently from the other, a hydrogen atom, a tert-butyl group or a tert-amyl group, and (b) 2-(2′-hydroxy-3′tert-butyl-5′-methyl phenyl)-5-chloro benzotriazole in combination each in an amount in the range of from 0.01 to 20% be weight based on the amount of the higher aliphatic compound.

5,364,970

PROCESS FOR THE HYDROFORMYLATION OF UNSATURATED CARBONYL COMPOUNDS

Eit Drent, and Eric Kragtwijk, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 25, 1994, Ser. No. 186,749

Claims priority, application Netherlands, Jan. 25, 1993, 93200185

Int. Cl.[5] C07C *45/10*

U.S. Cl. 568—454 20 Claims

1. A hydroformylation process comprising reacting α-substituted, α-β-unsaturated carbonyl compounds with carbon monoxide and hydrogen in the presence of a catalyst system comprising:

a) a source of rhodium cations; and

b) a source of ligands of the formula

$MR_1R_2R_3$ wherein M is a member the group consisting of phosphorus, arsenic and antimony; R_1, R_2 and R_3 are independently selected from the group consisting of hydrocarbyl groups and substituted hydrocarbyl groups, said hydrocarbyl and substituted hydrocarbyl groups together containing not more than 24 carbon atoms; wherein at least one of R_1, R_2 and R_3 is linked to M by an aliphatic carbon atom.

5,364,971

DECOLORIZATION OF POLYETHYLENE POLYAMINES USING RUTHENIUM

Wei-Yang Su, Austin, Tex., assignor to Texaco Chemical Inc., White Plains, N.Y.

Filed Aug. 25, 1993, Ser. No. 111,750

Int. Cl.[5] C07C *209/84*

U.S. Cl. 564—498 14 Claims

1. A continuous process for reducing the color of a polyamine product comprising contacting the product at elevated temperature and pressure with a catalytically effective amount of a ruthenium on alumina hydrogenation catalyst in the presence of a hydrogen-containing atmosphere, where the catalyst has a lifetime in this continuous process of at least 1,000 hours and where degradation of the polyamine product is less than 3%.

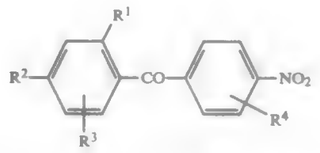
5,364,972

PREPARATION OF NITROBENZOPHENONES, AND A COLOR-STABLE MODIFICATION OF A BENZOPHENONE-AZOPYRIDONE DYE

Helmut Degen, Frankenthal; Norbert Zimmerman, Waldsee, both of Germany; Ralf Brueckmann, Charlotte, N.C.; Gunther Lamm, Hassloch, Germany; Arno Lange, Bad Duerkheim, Germany, and Helmut Reichelt, Neustadt, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

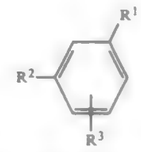
Filed Sep. 23, 1992, Ser. No. 948,579
Claims priority, application Germany, Sep. 25, 1991, 4131844
Int. Cl.[5] C07C *45/45*
U.S. Cl. 568—306 11 Claims

1. A process for preparing nitrobenzophenones of the formula I



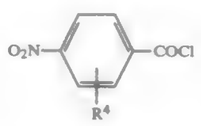
(I)

wherein R^1 and R^2 are identical or different and each independently of one another is C_{1-4} alkyl, R^3 is hydrogen and R^4 is hydrogen or halogen, by reacting aromatic compounds of the formula II



(II)

wherein R^1, R^2 and R^3 each have the above-mentioned meanings, with nitrobenzoyl chloride of the formula III



(III)

wherein R^4 has the above mentioned meanings, in the presence of a Lewis acid, wherein the reaction is carried out essentially in the absence of inert solvents at from 50°–110° C. and with a molar ratio of aromatic compound of the formula II to nitrobenzoyl chloride of the formula III of from 1:1 to 2:1, and 0.5–20% by weight of iron (III) chloride based on said aromatic compound of the formula II is used as said Lewis acid.

5,364,973

PRODUCTIVE PROCESS FOR MAKING CONVENTIONAL AND LOW-UNSATURATION POLYETHER POLYOLS

Jose F. Pazos, Charleston, W. Va., assignor to Arco Chemical Technology, Wilmington, Del.

Filed May 6, 1993, Ser. No. 58,109
Int. Cl.[5] C07C *41/03, 213/00*
U.S. Cl. 568—620 9 Claims

1. A process for making a polyether polyol having reduced unsaturation, said process comprising:

(a) polymerizing in a reactor a reaction mixture that contains propylene oxide, a hydroxyl group-containing or an amino group-containing initiator, and a basic or an organometallic epoxide polymerization catalyst, to produce a polyether polyol;

(b) during the polymerization, continuously or periodically removing a portion of the liquid or vapor phase of the reaction mixture from the reactor;

(c) distilling the removed portion to separate allyl alcohol and lower allyl alcohol propoxylates from the purified components (propylene oxide, or propylene oxide and polyether polyol); and

(d) returning the purified components to the reactor.

5,364,974

PROCESS FOR THE PREPARATION OF 3,5-DI-TERT-BUTYL-4-HYDROXY METHOXYBENZYL ALCOHOL

Boris I. Pantukh; Igor J. Logutov; Nikolai V. Ljubimov, and Grigory I. Rutman, all of Bashkortostan, Russian Federation, assignors to Sterlitamaxky Neftekhimicheaky Zavod, Bashkortostan, Russian Federation

Filed Dec. 21, 1993, Ser. No. 171,354
Int. Cl.[5] C07C *43/02*
U.S. Cl. 568—662 1 Claim

1. A process for the preparation of 3,5-di-tert-butyl-4-hydroxy-methoxybenzyl alcohol by reacting 2,6-tert-butylphenol with formaldehyde and methanol in the presence of a basic catalyst at elevated temperature characterized in that used as a catalyst is N,N,N′, N′-tetra-methyl-di-aminomethane compound and the process is carried out at a temperature in the range of 60°–100° C. with the molar ratio of 2,6-di-tert-butylphenol to formaldehyde to methanol to catalyst of 1.0:1.0–1.5:10–15:0.01–0.50.

5,364,975

PROCESS FOR THE PRODUCTION OF A TERTIARY ALKYL ETHER COMPRISING A FRACTIONATION SECTION

Jean-Luc Nocca; Phillipe Travers, both of Rueil Malmaison; Larry Mank, Orgeval, and Alain Forestiere, Vernaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 5, 1993, Ser. No. 57,603
Claims priority, application France, Jul. 1, 1992, 92 08190
Int. Cl.[5] C07C *41/06*
U.S. Cl. 568—697 20 Claims

1. A process for production of at least one tertiary alkyl ether, said process comprising:

contacting, in a first reactor, a hydrocarbon charge containing at least one reactive isoolefin with excess of an aliphatic monoalcohol, whereby said at least one reactive isoolefin reacts with said aliphatic monoalcohol;

removing effluent from said first reactor and introducing said effluent into a fractionation column;

recovering tertiary alkyl ether from the bottom of said fractionation column and removing head effluent from said fractionation column;

condensing said head effluent in a condenser; and

subdividing the condensed head effluent into a reflux stream which is fed to the head of said fractionation column and a distillate stream containing non-reactive hydrocarbons, hydrocarbons not converted in said first reaction section and excess aliphatic monoalcohol,

wherein after condensation of said head effluent, said reflux stream, either upstream or downstream of the subdivision of said head effluent, is introduced into a finishing reactor before said reflux stream is delivered to the head of said fractionation column, said finishing reactor operating at a pressure of 2–20 bar.

5,364,976

ALKYLATION/ETHERIFICATION PROCESS

Lyle R. Kallenbach, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1993, Ser. No. 145,270
Int. Cl.[5] C07C *41/06, 41/09;* C10L *1/02*
U.S. Cl. 568—697 18 Claims

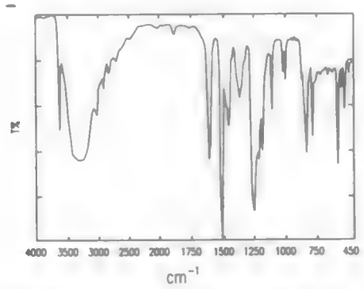
1. A process for simultaneously producing higher branched alkanes and tertiary ethers which comprises the step of contacting a liquid feed mixture comprising (a) at least one isoalkane containing 4–7 carbon atoms per molecule, (b) at least one second reactant selected from the group consisting of branched isoalkenes containing 4–8 carbon atoms per molecule and tertiary alkyl alcohols containing one OH group and 4–8 carbon atoms per molecule, and (c) at least one linear alkyl alcohol containing one OH group and 1–6 carbon atoms per molecule with a catalyst composition consisting essentially of trifluoromethanesulfonic acid and a solid material selected from the group consisting of boria, alumina, silica, titania, zirconia, aluminum sulfate, aluminum phosphate, aluminum borate, boron phosphate, boron sulfate and mixtures thereof, at effective reaction conditions so as to produce a product mixture comprising at least one branched alkane containing 5–12 carbon atoms per molecule and at least one tertiary alkyl ether containing 5–8 carbon atoms per molecule.

5,364,977

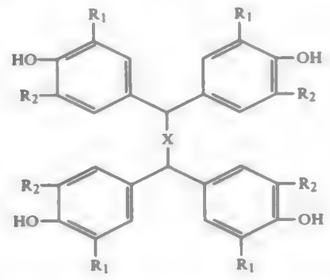
CLATHRATE COMPOUNDS COMPRISING TETRAKISPHENOLS AS HOST

Makoto Asai; Hiroshi Suzuki, and Takako Ichikawa, all of Ichihara, Japan, assignors to Nippon Soda Co., LTD, Tokyo, Japan

Continuation-in-part of Ser. No. 98,290, Aug. 4, 1993. This application Aug. 12, 1993, Ser. No. 105,546
Claims priority, application Japan, Dec. 1, 1992, 4-345524
Int. Cl.[5] C07C *39/12, 39/14*
U.S. Cl. 568—720 11 Claims



1. Clathrate compound prepared by the method of reacting tetrakisphenol of the formula



[I]

wherein X represent $(CH_2)_n$, n is 0, 1, 2, or 3, and R_1 and R_2 are the same or different and each are hydrogen, an alkyl group having 1 to 4 carbon atoms, a phenyl group, halogen or alkoxy group having 1 to 4 atoms; and, an organic compound under conditions sufficient to form the clathrate compound having the tetrakisphenol as the host.

5,364,978

PROCESS FOR REMOVAL OF TAR IN A PHENOL PREPARATION PROCESS

Johannes A. Kroon, Heerlen, and Wim Buijs, Schinnen, both of Netherlands, assignors to D.S.M. N.V., Heerlen, Netherlands

Filed Aug. 20, 1993, Ser. No. 109,359
Claims priority, application Netherlands, Aug. 20, 1992, 9201481
Int. Cl.[5] C07C *37/00, 37/68*
U.S. Cl. 568—801 11 Claims

1. Process for preparing a phenol comprising the steps of:

conducting an oxidative decarboxylation of the corresponding benzoic acid in the presence of a copper-containing catalyst in a reactor whereby a reaction mixture is obtained in the reactor; is avoided by

continuously removing a portion of the reaction mixture from the reactor;

subjecting the removed portion to an extraction by contacting the removed portion with water and, as an auxiliary liquid, a non-halogenated hydrocarbon compound which is not miscible with water, wherein after extraction an aqueous liquid is obtained containing benzoic acid and copper salts and an organic solution is obtained containing tar components, wherein accumulation of tar in the reactor is avoided, and

recycling the aqueous solution to the reactor, wherein the extraction is performed with 0.2 to 14 volume parts of auxiliary liquid per volume part of removed reaction mixture and with 0.5 to 10 volume parts of water per volume part of removed reaction mixture, the quantity of auxiliary liquid being so chosen that the resulting organic solution, containing auxiliary liquid, has a lower density then the aqueous solution and that the temperature during the extraction is higher than 80°.

5,364,979

CATALYZED VAPOR PHASE PROCESS FOR MAKING ALCOHOLS

Cecelia A. Radlowski, Riverside; Gary P. Hagen, Glen Ellyn; Lewis E. Grimes, Oak Park, and David F. Tatterson, Downers Grove, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 977,521, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 779,980, Oct. 21, 1991, abandoned, which is a division of Ser. No. 702,837, May 20, 1991, Pat. No. 5,095,156, which is a continuation of Ser. No. 413,314, Sep. 27, 1989, abandoned. This application Jan. 5, 1994, Ser. No. 177,662
Int. Cl.[5] C07C *41/06*
U.S. Cl. 568—697 10 Claims

1. A process for making methyl t-butyl ether from synthesis gas comprising a mixture of carbon monoxide and hydrogen which process comprises:

converting synthesis gas to methanol;

converting part of the methanol to ethanol by carbonylation of methanol and hydrogenolysis of products of carbonylation;

converting the ethanol and part of the methanol in a vapor phase, continuous process under catalytic alcohol condensation conditions to a mixture rich in isobutanol over a condensation catalyst comprising magnesium oxide having surface area above about 25 square meters per gram and made by calcination of magnesium hydroxide in the temperature range from above its decomposition temperature to 538° C.;

dehydrating the isobutanol to isobutene after separation from the mixture; and

reacting the isobutene and part of the methanol to form the methyl t-butyl ether.

5,364,980

PROCESS FOR THE PRODUCTION OF UNSYMMETRICAL TERT-DIALKYL ETHERS

Michael C. Kerby, Baton Rouge, La., and David E. W. Vaughan, Flemington, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 30, 1991, Ser. No. 816,318
Int. Cl.[5] C07C *41/09*
U.S. Cl. 568—698 11 Claims

1. A process for preparing unsymmetrical dialkyl ethers, wherein one of the alkyl groups is a tertiary group, which process comprises reacting a C_1 to C_3 aliphatic alcohol with a tertiary alkyl alcohol, in the presence of a catalyst comprised of a transition metal pillared interlayered clay having generally separated layers wherein the interlayer distances are substantially greater than a precursor of the same but non-separated clay and wherein the product includes multimetallic pillars, comprised of a cationic polymeric complex, or derivative structure thereof, of the formula:

$$N^{n+}(Al_{12-x}M_x)^{x+}O_4(OH)_{24}{}^{a+}$$

where x is a number from 1 to 6; a depends on the selection of M and N; N is selected from Al^{3+}, Si^{4+}, Ga^{3+}, Ge^{4+}, As^{5+}, P^{5+}, Cr^{3+}, Fe^{3+}, V^{5+}, Ru^{3+}, Ru^{4+}, Ni^{2+}, and Co^{2+}; and M is one or more of the elements of Groups 5B, 6B, 7B and 8 of the 4th, 5th and 6th Periods of the Periodic Table of the Elements.

5,364,981

ON-STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING PLATINUM/PALLADIUM MODIFIED β-ZEOLITE CATALYSTS

John F. Knifton, Austin, and Pei-Shing E. Dai, Port Arthur, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 8, 1993, Ser. No. 148,248
Int. Cl.[5] C07C *41/09*
U.S. Cl. 568—698 21 Claims

1. A method for synthesizing alkyl tertiary-alkyl ether which comprises reacting a C_1–C_6 primary alcohol with a C_4–C_{10} tertiary alcohol in the presence of a catalyst comprising a β-zeolite modified with one or more metals from Group VIII of the Periodic Table, optionally further modified with a compound selected from the group consisting of a halogen and a Group IB metal, and continuously contacting said C_1–C_6 primary alcohol with a C_4–C_{10} tertiary alcohol in a molar amount from about 10:1 to 1:10 over said zeolite catalyst at a temperature of about 20° to 250° C. and a pressure of about atmospheric to 1000 psi to obtain the desired alkyl tertiary ether product wherein the Group VIII metal-modified β-zeolite is reduced in a stream of hydrogen in the temperature range of 100° to 600° C.

5,364,982

CATALYTIC HYDROXYLATION OF PHENOL

Scott W. Brown, Wigan; Anthony Hackett, Warrington; Angela M. King, Netherton; Alexander Johnstone, South Wirral, and William R. Sanderson, Warrington, all of United Kingdom, assignors to Solvay Interox Limited, Warrington, England

PCT No. PCT/GB92/00258, § 371 Date Aug. 3, 1993, § 102(e) Date Aug. 3, 1993
PCT Filed Feb. 13, 1992, Ser. No. 94,210
Claims priority, application United Kingdom, Feb. 16, 1991, 91033.3; Jan. 16, 1992, 9200929.9
Int. Cl.[5] C07C *37/60*
U.S. Cl. 568—771 15 Claims

1. In a process for the hydroxylation of phenol which comprises reacting phenol with hydrogen peroxide in a compatible organic reaction medium in the presence of a catalyst to produce a dihydric phenol, the improvement wherein the catalyst, which is at least partly soluble in the reaction medium, is selected from salts of heteropolyacids of the formula

i) $Q_3\,PMo_mW_{12-m}O_{40}$, or

ii) $Q_{3+v}\,PM_nV_vO_{40}$

in which Q represents a compatible organic cation, m is zero or an integer less than 6, M represents molybdenum or tungsten, v is an integer which is up to 3, and n is an integer such that n+v=12, and wherein not more than a limited amount of hydrogen peroxide is employed.

5,364,983

PROCESS FOR THE PREPARATION OF AROMATIC POLYHYDROXY COMPOUNDS

Laurent Weisse, Oberursel, and Heinz Strutz, Usingen, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Oct. 7, 1993, Ser. No. 133,660
Claims priority, application Germany, Oct. 9, 1992, 4233989
Int. Cl.[5] C07C *37/00*
U.S. Cl. 568—771 17 Claims

1. A process for the preparation of aromatic polyhydroxy compounds, which comprises reacting an aromatic hydroxyaldehyde with hydrogen peroxide, with or without the addition of a base, in the presence of a nitrile R—CN, in which R is an alkyl radical having 1 to 4 carbon atoms or a phenyl radical, which is unsubstituted or substituted by one or more alkyl groups.

5,364,984

PROCESS FOR THE PREPARATION OF 1,3-PROPANEDIOL BY THE HYDROGENATION OF HYDROXYPROPIONALDEHYDE

Dietrich Arntz, Oberursel; Thomas Haas, Rüsselsheim, and Adolf Schäfer-Sindlinger, Frankfurt, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 24, 1992, Ser. No. 948,718
Claims priority, application Germany, Oct. 1, 1991, 4132663
Int. Cl.[5] C07C *31/20, 29/141*; B01J *23/42*
U.S. Cl. 568—862 13 Claims

1. A process for the preparation of 1,3-propanediol, said process comprising hydrogenating hydroxypropionaldehyde (HPA) in aqueous solution in the presence of a formed carrier catalyst in a fixed bed, said hydrogenating being carried out at temperatures of from 30° to 180° C. and hydrogen pressures of from 5 to 300 bar and at a pH of from 2.5 to 6.5, wherein said carrier catalyst consists essentially of titanium oxide on which platinum is applied in a finely divided form in a quantity of from 0.1 to 5.0% by weight based on the carrier.

5,364,985

PROCESS FOR SEPARATING MIXTURE OF ETHYLENE GLYCOL AND DIMETHYL TEREPHTHALATE POLYMERS

Paul M. Hermansen, Oak Lawn, Ill., assignor to Enviropur Waste Refining and Technology, Inc., The Woodlands, Tex.

Filed May 24, 1993, Ser. No. 66,498
Int. Cl.[5] C07C *27/26, 29/74*
U.S. Cl. 568—871 9 Claims

1. A process for separating ethylene glycol from a mixture that contains ethylene glycol and dimethyl terephthalate polymers, which comprises:

providing a pumpable mixture that contains ethylene glycol, dimethyl terephthalate polymers, and at least about three parts by weight of water per part of dimethyl terephthalate polymers;

agitating said mixture at a fluid shear rate effective to disperse the dimethyl terephthalate polymers in the ethylene glycol and the water;

adding a flocculant to said mixture in an amount in the range of about 0.01 weight percent to about 2 weight percent based on the total weight of the pumpable mixture, the flocculant containing an inorganic salt selected from the group consisting of aluminum sulfate and double sulfate salts of the formula:

$$R_2SO_4{\cdot}X_2(SO_4)_3$$

where R is an alkali metal or ammonium, and X is a trivalent metal to flocculate substantially all the dimethyl terephthalate polymers; and

separating the flocculated dimethyl terephthalate polymers from said mixture to produce an aqueous ethylene glycol stream.

5,364,986

PROCESS FOR THE PRODUCTION OF FATTY ALCOHOLS

Guenther Demmering, Solingen; Stephan Heck, Pulheim, and Lothar Friesenhagen, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Nov. 10, 1993, Ser. No. 150,931
Claims priority, application Germany, Dec. 16, 1992, 4242466
Int. Cl.[5] C07C *31/125, 31/20, 29/136*
U.S. Cl. 568—885 15 Claims

1. A process for the production of C_{8-22} fatty alcohol comprising contacting a triglyceride with hydrogen in the presence of a copper-zinc catalyst, wherein copper and zinc are the only metallic components thereof, and in a reaction zone having an entrance and exit wherein the hydrogen pressure in said reaction zone is from about 200 to about 280 bar, the temperature of the entrance of said reaction zone is from about 200° C. to about 230° C., and the temperature of the exit of said zone is from about 190° C. to about 220° C.

5,364,987

PROCESS FOR THE PREPARATION OF 1,3-PROPANEDIOL

Thomas Haas, Frankfurt am Main, and Dietrich Arntz, Oberursel, both of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jul. 6, 1993, Ser. No. 86,040
Claims priority, application Germany, Jul. 10, 1992, 4222708
Int. Cl.[5] C07C *31/20, 29/141*
U.S. Cl. 568—866 13 Claims

1. A process for the preparation of 1,3-propanediol, said process comprising

(a) hydrating acrolein in the presence of a hydration catalyst,

(b) catalytically hydrogenating the reaction mixture from (a) which contains 3-hydroxypropionaldehyde and from which unreacted acrolein has been removed,

(c) distilling the reaction mixture from (b) which contains water, 1,3-propanediol and by-products having boiling points higher than that of 1,3-propanediol; separating 3,3′-oxybis-1-propanol from the by-products having boiling points higher than that of 1,3-propanediol and treating said 3,3′-oxybis-1-propanol in aqueous solution at from 100° to 300° C. with an acid solid catalyst in order to cleave 3,3′-oxybis-1-propanol to form 1,3-propanediol, and the resulting reaction mixture from which the solid catalyst has been removed is returned to (c).

5,364,988

USE OF SUPPORTED CHROMIUM CATALYST IN THE PREPARATION OF TERTIARY BUTYL ALCOHOL FROM TERTIARY BUTYL HYDROPEROXIDE

John R. Sanderson, Leander, and Roger G. Duranleau, Georgetown, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 12, 1993, Ser. No. 151,235
Int. Cl.[5] C07C *29/132, 31/12*
U.S. Cl. 568—909.8 7 Claims

1. In a method wherein a solvent solution of a tertiary butyl hydroperoxide charge stock is brought into contact with a catalytically effective amount of a hydroperoxide decomposition catalyst in a hydroperoxide decomposition reaction zone in liquid phase with agitation to convert said tertiary butyl hydroperoxide to decomposition products, principally tertiary butyl alcohol, the improvement which comprises:

a) using, as said hydroperoxide decomposition catalyst, a supported hydroperoxide decomposition catalyst consisting essentially of alumina having chromium deposited thereon, and

b) recovering tertiary butyl alcohol from the products of said hydroperoxide decomposition reaction.

5,364,989

1,1,1-TRICHLORO-2-NITROETHANE PRODUCTION

Isao Aoki, Daiwahigashi; Takanori Tabuchi, Osaka, and Isao Minamida, Hyoge, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Continuation of Ser. No. 527,898, May 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 473,173, Jan. 31, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,725
Claims priority, application Japan, Jan. 31, 1989, 1-023356
Int. Cl.[5] C07C *205/02, 201/06*
U.S. Cl. 568—946 1 Claim

1. A process for the production of 1,1,1-trichloro-2-nitroethane which comprises reacting vinylidene chloride

$$Cl_2C{=}CH_2 \quad (I)$$

with 60 to 70% nitric acid and 25 to 36% hydrochloric acid at a temperature of from 10° C. to 35° C. in an open system to yield said 1,1,1-trichloro-2-nitroethane

$$Cl_3CCH_2NO_2 \quad (II)$$

wherein each of said nitric acid and said hydrochloric acid is used in an amount of 1.2 to 1.5 equivalents to said vinylidene chloride.

5,364,990

AQUEOUS SUBMERSION PYROLYZATION OF FLUOROFORM

Jack Hegenbarth, Wilmington, and Norman A. Street, Newark, both of Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jan. 13, 1994, Ser. No. 181,549
Int. Cl.[5] C07C *17/02*
U.S. Cl. 570—159 5 Claims

1. A process for preparing perfluoroolefins from fluoroform which comprises pyrolyzing fluoroform in a flame envelope submerged in water, said flame being at a temperature between about 1000° C. and 3000° C., and said flame being submerged at a depth such that the water pressure around the flame envelope is between about one and thirty inches of water, and collecting the perfluoroolelins produced.

5,364,991

PREPARATION OF 1,1,1,4,4,4-HEXAFLUOROBUTANE

Eiji Seki; Hirokazu Aoyama; Tatsuo Nakada, and Satoshi Koyama, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

PCT No. PCT/JP92/01529, § 371 Date Jul. 20, 1993, § 102(e) Date Jul. 20, 1993, PCT Pub. No. WO93/10067, PCT Pub. Date May 27, 1993
PCT Filed Nov. 24, 1992, Ser. No. 90,044
Claims priority, application Japan, Nov. 22, 1991, 3-307597; Dec. 4, 1991, 3-320324
Int. Cl.[5] C07C *19/08*
U.S. Cl. 570—175 15 Claims

1. A method for preparing 1,1,1,4,4,4-hexafluorobutane comprising reducing 2-chloro-1,1,1,4,4,4-hexafluorobutene-2

with hydrogen in the presence of a hydrogenation catalyst comprising an alloy which comprises at least one first metal component selected from the group consisting of platinum and palladium and at least one second metal component selected from the group consisting of silver, gold, tellurium, zinc, chromium, molybdenum and thallium.

5,364,992

HALOCARBON HYDROGENOLYSIS

William H. Manogue, Newark, and Velliyur N. M. Rao, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 847,987, Apr. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 418,832, Oct. 10, 1989, abandoned. This application Sep. 16, 1993, Ser. No. 122,102

Int. Cl.[5] C07C *19/08*

U.S. Cl. 570—176 **18 Claims**

1. A process for the hydrogenolysis of a halocarbon starting compound selected from the group consisting of CF_3CC1_2F, CF_3CHC1F, $CF_3CC1FCF_3$, $CC1F_2CC1F_2$, CF_3CC1_3 and CF_3CC1F_2 comprising contracting said halocarbon starting compound with at least 0.1 mole of hydrogen per mole of said halocarbon starting compound in an empty reaction vessel of nickel, iron or their alloys at a pressure within the range of from 0 psig to 1000 psig, at a temperature within the range of from 350° C. to 700° C. and for a time sufficient to produce a hydrogenolysis product wherein at least one chlorine has been replaced by hydrogen, at least 90% of the product of said hydrogenolysis containing the same number of fluorines as said halocarbon starting compound.

5,364,993

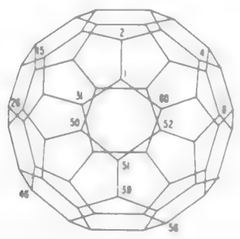
SELECTIVE FUNCTIONALIZATION OF FULLERENES

Zhenyu Zhang, New York, N.Y.; Warren Ruderman, Demarest, N.J., and James R. Fehlner, Salem Township, Wayne County, Pa., assignors to Inrad, Inc., Northvale, N.J.

Filed Jan. 21, 1993, Ser. No. 7,305

Int. Cl.[5] C07C *17/00, 19/00, 21/00*

U.S. Cl. 570—187 **33 Claims**



1. A method of functionalizing fullerene molecules, comprising the steps of:

providing both molecular sieve material having controlled spaces therein;

sorbing fullerene material into the molecular sieve material, including into the controlled spaces thereof, to yield a quantity of fullerene loaded molecular sieve material;

chemically reacting a reactant material with the fullerene molecules of the fullerene loaded molecular sieve material to yield functionalized fullerene reaction product within the controlled spaces.

5,364,994

LUBRICATING COMPOSITIONS CONTAINING α-OLEFIN POLYMERS

Curtis R. Scharf, Wickliffe, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 563,477, Aug. 6, 1990, which is a continuation of Ser. No. 139,392, Dec. 29, 1987, Pat. No. 4,968,853. This application Jul. 16, 1992, Ser. No. 915,471

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] C07C *2/26*

U.S. Cl. 585—3 **20 Claims**

1. A lubricating composition comprising: (A) a liquid alpha-olefin polymer having a number average molecular weight from about 2,000 to about 100,000 and being derived from alpha-olefins having from about 4 to about 30 carbon atoms, provided further that (A) has a bimodal molecular weight distribution having (i) a peak molecular weight maximum at 2,000 to 5,000 for a lower molecular weight component, and (ii) a peak molecular weight maximum at 50,000 to 75,000 for a higher molecular weight component; (B) an oil of lubricating viscosity, and (C) at least one member selected from the group consisting of a friction modifier, a sulfurized olefin, an ash-producing detergent, and an ashless dispersant.

5,364,995

POLYMER CRACKING

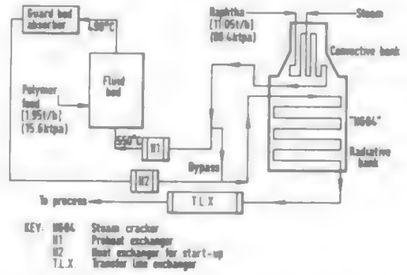
Kenneth C. Kirkwood, Stirlingshire; Stephen A. Leng, Livingston, and David W. Sims, Forgandenny, all of United Kingdom, assignors to BP Chemicals Limited, London, England

Filed Mar. 2, 1992, Ser. No. 844,256

Claims priority, application United Kingdom, Mar. 5, 1991, 9104604.5; Aug. 21, 1991, 9118025.7; Aug. 21, 1991, 9118026.5

Int. Cl.[5] C07C *1/00, 4/00*

U.S. Cl. 585—241 **15 Claims**



1. A process for producing lower hydrocarbons from waste and/or fresh polymers by pyrolysis, wherein said polymers contain no more than 10% w/w of elements other than carbon and hydrogen, said process comprising vaporizing a feed of waste/fresh polymer pieces in the presence of a fluidizing gas free of molecular oxygen or other oxidizing materials and a fluidized bed of a solid particulate fluidizable material inert to the hydrocarbon reactants and products under the reaction conditions in a reactor at a temperature from 450° to 600° C. to form by pyrolysis a mixed vapor of one or more of light olefins, paraffins, naphthenes, olefin oligomers and waxes.

5,364,996

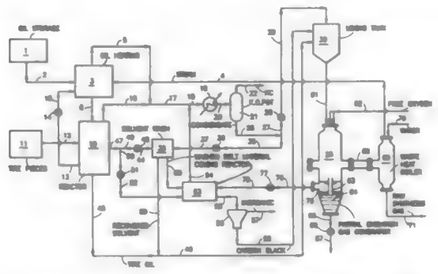
PARTIAL OXIDATION OF SCRAP RUBBER TIRES AND USED MOTOR OIL

Craig J. Castagnoli, Rowland Heights; Suk-Bae Cha, Long-beach, and Hong P. Wang, Diamond Bar, all of Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 895,972, Jun. 9, 1992, abandoned. This application Apr. 27, 1993, Ser. No. 53,727

Int. Cl.[5] C07C *1/00*

U.S. Cl. 585—241 **22 Claims**



1. A partial oxidation process comprising:

(1) contacting a feed material selected from the group consisting of rubber, rubber-containing material, oil soluble plastics, and mixtures thereof with a pumpable hydrocarbonaceous liquid in a vented liquefaction reaction vessel in which the pressure is in the range of about 1 to 20 atmospheres, gradually increasing the temperature of said hydrocarbonaceous liquid form about 200° F. to a maximum temperature in the range of about 500° F. to 850°F., and contacting said feed material with said pumpable hydrocarbonaceous liquid at said maximum temperature until more than about 90 wt.% of the rubber and/or oil soluble plastic feed material has been dissolved in said hydrocarbonaceous liquid, wherein the following materials (a) to (d) are produced:

(a) a pumpable heavy hydrocarbonaceous liquid containing about 20 to 80 weight percent of dissolved rubber and/or oil-soluble plastics;

(b) undissolved tire belt material selected from the group consisting of steel mesh, fiber-glass, rayon, and mixtures thereof containing less than 10 wt.% of undissolved rubber and/or oily materials;

(c) solid residue; and

(d) off gas comprising light hydrocarbons having a maximum atmospheric boiling point of 850° F., and H_2S;

(2) introducing materials (1)(b) into a closed vented coking zone maintained at a temperature in the range of about 500° F. to 1500° F. and a pressure in the range of about 1 to 20 atmospheres in the absence of oxygen, and producing and separating the following materials: (a) off gas comprising light hydrocarbons having a maximum atmospheric boiling point of 850° F., (b) inorganic materials, and (c) carbon black;

(3) mixing off gas (1)(d) from said reaction vessel in (1) and off gas (2)(a) from said coking zone in (2); and cooling said off gas mixture to produce a liquid condensate and a separate stream of non-condensible fuel gas comprising C_1–C_3 hydrocarbons;

(4) introducing said pumpable heavy hydrocarbonaceous liquid from (1)(a) into the reaction zone of a partial oxidation gas generator along with at least a portion of said liquid condensate from (3) and said carbon black from (2)(c) by way of a first passage in an annular-type burner comprising a central conduit and inner and outer coaxial concentric annular passages surrounding said central conduit, passing non-condensible fuel gas from (3) through a second passage in said burner, and passing a stream of free-oxygen containing gas and a temperature moderator through a third passage in said burner; wherein said streams impact each other and atomize, and reacting said materials by partial oxidation at a temperature in the range of about 1800° F. to 3500° F. and a pressure in the range of about 1 to 300 atmospheres, an atomic ratio of O/C in the range of about 0.8 to 1.5, and a weight ratio of H_2O to carbon in the range of about 0.2 to 3.0, thereby producing a hot raw effluent gas stream comprising H_2, CO, CO_2, H_2O, H_2S, and optionally N_2; and

(5) passing said hot raw effluent gas stream from (4) in indirect heat exchange with H_2O thereby producing steam, and heating said hydrocarbonaceous liquid for use in (1) with said steam to the temperature specified in (1).

5,364,997

PROCESS FOR CONVERTING MULTI-BRANCHED HEAVY HYDROCARBONS TO HIGH OCTANE GASOLINE

Michael J. Girgis, Lawrenceville, N.J., and Ying-Yen P. Tsao, Lahaska, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 955,774, Oct. 5, 1992, Pat. No. 5,284,985. This application Jul. 6, 1993, Ser. No. 87,955

Int. Cl.[5] C07C *5/27*

U.S. Cl. 585—253 **19 Claims**

1. A process for producing high octane naphtha range isoparaffins from a heavy hydrocarbon feed comprising a substantial proportion of multi-branched C_9+ olefins and/or paraffins having at least 4 alkyl substituents which comprises contacting said heavy hydrocarbon feed under hydrocracking conditions in the presence of an unsulfided catalyst composition comprising a noble metal and a low acidity molecular sieve having an Alpha Value of 5 or less to saturate said heavy olefins to high molecular weight multi-branched paraffins and cracking said high molecular weight multi-branched paraffins and/or said multi-branched C_9+ paraffins to produce a product comprising high octane naphtha range isoparaffins.

5,364,998

PROCESS FOR THE SELECTIVE HYDROGENATION OF HYDROCARBONS

Patrick Sarrazin, Rueil Malmaison, and Jean-Paul Boitiaux, Poissy, both of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Apr. 2, 1993, Ser. No. 42,178

Claims priority, application France, Apr. 2, 1992, 92 04150

Int. Cl.[5] C07C *5/05*

U.S. Cl. 585—259 **21 Claims**

1. A process for the selective hydrogenation of diolefins in a charge consisting essentially of monoolefins and, as impurities, diolefins, comprising contacting the charge and hydrogen with a supported catalyst at a temperature between 0° and 200° C. and a pressure between 20 and 300 bars in the absence of carbon monoxide, said catalyst, based on its total weight, containing:

a) 0.1 to 10% of at least one group VIII metal chosen from within the group consisting of nickel, palladium, platinum, rhodium and ruthenium;

b) 0.01 to 10% of at least one additional metal of group IIIA chosen from within the group consisting of gallium and indium.

5,364,999

ORGANIC CONVERSION WITH A CATALYST COMPRISING A CRYSTALLINE PILLARED OXIDE MATERIAL

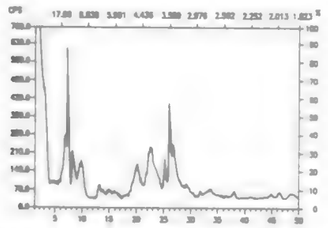
Charles T. Kresge, West Chester, Pa.; Wieslaw J. Roth, Sewell; Kenneth G. Simmons, Williamstown, both of N.J., and James C. Vartuli, West Chester, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 811,384, Dec. 20, 1991, Pat. No. 5,229,341, which is a continuation-in-part of Ser. No. 776,718, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 640,330, Jan. 11, 1991, abandoned, said Ser. No. 811,384, is a continuation-in-part of Ser. No. 640,329, Ser. No. 640,339, and Ser. No. 640,341, Jan. 11, 1991, all abandoned.

The portion of the term of this patent subsequent to Jul. 27, 2010, has been disclaimed.

Int. Cl.[5] C07C *2/00, 4/00, 5/00*

U.S. Cl. 585—407 **6 Claims**



1. A process for converting an organic compound, said process comprising contacting an organic compound with a catalyst under sufficient conversion conditions, said catalyst comprising a pillared, layered crystalline oxide prepared according to a method whereby a layered crystalline oxide is prevented from being transformed by calcination into a non-swellable zeolite, said method comprising the steps of:

(i) intercepting said layered crystalline oxide in an intermediate, swellable state;

(ii) swelling the swellable, layered crystalline oxide of step (i) with a swelling agent under conditions sufficient to, produce a swollen, layered crystalline oxide;

(iii) pillaring the swollen, layered crystalline oxide with a pillaring agent under conditions sufficient to insert interspathic oxide material in between the layers of the layered, crystalline oxide; and

(iv) calcining the pillared, layered crystalline oxide under conditions sufficient to transform the intercepted, layered crystalline oxide of step (i), in the absence of steps (ii) and (iii), into said non-swellable zeolite,

whereby a pillared, layered crystalline oxide is formed and the transformation of a layered, crystalline oxide into a non-swellable zeolite is prevented.

5,365,000

ORGANIC CONVERSION WITH A CATALYST COMPRISING A CRYSTALLINE PILLARD OXIDE MATERIAL

Charles T. Kresge, West Chester, Pa., and Wieslaw J. Roth, Sewell, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 811,383, Dec. 20, 1991, Pat. No. 5,266,541. No. 95,564

Int. Cl.[5] C07C *2/00, 4/00, 5/00*

U.S. Cl. 585—407 **3 Claims**

1. A process for converting an organic compound, said process comprising contacting an organic compound with a catalyst under sufficient conversion conditions, said catalyst comprising pillared, layered crystalline oxide prepared according to a method comprising contacting MCM-39 with a swelling agent under sufficient swelling conditions to produce a swollen layered oxide material, wherein said MCM-39 has the X-ray diffraction pattern comprising the following lines:

d(A)	I/I_o
9.45 ± 0.18	vs
6.93 ± 0.14	w
5.28 ± 0.11	m
4.55 ± 0.09	vs
4.06 ± 0.08	s
3.70 ± 0.07	vs
3.34 ± 0.07	vs
3.29 ± 0.07	m

and wherein said swollen layered oxide material has the X-ray diffraction pattern comprising the following lines:

d(A)	I/I_o
>20	vs
6.83 ± 0.14	w
3.42 ± 0.07	w,

further comprising contacting said swollen layered oxide material with a pillaring agent under conditions sufficient to convert said swollen layered oxide material to a pillared layered oxide material.

5,365,001

METHOD FOR PREPARING DIALKYLNAPHTHALENE

Koji Sumitani, Koganei; Keizo Shimada; Seiji Itoh, both of Iwakuni; Kimihiko Sato; Risuke Suzuki, both of Matsuyama, and Akio Namatame, Tokyo, all of Japan, assignors to Teijin Limited, Japan

PCT No. PCT/JP92/01006, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO93/02995, PCT Pub. Date Feb. 18, 1993

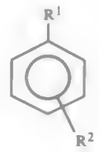
PCT Filed Aug. 6, 1992, Ser. No. 39,067

Claims priority, application Japan, Aug. 8, 1991, 3-222440; Sep. 4, 1991, 3-250341; Sep. 5, 1991, 3-252793; Aug. 6, 1992, 4-057950

Int. Cl.[5] C07C *5/00, 15/24*

U.S. Cl. 585—411 **30 Claims**

1. A method for preparing a dialkylnaphthalene by contacting an alkenylbenzene compound represented by formula [A]



[A]

wherein R^1 is a butenyl group substituted with a C_1–C_4 alkyl group or a group —CH_2—CH_2—CH_2—CH=CH—R^3 (where R^3 is a hydrogen atom or a C_1–C_4 alkyl group), and R^2 is a C_1–C_4 alkyl group, with a solid catalyst in a gas or liquid phase at a temperature of 150° to 500° C. in the presence of hydrogen,

wherein as said solid catalyst is used a catalyst comprising a composition (I) or (II) below:

(1) Composition (I)

$$(M^1)_a.(M^2)_b.(SiO_2.XAl_2O_3).(Al_2O_3)_c \qquad (I)$$

wherein M^1 represents at least one metal selected from the group consisting of metals belonging to group VIII of a periodic table and rhenium;

M^2 represents at least one member selected from the group consisting of zinc, gallium, and oxides thereof;

X is a molar ratio of Al_2O_3 to SiO_2 in ($SiO_2.XAl_2O_3$), and is within the range of 0.05 to 5;

a is % by weight of M^1 based on the sum of ($SiO_2.XAl_2O_3$) and $(Al_2O_3)_c$ and is within the range of 0.01 to 5;

b is % by weight of M^2 as metal based on the weight of ($SiO_2.XAl_2O_3$), and is within the range of 0.1 to 50;

c is weight ratio of (Al_2O_3) to ($SiO_2.XAl_2O_3$), and is within the range of 0 to 5.

(2) Mixture (II) (Mixture of II-(i) and II-(ii)):

$$(M^3)_d.(Al_2O_3) \qquad \text{II-(i)}$$

and

$$(M^4)_e.(SiO_2.XAl_2O_3) \qquad \text{II-(ii)}$$

wherein M^3 represents at least one metal belonging to group VIII of a periodical table;

d is % by weight of M^3 based on (Al_2O_3), and is within the range of 0.05 to 5;

M^4 represents at least one alkali metal;

e is % by weight of M^4 based on ($SiO_2.XAl_2O_3$), and is within the range of 0.05 to 10; and

X is a molar ratio of $Al_2O_3$to SiO_2 in ($SiO_2.XAl_2O_3$), and is within the range of 0.05 to 5.

5,365,002

CRYSTALLINE ZEOLITE-LIKE GALLOSILICATE, AND METHOD FOR ITS SYNTHESIS

Martin Wallau, Mainz; Rudolf Spichtinger, Frankfurt; Klaus K. Unger, Bensheim; Arno Tissler, and Roland Thome, both of Bonn, all of Germany, assignors to VAW Aluminium AG, Bonn and Veba OEL AG, Gelsenkirchen-Hassel, both of Germany

Filed Jun. 24, 1992, Ser. No. 903,792

Claims priority, application Germany, Jun. 25, 1991, 4120847

Int. Cl.[5] C07C *2/76;* **C01B** *33/20;* **B01J** *29/04*

U.S. Cl. 585—418 **9 Claims**

1. A crystalline structure comprising a gallosilicate composition, said structure belonging to the crystallographic family of tectosilicates and built up from TO_4 tetrahedra that are connected by oxygen atoms, wherein T represents a quadrivalent silicon or a trivalent gallium, said structure having an outer surface, said outer surface having an Si to Ga atomic ratio that is less than or equal to the average Si to Ga atomic ratio for the whole crystal;

said composition having an homogenous distribution of Si and Ga atoms throughout the crystal;

wherein said composition is formed without a template.

6. A method of converting C_2 to C_4 aliphatic hydrocarbons to BTX aromatic compounds comprising

passing a gas comprising C_2 to C_4 aliphatic hydrocarbons through a reactor comprising crystalline gallosilicate structures belonging to the crystallographic family of tectosilicates and built up from TO_4 tetrahedra that are connected via oxygen atoms, wherein T represents a quadrivalent silicon or a trivalent gallium, said structures having outer surfaces, said outer surfaces having an Si to Ga atomic ratio that is less than or equal to the average Si to Ga atomic ratio for each whole crystal;

said composition having an homogenous distribution of Si and Ga atoms throughout the crystal;

wherein said composition is formed without a template, and

recovering BTX aromatic compounds from the effluent of said reactor.

5,365,003

SHAPE SELECTIVE CONVERSION OF HYDROCARBONS OVER EXTRUSION-MODIFIED MOLECULAR SIEVE

Clarence D. Chang, Princeton; Cynthia T.-W. Chu; Thomas F. Degnan, both of Morrestown; Paul G. Rodewald, Rocky Hill, and David S. Shihabi, Pennington, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Feb. 25, 1993, Ser. No. 22,220

Int. Cl.[5] C07C *5/22, 2/64, 2/02;* **C10G** *73/00*

U.S. Cl. 585—470 **29 Claims**

1. A process for a shape selective hydrocarbon conversion comprises contacting a reaction stream comprising hydrocarbon under conversion conditions, with a catalytic molecular sieve which has been pre-selectivated by agglomerating a mixture comprising crystalline molecular sieve material and organosilicon compound.

5,365,004

SELECTIVE TOLUENE DISPROPORTIONATION PROCESS (STDP) WITH EX SITU SELECTIVATED ZEOLITE CATALYSTS

Jeffrey S. Beck, Princeton, N.J.; Sharon B. McCullen, Newtown, Pa., and David H. Olson, Pennington, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 28, 1993, Ser. No. 69,259

Int. Cl.[5] C07C *5/52*

U.S. Cl. 585—475 **31 Claims**

1. A process for enhanced shape selective disproportionation of toluene comprising:

contacting a reaction stream comprising toluene, under disproportionation conditions, with a catalytic molecular sieve which has been modified by being exposed to at least two ex situ selectivation sequences, wherein the ex situ selectivation sequence includes the steps of contacting the catalytic molecular sieve with a water-soluble organosilane polymer dissolved in an aqueous carrier and subsequently calcining the catalytic molecular sieve.

5,365,005

PROCESS FOR THE THERMAL CONVERSION OF METHANE AND A REACTOR FOR CARRYING OUT THE PROCESS

Jérome Weill, Lyons; Laure Capogna, Saint Denis; Véronique Arrondel, Houilles, and Jean-Jack Boumendil, La Colle sur Loup, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Oct. 19, 1992, Ser. No. 962,453

Claims priority, application France, Oct. 17, 1991, 91 12948

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **11 Claims**

1. A process for the thermal conversion of methane into hydrocarbons of higher molecular weight in a reaction zone having one elongated axis, comprising an upstream heating zone and a downstream cooling zone in which the effluents from the heating zone are cooled, said process comprising circulating a gaseous mixture containing methane in said heating zone in a direction of flow substantially parallel to the elongated axis of the reaction zone, wherein said heating zone comprises two walls of refractory material, at least one of said walls being disposed between outside walls of the reaction zone, said heating zone further comprising at least one longitudinal zone in which said gaseous mixture circulates, said longitudinal zone comprising a plurality of elements disposed in at least two layers within said refractory walls, which layers are substantially parallel to one another and substantially parallel to the elongated axis of the reaction zone, said elements forming in transverse projection a cluster of triangular, square or rectangular pitch, at least one of these layers comprising a series of sheaths containing electric heating means, thereby forming a layer of heating elements, said electric heating means thus being insulated from direct contact with the gaseous mixture containing the methane and said heating elements being grouped in successive transverse sections, each comprising at least one transverse row of elements, said sections being perpendicular to the elongated axis of the reaction zone, independent of one another and supplied with different amounts of electrical energy so as to define at least two parts in the heating zone; in the first part of the heating zone, heating the gaseous mixture to a temperature at least equal to approximately 1500° C. and, in the second part of the heating zone, following the first part, maintaining the gaseous mixture at a temperature substantially equal to the maximum temperature to which it was raised in the first part, wherein said methane is converted

into hydrocarbons of higher molecular weight; withdrawing an effluent from the second part of the heating zone; introducing said effluent into said downstream cooling zone; introducing a cooling fluid into the cooling zone to cool said effluent; and collecting said hydrocarbons of higher molecular weight at the end of the reaction zone.

5,365,006

PROCESS AND APPARATUS FOR DEHYDROGENATING ALKANES

Willibald Serrand, Buxheim, Germany, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

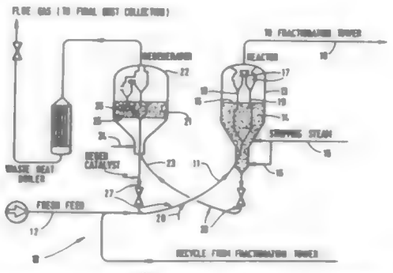
PCT No. PCT/GB91/01028, § 371 Date Dec. 31, 1992, § 102(e) Date Dec. 31, 1992, PCT Pub. No. WO92/00139, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 25, 1991, Ser. No. 962,797

Claims priority, application United Kingdom, Jul. 2, 1990, 9014643.2

Int. Cl.[5] **C07C** *2/00, 5/327, 5/373*

U.S. Cl. 585—501 **12 Claims**



1. A process for dehydrogenating alkanes comprising passing an alkane-containing feedstream through a dehydrogenation zone comprising one or more heat exchange tubes (which may contain alkane-dehydrogenation catalyst), which tubes are immersed in a bed of fluidized particles at an elevated temperature, in the range of 500° to 800° C., the temperature within the heat exchange tube(s) being maintained within said temperature range by heat-transfer from the fluidized bed, recovering an olefin-containing product stream from the dehydrogenation zone, and maintaining the elevated temperature of the bed of fluidized particles by an exothermic oxidation reaction with the bed.

5,365,007

ETHYLENE OLIGOMERIZATION AND CATALYST THEREFOR

An-hsiang Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 985,713. This application Aug. 31, 1993, Ser. No. 113,039

Int. Cl.[5] **C07C** *2/08, 2/18*

U.S. Cl. 585—528 **32 Claims**

1. A process for ethylene oligomerization comprising: (1) combining a nickel compound and a phosphine compound in a solvent to form a mixture; (2) combining said mixture with a phosphated alumina to form a catalyst system; and (3) contacting ethylene with said catalyst system under oligomerization conditions to produce an olefin having more than 2 carbon atoms.

32. A process comprising: (1) combining bis(1,5-cyclooctadiene)nickel(0) with a dicyclohexylphosphine in a hydrocarbon solvent, at 10° C. to 50° C. under an ethylene pressure in the range of 20 psig to 800 psig for 20 minutes to 2 hours to form a mixture; wherein the molar ratio of said dicyclohexylphosphine to said bis(1,5-cyclooctadiene)nickel(0) is in the range of from 0.8:1 to 1.2:1 and the weight ratio of said solvent to said bis(1,5-cyclooctadiene)nickel(0) is in the range of from 10:1 to 600:1; (2) combining said mixture with a phosphated alumina, at 10° C. to 75° C. under an ethylene pressure in the range of from 20 psig to 800 psig for 2 minutes to 3 hours, to produce olefins having greater than 2 carbon atoms; wherein the weight ratio of said phosphated alumina to said bis(1,5-cyclooctadiene)nickel(0) is in the range of from 10:1 to 60:1; and (3) recovering said olefins.

5,365,008

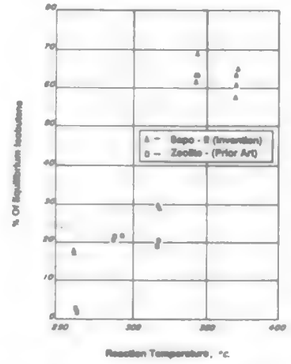
OLEFIN ISOMERIZATION PROCESS

Paul T. Barger, Arlington Heights, Ill.; R. Lyle Patton, Katonah; David A. Lesch, Ossining, both of N.Y.; Lorenz J. Bauer, Schaumburg, and Gregory J. Gajda, Mount Prospect, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 995,471, is a continuation-in-part of Ser. No. 814,167, Dec. 30, 1991, Pat. No. 5,191,146, which is a continuation-in-part of Ser. No. 670,139, Mar. 15, 1991, Pat. No. 5,132,484, which is a continuation-in-part of Ser. No. 442,879, Nov. 29, 1989, abandoned. This application Sep. 3, 1993, Ser. No. 116,190

Int. Cl.[5] **C07C** *5/23, 5/25*

U.S. Cl. 585—667 **20 Claims**



1. A process for the isomerization of pentenes which comprises contacting an pentene-containing feedstock at isomerization conditions with a catalyst containing at least one SAPO in which at least 60% of the framework silica is noncondensed silica to provide a product containing a greater concentration of isopentenes than in the feedstock.

5,365,009

HETEROGENEOUS ALKYLATION AND REGENERATION OF ALKYLATION CATALYSTS

Ashok Uppal, Sarnia; William J. Murphy, Bright's Grove, and Joseph P. Boyle, Sarnia, all of Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 14, 1993, Ser. No. 48,385

Int. Cl.[5] **C07C** *2/58;* **B01J** *29/38, 38/14*

U.S. Cl. 585—722 **12 Claims**

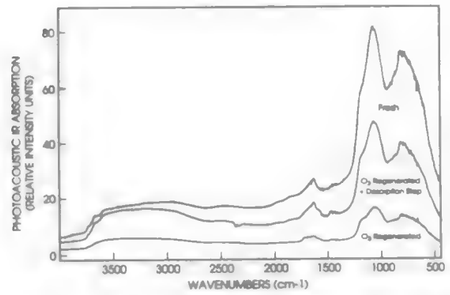
7. In an alkylation process, wherein an olefin and a branched chain paraffin are contacted together with a molecular sieve alkylation catalyst to form an alkylate product with carbonaceous material being adsorbed to the alkylation catalyst, the improvement comprising:

stopping the olefin and branched chain paraffin from contacting the alkylation catalyst,

heating the alkylation catalyst in the presence of ozone at a temperature between 20° C. and 200° C. for a time sufficient to react the carbonaceous material with the ozone to form ozonated hydrocarbons containing carbonyl carbons,

sweeping the heated alkylation catalyst with a desorption fluid at a temperature of 150°–300° C. for a time sufficient

to effectively remove the ozonated hydrocarbons containing the carbonyl carbons and until a photoacoustic infrared spectrum indicates essentially an absence of a carbonyl peak at about 1530–2000 cm^{-1}, and



recontacting the olefin and branched chain paraffin with the regenerated alkylation catalyst to form alkylate product.

5,365,010

METHOD FOR REGENERATING LEWIS ACID-PROMOTED TRANSITION ALUMINA CATALYSTS USED FOR ISOPARAFFIN ALKYLATION BY CALCINATION

Pradip Rao, San Jose; David L. King, Mountain View; Michael D. Cooper, San Jose, and Jerome E. Say, Rancho Palos Verdes, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 588,448, Sep. 26, 1990, abandoned, Ser. No. 697,318, May 7, 1991, Pat. No. 5,157,197, and Ser. No. 697,320, May 7, 1991, abandoned. This application Jun. 20, 1991, Ser. No. 718,394

The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.

Int. Cl.[5] **C07C** *2/58;* **B01J** *20/34, 38/12*

U.S. Cl. 585—726 **21 Claims**

1. A method for regenerating an alkylation catalyst component which component comprises transition alumina which has been contacted with a strong Lewis acid to produce an alkylation catalyst component containing between 0.5% and 30% by weight of Lewis acid and has been partially deactivated by use in an alkylation reaction medium, comprising the steps of:

a. separating the alkylation catalyst component from the alkylation reaction medium,

b. stripping light hydrocarbons and excess Lewis acid from the alkylation catalyst component using an inert gas,

c. heating the alkylation catalyst component to a temperature of 100° to 250° C.,

d. contacting the alkylation catalyst component with an oxygen-containing gas and maintaining a gas outlet temperature between 350° and 800° C. to regenerate the alkylation catalyst component comprising transition alumina.

5,365,011

METHOD OF PRODUCING UNSATURATED HYDROCARBONS AND SEPARATING THE SAME FROM SATURATED HYDROCARBONS

Ramakrishnan Ramachandran, Allendale, and Loc H. Dao, Bound Brook, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 891,501, May 29, 1992, abandoned. This application May 5, 1993, Ser. No. 54,641

Int. Cl.[5] **C07C** *7/13*

U.S. Cl. 585—829 **22 Claims**

1. A method of separating a gaseous alkene from a gas mixture comprised of said alkene and one or more alkanes comprising:

(a) subjecting said gas mixture to a pressure swing adsorption process comprising passing said gas mixture through at least one bed of 4A zeolite adsorbent at a temperature above about 50° C., thereby preferentially adsorbing said alkene from said gas mixture; and

(b) desorbing the adsorbed alkene from said at least one bed.

5,365,012

PROCESS FOR THE HEAT TREATMENT OF SPENT POT LININGS DERIVED FROM HALL-HEROULT ELECTROLYTIC CELLS

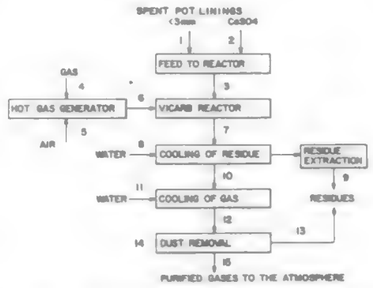
Eric Barrillon, Meylan; Pierre Personnet, Saint-Jean-de-Maurienne, and Jean-Claude Bontron, Aix-en-Provence, all of France, assignors to Aluminium Pechiney, Courbevoie, France

Continuation-in-part of Ser. No. 716,104, Jun. 17, 1991, Pat. No. 5,245,115. This application Jun. 25, 1993, Ser. No. 81,198

Claims priority, application France, Jul. 4, 1990, 90 09174

Int. Cl.[5] **B09B** *3/00;* **A62D** *3/00;* **C01F** *1/00*

U.S. Cl. 588—248 **13 Claims**



1. A process for heat treating spent pot linings obtained from Hall-Heroult electrolytic cells and comprising carbon and silico-aluminous materials impregnated with fluorides, comprising the steps of:

grinding said spent pot linings to a particle size less than 5 mm;

forming an intimate mixture of said ground spent pot linings and a pulverulent mineral additive of particle size less than 1 mm selected from the group consisting of anhydrous $CaSO_4$, $CaSO_4$. $2H_2O$ and mixtures thereof;

injecting said intimate mixture into the center of a vortex formed by a flow of circulating hot gas arriving tangentially at the top part of a reactor at a temperature T between 700° and 1100° C. and having a whirling movement;

contacting said injected intimate mixture with said circulating hot gas to form a suspension of concentration between 0.1 and 3 kg/Nm^3;

extracting said suspension from a bottom part of the reactor at a temperature t between 400° and 750° C. after a contact time between said injected intimate mixture and said circulating hot gas of less than 2 seconds;

maintaining the gas flow at the bottom of said reactor at a temperature T_o between 450° and 700° C. and such that $T > T_o \geqq t$;

cooling said extracted suspension; and

separating the gas flow of said cooled extracted suspension from solid particles of insoluble residue contained therein.

5,365,013

MOBILE DELEADING UNIT

Alan P. Aulson, 201 Pond St., Georgetown, Mass. 01833

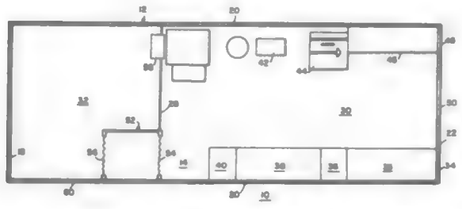
Continuation of Ser. No. 757,960, Sep. 12, 1991, abandoned. This application Jan. 10, 1994, Ser. No. 179,768

Int. Cl.[5] **B65F** *3/00*

U.S. Cl. 588—249 **11 Claims**

1. An apparatus for the safe removal and deleading of hazardous lead painted wood surfaces from lead painted building material at the building site of such material, comprising:

a compartmentalized enclosed structure having a plurality of side walls, a front and an end wall, a floor and a ceiling;
said structure having containment means therein to minimize leakage of hazardous waste particles therefrom;
said structure having a receiving port through one of said walls for receiving hazardous lead painted wood therein;
said structure containing mechanical apparatus for the removal of painted wood surfaces from hazardous lead painted wood received therein;
said structure having a discharge port through one of said walls for discharging wood therefrom, once the hazardous lead painted wood surfaces have been machined therefrom;
encapsulation means for encapsulatively packaging in an environmentally safe manner the lead painted wood surfaces machined from the hazardous lead painted wood received within said structure; and
a cleansing means for the removal of toxic debris from the outside of the encapsulated package of hazardous lead painted wood scraps; and
a negative air pressure means arranged within said structure to generate a flow of air into said structure from the outside thereof by maintaining an air pressure differential between the air pressure inside of said structure as less



than the air pressure outside of said structure, together with an air filtration system to filter air before its passage to outside said structure.

8. A method for the safe removal and deleading of hazardous lead painted wood found in buildings and apartments, comprising the steps of:
providing a structure on the site of a building being treated for hazardous lead painted wood;
feeding hazardous lead painted wood into said structure;
stripping the lead painted wood surfaces from the hazardous lead painted wood fed into said structure;
passing the lead paint stripped wood from said structure;
compacting and encapsulating said hazardous lead painted wood surfaces into handlable bales;
arranging an array of axled wheels under said structure for treating hazardous waste, so as to make said structure mobile;
generating a pressure differential between the air inside of said structure and the air outside thereof, the air inside of said structure being of lower pressure that the pressure of air on the outside of said structure, so as to minimize the escape of toxic hazardous waste in the air from said structure; and
filtering the toxic waste products from the air within said structure during said air pressure differential generation.

5,365,014

INBRED CORN LINE PHMKO

Joseph L. White, Princeton, Ind., and Michael W. Trimble, Singapore, Singapore, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 5, 1993, Ser. No. 14,024
Int. Cl.[5] A01H *5/00, 4/00;* **C12N** *5/04*
U.S. Cl. 800—200 **11 Claims**

1. Inbred corn seed designated PHMK0 and having ATCC Accession No. 75693.

5,365,015

ANTISENSE CONSTRUCTS DERIVED FROM PTOM13 PLANTS AND PLANT CELLS WITH REDUCED ETHYLENE EVOLUTION

Donald Grierson, Loughbrough; Andrew J. Hamilton, Nottingham, and Grantley W. Lycett, Loughbrough, all of England, assignors to Imperial Chemical Industries PLC, London, England

PCT No. PCT/GB90/01072, § 371 Date Mar. 16, 1992, § 102(e) Date Mar. 16, 1992, PCT Pub. No. WO91/01375, PCT Pub. Date Feb. 7, 1991
PCT Filed Jul. 12, 1990, Ser. No. 793,450
Claims priority, application United Kingdom, Jul. 14, 1989, 8916213.5
Int. Cl.[5] A01H *4/00;* **C12N** *5/14, 15/82*
U.S. Cl. 800—205 **11 Claims**

1. A DNA construct comprising a DNA sequence with sequence identity to the cDNA of pTOM13, preceded by a transcriptional initiation region operative in plants, so that the construct can generate RNA in plant cells, the DNA sequence being oriented to encode RNA complementary to the mRNA of pTOM13.

5,365,016

MODIFICATION OF STARCH PRODUCTION

Michael M. Burrell, Cottenham, and Stephen A. Coates, Cherry Hinton, both of England, assignors to Advanced Technologies (Cambridge) Limited, Cambridge, United Kingdom

Filed Jun. 3, 1992, Ser. No. 893,315
Claims priority, application United Kingdom, Jun. 12, 1991, 9112645
Int. Cl.[5] A01H *5/00;* **C12N** *15/00;* **C07H** *21/04*
U.S. Cl. 800—205 **11 Claims**

1. A process for altering starch production in a potato plant, which process comprises transforming a cell of said potato plant with a chimaeric gene comprising a promoter and the antisense coding sequence of waxy locus of a wheat plant genome.

7. A transgenic starch-producing potato plant derived from a host starch-producing potato plant, which comprises;
a host starch-producing potato plant having a plant cell genome integrated with a chimaeric gene which comprises, in the direction of transcription, the following operably linked components:
(a) a promoter which functions in the cell to cause a reduction of starch synthase activity in tubers and seeds;
(b) the antisense coding sequence of the waxy locus of a wheat plant; and
(c) a terminator sequence which is functional in the cell;
said transgenic plant exhibiting in comparison to the host potato plant from which it is derived
(i) reduced starch synthase activity; and
(ii) no apparent reduction in the total amount of starch produced.

5,365,017

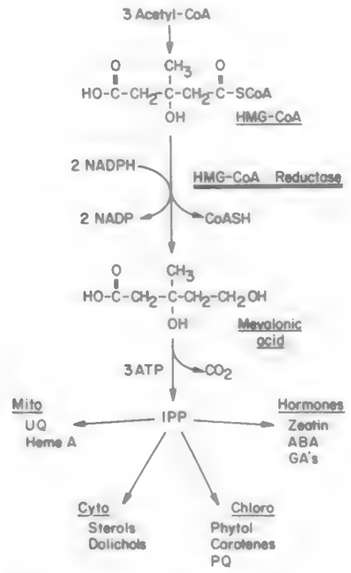
METHOD AND COMPOSITION FOR INCREASING STEROL ACCUMULATION IN HIGHER PLANTS

Joseph Chappell, Lexington, Ky.; Court A. Saunders, Clarendon Hills; Fred R. Wolf, Naperville, both of Ill., and Richard E. Cuellar, Glen Ellyn, Ill., assignors to Amoco Corporation, Naperville, Ill.

Division of Ser. No. 596,467, Oct. 12, 1990, Pat. No. 5,306,862. This application Sep. 9, 1993, Ser. No. 119,263
The portion of the term of this patent subsequent to Apr. 26, 2011, has been disclaimed.
Int. Cl.[5] A01H *1/04;* **C12N** *15/00, 9/02;* **C07H** *21/04*
U.S. Cl. 800—205 **11 Claims**

5. A plant that is the progeny of a plant transformed with a DNA construct, said DNA construct comprising a structural gene, said structural gene consisting essentially of nucleotides encoding an HMG-CoA reductase enzyme catalytic region

and at least a portion of the HMGCo-A linker region, said progeny plant containing said DNA construct and overac-



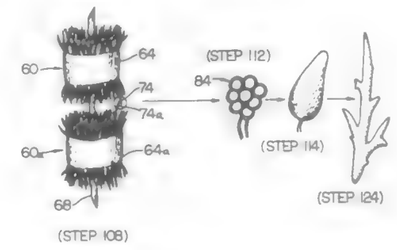
cumulating sterol and cycloartenol in comparison to a native plant that is not the progeny of a transformed plant.

5,365,018

METHOD OF CAUSING SOMATIC HYBRIDIZATION BETWEEN TWO SPECIES OF ALGAE

Donald P. Cheney, Ipswich, and Le Z. Wang, Boston, both of Mass., assignors to Northeastern University, Boston, Mass.

Filed Mar. 31, 1993, Ser. No. 40,625
Int. Cl.[5] C12N *15/00, 5/00, 5/02;* **A01G** *7/00*
U.S. Cl. 800—220 **9 Claims**



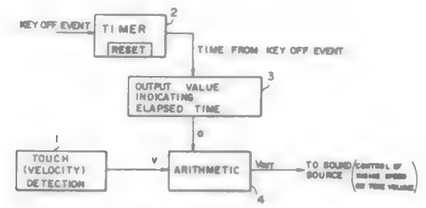
6. A method for somatic cell hybridization of two non-filamentous anatomically complex, thallophytic marine red algal plants comprising the steps of:
removing a section from each said non-filamentous anatomically complex, thallophytic marine red algal plant to be hybridized;
anchoring, in close juxtaposition, each said section from each of said non-filamentous anatomically complex, thallophytic marine red algal plant to be hybridized;
culturing said sections in close juxtaposition until projections from each said section have fused with projections from each said other section forming hybrid new shoots; and
isolating said hybrid new shoots so formed.

5,365,019

TOUCH CONTROLLER FOR AN ELECTRONIC MUSICAL INSTRUMENT

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of Ser. No. 500,803, Mar. 28, 1990, abandoned. This application Mar. 11, 1993, Ser. No. 29,999
Claims priority, application Japan, Mar. 30, 1989, 1-76623
Int. Cl.[5] G10H *1/02, 1/18*
U.S. Cl. 84—658 **5 Claims**



3. A touch controller for an electronic musical instrument having plural keys comprising;

touch detection means for detecting key touch data representing touch intensity in response to depression of a key;

output means for acquiring and outputting performance data, representing a performance parameter other than touch intensity, in response to depression of a key; and

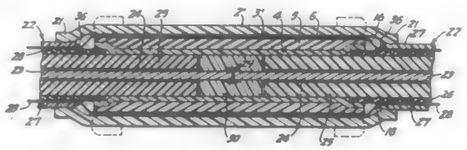
arithmetic means for performing a predetermined arithmetic operation using current key touch data detected by said touch detection means according to a current key depression and previous performance data outputted by said output means according to a previous key depression prior to the current key depression, and for outputting a result of the arithmetic operation as modified key-touch data to a sound source so as to control a degree of a touch effect according to the modified key-touch data.

5,365,020

CABLE JOINT COVERINGS, DEVICES FOR APPLYING SUCH COVERINGS AND JOINTS OBTAINED THEREWITH

Ubaldo Vallauri, Monza; Bruno Parmigiani, Milan, and Francesco Portas, Quattordio, all of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 464,370, Jan. 12, 1990. This application Apr. 12, 1990, Ser. No. 508,783
Claims priority, application Italy, Apr. 20, 1989, 20216 A/89
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] H02G *15/08, 15/18*
U.S. Cl. 174—73.1 **54 Claims**



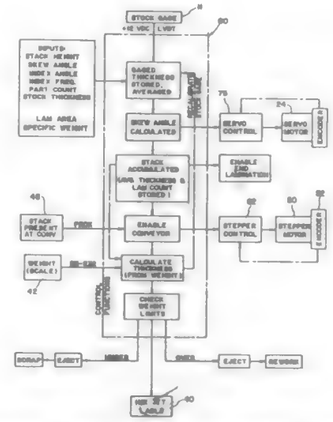
46. An electrical cable joint covering comprising at least a first sleeve and a second sleeve, each sleeve being formed of a cross-linked, polymeric compound and each sleeve being elastically expandible in the direction radially of the axis thereof and having an axially extending bore, said first sleeve being disposed within and co-axial with said second sleeve and said first sleeve comprising a radially innermost tubular layer and a further tubular layer radially outward of said innermost layer, the polymeric compound of said innermost tubular layer having a dielectric constant ϵ at least equal to 6 and said further tubular layer being an electrically insulating polymeric compound and said second sleeve comprising a radially outermost tubular layer and a further tubular layer radially inward of said outermost layer, the polymeric compound of said outermost layer having a residual deformation less than 35% with an imposed elongation of 50% applied for 500 hours at 100° C. and said further tubular layer of said second sleeve being semiconductive, and said second sleeve, separate from said first sleeve and without stress thereon, having a bore diameter smaller than the diameter of the exterior surface of said first sleeve separate from said second sleeve and without stress thereon, the ratio of said diameter of said exterior surface of said sleeve to said bore diameter of said second sleeve being at least 1.2, whereby with said first sleeve within said second sleeve, said second sleeve exerts radially inward pressure on said first sleeve.

5,365,021

COREWEIGHING SYSTEM FOR CLOSED-LOOP STOCK GAUGING CONTROL

Thomas R. Neuenschwander, Fort Wayne, Ind., assignor to L. H. Carbide Corporation, Fort Wayne, Ind.

Division of Ser. No. 835,214, Feb. 13, 1992, Pat. No. 5,241,138. This application Jun. 4, 1993, Ser. No. 72,504
Int. Cl.[5] G01G *19/52, 19/40;* **H02K** *15/02*
U.S. Cl. 177—50 **6 Claims**



1. A method of recalibrating an apparatus for manufacturing electric motor laminate stacks of a desired height from sheet stock material, said method comprising the steps of:

a) measuring the weight of a completed laminate part having a predetermined surface area and number of laminations;

b) calculating the average thickness of the stock material with said measured weight; and

c) adjusting said apparatus on the basis of said calculated average thickness to compensate for varying stock material thickness whereby said laminate stacks are manufactured to said desired height.

5,365,022

TWO POINT LOAD CELL

Johannes Wirth, Zurich, Switzerland, assignor to Wirth Gallo Messtechnik AG, Zurich, Switzerland

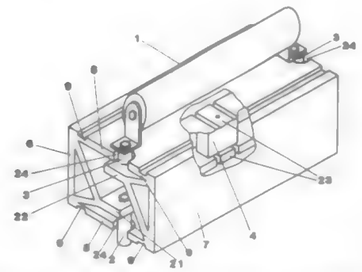
PCT No. PCT/CH92/00116, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO93/00575, PCT Pub. Date Jan. 7, 1993

PCT Filed Jun. 18, 1992, Ser. No. 955,742

Claims priority, application Switzerland, Jun. 24, 1991, 01859/91-7

Int. Cl.[5] G01G *3/08, 11/14;* G01L *1/22*

U.S. Cl. 177—229 2 Claims



1. Rod-shaped load cell with two load-input points, characterized by the fact that:

the load cell consists of a guide section (1) subdivided into a frame (6), a load-bearing element (7), and two generally parallel plates (8), connecting frame (6) and load-bearing element (7), with both the connections between frame (6) and plates (8), and between plates (8) and load-bearing element (7), being designed as band-shaped flexural joints (9), extending across the overall length of guide section (1);

the load cell further consists of two feet (2), each attached to one end of frame (6); two mounting elements (3), each attached to one end of Load-bearing element (7); a force sensor (4), installed between frame (6) and load-bearing element (7) in the center of guide section (1); with the flexural strength of frame (6), load-bearing element (7), and plates (8), being greater than that of flexural joints (9); and with the longitudinal extension of guide section (1) being a multiple of its lateral dimensions; and

further characterized by the fact that:

guide section (1) consists of an extruded section and consists of two essentially parallel plates (8) and two triangular sections, with both sides of plates (8) being respectively connected by two flexural Joints (9), with the triangular sections, with the downwards expanding triangle forming frame (6), and the upwards expanding triangle forming load-bearing element (7);

each of the cited triangular sections has a vertical side forming the external demarcation of guide section (1), while the two other sides of the triangular sections extend towards the interior of guide section (1);

the triangular sections of frame (6) and load-bearing element (7) each support a horizontal, flat rod (21,22) extending across the overall length of the guide section (1), with the arrangement so designed that the rods (21,22) run horizontally, in parallel, and over each other;

each one of plates (8) has two borings (24), located at the ends of guide section (1);

feet (2) pass through the borings of bottom plate (8), supporting bottom rod (21) connected to frame (6), while mounting element (3) passes through borings (24) in top plate (8), supporting rod (22) connected to load-bearing element (7), resulting, in each instance, in a foot (2) and a mounting element (3) lying along the same vertical axis;

force sensor (4) is installed in a vertical position between rods (21) and (22).

5,365,023

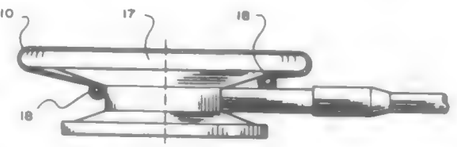
ELASTOMERIC STETHOSCOPE COVER

Gary P. Lawton, 13 Sagamore Cove, Branford, Conn. 06405

Filed May 13, 1993, Ser. No. 62,420

Int. Cl.[5] A61B *7/02, 5/02, 7/04*

U.S. Cl. 181—131 4 Claims



1. An elastic cover for a stethoscope head, the stethoscope head consisting of a cavity extending outwardly from a central body, the cavity terminating in an outer rim, the rim having an exterior surface that tapers outwardly from the central body, the cover being formed from a disk of elastomeric material, the cover having a central portion and a spiral-rolled peripheral edge, the maximum outer diameter of the central portion in its relaxed state being smaller than the diameter of the rim, and the elastomeric material being sufficiently elastic such that the central portion snugly fits the stethoscope head along the rim and the spiral-rolled peripheral edge snugly fits the exterior surface of the cavity after installation of the cover on the stethoscope head.

5,365,024

ACOUSTIC LENS SYSTEM

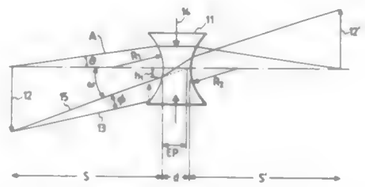
Akira Hasegawa, Mitaka; Masayoshi Omura; Shinichi Imade, both of Iruma, and Eishi Ikuta, Sagamihara, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 501,726, Mar. 30, 1990, abandoned. This application Feb. 9, 1993, Ser. No. 15,303

Claims priority, application Japan, Mar. 31, 1989, 1-081898

Int. Cl.[5] G10K *11/00;* G01S *15/00*

U.S. Cl. 181—176 17 Claims



1. An acoustic lens system for imaging sound waves generated from a sound source, comprising:

a plurality of acoustic lens elements constructed of solid materials and having an entrance surface and an exit surface with centers of curvature located at different positions,

there being spaces between said plurality of acoustic lens elements which spaces are filled with a medium having an attenuation factor of a sound wave which is smaller than that of a lens medium,

wherein said acoustic lens system has an acoustic beam stop therein and a foremost lens, among said plurality of lens elements, is configured so that curvature of a surface located on an exit side thereof is larger than that of a surface located on an entrance side, while a rearmost lens is configured so that curvature of a surface located on the exit side thereof is smaller than that of a surface located on the entrance side.

5,365,025

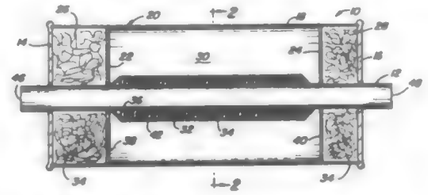
LOW BACKPRESSURE STRAIGHT-THROUGH REACTIVE AND DISSIPATIVE MUFFLER

Leon A. Kraai, Jackson; Robert L. Sager, Jr., Grass Lake, and William E. Hill, Ann Arbor, all of Mich., assignors to Tennessee Gas Pipeline Company, Lincolnshire, Ill.

Continuation of Ser. No. 825,536, Jan. 24, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 110,332

Int. Cl.[5] F01N *1/02*

U.S. Cl. 181—249 28 Claims



1. A muffler, comprising:

a tubular member having imperforate inlet and outlet end portions and a perforate central portion arranged along a central longitudinal axis;

an imperforate outer shell;

a first pair of headers spaced longitudinally and extending radially between the imperforate inlet end portion and the outer shell to form a first annular end chamber;

a second pair of headers spaced longitudinally and extending radially between the imperforate outlet end portion and the outer shell to form a second annular end chamber,

each said header pair including a perforate header and an imperforate header, said imperforate headers forming opposite longitudinal endwalls of the muffler, said perforate headers being disposed interiorly of the shell and forming an annular chamber around the perforate central portion of said tubular member, and each said annular end chamber between the respective perforate and imperforate headers and radially between the imperforate end portions and imperforate outer shell being substantially filled with sound absorbing material; and

a tubular sleeve extending longitudinally between said perforate headers and having a perforate central portion encircling the perforate central portion of said tubular member, said sleeve defining an outer annular resonating chamber between the sleeve and said outer shell and an inner annular sound absorbing chamber around the perforate central portion of said tubular member, said sound absorbing chamber being substantially filled with sound absorbing material.

5,365,026

USER INTERFACE CONTROL APPARATUS

Jerry E. Cromer, Jr., and Jerry E. Crower, both of 119 McQueen St., Sumter, S.C. 29150

Filed Apr. 23, 1993, Ser. No. 51,562

Int. Cl.[5] H01H *9/24, 35/40;* G09G *3/00*

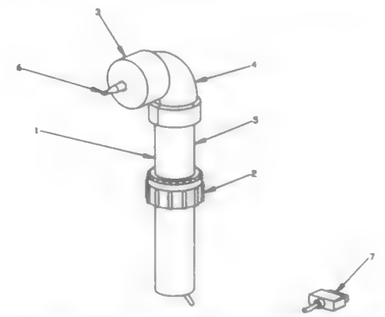
U.S. Cl. 200—1 R 20 Claims

1. A user interface controller for use by physically challenged users to selectively provide electrical control signals for operation of an electronic device, comprising:

a plurality of first control devices;

a plurality of pneumatically responsive second control devices;

and a single actuator operatively connected to said first and second control devices so as to select predetermined ones



of said first and second control devices for actuation by movement of the actuator.

5,365,027

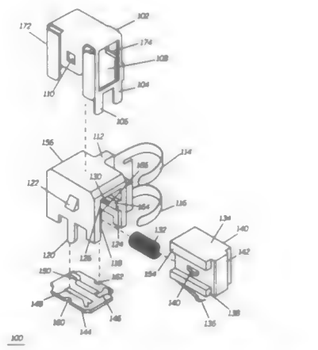
SLIDE SWITCH ASSEMBLY

Lawrence E. Marvet, Sunrise; Scott T. Ma, Margate; Son Q. Le, Sunrise; Douglas D. Peebles, Ft. Lauderdale; David Karl, Tamarac, and William C. Phelps, III, Plantation, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1992, Ser. No. 971,137

Int. Cl.[5] H01H *15/02*

U.S. Cl. 200—16 D 7 Claims



1. A surface mountable switch assembly, comprising:

a switch housing having an outer wall and including a floor section having top and bottom surfaces, the bottom surface including first, second and third surface mountable contacts, the switch housing also having a cavity defined by inner walls;

a guide rail located on at least one of the inner walls of the cavity;

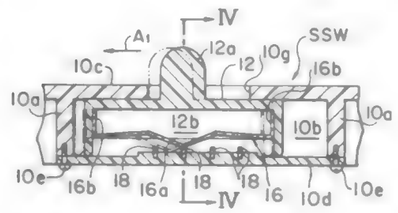
first and second spring finger contacts attached to the switch housing and extending out from the outer wall of the switch housing;

first, second and third traces located on the top surface of the floor section, the first trace electrically coupled to the first surface mountable contact, the second trace electrically coupled to the second surface mountable contact and the third trace electrically coupled to the third surface mountable contact; and

a switch actuator having a pair of conductive wipers, the switch actuator located within the cavity and movable along the guide rail between a first position in which the first and second traces are electrically coupled to each

other by the pair of conductive wipers, and a second position in which the first and third traces are electrically coupled to each other by the pair of conductive wipers.

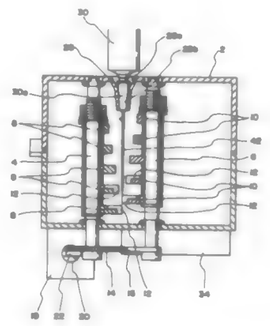
5,365,028
SLIDE SWITCHES
Tsunesuke Takano, Tokyo, Japan, assignor to Kabushiki Kaisha T AN T, Japan
Filed Aug. 3, 1993, Ser. No. 101,304
Int. Cl.[5] H01H *15/06*
U.S. Cl. 200—547 **6 Claims**



1. A slide switch comprising:
an electrically insulated support housing having opposing pairs of side walls which establish an interior space, and an upper wall joined to an upper edge of said opposing pairs of side walls to close an upper end of said interior space, said upper wall defining an opening in communication with said interior cavity;
an electrically insulated slide body having a top wall and opposed pairs of end and lateral walls defining an interior cavity, said slide body being slidably disposed within said interior space of said support housing so as to be movable reciprocally between at least first and second positions therewithin, said slide body having a knob which projects through said opening defined in said upper wall of said support housing to allow movement of said slide body between said first and second positions;
at least one pair of elongate conductors fixed to said support housing such that said at least one pair of fixed elongate conductors extend parallel to one another but are positioned in spaced relationship transversely relative to said reciprocal movement of said slide body; wherein
said slide body also includes an electrically conductive movable contact strip having a protruding contact surface which contacts both said fixed elongate conductors when said slide body is in at least one of said first and second positions, said movable contact strip having an opposed pair of upturned sides having outer surfaces and which terminate in free terminal ends, said movable contact strip being disposed in said cavity such that the entire outer surface of said upturned sides abut against respective ones of said opposed end walls, and such that said free terminal ends of said upturned sides abut against said top wall, said upturned sides exerting a bias force outwardly against said opposed end walls of said slide body to thereby frictionally retain said movable contact strip within said cavity.

5,365,029
DEVICE FOR DISPOSING INJECTION NEEDLES
Shinsaku Makihara, Yokohama, Japan, assignor to Esu Makku Co., Ltd., Kawasaki, Japan
Filed Dec. 3, 1993, Ser. No. 160,811
Claims priority, application Japan, Jul. 15, 1993, 5-197995
Int. Cl.[5] B23K *9/013;* **A61G** *12/00;* **A61L** *11/00*
U.S. Cl. 219—68 **3 Claims**

1. In a device for disposing injection needles in which an injection needle is sandwiched between an electrode of one side and an electrode of the other side, and sparks fly up between the electrodes to melt the needle, the improvement comprising:
a case 2;
a pair of shafts 4 and 6 which is rotatably journalled on the case 2 which are mutually in parallel;
a rotary drive means for synchronously driving said pair of shafts 4 and 6 by a predetermined torque in mutually counter directions;
a plurality of elongate electrodes 8 of one side fixed to the shaft 4 of the pair of shafts 4 and 6 at a predetermined interval mutually and projecting at right angles to the shaft 4;
a plurality of elongate electrodes 10 of the other side fixed to the shaft 6 of the pair of shafts 4 and 6 at a predetermined interval mutually and projecting at right angles to the shaft 6 and forming a plurality of sets of pairs with each of

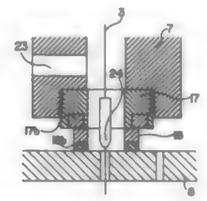


the electrodes of one side disposed in opposition with a difference in level with the electrodes 8 of the one side so that it crosses with the electrode 8 of one side;
a means for impressing voltage for flying up sparks between the electrodes 8 of one side and the electrodes 10 of the other side; and
an injection syringe slot 28 having a holding portion 28*b* that holds a tip portion of the syringe detachably which is positioned on an extension of an axis at an almost center of an opposite space portion between the electrodes 8 of one side and the electrodes 10 of the other side and being provided on the case 2, whereby an opposite interval D between each pair of opposite side surface of the electrodes 8 of one side and that of the electrodes 10 of the other side is narrowed in sequence toward a direction of a lower end of the needle 42 disposed at a center of the opposite space portion formed by the electrodes 8 and 10.

5,365,030
COREPIECE HANDLING DEVICE AND METHOD
Jyun Hayakawa, Yokohama, Japan, assignor to Sodick Co., Ltd., Yokohama, Japan
PCT No. PCT/JP91/01678, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO92/09396, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 30, 1991, Ser. No. 916,116
Claims priority, application Japan, Nov. 30, 1990, 2-337763
Int. Cl.[5] B23H *7/02*
U.S. Cl. 219—69.12 **15 Claims**

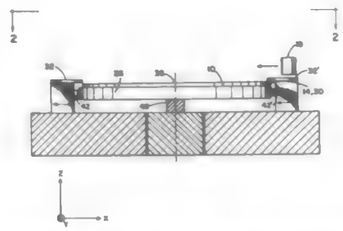
1. A wire-cut electroerosion machine for contour machining a workpiece using a wire electrode, said wire electrode being tensioned between a first wire guide block and a wire guide as it passes through a working zone of said electroerosion machine, wherein said contour machining produces a corepiece from said workpiece, said electroerosion machine further including a corepiece handling apparatus comprising:
a first holding means positioned adjacent the workpiece, and

comprising a magnetic material which can be selectively magnetized or demagnetized;
a second holding means fixed to said wire guide block for holding said first holding means; and



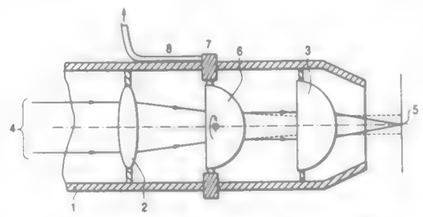
means for detaching said first holding means from said second holding means and for attaching said first holding means to a workpiece to thereby maintain the position of said corepiece relative to said workpiece while said corepiece is cut from said workpiece during said contour machining.

5,365,031
APPARATUS AND METHOD FOR SHIELDING A WORKPIECE HOLDING MECHANISM FROM DEPRECIATIVE EFFECTS DURING WORKPIECE PROCESSING
Peter B. Mumola, Huntington, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Mar. 23, 1992, Ser. No. 855,404
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.43 **24 Claims**



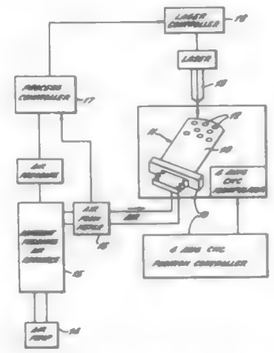
1. An apparatus for shielding a holding mechanism of a workpiece from depreciative effects during processing of said workpiece, said apparatus comprising:
means for rotating said workpiece;
means for holding said workpiece to said rotating means;
means for positioning said processing of said workpiece along a diameter of said rotating workpiece wherein said processing does not extend outside said diameter; and
means for shielding said rotating means and said holding means from said positioned processing of said rotating workpiece wherein said means for shielding is located along the outside edge of said diameter of said workpiece and allows said rotating means and said holding means to pass therebeneath.

5,365,032
METHOD OF CUTTING BY MEANS OF LASER RADIATION
Gerhard J. Müller, Berlin, and Gerfried Giebel, Homburg/Saar, both of Germany, assignors to Optec Gesellschaft fur optische Technik mbH, Burbach, Germany
Filed Jan. 25, 1993, Ser. No. 8,793
Claims priority, application Germany, Jan. 27, 1992, 4202487
Int. Cl.[5] B23K *26/06*
U.S. Cl. 219—121.67 **18 Claims**



1. A device for cutting material with laser radiation, comprising:
an anamorphic optical system including at least one cylindrical lens, said anamorphic optical system for focusing laser radiation along a focal line extending transversely to the direction of the radiation;
a linear lens array following said cylinder lens and being oriented parallel to the focal line for resolving the focal line into individual focal points; and
adjusting means for adjusting the length of the focal line and the degree of focusing along the focal line.

5,365,033
METHOD OF PRODUCING A MULTI-APERTURED COMPONENT
Edward C. Williams, Derby, United Kingdom, assignor to Elliott Industries Limited, London, United Kingdom
Filed Dec. 21, 1992, Ser. No. 994,511
Claims priority, application United Kingdom, Dec. 19, 1991, 9126929
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.71 **10 Claims**



1. A method of producing a multi-apertured component for providing a predetermined fluid flow comprising the steps of;
dividing the component into regions in which apertures are to be formed, forming a proportion of the apertures in a first region in accordance with assumed parameters, measuring the fluid flow through said apertures and correcting, if necessary, the assumed parameters for the apertures in the first region to provide the fluid flow required through the first region and the assumed parameters for

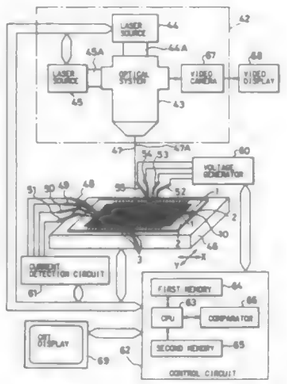
each of the other regions, and completing forming of the apertures in the first region and each of the other regions.

5,365,034

DEFECT DETECTION AND DEFECT REMOVAL APPARATUS OF THIN FILM ELECTRONIC DEVICE

Tetsuya Kawamura; Hiroshi Sano; Mamoru Furuta; Tatsuo Yoshioka, all of Hirakata, and Yutaka Miyata, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 24, 1993, Ser. No. 126,209
Claims priority, application Japan, Sep. 29, 1992, 4-259552
Int. Cl.[5] B23K *26/02*
U.S. Cl. 219—121.83 **3 Claims**



1. A defect detection apparatus of a thin film electronic device comprising:

laser beam generating means for generating a laser beam having a beam diameter which is smaller than a diameter of an object to be detected in the thin film electronic device,

optical means for scanning said laser beam generated by said laser beam generating means on plural conductive thin films laminated on a substrate by sandwiching a dielectric substance layer therebetween,

a voltage generator for applying a predetermined voltage of a direct current across said plural thin films laminated on said substrate,

current detection means for measuring a current supplied from said voltage generator,

a control circuit for comparing a first current value, which is supplied from said voltage generator under non-irradiation of said laser beam to said plural conductive thin films, with a second current value, which is supplied from said voltage generator under irradiation of said laser beam to said plural conductive thin films, and determining existence of a defect of short circuit between said plural conductive thin films at a position irradiated by said laser beam on the basis of a difference between said first current value and said second current value.

5,365,035

METHOD AND APPARATUS FOR TIG WELDING

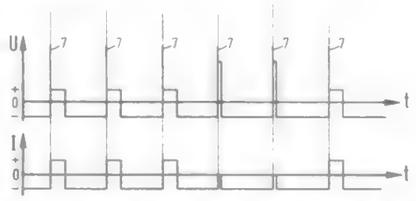
Knud J. Poulsen, Aalborg; Werner Scheele, Fjerritslev, and Henning Jorgensen, Thisted, all of Denmark, assignors to Svejsemaskinefabrikken Migatronic A/S, Fjerritslev, Denmark

Filed Aug. 18, 1993, Ser. No. 108,998
Claims priority, application Denmark, Aug. 28, 1992, 1073/92
Int. Cl.[5] B23K *9/073*
U.S. Cl. 219—137 PS **6 Claims**

1. A method of stabilizing a welding arc formed between a welding electrode and a workpiece during TIG welding with an alternating current, the method employing a welding voltage, which alternates between multiple positive and negative periods, thus generating a welding current, comprising:

a) monitoring the positive period of the welding voltage;

b) sensing if the welding arc has been reignited during the positive period;



c) immediately shortening the time length of the positive period if the welding arc has not been reignited during the positive period, and immediately changing the polarity of the welding voltage to the negative period; and

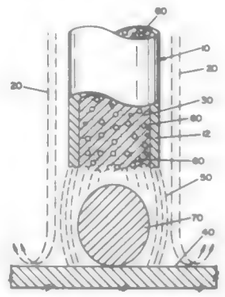
d) holding the length of the negative period substantially constant when the positive period is shortened.

5,365,036

FLUX CORED GAS SHIELDED ELECTRODE

Dennis D. Crockett, Mentor; Ronald J. Gordish, Kirtland; Karl J. Kulikowski, Cleveland Hts., and Robert P. Munz, Jefferson, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 902,020, Jun. 22, 1992, Pat. No. 5,233,160. This application Nov. 16, 1992, Ser. No. 977,086
The portion of the term of this patent subsequent to Aug. 3, 2010, has been disclaimed.
Int. Cl.[5] B23K *35/22*
U.S. Cl. 219—137 WM **31 Claims**



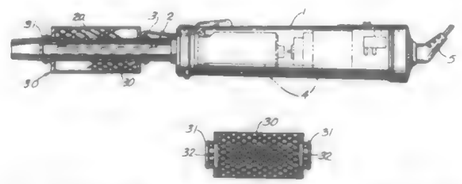
26. A method of gas shielded arc welding with a cored electrode to deposit a weld metal bead, said method comprising the steps of using an electrode having a core of fill material surrounded by a ferrous tube, said fill material including, by weight of fill material, 40–60% titanium dioxide and 1.0–5.0% aluminum powder, the amount of aluminum powder to produce 0.02–0.08% titanium and less than 0.10% aluminum in said weld metal.

5,365,037

ELECTRICALLY HEATED-AIR CURLING IRON WITH A PLURALITY OF DIFFERENT DIAMETER HAIR ROLLERS USABLE THEREWITH

Wing K. Chan, Kowloon, Hong Kong, assignor to America Direct (HK) Ltd., Kowloon, Hong Kong

Continuation-in-part of Ser. No. 636,576, Jan. 2, 1991, abandoned. This application Jun. 9, 1992, Ser. No. 896,135
Int. Cl.[5] A45D *6/00, 20/50, 2/36;* **F24H** *1/06*
U.S. Cl. 219—222 **2 Claims**



1. In combination, an electrically-powered hand-held hair curling iron and a plurality of different diameter generally cylindrical hair rollers for sequential use therewith, wherein the hair curling iron comprises:

a handle, including a heater-blower assembly for producing a stream of heated air and an elongate barrel, for insertion into respective one of said hair curling rollers, the barrel being hollow, in communication with said heater-blower assembly, and having apertures defined along its length for delivering the stream of heated air from the heater-blower assembly radially outwardly to a roller and hair wound on the roller when inserted into the roller, and the curling iron further comprising:

retention means on said curling iron adapted to cooperate with means on the roller for retaining a selected one of said rollers in position on the barrel when the barrel is inserted in the selected one of the rollers, and wherein each roller is hollow and has a perforated area on its outer circumference and has locating means for located the barrel centrally along the longitudinal axis of the roller, the internal diameter of the locating means being substantially smaller than the internal diameter of the perforated area of the outer circumference, and wherein the external diameters of each of the rollers at the perforated areas are different from one another, by the internal diameters of the locating means are the same as one another, whereby each roller is slidable onto the barrel and can be removably held thereon by the action of the retention means and locating means for heating the rollers in situ by the heated air, whereby the iron can be removed from one roller and positioned in another roller in situ in a user's hair.

5,365,038

COVERED DEFROSTER WITH A DEFROSTING PLATE OVER A LATENT HEAT SOURCE

Udagawa Mitsugu, Tottori, Japan, assignor to Kabushiki Kaisha Nissei Giken, Tottori, Japan

Filed Oct. 7, 1992, Ser. No. 956,316
Claims priority, application Japan, Feb. 14, 1992, 4-014482[U]; Feb. 14, 1992, 4-014483[U]; May 29, 1992, 4-043168[U]
Int. Cl.[5] A47J *39/00;* **A47G** *23/04;* **F24J** *1/00;* **H05B** *1/00*
U.S. Cl. 219—386 **14 Claims**

1. A defroster, comprising:

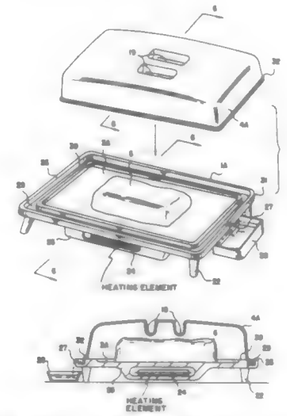
storage means for storage of a heat releasing substance;

a defrosting plate having a product supporting surface and arranged above the storage means in heat exchange relationship therewith;

receiving means for receiving melt water which results from defrosting of a frozen food product supported by the defrosting plate of the defroster;

said receiving means including a receiving groove extending along a portion of at least one perimeter edge of said defrosting plate;

said receiving groove having a depth which extends below said product supporting surface along said portion of said at least one perimeter edge; and



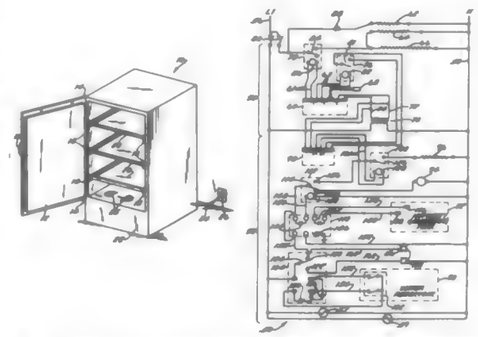
wherein said defroster further includes an upwardly extending perimeter edge wall extending above said product supporting surface and coextensive with at least a portion of said at least one perimeter edge of said defrosting plate; said upwardly extending perimeter edge wall being located between said receiving groove and said defrosting plate.

5,365,039

HUMIDITY CONTROLLED FOOD WARMER

Roderick J. Chaudoir, Fox Point, Wis., assignor to Hatco Corporation, Milwaukee, Wis.

Filed Jul. 21, 1992, Ser. No. 917,507
Int. Cl.[5] A21B *1/00*
U.S. Cl. 219—401 **18 Claims**



10. A method for controlling the humidity and temperature in a food-containing cabinet according to a predetermined set of parameters, comprising the steps of:

sensing when the temperature within the cabinet drops below a temperature parameter of the predetermined set of parameters;

activating a first heater disposed to heat the air within the cabinet in response to sensing the temperature within the cabinet drop below the temperature parameter;

sensing when the temperature within the cabinet drops

below the temperature parameter by a preselected amount;

activating a moisture generator to evaporate a liquid in the cabinet in response to sensing the temperature within the cabinet drop below the temperature parameter by the preselected amount; and

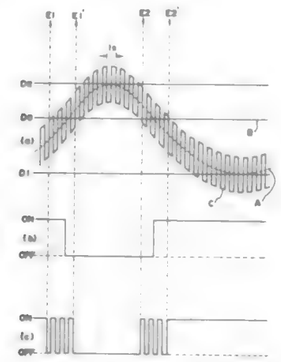
the method comprising the further step of measuring the amount of time the temperature in the cabinet drops below the temperature parameter by the preselected amount.

5,365,040

FIXING DEVICE HAVING A TEMPERATURE CONTROL SYSTEM

Tateki Oka, Atsugi, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Aug. 7, 1992, Ser. No. 927,116
Claims priority, application Japan, Aug. 9, 1991, 3-200806
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 **8 Claims**



1. A fixing device for thermally fusing a toner image on a paper by a heating roller and a pressure roller, the fixing device comprising:

heating means for heating the heating roller;

detecting means for detecting the temperature of the heating roller and providing a temperature detection signal;

signal converting means for continuously overlaying a periodically changing signal which is a square wave having a constant amplitude onto the temperature detection signal detected by the detecting means;

comparing means for comparing the modified temperature detection signal which is overlaid with the periodically changing signal by the signal converting means and a predetermined reference temperature signal which is a standard for temperature control, and

control means for supplying electric current pulses to the heating means during an operative state which is determined in accordance with the comparison result of the comparing means.

5,365,041

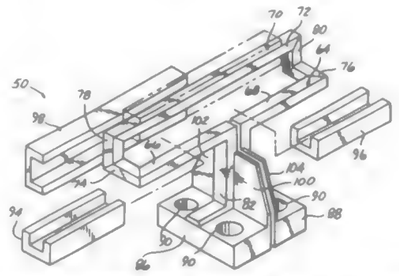
INDUCTION HEATING COIL FOR BONDING METAL SHEETS

Thomas J. Shank, Warren, Mich., assignor to Robotron Corporation, Southfield, Mich.

Filed Apr. 26, 1993, Ser. No. 53,102
Int. Cl.[5] H05B *6/40*
U.S. Cl. 219—633 **17 Claims**

1. An induction heating coil for inductively heating juxtaposed portions of two metal sheets to cure a heat curable bonding material disposed between and adjacent to a perimeter edge of the two metal sheets to bond the two metal sheets together, the induction heating coil comprising:

a first element disposed in a first plane and forming a first inductive heating surface adapted to be disposed adjacent one of the two metal sheets and the bonding material disposed therebetween;



a second element disposed in a second plane at a predetermined, non-parallel angle with respect to the first plane of the first element, the second element forming a second inductive heating surface adapted to be disposed adjacent the perimeter edge of the two metal sheets and the bonding material disposed therebetween; and

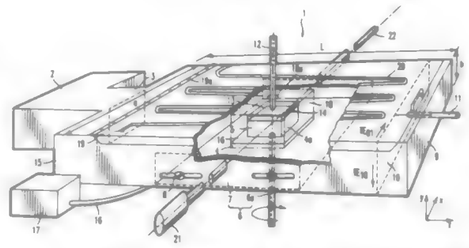
means for supplying a high frequency electric current to the first and second elements.

5,365,042

INSTALLATION AND METHOD FOR HEAT TREATING PARTS MADE OF A COMPOSITE MATERIAL HAVING A CERAMIC MATRIX BY USING MICROWAVE ENERGY

Joël M. D. Benoit, Cesson La Foret; Gilles J. M. Bessenay, Paris, and Daniel G. Girault, Melun, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Mar. 9, 1992, Ser. No. 848,246
Claims priority, application France, Mar. 14, 1991, 91 03065
Int. Cl.[5] H05B *6/80;* **C04B** *35/64*
U.S. Cl. 219—686 **5 Claims**



1. A heat treatment installation for parts made of a composite material with a ceramic matrix, comprising:

a treatment enclosure,

a UHF or microwave generator for generating an electric field,

a waveguide interconnecting said enclosure with said generator for conducting waves generated by said generator into said treatment enclosure,

a die located in said treatment enclosure for receiving a part to be treated,

a single-axis pressing device for hot pressing said part placed in said die in said enclosure,

a gas source in communication with said treatment enclosure for introducing an inert gas into said treatment enclosure for protecting said part during treatment; and

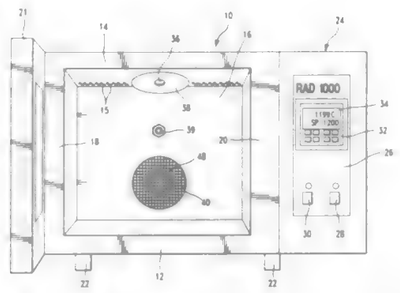
a resonant cavity tuning piston mounted in said enclosure and which is movable towards and away from the waveguide so as to set the enclosure in stabilized resonance relative to the electric field generated by the generator, wherein said treatment enclosure includes a support for said die and said part placed therein, said support being made of a thermally insulating material, a rotary drive mechanism for rotating said support, and a device for linearly moving said support in a direction perpendicular to the direction of the electric field generated in said enclosure.

5,365,043

HIGH HEAT MICROWAVE OVEN SYSTEM WITH TEMPERATURE SENSOR

Gary R. Bradford, Wappingers Falls, N.Y., assignor to North Atlantic Equipment Sales, Inc., Wappingers Falls, N.Y.

Continuation-in-part of Ser. No. 726,366, Jul. 5, 1991, abandoned. This application Oct. 31, 1991, Ser. No. 786,007
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—710 **10 Claims**



1. A microwave oven system for heating materials to a high heat comprising an oven having a cavity and a magnetron, wherein the system can operate at a selected high heat setpoint temperature, a furnace within said cavity, microwave absorptive heater elements within said furnace, and means for automatically controlling the temperature in said furnace by adjusting the operation of the magnetron, wherein the temperature controlling means includes a temperature sensor in the furnace, wherein the temperature controlling means includes a controller responsive to the temperature sensor to adjust the operation of the magnetron, wherein the controller includes means limiting the operation of the magnetron as the furnace approaches the setpoint, wherein the controller includes means limiting the operation of the magnetron by interrupting its operation for periods of time, wherein the controller interrupting means includes means increasing the periods in length as the actual temperature approaches the setpoint temperature.

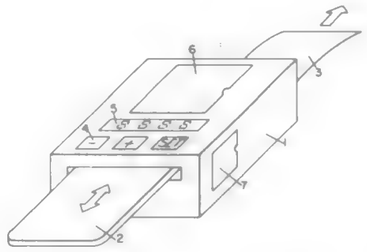
5,365,044

POSTAGE METER STRIP PRINTING MACHINE

Werner Hesshaus, Berlin, Germany, assignor to Francotyp-Postalia GmbH, Berlin, Germany

PCT No. PCT/EP91/01971, § 371 Date Jun. 15, 1992, § 102(e) Date Jun. 15, 1992, PCT Pub. No. WO92/07338, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 16, 1991, Ser. No. 859,740
Claims priority, application Germany, Oct. 16, 1990, 4033164
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 **4 Claims**

1. A postage meter strip printing machine and an associated postage credit card for use with said machine for card charging, which machine prints onto a postage strip a date, a postage value and an advertising cliché, said machine having arranged therein, within a common housing, a printing mechanism, a first processor system connected with said printing mechanism via information and signal conductors for transferring control and security data, an operating mechanism, and a read/write device which serves to receive said card and which is connected with said first processor system via information conductors for the exchange of digitized data for identification and for fee calculation, said card containing a second processor system including a processor, a program memory, a volatile data memory, and a non-volatile data memory having an accounting memory for storing the current accounting data, a



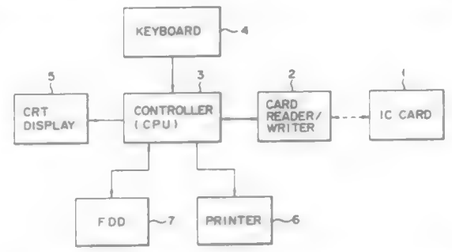
strip supply container in said common housing, said non-volatile data memory of said second processor system containing a cliché memory for storing the graphic data of an individual advertising cliché of the card user, said cliché memory being write-protected against a change of its data while newly loading postage credit into or resetting the fee register in the accounting memory of said card, and a device independent from the postage credit providing mechanism for writing data into said cliché memory.

5,365,045

PORTABLE ELECTRIC DEVICE

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 6, 1991, Ser. No. 710,025
Claims priority, application Japan, Jun. 7, 1990, 2-147480
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—380 **10 Claims**



1. A portable electronic device connectable to an external device, comprising:

a memory including a system area for storing system information relating to a manufacturer of the portable electronic device, and a user area for storing user information relating to a user of the portable electronic device;

first receiving means for receiving a first command and first predetermined data from said external device;

means for storing said first predetermined data in all of said user area in response to said first command received by said first receiving means;

second receiving means for receiving a second command and second predetermined data from said external device;

means for comparing said first predetermined data stored in all of said user area with said second predetermined data received by said second receiving means;

means for storing area definition information for dividing said user area into a plurality of storage areas based on a third command; and

means for inhibiting the comparing of said first and second predetermined data by said comparing means after said area definition information is stored in said user area.

5,365,046

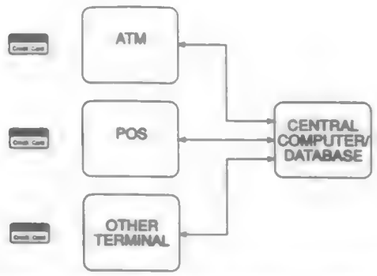
PREVENTING UNAUTHORIZED USE OF A CREDIT CARD

Frank V. Haymann, 25 Grenville Ave., Savoy, Johannesburg, Transvaal, South Africa

Filed Mar. 15, 1993, Ser. No. 31,341

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—380 **18 Claims**



1. A method of validating a credit card comprising the steps of:

issuing a credit card to a holder, the credit card bearing a first identification code;

assigning a second identification code to the holder;

conducting a validation transaction utilising the credit card wherein the first and second identification codes are input to a terminal;

determining whether the first and second identification codes both correspond to the same holder;

generating a validation record confirming the validity of the card if the first and second identification codes correspond; and

storing the validation record in a database which can be accessed by a vendor, so that use of the credit card may be authorised by reference to the validation record.

5,365,047

IC CARD WITH CLOCK SIGNAL INPUT CONTROL

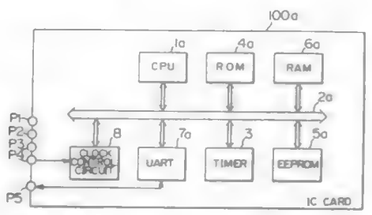
Atsuo Yamaguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1993, Ser. No. 43,788

Claims priority, application Japan, Apr. 7, 1992, 4-085699; Feb. 1, 1993, 5-014651

Int. Cl.[5] G06K *19/073*

U.S. Cl. 235—380 **4 Claims**



1. An IC card comprising:

data input/output means started in response to detection of a start bit of received data for performing data input/output control of said IC card,

data processing means for processing data,

nonvolatile memory means for storing programs to be executed by said data processing means,

writable nonvolatile memory means for storing data,

clock control means for controlling input of a clock signal from outside said card,

timer means for timing a time period of preset duration, and

system bus means interconnecting said data input/output means, data processing means, nonvolatile memory means, writable nonvolatile memory means, clock control means, and timer means wherein:

said data input/output means, said writable nonvolatile memory means, and said timer means which require the clock signal for operation generate operation signals indicating their respective operation, the operation signals being supplied to said clock control means, and

said clock control means includes a switching control section for controlling supply of the clock signal to said data processing means in response to the operation signals generated by said data input/output means, writable nonvolatile memory means, and timer means, and a clock input control section in response to said switching control section and the operation signals so that when at least one of said data input/output means, writable nonvolatile memory means, and timer means are in operation, the clock signal is supplied to said data input/output means, writable nonvolatile memory means, and timer means, and when none of said data input/output means, writable nonvolatile memory means, and timer means are in operation, input of the clock signal is inhibited.

5,365,048

BAR CODE SYMBOL READING APPARATUS WITH DOUBLE-READING PREVENTING FUNCTION

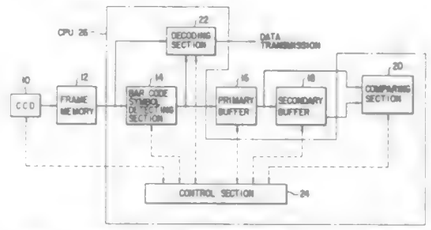
Chikako Komiya, and Hisakatsu Tanaka, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,878

Claims priority, application Japan, Feb. 20, 1992, 4-033533; May 28, 1992, 4-136725

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **17 Claims**



1. A bar code symbol reading apparatus comprising:

scanning/storing means for scanning a bar code symbol at regular intervals, and for storing image data corresponding to scanned bar code symbols;

position detecting means for detecting the position of the bar code symbol from the image data stored in said scanning/storing means;

first position-storing means for storing a first position data indicating the position of the bar code symbol detected by said position detecting means;

second position-storing means for storing a second position data indicating the position of the bar code symbol detected by said position detecting means prior to the first position data;

comparing means for comparing the first position data stored in said first position-storing means with the second position data stored in said second position-storing means; and

decoding means for decoding the bar code symbol on the basis of the image data stored in said scanning/storing means when it is determined by said comparing means that the first and second position data differ from each other.

5,365,049

FOCUSING MEANS FOR A SYMBOL CODE READER

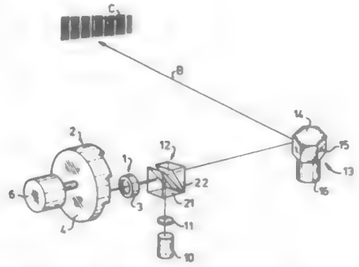
Ke-Ou Peng, Delft, Netherlands, assignor to Opticon Sensors Europe B.V., Hoofddorp, Netherlands

Filed Aug. 17, 1993, Ser. No. 107,505

Claims priority, application European Pat. Off., Aug. 19, 1992, 92202544.0

Int. Cl.[5] G06K *7/00*

U.S. Cl. 235—462 **17 Claims**



1. A focusing means for a bar code reader, comprising a lens system, wherein for varying the focal length the focusing means is provided with reflection means rotatable around a rotational axis, the reflection means comprising at least one reflective surface normally intersecting the optical axis of the lens system, the point of intersection having a distance relative to the lens system which varies in response to the rotation of the reflection means.

5,365,050

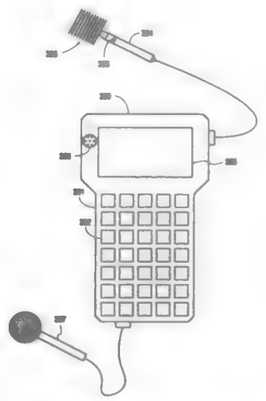
PORTABLE DATA COLLECTION TERMINAL WITH VOICE PROMPT AND RECORDING

Hall V. Worthington; Montgomery W. Worthington, both of Santa Cruz, and Steven A. Lazovich, Ben Lomond, all of Calif., assignors to Worthington Data Solutions, Santa Cruz, Calif.

Filed Mar. 16, 1993, Ser. No. 32,039

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **31 Claims**



1. A portable data collection terminal comprising:

a data input means;

a decoder computer connected to said data input means wherein in response to a signal from said data input means, said decoder computer generates a voice prompt signal;

a voice prompt circuit connected to said decoder computer so as to receive said voice prompt signal wherein in response to said voice prompt signal, said voice prompt circuit generates an oral voice prompt for an operator of said data collection terminal; and

said voice prompt circuit further comprising a recording circuit wherein in response to an audio frequency signal, said recording circuit processes said audio frequency signal for storing in said voice prompt circuit.

5,365,051

PROJECTION EXPOSURE APPARATUS

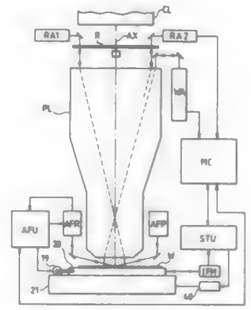
Hiroyuki Suzuki, and Osamu Furukawa, both of Tokyo, Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 92,448

Claims priority, application Japan, Jul. 20, 1992, 4-191766

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—201.2 **5 Claims**



1. A projection exposure apparatus comprising:

a projection optical system for projection-exposing a pattern of a mask onto a photosensitive substrate;

a stage for holding said photosensitive substrate, and for horizontally moving in a plane perpendicular to an optical axis of said projection optical system and vertically moving in a direction of the optical axis;

surface position detecting means for detecting, at a predetermined measurement point in a field of said projection optical system, a positional shift amount in the optical axis direction of the surface of said photosensitive substrate with respect to a reference plane set to substantially agree with a best image plane of said projection optical system;

focusing operation control means for vertically moving said stage during a focusing operation so that the positional shift amount becomes a predetermined value or less;

surface deviation measuring means for sequentially measuring n positional deviations in the optical axis direction between n first positions at substantially the centers of n specific local areas of a plurality of local areas on said photosensitive substrate to be exposed to a projected image of said pattern, and n second positions apart from the first positions by a predetermined amount in a predetermined direction and present in the n specific local areas, on the basis of the positional shift amount from said surface position detecting means;

calculating means for selecting m positional deviations falling within a predetermined tolerance from the n positional deviations and calculating an average value of the m selected positional deviations; and

correcting means for correcting said surface position detecting means such that said reference plane is displaced in the optical axis direction by the calculated average value,

wherein said focusing operation control means is operated in the corrected state, thereby performing a focusing opera-

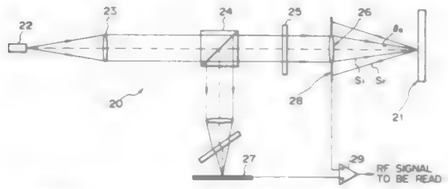
tion for each local area of said photosensitive substrate when exposure is performed.

5,365,052

OPTICAL INFORMATION READING APPARATUS WITH CONTROLLED NUMERICAL APERTURE RELATIONSHIP BETWEEN FOCUSING AND RECEIVING OPTICAL SYSTEMS

Takuma Yanagisawa, and Seiichi Ohsawa, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 26, 1993, Ser. No. 111,949
Claims priority, application Japan, Sep. 1, 1992, 4-233690
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.5 **4 Claims**



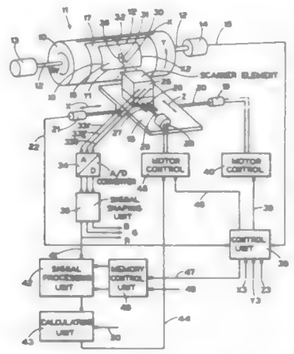
1. An optical information reading apparatus comprising:
an focusing optical system for impinging a reading beam on a recording medium including a reflective film whose reflectance depends on an incident light intensity therein; and
a receiving optical system for receiving the reading beam reflected by said recording medium, wherein the effective numerical aperture of said light receiving optical system is larger than the effective numerical aperture of said focusing optical system.

5,365,053

METHOD AND APPARATUS FOR SETTING THE SHARPNESS OF AN OPTICAL IMAGING SYSTEM

Rainer Schielke, Fleckeby; Holger Suhr, Kiel; Udo Wurdemann, Klausdorf, and Axel Heuer, Fahren, all of Germany, assignors to Linotype-Hell AG, Kiel, Germany

Filed Aug. 31, 1993, Ser. No. 107,783
Claims priority, application Germany, Feb. 19, 1991, 4105002
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.7 **19 Claims**



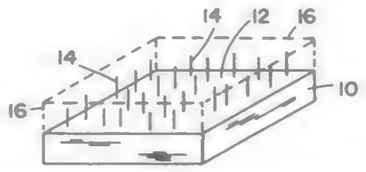
1. A method for setting sharpness of an optical imaging system by step-by-step adjustment of a distance between a subject and an objective until a maximum is achieved for a respectively identified sharpness value of the subject, comprising the steps of:
forming sharpness values from a sum of squared differences of image signal values of the subject in a line of neighboring pixels, and identifying an initial one of said sharpness values at a prescribed distance between the subject and the objective;
varying the prescribed distance by a first step width in both adjustment directions and calculating corresponding sharpness values;
identifying a starting distance corresponding to a best of the previous sharpness values as a starting value;
defining first and second distances in each adjustment direction, one of the distances having a relatively large second step width and the other distance having a relatively small third step width from said starting distance corresponding to the best sharpness value;
checking to see whether the first and second distances in each adjustment direction lie within a prescribed possible range of adjustment between the objective and subject and, if not, making said second and third step widths smaller;
identifying corresponding first and second sharpness values for the first and second distances in each adjustment direction;
defining a straight line that contains or intersects the first and second sharpness values lying at each side of the best sharpness value, the straight lines being tangents at a curve defining the sharpness values over distances within said range of adjustment;
identifying an intersection of the two tangents;
identifying a distance corresponding to said intersection as an adjustment value between the objective and the subject; and
adjusting the distance between the subject and the objective to said adjustment value.

5,365,054

OPTICAL DETECTOR HAVING A PLURALITY OF MATRIX LAYERS WITH COBALT DISILICIDE PARTICLES EMBEDDED THEREIN

Robert W. Fathauer, Susland, Calif., and Leo Schowalter, Latham, N.Y., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 912,961, Jul. 10, 1992, Pat. No. 5,273,617.
This application Aug. 25, 1993, Ser. No. 115,962
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214.1 **22 Claims**



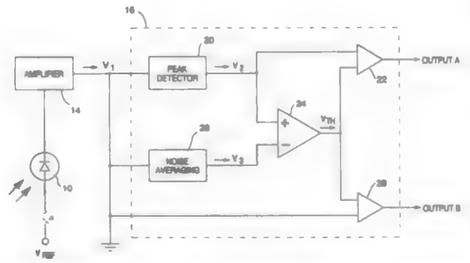
1. An optical response tailored optical component comprising in combination:
a semiconductor substrate;
a matrix of single crystal semiconductor on said substrate; and
a plurality of metal and semiconductor compound particles embedded in said matrix, the shape of said particles chosen to obtain a desired plasmon resonance frequency.

5,365,055

TEST CIRCUIT FOR A PULSED-LASER DETECTOR

Lawrence G. Decker, Loveland, Ohio; Janet R. Poston, Alexandria, Ky., and Edward F. Hume, Cincinnati, Ohio, assignors to Cincinnati Microwave, Inc., Cincinnati, Ohio

Continuation of Ser. No. 890,555, May 28, 1992, Pat. No. 5,206,500. This application Apr. 27, 1993, Ser. No. 53,465
The portion of the term of this patent subsequent to Apr. 27, 2010, has been disclaimed.
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **5 Claims**



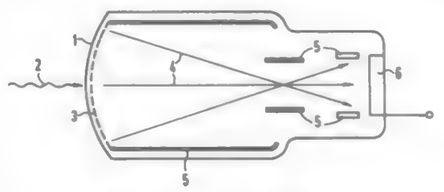
1. A pulsed-laser radar detection apparatus, comprising:
a photodetector;
a decision network coupled to the photodetector, said decision network generating an output pulse when a signal detected by the photodetector is a valid pulsed-laser signal according to predefined criteria which are implemented in the decision network;
counting means for counting output pulses;
modulator means for generating a number N of simulated valid pulsed-laser signals, said modulator means being positioned in a field of view of the photodetector;
switching means connected in series with the modulator means for engaging the modulator means; and
means for comparing the number of output pulses counted by the counting means to the number N of pulses generated by the modulator means to determine whether the decision network is functioning properly.

5,365,056

X-RAY IMAGE INTENSIFIER HAVING AN IMAGE SENSOR WITH AMORPHOUS SEMICONDUCTOR MATERIAL LAYER

Hartmut Sklebitz; Detlef Mattern, and Martin Hoheisel, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 1, 1993, Ser. No. 84,139
Claims priority, application Germany, Jul. 21, 1992, 4223693
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 VT **20 Claims**



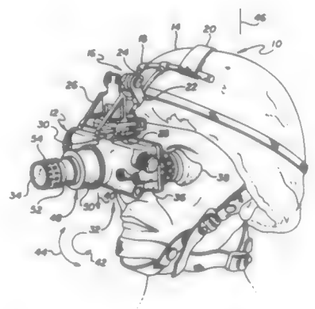
1. An x-ray image intensifier comprising:
an evacuated housing containing an input luminescent screen which generates electrons as a result of x-rays incident on said input luminescent screen;
electron optics for focusing said electrons, an image sensor onto which the electrons focused by said electron optics are incident, disposed in said housing at a side of said housing opposite said input luminescent screen; and
a layer system disposed on a side of said image sensor facing toward said input luminescent screen, said layer system including at least one semiconductor layer consisting of material for effecting an electron conversion of said electrons by ionization with charge carrier multiplication, said at least one semiconductor layer being comprised of amorphous semiconductor material.

5,365,057

LIGHT-WEIGHT NIGHT VISION DEVICE

Roland M. Morley, Tempe, and O'Dell Keil, Paradise Valley, both of Ariz., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed Jul. 2, 1993, Ser. No. 87,498
Int. Cl.[5] H01J *31/50*
U.S. Cl. 250—214 VT **19 Claims**



1. A night vision device comprising:
a housing which may be suspended relative to a user's head and eyes, the housing having an objective lens admitting low-level light from a scene to be viewed, an image intensifier apparatus providing an intensified image representative of the low-level scene, and an eye piece into which the user may look with at least one eye to view the intensified representative image; said housing including a lightweight mounting collar member supporting said objective lens and at least partially housing said image intensifier apparatus, and said mounting collar being formed of polymeric material, wherein said mounting collar member includes means for shielding said image intensifier apparatus from electromagnetic and electrostatic fields.

5,365,058

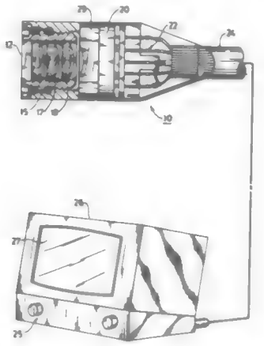
COMPENSATING OPTICAL SYSTEM FOR VIDEO MONITOR

Robert Wheeler, Skaneateles; Richard A. Tamburrino, Auburn, and Robert J. Wood, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jun. 16, 1993, Ser. No. 78,147
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **13 Claims**

1. A video system comprising:
photodetector means for sensing a pattern of light incident thereon, said pattern being a first representation of a visual field of interest, said photodetector means having an output in accordance with a first video convention;
video electronic means coupled to said output of said photodetector means for producing a video signal in accordance with a second video convention;
video output means adapted to said second video convention and accepting said video signal for producing a second representation of said field of interest;

compensating optical means disposed in an optical path extending from said photodetector means to said field of interest for varying at least one dimension of said pattern;



whereby said compensating optical means corrects a systematic distortion of said second representation which results from an incompatibility between said first video convention and said second video convention.

5,365,059

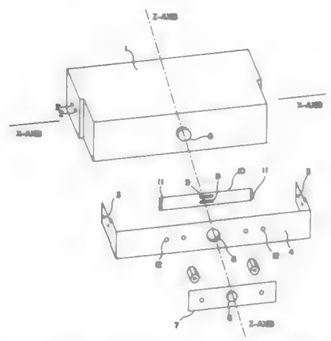
PARALLEL BEAM FORCE MEASUREMENT APPARATUS HAVING AN OPTICAL LIGHT SENSOR MEANS

Donald V. Savage, San Jose, Calif., assignor to Bilanx Technology, Inc., Cupertino, Calif.

Filed Aug. 6, 1993, Ser. No. 102,465

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.1 **19 Claims**



1. The method of effecting measurement of the magnitude of an applied force to a structural member which may have an indeterminate length, comprising the steps of:

a) mounting a first beam having X, Y and Z axes in cooperative association with said structural member whereby a force applied to said structural member in the direction of said Y-axis is applied also to said first beam in a manner to effect deflection thereof in the direction of said Y-axis in proportion to the force applied;

b) arranging a second beam parallel to the X-axis of said first beam and spaced from said first beam in the direction of said Z-axis;

c) causing opposite end portions of said second beam to be secured to corresponding opposite end portions of said first beam in a manner whereby said second beam is non-responsive to deflection of said first beam;

d) causing the relative deflection between said first and second beams to generate an electrical signal that is an analog of the force applied to said first beam and the deflection caused thereby; and

e) utilizing said signal to effect indication of the magnitude of the force applied to said first beam.

5,365,060

RELATIVE VELOCITY SENSING DEVICE

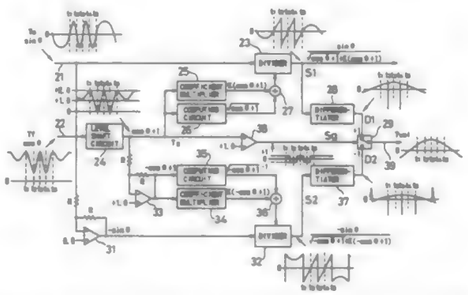
Tomoyuki Shirai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,783

Claims priority, application Japan, Mar. 30, 1992, 4-103687

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.16 **11 Claims**



1. A device for sensing a relative velocity between a first object and a second object comprising:

means for outputting a first sine-wave signal in accordance with a change in a relative position between said first and second objects;

means for converting said first sine-wave signal to a first sawtooth wave signal fluctuating with a same period as said first sine-wave signal;

means for generating a second sawtooth wave in accordance with said first sine-wave signal in such a manner that a phase of said second sawtooth wave signal is offset from a phase of said first sawtooth wave signal;

means for differentiating said first and second sawtooth wave signals to generate first and second differential signals, respectively; and

means for alternately selecting between said first and second differential signals to obtain a velocity signal representing a relative velocity between said first object and said second object.

5,365,061

OPTICAL DEVICE AND DATA COLLECTION SYSTEM

Carlos Enrique Munoz Elizondo, Chacara Nossa Senhora de Lourdes, S/No, Caixa Postal 379-Ribeirao Preto-Sao Paulo, Brazil

Filed Oct. 9, 1992, Ser. No. 958,979

Claims priority, application Brazil, Mar. 12, 1992, 9200863

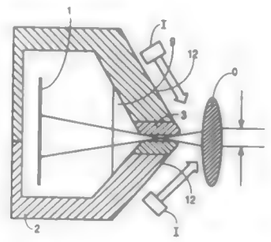
Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—237 R **22 Claims**

1. An optical device for collecting data relating to an object, said object illuminated by an external lighting system adjacent said object, said optical device comprising:

a housing forming an optical chamber, said housing having a front portion, said front portion having a groove such that said front portion restricts and/or regulates entry of light using an edge of said groove, said light being reflected from an area of said object into said optical chamber, said groove of said front portion having a configuration selected from the group consisting of a ring shape, an oblong shape and a straight shape;

an optical sensor mounted inside said optical chamber, said optical sensor receiving a portion of said light entering said optical chamber and producing a corresponding signal; and



a microcontroller operationally connected to said optical sensor.

5,365,062

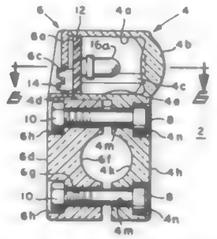
PHOTOELECTRIC SENSOR ASSEMBLY WITH TRANSPARENT HOUSING AN INTEGRALLY MOLDED LENS

Akbar Saffari, Milwaukee; Francis W. Camps, West Allis; Jerry A. Medema, Watertown; Charles J. Turner, Milwaukee, and Jeffrey J. Wolf, Brown Deer, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 956,189, Oct. 5, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,410

Int. Cl.[5] H01J *5/02*

U.S. Cl. 250—239 **9 Claims**



1. A through beam photoelectric sensor assembly comprising:

a molded transparent plastic housing comprising a chamber open to one side of said housing, a focusing lens portion integrally molded in a wall of said housing defining said chamber, said wall being opposite said open side, and a mounting block portion extending away from said chamber;

a circuit board positioned in said chamber at said open side, said circuit board comprising wiring terminals projecting from one surface of said board and a photoelectric device on an opposite surface of said board, said photoelectric device being disposed within said chamber and facing said lens portion;

a molded plastic cover overlying said open side of said housing and said circuit board, said cover comprising openings for said wiring terminals and a clamp portion extending therefrom substantially coextensive with and spaced from said mounting block portion;

aligned holes in said mounting block portion and said clamp portion; and

fastener means extending through respective said aligned holes for contemporaneously securing said cover to said housing and clamping said sensor assembly to a mounting member.

5,365,063

METHOD AND APPARATUS OF QUANTITATIVE NON-RESONANT PHOTOIONIZATION OF NEUTRAL PARTICLES AND THE USE OF SUCH APPARATUS

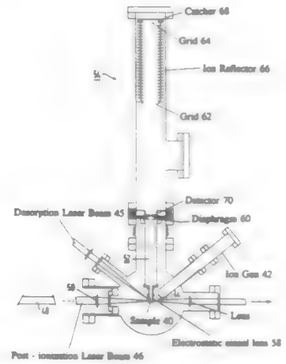
Stefan Kaesdorf, and Hartmut Schröder, both of München, Germany, assignors to Der Wissenschaften E.B. Max-Planck-Gesellschaft Zur Foerderung, Goettingen, Germany

Continuation of Ser. No. 790,771, Nov. 12, 1991, abandoned. This application Jun. 21, 1993, Ser. No. 80,581

Claims priority, application Germany, Nov. 13, 1990, 40361152

Int. Cl.[5] B01D *59/44;* **H01J** *49/00*

U.S. Cl. 250—288 **19 Claims**



16. Apparatus for simultaneous, quantitative, non-resonant ionization and quantification of multiple species of neutral particles of a gas, said multiple species of neutral particles each having an ionization saturation intensity above which ionization does not increase, said apparatus comprising:

a) laser means to generate a laser beam having a direction of propagation towards a spatial volume to ionize said neutral particles throughout said spatial volume and having a beam intensity profile;

b) optical focussing means to modify said laser beam intensity profile to have steep flanks each exhibiting a substantial intensity cutoff and having an intensity plateau between said steep flanks said plateau intensity having no significant area beneath any of said multiple species ionization saturation intensities, whereby said multiple neutral species are simultaneously ionized to saturation throughout said spatial volume; and

c) an ion-optical system for extracting said simultaneously ionized particles from said spatial volume said ion-optical extraction system having an acceptance region in said spatial volume, whereby said ionization is quantitative throughout said spatial volume for each said multiple neutral species; and

d) means for simultaneously quantifying said multiple neutral species.

5,365,064

PROCESS FOR FILTERING ELECTRICALLY CHARGED PARTICLES AND ENERGY FILTER

Gerhard Rettinghaus, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Balzers, Liechtenstein

Filed Nov. 30, 1992, Ser. No. 983,398

Claims priority, application Switzerland, Dec. 2, 1991, 3536/91-4

Int. Cl.[5] H01J *47/00, 49/00*

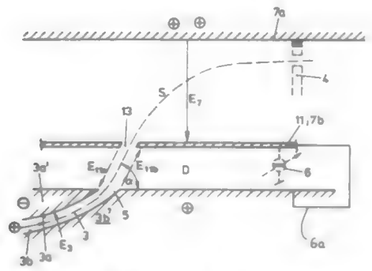
U.S. Cl. 250—305 **24 Claims**

1. A process for filtering electrically charged particles propagating along a propagation path as a particle beam, according to their kinetic energy, comprising the steps of:

deflecting the beam in one direction by applying a first

electrostatic field in a first volume region along said propagation path between a first pair of electrode surfaces;

deflecting said beam in another direction by applying a second electrostatic field between a second pair of electrode surfaces in at least one second volume region which at least one of precedes and succeeds said first volume region along said propagation path, said second pair of electrode surfaces being substantially concentrically bent with respect to a common center of curvature and each being at an electrostatic potential for generating said second electrostatic field;



shielding said first and second electrostatic fields with respect to mutual interference therebetween, by providing a third volume region between wall means held at an equipotential condition, said third volume region being between said first and second volume regions; and

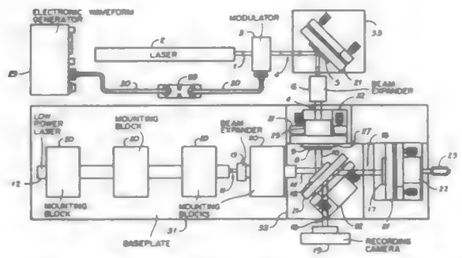
operatively connecting the electrostatic potential of said wall means to the electrostatic potential of the one of said second pair of electrode surfaces which is more remote from said center of curvature.

5,365,065

SENSITIVE INTERFEROMETRIC PARALLEL THERMAL-WAVE IMAGER

Joan F. Power, 1100 Docteur Penfield, Appartment 822, Montreal, Quebec H3A 1A8, Canada

Filed Feb. 12, 1993, Ser. No. 17,273
Int. Cl.[5] G01J *5/08, 5/00*
U.S. Cl. 250—330 **12 Claims**



1. A parallel, thermal-wave imaging apparatus for obtaining a thermal-wave image of a material sample, said apparatus comprising:

heating means for heating the material sample and establishing a thermal-wave therein;

an interferometer having a probe beam and a reference beam;

a thermooptical phase-shift element including three contiguous layers mounted on a base and comprising the material sample as a first layer, an optically reflective and thermally conductive second layer, and an optically transmissive, optical phase-shift third layer, wherein the thermal-wave established in said material sample first layer is propagated through said second layer and to said third layer, said third layer being selected to induce an optical phase-shift in said probe beam of said interferometer, the optical phase-shift resulting from a variation in optical properties of said third layer as the thermal-wave is propagated in said third layer;

said probe beam of said interferometer being directed towards said thermooptical phase-shift element and entering through said third layer, reflecting on said second layer and returning through said third layer with an optical phase-shift, wherein said interferometer can detect the optical phase-shift and can establish an interferogram by comparison of the phase-shifted probe beam and the reference beam; and

parallel recording means for detecting and recording at once a plurality of points on the sample to establish said interferogram which contains the thermal wave image information of the sample from which the thermal wave image is obtained.

12. A method of parallel, thermal-wave imaging of a material sample, said method comprising:

(1) heating the material sample and establishing a thermal-wave therein;

(2) providing a thermooptical phase-shift element including three contiguous layers mounted on a base and comprising the material sample as a first layer, an optically reflective and thermally conductive second layer, and an optically transmissive, optical phase-shift third layer;

(3) providing a parallel interferometer having a probe beam and a reference beam;

(4) propagating the thermal-wave established in said material sample first layer through the second layer and to the third layer, the third layer being selected to induce an optical phase-shift in the probe beam of said interferometer, the optical phase-shift resulting from a variation in optical properties of said third layer as the thermal-wave is propagated in said third layer;

(5) directing the probe beam of the interferometer towards the thermooptical phase-shift element such that the probe beam enters through the third layer, reflects on the second layer, and returns to the interferometer, through the third layer, with an optical phase-shift;

(6) parallelly detecting with the interferometer the phase-shift in the phase-shifted probe beam, and establishing an interferogram by comparing at once at a plurality of points the phase-shifted probe beam and the reference beam; and

(7) parallelly recording the interferogram which contains the thermal wave image information of the sample from which the thermal wave image is obtained.

5,365,066

LOW COST MEANS FOR INCREASING MEASUREMENT SENSITIVITY IN LED/IRED NEAR-INFRARED INSTRUMENTS

Don E. Krueger, Jr., McLean, Va., and Robert D. Rosenthal, Gaithersburg, Md., assignors to Futrex, Inc., Gaithersburg, Md.

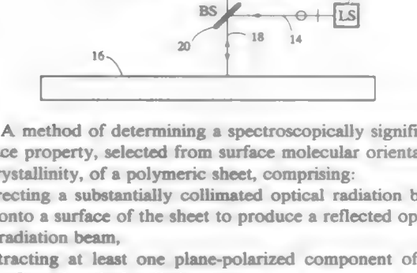
Continuation-in-part of Ser. No. 813,739, Dec. 30, 1991, Pat. No. 5,237,178, which is a continuation-in-part of Ser. No. 565,302, Aug. 10, 1990, Pat. No. 5,077,476, which is a continuation-in-part of Ser. No. 544,580, Jun. 27, 1990, Pat. No. 5,086,299, which is a continuation-in-part of Ser. No. 298,904, Jan. 19, 1989, Pat. No. 5,028,787. This application Nov. 23, 1992, Ser. No. 980,272
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—341.2 **21 Claims**

1. A near-infrared quantitative analysis instrument for non-invasive measurement of a constituent of a product, said analysis instrument comprising:

(a) introducing means including a near-infrared energy source including infrared emitting diodes for introducing near-infrared energy into a product;

(b) detector circuit means for detecting near-infrared energy emerging from said product, said detecting means producing a signal indicative of said energy emerging from said product;

(c) means for supplying current to each of said infrared emitting diodes in said introducing means;



(d) current modification means for modifying the current supplied to each infrared emitting diode in response to said signal from said detector circuit means; and

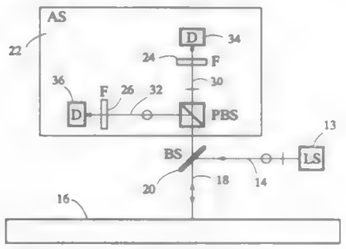
(e) processing means for calculating the electrical signal from said detector circuit means into a signal indicative of the quantity of said constituent present in said product.

5,365,067

METHOD AND DEVICE FOR EVALUATION OF SURFACE PROPERTIES, ESPECIALLY MOLECULAR ORIENTATION, IN NON-TRANSPARENT LAYERS

Kenneth Cole, St. Hubert; Paolo Cielo, Montréal; Michel M. Dumoulin, Mont. St. Hilaire, and Jacques Guévremont, Montréal, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Jun. 30, 1993, Ser. No. 83,468
Int. Cl.[5] G61J *4/00*
U.S. Cl. 250—341.8 **5 Claims**



1. A method of determining a spectroscopically significant surface property, selected from surface molecular orientation or crystallinity, of a polymeric sheet, comprising:

directing a substantially collimated optical radiation beam onto a surface of the sheet to produce a reflected optical radiation beam,

extracting at least one plane-polarized component of the reflected optical radiation beam,

detecting the intensity of the at least one component within at least one selected spectral band, and determining said spectroscopically significant surface property, selected from surface orientation or crystallinity, of said polymeric sheet by

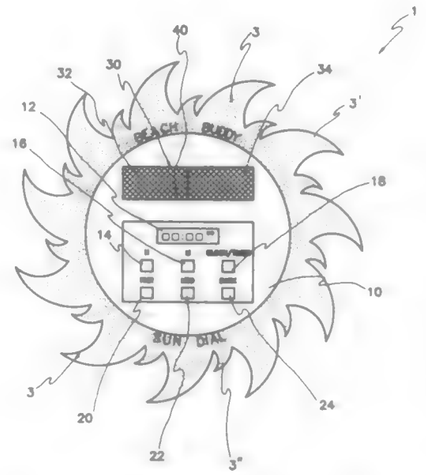
analyzing said intensity by comparison with a reference intensity.

5,365,068

SUN PROTECTION CALCULATOR AND TIMER

William H. Dickerson, 237 N. Marlyn Ave., Baltimore, Md. 21221

Filed Oct. 26, 1993, Ser. No. 141,224
Int. Cl.[5] G01J *1/00, 1/42*
U.S. Cl. 250—372 **7 Claims**



1. An apparatus for displaying an optimum safe sun protection factor (SPF) to provide skin protection from harmful sunlight for a user predetermined exposure time in local ambient conditions comprising:

a body having a peripheral decorative portion and an inner face including input and display portions;

electrical power means within said body including a photovoltaic cell to provide electrical energy;

a first changeable setting timekeeping circuit means for local timekeeping;

a second changeable setting time keeping circuit means to count down said predetermined exposure time;

first input means for setting both said first and second changeable setting timekeeping circuit means;

second input means for selecting one of at least three skin types, the skin types being demarcated along skin type susceptibility to ultraviolet radiation;

ultraviolet sensing means for measuring the ambient ultraviolet radiation intensity (mJ/cm^2);

internal storage means for data pertaining to the maximum energy absorption per unit area (UV_m) of ultraviolet radiation that is allowable for each of the skin types selectable by said second input means;

computation means to calculate said sun protection factor based upon said predetermined exposure time, said skin type input by said second input means, and said internally stored data according to the equation

$$\text{SPF factor} = \left(\frac{\text{exposure time}}{\text{mJ/cm}^2}\right) * UV_m$$

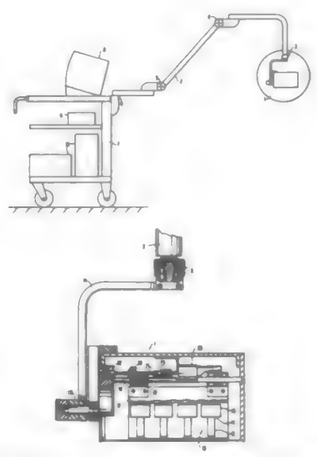
sun protection factor (SPF) output display means for indicating said optimum safe sun protection factor (SPF) to the user in the local ambient conditions.

5,365,069

LIGHT WEIGHT γ-CAMERA HEAD AND γ-CAMERA ASSEMBLIES CONTAINING IT

Yosef Eisen, Rishon-LeZion; Chaim Gilat, Rehovot, and Giora Keinan, Rishon LeZion, all of Israel, assignors to The State of Israel, Atomic Energy Commission, Soreq Nuclear Research Center, Israel

Filed Nov. 24, 1993, Ser. No. 157,713
Claims priority, application Israel, Jun. 2, 1993, 105881
Int. Cl.[5] G01T *1/166, 1/24*
U.S. Cl. 250—370.09 **20 Claims**



1. A gamma camera head having a detector assembly for the detection of X-rays and gamma radiation, in which said detector assembly comprises an array of room temperature, solid state spectroscopy grade detectors each associated with a collimator and preamplifier, which detectors and associated collimators and preamplifiers are arranged in parallel rows extending in a first direction and suitably spaced from each other in a second direction normal to said first direction, each of said parallel rows holding a plurality of said room temperature spectroscopy grade solid state detectors, electric motor means being provided for moving said detector assembly in said second direction in a controlled fashion.

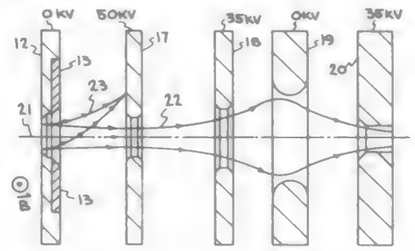
5,365,070

NEGATIVE ION BEAM INJECTION APPARATUS WITH MAGNETIC SHIELD AND ELECTRON REMOVAL MEANS

Oscar A. Anderson, Berkeley; Chun F. Chan, Hayward, and Ka-Ngo Leung, Hercules, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 29, 1992, Ser. No. 875,778
Int. Cl.[5] H01J *27/02*
U.S. Cl. 250—423 R **40 Claims**

1. A negative ion beam injection apparatus, comprising:
a. a negative ion generating means with an exit aperture of sufficient diameter to allow negative particles to exit the ion generating means,
b. a negatively-charged particle extracting means,
c. an electron removal means located exterior to the ion generating means,



d. a magnetic field shielding means, and
e. a beam transport means.

5,365,071

METHOD FOR RECORDING AND REPRODUCING A RADIATION IMAGE, APPARATUS USING SAID METHOD, PANEL FOR STORING A RADIATION IMAGE AND PHOTOSTIMULABLE PHOSPHORS

Romano Morlotti, Varazze, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 3, 1993, Ser. No. 115,826
Claims priority, application Italy, Oct. 5, 1992, MI92 A 002293
Int. Cl.[5] C09K *11/61*
U.S. Cl. 250—484.4 **25 Claims**

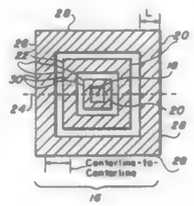
1. A method for recording and reproducing a radiation image comprising the steps of (i) causing a visible or infrared radiation-stimulable phosphor to absorb a high energy radiation which has passed through an object, (ii) stimulating said phosphor with visible or infrared radiations to release the energy stored as fluorescent light, and (iii) detecting said fluorescent light with light detecting means, characterized in that said phosphor is a UV-blue-emitting trivalent cerium activated rare earth metal halo-silicate.

5,365,072

REPOSITIONABLE SUBSTRATE FOR MICROSCOPES

David C. Turner, Alexandria, Va., and Bruce P. Gaber, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1993, Ser. No. 113,126
Int. Cl.[5] H01J *37/20*
U.S. Cl. 250—491.1 **8 Claims**



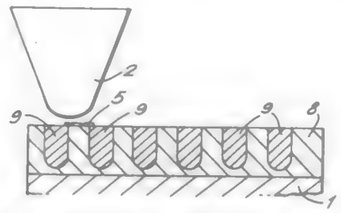
1. A repositionable substrate for microscopic applications, comprising a substrate having a pattern on its top surface to convey coordinate information, wherein said pattern on said top surface comprises a plurality of concentric geometric shapes centered about an origin point on said top surface, wherein each of said plurality of said geometric shapes comprises one or more lines having a unique linewidth corresponding to a unique distance of said geometric shape from said origin point.

5,365,073

NANOFABRICATED STRUCTURES

Julian D. White, Cambridge, United Kingdom, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,730
Claims priority, application United Kingdom, Jun. 24, 1992, 9213423.8
Int. Cl.[5] H01J *37/305*
U.S. Cl. 250—492.3 **6 Claims**



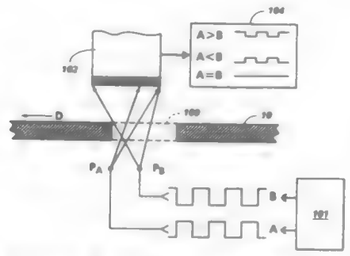
1. A method of forming a nano-scale electroconductive structure wherein a probe is used to produce a desired configuration of matter on a substrate, including causing the substrate to change from a relatively low to a relatively high conductivity condition, producing with the probe said desired configuration of matter on the substrate while in said relatively high conductivity condition, and thereafter causing the substrate to assume said relatively low conductivity condition, wherein said substrate assumes said relatively low conductivity condition at room temperature, and is heated to a temperature in excess of room temperature to achieve said relatively high conductivity condition during which said structure is formed with said probe.

5,365,074

APPARATUS FOR DETERMINING REGISTRATION OF IMAGING MEMBERS

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1993, Ser. No. 109,882
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—560 **20 Claims**



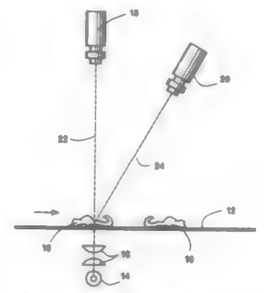
1. An apparatus for positioning a substrate movable in a process direction, the substrate defining an aperture therein, comprising:
a photodetector disposed adjacent a first side of the substrate;
means for forming a first light source point and a second light source point, disposed adjacent a second side of the substrate substantially opposite the photodetector, the first light source point and the second light source point being positioned whereby, when the aperture is disposed between the light source points and the photodetector, direct light from both the first light source point and the second light source point is capable of being detected by the photodetector;
the forming means comprising a first light source, a second light source, and a non-opaque optical component adapted to receive light from the first light source and the second light source, and including a reflector in the form of a void defining a cylindrical surface in the optical component; and
a condition detector associated with the photodetector, for detecting a condition in which light of substantially equal intensity from the first light source point and the second light source point is detected by the photo detector.

5,365,075

METHOD FOR AUTOMATED IDENTIFICATION OF RECYCLED PLASTIC ARTICLES WITH COMPARISON OF DIRECT AND DIFFUSE TRANSMITTED LIGHT

Paul E. Peterson, San Francisco, Calif., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Oct. 1, 1993, Ser. No. 131,084
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—571 **7 Claims**



1. A method for differentiating polymers contained in plastic articles which exhibit similar identifying characteristics upon being exposed to a direct light source which comprises
(1) passing said plastic articles between a light source and an array of detectors, said detectors being positioned in a manner such as to allow simultaneous measurement of a directly transmitted light signal and a diffused light signal,
(2) comparing said transmitted light signal to said diffused light signal, and
(3) utilizing the result of the comparison of step (2) to differentiate said polymers.

5,365,076

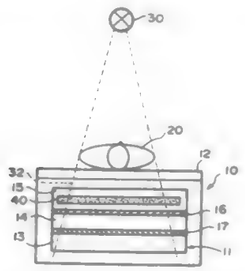
RADIATION IMAGE RECORDING APPARATUS

Toru Itakura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1993, Ser. No. 138,054
Claims priority, application Japan, Oct. 19, 1992, 4-280121; Dec. 25, 1992, 4-347091
Int. Cl.[5] G01N *23/04*
U.S. Cl. 250—582 **5 Claims**

1. A radiation image recording apparatus comprising a sheet housing section, which supports and houses at least a single stimulable phosphor sheet therein and which is exposed to radiation carrying image information of an object, a radiation image of the object being thereby stored on the stimulable phosphor sheet, which is housed in the sheet housing section,
wherein the sheet housing section is divided into at least three sheet housing compartments by:
a) a radiation energy distribution separating filter, which has good absorption characteristics with respect to low energy components of radiation and which is located in a direction approximately normal to the direction of travel of the radiation carrying image information of the object, and
b) at least a single radiation transmitting member, which has good radiation transmitting characteristics and

which is located parallel to said radiation energy distribution separating filter and at a position closer to the



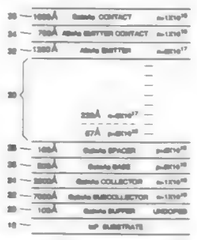
object than said radiation energy distribution separating filter is.

5,365,077

GAIN-STABLE NPN HETEROJUNCTION BIPOLAR TRANSISTOR

Robert A. Metzger, Thousand Oaks; Madjid Hafizi, Santa Monica; William E. Stanchina, and Loren G. McCray, both of Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 22, 1993, Ser. No. 7,695
Int. Cl.[5] H01L *29/72, 29/205*
U.S. Cl. 257—15 **17 Claims**



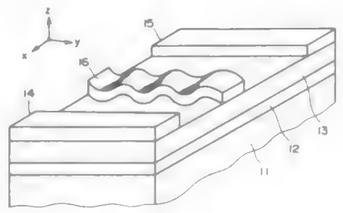
1. A gain-stable npn heterojunction bipolar transistor (HBT), comprising:
a semiconductor base layer that is p-doped with Be,
an n-doped semiconductor collector layer on one side of said base layer,
an n-doped emitter layer, formed from a different semiconductor material from said base and collector layers, on the other side of said base layer, and
a graded superlattice between said base and emitter layers, said superlattice comprising multiple discrete periods with each period having a layer of base material and a layer of emitter material, wherein the thicknesses of the base material layers progressively decrease and the thicknesses of the emitter material layers progressively increase in discrete steps for each successive period from the base to the emitter, and the thickness of each period, the thickness of the thinner layer in each period and the number of periods are selected to effectively prevent Be diffusion from reaching the emitter.

5,365,078

SEMICONDUCTOR DEVICE AND METHOD OF MAKING IT

Kazuo Hayashi, and Takuji Sonoda, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 130,885
Claims priority, application Japan, Oct. 6, 1992, 4-267006
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—24 **5 Claims**



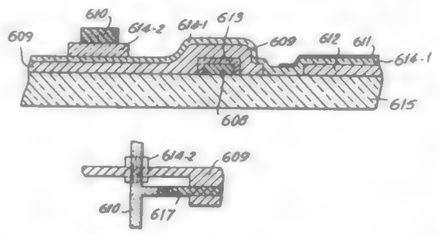
1. A semiconductor device comprising:
a semiconductor substrate;
a channel layer and an electron supply layer successively stacked on said semiconductor substrate;
source, drain, and gate electrodes disposed on a surface of said electron supply layer;
source and drain regions in said channel layer beneath said source and drain electrodes, respectively; and
parallel corrugations in the surface of said electron supply layer beneath said gate electrode, said corrugations having peaks and valleys extending along a channel in said channel layer between said source and drain regions, said corrugations repeating with a predetermined period whereby an electron gas within said channel layer beneath said gate electrode is one-dimensional when a bias voltage is applied to said gate electrode.

5,365,079

THIN FILM TRANSISTOR AND DISPLAY DEVICE INCLUDING SAME

Toshimoto Kodaira; Hiroyuki Oshima, and Toshihiko Mano, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 803,699, Dec. 4, 1991, abandoned, which is a continuation of Ser. No. 484,466, Feb. 22, 1990, abandoned, which is a continuation of Ser. No. 285,292, Dec. 15, 1988, abandoned, which is a continuation of Ser. No. 894,432, Jul. 16, 1986, abandoned, which is a continuation of Ser. No. 489,986, Apr. 29, 1983, abandoned. This application Feb. 5, 1993, Ser. No. 14,053
Claims priority, application Japan, Apr. 30, 1982, 57-74014; Apr. 30, 1982, 57-74015; May 6, 1982, 57-75814
Int. Cl.[5] H01L *29/04, 27/13, 29/78*
U.S. Cl. 257—59 **38 Claims**



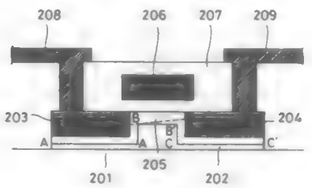
1. A liquid crystal display device, comprising:
a pair of opposed and spaced apart insulating substrates;
a liquid crystal material in the space between the substrates;
a plurality of substantially parallel source lines and a plurality of substantially parallel gate lines orthogonal to the source lines disposed on one substrate and a cross-over insulator formed of two insulating layers between the intersecting source and gate lines, the intersecting source and gate lines and two layer cross-over insulator therebetween forming a cross-over capacitor having a cross-over capacitance;
a plurality of picture elements in a matrix array at the intersections of the source and gate lines;
each picture element including a transparent liquid crystal driving electrode and a switching element coupled to the associated intersecting source and gate lines and a gate insulating layer under the gate line at the switching element; and
a display capacitor electrode formed on the substrate and covered by the liquid crystal driving electrode and a capacitive insulating layer between the display capacitor electrode and the liquid crystal driving electrode for forming a display capacitor having a display capacitance;
wherein the cross-over capacitance per unit area of the two layer cross-over capacitor is less than the display capacitance per unit area of said display capacitor.

5,365,080

FIELD EFFECT TRANSISTOR WITH CRYSTALLIZED CHANNEL REGION

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Simiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 838,887, Feb. 21, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,050
Claims priority, application Japan, Feb. 22, 1991, 3-050793
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—66 **16 Claims**



1. A semiconductor device comprising:
a semiconductor layer;
source and drain regions provided in said semiconductor layer;
a channel region located between said source and drain regions in said semiconductor layer; and
a gate electrode provided adjacent to said channel region with a gate insulator therebetween,
wherein the crystallinity of an upper portion of said semiconductor layer is higher than a lower portion of said semiconductor layer below said upper portion.

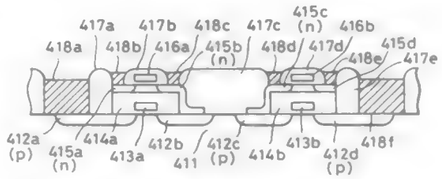
5,365,081

SEMICONDUCTOR DEVICE INCORPORATING THERMALLY CONTRACTED FILM

Shunpei Yamazaki, Tokyo, and Yasuhiko Takemura, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1992, Ser. No. 858,883
Claims priority, application Japan, Mar. 27, 1991, 3-087778
Int. Cl.[5] H01L *27/01, 27/13, 27/78*
U.S. Cl. 257—67 **25 Claims**

1. A semiconductor device comprising:
an insulating and thermally contracted film provided on a surface; and
a semiconductor film island provided on said insulating and thermally contracted film, functioning at least as a channel region of said device,



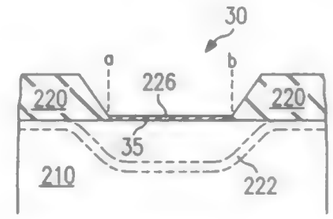
wherein said insulating and thermally contracted film is contracted by heating after the formation of said semiconductor film island thereon.

5,365,082

MOSFET CELL ARRAY

Manzur Gill, Arcola; Pradeep L. Shah, Dallas, and Dave J. McElroy, Allen, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1992, Ser. No. 954,223
Int. Cl.[5] H01L *27/12, 21/302*
U.S. Cl. 257—374 **20 Claims**



1. An array of memory cell transistors fabricated in rows and columns on a semiconductor substrate, comprising:
thick field oxide regions on said substrate separating each said memory cell transistors in each said row from said memory cell transistor in adjacent said columns;
an active area of said substrate between said thick field oxide regions and positioned at or below the level of lower surface of said thick field oxide regions on said substrate, for providing a fabrication base for said memory cell transistor components, each said active area defined by a two-tiered sidewall, of said field oxide region;
said two-tiered sidewall having a sloped upper sidewall and a vertical or nearly vertical lower sidewall; and
said memory cell transistors fabricated in said active areas of said substrate, each said memory cell transistor components including a gate, a drain, and a source.

5,365,083

SEMICONDUCTOR DEVICE OF BAND-TO-BAND TUNNELING TYPE

Yoshihide Tada, Chiba, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 799,063, Nov. 27, 1991, abandoned. This application Feb. 8, 1994, Ser. No. 194,626
Claims priority, application Japan, Nov. 29, 1990, 2-325759; Oct. 16, 1991, 3-267706
Int. Cl.[5] H01L *29/88, 27/01, 29/00*
U.S. Cl. 257—105 **16 Claims**

1. A semiconductor device of a band-to-band tunneling type comprising:
a first semiconductor region having one conductivity type and including first, second and third surfaces, said second

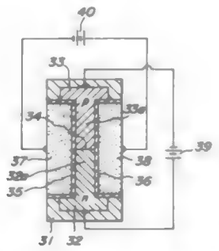
and third surfaces being crossed with said first surface at substantially right angles;

a second semiconductor region having the opposite conductivity type and including first, second and third surfaces, said second and third surfaces being crossed with said first surface at substantially right angles, said first surface of the first semiconductor region being adjoined with said first surface of said second semiconductor region to form a PN junction therebetween, said second surfaces of said first and second semiconductor regions being aligned with each other and said third surfaces of said first and second semiconductor regions being aligned with each other;

a first insulating film applied on said second surfaces of said first and second semiconductor regions;

a second insulating film applied on said third surfaces of said first and second semiconductor surfaces;

a first gate electrode formed on said first insulating film and extending over said first semiconductor and second semiconductor regions;



a second gate electrode formed on said second insulating film and extending under said first semiconductor and second semiconductor regions, wherein said second gate electrode does not contact the first gate electrode;

a first biasing means for applying a reverse bias voltage across said PN junction; and

a second biasing means for applying a gate bias voltage across said first and second gate electrodes, wherein a depletion region is formed in the vicinity of the PN junction, said gate bias voltage producing a band bend in said depletion region, the band bend extending into both said first and said second semiconductor regions, wherein minority carriers are transferred to and from a valence band and a conduction band by band-to-band tunneling through said band bend in a direction substantially parallel to the PN junction to produce electrons and holes in the depletion region, said electrons and holes moving through said PN junction by said reverse bias voltage.

5,365,084

VIDEO INSPECTION SYSTEM EMPLOYING MULTIPLE SPECTRUM LED ILLUMINATION

Don W. Cochran, and James E. Triner, both of Gates Mills, Ohio, assignors to Pressco Technology, Inc., Solon, Ohio

Continuation-in-part of Ser. No. 658,093, Feb. 20, 1991, Pat. No. 5,172,005. This application Dec. 14, 1992, Ser. No. 990,009

Int. Cl.[5] G01N *21/86;* **H04N** *7/18*

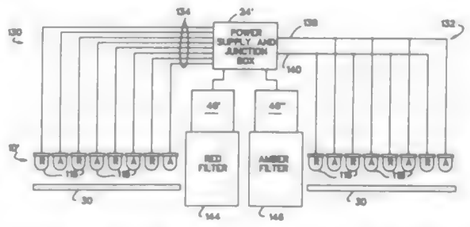
U.S. Cl. 250—571 **39 Claims**

1. An engineered video inspection illumination system comprising:

a first array of light emitting diodes adapted to provide illumination of a plurality of selected wavelength quanta;

first securing means adapted to secure the first array so as to illuminate an associated specimen disposed in an illumination region of the first array;

means for selectively supplying current to the first array so as to generate inspection light therefrom having a selected light constituent of first and second wavelengths; and



video receptor means adapted for receiving the inspection light after exposure thereof to the associated specimen.

5,365,085

POWER SEMICONDUCTOR DEVICE WITH A CURRENT DETECTING FUNCTION

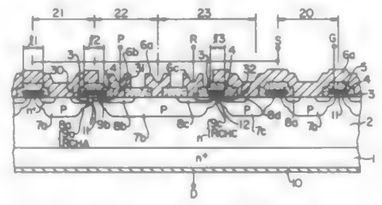
Norihito Tokura, Okazaki, and Tsuyoshi Yamamoto, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 29, 1991, Ser. No. 735,512

Claims priority, application Japan, Jul. 30, 1990, 2-202229; Jul. 19, 1991, 3-179654

Int. Cl.[5] H01L *29/74, 31/111, 29/00, 27/082*

U.S. Cl. 257—139 **24 Claims**



1. A power semiconductor device comprising:

a semiconductor substrate;

a power control portion formed on said semiconductor substrate constituted of a plurality of vertical unit cells of an insulated grate structure connected in parallel, each unit cell having a gate electrode and a channel portion;

a current signal detecting portion formed on said semiconductor substrate adjacent to at least a portion of said unit cells constituting said power control portion for detecting current flowing through said power control portion through detection of a voltage drop developed across a resistance of said channel portion; and

a lateral transistor structure formed on said semiconductor substrate and including a resistive channel portion and a gate electrode,

said gate electrodes of said lateral transistor structure and of said unit cells being connected mutually, said resistive channel portion of said lateral transistor structure having a resistance characteristic which is approximately equal to a resistance characteristic of the channel portion so as to compensate for a current detection error by using said resistive channel portion of said lateral transistor structure.

5,365,086

THYRISTORS HAVING A COMMON CATHODE

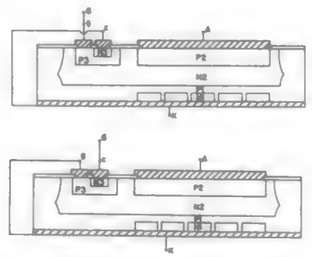
Robert Pezzani, Vouvray, France, assignor to SGS-Thomson Microelectronics S.A., Saint-Genis Pouilly, France

Filed Oct. 21, 1993, Ser. No. 140,749

Claims priority, application France, Oct. 29, 1992, 92 13340

Int. Cl.[5] H01L *29/00*

U.S. Cl. 257—157 **15 Claims**



1. A thyristor having a front surface and a rear surface, said thyristor comprising:

a vertical thyristor including, on the front surface, a localized anode region, and, on the rear surface, a cathode metalization substantially coating the whole rear surface,

a lateral thyristor formed on the front surface, and

a thyristor gate corresponding to either a cathode region or to a cathode-gate region of the lateral thyristor, wherein the cathode-gate region or cathode region, respectively, of said lateral thyristor is connected to the cathode of said vertical thyristor.

5,365,087

PHOTODETECTOR AND OPTO-ELECTRONIC INTEGRATED CIRCUIT WITH GUARD RING

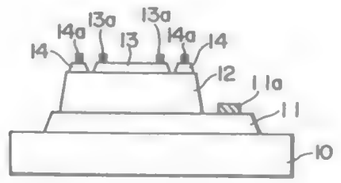
Goro Sasaki, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 12, 1993, Ser. No. 89,378

Claims priority, application Japan, Jul. 15, 1992, 4-188158; Jul. 15, 1992, 4-188159

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—184 **27 Claims**



1. A mesa type photodetector formed on a semiconductor substrate, comprising:

a first semiconductor region formed over a surface of said semiconductor substrate and having a first conduction type as a result of activation of an added impurity therein;

a second semiconductor region formed over a surface of said first semiconductor region and having a conduction type as a result of activation of an added impurity therein;

a guard ring region formed over said first semiconductor region at a certain clearance from an outer periphery of said second semiconductor region, and having the second conduction type as a result of activation of an added impurity therein;

a first electrode formed on the surface of said first semiconductor region;

a second electrode formed on a surface of said second semiconductor region; and

a third electrode formed on a surface of said guard ring region.

5,365,088

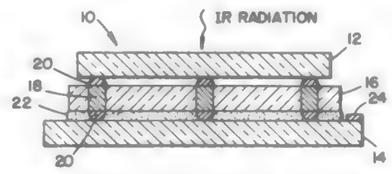
THERMAL/MECHANICAL BUFFER FOR HGCDTE/SI DIRECT HYBRIDIZATION

James M. Myroszyk, Santa Barbara, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 2, 1988, Ser. No. 227,581

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—186 **21 Claims**



1. A buffer structure interposed between a surface of a photodetector array comprised of Group II–VI material and a surface of a readout integrated circuit comprised of silicon, the structure having a coefficient of thermal expansion selected for accommodating the coefficient of thermal expansion of the photodetector array to the coefficient of thermal expansion of the silicon readout integrated circuit to minimize mechanical stress within the photodetector array resulting from unequal expansion or contraction of the Group II–VI material and silicon during a change in ambient temperature.

5,365,089

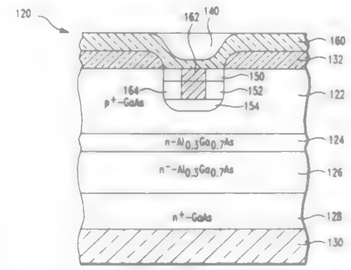
DOUBLE HETEROJUNCTION BIPOLAR TRANSISTOR AND THE METHOD OF MANUFACTURE THEREFOR

S. Noor Mohammad, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1992, Ser. No. 968,913

Int. Cl.[5] H01L *27/01, 29/00, 29/78*

U.S. Cl. 257—195 **10 Claims**



1. A Double Heterojunction Bipolar Transistor (DHBT) comprising:

a first layer of a first semiconductor material;

a second layer on said first layer, said second layer of a second semiconductor material;

a third layer on said second layer, said third layer of said second semiconductor material;

a fourth layer on said third layer, said fourth layer of said first semiconductor material;

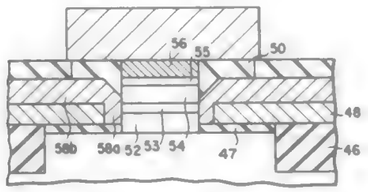
a layered plug in said trench, said layered plug having a highly doped core region said trench being filled by said layered plug.

5,365,090

HETERO BIPOLAR TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Shin-ichi Taka, Yokosuka; Kouji Kimura; Hiroshi Naruse, both of Kawasaki, and Kuniaki Kumamaru, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 14, 1993, Ser. No. 45,707
Claims priority, application Japan, Apr. 15, 1992, 4-121283
Int. Cl.[5] H01L *29/72*
U.S. Cl. 257—197 **12 Claims**



1. A hetero bipolar transistor, comprising:
a semiconductor substrate;
an insulating film formed on said semiconductor substrate, said film having a hole for exposing a surface of said substrate;
a first semiconductor layer of a first conductivity type formed on said surface of said substrate;
a second semiconductor layer of a second conductivity type formed on said first semiconductor layer;
a third semiconductor layer of the first conductivity type formed on said second semiconductor layer, said third semiconductor layer having an energy band gap larger than an energy band gap of said second semiconductor layer; and
a fourth semiconductor layer of the second conductivity type surrounding said first, second and third semiconductor layers, wherein a side wall of said fourth semiconductor layer contacts an upper portion of a side wall of said first semiconductor layer, all of a side wall of said second semiconductor layer and a lower portion of a side wall of said third semiconductor layer, a lowest portion of said side wall of said fourth semiconductor layer contacts with said insulating film, and an energy band gap of said fourth semiconductor layer is substantially the same as the energy band gap of said second semiconductor layer;
wherein said first, second and third semiconductor layers have the same surface area.

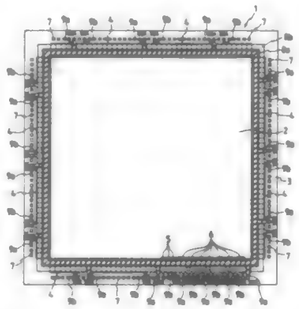
5,365,091

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Mikio Yamagishi, Ohme, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1993, Ser. No. 65,053
Claims priority, application Japan, Jun. 11, 1992, 4-150998
Int. Cl.[5] H01L *27/02, 27/10*
U.S. Cl. 257—203 **19 Claims**

1. A semiconductor integrated circuit device comprising:
a semiconductor substrate having a main surface including an internal circuit forming region;
a plurality of peripheral power supply lines so extended on said main surface along the periphery of said internal circuit forming region as to enclose said internal circuit forming region, said peripheral power supply lines including a first peripheral power supply line arranged in the outermost periphery of said internal circuit forming region and a second peripheral power supply line positioned internally of and adjacent to said first peripheral power supply line;
a plurality of external terminals disposed on said main surface and outside of said peripheral power supply lines;
a first inter-layer insulating film so formed on said main surface as to cover said main surface and said first peripheral power supply line, said second peripheral power supply line being formed on said first inter-layer insulating film; and



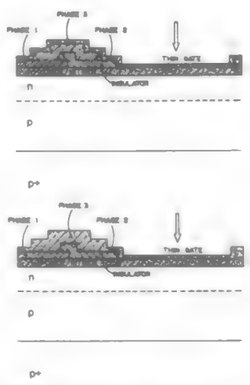
a first power leading line formed on said first inter-layer insulating film and over said first peripheral power supply line and electrically connecting said second peripheral power supply line and at least one of said external terminals.

5,365,092

FRONTSIDE ILLUMINATED CHARGE-COUPLED DEVICE WITH HIGH SENSITIVITY TO THE BLUE, ULTRAVIOLET AND SOFT X-RAY SPECTRAL RANGE

James R. Janesick, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 8, 1993, Ser. No. 17,423
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—232 **11 Claims**



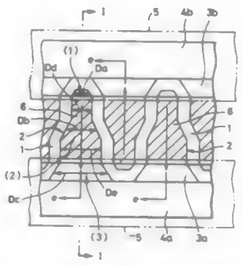
5. A photo-sensitive charge-coupled device comprising a plurality of electrically isolated gate structures for transferring charge packets by manipulating voltages applied to said gate structures; one of said gate structures having a thick portion and thin portion, said thin portion extending over the entire photo-sensitive region of said device, the width of the other said gate structures and said thick portion of said one gate structure being minimized to expose a majority of said photo-sensitive region to said thin portion, whereby a majority of photons incident on said photo-sensitive region of said device need only penetrate said thin portion.

5,365,093

SOLID-STATE IMAGING DEVICE WITH TAPERED CHANNEL REGIONS

Yoshinori Kuno, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 39,566
Claims priority, application Japan, Mar. 30, 1992, 4-074583
Int. Cl.[5] H01L *29/78, 27/14, 31/00*
U.S. Cl. 257—233 **12 Claims**



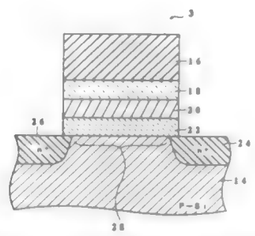
1. A solid-state imaging device comprising:
channel regions having a first end, said channel regions separated by channel stopper regions and having a first portion adjacent to said first end, said first portion having a first width, a second portion having a second width smaller than said first width and a third portion connected therebetween having a tapered width extending from said first width to said second width,
photosensitive regions formed within each said channel region,
a read-out gate formed on said first end of each said channel region, and
a shift register adjacent to said read-out gate.

5,365,094

SEMICONDUCTOR DEVICE INCLUDING FERROELECTRIC NONVOLATILE MEMORY

Hidemi Takasu, Ukyo, Japan, assignor to Rohm Company Limited, Kyoto, Japan

Filed Nov. 12, 1992, Ser. No. 948,682
Claims priority, application Japan, Nov. 18, 1991, 3-301680
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—295 **7 Claims**



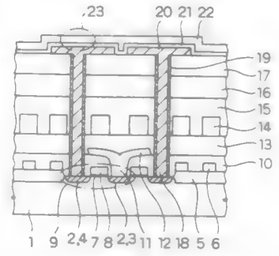
1. A semiconductor device including ferroelectric nonvolatile memory utilizing dielectric polarization comprising:
a first conductivity type semiconductor region;
a pair of second conductivity type diffusion regions formed in the first conductivity type semiconductor region and defining a space between the pair of diffusion regions;
an insulating layer of a material having a dielectric constant magnitudes higher than that of silicon nitride spanning the space between the pair of diffusion regions;
a ferroelectric layer overlying the insulating layer; and
a control electrode overlying the ferroelectric layer.

5,365,095

SEMICONDUCTOR MEMORY DEVICE AND PROCESS

Tomofumi Shono; Teruhito Ohnishi, and Masanori Fukumoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1993, Ser. No. 19,577
Claims priority, application Japan, Feb. 18, 1992, 4-030451; Aug. 25, 1992, 4-225593; Dec. 3, 1992, 4-324208
Int. Cl.[5] H01L *27/02, 23/48, 29/40*
U.S. Cl. 257—295 **7 Claims**



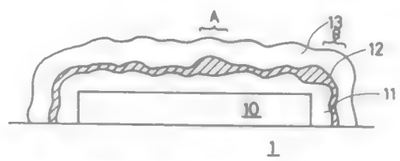
1. A semiconductor memory device comprising:
a switching transistor that is formed in a semiconductor substrate having an ion diffused layer near a surface of the semiconductor substrate, the ion diffused layer forming a source and a drain of the switching transistor;
a word line that forms a gate of the switching transistor, said word line separated from said semiconductor substrate by a gate oxide layer;
a bit line that is formed over the switching transistor and is directly coupled to a part of the ion diffused layer of the switching transistor;
at least one upper-level wire that is formed over the bit line and the word line, said upper-level wire being separated from the bit line and word line by a dielectric layer; and
a storage capacitor formed over the upper-level wire, said storage capacitor being coupled to a portion of the ion diffused layer of the switching transistor by a storage capacitor contact.

5,365,096

THIN FILM CAPACITIVE MEMORY DEVICE WITH A HIGH DIELECTRIC CONSTANT

Kouji Taniguchi, Shiki, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

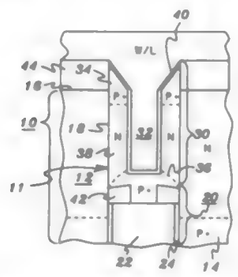
Filed May 12, 1992, Ser. No. 881,633
Claims priority, application Japan, Oct. 18, 1991, 3-271410
Int. Cl.[5] H01L *29/68, 29/78, 27/22, 29/82*
U.S. Cl. 257—296 **10 Claims**



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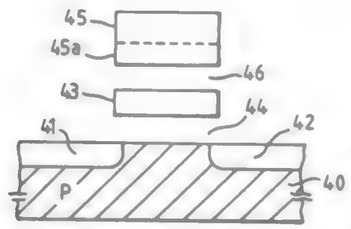
1. A semiconductor device including a capacitor comprising:
a lower electrode made of yttrium (Y);
a dielectric insulating film of a metal oxide formed directly on the yttrium electrode and made of a material having a dielectric constant greater than silicon dioxide; and
an upper electrode formed over the dielectric insulating film, wherein the lower electrode includes a first layer of polysilicon covered by second layer of yttrium (Y) which is covered by a third layer of Y_2O_3.

5,365,097
VERTICAL EPITAXIAL SOI TRANSISTOR, MEMORY CELL AND FABRICATION METHODS
Donald M. Kenney, Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 5, 1992, Ser. No. 958,195
Int. Cl.[5] H01L *29/68, 29/06*
U.S. Cl. 257—302 23 Claims



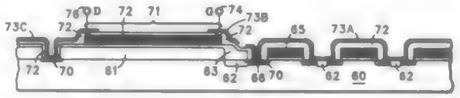
1. A vertical transistor formed in a substrate and one or more isolation layers overlying said substrate, said transistor comprising a trench in said substrate and said one or more isolation layers, said trench including a trench sidewall, said transistor residing entirely within said trench and having a gate electrode and a bulk channel proximate thereto within which an inversion layer is formed when said gate electrode is appropriately biased, said bulk channel being disposed directly on said trench sidewall and electrically connected to said substrate for receiving a back biasing potential through said substrate, said transistor also including a first node diffusion and a second node diffusion, said first node diffusion being disposed at an upper end of said bulk channel and said second node diffusion being disposed at a lower end of said bulk channel, said node diffusions being contained within said trench.

5,365,098
NON-VOLATILE SEMICONDUCTOR MEMORY HAVING IMPROVED ERASURE CHARACTERISTICS
Junichi Miyamoto, Kanagawa; Kuniyoshi Yoshikawa, Tokyo, and Kiyomi Naruke, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Oct. 20, 1992, Ser. No. 963,622
Claims priority, application Japan, Oct. 24, 1991, 3-303830
Int. Cl.[5] H01L *29/68, 29/78*
U.S. Cl. 257—316 17 Claims



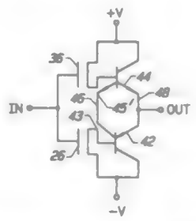
16. A non-volatile semiconductor memory comprising:
a semiconductor substrate of a first conductivity type having a surface;
a source region of a second conductivity type on the surface;
a drain region of the second conductivity type on the surface;
a channel region between the source and the drain regions;
a floating gate electrode over the channel region; and
a control gate electrode including a floating gate electrode side and an upper side on the floating gate electrode side, and an impurity concentration of the floating gate electrode side is lower than an impurity concentration of the upper side.

5,365,099
SEMICONDUCTOR DEVICE HAVING HIGH ENERGY SUSTAINING CAPABILITY AND A TEMPERATURE COMPENSATED SUSTAINING VOLTAGE
John P. Phipps, Phoenix; Stephen P. Robb, Tempe; Judy L. Sutor, Chandler, and Lewis E. Terry, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 37,501, Mar. 24, 1993, abandoned, which is a continuation of Ser. No. 278,988, Dec. 2, 1988, abandoned. This application Feb. 25, 1994, Ser. No. 202,856
Int. Cl.[5] H01L *29/10*
U.S. Cl. 257—328 21 Claims



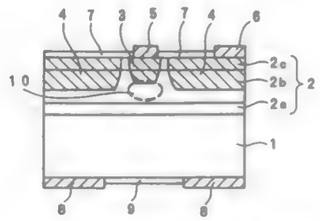
4. A semiconductor device having a gate region, a source region, and a drain region, comprising;
a plurality of diodes formed back-to-back in a polysilicon layer electrically connected to the gate region and the drain region of the semiconductor device and monolithically integrated with the semiconductor device;
a resistor electrically connected to the gate region and the source region, wherein the plurality of diodes provide a temperature compensated sustaining voltage of the semiconductor device.

5,365,100
LOW VOLTAGE COMPOUND MODULATED INTEGRATED TRANSISTOR STRUCTURE
John H. Hall, 3169 Payne Ave., San Jose, Calif. 95117
Filed Aug. 30, 1993, Ser. No. 114,012
Int. Cl.[5] H01L *29/70, 29/80, 29/91*
U.S. Cl. 257—370 10 Claims



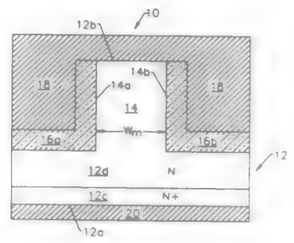
1. An integrated transistor structure comprising
a semiconductor body having a major surface with a first device region of a first conductivity type and a second device region of a second conductivity type therein,
a first device formed in said first device region and including a source region and a drain region of said second conductivity type, said source and drain regions being spaced apart by a channel region, a gate contact between said source and drain regions and insulatively spaced from said first device region, an ohmic contact to said source region, a first rectifying contact to said drain region, and a second rectifying contact to said drain region,
a second device formed in said second device region and including a source region and a drain region of first conductivity type, said source and drain regions being spaced apart by a channel region, a gate contact between said source and drain regions and insulatively spaced from said second device region, an ohmic contact to said source region, a first contact to said drain region, and a second contact to said drain region,
input connector means interconnecting said gate of said first device and said gate of said second device,
output connector means interconnecting said second contacts of said first and second devices, and
means interconnecting said first contacts to said drain regions.

5,365,101
PHOTO-SENSING DEVICE
Ichiro Tonai, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan
Continuation of Ser. No. 751,187, Aug. 29, 1991, abandoned. This application Jul. 20, 1993, Ser. No. 93,707
Claims priority, application Japan, Aug. 31, 1990, 2-230208
Int. Cl.[5] H01C *23/90*
U.S. Cl. 257—434 20 Claims



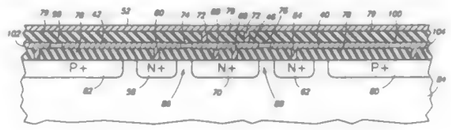
1. A photo-sensing device for receiving light on a bottom surface thereof and converting the light to an electric signal, said device comprising:
a semiconductor substrate having a first main surface and a second main surface;
a semiconductive layer of a first conductivity, said semiconductive layer having a main surface, and said semiconductive layer being located above the first main surface of said semiconductor substrate;
a first region of a second conductivity type, said first region extending into said semiconductive layer from said main surface thereof, said semiconductive layer and said first region being in contact to define a pn junction which provides a photo-sensing region;
a second region of a second conductivity type, said second region extending into said semiconductive layer from said main surface thereof, said second region surrounding said first region and being spaced apart from said first region, wherein a depth of said second region is deeper, in a direction from said first main surface of said semiconductor substrate to said second main surface thereof, than a deepest depth of said first region;
a first electrode located on the second main surface of said semiconductor substrate and having a window for passing light incident on the second main surface side of said semiconductor substrate to said pn junction; and
a second electrode in electrical communication with said first region,
wherein light passing through said window from said second main surface side of said semiconductor substrate is incident on said photo-sensing region and is converted into an electric signal.

5,365,102
SCHOTTKY BARRIER RECTIFIER WITH MOS TRENCH
Manoj Mehrotra, and Bantval J. Baliga, both of Raleigh, N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Jul. 6, 1993, Ser. No. 88,204
Int. Cl.[5] H01L *27/095, 29/48*
U.S. Cl. 257—475 18 Claims



1. A semiconductor rectifier comprising:
a semiconductor substrate having first and second opposing faces, said substrate having a cathode region of first conductivity type extending to said first face and a drift region of said first conductivity type extending to said second face, said drift region having a predetermined drift region doping concentration;
a cathode electrode on said first face, ohmically contacting said cathode region;
an anode electrode on said second face, said anode electrode forming a Schottky rectifying junction with said drift region at said second face; and
means, in said drift region, for increasing the reverse blocking voltage of said Schottky rectifying junction above the reverse blocking voltage of an ideal parallel-plane abrupt P-N junction

5,365,103
PUNCHTHRU ESD DEVICE ALONG CENTERLINE OF POWER PAD
Charles A. Brown, Corvallis, Oreg., and Robert B. Manley, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 25, 1993, Ser. No. 23,266
Int. Cl.[5] H01L *29/06, 29/44*
U.S. Cl. 257—497 18 Claims



1. An overvoltage protection circuit for protecting an integrated circuit from high voltage damage comprising:
a substrate of an integrated circuit die, the integrated circuit die having an outer edge;
a metal-one conductor formed from a first metal level above the substrate and extending across the integrated circuit die in a first direction substantially perpendicular with the outer edge of the integrated circuit die;
multiple metal-two conductors formed from a second metal level above the substrate and the first metal level for coupling various power, ground and data signals to active and passive devices within the integrated circuit, the metal-two conductors extending across the integrated circuit die in a second direction substantially perpendicu-

lar to the first direction and overlapping the metal-one conductor; and

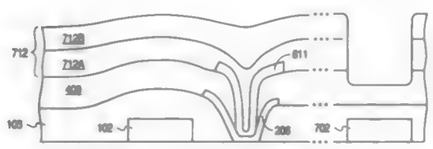
multiple punchthru devices formed in the substrate, each punchthru device coupled between a different metal-two conductor and the metal-one conductor, each punchthru device coupling its respective metal-two conductor to the metal-one conductor when a predetermined voltage potential exists between said metal-one and metal-two conductors.

5,365,104

OXYNITRIDE FUSE PROTECTIVE/PASSIVATION FILM FOR INTEGRATED CIRCUIT HAVING RESISTORS

Norman Godinho, Los Altos Hills, and Hai-Pyng Liaw, Cupertino, both of Calif., assignors to Paradigm Technology, Inc., San Jose, Calif.

Filed Mar. 25, 1993, Ser. No. 36,754
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—529 **12 Claims**



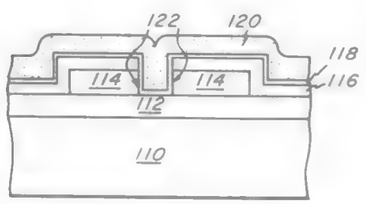
1. An integrated circuit comprising:
a semiconductor substrate;
a resistive element formed overlying the substrate;
a fuse formed overlying the substrate and laterally spaced apart from the resistive element;
a fuse protective layer overlying the fuse, wherein the fuse protective layer comprises a layer of doped silicate glass and a first oxynitride layer overlying the doped silicate glass layer the first oxynitride layer having a composition with a refractive index in a range of about 160 to 1.85; and
a second oxynitride layer formed overlying the resistive element as an uppermost layer of the integrated circuit.

5,365,105

SIDEWALL ANTI-FUSE STRUCTURE AND METHOD FOR MAKING

David K. Liu, Dallas; Kueing-Long Chen, Plano, and Bert R. Riemenschneider, Murphy, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 954,593, Sep. 30, 1992, abandoned, which is a continuation of Ser. No. 657,703, Feb. 19, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 113,507
Int. Cl.[5] H01L *27/02, 17/00*
U.S. Cl. 257—530 **24 Claims**



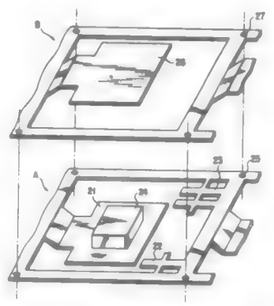
1. An anti-fuse comprising:
a first conductive layer having a horizontal major surface and having a substantially vertical sidewall;
a thick insulating layer formed on said horizontal major surface of said first conductive layer;
a dielectric layer formed on said vertical sidewall, said dielectric layer having a thickness less than said thick insulating layer and having a break down voltage less than a selected programming voltage and said thick insulating layer having a sufficient thickness such that said thick insulating layers will not break down when said selected programming voltage is applied across said thick insulating layers; and
a second conductive layer formed on said dielectric layer and over said thick insulating layer.

5,365,106

RESIN MOLD SEMICONDUCTOR DEVICE

Toshiya Watanabe, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1993, Ser. No. 127,060
Claims priority, application Japan, Oct. 27, 1992, 4-288561
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—669 **4 Claims**



1. A resin mold semiconductor device comprising:
a first lead frame including an island and at least one lead, said island having a first major surface on which a semiconductor chip is mounted, and a second major surface opposite to the first major surface and exposed at an outside surface of a resin member, each lead being located in an area adjacent to the island; and
a second lead frame including a distortion preventing member having a substantially similar shape to that of the island of the first lead frame, said distortion preventing member having a first major surface facing the first major surface of the island of the first lead frame and a second major surface exposed at an opposite outside surface of the resin member, the second lead frame further including a gap along an edge of the distortion preventing member that corresponds to the area in which each lead is located when the second lead frame is positioned proximate to the first lead frame.

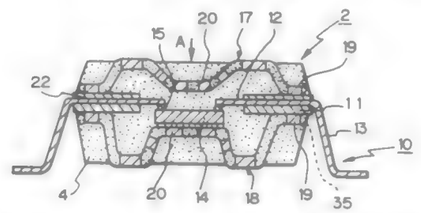
5,365,107

SEMICONDUCTOR DEVICE HAVING TAB TAPE

Fumio Kuraishi; Norio Wada, and Hirofumi Uchida, all of Nagano, Japan, assignors to Shinko Electric Industries, Co., Lt., Nagano, Japan

Filed Jun. 4, 1993, Ser. No. 70,968
Claims priority, application Japan, Jun. 4, 1992, 4-170176; Jan. 6, 1993, 5-016936
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—673 **12 Claims**

1. A semiconductor device comprising:
a TAB tape comprising an insulation support film having first and second opposite surfaces and a plurality of electrically conductive leads formed on said first surface of said support film, said conductive leads having portions protruding inwardly and defining inner leads and portions protruding outwardly and defining outer leads;
a semiconductor element having first and second, oppositely disposed main surfaces and mounted at the first surface thereof on, and connected to, said inner leads;
first and second heat radiating members having respective interior surfaces, disposed in spaced and surrounding relationship relatively to the first and second main surfaces of said semiconductor element, and exterior surfaces and having respective, first and second peripheral flange portions, said first and second flange portions cooperatively engaging, and thereby supporting, said TAB tape in a sandwich manner therebetween;
at least one of said first and second heat radiating members having a central portion protruding toward and providing a support for said semiconductor element; and
a sealing resin hermetically sealing and integrally interconnecting said semiconductor element, said inner leads and at least the respective interior surfaces of said first and second heat radiating members.

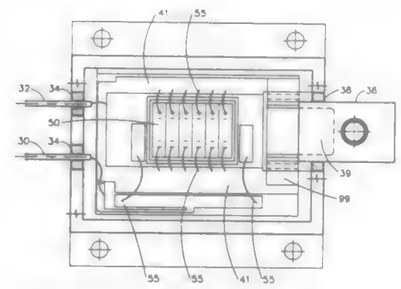


5,365,108

METAL MATRIX COMPOSITE SEMICONDUCTOR POWER SWITCH ASSEMBLY

W. Kyle Anderson; Richard J. Hoppe; William J. Durako, Jr., all of Rockford; Mark Metzler, Davis; Lawrence Hughes, and Stephen E. Jackson, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 19, 1992, Ser. No. 979,088
Int. Cl.[5] H01L *23/02, 23/12*
U.S. Cl. 257—678 **6 Claims**



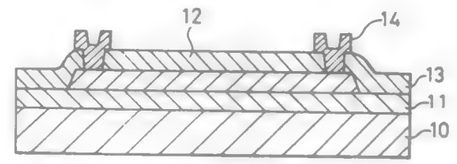
1. A semiconductor assembly comprising:
a metal matrix composite housing having a base and a plurality of side walls, one of said side walls having an opening disposed therethrough;
a semiconductor die having a plurality of power electrode pads on an upper surface of said semiconductor die and a power electrode on a lower surface of said semiconductor die;
said lower surface of said semiconductor die mechanically and electrically connected to said base;
a partially hollow conductive post sufficiently large in cross-section to conduct current to said plurality of electrode pads on said upper surface of said semiconductor die;
an insulating insert disposed within said opening disposed through said one of said side walls, said post extending through said insulating insert and insulated from said one of said side walls by said insulating insert;
a conductive bus mechanically secured to said base;
a lead coupling said post to said bus; and
a plurality of leads coupling said bus to said power electrode pads on said upper surface of said semiconductor die.

5,365,109

MIS SEMICONDUCTOR DEVICE WITH POLYSILICON GATE ELECTRODE

Mamoru Ishida, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 11, 1992, Ser. No. 928,878
Claims priority, application Japan, Aug. 21, 1991, 3-233901; Jul. 8, 1992, 4-204381
Int. Cl.[5] H01L *29/06, 29/78*
U.S. Cl. 257—754 **6 Claims**



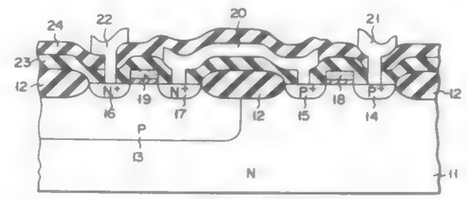
1. A polysilicon gate electrode for MIS semiconductor devices obtained by doping boron in a gate layer of polysilicon, wherein a crystal grain size of said polysilicon is at least 0.3 μm, the polysilicon gate layer contains the boron in a doping amount of not more than 3×10^{19} atoms/cm^3 and a sheet resistance of the gate electrode is not more than 500 Ω/cm^2.

5,365,110

SEMICONDUCTOR DEVICE WITH MULTI-LAYERED WIRING STRUCTURE

Fumitomo Matsuoka, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 834,976, Feb. 13, 1992, abandoned, which is a continuation of Ser. No. 608,344, Nov. 2, 1990, abandoned. This application Jul. 26, 1993, Ser. No. 96,844
Claims priority, application Japan, Nov. 7, 1989, 1-288005
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—762 **8 Claims**



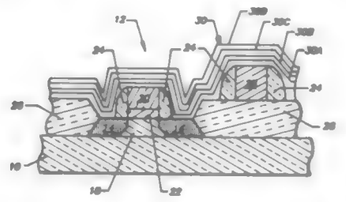
1. A semiconductor device having a multi-layered wiring structure in which a plurality of switching elements connected to one another by means of multi-layered wiring are arranged, comprising:
a first wiring, of a metal selected from a group consisting of copper, gold, silver and an alloy having one of copper, gold and silver as a main component., for supplying electric power to each of said switching elements; and
a second wiring, of a metal selected from a group consisting of aluminum and an aluminum alloy containing silicon and copper therein, for transmitting signals between said switching elements.

5,365,111

STABLE LOCAL INTERCONNECT/ACTIVE AREA SILICIDE STRUCTURE FOR VLSI APPLICATIONS

Seshadri Ramaswami, San Jose, and Robin W. Cheung, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1992, Ser. No. 995,869
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—768 **3 Claims**



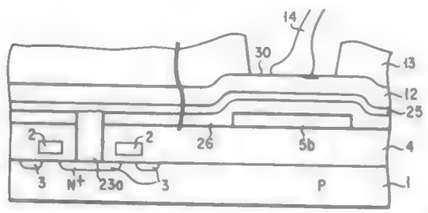
1. A local interconnect silicide structure for connecting silicon regions to silicon regions separated by oxide regions supported on a semiconductor wafer, comprising a first portion of titanium silicide/titanium nitride/titanium silicide contacting said silicon regions and a second portion of titanium/-titanium nitride/titanium silicide contacting said oxide regions.

5,365,112

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING AN IMPROVED BONDING PAD STRUCTURE

Yoichi Ohshima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 13, 1992, Ser. No. 959,644
Claims priority, application Japan, Oct. 14, 1991, 3-291873
Int. Cl.[5] H01L *21/31, 29/40*
U.S. Cl. 257—784 **23 Claims**



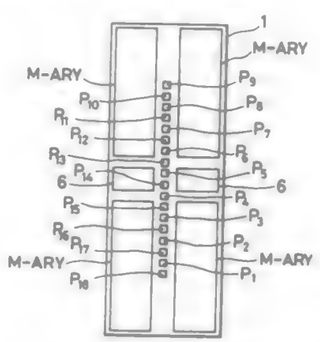
1. A semiconductor integrated circuit device comprising:
a semiconductor substrate;
an insulating film formed on said semiconductor substrate;
a pad bed layer formed on a first portion of said insulating film;
a contact hole formed in a second portion of said insulating film, said second portion of said insulating film being separated from said first portion of said insulating film;
a contact plug buried in said contact hole, at least a portion of said contact plug being made of the same material as said pad bed layer;
a wiring formed on said insulating film and contacting said contact plug; and
a bonding pad portion arranged on a portion of a surface of said wiring over said pad bed layer.

5,365,113

SEMICONDUCTOR DEVICE

Toshiyuki Sakuta, Tokyo; Kazuyuki Miyazawa, Iruma; Satoshi Oguchi, Tokyo; Aizo Kaneda, Yokohama; Masao Mitani, Yokohama; Shozo Nakamura, Yokohama; Kunihiko Nishi, and Gen Murakami, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 640,584, Jan. 14, 1991, Pat. No. 5,184,208, which is a continuation of Ser. No. 212,485, Jun. 28, 1988, abandoned. This application Jan. 4, 1993, Ser. No. 125
Claims priority, application Japan, Jun. 30, 1987, 62-161333; Sep. 17, 1987, 62-234654
Int. Cl.[5] H01L *23/48, 29/46, 23/28, 23/02*
U.S. Cl. 257—786 **11 Claims**



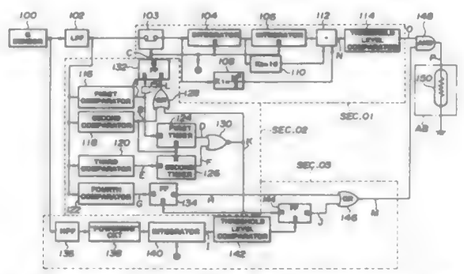
1. A semiconductor memory device comprising:
a rectangular-shaped semiconductor chip, having a main surface, including a first pair of opposing edges and a second pair of opposing edges;
first and second rectangular shaped memory cell array regions formed apart from each other at said main surface of said semiconductor chip, wherein each memory cell array region has a first pair of opposing end sides and a second pair of opposing end sides, the first and second pairs of end sides thereof are substantially in parallel to the first and second pairs of opposing edges of said semiconductor chip, respectively, and said first and second memory cell array regions are arranged at said main surface so that one of said first pair of end sides of said first memory cell array region faces one of said first pair of end sides of said second memory cell array region;
first and second peripheral circuit regions formed between said first and second memory cell array regions, said first and second peripheral circuit regions extending along said one of said first pair of end sides of said first memory cell array region and said one of said first pair of end sides of said second memory cell array regions, respectively;
a plurality of bonding pads formed at said main surface between said first and second peripheral circuit regions and being arrayed in a direction of said one of said first pair of end sides of said first memory cell array region and said one of said first pair of end sides of said second memory cell array region;
a plurality of leads, wherein each lead has an inner lead portion and an outer lead portion extending outwardly from said inner lead portion, said inner lead portion having a front end of said lead which overlies said main surface and which is fixedly disposed on said main surface through an insulating film;
means for electrically connecting the front ends of said leads to associated ones of said bonding pads, respectively; and
a resin for molding said semiconductor chip, the inner lead portions of said plurality of leads, said insulating film and the electrically connecting means.

5,365,114

VEHICLE PASSENGER RESTRAINT DEVICE FOR USE IN AUTOMOTIVE VEHICLE OR THE LIKE

Shinichiro Tsurushima; Satoru Matsumori; Kazuyasu Koa, and Kunihiro Kaneko, all of Saitama, Japan, assignors to Kansei Corporation, Omiya, Japan

Filed Jun. 8, 1992, Ser. No. 894,968
Claims priority, application Japan, Jun. 7, 1991, 3-162401; Jun. 28, 1991, 3-057976[U]; Jul. 22, 1991, 3-204584
Int. Cl.[5] B60R *21/16*
U.S. Cl. 307—10.1 **5 Claims**



1. A passenger vehicle restraint system comprising: means for activating a restraint device;
acceleration sensor means for sensing an acceleration of the passenger vehicle and issuing an analog signal which represents the intensity of said acceleration;
circuit means responsive to said acceleration sensor means for producing an activation trigger signal which is supplied to the restraint device activating means; and
a cumulative damage discrimination circuit, included in said circuit means, which senses the amount of energy produced when the vehicle encounters a collision by treating the analog signal from said acceleration sensor means and issues a damage level signal upon the sensed energy amount exceeding a predetermined level;
said cumulative damage discrimination circuit including:
a powering circuit for performing self-multiplication on the output from said acceleration sensor means and producing a control signal; and
comparator means for comparing the control signal produced by the powering circuit with a predetermined level and issuing said damage level signal when the control signal exceeds the predetermined level.

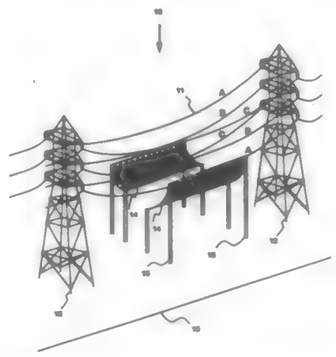
5,365,115

METHOD AND APPARATUS FOR MITIGATION OF MAGNETIC FIELDS FROM LOW FREQUENCY MAGNETIC FIELD SOURCES

Dilhan M. Kalyon, Teaneck; Halit S. Goktark, Hoboken, and Sudhir B. Railkar, Clifton, all of N.J., assignors to Stevens Institute of Technology, Hoboken, N.J.

Filed Jun. 23, 1992, Ser. No. 902,071
Int. Cl.[5] H02G *7/22*
U.S. Cl. 307—89 **23 Claims**

1. A method for mitigation of a magnetic field from a magnetic field generating source comprising the steps of
determining the pattern of a magnetic field generated about a magnetic field generating source; and
positioning a body of magnetic material adjacent to said source in a predetermined area of said magnetic field pattern to alter said pattern in order to reduce the magnitude of said pattern at an area remote from said source and said body.

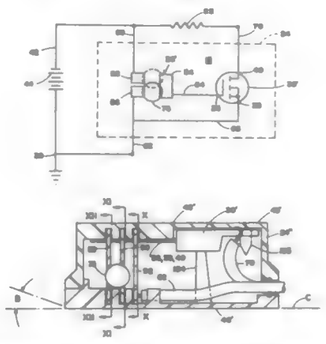


5,365,116

INCLINATION SWITCH

Kurt L. Loiss, Pentwater, Mich., assignor to LDI Inc., Kentwood, Mich.

Filed Mar. 23, 1993, Ser. No. 35,737
Int. Cl.[5] H01H *35/02*
U.S. Cl. 307—121 **29 Claims**



1. An inclination responsive switch for repetitively actuating and deactuating a high-current load connected with a high-current output terminal of said switch, when said switch is connected with a source of electrical energy, comprising:
a housing;
a gravity responsive device in said housing having a low-current output terminal;
a semiconductor switching device having a low-current input terminal and a high-current output terminal;
said low-current output terminal being connected with said low-current input terminal, wherein electrical current produced by said gravity responsive device is supplied to said semiconductor switching device, and wherein electrical current produced by said semiconductor switching device is supplied to a load connected with said high current output signal; and
wherein said gravity responsive device produces a low-current electrical signal on said low-current output terminal and said semiconductor switching device amplifies said low-current electrical signal to produce a high-current electrical signal, said low-current electrical signal having a first state when said housing is in a first inclination

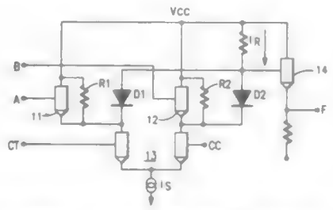
position in order to cause said switching device to supply a high current to actuate said electrical load, and said low-current electrical signal having a second state when said housing is in a second inclination position in order to cause said switching device to terminate said high current to deactuate said electrical load.

5,365,117

LOGIC GATES HAVING FAST LOGIC SIGNAL PATHS THROUGH SWITCHABLE CAPACITORS

Robert C. Wong, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1993, Ser. No. 26,653
Int. Cl.[5] H03K *17/00, 4/00, 12/00*
U.S. Cl. 327—374 **7 Claims**



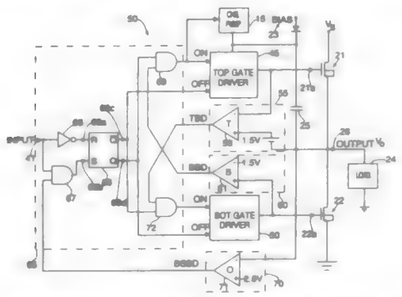
1. A selectable data coupling circuit comprising
a first terminal for receiving control signals;
a plurality of second terminals for receiving a plurality of data signals;
a plurality of diffused junction capacitors, each having a large diffusion capacitance when rendered conductive and a negligible diffusion capacitance when rendered non-conductive;
circuit means connected to each said capacitor for rendering one of said capacitors conductive in response to said control signal; and
a plurality of data signal pathways, each said capacitor being connected between a respective one of said second terminals and a respective one of said pathways,
said control signals being applied to said circuit means.

5,365,118

CIRCUIT FOR DRIVING TWO POWER MOSFETS IN A HALF-BRIDGE CONFIGURATION

Milton E. Wilcox, Saratoga, Calif., assignor to Linear Technology Corp., Milpitas, Calif.

Filed Jun. 4, 1992, Ser. No. 893,523
Int. Cl.[5] H03K *17/56*
U.S. Cl. 327—109 **22 Claims**



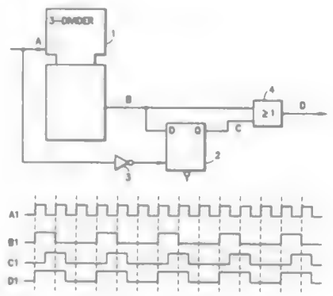
1. A circuit for alternately driving first and second transistors, each transistor having a control terminal for receiving a transistor drive signal, at least one of said transistor having a terminal coupled to an output terminal adapted to be coupled to a load and to a bootstrap capacitor charged to provide a boosted drive voltage to the first transistor, said circuit comprising:
a driver input adapted for receiving a driver input signal having a first state intended to turn the first transistor ON and the second transistor OFF, and a second state intended to turn the first transistor OFF and the second transistor ON;
means for monitoring the first transistor to generate a first signal indicative of the first transistor being in an operational state that can be considered substantially OFF;
means for monitoring the second transistor to generate a second signal indicative of the second transistor being in an operational state that can be considered substantially OFF;
means for monitoring the voltage at the output terminal to generate a recharge signal when the output voltage is below a predetermined voltage level; and
means coupled to the control terminals of the first and second transistors for driving the transistors in response to the driver input signal, the recharge signal and the first and second signals, so that (1) the first transistor is prevented from being driven ON until the driver input signal is in the first state and the second and recharge signals are also present, and (2) the second transistor is prevented from being driven ON until the driver input signal is in the second state and the first signal is also present,
whereby the drive to the first transistor is inhibited until the second transistor is considered to be substantially OFF and the bootstrap capacitor has had time to charge sufficiently to provide at least a predetermined boost to the first transistor drive voltage, and the drive to the second transistor is inhibited until the first transistor is considered to be substantially OFF.

5,365,119

CIRCUIT ARRANGEMENT

Raimo Kivari, Haukipudas, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Aug. 12, 1992, Ser. No. 928,982
Claims priority, application Finland, Aug. 15, 1991, 913862
Int. Cl.[5] H03K *5/06*
U.S. Cl. 327—115 **4 Claims**



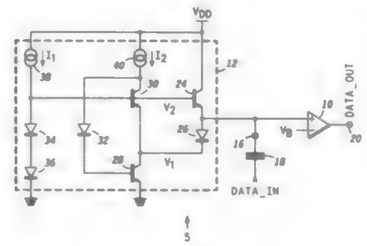
1. A signal generator, comprising:
frequency divider means having an input node for receiving a first signal having a first frequency f_1 and a single output node for outputting a second signal having a second frequency f_2, wherein a ratio f_1/f_2 is equal to an odd number that is equal to or greater than three;
delay means having an input node coupled to said single output node of said frequency divider means and an output node for outputting a third signal that is delayed in time with respect to said second signal by an amount that is a function of a period of said first signal, said third signal being synchronized to said first signal; and
logic means having a first input node coupled to said single output node of said frequency divider means and a second input node coupled to said output node of said delay means, said logic means having an output node for outputting a fourth signal having the second frequency f_2 and a 50% duty cycle.

5,365,120

DATA SLICER WITH HOLD

W. Eric Main, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 21, 1992, Ser. No. 947,625
Int. Cl.[5] H03K *5/08*
U.S. Cl. 327—77 **8 Claims**



1. A data slicer circuit having an input, which is responsive to a data signal supplied through a capacitive element, for providing a rectangular output pulse at an output, comprising:
a comparator having first and second inputs and an output, said first input of said comparator being coupled to the input of the data slicer, said second input of said comparator being coupled to receive a bias voltage, said output of said comparator being coupled to the output of the data slicer; and
clamping means coupled to said first input of said comparator, said clamping including:
(a) a first transistor having a collector, a base and an emitter, said collector of said first transistor being coupled to a first supply voltage terminal, said emitter of said first transistor be coupled to said first input of said comparator;
(b) a first diode having an anode and a cathode, said anode of said first diode being coupled to said first input of said comparator; and
(c) a bias circuit coupled to said base of said first transistor and said cathode of said first diode, said bias means providing a first voltage at said cathode of said first diode and a second voltage at said base of said first transistor, said bias voltage applied to said second input of said comparator being substantially equal to a midpoint voltage between said first and second voltages.

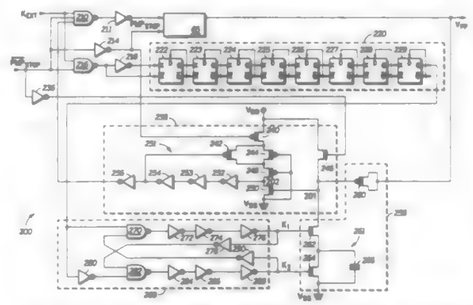
5,365,121

CHARGE PUMP WITH CONTROLLED RAMP RATE

Bruce L. Morton, Austin, and David W. Chrudimsky, Round Rock, both of Tex., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 8, 1993, Ser. No. 28,006
Int. Cl.[5] H03G *11/00*
U.S. Cl. 327—170 **18 Claims**

1. A charge pump with controlled ramp rate, comprising:
a charge pump for receiving a clock signal, and in response, providing an output voltage having a magnitude greater than a magnitude of said clock signal;
an RC differentiator circuit, coupled to said charge pump, for receiving said output voltage, and providing a control voltage at an output terminal, said control voltage proportional to a ramp-up rate of said output voltage;
a load element having a first terminal coupled to a first power supply voltage terminal, and a second terminal;
a transistor having a first current electrode coupled to said second terminal of said load element, a second current electrode coupled to a second power supply voltage terminal, and a control electrode coupled to said output terminal of said RC differentiator circuit; and
an inverter/buffer circuit having an input terminal coupled to said first current electrode of said transistor, and an output terminal for providing a control signal of a first logic state for disabling said charge pump in response to said control voltage increasing above a predetermined switching point, said inverter/buffer circuit providing said control signal at a second logic state for enabling said charge pump in response to said control voltage decreasing below said predetermined switching point.

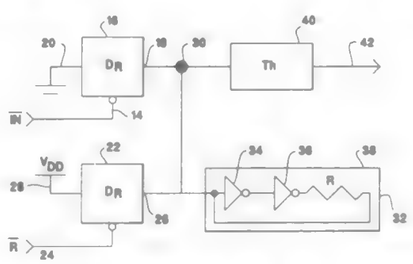


5,365,122

META STABLE RESISTANT SIGNAL DETECTOR

David T. Rackley, Garland, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 611,224, Nov. 9, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 989,492
Int. Cl.[5] H03K *5/153*
U.S. Cl. 327—306 **24 Claims**



1. A device for distinguishing logic states of an asynchronous signal comprising:
means for receiving and driving a signal to be detected, said receiving and driving means including a three-state buffer of a first conductivity type for providing an output signal;
means for latching said output signal of said receiving and driving means to a given logic state by comparing said output to a first threshold in a bus repeater;
means for level shifting the latched output signal of said latching means by comparing said latched output to a second threshold; and
means for resetting said device, said resetting means including a three-state buffer of a second conductivity type different from said first conductivity type.

5,365,123

SEMICONDUCTOR LOGIC CIRCUITS WITH DIODES AND AMPLITUDE LIMITER

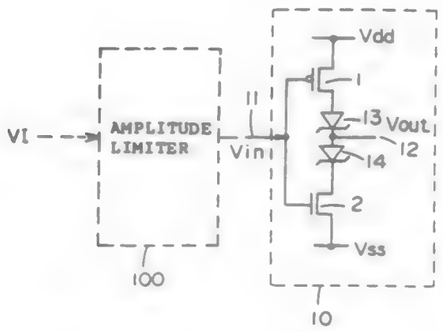
Yasunobu Nakase; Hiroshi Makino, and Kimio Ueda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1992, Ser. No. 937,095

Claims priority, application Japan, Aug. 29, 1991, 3-218509; Jul. 20, 1992, 4-192179

Int. Cl.[5] H03K *19/01, 19/08*

U.S. Cl. 326—109 **34 Claims**



1. A semiconductor logic device operable with a first operating power supply and a second operating power supply, comprising:

an amplitude limiter for limiting an amplitude of an input signal, said input signal having a first logic level at a potential level of the first operating power supply and a second logic level at a potential level of said second operating power supply, said amplitude limiter including a first limiting diode for lowering the potential level of an output signal below the potential level of said first power supply, a second limiting diode for raising the potential level of said output signal above the potential of said second power supply potential level, and current supply element for regularly causing a current flow through each of said first and second limiting diodes from said first power supply to said second power supply independent of a logic level of said input signal;

a first field effect transistor of a first type conductivity responsive to a first logic level of said output signal from said amplitude limiter for carrying current from the first operating power supply;

a first clamping means including a first diode having a first forward voltage thereacross, and conducting said current for clamping a potential of a first node to a potential of said first operating power supply minus said first forward voltage;

a second field effect transistor of a second type conductivity responsive to a second logic level of said output signal for carrying current into said second operating power supply; and

a second clamping means including a second diode having a second forward voltage drop thereacross, and conducting the current carried by said second field effect transistor for clamping a potential of said first node to a potential of said second operating power supply plus said second forward voltage, said output signal from said amplitude limiter having potential levels for steadily causing a current flow both through said first and second diodes from said first operating power supply to said second operating power supply.

5,365,124

BICMOS LOGIC CIRCUIT

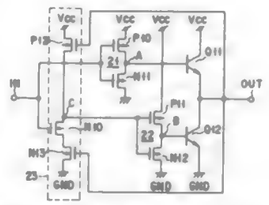
Katsuhiro Seta, Tokyo, and Hiroyuki Hara, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 23, 1993, Ser. No. 95,764

Claims priority, application Japan, Jul. 27, 1992, 4-199527

Int. Cl.[5] H03K *19/08*

U.S. Cl. 326—110 **8 Claims**



1. A BiCMOS logic circuit which comprises:

input terminal means for inputting an input signal;

output terminal means for outputting an output signal;

a first bipolar transistor having a main current path connected between a first potential and said output terminal means, for performing pull-up operation;

a second bipolar transistor having a main current path connected between said output terminal means and a second potential, for performing pull-down operation;

a first CMOS circuit for controlling a base current of said first bipolar transistor in accordance with the level of the input signal;

a second CMOS circuit for controlling a base potential of said second bipolar transistor in accordance with a control signal; and

control circuit means for generating the control signal from the level of the input signal and the level of the output signal, said control signal controlling said second CMOS circuit such that said second bipolar transistor is prevented from operating at a deep saturation region.

5,365,125

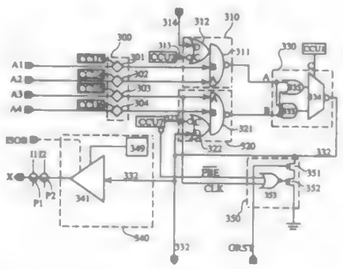
LOGIC CELL FOR FIELD PROGRAMMABLE GATE ARRAY HAVING OPTIONAL INTERNAL FEEDBACK AND OPTIONAL CASCADE

F. Erich Goetting, Cupertino, and Stephen M. Trimberger, San Jose, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Jul. 23, 1992, Ser. No. 919,658

Int. Cl.[5] H03K *19/177*

U.S. Cl. 326—39 **9 Claims**



1. A logic structure comprising:

an interconnect structure;

a plurality of logic cells, each logic cell comprising:

input means for providing to said logic cell a signal related to a signal from said interconnect structure;

means for calculating a logic function;

output buffer means for providing said logic function to said interconnect structure;

cascade means for providing said logic function as input to at least one other of said logic cells without passing through said output buffer means of said one of said logic cells or through said interconnect structure; and

feedback means for providing said logic function as input to said logic cell without passing through said output buffer means of said logic cell or through said interconnect structure.

5,365,126

GRAPHICS SYSTEM INCLUDING AN OUTPUT BUFFER CIRCUIT WITH CONTROLLED MILLER EFFECT CAPACITANCE

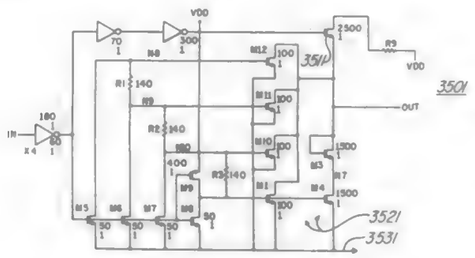
William R. Krenik, Garland, and Louis J. Izzi, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 647,614, Jan. 24, 1991, Pat. No. 5,274,284.

This application Sep. 27, 1993, Ser. No. 127,213

Int. Cl.[5] H03K *19/092, 19/094*

U.S. Cl. 326—83 **11 Claims**



1. A color palette comprising:

clock control circuitry; and

a clock buffer coupled to said clock control circuitry, said clock buffer having first and second supply rails and comprising:

a source follower output field effect transistor having a source coupled to an output line and further having a drain;

a voltage dropping circuit connected between the drain of the source follower output field effect transistor and the first supply rail, said voltage dropping circuit for introducing a controlled amount of Miller effect capacitance in the source follower output field effect, transistor;

a common source output transistor connected to the second supply rail; and

a diode coupled between the common source output transistor and the source of said source follower output field effect transistor.

5,365,127

CIRCUIT FOR CONVERSION FROM CMOS VOLTAGE LEVELS TO SHIFTED ECL VOLTAGE LEVELS WITH PROCESS COMPENSATION

Robert B. Manley, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 18, 1993, Ser. No. 139,247

Int. Cl.[5] H03K *19/0175*

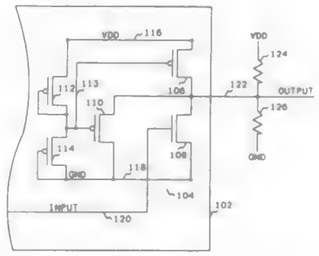
U.S. Cl. 326—73 **7 Claims**

1. A level conversion circuit for converting an input CMOS voltage level signal to a shifted ECL voltage level output signal within a CMOS integrated circuit, wherein said shifted ECL voltage level output signal is referenced to a supply voltage of said CMOS integrated circuit, said level conversion circuit comprising:

a first pFET connected between a supply voltage and said output signal;

an nFET connected between said output signal and a circuit ground, said nFET having said input signal connected to a gate thereof;

a second pFET connected in parallel to said nFET; and



a bias voltage connected to a gate of said first pFET and further connected to a gate of said second pFET wherein said bias voltage biases said output to maintain a shifted ECL logic one voltage level when said input is a CMOS logic zero voltage level.

5,365,128

HIGH-RESOLUTION SYNCHRONOUS DELAY LINE

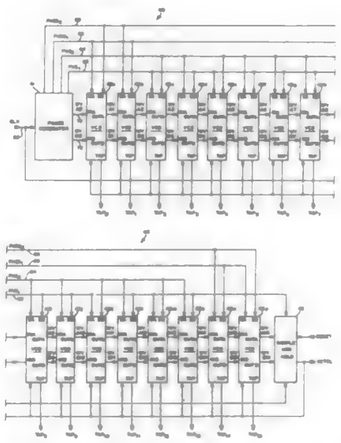
Mel Bazes, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 778,005, Oct. 17, 1991, abandoned.

This application Mar. 24, 1993, Ser. No. 36,219

Int. Cl.[5] H03K *5/159, 7/00, 3/01, 17/00*

U.S. Cl. 327—141 **28 Claims**



1. An integrated circuit synchronous delay line for generating delayed signals synchronized with a clock signal, comprising:

a) a phase generator coupled to said clock signal generating a first phasing signal approximately 90° out of phase with said clock signal and a second phasing signal substantially in phase with said clock signal, said phase generator generating a first trigger signal WVA_0 and a second trigger signal WVB_0, said first trigger signal WVA_0 and said second trigger signal WVB_0 being substantially deskewed with respect to each other, said first trigger signal WVA_0 being complementary to said second trigger signal WVB_0, said first and second trigger signals WVA_0 and WVB_0 being substantially in phase with said clock signal, said phase generator further comprising:

i) a master latch receiving said clock signal and outputting said first phasing signal;

ii) a slave latch receiving said first phasing signal and said clock signal and outputting said second phasing signal; and

iii) a first pass network generating said first trigger signal WVA_0 and said second trigger signal WVB_0, said first pass network being coupled to said clock signal, said first phasing signal and said second phasing signal; and

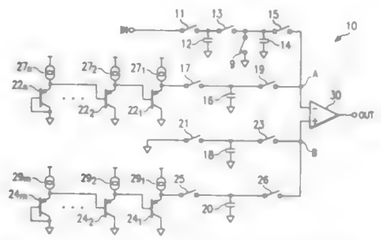
b) a plurality of serially coupled voltage controlled delay elements, each delay element having two trigger inputs, a delayed signal tap output, two trigger outputs, and a clock input, the plurality of serially coupled voltage controlled delay elements including a multiplicity of even voltage controlled delay elements and odd delay elements, a first of the even voltage controlled delay elements having its trigger inputs coupled to the first trigger signal WVA_0 and the second trigger signal WVB_0, each of the remaining even delay elements having its trigger inputs coupled to the trigger outputs of an adjacent odd delay element, all of the odd delay elements having their trigger inputs coupled to trigger outputs of an adjacent even delay element, some of the plurality of serially coupled voltage controlled delay elements having their clock inputs coupled to the first phasing signal and others of the plurality of serially coupled voltage controlled delay elements having their clock inputs coupled to the second phasing signal, wherein during a first clock cycle of said clock signal a first transition by the first trigger signal WVA_0 from a low voltage level to a high voltage level triggers transistions of the delayed signal tap outputs of the even voltage controlled delay elements, and a second transition by the second trigger signal WVB_0 from the high voltage to the low voltage triggers transistions of the delayed signal tap outputs of the odd controlled delay elements, and wherein during a second clock cycle following said first clock cycle a third transition by the first trigger signal WVA_0 from the high voltage level to the low voltage level triggers transitions of the delayed signal tap outputs of the odd voltage controlled delay elements and a fourth transition by the second trigger signal WVB_0 from the low voltage level to the high voltage level triggers transitions of the delayed signal tap outputs of the even voltage controlled delay elements.

5,365,129

TEMPERATURE-COMPENSATED VOLTAGE LEVEL SENSE CIRCUIT

William C. Slemmer, Dallas, and Bruce A. Doyle, Richardson, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Apr. 29, 1993, Ser. No. 55,080
Int. Cl.[5] H03K *5/24*
U.S. Cl. 327—65 **18 Claims**



1. A circuit for sensing the level of an input signal, comprising:

a comparator, having first and second inputs;

an input leg, having an input coupled to an input terminal receiving the input signal, and coupled to the first comparator input, comprising:

an input capacitor;

a first switch, connected between the input terminal and said input capacitor;

a second switch, connected between the input capacitor and the first comparator input;

a first bias circuit comprising a bipolar transistor, for defining a first diode voltage;

a first charge-sharing capacitor;

a third switch, connected between the emitter of the bipolar transistor in said first bias circuit and said first charge-sharing capacitor; and

a fourth switch, connected between the first charge-sharing capacitor and said first comparator input; and

a reference leg, coupled to the second comparator input, comprising:

a second bias circuit, comprising a bipolar transistor, for defining a second diode voltage different from said first diode voltage;

a second charge-sharing capacitor;

a fifth switch, connected between the emitter of the bipolar transistor in said second bias circuit and said second charge-sharing capacitor; and

a sixth switch, connected between the second charge-sharing capacitor and said second comparator input;

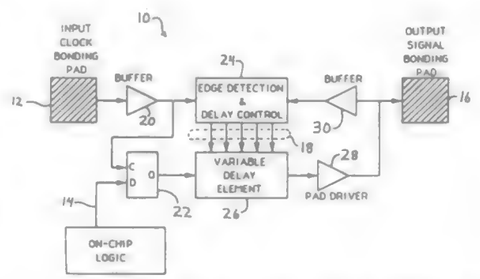
wherein the difference between said first diode voltage and said second diode voltage increases with increasing temperature.

5,365,130

SELF-COMPENSATING OUTPUT PAD FOR AN INTEGRATED CIRCUIT AND METHOD THEREFOR

Joseph Murray, Scottsdale; Ned D. Garinger, Tempe, and Peter H. Sorrells, Chandler, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Aug. 7, 1992, Ser. No. 926,979
Int. Cl.[5] H03K *5/13, 5/26*
U.S. Cl. 327—278 **9 Claims**



1. An output pad for an integrated circuit comprising, in combination:

circuitry means for driving an output of said integrated circuit to a conductor external to said integrated circuit;

first input means for providing a logic output from said integrated circuit to said circuitry means, said circuitry means delaying said logic output thereby providing a delayed output signal;

second input means coupled to said circuitry means for providing a clock signal from said integrated circuit to said circuitry means, said circuitry means delaying said logic output until an edge of said delayed output signal is coincident with an edge of said clock signal; and

output means coupled to said circuitry means for coupling said delayed output signal to said conductor;

said circuitry means comprising, in combination:

edge detector and delay control means coupled to said second input means and to said delayed output signal for detecting said edge of said clock signal and said edge of said delayed output signal to determine which of said edges occurs first, and having control word output means for providing an output that changes depending on which of said edges occurs first;

latch means coupled to said logic output for providing a clocked output signal which is synchronized to an edge of said clock signal; and

variable delay means coupled to said clocked output signal of said latch means having control word input means coupled to said control word output means for providing a delay from said logic output to said delayed output signal, said delay being determined by the value of said control word input means, said control word output means increasing said delay when said edge of said delayed output signal occurs before said edge of said clock signal, said control word output means decreasing said delay when said clock signal occurs before said delayed output signal, and said control word output means maintaining the same delay when said clock signal occurs coincident with said delayed output signal within a predetermined tolerance;

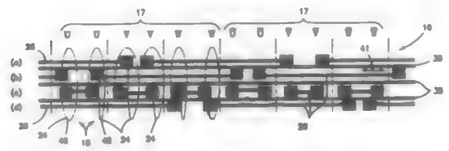
said output pad further comprising an input buffer having its input coupled to said second input means and having its output coupled to said latch means, and an output buffer having its input coupled to said delayed output signal and to said output means and having its output coupled to said edge detector and delay control means, said input buffer and said output buffer having identical propagation delay times.

5,365,131

LINEAR MOTOR PRIMARY

Yoshiaki Naito, Kawasaki; Keiichi Kohroki, Aichi, and Masayuki Kawaguchi, Inazawa, all of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 15, 1993, Ser. No. 152,794
Claims priority, application Japan, Nov. 16, 1992, 4-078320[U]
Int. Cl.[5] H02K *41/02*
U.S. Cl. 310—12 **12 Claims**



1. A linear motor primary driven by three phase electrical current, comprising:

a plurality of coils, having a first and second lead;

a plurality of laminations; and

a plurality of "U" shaped conductive connectors, for electrically connecting said leads of said coils;

wherein said plurality of coils are arranged in poles, each pole having three phases, each phase having a like number of coils; and

wherein said first leads of said coils of a particular phase are aligned in a first circumferential position and said second leads of said coils are aligned in a second circumferential position, said leads thereby forming axial rows along said primary; and

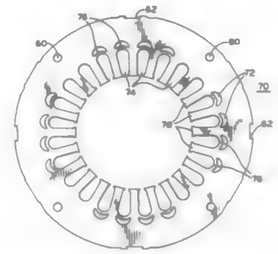
wherein said coils of a particular phase are connected by connecting said leads in said same row with said "U" shaped conductive connectors.

5,365,132

LAMINATION FOR A DYNAMOELECTRIC MACHINE WITH IMPROVED COOLING CAPACITY

John C. Haan, and Harald E. Blaettner, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed May 27, 1993, Ser. No. 68,208
Int. Cl.[5] H02K *1/20, 9/00*
U.S. Cl. 310—58 **14 Claims**



1. A stator lamination for a dynamoelectric machine comprising:

a generally flat disk having a centrally located bore for passage of a rotor therethrough;

a plurality of uniformly spaced winding slots extending radially outward from said bore, each adjacent ones of said winding slots defining a pole piece extending from said bore to a radially outer portion of the lamination, at least some of said winding slots extending radially outward beyond others of said winding slots;

a relatively narrow bridge extending in a circumferential direction across each of said at least some of said winding slots, said bridge separating said winding slots into a radially inner winding receiving portion substantially dimensionally identical to said others of said winding slots and into a radially outer passage for passing a cooling fluid in close proximity to windings in said radially inner portion of said at least some of said winding slots; and

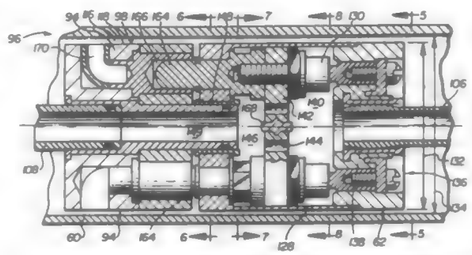
a radially outer boundary of said passages arcuately shaped with respect to the lamination for minimizing effects on the electromagnetic flux path extending radially through said pole pieces.

5,365,133

MINIATURE ROTATING RECTIFIER ASSEMBLY

Bernard A. Raad, Burbank, Calif., assignor to EEMCO/DATRON, Inc., Los Angeles, Calif.

Continuation of Ser. No. 913,228, Jul. 14, 1992, Pat. No. 5,319,272. This application Nov. 29, 1993, Ser. No. 158,281
Int. Cl.[5] H02K *11/00, 9/19*
U.S. Cl. 310—68 D **4 Claims**



1. A rectifier assembly in combination with a brushless, self-excited, cooled, dynamo electric device, said dynamo electric device being of the type having a main dynamo unit with a rotating DC field producing structure associated with a

hollow shaft, said unit being energized by an exciter dynamo unit having a rotor associated with said hollow shaft and producing AC, said shaft having a central axis extending longitudinally therethrough, and means for circulating coolant operatively associated with said dynamo electric device;

said rectifier assembly being disposed in said hollow shaft comprising:

a receptacle portion being retained inside said hollow shaft, said receptacle portion being electrically coupled to said dynamo electric device;

a diode assembly being disposed in said hollow shaft and matable with said receptacle portion for electrically coupling said diode assembly to said dynamo electric device for rectifying AC to DC to provide current to said DC field producing structure;

an entry port formed through one end of said diode assembly;

an exit port formed through an end of said receptacle portion distal said entry port;

a passage extending though said diode assembly and said receptacle portion, said passage communicating with said entry port and said exit port, said means for circulating coolant communicating with said entry port for providing coolant to said diode assembly and said receptacle portion;

at least two reduced dimension surfaces being defined on outside surfaces of said diode assembly and said receptacle portion having a dimension which is less than an inside surface of said hollow shaft, said reduced dimension surfaces being generally equidistantly spaced apart on said outside surfaces of said diode assembly and receptacle portion; and

a gap being defined between each of said reduced dimension surfaces and said inside surface of said hollow shaft, said gap communicating with said exit port for transporting coolant from said passage over the outside of said receptacle portion and said diode assembly, each of said gaps defining substantially equal volumes for balancing fluid flow and weight distribution of fluid flowing therethrough.

5,365,134

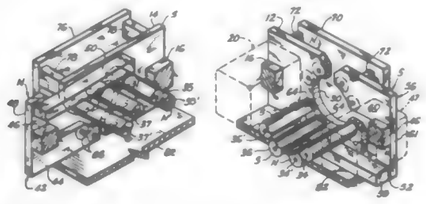
DC MAGNETIC MOTOR ASSEMBLY

Elmer B. Mason, 901 Vickie Dr., Del City, Okla. 73115, and Robert E. Stark, Springdale, Ark., assignors to Elmer B. Mason, Del City, Okla.

Continuation-in-part of Ser. No. 4,153, Jan. 13, 1993, Pat. No. 5,283,492, and a continuation-in-part of Ser. No. 161,494, Dec. 6, 1993. This application Jan. 12, 1994, Ser. No. 180,258

Int. Cl.[5] H02K *16/02*

U.S. Cl. 310—114 **15 Claims**



1. A DC motor assembly, comprising;

opposing spaced-apart magnetizable pole members;

magnetic flux field generating members extending between said pole members for polarizing each member of said pole members with a single polarity;

an armature having lobes forming a predetermined winding span operatively extending transversely between opposing members of said pole members;

opposing pairs of juxtaposed spaced-apart dual pole shoes extending between and connected for magnetic flux concentrating and conducting relation with like polarity pole members and in longitudinal interdigitated selected spaced relation about the periphery of said armature for forming a uniform concentrated magnetic flux field on the periphery of the armature normal to its longitudinal axis by opposite pairs of opposite polarity dual pole shoes adjacent and in diametric opposition with respect to the armature and the other pole shoes of the respective parts of dual pole shoes,

each pole shoe of the respective pair of dual pole shoes having a concave recess facing the perimeter of the armature and formed on a radius complemental with the radius of the armature for forming a fine air gap between a peripheral portion of the armature and the surface defining the adjacent concave recess, the combined width of the respective recess in each pole shoe of the pairs of dual pole shoes and the space therebetween being less than the width of the winding span of the armature; housing and bearing means for supporting said armature between said pole members;

a source of DC potential; and,

circuit means including switch and wiring means connecting the DC potential to ground through the armature for utilizing magnetic flux of like polarity from opposite directions in the respective pole shoe of said pairs of pole shoes and in diametric opposition on the armature,

whereby the edge of the respective armature winding span in the direction of rotation is magnetically attracted by the recess of the adjacent pole shoe of the respective pair of dual pole shoes of the pairs of pole shoes and the spacing between the respective pair of dual pole shoes decreases the intensity of magnetic flux acting on the armature during switching change and precludes any counter electromotive force on the edge of the respective armature winding span opposite the direction of rotation which is magnetically repelled in the direction of armature rotation by the magnetic flux in the recess of the other pole shoe of the respective pairs of pole shoes.

5,365,135

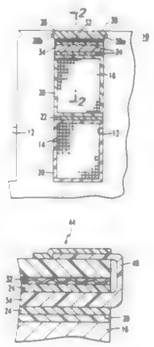
GENERATOR SLOT HOSE WEDGE ASSEMBLY

Kevin J. Konrad, Fort Payne, Ala., and Robert T. Ward, Winter Park, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1993, Ser. No. 152,648

Int. Cl.[5] H02K *3/487, 15/00*

U.S. Cl. 310—214 **6 Claims**



1. A dynamoelectric machine, comprising

a core member having a slot;

a conductive winding disposed within said slot; and

a wedge assembly disposed within said slot, comprising wedge and a conformable hose filled with a thermoset resin, cooperable with said conductive winding for use in minimizing movement of said conductive winding during operation of said dynamoelectric machine, wherein a portion of said conformable hose is looped over said wedge to attach said conformable hose thereto.

5,365,136

BRUSH FOR AN ELECTRIC MOTOR HAVING LOW SENSITIVITY TO VIBRATIONS

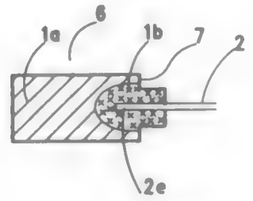
Jean-Bernard Deboves, Amiens, France, assignor to Le Carbone Lorraine, Amiens Cedex, France

Filed May 3, 1993, Ser. No. 55,375

Claims priority, application France, May 4, 1992, 92 05886

Int. Cl.[5] H02K *13/00*

U.S. Cl. 310—252 **10 Claims**



1. Brush for electric motors comprising:

a wearing part of electrically conductive material having a variable density,

an electrical conductor selected from a group consisting of a wire, cable or braid, said electrical conductor having at least one end for penetrating and immersing in said wearing part so that said one end is mechanically fixed and electrically connected to said wearing part,

a brush being obtained by compression of an electrically conductive powder containing said one end of said electrical conductor so as simultaneously to allow as formation of said wearing part, a mechanical fixing and an electrical connection of said electrical conductor and said wearing part,

characterized in that a density of at least a portion of an electrically conductive material of said wearing part in contact with said at least one end of said electrical conductor is higher than an average density of said electrically conductive material so as to form a super-compressed region around said immersed end.

5,365,137

ELECTRIC MOTOR

Lyman Richardson, Thornhill, and Wojciech Mizera, Downsview, both of Canada, assignors to Dynamic Systems International Inc., Concord, Canada

Continuation of Ser. No. 609,693, Nov. 1, 1990, abandoned. This application Apr. 26, 1993, Ser. No. 51,803

Int. Cl.[5] H02K *1/12*

U.S. Cl. 310—258 **8 Claims**

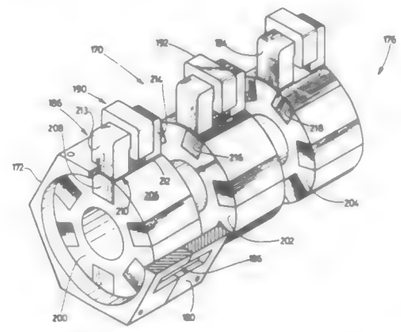
1. In an electric motor comprising a casing having a central longitudinal axis and an interior, a rotor in the interior of the casing, and means supporting the rotor for rotation about the axis relative to the casing, the improvement in which:

the motor comprises a multiplicity of axially-aligned motor phases, each of the motor phases comprising:

A. a multiplicity of stator pole assemblies, each of the stator pole assemblies comprising a plurality of magnetically-coupled stator poles each having a pole face and comprising electrically-operable coil means for producing a magnetic field in each of the stator poles of the stator pole assembly;

B. means for releasably mounting each of the stator pole assemblies to the casing with the coil means of the stator pole assembly external to the casing and with the poles of the stator pole assembly extending into the interior of the casing through one or more apertures in the casing, the stator pole assemblies being spaced-apart circumferentially about the exterior surface of the casing with the pole faces of the stator pole assemblies oriented in a cylindrical arrangement with a predetermined radius; and,

C. a multiplicity of magnetic elements mounted to the rotor and circumferentially spaced-apart, each of the magnetic elements having an element face, the element faces of the magnetic elements being oriented in a cylindrical arrangement with a radius smaller by a predetermined amount than the radius of the cylindrical arrangement of the pole faces of the stator pole assemblies, the element faces of the magnetic elements and the poles faces of the stator poles assemblies being arranged such that, during each rotation of the rotor, the poles faces of the stator pole assemblies simultaneously and repeatedly register with the element faces of the magnetic elements to form at each of the pole faces of the stator pole assemblies an air gap having a radial dimension corresponding to the predetermined amount and such the magnetic elements complete a local magnetic circuit with each of the stator pole assemblies whenever the air gaps are formed, the local magnetic circuit completed with each of the stator pole assemblies comprising the stator poles of the stator pole assembly, the air gaps formed at the pole faces of the stator pole assembly, and one or more of the magnetic elements which define the air gaps with the pole faces of the stator pole assembly;



the magnetic elements and stator poles assemblies of the motor phases being circumferentially oriented such that, at any time, at least one of the motor phases is capable of generating a torque to rotate the rotor when the coil means of the stator pole assemblies of the least one motor phase are electrically-energized.

5,365,138

DOUBLE MODE SURFACE WAVE RESONATORS

John C. B. Saw, Kanata, Canada; Thomas P. Cameron, Lawrenceville, Ga.; Mark S. Suthers, Lanark, Canada; John J. Nisbet, Nepean, Canada, and Samuel A. Tiller, Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 2, 1993, Ser. No. 160,628

Int. Cl.[5] H01L *41/08*

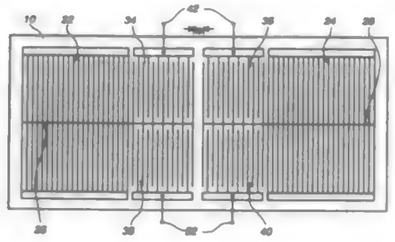
U.S. Cl. 310—313 D **23 Claims**

1. A surface wave resonator comprising:

a piezoelectric substrate; and

two IDTs (inter-digital transducers) arranged side by side on a surface of the substrate with a common rail therebetween, so that surface waves are coupled between the IDTs, each IDT having interleaved electrodes extending

from the common rail and from a respective outer rail, the outer rails providing signal connections to the resonator;



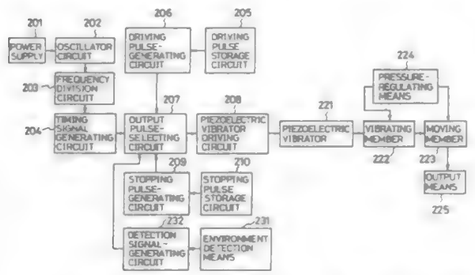
wherein at least one of the IDTs and its outer rail is divided into two halves for providing a differential signal connection to the resonator.

5,365,139

ELECTRONIC APPARATUS WITH ULTRASONIC MOTOR

Masao Kasuga; Tatsunori Inoue; Jun Hirotomi, and Hiroshi Kitamura, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Mar. 23, 1993, Ser. No. 36,033
Claims priority, application Japan, Mar. 24, 1992, 4-066367
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—316 **8 Claims**



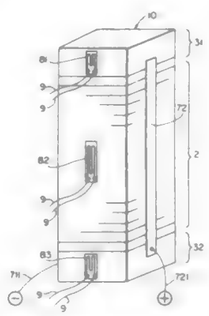
1. An electronic apparatus equipped with an ultrasonic motor comprising:
- a power supply;
- an oscillator circuit which is powered by the power supply and delivers a given output signal;
- a frequency division circuit receiving the output signal from the oscillator circuit and dividing the frequency;
- a timing signal generating circuit receiving the output signal from the frequency division circuit and delivering a given timing signal;
- an ultrasonic vibration-generating circuit receiving the output signal from the timing signal generating circuit and producing ultrasonic vibration that activates the ultrasonic motor;
- a piezoelectric vibrator receiving the output signal from the ultrasonic vibration-generating circuit, and vibrating;
- a vibrating member incorporating the piezoelectric vibrator;
- a moving member making contact with the vibrating member;
- a pressure-regulating means applying a given pressure to the vibrating member and to the moving member;
- an output means operated by operation of the moving member;
- a driving pulse storage circuit storing a plurality of driving pulses which produce given ultrasonic vibration in the vibrating member to operate the moving member;
- a driving pulse-generating circuit which receives the output signal from the driving pulse storage circuit and produces the driving pulses;
- a stopping pulse storage circuit storing a plurality of stopping pulses for stopping the operation of the moving member;
- a stopping pulse-generating circuit receiving the output signal from the stopping pulse storage circuit and producing the stopping pulses;
- an environment detection means which detects the environment or the states of the components of the electronic apparatus or the environment around the components of the electronic apparatus and delivers an output signal corresponding to the environment; and
- an output pulse-selecting circuit which receives the output signal from the driving pulse-generating circuit and the output signal from the stopping pulse-generating circuit, and controls an operation for producing output pulses corresponding to the result of the detection made by the environment detection means to the ultrasonic vibration-generating circuit.

5,365,140

PIEZOELECTRIC ACTUATOR HAVING STRAIN GAGE

Kazumasa Ohya; Kiyotaka Hamada, and Takayuki Inoi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,668
Claims priority, application Japan, Dec. 22, 1992, 4-341776
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 **7 Claims**



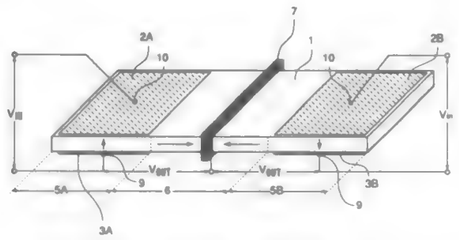
1. A piezoelectric actuator having a laminated structure including an active portion formed by alternatingly laminating a plurality of ceramics layers having piezoelectric characteristics and a plurality of internal electrode layers, for generating strain in a direction perpendicular to said ceramics layers and said internal electrode layers according to a drive voltage externally applied thereto and a plurality of other portions, at least one of strain in said direction caused by said drive voltage applied to said laminated-structure, elastic strain in said direction and strain caused by thermal expansion in said direction of adjacent ones of said active portion and the plurality of said other portions being different from each other, said piezoelectric actuator comprising means fixedly associated with said active portion and the plurality of said other portions, respectively, for detecting strains generated in said direction in said active portion and the plurality of said other portions.

5,365,141

PIEZOELECTRIC TRANSFORMER AND METHOD FOR DRIVING THE SAME

Jun Kawai, and Satoru Tagami, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 16, 1993, Ser. No. 18,290
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—359 **8 Claims**



1. A piezoelectric transformer comprising:
- a piezoelectric plate in the form of an elongated plate and electrodes formed thereon,
- the piezoelectric plate being divided into a pair of driver sections and at least one generator section which are continuous and integral with each other so as to form a single piezoelectric plate,
- the pair of driver sections being formed of two end regions of the piezoelectric plate containing a mechanical resonance node in an oscillation mode of the three or more odd number times of ½ of a resonance wavelength λ of the longitudinal mechanical oscillation in length of the piezoelectric plate,
- the at least one generator section being formed of a central region of the piezoelectric plate containing a mechanical resonance node in the above mentioned oscillation mode,
- the driver sections being polarized in a thickness direction, and
- the driver sections having a distance of λ/2 from the corresponding end of the piezoelectric plate.

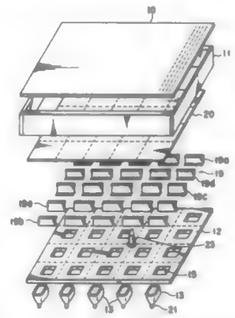
5,365,142

CATHODE-RAY TUBE WHEREIN PLURAL REGIONS OF PHOSPHOR SCREEN ARE SCANNED INDEPENDENTLY OF ONE ANOTHER

Takashi Nishimura; Kazuyuki Seino, and Eiji Kamohara, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 16, 1992, Ser. No. 945,415
Claims priority, application Japan, Dec. 26, 1991, 3-343800; Dec. 26, 1991, 3-343802; Dec. 26, 1991, 3-343803; Dec. 26, 1991, 3-343804
Int. Cl.[5] H01J *31/20, 29/07*
U.S. Cl. 313—2.1 **19 Claims**

1. A cathode-ray tube comprising:
- an envelope having a substantially rectangular first plate and a substantially rectangular, flat second plate opposed at a distance to the first plate;
- a phosphor screen formed on the inner surface of the first plate and having a number of striped phosphor layers extending in parallel to one another, and a plurality of regions, each of the phosphor layers having first and second longitudinal ends;
- a shadow mask arranged within the envelope;
- mask support means for supporting the shadow mask such that the shadow mask is opposed at a distance to the phosphor screen, said mask support means including a first support portion fixed to the inner surface of the second plate and situated to face the first longitudinal ends of the phosphor layers, a second support portion fixed to the inner surface of the second plate and situated to face the second longitudinal ends of the phosphor layers, and an intermediate support portion fixed to the inner surface of the second plate and situated between the first and second support portions, said shadow mask being supported on the first, second and intermediate support portions while



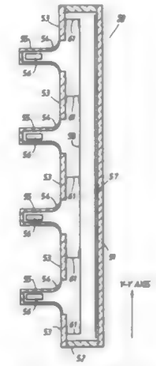
being applied with a tensile force in the longitudinal direction of the phosphor layers; and
- beam emitting means attached to the second plate, for emitting electron beams for scanning the regions of the phosphor screen independently of one another.

5,365,143

COLOR CATHODE RAY TUBE HAVING A PLURALITY OF MASKS

Takashi Nishimura; Kazuyuki Seino, and Eiji Kamohara, all of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 26, 1992, Ser. No. 904,069
Claims priority, application Japan, Jun. 28, 1991, 3-157283
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 **24 Claims**



1. A color cathode ray tube comprising:
- a vacuum envelope including a faceplate having an inner surface, a first axis, and a second axis perpendicular to the first axis, and a plurality of necks opposing the faceplate;
- an electron gun assembly received in each of the necks, each electron gun assembly for emitting an electron beam;
- a phosphor screen formed on the inner surface of the faceplate, including a plurality of continuous segment regions scanned with an electron beam emitted from corresponding ones of the electron gun assemblies; and
- a mask member received in the vacuum envelope and facing the faceplate, the mask member having a plurality of individual masks, each of which has at least one effective region through which the electron beams pass and at least

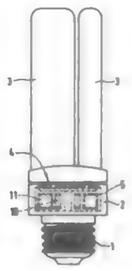
one non-effective region surrounding the effective regions, wherein each individual mask is substantially separated from adjacent individual masks along the first axis, wherein the number of effective regions in the first axis of each individual mask is equal to or less than the number of effective regions in the second axis of each individual mask, and wherein the mask member includes a gap between the adjacent individual masks.

5,365,144

ELECTRICAL POWER SUPPLY UNIT FOR THE SUPPLY OF LOW POWER LOADS

Hans-Dieter Layh, Anna Maria, Fla., assignor to Technology Services, Inc., Anna Maria, Fla.

Filed Jun. 9, 1993, Ser. No. 73,437
Claims priority, application Germany, Jun. 10, 1992, 4218968
Int. Cl.[5] H01J 7/44
U.S. Cl. 315—58 **11 Claims**



1. Power supply unit for the supply of low voltage loads, comprising:

input-side power connections and output-side load connections;

an electrolytic capacitor having a large capacitance;

one of a transformer and choke-coil;

a housing in which said capacitor and said one of the transformer and choke-coil are arranged, said housing having a substantially disk-shape in which ring-shaped chambers are arranged;

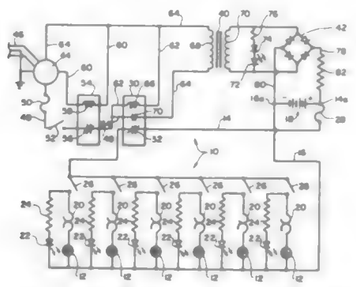
wherein said capacitor and said one of said transformer and choke-coil have a ring-shaped construction and are separately housed in said ring-shaped chambers arranged coaxially with respect to one another.

5,365,145

EMERGENCY LIGHTING SYSTEM

Gregory S. Fields, Las Vegas, Nev., assignor to Gnel, Inc., Las Vegas, Nev.

Filed Aug. 9, 1993, Ser. No. 103,542
Int. Cl.[5] H05B 37/00
U.S. Cl. 315—86 **14 Claims**



1. An emergency lighting system for providing low voltage DC battery powered illumination to one or more areas of a home, apartment, office or other building structure in an emergency mode upon the failure or termination in such areas of a normal AC power mode, said system comprising:

a) a source of normal AC power having interconnecting leads to the primary high voltage winding of a voltage step-down transformer and forming therewith an AC circuit;

b) AC power rectifying means, including input terminals and output terminals, having its input terminals connected to the secondary low voltage winding of said transformer;

c) an emergency battery power source having its terminals connected to the output terminals of said rectifying means to receive low voltage DC power for storage therein when said normal AC power source is operative;

d) at least one low voltage incandescent lamp interconnected by low voltage leads to the terminals of said battery power source and forming therewith an emergency DC circuit; and

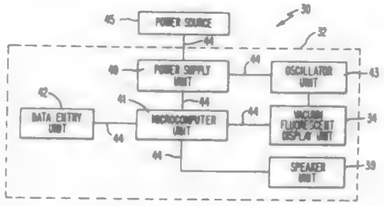
e) control relay means for interacting between said AC circuit and said DC circuit, said relay means including DC circuit contact means interconnected in one of the low voltage leads of said DC circuit from said lamp to a terminal of said battery source, and said relay means including coil means in said AC circuit for maintaining said DC circuit contacts in their open position during AC current flow in said AC circuit and responsive to a termination or failure of said AC power source and cessation of AC current flow in said AC circuit to close said DC circuit contact means whereby said low voltage lamp is energized by said battery source to produce emergency illumination.

5,365,146

CONTROL DEVICE HAVING AN OSCILLATOR UNIT THAT PULSES A DIRECT CURRENT THROUGH THE FILAMENTS OF THE VACUUM FLUORESCENT DISPLAY UNIT THEREOF AND METHODS OF MAKING THE SAME

Brian J. Kadwell, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 14, 1993, Ser. No. 4,702
Int. Cl.[5] H05B 39/00
U.S. Cl. 315—94 **12 Claims**



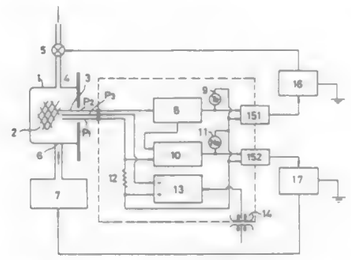
1. In a control device comprising a microcomputer unit, a vacuum fluorescent display unit having filament means, a power supply unit for being interconnected to a high voltage alternating current power supply means that has a certain frequency, and circuit means operatively interconnecting said units together, said power supply unit comprising a transformerless capacitor arrangement for creating a low voltage direct current from said power source means to power said microcomputer unit, the improvement wherein a part of said circuit means comprises a transformerless oscillator unit that receives said direct current and pulses the same through said filament means at a frequency that is greater than said certain frequency and that causes said filament means to heat to an operating temperature thereof.

5,365,147

PLASMA STABILIZING APPARATUS EMPLOYING FEEDBACK CONTROLS

Kibatsu Shinohara, Yokohama; Kozo Obara, Kamakura, and Tsuku Umezawa, Yokohama, all of Japan, assignors to Nichimen Kabushiki Kaisha, Osaka and Nihon Kosyuha Kabushiki Kaisha, Yokohama, both of Japan

PCT No. PCT/JP91/01617, § 371 Date Jul. 27, 1992, § 102(e) Date Jul. 27, 1992, PCT Pub. No. WO92/10076, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 915,809
Claims priority, application Japan, Nov. 28, 1990, 2-328262
Int. Cl.[5] H01J 7/24
U.S. Cl. 315—111.21 **5 Claims**



1. A plasma stabilizing apparatus for operating a system having three probes for immersion in a plasma, the apparatus comprising:

a circuit for coupling to the three probes, for generating a first signal indicative of an electron temperature of the plasma and a second signal indicative of an electron density of the plasma;

a coupling element, having a first input responsive to the first signal, a second input responsive to the second signal, and first and second outputs electrically isolated from the first and second inputs, for generating a third signal on the first output, the third signal being indicative of the electron temperature of the plasma, and for generating a fourth signal on the second output, the fourth signal being indicative of the electron density of the plasma;

a circuit for controlling a plasma gas pressure in response to the third signal; and

a circuit for controlling a plasma excitation power in response to the fourth signal.

5,365,148

SINUSOIDAL INDUCTORLESS DIMMER PROVIDING AN AMPLITUDE ATTENUATED OUTPUT

Paul E. Mallon, and Gary S. Bateman, both of Paso Robles, Calif., assignors to Electronics Diversified, Inc., Hillsboro, Oreg.

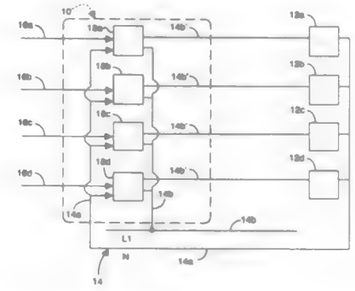
Filed Nov. 19, 1992, Ser. No. 978,816
Int. Cl.[5] G05F 1/00
U.S. Cl. 315—194 **14 Claims**

1. A dimmer circuit receiving a sinusoidal line power source and driving a load therewith between full power and zero power conditions, the dimmer circuit comprising:

input logic receiving a dimmer control signal representing a magnitude of dimming relative to said full power condition and providing an internal dimmer control signal corresponding to said magnitude of dimming;

a first power attenuation component receiving said sinusoidal power source and providing an amplitude scaled sinusoidal load power source attenuated relative to said line power source, said first power attenuation component having a gate terminal coupled to said internal dimmer control signal and scaling at a given amplitude throughout a first half-cycle of said load power source relative to said line power source as a function of said dimmer control signal;

a second power attenuation component receiving said sinusoidal power source and providing an amplitude scaled sinusoidal load power source attenuated relative to said line power source, said second power attenuation component having a gate terminal coupled to said internal dimmer control signal and at a given amplitude scaling amplitude throughout a second half-cycle of said load power



source relative to said line power source as a function of said dimmer control signal; and

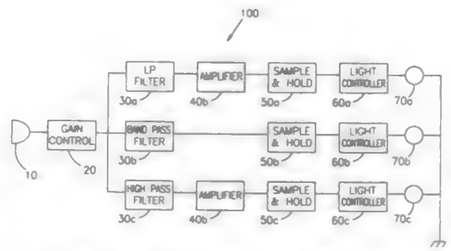
a biasing arrangement prebiasing said first power attenuation device relative to the second power attenuation device whereby said first power attenuation device scales throughout said first half-cycle differently than said second power attenuation device scales throughout said second half-cycle for a given magnitude of said internal dimmer control signal.

5,365,149

APPARATUS AND METHOD FOR PRODUCING A FREQUENCY BASED VISUAL EFFECT

Robert Blakeslee, 11005 "Y" St., Omaha, Nebr. 68137, and Thad Kulik, 8550 Underwood Ave., Omaha, Nebr. 68114

Filed Apr. 8, 1993, Ser. No. 48,452
Int. Cl.[5] H05B 37/00
U.S. Cl. 315—200 A **13 Claims**



1. A variable lighting apparatus for visually simulating and translating the frequencies present in an input signal to a light, the characteristics of which may be varied in accordance to the properties of the input signal, the lighting apparatus comprising:

an input means for electrically inputting said signal to be simulated;

sampling means electrically connected to said input means for obtaining a sample of said input signal;

converter means for converting said sample of said signal input into a variable frequency output, the frequency of which varies in proportion to amplitude of said sample of said signal input;

electric pulsing means for generating a sequence of electric

pulses the period of which is determined by the output of said converter means; and

light means electrically connected to said pulsing means for pulsed illumination in response to said variable output frequency of said converter means whereby said light means is pulsed for a period proportional to said input signal amplitude.

5,365,150

INVERTER DEVICE HAVING LOAD VOLTAGE DETECTION FUNCTION

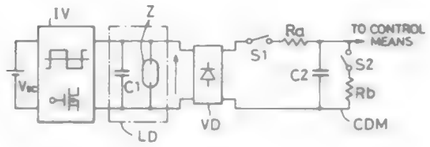
Tsutomu Shiomi, and Hiroichi Shinbori, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 26, 1993, Ser. No. 9,042

Claims priority, application Japan, Jan. 28, 1992, 4-013463

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **16 Claims**



1. An inverter device having a load voltage detecting function, said inverter device comprising:

switching means connected to a DC power source for producing a square wave voltage from DC power produced by the DC power source;

a load section connected to said switching means and including at least a load and a first capacitor connected in parallel with said load;

voltage detecting means connected to said load section for generating a detection voltage responsive to the square wave voltage applied to said load, said voltage detecting means including a second capacitor and means for comparing the detection voltage with a voltage on said second capacitor;

charging and discharging means for charging said second capacitor with the detection voltage when the detection voltage is higher than a voltage on said second capacitor and discharging said second capacitor when the detection voltage is lower than the voltage on said second capacitor; and

means for maintaining, during application to said load of a transient voltage upon every inversion of the square wave voltage, the voltage on said second capacitor immediately before the inversion.

5,365,151

GAS DISCHARGE LAMP BALLAST CIRCUIT WITH FREQUENCY MODULATED PULSE CONTROL

Norbert Spiegel, Dornbirn, Australia, and Wolfgang Pabst, Lindau, Germany, assignors to Tridonic Bauelemente GmbH, Dornbirn, Austria

PCT No. PCT/EP92/01566, § 371 Date Mar. 12, 1993, § 102(e) Date Mar. 12, 1993, PCT Pub. No. WO93/01695, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 10, 1992, Ser. No. 988,962

Claims priority, application Germany, Jul. 12, 1991, 4123187

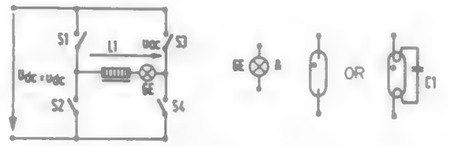
Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **23 Claims**

1. A ballast for the pulsed-mode operation of gas discharge lamps having a buffered feed d.c. voltage from which the utilized power for the lamps can be derived, said ballast comprising a reactance,

a circuit for connecting said reactance in series with a lamp, and

at least one electronic switching device connected to supply the reactance and the lamp periodically with voltage pulses of first and second different frequencies, respectively, and which are, frequency modulated in response to a control signal,



the switching device including at least one switching element connected as an interrupter and further including a free running diode connected to take up load current of the load circuit comprising the lamp and the reactance when the switching element is non-conductive.

5,365,152

APPARATUS FOR CONTROLLING THE POWER TO A DISCHARGE-LAMP

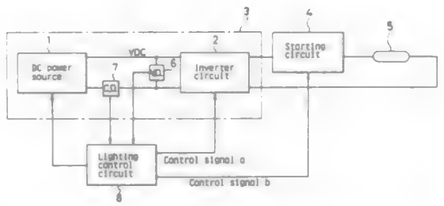
Masataka Ozawa, Takarazuka; Takayuki Kamitani, Osaka; Kazutaka Koyama, Nishinomiya; Shigeru Horii, Takatsuki; Koji Miyazaki, Yawata; Nobuhisa Yoshikawa, Sakai; Takeshi Saito, Amagasaki; Kazuhiko Ito, Hirakata; Masayoshi Gyoten, Takatsuki, and Atsuo Waki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Aug. 18, 1992, Ser. No. 931,730

Claims priority, application Japan, Sep. 9, 1991, 3-227753; Nov. 18, 1991, 3-300932

Int. Cl.[5] G05F *1/00*

U.S. Cl. 315—291 **5 Claims**



1. A discharge-lamp lighting apparatus comprising;

a discharge lamp;

lamp current supply means for supplying said discharge lamp with a current; and

lighting control means for controlling an output of said lamp current supply means in response to an off-time and an on-time of said discharge lamp, said lighting control means increasing its initial output in response to increase of said off-time and decreasing its output to a rated output as time lapses after start-up of said discharge lamp;

said lighting control means determines an output level of said lamp current supply means, which is in a state just after start-up of said discharge lamp, within a time period from power-on of said lamp current supply means to start-up of said discharge lamp; and

said lighting control means decreases said output level to a rated level as time lapses after said start-up.

5,365,153

AC VARIABLE SPEED DRIVING APPARATUS AND ELECTRIC VEHICLE USING THE SAME

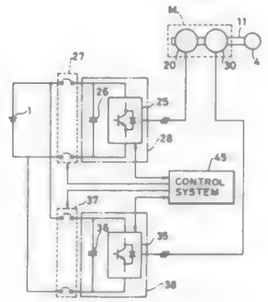
Kouetsu Fujita; Takao Yanase; Shigenori Kinoshita; Osamu Motoyoshi, and Yoshio Ito, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jan. 7, 1993, Ser. No. 72,756

Claims priority, application Japan, Jan. 10, 1992, 4-177562; Jan. 26, 1992, 4-193210; Jul. 17, 1992, 4-213464; Jul. 17, 1992, 4-213465

Int. Cl.[5] H02P *1/54*

U.S. Cl. 318—34 **13 Claims**



1. An AC variable speed driving apparatus including an AC motor and an inverter which drives the AC motor, said AC motor comprising:

a first rotor having a permanent magnet, said first rotor being mounted on an axis of rotation;

first stator windings constituting a synchronous motor in conjunction with said first rotor;

a second rotor mounted on said axis of rotation; and

second stator windings constituting an induction motor in conjunction with said second rotor, said first and second stator windings being disposed so that they do not magnetically interfere with each other, the number of poles of said synchronous motor being equal to that of said induction motor, and said first and second stator windings being displaced with respect to each other in a direction of rotation of said first and second rotors by a predetermined electrical angle,

whereby said inverter independently supplies said first and second stator windings with AC power thereby driving said synchronous motor and said induction motor separately.

5,365,154

APPLIANCE CONTROL SYSTEM AND METHOD

John K. Schneider, Snyder; Frank W. Keeney, Williamsville; Nicholas G. Leszczynski, Amherst, and Benjamin H. Weppner, Williamsville, all of N.Y., assignors to North Coast Electronics, Inc., Williamsville, N.Y.

Continuation-in-part of Ser. No. 729,433, Jul. 12, 1991, abandoned. This application Jan. 10, 1992, Ser. No. 819,247

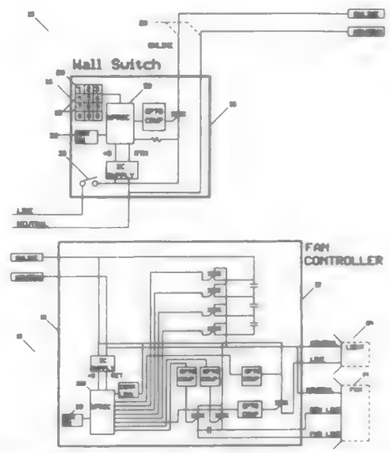
Int. Cl.[5] H02P *7/00, 7/74;* G08C *19/00*

U.S. Cl. 318—103 **12 Claims**

1. A ceiling fan control system comprising:

a) a fan controller operatively connected to the motor of a ceiling fan for controlling the speed and direction of rotation of said fan in response to command signals received by said controller;

b) control switch means adapted to be located remote from said fan at a manually accessible location, said switch means including a plurality of operator members each providing a function command when manually operated, said switch means including programmed processor means for converting said function commands provided by said operator members into speed and direction command signals for use by said fan controller and said switch means including circuit means connected to an existing a.c. power line for providing d.c. power for operating said processor means, said circuit means comprising means for controlling the half cycle of the a.c. waveform from said a.c. power line in a manner preventing transmission of a.c. power during a portion of said half cycle, energy storage means operatively connected to said controlling means for



storing energy during said portion of said half cycle and means operatively connected to said energy storage means for utilizing the stored energy to provide d.c. power for operating said processor means; and

c) means for providing a communication link between said control switch means and said fan controller for transmitting said command signals from said control switch means to said fan controller.

5,365,155

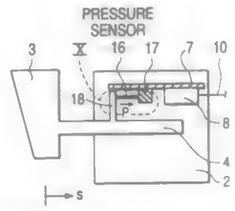
ROTATIONAL SPEED CONTROL AND USE OF SAME TO CONTROL THE ROTATIONAL SPEED OF AN ELECTRIC HAND TOOL MOTOR

Bernward Zimmermann, Tuttlingen, Germany, assignor to Marquardt GmbH, Rietheim-Weilheim, Germany

Continuation-in-part of Ser. No. 600,774, Oct. 22, 1990, abandoned. This application Jan. 29, 1993, Ser. No. 12,139

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—268 **26 Claims**



1. A rotational speed control for electric motors of electric hand tools, comprising:

a. displacement means for providing displacement in response to manual operation of the electric hand tool selected from the group consisting essentially of a linear displacement device for providing linear displacement (s) and an actuating dial for providing arcuate displacement (S);

b. an elastic membrane to which the displacement means is

articulatedly connected via a spring so that during displacement of the displacement means the elastic membrane deforms as a function of the displacement;

c. actuating means comprised of a sensor element coupled to the elastic membrane so that the sensor element produces an electrical output variable as a function of the deformation of the elastic membrane, the sensor element being selected from the group consisting essentially of a Hall sensor, an inductive sensor, and a sensor switch; and

d. an electronic switch for rotational speed control connected to the actuating means, from which it receives the electrical output variable, and to the electric motor of the electric hand tool.

5,365,156

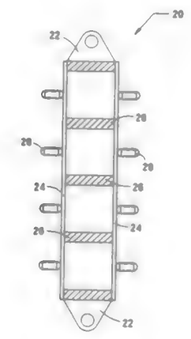
FORCE TRANSDUCER FOR A ROBOTIC ARM

James C. Crook, 1405 Chatsworth La., Raleigh, N.C. 27614

Filed Oct. 27, 1993, Ser. No. 141,527

Int. Cl.[5] B25J *15/12*

U.S. Cl. 318—568.16 **17 Claims**



11. A force applying member for a robotic device comprising:

(a) a plurality of axially contractible cells disposed in end-to-end relationship;

(b) wherein each cell includes:

(1) first and second end pieces spaced from one another along a longitudinal axis;

(2) a pair of flexible connecting strips joining said first and second end pieces and disposed on opposite sides of said longitudinal axis; and

(3) an actuator disposed adjacent each connecting strip for deflecting the connecting strip relative to the longitudinal axis, wherein the actuators are moveable toward one another and away from one another along an actuator path disposed generally perpendicular to the longitudinal axis.

5,365,157

VOLTAGE REGULATOR EMPLOYING A TRIAC TO DELIVER VOLTAGE TO A LOAD

Alexander Geller, Brooklyn, and Steven Abdelqader, Theills, both of N.Y., assignors to Coltene/Whaledent, Inc., Mahwah, N.J.

Filed Jan. 7, 1994, Ser. No. 178,779

Int. Cl.[5] G05F *1/10, 1/40, 1/455*

U.S. Cl. 323—237 **8 Claims**

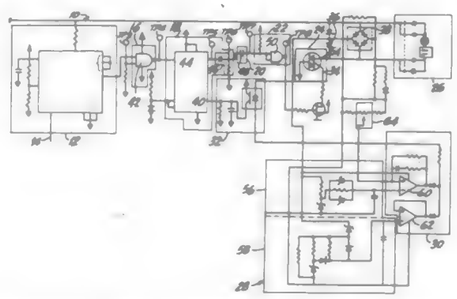
1. A voltage regulator for producing a stable RMS output signal from a fluctuating alternating current input signal, comprising:

a timer receiving the input signal and producing a timing signal having a certain pulse width;

a triac controlled by the pulse width of the timing signal and delivering an output signal to a load;

a reference voltage circuit receiving the output signal from the triac and producing a reference signal;

a comparator circuit receiving the output signal and the reference signal and producing therefrom a comparison signal; and



a coupling circuit receiving the output signal and the comparison signal and producing an error signal, said error signal being coupled to the timer, whereby the pulse width of the timing signal is a function of receipt of the error signal by the timer thus changing the control of the triac and the output signal produced thereby.

5,365,158

DRIVING CONTROL APPARATUS FOR INDUCTION MOTOR

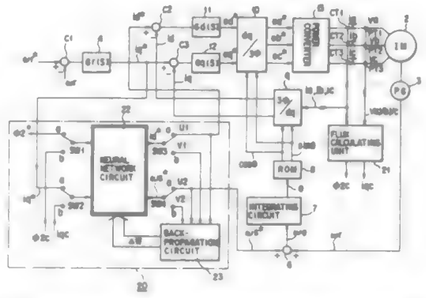
Shigeru Tanaka, Tokyo; Susumu Tadakuma, Atsugi, and Kazuo Shimane, Kamifukuoka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1992, Ser. No. 982,613

Claims priority, application Japan, Nov. 30, 1991, 3-339592; Jan. 28, 1992, 4-013069

Int. Cl.[5] G06G *7/60;* **H02P** *7/36*

U.S. Cl. 318—806 **12 Claims**



1. A driving control apparatus for an induction motor, comprising:

parameter detecting means for detecting control parameters of said induction motor;

calculating means for calculating a rotor flux and a torque current of said induction motor on the basis of the control parameters;

neural network means, having weight functions to provide an excitation current command value and a slip frequency command value, for receiving a rotor flux command value and a torque current command value for said induction motor and rotor flux and torque current values calculated by said calculating means and for processing the received rotor flux command value, the received torque current command value, the received rotor flux value, and the received torque current value in accordance with the weight functions, and outputting an excitation current command value and a slip frequency command value;

back propagation means for processing the excitation current command value and the slip frequency command value input from said neural network means, to obtain a plurality of correction amounts corresponding to the weight functions, and for optimizing the weight functions in accordance with the correction amounts; and

vector control means for detecting an actual excitation current and an actual torque current of said induction motor on the basis of the slip frequency command value output from said neural network means and the control parameters, and controlling said induction motor in accordance with a deviation between a detected actual excitation current value and the excitation current command value and a deviation between a detected actual torque current value and the torque current command value.

5,365,159

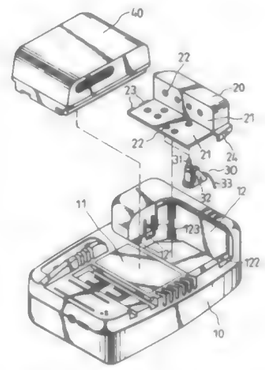
BATTERY-CHARGER WITH ADJUSTABLE CONTACTS

Stephen Chen, Changhua, Taiwan, Prov. of China, assignor to E Lead Electronic Co., Ltd., Changhua, Taiwan, Prov. of China

Filed Oct. 5, 1993, Ser. No. 131,752

Int. Cl.[5] H01M *10/46;* **H02J** *7/00*

U.S. Cl. 320—15 **1 Claim**



1. A battery-charger for different size batteries comprising,

a base body,

a contact-adjusting member disposed on said base body and a set of conductive contacts moveably engaged to said contact-adjusting member,

wherein said base body has a battery fixing seat on which said different size batteries are located and a fixing member on which said contact-adjusting member can be releasably engaged,

said fixing member being formed with two lateral insert grooves and a resilient fixing plate for resiliently abutting against and releasably fixing said contact-adjusting member on said fixing member,

said contact-adjusting member having two plane surfaces perpendicular to each other,

each of said two plane surfaces formed with more than two through holes,

said set of conductive contacts being movable for insertion into any of said through holes according to specific positions of power contacts on a battery of said different size batteries,

said contact-adjusting member also having two lateral insert sections corresponding to said insert grooves of said fixing member of said base body,

whereby said contact-adjusting member is engaged on said fixing member by means of inserting said insert sections in said insert grooves,

said set of contacts being used to conduct electricity supplied by an inner circuit of said base body to said battery for charging the battery,

each conductive contact of said set of conductive contacts being composed of a cover section and a conductive contact section,

wherein said cover section is held in engagement between said contact-adjusting member and said fixing member while said conductive contact section extends through a through hole of said more than two through holes to engage a power contact of said power contacts on said battery when said contact-adjusting member is engaged to said fixing member, and

a wire being used to electrically connect said conductive contact section with said inner circuit of said base body.

5,365,160

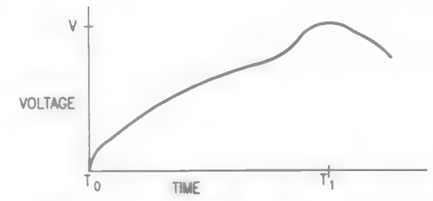
APPARATUS AND METHOD FOR CHARGING BATTERIES

Lee E. Leppo, Tallmadge, and Charles A. Rinkes, Medina, both of Ohio, assignors to Telxon Corporation, Akron, Ohio

Filed Sep. 6, 1991, Ser. No. 755,890

Int. Cl.[5] H02J *7/00*

U.S. Cl. 320—22 **23 Claims**



1. An apparatus for charging a rechargeable battery that has a voltage that varies with its state of charge, the apparatus comprising:

charging means for delivering electrical energy to the battery at a controllably-variable charging rate;

measurement means for providing periodic measurements of battery voltage; and

control means for detecting any change in value between successive battery voltage measurements and conditioning the charging means to decrease the charging rate if the detected voltage change is negative, increase the charging rate up to a predetermined maximum rate if the detected voltage change is positive, and decrease to zero the charging rate after initially detecting a negative voltage change and subsequently detecting a positive voltage change.

5,365,161

STABILIZED VOLTAGE SUPPLY

Koichi Inoue, and Takahiro Ota, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 24, 1992, Ser. No. 980,725

Claims priority, application Japan, Nov. 26, 1991, 3-336048

Int. Cl.[5] G05F *1/565*

U.S. Cl. 323—282 **13 Claims**

1. A stabilized voltage supply comprising:

an output element for outputting an output current depending on a current supplied to said output element, said output element being responsive to a power voltage;

current/voltage converting means for converting the output current of said output element into a voltage which in turn is outputted therefrom as a stabilized output voltage;

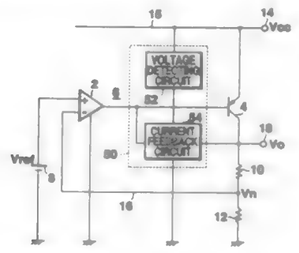
means for comparing said stabilized output voltage directly or indirectly with a predetermined reference voltage, said comparing means being responsive to the result from the comparison to provide a current to said output element; and

means for adjusting the current supplied to said output ele-

ment such that said output element will not be saturated when the power voltage decreases to a level equal to or lower than a predetermined level, including

means for detecting a drop in the power voltage;

current dividing means for dividing part of the output



current of said output element when the power voltage decreases to a level equal to or lower than the predetermined level; and

means for subtracting a current corresponding to the divided current from the current supplied to said output element.

5,365,162

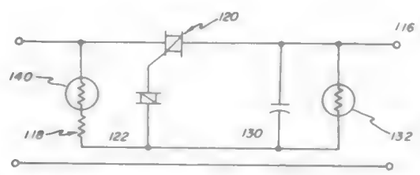
LIGHT BULB ELECTRIC LIFE EXTENDER HAVING A DIACTRIAC COMBINATION CONNECTER IN PARALLEL WITH A CAPACITOR

Shaam P. Sundhar, c/o 87 Juniper Ave., Westerville, Ohio 43081

Filed Jul. 8, 1992, Ser. No. 910,725

Int. Cl.[5] H02M *1/00*

U.S. Cl. 323—320 **4 Claims**



1. An electrical bulb saver for use with light bulbs, said bulb saver having an electrical circuit comprising a resistor, a capacitor, two thyristors, said two thyristors being directly connected to each other, and said resistor being directly connected to one of said two thyristors, said capacitor being directly connected to one of said two thyristors, and a photo resistor, and a rectifier.

5,365,163

SENSOR ARRAY FOR CIRCUIT TRACER

James R. Satterwhite, Roxboro, N.C.; Sandra J. Horning, Austin, Tex.; Gerald A. Wyatt, Round Rock, Tex., and Daniel E. Reisem, Austin, Tex., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Sep. 29, 1992, Ser. No. 950,157

Int. Cl.[5] G01R *19/00*; G01V *3/08, 3/10*; G01N *31/02*

U.S. Cl. 324—67 **11 Claims**

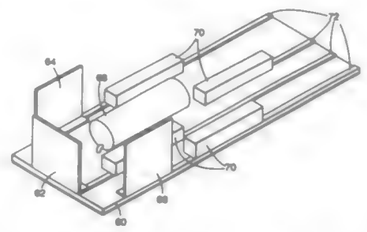
6. A sensor array for an electromagnetic probe, comprising:

a board member having an end and first and second sides;

first, generally planar, electrode means for sensing electric field potential, attached to said board member proximate said end thereof, extending generally perpendicular to said board member;

second and third, generally planar, electrode means for sensing electric field potential, attached to said board member proximate said first and second sides thereof, said second and third electrode means being generally parallel to one another, being generally perpendicular to said board member, and being generally perpendicular to said first electrode means; and

inductive coil means attached to said board member, and



interposed between said second and third electrode means, for sensing a magnetic field, said coil means having an axis which is generally perpendicular to said first electrode means and parallel to said second and third electrode means.

5,365,164

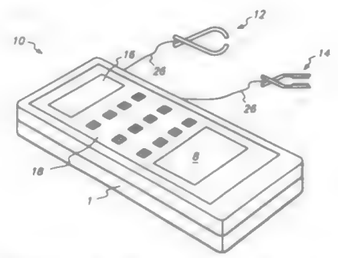
HARMONIC ANALYZER AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Michael Z. Lowenstein, Mequon, and Dean R. Mehlberg, Hales Corners, both of Wis., assignors to TCI (Trans-Coil, Inc.), Milwaukee, Wis.

Filed Aug. 24, 1992, Ser. No. 934,866

Int. Cl.[5] G01R *21/06*

U.S. Cl. 324—76.21 **4 Claims**



1. An apparatus for determining and displaying the harmonic distortions which may be found in an electrical carrier affecting the power quality, comprising:

input means for operatively connecting said apparatus to said electrical carrier and generating an analog input signal;

an analog to digital convertor to produce a digital signal;

a central processing unit for analyzing said digital signal utilizing Fourier analysis and generating mathematically quantifiable harmonic data for a plurality or harmonics of said analog input signal substantially concurrently;

display means for graphically showing in averaged or continuously updated form said harmonic data;

an input signal conditioner provided between said input means and said central processing unit;

said display means is capable of showing absolute values of current or voltage, showing RMS values of current or voltage, showing total harmonic distortion, showing a graph of the percent fundamental voltage or current versus harmonic number, and showing the voltage or current waveform versus time; and

said apparatus is portable and hand-held.

5,365,165

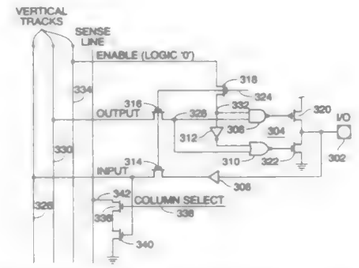
TESTABILITY ARCHITECTURE AND TECHNIQUES FOR PROGRAMMABLE INTERCONNECT ARCHITECTURE

Khaled A. El-Ayat, and Jia-Hwang Chang, both of Cupertino, Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 822,490, Jan. 14, 1992, Pat. No. 5,309,091, which is a continuation of Ser. No. 375,799, Jul. 5, 1989, Pat. No. 5,083,083, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application May 26, 1992, Ser. No. 889,839

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—58.1 **4 Claims**



4. In an integrated circuit having a plurality of input/output modules, each of said input/output modules including an input module section having an input node connected to a unique input/output pin on said integrated circuit and an output node connected to a unique first internal node in said integrated circuit, and an output module section having an input node connected to a unique second internal node in said integrated circuit and an output node connected to a unique input output pin on said integrated circuit, each input/output module being programmable by a user such that its function may be defined as an input module, an output module, or a bi-directional module, said integrated circuit further having two states, a first unprogrammed state where none of the functions of said input-/output modules have been defined, and a second, programmed state in which the functions of said input/output modules have been defined by either enabling or disabling the output module function of said input/output module, circuitry for simultaneously testing the input module sections of a first group of said input/output modules and the output module function of a second group of said input/output modules in said unprogrammed state, and wherein said first and second groups are mutually exclusive, comprising:

an internal testing sense line associated with said first group of said input/output modules;

addressing means for simultaneously selecting said first group of said input/output modules;

means for temporarily disabling the output sections of said first group of said input/output modules selected by said addressing means;

means for temporarily enabling the output sections of said second group of said input/output modules selected by said addressing means;

means for simultaneously temporarily connecting the unique first internal nodes of the input module sections of said first input/output modules in said first group to said internal testing sense line;

means for temporarily connecting said internal testing sense line to an input/output pin on said integrated circuit; and

means for temporarily connecting an input/output pin of said integrated circuit to the input nodes of the output module sections of said second group of said input/output modules at the same time said first input/output modules are being tested.

5,365,166

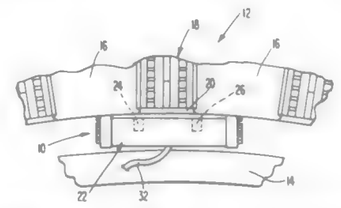
SYSTEM AND METHOD FOR TESTING ELECTRICAL GENERATORS

George F. Dailey, Plum Borough; James A. Bauer, Gibsonia, and Mark W. Fischer, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1993, Ser. No. 15,963

Int. Cl.[5] G01R *31/34*

U.S. Cl. 324—158 MG **8 Claims**



1. A method for performing a test on an electrical generator of the type having a rotor and a stator, the stator having an inner periphery defining a space within which the rotor is mounted to rotate, the inner periphery comprising a magnetic material in which a plurality of axial stator slots are defined, comprising:

(a) positioning a movable carriage over a selected stator slot so as to be able to axially traverse the selected stator slot, the carriage having testing equipment mounted thereon;

(b) performing a test with the testing equipment;

(c) sensing whether the movable carriage is centered in an optimum position with respect to the selected stator slot; and

(d) centering the movable carriage with respect to the optimum position if the movable carriage is not so centered, whereby accuracy of any testing by the testing equipment is optimized.

5,365,167

INTEGRATED CIRCUIT DEVICE HAVING SIGNAL DISCRIMINATION CIRCUIT AND METHOD OF TESTING THE SAME

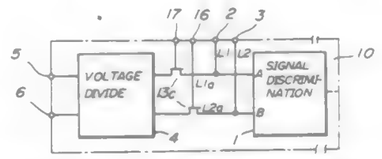
Masahiro Tanaka, Kawasaki; Kazuhiro Tomita, Kasugai, and Kazumi Ogawa, Komaki, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of Japan

Division of Ser. No. 944,767, Sep. 14, 1992, Pat. No. 5,304,923, which is a division of Ser. No. 789,878, Nov. 12, 1991, Pat. No. 5,168,219, which is a continuation of Ser. No. 429,501, Oct. 31, 1989, abandoned. This application Feb. 3, 1994, Ser. No. 191,451

Claims priority, application Japan, Oct. 31, 1988, 63-275280; Dec. 23, 1988, 63-325412; Jan. 11, 1989, 1-4400

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—158.1 **6 Claims**



1. A method of testing an integrated circuit device formed on a chip including;

a pair of signal input terminals,

signal discriminating means having a pair of input terminals coupled to said signal input terminals, for comparing a data signal and a reference signal supplied through said input terminals and for determining whether or not the

level of said data signal is higher than that of said reference signal,

a pair of test signal terminals to which a first pair of test signals having a first potential difference is applied,

voltage dividing means for dividing said first potential difference to thereby generate a second pair of test signals having a second potential difference less than said first potential difference, and

switching means, provided between said voltage dividing means and said signal discriminating means, for selectively connecting said voltage dividing means and said signal discriminating means, said method comprising the steps of:

connecting said voltage dividing means and said signal discrimination means through said switching means;

supplying said pair of test signal terminals with said first pair of test signals forming said first potential difference;

supplying said signal discriminating means with said second pair of test signals having said second voltage difference derived from said voltage dividing means;

determining whether said signal discriminating means correctly discerns whether one of said second pair of test signals is higher than the other test signal; and

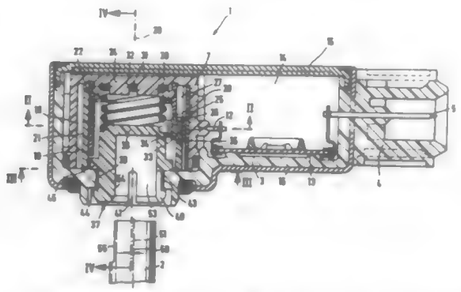
disconnecting said voltage dividing means from said signal discriminating means by said switching means.

5,365,168

MEASURING INSTRUMENT FOR CONTACTLESS DETERMINATION OF AN ANGLE OF ROTATION OF AN ADJUSTING SHAFT

Asta Reichl, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 12, 1993, Ser. No. 30,958
Claims priority, application Germany, Apr. 7, 1992, 4211616
Int. Cl.[5] G01B *7/30;* **F02D** *9/08*
U.S. Cl. 324—207.16 **18 Claims**



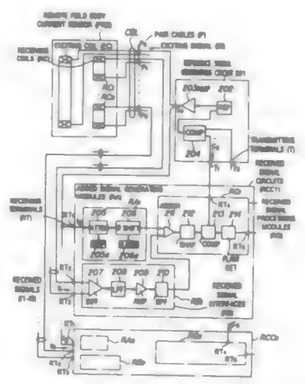
1. A measuring instrument for the contactless determination of an angle of rotation of an adjusting shaft, said measuring instrument comprises a coil body (7) that surrounds a measuring ring (25) having a portion that extends circumferentially over an angle less than 360°, said coil body (7) and said measuring ring (25) are movable relative to each other, and at least one sensor coil is disposed on said coil body, an alternating current flows through said at least one sensor coil, whose inductance and alternating current resistance vary by rotation of said measuring ring as a result of a relative variation in a size of a region of said portion of said measuring ring, which is oriented toward the at least one sensor coil, said measuring ring comprises electrically conducting and/or ferromagnetic material, and wherein the adjusting shaft can be coupled to a coupling body, in which the coupling body (37) engages a driver body (21) said driver body (27) is disposed between said coupling body (37) and said measuring ring (25) and engages said measuring ring to rotate said measuring ring, and both the coupling body (37) and the driver body (21) have at least one protuberance (47) or an indentation (49), and the at least one protuberance (47) and indentation (49) engage one another with play.

5,365,169

REMOTE FIELD EDDY CURRENT FLAW DETECTOR FOR METAL MATERIAL INCLUDING ATTENUATOR, ADDER, PHASE SHIFTERY AND PHASE COMPARATOR

Yasuharu Hosohara; Kiwamu Suzuki, both of Yokohama; Shigeru Fujiwara, and Toshihide Kawabe, both of Kure, all of Japan, assignors to Tokyo Gas Co., Ltd., Tokyo and CXR Co., Ltd., Hiroshima, both of Japan

Division of Ser. No. 740,388, Aug. 5, 1991, Pat. No. 5,210,492. This application Jan. 28, 1993, Ser. No. 14,875
Claims priority, application Japan, Apr. 22, 1991, 3-90685; May 27, 1991, 3-121291
Int. Cl.[5] G01N *27/90*
U.S. Cl. 324—233 **2 Claims**



1. A remote field eddy current flaw detector for detecting flaws in a metal pipe, comprising:

a reference signal generator for generating a reference signal;

an exciting coil for receiving an exciting signal having the same phase as that of said reference signal and generating remote field eddy current signals in the metal pipe to be tested;

a receiving coil, spaced axially from said exciting coil by a predetermined axial distance, for receiving said remote field eddy current signals that have passed through said pipe to generate a received signal;

an attenuator for attenuating said exciting signal at a predetermined level;

a phase shifter for delaying the attenuated signal to a predetermined phase angle;

a signal adder for adding the attenuated and delayed signal to said received signal; and

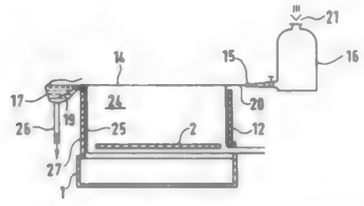
a flaw data generator for phase-comparing the added signal generated by said signal adder with said reference signal to generate a flaw signal representative of flaws in the metal pipe.

5,365,170

MEASUREMENT OF MAGNETIC PROPERTIES OF ELECTRICAL STEELS USING A SEARCH COIL PARTIALLY DEFINED BY A FLUID ELECTROLYTE

Philip Beckley, Newport, Wales, assignor to ORB Electrical Steels Limited, Great Britain

Filed Jan. 19, 1993, Ser. No. 4,906
Int. Cl.[5] G01R *33/12, 33/02;* **G01N** *27/72;* **H01F** *27/28*
U.S. Cl. 324—239 **6 Claims**



1. An apparatus for measuring the magnetic properties of electrical steels, the apparatus comprising:

means for inducing in a strip or sheet of electrical steel a magnetising electromagnetic force whose strength provides a measure of the magnetic properties of the strip or sheet;

a search coil through which the magnetized strip or sheet passes and whose upper extent is defined by a coherent jet of fluid electrolyte; and

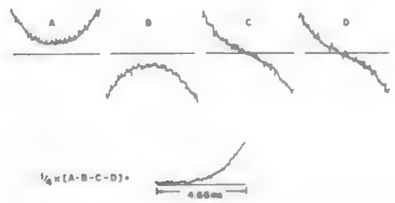
means coupled to the search coil for measuring the electromagnetic force induced within the strip or sheet.

5,365,171

REMOVING THE EFFECTS OF ACOUSTIC RINGING AND REDUCING TEMPERATURE EFFECTS IN THE DETECTION OF EXPLOSIVES BY NQR

Michael L. Buess, Alexandria, Va.; Allen N. Garroway, and James P. Yesinowski, both of Fort Washington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1992, Ser. No. 983,990
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—307 **14 Claims**



1. A system for detecting a substance selected from the group consisting of explosives and narcotics in a specimen by nuclear quadrupole resonance, comprising:

pulse generating means for generating a set of radio frequency pulse sequences having a predetermined frequency, said set of radio frequency pulse sequences comprising:

a first steady state free precession RF pulse sequence and;

a second steady state free precession RF pulse sequence temporally distinct from said first RF pulse sequence;

wherein each pulse of said first RF pulse sequence is of the same phase, duration, pulse separation and frequency, each pulse of said second RF pulse sequence having the same duration, pulse separation and frequency as the pulses of said first pulse sequence, said pulses of said second RF pulse sequence being, alternately, of the same phase as those of said first pulse sequence and of the opposite phase as those of said first pulse sequence;

a coil means for irradiating the specimen with said set of radio frequency pulse sequences and detecting a total nuclear quadrupole resonance signal in response to irradiating the specimen, said total nuclear quadrupole resonance signals produced in response to said first RF pulse sequence and second RF pulse sequence each including a free induction decay contribution and an echo contribution;

coupling means for transmitting said set of radio frequency pulses to said coil means and receiving said total nuclear quadrupole resonance signal from said coil means;

means for adding the total nuclear quadrupole resonance signal produced in response to said first RF pulse sequence to the total nuclear quadrupole resonance signal produced in response to said second RF pulse sequence so that said free induction decay contributions to each of said total nuclear quadrupole resonance signals cancel and only the echo contributions to said total nuclear quadrupole resonance signal remain, thus providing a coadded signal;

comparing means for comparing said coadded signal to a predetermined threshold value; and

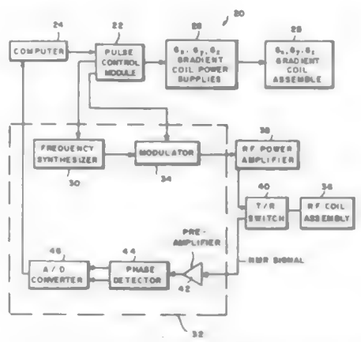
an alarm for signaling when said coadded signal exceeds said predetermined threshold value.

5,365,172

METHODS AND APPARATUS FOR MRI

Mirko I. Hrovat, Brockton; Samuel Patz, Brookline, and Yuly M. Pulyer, Malden, all of Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Aug. 7, 1992, Ser. No. 927,173
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **26 Claims**



1. Apparatus for obtaining image formation information from an object, said apparatus comprising:

a magnet system for applying a magnetic field that is substantially homogeneous over an imaging space in which at least a portion of the object to be imaged is placed;

an excitation system for applying radio frequency excitation to the object in the imaging space;

a receiver system for detecting NMR signals from the object; and

a magnetic field encoding system to apply an encoding magnetic field in the imaging space to provide spatial discrimination of the NMR signals from the object;

wherein the encoding magnetic field comprises a field, the strength of which varies depending on more than one orthogonal spatial coordinate.

5,365,173

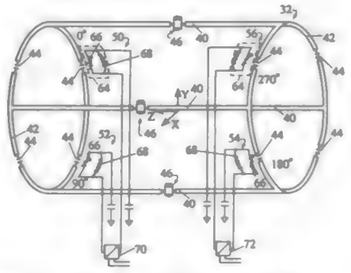
TECHNIQUE FOR DRIVING QUADRATURE DUAL FREQUENCY RF RESONATORS FOR MAGNETIC RESONANCE SPECTROSCOPY/IMAGING BY FOUR-INDUCTIVE LOOP OVER COUPLING

Xueming Zou, Willoughby; David A. Lampman, Lakewood, and Paul T. Orlando, Mentor, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 919,215, Jul. 24, 1992, Pat. No. 5,280,248, and a continuation-in-part of Ser. No. 922,162, Jul. 29, 1992. This application Feb. 18, 1993, Ser. No. 19,234

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—318 **20 Claims**



1. A magnetic resonance system comprising:

a static magnetic field means for generating a static magnetic field through an examination region;

a gradient field means for creating magnetic field gradients across the examination region;

a resonator coil for at least one of (1) transmitting radio frequency signals into the examination region, and (2) receiving radio frequency resonance signals from the examination region;

first, second, third, and fourth primary loop circuits inductively coupled to the resonator coil at 90° intervals thereabout for transferring at least one of radio frequency excitation signals and radio frequency resonance signals between the resonator coil and the first, second, third, and fourth primary loop circuits, at least the first and second primary loop circuits being connected by a cable means with a radio frequency receiver and transmitter means.

5,365,174

MAGNETIC RESONANCE IMAGING APPARATUS

Mutsumi Yoshikata, Noda, and Tsuneo Maeda, Tokyo, both of Japan, assignors to Hitachi Medical Corporation, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,825

Claims priority, application Japan, Feb. 10, 1992, 4-056487

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—318 **22 Claims**

1. A magnetic resonance imaging apparatus, comprising:

magnetic field generating means for applying a static magnetic field and gradient magnetic fields to an object to be examined;

means for irradiating nuclei of atoms constituting the living body tissue of an object to be examined with electromagnetic waves for causing nuclear magnetic resonance;

means for detecting electromagnetic waves emitted from the object owing to the nuclear magnetic resonance;

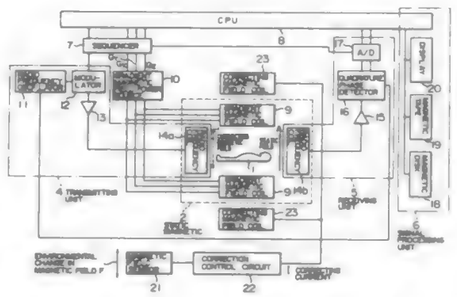
means for performing an operation for reconstruction of an image by processing signals of electromagnetic waves detected by the detecting means;

a magnetic field sensor for detecting a change in environmental magnetic field around said magnetic field generating means;

correction control circuit for amplifying a detection signal from said magnetic field sensor for generating a correcting current;

correcting magnetic field coil means to which the correcting current from the correction control circuit is input for generating a correcting magnetic field in a direction opposite to the change in the environmental magnetic field; and

a phase correcting circuit for correcting the phase of the



correcting current supplied to said correcting magnetic field coil means;

wherein the correcting magnetic field coil means and the magnetic field sensor are disposed so as to be magnetically uncoupled.

5,365,175

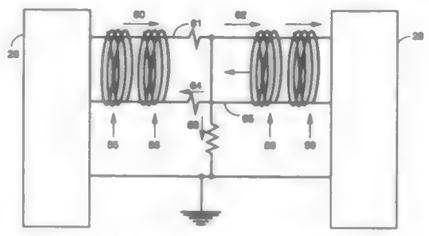
METHOD OF LOCATING GROUND FAULTS

Richard L. Patterson, South Euclid, Ohio; Allen H. Rose, Boulder, Colo., and Ronald C. Cull, Milan, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 21, 1993, Ser. No. 6,413

Int. Cl.[5] G01R *31/08*

U.S. Cl. 324—501 **3 Claims**



1. A method of locating ground faults comprising the steps of;

creating a plurality of circular optical paths, each for transmission of light having a linear state of polarization,

placing at least one pair of current carrying conductors including a forward and return path for current, within at least two of said circular optical paths,

transmitting current on said forward path of said pair of current carrying conductors and returning current on said return path of said pair of current carrying conductors thereby exposing said optical paths to the Faraday effect produced by said current traveling on said forward and return paths of said pair of current carrying conductors,

transmitting light having a linear state of polarization in said optical paths,

detecting, in at least two optical paths, rotation in the linear state of polarization caused by said Faraday effect thereby signalling a ground fault, and

locating said ground fault by comparing detected rotations in said at least two optical paths.

5,365,176

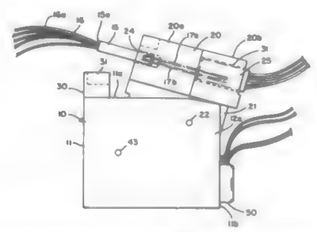
WIRING HARNESS SECURITY INSPECTION DEVICE

Doyle E. Miller, 16630 C.R. 10, P.O. Box 1474, Bristol, Ind. 46507

Filed Jan. 4, 1993, Ser. No. 206

Int. Cl.[5] G01R *31/00;* **H01R** *13/44*

U.S. Cl. 324—539 **6 Claims**



1. A wiring harness security inspection device comprising a base, a cradle supported on the base and movable from an unlocked to a locked position, retaining means cooperating with the cradle for securing a connector of a wiring harness to the cradle, latching means engageable with the cradle for maintaining the cradle in the locked position, and actuating means for moving the latching means into and out of engagement with the cradle whereby upon attaching the connector to the cradle and moving the cradle to the locked position to secure the connector to the cradle with the retaining means, the connector cannot be removed from the cradle until the wiring harness passes electrical inspection indicating proper securement of the connection to the wiring harness and the sending of an electrical signal for energizing the actuating means thereby enabling the actuating means to release the latching means and move the cradle to the unlocked position for removal of the connector from the cradle.

5,365,177

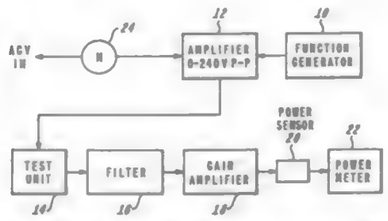
APPARATUS FOR MEASUREMENT OF HIGH FREQUENCY CORONA DISCHARGES IN ELECTRICAL COMPONENTS

Charles H. Hamp, III, Seattle, Wash., and David D. Maine, Brussels, , assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 10, 1993, Ser. No. 29,098

Int. Cl.[5] G01R *31/06, 31/14*

U.S. Cl. 324—547 **10 Claims**



8. Apparatus for the corona testing of electrical insulation of an electrical device, comprising:

means for subjecting said electrical device to a source of sufficiently high electrical stress so as to cause corona discharge in defective portions of the insulation,

a high pass filter, responsive to high frequency emanations resulting from said corona discharge while substantially attenuating low frequency emanations from said source of electrical stress,

a first indicating device coupled to an output of said high pass filter for providing a averaged power indication of said high frequency emanations,

a second indicating device coupled to the source of electrical stress for providing an indication of a state of a minimum power consumption as a function of varying an electrical parameter of said source of electrical stress,

means for varying said parameter as a function of frequency so as to establish said corona discharge at an optimum point of operation of said electrical device characterized by said state of minimum power consumption, and

means for independently shielding at least said electrical device and said filter for substantially reducing high frequency disturbances to or from the surrounding area.

5,365,178

ELECTRICAL DEVICE FOR LIQUID LEVEL MEASUREMENTS IN INDUSTRIAL TANKS AND THE LIKE

Ronald Van Der Pol, Venlo, Netherlands, assignor to Krohne Messtechnik GmbH & Co. KG, Duisburg, Germany

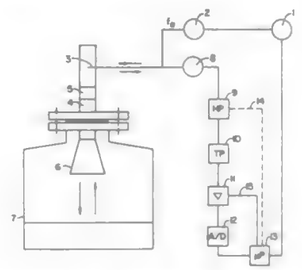
PCT No. PCT/EP92/00131, § 371 Date Oct. 8, 1992, § 102(e) Date Oct. 8, 1992, PCT Pub. No. WO92/14124, PCT Pub. Date Aug. 20, 1992

PCT Filed Jan. 21, 1992, Ser. No. 938,122

Claims priority, application Germany, Feb. 12, 1991, 4104146

Int. Cl.[5] G01R *27/04;* **G01S** *13/08*

U.S. Cl. 324—644 **14 Claims**



1. An apparatus for measuring the height of a liquid in a tank comprising:

means for generating a reference signal of continuously changing frequency;

a coupler operatively coupled to the generating means for converting the reference signal into electromagnetic waves;

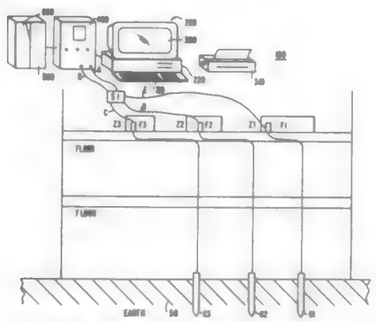
an antenna connected to the coupler and the tank for directing the electromagnetic waves into the tank against the liquid and receiving a signal reflected by the liquid;

a mixer operatively coupled to the generating means and the antenna, the mixer receiving the reference signal from the generating means and the reflected signal from the antenna, the mixer comparing the reference and reflected signals and computing a frequency shift signal which is a function of a distance travelled by the electromagnetic waves between the antenna and the liquid;

a band-pass filter operatively coupled to the mixer for attenuating frequencies below a lower limiting frequency so to attenuate interference signals corresponding to said frequencies; and

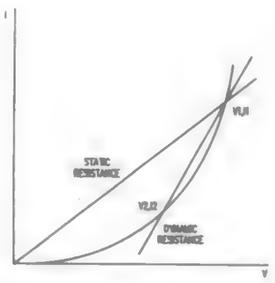
a microprocessor coupled to the filter for calculating the height of the liquid based on the frequency shift signal, the microprocessor continually adjusting the lower limiting frequency of the filter so that the frequencies corresponding to the interference signals are sufficiently attenuated while attenuation of the frequency shift signal is minimized.

5,365,179
APPARATUS AND METHOD FOR MEASURING GROUND IMPEDANCE
Wesley A. Rogers, Grosse Pointe Park, Mich., assignor to Electronic Development, Inc., Grosse Pointe Park, Mich.
Filed Mar. 19, 1992, Ser. No. 854,313
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—650 **49 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 54 Pages)



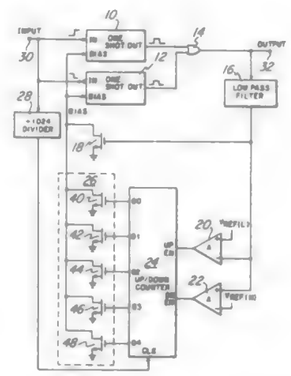
1. A system for measuring impedance of ground paths at frequencies above dc comprising:
a first, second, and third ground path to earth;
a first circuit for providing a signal at its output and determining the impedance vector across the output in response to the signal, the signal having a frequency selected from among a selected range of frequencies;
test leads for connecting the first circuit output to two of the first, second, and third ground paths; and
a second circuit for controlling the first circuit to provide an output signal at each of a first plurality of frequencies in the selected frequency range, one frequency at a time, and to determine the impedance vector across the first circuit output in response to each provided output signal.

5,365,180
METHOD FOR MEASURING CONTACT RESISTANCE
Ran Edelman, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Apr. 16, 1993, Ser. No. 48,892
Int. Cl.[5] G01R *31/26*
U.S. Cl. 324—715 **8 Claims**



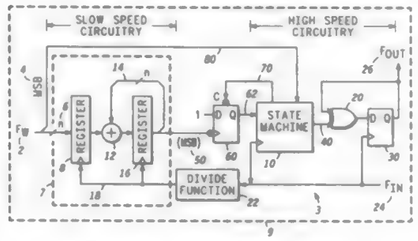
1. A method for measuring contact resistance between a test fixture and a device under test during device testing, the method comprising the steps of:
positioning one of a device under test and a test fixture relative to the other to establish an electrical contact;
forcing a first test current between two pins of the device under test through an isolating diode and measuring a first voltage drop associated therewith;
forcing a second test current between said two pins of the device under test through said isolating diode and measuring a second voltage drop associated therewith, said second test current having a different amperage than said first test current; and
determining the dynamic resistance of the test path using the values of the forced currents and the measured voltage drops and using the determined dynamic resistance in the determination of the contact resistances between the test fixture and the device under test.

5,365,181
FREQUENCY DOUBLER HAVING ADAPTIVE BIASING
Hugh Mair, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 15, 1993, Ser. No. 31,753
Int. Cl.[5] H03K *3/033, 3/78, 21/08*
U.S. Cl. 327—116 **19 Claims**



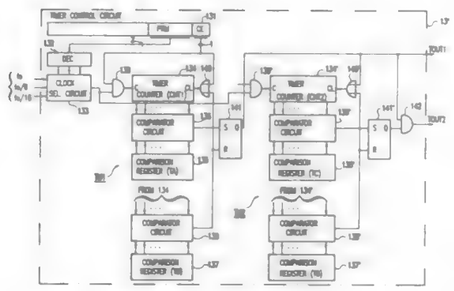
1. In a frequency doubler including means responsive to an input signal for generating an output signal having a single pulse corresponding to each transition of said input signal, wherein the width of said pulse is determined by the magnitude of a bias current supplied to said generating means, and further including means responsive to the average voltage level of said output signal for supplying said bias current, apparatus for adaptively supplementing the range of said bias current to said generating means comprising:
first means for comparing the average voltage level of said output signal with a first reference voltage level;
second means for comparing the average voltage level of said output signal with a second reference voltage level, greater than said first reference voltage level;
a digital up/down counter providing signals representing the count of said counter, said counter signals being in a binary relationship to one another, said counter being responsive to said first comparing means for enabling up counts, and responsive to said second comparing means for enabling down counts; and
a plurality of switching transistors responsive at their respective gate electrodes to said counter signals, said switching transistors providing bias currents to said generating means in proportion to the count of said counter.

5,365,182
METHOD AND APPARATUS FOR LOW POWER CLOCK GENERATION FOR HIGH SPEED APPLICATIONS
Thomas M. King, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 22, 1993, Ser. No. 79,573
Int. Cl.[5] H03B *19/00*
U.S. Cl. 327—115 **23 Claims**



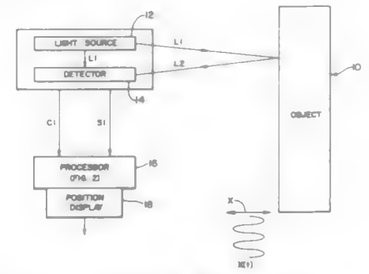
1. An apparatus for low power clock generation comprising:
a dividing means for receiving a high frequency input signal and producing a low frequency input signal;
a numerically controlled oscillator (NCO) coupled to the dividing means, the NCO for receiving a frequency word and the low frequency input signal and for producing a phase advance command;
a command means coupled to the NCO, the command means for receiving the phase advance command and for producing an output transition command; and
a phase shifter coupled to the command means, the phase shifter for executing the output transition command in response to a phase advance/retard polarity input and a high frequency clock input signal and for producing a low-frequency output clock signal.

5,365,183
SINGLE CHIP MICROCOMPUTER HAVING TWO KINDS OF TIMER FUNCTIONS
Yuko Mitsuhira, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Sep. 28, 1992, Ser. No. 951,866
Claims priority, application Japan, Sep. 30, 1991, 3-250919
Int. Cl.[5] H03K *5/15*
U.S. Cl. 327—144 **20 Claims**



1. A single chip microcomputer comprising:
clock signal generating means for generating at least one clock signal having a predetermined frequency;
first counting means, operatively connected to said clock signal generating means, for counting said clock signal;
first timer signal generating means, connected to said first counting means, for generating a first timer signal which changes from one of first binary logic states to the other of said first binary logic states when the value of said first counting means reaches a first predetermined value and changes from said other of said first binary logic states to said one of said first binary logic states when the value of said first counting means reaches a second predetermined value;
second counting means, operatively connected to said clock signal generating means, for counting said clock signal; and
second timer signal generating means connected to said second counting means and said first timer signal generating means, for generating a second timer signal which changes from one of second binary logic states to the other of said second binary logic states when the value of said second counting means reaches a third predetermined value and changes from said other of said second binary logic states to said one of said second binary logic states when the value of said second counting means reaches a fourth predetermined value; and
means for deactivating said second timer signal generating means during said first timer signal being in said one of said first binary logic states.

5,365,184
QUADRATURE PHASE PROCESSING
Alan B. Callender, Stuart, and Robert A. Bondurant, Palm City, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jan. 13, 1993, Ser. No. 3,918
Int. Cl.[5] G01S *13/50*
U.S. Cl. 327—2 **19 Claims**



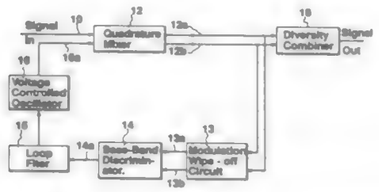
1. A measurement apparatus characterized by:
first means for providing a phase modulated signal from an object, the signal having a minimum and maximum frequency;
second means for providing two quadrature signals from said phase modulated signal;
third means for producing a quadrant signal by counting up and down the number of repetitions of the phase modulated exceeding a value of signal magnitude computed from each quadrature signal at two successive time intervals defined by clock signals with a frequency with a period that is a selected percentage of the quarter period for one cycle of the maximum frequency of the change in phase of the phased modulated signal, said third means comprising a first clock for providing the clock signals; and
fourth means for providing a signal indicating a phase position within one period of the phase modulated signal based on the magnitude of said quadrant signal.

5,365,185

FREQUENCY CONTROLLED LOOP FOR DEMODULATING OOK AND PSK SIGNALS

Israel Bar-David, Haifa, Israel, assignor to Technion Research & Development Foundation, Haifa, Israel

Filed Jul. 30, 1993, Ser. No. 100,602
Claims priority, application Israel, Aug. 5, 1992, 102737
Int. Cl.[5] H04L *27/22*
U.S. Cl. 329—308 **18 Claims**



1. A method of producing a frequency-controlled loop in a phase-diversity receiver for demodulating received ON-OFF-keyed (OOK) and phase shift keying (PSK) signals, comprising the following operations:

(a) generating a reference frequency signal;

(b) feeding the reference frequency signal and the received signals to a quadrature mixer (QM) which produces two output signals in phase quadrature at nominally zero intermediate frequency;

(c) producing from said phase quadrature output signals, quadrature continuous wave signals void of the modulation;

(d) generating a voltage proportional to the frequency of the quadrature continuous wave signals;

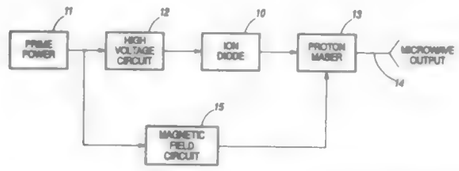
(e) and utilizing said generated voltage for controlling the frequency of the reference frequency signal generated in operation (a).

5,365,186

PROTON MASER

Donald L. Easley, P.O. Box 955, Bodega Bay, Calif. 94923

Filed Feb. 16, 1993, Ser. No. 18,048
Int. Cl.[5] H01S *1/02*
U.S. Cl. 330—4 **10 Claims**



1. A method of generating microwave power, said method comprising the steps of

producing a charged-particle beam that is charge-neutralized by electrons, said charged particles being heavier than electrons, and

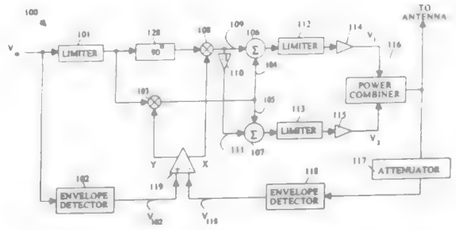
passing said charge-neutralized beam through at least one conductive cavity which is resonant at a selected microwave frequency and in a selected fundamental mode.

5,365,187

POWER AMPLIFIER UTILIZING THE VECTOR ADDITION OF TWO CONSTANT ENVELOPE CARRIERS

Thomas Hornak, Portola Valley, and William J. McFarland, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 29, 1993, Ser. No. 145,353
Int. Cl.[5] H03G *1/00, 9/00, 11/00*
U.S. Cl. 330—10 **7 Claims**



1. A power amplifier having a gain factor of G for generating an output signal from a lower power amplitude modulated input signal, said power amplifier comprising:

means for generating first and second constant envelope signals, each said constant envelope signal having the same frequency as said input signal, said second constant envelope signal differing in phase from said first constant envelope signal by an amount depending on the amplitude of said input signal;

means for vectorially adding said first and second constant envelope signals to obtain said output signal;

means for detecting any deviation of the amplitude ratio of said output and said input signals from G; and

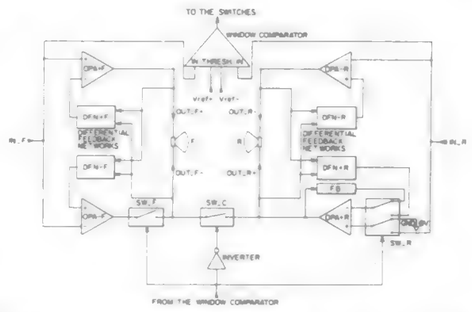
means for altering said phase difference between said first and second constant envelope signals so as to reduce said detected deviation of amplitude ratio.

5,365,188

SELF-CONFIGURABLE, DUAL BRIDGE, POWER AMPLIFIER

Edoardo Botti, Vigevano, and Guido Brasca, Varese, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Feb. 7, 1994, Ser. No. 192,858
Claims priority, application European Pat. Off., Feb. 24, 1993, 93830070.4
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—51 **8 Claims**



8. A method of reducing power dissipation in a double bridge amplifier characterized by comprising

generating a configuring signal in function of the instantaneous value of signals fed to the input terminals of the amplifier;

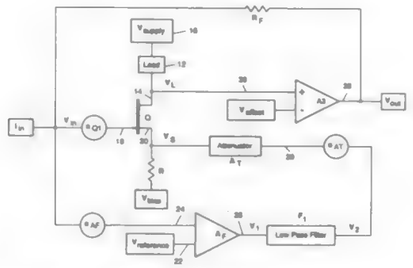
driving by said generated signal a plurality of configuring means capable of configuring the amplifier as a single bridge amplifier, driving a first and a second load connected susbtantially in series as long as the instantaneous value of the input signals is comprised within a window defined by a negative reference voltage and by a positive reference voltage, or as two distinct bridge amplifiers, each driving one of said first and second loads, when the instantaneous value of at least one of the input signals is outside the window defined by said reference voltages.

5,365,189

DRIFT FREE LOW NOISE COMPOSITE AMPLIFIER AND METHOD OF OPERATION THEREOF

Larry D. Coulson, Edmonton, Canada, assignor to The Governors of the University of Alberta Intellectual Property & Contracts Office University of Alberta, Edmonton, Canada

Filed Mar. 17, 1993, Ser. No. 32,488
Int. Cl.[5] H03F *3/68, 3/85, 1/00*
U.S. Cl. 330—126 **16 Claims**



1. A composite amplifier comprising:

an active gain element having a gate, a drain and a source;

an external voltage reference source;

feedback circuit means connected between the gate and the source, the feedback circuit being responsive to a change in voltage at the gate relative to the external voltage reference to supply a voltage of equal but opposite magnitude to the source; and

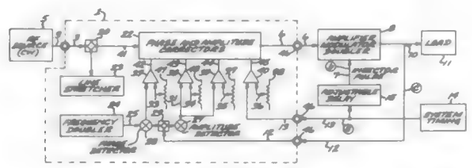
a voltage source connected to the source of the active gain element and the voltage source having an impedance whose Johnson noise is less than the noise of the active gain element.

5,365,190

FEED-FORWARD DIGITAL PHASE AND AMPLITUDE CORRECTION SYSTEM

David U. L. Yu, and Patrick H. Conway, both of Rancho Palos Verdes, Calif., assignors to Duly Research, Inc., Rancho Palos Verdes, Calif.

Filed May 3, 1993, Ser. No. 55,314
Int. Cl.[5] H03L *7/00*
U.S. Cl. 330—149 **7 Claims**



1. A correction system for stabilizing the phase and amplitude of output pulses generated by a device such that repeatable, RF pulses are generated, said device having an input for receiving a first signal that is to be amplified and an output for delivering periodic RF output pulses of amplified energy to a load comprising:

first means for detecting the phase of said first signal and producing a reference signal that is indicative of said phase,

second means for detecting the phase in said amplifier output pulses and producing digital output signals that are indicative of said phase in said amplifier output pulses; and

first means for comparing each of said output signals with said reference signal to produce a sequence of error signals that are indicative of variations of said phase at said pulsed amplifier output during individual ones of said amplifier output pulses, said comparing means comprising a phase detector and said error signals are indicative of phase variations from reference levels at said output of said device, said reference levels being constant or controlled by a digital microprocessor, and means for modifying said phase in said first signal comprising a phase shifter controlled by digital signal processing devices comprising phase error data storage means, timing means, phase correction logic means and phase correction data storage means,

said error signals being stored during each of said sequence of said amplifier output pulses,

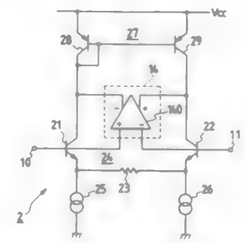
the error signals which were stored during prior amplifier output pulses modifying said phase in said first signal during subsequent output pulses to provide repeatable subsequent output pulses.

5,365,191

OFFSET REDUCING CIRCUIT FOR DIFFERENTIAL AMPLIFIER

Shigeyoshi Hayashi, Kyoto, Japan, assignor to Rohm Co., Ld., Kyoto, Japan

Filed Aug. 26, 1992, Ser. No. 935,552
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **6 Claims**



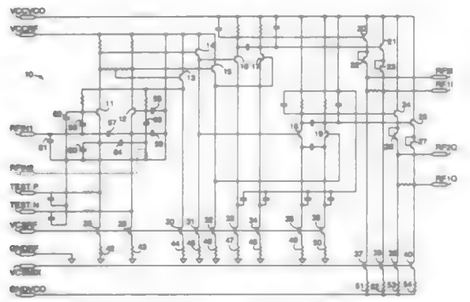
1. A voltage offset reducing circuit which reduces a voltage differential produced between two transistors of a differential amplifier, said voltage differential being produced by an imbalance in current supplied to a differential couple, comprising:

a current mirror circuit disposed on a collector side of said two transistors of said differential amplifier, for supplying a current to one of said two transistors which corresponds to a current flowing through the other of said two transistors;

a differential amplifier including a resistor connected between emitters of the two transistors to form said differential couple; and

a current canceling circuit for detecting a voltage differential between bases of said two transistors, configured to supply a current responsive to said voltage differential to said differential amplifier, thus acting to cancel said current imbalance responsible for causing said voltage differential.

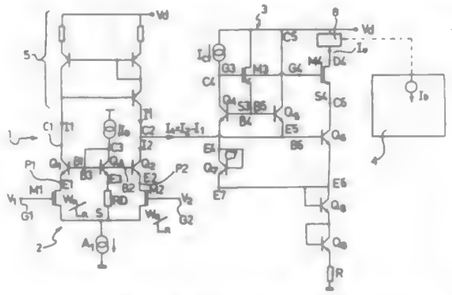
5,365,192
AC-COUPLED SINGLE-ENDED OR DIFFERENTIAL-INPUT RADIO FREQUENCY AMPLIFIER INTEGRATED CIRCUIT
Gary L. Wagner, Menlo Park, and Chung Y. Lau, Sunnyvale, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.
Filed Aug. 11, 1993, Ser. No. 105,026
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **11 Claims**



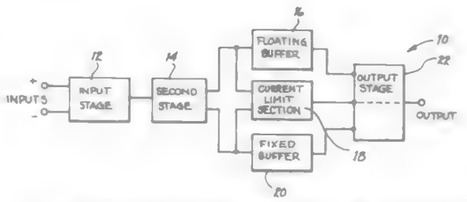
1. A single-ended input and differential-output radio frequency (RF) amplifier for fabrication within a single semiconductor integrated circuit (IC), the amplifier comprising:
a radio frequency (RF) input terminal for accepting signals in excess of one gigahertz in frequency;
a first bipolar transistor amplifier having a first collector, a first emitter and a first base;
a first transistor current source for providing a bias to the first bipolar transistor;
a first emitter decoupling capacitor connected between said first emitter and a signal common;
a first capacitor network comprised of a first input capacitor connected between the RF input terminal and said first base and a first base capacitor connected between said first base and said signal common;
a second bipolar transistor having a second collector, a second emitter and a second base;
a second transistor current source for providing a bias to the second bipolar transistor;
a second emitter decoupling capacitor connected between said second emitter and said signal common;
a second capacitor network comprised of a second input capacitor connected between said signal common and said second base and a second base capacitor connected between said second base and said signal common; and
a second emitter coupling capacitor connected between said signal common and said second emitter.

5,365,193
CIRCUIT FOR NEUTRALIZING THERMAL DRIFT IN A TRANSCONDUCTANCE STAGE
Maurizio Zuffada, Milan; Gianfranco Vai, Pavia; Marco Gregori, Milan; David Moloney, Cornaredo, and Giorgio Betti, Milan, all of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milan, Italy
Filed Nov. 25, 1992, Ser. No. 982,376
Claims priority, application Italy, Nov. 26, 1991, MI91A003144
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—253 **20 Claims**

10. A circuit for compensation of thermal drift in a transconductance amplifier, the circuit comprising:
a first transconductance stage structurally similar to the transconductance amplifier and generating a current proportional to a differential voltage applied to a first and second differential inputs; and
a second stage receiving said current from said first transconductance stage and outputting an output current to the transconductance amplifier, the value of said output current being inversely proportional to temperature-dependent parameters of the transconductance.



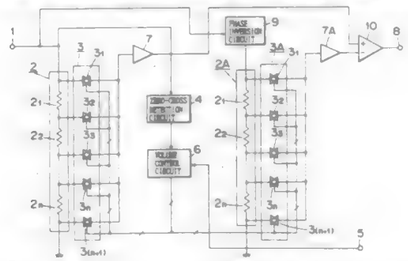
5,365,194
POWER OPERATIONAL AMPLIFIER HAVING OSCILLATION LIMITER AND METHOD THEREFOR
William K. Sands, Jr., Tucson, Ariz., assignor to APEX Microtechnology Corporation, Tucson, Ariz.
Filed Jun. 3, 1993, Ser. No. 72,329
Int. Cl.[5] H03F *21/00;* **H03G** *1/00, 9/00, 11/00*
U.S. Cl. 330—253 **20 Claims**



1. In a power operational amplifier device, the combination comprising:
floating buffer means coupled to an input portion of said power operational amplifier device for isolating said input portion from a portion of an output stage of said power operational amplifier device;
fixed buffer means coupled to said input portion for isolating said input portion from another portion of said output stage of said power operational amplifier device;
current limiting means coupled to both said floating buffer means and said fixed buffer means for limiting output current of said power operational amplifier device; and
output stage means coupled to each of said floating buffer means, said fixed buffer means, and said current limiting means for providing said output current of said power operational amplifier device.

5,365,195
VOLUME CONTROL APPARATUS PRODUCING REDUCED NOISE AND DISTORTION
Tohru Kageyama, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed May 13, 1993, Ser. No. 60,054
Claims priority, application Japan, May 14, 1992, 4-121723
Int. Cl.[5] H03G *3/30*
U.S. Cl. 330—284 **3 Claims**

1. A volume apparatus comprising:
a first semiconductor voltage dividing circuit made up of nonlinear a plurality of semiconductor resistors connected in series, the series resistors successively attenuating an input signal and outputting attenuated signals;
a first semiconductor switch circuit made up of a plurality of semiconductor switches, the semiconductor switches controlling the supply of the attenuated signals output from the first semiconductor voltage dividing circuit;
a phase inversion circuit for inverting the phase of the input signal;
a second semiconductor voltage dividing circuit made up of nonlinear a plurality of semiconductor resistors connected in series, the series resistors successively attenuating the input signal output from the phase inversion circuit and outputting attenuated signals;
a second semiconductor switch circuit made up of a plurality of semiconductor switches, the semiconductor switches controlling the supply of the attenuated signals output from the second semiconductor voltage dividing circuit;



a volume control circuit controlling the first and second semiconductor switch circuits according to a control signal; and
a differential amplifier having one of input terminals thereof connected to the output of the first semiconductor switch circuit and the other connected to the output of the second semiconductor switch circuit;
whereby the attenuated signals from the first semiconductor switch circuit are supplied to one input terminal of the differential amplifier and the attenuated signals from the second semiconductor switch circuit, whose phase is inverted from that of the signals from the first semiconductor switch circuit, are supplied to the other input terminal of the differential amplifier to cancel noise and distortions of nonlinear these two kinds of attenuated signals and amplify the attenuated signals by two times.

5,365,196

Patent Not Issued For This Number

5,365,197
LOW-NOISE DISTRIBUTED AMPLIFIER
Pertti K. Ikalainen, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jun. 30, 1993, Ser. No. 86,281
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—286 **20 Claims**

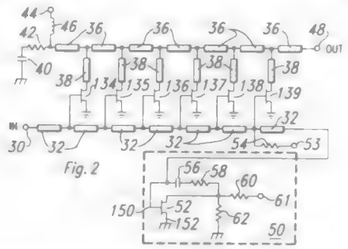
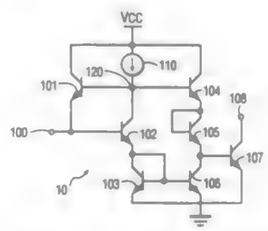


Fig. 2

1. An amplifier comprising:
a) an input transmission line;
b) an output transmission line;
c) at least two active devices distributed between said two transmission lines;
d) a termination coupled to an end of said input transmission line, wherein said termination is dc isolated from said input transmission line, and further wherein said termination is biased independently of said active devices distributed between said two transmission lines.

5,365,198
WIDEBAND AMPLIFIER CIRCUIT USING NPN TRANSISTORS
Stephen L. Wong, Scarsdale, N.Y., assignor to Philips Electronics North America Corporation, New York, N.Y.
Filed Sep. 23, 1993, Ser. No. 125,995
Int. Cl.[5] H03F *3/04*
U.S. Cl. 330—288 **5 Claims**

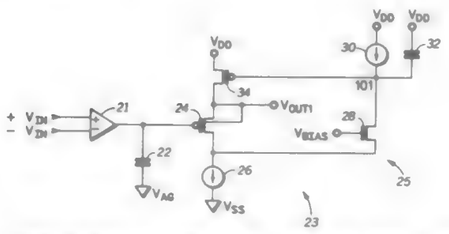


1. A wideband amplifier circuit comprising a first current path between a positive and a negative supply line having first, second and third npn bipolar transistors, an amplifier input coupled to said first and second transistors, a second current path between said supply lines having fourth, fifth and sixth npn bipolar transistors, a seventh npn bipolar transistor for providing an amplifier output and coupled to said fifth and sixth transistors, and a first current source coupled between said positive supply line and the first, second and fourth transistors at a first junction, the base-emitter junctions of said first, second and third transistors being connected in series between said first junction and said negative supply and the base-emitter junctions of said fourth, fifth and seventh transistors being connected in series between said first junction and said negative supply, whereby the sum of the base-emitter voltages of said first, second and third transistors is equal to the sum of the base-emitter voltages of said fourth, fifth and seventh transistors.

5,365,199
AMPLIFIER WITH FEEDBACK HAVING HIGH POWER SUPPLY REJECTION
Todd L. Brooks, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 2, 1993, Ser. No. 100,789
Int. Cl.[5] H03F *1/38*
U.S. Cl. 330—291 **15 Claims**

1. A CMOS amplifier with feedback having high power supply rejection, comprising:
an amplifier stage having first and second input terminals and an output terminal;
a stabilizing capacitor having a first plate electrode coupled to the output terminal of the amplifier stage, and a second plate electrode coupled to an analog ground terminal;
a source-follower transistor having a gate coupled to the output terminal of the amplifier stage for receiving an input signal, a source for providing an output signal, and a drain having a drain current; and
a negative feedback circuit, coupled between the source and the drain of the source-follower transistor, for detecting variations in the drain current of the source-follower

transistor due to changes in a load current, and in response to detecting a variation in the drain current, providing



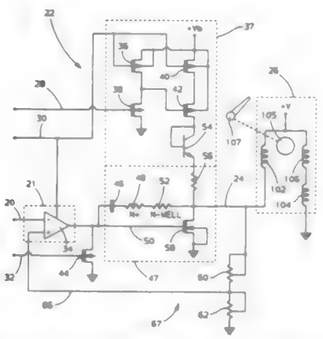
negative current feedback to the source of the source-follower transistor to limit the variations in the drain current.

5,365,200

CMOS GAUGE DRIVER

Edward H. Hennigford, Russiaville, and Gregory J. Manlove, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 8, 1992, Ser. No. 957,837
Int. Cl.[5] H03F *1/34;* **G01R** *1/30*
U.S. Cl. 330—293 **8 Claims**



5. An apparatus comprising an integrated circuit including a first stage amplifier and a second stage amplifier, the first stage amplifier characterized by a cross-coupled integrated circuit layout providing a linear gain, A, substantially defined as $A=g_m r_o'$, where g_m and r_o' represent the first amplifier stage transconductance and output impedance, respectively, the second stage amplifier coupled to a first output of the first stage amplifier and comprising a high-voltage integrated circuit transistor with an AC feedback circuit comprising, in series, a capacitor, an N+ resistor and an N-Well resistor, wherein the second stage amplifier has a second output used to directly drive an inductive load.

5,365,201

POWER SUPPLY INTERRUPTION CIRCUIT FOR AN AUDIO POWER AMPLIFIER

Kelvin Shih, 903 Devonshire, Brighton, Mich. 48116, and Fu-Yih Shih, 9th Floor, 50.52, Min Chuan Rd., Hsin Tien, Taipei, Taiwan, Prov. of China

Filed Jun. 16, 1993, Ser. No. 79,127
Int. Cl.[5] H03F *1/02, 3/04;* **H02H** *7/20;* **G11B** *7/125*
U.S. Cl. 330—298 **11 Claims**

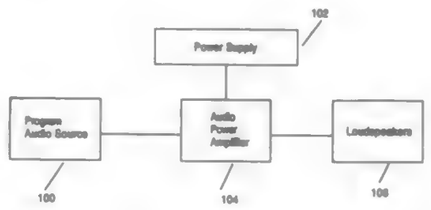
1. A power supply for an audio amplifier having at least one power transistor, said power supply comprising:

supply means for supplying a voltage to one or more power transistors;

current sensing means for sensing the current output of the supply means and generating a supply current signal;

comparison means for comparing the magnitude of the supply current signal to a preset level;

generating means for generating a current limit signal if the magnitude of the supply current signal exceeds the preset level;



control means responsive to the current limit signal for disabling the supply means, said control means comprising a transistor;

reset means for manually generating a reset signal; and

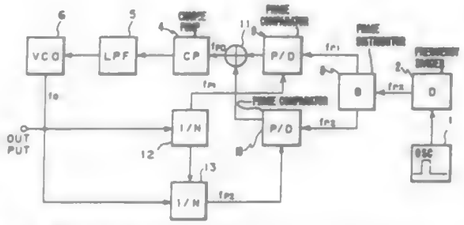
latching means responsive to the reset means for holding the supply means in a disabled condition until the reset signal is present, said latching means comprising a flip-flop circuit.

5,365,202

PLL FREQUENCY SYNTHESIZER USING PLURAL PHASE COMPARISONS

Kazuhiro Mori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1993, Ser. No. 40,281
Claims priority, application Japan, Apr. 15, 1992, 4-119869
Int. Cl.[5] H03L *7/087, 7/18*
U.S. Cl. 331—12 **2 Claims**



1. A frequency synthesizer using a phase-locked loop for producing signals of multiple frequencies, comprising:

a voltage-controlled oscillator which generates a signal having a frequency correspondent to an input voltage supplied thereto;

a reference signal oscillator which generates a first reference phase signal that establishes an operational base of said synthesizer;

a phase distributor which produces a second reference phase signal and a third reference phase signal based on said first reference phase signal;

a first frequency divider which divides an output frequency of said voltage-controlled oscillator by a first frequency division factor;

a second frequency divider which divides an output frequency of said voltage-controlled oscillator by a second frequency division factor;

a first phase comparator which detects a phase difference between the second reference phase signal and an output signal of said first frequency divider to produce a first

phase difference signal which represents the detected phase difference;

a second phase comparator which detects a phase difference between the third reference phase signal and an output signal of said second frequency divider to produce a second phase difference signal which represents the detected phase difference;

an adder which adds the first and the second phase difference signals;

a charge pump which varies an output state thereof in response to an output of said adder; and

a low pass filter which removes the high frequency components above a predetermined frequency from an output signal of said charge pump and supplies a resulting voltage signal to said voltage-controlled oscillator;

said first reference phase signal having a frequency twice as high as the frequency of the second and third reference phase signals;

the phase difference between the second reference signal and the third reference signal being a half wavelength of the first reference signal; and

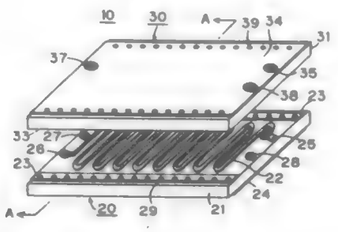
wherein said first frequency divider produces a pulse signal on completion of counting N output pulses of said voltage-controlled oscillator, where N is a natural number representing a frequency division factor, and said second frequency divider produces a pulse signal on completion of counting $(2n+1)$ N/2 output pulses of said voltage-controlled oscillator, where n is a natural number.

5,365,203

DELAY LINE DEVICE AND METHOD OF MANUFACTURING THE SAME

Nakaba Nakamura, and Makoto Kosaki, both of Kyoto, Japan, assignors to Susumu Co., Ltd., Kyoto, Japan

Filed Oct. 25, 1993, Ser. No. 140,539
Claims priority, application Japan, Nov. 6, 1992, 4-322383
Int. Cl.[5] H01P *9/00, 1/18*
U.S. Cl. 333—161 **7 Claims**



1. A delay line device comprising:

a first substrate having a signal line centrally formed on one of main surfaces of a ceramic substrate, bonding electrodes formed in a peripheral portion of said main surface, a ground electrode formed over substantially the entire region of the other main surface of said ceramic substrate, and means for providing electrical connections between said ground electrode and said bonding electrodes; and

a second substrate having bonding electrodes formed on one of main surfaces of a ceramic substrate identical in thickness and material to the ceramic substrate of said first substrate and at positions respectively corresponding to the bonding electrodes of said first substrate, a ground electrode formed over substantially the entire region of the other main surface of said ceramic substrate, and means for providing electrical connections between said ground electrode and said bonding electrodes; and

wherein said first and second substrates being stacked on one another in such a manner that the bonding electrodes of said first substrate and the bonding electrodes of said second substrate are respectively disposed in facing relationship to one another; and

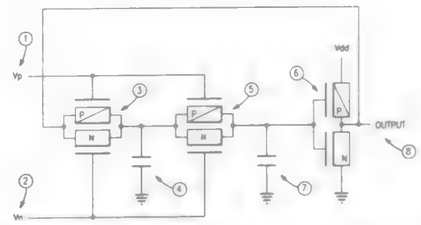
said opposed bonding electrodes of said first and second substrates are bonded to one another in such a manner that the signal line of said first substrate is brought into contact with the ceramic substrate of said second substrate.

5,365,204

CMOS VOLTAGE CONTROLLED RING OSCILLATOR

John M. Angiulli, Lagrangeville, N.Y.; Arun K. Ghose, Behala, India; Richard R. Konian; Samuel R. Levine, both of Poughkeepsie, N.Y.; David Meltzer, Wappingers Falls, N.Y.; Wen-Yuan Wang, and Leon L. Wu, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1993, Ser. No. 145,364
Int. Cl.[5] H03B *5/24;* **H03K** *3/354*
U.S. Cl. 331—57 **9 Claims**



1. A variable frequency digital oscillator comprising:

a digital ring oscillator circuit having two supply voltages Vss and Vdd; and

an odd number of CMOS inverters connected in cascade to form a loop; and

a plurality of CMOS transmission gates coupled between each adjacent pair of said CMOS inverters; and

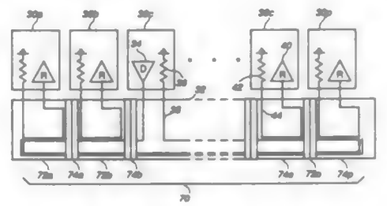
a MOS capacitor connected between the output of each transmission gate and said Vss supply.

5,365,205

BACKPLANE DATABUS UTILIZING DIRECTIONAL COUPLERS

Larry K. Wong, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 20, 1993, Ser. No. 64,282
Int. Cl.[5] H01D *5/18*
U.S. Cl. 333—109 **5 Claims**



1. A backplane databus comprising:

a plurality of modules, each having first, second and third edges, first and second substantially parallel conductive tracks between the first and second edges for carrying a main signal, a third conductive track forming a loop running from the third edge, paralleling the first substantially parallel conductive track for a coupling length L_c and returning to the third edge, and first, second and third connectors affixed to the first, second, and third edges respectively, the first and second connectors electrically connected to respective ends of the first and second sub-

stantially parallel conductive tracks, the third connector electrically connected to the third conductive track;

a pair of end modules, each having fourth and fifth edges, a fourth conductive track forming a u-shape from the fourth edge back to the fourth edge, a fifth conductive track forming a loop running from the fifth edge, paralleling the fourth conductive track for a coupling length L_c and returning to the fifth edge and fourth and fifth connectors affixed to the fourth and fifth edges respectively, the fourth connector electrically connected to the fourth conductive track, the fifth connector electrically connected to the fifth conductive track; and

an intermediate module having sixth, seventh and eighth edges, sixth, seventh, and eighth conductive tracks, the sixth and seventh conductive tracks each forming an L-shape from the eighth edge to the sixth and seventh edges, respectively, an eight conductive track between the sixth and seventh edges and sixth, seventh and eighth connectors affixed to the sixth, seventh and eighth edges, respectively, and electrically connected to the sixth and eighth conductive tracks, and seventh and eighth conductive tracks and sixth and seventh conductive tracks, respectively, the intermediate, plurality and end modules being interconnected thereby to form a continuous main conductive track including the sixth conductive track, a portion of the plurality of first conductive tracks, a fourth conductive track, a like portion of the plurality of second conductive tracks, the eighth conductive track, the remainder of the plurality of second conductive tracks, a fourth conductive track, the remainder of the plurality of first conductive tracks, and the seventh conductive track.

5,365,206

SURFACE ACOUSTIC WAVE REFLECTOR FILTER HAVING Z-SHAPED PROPAGATION PATHS

Jürgen Machui, and Werner Ruile, both of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

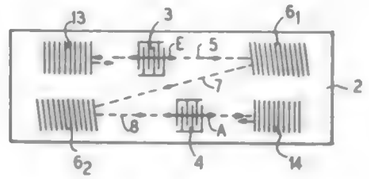
PCT No. PCT/DE90/00876, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO91/07818, PCT Pub. Date May 30, 1991

PCT Filed Nov. 14, 1990, Ser. No. 856,044

Claims priority, application Germany, Nov. 14, 1989, 3937871; Jun. 12, 1990, 4018784

Int. Cl.[5] H03H *9/64*

U.S. Cl. 333—195 **25 Claims**



1. A reflector filter operating with surface acoustic waves, comprising:

an input transducer having an associated single main wave propagation direction,

an output transducer having an associated single main wave propagation direction,

a substrate having a surface for propagating acoustic waves and said input and output transducers being arranged on said surface such that there is no coincidence of the input transducer main wave propagation direction and the output transducer main wave propagation direction,

two reflectors disposed along a respective acoustic path located between the input transducer and the output transducer, said reflectors arranged relative to the input and output transducers and to one another such that the acoustic wave propagating between the input and output transducers has two series-connected changes of direction, each change of direction defining a respective angle and the angles of each of the changes of directions having equal values, and each of said angles of said respective changes of directions of the acoustic wave in a respective reflector being greater than 155° and less than 180°, so that an essentially Z-shaped or inverted Z-shaped wave propagation path is produced from the input transducer to the output transducer.

5,365,207

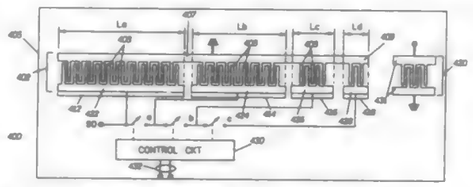
MULTI-BANDWIDTH SAW FILTER

Jaime A. Borras, Hialeah, Fla., and David Peaunuri, Fountain Hills, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1992, Ser. No. 999,256

Int. Cl.[5] H03H *9/64*

U.S. Cl. 333—196 **7 Claims**



1. A multi-bandwidth SAW filter, comprising:

a piezoelectric substrate;

first and second SAW transducers having different lengths disposed on said piezoelectric substrate, wherein the lengths of said SAW transducers correspond to selectable bandwidths of the filter;

a third SAW transducer positioned between the first and second SAW transducers, wherein the third SAW transducer comprises a unidirectional SAW transducer capable of selectively directing acoustic waves to and from one of its opposing sides; and

means for selecting one of said first and second SAW transducers in response to a control signal, and for coupling an input signal to the selected SAW transducer, the control signal indicating a desired bandwidth for the SAW filter to present.

5,365,208

MICROWAVE STRIPLINE FILTER FORMED FROM A PAIR OF DIELECTRIC SUBSTRATES

Kenji Ito; Hiroyuki Shimizu, and Seigo Hino, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

PCT No. PCT/JP92/00440, § 371 Date Dec. 7, 1992, § 102(e) Date Dec. 7, 1992, PCT Pub. No. WO92/17913, PCT Pub. Date Oct. 15, 1992

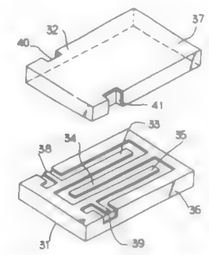
PCT Filed Apr. 8, 1992, Ser. No. 949,627

Claims priority, application Japan, Apr. 8, 1991, 3-075229; Apr. 8, 1991, 3-075232; May 15, 1991, 3-110316

Int. Cl.[5] H01P *1/203*

U.S. Cl. 333—204 **1 Claim**

1. A microwave strip line filter having a pair of dielectric substrates each having an outer surface and an inner surface and each being provided with a ground conductor on the outer surface, at least one of the dielectric substrates being provided with resonant electrodes on the inner surface thereof, said dielectric substrates being stacked and bonded so that the resonant electrodes are sandwiched therebetween the dielectric substrates being made of ceramic materials having different relative dielectric constants, respectively, one of said pair of dielectric substrates being constructed of a dielectric ceramic material having a composition represented by, x BaO.y TiO_2.z.Nd_2O_3+w Y_2O_3, wherein X=17.7 mole %, y=69.8 mole %, z=12.5 mole % and w=7.5 weight %, and the other dielectric substrate being constructed of a dielectric ceramic material having a composition represented by x BaO.y TiO_2.z Nd_2O_3+w Y_2O_3+v Al_2O_3, wherein x=17.7 mole %, y=69.8 mole %, z=12.5 mole %, w=7.5 weight % and v=1 weight %.



5,365,209

DIELECTRIC FILTERS AND DUPLEXERS INCORPORATING SAME

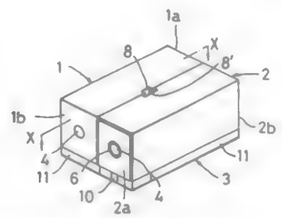
Atsushi Ito, Higashiosaka, and Yasuhiko Okamoto, Osaka, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 2, 1993, Ser. No. 43,463

Claims priority, application Japan, Apr. 3, 1992, 4-082106; Jan. 12, 1993, 5-003426; Feb. 1, 1993, 5-014753; Feb. 19, 1993, 5-030538

Int. Cl.[5] H01P *1/205*

U.S. Cl. 333—206 **12 Claims**



1. A dielectric filter comprising: a dielectric substrate having input and output coupling strip lines, and a plurality of coaxial resonators, each of the resonators comprising a dielectric member having a through hole, an outer peripheral surface and an inner peripheral surface, the outer and inner peripheral surfaces being covered with an electrically conductive material to provide an outer conductor and an inner conductor respectively, the outer conductor being partially removed, the resonator having an end face where the outer and inner conductors are short-circuited and an open end face where the outer and inner conductors are not connected to each other, the plurality of coaxial resonators including a pair of resonators serving as an input stage and an output stage and arranged on the dielectric substrate with their open end faces oriented in directions opposite to each other, the dielectric substrate being shaped in the dimensions of width and length substantially in conformity with a bottom contour of the plurality of resonators as arranged on the substrate; and wherein said pair of resonators serving as an input stage and an output stage are coupled to the input and output coupling strip lines, respectively.

5,365,210

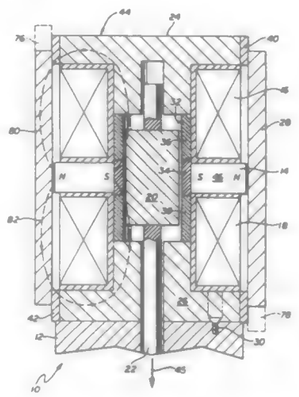
LATCHING SOLENOID WITH MANUAL OVERRIDE

Marshall U. Hines, Scottsdale, Ariz., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 21, 1993, Ser. No. 124,918

Int. Cl.[5] H01F *7/08, 7/00;* **H01H** *9/00*

U.S. Cl. 335—238 **4 Claims**



1. Solenoid apparatus, comprising in combination:

an encasement including two relatively fixed end pieces interconnected with a movable portion; the encasement having a longitudinal axis and variable reluctance; the reluctance being variable by movement of the movable portion in a direction parallel to the longitudinal axis and relative to the endpieces;

two spaced coils circumscribing the axis and secured in fixed relation to the end pieces;

a cylindrical armature coaxial with the encasement and disposed for axial movement between the end pieces;

a permanent magnet interposed between the coils and circumscribing the armature;

the encasement being interconnected with the magnet and coils whereby the movable portion is translatable in either of two directions along the axis.

5,365,211

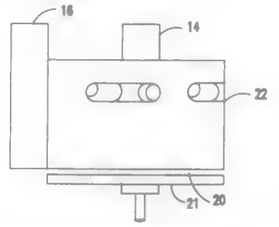
WOUND COIL WITH INTEGRAL COOLING PASSAGES

William D. Carbaugh, Jr., Marlboro; David C. Long, Wappingers Falls, both of N.Y., and Karl F. Stroms, Las Vegas, Nev., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1992, Ser. No. 996,765

Int. Cl.[5] H01F *5/00*

U.S. Cl. 335—300 **27 Claims**



23. An electromagnetic coil comprising:

a conductive sheet with a series of openings punched in said sheet, said series of openings extending along the length of said conductive sheet with adjacent opening separated by a web of said conductive sheet material; and

said conductive sheet wrapped in a spiral to form said coil with said openings in adjacent layers partially overlapping in a direction of said length of said conductive sheet to form at least one fluid passageway having increased surface area of said conductive sheet forming a surface of said at least one passageway and extending throughout said coil allowing passage of thermally conductive fluid through said coil.

5,365,212

MAGNETORESISTANCE EFFECT ELEMENT

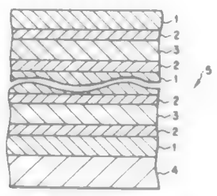
Yoshiaki Saito; Koichiro Inomata, both of Yokohama; Shiho Okuno, Fujisawa, and Yoshinori Takahashi, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 2, 1993, Ser. No. 100,427

Claims priority, application Japan, Aug. 3, 1992, 4-206441; Aug. 3, 1992, 4-206442; Feb. 26, 1993, 5-061225

Int. Cl.[5] H01L *43/00*

U.S. Cl. 338—32 R **31 Claims**



1. A magnetoresistance effect element comprising a multilayer stack of alternating magnetic and non-magnetic layers, and having a mixture layer constituted by a mixture of a ferromagnetic element and a non-ferromagnetic element interposed between adjacent stacked magnetic and non-magnetic layers so as to exhibit a magnetoresistance effect, and wherein $2(X_1/X_n)/n$ is larger than 1.1 where n is the number of atomic layers of said mixture layer, X_1 is an atomic concentration (%) of said ferromagnetic element of an atomic layer closest to said magnetic layer, and X_n is an atomic concentration (%) of said ferromagnetic element of the n-th atomic layer closest to said non-magnetic layer.

5,365,213

WARNING DEVICE

Nathaniel H. Paull, 520 E. 81st St., Apt. 11-D, New York, N.Y. 10028, and Howard P. Davis, 250 Gorge Rd., Apt. 9C, Cliffside Park, N.J. 07010

Filed Apr. 1, 1993, Ser. No. 41,827

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—321 **10 Claims**

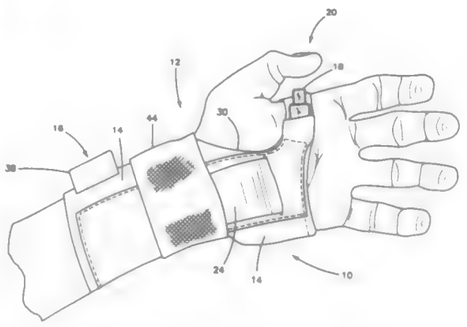
1. A warning apparatus, comprising:

a body member for disposal around at least a portion of the hand and the wrist of a user, wherein the body member includes at least in part two layers of material and at least one rigid support member at least in part between said two layers of material;

warning means operative to emit an audible warning signal attached to the body member;

switch means for actuating the warning means attached to the body member so that the switch means is substantially adjacent to at least one finger of the hand and being operatively connected to the warning means so that actuation of the switch means causes the warning means to emit said warning signal; and

conductive means electrically connecting the switch means to the warning means, wherein the conductive means is disposed at least in part between said at least two layers of material and in addition at least in part behind said at least one rigid support member,



wherein said rigid support member protects the integrity of the warning apparatus.

5,365,214

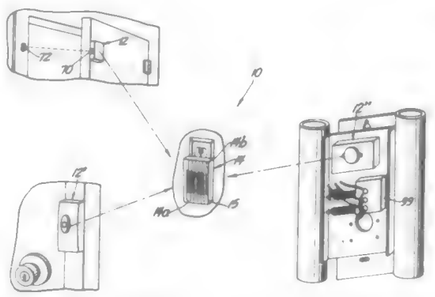
MUSICAL WIRELESS ALERTING SYSTEM

Paul G. Angott, Troy; Gregory G. Kilby, Plymouth, and Thomas G. Xydis, Ann Arbor, all of Mich., assignors to Dimango Products Corporation, Brighton, Mich.

Filed Aug. 24, 1992, Ser. No. 934,363

Int. Cl.[5] G08B *3/00*

U.S. Cl. 340—328 **31 Claims**



1. An alerting assembly for producing an audible indication of predefined conditions, said assembly comprising:

detector means (12) for detecting a predefined condition and for producing and transmitting a radio frequency alert signal indicative of said predefined condition;

audio means (14) remote from said detector means (12) for receiving said radio frequency alert signal and for producing one of several audible indications representative of the detection of said predefined condition;

said detector means (12) including audible selection means (20) for manual selection of one of a plurality of audio codes representative of different audible indications and radio frequency transmitter means (18) for receiving and transmitting said radio frequency alert signal comprising said selected audio code upon detection of said predefined condition to said audio means (14), said audio means (14) producing said one of several audible indications based on said selected audio code.

5,365,215

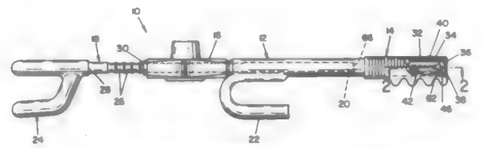
VEHICLE STEERING LOCK WITH AUDIBLE SIGNAL

Louis D. Carlo, Litchfield; Danut Voiculescu, Cleveland, and John Rutkowski, Cuyahoga Falls, all of Ohio, assignors to Winner International, Sharon, Pa.

Filed Jan. 21, 1993, Ser. No. 7,270

Int. Cl.[5] B60R *25/10*

U.S. Cl. 340—426 **19 Claims**



1. In a vehicle anti-theft device mountable in a vehicle to limit rotation of a vehicle steering wheel and comprising first and second attachment means displaceable relative to one another between mounting and storage positions, the improvement comprising: vibration responsive electric circuit means on said device for producing an audible signal when said attachment means are in said storage position, said circuit means including means for sensing vibration of said device and producing a control signal indicative of no vibration of said device, audio signal generating means, and means to transmit said control signal to said signal generating means to generate an audible sound in response to said control signal.

5,365,216

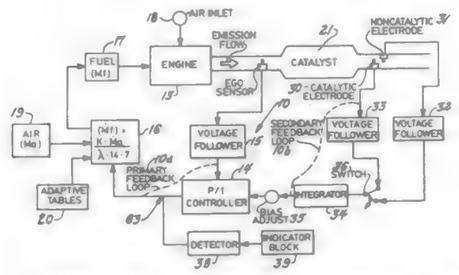
CATALYST MONITORING USING EGO SENSORS

Allan J. Kotwicki, Sterling Heights, and Douglas R. Hamburg, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 741,881, Aug. 7, 1991. This application Mar. 1, 1994, Ser. No. 203,916

Int. Cl.[5] B60Q *1/00;* **F01N** *3/00*

U.S. Cl. 340—439 **5 Claims**



1. An oxygen sensor construction for sensing exhaust pores of an internal combustion engine, comprising:

(a) a cylindrical solid electrolyte ion conductor closed at one end and having its interior wall exposed to air and its exterior wall exposed to exhaust gases from said engine having an oxygen partial pressure lower than the oxygen in said air;

(b) at least one low-to-non catalytic electrode on said interior wall having an imposed voltage;

(c) at least one highly catalytic electrode on said exterior wall connected to ground a migration of oxygen ions formed at the interior wall electrode being through said conductor to combine as oxygen molecules at said exterior electrode and cause a net voltage to occur between said electrodes indicative of a degree of oxygen present in said exhaust gas.

5,365,217

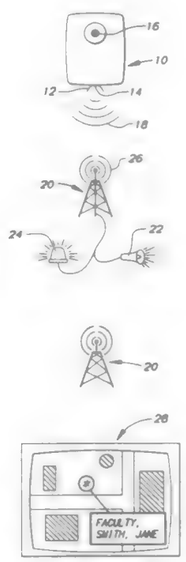
PERSONAL SECURITY SYSTEM APPARATUS AND METHOD

Frank J. Toner, Box J 210 N. Benson Ave., Longport, N.J. 08402, assignor to Frank J. Toner and Atlantic Coast Alarm, Margate, N.J.

Filed Feb. 20, 1992, Ser. No. 839,343

Int. Cl.[5] G08B *1/08*

U.S. Cl. 340—539 **36 Claims**



1. A method for monitoring safety of a plurality of persons within a predetermined area, comprising:

a. wirelessly transmitting from a person in apprehension respecting personal safety a distress signal indicative of a preselected identification code unique to such person;

b. monitoring said distress signal by a plurality of detecting stations distributed throughout said predetermined area so that at least one of said detectinq stations is within range of said distress signal throughout said predetermined area;

c. detecting said distress signal by at least one of said detecting stations;

d. sending a relay signal to a central monitoring station from at least one of said detecting stations responsively to detecting said distress signal, said relay signal including:

i. information indicative of said unique code associated with said distress signal; and

ii. information indicative of location within said predetermined area from which said relay signal is sent;

e. upon receiving said relay signal at said central monitoring station, determining said unique code associated with said detected distress signal and correlating said unique code with said person in apprehension;

f. correlating said information indicative of location from which said relay signal was sent with position within said predetermined area; and

g. providing a sensorially perceptible information display including;

i. identity of said person in apprehension:

ii. membership status and personal information for said person in apprehension; and

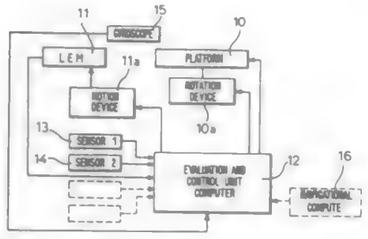
iii. position within said predetermined area from which said distress signal was transmitted.

5,365,218

SYSTEM FOR GUARDING PROPERTY INCLUDING A MOBILE LASER UNIT

Ulrich Otto, Nussdorf im Chiemgau, Germany, assignor to Deutsche Aerospace AG, Munich, Germany

Filed Sep. 14, 1992, Ser. No. 944,323
Claims priority, application Germany, Sep. 14, 1991, 4130619
Int. Cl.[5] G08B *13/183*
U.S. Cl. 340—557 **16 Claims**



1. System for protecting buildings, vehicles, and persons, comprising:

a platform with variably adjustable rotational speed provided on an elevated station with an unobstructed view about the property to be protected,

an area-monitoring laser device mounted on the platform, and

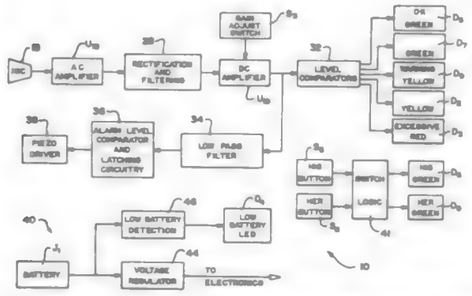
an evaluation and control unit located externally of the laser device and connected to communicate with the laser device and which determines, identifies, and displays laser device detected changes on the basis of stored information.

5,365,219

CONVERSATION LEVEL WARNING DEVICE

Stanley Wong, Vancouver, Canada; Michael H. Chang, 33 E. 47th Street, Vancouver, B.C., Canada V5W 2A4 , and Robert Lee, Burnaby, Canada, assignors to Michael Hung Chang, Vancouver, Canada

Filed Jul. 8, 1992, Ser. No. 910,434
Int. Cl.[5] G08B *23/00;* **H04R** *29/00*
U.S. Cl. 340—573 **1 Claim**



1. A monitoring device which promotes rational discussions by warning persons when their voice levels exceed a preset amplitude, the device comprising:

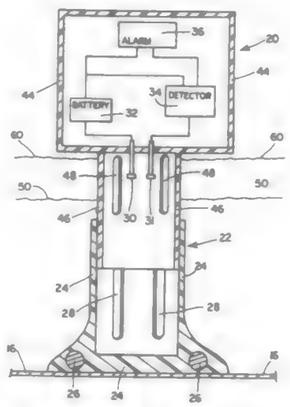
an electrical power source, an electrical circuit and a microphone connected to the circuit for producing an electrical signal related to the amplitude of sound received by the microphone, the circuit including an AC amplifier coupled with the microphone for amplifying the electrical signal, a rectifier coupled with the AC amplifier for rectifying the amplified electrical signal, a DC amplifier for amplifying the recalled signal, a plurality of comparators, each said comparator having one input coupled with the rectifier to receive the rectified signal, one input which receives a reference voltage and an output which produces a comparator output, a first said comparator being coupled to a differential amplifier which produces an output only if the output of said first comparator is produced for at least as long as a preset length of time, the differential amplifier being coupled with an audible signaling device including an oscillator and a piezo-electric buzzer which is sounded when the first comparator produces an output indicating that the voice levels of the persons exceed the preset amplitude long enough for the differential amplifier output to be produced, a second said comparator being coupled to an LED and having a different reference voltage than the first comparator so the LED lights at a voice level below that which causes the buzzer to sound.

5,365,220

WARNING ALARM DEVICE FOR AN EVAPORATIVE COOLER

Steven C. Rasmason, 5198 Cadenza Dr., Salt Lake City, Utah 84084

Filed Sep. 4, 1992, Ser. No. 941,230
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—620 **3 Claims**



1. A warning alarm device for an evaporative cooler of the type having (a) an air duct connecting the evaporative cooler with an interior portion of a building being served by the evaporative cooler, (b) a reservoir for containing a body of water and (c) a water overflow that allows water to flow out of said reservoir whenever the body of water exceeds a preset depth in said reservoir, said device comprising

a housing;

a hollow projection extending downwardly from said housing, said hollow projection having at least one opening provided in an upper portion thereof;

a pair of electrodes that are spaced apart from each other and extend from said housing so that distal ends of said electrodes are positioned within said hollow projection;

a base member that is adapted to rest on a floor of said reservoir;

a hollow member extending upwardly from said base member, said hollow member having at least one opening provided in a lower portion thereof;

said hollow projection on said housing and said hollow member on said base member being attached to each other so that said hollow projection can move up and down in telescopic type movement relative to said hollow member on said base member, and further so that said opening on said hollow projection and said opening on said hollow member are always exposed, whereby the distal ends of said electrodes in said hollow projection can be set at a desired position above the base member and the floor of said reservoir on which the base member rests so that when the body of water in said reservoir attains a specified depth, the distal ends of said electrodes will be submerged in the body of water;

an electrical circuit contained in said housing and connected to said electrodes, said electrical circuit being open when said electrodes are not submerged in said body of water and closed when said electrodes are submerged in said body of water;

audible alarm means attached to said housing; and

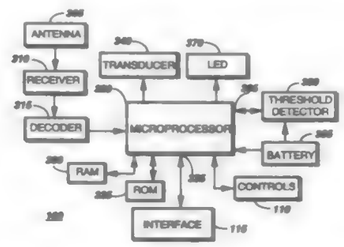
means for activating said audible alarm means when said electrical circuit is closed so that an audible alarm is transmitted to the interior portion of the building being served by said evaporative cooler through the air duct connecting the evaporative cooler and the interior of said building.

5,365,221

COMPUTER CARD HAVING LOW BATTERY INDICATOR

Robert D. Fennell, Coral Springs; Gregory L. Cannon, Delray Beach; William J. Macko, West Palm Beach, and Gregory W. Fuller, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 19, 1992, Ser. No. 963,957
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—636 **17 Claims**



2. A battery powered electronic device for coupling to a host computer, the electronic device comprising:

an interface for transmitting data to the host computer;

an annunciator for generating an alert;

interface monitoring means coupled to the interface for determining an interface status as being active or inactive;

voltage monitoring means coupled to a battery for monitoring the battery voltage;

threshold detection means coupled to the voltage monitoring means for detecting that the battery voltage has fallen below a predetermined threshold voltage and generating a low battery signal in response thereto; and

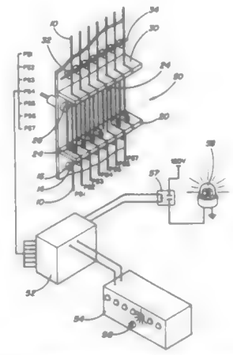
control means for receiving the low battery signal, wherein the control means, in response to reception of the low battery signal, provides a low battery indication to the interface when the interface has an active status and provides an activation signal to the annunciator when the interface has an inactive status.

5,365,222

METHOD AND DETECTOR FOR DETECTING SURFACE ROUGHNESS OR DEFECTS ON COATED WIRE OR CABLE

Jean Robinette, Montreal; Jack Mark, Laval, and André Laramée, Montreal, all of Canada, assignors to Alcatel Canada Wire Inc., North York, Canada

Filed Jul. 2, 1993, Ser. No. 86,017
Claims priority, application Canada, Dec. 11, 1992, 2085160-1
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—677 **12 Claims**



6. A detector for detecting surface roughness or defects on a coated wire or cable which comprises:

(a) a die mounted around the wire or cable as it travels after a coating operation to be wound on a reel, said die has an opening which is generally equal to a desired cross-section of the wire or cable, said die being adapted to be pulled on the wire or cable when engaged by an oversize roughness or defect on the surface of the wire or cable creating a cross-section larger than the opening as the oversize roughness or defect passes through the die prior to being wound on the reel; and

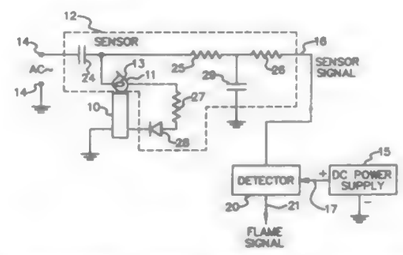
(b) sensing means for sensing the presence of the die when it reaches a predetermined spot while being pulled on the wire or cable and for producing a signal detecting the oversize roughness or defect on the surface of the wire or cable.

5,365,223

FAIL-SAFE CONDITION SENSING CIRCUIT

Paul E. Sigafus, Medina, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 28, 1991, Ser. No. 783,950
Int. Cl.[5] G08B *23/00, 17/12;* **F23N** *5/08*
U.S. Cl. 340—693 **13 Claims**



1. Apparatus for signaling presence of a predetermined condition by providing a condition signal having a predetermined level, comprising:

a) a sensor having a power terminal and providing, respon-

sive exclusively to existence of the predetermined condition and to presence of operating power on the power terminal, a sensor signal having a level within a predetermined signal voltage range offset in a first direction from a common voltage level;

b) a first power supply providing operating power to the sensor's power terminal;

c) a detector having a power terminal, and receiving the sensor signal and providing the condition signal with the predetermined level responsive exclusively to the sensor signal level being within the predetermined signal voltage range and to presence on the detector power terminal of a predetermined power voltage whose level defines one end of a predetermined power voltage range offset in the opposite direction relative to the common voltage level from the offset direction of the sensor signal level's predetermined voltage range; and

d) a second power supply providing the predetermined power voltage to the detector's power terminal.

5,365,224

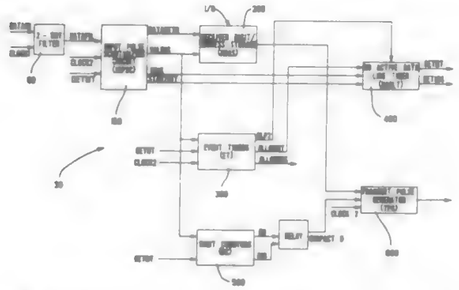
ERROR RECOVERY ARRANGEMENT IN A TIME DIVISION MULTIPLEX DATA TRANSMISSION SYSTEM

Keith J. McKechnie, Harrisburg; Lee W. Steely, Mohnton, and Paul S. Chang, Harrisburg, all of Pa., assignors to The Whitaker Company, Wilmington, Del.

Continuation of Ser. No. 864,453, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 558,024, Jul. 25, 1990, abandoned. This application Feb. 22, 1994, Ser. No. 200,848

Int. Cl.[5] H04Q *5/16, 9/16;* **H04J** *3/24*

U.S. Cl. 346—825.04 **7 Claims**



1. In a data transmission system including a control unit, a plurality of remote stations, a transmission line, and means for coupling said control unit and said plurality of remote stations to said transmission line, wherein the control unit transmits data to an addressed one of said plurality of remote stations in the form of data digits having a defined set of characteristics, the data transmission by the control unit including a first number of data digits when the remote stations are addressed sequentially from a first one of the remote stations to a last one of the remote stations and the data transmitted by the control unit including a second number of digits when a particular remote station is addressed directly, said second number of digits consisting of said first number of data digits plus a third number of address digits, each of the remote stations including means responsive to receipt of said second number of digits for recognizing its particular address from the third number of address digits and each of the remote stations including means responsive to receipt of only said first number of data digits for counting transmissions from the control unit,

an arrangement in each of the remote stations comprising:

means for receiving signals on the transmission line;

means for validating the received signals as valid digits when the received signals have the defined set of characteristics;

means for counting the received valid digits;

means for detecting termination of a transmission from the control unit;

means for transmitting data to the control unit on the transmission line after detecting termination of a transmission from the control unit when the particular remote station has been addressed; and

error means responsive to detection of termination of transmission from the control unit for examining the counted number of received valid digits and, when the counted number is less than a fourth number, causing the remote station to ignore the transmission.

5,365,225

TRANSMITTER-RECEIVER SYSTEM WITH (RE-)INITIALIZATION

Anton Bachhuber, Langquaid, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

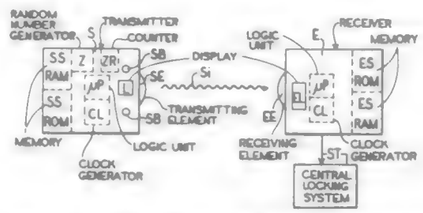
PCT No. PCT/DE90/00276, § 371 Date Nov. 18, 1991, § 102(e) Date Nov. 18, 1991, PCT Pub. No. WO90/14484, PCT Pub. Date Nov. 29, 1990

PCT Filed Apr. 6, 1990, Ser. No. 773,635

Claims priority, application Germany, May 18, 1989, 3916175

Int. Cl.[5] E05B *49/00;* **G07C** *9/00*

U.S. Cl. 340—825.31 **44 Claims**



1. A transmitter-receiver system for checking authorization to use an object; comprising:

a transmitter having a transmitting element and a first transmitter operator control element which triggers the transmitting of coded signals by the transmitting element, the coded signal representing a code concerning the authorization to use the object, and

the transmitter also having at least one transmitter memory for storage of data regarding the coded signals representing the coded concerning the authorization to use;

a receiver, having a receiving element which receives the coded signals from the transmitter, having a receiver memory for storage of data for determining authorization or non-authorization of the codes received in the coded signals, and having

a logic unit, which checks the received code with the data stored in the receiver memory and, depending on the result of the check, actuates a mechanism on the object;

in (re-)initialization of the system for at least one of matching and rematching a new code transmitted by the transmitter to a code authorized by the receiver, the transmitter having for preparation of the new code a random generator, which generates a random number by actuation of a second transmitter operator control element;

an original code, which establishes one of a starting code and a set of various new codes including the starting code using at least one of the transmitted original code, data formed in the receiver from the original code, and data formed in the transmitter from the original code, the original code being stored in the transmitter memory or in the receiver memory, wherein the random generator generates a random number that is indicative of only a fragment of the original code and, by further actuations of the second operator control element, produces in stages all fragments of the original code,

the transmitter having a logic unit for converting the generated fragments into the original code,

the original code or starting code being established from at least three fragments derived from random numbers generated by the random generator, and

the original code being transmitted unidirectionally from the transmitter to the receiver without any dialogue taking place automatically and bidirectionally between the transmitter and the receiver.

5,365,226

RADIO COMMUNICATION APPARATUS CAPABLE OF PREVENTING UNINTENTIONAL DISPLAY OPERATION

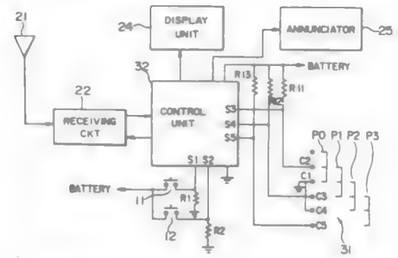
Masaaki Morishima, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 797,309, Nov. 25, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 137,688

Claims priority, application Japan, Nov. 26, 1990, 2-318002

Int. Cl.[5] G08B *5/22*

U.S. Cl. 340—825.44 **2 Claims**



1. A radio communication apparatus having an individual call number and being capable of operating in one of a standby mode wherein the apparatus is waiting to receive a call signal that is coincident with the individual call number and a message received mode wherein the apparatus has received a call signal that is coincident with the individual call number, the apparatus comprising:

receiving means for receiving a call signal as a received call signal, and a message signal representing a message;

judging means connected to said receiving means for judging whether or not said received call signal is coincident with said individual call number, said judging means producing said message signal when said received call signal is coincident with said individual call number;

display means connected to said judging means for displaying said message;

display mode setting means operatively connected to said judging means for setting a display mode of said display means, wherein said display means is operable to display said message;

prevention means for preventing an unintentional display operation of said display means while said radio communication apparatus is in the standby mode, said prevention means including inhibition means having an active state and an inactive state and operatively connected to said display mode setting means for inhibiting said display mode setting means from setting said display mode while said inhibition means is in said active state and while said radio communication apparatus is in the standby mode;

slide switch means connected to said inhibition means for putting said inhibition means into said active state while said slide switch means is positioned at a predetermined position and for putting said inhibition means into said inactive state while said slide switch means is positioned at a preselected position that is different from said predetermined position;

detecting means connected to said slide switch means for detecting whether said slide switch means is positioned at said predetermined position;

accepting means connected to said detecting means for permitting said display mode setting means to set said display mode while said slide switch means is positioned at said preselected position; and

cancel means operatively connected to said judging means, said inhibition means, and said detecting means for cancelling an inhibition operation of said inhibition means in response to said judging means judging a coincidence between said received call signal and said individual call number.

5,365,227

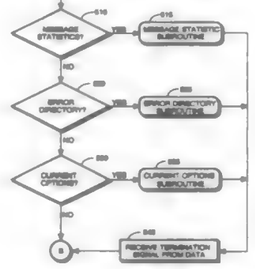
METHOD AND APPARATUS FOR TRANSMITTING STATUS INFORMATION FROM A SELECTIVE CALL RECEIVER TO AN EXTERNAL ELECTRONIC DEVICE

Gregory L. Cannon, Coconut Creek; William J. Macko, West Palm Beach; Gregory W. Fuller, Boca Raton, and Jill L. Theobald, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 6, 1992, Ser. No. 909,262

Int. Cl.[5] H04Q *5/24*

U.S. Cl. 340—825.55 **20 Claims**



1. A method, in a selective call receiver having internal status parameters and being interactively coupled to an external electronic device, for trahsmitting data concerning the internal status parameters to the electronic device, the method comprising the steps of:

(a) receiving a user-initiated status command from the electronic device;

(b) retrieving, in response to step (a), a predetermined status menu from a memory, wherein the status menu comprises at least one status category associated with status information about the selective call receiver; and

(c) transmitting the status menu to the electronic device for display thereby.

5,365,228

SYNC-NET- A BARRIER SYNCHRONIZATION APPARATUS FOR MULTI-STAGE NETWORKS

Philip L. Childs; Howard T. Olnowich, both of Endicott, and Joseph F. Skovira, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 677,543, Mar. 29, 1991, abandoned. This application Aug. 21, 1991, Ser. No. 748,303

Int. Cl.[5] H04Q *11/00;* **G06F** *13/00*

U.S. Cl. 340—825.8 **23 Claims**

1. A multi-stage interconnection network and barrier syn-

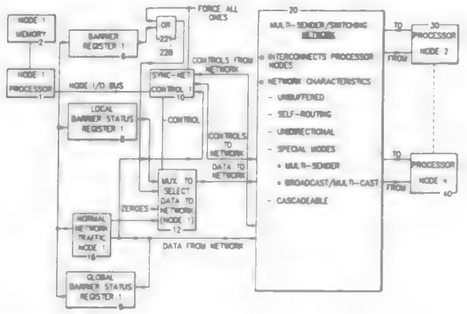
chronization apparatus jointly functioning in a system comprising:

a plurality of transmitting elements for transmitting data to the interconnection network and to the barrier synchronization apparatus;

a plurality of receiving elements for receiving data from the interconnection network and from the barrier synchronization apparatus;

a multi-sender switch apparatus means comprising the network for coupling said elements asynchronously through input to output port connections for establishing point to point input to output port connections, single input to multiple or all output port connections, and multiple or all input port connections to multiple or all output port connections;

a barrier synchronization apparatus located at every system element, the barrier synchronization apparatus including:



a barrier select register for identifying barriers required to be updated;

a local barrier status register for storing global barrier status data;

a global barrier status register for storing global barrier status data and having an input coupled from the network and an output means coupled to the barrier select register and the local barrier status register;

a barrier synchronization control means for controlling a barrier synchronization operation over the network and for providing global barrier status data to the system elements and having an input means coupled from the node and the network and an output means coupled to the network; and

a data selection multiplexer, controlled by the barrier synchronization control means for selecting data sources from the barrier select register and the local barrier status register for transmission of data to the network.

5,365,229

ADAPTIVE TELEMETRY SYSTEM FOR HOSTILE ENVIRONMENT WELL LOGGING

Wallace R. Gardner, Houston, and Kenneth R. Goodman, La-Porte, both of Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Continuation of Ser. No. 976,848, Nov. 16, 1992, abandoned.
This application Mar. 22, 1994, Ser. No. 216,504
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—855.4 **7 Claims**

1. A telemetry system for use in transferring data from a sonde in a well borehole to the surface via cable the system including a sonde supported uplink transmitter, comprising:

(a) at least one sensor supported in the sonde;

(b) a multi-level duobinary encoder connected to said sensor for receiving a flow of sensor data therefrom and encoding the sensor data to form an encoded stream of data symbols;

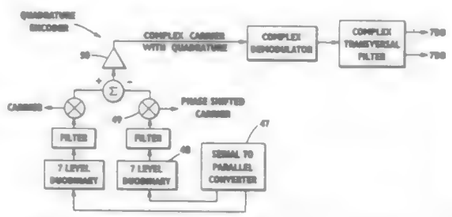
(c) a quadrature modulator to produce a quadrature output signal, comprising:

(1) a first quadrature modulator receiving the encoded stream, said first quadrature modulator being modulated by a first carrier to produce a first signal;

(2) a second quadrature modulator receiving the encoded stream, said second quadrature modulator being modulated by a second carrier that is phase shifted with respect to the first carrier to produce a second signal;

(3) a summer for summing the first and second signals to provide a quadrature modulated output signal; and

(d) an output driver provided with said quadrature modulated output signal and having an output connected to the cable extending from the sonde to the surface.

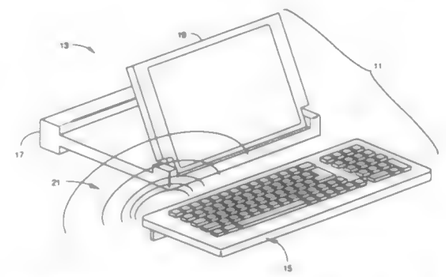


5,365,230

INDUCTIVELY COUPLED KEYBOARD

Dan Kikinis, Sunnyvale, Calif., assignor to Cordata, Inc., Tortola, Virgin Islands (Br.)

Filed Mar. 15, 1993, Ser. No. 31,805
Int. Cl.[5] H03M *11/00*
U.S. Cl. 341—22 **10 Claims**



1. A keyboard input device for a computer, comprising:

an array of keys for entering data and commands;

a microprocessor-based controller for managing operations of said keyboard;

electrical conductors connecting said array of keys to said microprocessor-based controller;

a power supply connected to power-using elements of said keyboard for supplying electrical power for the keyboard; and

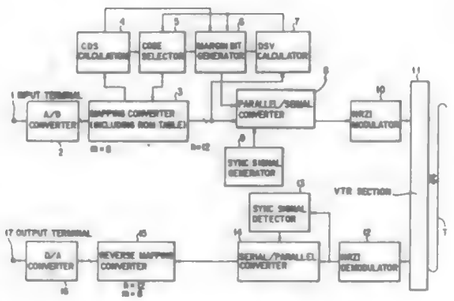
a magnetic field generator managed by said microprocessor-based controller for transmitting digital scan codes by a varying magnetic field generated by said magnetic field generator.

5,365,231

ENCODING APPARATUS FOR DIGITAL SIGNAL WITH IMPROVED BLOCK CHANNEL CODING

Kazuharu Niimura, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1992, Ser. No. 858,637
Claims priority, application Japan, Mar. 30, 1991, 3-093031; Mar. 30, 1991, 3-093032; Mar. 30, 1991, 3-093033
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—58 **10 Claims**



1. An encoding apparatus comprising:

encoding means for separating an input digital signal including m bits (m: a positive integer) into a first group and a second group predetermined with respect to 2^m pieces of data allowable for said input digital signal, and encoding each piece of data in said first group to a single code word including n bits (n being a positive integer and larger than m) in one-to-one correspondence and encoding each piece of data in said second group to two code words each including n bits in one-to-two correspondence;

CDS (Code word Digital Sum) calculating means for calculating a CDS value for each of said words output from said encoding means;

DSV (Digital Sum Variation) calculating means for calculating an accumulated DSV value of said individual words output from said encoding means;

code selecting means for, when said two-n-bit code words are output from said encoding means, selecting that one of said code words which decreases a next accumulated DSV value to be calculated by said DSV calculating means, in accordance with said CDS value from said CDS calculating means and said accumulated DSV value from said DSV calculating means;

margin bit inserting means for generating a predetermined margin bit which decreases a next accumulated DSV value to be calculated by said DSV calculating means, in accordance with said CDS value from said CDS calculating means and said accumulated DSV value from said DSV calculating means, and inserting said margin bit in said single n-bit code word output from said encoding means and said one code word selected by said code selecting means; and

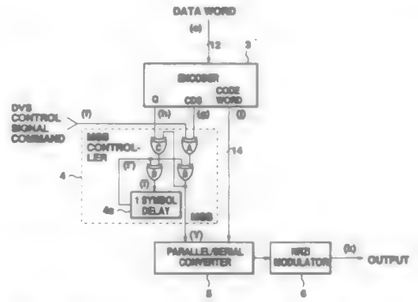
transfer means for transferring an encoded code word including a total of n+1 bits resulting from the insertion of said predetermined margin bit by said margin bit inserting means.

5,365,232

DATA CONVERSION METHOD, PILOT SIGNAL FORMATION METHOD USING THE SAME AND ROTARY MAGNETIC HEAD DEVICE FOR USE THEREIN

Kihei Ido, and Masayuki Ohta, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 743,888, Aug. 12, 1991, abandoned.
This application Aug. 31, 1993, Ser. No. 120,857
Claims priority, application Japan, Aug. 18, 1990, 2-217624; Feb. 26, 1991, 3-030839; Jun. 14, 1991, 3-143457
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—95 **49 Claims**



1. A data conversion method from m bits of data words into n bits of code words, n being larger than m, comprising:

(a) restricting the number of "0" bits arranged between one bit "1" and a next bit "1" to at most 4 in a code string of each code word;

(b) allocating a pair of code words of n bits having CDSs (code word digital sum) of +1 and −1 to correspond to every one of the data words of m bits;

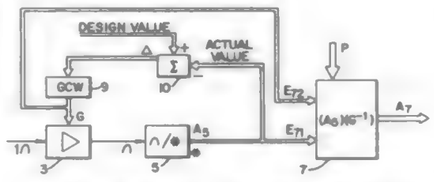
(c) selectively using one of the pair of code words of CDSs +1 and −1 according to a DSV (digital sum variation) control signal to convert the data words of m bits into code words of n bits.

5,365,233

METHOD FOR DIGITIZING A BAND-LIMITED, ANALOG SIGNAL, ANALOG-DIGITAL PROCESSING UNIT TO IMPLEMENT THE METHOD, A METHOD FOR DIGITAL FILTERING AND A DIGITAL FILTER FOR ITS IMPLEMENTATION

Arthur Schaub, Wolfhausen, Switzerland, assignor to Ascom Audiosys AG, Switzerland

Filed Feb. 3, 1993, Ser. No. 13,824
Claims priority, application Switzerland, Feb. 4, 1992, 00 311/92-5
Int. Cl.[5] H03M *1/18*
U.S. Cl. 341—139 **26 Claims**



1. A method for digitizing a band-limited, analog signal, said method comprising:

amplifying the analog signal;

digitizing the amplified analog signal in a preset number of quantizing steps;

setting a prevailing amplification of the analog signal so that the average value over time of the size of the digitized analog signal is controlled to a predetermined value;

prestoring all possible values of the digitized analog signal based upon the number of quantizing steps; and

retrieving a prestored signal corresponding to the digitized analog signal amplified with an inverse amplification of the prevailing amplification.

5,365,234

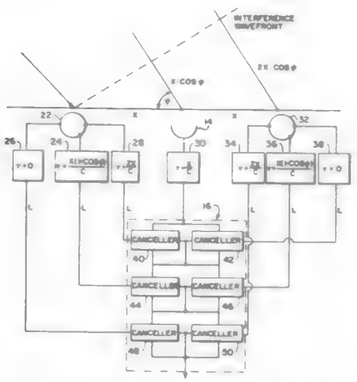
HIGH-RESOLUTION SIDELOBE-CANCELLER AUXILIARY ANTENNAS

Bernard L. Lewis, Oxon Hill, Md., assignor to United States of America as represented by the Secretary of the Navy

Filed Mar. 23, 1977, Ser. No. 783,918

Int. Cl.[5] G01S *7/36*

U.S. Cl. 342—16 **9 Claims**



1. In a communications receiver employing a directional main radar antenna and a sidelobe canceller system including an adaptive-loop canceller system for cancelling interference from the sidelobe signals of said main radar antenna, the improvement to said sidelobe canceller system which comprises:

directional auxiliary antenna means having multiple orthogonal directional beams the sum of which cover 360° in azimuth and multiple output ports each corresponding to a different one of said orthogonal directional beams, said directional auxiliary antenna means widely spaced from said main radar antenna for receiving interference signals and determining their angle of arrival;

a plurality of auxiliary-antenna time-delay means each connected to a different one of said output ports for providing differently delayed signals to said adaptive-loop canceller system with the amount of time delay proportional to the angular position of the output port to which the time delay means is connected to; and

main-antenna time-delay means connected between said main radar antenna and said adaptive-loop canceller for providing a delayed signal to said adaptive-loop canceller system.

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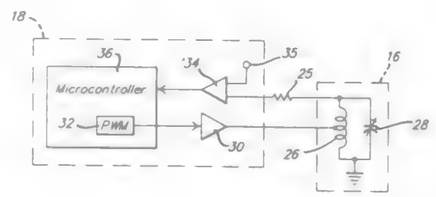
METHOD AND APPARATUS FOR REDUCING RESIDUAL RF POWER IN A TRANSMITTER/RECEIVER ANTENNA

John F. Kennedy, Dearborn; Lawrence P. Kirk, Canton, and Gregory A. Marek, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 7, 1993, Ser. No. 116,840

Int. Cl.[5] G01S *13/76;* **H04B** *1/44*

U.S. Cl. 342—44 **19 Claims**



1. A method for interrogating a transponder using a single transmit-receive antenna, comprising the steps of:

generating a first transmission signal having a first phase for a time interval which energizes said transponder;

generating a second transmission signal after said first transmission signal having a second phase which reduces residual energy in said antenna; and

receiving an RF signal on said antenna from said transponder.

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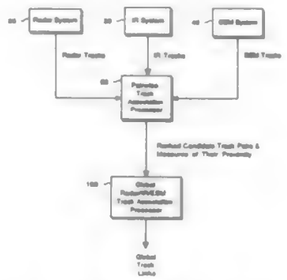
AUTOMATIC GLOBAL RADAR/IR/ESM TRACK ASSOCIATION BASED ON RANKED CANDIDATE PAIRINGS AND MEASURES OF THEIR PROXIMITY

John T. Fagarasan, Brea; Stephen W. Alland, Pomona, and Ronald J. Jakaub, Hacienda Heights, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 916,772, Jul. 17, 1992, Pat. No. 5,317,319. This application Mar. 5, 1993, Ser. No. 38,341

Int. Cl.[5] G01S *17/66, 17/87, 7/50*

U.S. Cl. 342—53 **14 Claims**



1. A tri-sensor track assignment system employing track association based on ranked candidate pairs, comprising:

a radar sensor for providing radar tracks, each track characterized by a collection of data enabling an estimate of a target's position and velocity;

an infrared (IR) sensor for providing IR tracks, wherein each IR track is characterized by target range and elevation data enabling an estimate of the target's position in respect to range and elevation;

an electronic support measure (ESM) sensor providing an ESM track, each track characterized by bearing and waveform data regarding a target;

a system processor responsive to said radar, IR and ESM tracks for processing said tracks and providing a global track list of global tracks, comprising means for forming and updating pairwise association lists between respective ones of the tracks to provide ranked pairwise association lists for the radar/IR pairs, the radar/ESM pairs and IR/ESM pairs;

means for forming strong and weak global track germs (GTG's) from said tracks and said pairwise association lists; and

means for processing the pairwise lists and the respective targets to perform global association of ESM tracks with the strong and weak global track germs to provide said global track lists, said means comprising means for defining for each ESM track a list of strong GTG's and a list of weak GTG's eligible for association with that ESM track, means for globally associating each ESM track with the best choice eligible strong GTG, if any, and means for globally associating a particular ESM track with the best choice weak GTG, if any, if no strong GTG is eligible for association with that particular ESM track.

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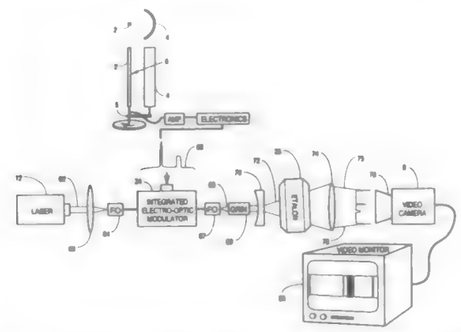
MICROWAVE CAMERA

Paul A. Johnson, El Cajon; Ri-Chee Chou; Chris A. Martin, both of San Diego; Britt Spivey, Encinitas, and John Lovberg, San Diego, all of Calif., assignors to Thermo Trex Corporation, San Diego, Calif.

Filed May 13, 1993, Ser. No. 63,268

Int. Cl.[5] G01S *3/02*

U.S. Cl. 342—179 **16 Claims**



1. A microwave antenna camera system for imaging microwave emitting objects within a field of view comprising:

a) an antenna system means having frequency dependent beam directions, for collecting microwave radiation and converting said radiation into a high frequency electrical signal,

b) an optical source means for producing a coherent optical beam,

c) an electro-optical modulating means for modulating said optical beam with said high frequency signal to produce a modulated optical beam having a frequency spectrum that is a function of the spatial distribution of said microwave emitting objects within said field of view,

d) an imaging means for producing, from said modulated optical beam, an image of said microwave emitting objects within said field of view.

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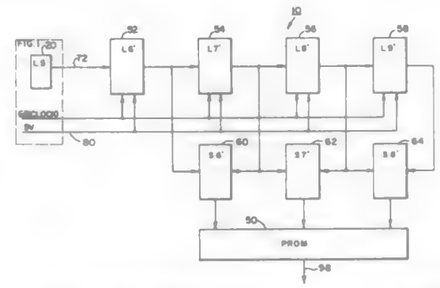
PRECISION TIME MEASUREMENTS

William B. Sullivan, Verona, N.J., assignor to Wide Band Systems, Inc., Franklin, N.J.

Filed Nov. 29, 1993, Ser. No. 158,947

Int. Cl.[5] G01S *7/28*

U.S. Cl. 342—195 **25 Claims**



1. A circuit arrangement for receiving, holding and measuring an RF pulse envelope having an amplitude with predetermined rise and fall times and comprising digital words having a predetermined number of bits with a predetermined bit resolution, said circuit arrangement comprising:

(a) a first plurality of sequential latches responsive to a timing signal having a predetermined frequency and each latch receiving and storing one of said digital words, said first plurality of latches each having an output and arranged into lower and upper stages with one of the said lower stages serving as a reference stage;

(b) a summing reference network having an output and first and second inputs with the first input being connected to said output of said reference stage and the second input being connected to a reference quantity comprising a digital word and defining a predetermined reference point of the RF pulse envelope;

(c) a first plurality of subtracting networks each having an output and first and second inputs, said plurality of subtracting networks being arranged so that one of each has its first input respectively connected to the output of said lower and upper stages, except for said reference stage, of said first plurality of latches, each of said first plurality of substituting networks having its second input connected to said output of said summing reference network;

(d) a logic element having inputs connected to each of said outputs of said first plurality of subtracting networks anti generating an output control signal SV in the absence of all signals on its inputs, the occurrence of said output control signal SV being indicative that the sum of both the contents of said reference stage and the contents of said reference quantity is within said predetermined point of the maximum amplitude of the RF pulse envelope;

(e) a second plurality of sequential latches each having input and output stages, an output and first and second inputs and all being responsive to said control signal SV and said timing signal, said second plurality of latches being arranged in parallel with and receiving and storing the digital words received and stored by said upper stages of said first plurality of latches;

(f) a second plurality of subtracting networks each having an output and first and second inputs, a first network of which has its input connected to the output of the first latch of said second plurality of latches and its second input connected to the output of the second latch of said second plurality of latches, a second network of which has its first input connected to the second input of the first network and its second input connected to the output of the third latch of said second plurality of latches, and a third network of which has its first input connected to the

second input of said second network and its second input connected to the output of the fourth latch of said second plurality of latches; and

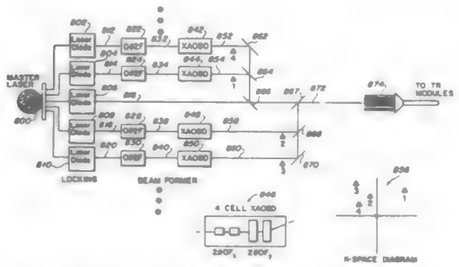
(g) a PROM having prestored and addressable routines and receiving the outputs of said second plurality of subtracting networks, the outputs of said first sequential latches and the output signal SV, said output of the reference stage containing first data which is in coincidence with said control signal SV and which defines the amplitude of the RF pulse envelope at said predetermined point, said output of said lower latches of said first plurality of latches containing second data that defines the preceding and subsequent amplitudes of the RF pulse envelope relative to said predetermined point, said output of said second plurality of subtracting networks defining an address to access a family of waveform shapes having a peak value defined by said predetermined point, said PROM further having routines so that said preceding and subsequent amplitudes of the RF pulse envelope are compared against each of the family of waveform shapes to define a match that provides the time location, relative to the occurrence of said control signal SV, of the 3 dB point on the RF pulse envelope, said time location corresponding to a time of arrival (TOA) parameter of said RF pulse envelope and also defining the pulse width of said RF pulse envelope, said time location being definable within selectable increments of said predetermined frequency of said timing signal.

5,365,239

FIBER OPTIC FEED AND PHASED ARRAY ANTENNA

P. Denzil Stilwell, Jr., Cheverly, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1991, Ser. No. 788,704
Int. Cl.[5] H01Q *3/22, 3/24*
U.S. Cl. 342—368 **34 Claims**



1. A fiber optic feed comprising:

optical circuit means for providing at least one optical output signal modulated according to an RF source; and

antenna interface means for demodulating said at least one optical output signal and communicating with an antenna;

wherein said optical circuit means comprises:

a coherent light source;

interferometer means driven by said coherent light source for synthesizing a plurality of independently controlled beams;

optic modulating means for frequency modulating at least one of said independently controlled beams according to said RF source; and

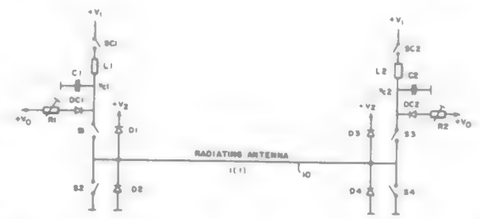
optic pickup means for producing said at least one optical output signal according to a superposition of said plurality of independently controlled beams.

5,365,240

EFFICIENT DRIVING CIRCUIT FOR LARGE-CURRENT RADIATOR

Henning F. Harmuth, Potomac, Md., assignor to Geophysical Survey Systems, Inc., North Salem, N.H.

Filed Nov. 4, 1992, Ser. No. 971,195
Int. Cl.[5] H01Q *1/26*
U.S. Cl. 343—701 **10 Claims**



1. In a circuit for driving a large-current radiator, the circuit being of a type having at least a first switching circuit, coupled to the radiator, for switching a current pulse through the radiator over a short time, the improvement comprising:

a) a means for feeding a stored limited energy to said switching circuit, said means for feeding including a means for storing the limited energy; and

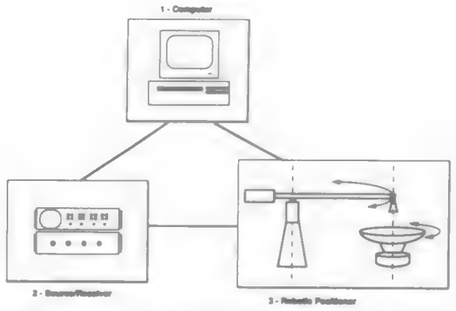
b) a means for providing a constant current through the radiator, without creating a large voltage across said switching circuit, thereby avoiding the dissipation of a substantial part of the stored limited energy in the switching circuit.

5,365,241

METHOD AND APPARATUS FOR PERFORMING PLANAR NEAR-FIELD ANTENNA MEASUREMENT USING BI-POLAR GEOMETRY

Lawrence I. S. Williams, 1401 Puente St., Brea, Calif. 92621, and Yahya Rahmat-Samii, 4509 Tobias Ave., Sherman Oaks, Calif. 91403

Filed Jun. 24, 1992, Ser. No. 903,366
Int. Cl.[5] G01R *29/10*
U.S. Cl. 343—703 **1 Claim**



1. An apparatus for performing near-field measurements on an antenna comprising:

first positioning means for mounting the antenna and rotating the antenna about a first rotation axis in an azimuthal plane, said first positioning means including a telescopic pedestal attached on top of a rotary positioner, wherein said rotary positioner mounts onto a rotator tilt platform; second positioning means for mounting a field probe thereto in various directions associated with the antenna and moving said field probe along a second rotation axis defining radial arcs, said second positioning means including a robotic positioner, said robotic positioner including a probe rotator/translation stage at an end towards the antenna and a counter-balance weight at an opposite end, said robotic positioner attached on top of an additional rotary positioner, said additional rotary positioner mounted onto an arm column;

wherein said arm column and said rotator tilt platform are mounted together by a rigid base such that said first and second positioning means move relative to each other allowing the antenna or said field probe to receive electromagnetic signals by the other in at least two dimensions;

whereby said field probe is aligned over the antenna by commanding said robotic positioner by a computer and moving the antenna and said field probe by way of a moving step through a predetermined sequence of measurement test points, said moving step comprising the steps of stepping said rotary positioner through a 360 degree azimuthal rotation while stepping said field probe along a radial arc, said two stepping steps being performed in a predetermined sequence, wherein a bi-polar collection grid is mapped out; and

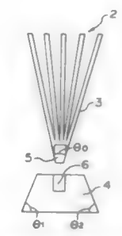
whereby a radio frequency source/receiver generates an electromagnetic signal at the antenna or said field probe and received by the other to perform near-field measurements at each measurement test point for storing and subsequent calculation of a near-field to far-field transformation on said near-field measurements.

5,365,242

GLASS ANTENNA FOR A TELEPHONE OF AN AUTOMOBILE

Masaru Shiina, Kanagawa, Japan, assignor to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 928,175, Aug. 14, 1992, Pat. No. 5,264,858, which is a continuation of Ser. No. 733,817, Jul. 22, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 110,948
Claims priority, application Japan, Jul. 31, 1990, 2-80622
Int. Cl.[5] H01Q *1/32, 1/38*
U.S. Cl. 343—713 **10 Claims**



1. A glass antenna for a telephone of an automobile which comprises:

a main antenna conductor composed of a plurality of linear conductive strips extended radially from a junction, the main antenna conductor having an overall outline shape which is substantially a triangle;

an insular earth conductor having a shape of a trapezoid which is disposed opposing the junction of the main antenna conductor and is disconnected with the main antenna conductor with respect to direct current;

power feeding terminals provided on the main antenna conductor and the insular earth conductor; and

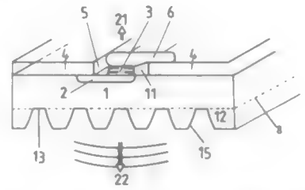
wherein both of the main antenna conductor and the insular earth conductor are formed at predetermined positions in a glass plate.

5,365,243

PLANAR WAVEGUIDE FOR INTEGRATED TRANSMITTER AND RECEIVER CIRCUITS

Josef Büchler, and Erich Kasper, both of Pfaffenhofen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Jun. 15, 1992, Ser. No. 898,850
Claims priority, application Germany, Jun. 15, 1991, 4119784
Int. Cl.[5] H01Q *19/06*
U.S. Cl. 343—753 **14 Claims**



1. In a planar waveguide structure for transmitters and receivers including a semiconductor substrate having a front surface and an opposite rear surface, and at least one active semiconductor component element connected with planar waveguide structures arranged on said front surface; the improvement wherein:

said rear surface of said semiconductor substrate is at least partially formed as at least one of an inwardly radiating surface and an outwardly radiating surface; and

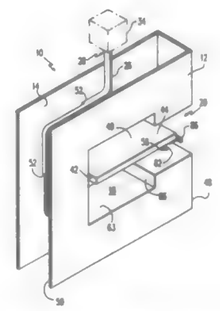
said rear surface of said substrate is geometrically shaped such that an electromagnetic property of incident or emanating electromagnetic radiation is altered in a predetermined manner and is formed of planar faces parallel to said rear surface and lens portions transverse to said rear surface.

5,365,244

WIDEBAND NOTCH RADIATOR

James B. Yon, Upper Marlboro, and Timothy G. Waterman, Eldersburg, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1993, Ser. No. 10,716
Int. Cl.[5] H01Q *13/10*
U.S. Cl. 343—767 **7 Claims**



1. An antenna element for radiating electromagnetic signals, comprising:

a first groundplane and a second groundplane that are formed of conductive material, the groundplanes being parallel and spaced apart from one another, one side of the groundplanes defining a front of the element, each groundplane being generally C-shaped and being similarly oriented, the groundplanes further having a plurality of connecting planes attached to and connecting the ground-

planes such that a notch is formed thereby at the front of the element that opens to free space;

an elongated section of transmission line disposed between the two groundplanes, the transmission line having a source-receiving end connected to a signal source and having a feed end opposite to the source-receiving end; and

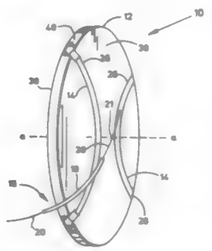
a transformer segment located within the notch, the transformer segment having a first end and an oppositely located second end, the transformer segment first end being connected to the feed end of the transmission line, the transformer segment second end facing the notch opening.

5,365,245

HYBRID ORTHOGONAL TRANSVERSE ELECTROMAGNETIC FED REFLECTOR ANTENNA

Thinh Q. Ho, Anaheim, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 6, 1993, Ser. No. 61,611
Int. Cl.[5] H01Q *19/12*
U.S. Cl. 343—840 **17 Claims**



1. A broadband antenna, comprising:

an electromagnetic reflector having a focal point;

a transverse electromagnetic transmission carrier which includes:

a first electrically conductive strut having a first electrical impedance and mounted in electrical contact with said reflector; and

a second electrically conductive strut having a second electrical impedance substantially equal to said first electrical impedance, and which is mounted in electrical contact with said reflector; and

a transverse electromagnetic feed having a first electrical conductor mounted in electrical contact with said first strut, and a second electrical conductor intersecting said focal point and electrically coupled to said second strut.

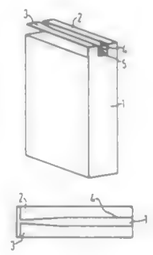
5,365,246

TRANSMITTING AND/OR RECEIVING ARRANGEMENT FOR PORTABLE APPLIANCES

Josef Rasinger, Mödling; Arpad-Luwdig Scholtz, and Ernst Bonek, both of Vienna, all of Austria, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/EP90/01227, § 371 Date Apr. 27, 1992, § 102(e) Date Apr. 27, 1992, PCT Pub. No. WO91/02386, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 26, 1990, Ser. No. 828,792
Claims priority, application Austria, Jul. 27, 1989, A 1815/89
The portion of the term of this patent subsequent to Aug. 15, 2009, has been disclaimed.
Int. Cl.[5] H01Q *1/24, 9/04*
U.S. Cl. 343—702 **24 Claims**

1. A transmitting and/or receiving arrangement for portable appliances, comprising: a shielding housing of metal, containing a radio-frequency section, and an antenna, the antenna having at least two antenna resonators which are parasitically coupled to one another and are essentially identically oriented in a longitudinal direction, each of the at least two antenna resonators having one free resonator end and one end angled via a bending edge and conductively connected to the shielding housing, a transmitter output and a receiver input, respectively, being connected only to a feedpoint of a single antenna resonator of the at least two antenna resonators via a feedline through a coaxial feedthrough in the shielding housing, which



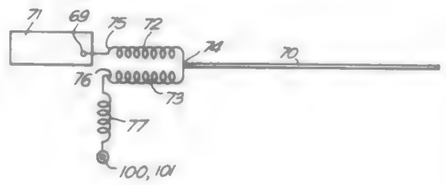
feedpoint is located between the bending edge and the free resonator end of the single antenna resonator, and an inside clearance of a slot formed between two adjacent antenna resonators of the at least two antenna resonators being much less in an area of the free resonator end than at the bending edge for varying the input impedance of the antenna.

5,365,247

TRANSMITTERS AND RECEIVERS WITH ANTENNAS

Albertus C. Van der Veen, Kent, and Graham K. L. Smith, Hampshire, both of England, assignors to 501 Hi-Trak Systems Limited, Surrey, England

Continuation of Ser. No. 590,264, Sep. 28, 1990, abandoned. This application Sep. 14, 1992, Ser. No. 945,421
Claims priority, application United Kingdom, Sep. 30, 1989, 8922095
Int. Cl.[5] H01Q *1/24*
U.S. Cl. 343—702 **18 Claims**



1. In combination a single antenna and a transmitter/-receiver, the transmitter/receiver comprising a circuit having terminal means designed to transmit and/or receive signals at a predetermined frequency and wavelength in the VHF band

and having input/output terminal means and a casing at least part of which is conductive and in which the circuit is located, the casing having a length dimension greater than its dimensions in other directions, the antenna comprising a straight wire portion and a coiled wire portion connected in series and extending in the direction of the length dimension of the casing, at least a majority of the coiled wire portion being exterior to the conductive part of the casing, and in which the straight wire portion and the coiled portion having a combined length which is no more than a quarter of the predetermined wavelength, one end of the coiled wire portion is connected directly to the transmitter/receiver terminal means without the intermission of a transmission line and so as to be substantially rigid with the casing, the coiled portion and the straight wire portion having predetermined lengths to provide a radiated output/received signal at said wavelength greater than the signal given by a straight wire antenna of length equal to said combined length, and the coiled wire portion is a bifilar wire having two parts, an end of each part of which is connected to the straight wire portion, another end of one part of which is connected to the output terminal means of the transmitter and another end of the other part of which is connected to one of the transitter power supply terminals through a blocking inductance.

5,365,248

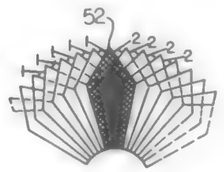
Patent Not Issued For This Number

5,365,249

ELECTRONIC DISPLAY WITH HIGH SPATIAL RESOLUTION POINTER

Robert S. Benward, Huntington Station, N.Y., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Jan. 31, 1991, Ser. No. 648,085
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—50 **1 Claim**



1. A dial display having a radial pointer said pointer having an indicator having a width in a direction of movement, said indicator movable in radial increments less than said width, said dial display comprising:

a first image pane having a plurality of adjacent first conductive segments thereon, each first segment including a first radially extending portion and a first tip portion in connection therewith, said first tip portion bounded by a first edge slanted in a clockwise direction with respect of said dial display said first segments having a thickness in the direction of movement equal to an increment;

a second image pane disposed in a first direction of said first image pane, said second image pane having a plurality of adjacent conductive second segments thereof, each second segment including a second radially extending portion and a second tip portion in connection therewith, said second tip portion bounded by a second edge slanted in a counterclockwise direction with respect of said dial display, whereby a projection of a first edge underlying a second segment intersects the second edge thereof at an acute angle to form a point position of said indicator, and wherein said second segments have said thickness in the direction of movement;

liquid crystal material between said first and second image panes visually indicating a first electrical condition between first segments and overlying second segments;

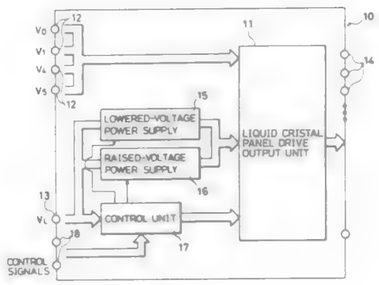
means for producing said first electrical condition between selected first segments and overlying second segments whereby said liquid crystal material forms a radially movable pointer having said width and wherein said pointer is movable in increments of said thickness.

5,365,250

SEMICONDUCTOR DEVICE FOR DRIVING LIQUID CRYSTAL PANEL

Hiroyuki Hirashima, Kita-Katsuragi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 10, 1992, Ser. No. 944,119
Claims priority, application Japan, Sep. 10, 1991, 3-230286
Int. Cl.[5] G09G *3/00;* **G01R** *31/00*
U.S. Cl. 345—94 **6 Claims**



1. A semiconductor device for driving a liquid crystal panel, comprising:

output means for generating output signals to drive said liquid crystal panel;

a power supply terminal for supplying a predetermined constant voltage from a power supply outside of said liquid crystal panel;

a control terminal for receiving a first control signal for controlling a self burn-in test;

voltage changing means connected to said power supply terminal for changing said predetermined constant voltage supplied via said power supply terminal into a desired voltage necessary for said self burn-in test in response to a second control signal; and

control means connected to said power supply terminal, said control terminal and said voltage changing means for

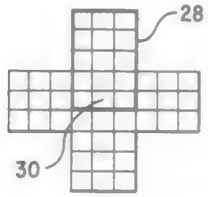
generating said second control signal controlling said voltage changing means to generate said desired voltage for said self burn-in test in response to said first control signal so that said output means conducts said self burn-in test.

5,365,251

IMAGE QUALITY IMPROVEMENT BY HIERARCHICAL PATTERN MATCHING WITH VARIABLE SIZE TEMPLATES

Michel J. Denber, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1992, Ser. No. 936,456
Int. Cl.[5] G09G *1/16*
U.S. Cl. 345—136 **11 Claims**



1. A pattern matching method in a signal processing device for improving image quality, comprising:

partitioning a template into a plurality of sub-templates;

passing the template over an image on a pixel-by-pixel basis such that the template is centered about a central pixel;

determining whether the sub-templates contain image information other than either of all white and all black;

if any of the sub-templates are determined to contain image information other than either of all white and all black, checking the sub-template containing such image information by using a matching region, said matching region including at least a portion of the sub-template containing such image information but less than the entire template, said matching region extending beyond the sub-template containing such image information at least to the central pixel;

matching a pattern in the matching region to a corresponding pattern to specify an action to be taken on the central pixel; and

generating an output image based on the step of matching the pattern in the matching region to a corresponding pattern.

5,365,252

COLOR QUANTIZATION APPARATUS AND METHOD FOR FRAME BUFFER DISPLAY

Dick W. Lo, Santa Clara County, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan and Ricoh Corporation, San Jose, Calif.

Filed Sep. 23, 1991, Ser. No. 763,809
Int. Cl.[5] G09G *1/28*
U.S. Cl. 345—153 **21 Claims**

1. In a digital color image display system wherein a color image is stored as an array of pixels, each pixel having an associated color represented by three, basic colors, each of said basic colors having n+1 bits where n is greater than zero, thus all color combinations of said three n+1 bits of the three basic colors form a color universe which includes all possible color combinations of the pixels, said digital color image display system comprising:

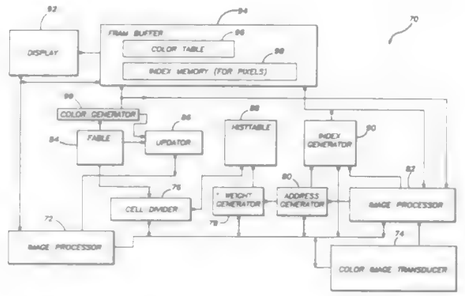
(a) first memos- means for storing color distribution of the pixels in said color universe, said first memory means having a sequence of addresses whose whole range encompasses said color universe; and

(b) first address means for mapping each pixel into one of said addresses of said first memory means according to the said three n+1 bits of the three basic colors associated to said each pixel:

wherein said three n+1 bits of said three basic colors have a format

r0 r1 r2 r3 . . . rn

g0 g1 g2 g3 . . . gn



b0 b1 b2 b3 . . . bn

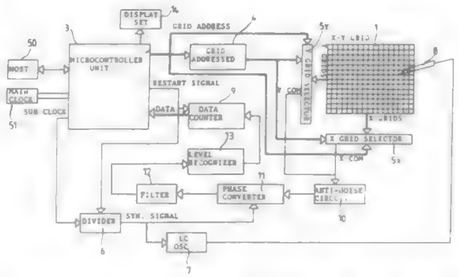
wherein said sequence of addresses of said first memory means has an address format r0 g0 b0 r1 g1 b1 r2 g2 b2 . . . rn gn bn, and wherein said first address means forms said address format for said first memory means by converting said three n+1 bits of said three basic colors into said address format r0 g0 b0 r1 g1 b1 r2 g2 b2 . . . rn gn bn.

5,365,253

DIGITIZER DEVICE WITH ANTI-NOISE AND STATUS DISPLAY

Robert Cheng, Taipei; Robin Chen, Chia Yi; Michael Su, Taipei, and Chuen-Jing Horng, Chang Hua, all of Taiwan, Prov. of China, assignors to Wintime Technology Inc., Hsin Tien-Taipei, Taiwan, Prov. of China

Filed Nov. 12, 1992, Ser. No. 974,881
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **3 Claims**



1. A digitizer device with an anti-noise circuit and a status display unit, comprising a digitizer having a microcontroller unit respectively connected to a host computer and a main clock, wherein the digitizer has a hardware circuit incorporated with a software program built in the microcontroller unit to protect against outside noise so as to ensure the stability of coordinate values, said status display unit being connected to said microcontroller unit in order to show the current status and operating mode of the digitizer, wherein:

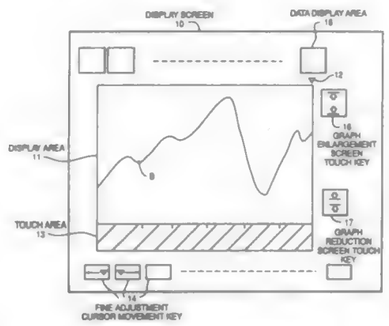
the hardware circuit of said digitizer drives said microcontroller unit to provide a X, Y grid address to a Y grid selector, a X grid selector and a scanning sequence determining grid addresser and sends a secondary pulse signal to an LC oscillator through a frequency divider for use as a reference frequency for a mouse (or stylus), and then said microcontroller unit is controlled to send a start signal to reset a data counter and said frequency divider, thereby causing said data counter to start counting the value as the mouse (or stylus) projects a signal onto an X-Y grid of the digitizer, an induced signal from the digitizer being then sent to the anti-noise circuit through a Y grid selector and a X grid selector, thereby causing the anti-noise circuit to attenuate outside noises of frequency beyond the range of 15 KHz to 150 KHz, so as to eliminate the frequencies other than that emitted through the mouse (or stylus) and improve a signal-to-noise ratio, the signal from said anti-noise circuit being then sent with a synchronous signal from said frequency divider to a phase converter for phase separation and then to a low pass filter for low pass filtration so as to define a low frequency signal, the low frequency signal being then sent to a level recognizer and then converted into a digital pulse signal for controlling said data counter to stop from counting and simultaneously driving it to send counted data to said microcontroller unit for calculating accurate X-Y values for permitting said microcontroller unit to send the calculated result to said host computer and show the current status of the digitizer through said status display unit.

5,365,254

TRENDGRAPH DISPLAY SYSTEM

Junichi Kawamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 672,403, Mar. 20, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,339
Claims priority, application Japan, Mar. 23, 1990, 2-072014
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—157 **4 Claims**



1. A trendgraph display system for displaying a trendgraph with the X axis being the time axis, representing time-serially data collected at a specified period in a display area, the system comprising:

cursor means for displaying a cursorline corresponding to a desired time movable in the direction of the X axis in the display area;

touch sensor means provided near the display area for specifying by a touch a point on the X axis to which the cursorline is to be moved;

means for moving the cursorline to the specified point;

means for detecting a point of intersection where the cursorline intersects the displayed trendgraph in the display area;

means for selecting a display scale of the displayed trendgraph; and

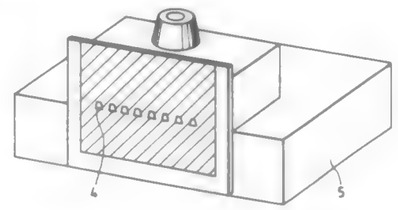
display control means for displaying the trendgraph at the selected display scale, the display control means automatically positioning in a vertical direction the point of intersection at the center of the display area at the selected display scale so, as to recognize a region including the point of intersection in the displayed trendgraph.

5,365,255

MANUFACTURING METHOD FOR INK JET RECORDING HEAD AND INK JET RECORDING HEAD

Makoto Inoue, deceased, late of Kawasaki; Tsuneo Inoue, heir, Yokosuka, both of Japan; Kazuaki Masuda, Kawasaki; Shigeo Toganoh, Tokyo; Manabu Sueoka, Kawasaki; Keiichi Murai, Kashiwa; Takashi Watanabe; Akira Goto, both of Yokohama, and Motoaki Sato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 733,155, Jul. 19, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 22,924
Claims priority, application Japan, Jul. 21, 1990, 2-193686; Mar. 8, 1991, 3-43658; Mar. 8, 1991, 3-43671; Mar. 8, 1991, 3-43672
Int. Cl.[5] B41J *2/14*
U.S. Cl. 347—45 **12 Claims**



1. An ink jet recording head, comprising:

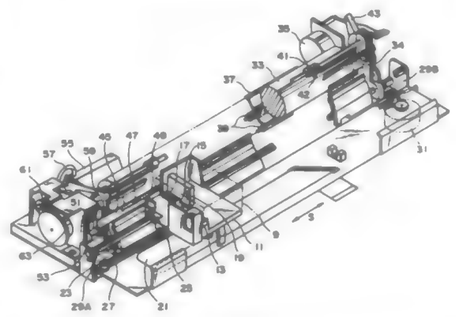
a body having a plurality of discharge ports having peripheral portions, at least said peripheral portions of said discharge ports comprising a film which contains a polymer having a fluorine heterocyclic structure in a principal chain.

5,365,256

RECORDING APPARATUS WITH RECORDING MEDIUM CONVEYANCE CONTROL FOR FIXING RECORDED INK

Tsutomu Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 982,061, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 635,680, Dec. 28, 1990, abandoned. This application Feb. 10, 1994, Ser. No. 194,639
Claims priority, application Japan, Dec. 29, 1989, 1-344923
Int. Cl.[5] G01D *15/18*; B41J *2/01, 29/38*; B41F *5/02*
U.S. Cl. 347—16 **88 Claims**



1. A recording apparatus comprising:

a recording head for recording by discharging an ink to a recording medium;

conveying means for conveying the recording medium in a recording direction and a reverse direction;

instructing means for instructing said conveying means to convey the recording medium in the reverse direction; and

conveyance control means for controlling the conveying means so as to inhibit conveyance of the recording medium in the reverse direction in a case where recorded ink is not fixed yet on the recording medium in response to said instruction, wherein a discrimination regarding whether recorded ink is not yet fixed is performed on a basis of an elapsed time after completion of recording.

9. A recording method comprising:

a recording step of recording by discharging an ink to a recording medium;

a conveying step of conveying the recording medium in a recording direction during said recording step;

an instructing step of instructing conveyance of the recording medium in a reverse direction opposite to the recording direction; and

a conveyance control step of controlling conveyance of the recording medium so as to inhibit conveyance of the recording medium in the reverse direction in a case where the recorded ink is not fixed yet on the recording medium in response to said instruction step, wherein a discrimination regarding whether the recorded ink is not yet fixed is performed on a basis of an elapsed time after completion of the recording in said recording step.

5,365,257

THERMAL PRINTER AND METHOD OF CONTROLLING A THERMAL PRINT HEAD

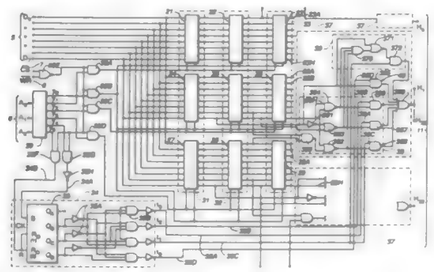
Masahiro Minowa; Naoki Kobayashi; Satoshi Nakajima, and Tadashi Furuhata, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 592,695, Oct. 3, 1990, Pat. No. 5,255,011. This application Jul. 22, 1993, Ser. No. 95,880

Claims priority, application Japan, Oct. 3, 1989, 1-258212; Oct. 12, 1989, 1-265675; Oct. 12, 1989, 1-265676

Int. Cl.[5] B41J *2/375, 2/36*

U.S. Cl. 346—76 PH **21 Claims**



6. A thermal printer comprising:

a thermal print head having a plurality of heating elements formed relative to a print head baseplate,

a sensor in said baseplate for providing a value corresponding to the instantaneous print head temperature,

head temperature detection means connected to said sensor for determining a temperature value based upon said corresponding value produced at said sensor,

timing means for providing a temperature detect signal when operation of said print head has been inactive for a determined period of time,

said head temperature detection means for detecting, via said sensor, (a) an ambient temperature of said print head when power is first applied to the printer or upon receipt of said temperature detect signal and (b) a thermal head operating temperature during printing operation of said heating elements,

controller means connected to said heating elements for applying energy signals to operate said heating elements,

energy control means connected to said temperature detection means and said controller means for providing an energy value determinative of a relative magnitude for said energy signals provided by said controller means based upon both said detected ambient temperature value and said detected operating temperature value determined by said head temperature detection means via said sensor.

5,365,258

COLOR IMAGE FORMING APPARATUS WITH PLURAL PHOTOCONDUCTOR DRUMS

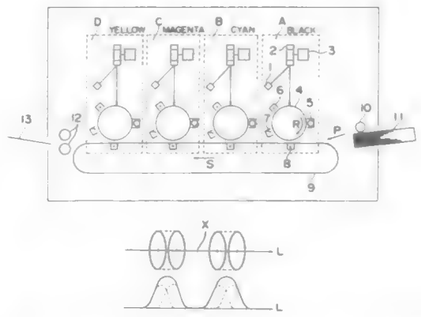
Kazuyuki Murata, Tsuzuki, and Takeshi Shimamoto, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 19, 1993, Ser. No. 20,131

Claims priority, application Japan, Feb. 21, 1992, 4-034616

Int. Cl.[5] G01D *9/42, 15/14;* **G03G** *15/01*

U.S. Cl. 346—108 **12 Claims**



1. A color image forming apparatus with plural photoconductor drums comprising:

a plurality of color image forming arrangements, each arrangement comprising:

image signal processing means for processing an image signal at a particular color and for producing a modulated image signal having a level which changes linearly from a minimum to a maximum;

semiconductor laser means for emitting a laser beam in accordance with said modulated image signal;

photoconductor means; and

scanning means for scanning the laser beam on said photoconductor means.

5,365,259

SCANNING OPTICAL DEVICE

Masanobu Kanoto, and Yasuo Suzuki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 673,127, Mar. 20, 1991, abandoned. This application Dec. 8, 1993, Ser. No. 163,406

Claims priority, application Japan, Mar. 23, 1990, 2-73980; Mar. 11, 1991, 3-044895

Int. Cl.[5] H04N *1/21*

U.S. Cl. 346—108 **49 Claims**

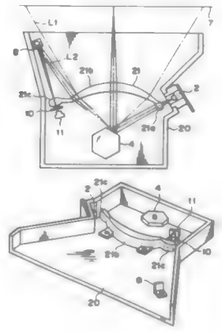
1. A scanning optical device comprising:

a light source;

a deflector for deflecting a light beam from said light source;

optical means having an edge portion and a center portion, said edge portion including first optical means for directing the light beam from said light source to said deflector, and said center portion including second optical means for directing the light beam deflected by said deflector to a predetermined plane;

said second optical means having an optical function which differs from that of said first optical means; and



said second optical means being integrally formed with said first optical means.

5,365,260

INK SUPPLY DEVICE WITH ELASTIC VALVE FOR LIQUID SUPPLYING SLIT

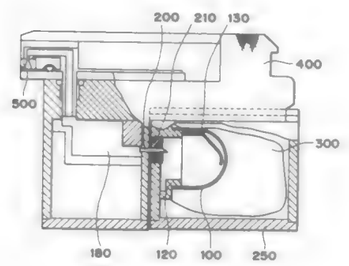
Masashi Kitani, Yokohama; Yoshifumi Hattori, Yamato; Etsurou Suzuki, Yokohama; Hideo Saikawa, Kawasaki; Masami Kojima; Kenji Kawano, both of Tokyo; Koichi Tanno, Kawasaki, and Kenji Aono, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1992, Ser. No. 900,013

Claims priority, application Japan, Jun. 19, 1991, 3-147394; Jun. 19, 1991, 3-147401

Int. Cl.[5] B41J *2/175*

U.S. Cl. 347—87 **23 Claims**



1. A liquid discharge cartridge having liquid discharge means and a liquid container for containing liquid to be supplied to said liquid discharge means, said liquid container comprising:

a liquid storing section for storing liquid;

a liquid introducing section connected to said liquid discharge means to introduce liquid in said liquid storing section to said liquid discharge means;

an elastic separation member separating said liquid storing section from said liquid introducing section and having a cutout, wherein said separation member deforms to open said cutout and allow liquid to flow from said liquid storing section to said liquid introducing section in the presence of a predetermined pressure difference from said liquid storing section to said liquid introducing section and to close said cutout and limit flow of liquid in the presence of a pressure difference smaller than said predetermined pressure difference; and

elastic closing means spaced from said cutout and having a predetermined elasticity to be deformable in response to pressure variations in said liquid introducing section, wherein said closing means deforms to close said cutout in the presence of a predetermined pressure drop from said liquid introducing section to said liquid storing section.

5,365,261

TRANSFER TYPE INK JET PRINTER

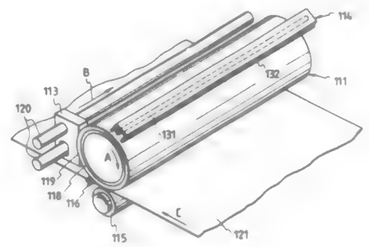
Yoshiyuki Ozawa; Hideo Yamazaki; Makoto Fujino; Tohru Fukushima, and Yoshinori Miyazawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,484

Claims priority, application Japan, Mar. 19, 1992, 4-063288; Jun. 4, 1992, 4-144444; Jun. 29, 1992, 4-170332; Oct. 16, 1992, 4-278937; Dec. 7, 1992, 4-326912

Int. Cl.[5] B41V *2/01*

U.S. Cl. 347—103 **21 Claims**



1. A transfer type ink jet printer, comprising:

an ink jet type record/write means for ejecting ink droplets in which charged coloring particles have been dispersed in a solvent in the form of insulating carrier liquid having a low dielectric constant;

a transfer medium for carrying and moving an ink image formed of ink droplets ejected from said ink jet type record/write means;

a transfer means for transferring the ink image written to said transfer medium on a recording medium by bringing the recording medium in contact with said transfer medium; and

a means for temporarily fixing the charged coloring particles in the ink image on said transfer medium until the ink image is led to said transfer means after the ink image is formed on said transfer medium.

5,365,262

SEALED INSULATED INK CONTAINER

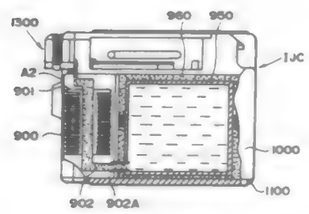
Yoshifumi Hattori, Yamato; Masashi Kitani; Etsuroo Suzuki, both of Yokohama; Hideo Saikawa, Kawasaki; Masami Kojima; Kenji Kawano, both of Tokyo; Koichi Tanno, and Kenji Aono, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 802,550, Dec. 5, 1991, abandoned. This application Jan. 26, 1994, Ser. No. 186,506

Claims priority, application Japan, Dec. 10, 1990, 2-409960

Int. Cl.[5] G01D *15/16, 15/18*

U.S. Cl. 347—87 **13 Claims**



1. An ink container for containing ink, comprising:

an inner case for containing ink;

an outer case containing said inner case;

an ink supply passage for supplying the ink from said inner case to an ink jet recording head; and

a filler material of liquid or powder, having at least one of a heat insulative property and a sealing property, in a closed space defined by said inner case, outer case and said supply passage.

5,365,263

Patent Not Issued For This Number

5,365,264

VIDEO NETWORK SYSTEM WITH COMPUTER LAN

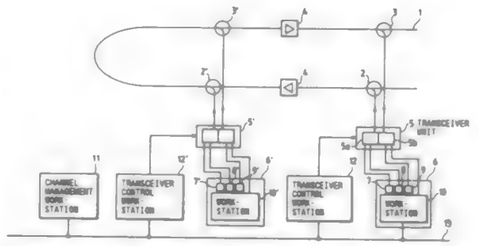
Akino Inoue, Kawasaki; Motohiro Misawa, Sagamihara; Kazuaki Yamaguchi, Kawasaki, and Etsumi Kanaya, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1991, Ser. No. 800,293

Claims priority, application Japan, Nov. 29, 1990, 2-334011

Int. Cl.[5] H04B *3/50;* **H04H** *1/02*

U.S. Cl. 348—10 **9 Claims**



1. A bi-directional video signal transmission system comprising:

transmission line means stretched to have upstream and downstream portions for transmitting a RF signal on which an analogue image signal is frequency-multiplexed;

one-way amplifier means inserted into said transmission line means for amplifying said RF signal;

modulating means for modulating a base-band image signal into a signal having a variable carrier frequency;

mixing means inserted into the upstream portion of said transmission line means for mixing said signal modulated in said modulating means to said RF signal;

dividing means inserted into the downstream porion of said transmission line means for picking up an image signal having a variable carrier frequency from said RF signal;

demodulating means for demodulating said image signal picked up by said dividing means into said base-band image signal

image signal input means for supplying said base-band image signal to said modulating means;

image display means for outputting said base-band image signal from said demodulating means;

transmission request means for generating a request of a video signal transmission;

channel management means for receiving the request from said transmission request means and assigning an available transmission channel responsively thereto; and

control means for controlling switching operations of modulation and demodulation in said modulating and demodulating means in accordance with the transmission channel assigned by the channel management means.

5,365,265

MULTIPOINT TELECONFERENCE SYSTEM EMPLOYING COMMUNICATION CHANNELS SET IN RING CONFIGURATION

Yoji Shibata, Yokosuka, and Masaaki Takizawa, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 15, 1992, Ser. No. 913,401

Claims priority, application Japan, Jul. 15, 1991, 3-174025

Int. Cl.[5] H04N *1/42, 7/14*

U.S. Cl. 348—15 **16 Claims**

1. In a multipoint video telephone/teleconference system having a plurality of video telephone/teleconference terminals which are connected to digital communication channels and which transmit and receive communication frame containing video telephonic/teleconferential data, which includes video data, through the connected digital communication channels, said multipoint teleconference system comprising:

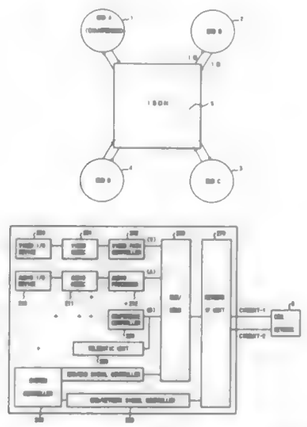
wherein said digital communication channels connect said plurality of video telephone/teleconference terminals in a ring configuration; and

wherein each of said video telephone/teleconference terminals comprises:

generation means for generating the video telephonic/teleconferential data which is to be sent to the other video telephone/teleconference terminals, said telephonic/teleconferential data including said video data,

resumption means for resuming said video data contained in said communication frame received from the video telephone/teleconference terminal at an upper stream position of a loop with respect to transfer of said communication frame,

relay means for transmitting the received communication



frame to the video telephone/teleconference terminal at a lower stream position of said loop so that said communication frame may revolve around said loop, said loop being formed of said digital communication channels which connect said plurality of video telephone/teleconference terminals to one another,

cancellation means for cancelling the video data which was entered into said communication frame by a video telephone/teleconference terminal itself and which has revolved around said loop, from within said communication frame which is to be relayed by said relay means, and

transmission means for entering the generated video data into an unused area of said communication frame which is to be relayed by said relay means, thereby sending said generated video data to said other video telephone/teleconference terminals which lie on said loop.

5,365,266

VIDEO IMAGING METHOD AND APPARATUS FOR AUDIENCE PARTICIPATION

Loren C. Carpenter, 82 Queva Vista, Novato, Calif. 94947

Continuation-in-part of Ser. No. 806,051, Dec. 10, 1991, Pat. No. 5,210,604. This application Nov. 19, 1992, Ser. No. 978,612

The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] H04N *7/18*

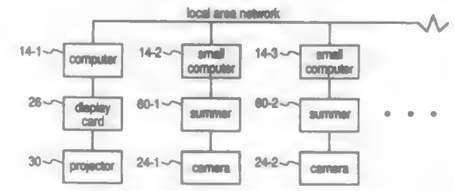
U.S. Cl. 348—61 **29 Claims**

MICROFICHE APPENDIX INCLUDED

(65 Microfiche, 1 Pages)

1. A method for collecting data from a plurality of persons, comprising the steps of:

providing each of the plurality of persons with a radiation source capable of defining at least two states;



scanning all the radiation sources with a detector to form an image of all the radiation sources, thereby determining the state of each scanned source; and

aggregating the determined states into data.

5,365,267

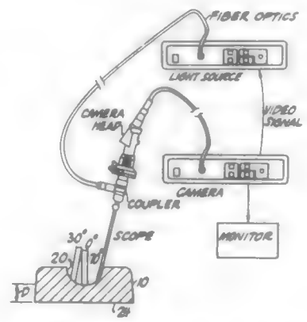
WHITE BALANCE TARGET

Nelson Edwards, Clearwater, Fla., assignor to Linvatec Corporation, Largo, Fla.

Filed Jun. 19, 1992, Ser. No. 901,059

Int. Cl.[5] H04N *7/18, 9/73*

U.S. Cl. 348—65 **17 Claims**



1. A target for use in white balancing an endoscopic camera having a distal scope tip comprising a light source for radiating light from said distal scope tip and an optical means for viewing the field illuminated by said light source, the target comprising:

a light receiving surface for receiving the distal scope tip contiguously adjacent thereto and for receiving light from the light source;

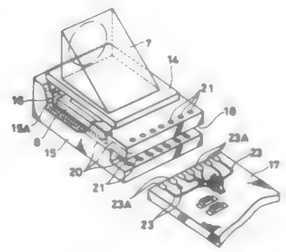
a light diffusing body operatively associated with said surface and having a predetermined depth substantially greater than the thickness of said light receiving surface for receiving light from said surface, diffusing at least a portion of said received light and re-radiating a predetermined amount of said received light from within said body back through said surface such that the camera views a field of substantially uniform intensity.

5,365,268

CIRCUIT BOARD OF SOLID-STATE IMAGE SENSOR FOR ELECTRONIC ENDOSCOPE

Itsuji Minami, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation of Ser. No. 866,575, Apr. 10, 1992. This application Jun. 29, 1993, Ser. No. 82,913
Claims priority, application Japan, Apr. 26, 1991, 3-125327
Int. Cl.[5] A61B *1/06*
U.S. Cl. 348—76 4 Claims



1. A circuit board of a solid-state image sensor for an electronic endoscope comprising:

a package for attaching thereto the solid-state image sensor disposed at one end portion of the electronic endoscope, said sensor having input/output terminals at both ends;

a groove portion formed at one end of the package;

connecting terminals disposed on the upper surface and the under surface of the groove portion of the package portion and connected to the solid-state image sensor; and

a substrate which is provided with a wiring pattern on both sides thereof and which is fitted into the groove portion of the package so as to connect the package and the substrate by the connecting terminals, wherein the substrate may be connected with either side facing the upper surface of said groove portion of the package such as to provide an image or a mirror image of video signals picked up by the solid-state image sensor.

5,365,269

ELECTRONIC CAMERA WITH AUTOMATIC IMAGE TRACKING AND MULTI-FRAME REGISTRATION AND ACCUMULATION

Alan W. Holmes, and Mathew J. Iougmire, both of Santa Barbara, Calif., assignors to Santa Barbara Instrument Group, Inc., Santa Barbara, Calif.

Filed Oct. 22, 1992, Ser. No. 964,775
Int. Cl.[5] H04N *5/225, 5/253, 7/01*
U.S. Cl. 348—297 17 Claims

2. An electronic camera, comprising:

optoelectronic sensor means for receiving a light image of a scene which moves continuously relative to the sensor means over a sensing interval, and for producing a periodically updated current electronic image corresponding to said scene at a current time over said sensing interval;

image memory means for storing a prior electronic image of said scene taken at a time prior to the current time;

offset sensor means for sensing an offset between said current image and said prior image corresponding to a relative movement between said scene and said sensor means during the time interval between said prior time and the current time; and

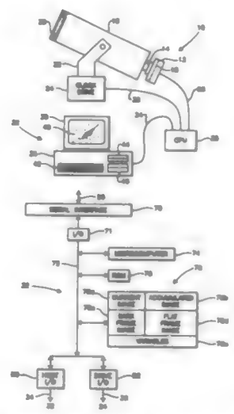
shift and accumulate means for electronically shifting said current image by said offset and adding said shifted current image to said prior image in registration therewith to produce an accumulated image of said scene that is substantially streak-free;

said current and prior images each comprising pixels;

said image memory means comprising current memory means for storing said pixels of said current image at respective current addresses and accumulated memory means for storing said pixels of said prior image at respective accumulated addresses; and

said shift and accumulate means comprising:

shifting means for computing shifted current addresses by altering said respective current addresses by values corresponding to said offset; and



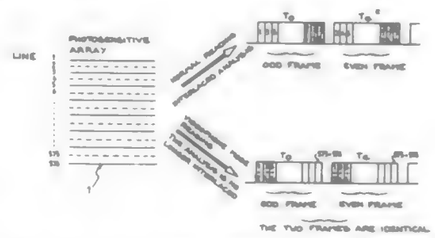
accumulating means for reading and adding pixels stored at said shifted current addresses in the current memory means to pixels stored in said accumulated addresses in the accumulated memory means, and storing said added pixels at said accumulated addresses in the accumulated memory means.

5,365,270

METHOD AND DEVICE FOR THROUGHPUT COMPRESSION FOR A VIDEOPHONE CAMERA

Jacques Guichard; Georges Buchner, both of Paris; Jean-Yves Eouzan, Cesson Sevigne, and Jean-Claude Hertaux, Liffre, all of France, assignors to Thomson-CFS, Puteaux and Etat Francais represented by Le Centre National d'Etudes des Telecommunications, Issy Les Moulineaux, both of France

PCT No. PCT/FR90/00852, § 371 Date Jun. 1, 1992, § 102(e) Date Jun. 1, 1992, PCT Pub. No. WO91/08643, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 27, 1990, Ser. No. 859,465
Claims priority, application France, Dec. 1, 1989, 89 15887
Int. Cl.[5] H04N *3/14*
U.S. Cl. 348—311 9 Claims



1. A method of throughput compression for use in a videophone camera comprising an array of charge-transfer photosensitive cells forming an image sensor, said method comprising the steps of:

dividing up the array of photosensitive cells into two frames of interlaced even and odd lines of the cells;

transferring, during a first time interval, electric charges supplied by each cell of an even line into a plurality of corresponding first storage cells;

transferring, during a second time interval following the first interval, the electric charges contained in the first storage cells into a plurality of corresponding second storage cells;

adding, during a third time interval, the electric charges stored in said plurality of second cells to electric charges supplied by each of a plurality of corresponding cells of a corresponding odd line of cells; and

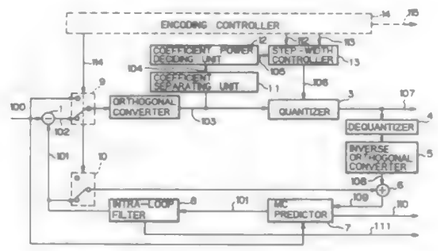
continuously adjusting, as a function of each desired throughput of the videophone camera, duty cycles of the first, second and third time intervals relative to a period for scanning the lines of the array of photosensitive cells, wherein said duty cycles are adjusted in proportion to the inverse ratio of the speed of scanning the lines of the array.

5,365,271

INFORMATION SOURCE ENCODING APPARATUS

Kenichi Asano, Kanagawa, Japan, assignor to Mitsubitshi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1992, Ser. No. 988,722
Claims priority, application Japan, Dec. 27, 1991, 3-347285
Int. Cl.[5] H04N *7/133, 7/137*
U.S. Cl. 348—402 6 Claims



1. An information source encoding apparatus comprising:

an orthogonal converter which is switched by an intra-frame/inter-frame mode signal outputted by an adaptive discrimination operation of an encoding controller for generating conversion coefficients by orthogonal conversion in units of pixel blocks of an original signal of a current image frame or a predicted error signal indicative of a difference between the original signal and the predicted signal;

a quantizer which generates quantization output data by quantizing the AC component of each conversion coefficient supplied from said orthogonal converter in a quantizing step width determined by quantization characteristic designating signal from said encoding controller; and

a motion compensated predicting unit which generates the predicted signal by applying a pattern matching operation in units of pixel blocks to a local decoding signal of a preceding image frame generated by conducting an inverse process on the quantization output data and the original signal of the current image frame;

said encoding apparatus further comprising a coefficient separating unit for selectively separating conversion coefficients in a predetermined spatial frequency region from said orthogonal converter;

a coefficient power deciding unit for calculating to power of the conversion coefficients selected by said coefficient separating unit so as to compare the calculated result with a predetermined threshold value; and

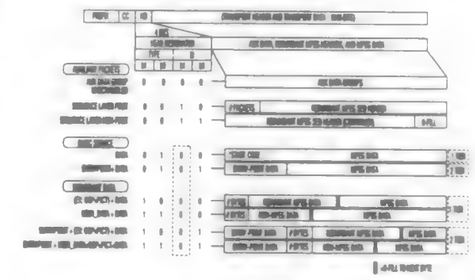
a step-width controller for causing said quantizer to operate, based on the result of the discriminating between an intra-frame mode and an inter-frame mode by said encoding controller and the result from said power deciding unit, in a quantizing step width which does not generate any quantization overload if the power of said conversion coefficients is larger than said threshold value in the intra-frame mode, or in a quantizing step determined by the quantizing characteristic designation signal from said encoding controller in remaining cases, and for outputting a combined adaptive quantizing characteristic designation signal to said quantizer to adaptively control the quantizing step width in a combined manner.

5,365,272

METHOD FOR FORMATTING COMPRESSED VIDEO DATA INTO TRANSPORT CELLS

Robert J. Siracusa, Lawrenceville, N.J., assignor to General Electric Company, Princeton, N.J.

Division of Ser. No. 901,045, Jun. 19, 1992. This application Jul. 2, 1993, Ser. No. 85,364
Int. Cl.[5] H04N *7/00, 7/04*
U.S. Cl. 348—426 15 Claims



1. In a digital video transmission system for transmitting MPEG compressed video signal including layered data having headers containing data descriptive of respective layers, a method for segmenting said compressed video signal into transport cells, respective transport cells containing three protocol layers; said method comprising:

providing said compressed video signal;

forming a link layer header including at least a first data field identifying the service to which the video signal is to be applied;

forming a video transport layer header including a continuity count which is service specific and which increments in successive transport cells, and a data field which indicates one of a plurality of alternative data formats selected for the respective service layer;

dividing said compressed video signal into payloads of no greater than a predetermined number of bits;

forming a service layer from one of said plurality of alternative data formats, which service layer may include at least one of said payloads; and

concatenating said link layer header, said transport layer header and said service layer for conveyance.

5,365,273

METHOD AND DEVICE FOR FILM-MODE DETECTION

Carlos Correa, VS-Schwenningen, and Rainer Schweer, Niedereschach, both of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villengen-Schwenningen, Germany

Filed Apr. 23, 1993, Ser. No. 52,048
Claims priority, application Germany, Apr. 24, 1992, 4213551
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—452 12 Claims

1. A method for film-mode detection comprising:

concurrently providing pixel values from at least first and second adjacent fields of video signal;

comparing amplitude values of respective pixels from corresponding image areas of said first and second adjacent fields, and for a predetermined one of said first and second adjacent fields assigning a first value to comparison results indicating that the amplitude value of respective pixels in horizontal lines of said first adjacent field are intermediate

the amplitude values of vertically aligned pixels in two horizontal lines of said second adjacent field between which said horizontal lines of said first adjacent field are disposed, and assigning a second value if the amplitude value of said respective pixels in said first adjacent field are greater than the maximum of, or lesser than the minimum of the amplitude values of said vertically aligned pixels,; and

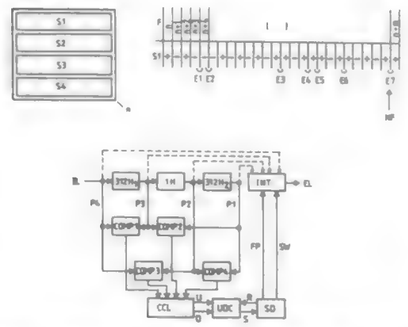
combining the comparison results from at least a portion of respective said predetermined one of said first and second adjacent fields, to determine if values assigned said comparison results are predominantly said first or said second value, and assigning said predetermined one of said first and second adjacent fields the predominant first or second value; and

establishing film mode detection if a sequence of values assigned a predetermined number of successive said predetermined one of said first and second adjacent fields, corresponds to a predetermined pattern.

7. A method for film-mode detection comprising:

concurrently providing pixel samples from three successive fields, wherein first and fourth pixel samples from a first and third of said successive fields respectively, are vertically disposed between second and third pixels from a second of said three successive fields;

comparing said first and fourth pixel values with said second and third pixel values to determine whether said four pixel values represent contiguous image contours;



assigning a positive or negative value to the results of respective comparisons depending upon whether contiguous image contours are determined to occur;

summing the results of comparisons over respective field intervals, and assigning first or second values to respective fields depending upon whether the sum of results of comparisons for respective fields are positive or negative; and

comparing the sequence of first and second values assigned to successive fields, for a predetermined pattern.

9. An apparatus for film-mode detection comprising:

an input terminal for applying a video signal;

delay means, coupled to said input terminal, for concurrently providing pixel values from adjacent fields of video signal;

a means, coupled to said delay means, for comparing amplitude values of respective pixels from corresponding image areas of said adjacent fields to determine whether amplitude values of respective pixels in successive adjacent fields are in a first or a second monotonically increasing or monotonically decreasing relationship; and

means, coupled to said comparing means, for determining if the comparison results over at least a portion of respective field intervals indicate that respective pixel amplitude values of said respective field intervals are predominantly in said first or second monotonically increasing or decreasing relationship, and assigning a first or second value respectively to said respective field intervals according to the predominance determined; and

means, coupled to said means for determining, for establishing film mode detection if a resulting sequence of said first and second values assigned to a predetermined number of said respective field intervals corresponds to a predetermined pattern.

5,365,274

VIDEO SIGNAL CONVERTING APPARATUS WITH REDUCED PROCESSING FOR ALIASING INTERFERENCE

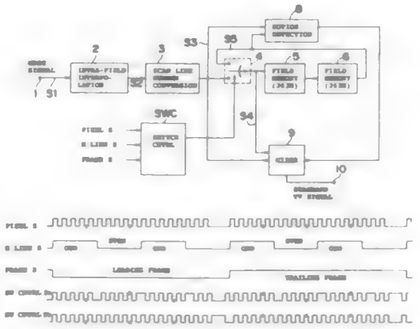
Yoshio Seki, Osaka; Masaki Tokoi, Neyagawa; Atsushi Ishizu, Takatsuki, and Yoichiro Miki, Kawachinagano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 13, 1993, Ser. No. 61,704

Claims priority, application Japan, May 13, 1992, 4-120232; Nov. 18, 1992, 4-308546

Int. Cl.[5] H04N *7/01*

U.S. Cl. 348—458 **22 Claims**



1. A video signal converting apparatus for converting a MUSE signal to a NTSC signal comprising:

intra-field interpolation means for receiving an original MUSE pixel data and for inserting simulated pixel data between said original data to produce an interpolated signal;

scan line number conversion means for extracting a horizontal line from a predetermined number of horizontal lines from said interpolated signal for producing an extracted signal;

first memory means having a capacity for storing one field of the extracted signal;

second memory means having a capacity for storing one field of the extracted signal and connected in series to said first memory means for sequentially receiving data from said first memory means and for producing a delayed signal; and

selection means for alternatively selecting the pixel data from said scan line number conversion means and from said second memory means and for producing a combined signal which is provided to said first memory means.

5,365,275

METHOD AND APPARATUS FOR GENERATING PAL VIDEO SIGNAL BY DIGITAL PROCESSING

Hiroaki Kobayashi, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 18, 1992, Ser. No. 900,299

Claims priority, application Japan, Jun. 28, 1991, 3-158202

Int. Cl.[5] H04N *11/16, 11/04*

U.S. Cl. 348—493 **2 Claims**

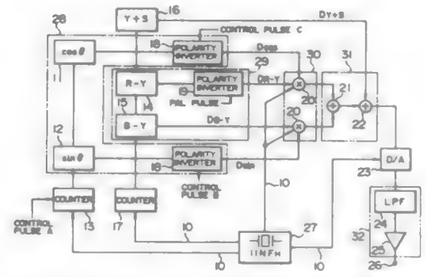
2. An apparatus for generating a PAL video signal by digital processing comprising:

means for generating a basic clock having a frequency which is 11×N times (N: an integer) as high as a horizontal synchronization frequency F_H;

means for generating digital data Dsin and Dcos of orthogonal color subcarriers quantized with the quantization timing of said basic clock;

means for generating digital data $D_{B\text{-}Y}$ and $D_{R\text{-}Y}$ of respective color difference signals B-Y and R-Y quantized with the quantization timing of said basic clock;

means for generating digital data D_{Y+S} of a luminance



signal quantized with the quantization timing of said basic clock;

means for multiplying said digital data $D_{B\text{-}Y}$ by said digital data Dsin and said digital data $D_{R\text{-}Y}$ by said digital data Dcos to obtain digital data of a B-Y modulation signal and digital data of an R-Y modulation signal respectively;

means for adding said digital data of the B-Y modulation signal, said digital data of the R-Y modulation signal and said digital data D_{Y+S} of the luminance signal; and

digital/analog conversion means for effecting digital/analog conversion of the result of addition by said adder means.

5,365,276

MULTISCREEN DISPLAY CIRCUIT FOR DISPLAYING VIDEO SIGNAL SOURCES HAVING DIFFERENT ASPECT RATIOS

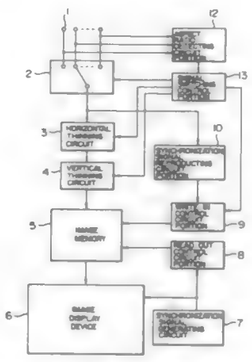
Kiyoshi Imai, Kyoto; Yutaka Nio, Hirakata; Ken Sakamoto, Takatsuki; Keiya Miyoshi, Ikeda; Mitsuji Okawa, Toyonaka, and Toyoaki Unemura, Itami, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1992, Ser. No. 894,922

Claims priority, application Japan, Jun. 13, 1991, 3-141612

Int. Cl.[5] H04N *5/46, 5/262, 5/445*

U.S. Cl. 348—556 **6 Claims**



1. A multi-screen display circuit comprising:

video signal source switching means for selecting a video signal source, for outputting a video signal, from a plurality of video signal sources connected to said video signal source switching means;

a thinning circuit portion, having a settable thinning ratio, connected to the output of said video signal source switching means, for receiving said video signal from said video signal source switching means and thinning said video signal in accordance with said settable thinning ratio;

an image memory connected to the output of said thinning circuit portion and including a memory space storing video data;

image display means, connected to the output of said image memory, for displaying video data received from said image memory;

an aspect ratio detecting circuit portion for detecting an aspect ratio of video signals of each of said video signal sources and outputting a detection signal; and

a write in control circuit portion for performing write in control of writing of said video data into sub-screen spaces divided in said memory space of said image memory, wherein:

said settable thinning ratio of said thinning circuit portion and said write in control circuit portion are controlled in response to said detection signal.

5,365,277

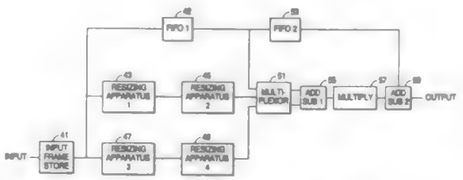
APPARATUS WITH REDUCTION/MAGNIFICATION IMAGE SIZE PROCESSING FOR PRODUCING LOW-PASS FILTERED IMAGES

Lance Greggain, Woodbridge, Canada, assignor to Genesis Microchip Inc., Ontario, Canada

Filed Oct. 8, 1993, Ser. No. 133,372

Int. Cl.[5] H04N *5/14*

U.S. Cl. 348—571 **3 Claims**



1. A video filtering system, comprising:

a) input storage means for storing an input digital image;

b) first temporary storage means connected to said input storage means for temporarily storing said input digital image;

c) a first pair of series connected resizing apparatus connected to said input storage means for reducing said input digital image to a first reduced size and then magnifying said first reduced size digital input image to original size as a first low-pass filtered version of said input digital image;

c) a second pair of series connected resizing apparatus connected to said input storage means for reducing said input digital image to a second reduced size and then magnifying said second reduced size digital input image to original size as a second low-pass filtered version of said input digital image;

d) a multiplexer having a first input connected to said first temporary storage means, a second input connected to said first pair of series connected resizing apparatus, and a third input connected to said second pair of series connected resizing apparatus, for selecting said input digital image stored in said first temporary storage means for output on a first output thereof, and one of said first or second low-pass filtered versions of said input digital image on a second output thereof;

e) a first adder/subtracter connected to said first output and said second output of said multiplexer for adding or sub-

tracting said selected one of said first or second low-pass filtered versions of said input digital image to or from said input digital image temporarily stored in said first temporary storage means and in response generating a first intermediate image;

f) a multiplier connected to said first adder/subtracter for multiplying said first intermediate image by a predetermined scaling factor and in response generating a second intermediate image;

g) a second temporary storage means connected to said first temporary storage means for further temporarily storing said input digital image;

h) a second adder/subtracter connected to said multiplier for adding or subtracting said second intermediate image to or from said input digital image temporarily stored in said second temporary storage means and in response generating an output filtered image.

5,365,278

SIDE BY SIDE TELEVISION PICTURES

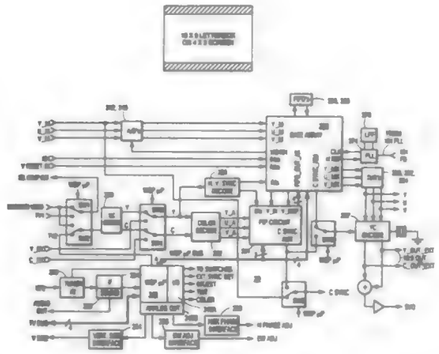
Donald H. Willis, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Indianapolis, Ind.

Continuation of Ser. No. 945,640, Nov. 6, 1992, abandoned. This application Feb. 10, 1994, Ser. No. 194,782

Claims priority, application United Kingdom, Jun. 1, 1990, 9012326

Int. Cl.[5] H04N *7/18, 5/262*

U.S. Cl. 348—581 **19 Claims**



1. A video system, comprising:

means for quantizing first and second video signals, representing first and second pictures respectively, at higher and lower levels of resolution relative to one another;

video display means;

means for synchronizing said first video signal, said second signal and said video display means with one another;

means for modifying said first and second quantized video signals to represent said first and second pictures in size;

means for enhancing in apparent quantization resolution the one of said first and second quantized video signals having said lower level of guantization resolution: and,

means for combining said size modified video signal having said relatively higher level of quantization resolution and said size modified video signal having said enhanced apparent level of quantization resolution for side-by-side display of said pictures on said video display means.

5,365,279

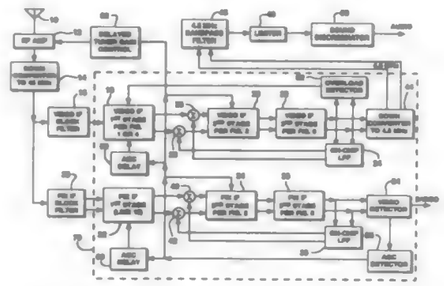
USING D-C FEEDBACK WITH ON-CHIP FILTERING TO BALANCE I-F DRIVE TO SECOND DETECTOR IN MONOLITHIC IC

Jack R. Harford, Flemington, N.J., assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Continuation-in-part of Ser. No. 80,705, Jun. 24, 1993, Pat. No. 5,305,109, which is a continuation-in-part of Ser. No. 940,220, Sep. 8, 1992. This application Jun. 24, 1993, Ser. No. 80,725

Int. Cl.[5] H04N *5/52*

U.S. Cl. 348—678 **18 Claims**



1. A first detector and a frequency-selective filter receiving input signal from said first detector, in combination with a monolithic integrated circuit, said monolithic integrated circuit comprising:

a second detector of a type receiving balanced input signal voltages superposed on respective direct bias potentials;

a direct-coupled cascade connection of amplifier stages for amplifying a response from said frequency-selective filter, thereby to supply to said second detector said balanced input signal voltages superposed on respective direct bias potentials;

first, second and third emitter-coupled transistor differential amplifiers included in order of their ordinal numbering in said direct-coupled cascade connection of amplifier stages, each having a respective pair of input terminals and having a respective pair of output terminals, the response of said frequency-selective filter being applied between the input terminals of said first emitter-coupled transistor differential amplifier;

automatic gain control circuitry for controlling the respective voltage gains of said first and second emitter-coupled transistor differential amplifiers;

differential lowpass filter means for filtering the balanced input signal voltages superposed on respective direct bias potentials supplied from respective ones of the pair of output terminals of said third emitter-coupled transistor differential amplifier, for generating balanced direct-current feedback signals; and

means for combining said balanced direct-current feedback signals with balanced output signals from the respective pair of output terminals of said first emitter-coupled transistor differential amplifier for application to the respective pair of input terminals of said second emitter-coupled transistor differential amplifier.

11. A first detector and frequency-selective filter receiving input signal from said first detector, in combination with a monolithic integrated circuit, said monolithic integrated circuit comprising:

a second detector of a type receiving balanced input signal voltages superposed on respective direct bias potentials;

a direct-coupled cascade connection of amplifier stages for amplifying a response from said frequency-selective filter, thereby to supply to said second detector said balanced input signal voltages superposed on respective direct bias potentials;

first, second and third emitter-coupled transistor differential amplifiers included in order of their ordinal numbering in said direct-coupled cascade connection of amplifier stages, each having a respective pair of input terminals and having a respective pair of output terminals, the response of said frequency-selective filter being applied between the input terminals of said first emitter-coupled transistor differential amplifier;

first and second common-collector-amplifier transistors included in said direct-coupled cascade connection of amplifier stages, having respective base electrodes to which respective ones of the pair of output terminals of said first emitter-coupled transistor differential amplifier connect, and having respective emitter electrodes connected to respective ones of the pair of input terminals of said second emitter-coupled transistor differential amplifier;

automatic gain control circuitry for controlling the respective voltage gains of said first and second emitter-coupled transistor differential amplifiers; and

differential lowpass filtering of the balanced input signal voltages superposed on respective direct bias potentials supplied from respective ones of the pair of output terminals of said third emitter-coupled transistor differential amplifier, for generating balanced direct current feedback signals applied to the emitter electrodes of said first and second common-collector-amplifier transistors.

5,365,280

METHOD AND APPARATUS FOR DISCRIMINATING BETWEEN MOVIE FILM AND NON-MOVIE FILM AND GENERATING A PICTURE SIGNAL PROCESSING MODE CONTROL SIGNAL

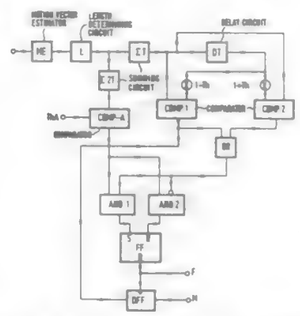
Gerard De Haan; Hendrik Huijgen; Paul W. A. C. Biezen, and Olukayode A. Ojo, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 11, 1993, Ser. No. 75,653

Claims priority, application European Pat. Off., Jun. 26, 1992, 92201895.7

Int. Cl.[5] H04N *5/253*

U.S. Cl. 348—699 **20 Claims**



1. A method of generating a control signal indicating whether a received picture signal originated from a movie-film source or from a non-movie-film source by a video camera for controlling a picture signal processing mode for the received picture signals, comprising the steps of:

(a) determining first motion vectors for a first field of the received picture signals,

(b) determining second motion vectors for a second field of the received picture signals,

(c) comparing said first and second motion vectors and based upon said comparison generating a control signal indicating whether the received picture signal originated from a movie-film source or from a non-movie-film source by a video camera.

5,365,281

MOTION SIGNAL DETECTING CIRCUIT

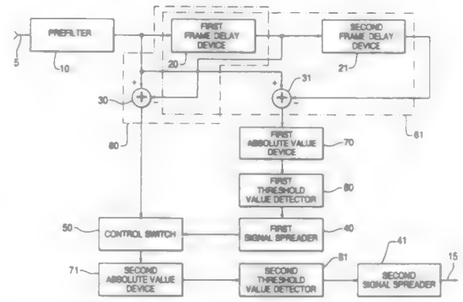
Jung-Wan Ko, Lawrenceville, N.J., and Christopher H. Strolle, Glenside, Pa., assignors to SamSung Electronics, Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jun. 26, 1992, Ser. No. 903,942

The portion of the term of this patent subsequent to Jun. 14, 2011, has been disclaimed.

Int. Cl.[5] H04N *9/64, 7/18*

U.S. Cl. 348—700 **12 Claims**



1. Apparatus for detecting motion in a video signal to generate a motion signal, said apparatus comprising:

first detecting means for detecting magnitudes of changes between a current value of said video signal and a first previous value of said video signal descriptive of a spatial location in a frame of said video signal two frames before a current frame that corresponds to a currently-scanned spatial location, and for generating a corresponding output signal descriptive of said magnitudes of changes between said current and first previous values of said video signal;

second detecting means for detecting at selected times magnitudes of changes between a current value of said video signal descriptive of a currently-scanned spatial location in a current frame of said video signal, and a second previous value of said video signal one frame before said current frame that corresponds to said currently-scanned spatial location, and for generating a corresponding output signal descriptive of said magnitudes of changes between said current and second previous values of said video signal;

electrically controlled switch means within said second detecting means, for selectively disabling the operation of said second detecting means and so causing the output signal of said second detecting means to assume a prescribed value;

means responsive to the output signal of said first detecting means for supplying a control signal; and

means responsive to the output signal of said first detecting means, for supplying said motion signal.

5,365,282

TELEVISION SYSTEM MODULE WITH REMOTE CONTROL CODE DETERMINATION

Michael R. Levine, Boca Raton, Fla., assignor to Smart VCR Limited Partnership, Ann Arbor, Mich.

Filed Jan. 19, 1993, Ser. No. 5,727

Int. Cl.[5] H04N *5/44*

U.S. Cl. 348—734 **15 Claims**

1. A T.V. module adapted for use in conjunction with a remotely controllable associated unit, comprising:

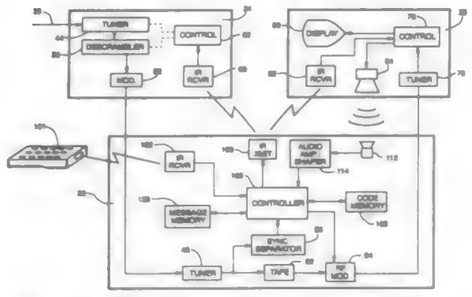
a remote-control signal transmitter adapted to transmit signals representative of control codes to the associated unit;

means adapted to analyze the operation of said associated unit in response to said control codes;

a memory operative to store remote-control codes; and

an electronic controller means operative to perform the following functions:

cause said remote-control signal transmitter to transmit test control signals to said associated unit,



cause said means adapted to analyze the operation of said associated unit to determine control codes related to the associated unit in response to said test control codes, and cause the control codes determined to be related to the associated unit to be stored in said memory.

5,365,283

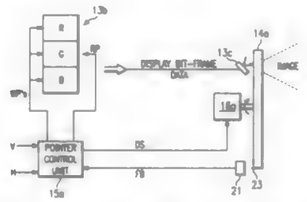
COLOR PHASE CONTROL FOR PROJECTION DISPLAY USING SPATIAL LIGHT MODULATOR

Donald B. Doherty, Irving; Richard C. Meyer, Plano; Stephen W. Marshall, Richardson; Jeffrey B. Sampsell, and Robert J. Gove, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 19, 1993, Ser. No. 93,537

Int. Cl.[5] H04N *9/14, 9/47*

U.S. Cl. 348—743 **9 Claims**



7. A method of providing a drive signal for a color-wheel motor for a display system that uses a motor-driven color wheel to display frames of color images from a video signal having a horizontal sync signal and a vertical sync signal, comprising the steps of:

converting the horizontal sync signal to a first pulsed signal having a frequency of said horizontal sync signal times a frequency multiplier;

dividing said first pulsed signal by a value equal to the number of lines in each frame to generate a frame-pulsed signal;

dividing said frame-pulsed signal by a predetermined frequency divider to generate a square wave signal having a period equal to that of the vertical sync signal, wherein said divider value operates to change the phase of said square wave, and said change is repeated to incrementally obtain a desired phase relationship between said square wave and said vertical signal; and

driving the color wheel motor with a drive signal derived from said square wave.

5,365,284

LIQUID CRYSTAL DISPLAY DEVICE AND DRIVING METHOD THEREOF

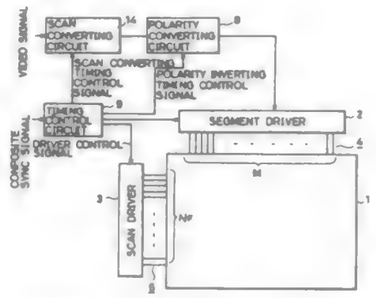
Toshio Matsumoto; Shuhei Yasuda; Tokutarou Kusada, and Nobuyoshi Nagashima, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

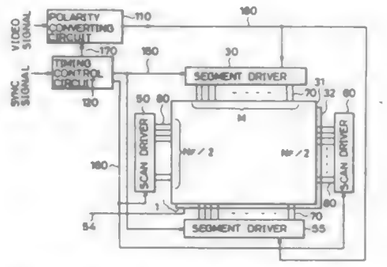
Continuation of Ser. No. 476,536, Feb. 7, 1990, abandoned. This application Dec. 31, 1992, Ser. No. 999,684

Claims priority, application Japan, Feb. 10, 1989, 1-32324; Nov. 30, 1989, 1-313663

Int. Cl.[5] H04N *5/74*

U.S. Cl. 348—793 **4 Claims**





1. A liquid crystal display device, comprising:

converting means for converting original video signals into psuedo video signals by time compressing original video signals of 1 horizontal scanning period of interlace specification to ½, and by interpolating, between each of the compressed signals, a signal which is similar to any of the time compressed signals;

a liquid crystal panel including scan signal lines the number of which is substantially equal to the number of valid scan lines in 1 frame of television signals, and a plurality of rows of liquid crystal pixels each connected to said scan signal lines;

each of said rows of liquid crystal pixels including a plurality of liquid crystal pixels;

scan driver means, operating at a frequency twice as much as horizontal scanning frequency of said original video signals, for successively scanning and driving said scan signal lines on said liquid crystal panel;

timing control means for shifting operation timing of said scan driver means in a first field constituting 1 frame of said original video signals from operation timing of said scan driver means in a second field constituting said 1 frame, by one half of the horizontal scanning period of said original video signals; and

segment driver means, responsive to said psuedo video signals, for driving said liquid crystal pixels in a frequency cycle twice as much as the horizontal scanning frequency of said original video signals.

5,365,285

CRT DISPLAY DEVICE WITH A GROUNDED RIMBAND SO AS TO SUPPRESS AN ELECTRO-MAGNETIC EMISSION

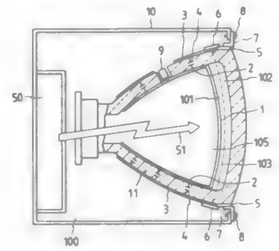
Isao Kizuya, Hitachi; Kenkichi Yamashita, Katsuta; Kunihiko Onuma, and Akira Hoshikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1991, Ser. No. 670,197

Claims priority, application Japan, Mar. 16, 1990, 2-64230

Int. Cl.[5] H04N *5/65*

U.S. Cl. 348—818 **5 Claims**



1. A CRT display unit comprising:

a chassis enclosing a video amplifier for amplifying video signals and a CRT device having an envelope formed by a funnel section and a panel section sealed at a joining section and conductive coating films coated on both internal and external surfaces of the funnel section, the perimeter of the panel section being surrounded by a metal rim band, and the envelope being fastened to the chassis by means of a metal fixture installed on the rim band;

a first conductive member electrically connecting the conductive coating film on the external surface of said funnel section to said rim band; and

a chassis conductive member installed in a space between the rim band and the chassis for electrically connecting the rim band to the chassis,

wherein a plurality of second conductive members are provided in said space between the rim band and the chassis.

5,365,286

OPHTHALMIC MEASURING APPARATUS

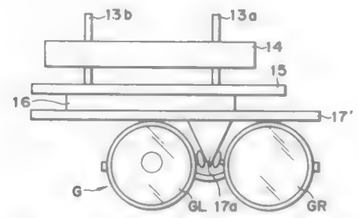
Takashi Masuda, Yamato, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1992, Ser. No. 829,276

Claims priority, application Japan, Feb. 5, 1991, 3-036797

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—204 **28 Claims**



10. An optical measuring comprising:

a spectacles contacting member for contacting spectacles to be examined;

first distance measuring means for measuring the distance from a first position to the center of a spectacle lens of the spectacles to be examined on the basis of the amount of the displacement of said spectacles contacting member; and

second distance measuring means, providing with an observation system for observing the front eye part of an eye to be examined therethrough, for measuring the distance from a second position to the center of the pupil of the eye to be examined on the basis of the amount of displacement of said observation system.

5,365,287

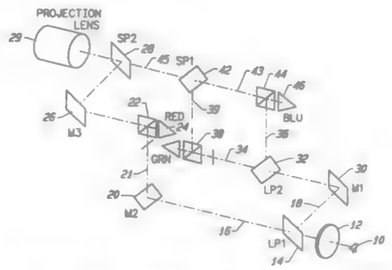
THREE COLOR CHANNEL, TWO-ELEVATION OPTICS FOR A SINGLE LENS VIDEO PROJECTOR

David W. Vollmer, Santa Cruz, and Rodney J. Kugizaki, San Ramon, both of Calif., assignors to Greyhawk Systems, Inc., Mountain View, Calif.

Filed Nov. 8, 1993, Ser. No. 148,933

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—31 **10 Claims**



10. A video projector comprising:

a source of projection light containing substantially the entire visible spectrum;

a reflector of substantially elliptical shape positioned to capture a portion of the light from said projection light source and to reflect said light at a focal point;

a condensing lens positioned beyond the focal point of said reflector and intercepting substantially all of the reflected light from said reflector, said condensing lens adapted to form a first light beam;

a first dichroic beam splitter positioned in the optical path of said first light beam and adapted to divide said first light beam into a second light beam containing a single primary color and a third light beam containing the remaining primary colors;

a first sheet polarizer positioned in the optical path of said second light beam and adapted to transmit a substantial portion of said second beam with an S- polarization state and absorb a substantial portion of light in said second light beam with a P-polarization state;

a first polarization modulator positioned to receive said second light beam and adapted to modulate the polarity thereof with signal information;

a first polarizer-analyzer positioned in the optical path of said second light beam between said first sheet polarizer and said first polarization modulator and adapted to reflect light in an S-polarization state only onto said first polarization modulator and to analyze said light beam reflected from said first polarization modulator such that said second light beam reflected from said first polarizer analyzer is amplitude modulated;

a first mirror positioned in the optical path of said third light beam subsequent to said first dichroic beam splitter, said first mirror adapted to cause the energy in said P polarization state to become S polarized and the energy in said S polarization state to become P polarized;

a second dichroic beam splitter positioned to receive said third light beam from said first mirror and adapted to divide said third light beam into a fourth light beam containing only one of said remaining primary colors and a fifth light beam containing the final primary color;

a second polarization modulator positioned to receive said fourth light beam and adapted to modulate the polarity thereof with signal information;

a second polarizer-analyzer positioned in the optical path of said fourth light beam between said second dichroic filter and said second polarization modulator and adapted to reflect light in a S polarization state only onto said second polarization modulator and to analyze said fourth reflected light beam reflected from said second polarization modulator such that said fourth light beam reflected from said second polarization modulator is amplitude modulated;

a second sheet polarizer positioned in the optical path of said fourth light beam before said second polarizer-analyzer and adapted to transmit a substantial portion of said fourth beam with a S polarization state and absorb a substantial portion of light in said fourth light beam with a P polarization state;

a third sheet polarizer positioned in the optical path of said fifth light beam and adapted to transmit a substantial portion of said fifth beam with a S polarization state and absorb a substantial portion of light in said fifth light beam with a P polarization state;

a third polarization modulator positioned to receive said fifth light beam and adapted to modulate the polarity of said beam with signal information;

a third polarizer-analyzer positioned in the optical path of said fifth light beam between a second dichroic beamsplitter and said third polarization modulator and adapted to transmit light in a P polarization state only onto said third polarization modulator and to analyze said fifth reflected light beam reflected from said third polarization modulator such that said fifth light beam reflected from said third polarization modulator is amplitude modulated;

a first beam combiner positioned in the optical paths of said fourth and fifth light beams and adapted to combine said fourth and fifth light beams into a sixth light beam that contains all of the information of said fourth and fifth light beams;

a second beam combiner positioned in the optical path of said second and sixth light beams and adapted to combine said second and sixth light beams into an eighth light beam contain all of the information in said second and sixth light beams; and

a projection lens positioned in the optical path of said eighth light beam and adapted to focus said beam onto a projection plane.

5,365,288

IMAGE MOVER

Duane S. Dewald, Dallas, Tex.; Lloyd G. Cross, Gualala, Calif., and Paul A. Linden, Overland Park, Kans., assignors to Advanced Laser Projection, Inc., Dallas, Tex.

Continuation of Ser. No. 955,310, Oct. 1, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,365

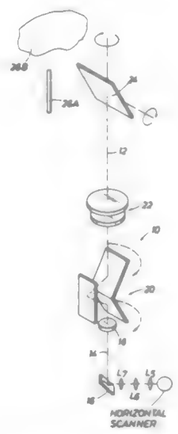
Int. Cl.[5] G03B *21/28*

U.S. Cl. 353—98 **32 Claims**

1. Apparatus adapted for use with a projector having a diverging image and a steering mirror, comprising

a first lens for collimating said diverging image to provide a collimated image,

rotator for rotating said collimated image responsive to horizontal movement of the steering mirror, and



a second lens for restoring said collimated image to a restored diverging image.

5,365,289

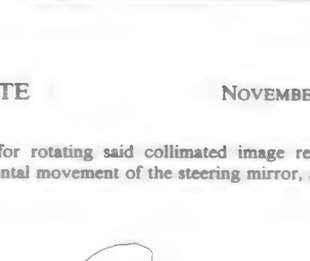
MANUAL CASSETTE SYSTEM FOR OVERHEAD PROJECTION TRANSPARENCIES

Steven A. Zilber, Reserve Sq., #16T-W, 1701 E. 12th St., Cleveland, Ohio 44114-3237

Continuation-in-part of Ser. No. 903,242, Jun. 23, 1992, Pat. No. 5,198,846. This application Mar. 26, 1993, Ser. No. 37,930

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—120 **19 Claims**



1. A storage cassette for holding and dispensing overhead projector transparencies, comprising:

a housing including top, bottom, and side walls defining a chamber therein, the housing having an open end sized to permit insertion of a stack of transparencies;

a generally upwardly facing follower plate sized to support a stack of transparencies and located within the chamber with means for biasing the follower plate upwardly;

an access door at the open end of the housing, the access door being movable from a closed position to an open position for loading a stack of transparencies onto the follower plate within the chamber, the access door having an inside face directed toward the follower plate within the chamber when in the closed position;

a transparency discharge slot defined between the top wall of the housing and the top of the access door when the access door is in the closed position, the transparency discharge slot being generally parallel to the top wall;

an access opening through the top wall of the housing for permitting manual access to the top transparency in the stack of transparencies on the follower plate to permit the top transparency to be slid manually through the discharge slot; and

anti-pushdown means for preventing depression of the follower plate during manual sliding of the top transparency through the discharge slot.

5,365,290

CAMERA CAPABLE OF RECORDING PHOTOGRAPHING INFORMATION AND PRINTING APPARATUS THEREFOR

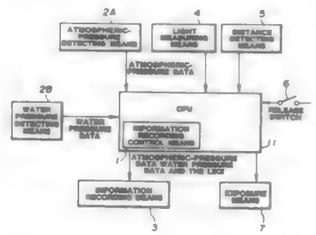
Tatsuya Suzuki; Masaki Nagao, and Kunio Yokoyama, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1993, Ser. No. 104,186

Claims priority, application Japan, Aug. 10, 1992, 4-212970; Aug. 24, 1992, 4-224115

Int. Cl.[5] G03B *17/08*

U.S. Cl. 354—64 **25 Claims**



1. A camera capable of recording photographic information, comprising:

pressure-information detecting means for detecting pressure information at a location where a camera body is positioned;

magnetic recording means for recording information detected by said pressure-information detecting means onto a magnetic memory section provided on a film, as environmental information; and

recording control means for controlling said photographic-information recording means such that said detected information and a photographic image are recorded corresponding to each other on said film.

5,365,291

APPARATUS FOR ADJUSTABLY MOUNTING A CAMERA ON AIRCRAFT

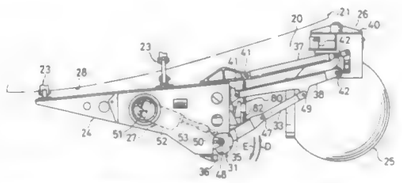
Iwao Maeda, Kobe, Japan, assignor to Shinmaywa Industries, Ltd., Nishinomiya, Japan

Filed Sep. 22, 1992, Ser. No. 948,672

Claims priority, application Japan, Sep. 30, 1991, 3-276352

Int. Cl.[5] G03B *39/00*

U.S. Cl. 354—74 **11 Claims**



7. Camera mounting mechanism for aircraft comprising:

a) housing for a camera;

b) a camera support section including a linkage system for movement of said camera housing between a retracted limit position proximate the aircraft and an extended limit position facilitating 360° photography while aircraft is spatially oriented in one position; and

c) actuator means for selectively actuating said camera support section between said limit positions.

5,365,292

INDICATOR DEVICE FOR CAMERA

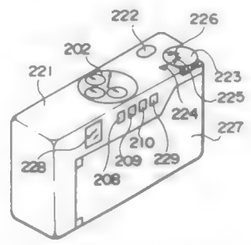
Hiroshi Wakabayashi, Yokohama; Daiki Tsukakara, Hiratuka; Yuji Katano, Kawasaki, and Hitoshi Aoki, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 1, 1993, Ser. No. 11,851

Claims priority, application Japan, Feb. 5, 1992, 4-020139; Feb. 24, 1992, 4-036486; Feb. 24, 1992, 4-036487; Mar. 12, 1992, 4-012331[U]; May 28, 1992, 4-137225; May 28, 1992, 4-137226; Jun. 2, 1992, 4-141414; Jun. 15, 1992, 4-155327

Int. Cl.[5] G03B *17/18, 17/24, 17/36, 29/00*

U.S. Cl. 354—76 **68 Claims**



1. An indicator device for a camera comprising a drive means, for displaying information related to conditions for photography, comprising:

(a) an indicator means comprising an indicator pointer and a scale plate, said indicator means displaying said information related to conditions for photography by the position of said indicating pointer which is rotationally driven against said scale plate by said drive means;

(b) an operation member which when operated by a user of the camera puts the camera into the condition ready to shoot a photograph; and

(c) a drive control means which:

(c1) drives said indicator pointer so as to display said information related to conditions for photography, when by the operation of said operation member the camera is put into the condition ready to take a photograph; and

(c2) drives said indicator pointer according to the passage of time when the camera is not put into the condition ready to take a photograph.

5,365,293

PANHEAD OF IMPROVED OPERABILITY

Koichiro Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.

Filed Mar. 17, 1993, Ser. No. 34,226

Int. Cl.[5] G03B *29/00*

U.S. Cl: 354—81 **8 Claims**

1. A panhead for a tripod of the type used for supporting a camera, said panhead comprising:

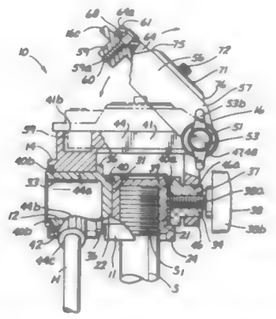
a panning base adapted for mounting to a tripod for rotation in a horizontal plane about a vertical axis;

a tilting base hinged to said panning base for turning about a first horizontal axis, said tilting base having left and right sides, a front and a rear;

a side tilting base including a top surface and hinged to said tilting base for turning about a second horizontal axis transverse to said first horizontal axis between a horizontal position and a vertical position, and means for mounting a camera to said top surface; and

an operating handle extending rearwardly from said left side of said tilting base;

characterized in that said second horizontal axis is located on said right side of said tilting base and generally diametrically opposed to said handle about said vertical axis, such that said side tilting base pivots clockwise and towards the right of an operator facing said rear as said side tilting base is turned from said horizontal to said vertical position.



5,365,294

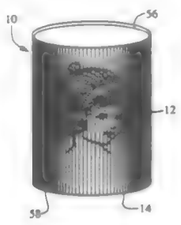
METHOD AND APPARATUS FOR CREATING CYLINDRICAL THREE DIMENSIONAL PICTURE

Victor G. Anderson, Arlington, Tex., assignor to Pinnacle Brands, Inc., Grand Prairie, Tex.

Filed Jan. 11, 1993, Ser. No. 2,969

Int. Cl.[5] G03B *35/00*

U.S. Cl. 354—112 **47 Claims**



1. A three dimensional picture viewable by an observer through an angle of 360° comprising:

a photograph containing a series of sequential images of a subject photographed while being rotated through an angle of 360°; and

a lenticular lens disposed between the photograph and the observer to permit the image of the subject recorded on the photograph to be viewed through an angle of 360°.

5,365,295

FILM TRANSPORTING SYSTEM FOR PHOTOGRAPHIC CAMERA

Tatsuo Saito, and Haruo Onozuka, both of Ohmiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

Filed Jun. 8, 1993, Ser. No. 73,171

Claims priority, application Japan, Jun. 9, 1992, 4-173737

Int. Cl.[5] G03B *1/18, 7/26, 19/02, 1/60*

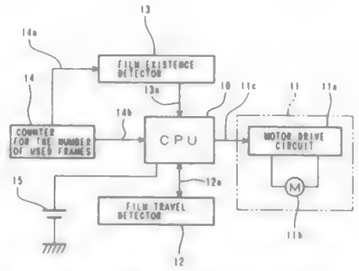
U.S. Cl. 354—173.1 **6 Claims**

1. A film transporting system for a photographic camera including a source battery, the film transporting system comprising:

a film transporter energized from the source battery loaded in the camera to selectively advance or rewind a film roll loaded in the camera; and

a film travel detector adapted to detect an amount by which the film roll has been transported;

and a controller coupled to said film transporter and to said film travel detector, said controller adapted to compare an amount that the film roll has been transported by said film transporter with a preset value, corresponding to a picture frame and, if said amount of travel corresponds to said preset value, to apply a stop signal to said film transporter so that said film transporter is stopped upon reception of this signal, wherein said controller always controls said film transporter to advance the film to a next unexposed frame, by advancing the film by said present value, each time the source battery is replaced.



5,365,296

MOTOR AND AN OPTICAL APPARATUS HAVING SUCH MOTOR

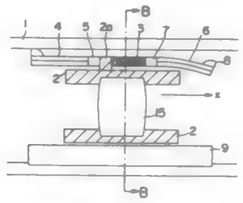
Junichi Murakami, Yokohama; Shigeru Ogino, Tokyo; Hiroyuki Wada, and Hiroyuki Takahara, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,994

Claims priority, application Japan, Oct. 30, 1990, 2-2292510; Oct. 14, 1991, 3-264766

Int. Cl.[5] G03B *1/18;* H01L *41/04*

U.S. Cl. 354—195.1 **25 Claims**



1. A motor for driving a moving member with respect to a member which serves as a reference of the movement, said motor comprising:

engaging means supported by one of said reference member and said moving member, and including at least two first piezoelectric actuators for selectively operating a contact portion of said piezoelectric actuators such that said contact portion selectively is brought into contact with or is moved away from the other one of said reference member and said moving member; and

at least one second piezoelectric actuator operable to change a distance between said a least two first piezoelectric actuators,

wherein at least one of said at least two first piezoelectric actuators employs a bimorph type piezoelectric element.

5,365,297

CAMERA SYSTEM WITH ZOOM LENS HAVING PRESETTABLE FOCAL LENGTHS

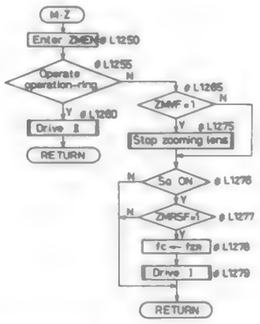
Tetsuya Arimoto; Minoru Kuwana; Kenji Ishibashi; Yasuaki Serita; Masayuki Ueyama; Hiroshi Ootsuka, and Hisashi Tokumaru, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Continuation of Ser. No. 957,637, Oct. 7, 1992, Pat. No. 5,258,802, which is a continuation of Ser. No. 516,962, Apr. 30, 1990, abandoned. This application Nov. 12, 1992, Ser. No. 974,692

Claims priority, application Japan, Apr. 30, 1989, 1-109921

Int. Cl.[5] G03B *5/00*

U.S. Cl. 354—195.1 **9 Claims**



1. A camera system having a camera body and a zoom lens associated with the camera body comprising:

a manual zoom operation member that is operated to move the zoom lens to a desired position between wide and telephoto focal length limits in a manual zoom mode of operation;

means for manually setting a focal length of the zoom lens;

means for storing data corresponding to said manually set focal length; and

means for driving said zoom lens in response to a manual operation during said manual zoom mode to drive the zoom lens to a position corresponding to the stored focal length from a position established by the operation of said manual zoom operation member.

5,365,298

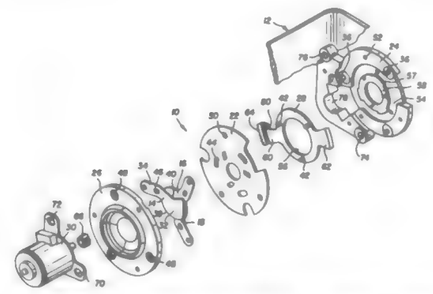
CAMERA SHUTTER WITH OSCILLATION DAMPING

Myron E. Fox, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 5, 1993, Ser. No. 42,434

Int. Cl.[5] G03B *9/08*

U.S. Cl. 354—230 **7 Claims**



1. A combined shutter and adjustable aperture having a plurality of blades coupled through a drive train to a stepper motor for controlling movement of said blades between a closed position and a plurality of open positions, the open positions defining exposure apertures, characterized in that:

said drive train includes resilient means for increasing friction substantially uniformly in said plurality of positions, to dampen oscillations caused by operation of said stepper motor.

5,365,299

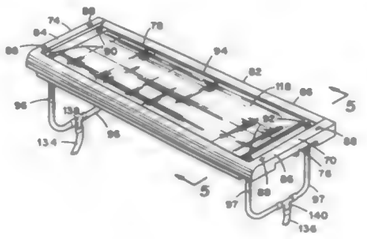
SYSTEM AND APPARATUS FOR THE PROCESSING OF A PHOTOSENSITIVE SHEET MATERIAL AND AN ASSOCIATED METHOD

Basavaraji R. Desai, Knoxville, Tenn., assignor to Picture Productions Limited Partnership, Knoxville, Tenn.

Filed Jan. 5, 1993, Ser. No. 672

Int. Cl.[5] G03D *3/08, 3/02*

U.S. Cl. 354—319 **21 Claims**



1. A system for use in the processing of a photographic sheet material having photographic emulsion on at least one of the faces thereof, the system comprising:

a reservoir having an elongate cavity for containing a relatively small amount of processing solution through which the material is moved during a processing operation, the cavity having two opposite ends and a substantially flat bottom surface therebetween, said bottom surface being substantially covered with bottom fabric means that is secured thereto and wetted by processing solution contained therein;

top fabric means supported within the cavity structure above said cavity for cooperating with the material as the material is moved through the cavity for dispersing the processing solution in contact with the emulsion-bearing face of the material; and

inlet and outlet conduit means associated with the reservoir for moving processing solution across said bottom surface from one end of the cavity to the other end of the cavity at a depth substantially corresponding to the thickness of said bottom fabric means to enhance the distribution of processing solution across an emulsion-bearing face of the material during a processing operation.

5,365,300

METHOD FOR PROCESSING PHOTOGRAPHIC MATERIALS

Ubbo Wernicke, Rösrath-Kleineichen; Viktor Osegowitsch, Taufkirchen, and Wilfried Hehn, Munich, all of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1992, Ser. No. 833,995

Claims priority, application Germany, Feb. 26, 1991, 4105917

Int. Cl.[5] G03D *3/08*

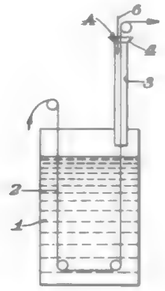
U.S. Cl. 354—320 **2 Claims**

1. In a process for the treatment of a photographic material, the steps comprising,

first, treating a photographic material with a bath containing at least one processing chemical,

and then guiding the treated material in an upwardly movement through an upwardly extending compartment hav-

ing a volume of 1000 to 5000 cm^3 per m^2 of the material present within the compartment to closely surround said treated material, said. Upwardly extending compartment terminating above the bath and



washing the material moving upwardly in the compartment with water flowing under the effect of gravity of a downwardly movement countercurrent to the movement of the material.

5,365,301

DRIVING FORCE TRANSMISSION MECHANISM

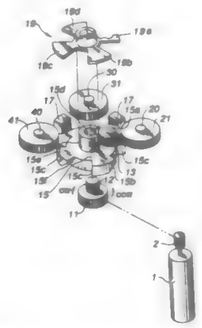
Yukihiko Sugita, Hachioji; Hiroshi Terada, Mitaka, and Takao Nishida, Urawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 33,288

Claims priority, application Japan, Mar. 17, 1992, 4-060548; Jun. 29, 1992, 4-171066; Sep. 28, 1992, 4-258556; Oct. 7, 1992, 4-268878

Int. Cl.[5] G03B *1/18, 3/10*

U.S. Cl. 354—400 **41 Claims**



1. A camera having a driving force transmission mechanism provided therein, comprising:

a single motor;

a sun gear selectively rotated in one of a forward and a reverse direction by said motor;

a planetary gear engaging said sun gear;

a plurality of driven gears each driving a different camera function and being arranged about a revolution orbit of said planetary gear and to which a driving force of said motor is selectively transmitted; and

a selection driving means for selecting one of said driven gears, to be engaged by said planetary gear, responsive to revolving of said planetary gear due to rotation in one of said directions of said sun gear, and transmitting a driving force to said selected driven gear via said planetary gear responsive to rotation in the other one of said directions of said sun gear.

5,365,302

FOCUS AREA SETTING APPARATUS OF CAMERA

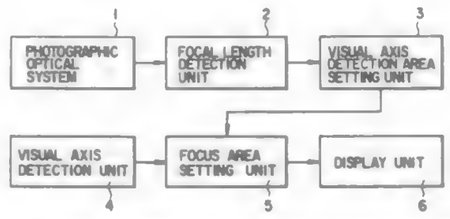
Shinichi Kodama, Tokyo, Japan, assignor to Olympus Optical Company, Ltd., Japan

Filed Apr. 30, 1993, Ser. No. 56,306

Claims priority, application Japan, May 1, 1992, 4-112607; Oct. 22, 1992, 4-284216; Feb. 9, 1993, 5-021125

Int. Cl.[5] G03B *13/36, 17/24*

U.S. Cl. 354—403 **53 Claims**



1. A focus area setting apparatus of a camera having a finder, comprising:

a zoom lens;

focal length detecting means for detecting a focal length of said zoom lens;

distance measuring means for detecting distances of an object at a plurality of distance measurement points without using said zoom lens;

visual axis direction detecting means, provided near said finder of said camera, for detecting a visual axis direction of a user;

determining means for obtaining a distance measurement enable range Ls in accordance with an equation:

$$Ls = La \times (fs/fa)$$

where fs is a focal length detected by said focal length detecting means, fa is a focal length of said zoom lens at a wide-angle side thereof, and La is a distance measurement enable range at the wide-angle side of said zoom lens, and determining whether or not the visual axis direction of the user detected by said visual axis direction detecting means is located within the distance measurement enable range Ls;

focus area setting means for, when said determining means determines that the visual axis direction is located within the distance measurement enable range, selecting a distance measurement point, among the plurality of distance measurement points detected by said distance measuring means, which is closest to the visual axis direction of the user, and setting a focus area; and

display means for displaying the focus area set by said focus area setting means.

5,365,303

SHAKE-FREE IMAGE RESTORATION SYSTEM

Masafumi Yamasaki, and Yoshinori Matsuzawa, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1993, Ser. No. 62,292

Claims priority, application Japan, May 21, 1992, 4-129105; Jul. 13, 1992, 4-185010; Aug. 11, 1992, 4-214131; Oct. 5, 1992, 4-266344

Int. Cl.[5] G03B *17/00, 17/24*

U.S. Cl. 354—430 **34 Claims**

1. A shake-free image restoration system to be used for camera films carrying a recording medium thereon, comprising:

an image pick-up device for shooting a scene by exposing a film by way of an optical system and recording an image of the scene on the film;

shake quantity detecting means for detecting a shake quantity of the image pick-up device during the exposure of the film to the scene by said image pick-up device;

shake data recording means for recording data representing the shake quantity on a recording medium on the film;

shake data reproducing means for reproducing said data representing the shake quantity recorded on the recording medium by said shake data recording means;

shake trace data transformation means for outputting shake transmitting functions generated on the basis of the data representing the shake quantity reproduced by said shake data reproducing means;

first Fourier transformation means for carrying out a Fourier transformation on said shake transmitting functions output by said shake trace data transformation means;

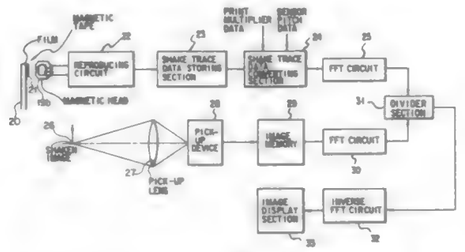


image transformation means for transforming said image of the scene recorded on said film into digital signals;

second Fourier transformation means for carrying out a Fourier transformation on said digital signals transformed by said image transformation means;

dividing means for carrying out divisions on outputs from said first and second Fourier transformation means; and

inverse Fourier transformation means for carrying out an inverse Fourier transformation on an output from said dividing means, an output from said inverse Fourier transformation means being an image of the scene free from any trace of the shake.

5,365,304

CAMERA WITH CAMERA-SHAKE DETECTION APPARATUS

Masataka Hamada, Osakasayama; Eiji Yamakawa, Toyonaka; Hiroshi Ootsuka; Hisayuki Masumoto, both of Sakai, and Takashi Okada, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Division of Ser. No. 987,778, Dec. 9, 1992, Pat. No. 5,270,767, which is a division of Ser. No. 632,075, Dec. 21, 1990, Pat. No. 5,218,442. This application Sep. 14, 1993, Ser. No. 120,443

Claims priority, application Japan, Dec. 21, 1989, 1-333963; Dec. 21, 1989, 1-333964; Dec. 21, 1989, 1-333965; Dec. 21, 1989, 1-333966; Dec. 21, 1989, 1-333967

Int. Cl.[5] G03B *5/00;* **H04N** *5/228*

U.S. Cl. 354—430 **9 Claims**

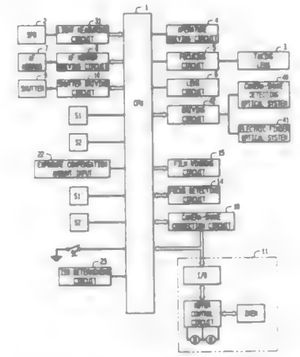
1. A camera capable of detecting camera shake, comprising:

detecting means for detecting camera shake repeatedly;

calculating means for calculating a moving speed of subject image based on the detected camera shake;

an optical system operable to correct the camera shake;

driving means for driving said optical system; and



predicting means for predicting an amount of drive of said driving means to be driven based on the calculated moving speed and an interval of the camera shake detection.

5,365,305

POWER SUPPLY CONTROL CIRCUIT FOR A DISPLAY OF A CAMERA

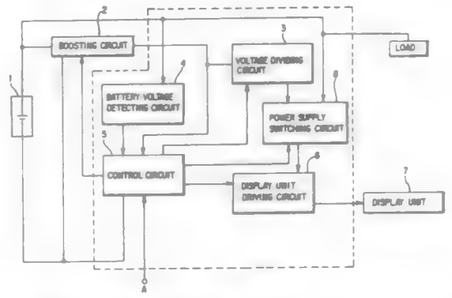
Yoichi Seki, and Hiroyuki Saito, both of Chiba, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 23,011

Claims priority, application Japan, Mar. 17, 1992, 4-060524

Int. Cl.[5] G03B *7/26*

U.S. Cl. 354—484 **7 Claims**



1. A power supply control circuit for a display of a camera energized by a battery, comprising:

display means for displaying photographic information data or a date;

boosting means for boosting the voltage of the battery to a predetermined voltage;

control means for determining the existence of a waiting mode in which a load beyond a predetermined value is not applied to the battery and an operation mode in which a load beyond the predetermined value is applied to the battery;

battery voltage detecting means for detecting the voltage of the battery; and

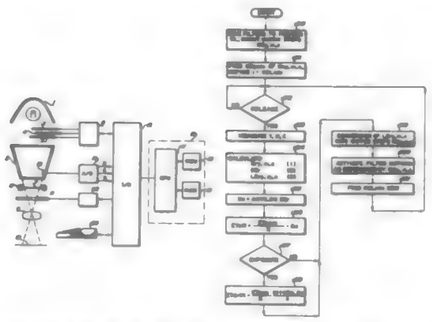
power supply switching means for switching a power input of said display means to said boosting means during said operation mode and for switching said power input to the battery when said battery voltage detecting means detects restoration of the battery voltage after the end of said operation mode, according to an output signal of said control means.

5,365,306

METHOD AND APPARATUS FOR REGULATION OF THE AMOUNT OF PRINTING LIGHT IN PHOTOGRAPHIC ENLARGING OR PRINTING DEVICES

Verner Delneg, Vahrn, and Alex Vinatzer, Brixen, both of Italy, assignors to Durst Phototechnik GmbH, Brixen, Italy

Filed Oct. 12, 1993, Ser. No. 892,577
Claims priority, application Italy, Oct. 4, 1990, 4844-A/90
Int. Cl.[5] G03B *27/80*
U.S. Cl. 355—38 **16 Claims**



1. Method for regulation of an amount of printing light in a closed loop of an enlarging device equipped with a color filter device containing color filters, where the printing light influenced by the color filters is selectively measured in the primary colors red, green and blue, wherein a deviation (Ery,m,c) resulting from comparison of measured actual values with preset reference values is divided into color deviation (LEry,m,c) and brightness deviation (DEr), the color deviation (LEry,m,c) is balanced out by regulation of the color filters, said method including the step of establishing a nominal exposure time (ETnom), establishing a reference value of light intensity $(Iy,m,c)_{reference}$ and measuring an actual value of $(Iy,m,c)_{actual}$, and the brightness deviation (DEr) is converted into a correction factor (K) for adjusting the nominal exposure time (ETnom) to an effective exposure time ETeff, in such a manner that for each primary color, the product of the actual value of the light intensity $(Iy,m,c)_{actual}$ and the effective exposure time (ETeff) is constant and equal to the product of the reference value of the light intensity $(Iy,m,c)_{reference}$ and the nominal exposure time (ETnom).

5,365,307

IMAGE PROJECTING APPARATUS

Kazuhide Sugiyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 45,226
Claims priority, application Japan, Apr. 24, 1992, 4-131925
Int. Cl.[5] G03B *13/28*
U.S. Cl. 355—45 **19 Claims**

1. An image projection apparatus switchable between a reader mode in which an image is projected on an screen and a printer mode in which the image is projected on an exposure position, comprising:

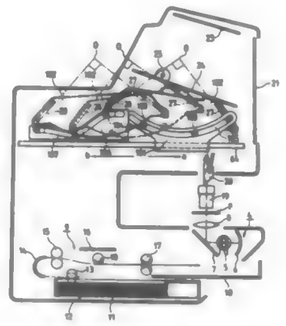
an imaging lens;

first optical means for guiding image bearing light, formed by said imaging lens, to a screen;

second optical means for guiding the image bearing light, formed by said imaging lens, to the exposure position, said second optical means including two mirrors which are mutually perpendicularly positioned;

a support member supporting said two mirrors and capable of a rotating motion;

a transport member rotatably supporting said support member and movable in a direction crossing the optical path of said imaging lens; and



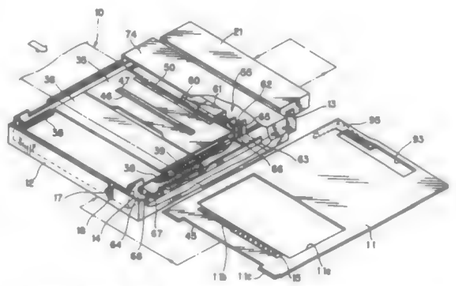
an arc-shaped guide member provided on said support member or on said transport member and serving to cause a rotating motion of said support member.

5,365,308

PAPER MASK UNIT FOR PHOTOGRAPHIC PRINTER

Yoshio Ozawa, Kanagawa; Takashi Matsumoto, and Kimitoshi Saito, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 10, 1992, Ser. No. 911,589
Claims priority, application Japan, Jul. 12, 1991, 3-198486; Jul. 12, 1991, 3-198487
Int. Cl.[5] G03B *27/58*
U.S. Cl. 355—74 **15 Claims**



1. A paper mask unit for setting a paper mask in an exposure station of a photographic printer in contact with photographic paper, said paper mask unit comprising:

a mask frame for holding said paper mask therein, said paper mask being removably inserted in said mask frame by being slid along a mask guide path in a direction transverse to said photographic paper;

a stopper coupled to said mask frame so as to be disposed in said mask guide path of said mask frame, for preventing insertion of said paper mask into said exposure station, when said mask frame is placed in said masking position, said stopper being retracted from said mask guide path when said mask frame is placed in said retracted position; and

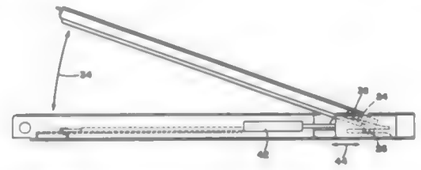
a mask frame shifting device coupled to said mask frame so as to shift said mask frame between a masking position wherein said paper mask is in contact with said photographic paper, and a retracted position wherein said paper mask is spaced apart from said photographic paper, said mask frame shifting device comprising a motor and a transmission mechanism for transmitting rotational movement of said motor to said mask frame.

5,365,309

EXPOSURE FRAME ASSEMBLY

Allen A. Lawson, Coon Rapids, Minn., assignor to Colight, A Division of Hanovia Lamp, Minneapolis, Minn.

Filed Aug. 17, 1993, Ser. No. 107,538
Int. Cl.[5] G03B *27/62*
U.S. Cl. 355—75 **6 Claims**



1. A exposure frame assembly for use with a contact and off contact photo exposure machine to expose a photosensitive work-piece, said exposure frame assembly comprising:

an upper tray frame;

said upper tray frame having at least one tray lift roller and said upper tray frame having at least one hinge pivot roller;

a lower tray frame coupled to said photo exposure machine;

at least one actuator ram coupled to said lower tray frame for capturing said hinge pivot roller and for providing opening force to said tray lift roller;

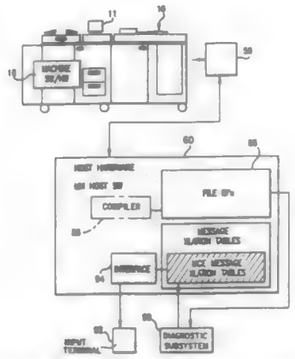
whereby said upper tray frame moves away from said lower tray frame by rotation about a pivot axis formed by said hinge pivot roller.

5,365,310

REMOTE DIAGNOSIS OF COPY QUALITY DEFECTS

Everett W. Jenkins, Webster; Donald L. Wegeng, Rochester; Martin F. Lo Biondo, Penfield, and John M. Rubens, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 30, 1993, Ser. No. 99,385
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 **16 Claims**



1. A process for remotely diagnosing non-repeatable copy quality defects in printed pages of a print job being processed by an electronic reprographic system, the reprographic system includes a printer for producing prints from the pages in response to job program instructions, and a user interface with display screen and at least one command input device for inputting the job program instructions for the print job, comprising the steps of:

printing the print job;

determining a non-repeatable copy quality defect is present;

loading the defective print job pages into a system document handler for scanning;

scanning the defective print job pages thereby creating digitized page images of the defective pages;

transferring the digitized page images containing the copy quality defect along with reprographic system identification and physical data to a remote diagnostic computer, the remote diagnostic computer having expert system software stored in a memory thereof for analyzing the copy quality defect;

analyzing the digitized page images using the remote diagnostic computer;

receiving from the remote diagnostic computer at least one of a status message, notice that a service technician is responding and a list of corrective procedures, the at least one status message, notice and list being displayed on the user interface display screen; and

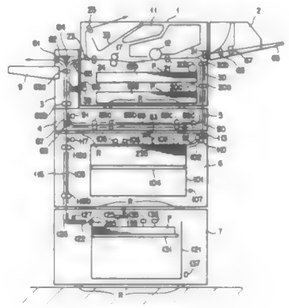
implementing the list of corrective procedures thereby correcting the copy quality defect.

5,365,311

IMAGE FORMING SYSTEM COMPRISING AN IMAGE FORMING DEVICE AND VARIOUS OPTIONAL DEVICES CONNECTED TO THE IMAGE FORMING DEVICE

Takashi Matsuoka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 22, 1992, Ser. No. 964,962
Claims priority, application Japan, Oct. 28, 1991, 3-281544
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—205 **10 Claims**



10. An image forming system, comprising:

a first device for forming an image on an image forming medium, the first device having means for discharging the image forming medium on which the image has been formed;

a second device for receiving the image forming medium discharged by the first device;

a third device, being detachable and located between the first device and the second device, for transporting the image forming medium from the first device to the second device:

first detector means for detecting whether the third device is located between the first device and the second device;

second detector means for detecting whether the third device is enabled to operate; and

means for allowing the device to discharge the image forming medium when the third device is not located between the first device and the second device or when the first detector means detects that the third device is located between the first device and the second device and the second detector means detects that the third devise is enabled to operate.

5,365,312

ARRANGEMENT FOR PRINTER EQUIPMENT FOR MONITORING RESERVOIRS THAT CONTAIN PRINTING MEDIUM

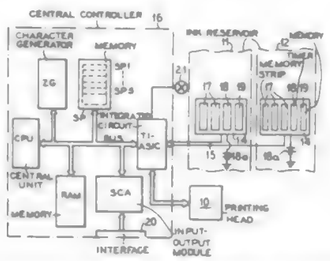
Rüdiger Hillmann, Emmering, and Thomas Fuchs, Munich, both of Germany, assignors to Mannesmann AG, Erlangen, Germany

PCT No. PCT/DE88/00462, § 371 Date Jan. 22, 1991, § 102(e) Date Jan. 22, 1991, PCT Pub. No. WO90/00974, PCT Pub. Date Feb. 8, 1990

PCT Filed Jul. 25, 1988, Ser. No. 646,777

Int. Cl.[5] G03G *15/00;* **B41J** *27/00, 32/00*

U.S. Cl. 355—206 **10 Claims**



1. An arrangement for printing equipment, comprising:

a) a reservoir means for accepting a printing medium, said reservoir comprises an electronic memory means for storing status data of the printing medium relevant to a printing operation,

b) means for acquiring a current fill status of said reservoir means and for writing a memory value corresponding to the current fill status into said electronic memory means,

c) means for acquiring the memory value of said electronic memory means corresponding to a minimum supply of printing medium and for at least one of triggering an alarm signal and blocking a printing operation, and

said electronic memory means being irreversibly modified by said means for writing a memory value so that writeability of said electronic memory means is suppressed after the memory value corresponding to the minimum supply of printing medium as been reached;

e) timer means for counting down time intervals from an initial filling of the printing medium into said reservoir means to an expiration of a predetermined service life; and

f) means for blocking printing operation when said timer means indicates an expiration of said predetermined service life.

5,365,313

IMAGE FORMING APPARATUS FOR CONTROLLING IMAGE DENSITY USING LOGARITHM COMPRESSING MEANS

Katsuya Nagamochi, Tokyo, and Rintaro Nakane, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 17, 1993, Ser. No. 32,299

Claims priority, application Japan, Sep. 24, 1992, 4-255081

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—208 **15 Claims**

14. An image forming apparatus, comprising:

means for forming an image on an image carrier, said image corresponding to image data formed with a developing agent under a predetermined image forming condition;

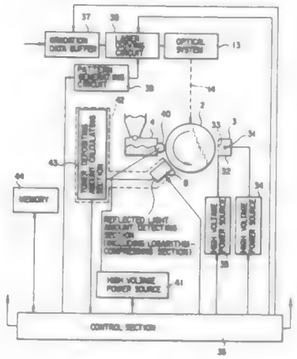
means for detecting the amount of said developing agent attached to the image carrier, said detecting means comprising:

a) means for directing a light beam toward a surface of the image carrier;

b) means for converting the light reflected from the surface of the image carrier into electric signals, said converting means performing conversion to meet the relationship $V = kP$, where V indicates a voltage, k denotes a coefficient and P represents the reflected light and, thus, the voltage V is proportional to the amount P of the reflected light;

c) means for logarithm-compressing the electric signals produced by said converting means; and

d) means for calculating a developing agent deposition amount in accordance with a difference between an output obtained by logarithm conversion of the voltage proportional to the reflected light, said conversion being carried out by said logarithm converting means



when said developing agent is deposited on said image carrier, and another output obtained by logarithm conversion of the voltage proportional to the reflected light, said conversion being carried out by said logarithm converting means when said developing agent is not deposited on said image carrier;

means for compensating for the temperature characteristics of said logarithm-compressing means; and

means for setting said image forming condition in accordance with the amount of the developing agent detected by said detecting means, so as to stabilize image density changes of the image formed on said image carrier.

5,365,314

IMAGE HEATING APPARATUS CAPABLE OF CHANGING DUTY RATIO

Kouichi Okuda; Shunji Nakamura; Yasumasa Ohtsuka, all of Yokohama; Yohji Tomoyuki, Ichikawa; Akira Hayakawa, and Daizo Fukuzawa, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,881

Claims priority, application Japan, Mar. 27, 1992, 4-101604

Int. Cl.[5] G03G *15/20*

U.S. Cl. 355—208 **16 Claims**

1. An image heating apparatus comprising:

a heater;

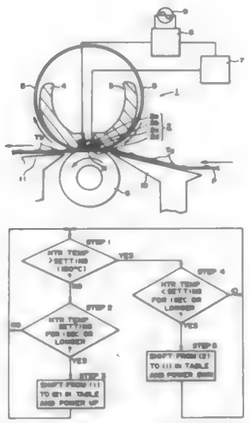
a temperature detecting member for detecting a temperature of said heater;

controlling means for controlling electric power supplied to said heater so that the temperature detected by said temperature detecting member is maintained at a predetermined temperature; and

comparing means for comparing the temperature detected by said temperature detecting member to a reference temperature higher than the predetermined temperature;

wherein when said detected temperature exceeds said reference temperature, said control means reduces a duty ratio of the electric power to be supplied to said heater; and

after a predetermined period of time, when said detected temperature still exceeds the reference temperature, said



control means further reduces the duty ratio of the electric power to be supplied to said heater.

5,365,315

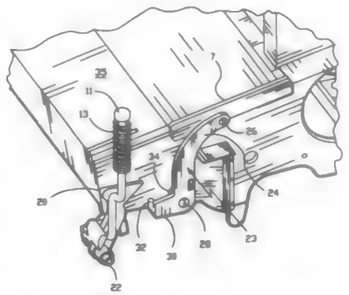
IMAGING DEVICE WITH CARTRIDGE AND LID INTERACTION

Ronald W. Baker, Versailles; Robert L. Burdick, Nicholasville; Martin V. DiGirolamo; Paul D. Horrall, both of Lexington; Larry J. Rice, Nicholasville; Ronald L. Roe, Lexington; Earl D. Ward, II, Lexington, and Bernard L. Wilzbach, Lexington, all of Ky., assignors to Lexmark International, Inc., Greenwich, Conn.

Filed Jul. 29, 1993, Ser. No. 99,814

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—210 **7 Claims**



1. An imaging apparatus comprising a removable cartridge containing toner, a photoconductive member and a shutter covering said photoconductive member when closed, a movable lid for said imaging apparatus carrying an optical member to selectively expose said photoconductive member and a charging member to electrically charge said photoconductive member, a biased push plate pivotally attached to said lid, a plunger resiliently mounted on said apparatus separate from said cartridge and positioned to contact said push plate as said lid closes, a pivotally mounted first crank arm pivotally connected to said plunger, and a second crank arm pivotally mounted on said cartridge and connected to said shutter to open and close said shutter, said first crank arm being located to rotate said second crank arm to open said shutter when said lid closes on said plunger.

5,365,316

ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS AND ITS HIGH VOLTAGE POWER SOURCE DEVICE

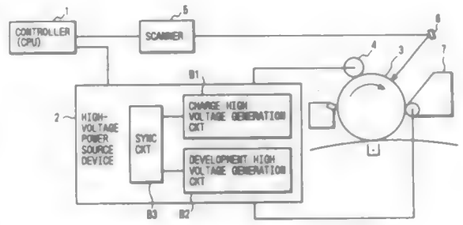
Hajime Motoyama, Kawasaki; Junichi Kimizuka, Yokohama; Takeji Gima, Toride, and Akihiro Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 107,593

Claims priority, application Japan, Aug. 20, 1992, 4-221172; Oct. 29, 1992, 4-291198

Int. Cl.[5] G03G *15/00, 15/02, 15/08*

U.S. Cl. 355—219 **10 Claims**



1. An image forming apparatus comprising:

a photosensitive member;

a charging member for charging said photosensitive member;

a developing member for developing a visible image from an electrostatic latent image formed on the photosensitive member;

first supply means for supplying an output which is obtained by multiplexing a first AC voltage with a first DC voltage to said changing member; and

second supply means for supplying an output which is obtained by multiplexing a second AC voltage with a second DC voltage to said developing member,

wherein a ratio of frequencies of said first and second AC voltages is set to an integer.

5,365,317

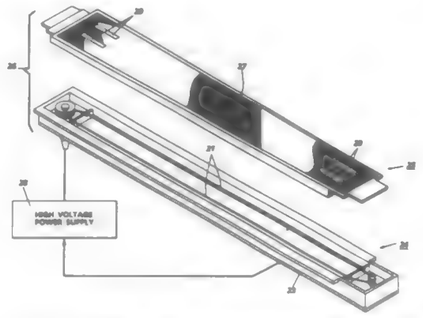
CHARGING SYSTEM FOR ELIMINATING EDGEBANDING IN AN ELECTROSTATOGRAPHIC PRINTING PROCESS

Jeffrey J. Folkins; Daniel M. Bray, both of Rochester; Alex Fioravanti; Kenneth W. Pietrowski, both of Penfield; Gerald T. Lioy, and Thomas J. Behe, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1993, Ser. No. 161,558

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—225 **17 Claims**



1. A corona generating device for depositing charge on an adjacent surface, comprising:

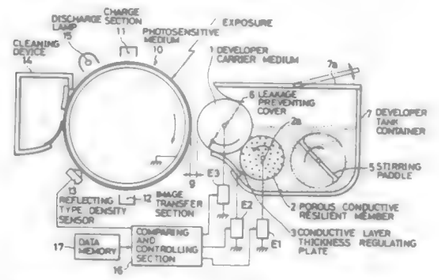
a support frame;
a corona generating electrode mounted in said support frame; and
control grid means mounted on said support frame in spaced relation to said corona generating electrode, said control grid means defining an elongated aperture located in substantial alignment with said electrode, extending along a portion thereof, for varying the charge deposited on the adjacent surface.

5,365,318

DEVELOPER UNIT UTILIZING A NON-MAGNETIC SINGLE COMPONENT DEVELOPER

Yuji Hiraoka, and Chiseki Yamaguchi, both of Saitama, Japan, assignors to Hiraoka H.I. Laboratory Co., Ltd., Saitama, Japan

Filed Jul. 16, 1992, Ser. No. 914,954
Claims priority, application Japan, Jul. 9, 1992, 4-220576
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **10 Claims**



1. A developing apparatus comprising:
a developer carrier medium for carrying thereon a developer for developing a latent image formed on a latent image carrier medium;
an electrically conductive developer supply member rotatably arranged while making contact with said developer carrier medium;
a conductivity regulating member for regulating a layer thickness of the developer onto said developer carrier medium so as to form a thin layer of the developer on said developer carrier medium, and for applying a predetermined degree of electric charge to the developer;
separate power sources for supplying predetermined outputs to said developer carrier medium, said electrically conductive supply member and said conductivity regulating member, respectively; and
control means for independently controlling the outputs of each of said power sources in accordance with an output from a means for detecting a factor relating to a developing function of said developing apparatus.

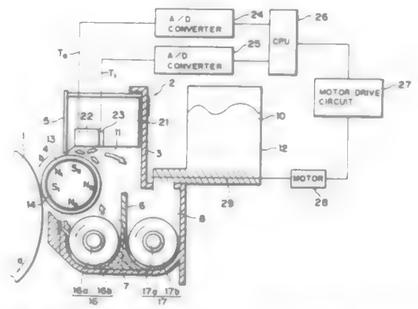
5,365,319

IMAGE FORMING APPARATUS REPLENISHING TONER BY DETECTING THE RATIO OF TONER AND CARRIER AND THE DENSITY OF THE DEVELOPER

Yuji Sakemi, Inagi, and Masami Izumizaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 25,177
Claims priority, application Japan, Mar. 5, 1992, 4-83445
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **11 Claims**

1. An image forming apparatus comprising:
a developer container for containing developer including toner and magnetic carrier particles;
a developer carrying member for feeding out the developer from said developer container and for developing an electrostatic latent image;
toner replenishing means for replenishing toner to said developer container;
first detection means for detecting first information corresponding to ratio of the carrier and the toner;



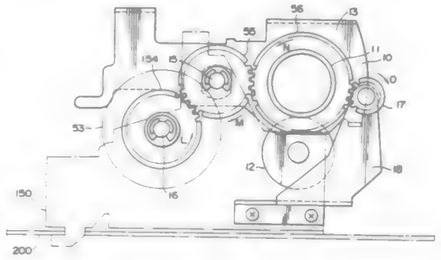
second detection means for detecting second information corresponding to density of the developer in the developer container; and
control means for controlling the operation of said toner replenishing means on the basis of output signals from said first and second detection means.

5,365,320

SHEET WARP PREVENTION MECHANISM EMPLOYED IN A FIXING UNIT OF AN ELECTROPHOTOGRAPHIC PRINTER

Masatoshi Takano, Akikawa, and Masakazu Hirano, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 678,139, Apr. 1, 1991, abandoned. This application May 3, 1993, Ser. No. 55,758
Claims priority, application Japan, Mar. 30, 1990, 2-85976
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **21 Claims**



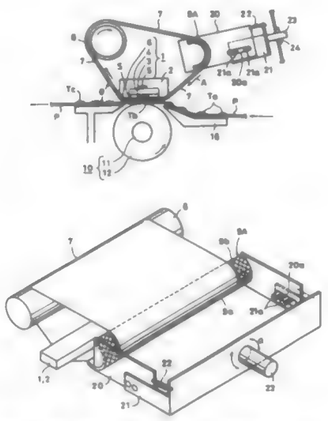
18. A sheet warp prevention mechanism adapted to be positioned in an imaging device, comprising:
a pair of rollers, and means for mounting said rollers for movement into and out of contact with each other,
a gear member coaxially provided with one of said rollers and arranged to rotate said one of said rollers in a predetermined direction for feeding a continuous sheet; and
an inhibiting member operably connected to said gear member of one of said rollers to prevent rotation of said one of said roller in a direction opposite to said predetermined direction, whereby warping of the continuous sheet is inhibited.

5,365,321

ENDLESS BELT DRIVING DEVICE WITH AUTOMATIC BELT DISPLACEMENT CORRECTION

Masato Koshimizu, Yokohama, and Yuji Yamasaka, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,854
Claims priority, application Japan, Jun. 5, 1992, 145871
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **17 Claims**



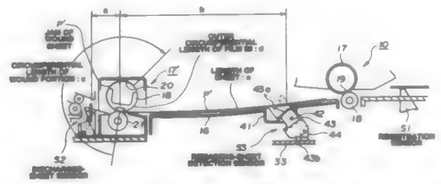
1. An endless belt driving device, comprising:
an endless belt;
a driving means for driving said endless belt;
a guide member for guiding movement of said endless belt; and
a supporting means for rotatably supporting said guide member so that said guide member is rotatable about an axis extending in a direction perpendicular to a lateral dimension of said guide member in response to lateral displacement of said belt,
wherein said guide member has two end sections and a center portion, the center portion having a smaller friction factor than said end sections.

5,365,322

IMAGE FORMING APPARATUS WHICH DETECTS A JAM OF A WOUND SHEET

Tatsuo Hamada, Kawasaki, and Nobukazu Adachi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1993, Ser. No. 152,378
Claims priority, application Japan, Dec. 2, 1992, 4-361961
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—316 **7 Claims**



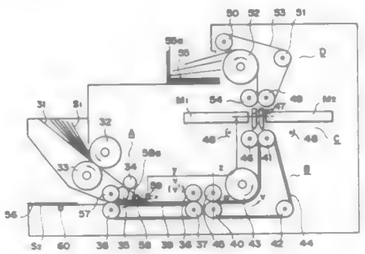
1. An image forming apparatus for forming an image on a recording material fed from a sheet-feeding portion, said apparatus comprising:
image forming means for forming an unfixed image on the recording material fed from the sheet-feeding portion;
a fixing rotating member, having a grasping portion, for fixing the unfixed image while grasping and conveying the recording material which supports the unfixed image;
a first detection member, provided at a side downstream from the grasping portion of said fixing rotating member in the moving direction of the recording material, for detecting the recording material; and
a second detection member, provided at a side upstream from the grasping portion of said fixing rotating member in the moving direction of the recording material, for detecting the recording material,
wherein the distance between said first detection member and said second detection member is less than a minimum length in the conveying direction of ordinary recording material used in said apparatus.

5,365,323

IMAGE RECORDING DEVICE

Kyoichi Ando, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 943,485, Sep. 11, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 220,937
Claims priority, application Japan, Sep. 19, 1991, 3-266881; Oct. 23, 1991, 3-302671
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—321 **11 Claims**



1. An image recording device comprising:
first conveying means for conveying an original from a paper feed position to a predetermined position located before a recording position, the original being one of a plurality of types;
second conveying means for conveying the original conveyed to said predetermined position by said first conveying means, to a receiving position through said recording position, said second conveying means conveying the original at a constant speed;
recording means for reading an image on the original which is moving at said constant speed through said recording position and recording it onto a recording medium; and
control means for changing an original conveying speed conveyed by said first conveying means,
wherein the original conveying speed of said first conveying means changes based on the original type.

5,365,324

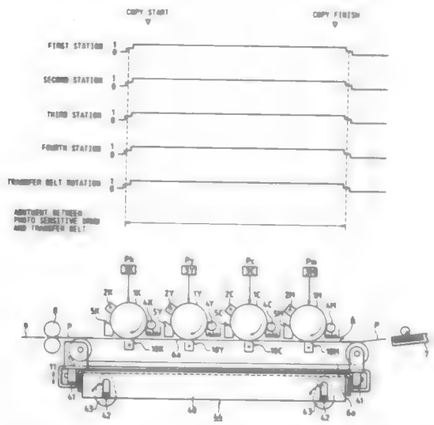
MULTI-IMAGE FORMING APPARATUS

Sono Gu, Omiya, and Yoshinori Nagao, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 775,135, Oct. 11, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 94,917
Claims priority, application Japan, Oct. 12, 1990, 2-273816
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 R **7 Claims**

1. An image forming apparatus comprising:
an image bearing member for bearing an image to be transferred to a recording material at a transfer position, said image bearing member moving at a first peripheral speed during the image transfer;

convey means for conveying the recording material to the transfer position, said convey means being moveable between a first position in contact with said image bearing member and conveying the recording material, and a second position apart from said image bearing member, said convey means moving at the first peripheral speed while in the first position during the image transfer,



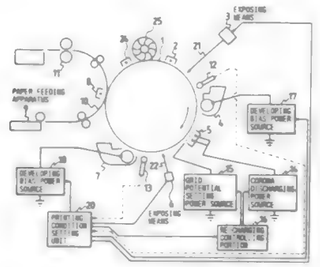
wherein as said convey means is moved from the second position to the first position, said image bearing member moves at a second peripheral speed slower than said first peripheral speed and the peripheral speed of said convey means as it moves from the second position to the first position is at the second peripheral speed.

5,365,325

METHOD OF MULTI-COLOR RECORDING USING ELECTRO-PHOTOGRAPHY PROCESS AND APPARATUS THEREFOR WHEREIN MIXED COLORS GENERATION IS PREVENTED

Takao Kumasaka, Takahagi; Yuzuru Shimazaki; Toru Miyasaka, both of Hitachi, and Yukio Otome, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Aug. 5, 1993, Ser. No. 102,360
Claims priority, application Japan, Aug. 10, 1992, 4-212874
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **12 Claims**



1. A method of multi-color recording using an electrophotography process comprising the steps of:

a) producing an image by the following steps:

(i) charging a photosensitive body;

(ii) exposing selectively a surface of said photosensitive body charged in step (i) in response to a desired recording content; and

(iii) forming toner images by adhering toners to said surface of said photosensitive body exposed in step (ii);

b) transferring said toner images on said surface of said photosensitive body to a recording medium;

c) fixing said toners to said recording medium;

d) repeating step a) of producing to form toner images having several colors on said surface of said photosensitive body;

e) charging the photosensitive body with a charger having a control electrode during a second charging step and all successive charging steps; and

f) applying a controlling potential (Vg) to the control electrode, wherein a relationship between the controlling potential (Vg), the target surface potential (Vo) of a non-image portion of said surface of said photosensitive body and a direct current component potential (Vdc) of a developing bias potential in each developing step satisfies the following formula,

$$|Vo| > |Vdc| \cong |Vg|$$

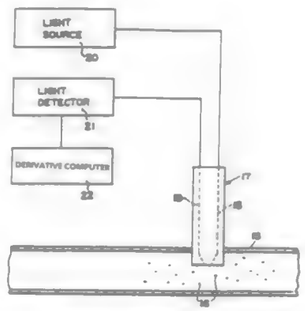
whereby mixing of colors during and after the second charging step can be prevented.

5,365,326

METHOD AND APPARATUS FOR DETERMINING FLOW RATES AND CONCENTRATIONS IN MULTI-PHASE STREAMS

Ray W. Chrisman; Raymond A. Cocco, both of Midland, Mich., and John A. Cleveland, Jr., Zionsville, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1993, Ser. No. 17,077
Int. Cl.[5] G01P *3/36*; G01N *21/00*
U.S. Cl. 356—28.5 **9 Claims**



1. An improved method for determining particle velocity in a fluid medium containing particles capable of backscattering light by illuminating a single, finite and symmetrical zone of said fluid medium with light capable of being backscattered by said particles, collecting backscattered light from said zone, converting said backscattered light into at least one voltage waveform with respect to time, and determining velocity from said waveform(s), the improvement comprising determining velocity of said particles by computing a derivative of the voltage waveform(s) with respect to time, normalizing the derivative with respect to concentration, and multiplying the normalized derivative by a calibration constant, k'.

5,365,327

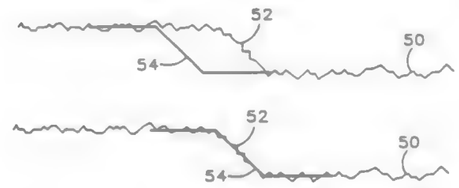
Patent Not Issued For This Number

5,365,328

LOCATING THE POSITION OF AN EVENT IN ACQUIRED DIGITAL DATA AT SUB-SAMPLE SPACING

Duwayne R. Anderson, Redmond, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Filed May 21, 1993, Ser. No. 65,724
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—73.1 **7 Claims**



1. A method for characterizing an event in a waveform of acquired digital data where the event has a known shape comprising the steps of:

(a) applying a pattern having amplitude and location coefficients over the acquired digital data for determining a best fit between the data and the pattern as a function of a peak RMS value by incrementing the amplitude coefficient of a pattern and positioning the pattern over the acquired data for each amplitude coefficient for determining the RMS value as a function of varying the location coefficient with the location coefficient increment spacing being less than the sample spacing of the digital data;

(b) comparing the peak RMS value to a threshold value for verifying the existence of the event; and

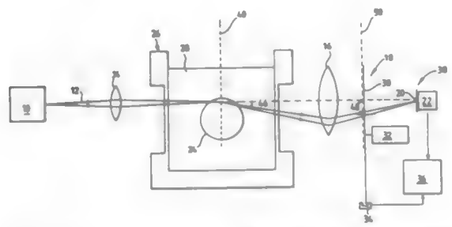
(c) characterizing the event as to amplitude and location using the amplitude and location coefficients of the pattern.

5,365,329

APPARATUS AND METHOD FOR MEASURING REFRACTIVE INDEX

David A. Svendsen, Winchester, United Kingdom, assignor to York Technology Limited, United Kingdom

Continuation of Ser. No. 689,812, May 14, 1991, abandoned. This application Mar. 12, 1993, Ser. No. 31,027
Claims priority, application United Kingdom, Nov. 15, 1988, 8826643
Int. Cl.[5] G01N *21/45*
U.S. Cl. 356—73.1 **29 Claims**



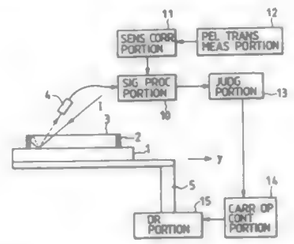
1. A transverse-type analyser, for measuring optical properties in an approximately cylindrical transparent object, such as an optical fibre or optical fibre preform, which diffracts light incident upon it, the analyser comprising illuminating means for producing an illuminating beam which is incident upon said object in a direction which is transverse to the longitudinal axis of said object, a detector for sensing the beam transmitted through said object, means of holding said object between the illuminating means and detector, and filtering means for selectively limiting the output of the detector, said filtering means being adjustable such that the detector produces a signal in response to, and in dependence upon, that portion of the transmitted beam which is the result of diffraction of the illuminating beam by said object in a direction parallel to the longitudinal axis thereof and corresponds to the nth diffraction order, where n is preselected and is non-zero.

5,365,330

FOREIGN PARTICLE INSPECTION APPARATUS

Tsuneyuki Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 20, 1992, Ser. No. 979,276
Claims priority, application Japan, Nov. 27, 1991, 3-335901; Nov. 27, 1991, 3-335902
Int. Cl.[5] G01N *21/32*
U.S. Cl. 356—237 **26 Claims**



1. Foreign particle inspection apparatus, comprising:

radiating means for radiating a light beam toward a surface to be inspected, which is at least one of a surface of a protection film supported by a frame member and a surface of a substrate provided with said protection film;

light receiving means for receiving light of said beam from said surface to be inspected to output a photoelectric signal;

detecting means for detecting foreign particles based on the signal of said light receiving means; and

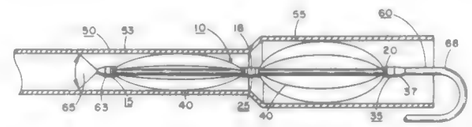
inspection area setting means for determining in accordance with an optical property of at least one of said frame member and said protection film an inspection area to be irradiated by said light beam on said surface.

5,365,331

SELF CENTERING DEVICE FOR BORESCOPES

Richard A. Tamburrino, Auburn; Alan S. Knieriem, Syracuse; Roger Leseberg, Liverpool, and Timothy J. Smith, Auburn, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jan. 27, 1993, Ser. No. 9,779
Int. Cl.[5] G02B *23/26*
U.S. Cl. 356—241 **6 Claims**



1. An apparatus for holding an insertion tube of a borescope centered within a passage along which the borescope travels that includes:

a pair of opposed collar assemblies capable of being slidably mounted upon the insertion tube of a borescope;

each collar assembly including a cylindrical body section and an annular retaining ring, having an outer wall and being removably mounted in face-to-face contact with one end face of the body section;

each retaining ring having a rear end face in contact with

one body section and a front end face facing that of the retaining ring on the opposing collar assembly;

each retaining ring further including a series of circumferentially spaced rotor seats formed therein and a longitudinally disposed slot passing radially through the outer wall of the ring into each rotor seat;

a plurality of elongated wire spring members equal in number to that of the rotor seats on each retaining ring, and extending between the collar assemblies, each end of each wire passing through a longitudinal slot formed in a retaining ring into a rotor seat and being attached to a rotor mounted within said seat; and

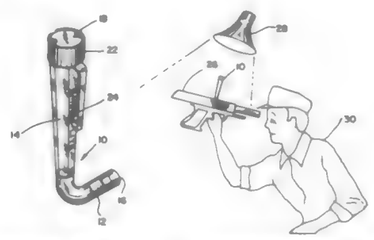
clamping means for holding one of said collar assemblies in a stationary position upon an insertion tube whereby said clamped assembly is retained adjacent to the distal viewing end of the borescope while the other collar assembly may be slid along the borescope insertion tube so that the wire spring members maintain contact with the passage in which the borescope travels.

5,365,332

FIREARM INSPECTION DEVICE

John C. Barber, Jr.; Janet L. Barber, and John S. A. Barber, all of Friendship, Wis., assignors to J. Bar Enterprises, Friendship, Wis.

Filed Feb. 18, 1993, Ser. No. 19,042
Int. Cl.[5] G02B *23/26*
U.S. Cl. 356—241 **6 Claims**



1. A device for inspecting a firearm by directing light from a remote, exterior source to the receiving chamber and bore of a firearm, said device comprising:

a compact, generally L-shaped, single piece, completely transparent, light-transmitting, molded, mirror-free member including a first leg substantially circular in cross section with a constant diameter throughout its length and having an outwardly curved, unobstructed free end, said first leg merging smoothly into a second leg substantially polygonal in cross section with an outwardly flaring diameter throughout its length and having an outwardly curved, unobstructed free end larger in diameter than said free end of said first leg, each of said free ends forming a convex lens used as an optical sight, either of said free ends being insertable in said receiving chamber while the other of said free ends is exposable to the light from said exterior source, such that the light is gathered and diffused via said free ends into said bore for substantially unobstructed, inspection thereof.

5,365,333

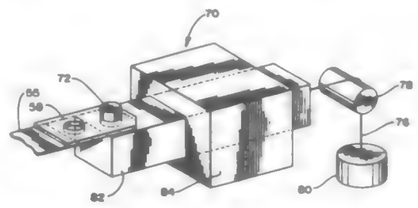
APPARATUS FOR ANALYZING TRACKING ERROR IN MAGNETIC TAPES

Wayne M. Wirth, and Peter J. Vogelgesang, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 1, 1992, Ser. No. 877,842
Int. Cl.[5] G01B *11/16;* **G01N** *21/01*
U.S. Cl. 356—244 **6 Claims**

1. An apparatus for holding a length of magnetic tape having a configuration of recorded tracks to facilitate measuring the configuration of recorded tracks on said magnetic tape, said apparatus comprising:

a rigid, elongated base for holding said length of tape in an elongated position, said base further including a tensioning mechanism for holding said tape under a given tension, a pair of generally planar tabs for attaching to the ends of said length of tape, each of said tabs having structure defining at least one mounting hole therethrough constructed and positioned so as to enable mounting on said tensioning mechanism and an attaching edge, said mounting hole having its central axis on an axis central of and perpendicular to the attaching edge of said tab, said tensioning mechanism including two upright mounting pins for mounting said tabs thereon, said pins being spaced apart, wherein one of said pins is fixedly mounted to the base and the other of said pins being relatively movable in a plane along the length of said base, each of said pins having a longitudinal axis and being adapted to be received within said at least one hole of one of said tabs, whereby each of said tabs is free to rotate about the longitudinal axis of said pin on which it is mounted, said base further including a porous substrate positioned on said base and between said pins and a vacuum means for creating a force sufficient to immobilize a tape contacting said porous substrate.

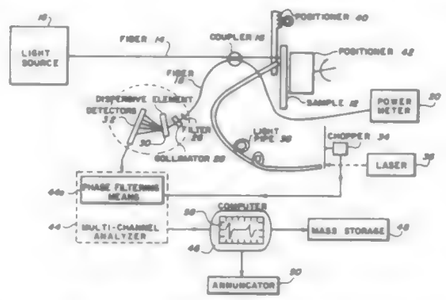


5,365,334

MICRO PHOTOREFLECTANCE SEMICONDUCTOR WAFER ANALYZER

Nicholas Bottka, Burke, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1990, Ser. No. 632,215
Int. Cl.[5] G01J *3/28*
U.S. Cl. 356—326 **12 Claims**



1. A photoreflective analyzer to measure the properties of materials for a sample, said analyzer comprising:

a source of exciting light;

a chopping means to periodically interrupt said exciting light;

a first conducting means for conducting said exciting light to said sample;

a source of broadband, probing light;

a second conducting means for conducting said probing light to said sample;

an optical filtering means for filtering out the wavelength of said excited light;

a third conducting means for conducting the probing light reflected from said sample to said optical filtering means;

a plurality of detectors for detecting the intensity of said broadband reflected probing light;

a dispensing means for dispensing onto said plurality of detectors the wavelengths of light in the spectrum of said broadbeam reflected probing light that is passed by said filtering means; and

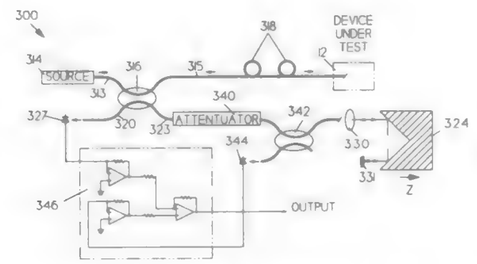
a phase filtering means for isolating the changes in the detected intensities that are in phase with the frequency of said chopper.

5,365,335

OPTICAL LOW-COHERENCE REFLECTOMETER USING OPTICAL ATTENUATION

Wayne V. Sorin, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 889,542, May 27, 1992, abandoned.
This application Mar. 18, 1994, Ser. No. 210,656
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **3 Claims**



1. An optical interferometer for measuring the optical properties of a device, said interferometer comprising:

source means for providing a low-coherence light signal;

first splitting means for dividing said low-coherence light signal into first and second light signals, said first light signal being applied to said device and said second light signal being directed into a reference optical path, said first splitting means further comprising means for combining light returning from said device and from said reference optical path and applying said combined light to a first optical detector;

means disposed in said reference optical path for attenuating the light signals traveling therein, said attenuation being chosen to reduce the relative intensity noise generated in said first optical detector. Said attenuating means attenuating said light from said reference optical path that is combined with said light returning from said device by said first splitting means;

means for varying the optical path length of said reference optical path relative to the optical path between said splitting means and said device.

5,365,336

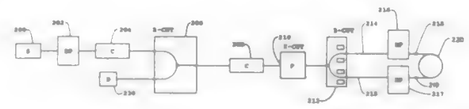
Patent Not Issued For This Number

5,365,337

METHOD AND APPARATUS FOR COMPENSATING FOR THE RESIDUAL BIREFRINGENCE IN INTERFEROMETRIC FIBER-OPTIC GYROS

L. Jerry Page, Alto; David R. Bina, Grand Rapids; Daniel R. Lynch, Wayland, and William G. Otten, Ada, all of Mich., assignors to Smiths Industries Aerospace & Defense Systems, Inc., Grand Rapids, Mich.

Filed Oct. 28, 1992, Ser. No. 967,795
Int. Cl.[5] G01B *19/72*
U.S. Cl. 356—350 **15 Claims**



1. An optical circuit comprising an optical path for conducting optical signals from a light source to a light sensitive device, said path comprising:

a plurality of serially coupled optical elements each having birefringence characteristics resulting in a depolarization component of ascertainable magnitude and ascertainable direction;

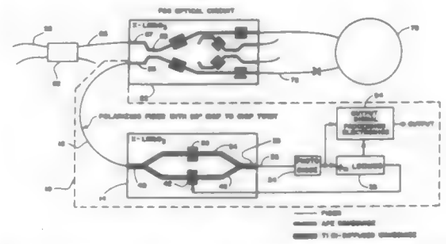
at least one compensating optical element serially connected in said path with said plurality of optical elements and having predetermined inherent birefringence characteristics resulting in a compensating depolarization component of a magnitude substantially equal to the net magnitude of a resultant depolarization component obtained by combining said depolarization components of each of said plurality of optical elements such that oppositely directed components are cancelled, said compensating component having a direction substantially directly opposite to the direction of said resultant depolarization component.

5,365,338

WAVELENGTH SENSOR FOR FIBER OPTIC GYROSCOPE

Michael D. Bramson, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1991, Ser. No. 706,506
Int. Cl.[5] G01B *9/02;* **H01S** *3/083*
U.S. Cl. 356—350 **17 Claims**



1. An apparatus for correcting the scale factor of a fiber optic gyroscope, comprising:

a means connected to said gyroscope to obtain light that has traveled in both directions therethrough, for sensing the wavelength of light in said gyroscope;

a means connected to said sensing means, for processing the light from said sensing means, and producing error compensating signals and wavelength information; and

a means for optically coupling the light output of said gyroscope to the input of said sensing means.

5,365,339

TWO DEPOLARIZER FIBER-OPTIC GYROSCOPE THAT ELIMINATES INTERFERENCE BETWEEN THE DEPOLARIZERS

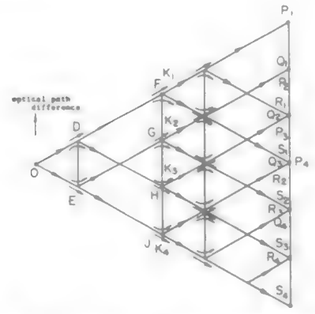
Yozo Nishiura, and Yasuhiko Nishi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 911,612, Jul. 10, 1992. This application Jan. 8, 1993, Ser. No. 2,060

Claims priority, application Japan, Jul. 12, 1991, 3-198534; Apr. 30, 1992, 4-139899; Jul. 7, 1992, 4-204382; Dec. 11, 1992, 4-353422

Int. Cl.[5] G01C *19/64*

U.S. Cl. 356—350 **20 Claims**



1. A fiber-optic gyroscope for measuring an angular velocity of a fiber coil from a phase difference between a clockwise-propagating beam and a counter-clockwise-propagating beam when light beams are transmitted clockwise and counter-clockwise in the fiber coil comprising:

a light source for emitting a semi-monochromatic light;

a fiber coil made from a single-mode fiber wound many times for letting beams propagate clockwise and counter-clockwise therein;

a photodetector for letting a clockwise-propagating beam and a counterclockwise-propagating beam interfere with each other and for detecting intensity of interfering beams;

a polarizer for converting a circularly-polarized, elliptically-polarized or linearly-polarized beam into a linearly-polarized beam with a definite polarization plane parallel with an allowable axis;

a first path communicating with the light source;

a second path in which the polarizer is provided;

a third path and a fourth path as extra parts of the fiber coil;

a fifth path communicating with the photodetector;

a first coupler for connecting the first path and the fifth path to the second path;

a second coupler for connecting the third path and the fourth path to the second path;

a first depolarizer provided between the light: source and the polarizer for depolarizing light beams;

a second depolarizer provided in the third path or fourth path for depolarizing light beams,

the beams emitted from the light source being depolarized by the first depolarizer and entering the polarizer,

the first depolarizer being constructed by coupling a first birefringent material A of birefringence B_a and a length L_a to a second birefringent material B of birefringence B_b and a length L_b with optical principal axes inclining at 45 degrees to each other,

the second depolarizer being constructed by coupling a third birefringent material C of birefringence B_o and a length L_o to a fourth birefringent material D of birefringence B_d and a length L_d with optical principal axes inclining at 45 degrees to each other, in which the birefringence and lengths of birefringent materials A, B, C and D satisfy inequalities;

$$|P_aB_aL_a+P_bB_bL_b+P_cB_cL_c+P_dB_dL_d|-B_5L_5>C$$

where P_a, P_b, P_c, and P_d are triplet factors for materials A. B, C and D which take independently one of three values -1, 0, or $+1$ but do not take 0 at the same time, C is a coherent length of the light emitted from the light source, B_5L_5 is a sum of products of birefringence and length of the single-mode fiber coil and the couplers.

5,365,340

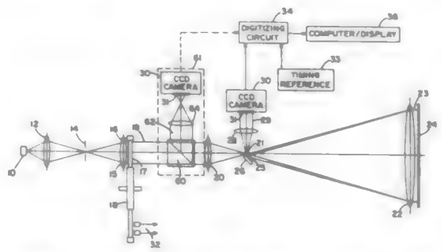
APPARATUS AND METHOD FOR MEASURING THE THICKNESS OF THIN FILMS

Anthony M. Ledger, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 10, 1992, Ser. No. 987,926

Int. Cl.[5] G01B *11/02*

U.S. Cl. 356—357 **26 Claims**



1. An apparatus for measuring the thickness of a layer of material having front and rear surfaces, said material having a property that will transmit radiation, said apparatus comprising:

means for irradiating an entire front surface area of said layer with a collimated monochromatic radiation so that reflected radiation from said front and rear surfaces has characteristics corresponding to said thickness of said layer in said surface area and wherein said

means for irradiating with monochromatic radiation comprises means for sequentially irradiating said surface area with monochromatic light of differing wavelengths, so that ambiguities arising when said thickness is a multiple of a wavelength are eliminated;

means for receiving said reflected radiation and for detecting said characteristics; and

means for self-normalizing said detected characteristics and for comparing said self-normalized characteristics of said received radiation with a set of reference characteristics corresponding to known thicknesses and for providing an output corresponding to said thickness of said layer in said area.

5,365,341

BONDING WIRE INSPECTION APPARATUS

Kenji Sugawara, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

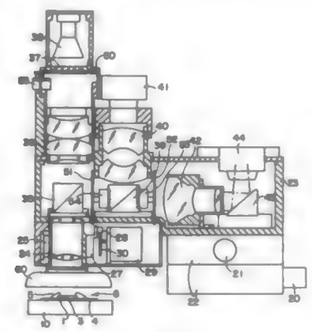
Filed Dec. 1, 1992, Ser. No. 983,655

Claims priority, application Japan, Dec. 2, 1991, 3-341832

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—394 **1 Claim**

1. A bonding wire inspection apparatus that inspects wires bonded between the pads of a semiconductor chip and the leads of a lead frame comprising an objective lens group which takes in the image of an object to be inspected, imaging lens groups that image the image taken in by said objective lens group, and cameras which photograph the images imaged by said imaging lens groups are all installed in an opto-head, and



wherein only said objective lens group is driven in a Z-direction by a Z-direction drive motor.

5,365,342

ALIGNMENT AND EXPOSURE APPARATUS AND METHOD FOR MANUFACTURE OF INTEGRATED CIRCUITS

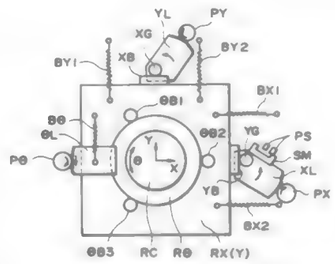
Naoki Ayata, Machida; Mitsugu Yamamura, Yokohama; Bunei Hamasaki, Yokohama; Masao Kosugi, Yokohama; Kazuo Takahashi, Kawasaki, and Mitsuaki Seki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 685,449, Apr. 15, 1991, abandoned, which is a division of Ser. No. 542,653, Jun. 25, 1990, Pat. No. 5,050,111, which is a continuation of Ser. No. 271,360, Nov. 16, 1988, abandoned, which is a continuation of Ser. No. 788,494, Oct. 17, 1985, abandoned. This application Mar. 10, 1993, Ser. No. 29,363

Claims priority, application Japan, Oct. 18, 1984, 59-217307; Nov. 30, 1984, 59-251924; Nov. 30, 1984, 59-251925; Nov. 30, 1984, 59-251926; Nov. 30, 1984, 59-251927; Nov. 30, 1984, 59-251928; Nov. 30, 1984, 59-251929; Nov. 30, 1984, 59-251930; Dec. 20, 1984, 59-267454; May 13, 1985, 60-99512; May 13, 1985, 60-99513

Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—401 **21 Claims**



1. An exposure apparatus for exposing different zones of a workpiece to a pattern of an original with radiation, in a predetermined sequence, said apparatus comprising:

first driving means for moving the workpiece along two orthogonal directions, relative to the original, to allow sequential exposures of the zones of the workpiece to the pattern of the original;

detecting means for detecting an alignment mark of the original and for detecting alignment marks of particular zones of the workpiece through the original to determine a positional relationship of the workpiece with respect to the original, wherein said detecting means is effective to determine an overall rotational error of the workpiece with respect to the original;

second driving means for moving the workpiece relative to the original in a rotational direction in accordance with the determined overall rotational error of the workpiece; and

control means for controlling said first driving means when said first driving means moves the workpiece in said two orthogonal directions for the sequential exposure of the different zones of the workpiece, to substantially eliminate any remainder of the overall rotational error of the workpiece.

5,365,343

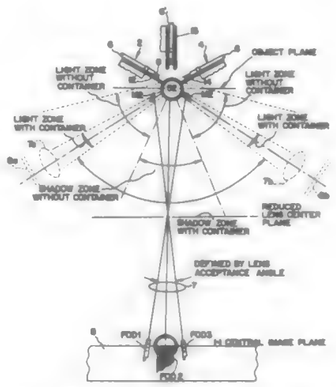
LIGHT FLUX DETERMINATION OF PARTICLE CONTAMINATION

Julius Z. Knapp, 22 Foxwood Dr., Somerset, N.J. 08873

Filed Jul. 23, 1993, Ser. No. 96,619

Int. Cl.[5] G01N *21/90*

U.S. Cl. 356—427 **29 Claims**



1. A method for automated non-destructive inspection of injectable pharmaceutical solutions, in transparent containers, for particle contamination, said method comprising the steps of:

a. moving the solution container, whereby particles, contained therein, are placed in motion;

b. fully illuminating the solution in the container, while the particles are in motion, with forward scatter lighting; wherein there is an instantaneous increase of the normal current flowing from a first light detector element, which detects the forward scatter lighting, caused by reflection of light by individual particles; with said instantaneous increase of current being proportional to the size of the individual particles;

c. directing said increase of current to first current detector means;

d. back lighting a volume of the solution in the container with collimated light, during the period when the solution in the container is fully illuminated with forward scatter lighting, wherein there is light extinction caused by individual particles passing through said volume, with an instantaneous decrease of current from a second light detector element, which detects said collimated light, from normal non-particle illumination in said volume, and wherein said instantaneous decrease of current is proportional to the size of the individual particles;

e. directing said decrease of current to second current detector means;

f. summing the absolute values of the detected increases and decreases of current into an optical signature of particle contaminants in the container solution; and

g. accepting containers having optical signatures falling

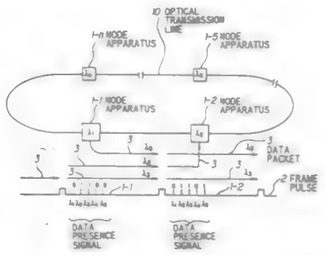
within pre-determined acceptable optical signature ranges.

5,365,344

SYSTEM FOR TRANSMITTING DATA USING WAVELENGTH DIVISION MULTIPLEXING

Masahiro Eda, and Masahiko Fujiwara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,512
Claims priority, application Japan, Jun. 27, 1991, 3-183322; Jun. 27, 1991, 3-183323
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—124 **11 Claims**



1. A system for transmitting data using wavelength division multiplexing, comprising:

an optical transmission line through which wavelength division multiplexed data are propagated, said data being allocated in time slots defined by a frame pulse; and

a plurality of node apparatuses connected to said optical transmission line for transmitting and receiving said data, wherein each of said plurality of node apparatuses is assigned with a wavelength different from the other node apparatuses, which acts as an address signal, and each of said node apparatuses comprises:

first detecting means for detecting one of said wavelength division multiplexed data with a wavelength corresponding to the assigned wavelength and propagated on the optical transmission line;

means for receiving data of said one of said wavelength division multiplexed data detected by the first detecting means;

second detecting means for detecting another of said wavelength multiplexed data; and

means for transmitting data from a first node apparatus over the optical transmission to a second node apparatuses at a wavelength corresponding to a wavelength assigned to the second node apparatus when the second detecting means detects no transmission of data at the wavelength assigned to the second node apparatus during a time slot.

5,365,345

INFRARED TRANSMITTING WINDOW AND METHOD OF MAKING SAME

Stephen H. Propst, and Geoffrey A. Walter, both of Santa Ynez, Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

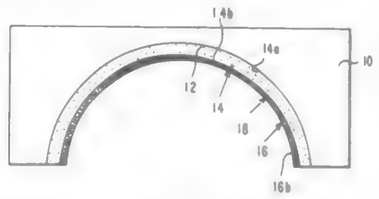
Filed Apr. 10, 1991, Ser. No. 683,765
Int. Cl.[5] G02B *5/22*
U.S. Cl. 359—359 **21 Claims**

1. A process for fabricating an infrared transparent window including the steps of:

(a) providing a mold having a surface;

(b) depositing a diamond layer on said surface;

(c) depositing an adhesive layer comprising germanium carbide on said diamond layer; and



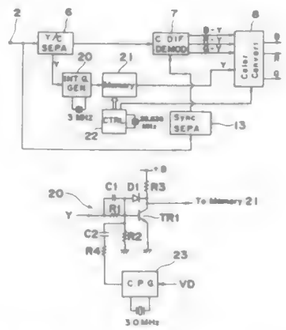
(d) depositing a zinc salt layer selected from the group consisting of zinc selenide and zinc sulfide on said adhesive layer.

5,365,346

IMAGE SIGNAL PROCESSOR GENERATING REDUCED MEMORY CONSUMPTION STILL IMAGES YET PRESERVING IMAGE QUALITY

Takao Abumi, Yaita, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 674,382, Mar. 25, 1991, abandoned, which is a continuation of Ser. No. 465,635, Jan. 22, 1990, Pat. No. 5,021,873, which is a continuation of Ser. No. 168,963, Mar. 16, 1988, abandoned. This application Oct. 30, 1992, Ser. No. 969,443
Claims priority, application Japan, Mar. 16, 1987, 62-61897; May 30, 1987, 62-84305[U]
Int. Cl.[5] H04N *9/64, 5/14*
U.S. Cl. 348—708 **9 Claims**



4. An image signal processor comprising:

quasi-intermediate color generating means for superimposing clock signals on a luminance signal,

a clock pulse superimposing circuit having a direct current inhibiting means for cutting off a direct current component contained in the clock pulses; and

a matrix circuit for summing the superimposed luminance signal and color difference signals together to provide an added output.

5,365,347

CODING APPARATUS

Tohru Ozaki, Tokyo, Japan, assignor to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Jan. 22, 1992, Ser. No. 824,125
Claims priority, application Japan, Jan. 31, 1991, 3-010735
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—261.1 **3 Claims**

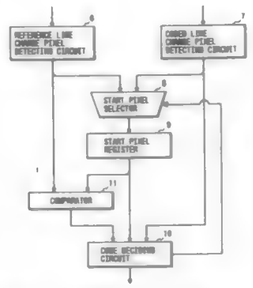
1. A coding apparatus comprising:

first detecting means for sequentially detecting change pixels in a currently-coded line independent of a start pixel, and deriving information of the detected change pixels in the currently-coded line;

second detecting means for sequentially detecting change pixels in a reference line independent of the start pixel, and deriving information of the detected change pixels in the reference line, the reference line immediately preceding the currently-coded line;

selecting means for selecting one of the information derived by the first detecting means and the information derived by the second detecting means;

generating means for generating information of the start



pixel from the information selected by the selecting means;

comparing means for comparing the information generated by the generating means and the information derived by the second detecting means, selectively disabling and enabling the information derived by the second detecting means, and outputting only the enabled information derived by the second detecting means; and

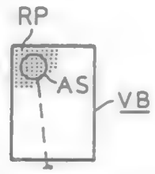
deciding means for deciding a mode of MR coding in accordance with the information derived by the first detecting means, the information outputted from the comparing means, and the information generated by the generating means.

5,365,348

PROCESS FOR PRINTING A HALFTONE IMAGE

Friedrich Drees; Raimund Nisius; Hartmut Grethen, and Wolfgang Pekruhn, all of Berlin, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

PCT No. PCT/DE91/00612, § 371 Date Apr. 8, 1993, § 102(e) Date Apr. 8, 1993, PCT Pub. No. WO92/03885, PCT Pub. Date Mar. 5, 1992
PCT Filed Jul. 26, 1991, Ser. No. 969,200
Claims priority, application Germany, Aug. 13, 1990, 4025793
Int. Cl.[5] H04N *1/21*
U.S. Cl. 358—298 **5 Claims**



1. A process for printing a half tone image from original image data represented as a plurality of respective halftone steps of a halftone dot of a model image, said process comprises the steps of:

(a) defining a plurality of processing flames each having corresponding positions for image data represented by a plurality of adjacent halftone dots, wherein each of the positions are assigned a position number;

(b) adopting the original image data in accordance with a selected one of the plurality of processing frames in correspondence to the positions of the plurality of adjacent halftone dots;

(c) associating a corresponding reference pattern with each of the halftone steps, wherein the reference pattern has a plurality of predetermined color step values in correspondence to an arrangement and the position numbers of the positions of the selected one of the plurality of processing frame;

(d) obtaining corresponding color step values from the image data adopted in step (b) in accordance with the corresponding reference pattern for each of the position numbers of the positions of the selected processing frame, the color step value contained in the corresponding reference pattern associated with the halftone step at a position with the corresponding position number is associated with a print position corresponding to each of the image data; and;

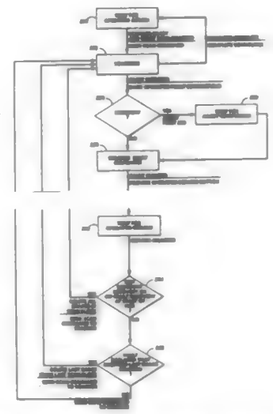
(e) printing color dots with graduated color gradations at the print positions to produce the halftone step, wherein the color gradation of each of the color dots is adjusted in accordance with the color step value corresponding to the print position.

5,365,349

IMAGE DELETION FOR IMPROVED SCANNER FAULT RECOVERY

Kurt T. Knodt, Rochester; Herbert J. Raymor, Holcomb; Gerald L. Coy, and Randall P. Cole, both of Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 589,622, Sep. 28, 1990, abandoned. This application Nov. 9, 1993, Ser. No. 150,327
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—406 **8 Claims**



1. A method of scanner interruption recovery in an electronic reprographic printing system having a scanner for scanning documents that comprise a job to be scanned, a converter for converting the scanned documents to electronic images, a memory for storing the electronic images, and a printer, the method comprising the steps of:

monitoring the scanner for any interruption in scanning prior to completion of scanning of the without displaying said electronic images;

upon detection of an interruption in scanning, determining which electronic images correspond to a scanned document involved in the scanning interruption; and

deleting from said memory said electronic images corre-

sponding to said scanned document involved in the scanning interruption determined in said determining step.

5,365,350

DATA COMMUNICATION METHOD BETWEEN CIRCUITS

Masahiro Kawasaki, Tokyo; Teruhiko Naruo, Kyoto; Yutaka Ohsawa, and Isamu Hashimoto, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

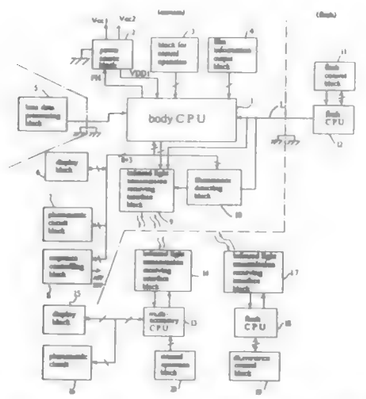
Continuation of Ser. No. 568,516, Aug. 16, 1990, Pat. No. 5,283,663. This application Nov. 4, 1993, Ser. No. 146,736

Claims priority, application Japan, Aug. 17, 1989, 1-212008; Sep. 18, 1989, 1-241459

The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.

Int. Cl.[5] H04N *1/41*

U.S. Cl. 358—426 **27 Claims**



1. A method for exchanging data between a first communication circuit of a camera body and a second communication circuit of an auxiliary unit operable with the camera body, comprising the steps of:

establishing a reference time in response to an occurrence of a first level change in a pulse signal outputted from one of the first and second communication circuits, the reference time being determined by one of the first and second communication circuits;

designating a data bit as a "1" or a "0" during a time period extending from the reference time to a subsequent level change in the pulse signal following the reference time, the designating step being performed by one of the first and second communication circuits;

determining a new reference time in response to the occurrence of the subsequent level change in the pulse signal relative to a next bit of data in the pulse signal, the new reference time being determined by one of the first and second communication circuits; and

repeating the designating step and the determining step, whereby data of a predetermined number of bits is continuously transmittable in the pulse signal.

5,365,351

Patent Not Issued For This Number

5,365,352

IMAGE READING APPARATUS HAVING COLOR IMAGE SENSOR IN WHICH A PLURALITY OF CCD ARRAYS ARE FORMED INTEGRALLY ON ONE CHIP

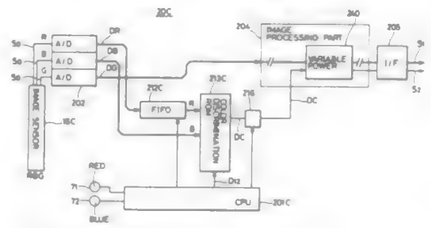
Katsuaki Tajima, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 848,853

Claims priority, application Japan, Mar. 15, 1991, 3-077047; Mar. 15, 1991, 3-077048

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—500 **17 Claims**



1. An image reading apparatus, comprising:

image reading means including a color image sensor in which three CCD arrays arranged parallel with each other for reading different color components included in an image of the original, respectively, are integrally formed on one chip, each of said CCD arrays reading the image of the original by a predetermined number of pixels to provide image data;

scanning means for moving said color image sensor and the image of the original relatively in a direction transverse to said CCD arrays;

color discrimination means for discriminating the color of the image of the original for every pixel on the basis of image data from at least two of said CCD arrays included in said image reading means; and

provision means for providing image data from a particular one of said CCD arrays included in said image reading means and a discrimination result from said color discrimination means in synchronism with each other.

5,365,353

PROCEDURE FOR MAKING COPIES FROM PHOTOGRAPHIC ORIGINALS

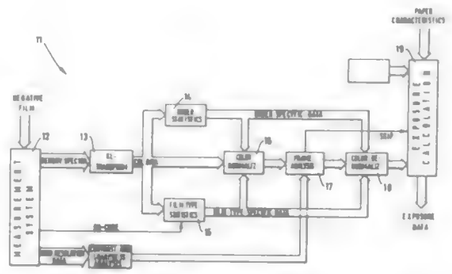
Walter Kraft, Zürich, Switzerland, assignor to Gretag Imaging, AG

Filed Sep. 8, 1993, Ser. No. 117,758

Claims priority, application Germany, Sep. 11, 1992, 92810698

Int. Cl.[5] G03F *3/08*

U.S. Cl. 358—518 **17 Claims**



1. Process for making copies of photographic originals on a film in a photographic copying machine, comprising the steps of:

sectionally scanning an original being copied by a measurement system in a measurement station of the photographic color copying machine;

feeding measured light that is transmitted or remitted from each scanned section of the original being copied to a detector;

converting the measured light into electrical signals as a function of wavelength and intensity of the measured light;

digitizing the electrical signals to obtain color data for processing in a computation and evaluation unit;

analyzing the color data in an analysis unit to establish correction values, said step of analyzing further including steps of:

(a) subjecting said color data to a reversible linear or non-linear standardization transformation which is determined from order specific statistics, or from film type specific statistics, or from a weighted combination of the order specific statistics and the film type specific statistics, and thus converting said color data into normalized color values to provide initial data for the analysis unit;

(b) forming normalized correction values which are not film specific in the analysis unit from the normalized color values, thereby taking into account color, density, and structural characteristics of the original being copied;

(c) converting the non-film specific normalized correction values of the analysis unit into de-standardized correction values in a de-standardization unit using a de-standardization transformation which is inverse to the standardization transformation, said de-standardized correction values taking into account again color characteristics of film material being copied;

determining a required amount of copying light from the de-standardized correction values in an exposure calculation unit; and

making copies from the original being copied in an exposure station based on said copying light.

5,365,354

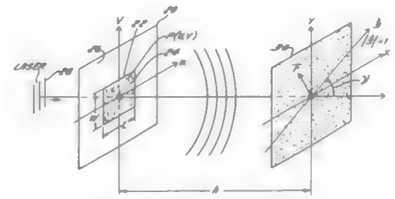
GRIN TYPE DIFFUSER BASED ON VOLUME HOLOGRAPHIC MATERIAL

Tomasz P. Jannson, Torrance; David G. Pelka, Los Angeles, and Tin M. Aye, Torrance, all of Calif., assignors to Physical Optics Corporation, Torrance, Calif.

Continuation of Ser. No. 591,801, Oct. 2, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 848,703

Int. Cl.[5] G02B *5/32, 5/02, 27/48;* G03H *1/32*

U.S. Cl. 359—15 **10 Claims**



7. A reflection diffuser for light and having a center, the diffuser comprising a volume holographic medium having a refractive index and two opposing sides;

one side of the medium comprising a mirror so that light entering the other side of the medium is diffracted by the medium, is reflected from the mirror and is further diffracted by the medium before exiting the other side;

the medium being recorded non-holographically with speckle means using a mask diffuser aperture having an angular size, and processed so that the speckle means 1) define non-discontinuous and smoothly varying changes in the refractive index of the medium, 2) provide scatter, with non-discontinuous reflection, of light traveling from the entrance surface to the exit surface, and 3) have a statistical average size which is inversely proportional to the angular size of the aperture viewed from the center of the diffuser, whereby (1) reflection from the diffuser is substantially limited to Fresnel reflection of light entering the other side, and to light reflected from the mirror, and (2) light exiting the other side is substantially non-specular; wherein the diffuser has no phase information stored therein.

5,365,355

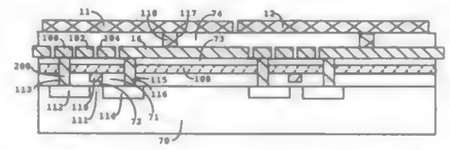
LIGHT BLOCKING, PIXEL ENHANCEMENT AND PHOTOCURRENT REDUCTION IN ACTIVE MATRIX LIQUID CRYSTAL DISPLAYS

William A. Hastings, III, Novato, and William N. Buchele, Los Gatos, both of Calif., assignors to WAH-III Technology Corporation, Novato, Calif.

Filed Mar. 10, 1993, Ser. No. 29,127

Int. Cl.[5] G02F *1/1343, 1/1335*

U.S. Cl. 359—59 **16 Claims**



1. In an active matrix liquid crystal display, a back plate structure formed on a planar surface of a silicon substrate to shield a portion of said planar surface of said silicon substrate from incident light, comprising:

a first plurality of reflective electrodes organized in a first array of rows and columns on a first planar surface substantially parallel to said planar surface of said silicon substrate and lying above said planar surface, said first array of reflective electrodes having a gap between each pair of adjacent reflective electrodes in said first array; and

a second plurality of reflective electrodes equal in number to said first plurality of reflective electrodes and organized in a second array of rows and columns on a second planar surface substantially parallel to said planar surface of said silicon substrate and lying between said first planar surface of said first array and said planar surface of said silicon substrate;

wherein said second array of reflective electrodes is positioned relative to said first array of reflective electrodes in an offset manner such that a portion of each of said second plurality of reflective electrodes is directly under portions of at least one gap in said first array so as to shield said portion of said planar surface of said silicon substrate from incident light.

5,365,356

METHOD OF FABRICATING AN ENCAPSULATED LIQUID CRYSTAL DISPLAY

Francis J. McFadden, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 928,505, Aug. 11, 1992, abandoned. This application Mar. 16, 1994, Ser. No. 214,356

Int. Cl.[5] G02F *1/13*

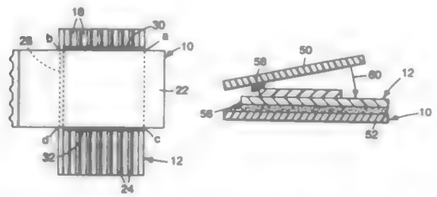
U.S. Cl. 359—62 **7 Claims**

1. A method of fabricating an encapsulated liquid crystal display including the steps of:

adhering a pair of rectangular, optically transparent interior substrates, at least one of which is flexible, to each other on three of the four sides of their peripheries;

placing a liquid crystal material between the interior substrates;

placing the interior substrates parallel to and interposed between a pair of optically transparent, rigid exterior substrates, the substrates each having inner and outer major surfaces;



placing a transparent resin between the outer major surfaces of the interior substrates and the inner major surfaces of the exterior substrates;

applying pressure to the outer major surfaces of the exterior substrates to force them toward the interior substrates; and

curing the transparent resin, thereby adhering the inner major surfaces of the exterior substrates to each other.

5,365,357

COLOR LIQUID CRYSTAL DISPLAY HAVING COLOR FILTERS AND LIGHT BLOCKING LAYERS IN THE PERIPHERY

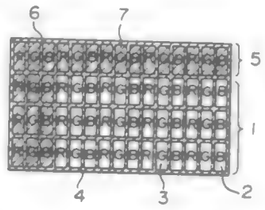
Masao Ohgawara, Yokohama, and Hiroyoshi Tsubota, Tokyo, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 844,875, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 337,834, Apr. 14, 1989, abandoned. This application May 24, 1993, Ser. No. 65,526

Claims priority, application Japan, Apr. 21, 1988, 63-96856; Nov. 1, 1988, 63-274462

Int. Cl.[5] G02F *1/1335*

U.S. Cl. 359—67 **13 Claims**



1. A color liquid crystal display device comprising:

a substrate having a display region and a peripheral region;

first groups of mutually opposed electrodes formed on the substrate in the display region;

a plurality of first color filters formed in the display region, each of the first color filters occupying a first predetermined area;

a plurality of first light shielding layers formed in the display region;

a plurality of second color filters formed in the peripheral region, wherein each of the second color filters occupies a second predetermined area corresponding to 5% to 50% of the first predetermined area occupied by each of the first color filters; and

a plurality of second light shielding layers formed in the peripheral region.

5,365,358

OPTICAL SWITCHING EQUIPMENT FOR THE THROUGH-CONNECTION OF OPTICAL MESSAGE CELLS

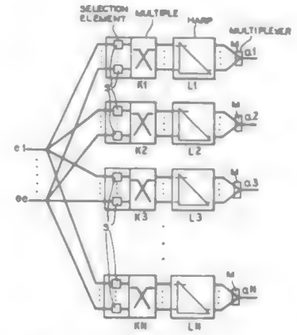
Karl-Ulrich Stein, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 24, 1993, Ser. No. 110,995

Claims priority, application European Pat. Off., Sep. 16, 1992, 92115840.8

Int. Cl.[5] H04J *14/00*

U.S. Cl. 359—117 **15 Claims**



11. An optical switching network for through-connecting optical message cells and having inputs and at least one output, comprising:

at least one optical space-switching multiple having inputs connected to the inputs of the optical switching network and having outputs;

at least one optical transit time harp having a plurality of light waveguides having graduated transit times of whole-number, n-multiples, where n≧0, of a message cell duration, and having inputs and outputs;

said at least one optical transit time harp having the inputs thereof connected to the outputs of said at least one space-switching multiple, the outputs of said at least one optical transit time harp being combined at the at least one output of the optical switching network via an optical multiplexer;

the optical message cells being through-connected in the space-switching multiple to the following transit time harp in accordance with the arrival of the message cells at the inputs of the space-switching multiple: such that successively arriving message cells traverse a light waveguide with a transit time equal to the zero multiple of the message cell duration up to a first-time simultaneous arrival of a plurality of message cells; such that, given a first-time simultaneous arrival of m message cells, said m message cells each respectively traverse m light waveguides of the transit time harp having transit times equal to the zero multiple through the m−1 multiple of the message cell duration; such that message cells respectively individually arriving thereafter successively traverse a light waveguide having the respectively longest transit time made use of just therebefore, whereas respectively n simultaneously arriving message cells each respectively traverse n light waveguides of the transit time harp having transit times equal to the respectively longest transit time made use of just therebefore and equal to the n−1 transit time durations that are next longest in transit time graduation; and such that, given every non-arrival of message cells, a light waveguide having a transit time shorter by one message cell duration is designated to be a current light waveguide having the longest transit time just made use of instead of the light waveguide having the respectively longest transit time just made use therebefore.

5,365,359

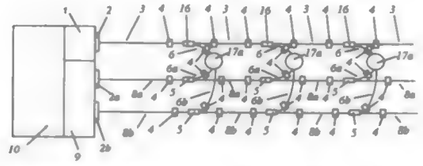
METHOD FOR ELECTRICALLY PASSIVE SELF-ROUTING OPTICAL MULTIPLEXING

William B. Spillman, Jr., Vergennes, Vt., assignor to Catamount Scientific, Inc., Charlotte, Vt.

Filed May 14, 1993, Ser. No. 61,544

Int. Cl.[5] H04J *14/08*

U.S. Cl. 359—139 **13 Claims**



1. A self-routing electrically passive optical multiplexing system, comprising:

a. an optical source module;

b. an outwardly directed optical transmission path;

c. a plurality of alternate optical transmission paths;

d. an inwardly directed optical transmission path;

e. a plurality of electrically unpowered photoactivated optical switches sequentially located in said outwardly directed optical transmission path such that upon illumination from said optical source module each of said switches initially switches substantially all of the optical power each of said switches receives from said outwardly directed optical transmission path to one of said alternate optical transmission paths for a characteristic period of time before redirecting substantially all of the optical power received from said outwardly directed optical transmission path back along said outwardly directed optical transmission path;

f. a plurality of optical modulation devices each positioned in one each of said alternate optical transmission paths serving to modify some characteristic of the optical power traveling along said path;

g. a plurality of optical coupling devices that redirect optical power from each one of said alternate optical transmission paths into said inwardly directed optical transmission path;

h. a photodetection module;

i. a control and signal processing module electronically connected to said optical source module and said photodection module.

5,365,360

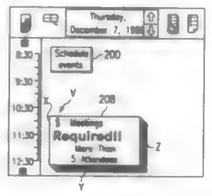
METHOD AND APPARATUS FOR PRESENTING INFORMATION CONTAINED WITHIN A DATA ICON BY ASSIGNING ATTRIBUTES TO VARIOUS DIMENSIONS OF THE DATA ICON

Robert J. Torres, Colleyville, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1991, Ser. No. 793,046

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—159 **2 Claims**



1. A method of presenting information contained within a data icon which comprises an interactive hybrid icon/window to a user of a data processing system, comprising the steps of:

storing a plurality of interactive information factors in the data icon on a monitor screen of the data processing system; and

automatically varying each of a plurality of dimensions of the data icon with at least three dimensions in order to depict a representation of preselected ones of said information factors, wherein the user is presented with a graphical representation of said preselected factors without a necessity of opening the data icon and wherein a first dimension is varied to depict a time duration, a second dimension is varied to depict relative importance of the data icon as compared to other similar data icons and a third dimension varied to depict a number of attendees required in relation to an event represented by the data icon.

5,365,361

COHERENT OPTICAL MULTI-CHANNEL ARRANGEMENT

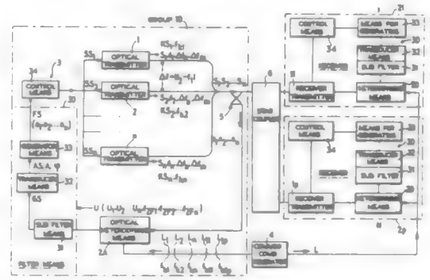
Bernd Noll; Alfred Ebberg, and Reinhold Noe, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 10, 1993, Ser. No. 74,424

Claims priority, application Germany, Jun. 17, 1992, 4219926

Int. Cl.[5] H04B *10/00*

U.S. Cl. 359—161 **9 Claims**



1. A coherent optical multi-channel arrangement comprising a plurality of spatially distributed optical transmitters for transmitting optical information signals,, each transmitter having means for frequency modulating said optical information signals with a modulation frequency within a predetermined modulation frequency range, each of the transmitters transmitting its frequency-modulated optical information signal on a respective channel at a respective carrier frequency, the respective channel carrier frequencies of said channels differing from one another by such small frequency spacings that a risk of crosstalk between the channels may be present given frequency changes of the carrier frequencies caused by instability during operation of one or more transmitters, each of the transmitters having means for additionally frequency-modulating its frequency-modulated optical information signal with a periodic identification signal, each periodic identification signal having a unique fixed repetition frequency individually allocated to its transmitter for identification of the respective transmitter; means for tapping the additionally frequency modulated, frequency-modulated optical information signals from each transmitter to obtain a plurality of tapped signals; means for forming an optical frequency comb spectrum having components respectively at a plurality of reference frequency lines at respective fixed reference frequencies, said fixed reference frequencies respectively coinciding with said carrier frequencies at said small frequency spacings from one another; coherent optical heterodyning means supplied with the tapped signal of each transmitter, for generating a heterodyned signal by

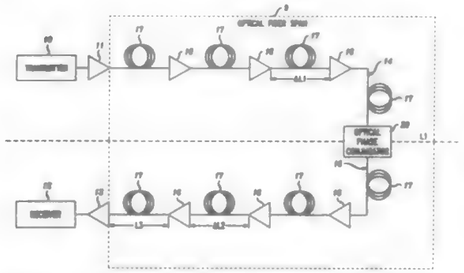
respectively superimposing said tapped signals with the components of the optical frequency comb spectrum; filter means, supplied with said heterodyned signal from the heterodyning means, for transmitting the repetition frequencies of the identification signals and any frequency changes of the channel carrier frequencies contained in the heterodyned signal, and for blocking higher frequencies that are otherwise obtained in the heterodyned signal including the channel carrier frequencies of the transmitters and the modulation frequencies of the frequency-modulated optical information signals, said filter means having a filter output signal that contains the information about the repetition frequencies, said frequency changes and an allocation of the frequency changes to the repetition frequencies; and control means, supplied with said filter output signal and connected to each transmitter, for generating a respective control signal for every transmitter for controlling the channel carrier frequency of each transmitter, dependent on said information contained in the filter output signal for cancelling any existing frequency change of the carrier frequency of the transmitter.

5,365,362

ULTRA-HIGH CAPACITY NON-SOLITON OPTICAL TRANSMISSION USING OPTICAL PHASE CONJUGATION

Alan H. Gnauck, Middletown, and Christian Kurtzke, Hazlet, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 10, 1993, Ser. No. 120,014
Int. Cl.[5] H04B *10/00, 10/02*
U.S. Cl. 359—174 **20 Claims**



13. An optical communication system comprising:
an optical fiber span made up of at least one segment, each of said segments having a first portion and a second portion;
an optical signal transmitter at one end of said optical fiber span for supplying an optical signal to said optical fiber span;
an optical signal receiver at an opposite end of said optical fiber span for receiving said optical signal from said optical fiber span;
at least one in-line amplifier within each of said first and said second portions of said segment of said optical fiber span to provide a power level for said optical signal within said portions such that a nonlinearity of said fiber span is compensated within said portions; and
an optical phase conjugator between said first and said second portions of said segment for phase conjugating said optical signal.

5,365,363

Patent Not Issued For This Number

5,365,364

OPTICAL SCANNER AND PRINTER

William H. Taylor, S. Deerfield, Mass., assignor to Kollmorgen Corporation, Simsbury, Conn.

Filed Dec. 10, 1991, Ser. No. 805,575
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—208 **34 Claims**



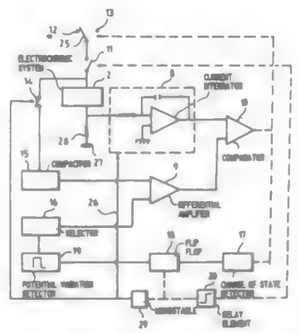
1. An optical system, comprising:
a rotating scan disc including a circular array of concave reflectors on a planar surface thereof;
imaging means adapted to coincide with the scanning sweep of the concave reflectors and separated from said concave reflectors by a distance equal to the focal length of said concave reflectors;
a light source positioned to emit light toward said circular array of concave reflectors to form an image redirected from said imaging means; and
image adjustment means for adjusting the curvature of said image.

5,365,365

ELECTROCHROMIC SYSTEM WITH MEASUREMENT OF CHARGE TO BE TRANSFERRED

Xavier Ripoche, Paris, and Marc Ast, Fontenay-Aux-Roses, both of France, assignors to Saint Gobain Vitrage International, Courbevoie, France

Filed Apr. 29, 1993, Ser. No. 53,652
Claims priority, application France, Apr. 30, 1992, 9205323
Int. Cl.[5] G02F *1/03, 1/07*
U.S. Cl. 359—267 **13 Claims**



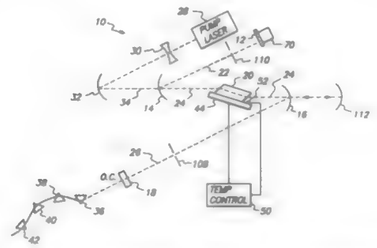
1. A method of controlling the color in an electrochromic system, comprising the steps of:
determining the charge to be transferred as a function of the discharge potential of the system;
measuring the charge passing through the systems;
comparing the measured charge with the charge to be transferred; and
controlling the supply of current to said electrochromic system in response to said comparing.

5,365,366

SYNCHRONOUSLY PUMPED SUB-PICOSECOND OPTICAL PARAMETRIC OSCILLATOR

James D. Kafka, Mountain View; Michael L. Watts, Union City; Jan-Willem J. Pieterse, Sunnyvale, and Kevin K. Holsinger, Menlo Park, all of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Apr. 29, 1993, Ser. No. 58,743
Int. Cl.[5] H03F *7/00;* **H01S** *3/10*
U.S. Cl. 359—330 **13 Claims**



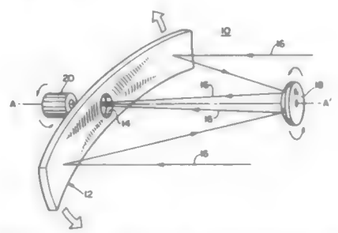
1. A synchronously pumped, optical parametric oscillator comprising:
means for defining a cavity with an optical path therethrough;
an LBO crystal disposed in said optical path in said cavity at a beam waist position thereof;
a cw mode locked Ti:Sapphire pump source oriented to supply pump pulses to said LBO crystal;
said cavity having a length selected to produce a synchronous pumping condition;
means for controlling the temperature of said LBO crystal to within at least about 2° C.

5,365,367

HIGH-RESOLUTION SYNTHETIC APERTURE TELESCOPE SYSTEM

Theodore F. Zehnpfennig, Wayland, and Saul A. Rappaport, Burlington, both of Mass., assignors to Visidyne, Inc., Burlington, Mass.

Filed Jun. 17, 1993, Ser. No. 79,087
Int. Cl.[5] G02B *23/04, 27/00*
U.S. Cl. 359—399 **9 Claims**



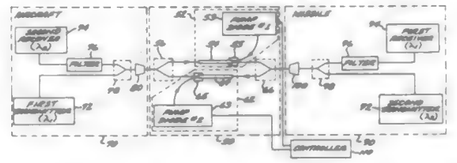
1. A high-resolution synthetic aperture telescope system for obtaining images of an object using electromagnetic radiation which is received within an aperture to be synthesized, comprising:
a primary mirror which covers a chordal section of the aperture to be synthesized; and
means for rotating said primary mirror section through a number of angular positions about the aperture being synthesized to obtain a plurality of component images of the object, at least one from each of said positions.

5,365,368

EFFICIENT BI-DIRECTIONAL OPTICAL FIBER AMPLIFIER FOR MISSILE GUIDANCE DATA LINK REPEATER

Hui-Pin Hsu, Northridge, and Ronald B. Chesler, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 937,802, Aug. 28, 1992, abandoned.
This application Dec. 29, 1993, Ser. No. 174,929
Int. Cl.[5] H04B *9/00;* **H04L** *9/02*
U.S. Cl. 359—341 **19 Claims**



1. A bi-directional optical fiber data transmission link for interconnecting a missile having a first optical signal means with a launch platform having a second optical signal means, said first and second optical signal means operating at different optical wavelengths, comprising first and second lengths of optical fibers, a first end of said first length of fiber coupled to said first optical signal means and a first end of said second length of fiber coupled to said second optical signal means, and a bi-directional optical amplifier for amplifying bi-directional optical signals simultaneously carried between said first and second signal means by a single transmission fiber channel comprising said first and second fiber lengths and said amplifier to compensate for optical losses incurred over said fiber channel, said amplifier comprising first and second input/output (I/O) ports, said first I/O port coupled to a second end of said first length of optical fiber, said second I/O port coupled to a second end of said second length of optical fiber, first and second signal routing wavelength division multiplexing (WDM) optical couplers respectively connected to said first and second I/O ports for maintaining separation between said signals of different optical wavelengths, and first and second separate optical signal amplifier channels connected between said first and second optical couplers for amplifying two respective counter-propagating signals at said different optical wavelengths.

5,365,369

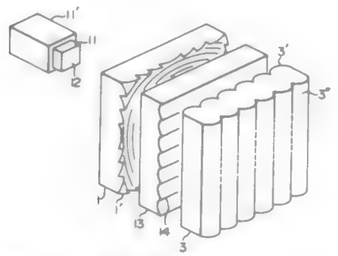
TWO DIMENSIONAL MOIRE REDUCTION TYPE PROJECTION DISPLAY

Masanori Ogino, Yokohama; Shoji Kuroda, Odawara, and Yoshiaki Iwahara, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1993, Ser. No. 98,878
Claims priority, application Japan, Feb. 26, 1993, 5-037822
Int. Cl.[5] G03B *21/60*
U.S. Cl. 359—457 **4 Claims**

1. A two dimensional moiré reduction type rear projection display comprising: a transmissive screen including at least a sheet having a surface of a concentric Fresnel lens in a light emitting surface thereof, a sheet having a surface of a transverse stripe lenticular lens and a sheet having a surface of a longitudinal stripe lenticular lens; and a projection lens, characterized in that said at least three sheets are arranged in that order from a light incident side to a light emitting side, and the following relationships are obtained:
0.9 To < vy-dy/n, and 0.9 To < vx-dx/n < 3 To where vy and vx denote a longitudinal divergence angle and a transverse divergence angle, respectively, which are obtained when viewing a pupil of said projection lens from the side of said lenticular lenses through the surface of said Fresnel lens,

dy denotes a distance between the surface of said Fresnel lens and a focal plane of said transverse stripe lenticular lens sheet corresponding to parallel emitted rays, dx denotes a distance between the surface of said Fresnel lens



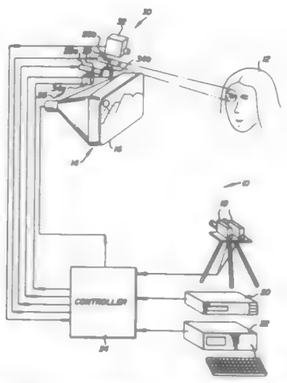
and a focal plane of said longitudinal stripe lenticular lens sheet corresponding to parallel emitted rays, n denotes a refractive index of a medium of the member constituting said transmissive screen, and To denotes an array pitch of the surface of said Fresnel lens.

5,365,370

THREE DIMENSIONAL VIEWING ILLUSION WITH 2D DISPLAY

J. Stephen Hudgins, 923 Ballard Ct., Blacksburg, Va. 24060

Filed Jun. 10, 1993, Ser. No. 74,756
Int. Cl.[5] G02B *27/22*
U.S. Cl. 359—464 **13 Claims**



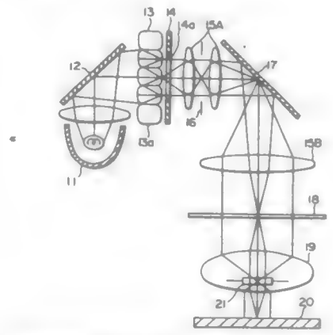
1. A system for producing a three dimensional viewing illusion comprising:
- a display means for displaying, alternately, left and right images of a stereo pair which left and right images of the stereo pair are designed to be viewed respectively by the left and right eyes of a viewer as a single three dimensional image;
- a light source means for shining, alternately, light therefrom to right and left eyes of the viewer synchronously with the displaying of the respective left and right images of the stereo pair so that while the eyes of the viewer do view both of the left and right stereo images, the contrast of the eye receiving both the light and the stereo image designed for the other eye is reduced.

5,365,371

PROJECTION EXPOSURE APPARATUS

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1993, Ser. No. 14,144
Claims priority, application Japan, Feb. 10, 1992, 4-023743
Int. Cl.[5] G02B *5/30, 27/28*
U.S. Cl. 359—483 **4 Claims**



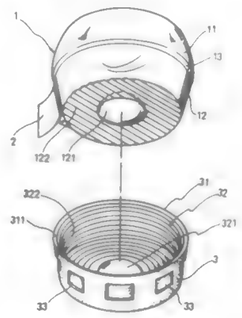
1. A projection exposure apparatus comprising:
- a light source for producing source light;
- a condenser lens for condensing the source light from said light source onto a mask including a circuit pattern;
- a projection lens having an optical axis and a pupil including a surface, said projection lens condensing the source light that has passed through the mask onto a surface of a wafer as illumination light; and
- a polarizer disposed on the surface of the pupil of said projection lens, Said polarizer at least principally transmitting as the illumination light that is converged onto the surface of the wafer polarized light having radial planes of polarization intersecting the optical axis of said projection lens.

5,365,372

REFLECTOR ROAD SIGN

Judy Chen, 2F. No. 2, Alley 1, Lane 110, Chung-Cheng W. Rd., Chu-Pei City, Hsin-Chu Hsien, Taiwan, Prov. of China

Filed May 21, 1993, Ser. No. 64,661
Int. Cl.[5] G02B *5/12*
U.S. Cl. 359—515 **7 Claims**



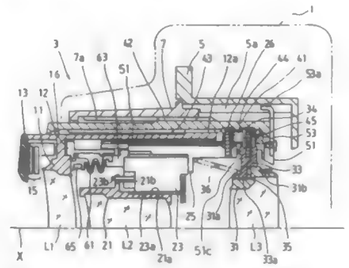
1. A reflector road sign comprising:
- a reflector body made of a tempered glass consisted of a conical upper part narrowing to the topmost edge thereof, a conical lower part narrowing to the lowest edge thereof, and a sloping edge connected between said upper part and said lower part, said lower part having a center recessed hole on a corrugated bottom surface thereof;
- a reflecting paper covered around the periphery of said lower part of said reflector body;
- a casing made to receive said reflector body, said casing comprising a top opening, through which said lower part of said reflector body inserts into said casing, a protruded block on the inside inserted into said recessed hole on said lower part of said reflector body, a top sloping edge around said top opening engaged with the sloping edge on said reflector body, and
- a layer of bonding resin covered over the inside wall of said casing for binding said casing and said lower part of said reflector body together.

5,365,373

LIGHT INTERCEPTING APPARATUS OF LENS BARREL

Hitoshi Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 10, 1993, Ser. No. 74,423
Claims priority, application Japan, Jun. 11, 1992, 4-040008[U]
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—601 **15 Claims**



1. A light intercepting apparatus of a lens barrel in which at least two lens assemblies, provided in the lens barrel, are adjustable in an optical axis direction, comprising;
- a cylindrical light intercepting member which isolates a light path defined between the lens assemblies from outside light, said light intercepting member being elastically expandable and contractable in accordance with relative movement of the lens assemblies;
- a holding member which holds an end of said light intercepting member at one end thereof to one of said at least two lens assemblies, so that said light intercepting member may be expanded or contracted; and
- a flanged member which is movable together with another of said at least two lens assemblies in the optical axis direction, wherein said light intercepting member comes into sliding contact at another end thereof with said flanged member so as to isolate the light path.

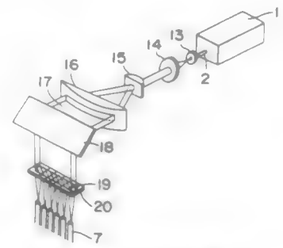
5,365,374

LASER OPTICAL DEVICE

Yukio Nishikawa, Ikeda, and Yuji Uesugi, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 4, 1992, Ser. No. 941,170
Claims priority, application Japan, Sep. 4, 1991, 3-223870
Int. Cl.[5] G02B *27/12, 6/32*
U.S. Cl. 359—619 **6 Claims**

1. A laser optical device comprising:
- a laser oscillator;
- a beam shaping optical means for shaping a laser beam emitted from said oscillator to form a shaped laser beam;
- a plurality of incidence lenses arranged in such a manner as to respectively receive equal quantities of radiant power from said shaped laser beam;
- a first driving means for moving said incidence lenses in a first direction perpendicular to an optical axis direction;
- a second driving means for moving the incidence lenses in a second direction perpendicular to both said first direction and said optical axis direction;
- a third driving means for moving the incidence lenses in the optical axis direction;
- wherein said incidence lenses constitute means for focusing each of said equal quantities of radiant power on each of a plurality of locations;



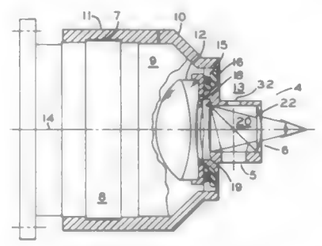
- wherein beam transmitting optical fibers are provided for respectively receiving said equal quantities of radiant power respectively focused on said locations by said incidence lenses;
- wherein said second driving means moves said optical fibers in said second direction together with said incidence lenses; and
- wherein said first driving means moves said optical fibers in said first direction together with said incidence lenses.

5,365,375

EXTERNAL OPTICAL DEVICE FOR PROVIDING MULTIPLE OPTICAL PORTS FOR A GUNSIGHT

Lawrence M. Monari, Palm Bay, Fla., assignor to DBA Systems, Inc., Melbourne, Fla.

Filed Apr. 19, 1993, Ser. No. 48,002
Int. Cl.[5] G02B *27/14*
U.S. Cl. 359—629 **8 Claims**



1. A device for providing a viewing port to an optical gunsight and a camera optical port for recording gunsight produced images comprising:
- a housing having a first end which is clamped to the end of an optical gunsight, said housing having a second end in line with said first end, forming a viewing port having an axis common with said gunsight axis, and including a camera optical port having an axis perpendicular to the optical gunsight axis;
- an assembly of optical elements located in said housing, said assembly including:
  - a front lens positioned adjacent said optical gunsight aperture;
  - an aspheric lens adjacent said first lens;
  - a beamsplitter located adjacent said aspheric lens having a first exit surface having an axis coincident with the axis of said first lens, said aspheric lens, and said housing second end, and a second exit surface having an axis

perpendicular to the axis of said first lens and coincident with the axis of said camera optical port; and,

an eye lens having flat surface bonded to said beamsplitter first exit surface.

5,365,376

ZOOM LENS

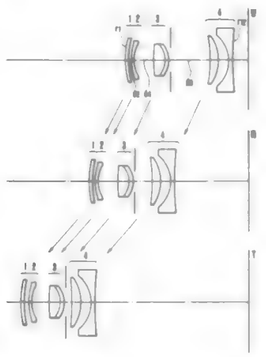
Yoshinori Itoh, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,523

Claims priority, application Japan, Sep. 2, 1991, 3-221574

Int. Cl.[5] G02B *15/14*

U.S. Cl. 359—686 **15 Claims**



1. A zoom lens comprising, in order from a long conjugate side, a first lens unit of negative refractive power, a second lens unit of negative refractive power, a third lens unit of positive refractive power and a fourth lens unit of negative refractive power, wherein during zooming a separation between each adjacent two of said first, second, third and fourth lens units is varied.

5,365,377

LENS SYSTEM

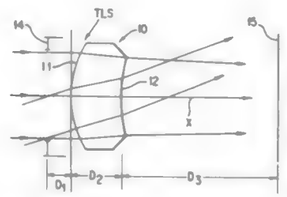
Kenichi Sato, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jun. 18, 1993, Ser. No. 77,995

Claims priority, application Japan, Jun. 19, 1992, 4-186341; Jun. 19, 1992, 4-186342

Int. Cl.[5] G02B *13/18*

U.S. Cl. 359—718 **7 Claims**



1. A taking lens system for a camera comprising:

a single component bi-aspherical lens of a positive meniscus type having a ratio of a radius of curvature of a reference concave spherical surface of a concave aspherical surface to a radius of curvature of a reference convex aspherical surface of a convex aspherical surface between 1.0 and 2.5; and

an aperture stop facing a convex aspherical surface of said single component bi-aspherical meniscus lens;

wherein said convex aspherical surface has a surface sag, from said reference convex spherical surface, which increases with a semi-aperture distance from an optical axis of the single component bi-aspherical lens so as to cause a gradual increase in positive power, and said concave aspherical surface has a surface sag, from said reference concave spherical surface, which increases with a semi-aperture distance from said optical axis so as to cause a gradual increase in negative power.

5,365,378

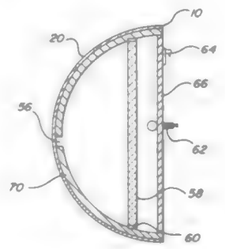
CONVEX REFLECTIVE SIGN

Paul Sorko-Ram, 1111 N. Centerville Rd., Sturgis, Mich. 49091

Continuation of Ser. No. 638,701, Jan. 8, 1991, Pat. No. 5,183,688, which is a continuation-in-part of Ser. No. 428,637, Oct. 30, 1989, abandoned. This application Jun. 17, 1992, Ser. No. 899,703

Int. Cl.[5] G02B *5/10, 13/12*

U.S. Cl. 359—839 **15 Claims**



1. A convex surveillance mirror, comprising:

a transparent base formed as a segment of a hollow sphere and having an outer convex surface, an inner concave surface, a center portion and a substantially circular edge;

a thin reflective coating incompletely covering said inner concave surface so as to leave portions thereof uncovered in a predefined pattern, said predefined pattern located proximate a portion of the edge of said base, leaving said center portion unobstructed;

a light source mounted proximate said inner concave surface; and

a support mechanism attached to said base for mounting said mirror,

wherein light from said light source is transmitted through said predefined pattern to provide a visible contrasting image on the outer surface of said mirror.

5,365,379

LASER CORRECTING MIRROR

Richard H. Sawicki, Danville, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1993, Ser. No. 39,669

Int. Cl.[5] G02B *7/18*

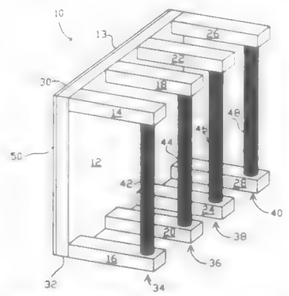
U.S. Cl. 359—846 **17 Claims**

1. An apparatus for correcting wavefront distortion in a laser beam, comprising:

a generally rectangular mirror body, a front surface thereof being a light reflecting surface, the mirror body being resiliently bendable, to a limited extent;

a plurality of leg devices projecting rearwardly from said mirror body, said leg devices being attached to the mirror body such that bending forces can be applied to the mirror body therethrough, the bending forces being such that the light reflecting surface is distorted thereby; and

a plurality of adjustment mechanisms for applying the bending forces between opposing of leg devices, wherein;



said light reflecting surface is bent into a shape defined by a cubic function by the application of the bending forces to said plurality of leg devices.

5,365,380

VARIABLE-SPEED VIDEO SIGNAL REPRODUCING APPARATUS ABLE TO SWITCH VIDEO SIGNAL INTERPOLATION

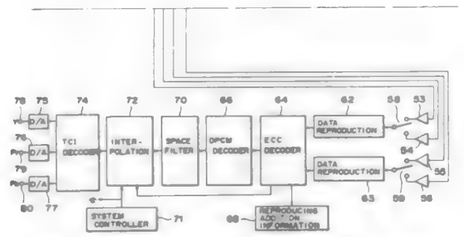
Yasuyuki Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 585,175, Sep. 20, 1990, abandoned. This application Mar. 29, 1993, Ser. No. 39,692

Claims priority, application Japan, Sep. 25, 1989, 1-248756

Int. Cl.[5] H04N *5/78*

U.S. Cl. 360—10.30 **15 Claims**



1. A video signal reproducing apparatus, comprising:

a rotary head for reproducing a video signal from a tape-shaped recording medium on which plural oblique tracks are formed in parallel manner;

transporting means for transporting the tape-shaped recording medium in a longitudinal direction thereof;

interpolation means for interpolating a video signal reproduced by said rotary head using a plurality of interpolation methods; and

selection means for selecting said interpolation methods to be used in said interpolation means, according to a transport speed of the recording medium by said transporting means.

5,365,381

HIGH SPEED RECORDED INFORMATION DUPLICATING EQUIPMENT

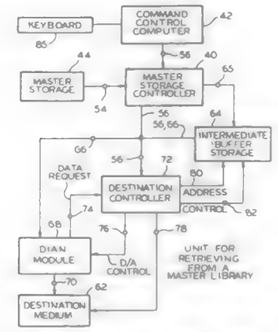
Robert G. Scheffler, Wheaton, Ill., assignor to Magic Music Cassette Company, Wheeling, Ill.

Continuation of Ser. No. 253,067, Oct. 4, 1988, Pat. No. 5,021,893, which is a continuation-in-part of Ser. No. 133,936, Dec. 17, 1987, Pat. No. 5,041,921, which is a continuation-in-part of Ser. No. 874, Jan. 6, 1987, abandoned. This application Jun. 3, 1991, Ser. No. 709,714

The portion of the term of this patent subsequent to Aug. 20, 2008, has been disclaimed.

Int. Cl.[5] G11B *5/86, 3/64, 7/28*

U.S. Cl. 360—15 **14 Claims**



1. A system for duplicating selected prerecorded items of information, the items of information being prerecorded on a source medium, the system duplicating the items of information onto a destination medium as a custom album, the system comprising

means for generating first digital signals corresponding to selected items of information on the source medium;

means for storing said first digital signals in a master storage library under item addresses which individually identify each of the selected items of information;

means for retrieving the first digital signals from the master storage library and for generating second digital signals corresponding to a plurality of the selected items of information;

buffer storage means for receiving and storing said second digital signals and for generating third digital signals;

destination control means for controlling said buffer storage means and for controlling the recording of the items of information on to the destination medium;

said destination control means further including

control processor for identifying the information in said buffer storage means;

memory address generator operatively connected to the control processor for generating address signals to access information in the buffer storage means;

bus control means operatively connected to said buffer storage means by a first bus for controlling the generation of said third digital output signals of said buffer storage means;

request control logic means operatively connected to said bus control means for controlling said bus control means;

byte unstacker means operatively connected to said buffer storage means for receiving and unstacking the third digital output signals of the buffer storage means; and

first-in-first-out (FIFO) buffer means operatively connected to said byte unstacker means for receiving the unstacked third digital output signals and for generating fourth signals.

5,365,382

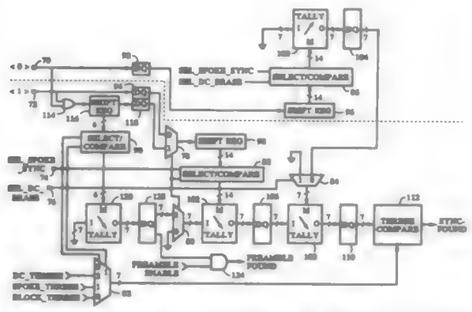
SYNCHRONIZATION TO DIFFERENT FIELDS IN A STORAGE DEVICE

Lih-Jyh Weng, Shrewsbury, Mass.; Michael E. Kastner, Broomfield, Colo., and Bruce Leshay, West Boylston, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 18, 1993, Ser. No. 64,286

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—51 **17 Claims**



1. A method of operating a data storage device, comprising the steps of:

selecting a first synchronization pattern of hex 2A248A4 to be searched for in a cell stream to be read from a storage medium in said data storage device;

phase-locking to a preamble cell pattern of 0101 . . . 01 appearing in said cell stream to establish correct cell sampling times;

comparing a portion of said cell stream to the selected synchronization pattern;

determining the number of positions in which the selected synchronization pattern and said portion of said cell stream differ;

repeating said comparing and determining steps for succeeding portions of said cell stream until the number of differing positions is less than a first threshold;

selecting a second synchronization pattern of hex 2929449 to be searched for in said cell stream; and

repeating said phase-locking, comparing and determining steps for succeeding portions of said cell stream until the number of differing positions is less than a second threshold.

5,365,383

SYSETM FOR OPTICALLY SENSING THE PLACEMENT OF MAGNETIC TAPE CARTRIDGE MEDIA IN A COMPUTER MEMORY BACKUP DEVICE

Kevin L. Miller; Eric M. Krug, both of Loveland, Colo., and James A. Imthurn, Rathdrum, Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 13, 1990, Ser. No. 612,835

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] G11B *15/18, 15/008;* **G01N** *21/86*

U.S. Cl. 360—69 **42 Claims**

1. A controller for ascertaining appropriate placement of a standardized computer tape cartridge in a computer memory backup device comprising:

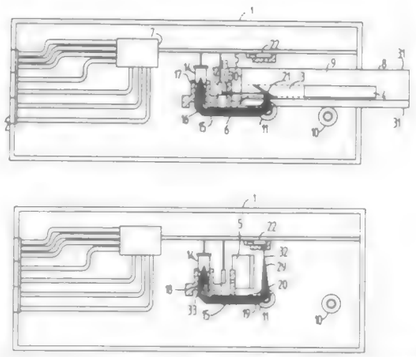
a. computer tape memory media;

b. a standardized container for said computer tape memory media wherein said computer tape memory media and said standardized container comprise a tape media system having an integral mirror assembly positioned for sensing through said computer tape memory media;

c. a means for releasably accepting said standardized container;

d. a sensor means which determines appropriate placement of said standardized container within said means for releasably accepting comprising:

(1) a means for emitting electromagnetic radiation wherein said means for emitting comprises a light emitting diode directed toward said mirror assembly when said standardized cartridge is appropriately placed; and



(2) a sensor which receives said electromagnetic radiation; and

e. a trigger which activates said computer memory backup device wherein said trigger is responsive to said sensor means which determines appropriate placement of said standardized container within said means for releasably accepting said standardized container.

5,365,384

VIDEO TAPE RECORDER HAVING AUTOMATIC INDEX SCAN METHOD AND PICTURE-IN-PICTURE FUNCTION

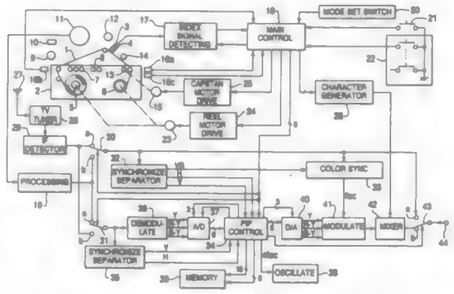
Seung-lyul Choi, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 17, 1991, Ser. No. 701,759

Claims priority, application United Kingdom, Apr. 25, 1991, 910984

Int. Cl.[5] H04N *5/782*

U.S. Cl. 360—72.2 **17 Claims**



1. An automatic index scan apparatus in a video tape recorder for reproducing contents of a recorded magnetic tape having index signals recorded at starting positions of each recorded program, said apparatus comprising:

means for setting an index scan mode, a reproducing mode, and an address;

tape traveling means, responsive to the setting of said index scan mode and said reproducing mode, for transporting said magnetic tape at high speed in a forward direction and a reverse direction and at normal speed in said forward direction;

index signal detecting means for detecting said index signals during the transporting of said magnetic tape;

reproducing means, responsive to setting of said reproducing mode, for reproducing said contents of said magnetic tape; and

picture-in-picture forming means comprising a memory adapted to store at least one screen, being responsive to the setting of said reproducing mode, said index scan mode and said address, for storing in said memory a video signal for one screen reproduced from said magnetic tape every time said index signal are detected during the normal speed transporting of said magnetic tape, and for forming a multiple picture-in-picture screen by combining a main screen corresponding to a video signal to be received by a tuner contained in said video tape recorder and at least one subscreen corresponding to video signals for the screens stored in said memory.

5,365,385

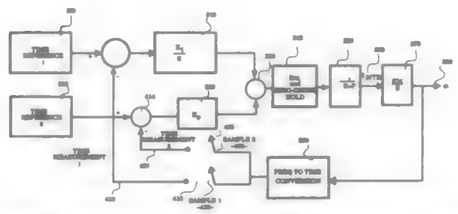
METHOD AND APPARATUS FOR MULTIRATE SAMPLING FOR DISK DRIVE SPINDLE CONTROL

James W. Hargarten, Lafayette, and Steven P. Ward, Louisville, both of Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Jun. 24, 1993, Ser. No. 82,286

Int. Cl.[5] G11B *15/467, 15/52;* **H02P** *5/06;* **H03D** *13/00*

U.S. Cl. 360—73.03 **23 Claims**



1. In a disk drive system, a spindle control circuit to control the speed of revolution of the disk drive, said circuit generating a frequency of rotation ω, said circuit comprising:

a first clock reference operating at a first frequency;

a second clock reference operating at a second frequency;

a compensator circuit for adjusting the frequency of rotation ω based upon feedback of the output frequency of rotation ω, comprising;

a integrator sub circuit receiving a first clock input and operating at an integrator operating frequency corresponding to the first frequency, said integrator generating signals to minimize steady state speed error,

a gain sub circuit receiving a second clock input and operating at a gain operating frequency corresponding to the second frequency, said gain sub circuit generating signals to control the gain of the motor frequency of rotation,

combination means for combining the output signals of the integrator sub circuit and the gain sub circuit;

conversion means for generating a signal to operate the motor to rotate the disk drive at a frequency of rotation ω;

feedback means for receiving the value of the frequency ω, comprising;

converting means for converting the frequency ω to a time value,

a first sample means which generates a first sample of the time value at the first frequency,

a second sample means which generates a sample of the time value at the second frequency,

a first feedback adjustment means for receiving the first sample and comparing it to the first clock reference to provide an integrator error measure to the integrator sub circuit;

a second feedback adjustment means for receiving the second sample and comparing it to the second clock reference to provide a gain error measure to the gain sub circuit;

wherein the clock references can be individually adjusted to provide closer control of the speed of revolution while maintaining adequate gain for control of stabilization at the motor.

5,365,386

LOADING POST DRIVING DEVICE

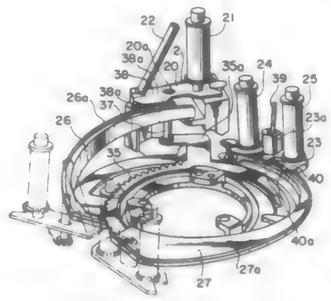
Akio Konishi, Hirakata; Yoshiyuki Saito, Kadoma; Shuzo Takeda, Hirakata; Hideaki Yoshio, Moriguchi, and Hiroshi Kurumatani, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1992, Ser. No. 867,059

Claims priority, application Japan, Apr. 16, 1991, 3-083887; Apr. 17, 1991, 3-085062; Apr. 17, 1991, 3-085064; Apr. 17, 1991, 3-085071

Int. Cl.[5] G11B *15/665*

U.S. Cl. 360—85 **2 Claims**



1. A loading post driving device for withdrawing a magnetic tape out of a tape cassette and winding said magnetic tape around a cylindrical rotary head cylinder having a rotary head built therein, the driving device comprising:

a loading boat having a through-hole;

a loading post, for withdrawing said magnetic tape, mounted on said loading boat in a position of extending upwards;

a substantially arc shaped loading guide for guiding said loading boat along the circumference of said rotary head cylinder, said loading guide having a side edge provided with a stepped portion;

a drive ring member for transmitting driving force from a drive source to said loading boat; and

a drive shaft, mounted in a position of extending upwards on said drive ring member so as to be immovable relative thereto, wherein said drive shaft is inserted through said through-hole in said loading boat, and said loading boat has an engagement portion engaging with said stepped portion provided on said loading guide to hold said loading boat in such a manner as to be able to vertically move as said drive ring member turns.

5,365,387

AUTOMATIC VIDEO TAPE CONVERTER

Stephen Chen, Changhua City, Taiwan, Prov. of China, assignor to E Lead Electronic Co. Ltd., Changhua City, Taiwan, Prov. of China

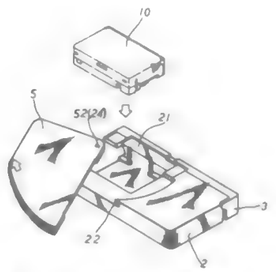
Filed Jan. 29, 1993, Ser. No. 11,223

Int. Cl.[5] G11B *15/665, 23/08*

U.S. Cl. 360—94 **1 Claim**

1. An improved automatic video tape converter, comprising a box body, a front cover and a bottom cover, wherein an opening is formed on said box body, through which a camera-

used video tape cassette can be placed into said box body, a drive cover having a lateral rack portion and a rotary shaft at one corner pivotably disposed over said opening, wherein when said rack portion of said drive cover is engaged by a winding mechanism and driving gears to rotate the cover from an open to a closed position and back to an open position, a right arm member cooperates with a left arm member and left



and right fixing blocks to move the tape in the camera-used tape cassette out of said cassette to a stretched orientation, wherein said rotary shaft of said drive cover permits the same to be smoothly opened/closed in an arc rotary manner and when said drive cover is not completely closed, one corner thereof will protrude outside said box body and prevent the same from being inserted into a video player.

5,365,388

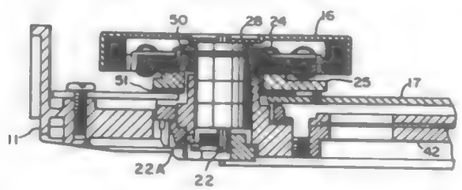
DISK DRIVE CONSTRUCTED TO ISOLATE MOTOR VIBRATION

Stuart Maughan, Bountiful, and Earl Bryner, Roy, both of Utah, assignors to Iomega Corporation, Roy, Utah

Continuation of Ser. No. 759,487, Sep. 13, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 52,827

Int. Cl.[5] G11B *17/02, 33/14, 33/08*

U.S. Cl. 360—99.04 **9 Claims**



1. A disk drive for writing and reading data to and from a magnetic disk contained in a rigid cartridge comprising:

a chassis;

a spicule member mounted on said chassis, said spicule member engaging and guiding said cartridge with respect to said disk drive;

a drive spindle for driving said magnetic disk;

said spicule member having a drive shaft housing in which said spindle is rotatably mounted;

a stator having a plurality of stator windings and a central aperture disposed about said spindle;

a rotor coupled to said spindle and inductively disposed about said stator; and

a shock-absorbing stator positioner disposed around a substantial portion of a shoulder of said drive shaft housing, said stator being placed over said positioner, said positioner securing said stator against movement, said positioner being a stiff microcellular urethane material.

5,365,389

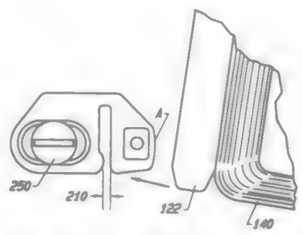
CRASH STOP AND MAGNETIC LATCH FOR OPTIMUM USE OF DISC SPACE

Iraj Jabbari, Santa Clara County, and Shahriar A. Tafreshi, Santa Cruz County, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 611,412, Nov. 9, 1990, Pat. No. 5,187,627. This application Jun. 5, 1992, Ser. No. 893,764

Int. Cl.[5] G11B *5/54*

U.S. Cl. 360—105 **14 Claims**



1. A limit stop in a disc drive system having a movable actuator arm movable on a rotary path, the limit stop comprising:

a base element for fixing a stop position of the limit stop relative to the actuator arm;

a cantilevered arm having a first surface facing a first side of said movable actuator arm, said first surface for engaging said first side of said movable actuator arm as said actuator arm rotates to said stop position; and,

shock mitigation means connecting said base element and said cantilevered arm for slowing or stopping the movement of said movable actuator arm, said cantilevered arm being spaced from said base element by said shock mitigation means to form a first gap, said cantilevered arm movable upon engagement with said first side of said movable actuator arm, said base element stopping the movement of said movable actuator arm when said first gap is closed.

5,365,390

MAGNETIC HEAD ACTUATOR WITH IMPROVED SUPPORT

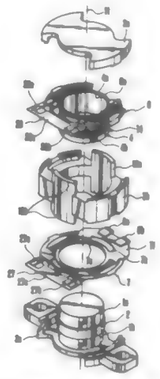
Masahide Hasegawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1992, Ser. No. 941,983

Claims priority, application Japan, Sep. 10, 1991, 3-230257; Jan. 28, 1992, 4-013387

Int. Cl.[5] G11B *5/588*

U.S. Cl. 360—107 **16 Claims**



1. A magnetic head actuator comprising:

a) a magnetic member arranged to form a magnetic path having an air gap;

b) a coil bobbin disposed within said air gap; and

c) an elastic support member arranged to carry said coil bobbin in such a manner that said coil bobbin is displaceable within said air gap, said elastic support member having a projection formed at a first part where said elastic support member is secured to said coil bobbin, at least one magnetic head being secured to a fore end of said projection, and said projection having a through hole formed in a second part between said first part and said fore end of said projection to allow a part of a yoke constituting said magnetic member to pierce through said through hole, whereby said part of said yoke shields said magnetic head from stray magnetic flux leakage.

5,365,391

MAGNETIC REPRODUCING HEAD HAVING A DISTRIBUTED-CONSTANT CIRCUIT TYPE MAGNETIC FIELD DETECTOR

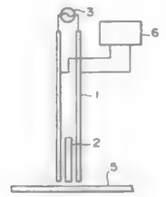
Yasunari Sugiyama, Tokyo; Kiyoshi Kagawa, Kanagawa; Masatoshi Hayakawa, Miyagi, and Hiroyuki Ohmori, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,924

Claims priority, application Japan, Feb. 28, 1991, 3-034795; Oct. 3, 1991, 3-256557

Int. Cl.[5] G11B *5/127;* **G01R** *33/02*

U.S. Cl. 360—110 **11 Claims**



7. A magnetic reproducing head having a distributed-constant circuit type magnetic field detector comprising:

a magnetic member, permeability of which is caused to vary by a magnetic field to be detected, disposed at the terminal portion of a microstrip coplanar line; and

means connected to said line for detecting a change in the reflection coefficient at the terminal portion due to a variation in the permeability.

5,365,392

MAGNETIC HEAD WITH SHAPED WINDING GROOVES

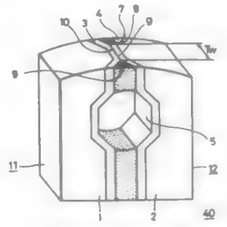
Heikichi Sato; Hitoshi Kimura, and Osamu Onodera, all of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 8,672

Claims priority, application Japan, Jan. 31, 1992, 4-016969

Int. Cl.[5] G11B *5/147*

U.S. Cl. 360—126 **2 Claims**



1. A magnetic head having a pair of magnetic core halve, at least one of which is formed of a magnetic oxide material portion, and a magnetic metal thin film on each of said core halves, said magnetic metal thin films being abutted so that a magnetic gap is formed between abutment surfaces of the magnetic metal thin films, said gap defining a plane between the abutment surfaces, at least one of said magnetic core halves having a winding groove, wherein said winding groove is bounded by a plurality of planar surfaces formed in the two core halves, there being at least three of said planar surfaces which lie at oblique angles to said gap plane.

5,365,393

MAGNETIC TAPE CASSETTE HAVING A GROOVE EXTENDING PERPENDICULAR TO A FRONT WALL THEREOF FOR ENGAGEMENT BY A LOADING MECHANISM OF A TAPE CASSETTE APPARATUS

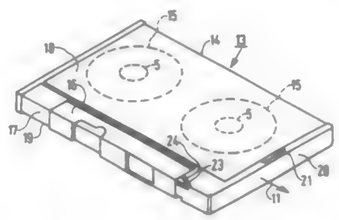
Georg Weber, Lohra; Thomas Scholz, Winkels, both of Germany, and Norbert C. Vollmann, Veldhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 925,241, Aug. 4, 1992, Pat. No. 5,231,553, which is a continuation of Ser. No. 629,512, Dec. 18, 1990. This application Jun. 29, 1993, Ser. No. 84,836

Claims priority, application Netherlands, Dec. 18, 1989, 8903088; Feb. 14, 1990, 9000348

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—132 **12 Claims**



1. A magnetic tape cassette, comprising:

a. a housing having two planar parallel main walls and a front wall, a back wall, and two side walls connecting said main walls, said front wall having a central opening for receiving a magnetic head and a pressure roller opening on each lateral side of said central opening for receiving a pressure roller;

b. two coplanar reels rotatably mounted within said housing;

c. a length of magnetic tape wound on said reels; and

d. a sliding cover slidable along the front wall between a closed position, in which said openings are covered, and an open position, in which said openings are uncovered;

one of said main walls including two reel-spindle apertures having centers concentric with said reels for the passage of two reel-drive spindles of a magnetic tape apparatus, and

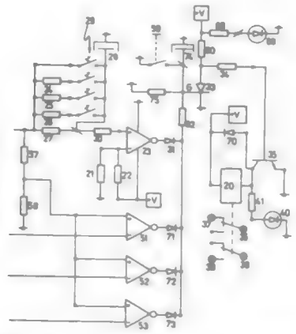
the other said main wall being free of reel apertures and including a groove extending perpendicularly to said front wall and arranged adjacent a said side wall, said groove having a center spaced the same distance from said front wall as the centers of said reel spindle apertures are spaced from said front wall.

5,365,394

ELECTRONIC RELAY TO PROTECT MOTORS AND THYRISTORS AGAINST SYMMETRIC OVERLOAD, PHASE UNBALANCE AND SHORT-CIRCUIT

Francisco Gomez Ibargueangoitia, Sondica, Spain, assignor to Fanox Electronic, S.L., Sondica, Spain

Filed Dec. 9, 1993, Ser. No. 165,003
Claims priority, application Spain, Dec. 9, 1992, 9202504
Int. Cl.[5] H02H 7/08
U.S. Cl. 361—33 20 Claims



1. Electronic relay to protect motors an thyristors against symmetric overload, phase unbalance and short-circuit, of the type that is applied to motors by means of its contacts, producing the automatic disconnection of the motor under certain circumstances and that has a feed source provided with a one-phase transformer, rectifying bridge, filter condenser and regulator that provides a stabilized voltage; characterized in that it has some pickups where one-phase signals are generated, connected to some diodes, connected to some capacitors and to a zener diode for the purpose of obtaining rectified, filtered and limited signals, with a voltage level proportional to the line intensity of the protected motor; including a multiple microswitch which connected to some resistors permits the presetting of said voltage level and nominal triggering intensity of a relay, also including a R-C network that can be timed in various scales comprised of resistors a capacitor and another multiple microswitch that allows adjustment of the triggering time constant and that applied to that voltage level at the non-inverting input of an operational amplifier whose inverting input is at a reference voltage, so that upon the non-inverting input reaching said reference voltage, due to a symmetric overload, the output of the operational amplifier passes to logic state 1, sending a positive signal to gate of a thyristor, which enters into conduction and depolarizes the base of a transistor making it pass from saturation to cut, whereby relay connected to the collector of transistor is triggered, changing the state of its contacts and causing disconnection of the protected motor and lighting up of a LED connected by means of a resistor to the collector of the transistor.

5,365,395

FUSE BLOCK PROTECTOR

Jerry Callaway, Novato, Calif., assignor to Panamax, Inc., San Rafael, Calif.

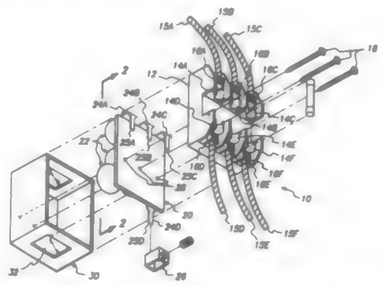
Filed Nov. 2, 1992, Ser. No. 970,017
Int. Cl.[5] H02H 9/06
U.S. Cl. 361—56 7 Claims

1. A retrofit device for adding overvoltage protection to a fuse block having a plurality of terminal lugs affixed in pairs to one face of a flat insulating plate, the apparatus comprising:

a flat mounting plate separate from the fuse block and having a front face and a rear face;

a plurality of conductive straps each affixed to the rear face of the mounting plate and electrically isolated from each other, each conductive strap having a portion thereof extending from the rear face to the front face of the mounting plate for electrically connecting the strap to a terminal lug of the fuse block;

a grounding strap affixed to the rear face of the mounting plate and electrically isolated from the conductive straps,



the grounding strap including means extending from the rear face of the mounting plate for receiving a grounding wire; and

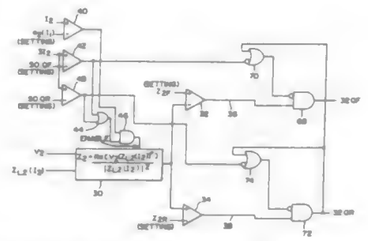
an overvoltage protection circuit coupled to the conductive and grounding straps on the rear face of the mounting plate.

5,365,396

NEGATIVE SEQUENCE DIRECTIONAL ELEMENT FOR A RELAY USEFUL IN PROTECTING POWER TRANSMISSION LINES

Jeffrey B. Roberts, Moscow, Id., and Edmund O. Schweitzer, III, Pullman, Wash., assignors to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Continuation-in-part of Ser. No. 961,260, Oct. 15, 1992. This application Jun. 28, 1993, Ser. No. 83,454
Int. Cl.[5] H02H 3/26
U.S. Cl. 361—80 5 Claims



1. A directional element for use in a relay for protection of power transmission lines, comprising:

means for obtaining negative sequence voltage and current quantities of the power signal present on a power transmission line;

means for calculating from said negative sequence voltage and current quantities a quantity which is representative of the negative sequence impedance of the transmission line; and

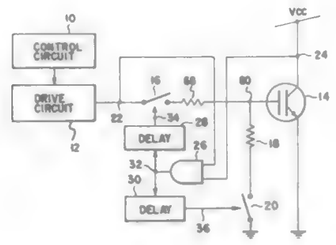
means for comparing said calculated quantity against first and second selected comparison threshold quantities to identify direction of a fault relative to the relay, the first comparison threshold quantity being for a forward fault and the second comparison threshold quantity being for a reverse fault, and wherein said comparison threshold quantities include at least a portion of a predetermined basic threshold quantity and a selected fraction of the magnitude of the negative sequence impedance determined from the magnitudes of said negative sequence voltage and current quantities.

5,365,397

DEVICE FOR PROTECTING POWER SEMICONDUCTOR DEVICE AGAINST SHORT CIRCUIT

Nagatoshi Kadota, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 27, 1993, Ser. No. 52,994
Claims priority, application Japan, Apr. 28, 1992, 4-109913
Int. Cl.[5] H03K 17/56
U.S. Cl. 361—93 11 Claims



1. A protective device against a short circuit for preventing the breakdown of a semiconductor device caused by the short circuit of a load connected to an output terminal of the semiconductor device, comprising:

means for generating a control signal to control the ON-OFF state of said semiconductor device;

switching means connected between said control signal generation means and a control terminal of said semiconductor device;

means for detecting the short circuit of said load according to the control signal and a level at the output terminal of said semiconductor device;

means for switching off said switching means when a first preset time has passed after said short circuit detection means detects a short circuit, thereby isolating said control means and semiconductor device from each other; and

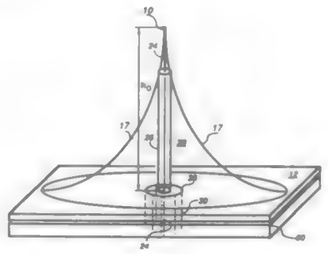
turn-off means, connected to said semiconductor device, for turning off said semiconductor device when a second preset time longer than the first preset time has passed after the short circuit detection means detects a short circuit.

5,365,398

LIGHTNING PROTECTION SYSTEM

Richard Briët, 5661 Citrus Ct., Cypress, Calif. 90630

Filed Jul. 24, 1992, Ser. No. 919,598
Int. Cl.[5] H02H 9/04
U.S. Cl. 361—117 19 Claims



1. A lightning attractor apparatus for protecting secondary structures, the secondary structures being located relative to a body having reference ground potential, the apparatus comprising:

(a) an elongate central conductor having upper and lower extremities;

(b) a first tubular conductor having upper and lower extremities, the tubular conductor enclosing a portion of the central conductor;

(c) insulative spacing means connecting the tubular conductor in coaxially spaced relation to the central conductor;

(d) base means for supporting the central and tubular conductors with the upper extremity of the central conductor projecting above the upper extremity of the tubular conductor; and

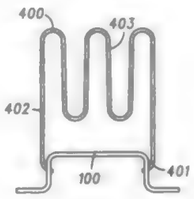
(e) main grounding means for electrically connecting lower portions of the central conductor and the tubular conductor to the body having reference ground potential.

5,365,399

HEAT SINKING APPARATUS FOR SURFACE MOUNTABLE POWER DEVICES

Kevin L. Kent, Woodstock, and Jacqueline D. Glomski, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1992, Ser. No. 923,636
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—704 2 Claims



1. A heat sinking apparatus for use with a surface mountable power device, wherein the surface mountable power device is thermally coupled to a thermal plane of a substrate and wherein the surface mountable power device has a predetermined package size, the heat sinking apparatus comprises:

a first planar surface having a predetermined surface area;

at least a first gull-wing mounting tab and second gull-wing mounting tab, wherein the at least a first gull-wing mounting tab and second gull-wing mounting tab are substantially parallel to the first planar surface and are on a different plane than the first planar surface;

at least a first connective leg and second connective leg, each having a predetermined length and each having a slot of predetermined dimensions, the first connective leg and the second connective leg are thermally and physically coupled to the first planar surface and the at least a first gull-wing mounting tab and second gull-wing mounting tab; wherein the first planar surface, the at least a first gull-wing mounting tab and second gull-wing mounting tab, and the first connective leg and second connective leg are comprised of a thermally conductive material such that the heat sinking apparatus is auto pick and placeable on the substrate with the first planar surface being substantially parallel to the substrate, wherein inner dimensions of the heat sinking apparatus are in the range of at least as great as the predetermined packaged size of the surface mountable power device and less than three times the predetermined package size such that the surface mountable power device is at least partially encased by the heat sinking apparatus, and such that a substantial portion of heat generated by the surface mountable power device is thermally transferred through the thermal plane of the substrate to the heat sinking apparatus, and

a clip-on heat sink extension having a predetermined geometric shape that mates with the slots of the at least a first

connective leg and second connective leg such that the heat sinking apparatus provides further heat dissipation for the surface mountable power device.

5,365,400

HEAT SINKS AND SEMICONDUCTOR COOLING DEVICE USING THE HEAT SINKS

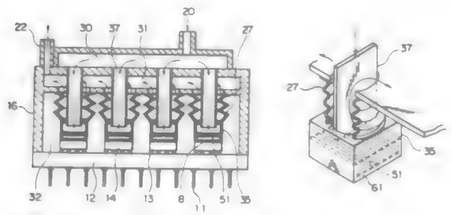
Noriyuki Ashiwake, Tsuchiura; Takahiro Daikoku, Ushiku; Toshio Hatsuda, Ibaraki; Shizuo Zushi, Hadano, all of Japan, and Satomi Kobayashi, Rye, N.Y., assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 535,527, Jun. 11, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 771,777

Claims priority, application Japan, Sep. 9, 1988, 63-224655; Jun. 9, 1989, 1-145360; Oct. 5, 1990, 2-266225

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—752 **6 Claims**



1. A semiconductor cooling device comprising:

a printed board having an element-carrying surface carrying a plurality of integrated circuit elements or packages; a heat sink provided for each of said elements or packages and having an internal space through which a refrigerant is circulated; and a housing which seals the element-carrying surface of said printed board in a liquid-tight manner;

said housing having a three-layered structure including a space for sealing said element-carrying surface in liquid-tight manner, a header portion for discharging said refrigerant and a header portion for supplying said refrigerant,

each said heat sink being connected to the refrigerant discharging header portion in a liquid-tight manner through a flexible structure which extends perpendicularly to said printed board and which has an inside diameter substantially equal to the width of each of said elements or packages; and

a plurality of nozzles operatively arranged in said housing and extending perpendicularly to said printed board through said flexible structure at positions corresponding to the positions where said elements or packages are carried, said nozzles having outlet openings in the respective heat sinks, so as to supply said refrigerant from the refrigerant supplying header to the respective heat sinks,

each said heat sink having an inner bottom plate on which are formed a plurality of parallel tabular fins perpendicular to said element-carrying surface, the openings of said nozzles having a substantially rectangular cross-section positioned above mid-portions of the fins, the longer axis of which extends perpendicularly to the longitudinal axes of said parallel tabular fins and is substantially equal to an inside diameter of said flexible structure,

such that said refrigerant is supplied from the mid-portion of the fins to outward portions of the fins.

5,365,401

Patent Not Issued For This Number

5,365,402

COOLING APPARATUS OF ELECTRONIC DEVICE

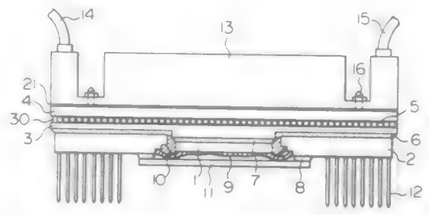
Toshio Hatada; Shigeo Ohashi, both of Tsuchiura; Tadakatsu Nakajima; Heikichi Kuwahara, both of Ibaraki; Hitoshi Matsushima, Ryugasaki; Motohiro Sato; Hiroshi Inouye, both of Ibaraki; Takao Ohba; Akira Yamagiwa, both of Hadano; Kanji Otsuka, Higashiyamato, and Yuuji Shirai, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,268

Claims priority, application Japan, Nov. 30, 1990, 2-329248

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—699 **15 Claims**



7. Cooling apparatus of an electronic device comprising a semiconductor chip mounted on a wiring board, and a heat sink for radiating heat of said semiconductor chip,

wherein said heat sink is mounted to said a joint plate,

said cooling apparatus further comprising a thermal diffusion plate provided on a lower side of said joint plate, with a first elastic member having thermal conductivity interposed therebetween; and

a second elastic member arranged so as to cover an entire top surface of said semiconductor chip and having thermal conductivity to transmit heat from said semiconductor chip to said thermal diffusion plate, and

wherein said thermal diffusion plate diffuses heat transmitted from said second elastic member, both of which are interposed between said semiconductor chip and said first elastomer as viewed in a direction of a side of the semiconductor chip.

5,365,403

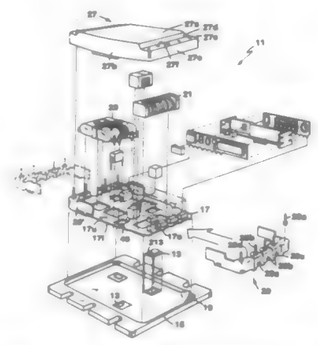
PACKAGING ELECTRICAL COMPONENTS

Patrizio Vinciarelli, Boston; Fred Finnemore, No. Reading; John S. Balog, Mendon, and Brant T. Johnson, Concord, all of Mass., assignors to VLT Corporation, San Antonio, Tex.

Continuation of Ser. No. 914,347, Jul. 17, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 177,797

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—707 **20 Claims**



1. A package for electrical components, comprising a circuit board for holding the electrical components,

an enclosure having generally parallel, spaced apart upper and lower internal surfaces, the circuit board lying generally parallel to the lower internal surface with the electrical components held in an internal space between the circuit board and the upper internal surface,

conductive terminal pins extending from outside the enclosure into the internal space, and

conductive links, each link having an end attached to the periphery of the circuit board and another end projecting into the internal space and connected to one of the terminal pins.

5,365,404

JACK-TYPE SEMICONDUCTOR INTEGRATED CIRCUIT PACKAGES

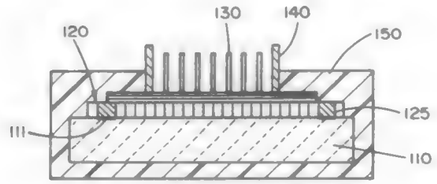
Seung Dae Back, Choongcheongbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Oct. 19, 1992, Ser. No. 962,878

Claims priority, application Rep. of Korea, Nov. 14, 1991, 20242/1991

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—760 **8 Claims**



1. A jack semiconductor integrated circuit package comprising:

a semiconductor chip, said semiconductor chip being provided with a plurality of bond pads;

jack means for electrically connecting said semiconductor chip, said jack means including a jack housing and a plurality of connection members connected to said jack housing;

a resin film for electrically connecting said bond pads of the semiconductor chip to said connection members of the jack means and bonding the jack means to the semiconductor chip, said resin film containing a plurality of conductive wires; and

a sealing resin housing for sealing both the semiconductor chip and the jack means, which are bonded to each other by said resin film.

5,365,405

MULTI-CHIP MODULE

Wolfgang Hoenlein, Unterhaching, and Volker Lehmann, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 21, 1993, Ser. No. 64,235

Claims priority, application Germany, Jun. 10, 1992, 4219031

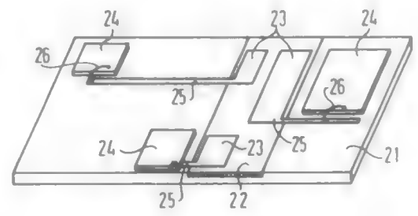
Int. Cl.[5] H05K *1/16*

U.S. Cl. 361—766 **16 Claims**

1. A multi-chip module, comprising:

a carrier of monocrystalline silicon, said carrier having a surface that is at least partially enlarged by electro-chemical etching in a fluoride-containing acidic electrolyte to produce a plurality of hole openings that thereby form an enlarged surface portion of said surface, said carrier being connected as an anode; and

at least one capacitor arranged on said enlarged surface portion, said at least one capacitor having a dielectric layer that uniformly covers a surface of the hole openings and a portion of said surface of said carrier between said hole openings, said at least one capacitor also having a conductive layer that is arranged on said dielectric layer,



whereby said carrier and said conductive layer act as capacitor electrodes of said at least one capacitor.

5,365,406

MASTER-SLICE TYPE SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

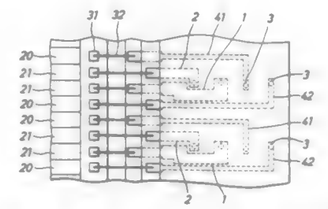
Yasumi Kurashima, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 30, 1992, Ser. No. 828,368

Claims priority, application Japan, Feb. 1, 1991, 3-011809

Int. Cl.[5] H05K *7/02;* **H01L** *29/44*

U.S. Cl. 361—777 **6 Claims**



1. A master-slice type semiconductor integrated circuit device having a PGA package mounting a master-slice type semiconductor chip, comprising:

input cells provided on said semiconductor chip and electrically connected to respective ones of external pins in the outermost one of a plurality of rows of the external pins via first wires in said PGA package;

input/output cells provided on said semiconductor chip and electrically connected t respective ones of external pins in the innermost one of the plurality of rows of the external pins via second wires in said PGA package, said first wires in said PGA package connected to said external pins in the outermost one of the plurality of rows of said external pins having widths which are smaller than widths of the second wires in said package which are connected to said external pins in the innermost one of the plurality of rows of said external pins,

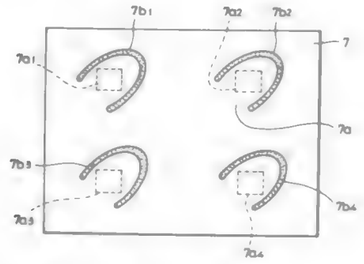
a pair of said first wires being arranged with at least one of said second wires intervening between wires in the pair of first wires.

5,365,407

DC POWER SUPPLY DEVICE WITH PRINTED-CIRCUIT BOARD HAVING GROUND PATTERN

Toshiya Nakabayashi, Tokyo; Hirokazu Nakayoshi, Kanagawa, and Kazuo Hashimoto, Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Jan. 27, 1993, Ser. No. 9,988
Claims priority, application Japan, Feb. 7, 1992, 4-022839
Int. Cl.[5] H05K *1/11;* **H01R** *13/648*
U.S. Cl. 361—794 **3 Claims**



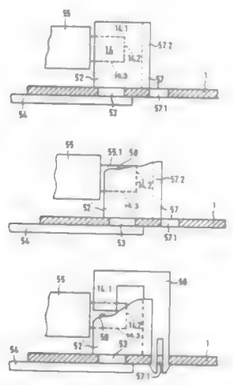
1. A DC power supply device comprising:
a plurality of power supply blocks for supplying a plurality of voltages, each of said power supply blocks being composed of a switching circuit for being supplied with a DC voltage and a smoothing circuit connected to an output terminal of said switching circuit;
said power supply blocks being mounted on a multilayer circuit board, said multilayer circuit board including a layer of a ground pattern with an electric conductor extending substantially fully thereover, said ground pattern being separated into a plurality of ground pattern portions by a plurality of recesses defined therein, said power supply blocks having respective ground terminals connected to said ground pattern portions, respectively.

5,365,408

CHASSIS WITH IMMOVABLE ATTACHMENT ELEMENTS AFFIXED THERETO

Siegfried Apitz, Schömberg, Germany, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed Aug. 5, 1993, Ser. No. 102,626
Claims priority, application Germany, Aug. 6, 1992, 4226016
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—807 **5 Claims**



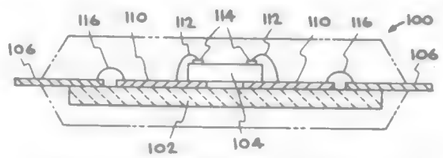
1. An appliance chassis (1) with immovably affixed attachment elements (52), with at least one holding device (14), having parts thereof for supporting components (55) to the chassis, to which the respective attachment element containing the holding device is assigned, characterized in that
an attaching device (57) for a predetermined attachment element (52) is formed directly on the attachment element (52) for holding a repair element (56) for connection to the attachment element,
and that after said predetermined attachment element (52) is damaged (58), the repair element (56) can be inserted into the corresponding attaching device (57), wherein said repair element (56) contains means, in conjunction with certain not damaged parts of the holding device, for supporting components to the chassis.

5,365,409

INTEGRATED CIRCUIT PACKAGE DESIGN HAVING AN INTERMEDIATE DIE-ATTACH SUBSTRATE BONDED TO A LEADFRAME

Young I. Kwon, San Jose, and Louis H. Liang, Los Altos, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 839,191, Feb. 20, 1993, abandoned.
This application Jun. 4, 1993, Ser. No. 71,921
Int. Cl.[5] H05K *5/02*
U.S. Cl. 361—813 **8 Claims**



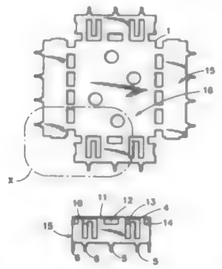
1. An integrated-circuit package configuration for packaging an integrated-circuit die, comprising:
a leadframe having a plurality of inwardly-extending bonding fingers and a central region, said inwardly-extending bonding fingers disposed peripherally surrounding said central region,
an electrically-insulated, heat-conductive die-attach substrate having a first surface disposed in said central region of said leadframe, said integrated-circuit die mounted on said first surface of said die-attach substrate in said central region of said leadframe, said inwardly extending bonding fingers attached to the periphery of said die-attach substrate, such at said integrated circuit die disposed on said first surface in said central region of said die-attach substrate is peripherally surrounded by said inwardly extending bonding fingers,
a plurality of electrically conductive, one-piece elongated bonding traces formed on said first surface of said electrically-insulated, heat-conductive die-attach substrate, said conductive, one-piece elongated traces having first and second ends, said first ends of said traces located in said central region, said traces extending from said central region of said die-attach substrate towards said inwardly-extending bonding fingers such that said second ends of said traces are proximate to a respective end of said inwardly-extending bonding fingers, said conductive one-piece elongated traces each providing a respective intermediate attachment area for attachment of respective bonding wires which extend between bonding pads on said integrated-circuit die and said conductive traces,
means for electrically connecting each of said bonding traces to a corresponding bonding finger of said leadframe,
wherein said means for electrically connecting each of said bonding traces to a corresponding bonding finger of said leadframe includes second bonding wires respectively connected between a bonding trace and a corresponding bonding finger.
wherein said conductive traces extend from said central region of said die-attach substrate such that said integrated-circuit die overlies said conductive traces while still providing an exposed portion of said conductive traces as a respective intermediate attachment area for said respective bonding wires.

5,365,410

ELECTROMAGNETIC COMPATIBILITY ENCLOSURE

Pekka Louka, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Oct. 19, 1992, Ser. No. 963,418
Claims priority, application Finland, Oct. 22, 1991, 917978
Int. Cl.[5] H05K *9/00*
U.S. Cl. 361—816 **11 Claims**



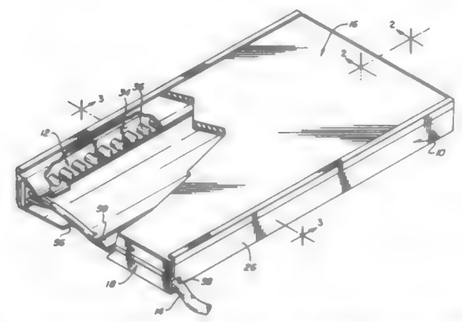
1. An electromagnetic compatibility enclosure with side walls (15) and a cover (16) used for providing component protection in an electrical apparatus, characterized in that the side walls (15) and the cover (16) are formed of a same plate preform by bending, and that there is an arrangement in a bending area (3) between the cover (16) and the side walls (15) for opening and closing the enclosure (4), wherein the arrangement on three sides between the cover and the side walls comprises necks (7, 11) and openings (8, 12, 13, 14) between the necks and, at least a part of the openings are made in a U-form (13), so that strips (10) formed thereby can be bent to form brackets for a cable passing along an end of the enclosure (4).

5,365,411

EXIT SIGNS WITH LED ILLUMINATION

David J. Rycroft, Unionville, and Abi F. Madadi, Scarborough, both of Canada, assignors to Kaufel Group Ltd., Scarborough, Canada

Filed Jan. 6, 1993, Ser. No. 1,393
Int. Cl.[5] F21V *19/04;* **G09F** *13/18*
U.S. Cl. 362—20 **21 Claims**



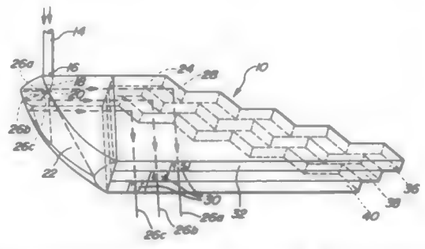
1. A light unit for use in lighted sign assemblies comprising:
(a) a housing having;
(i) a rear wall,
(ii) upstanding side walls along two opposed sides of said rear wall, and
(iii) shield elements extending inwardly from adjacent the upper ends of said side walls;
(b) light arrays extending along said side walls and including a multiplicity of light emitting diodes disposed in spaced relationship above said rear wall and below said shield elements;
(c) power supply means to said diodes; and
(d) diffuser means extending across said housing above said shield elements, said rear wall being configured to reflect light emitted from said diodes relatively uniformly across said diffuser means which contributes to relative uniform transmission of light therethrough.

5,365,412

LOW PROFILE ILLUMINATOR

Prasad M. Koppolu, Troy; Jeyachandrabose Chinniah, both of Troy; Amir Fallah, Holly, and Mahendra Dassanayake, Troy, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1993, Ser. No. 1,591
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **8 Claims**



1. A lighting System, including a remote light source comprising:
an illuminator having a semi-paraboloidal reflector section having a focal axis and a focal point and a plurality of adjacent emitter sections each emitter section having at least one reflective facet;
a light guide for transmitting light from said remote light source to said illuminator;
a non-imaging optics concentrator attached to said light guide and positioned at the focal point of said semi-paraboloidal reflector section and inclined with respect to the focal axis of said semi-paraboloidal reflector section; and
said emitter sections aligned with adjacent emitter sections such that the facets of adjacent emitter sections are staggered whereby the light from each reflective facet is combined to form a beam pattern.

5,365,413

VEHICLE LIGHTING SYSTEM

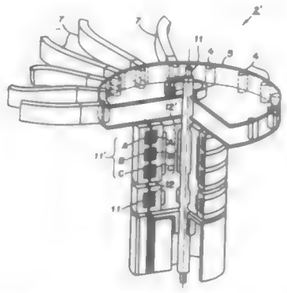
Gert Krammer, Graz, Austria, assignor to Zizala Lichtsysteme GmbH, Wieselburg, Austria

Filed Mar. 8, 1993, Ser. No. 28,102
Claims priority, application Austria, Mar. 9, 1992, 448/92
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **22 Claims**

1. A lighting system comprising:
a central light-producing unit having a defined axis and at least one light source for emitting light in a defined angular zone in a substantially radial direction with respect to said axis,
means for rotating said light source about said axis,
means for energizing said light source to emit light in a pulsating manner as a function of the rotational position of said light source, and
a plurality of light guides, each having an input end arranged

circumferentially on a support means around said light source for receiving and guiding light produced by said light source to a lighting fixture associated with said light guide adjacent an output end thereof,

said means for energizing said light source being coordi-



nated with the rotational position of said light source relative to said light guide input ends, said light source being energized to emit light only when said light source is at a rotational position whereby said angular zone overlaps one of said input end of one of said light guide desired to be illuminated.

5,365,414

DEVICE FOR CONFIRMING OPTICAL-AXIS ADJUSTMENT OF AUTOMOTIVE HEADLAMP

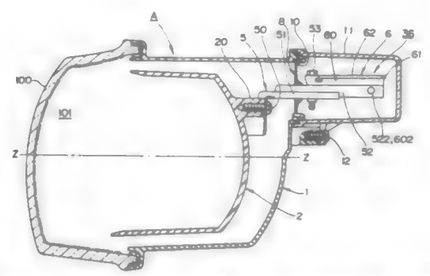
Akira Chikada, Isehara, and Shigeteru Ohgiri, Hadano, both of Japan, assignors to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 970,406

Claims priority, application Japan, Oct. 28, 1991, 3-088280[U]; Nov. 25, 1991, 3-096477[U]; May 8, 1992, 4-030063[U]

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 362—61 **20 Claims**



1. In an automotive headlamp having a mount body, a to-be-adjusted member mounted pivotably on said mount body, a lamp bulb fixed to said to-be-adjusted member and disposed inside a bulb space, and at least one optical-axis adjuster to vertically adjust the optical axis of said headlamp by pivoting said to-be-adjusted member vertically with respect to said mount body,

a device for confirming the adjustment of said optical axis of said automotive headlamp, comprising:

a level consisting of a casing and bubble tube, fixed to said to-be-adjusted member, located outside said bulb space, the vertical adjustment of said optical axis of said to-be-adjusted member being confirmed by visually checking the movement of a bubble in said bubble tube; and

a transparent cap covering said level;

wherein said mount body is a lamp housing and said to-be-adjusted member is a movable reflector;

wherein said level is mounted on said movable reflector and projects out of said bulb space from an opening formed in said lamp housing, and said transparent cap is mounted on a circumferential edge of said opening in said lamp housing and covers said level and opening; and

wherein said transparent cap extends rearward of said lamp housing.

5,365,415

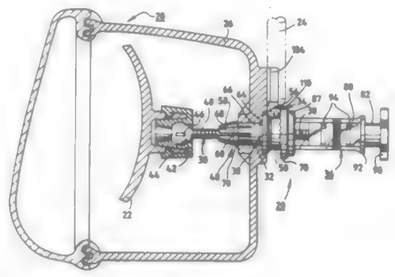
SNAP-FIT RIGHT ANGLE ADJUSTOR MECHANISM

Karl R. Schmitt, Rockford, and Douglas E. Pherigo, Loves Park, both of Ill., assignors to Textron Inc., Providence, R.I.

Filed May 5, 1993, Ser. No. 36,817

Int. Cl.[5] B60Q *1/06*

U.S. Cl. 362—66 **23 Claims**



1. An adjustment assembly for use in an automotive headlamp arrangement to permit pivotal motion of a movable headlamp component, such as a reflector member or the like, wherein the adjustment assembly is adapted to be mounted to a stationary component of the overall headlamp arrangement, to effect pivotal motion of said movable component through which aiming of the headlamp beam is attained, said adjustment assembly comprising: an adjuster screw member having an elongate threaded shank and having one end adapted for operable engagement with the movable component, means for preventing relative rotation of said adjuster screw member, a bushing member adapted to be rotatably engaged in an aperture formed in said stationary component, snap-fit means on said bushing for attaining said rotatable engagement in said aperture, said bushing including an axial bore in which said threaded shank of said adjuster screw member is operatively engaged, a gear member non-rotatably secured to said bushing and including means thereon for engagement by a drive member such that upon rotation of the drive member, rotation is imparted to said bushing by said gear member which will drive said adjustment screw linearly due to the non-rotatable mounting of said adjustment screw, which linear movement can be used to adjust the position of said movable component.

5,365,416

SUN VISOR WITH INTEGRAL CORE

Don M. Peterson, Quincy, Mich., assignor to Crotty Corporation, Quincy, Mich.

Filed Apr. 15, 1992, Ser. No. 868,945

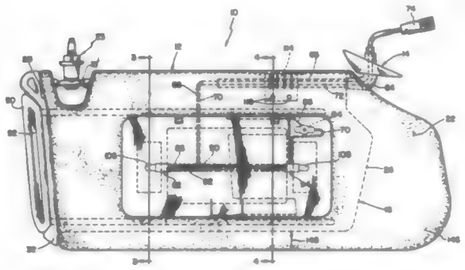
Int. Cl.[5] B60Q *3/02;* **B60R** *21/055, 1/12;* **B60J** *3/02*

U.S. Cl. 362—135 **13 Claims**

9. A sun visor assembly comprising:

a plastic core member having a peripheral edge; and

an outer covering material covering said core member, said covering material comprising a cloth material adhered to a rigid foundation, said covering material being folded over said core member and fastened to itself in such a manner to secure said core member substantially within said covering material, said covering material extending



beyond the peripheral edge of said core member to define the shape of the sun visor.

5,365,417

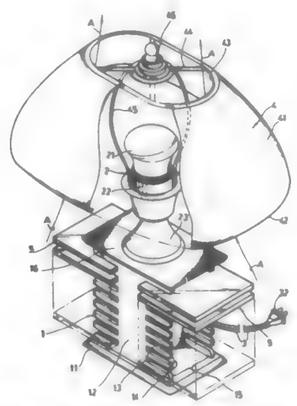
COMPLEMENTARILY AGGREGATED LIGHTING FIXTURE AND RACK APPARATUS

Duncan Chen, P.O. Box 55-1670, Taipei (104), Taiwan, Prov. of China

Filed Mar. 14, 1994, Ser. No. 209,456

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—154 **4 Claims**



1. A lighting fixture and rack apparatus comprising:

a rack means (1) for holding and storing a pluraliy of disk shaped articles (5) thereon;

an illuminating means (2) having at least an illuminator (21) inserted in a socket (22) secured in a connector (23) mounted on an upper portion of the rack means (1);

a power supply means (3) having an electrical cord (31) inserted in a central portion of said rack means (1) for directing a power from a power source to the illuminator (21) for powering and lighting said illuminator (21); and

a lamp shade means (4) mounted on a top portion of said illuminating means (2), whereby upon powering of said illuminator (21), a thermosyphon is formed around said illuminator (21) and said rack means (1) for drafting air streams around said rack means (1), said illuminating means (2) and in said lamp shade means (4) for well ventilation of said disk shaped articles (5) held on said rack means (1).

5,365,418

TRAFFIC LIGHT

James L. Gardner, Turramurra, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

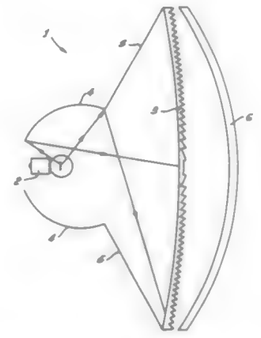
PCT No. PCT/AU91/00197, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO91/18242, PCT Pub. Date Nov. 28, 1991

PCT Filed May 9, 1991, Ser. No. 946,481

Claims priority, application Australia, May 11, 1990, PK 0100

Int. Cl.[5] F21V *13/04*

U.S. Cl. 362—308 **3 Claims**



1. A signalling light including:

a light source;

a fresnel lens having an area to provide an output beam; and

a reflective surface partially surrounding said light source defining an opening directed toward said fresnel lens and having an area substantially less than the area of said fresnel lens so that light that is available for the production of phantom signals is reduced with respect to any external light that enters via the fresnel lens and wherein in use, a portion of said fresnel lens is directly radiated through said opening by light from said source and said reflective surface directs substantially any remainder of the light from said source toward said fresnel lens to substantially evenly illuminate all of the available fresnel lens area, wherein said reflective surface and said lens are fixedly spaced by a nonreflective support means.

5,365,419

SWITCHING DC CONVERTER

Harald Schreiber, Salzkotten, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 9, 1993, Ser. No. 28,276

Claims priority, application European Pat. Off., Mar. 9, 1992, 92104029.1

Int. Cl.[5] H02M *3/335*

U.S. Cl. 363—16 **17 Claims**

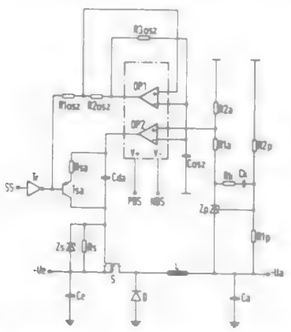
1. A switching DC converter, comprising:

a regulating switch, a freewheeling diode and an LC filter operatively coupled together to form a buck converter;

a square-wave signal generator operatively coupled to the regulating switch that modulates a pulse width of a control pulse signal depending on an output voltage of the DC converter, and given a fixed frequency, that is dynamically and selectively directly coupled to a control input of the regulating switch; and

a Zener diode circuit having a programmable Zener diode, which circuit is coupled between an output of the DC converter and an input of the square-wave signal genera-

tor and is configured to generate a variable reference input for pulse-width-modulation of the square-wave signal



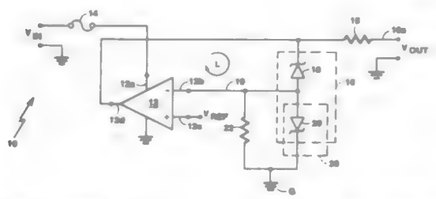
generator that has a proportional relationship to the output voltage of the DC converter.

5,365,420

HIGH EFFICIENCY INTRINSICALLY SAFE POWER SUPPLY

Gary R. Cadman, Norwell, Mass., assignor to Scully Signal Company, Wilmington, Mass.

Filed Jun. 14, 1993, Ser. No. 76,812
Int. Cl.[5] H02M *7/10*
U.S. Cl. 363—50 **16 Claims**



6. An intrinsically safe power supply having an output for generating an output voltage with a magnitude and a mechanism for limiting the output voltage in a fault condition, the mechanism including a Zener diode and resistor barrier circuit having a Zener diode connected across the power supply output, the power supply comprising:

a voltage regulator responsive to a feedback signal with a magnitude for producing the output voltage across the Zener diode causing a zener current to flow through the Zener diode, the voltage regulator being constructed so that an increase in the feedback signal magnitude causes the output voltage magnitude to decrease proportionally; and

apparatus responsive to the zener current for generating the feedback signal.

5,365,421

PULSE TRANSFORMER HAVING PLURAL SIMULTANEOUSLY OPERABLE PRIMARY WINDINGS AND A SINGLE SECONDARY WINDING

Gary B. Eastman, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 990,227, Dec. 14, 1992, abandoned. This application Jan. 11, 1994, Ser. No. 182,538
Int. Cl.[5] H02M *7/42*
U.S. Cl. 363—71 **12 Claims**

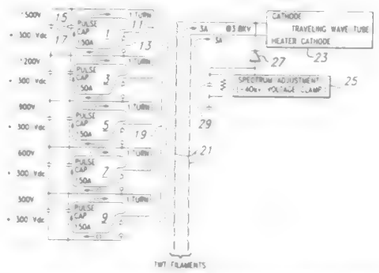
1. A pulse transformer circuit which comprises:

(a) a transformer core having a plurality of individual primary windings and a secondary winding coupled thereto;

(b) a plurality of primary circuits, each of said primary circuits coupled to a different one of said primary windings, each of said primary circuits comprising:

(i) a switch in series with said primary winding;

(ii) a capacitor coupled across said primary winding and said switch;



(iii) a voltage source coupled across said capacitor;

(c) a load circuit coupled across said secondary winding; and

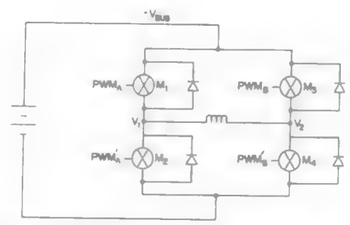
(d) a negative high voltage clamp circuit coupled to said load circuit to minimize voltage overshoot in said secondary winding.

5,365,422

PULSE-WIDTH MODULATED CIRCUIT FOR APPLYING CURRENT TO A LOAD

Eric C. Close, Valley Forge; Jerry K. Goff, Doylestown, and Donald A. Yost, Willow Grove, all of Pa., assignors to Performance Controls, Inc., Horsham, Pa.

Filed Jun. 1, 1993, Ser. No. 69,789
Int. Cl.[5] H02M *3/24;* **H02P** *5/28*
U.S. Cl. 363—98 **11 Claims**



1. A circuit for applying current to a load, the circuit comprising:

a) a power supply,

b) four switches, all of the switches having at least two terminals, one terminal of each switch being connected to the power supply and the other terminal being connected to the load, wherein the switches comprise means for defining paths for current from the power supply, to the load, and back to the power supply, and wherein the switches also comprise means for defining at least one closed path for current flow, wherein said closed path excludes the power supply, and

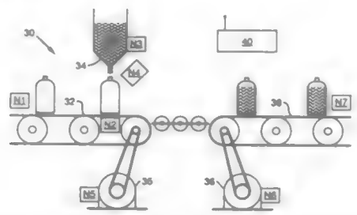
c) means for generating pulse-width modulated signals, wherein said signals control the switches, and wherein the signals are arranged such that they alternate between providing a path for current from the power supply through the load and back to the power supply, and establishing said closed path which excludes the power supply, wherein there are at least two independent pulse-width modulated signals for controlling the switches.

5,365,423

CONTROL SYSTEM FOR DISTRIBUTED SENSORS AND ACTUATORS

Sujeet Chand, Westlake Village, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Jan. 8, 1992, Ser. No. 818,008
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—140 **10 Claims**



1. A decentralized system for monitoring and controlling a dynamic process, comprising:

a plurality of distributed control elements, each of said control elements having at least two states;

a communication link connecting at least selected ones of said control elements; and

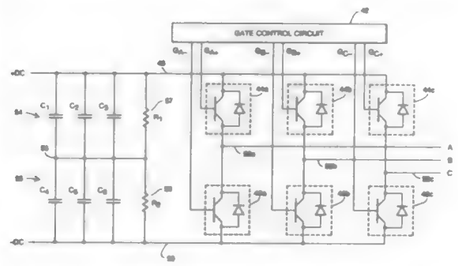
a plurality of microprocessors corresponding to said plurality of control elements, each of said microprocessors dedicated to a corresponding one of said control elements for time-stamping state changes of said one control element; communicating said time-stamped state changes to selected others of said control elements; storing a sequence function associated with said one control element, said sequence function comprising a sequence of at least one other control element state change defining an event signature for said one control element to change state; computing an expectation function for determining a likelihood of said one control element to change state, said expectation function computed from said sequence function; and evaluating state changes to identify malfunctions of said one control element based on said state change likelihoods determined by said expectation function.

5,365,424

HIGH POWER LAMINATED BUS ASSEMBLY FOR AN ELECTRICAL SWITCHING CONVERTER

David Deam, San Ramon, and William L. Erdman, Brentwood, both of Calif., assignors to Kenetech Windpower, Inc., Livermore, Calif.

Continuation-in-part of Ser. No. 728,112, Jul. 10, 1991, Pat. No. 5,172,310. This application Dec. 15, 1992, Ser. No. 990,681
The portion of the term of this patent subsequent to Dec. 15, 2009, has been disclaimed.
Int. Cl.[5] H02M *1/10;* **H01B** *5/00*
U.S. Cl. 363—144 **4 Claims**



1. A low impedance laminated bus assembly for a high power switched converter that has a plurality of switch pairs including a −DC switch and a +DC switch for high speed switching to convert between AC power on an AC power line that has a plurality of phases and DC energy storage device that has a +DC side and −DC side, said laminated bus assembly comprising:

a first conductor plane having a plurality of AC bar conductors positioned thereon, including an AC bar conductor for each phase of AC power;

a second conductor plane including a −DC bar conductor positioned thereon;

a third conductor plane including a +DC bar conductor positioned thereon;

a plurality of dielectric layers, each layer laminated between two of the first, second, and third planes;

a −DC coupling means for coupling the −DC bar conductor to the −DC side of the DC power;

a +DC coupling means for coupling the +DC bar conductor to the +DC side of the DC power;

a +AC switch coupler for coupling each +AC bar conductor to a respective +DC switch in each of the plurality of switch pairs;

a −AC switch coupler for coupling each −AC bar conductor to a respective −DC switch in each of the plurality of switch pairs;

a first switch coupler for coupling the −DC bar conductors to the −DC switch in each of the plurality of switch pairs; and

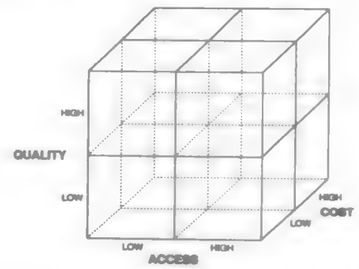
a second switch coupler for coupling the +DC bar conductor to the +DC switch in each of the plurality of switch pairs.

5,365,425

METHOD AND SYSTEM FOR MEASURING MANAGEMENT EFFECTIVENESS

Michael J. Torma, Dallas, Tex.; Bernard W. Galing, Papillion, Nebr.; Robert J. Palmer, Omaha, Nebr., and Suzanne K. S. West, Bellevue, Nebr., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 22, 1993, Ser. No. 52,402
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—401 **18 Claims**



1. A process for evaluating effectiveness of service among a set of treatment facilities, said process comprising the steps of:

gathering data quantifying quality, cost, and access performance characteristics of each of the treatment facilities;

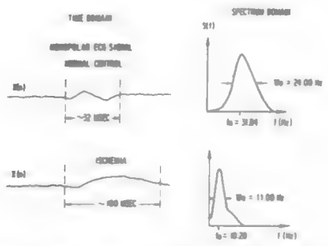
displaying the quality, cost and access performance characteristics simultaneously on a graph to indicate thereby strong and weak quality, cost and access performance characteristics; and

identifying the strong and weak quality, cost and access performance characteristics of each treatment facility.

5,365,426
ADVANCED SIGNAL PROCESSING METHODOLOGY FOR THE DETECTION, LOCALIZATION AND QUANTIFICATION OF ACUTE MYOCARDIAL ISCHEMIA

John H. Siegel, Baltimore, Md., and Chrysostomos L. Nikias, Needham, Mass., assignors to The University of Maryland, Baltimore, Md.

Continuation-in-part of Ser. No. 25,896, Mar. 13, 1987, Pat. No. 4,974,162. This application Sep. 21, 1990, Ser. No. 586,108
Int. Cl.[5] G06F *15/00;* **A61B** *5/04*
U.S. Cl. 364—413.06 **14 Claims**

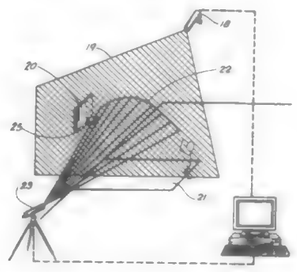


1. A method of detecting myocardial ischemia from a time-domain ECG signal X(n); n=0,1, . . . , N, where N is an integer, comprising the steps of:
providing an ECG sensor;
detecting said ECG signal from said ECG sensor;
generating a decision variable from said ECG signal;
comparing said decision variable to a histogram of previously obtained sensor signal data to obtain a myocardial ischemia quantification index corresponding to a probability of ischemia; and
comparing said quantification index to a selected value to determine the presence of myocardial ischemia.

5,365,427
METHOD AND APPARATUS FOR INDICATING THE OPTIMAL SHOT PATH OF A BASKETBALL

Gerard C. Soignet, 110 Isabelle Pl., Thibodaux, La. 70301, and Wyndham C. Payne, 300 Ellen St., Ama, La. 70031

Continuation-in-part of Ser. No. 818,828, Jan. 10, 1992. This application Feb. 10, 1993, Ser. No. 16,028
Int. Cl.[5] G06F *15/44*
U.S. Cl. 364—410 **10 Claims**

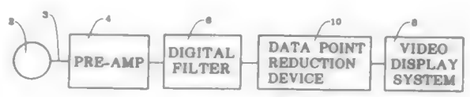


1. A computer implemented method for training a player to shoot a ball at a target along an arcuate optimal shot trajectory, comprising the steps of:
a. using a computer for calculating an optimal shot path trajectory relative to said players location, said optimal shot path trajectory situated along an arcuate path running for generally the players point of release to generally said target;
b. providing shot path indicia means for visually indicating said arcuate path, wherein indicating said accurate path further comprises the sub steps of:
i. providing a first visible light path forming a flat vertical plane running in mid-air from the target to the player's point of release;
ii. providing a second visible light path forming an arcuate plane, situated along said arcuate path comprising said optimal shot path;
iii. intersecting said first and second visible light paths, indicating in mid-air said optimal shot path trajectory,
c. aiming and shooting said ball along said intersection of said first and second light sources.

5,365,428
DEVICE AND METHOD FOR REDUCING NUMBER OF DATA SAMPLE POINTS SENT TO A VIDEO DISPLAY SYSTEM

Victor M. dePinto, Kirkland, Wash., and Curtis D. Kinghorn, Ferguson, Mo., assignors to Quinton Instrument Company, Seattle, Wash.

Filed Jan. 21, 1992, Ser. No. 822,781
Int. Cl.[5] G06F *15/42;* **A61B** *5/0452*
U.S. Cl. 364—413.06 **23 Claims**

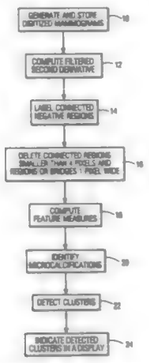


1. A device for converting an input digital electrocardiograph (ECG) signal sampled at a first rate to an output digital ECG signal sampled at a second rate where the first rate is higher than the second rate, the output signal made of a series of representative amplitude values for further processing or display, the output signal being representative of the input signal presented to the device, the input signal made up of a series of N sampled input amplitude values X_n (n−1 to N), the output signal preserving the maximum and minimum amplitudes of the input signal on the range of the sampled input amplitude values X_n, the output signal presented to an output terminal, the device comprising:
a) means for extracting seriatim N sample amplitude values X_n from an input signal and storing said sample input amplitude values X_n in an electronic memory means, said N sampled input amplitude values X_n having a first amplitude end point and a second amplitude end point at X_1 and X_N, respectively, and a middle sample;
b) means, implemented on a central processing unit, for determining the shape of a curve formed by plotting said sample input amplitude values versus an indicia representing the order that the sampled input amplitude values were sampled and thereafter sequentially connecting said plotted input amplitude values;
c) means for transferring the amplitude value of said middle sample to the output terminal if both the maximum and minimum amplitude values of said sample group appear at said first and second end points, regardless of order;
d) means for transferring the minimum amplitude value of said sample group to the output terminal if said curve is concave shaped; and,
e) means for transferring the maximum amplitude value of said sample group to the output terminal if said curve is convex shaped.

5,365,429
COMPUTER DETECTION OF MICROCALCIFICATIONS IN MAMMOGRAMS

Charles S. Carman, Ossining, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jan. 11, 1993, Ser. No. 3,071
Int. Cl.[5] G06F *15/00;* **A61B** *6/04*
U.S. Cl. 364—413.13 **4 Claims**



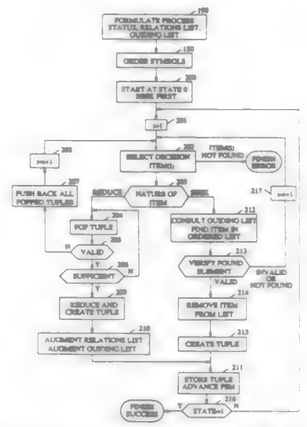
1. A method for aiding detection of cancer, comprising:
generating a radiologic image of a region of internal human anatomy by detecting radiation exiting from said region, said image comprising a two dimensional array of pixel positions having respective digitized intensity values; storing said image in a digital storage device; and automatically performing the following steps with a computer having access to the storage device:
computing filtered second spatial derivative of intensity values for pixel positions of the radiologic image, in a manner which preserves the locations of edges of any spots in said image different in intensity from their surrounds as zero crossings in values of said second derivative;
identifying one or more spots at pixel positions of the radiologic image as a function of the filtered second spatial derivative;
computing a plurality of measures of features of the identified one or more spots, said plurality of measures being indicative of at least shape and edge gradient of said spots; and
based on a determination from said measures of features computed, identifying which of said spots correspond to objects of a type associated with malignancy.

5,365,430
METHOD FOR PARSING IMAGES

Hosagrahar V. Jagadish, Berkeley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 25, 1991, Ser. No. 720,318
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **6 Claims**

1. A method carried out by a computer including a memory and a processing unit, for arranging a set of symbols in accordance with a grammar, which symbols are stored in said memory, said method comprising the steps of:
the processing unit choosing a symbol from said set of symbols and forming with said symbol a current partial expression, and
the processing unit iteratively executing, until all symbols stored in said memory are selected, the steps of
searching the set of symbols according to a preselected order in the course of the step of searching, selecting the first symbol that meets a selectability criterion which is dependent on the current partial expression and the grammar, and

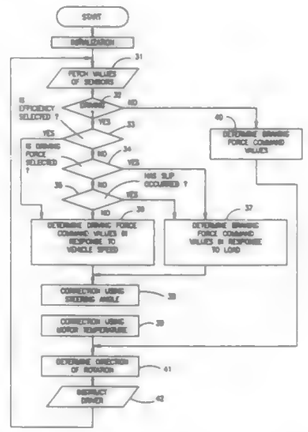


associating the selected symbol with the current partial expression to form a new current partial expression.

5,365,431
CONTROL OF ELECTRIC VEHICLE MOTORS RESPONSIVE TO DETECTED VEHICLE SPEED AND REQUIRED TOTAL DRIVING FORCE

Yukihiro Minezawa; Mutsumi Kawamoto, both of Tokyo; Hidemitsu Inagaki, Nishio, and Yutaka Hotta, Chiryu, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Apr. 24, 1991, Ser. No. 690,834
Int. Cl.[5] B60L *15/20*
U.S. Cl. 364—424.01 **11 Claims**



1. An electric motor vehicle having a plurality of motors mounted thereon as a driving power source, comprising:
speed detecting means for detecting a speed of the electric motor vehicle;
determining means for determining total driving force required for the electric motor vehicle;
calculating means for determining an individual driving force value for each of the plurality of motors in accordance with two separate inputs to said calculating means representative, respectively, of the detected speed and the

determined total driving force, with a difference between an individual driving value for one wheel and an individual driving force value for another wheel being determined by values of both of said two inputs; and

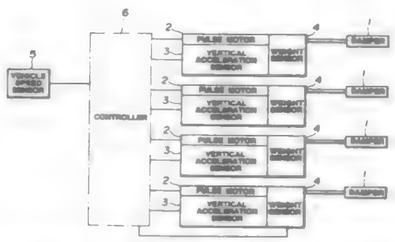
control means for individually controlling each of said motors on the basis of the individual driving force values determined by said calculating means.

5,365,432

SYSTEM AND METHOD FOR OPTIMALLY CONTROLLING DAMPING FORCE CHARACTERISTICS OF FRONT AND REAR SUSPENSION UNITS OF FOUR-WHEELED VEHICLE

Shinobu Kakizaki, and Makoto Kimura, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Nov. 27, 1991, Ser. No. 798,888
Claims priority, application Japan, Nov. 30, 1990, 2-338747
Int. Cl.[5] B60G *17/01*
U.S. Cl. 364—424.05 **13 Claims**



1. A damping force controlled suspension system for an automotive vehicle, comprising:

a) a plurality of suspension units, each suspension unit being intervened between one of front and rear tire wheels and vehicular body and having relatively displaceable sprung mass member and unsprung mass member;

b) damping force coefficient changing means, installed between the sprung mass member and unsprung mass member in each suspension unit, responsive to an input change control signal for changing a damping force acted upon a direction of relative displacement between the sprung mass member and unsprung mass member at a multiple number of stages;

c) detecting means, installed on one of the front wheel positions and on one of the rear wheel positions, for detecting a factor of determining a vehicular behavior and outputting signals indicative thereof;

d) controlling means responsive to the signals derived from the detecting means for outputting the change control signal to each damping force coefficient changing means so that the damping force generated by the damping force coefficient changing means is changed on the basis of the signals derived from the detecting means;

e) time difference setting means for deriving a time difference between a time at which the front wheels have passed on a road surface and a time at which the rear wheels have passed on the same road surface;

f) correction means for deriving a correction value corresponding to a difference between a damping force required to obtain an optimum damping force in the front wheel suspension units and a damping force actually generated in the front wheel suspension units; and

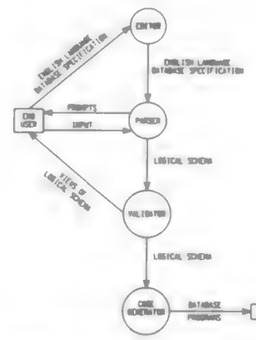
g) rear wheel suspension controlling means for deriving an optimum damping force on the basis of the correction value past by the derived time difference and the present input signals derived from the detecting means placed on the rear wheel positions and for outputting the change control signal to the damping force coefficient changing means placed in the rear wheel suspension units when deriving the optimum damping force.

5,365,433

SYSTEM FOR AUTOMATICALLY PROGRAMMING A FUNCTIONAL DATABASE

Geoffrey D. Steinberg, 1928 Carlton Dr., and Robert H. Faley, 6212 Third Avenue, both of, Kent, Ohio 44240

Filed Jul. 24, 1992, Ser. No. 919,707
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **22 Claims**



1. A system for automatically creating a relational database from a string of words, the string of words forming a substantially grammatically complete sentence in which the words have a certain relationship to one another, the string of words including a subject noun, a verb, and at least one descriptive noun following the verb, said system comprising:

a terminal which receives input data from a user and displays output data to the user; and

a processing unit which processes the data input by the user and generates the data to be output to the user, said processing unit comprising:

an editor which inputs a string of words from a user at said terminal and displays it to the user at said terminal;

a parser which receives the inputted string of words from said editor, determines if the string of words includes a subject noun, a verb, and at least one descriptive noun following the verb, analyzes the string of words to determine the relationship among the words, and generates a logical schema; and

a database generator which receives the generated logical schema from said parser and programs a database containing a file and at least one field linked together in accordance with the logical schema.

5,365,434

BOOK ENHANCER

Vincent D. Figliuzzi, fort Atkinson, Wis., assignor to Carolyn E. Carlson, Chicago, Ill. and Linda J. Figliuzzi, Markesan, Wis.

Filed Jun. 4, 1993, Ser. No. 70,911
Int. Cl.[5] G06F *3/14, 15/40*
U.S. Cl. 364—419.13 **26 Claims**

1. A system for assisting understanding of a book being read by an individual comprising:

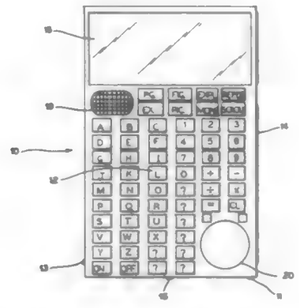
first electrical storage means interchangeably storing portions of the book for subsequent access;

second electrical storage means storing information relating to a page of the book;

input means inputting a page number of the book;

means for selecting a segment of the portion of the book after the inputting of the page number;

matching means electrically and operatively connected to the means for inputting, the first electrical storage means, the second electrical storage means and the means for selecting, the matching means searching the segment on the page number with the portions and the information in the first electrical storage means and the second electrical storage means, respectively, resulting in an identification; and



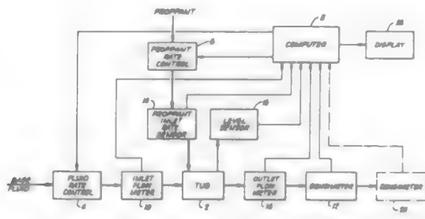
output means outputting the identification, the means for outputting electrically connected to the matching means.

5,365,435

SYSTEM AND METHOD FOR QUANTITATIVE DETERMINATION OF MIXING EFFICIENCY AT OIL OR GAS WELL

Stanley V. Stephenson, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 19, 1993, Ser. No. 19,959
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—420 **13 Claims**



1. A quantitative mixing efficiency determination system for controlling mixing at an oil or gas well site, comprising:

a mixing system disposed at an oil or gas well site;

means, connected to said mixing system, for sensing a plurality of actual characteristics of said mixing system;

means for defining at the oil or gas well site a predetermined mathematical model of said mixing system and for providing at the oil or gas well site a numerical ideal output characteristic of said mixing system in response to said plurality of actual characteristics of said mixing system sensed at the oil or gas well site;

means, connected to said mixing system, for sensing an actual output characteristic of said mixing system and quantifying said sensed actual output characteristic; and

means, connected to said means for defining and providing and to said means for sensing an actual output characteristic, for comparing said numerical ideal output characteristic and said quantified actual output characteristic at the oil or gas well site to determine how closely the actual output characteristic corresponds to the ideal output characteristic wherein:

said means for defining and providing includes a digital computer disposed at the well site and programmed with at least one equation implementing said mathematical model;

said mixing system includes a mixing tub wherein at least a first material and a second material are mixed;

said means for sensing a plurality of actual characteristics includes:

a first inlet sensor monitoring said first material;

a second inlet sensor monitoring said second material; and

a level sensor monitoring a level of mixture in said tub;

said means for sensing an actual output characteristic includes an outlet sensor monitoring the outlet flow of the mixture from said tub; and

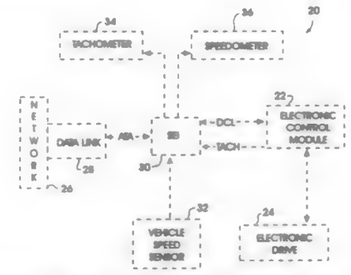
wherein said sensors provide respective signals to said computer so that signals from said first inlet sensor, said second inlet sensor and said level sensor define values used in said at least one equation for computing said numerical ideal output characteristic and so that a signal from said outlet sensor defines a value for said quantified actual output characteristic.

5,365,436

ELECTRONIC MANAGEMENT SYSTEM FOR HEAVY-DUTY TRUCKS

David A. Schaller, Fort Wayne, Ind.; Richard S. Kroll, Aurora; Zbigniew F. Kosobucki, Chicago, both of Ill.; Eric T. Swenson, Fort Wayne, Ind.; Charles R. Cornell, Naperville, and Gregory L. Pence, Lisle, both of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jan. 14, 1993, Ser. No. 4,344
Int. Cl.[5] G06F *13/00;* **B60Q** *1/00*
U.S. Cl. 364—424.03 **11 Claims**



1. An on-board electronic data management system in an automotive vehicle that is powered by an engine comprising:

A) a data link that serves the vehicle;

B) an electronic engine management system, comprising its own microprocessor that services the engine and comprises means for transceiving data in a particular electronic format that is different from an electronic data format of said data link; and

C) a module comprising its own microprocessor that interfaces said data link and said electronic engine management system to provide bi-directional through-transmission of data between said data link, and said electronic engine management system, and that further comprises,

1) means for receiving data in said particular electronic format from said electronic engine management system, for translating the received data into the electronic format of said data link, and for transmitting the translated received data to said data link, and

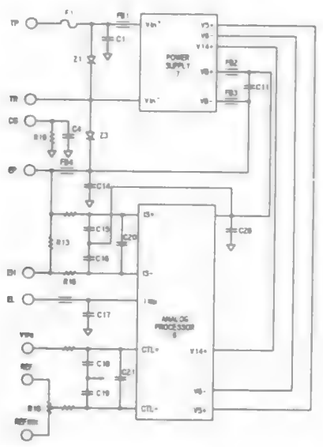
2) means for receiving data from said data link in the electronic format of the data link, for translating the last-mentioned received data into said particular electronic format of said electronic engine management system, and for transmitting the last-mentioned translated received data to said electronic engine management system.

5,365,437

INTERNAL LINE HYDRAULIC FLUID PRESSURE TRANSMISSION RECALIBRATION UNIT

Peter T. Cunningham, and James H. Rowlee, both of Pasadena, Calif., assignors to Gale Banks Engineering, Azusa, Calif.

Filed Jul. 2, 1991, Ser. No. 725,058
Int. Cl.[5] G06F *15/20*; B60K *41/08*
U.S. Cl. 364—424.1 **9 Claims**



1. A method for recalibrating internal hydraulic fluid pressure of an electronically controlled transmission comprising the steps of:

(a) monitoring a control signal transmitted by an electronic control system to an electronic pressure valve;

(b) monitoring an engine load control signal;

(c) generating a first electronic signal proportional to said control signal;

(d) generating a second electronic signal proportional to said engine load control signal;

(e) multiplying said first electronic signal by said second electronic signal to obtain a product;

(f) generating an injection signal proportional to said product when said first and second electronic signals both have positive values; and

(g) injecting said injection signal into a feedback signal transmitted from said electronic pressure valve to said electronic control system.

5,365,438

AUDIBLE AND VISUAL FEEDBACK FOR USER STIMULATED SELF-TEST DIAGNOSTICS

Clair E. Mitchell, Detroit; Karl W. Wojcik, Sterling Heights; David J. Rutkowski, Grosse Ile; Peter Langer, Troy, and Paul C. Dara, Warren, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 8, 1993, Ser. No. 1,966
Int. Cl.[5] G01M *15/00*
U.S. Cl. 364—424.03 **10 Claims**

1. A self-diagnostic method for determining operating faults in an automotive electrical system of the type having,

a plurality of state sensors each for generating a corresponding sensing signal when changed between two or more states,

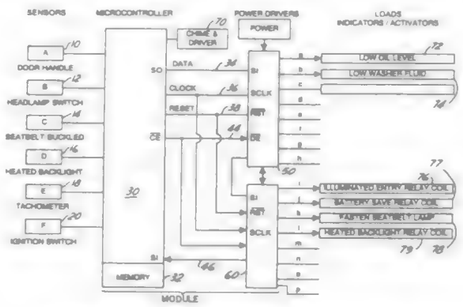
a master controller for receiving the sensing signals from the sensors and responsive thereto generating at least one corresponding controller signal,

a plurality of loads comprising either indicators or actuators, with each load for being actuated responsive to the stimulation of a corresponding one or more of the sensors, with at least one of the indicators also being designated as a first confirming indicator and at least another one of the indicators also being designated as a second confirming indicator,

a plurality of power drivers each operatively coupled to the master controller and between a source of electrical energy and a corresponding one of the loads for coupling power thereto responsive to receiving a corresponding one of the controller signals,

wherein the self-diagnostic method includes the preliminary step of mechanically actuating a selected one of the sensors for placing the master controller out of an operating mode and into a test mode in which the first and second confirming indicators are actuated responsive to the first and second controller signals, but not in the operating mode, and further including the steps of:

a. mechanically actuating a selected one of the sensors and



responsive thereto generating a corresponding sensing signal,

b. electrically actuating the first confirming indicator responsive to the master controller receiving and processing the corresponding sensing signal from the actuated sensor, and

c. electrically actuating the second confirming indicator responsive to the master controller confirming that the power driver has coupled power to its corresponding load,

whereby the first confirming indicator will confirm that the corresponding sensing signal from the mechanically actuated sensor has been received and processed by the master controller, and the second confirming indicator will confirm that the master controller has actuated the corresponding power driver.

5,365,439

METHOD AND APPARATUS FOR DETECTING FRICTION COEFFICIENT OF ROAD SURFACE, AND METHOD AND SYSTEM FOR FOUR-WHEEL STEERING OF VEHICLES USING THE DETECTED FRICTION COEFFICIENT OF ROAD SURFACE

Nobuo Momose, and Hiroaki Yoshida, both of Okazaki, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

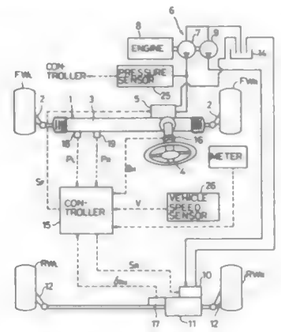
Filed Jul. 5, 1991, Ser. No. 727,232
Claims priority, application Japan, Jul. 6, 1990, 2-179239
Int. Cl.[5] B62D *7/15*; G06F *15/48*
U.S. Cl. 364—424.05 **18 Claims**

1. A method for detecting a friction coefficient of a road surface on which a vehicle runs, the vehicle including front wheels, a steering wheel and a hydraulic power steering unit disposed between the front wheels and the steering wheel, the hydraulic power steering unit assisting the steering wheel in steering the front wheels, the method comprising the steps of:

(a) detecting an operating angle of the steering wheel, a speed of the vehicle and an operating pressure of the hydraulic power steering unit, respectively;

(b) detecting a proper steering situation only when at least one of two conditions is satisfied during operation of the steering wheel, one condition being an increase in steering angle of the front wheels and the other condition being the holding of the front wheels at a steering position beyond a predetermined angle and

(c) calculating a friction coefficient of the road surface on the basis of the data detected in said step (a) only when the proper steering situation is detected in said step (b), the friction coefficient of the road surface being calculated by using relationships of the following three conditions,



(i) a slip angle of the front wheels is determined in accordance with the detected operating angle of the steering wheel, the detected vehicle speed and the friction coefficient of the road surface,

(ii) a cornering force of the front wheels is determined in accordance with the slip angle and the friction coefficient of the road surface, and

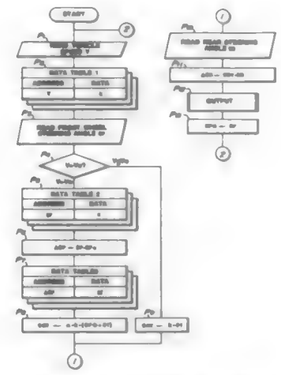
(iii) the cornering force is proportional to the detected operating pressure of the hydraulic power steering unit.

5,365,440

FOUR WHEEL STEERING SYSTEM

Masaru Abe; Yoshimichi Kawamoto; Ikuo Nonaga, and Masataka Izawa, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 800,070
Claims priority, application Japan, Nov. 30, 1990, 2-336801
Int. Cl.[5] B62D *6/00*
U.S. Cl. 364—424.05 **13 Claims**



1. A four wheel steering system for a motor vehicle with steerable front and rear road wheels, comprising:

means for detecting a front wheel steering angle θ_F through which the front road wheels are steered;

means for detecting a vehicle speed V of the motor vehicle;

means for determining a change in the front wheel steering angle;

means for steering the rear road wheels; and

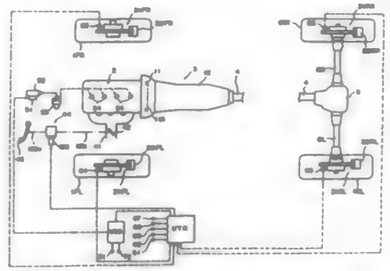
control means for controlling said rear road wheels steering means based on the detected front wheel steering angle and the detected vehicle speed when the front road wheels are steered, said control means comprising means for controlling said steering means to steer the rear road wheels in a direction which is opposite to the front road wheels if the detected vehicle speed is smaller than a predetermined vehicle speed, controlling said steering means to steer the rear road wheels in a direction which is the same as the front road wheels if the detected vehicle speed is larger than the predetermined vehicle speed, controlling said steering means to increase a rear wheel steering angle through which the rear road wheels are steered as the front wheel steering angle increases if a change in the front wheel steering angle is smaller than a predetermined change in the front wheel steering angle, and controlling said steering means to reduce an increase in the rear wheel steering angle if a change in the front wheel steering angle is larger than said predetermined change in the front wheel steering angle.

5,365,441

VEHICULAR WHEEL SPIN CONTROL TECHNIQUES

Anthony T. Ander, Plymouth; Andrew A. Adamczyk; Davorin Hrovat, both of Dearborn, and Lee-Fei Chen, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 31, 1992, Ser. No. 937,333
Int. Cl.[5] B60K *28/16*
U.S. Cl. 364—426.03 **21 Claims**



1. A method of controlling the spin of driven wheels of a vehicle also including nondriven wheels and an engine controlled by spark angle comprising in combination the steps of:

generating a first speed signal representative of the angular speed of said driven wheels;

generating a second speed signal representative of the angular speed of said nondriven wheels;

generating a slip error signal responsive to said first speed signal and said second speed signal;

generating a slip error derivative signal at least approximately proportional to the derivative of said slip error signal;

generating a spark angle control signal responsive to said slip error signal and said slip error derivative signal; and

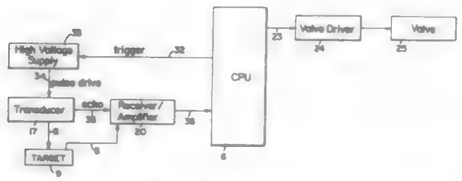
controlling the spark angle in response to said spark angle control signal, whereby the degree of spark angle retardation is altered in order to control the spin of said driven wheels.

5,365,442

SONIC RANGING GRADE LEVEL CONTROLLER

Douglas C. Schmidt, Blaine, Minn., assignor to Thermedics, Inc., Waltham, Mass.

Filed Oct. 21, 1991, Ser. No. 780,149
Int. Cl.[5] A01B *63/114*
U.S. Cl. 364—424.07 19 Claims



1. A method of controlling the position of an implement in relationship to a surface, comprising the steps of:

(a) selecting a desired relationship between the implement and the surface;

(b) emitting a sonic wave;

(c) detecting echoes produced by the reflection of the sonic wave from the surface; and

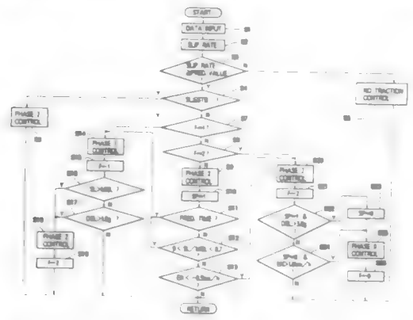
(d) generating a correction signal which causes the implement to alter its relationship to the surface if a difference between a desired distance and a measured distance exceeds a certain amount, wherein a transfer function defining a relationship between the difference and the correction signal magnitude is linear.

5,365,443

TRACTION CONTROL DEVICE FOR VEHICLES

Toshiaki Tsuyama, Higashi; Toru Onaka, Hiroshima; Kazutoshi Nobumoto, Aki, and Makoto Kawamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 7, 1991, Ser. No. 711,876
Claims priority, application Japan, Jun. 7, 1990, 2-149628
Int. Cl.[5] B60T *8/32;* B60K *31/00*
U.S. Cl. 364—426.03 15 Claims



1. A traction control device for a vehicle having drive wheels and passive wheels comprising:

means for detecting a speed of each of the drive wheels of the vehicle;

means for detecting a speed of each of the passive wheels of the vehicle;

means for calculating an actual slip rate of the drive wheels based on the detected speeds of the drive and passive wheels;

means for establishing a first target slip rate for a slip rate engine control and a second target slip rate for a slip rate brake control; and

means for matching the actual slip rate with one of the target slip rates by controlling engine output and braking power;

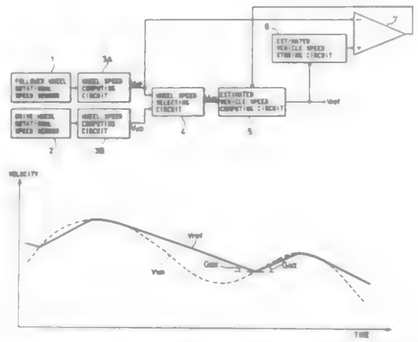
wherein the engine output and the braking power are first controlled based on a time differential of a difference between the actual slip rate and one of the target slip rates at least until the actual slip rate arrives at the one of the target slip rates for the first time, and thereafter controlled based on the difference between the actual slip rate and one of the target slip rates.

5,365,444

METHOD OF ESTIMATING VEHICLE VELOCITY AND METHOD OF AND SYSTEM FOR CONTROLLING BRAKES

Osamu Suzuki; Keishin Tanaka; Tatsuo Hayashi; Takushi Matsuto; Chiaki Kumagai; Takeshi Sakurai, and Atsuo Ota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1992, Ser. No. 958,166
Claims priority, application Japan, Oct. 8, 1991, 3-260853; Oct. 16, 1991, 3-267939; Oct. 24, 1991, 3-278062
Int. Cl.[5] B60T *8/58;* B60K *31/00*
U.S. Cl. 364—426.04 2 Claims



1. A method of estimating a vehicle velocity, said method comprising the following steps:

a first step of determining velocities of drive wheels and follower wheels of said vehicle;

a second step of selecting the fastest velocity of said velocities determined in said first step;

a third step of determining a current estimated velocity $V_{ref(n)}$ of said vehicle based on said fastest wheel velocity selected in said second step; and

a fourth step of repeatedly executing said first through third steps at given time intervals through a (n) and setting the estimated vehicle velocity determined in a previous (n−1) cycle as said current estimated vehicle velocity when said estimated vehicle velocity determined in said third step is faster than said follower wheel velocities determined in said first step and lower than said fastest wheel velocity selected in said second step,

wherein the estimated velocity $V_{ref(n)}$ is determined in said third step as follows:

(i) if said vehicle has not decelerated below a predetermined lower limit deceleration G_{DEC} or accelerated above a predetermined upper limit acceleration G_{ACC}, then

$$V_{ref(n)} = V_{WM(n)}$$

where $V_{WM(n)}$ is a fastest wheel velocity of said drive wheels and said follower wheels,

(ii) if said vehicle has decelerated below said lower limit deceleration, then

$$V_{ref(n)} = V_{ref(n-1)} - \Delta G_{DEC}$$

where $V_{ref(n-1)}$ is an estimated vehicle velocity determined in the previous cycle (n−1), and ΔG_{DEC} is a lower limit of a deceleration in a current cycle, and

(iii) if said vehicle has accelerated above said upper limit acceleration, then

$$V_{ref(n)} = V_{ref(n-1)} + \Delta G_{ACC}$$

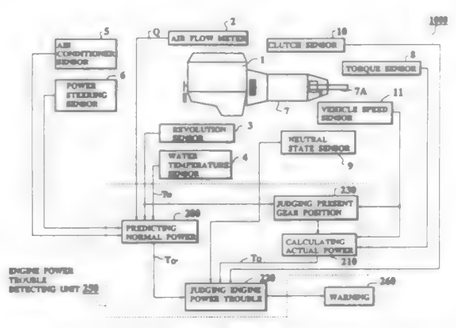
wherein ΔG_{ACC} is an upper limit of an acceleration in said current cycle.

5,365,445

ENGINE POWER TROUBLE DETECTING METHOD AND APPARATUS BY CHECKING ACTUAL ENGINE POWER CONDITION

Satoshi Takizawa, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Aug. 7, 1991, Ser. No. 741,772
Claims priority, application Japan, Aug. 8, 1990, 2-209867
Int. Cl.[5] B60K *41/08;* G07C *5/08*
U.S. Cl. 364—431.01 22 Claims



1. A method for detecting an abnormal power condition in an engine, comprising the steps of:

predicting a power value derived from the engine under a normal state based upon at least a revolution value of the engine and an air intake amount thereof;

calculating an actual power value of the engine based on at least a power value derived from a power shaft of a power transmission system; and

comparing the predicted power value with the calculated actual power value thereby to detect an abnormal power condition occurring in the engine.

5,365,446

SYSTEM FOR INTEGRATED PITCH AND THRUST CONTROL OF ANY AIRCRAFT

Jacques Farineau, and Panxika Larramendy, both of Toulouse, France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

PCT No. PCT/FR91/00533, § 371 Date Jan. 24, 1992, § 102(e) Date Jan. 24, 1992
PCT Filed Jul. 3, 1991, Ser. No. 820,633
Claims priority, application France, Jul. 4, 1990, 90 08479
Int. Cl.[5] G05D *1/08*
U.S. Cl. 364—433 6 Claims

1. A pitch and thrust control system for an aircraft (1), comprising:

(a) first airfoils for pitch control (5, 12) actuated from a first actuator member (14) associated with a first transducer (18) delivering a first electrical signal representative of a first longitudinal parameter setting (Θc));

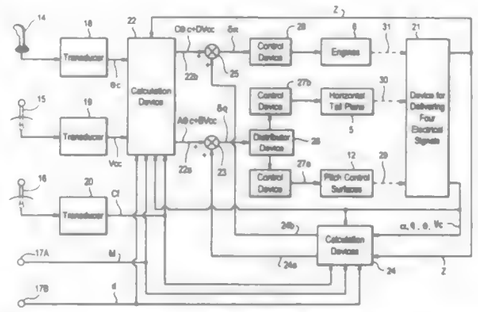
(b) at least one engine (6) controlled from a second actuator member (15) associated with a second transducer (19) delivering a second electrical signal representative of a speed setting (Vcc) for said aircraft;

(c) a plurality of second airfoils (7, 8, 9, 10) for taking up different relative positions as a function of each stage of flight of the aircraft, defining particular aerodynamic configurations, with one or other of said aerodynamic configurations being selected by actuating a third actuator member (16) associated with a third transducer (20) delivering a third electrical signal representative of the selected configuration (Cf);

(d) means (17A) for delivering a fourth electrical signal representative of the mass (M) of said aircraft (1);

(e) means (17B) for delivering a fifth electrical signal representative of the distance (d') along the longitudinal axis (R—R) of said aircraft between the center of gravity (G) of said aircraft and an origin (O);

(f) means (21) for delivering sixth, seventh, eighth, ninth, and tenth electrical signals respectively representative of instantaneous flight altitude (Z), aerodynamic angle of incidence (α), pitching rate (q'), longitudinal trim (Θ), and speed (Vc) of said aircraft;



(g) a first calculation device (22) receiving said first to sixth electrical signals, together with said tenth electrical signal and delivering first and second linear combinations (AΘc+BVcc; CΘc+DVcc) of said first and second electrical signals (Θc) Vcc), with the coefficients (A, B and C, D) given to said first and second electrical signals, respectively, in said first and second linear combinations depending on said third to sixth and tenth electrical signals;

(h) a second calculation device (24) receiving said third to tenth electrical signals and generating third and fourth linear combinations (aα+bq+cΘ+dVc; eα+fq+gΘ+hVc) of said seventh to tenth electrical signals, the coefficients (a, b, c, d; e, f, g, h) given to said seventh to tenth electrical signals, respectively, in said third and fourth linear combinations depending on said third to sixth and tenth electrical signals;

(i) first adder means (23) receiving said first and third linear combinations and adding them to form a pitch first electrical command (δq) applied to said first airfoils (5, 12): and

(j) second adder means (25) receiving said second and fourth linear combinations and adding them to form a thrust second electrical command (δπ) applied to an engine (6) of said aircraft.

5,365,447

GPS AND SATELITE NAVIGATION SYSTEM

Arthur R. Dennis, 2624 Rose Hill Dr., League City, Tex. 77573

Filed Sep. 20, 1991, Ser. No. 763,379
Int. Cl.[5] H04B *7/185*
U.S. Cl. 364—449 5 Claims

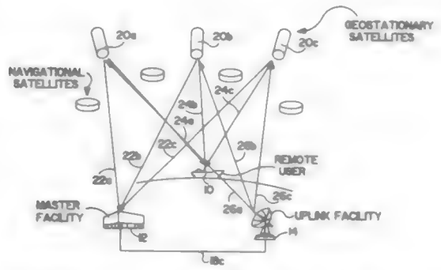
1. A method for determining positional coordinates, comprising the steps of:

transmitting an unmodulated first plurality of signals to a plurality of fixed relays from a control facility;

receiving the unmodulated first plurality of signals from the fixed relays and an unmodulated second plurality of signals from a plurality of navigational satellites at the control facility and at a remote location;

modulating the unmodulated first plurality of signals and the unmodulated second plurality of signals received at the control facility and retransmitting the modulated first plurality of signals and the modulated second plurality of signals to the remote location;

receiving the modulated first plurality of signals and the



modulated second plurality of signals from the control facility at the remote location; and

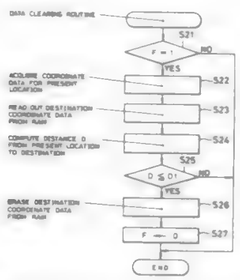
processing the unmodulated first plurality of signals, the modulated first plurality of signals, the unmodulated second plurality of signals, and the modulated second plurality of signals received at the remote location to minimize errors in the data in the unmodulated first plurality of signals and in the modulated first plurality of signals with the data in the unmodulated second plurality of signals and in the modulated second plurality of signals to obtain accurate positional coordinates.

5,365,448

ON-VEHICLE NAVIGATION APPARATUS WITH AUTOMATIC RE-INITIALIZATION FUNCTION

Kenichi Nobe, and Morio Araki, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,645
Claims priority, application Japan, Apr. 12, 1991, 3-079881
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **5 Claims**



1. An on-vehicle navigation apparatus for displaying navigation information from a present location of a vehicle to a destination, comprising:

detection means for detecting present-location coordinate data representing the present location of said vehicle;

means for acquiring destination coordinate data representing said destination in accordance with an operator input and storing said destination coordinate data in a memory;

means for computing a distance from said present location to said destination on the basis of said present-location coordinate data and said destination coordinate data;

discriminating means for discriminating whether the computed distance is greater than a predetermined value;

drive-source start detecting means for detecting start of a drive source of said vehicle and for generating a start detection signal;

means for erasing said destination coordinate data from said memory when said computed distance is judged to be not greater than said predetermined value upon generation of said start detection signal; and

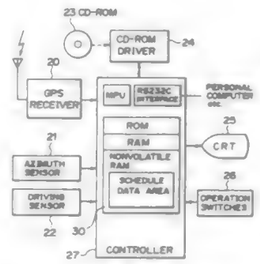
display means for displaying at least one of said present location coordinate data and said destination coordinate data.

5,365,449

NAVIGATION DEVICE

Takashi Kashiwazaki, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 22, 1992, Ser. No. 949,798
Claims priority, application Japan, Sep. 27, 1991, 3-249187
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **21 Claims**



20. A navigation device comprising:

means for measuring a present position of a movable body equipped with said navigation device;

means for displaying map information;

means for storing destination information including at least positional information of a destination to which said movable body is scheduled to move, and an estimated time to arrive at the destination; and

a control means for controlling said displaying means to display the map information, which corresponds to the measured present position, and display the measured present position on the displayed map information, selecting destination information, which corresponds to a destination located in said displayed map information, from the stored destination information, and controlling said displaying means to display the selected destination information on the displayed map information,

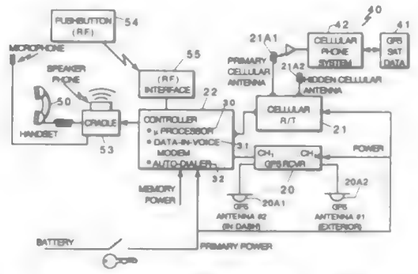
wherein said control means calculates a distance from the measured present position to the destination and a changing rate of the calculated distance, judges whether or not said movable body has passed the destination if the changing rate is within a predetermined threshold range and a minimum value of the calculated distance is smaller than a predetermined threshold value to output a first result of judgment, compares the estimated time and a present time, judges whether or not it has passed the estimated time to output a second result of judgment, and controls said displaying means to change the brightness of the displayed destination information depending on the first and second results of judgment.

5,365,450

HYBRID GPS/DATA LINE UNIT FOR RAPID, PRECISE, AND ROBUST POSITION DETERMINATION

Leonard Schuchman, Potomac, Md.; Ronald Bruno, Arlington, Va.; Robert Rennard, San Martin, Calif., and Charles Moses, Catonsville, Md., assignors to Stanford Telecommunications, Inc., Reston, Va.

Filed Dec. 17, 1992, Ser. No. 992,892
Int. Cl.[5] G01S *5/02;* **G08G** *1/12*
U.S. Cl. 364—449 **11 Claims**



1. In a global positioning system (GPS) in which a plurality earth orbiting GPS satellites transmit position information to mobile radio stations on earth including a Satellite Data Message block, the improvement comprising:

an earth based source of satellite data for all in-view GPS satellites including said Satellite Data Message blocks for each in-view satellite for assisting said mobile radio station to access position information from said satellites, and an earth based communication means coupled to said source,

means coupled to said mobile radio station for connecting to said earth based communication means to said earth-based source for extricating said satellite position data via said non-satellite earth based communication means, and

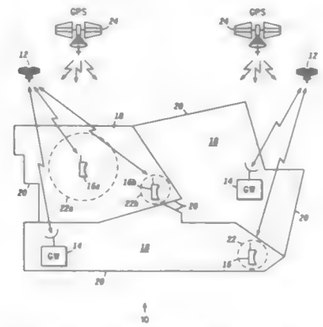
means at said mobile for processing said Satellite Data Message blocks from said earth-based source to enable said mobile radio station to rapidly locate and access position information from said earth orbiting satellite.

5,365,451

MOBILE UNIT TRACKING SYSTEM

Theresa C. Y. Wang, Scottsdale, and Steven H. Moritz, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 803,835, Dec. 9, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 205,753
Int. Cl.[5] H04B *1/00*
U.S. Cl. 364—449 **19 Claims**



1. A method of tracking a mobile unit, said method comprising the steps of:

establishing a communication link with a node of a satellite communication system comprised of a plurality of nodes having movement relative to said mobile unit;

generating at said mobile unit, original location data, said original location data describing an original location of said mobile unit;

sending said original location data from said mobile unit to said one node;

first determining by said communication system, a geo-political jurisdiction in which said mobile unit resides based on said original location;

second determining by said communication system, parameters for said communication link based on restrictions imposed by said geo-political jurisdiction, said parameters including frequency allocation, billing rates and taxes;

calculating by said communication system, a radius determined in part by said mobile unit's proximity to a border of said geo-political jurisdiction in which said mobile unit resides based on said original location of said mobile unit;

receiving at said mobile unit, a data message describing said radius;

defining by said mobile unit, an area around said original location of said mobile unit using said radius;

third determining, by said mobile unit, when said mobile unit is outside of said area by comparing said original location to a current location of said mobile unit; and

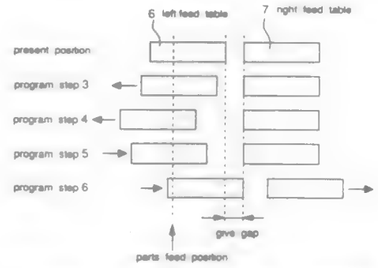
transmitting to said satellite communication system, from said mobile unit when said mobile unit is outside of said area, a current location data message describing said current location of said mobile unit.

5,365,452

PARTS SUPPLY METHOD IN WHICH MOVEMENTS OF PARALLEL SUPPLY TABLES ARE CONTROLLED

Shigeki Imafuku, Kadoma; Noriaki Yoshida, Ikeda; Takeshi Takeda, Toyono, and Takashi Shimizu, Kishiwada, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 24, 1992, Ser. No. 856,650
Claims priority, application Japan, Mar. 28, 1991, 3-064591
Int. Cl.[5] H05K *3/30*
U.S. Cl. 364—468 **1 Claim**



1. A part supply method for controlling a parts supply apparatus having at least adjacent first and second parts supply tables which are spaced apart from each other along a moving direction and which are capable of being moved independently of one another in the moving direction, each of said first and second parts supply tables for setting therein a plurality of adjacent parts supply units, the parts supply apparatus further having a drive device for selectively moving each first and second parts supply table in the moving direction so as to position a desired parts supply unit at a parts take out position to permit parts contained in the desired supply unit to be extracted using an extracting mechanism, wherein, during each of plural successive parts supply operations of said parts supply apparatus, parts are extracted by the extracting mechanism from a parts supply unit position at the parts take out position by movement of one of said first and second parts supply tables, said method comprising:

a first step of determining in advance, based on previously prepared parts supply information, a movement of said first parts supply table during a plurality of successive parts supply operations in which parts are respectively extracted from a plurality of parts supply units of only said first parts supply table;

a second step of determining in advance a movement of said second parts supply table during said plurality of successive parts supply operations, said second step including (a) determining, for each of the plurality of successive parts supply operations, an interval between a current position of said second parts supply table and a position of said first parts supply table determined in said first step, and (b) setting, for each of the plurality of successive parts supply operations, the position of the second parts supply table so as to obtain a given interval between the first and second parts supply tables when the determined interval between the current position of said second parts supply table and the position of said first parts supply table is less than the given interval, and so as to establish the current position of the second parts supply table as the set position of the second parts supply table when the interval between the current position of the second parts supply table and the first supply table is more than the given internal, wherein an unnecessary movement of the second parts supply table is avoided by establishing the current position of the second parts supply table as the set position of the second parts supply table when the interval between the current position of the second parts supply table and the first supply table is more than the given internal; and,

a third step of effecting the plurality of successive parts supply operations in accordance with the advance determined movements of the first and second supply tables.

5,365,453

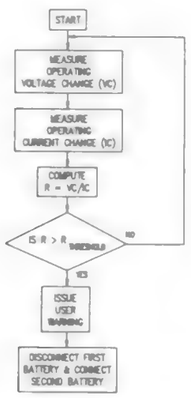
SYSTEM FOR INDICATING A LOW BATTERY CONDITION

Warren W. Startup, and Gregory N. Stewart, both of Austin, Tex., assignors to Dell USA, L.P., Austin, Tex.

Continuation of Ser. No. 656,262, Feb. 14, 1991, Pat. No. 5,268,845. This application Apr. 12, 1993, Ser. No. 46,428

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—481 **18 Claims**



1. A method for detecting a low charge state of a battery connected to a load for supplying power thereto, the method comprising:

measuring a change in the operating voltage of said battery occurring responsive to a change in the power consumption of said load;

measuring a change in the current through said load occurring responsive to said change in load power consumption;

computing a ratio of said battery voltage change to said load current change;

comparing said ratio to a preselected threshold value; and

issuing a user warning signal indicating a low battery when said ratio exceeds said preselected threshold value.

5,365,454

LAYOUT DESIGNING METHOD FOR A SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

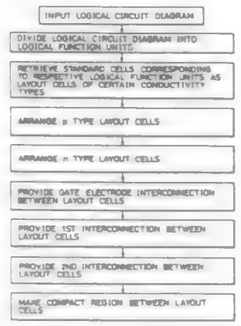
Shinichi Nakagawa, and Hiroyuki Kawai, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 777,704

Claims priority, application Japan, Oct. 18, 1990, 2-281031

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **5 Claims**



1. A layout designing method for a semiconductor integrated circuit device in which a layout of the semiconductor integrated circuit device having predetermined logical functions is designed using standard layout patterns which are designed in advance for respective logical function units, said method comprising the steps of:

dividing a predetermined logical circuit diagram into a plurality of said logical function units;

from a predetermined library, taking out said standard layout patterns, which respectively correspond to said logical function units, such that each of layout patterns is divided into a layout pattern of a first conductivity type and a layout pattern of a second conductivity type;

arranging said layout patterns including a plurality of first semiconductor devices of said first conductivity type in accordance with said logical circuit diagram;

arranging said layout patterns including a plurality of second semiconductor devices of said second conductivity type in accordance with said logical circuit diagram; and

arranging an interconnection pattern for interconnecting said layout patterns in accordance with said logical circuit diagram.

5,365,455

METHOD AND APPARATUS FOR AUTOMATIC NUCLEIC ACID SEQUENCE DETERMINATION

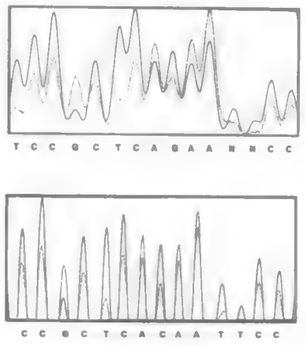
Clark Tibbetts, Nashville, and John M. Bowling, Murfreesboro, both of Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Sep. 20, 1991, Ser. No. 763,457

Int. Cl.[5] G06G *7/58*

U.S. Cl. 364—497 **38 Claims**

1. A method for the nucleic acid sequence determination of a polynucleotide, wherein a nucleic acid sequencing ladder comprises signals corresponding to oligonucleotides formed from the polynucleotide, comprising the step of correlating an intensity variable for each signal in the nucleic acid sequencing ladder with an informative variable for that signal, wherein the informative variable comprises information from at least two



adjacent signals from other than a tri-nucleotide palindrome in the nucleic acid sequencing ladder, such that each signal in the nucleic acid sequencing ladder is identified so as to determine the nucleic acid sequence corresponding to the polynucleotide.

5,365,456

METHOD FOR MODELLING THE ELECTRON DENSITY OF A CRYSTAL

Subramanian Subbiah, Woodside, Calif., assignor to The Board of Trustees of the Leland Stanford University, Palo Alto, Calif.

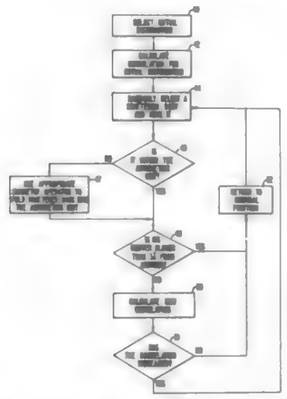
Continuation-in-part of Ser. No. 648,788, Jan. 30, 1991, Pat. No. 5,200,910. This application Jan. 30, 1992, Ser. No. 831,258

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—499 **24 Claims**

MICROFICHE APPENDIX INCLUDED

(4 Microfiche, 240 Pages)



21. In a digital computer, a method for modelling the electron density distribution of a macromolecule in a defined asymmetric unit of a crystal lattice having locations of uniformly diffracting electron density, comprising:

inputting experimental data collected from an X-ray diffraction experiment into the computer.

randomly distributing a plurality of scattering bodies in an asymmetric unit having substantially the same dimensions as the defined symmetric unit; and

repeatedly moving said plurality of scattering bodies to more compact distributions such that the total distance between scattering bodies is decreasing, and determining scattering amplitudes of the scattering bodies in each distribution until reaching a final distribution of scattering bodies, the final distribution having scattering amplitudes having a maximum fit with amplitudes from said experimental data, said final distribution also defining the electron density distribution of the macromolecule in the defined asymmetric unit.

5,365,457

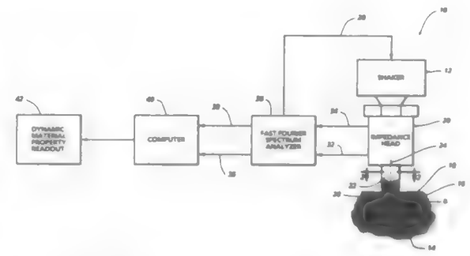
IN SITU DYNAMIC MATERIAL PROPERTY MEASUREMENT SYSTEM

Walter Madigosky, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1992, Ser. No. 963,177

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—506 **15 Claims**



1. A system for measurement of physical characteristics of a material, comprising: a probe having an end tip engageable with the material, shaker means driving the probe for indentation of the material at the end tip, impedance sensing means connected to the probe for monitoring said indentation of the material, analyzer means operatively connecting the impedance sensing means to the shaker means for limiting said indentation of the material by the probe to a frequency range within which material resistance to indentation varies as a time dependent function and computer means connected to the analyzer means for converting said time dependent function into dynamic material property data corresponding to the physical characteristics of the material.

5,365,458

MOTOR ECCENTRICITY MEASURING APPARATUS

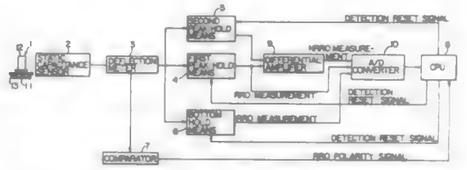
Itaru Tamura, Kyoto, and Akira Toyama, Joyo, both of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan

Filed Mar. 25, 1992, Ser. No. 856,258

Claims priority, application Japan, Mar. 29, 1991, 3-089077; Jul. 4, 1991, 3-190867; Jul. 11, 1991, 3-198549

Int. Cl.[5] G01B *21/20*

U.S. Cl. 364—506 **11 Claims**



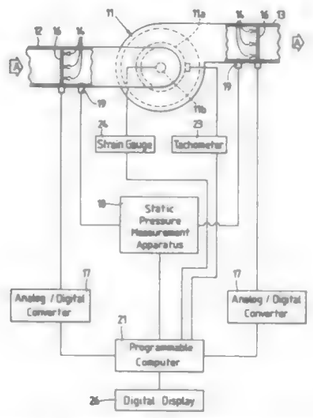
7. A motor eccentricity measuring apparatus comprising:

detecting means for detecting a deflection of the rotating shaft of a motor;

first shift means for shifting-up a detected value of said detecting means to a given positive level;

first peak hold means for holding the peak of the detected value shifted up by said first shift means;
second shift means for shifting-down the detected value of said detecting means to a given negative level;
polarity inverting means for inverting the polarity of the detected value shifted down by said second shift means;
second peak hold means for holding the peak of the detected value polarity inverted by said polarity inverting means; and
calculating means for calculating repeatable runout (RRO) from the peak values held by said first and second peak hold means.

5,365,459
CONTINUOUS STACK FLOW RATE MONITOR
Robert E. Perry, P.O. Box 1607, Pelham, Ala. 35124
Filed Feb. 25, 1992, Ser. No. 840,529
Int. Cl.[5] G01M *19/00*
U.S. Cl. 364—509 **10 Claims**

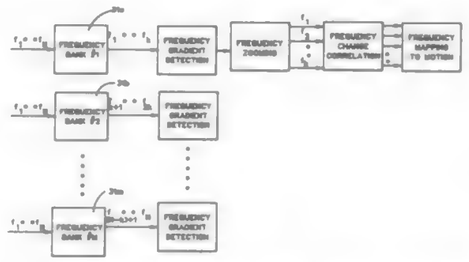


1. Apparatus for calculating and displaying the flow rate of flue gases through a fan in a stack comprising:
(a) first sensing means for sensing average air temperature within a stack on the discharge side of a motor driven fan including a plurality of thermocouples mounted within said stack;
(b) second means for sensing average air temperature within a stack on an inlet side of said fan comprising a plurality of thermocouples mounted within said stack;
(c) means for sensing the pressure at said inlet side of said fan;
(d) means for determining the power output of said motor;
(e) means operatively connected to said first and second temperature sensing means, said pressure sensing means, said power determining means to receive signals derived from the parameters measured thereby for converting said signals to a measurement of the rate of flow of flue gases through said fan based on the formula

$$\text{Fan Flow Rate} = \frac{(P_m)\,(F)\,(C_o)\,T_1\,[(K-1)/K]}{(T_2 - T_1)\,(P_1)}$$

where:
T_1=the inlet temperature in degrees Fahrenheit plus 460° F.,
T_2=the outlet temperature in degrees Fahrenheit plus 460°,
P_1=the inlet static pressure in inches water gauge plus 406.9 inches,
K=the ratio of gas specific heat at constant pressure to constant volume,
T_2-T_1 represents the measured temperature differential of the gas induced through the fan,
F=the rated efficiency of the coupling or the coupling and the motor depending on whether P_m is measured at the output or input of the motor,
P_m =the measured power,
C_o=a conversion constant for converting the measured power to a flow rate; and
(f) means for displaying said stack flow.

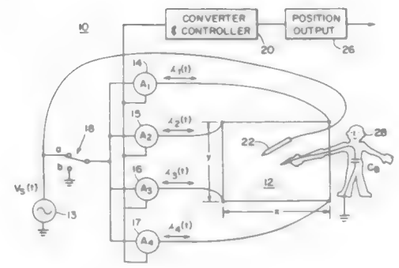
5,365,460
NEURAL NETWORK SIGNAL PROCESSOR
Hwang Chung, Irvine, Calif., assignor to Rockwell International Corp., Seal Beach, Calif.
Filed Aug. 27, 1990, Ser. No. 572,296
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—516 **26 Claims**



1. A processor for detecting target position and motion against a background, comprising:
an array of detectors, wherein each of said detectors produces a pulse train having a frequency within a unique one of a plurality of predetermined frequency ranges;
a communication channel;
a frequency division mutiplexer having input terminals connected to said detectors and an output terminal connected to said communication channel for multiplexing said pulse trains onto said communication channel; and
a processor connected to said communication channel for identifying the frequency range in which a pulse train frequency changes.

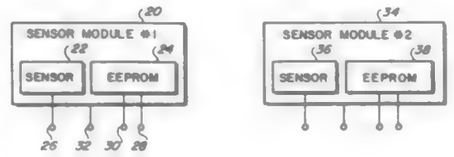
5,365,461
POSITION SENSING COMPUTER INPUT DEVICE
Robert A. Stein, Bridgewater, Mass.; James D. Logan, Windham, N.H., and Charles A. Woringer, Catumet, Mass., assignors to MicroTouch Systems, Inc., Wilmington, Mass.
Filed Apr. 30, 1992, Ser. No. 860,054
Int. Cl.[5] G01B *7/00*
U.S. Cl. 364—550 **31 Claims**

1. A position sensing input device, comprising:
a sensor having on analog sensing surface and including a single layer of one or more conductive sheets;
means for detecting without electromagnetic radiation either a human touch or the touch of an inanimate object or both on said sensor; and



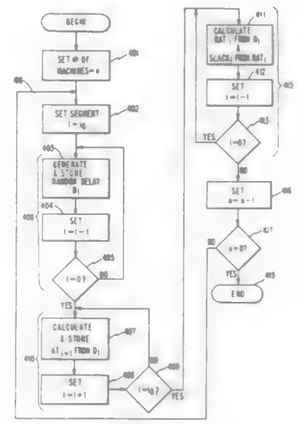
means for discriminating between the two types of touch for allowing input with at least one of an inanimate object and a human touch.

5,365,462
INSTRUMENTATION SYSTEM WITH MULTIPLE SENSOR MODULES PROVIDING CALIBRATION DATE INFORMATION
Ronald V. McBean, Sr., 551 W. Kent Dr., Chandler, Ariz. 85224
Division of Ser. No. 982,309, Nov. 25, 1992. This application Oct. 4, 1993, Ser. No. 130,833
Int. Cl.[5] G06F *13/00*
U.S. Cl. 64—571.04 **7 Claims**



1. An instrumentation apparatus for sensing and measuring at least one parameter, comprising in combination:
a. a first sensor module including a first sensor responsive to a condition for generating a first electrical signal indicative of such condition;
b. a second sensor module including a second sensor responsive to a condition for generating a second electrical signal indicative of such condition;
c. central processor means responsive to electrical signals generated by said first sensor module and by said second sensor module for computing a measurement sensed by said first sensor module and by said second sensor module, said central processor means including date means for identifying the present date;
d. display means coupled to said central processor means for numerically displaying the measurement computed by said central processor means;
e. means for selectively coupling one of said first and second sensor modules to said central processor;
f. each of said first and second sensor modules including calibration date code means for providing to said central processor means information which said central processor means can compare to the present date for detecting that the selected sensor module requires recalibration;
g. said central processor means being responsive to the calibration date code means of the selected sensor module that is coupled to said central processor means for comparing the information provided thereby to the present date, and causing said display means to display warning indicia if the selected sensor module requires recalibration.

5,365,463
METHOD FOR EVALUATING THE TIMING OF DIGITAL MACHINES WITH STATISTICAL VARIABILITY IN THEIR DELAYS
Wilm E. Donath, Pleansantville; Robert B. Hitchcock, and Jeffrey P. Soreff, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1990, Ser. No. 631,827
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—578 **24 Claims**



2. A method of simulating digital machine performance with an apparatus including means for randomly selecting a delay of a particular digital element based upon at least one of a set of correlation factors descriptive of a correlation of delay distributions of said digital element and another digital element, said method including the steps of
applying selected weights to a plurality of selected, normalized, uncorrelated distributions, and
deriving at least two delay distributions as weighted sums of respective ones of said uncorrelated distributions.

5,365,464

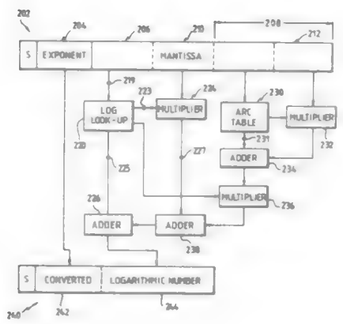
Patent Not Issued For This Number

5,365,465

FLOATING POINT TO LOGARITHM CONVERTER

Keith E. Larson, Stafford, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1991, Ser. No. 814,004
Int. Cl.[5] G06F 7/00
U.S. Cl. 364—715.03 26 Claims



18. An apparatus for converting an n-bit floating point number to a logarithmic representation, the number having a first set of bits assigned to a mantissa, and a second set of bits assigned to an exponent, the logarithmic representation having a characteristic and a fraction, comprising:

a. a first register for storing the number;

b. a converter coupled to the first register, the converter responsive to a third subset of the first set for generating a first logarithm of a third subset of the first set and for generating a slope of a logarithmic function at the first logarithm;

c. a multiplier coupled to the converter and coupled to the first register, the multiplier responsive to a sum of a fourth and fifth subset of the first set and responsive to the slope for generating an interpolated value;

d. an adder coupled to the converter and coupled to the multiplier, the adder responsive to the interpolated value and responsive to the first logarithm for generating the fraction; and

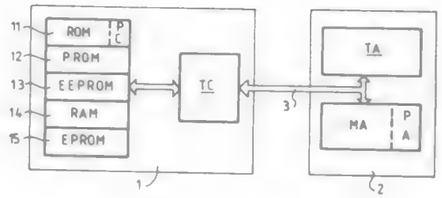
e. a second register coupled to the first register and coupled to the adder, for receiving the second set of bits in a first part and for receiving the fraction in a second part, wherein the logarithmic representation is a combination of the first and second parts.

5,365,466

METHOD FOR GENERATING A RANDOM NUMBER IN A SYSTEM WITH PORTABLE ELECTRONIC OBJECTS, AND SYSTEM FOR IMPLEMENTING THE METHOD

Michel Hazard, Mareil sur Mauldre, France, assignor to Bull CP8, Trappes, France

Continuation of Ser. No. 741,520, Aug. 9, 1991, abandoned. This application Feb. 10, 1994, Ser. No. 194,632
Claims priority, application France, Dec. 19, 1989, 89 16769
Int. Cl.[5] G06F 7/38; H04K 1/00
U.S. Cl. 364—717 6 Claims



1. A method for generating a random number in a data processing system including at least one portable object having electronic memory means, data processing circuits, and means for generating a random number as required during a data processing session, wherein said data processing session is defined as the time between the moment when the portable object is connected to a data processing apparatus and the moment when it is disconnected therefrom, said memory means having a volatile memory zone and a non-volatile memory zone, wherein said data processing apparatus includes processing circuits for processing data contained in said portable object, said method comprising the steps of executing a calculating program stored in said memory means of said portable object and taking into account parameters memorized in the memory means (MC) of the portable object for executing said calculating program, wherein the step of taking into account parameters includes the steps of:

providing a first parameter (PA1) to said calculating program, wherein said first parameter comprises a datum of a field (RB) of said volatile memory zone, and modifying said datum following each request for a random number during said data processing session, wherein the first parameter is provided such that said first parameter is incapable of having a same value twice during said data processing sessions; and

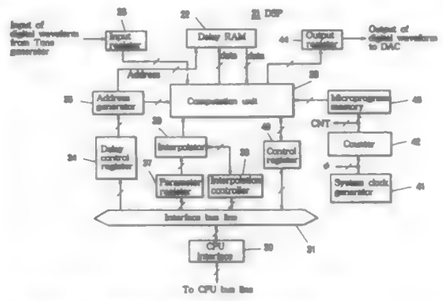
providing a second parameter (PA2) to said calculating program, wherein said second parameter (PA2) comprises a datum of said non-volatile memory zone of the object, and modifying said datum at least once during said data processing session and preserving said datum between an end of one session and a next session, wherein said second parameter (PA2) is provided such that said second parameter (PA2) is incapable of having a same value twice during service life of the portable object.

5,365,467

SIGNAL PROCESSOR FOR PROVIDING VARIABLE ACOUSTIC EFFECT

Yoshio Fujita, and Kazuhisa Okamura, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan

Filed Dec. 21, 1993, Ser. No. 171,116
Claims priority, application Japan, Dec. 25, 1992, 4-347367
Int. Cl.[5] G06F 7/38; G10H 7/12
U.S. Cl. 364—723 4 Claims



1. A signal processing apparatus comprising:

computation means for executing computation processing of a waveform of a given signal, using a plurality of parameters;

register means for registering values of the respective parameters;

designating means for designating at least one of the parameters;

rewriting means for rewriting the designated parameter from an old value to a new value; and

interpolation means for feeding to the computation means an intermediate value of the designated parameter, which is interpolated progressively from the old value to the new value,

wherein the interpolation means includes means defining a multiple of interpolation channels, a number of which is less than a total number of the parameters, and means for selectively assigning the designated parameter to one of the interpolation channels to carry out interpolation of the designated parameter.

5,365,468

SAMPLING FREQUENCY CONVERTER

Yuji Kakubo, Tachikawa; Shigeki Kimura, Hamamatsu; Hiromi Sotome, Hamamatsu; and Koji Niimi, Hamamatsu, all of Japan, assignors to Yamha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 18,955, Feb. 17, 1993, abandoned. This application Sep. 14, 1993, Ser. No. 121,212
Claims priority, application Japan, Feb. 17, 1992, 4-061193; Mar. 12, 1992, 4-088113
Int. Cl.[5] G06F 15/31
U.S. Cl. 364—724.1 5 Claims

1. A sampling frequency converter comprising:

oversampling means for oversampling an input sample train;

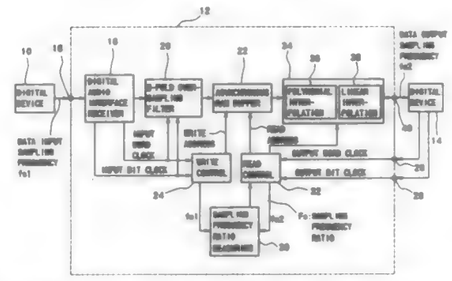
a memory;

write control means for writing oversampled data provided from said oversampling means in said memory with a clock synchronized with the oversampled data;

sampling frequency ratio measuring means for measuring a frequency ratio of a sampling frequency of the input sample train and a sampling frequency of an output sample train to be output;

read control means for reading from said memory the oversampled data used for obtaining interpolation data at two points before and after an output sample value which realizes the measured sampling frequency ratio by a polynomial interpolation;

polynomial interpolation means for obtaining the interpolation data at the two points by the polynomial interpolation on the basis of the oversampled data read from said memory by said read control means; and



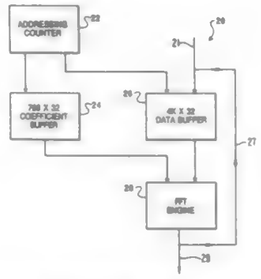
linear interpolation means for linear-interpolating between the polynomial interpolation data at the two points obtained by the polynomial interpolation and thereby obtaining the output sample value realizing the sampling frequency ratio.

5,365,469

FAST FOURIER TRANSFORM USING BALANCED COEFFICIENTS

Brian R. Mercy, Warrenton, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 606,635, Oct. 31, 1990, abandoned. This application Jan. 13, 1993, Ser. No. 4,217
Int. Cl.[5] G06F 7/38
U.S. Cl. 364—726 7 Claims



1. A method of generating a sequence of signals which represent balanced coefficients wherein each balanced coefficient is a combination of the same number of balanced coefficient values for a Fourier transform for use in a Fast Fourier Transform processor in processing a sequence of N=2**P real-value input signals comprising the steps of:

storing said sequence of input signals in a data buffer;

generating a set of balanced coefficient values wherein the number of balanced coefficients is substantially equal to P times the square root of 2** P;

selectively combining in the Fast Fourier Transform processor said stored signals and said balanced coefficient values, thereby to form an intermediate sequence of Fourier transform signals;

storing said intermediate Fourier signals in said data buffer in place of said sequence of signals previously stored in said data buffer; and

iteratively performing steps of combining the balanced coefficient values with the signals stored in the data buffer and storing the resultant intermediate Fourier transform frequency domain signals in the data buffer to be used as operands for the next iteration of Fourier signals until

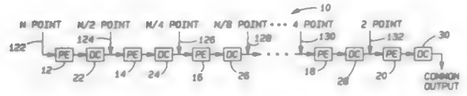
completion of a Fourier series of coefficients for the input sequence of N real-value input signals whereby the storage capacity for the Fast Fourier Transform processor is reduced by using the balanced coefficients in transforming the input signal from a time domain to a frequency domain.

5,365,470

FAST FOURIER TRANSFORM MULTIPLEXED PIPELINE

Ronald P. Smith, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 10, 1993, Ser. No. 15,946
Int. Cl.[5] G06F *15/332*
U.S. Cl. 364—726 **18 Claims**



1. A fast fourier transform (FFT) processor for processing normal order input data and producing bit reversed order output, said processor comprising:

input means for receiving a plurality of normal order input data sets;

a row of processing elements each receiving data either from said input means or from a preceding processing element, each processing element adapted to perform one pass of a DIF FFT, wherein said processing elements are arranged in said row such that the first processing element is adapted to perform the first pass of an N point DIF FFT, N being equal to 2^n where n is an integer and being the largest point FFT said FFT processor performs, and each succeeding processing element is adapted to perform the first pass of a DIF FFT which has half the number of points than the preceding processing element; and

memory means connected to the output of each successive processing element in said row for storing and transferring the results of each processing element to the next successive processing element in said row, whereby said successive processing elements following said first processing element in said row perform said smaller FFTs on said data sets at the same time that said first processing element and any preceding processing elements are performing larger point FFTs.

5,365,471

DIVIDER FOR PERFORMING SIGNED DIVISION USING A REDUNDANT SIGNED DIGIT

Fumiki Sato, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 926,871
Claims priority, application Japan, Aug. 8, 1991, 3-223501
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—746.2 **4 Claims**

1. A divider for performing division between a numeral expressed as at least one redundant signed digit and a divisor expressed as a signed binary number, comprising:

a quotient determining means for determining a quotient digit from the numeral;

a quotient digit correcting means for applying predetermined correction to the quotient digit according to the sign of the divisor;

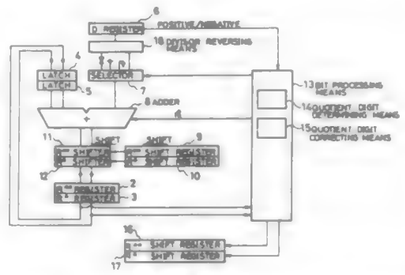
a divisor reversing means for receiving the divisor and performing one of:

(*a*) reversing all bits of the divisor when the sign of the divisor is negative;

(*b*) outputting all bits of the divisor as "1";

(*c*) outputting all bits of the divisor as "0";

a selector, coupled to said divisor reversing means and coupled to receive said quotient digit, to select one of (a), (b) or (c) above as a divisor output of said divisor reversing means, wherein said quotient digit is used by said selector as a selector signal to control selection of (a), (b) or (c); and



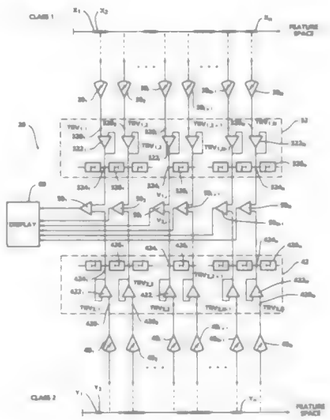
an adder, coupled to receive said divisor output, for adding said divisor output of said divisor reversing means to the numeral.

5,365,472

NON-LINEAR RESISTIVE GRID KERNEL ESTIMATOR USEFUL IN SINGLE FEATURE, TWO-CLASS PATTERN CLASSIFICATION

Jeffrey L. Solka, Fredericksburg; George W. Rogers; Carey E. Priebe, both of King George; Wendy L. Poston, Fredericksburg, all of Va., and Harold Szu, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1993, Ser. No. 157,553
Int. Cl.[5] G06G *7/00*
U.S. Cl. 364—807 **3 Claims**



1. A device for establishing a probability density function useful in classification of a feature as belonging to one of two classes, comprising:

first means for converting a first known feature space associated with a first class to a plurality of voltages reflecting said first known feature space at a corresponding plurality of first feature space bins;

a first one-dimensional, non-linear resistive grid having a first plurality of input and output nodes, each of said first plurality of input nodes continuously receiving said plurality of voltages reflecting said first known feature space, wherein said first resistive grid produces a first output voltage at each of said first plurality of output nodes;

second means for converting a second known feature space associated with a second class to a plurality of voltages reflecting said second known feature space at a corresponding plurality of second feature space bins;

a second one-dimensional, non-linear resistive grid having a second plurality of input and output nodes, each of said second plurality of input nodes continuously receiving said plurality of voltages reflecting said second known feature space, wherein said second resistive grid produces a second output voltage at each of said second plurality of output nodes;

a plurality of voltage comparators, each of said plurality of voltage comparators for comparing said first and second output voltages from corresponding ones of said first and second plurality of output nodes, wherein each of said plurality of voltage comparators outputs a discrete probability density function that considers corresponding ones of said plurality of said first and second feature space bins; and

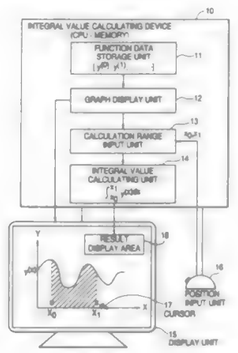
means for displaying each said probability density function from each of said plurality of voltage comparators.

5,365,473

INTEGRAL VALUE CALCULATING DEVICE AND FUNCTION GRADIENT CALCULATING DEVICE

Takefumi Namiki, and Masuhiro Mikami, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 27, 1992, Ser. No. 982,563
Claims priority, application Japan, Nov. 26, 1991, 3-310604
Int. Cl.[5] G06G *7/18*; G06F *15/66, 3/14*
U.S. Cl. 364—829 **10 Claims**



1. An integral value calculating device for calculating an integral value of a function, comprising:

a computer, comprising:

graph display means for outputting a graph for a function according to received data;

calculation range input means, communicating with said graph display means, for designating an integral range for said function according to position data externally designated for said graph; and

integral value calculating means, communicating with said calculation range input means, for calculating the integral value of said function for said designated integral range; and

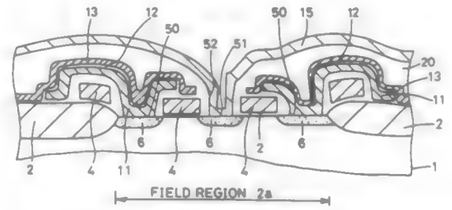
an external unit connected to said computer and receiving the graph and the integral range.

5,365,474

SEMICONDUCTOR MEMORY DEVICE

Kaoru Motonami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1993, Ser. No. 135,638
Claims priority, application Japan, Oct. 21, 1992, 4-282778; Jul. 28, 1993, 5-186270; Sep. 22, 1993, 5-236553
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—51 **7 Claims**



1. A semiconductor memory device carrying out input/output of memory information by using a memory cell having a word line serving as a transfer gate, and a bit line serving as a data line, comprising:

a semiconductor substrate having a main surface;

a plurality of first field regions isolated from each other by a field oxide film provided in the main surface of said semiconductor substrate, and formed at a predetermined pitch in the running direction of said bit line; and

a plurality of second field regions formed adjacent to and parallel to rows formed by said plurality of first field regions, and formed at the same pitch as said pitch, wherein

said first field regions and said second field regions are formed shifted from each other by ½ pitch in the running direction of said bit line, and

each of said first and said second field regions includes;

(a) a transfer gate provided on the field region,

(b) a pair of source/drain regions provided in the main surface of said semiconductor substrate on both sides of said transfer gate,

(c) a first interlayer insulating film provided on said semiconductor substrate for covering said transfer gate,

(d) a bit line contact hole provided in said first interlayer insulating film for exposing the surface of one of said source/drain regions,

(e) bit line provided on said first interlayer insulating film for contacting one of said source/drain regions through said bit line contact hole,

(f) a second interlayer insulating film provided on said semiconductor substrate for covering said bit line,

(g) a storage node contact hole provided in said second interlayer insulating film for exposing the surface of said the other one of source/drain region,

(h) a storage node provided on said second interlayer insulating film so as to be connected to said the other one of source/drain regions through said storage node contact hole,

(i) a capacitor insulating film covering the surface of said storage node, and

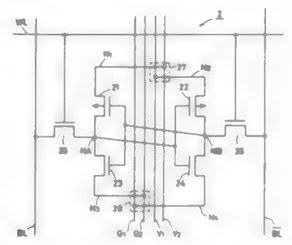
(j) a cell plate provided on said semiconductor substrate for covering said storage node with said capacitor insulating film posed therebetween.

5,365,475

SEMICONDUCTOR MEMORY DEVICE USABLE AS STATIC TYPE MEMORY AND READ-ONLY MEMORY AND OPERATING METHOD THEREFOR

Tetsuya Matsumura; Shinichi Uramoto, and Masahiko Yoshimoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 747,204
Claims priority, application Japan, Aug. 31, 1990, 2-231644
Int. Cl.[5] G11C *11/00*
U.S. Cl. 365—154 **27 Claims**



1. A semiconductor memory device, comprising:
a first potential line for receiving a first potential;
a second potential line for receiving a second potential;
a third potential line for selectively receiving the first potential or the second potential;
a fourth potential line for selectively receiving the first potential or the second potential; and at least one memory cell; said memory cell including:
a first node and a second node provided with potentials which are complementary to each other;
first pull-up/pull-down means connected between either of said first and third potential lines and said first node;
second pull-up/pull-down means connected between either of said first and third potential lines and said second node,
third pull-up/pull-down means connected between either of said second and fourth potential lines and said first node; and
fourth pull-up/pull-down means connected between either of said second and fourth potential lines and said second node.

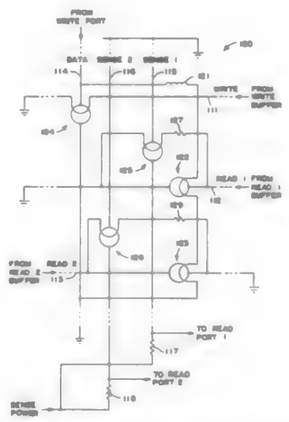
5,365,476

THREE-PORT JOSEPHSON MEMORY CELL FOR SUPERCONDUCTING DIGITAL COMPUTER

Oleg A. Mukhanov, Rye Brook, N.Y., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 26, 1993, Ser. No. 23,276
Int. Cl.[5] G11C *11/44*
U.S. Cl. 365—162 **19 Claims**

1. A method of storing data in a superconducting memory cell and retrieving the stored data, said memory call receiving a data input signal from a data line, a write enable signal from a write line, a first read enable signal from a first read line, and a second read enable signal from a second read line, said memory cell transmitting a first data output signal to a first sense line and a second data output signal to a second sense line, said method comprising the steps of:
opening a write gate in response to said write enable signal being received from said write line to divert and store said data input signal as a circulating current in said memory cell;
sensing said circulating current with a first read gate to generate said first data output signal, and transmitting said first data output signal from said memory cell to said first sense line in response to said first read enable signal; and
sensing said circulating current with a second read gate to generate said second data output signal, and independently transmitting said second data output signal from said memory cell to said second sense line in response to said second read enable signal, so that said circulating



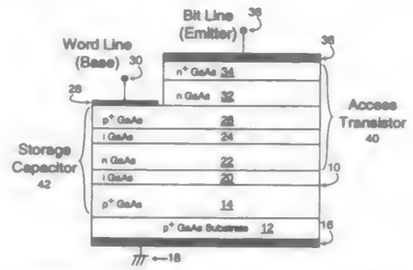
current can be sensed independently or simultaneously on said first sense line or said second sense line.

5,365,477

DYNAMIC RANDOM ACCESS MEMORY DEVICE

James A. Cooper, Jr.; Michael R. Melloch, and Theresa B. Stellwag, all of West Lafayette, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1992, Ser. No. 899,538
Int. Cl.[5] H01L *29/161*
U.S. Cl. 365—174 **19 Claims**



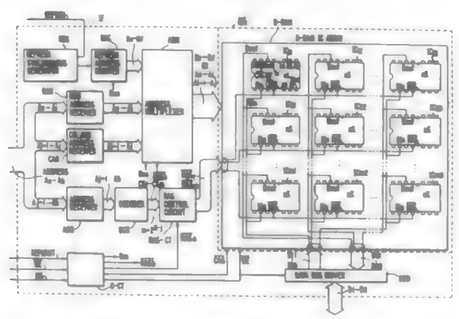
1. A dynamic random access memory (DRAM) device with extended memory storage time, said DRAM device comprising:
a bit line for writing information to storage when a potential is applied thereto;
means for storing charge; and
a bipolar transistor for connecting said charge storing means to said bit line, said bipolar transistor being formed in a semiconductor having a bandgap greater than the bandgap of silicon and said transistor having a base region, an emitter region connected to said bit line, and a floating collector region:
wherein said DRAM device is generation limited i.e., a charge is stored by creating a deficit of carriers in the floating collector region, the storage time being determined by the rate at which carriers are created again in the collector region by thermal generation.

5,365,478

SEMICONDUCTOR MEMORY

Katsuhiro Shimohigashi, Musashimurayama; Hiroo Masuda, Kodaira; Kunihiko Ikuzaki, Hinode, and Hiroshi Kawamoto, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 115,241, Aug. 18, 1993, abandoned, which is a continuation of Ser. No. 985,644, Dec. 7, 1992, which is a continuation of Ser. No. 864,934, Apr. 7, 1992, Pat. No. 5,170,374, which is a continuation of Ser. No. 515,345, Apr. 30, 1990, Pat. No. 5,119,332, which is a continuation of Ser. No. 397,119, Aug. 22, 1989, which is a continuation of Ser. No. 230,046, Aug. 9, 1988, Pat. No. 4,860,255, which is a continuation of Ser. No. 120,539, Nov. 13, 1987, abandoned, which is a division of Ser. No. 941,840, Dec. 15, 1986, Pat. No. 4,709,353, which is a division of Ser. No. 854,502, Apr. 22, 1986, Pat. No. 4,646,267, which is a division of Ser. No. 756,707, Jul. 19, 1985, Pat. No. 4,592,022, which is a division of Ser. No. 638,982, Aug. 8, 1984, Pat. No. 4,539,658, which is a division of Ser. No. 377,958, May 13, 1982, Pat. No. 4,472,792. This application Feb. 9, 1994, Ser. No. 193,896
Claims priority, application Japan, May 13, 1981, 56-70733
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.01 **25 Claims**



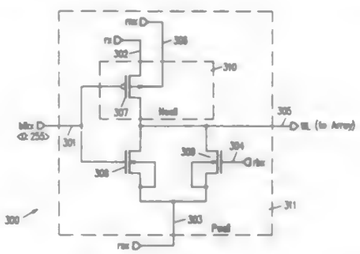
19. A semiconductor memory formed in a semiconductor integrated circuit comprising:
a pair of data lines disposed substantially parallel and adjacent to each other;
a word line arranged so as to intersect with both data lines of said pair of data lines;
a dummy word line arranged so as to intersect with both data lines of said pair of data lines;
a memory cell coupled to said word line and to at least one data line of said pair of data lines at a cross point of said word line and said at least one data line;
a dummy cell coupled to said dummy word line and to at least one data line of said pair of data lines at a cross point of said dummy word line and said at least one data line;
amplifier means coupled to said pair of data lines for amplifying a potential difference between said data lines, and including first and second terminals which receive a first reference voltage and a second reference voltage, respectively, to operate said amplifier means, said amplifier means comprising first and second circuits;
said first circuit including a pair of cross-coupled N-channel MISFETs coupled to said pair of data lines for bringing about a differential amplification operation; and
said second circuit including a pair of crosscoupled P-channel MISFETs coupled to said pair of data lines for bringing about a differential amplification operation;
precharging means for setting said pair of data lines at an intermediate potential between said first reference voltage and said second reference voltage; and
selecting means for selecting said word line and said dummy word line,
wherein the differential amplification operation of said first circuit is started at a time different from the time when the differential amplification operation of said second circuit is started.

5,365,479

ROW DECODER AND DRIVER WITH SWITCHED-BIAS BULK REGIONS

Loc B. Hoang; Khoi V. Dinh, both of San Jose, and Jitendra R. Kulkarni, Mountain View, all of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Filed Mar. 3, 1994, Ser. No. 206,446
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—189.29 **18 Claims**



1. A row line circuit comprising:
a first bulk region coupled to a first bulk bias voltage;
a second bulk region coupled to a second bulk bias voltage;
a pull up transistor formed in said first bulk region having a first lead coupled to a first voltage signal, a second lead coupled to said row line, and a control terminal coupled to receive a block select signal;
a first pull down transistor formed in said second bulk region having a first lead coupled to said row line, a second lead coupled to a second voltage signal, and a control line coupled to receive said block select signal;
a second pull down transistor formed in said second bulk region having a first lead coupled to said row line, a second lead coupled to said second voltage signal, and a control lead couple to receive a control signal,
wherein one or both of said first and second bulk bias voltages are selected during erasure of memory cells on said row line to a first value when said row line is selected and a second value when said row line is deselected.

5,365,480

MEMORY CELLS AND A MEMORY APPARATUS USING THEM

Kouichirou Yamamura; Kenichi Toyota, and Yoshihiko Kawano, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 27, 1993, Ser. No. 67,982
Claims priority, application Japan, May 28, 1992, 4-160113; Nov. 18, 1992, 4-332504
Int. Cl.[5] H01L *27/11*
U.S. Cl. 365—190 **8 Claims**

1. A memory apparatus comprising:
(A) an array of a plurality of memory cells,
(i) said memory cells including
(a) a first transistor for receiving the potential of a left word line to connect a left bit line with said memory cell,
(b) a second transistor for receiving the potential of a right word line controlled independently of said left word line to connect a right bit line with said memory cell,
(c) a power supply terminal for receiving a source voltage from a power supply line, and
(d) a ground terminal for receiving a ground voltage from a ground line,
(ii) said array comprising a plurality of rows of said mem-

ory cells and a plurality of columns of said memory cells,

(a) said plurality of rows including at least a first and second row, said first and second rows comprising a first and second sequence of said memory cells, respectively, and

(b) said plurality of columns including at least a first and second column, said first and second columns comprising a third and fourth sequence of said memory cells, respectively;

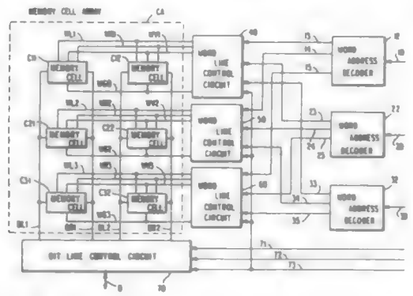
(B) a plurality of said left word lines including at least a first left word line and a second left word line;

(C) a plurality of said right word lines including at least a first right word line and a second right word line;

(D) a plurality of said left bit lines including at least a first left bit line and a second left bit line;

(E) a plurality of said right bit lines including at least a first right bit line and a second right bit line;

(F) a plurality of said power supply lines including at least a first and a second power supply line;



(G) a plurality of said ground lines including at least a first ground line and a second ground line;

(H) a bit line control circuit; and

(I) a plurality of word line control circuits, including at least a first word line control circuit and a second word line control circuit;

in which

each of said first sequence of memory cells is connected to (i) said first left word line, (ii) said first right word line, (iii) said first power supply line, and (iv) said first ground line,

each of said second sequence of memory cells is connected to (i) said second left word line, (ii) said second right word line, (iii) said second power supply line, and (iv) said second ground line,

each of said third sequence of memory cells is connected to said first left bit line and to said first right bit line, and

each of said fourth sequence of memory cells is connected to said second left bit line and to said second right bit line.

5,365,481

SEMICONDUCTOR MEMORY DEVICE HAVING TEST MODE AND METHOD OF SETTING TEST MODE

Seiji Sawada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 88,641

Claims priority, application Japan, Jul. 14, 1992, 4-186610

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—201 **7 Claims**

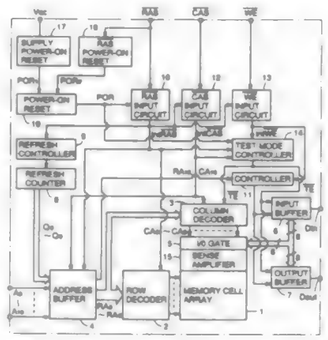
1. A semiconductor memory device, comprising:

a memory cell array;

internal circuit means responsive to a plurality of control signals for carrying out reading of data from said memory cell array and writing of data in said memory cell array;

means responsive to a predetermined pattern of change of logic levels of at least several control signals out of said plurality of control signals for setting a test mode of said memory cell array; and

reset pulse generating means responsive to power-on for generating a reset pulse setting at least said means for setting a test mode in an initial state over a variable period,



said variable period defined by the timing of a change in logic level of one of said plurality of control signals.

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SEMICONDUCTOR MEMORY DEVICE WITH PROVISION OF PSEUDO-ACCELERATION TEST

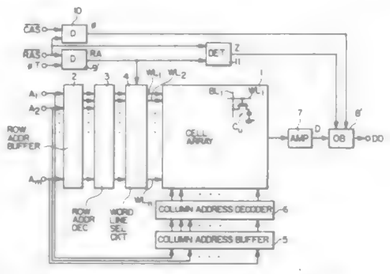
Hiroshi Nakayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 13, 1994, Ser. No. 181,467

Claims priority, application Japan, Jan. 13, 1993, 5-3719

Int. Cl.[5] G11C *29/00*

U.S. Cl. 365—201 **26 Claims**



1. A semiconductor memory device comprising:

a memory cell array including memory cells;

means, connected to said memory cell array, for selecting one of said memory cells;

means, connected to said memory cell array, for reading and outputting data from a memory cell selected by said selecting means;

means, connected to said selecting means, for receiving an activation signal and a pseudo-acceleration test signal to generate a driving signal for driving said selecting means, said driving signal being generated by delaying said activation signal with a definite delay time period which is changed in response to said pseudo-acceleration test signal;

means, connected to said driving signal generating means and said reading and outputting means, for determining whether said driving signal generating means is normal or abnormal, to transmit a determination signal to said reading and outputting means.

5,365,483

RANDOM ACCESS MEMORY ARCHITECTURE INCLUDING PRIMARY AND SIGNAL BIT LINES AND COUPLING MEANS THEREFOR

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

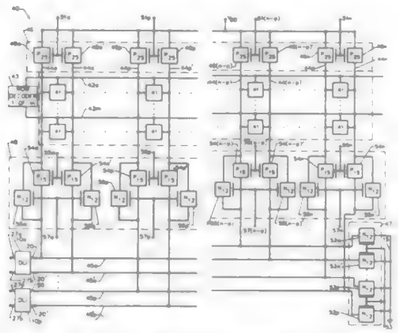
Division of Ser. No. 708,459, May 31, 1991, Pat. No. 5,304,874.

This application Feb. 25, 1994, Ser. No. 201,858

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—203 **18 Claims**



1. A Random Access Memory (RAM) for storing therein binary data during a write operation, for maintaining stored binary data therein during an idle operation, and for accessing binary data stored therein during a read operation, said RAM comprising:

an array of memory cells arranged in a plurality of rows and a plurality of columns, each of said memory cells adapted for storing therein a binary digit;

a plurality of word lines, each of which is connected to a respective row of said memory cell array;

a plurality of pairs of primary bit lines, each pair being connected to a respective column of said memory cell array;

a plurality of pairs of signal bit lines, each pair being connected to at least one respective pair of said primary bit lines;

a plurality of sensing means, each being connected to a respective pair of signal bit lines, for reading the binary digit stored in a selected one of said memory cells;

first means for coupling said primary bit lines to a first reference voltage during an idle operation and during a read operation, and for decoupling a selected pair of said primary bit lines from said first reference voltage during a write operation;

second means for coupling said signal bit lines to a second reference voltage during an idle operation, and for decoupling a pair of said signal bit lines which is connected to said selected pair of primary bit liens from said second reference voltage during a read operation, and for decoupling only a first signal bit line of said pair of said signal bit lines which is connected to said selected pair of primary bit lines from said second reference voltage during a write operation; and

third means for coupling said selected pair of said primary bit liens to said pair of said signal bit lines which are connected to said selected pair of primary bit lines during a read operation, to thereby cause current to flow from said selected pair of said primary bit lines to said pair of said signal bit liens which are connected to said selected pair of primary bit lines while said primary bit lines are coupled to said first reference voltage, and for coupling said pair of signal bit lines to said selected pair of primary bit lines during a write operation, to thereby clamp a first one of said selected pair of primary bit lines which is coupled to a second signal bit lines of said pair of said signal bit lines to said second reference voltage, and for decoupling said primary bit lines and said signal bit lines from one another during an idle operation.

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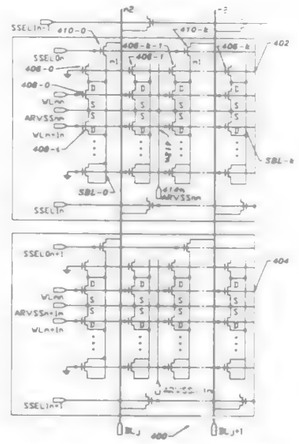
INDEPENDENT ARRAY GROUNDS FOR FLASH EEPROM ARRAY WITH PAGED ERASE ARCHITECHTURE

Lee E. Cleveland, Santa Clara; Michael A. Van Buskirk, San Jose; Johnny C. Chen, Cupertino, and Chung K. Chang, Sunnyvale, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 23, 1993, Ser. No. 109,887

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—218 **20 Claims**



19. In a semiconductor integrated circuit memory device having array means formed of a plurality of half-sectors, each of said plurality of half-sectors including a plurality of memory cells arrayed in rows of word lines and columns of bit lines intersecting said rows of word lines, each of said memory cells including a floating gate, a control gate, a source region connected to a separate independent ground line, and a drain region coupled to a respective one of the bit lines, and where each memory cell is programmable predominately by transferring hot electrons into its floating gate and is erasable predominately by tunneling electrons from its floating gate to its source region, each of said plurality of half-sectors comprising:

said control gate of each memory cell receiving a relatively negative potential during flash erasure; and

ground line circuit means (322) for generating a half-sector ground line signal, (ARVSSnm) said separate independent ground line (412n) being connected to said ground line circuit means for receiving said half-sector ground line signal.

5,365,485

FIFO WITH FAST RETRANSMIT MODE

M. Dwayne Ward, Garland; Kenneth L. Williams, Richardson, and Kevin J. Craig, McKinney, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 22, 1993, Ser. No. 156,115

Int. Cl.[5] G11C *7/00, 21/00*

U.S. Cl. 365—221 **6 Claims**

1. A first-in, first-out (FIFO) memory comprising:

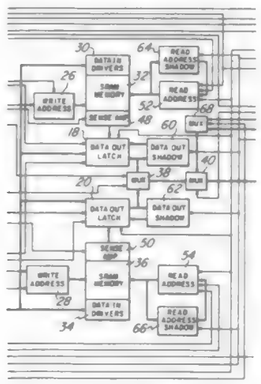
a memory having a plurality of read-addressable memory locations;

a data output register coupled to said memory for reading

data from at least one read-addressed memory location of said memory;

a read pointer for read-addressing said at least one memory location, said at least one read-addressed memory location having an address represented by a plurality of read address digits, a read address register in said read pointer being provided for storing said read address digits;

a write pointer for write-addressing said at least one memory location, said at least one write-addressed memory location having an address represented by a plurality of write address digits, a write address register in said write pointer being provided for storing said write address digits;



input means for receiving first and second control signals; and

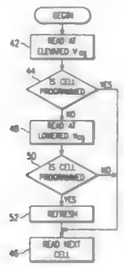
a shadow read address register coupled to said read address register and said shadow read address register and said read address register being responsive to said first and second control signals, wherein actuation of said first control signal causes the read address digits stored in said read address register to be stored in said shadow read address register, and actuation of said second control signal causes the read address digits stored in said shadow read address register to be stored in said read address register.

5,365,486

METHOD AND CIRCUITRY FOR REFRESHING A FLASH ELECTRICALLY ERASABLE, PROGRAMMABLE READ ONLY MEMORY

John F. Schreck, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 16, 1992, Ser. No. 991,233
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—222 **46 Claims**



1. A method of refreshing a flash electrically erasable, programmable read only memory having a plurality of memory cells, comprising the steps of:

reading a particular memory cell at an elevated control gate voltage;

making an initial determination of whether the particular memory cell has been programmed;

if the initial determination is that the particular memory cell has been programmed, performing said method on another memory cell;

if the initial determination is that the particular memory cell has not been programmed, reading the particular memory cell at a lowered control gate voltage;

making a final determination of whether the particular memory cell has been programmed;

if the final determination is that the particular memory cell has not been programmed, performing said method on another memory cell;

if the final determination is that the particular memory cell has been programmed, refreshing the particular memory cell; and

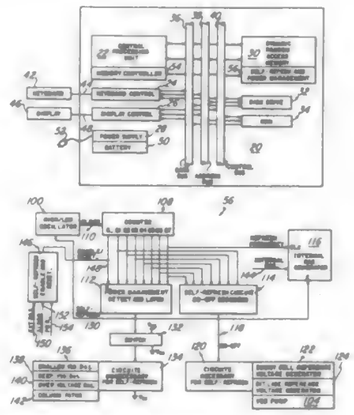
performing said method on another memory cell.

5,365,487

DRAM POWER MANAGEMENT WITH SELF-REFRESH

Vipul C. Patel, Houston; David R. Brown, and Jim C. Tso, both of Sugarland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 24, 1992, Ser. No. 857,034
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **35 Claims**



1. A computer system comprising:

a central processor that performs the processing of the computer system;

a memory including the data to be processed by the processor and the instructions to be used in the central processor for processing the data;

a memory controller associated with the central processor for controlling access of the memory by the central processor, said memory controller producing signals indicating a sleep mode to the memory; and

the memory including dynamic random access memory parts including arrays of memory cells, the cells being dynamic and requiting refresh of groups of cells at a certain rate to maintain data stored in the cells, the dynamic random access memory parts further including first circuits required to operate to support refresh of the memory cells and second circuits that can have power removed during refresh of the memory cells, the dynamic random access memory parts further including power management circuits that operate in response to the signals indicating a sleep mode to effect a self-refresh of the memory cells with operation of the first circuits substantially only

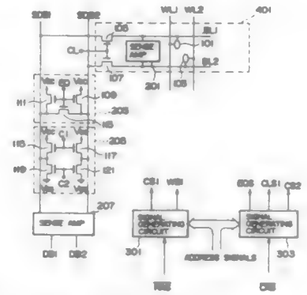
at refresh of a group of cells and with electrical power removed from the second circuits.

5,365,488

DATA READING CIRCUIT HAVING A CLAMPING CIRCUIT FOR CLAMPING A PAIR OF DATA BUSES TO PREDETERMINED POTENTIALS

Yuichi Matsushita, Miyazaki, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1993, Ser. No. 70,239
Claims priority, application Japan, Jun. 5, 1992, 4-145188
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—226 **20 Claims**



1. A data reading circuit comprising:

a pair of data buses supplied with complementary potential respectively;

a first reference voltage source having a first potential;

a second reference voltage source having a second potential;

a first switch connected to said first reference voltage source and said pair of data buses and responsive to a first clamping signal to electrically connect said first reference voltage source to said pair of data buses; and

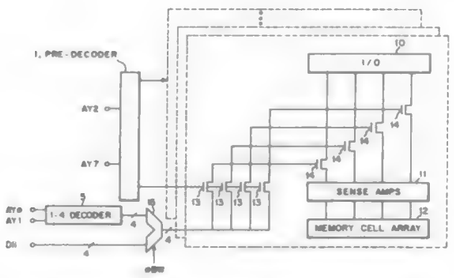
a second switch connected to said second reference voltage source and said pair of data buses and responsive to a second clamping signal to electrically connect said second reference voltage source to said pair of data buses.

5,365,489

DUAL PORT VIDEO RANDOM ACCESS MEMORY WITH BLOCK WRITE CAPABILITY

Seong-ouk Jeong, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggui-do

Filed May 1, 1992, Ser. No. 877,235
Claims priority, application Rep. of Korea, Jan. 10, 1992, 92-265
Int. Cl.[5] G11C *8/00, 8/04*
U.S. Cl. 365—230.03 **4 Claims**



1. A semiconductor memory device for performing a memory block write function, said semiconductor memory device comprising:

a plurality of cell array blocks, each cell array block including a plurality of bit lines;

a plurality of column select transistors coupled to said plurality of cell array blocks for selectively accessing corresponding ones of said plurality of bit lines;

first decoding means, responsive to a first portion of a column address, for generating a first select signal for selecting one of said plurality of cell array blocks;

second decoding means, responsive to a second portion of said column address, for generating a second select signal;

multiplexing means for selectively outputting one of said second select signal and an external block write signal in response to a block write mode control signal; and

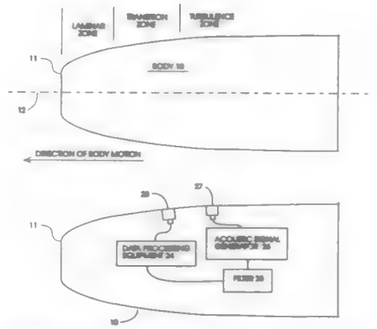
a plurality of transfer transistors coupled to said multiplexing means and directly to said first decoding means, for driving select ones of said plurality of column select transistors in said selected one of said plurality of cell array blocks in response to said selectively multiplexed output of said multiplexing means.

5,365,490

METHOD AND SYSTEM FOR REDUCING DRAG ON A BODY MOVING THROUGH A FLUID MEDIUM

Richard A. Katz, East Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 2, 1993, Ser. No. 117,512
Int. Cl.[5] B64C *23/00*
U.S. Cl. 367—1 **9 Claims**



1. A method of reducing drag on a body moving through a fluid medium comprising the steps of:

supplying in the sidewall of the body, in at least a region of the body in which turbulence is expected to occur, sensors each for generating a signal suitable for measuring amplitude of pressure fluctuations of the medium proximate a region of said sidewall;

during a reference stage during which the body moves through the fluid medium when it is known that turbulence is occurring around at least a portion of said body, (i) enabling the sensors to each generate reference temporal pressure data representing fluctuations in pressure of the fluid medium around said body, and (ii) generating, in response to reference temporal pressure data generated by sensors in a turbulence zone at which turbulence is occurring and sensors in a transition zone between the turbulence zone and a laminar flow zone, method-of-delay phase portraits for a progression of selected delay intervals; and

during an operational stage during which the body moves through the fluid medium (i) enabling the sensors to each generate operational temporal pressure data representing fluctuations in pressure of the fluid medium around said

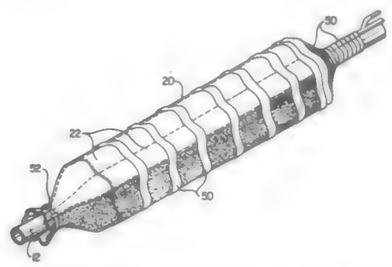
body proximate the respective sensor due to motion of the body through the medium and further due to external acoustic signal sources, (ii) detecting the onset of turbulence proximate the respective sensor in connection with such operational temporal pressure data, (iii) filtering the operational temporal pressure data to separate a portion representing an acoustic turbulence signal from the portion representing acoustic signals from external acoustic signal sources, and (iv) injecting into the medium proximate the respective sensor, in response to the acoustic turbulence signal, an acoustic signal of appropriate phase to reduce the amplitude of said acoustic turbulence signal and thereby reduce drag on the body due to the medium.

5,365,491

MARINE SEISMIC BOTTOM GEOPHONE COUPLING AND ANCHOR

Lawrence B. Sullivan, Plano, Tex., and Jeffrey H. Hastings, Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 20, 1993, Ser. No. 169,288
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—15 **13 Claims**



1. A marine bottom geophone coupling and anchor comprising:
two rectangular fabric sections attached along their edges and at a plurality of lines between and parallel to one set of opposing sides to form a plurality of tubular pockets;
an opening at one end of each tubular pocket and a flap for covering and sealing each opening;
weighting material filling each tubular pocket;
connecting flaps attached to a first two opposing edges of said fabric sections, and adapted for releasably attaching said opposing edges to hold said fabric sections in a generally cylindrical shape;
loops attached to a second two of said opposing edges and a pair of cords inserted through said loops and adapted for releasably drawing said second opposing edges into engagement with a bottom cable passing through said anchor.

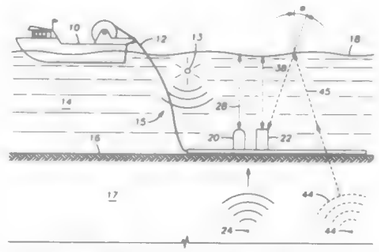
5,365,492

METHOD FOR REVERBERATION SUPPRESSION

William H. Dragoset, Jr., Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 4, 1993, Ser. No. 101,949
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—21 **15 Claims**

1. An improved method for processing seismic data for suppressing multiple reverberations, comprising:
(a) creating a reflected seismic wavefield in a water environment, said seismic wavefield being characterized by a pressure signature, and a velocity signature that includes an embedded noise signature;
(b) detecting the pressure signature of said reflected seismic wavefield at a selected location;
(c) concurrently detecting the velocity signature of said reflected seismic wavefield at a location juxtaposed to said selected location;
(d) filtering said pressure signature;
(e) extracting said noise signature by subtractively combining said filtered pressure signature with said velocity signature;



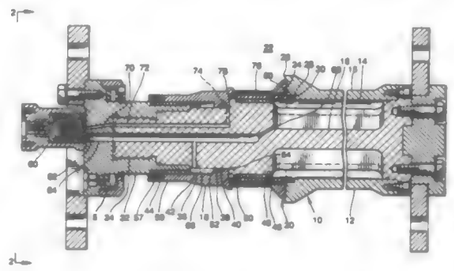
(f) producing a refined velocity signature by adding the extracted noise signature to said velocity signature with opposite sign;
(g) applying a desired scale factor to said refined velocity signature and summing said pressure signature with said refined and scaled velocity signature; and
(h) generating an auto-correlation function for the summed signature.

5,365,493

AIR GUN

E. R. Harrison, P.O. Box 42800, Houston, Tex. 77242-8044

Filed Oct. 15, 1992, Ser. No. 961,380
Int. Cl.[5] H04R *23/00;* **G01V** *1/04*
U.S. Cl. 367—144 **14 Claims**



1. An air gun responsive to a supply of compressed gas, comprising:
a housing assembly defining a primary chamber and a discharge port through which said primary chamber may be communicated with the environment surrounding said air gun;
a valve member movably arranged relative to said housing assembly, said valve member movable between a first, closed, position and a second, open, position, said valve member and said housing assembly cooperatively configured with said valve member having a first surface arranged to contact a second surface on said housing assembly when said valve member is in said first, closed, position to close said discharge port, said valve member and said housing assembly cooperatively defining a firing chamber arranged to selectively receive compressed gas to move said valve member from said first position to said second position, said valve member further comprising a passageway providing fluid communication between said firing chamber and said first surface of said valve member; and

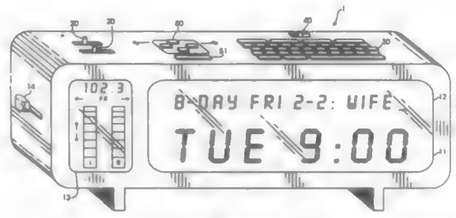
an air control valve cooperatively arranged with said housing member to selectively supply compressed gas to said firing chamber to actuate said air gun.

5,365,494

RADIO ALARM CLOCK WITH REMINDER CAPABILITY

Mike Lynch, 7261 Parklane, Algonac, Mich. 48001

Filed Feb. 7, 1994, Ser. No. 192,586
Int. Cl.[5] G04B *47/00, 23/02;* **H04B** *1/16*
U.S. Cl. 368—10 **13 Claims**



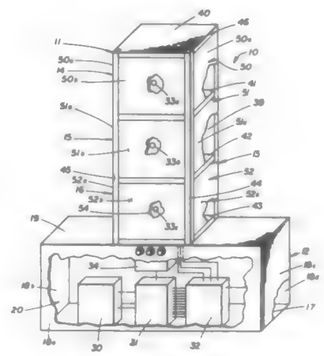
1. An Alarm Clock With Reminder Capability comprising:
an alarm clock having a clock data means for inputting clock data, the clock data comprising current time, day of the week, month, date and year, the alarm clock also having an alarm data input means for inputting alarm data, the clock data input means and the alarm data input means being similar to that of a conventional bedside alarm clock;
an alarm enable input means for enabling a plurality of integral alarms, each alarm having an alarm enabled state and an alarm disabled state;
a message data input means for inputting message data, the message data comprising user message data, default message data and message schedule data;
an audio receiver having integral programmable components, the components comprising an am fm radio, a sound generator and an audio amplifier, the audio receiver also having a receiver input means for inputting receiver data and a plurality of audio outputs for outputting audio data, such that the audio receiver can be used independently as both an alarm and a conventional audio component;
a plurality of internal audio speakers connected to audio outputs of the audio receiver for broadcasting audio data received from an audio outputs;
a plurality of display means for displaying clock data, alarm data, message data, message scheduling data, receiver data and default data; the default data comprising default message type data, user prompt menu data, default attribute data and program data;
a plurality of change disable means for preventing inadvertant data and control input, the change disable means having a change enable state wherein the clock data input, alarm data input and message data input are enabled and a change disable state wherein the clock data input, alarm data input and message data input are disabled;
a plurality of blackout protection means for preventing the loss of data due to primary power interruption;
a default memory means having a plurality of default data memory regions, the default data memory regions containing default data;
an alarm data memory means having a plurality of alarm data memory regions for storing alarm data input by the alarm data input means and corresponding radio data input by the radio data input means;
a message data memory means for storing the message data, default message type data and message schedule data input by the message data input means; and
a coincidence detection means for detecting alarm schedule data that is identical to corresponding clock data and for each alarm enabled state, inputting the corresponding radio data to the radio data input means, also for detecting message schedule data that corresponds with clock data and inputting the corresponding data to tile display data input means.

5,365,495

CLOCK DEVICE INCLUDING HOUR, DECADE AND UNIT MINUTE STATIONS

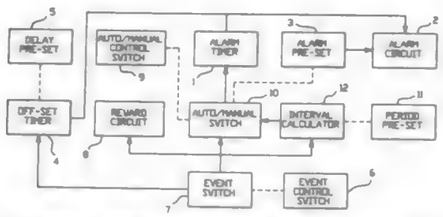
William J. Cussen, 20 Irwin Way, Apt. 620, Orinda, Calif. 94563

Filed Nov. 10, 1993, Ser. No. 150,614
Int. Cl.[5] G04B *19/00;* **G04C** *19/00*
U.S. Cl. 368—79 **16 Claims**



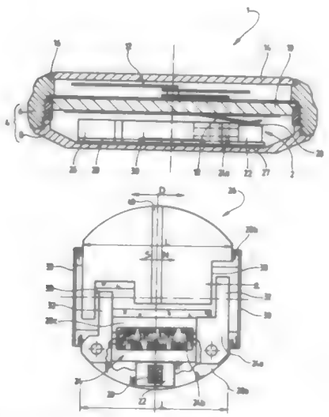
1. An electrooptical clock device for generating and displaying the time of day, comprising
display means for displaying time of day as separate hour, 10-minute and minute decimally based count translations thereof, including a plurality of lights, said display means comprising three lights in which one such light is associated with said hour count translation only, another such light is associated with said 10-minute count translation only and yet another such light is associated with minute count translation only,
a clock module for generating clock data in digital format indicative of the time of day in hour, 10-minute and minute segments, said 10-minute segment being normalized relative to said hour segment and said minute segment being normalized relative to said 10-minute segment,
generating and control means for translating said clock data of said clock module into a series of drive signals indicative of said time of day in hour, 10-minute and minute data blocks for causing blinking of said lights of said display means in sequence, said drive signals associated with said hour, said 10-minute and said minute data blocks driving said lights of said display means in sequence, said one light being activated and then deactivated wherein total number of activations is between 1 and 12 and is indicative of said hour count translation of said time of day, said another light being activated and then deactivated wherein total number of activations is between 1 and 5 and is indicated of said 10-minute count translation of said time of day, said yet another light being activated and then deactivated wherein total number of activations is between 1 and 9 and is indicative of said minute count translation of said time of day, wherein said 10-minute and minute data blocks are separately and sequentially displayed as decimally based blinking translations of said minute segments of said clock data thereby permitting children to learn to distinguish minute segments of said time of day and to count.

5,365,496
POTTY TRAINER TIMEPIECE
Kathleen R. Tolan-Samilow, 55-1B E. Main St., Flemington, N.J. 08822
Filed Jan. 24, 1994, Ser. No. 184,926
Int. Cl.[5] G04P *8/00*; G04B *23/00*
U.S. Cl. 368—109 **20 Claims**



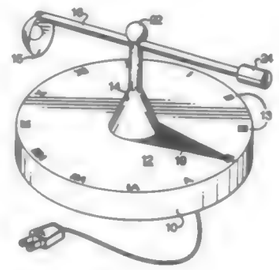
1. A device for time conditioning children, said device comprising:
a. an alarm circuit for producing an alarm signal;
b. an alarm timer for timing an alarm interval and activating said alarm circuit, said alarm timer operatively connected to said alarm circuit;
c. an alarm pre-set for providing a user with means to adjust said alarm interval, said alarm interval pre-set operatively connected to said alarm timer;
d. an offset timer for timing a delay interval and activating said alarm circuit, said offset timer operatively connected to said alarm circuit;
e. a delay pre-set for providing a user with means to adjust said delay interval, said delay pre-set operatively connected to said alarm timer;
f. an event switch for switching between said alarm timer and said off-set timer, said event switch operatively connected to said alarm timer and said off-set timer; and
g. an event switch control for providing a user with means to control said event switch to thereby choose between said offset timer and said alarm timer.

5,365,497
SILENT ELECTROMAGNETIC ALARM
Jean-Jacques Born, Morges, Switzerland, assignor to Asulab S.A., Bienne, Switzerland
Filed May 3, 1994, Ser. No. 238,024
Claims priority, application Switzerland, May 18, 1993, 01 512/93-5
Int. Cl.[5] G04B *19/06*; G04C *21/00*
U.S. Cl. 368—230 **17 Claims**



1. A non-acoustic alarm for a device supplying information such as time information, said alarm comprising motor means which can be electrically driven and which is associated with a mass adapted to be set in motion under the action of the motor means in order to furnish a vibratory effect, the motor means including an electromagnetic motor fixedly mounted on support means comprising elastic coupling elements which are associated with said mass and cause said mass to assume a quasi-linear oscillating motion relative to the electromagnetic motor when the motor is operated.

5,365,498
SUNDIAL-LIKE TIMEPIECE
Stephen Lazanyi, 221 Shakespeare Dr., Waterloo, Ontario, Canada N2L 2T5
Filed Sep. 3, 1993, Ser. No. 115,607
Int. Cl.[5] G04B *19/06*
U.S. Cl. 368—239 **8 Claims**

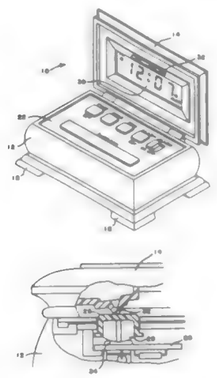


1. A timepiece comprising:
a conventional clock mechanism including a surface having a perimeter defining at least a pan circle with a plurality of time interval markings inscribed thereon about the said perimeter, and an electric motor mounted below said surface,
a symmetrically-shaped gnomon having a longitudinal axis mounted on said surface substantially at 90° to said surface,
a drive shaft operatively connected to the electric motor for rotation by the electric motor, said drive shaft having a distal end extending through the gnomon coaxial therewith,
a support arm connected to the distal end of the drive shaft for rotation therewith in a planed parallel to the surface, said support arm having opposite ends substantially coextensive with the perimeter of the surface, and
electrically energized illumination means supported at one end of the support arm for illuminating said gnomon to cause a symmetrical shadow of the gnomon to be cast upon the surface, whereby as the illumination means moves relative to the circular perimeter of the surface, the symmetrical shadow of the gnomon moves in succession across each of the time interval markings beneath the other end of the arm, thus permitting time to be read off the timepiece.

5,365,499
CLOCK WITH LID-ACTIVATED SNOOZE ALARM
Anthony Sell, Crystal Lake, Ill., assignor to Spartus Corporation, Arlington Heights, Ill.
Filed Apr. 29, 1994, Ser. No. 236,593
Int. Cl.[5] G04B *23/00*
U.S. Cl. 368—262 **5 Claims**

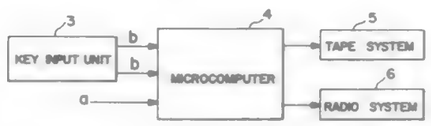
1. A clock having a snooze alarm, comprising
a housing, including a depressible snooze actuator therein and movable between an off position and an on position,
a lid hingedly connected to the housing, the lid containing a clock display,

the lid having a portion thereof which contacts the snooze actuator in the off position when the lid is in a substantially closed position relative to the housing and which



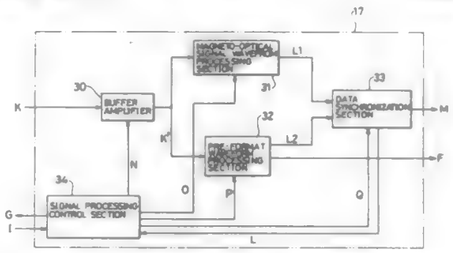
rests lightly on the snooze actuator and which depresses the snooze actuator into the on position when the lid is pressed into a fully closed position against the housing.

5,365,500
KEY CONTROL METHOD AND CONTROL DEVICE FOR A CASSETTE TAPE RECORDER
Sung G. Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 19, 1991, Ser. No. 810,167
Claims priority, application Rep. of Korea, Dec. 24, 1990, P-90-21604
Int. Cl.[5] H04B *1/20*
U.S. Cl. 369—2 **11 Claims**



1. A method of controlling operation of a cassette tape recorder with a radio coupled thereto, said cassette tape recorder having one or more keys each representing a plurality of possible functions selectable by the user of the recorder, comprising the steps of:
manipulating at least one of said one or more keys to represent one of a plurality of possible functions selectable by the user of the recorder to be performed;
providing a control signal in response to a selected function; and
performing the selected function in response to said control signal;
providing a mode signal indicating if one of the recorder and radio was selected by the user; and
providing an indication that one of the recorder and radio is operative in response to said mode indicating signal.

5,365,501
INFORMATION RECORDING AND REPRODUCING DEVICE
Hiroshi Fuji; Takeshi Yamaguchi, and Toshihisa Deguchi, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 555,569, Jul. 20, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 853,863
Claims priority, application Japan, Jul. 21, 1989, 1-189640
Int. Cl.[5] G11B *17/32*
U.S. Cl. 369—13 **9 Claims**



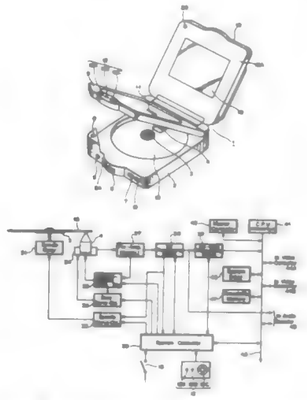
1. An information recording and reproducing apparatus for recording and reproducing information from a memory device having a plurality of pre-recorded areas, each pre-recorded area having pre-recorded marks, comprising:
recording means for recording the information on the memory device;
reproducing means for reproducing the information from the memory device;
re-triggerable pulse generating means for detecting each pre-recorded area in accordance with the transitions of the reproduced signal from said reproducing means; and
waveform shaping means for shaping a waveform of the reproduced signal from said reproducing means so as to convert into a binary reproduced signal, the binary reproduced signal being inputted to said re-triggerable pulse generating means;
wherein said re-triggerable pulse generating means comprises:
a divider having a clear input terminal, a clock input terminal and an output terminal, which receives the reproduced digital signal through the clear input terminal thereof; and
an AND circuit having one of its input terminals connected to the output terminal of said divider, another of its input terminals connected to a reference clock signal for dividing operation and its output connected to the clock input terminal.

5,365,502
OPTICAL DISC PLAYER HAVING A RESUME FUNCTION
Kousuke Misono, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 4, 1992, Ser. No. 830,931
Claims priority, application Japan, Feb. 5, 1991, 3-014590
Int. Cl.[5] G11B *11/18*
U.S. Cl. 369—18 **14 Claims**

1. An optical disc player comprising:
(a) reproducing means for reproducing information recorded on an optical disc;
(b) display means for displaying information reproduced from said optical disc;
(c) first memory means for storing therein a playback position information of said optical disc at a timing point when a reproducing operation of said reproducing means is interrupted;
(d) second memory means for storing therein displayed information displayed on the display means;
(e) holding means for causing the displayed information stored in said second memory means at a timing point

when said reproducing operation is interrupted to be continuously refreshed; and

(f) control means for reading the playback position information of said the optical disc from said first memory means when the reproducing operation is resumed by said reproducing means and controlling the reproducing means to resume reproduction of said optical disc at a location on



the optical disc designated by the playback position information and controlling the display means to resume a display of the information stored in the sound memory means at the timing point when the reproducing operation was interrupted.

5,365,503

DIGITAL RECORDING AND REPRODUCING APPARATUS

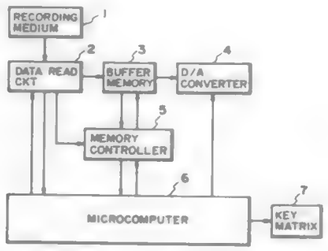
Soju Goto, Hino, Japan, assignor to Kabushiki Kaisha Kenwood, Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,974

Claims priority, application Japan, Jan. 24, 1992, 4-034188

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—32 **4 Claims**



1. A digital recording and reproducing apparatus which includes a read unit (2) and D/A converter (4), the read unit having a speed of reading information recorded in a recording medium (1) faster than that of converting the read data into an analog signal in the D/A converter, comprising:

a buffer memory (3) interposed between the read unit and D/A converter for temporarily storing said read data before converting said read data into an analog signal, said buffer memory having a capacity allowing to produce sounds for a sufficient time period, and

a control unit (5,6) for detecting, in response to a cue or review mode instruction, an address of data in the recording medium which is currently converted in the D/A converter, and controlling the read unit to read a predetermined amount of data at addresses in the recording medium which start an address forwardly or backwardly remoted from the detected address by a first predetermined distance and then repeatedly read the predetermined amount of data in the recording medium at addresses which starts an address jumped from the last read address in the previous read cycle by a second predetermined distance.

5,365,504

OPTICAL DISK APPARATUS, AND CONSTRUCTION OF OPTICAL DISK

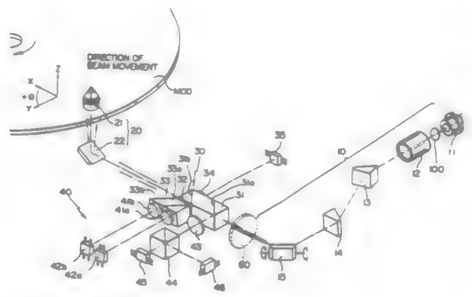
Masato Noguchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 781,413, Oct. 23, 1991, abandoned. This application Aug. 17, 1993, Ser. No. 107,165

Claims priority, application Japan, Oct. 23, 1990, 2-286439; Mar. 5, 1991, 3-123235

Int. Cl.[5] G11B *7/135*

U.S. Cl. 369—44.41 **6 Claims**



1. An optical disk apparatus comprising:

an incident light optical system wherein a light beam, having a wavefront aberration in which an odd function component with respect to two perpendicular axes corresponding to the radial and tangential directions of an optical disk is contained, is made to impinge on the disk;

a light detecting unit divided into at least two regions by a boundary line corresponding to the radial direction of the optical disk, which detects a light beam guided from said optical disk and provides output signals corresponding to the light detected by each region; and

computing means for outputting a tracking error signal by computing an output differential between said output signals from said regions of said light detecting unit divided by a boundary corresponding to a radial direction of said disk.

5,365,505

INFORMATION REPRODUCING DEVICE

Hiroshi Fuji, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 580,946, Sep. 11, 1992, abandoned! This application Oct. 13, 1992, Ser. No. 960,300

Claims priority, application Japan, Sep. 14, 1989, 1-239014

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—59 **15 Claims**

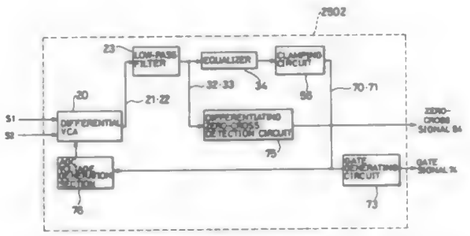
1. An information reproducing device comprising:

zero signal generating means for receiving an analog reproduced signal derived from a signal that was detected by irradiating a light beam upon an information recording medium whereon information is digitally recorded, and that was subjected to a process for reducing noise of an information signal contained in said signal, for differentiating said analog reproduced signal and generating a differentiated signal, and for comparing said differentiated signal and the zero level of said differentiated signal and generated a zero-cross signal as binary signal,

equalizing means for generating an analog equalized reproduced signal by emphasizing the amplitude of frequency components present in said analog reproduced signal,

gate signal generating means for generating a gate signal as a binary signal corresponding to a transition in said analog equalized reproduced signal,

and



binary reproduced signal generating means where said zero-cross signal and said gate signal are fed to, and for generating a binary reproduced signal based on a logical product of said zero-cross signal and said gate signal,

wherein said equalizing means is mounted ahead of at least said gate signal generating means.

5,365,506

LASER DISK PLAYER

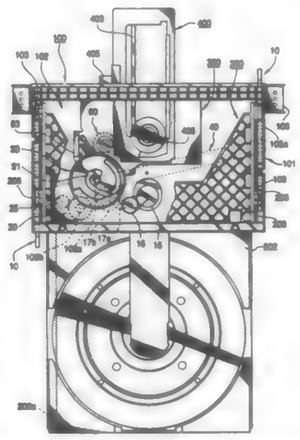
Chung G. Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 3, 1992, Ser. No. 923,544

Claims priority, application Rep. of Korea, Dec. 23, 1991, 91-23948

Int. Cl.[5] G11B *33/02*

U.S. Cl. 369—75.2 **46 Claims**



1. A laser disk player for playing back information recorded in a disk by using an optical pickup, comprising:

chucking means mounted on a chassis and having a bracket tray, for performing a loading and a chucking operation of a disk tray;

a plate located at said bracket tray of said chucking means;

a plate spring fixed at the center of said plate by a holder;

a clamp mounted at said holder to press on a surface of the disk;

rotary means having first and second surfaces and receiving rotary power from a main motor, for sliding said disk tray by rotation of a first tray gear and a second tray gear engaged with said rotary means;

a lever operated according to the motion of said rotary means for chucking a disk by guiding said bracket tray of said chucking means using a side plate connected to said chassis; and

a tilt gear mounted on a deck and engaged with said rotary means, for tilting an optical apparatus holding the optical pickup;

said rotary means further comprising:

a cam slot formed on said first surface, for moving a guiding pin formed on said lever to control operation of said laser disk player, said cam slot having a widened portion for accommodating insertion of said guiding pin during assembly of said laser disk player;

said second surface of said rotary means having a plurality of mode cam slots, each mode cam slot having a corresponding engaging pin movably installed within each said mode cam slot for controlling modes of operation of said optical pickup; and

each mode cam slot further comprising an assembly hole for accommodating each corresponding engaging pin during assembly of said laser disk player.

5,365,507

LIGHT-AMOUNT CONTROL DEVICE FOR AN OPTICAL-DISK RECORDING-REPRODUCTION APPARATUS

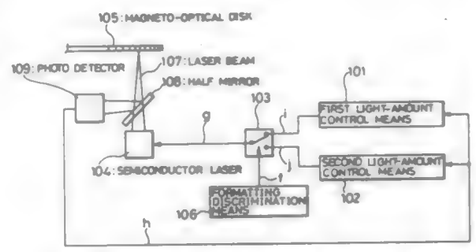
Hiroshi Fuji, and Takashi Iwaki, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1993, Ser. No. 100,663

Claims priority, application Japan, Aug. 10, 1992, 4-212572

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—116 **19 Claims**



1. A light-amount control device for an optical disk recording-reproduction apparatus comprising:

first light-amount control means for continuously controlling the output light-amount of a light source with respect to a recording medium that has not been formatted;

second light-amount control means for controlling the output light-amount of the light source to be applied to each of a plurality of sectors with respect to a recording medium that has been formatted;

discrimination means for discriminating whether or not a recording medium, loaded in the optical disk recording-reproduction apparatus, has been formatted; and

switching means for selectively switching the first light-amount control means and the second light-amount control means according to a result of discrimination made by the discrimination means.

5,365,508

MAGNETO-OPTICAL READ/WRITE DEVICE

Johannus L Bakx, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 18, 1993, Ser. No. 224,133

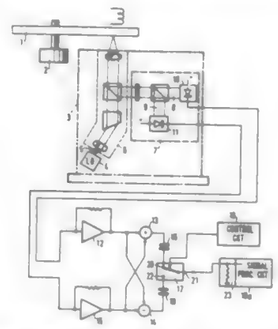
Claims priority, application European Pat. Off., Nov. 20, 1992, 92203586.0

Int. Cl.[5] G11B *11/12*

U.S. Cl. 369—124 **2 Claims**

1. Magneto-optical read/write device for reading and writ-

ing by magneto-optical means information from/on a magneto-optical record carrier, the device comprising a magneto-optical read/write head which includes a radiation source for generating a radiation beam, and an optical system for focusing the radiation beam on a magneto-optical detection system via the record carrier; said detection system comprising a first and a second radiation-sensitive detector, an output of the first detector being coupled to a first input of an adder circuit and a first input of a subtracter circuit, an output of the second



detector being coupled to a second input of the adder circuit and a second input of the subtracter circuit, an output of the adder circuit being coupled to a first input of a selection circuit, an output of the subtracter circuit being coupled to a second input of the selection circuit, the output of the selection circuit being coupled to a signal processing circuit; characterized in that the couplings of the first and second detectors to the adder and subtracter circuits are DC couplings, and the couplings of the outputs of the adder and subtracter circuits to the selector circuit are capacitive couplings.

5,365,509

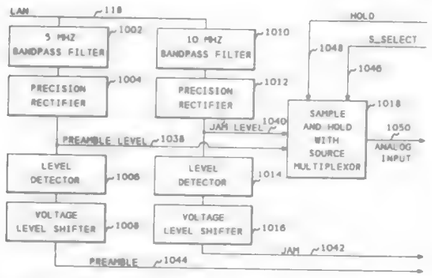
METHOD AND APPARATUS FOR ANALYZING NODES ON A COMPUTER NETWORK

Peter J. Walsh, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 578,989, Sep. 4, 1990, abandoned. This application Nov. 18, 1992, Ser. No. 978,052

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—13 **17 Claims**



1. A system for determining defective nodes on a computer network cable, said system comprising:

a signal level determining means, connected on said cable, for determining and storing a signal level of each signal sent in said cable, whereby said signal level indicates which of a plurality of nodes sent said signal;

means for sending a pseudo frame signal on said cable;

a signal detecting means for detecting a late collision signal, while said means for sending a pseudo frame is sending a pseudo frame on said cable, and for determining a collision signal level of said late collision signal, wherein said late collision signal comprises a collision signal sent in said cable after a predetermined amount of time beyond a start of each signal;

calculating means connected to said signal level means and said signal detecting means for comparing said collision signal level to each of said stored signal levels to determine a location of a node sending said late collision signal, wherein said node sending said late collision signal is a defective node.

5,365,510

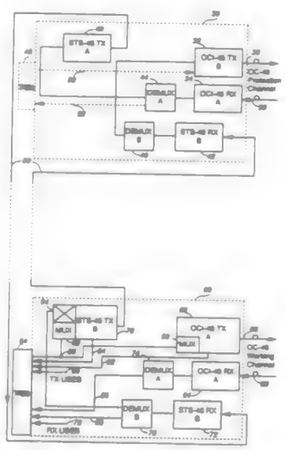
COMMUNICATIONS SYSTEM WITH A SINGLE PROTECTION LOOP

David J. Nicholson; Donald R. Ellis, both of Ottawa; John B. Mills; Dino C. DiPerna, both of Kanata; David W. Martin, Nepean; Wang-Hsin Peng, Ottawa, and Kim B. Roberts, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 9, 1992, Ser. No. 865,533

Int. Cl.[5] H04L *1/22*

U.S. Cl. 370—16 **11 Claims**



1. In a SONET communications system comprising:

a first terminal at a first location; a second terminal at a second location remote from the first location; and a plurality of communications channels between the first and second terminals, each terminal having a plurality of shelves, which include a protection shelf and a plurality of working shelves, each working shelf within a terminal, being serially connected via a single protection loop from the protection shelf through the working shelves back to the protection shelf, a position for each working shelf within the terminal being defined by proximity to the protection shelf on the protection loop, each working shelf of the first terminal of a given position being connected to a respective working shelf of the second terminal via a respective one of the plurality of communications channels, each of which includes a forward channel for communication from the first terminal to the second terminal and a reverse channel for communication from the second terminal to the first terminal, the protection shelf of the first and second terminals being connected together via one of the plurality of communications channels that includes a forward protection channel and a reverse protection channel, a method comprising the steps of:

providing at each location, via the single protection loop, a local virtual protection loop for carrying an indication of protection requirements and status of the location local to the respective location; and

providing via the single protection loop at each location, a remote virtual protection loop for carrying an indication of protection requirements and status of the location remote from the respective location.

5,365,511

RELIABLE CROSS-CONNECTION NETWORK

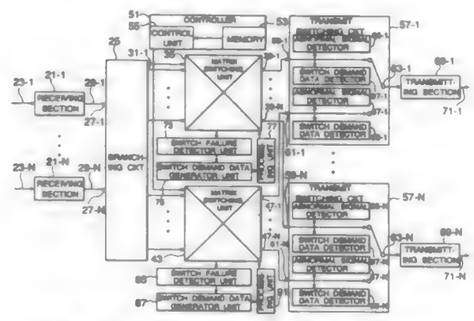
Toshihiko Kasano, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Feb. 16, 1993, Ser. No. 18,027

Claims priority, application Japan, Feb. 13, 1992, 4-26871

Int. Cl.[5] H04Q *1/00, 11/04*

U.S. Cl. 370—16 **3 Claims**



1. A cross-connection network comprising:

first through N-th input lines for receiving first through N-th input digital signals, respectively, where N represents an integer greater than one;

a branching circuit having first through N-th input terminals, primary first through primary N-th output terminals, and secondary first through secondary N-th output terminals, said first through said N-th input terminals being connected to said first through said N-th input lines, to said primary first through said primary N-th output terminals, and to said secondary first through said secondary N-th output terminals, respectively;

a first matrix switching unit having primary first through primary N-th matrix input terminals identified by primary input terminal codes, respectively, and primary first through primary N-th matrix output terminals identified by primary output terminal codes, respectively, said primary first through said primary N-th matrix input terminals being connected to said primary first through said primary N-th output terminals, respectively, said first matrix switching unit being for selectively connecting said primary first through said primary N-th matrix input terminals to said primary first through said primary N-th matrix output terminals;

a second matrix switching unit having secondary first through secondary N-th matrix input terminals identified by secondary input terminal codes, respectively, and secondary first through secondary N-th matrix output terminals identified by secondary output terminal codes, respectively, said secondary first through said secondary N-th matrix input terminals being connected to said secondary first through said secondary N-th output terminals, respectively, said second matrix switching unit being for selectively connecting said secondary first through said secondary N-th matrix input terminals to said secondary first through said secondary N-th matrix output terminals;

a controller comprising a memory and a control unit, said memory being for memorizing connection information signals indicating, in correspondence to said primary and said secondary input terminal codes, designated ones, not greater in number than N, of said primary output terminal codes and of said secondary output terminal codes, said control unit being connected to said memory and said first and said second matrix switching units for controlling, in accordance with said connection information signals, said first matrix switching unit to make said first matrix switching unit cross connect said primary first through said primary N-th matrix input terminals to ones of said primary first through said primary N-th matrix output terminals that are identified by said designated ones of the primary output terminal codes, said control unit being for controlling said second matrix switching unit to make said second matrix switching unit cross connect said secondary first through said secondary N-th matrix input terminals to ones of said secondary first through said secondary N-th matrix output terminals that are identified by said designated ones of said secondary output terminal codes; and

first through N-th transmit switching circuits comprising primary first through primary N-th transmit input terminals, secondary first through secondary N-th transmit input terminals, first through N-th transmit output terminals, primary first through primary N-th abnormal signal detectors, and secondary first through secondary N-th abnormal signal detectors, respectively, said primary first through said primary N-th transmit input terminals being connected to said primary first through said primary N-th matrix output terminals, respectively, for receiving said first through said N-th input digital signals through said branching circuit and said first matrix switching unit, respectively, said secondary first through said secondary N-th transmit input terminals being connected to said secondary first through said secondary N-th matrix output terminals, respectively, for receiving said first through said N-th input digital signals through said branching circuit and said second matrix switching unit, respectively, said primary first through said primary N-th abnormal signal detectors being for detecting primary abnormalities of said first through said N-th input digital signals supplied thereto, respectively, said secondary first through said secondary N-th abnormal signal detectors being for detecting secondary abnormalities of said first through said N-th input digital signals supplied thereto, respectively, said first through said N-th transmit switching circuits being for supplying said first through said N-th input digital signals from said primary first through said primary N-th transmit input terminals to said first through said N-th transmit output terminals, respectively, when said secondary first through said secondary N-th abnormal detectors detect the secondary abnormalities of said first through said N-th input digital signals, respectively, said first through said N-th transmit switching circuits being for supplying said secondary first through said secondary N-th input digital signals from said secondary first through said secondary N-th transmit input terminals to said first through said N-th transmit output signals, respectively, when said primary first through said primary N-th abnormal signal detectors detect the primary abnormalities of said first through said N-th input digital signals, respectively.

5,365,512

MULTISITE TRUNKED RF COMMUNICATION SYSTEM WITH RELIABLE CONTROL MESSAGING NETWORK

Edward A. Combs, Lynchburg; Dennis M. Maddox, Rustburg, and Wim A. Imron, Forest, all of Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Jul. 2, 1993, Ser. No. 84,944

Int. Cl.[5] H04J *3/14;* **G06F** *11/20*

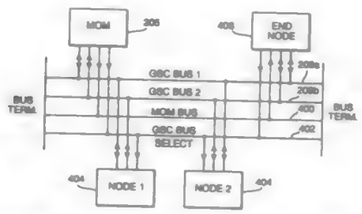
U.S. Cl. 370—16 **15 Claims**

14. A switch, comprising:

a back plane including plural control message buses and a control line;

multiple, processor-controlled nodes operatively connected to one of the control message buses and to a control line of the back plane, wherein when one end node polls other

nodes on one of the control message buses and detects that a response is not received from the other end node, the



one end node commands all of the other nodes over the control line to switch to another control message bus.

5,365,513

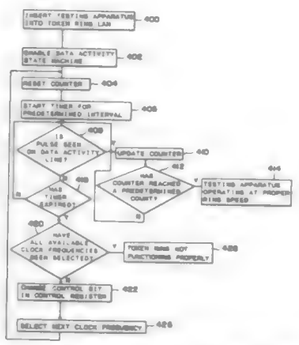
TOKEN RING LOCAL AREA NETWORK TESTING APPARATUS FOR MATCHING ITS SPEED TO RING SPEED

Mark Copley, and Charles H. Whiteside, both of Colorado Springs, Colo., assignors to John Fluke Mfg. Co., Everett, Wash. and Forté Networks, Inc., Colorado Springs, Colo.

Filed Jan. 11, 1993, Ser. No. 3,237

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—17 **11 Claims**



1. A method for modifying a rate at which data is sent by a testing apparatus around a token ring local area network, comprising:

inserting a testing apparatus into a token ring having a predetermined rate at which data is properly transmitted around the token ring.

ascertaining whether an acceptable event has occurred, said acceptable event including receipt of a valid data stream by said testing apparatus after insertion thereof, said valid data stream included in one of a token and a frame;

counting each time said acceptable event occurs;

resetting a timer before conducting said counting step;

monitoring said timer for passage of a predetermined time interval, said predetermined time interval being less than a time that causes a beacon state to occur in the token ring;

determining whether a predetermined count has been counted indicative that a predetermined number of acceptable events has occurred, before said timer has reached said predetermined time interval, with said predetermined count being greater than one; and

modifying a rate at which said testing apparatus is able to send data into the token ring when a determination is made that said timer has exceeded said predetermined time interval before said predetermined count is reached.

5,365,514

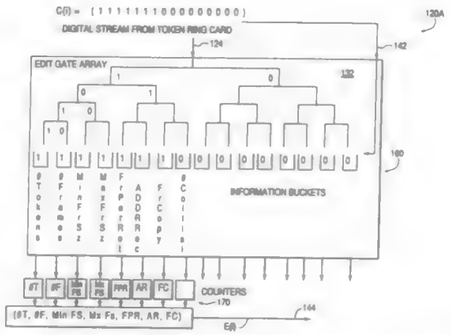
EVENT DRIVEN INTERFACE FOR A SYSTEM FOR MONITORING AND CONTROLLING A DATA COMMUNICATIONS NETWORK

Paul C. Hershey, Manassas, Va.; Kenneth J. Barker, Cary; Charles S. Lingafelt, Sr., Durham, both of N.C., and John G. Waclawsky, Frederick, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,575

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—17 **30 Claims**



1. In a system which communicates a serial data stream having a characteristic pattern, said system including a control vector source for providing a control vector which describes said characteristic pattern and an event vector expert for analyzing an event vector which represents a plurality of occurrences of said pattern an Event Driven Interface, comprising:

an n-bit address register having a first portion with n−1 bits and an second portion with one bit and an input to said second portion coupled to said data stream, for receiving a bit from said serial data stream, where n is a positive integer;

an addressable memory having a plurality of data storage locations, each having a first portion with n−1 bits and a second portion with m bits, said memory having an n-bit address input coupled an output of said address register and having a data input coupled to said control vector source, for receiving said control vector to configure data stored in first and second ones of said data storage locations to represent a digital filter for said pattern, where m is a positive integer or zero;

a feedback path from an output of said memory to an input of said register, for transferring said data from said first portion of said first one of said data storage locations in said memory to said first portion of said address register, for concatenation with said bit from said serial data stream to form an address for accessing said second one of said data storage locations of said memory;

a counter coupled to an output of said memory, for counting when said second one of said data storage locations in said memory is accessed, forming said event vector.

5,365,515

NETWORK MONITOR AND TEST APPARATUS

Martin H. Graham, Berkeley, Calif., assignor to Tut Systems, Inc., Pleasant Hill, Calif.

Continuation of Ser. No. 991,180, Dec. 16, 1992, abandoned, which is a division of Ser. No. 731,634, Jul. 17, 1991, abandoned. This application Apr. 28, 1994, Ser. No. 234,726

Int. Cl.[5] H04B *17/00*

U.S. Cl. 370—17 **10 Claims**

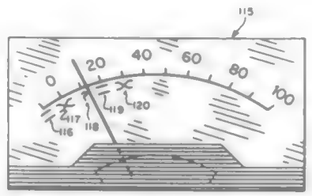
1. A method for monitoring the traffic flow and the condition of an Ethernet network, the method comprising:

coupling a direct current meter to the network;

providing a circuit for determining whether the network has a predetermined level of functionality, the circuit coupled to the network and the meter; and

calibrating the meter such that:

the meter indicates a first non-zero reading when there is no current through the meter,



the meter indicates a second reading when the network has the predetermined level of functionality and there is no Ethernet signal being transmitted in the network, and

the meter indicates a third reading when the network has the predetermined level of functionality and there is a continuous Ethernet signal being transmitted in the network.

5,365,516

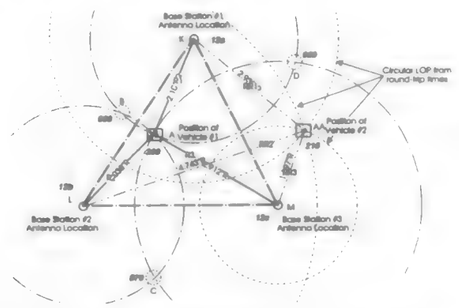
COMMUNICATION SYSTEM AND METHOD FOR DETERMINING THE LOCATION OF A TRANSPONDER UNIT

Louis H. M. Jandrell, Dallas, Tex., assignor to Pinpoint Communications, Inc., Dallas, Tex.

Filed Aug. 16, 1991, Ser. No. 746,954

Int. Cl.[5] G01S *3/02;* **H04K** *1/02;* **H04B** *7/17*

U.S. Cl. 370—18 **6 Claims**



5. A two-way message delivery system for mobile resource management, comprising:

at least one transponder device which uses a radio frequency communication link;

an array of base stations which communicate with the transponder device using the radio frequency communication link;

wherein the radio frequency communication link employed by each base station and the transponder device includes

means for generating successive impulse bursts of an intermediate-frequency signal,

means for correlating successive impulse bursts with selected ones of a family of modulating sequences based on prescribed PRN codes, so that each resulting correlate represents a particular multi-bit data symbol, and transmitting the resulting correlates,

means for receiving and decorrelating the transmitted correlates with modulating sequences based on the same prescribed PRN codes used to produce the transmitted correlates, and

means for accumulating the signal energy contained in multiple decorrelates resulting from the decorrelation of a correlate received via multiple paths, to improve the data quality.

5,365,517

ISDN TERMINAL EQUIPMENT

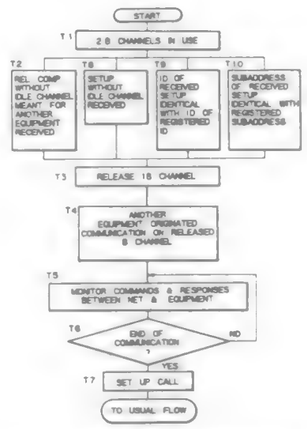
Tamiko Kato, Atsugi; Shinichiro Ozeki, Isehara, and Takanori Fujii, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 3, 1993, Ser. No. 115,547

Claims priority, application Japan, Sep. 4, 1992, 4-236245

Int. Cl.[5] H04J *3/12;* **H04M** *3/22*

U.S. Cl. 370—58.3 **5 Claims**



1. ISDN terminals connected in a multipoint configuration to an ISDN basic rate interface having two B channels for user information transfer and a single D channel for signaling and data transfer as channels which a single one of said ISDN terminals can use, said ISDN terminals being capable of holding a communication, each of said ISDN terminals comprising:

no channel detecting means for detecting, when one of said ISDN terminals is using said two B channels, a signal indicative of a no idle channel condition which is sent to another of said ISDN terminals and indicates to said another of said ISDN terminals that both of said B channels are being used; and

channel releasing means for releasing by said one of said ISDN terminals, when said no channel detecting means detects said signal, one of said two B channels having been used by said one of said ISDN terminals.

5,365,518

SONET OVERHEAD SERVER

Francis G. Noser, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Mar. 2, 1992, Ser. No. 844,238

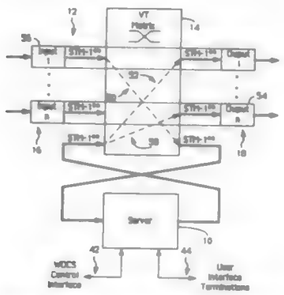
Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—58.1 **7 Claims**

1. A network element, comprising:

a cross-connect, responsive to a plurality of input signals in an electrical transport format for use in the network element, the input signals comprising both overhead and data signals organized in frames having a plurality of rows and columns of bytes, for cross-connecting the input data and overhead signals and for providing the cross-connected input data and overhead signals in the electrical transport format; and

plural servers, each responsive to different cross-connected input data and overhead signals from the cross-connect in the electrical transport format, for selectively input data and overhead signals and responsive to output data and overhead signals from user interfaces, for providing the



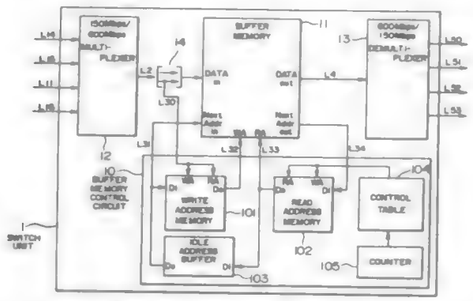
output data and overhead signals in the electrical transport format, and wherein the cross-connect is responsive to the output data and overhead signals in the electrical transport format for cross-connecting and providing same as cross-connected output signals in the electrical transport format.

5,365,519

ATM SWITCHING SYSTEM CONNECTABLE TO I/O LINKS HAVING DIFFERENT TRANSMISSION RATES

Takahiko Kozaki, Koganei; Junichirou Yanagi, Kodaira; Kiyoshi Aiki, Hachioji; Yutaka Ito, and Kaoru Aoki, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 745,466, Aug. 14, 1991, Pat. No. 5,280,475. This application Mar. 4, 1992, Ser. No. 845,668
Claims priority, application Japan, Mar. 5, 1991, 3-038388
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 10 Claims



1. A switching system comprising a switch unit including a plurality of switch unit input ports and switch unit output ports having a first transmission rate, a plurality of input lines for supplying input cell streams to said switch unit input ports, a plurality of output lines for transmitting output cell streams output from said switch unit output ports, and at least one conversion means interposed between at least one of the switch unit output ports and at least one of the output lines having a second transmission rate different from the first transmission rate and for converting at least one output cell stream received from said at least one switch unit output port having the first transmission rate to at least one cell stream having the second transmission rate by multiplexing or demultiplexing the received output cell stream;

said switch unit comprises:

multiplexer means for multiplexing a plurality of cells received from the switch unit input ports into a sequential cell stream, each of said cells including routing information for designating one of said output lines;

a shared buffer memory for temporarily storing the cells outputted sequentially from the multiplexer means, each of said cells forming a pair along with a pointer address for indicating a location address of a next input cell related thereto;

demultiplexer means for periodically distributing cells read out from the shared buffer memory among the switch unit output ports; and

a buffer memory control means for accessing said shared buffer memory;

said buffer memory control means comprises:

idle address buffer means for storing idle addresses to be used as a pointer address;

means for extracting routing information from the cells of said sequential cell stream outputted from said multiplexer means;

write control means for writing each of input cells of the sequential cell stream outputted from the multiplexer means into said shared buffer memory forming a pair including the input cell and a pointer address taken out from said idle address buffer means in such a manner that a group of cells having the same routing information are chained one after another in the shared buffer memory by writing a next input cell at a memory location designated by the pointer address paired with a preceding input cell belonging to a cell group specified by the routing information supplied from said extracting means;

output control means for storing identifiers of the output lines in correlation with said switch unit output ports and for selectively outputting said identifiers one after another in accordance with the switch unit output port to which is to be distributed a cell read out from said shared buffer memory; and

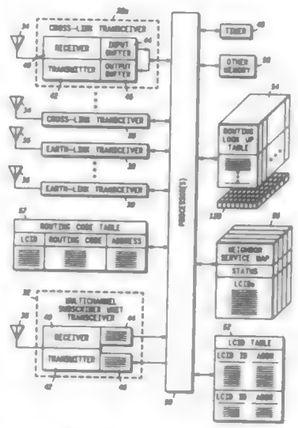
read control means for reading out from said shared buffer memory a pair of cell and pointer address belonging to a cell group specified by the output line identifier outputted from the output control means.

5,365,520

DYNAMIC SIGNAL ROUTING

Theresa C. Y. Wang, Scottsdale, Ariz., and Raymond J. Leopold, Colorado Springs, Colo., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1992, Ser. No. 858,829
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 27 Claims



1. A method of routing a signal through a switch which serves as one node in a constellation of switching nodes that

move with respect to each other, said switch having a plurality of communication links associated therewith and having a neighbor node associated with each of said communication links, said method comprising the steps of:

receiving neighbor service update messages at said switch indicating if any of said communication links have failed or if one of said neighbor nodes cannot process traffic data;

receiving, at said switch, a data packet having a routing code therein, said data packet representing at least a portion of said signal;

obtaining a link identifier in response to said routing code, said link identifier specifying a first choice communication link for routing said data packet away from said switch based on said routing code;

determining a link status from said neighbor service update messages for said first choice communication link, said link status indicating if said first choice communication link has failed or if said neighbor node associated with said first choice communication link can process said data packet;

dynamically determining by said switch using said link identifier and said link status, one of said communication links for routing said data packet away from said switch; and

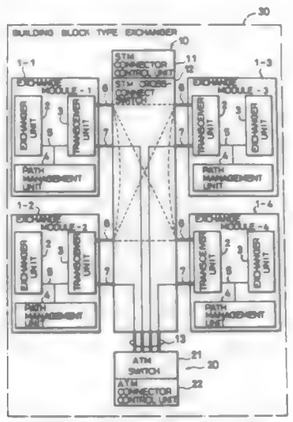
transmitting said data packet away from said switch over said one communication link.

5,365,521

DATA TRANSMISSION AND TRANSMISSION PATH SETTING AMONG EXCHANGE MODULES IN BUILDING BLOCK TYPE EXCHANGER

Hirokazu Ohnishi; Shinji Yasuda, both of Saitama; Kiminori Shinozaki, Tokyo; Kouji Kogure, Tokyo, and Shigehiko Suzuki, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Feb. 18, 1993, Ser. No. 19,103
Claims priority, application Japan, Feb. 20, 1992, 4-069322; Feb. 20, 1992, 4-069323; Feb. 26, 1992, 4-039679
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 20 Claims



16. A building block type exchange, comprising:

at least one exchange module having a transmission path set up/release function;

an STM exchange module connector having a cross-connect function connected to said at least one exchange module through at least one logical STM transmission line containing at least one logical STM transmission path for transmission of specific data;

an ATM connector connecting to the STM exchange module connector through at least one STM transmission line containing local transmission paths provided in correspondence to said at least one logical STM transmission path for transmission of specific data;

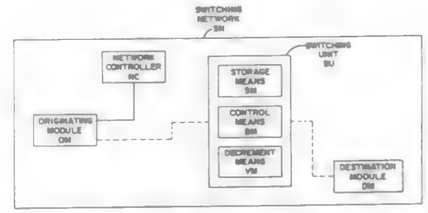
wherein said at least one logical STM transmission path for transmission of specific data is fixedly switched to the logical transmission paths of said at least one STM transmission line by the STM exchange module connector, such that the specific data to be transmitted from said at least one exchange module is transmitted in a form of ATM cells to the ATM connector through said at least one logical STM transmission path for transmission of specific data, the STM exchange module connector, and said at least one STM transmission line, while all the specific data to be transmitted to said at least one exchange module are multiplexed in a form of multiplexed ATM cells at the ATM connector and the multiplexed ATM cells are transmitted from the ATM connector to said at least one exchange module through said at least one STM transmission line, the STM exchange module connector, and said at least one logical STM transmission path for transmission of specific data.

5,365,522

SWITCHING NETWORK

Hugo J. P. Peeters, Braschaat, , assignor to Alcatel, N.V., Amsterdam, Netherlands

Filed May 28, 1993, Ser. No. 68,387
Claims priority, application European Pat. Off., Jan. 1, 1992, 92201552.4
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60.1 19 Claims



1. A switching network (SN) including a plurality of intercoupled switching units (SU) having first switching units (SU) through which at least a first communication path (VP) is established for at least one cell stream by control information in a first path set up cell (PSUC) transmitted prior to the transmission of data cells of said at least one cell stream on said first communication path (VP), characterized in that

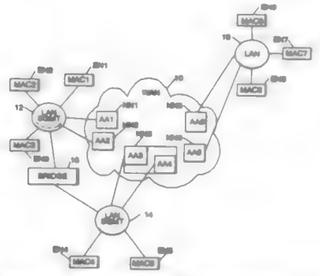
said plurality of intercoupled switching unit includes a second switching unit (SU) having control means (BM) for determining on the basis of a first tag (ID) associated with said first path set up cell (PSUC) and a second tag (ID, DISL1) associated with a second path set up cell (PSUC) received in said second switching unit (SU) whether a second communication path (VP) is established through said first switching units (SU) by said second path set up cell (PSUC).

5,365,523

FORMING AND MAINTAINING ACCESS GROUPS AT THE LAN/WAN INTERFACE

Jeffrey H. Derby, Chapel Hill, N.C.; Willibald A. Doeringer, Langnau, Switzerland; John E. Drake, Jr., Pittsboro, N.C.; Douglas H. Dykeman, Rueschlikon, Switzerland; Liang Li, Chapel Hill; Marcia L. Peters, Pittsboro, both of N.C.; Haldon J. Sandick, Durham, and Ken Van Vu, Cary, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1992, Ser. No. 976,826
Int. Cl.[5] H04L *12/46, 12/66*
U.S. Cl. 370—85.2 **23 Claims**



1. For use in a plural network communication system having multiple access agents at a network-to-network interface, a cooperative method for use by each of the access agents so that the access agents form and maintain the access agents common to the interface into a group for operative use as a group by the communication system, said method in each access agent comprising the steps of:

negotiating for leadership of the group with all other access agents common to the interface by testing whether or not a group leader message has been received from another access agent in a predetermined interval of time, and sending a negotiation message to the other access agents if a group leader message has not been received;

resolving conflicts in negotiation and assuming a role of group leader or a role of member of the group; and

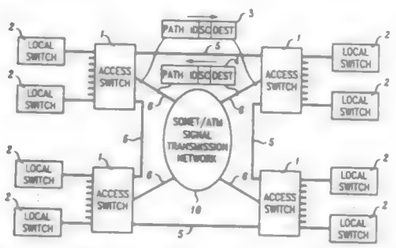
maintaining group operation integrity after the group has been formed whereby the communication system may manage the access agents as a group.

5,365,524

ESTABLISHING TELECOMMUNICATIONS CALL PATHS BETWEEN CLUSTERED SWITCHING ENTITIES

Thomas L. Hiller, Glen Ellyn; James J. Phelan, Downers Grove, and Meyer J. Zola, Oak Park, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 6, 1992, Ser. No. 972,787
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—94.2 **4 Claims**



1. In a telecommunications switching system or cluster comprising a plurality of switching modules or switching systems, apparatus comprising:

means for converting first output signals to second output signals, each said first output signal comprising a plurality of synchronous pulse code modulated (PCM) signals received from said switching modules or systems, each said first output signal for carrying a plurality of PCM channels, each said second output signal comprising a plurality of composite packets transmitted periodically, and each composite packet comprising bytes of a plurality of PCM channels of said first output signals, the PCM channels of each composite packet having a common means for converting third output signals into PCM signals as a destination; and

means for switching each composite packet of said second output signals to one of a plurality of third output signals, each said third output signal for transmission to a means for convertning a third output signal into PCM signals for transmission to ones of said plurality of switching modules or systems;

wherein each of said second and said third output signals comprise Asynchronous Transfer Mode (ATM) signals and said plurality of periodically transmitted composite packets are a plurality of composite ATM cells;

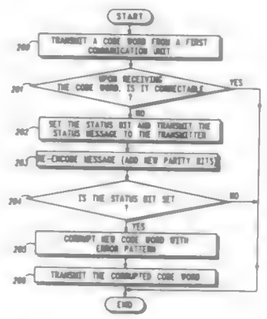
wherein said plurality of composite ATM cells each carries a plurality of bytes, each byte representing one PCM signal of one channel, and wherein each of said plurality of composite ATM cells carries only a single byte of any channel.

5,365,525

METHOD FOR REDUCING BANDWIDTH OF A WIRELINE COMMUNICATION PATH

Donald G. Newberg, Schaumburg, and Lawrence E. Feldman, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 27, 1992, Ser. No. 982,344
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—2.1 **5 Claims**



1. In a communication system that includes a plurality of communication units, a receive wireless communication path, a transmit wireless communication path, at least one receiver that is operably coupled to the receive communication path, and a transmitter that is operably coupled to the transmit wireless communication path, wherein the transmitter is operably coupled to the receiver via a wireline communication path, a method for labeling uncorrectable transmitted code words and reducing bandwidth, the method comprises the steps of:

a) transmitting, by a first communication unit of the plurality of communication units, a code word via the receive wireless communication path to the receiver to produce a transmitted code word;

b) detecting, by the receiver, that the transmitted code word is uncorrectable to produce an uncorrectable code word;

c) setting, by the receiver, a predetermined number of bits to indicate that the transmitted code word is uncorrectable;

d) transmitting, by the receiver to the transmitter via the wireline communication path, at least the predetermined number of bits, said uncorrectable code word and predetermined number of bits being less in length than said code word;

e) generating, by the transmitter, an error code word;

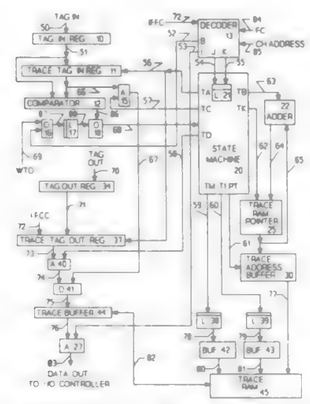
f) transmitting, by the transmitter via the transmit wireless communication path to at least a second communication unit, the error code word.

5,365,526

TRACE SYSTEM FOR AN I/O CHANNEL

Chun Wu, Alameda, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 18, 1992, Ser. No. 993,100
Int. Cl.[5] G06F *11/34*
U.S. Cl. 371—16.5 **10 Claims**



1. A trace system in an I/O channel for generating and preserving the history of operation of said I/O channel which operates under the control of an I/O channel controller, said I/O channel having a TAG IN register for storing in tags and a TAG OUT register for storing out tags, said trace system comprising:

first means for generating a first signal whenever the contents of said TAG IN register is changed in said TAG IN register during the operation of said I/O channel;

second means for generating a second signal whenever said TAG OUT register is written into during the operation of said I/O channel;

storage means for sequentially storing the contents of said TAG IN register and said TAG OUT register said in tags and said out tags; and

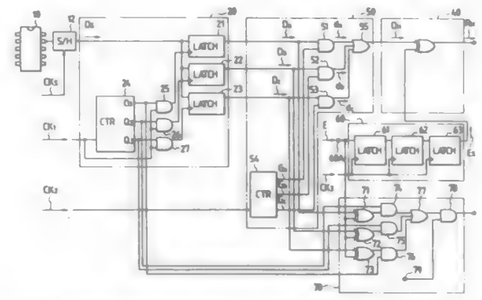
control means for transferring to said storage means the contents of said TAG IN register and TAG OUT register whenever said first signal or said second signal is generated whereby the recent past history of the operation of said I/O channel is sequentially stored in said storage means for analysis upon detection of an error in the operation of said I/O channel by said I/O channel controller.

5,365,527

LOGICAL COMPARISON CIRCUIT

Tatsuya Honma, Gyoda, Japan, assignor to Advantest Corporation, Tokyo, Japan

Filed Jul. 15, 1991, Ser. No. 729,996
Claims priority, application Japan, Jul. 18, 1990, 2-189716
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—25.1 **5 Claims**



1. A logical comparison circuit comprising:

an interleave circuit including n latch circuits, whereby a sample data signal is latched in said n latch circuits in synchronization with a test clock, n being an integer equal to or greater than 2, for conversion to n trains of low-speed signals each having a period n times longer than that of said test clock;

a multi-phase pulse generator for generating n pulse signals having different phases synchronized with an expected value pattern signal;

a period converter, operatively connected to said interleave circuit and said multi-phase pulse generator, for converting said converted low-speed signals from said interleave circuit which are extracted by said n pulse signals having different phases, into a high-speed signal; and

a comparator, operatively connected to said period converter, for comparing said high-speed signals with said expected value pattern signal to decide whether said sample data signal coincides with said expected value pattern signal.

5,365,528

METHOD FOR TESTING DELAY FAULTS IN NON-SCAN SEQUENTIAL CIRCUITS

Vishwani D. Agrawal, New Providence, and Tapan J. Chakraborty, Mercerville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 3, 1992, Ser. No. 862,942
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—25.1 **8 Claims**

1. A method for detecting whether a signal transition has propagated within a prescribed interval along a signal path of interest in a digital circuit having at least one primary input and at least one primary output, and including a plurality of flip-flops, comprising the steps of:

designating a first (source) flip-flop in the digital circuit which is proximate to a first end of the signal path of interest and a second (destination) flip-flop which is proximate a second end of the signal path of interest;

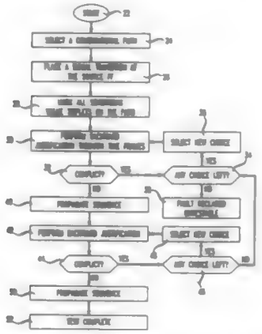
activating the signal path to establish what logic value is necessary at each of a plurality of intermediate portions of the signal path in order for a selected signal transition to propagate from the source flip-flop to the destination flip-flop

performing a first backward justification, in accordance with the activation of the signal path, to synthesize a first sequence of vectors which, when applied to the primary input, serves to propagate a selected logic value from the primary input to the source flip-flop to cause the source

flip-flop to generate the selected logic transition and to propagate the signal transition to the destination flip-flop so that a logic value is latched therein;

performing a second backward justification, in accordance with the activation of the signal path, to synthesize a second sequence of vectors, which, when applied to the primary input, serves to propagate the logic value that has been latched into the destination flip-flop to the primary output;

periodically applying a successive one of the vectors of the first sequence to the primary input such that the selected logic value is propagated from the primary input to the



source flip-flop, and that the selected signal transition is generated by the source flip-flop and propagates therefrom to the destination flip-flop within the predetermined interval in the absence of a delay fault;

periodically applying a successive one of the vectors of the second sequence to the primary input to cause the destination flip-flop to propagate the logic value that has been latched therein following application of the first sequence of vectors to the primary output; and

comparing the logic value propagated to the primary output to the preselected logic value to determine if a delay fault is present.

5,365,529

CIRCUITRY FOR DETECTING AND CORRECTING ERRORS IN DATA WORDS OCCURRING IN REED-SOLOMON CODED BLOCKS AND DETERMINING WHEN ERRORS ARE UNCORRECTABLE BY SYNDROME ANALYSIS, EUCLID'S ALGORITHM AND A CHIEN SEARCH

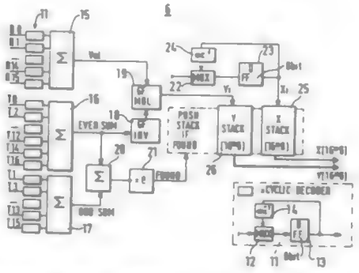
Roland Mester, Darmstadt, Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Germany

Filed Dec. 12, 1991, Ser. No. 805,766

Claims priority, application Germany, Feb. 25, 1991, 4105860

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—37.1 **4 Claims**



1. In circuitry for detecting and correcting errors in data words occurring in Reed-Solomon coded blocks and comprising a stage that constructs syndromes in the data flowing through the blocks, a stage that detects erasures in the syndromes, a stage that applies a Euclid's algorithm with

$$T_s(x)=\{Q_{s-1}(x)\cdot T_{s-1}(x)\}+T_{s-2}(x),$$

$$R_s(x)=\{Q_{s-1}(x)\cdot R_{s-1}(x)\}+R_{s-2}(x),$$

and

$$Q_{s-1}(x)=R_{s-2}(x)/R_{s-1}(x)$$

wherein $T_s(x)$, $R_s(x)$, and $Q_{s-1}(x)$ are polynomials representing the position of the error, its value, and a provisional value respectively and $R_s(x)$ and $T_s(x)$ can be normalized with a minimal coefficient $T_s(0)=\delta$ such that $R(x)=R_s(xi/\delta$ and $T(x)=T_s(x)/\delta$, a stage that detects error positions X_k and values Y_k by conducting a Chien zero-root search in conjunction with

$$Y_k=\frac{R(X_k)}{X_k{}^b\cdot T'(X_k)}$$

wherein $T'(X_k)$ is the first derivative of T at a place x_k, and a stage that uses the accordingly calculated error positions X_k and values Y_k to correct signal-duration matched data words in a currently occurring Reed-Solomon coded block, the improvement comprising:

a forwards counter for counting up the data words in one block and emitting a target value (X_i) simultaneously with the Chien zero-root detection;

a first stack, coupled to the forwards counter, for storing counts (X_i), representative of error positions, that can be extracted from it at the end of each data block;

a second stack, coupled to the first stack, for storing the the error positions (X_k) extracted from the first stack;

a third stack for storing, simultaneously with the storage of the counts in the first stack, error values (Y_i) that can be extracted from it at the end of each data block;

a fourth stack, coupled to the third stack, for storing the error values (Y_k) extracted from the third stack;

a backwards counter for counting down from the value of one block length;

a comparator, coupled to the backwards counter and to the second stack, for comparing whatever count is at the top of the second stack with the counts emitted by the backwards counter in order to derive a control signal when the two counts are equal; and

an exclusive-OR stage with one input terminal coupled to receive the error value (Y_k) at the top of the fourth stack in accordance with the control signal, with another input terminal coupled to receive the signal-duration matched data words, and with an output terminal that emits corrected data words.

5,365,530

ERROR-CORRECTION ENCODING AND DECODING SYSTEM

Hideo Yoshida, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

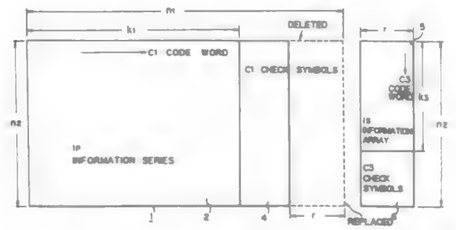
Filed May 12, 1992, Ser. No. 881,533

Int. Cl.[5] H03M *13/00;* **G11B** *20/18*

U.S. Cl. 371—37.4 **17 Claims**

12. A decoder for decoding encoded data including first data encoding an Ip information series and second data encoding an Is information series, a portion of check symbols of said first data being deleted and replaced by said second data in said encoded data when an Is information series is encoded, said decoder comprising:

a first decoding section for decoding a portion of said encoded data corresponding to said first data to provide an Ip information series; and



a second decoding section for decoding a portion of said encoded data corresponding to said second data to provide an Is information series.

5,365,531

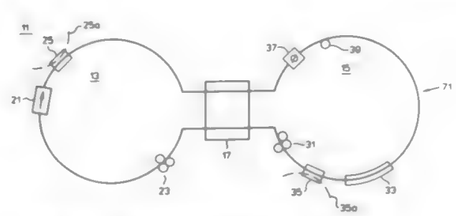
APPARATUS AND METHOD FOR INITIALIZING AN OPTICAL-FIBER LASER FOR MODE LOCKING

Hong Lin, Palo Alto; Wayne V. Sorin, Mountain View, and David K. Donald, Monte Sereno, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 24, 1992, Ser. No. 980,896

Int. Cl.[5] H01S *3/098*

U.S. Cl. 372—18 **18 Claims**



1. A fiber loop laser comprising:

a fiber loop having an output coupler;

a Sagnac loop, optically coupled to the fiber loop to define an optical path, having an input coupler receiving excitation energy;

wherein the optical path includes the fiber loop and the Sagnac loop;

polarization compensation means in the optical path;

an amplifying medium in the optical path, operative to amplify a light signal in the optical path sufficiently to cause to the laser to oscillate;

wherein the output coupler extracts a portion of the amplified light signal; and

a controllable phase shifter in the optical path, operative to introduce a non-reciprocal phase shift before mode-lock to initialize the laser for mode-locking.

5,365,532

CAVITY DUMP LASER AMPLITUDE STABILIZATION

Louis F. Klaras, Redondo Beach, and Kuei-Ru Chien, Cerritos, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

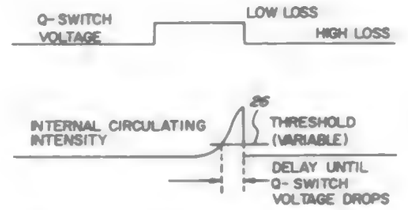
Filed Oct. 9, 1992, Ser. No. 958,623

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—31 **21 Claims**

1. Apparatus for stabilizing amplitude in a pulsed laser wherein a laser flux is generated and an output pulse is produced when said flux is dumped, comprising:

indicating means for generating a control signal indicating that said laser flux has increased to a selected threshold; and



means responsive to said control signal for causing said flux to be dumped.

5,365,533

INTEGRATED CIRCUIT OF SEMICONDUCTOR LASERS

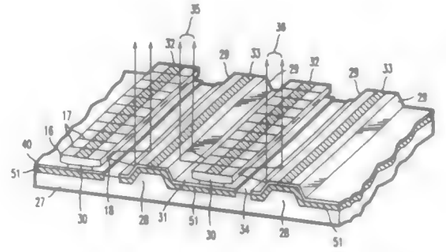
Bernard Grousin, Les Ulis, France, assignor to Thomson Hybrides, Puteaux, France

Filed Nov. 9, 1992, Ser. No. 973,823

Claims priority, application France, Nov. 22, 1991, 91 14401

Int. Cl.[5] H01S *3/045*

U.S. Cl. 372—36 **7 Claims**



1. An integrated circuit of semiconductor lasers, comprising:

at least one linear array of lasers formed by a plurality of layers epitaxially grown on a semi-insulator substrate, said lasers being supplied with current between a first metal contact deposited on said linear array and a second metal contact on a first of said plurality of epitaxially grown conductive layers;

wherein, in order to lower the resistance of the first epitaxially grown conductive layer, a surface layer of the substrate in contact with said first epitaxially grown conductive layer has a dopant diffused therein to make said surface layer conductive.

5,365,534

INJECTION LASER AND PHOTOSENSOR ASSEMBLY

Adrian P. Janssen, Exwick, and Martin P. Rees, Paignton, both of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 24, 1994, Ser. No. 201,473

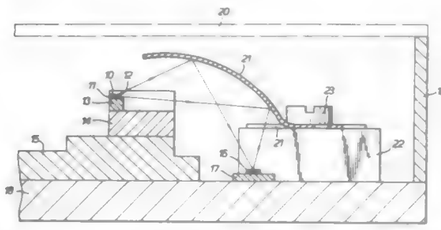
Claims priority, application United Kingdom, Feb. 25, 1993, 9303783

Int. Cl.[5] H01S *3/02*

U.S. Cl. 372—36 **20 Claims**

1. An injection laser and photosensor assembly having a reflector providing optical coupling between an optical emission zone of the laser and a photosensitive surface of the photo-

sensor which reflector has its reflecting surface conforming substantially to a portion of an ellipsoid of revolution located



with one focus substantially at said emission zone and the other focus substantially at said photosensitive surface.

5,365,535

SEMICONDUCTOR LASER AND BEAM SPLITTING DEVICES, AND OPTICAL INFORMATION RECORDING/REPRODUCING, OPTICAL COMMUNICATION, AND OPTOMAGNETIC RECORDING/REPRODUCING APPARATUSES USING SEMICONDUCTOR LASER AND BEAM SPLITTING DEVICES

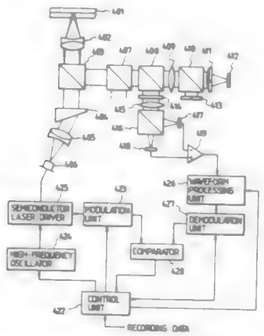
Eiji Yamaguchi, Zama; Hiroaki Hoshi, Yokohama; Masakuni Yamamoto, Yamato, and Sotomitsu Ikeda, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,316

Claims priority, application Japan, Jan. 13, 1992, 4-021579; Mar. 19, 1992, 4-092312; Aug. 21, 1992, 4-244043

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—38 **22 Claims**



1. An optical information recording/reproducing apparatus comprising:

a semiconductor laser, having an active layer comprising at least two light-emitting layers having different energy levels, for generating first and second light beams having different wavelengths;

a wavelength dispersion element for dispersing the first and second light beams generated by said semiconductor laser; and

an optical system for converging the first and second light beams dispersed by said wavelength dispersion element to form first and second light spots on a track of a recording medium at a predetermined interval,

wherein information is recorded on the track with the first light spot, and just after recording the information recorded on the track is reproduced with the second light spot.

5,365,536

SEMICONDUCTOR LASER

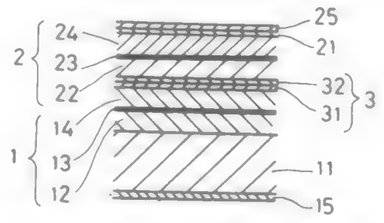
Akinori Seki, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 20, 1993, Ser. No. 93,754

Claims priority, application Japan, Jul. 20, 1992, 4-215580; Dec. 18, 1992, 4-356021

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **8 Claims**



8. A semiconductor laser for radiating a laser beam when current flows in a forward direction, comprising:

a p-type semiconductor substrate;

a first laser structure formed on said semiconductor substrate and having a forward direction coincident with said forward direction of said semiconductor laser, said first laser structure comprising:

i) a first p-type clad layer,

ii) a first active layer formed on said first p-type clad layer, and

iii) a first n-type clad layer formed on said first active layer,

a tunnel diode structure formed on said first laser structure and having a forward direction that is opposite to said forward direction of said semiconductor laser, said tunnel diode structure including:

a first n-type junction layer, and

a second p-type junction layer formed on said first n-type junction layer, and

a second laser structure formed on said tunnel diode structure and having a forward direction coincident with said forward direction of said semiconductor laser, said second laser structure comprising:

i) a second p-type clad layer,

ii) a second active layer formed on said second p-type clad layer, and

iii) a second n-type clad layer formed on said second active layer,

wherein said first and second junction layers are formed of a material selected from a group including GaAs, InGaAs and InP; and

wherein said first and second junction layers have an impurity concentration of at least $1\times10^{18}/cm^3$ and a layer thickness of no more than 50 nm.

5,365,537

METHOD OF PRODUCING A SEMICONDUCTOR LASER

Kiyotaka Sato, and Kenji Togura, both of Fukushima, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1993, Ser. No. 1,462

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—50 **13 Claims**

1. A semiconductor laser device comprising:

a substrate;

a semiconductor film on said substrate having a plurality of layers, each of said layers substantially parallel to said substrate;

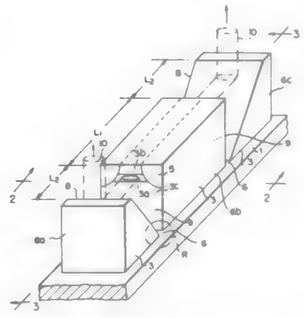
said plurality of layers having a laser excitation layer;

two cleavages defining first and second cleaved ends in said semiconductor film;

said first and second cleaved ends dividing said semiconductor film into a resonator, having said first and second cleaved ends at opposed ends thereof, and at least one separated portion adjacent to said resonator;

said first and second cleaved ends being parallel to each other and spaced apart a distance effective to define said resonator for permitting laser activity within said semiconductor film;

said laser excitation layer being effective for emitting at least on beam from said first and second cleaved ends in response to an excitation;



a mirror plane on said at least one separated portion facing one of said first and second cleaved ends;

said mirror plane being reflective and disposed at an angle with respect to a line perpendicular to said first and second cleaved ends;

said angle being effective for reflecting said at least one beam between said line and a location off said substrate in a desired direction; and

means for exciting said laser excitation layer.

5,365,538

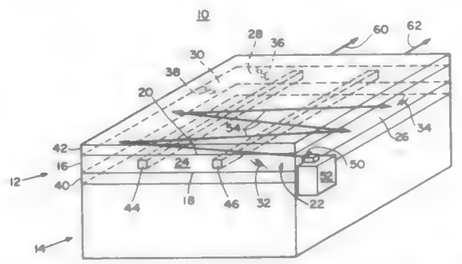
SLAB WAVEGUIDE PUMPED CHANNEL WAVEGUIDE LASER

Richard Tumminelli, Ashland; Farhad Hakimi, Watertown, and John R. Haavisto, Marshfield Hills, all of Mass., assignors to The Charles Stark Draper Laboratory Inc., Cambridge, Mass.

Filed Oct. 29, 1992, Ser. No. 969,783

Int. Cl.[5] H01S *3/07, 3/091;* **G02B** *6/00*

U.S. Cl. 372—66 **9 Claims**



1. A slab waveguide pumped channel waveguide laser comprising:

a slab waveguide having a primary pump guiding layer having a first index of refraction and having first and second opposing faces and a peripheral edge including a mirror surface; and cladding means having second index of refraction lower than said first index of refraction proximate said first and second opposing surfaces;

at least one rare earth doped channel waveguide laser having a third index of refraction higher than said first index of refraction disposed in said primary guiding layer; and

means for introducing pumping energy into said guiding layer to reflect between said mirror surfaces and energize said laser.

5,365,539

MICROCHIP LASER

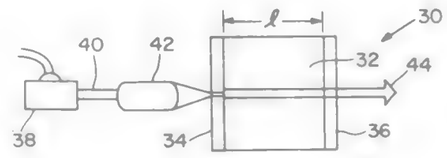
Aram Mooradian, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 13,562, Feb. 3, 1993, Pat. No. 5,265,116, which is a continuation of Ser. No. 999,577, Dec. 30, 1992, Pat. No. 5,256,164, which is a continuation of Ser. No. 512,981, Apr. 23, 1990, abandoned, which is a division of Ser. No. 308,251, Feb. 9, 1989, Pat. No. 4,953,166, which is a continuation-in-part of Ser. No. 151,396, Feb. 2, 1988, Pat. No. 4,860,304. This application Oct. 22, 1993, Ser. No. 140,616

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] H01S *3/091*

U.S. Cl. 372—75 **26 Claims**



1. A solid state optically pumped laser comprising a solid state gain medium disposed between two mirrors characterized in that the distance between the mirrors is such that the gain bandwidth of the gain medium is less than the frequency separation of the cavity modes, and in that the laser is pumped to operate in a single transverse mode.

5,365,540

VERTICAL-TO-SURFACE OPTICAL SEMICONDUCTOR DEVICE AND APPARATUS FOR COUPLING OPTICAL SIGNALS

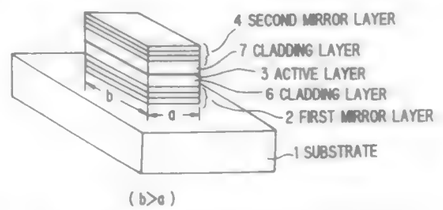
Yutaka Yamanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 22, 1993, Ser. No. 124,601

Claims priority, application Japan, Sep. 25, 1992, 4-256665

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—92 **5 Claims**



1. A vertical-to-surface optical semiconductor device, comprising:

a first mirror layer, a first cladding layer, an active layer, a second cladding layer, and a second mirror layer, successively, grown on a semiconductor substrate to provide a vertical cavity between said first and second mirror layers;

wherein said vertical cavity is of a rectangular shape having short and long sides to provide first and second resonant

wavelengths having a wavelength difference therebetween equal to a wavelength shift induced by a heat generated in operation of said vertical cavity, said first wavelength being shorter than said second wavelength, and light polarization planes of said first and second wavelengths being orthogonal to each other.

5,365,541

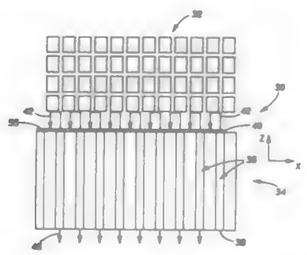
MIRROR WITH PHOTONIC BAND STRUCTURE

Donald L. Bullock, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 827,108, Jan. 29, 1992, abandoned. This application Jan. 27, 1993, Ser. No. 1,231

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—99 **29 Claims**



1. An apparatus including a laser for generating in-phase light from the laser, said apparatus comprising:

a laser producing a light beam at a predetermined wave length;

a periodic lattice structure of regular geometric shapes disposed to receive light from said laser, said structure having a first index of refraction;

an interstitial medium existing between said geometric shapes, said interstitial medium having a second index of refraction which is different from said first index of refraction; and

said periodic lattice structure adapted to receive the light beam, said lattice structure having a spatial period between said geometric shapes which is chosen such that the light of symmetric uniphase mode from said laser is selectively reflected with a substantially enhanced reflectivity relative to other modes by said periodic lattice structure as a result of the photonic band structure of said periodic lattice.

5,365,542

ANODE FOR A DIRECT CURRENT ARC FURNACES

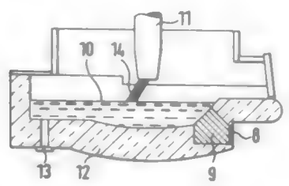
Edgar Nix, Ratingen, Germany, assignor to Deutsch Voest-Alpine Industrieanlagenbau GmbH, Dusseldorf, Germany

Continuation of Ser. No. 917,453, Jul. 21, 1992. This application Sep. 20, 1993, Ser. No. 124,364

Claims priority, application Germany, Aug. 12, 1991, 4126627

Int. Cl.[5] H05B *7/22*

U.S. Cl. 373—64 **7 Claims**



1. Anode for a direct current arc furnace, in which at least part of a furnace area receiving the melt is provided on the inside with an electrically conductive refractory lining, which is electrically connected to an annular copper conductor located on the outside of the furnace and in which a vertically-oriented cathode is arranged above the melt, wherein the electrically conductive lining has values for its electrical resistivity which change circumferentially with respect to the vertical axis of the cathode to thereby provide a lower electrical resistance on a side of the furnace opposite to an eccentrically arranged taphole.

5,365,543

TRANSMITTING CIRCUIT AND RECEIVING CIRCUIT

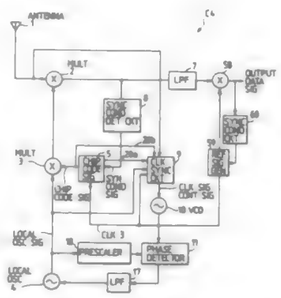
Kenichi Takahashi, Kawasaki; Hiroshi Ohnishi, Tokyo, and Minako Takeishi, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sep. 27, 1993, Ser. No. 127,276

Claims priority, application Japan, Dec. 9, 1991, 3-324425; Sep. 28, 1992, 4-257795

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **9 Claims**



1. A receiving circuit for receiving a transmitted data signal which is coded by a first chip code signal having a predetermined signal pattern to spread spectrum of the transmitted data and is modulated by a carrier signal, said receiving circuit comprising:

(a) receiving means for receiving said transmitted data signal;

(b) demodulation means for demodulating said received data signal;

(c) chip code signal generation means for generating a second chip code signal having said predetermined signal pattern;

(d) decoding means for decoding said demodulated data signal with said second chip code signal;

(e) detection means for detecting whether said second chip code signal is in an asynchronous condition with said received data signal to produce an asynchronous detection signal;

(f) synchronizing means for synchronizing said second chip code signal with said first chip code signal included in said received data signal in response to said asynchronous detection signal; and

(g) control means responsive to said detection means for measuring a time interval for which said asynchronous detection signal is produced continuously and for supplying said asynchronous detection signal to said synchronizing means when said time interval is longer than a predetermined interval.

5,365,544

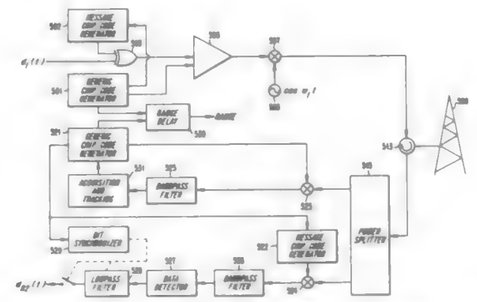
CDMA COMMUNICATIONS AND GEOLOCATION SYSTEM AND METHOD

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 6,851, Jan. 21, 1993, abandoned, which is a continuation-in-part of Ser. No. 622,235, Dec. 5, 1990, and Ser. No. 626,109, Dec. 14, 1990, Pat. No. 5,228,056. This application Feb. 23, 1994, Ser. No. 178,016

Int. Cl.[5] H04L *27/30;* **H04K** *1/00*

U.S. Cl. 375—1 **42 Claims**



1. A spread-spectrum CDMA communications system for communicating base-message data to a plurality of remote units, and range locating each of said remote units, said spread-spectrum CDMA communications system comprising:

a plurality of base stations for communicating base-message data to the plurality of remote units, each of said base stations including,

base-spreading means for spread-spectrum processing the base-message data;

base-generic means for generating a base-generic-chip-code signal;

base-combiner means for combining the base-generic-chip-code signal with the spread-spectrum-processed-base-message data, thereby generating a base-CDMA signal;

base-transmitter means for transmitting the base-CDMA signal from said base station to said remote unit;

a base antenna coupled to said base-transmitter means;

each of said remote units including,

a remote antenna;

remote-detection means, coupled to said remote antenna, for detecting the base-generic-chip-code signal embedded in the base-CDMA signal, and for recovering, using the detected-base-generic-chip-code signal, the base-message data communicated from said base station;

remote-spreading means for spread-spectrum processing remote-message data;

remote-combiner means, responsive to the detected-generic-chip-code signal and the spread-spectrum-processed-remote data for generating a remote-CDMA signal;

remote-transmitter means for transmitting the remote-CDMA signal from the remote unit to said base station;

wherein each of said base stations further includes,

base-detection means, coupled to said base antenna, for detecting the remote-generic-chip-code signal embedded in the remote-CDMA signal, and for recovering, using the detected-remote-generic-chip-code signal, the remote-message data communicated from said remote unit; and

range means, responsive to the detected- remote-generic-chip-code signal and the base-generic-chip-code signal for determining a range delay between said remote unit and said base station.

5,365,545

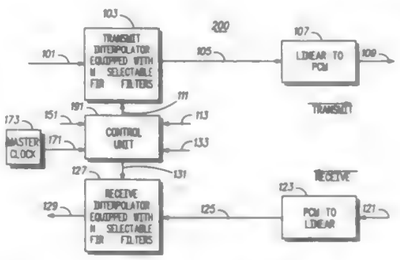
MODEM-CHANNEL BANK CONVERTER

Steven R. Blackwell, and Michael D. Fanning, both of Huntsville, Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Apr. 24, 1992, Ser. No. 873,320

Int. Cl.[5] H04B *1/38*

U.S. Cl. 375—8 **24 Claims**



1. A modem-channel bank converter

having a transmit circuit comprising a transmit interpolator and a control unit,

the transmit interpolator having a transmit interpolator input, a transmit interpolator output, the transmit interpolator further having a predetermined number (M) of selectable finite impulse response filters controlled by the control unit,

the transmit circuit having a transmit circuit input coupled to the transmit interpolator input, the transmit circuit further having a transmit circuit output coupled to the transmit interpolator output,

the control unit receiving a modem clock signal of frequency=f_{modem}, a channel bank transmit framing signal of frequency 32 $f_{channel\ bank}$, and a master clock signal of frequency=f_{master},

the transmit circuit arranged for forming a channel bank transmit sample on a modem transmit sample and a selected tap value (j) in accordance with a predetermined method, the predetermined method comprising the following steps:

(a) upon receiving the modem clock signal, applying the modem transmit sample to the transmit interpolator input, and determining a first master clock reading;

(b) upon receiving the channel bank transmit framing signal, determining a second master clock reading;

(c) computing a master clock reading transmit difference (D_t) based on the second master clock reading minus the first master clock reading;

(d) determining j based on D_t; and,

(e) providing the channel bank transmit sample based on the transmit interpolator output,

where j is directly proportional to D_t, and where:

j=the selected tap value,

D_t=the master clock reading difference; and,

M=the predetermined number of selectable finite impulse responses filters.

5,365,546

METHOD OF AND APPARATUS FOR CONTROLLING MODULATION OF DIGITAL SIGNALS IN FREQUENCY-MODULATED TRANSMISSIONS

Steven E. Koenck; Ronald L. Mahany, and William W. Frede, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa

Continuation-in-part of Ser. No. 467,096, Jan. 18, 1990, Pat. No. 5,052,020. This application Jul. 22, 1991, Ser. No. 735,128

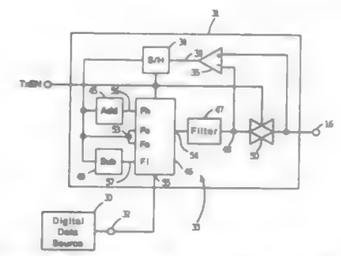
Int. Cl.[5] H04L *27/12*

U.S. Cl. 375—9 **27 Claims**

1. A method of controlling data flow between a digital data

device and an analog communication device which includes a voltage controlled oscillator circuit, said method including receiving digital data messages, generating an analog signal modulated with said digital data messages and applying said modulated analog signal to the oscillator circuit of the analog communication device, said method further comprising:

storing a digitally coded value equivalent of a quiescent bias signal level which when applied to the oscillator circuit



will cause the oscillator circuit to operate at a channel frequency;

generating a high and a low modulation analog signal level with respect to said stored digitally coded value equivalent of said quiescent bias signal level; and

applying to the oscillator circuit said analog signal modulated with said high and low modulated analog signal levels in accordance respectively with high and low data signals of said received digital data messages.

5,365,547

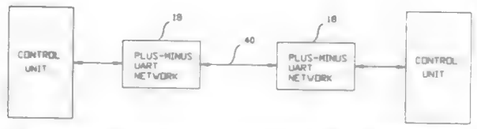
1X ASYNCHRONOUS DATA SAMPLING CLOCK FOR PLUS MINUS TOPOLOGY APPLICATIONS

Frank Marinaro, 22 Lauren Ave., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 750,968, Aug. 28, 1991. This application Jul. 16, 1992, Ser. No. 914,898

Int. Cl.[5] H04L *27/00*

U.S. Cl. 375—37 **8 Claims**



8. A system for asynchronous transmission and reception of data between control units, comprising:

a first control unit operatively connected to a first asynchronous transmitter-receiver circuit, said first asynchronous transmitter-receiver circuit having a transmitter portion having means for separately processing odd data bits and even data bits at a rate between 1 MHz and 40 MHz; a receiver portion for processing received data signals and extracting the odd and even data bits therefrom, said receiver portion having a data sampling clock circuit which includes a received data-to-clock position circuit for determining the position of said received data signals with respect to a system clock, a bias distortion circuit for determining the pulse width of the received data signals and means for combining and decoding output signals from said received data-to-clock position circuit and said bias distortion circuit to determine a true center of said received data signals and for selecting a proper sampling clock for said received data signals; an interface portion for serially transmitting said odd and even data bits on a single media in response to said transmitter portion and for receiving serial data from said single media and detecting positive and negative transitions of said received data signals;

a second control unit operatively connected to a second asynchronous transmitter-receiver circuit, said second asynchronous transmitter-receiver circuit having a transmitter portion having means for separately processing odd data bits and even data bits at a rate between 1 MHz and 40 MHz; a receiver portion for processing received data signals and extracting the odd and even data bits therefrom, said receiver portion having a data sampling clock circuit which includes a received data-to-clock position circuit for determining the position of said received data signals with respect to a system clock, a bias distortion circuit for determining the pulse width of the received data signals and means for combining and decoding output signals from said received data-to-clock position circuit and said bias distortion circuit to determine a true center of said received data signals and for selecting a proper sampling clock for said received data signals; an interface portion for serially transmitting said odd and even data bits on a single media in response to said transmitter portion and for receiving serial data from said single media and detecting positive and negative transitions of said received data signals; and

a further single media connected between said first and second control units, which facilitates serial communication of data therebetween.

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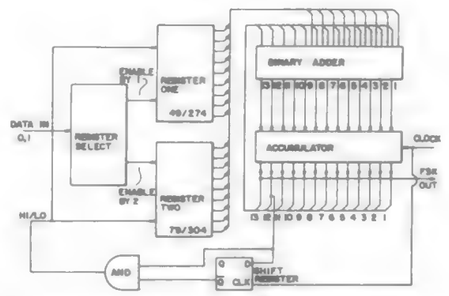
DIGITAL FSK TRANSMITTER

William E. Baker, Mentor, Ohio, assignor to Elsag International B. V.

Division of Ser. No. 752,758, Aug. 30, 1991, Pat. No. 5,311,556. This application Mar. 17, 1993, Ser. No. 32,938

Int. Cl.[5] H04L *27/10*

U.S. Cl. 375—62 **6 Claims**



1. An FSK transmitter for transmitting an FSK signal comprising:

an accumulator;

an adder connected to said accumulator to add numbers thereto;

register means having a predetermined pair of numbers stored therein;

means for enabling one register from said register means;

a clock providing a frequency signal driving said accumulator to output a first and second frequency output signals; and

means for feeding back said clock signal and a signal from said accumulator to said register means to enable said pair of numbers to be passed to said adder.

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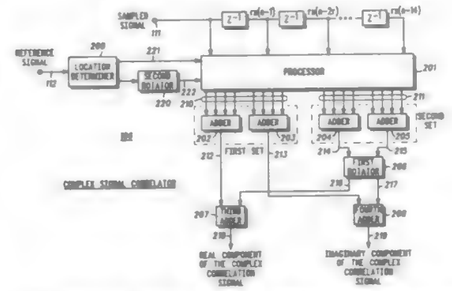
COMPLEX SIGNAL CORRELATOR AND METHOD THEREFOR

Henry L. Kazecki, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1993, Ser. No. 65,421

Int. Cl.[5] H03D *1/00;* **H04L** *27/06*

U.S. Cl. 375—96 **16 Claims**



5. In a receiver that receives a modulated signal, wherein the receiver includes a downconvertor, a sampler and a memory unit, wherein the downconvertor is coupled to receive the modulated signal and operative to downconvert the modulated signal to produce a downconverted signal, wherein the sampler is coupled to receive the downconverted signal and operative to sample the downconverted signal at multiple points in time to produce a sampled signal, wherein the memory unit stores a reference signal therein, wherein both the modulated signal and the reference signal are complex signals represented by real and imaginary components having values and defined by real and imaginary axes, a complex signal correlator coupled to receive the sampled signal and the reference signal and operative to correlate, at the multiple points in time, the sampled signal with the reference signal to produce a complex correlation signal, comprising:

a location determiner coupled to receive the reference signal and operative to determine the location of the reference signal relative to the real and imaginary axes;

a processor coupled to receive the determined location of the reference signal and the real and imaginary components of the sampled signal and operative to process the real and imaginary components of the sampled signal responsive to the location, relative to the real and imaginary axes, of the reference signal to produce real and imaginary on and off axis components of the sampled signal, wherein the real and imaginary on axis components correspond to the reference signal in time determined to be located on the axes, and wherein the real and imaginary off axis components correspond to the reference signal in time determined to be located off the axes;

a first set of adders coupled to receive the real and imaginary on axis components of the sampled signal and operative to add the real and imaginary on axis components of the sampled signal to produce first real and imaginary components, respectively;

a second set of adders coupled to receive the real and imaginary off axis components of the sampled signal and operative to add the real and imaginary off axis components of the sampled signal to produce second real and imaginary components, respectively;

a first rotator coupled to receive the second real and imaginary signals and operative to rotate the second real and imaginary signals to a location off the axes to produce rotated real and imaginary signals, respectively;

a third adder coupled to receive the first and rotated real signals and operative to add the first and rotated real signals to produce a real component of the complex correlated signal; and

a fourth adder coupled to receive the first and rotated imaginary signals and operative to add the first and rotated imaginary signals to produce an imaginary component of the complex correlation signal.

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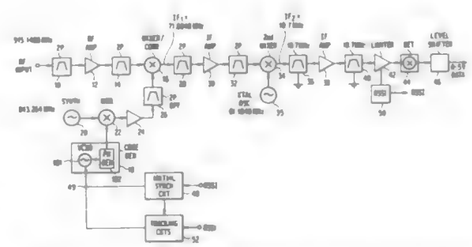
INITIAL SYNCHRONIZATION AND TRACKING CIRCUITS FOR SPREAD SPECTRUM RECEIVERS

David L. Roberson, Forest, Va., assignor to Pulse Electronics, Inc., Rockville, Md.

Filed Jul. 18, 1991, Ser. No. 732,461

Int. Cl.[5] H04L *27/30*

U.S. Cl. 375—1 **5 Claims**



1. A direct sequence digital spread spectrum receiver comprising:

radio frequency input means for receiving a radio frequency signal;

mixer/correlator means for combining said radio frequency signal with a reference signal and generating an intermediate frequency signal;

intermediate frequency means for amplifying, filtering and limiting said intermediate frequency signal, said intermediate frequency means generating a limited, frequency modulated output and a received signal strength indicator signal;

detector means responsive to said limited, frequency modulated output for generating a digital data output signal;

code generator means for generating a receiver pseudorandom digital code sequence, said code generator means including a voltage controlled crystal oscillator driving a pseudorandom number generator;

sinewave generator means for generating a reference sinewave signal;

bi-phase shift keyed modulator means responsive to said pseudorandom digital code for modulating said reference sinewave signal to generate said reference signal for said mixer/correlator means;

initial synchronization means responsive to said received signal strength indicator signal for generating a first control voltage for said voltage controlled crystal oscillator for causing said receiver pseudorandom code sequence generated by said code generator means to slip with respect to a received code sequence, said initial synchronization means including means for detecting when said receiver pseudorandom code sequence coincides with said received code sequence and generating a detection output signal; and

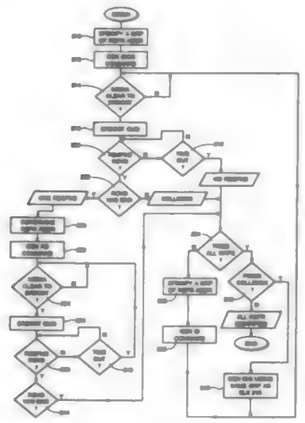
tracking means responsive to said received signal strength indicator signal for generating a second control voltage for said voltage controlled crystal oscillator for frequency modulating an output of said voltage controlled crystal oscillator to accurately track said received code sequence with said receiver pseudorandom code sequence.

5,365,551

DATA COMMUNICATION TRANSCEIVER USING IDENTIFICATION PROTOCOL

Charles K. Snodgrass, Boise, Id.; David H. Allen, Rochester, Minn.; John R. Tuttle, Boise, Id.; Robert R. Rotzoll, Boise, Id., and George E. Pax, Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 15, 1992, Ser. No. 990,918
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **51 Claims**



1. A transceiver comprising:
a. a transmitter for transmitting a command signal, the command signal comprising an address of a subset of a predetermined set of designations;
b. a receiver for receiving a reply signal;
c. means for determining a self designation from the reply signal, the self designation responsive to the command signal;
d. a circuit for providing a collision detection signal;
e. specifying means, responsive to the collision detection signal, for specifying the address, wherein the specifying means further comprises a computer circuit that performs the following method for selecting an untested subset after use of an initial subset, the method comprising the steps of:
(1) if a collision occurred, dividing the initial subset into an untested right subset and an untested left subset, the initial subset becoming the immediate superset of the untested right subset, the untested right subset disjoint from the untested left subset, and selecting the untested left subset whereby the untested left subset becomes a tested left subset;
(2) if a collision occurred and the initial subset cannot be divided or if a collision did not occur, selecting the untested right subset disjoint from the initial subset whereby the untested right subset becomes a tested right subset; and
(3) if a collision did not occur, considering individually each immediate superset of the initial set until a tested left is under consideration and selecting the untested right subset that is disjoint from the tested left subset under consideration.

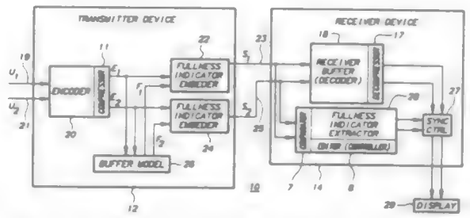
5,365,552

BUFFER FULLNESS INDICATOR

Brian Astle, Cranbury, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 16, 1992, Ser. No. 977,501
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—106 **21 Claims**

1. A communication system having a transmitter device and a receiver device, said transmitter device having a transmitter buffer for partially filling a receiver buffer to an actual receiver buffer fullness level, comprising:
means for determining a buffer fullness indicator representative of the predicted level of fullness of said receiver buffer in accordance with a first signal;
indicator embedder means for embedding said buffer fullness indicator into said first signal to form a second signal;



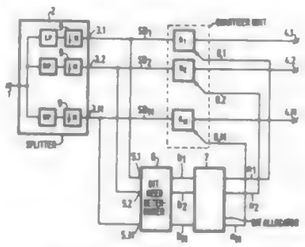
said transmitter device having means for transmitting said second signal including said embedded buffer fullness indicator;
said receiver device having means for receiving said transmitted signal and recovering said buffer fullness indicator from said transmitted second signal; and,
means for determining a fullness level of said receiver buffer in accordance with said recovered buffer fullness indicator.

5,365,553

TRANSMITTER, ENCODING SYSTEM AND METHOD EMPLOYING USE OF A BIT NEED DETERMINER FOR SUBBAND CODING A DIGITAL SIGNAL

Raymond N. J. Veldhuis; Robbert G. van der Waal; Leon M. van de Kerkhof, and Gerrit J. Keeman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 694,324, May 1, 1991, abandoned, which is a continuation of Ser. No. 621,693, Nov. 30, 1990, abandoned. This application Oct. 27, 1993, Ser. No. 144,093
Int. Cl.[5] H04B *1/66*
U.S. Cl. 375—122 **51 Claims**



1. An encoding system for encoding a digital signal having a specific sampling frequency and bandwidth, comprising:
splitter means for dividing the bandwidth of the digital signal into M successive subbands, and generating, in response to the digital signal, M subband signals having reduced sampling frequencies, each of the subband signals being associated with one of the subbands;
quantizing means for quantizing time-equivalent signal blocks of the subband signals, a subband signal SB_m of the subband signals having successive signal blocks which each contain q samples of that subband signal, each sample in a signal block of subband signal SB_m having an amplitude and being quantized by n_m bits, where n_m may vary for different signal blocks of subband signal SB_m;
bit need determining means for determining bit needs for the time-equivalent signal blocks, said bit need determining means comprising:
(a) means for estimating power within the time-equivalent signal blocks, the signal block of subband signal SB_m having a power v_m;
(b) means for determining scale factors for the time-equivalent signal blocks, a scale factor SF_m for the signal block of subband signal SB_m being determined from a sample therein having a maximum absolute amplitude value;
(c) means for determining masking magnitudes for the time-equivalent signal blocks, the signal block of subband signal SB_m having a masking magnitude w_m which is determined in accordance with the following relationship:

$$w_m = \sum_{i=1}^{M} d_{mi}v_i + w_{r.m},$$

where $d_{mi}v_i$ denotes masked power in the signal block of subband signal SB_m as a result of power v_i in a time-equivalent signal block of a subband signal SB_i of the subband signals, d_{mi} denotes a matrix coefficient in an $M \times M$ matrix by which the power v_i is multiplied to determine the masked power in the signal block of subband signal SB_m as a result of the time-equivalent signal block of subband signal SB_i, and $w_{r.m}$ denotes a masking threshold in the signal block of subband signal SB_m; and
(d) means for determining the following relationship for the time-equivalent signal blocks:

$$b_m = K_1 \cdot {}^2\log(K_2 \sqrt{SF_m{}^2/w_m} + K_3),$$

where K_1, K_2 and K_3 are constants; and b_m is a bit need for the signal block of subband signal SB_m corresponding to the number of bits by which the q samples in that signal block should be represented, and b_m may vary for different signal blocks of the subband signal SB_m; and
bit allocation means for allocating bits to the time-equivalent signal blocks from an available number of bits B, n_m bits being allocated to each of the q samples of the signal block of subband signal SB_m in accordance with at least the bit need, b_m, for that signal block;
wherein M, m and i are integers such that $1 \leqq m \leqq M$ and $1 \leqq i \leqq M$; q and B are integers, where q is greater than unity and B is greater than zero; and b_m, n_m, v_m, v_i, SF_m, w_m, d_{mi} and $w_{r.m}$ are variables, where n_m and SF_m are greater than or equal to zero.

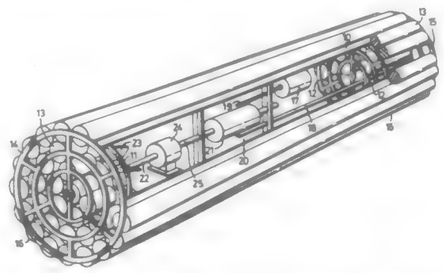
5,365,554

INSTRUMENTATION PROBE

Michael T. Flaman, 20 Treeline Court, Etobicoke, Ontario, Canada M9C 1K8

Filed Sep. 22, 1992, Ser. No. 948,443
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—245 **6 Claims**

5. An instrumentation probe according to claim 4, wherein the cylindrical cage comprises an array of fuel pencils extending longitudinally between the end plates, the array of fuel pencils being distributed symmetrically around a longitudinal



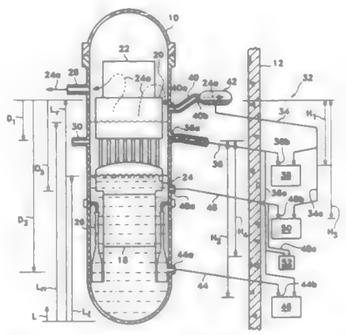
axis and defining an axially extending internal space wherein said measuring and recording means are mounted.

5,365,555

WATER LEVEL MEASUREMENT SYSTEM

James K. Sawabe, and Lamont H. Youngborg, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 23, 1993, Ser. No. 79,079
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—258 **15 Claims**



1. A system for measuring water level comprising:
a reactor pressure vessel containing a nuclear reactor core and a steam separator assembly disposed thereabove, said vessel being fillable with water to a nominal level above said core;
a reference leg for containing a predetermined first reference column height of water having a reference level disposed vertically above said nominal level;
a first variable leg having a first tap disposed in flow communication with said vessel at a predetermined first depth below said reference level and below said nominal level and adjacent said steam separator assembly, and further having a first port;
a first monitor disposed in flow communication with said reference leg and said first port for determining differential pressure therebetween to indicate level of said water in said vessel above said first tap;
a second variable leg having a second tap disposed in flow communication with said vessel at a predetermined second depth below said reference level, said nominal level, and said first tap, and further having a second port; and
a second monitor disposed in flow communication with said first leg and said second port for determining differential pressure therebetween to indicate level of said water between said first and second taps when said water level falls below said first tap, with said first leg being inclined

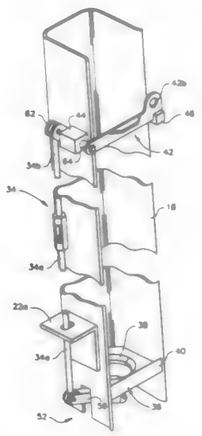
downwardly for containing water therein up to said first tap to provide a predetermined second reference column height for said second monitor.

5,365,556

FUEL STORAGE RACKS FOR FUEL STORAGE POOL

Frank J. Mallie, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Jul. 7, 1993, Ser. No. 87,310
Int. Cl.[5] G21C *19/06*
U.S. Cl. 376—272 **18 Claims**



15. A fuel storage pool for storing fuel bundle assemblies underwater, comprising a plurality of fuel storage racks separated by aisles, each of said racks having first and second rows of storage cells and means for supporting said first row of storage cells in a first inclined position and said second row of storage cells in a second inclined position, said first and second inclined positions forming an A-shaped configuration, wherein each of said storage cells comprises a storage channel having an open side of width sufficient to allow passage of a fuel bundle assembly therethrough, means for supporting said fuel bundle assembly in said storage channel, and means for blocking passage of said stored fuel bundle assembly through said open side of said storage channel in response to displacement of said fuel bundle assembly from a first position whereat said fuel bundle assembly supporting means does not support said fuel bundle assembly to a second position whereat said fuel bundle assembly supporting means supports said fuel bundle assembly, said blocking means being mounted on said storage channel and said open side of said storage channel facing one of said aisles.

5,365,557

FUEL ASSEMBLY OF A NUCLEAR REACTOR WITH A GRID STRUCTURE FOR PRODUCING SPIN

Johann Meseth, Dieburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

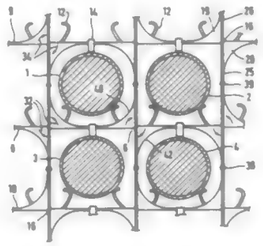
Filed Jun. 10, 1993, Ser. No. 75,167
Claims priority, application Germany, Jun. 10, 1992, 4219008
Int. Cl.[5] G21C *3/322, 3/352*
U.S. Cl. 376—439 **9 Claims**

7. A fuel assembly, comprising:

a bundle of fuel rods;

approximately mutually parallel upright webs extending between said fuel rods in a plane approximately perpendicular to said fuel rods;

said webs having upper edges and tabs on said upper edges, each of said tabs having an end, and each of said tabs being twisted toward said end about an axis approximately parallel to said fuel rods; and



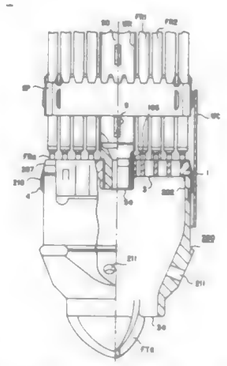
crosswise webs joining said ends of said tabs of adjacent webs to one another, said tabs having tab parts being twisted by 90° relative to said webs, and said tab parts merging with said crosswise webs.

5,365,558

FUEL ASSEMBLY FOR A BOILING WATER REACTOR, WITH A FOOT ASSEMBLED FROM STANDARDIZED PARTS

Hans-Joachim Lippert, Höchstadt, and Werner Meier, Kunreuth, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 18, 1993, Ser. No. 33,507
Claims priority, application Germany, Sep. 18, 1990, 4029539
Int. Cl.[5] G21C *1/04*
U.S. Cl. 376—445 **20 Claims**



1. A fuel assembly for a boiling water reactor, comprising:

a) a cluster of mutually parallel fuel rods;

b) a fuel assembly channel laterally surrounding said cluster of fuel rods and having open upper and lower ends;

c) a top plate covering said upper open end of said fuel assembly channel and having coolant outlets formed therein; and

d) a foot part being assembled from a plurality of individual parts and including:

i) a cast transitional piece having a lower end with an inlet opening formed therein and an upper edge inserted into said open lower end of said fuel assembly channel, said transitional piece defining and surrounding a flow channel widening upward in funnel-like fashion from said inlet opening; and

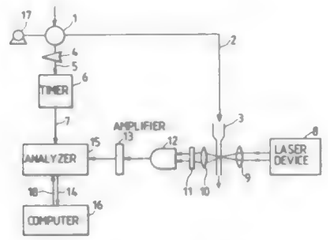
ii) a base plate being disposed at and welded to said upper edge of said transitional piece, said base plate covering said open lower end of said fuel assembly channel and having coolant inlets formed therein.

5,365,559

PARTICLE COUNTING APPARATUS FOR A TOTAL COUNTING OF PARTICLES CONTAINED IN A LIQUID SAMPLE

Yu-Ming Hsueh; Kazumichi Imai, and Masataka Koga, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 8,984
Claims priority, application Japan, Jan. 30, 1992, 4-014825
Int. Cl.[5] G01N *15/00, 21/53;* G06M *11/00*
U.S. Cl. 377—10 **9 Claims**



1. A particle counting apparatus for counting particles contained in a liquid sample comprising,

a flow cell in which the liquid sample flows,

a light source for irradiating a light beam to the sample liquid in the flow cell,

a detector for detecting a pulse-wise signal scattered from the particles by the irradiating of the light beam thereto, and

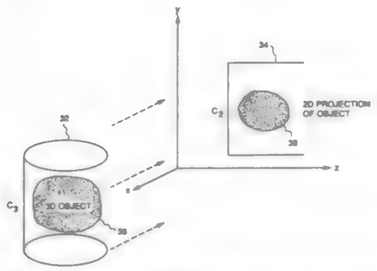
a computer for obtaining a total particle counting value by multiplying a first counting value obtained by counting the particles in the liquid sample when a leading portion of the liquid sample flowing through said flow cell is irradiated with the light beam and the plural particles in the leading portion do not overlap in the light beam, with a correlation coefficient which is previously obtained as a correction value based on a relation between said first counting value and a second counting value obtained by counting the particles when a steady-state portion of the liquid sample is irradiated with the light beam.

5,365,560

METHOD AND APPARATUS FOR ACQUIRING A UNIFORM DISTRIBUTION OF RADON DATA SUFFICIENTLY DENSE TO CONSTITUTE A COMPLETE SET FOR EXACT IMAGE RECONSTRUCTION OF AN OBJECT IRRADIATED BY A CONE BEAM SOURCE

Kwok C. Tam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 29, 1991, Ser. No. 737,525
Int. Cl.[5] G01N *23/083*
U.S. Cl. 378—8 **8 Claims**



1. A method for acquiring discrete cone beam projection data along a three dimensional (3D) scanning trajectory in order to obtain a substantially uniform distribution of Radon data that is sufficiently dense to ensure the acquisition of a complete set of Radon data wherein said Radon data is organized onto a plurality of co-axial planes for exact image reconstruction of an object irradiated by a scanning cone beam source, said method comprising the steps:

ensuring substantially equivalent signal-to-noise ratio among cone beam projection data;

providing a 3D scanning trajectory such that at least a composite of corresponding planar projections of said trajectory forms a continuous, convex, closed curve about a corresponding planar projection of the object being scanned, the step of providing a 3D scanning trajectory further comprising selecting respective portions from a plurality of 3D scanning trajectory projections onto respective planes of said plurality of co-axial planes to collectively form a continuous, convex, closed curve enclosing the respective projection of said object; and

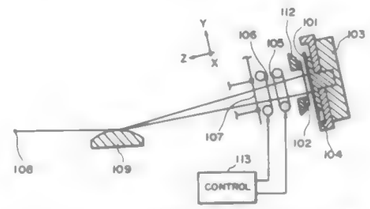
discretely sampling at a corresponding plurality of cone beam source positions along said scanning trajectory in a manner providing uniformity in said distribution of Radon data.

5,365,561

EXPOSURE CONTROL IN AN X-RAY EXPOSURE APPARATUS

Ryuichi Ebinuma, Kawasaki; Nobutoshi Mizusawa, Yamato; Masayuki Suzuki, Zama; Shinichirou Uno, Atsugi; Tetsuzo Mori, Atsugi, and Hiroshi Kurosawa, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 995,919, Dec. 22, 1992, abandoned, which is a continuation of Ser. No. 887,668, May 26, 1992, abandoned, which is a continuation of Ser. No. 534,375, Jun. 7, 1990, abandoned, which is a continuation of Ser. No. 453,087, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 244,410, Sep. 14, 1988, abandoned. This application Jan. 18, 1994, Ser. No. 182,535
Claims priority, application Japan, Mar. 25, 1988, 63-071040
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—34 **68 Claims**



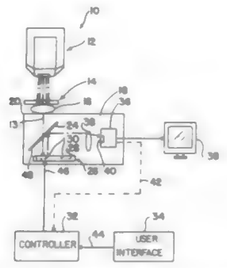
67. A microdevice manufacturing exposure method, comprising the steps of:

expanding, using a mirror, synchrotron radiation in a direction substantially perpendicular to an electron orbit plane to illuminate for exposure a predetermined zone of a workpiece at one time;

maintaining the mirror stationary at least during exposure of the predetermined zone of the workpiece; and

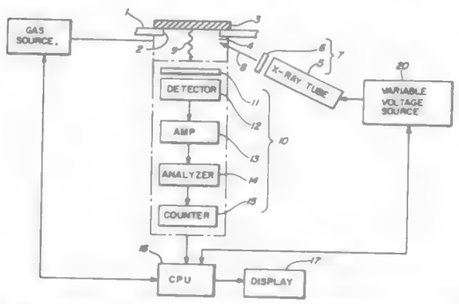
controlling the exposure time at each portion of the predetermined zone of the workpiece in relation to an illuminance profile of the synchrotron radiation from the mirror to expose at least one portion of the predetermined zone of the workpiece for an exposure time different from that of another portion of the predetermined zone of the workpiece.

5,365,562
DIGITAL IMAGING APPARATUS
Emre Toker, Waltham, Mass., assignor to Fischer Imaging Corporation, Denver, Colo.
Filed Sep. 20, 1993, Ser. No. 123,726
Int. Cl.[5] A61B 6/00
U.S. Cl. 378—37 16 Claims



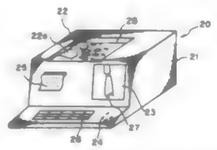
14. An apparatus for imaging an area of interest within a patient's breast, comprising:
a moveable member for compressingly engaging said patient's breast;
an x-ray source for transmitting x-rays through said patient's compressed breast;
support means for supporting first and second phosphorescent screens adapted for receiving said x-rays and emitting light responsive thereto, wherein said first phosphorescent screen has greater limiting resolution than said second phosphorescent screen;
positioning means for use in moving said support means between a first position wherein said first phosphorescent screen receives said x-rays and a second position wherein said second phosphorescent screen receives said x-rays.

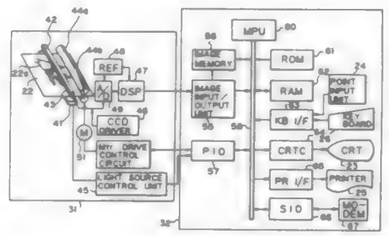
5,365,563
FLUORESCENT X-RAY QUANTITATIVE ANALYSIS APPARATUS
Akimichi Kira, and Haruto Sugishita, both of Miyanohigashi, Japan, assignors to Horiba, Ltd., Kyoto, Japan
Filed Feb. 25, 1993, Ser. No. 23,047
Claims priority, application Japan, Feb. 29, 1992, 4-079240
Int. Cl.[5] G01N 23/20
U.S. Cl. 378—48 10 Claims



1. An improved fluorescent X-ray quantitative analysis apparatus comprising:
means for generating a stream of primary X-rays including a variable voltage source and a variable primary X-ray filter; means for supporting a sample to receive the beam of primary X-rays after translating through the primary X-ray filter;
first means for measuring the X-rays from the sample at a first predetermined condition of voltage and filter values;
second means for measuring the X-rays from the sample at a second predetermined condition of voltage and filter values wherein at least one conditioned value is changed from the first condition;
means for storing the measurements of the first and second means; and
computer means for determining the concentrations of elements in the sample from the respective measurements of the first and second means including providing a corresponding simultaneous equation for each respective measurement and calculating the concentrations by a convergent calculation pursuant to a fundamental parameter method.

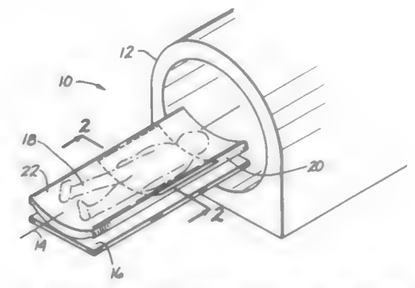
5,365,564
METHOD AND APPARATUS FOR BONE MORPHOMETRY AND A MORPHOMETRIC BONE ASSAY SYSTEM
Makoto Yashida, Kobe; Kanji Kurome, Ibaragi; Atsushi Asahina, Ibaragi; Yasuki Hanaoka, Ibaragi, and Kazuo Imose, Takarazuka, all of Japan, assignors to Teijin Limited, Osaka, Japan
PCT No. PCT/JP90/00220, § 371 Date Oct. 23, 1991, § 102(e) Date Oct. 23, 1991, PCT Pub. No. WO90/09761, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 23, 1990, Ser. No. 601,716
Claims priority, application Japan, Feb. 23, 1989, 1-41760; May 16, 1989, 1-120376; May 31, 1989, 1-136176
Int. Cl.[5] G01N 23/06
U.S. Cl. 378—55 36 Claims





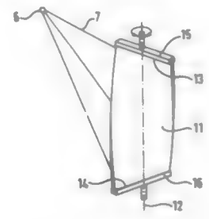
1. A bone-morphometric apparatus comprising, in combination:
automatic image read means for automatically reading the bone-morphometric data of the image of a sample bone formed on an X-ray film by irradiating the sample bone together with a given standard matter with X-rays, through the illumination of the image and the detection of the quantity of light transmitted through the image wherein said automatic image read means comprises automatic film feed means for feeding the X-ray film; linear light source means for emitting light to illuminate the X-ray film; and linear image detecting means for detecting the quantity of transmitted light transmitted through the X-ray film;
image storage means for storing the bone-morphometric data of the image of the sample bone obtained by the automatic image read means;
arithmetic means for processing the bone-morphometric data of the image stored in the image storage means for bone morphometry; and
bone-morphometric data output means for providing the results of bone morphometry obtained through the operation of the arithmetic means.

5,365,565
APPARATUS AND METHOD FOR OBTAINING ANALOG AND COMPUTER PROJECTION RADIOGRAPHS FROM COMPUTER TOMOGRAPHIC SCANNERS
Zoran L. Barbaric, Malibu, Calif., assignor to The Regents of the University of California, Oakland, Calif.
Filed Feb. 18, 1994, Ser. No. 198,703
Int. Cl.[5] G21K 5/10
U.S. Cl. 378—146 20 Claims



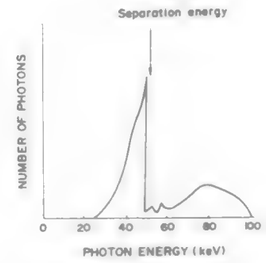
1. An apparatus for providing an analog radiograph of a patient comprising:
a fixed collimated X-ray source;
an analog X-ray detecting assembly for detecting projection X-ray images of said patient from said X-ray source; and
a mechanism for moving said assembly in unison with said patient while said patient is being exposed to X-rays from said X-ray source,
whereby said analog radiograph is provided with high spatial resolution and contrast resolution.

5,365,566
RADIATION DIAPHRAGM
Michael Maas, Uttenreuth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 6, 1993, Ser. No. 86,657
Claims priority, application Germany, Aug. 24, 1992, 4228082
Int. Cl.[5] G21K 1/04
U.S. Cl. 378—150 12 Claims



12. A radiation diaphragm comprising a plurality of individual diaphragm lamellae that are initially aligned parallel to one another, at least one of said lamellae consisting of flexible material; and adjustment means, engaging each of said diaphragm lamellae for orienting each of said diaphragm lamellae, including flexing said at least one lamella, for setting a radiation absorption shape selectively matchable to different examination subjects.

5,365,567
K-EDGE FILTER AND X-RAY APPARATUS EMPLOYING THE SAME
Tetsuro Ohtsuchi, Osaka; Hiroshi Tsutsui, Yawata; Koichi Ohmori, Toyonaka, and Sueki Baba, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 85,826, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 836,427, Feb. 18, 1992, Pat. No. 5,285,489. This application Feb. 4, 1994, Ser. No. 191,702
Claims priority, application Japan, Feb. 20, 1991, 3-026110
Int. Cl.[5] G21K 3/00
U.S. Cl. 378—156 2 Claims



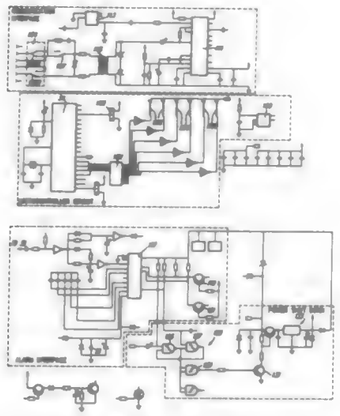
1. A method of measuring X-rays using an X-ray apparatus including an X-ray detector,an X-ray generator and a K-edge filter disposed between the X-ray generator and an object to be measured;
comprising choosing a K-edge filter such that between a first maximum value of energy corresponding to output pulses of X-rays usable as data and a second maximum value of energy corresponding to output pulses of X-rays obtained at the time when K-shell characteristic X-rays generated in the X-ray detector have escaped from the X-ray detector, X-rays generated from the X-ray generator and having a continuous spectrum are subjected to energy separation by the K-edge filter and then measured such that X-rays which have passed through the object and have a plurality of energies are measured.

5,365,568
SMOKE DETECTOR WITH AUTOMATIC DIALING
Raymond Gilbert, 3458 Clérin, Ste-Foy, Québec, Canada G1X
Continuation-in-part of Ser. No. 787,095, Nov. 4, 1991, abandoned. This application Jul. 6, 1993, Ser. No. 86,119
Int. Cl.[5] H04M 11/04
U.S. Cl. 379—43 6 Claims

1. A system for detecting one or more of a plurality of alarm conditions, at a monitored location, by respective alarm detectors, and for reporting the detected alarm conditions to one or more respective monitoring stations, comprising:
telephone line means for effecting communications between said monitored location and one or more of said monitoring stations;
an alarm sensor having a plurality of inputs, said alarm detectors being connected to respective ones of said inputs of said alarm sensor;
said alarm sensor including a data output terminal (SDA) and a clock output terminal (SCL);
a modem having a plurality of input terminals and a plurality of output terminals;
a microprocessor having a plurality of input terminals and a plurality of output terminals;
a battery;
power shut-down means connected between said battery and said modem and said microprocessor, said power shut-down means being normally turned on whereby power from said battery is not supplied to said modem and to said microprocessor;

trigger circuit means connected between said sensor and said power shut-down means;

said trigger circuit means being activated by said alarm sensor on receipt of an alarm condition signal whereby to turn off said power shut-down means;



whereby, power is supplied to said modem and to said microprocessor on receipt of an alarm condition by said alarm sensor;

means for seizing said telephone line means on receipt of an alarm condition by said alarm sensor.

5,365,569

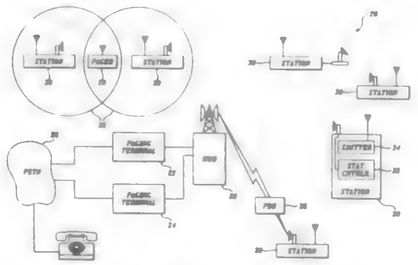
DIGITAL SIMULCAST TRANSMISSION SYSTEM

Mark L. Witsaman; Roger E. Beaz; David W. Gleasner, and Joel R. Crowley-Dierks, all of Quincy, Ill., assignors to Glenayre Electronics, Ltd., Vancouver, Canada

Filed Aug. 17, 1992, Ser. No. 931,789

Int. Cl.[5] H04M *11/00;* **H04B** *1/00*

U.S. Cl. 379—57 **47 Claims**



1. A simulcast broadcast system comprising:

a hub including:

a clock for maintaining a system time;

an interface unit for receiving signals to be broadcast and connected to said clock for receiving said system time, said interface unit functioning to: determine the rate at which the signals are to be broadcast; packetize the signals into a plurality of signal blocks wherein signals in said signal blocks are in a digital format; and provide each said signal block with a start time based on said system time and a rate signal representing a desired broadcast rate liar the signals;

a linking unit connected to said interface unit for receiving said signal block and for forwarding said signal block over a link channel; and

a plurality of stations, each said station including:

a transmitter for broadcasting said signals to be broadcast;

a linking unit connected to the link channel for receiving said signal blocks;

a clock for maintaining said system time; and

a station processor that is connected to said station clock for receiving said system time, that is connected to said linking unit for receiving said signal blocks, and that is connected to said transmitter for forwarding the signals to be simulcast thereto, said station processor functioning to forward said signals to be broadcast in each said signal block to said transmitter when said system time equals said start time in said signal block to be broadcast at a rate based on said rate signal in said signal block.

5,365,570

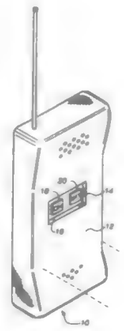
EMERGENCY CELLULAR TELEPHONE APPARATUS

Mark J. Boubelik, 2819 Edison Ave., Sacramento, Calif. 95821

Filed Jun. 2, 1992, Ser. No. 892,328

Int. Cl.[5] H04M *11/00, 1/00, 9/00*

U.S. Cl. 379—59 **10 Claims**



1. Emergency cellular phone apparatus including, in combination:

a cellular phone housing;

radio frequency transceiver means for transmitting and receiving modulated radio signals;

audio processing means for voice and signaling modulation and demodulation of said radio signals;

central processing means for controlling call setup activities on the cellular network;

power supply means for delivering necessary voltages and currents to said radio frequency transceiver means and said audio processing means and said central processing means;

actuator means manually accessible from a location external to said cellular phone housing for actuating said radio frequency transceiver means and said audio processing means and said central processing means and said power supply means;

said actuator being modular includes electrical connector means and is selectively connectable to and disconnectable from said cellular phone housing;

said cellular phone housing defining a recess for accommodating said actuator means;

said cellular phone housing includes a socket communicating with said recess for receiving said electrical connector means when said actuator means is accommodated by said recess;

call restriction means in operative association with said central processing means for restricting modulation of said radio signals, during call initiation by operation of said actuator means, to signals required for connection to a predetermined emergency phone number;

incoming call answering means in operative association with said central processing means for establishing audio communications upon actuation of said actuator means by a user of said emergency cellular phone apparatus when an incoming call occurs.

5,365,571

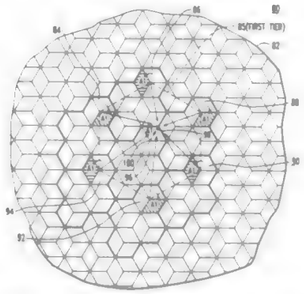
CELLULAR SYSTEM HAVING FREQUENCY PLAN AND CELL LAYOUT WITH REDUCED CO-CHANNEL INTERFERENCE

Peter S. Rha, Chevy Chase; Stanley E. Kay, Rockville, and Andrew J. MacDonald, Damascus, all of Md., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 24, 1993, Ser. No. 64,997

Int. Cl.[5] H04M *11/00;* **H04Q** *7/00*

U.S. Cl. 379—59 **17 Claims**



1. A cellular radio-telephone system comprising:

a first plurality of cells located adjacent to each other within a predetermined land area;

the cells each commonly having a second plurality of sectors;

the cells being grouped into clusters of N adjoining cells where N equals at least 2;

each cell cluster having a set of assigned system frequencies;

each cell within each cell cluster having a subset of frequencies from the frequency set so that N groups of co-channel cells exist with each co-channel cell group including one cell from each cluster having channel frequencies corresponding to those for its co-channel cell group;

each sector within each cell having channels corresponding to a sub-subset of frequencies from the associated frequency subset;

respective base station antennas located in the respective sectors of the respective cells;

each of the cell sectors having a third plurality of subscriber station directional antennas disposed at predetermined locations within the sector for communication linkage with the associated base station antenna;

the cells being disposed substantially in rows and columns and further being formed to provide a predetermined relative orientation pattern for co-channel cell sectors;

co-channel cells forming a first cell tier around a preselected center co-channel cell with a common direction operative as a reference orientation direction for co-channel sectors therein;

co-channel sectors in successive co-channel cells about the first tier being successively oriented in alternating first and second directions; and

the alternating directions being a first direction corresponding to at least one sector rotation from the reference direction in the counter-clockwise direction and a second direction corresponding to at least one sector rotation from the reference direction in the clockwise direction.

5,365,572

CORDLESS KEY TELEPHONE SYSTEM WITH MULTIPLE TENANT FACILITY

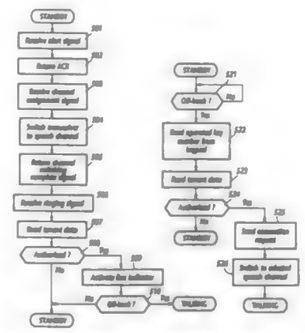
Noboru Saegusa; Yukihiro Shimura; Shinji Kumataka; Hirokazu Adachi; Ichiro Tamura, and Kosuke Hashimoto, all of Tokyo, Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,852

Claims priority, application Japan, Sep. 20, 1991, 3-241666

Int. Cl.[5] H04M *11/02*

U.S. Cl. 379—61 **8 Claims**



3. A cordless key telephone system comprising:

connection setup means for establishing radio-frequency connections between each of a plurality of exchange lines and a plurality of cordless stations in response to an incoming call termination at one of said exchange lines and in response to an originating call from one of said cordless stations and transmitting a ringing signal containing line identification of the line at which said incoming call is terminated,

each of said cordless stations comprising:

a plurality of line keys associated respectively with said exchange lines and a plurality of line indicators associated respectively with said line keys;

a memory for storing tenant data indicating ones of said exchange lines to which the cordless station is authorized to access; and

control means for examining said tenant data in response to receipt of the ringing signal through a said connection, and activating one of said line indicators when the exchange line indicated by the line identification contained in the ringing signal is found in tenant data, and examining said tenant data from said memory in response to an outgoing call originated by the cordless station operating one of said line keys, and allowing said connection setup means to establish a said connection to one of said exchange lines when the exchange line associated with the operated line key is found in the tenant data, wherein the memory of each of said cordless stations comprises a first memory portion for storing tenant data indicating first ones of said exchange lines to which the cordless station is authorized to access when an incoming call is terminated and a second memory portion for storing tenant data indicating second ones of said exchange lines to which the cordless station is authorized to access when an outgoing call is originated from the cordless station,

the control means of the cordless station examining the tenant data from said first memory portion in response to receipt of the ringing signal through a said connection and activating one of said line indicators when the exchange line indicated by the line identification contained in the ringing signal is found in the tenant data stored in the first memory portion, and examining the tenant data from said second memory portion in response to an outgoing call

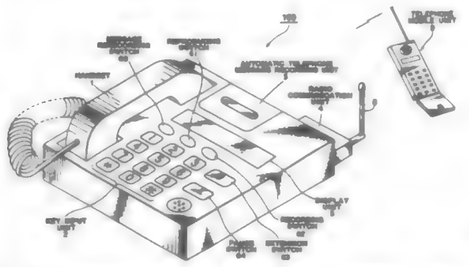
originated by the cordless station operating one of said line keys and allowing said connection setup means to establish a said connection to the exchange line associated with the operated line key when the exchange line associated with the operated line key is found in the tenant data stored in the second memory portion.

5,365,573

CORDLESS TELEPHONE SYSTEM INCLUDING DETACHABLE RADIO UNIT FOR COMMUNICATING WITH A BASE UNIT AND A MOBILE UNIT

Naruhiko Sakamoto, Tokyo, and Shinjiro Ishida, Iruma, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 35,727
Claims priority, application Japan, Mar. 30, 1992, 4-74536
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 **14 Claims**



9. A cordless telephone apparatus with an automatic telephone message recording function, comprising:

a telephone base unit having a main body;

a radio communication unit detachably connected to said main body of the telephone base unit, said radio communication unit including a transmitting/receiving means for performing a radio communication with a telephone mobile unit, wherein said transmitting/receiving means performs a radio communication with said telephone mobile unit when said radio communication unit is detached from said telephone base unit, and performs radio communication with said telephone mobile unit and further is connectable to a telephone subscriber line, when said radio communication unit is connected to said telephone base unit;

a telephone channel interface unit provided within said main body of said telephone base unit, for interfacing said radio communication unit with a telephone subscriber line; and

an automatic telephone message recording unit provided within said main body of said telephone base unit, for automatically recording a telephone message.

5,365,574

TELEPHONE NETWORK VOICE RECOGNITION AND VERIFICATION USING SELECTIVELY-ADJUSTABLE SIGNAL THRESHOLDS

Alan K. Hunt, Carrollton, and Thomas B. Schalk, Dallas, both of Tex., assignors to VCS Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 901,742, Jun. 22, 1992, Pat. No. 5,297,194, which is a continuation of Ser. No. 523,486, May 15, 1990, Pat. No. 5,127,043. This application Nov. 25, 1992, Ser. No. 982,186
Int. Cl.[5] G10L *9/08*; H04M *1/66*
U.S. Cl. 379—88 **9 Claims**

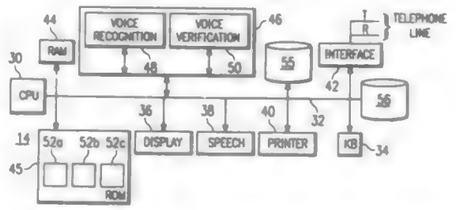
7. A method for enabling a caller to obtain access to one or more services via a telephone network by speaking a password having a plurality of characters, comprising the steps of:

establishing at least one predetermined threshold value for a speaker verification signal;

generating a set of parameters for each spoken character using a voice verification feature transformation, the set of parameters for use in a voice verification system;

following entry and recognition of the password, using the sets of parameters to generate a speaker verification signal for the password;

adjusting the predetermined threshold value upon a predetermined call condition;



determining whether the speaker verification signal for the password has a predetermined relationship with respect to the adjusted threshold value; and

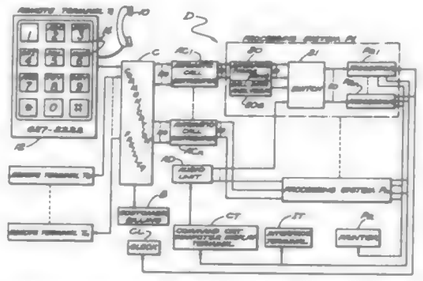
if the speaker verification signal for the password has a predetermined relationship with respect to the adjusted threshold value, accepting the caller's identity.

5,365,575

TELEPHONIC-INTERFACE LOTTERY SYSTEM

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources Inc., Omaha, Nebr.

Continuation-in-part of Ser. No. 555,111, Jul. 18, 1990, Pat. No. 5,048,075, which is a continuation of Ser. No. 342,506, Apr. 24, 1989, abandoned, which is a continuation of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 10, 1985, abandoned. This application Sep. 9, 1991, Ser. No. 756,956
The portion of the term of this patent subsequent to Dec. 20, 2003, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—92 **34 Claims**



1. A telephonic-interface lottery control system for use with a communication facility including remote terminal apparatus for individual callers to call, wherein said remote terminal apparatus may comprise a conventional telephone instrument including voice communication means, and digital input means in the form of an array of alphabetic numeric buttons for providing identification data, said telephonic-interface lottery system comprising:

interface means coupled to said communication facility to interface said remote terminal apparatus for voice and digital communication with said individual callers;

voice generator means coupled through said interface means for providing vocal instructions to an individual caller to enter identification data;

means for processing data supplied by said individual callers, said processing means coupled to said interface means and selecting at least one subset of at least one lottery winner;

qualification means coupled to said interface means for limiting access to said processing means; and

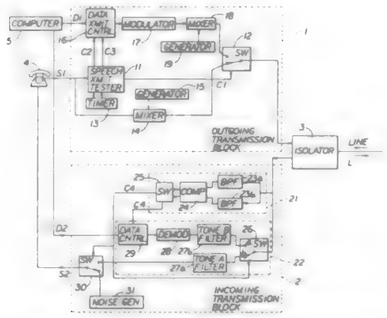
means for storing coupled to said interface means for storing said identification data.

5,365,576

DATA AND SPEECH TRANSMISSION DEVICE

Mihoji Tsumura, and Masato Hata, both of Osaka, Japan, assignors to Ricos Co., Ltd., Osaka, Japan

Filed Feb. 27, 1992, Ser. No. 842,553
Claims priority, application Japan, Feb. 27, 1991, 3-058025; Feb. 27, 1991, 3-058026
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 **10 Claims**



1. A data and speech transmission device comprising:

an outgoing transmission block having a speech transmission tester for detecting input of speech signals and on receipt of said speech signals simultaneously issuing a transmission interrupt signal, a data transmission controller for receiving data signals, said data transmission controller being connected to said speech transmission tester for receiving said transmission interrupt signal, a timer connected to said speech transmission tester for outputting a transmission enabling signal to said data transmission controller a fixed period of time after said speech transmission tester has detected an absence of said speech signals input, means for generating two tone signals each of said tone signals having a different frequency, a first mixing means for mixing said speech signals with one of said tone signals, and a second mixing means for mixing said data signals with a second one of said tone signals, said second mixing means being connected to said data transmission controller for receiving said data signals, a switch connected to said speech transmission tester for selectively outputting said mixed speech signals and said mixed data signals to a telephone line in response to a control signal from said speech transmission tester; and

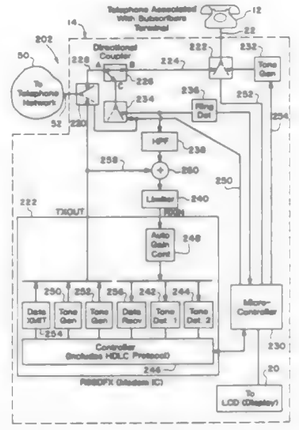
an incoming transmission block connected to said outgoing transmission block for receiving incoming speech and data signals, said incoming transmission block including two band-pass filters for receiving said incoming signals, each of said filters corresponding in frequency to one of said two tone signals, a comparator connected to said filters for identifying signals output from said filters, an incoming transmission switch for receiving said incoming signals, a speech restoration circuit and a data restoration circuit, said restoration circuits being connected to said incoming transmission switch, and a data and speech controller connected to said comparator, said controller outputting a control signal to said incoming transmission switch for selectively connecting said incoming signals either to said speech restoration circuit or said data restoration circuit, whereby said incoming signals are restored to their original form for input to a telephone or a computer, respectively.

5,365,577

TELECOMMUNICATION DISPLAY SYSTEM

Richard A. Davis, Boulder; Ronald K. Witmore, Lafayette; Charles J. Fette, Parker; Anthony J. Brittain, and Peter Mathys, both of Boulder, all of Colo., assignors to Radish Communications Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 589,203, Sep. 27, 1990, Pat. No. 5,164,982. This application May 1, 1992, Ser. No. 877,328
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—96 **83 Claims**



1. A telecommunication system for bidirectional communication of voice and visual data via a plain old telephone system (POTS) connection, comprising:

an agent station having:

(a) agent visual data generating means for generating agent visual data;

(b) agent visual data display means for displaying visual data;

(c) an agent telephone;

(d) agent modem means for:

(1) transmitting visual data from said agent visual data generating means into said POTS, including tone generator means for generating signal tones on said POTS associated with said agent visual data including a start tone to indicate that visual data is about to be transmitted, flag signals, and rate signals to indicate the rate at which said visual data will be transmitted on said POTS; and

(2) receiving visual data from said POTS and transmitting it to said agent visual data display means, including tone detector means for detecting the start tone, flag signals and rate signals associated with said visual data received from said POTS;

(e) agent directional coupler means positioned between said POTS, said agent telephone, and said agent modem means for transmitting signals bidirectionally between said POTS and said agent telephone, for transmitting signals from said POTS to said agent modem means, and for inhibiting signal transfer between said agent telephone and said agent modem means;

(f) agent by-pass relay means positioned between said POTS and said agent directional coupler means for connecting and disconnecting said agent directional

coupler and said agent telephone to and from said POTS; and

(g) agent microcontroller means for actuating said agent by-pass relay means to disconnect said agent telephone from said POTS in response to being signalled by said agent modem means that a start tone has been received, and for responding to said rate signals received by said agent modem means by generating signals to set said agent modem means to receive data at the rate indicated by said received rate signals, and then reconnecting said agent telephone to said POTS after said visual data has been received; and

a subscriber station having:

(a) subscriber visual data generating means for generating subscriber visual data;

(b) subscriber visual data display means for displaying visual data;

(c) a subscriber telephone;

(d) subscriber modem means for:

(1) transmitting subscriber visual data from said subscriber visual data generating means into said POTS, including tone generator means for generating subscriber signal tones on said POTS associated with said subscriber visual data including a subscriber start tone to indicate that visual data is about to be transmitted, subscriber flag signals, and subscriber rate signals to indicate the rate at which said subscriber visual data will be transmitted on said POTS; and

(2) receiving agent visual data from said POTS and transmitting it to said subscriber visual data display means, including tone detector means for detecting the agent start tone, agent flag signals and agent rate signals associated with said agent visual data received from said POTS;

(e) subscriber directional coupler means positioned between said POTS, said subscriber telephone, and said subscriber modem means for transmitting signals bidirectionally between said POTS and said subscriber telephone, for transmitting signals from said POTS to said subscriber modem means, and for inhibiting signal transfer between said subscriber telephone and said subscriber modem means;

(f) subscriber by-pass relay means positioned between said POTS and said subscriber directional coupler means for connecting and disconnecting said subscriber directional coupler and said subscriber telephone to and from said POTS; and

(g) subscriber microcontroller means for actuating said subscriber by-pass relay means to disconnect said subscriber telephone from said POTS in response to being signalled by said subscriber modem means that said agent start tone has been received, and for responding to said agent rate signals received by said subscriber modem means by generating signals to set said subscriber modem means to receive data at the rate indicated by said agent rate signals, and then reconnecting said subscriber telephone to said POTS after said agent visual data has been received.

5,365,578

METHOD AND SYSTEM FOR TRANSFERRING SPECIAL CIRCUIT TELEPHONE PAIRS

James M. Buzbee; Douglas R. Connally, both of Mineral Wells, and Wayne Matthews, Dennison, all of Tex., assignors to Industrial Technology, Mineral Wells, Tex.

Filed Oct. 15, 1992, Ser. No. 962,485
Int. Cl.[5] H04M *11/00, 1/24, 3/00*
U.S. Cl. 379—96 **20 Claims**

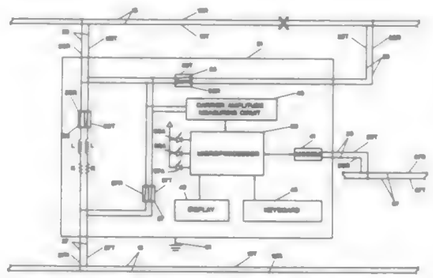
1. A method for transferring a special telephone circuit between first and second locations from a first set of conductors to a second set of conductors, with said first set of conductors carrying data thereon, said first and second sets of conductors extending between said first and second locations, comprising the steps of:

a) at said first location, connecting a first location switch in parallel with a first portion of said first set of conductors which is to be cut and connecting said first location switch between said first and second sets of conductors;

b) at said second location, connecting a second location switch in parallel with a second portion of said first set of conductors which is to be cut and connecting said second location switch between said first and second sets of conductors;

c) routing said data on said first set of conductors through said respective switches at each of said locations;

d) determining the direction of data travel between said first and second locations along said first set of conductors so as to determine which of said first and second locations is an upstream location and which of said first and second locations is a downstream location, said upstream location having an upstream switch that is whichever one of said



first and second location switches that is located at said upstream location, said downstream location having a downstream switch that is the other of said first and second location switches located at said downstream location;

e) switching said upstream switch first so as to transfer said circuit from said first set of conductors extending to said downstream location to said second set of conductors extending to said downstream location, said upstream location transfer creating an end to said data travelling on said first set of conductors extending to said downstream location; and then

f) determining when said end of data on said first set of conductors arrives at said downstream location, wherein when said end of data arrives switching said downstream switch so as to transfer said circuit from said first set of conductors extending to said upstream location to said second set of conductors extending to said upstream location.

5,365,579

METHOD AND APPARATUS FOR REMOTE CONTROL AND SYNCHRONIZATION ALLOWING FOR SIMULTANEOUS REMOTE COLLABORATION

Andrew D. Hendrickson, San Francisco, Calif., assignor to LucasArts Entertainment Company, Nicasio, Calif.

Filed Dec. 27, 1991, Ser. No. 815,276
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—101 **18 Claims**

1. An apparatus for remote control of motion picture soundtrack post-production, comprising:

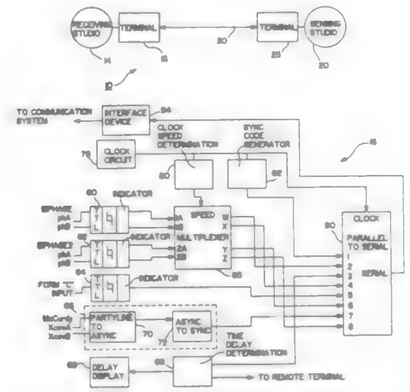
a receiving studio means for viewing a motion picture;

a sending studio means for producing and playing said motion picture soundtrack;

means for generating a plurality of signals for synchronization, control, or communication;

means for encoding said plurality of signals as a sequence of encoded digital words, each one of said encoded digital words comprising a plurality of bits, and each one of said plurality of signals corresponding to a predetermined one or more of said plurality of bits, said means for encoding further comprising first sampling means for sampling said plurality of signals at a predetermined sampling frequency, and clock means for providing a clock signal which determines said sampling frequency;

means for transmitting said sequence of encoded digital



words over a communication network, said means for transmitting further comprise means for communicating said sequence of encoded digital words from said receiving studio mans to said sending studio means;

means for decoding said sequence of encoded digital words to recover said plurality of signals; and

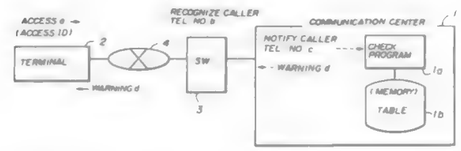
means for remotely controlling said motion picture soundtrack post-production, using said plurality of signals.

5,365,580

SYSTEM AND METHOD OF DETECTING UNAUTHORIZED USE OF IDENTIFIERS

Tetsuya Morisaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 30, 1992, Ser. No. 968,873
Claims priority, application Japan, Nov. 7, 1991, 3-291077
Int. Cl.[5] H04M *1/66*
U.S. Cl. 379—189 **22 Claims**



1. A system for detecting unauthorized use of an identifier in a communication system which includes at least one terminal coupled to a communication center via a communication network, said system comprising:

first means, provided in the communication center, for managing a password and a previous caller telephone number in correspondence with said identifier, said previous caller telephone number being variable dependent upon a location of a last attempted call using said identifier; and

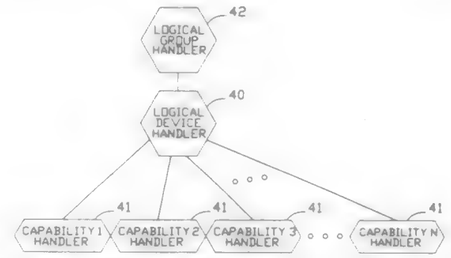
second means, provided in the communication center, for sending a warning message to the terminal if an access identifier and an access password input from the terminal from which an access request is made respectively match said identifier and a corresponding password managed by said first means but a present caller telephone number from which the access request is made is different from the previous caller telephone number.

5,365,581

TELEPHONIC SWITCHING SYSTEM WITH AUTOMATIC PORT ASSIGNMENT CAPABILITY AND METHOD

Daniel F. Baker, Rolling Meadows, and Joseph C. Steinlicht, Glen Ellyn, both of Ill., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 25, 1992, Ser. No. 904,413
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—196 **33 Claims**



1. In a telephonic switching system having a switch controlled by a central processing unit to interconnect an external network of external telephonic units with a plurality of interior telephonic units of various capabilities respectively connectable with a plurality of communication ports of the switch, the improvement being an automatic port capability assignment system, comprising:

means for determining the physical capabilities of an interior telephonic unit connected with at least some of the communication ports;

means responsive to receipt from the interior telephonic unit interconnected to one of said plurality of ports of a sign-in code identifying a user for ascertaining or predetermined set of authorized personal capabilities permitted for the individual user; and

means responsive to both the determining means and the ascertaining means for assigning port capabilities to a communication port.

5,365,582

CALL DISTRIBUTING SERVICE SYSTEM FOR A PLURALITY OF TERMINALS

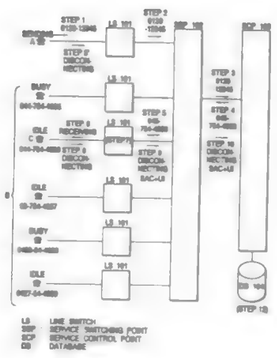
Kazuyuki Yamada, Yokohama, and Satoshi Takakura, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 2, 1992, Ser. No. 844,538
Claims priority, application Japan, Mar. 1, 1991, 3-035831
Int. Cl.[5] H04M *3/54*
U.S. Cl. 379—265 **14 Claims**

1. A call distributing service system for a plurality of terminals in a number conversion service having a plurality of target receiver terminals and a plurality of target receiver terminal numbers, in which at least one switching unit permits calls from users to be received by corresponding target receiver terminals by converting user-specified registered receiver identification numbers to corresponding target receiver terminal numbers, said service system comprising;

target receiver terminal information storing means for registering, as numbers, a plurality of said target receiver terminals, and storing, for each user-specified registered receiver identification number, plural sets of each said corresponding target receiver terminal number, and idle/-busy information indicating an idle/busy state of the corresponding target receiver terminal for said corresponding target receiver terminals; and

control means for selecting, based on a predetermined priority, from said target receiver terminal information storing means according to a selected one of said user-specified registered receiver identification numbers, one of said target receiver terminal numbers corresponding to one of said target receiver terminals indicated as in the idle state



according to said idle/busy information, outputting said selected target receiver terminal number to one of said switching units, and updating said idle/busy information stored by said target receiver terminal information storing means according to the idle/busy state of each said corresponding target receiver terminal.

5,365,583

METHOD FOR FAIL-SAFE OPERATION IN A SPEAKER PHONE SYSTEM

Shan-Shan Huang, Sunnyvale; Brian L. Hinman, Los Gatos, and Eric K. Gaut, Palo Alto, all of Calif., assignors to Polycom, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 909,060, Jul. 2, 1992, abandoned. This application Sep. 11, 1992, Ser. No. 943,732

Int. Cl.[5] H04M *9/08, 1/20*

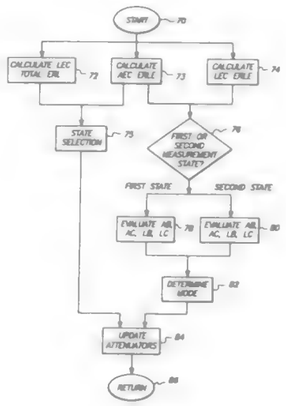
U.S. Cl. 379—390 **6 Claims**

1. A method for maintaining loop stability between a transmit and a receive path of a full-duplex speaker phone by selectively controlling an attenuator in the transmit path and an attenuator in the receive path, the method comprising the steps of:

calculating a transmit energy ratio and a receive energy ratio;

determining from the transmit energy ratio and the receive energy ratio whether to use a first measurement state or a second measurement state for evaluating a set of operating parameters;

evaluating the set of operating parameters based on signal levels from sample points in the transmit and the receive paths, wherein the evaluation of the set of operating parameters during use of the first measurement state further comprises the substeps of:



a. comparing a post pre-emphasis signal level to a pre-emphasis background noise level,

b. comparing the post pre-emphasis signal level multiplied by a scale factor and added to a bias factor, to an attenuated output of a receive signal,

c. comparing a pre-echo cancellation signal level to a pre-echo cancellation background noise level, and

d. comparing the pre-echo cancellation signal level to a post de-emphasis signal level;

determining an attenuator operating mode based on the set of evaluated operating parameters; and

adjusting the transmit path attenuator and the receive path attenuator based on the determined attenuator operating mode in order to maintain loop stability between the transmit and receive paths.

5,365,584

Patent Not Issued For This Number

5,365,585

METHOD AND APPARATUS FOR ENCRYPTION HAVING A FEEDBACK REGISTER WITH SELECTABLE TAPS

Larry C. Puhl, Sleepy Hollow, and Louis D. Finkelstein, Wheeling, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1993, Ser. No. 114,804

Int. Cl.[5] H04L *9/00;* **G06F** *1/02*

U.S. Cl. 380—9 **17 Claims**

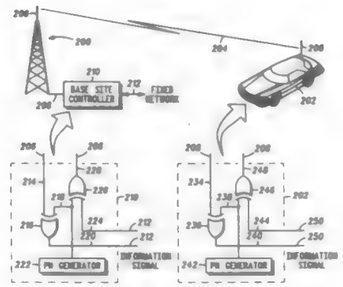
9. A communication device for use in maintaining secure communications through an encryption process between a subscriber unit and a fixed network communication unit of a serving communication system, comprising:

(a) a pseudo-random bit sequence generator means for generating a non-linear pseudo-random bit sequence, the pseudo-random bit sequence generator means comprising:

(i) shift register means for storing a predetermined number of bits;

(ii) first feedback means, coupled to the shift register means, for determining a first input bit as a function of bits stored in the shift register means;

(iii) second feedback means, coupled to the shift register means, for determining a second input bit as a function of bits stored in the shift register means; and



(iv) control means, coupled to the shift register means, the first feedback means, and the second feedback means, for deterministically selecting and providing a particular input bit to the shift register means, the particular input bit being selected from the group consisting of the first input bit and the second input bit;

(b) encrypting means, coupled to the pseudo-random bit sequence generator means, for encrypting an input information signal as a function of the non-linear pseudo-random bit sequence; and

(c) transmitting means, coupled to the encrypting means, for transmitting the encrypted information signal over a communication channel.

5,365,586

METHOD AND APPARATUS FOR FINGERPRINTING MAGNETIC MEDIA

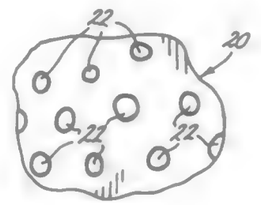
Ronald S. Indeck, Olivette, and Marcel W. Muller, St. Louis, both of Mo., assignors to Washington University, St. Louis, Mo.

Filed Apr. 9, 1993, Ser. No. 46,040

Int. Cl.[5] G11B *23/28;* **H04K** *1/00;* **H04L** *9/00;* **G06K** *7/08*

U.S. Cl. 380—3 **122 Claims**

1. A device for fingerprinting an object for the later determination of its identity, said object including at least in part, a magnetic medium portion, said device having means for determining a remanent noise for said medium portion, said remanent noise comprising the fingerprint for said object, and



means for recording said remanent noise for later comparison with the later determination of said remanent noise to thereby identify said object.

5,365,587

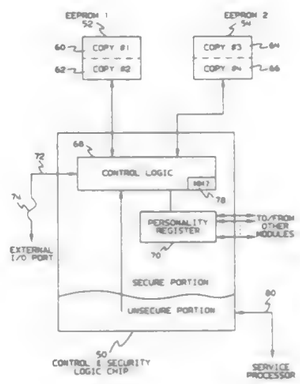
SELF MODIFYING ACCESS CODE FOR ALTERING CAPABILITIES

John E. Campbell, Hurley, N.Y.; Michael J. Chan, Raleigh, N.C.; Steven F. Hajek, West Hurley, and Paul L. Wiltgen, Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 29,856, Mar. 11, 1993. This application Jun. 30, 1993, Ser. No. 85,216

Int. Cl.[5] H04L *9/32;* **G06F** *12/14*

U.S. Cl. 380—25 **12 Claims**



1. A data processing system comprising:

a locally accessed computer system,

a secure remote access number generator for generating an access number for selectively transmitting said access number to said locally accessed computer system,

a local secure access control within said locally accessed computer system,

a data link for transmitting said access number along with a unique entered personal identification number of altering parameters of the locally accessed computer system after

the locally accessed computer system has been accessed by a transmission from the secure remote access number generator, and

means within the locally accessed computer system for comparing said entered personal identification number to said access number a predetermined number of times,

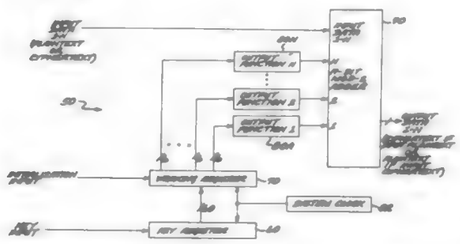
wherein if there is a match between said entered personal identification number and said access number prior to said predetermined number, parameters of said locally accessed computer system are altered.

5,365,588

HIGH SPEED ENCRYPTION SYSTEM AND METHOD

Mark E. Bianco, Pomona, and Gregory L. Mayhew, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 12, 1993, Ser. No. 30,687
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—42 **49 Claims**



1. A high speed data encryption system for encrypting input data to produce encrypted data, comprising:

a working register, comprising a linear feedback shift register having a plurality of stages including an output stage and a plurality of intermediate stages;

means for initializing the working register by loading it with a binary sequence;

means for selectively feeding back the output state of said output stage of said working register into selected inputs of said intermediate stages, as determined by a cryptographic key;

N mathematical independent nonlinear output function means, where $N \geq 2$, each for performing a different nonlinear function on the output states of T selected stages of said working register, where $T \geq 1$;

means for clocking said working register, wherein with each clock cycle, said working register is advanced one state, and the outputs of said selected working register stages feed said N output function means; and

means for logically operating on respective input data bits and said outputs of said output function means to produce encrypted data.

5,365,589

METHOD AND APPARATUS FOR ENCRYPTION, DECRYPTION AND AUTHENTICATION USING DYNAMICAL SYSTEMS

Howard A. Gutowitz, 6395 Claremore La., San Diego, Calif. 92120

Filed Feb. 7, 1992, Ser. No. 832,476
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—43 **44 Claims**

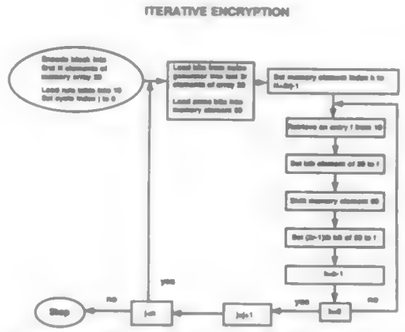
1. A method for encrypting information comprising the steps of:

establishing a plurality of dynamical systems to be used as keys for encryption;

selecting from said plurality of dynamical systems a plurality of current-key dynamical systems to be used as current keys for encryption;

choosing at least one of said current-key dynamical system, the chosen dynamical system being an irreversible dynamical system;

defining a current state of at least one of the current-key dynamical systems in correspondence with at least a portion of an information stream to be encrypted; and



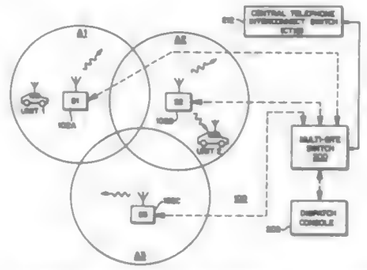
applying said at least one of said current-key dynamical systems over a selected number of iteration cycles to produce from said current state a new state of said at least one of said current-key dynamical systems, said new state representing an encryption of the information.

5,365,590

SYSTEM FOR PROVIDING ACCESS TO DIGITALLY ENCODED COMMUNICATIONS IN A DISTRIBUTED SWITCHING NETWORK

Charles P. Brame, Forest, Va., assignor to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Filed Apr. 19, 1993, Ser. No. 47,834
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—49 **25 Claims**



14. A digitally trunked radio frequency communications system comprising:

mobile or portable digitally trunked radio transceivers;

plural digital repeater sites having corresponding coverage areas and serving mobile or portable digitally trunked radio transceivers disposed within the coverage areas, the radio transceivers supporting digitally encrypted communications; and

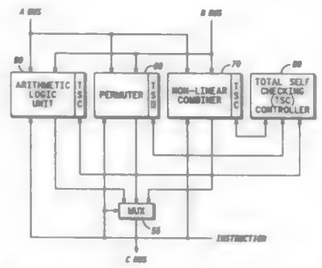
a distributed switch for routing communications between digital repeater sites and analog communication sources and destinations including a digital interface module for encrypting communications originated from an analog communication unit and decrypting encrypted communications to be received by the analog communication unit, wherein the digital interface module permits the analog communication unit to originate and participate in encrypted communications with one or more radio transceivers.

5,365,591

SECURE CRYPTOGRAPHIC LOGIC ARRANGEMENT

Phillip A. Carswell, Mesa, and Steven F. Clark, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 29, 1993, Ser. No. 143,036
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—49 **22 Claims**



1. A secure cryptographic logic arrangement comprising:

a crypto processor for transmitting and receiving plain text data and cipher text data and for converting cipher text data to plain text data and for converting plain text data to cipher text data, said crypto processor including:

first and second input buses;

an output bus;

an arithmetic logic unit coupled to said first and second input buses and to said output bus;

a permuter coupled in parallel with said arithmetic logic unit to said first and second input buses and to said output bus;

a non-linear combiner coupled in parallel with said arithmetic logic unit and with said permuter to said first and second input buses and to said output bus; and

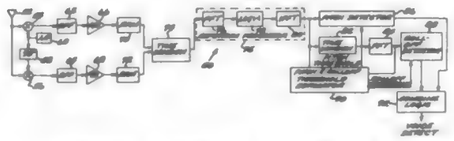
a total self-checking controller coupled to said arithmetic logic unit, to said permuter and to said non-linear combiner, said total self-checking controller halting the processing of said crypto processor in response to detection of a fault in said crypto processor.

5,365,592

DIGITAL VOICE DETECTION APPARATUS AND METHOD USING TRANSFORM DOMAIN PROCESSING

Robert W. Horner, Whittier; Khein V. Cai, Brea; Ronald L. Bergen, Irvine, and Keith A. Lane, Huntington Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 19, 1990, Ser. No. 555,114
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—46 **27 Claims**



1. A waveform characterizer apparatus for determining cepstrum pitch and spectral rolloff properties of an input signal waveform, comprising:

means for digitizing the input signal waveform to provide a digital waveform signal;

means for providing the cepstrum of the input signal waveform including means for transforming the digitized input signal waveform into the frequency domain which includes memory means for storing said digital samples in memory, means for reading said digital samples out of said memory means in blocks of N samples corresponding to a frame duration of T=NR, and means for transforming said respective blocks of digital data samples into the frequency domain by a fast Fourier transform algorithm;

means for deconvolving the impulse response and periodicity of the frequency domain signal to provide a deconvolved digital signal; and

means for transform the deconvolved digital signal back into the time domain to provide the cepstrum of the input signal waveform; and

means for isolating the pitch period of the input signal waveform as a single peak in the cepstrum located at the period of the signal and determining the peak pitch magnitude value; and

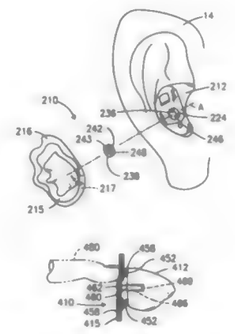
means for determining the spectral rolloff of the input signal waveform from the cepstrum of the input signal waveform.

5,365,593

DECORATIVE AND OPERATIVE HEARING AID ATTACHMENT

Jean B. Greenwood, Warren, Ohio, and J. Stephen Tenbarge, Clearwater, Fla., assignors to Jeanie HearRing, Inc., Warren, Ohio

Filed Mar. 19, 1993, Ser. No. 34,567
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—69 **6 Claims**



1. A decorative and operative hearing aid attachment for a hearing aid having a generally cylindrical volume control knob, the volume control knob having an outwardly facing surface, in relation to the hearing aid, that is generally normal to the longitudinal axis of the volume control knob, said decorative attachment comprising:

a decorative element sized and configured to substantially shield a hearing aid when said hearing aid attachment is attached to the hearing aid; and

a cup-shaped receptor comprising a bottom and at least one wall extending therefrom, said receptor having an outer bottom surface, and said decorative element being attached to said outer bottom surface; said receptor being sized and configured to receive the volume control knob therein such that rotation of said decorative element operates the volume control of the hearing aid.

5,365,594

ACTIVE SOUND AND/OR VIBRATION CONTROL

Colin F. Ross, Stapleford, and Graham P. Eatwell, Caldecote, both of United Kingdom, assignors to Active Noise and Vibration Technologies, Inc., Phoenix, Ariz.

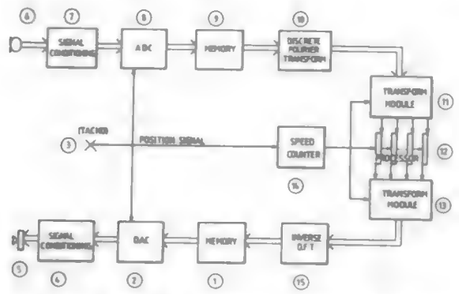
PCT No. PCT/GB90/00617, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO90/02447, PCT Pub. Date Mar. 8, 1990

PCT Filed Apr. 20, 1990, Ser. No. 776,261

Claims priority, application United Kingdom, Aug. 17, 1988, 8819581.3

Int. Cl.[5] G10K *11/16*

U.S. Cl. 381—71 **4 Claims**



1. An active sound or vibration cancelling apparatus for cancelling sound or vibration from a source thereof, comprising:

a. a source of sensing means, having an output, for producing a source signal related to the phase of unwanted sound or vibration at the source;

b. a distributed plurality of sound or vibration sensors, each having an output;

c. a distributed plurality of sound or vibration producing actuators;

d. analogue-to-digital converter means for sampling output signals of said sound or vibration sensors in dependence on the source signal, said converted means having an output; and

e. processing means responsive to the output of said analogue-to-digital converter means to produce drive signals for said sound or vibration producing actuators to effect cancellation of noise or vibration from said source thereof;

f. wherein said processing means uses data in the form of singular values representing a singular value decomposition of a matrix representing transfer functions between said plurality of actuators and said plurality of sensors to calculate said drive signals.

5,365,595

SEALED MICROPHONE ASSEMBLY

Richard C. Li, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 19, 1993, Ser. No. 19,800

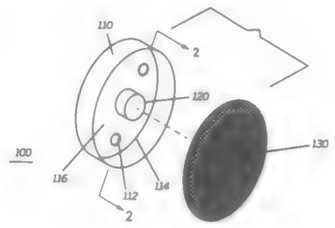
Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—168 **4 Claims**

1. A waterproof microphone assembly for operating within an audio frequency range, comprising:

a microphone having a sensitivity;

a microphone housing including (a) an acoustically resonant cavity within the audio frequency range, wherein said acoustically resonant cavity is formed to include a backside upon which a microphone is centrally positioned, (b) a first selectively shaped aperture for producing an acoustic bandpass response within the audio frequency range and (c) a second selectively shaped aperture, wherein said first selectively shaped aperture and said second selectively shaped aperture are formed on said backside, and said first selectively shaped aperture and said second selectively shaped aperture are being symmetrically positioned with respect to said microphone; and



a sealing membrane covering said acoustically resonant cavity to render the microphone assembly waterproof while substantially maintaining the sensitivity of the microphone.

5,365,596

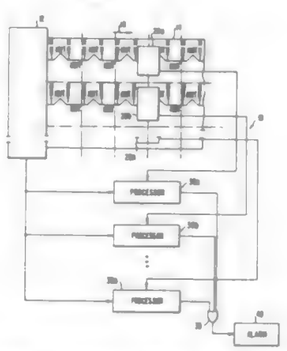
METHODS AND APPARATUS FOR AUTOMATIC IMAGE INSPECTION OF CONTINUOUSLY MOVING OBJECTS

Henry M. Dante, Midlothian, and David A. Lowitz, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 17, 1992, Ser. No. 992,139

Int. Cl.[5] G06K *9/00, 9/68;* **H04N** *7/18;* **G01N** *21/00*

U.S. Cl. 382—8 **14 Claims**



1. The method of determining whether an image is substantially like a predetermined image which is subject to some minor but acceptable variations, said method comprising the steps of:

(1) forming a template image which is representative of said predetermined image and said minor but acceptable variations by performing the steps of:

(a) identifying a plurality of training images, each of which is substantially like said image, and at least some of which includes at least some of said minor but acceptable variations from said image;

(b) representing each of a plurality of portions of each of said training images by a pixel value, each of said portions of each of said training images respectively corresponding to an associated one of said portions of said template image; and

(c) for each portion of said template image, using as the template image pixel value the largest of the pixel values for the associated portion in said training images;

(2) representing each of a plurality of portions of said template image by a pixel value;

(3) representing each of a plurality of portions of said image of a pixel value, each of said portions of said image respectively corresponding to an associated one of said portions of said template image;

(4) for each of said portions of said image, determining the difference between the pixel value of that portion of said image and the pixel value for the associated template image portion;

(5) cumulating said differences for at least some of said portions of said image to produce a cumulative difference value;

(6) comparing said cumulative difference value to a predetermined threshold value; and

(7) identifying said image as unlike said predetermined image if said cumulative differences value bears a predetermined relationship to said threshold value.

5,365,597

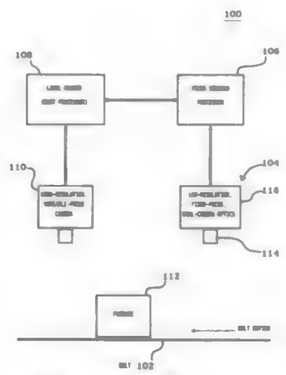
METHOD AND APPARATUS FOR PASSIVE AUTORANGING USING RELAXATION

Lee F. Holeva, New Millville, Conn., assignor to United Parcel Services of America, Inc., Atlanta, Ga.

Filed Jun. 11, 1993, Ser. No. 75,738

Int. Cl.[5] G06K *9/00, 9/36*

U.S. Cl. 382—8 **89 Claims**



1. A method for determining a differential blur spread corresponding to an object, comprising the steps of:

(a) providing a first image of said object, said first image being generated by a camera having a first camera parameter;

(b) providing a second image of said object, said second image being generated by a camera having a second camera parameter different from said first camera parameter; and

(c) performing a relaxation procedure in accordance with said first and second images to generate said differential blur spread.

5,365,598

HANDWRITTEN KEYBOARDLESS ENTRY COMPUTER SYSTEM

Ralph Sklarew, Reston, Va., assignor to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 523,447, May 14, 1990, Pat. No. 5,157,737, which is a continuation of Ser. No. 29,772, Mar. 24, 1987, Pat. No. 4,972,496, which is a continuation-in-part of Ser. No. 889,513, Jul. 25, 1986, abandoned. This application Jun. 19, 1992, Ser. No. 902,409

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—13 **29 Claims**

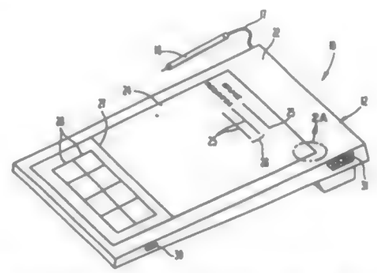
1. A computer that includes a system for assigning the identity of one of a plurality of predetermined symbols to a digitized symbol input signal, with the plurality of predetermined symbols including a plurality of computer generated font symbols and a first editing symbol for indicating a change to be made on a group of computer generated font symbols in displayed text, said computer comprising:

a locator device;

a resistive type touch display screen for displaying images, including preexisting graphic images, text, and combinations of graphic images and text, generated by said computer and for providing a position signal indicating the position of said locator device over said screen;

means for coincidentally displaying on said screen an image of a handwritten symbol formed by moving said locator device over said screen;

means, coupled to said screen to receive said position signal generated when said handwritten symbol is formed, for converting the received position signal into a first input signal;



means for assigning to said first input signal, the identity of one of

a first of the plurality of computer generated font symbols and

the first editing symbol

means for displaying an image of said first computer generated font symbol on said screen when the first input signal is assigned the identity of said first computer generated font symbol; and

means for changing a first group of computer generated font symbols in text displayed on said screen to a second group of computer generated font symbols assigned to a group of handwritten symbols formed by said locator device over said screen when said first input signal is assigned the identity of the first editing symbol.

5,365,599

METHOD AND SYSTEM OF CONVERTING DELINEATIVE PATTERN

Kunio Seto, Tokyo; Kensaku Tanaka, Yokohama; Yukari Taniguchi, and Takahiro Kato, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 94,924, Jul. 22, 1993, abandoned, which is a continuation of Ser. No. 690,398, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 569,737, Aug. 22, 1990, abandoned, which is a continuation of Ser. No. 336,514, Apr. 11, 1989, abandoned, which is a continuation of Ser. No. 914,733, Oct. 2, 1986, abandoned. This application Dec. 23, 1993, Ser. No. 173,868

Claims priority, application Japan, Oct. 7, 1985, 60-222937

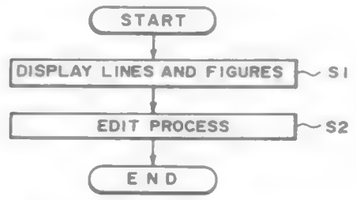
Int. Cl.[5] G06K *9/48*

U.S. Cl. 382—22 **106 Claims**

1. A pattern conversion method employing (i) storage means for storing data, in a form of a series of coordinates, representative of an original pattern comprising a plurality of pattern elements, (ii) means for reading the data from the storage means, and (iii) means for processing the data read from the storage means, wherein the processing by the processing means comprises the steps of:

parallel moving each of a plurality of segments, which plurality of segments form a contour of one of the plurality of

pattern elements, by a distance d in a predetermined direction corresponding to a direction of the series of coordinates;



obtaining an intersection between adjacent ones of the moved segments; and

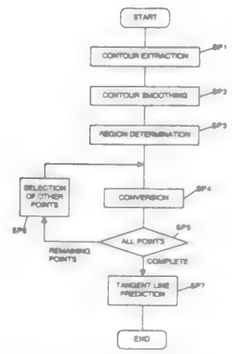
repeating said moving and obtaining steps for the rest of the plurality of pattern elements.

5,365,600

IMAGE PROCESSING SYSTEM

Michihiro Nagaishi, Nagano, Japan, assignor to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan

Filed Jun. 11, 1993, Ser. No. 74,519
Claims priority, application Japan, Mar. 19, 1993, 5-060323
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—41 **4 Claims**



1. An image processing system comprising:

input means for entering an image;

line extracting means for extracting a straight line going through a selected point on said image entered by said input means according to Hough transform with said selected point as the origin, said line extracting means having

(a) contour extracting means for extracting a contour according to the continuous state of pixels forming said image entered by said input means,

(b) region determinating means for determining a region in which said selected point and adjacent points go through said region, and

(c) transformation means for carrying out Hough transform of said straight line with said selected point as the center point of said region and as the origin to predict said contour; and

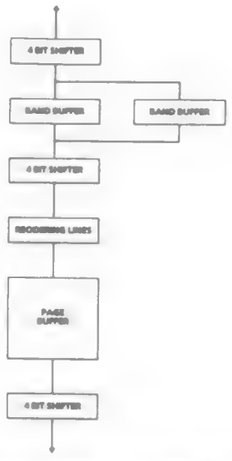
output means for providing the extraction result by said line extracting means.

5,365,601

N-BIT WIDE PARALLEL ROTATION ALGORITHM

Vinod K. Kadakia, Rancho Palos Verdes; Jeffrey N. Kellman, Hawthorne, and Christine Kang, Los Angeles, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1991, Ser. No. 811,865
Int. Cl.[5] G06K *9/32*
U.S. Cl. 382—46 **2 Claims**



1. A circuit for rotating an x scanline by y bit image grouped into m-bit words comprising:

a first shifter for circularly shifting each word by n bits times the scanline number mod n, where n is a fraction of m,

a first buffer means implemented from m/n memory devices, numbered 1 to m/n, each device n-bits wide, for storing the words shifted by said first shifter,

a system of connecting lines for reordering the output bits of said first buffer means so that when the bits are read out of the first buffer in the following order:

0 0, 1, . . . n-1 from memory device **1**; **1** 0, 1, . . . n-1 from memory device **2**; . . . to memory device m/n

to line $x - 1$

they will be reordered into the following order:

$0, 1, \ldots n-1$ 0; $0, 1, \ldots n-1$ 1; . . .

to line $x - 1$

a second shifter for grouping said bits received from said connecting lines into m bit words, numbering said m bit words from zero, and circularly shifting each m bit word received from said connecting lines by n bits times the m bit word number, mod n,

a second buffer means implemented from m/n memory devices, each device n-bits wide, for storing the output of said second shifter, and

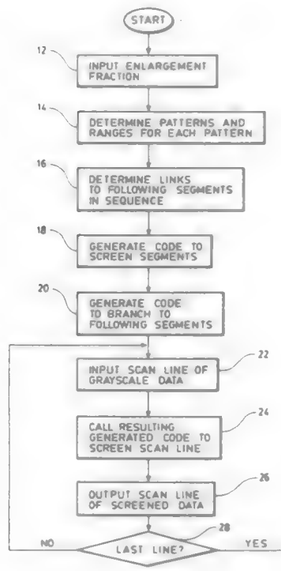
a third shifter for receiving and circularly shifting each word received from said second buffer means by n bits times the third shifter scanline number mod n, the result being the fully rotated image.

5,365,602

INTEGRATED HALF-TONE SCREENING AND ENLARGING USING AN ENLARGEMENT MAPPING PATTERN HAVING LINKED, UNIQUE PATTERN SEGMENTS

Raphael L. Levien, P.O. Box 31, McDowell, Va. 24458

Continuation of Ser. No. 748,948, Aug. 23, 1991, abandoned.
This application Jul. 9, 1993, Ser. No. 89,893
Int. Cl.[5] G06K *9/42*
U.S. Cl. 382—47 **30 Claims**



5. An apparatus for screening an image through a given screen, including enlarging said image by a preselected enlargement factor, said apparatus comprising:

storing said image as an array of original pixels;

means for compiling a sequence of instructions responsive to said enlargement factor for repeating respective pixels of said stored image and for comparing said respective pixels of said enlarged image to said screen, said compiling means comprising:

means for generating a sequence of control symbols corresponding to said desired enlargement factor for at least one line of said stored image;

means for separating said sequence of control symbols into a plurality of unique patterns corresponding to portions of said sequence of control symbols wherein the sum of the lengths of said plurality of unique patterns is less than the length of said sequence of control symbols;

means for compiling a plurality of program segments corresponding to said plurality of unique patterns for screening portions of said stored image by said screen wherein the sum of the lengths of said plurality of program segments is less than the length of a compiled program corresponding to said sequence of control symbols; and

means for determining a plurality of links for connecting said plurality of respective program segments to correspond to said sequence of control symbols; and

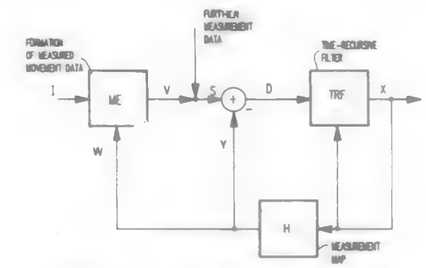
means for performing said sequence of instructions to process said image; whereby said image is enlarged by said preselected enlargement factor and compared to said given screen.

5,365,603

METHOD FOR ANALYZING MOVEMENTS IN TEMPORAL SEQUENCES OF DIGITAL IMAGES

Klaus-Peter Karmann, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 25, 1993, Ser. No. 969,212
Claims priority, application Germany, Jul. 27, 1990, 4023938
Int. Cl.[5] G06K *9/20, 9/46, 9/66*
U.S. Cl. 382—48 **20 Claims**



1. A method for analyzing temporal sequences of digital images, comprising the steps of:

providing temporal sequences of digital images from at least one sensor;

deriving measured movement data from the temporal sequences of digital images;

deriving predicted movement data from the temporal sequences of digital images;

providing temporal sequences of predicted measurement data and temporal sequences of measured measurement data;

determining temporal sequences of state variables in a temporally recursive fashion using a comparison of the temporal sequences of predicted measurement data, that includes the predicted movement data, with the temporal sequences of measured measurement data, that includes the measured movement data;

said temporal sequences of state variables being input to a measurement map, and said predicted movement data and said temporal sequences of predicted measurement data being output from said measurement map;

said predicted movement data and said temporal sequences of digital images being input to a formation device, measured movement data and said temporal sequences of measured movement data being output from said formation device;

said temporal sequences of measured movement data and said temporal sequences of predicted measurement data being into to a comparator, and temporal sequences of resultant measurement data being output from said comparator; and

said temporal sequences of resultant measurement data and said temporal sequences of state variables being input to a time-recursive filter, and said temporal sequences being output from said time-recursive filter.

5,365,604

ERROR CONCEALMENT APPARATUS FOR VIDEO SIGNAL PROCESSORS

Wilson Kwok, Plainsboro, and Huifang Sun, Princeton, both of N.J., assignors to RCA Thomson Licensing Corporation, Princeton, N.J.

Filed Jan. 14, 1993, Ser. No. 4,358
Int. Cl.[5] G06K *9/40*
U.S. Cl. 382—54 **10 Claims**

1. Apparatus for concealing blocks of erroneous pixel data, each block consisting of a two dimensional matrix of pixel data, said apparatus comprising:

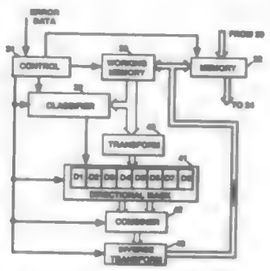
an addressable source of pixel data representing respective

two dimensional images, said pixel data susceptible of including erroneous two dimensional blocks of such data:

a source of error data, said error data indicating which blocks of said pixel data are erroneous (hereinafter designated bad pixel data);

means responsive to said error data, for accessing from said addressable source of pixel data, pixel data located adjacent to a block of bad pixel data, and generating directional indicators Di which indicate respective angular directions, referenced to predetermined axes of said two dimensional images, of predominant image features represented by said pixel data located adjacent said block of bad pixel data;

means for generating from pixel data located adjacent to said



block of bad data, and along directional lines corresponding to said indicators Di, respective synthesized blocks of pixel data for each indicator Di; and

means for selectively combining pixel data from said respective synthesized blocks to form a further block of pixel data, and substituting said further block for said block of bad pixel data, said means for selectively combining populating respective matrix points of said further block with pixel data from corresponding matrix locations from said respective synthesized blocks, each matrix location of said further block being populated by pixel data selected exclusively from the corresponding matrix location of a single Synthesized block and pixel data populating said further matrix coming from at least two of said synthesized blocks.

5,365,605

IMAGE SCANNER INCLUDING VIEWING WINDOW

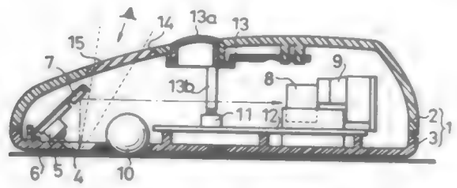
Junichi Hosogoe, and Kiyoshi Kimura, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 609,122, Oct. 31, 1990, abandoned, which is a continuation of Ser. No. 403,847, Aug. 31, 1989, abandoned, which is a continuation of Ser. No. 134,763, Dec. 18, 1987, abandoned. This application Jun. 17, 1991, Ser. No. 719,083

Claims priority, application Japan, Mar. 9, 1987, 62-33098[U]; Apr. 24, 1987, 62-61468[U]

Int. Cl.[5] G06K *9/22, 7/10, 9/20*

U.S. Cl. 382—59 **18 Claims**



1. An image scanner comprising:

a light source for illuminating an original;

a reflecting mirror for reflecting light reflected from the original to a predetermined direction;

an image sensor for receiving the light reflected from the reflecting mirror so as to input information from the illuminated original thereunto;

a case for enclosing the light source, mirror, and image sensor and having a lower surface slidable across the original;

a window formed on a upper surface of the case, for observing the original;

an opening in the lower surface of the case for allowing the light from the light source to pass through the case to the original; and

a cylindrical roller for sensing an amount of movement over the original, said roller being rotatable on the original.

5,365,606

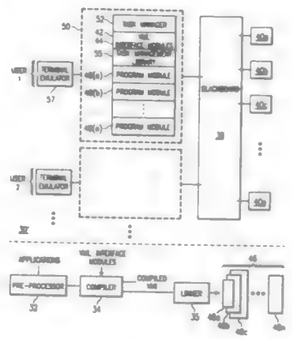
VIRTUAL SOFTWARE MACHINE RUNNING MULTIPLE PROGRAM MODULES IN A SINGLE ADDRESS SPACE OF A TARGET COMPUTER

Thomas A. Brocker, Richardson; W. Jesse Furqueron, Irving, and Bill L. Braswell, Plano, all of Tex., assignors to Visystems, Inc., Dallas, Tex.

Filed Nov. 27, 1991, Ser. No. 800,503

Int. Cl.[5] G06F *9/06*

U.S. Cl. 395—650 **3 Claims**



1. In a method, using a virtual software machine, for providing a virtual execution environment in a target computer system for application software programs having one or more execution dependencies that are incompatible with a software execution environment on the target computer system, the virtual software machine comprising a plurality of independent processes, a management interface for generating requests for execution to the plurality of independent processes and for receiving results of such processing, and preprocessing means for identifying execution dependencies of the application software programs and in response thereto generating a set of program modules, the improvement comprising the steps of:

binding a task manager control module into a single address space of the target computer software execution environment;

in response to a transaction request, dynamically binding one or more of the program modules into the single address space for scheduling and execution under the control of the task manager control module, wherein at least one of the program modules calls the management interface upon encountering an execution dependency in the program module; and

resolving a context of each of the one or more program modules loading into the single address space during execution of the program modules by the task manager control module.

DESIGN PATENTS

GRANTED NOV. 15, 1994

ERRATA

For CLASS	See PATENT NO.
D21-171	D 352,374
D9-337	D 352,445
D24-218	D 352,516

352,371
BELL-SHAPED PASTA
Ricardo J. Gonzalez, Glenview, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Jul. 12, 1993, Ser. No. 10,589
Term of patent 14 years
U.S. Cl. D1—106



352,372
CANDY CANE-SHAPED PASTA
Ricardo J. Gonzalez, Glenview, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Jul. 12, 1993, Ser. No. 10,572
Term of patent 14 years
U.S. Cl. D1—106



352,373
STOCKING-SHAPED PASTA
Ricardo J. Gonzalez, Glenview, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.
Filed Jul. 12, 1993, Ser. No. 13,201
Term of patent 14 years
U.S. Cl. D1—106



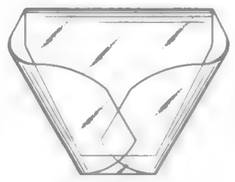
352,374
DOLL
Taiken Kanedo, Osaka, Japan, assignor to Nichie Co., Ltd., Osaka, Japan
Filed Jul. 29, 1993, Ser. No. 11,221
Term of patent 14 years
U.S. Cl. D21—171



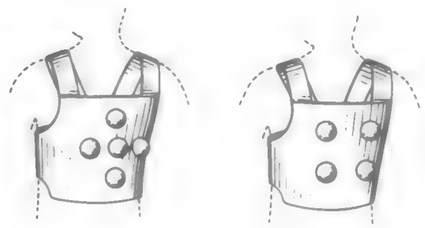
352,375
PRE-TIED SCARF
Shirlette A. Satterwhite, 11237 W. Port Dr., Bowie, Md. 20720
Filed Apr. 12, 1993, Ser. No. 6,986
Term of patent 14 years
U.S. Cl. D2—501



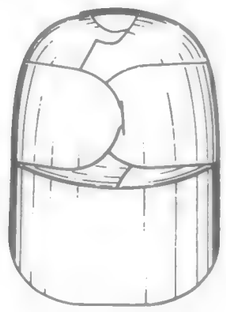
352,376
TIE KNOT PROTECTOR
Aletha J. Moore, 21891 Ridgedale St., Oak Park, Mich. 48237
Filed May 4, 1992, Ser. No. 878,014
Term of patent 14 years
U.S. Cl. D2—605



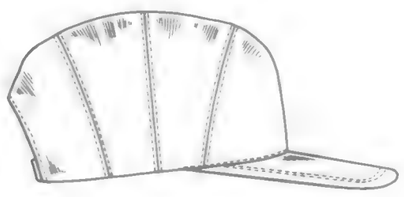
352,377
VEST FOR DISCOURAGING SUPINE POSTURE
Yury Furman, 7250 Franklin Ave., #515, Los Angeles, Calif. 90046
Filed Mar. 17, 1993, Ser. No. 6,018
Term of patent 14 years
U.S. Cl. D2—830



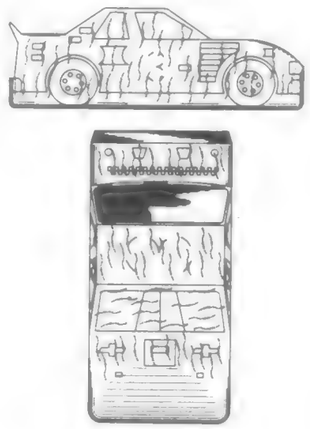
352,378
HAT
Herbert H. Wise, 7649 Woodrow Wilson Dr., Los Angeles, Calif. 90046
Filed Nov. 20, 1992, Ser. No. 1,714
Term of patent 14 years
U.S. Cl. D2—876



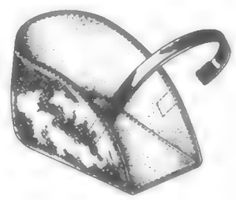
352,379
ATHLETIC CAP
Alfred R. Pierce, Jr., 2922 Fries Mill Rd., Williamstown, N.J. 08094
Filed Jun. 21, 1993, Ser. No. 9,733
Term of patent 14 years
U.S. Cl. D2—882



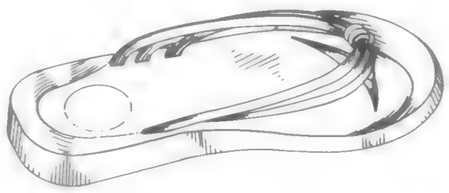
352,380
SLIPPER
Richard C. Oehring, and Nicole A. Oehring, both of 6140 Queens Dr. #5, Lincoln, Nebr. 68516
Filed Jul. 1, 1993, Ser. No. 10,139
Term of patent 14 years
U.S. Cl. D2—898



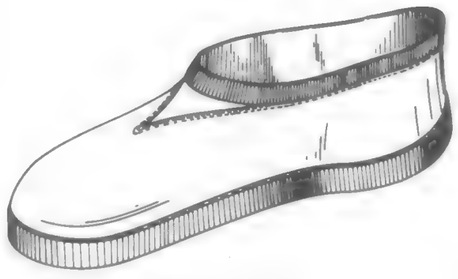
352,381
HEEL PROTECTOR/CALLOUS REMOVER
Jamie Rose, Phoenix, Ariz., assignor to Jamie Rose Coffey, Phoenix, Ariz.
Filed Feb. 16, 1993, Ser. No. 4,898
Term of patent 14 years
U.S. Cl. D2—915



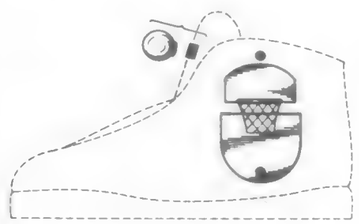
352,382
SLIPPER
Ming-Chih Chuang, Nan Tou City, Taiwan, Prov. of China, assignor to Che Shang Enterprise, Co., Ltd., Nan Tou City, Taiwan, Prov. of China
Filed Mar. 22, 1993, Ser. No. 6,163
Term of patent 14 years
U.S. Cl. D2—917



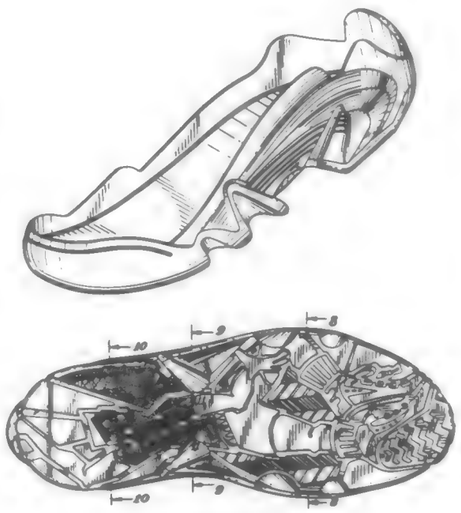
352,383
SHOE
Helene Verin, Lenox, Mass., assignor to The Keds Corporation, Cambridge, Mass.
Filed Apr. 8, 1992, Ser. No. 866,241
Term of patent 14 years
U.S. Cl. D2—919



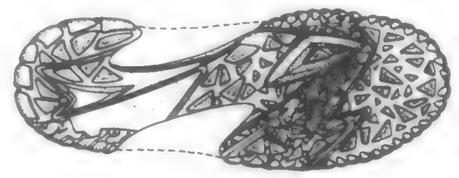
352,384
ACCESSORY KIT TO BE ATTACHED TO AN ATHLETIC SHOE
Dwight F. Robinson, Y.E.S. Enterprise, 1817 S. 6th St., Camden, N.J. 08104
Filed Oct. 23, 1992, Ser. No. 735
Term of patent 14 years
U.S. Cl. D2—946



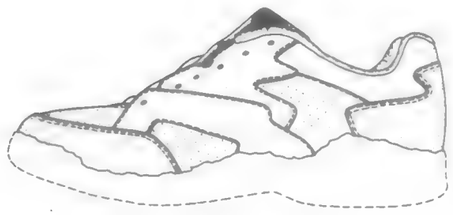
352,385
SHOE SOLE
Kevin J. Crowley, Brentwood, N.H., assignor to Fila U.S.A. Inc., Hunter Valley, Md.
Filed Apr. 21, 1993, Ser. No. 7,396
Term of patent 14 years
U.S. Cl. D2—952



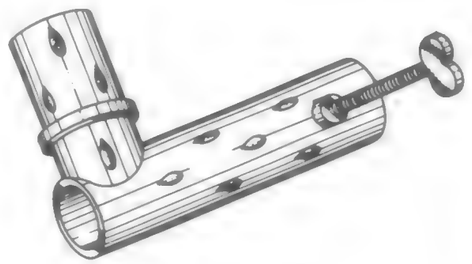
352,386
SHOE SOLE
Ricardo Vestuti, and Christian Tresser, both of Quincy, Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Apr. 20, 1994, Ser. No. 21,607
Term of patent 14 years
U.S. Cl. D2—953

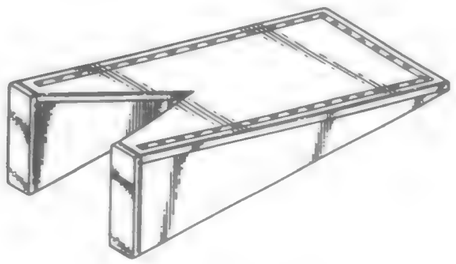


352,387
SHOE UPPER
Linda Poetsch, Oregon City, Oreg., assignor to Avia Group International, Inc., Beaverton, Oreg.
Filed May 2, 1994, Ser. No. 22,215
Term of patent 14 years
U.S. Cl. D2—969

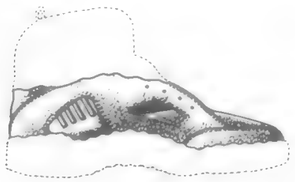


352,388
BOOT REMOVING AID
Dennis Swirsky, 24 Malmalick Ave., Waterbury, Conn. 06708
Filed Dec. 30, 1992, Ser. No. 3,164
Term of patent 14 years
U.S. Cl. D2—642





352,389
SHOE UPPER
Judith R. Close, Dedham, Mass.; E. Scott Morris, East Providence, R.I., and Paul Caron, Manchester, N.H., assignors to Reebok International Ltd., Stoughton, Mass.
Filed Mar. 8, 1994, Ser. No. 19,641
Term of patent 14 years
U.S. Cl. D2—970

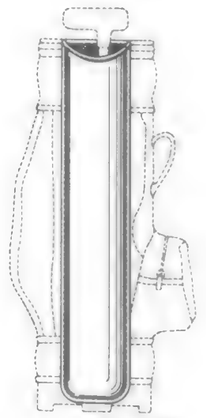


352,390
UMBRELLA HOLDER FOR WHEEL CHAIRS
Herbert R. Shrum, 2210 N. Orchard Dr., Burbank, Calif. 91504
Filed Jun. 25, 1992, Ser. No. 903,555
Term of patent 14 years
U.S. Cl. D3—10

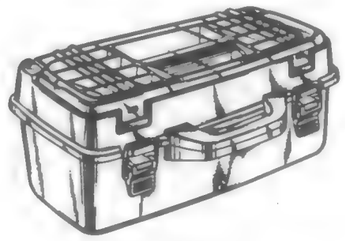
352,391
COMBINED PLUSH ANIMAL HANDBAG SET
Maria E. Beltempo, 276 Essex St., Brooklyn, N.Y. 11208
Filed Nov. 23, 1993, Ser. No. 15,624
Term of patent 14 years
U.S. Cl. D3—235



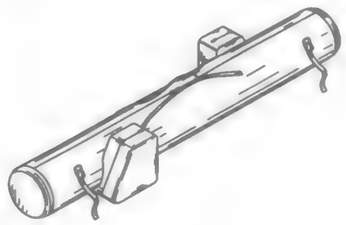
352,392
HOLSTER FOR GOLF BAG
Thomas Little, 167 Mountainview Ave., Nutley, N.J. 07110
Filed Mar. 2, 1992, Ser. No. 843,109
Term of patent 14 years
U.S. Cl. D3—255



352,393
TACKLE BOX
Joseph F. Fiore, Lebanon, Pa., assignor to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Oct. 5, 1992, Ser. No. 93
Term of patent 14 years
U.S. Cl. D3—260



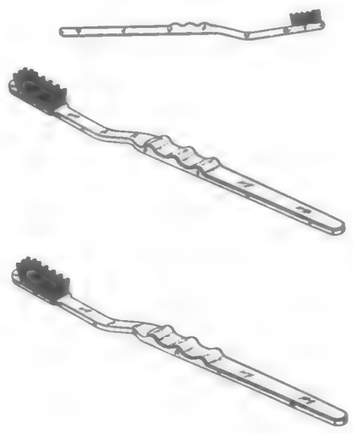
352,394
COMBINED SKI AND BOOT BAG
David B. Deioma, and David M. Deioma, both of 35 Greentree Rd., Chagrin Falls, Ohio 44022
Filed Sep. 28, 1993, Ser. No. 13,599
Term of patent 14 years
U.S. Cl. D3—261



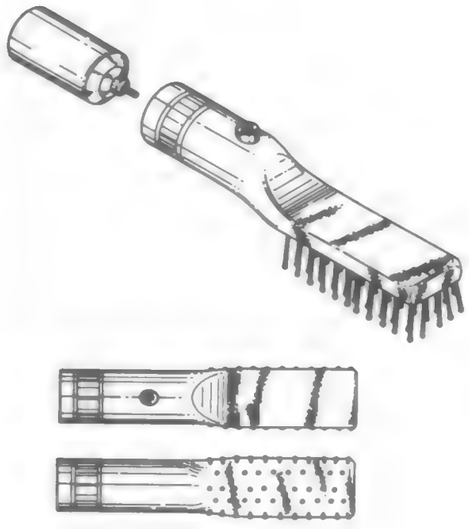
352,395
WHEELED LUGGAGE CASE
William L. King, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Jan. 25, 1993, Ser. No. 4,033
Term of patent 14 years
U.S. Cl. D3—279



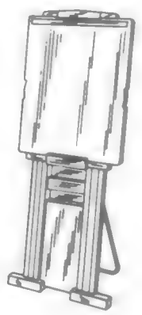
352,396
TOOTHBRUSH
John P. Curtis, Bloomsbury, Keader N. Rustogi, Kendall Park, both of N.J.; John C. Crawford, Lake Mahopac, N.Y.; James H. Kemp, North Brunswick, N.J.; Thomas E. Mintel, Rahway, N.J.; Bert D. Heinzelman, North Bergen, N.J.; Adam Sherman, Brooklyn, N.Y.; Robert Moskovich, East Brunswick, N.J.; James Petronio, New York, N.Y.; Donald R. Lamond, Lynbrook; Laura H. Edelman, New York, both of N.Y.
Continuation-in-part of Ser. No. 807,367, Dec. 13, 1991, Pat. No. Des. 342,160, which is a continuation of Ser. No. 636,802, Jan. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 501,992, Mar. 29, 1990, abandoned, and a continuation-in-part of Ser. No. 501,627, Mar. 29, 1990, Pat. No. Des. 334,472, and a continuation-in-part of Ser. No. 501,626, Mar. 29, 1990, Pat. No. Des. 330,286, and a continuation-in-part of Ser. No. 502,135, Mar. 29, 1990, Pat. No. Des. 330,116. This application Oct. 5, 1992, Ser. No. 39
The portion of the term of this patent subsequent to Apr. 6, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



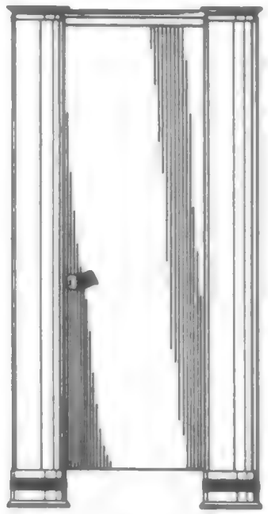
352,397
MEDICINE APPLYING PET BRUSH
Harriette Coleman, 4718 W. Madison, Chicago, Ill. 60644
Filed Oct. 29, 1992, Ser. No. 944
Term of patent 14 years
U.S. Cl. D4—114



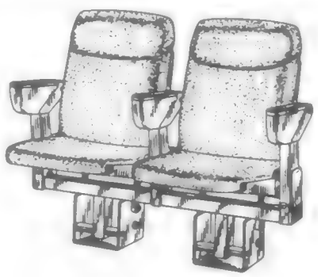
352,398
EASEL DESIGN
Michael Rellinger, Chicago; Richard R. Gilbert, Barrington; Sara E. Green, Chicago, and John Jepsen, Grayslake, all of Ill., assignors to Quartet Manufacturing Company, Skokie, Ill.
Filed May 13, 1993, Ser. No. 8,309
Term of patent 14 years
U.S. Cl. D6—300



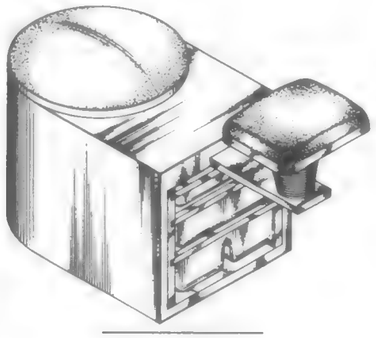
352,399
DOOR ASSEMBLY FOR A CUBICLE
David Goodwin, Surrey, United Kingdom, assignor to Thrislington Sales Limited, Deeside, United Kingdom
Filed Jul. 15, 1992, Ser. No. 914,619
Claims priority, application United Kingdom, Jan. 16, 1992, 2020334
Term of patent 14 years
U.S. Cl. D6—332



352,400
FOLDING CHAIR UNIT
Ryokichi Yamazaki, Chiba, Japan, assignor to Kabushiki Kaisha Kotobuki, Tokyo, Japan
Filed Dec. 21, 1992, Ser. No. 2,775
Claims priority, application Japan, Jul. 22, 1992, 4-21729
Term of patent 14 years
U.S. Cl. D6—335



352,401
PEDICURE STOOL
Claudio Bonazza, Mission Viejo, Calif., assignor to Venice Trading Company, Inc., Costa Mesa, Calif.
Filed May 12, 1993, Ser. No. 8,268
Term of patent 14 years
U.S. Cl. D6—336



352,402
LOUNGE CHAIR FRAME
Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.
Filed Dec. 28, 1992, Ser. No. 3,104
Term of patent 14 years
U.S. Cl. D6—370



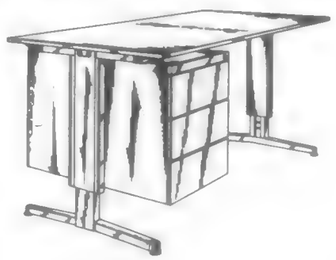
352,403
ARM CHAIR FRAME
Leo Martin, Coconut Grove, Fla., assignor to Miami Metal Products, Inc., Miami, Fla.
Filed Dec. 28, 1992, Ser. No. 3,105
Term of patent 14 years
U.S. Cl. D6—370



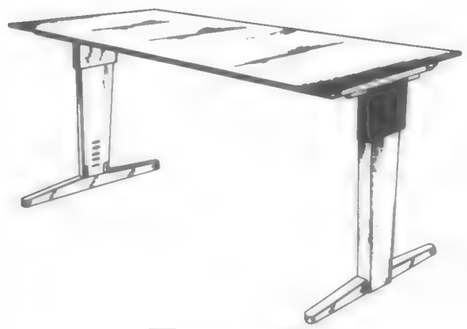
352,404
SOFA
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Taisano, both of Italy, assignors to Industrie Natuzzi, Spa, Bari, Italy
Filed Sep. 10, 1993, Ser. No. 12,820
Term of patent 14 years
U.S. Cl. D6—381



352,405
WRITING DESK
Adrianus J. M. Scheffers, AW Boxtel, Netherlands, assignor to Assenburg B.V., Tilburg, Netherlands
Filed Jan. 24, 1992, Ser. No. 826,172
Claims priority, application WIPO, Aug. 15, 1991, DMA/001571
Term of patent 14 years
U.S. Cl. D6—422



352,406
WRITING DESK
Adrianus J. M. Scheffers, AW Boxtel, Netherlands, assignor to Ascenburg B.V., Tilburg, Netherlands
Filed Jun. 17, 1992, Ser. No. 900,246
Claims priority, application Hagne Agreement, Feb. 3, 1992, DMA/001691
Term of patent 14 years
U.S. Cl. D6—480



352,407
TABLE
John J. Rizzi, Weston, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 30, 1993, Ser. No. 6,571
Term of patent 14 years
U.S. Cl. D6—482



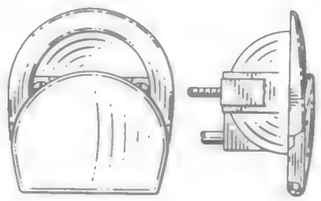
352,408
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Jul. 23, 1993, Ser. No. 11,022
Claims priority, application Japan, Jun. 4, 1993, 5-16342
Term of patent 14 years
U.S. Cl. D6—482



352,409
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Jul. 23, 1993, Ser. No. 11,023
Claims priority, application Japan, Jun. 4, 1993, 5-16341
Term of patent 14 years
U.S. Cl. D6—482



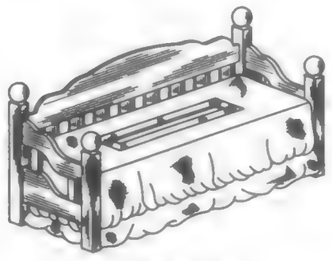
352,410
ACTUATOR CONTROL ASSEMBLY FOR MOTION FURNITURE
Michael A. Barnard, Wichita, Kans., assignor to Wescon Products Company, Wichita, Kans.
Filed Jul. 7, 1993, Ser. No. 10,370
Term of patent 14 years
U.S. Cl. D6—491



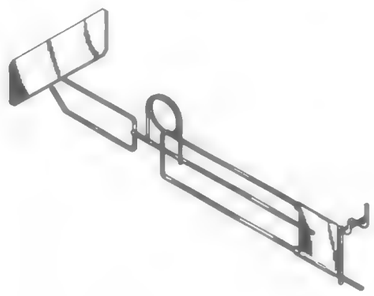
352,411
PANEL FOR PATIO FURNITURE
Glen D. Kennitz, Gallatin, Tenn., assignor to Sunbeam Corporation, Fort Lauderdale, Fla.
Continuation of Ser. No. 962,495, Oct. 15, 1992. This application Nov. 30, 1992, Ser. No. 2,049
Term of patent 14 years
U.S. Cl. D6—502



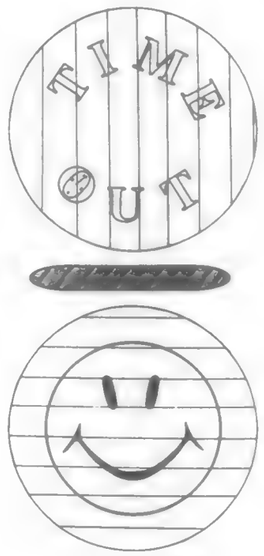
352,412
DAY BED TISSUE BOX COVER
Rosa Lopez, 69 Stiles St., Waterbury, Conn. 06706
Filed Aug. 17, 1992, Ser. No. 930,914
Term of patent 14 years
U.S. Cl. D6—518



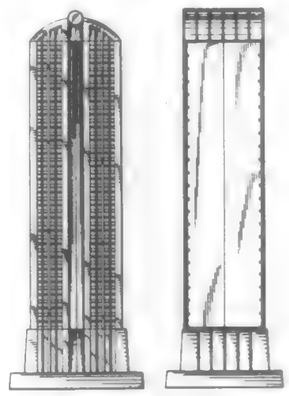
352,413
TELESCOPING DISPLAY CARD HOLDER
Jacob R. Ballard, Lincolnton, N.C., assignor to Vermont American Corporation, Louisville, Ky.
Filed May 4, 1993, Ser. No. 7,918
Term of patent 14 years
U.S. Cl. D6—566



352,414
TIME-OUT SEAT PAD
Scott D. Butler, 630 Colony Ave., Lindenhurst, Ill. 60046
Filed Mar. 22, 1993, Ser. No. 6,487
Term of patent 14 years
U.S. Cl. D6—601



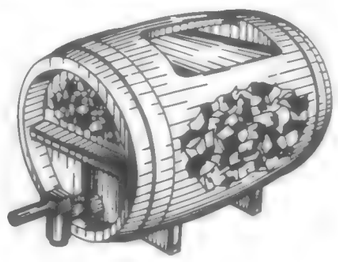
352,415
STORAGE DEVICE FOR COMPACT DISCS AND AUDIO AND VIDEO CASSETTES
Stephen Koziol, Erbach/Odenwald, Germany, assignor to Koziol Geschenkartikel GmbH, Erbach/Odenwald, Germany
Filed Dec. 14, 1992, Ser. No. 2,613
Claims priority, application Germany, Jun. 13, 1992, M 92 04 331.3
Term of patent 14 years
U.S. Cl. D6—630



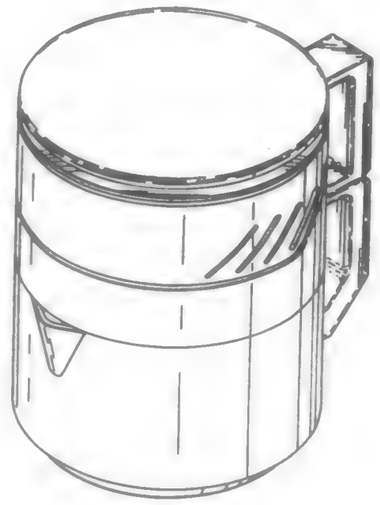
352,416
DRINKING STRAW WITH PARTIAL FACE MASK
Lisa Dutton, Studio City, Calif., assignor to Determined Productions, Inc., San Francisco, Calif.
Filed Sep. 25, 1992, Ser. No. 951,418
Term of patent 14 years
U.S. Cl. D7—300.2



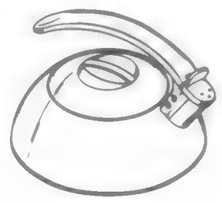
352,417
BEER KEG
Richard A. Petroske, Brookfield, Wis., and James E. Richardson, Weston, Conn., assignors to Miller Brewing Company, Milwaukee, Wis.
Filed Mar. 9, 1993, Ser. No. 5,678
Term of patent 14 years
U.S. Cl. D7—301



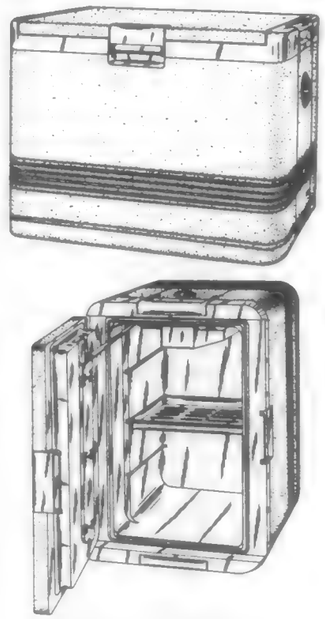
352,418
COFFEE BREWER
John Betts, New York, and Irene Krone, East Hampton, both of N.Y., assignors to Farberware, Inc., Bronx, N.Y.
Continuation-in-part of Ser. No. 298,584, Jan. 17, 1989. This application Jun. 20, 1989, Ser. No. 369,547
Term of patent 14 years
U.S. Cl. D7—310



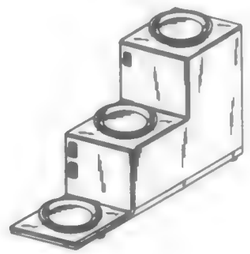
352,419
TEAKETTLE
I-Chen Lin, Taipei Hsien, Taiwan, Province of China, assignor to Oxford Design & Mechanics, Inc., Taiwan, Province of China.
Filed Mar. 23, 1993, Ser. No. 6,239
Term of patent 14 years
U.S. Cl. D7—322



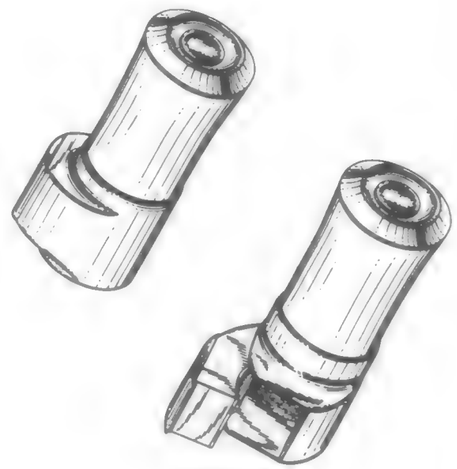
352,420
THERMOELECTRIC HEATER AND COOLER UNIT FOR FOOD
James J. J. Costello, Houston, Tex., assignor to Igloo Products Corp., Houston, Tex.
Filed Sep. 3, 1991, Ser. No. 753,668
Term of patent 14 years
U.S. Cl. D7—350



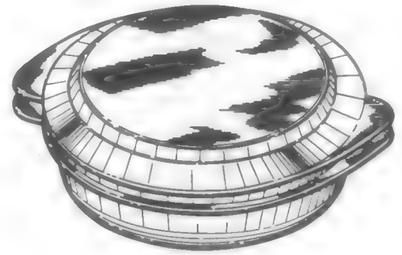
352,421
THREE STEP COFFEE DECANTER WARMER
Brian D. Newnan, Louisville, Ky., assignor to Grindmaster Corporation, Louisville, Ky.
Filed Aug. 5, 1992, Ser. No. 925,609
Term of patent 14 years
U.S. Cl. D7—364



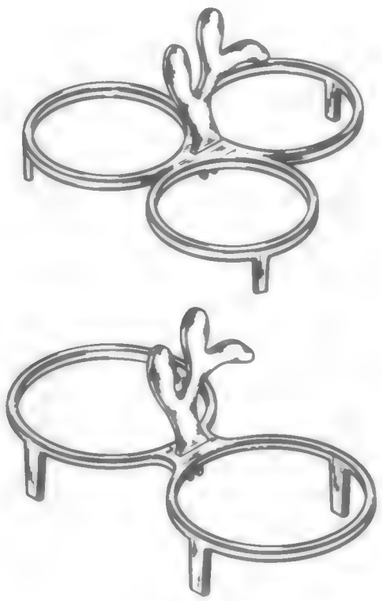
352,422
ELECTRIC CHEESE GRATER WITH SPRING-LOADED CHEESE COMPARTMENT
George Bigelow, Chai Wan, Hong Kong, assignor to Nor-Wol Products, Inc., Canada
Filed Jun. 22, 1993, Ser. No. 9,825
Term of patent 14 years
U.S. Cl. D7—372



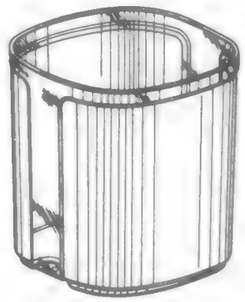
352,423
MICROWAVE REHEATABLE CONTAINER
Douglas M. Laib, Kissimmee, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Mar. 30, 1993, Ser. No. 6,470
Term of patent 14 years
U.S. Cl. D7—538



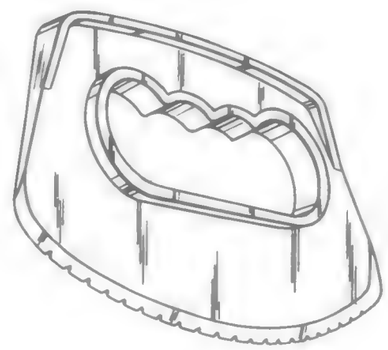
352,424
CONDIMENT DISH HOLDER
Jerome L. Asmer, 501 SW. 9th, Oklahoma City, Okla. 73109
Filed Sep. 21, 1993, Ser. No. 13,198
Term of patent 14 years
U.S. Cl. D7—600



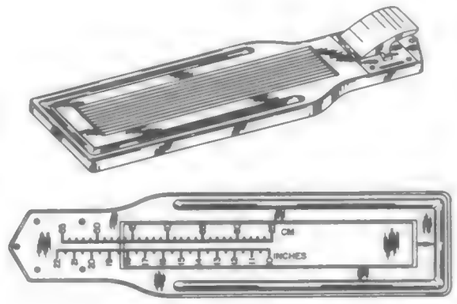
352,425
FOOD STORAGE CONTAINER
Robert H. C. M. Daenen, Essene, and Pieter K. J. DeCoster, Aalst, both of Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Continuation of Ser. No. 2,878, Dec. 22, 1992, abandoned. This application Feb. 17, 1994, Ser. No. 18,870
Term of patent 14 years
U.S. Cl. D7—602



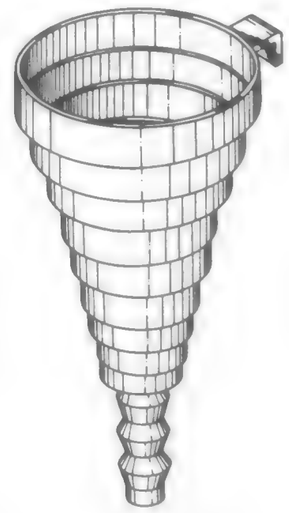
352,426
PIZZA CUTTER
Terence Tucker, P.O. Box 1420, San Juan Capistrano, Calif. 92693
Filed Sep. 10, 1993, Ser. No. 12,784
Term of patent 14 years
U.S. Cl. D7—696



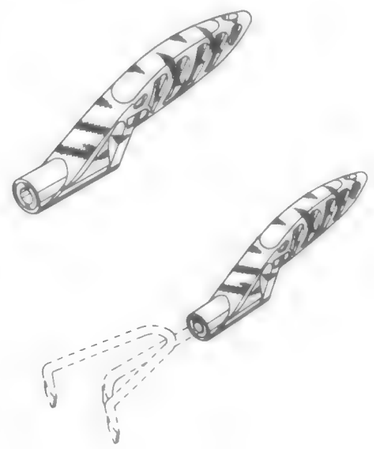
352,427
FISH FILLET BOARD
Wayne D. Burd, High Ridge, Mo., assignor to Koller-Craft Plastic Products, Fenton, Mo.
Filed Apr. 2, 1993, Ser. No. 6,596
Term of patent 14 years
U.S. Cl. D7—698



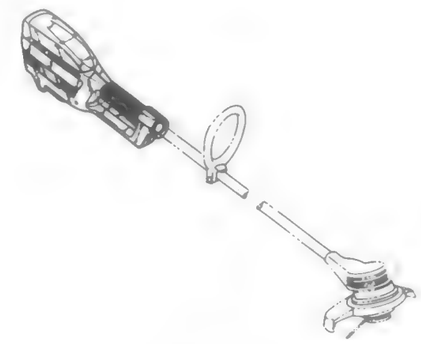
352,428
COLLAPSIBLE FUNNEL
Charles E. Waldmyer, 213 Sasser Dr., Clovis, N. Mex. 88101
Filed Mar. 23, 1993, Ser. No. 6,261
Term of patent 14 years
U.S. Cl. D7—700



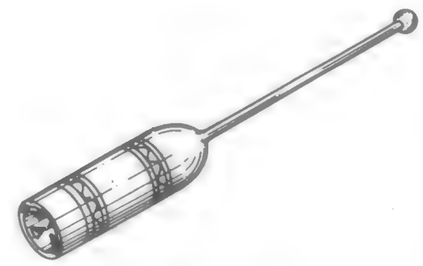
352,429
HANDLE OF A RAKE
Wonbaek Choi, Seoul, Rep. of Korea, assignor to Bando Industrial Co., Ltd., Choongchungbuk-do, Rep. of Korea
Filed Sep. 30, 1993, Ser. No. 13,702
Claims priority, application Rep. of Korea, Aug. 10, 1993, 93-16147
Term of patent 14 years
U.S. Cl. D8—1



352,430
POWER HEAD FOR A LINE TRIMMER
Naoki Kikuchi, Chandler, Ariz., assignor to Ryobi Outdoor Products Inc., Chandler, Ariz.
Filed Jan. 29, 1993, Ser. No. 4,224
Term of patent 14 years
U.S. Cl. D8—8



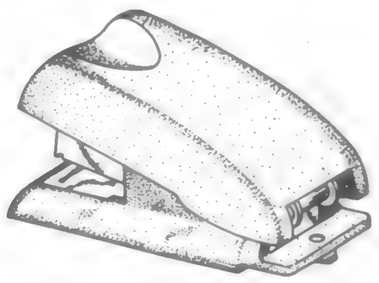
352,431
IMPLEMENT FOR GUIDING WIRES THROUGH FLEXIBLE CONDUIT
Robert D. Bassett, R.R. 1 Box 170, Alexandria, Ind. 46001
Filed Oct. 29, 1992, Ser. No. 928
Term of patent 14 years
U.S. Cl. D8—14



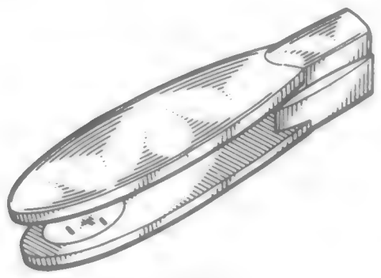
352,432
SMOOTHING TOOL FOR WALL COVERING
James M. Monroe, P.O. Box 12098, Denver, Colo. 80212
Filed Jun. 16, 1992, Ser. No. 899,388
Term of patent 14 years
U.S. Cl. D8—45



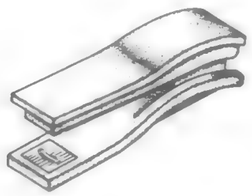
352,433
MINI-STAPLER
Robert S. Smith, 1468 Rimcrest Ct., Bonita, Calif. 91902
Filed Aug. 2, 1993, Ser. No. 11,309
Term of patent 14 years
U.S. Cl. D8—50



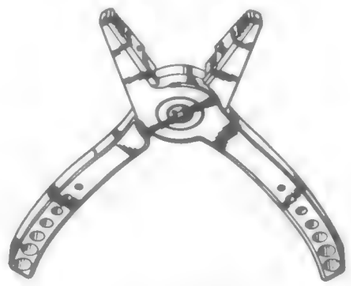
352,434
STAPLER
William H. N. Chi, No. 32, Kwangcheng Rd., Tali Hsiang, Taichung Hsien, Taiwan, Prov. of China
Filed Nov. 18, 1993, Ser. No. 15,483
Term of patent 14 years
U.S. Cl. D8—50



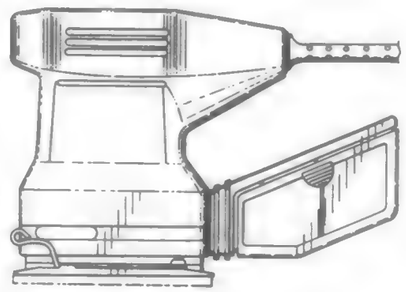
352,435
STAPLER
William H. N. Chi, No. 32, Kwangcheng Rd., Tali Hsiang, Taichung Hsien, Prov. of China
Filed Nov. 18, 1993, Ser. No. 15,503
Term of patent 14 years
U.S. Cl. D8—50



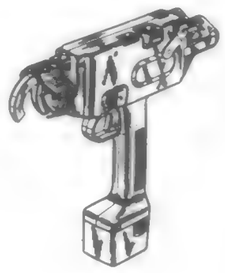
352,436
PLIERS
Steven D. Abel, 6051 W. Greentree Dr., Somis, Calif. 93066
Filed Mar. 8, 1993, Ser. No. 5,607
Term of patent 14 years
U.S. Cl. D8—52



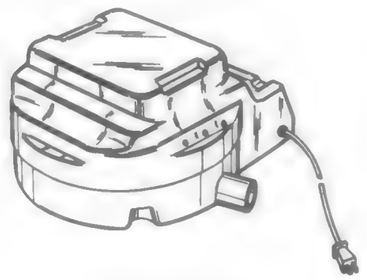
352,437
SANDER
Daniel A. Chunn, Greenville, and Hiroshi Morikawa, Clemson, both of S.C., assignors to Ryobi Motor Products Corp., Easley, S.C.
Filed Mar. 23, 1993, Ser. No. 6,665
Term of patent 14 years
U.S. Cl. D8—62



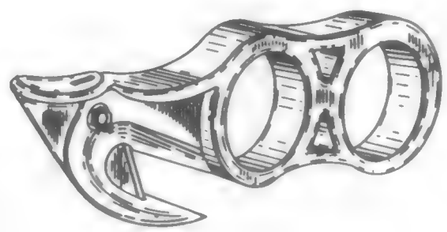
352,438
WIRE BINDER
Takeo Hattori, Tokyo, Japan, assignor to Max Co., Ltd., Tokyo, Japan
Filed Oct. 26, 1993, Ser. No. 14,546
Claims priority, application Japan, Apr. 26, 1993, 5-12397
Term of patent 14 years
U.S. Cl. D8—68



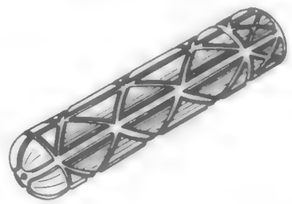
352,439
DUST COLLECTION DEVICE FOR FLOOR SANDER
Thomas E. Bedford, 23425 Ontario La., El Toro, Calif. 92630
Filed Nov. 25, 1992, Ser. No. 1,890
Term of patent 14 years
U.S. Cl. D8—70



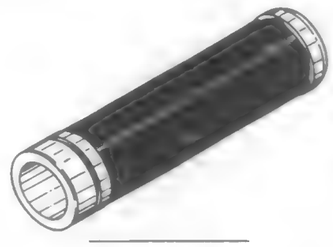
352,440
RIPPING KNIFE
Roger Perigny, 674, 2e Avenue Ouest, Amos, Quebec, Canada J9T 1S8
Filed Feb. 23, 1993, Ser. No. 5,461
Term of patent 14 years
U.S. Cl. D8—98



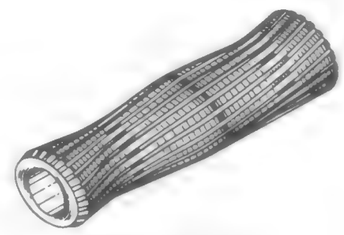
352,441
CYCLE HANDLE BAR GRIP
William Oury, Box 295, Green Mountain Falls, Colo. 80819, and William E. Thomas, II, 725 Oakmont La., Fruit Heights, Utah 84037
Filed Mar. 2, 1992, Ser. No. 844,409
Term of patent 14 years
U.S. Cl. D8—303



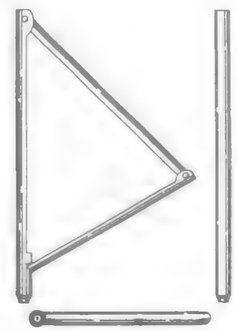
352,442
HANDLEBAR GRIP
Chen Lee-Chang, Tainan Hsien, Taiwan, Prov. of China, assignor to Co-Union Industry Co., Ltd., Tainan Hsien, Taiwan, Prov. of China
Filed Jan. 12, 1993, Ser. No. 3,643
Term of patent 14 years
U.S. Cl. D8—303



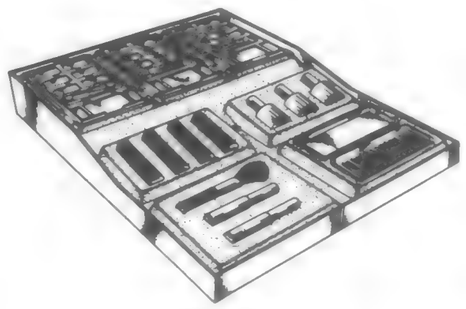
352,443
BICYCLE HANDLEBAR GRIP
Ming-Chang Chen, No. 48, Huan Kung Road, Yung Kang Hsiang, Tainan Hsien, Taiwan, Prov. of China
Filed Apr. 30, 1993, Ser. No. 7,670
Term of patent 14 years
U.S. Cl. D8—303



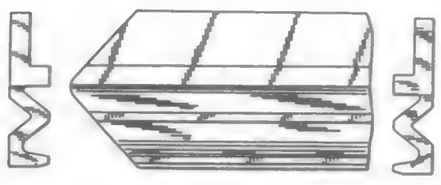
352,444
ANTI-THEFT DEVICE FOR A BICYCLE
David J. Warner, Stockport, United Kingdom, assignor to Maureen Warner, Palm Springs, Calif.
Filed Mar. 23, 1992, Ser. No. 4,051
Claims priority, application United Kingdom, Nov. 7, 1991, 2018839
Term of patent 14 years
U.S. Cl. D8—333



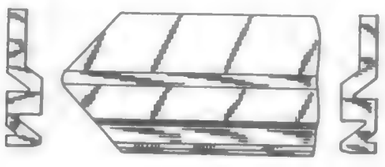
352,445
COSMETIC DISPLAY TRAY
Robert Lazzi, and Susan F. Brand, both of New York, N.Y., assignors to Estee Lauder, Inc., New York, N.Y.
Filed Sep. 29, 1992, Ser. No. 952,416
Term of patent 14 years
U.S. Cl. D9—337



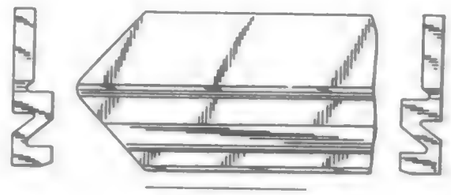
352,446
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,292
Term of patent 14 years
U.S. Cl. D8—347



352,447
PORTION OF A KEY BLADE BLANK
Robert E. Kearns, San Francisco, Calif., assignor to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,303
Term of patent 14 years
U.S. Cl. D8—347



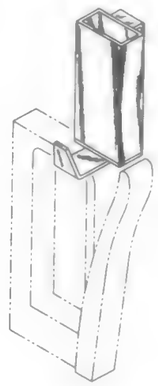
352,448
PORTION OF A KEY BLADE BLANK
Anthony J. Hoffman, Plantsville, Conn., and Robert E. Kearns, San Francisco, Calif., assignors to Corbin Russwin, Inc., Berlin, Conn.
Filed Jan. 6, 1993, Ser. No. 3,757
Term of patent 14 years
U.S. Cl. D8—347



352,449
PORTABLE HOSE REEL
Lyle A. Rosine, Aurora, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Apr. 21, 1993, Ser. No. 7,374
Term of patent 14 years
U.S. Cl. D8—359



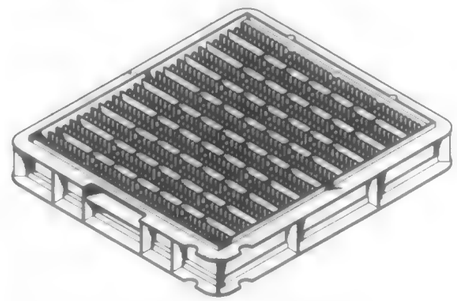
352,450
STAPLE GUN HOLDER
Richard J. Jetter, 1887 Ridgeway Dr., Clearwater, Fla. 34615
Filed Dec. 13, 1993, Ser. No. 16,332
Term of patent 14 years
U.S. Cl. D8—373



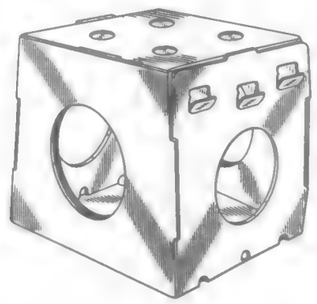
352,451
TUBE BOTTLE WITH BREAKABLE SPOUT
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Mar. 17, 1993, Ser. No. 6,015
Term of patent 14 years
U.S. Cl. D9—300



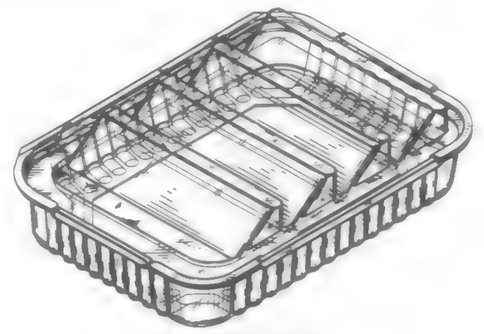
352,452
PACKAGING BOX FOR OPTICAL DISC SHUTTERS
Toshikazu Asai, Tokyo, Japan, assignor to Kato Spring Works Co., Ltd., Tokyo, Japan
Filed Aug. 10, 1993, Ser. No. 11,625
Claims priority, application Japan, Feb. 17, 1993, 5-4326
Term of patent 14 years
U.S. Cl. D9—341



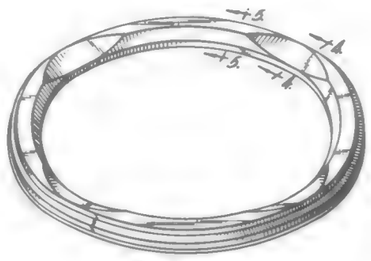
352,453
BOX FOR SHIPPING ASPARAGUS
Mark R. Bacchetti; Ronald E. Heiskell, both of Tracy, and Ezra E. Theys, San Mateo, all of Calif., assignors to Advanced Container Corporation, Tracy, Calif.
Filed Jul. 23, 1993, Ser. No. 11,007
Term of patent 14 years
U.S. Cl. D9—418



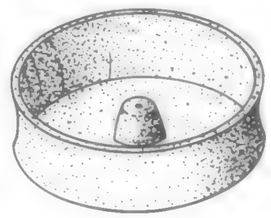
352,454
PASTRY PACKAGE
Calvin S. Krupa, Plymouth, Minn., assignor to Ultra Pac, Inc., Rogers, Minn.
Filed Aug. 25, 1993, Ser. No. 12,160
Term of patent 14 years
U.S. Cl. D9—425



352,455
RIM SEAL FOR A CAN
John E. Balson, 227 Lancaster Ave., Devon, Pa. 19333
Division of Ser. No. 669,272, Mar. 14, 1991, Pat. No. Des. 338,621. This application Mar. 2, 1993, Ser. No. 5,339
Term of patent 14 years
U.S. Cl. D9—434



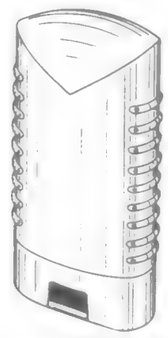
352,456
END MEMBER FOR SQUEEZABLE TUBE
Hans Linnér, Kalmar, Sweden, assignor to Norden Pac Development AB, Sweden
Filed Oct. 2, 1992, Ser. No. 7
Claims priority, application Sweden, Apr. 2, 1992, 92-0765
Term of patent 14 years
U.S. Cl. D9—439



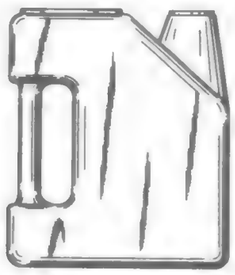
352,457
BOTTLE CAP
William F. Hughes, Jr., Hingham, and Robert F. Kleinrath, Hanover, both of Mass., assignors to The Gillette Company, Boston, Mass.
Filed Oct. 15, 1992, Ser. No. 499
Term of patent 14 years
U.S. Cl. D9—447



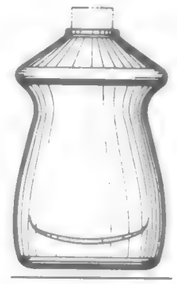
352,458
DISPENSER FOR CREAM OR GEL
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 903,848, Jun. 25, 1992, abandoned. This application Nov. 24, 1992, Ser. No. 1,381
Term of patent 14 years
U.S. Cl. D9—520



352,459
MOTOR OIL JUG
Paul J. Pollacco, 3819 Burlingame Pl., Alexandria, Va. 22309
Filed Aug. 20, 1992, Ser. No. 932,052
Term of patent 14 years
U.S. Cl. D9—528



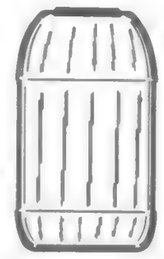
352,460
BOTTLE
Adam Sherman, Brooklyn, N.Y., and Peter Stagl, Morris Plains, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 21, 1993, Ser. No. 7,395
Term of patent 14 years
U.S. Cl. D9—542



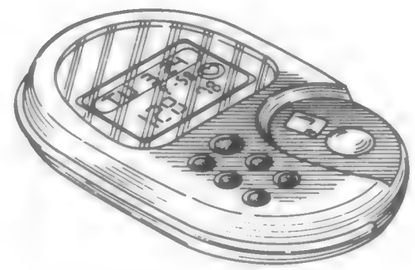
352,461
BOTTLE
Therese A. Flanagan, and Angela M. De Frank, both of Chicago, Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jul. 30, 1993, Ser. No. 11,286
Term of patent 14 years
U.S. Cl. D9—542



352,462
BEVERAGE CONTAINER
Samuel J. Rupert, Ann Arbor, Mich., assignor to Ecco, Inc., Ann Arbor, Mich.
Filed May 10, 1993, Ser. No. 8,124
Term of patent 14 years
U.S. Cl. D9—573



352,463
COMBINED PORTABLE TIMEPIECE AND HEMADYNOMETER
Tatsuya Kubo, Ome, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 17, 1992, Ser. No. 1,603
Term of patent 14 years
U.S. Cl. D10—31



352,464
WRIST-WATCH WITH BAND
Jorg Hysek, Le Roccabella, 24, avenue Princesse Grace, Bloc B, 2léme étage, 98000 Monte-Carlo, Monaco
Filed Jul. 14, 1992, Ser. No. 913,310
Term of patent 14 years
U.S. Cl. D10—32



352,465
WATCH
Roberto Ventrella, Naples, Italy, assignor to Courm, Ries, Bannwart et Co S.A., La Chaux de Fonds, Switzerland
Filed Sep. 30, 1992, Ser. No. 954,080
Claims priority, application [XH] Hague Agreement, Apr. 2, 1992, DM/022 538
Term of patent 14 years
U.S. Cl. D10—32



352,466
WATCH
Roberto Ventrella, Napoli, Italy, assignor to Corum, Ries, Bannwart et Co. S.A., La Chaux-de-Fonds, Switzerland
Filed Sep. 30, 1992, Ser. No. 954,079
Claims priority, application Hague Agreement, Apr. 2, 1992, DM/022 538
Term of patent 14 years
U.S. Cl. D10—32



352,467
WRISTWATCH
Akie Ito, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,964
Term of patent 14 years
U.S. Cl. D10—32



352,468
WRISTWATCH
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Nov. 25, 1992, Ser. No. 1,966
Term of patent 14 years
U.S. Cl. D10—32



352,469
REVERSIBLE WATCH
Walter Schlup, 13 Av. Léopold-Robert, CH 2300 La Chaux-de-Fonds, Switzerland
Filed Aug. 4, 1992, Ser. No. 925,468
Claims priority, application Hague Agreement, Feb. 5, 1992, DMA/001697
Term of patent 14 years
U.S. Cl. D10—39



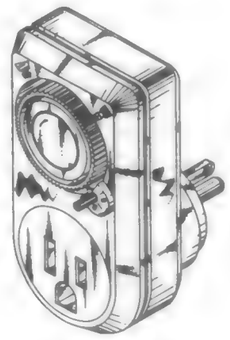
352,470
WATCH
Francis Besson, La Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux SA, La Chaux-de-Fonds, Switzerland
Filed Aug. 6, 1992, Ser. No. 926,861
Claims priority, application Hague Agreement, Mar. 30, 1992, DMA/001747
Term of patent 14 years
U.S. Cl. D10—39



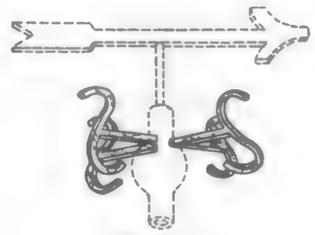
352,471
WATCH
Francis Besson, La Chaux-de-Fonds, Switzerland, assignor to Girard-Perregaux SA, La Chaux-de-Fonds, Switzerland
Filed Aug. 6, 1992, Ser. No. 926,862
Claims priority, application Hague Agreement, Mar. 30, 1992, DMA/001747
Term of patent 14 years
U.S. Cl. D10—39



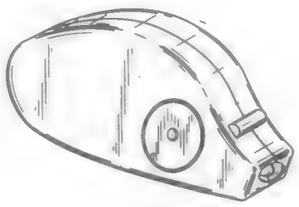
352,472
MECHANICAL TIMER
Chan-Fu Chen, No. 22-1, Lane 14, Ho Ping Rd., Pan Chiao City, Taipei Hsien, Taiwan, Prov. of China
Filed Dec. 21, 1992, Ser. No. 2,778
Term of patent 14 years
U.S. Cl. D10—40



352,473
WEATHER VANE
Michael C. Barefoot, Chapel Hill, N.C., assignor to A Southern Season, Inc., Chapel Hill, N.C.
Filed Jul. 30, 1993, Ser. No. 11,219
Term of patent 14 years
U.S. Cl. D10—59



352,474
PERSONAL SECURITY ALARM
Yuen Se Kit, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed May 6, 1993, Ser. No. 8,021
Claims priority, application United Kingdom, Jan. 13, 1993, 2028354
Term of patent 14 years
U.S. Cl. D10—106



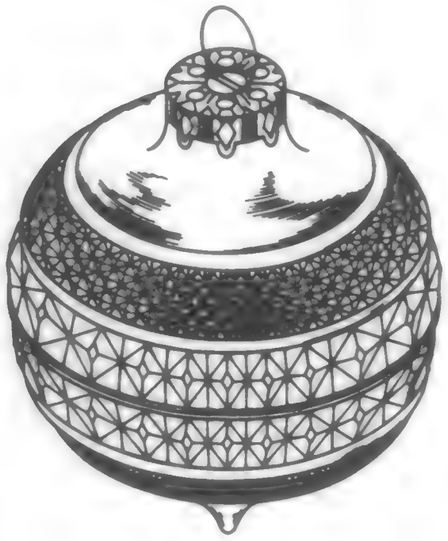
352,475
WATCH BAND
Akie Ito, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 23, 1993, Ser. No. 9,853
Term of patent 14 years
U.S. Cl. D11—3



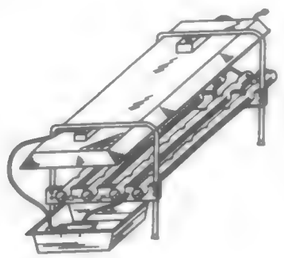
352,476
WATCH BRACELET
M. Charles Lefevre, St. Germain en Laye, France, assignor to Societe Nouvelle Chanmet S.A., Paris, France
Filed Feb. 3, 1993, Ser. No. 4,358
Term of patent 14 years
U.S. Cl. D11—25



352,477
ORNAMENT
Chin-Sheng Yang, 4 Fr. No. 26, Lane 358 Yung An Street, Tainan, Taiwan, Prov. of China
Filed Jul. 30, 1993, Ser. No. 11,303
Term of patent 14 years
U.S. Cl. D11—121

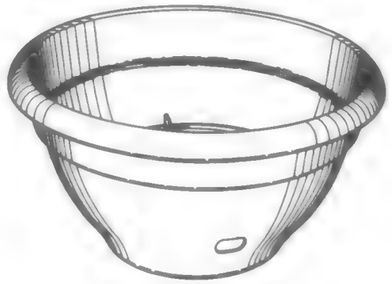


352,478
HYDROPONICS SYSTEM
Ricky M. Whittle, 4400 Grassy Ln., Burlington, N.C. 27215, and David K. Graham, 6818 Smithwood Rd., Liberty, N.C. 27298
Filed Jun. 17, 1992, Ser. No. 900,259
Term of patent 14 years
U.S. Cl. D11—144

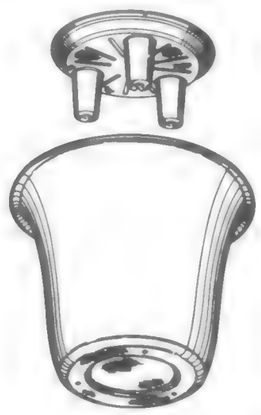


352,479
PLANTER
Arthur R. Carlson, Rowville, Australia, assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Aug. 13, 1993, Ser. No. 11,814
The portion of the term of this patent subsequent to Apr. 19, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—153

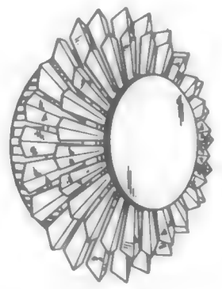




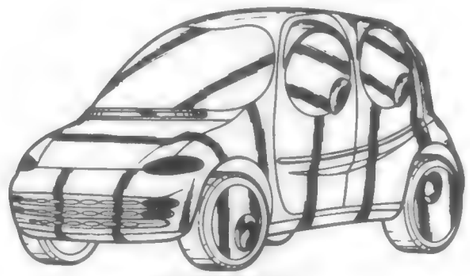
352,480
PLANTER
Arthur R. Carlson, Rowville, Australia, assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Aug. 13, 1993, Ser. No. 11,838
Term of patent 14 years
U.S. Cl. D11—153



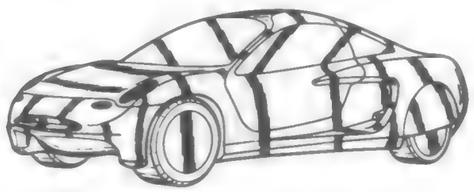
352,481
SUNBURST LIGHT SCULPTURE
Kenneth W. Williams, 20309 Lakemore Dr., Canyon Country, Calif. 91351
Filed Oct. 13, 1992, Ser. No. 383
Term of patent 14 years
U.S. Cl. D11—157



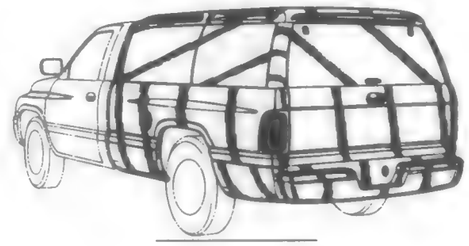
352,482
AUTOMOBILE
Raymond C. Cannara, Clarkston; K. Neil Walling, Leonard, and Robert J. Janosko, Bloomfield Hills, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 21, 1993, Ser. No. 14,445
Term of patent 14 years
U.S. Cl. D12—90



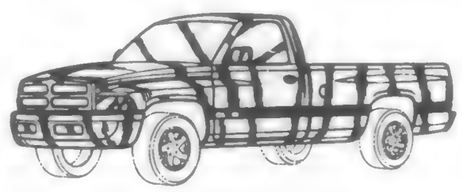
352,483
AUTOMOBILE
Kevin R. Verduyn, Oceanside; Thomas G. Tremont; Timothy W. Annese, both of San Diego, all of Calif., and K. Neil Walling, Leonard, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 21, 1993, Ser. No. 14,443
Term of patent 14 years
U.S. Cl. D12—91



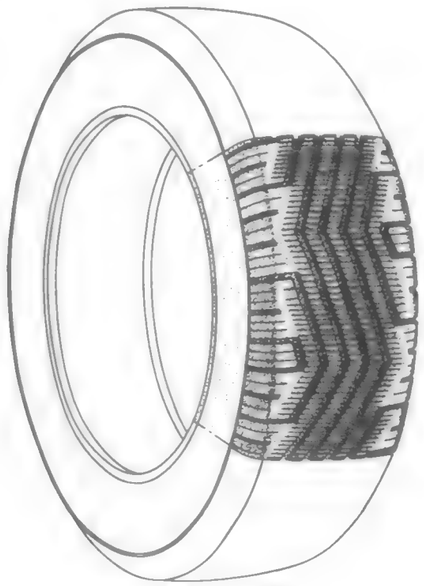
352,484
VEHICLE BODY
Kenneth S. Mack, Bloomfield Hills; Phillip E. Payne; Thomas S. Moore, both of Northville; K. Neil Walling, Leonard; Delbert D. DeRees, Romeo, and Jack Kenitz, New Baltimore, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Feb. 9, 1993, Ser. No. 4,633
Term of patent 14 years
U.S. Cl. D12—96



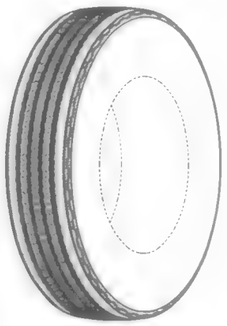
352,485
PICKUP TRUCK BODY EXTERIOR SURFACE
Trevor M. Creed, W. Bloomfield; Clyde W. Ney, Waterford; Joseph T. Papai, Bloomfield Township Oakland County, and Phillip E. Payne, Northville, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Sep. 30, 1992, Ser. No. 954,242
Term of patent 14 years
U.S. Cl. D12—98



352,486
TIRE
Timothy A. White, Greer, S.C., assignor to Michelin Recherche et Technique S.A, Granges-Paccot, Switzerland
Filed Mar. 10, 1993, Ser. No. 5,710
Term of patent 14 years
U.S. Cl. D12—142



352,487
TIRE TREAD
Kenneth H. Paulin, Uniontown; Daniel E. Schuster, North Royalton, and Deborah L. Young, Copley, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 814,921, Dec. 30, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 6,587
Term of patent 14 years
U.S. Cl. D12—143



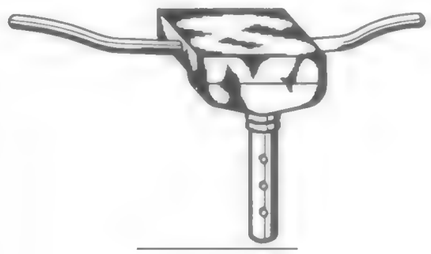
352,488
VEHICLE TIRE
Jean-Pierre Siramy, Ronnet, France, assignor to Dunlop France SA, Moulineaux, France
Filed Dec. 9, 1992, Ser. No. 2,464
Claims priority, application France, Jun. 11, 1992, 923591
Term of patent 14 years
U.S. Cl. D12—147



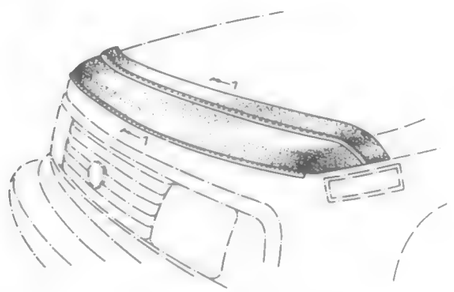
352,489
TIRE TREAD
Michel Breny, Holzthum; Maurice Graas, Reichlange, both of Luxembourg, and Jenner Powell, Vaux-Sur-Sure, , assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 18, 1992, Ser. No. 2,600
Claims priority, application Benelux TM/Des. Off., Jul. 9, 1992, 67799-00
Term of patent 14 years
U.S. Cl. D12—147



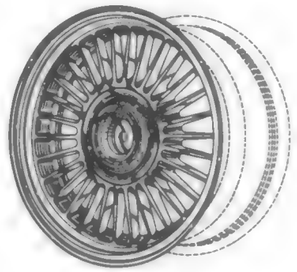
352,490
VEHICLE STEERING WHEEL PROTECTION UNIT
Joseph S. Barrett, 20330 N.W. 35th Ave., Carol City, Fla. 33156
Filed Sep. 22, 1992, Ser. No. 950,036
Term of patent 14 years
U.S. Cl. D12—179



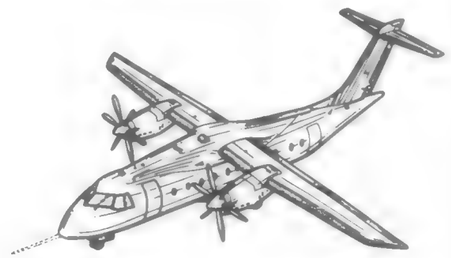
352,491
HOOD PROTECTOR
Carlo Galasso, 1008-14 Street S.E., Calgary, Alberta, Canada T2G 3K3
Filed Nov. 12, 1993, Ser. No. 15,272
Claims priority, application Canada, Jun. 30, 1993, 30-06-93-7
Term of patent 14 years
U.S. Cl. D12—190



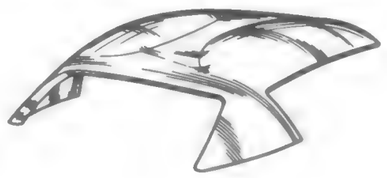
352,492
FRONT FACE OF A WHEEL FOR AN AUTOMOBILE
Boyke Boyer, Munich, Germany, assignor to Bayerische Motoren Werke AG, Munich, Germany
Filed Apr. 2, 1993, Ser. No. 6,603
Claims priority, application Germany, Oct. 2, 1992, 9207333
Term of patent 14 years
U.S. Cl. D12—211



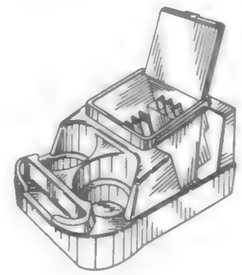
352,493
AIRPLANE
Hubert Krojer, Bermatingen, Germany, assignor to Dornier Luftfahrt GmbH, Germany
Filed Mar. 11, 1992, Ser. No. 849,677
Claims priority, application Germany, Sep. 11, 1991, M 91 06 545.3
Term of patent 14 years
U.S. Cl. D12—337



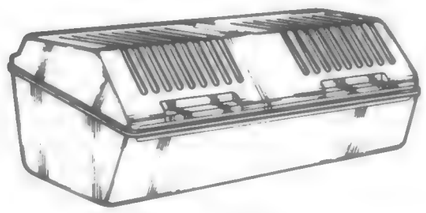
352,494
VEHICLE TOP
Robert N. Hubbach, Clarkston; Thomas C. Gale, Rochester; Ernest J. Barry, Clarkston, and K. Neil Walling, Leonard, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 5, 1993, Ser. No. 11,479
Term of patent 14 years
U.S. Cl. D12—401



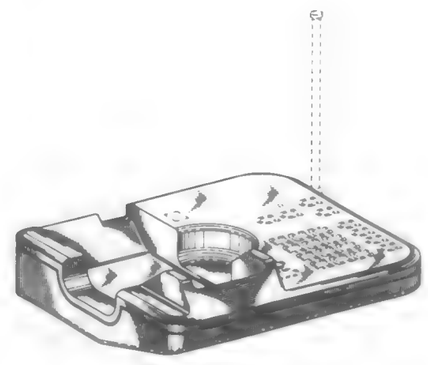
352,495
VEHICLE CONSOLE
Gordon N. Mawhinney, Powell, and Douglas G. Covell, Columbus, both of Ohio, assignors to Lancaster Colony Corporation, Columbus, Ohio
Filed Jun. 18, 1993, Ser. No. 9,705
Term of patent 14 years
U.S. Cl. D12—419



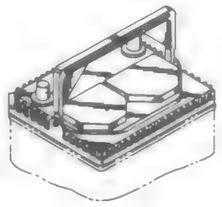
352,496
STORAGE TRUNK FOR A TRUCK BED
Jerald Gower, Beaverton, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Filed Nov. 17, 1992, Ser. No. 1,539
Term of patent 14 years
U.S. Cl. D12—423



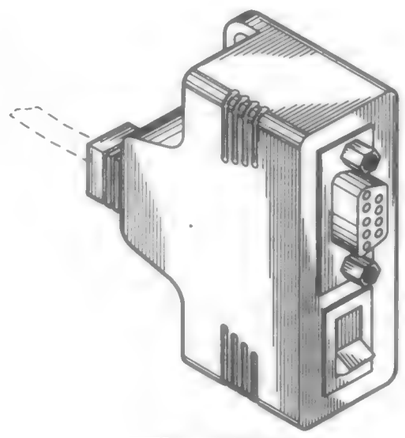
352,497
CHARGING BASE
Anthony Scianna, Sr., Morton Grove, and Dale G. Johnson, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 2, 1993, Ser. No. 11,348
Term of patent 14 years
U.S. Cl. D13—108



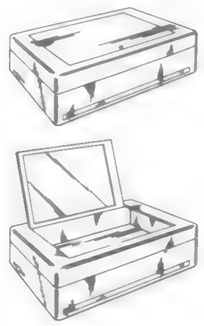
352,498
COMBINED STORAGE BATTERY COVER AND MOVABLE HANDLE
David B. Beidler, Gilbertsville, and Scott Cronrath, Shillington, both of Pa., assignors to Exide Corporation, Reading, Pa.
Filed Feb. 12, 1986, Ser. No. 833,492
Term of patent 14 years
U.S. Cl. D13—119



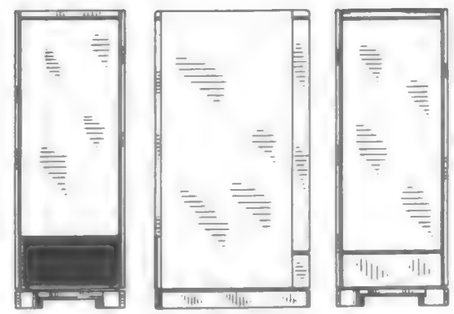
352,499
REMOTE CONNECTOR ASSEMBLY
Roman P. Rak, Delta, Canada, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 4, 1993, Ser. No. 4,384
Term of patent 14 years
U.S. Cl. D13—147



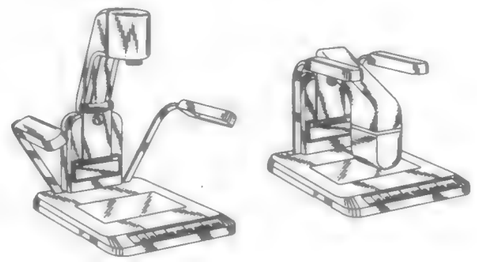
352,500
COMPUTER HOUSING
Douglas L. Hackleman, 11890 Holly St., Grand Terrace, Calif. 92324
Filed Apr. 1, 1992, Ser. No. 862,249
Term of patent 14 years
U.S. Cl. D14—100



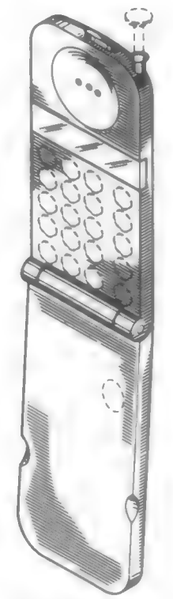
352,501
COMPUTER ENCLOSURE
Allan E. Weaver, Hollis, N.H.; John W. Benson, Westwood, Mass.; Robert W. Moore, Colorado Springs, Colo., and J. John Schrenk, Pasadena, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Aug. 20, 1990, Ser. No. 569,548
Term of patent 14 years
U.S. Cl. D14—102



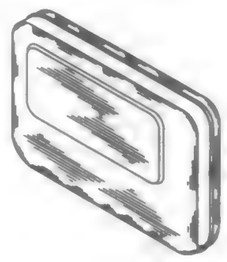
352,502
IMAGE SCANNER
Fumio Hasegawa, Nagoya, Japan, assignor to Elmo Company, Limited, Nagoya, Japan
Filed Jun. 3, 1993, Ser. No. 9,212
Term of patent 14 years
U.S. Cl. D14—107



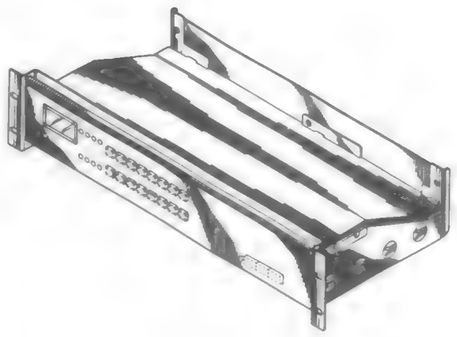
352,503
PORTABLE TELEPHONE
Albert Nagele, Wilmette, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 3, 1992, Ser. No. 864,901
Term of patent 14 years
U.S. Cl. D14—138



352,504
COVER FOR A SELECTIVE CALL RECEIVER
William J. Scheid, Coral Springs, and Jeffrey S. King, Boynton Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 21, 1992, Ser. No. 948,986
The portion of the term of this patent subsequent to May 9, 1994, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—191



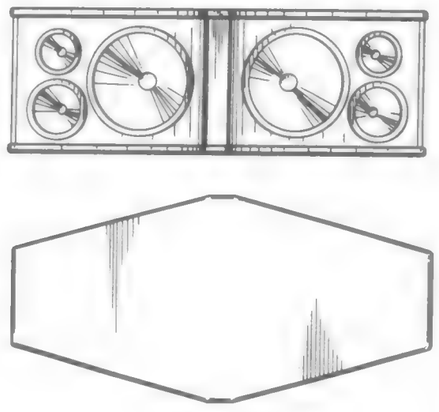
352,505
CONTROL TRAY FOR BASE STATION
Marc H. Pullman, Bartlett; Jeffrey S. Lipschultz, Streamwood, and Kenneth W. Larson, Elmhurst, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 30, 1992, Ser. No. 876,228
Term of patent 14 years
U.S. Cl. D14—299



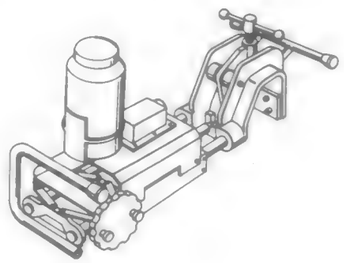
352,506
REMOTE CONTROLLER FOR TELEVISION RECEIVER
Kuniyuki Kawamoto; Osamu Sugihara, and Kazutoshi Masunari, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 3, 1993, Ser. No. 7,809
Claims priority, application Japan, Nov. 4, 1992, 4-32393
Term of patent 14 years
U.S. Cl. D14—218



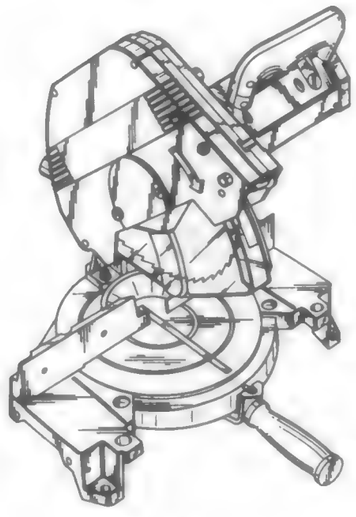
352,507
AUDIO SPEAKER UNIT
Michael Price, Rte. 4, Box 237, Rogersville, Mo. 65742
Filed Jul. 22, 1993, Ser. No. 10,923
Term of patent 14 years
U.S. Cl. D14—215



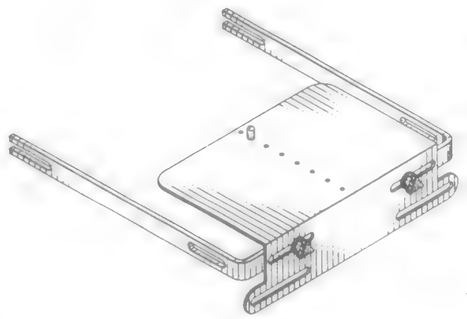
352,508
DRILLING MACHINE FOR RAILROAD RAIL
Hirotoshi Noda, Atsugi, Japan, assignor to Kabushiki Kaisha Yamazaki Haguruma Seisakusho, Atsugi, Japan
Filed Jul. 15, 1993, Ser. No. 10,672
Term of patent 14 years
U.S. Cl. D15—132



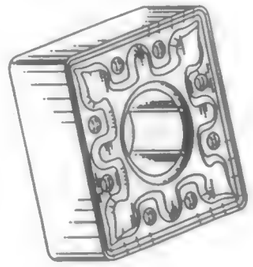
352,509
MITER SAW
John R. Kriaski, Jackson; Randy G. Cooper, Milan; James P. Nichols, Jr., and Donald R. Bosten, both of Jackson, all of Tenn., assignors to Porter-Cable Corporation, Jackson, Tenn.
Filed May 6, 1993, Ser. No. 8,015
Term of patent 14 years
U.S. Cl. D15—133



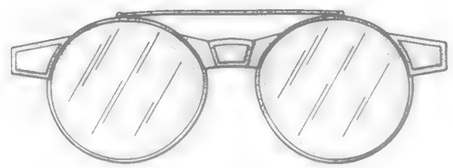
352,510
CIRCLE CUTTING JIG
Stephen O. Sutton, Wexford, and David N. Hollinger, Glenshaw, both of Pa., assignors to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Sep. 2, 1993, Ser. No. 12,333
Term of patent 14 years
U.S. Cl. D15—138



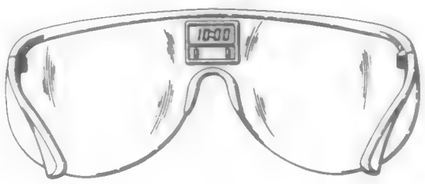
352,511
CUTTING TOOL INSERT
Kenneth L. Niebauer, and Earl L. Griffin, both of Raleigh, N.C., assignors to Kennametal Inc., Latrobe, Pa.
Filed May 8, 1991, Ser. No. 697,479
Term of patent 14 years
U.S. Cl. D15—139



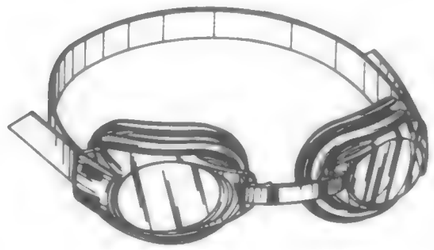
352,512
SPECTACLE FRAME
Bernhard Müller-Menrad, München, Germany, assignor to Swatch AG, Bienne, Switzerland
Filed Mar. 24, 1993, Ser. No. 6,275
Claims priority, application Germany, Sep. 25, 1992, 023974
Term of patent 14 years
U.S. Cl. D16—320



352,513
COMBINED SUNGLASSES AND TIMEPIECE
Sandra Schwartz, 8601 NW. 47th St., Lauderhill, Fla. 33351
Filed May 4, 1993, Ser. No. 7,821
Term of patent 14 years
U.S. Cl. D16—309



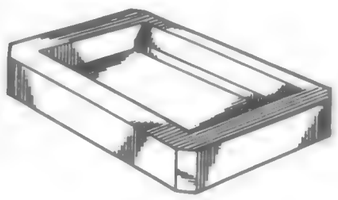
352,514
SWIM GOGGLES
Robert N. Shelton, Princeton, Mass., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed May 28, 1993, Ser. No. 8,894
Term of patent 14 years
U.S. Cl. D16—303



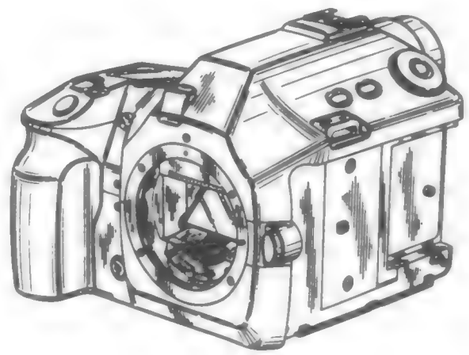
352,515
STAY SECURE GLASSES
James M. Montague, P.O. Box 1244, Banner Elk, N.C. 28604
Filed Oct. 12, 1993, Ser. No. 14,039
Term of patent 14 years
U.S. Cl. D16—311



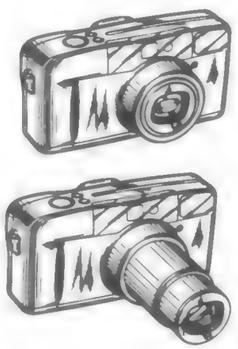
352,516
TRAY
Edward F. Newman, Douglasville, and John R. Popps, Auburn, both of Ga., assignors to Ciba-Geigy Corporation, New York, N.Y.
Filed Mar. 11, 1993, Ser. No. 5,807
Term of patent 14 years
U.S. Cl. D24—218



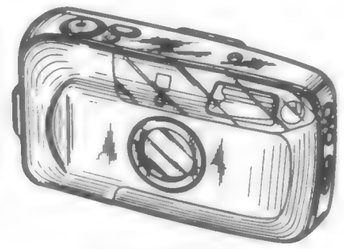
352,517
SINGLE LENS REFLEX STILL VIDEO CAMERA BODY
Yoshiaki Sugiyama, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 1, 1993, Ser. No. 5,271
Claims priority, application Japan, Aug. 28, 1992, 4-25640
Term of patent 14 years
U.S. Cl. D16—202



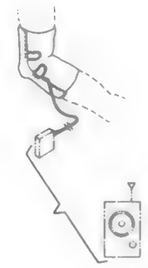
352,518
CAMERA
Hiroyuki Fukushima, Kami-Fukuoka; Hiroshi Kikuchi, Kawasaki, and Kazuaki Sakuta, Komae, all of, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 16, 1993, Ser. No. 11,835
Claims priority, application Japan, Feb. 26, 1993, 5-5658
Term of patent 14 years
U.S. Cl. D16—209



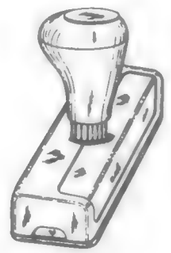
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CAMERA
Hitomi Ito, Tokyo, Japan; Toyotoshi Suzuki, Taizhong-shi, and Ji Dali, Taizhong-xian, both of Taiwan, Prov. of China, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 16, 1993, Ser. No. 11,842
Term of patent 14 years
U.S. Cl. D16—209



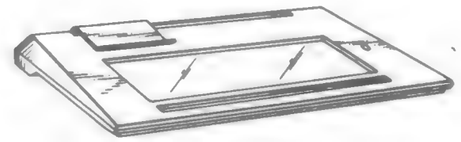
352,520
MUSICAL TONE CONTROLLER
Shunichi Matsushima, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan
Filed Feb. 4, 1992, Ser. No. 831,282
Claims priority, application Japan, Aug. 6, 1991, 3-23639
Term of patent 14 years
U.S. Cl. D17—99



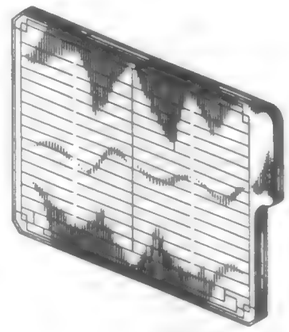
352,521
PRE-INKED MOUNT
Steven Sculler, Manalapan, N.J.; Alexander Wall, Nokomis, Fla.; James M. Ryan, New York, N.Y.; David C. Danielson, New Canaan, Conn., and Tor G. Boaner, New York, N.Y., assignors to M&R Marking Systems, Inc., Piscataway, N.J.
Filed Mar. 10, 1993, Ser. No. 7,203
Term of patent 14 years
U.S. Cl. D18—15



352,522
EDITOR
Kenichi Tomatsu, Yokohama; Akira Momose, Narashino; Yoko Nakamura, Yokohama; Tatsuo Okuda, Tokyo; Fumio Kojima, Mitaka, and Masahiro Kurita, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,183
Term of patent 14 years
U.S. Cl. D18—40



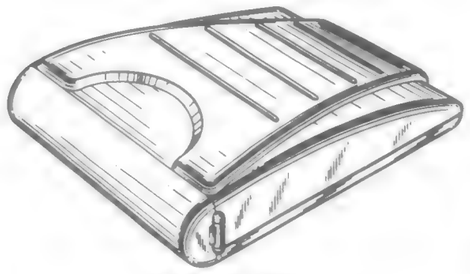
352,523
INDEX CARD
Brian McCracken, 21416 Velicata St., Woodland Hills, Calif. 91364
Filed Oct. 2, 1992, Ser. No. 939,378
Term of patent 14 years
U.S. Cl. D19—1



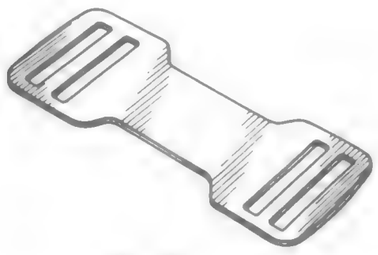
352,524
CASE FOR LEAD
Hiroyuki Watanabe, Hiratsuka, Japan, assignor to Pilot Precision Kabushiki Kaisha, Hiratsuka, Japan
Filed Jul. 13, 1992, Ser. No. 912,781
Claims priority, application Japan, Jan. 20, 1992, 4-1110
Term of patent 14 years
U.S. Cl. D19—35



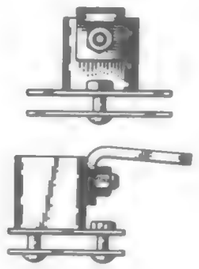
352,525
INFORMATION CARD INDEX
Matthew Coe, Cedar Grove, N.J., assignor to PharmaDesign, Inc., Warren, N.J.
Filed Nov. 10, 1992, Ser. No. 1,323
Term of patent 14 years
U.S. Cl. D19—76



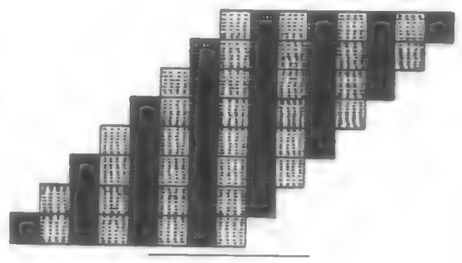
352,526
TAG
Norman P. Liebman, Livingston, N.J., assignor to Arch Crown Tags, Inc., Roseland, N.J.
Filed Dec. 27, 1993, Ser. No. 19,000
Term of patent 14 years
U.S. Cl. D20—22



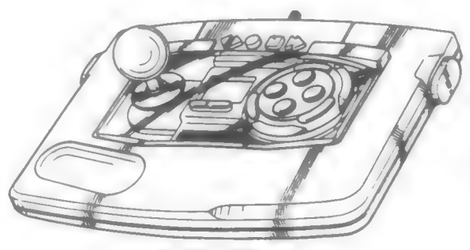
352,527
DETACHABLE BASE PLATE FOR A TRAFFIC SIGN
Paul A. Brydalski, West Seneca, and George A. Giotis, Williamsville, both of N.Y., assignors to Flasher Handling Corp., Depew, N.Y.
Division of Ser. No. 948,829, Sep. 17, 1992, Pat. No. Des. 346,623, which is a continuation-in-part of Ser. No. 611,869, Nov. 13, 1990, Pat. No. Des. 331,605. This application Feb. 28, 1994, Ser. No. 19,341
Term of patent 14 years
U.S. Cl. D20—41



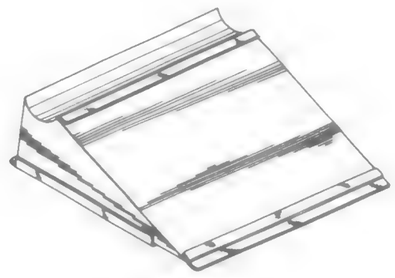
352,528
GAME BOARD
James Boehm, 14008 Sandy Ct., Apt. A, Tampa, Fla. 33613
Filed Mar. 1, 1993, Ser. No. 5,291
Term of patent 14 years
U.S. Cl. D21—24



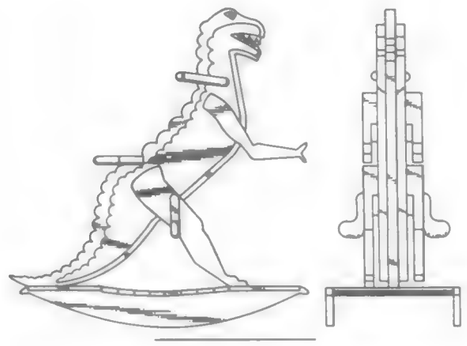
352,529
JOYSTICK
Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong
Filed Sep. 24, 1993, Ser. No. 13,475
Term of patent 14 years
U.S. Cl. D21—48



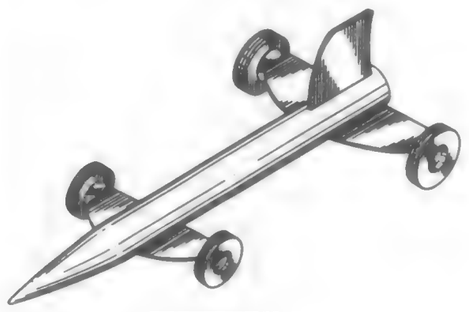
352,530
HOLDER FOR BINGO CARDS
Oscar Gauvreau, 1529 Gemmell St., Sudbury, Ontario, Canada P3A 1H2
Filed May 12, 1993, Ser. No. 8,216
Claims priority, application Canada, Nov. 13, 1992, 13-11-92-8
Term of patent 14 years
U.S. Cl. D21—54



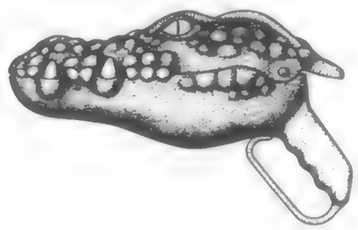
352,531
DINOSAUR ROCKING TOY
Dennis A. Rouille, 62 Maple St., Burlington, Vt. 05401
Filed Jul. 19, 1993, Ser. No. 10,787
Term of patent 14 years
U.S. Cl. D21—66



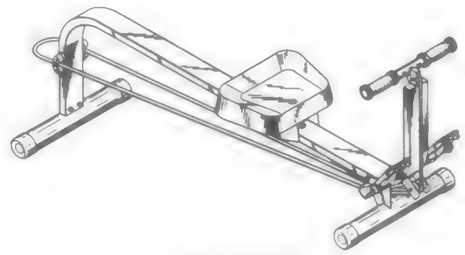
352,532
GUIDABLE ROCKET POWERED TOY CAR
Eugene T. Tully, HCR 70 Box 157, S. Otselic, N.Y. 13155
Filed Oct. 20, 1993, Ser. No. 14,306
Term of patent 14 years
U.S. Cl. D21—137



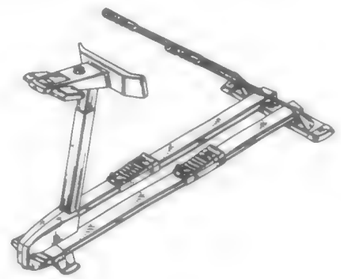
352,533
CROCODILE TOY
Henry Wolfe, Palmetto, Fla., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed May 6, 1993, Ser. No. 7,987
Term of patent 14 years
U.S. Cl. D21—157



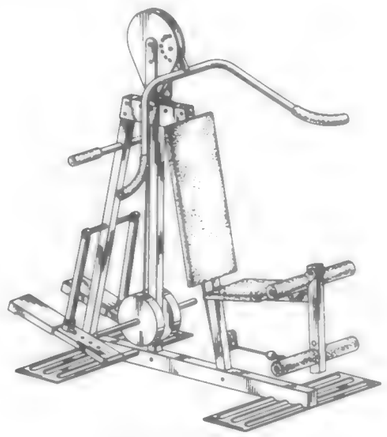
352,534
ROWING MACHINE EXERCISER
John S. Dreibelbis, Shakopee; Charles C. Hall, St. Louis Park, and Pat J. Novak, St. Paul, all of Minn., assignors to NordicTrack, Inc., Chaska, Minn.
Filed Aug. 26, 1992, Ser. No. 935,213
Term of patent 14 years
U.S. Cl. D21—191



352,535
SKI EXERCISER
Randolph F. Miller, Mount Vernon, Wash., assignor to Tunturi, Inc., Redmond, Wash.
Filed Apr. 20, 1993, Ser. No. 7,252
Term of patent 14 years
U.S. Cl. D21—191



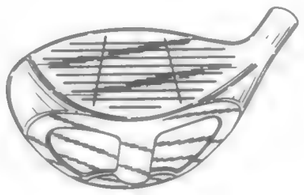
352,536
MULTI-FUNCTION EXERCISE MACHINE
Rick Byrd; Kevin Gerschefske, both of Springfield, and Charles Brazeal, Mansfield, all of Mo., assignors to Stamina Products, Inc., Springfield, Mo.
Filed Mar. 5, 1993, Ser. No. 5,544
Term of patent 14 years
U.S. Cl. D21—195



352,537
UNDERWATER GOLF BALL TRAP
Jeffrey Pifer, 23612 Via Potes, and Lewis Levy, 23631 Via El Rocio, both of Mission Viejo, Calif. 92691
Filed Oct. 7, 1992, Ser. No. 206
Term of patent 14 years
U.S. Cl. D21—206



352,538
GOLF CLUB HEAD
Robert J. Williams, Jr., 40501 Clover La., Palm Desert, Calif. 92260
Filed Feb. 26, 1993, Ser. No. 5,314
Term of patent 14 years
U.S. Cl. D21—214



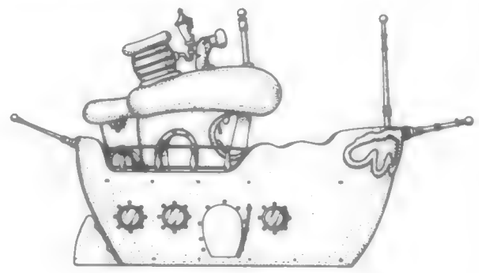
352,539
CENTRAL PORTION OF A HOSEL FOR A GOLF CLUB
Ronald D. Griffin, 1413 Agnes, Richland, Wash. 99352
Filed Sep. 28, 1992, Ser. No. 953,573
Term of patent 14 years
U.S. Cl. D21—221



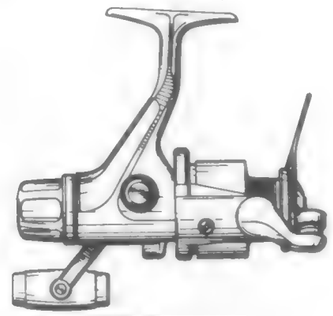
352,540
GYMNASIUM INSERT FOR A PLAYPEN
Jonathan D. Harger, 139 Soi Lercha 1, Paholvolthin Rd., Bangkok, Thailand 10400
Filed May 13, 1993, Ser. No. 8,306
Term of patent 14 years
U.S. Cl. D21—245



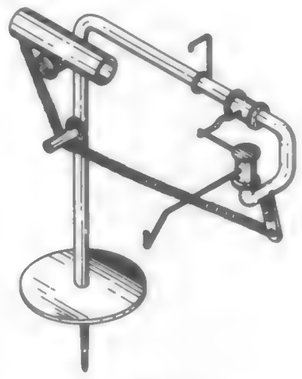
352,541
AMUSEMENT CHARACTER BOAT
James H. Shull, Santa Clarita, and Joseph A. Lanzisero, Burbank, both of Calif., assignors to The Walt Disney Company, Burbank, Calif.
Filed Jan. 22, 1993, Ser. No. 3,974
Term of patent 14 years
U.S. Cl. D21—250



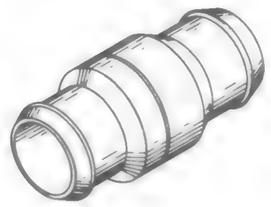
352,542
SPINNING REEL
Kenji Onishi, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Sep. 15, 1992, Ser. No. 948,860
Term of patent 14 years
U.S. Cl. D22—141



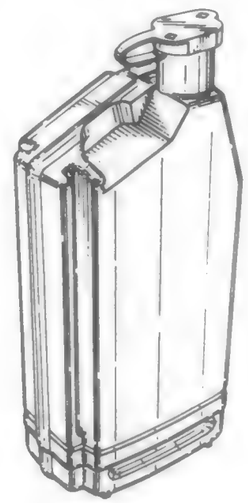
352,543
FISHING ROD HOLDER
Gerry J. Venable, P.O. Box 2121, Milan, N. Mex. 87021
Filed Aug. 18, 1993, Ser. No. 11,922
Term of patent 14 years
U.S. Cl. D22—147



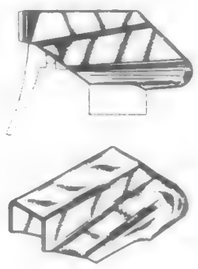
352,544
RADIATOR FILTER
Ilan Z. Golan, 4404 Elenda St., Culver City, Calif. 902301
Filed Sep. 24, 1992, Ser. No. 951,539
Term of patent 14 years
U.S. Cl. D23—209



352,545
CONTAINER
David Raffo, Chester, United Kingdom, assignor to Nomix-Chipman Limited, Bristol, United Kingdom
Division of Ser. No. 704,442, May 23, 1991, Pat. No. Des. 344,323. This application Dec. 6, 1993, Ser. No. 16,070
Claims priority, application United Kingdom, Dec. 4, 1990, 2011506
Term of patent 14 years
U.S. Cl. D23—225



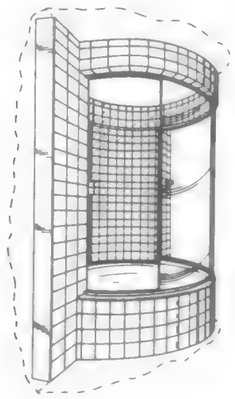
352,546
SPRAYER SHROUD
Scott A. Silvenis, Midland, Mich.; John A. Zarcher, Saint Charles, Mo., and James L. Ghighi, Greenville, S.C., assignors to Dowbrands Inc., Indianapolis, Ind.
Filed Sep. 7, 1993, Ser. No. 12,642
Term of patent 14 years
U.S. Cl. D23—226



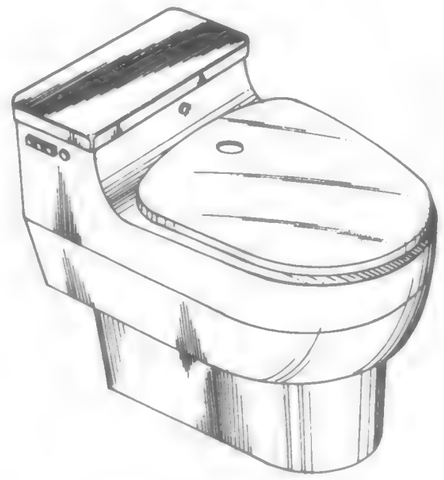
352,547
SPOUT
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Aug. 9, 1993, Ser. No. 11,563
The portion of the term of this patent subsequent to Dec. 14, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—255



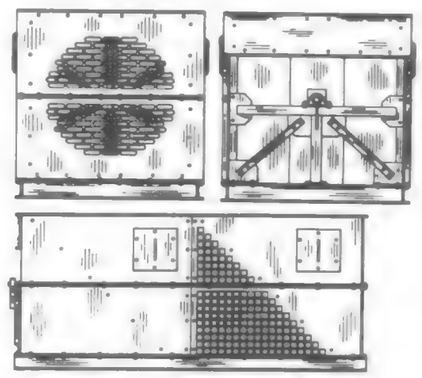
352,548
CIRCULAR SHOWER STALL
Barry Pinsky, 5314 Bluebell Ave., North Hollywood, Calif. 91607, and Brian K. Gottlieb, 4301 Kling St., #19, Burburk, Calif. 91505
Filed Aug. 23, 1993, Ser. No. 12,079
Term of patent 14 years
U.S. Cl. D23—283



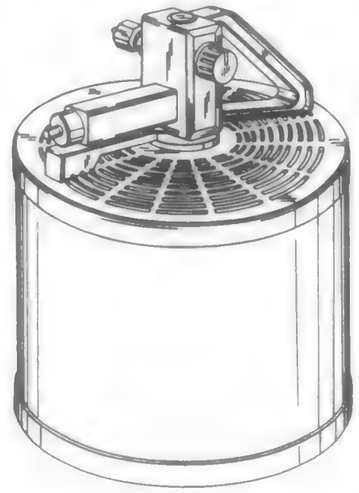
352,549
VENTILATED TOILET
Jae K. Sim, 5021 Crescent Dr., Anaheim, Calif. 92807
Filed Feb. 14, 1992, Ser. No. 835,680
Term of patent 14 years
U.S. Cl. D23—301



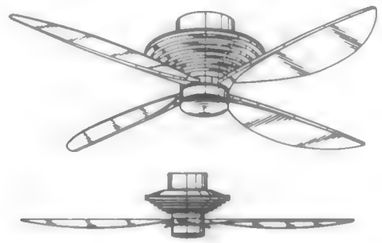
352,550
INDUSTRIAL AIR COOLED HEAT EXCHANGER
Robert K. Rothenbucher, Claremont, Okla., assignor to Compression Coolers, Inc., Sapulpa, Okla.
Filed Nov. 8, 1993, Ser. No. 15,101
Term of patent 14 years
U.S. Cl. D23—314



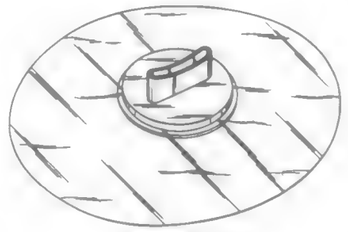
352,551
FUME FILTER FOR USE WITH A SOLDERING APPARATUS
Mats Andersson, Axvall, Sweden, assignor to AB Lectrostatic, Skara, Sweden
Filed Oct. 29, 1993, Ser. No. 14,730
Claims priority, application Sweden, Apr. 29, 1983, 93-1066
Term of patent 14 years
U.S. Cl. D23—365



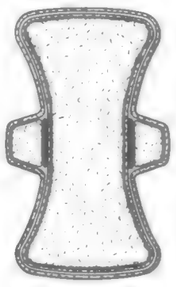
352,552
COMBINED CEILING FAN AND LIGHT
Shigemichi Oyama, Kyoto, and Mutsumi Sawanishi, Osaka, both of Japan, assignors to Matsushita Seiko Co., Ltd. and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan
Continuation of Ser. No. 835,678, Feb. 14, 1992, abandoned.
This application Aug. 26, 1993, Ser. No. 12,208
Claims priority, application Japan, Aug. 22, 1991, 3-25278
The portion of the term of this patent subsequent to Mar. 16, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—377



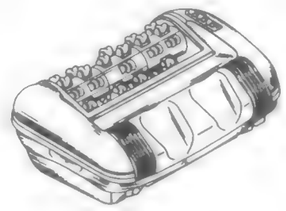
352,553
DISPOSABLE RESUSCITATOR HAVING A UNIDIRECTIONAL VALVE
Terry L. Shirley, 31471 Paseo Duran, San Juan Capistrano, Calif. 92675
Filed Mar. 17, 1992, Ser. No. 853,159
Term of patent 14 years
U.S. Cl. D24—110



352,554
SANITARY NAPKIN
Angelo P. Ruffo, Mount Royal, Canada; James Bradstreet, Colts Neck, N.J.; Frank S. Giang, Spotswood, N.J.; Sherilyn S. McCoy, Monmouth Junction, N.J., and Patricia Ramacieri, Montreal, Canada, assignors to Johnson & Johnson Inc., Montreal, Canada
Continuation of Ser. No. 478,167, Feb. 9, 1990, abandoned. This application Nov. 16, 1992, Ser. No. 977,725
The portion of the term of this patent subsequent to Jun. 23, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—125



352,555
MASSAGER
Wen-Hsu Hsieh, Changhua, Taiwan, Prov. of China, assignor to Kuang Yu Metals Co., Ltd., Changhua, Taiwan, Prov. of China
Filed Jul. 30, 1993, Ser. No. 11,232
Term of patent 14 years
U.S. Cl. D24—213



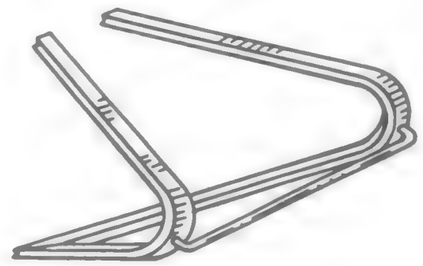
352,556
MASSAGER
Richard McShirley, Santa Clarita, and Robert McShirley, Valencia, both of Calif., assignors to Health o meter, Inc., Bridgeview, Ill.
Filed Jan. 6, 1993, Ser. No. 3,432
Term of patent 14 years
U.S. Cl. D24—214



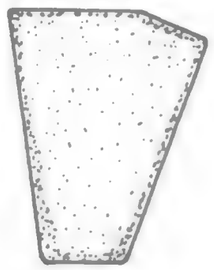
352,557
OCTAHEDRON TRUSS ASSEMBLY
Ally O. Hing, P.O. Box A, Superior, Ariz. 85273
Filed Aug. 5, 1993, Ser. No. 11,421
Term of patent 14 years
U.S. Cl. D25—61



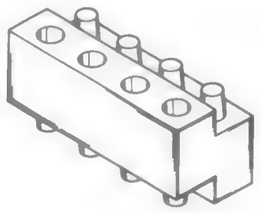
352,558
BRACKET FOR A TREE CLIMBER
James L. Stepp, P.O. Box 118, South Casco, Me. 04077
Filed Nov. 24, 1992, Ser. No. 1,790
Term of patent 14 years
U.S. Cl. D25—62



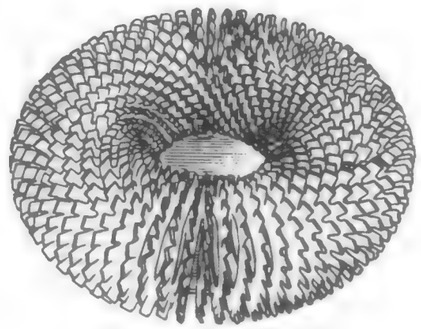
352,559
PAVING STONE
Ronald G. Krueger, Hampton, and Arthur A. Labounear, Wantage, both of N.J., assignors to Concrete Stone and Tile Corporation, Branchville, N.J.
Filed Apr. 3, 1992, Ser. No. 863,729
Term of patent 14 years
U.S. Cl. D25—113



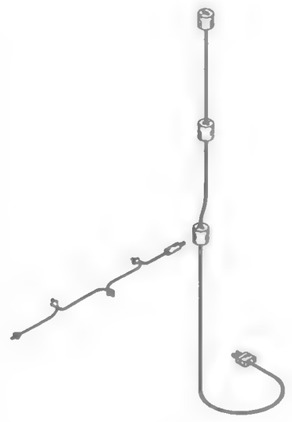
352,560
BRICK
Jung-fa Lin, 7 Lane Chung Cheng, Kwei Lin, Chushan, Nantou, Taiwan, Prov. of China
Filed Apr. 12, 1993, Ser. No. 6,884
Term of patent 14 years
U.S. Cl. D25—118



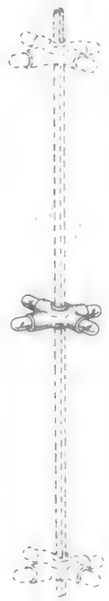
352,561
CANDLEHOLDER
Ingvar Johansson, Alvesta, Sweden, assignor to AB Maskinarbeten, Alvesta, Sweden
Filed Oct. 23, 1992, Ser. No. 752
Claims priority, application Sweden, Apr. 23, 1992, 92-0917
Term of patent 14 years
U.S. Cl. D26—9



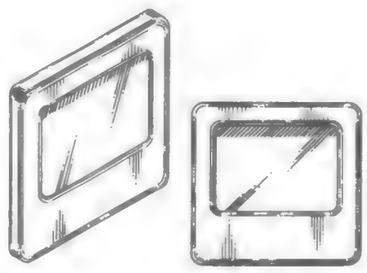
352,562
CHRISTMAS TREE LIGHT SYSTEM
Lawrence B. Horton, 1570 N. 1500 W., Provo, Utah 84604
Filed Nov. 20, 1992, Ser. No. 1,675
Term of patent 14 years
U.S. Cl. D26—25



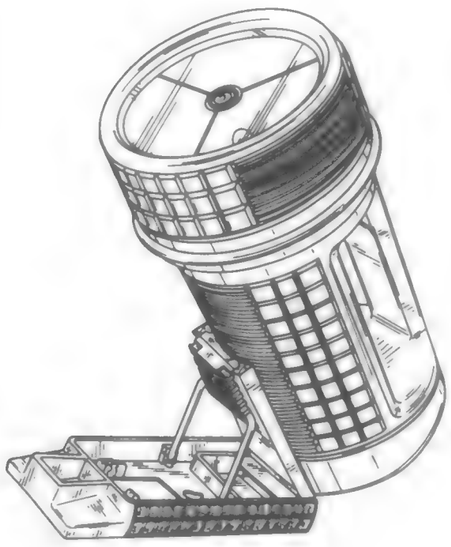
352,563
DECORATIVE LIGHT FOR A LIGHT STRING
Kazuaki Murata, Tokyo, Japan, assignor to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 15, 1993, Ser. No. 14,213
Term of patent 14 years
U.S. Cl. D26—25



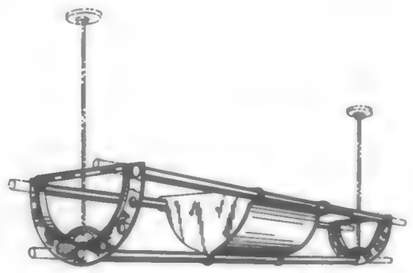
352,564
ELECTROLUMINESCENT NIGHT LIGHT
Joseph E. Marischen, Austin, Tex., assignor to Austin Innovations, Inc., Austin, Tex.
Filed Jan. 21, 1993, Ser. No. 3,879
Term of patent 14 years
U.S. Cl. D26—26



352,565
LANTERN
Kai Ching A. Yau, Kowloon, Hong Kong, assignor to Practical Products Mfy. Ltd., Kowloon, Hong Kong
Filed Jun. 24, 1992, Ser. No. 903,989
Claims priority, application United Kingdom, Jan. 22, 1992, 2020443
Term of patent 14 years
U.S. Cl. D26—37



352,566
SUSPENDED LIGHTING FIXTURE
Dennis E. Johnson, Grafton, and Scott P. Malmsten, West Bend, both of Wis., assignors to SPI Lighting, Inc., Mequon, Wis.
Filed May 7, 1993, Ser. No. 8,032
Term of patent 14 years
U.S. Cl. D26—88



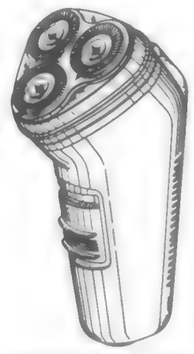
352,567
TABLE LAMP
John R. Drucker, Atlanta, Ga., assignor to The Speer Lamp Corp. of New York, Smyrna, Ga.
Filed Dec. 1, 1993, Ser. No. 15,896
Term of patent 14 years
U.S. Cl. D26—110



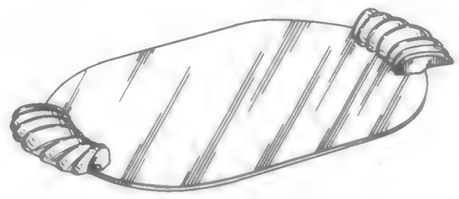
352,568
RAZOR BLADE HANDLE
Edward H. Meisner, Short Hills; Michael P. Ballone, New Providence, and Thomas Van Dyk, Prospect Park, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Nov. 19, 1992, Ser. No. 1,666
Term of patent 14 years
U.S. Cl. D28—48



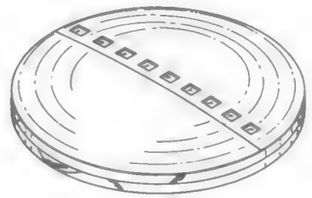
352,569
DRY SHAVER
Klaas T. Oord, Wispel 52, Drachten, Netherlands
Filed Jan. 3, 1991, Ser. No. 637,003
Claims priority, application WIPO, Jul. 19, 1990, DM/017.173
Term of patent 14 years
U.S. Cl. D28—50



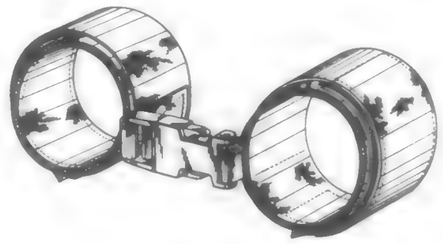
352,570
MIRRORED VANITY TRAY
Judith M. Kruger, Highland Park, Ill., assignor to Paris Presents Incorporated, Gurnee, Ill.
Filed Jun. 1, 1993, Ser. No. 8,906
Term of patent 14 years
U.S. Cl. D28—73



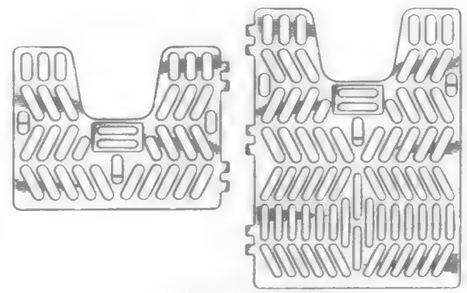
352,571
COSMETIC COMPACT
Susan R. Wacker, New York, N.Y., assignor to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Sep. 22, 1992, Ser. No. 949,054
Term of patent 14 years
U.S. Cl. D28—82



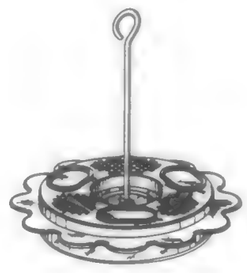
352,572
PAIR OF FABRIC HANDCUFFS
Joseph Pustizzi, Jr., P.O. Box 613, Reading, Mass. 01867
Filed Jun. 1, 1992, Ser. No. 890,473
Term of patent 14 years
U.S. Cl. D29—120



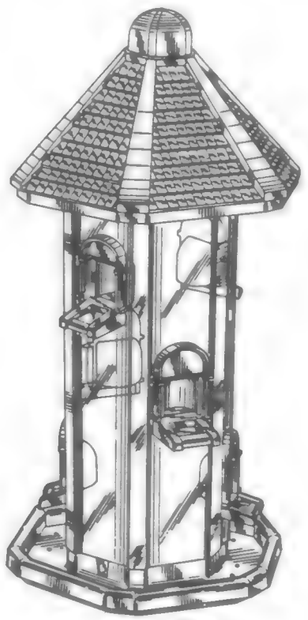
352,573
HORSE STALL GATE
Gerald A. Sampson, Santa Fe Springs; Gordon J. Sanden, Huntington Beach, and Harold D. Sampson, Cypress, all of Calif., assignors to Allen United, Santa Fe Springs, Calif.
Filed Aug. 16, 1993, Ser. No. 11,777
Term of patent 14 years
U.S. Cl. D30—119



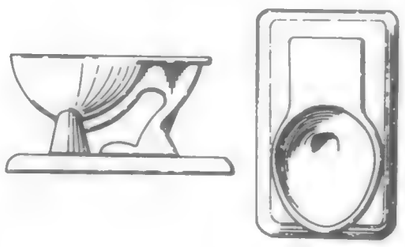
352,574
BUTTERFLY FEEDER
Arthur C. Brown, P.O. Box 277, West Kingston, R.I. 02892
Filed Mar. 5, 1993, Ser. No. 5,443
Term of patent 14 years
U.S. Cl. D30—121



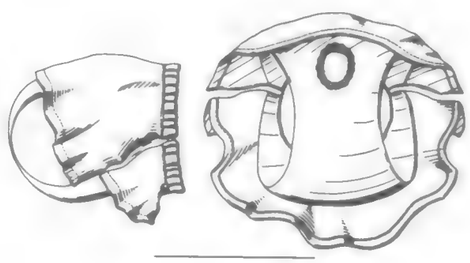
352,575
BIRD FEEDER
Jeffrey D. Bransky, Clarendon Hills, and Kenneth L. Sanderson, Elgin, both of Ill., assignors to Duraco Products, Inc., Streamwood, Ill.
Filed Oct. 15, 1992, Ser. No. 488
Term of patent 14 years
U.S. Cl. D30—127



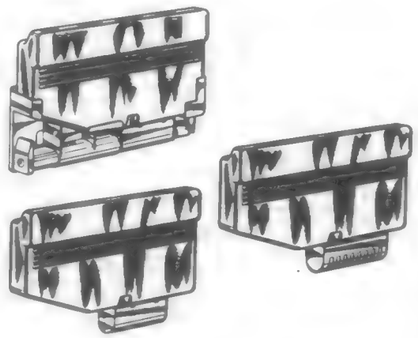
352,576
ANIMAL FEEDING BOWL
Nathaniel A. Trigoboff, and Debra R. Trigoboff, both of 515 Danville Ter., Davie, Fla. 33325
Filed Sep. 23, 1993, Ser. No. 13,445
Term of patent 14 years
U.S. Cl. D30—129



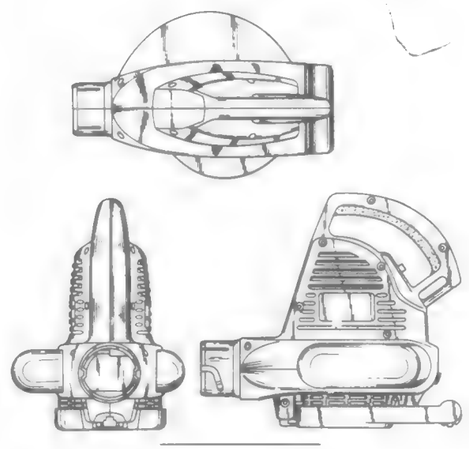
352,577
GARMENT FOR FEMALE CANINES
Stephanie A. Shover, 5231 N.W. 53rd Ave., Coconut Creek, Fla. 33073
Filed Apr. 26, 1993, Ser. No. 7,534
Term of patent 14 years
U.S. Cl. D30—145



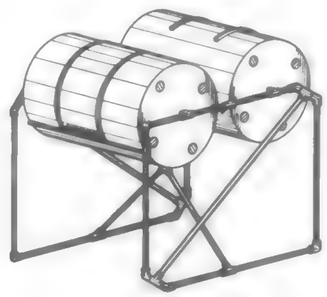
352,578
DISHWASHER DETERGENT DISPENSER
Phillip B. Mooney, Burlington, and Michael W. Hetherington, Mount Albert, both of Canada, assignors to Diversey Corporation, Mississauga, Canada
Filed Jan. 9, 1991, Ser. No. 639,704
Claims priority, application Canada, Jul. 9, 1990, 09079017; Jul. 9, 1990, 09079018
Term of patent 14 years
U.S. Cl. D32—3



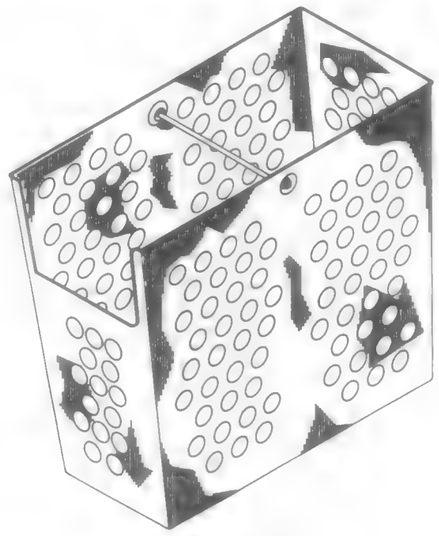
352,579
COMBINED BLOWER AND VACUUM
Michael Baker, Chandler, and Harold Coleman, Phoenix, both of Ariz., assignors to Ryobi Outdoor Products, Chandler, Ariz.
Filed Jun. 10, 1992, Ser. No. 896,542
Term of patent 14 years
U.S. Cl. D32—15



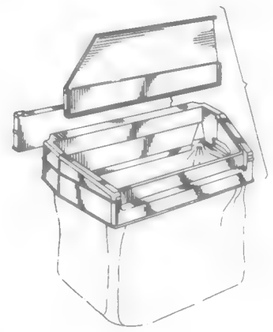
352,580
DOUBLE-BARREL COMPOSTER
James A. Cook, 350 Valli-Hi Rd., Eagle, Id. 83616
Filed Jan. 22, 1993, Ser. No. 3,975
Term of patent 14 years
U.S. Cl. D34—1



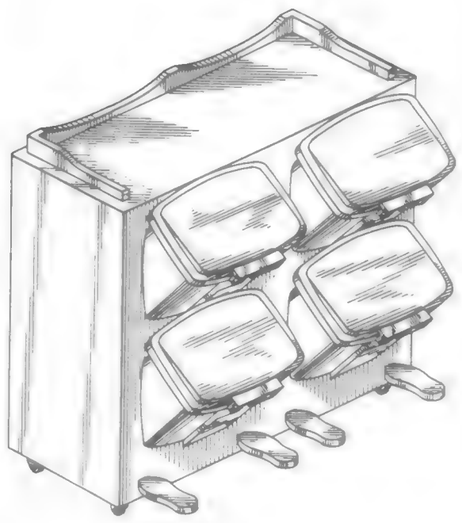
352,581
RECYCLE BIN
John H. Fredericks, 1416 Quail View Cir., Walnut Creek, Calif. 94596
Filed Aug. 9, 1993, Ser. No. 11,514
Term of patent 14 years
U.S. Cl. D34—1



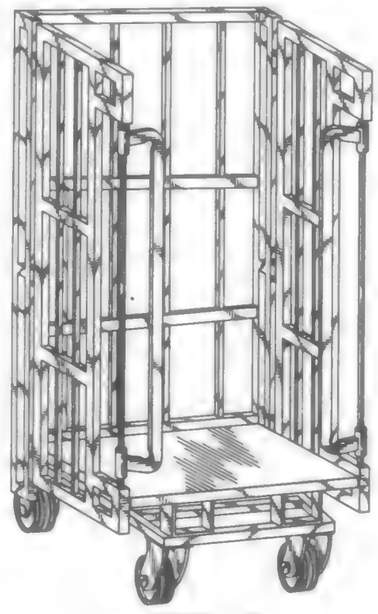
352,582
GARBAGE OR WASTE BAG DISPOSAL
Bernhard Hachenberg, 10 Ayrshire Avenue, Benowa, Queensland, 4217, Australia
Filed Sep. 8, 1992, Ser. No. 940,809
Claims priority, application Australia, Mar. 12, 1992, 623/92
Term of patent 14 years
U.S. Cl. D34—6



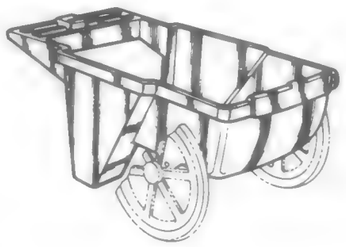
352,583
RECYCLING BIN
Charles E. Cadwell, 159 Paramount, Wood Dale, Ill. 60191
Filed Oct. 29, 1993, Ser. No. 14,834
Term of patent 14 years
U.S. Cl. D34—9



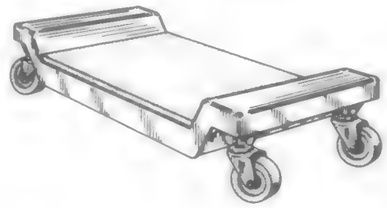
352,585
CART
Ronald L. Binning, Hampton, Va., assignor to IDAB Incorporated, Hialeah, Fla.
Filed Aug. 27, 1993, Ser. No. 12,239
Term of patent 14 years
U.S. Cl. D34—17



352,584
CART
Edward L. Boyd, Montvale, N.J., assignor to Rubbermaid Specialty Products Inc., Wooster, Ohio
Filed Dec. 21, 1993, Ser. No. 16,616
Term of patent 14 years
U.S. Cl. D34—16



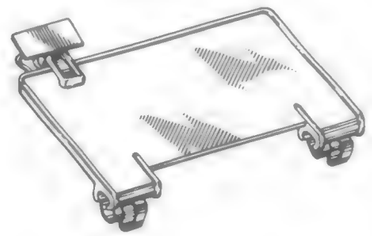
352,586
PERSONAL DOLLY
Walter H. Baucom, Albany, N.Y., assignor to DSC Industrial, Inc., Albany, N.Y.
Filed Nov. 22, 1993, Ser. No. 15,613
Term of patent 14 years
U.S. Cl. D34—23



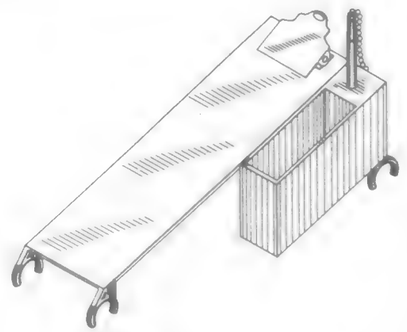
352,587
EQUIPMENT RACK CORNER PIECE
Jeffrey T. McCaffrey, Portland, Oreg., assignor to Anthro Corporation, Portland, Oreg.
Continuation-in-part of Ser. No. 1,920, Nov. 24, 1992. This application Dec. 31, 1992, Ser. No. 3,182
Term of patent 14 years
U.S. Cl. D34—27



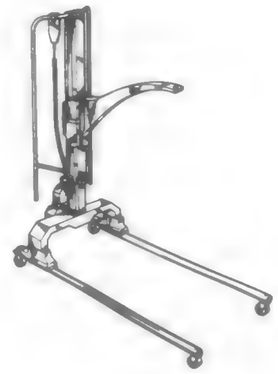
352,588
SHOPPING CART ATTACHMENT
John T. Orphan, 404 N. Barryknoll St., Anaheim, Calif. 92807
Filed Jan. 8, 1993, Ser. No. 3,398
Term of patent 14 years
U.S. Cl. D34—27



352,589
PORTABLE SHOPPING CART ATTACHMENT
James F. Kennedy, 2588 Malibu Cir., Orange Park, Fla. 32065-7591
Filed Oct. 25, 1993, Ser. No. 14,485
Term of patent 14 years
U.S. Cl. D34—27



352,590
MOBILE PATIENT LIFTER
Philip G. Hodges, Thebarton, Australia, assignor to UC Medical Products Pty Ltd., Thebarton, Australia
Filed Jul. 7, 1993, Ser. No. 10,356
Term of patent 14 years
U.S. Cl. D34—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C.T. Inc.: *See—*
Davis, Kenneth W., 5,363,594, Cl. 47-82.000.

A.C.X. Trading, Inc.: *See—*
Gombos, John M.; and Leashno, Moshe, 5,364,226, Cl. 414-786.000.

A. Finkl & Sons Co.: *See—*
Finkl, Charles W.; Brada, Guy A.; and Underys, Algirdas A., 5,364,588, Cl. 420-67.000.

A. K. Technical Laboratory, Inc.: *See—*
Takeuchi, Setsuyuki, 5,364,585, Cl. 264-520.000.

A-Z Formen- und Maschinenbau GmbH: *See—*
Hilke, Rainer; and Schmaderer, Gerhard, 5,364,490, Cl. 156-396.000.

Aase, Brenda L., to Schneider (USA) Inc. Small diameter dilatation catheter having wire reinforced coaxial tubular body. 5,364,357, Cl. 604-96.000.

AB Volvo Penta: *See—*
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Abbott Laboratories: *See—*
De, Biswanath, 5,364,869, Cl. 514-340.000.
Grabenkort, R. W.; and Joyce, Thomas P., 5,364,384, Cl. 604-408.000.
Hughes, Timothy J.; and Swingler, David N., 5,363,856, Cl. 128-713.000.

Abbott, William A. Method and reagent system for assaying isoenzyme profiles. 5,364,765, Cl. 435-26.000.

Abdelqader, Steven: *See—*
Geller, Alexander; and Abdelqader, Steven, 5,365,157, Cl. 323-237.000.

Abe, Masaru; Kawamoto, Yoshimichi; Nonaga, Ikuo; and Izawa, Masataka, to Honda Giken Kogyo Kabushiki Kaisha. Four wheel steering system. 5,365,440, Cl. 364-424.050.

Abe, Tsugio: *See—*
Kojima, Haruji; Abe, Tsugio; Shoji, Toru; and Shirose, Meizo, 5,364,730, Cl. 430-137.000.

Abinanti, T. Michael, to Met Displays, Inc. Replaceable cushions for fixtures/hardware supporting glass panels. 5,364,055, Cl. 248-316.100.

Abramczyk, William M.; and Ikirt, Kimberly L., to General Motors Corporation. Air bag module. 5,364,123, Cl. 280-728.00A.

Abrams, Robert: *See—*
Cimino, William W.; Abrams, Robert; Taimisto, Miriam H.; Jenson, Marc; and Macaulay, Patrick E., 5,364,352, Cl. 604-95.000.

Abumi, Takao, to Sharp Kabushiki Kaisha. Image signal processor generating reduced memory consumption still images yet preserving image quality. 5,365,346, Cl. 348-708.000.

Abus August Bremicker Sohne KG: *See—*
Meckbach, Gerhard, 5,363,678, Cl. 70-38.00A.

Acharya, Arun; Gottzmann, Christian F.; Lockett, Michael J.; Schneider, James S.; Victor, Richard A.; and Zawierucha, Robert, to Praxair Technology, Inc. Compact contacting device. 5,363,909, Cl. 165-111.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Container for magnetic tape cassette. 5,363,960, Cl. 206-387.000.

Actel Corporation: *See—*
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,365,165, Cl. 324-58.100.

Active Noise and Vibration Technologies, Inc.: *See—*
Ross, Colin F.; and Eatwell, Graham P., 5,365,594, Cl. 381-71.000.

Acutus Mold Inc.: *See—*
Ives, Kenneth; Keating, Gregory; and Sorenson, Kenneth, 5,363,709, Cl. 73-865.900.

Adachi, Hirokazu: *See—*
Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.

Adachi, Nobukazu: *See—*
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Adamczyk, Andrew A.: *See—*
Ander, Anthony T.; Adamczyk, Andrew A.; Hrovat, Davorin; and Chen, Lee-Fei, 5,365,441, Cl. 364-426.030.

Adamidis, Ioannis J. Center post supported table with a multiple of table leaves. 5,363,772, Cl. 108-66.000.

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Adams, Bruce M.: *See—*
Jacobs, Stephen W.; Arslanian, Gregory K.; Adams, Bruce M.; Ivankovits, John C.; and Bowe, Donald J., 5,364,007, Cl. 228-42.000.

Adams, Carl A.: *See—*
Mach, Patrick A.; Hesselroth, Karen E.; Adams, Carl A.; and Schwab, Debra L., 5,364,766, Cl. 435-34.000.

Adamski, Maximilian, Jr.; and Berg, Paul A., to Union Special Corporation. Sewing cloth handling device. 5,363,784, Cl. 112-121.120.

Addeo, Antonio: *See—*
Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., to Mining Technologies, Inc. Apparatus and method for continuous mining. 5,364,171, Cl. 299-18.000.

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Advanced Cardiovascular Systems, Inc.: *See—*
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Advanced Micro Devices, Inc.: *See—*
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Advanced Oxygen Technologies, Inc.: *See—*
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Advanced Protective Injection Systems Medical B.V.: *See—*
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Advanced Technologies (Cambridge) Limited: *See—*
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Advanced Therapies, Inc.: *See—*
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Advantest Corporation: *See—*
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AeroSport, Inc.: *See—*
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Agfa Gevaert Aktiengesellschaft: *See—*
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Timmerman, Daniel M.; and Vandenabeele, Hubert, 5,364,752, Cl. 430-529.000.

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Sanghera, Jasbinder S.; Pureza, Pablo C.; and Aggarwal, Ishwar D., 5,364,434, Cl. 65-30.100.

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Van Gilst, Carl W., 5,363,806, Cl. 119-61.000.

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Kubo, Kazuhiro, 5,364,788, Cl. 435-252.500.

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Aho, Richard E.; and Baker, Martin, to MileMarker, Inc. Selective drive fluid coupling. 5,363,948, Cl. 192-58.00R.

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Isozaki, Tadaaki; Mogamiya, Hiroyuki; Aihara, Yoshihiko; and Hagiwara, Takashi, 5,364,561, Cl. 252-299.650.

Aiki, Kiyoshi: *See—*
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, 5,365,519, Cl. 370-60.000.

Aikou, Kenichi; Suzuki, Eiichi; and Goto, Tugio, to Asahi Kasei Kogyo Kabushiki Kaisha. Electronic delay circuit for firing ignition element. 5,363,765, Cl. 102-220.000.

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Jacobs, Stephen W.; Arslanian, Gregory K.; Adams, Bruce M.; Ivankovits, John C.; and Bowe, Donald J., 5,364,007, Cl. 228-42.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Yamashita, Osao; and Nakatsu, Yasunori, 5,363,828, Cl. 123-520.000.

Aisin Aw Co., Ltd.: *See—*
Minezawa, Yukihiro; Kawamoto, Mutsumi; Inagaki, Hidemitsu; and Hotta, Yutaka, 5,365,431, Cl. 364-424.010.

Aisin Seiki Kabushiki Kaisha: *See—*
Katoh, Kiyokazu; Kaneko, Kenichi; Matsubara, Osamu; and Niwa, Takashi, 5,364,283, Cl. 439-201.000.
Sakamoto, Kazunori, 5,363,710, Cl. 74-2.000.
Sakane, Shinsuke; Ichikawa, Hiroyuki; Fukushima, Satoru; and Hamada, Chiaki, 5,364,175, Cl. 303-97.000.
Sawada, Masashi; and Takeuchi, Hiroaki, 5,364,176, Cl. 303-113.200.

Aitken, John M.; Akbar, Shahzad; Crowder, Billy L.; Iqbal, Asif; and Nihal, Perwaiz, to International Business Machines Corporation. Method of Fabricating a micro-coaxial wiring structure. 5,363,550, Cl. 29-828.000.

Ajika, Natsuo; Arima, Hideaki; Motonami, Kaoru; Hachisuka, Atsushi; and Okudaira, Tomonori, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing a semiconductor memory device with multiple device forming regions. 5,364,811, Cl. 437-52.000.

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Aitken, John M.; Akbar, Shahzad; Crowder, Billy L.; Iqbal, Asif; and Nihal, Perwaiz, 5,363,550, Cl. 29-828.000.

Akimoto, Masami; Yoshioka, Kazutoshi; and Iida, Naruaki, to Tokyo Electron Limited; and Tokyo Electron Kyushu Limited. Apparatus for processing wafer-shaped substrates. 5,364,222, Cl. 414-416.000.

Akiyama, Koji: *See—*
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,364,668, Cl. 428-1.000.

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Aktiebolaget Electrolux: *See—*
Hagqvist, Peter; Fonser, Per; and Dellby, Fredrik, 5,364,525, Cl. 210-190.000.
Sundman, Kurt, 5,363,665, Cl. 62-125.000.

Aktiengesellschaft Fur Geld-Und Kapitalanlagen: *See—*
Haeberli, Adrian, 5,363,887, Cl. 141-12.000.

Akzo N.V.: *See—*
Lewis, Gregory D.; Roberts, Roger G.; and Givens, Thomas B., 5,364,592, Cl. 422-63.000.

Al-Megren, Abdulaziz A. Device and method for installing a submerged water pump in an artesian well. 5,363,922, Cl. 166-380.000.

Albrecht, Brian: *See—*
Schempf, Hagen; and Albrecht, Brian, 5,363,935, Cl. 180-9.100.

Albrecht, Konrad: *See—*
Rochling, Hans; Kocur, Jean; and Albrecht, Konrad, 5,364,832, Cl. 504-272.000.

Albrisi, Bruno: *See—*
Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

Albus, Udo: *See—*
Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, 5,364,868, Cl. 514-331.000.

Alcan International Limited: *See—*
Tremblay, Francois; Turcotte, Gilles R.; Lavoie, Serge; Dube, Ghyslain; Tremblay, Sylvain P.; and Fortin, Jean-Yves, 5,364,443, Cl. 75-403.000.

Alcatel Canada Wire Inc.: *See—*
Robinette, Jean; Mark, Jack; and Laramee, Andre , 5,365,222, Cl. 340-677.000.

Alcatel Fibres Optiques: *See—*
Le Sergent, Christian, 5,364,429, Cl. 65-399.000.

Alcatel Italia S.p.A.: *See—*
Forti, Adriano; and Brambilla, Enrico, 5,364,136, Cl. 285-176.000.

Alcatel Network Systems, Inc.: *See—*
Noser, Francis G., 5,365,518, Cl. 370-58.100.
Weber, William F., 5,364,287, Cl. 439-358.000.

Alcatel, N.V.: *See—*
Peeters, Hugo J. P., 5,365,522, Cl. 370-60.100.

Alden, Donald L.; Gandionco, Isidro M.; Thornton, Troy L.; and Yambao, August R., to Advanced Cardiovascular Systems, Inc. Holding system for coiled intravascular products. 5,364,355, Cl. 604-96.000.

Alexander, John V.; Uchiyama, Jerome T.; and Penner, Arthur F., to Westinghouse Electric Corporation. Elastomeric passive tensioner for oil well risers. 5,363,920, Cl. 166-350.000.

Alexander, Kiplin C.: *See—*
Belin, Felix; Alexander, Kiplin C.; and James, David E., 5,363,812, Cl. 122-4.00D.

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Garry, Robert F., Jr.; Fermin, Cesar D.; and Alexander, Steve S., Jr., 5,364,757, Cl. 435-5.000.

Alfred Teves GmbH: *See—*
Thiel, Rudolf; Klimt, Ulrich; and Doell, Andreas, 5,363,944, Cl. 188-73.310.

Alfred-Wegener-Institut fur Polar- und Meeresforschung: *See—*
Rohardt, Gerd, 5,364,297, Cl. 441-23.000.

Alit, Ken J.: *See—*
Franzen, Paul H.; Alit, Ken J.; Michaud, Richard R.; Probstmeyer, Helmuth; and Tammone, Michael R., 5,364,335, Cl. 494-15.000.

Allain, Denis: *See—*
Rainaud, Guy; Allain, Denis; and Aubert, Henri, 5,363,527, Cl. 14-2.400.

Alland, Stephen W.: *See—*
Fagarasan, John T.; Alland, Stephen W.; and Jakaub, Ronald J., 5,365,236, Cl. 342-53.000.

Allard, Randall N.: *See—*
Hayes, S. Kyle; and Allard, Randall N., 5,364,397, Cl. 606-61.000.

Allen, Bernie; Azevedo, Aaron; Knoepke, Eckhard; Kimball, Neal F. X.; Blake, Philip L.; Hayes, John A.; Healy, John A.; and Edington, Christopher J., to Converse Inc. Shoe sole with a cushioning fluid filled bladder and a clip holding the bladder and providing enhanced lateral and medial stability. 5,363,570, Cl. 36-28.000.

Allen, David H.: *See—*
Snodgrass, Charles K.; Allen, David H.; Tuttle, John R.; Rotzoll, Robert R.; and Pax, George E., 5,365,551, Cl. 375-1.000.

Allen, Thomas P.: *See—*
Kilgore, Bruce J.; Allen, Thomas P.; and Auger, Perry W., 5,363,573, Cl. 36-131.000.

Allen, Tracy L. Device for storing photos. 5,363,963, Cl. 206-425.000.

Allergan, Inc.: *See—*
Zaleski, Edward R., 5,364,405, Cl. 606-107.000.

Alliant Techsystems, Inc.: *See—*
Miller, Paul L.; Stignani, Mark D.; and Wittmer, Gary G., 5,363,603, Cl. 451-40.000.

Allied Tube & Conduit Corporation: *See—*
Maitra, Kalyan K.; McInerney, Daniel G.; and Unger, Carl H., 5,364,661, Cl. 427-433.000.

AlliedSignal Inc.: *See—*
Eick, Christopher D.; Powers, Paul J.; and Williamson, John R., 5,364,231, Cl. 416-157.00R.
Hines, Marshall U., 5,365,210, Cl. 335-238.000.
Ramanan, V. R. V.; and Smith, Carl H., 5,364,477, Cl. 148-304.000.

Allison, Gerald R.: *See—*
Georges, Michael K.; Listigovers, Nancy A.; Drappel, Stephan V.; McDougall, Maria V.; and Allison, Gerald R., 5,364,723, Cl. 430-110.000.
Mahabadi, Hadi K.; Kao, Sheau V.; Allison, Gerald R.; Gerroir, Paul J.; Chang, Hui; and Hawkins, Michael S., 5,364,724, Cl. 430-110.000.

Alpha-Terapeutic GmbH: *See—*
Dittmann, Otto, 5,364,350, Cl. 604-89.000.

Alps Electric Co., Ltd.: *See—*
Hosogoe, Junichi; and Kimura, Kiyoshi, 5,365,605, Cl. 382-59.000.

Altamura, Maria; Francalanci, Franco; and Marchi, Marcello, to Farmitalia Carlo Erba S.r.l. Process for the preparation of penems. 5,364,768, Cl. 435-43.000.

Altura, Bella T.; and Altura, Burton M., to Research Foundation of the State University of New York. Ionized magnesium^{2+} concentrations in biological samples. 5,364,642, Cl. 426-74.000.

Altura, Burton M.: *See—*
Altura, Bella T.; and Altura, Burton M., 5,364,642, Cl. 426-74.000.

Alumax Extrusions, Inc.: *See—*
Basar, Ronald J.; and Benedyk, Joseph C., 5,363,628, Cl. 52-745.190.

Aluminium Pechiney: *See—*
Barrillon, Eric; Personnet, Pierre; and Bontron, Jean-Claude, 5,365,012, Cl. 588-248.000.

Alza Corporation: *See—*
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., 5,364,630, Cl. 424-449.000.

Amada Company, Ltd.: *See—*
Ogasawara, Kazui, 5,363,729, Cl. 83-389.000.

Amami, Kazuyoshi: *See—*
Kojima, Kiyoshi; Amami, Kazuyoshi; Ueda, Hiroshi; Furuyama, Shizuo; Hara, Yoshihiro; Hasegawa, Kyoichi; and Kawamata, Tadashi, 5,364,253, Cl. 425-78.000.

Amano Corporation: *See—*
Shishido, Osamu; Arai, Satoshi; Tomaru, Yuugo; and Nagayama, Eiji, 5,363,600, Cl. 451-397.000.

Amdahl Corporation: *See—*
Wu, Chun, 5,365,526, Cl. 371-16.500.

Amdurablea, Inc.: *See—*
Munk, Marvin R., 5,364,021, Cl. 229-157.000.

Amemiya, Satoshi, to Jatco Corporation. Control system for automotive automatic transmission. 5,364,317, Cl. 475-132.000.

America Direct (HK) Ltd.: *See—*
Chan, Wing K., 5,365,037, Cl. 219-222.000.

American Air Liquide: *See—*
Spencer, Kevin C., 5,364,777, Cl. 435-134.000.

American Cyanamid Company: *See—*
Burello, Marco P.; Stack, Jeffrey G.; and Cortes, David A., 5,364,968, Cl. 564-416.000.
Rego, Richard P., Jr.; and Bourque, Bernard J., 5,364,400, Cl. 606-72.000.

American Home Products Corporation: *See—*
Failli, Amedeo A.; Kreft, Anthony F., III; Musser, John H.; Banker, Annette L.; Nelson, James A.; Shah, Uresh S.; and Kubrak, Dennis M., 5,364,944, Cl. 548-341.100.

American Sterlizer Company: *See—*
Hillebrenner, H. William, 5,364,590, Cl. 422-28.000.

American Trading and Production Corporation: *See—*
Chan, Eric P., 5,363,974, Cl. 211-128.000.

Amoco Corporation: *See—*
Chappell, Joseph; Saunders, Court A.; Wolf, Fred R.; and Cuellar, Richard E., 5,365,017, Cl. 800-205.000.
Domeier, Linda A., 5,364,700, Cl. 428-394.000.
Radlowski, Cecelia A.; Hagen, Gary P.; Grimes, Lewis E.; and Tatterson, David F., 5,364,979, Cl. 568-697.000.

Ampex Systems Corporation: *See—*
Lubin, James K., 5,364,194, Cl. 384-493.000.

Amphenol Socapex: *See—*
Cottet, Jacques; and Servoz, Serge, 5,363,551, Cl. 29-837.000.

Amtech Systems, Inc.: *See—*
Rhieu, Ji H., 5,364,667, Cl. 427-582.000.

Amylin Pharmaceuticals, Inc.: *See—*
Cooper, Garth J. S.; and Leighton, Brendan, 5,364,841, Cl. 514-12.000.

Anada, Katsuya; and Yoshioka, Yukio, to Nippon Thompson Co., Ltd. Compact X-Y table assembly. 5,363,774, Cl. 108-143.000.

Analog Devices, Inc.: *See—*
Chau, Kevin H. L.; Saltmarsh, Michael P.; and Church, Deborah A., 5,364,497, Cl. 156-645.000.

Ander, Anthony T.; Adamczyk, Andrew A.; Hrovat, Davorin; and Chen, Lee-Fei, to Ford Motor Company. Vehicular wheel spin control techniques. 5,365,441, Cl. 364-426.030.

Anderson Barrows Metal Corporation: *See—*
Anderson, Neill E., 5,364,134, Cl. 285-38.000.
Anderson, Neill E., 5,364,135, Cl. 285-38.000.

Anderson, Byron E.: *See—*
Baumann, Michael A.; and Anderson, Byron E., 5,364,930, Cl. 530-326.000.

Anderson Chemical Company: *See—*
Brand, Shadley F., 5,363,865, Cl. 134-56.00R.

Anderson, Claudia M.: *See—*
Hartsock, Dale L.; Caverly, John C.; Schroeder, Fred G.; Anderson, Claudia M.; and Breuhan, Ronald G., 5,364,131, Cl. 285-23.000.

Anderson, Dallas W., to Premier Laser Systems, Inc. Method and apparatus for sealing and/or grasping luminal tissue. 5,364,389, Cl. 606-8.000.

Anderson, Duwayne R., to Tektronix, Inc. Locating the position of an event in acquired digital data at sub-sample spacing. 5,365,328, Cl. 356-73.100.

Anderson, Neill E., to Anderson Barrows Metal Corporation. End fitting for flexible conduit. 5,364,134, Cl. 285-38.000.

Anderson, Neill E., to Anderson-Barrows Metal Corporation. End fitting for flexible conduit. 5,364,135, Cl. 285-38.000.

Anderson, Oscar A.; Chan, Chun F.; and Leung, Ka-Ngo, to University of California, The Regents of the. Negative ion beam injection apparatus with magnetic shield and electron removal means. 5,365,070, Cl. 250-423.00R.

Anderson, Philip A.: *See—*
Christian, Jerry D.; and Anderson, Philip A., 5,364,603, Cl. 423-104.000.

Anderson, Victor G., to Pinnacle Brands, Inc. Method and apparatus for creating cylindrical three dimensional picture. 5,365,294, Cl. 354-112.000.

Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., to Sundstrand Corporation. Metal matrix composite semiconductor power switch assembly. 5,365,108, Cl. 257-678.000.

Ando, Kyoichi, to Canon Kabushiki Kaisha. Image recording device. 5,365,323, Cl. 355-321.000.

Ando, Takao: *See—*
Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.

Andreas Stihl: *See—*
Pretzsch, Peter; Kein, Michael; and Linsbauer, Peter, 5,363,815, Cl. 123-41.700.

Andreasen, Jon R. Ceiling wire tool. 5,363,525, Cl. 7-138.000.

Andrews, Bradley C., to Metal Processing Corporation. Method and apparatus for increasing furnace capacity. 5,364,266, Cl. 432-254.100.

Andrews, William J.; Ebner, Jerry R.; and Felthouse, Timothy R., to Huntsman Specialty Chemicals Corporation. Catalysis for the production of maleic anhydride containing vanadium-phosphorus oxide with selected promoter elements. 5,364,824, Cl. 502-209.000.

Andritz Sprout-Bauer, Inc.: *See—*
Prew, Stanley R., 5,364,038, Cl. 241-189.100.

Angeline, Barry D., to Tremco, Inc. Aqueous silane coupling agent solution for use as a sealant primer. 5,363,994, Cl. 222-529.000.

Angiulli, John M.; Ghose, Arun K.; Konian, Richard R.; Levine, Samuel R.; Meltzer, David; Wang, Wen-Yuan; and Wu, Leon L., to International Business Machines Corporation. CMOS voltage controlled ring oscillator. 5,365,204, Cl. 331-57.000.

Angott, Paul G.; Kilby, Gregory G.; and Xydis, Thomas G., to Dimango Products Corporation. Musical wireless alerting system. 5,365,214, Cl. 340-328.000.

Anico Co. Ltd.: *See—*
Lee, Bup-Jong, 5,364,599, Cl. 422-170.000.

Anselme, Christophe; and Baudin, Isabelle, to Lyonnaise Des Eaux - Dumez. Process and apparatus for treating waste liquids. 5,364,534, Cl. 210-650.000.

Anthon, John R.; Cox, James V.; and Sullivan, Scott L., to Great American Tool Company, Inc., The. Blade sharpener. 5,363,602, Cl. 451-540.000.

Anthony, Thomas R.; and Williams, Brad E., to General Electric Company. Diamond wire die. 5,363,687, Cl. 72-467.000.

Anthony, Thomas R.: *See—*
Banholzer, William F.; Anthony, Thomas R.; Gilmore, Robert S.; Siemers, Paul A.; and McCloskey, John C., 5,363,556, Cl. 29-890.142.

Anthony's Manufacturing Company, Inc.: *See—*
Richardson, Richard J.; and Crown, Charles F., 5,363,611, Cl. 312-116.000.

Anziano, Dominick J.: *See—*
Murray, Christopher K.; Beckvermit, Jeffrey T.; and Anziano, Dominick J., 5,364,947, Cl. 549-510.000.

Aochi, Tak; and Pyle, Robert J., to Lockheed Missiles & Space Company, Inc. Grid structures. 5,364,491, Cl. 156-446.000.

Aoki, Akira; Yasui, Takashi; Mizushima, Yoshihiro; and Fukushima, Mitsuru, to TACHI-S Co. Ltd. Structure of seat cushion frame in a vehicle seat. 5,364,167, Cl. 297-452.180.

Aoki, Hitoshi: *See—*
Wakabayashi, Hiroshi; Tsukakara, Daiki; Katano, Yuji; and Aoki, Hitoshi, 5,365,292, Cl. 354-76.000.

Aoki, Isao; Tabuchi, Takanori; and Minamida, Isao, to Takeda Chemical Industries, Ltd. 1,1,1-trichloro-2-nitroethane production. 5,364,989, Cl. 568-946.000.

Aoki, Kaoru: *See—*
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, 5,365,519, Cl. 370-60.000.

Aoki, Masakazu; Natori, Tatsuo; and Mori, Hidetomo, to Hitachi, Ltd. Oil-free screw compressor and method of manufacture. 5,364,250, Cl. 418-201.100.

Aoki, Michio: *See—*
Otake, Sugako; Kojima, Takeshi; Aoki, Michio; Mukasa, Eigo; and Hosaki, Kikuo, 5,364,544, Cl. 252-28.000.

Aoki, Shunji; and Hara, Yasuaki, to Shin-Etsu Chemical Co., Ltd. UV light-curable epoxy-functional organopolysiloxane/polyether composition release. 5,364,888, Cl. 522-31.000.

Aoki, Takatoshi: *See—*
Iwata, Takeshi; and Aoki, Takatoshi, 5,363,818, Cl. 123-90.160.

Aono, Kenji: *See—*
Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,262, Cl. 347-87.000.
Kitani, Masashi; Hattori, Yoshifumi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,260, Cl. 347-87.000.

Aotani, Yoshimasa: *See—*
Kondo, Shunichi; Umehara, Akira; Aotani, Yoshimasa; and Yamaoka, Tsuguo, 5,364,738, Cl. 430-283.000.

Aoyama, Akihiro; Kaneko, Hitoshi; Tajiri, Akira; Okamura, Iwao; and Tanaka, Yuzo, to Pioneer Electronic Corporation. Apparatus having video display and display-synchronizing motion mechanism. 5,364,270, Cl. 434-55.000.

Aoyama, Hirokazu: *See—*
Seki, Eiji; Aoyama, Hirokazu; Nakada, Tatsuo; and Koyama, Satoshi, 5,364,991, Cl. 570-175.000.

APEX Microtechnology Corporation: *See—*
Sands, William K., Jr., 5,365,194, Cl. 330-253.000.

Apitz, Siegfried, to Nokia Technology GmbH. Chassis with immovable attachment elements affixed thereto. 5,365,408, Cl. 361-807.000.

Apolet, Josef; Ballotta, Romano; and Cavallo, Giovanni, to D.D. S.R.L. Irrigation device for use in ear canals for therapeutic or hygienic purposes. 5,364,343, Cl. 604-43.000.

Appledorn, James B. Weighted golf putter. 5,364,102, Cl. 273-162.00R.

Applied Materials, Inc.: *See—*
Lorimer, D'Arcy H., 5,363,872, Cl. 137-1.000.

Appolonia, John; McCormick, Steve; and Boddaert, Robert, to BOC Group, Inc., The. Apparatus and process for chilling food products. 5,363,658, Cl. 62-63.000.

Arai, Katsuya; Tsukada, Toshikazu; and Tomizawa, Hirotaka, to Tonen Corporation. Lubricating oil composition containing friction modifier and corrosion inhibitor. 5,364,545, Cl. 252-32.70R.

Arai, Motohiro: *See—*
Nakamura, Takashi; Osumi, Kenji; Oga, Kiyomasa; Arai, Motohiro; Ikeda, Ryukichi; Yoshida, Eiji; Okada, Hirofumi; and Hamanaka, Ryusuke, 5,364,449, Cl. 75-650.000.

Arai, Satoshi: *See—*
Shishido, Osamu; Arai, Satoshi; Tomaru, Yuugo; and Nagayama, Eiji, 5,363,600, Cl. 451-397.000.

Arai, Yoshihisa: *See—*
Mizukami, Masamichi; Yui, Tomoyuki; Johno, Masahiro; Arai, Yoshihisa; and Mineta, Hiroshi, 5,364,560, Cl. 252-299.650.

Arakawa, Takeshi: *See—*
Asada, Hidenori; Arakawa, Takeshi; and Tsuji, Nobuyuki, 5,364,721, Cl. 430-109.000.

Araki, Morio: *See*—
Nobe, Kenichi; and Araki, Morio, 5,365,448, Cl. 364-449.000.

Archer Daniels Midland Company: *See*—
Poppe, George; Ciesielski, Denise; and Matlock, Mark, 5,364,465, Cl. 106-124.000.

Arco Chemical Technology: *See*—
Pazos, Jose F., 5,364,973, Cl. 568-620.000.

Arco Chemical Technology, L.P.: *See*—
Critchfield, Frank E.; Simroth, Donald W.; and Watson, Stuart L., 5,364,906, Cl. 525-53.000.
Guo, Shao H.; and Grey, Roger A., 5,364,909, Cl. 525-69.000.

Ariga, Hiroyoshi, to Daiichi Pharmaceutical Co., Ltd. Method for isolating a DNA encoding an autonomously replicating sequence. 5,364,761, Cl. 435-6.000.

Arima, Hideaki: *See*—
Ajika, Natsuo; Arima, Hideaki; Motonami, Kaoru; Hachisuka, Atsushi; and Okudaira, Tomonori, 5,364,811, Cl. 437-52.000.

Arima, Hideki: *See*—
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Camera system with zoom lens having presettable focal lengths. 5,365,297, Cl. 354-195.100.

Armato, Peter J., to Equine Textiles, Inc. Equine athletic boot with inflatable U-shaped bladder. 5,363,632, Cl. 54-82.000.

Armitage, David A.; and Peacock, John, to Roussel Uclaf. Dispensing method and apparatus. 5,363,888, Cl. 141-98.000.

Armstrong World Industries, Inc.: *See*—
Sauer, Gale E., 5,363,622, Cl. 52-506.070.

Arnoldy, Peter; and Kremers, Antoon P. M., to Shell Oil Company. Carbonylation process using palladium phosphine catalyst. 5,364,957, Cl. 560-207.000.

Arntz, Dietrich; Haas, Thomas; and Schafer-Sindlinger, Adolf, to Degussa Aktiengesellschaft. Process for the preparation of 1,3-propanediol by the hydrogenation of hydroxypropionaldehyde. 5,364,984, Cl. 568-862.000.

Arntz, Dietrich: *See*—
Haas, Thomas; and Arntz, Dietrich, 5,364,987, Cl. 568-866.000.

Arrendiell, Robert W.; and Ellis, Gwendolyn G. Cord clasp. 5,363,538, Cl. 24-499.000.

Arrigoni, Claudio: *See*—
Varasi, Mario; Heidempergher, Franco; Arrigoni, Claudio; and Caccia, Carla, 5,364,854, Cl. 514-230.200.

Arrondel, Veronique: *See*—
Weill, Jerome; Capogna, Laure; Arrondel, Veronique; and Boumendil, Jean-Jack, 5,365,005, Cl. 585-500.000.

Arslanian, Gregory K.: *See*—
Jacobs, Stephen W.; Arslanian, Gregory K.; Adams, Bruce M.; Ivankovits, John C.; and Bowe, Donald J., 5,364,007, Cl. 228-42.000.

Asaba, Tetsuo: *See*—
Kataoka, Yuzo; Ichise, Toshihiko; Ishizuka, Keiji; and Asaba, Tetsuo, 5,364,802, Cl. 437-31.000.

Asada, Hidenori; Arakawa, Takeshi; and Tsuji, Nobuyuki, to Mita Industrial Co., Ltd. Electrophotographic toner. 5,364,721, Cl. 430-109.000.

Asahara, Norimi; Hojo, Yasuo; and Ohtubo, Hideaki, to Toyota Jidosha Kabushiki Kaisha. Speed stage shifting of automatic transmission by reduction of servo oil pressure to slip limit stand-by pressure and subsequent decrements. 5,363,724, Cl. 477-143.000.

Asahara, Tomohiko: *See*—
Kuwabara, Masayoshi; Asahara, Tomohiko; Ujiie, Noboru; and Kagaminuma, Nobuhiro, 5,364,409, Cl. 606-148.000.

Asahi Glass Company Ltd.: *See*—
Ohgawara, Masao; and Tsubota, Hiroyoshi, 5,365,357, Cl. 359-67.000.
Shiina, Masaru, 5,365,242, Cl. 343-713.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Aikou, Kenichi; Suzuki, Eiichi; and Goto, Tugio, 5,363,765, Cl. 102-220.000.
Hata, Tadashige; and Ibe, Sadao, 5,364,900, Cl. 524-291.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Kawasaki, Masahiro; Naruo, Teruhiko; Ohsawa, Yutaka; and Hashimoto, Isamu, 5,365,350, Cl. 358-426.000.
Noguchi, Masato, 5,365,504, Cl. 369-44.410.
Shirai, Tomoyuki, 5,365,060, Cl. 250-231.160.
Takano, Masatoshi; and Hirano, Masakazu, 5,365,320, Cl. 355-282.000.
Tanaka, Hitoshi, 5,365,373, Cl. 359-601.000.

Asahina, Atsushi: *See*—
Yashida, Makoto; Kurome, Kanji; Asahina, Atsushi; Hanaoka, Yasuki; and Imose, Kazuo, 5,365,564, Cl. 378-55.000.

Asai, Hiromoto: *See*—
Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, 5,364,533, Cl. 210-645.000.

Asai, Kuniaki: *See*—
Satoji, Fuminori; Hashimoto, Shoichi; Asai, Kuniaki; and Kobayashi, Tadayasu, 5,364,670, Cl. 428-1.000.

Asai, Makoto; Suzuki, Hiroshi; and Ichikawa, Takako, to Nippon Soda Co., LTD. Clathrate compounds comprising tetrakisphenols as host. 5,364,977, Cl. 568-720.000.

Asano, Kenichi, to Mitsubitshi Denki Kabushiki Kaisha. Information source encoding apparatus. 5,365,271, Cl. 348-402.000.

Asano, Masamichi: *See*—
Taura, Tadayuki; Asano, Masamichi; Kanebako, Kazunori; and Iwahashi, Hiroshi, 5,364,805, Cl. 437-43.000.

Asano, Satoshi: *See*—
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.

Asano, Shoji: *See*—
Okada, Hiromasa; and Asano, Shoji, 5,364,694, Cl. 428-288.000.

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Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,364,666, Cl. 427-579.000.

Bedwell, William B.: *See—*
Calcaterra, Lidia T.; Koljack, Mathias P.; Farishta, Qamardin; Koehler, Michael G.; Bedwell, William B.; Hangey, Dale A.; and Green, George D., 5,364,541, Cl. 252-8.600.

Behe, Thomas J.: *See—*
Folkins, Jeffrey J.; Bray, Daniel M.; Fioravanti, Alex; Pietrowski, Kenneth W.; Lioy, Gerald T.; and Behe, Thomas J., 5,365,317, Cl. 355-225.000.

Belanger, Roger R. Satellite printing press. 5,363,762, Cl. 101-177.000.

Belin, Felix; Alexander, Kiplin C.; and James, David E., to Babcock & Wilcox Company, The. Method and apparatus for controlling the bed temperature in a circulating fluidized bed reactor. 5,363,812, Cl. 122-4.00D.

Bellak, Jerry K.; and Freidhoff, Joel B. Practice round having a projectile and an adapter with the same caliber as the projector and an appropriate propelling charge. 5,363,769, Cl. 102-446.000.

Bellos, Thomas J.; and Noelken, Gregory P., to Petrolite Corporation. Method of removing water soluble organics from oil process water. 5,364,532, Cl. 210-639.000.

Benedyk, Joseph C.: *See—*
Basar, Ronald J.; and Benedyk, Joseph C., 5,363,628, Cl. 52-745.190.

Benham, Elizabeth A.; and McDaniel, Max P., to Phillips Petroleum Company. Ethylene polymerization process. 5,364,915, Cl. 526-105.000.

Benita, Simon; and Levy, Menashe, to Yissum Research Development Company of the Hebrew University of Jerusalem. Medicinal emulsions. 5,364,632, Cl. 424-450.000.

Bennett, Herbert G. Three dimensional objects and methods of making the same. 5,364,017, Cl. 229-107.000.

Benoit, Joel M. D.; Bessenay, Gilles J. M.; and Girault, Daniel G., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Installation and method for heat treating parts made of a composite material having a ceramic matrix by using microwave energy. 5,365,042, Cl. 219-686.000.

Benoit, Terry J. Irrigation pump apparatus. 5,364,233, Cl. 417-231.000.

Benslay, Roger M.: *See—*
Hettinger, William P.; and Benslay, Roger M., 5,364,827, Cl. 502-338.000.

Benteler Industries, Inc.: *See—*
Wells, Gary L.; Rigsby, Donald R.; and Dehlinger, James R., 5,363,544, Cl. 29-523.000.

Benward, Robert S., to Parker Hannifin Corporation. Electronic display with high spatial resolution pointer. 5,365,249, Cl. 345-50.000.

Benz, Roger E.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; and Crowley-Dierks, Joel R., 5,365,569, Cl. 379-57.000.

Beretta, Mario. Method for setting dyes on fabrics, by a two-step process, and system therefor. 5,364,411, Cl. 8-476.000.

Berg, Paul A.: *See—*
Adamski, Maximilian, Jr.; and Berg, Paul A., 5,363,784, Cl. 112-121.120.

Bergen, Gary R.; and Ghostley, Thomas J., to Kwikset Corporation. Door latch assembly. 5,364,139, Cl. 292-169.000.

Bergen, Ronald L.: *See—*
Horner, Robert W.; Cai, Kheim V.; Bergen, Ronald L.; and Lane, Keith A., 5,365,592, Cl. 381-46.000.

Berger, Horst, to Mepla-Werke Lautenschlager GmbH & Co. KG. Drawer side wall formed of an upper double-walled profile section and a bottom profile section inserted into the open bottom of the upper profile section. 5,364,180, Cl. 312-334.140.

Berger, Rupert: *See—*
Gruber, Rudolf; Berger, Rupert; Enkner, Bernhard; and Losbichler, Gerhard, 5,364,079, Cl. 266-246.000.

Bergeron, Raymond J., Jr., to University of Florida. Analogs of desferrioxamine B and method for synthesis thereof. 5,364,965, Cl. 562-623.000.

Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., to Genencor International Inc. Heterologous polypeptides expressed in aspergillus. 5,364,770, Cl. 435-69.100.

Berkman, John W.: *See—*
Beuchat, Charles E.; Etherington, Roger; Walbrink, Harold J.; and Berkman, John W., 5,364,342, Cl. 604-30.000.

Bernardi, Richard B.: *See—*
Hall, Anne L.; and Bernardi, Richard B., 5,363,851, Cl. 128-661.090.

Berry, Donald P., Sr. Device for supplying food to a person while avoiding choking. 5,364,348, Cl. 604-77.000.

Besemann, Alfred, to E.C.H. Will GmbH. Apparatus for manipulating sheets or webs of paper. 5,363,730, Cl. 83-425.300.

Bessenay, Gilles J. M.: *See—*
Benoit, Joel M. D.; Bessenay, Gilles J. M.; and Girault, Daniel G., 5,365,042, Cl. 219-686.000.

Best, Willie H., to Thermal Engineering Corp. Self incinerating oven and process carried out thereby. 5,363,567, Cl. 34-271.000.

Bethurum, Gary C., to ITT Corporation. Cable harness assembly for IC card. 5,364,292, Cl. 439-610.000.

Betti, Giorgio: *See—*
Zuffada, Maurizio; Vai, Gianfranco; Gregori, Marco; Moloney, David; and Betti, Giorgio, 5,365,193, Cl. 330-253.000.

Betz, Dieter; Nuebel, Karl-Heinz; Grewe, Werner; and Balcarek, Oskar, to Robert Bosch GmbH. Fastening arrangement for connections at ignition coils for motor vehicles. 5,364,279, Cl. 439-76.000.

Betz, Gerhard, to Thyssen Guss AG. Steel mold especially for permanent mold casting of metal. 5,363,900, Cl. 164-348.000.

Beuchat, Charles E.; Etherington, Roger; Walbrink, Harold J.; and Berkman, John W., to Nestle S.A. Microsurgical cassette. 5,364,342, Cl. 604-30.000.

Beuck, Martin: *See—*
Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubsch, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.

BHS-Bayerische Berg-Hutten-und Salzwerke AG: *See—*
Heidrich, Guenther; and Muller, Siegfried, 5,364,309, Cl. 464-99.000.

Bialik, David: *See—*
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Bianco, Mark E.; and Mayhew, Gregory L., to Hughes Aircraft Company. High speed encryption system and method. 5,365,588, Cl. 380-42.000.

Bice, Danford L.: *See—*
Stultz, Jeffrey H.; and Bice, Danford L., 5,364,538, Cl. 210-750.000.

Bicheler, James P.: *See—*
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,363,521, Cl. 5-99.100.

Bickel, Martin; Brocks, Dietrich; Burghard, Harald; Gunzier, Volkmar; and Henke, Stephan, to Hoechst Aktiengesellschaft. Pyridine-2,4- and dicarboxylic acid derivatives, the use thereof and pharmaceutical composition based on these compounds. 5,364,873, Cl. 514-354.000.

Bieck, Torsten; Kaupp, Eduard; Stephan, Christoph, deceased (by Stephan, Dorothea, heir); Stephan, Otto, heir; and Stephan, Isle, heir, to fischerwerke, Artur Fischer GmbH & Co. KG. Device for storing magnetic tape cassettes. 5,363,961, Cl. 206-387.000.

Biencourt, Michael P.: *See—*
Cardellini, David A.; Biencourt, Michael P.; Taylor, Jeffrey P.; Haeber, John A.; and DeVires, John A., 5,363,696, Cl. 73-61.440.

Biezen, Paul W. A. C.: *See—*
De Haan, Gerard; Huijgen, Hendrik; Biezen, Paul W. A. C.; and Ojo, Olukayode A., 5,365,280, Cl. 348-699.000.

Bigelow, George, to Nor-Wol Products, Inc. Electric cheese grater with spring-loaded cheese compartment. 5,364,037, Cl. 241-93.000.

Bigelow, Louis K.; Csillag, Frank J.; and Hoggins, James T., to Norton Company. Method for making diamond grit and abrasive media. 5,364,423, Cl. 51-293.000.

Bigg, Denis; Vidaluc, Jean-Louis; and Calmel, Francis, to Pierre Fabre Medicament. 1,4-disubstituted piperidines, their preparation and their application in therapy. 5,364,864, Cl. 514-318.000.

Bignami, Gary S.; and Grothaus, Paul G., to Hawaii Biotechnology Group, Inc. Process for affinity purification by immunoadsorption in non-aqueous solvent. 5,364,531, Cl. 210-635.000.

Bikson, Benjamin; and Nelson, Joyce K., to Praxair Technology, Inc. Fluid separation composite membranes prepared from sulfonated aromatic polymers in lithium salt form. 5,364,454, Cl. 95-45.000.

Bilanx Technology, Inc.: *See—*
Savage, Donald V., 5,365,059, Cl. 250-231.100.

Bilgrien, Carl J.; Lutz, Michael A.; and Nguyen, Binh T., to Dow Corning Corporation. Curable compositions containing an anaerobically inactive hydrosilation catalyst and method for preparing said compositions. 5,364,922, Cl. 528-15.000.

Billig, Ernst: *See—*
Babin, James E.; Maher, John M.; and Billig, Ernst, 5,364,950, Cl. 556-2.000.

Bina, David R.: *See—*
Page, L. Jerry; Bina, David R.; Lynch, Daniel R.; and Otten, William G., 5,365,337, Cl. 356-350.000.

Binney & Smith, Inc.: *See—*
Miller, Richard E.; and Mariano, Karen, 5,364,892, Cl. 523-218.000.

Biotechnology Australia Pty. Ltd: *See—*
Burger, Henry G.; de Kretser, David M.; Findlay, John K.; Morgan, Francis J.; Hearn, Milton T. W.; Milne-Robertson, David M.; and Forage, Robert G., 5,364,837, Cl. 514-8.000.

Birkhan, Horst; Kohle, Hans-Juergen; Welgand, Joachim; and Wehner, Winfried, to Rewo Chemische Werke GmbH. Fabric softener rinsing agents. 5,364,542, Cl. 252-8.800.

Bissett, Donald L.: *See—*
Bush, Rodney D.; Bissett, Donald L.; and Chatterjee, Ranjit, 5,364,617, Cl. 424-59.000.

Bissex, Karl A., to DMS, Inc. Mobile metering storage apparatus. 5,364,223, Cl. 414-526.000.

Bjorck, Bengt; and Carlsson, Lars, to Tetra Laval Holdings & Finance SA. Opening arrangement. 5,364,019, Cl. 229-125.090.

Bjornestol, Karl O.; Malmo, Jan T.; Strom, Yngve; and Vikhagen, Eiolf, to Elkem Technology a/s. Method for detecting pinholes in continuously cast billets. 5,363,901, Cl. 164-451.000.

Black Gold Corporation: *See—*
Briggs, Eugene C., 5,363,836, Cl. 126-109.000.

Blackburn, Douglas H.: *See—*
Dexter, James L.; Cooper, David G.; Blackburn, Douglas H.; Cranmer, David C.; and Kauffman, Dale A., 5,364,819, Cl. 501-45.000.

Blackburn, Linda M. Surgical pillow with removable weight. 5,363,523, Cl. 5-630.000.

Blackwell, Steven R.; and Fanning, Michael D., to Universal Data Systems, Inc. MODEM-channel bank converter. 5,365,545, Cl. 375-8.000.

Blackwood, John J.; Inbar, Shai; and Patzke, James V., to PB Diagnostics Systems, Inc. Diagnostic assay system. 5,364,796, Cl. 436-500.000.

Blaettner, Harald E.: *See—*
Hann, John C.; and Blaettner, Harald E., 5,365,132, Cl. 310-58.000.

Blake, Philip L.: *See—*
Allen, Bernie; Azevedo, Aaron; Knoepke, Eckhard; Kimball, Neal F. X.; Blake, Philip L.; Hayes, John A.; Healy, John A.; and Edington, Christopher J., 5,363,570, Cl. 36-28.000.

Blakeslee, Robert; and Kulik, Thad. Apparatus and method for producing a frequency based visual effect. 5,365,149, Cl. 315-200.00A.

Blankenburg, Karl. Pressurized flushing toilet. 5,363,513, Cl. 4-354.000.

Blenk, Gerhard; and Zeh, Meinrad, to Horst Blaser Jagdwaffenfabrik. Firing mechanism for a rifle. 5,363,581, Cl. 42-69.020.

Block, George: *See—*
Russo, Kenneth J.; and Block, George, 5,364,200, Cl. 402-79.000.

Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, The: *See—*
Johnson, Kenneth M.; and Sieburth, John M., 5,364,594, Cl. 422-90.000.

Board of Regents, The University of Texas System: *See—*
Robillard, Jean J., 5,364,739, Cl. 430-292.000.
Walaszek, Zbigniew; Slaga, Thomas J.; and Hanausek, Margaret, 5,364,644, Cl. 514-574.000.

Boattini, Pier P.; D'Angio', Carlo; and Paudice, Ciro, to Societe Italiana Vetro-SIV-S.p.A. Process for the manufacture of decorated sheets of laminated safety glass. 5,364,479, Cl. 156-100.000.

BOC Group, Inc., The: *See—*
Appolonia, John; McCormick, Steve; and Boddaert, Robert, 5,363,658, Cl. 62-63.000.
Feits, John T.; Chatham, Hood, III; Countrywood, Joseph; and Nelson, Robert J., 5,364,665, Cl. 427-571.000.
Naumovitz, Joseph P., 5,363,657, Cl. 62-39.000.
Ramachandran, Ramakrishnan; and Dao, Loc H., 5,365,011, Cl. 585-829.000.

Boddaert, Robert: *See—*
Appolonia, John; McCormick, Steve; and Boddaert, Robert, 5,363,658, Cl. 62-63.000.

Bode-Greuel, Kerstin, to Troponwerke GmbH & Co KG. Combination having a neuroprotective effect. 5,364,857, Cl. 514-259.000.

Bodilsen Holding A/S: *See—*
Jeppesen, Anders E. H., 5,364,658, Cl. 427-209.000.

Bodycoat, Peter R.; and DiNola, Louis P., to United States of America, Navy. Hydraulic cylinder assembly for use in variable external pressure environments. 5,363,650, Cl. 60-325.000.

Boehm, Michael W.; and Johnson, Robert W., to Tsann Kuen USA, Inc. Electrical cooker. 5,363,748, Cl. 99-372.000.

Boeing Company, The: *See—*
Boyd, Jerry L.; and Cameron, Kenneth C., Sr., 5,363,543, Cl. 29-464.000.
Ross, Richard G.; and Gannon, George T., 5,364,083, Cl. 269-21.000.

Boesten, Michael W. M.: *See—*
Rouhof, Hendrikus J. H.; Van Dortmont, Godefridus M.; and Boesten, Michael W. M., 5,364,609, Cl. 423-387.000.

Boettiger, Walter W., Jr. Exercise device. 5,364,324, Cl. 482-46.000.

Boitiaux, Jean-Paul: *See—*
Sarrazin, Patrick; and Boitiaux, Jean-Paul, 5,364,998, Cl. 585-259.000.

Bolanos, Henry: *See—*
Green, David T.; Bolanos, Henry; Young, Wayne; DeFonzo, Stephan A.; McGarry, Richard A.; and Mastri, Dominick L., 5,364,002, Cl. 227-177.000.

Bolcsak, Lois E.: *See—*
Janoff, Andrew S.; Boni, Lawrence; Minchey, Sharma R.; Bolcsak, Lois E.; and Weiss, Steven J., 5,364,631, Cl. 424-450.000.

Boles, Raymond L.; Knox, Benjamin H.; and Noe, James B., to Du Pont de Nemours, E. I., and Company. Mixed filament yarn of polyester filaments and nylon filaments. 5,364,701, Cl. 428-373.000.

Bolin, James A., to I.M.T.E.C. Enterprises, Inc. Glassware forming machine with spring-biased plenum. 5,364,437, Cl. 65-265.000.

Boll, Wolf; and Fedeler, Axel, to Mercedes-Benz AG. Driving method and arrangement with epicyclic gearbox having a centrifugal brake and ABS for motor vehicle axles. 5,364,319, Cl. 475-224.000.

Bollinger, Lynn D.; Power, Michael P.; Poole, Richard R.; and Gardopee, George J., to Hughes Aircraft Company. Highly durable noncontaminating surround materials for plasma etching. 5,364,496, Cl. 156-643.000.

Bona, Gregory T.: *See—*
Lentsch, Steven E.; Keller, Cynthia A.; Bona, Gregory T.; and Man, Victor F., 5,364,551, Cl. 252-156.000.

Bondurant, Robert A.: *See—*
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Bonek, Ernst: *See—*
Rasinger, Josef; Scholtz, Arpad-Luwdig; and Bonek, Ernst, 5,365,246, Cl. 343-702.000.

Bonelli, Enrico: *See—*
Mascitelli, Francesco; Bonelli, Enrico; and Donato, Berardinucci, 5,363,993, Cl. 222-321.000.

Bones, Chad: *See—*
Hollis, Jeffrey C.; Bones, Chad; and York, Troy M., 5,364,090, Cl. 271-216.000.

Boni, Lawrence: *See—*
Janoff, Andrew S.; Boni, Lawrence; Minchey, Sharma R.; Bolcsak, Lois E.; and Weiss, Steven J., 5,364,631, Cl. 424-450.000.

Bonse, Bernhard, to Robert Bosch GmbH. Fuel injection device for internal combustion engines. 5,363,824, Cl. 123-506.000.

Bonser, Steven M.: *See—*
Wilson, John C.; Bonser, Steven M.; and Jadwin, Thomas A., 5,364,725, Cl. 430-110.000.

Bonsignore, Stefanio: *See—*
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Bontron, Jean-Claude: *See—*
Barrillon, Eric; Personnet, Pierre; and Bontron, Jean-Claude, 5,365,012, Cl. 588-248.000.

Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., to Eli Lilly and Company. 6-heterocyclic-4-amino-1,3,4,5-tetrahydrobenz[CD]indoles. 5,364,856, Cl. 514-253.000.

Boos, J. Brad; and Kruppa, Walter, to United States of America, Navy. Fabrication method for III-V heterostructure field-effect transistors. 5,364,816, Cl. 437-133.000.

Bordeau, Kenneth J.: *See—*
Strupczewski, Joseph T.; Helsley, Grover C.; Chiang, Yulin; Bordeau, Kenneth J.; and Glamkowski, Edward J., 5,364,866, Cl. 514-321.000.

Borden, Inc.: *See—*
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Bormann, Thomas J.: *See—*
Matkovich, Vlado I.; Bormann, Thomas J.; Gsell, Thomas C.; and Pascale, Frank R., 5,364,526, Cl. 210-206.000.

Born, Jean-Jacques, to Asulab S.A. Silent electromagnetic alarm. 5,365,497, Cl. 368-230.000.

Borowy, William J. Air heater seals. 5,363,906, Cl. 165-9.000.

Borras, Jaime A.; and Penunuri, David, to Motorola, Inc. Multi-bandwidth saw filter. 5,365,207, Cl. 333-196.000.

Boskamp, Eddy B.: *See—*
Chowdhury, Sruba; and Boskamp, Eddy B., 5,363,845, Cl. 128-653.500.

Bosna, Alexander A.; and Riccio, Louis M. Abradable non-metallic seal for rotating turbine engine. 5,364,543, Cl. 252-12.200.

Botsolas, Carol M.: *See—*
Botsolas, Christos J., 5,363,517, Cl. 4-661.000.

Botsolas, Christos J., to Botsolas, Carol M. Protective covers for P-shaped traps and for water supply valves. 5,363,517, Cl. 4-661.000.

Botti, Edoardo; and Brasca, Guido, to SGS-Thomson Microelectronics S.r.l. Self-configurable, dual bridge, power amplifier. 5,365,188, Cl. 330-51.000.

Bottka, Nicholas, to United States of America, Navy. Micro photoreflectance semiconductor wafer analyzer. 5,365,334, Cl. 356-326.000.

Boubelik, Mark J. Emergency cellular telephone apparatus. 5,365,570, Cl. 379-59.000.

Boudreau, Robert J.: *See—*
Cunard, Joel C.; Boudreau, Robert J.; and Ziegler, William H., Jr., 5,364,312, Cl. 472-118.000.

Boumendil, Jean-Jack: *See—*
Weill, Jerome; Capogna, Laure; Arrondel, Veronique; and Boumendil, Jean-Jack, 5,365,005, Cl. 585-500.000.

Bourbon, Godelieve: *See—*
Knight, Ann E.; and Bourbon, Godelieve, 5,364,897, Cl. 524-457.000.

Bourgeois, Ivan: *See—*
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Bourque, Bernard J.: *See—*
Rego, Richard P., Jr.; and Bourque, Bernard J., 5,364,400, Cl. 606-72.000.

Bowe, Donald J.: *See—*
Jacobs, Stephen W.; Arslanian, Gregory K.; Adams, Bruce M.; Ivankovits, John C.; and Bowe, Donald J., 5,364,007, Cl. 228-42.000.

Bowen, David, Jr.; and Smith, Gerald L., to Scapa Group, PLC. Heat set spiral link fabric with modified stuffer yarns. 5,364,692, Cl. 428-222.000.

Bowling, John M.: *See—*
Tibbetts, Clark; and Bowling, John M., 5,365,455, Cl. 364-497.000.

Boyd, Douglas E.: *See—*
Atterbury, William G.; and Boyd, Douglas E., 5,363,673, Cl. 62-323.100.

Boyd, Jerry L.; and Cameron, Kenneth C., Sr., to Boeing Company, The. Method of aligning two bushings in a bore. 5,363,543, Cl. 29-464.000.

Boyle, Joseph P.: *See—*
Uppal, Ashok; Murphy, William J.; and Boyle, Joseph P., 5,365,009, Cl. 585-722.000.

Boyles, Bradley S.: *See—*
Donovan, Kyle P.; and Boyles, Bradley S., 5,364,060, Cl. 248-588.000.

Bozovic, Ivan: *See—*
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BP Chemicals Limited: *See—*
Carey, John L., 5,364,822, Cl. 502-24.000.
Kirkwood, Kenneth C.; Leng, Stephen A.; and Sims, David W., 5,364,995, Cl. 585-241.000.

Brada, Guy A.: *See—*
Finkl, Charles W.; Brada, Guy A.; and Underys, Algirdas A., 5,364,588, Cl. 420-67.000.

Bradford, Gary R., to North Atlantic Equipment Sales, Inc. High heat microwave oven system with temperature sensor. 5,365,043, Cl. 219-710.000.

Bradley, Greg A.: *See—*
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; and Bradley, Greg A., 5,363,667, Cl. 62-131.000.

Bradtmueller, Lynn E.; Wiedemann, Gustave F.; Pierre, David M.; and Smitley, Ronnie G., to General Electric Company. Apparatus for making armatures for electrodynamic machines. 5,363,546, Cl. 29-564.100.

Brambilla, Alberto, to Clark-Hurth Components S.p.A. Power distributor unit particularly for agricultural, industrial and similar machine. 5,364,316, Cl. 475-80.000.

Brambilla, Enrico: *See—*
Forti, Adriano; and Brambilla, Enrico, 5,364,136, Cl. 285-176.000.

Brame, Charles P., to Ericsson GE Mobile Communications Inc. System for providing access to digitally encoded communications in a distributed switching network. 5,365,590, Cl. 380-49.000.

Bramson, Michael D., to United States of America, Navy. Wavelength sensor for fiber optic gyroscope. 5,365,338, Cl. 356-350.000.

Branch, Gary E. Tubeless tire demounting tools. 5,363,897, Cl. 157-1.300.

Brand, Shadley F., to Anderson Chemical Company. Vehicle washing machine. 5,363,865, Cl. 134-56.00R.

Brandell, John T.: *See—*
Streich, Steven G.; Brandell, John T.; Szarka, David D.; and Sullaway, Bobby L., 5,364,110, Cl. 277-115.000.

Brandon, Fred J.; Lampson, Miles L.; and Grace, Fred I., to United States of America, Army. Remjet powered, armor piercing, high explosive projectile. 5,363,766, Cl. 102-374.000.

Brandorff, Alexander; and Smith, Steven L., to United Parcel Service of America, Inc. Robotic gripper for handling objects of various sizes. 5,364,146, Cl. 294-86.400.

Brandstetter, Hermann: *See—*
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; Thiele, Hartmut; and Liepold, August, 5,363,962, Cl. 206-394.000.

Brantingham, George L.: *See—*
Herman, Susan J.; Wallace, Richard H.; Stella, Michel; and Brantingham, George L., 5,364,272, Cl. 434-159.000.

Brasca, Guido: *See—*
Botti, Edoardo; and Brasca, Guido, 5,365,188, Cl. 330-51.000.

Braswell, Bill L.: *See—*
Brocker, Thomas A.; Furqueron, W. Jesse; and Braswell, Bill L., 5,365,606, Cl. 395-650.000.

Braun, Phillip M.; and Simonelli, David J., to Stanley-Bostitch, Inc. Fastener feeder having vibratory brush. 5,363,999, Cl. 227-119.000.

Braunhardt, Klaus A.: *See—*
Soots, Daniel L.; and Braunhardt, Klaus A., 5,364,306, Cl. 460-68.000.

Bray, Daniel M.: *See—*
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Breitfeller, James: *See—*
Lauff, John; Breitfeller, James; Steele, D. Bernie; and Coogan, Louise, 5,364,786, Cl. 435-252.200.

Brenner, Lothar: *See—*
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Breuhan, Ronald G.: *See—*
Hartsock, Dale L.; Caverly, John C.; Schroeder, Fred G.; Anderson, Claudia M.; and Breuhan, Ronald G., 5,364,131, Cl. 285-23.000.

Brewer, Christine G. Panties and a method of fabricating the same. 5,363,511, Cl. 2-406.000.

Brickner, Louis C.: *See—*
Baird, Charles J.; Wixey, Barry D.; and Brickner, Louis C., 5,363,733, Cl. 83-786.000.

Briet, Richard. Lightning protection system. 5,365,398, Cl. 361-117.000.

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Hori, Masayuki; and Uyama, Yoshiyuki, 5,363,783, Cl. 112-121.110.

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Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., 5,364,380, Cl. 604-359.000.

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Theurer, Josef; and Brunninger, Manfred, 5,364,221, Cl. 414-339.000.

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Burkholder, Roy A.; and Gretzky, Anthony J., 5,364,314, Cl. 473-94.000.

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Maughan, Stuart; and Bryner, Earl, 5,365,388, Cl. 360-99.040.

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Capy, Gilbert; and Buchberg, Akiva, 5,364,016, Cl. 229-87.030.

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Pierret, Peter G.; Werbowsky, Laurie L.; Buchholz, A. Bruce; and Goodnough, Glenn D., 5,363,904, Cl. 165-2.000.

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Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, 5,365,270, Cl. 348-311.000.

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Kim, Sang H.; Adin, Anthony; Beal, Richard E.; Budz, Jerzy A.; Lam, Wai K.; and Whitson, Mark A., 5,364,754, Cl. 430-569.000.

Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., to TRW Inc. Tilt-telescope steering column. 5,363,716, Cl. 74-493.000.

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Chefalo, Patrick M.; Naujokas, Andrius A.; Popham, Stephen M.; DiStefano, Gary M.; and Buesing, Robert J., 5,364,500, Cl. 159-49.000.

Buess, Michael L.; Garroway, Allen N.; and Yesinowski, James P., to United States of America, Navy. Removing the effects of acoustic ringing and reducing temperature effects in the detection of explosives by NQR. 5,365,171, Cl. 324-307.000.

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Buican, Tudor N.; and Carlson, Kevin M., to Cell Robotics, Inc. Method for the manufacture of an optical manipulation chamber. 5,364,744, Cl. 430-321.000.

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Kroon, Johannes A.; and Buijs, Wim, 5,364,978, Cl. 568-801.000.

Bujalski, Duane R.; Zank, Gregg A.; and Barnard, Thomas D., to Dow Corning Corporation. Method of crosslinking polysilazane polymers. 5,364,920, Cl. 528-5.000.

Bukowski, James A.: *See*—
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Hazard, Michel, 5,365,466, Cl. 364-717.000.

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Baitz, Gunter; and Burchart, Joachim, 5,364,196, Cl. 400-691.000.

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Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, 5,364,749, Cl. 430-507.000.

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Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,364,666, Cl. 427-579.000.

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Brown, Louis R.; Steffens, Charles E., Jr.; Vos, Thomas H.; and Burley, Edward J., 5,364,125, Cl. 280-730.00A.

Burnett, Gilbert W.; and Holland, Robert B., to Dust Free, Inc. Adjustable air filtering device. 5,364,458, Cl. 96-55.000.

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Burrell, Michael M.; and Coates, Stephen A., to Advanced Technologies (Cambridge) Limited. Modification of starch production. 5,365,016, Cl. 800-205.000.

Burris Company: *See*—
McCarty, John P., 5,363,559, Cl. 33-246.000.

Burroughs Wellcome Co.: *See*—
King, Ann C., 5,364,843, Cl. 514-15.000.

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Burysek, Frantisek: *See*—
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Drzewiecki, Gary M.; Butterfield, Robert D.; and Ciaccio, Edward J., 5,363,855, Cl. 128-672.000.

Butts, Becky. Toilet training device for children. 5,363,516, Cl. 4-661.000.

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Flint, W. Toriran; and Byers, Joseph L., 5,364,683, Cl. 428-141.000.

Byrom, David, to Zeneca Limited. Copolymer production. 5,364,778, Cl. 435-135.000.

C.A. Lawton Company: *See*—
Buckley, Daniel T.; and Horn, Siegfried W., 5,364,258, Cl. 425-501.000.

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Schapira, Joseph; Cheminaud, Jean-Claude; Petitbon, Pascal; and Imbert, Dominique, 5,364,440, Cl. 71-64.120.

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Morimoto, Keizin; Tsujimoto, Masanobu; Yaji, Tomomi; and Murakami, Tooru, 5,364,460, Cl. 106-1.230.

Cable Service Technologies, Inc.: *See*—
Schmelzer, Richard A.; and Lambert, Trevor, 5,365,263, Cl. 348-9.000.

Caccia, Carla: *See*—
Varasi, Mario; Heidempergher, Franco; Arrigoni, Claudio; and Caccia, Carla, 5,364,854, Cl. 514-230.200.

Cadman, Gary R., to Scully Signal Company. High efficiency intrinsically safe power supply. 5,365,420, Cl. 363-50.000.

Cage, Jeffrey B.: *See*—
Lyon, Douglas J.; Jensen, Stefan S.; Cage, Jeffrey B.; and Niblock, Robert R., 5,363,659, Cl. 62-71.000.

Cai, Kheim V.: *See*—
Horner, Robert W.; Cai, Kheim V.; Bergen, Ronald L.; and Lane, Keith A., 5,365,592, Cl. 381-46.000.

Cai, Rubing; and Yokoyama, Thomas W., to Sherwin-Williams Company, The. Anhydride-functional monomers and polymers and reactive compositions prepared from same. 5,364,945, Cl. 549-253.000.

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Sarkar, Arnab, 5,364,430, Cl. 65-416.000.

Calcaterra, Lidia T.; Koljack, Mathias P.; Farishta, Qamardin; Koehler, Michael G.; Bedwell, William B.; Hangey, Dale A.; and Green, George D. Method to impart coffee stain resistance to polyamide textile substrates. 5,364,541, Cl. 252-8.600.

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Janesick, James R., 5,365,092, Cl. 257-232.000.
VanZandt, Thomas R.; Kaiser, William J.; Kenny, Thomas W.; and Crisp, David, 5,364,185, Cl. 374-28.000.

Callahan, Stephen A., to McDonnell Douglas Helicopter Co. Hybrid resistance cards and methods for manufacturing same. 5,364,705, Cl. 428-601.000.

Callaway, Jerry, to Panamax, Inc. Fuse block protector. 5,365,395, Cl. 361-56.000.

Callender, Alan B.; and Bondurant, Robert A., to United Technologies Corporation. Quadrature phase processing. 5,365,184, Cl. 327-2.000.

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Bigg, Denis; Vidaluc, Jean-Louis; and Calmel, Francis, 5,364,864, Cl. 514-318.000.

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Marega, Antonello; Giuseppe, Goggia; and Marco, Breda, 5,363,572, Cl. 36-121.000.

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Cameron, Kenneth C., Sr.: *See*—
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Camp, William P., Jr.: *See*—
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Campbell, Dale E.: *See*—
Lacuna, Ricardo F.; Curry, Gaylan J.; and Campbell, Dale E., 5,363,950, Cl. 198-382.000.

Campbell, John E.; Chan, Michael J.; Hajek, Steven F.; and Wiltgen, Paul L., to International Business Machines Corporation. Self modifying access code for altering capabilities. 5,365,587, Cl. 380-25.000.

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Canada, Her Majesty the Queen in Right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See*—
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Cannon, Gregory L.; Macko, William J.; Fuller, Gregory W.; and Theobald, Jill L., to Motorola, Inc. Method and apparatus for transmitting status information from a selective call receiver to an external electronic device. 5,365,227, Cl. 340-825.550.

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Fennell, Robert D.; Cannon, Gregory L.; Macko, William J.; and Fuller, Gregory W., 5,365,221, Cl. 340-636.000.

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Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., 5,365,464, Cl. 364-580.000.

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Ayata, Naoki; Yamamura, Mitsugu; Hamasaki, Bunei; Kosugi, Masao; Takahashi, Kazuo; and Seki, Mitsuaki, 5,365,342, Cl. 356-401.000.
Ebinuma, Ryuichi; Mizusawa, Nobutoshi; Suzuki, Masayuki; Uno, Shinichirou; Mori, Tetsuzo; and Kurosawa, Hiroshi, 5,365,561, Cl. 378-34.000.

Gu, Sono; and Nagao, Yoshinori, 5,365,324, Cl. 355-326.00R.

Hamada, Tatsuo; and Adachi, Nobukazu, 5,365,322, Cl. 355-316.000.

Hasegawa, Masahide, 5,365,390, Cl. 360-107.000.

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Itoh, Yoshinori, 5,365,376, Cl. 359-686.000.

Kanemitsu, Shinji; Onoda, Shigeyoshi; Okuma, Keiko; and Nakai, Hiroshi, 5,364,195, Cl. 347-4.000.

Kanoto, Masanobu; and Suzuki, Yasuo, 5,365,259, Cl. 346-108.000.

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Koshimizu, Masato; and Yamanaka, Yuji, 5,365,321, Cl. 355-285.000.

Maruyama, Hiroyoshi; Dantonia, Luigi; and Giacometto, Felice, 5,364,088, Cl. 271-164.000.

Masuda, Takashi, 5,365,286, Cl. 351-204.000.

Miyabayashi, Toshiyuki, 5,364,697, Cl. 428-323.000.

Motoyama, Hajime; Kimizuka, Junichi; Gima, Takeji; and Nakamura, Akihiro, 5,365,316, Cl. 355-219.000.

Mouri, Akihiro; Fukui, Tetsuro; Katayama, Masato; Isaka, Kazuo; and Nakamura, Susumu, 5,364,732, Cl. 430-201.000.

Murakami, Junichi; Ogino, Shigeru; Wada, Hiroyuki; and Takahara, Hiroyuki, 5,365,296, Cl. 354-195.100.

Nakazawa, Akihiko; Kato, Masayoshi; Ohno, Manabu; Okubo, Nobuyuki; and Suzuki, Shunji, 5,364,720, Cl. 430-106.600.

Okuda, Kouichi; Nakamura, Shunji; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,365,314, Cl. 355-208.000.

Osada, Yoshiyuki, 5,364,815, Cl. 437-99.000.

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Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, Masashi; and Onuma, Tsutomu, 5,364,722, Cl. 430-110.000.

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Yonehara, Takao; Nishigaki, Yuji; and Yamagata, Kenji, 5,363,799, Cl. 117-94.000.

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Weill, Jerome; Capogna, Laure; Arrondel, Veronique; and Boumendil, Jean-Jack, 5,365,005, Cl. 585-500.000.

Capy, Gilbert; and Buchberg, Akiva, to Wrapco International B.V. Pleated wrapper for solid loose articles. 5,364,016, Cl. 229-87.030.

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Satterfield, Michael J.; Caramberis, Theodore C.; and Tharp, Glenn T., 5,364,144, Cl. 294-27.100.

Carbaugh, William D., Jr.; Long, David C.; and Stroms, Karl F., to International Business Machines Corporation. Wound coil with integral cooling passages. 5,365,211, Cl. 335-300.000.

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Hewitt, Geoffrey A.; Rath, Andrew K.; and McQuarrie, Harvey K., 5,364,358, Cl. 604-99.000.

Cardiovascular Imaging Systems, Inc.: *See*—
Jang, Yue-Teh, 5,364,347, Cl. 604-53.000.
Soni, Bobby; Didday, Richard; and Hurley, Kean, 5,363,850, Cl. 128-661.080.
Suorsa, Veijo; and Brisken, Axel, 5,363,849, Cl. 128-661.080.

Carey, John G.: *See*—
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Carey, John L., to BP Chemicals Limited. Process for the recovery of group VIII noble metals. 5,364,822, Cl. 502-24.000.

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Buican, Tudor N.; and Carlson, Kevin M., 5,364,744, Cl. 430-321.000.

Carlsson, Ingmar, to Eson Pac AB. Disposable package. 5,364,018, Cl. 229-120.170.

Carlsson, Lars: *See*—
Bjorck, Bengt; and Carlsson, Lars, 5,364,019, Cl. 229-125.090.

Carman, Charles S., to North American Philips Corporation. Computer detection of microcalcifications in mammograms. 5,365,429, Cl. 364-413.130.

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Schempf, Hagen; and Albrecht, Brian, 5,363,935, Cl. 180-9.100.

Carpenter, Loren C. Video imaging method and apparatus for audience participation. 5,365,266, Cl. 348-61.000.

Carpio, Ronald A., to Sematech, Inc. Scheme for bath chemistry measurement and control for improved semiconductor wet processing. 5,364,510, Cl. 204-153.100.

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Taylor-McCune, Christopher J.; Kurth, Brian J.; and Golobay, Lloyd D., 5,364,244, Cl. 417-536.000.

Carr, Kenneth L., to Microwave Medical Systems, Inc. Therapeutic probe for radiating microwave and ionizing radiation. 5,364,336, Cl. 600-2.000.

Carsten Health Industries, Inc.: *See*—
Russo, Kenneth J.; and Block, George, 5,364,200, Cl. 402-79.000.

Carswell, Phillip A.; and Clark, Steven F., to Motorola, Inc. Secure cryptographic logic arrangement. 5,365,591, Cl. 380-49.000.

Carter Automotive Company, Inc.: *See*—
Siekmann, James M., 5,363,827, Cl. 123-509.000.

Carter, Jeffrey T.: *See*—
Choate, Martin T.; McGrail, Patrick; Sefton, Mark S.; and Carter, Jeffrey T., 5,364,914, Cl. 525-505.000.

Carter, Mary J. Face decoration and method of using the same. 5,363,675, Cl. 63-14.100.

Carter, Sandy. Flexible jewelry display and storage device. 5,363,953, Cl. 206-6.100.

Cartier, Paul F., III: *See*—
Farnsworth, Vincent R.; and Cartier, Paul F., III, 5,364,068, Cl. 251-129.170.

Cartwright, Mark A.: *See*—
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.

Carver, Juanita. Bed sore pad. 5,364,339, Cl. 602-47.000.

Casanova, Eduardo A.; and Kalota, Dennis J., to Monsanto Company. Process for preparing 1,2,3,4-butanetetracarboxylic acid. 5,364,964, Cl. 562-590.000.

Casio Computer Co., Ltd.: *See*—
Sakamoto, Naruhiko; and Ishida, Shinjiro, 5,365,573, Cl. 379-61.000.

Caskey, Charles T.; and Edwards, Albert O., to Baylor College of Medicine. DNA typing with short tandem repeat polymorphisms and identification of polymorphic short tandem repeats. 5,364,759, Cl. 435-6.000.

Castagno, Leo L.; and Hudson, Christopher L., to Vanmark Corporation. Method and means for screening solids from a liquid medium. 5,364,539, Cl. 210-768.000.

Castagnoli, Craig J.; Cha, Suk-Bae; and Wang, Hong P., to Texaco Inc. Partial oxidation of scrap rubber tires and used motor oil. 5,364,996, Cl. 585-241.000.

Catalytica, Inc.: *See*—
Rao, Pradip; King, David L.; Cooper, Michael D.; and Say, Jerome E., 5,365,010, Cl. 585-726.000.

Catamount Scientific, Inc.: *See*—
Spillman, William B., Jr., 5,365,359, Cl. 359-139.000.

Caterpillar Inc.: *See*—
Grawey, Charles R.; Grob, Robert J.; and Hart, Cullen P., 5,363,936, Cl. 180-9.210.

Cathrein, Ernst; Stein, Hermann; Stoller, Hansjorg; and Viardot, Klaus, to Hoffmann-La Roche Inc. Powdered aqueous carotenoid dispersions. 5,364,563, Cl. 252-311.000.

Catlin, Christopher S., to Xcorp, Inc. Safe, low emissions, low cost, automobile. 5,363,939, Cl. 180-291.000.

Catot, Bernard; Del Fabbro, Vaerio; and Stevenot, Guy, to Valdunes. Device for inspecting the rim of a railway wheel. 5,363,702, Cl. 73-598.000.

Cavallo, Giovanni: *See*—
Apolet, Josef; Ballotta, Romano; and Cavallo, Giovanni, 5,364,343, Cl. 604-43.000.

Cavanagh, James: *See*—
Manzo, Robert P.; and Cavanagh, James, 5,364,550, Cl. 252-102.000.

Caverly, John C.: *See*—
Hartsock, Dale L.; Caverly, John C.; Schroeder, Fred G.; Anderson, Claudia M.; and Breuhan, Ronald G., 5,364,131, Cl. 285-23.000.

Cebula, Edwin; and Kamikow, Joseph E., to Data East Pinball, Inc. Multiple ball feed unit for pinball machine. 5,364,096, Cl. 273-121.00A.

Cecebe Technologies Inc.: *See*—
Cameron, Gordon M., 5,364,457, Cl. 96-27.000.

Cedoz, Roger T.; and Schaupp, John F., to Ransburg Corporation. Seal for spray gun. 5,364,033, Cl. 239-526.000.

Cell Robotics, Inc.: *See—*
Buican, Tudor N.; and Carlson, Kevin M., 5,364,744, Cl. 430-321.000.

Cellini, Ferdinando. Corkscrew with fitting to shear the tinfoil, plastic or other caps on the neck of bottles. 5,363,725, Cl. 81-3.090.

Centorr/Vacuum Industries, Inc.: *See—*
Miller, Charles W., Jr.; Currier, John; Duclos, Larry; and Ayer, Thomas, 5,363,952, Cl. 198-848.000.

Central Glass Company: *See—*
Morimoto, Shigeki; and Noguchi, Tadashi, 5,364,820, Cl. 501-71.000.

Central Glass Company, Limited: *See—*
Nakashima, Hiroshi; Yano, Yoshihiro; and Iida, Yasunobu, 5,364,685, Cl. 428-155.000.

Centro Sviluppo Settori Impiego S.r.l.: *See—*
Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

Cerny, Harry R. Simultaneous double-bladed kayak paddle. 5,364,296, Cl. 440-101.000.

Cerovich, Leslie S.: *See—*
Evangelista, Richard A.; Summerfield, Stephen D.; and Cerovich, Leslie S., 5,363,690, Cl. 73-31.050.

Cha, Suk-Bae: *See—*
Castagnoli, Craig J.; Cha, Suk-Bae; and Wang, Hong P., 5,364,996, Cl. 585-241.000.

Chadwick, Robert; Siviter, Carl; and Farmer, Anthony D., to Foseco International Limited. Ceramic material. 5,364,570, Cl. 264-28.000.

Chakraborty, Tapan J.: *See—*
Agrawal, Vishwani D.; and Chakraborty, Tapan J., 5,365,528, Cl. 371-25.100.

Champion, Cecil L.: *See—*
Collins, Cecil A.; and Champion, Cecil L., 5,364,169, Cl. 297-479.000.

Chan, Chun F.: *See—*
Anderson, Oscar A.; Chan, Chun F.; and Leung, Ka-Ngo, 5,365,070, Cl. 250-423.00R.

Chan, Eric P., to American Trading and Production Corporation. Stackable desk tray assembly. 5,363,974, Cl. 211-128.000.

Chan, Michael J.: *See—*
Campbell, John E.; Chan, Michael J.; Hajek, Steven F.; and Wiltgen, Paul L., 5,365,587, Cl. 380-25.000.

Chan, Wing K., to America Direct (HK) Ltd. Electrically heated-air curling iron with a plurality of different diameter hair rollers usable therewith. 5,365,037, Cl. 219-222.000.

Chand, Sujeet, to Rockwell International Corporation. Control system for distributed sensors and actuators. 5,365,423, Cl. 364-140.000.

Chandrakumar, Nizal S.: *See—*
Hansen, Donald W., Jr.; Chandrakumar, Nizal S.; Peterson, Karen B.; Tsymbalov, Sofya; and Husa, Robert K., 5,364,850, Cl. 514-255.000.

Chang, Chung K.: *See—*
Cleveland, Lee E.; Van Buskirk, Michael A.; Chen, Johhny C.; and Chang, Chung K., 5,365,484, Cl. 365-218.000.

Chang, Clarence D.; Chu, Cynthia T.-W.; Degnan, Thomas F.; Rodewald, Paul G.; and Shihabi, David S., to Mobil Oil Corp. Shape selective conversion of hydrocarbons over extrusion-modified molecular sieve. 5,365,003, Cl. 585-470.000.

Chang, Dong-Sik; and Chung, Su-Min, to Samsung Display Devices Co., Ltd. Solution for preparing a conductive film for a flat brown tube. 5,364,567, Cl. 252-518.000.

Chang, Hui: *See—*
Mahabadi, Hadi K.; Kao, Sheau V.; Allison, Gerald R.; Gerroir, Paul J.; Chang, Hui; and Hawkins, Michael S., 5,364,724, Cl. 430-110.000.

Chang, Jia-Hwang: *See—*
El-Ayat, Khaled A.; and Chang, Jia-Hwang, 5,365,165, Cl. 324-58.100.

Chang, Kuo-Ching; Tseng, Shih-Tsung; and Huang, Jain-Sheng, to Industrial Technology Research Institute. Plasma torch-jet liquid waste treatment device. 5,363,781, Cl. 110-250.000.

Chang, Kuo-Tung: *See—*
Ma, Yueh Y.; and Chang, Kuo-Tung, 5,364,806, Cl. 437-43.000.

Chang, Michael H.: *See—*
Wong, Stanley; Chang, Michael H.; and Lee, Robert, 5,365,219, Cl. 340-573.000.

Chang, Michael Hung: *See—*
Wong, Stanley; Chang, Michael H.; and Lee, Robert, 5,365,219, Cl. 340-573.000.

Chang, Paul S.: *See—*
McKechnie, Keith J.; Steely, Lee W.; and Chang, Paul S., 5,365,224, Cl. 346-825.040.

Chang, Shih-Chanh: *See—*
Lur, Water; Huang, Cheng-Han; Chang, Shih-Chanh; and Lin, Liang-Chih, 5,364,817, Cl. 437-192.000.

Chang, Shih-Hung. Automation device for automobile manual shift system. 5,363,946, Cl. 192-3.580.

Chapman, Michael W.; Edwards, Charles C.; and Mears, Dana C., to Pfizer Hospital Products Group, Inc. Modular femoral fixation system. 5,364,398, Cl. 606-69.000.

Chappell, Joseph; Saunders, Court A.; Wolf, Fred R.; and Cuellar, Richard E., to Amoco Corporation. Method and composition for increasng sterol accumulation in higher plants. 5,365,017, Cl. 800-205.000.

Chardon Rubber Company: *See—*
Kronbetter, Clarence W., 5,363,596, Cl. 49-495.100.

Charles Stark Draper Laboratory Inc., The: *See—*
Tumminelli, Richard; Hakimi, Farhad; and Haavisto, John R., 5,365,538, Cl. 372-66.000.

Chatham, Hood, III: *See—*
Felts, John T.; Chatham, Hood, III; Countrywood, Joseph; and Nelson, Robert J., 5,364,665, Cl. 427-571.000.

Chatterjee, Ranjit: *See—*
Bush, Rodney D.; Bissett, Donald L.; and Chatterjee, Ranjit, 5,364,617, Cl. 424-59.000.

Chau, Kevin H. L.; Saltmarsh, Michael P.; and Church, Deborah A., to Analog Devices, Inc. Method for fabricating microstructures using temporary bridges. 5,364,497, Cl. 156-645.000.

Chaudoir, Roderick J., to Hatco Corporation. Humidity controlled food warmer. 5,365,039, Cl. 219-401.000.

Chefalo, Patrick M.; Naujokas, Andrius A.; Popham, Stephen M.; DiStefano, Gary M.; and Buesing, Robert J., to Eastman Kodak Company. Process for removing nitrites from a silver nitrate solution. 5,364,500, Cl. 159-49.000.

Cheminaud, Jean-Claude: *See—*
Schapira, Joseph; Cheminaud, Jean-Claude; Petitbon, Pascal; and Imbert, Dominique, 5,364,440, Cl. 71-64.120.

Chen, Chien-Yung: *See—*
Ho, Yen-Shyh; and Chen, Chien-Yung, 5,364,804, Cl. 437-41.000.

Chen, Da-Chung: *See—*
Chen, Mao-Lan; and Chen, Da-Chung, 5,364,103, Cl. 273-193.00R.

Chen, Duncan. Complementarily aggregated lighting fixture and rack apparatus. 5,365,417, Cl. 362-154.000.

Chen, Johhny C.: *See—*
Cleveland, Lee E.; Van Buskirk, Michael A.; Chen, Johhny C.; and Chang, Chung K., 5,365,484, Cl. 365-218.000.

Chen, Judy. Reflector road sign. 5,365,372, Cl. 359-515.000.

Chen, Kueing-Long: *See—*
Liu, David K.; Chen, Kueing-Long; and Riemenschneider, Bert R., 5,365,105, Cl. 257-530.000.

Chen, Kun-Ti, to United Microelectronics Corporation. Etch method for manufacturing a color filter. 5,364,498, Cl. 156-650.000.

Chen, Lee-Fei: *See—*
Ander, Anthony T.; Adamczyk, Andrew A.; Hrovat, Davorin; and Chen, Lee-Fei, 5,365,441, Cl. 364-426.030.

Chen, Mao-Lan; and Chen, Da-Chung, to Love-Blue Enterprise Co., Ltd. Sports equipment for golf-like game. 5,364,103, Cl. 273-193.00R.

Chen, Robin: *See—*
Cheng, Robert; Chen, Robin; Su, Michael; and Horng, Chuen-Jing, 5,365,253, Cl. 345-156.000.

Chen, Stephen, to E Lead Electronic Co., Ltd. Battery-charger with adjustable contacts. 5,365,159, Cl. 320-15.000.

Chen, Stephen, to E Lead Electronic Co. Ltd. Automatic video tape converter. 5,365,387, Cl. 360-94.000.

Chen, Yasu T., to United States of America, Air Force. Chemical warfare method with intermittently cooled protective garment. 5,363,663, Cl. 62-99.000.

Chene, William R.: *See—*
Huggins, Michael J.; and Chene, William R., 5,363,715, Cl. 74-473.00R.

Cheney, Donald P.; and Wang, Le Z., to Northeastern University. Method of causing somatic hybridization between two species of algae. 5,365,018, Cl. 800-220.000.

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Chesler, Ronald B.: *See—*
Hsu, Hui-Pin; and Chesler, Ronald B., 5,365,368, Cl. 359-341.000.

Chesley, David; Falck, Deborah; Hanson, Robert L.; and Hetfield, Margaret, to Digital Equipment Corporation. Identification panel for electronic equipment cabinet. 5,363,578, Cl. 40-488.000.

Cheung, Robin W.: *See—*
Ramaswami, Seshadri; and Cheung, Robin W., 5,365,111, Cl. 257-768.000.

Chevrier, Pascal; and Faubeau, Edmond, to Forges de Belles Ondes. Windscreen wiper arm, particularly for a high-speed vehicle. 5,363,531, Cl. 15-250.040.

Chevron Research Company: *See—*
Buckley, Thomas F., III, 5,364,546, Cl. 252-51.50A.

Chevron Research and Technology Company: *See—*
Dieckmann, Gunther H.; and Labrador, Elena Q., 5,364,517, Cl. 208-121.000.
Marquis, David M.; and Kuehne, Donald L., 5,363,915, Cl. 166-274.000.

Chiang, Yulin: *See—*
Strupczewski, Joseph T.; Helsley, Grover C.; Chiang, Yulin; Bordeau, Kenneth J.; and Glamkowski, Edward J., 5,364,866, Cl. 514-321.000.

Chien, Kuei-Ru: *See—*
Klaras, Louis F.; and Chien, Kuei-Ru, 5,365,532, Cl. 372-31.000.

Chikada, Akira; and Ohgiri, Shigeteru, to Ichikoh Industries, Ltd. Device for confirming optical-axis adjustment of automotive headlamp. 5,365,414, Cl. 362-61.000.

Chikama, Toshio, to Kabushiki Kaisha Machida Seisakusho. Bending device having a bellows. 5,363,882, Cl. 138-118.000.

Childs, Paul J.: *See—*
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,363,749, Cl. 99-403.000.

Childs, Philip L.; Olnowich, Howard T.; and Skovira, Joseph F., to International Business Machines Corporation. SYNC-NET- a barrier synchronization apparatus for multi-stage networks. 5,365,228, Cl. 340-825.800.

Chimenti, Thomas A.: *See—*
Raaber, Raymond R.; and Chimenti, Thomas A., 5,363,996, Cl. 224-314.000.

Chinniah, Jeyachandrabose: *See—*
Koppolu, Prasad M.; Chinniah, Jeyachandrabose; Fallah, Amir; and Dassanayake, Mahendra, 5,365,412, Cl. 362-32.000.

Chiou, George C. Y.: *See—*
Varma, Rajender S.; and Chiou, George C. Y., 5,364,884, Cl. 514-551.000.

Chiron-Werke GmbH & Co. KG: *See—*
Rutschle, Eugen; and Haninger, Rudolf, 5,364,210, Cl. 409-134.000.

Chiyoda Corporation: *See—*
Kikkawa, Yoshitsugi; Yamamoto, Osamu; Sakaguchi, Junichi; and Nakamura, Moritaka, 5,363,655, Cl. 62-9.000.
Minami, Takeshi; Shimokawa, Kenji; Hamato, Kazuhiko; Shiroto, Yoshimi; and Yoneda, Noriyuki, 5,364,963, Cl. 562-519.000.

Chlebek, Kevin B., to Thetford Corporation. Pressure relief vent for a waste holding tank. 5,363,510, Cl. 4-321.000.

Cho, Chih-Chen, to Texas Instruments Incorporated. Method for the growth of epitaxial metal-insulator-metal-semiconductor structures. 5,364,468, Cl. 148-33.300.

Choate, Martin T.; McGrail, Patrick; Sefton, Mark S.; and Carter, Jeffrey T., to Imperial Chemical Industries PLC. Moulding composition comprising a thermoset component and thermoplast component. 5,364,914, Cl. 525-505.000.

Choi, Seung-lyul, to SamSung Electronics Co., Ltd. Video tape recorder having automatic index scan method and picture-in-picture function. 5,365,384, Cl. 360-72.200.

Chou, Hung-Tu. Collapsible labyrinth. 5,364,311, Cl. 472-62.000.

Chou, Ri-Chee: *See—*
Johnson, Paul A.; Chou, Ri-Chee; Martin, Chris A.; Spivey, Britt; and Lovberg, John, 5,365,237, Cl. 342-179.000.

Chowdhury, Sruba; and Boskamp, Eddy B., to Medical Advances, Inc. Breast coil for magnetic resonance imaging. 5,363,845, Cl. 128-653.500.

Chrisman, Ray W.; Cocco, Raymond A.; and Cleveland, John A., Jr., to Dow Chemical Company, The. Method and apparatus for determining flow rates and concentrations in multi-phase streams. 5,365,326, Cl. 356-28.500.

Christian, Jerry D.; and Anderson, Philip A., to United States of America, Energy. Mercury-free dissolution of aluminum-clad fuel in nitric aacid. 5,364,603, Cl. 423-104.000.

Christopher, Michael E.; and Cochran, Gerald N., to Texas Aluminum Industries, Inc. Energy-efficient sun room. 5,363,615, Cl. 52-272.000.

Chrudimsky, David W.: *See—*
Morton, Bruce L.; and Chrudimsky, David W., 5,365,121, Cl. 327-170.000.

Chrysler Corporation: *See—*
Klotz, James R., 5,363,722, Cl. 74-606.00R.
Sihon, Tanas M., 5,364,109, Cl. 277-9.000.

Chu, Barbara; Kramer, Fred R.; Lizardi, Paul; and Orgel, Leslie E., to Salk Institute for Biological Studies, The; and Columbia University, The Trustees of. Replicative RNA reporter systems. 5,364,760, Cl. 435-6.000.

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Chuang, Lai-Yeh. Slidable folding shelf. 5,363,773, Cl. 108-102.000.

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Chung, Su-Min: *See—*
Chang, Dong-Sik; and Chung, Su-Min, 5,364,567, Cl. 252-518.000.

Church, Deborah A.: *See—*
Chau, Kevin H. L.; Saltmarsh, Michael P.; and Church, Deborah A., 5,364,497, Cl. 156-645.000.

Ciaccio, Edward J.: *See—*
Drzewiecki, Gary M.; Butterfield, Robert D.; and Ciaccio, Edward J., 5,363,855, Cl. 128-672.000.

Ciali, Massimo: *See—*
Marcotullio, Armando; Tinucci, Laura; and Ciali, Massimo, 5,364,960, Cl. 562-121.000.

Ciba-Geigy Corporation: *See—*
Fuchs, Reiner; Kaufhold, Johannes; and Malzacher, Kornelia, 5,364,954, Cl. 556-90.000.
Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, 5,364,749, Cl. 430-507.000.

Cielo, Paolo: *See—*
Cole, Kenneth; Cielo, Paolo; Dumoulin, Michel M.; and Guevremont, Jacques, 5,365,067, Cl. 250-341.800.

Ciesielski, Denise: *See—*
Poppe, George; Ciesielski, Denise; and Matlock, Mark, 5,364,465, Cl. 106-124.000.

Cimino, William W.; Abrams, Robert; Taimisto, Miriam H.; Jenson, Marc; and Macaulay, Patrick E., to Heart Rhythm Technologies, Inc. Catheter for electrophysiological procedures. 5,364,352, Cl. 604-95.000.

Cincinnati Microwave, Inc.: *See—*
Decker, Lawrence G.; Poston, Janet R.; and Hume, Edward F., 5,365,055, Cl. 250-214.00R.

Ciolczyk, Jean-Pierre; and Nicolas, Olivier, to Hutchinson. Torque take-up link for a vehicle engine. 5,364,061, Cl. 248-610.000.

Circadian, Inc.: *See—*
Mishelevich, David J.; Lampher, Ted W.; Lampher, Gregory B.; and Long, James, 5,363,842, Cl. 128-200.140.

Citizen Watch Co., Ltd.: *See—*
Sakamaki, Yumiko; Naito, Tomijiro; and Yukinari, Toshiro, 5,364,558, Cl. 252-299.010.

Clairol Inc: *See—*
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Clarion Co., Ltd.: *See—*
Kinoshita, Shigeo; Asano, Takahiro; Matsuda, Sadamu; and Watanabe, Wataru, 5,364,059, Cl. 248-584.000.
Sato, Kiyotaka; and Togura, Kenji, 5,365,537, Cl. 372-50.000.

Clark-Hurth Components S.p.A.: *See—*
Brambilla, Alberto, 5,364,316, Cl. 475-80.000.

Clark, James B.: *See—*
Jenneman, Gary E.; and Clark, James B., 5,363,913, Cl. 166-246.000.

Clark, Robert A.; Puzon, Rory R.; and Wlodarczyk, James T., to Delaware Capital Formation, Inc. Processing vessel having discharge metering/mixing auger. 5,363,747, Cl. 99-348.000.

Clark, Steven F.: *See—*
Carswell, Phillip A.; and Clark, Steven F., 5,365,591, Cl. 380-49.000.

Clavel, Francois: *See—*
Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,364,933, Cl. 530-412.000.

Claypoole, Lynnford W.: *See—*
Buehler, James A.; and Claypoole, Lynnford W., 5,364,589, Cl. 422-26.000.

Clayton, Everett A.; and Gore, Kiron, to Motorola, Inc. Method and apparatus for dispensing electronic components. 5,364,045, Cl. 242-588.600.

CLE: *See—*
Paliard, Maurice, 5,364,265, Cl. 432-106.000.

Clemens, Bruce M.: *See—*
Lairson, Bruce M.; Clemens, Bruce M.; and Visokay, Mark R., 5,363,794, Cl. 117-7.000.

Clement, Katherine S.: *See—*
Babb, David A.; Richey, W. Frank; Clement, Katherine S.; and Ezzell, Bobby R., 5,364,917, Cl. 526-242.000.

Clement, Thomas J.: *See—*
Auth, David C.; Clement, Thomas J.; and Intlekofer, Michael J., 5,364,393, Cl. 606-34.000.

Cleveland, John A., Jr.: *See—*
Chrisman, Ray W.; Cocco, Raymond A.; and Cleveland, John A., Jr., 5,365,326, Cl. 356-28.500.

Cleveland, Lee E.; Van Buskirk, Michael A.; Chen, Johhny C.; and Chang, Chung K., to Advanced Micro Devices, Inc. Independent array grounds for flash EEPROM array with paged erase architecture. 5,365,484, Cl. 365-218.000.

Cliffe, Ian A., to John Wyeth & Brother, Limited. 1-[3 or 4-[1-[4-piperazinyl]]-2 arylpropionyl or butryl]-heterocyclic derivatives. 5,364,849, Cl. 514-212.000.

Climax Manufacturing Company: *See—*
Hirschey, Urban C., 5,364,015, Cl. 229-116.500.

Cline, William: *See—*
Dunning, Dave; and Cline, William, 5,363,907, Cl. 165-46.000.

Cliveden Ltd.: *See—*
Herman, Stephen, 5,364,879, Cl. 514-452.000.

Cloer, Nat, to Cornelia Textiles, Inc. Method of inhibiting lumber checking. 5,363,568, Cl. 34-511.000.

Clorox Company, The: *See—*
Stanislowski, Anna G.; Heitfeld, Fred A.; Wiersema, Richard J.; and Poulose, Ayyookaran J., 5,364,554, Cl. 252-186.380.

Close, Eric C.; Goff, Jerry K.; and Yost, Donald A., to Performance Controls, Inc. Pulse-width modulated circuit for applying current to a load. 5,365,422, Cl. 363-98.000.

Clough, Warren R.: *See—*
Condit, David A.; Michels, H. Harvey; Garoushen, Thomas J.; and Clough, Warren R., 5,363,661, Cl. 62-77.000.

Coakley, Kim L., to Pneumo Abex Corporation. Fluid motor/pump with scavenged case. 5,363,740, Cl. 91-499.000.

Coates, Bradley J.: *See—*
Lowery, Gary; Sherman, Michael C.; Ray, Eddie F., III; and Coates, Bradley J., 5,364,399, Cl. 606-69.000.

Coates, Stephen A.: *See—*
Burrell, Michael M.; and Coates, Stephen A., 5,365,016, Cl. 800-205.000.

Cocco, Raymond A.: *See—*
Chrisman, Ray W.; Cocco, Raymond A.; and Cleveland, John A., Jr., 5,365,326, Cl. 356-28.500.

Cochran, Don W.; and Triner, James E., to Presco Technology, Inc. Video inspection system employing multiple spectrum LED illumination. 5,365,084, Cl. 250-571.000.

Cochran, Gerald N.: *See—*
Christopher, Michael E.; and Cochran, Gerald N., 5,363,615, Cl. 52-272.000.

Cochran, James; and Rollins, Wayne, to Atwell Industries, Inc. Truck bedliner locking device. 5,364,150, Cl. 296-39.200.

Cohen, Marlene L.; Lacefield, William B.; and Robertson, David W., to Eli Lilly and Company. Specific 5-HT$_3$ antagonists. 5,364,863, Cl. 514-304.000.

Coiner, Robert A. Heavy duty vehicle bumper with storage compartment and accessories. 5,364,142, Cl. 293-117.000.

Coker, Wesley L. Retractor for spinal surgery. 5,363,841, Cl. 128-20.000.

Cole, Kenneth; Cielo, Paolo; Dumoulin, Michel M.; and Guevremont, Jacques, to National Research Council of Canada. Method and de-

vice for evaluation of surface properties, especially molecular orientation, in non-transparent layers. 5,365,067, Cl. 250-341.800.

Cole, Randall P.: *See—*
Knodt, Kurt T.; Raymor, Herbert J.; Coy, Gerald L.; and Cole, Randall P., 5,365,349, Cl. 358-406.000.

Coleman, Patrick L.: *See—*
Rolando, Richard J.; Coleman, Patrick L.; Kangas, Steven L.; and Kotnour, Thomas A., 5,364,907, Cl. 525-54.100.

Coles, Richard G.; and Broadfoot, Ian J., to Grainco Queensland Co-Operative Association Limited. Apparatus for preparing animal feedstuff from cotton seed. 5,363,754, Cl. 99-484.000.

Colgate-Palmolive Company: *See—*
Cao, Hoai C., 5,364,553, Cl. 252-174.120.

Colight, A Division of Hanovia Lamp: *See—*
Lawson, Allen A., 5,365,309, Cl. 355-75.000.

Coll, Milton E. Ureteral stent-catheter having varying internal diameter and method of use. 5,364,340, Cl. 604-8.000.

Colleran, Stephen A., to Molex Incorporated. Printed circuit board connector assembly. 5,364,280, Cl. 439-76.000.

Collias, Dimitris I.: *See—*
Taniguchi, Tatsuya; and Collias, Dimitris I., 5,364,031, Cl. 239-330.000.

Collins, Cecil A.; and Krambeck, Dagoberto, to General Safety Corporation. Vehicle safety belt tensioning mechanism. 5,364,129, Cl. 280-806.000.

Collins, Cecil A.; and Champion, Cecil L., to General Safety Corporation. Linear safety belt retractor. 5,364,169, Cl. 297-479.000.

Colombo, Anna L.: *See—*
Hutchinson, Charles R.; Madduri, Krishna M.; Torti, Francesca; and Colombo, Anna L., 5,364,781, Cl. 435-193.000.

Coltene/Whaledent, Inc.: *See—*
Geller, Alexander; and Abdelqader, Steven, 5,365,157, Cl. 323-237.000.

Columbia University, The Trustees of: *See—*
Chu, Barbara; Kramer, Fred R.; Lizardi, Paul; and Orgel, Leslie E., 5,364,760, Cl. 435-6.000.

Combs, Edward A.; Maddox, Dennis M.; and Imron, Wim A., to Ericsson GE Mobile Communications Inc. Multisite trunked RF communication system with reliable control messaging network. 5,365,512, Cl. 370-16.000.

Combustion Concepts, Inc.: *See—*
Kraemer, William E.; and Daneshvar, Manouchehr, 5,364,080, Cl. 266-262.000.

Combustion Engineering, Inc.: *See—*
Kmiotek, Stanley E.; and Stanwicks, Peter L., 5,363,778, Cl. 110-232.000.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Gardner, James L., 5,365,418, Cl. 362-308.000.

Compagnie Generale des Etablissements Michelin-Michelin & Cie: *See—*
Gouttebessis, Jacques; and Jouve, Guy, 5,363,894, Cl. 152-158.000.

Compeau, David E.: *See—*
Hlavaty, David G.; Shah, Suresh D.; and Compeau, David E., 5,364,252, Cl. 425-3.000.

Complications S.A.: *See—*
Schick, Herve, 5,363,640, Cl. 59-80.000.

Composite Materials Technology, Inc.: *See—*
Yu, Dingan, 5,364,709, Cl. 428-662.000.

Compton, Charles A.: *See—*
Murdock, James L.; and Compton, Charles A., 5,364,030, Cl. 239-310.000.

Comstock, Scott G.: *See—*
Doyle, James J., Jr.; and Comstock, Scott G., 5,364,062, Cl. 248-674.000.

Condit, David A.; Michels, H. Harvey; Garosshen, Thomas J.; and Clough, Warren R. Method and apparatus for testing refrigerant. 5,363,661, Cl. 62-77.000.

Coniff, John B., to Eaton Corporation. Method of heat sinking and mounting a solid-state device. 5,363,552, Cl. 29-840.000.

Conlan, Michael D. See-through bus stop shelter. 5,363,608, Cl. 52-79.100.

Conley, David L.: *See—*
Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.

Conley, Ralph F., Jr., to MIM Industries, Inc. Non-intrusive workpiece pallet locator. 5,363,785, Cl. 112-121.150.

Connally, Douglas R.: *See—*
Buzbee, James M.; Connally, Douglas R.; and Matthews, Wayne, 5,365,578, Cl. 379-96.000.

Conoco Inc.: *See—*
Williams, Jerry G.; Monib, Monib M.; Salama, Mamdouh M.; Schwartz, David H.; and Dew, Edward G., 5,363,929, Cl. 175-107.000.

Consolidation Coal Company: *See—*
Wu, Muh-Cheng M.; and Wasson, George E., 5,364,572, Cl. 264-40.100.

Constant Velocity Systems, Inc.: *See—*
Baltazar, Lawrence C.; and Buck, Robert J., 5,363,601, Cl. 451-540.000.

Constructions Industrielles de la Mediterranee CNIM: *See—*
Rainaud, Guy; Allain, Denis; and Aubert, Henri, 5,363,527, Cl. 14-2.400.

Conte, Francis Luca: *See—*
Farwell, Lawrence A., 5,363,858, Cl. 128-731.000.

Conte, John E.: *See—*
Debs, Robert J.; Montgomery, Alan B.; Conte, John E.; and Golden, Jeffrey A., 5,364,615, Cl. 424-45.000.

Continental Engineering Group, Inc.: *See—*
Ugalde, Carlos V., 5,364,177, Cl. 312-194.000.

Control Resources, Inc.: *See—*
Kundert, Warren R., 5,364,026, Cl. 236-49.300.

Controlair, Inc.: *See—*
Doyle, James J., Jr.; and Comstock, Scott G., 5,364,062, Cl. 248-674.000.

Converse Inc.: *See—*
Allen, Bernie; Azevedo, Aaron; Knoepke, Eckhard; Kimball, Neal F. X.; Blake, Philip L.; Hayes, John A.; Healy, John A.; and Edington, Christopher J., 5,363,570, Cl. 36-28.000.

Conway, Patrick H.: *See—*
Yu, David U. L.; and Conway, Patrick H., 5,365,190, Cl. 330-149.000.

Coogan, Louise: *See—*
Lauff, John; Breitfeller, James; Steele, D. Bernie; and Coogan, Louise, 5,364,786, Cl. 435-252.200.

Cook, Charles D., to Procter & Gamble Company, The. Packages for single-use folded towels which provide for unfolding of the towel upon removal from the package. 5,363,986, Cl. 221-63.000.

Cook Incorporated: *See—*
Jaffe, Richard B.; and Parrish, Frank A., 5,364,404, Cl. 606-106.000.

Cook, John D., to Inlet Medical. Irrigation/aspiration valve and probe for laparoscopy. 5,364,341, Cl. 604-30.000.

Cooper, David G.: *See—*
Dexter, James L.; Cooper, David G.; Blackburn, Douglas H.; Cranmer, David C.; and Kauffman, Dale A., 5,364,819, Cl. 501-45.000.

Cooper, Garth J. S.; and Leighton, Brendan, to Amylin Pharmaceuticals, Inc. Treatment of obesity and essential hypertension and related disorders. 5,364,841, Cl. 514-12.000.

Cooper, James A., Jr.; Melloch, Michael R.; and Stellwag, Theresa B., to United States of America, Navy. Dynamic random access memory device. 5,365,477, Cl. 365-174.000.

Cooper, John C., deceased: *See—*
Panayappan, Ramanathan; and Cooper, John C., deceased, 5,364,574, Cl. 264-46.500.

Cooper, Linda, legal representative: *See—*
Panayappan, Ramanathan; and Cooper, John C., deceased, 5,364,574, Cl. 264-46.500.

Cooper, Michael D.: *See—*
Rao, Pradip; King, David L.; Cooper, Michael D.; and Say, Jerome E., 5,365,010, Cl. 585-726.000.

Copley, Mark; and Whiteside, Charles H., to John Fluke Mfg. Co.; and Forte Networks, Inc. Token ring local area network testing apparatus for matching its speed to ring speed. 5,365,513, Cl. 370-17.000.

Corace, Russell A.: *See—*
Rom, Paul F.; Corace, Russell A.; and Briscoe, Roderick E., 5,364,366, Cl. 604-163.000.

Cordata, Inc.: *See—*
Kikinis, Dan, 5,365,230, Cl. 341-22.000.

Cordis Corporation: *See—*
Viera, Fernando M., 5,363,847, Cl. 128-657.000.

Corfitsen, Mogens T.; Harboe, Henrik; and Othel-Jacobsen, Erik. Apparatus for advancing an object through a body passage. 5,364,353, Cl. 604-95.000.

Cornelia Textiles, Inc.: *See—*
Cloer, Nat, 5,363,568, Cl. 34-511.000.

Cornell, Charles R.: *See—*
Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., 5,365,436, Cl. 364-424.030.

Cornell, Robert G. Paper article dispenser. 5,363,985, Cl. 221-46.000.

Corning Incorporated: *See—*
Friske, Mark S.; Johnson, Ronald E.; Reagan, Christine M.; Winer, Theresa A.; and Wu, Lung-Ming, 5,364,487, Cl. 156-309.900.

Cornish, Darryl J.: *See—*
Huston, Charles D.; and Cornish, Darryl J., 5,364,093, Cl. 273-32.00R.

Correa, Carlos; and Schweer, Rainer, to Deutsche Thomson-Brandt GmbH. Method and device for film-mode detection. 5,365,273, Cl. 348-452.000.

Cortes, David A.: *See—*
Burello, Marco P.; Stack, Jeffrey G.; and Cortes, David A., 5,364,968, Cl. 564-416.000.

Corthell, Stephen G.: *See—*
Hite, William H.; Roush, Dennis H.; and Corthell, Stephen G., 5,363,686, Cl. 72-455.000.

Cotner, Richard C.: *See—*
Kenney, Raymond J.; Ishida, Takuzo; and Cotner, Richard C., 5,364,733, Cl. 430-203.000.

Cotter, Donald P., to Cotterco, Inc. Roofing and siding system. 5,363,624, Cl. 52-547.000.

Cotterco, Inc.: *See—*
Cotter, Donald P., 5,363,624, Cl. 52-547.000.

Cotteret, Jean: *See—*
Lang, Gerard; Junino, Alex; Cotteret, Jean; and Vandenbossche, Jean J., 5,364,414, Cl. 8-409.000.

Cottet, Jacques; and Servoz, Serge, to Amphenol Socapex. Method and apparatus for mounting components with angled terminals. 5,363,551, Cl. 29-837.000.

Cotton, James D., to Kimberly-Clark Corporation. Process for selectively absorbing oily contaminants. 5,364,680, Cl. 428-126.000.

Coulson, Larry D., to University of Alberta Intellectual Property & Contracts Office University of Alberta, The Governors of the. Drift free low noise composite amplifier and method of operation thereof. 5,365,189, Cl. 330-126.000.

Countrywood, Joseph: *See—*
Felts, John T.; Chatham, Hood, III; Countrywood, Joseph; and Nelson, Robert J., 5,364,665, Cl. 427-571.000.

Courtemanche, Alain: *See—*
Houle, Michel; Courtemanche, Alain; and Courtemanche, Denis, 5,364,116, Cl. 280-442.000.

Courtemanche, Denis: *See—*
Houle, Michel; Courtemanche, Alain; and Courtemanche, Denis, 5,364,116, Cl. 280-442.000.

Couwels, Ludo J. C., to Praxair Technology, Inc. Apparatus and process for combusting fluid fuel containing solid particles. 5,363,782, Cl. 110-238.000.

Cowan, Kenneth M.; and Hale, Arthur H., to Shell Oil Company. Wellbore sealing with unsaturated monomer system. 5,363,918, Cl. 166-295.000.

Cox, Choice L. Gear post steering column shackle. 5,363,677, Cl. 70-18.000.

Cox, James V.: *See—*
Anthon, John R.; Cox, James V.; and Sullivan, Scott L., 5,363,602, Cl. 451-540.000.

Cox, Mark K.; and Frederick, Tim J., to Eastman Chemical Company. Continuous hydrolysis of cellulose acetate. 5,364,935, Cl. 536-69.000.

Cox, Sherman D.; and Wise, Kenneth J., to Minerals Technologies. Spheroidal aggregate of platy synthetic hydrotalcite. 5,364,828, Cl. 502-341.000.

Coy, Gerald L.: *See—*
Knodt, Kurt T.; Raymor, Herbert J.; Coy, Gerald L.; and Cole, Randall P., 5,365,349, Cl. 358-406.000.

CRA Services Ltd.: *See—*
Batterham, Robin J.; Grant, Roderick M.; Happ, James V.; and Thiele, Glenn A., 5,364,446, Cl. 75-434.000.

Craig, Kevin J.: *See—*
Ward, M. Dwayne; Williams, Kenneth L.; and Craig, Kevin J., 5,365,485, Cl. 365-221.000.

Cranmer, David C.: *See—*
Dexter, James L.; Cooper, David G.; Blackburn, Douglas H.; Cranmer, David C.; and Kauffman, Dale A., 5,364,819, Cl. 501-45.000.

Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., to Seven, Ltd. Newspaper vending unit. 5,363,987, Cl. 221-195.000.

Crawley, Graham C.: *See—*
Bruneau, Pierre A. R.; Crawley, Graham C.; and Oldham, Keith, 5,364,877, Cl. 514-414.000.

Creaser, Inge I.: *See—*
Pope, Michael T.; Creaser, Inge I.; and Heckel, Mark C., 5,364,568, Cl. 588-18.000.

Creed, Guy J.: *See—*
Cameron, Bruce M., Sr.; Merril, Carl R.; Creed, Guy J.; and VanderPutten, Dale, 5,364,793, Cl. 436-86.000.

Crevelling, John W.: *See—*
Pelto, Ralph H.; Simpson, Brian L.; Walker, Theodore E.; Crevelling, John W.; Logsdon, Kevin M.; Drake, Paul C.; and Hennenkamp, Jeffrey R., 5,364,418, Cl. 23-313.00R.

Crilly, Paul B.: *See—*
Augenblick, Kurt B.; Crilly, Paul B.; Engel, Steven J.; and Fogelman, Kimber D., 5,363,707, Cl. 73-864.840.

Crisci, Louis; and Mallin, Martin, to Lake Grove Toy Corporation. Toy airplane launcher and winder. 5,364,298, Cl. 446-59.000.

Crisp, David: *See—*
VanZandt, Thomas R.; Kaiser, William J.; Kenny, Thomas W.; and Crisp, David, 5,364,185, Cl. 374-28.000.

Critchfield, Frank E.; Simroth, Donald W.; and Watson, Stuart L., to Arco Chemical Technology, L.P. Low viscosity polymer polyols with improved dispersion stability. 5,364,906, Cl. 525-53.000.

Crockett, Dennis D.; Gordish, Ronald J.; Kulikowski, Karl J.; and Munz, Robert P., to Lincoln Electric Company, The. Flux cored gas shielded electrode. 5,365,036, Cl. 219-137.0WM.

Cromer, Jerry E., Jr.; and Crower, Jerry E. User interface control apparatus. 5,365,026, Cl. 200-1.00R.

Crook, James C. Force transducer for a robotic arm. 5,365,156, Cl. 318-568.160.

Crosby, Everett A.; and Camp, William P., Jr., to Wooster Brush Company, The. Brush keepers. 5,363,959, Cl. 206-362.400.

Cross, Lloyd G.: *See—*
Dewald, Duane S.; Cross, Lloyd G.; and Linden, Paul A., 5,365,288, Cl. 353-98.000.

Crotty Corporation: *See—*
Peterson, Don M., 5,365,416, Cl. 362-135.000.

Crow, Lowell, to Transamerican Technologies International. High pressure micro valve. 5,364,070, Cl. 251-322.000.

Crowder, Billy L.: *See—*
Aitken, John M.; Akbar, Shahzad; Crowder, Billy L.; Iqbal, Asif; and Nihal, Perwaiz, 5,363,550, Cl. 29-828.000.

Crower, Jerry E.: *See—*
Cromer, Jerry E., Jr.; and Crower, Jerry E., 5,365,026, Cl. 200-1.00R.

Crowley-Dierks, Joel R.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; and Crowley-Dierks, Joel R., 5,365,569, Cl. 379-57.000.

Crown, Charles F.: *See—*
Richardson, Richard J.; and Crown, Charles F., 5,363,611, Cl. 312-116.000.

Crumly, William R.; Schreiber, Christopher M.; and Feigenbaum, Haim, to Hughes Aircraft Company. Three-dimensional electroformed circuitry. 5,364,277, Cl. 439-67.000.

Crystal, Richard; and Geffre, Raymond, to Graphic Utilities, Incorporated. Waterfast inks. 5,364,462, Cl. 106-22.00R.

Csanko, Louis: *See—*
Hatch, David; McClune, Don; Fair, Mervin; Fleming, Jeff; and Csanko, Louis, 5,364,294, Cl. 439-676.000.

Csillag, Frank J.: *See—*
Bigelow, Louis K.; Csillag, Frank J.; and Hoggins, James T., 5,364,423, Cl. 51-293.000.

Cuellar, Richard E.: *See—*
Chappell, Joseph; Saunders, Court A.; Wolf, Fred R.; and Cuellar, Richard E., 5,365,017, Cl. 800-205.000.

Cuevas, Jess A., to TRW Inc. Inflator assembly. 5,364,127, Cl. 280-741.000.

CUI, Inc.: *See—*
Hexter, Peter K., Jr., 5,363,964, Cl. 206-449.000.

Cull, Ronald C.: *See—*
Patterson, Richard L.; Rose, Allen H.; and Cull, Ronald C., 5,365,175, Cl. 324-501.000.

Cullen, Daniel: *See—*
Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., 5,364,770, Cl. 435-69.100.

Cummins, Thomas J.: *See—*
Green, Nancy F.; Cummins, Thomas J.; and Oakes, Fred T., 5,364,591, Cl. 422-58.000.

Cunard, Joel C.; Boudreau, Robert J.; and Ziegler, William H., Jr., to Hedstrom Corporation. Play gym construction. 5,364,312, Cl. 472-118.000.

Cunningham, Peter T.; and Rowlee, James H., to Gale Banks Engineering. Internal line hydraulic fluid pressure transmission recalibration unit. 5,365,437, Cl. 364-424.100.

Cupertino, Domenico C.; and Tasker, Peter A. Chemical process for the recovery of metal from an organic complex. 5,364,452, Cl. 75-710.000.

Cur, Nihat O.; and Kruck, Richard W., to Whirlpool Corporation. Vacuum panel manufacturing process. 5,364,577, Cl. 264-69.000.

Currier, John: *See—*
Miller, Charles W., Jr.; Currier, John; Duclos, Larry; and Ayer, Thomas, 5,363,952, Cl. 198-848.000.

Curry, Gaylan J.: *See—*
Lacuna, Ricardo F.; Curry, Gaylan J.; and Campbell, Dale E., 5,363,950, Cl. 198-382.000.

Curtis, Gary L.; Johnson, Gregory A.; and Tuebo, Paula M., to Minnesota Mining and Manufacturing Company. Method and apparatus for cutting a keyway in a mill roll. 5,364,330, Cl. 492-41.000.

Cussen, William J. Clock device including hour, decade and unit minute stations. 5,365,495, Cl. 368-79.000.

CXR Co., Ltd.: *See—*
Hosohara, Yasuharu; Suzuki, Kiwamu; Fujiwara, Shigeru; and Kawabe, Toshihide, 5,365,169, Cl. 324-233.000.

Cytyc Corporation: *See—*
Polk, Lewis T., Jr.; Vartanian, Hugh; Brown, Phillip P.; and Sloan, Walker M., III, 5,364,597, Cl. 422-101.000.

Czech, Norberto; and Lauzon, Robert, to Glopak Inc. Apparatus for attaching articles to a plastic bag wall. 5,363,966, Cl. 206-554.000.

Czuchajowska, Zuzanna; and Pomeranz, Yeshajahu, to Washington State University Research Foundation. Process for fractionating legumes to obtain pure starch and a protein concentrate. 5,364,471, Cl. 127-65.000.

D&D Gaming Patents, Inc.: *See—*
Jones, Daniel A.; and Suttle, James P., 5,364,104, Cl. 273-292.000.
Jones, Daniel A., 5,364,105, Cl. 273-292.000.

D.D. S.R.L.: *See—*
Apolet, Josef; Ballotta, Romano; and Cavallo, Giovanni, 5,364,343, Cl. 604-43.000.

D.S.M. N.V.: *See—*
Kroon, Johannes A.; and Buija, Wim, 5,364,978, Cl. 568-801.000.

Dai, Pei-Shing E.: *See—*
Knifton, John F.; and Dai, Pei-Shing E., 5,364,981, Cl. 568-698.000.

Daicel Chemical Industries, Ltd.: *See—*
Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, 5,364,669, Cl. 428-1.000.

Daido Metal Company, Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, 5,364,523, Cl. 205-128.000.
Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; and Tanaka, Takuya, 5,364,682, Cl. 428-138.000.

Daifuku Co., Ltd.: *See—*
Makimura, Katsuyoshi; and Yano, Kazuo, 5,363,770, Cl. 104-172.500.

Daiichi Pharmaceutical Co., Ltd.: *See—*
Ariga, Hiroyoshi, 5,364,761, Cl. 435-6.000.

Daikin Industries, Ltd.: *See—*
Seki, Eiji; Aoyama, Hirokazu; Nakada, Tatsuo; and Koyama, Satoshi, 5,364,991, Cl. 570-175.000.

Daikoku, Keisuke, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Fuel injection type multiple cylinder engine unit. 5,363,814, Cl. 123-73.0AD.

Daikoku, Takahiro: *See—*
Ashiwake, Noriyuki; Daikoku, Takahiro; Hatsuda, Toshio; Zushi, Shizuo; and Kobayashi, Satomi, 5,365,400, Cl. 361-752.000.

Dailey, George F.; Bauer, James A.; and Fischer, Mark W., to Westinghouse Electric Corporation. System and method for testing electrical generators. 5,365,166, Cl. 324-158.0MG.
Daimler-Benz AG: *See—*
Von Benda, Klaus; Gutmann, Gunter; and Weger, Wolfgang, 5,364,713, Cl. 429-66.000.
Daimler-Benz Aktiengesellschaft: *See—*
Buchler, Josef; and Kasper, Erich, 5,365,243, Cl. 343-753.000.
Dais, Brian C.; and Porchia, Jose, to Dowbrands L.P. Process and apparatus for controlling the gap width of a reclosable closure profile for a thermoplastic container. 5,363,540, Cl. 24-587.000.
Daisy Manufacturing Company, Inc.: *See—*
Stuchlik, William R., 5,363,834, Cl. 124-76.000.
Daiwa Seiko, Inc.: *See—*
Kaneko, Kyoichi, 5,363,565, Cl. 33-719.000.
Dalling, N. Lawrence: *See—*
Pearson, William R.; and Dalling, N. Lawrence, 5,364,363, Cl. 604-136.000.
DAMBACH-Industrieanlagen GmbH: *See—*
Killinger, Erich, 5,364,220, Cl. 414-272.000.
D'Ambrosio, George A. Hand-operated can press. 5,363,759, Cl. 100-110.000.
Damitz, Wayne A.: *See—*
Venegas, Frank, Jr.; and Damitz, Wayne A., 5,364,077, Cl. 256-69.000.
Damm, Oliver F. R. A.; and Tank, Klaus. Diamond bearing assembly. 5,364,192, Cl. 384-420.000.
Damper Design, Inc.: *See—*
Hagar, Donald K., 5,363,903, Cl. 165-9.000.
Dampier, Clayton; and Orta, Octavio, to Riverwood International Corporation. Clip-type article carrier and method of manufacture. 5,363,954, Cl. 206-144.000.
Damstra, Ate K.: *See—*
Dekker, Jan H.; and Damstra, Ate K., 5,363,534, Cl. 15-339.000.
Dana Corporation: *See—*
McBurnett, James R.; and Poyner, Weston R., 5,363,649, Cl. 60-325.000.
Danek Medical, Inc.: *See—*
Lowery, Gary; Sherman, Michael C.; Ray, Eddie F., III; and Coates, Bradley J., 5,364,399, Cl. 606-69.000.
Daneshvar, Manouchehr: *See—*
Kraemer, William E.; and Daneshvar, Manouchehr, 5,364,080, Cl. 266-262.000.
Daneshvar, Yousef. Special instrument covers. 5,363,843, Cl. 128-630.000.
Danforth Biomedical Incorporated: *See—*
Horzewski, Michael J.; and Kraus, Jeffrey L., 5,364,376, Cl. 604-280.000.
Dangelmayr, Andreas: *See—*
Thudium, Karl; Dangelmayr, Andreas; and Rieger, Walter, 5,363,684, Cl. 72-405.000.
D'Angio', Carlo: *See—*
Boattini, Pier P.; D'Angio', Carlo; and Paudice, Ciro, 5,364,479, Cl. 156-100.000.
Danks, John K.; and Mazzola, Richard V., to Endoscopic Concepts, Inc. Trocar and cannula. 5,364,372, Cl. 604-264.000.
Dante, Henry M.; and Lowitz, David A., to Philip Morris Incorporated. Methods and apparatus for automatic image inspection of continuously moving objects. 5,365,596, Cl. 382-8.000.
Dantonia, Luigi: *See—*
Maruyama, Hiroyoshi; Dantonia, Luigi; and Giacometto, Felice, 5,364,088, Cl. 271-164.000.
Dao, Loc H.: *See—*
Ramachandran, Ramakrishnan; and Dao, Loc H., 5,365,011, Cl. 585-829.000.
Dara, Paul C.: *See—*
Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., 5,365,438, Cl. 364-424.030.
Dardenne, Guy: *See—*
Barth, Pat; and Dardenne, Guy, 5,363,727, Cl. 81-177.200.
Dart Industries Inc.: *See—*
Molo, Nicholas J., 5,363,978, Cl. 220-254.000.
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Roubof, Hendrikus J. H.; Van Dortmont, Godefridus M.; and Boesten, Michael W. M., 5,364,609, Cl. 423-387.000.

Du Pont Merck Pharmaceutical Company, The: *See—*
Wilde, Richard G., 5,364,875, Cl. 514-375.000.

Dube, Ghyslain: *See—*
Tremblay, Francois; Turcotte, Gilles R.; Lavoie, Serge; Dube, Ghyslain; Tremblay, Sylvain P.; and Fortin, Jean-Yves, 5,364,443, Cl. 75-403.000.

Duchesneau, Michel L.: *See—*
Mastrangelo, James J.; Duchesneau, Michel L.; and Hayden, Richard A., 5,364,152, Cl. 296-65.100.

Duclos, Larry: *See—*
Miller, Charles W., Jr.; Currier, John; Duclos, Larry; and Ayer, Thomas, 5,363,952, Cl. 198-848.000.

Dudrey, Denis J.: *See—*
Kahlbaugh, Brad E.; Reinhart, Susan B.; Dudrey, Denis J.; and Herman, John T., 5,364,456, Cl. 95-287.000.

Duly Research, Inc.: *See—*
Yu, David U. L.; and Conway, Patrick H., 5,365,190, Cl. 330-149.000.

Dumoulin, Michel M.: *See—*
Cole, Kenneth; Cielo, Paolo; Dumoulin, Michel M.; and Guevremont, Jacques, 5,365,067, Cl. 250-341.800.

Dunaway, Weyman H.; Garrett, Elizabeth H.; and Rowe, Dudley C., to ECC International Inc. Method for pelletizing calcined clay. 5,364,579, Cl. 264-82.000.

Duncan, Alexander: *See—*
Harms, Frank H.; Beard, John R.; and Duncan, Alexander, 5,364,385, Cl. 604-410.000.

Dunn, Jeffery D.; and Dunn, Starla J. Pipe joint cleaner. 5,363,530, Cl. 15-236.080.

Dunn, Starla J.: *See—*
Dunn, Jeffery D.; and Dunn, Starla J., 5,363,530, Cl. 15-236.080.

Dunn, Stephen J.: *See—*
Funk, Erwin D.; Henricson, Kaj; and Dunn, Stephen J., 5,364,505, Cl. 162-238.000.

Dunning, Dave; and Cline, William. Hose cover and hose assembly. 5,363,907, Cl. 165-46.000.

Duphar International Research B.V.: *See—*
Muir, Susie Jane; Koopman, Marcel B. H.; and Kusters, Johannes G., 5,364,774, Cl. 435-69.300.

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Boles, Raymond L.; Knox, Benjamin H.; and Noe, James B., 5,364,701, Cl. 428-373.000.
Dee, Gregory T.; and Tuminello, William H., 5,364,929, Cl. 528-491.000.
Hershey, Howard P.; Katayama, Carol D.; Ralston, Edward J.; Stoner, Timothy D.; and Wong, James F., 5,364,780, Cl. 435-172.300.
Jacobson, Howard W., 5,364,566, Cl. 252-518.000.
Manogue, William H.; and Rao, Velliyur N. M., 5,364,992, Cl. 570-176.000.
Quinn, John A.; and Fan, Roxy N., 5,364,889, Cl. 522-71.000.
Tebbe, Frederick N.; and Baker, Ralph T., 5,364,607, Cl. 423-286.000.

Durako, William J., Jr.: *See—*
Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., 5,365,108, Cl. 257-678.000.

Duranleau, Roger G.: *See—*
Sanderson, John R.; and Duranleau, Roger G., 5,364,988, Cl. 568-909.800.

Duret, Pierre: *See—*
Venturi, Stephane; and Duret, Pierre, 5,363,819, Cl. 123-192.200.

Durkopp Adler Aktiengesellschaft: *See—*
Hampel, Klaus; Pries, Gunter; and Goldbecker, Wilfried, 5,363,786, Cl. 112-255.000.

Durst Phototechnik GmbH: *See—*
Delueg, Verner; and Vinatzer, Alex, 5,365,306, Cl. 355-38.000.

Dust Free, Inc.: *See—*
Burnett, Gilbert W.; and Holland, Robert B., 5,364,458, Cl. 96-55.000.

Dykeman, Douglas H.: *See—*
Derby, Jeffrey H.; Doeringer, Willibald A.; Drake, John E., Jr.; Dykeman, Douglas H.; Li, Liang; Peters, Marcia L.; Sandick, Haldon J.; and Vu, Ken Van, 5,365,523, Cl. 370-85.200.

Dynamic Systems International Inc.: *See—*
Richardson, Lyman; and Mizera, Wojciech, 5,365,137, Cl. 310-258.000.

Dynes, Robert C.; Hartford, Elliot H., Jr.; Hellman, Eric S.; Pargellis, Andrew N.; and Sharifi, Fred, to AT&T Bell Laboratories. Article comprising a superconductor/insulator layer structure, and method of making the article. 5,364,836, Cl. 505-190.000.

Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., to Monsanto Company. Sulfone peroxycarboxylic acids. 5,364,959, Cl. 562-2.000.

E.C.H. Will GmbH: *See—*
Besemann, Alfred, 5,363,730, Cl. 83-425.300.

E. D. Design Manufacturing: *See—*
Hecker, Jack D., 5,363,549, Cl. 29-742.000.

E. L. Harley Inc.: *See—*
Harley, Richard E.; and Mikkelsen, Erik, 5,363,564, Cl. 33-618.000.

E Lead Electronic Co., Ltd.: *See—*
Chen, Stephen, 5,365,159, Cl. 320-15.000.
Chen, Stephen, 5,365,387, Cl. 360-94.000.

Earl, Floyd, to Pure The Ionizer Inc. Electrochemical ionization apparatus system for purifying water. 5,364,512, Cl. 204-228.000.

Earls, Jimmy D.: *See—*
Hefner, Robert E., Jr.; and Earls, Jimmy D., 5,364,912, Cl. 525-418.000.

Eastham, Gary B., to Texas Instruments Incorporated. Pulse transformer having plural simultaneously operable primary windings and a single secondary winding. 5,365,421, Cl. 363-71.000.

Eastman Chemical Company: *See—*
Cox, Mark K.; and Frederick, Tim J., 5,364,935, Cl. 536-69.000.

Eastman Kodak Company: *See—*
Chefalo, Patrick M.; Naujokas, Andrius A.; Popham, Stephen M.; DiStefano, Gary M.; and Buesing, Robert J., 5,364,500, Cl. 159-49.000.
Edwards, James L.; Hahm, Paul T.; and LaBarca, Joseph E., 5,364,747, Cl. 430-504.000.
Fox, Myron E., 5,365,298, Cl. 354-230.000.
Green, Nancy F.; Cummins, Thomas J.; and Oakes, Fred T., 5,364,591, Cl. 422-58.000.
Kim, Sang H.; Adin, Anthony; Beal, Richard E.; Budz, Jerzy A.; Lam, Wai K.; and Whitson, Mark A., 5,364,754, Cl. 430-569.000.
Manzo, Robert P.; and Cavanagh, James, 5,364,550, Cl. 252-102.000.
Mooberry, Jared B.; Singer, Stephen P.; Seifert, James J.; Ross, Robert J.; and Kapp, Daniel L., 5,364,745, Cl. 430-359.000.
Pelto, Ralph H.; Simpson, Brian L.; Walker, Theodore E.; Crevelling, John W.; Logadon, Kevin M.; Drake, Paul C.; and Hennenkamp, Jeffrey R., 5,364,418, Cl. 23-313.00R.
Tschiderer, Paul E., 5,363,998, Cl. 226-200.000.
Wilson, John C.; Bonser, Steven M.; and Jadwin, Thomas A., 5,364,725, Cl. 430-110.000.

Eastman, Richard E.: *See—*
Wilson, Robert J.; Sperduti, David; Eastman, Richard E.; Adler, Randy W.; and Winks, Joseph A., 5,363,938, Cl. 180-233.000.

Easton Aluminum, Inc.: *See—*
Easton, James L.; Filice, Gary W.; Souders, Roger; and Teixeira, Charles, 5,364,095, Cl. 273-72.00A.

Easton, James L.; Filice, Gary W.; Souders, Roger; and Teixeira, Charles, to Easton Aluminum, Inc. Tubular metal ball bat internally reinforced with fiber composite. 5,364,095, Cl. 273-72.00A.

Eaton Corporation: *See—*
Coniff, John B., 5,363,552, Cl. 29-840.000.
Edler, James P., 5,364,608, Cl. 423-344.000.
Huggins, Michael J.; and Chene, William R., 5,363,715, Cl. 74-473.00R.
Pearson, James E., 5,363,713, Cl. 74-425.000.
Raddatz, Claus D.; Wojtecki, Ronald J.; and Zerndt, Norman E., 5,363,743, Cl. 92-98.00D.
Saffari, Akbar; Camps, Francis W.; Medema, Jerry A.; Turner, Charles J.; and Wolf, Jeffrey J., 5,365,062, Cl. 250-239.000.
Wolcott, John H., 5,363,912, Cl. 166-72.000.

Eaton, Dan L.: *See—*
Drayna, Dennis T.; and Eaton, Dan L., 5,364,934, Cl. 536-23.200.

Eatwell, Graham P.: *See—*
Ross, Colin F.; and Eatwell, Graham P., 5,365,594, Cl. 381-71.000.

Ebberg, Alfred: *See—*
Noll, Bernd; Ebberg, Alfred; and Noe, Reinhold, 5,365,361, Cl. 359-161.000.

Ebel, James P.: *See—*
Singer, Robert E.; and Ebel, James P., 5,364,616, Cl. 424-52.000.

Ebinuma, Ryuichi; Mizusawa, Nobutoshi; Suzuki, Masayuki; Uno, Shinichirou; Mori, Tetsuzo; and Kurosawa, Hiroshi, to Canon Kabushiki Kaisha. Exposure control in an X-ray exposure apparatus. 5,365,561, Cl. 378-34.000.

Ebner, Cynthia L.: *See—*
Huynh-Tran, Truc-Chi T.; Kumpfmiller, Ronald J.; and Ebner, Cynthia L., 5,364,741, Cl. 430-300.000.

Ebner, Jerry R.: *See—*
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ECC International Inc.: *See—*
Dunaway, Weyman H.; Garrett, Elizabeth H.; and Rowe, Dudley C., 5,364,579, Cl. 264-82.000.

ECC International Limited: *See—*
Falcon-Steward, Hugh R., 5,364,036, Cl. 241-21.000.

Echizenya, Kazuhiko: *See—*
Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.

Eckert, C. Edward. Molten metal treatment. 5,364,450, Cl. 75-678.000.

Eckstein, James N.; and Bozovic, Ivan, to Varian Associates, Inc. Method of deposing by molecular beam epitaxy. 5,364,492, Cl. 117-105.000.

Ecoair Corp.: *See—*
Powell, James W., deceased, 5,363,674, Cl. 62-505.000.

Ecolab Inc.: *See—*
Lentsch, Steven E.; Keller, Cynthia A.; Bona, Gregory T.; and Man, Victor F., 5,364,551, Cl. 252-156.000.

Eda, Masahiro; and Fujiwara, Masahiko, to NEC Corporation. System for transmitting data using wavelength division multiplexing. 5,365,344, Cl. 359-124.000.

Edelman, Ran, to National Semiconductor Corporation. Method for measuring contact resistance. 5,365,180, Cl. 324-715.000.

Edington, Christopher J.: *See—*
Allen, Bernie; Azevedo, Aaron; Knoepke, Eckhard; Kimball, Neal F. X.; Blake, Philip L.; Hayes, John A.; Healy, John A.; and Edington, Christopher J., 5,363,570, Cl. 36-28.000.

Edler, James P., to Eaton Corporation. Method of converting a silicon nitride from alpha-phase to beta-phase, apparatus used therefor, and silicon nitride material made therefrom. 5,364,608, Cl. 423-344.000.

Edmund, Nicholas E.; and Kyffin, Steven H. M., to Edmund, Nicholas E. Wheelchair. 5,363,934, Cl. 180-6.500.

Edwards, Albert O.: *See—*
Caskey, Charles T.; and Edwards, Albert O., 5,364,759, Cl. 435-6.000.

Edwards, Charles C.: *See—*
Chapman, Michael W.; Edwards, Charles C.; and Mears, Dana C., 5,364,398, Cl. 606-69.000.

Edwards, James L.; Hahm, Paul T.; and LaBarca, Joseph E., to Eastman Kodak Company. Color correcting layers consisting essentially of at least one dye-forming coupler and gelatin in chromogenic black-and-white photographic imaging systems. 5,364,747, Cl. 430-504.000.

Edwards, Nelson, to Linvatec Corporation. White balance target. 5,365,267, Cl. 348-65.000.

Edwards, Richard A. Pet litter box. 5,363,808, Cl. 119-166.000.

Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., to International Business Machines, Inc. Method of drilling vias and through holes. 5,363,553, Cl. 29-852.000.

Edwards, Stuart D.; and Thompson, Russell B., to EP Technologies, Inc. Electrode tip assembly with variable resistance to bending. 5,363,861, Cl. 128-772.000.

EEMCO/DATRON, Inc.: *See—*
Raad, Bernard A., 5,365,133, Cl. 310-68.00D.

Egger, Walter C., to VTZ Engineering & Services AG. Method of cleaning containers, a rinsing assembly and an apparatus for cleaning containers. 5,363,866, Cl. 134-45.000.

Egitto, Frank D.: *See—*
Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.

Egolf, Theo: *See—*
Luthi, Rudolf; Krebs, Roland; and Egolf, Theo, 5,363,685, Cl. 72-405.000.

Ehman, Richard L.: *See—*
Riederer, Stephen J.; Liu, Yu L.; and Ehman, Richard L., 5,363,844, Cl. 128-653.200.

Eichholz, Raimund; and Schuller, Klaus, to Lemforder Metallwaren AG. Bearing mount of the steering column tube of a telescoping steering column. 5,363,717, Cl. 74-493.000.

Eick, Christopher D.; Powers, Paul J.; and Williamson, John R., to AlliedSignal Inc. Full authority propeller pitch control. 5,364,231, Cl. 416-157.00R.

Eickmann, Karl. High pressure devices. 5,364,234, Cl. 417-273.000.

Eierdanz, Horst: *See—*
Neuss, Michael; and Eierdanz, Horst, 5,364,949, Cl. 554-161.000.

Eisen, Yosef; Gilat, Chaim; and Keinan, Giora, to State of Israel, Atomic Energy Commission, Soreq Nuclear Research Center, The. Light weight γ-camera head and γ-camera assemblies containing it. 5,365,069, Cl. 250-370.090.

Eisert, Wolfgang: *See—*
Franz, Helmut; Muller, Thomas; and Eisert, Wolfgang, 5,364,622, Cl. 424-94.640.

Elan Corporation, Plc: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,364,620, Cl. 424-497.000.

El-Ayat, Khaled A.; and Chang, Jia-Hwang, to Actel Corporation. Testability architecture and techniques for programmable interconnect architecture. 5,365,165, Cl. 324-58.100.

Electronic Development, Inc.: *See—*
Rogers, Wesley A., 5,365,179, Cl. 324-650.000.

Electronic Publishing Resources Inc.: *See—*
Shear, Victor H., 5,365,584, Cl. 380-4.000.

Electronics Diversified, Inc.: *See—*
Mallon, Paul E.; and Bateman, Gary S., 5,365,148, Cl. 315-194.000.

Elf Aquitaine Production: *See—*
Delrieu, Jean-Luc, 5,363,788, Cl. 114-125.000.

Elgeti, Klaus: *See—*
Rhiel, Franz F.; Steude, Heinrich; Weymans, Gunther; and Elgeti, Klaus, 5,363,905, Cl. 165-1.000.

Eli Lilly and Company: *See—*
Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,364,856, Cl. 514-253.000.
Cohen, Marlene L.; Lacefield, William B.; and Robertson, David W., 5,364,863, Cl. 514-304.000.

Elitex Usti Nad Orlici: *See—*
Spindler, Zdenek; Burysek, Frantisek; and Novotny, Vojtech, 5,363,638, Cl. 57-270.000.

Elkem Technology a/s: *See—*
Bjornestol, Karl O.; Malmo, Jan T.; Strom, Yngve; and Vikhagen, Eiolf, 5,363,901, Cl. 164-451.000.

Elliott Industries Limited: *See—*
Williams, Edward C., 5,365,033, Cl. 219-121.710.

Elliott, Robert S.: *See—*
Falla, Daniel J.; Ross, Allen W.; and Elliott, Robert S., 5,364,486, Cl. 156-308.400.

Ellis, Donald R.: *See—*
Nicholson, David J.; Ellis, Donald R.; Mills, John B.; DiPerna, Dino C.; Martin, David W.; Peng, Wang-Hsin; and Roberts, Kim B., 5,365,510, Cl. 370-16.000.

Ellis, Gwendolyn G.: *See—*
Arrendiell, Robert W.; and Ellis, Gwendolyn G., 5,363,538, Cl. 24-499.000.

Elsag International B. V.: *See—*
Baker, William E., 5,365,548, Cl. 375-62.000.

Elsner, Bertram F.; and Molison, Robert E., to Elsner Engineering Works, Inc. Two roll web cutter and method. 5,363,728, Cl. 83-23.000.

Elsner Engineering Works, Inc.: *See—*
Elsner, Bertram F.; and Molison, Robert E., 5,363,728, Cl. 83-23.000.

Elst, Paul D.: *See—*
Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., 5,363,987, Cl. 221-195.000.

Eltech Systems Corporation: *See—*
Dietrich, Jospeh J., 5,364,509, Cl. 204-149.000.

Elwell, Brian E., to Novitas Incorporated. Method of calibrating motion detectors within a scaled environment. 5,363,688, Cl. 73-1.00D.

Emerson Electric Co.: *See—*
Richmond, James W., 5,363,873, Cl. 137-1.000.
Sciuto, George J., 5,364,540, Cl. 210-806.000.

Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., to Canon Information Systems, Inc. Method and apparatus for testing an interactive network board. 5,365,464, Cl. 364-580.000.

Emhart Inc.: *See—*
Mowery, Richard W., 5,363,518, Cl. 4-692.000.

Emory University: *See—*
Lollar, John S.; and Runge, Marschall S., 5,364,771, Cl. 435-69.100.

Endo, Masayuki: *See—*
Takinishi, Fumitaka; Togo, Makiko; Endo, Masayuki; and Yokoyama, Yasuaki, 5,364,910, Cl. 525-327.300.

Endorecherche: *See—*
Labrie, Fernand; and Merand, Yves, 5,364,847, Cl. 514-182.000.

Endoscopic Concepts, Inc.: *See—*
Danks, John K.; and Mazzola, Richard V., 5,364,372, Cl. 604-264.000.

Engel, Darryl L., to Universal Tool & Stamping Company, Inc. Screw designs for a scissors jack. 5,364,072, Cl. 254-126.000.

Engel, Steven J.: *See—*
Augenblick, Kurt B.; Crilly, Paul B.; Engel, Steven J.; and Fogelman, Kimber D., 5,363,707, Cl. 73-864.840.

Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, to Hoechst Aktiengesellschaft. Amino-substituted benzoylguanidines, process for their preparation, their use as a medicament and medicament containing them. 5,364,868, Cl. 514-331.000.

Englert, Heinrich C.; Klaus, Erik; Mania, Dieter; and Scholkens, Bernward, to Hoechst Aktiengesellschaft. Use of substituted 3,4-dihydro-2H-benzopyrans as remedies for obstructive functional disorders of the lungs. 5,364,878, Cl. 514-422.000.

Enichem Augusta Industriale S.r.l.: *See—*
Marcotullio, Armando; Tinucci, Laura; and Ciali, Massimo, 5,364,960, Cl. 562-121.000.

Eniricerche S.p.A.: *See—*
Marcotullio, Armando; Tinucci, Laura; and Ciali, Massimo, 5,364,960, Cl. 562-121.000.
Soncini, Paolo; and Bonsignore, Stefanio, 5,364,951, Cl. 556-9.000.

Enkner, Bernhard: *See—*
Gruber, Rudolf; Berger, Rupert; Enkner, Bernhard; and Losbichler, Gerhard, 5,364,079, Cl. 266-246.000.

Enrique Munoz Elizondo, Carlos. Optical device and data collection system. 5,365,061, Cl. 250-237.00R.

Enscore, David J.: *See—*
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., 5,364,630, Cl. 424-449.000.

Ensley, Donald L. Proton maser. 5,365,186, Cl. 330-4.000.

Environmental Research Institute of Michigan: *See—*
Dobbs, Michael E.; Tchoryk, Peter, Jr.; and Jones, Donald B., 5,364,046, Cl. 244-161.000.

Enviropur Waste Refining and Technology, Inc.: *See—*
Hermanson, Paul M., 5,364,985, Cl. 568-871.000.

Enviroscience, Inc.: *See—*
Philipp, Carl T.; and Sims, Bobby H., 5,364,447, Cl. 75-500.000.

Eouzan, Jean-Yves: *See—*
Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, 5,365,270, Cl. 348-311.000.

EP Technologies, Inc.: *See—*
Edwards, Stuart D.; and Thompson, Russell B., 5,363,861, Cl. 128-772.000.
Heinzelman, Bert D.; and Brooks, Christopher J., 5,364,351, Cl. 604-95.000.

Epstein, Irving. Single action rotary release hook. 5,364,145, Cl. 294-82.270.

Equine Textiles, Inc.: *See—*
Armato, Peter J., 5,363,632, Cl. 54-82.000.

Eramo, Jr.; Lincoln; and Winkler, William J., to Morton International, Inc. Photoimageable compositions. 5,364,736, Cl. 430-280.000.

Erdman, William L.: *See—*
Deam, David; and Erdman, William L., 5,365,424, Cl. 363-144.000.

Erich Schumm GmbH & Co. KG: *See—*
Kleemann, Karl F., 5,363,536, Cl. 24-30.50P.

Erickson, Arvid L. Display panel assembly. 5,363,612, Cl. 52-239.000.

Ericsson GE Mobile Communications Inc.: *See—*
Brame, Charles P., 5,365,590, Cl. 380-49.000.
Combs, Edward A.; Maddox, Dennis M.; and Imron, Wim A., 5,365,512, Cl. 370-16.000.

Erlandson, Gregory E.: *See—*
Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., 5,363,987, Cl. 221-195.000.

Ersfeld, Dean A.: *See—*
Moren, Dean M.; and Ersfeld, Dean A., 5,364,693, Cl. 428-263.000.

ESCO Equipment Service Company: *See—*
Dickey, Thomas E.; and Gehr, Thomas Y., Jr., 5,364,147, Cl. 294-118.000.

Eslinger, David M.: *See—*
Sorem, Robert M.; and Eslinger, David M., 5,363,542, Cl. 29-454.000.

Esnouf, Philip S. Game apparatus. 5,364,108, Cl. 273-430.000.

Eson Pac AB: *See—*
Carlsson, Ingmar, 5,364,018, Cl. 229-120.170.

Espitalie, Jean: *See—*
Lafargue, Eric; Espitalie, Jean; and Lesage, Thierry, 5,363,692, Cl. 73-38.000.

Esposito, Chris. Construction arrangement including multiple panels provided with interlocking edges and related methods. 5,363,606, Cl. 52-11.000.

Essary, Karen P. Pillow template apparatus. 5,363,561, Cl. 33-562.000.

Esu Makku Co., Ltd.: *See—*
Makihara, Shinsaku, 5,365,029, Cl. 219-68.000.

Etat Francais represented by Le Centre National d'Etudes des Telecommunications: *See—*
Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, 5,365,270, Cl. 348-311.000.

Etherington, Roger: *See—*
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Ethicon Endo-Surgery: *See—*
Williamson, Warren P., IV, 5,364,003, Cl. 227-178.000.

Ethicon, Inc.: *See—*
Failla, Stephen J.; Rarey, Charles M.; and Stokes, Michael J., 5,364,410, Cl. 606-148.000.
Kuwabara, Masayoshi; Asahara, Tomohiko; Ujiie, Noboru; and Kagaminuma, Nobuhiro, 5,364,409, Cl. 606-148.000.

Ettelbrueck, Ruediger, to Maschinenfabrik Kaspar Walter GmbH & Co., KG. Holding device for hollow-cylinder printing formes. 5,364,202, Cl. 403-322.000.

Etzbach, Karl-Heinz; Sens, Ruediger; and Killburg, Heike, to BASF Aktiengesellschaft. Methine or azamethine dye polymers. 5,364,919, Cl. 526-265.000.

Eugler, Norbert: *See—*
Burger, Simon; and Eugler, Norbert, 5,364,118, Cl. 280-614.000.

Evangelista, Richard A.; Summerfield, Stephen D.; and Cerovich, Lealie S., to Exidyne Instrumentation Technologies, Inc. Gas detection apparatus. 5,363,690, Cl. 73-31.050.

Evans, Barry L.: *See—*
Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., 5,363,859, Cl. 128-739.000.

Evans, Hank A. Pinch resistant child's toilet seat insert. 5,363,509, Cl. 4-235.000.

Eveready Battery Company, Inc.: *See—*
Getz, Dale R.; Nardi, John C.; and Scarr, Robert F., 5,364,715, Cl. 429-229.000.

Exidyne Instrumentation Technologies, Inc.: *See—*
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Pate, Joseph L.; and Fishel, David L., 5,364,681, Cl. 428-137.000.

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Flaman, Michael T. Instrumentation probe. 5,365,554, Cl. 376-245.000.

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Flowers, Daniel G.; and Sternfeld, Marvin, to Research Organics, In. Chromogenic compounds and methods of using same. 5,364,767, Cl. 435-39.000.

Flumene, Antonio G.; and Pilo, Giuseppe. Needle for medical use with safety protection. 5,364,360, Cl. 604-110.000.

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Shaber, Steven H.; and Flynn, Katherine E., 5,364,870, Cl. 514-340.000.

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Hartsock, Dale L.; Caverly, John C.; Schroeder, Fred G.; Anderson, Claudia M.; and Breuhan, Ronald G., 5,364,131, Cl. 285-23.000.
Kennedy, John F.; Kirk, Lawrence P.; and Marek, Gregory A., 5,365,235, Cl. 342-44.000.
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Kotwicki, Allan J.; and Hamburg, Douglas R., 5,365,216, Cl. 340-439.000.
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McCune, Robert C., Jr.; Reatherford, Larry V.; and Zaluzec, Matthew J., 5,364,663, Cl. 427-449.000.
Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., 5,365,438, Cl. 364-424.030.
Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., 5,363,646, Cl. 60-274.000.
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Sopko, Gary M.; Herbert, Gerald F.; and Sarmast, Syed H., 5,364,172, Cl. 301-37.420.
Terry, Joseph L., 5,364,025, Cl. 236-49.100.
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Foseco International Limited: *See—*
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Franz, Helmut; Muller, Thomas; and Eisert, Wolfgang, to Dr. Karl Thomae GmbH. Methods for preventing adhesions to organs and parts of organs by application of tissue plasminogen activator and hydroxyethylcellulose hydrogel. 5,364,622, Cl. 424-94.640.

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Theurer, Josef; and Brunninger, Manfred, 5,364,221, Cl. 414-339.000.

Franzen, Paul H.; Alit, Ken J.; Michaud, Richard R.; Probstmeyer, Helmuth; and Tammone, Michael R., to Dorr-Oliver Incorporated. Disc-decanter centrifuge. 5,364,335, Cl. 494-15.000.

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Weston, Charles W.; Peacock, Lawrence A.; and Thornsberry, Willis L., Jr., 5,364,438, Cl. 71-29.000.

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Frick, Thomas: *See—*
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Fuchs, Thomas: *See—*
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Fujita, Kouetsu; Yanase, Takao; Kinoshita, Shigenori; Motoyoshi, Osamu; and Ito, Yoshio, 5,365,153, Cl. 318-34.000.
Sasaki, Toshiaki; and Shimizu, Hitoshi, 5,364,481, Cl. 118-718.000.

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Itakura, Toru, 5,365,076, Cl. 250-582.000.
Kondo, Shunichi; Umehara, Akira; Aotani, Yoshimasa; and Yamaoka, Tsuguo, 5,364,738, Cl. 430-283.000.
Miyamoto, Yasushi; and Ikegawa, Akihiko, 5,364,755, Cl. 430-584.000.
Ozawa, Yoshio; Matsumoto, Takashi; and Saito, Kimitoshi, 5,365,308, Cl. 355-74.000.
Yamakawa, Katsuyoshi; Sato, Kozo; and Suginome, Takashi, 5,364,941, Cl. 546-114.000.
Yoneyama, Hiroyuki, 5,364,748, Cl. 430-505.000.
Yoshida, Tetsuo; and Heki, Tatsuo, 5,364,750, Cl. 430-509.000.

Fuji Photo Optical Co., Ltd.: *See—*
Minami, Itsuji, 5,365,268, Cl. 348-76.000.
Saito, Tatsuo; and Onozuka, Haruo, 5,365,295, Cl. 354-173.100.
Sato, Kenichi, 5,365,377, Cl. 359-718.000.

Fujihara, Tetuo; Ito, Takashi; Iwaki, Fuminori; and Ichikawa, Hitoshi, to Hitachi, Ltd. Hydroelectric machines and their installation. 5,364,229, Cl. 415-163.000.

Fujii, Takanori: *See—*
Kato, Tamiko; Ozeki, Shinichiro; and Fujii, Takanori, 5,365,517, Cl. 370-58.300.

Fujimoto, Hiroaki: *See—*
Kisida, Hirosi; Shuto, Akira; Sakamoto, Noriyasu; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,364,966, Cl. 564-190.000.

Fujimoto, Shinya: *See—*
Ohuchi, Hirofumi; and Fujimoto, Shinya, 5,363,647, Cl. 60-276.000.

Fujimura, Shuzo; Kisa, Toshimasa; and Motoki, Yasunari, to Fujitsu Limited. Microwave plasma processing process and apparatus. 5,364,519, Cl. 204-298.380.

Fujimura, Yoshiichi; and Matsuura, Shizutaka, to Takata Corporation. Seat belt retractor. 5,364,048, Cl. 242-381.100.

Fujino, Makoto: *See—*
Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, 5,365,261, Cl. 347-103.000.

Fujinoki, Akira: *See—*
Nishimura, Hiroyuki; Fujinoki, Akira; Matsuya, Toshikatsu; Inaki, Kyoichi; Kato, Toshiyuki; and Shimada, Atsushi, 5,364,433, Cl. 65-17.400.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takase, Shigehiro; Hatanaka, Hiroshi; Ezaki, Masami; Tsujii, Eisaku; Okamoto, Masanori; Shigematsu, Nobuharu; and Okuhara, Masakuni, 5,364,624, Cl. 424-117.000.
Takasugi, Hisashi; Katsura, Yousuke; Tomishi, Tetsuo; and Inoue, Yoshikazu, 5,364,871, Cl. 514-342.000.

Fujita, Kouetsu; Yanase, Takao; Kinoshita, Shigenori; Motoyoshi, Osamu; and Ito, Yoshio, to Fuji Electric Co., Ltd. AC variable speed driving apparatus and electric vehicle using the same. 5,365,153, Cl. 318-34.000.

Fujita, Yoshio; and Okamura, Kazuhisa, to Yamaha Corporation. Signal processor for providing variable acoustic effect. 5,365,467, Cl. 364-723.000.

Fujitsu Limited: *See—*
Fujimura, Shuzo; Kisa, Toshimasa; and Motoki, Yasunari, 5,364,519, Cl. 204-298.380.
Inomata, Kiyoshi, 5,364,334, Cl. 493-410.000.
Morisaki, Tetsuya, 5,365,580, Cl. 379-189.000.
Nakagawa, Kenji; Kanazawa, Masao; Haruki, Tamae; and Tabata, Yasuko, 5,364,716, Cl. 430-5.000.
Namiki, Takefumi; and Mikami, Masuhiro, 5,365,473, Cl. 364-829.000.
Oae, Yoshihisa; and Sakamoto, Kiichi, 5,364,718, Cl. 430-5.000.
Tanaka, Masahiro; Tomita, Kazuhiro; and Ogawa, Kazumi, 5,365,167, Cl. 324-158.100.
Yamada, Kazuyuki; and Takakura, Satoshi, 5,365,582, Cl. 379-265.000.

Fujitsu VLSI Limited: *See—*
Tanaka, Masahiro; Tomita, Kazuhiro; and Ogawa, Kazumi, 5,365,167, Cl. 324-158.100.

Fujiwara, Hideki: *See—*
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.

Fujiwara, Masahiko: *See—*
Eda, Masahiro; and Fujiwara, Masahiko, 5,365,344, Cl. 359-124.000.

Fujiwara, Masatsugu: *See—*
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, Masashi; and Onuma, Tsutomu, 5,364,722, Cl. 430-110.000.

Fujiwara, Shigeru: *See—*
Hosohara, Yasuharu; Suzuki, Kiwamu; Fujiwara, Shigeru; and Kawabe, Toshihide, 5,365,169, Cl. 324-233.000.

Fujiwara, Tohru: *See—*
Nishimura, Eichi; Takeda, Shoichi; Fujiwara, Tohru; and Kobayashi, Nobushige, 5,364,063, Cl. 249-52.000.

Fujiwara, Toshiyuki: *See—*
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.

Fukanuma, Tetsuhiko; Kobayashi, Hisao; Yoshida, Tetsuo; and Kondo, Yoshitami, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Sealing structure for scroll type compressor. 5,364,247, Cl. 418-55.200.

Fukaya, Yukiko: *See—*
Nakashima, Shoichi; Fukaya, Yukiko; Komuro, Katsuhiro; and Iizuka, Tadashi, 5,364,248, Cl. 418-178.000.

Fukui, Tetsuro: *See—*
Mouri, Akihiro; Fukui, Tetsuro; Katayama, Masato; Isaka, Kazuo; and Nakamura, Susumu, 5,364,732, Cl. 430-201.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for a marine engine. 5,364,322, Cl. 477-108.000.

Fukumoto, Masanori: *See*—
Shono, Tomofumi; Ohnishi, Teruhito; and Fukumoto, Masanori, 5,365,095, Cl. 257-295.000.

Fukuoka, Hisaji; Yoshida, Tatsuji; Kobayashi, Suminori; and Sakurai, Toshikazu, to Hikari Seiyaku Kabushiki Kaisha. Infusion unit. 5,364,386, Cl. 604-411.000.

Fukushige, Yoshimi: *See*—
Higashino, Tetsuo; Nakamura, Shosaku; Iimuroa, Akira; Maeyama, Miwo; Fukushige, Yoshimi; and Harada, Tomoyuki, 5,364,331, Cl. 492-43.000.

Fukushima, Mitsuru: *See*—
Aoki, Akira; Yasui, Takashi; Mizushima, Yoshihiro; and Fukushima, Mitsuru, 5,364,167, Cl. 297-452.180.

Fukushima, Satoru: *See*—
Sakane, Shinsuke; Ichikawa, Hiroyuki; Fukushima, Satoru; and Hamada, Chiaki, 5,364,175, Cl. 303-97.000.

Fukushima, Tohru: *See*—
Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, 5,365,261, Cl. 347-103.000.

Fukuzawa, Daizo: *See*—
Okuda, Kouichi; Nakamura, Shunji; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,365,314, Cl. 355-208.000.

Fuller, Gregory W.: *See*—
Cannon, Gregory L.; Macko, William J.; Fuller, Gregory W.; and Theobald, Jill L., 5,365,227, Cl. 340-825.550.
Fennell, Robert D.; Cannon, Gregory L.; Macko, William J.; and Fuller, Gregory W., 5,365,221, Cl. 340-636.000.

Fuller, Mark; and Robinson, Alan. Alphanumeric and graphic water display. 5,363,577, Cl. 40-406.000.

Funai Electric Co., Ltd.: *See*—
Shibata, Masaharu, 5,364,183, Cl. 366-98.000.

Funk, Erwin D.; Henricson, Kaj; and Dunn, Stephen J., to Kamyr, Inc. Pressurized ozone pulp delignification reactor and a compressor for supplying ozone to the reactor. 5,364,505, Cl. 162-238.000.

Furqueron, W. Jesse: *See*—
Brocker, Thomas A.; Furqueron, W. Jesse; and Braswell, Bill L., 5,365,606, Cl. 395-650.000.

Furuhata, Tadashi: *See*—
Minowa, Masahiro; Kobayashi, Naoki; Nakajima, Satoshi; and Furuhata, Tadashi, 5,365,257, Cl. 346-76.0PH.

Furukawa, Kenichi. Process for producing dyed laminated products. 5,364,412, Cl. 8-471.000.

Furukawa, Osamu: *See*—
Suzuki, Hiroyuki; and Furukawa, Osamu, 5,365,051, Cl. 250-201.200.

Furuta, Mamoru: *See*—
Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, 5,365,034, Cl. 219-121.830.

Furuya, Kazuhito; and Miyamoto, Yasuyuki, to Tokyo Institute of Technology. Method of manufacturing X-ray exposure mask. 5,364,717, Cl. 430-5.000.

Furuyama, Shizuo: *See*—
Kojima, Kiyoshi; Amami, Kazuyoshi; Ueda, Hiroshi; Furuyama, Shizuo; Hara, Yoshihiro; Hasegawa, Kyoichi; and Kawamata, Tadashi, 5,364,253, Cl. 425-78.000.

Fury, Ltd.: *See*—
Fiore, Allan, 5,363,763, Cl. 101-349.000.

Futrex, Inc.: *See*—
Krueger, Don E., Jr.; and Rosenthal, Robert D., 5,365,066, Cl. 250-341.200.

G. D. Searle & Co.: *See*—
Hansen, Donald W., Jr.; Chandrakumar, Nizal S.; Peterson, Karen B.; Tsymbalov, Sofya; and Husa, Robert K., 5,364,850, Cl. 514-255.000.

Gaber, Bruce P.: *See*—
Turner, David C.; and Gaber, Bruce P., 5,365,072, Cl. 250-491.100.

Gabor, Thomas; and O'Kelly, James M., to Minnesota Mining and Manufacturing Company. Continuous atmospheric pressure CVD coating of fibers. 5,364,660, Cl. 427-255.300.

Gaddis, Edward S., to Otto Oeko-Tech GmbH & Co. KG. Process for the biological purification of sewage. 5,364,530, Cl. 210-621.000.

Gael, Inc.: *See*—
Fields, Gregory S., 5,365,145, Cl. 315-86.000.

Gaffney, John J.: *See*—
O'Connor, Thomas J.; Pistorino, Mark J.; Gaffney, John J.; and Foulds, William T., 5,364,571, Cl. 264-29.500.

Gajda, Gregory J.: *See*—
Barger, Paul T.; Patton, R. Lyle; Lesch, David A.; Bauer, Lorenz J.; and Gajda, Gregory J., 5,365,008, Cl. 585-667.000.

Galassi, Angelo, to Tampograf S.a.s. di J.E. Taylor & Co. Plate inking device. 5,363,761, Cl. 101-163.000.

Gale Banks Engineering: *See*—
Cunningham, Peter T.; and Rowlee, James H., 5,365,437, Cl. 364-424.100.

Gale, Robert M.: *See*—
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., 5,364,630, Cl. 424-449.000.

Galing, Bernard W.: *See*—
Torma, Michael J.; Galing, Bernard W.; Palmer, Robert J.; and West, Suzanne K. S., 5,365,425, Cl. 364-401.000.

Gall, Thomas P.: *See*—
Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.

Gallagher, Alton V. Mobile drilling machine. 5,363,925, Cl. 173-186.000.

Gallagher, John G., to Hydramotion Limited. Vibratile sensing instrument. 5,363,691, Cl. 73-32.00A.

Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., to Union Oil Company of California. Method to treat geothermal fluid streams. 5,364,439, Cl. 71-57.000.

Gamble, Victor: *See*—
Beattie, David; Miller, John; and Gamble, Victor, 5,364,344, Cl. 604-43.000.

Gandionco, Isidro M.: *See*—
Alden, Donald L.; Gandionco, Isidro M.; Thornton, Troy L.; and Yambao, August R., 5,364,355, Cl. 604-96.000.

Gannon, George T.: *See*—
Ross, Richard G.; and Gannon, George T., 5,364,083, Cl. 269-21.000.

Ganser, Martin; and Klink, Alfred, to Mercedes-Benz AG. Control device for a remote-controllable actuation device. 5,363,718, Cl. 74-501.50R.

Ganz, Robert H., to Riverwood International, Inc. Closure panel lock mechanism. 5,364,022, Cl. 229-198.200.

Gar Bar Corporation: *See*—
Mathews, H. Wayne; and Barnes, Ronny L., 5,363,923, Cl. 172-6.000.

Gardner, Eric E.: *See*—
Schneider, Steven E.; Rogers, Rick L.; and Gardner, Eric E., 5,363,537, Cl. 24-289.000.

Gardner, James L., to Commonwealth Scientific and Industrial Research Organisation. Traffic light. 5,365,418, Cl. 362-308.000.

Gardner, Wallace R.; and Goodman, Kenneth R., to Halliburton Logging Services, Inc. Adaptive telemetry system for hostile environment well logging. 5,365,229, Cl. 340-855.400.

Gardopee, George J.: *See*—
Bollinger, Lynn D.; Power, Michael P.; Poole, Richard R.; and Gardopee, George J., 5,364,496, Cl. 156-643.000.

Garinger, Ned D.: *See*—
Murray, Joseph; Garinger, Ned D.; and Sorrells, Peter H., 5,365,130, Cl. 327-278.000.

Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., to Fisher-Price, Inc. Collapsible playpen. 5,363,521, Cl. 5-99.100.

Garoushen, Thomas J.: *See*—
Condit, David A.; Michels, H. Harvey; Garoushen, Thomas J.; and Clough, Warren R., 5,363,661, Cl. 62-77.000.

Garrand, Margo A.: *See*—
Garrand, Michael L.; and Garrand, Margo A., 5,363,871, Cl. 135-90.000.

Garrand, Michael L.; and Garrand, Margo A. Infant sun shield. 5,363,871, Cl. 135-90.000.

Garrett, Elizabeth H.: *See*—
Dunaway, Weyman H.; Garrett, Elizabeth H.; and Rowe, Dudley C., 5,364,579, Cl. 264-82.000.

Garrison, Tim. Shock-reducing saddle pad. 5,363,631, Cl. 54-66.000.

Garroway, Allen N.: *See*—
Buess, Michael L.; Garroway, Allen N.; and Yesinowski, James P., 5,365,171, Cl. 324-307.000.

Garry, Robert F., Jr.; Fermin, Cesar D.; and Alexander, Steve S., Jr., to Administrators of the Tulane Educational Fund. Methods of supporting a diagnosis of systemic lupus erythematosus. 5,364,757, Cl. 435-5.000.

Gas Research Institute: *See*—
Atterbury, William G.; and Boyd, Douglas E., 5,363,673, Cl. 62-323.100.
Komarneni, Sridhar; and Malla, Prakash B., 5,364,455, Cl. 95-117.000.

Gates, Douglas W.: *See*—
Schieck, Richard A.; Kremers, Henry T.; and Gates, Douglas W., 5,364,087, Cl. 271-148.000.

Gaut, Eric K.: *See*—
Huang, Shan-Shan; Hinman, Brian L.; and Gaut, Eric K., 5,365,583, Cl. 379-390.000.

GBR Systems Corporation: *See*—
Kennish, James R., 5,364,085, Cl. 270-58.000.

GC Corporation: *See*—
Sakuma, Tetsuro; and Okada, Junichi, 5,364,890, Cl. 522-92.000.

GE Plastics, Japan, Ltd. (GEP): *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; Miura, Kimiyoshi; Tominari, Kenichi; and Kanezawa, Akio, 5,364,926, Cl. 528-198.000.

Gebauer, Elke: *See*—
Disselbeck, Dieter; and Gebauer, Elke, 5,364,686, Cl. 428-174.000.

Gebr, Becker GmbH & Co.: *See*—
Henning, Hans-Heinrich; Frohn, Dieter; Hollmann, Carldieter; Winkelstroter, Walter; and Diedrichsen, Frank, 5,364,228, Cl. 415-55.100.

Gebr. Happich GmbH: *See*—
Vaxelaire, Francis, 5,364,153, Cl. 296-97.500.

Gebruder Loepfe AG: *See*—
Weidmann, Erich, 5,363,883, Cl. 139-450.000.

Geffre, Raymond: *See*—
Crystal, Richard; and Geffre, Raymond, 5,364,462, Cl. 106-22.00R.

Gehr, Thomas Y., Jr.: *See*—
Dickey, Thomas E.; and Gehr, Thomas Y., Jr., 5,364,147, Cl. 294-118.000.

Geller, Alexander; and Abdelqader, Steven, to Coltene/Whaledent, Inc. Voltage regulator employing a triac to deliver voltage to a load. 5,365,157, Cl. 323-237.000.

Gen-Probe Incorporated: *See*—
Kacian, Daniel L., 5,364,763, Cl. 435-7.320.

GenCorp Inc.: *See*—
Pate, Joseph L.; and Fishel, David L., 5,364,681, Cl. 428-137.000.
Schneider, Steven E.; Rogers, Rick L.; and Gardner, Eric E., 5,363,537, Cl. 24-289.000.

Genencor International Inc.: *See*—
Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., 5,364,770, Cl. 435-69.100.
Lauff, John; Breitfeller, James; Steele, D. Bernie; and Coogan, Louise, 5,364,786, Cl. 435-252.200.

Genentech, Inc.: *See*—
Drayna, Dennis T.; and Eaton, Dan L., 5,364,934, Cl. 536-23.200.
Mather, Jennie P.; and Roberts, Penelope E., 5,364,785, Cl. 435-240.200.
Rosenthal, Arnon, 5,364,769, Cl. 435-69.100.

General Electric Company: *See*—
Anthony, Thomas R.; and Williams, Brad E., 5,363,687, Cl. 72-467.000.
Banholzer, William F.; Anthony, Thomas R.; Gilmore, Robert S.; Siemers, Paul A.; and McCloskey, John C., 5,363,556, Cl. 29-890.142.
Bradtmueller, Lynn E.; Wiedemann, Gustave F.; Pierre, David M.; and Smitley, Ronnie G., 5,363,546, Cl. 29-564.100.
Halila, Ely E., 5,363,643, Cl. 60-39.310.
Hall, Anne L.; and Bernardi, Richard B., 5,363,851, Cl. 128-661.090.
Hann, John C.; and Blaettner, Harald E., 5,365,132, Cl. 310-58.000.
Hung, Stephen L., 5,364,606, Cl. 423-239.200.
Lee, Ching-Pang, 5,363,654, Cl. 60-752.000.
Lee, Gim F., Jr.; and Snow, Kevin M., 5,364,898, Cl. 524-265.000.
Mallie, Frank J., 5,365,556, Cl. 376-272.000.
Sawabe, James K.; and Youngborg, Lamont H., 5,365,555, Cl. 376-258.000.
Schmidt, George S., 5,363,562, Cl. 33-567.100.
Siracusa, Robert J., 5,365,272, Cl. 348-426.000.
Tam, Kwok C., 5,365,560, Cl. 378-8.000.
Tracy, James E.; and Bartholomew, John T., 5,364,703, Cl. 428-460.000.

General Hospital Corporation, The: *See*—
Rubin, Robert H.; and Strauss, H. William, 5,363,846, Cl. 128-654.000.

General Motors Corporation: *See*—
Abramczyk, William M.; and Ikirt, Kimberly L., 5,364,123, Cl. 280-728.00A.
Donegan, Michael W.; Volz, John L.; and Brown, Thomas C., 5,364,124, Cl. 280-730.00R.
Hlavaty, David G.; Shah, Suresh D.; and Compeau, David E., 5,364,252, Cl. 425-3.000.
Mastrangelo, James J.; Duchesneau, Michel L.; and Hayden, Richard A., 5,364,152, Cl. 296-65.100.
Minner, Jeffrey L.; and Farkas, Frank J., 5,364,069, Cl. 251-144.000.
Swain, James C., 5,364,237, Cl. 417-319.000.
Wirsing, Timothy A., 5,363,595, Cl. 49-375.000.

General Railway Signal Corporation: *See*—
Petit, William A.; Maderer, George G.; Macano, Samuel J.; and Hoelscher, James R., 5,364,047, Cl. 246-122.00R.

General Safety Corporation: *See*—
Collins, Cecil A.; and Krambeck, Dagoberto, 5,364,129, Cl. 280-806.000.
Collins, Cecil A.; and Champion, Cecil L., 5,364,169, Cl. 297-479.000.

General Signal Corporation: *See*—
Rains, Robert L., 5,364,184, Cl. 366-273.000.

Genesis Microchip Inc.: *See*—
Greggain, Lance, 5,365,277, Cl. 348-571.000.

Genet, Alain: *See*—
Junino, Alex; Genet, Alain; and Lang, Gerard, 5,364,413, Cl. 8-421.000.

Genetics Institute, Inc.: *See*—
Gerhart, Tobin N.; Wang, Elizabeth A.; and Kriz, Mary J., 5,364,839, Cl. 514-12.000.

Genovese, Frank C., to Xerox Corporation. Apparatus for determining registration of imaging members. 5,365,074, Cl. 250-560.000.

Geobiotics, Inc.: *See*—
Kohr, William J., 5,364,453, Cl. 75-711.000.

Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., to Elan Corporation, Plc. Controlled absorption diltiazem formulation for once daily administration. 5,364,620, Cl. 424-497.000.

Geophysical Survey Systems, Inc.: *See*—
Harmuth, Henning F., 5,365,240, Cl. 343-701.000.

George, Gordon P. Fiberoptic intubating scope with camera and lightweight portable screen and method of using same. 5,363,838, Cl. 128-6.000.

George Karl Geka-Brush GmbH: *See*—
Fitjer, Holger, 5,363,529, Cl. 15-167.100.

Georges, Michael K.; Listigovers, Nancy A.; Drappel, Stephan V.; McDougall, Maria V.; and Allison, Gerald R., to Xerox Corporation. Toner compositions with styrene terpene resins. 5,364,723, Cl. 430-110.000.

Georgetown University: *See*—
Pope, Michael T.; Creaser, Inge I.; and Heckel, Mark C., 5,364,568, Cl. 588-18.000.

Gerber, Matthias: *See*—
Kast, Juergen; Meyer, Norbert; Misslitz, Ulf; Harreus, Albrecht; Walter, Helmut; Gerber, Matthias; and Westphalen, Karl-Otto, 5,364,833, Cl. 504-289.000.

Gerhards, Richard L.: *See*—
Fritschen, Thomas M.; and Gerhards, Richard L., 5,364,160, Cl. 297-195.100.

Gerhart, Tobin N.; Wang, Elizabeth A.; and Kriz, Mary J., to Genetics Institute, Inc. Osteoinductive pharmaceutical formulations. 5,364,839, Cl. 514-12.000.

Gerkin, Richard M.; and Richey, Forest A., Jr., to OSi Specialties Inc. Substituted ureas containing cyclic amines as chain extenders in polymeric systems. 5,364,924, Cl. 528-73.000.

Gerroir, Paul J.: *See*—
Mahabadi, Hadi K.; Kao, Sheau V.; Allison, Gerald R.; Gerroir, Paul J.; Chang, Hui; and Hawkins, Michael S., 5,364,724, Cl. 430-110.000.

Getman, Daniel P.: *See*—
Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., 5,364,959, Cl. 562-2.000.

Getz, Dale R.; Nardi, John C.; and Scarr, Robert F., to Eveready Battery Company, Inc. Alkaline cells that are substantially free of mercury. 5,364,715, Cl. 429-229.000.

Gexco Ent. a division of Tennis Ball Saver, Inc.: *See*—
Sendziak, Walter, 5,364,677, Cl. 428-40.000.

Ghose, Arun K.: *See*—
Angiulli, John M.; Ghose, Arun K.; Konian, Richard R.; Levine, Samuel R.; Meltzer, David; Wang, Wen-Yuan; and Wu, Leon L., 5,365,204, Cl. 331-57.000.

Ghostley, Thomas J.: *See*—
Bergen, Gary R.; and Ghostley, Thomas J., 5,364,139, Cl. 292-169.000.

Giacometto, Felice: *See*—
Maruyama, Hiroyoshi; Dantonia, Luigi; and Giacometto, Felice, 5,364,088, Cl. 271-164.000.

Giblin, Edward; Moran, Kymberly; and Griffiths, Jeannine, to Lever Brothers Company, Division of Conopco, Inc. Bridged integral liner. 5,363,981, Cl. 220-416.000.

Giebel, Gerfried: *See*—
Muller, Gerhard J.; and Giebel, Gerfried, 5,365,032, Cl. 219-121.670.

Gilat, Chaim: *See*—
Eisen, Yosef; Gilat, Chaim; and Keinan, Giora, 5,365,069, Cl. 250-370.090.

Gilbarco Limited: *See*—
Saxton, John E.; Jennings, Michael L.; Bartlett, Jack F.; Dormer, James R.; and Massingberd-Mundy, Peter D. G., 5,363,988, Cl. 222-14.000.

Gilbert, Raymond. Smoke detector with automatic dialing. 5,365,568, Cl. 379-43.000.

Gill, Manzur; Shah, Pradeep L.; and McElroy, Dave J., to Texas Instruments Incorporated. MOSFET cell array. 5,365,082, Cl. 257-374.000.

Gill, Peter J., to Richard Bergner GmbH & Co. Fastening member having threads, particularly a screw and screwing tool. 5,364,212, Cl. 411-404.000.

Gilles, Peru; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, to Sollac. Device for positioning sheet blanks in an installation for the continuous butt welding of said sheet blanks. 5,364,006, Cl. 228-4.100.

Gillingham, David P.: *See*—
Tack, Robert D.; Smith, Darryl R. T.; and Gillingham, David P., 5,364,419, Cl. 44-371.000.

Gilmore, Larry J. Conveyor apparatus with powered leveling roll. 5,363,972, Cl. 209-705.000.

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Benoit, Joel M. D.; Bessenay, Gilles J. M.; and Girault, Daniel G., 5,365,042, Cl. 219-686.000.

Girgis, Michael J.; and Tsao, Ying-Yen P., to Mobil Oil Corporation. Process for converting multi-branched heavy hydrocarbons to high octane gasoline. 5,364,997, Cl. 585-253.000.

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Quax, Wilhelmus J.; Laroche, Yves; Vollebregt, Adrianus W. H.; Stanssens, Patrick; and Lauwereys, Marc, 5,364,782, Cl. 435-202.000.

Gittlein, Michael. Oil cooler. 5,363,823, Cl. 123-196.0AB.

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Marega, Antonello; Giuseppe, Goggia; and Marco, Breda, 5,363,572, Cl. 36-121.000.

Givens, Thomas B.: *See*—
Lewis, Gregory D.; Roberts, Roger G.; and Givens, Thomas B., 5,364,592, Cl. 422-63.000.

Glamkowski, Edward J.: *See*—
Strupczewski, Joseph T.; Helsley, Grover C.; Chiang, Yulin; Bordeau, Kenneth J.; and Glamkowski, Edward J., 5,364,866, Cl. 514-321.000.

Glascock, Joan K.: *See*—
Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., 5,364,959, Cl. 562-2.000.

Glass Incorporated International: *See*—
Lewis, Albert; and Kottnauer, Cenek A., 5,364,431, Cl. 65-488.000.
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Laird, Jesse D., III, 5,363,984, Cl. 221-24.000.
Glenayre Electronics, Ltd.: *See*—
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; and Crowley-Dierks, Joel R., 5,365,569, Cl. 379-57.000.
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Dixon, James T.; and Glickstein, Marvin R., 5,363,641, Cl. 60-39.020.
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Kent, Kevin L.; and Glomski, Jacqueline D., 5,365,399, Cl. 361-704.000.
Glopak Inc.: *See*—
Czech, Norberto; and Lauzon, Robert, 5,363,966, Cl. 206-554.000.
Gnauck, Alan H.; and Kurtzke, Christian, to AT&T Bell Laboratories. Ultra-high capacity non-soliton optical transmission using optical phase conjugation. 5,365,362, Cl. 359-174.000.
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Rosen, Terry J.; Godek, Dennis M.; Gut, Sally; and Wint, Lewin, 5,364,943, Cl. 546-223.000.
Godfried, Alan; and Dronzek, Peter J., Jr. Corner gathered lawn and leaf bag with adhesive attachment means. 5,364,188, Cl. 383-4.000.
Godinho, Norman; and Liaw, Hai-Pyng, to Paradigm Technology, Inc. Oxynitride fuse protective/passivation film for integrated circuit having resistors. 5,365,104, Cl. 257-529.000.
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Goertzen, William, to Motor Coach Industries. Self-steering axle for vehicles. 5,364,113, Cl. 280-81.600.
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Goff, Jerry K.: *See*—
Close, Eric C.; Goff, Jerry K.; and Yost, Donald A., 5,365,422, Cl. 363-98.000.
Gohda, Katsura: *See*—
Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.
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Justice, Alan; Singh, Tejinder; Gohil, Kishor C.; and Valentino, Karen L., 5,364,842, Cl. 514-12.000.
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Kalyon, Dilhan M.; Gokturk, Halit S.; and Railkar, Sudhir B., 5,365,115, Cl. 307-89.000.
Goldbecker, Wilfried: *See*—
Hampel, Klaus; Pries, Gunter; and Goldbecker, Wilfried, 5,363,786, Cl. 112-255.000.
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Debs, Robert J.; Montgomery, Alan B.; Conte, John E.; and Golden, Jeffrey A., 5,364,615, Cl. 424-45.000.
Goldenberg, David M., to Immunomedics, Inc. Detection of cardiovascular lesions. 5,364,612, Cl. 424-1.530.
Goldmann, Siegfried: *See*—
Straub, Alexander; Stoltefuss, Jurgen; Goldmann, Siegfried; Gross, Rainer; Bechem, Martin; Hebisch, Siegbert; Hutter, Joachim; and Rounding, Howard-Paul, 5,364,855, Cl. 514-248.000.
Goldstar Co., Ltd.: *See*—
Park, Sung G., 5,365,500, Cl. 369-2.000.
Goldstar Electron Co., Ltd.: *See*—
Back, Seung Dae, 5,365,404, Cl. 361-760.000.
Hwang, Hyun S., 5,364,807, Cl. 437-44.000.
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Taylor-McCune, Christopher J.; Kurth, Brian J.; and Golobay, Lloyd D., 5,364,244, Cl. 417-536.000.
Gombos, John M.; and Leashno, Moshe, to A.C.X. Trading, Inc. Method of unloading non-palletized units of cargo. 5,364,226, Cl. 414-786.000.
Gomez Ibarguengoitia, Francisco, to Fanox Electronic, S.L. Electronic relay to protect motors and thyristors against symmetric overload, phase unbalance and short-circuit. 5,365,394, Cl. 361-33.000.
Goodman, Kenneth R.: *See*—
Gardner, Wallace R.; and Goodman, Kenneth R., 5,365,229, Cl. 340-855.400.
Goodnough, Glenn D.: *See*—
Pierret, Peter G.; Werbowsky, Laurie L.; Buchholz, A. Bruce; and Goodnough, Glenn D., 5,363,904, Cl. 165-2.000.
Goodyear Tire & Rubber Company, The: *See*—
Bauer, Richard G.; Burlett, Donald J.; Miller, Joseph W., Jr.; Schorr, Gordon R.; and Bapat, Pradeep M., 5,364,905, Cl. 525-53.000.
Wells, Thomas H.; and Bukowski, James A., 5,363,895, Cl. 152-209.00R.
Gordish, Ronald J.: *See*—
Crockett, Dennis D.; Gordish, Ronald J.; Kulikowski, Karl J.; and Munz, Robert P., 5,365,036, Cl. 219-137.0WM.
Gordon, Ellis D. Automatic food preparation device. 5,363,746, Cl. 99-328.000.
Gordon, Norman S., to Laurus Medical Corporation. Endoscopic suture system. 5,364,408, Cl. 606-144.000.
Gore, Kiron: *See*—
Clayton, Everett A.; and Gore, Kiron, 5,364,045, Cl. 242-588.600.
Gorman, Michael: *See*—
Kelman, Josh; Gray, John; and Gorman, Michael, 5,364,159, Cl. 296-192.000.
Gossens, Anthonette A.: *See*—
Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., 5,364,380, Cl. 604-359.000.
Goto, Akira: *See*—
Inoue, Makoto, deceased; Inoue, Tsuneo, heir; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,365,255, Cl. 347-45.000.
Goto, Soju, to Kabushiki Kaisha Kenwood. Digital recording and reproducing apparatus. 5,365,503, Cl. 369-32.000.
Goto, Tugio: *See*—
Aikou, Kenichi; Suzuki, Eiichi; and Goto, Tugio, 5,363,765, Cl. 102-220.000.
Gotoh, Moriyasu: *See*—
Yorita, Hiroshi; Igashira, Toshihiko; Sakakibara, Yasuyuki; Gotoh, Moriyasu; and Watanabe, Kazuhide, 5,363,816, Cl. 123-90.120.
Gottschald, Lutz; and Barwasser, Gunter, to Wernicke & Co. GmbH. Eyelgass lens edging machine. 5,363,597, Cl. 451-69.000.
Gottzmann, Christian F.: *See*—
Acharya, Arun; Gottzmann, Christian F.; Lockett, Michael J.; Schneider, James S.; Victor, Richard A.; and Zawierucha, Robert, 5,363,909, Cl. 165-111.000.
Gourley, Charles A. Latching winch suitable for flagpoles. 5,364,074, Cl. 254-375.000.
Gouttebessis, Jacques; and Jouve, Guy, to Compagnie Generale des Etablissements Michelin-Michelin & Cie. Safety support to be incorporated inside a tire. 5,363,894, Cl. 152-158.000.
Gove, Robert J.: *See*—
Doherty, Donald B.; Meyer, Richard C.; Marshall, Stephen W.; Sampsell, Jeffrey B.; and Gove, Robert J., 5,365,283, Cl. 348-743.000.
Grabenkort, R. W.; and Joyce, Thomas P., to Abbott Laboratories. Flexible container with intergral protective cover. 5,364,384, Cl. 604-408.000.
Grabos, Fred F., Jr.; and Dondero, George V., to Smith Sport Optics, Inc. Protective goggle and lens with adjustable ventilation. 5,363,512, Cl. 2-436.000.
Grabowski, Norman A., to United Technologies Corporation. Ampoule rupture detection system. 5,363,694, Cl. 73-40.700.
Grace, Fred I.: *See*—
Brandon, Fred J.; Lampson, Miles L.; and Grace, Fred I., 5,363,766, Cl. 102-374.000.
Graco Inc.: *See*—
Ma, Yamin; Lunzer, Lawrence J.; and Fender, Norman N., 5,364,035, Cl. 239-690.000.
Sydow, Chris W., 5,363,739, Cl. 91-346.000.
Grady, Eugene J. Method and apparatus for carpet stretching. 5,364,143, Cl. 294-8.600.
Grafe, Horst, to SMS Schloemann-Siegmag Aktiengesellschaft. Apparatus for displacing and adjusting powered rolls supported in crossbeams for conveying metal plates. 5,363,731, Cl. 83-436.000.
Graffin, Andre , to Serac France. Device for closing receptacles by welding on lids, and installation including the same. 5,363,629, Cl. 53-329.300.
Graham, Gary A. Exercise apparatus comprising an adjustable kickplate assembly. 5,364,327, Cl. 482-122.000.
Graham, Martin H., to Tut Systems, Inc. Network monitor and test apparatus. 5,365,515, Cl. 370-17.000.
Grainco Queensland Co-Operative Association Limited: *See*—
Coles, Richard G.; and Broadfoot, Ian J., 5,363,754, Cl. 99-484.000.
Granneman, James G.; Lahners, Kristine N.; and Rao, Donald D., to Wayne State University. DNA molecule encoding the β_3-adrenergic receptor. 5,364,772, Cl. 435-69.100.
Grant, Roderick M.: *See*—
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Grapes, Thomas F.: *See*—
Tilles, David J.; San Miguel, Frank J.; Grapes, Thomas F.; Deemer, Diane L.; Wakamiya, Stanley K.; Mullenix, James D.; Westerdale, Mark W.; and Bialik, David, 5,363,967, Cl. 209-539.000.
Graphic Utilities, Incorporated: *See*—
Crystal, Richard; and Geffre, Raymond, 5,364,462, Cl. 106-22.00R.
Graphoplast S.p.A.: *See*—
Piana, Ivana; and Piana, Silvano, 5,363,576, Cl. 40-316.000.
Grass AG: *See*—
Scheible, Adolf, 5,364,181, Cl. 312-348.400.
Grau, Thomas D., to International Pipe Machinery Corp. An improved combination counter rotating packerhead and vibrator assembly and method of operation thereof. 5,364,578, Cl. 264-71.000.
Grawey, Charles R.; Grob, Robert J.; and Hart, Cullen P., to Caterpillar Inc. Frictionally driven belted work vehicle. 5,363,936, Cl. 180-9.210.
Gray, Gary A., Jr., to Xerox Corporation. Soft nip folder. 5,364,332, Cl. 493-23.000.
Gray, Gregory L.: *See*—
Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., 5,364,770, Cl. 435-69.100.
Gray, John: *See*—
Kelman, Josh; Gray, John; and Gorman, Michael, 5,364,159, Cl. 296-192.000.

Gray, Thomas E.; Kunselman, Michael E.; and Palmer, Richard A., to Dow Corning Corporation. Silicone rubber with self-adhesion to glass and metal. 5,364,921, Cl. 528-15.000.
Great American Tool Company, Inc., The: *See*—
Anthon, John R.; Cox, James V.; and Sullivan, Scott L., 5,363,602, Cl. 451-540.000.
Green, David T.; Bolanos, Henry; Young, Wayne; DeFonzo, Stephan A.; McGarry, Richard A.; and Mastri, Dominick L., to United States Surgical Corporation. Apparatus and method for applying surgical staples to attach an object to body tissue. 5,364,002, Cl. 227-177.000.
Green, George D.: *See*—
Calcaterra, Lidia T.; Koljack, Mathias P.; Farishta, Qamardin; Koehler, Michael G.; Bedwell, William B.; Hangey, Dale A.; and Green, George D., 5,364,541, Cl. 252-8.600.
Green, Nancy F.; Cummins, Thomas J.; and Oakes, Fred T., to Eastman Kodak Company. Device for moving a target-bearing solid through a liquid for detection while being contained. 5,364,591, Cl. 422-58.000.
Green, Wells L.: *See*—
Baker, Jay D.; Lemecha, Myron; McMillan, Richard K., II; Salisbury, Kenneth A.; Stevenson, Paul E.; Merala, Thomas B.; Green, Wells L.; Mikkor, Matti; and Meyer, Bernard A., 5,364,011, Cl. 228-180.210.
Greenberg, Allen. Color bloom painting system. 5,364,470, Cl. 118-500.000.
Greenwood, Jean B.; and Tenbarge, J. Stephen, to Jeanie HearRing, Inc. Decorative and operative hearing aid attachment. 5,365,593, Cl. 381-69.000.
Greggain, Lance, to Genesis Microchip Inc. Apparatus with reduction/magnification image size processing for producing low-pass filtered images. 5,365,277, Cl. 348-571.000.
Gregori, Marco: *See*—
Zuffada, Maurizio; Vai, Gianfranco; Gregori, Marco; Moloney, David; and Betti, Giorgio, 5,365,193, Cl. 330-253.000.
Gretag Imaging, AG: *See*—
Kraft, Walter, 5,365,353, Cl. 358-518.000.
Grethen, Hartmut: *See*—
Drees, Friedrich; Nisius, Raimund; Grethen, Hartmut; and Pekruhn, Wolfgang, 5,365,348, Cl. 358-298.000.
Gretzky, Anthony J.: *See*—
Burkholder, Roy A.; and Gretzky, Anthony J., 5,364,314, Cl. 473-94.000.
Grewe, Werner: *See*—
Betz, Dieter; Nuebel, Karl-Heinz; Grewe, Werner; and Balcarek, Oskar, 5,364,279, Cl. 439-76.000.
Grey, Roger A.: *See*—
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Greyhawk Systems, Inc.: *See*—
Volimer, David W.; and Kugizaki, Rodney J., 5,365,287, Cl. 353-31.000.
Grierson, Donald; Hamilton, Andrew J.; and Lycett, Grantley W., to Imperial Chemical Industries PLC. Antisense constructs derived from pTOM13 plants and plant cells with reduced ethylene evolution. 5,365,015, Cl. 800-205.000.
Gries, Heinz: *See*—
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,364,614, Cl. 424-9.000.
Griffith, Owen W.; and Narayanan, Krishnaswamy, to Medical College of Wisconsin Research Foundation, Inc., The. S-alkyl-isothioureidoamino acids and use thereof. 5,364,881, Cl. 514-508.000.
Griffiths, Jeannine: *See*—
Giblin, Edward; Moran, Kymberly; and Griffiths, Jeannine, 5,363,981, Cl. 220-416.000.
Grimes, Lewis E.: *See*—
Radlowski, Cecelia A.; Hagen, Gary P.; Grimes, Lewis E.; and Tatterson, David F., 5,364,979, Cl. 568-697.000.
Grinding & Sizing Co., Inc.: *See*—
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Grob, Robert J.: *See*—
Grawey, Charles R.; Grob, Robert J.; and Hart, Cullen P., 5,363,936, Cl. 180-9.210.
Grochowicz, Sebastian F. Table saw extension apparatus. 5,363,893, Cl. 144-287.000.
Groemminger, Suzanne F.: *See*—
De, Nimai C.; Heiler, David J.; Marsh, David A.; and Groemminger, Suzanne F., 5,364,637, Cl. 424-464.000.
Gross, Rainer: *See*—
Straub, Alexander; Stoltefuss, Jurgen; Goldmann, Siegfried; Gross, Rainer; Bechem, Martin; Hebisch, Siegbert; Hutter, Joachim; and Rounding, Howard-Paul, 5,364,855, Cl. 514-248.000.
Grossmann, Klaus: *See*—
Kirchner, Juergen; Schmidt, Oskar; Grossmann, Klaus; Rademacher, Wilhelm; Hepp, Michael; and Zierke, Thomas, 5,364,834, Cl. 504-319.000.
Grothaus, Paul G.: *See*—
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Groussin, Bernard, to Thomson Hybrides. Integrated circuit of semiconductor lasers. 5,365,533, Cl. 372-36.000.
Groves, Dorothy: *See*—
Groves, Trevor K., 5,364,679, Cl. 428-76.000.
Groves, Trevor K., to Groves, Dorothy. Flexible armour with energy absorbing half-spheres or hemispherically-shaped bodies. 5,364,679, Cl. 428-76.000.
Gruber, Peter; Roth, Willy; and Schepky, Gottfried, to Dr. Karl Thomae GmbH. Oral pharmaceutical forms of pimobendan. 5,364,646, Cl. 424-464.000.
Gruber, Rudolf; Berger, Rupert; Enkner, Bernhard; and Losbichler, Gerhard, to Voest-Alpine Industrieanlagenbau GmbH. Tiltable converter. 5,364,079, Cl. 266-246.000.
Gruber, Walter, to Carl Freudenberg, Firma. Pivot bearing. 5,364,191, Cl. 384-203.000.
Grundy, David A.: *See*—
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Grutze, Joachim: *See*—
Schwarz, Max; Grutze, Joachim; Hildebrand, Dietrich; Wolff, Joachim; and Stohr, Frank-Michael, 5,364,416, Cl. 8-549.000.
Gsell, Thomas C.: *See*—
Matkovich, Vlado I.; Bormann, Thomas J.; Gsell, Thomas C.; and Pascale, Frank R., 5,364,526, Cl. 210-206.000.
Gu, Sono; and Nagao, Yoshinori, to Canon Kabushiki Kaisha. Multi-image forming apparatus. 5,365,324, Cl. 355-326.00R.
Guarriello, Henry J.; Guarriello, Joseph A.; and Guarriello, Theodore J. Reverse lip blow molded article. 5,364,675, Cl. 428-35.700.
Guarriello, Joseph A.: *See*—
Guarriello, Henry J.; Guarriello, Joseph A.; and Guarriello, Theodore J., 5,364,675, Cl. 428-35.700.
Guarriello, Theodore J.: *See*—
Guarriello, Henry J.; Guarriello, Joseph A.; and Guarriello, Theodore J., 5,364,675, Cl. 428-35.700.
Guess, Ronald W.: *See*—
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; and Bradley, Greg A., 5,363,667, Cl. 62-131.000.
Janke, Donald E.; Szynal, Joseph M.; and Guess, Ronald W., 5,363,669, Cl. 62-155.000.
Guetard, Denise: *See*—
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Guevremont, Jacques: *See*—
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Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, to Thomson-CFS; and Etat Francais represented by Le Centre National d'Etudes des Telecommunications. Method and device for throughput compression for a videophone camera. 5,365,270, Cl. 348-311.000.
Guilford Pharmaceuticals Inc.: *See*—
Hamilton, Gregory S., 5,364,876, Cl. 514-381.000.
Guinn, Lloyd J.; and Smith, James L. Microbial cleaner. 5,364,789, Cl. 435-262.500.
Guiraudon, Gerard M.; and Bourgeois, Ivan, to Medtronic, Inc. Muscle powered cardiac assist system. 5,364,337, Cl. 600-16.000.
Gulf States Paper Corporation: *See*—
Gulliver, Richard F.; and Linder, Michael C., 5,364,333, Cl. 493-84.000.
Gulliver, Richard F.; and Linder, Michael C., to Gulf States Paper Corporation. Tamper evident consumer product package, windowed flat blank used therein, and method and apparatus for making the same. 5,364,333, Cl. 493-84.000.
Gunzel, Erhard P. H.: *See*—
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Gunzier, Volkmar: *See*—
Bickel, Martin; Brocks, Dietrich; Burghard, Harald; Gunzier, Volkmar; and Henke, Stephan, 5,364,873, Cl. 514-354.000.
Guo, Shao H.; and Grey, Roger A., to ARCO Chemical Technology, L.P. Graft polymer compositions containing mono-amine functionalized polyoxyalkylene ethers. 5,364,909, Cl. 525-69.000.
Gur, Turgut M.; Wise, Henry; and Huggins, Robert A., to Leland Stanford Junior University, The Board of Trustees of the. Method and apparatus for partial oxidation of methane and cogeneration of electrical energy. 5,364,506, Cl. 204-59.00R.
Gurewitz, Richard M. Thermoplastic film from polyethylene having improved surface adhesion and method of making thereof. 5,364,695, Cl. 428-323.000.
Gursky, Paul S.: *See*—
Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.
Gurtler, Josef, to Hagen Batterie AG. Terminal post for a storage battery. 5,364,714, Cl. 429-178.000.
Gustafson, Donald E., to Minnesota Mining and Manufacturing Company. Cover assembly for use with photographs. 5,364,671, Cl. 428-14.000.
Gut, Sally: *See*—
Rosen, Terry J.; Godek, Dennis M.; Gut, Sally; and Wint, Lewin, 5,364,943, Cl. 546-223.000.
Guthery, B. Eugene. Disinfecting product. 5,364,650, Cl. 426-331.000.
Guthrie, Calvin L.: *See*—
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Gutmann, Gunter: *See*—
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Gutohrlein, Bernd: *See*—
Becker, Rolf; Michel, Thomas; Meissner, Manfred; and Gutohrlein, Bernd, 5,364,174, Cl. 303-97.000.
Gutowitz, Howard A. Method and apparatus for encryption, decryption and authentication using dynamical systems. 5,365,589, Cl. 380-43.000.

Gutte, Richard: *See*—
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Gyoten, Masayoshi: *See*—
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Haas, David J.; and Haas, Sandra F., to S.J.A. Trust. Method for assembly and activation of a reusable security identification badge. 5,364,132, Cl. 283-67.000.

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Haas, David J.; and Haas, Sandra F., 5,364,132, Cl. 283-67.000.

Haas, Thomas; and Arntz, Dietrich, to Degussa Aktiengesellschaft. Process for the preparation of 1,3-propanediol. 5,364,987; Cl. 568-866.000.

Haas, Thomas: *See*—
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Haavisto, John R.: *See*—
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Habich, Dieter; Hansen, Jutta; and Paessens, Arnold, to Bayer Aktiengesellschaft. Phosphonate-containing pseudopeptides of the hydroxyethylamine and norstatin type. 5,364,931, Cl. 530-331.000.

Hachisuka, Atsushi: *See*—
Ajika, Natsuo; Arima, Hideaki; Motonami, Kaoru; Hachisuka, Atsushi; and Okudaira, Tomonori, 5,364,811, Cl. 437-52.000.

Hackett, Anthony: *See*—
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Straub, Alexander; Stoltefuss, Jurgen; Goldmann, Siegfried; Gross, Rainer; Bechem, Martin; Hebisch, Siegbert; Hutter, Joachim; and Rounding, Howard-Paul, 5,364,855, Cl. 514-248.000.

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Hecker, Jack D., to E. D. Design Manufacturing. Cable laminating and terminating system. 5,363,549, Cl. 29-742.000.

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Wernicke, Ubbo; Osegowitsch, Viktor; and Hehn, Wilfried, 5,365,300, Cl. 354-320.000.

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Varasi, Mario; Heidempergher, Franco; Arrigoni, Claudio; and Caccia, Carla, 5,364,854, Cl. 514-230.200.

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Kiener, Andreas; Tschech, Andreas; Tinschert, Andreas; and Heinzmann, Klaus, 5,364,940, Cl. 544-406.000.

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Stanislowski, Anna G.; Heitfeld, Fred A.; Wiersema, Richard J.; and Poulose, Ayyookaran J., 5,364,554, Cl. 252-186.380.

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Yoshida, Tetsuo; and Heki, Tatsuo, 5,364,750, Cl. 430-509.000.

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Line, Henri, 5,364,329, Cl. 483-56.000.

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Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., 5,363,987, Cl. 221-195.000.

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Strupczewski, Joseph T.; Helsley, Grover C.; Chiang, Yulin; Bordeau, Kenneth J.; and Glamkowski, Edward J., 5,364,866, Cl. 514-321.000.

Henderson, Robert W., to Nutramax Laboratories, Inc. Glucosamine, chondroitin and manganese composition for the protection and repair of connective tissue. 5,364,845, Cl. 514-54.000.

Hendrick, David A.: *See*—
Robinson, Randolph C.; and Hendrick, David A., 5,364,396, Cl. 606-53.000.

Hendrickson, Andrew D., to LucasArts Entertainment Company. Method and apparatus for remote control and synchronization allowing for simultaneous remote collaboration. 5,365,579, Cl. 379-101.000.

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Schultz, Dieter, 5,364,362, Cl. 604-115.000.

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Bickel, Martin; Brocks, Dietrich; Burghard, Harald; Gunzier, Volkmar; and Henke, Stephan, 5,364,873, Cl. 514-354.000.

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Devore, David I.; and Fischer, Stephen A., 5,364,927, Cl. 528-339.300.

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Demmering, Guenther; Heck, Stephan; and Friesenhagen, Lothar, 5,364,986, Cl. 568-885.000.
Hill, Karlheinz; Foerg, Franz; Koerner, Hermann; and Penninger, Josef, 5,364,647, Cl. 424-490.000.
Merz, Thomas; Shamayeli, Khalil; and Kuhlmann, Werner, 5,364,552, Cl. 252-174.220.
Neuss, Michael; and Eierdanz, Horst, 5,364,949, Cl. 554-161.000.

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Henning, Hans-Heinrich; Frohn, Dieter; Hollmann, Carldieter; Winkelstroter, Walter; and Diedrichsen, Frank, to Gebr, Becker GmbH & Co. Turbine for gas compression. 5,364,228, Cl. 415-55.100.

Henricson, Kaj: *See*—
Funk, Erwin D.; Henricson, Kaj; and Dunn, Stephen J., 5,364,505, Cl. 162-238.000.

Henszey, Richard R.; and Weiss, Bruce, to Sentry Equipment Corp. Automated sample conditioning module. 5,363,874, Cl. 137-14.000.

Hepp, Michael: *See*—
Kirchner, Juergen; Schmidt, Oskar; Grossmann, Klaus; Rademacher, Wilhelm; Hepp, Michael; and Zierke, Thomas, 5,364,834, Cl. 504-319.000.

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Sopko, Gary M.; Herbert, Gerald F.; and Sarmast, Syed H., 5,364,172, Cl. 301-37.420.

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Kahlbaugh, Brad E.; Reinhart, Susan B.; Dudrey, Denis J.; and Herman, John T., 5,364,456, Cl. 95-287.000.

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Herman, Susan J.; Wallace, Richard H.; Stella, Michel; and Brantingham, George L., to Texas Instruments Incorporated. Apparatus and method for teaching. 5,364,272, Cl. 434-159.000.

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Hern, Gregory L., to Baker Hughes Incorporated. Dual-diaphragm lubricant compensator for earth-boring bits. 5,363,930, Cl. 175-228.000.

Hernandez, Ana M., to Diston Industries, Inc. Adjustable corner mullion for joining building panels. 5,363,616, Cl. 52-281.000.

Herndon, Oma L. Combustible material treatment process and product. 5,364,420, Cl. 44-542.000.

Herrmann, Richard W.: *See*—
Kasvikis, Spyros; Herrmann, Richard W.; and Finburgh, Simon E., 5,364,364, Cl. 604-151.000.

Herron, Ross W.; and Beard, Garry E. Pulse damper. 5,364,236, Cl. 417-312.000.

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Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, 5,365,270, Cl. 348-311.000.

Herz, Glenn E.: *See*—
Warren, Robert C.; Farmer, Stanley E.; and Herz, Glenn E., 5,363,771, Cl. 105-29.100.

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Mach, Patrick A.; Hesselroth, Karen E.; Adams, Carl A.; and Schwab, Debra L., 5,364,766, Cl. 435-34.000.

Hesshaus, Werner, to Francotyp-Postalia GmbH. Postage meter strip printing machine. 5,365,044, Cl. 235-375.000.

Hetfield, Margaret: *See*—
Chesley, David; Falck, Deborah; Hanson, Robert L.; and Hetfield, Margaret, 5,363,578, Cl. 40-488.000.

Hettinger, William P.; and Benslay, Roger M., to Ashland Oil, Inc. Composition comprising magnetically active moieties for magnetic beneficiation of particulates in fluid bed hydrocarbon processing. 5,364,827, Cl. 502-338.000.

Heuer, Axel: *See*—
Schielke, Rainer; Suhr, Holger; Wurdemann, Udo; and Heuer, Axel, 5,365,053, Cl. 250-201.700.

Hewitt, Geoffrey A.; Rath, Andrew K.; and McQuarrie, Harvey K., to Cardio-Search Limited. Device for controlling the inflation of a balloon catheter. 5,364,358, Cl. 604-99.000.

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Augenblick, Kurt B.; Crilly, Paul B.; Engel, Steven J.; and Fogelman, Kimber D., 5,363,707, Cl. 73-864.840.
Brown, Charles A.; and Manley, Robert B., 5,365,103, Cl. 257-497.000.
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Lin, Hong; Sorin, Wayne V.; and Donald, David K., 5,365,531, Cl. 372-18.000.
Manley, Robert B., 5,365,127, Cl. 326-73.000.
Miller, Kevin L.; Krug, Eric M.; and Imthurn, James A., 5,365,383, Cl. 360-69.000.
Nguyen, Khe C., 5,364,727, Cl. 430-119.000.
Sorin, Wayne V., 5,365,335, Cl. 356-345.000.
Walsh, Peter J., 5,365,509, Cl. 370-13.000.
Zimmermann, Hans-Peter, 5,364,521, Cl. 204-299.00R.

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MacLennan, Ian M.; and Hewson, Clifford B., 5,364,639, Cl. 426-16.000.

Hexter, Peter K., Jr., to CUI, Inc. Embossed metal trading card and container therefore. 5,363,964, Cl. 206-449.000.

Heyer, Raymond F., to Minnesota Mining and Manufacturing Company. Entangled continuous filament nonwoven scouring articles and methods of making same. 5,363,604, Cl. 51-400.000.

Heyns, Garrett J.; McClure, Terry R.; Nicholl, Hugh; Read, Peter H.; Schulte, Steven M.; and Tabrizi, Mohammad F., to AT&T Bell Laboratories. Probemat cleaning system using CO_2 pellets. 5,364,472, Cl. 134-7.000.

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McGraw, Kevin N., 5,363,522, Cl. 5-474.000.

Hidaka, Yusei: *See*—
Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.

Higashino, Tetsuo; Nakamura, Shosaku; Iimurou, Akira; Maeyama, Misao; Fukushige, Yoshimi; and Harada, Tomoyuki, to Tohoyogyo Co., Ltd. Heat resistant roll for use in steel plate manufacturing equipment. 5,364,331, Cl. 492-43.000.

Higgins, Sheryl W.: *See*—
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Highland Supply Corporation: *See*—
Weder, Donald E.; and Straeter, William F., 5,363,592, Cl. 47-58.000.
Weder, Donald E.; and Straeter, Joseph G., 5,363,630, Cl. 53-399.000.

Hikari Seiyaku Kabushiki Kaisha: *See*—
Fukuoka, Hisaji; Yoshida, Tatsuji; Kobayashi, Suminori; and Sakurai, Toshikazu, 5,364,386, Cl. 604-411.000.

Hikita, Kazuyasu, to Mitsubishi Materials Corporation. Apparatus for converting light energy into electric energy and storing the same. 5,364,710, Cl. 429-9.000.

Hild, Eugen; and Floettmann, Kai-Uwe, to Robert Bosch GmbH. Hand planing tool with a rotating blade mount. 5,363,892, Cl. 144-225.000.

Hildebrand, Dietrich: *See*—
Schwarz, Max; Grutze, Joachim; Hildebrand, Dietrich; Wolff, Joachim; and Stohr, Frank-Michael, 5,364,416, Cl. 8-549.000.

Hilke, Rainer; and Schmaderer, Gerhard, to A-Z Formen- und Maschinenbau GmbH. Retreading device for tires. 5,364,490, Cl. 156-396.000.

Hill, Karlheinz; Foerg, Franz; Koerner, Hermann; and Penninger, Josef, to Henkel Kommanditgesellschaft auf Aktien. Powdered preparations of surface active alkylglycosides. 5,364,647, Cl. 424-490.000.

Hill, Peter C.; Saffer, Gary M.; Pugh, Robert v.; and Asbaghi, Ahmed, to Mattel, Inc. Surface skimming toy. 5,364,299, Cl. 446-176.000.

Hill, Randal M.; and Snow, Steven A., to Dow Corning Corporation. Silicone vesicles and entrapment. 5,364,633, Cl. 424-450.000.

Hill, William E.: *See*—
Kraai, Leon A.; Sager, Robert L., Jr.; and Hill, William E., 5,365,025, Cl. 181-249.000.

Hillebrenner, H. William, to American Sterlizer Company. Method for sterilization of objects. 5,364,590, Cl. 422-28.000.

Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., to AT&T Bell Laboratories. Establishing telecommunications call paths between clustered switching entities. 5,365,524, Cl. 370-94.200.

Hillmann, Rudiger; and Fuchs, Thomas, to Mannesmann AG. Arrangement for printer equipment for monitoring reservoirs that contain printing medium. 5,365,312, Cl. 355-206.000.

Hillmer-Mann, Eric W., to McKenzie, R. Dale. Sheet fastener hinge device. 5,364,199, Cl. 402-68.000.

Hills Industries Limited: *See*—
Meade, Ronald G., 5,363,975, Cl. 211-197.000.

Himes, Ronald E.; Holtmyer, Marlin D.; Hunt, Charles V.; and Laramay, Mary A. H., to Halliburton Company. Method of gravel packing a well. 5,363,916, Cl. 166-276.000.

Himmelreich, Margot Marie Charlotte, Petra Himmelreich, heirs: *See*—
Spiess, Wolfram; Franke, Friedrich; Himmelreich, Rolf, deceased; and Himmelreich, Ralf, heir, 5,364,952, Cl. 556-44.000.

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Spiess, Wolfram; Franke, Friedrich; Himmelreich, Rolf, deceased; and Himmelreich, Ralf, heir, 5,364,952, Cl. 556-44.000.

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Spiess, Wolfram; Franke, Friedrich; Himmelreich, Rolf, deceased; and Himmelreich, Ralf, heir, 5,364,952, Cl. 556-44.000.

Hines, Marshall U., to AlliedSignal Inc. Latching solenoid with manual override. 5,365,210, Cl. 335-238.000.

Hinman, Brian L.: *See*—
Huang, Shan-Shan; Hinman, Brian L.; and Gaut, Eric K., 5,365,583, Cl. 379-390.000.

Hino, Seigo: *See*—
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Hinz, Werner; Maletzko, Christian; Becker, Johannes; and Matzke, Guenter, to BASF Akitengesellschaft. Preparation of compact or cellular elastomers containing urethane and urea groups, and moldings produced therefrom. 5,364,852, Cl. 521-159.000.

Hirabayashi, Shigeto: *See*—
Yamazaki, Katsumasa; Sugita, Shuichi; and Hirabayashi, Shigeto, 5,364,753, Cl. 430-549.000.

Hirahara, Katsuji. Controlled low volume irrigation system. 5,364,034, Cl. 239-565.000.

Hirai, Kazuyasu, to Murata Kikai Kabushiki Kaisha. Method of threading in a false twisting machine and an apparatus for carrying out the same. 5,363,637, Cl. 57-269.000.

Hiramatsu, Nobutaka: *See*—
Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; and Tanaka, Takuya, 5,364,682, Cl. 428-138.000.

Hirano, Masakazu: *See*—
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Hirano, Nobuhiro: *See*—
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.

Hirano, Yutaka; Tsuji, Masayuki; and Sakakibara, Hironobu, to Kawatetsu Tubic Co., Ltd. Method of producing a coupling for oil country tubular goods. 5,363,545, Cl. 29-527.400.

Hirao, Shozo: *See—*
Takahama, Koichi; Hirao, Shozo; Yokoyama, Masaru; Kishimoto, Takashi; and Yokokawa, Hiroshi, 5,364,823, Cl. 502-62.000.

Hiraoka H.I. Laboratory Co., Ltd.: *See—*
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Hiraoka, Yuji; and Yamaguchi, Chiseki, to Hiraoka H.I. Laboratory Co., Ltd. Developer unit utilizing a non-magnetic single component developer. 5,365,318, Cl. 355-246.000.

Hirashima, Hiroyuki, to Sharp Kabushiki Kaisha. Semiconductor device for driving liquid crystal panel. 5,365,250, Cl. 345-94.000.

Hirotomi, Jun: *See—*
Kasuga, Masao; Inoue, Tatsunori; Hirotomi, Jun; and Kitamura, Hiroshi, 5,365,139, Cl. 310-316.000.

Hirschey, Urban C., to Climax Manufacturing Company. Box with simulated loose wrap. 5,364,015, Cl. 229-116.500.

Hirth-Dietrich, Claudia: *See—*
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Hitachi Koki Co., Ltd.: *See—*
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Hitachi, Ltd.: *See—*
Aoki, Masakazu; Natori, Tatsuo; and Mori, Hidetomo, 5,364,250, Cl. 418-201.100.
Ashiwake, Noriyuki; Daikoku, Takahiro; Hatsuda, Toshio; Zushi, Shizuo; and Kobayashi, Satomi, 5,365,400, Cl. 361-752.000.
Fujihara, Tetuo; Ito, Takashi; Iwaki, Fuminori; and Ichikawa, Hitoshi, 5,364,229, Cl. 415-163.000.
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.
Hsueh, Yu-Ming; Imai, Kazumichi; and Koga, Masataka, 5,365,559, Cl. 377-10.000.
Kizuya, Isao; Yamashita, Kenkichi; Onuma, Kunihiko; and Hoshikawa, Akira, 5,365,285, Cl. 348-818.000.
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, 5,365,519, Cl. 370-60.000.
Kumasaka, Takao; Shimazaki, Yuzuru; Miyasaka, Toru; and Otome, Yukio, 5,365,325, Cl. 355-326.000.
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Nakao, Takashi; and Yoda, Hiroaki, 5,363,668, Cl. 62-141.000.
Nakashima, Shoichi; Fukaya, Yukiko; Komuro, Katsuhiro; and Iizuka, Tadashi, 5,364,248, Cl. 418-178.000.
Ogino, Masanori; Kuroda, Shoji; and Iwahara, Yoshiaki, 5,365,369, Cl. 359-457.000.
Onisawa, Makoto; Yoshioka, Ken; Koizumi, Makoto; Nagae, Hiromitsu; and Koshida, Ryoichi, 5,363,829, Cl. 123-617.000.
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.
Shibata, Yoji; and Takizawa, Masaaki, 5,365,265, Cl. 348-15.000.
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White, Julian D., 5,365,073, Cl. 250-492.300.
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Hitachi Medical Corporation: *See—*
Yoshikata, Mutsumi; and Maeda, Tsuneo, 5,365,174, Cl. 324-318.000.

Hitchcock, Robert B.: *See—*
Donath, Wilm E.; Hitchcock, Robert B.; and Soreff, Jeffrey P., 5,365,463, Cl. 364-578.000.

Hite, William H.; Roush, Dennis H.; and Corthell, Stephen G., to National Machinery Company, The. Progressive former. 5,363,686, Cl. 72-455.000.

Hitec Co., Ltd.: *See—*
Shibata, Chiyoji; and Nakamura, Minoru, 5,364,302, Cl. 452-174.000.

Hitomi, Yasuhiro, to Shimano Inc. Oscillating mechanism for a spinning reel. 5,364,041, Cl. 242-242.000.

Hiwada, Kunio: *See—*
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Iijima, Yasuteru; Takahagi, Hidekuni; Kokubu, Tatsuo; and Hiwada, Kunio, 5,364,844, Cl. 514-18.000.

Hiwatashi, Tatsuya: *See—*
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Hlavaty, David G.; Shah, Suresh D.; and Compeau, David E., to General Motors Corporation. Gas injector with retractable nozzle for assist of plastics injection molding. 5,364,252, Cl. 425-3.000.

Ho, I-Chieng: *See—*
Li, Yao-Tzu; Yundt, Albert P., Jr.; Ho, I-Chieng; and Huang, Henry, 5,363,660, Cl. 62-71.000.

Ho, Thinh Q., to United States of America, Navy. Hybrid orthogonal transverse electromagnetic fed reflector antenna. 5,365,245, Cl. 343-840.000.

Ho, Yen-Shyh; and Chen, Chien-Yung, to Taiwan Semiconductor Manufacturing Company. Nitride cap sidewall oxide protection from BOE etch. 5,364,804, Cl. 437-41.000.

Hoagland, Mark A.: *See—*
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.

Hoang, Loc B.; Dinh, Khoi V.; and Kulkarni, Jitendra R., to National Semiconductor Corp. Row decoder and driver with switched-bias bulk regions. 5,365,479, Cl. 365-189.290.

Hoback, James E.: *See—*
Sawyer, Thomas E.; and Hoback, James E., 5,363,575, Cl. 40-308.000.

Hobbs, Timothy A.: *See—*
McConnell, Bain C.; Fix, Robert J., Sr.; Deal, Philip A.; Hobbs, Timothy A.; Jordan, Larry S.; and Steelman, Harold L., 5,363,885, Cl. 141-1.000.

Hoechst Aktiengesellschaft: *See—*
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Disselbeck, Dieter; and Gebauer, Elke, 5,364,686, Cl. 428-174.000.
Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, 5,364,868, Cl. 514-331.000.
Englert, Heinrich C.; Klaus, Erik; Mania, Dieter; and Scholkens, Bernward, 5,364,878, Cl. 514-422.000.
Lang, Hans; Naumann, Christoph; Raiss, Ruth; Komiyama, Osamu; and Terui, Yoshiko, 5,364,846, Cl. 514-102.000.
Murschall, Ursula; Speith, Angela; and Schloegl, Gunter, 5,364,704, Cl. 428-516.000.
Pawlowski, Georg; Roeschert, Horst; Spiess, Walter; and Przybilla, Klaus-Juergen, 5,364,734, Cl. 430-230.000.
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Saal, Marliese; Harreus, Albrecht; and Gutte, Richard, 5,364,674, Cl. 428-34.800.
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Hoechst-Roussel Pharmaceuticals, Inc.: *See—*
Strupczewski, Joseph T.; Helsley, Grover C.; Chiang, Yulin; Bordeau, Kenneth J.; and Glamkowski, Edward J., 5,364,866, Cl. 514-321.000.

Hoehne, Dennis L.: *See—*
Dorste, David C.; Hoehne, Dennis L.; Friend, John W.; and Tillotson, Donald L., 5,364,066, Cl. 251-122.000.

Hoelscher, James R.: *See—*
Petit, William A.; Maderer, George G.; Macano, Samuel J.; and Hoelscher, James R., 5,364,047, Cl. 246-122.00R.

Hoenlein, Wolfgang; and Lehmann, Volker, to Siemens Aktiengesellschaft. Multi-chip module. 5,365,405, Cl. 361-766.000.

Hofer, Gene A.; and Longe, Karen M., to Zebra Technologies Corporation. Identification bracelet. 5,364,133, Cl. 283-75.000.

Hoff, Murray. Portable barbecue and cooler carrying apparatus. 5,363,977, Cl. 220-4.270.

Hoffman, Ronald J., to Ryobi Outdoor Products, Inc. Angle gear drive. 5,363,723, Cl. 74-606.00R.

Hoffmann, Hans-Rainer: *See—*
Kissel, Thomas; Schrank, Henriette; and Hoffmann, Hans-Rainer, 5,364,628, Cl. 424-448.000.

Hoffmann, Jacques E.; and Balke, David J., to Intertech Development Company. Calibration device for leak detecting instruments. 5,363,689, Cl. 73-3.000.

Hoffmann-La Roche Inc.: *See—*
Cathrein, Ernst; Stein, Hermann; Stoller, Hansjorg; and Viardot, Klaus, 5,364,563, Cl. 252-311.000.
Schadt, Martin; and Seils, Frank, 5,364,556, Cl. 252-299.010.

Hoffmann, Michael R.: *See—*
Weres, Oleh; and Hoffmann, Michael R., 5,364,508, Cl. 204-128.000.

Hofling, Berthold, to Bavaria Medizin Technologie GmbH. Sleeve catheter. 5,364,356, Cl. 604-96.000.

Hofman, William K.; Mayette, Jerry J.; and Bach, David F., to Westinghouse Electric Corporation. File cabinet having a corregated inner framework construction. 5,364,178, Cl. 312-263.000.

Hoggins, James T.: *See—*
Bigelow, Louis K.; Csillag, Frank J.; and Hoggins, James T., 5,364,423, Cl. 51-293.000.

Hogikyan, Robert M.: *See—*
LeClerc, Denys F.; and Hogikyan, Robert M., 5,364,502, Cl. 162-49.000.

Hoguchi, Tetsuya, to O-Oka Forge Co., Ltd. Gear product. 5,363,714, Cl. 74-432.000.

Hoheisel, Martin: *See—*
Sklebitz, Hartmut; Mattern, Detlef; and Hoheisel, Martin, 5,365,056, Cl. 250-214.0VT.

Hojo, Yasuo: *See—*
Asahara, Norimi; Hojo, Yasuo; and Ohtubo, Hideaki, 5,363,724, Cl. 477-143.000.

Holeva, Lee F., to United Parcel Services of America, Inc. Method and apparatus for passive autoranging using relaxation. 5,365,597, Cl. 382-8.000.

Holland, Kenneth M. Producing active carbon using microwave discharge. 5,364,821, Cl. 502-5.000.

Holland, Robert B.: *See—*
Burnett, Gilbert W.; and Holland, Robert B., 5,364,458, Cl. 96-55.000.

Hollenbaugh, Donald L., Jr.; McGregor, Gordon L.; and Minor, Raymond B., to W. L. Gore & Associates, Inc. Continuous polytetrafloroethylene fibers. 5,364,699, Cl. 428-357.000.

Hollenstein, Helmut: *See—*
Brustle, Klaus; and Hollenstein, Helmut, 5,364,179, Cl. 312-333.000.

Hollis, Jeffrey C.; Bones, Chad; and York, Troy M., to Tab Products Company. Sequence stacker. 5,364,090, Cl. 271-216.000.

Hollmann, Carldieter: *See—*
Henning, Hans-Heinrich; Frohn, Dieter; Hollmann, Carldieter; Winkelstroter, Walter; and Diedrichsen, Frank, 5,364,228, Cl. 415-55.100.

Holmes, Alan W.; and Iongmire, Mathew J., to Santa Barbara Instrument Group, Inc. Electronic camera with automatic image tracking and multi-frame registration and accumulation. 5,365,269, Cl. 348-297.000.

Holmes, Robert L.: *See—*
Drewanz, Andreas; Holmes, Robert L.; Key, Edward; and Reinken, Allan J., 5,364,288, Cl. 439-404.000.

Holset Engineering Company, Ltd.: *See—*
Vollet, Eric M., 5,364,308, Cl. 464-82.000.

Holsinger, Kevin K.: *See—*
Kafka, James D.; Watts, Michael L.; Pieterse, Jan-Willem J.; and Holsinger, Kevin K., 5,365,366, Cl. 359-330.000.

Holtermann, Henri: *See—*
Ozenne, Jean-Pierre; and Holtermann, Henri, 5,364,379, Cl. 604-342.000.

Holtmyer, Marlin D.: *See—*
Himes, Ronald E.; Holtmyer, Marlin D.; Hunt, Charles V.; and Laramay, Mary A. H., 5,363,916, Cl. 166-276.000.

Homberg, William D.: *See—*
Magnussen, Haakon T., Jr.; Homberg, William D.; and Rainin, Kenneth, 5,364,596, Cl. 422-100.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Abe, Masaru; Kawamoto, Yoshimichi; Nonaga, Ikuo; and Izawa, Masataka, 5,365,440, Cl. 364-424.050.
Akazaki, Shusuke; Hasegawa, Yusuke; Nishimura, Yoichi; and Komoriya, Isao, 5,363,648, Cl. 60-276.000.
Iwashita, Kanau; Nishimoto, Yukimasa; Sawano, Yoshiaki; and Tsuchida, Tetsuo, 5,363,943, Cl. 188-72.500.
Iwata, Takeshi; and Aoki, Takatoshi, 5,363,818, Cl. 123-90.160.
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,365,444, Cl. 364-426.040.
Wada, Masayoshi; Matsuda, Shohei; Yahagi, Toshio; and Inagawa, Shinichi, 5,364,173, Cl. 303-11.000.

Honeywell Inc.: *See—*
Hamp, Charles H., III; and Maine, David D., 5,365,177, Cl. 324-547.000.
Joly, Lucien E.; Knipfer, Michael A.; Miller, Michelle J.; Nitzschke, George O.; and Weinberger, Mark T., 5,363,700, Cl. 73-504.000.
Sigafus, Paul E., 5,365,223, Cl. 340-693.000.
Vollmer, Rudolf, 5,363,875, Cl. 137-218.000.

Hong, Gary: *See—*
Yang, Ming-Tzong; Hsue, Chen-Chiu; and Hong, Gary, 5,364,808, Cl. 437-47.000.

Hongu, Akinori: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Honma, Tatsuya, to Advantest Corporation. Logical comparison circuit. 5,365,527, Cl. 371-25.100.

Honnigford, Edward H.; and Manlove, Gregory J., to Delco Electronics Corporation. CMOS gauge driver. 5,365,200, Cl. 330-293.000.

Hoover Universal, Inc.: *See—*
West, Gary L., 5,364,170, Cl. 297-483.000.

Hoppe, Richard J.: *See—*
Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., 5,365,108, Cl. 257-678.000.

Hopper, Michael A.: *See—*
Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Hopper, Michael A., 5,364,729, Cl. 430-137.000.

Horan, Robert T., to Devon Industries, Inc. Blade arming cartridge. 5,363,958, Cl. 206-356.000.

Horch, Kenneth W.: *See—*
Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., 5,363,859, Cl. 128-739.000.

Hori, Masayuki; and Uyama, Yoshiyuki, to Brother Kogyo Kabushiki Kaisha. Sewing machine having a dial for scrolling display screen image to select desired pattern of stitches. 5,363,783, Cl. 112-121.110.

Horiba, Ltd.: *See—*
Kira, Akimichi; and Sugishita, Haruto, 5,365,563, Cl. 378-48.000.

Horiguchi, Takeshi; and Katabira, Torao, to Toshiba Kikai Kabushiki Kaisha. Printing plate mounting apparatus, printing plate replacement apparatus and printing plate replacement method. 5,363,764, Cl. 101-485.000.

Horii, Shigeru: *See—*
Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi; Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, 5,365,152, Cl. 315-291.000.

Horiuchi, Tatsuo: *See—*
Oguma, Tetsuya; Horiuchi, Tatsuo; and Tobe, Koichiro, 5,364,936, Cl. 536-103.000.

Horn, Siegfried W.: *See—*
Buckley, Daniel T.; and Horn, Siegfried W., 5,364,258, Cl. 425-501.000.

Hornak, Thomas; and McFarland, William J., to Hewlett-Packard Company. Power amplifier utilizing the vector addition of two constant envelope carriers. 5,365,187, Cl. 330-10.000.

Horner, Robert W.; Cai, Kheim V.; Bergen, Ronald L.; and Lane, Keith A., to Hughes Aircraft Company. Digital voice detection apparatus and method using transform domain processing. 5,365,592, Cl. 381-46.000.

Horng, Chuen-Jing: *See—*
Cheng, Robert; Chen, Robin; Su, Michael; and Horng, Chuen-Jing, 5,365,253, Cl. 345-156.000.

Horning, Sandra J.: *See—*
Satterwhite, James R.; Horning, Sandra J.; Wyatt, Gerald A.; and Reisem, Daniel E., 5,365,163, Cl. 324-67.000.

Horrall, Paul D.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Rice, Larry J.; Roe, Ronald L.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,365,315, Cl. 355-210.000.

Horst Blaser Jagdwaffenfabrik: *See—*
Blenk, Gerhard; and Zeh, Meinrad, 5,363,581, Cl. 42-69.020.

Horzewski, Michael J.; and Kraus, Jeffrey L., to Danforth Biomedical Incorporated. Convertible catheter. 5,364,376, Cl. 604-280.000.

Hosaki, Kikuo: *See—*
Otake, Sugako; Kojima, Takeshi; Aoki, Michio; Mukasa, Eigo; and Hosaki, Kikuo, 5,364,544, Cl. 252-28.000.

Hoshi, Hiroaki: *See—*
Yamaguchi, Eiji; Hoshi, Hiroaki; Yamamoto, Masakuni; and Ikeda, Sotomitsu, 5,365,535, Cl. 372-38.000.

Hoshikawa, Akira: *See—*
Kizuya, Isao; Yamashita, Kenkichi; Onuma, Kunihiko; and Hoshikawa, Akira, 5,365,285, Cl. 348-818.000.

Hosoda, Naoyuki: *See—*
Morikawa, Masaki; Hosoda, Naoyuki; and Uchiyama, Naoki, 5,364,482, Cl. 156-182.000.

Hosogoe, Junichi; and Kimura, Kiyoshi, to Alps Electric Co., Ltd. Image scanner including viewing window. 5,365,605, Cl. 382-59.000.

Hosohara, Yasuharu; Suzuki, Kiwazau; Fujiwara, Shigeru; and Kawabe, Toshihide, to Tokyo Gas Co., Ltd.; and CXR Co., Ltd. Remote field eddy current flaw detector for metal material including attenuator, adder, phase shiftery and phase comparator. 5,365,169, Cl. 324-233.000.

Hosokawa, Chishio; and Kusumoto, Tadashi, to Idemitsu Kosan Co., Ltd. Process for production of a thin film electrode and an electroluminescence device. 5,364,654, Cl. 427-66.000.

Hosono, Masayuki: *See—*
Takada, Susumu; Hosono, Masayuki; Ishibashi, Kouichirou; and Kanda, Koichiro, 5,363,741, Cl. 92-13.500.

Hosterman, Craig: *See—*
Beakley, George; Hosterman, Craig; and Rice, Warren, 5,363,664, Cl. 62-113.000.

Hostetler, Karl Y.: *See—*
Basava, Channa; and Hostetler, Karl Y., 5,364,840, Cl. 514-12.000.

Hotta, Yutaka: *See—*
Minezawa, Yukihiro; Kawamoto, Mutsumi; Inagaki, Hidemitsu; and Hotta, Yutaka, 5,365,431, Cl. 364-424.010.

Houle, Michel; Courtemanche, Alain; and Courtemanche, Denis, to J. Houle Et Fils Inc. Automatic steering assembly for towed vehicle. 5,364,116, Cl. 280-442.000.

Houser, David E.: *See—*
Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.

Howard, Charles P., to AeroSport, Inc. Metabolic analyzer. 5,363,857, Cl. 128-718.000.

HRB, L.L.C.: *See—*
Beakley, George; Hosterman, Craig; and Rice, Warren, 5,363,664, Cl. 62-113.000.

Hrovat, Davorin: *See—*
Ander, Anthony T.; Adamczyk, Andrew A.; Hrovat, Davorin; and Chen, Lee-Fei, 5,365,441, Cl. 364-426.030.

Hrovat, Mirko I.; Patz, Samuel; and Pulyer, Yuly M., to Brigham and Women's Hospital. Methods and apparatus for MRI. 5,365,172, Cl. 324-309.000.

Hsh, Glint. Synthetic cultivation medium and its method of manufacture. 5,363,593, Cl. 47-59.000.

Hsia, Jen-Chang, to Canada, Her Majesty the Queen in Right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Pasteurizable, freeze-driable hemoglobin-based blood substitute. 5,364,932, Cl. 530-385.000.

Hsiao, Chia-Yuan. Bicycle pedal crank dismounting device. 5,363,721, Cl. 74-594.100.

Hsieh, Bing R.: *See—*
Morrison, Ian D.; Hsieh, Bing R.; and Taylor, Jerry H., 5,364,726, Cl. 430-115.000.

Hsieh, Yung-Li. Hot/cold water mixing faucet with water temperature control. 5,363,880, Cl. 137-625.170.

Hsu, E-Chang: *See—*
Yu, Foung-Hsoung; Lin, Chien-Hsing; Hsu, E-Chang; and Yaung, Huann-Jen, 5,363,933, Cl. 180-6.500.

Hsu, Hui-Pin; and Chesler, Ronald B., to Hughes Aircraft Company. Efficient bi-directional optical fiber amplifier for missile guidance data link repeater. 5,365,368, Cl. 359-341.000.

Hsue, Chen-Chiu: *See*—
Yang, Ming-Tzong; Hsue, Chen-Chiu; and Hong, Gary, 5,364,808, Cl. 437-47.000.

Hsueh, Yu-Ming; Imai, Kazumichi; and Koga, Masataka, to Hitachi, Ltd. Particle counting apparatus for a total counting of particles contained in a liquid sample. 5,365,559, Cl. 377-10.000.

Huang, Bao T., to Schlumberger Industries. Fluidic oscillator and a flow meter including such an oscillator. 5,363,704, Cl. 73-861.190.

Huang, Cheng-Han: *See*—
Lur, Water; and Huang, Cheng-Han, 5,364,803, Cl. 437-40.000.
Lur, Water; Huang, Cheng-Han; Chang, Shih-Chanh; and Lin, Liang-Chih, 5,364,817, Cl. 437-192.000.

Huang, Henry: *See*—
Li, Yao-Tzu; Yundt, Albert P., Jr.; Ho, I-Chieng; and Huang, Henry, 5,363,660, Cl. 62-71.000.

Huang, Jain-Sheng: *See*—
Chang, Kuo-Ching; Tseng, Shih-Tsung; and Huang, Jain-Sheng, 5,363,781, Cl. 110-250.000.

Huang, Kuang-Wu. Semi-automatic anchor shooter. 5,363,736, Cl. 89-1.140.

Huang, Shan-Shan; Hinman, Brian L.; and Gaut, Eric K., to Polycom, Inc. Method for fail-safe operation in a speaker phone system. 5,365,583, Cl. 379-390.000.

Huang, Yiang F. Safety device for a lighter. 5,364,261, Cl. 431-153.000.

Huber, Juergen: *See*—
von Gentzkow, Wolfgang; Huber, Juergen; Rogler, Wolfgang; and Wilhelm, Dieter, 5,364,893, Cl. 523-429.000.

Huber, Michael J.: *See*—
Poor, Ralph P.; and Huber, Michael J., 5,364,476, Cl. 148-27.000.

Hubach, Walter: *See*—
Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubach, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.

Hudgins, J. Stephen. Three dimensional viewing illusion with 2D display. 5,365,370, Cl. 359-464.000.

Hudson, Christopher L.: *See*—
Castagno, Leo L.; and Hudson, Christopher L., 5,364,539, Cl. 210-768.000.

Huff, Marvin E., to Novalek, Inc. Gnaw resistant animal watering bottle. 5,363,802, Cl. 119-18.000.

Huggins, Michael J.; and Chene, William R., to Eaton Corporation. Transmission X-control mechanism and pivot pin therefore. 5,363,715, Cl. 74-473.00R.

Huggins, Robert A.: *See*—
Gur, Turgut M.; Wise, Henry; and Huggins, Robert A., 5,364,506, Cl. 204-59.00R.

Hughes Aircraft Company: *See*—
Bailey, Wilbur M.; Hulderman, George H.; and Schotter, Daniel K., 5,364,489, Cl. 156-356.000.
Bianco, Mark E.; and Mayhew, Gregory L., 5,365,588, Cl. 380-42.000.
Bollinger, Lynn D.; Power, Michael P.; Poole, Richard R.; and Gardopee, George J., 5,364,496, Cl. 156-643.000.
Crumly, William R.; Schreiber, Christopher M.; and Feigenbaum, Haim, 5,364,277, Cl. 439-67.000.
Davidson, R. Paul, 5,364,004, Cl. 228-1.100.
Fagarasan, John T.; Alland, Stephen W.; and Jakaub, Ronald J., 5,365,236, Cl. 342-53.000.
Horner, Robert W.; Cai, Kheim V.; Bergen, Ronald L.; and Lane, Keith A., 5,365,592, Cl. 381-46.000.
Hsu, Hui-Pin; and Chesler, Ronald B., 5,365,368, Cl. 359-341.000.
Klaras, Louis F.; and Chien, Kuei-Ru, 5,365,532, Cl. 372-31.000.
Ledger, Anthony M., 5,365,340, Cl. 356-357.000.
Metzger, Robert A.; Hafizi, Madjid; Stanchina, William E.; and McCray, Loren G., 5,365,077, Cl. 257-15.000.
Mumola, Peter B., 5,365,031, Cl. 219-121.430.
Rha, Peter S.; Kay, Stanley E.; and MacDonald, Andrew J., 5,365,571, Cl. 379-59.000.
Townsend, Carl W., 5,364,712, Cl. 429-42.000.

Hughes, Lawrence: *See*—
Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., 5,365,108, Cl. 257-678.000.

Hughes, Timothy J.; and Swingler, David N., to Abbott Laboratories. Correcting thermal drift in cardiac output determination. 5,363,856, Cl. 128-713.000.

Huijgen, Hendrik: *See*—
De Haan, Gerard; Huijgen, Hendrik; Biezen, Paul W. A. C.; and Ojo, Olukayode A., 5,365,280, Cl. 348-699.000.

Hulderman, George H.: *See*—
Bailey, Wilbur M.; Hulderman, George H.; and Schotter, Daniel K., 5,364,489, Cl. 156-356.000.

Hull, Jack L. Tire ballast and sealant. 5,364,463, Cl. 106-33.000.

Hume, Edward F.: *See*—
Decker, Lawrence G.; Poston, Janet R.; and Hume, Edward F., 5,365,055, Cl. 250-214.00R.

Hung, Stephen L., to General Electric Company. NOx reduction through the use of methane. 5,364,606, Cl. 423-239.200.

Hunt, Alan K.; and Schalk, Thomas B., to VCS Industries, Inc. Telephone network voice recognition and verification using selectively-adjustable signal thresholds. 5,365,574, Cl. 379-88.000.

Hunt, Charles V.: *See*—
Himes, Ronald E.; Holtmyer, Marlin D.; Hunt, Charles V.; and Laramay, Mary A. H., 5,363,916, Cl. 166-276.000.

Hunter, David H.: *See*—
Krauss, Timothy A.; Hunter, David H.; and Beatty, Robert D., 5,364,230, Cl. 416-134.00A.

Hunter, Jerry J., to Doe Run Tooling. Pallet/sine plate connector. 5,363,563, Cl. 33-568.000.

Hunter, Robert O., Jr.; Smith, Adlai H.; and McArthur, Bruce B., to Litel Instruments. Apparatus and process for the production of fine line metal traces. 5,364,493, Cl. 156-630.000.

Huntsman Specialty Chemicals Corporation: *See*—
Andrews, William J.; Ebner, Jerry R.; and Felthouse, Timothy R., 5,364,824, Cl. 502-209.000.

Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., to Tecogen, Inc. Microwave enhanced deep fat fryer. 5,363,749, Cl. 99-403.000.

Hurley, Kean: *See*—
Soni, Bobby; Didday, Richard; and Hurley, Kean, 5,363,850, Cl. 128-661.080.

Husa, Robert K.: *See*—
Hansen, Donald W., Jr.; Chandrakumar, Nizal S.; Peterson, Karen B.; Tsymbalov, Sofya; and Husa, Robert K., 5,364,850, Cl. 514-255.000.

Husting, Thomas J., to Kohler Co. Drain valve assembly. 5,363,519, Cl. 4-689.000.

Huston, Charles D.; and Cornish, Darryl J. Golf distance measuring system and method. 5,364,093, Cl. 273-32.00R.

Hutchinson: *See*—
Ciolczyk, Jean-Pierre; and Nicolas, Olivier, 5,364,061, Cl. 248-610.000.

Hutchinson, Charles R.; Madduri, Krishna M.; Torti, Francesca; and Colombo, Anna L., to Farmitalia Carlo ERBA S.r.l. Process for preparing daunorubicin. 5,364,781, Cl. 435-193.000.

Hutchison, Glenn E.; and Riddle, Richard L., to Universal Engraving, Inc. Metal die acid etch apparatus and process. 5,364,494, Cl. 156-642.000.

Hutter, Joachim: *See*—
Straub, Alexander; Stoltefuss, Jurgen; Goldmann, Siegfried; Gross, Rainer; Bechem, Martin; Hebisch, Siegbert; Hutter, Joachim; and Rounding, Howard-Paul, 5,364,855, Cl. 514-248.000.

Huynh-Tran, Truc-Chi T.; Kumpfmiller, Ronald J.; and Ebner, Cynthia L., to W. R. Grace & Co.-Conn. Aqueous developable photosensitive polyurethane-(meth)acrylate. 5,364,741, Cl. 430-300.000.

Hwang, Hyun S., to Goldstar Electron Co., Ltd. Method for fabricating LDD transitor utilizing halo implant. 5,364,807, Cl. 437-44.000.

Hybrivet Systems, Inc.: *See*—
Stone, Marcia J., 5,364,792, Cl. 436-73.000.

Hydramotion Limited: *See*—
Gallagher, John G., 5,363,691, Cl. 73-32.00A.

Hydril Company: *See*—
Carlson, Douglas W.; and Simons, Stephen P., 5,364,064, Cl. 251-5.000.

Hyundai Electronics Industries Co., Ltd.: *See*—
Ma, Yueh Y.; and Chang, Kuo-Tung, 5,364,806, Cl. 437-43.000.

Hyundai Motor Company: *See*—
Lee, Unkoo, 5,364,121, Cl. 280-688.000.

I.M.T.E.C. Enterprises, Inc.: *See*—
Bolin, James A., 5,364,437, Cl. 65-265.000.

Ibe, Sadao: *See*—
Hata, Tadashige; and Ibe, Sadao, 5,364,900, Cl. 524-291.000.

Ichikawa, Hiroyuki: *See*—
Sakane, Shinsuke; Ichikawa, Hiroyuki; Fukushima, Satoru; and Hamada, Chiaki, 5,364,175, Cl. 303-97.000.

Ichikawa, Hitoshi: *See*—
Fujihara, Tetuo; Ito, Takashi; Iwaki, Fuminori; and Ichikawa, Hitoshi, 5,364,229, Cl. 415-163.000.

Ichikawa, Takako: *See*—
Asai, Makoto; Suzuki, Hiroshi; and Ichikawa, Takako, 5,364,977, Cl. 568-720.000.

Ichikoh Industries, Ltd.: *See*—
Chikada, Akira; and Ohgiri, Shigeteru, 5,365,414, Cl. 362-61.000.

Ichimaru, Nobuyuki, to Tokico Ltd. Vehicle suspension control system with sequential control flow. 5,364,122, Cl. 280-709.000.

Ichise, Toshihiko: *See*—
Kataoka, Yuzo; Ichise, Toshihiko; Ishizuka, Keiji; and Asaba, Tetsuo, 5,364,802, Cl. 437-31.000.

ICI Pharma: *See*—
Bruneau, Pierre A. R.; Crawley, Graham C.; and Oldham, Keith, 5,364,877, Cl. 514-414.000.

ICI Resins BV: *See*—
Pears, David A.; Carey, John G.; Stenson, Paul H.; and Overbeek, Gerardus C., 5,364,891, Cl. 522-149.000.

Idaho Research Foundation: *See*—
Orser, Cindy S.; and Xun, Luying, 5,364,787, Cl. 435-252.330.

Ide, Hiroshi: *See*—
Shimizu, Kunio; Sasa, Nobumasa; Watanabe, Manabu; Ide, Hiroshi; and Mayama, Shinya, 5,364,731, Cl. 430-143.000.

Ide, Yoshikazu, to Mazda Motor Corporation. Rear portion structure of vehicle. 5,364,128, Cl. 280-784.000.

Idei, Kouji; and Senoo, Hideaki, to Mitsubishi Paper Mills Limited. Ink-jet recording medium. 5,364,702, Cl. 428-423.100.

Idemitsu Kosan Co., Ltd.: *See*—
Hosokawa, Chishio; and Kusumoto, Tadashi, 5,364,654, Cl. 427-66.000.

IDN Inventions and Development of Novelties AG: *See*—
Ackeret, Peter, 5,363,960, Cl. 206-387.000.

Ido, Kihei; and Ohta, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Data conversion method, pilot signal formation method using the same and rotary magnetic head device for use therein. 5,365,232, Cl. 341-95.000.

Iga, Hiroto: *See*—
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Igashira, Toshihiko: *See*—
Yorita, Hiroshi; Igashira, Toshihiko; Sakakibara, Yasuyuki; Gotoh, Moriyasu; and Watanabe, Kazuhide, 5,363,816, Cl. 123-90.120.

Iida, Hisashi: *See*—
Suzumura, Toshihiro; Iida, Hisashi; Kondo, Toshio; and Isomura, Shigenori, 5,363,832, Cl. 123-704.000.

Iida, Naruaki: *See*—
Akimoto, Masami; Yoshioka, Kazutoshi; and Iida, Naruaki, 5,364,222, Cl. 414-416.000.

Iida, Takashi: *See*—
Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, 5,364,533, Cl. 210-645.000.

Iida, Yasunobu: *See*—
Nakashima, Hiroshi; Yano, Yoshihiro; and Iida, Yasunobu, 5,364,685, Cl. 428-155.000.

Iijima, Masaaki: *See*—
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

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Higashino, Tetsuo; Nakamura, Shosaku; Iimurou, Akira; Maeyama, Misao; Fukushige, Yoshimi; and Harada, Tomoyuki, 5,364,331, Cl. 492-43.000.

Iizuka, Tadashi: *See*—
Nakashima, Shoichi; Fukaya, Yukiko; Komuro, Katsuhiro; and Iizuka, Tadashi, 5,364,248, Cl. 418-178.000.

Ikai, Takasi: *See*—
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

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Nakamura, Takashi; Osumi, Kenji; Oga, Kiyomasa; Arai, Motohiro; Ikeda, Ryukichi; Yoshida, Eiji; Okada, Hirofumi; and Hamanaka, Ryusuke, 5,364,449, Cl. 75-650.000.

Ikeda, Sotomitsu: *See*—
Yamaguchi, Eiji; Hoshi, Hiroaki; Yamamoto, Masakuni; and Ikeda, Sotomitsu, 5,365,535, Cl. 372-38.000.

Ikeda, Takaaki, to Koyo Seiko Co., Ltd. Spring for one-way clutch having adjusting openings of a special shape. 5,363,947, Cl. 192-45.100.

Ikegawa, Akihiko: *See*—
Miyamoto, Yasushi; and Ikegawa, Akihiko, 5,364,755, Cl. 430-584.000.

Ikeya, Kiyokazu: *See*—
Tohyama, Masao; and Ikeya, Kiyokazu, 5,364,284, Cl. 439-266.000.

Ikirt, Kimberly L.: *See*—
Abramczyk, William M.; and Ikirt, Kimberly L., 5,364,123, Cl. 280-728.00A.

Ikuta, Eishi: *See*—
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,365,024, Cl. 181-176.000.

Ikuzaki, Kunihiko: *See*—
Shimohigashi, Katsuhiro; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, 5,365,478, Cl. 365-189.010.

Illawarra Technology Corporation Limited: *See*—
Worner, Howard K., 5,364,441, Cl. 75-10.100.

Illinois Tool Works Inc.: *See*—
Tisol, James S., 5,363,539, Cl. 24-543.000.

Imade, Shinichi: *See*—
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,365,024, Cl. 181-176.000.

Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, to Matsushita Electric Industrial Co., Ltd. Parts supplying method in which movements of parallel supply tables are controlled. 5,365,452, Cl. 364-468.000.

Imafuku, Tatsuo: *See*—
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.

Imagyn Medical, Inc.: *See*—
Lowery, Guy R.; Bacich, Steven R.; and Tholin, Keith, 5,364,345, Cl. 604-49.000.

Imai, Kazumichi: *See*—
Hsueh, Yu-Ming; Imai, Kazumichi; and Koga, Masataka, 5,365,559, Cl. 377-10.000.

Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, to Matsushita Electric Industrial Co., Ltd. Multiscreen display circuit for displaying video signal sources having different aspect ratios. 5,365,276, Cl. 348-556.000.

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Imanara, Tohru; Satou, Shoichi; and Yamashita, Naomi, to Mitsubishi Kasei Corporation. Process for producing fiber-reinforced resin moldings. 5,364,584, Cl. 264-510.000.

Imbert, Dominique: *See*—
Schapira, Joseph; Cheminaud, Jean-Claude; Petitbon, Pascal; and Imbert, Dominique, 5,364,440, Cl. 71-64.120.

Immunomedics, Inc.: *See*—
Goldenberg, David M., 5,364,612, Cl. 424-1.530.

Imose, Kazuo: *See*—
Yashida, Makoto; Kurome, Kanji; Asahina, Atsushi; Hanaoka, Yasuki; and Imose, Kazuo, 5,365,564, Cl. 378-55.000.

Imperial Chemical Indsutries PLC: *See*—
Pears, David A.; Carey, John G.; Stenson, Paul H.; and Overbeek, Gerardus C., 5,364,891, Cl. 522-149.000.

Imperial Chemical Industries, PLC: *See*—
Bruneau, Pierre A. R.; Crawley, Graham C.; and Oldham, Keith, 5,364,877, Cl. 514-414.000.
Choate, Martin T.; McGrail, Patrick; Sefton, Mark S.; and Carter, Jeffrey T., 5,364,914, Cl. 525-505.000.
Grierson, Donald; Hamilton, Andrew J.; and Lycett, Grantley W., 5,365,015, Cl. 800-205.000.
Knight, Ann E.; and Bourbon, Godelieve, 5,364,897, Cl. 524-457.000.
Nield, Eric; Palasz, Peter D.; Taylor, Philip L.; and Lam, Peter H. L., 5,364,901, Cl. 524-521.000.

Implant Innovations, Inc.: *See*—
Lazzara, Richard J.; and Beaty, Keith D., 5,364,268, Cl. 433-173.000.

Imron, Wim A.: *See*—
Combs, Edward A.; Maddox, Dennis M.; and Imron, Wim A., 5,365,512, Cl. 370-16.000.

Imthurn, James A.: *See*—
Miller, Kevin L.; Krug, Eric M.; and Imthurn, James A., 5,365,383, Cl. 360-69.000.

Inada, Kazuyuki: *See*—
Ohkuma, Kazuhiro; Hanno, Yoshio; Inada, Kazuyuki; Matsuda, Isao; and Katta, Yasuo, 5,364,652, Cl. 426-549.000.

Inagaki, Hidemitsu: *See*—
Minezawa, Yukihiro; Kawamoto, Mutsumi; Inagaki, Hidemitsu; and Hotta, Yutaka, 5,365,431, Cl. 364-424.010.

Inagaki, Tomohiro: *See*—
Kitajima, Masato; Soma, Shinji; Kamiya, Akimitsu; Suzuki, Akira; Sekiya, Yasuhisa; and Inagaki, Tomohiro, 5,364,422, Cl. 51-307.000.

Inagawa, Shinichi: *See*—
Wada, Masayoshi; Matsuda, Shohei; Yahagi, Toshio; and Inagawa, Shinichi, 5,364,173, Cl. 303-11.000.

Inaki, Kyoichi: *See*—
Nishimura, Hiroyuki; Fujinoki, Akira; Matsuya, Toshikatsu; Inaki, Kyoichi; Kato, Toshiyuki; and Shimada, Atsushi, 5,364,433, Cl. 65-17.400.

Inami, Shuichi: *See*—
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.

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Inbar, Shai: *See*—
Blackwood, John J.; Inbar, Shai; and Patzke, James V., 5,364,796, Cl. 436-500.000.

Indeck, Ronald S.; and Muller, Marcel W., to Washington University. Method and apparatus for fingerprinting magnetic media. 5,365,586, Cl. 380-3.000.

Indresco Inc.: *See*—
Fitch, Lawrence D., 5,363,995, Cl. 222-600.000.

Industri AB Thule: *See*—
Raaber, Raymond R.; and Chimenti, Thomas A., 5,363,996, Cl. 224-314.000.

Industrial Technology: *See*—
Buzbee, James M.; Connally, Douglas R.; and Matthews, Wayne, 5,365,578, Cl. 379-96.000.

Industrial Technology Research Institute: *See*—
Chang, Kuo-Ching; Tseng, Shih-Tsung; and Huang, Jain-Sheng, 5,363,781, Cl. 110-250.000.
Koh, Chao-Ming, 5,364,813, Cl. 437-52.000.
Yu, Foung-Hsoung; Lin, Chien-Hsing; Hsu, E-Chang; and Yaung, Huann-Jen, 5,363,933, Cl. 180-6.500.

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Aymerich, Jose ; and Prat, Jesus, 5,364,149, Cl. 296-97.120.

Ingersoll-Rand Company: *See*—
Sell, Leslie J., 5,364,073, Cl. 254-369.000.

Inlet Medical: *See—*
Cook, John D., 5,364,341, Cl. 604-30.000.

Innostar, Inc.: *See—*
Yeung, Michael; Lee, Robert N.; and Tsao, Chein-Hwa, 5,363,890, Cl. 141-364.000.

Ino, Kiyoji: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

Inoi, Takayuki: *See—*
Ohya, Kazumasa; Hamada, Kiyotaka; and Inoi, Takayuki, 5,365,140, Cl. 310-328.000.

Inomata, Hiroshi: *See—*
Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, 5,364,676, Cl. 428-35.700.

Inomata, Kiyoshi, to Fujitsu Limited. Continuous paper folding device for use with printer. 5,364,334, Cl. 493-410.000.

Inomata, Koichiro: *See—*
Saito, Yoshiaki; Inomata, Koichiro; Okuno, Shibo; and Takahashi, Yoshinori, 5,365,212, Cl. 338-32.00R.

Inoue, Akino; Misawa, Motohiro; Yamaguchi, Kazuaki; and Kanaya, Etsumi, to Matsushita Electric Industrial Co., Ltd. Video network system with computer LAN. 5,365,264, Cl. 348-10.000.

Inoue, Kenichi; and Mitsuhashi, Tsuyoshi, to Konica Corporation. Developer for silver halide photographic light-sensitive material. 5,364,746, Cl. 430-488.000.

Inoue, Koichi; and Ota, Takahiro, to Rohm Co., Ltd. Stabilized voltage supply. 5,365,161, Cl. 323-282.000.

Inoue, Makoto, deceased; Inoue, Tsuneo, heir; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, to Canon Kabushiki Kaisha. Manufacturing method for ink jet recording head and ink jet recording head. 5,365,255, Cl. 347-45.000.

Inoue, Tatsunori: *See—*
Kasuga, Masao; Inoue, Tatsunori; Hirotomi, Jun; and Kitamura, Hiroshi, 5,365,139, Cl. 310-316.000.

Inoue, Tsuneo, heir: *See—*
Inoue, Makoto, deceased; Inoue, Tsuneo, heir; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,365,255, Cl. 347-45.000.

Inoue, Yoshikazu: *See—*
Takasugi, Hisashi; Katsura, Yousuke; Tomishi, Tetsuo; and Inoue, Yoshikazu, 5,364,871, Cl. 514-342.000.

Inouye, Hiroshi: *See—*
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Inrad, Inc.: *See—*
Zhang, Zhenyu; Ruderman, Warren; and Fehlner, James R., 5,364,993, Cl. 570-187.000.

Institut Francais du Petrole: *See—*
Lafargue, Eric; Espitalie, Jean; and Lesage, Thierry, 5,363,692, Cl. 73-38.000.
Nocca, Jean-Luc; Travers, Phillipe; Mank, Larry; and Forestiere, Alain, 5,364,975, Cl. 568-697.000.
Sarrazin, Patrick; and Boitiaux, Jean-Paul, 5,364,998, Cl. 585-259.000.
Venturi, Stephane; and Duret, Pierre, 5,363,819, Cl. 123-192.200.
Weill, Jerome; Capogna, Laure; Arrondel, Veronique; and Boumendil, Jean-Jack, 5,365,005, Cl. 585-500.000.

Institut Pasteur: *See—*
Montagnier, Luc; Guetard, Denise; Brun-Vezinet, Francoise; and Clavel, Francois, 5,364,933, Cl. 530-412.000.

Intel Corporation: *See—*
Astle, Brian, 5,365,552, Cl. 375-106.000.
Bazes, Mel, 5,365,128, Cl. 327-141.000.

InterDigital Technology Corporation: *See—*
Schilling, Donald L., 5,365,544, Cl. 375-1.000.

Intermedics Orthopedics, Inc.: *See—*
Mumme, Charles W.; and Vinciguerra, John D., 5,364,402, Cl. 606-88.000.

International Business Machines Corporation: *See—*
Aitken, John M.; Akbar, Shahzad; Crowder, Billy L.; Iqbal, Asif; and Nihal, Perwaiz, 5,363,550, Cl. 29-828.000.
Angiulli, John M.; Ghose, Arun K.; Konian, Richard R.; Levine, Samuel R.; Meltzer, David; Wang, Wen-Yuan; and Wu, Leon L., 5,365,204, Cl. 331-57.000.
Campbell, John E.; Chan, Michael J.; Hajek, Steven F.; and Wiltgen, Paul L., 5,365,587, Cl. 380-25.000.
Carbaugh, William D., Jr.; Long, David C.; and Stroms, Karl F., 5,365,211, Cl. 335-300.000.
Childs, Philip L.; Olnowich, Howard T.; and Skovira, Joseph F., 5,365,228, Cl. 340-825.800.
Derby, Jeffrey H.; Doeringer, Willibald A.; Drake, John E., Jr.; Dykeman, Douglas H.; Li, Liang; Peters, Marcia L.; Sandick, Haldon J.; and Vu, Ken Van, 5,365,523, Cl. 370-85.200.
Donath, Wilm E.; Hitchcock, Robert B.; and Soreff, Jeffrey P., 5,365,463, Cl. 364-578.000.
Fan, Long-Shen; and Zappe, Hans H., 5,364,742, Cl. 430-317.000.
Hershey, Paul C.; Barker, Kenneth J.; Lingafelt, Charles S., Sr.; and Waclawsky, John G., 5,365,514, Cl. 370-17.000.
Kenney, Donald M., 5,365,097, Cl. 257-302.000.
Mercy, Brian R., 5,365,469, Cl. 364-726.000.
Mohammad, S. Noor, 5,365,089, Cl. 257-195.000.
Schmidt, Manfred; Staudenmaier, Klaus; Schnee, Joachim; Mannsdoerfer, Walter; and Weber, Volker, 5,364,673, Cl. 428-34.000.
Torres, Robert J., 5,365,360, Cl. 395-159.000.
Wong, Robert C., 5,365,117, Cl. 327-374.000.

International Business Machines, Inc.: *See—*
Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.

International Pipe Machinery Corp.: *See—*
Grau, Thomas D., 5,364,578, Cl. 264-71.000.

International Synthecon, LLC: *See—*
Joran, Alvin D., 5,364,851, Cl. 530-345.000.

Interox Chemicals Limited: *See—*
McDonogh, Colin F., 5,364,549, Cl. 252-79.400.

Intertech Development Company: *See—*
Hoffmann, Jacques E.; and Balke, David J., 5,363,689, Cl. 73-3.000.

Intlekofer, Michael J.: *See—*
Auth, David C.; Clement, Thomas J.; and Intlekofer, Michael J., 5,364,393, Cl. 606-34.000.

Iomega Corporation: *See—*
Maughan, Stuart; and Bryner, Earl, 5,365,388, Cl. 360-99.040.

Iongmire, Mathew J.: *See—*
Holmes, Alan W.; and Iongmire, Mathew J., 5,365,269, Cl. 348-297.000.

Iqbal, Asif: *See—*
Aitken, John M.; Akbar, Shahzad; Crowder, Billy L.; Iqbal, Asif; and Nihal, Perwaiz, 5,363,550, Cl. 29-828.000.

Isaka, Kazuo: *See—*
Mouri, Akihiro; Fukui, Tetsuro; Katayama, Masato; Isaka, Kazuo; and Nakamura, Susumu, 5,364,732, Cl. 430-201.000.

Iseki, Yuji: *See—*
Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, 5,364,669, Cl. 428-1.000.

Ishibashi, Kenji: *See—*
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.

Ishibashi, Kouichirou: *See—*
Takada, Susumu; Hosono, Masayuki; Ishibashi, Kouichirou; and Kanda, Koichiro, 5,363,741, Cl. 92-13.500.

Ishida, Mamoru, to Ricoh Company, Ltd. MIS semiconductor device with polysilicon gate electrode. 5,365,109, Cl. 257-754.000.

Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, to Mitsui Toatsu Chemicals, Incorporated. Process for the production of methylene-crosslinked polyphenylene polyisocyanate. 5,364,958, Cl. 560-359.000.

Ishida, Shinjiro: *See—*
Sakamoto, Naruhiko; and Ishida, Shinjiro, 5,365,573, Cl. 379-61.000.

Ishida, Takuzo: *See—*
Kenney, Raymond J.; Ishida, Takuzo; and Cotner, Richard C., 5,364,733, Cl. 430-203.000.

Ishiguro, Yoichi: *See—*
Kyoto, Michihisa; Ishiguro, Yoichi; Urano, Akira; and Kakuzen, Hideo, 5,364,428, Cl. 65-397.000.

Ishikawa, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Bus bar connecting device. 5,364,203, Cl. 403-403.000.

Ishikura, Kazuo, to Nikkiso Co., Ltd. Terminal structure for motor-driven pump. 5,364,239, Cl. 417-423.300.

Ishimoto, Masayori, to Diesel Kiki Co., Ltd. Fuel injection pump. 5,364,243, Cl. 417-499.000.

Ishizu, Atsushi: *See—*
Seki, Yoshio; Tokoi, Masaki; Ishizu, Atsushi; and Miki, Yoichiro, 5,365,274, Cl. 348-458.000.

Ishizuka, Keiji: *See—*
Katsoka, Yuzo; Ichise, Toshihiko; Ishizuka, Keiji; and Asaba, Tetsuo, 5,364,802, Cl. 437-31.000.

Isomura, Shigenori: *See—*
Suzumura, Toshihiro; Iida, Hisashi; Kondo, Toshio; and Isomura, Shigenori, 5,363,832, Cl. 123-704.000.

Isomura, Yasuo: *See—*
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

Isozaki, Tadaaki; Mogamiya, Hiroyuki; Aihara, Yoshihiko; and Hagiwara, Takashi, to Showa Shell Sekiyu Kabushiki Kaisha. Liquid crystal compounds and liquid crystal compositions containing them. 5,364,561, Cl. 252-299.650.

ISP Investments Inc.: *See—*
Taylor, Paul D.; Narayanan, Kolazi S.; and Plotkin, Jeffrey S., 5,364,691, Cl. 428-220.000.

Itakura, Toru, to Fuji Photo Film Co., Ltd. Radiation image recording apparatus. 5,365,076, Cl. 250-582.000.

Ito, Atsushi; and Okamoto, Yasuhiko, to Sanyo Electric Co., Ltd. Dielectric filters and duplexers incorporating same. 5,365,209, Cl. 333-206.000.

Ito, Kazuhiko: *See—*
Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi; Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, 5,365,152, Cl. 315-291.000.

Ito, Kenji; Shimizu, Hiroyuki; and Hino, Seigo, to NGK Spark Plug Co., Ltd. Microwave stripline filter formed from a pair of dielectric substrates. 5,365,208, Cl. 333-204.000.

Ito, Takashi: *See—*
Fujihara, Tetuo; Ito, Takashi; Iwaki, Fuminori; and Ichikawa, Hitoshi, 5,364,229, Cl. 415-163.000.

Ito, Yoshio: *See—*
Fujita, Kouetsu; Yanase, Takao; Kinoshita, Shigenori; Motoyoshi, Osamu; and Ito, Yoshio, 5,365,153, Cl. 318-34.000.

Ito, Yutaka: *See—*
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, 5,365,519, Cl. 370-60.000.

Itoh, Seiji: *See—*
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.

Itoh, Yoshinori, to Canon Kabushiki Kaisha. Zoom lens. 5,365,376, Cl. 359-686.000.

ITT Corporation: *See—*
Bethurum, Gary C., 5,364,292, Cl. 439-610.000.

IVAC Corporation: *See—*
Kasvikis, Spyros; Herrmann, Richard W.; and Finburgh, Simon E., 5,364,364, Cl. 604-151.000.

Ivankovits, John C.: *See—*
Jacobs, Stephen W.; Arslanian, Gregory K.; Adams, Bruce M.; Ivankovits, John C.; and Bowe, Donald J., 5,364,007, Cl. 228-42.000.

Ives, Kenneth; Keating, Gregory; and Sorenson, Kenneth, to Acutus Mold Inc. Die sensor assembly. 5,363,709, Cl. 73-865.900.

Iwahara, Yoshiaki: *See—*
Ogino, Masanori; Kuroda, Shoji; and Iwahara, Yoshiaki, 5,365,369, Cl. 359-457.000.

Iwahashi, Hiroshi: *See—*
Taura, Tadayuki; Asano, Masamichi; Kanebako, Kazunori; and Iwahashi, Hiroshi, 5,364,805, Cl. 437-43.000.

Iwaki, Fuminori: *See—*
Fujihara, Tetuo; Ito, Takashi; Iwaki, Fuminori; and Ichikawa, Hitoshi, 5,364,229, Cl. 415-163.000.

Iwaki, Takashi: *See—*
Fuji, Hiroshi; and Iwaki, Takashi, 5,365,507, Cl. 369-116.000.
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.

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Sakemi, Yuji; and Izumizaki, Masami, 5,365,319, Cl. 355-246.000.

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Krenik, William R.; and Izzi, Louis J., 5,365,126, Cl. 326-83.000.

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Barber, John C., Jr.; Barber, Janet L.; and Barber, John S. A., 5,365,332, Cl. 356-241.000.

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Houle, Michel; Courtemanche, Alain; and Courtemanche, Denis, 5,364,116, Cl. 280-442.000.

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Rench, Geoffrey B.; Jacobs, Stephen; and Jolly, Frank, 5,363,535, Cl. 15-344.000.

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Amemiya, Satoshi, 5,364,317, Cl. 475-132.000.

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Greenwood, Jean B.; and Tenbarge, J. Stephen, 5,365,593, Cl. 381-69.000.

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Lankford, James D., 5,363,839, Cl. 128-9.000.

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Mensch, William A., 5,363,951, Cl. 198-606.000.

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Copley, Mark; and Whiteside, Charles H., 5,365,513, Cl. 370-17.000.

John Wyeth & Brother, Limited: *See—*
Cliffe, Ian A., 5,364,849, Cl. 514-212.000.
Johno, Masahiro: *See—*
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Johnson, Samuel G., III: *See—*
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.
Johnstone, Alexander: *See—*
Brown, Scott W.; Hackett, Anthony; King, Angela M.; Johnstone, Alexander; and Sanderson, William R., 5,364,982, Cl. 568-771.000.
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Rench, Geoffrey B.; Jacobs, Stephen; and Jolly, Frank, 5,363,535, Cl. 15-344.000.
Joly, Lucien E.; Knipfer, Michael A.; Miller, Michelle J.; Nitzschke, George O.; and Weinberger, Mark T., to Honeywell Inc. Skewed axis inertial sensor assembly. 5,363,700, Cl. 73-504.000.
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Harris, Guy H.; Zink, Deborah; Jones, E. Tracy T.; and Kong, Yu L., 5,364,948, Cl. 554-36.000.
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Jow, Jin-Long. Toy train. 5,364,300, Cl. 446-437.000.
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Moreland, Peter J.; and Jozef de Peuter, Frans L., 5,364,511, Cl. 204-196.000.
Julius Blum Gesellschaft m.b.H.: *See—*
Brustle, Klaus; and Hollenstein, Helmut, 5,364,179, Cl. 312-333.000.
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Yoshimoto, Katsunobu; Hatta, Masayoshi; and Kumondai, Toshio, 5,363,777, Cl. 110-214.000.
Kabushiki Kaisha Kenwood: *See—*
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Takahama, Yo; and Yonezawa, Keitaro, 5,364,328, Cl. 483-28.000.
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Chikama, Toshio, 5,363,882, Cl. 138-118.000.
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Mitsugu, Udagawa, 5,365,038, Cl. 219-386.000.
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Takano, Tsunesuke, 5,365,028, Cl. 200-547.000.
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Otake, Sugako; Kojima, Takeshi; Aoki, Michio; Mukasa, Eigo; and Hosaki, Kikuo, 5,364,544, Cl. 252-28.000.
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Iijima, Yasuo, 5,365,045, Cl. 235-380.000.
Kadota, Nagatoshi, 5,365,397, Cl. 361-93.000.
Kawamoto, Junichi, 5,365,254, Cl. 345-157.000.
Koike, Noboru, 5,365,248, Cl. 343-702.000.
Matsuoka, Takashi, 5,365,311, Cl. 355-205.000.
Miyamoto, Junichi; Yoshikawa, Kuniyoshi; and Naruke, Kiyomi, 5,365,098, Cl. 257-316.000.
Nagamochi, Katsuya; and Nakane, Rintaro, 5,365,313, Cl. 355-208.000.
Niimura, Kazuharu, 5,365,231, Cl. 341-58.000.
Nishimura, Takashi; Seino, Kazuyuki; and Kamohara, Eiji, 5,365,142, Cl. 313-2.100.
Nishimura, Takashi; Seino, Kazuyuki; and Kamohara, Eiji, 5,365,143, Cl. 313-402.000.
Ohshima, Yoichi, 5,365,112, Cl. 257-784.000.
Osada, Akira, 5,363,942, Cl. 187-376.000.
Saito, Yoshiaki; Inomata, Koichiro; Okuno, Shiho; and Takahashi, Yoshinori, 5,365,212, Cl. 338-32.00R.
Seta, Katsuhiro; and Hara, Hiroyuki, 5,365,124, Cl. 326-110.000.
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Tanaka, Shigeru; Tadakuma, Susumu; and Shimane, Kazuo, 5,365,158, Cl. 318-806.000.
Taura, Tadayuki; Asano, Masamichi; Kanebako, Kazunori; and Iwahashi, Hiroshi, 5,364,805, Cl. 437-43.000.
Watanabe, Toshiya, 5,365,106, Cl. 257-669.000.
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Fukanuma, Tetsuhiko; Kobayashi, Hisao; Yoshida, Tetsuo; and Kondo, Yoshitami, 5,364,247, Cl. 418-55.200.
Kimura, Kazuya; Kayukawa, Hiroaki; Takenaka, Kenji; and Makino, Yoshihiro, 5,364,232, Cl. 417-222.100.
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Matsuoka, Fumitomo, 5,365,110, Cl. 257-762.000.
Kacian, Daniel L., to Gen-Probe Incorporated. Techniques for preparing specimens for bacterial assays. 5,364,763, Cl. 435-7.320.
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Kadwell, Brian J., to Robertshaw Controls Company. Control device having an oscillator unit that pulses a direct current through the filaments of the vacuum fluorescent display unit thereof and methods of making the same. 5,365,146, Cl. 315-94.000.
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Kush, Donald C., 5,363,902, Cl. 164-485.000.
Kaiser, Larry R., to University of Pennsylvania, University of Pa.-Center for Technology Transfer, The Trustees of the. Surgical method using finger protecting sheath. 5,363,864, Cl. 128-898.000.
Kaiser, Robert, to Sierra Line Products, Inc. Liftable rigid truck bed cover. 5,364,154, Cl. 296-100.000.
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Kakuta, Kihachiro. Automated portable pet toilet. 5,363,807, Cl. 604-164.000.
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Kyoto, Michihisa; Ishiguro, Yoichi; Urano, Akira; and Kakuzen, Hideo, 5,364,428, Cl. 65-397.000.
Kallenbach, Lyle R., to Phillips Petroleum Company. Alkylation/etherification process. 5,364,976, Cl. 568-697.000.
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Casanova, Eduardo A.; and Kalota, Dennis J., 5,364,964, Cl. 562-590.000.
Kalwitz, George A.: *See—*
Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., 5,365,464, Cl. 364-580.000.
Kalyon, Dilhan M.; Gokturk, Halit S.; and Railkar, Sudhir B., to Stevens Institute of Technology. Method and apparatus for mitigation of magnetic fields from low frequency magnetic field sources. 5,365,115, Cl. 307-89.000.
Kamen, Dean L., to Deka Products Limited Partnership. Intravenous fluid delivery device. 5,364,371, Cl. 604-251.000.
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Cebula, Edwin; and Kamikow, Joseph E., 5,364,096, Cl. 273-121.00A.
Kaminkow, Joseph E., to Data East Pinball, Inc. Rolling ball game with auxiliary control. 5,364,098, Cl. 273-119.00R.
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Kamon, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Projection exposure apparatus. 5,365,371, Cl. 359-483.000.
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Edwards, Robert D.; Egitto, Frank D.; Gall, Thomas P.; Gursky, Paul S.; Houser, David E.; Kamperman, James S.; and Wrenner, Warren R., 5,363,553, Cl. 29-852.000.
Kamyr, Inc.: *See—*
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Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, to Kawasaki Steel Corporation. Czochralski crystal pulling process and an apparatus for carrying out the same. 5,363,795, Cl. 117-13.000.
Kanaya, Etsumi: *See—*
Inoue, Akino; Misawa, Motohiro; Yamaguchi, Kazuaki; and Kanaya, Etsumi, 5,365,264, Cl. 348-10.000.
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Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.
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Takada, Susumu; Hosono, Masayuki; Ishibashi, Kouichirou; and Kanda, Koichiro, 5,363,741, Cl. 92-13.500.
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Rolando, Richard J.; Coleman, Patrick L.; Kangas, Steven L.; and Kotnour, Thomas A., 5,364,907, Cl. 525-54.100.
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Katayama, Masato: *See—*
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Kato, Masayoshi: *See—*
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Kato, Yoshinori: *See—*
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.

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Ohkuma, Kazuhiro; Hanno, Yoshio; Inada, Kazuyuki; Matsuda, Isao; and Katta, Yasuo, 5,364,652, Cl. 426-549.000.

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Dexter, James L.; Cooper, David G.; Blackburn, Douglas H.; Cranmer, David C.; and Kauffman, Dale A., 5,364,819, Cl. 501-45.000.

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Kaufhold, Johannes: *See—*
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Bieck, Torsten; Kaupp, Eduard; Stephan, Christoph, deceased; Stephan, Otto, heir; and Stephan, Isle, heir, 5,363,961, Cl. 206-387.000.

Kawabata, Shoichi: *See—*
Hamuro, Mitsuro; Matsuda, Shigeyoshi; and Kawabata, Shoichi, 5,364,014, Cl. 228-248.100.

Kawabe, Toshihide: *See—*
Hosohara, Yasuharu; Suzuki, Kiwamu; Fujiwara, Shigeru; and Kawabe, Toshihide, 5,365,169, Cl. 324-233.000.

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Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,364,321, Cl. 477-42.000.

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Kawai, Tsuneo: *See—*
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Kawamoto, Hiroshi: *See—*
Shimohigashi, Katsuhiro; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, 5,365,478, Cl. 365-189.010.

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Kawamura, Makoto: *See—*
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Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, to Matsushita Electric Industrial Co., Ltd. Defect detection and defect removal apparatus of thin film electronic device. 5,365,034, Cl. 219-121.830.

Kawamura, Yasuo: *See—*
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

Kawamura, Yuzi: *See—*
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Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, to Shinko Electric Co., Ltd. Article storage house in a clean room. 5,363,867, Cl. 134-95.200.

Kawano, Kenji: *See—*
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Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.
Tada, Yoshihide, 5,365,083, Cl. 257-105.000.
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

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Kay, Stanley E.: *See—*
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Kayukawa, Hiroaki: *See—*
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Kazda, Stanislav: *See—*
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Kazecki, Henry L., to Motorola, Inc. Complex signal correlator and method therefor. 5,365,549, Cl. 375-96.000.

Keating, Gregory: *See—*
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Keeney, Frank W.: *See—*
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Keesman, Gerrit J.: *See—*
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Keil, O'Dell: *See—*
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Kein, Michael: *See—*
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Keinan, Giora: *See—*
Eisen, Yosef; Gilat, Chaim; and Keinan, Giora, 5,365,069, Cl. 250-370.090.

Keith, Peter G. Method and apparatus for connecting a tow vehicle to a trailer having a front axle assembly which pivots about a verticle axis. 5,364,117, Cl. 280-459.000.

Keller, Cynthia A.: *See—*
Lentsch, Steven E.; Keller, Cynthia A.; Bona, Gregory T.; and Man, Victor F., 5,364,551, Cl. 252-156.000.

Kellman, Jeffrey N.: *See—*
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Kelly, Brian J.: *See—*
Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., 5,364,439, Cl. 71-57.000.

Kelman, Josh; Gray, John; and Gorman, Michael, to Davidson Textron Inc. Structural instrument panel carrier assembly. 5,364,159, Cl. 296-192.000.

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Kemp, Richard A., to Shell Oil Company. Process for preparing ethylene oxide catalysts. 5,364,826, Cl. 502-315.000.

Kemper, William S.: *See—*
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Kendall Company, The: *See—*
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Kenetech Windpower, Inc.: *See—*
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Kennametal Inc.: *See—*
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Kennedy, John F.; Kirk, Lawrence P.; and Marek, Gregory A., to Ford Motor Company. Method and apparatus for reducing residual RF power in a transmitter/receiver antenna. 5,365,235, Cl. 342-44.000.

Kenney, Donald M., to International Business Machines Corporation. Vertical epitaxial SOI transistor, memory cell and fabrication methods. 5,365,097, Cl. 257-302.000.

Kenney, Raymond J.; Ishida, Takuzo; and Cotner, Richard C., to Minnesota Mining and Manufacturing Company. Photothermographic elements with novel layer structures, each of which contains a thermally-diffusible oxidizable leuco dye and process for producing a color image from leuco dye. 5,364,733, Cl. 430-203.000.

Kennish, James R., to GBR Systems Corporation. Accumulator with "first page holder" feature. 5,364,085, Cl. 270-58.000.

Kenny, Thomas W.: *See—*
VanZandt, Thomas R.; Kaiser, William J.; Kenny, Thomas W.; and Crisp, David, 5,364,185, Cl. 374-28.000.

Kent, Kevin L.; and Glomski, Jacqueline D., to Motorola, Inc. Heat sinking apparatus for surface mountable power devices. 5,365,399, Cl. 361-704.000.

Kerby, Michael C.; and Vaughan, David E. W., to Exxon Research & Engineering Co. Process for the production of unsymmetrical tert-dialkyl ethers. 5,364,980, Cl. 568-698.000.

Kersey, Joe B.: *See—*
Davis, Gail F.; and Kersey, Joe B., 5,364,012, Cl. 228-184.000.

Kestner, Michael T.; and Baxter, Benjamin A., to Marine Machines, Inc. Processing sea urchins for extracting gonads. 5,364,301, Cl. 452-18.000.

Ketema, Inc.: *See—*
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Key, Edward: *See—*
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Kiener, Andreas; Tschech, Andreas; Tinschert, Andreas; and Heinzmann, Klaus, to Lonza Ltd. Microbiological process for hydroxylation of nitrogen-heterocyclic-carboxylic acids. 5,364,940, Cl. 544-406.000.

Kikinis, Dan, to Cordata, Inc. Inductively coupled keyboard. 5,365,230, Cl. 341-22.000.

Kikkawa, Yoshitsugi; Yamamoto, Osamu; Sakaguchi, Junichi; and Nakamura, Moritaka, to Chiyoda Corporation. Method for liquefying natural gas. 5,363,655, Cl. 62-9.000.

Kikkoman Corporation: *See—*
Oguma, Tetsuya; Horiuchi, Tatsuo; and Tobe, Koichiro, 5,364,936, Cl. 536-103.000.

Kil, Kee S.; Whang, Woon H.; and Lee, Kang Y., to Lucky, Ltd. Doormat and apparatus for producing the same. 5,364,687, Cl. 428-184.000.

Kilby, Gregory G.: *See—*
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Kilgore, Bruce J.; Allen, Thomas P.; and Auger, Perry W., to Nike, Inc. Rotatable cleat. 5,363,573, Cl. 36-131.000.

Killburg, Heike: *See—*
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Killinger, Erich, to DAMBACH-Industrieanlagen GmbH. Shelf servicing apparatus. 5,364,220, Cl. 414-272.000.

Kim, Ok C. Finger and palm guard. 5,363,508, Cl. 2-21.000.

Kim, Sang H.; Adin, Anthony; Beal, Richard E.; Budz, Jerzy A.; Lam, Wai K.; and Whitson, Mark A., to Eastman Kodak Company. Silver halide photographic emulsions precipitated in the presence of organic dichalcogenides. 5,364,754, Cl. 430-569.000.

Kimball, Neal F. X.: *See—*
Allen, Bernie; Azevedo, Aaron; Knoepke, Eckhard; Kimball, Neal F. X.; Blake, Philip L.; Hayes, John A.; Healy, John A.; and Edington, Christopher J., 5,363,570, Cl. 36-28.000.

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Latimer, Margaret G.; Matthews, Billie J.; and Shershin, Ann M., 5,364,382, Cl. 604-378.000.
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Kimizuka, Junichi: *See—*
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Kimura, Hitoshi: *See—*
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Kimura, Kazuhiko: *See—*
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Kimura, Kazuya; Kayukawa, Hiroaki; Takenaka, Kenji; and Makino, Yoshihiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable displacement compressor. 5,364,232, Cl. 417-222.100.

Kimura, Kiyoshi: *See—*
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Kimura, Makoto: *See—*
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Kimura, Shigeki: *See—*
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Kimura, Yoshiko: *See—*
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Kinetrol Limited: *See—*
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King, Angela M.: *See—*
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King, Ann C., to Burroughs Wellcome Co. Agents for potentiating the effects of antitumor agents and combating multiple drug resistance. 5,364,843, Cl. 514-15.000.

King, Daniel W. Siding panel and support strip assembly. 5,363,623, Cl. 52-520.000.

King, David L.: *See—*
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Suzuki, Fumio; Kuroda, Takeshi; Kitamura, Shigeto; and Ohmori, Kenji, 5,364,859, Cl. 514-293.000.

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Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., 5,364,439, Cl. 71-57.000.

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Klein, Gary G.; and Voss, Darrell W., 5,364,115, Cl. 280-288.000.

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Ganser, Martin; and Klink, Alfred, 5,363,718, Cl. 74-501.50R.

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Fricke, Helmut; Moest, Thomas; and Flaig, Ernst, 5,364,635, Cl. 424-451.000.

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Banks, Thomas F.; Vidal, Claude; Knoll, Randall L.; and Redmond, Russell J., 5,364,367, Cl. 604-174.000.

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Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubsch, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.

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Minowa, Masahiro; Kobayashi, Naoki; Nakajima, Satoshi; and Furuhata, Tadashi, 5,365,257, Cl. 346-76.0PH.

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Ashiwake, Noriyuki; Daikoku, Takahiro; Hatsuda, Toshio; Zushi, Shizuo; and Kobayashi, Satomi, 5,365,400, Cl. 361-752.000.

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Hsueh, Yu-Ming; Imai, Kazumichi; and Koga, Masataka, 5,365,559, Cl. 377-10.000.

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Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, 5,365,521, Cl. 370-60.000.

Kogure, Tomohiko; Muraki, Takao; and Nakakita, Issey, to Yokohama Rubber Co., Ltd., The. Pneumatic tire with reinforcing layer embedded in a defined rubber. 5,363,896, Cl. 152-543.000.

Koh, Chao-Ming, to Industrial Technology Research Institute. Stacked DRAM poly plate capacitor. 5,364,813, Cl. 437-52.000.

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Kohroki, Keiichi: *See—*
Naito, Yoshiaki; Kohroki, Keiichi; and Kawaguchi, Masayuki, 5,365,131, Cl. 310-12.000.

Koike, Hiroyuki: *See—*
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Iijima, Yasuteru; Takahagi, Hidekuni; Kokubu, Tatsuo; and Hiwada, Kunio, 5,364,844, Cl. 514-18.000.

Koike, Noboru, to Kabushiki Kaisha Toshiba. Extendable antenna for a radio transceiver. 5,365,248, Cl. 343-702.000.

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Kojima, Haruji; Abe, Tsugio; Shoji, Toru; and Shirose, Meizo, to Konica Corporation. Toner for developing electrostatic images and method for manufacturing thereof. 5,364,730, Cl. 430-137.000.

Kojima, Kiyoshi; Amami, Kazuyoshi; Ueda, Hiroshi; Furuyama, Shizuo; Hara, Yoshihiro; Hasegawa, Kyoichi; and Kawamata, Tadashi, to Matsushita Electric Industrial Co., Ltd. Magnetic circuit component molding device. 5,364,253, Cl. 425-78.000.

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Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

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Kolich, Robert A.: *See—*
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,363,521, Cl. 5-99.100.

Koljack, Mathias P.: *See—*
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Kollmorgen Corporation: *See—*
Taylor, William H., 5,365,364, Cl. 359-208.000.

Komarneni, Sridhar; and Malla, Prakash B., to Gas Research Institute. Silica gels of controlled pore size as desiccant materials and processes for producing same. 5,364,455, Cl. 95-117.000.

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Komiya, Iwao: *See—*
Takayama, Yuji; Wada, Hirotaka; and Komiya, Iwao, 5,364,903, Cl. 524-555.000.

Komiyama, Osamu: *See—*
Lang, Hans; Naumann, Christoph; Raiss, Ruth; Komiyama, Osamu; and Terui, Yoshiko, 5,364,846, Cl. 514-102.000.

Komoriya, Akira: *See—*
Packard, Beverly; and Komoriya, Akira, 5,364,619, Cl. 424-85.100.

Komoriya, Isao: *See—*
Akazaki, Shusuke; Hasegawa, Yusuke; Nishimura, Yoichi; and Komoriya, Isao, 5,363,648, Cl. 60-276.000.

Komuro, Katsuhiro: *See—*
Nakashima, Shoichi; Fukaya, Yukiko; Komuro, Katsuhiro; and Iizuka, Tadashi, 5,364,248, Cl. 418-178.000.

Kon, Kazuyasu: *See—*
Tsurushima, Shinichiro; Matsumori, Satoru; Kon, Kazuyasu; and Kaneko, Kunihiro, 5,365,114, Cl. 307-10.100.

Kondo, Hidenori: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

Kondo, Masao, to Yamaha Corporation. Electronic musical instrument of variable timbre with switchable automatic accompaniment. 5,363,735, Cl. 84-622.000.

Kondo, Shunichi; Umehara, Akira; Aotani, Yoshimasa; and Yamaoka, Tsuguo, to Fuji Photo Film Co., Ltd. Light-sensitive composition. 5,364,738, Cl. 430-283.000.

Kondo, Toshio: *See—*
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Kondo, Yoshihito: *See—*
Ueda, Michio; Kondo, Yoshihito; and Umazume, Hiroaki, 5,363,753, Cl. 99-453.000.

Kondo, Yoshitami: *See—*
Fukanuma, Tetsuhiko; Kobayashi, Hisao; Yoshida, Tetsuo; and Kondo, Yoshitami, 5,364,247, Cl. 418-55.200.

Kondou, Yuu: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Kong, Yu L.: *See—*
Harris, Guy H.; Zink, Deborah; Jones, E. Tracy T.; and Kong, Yu L., 5,364,948, Cl. 554-36.000.

Konian, Richard R.: *See—*
Angiulli, John M.; Ghose, Arun K.; Konian, Richard R.; Levine, Samuel R.; Meltzer, David; Wang, Wen-Yuan; and Wu, Leon L., 5,365,204, Cl. 331-57.000.

Konica Corporation: *See—*
Inoue, Kenichi; and Mitsuhashi, Tsuyoshi, 5,364,746, Cl. 430-488.000.
Kojima, Haruji; Abe, Tsugio; Shoji, Toru; and Shirose, Meizo, 5,364,730, Cl. 430-137.000.
Kurachi, Yasuo; Yaegashi, Kaoru; Siato, Yoichi; Wada, Yoshihiro; and Nakajima, Akihisa, 5,364,751, Cl. 430-527.000.
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Konings, Jeroen H. G.: *See—*
Renkema, Jacob; Konings, Jeroen H. G.; and Muskens, Bernardus J., 5,364,916, Cl. 526-161.000.

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Van Der Tol, Johannes J. G. M.; Metaal, Eduard G.; and Pedersen, Jorgen W., 5,364,495, Cl. 156-643.000.

Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Loading post driving device. 5,365,386, Cl. 360-85.000.

Konno, Mark A.: *See—*
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Konow, Paul A. Gotchya fishhook. 5,363,588, Cl. 43-43.160.

Konrad, Kevin J.; and Ward, Robert T., to Westinghouse Electric Corporation. Generator slot hose wedge assembly. 5,365,135, Cl. 310-214.000.

Konwitz, Ellie, to Laser Industries Ltd. Laser beam delivery system. 5,364,391, Cl. 606-16.000.

Koopman, Marcel B. H.: *See—*
Muir, Susie Jane; Koopman, Marcel B. H.; and Kusters, Johannes G., 5,364,774, Cl. 435-69.300.

Koorey, Daniel P. Method for refinishing vehicle wheels. 5,364,656, Cl. 427-142.000.

Koppolu, Prasad M.; Chinniah, Jeyachandrabose; Fallah, Amir; and Dassanayake, Mahendra, to Ford Motor Company. Low profile illuminator. 5,365,412, Cl. 362-32.000.

Kortec AG: *See—*
Weber, Ralph, 5,364,448, Cl. 75-444.000.

Kosa, Yasunobu; and Kirsch, Howard C., to Motorola, Inc. Methods of forming a vertical field-effect transistor and a semiconductor memory cell. 5,364,810, Cl. 437-52.000.

Kosaki, Makoto: *See—*
Nakamura, Nakaba; and Kosaki, Makoto, 5,365,203, Cl. 333-161.000.

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Koster, Helmut. Heating and cooling arrangement in particular of a structure suspended from a room ceiling. 5,363,908, Cl. 165-49.000.

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Ayata, Nsoki; Yamamura, Mitsugu; Hamasaki, Bunei; Kosugi, Masao; Takahashi, Kazuo; and Seki, Mitsuaki, 5,365,342, Cl. 356-401.000.

Kotani, Tomoyuki, to Diafoil Hoechst Company, Limited. Laminated polyester film for magnetic recording medium. 5,364,698, Cl. 428-323.000.

Kotch, Richard J.; O'Brien, John A.; and McConnell, George A., to Vickers, Incorporated. Portable electrohydraulic trainer. 5,363,738, Cl. 91-1.000.

Kotnour, Thomas A.: *See—*
Rolando, Richard J.; Coleman, Patrick L.; Kangas, Steven L.; and Kotnour, Thomas A., 5,364,907, Cl. 525-54.100.

Kotobuki Sangyo Co., Ltd.: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

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Kotwicki, Allan J.; and Hamburg, Douglas R., to Ford Motor Company. Catalyst monitoring using ego sensors. 5,365,216, Cl. 340-439.000.

Koyama, Kazutaka: *See—*
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Koyama, Satoshi: *See—*
Seki, Eiji; Aoyama, Hirokazu; Nakada, Tatsuo; and Koyama, Satoshi, 5,364,991, Cl. 570-175.000.

Koyama, Tamotsu: *See—*
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.

Koyo Seiko Co., Ltd.: *See—*
Ikeda, Takaaki, 5,363,947, Cl. 192-45.100.

Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, to Hitachi, Ltd. ATM switching system connectable to I/O links having different transmission rates. 5,365,519, Cl. 370-60.000.

Koziol, Jeffrey E. Beam delivery system for corneal surgery. 5,364,388, Cl. 606-5.000.

Kraai, Leon A.; Sager, Robert L., Jr.; and Hill, William E., to Tennessee Gas Pipeline Company. Low backpressure straight-through reactive and dissipative muffler. 5,365,025, Cl. 181-249.000.

Kraemer, William E.; and Daneshvar, Manouchehr, to Combustion Concepts, Inc. High efficient heat treating and drying apparatus and method. 5,364,080, Cl. 266-262.000.

Kraft General Foods, Inc.: *See—*
Morimoto, Keisuke; and Lugay, Joaquin C., 5,364,643, Cl. 426-102.000.

Kraft, Walter, to Gretag Imaging, AG. Procedure for making copies from photographic originals. 5,365,353, Cl. 358-518.000.

Kragten, Ubaldus F.; and Frohn-Schlosser, Miriam K. J., to Stamicarbon B.V. Method for purification of a benzoic acid. 5,364,962, Cl. 562-494.000.

Kragtwijk, Eric: *See—*
Drent, Eit; and Kragtwijk, Eric, 5,364,970, Cl. 568-454.000.

Krambeck, Dagoberto: *See—*
Collins, Cecil A.; and Krambeck, Dagoberto, 5,364,129, Cl. 280-806.000.

Kramer, Fred R.: *See—*
Chu, Barbara; Kramer, Fred R.; Lizardi, Paul; and Orgel, Leslie E., 5,364,760, Cl. 435-6.000.

Kramer, Thomas: *See—*
Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubsch, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.

Krammer, Gert, to Zizala Lichtsysteme GmbH. Vehicle lighting system. 5,365,413, Cl. 362-32.000.

Kraus, Jeffrey L.: *See—*
Horzewski, Michael J.; and Kraus, Jeffrey L., 5,364,376, Cl. 604-280.000.

Kraus, Lawrence. Two handled animal control tether. 5,363,810, Cl. 119-795.000.

Krauss, Timothy A.; Hunter, David H.; and Beatty, Robert D., to United Technologies Corporation. Rotor blade subassembly for a rotor assembly having ducted, coaxial counter-rotating rotors. 5,364,230, Cl. 416-134.00A.

Krebs, Roland: *See—*
Luthi, Rudolf; Krebs, Roland; and Egolf, Theo, 5,363,685, Cl. 72-405.000.

Kreft, Anthony F., III: *See—*
Failli, Amedeo A.; Kreft, Anthony F., III; Musser, John H.; Banker, Annette L.; Nelson, James A.; Shah, Uresh S.; and Kubrak, Dennis M., 5,364,944, Cl. 548-341.100.

Kremers, Antoon P. M.: *See—*
Arnoldy, Peter; and Kremers, Antoon P. M., 5,364,957, Cl. 560-207.000.

Kremers, Henry T.: *See—*
Schieck, Richard A.; Kremers, Henry T.; and Gates, Douglas W., 5,364,087, Cl. 271-148.000.

Krenik, William R.; and Izzi, Louis J., to Texas Instruments Incorporated. Graphics system including an output buffer circuit with controlled Miller effect capacitance. 5,365,126, Cl. 326-83.000.

Kresge, Charles T.; Roth, Wieslaw J.; Simmons, Kenneth G.; and Vartuli, James C., to Mobil Oil Corp. Organic conversion with a catalyst comprising a crystalline pillared oxide material. 5,364,999, Cl. 585-407.000.

Kresge, Charles T.; and Roth, Wieslaw J., to Mobil Oil Corp. Organic conversion with a catalyst comprising a crystalline pillard oxide material. 5,365,000, Cl. 585-407.000.

Kriehn, Hartmut; and Brenner, Lothar, to Leybold Aktiengesellschaft. Dry-running twin-shaft vacuum pump. 5,364,245, Cl. 418-9.000.

Kriz, Mary J.: *See—*
Gerhart, Tobin N.; Wang, Elizabeth A.; and Kriz, Mary J., 5,364,839, Cl. 514-12.000.

Krohne Messtechnik GmbH & Co. KG: *See—*
Van Der Pol, Ronald, 5,365,178, Cl. 324-644.000.

Kroll, Richard E.; Tamburrini, Vincent; and Hansen, Frederick M., to Dryvit Systems, Inc. Insulative wall cladding having insulation boards fitting together to form channels. 5,363,621, Cl. 52-506.010.

Kroll, Richard S.: *See—*
Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., 5,365,436, Cl. 364-424.030.

Kronbetter, Clarence W., to Chardon Rubber Company. Seal assembly for a sliding window. 5,363,596, Cl. 49-495.100.

Kroon, Johannes A.; and Buijs, Wim, to D.S.M. N.V. Process for removal of tar in a phenol preparation process. 5,364,978, Cl. 568-801.000.

Kruck, Richard W.: *See—*
Cur, Nihat O.; and Kruck, Richard W., 5,364,577, Cl. 264-69.000.

Krueger, Don E., Jr.; and Rosenthal, Robert D., to Futrex, Inc. Low cost means for increasing measurement sensitivity in LED/IRED near-infrared instruments. 5,365,066, Cl. 250-341.200.

Krug, Eric M.: *See—*
Miller, Kevin L.; Krug, Eric M.; and Imthurn, James A., 5,365,383, Cl. 360-69.000.

Kruppa, Walter: *See—*
Boos, J. Brad; and Kruppa, Walter, 5,364,816, Cl. 437-133.000.

Kubiak, James M.: *See—*
Fike, Richard; and Kubiak, James M., 5,364,784, Cl. 435-240.100.

Kubo, Kazuhiro, to AHC Inc. Pure culture of *Bacillus subtilis* FERM BP-3418. 5,364,788, Cl. 435-252.500.

Kubo, Takayuki: *See—*
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.

Kubrak, Dennis M.: *See—*
Failli, Amedeo A.; Kreft, Anthony F., III; Musser, John H.; Banker, Annette L.; Nelson, James A.; Shah, Uresh S.; and Kubrak, Dennis M., 5,364,944, Cl. 548-341.100.

Kudo, Noriak: *See—*
Watanabe, Jyun; and Kudo, Noriak, 5,364,899, Cl. 524-268.000.

Kuehne, Donald L.: *See—*
Marquis, David M.; and Kuehne, Donald L., 5,363,915, Cl. 166-274.000.

Kuge, Raizo; and Moteki, Yoshiji, to Kabushiki Kaisha Hosokawa Yoko. Zippered bag and method of forming the same. 5,364,189, Cl. 383-61.000.

Kugizaki, Rodney J.: *See—*
Vollmer, David W.; and Kugizaki, Rodney J., 5,365,287, Cl. 353-31.000.

Kuhlmann, Werner: *See—*
Merz, Thomas; Shamayeli, Khalil; and Kuhlmann, Werner, 5,364,552, Cl. 252-174.220.

Kuhn, Petrus H. A. N., to Sara Lee/DE N.V. Dispenser adapted for combined continuous and instant operation. 5,364,027, Cl. 239-44.000.

Kujiraoka, Takeshi: *See—*
Toyofuku, Katsuyuki; Nagamatsu, Ichiro; Shirakawa, Shinji; Iga, Hiroto; Kujiraoka, Takeshi; and Murakami, Kensei, 5,364,706, Cl. 428-607.000.

Kulik, Thad: *See—*
Blakeslee, Robert; and Kulik, Thad, 5,365,149, Cl. 315-200.00A.

Kulikowski, Karl J.: *See—*
Crockett, Dennis D.; Gordish, Ronald J.; Kulikowski, Karl J.; and Munz, Robert P., 5,365,036, Cl. 219-137.0WM.

Kulkarni, Jitendra R.: *See—*
Hoang, Loc B.; Dinh, Khoi V.; and Kulkarni, Jitendra R., 5,365,479, Cl. 365-189.290.

Kumagai, Chiaki: *See—*
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,365,444, Cl. 364-426.040.

Kumamaru, Kuniaki: *See—*
Taka, Shin-ichi; Kimura, Kouji; Naruse, Hiroshi; and Kumamaru, Kuniaki, 5,365,090, Cl. 257-197.000.

Kumar, Nanda P. B. A.: *See—*
Raskin, Ilya; Kumar, Nanda P. B. A.; and Douchenkov, Slavik, 5,364,451, Cl. 75-710.000.

Kumar, Ranjit; Ritter, Ronald E.; and Schaeffer, Howard J., III, to W. R. Grace & Co.-Conn. Catalytic cracking catalysts and additives. 5,364,516, Cl. 208-120.000.

Kumar, Satish: *See—*
Levien, Keith L.; Morrell, Jeffrey J.; Kumar, Satish; and Sahle-Demessie, Endalkachew, 5,364,475, Cl. 134-42.000.

Kumasaka, Takao; Shimazaki, Yuzuru; Miyasaka, Toru; and Otome, Yukio, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Method of multicolor recording using electro-photography process and apparatus therefor wherein mixed colors generation is prevented. 5,365,325, Cl. 355-326.000.

Kumataka, Shinji: *See—*
Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.

Kumazaki, Toshimi, to Mitsuboshi Belting Ltd. V-ribbed belt. 5,364,315, Cl. 474-242.000.

Kumondai, Toshio: *See—*
Yoshimoto, Katsunobu; Hatta, Masayoshi; and Kumondai, Toshio, 5,363,777, Cl. 110-214.000.

Kumpfmiller, Ronald J.: *See—*
Huynh-Tran, Truc-Chi T.; Kumpfmiller, Ronald J.; and Ebner, Cynthia L., 5,364,741, Cl. 430-300.000.

Kundert, Warren R., to Control Resources, Inc. Ventilation fan control. 5,364,026, Cl. 236-49.300.

Kuno, Yoshinori, to Sony Corporation. Solid-state imaging device with tapered channel regions. 5,365,093, Cl. 257-233.000.

Kunselman, Michael E.: *See—*
Gray, Thomas E.; Kunselman, Michael E.; and Palmer, Richard A., 5,364,921, Cl. 528-15.000.

Kuntz, Guenther: *See—*
Schwarz, Lothar; and Kuntz, Guenther, 5,364,528, Cl. 210-323.200.

Kurachi, Yasuo; Yaegashi, Kaoru; Siato, Yoichi; Wada, Yoshihiro; and Nakajima, Akihisa, to Konica Corporation. Silver halide photographic light-sensitive material using antistatic plastic film. 5,364,751, Cl. 430-527.000.

Kuraishi, Fumio; Wada, Norio; and Uchida, Hirofumi, to Shinko Electric Industries, Co., Lt. Semiconductor device having tab tape. 5,365,107, Cl. 257-673.000.

Kuranami, Shunji, to Koito Industries, Ltd. Headrest for seats. 5,364,164, Cl. 297-408.000.

Kuraray Co., Ltd.: *See—*
Okada, Hiromasa; and Asano, Shoji, 5,364,694, Cl. 428-288.000.

Kurashima, Yasumi, to NEC Corporation. Master-slice type semiconductor integrated circuit device. 5,365,406, Cl. 361-777.000.

Kuratomi, Yasunori: *See—*
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,364,668, Cl. 428-1.000.

Kuretake, Masato; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Yoshida, Yoshimi; Uda, Sawayo; and Zushi, Takayasu, to Takata Corporation. Specially folded air bag and special inflator for inflating air bag. 5,364,126, Cl. 280-730.00R.

Kurita Water Industries, Ltd.: *See—*
Okuyama, Tsuneo; Izumi, Tomonori; and Yamaguchi, Masato, 5,364,520, Cl. 204-299.00R.

Kuroda, Kazuyuki: *See—*
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

Kuroda, Shoji: *See—*
Ogino, Masanori; Kuroda, Shoji; and Iwahara, Yoshiaki, 5,365,369, Cl. 359-457.000.

Kuroda, Takeshi: *See—*
Suzuki, Fumio; Kuroda, Takeshi; Kitamura, Shigeto; and Ohmori, Kenji, 5,364,859, Cl. 514-293.000.

Kuroda, Yasuhisa: *See—*
Hasegawa, Masamitsu; and Kuroda, Yasuhisa, 5,364,626, Cl. 424-403.000.

Kurome, Kanji: *See—*
Yashida, Makoto; Kurome, Kanji; Asahina, Atsushi; Hansoka, Yasuki; and Imoee, Kazuo, 5,365,564, Cl. 378-55.000.

Kurono, Masayasu: *See—*
Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, 5,364,533, Cl. 210-645.000.

Kurosawa, Hiroshi: *See—*
Ebinuma, Ryuichi; Mizusawa, Nobutoshi; Suzuki, Masayuki; Uno, Shinichirou; Mori, Tetsuzo; and Kurosawa, Hiroshi, 5,365,561, Cl. 378-34.000.

Kurozumi, Seizi: *See—*
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.

Kurth, Brian J.: *See—*
Taylor-McCune, Christopher J.; Kurth, Brian J.; and Golobay, Lloyd D., 5,364,244, Cl. 417-536.000.

Kurtzke, Christian: *See—*
Gnauck, Alan H.; and Kurtzke, Christian, 5,365,362, Cl. 359-174.000.

Kurumatani, Hiroshi: *See—*
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,365,386, Cl. 360-85.000.

Kusada, Tokutarou: *See—*
Matsumoto, Toshio; Yasuda, Shuhei; Kusada, Tokutarou; and Nagashima, Nobuyoshi, 5,365,284, Cl. 348-793.000.

Kusano, Toshihiko, to NEC Corporation. Reliable cross-connection network. 5,365,511, Cl. 370-16.000.

Kush, Donald C., to Kaiser Aluminum & Chemical Corporation. Contained quench system for controlled cooling of continuous web. 5,363,902, Cl. 164-485.000.

Kusters, Johannes G.: *See—*
Muir, Susie Jane; Koopman, Marcel B. H.; and Kusters, Johannes G., 5,364,774, Cl. 435-69.300.

Kusumoto, Tadashi: *See—*
Hosokawa, Chishio; and Kusumoto, Tadashi, 5,364,654, Cl. 427-66.000.

Kuwabara, Masayoshi; Asahara, Tomohiko; Ujiie, Noboru; and Kagaminuma, Nobuhiro, to Ethicon, Inc. Endoscopic needle holder. 5,364,409, Cl. 606-148.000.

Kuwahara, Heikichi: *See—*
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Kuwahara, Kiyoshi; Yoshida, Akira; and Kuwahara, Masako, to Perfect Shoji Kabushiki Kaisha. Car cover. 5,364,155, Cl. 296-136.000.

Kuwahara, Masako: *See—*
Kuwahara, Kiyoshi; Yoshida, Akira; and Kuwahara, Masako, 5,364,155, Cl. 296-136.000.

Kuwana, Minoru: *See—*
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.

Kwiatek, David J., to Harper-Wyman Company. Electrode assembly for gas burner spark ignition. 5,364,264, Cl. 431-266.000.

Kwikset Corporation: *See—*
Bergen, Gary R.; and Ghostley, Thomas J., 5,364,139, Cl. 292-169.000.

Kwok, Wilson; and Sun, Huifang, to RCA Thomson Licensing Corporation. Error concealment apparatus for video signal processors. 5,365,604, Cl. 382-54.000.

Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Joong-Hyun; and Oh, Kyoung-Seok, to SamSung Electronics Co., Ltd. Method of fabricating a capacitor for a dynamic random access memory cell. 5,364,809, Cl. 437-52.000.

Kwon, Young I.; and Liang, Louis H., to VLSI Technology, Inc. Integrated circuit package design having an intermediate die-attach substrate bonded to a leadframe. 5,365,409, Cl. 361-813.000.

Kyffin, Steven H. M.: *See—*
Edmund, Nicholas E.; and Kyffin, Steven H. M., 5,363,934, Cl. 180-6.500.

Kyo-Fi Industrial Corporation: *See—*
Teramura, Koji, 5,364,213, Cl. 411-431.000.

Kyocera Elco Corporation: *See—*
Ota, Yoshiyuki; and Sakaoka, Masaki, 5,364,275, Cl. 439-65.000.

Kyoto, Michihisa; Ishiguro, Yoichi; Urano, Akira; and Kakuzen, Hideo, to Sumitomo Electric Industries, Ltd. Method for producing glass preform for optical fiber. 5,364,428, Cl. 65-397.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Katsumata, Ryoichi; Ohshiro, Takashi; Yokoi, Haruhiko; and Shiomi, Michio, 5,364,775, Cl. 435-107.000.
Suzuki, Fumio; Kuroda, Takeshi; Kitamura, Shigeto; and Ohmori, Kenji, 5,364,859, Cl. 514-293.000.

L. H. Carbide Corporation: *See—*
Neuenschwander, Thomas R., 5,365,021, Cl. 177-50.000.

L. Schuler GmbH: *See—*
Thudium, Karl; and Rieger, Walter, 5,363,683, Cl. 72-405.000.
Thudium, Karl; Dangelmayr, Andreas; and Rieger, Walter, 5,363,684, Cl. 72-405.000.

Lab One Enterprises, L.C.: *See—*
Willits, William G.; and Schmitt, Thomas P., Jr., 5,364,269, Cl. 433-178.000.

LaBarca, Joseph E.: *See—*
Edwards, James L.; Hahm, Paul T.; and LaBarca, Joseph E., 5,364,747, Cl. 430-504.000.

LaBarre, Berger A., to Norco, Inc. Hinged strut construction. 5,364,201, Cl. 403-322.000.

Laboratoires Biotrol: *See—*
Ozenne, Jean-Pierre; and Holtermann, Henri, 5,364,379, Cl. 604-342.000.

Laboratoires UPSA: *See—*
Bru-Magniez, Nicole; Launay, Michele; and Teulon, Jean-Marie, 5,364,860, Cl. 514-300.000.

Labrador, Elena Q.: *See—*
Dieckmann, Gunther H.; and Labrador, Elena Q., 5,364,517, Cl. 208-121.000.

Labrie, Fernand; and Merand, Yves, to Endorecherche. Inhibitors of sex steroid biosynthesis and methods for their production and use. 5,364,847, Cl. 514-182.000.

Lacefield, William B.: *See—*
Cohen, Marlene L.; Lacefield, William B.; and Robertson, David W., 5,364,863, Cl. 514-304.000.

Lacuna, Ricardo F.; Curry, Gaylan J.; and Campbell, Dale E., to U.S. Natural Resources, Inc. Lumber organizer. 5,363,950, Cl. 198-382.000.

Lafargue, Eric; Espitalie, Jean; and Lesage, Thierry, to Institut Francais du Petrole. Device and method for evaluating the ability of a body containing a product to expel the product from the body. 5,363,692, Cl. 73-38.000.

Laffan, David, to Lonza Ltd.; and Sankyo Company Ltd. Process for the preparation of substituted pentaalkylchromenes. 5,364,946, Cl. 549-407.000.

Lagunas-Solar, Manuel C.; and Pyne, Alvan W., to University of California, The Regents of the. Method of controlling microorganisms by pulsed ultraviolet laser radiation. 5,364,645, Cl. 426-248.000.

Lahners, Kristine N.: *See—*
Granneman, James G.; Lahners, Kristine N.; and Rao, Donald D., 5,364,772, Cl. 435-69.100.

Lai, Yu-Chin: *See—*
Valint, Paul L., Jr.; McGee, Joseph A.; and Lai, Yu-Chin, 5,364,918, Cl. 526-245.000.

L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude: *See—*
Nagamura, Takashi; and Yamamoto, Takao, 5,363,656, Cl. 62-25.000.

Laird, Jesse D., III, to Gldrj Company. Display device having an article dispenser therein. 5,363,984, Cl. 221-24.000.

Lairson, Bruce M.; Clemens, Bruce M.; and Visokay, Mark R., to Leland Stanford Junior University, The Board of Trustees of the. Uniaxial thin film structures formed from oriented bilayers and multilayers. 5,363,794, Cl. 117-7.000.

Lake Grove Toy Corporation: *See—*
Crisci, Louis; and Mallin, Martin, 5,364,298, Cl. 446-59.000.

Lam, Peter H. L.: *See—*
Nield, Eric; Palasz, Peter D.; Taylor, Philip L.; and Lam, Peter H. L., 5,364,901, Cl. 524-521.000.

Lam, Wai K.: *See—*
Kim, Sang H.; Adin, Anthony; Beal, Richard E.; Budz, Jerzy A.; Lam, Wai K.; and Whitson, Mark A., 5,364,754, Cl. 430-569.000.

Lambert, Trevor: *See—*
Schmelzer, Richard A.; and Lambert, Trevor, 5,365,263, Cl. 348-9.000.

Lamm, Gunther: *See—*
Degen, Helmut; Zimmerman, Norbert; Brueckmann, Ralf; Lamm, Gunther; Lange, Arno; and Reichelt, Helmut, 5,364,972, Cl. 568-306.000.

Lamort, Jean-Pierre: *See—*
Baret, Jean-Luc A. G.; Leclerc, Marc; and Lamort, Jean-Pierre, 5,364,501, Cl. 162-5.000.

Lamoureux, William R. Rotary lawn mower blade with upturned cutting edges for making multiple cuts. 5,363,636, Cl. 56-255.000.

Lamperti, Marino: *See—*
Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

Lampman, David A.: *See—*
Zou, Xueming; Lampman, David A.; and Orlando, Paul T., 5,365,173, Cl. 324-318.000.

Lampson, Miles L.: *See—*
Brandon, Fred J.; Lampson, Miles L.; and Grace, Fred I., 5,363,766, Cl. 102-374.000.

Lane, Keith A.: *See—*
Horner, Robert W.; Cai, Kheim V.; Bergen, Ronald L.; and Lane, Keith A., 5,365,592, Cl. 381-46.000.

Lane, Richard A.: *See—*
Petersen, Thomas D.; and Lane, Richard A., 5,364,403, Cl. 606-91.000.

Lang, Gary E., to Makura Corporation. Multi-adjustment cervical pillow. 5,363,524, Cl. 5-640.000.

Lang, Gerard; Junino, Alex; Cotteret, Jean; and Vandenbossche, Jean J., to L'Oreal. Tinctorial composition for keratinous fibres containing oxidation dye precursors and aminoindole couplers, methods for dyeing using these compositions and new compounds. 5,364,414, Cl. 8-409.000.

Lang, Gerard: *See—*
Junino, Alex; Genet, Alain; and Lang, Gerard, 5,364,413, Cl. 8-421.000.

Lang, Hans; Naumann, Christoph; Raiss, Ruth; Komiyama, Osamu; and Terui, Yoshiko, to Hoechst Aktiengesellschaft. N-cycloalkylaminoethane-1,1-bis (phosphonic acid) useful for the treatment of osteoporosis and degenerative joint disease. 5,364,846, Cl. 514-102.000.

Lang, Hans-Jochen: *See—*
Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, 5,364,868, Cl. 514-331.000.

Lange, Arno: *See—*
Degen, Helmut; Zimmerman, Norbert; Brueckmann, Ralf; Lamm, Gunther; Lange, Arno; and Reichelt, Helmut, 5,364,972, Cl. 568-306.000.

Langer, Peter: *See—*
Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., 5,365,438, Cl. 364-424.030.

Lankford, James D., to JEDMED Instrument Company. Video otoscope. 5,363,839, Cl. 128-9.000.

Lanpher, Gregory B.: *See—*
Mishelevich, David J.; Lanpher, Ted W.; Lanpher, Gregory B.; and Long, James, 5,363,842, Cl. 128-200.140.

Lanpher, Ted W.: *See—*
Mishelevich, David J.; Lanpher, Ted W.; Lanpher, Gregory B.; and Long, James, 5,363,842, Cl. 128-200.140.

Lapovok, Vladimir N.: *See—*
Trusov, Lev I.; Lapovok, Vladimir N.; and Novikov, Victor I., 5,364,586, Cl. 419-2.000.

Laramay, Mary A. H.: *See—*
Himes, Ronald E.; Holtmyer, Marlin D.; Hunt, Charles V.; and Laramay, Mary A. H., 5,363,916, Cl. 166-276.000.

Laramee, Andre : *See—*
Robinette, Jean; Mark, Jack; and Laramee, Andre , 5,365,222, Cl. 340-677.000.

Larkin, Brent H. Plumbing tool for temporarily plugging a pipe with field-replaceable gasket. 5,363,881, Cl. 138-89.000.

Larkin, David J.; and Powell, J. Anthony, to United States of America, National Aeronautics and Space Administration. Process for the controlled growth of single-crystal films of silicon carbide polytypes on silicon carbide wafers. 5,363,800, Cl. 117-95.000.

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Larson, Keith E., to Texas Instruments Incorporated. Floating point to logarithm converter. 5,365,465, Cl. 364-715.030.

Laser Industries Ltd.: *See—*
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Latimer, Margaret G.; Matthews, Billie J.; and Shershin, Ann M., to Kimberly-Clark Corporation. Absorbent structure having improved fluid surge management and product incorporating same. 5,364,382, Cl. 604-378.000.

Lau, Chung Y.: *See—*
Wagner, Gary L.; and Lau, Chung Y., 5,365,192, Cl. 330-252.000.

Laub, Michael F., to Whitaker Corporation, The. Electronic component upgrade connector and contact. 5,364,278, Cl. 439-69.000.

Lauff, John; Breitfeller, James; Steele, D. Bernie; and Coogan, Louise, to Genencor International, Inc. Pure culture of *Agrobacterium sp.* which degrades ferric chelates. 5,364,786, Cl. 435-252.200.

Laughlin, Donald J.; and Wagoner, Lawrence E., to No Peek 21. Card mark sensor and methods for blackjack. 5,364,106, Cl. 273-304.000.

Launay, Michele: *See—*
Bru-Magniez, Nicole; Launay, Michele; and Teulon, Jean-Marie, 5,364,860, Cl. 514-300.000.

Laurie, Jean-Phillippe R. L.; and Perratone, Rene , to Single Buoy Moorings Inc. Disconnectable mooring system. 5,363,789, Cl. 114-293.000.

Laurus Medical Corporation: *See—*
Gordon, Norman S., 5,364,408, Cl. 606-144.000.

Lauwereys, Marc: *See—*
Quax, Wilhelmus J.; Laroche, Yves; Vollebregt, Adrianus W. H.; Stanssens, Patrick; and Lauwereys, Marc, 5,364,782, Cl. 435-202.000.

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Lawhorn, David E.: *See—*
Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,364,856, Cl. 514-253.000.

Lawlis, Virgil B.: *See—*
Berka, Randy M.; Cullen, Daniel; Gray, Gregory L.; Hayenga, Kirk J.; and Lawlis, Virgil B., 5,364,770, Cl. 435-69.100.

Lawson, Allen A., to Colight, A Division of Hanovia Lamp. Exposure frame assembly. 5,365,309, Cl. 355-75.000.

Lawton, Gary P. Elastomeric stethoscope cover. 5,365,023, Cl. 181-131.000.

Layh, Hans-Dieter, to Technology Services, Inc. Electrical power supply unit for the supply of low power loads. 5,365,144, Cl. 315-58.000.

Lazanyi, Stephen. Sundial-like timepiece. 5,365,498, Cl. 368-239.000.

Lazzara, Richard J.; and Beaty, Keith D., to Implant Innovations, Inc. Method for installing a dental implant fixture in cortical bone. 5,364,268, Cl. 433-173.000.

LDI Inc.: *See—*
Lohss, Kurt L., 5,365,116, Cl. 307-121.000.

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Leashno, Moshe: *See—*
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Leber, Helmut, to Heraeus Quarzglas GmbH. Method for producing a composite glass body with drawing of concentric melts. 5,364,432, Cl. 65-17.300.

LeClerc, Denys F.; and Hogikyan, Robert M., to Pulp & Paper Research Institute of Canada. Control of recovery boiler operation by IR spectroscopy. 5,364,502, Cl. 162-49.000.

Leclerc, Marc: *See—*
Baret, Jean-Luc A. G.; Leclerc, Marc; and Lamort, Jean-Pierre, 5,364,501, Cl. 162-5.000.

Ledger, Anthony M., to Hughes Aircraft Company. Apparatus and method for measuring the thickness of thin films. 5,365,340, Cl. 356-357.000.

Leduc, Steven. Sterilization system. 5,364,602, Cl. 422-307.000.

Lee, Bup-Jong, to Anico Co. Ltd. Method and multi-ejector type of system for purifying the polluted poisonous exhaust gas. 5,364,599, Cl. 422-170.000.

Lee, Ching-Pang, to General Electric Company. Recuperative impingement cooling of jet engine components. 5,363,654, Cl. 60-752.000.

Lee, Chung G., to SamSung Electronics Co., Ltd. Laser disk player. 5,365,506, Cl. 369-75.200.

Lee, Gilbert F.; and Hartmann, Bruce, to United States of America, Navy. Material characterizing system. 5,363,701, Cl. 73-574.000.

Lee, Gim F., Jr.; and Snow, Kevin M., to General Electric Company. Electrically conductive article made of polyphenylene ether electrical insulation compositions. 5,364,898, Cl. 524-265.000.

Lee, Kang Y.: *See—*
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Lee, Robert N.: *See—*
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Lee, Seong-Kyu. Portable bedpan. 5,363,514, Cl. 4-455.000.

Lee, Seung S. Safety apparatus for candles. 5,363,590, Cl. 431-253.000.

Lee, Unkoo, to Hyundai Motor Company. Rear suspension for vehicle having increased free layout. 5,364,121, Cl. 280-688.000.

Leggitt, Gary L.: *See—*
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Dornmair, Klaus; and McConnell, Harden M., 5,364,762, Cl. 435-7.240.
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Leland Stanford University, The Board of Trustees of the: *See—*
Subbiah, Subramanian, 5,365,456, Cl. 364-499.000.

Lelli, Charles; and Lelli, Marc L. Lumbar support belt. 5,363,863, Cl. 128-876.000.

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Lemelson, Jerome. Method and apparatus for road hole repair. 5,364,205, Cl. 404-72.000.

Lemforder Metallwaren AG: *See—*
Eichholz, Raimund; and Schuller, Klaus, 5,363,717, Cl. 74-493.000.

Lemire, George: *See—*
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Leng, Stephen A.: *See—*
Kirkwood, Kenneth C.; Leng, Stephen A.; and Sims, David W., 5,364,995, Cl. 585-241.000.

Lentsch, Steven E.; Keller, Cynthia A.; Bona, Gregory T.; and Man, Victor F., to Ecolab Inc. Reduced misting oven cleaner. 5,364,551, Cl. 252-156.000.

Leopold, Raymond J.: *See—*
Wang, Theresa C. Y.; and Leopold, Raymond J., 5,365,520, Cl. 370-60.000.

Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, to Ciba-Geigy Corporation. Photographic material containing UV absorber. 5,364,749, Cl. 430-507.000.

Leppo, Lee E.; and Rinkes, Charles A., to Telxon Corporation. Apparatus and method for charging batteries. 5,365,160, Cl. 320-22.000.

Le Roy, Yvon: *See—*
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Lesage, Thierry: *See—*
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Leseberg, Roger: *See—*
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Le Sergent, Christian, to Alcatel Fibres Optiques. Method of manufacturing active optical fibers. 5,364,429, Cl. 65-399.000.

Leshay, Bruce: *See—*
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Leto, Francis T.: *See—*
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Leto, Paul R.: *See—*
Leto, Salvadore, 5,364,281, Cl. 439-100.000.

Leto, Salvadore, to Harrison, Philly D.; Leto, Paul R.; and Leto, Francis T. Electrical connector system for grounding member and ground wire. 5,364,281, Cl. 439-100.000.

Leu, Sammy W., to Reebok International Ltd. Collapsible frame assembly and stroller. 5,364,119, Cl. 280-647.000.

Leung, Ka-Ngo: *See—*
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Lever Brothers Company, Division of Conopco, Inc.: *See—*
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Levien, Keith L.; Morrell, Jeffrey J.; Kumar, Satish; and Sahle-Demessie, Endalkachew, to State of Oregon acting by and through the State Board of Higher Education on behalf of Oregon State University. Process for removing chemical preservatives from wood using supercritical fluid extraction. 5,364,475, Cl. 134-42.000.

Levien, Raphael L. Integrated half-tone screening and enlarging using an enlargement mapping pattern having linked, unique pattern segments. 5,365,602, Cl. 382-47.000.

Levine, Michael R., to Smart VCR Limited Partnership. Television system module with remote control code determination. 5,365,282, Cl. 348-734.000.

Levine, Samuel R.: *See—*
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Levy, Menashe: *See—*
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Lew, Chel W., to Southwest Research Institute. Controlled-release PH sensitive capsule and adhesive system and method. 5,364,634, Cl. 424-451.000.

Lew, Hyok S. Convective acceleration flowmeter. 5,363,706, Cl. 73-861.380.

Lewis, Albert; and Kottnauer, Cenek A., to Glass Incorporated International. Apparatus for production of glass fibers utilizing spinning cup structure. 5,364,431, Cl. 65-488.000.

Lewis, Bernard L., to United States of America, Navy. High-resolution sidelobe-canceller auxiliary antennas. 5,365,234, Cl. 342-16.000.

Lewis, Danny H.: *See—*
Meer, Robert K. V.; Lofgren, Clifford S.; Williams, David F.; Meyers, William E.; and Lewis, Danny H., 5,364,618, Cl. 424-84.000.

Lewis, David M., to Clairol Inc. Oxidative hair dye compositions and processes utilizing leuco vat dyes. 5,364,415, Cl. 8-406.000.

Lewis, Gregory D.; Roberts, Roger G.; and Givens, Thomas B., to 'Akzo N.V. Cassette for storing and dispensing cuvettes. 5,364,592, Cl. 422-63.000.

Lexmark International, Inc.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Rice, Larry J.; Roe, Ronald L.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,365,315, Cl. 355-210.000.
Beach, Bradley L.; Burns, Kathryn E.; Franey, Terence E.; Piekunka, Ann M.; Spivey, Paul T.; and Zimmer, Agnes K., 5,364,461, Cl. 106-22.00R.

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Li, Chi, to Ford Motor Company. Electroviscoelastic gel-like solids. 5,364,565, Cl. 252-500.000.

Li, Liang: *See—*
Derby, Jeffrey H.; Doeringer, Willibald A.; Drake, John E., Jr.; Dykeman, Douglas H.; Li, Liang; Peters, Marcia L.; Sandick, Haldon J.; and Vu, Ken Van, 5,365,523, Cl. 370-85.200.

Li, Richard C., to Motorola, Inc. Sealed microphone assembly. 5,365,595, Cl. 381-168.000.

Li, Yao-Tzu; Yundt, Albert P., Jr.; Ho, I-Chieng; and Huang, Henry, to Y. T. Li Engineering, Inc. Orbital type freezing apparatus and method. 5,363,660, Cl. 62-71.000.

Liang, David. Combination of utensils. 5,363,755, Cl. 99-484.000.

Liang, Louis H.: *See—*
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Liaw, Hai-Pyng: *See—*
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Libbey-Owens-Ford Co.: *See—*
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Lieber, Clement E.; Taimisto, Miriam H.; Swendson, David L.; Konno, Mark A.; Busse, Lawrence J.; and Skidmore, Robert, to Baxter International Inc. Ultrasound probe for use with transport catheter and method of making same. 5,363,853, Cl. 128-662.060.

Liepold, August: *See—*
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; Thiele, Hartmut; and Liepold, August, 5,363,962, Cl. 206-394.000.

Life Technologies, Inc.: *See—*
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Lifecell: *See—*
Livesey, Stephen A.; del Campo, Anthony A.; and Nag, Abhijit, 5,364,756, Cl. 435-2.000.

LifeSource Advanced Blood Bank Systems, Inc.: *See—*
Harms, Frank H.; Beard, John R.; and Duncan, Alexander, 5,364,385, Cl. 604-410.000.

Lilly, Robert L., to BASF Corporation. Method for producing polymeric fibers with improved anti-static properties and fibers and fabrics produced thereby. 5,364,582, Cl. 264-211.000.

Lim, Joon Y.: *See—*
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Lin, Feng. Application independent, portable room temperature and humidity controller. 5,364,024, Cl. 236-44.00C.

Lin, Hong; Sorin, Wayne V.; and Donald, David K., to Hewlett-Packard Company. Apparatus and method for initializing an optical-fiber laser for mode locking. 5,365,531, Cl. 372-18.000.

Lin, Hsiang-Cheng. Beverage vessel with magnetic lid. 5,363,745, Cl. 99-306.000.

Lin, Liang-Chih: *See—*
Lur, Water; Huang, Cheng-Han; Chang, Shih-Chanh; and Lin, Liang-Chih, 5,364,817, Cl. 437-192.000.

Lincoln Electric Company, The: *See—*
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Linden, Paul A.: *See—*
Dewald, Duane S.; Cross, Lloyd G.; and Linden, Paul A., 5,365,288, Cl. 353-98.000.

Lindenmueller, Johann; and Wagner, Alois, to Ascom Hasler AG. Rotor unit for a postage meter machine. 5,363,760, Cl. 101-91.000.

Linder, Michael C.: *See—*
Gulliver, Richard F.; and Linder, Michael C., 5,364,333, Cl. 493-84.000.

Linderoth, Gustaf, to Nokia-Maillefer Oy. Arrangement in a coil winding machine for a cable or a similar strandlike product. 5,364,043, Cl. 242-397.000.

Lindvall, Anders: *See—*
Frutschi, Hans U.; Lindvall, Anders; and Wettstein, Hans, 5,363,642, Cl. 60-39.040.

Line, Henri, to Helis S.A. Machine tool fitted with a tool magazine having disks. 5,364,329, Cl. 483-56.000.

Linear Technology Corp.: *See—*
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Link, Donald M. Rotary steam engine having rotor side plates. 5,364,249, Cl. 418-191.000.

Liskner, Herbert L., Jr., to Kelsey-Hayes Corporation. Vehicular anti-lock brake system hydraulic control valve and method of making same. 5,364,067, Cl. 251-129.020.

Linotype-Hell AG: *See—*
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Liposome Company, Inc., The: *See—*
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Lippert, Hans-Joachim; and Meier, Werner, to Siemens Aktiengesellschaft. Fuel assembly for a boiling water reactor, with a foot assembled from standardized parts. 5,365,558, Cl. 376-445.000.

Lipscomb, N. Thornton; Buazza, Omar M.; Luetke, Stephen C.; and Robinson, John J., to Ophthalmic Research Group International, Inc. Apparatus for the production of plastic lenses. 5,364,256, Cl. 425-174.400.

Liquid Carbonic Corporation: *See—*
Rhoades, George D., 5,363,879, Cl. 137-614.050.

Liskow, Uwe: *See—*
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Little Caesar Enterprises, Inc.: *See—*
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Litton Systems, Inc.: *See—*
Morley, Roland M.; and Keil, O'Dell, 5,365,057, Cl. 250-214.0VT.

Liu, Chang-Hsiung. Inflatable rocking chair. 5,364,161, Cl. 297-195.110.

Liu, David K.; Chen, Kueing-Long; and Riemenschneider, Bert R., to Texas Instruments Incorporated. Sidewall anti-fuse structure and method for making. 5,365,105, Cl. 257-530.000.

Liu, Han-Du. Stone mounting member. 5,363,620, Cl. 52-482.000.

Liu, Tony. Multi-directional rotatable wrist exerciser. 5,364,323, Cl. 482-45.000.

Liu, Yu L.: *See—*
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Livesey, Stephen A.; del Campo, Anthony A.; and Nag, Abhijit, to Lifecell. Method of cryopreserving a suspension of biological material. 5,364,756, Cl. 435-2.000.

Lizardi, Paul: *See—*
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Lizell, Magnus B.; and Vanroye, Bert, to Monroe Auto Equipment Company. Control valve for shock absorbers. 5,363,945, Cl. 188-281.000.

Lizotte, Brian M.: *See—*
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LMC Operating Corp.: *See—*
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Lo, Dick W., to Ricoh Company, Ltd.; and Ricoh Corporation. Color quantization apparatus and method for frame buffer display. 5,365,252, Cl. 345-153.000.

Lo, Hsin-Hsin. Slingshot for use in shooting fish line. 5,363,584, Cl. 43-19.000.

Lo Biondo, Martin F.: *See—*
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Lofgren, Clifford S.: *See—*
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Logan, James D.: *See—*
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Logsdon, Kevin M.: *See—*
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Lohss, Kurt L., to LDI Inc. Inclination switch. 5,365,116, Cl. 307-121.000.

Loistl, Uwe: *See—*
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Loliger, Jurg; and Saucy, Francoise, to Nestec S.A. Process for preparing synergic antioxidant mixture. 5,364,886, Cl. 514-772.000.

Lollar, John S.; and Runge, Marschall S., to Emory University. Hybrid human/porcine factor VIII. 5,364,771, Cl. 435-69.100.

Lomas, David A.; Sechrist, Paul A.; and Haun, Edward C., to UOP. Fluidized catalytic cracking of hydrocarbons utilizing a vented riser. 5,364,515, Cl. 208-113.000.

Long, David C.: *See—*
Carbaugh, William D., Jr.; Long, David C.; and Stroms, Karl F., 5,365,211, Cl. 335-300.000.

Long, James: *See—*
Mishelevich, David J.; Lanpher, Ted W.; Lanpher, Gregory B.; and Long, James, 5,363,842, Cl. 128-200.140.

Long, Scott II., to Radar Engineers. Vehicular mounting system for directional antennas. 5,364,049, Cl. 248-205.100.

Longe, Karen M.: *See—*
Hofer, Gene A.; and Longe, Karen M., 5,364,133, Cl. 283-75.000.

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Kiener, Andreas; Tschech, Andreas; Tinschert, Andreas; and Heinzmann, Klaus, 5,364,940, Cl. 544-406.000.
Laffan, David, 5,364,946, Cl. 549-407.000.

L'Oreal: *See—*
Junino, Alex; Genet, Alain; and Lang, Gerard, 5,364,413, Cl. 8-421.000.
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Sebag, Henri; and Mahieu, Claude, 5,364,625, Cl. 424-401.000.

Lorimer, D'Arcy H., to Applied Materials, Inc. Low particulate slit valve system and method for controlling same. 5,363,872, Cl. 137-1.000.

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Gruber, Rudolf; Berger, Rupert; Enkner, Bernhard; and Losbichler, Gerhard, 5,364,079, Cl. 266-246.000.

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Johnson, Paul A.; Chou, Ri-Chee; Martin, Chris A.; Spivey, Britt; and Lovberg, John, 5,365,237, Cl. 342-179.000.

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Chen, Mao-Lan; and Chen, Da-Chung, 5,364,103, Cl. 273-193.00R.

Lowenstein, Michael Z.; and Mehlberg, Dean R., to TCI (Trans-Coil, Inc.). Harmonic analyzer and methods of constructing and utilizing same. 5,365,164, Cl. 324-76.210.

Lowery, Gary; Sherman, Michael C.; Ray, Eddie F., III; and Coates, Bradley J., to Danek Medical, Inc. Anterior cervical plating system. 5,364,399, Cl. 606-69.000.

Lowery, Guy R.; Bacich, Steven R.; and Tholin, Keith, to Imagyn Medical, Inc. Method of tubal recanalization and catheter system therefor. 5,364,345, Cl. 604-49.000.

Lowitz, David A.: *See—*
Dante, Henry M.; and Lowitz, David A., 5,365,596, Cl. 382-8.000.

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Kissel, Thomas; Schrank, Henriette; and Hoffmann, Hans-Rainer, 5,364,628, Cl. 424-448.000.

Lu, Chung-Tai. Scissor jack. 5,364,071, Cl. 254-8.00B.

Lubin, James K., to Ampex Systems Corporation. Axially displaced flexural bearing support. 5,364,194, Cl. 384-493.000.

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Scharf, Curtis R., 5,364,994, Cl. 585-3.000.

LucasArts Entertainment Company: *See—*
Hendrickson, Andrew D., 5,365,579, Cl. 379-101.000.

Lucky, Ltd.: *See—*
Kil, Kee S.; Whang, Woon H.; and Lee, Kang Y., 5,364,687, Cl. 428-184.000.

Ludlow, Roy A. G.; and De Beneducci, Ramon, to Project Design Technology Limited. Gaming apparatus. 5,364,100, Cl. 273-143.00R.

Luetke, Stephen C.: *See—*
Lipscomb, N. Thornton; Buazza, Omar M.; Luetke, Stephen C.; and Robinson, John J., 5,364,256, Cl. 425-174.400.

Lugay, Joaquin C.: *See—*
Morimoto, Keisuke; and Lugay, Joaquin C., 5,364,643, Cl. 426-102.000.

Lumb, Douglas; and Rock, Moshe, to Malden Mills Industries, Inc. Windproof and water resistant composite fabric with barrier layer. 5,364,678, Cl. 428-96.000.

Lund, Gary J. Side rail anchor bar. 5,364,211, Cl. 410-108.000.

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Ma, Yamin; Lunzer, Lawrence J.; and Fender, Norman N., 5,364,035, Cl. 239-690.000.

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Luther, Willis J.: *See—*
Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., 5,365,464, Cl. 364-580.000.

Luthi, Rudolf; Krebs, Roland; and Egolf, Theo, to Styner & Bienz AG. Transfer device in a press. 5,363,685, Cl. 72-405.000.

Lutz, Gottfried: *See—*
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; Thiele, Hartmut; and Liepold, August, 5,363,962, Cl. 206-394.000.

Lutz, Michael A.: *See—*
Bilgrien, Carl J.; Lutz, Michael A.; and Nguyen, Binh T., 5,364,922, Cl. 528-15.000.

Luxtron Corporation: *See—*
Wang, Zhihai; and Adams, Bruce, 5,364,186, Cl. 374-126.000.

Luzovich, Steven A.: *See—*
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Lycett, Grantley W.: *See—*
Grierson, Donald; Hamilton, Andrew J.; and Lycett, Grantley W., 5,365,015, Cl. 800-205.000.

Lynch, Albert E.: *See—*
Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.

Lynch, Daniel R.: *See—*
Page, L. Jerry; Bina, David R.; Lynch, Daniel R.; and Otten, William G., 5,365,337, Cl. 356-350.000.

Lynch, Mike. Radio alarm clock with reminder capability. 5,365,494, Cl. 368-10.000.

Lyne, Robert C., Jr. Space-saving bed. 5,363,520, Cl. 5-11.000.

Lyon, David, to United States of America, Army. Baton with integral projectile launcher. 5,364,097, Cl. 273-84.00R.

Lyon, Douglas J.; Jensen, Stefan S.; Cage, Jeffrey B.; and Niblock, Robert R., to Heat and Control, Inc. Ice making apparatus. 5,363,659, Cl. 62-71.000.

Lyon, James: *See—*
Moore, Earl; Frick, Thomas; Smith, Wayne; and Lyon, James, 5,363,672, Cl. 62-258.000.

Lyonnaise Des Eaux - Dumez: *See—*
Anselme, Christophe; and Baudin, Isabelle, 5,364,534, Cl. 210-650.000.

Ma, Scott T.: *See—*
Marvet, Lawrence E.; Ma, Scott T.; Le, Son Q.; Peebles, Douglas D.; Karl, David; and Phelps, William C., III, 5,365,027, Cl. 200-16.00D.

Ma, Yamin; Lunzer, Lawrence J.; and Fender, Norman N., to Graco Inc. High voltage sealing and isolation via dynamic seals. 5,364,035, Cl. 239-690.000.

Ma, Yueh Y.; and Chang, Kuo-Tung, to Hyundai Electronics Industries Co., Ltd. Method of making a self-aligned dual-bit split gate (DSG) flash EEPROM cell. 5,364,806, Cl. 437-43.000.

Maas, Michael, to Siemens Aktiengesellschaft. Radiation diaphragm. 5,365,566, Cl. 378-150.000.

Macano, Samuel J.: *See—*
Petit, William A.; Maderer, George G.; Macano, Samuel J.; and Hoelscher, James R., 5,364,047, Cl. 246-122.00R.

Macaulay, Patrick E.: *See—*
Cimino, William W.; Abrams, Robert; Taimisto, Miriam H.; Jenson, Marc; and Macaulay, Patrick E., 5,364,352, Cl. 604-95.000.

MacDonald, Andrew J.: *See—*
Rha, Peter S.; Kay, Stanley E.; and MacDonald, Andrew J., 5,365,571, Cl. 379-59.000.

Mach, Patrick A.; Hesselroth, Karen E.; Adams, Carl A.; and Schwab, Debra L., to Minnesota Mining and Manufacturing Company. Culture medium for rapid count of coliform bacteria. 5,364,766, Cl. 435-34.000.

Machui, Jurgen; and Ruile, Werner, to Siemens Aktiengesellschaft. Surface acoustic wave reflector filter having z-shaped propagation paths. 5,365,206, Cl. 333-195.000.

Mack Trucks, Inc.: *See—*
Yurasits, James J., 5,364,151, Cl. 296-65.100.

Macko, William J.: *See—*
Cannon, Gregory L.; Macko, William J.; Fuller, Gregory W.; and Theobald, Jill L., 5,365,227, Cl. 340-825.550.
Fennell, Robert D.; Cannon, Gregory L.; Macko, William J.; and Fuller, Gregory W., 5,365,221, Cl. 340-636.000.

MacLennan, Ian M.; and Hewson, Clifford B. Beer making method. 5,364,639, Cl. 426-16.000.

MacLeod, Iain M., to Terraplas Limited. Cover for an area of ground. 5,364,204, Cl. 404-35.000.

MacMillan Bloedel Limited: *See—*
Solinas, Marco; and Murphy, Thomas H., 5,364,503, Cl. 162-65.000.

Madadi, Abi F.: *See—*
Rycroft, David J.; and Madadi, Abi F., 5,365,411, Cl. 362-20.000.

Maddox, Dennis M.: *See—*
Combs, Edward A.; Maddox, Dennis M.; and Imron, Wim A., 5,365,512, Cl. 370-16.000.

Madduri, Krishna M.: *See—*
Hutchinson, Charles R.; Madduri, Krishna M.; Torti, Francesca; and Colombo, Anna L., 5,364,781, Cl. 435-193.000.

Maderer, George G.: *See—*
Petit, William A.; Maderer, George G.; Macano, Samuel J.; and Hoelscher, James R., 5,364,047, Cl. 246-122.00R.

Madigosky, Walter, to United States of America, Navy. In situ dynamic material property measurement system. 5,365,457, Cl. 364-506.000.

Maeda, Iwao, to Shinmaywa Industries, Ltd. Apparatus for adjustably mounting a camera on aircraft. 5,365,291, Cl. 354-74.000.

Maeda, Tsuneo: *See—*
Yoshikata, Mutsumi; and Maeda, Tsuneo, 5,365,174, Cl. 324-318.000.

Maeyama, Misao: *See—*
Higashino, Tetsuo; Nakamura, Shosaku; Iimurou, Akira; Maeyama, Misao; Fukushige, Yoshimi; and Harada, Tomoyuki, 5,364,331, Cl. 492-43.000.

Magic Music Cassette Company: *See—*
Scheffler, Robert G., 5,365,381, Cl. 360-15.000.

Magnussen, Haakon T., Jr.; Homberg, William D.; and Rainin, Kenneth, to Rainin Instrument Co., Inc. Manual pipette with plunger velocity governor, home position latch and trigger release. 5,364,596, Cl. 422-100.000.

Mahabadi, Hadi K.; Kao, Sheau V.; Allison, Gerald R.; Gerroir, Paul J.; Chang, Hui; and Hawkins, Michael S., to Xerox Corporation. Toner and developer compositions with compatibilizer. 5,364,724, Cl. 430-110.000.

Mahany, Ronald L.: *See—*
Koenck, Steven E.; Mahany, Ronald L.; and Frede, William W., 5,365,546, Cl. 375-9.000.

Maher, John M.: *See—*
Babin, James E.; Maher, John M.; and Billig, Ernst, 5,364,950, Cl. 556-2.000.

Mahieu, Claude: *See—*
Sebag, Henri; and Mahieu, Claude, 5,364,625, Cl. 424-401.000.

Mahn, John, Jr. Heat activated transfer for elastomeric materials. 5,364,688, Cl. 428-187.000.

Mahoney, Murray W.: *See—*
Stacher, George W.; and Mahoney, Murray W., 5,364,008, Cl. 228-103.000.

Main, W. Eric, to Motorola, Inc. Data slicer with hold. 5,365,120, Cl. 327-77.000.

Maine, David D.: *See—*
Hamp, Charles H., III; and Maine, David D., 5,365,177, Cl. 324-547.000.

Mair, Hugh, to Texas Instruments Incorporated. Frequency doubler having adaptive biasing. 5,365,181, Cl. 327-116.000.

Maitra, Kalyan K.; McInerney, Daniel G.; and Unger, Carl H., to Allied Tube & Conduit Corporation. Method and apparatus for galvanizing linear materials. 5,364,661, Cl. 427-433.000.

Maki, Wayne: *See—*
Wildes, Forrest; Maki, Wayne; and Jefferson, Chris A., 5,363,758, Cl. 100-43.000.

Makihara, Shinsaku, to Esu Makku Co., Ltd. Device for disposing injection needles. 5,365,029, Cl. 219-68.000.

Makimura, Katsuyoshi; and Yano, Kazuo, to Daifuku Co., Ltd. Drive unit for transport trolley having plastic center link and drive dog covering for noise reduction. 5,363,770, Cl. 104-172.500.

Makino, Hiroshi: *See—*
Nakase, Yasunobu; Makino, Hiroshi; and Ueda, Kimio, 5,365,123, Cl. 326-109.000.

Makino, Kenzi: *See—*
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

Makino, Yoshihiro: *See—*
Kimura, Kazuya; Kayukawa, Hiroaki; Takenaka, Kenji; and Makino, Yoshihiro, 5,364,232, Cl. 417-222.100.

Makow, Stan P. Device for maintaining proper spacing and levelling of tiles during laying thereof. 5,363,560, Cl. 33-527.000.

Makura Corporation: *See—*
Lang, Gary E., 5,363,524, Cl. 5-640.000.

Malden Mills Industries, Inc.: *See—*
Lumb, Douglas; and Rock, Moshe, 5,364,678, Cl. 428-96.000.

Maletzko, Christian: *See—*
Hinz, Werner; Maletzko, Christian; Becker, Johannes; and Matzke, Guenter, 5,364,852, Cl. 521-159.000.

Malla, Prakash B.: *See—*
Komarneni, Sridhar; and Malla, Prakash B., 5,364,455, Cl. 95-117.000.

Mallamo, John P.: *See—*
DeHaven-Hudkins, Diane L.; Mallamo, John P.; and Michne, William F., 5,364,867, Cl. 514-326.000.

Mallie, Frank J., to General Electric Company. Fuel storage racks for fuel storage pool. 5,365,556, Cl. 376-272.000.

Mallin, Martin: *See—*
Crisci, Louis; and Mallin, Martin, 5,364,298, Cl. 446-59.000.

Mallinckrodt Medical, Inc.: *See—*
Beaty, Julie A.; Deutsch, Edward A.; and Nosco, Dennis L., 5,364,953, Cl. 556-46.000.

Mallon, Paul E.; and Bateman, Gary S., to Electronics Diversified, Inc. Sinusoidal inductorless dimmer providing an amplitude attenuated output. 5,365,148, Cl. 315-194.000.

Malmo, Jan T.: *See—*
Bjornestol, Karl O.; Malmo, Jan T.; Strom, Yngve; and Vikhagen, Eiolf, 5,363,901, Cl. 164-451.000.
Malzacher, Kornelia: *See—*
Fuchs, Reiner; Kaufhold, Johannes; and Malzacher, Kornelia, 5,364,954, Cl. 556-90.000.
Man Gutehoffnungshutte AG: *See—*
Zimmermann, Achim; Beck, Karl-Erhard; and Mohr, Klaus D., 5,363,653, Cl. 60-751.000.
Man Nutzfahrzeuge AG: *See—*
Neitz, Alfred, 5,363,820, Cl. 123-193.100.
Man, Victor F.: *See—*
Lentsch, Steven E.; Keller, Cynthia A.; Bona, Gregory T.; and Man, Victor F., 5,364,551, Cl. 252-156.000.
Mandel, Barry P., to Xerox Corporation. Apparatus for applying a binding strip to document sets. 5,364,216, Cl. 412-34.000.
Mania, Dieter: *See—*
Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, 5,364,868, Cl. 514-331.000.
Englert, Heinrich C.; Klaus, Erik; Mania, Dieter; and Scholkens, Bernward, 5,364,878, Cl. 514-422.000.
Manikumar, Govindarajan: *See—*
Wall, Monroe E.; Wani, Mansukh C.; Nicholas, Allan W.; and Manikumar, Govindarajan, 5,364,858, Cl. 514-279.000.
Mank, Larry: *See—*
Nocca, Jean-Luc; Travers, Phillipe; Mank, Larry; and Forestiere, Alain, 5,364,975, Cl. 568-697.000.
Manley, Johnny M.: *See—*
Toomey, Danny D.; Ralls, Gene R.; and Manley, Johnny M., 5,363,541, Cl. 29-890.140.
Manley, Robert B., to Hewlett-Packard Company. Circuit for conversion from CMOS voltage levels to shifted ECL voltage levels with process compensation. 5,365,127, Cl. 326-73.000.
Manley, Robert B.: *See—*
Brown, Charles A.; and Manley, Robert B., 5,365,103, Cl. 257-497.000.
Manlove, Gregory J.: *See—*
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Mannesmann AG: *See—*
Hillmann, Rudiger; and Fuchs, Thomas, 5,365,312, Cl. 355-206.000.
Mannesmann Aktiengesellschaft: *See—*
Drees, Friedrich; Nisius, Raimund; Grethen, Hartmut; and Pekruhn, Wolfgang, 5,365,348, Cl. 358-298.000.
Mannsdoerfer, Walter: *See—*
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Mano, Toshihiko: *See—*
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Manogue, William H.; and Rao, Velliyur N. M., to Du Pont de Nemours, E. I., and Company. Halocarbon hydrogenolysis. 5,364,992, Cl. 570-176.000.
Manser, Josef; Friedrich, Egger; Seiler, Werner; and Resch, Heinz, to Buehler AG. Process and apparatus for pressing and drying pasta. 5,364,651, Cl. 426-451.000.
Manteuffel, Hans J. M.: *See—*
Zimmermann, Heinz; and Manteuffel, Hans J. M., 5,364,527, Cl. 210-243.000.
Manzer, Hans, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Individual-Sheet stacking apparatus for printers to build up a stack of individual sheets. 5,364,089, Cl. 271-177.000.
Manzo, Robert P.; and Cavanagh, James, to Eastman Kodak Company. Liquid detergent composition. 5,364,550, Cl. 252-102.000.
Marchi, Marcello: *See—*
Altamura, Maria; Francalanci, Franco; and Marchi, Marcello, 5,364,768, Cl. 435-43.000.
Marco, Breda: *See—*
Marega, Antonello; Giuseppe, Goggia; and Marco, Breda, 5,363,572, Cl. 36-121.000.
Marcotullio, Armando; Tinucci, Laura; and Ciali, Massimo, to Eniricerche S.p.A.; and Enichem Augusta Industriale S.r.l. Process for preparing sulfonated paraffins with a larger content of polysulfonated species. 5,364,960, Cl. 562-121.000.
Marega, Antonello; Giuseppe, Goggia; and Marco, Breda, to Calzaturificio Tecnica Spa. Lateral-inclination adjusting device for ski-boots. 5,363,572, Cl. 36-121.000.
Marek, Gregory A.: *See—*
Kennedy, John F.; Kirk, Lawrence F.; and Marek, Gregory A., 5,365,235, Cl. 342-44.000.
Mariano, Karen: *See—*
Miller, Richard E.; and Mariano, Karen, 5,364,892, Cl. 523-218.000.
Marienfeld, Mark L. Soil stabilization system. 5,364,206, Cl. 405-16.000.
Marinaro, Frank. IX asynchronous data sampling clock for plus minus topology applications. 5,365,547, Cl. 375-37.000.
Marine Machines, Inc.: *See—*
Kestner, Michael T.; and Baxter, Benjamin A., 5,364,301, Cl. 452-18.000.
Marini, Paolo: *See—*
Di Stefano, Vittorio; and Marini, Paolo, 5,364,548, Cl. 252-58.000.
Mark, Jack: *See—*
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Marley Cooling Tower Company, The: *See—*
Bugler, Thomas W., III, 5,364,569, Cl. 261-109.000.
Marquardt GmbH: *See—*
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Marquis, David M.; and Kuehne, Donald L., to Chevron Research and Technology Company. Enhanced oil recovery technique employing nonionic surfactants. 5,363,915, Cl. 166-274.000.
Marsh, David A.: *See—*
De, Nimai C.; Heiler, David J.; Marsh, David A.; and Groeminger, Suzanne F., 5,364,637, Cl. 424-464.000.
Marshall, Cyrus C., Jr.: *See—*
Konopasek, James L.; and Marshall, Cyrus C., Jr., 5,363,787, Cl. 114-74.00A.
Marshall, Stephen W.: *See—*
Doherty, Donald B.; Meyer, Richard C.; Marshall, Stephen W.; Sampsell, Jeffrey B.; and Gove, Robert J., 5,365,283, Cl. 348-743.000.
Martan, Hans: *See—*
Neumann, Hans-Peter; Martan, Hans; Petersen, Hermann; and Doerflinger, Walter, 5,364,825, Cl. 502-311.000.
Martens, Gerhard; and Gunzel, Erhard P. H., to U.S. Philips Corporation. Method of detecting anomalies of the skin, more particularly melanomae, and apparatus for carrying out the method. 5,363,854, Cl. 128-665.000.
Martin, Annette L.: *See—*
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., 5,364,187, Cl. 374-161.000.
Martin, Chris A.: *See—*
Johnson, Paul A.; Chou, Ri-Chee; Martin, Chris A.; Spivey, Britt; and Lovberg, John, 5,365,237, Cl. 342-179.000.
Martin, David W.: *See—*
Nicholson, David J.; Ellis, Donald R.; Mills, John B.; DiPerna, Dino C.; Martin, David W.; Peng, Wang-Hsin; and Roberts, Kim B., 5,365,510, Cl. 370-16.000.
Martin, Dean A.: *See—*
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Maruo, Shigeaki: *See—*
Ezure, Yohji; Maruo, Shigeaki; Miyazaki, Katsunori; and Yamada, Naoyoshi, 5,364,794, Cl. 435-96.000.
Maruyama, Hiroyoshi; Dantonia, Luigi; and Giacometto, Felice, to Olivetti-Canon Industriale S.p.A.; and Canon Kabushiki Kaisha. Paper holding apparatus. 5,364,088, Cl. 271-164.000.
Marvet, Lawrence E.; Ma, Scott T.; Le, Son Q.; Peebles, Douglas D.; Karl, David; and Phelps, William C., III, to Motorola, Inc. Slide switch assembly. 5,365,027, Cl. 200-16.00D.
Masaru, Tsuda. Position adjustment structure using an eccentric shaft. 5,363,633, Cl. 56-17.200.
Maschinenfabrik Kaspar Walter GmbH & Co., KG: *See—*
Ettelbrueck, Ruediger, 5,364,202, Cl. 403-322.000.
Mascitelli, Francesco; Bonelli, Enrico; and Donato, Berardinucci, to SAR S.p.A. Plastic dispenser for liquids or other substances. 5,363,993, Cl. 222-321.000.
Masco Corporation of Indiana: *See—*
Dietrich, Hagen; and Wheatland, Graham, 5,364,138, Cl. 292-1.500.
Mason, Elmer B.; and Stark, Robert E., to Mason, Elmer B. DC magnetic motor assembly. 5,365,134, Cl. 310-114.000.
Massachusetts Institute of Technology: *See—*
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Ruley, H. Earl; and von Melchner, Harold, 5,364,783, Cl. 435-235.100.
Massingberd-Mundy, Peter D. G.: *See—*
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Mastrangelo, James J.; Duchesneau, Michel L.; and Hayden, Richard A., to General Motors Corporation. Adjustable seat for van-type vehicles. 5,364,152, Cl. 296-65.100.
Mastri, Dominick L.: *See—*
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Masu, Kazuya: *See—*
Tsubouchi, Kazuo; and Masu, Kazuya, 5,364,664, Cl. 427-535.000.
Masuda, Hiroo: *See—*
Shimohigashi, Katsuhiro; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, 5,365,478, Cl. 365-189.010.
Masuda, Kazuaki: *See—*
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Masuda, Takashi, to Canon Kabushiki Kaisha. Ophthalmic measuring apparatus. 5,365,286, Cl. 351-204.000.
Masumoto, Hisayuki: *See—*
Hamada, Masataka; Yamakawa, Eiji; Ootsuka, Hiroshi; Masumoto, Hisayuki; and Okada, Takashi, 5,365,304, Cl. 354-430.000.
Mather, Jennie P.; and Roberts, Penelope E., to Genentech, Inc. Method of isolating lung cell line. 5,364,785, Cl. 435-240.200.
Mathews, H. Wayne; and Barnes, Ronny L., to Gar Bar Corporation. Flip up row follower. 5,363,923, Cl. 172-6.000.
Mathys, Peter: *See—*
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Matkovich, Vlado I.; Bormann, Thomas J.; Gsell, Thomas C.; and Pascale, Frank R., to Pall Corporation. System for processing separate containers of biological fluid. 5,364,526, Cl. 210-206.000.

Matlock, Mark: *See—*
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Matros, Yurii S.; and McCombs, David E., to Monsanto Enviro-Chem Systems, Inc. Process and apparatus for gas phase reaction in a regenerative incinerator. 5,364,259, Cl. 431-5.000.
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Ohkuma, Kazuhiro; Hanno, Yoshio; Inada, Kazuyuki; Matsuda, Isao; and Katta, Yasuo, 5,364,652, Cl. 426-549.000.
Matsuda, Sadamu: *See—*
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Matsuda, Shohei: *See—*
Wada, Masayoshi; Matsuda, Shohei; Yahagi, Toshio; and Inagawa, Shinichi, 5,364,173, Cl. 303-11.000.
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Matsuoka, Takashi, to Kabushiki Kaisha Toshiba. Image forming system comprising an image forming device and various optional devices connected to the image forming device. 5,365,311, Cl. 355-205.000.
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Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.
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Matsushita Electric Industrial Co., Ltd.: *See—*
Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,365,452, Cl. 364-468.000.
Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, 5,365,276, Cl. 348-556.000.
Inoue, Akino; Misawa, Motohiro; Yamaguchi, Kazuaki; and Kanaya, Etsumi, 5,365,264, Cl. 348-10.000.
Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, 5,365,034, Cl. 219-121.830.
Kishimoto, Yoshio; and Suzuki, Masaaki, 5,364,829, Cl. 503-201.000.
Kobayashi, Hiroaki, 5,365,275, Cl. 348-493.000.
Kojima, Kiyoshi; Amami, Kazuyoshi; Ueda, Hiroshi; Furuyama, Shizuo; Hara, Yoshihiro; Hasegawa, Kyoichi; and Kawamata, Tadashi, 5,364,253, Cl. 425-78.000.
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,365,386, Cl. 360-85.000.
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Nakagawa, Tohru, 5,363,697, Cl. 73-105.000.
Nishikawa, Yukio; and Uesugi, Yuji, 5,365,374, Cl. 359-619.000.
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Matsushita Electric Works, Ltd.: *See—*
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Takahama, Koichi; Hirao, Shozo; Yokoyama, Masaru; Kishimoto, Takashi; and Yokokawa, Hiroshi, 5,364,823, Cl. 502-62.000.
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Matsushita, Michiyo: *See—*
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Matsushita, Yuichi, to Oki Electric Industry Co., Ltd. Data reading circuit having a clamping circuit for clamping a pair of data buses to predetermined potentials. 5,365,488, Cl. 365-226.000.
Matsutani Chemical Industries Co., Ltd.: *See—*
Ohkuma, Kazuhiro; Hanno, Yoshio; Inada, Kazuyuki; Matsuda, Isao; and Katta, Yasuo, 5,364,652, Cl. 426-549.000.
Matsuto, Takushi: *See—*
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Matsuura, Akihiro: *See—*
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Matsuya, Toshikatsu: *See—*
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Matsuzawa, Yoshinori: *See—*
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Mattel, Inc.: *See—*
Hill, Peter C.; Saffer, Gary M.; Pugh, Robert v.; and Asbaghi, Ahmed, 5,364,299, Cl. 446-176.000.
Mattern, Detlef: *See—*
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Matthews, Billie J.: *See—*
Latimer, Margaret G.; Matthews, Billie J.; and Shershin, Ann M., 5,364,382, Cl. 604-378.000.
Matthews, Douglas R. Leveraged weight compounding system. 5,364,325, Cl. 482-111.000.
Matthews International Corporation: *See—*
Hancovsky, John P., 5,363,609, Cl. 52-103.000.
Matthews, Wayne: *See—*
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Hinz, Werner; Maletzko, Christian; Becker, Johannes; and Matzke, Guenter, 5,364,852, Cl. 521-159.000.
Maughan, Stuart; and Bryner, Earl, to Iomega Corporation. Disk drive constructed to isolate motor vibration. 5,365,388, Cl. 360-99.040.
Max-Planck-Gesellschaft Zur Foerderung, Der Wissenschaften E.B.: *See—*
Kaesdorf, Stefan; and Schroder, Hartmut, 5,365,063, Cl. 250-288.000.
Maxtor Corporation: *See—*
Hargarten, James W.; and Ward, Steven P., 5,365,385, Cl. 360-73.030.
Mayama, Shinya: *See—*
Shimizu, Kunio; Sasa, Nobumasa; Watanabe, Manabu; Ide, Hiroshi; and Mayama, Shinya, 5,364,731, Cl. 430-143.000.
Mayerl, Friedrich: *See—*
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Mayette, Jerry J.: *See—*
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Mayhew, Gregory L.: *See—*
Bianco, Mark E.; and Mayhew, Gregory L., 5,365,588, Cl. 380-42.000.
Mayo Foundation for Medical Education and Research: *See—*
Riederer, Stephen J.; Liu, Yu L.; and Ehman, Richard L., 5,363,844, Cl. 128-653.200.
Mazda Motor Corporation: *See—*
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Tsuyama, Toshiaki; Onaka, Toru; Nobumoto, Kazutoshi; and Kawamura, Makoto, 5,365,443, Cl. 364-426.030.
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Mazzola, Richard V.: *See—*
Danks, John K.; and Mazzola, Richard V., 5,364,372, Cl. 604-264.000.
McAlister, John. Cushion for a household pet. 5,363,804, Cl. 119-25.500.

McArthur, Bruce B.: *See—*
Hunter, Robert O., Jr.; Smith, Adlai H.; and McArthur, Bruce B., 5,364,493, Cl. 156-630.000.

McBean, Ronald V., Sr. Instrumentation system with multiple sensor modules providing calibration date information. 5,365,462, Cl. 64-571.040.

McBurnett, James R.; and Poyner, Weston R., to Dana Corporation. Hydraulic dry valve control apparatus. 5,363,649, Cl. 60-325.000.

McCall, Floyd, to Ketema, Inc. Method and apparatus for determining characteristics of fluid flow. 5,363,699, Cl. 73-198.000.

McCarty, John P., to Burris Company. Telescope inner tube locking device and method. 5,363,559, Cl. 33-246.000.

McCloskey, John C.: *See—*
Banholzer, William F.; Anthony, Thomas R.; Gilmore, Robert S.; Siemers, Paul A.; and McCloskey, John C., 5,363,556, Cl. 29-890.142.

McClune, Don: *See—*
Hatch, David; McClune, Don; Fair, Mervin; Fleming, Jeff; and Csanko, Louis, 5,364,294, Cl. 439-676.000.

McClure, Terry R.: *See—*
Heyns, Garrett J.; McClure, Terry R.; Nicholl, Hugh; Read, Peter H.; Schulte, Steven M.; and Tabrizi, Mohammad F., 5,364,472, Cl. 134-7.000.

McCombs, David E.: *See—*
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McConnell, Bain C.; Fix, Robert J., Sr.; Deal, Philip A.; Hobbs, Timothy A.; Jordan, Larry S.; and Steelman, Harold L., to R. J. Reynolds Tobacco Company. Robotic sample preparation system and method. 5,363,885, Cl. 141-1.000.

McConnell, George A.: *See—*
Kotch, Richard J.; O'Brien, John A.; and McConnell, George A., 5,363,738, Cl. 91-1.000.

McConnell, Harden M.: *See—*
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McCord, Thomas G.: *See—*
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McCormick, Steve: *See—*
Appolonia, John; McCormick, Steve; and Boddaert, Robert, 5,363,658, Cl. 62-63.000.

McCray, Loren G.: *See—*
Metzger, Robert A.; Hafizi, Madjid; Stanchina, William E.; and McCray, Loren G., 5,365,077, Cl. 257-15.000.

McCullen, Sharon B.: *See—*
Beck, Jeffrey S.; McCullen, Sharon B.; and Olson, David H., 5,365,004, Cl. 585-475.000.

McCune, Robert C., Jr.; Reatherford, Larry V.; and Zaluzec, Matthew J., to Ford Motor Company. Thermally spraying metal/solid lubricant composites using wire feedstock. 5,364,663, Cl. 427-449.000.

McDaniel, Max P.: *See—*
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McDonnell, Donald P.: *See—*
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McDonnell Douglas Helicopter Co.: *See—*
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McDonogh, Colin F., to Interox Chemicals Limited. Hydrogen peroxide solutions. 5,364,549, Cl. 252-79.400.

McDougall, Maria V.: *See—*
Georges, Michael K.; Listigovers, Nancy A.; Drappel, Stephan V.; McDougall, Maria V.; and Allison, Gerald R., 5,364,723, Cl. 430-110.000.

McDoulett, C. Dale, Jr.; and Reschke, George W., to North American Palladium Ltd. Metal leaching and recovery process. 5,364,444, Cl. 75-421.000.

McDowell, James. Paint roller cleaning assembly. 5,363,869, Cl. 134-104.200.

McElroy, Dave J.: *See—*
Gill, Manzur; Shah, Pradeep L.; and McElroy, Dave J., 5,365,082, Cl. 257-374.000.

McFadden, Francis J., to Minnesota Mining and Manufacturing Company. Method of fabricating an encapsulated liquid crystal display. 5,365,356, Cl. 359-62.000.

McFarland, William J.: *See—*
Hornak, Thomas; and McFarland, William J., 5,365,187, Cl. 330-10.000.

McGarry, Richard A.: *See—*
Green, David T.; Bolanos, Henry; Young, Wayne; DeFonzo, Stephan A.; McGarry, Richard A.; and Mastri, Dominick L., 5,364,002, Cl. 227-177.000.

McGee, Joseph A.: *See—*
Valint, Paul L., Jr.; McGee, Joseph A.; and Lai, Yu-Chin, 5,364,918, Cl. 526-245.000.

McGrail, Patrick: *See—*
Choate, Martin T.; McGrail, Patrick; Sefton, Mark S.; and Carter, Jeffrey T., 5,364,914, Cl. 525-505.000.

McGraw, Kevin B., to Hickory Springs Manufacturing Company. Spring assembly and perimeter support spring therefor. 5,363,522, Cl. 5-474.000.

McGregor, Gordon L.: *See—*
Hollenbaugh, Donald L., Jr.; McGregor, Gordon L.; and Minor, Raymond B., 5,364,699, Cl. 428-357.000.

McGuire, Shel: *See—*
Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,364,666, Cl. 427-579.000.

McInerney, Daniel G.: *See—*
Maitra, Kalyan K.; McInerney, Daniel G.; and Unger, Carl H., 5,364,661, Cl. 427-433.000.

McKechnie, Keith J.; Steely, Lee W.; and Chang, Paul S., to Whitaker Company, The. Error recovery arrangement in a time division multiplex data transmission system. 5,365,224, Cl. 346-825.040.

McKenzie, R. Dale: *See—*
Hillmer-Mann, Eric W., 5,364,199, Cl. 402-68.000.

McLennan, Alistair J.: *See—*
Farmer, David B.; and McLennan, Alistair J., 5,364,904, Cl. 524-832.000.

McMillan, Richard K., II: *See—*
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McNeff, Larry C.: *See—*
Johnson, David M.; and McNeff, Larry C., 5,363,708, Cl. 73-865.800.

McPhee, Mike, to Permaban North America, Inc. Positive locking concrete screed rail. 5,363,619, Cl. 52-367.000.

McQuarrie, Harvey K.: *See—*
Hewitt, Geoffrey A.; Rath, Andrew K.; and McQuarrie, Harvey K., 5,364,358, Cl. 604-99.000.

McQueen, Mark A., to Micron Technology, Inc. Germanium implanted stacked capacitor cell. 5,364,814, Cl. 437-52.000.

McRowe, Arthur W.: *See—*
Stevenson, Donald R.; Nguyen, Duong N.; and McRowe, Arthur W., 5,364,895, Cl. 524-120.000.

Meade, Ronald G., to Hills Industries Limited. Clothes dryer line tensioning device. 5,363,975, Cl. 211-197.000.

Mears, Dana C.: *See—*
Chapman, Michael W.; Edwards, Charles C.; and Mears, Dana C., 5,364,398, Cl. 606-69.000.

Meckbach, Gerhard, to Abus August Bremicker Sohne KG. Padlock with ball-locked shackle. 5,363,678, Cl. 70-38.00A.

Medema, Jerry A.: *See—*
Saffari, Akbar; Camps, Francis W.; Medema, Jerry A.; Turner, Charles J.; and Wolf, Jeffrey J., 5,365,062, Cl. 250-239.000.

Medical Advances, Inc.: *See—*
Chowdhury, Sruba; and Boskamp, Eddy B., 5,363,845, Cl. 128-653.500.

Medical College of Wisconsin Research Foundation, Inc., The: *See—*
Griffith, Owen W.; and Narayanan, Krishnaswamy, 5,364,881, Cl. 514-508.000.

Medtronic, Inc.: *See—*
Domenico, Edward D.; Stewart, Mark T.; and Urban, Marek W., 5,364,662, Cl. 427-536.000.
Guiraudon, Gerard M.; and Bourgeois, Ivan, 5,364,337, Cl. 600-16.000.

Meer, Robert K. V.; Lofgren, Clifford S.; Williams, David F.; Meyers, William E.; and Lewis, Danny H., to United States of America, Agriculture; and Southern Research Institute, Inc. Method for the control of insects. 5,364,618, Cl. 424-84.000.

Mehl, Thomas L. Method of removing hair from the body and inhibiting future growth. 5,364,394, Cl. 606-36.000.

Mehlberg, Dean R.: *See—*
Lowenstein, Michael Z.; and Mehlberg, Dean R., 5,365,164, Cl. 324-76.210.

Mehrotra, Manoj; and Baliga, Bantval J., to North Carolina State University. Schottky barrier rectifier with MOS trench. 5,365,102, Cl. 257-475.000.

Mei Shual Cosmetics Co., Ltd.: *See—*
Shen, Wen-Chang, 5,363,969, Cl. 206-581.000.

Meier, Werner: *See—*
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Meijer, Christophorus J.; van den Brule, Adrianus J.; Walboomers, Jan M.; and Snijders, Petrus; J., to Stichting Researchfonds Pathologie. Primers and process for detecting human papillomavirus genotypes by PCR. 5,364,758, Cl. 435-5.000.

Meissner, Manfred: *See—*
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Meissner + Wurst GmbH + Co. Lufttechnische Anlagen Gebaude-Und Verfahrenstechnik: *See—*
Simon, Rudolf; Dryden, John C.; and Schlitz, Franz, 5,364,425, Cl. 55-385.200.

Meldrum, Charles R. Extended life produce. 5,364,648, Cl. 426-327.000.

Melloch, Michael R.: *See—*
Cooper, James A., Jr.; Melloch, Michael R.; and Stellwag, Theresa B., 5,365,477, Cl. 365-174.000.

Melner, Michael H.: *See—*
Haugland, Richard P.; Kang, Hee C.; Young, Steven L.; and Melner, Michael H., 5,364,764, Cl. 435-15.000.

Meltzer, Aaron D.; Wicks, Douglas A.; and Pielartzik, Harald, to Miles Inc. Thermoset compositions based on nylon-1. 5,364,913, Cl. 525-440.000.

Meltzer, David: *See—*
Angiulli, John M.; Ghose, Arun K.; Konian, Richard R.; Levine, Samuel R.; Meltzer, David; Wang, Wen-Yuan; and Wu, Leon L., 5,365,204, Cl. 331-57.000.

Mendez, Luis E., to Baker Hughes, Inc. Wireline pull disconnect. 5,363,921, Cl. 166-377.000.

Mensch, William A., to Jervis B. Webb Company. Over and under belt conveyor system. 5,363,951, Cl. 198-606.000.

Mepla-Werke Lautenschlager GmbH & Co. KG: *See—*
Berger, Horst, 5,364,180, Cl. 312-334.140.

Merala, Thomas B.: *See—*
Baker, Jay D.; Lemecha, Myron; McMillan, Richard K., II; Salisbury, Kenneth A.; Stevenson, Paul E.; Merala, Thomas B.; Green, Wells L.; Mikkor, Matti; and Meyer, Bernard A., 5,364,011, Cl. 228-180.210.

Merand, Yves: *See—*
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Mercedes-Benz AG: *See—*
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Ganser, Martin; and Klink, Alfred, 5,363,718, Cl. 74-501.50R.
Hartl, Mathias, 5,364,081, Cl. 267-64.250.

Mercier, Charles W. Disposable surgical instrument passer. 5,363,862, Cl. 128-846.000.

Mercier, Dominique. Process and device for the magnetic treatment of a fluid. 5,364,536, Cl. 210-695.000.

Merck & Co., Inc.: *See—*
Balani, Suresh K.; Kauffman, Laura R.; and Theoharides, Anthony D., 5,364,776, Cl. 435-118.000.
Doherty, James B.; Firestone, Raymond A.; Finke, Paul E.; Hagmann, William K.; Shah, Shrenik K.; and Thompson, Kevan R., 5,364,848, Cl. 514-201.000.
Harris, Guy H.; Zink, Deborah; Jones, E. Tracy T.; and Kong, Yu L., 5,364,948, Cl. 554-36.000.

Mercy, Brian R., to International Business Machines Corporation. Fast fourier transform using balanced coefficients. 5,365,469, Cl. 364-726.000.

Merril, Carl R.: *See—*
Cameron, Bruce M., Sr.; Merril, Carl R.; Creed, Guy J.; and VanderPutten, Dale, 5,364,793, Cl. 436-86.000.

Merris, Charles S., Jr., to P. H. Glatfelter Company. Process for preparation of high opacity precipitated calcium carbonate by reacting sodium carbonate with calcium hydroxide. 5,364,610, Cl. 423-432.000.

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Meseth, Johann, to Siemens Aktiengesellschaft. Fuel assembly of a nuclear reactor with a grid structure for producing spin. 5,365,557, Cl. 376-439.000.

Meshberg, Philip. Variable spray and dosage pump. 5,363,992, Cl. 222-309.000.

Messud, Paul. Leg-loading spear gun. 5,363,833, Cl. 124-26.000.

Mester, Roland, to BTS Broadcast Television Systems GmbH. Circuitry for detecting and correcting errors in data words occurring in Reed-Solomon coded blocks and determining when errors are uncorrectable by syndrome analysis, Euclid's algorithm and a Chien search. 5,365,529, Cl. 371-37.100.

Met Displays, Inc.: *See—*
Abinanti, T. Michael, 5,364,055, Cl. 248-316.100.

Metaal, Eduard G.: *See—*
Van Der Tol, Johannes J. G. M.; Metaal, Eduard G.; and Pedersen, Jorgen W., 5,364,495, Cl. 156-643.000.

Metagal North America Ltd.: *See—*
Shepherd, Charles G., 5,364,058, Cl. 248-479.000.

Metal Processing Corporation: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Metzger, Robert A.; Hafizi, Madjid; Stanchina, William E.; and McCray, Loren G., to Hughes Aircraft Company. Gain-stable NPN heterojunction bipolar transistor. 5,365,077, Cl. 257-15.000.

Metzler, Mark: *See—*
Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., 5,365,108, Cl. 257-678.000.

Meyer, Bernard A.: *See—*
Baker, Jay D.; Lemecha, Myron; McMillan, Richard K., II; Salisbury, Kenneth A.; Stevenson, Paul E.; Merala, Thomas B.; Green, Wells L.; Mikkor, Matti; and Meyer, Bernard A., 5,364,011, Cl. 228-180.210.

Meyer, Norbert: *See—*
Kast, Juergen; Meyer, Norbert; Misslitz, Ulf; Harreus, Albrecht; Walter, Helmut; Gerber, Matthias; and Westphalen, Karl-Otto, 5,364,833, Cl. 504-289.000.

Meyer, Richard C.: *See—*
Doherty, Donald B.; Meyer, Richard C.; Marshall, Stephen W.; Sampsell, Jeffrey B.; and Gove, Robert J., 5,365,283, Cl 348-743.000.

Meyers, Edward: *See—*
Patel, Pramathesh S.; Mayerl, Friedrich; and Meyers, Edward, 5,364,623, Cl. 424-116.000.

Meyers, William E.: *See—*
Meer, Robert K. V.; Lofgren, Clifford S.; Williams, David F.; Meyers, William E.; and Lewis, Danny H., 5,364,618, Cl. 424-84.000.

Michaud, Richard R.: *See—*
Franzen, Paul H.; Alit, Ken J.; Michaud, Richard R.; Probstmeyer, Helmuth; and Tammone, Michael R., 5,364,335, Cl. 494-15.000.

Michel, Thomas: *See—*
Becker, Rolf; Michel, Thomas; Meissner, Manfred; and Gutohrlein, Bernd, 5,364,174, Cl. 303-97.000.

Michels, H. Harvey: *See—*
Condit, David A.; Michels, H. Harvey; Garosshen, Thomas J.; and Clough, Warren R., 5,363,661, Cl. 62-77.000.

Michne, William F.: *See—*
DeHaven-Hudkins, Diane L.; Mallamo, John P.; and Michne, William F., 5,364,867, Cl. 514-326.000.

Micron Semiconductor, Inc.: *See—*
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., 5,364,187, Cl. 374-161.000.

Micron Technology, Inc.: *See—*
McQueen, Mark A., 5,364,814, Cl. 437-52.000.
Snodgrass, Charles K.; Allen, David H.; Tuttle, John R.; Rotzoll, Robert R.; and Pax, George E., 5,365,551, Cl. 375-1.000.

MicroTouch Systems, Inc.: *See—*
Stein, Robert A.; Logan, James D.; and Woringer, Charles A., 5,365,461, Cl. 364-550.000.

Microwave Medical Systems, Inc.: *See—*
Carr, Kenneth L., 5,364,336, Cl. 600-2.000.

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Mikami, Masuhiro: *See—*
Namiki, Takefumi; and Mikami, Masuhiro, 5,365,473, Cl. 364-829.000.

Mikami, Ryozo, to Dow Corning Toray Silicone Co., Ltd. Organopolysiloxane graft epoxy resins and a method for the preparation thereof. 5,364,923, Cl. 528-27.000.

Miki, Yoichiro: *See—*
Seki, Yoshio; Tokoi, Masaki; Ishizu, Atsushi; and Miki, Yoichiro, 5,365,274, Cl. 348-458.000.

Mikkelsen, Erik: *See—*
Harley, Richard E.; and Mikkelsen, Erik, 5,363,564, Cl. 33-618.000.

Mikkor, Matti: *See—*
Baker, Jay D.; Lemecha, Myron; McMillan, Richard K., II; Salisbury, Kenneth A.; Stevenson, Paul E.; Merala, Thomas B.; Green, Wells L.; Mikkor, Matti; and Meyer, Bernard A., 5,364,011, Cl. 228-180.210.

Milam, Stanley N.: *See—*
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Milani, Francesco: *See—*
Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

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Vezzoli, Annibale; Lamperti, Marino; Addeo, Antonio; Milani, Francesco; and Albrisi, Bruno, 5,364,254, Cl. 425-133.100.

MileMarker, Inc.: *See—*
Aho, Richard E.; and Baker, Martin, 5,363,948, Cl. 192-58.00R.

Miles Inc.: *See—*
Meltzer, Aaron D.; Wicks, Douglas A.; and Pielartzik, Harald, 5,364,913, Cl. 525-440.000.

Milieu Diensten Combinatie B.V.: *See—*
Van Der Does, Hendrik J., 5,364,473, Cl. 134-8.000.

Milke, Erhard: *See—*
Welp, Ewald G.; and Milke, Erhard, 5,364,044, Cl. 242-530.400.

Miller, Charles W., Jr.; Currier, John; Duclos, Larry; and Ayer, Thomas, to Centorr/Vacuum Industries, Inc. High temperature transport belt for materials treating furnace. 5,363,952, Cl. 198-848.000.

Miller, Danny T.; and Viviano, Robert, to Little Caesar Enterprises, Inc. Pasta pan and cooking method. 5,363,750, Cl. 99-426.000.

Miller, Donald W. Corner protector assembly and retainer clip therefor. 5,363,617, Cl. 52-288.100.

Miller, Doyle E. Wiring harness security inspection device. 5,365,176, Cl. 324-539.000.

Miller, John: *See—*
Beattie, David; Miller, John; and Gamble, Victor, 5,364,344, Cl. 604-43.000.

Miller, John E., to Parma Corporation. Spring assembly for seating and bedding. 5,364,082, Cl. 267-108.000.

Miller, Joseph W., Jr.: *See—*
Bauer, Richard G.; Burlett, Donald J.; Miller, Joseph W., Jr.; Schorr, Gordon R.; and Bapat, Pradeep M., 5,364,905, Cl. 525-53.000.

Miller, Kevin L.; Krug, Eric M.; and Imthurn, James A., to Hewlett-Packard Company. Sysetm for optically sensing the placement of magnetic tape cartridge media in a computer memory backup device. 5,365,383, Cl. 360-69.000.

Miller, Michelle J.: *See—*
Joly, Lucien E.; Knipfer, Michael A.; Miller, Michelle J.; Nitzschke, George O.; and Weinberger, Mark T., 5,363,700, Cl. 73-504.000.

Miller, Paul L.; Stignani, Mark D.; and Wittmer, Gary G., to Alliant Techsystems, Inc. Abrasive fluid jet cutting compositon and method. 5,363,603, Cl. 451-40.000.

Miller, Richard E.; and Mariano, Karen, to Binney & Smith, Inc. Modeling dough. 5,364,892, Cl. 523-218.000.

Miller, Ricky D.; and Reeve, Bruce A. Hook for attaching a boat cover. 5,364,054, Cl. 248-304.000.

Milliken Research Corporation: *See—*
Dischler, Louis, 5,363,599, Cl. 451-326.000.

Wenstrup, David E.; and Roe, Sammy L., 5,364,417, Cl. 8-592.000.

Mills, John B.: *See—*
Nicholson, David J.; Ellis, Donald R.; Mills, John B.; DiPerna, Dino C.; Martin, David W.; Peng, Wang-Hsin; and Roberts, Kim B., 5,365,510, Cl. 370-16.000.

Milne-Robertson, David M.: *See—*
Burger, Henry G.; de Kretser, David M.; Findlay, John K.; Morgan, Francis J.; Hearn, Milton T. W.; Milne-Robertson, David M.; and Forage, Robert G., 5,364,837, Cl. 514-8.000.

Milsco Manufacturing Company: *See—*
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MIM Industries, Inc.: *See—*
Conley, Ralph F., Jr., 5,363,785, Cl. 112-121.150.

Minami, Itsuji, to Fuji Photo Optical Co., Ltd. Circuit board of solid-state image sensor for electronic endoscope. 5,365,268, Cl. 348-76.000.

Minami, Takeshi; Shimokawa, Kenji; Hamato, Kazuhiko; Shiroto, Yoshimi; and Yoneda, Noriyuki, to Chiyoda Corporation. Supported rhodium catalyst, method of preparing same and process of producing acetic acid by methanol carbonylation using same. 5,364,963, Cl. 562-519.000.

Minamida, Isao: *See—*
Aoki, Isao; Tabuchi, Takanori; and Minamida, Isao, 5,364,989, Cl. 568-946.000.

Minato, Mitsuaki; Uehara, Akira; and Matsushita, Atsushi, to Tokyo Ohka Kogyo Co., Ltd. Coaxial plasma processing apparatus. 5,364,488, Cl. 156-345.000.

Minchey, Sharma R.: *See—*
Janoff, Andrew S.; Boni, Lawrence; Minchey, Sharma R.; Bolcsak, Lois E.; and Weiss, Steven J., 5,364,631, Cl. 424-450.000.

Minemoto, Masaki: *See—*
Iijima, Masaki; Yamada, Masakazu; Tomikawa, Fumio; Negoro, Masaaki; Minemoto, Masaki; and Haneda, Hisao, 5,364,611, Cl. 423-437.00R.

Minerals Technologies: *See—*
Cox, Sherman D.; and Wise, Kenneth J., 5,364,828, Cl. 502-341.000.

Mineta, Hiroshi: *See—*
Mizukami, Masamichi; Yui, Tomoyuki; Johno, Masahiro; Arai, Yoshihisa; and Mineta, Hiroshi, 5,364,560, Cl. 252-299.650.

Minezawa, Yukihiro; Kawamoto, Mutsumi; Inagaki, Hidemitsu; and Hotta, Yutaka, to Aisin Aw Co., Ltd. Control of electric vehicle motors responsive to detected vehicle speed and required total driving force. 5,365,431, Cl. 364-424.010.

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Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.

Minner, Jeffrey L.; and Farkas, Frank J., to General Motors Corporation. Draincock assembly for vehicle radiator. 5,364,069, Cl. 251-144.000.

Minnesota Mining and Manufacturing: *See—*
Satterwhite, James R.; Horning, Sandra J.; Wyatt, Gerald A.; and Reisem, Daniel E., 5,365,163, Cl. 324-67.000.

Minnesota Mining and Manufacturing Company: *See—*
Banks, Thomas F.; Vidal, Claude; Knoll, Randall L.; and Redmond, Russell J., 5,364,367, Cl. 604-174.000.
Curtis, Gary L.; Johnson, Gregory A.; and Tuebo, Paula M., 5,364,330, Cl. 492-41.000.
Fohrenkamm, Elsie A.; and Sanders, James F., 5,364,740, Cl. 430-294.000.
Gabor, Thomas; and O'Kelly, James M., 5,364,660, Cl. 427-255.300.
Gustafson, Donald E., 5,364,671, Cl. 428-14.000.
Heyer, Raymond F., 5,363,604, Cl. 51-400.000.
Kenney, Raymond J.; Ishida, Takuzo; and Cotner, Richard C., 5,364,733, Cl. 430-203.000.
Mach, Patrick A.; Hesselroth, Karen E.; Adams, Carl A.; and Schwab, Debra L., 5,364,766, Cl. 435-34.000.
McFadden, Francis J., 5,365,356, Cl. 359-62.000.
Moren, Dean M.; and Ersfeld, Dean A., 5,364,693, Cl. 428-263.000.
Morlotti, Romano, 5,365,071, Cl. 250-484.400.
Rolando, Richard J.; Coleman, Patrick L.; Kangas, Steven L.; and Kotnour, Thomas A., 5,364,907, Cl. 525-54.100.
Wirth, Wayne M.; and Vogelgesang, Peter J., 5,365,333, Cl. 356-244.000.
Wyman, Stuart J., 5,364,042, Cl. 242-348.000.

Minolta Camera Kabushiki Kaisha: *See—*
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.
Hamada, Masataka; Yamakawa, Eiji; Ootsuka, Hiroshi; Masumoto, Hisayuki; and Okada, Takashi, 5,365,304, Cl. 354-430.000.
Tajima, Katsuaki, 5,365,352, Cl. 358-500.000.

Minolta Co., Ltd.: *See—*
Oka, Tateki, 5,365,040, Cl. 219-497.000.

Minor, Raymond B.: *See—*
Hollenbaugh, Donald L., Jr.; McGregor, Gordon L.; and Minor, Raymond B., 5,364,699, Cl. 428-357.000.

Minowa, Masahiro; Kobayashi, Naoki; Nakajima, Satoshi; and Furuhata, Tadashi, to Seiko Epson Corporation. Thermal printer and method of controlling a thermal print head. 5,365,257, Cl. 346-76.0PH.

Miris Medical Corporation: *See—*
Rubsamen, Reid M., 5,364,838, Cl. 514-3.000.

Misawa, Motohiro: *See—*
Inoue, Akino; Misawa, Motohiro; Yamaguchi, Kazuaki; and Kanaya, Etsumi, 5,365,264, Cl. 348-10.000.

Mishelevich, David J.; Lanpher, Ted W.; Lanpher, Gregory B.; and Long, James, to Circadian, Inc. Intelligent inhaler providing feedback to both patient and medical professional. 5,363,842, Cl. 128-200.140.

Misner, Ned L.: *See—*
Thompson, Ronald J.; Misner, Ned L.; and Winegard, Michael D., 5,363,557, Cl. 29-898.041.

Misono, Kousuke, to Sony Corporation. Optical disc player having a resume function. 5,365,502, Cl. 369-18.000.

Misslitz, Ulf: *See—*
Kast, Juergen; Meyer, Norbert; Misslitz, Ulf; Harreus, Albrecht; Walter, Helmut; Gerber, Matthias; and Westphalen, Karl-Otto, 5,364,833, Cl. 504-289.000.

Misumi, Masao: *See—*
Nakao, Yuichi; Misumi, Masao; and Matsubara, Naoki, 5,363,705, Cl. 73-861.220.

Mita Industrial Co., Ltd.: *See—*
Asada, Hidenori; Arakawa, Takeshi; and Tsuji, Nobuyuki, 5,364,721, Cl. 430-109.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.

Mitani, Masao: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.

Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., to Ford Motor Company. Audible and visual feedback for user stimulated self-test diagnostics. 5,365,438, Cl. 364-424.030.

Mitel Corporation: *See—*
Ouellet, Luc, 5,364,818, Cl. 437-195.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ajika, Natsuo; Arima, Hideaki; Motonami, Kaoru; Hachisuka, Atsushi; and Okudaira, Tomonori, 5,364,811, Cl. 437-52.000.
Fukui, Wataru, 5,364,322, Cl. 477-108.000.
Hayashi, Kazuo; and Sonoda, Takuji, 5,365,078, Cl. 257-24.000.
Ido, Kihei; and Ohta, Masayuki, 5,365,232, Cl. 341-95.000.
Ishikawa, Masahiro, 5,364,203, Cl. 403-403.000.
Kamon, Kazuya, 5,365,371, Cl. 359-483.000.
Matsumura, Tetsuya; Uramoto, Shinichi; and Yoshimoto, Masahiko, 5,365,475, Cl. 365-154.000.
Mori, Kazuhiro, 5,365,202, Cl. 331-12.000.
Motonami, Kaoru, 5,365,474, Cl. 365-51.000.
Nakagawa, Shinichi; and Kawai, Hiroyuki, 5,365,454, Cl. 364-491.000.
Nakase, Yasunobu; Makino, Hiroshi; and Ueda, Kimio, 5,365,123, Cl. 326-109.000.
Ohuchi, Hirofumi; and Fujimoto, Shinya, 5,363,647, Cl. 60-276.000.
Sato, Fumiki, 5,365,471, Cl. 364-746.200.
Sawada, Seiji, 5,365,481, Cl. 365-201.000.
Yamaguchi, Atsuo, 5,365,047, Cl. 235-380.000.
Yoshida, Hideo, 5,365,530, Cl. 371-37.400.

Mitsubishi Gas Chemical Co., Inc.: *See—*
Mizukami, Masamichi; Yui, Tomoyuki; Johno, Masahiro; Arai, Yoshihisa; and Mineta, Hiroshi, 5,364,560, Cl. 252-299.650.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Momose, Nobuo; and Yoshida, Hiroaki, 5,365,439, Cl. 364-424.050.
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,364,321, Cl. 477-42.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Iijima, Masaki; Yamada, Masakazu; Tomikawa, Fumio; Negoro, Masaaki; Minemoto, Masaki; and Haneda, Hisao, 5,364,611, Cl. 423-437.00R.

Mitsubishi Kasei Corporation: *See—*
Imanara, Tohru; Satou, Shoichi; and Yamashita, Naomi, 5,364,584, Cl. 264-510.000.
Sakamoto, Masaharu: Mori, Tomoyuki; and Tsuboi, Akio, 5,364,445, Cl. 75-426.000.
Shimizu, Kunio; Sasa, Nobumasa; Watanabe, Manabu; Ide, Hiroshi; and Mayama, Shinya, 5,364,731, Cl. 430-143.000.

Mitsubishi Materials Corporation: *See—*
Hikita, Kazuyasu, 5,364,710, Cl. 429-9.000.
Morikawa, Masaki; Hosoda, Naoyuki; and Uchiyama, Naoki, 5,364,482, Cl. 156-182.000.

Mitsubishi Paper Mills Limited: *See—*
Idei, Kouji; and Senoo, Hideaki, 5,364,702, Cl. 428-423.100.

Mitsubishi Rayon Company Limited: *See—*
Takayama, Yuji; Wada, Hirotaka; and Komiya, Iwao, 5,364,903, Cl. 524-555.000.

Mitsubitshi Denki Kabushiki Kaisha: *See—*
Asano, Kenichi, 5,365,271, Cl. 348-402.000.

Mitsuboshi Belting Ltd.: *See—*
Kumazaki, Toshimi, 5,364,315, Cl. 474-242.000.

Mitsugu, Udagawa, to Kabushiki Kaisha Nissei Giken. Covered defroster with a defrosting plate over a latent heat source. 5,365,038, Cl. 219-386.000.

Mitsuhashi, Tsuyoshi: *See—*
Inoue, Kenichi; and Mitsuhashi, Tsuyoshi, 5,364,746, Cl. 430-488.000.

Mitsuhira, Yuko, to NEC Corporation. Single chip microcomputer having two kinds of timer functions. 5,365,183, Cl. 327-144.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,364,967, Cl. 564-315.000.

Mitutoyo Corporation: *See—*
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Miura, Kimiyoshi: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; Miura, Kimiyoshi; Tominari, Kenichi; and Kanezawa, Akio, 5,364,926, Cl. 528-198.000.

Miura, Noriyasu, to Oji Kenzai Kogyo Co., Ltd. Method of manufacturing laminate for honeycomb structure. 5,364,485, Cl. 156-264.000.

Miyabayashi, Toshiyuki, to Canon Kabushiki Kaisha. Silicon composition, elastic revolution body and fixing device using the composition. 5,364,697, Cl. 428-323.000.

Miyahara, Shunji: *See—*
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.

Miyajima, Toshihiko: *See—*
Takahashi, Tetsuo; Miyauchi, Eisaku; Miyajima, Toshihiko; and Watanabe, Hideaki, 5,364,219, Cl. 414-217.000.

Miyamoto, Hironobu, to NEC Corporation. Dry etching process for gallium arsenide excellent in selectivity with respect to aluminum gallium arsenide. 5,364,499, Cl. 156-662.000.

Miyamoto, Junichi; Yoshikawa, Kuniyoshi; and Naruke, Kiyomi, to Kabushiki Kaisha Toshiba. Non-volatile semiconductor memory having improved erasure characteristics. 5,365,098, Cl. 257-316.000.

Miyamoto, Yasushi; and Ikegawa, Akihiko, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 5,364,755, Cl. 430-584.000.

Miyamoto, Yasuyuki: *See—*
Furuya, Kazuhito; and Miyamoto, Yasuyuki, 5,364,717, Cl. 430-5.000.

Miyasaka, Toru: *See—*
Kumasaka, Takao; Shimazaki, Yuzuru; Miyasaka, Toru; and Otome, Yukio, 5,365,325, Cl. 355-326.000.

Miyata, Yutaka: *See—*
Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, 5,365,034, Cl. 219-121.830.

Miyauchi, Eisaku: *See—*
Takahashi, Tetsuo; Miyauchi, Eisaku; Miyajima, Toshihiko; and Watanabe, Hideaki, 5,364,219, Cl. 414-217.000.

Miyauchi, Michihiro: *See—*
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,364,668, Cl. 428-1.000.

Miyazaki, Katsunori: *See—*
Ezure, Yohji; Maruo, Shigeaki; Miyazaki, Katsunori; and Yamada, Naoyoshi, 5,364,794, Cl. 435-96.000.

Miyazaki, Koji: *See—*
Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi; Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, 5,365,152, Cl. 315-291.000.

Miyazawa, Kazuyuki: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.

Miyazawa, Yoshinori: *See—*
Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, 5,365,261, Cl. 347-103.000.

Miyoshi, Keiya: *See—*
Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, 5,365,276, Cl. 348-556.000.

Mizera, Wojciech: *See—*
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Mizoguchi, Akira: *See—*
Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, 5,363,797, Cl. 117-68.000.

Mizuguchi, Masaaki: *See—*
Noguchi, Yoshitaka; and Mizuguchi, Masaaki, 5,364,289, Cl. 439-501.000.

Mizuhara, Howard, to Morgan Crucible Company, plc, The. Joining of metal to ceramic bodies by brazing. 5,364,010, Cl. 228-124.600.

Mizukami, Masamichi; Yui, Tomoyuki; Johno, Masahiro; Arai, Yoshihisa; and Mineta, Hiroshi, to Mitsubishi Gas Chemical Co., Inc. Liquid crystal compound and liquid crystal display device. 5,364,560, Cl. 252-299.650.

Mizuno, Morio, to Takachiho Sangyo Kbushiki Kaisha. Device for detecting inclination of boring head of boring tool. 5,363,926, Cl. 175-45.000.

Mizusawa, Nobutoshi: *See—*
Ebinuma, Ryuichi; Mizusawa, Nobutoshi; Suzuki, Masayuki; Uno, Shinichirou; Mori, Tetsuzo; and Kurosawa, Hiroshi, 5,365,561, Cl. 378-34.000.

Mizushima, Yoshihiro: *See—*
Aoki, Akira; Yasui, Takashi; Mizushima, Yoshihiro; and Fukushima, Mitsuru, 5,364,167, Cl. 297-452.180.

Mizzi, John V.: *See—*
Nakao, Naomi L.; Nakao, Michael A.; and Mizzi, John V., 5,363,860, Cl. 128-760.000.

MK Seiko Co., Ltd.: *See—*
Nishimura, Eichi; Takeda, Shoichi; Fujiwara, Tohru; and Kobayashi, Nobushige, 5,364,063, Cl. 249-52.000.

Mobil Oil Corp.: *See—*
Beck, Jeffrey S.; McCullen, Sharon B.; and Olson, David H., 5,365,004, Cl. 585-475.000.
Chang, Clarence D.; Chu, Cynthia T.-W.; Degnan, Thomas F.; Rodewald, Paul G.; and Shihabi, David S., 5,365,003, Cl. 585-470.000.
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Jennings, Alfred R.; Sprunt, Eve S.; and Timmer, Robert S., 5,363,917, Cl. 166-288.000.
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Matros, Yurii S.; and McCombs, David E., 5,364,259, Cl. 431-5.000.
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Moren, Dean M.; and Ersfeld, Dean A., to Minnesota Mining and Manufacturing Company. Orthopedic support materials. 5,364,693, Cl. 428-263.000.
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Morishima, Masaaki, to NEC Corporation. Radio communication apparatus capable of preventing unintentional display operation. 5,365,226, Cl. 340-825.440.
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Barr, Robert K., 5,364,737, Cl. 430-281.000.
Eramo, Jr.; Lincoln; and Winkler, William J., 5,364,736, Cl. 430-280.000.
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Borras, Jaime A.; and Penunuri, David, 5,365,207, Cl. 333-196.000.
Brooks, Todd L., 5,365,199, Cl. 330-291.000.
Cannon, Gregory L.; Macko, William J.; Fuller, Gregory W.; and Theobald, Jill L., 5,365,227, Cl. 340-825.550.
Carswell, Phillip A.; and Clark, Steven F., 5,365,591, Cl. 380-49.000.
Clayton, Everett A.; and Gore, Kiron, 5,364,045, Cl. 242-588.600.
Fennell, Robert D.; Cannon, Gregory L.; Macko, William J.; and Fuller, Gregory W., 5,365,221, Cl. 340-636.000.
Kazecki, Henry L., 5,365,549, Cl. 375-96.000.
Kent, Kevin L.; and Glomski, Jacqueline D., 5,365,399, Cl. 361-704.000.
King, Thomas M., 5,365,182, Cl. 327-115.000.
Kosa, Yasunobu; and Kirsch, Howard C., 5,364,810, Cl. 437-52.000.
Li, Richard C., 5,365,595, Cl. 381-168.000.
Main, W. Eric, 5,365,120, Cl. 327-77.000.
Marvet, Lawrence E.; Ma, Scott T.; Le, Son Q.; Peebles, Douglas D.; Karl, David; and Phelps, William C., III, 5,365,027, Cl. 200-16.00D.
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Newberg, Donald G.; and Feldman, Lawrence E., 5,365,525, Cl. 371-2.100.
Phipps, John P.; Robb, Stephen P.; Sutor, Judy L.; and Terry, Lewis E., 5,365,099, Cl. 257-328.000.
Puhl, Larry C.; and Finkelstein, Louis D., 5,365,585, Cl. 380-9.000.
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Wang, Theresa C. Y.; and Moritz, Steven H., 5,365,451, Cl. 364-449.000.
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Mowery, Richard W., to Emhart Inc. Popup drain stopper. 5,363,518, Cl. 4-692.000.
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Muir, Susie Jane; Koopman, Marcel B. H.; and Kusters, Johannes G., to Duphar International Research B.V. Treponema hyodysenteriae vaccine. 5,364,774, Cl. 435-69.300.
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Mukhanov, Oleg A., to Digital Equipment Corporation. Three-port Josephson memory cell for superconducting digital computer. 5,365,476, Cl. 365-162.000.
Mulcahy, Stephen J. Combination disposable waste container. 5,363,980, Cl. 220-404.000.
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Tilles, David J.; San Miguel, Frank J.; Grapes, Thomas F.; Deemer, Diane L.; Wakamiya, Stanley K.; Mullenix, James D.; Westerdale, Mark W.; and Bialik, David, 5,363,967, Cl. 209-539.000.
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Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubsch, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.
Muller, Marcel W.: *See*—
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Muller, Siegfried: *See*—
Heidrich, Guenther; and Muller, Siegfried, 5,364,309, Cl. 464-99.000.
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Muller, Ulrich E.: *See*—
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Mumme, Charles W.; and Vinciguerra, John D., to Intermedics Orthopedics, Inc. Tibial spacer saw guide. 5,364,402, Cl. 606-88.000.
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Munk, Marvin R., to Amdurables, Inc. Mailing pack. 5,364,021, Cl. 229-157.000.
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Hirai, Kazuyasu, 5,363,637, Cl. 57-269.000.
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Murata, Masanao: *See*—
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Muro, Narahiko, 5,363,756, Cl. 99-538.000.
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Murphy, Thomas H.: *See*—
Solinas, Marco; and Murphy, Thomas H., 5,364,503, Cl. 162-65.000.
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Murray, Christopher K.; Beckvermit, Jeffrey T.; and Anziano, Dominick J., to Hauser Chemical Research, Inc. Process for separating cephalomannine from taxol using ozone and water-soluble hydrazines or hydrazides. 5,364,947, Cl. 549-510.000.
Murray, Joseph; Garinger, Ned D.; and Sorrells, Peter H., to VLSI Technology, Inc. Self-compensating output pad for an integrated circuit and method therefor. 5,365,130, Cl. 327-278.000.
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Renkema, Jacob; Konings, Jeroen H. G.; and Muskens, Bernardus J., 5,364,916, Cl. 526-161.000.
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Mustion, Richard P. Golf ball position marking aid. 5,364,094, Cl. 273-32.00A.
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Myers, Kurt S.: *See*—
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Nagao, Yoshinori: *See*—
Gu, Sono; and Nagao, Yoshinori, 5,365,324, Cl. 355-326.00R.

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Matsumoto, Toshio; Yasuda, Shuhei; Kusada, Tokutarou; and Nagashima, Nobuyoshi, 5,365,284, Cl. 348-793.000.

Nagayama, Eiji: *See*—
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Naito, Tomijiro: *See*—
Sakamaki, Yumiko; Naito, Tomijiro; and Yukinari, Toshiro, 5,364,558, Cl. 252-299.010.

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Nakajima, Akihisa: *See*—
Kurachi, Yasuo; Yaegashi, Kaoru; Saito, Yoichi; Wada, Yoshihiro; and Nakajima, Akihisa, 5,364,751, Cl. 430-527.000.

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Minowa, Masahiro; Kobayashi, Naoki; Nakajima, Satoshi; and Furuhata, Tadashi, 5,365,257, Cl. 346-76.0PH.

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Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

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Kogure, Tomohiko; Muraki, Takao; and Nakakita, Issey, 5,363,896, Cl. 152-543.000.

Nakamura, Akihiro: *See*—
Motoyama, Hajime; Kimizuka, Junichi; Gima, Takeji; and Nakamura, Akihiro, 5,365,316, Cl. 355-219.000.

Nakamura, Akio: *See*—
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.

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Shibata, Chiyoji; and Nakamura, Minoru, 5,364,302, Cl. 452-174.000.

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Baba, Norimasa; Yamamoto, Ken; Yamamoto, Michiyasu; Sanada, Ryouichi; Torigoe, Eiichi; and Nakamura, Mitsugu, 5,363,910, Cl. 165-153.000.

Nakamura, Moritaka: *See*—
Kikkawa, Yoshitsugi; Yamamoto, Osamu; Sakaguchi, Junichi; and Nakamura, Moritaka, 5,363,655, Cl. 62-9.000.

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Higashino, Tetsuo; Nakamura, Shosaku; Iimurou, Akira; Maeyama, Misao; Fukushige, Yoshimi; and Harada, Tomoyuki, 5,364,331, Cl. 492-43.000.

Nakamura, Shozo: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.

Nakamura, Shunji: *See*—
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Nakamura, Susumu: *See*—
Mouri, Akihiro; Fukui, Tetsuro; Katayama, Masato; Isaka, Kazuo; and Nakamura, Susumu, 5,364,732, Cl. 430-201.000.

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Wakabayashi, Takao, 5,364,469, Cl. 118-423.000.

Nakano, Hiroyuki: *See*—
Imai, Tomoyasu; Yoshimi, Takani; Matsuura, Akihiro; Takashima, Toshiharu; Tsutsui, Toshihiro; and Nakano, Hiroyuki, 5,363,598, Cl. 51-331.000.

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Nakao, Naomi L.; Nakao, Michael A.; and Mizzi, John V., 5,363,860, Cl. 128-760.000.

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Nakatani, Koichiro, to Velbon International Corporation. Panhead of improved operability. 5,365,293, Cl. 354-81.000.

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Yamashita, Osao; and Nakatsu, Yasunori, 5,363,828, Cl. 123-520.000.

Nakayama, Hiroshi, to NEC Corporation. Semiconductor memory device with provision of pseudo-acceleration test. 5,365,482, Cl. 365-201.000.

Nakayama, Raymond M. Fruit and nut-containing confectionary candy and method of preparation. 5,364,653, Cl. 426-660.000.

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Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.

Namiki, Takefumi; and Mikami, Masuhiro, to Fujitsu Limited. Integral value calculating device and function gradient calculating device. 5,365,473, Cl. 364-829.000.

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Taylor, Paul D.; Narayanan, Kolazi S.; and Plotkin, Jeffrey S., 5,364,691, Cl. 428-220.000.

Narayanan, Krishnaswamy: *See*—
Griffith, Owen W.; and Narayanan, Krishnaswamy, 5,364,881, Cl. 514-508.000.

Nardi, John C.: *See*—
Getz, Dale R.; Nardi, John C.; and Scarr, Robert F., 5,364,715, Cl. 429-229.000.

Naruke, Kiyomi: *See*—
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Naruo, Teruhiko: *See*—
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Naruse, Hiroshi: *See*—
Taka, Shin-ichi; Kimura, Kouji; Naruse, Hiroshi; and Kumamaru, Kuniaki, 5,365,090, Cl. 257-197.000.

Nash, John V., to Kinetrol Limited. Flow control devices. 5,363,876, Cl. 137-501.000.

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Hite, William H.; Roush, Dennis H.; and Corthell, Stephen G., 5,363,686, Cl. 72-455.000.

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Cole, Kenneth; Cielo, Paolo; Dumoulin, Michel M.; and Guevremont, Jacques, 5,365,067, Cl. 250-341.800.

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Edelman, Ran, 5,365,180, Cl. 324-715.000.
Hoang, Loc B.; Dinh, Khoi V.; and Kulkarni, Jitendra R., 5,365,479, Cl. 365-189.290.

Natori, Tatsuo: *See*—
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Chefalo, Patrick M.; Naujokas, Andrius A.; Popham, Stephen M.; DiStefano, Gary M.; and Buesing, Robert J., 5,364,500, Cl. 159-49.000.

Naumann, Christoph: *See*—
Lang, Hans; Naumann, Christoph; Raiss, Ruth; Komiyama, Osamu; and Terui, Yoshiko, 5,364,846, Cl. 514-102.000.

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Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., 5,365,436, Cl. 364-424.030.

NEC Corporation: *See*—
Eda, Masahiro; and Fujiwara, Masahiko, 5,365,344, Cl. 359-124.000.
Inasaka, Jun, 5,364,276, Cl. 439-66.000.
Kawai, Jun; and Tagami, Satoru, 5,365,141, Cl. 310-359.000.
Kurashima, Yasumi, 5,365,406, Cl. 361-777.000.
Kusano, Toshihiko, 5,365,511, Cl. 370-16.000.
Matsubayashi, Katsuyoshi, 5,363,949, Cl. 194-206.000.
Mitsuhira, Yuko, 5,365,183, Cl. 327-144.000.
Miyamoto, Hironobu, 5,364,499, Cl. 156-662.000.
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Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.
Yamamura, Kouichirou; Toyota, Kenichi; and Kawano, Yoshihiko, 5,365,480, Cl. 365-190.000.
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Iijima, Masaki; Yamada, Masakazu; Tomikawa, Fumio; Negoro, Masaaki; Minemoto, Masaki; and Haneda, Hisao, 5,364,611, Cl. 423-437.00R.

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Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., 5,363,987, Cl. 221-195.000.

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Nelson, Douglas M., to Libbey-Owens-Ford Co. Method of introducing protective atmosphere gases into a glass forming chamber. 5,364,435, Cl. 65-32.500.

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Failli, Amedeo A.; Kreft, Anthony F., III; Musser, John H.; Banker, Annette L.; Nelson, James A.; Shah, Uresh S.; and Kubrak, Dennis M., 5,364,944, Cl. 548-341.100.

Nelson, Joyce K.: *See*—
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Nelson, Melinda: *See*—
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., 5,364,630, Cl. 424-449.000.

Nelson, Robert J.: *See*—
Felts, John T.; Chatham, Hood, III; Countrywood, Joseph; and Nelson, Robert J., 5,364,665, Cl. 427-571.000.

Nemani, Murthy N.: *See*—
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.

Nestec S.A.: *See*—
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Beuchat, Charles E.; Etherington, Roger; Walbrink, Harold J.; and Berkman, John W., 5,364,342, Cl. 604-30.000.

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Neumann, Hans-Peter; Martan, Hans; Petersen, Hermann; and Doerflinger, Walter, to BASF Aktiengesellschaft. Multimetal oxide compositions and process of preparing same. 5,364,825, Cl. 502-311.000.

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Justice, Alan; Singh, Tejinder; Gohil, Kishor C.; and Valentino, Karen L., 5,364,842, Cl. 514-12.000.

Neuss, Michael; and Eierdanz, Horst, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of branched fatty acids and esters thereof. 5,364,949, Cl. 554-161.000.

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Wilson, Robert J.; Sperduti, David; Eastman, Richard E.; Adler, Randy W.; and Winks, Joseph A., 5,363,938, Cl. 180-233.000.

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Stallard, Clinton W., III, 5,363,791, Cl. 114-318.000.

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Ito, Kenji; Shimizu, Hiroyuki; and Hino, Seigo, 5,365,208, Cl. 333-204.000.

Nguyen, Binh T.: *See*—
Bilgrien, Carl J.; Lutz, Michael A.; and Nguyen, Binh T., 5,364,922, Cl. 528-15.000.

Nguyen, Duong N.: *See*—
Stevenson, Donald R.; Nguyen, Duong N.; and McRowe, Arthur W., 5,364,895, Cl. 524-120.000.

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Nguyen, Kim D.: *See*—
Spink, Donald R.; and Nguyen, Kim D., 5,364,604, Cl. 423-210.000.

Nguyen, Tai H. Self-opening thermoplastic bag system. 5,363,965, Cl. 206-554.000.

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Lyon, Douglas J.; Jensen, Stefan S.; Cage, Jeffrey B.; and Niblock, Robert R., 5,363,659, Cl. 62-71.000.

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Weeks, Horace W.; Strohmeyer, James J.; and Nice, Jeffrey R., 5,363,971, Cl. 209-584.000.

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Nicholas, Allan W.: *See*—
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Nicholl, Hugh: *See*—
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Ciolczyk, Jean-Pierre; and Nicolas, Olivier, 5,364,061, Cl. 248-610.000.

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Nike, Inc.: *See*—
Kilgore, Bruce J.; Allen, Thomas P.; and Auger, Perry W., 5,363,573, Cl. 36-131.000.

Niki, Hirokazu: *See*—
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

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Siegel, John H.; and Nikias, Chrysostomos L., 5,365,426, Cl. 364-413.060.

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Ishikura, Kazuo, 5,364,239, Cl. 417-423.300.

Nikon Corporation: *See*—
Hagiwara, Tsuneyuki, 5,365,330, Cl. 356-237.000.
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Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, 5,365,276, Cl. 348-556.000.

Nippon Densan Corporation: *See*—
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Nippon Mining & Metals Company, Limited: *See*—
Tasaki, Hiroshi; Nishimura, Eiji; and Yamamoto, Yasunori, 5,364,478, Cl. 148-533.000.

Nippon Shinyaku Company Limited: *See*—
Ezure, Yohji; Maruo, Shigeaki; Miyazaki, Katsunori; and Yamada, Naoyoshi, 5,364,794, Cl. 435-96.000.

Nippon Soda Co., LTD: *See*—
Asai, Makoto; Suzuki, Hiroshi; and Ichikawa, Takako, 5,364,977, Cl. 568-720.000.

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Yorita, Hiroshi; Igashira, Toshihiko; Sakakibara, Yasuyuki; Gotoh, Moriyasu; and Watanabe, Kazuhide, 5,363,816, Cl. 123-90.120.

Nippon Telegraph and Telephone Corporation: *See*—
Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, 5,365,521, Cl. 370-60.000.

Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.

Nippon Thompson Co., Ltd.: *See*—
Anada, Katsuya; and Yoshioka, Yukio, 5,363,774, Cl. 108-143.000.

Nippondenso Co., Ltd.: *See*—
Baba, Norimasa; Yamamoto, Ken; Yamamoto, Michiyasu; Sanada, Ryouichi; Torigoe, Eiichi; and Nakamura, Mitsugu, 5,363,910, Cl. 165-153.000.
Ikeda, Hiroshi; and Kawai, Katsuhiko, 5,363,817, Cl. 123-90.150.
Morikawa, Junya, 5,363,830, Cl. 123-674.000.
Suzumura, Toshihiro; Iida, Hisashi; Kondo, Toshio; and Isomura, Shigenori, 5,363,832, Cl. 123-704.000.
Takagi, Hiromi; Takehisa, Fumitaka; and Yokoi, Mitsuyoshi, 5,363,899, Cl. 164-4.100.
Tokura, Norihito; and Yamamoto, Tsuyoshi, 5,365,085, Cl. 257-139.000.

Nisbet, John J.: *See*—
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Nishi, Kunihiko: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.

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Sugita, Yukihiko; Terada, Hiroshi; and Nishida, Takao, 5,365,301, Cl. 354-400.000.

Nishigaki, Yuji: *See*—
Yonehara, Takao; Nishigaki, Yuji; and Yamagata, Kenji, 5,363,799, Cl. 117-94.000.

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Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.

Nishimoto, Yukimasa: *See*—
Iwashita, Kanau; Nishimoto, Yukimasa; Sawano, Yoshiaki; and Tsuchida, Tetsuo, 5,363,943, Cl. 188-72.500.

Nishimura, Eichi; Takeda, Shoichi; Fujiwara, Tohru; and Kobayashi, Nobushige, to MK Seiko Co., Ltd. Ice cube tray. 5,364,063, Cl. 249-52.000.

Nishimura, Eiji: *See*—
Tasaki, Hiroshi; Nishimura, Eiji; and Yamamoto, Yasunori, 5,364,478, Cl. 148-533.000.

Nishimura, Hiroyuki; Fujinoki, Akira; Matsuya, Toshikatsu; Inaki, Kyoichi; Kato, Toshiyuki; and Shimada, Atsushi, to Shin-Etsu Quartz Products Company Limited. Optical member of synthetic quartz glass for excimer lasers and method for producing same. 5,364,433, Cl. 65-17.400.

Nishimura, Takashi; Seino, Kazuyuki; and Kamohara, Eiji, to Kabushiki Kaisha Toshiba. Cathode-ray tube wherein plural regions of phosphor screen are scanned independently of one another. 5,365,142, Cl. 313-2.100.

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Nishimura, Yoichi: *See*—
Akazaki, Shusuke; Hasegawa, Yusuke; Nishimura, Yoichi; and Komoriya, Isao, 5,363,648, Cl. 60-276.000.

Nishina, Shingo; Suzuki, Tamio; and Kimura, Kazuhiko, to Mitutoyo Corporation. Clamping assembly for measuring instrument. 5,363,566, Cl. 33-810.000.

Nishiura, Yozo; and Nishi, Yasuhiko, to Sumitomo Electric Industries, Ltd. Two depolarizer fiber-optic gyroscope that eliminates interference between the depolarizers. 5,365,339, Cl. 356-350.000.

Nishizaki, Katsumi: *See*—
Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.

Nishizawa, Muneo; and Hamaue, Tetsuya, to Takata Corporation. Retractor shaft-rotating type seat belt pretensioner. 5,364,168, Cl. 297-476.000.

Nisius, Raimund: *See*—
Drees, Friedrich; Nisius, Raimund; Grethen, Hartmut; and Pekruhn, Wolfgang, 5,365,348, Cl. 358-298.000.

Nissan Chemical Industries Ltd.: *See*—
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

Nissan Motor Company, Ltd.: *See*—
Takizawa, Satoshi, 5,365,445, Cl. 364-431.010.

Nitta, Kazunari: *See*—
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

Nitzschke, George O.: *See*—
Joly, Lucien E.; Knipfer, Michael A.; Miller, Michelle J.; Nitzschke, George O.; and Weinberger, Mark T., 5,363,700, Cl. 73-504.000.

Niwa, Takashi: *See*—
Katoh, Kiyokazu; Kaneko, Kenichi; Matsubara, Osamu; and Niwa, Takashi, 5,364,283, Cl. 439-201.000.

Nix, Edgar, to Deutsch Voest-Alpine Industrieanlagenbau GmbH. Anode for a direct current arc furnaces. 5,365,542, Cl. 373-64.000.

No Peek 21: *See*—
Laughlin, Donald J.; and Wagoner, Lawrence E., 5,364,106, Cl. 273-304.000.

Nobe, Kenichi; and Araki, Morio, to Pioneer Electronic Corporation. On-vehicle navigation apparatus with automatic re-initialization function. 5,365,448, Cl. 364-449.000.

Nobumoto, Kazutoshi: *See*—
Tsuyama, Toshiaki; Onaka, Toru; Nobumoto, Kazutoshi; and Kawamura, Makoto, 5,365,443, Cl. 364-426.030.

Nocca, Jean-Luc; Travers, Phillipe; Mank, Larry; and Forestiere, Alain, to Institut Francais du Petrole. Process for the production of a tertiary alkyl ether comprising a fractionation section. 5,364,975, Cl. 568-697.000.

Noda Institute for Scientific Research: *See*—
Koga, Takuro, 5,364,564, Cl. 252-351.000.
Oguma, Tetsuya; Horiuchi, Tatsuo; and Tobe, Koichiro, 5,364,936, Cl. 536-103.000.

Noe, James B.: *See*—
Boles, Raymond L.; Knox, Benjamin H.; and Noe, James B., 5,364,701, Cl. 428-373.000.

Noe, Reinhold: *See*—
Noll, Bernd; Ebberg, Alfred; and Noe, Reinhold, 5,365,361, Cl. 359-161.000.

Noelken, Gregory P.: *See*—
Belloa, Thomas J.; and Noelken, Gregory P., 5,364,532, Cl. 210-639.000.

Noguchi, Masato, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical disk apparatus, and construction of optical disk. 5,365,504, Cl. 369-44.410.

Noguchi, Tadashi: *See*—
Morimoto, Shigeki; and Noguchi, Tadashi, 5,364,820, Cl. 501-71.000.

Noguchi, Yoshitaka; and Mizuguchi, Masaaki, to Yamaha Corporation. Retractable wire holder for electric unit. 5,364,289, Cl. 439-501.000.

Nokia-Maillefer Oy: *See*—
Linderoth, Gustaf, 5,364,043, Cl. 242-397.000.

Nokia Mobile Phones Ltd.: *See*—
Kivari, Raimo, 5,365,119, Cl. 327-115.000.
Lonka, Pekka, 5,365,410, Cl. 361-816.000.

Nokia Technology GmbH: *See*—
Apitz, Siegfried, 5,365,408, Cl. 361-807.000.

Noky, Werner, to Schott Glaswerke. Process and apparatus for producing a filter in the form of a monolithic honeycomb body. 5,364,573, Cl. 264-40.100.

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Nomura, Koji: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,364,668, Cl. 428-1.000.

Nonaga, Ikuo: *See*—
Abe, Masaru; Kawamoto, Yoshimichi; Nonaga, Ikuo; and Izawa, Masataka, 5,365,440, Cl. 364-424.050.

Nor-Wol Products, Inc.: *See*—
Bigelow, George, 5,364,037, Cl. 241-93.000.

Norand Corporation: *See*—
Koenck, Steven E.; Mahany, Ronald L.; and Frede, William W., 5,365,546, Cl. 375-9.000.

Norco, Inc.: *See*—
LaBarre, Berger A., 5,364,201, Cl. 403-322.000.

Nordling, Carl E. Remote control fishing boat remote troller. 5,363,587, Cl. 43-26.100.

Norfin, Inc.: *See*—
Snellman, Donald L.; and Tonkin, Dean G., 5,364,215, Cl. 412-3.000.

Norman, Timothy J.: *See*—
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,363,749, Cl. 99-403.000.

North American Pallidium Ltd.: *See*—
McDoulett, C. Dale, Jr.; and Reschke, George W., 5,364,444, Cl. 75-421.000.

North American Philips Corporation: *See*—
Carman, Charles S., 5,365,429, Cl. 364-413.130.
Drewanz, Andreas; Holmes, Robert L.; Key, Edward; and Reinken, Allan J., 5,364,288, Cl. 439-404.000.

North Atlantic Equipment Sales, Inc.: *See*—
Bradford, Gary R., 5,365,043, Cl. 219-710.000.

North Carolina State University: *See*—
Mehrotra, Manoj; and Baliga, Bantval J., 5,365,102, Cl. 257-475.000.

North Coast Electronics, Inc.: *See*—
Schneider, John K.; Keeney, Frank W.; Leszczynski, Nicholas G.; and Weppner, Benjamin H., 5,365,154, Cl. 318-103.000.

North Dakota State University: *See*—
Domenico, Edward D.; Stewart, Mark T.; and Urban, Marek W., 5,364,662, Cl. 427-536.000.

Northeastern University: *See*—
Cheney, Donald P.; and Wang, Le Z., 5,365,018, Cl. 800-220.000.

Northern Telecom Limited: *See*—
Janssen, Adrian P.; and Rees, Martin P., 5,365,534, Cl. 372-36.000.

Nicholson, David J.; Ellis, Donald R.; Mills, John B.; DiPerna, Dino C.; Martin, David W.; Peng, Wang-Hsin; and Roberts, Kim B., 5,365,510, Cl. 370-16.000.
Saw, John C. B.; Cameron, Thomas P.; Suthers, Mark S.; Nisbet, John J.; and Tiller, Samuel A., 5,365,138, Cl. 310-313.00D.
Wong, Larry K., 5,365,205, Cl. 333-109.000.

Northwestern University: *See*—
Baumann, Michael A.; and Anderson, Byron E., 5,364,930, Cl. 530-326.000.

Norton Company: *See*—
Bigelow, Louis K.; Csillag, Frank J.; and Hoggins, James T., 5,364,423, Cl. 51-293.000.

Nosco, Dennis L.: *See*—
Beaty, Julie A.; Deutsch, Edward A.; and Nosco, Dennis L., 5,364,953, Cl. 556-46.000.

Noser, Francis G., to Alcatel Network Systems, Inc. Sonet overhead server. 5,365,518, Cl. 370-58.100.

Novalek, Inc.: *See*—
Huff, Marvin E., 5,363,802, Cl. 119-18.000.

Novikov, Victor I.: *See*—
Trusov, Lev I.; Lapovok, Vladimir N.; and Novikov, Victor I., 5,364,586, Cl. 419-2.000.

Novitas Incorporated: *See*—
Elwell, Brian E., 5,363,688, Cl. 73-1.00D.

Novo Nordisk A/S: *See*—
Baret, Jean-Luc A. G.; Leclerc, Marc; and Lamort, Jean-Pierre, 5,364,501, Cl. 162-5.000.

Novotny, Vojtech: *See*—
Spindler, Zdenek; Burysek, Frantisek; and Novotny, Vojtech, 5,363,638, Cl. 57-270.000.

NTN Corporation: *See*—
Satoji, Fuminori; Hashimoto, Shoichi; Asai, Kuniaki; and Kobayashi, Tadayasu, 5,364,670, Cl. 428-1.000.

Nuebel, Karl-Heinz: *See*—
Betz, Dieter; Nuebel, Karl-Heinz; Grewe, Werner; and Balcarek, Oskar, 5,364,279, Cl. 439-76.000.

Nutramax Laboratories, Inc.: *See*—
Henderson, Robert W., 5,364,845, Cl. 514-54.000.

O-Oka Forge Co., Ltd.: *See*—
Hoguchi, Tetsuya, 5,363,714, Cl. 74-432.000.

One, Yoshihisa; and Sakamoto, Kiichi, to Fujitsu Limited. Method of exposing patttern of semiconductor devices and stencil mask for carrying out same. 5,364,718, Cl. 430-5.000.

Oakes, Fred T.: *See*—
Green, Nancy F.; Cummins, Thomas J.; and Oakes, Fred T., 5,364,591, Cl. 422-58.000.

Obando, Manuel E.: *See*—
Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., 5,364,439, Cl. 71-57.000.

Obara, Kozo: *See*—
Shinohara, Kibatsu; Obara, Kozo; and Umezawa, Tsuku, 5,365,147, Cl. 315-111.210.

O'Brien, John A.: *See*—
Kotch, Richard J.; O'Brien, John A.; and McConnell, George A., 5,363,738, Cl. 91-1.000.

Oceanic Systems, Inc.: *See*—
Watters, Jeffrey R.; and Thoes, Anthony M., 5,363,801, Cl. 119-15.000.

Ochi, Shigeo, to Hanabusa Patent Office. Inhibitor of absorption of digestion product of food and drink. 5,364,636, Cl. 424-456.000.

Ochiai, Akira; Takahashi, Katsuji; and Watanabe, Kouya, to Toshiba Kikai Kabushiki Kaisha. Hydrostatic bearing apparatus. 5,364,190, Cl. 384-100.000.

O'Connor, Thomas J.; Pistorino, Mark J.; Gaffney, John J.; and Foulds, William T., to Avco Corporation. Method of making a composite material. 5,364,571, Cl. 264-29.500.

Odagiri, Masaru: *See*—
Takahashi, Kiyoshi; Murai, Mikio; Odagiri, Masaru; Ueda, Hideyuki; Ohchi, Yukikazu; and Hiwatashi, Tatsuya, 5,364,690, Cl. 428-212.000.

Oga, Kiyomasa: *See*—
Nakamura, Takashi; Osumi, Kenji; Oga, Kiyomasa; Arai, Motohiro; Ikeda, Ryukichi; Yoshida, Eiji; Okada, Hirofumi; and Hamanaka, Ryusuke, 5,364,449, Cl. 75-650.000.

Ogasawara, Kazui, to Amada Company, Ltd. Shearing machine. 5,363,729, Cl. 83-389.000.

Ogawa, Hisahito: *See*—
Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, 5,364,668, Cl. 428-1.000.

Ogawa, Kazumi: *See*—
Tanaka, Masahiro; Tomita, Kazuhiro; and Ogawa, Kazumi, 5,365,167, Cl. 324-158.100.

Ogawa, Makoto: *See*—
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori. Yoshio, 5,364,883, Cl. 514-530.000.

Ogino, Masanori; Kuroda, Shoji; and Iwahara, Yoshiaki, to Hitachi, Ltd. Two dimensional moire reduction type projection display. 5,365,369, Cl. 359-457.000.

Ogino, Shigeru: *See*—
Murakami, Junichi; Ogino, Shigeru; Wada, Hiroyuki; and Takahara, Hiroyuki, 5,365,296, Cl. 354-195.100.

Oguchi, Satoshi: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,365,113, Cl. 257-786.000.

Oguma, Tetsuya; Horiuchi, Tatsuo; and Tobe, Koichiro, to Kikkoman Corporation; and Noda Institute for Scientific Research. Cycloisomaltooligosaccharides. 5,364,936, Cl. 536-103.000.

Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, to Sanwa Kagaku Kenkyusho Co., Ltd. Process for separating serum and plasma. 5,364,533, Cl. 210-645.000.

Oguti, Tosihiko: *See*—
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

Oh, Kyoung-Seok: *See*—
Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Joong-Hyun; and Oh, Kyoung-Seok, 5,364,809, Cl. 437-52.000.

Ohashi, Shigeo: *See*—
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Ohba, Takao: *See*—
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Ohbuchi, Yutaka: *See*—
Tanaka, Shigetaka; Ohtake, Yukio; and Ohbuchi, Yutaka, 5,363,652, Cl. 60-603.000.

Ohchi, Yukikazu: *See*—
Takahashi, Kiyoshi; Murai, Mikio; Odagiri, Masaru; Ueda, Hideyuki; Ohchi, Yukikazu; and Hiwatashi, Tatsuya, 5,364,690, Cl. 428-212.000.

Ohgawara, Masao; and Tsubota, Hiroyoshi, to Asahi Glass Company Ltd. Color liquid crystal display having color filters and light blocking layers in the periphery. 5,365,357, Cl. 359-67.000.

Ohgiri, Shigeteru: *See*—
Chikada, Akira; and Ohgiri, Shigeteru, 5,365,414, Cl. 362-61.000.

Ohio State University Research Foundation: *See*—
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Ohkuma, Kazuhiro; Hanno, Yoshio; Inada, Kazuyuki; Matsuda, Isao; and Katta, Yasuo, to Matsutani Chemical Industries Co., Ltd. Indigestable dextrin. 5,364,652, Cl. 426-549.000.

Ohmori, Hiroyuki: *See*—
Sugiyama, Yasunari; Kagawa, Kiyoshi; Hayakawa, Masatoshi; and Ohmori, Hiroyuki, 5,365,391, Cl. 360-110.000.

Ohmori, Kenji: *See*—
Suzuki, Fumio; Kuroda, Takeshi; Kitamura, Shigeto; and Ohmori, Kenji, 5,364,859, Cl. 514-293.000.

Ohmori, Koichi: *See*—
Ohtsuchi, Tetsuro; Tsutsui, Hiroshi: Ohmori, Koichi; and Baba, Sueki, 5,365,567, Cl. 378-156.000.

Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Casting handle for fishing rods. 5,363,585, Cl. 43-23.000.

Ohmura, Takahiko: *See*—
Kohno, Masahiko; and Ohmura, Takahiko, 5,364,925, Cl. 528-104.000.

Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, to Nippon Telegraph and Telephone Corporation. Data transmission and transmission path setting among exchange modules in building block type exchanger. 5,365,521, Cl. 370-60.000.

Ohnishi, Hiroshi: *See*—
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Ohnishi, Teruhito: *See*—
Shono, Tomofumi; Ohnishi, Teruhito; and Fukumoto, Masanori, 5,365,095, Cl. 257-295.000.

Ohno, Manabu: *See*—
Nakazawa, Akihiko; Kato, Masayoshi; Ohno, Manabu; Okubo, Nobuyuki; and Suzuki, Shunji, 5,364,720, Cl. 430-106.600.

Ohsawa, Seiichi: *See*—
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Ohsawa, Yutaka: *See*—
Kawasaki, Masahiro; Naruo, Teruhiko; Ohsawa, Yutaka; and Hashimoto, Isamu, 5,365,350, Cl. 358-426.000.

Ohshima, Yoichi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device having an improved bonding pad structure. 5,365,112, Cl. 257-784.000.

Ohshiro, Takashi: *See*—
Katsumata, Ryoichi; Ohshiro, Takashi; Yokoi, Haruhiko; and Shiomi, Michio, 5,364,775, Cl. 435-107.000.

Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, to Mita Industrial Co., Ltd. Toner for developing electrostatic images. 5,364,719, Cl. 430-106.000.

Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, to Mita Industrial Co., Ltd. Method of manufacturing a toner. 5,364,728, Cl. 430-137.000.

Ohta, Masahiro: *See*—
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Ohta, Masayuki: *See—*
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Ohtake, Yukio: *See—*
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Ohtsu, Akira: *See—*
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Ohtsuchi, Tetsuro; Tsutsui, Hiroshi; Ohmori, Koichi; and Baba, Sueki, to Matsushita Electric Industrial Co., Ltd. K-edge filter and X-ray apparatus employing the same. 5,365,567, Cl. 378-156.000.

Ohtsuka, Yasumasa: *See—*
Okuda, Kouichi; Nakamura, Shunji; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,365,314, Cl. 355-208.000.

Ohtubo, Hideaki: *See—*
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Ohuchi, Hirofumi; and Fujimoto, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Dual-sensor type air fuel ratio control system for internal combustion engine and catalytic converter diagnosis apparatus for the same. 5,363,647, Cl. 60-276.000.

Ohya, Kazumasa; Hamada, Kiyotaka; and Inoi, Takayuki, to NEC Corporation. Piezoelectric actuator having strain gage. 5,365,140, Cl. 310-328.000.

Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, to Sanyo Chemical Industries, Ltd. Process for making resin composition and resin composition. 5,364,908, Cl. 525-64.000.

Oji Kenzai Kogyo Co., Ltd.: *See—*
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Ojo, Olukayode A.: *See—*
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Oka, Taieki, to Minolta Co., Ltd. Fixing device having a temperature control system. 5,365,040, Cl. 219-497.000.

Okada, Hirofumi: *See—*
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Okada, Hiromasa; and Asano, Shoji, to Kuraray Co., Ltd. Polyethylene terephthalate-based meltblown nonwoven fabric ad process for producing the same. 5,364,694, Cl. 428-288.000.

Okada, Hiroshi: *See—*
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Okada, Junichi: *See—*
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Okada, Minoru: *See—*
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Okada, Takashi: *See—*
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Okajima, Shinpei, to Shimano Inc. Last for use in making cycling shoes, last and cycling shoe sole, and a method for making shoes using a last. 5,363,526, Cl. 12-133.00B.

Okamoto, James, to Quickie Designs Inc. Latch assembly for a wheelchair. 5,364,165, Cl. 297-364.000.

Okamoto, Masanori: *See—*
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Okamoto, Toshiaki: *See—*
Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.

Okamoto, Yasuhiko: *See—*
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Okamura, Iwao: *See—*
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Okamura, Kazuhisa: *See—*
Fujita, Yoshio; and Okamura, Kazuhisa, 5,365,467, Cl. 364-723.000.

Okawa, Mitsuji: *See—*
Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, 5,365,276, Cl. 348-556.000.

Okawa, Tadashi; and Yamada, Shuji, to Dow Corning Toray Silicone Co., Ltd. Method for preparing silica filled organosiloxane compositions. 5,364,896, Cl. 524-266.000.

O'Kelly, James M.: *See—*
Gabor, Thomas; and O'Kelly, James M., 5,364,660, Cl. 427-255.300.

Oki Electric Industry Co., Ltd.: *See—*
Matsushita, Yuichi, 5,365,488, Cl. 365-226.000.

Okubo, Nobuyuki: *See—*
Nakazawa, Akihiko; Kato, Masayoshi; Ohno, Manabu; Okubo, Nobuyuki; and Suzuki, Shunji, 5,364,720, Cl. 430-106.600.

Okuda, Kouichi; Nakamura, Shunji; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, to Canon Kabushiki Kaisha. Image heating apparatus capable of changing duty ratio. 5,365,314, Cl. 355-208.000.

Okudaira, Tomonori: *See—*
Ajika, Natsuo; Arima, Hideaki; Motonami, Kaoru; Hachisuka, Atsushi; and Okudaira, Tomonori, 5,364,811, Cl. 437-52.000.

Okuhara, Masakuni: *See—*
Takase, Shigehiro; Hatanaka, Hiroshi; Ezaki, Masami; Tsujii, Eisaku; Okamoto, Masanori; Shigematsu, Nobuharu; and Okuhara, Masakuni, 5,364,624, Cl. 424-117.000.

Okuma, Keiko: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Okuma, Keiko; and Nakai, Hiroshi, 5,364,195, Cl. 347-4.000.

Okuno, Atsushi: *See—*
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.

Okuno, Shiho: *See—*
Saito, Yoshiaki; Inomata, Koichiro; Okuno, Shiho; and Takahashi, Yoshinori, 5,365,212, Cl. 338-32.00R.

Okuyama, Tsuneo; Izumi, Tomonori; and Yamaguchi, Masato, to Kurita Water Industries, Ltd. Capillary column packed with glucomannan gel for capillary electrophoresis and methods for making and using same. 5,364,520, Cl. 204-299.00R.

Oldham, Keith: *See—*
Bruneau, Pierre A. R.; Crawley, Graham C.; and Oldham, Keith, 5,364,877, Cl. 514-414.000.

Olivetti-Canon Industriale S.p.A.: *See—*
Maruyama, Hiroyoshi; Dantonia, Luigi; and Giacometto, Felice, 5,364,088, Cl. 271-164.000.

Olnowich, Howard T.: *See—*
Childs, Philip L.; Olnowich, Howard T.; and Skovira, Joseph F., 5,365,228, Cl. 340-825.800.

Olsen, James M., to Pharmacia Deltec, Inc. Pump apparatus and method including double activation pump apparatus. 5,364,242, Cl. 417-474.000.

Olson, David H.; Stucky, Galen D.; and Vartuli, James C., to Mobil Oil Corp. Sensor device containing mesoporous crystalline material. 5,364,797, Cl. 436-501.000.

Olson, David H.: *See—*
Beck, Jeffrey S.; McCullen, Sharon B.; and Olson, David H., 5,365,004, Cl. 585-475.000.

Olympus Optical Co., Ltd.: *See—*
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,365,024, Cl. 181-176.000.
Kodama, Shinichi, 5,365,302, Cl. 354-403.000.
Komiya, Chikako; and Tanaka, Hisakatsu, 5,365,048, Cl. 235-462.000.
Sugita, Yukihiko; Terada, Hiroshi; and Nishida, Takao, 5,365,301, Cl. 354-400.000.
Suzuki, Tatsuya; Nagao, Masaki; and Yokoyama, Kunio, 5,365,290, Cl. 354-64.000.
Yamasaki, Masafumi; and Matsuzawa, Yoshinori, 5,365,303, Cl. 354-430.000.

O'Malley, Bert W.: *See—*
Vegeto, Elisabetta; McDonnell, Donald P.; and O'Malley, Bert W., 5,364,791, Cl. 435-320.100.

Omura, Masayoshi: *See—*
Hasegawa, Akira; Omura, Masayoshi; Imade, Shinichi; and Ikuta, Eishi, 5,365,024, Cl. 181-176.000.

Onaka, Toru: *See—*
Tsuyama, Toshiaki; Onaka, Toru; Nobumoto, Kazutoshi; and Kawamura, Makoto, 5,365,443, Cl. 364-426.030.

O'Neil, Alexander G. B. Fluid coupling and the method of manufacture. 5,364,377, Cl. 604-283.000.

O'Neill, James F., to Xerox Corporation. Process for fabrication of bubble jet using positive resist image reversal for lift off of passivation layer. 5,364,743, Cl. 430-320.000.

Onisawa, Makoto; Yoshioka, Ken; Koizumi, Makoto; Nagae, Hiromitsu; and Koshida, Ryoichi, to Hitachi, Ltd. Ignition distributor of internal combustion engine. 5,363,829, Cl. 123-617.000.

Onoda, Shigeyoshi: *See—*
Kanemitsu, Shinji; Onoda, Shigeyoshi; Okuma, Keiko; and Nakai, Hiroshi, 5,364,195, Cl. 347-4.000.

Onodera, Osamu: *See—*
Sato, Heikichi; Kimura, Hitoshi; and Onodera, Osamu, 5,365,392, Cl. 360-126.000.

Onozuka, Haruo: *See—*
Saito, Tatsuo; and Onozuka, Haruo, 5,365,295, Cl. 354-173.100.

Onuma, Kunihiko: *See—*
Kizuya, Isao; Yamashita, Kenkichi; Onuma, Kunihiko; and Hoshikawa, Akira, 5,365,285, Cl. 348-818.000.

Onuma, Tsutomu: *See—*
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, Masashi; and Onuma, Tsutomu, 5,364,722, Cl. 430-110.000.

Oogaki, Yasuji: *See—*
Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, 5,363,797, Cl. 117-68.000.

Ootsuka, Hiroshi: *See—*
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.
Hamada, Masataka; Yamakawa, Eiji; Ootsuka, Hiroshi; Masumoto, Hisayuki; and Okada, Takashi, 5,365,304, Cl. 354-430.000.

Ophthalmic Research Group International, Inc.: *See—*
Lipscomb, N. Thornton; Buazza, Omar M.; Luetke, Stephen C.; and Robinson, John J., 5,364,256, Cl. 425-174.400.

Optec Gesellschaft fur optische Technik mbH: *See—*
Muller, Gerhard J.; and Giebel, Gerfried, 5,365,032, Cl. 219-121.670.

Opticon Sensors Europe B.V.: *See—*
Peng, Ke-Ou, 5,365,049, Cl. 235-462.000.

ORB Electrical Steels Limited: *See—*
Beckley, Philip, 5,365,170, Cl. 324-239.000.

Orgel, Leslie E.: *See—*
Chu, Barbara; Kramer, Fred R.; Lizardi, Paul; and Orgel, Leslie E., 5,364,760, Cl. 435-6.000.

Orlando, Paul T.: *See—*
Zou, Xueming; Lampman, David A.; and Orlando, Paul T., 5,365,173, Cl. 324-318.000.

Orser, Cindy S.; and Xun, Luying, to Idaho Research Foundation. Genes and enzymes involved in the microbial degradation of pentachlorophenol. 5,364,787, Cl. 435-252.330.

Orta, Octavio: *See—*
Dampier, Clayton; and Orta, Octavio, 5,363,954, Cl. 206-144.000.

Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., to Ford Motor Company. Engine air/fuel control system with catalytic converter monitoring. 5,363,646, Cl. 60-274.000.

Osada, Akira, to Kabushiki Kaisha Toshiba. Braking device for an elevator. 5,363,942, Cl. 187-376.000.

Osada Research Institute, Ltd.: *See—*
Seto, Norio, 5,363,711, Cl. 74-25.000.

Osada, Yoshiyuki, to Canon Kabushiki Kaisha. Crystal articles and method for forming the same. 5,364,815, Cl. 437-99.000.

Osadchuk, Mark. Pipeline padding apparatus. 5,363,574, Cl. 37-142.500.

Osaka Gas Company Ltd.: *See—*
Hasegawa, Masamitsu; and Kuroda, Yasuhisa, 5,364,626, Cl. 424-403.000.

Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., to Alza Corporation. Subsaturated nicotine transdermal therapeutic system. 5,364,630, Cl. 424-449.000.

Osegowitsch, Viktor: *See—*
Wernicke, Ubbo; Osegowitsch, Viktor; and Hehn, Wilfried, 5,365,300, Cl. 354-320.000.

Oshima, Hiroyuki: *See—*
Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,365,079, Cl. 257-59.000.

OSi Specialties Inc.: *See—*
Gerkin, Richard M.; and Richey, Forest A., Jr., 5,364,924, Cl. 528-73.000.

Osumi, Kenji: *See—*
Nakamura, Takashi; Osumi, Kenji; Oga, Kiyomasa; Arai, Motohiro; Ikeda, Ryukichi; Yoshida, Eiji; Okada, Hirofumi; and Hamanaka, Ryusuke, 5,364,449, Cl. 75-650.000.

Ota, Atsuo: *See—*
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,365,444, Cl. 364-426.040.

Ota, Takahiro: *See—*
Inoue, Koichi; and Ota, Takahiro, 5,365,161, Cl. 323-282.000.

Ota, Yoshiyuki; and Sakaoka, Masaki, to Kyocera Elco Corporation. Memory card connector. 5,364,275, Cl. 439-65.000.

Otake, Sugako; Kojima, Takeshi; Aoki, Michio; Mukasa, Eigo; and Hosaki, Kikuo, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Grease for a slide contact. 5,364,544, Cl. 252-28.000.

Othel-Jacobsen, Erik: *See—*
Corfitsen, Mogens T.; Harboe, Henrik; and Othel-Jacobsen, Erik, 5,364,353, Cl. 604-95.000.

Otis Elevator Company: *See—*
Naito, Yoshiaki; Kohroki, Keiichi; and Kawaguchi, Masayuki, 5,365,131, Cl. 310-12.000.

Otome, Yukio: *See—*
Kumasaka, Takao; Shimazaki, Yuzuru; Miyasaka, Toru; and Otome, Yukio, 5,365,325, Cl. 355-326.000.

Otsuka, Kanji: *See—*
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Otten, William G.: *See—*
Page, L. Jerry; Bina, David R.; Lynch, Daniel R.; and Otten, William G., 5,365,337, Cl. 356-350.000.

Otto Oeko-Tech GmbH & Co. KG: *See—*
Gaddis, Edward S., 5,364,530, Cl. 210-621.000.

Otto, Ulrich, to Deutsche Aerospace AG. System for guarding property including a mobile laser unit. 5,365,218, Cl. 340-557.000.

OTV (Omnium de Traitements et de Valorisation): *See—*
Paillard, Herve , 5,364,537, Cl. 210-743.000.

Ouellet, Luc, to Mitel Corporation. Sog with moisture resistant protective capping layer. 5,364,818, Cl. 437-195.000.

Oval Corporation: *See—*
Nakao, Yuichi; Misumi, Masao; and Matsubara, Naoki, 5,363,705, Cl. 73-861.220.

Overbeek, Gerardus C.: *See—*
Pears, David A.; Carey, John G.; Stenson, Paul H.; and Overbeek, Gerardus C., 5,364,891, Cl. 522-149.000.

Owens-Illinois Closure Inc.: *See—*
Fillmore, William E., 5,363,990, Cl. 222-135.000.

Oxley, Gerald K.: *See—*
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.

Oxley, L. Thomas, to T-Systems, Inc. System for sampling fluid. 5,364,598, Cl. 422-102.000.

Ozaki, Tohru, to Matsushita Graphic Communication Systems, Inc. Coding apparatus. 5,365,347, Cl. 358-261.100.

Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi; Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, to Matsushita Electric Industrial Co. Ltd. Apparatus for controlling the power to a discharge-lamp. 5,365,152, Cl. 315-291.000.

Ozawa, Yoshio; Matsumoto, Takashi; and Saito, Kimitoshi, to Fuji Photo Film Co., Ltd. Paper mask unit for photographic printer. 5,365,308, Cl. 355-74.000.

Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, to Seiko Epson Corporation. Transfer type ink jet printer. 5,365,261, Cl. 347-103.000.

Ozeki, Shinichiro: *See—*
Kato, Tamiko; Ozeki, Shinichiro; and Fujii, Takanori, 5,365,517, Cl. 370-58.300.

Ozenne, Jean-Pierre; and Holtermann, Henri, to Laboratoires Biotrol. Stoma equipment. 5,364,379, Cl. 604-342.000.

P. H. Glatfelter Company: *See—*
Merris, Charles S., Jr., 5,364,610, Cl. 423-432.000.

Paarlberg, Conrad. Dual rocker shaft internal combustion diesel engine. 5,363,813, Cl. 123-18.00R.

Pabst, Wolfgang: *See—*
Spiegel, Norbert; and Pabst, Wolfgang, 5,365,151, Cl. 315-209.00R.

Packard, Beverly; and Komoriya, Akira, to United States of America, Health and Human Services. Oncoimmunins. 5,364,619, Cl. 424-85.100.

Paddock, Charles W.: *See—*
Garland, Thomas A.; Kolich, Robert A.; Paddock, Charles W.; and Bicheler, James P., 5,363,521, Cl. 5-99.100.

Padgett, James R. Portable tiltable hopper assembly. 5,364,224, Cl. 414-703.000.

Paessens, Arnold: *See—*
Habich, Dieter; Hansen, Jutta; and Paessens, Arnold, 5,364,931, Cl. 530-331.000.

Page, L. Jerry; Bina, David R.; Lynch, Daniel R.; and Otten, William G., to Smiths Industries Aerospace & Defense Systems, Inc. Method and apparatus for compensating for the residual birefringence in interferometric fiber-optic gyros. 5,365,337, Cl. 356-350.000.

Paget, Charles J., Jr.: *See—*
Boober, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,364,856, Cl. 514-253.000.

Paillard, Herve , to OTV (Omnium de Traitements et de Valorisation). Process for the oxidation of organic micropollutants in water using the O_3/H_2O_2 combination. 5,364,537, Cl. 210-743.000.

Palasz, Peter D.: *See—*
Nield, Eric; Palasz, Peter D.; Taylor, Philip L.; and Lam, Peter H. L., 5,364,901, Cl. 524-521.000.

Palfreyman, Malcolm N.; and Vicker, Nigel, to Rhone-Poulenc Rorer Limited. Thioformamide derivatives. 5,364,853, Cl. 514-332.000.

Paliard, Maurice, to CLE. Equipment for and method of precalcining any mineral materials whatsoever. 5,364,265, Cl. 432-106.000.

Pall Corporation: *See—*
Matkovich, Vlado I.; Bormann, Thomas J.; Gsell, Thomas C.; and Pascale, Frank R., 5,364,526, Cl. 210-206.000.

Palmer, Richard A.: *See—*
Gray, Thomas E.; Kunselman, Michael E.; and Palmer, Richard A., 5,364,921, Cl. 528-15.000.

Palmer, Robert J.: *See—*
Torma, Michael J.; Galing, Bernard W.; Palmer, Robert J.; and West, Suzanne K. S., 5,365,425, Cl. 364-401.000.

Panamax, Inc.: *See—*
Callaway, Jerry, 5,365,395, Cl. 361-56.000.

Panayappan, Ramanathan; and Cooper, John C., deceased (by Cooper, Linda, legal representative), to United States of America, Navy. Method of forming a corrosion-resistant EMI shielding gasket between graphite and metal components. 5,364,574, Cl. 264-46.500.

Panex Corporation: *See—*
Delatorre, Leroy C., 5,363,703, Cl. 73-733.000.

Pank, Donald: *See—*
Smith, Warren; and Pank, Donald, 5,364,326, Cl. 482-113.000.

Panoz, Donald E.: *See—*
Geoghegan, Edward J.; Mulligan, Seamus; and Panoz, Donald E., 5,364,620, Cl. 424-497.000.

Pantukh, Boris I.; Logutov, Igor J.; Ljubimov, Nikolai V.; and Rutman, Grigory I., to Sterlitamaxky Neftekhimichesky Zavod. Process for the preparation of 3,5-di-tert-butyl-4-hydroxy methoxybenzyl alcohol. 5,364,974, Cl. 568-662.000.

Paoletti, Enzo; and Perkus, Marion E., to Virogenetics Corporation. Genetically engineered vaccine strain. 5,364,773, Cl. 435-69.100.

Paradigm Technology, Inc.: *See—*
Godinho, Norman; and Liaw, Hai-Pyng, 5,365,104, Cl. 257-529.000.

Pargellis, Andrew N.: *See—*
Dynes, Robert C.; Hartford, Elliot H., Jr.; Hellman, Eric S.; Pargellis, Andrew N.; and Sharifi, Fred, 5,364,836, Cl. 505-190.000.

Park, Sung G., to Goldstar Co., Ltd. Key control method and control device for a cassette tape recorder. 5,365,500, Cl. 369-2.000.

Parker Hannifin Corporation: *See—*
Benward, Robert S., 5,365,249, Cl. 345-50.000.

Parma Corporation: *See—*
Miller, John E., 5,364,082, Cl. 267-108.000.

Parmigiani, Bruno: *See—*
Vallauri, Ubaldo; Parmigiani, Bruno; and Portas, Francesco, 5,365,020, Cl. 174-73.100.

Parrish, Frank A.: *See—*
Jaffe, Richard B.; and Parrish, Frank A., 5,364,404, Cl. 606-106.000.

Partridge, Peter G.; and Wisbey, Andrew, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Titanium compressor blade having a wear-resistant portion. 5,363,554, Cl. 29-889.710.

Partridge, Randall D.; and Rankel, Lillian A., to Mobil Oil Corporation. Process for treating heavy oil. 5,364,524, Cl. 208-251.00H.

Pascale, Frank R.: *See—*
Matkovich, Vlado I.; Bormann, Thomas J.; Gsell, Thomas C.; and Pascale, Frank R., 5,364,526, Cl. 210-206.000.

Pate, Joseph L.; and Fishel, David L., to GenCorp Inc. Acoustic lamina wall covering. 5,364,681, Cl. 428-137.000.

Patel, Pramathesh S.; Mayerl, Friedrich; and Meyers, Edward, to Bristol-Myers Squibb Company. Antibiotic produced by *Bacillus subtilis* ATCC 55422 capable of inhibiting bacteria. 5,364,623, Cl. 424-116.000.

Patel, Raj D.: *See—*
Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Hopper, Michael A., 5,364,729, Cl. 430-137.000.

Patel, Vipul C.; Brown, David R.; and Tso, Jim C., to Texas Instruments Incorporated. DRAM power management with self-refresh. 5,365,487, Cl. 365-226.000.

Paton, H. Neil. Composite elastomeric air spring and sealing structure. 5,364,086, Cl. 267-140.400.

Patterson, Richard L.; Rose, Allen H.; and Cull, Ronald C., to United States of America, National Aeronautics and Space Administration. Method of locating ground faults. 5,365,175, Cl. 324-501.000.

Patton, R. Lyle: *See—*
Barger, Paul T.; Patton, R. Lyle; Lesch, David A.; Bauer, Lorenz J.; and Gajda, Gregory J., 5,365,008, Cl. 585-667.000.

Patz, Samuel: *See—*
Hrovat, Mirko I.; Patz, Samuel; and Pulyer, Yuly M., 5,365,172, Cl. 324-309.000.

Patzke, James V.: *See—*
Blackwood, John J.; Inbar, Shai; and Patzke, James V., 5,364,796, Cl. 436-500.000.

Paudice, Ciro: *See—*
Boattini, Pier P.; D'Angio', Carlo; and Paudice, Ciro, 5,364,479, Cl. 156-100.000.

Paul-Munroe Engineering: *See—*
Cardellini, David A.; Biencourt, Michael P.; Taylor, Jeffrey P.; Haeber, John A.; and DeVires, John A., 5,363,696, Cl. 73-61.440.

Paull, Nathaniel H.; and Davis, Howard P. Warning device. 5,365,213, Cl. 340-321.000.

Pawlowski, Georg; Roeschert, Horst; Spiess, Walter; and Przybilla, Klaus-Juergen, to Hoechst Aktiengesellschaft. Postive-working radiation-sensitive mixture and radiation-sensitive recording material produced therewith. 5,364,734, Cl. 430-230.000.

Pax, George E.: *See—*
Snodgrass, Charles K.; Allen, David H.; Tuttle, John R.; Rotzoll, Robert R.; and Pax, George E., 5,365,551, Cl. 375-1.000.

Payne, Wyndham C.: *See—*
Soignet, Gerard C.; and Payne, Wyndham C., 5,365,427, Cl. 364-410.000.

Pazos, Jose F., to Arco Chemical Technology. Productive process for making conventional and low-unsaturation polyether polyols. 5,364,973, Cl. 568-620.000.

PB Diagnostics Systems, Inc.: *See—*
Blackwood, John J.; Inbar, Shai; and Patzke, James V., 5,364,796, Cl. 436-500.000.

Peacock, John: *See—*
Armitage, David A.; and Peacock, John, 5,363,888, Cl. 141-98.000.

Peacock, Lawrence A.: *See—*
Weston, Charles W.; Peacock, Lawrence A.; and Thornsberry, Willis L., Jr., 5,364,438, Cl. 71-29.000.

Peaden, Paul A.: *See—*
Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., 5,364,439, Cl. 71-57.000.

Pears, David A.; Carey, John G.; Stenson, Paul H.; and Overbeek, Gerardus C., to Imperial Chemical Indsutries PLC; and ICI Resins BV. Incorporation of desired groups into polymers, the polymers so produced, and compositions containing them. 5,364,891, Cl. 522-149.000.

Pearson, James E., to Eaton Corporation. Quieted servoactuator. 5,363,713, Cl. 74-425.000.

Pearson, William R.; and Dalling, N. Lawrence, to Survival Technology, Inc. Rectal administrator. 5,364,363, Cl. 604-136.000.

Pedain, Josef: *See—*
Zwiener, Christian; Schmalstieg, Lutz; and Pedain, Josef, 5,364,955, Cl. 556-418.000.

Pedersen, Jorgen W.: *See—*
Van Der Tol, Johannes J. G. M.; Metaal, Eduard G.; and Pedersen, Jorgen W., 5,364,495, Cl. 156-643.000.

Peebles, Douglas D.: *See—*
Marvet, Lawrence E.; Ma, Scott T.; Le, Son Q.; Peebles, Douglas D.; Karl, David; and Phelps, William C., III, 5,365,027, Cl. 200-16.00D.

Peeters, Hugo J. P., to Alcatel, N.V. Switching network. 5,365,522, Cl. 370-60.100.

Pekruhn, Wolfgang: *See—*
Drees, Friedrich; Nisius, Raimund; Grethen, Hartmut; and Pekruhn, Wolfgang, 5,365,348, Cl. 358-298.000.

Pelka, David G.: *See—*
Jannson, Tomasz P.; Pelka, David G.; and Aye, Tin M., 5,365,354, Cl. 359-15.000.

Pellet, Marc, to Societe Europeenne de Propulsion. Enclosure containing hot gases cooled by transpiration, in particular the thrust chamber of a rocket engine. 5,363,645, Cl. 60-267.000.

Pelto, Ralph H.; Simpson, Brian L.; Walker, Theodore E.; Crevelling, John W.; Logsdon, Kevin M.; Drake, Paul C.; and Hennenkamp, Jeffrey R., to Eastman Kodak Company. Process for compacting silver nitrate. 5,364,418, Cl. 23-313.00R.

Pelton, John F., to Praxair Technology, Inc. Gas dispersion apparatus for molten aluminum refining. 5,364,078, Cl. 266-233.000.

Pence, Gregory L.: *See—*
Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., 5,365,436, Cl. 364-424.030.

Peng, Ke-Ou, to Opticon Sensors Europe B.V. Focusing means for a symbol code reader. 5,365,049, Cl. 235-462.000.

Peng, Wang-Hsin: *See—*
Nicholson, David J.; Ellis, Donald R.; Mills, John B.; DiPerna, Dino C.; Martin, David W.; Peng, Wang-Hsin; and Roberts, Kim B., 5,365,510, Cl. 370-16.000.

Penner, Arthur F.: *See—*
Alexander, John V.; Uchiyama, Jerome T.; and Penner, Arthur F., 5,363,920, Cl. 166-350.000.

Penninger, Josef: *See—*
Hill, Karlheinz; Foerg, Franz; Koerner, Hermann; and Penninger, Josef, 5,364,647, Cl. 424-490.000.

Penunuri, David: *See—*
Borras, Jaime A.; and Penunuri, David, 5,365,207, Cl. 333-196.000.

Perfect, Frederick H., deceased (by Perfect, Marjorie L., executor), to Reading Alloys, Inc. Nickel alloy for hydrogen battery electrodes. 5,364,587, Cl. 419-31.000.

Perfect, Marjorie L., executor: *See—*
Perfect, Frederick H., deceased, 5,364,587, Cl. 419-31.000.

Perfect Shoji Kabushiki Kaisha: *See—*
Kuwahara, Kiyoshi; Yoshida, Akira; and Kuwahara, Masako, 5,364,155, Cl. 296-136.000.

Performance Controls, Inc.: *See—*
Close, Eric C.; Goff, Jerry K.; and Yost, Donald A., 5,365,422, Cl. 363-98.000.

Perkin-Elmer Corporation, The: *See—*
Atwood, John G.; and Haff, Lawrence A., 5,364,790, Cl. 435-288.000.

Perko, Vincent L.: *See—*
Johnson, Jerry L.; Perko, Vincent L.; and Williams, Melanee J., 5,363,719, Cl. 74-502.400.

Perkus, Marion E.: *See—*
Paoletti, Enzo; and Perkus, Marion E., 5,364,773, Cl. 435-69.100.

Permaban North America, Inc.: *See—*
McPhee, Mike, 5,363,619, Cl. 52-367.000.

Perratone, Rene : *See—*
Laurie, Jean-Phillippe R. L.; and Perratone, Rene , 5,363,789, Cl. 114-293.000.

Perry, Robert E. Continuous stack flow rate monitor. 5,365,459, Cl. 364-509.000.

Personnet, Pierre: *See—*
Barrillon, Eric; Personnet, Pierre; and Bontron, Jean-Claude, 5,365,012, Cl. 588-248.000.

Petechik, Charles R. Safety signal kit. 5,363,792, Cl. 116-28.00R.

Peters, Alfons L. J.: *See—*
Van Grinsven, Adrianus M.; Peters, Alfons L. J.; Roos, Robert; and Wieg, Andras J., 5,364,640, Cl. 426-33.000.

Peters, Marcia L.: *See—*
Derby, Jeffrey H.; Doeringer, Willibald A.; Drake, John E., Jr.; Dykeman, Douglas H.; Li, Liang; Peters, Marcia L.; Sandick, Haldon J.; and Vu, Ken Van, 5,365,523, Cl. 370-85.200.

Petersen, Hermann: *See—*
Neumann, Hans-Peter; Martan, Hans; Petersen, Hermann; and Doerflinger, Walter, 5,364,825, Cl. 502-311.000.

Petersen, Thomas D.; and Lane, Richard A., to Zimmer, Inc. Acetabular cup positioner. 5,364,403, Cl. 606-91.000.

Petersen, Walter J., to Toro Company, The. Vehicle steering and suspension system. 5,364,114, Cl. 280-95.100.

Peterson, Don M., to Crotty Corporation. Sun visor with integral core. 5,365,416, Cl. 362-135.000.

Peterson, Karen B.: *See—*
Hansen, Donald W., Jr.; Chandrakumar, Nizal S.; Peterson, Karen B.; Tsymbalov, Sofya; and Husa, Robert K., 5,364,850, Cl. 514-255.000.

Peterson, Kevin T., to Rockwell International Corp. Shielded stackable solderless connector/filter assembly. 5,364,293, Cl. 439-620.000.

Peterson, Paul E., to Union Carbide Chemicals & Plastics Technology Corporation. Method for automated identification of recycled plastic articles with comparison of direct and diffuse transmitted light. 5,365,075, Cl. 250-571.000.

Peterson, Philip S.: *See—*
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.

Petit, William A.; Maderer, George G.; Macano, Samuel J.; and Hoelscher, James R., to General Railway Signal Corporation. Automatic vehicle control and location system. 5,364,047, Cl. 246-122.00R.

Petitbon, Pascal: *See—*
Schapira, Joseph; Cheminaud, Jean-Claude; Petitbon, Pascal; and Imbert, Dominique, 5,364,440, Cl. 71-64.120.

Petrolite Corporation: *See—*
Bellos, Thomas J.; and Noelken, Gregory P., 5,364,532, Cl. 210-639.000.

Pezzani, Robert, to SGS-Thomson Microelectronics S.A. Thyristors having a common cathode. 5,365,086, Cl. 257-157.000.

Pfeffer, Henry A.; and Wolfe, Gary E., to FMC Corporation. Recovery of cyanide from precious metal tailings. 5,364,605, Cl. 423-236.000.

Pfizer Hospital Products Group, Inc.: *See—*
Chapman, Michael W.; Edwards, Charles C.; and Mears, Dana C., 5,364,398, Cl. 606-69.000.

Pfizer Inc.: *See—*
Dickinson, Roger P.; and Richardson, Kenneth, 5,364,938, Cl. 544-333.000.
Rosen, Terry J.; Godek, Dennis M.; Gut, Sally; and Wint, Lewin, 5,364,943, Cl. 546-223.000.
Soloman, Sabrie B., 5,363,968, Cl. 209-546.000.

Pharmacia Deltec, Inc.: *See—*
Olsen, James M., 5,364,242, Cl. 417-474.000.

Pharmetrix Corp.: *See—*
Kochinke, F.; and Baker, Richard W., 5,364,629, Cl. 424-449.000.

Phelan, James J.: *See—*
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,365,524, Cl. 370-94.200.

Phelps, William C., III: *See—*
Marvet, Lawrence E.; Ma, Scott T.; Le, Son Q.; Peebles, Douglas D.; Karl, David; and Phelps, William C., III, 5,365,027, Cl. 200-16.00D.

Pherigo, Douglas E.: *See—*
Schmitt, Karl R.; and Pherigo, Douglas E., 5,365,415, Cl. 362-66.000.

Philip Morris Incorporated: *See—*
Dante, Henry M.; and Lowitz, David A., 5,365,596, Cl. 382-8.000.
Fleenor, J. Jerome, 5,363,955, Cl. 206-273.000.

Philipp, Carl T.; and Sims, Bobby H., to Enviroscience, Inc. Method of recycling hazardous waste. 5,364,447, Cl. 75-500.000.

Philippi, Gerd. Modular building system. 5,363,625, Cl. 52-653.200.

Philips Electronics North America Corporation: *See—*
Wong, Stephen L., 5,365,198, Cl. 330-288.000.

Phillips, Douglas E. Apparatus for the early detection and relief of unsafe conditions in a gaseous system. 5,364,262, Cl. 431-202.000.

Phillips, Earl K.: *See—*
Shiau, David W.; Detlefsen, William D.; and Phillips, Earl K., 5,364,902, Cl. 524-541.000.

Phillips Petroleum Company: *See—*
Ash, Carlton E., 5,364,928, Cl. 528-373.000.
Benham, Elizabeth A.; and McDaniel, Max P., 5,364,915, Cl. 526-105.000.
Jenneman, Gary E.; and Clark, James B., 5,363,913, Cl. 166-246.000.
Kallenbach, Lyle R., 5,364,976, Cl. 568-697.000.
Wu, An-hsiang, 5,365,007, Cl. 585-528.000.

Philpot, James E., to Teledyne Industries Inc. Locator clip. 5,364,051, Cl. 248-229.000.

Phipps, John P.; Robb, Stephen P.; Sutor, Judy L.; and Terry, Lewis E., to Motorola, Inc. Semiconductor device having high energy sustaining capability and a temperature compensated sustaining voltage. 5,365,099, Cl. 257-328.000.

Physical Optics Corporation: *See—*
Jannson, Tomasz P.; Pelka, David G.; and Aye, Tin M., 5,365,354, Cl. 359-15.000.

PhytoTech, Inc.: *See—*
Raskin, Ilya; Kumar, Nanda P. B. A.; and Douchenkov, Slavik, 5,364,451, Cl. 75-710.000.

Piana, Ivana; and Piana, Silvano, to Graphoplast S.p.A. Support for electric cable and wire marking with closed, partially notched sleeve. 5,363,576, Cl. 40-316.000.

Piana, Silvano: *See—*
Piana, Ivana; and Piana, Silvano, 5,363,576, Cl. 40-316.000.

Picard, Joseph A.; and Sliskovic, Drago R., to Warner-Lambert Company. Oxysulfonyl urea ACAT inhibitors. 5,364,882, Cl. 514-517.000.

Pichler, Gerald P., to Federal-Mogul Corporation. Accumulator piston having multiple elastomeric seals. 5,363,744, Cl. 92-242.000.

Picker International, Inc.: *See—*
Zou, Xueming; Lampman, David A.; and Orlando, Paul T., 5,365,173, Cl. 324-318.000.

Picture Productions Limited Partnership: *See—*
Desai, Basavaraji R., 5,365,299, Cl. 354-319.000.

Piekunka, Ann M.: *See—*
Beach, Bradley L.; Burns, Kathryn E.; Franey, Terence E.; Piekunka, Ann M.; Spivey, Paul T.; and Zimmer, Agnes K., 5,364,461, Cl. 106-22.00R.

Pielartzik, Harald: *See—*
Meltzer, Aaron D.; Wicks, Douglas A.; and Pielartzik, Harald, 5,364,913, Cl. 525-440.000.

Pierre, David M.: *See—*
Bradtmueller, Lynn E.; Wiedemann, Gustave F.; Pierre, David M.; and Smitley, Ronnie G., 5,363,546, Cl. 29-564.100.

Pierre Fabre Medicament: *See—*
Bigg, Denis; Vidaluc, Jean-Louis; and Calmel, Francis, 5,364,864, Cl. 514-318.000.

Pierret, Peter G.; Werbowsky, Laurie L.; Buchholz, A. Bruce; and Goodnough, Glenn D. Setback control for HVAC system. 5,363,904, Cl. 165-2.000.

Pierson, Mark V.: *See—*
Hecht, Lewis C.; Sulger, Merritt P., deceased; Sulgar, Ellen, executrix; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,364,225, Cl. 414-786.000.

Pieterse, Jan-Willem J.: *See—*
Kafka, James D.; Watts, Michael L.; Pieterse, Jan-Willem J.; and Holsinger, Kevin K., 5,365,366, Cl. 359-330.000.

Pietrowski, Kenneth W.: *See—*
Folkins, Jeffrey J.; Bray, Daniel M.; Fioravanti, Alex; Pietrowski, Kenneth W.; Lioy, Gerald T.; and Behe, Thomas J., 5,365,317, Cl. 355-225.000.

Pilo, Giuseppe: *See—*
Flumene, Antonio G.; and Pilo, Giuseppe, 5,364,360, Cl. 604-110.000.

Pinnacle Brands, Inc.: *See—*
Anderson, Victor G., 5,365,294, Cl. 354-112.000.

Pinpoint Communications, Inc.: *See—*
Jandrell, Louis H. M., 5,365,516, Cl. 370-18.000.

Pioneer Electronic Corporation: *See—*
Aoyama, Akihiro; Kaneko, Hitoshi; Tajiri, Akira; Okamura, Iwao; and Tanaka, Yuzo, 5,364,270, Cl. 434-55.000.
Kageyama, Tohru, 5,365,195, Cl. 330-284.000.
Kashiwazaki, Takashi, 5,365,449, Cl. 364-449.000.
Nobe, Kenichi; and Araki, Morio, 5,365,448, Cl. 364-449.000.
Yanagisawa, Takuma; and Ohsawa, Seiichi, 5,365,052, Cl. 250-201.500.

Pioneer Hi-Bred International, Inc.: *See—*
White, Joseph L.; and Trimble, Michael W., 5,365,014, Cl. 800-200.000.

Pioneering Concepts Incorporated: *See—*
Schultz, Glen R., 5,364,241, Cl. 417-442.000.

Pirelli Cavi S.p.A.: *See—*
Vallauri, Ubaldo; Parmigiani, Bruno; and Portas, Francesco, 5,365,020, Cl. 174-73.100.

Pistorino, Mark J.: *See—*
O'Connor, Thomas J.; Pistorino, Mark J.; Gaffney, John J.; and Foulds, William T., 5,364,571, Cl. 264-29.500.

Plant Genetic Systems N.V.: *See—*
Quax, Wilhelmus J.; Laroche, Yves; Vollebregt, Adrianus W. H.; Stanssens, Patrick; and Lauwereys, Marc, 5,364,782, Cl. 435-202.000.

Plante, Fernand. Tubular saw tooth and mount assembly. 5,363,891, Cl. 144-218.000.

Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, to Schering Aktiengesellschaft. Cascade polymer bound chelating compounds, their chelates and conjugates, processes for their production, and pharmaceutical agents containing them. 5,364,614, Cl. 424-9.000.

Plotkin, Jeffrey S.: *See—*
Taylor, Paul D.; Narayanan, Kolazi S.; and Plotkin, Jeffrey S., 5,364,691, Cl. 428-220.000.

Plumly, George W. Floor type advertising apparatus. 5,363,579, Cl. 40-600.000.

Pneumo Abex Corporation: *See—*
Coakley, Kim L., 5,363,740, Cl. 91-499.000.

Poirier, Robert H.: *See—*
Taboada, John; and Poirier, Robert H., 5,364,390, Cl. 606-10.000.

Poling, David L., Sr. Frictionless carriage for tire uniformity machine loadwheel carriage. 5,363,698, Cl. 73-146.000.

Polk, Lewis T., Jr.; Vartanian, Hugh; Brown, Phillip P.; and Sloan, Walker M., III, to Cytyc Corporation. Apparatus for collection and transfer of particles. 5,364,597, Cl. 422-101.000.

Poll, Wayne L. Laparoscopic suturing system. 5,364,407, Cl. 606-139.000.

Polycom, Inc.: *See—*
Huang, Shan-Shan; Hinman, Brian L.; and Gaut, Eric K., 5,365,583, Cl. 379-390.000.

Pomeranz, Yeshajahu: *See—*
Czuchajowska, Zuzanna; and Pomeranz, Yeshajahu, 5,364,471, Cl. 127-65.000.

Poole, Richard R.: *See—*
Bollinger, Lynn D.; Power, Michael P.; Poole, Richard R.; and Gardopee, George J., 5,364,496, Cl. 156-643.000.

Poor, Ralph P.; and Huber, Michael J., to Surface Combustion, Inc. Industrial variable carbon potential gas generator. 5,364,476, Cl. 148-27.000.

Pope, Michael T.; Creaser, Inge I.; and Heckel, Mark C., to Georgetown University. Compounds and methods for separation and molecular encapsulation of metal ions. 5,364,568, Cl. 588-18.000.

Popham, Stephen M.: *See—*
Chefalo, Patrick M.; Naujokas, Andrius A.; Popham, Stephen M.; DiStefano, Gary M.; and Buesing, Robert J., 5,364,500, Cl. 159-49.000.

Poppe, George; Ciesielski, Denise; and Matlock, Mark, to Archer Daniels Midland Company. Method of producing protein products for bright paper coating applications. 5,364,465, Cl. 106-124.000.

Porchia, Jose: *See—*
Dais, Brian C.; and Porchia, Jose, 5,363,540, Cl. 24-587.000.

Porex Technologies Corp.: *See—*
Smith, Michael W., 5,364,595, Cl. 422-100.000.

Portas, Francesco: *See—*
Vallauri, Ubaldo; Parmigiani, Bruno; and Portas, Francesco, 5,365,020, Cl. 174-73.100.

Portfolio, Donald C.; and Fensel, Fred A., to Tremco, Inc. Emulsification of asphalt and modified asphalt with primary emulsifier polymers comprised of acrylic acid type monomers. 5,364,894, Cl. 524-60.000.

Poston, Janet R.: *See—*
Decker, Lawrence G.; Poston, Janet R.; and Hume, Edward F., 5,365,055, Cl. 250-214.00R.

Poston, Wendy L.: *See—*
Solka, Jeffrey L.; Rogers, George W.; Priebe, Carey E.; Poston, Wendy L.; and Szu, Harold, 5,365,472, Cl. 364-807.000.

Poulose, Ayyookaran J.: *See—*
Stanislowski, Anna G.; Heitfeld, Fred A.; Wiersema, Richard J.; and Poulose, Ayyookaran J., 5,364,554, Cl. 252-186.380.

Poulsen, Knud J.; Scheele, Werner; and Jorgensen, Henning, to Svejsemaskinefabrikken Migatronic A/S. Method and apparatus for TIG welding. 5,365,035, Cl. 219-137.0PS.

Powell, Barbara G., Executrix: *See—*
Powell, James W., deceased, 5,363,674, Cl. 62-505.000.

Powell, J. Anthony: *See—*
Larkin, David J.; and Powell, J. Anthony, 5,363,800, Cl. 117-95.000.

Powell, James W., deceased (by Powell, Barbara G., Executrix), to Ecoair Corp. Zero superheat refrigeration compression system. 5,363,674, Cl. 62-505.000.

Power, Joan F. Sensitive interferometric parallel thermal-wave imager. 5,365,065, Cl. 250-330.000.

Power, Michael P.: *See—*
Bollinger, Lynn D.; Power, Michael P.; Poole, Richard R.; and Gardopee, George J., 5,364,496, Cl. 156-643.000.

Powers, Paul J.: *See—*
Eick, Christopher D.; Powers, Paul J.; and Williamson, John R., 5,364,231, Cl. 416-157.00R.

Powers, Ronald J. Cosmetic pencil with descending sheath. 5,364,197, Cl. 401-75.000.

Poyner, Weston R.: *See—*
McBurnett, James R.; and Poyner, Weston R., 5,363,649, Cl. 60-325.000.

Prasad, Romeo. Steering wheel locking apparatus. 5,363,679, Cl. 70-209.000.

Prat, Jesus: *See—*
Aymerich, Jose ; and Prat, Jesus, 5,364,149, Cl. 296-97.120.

Praxair Technology, Inc.: *See—*
Acharya, Arun; Gottzmann, Christian F.; Lockett, Michael J.; Schneider, James S.; Victor, Richard A.; and Zawierucha, Robert, 5,363,909, Cl. 165-111.000.
Bikson, Benjamin; and Nelson, Joyce K., 5,364,454, Cl. 95-45.000.
Bury, Roland P. A. G., 5,363,779, Cl. 110-236.000.
Couwels, Ludo J. C., 5,363,782, Cl. 110-238.000.
Pelton, John F., 5,364,078, Cl. 266-233.000.

Precision Fukuhara Works, Ltd.: *See—*
Tsuchiya, Koji, 5,363,676, Cl. 66-168.000.

Premier Laser Systems, Inc.: *See—*
Anderson, Dallas W., 5,364,389, Cl. 606-8.000.

Prent, Mark. Body part mold system. 5,364,580, Cl. 264-138.000.

Presco Technology, Inc.: *See—*
Cochran, Don W.; and Triner, James E., 5,365,084, Cl. 250-571.000.

Prestigiacomo, Nick J. Flame suppressant marinating grill overlay. 5,363,751, Cl. 99-444.000.

Pretzsch, Peter; Kein, Michael; and Linsbauer, Peter, to Andreas Stihl. Cooling air blower with combustion air channel. 5,363,815, Cl. 123-41.700.

Prew, Stanley R., to Andritz Sprout-Bauer, Inc. Screenless hammermill. 5,364,038, Cl. 241-189.100.

Price, David E.: *See—*
Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.

Priebe, Carey E.: *See—*
Solka, Jeffrey L.; Rogers, George W.; Priebe, Carey E.; Poston, Wendy L.; and Szu, Harold, 5,365,472, Cl. 364-807.000.

Pries, Gunter: *See—*
Hampel, Klaus; Pries, Gunter; and Goldbecker, Wilfried, 5,363,786, Cl. 112-255.000.

Probstmeyer, Helmuth: *See—*
Franzen, Paul H.; Alit, Ken J.; Michaud, Richard R.; Probstmeyer, Helmuth; and Tammone, Michael R., 5,364,335, Cl. 494-15.000.

Procter & Gamble Company, The: *See—*
Bush, Rodney D.; Bissett, Donald L.; and Chatterjee, Ranjit, 5,364,617, Cl. 424-59.000.
Cook, Charles D., 5,363,986, Cl. 221-63.000.
Singer, Robert E.; and Ebel, James P., 5,364,616, Cl. 424-52.000.
Smurkoski, John A.; Leggitt, Gary L.; and Wilson, Gregory L., 5,364,504, Cl. 162-116.000.
Taniguchi, Tatsuya; and Collias, Dimitris I., 5,364,031, Cl. 239-330.000.

Project Design Technology Limited: *See—*
Ludlow, Roy A. G.; and De Beneducci, Ramon, 5,364,100, Cl. 273-143.00R.

Propst, Stephen H.; and Walter, Geoffrey A., to Santa Barbara Research Center. Infrared transmitting window and method of making same. 5,365,345, Cl. 359-359.000.

Proshan, Mary-Elizabeth. Detachable cap for disposable containers of liquid. 5,363,983, Cl. 220-717.000.

Przybilla, Klaus-Juergen: *See—*
Pawlowski, Georg; Roeschert, Horst; Spiess, Walter; and Przybilla, Klaus-Juergen, 5,364,734, Cl. 430-230.000.

Pugh, Robert v.: *See—*
Hill, Peter C.; Saffer, Gary M.; Pugh, Robert v.; and Asbaghi, Ahmed, 5,364,299, Cl. 446-176.000.

Puhl, Larry C.; and Finkelstein, Louis D., to Motorola, Inc. Method and apparatus for encryption having a feedback register with selectable taps. 5,365,585, Cl. 380-9.000.

Pulp & Paper Research Institute of Canada: *See—*
LeClerc, Denys F.; and Hogikyan, Robert M., 5,364,502, Cl. 162-49.000.

Pulse Electronics, Inc.: *See—*
Roberson, David L., 5,365,550, Cl. 375-1.000.

Pulyer, Yuly M.: *See—*
Hrovat, Mirko I.; Patz, Samuel; and Pulyer, Yuly M., 5,365,172, Cl. 324-309.000.

Pure The Ionizer Inc.: *See—*
Earl, Floyd, 5,364,512, Cl. 204-228.000.

Pureza, Pablo C.: *See—*
Sanghera, Jasbinder S.; Pureza, Pablo C.; and Aggarwal, Ishwar D., 5,364,434, Cl. 65-30.100.

Puzon, Rory R.: *See—*
Clark, Robert A.; Puzon, Rory R.; and Wlodarczyk, James T., 5,363,747, Cl. 99-348.000.

Pyle, James H.: *See—*
Simpson, W. Dwain; and Pyle, James H., 5,363,889, Cl. 141-208.000.

Pyle, Robert J.: *See—*
Aochi, Tak; and Pyle, Robert J., 5,364,491, Cl. 156-446.000.

Pyne, Alvan W.: *See—*
Lagunas-Solar, Manuel C.; and Pyne, Alvan W., 5,364,645, Cl. 426-248.000.

Pynenburg, Adrian W. Snap closing panel holder. 5,364,057, Cl. 248-475.100.

QLH USA, Inc.: *See—*
Jiang, Curtis T., 5,364,056, Cl. 248-447.000.

Quax, Wilhelmus J.; Laroche, Yves; Vollebregt, Adrianus W. H.; Stanssens, Patrick; and Lauwereys, Marc, to Gist-Brocades N.V.; and Plant Genetic Systems N.V. Mutant microbial α-amylases with increased thermal, acid and/or alkaline stability. 5,364,782, Cl. 435-202.000.

Quay, Steven C.: *See—*
Sieving, Paul F.; Watson, Alan D.; Quay, Steven C.; and Rocklage, Scott M., 5,364,613, Cl. 424-9.000.

Quickie Designs Inc.: *See—*
Okamoto, James, 5,364,165, Cl. 297-364.000.

Quinn, John A.; and Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Investment casting pattern material comprising thermally-collapsible expanded microspheres. 5,364,889, Cl. 522-71.000.

Quinto, Dennis T.: *See—*
Santhanam, Anakkavur T.; Godse, Rajendra V.; Quinto, Dennis T.; Undercoffer, Kenneth E.; and Jindal, Prem C., 5,364,209, Cl. 407-119.000.

Quinton Instrument Company: *See—*
dePinto, Victor M.; and Kinghorn, Curtis D., 5,365,428, Cl. 364-413.060.

R. J. Reynolds Tobacco Company: *See—*
McConnell, Bain C.; Fix, Robert J., Sr.; Deal, Philip A.; Hobbs, Timothy A.; Jordan, Larry S.; and Steelman, Harold L., 5,363,885, Cl. 141-1.000.

Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., to Ra, Jong Oh; and Lim, Joon Young. Continuously-geared automatic transmission with controlling brakes. 5,364,320, Cl. 475-280.000.

Ra, Jong Oh: *See—*
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,364,320, Cl. 475-280.000.

Raaber, Raymond R.; and Chimenti, Thomas A., to Industri AB Thule. Bicycle carrier adapted to be mounted on the back of a vehicle. 5,363,996, Cl. 224-314.000.

Raad, Bernard A., to EEMCO/DATRON, Inc. Miniature rotating rectifier assembly. 5,365,133, Cl. 310-68.00D.

Racine Industries, Inc.: *See—*
Rench, Geoffrey B.; Jacobs, Stephen; and Jolly, Frank, 5,363,535, Cl. 15-344.000.

Rackley, David T., to VLSI Technology, Inc. Meta stable resistant signal detector. 5,365,122, Cl. 327-306.000.

Radar Engineers: *See—*
Long, Scott B., 5,364,049, Cl. 248-205.100.

Raddatz, Claus D.; Wojtecki, Ronald J.; and Zerndt, Norman E., to Eaton Corporation. Fluid pressure servomotor. 5,363,743, Cl. 92-98.00D.

Rademacher, Wilhelm: *See—*
Kirchner, Juergen; Schmidt, Oskar; Grossmann, Klaus; Rademacher, Wilhelm; Hepp, Michael; and Zierke, Thomas, 5,364,834, Cl. 504-319.000.

Radish Communications Systems, Inc.: *See—*
Davis, Richard A.; Witmore, Ronald K.; Fette, Charles J.; Brittain, Anthony J.; and Mathys, Peter, 5,365,577, Cl. 379-96.000.

Radlowski, Cecelia A.; Hagen, Gary P.; Grimes, Lewis E.; and Tatterson, David F., to Amoco Corporation. Catalyzed vapor phase process for making alcohols. 5,364,979, Cl. 568-697.000.

Rahmat-Samii, Yahya: *See—*
Williams, Lawrence I. S.; and Rahmat-Samii, Yahya, 5,365,241, Cl. 343-703.000.

Railkar, Sudhir B.: *See—*
Kalyon, Dilhan M.; Gokturk, Halit S.; and Railkar, Sudhir B., 5,365,115, Cl. 307-89.000.

Rainaud, Guy; Allain, Denis; and Aubert, Henri, to Constructions Industrielles de la Mediterranee CNIM. Spanning beam structure for clearing breaches by vehicles. 5,363,527, Cl. 14-2.400.

Rainin Instrument Co., Inc.: *See—*
Magnussen, Haakon T., Jr.; Homberg, William D.; and Rainin, Kenneth, 5,364,596, Cl. 422-100.000.

Rainin, Kenneth: *See—*
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Rubens, John M.: *See—*
Jenkins, Everett W.; Wegeng, Donald L.; Lo Biondo, Martin F.; and Rubens, John M., 5,365,310, Cl. 355-202.000.
Rubin, Robert H.; and Strauss, H. William, to General Hospital Corporation, The. Method for the diagnosis and treatment of inflammation. 5,363,846, Cl. 128-654.000.
Rubsamen, Reid M., to Miris Medical Corporation. Method of administration of insulin. 5,364,838, Cl. 514-3.000.
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Zhang, Zhenyu; Ruderman, Warren; and Fehlner, James R., 5,364,993, Cl. 570-187.000.
Ruile, Werner: *See—*
Machui, Jurgen; and Ruile, Werner, 5,365,206, Cl. 333-195.000.
Ruley, H. Earl; and von Melchner, Harold, to Massachusetts Institute of Technology. Retrovirus promoter-trap vectors. 5,364,783, Cl. 435-235.100.
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Lollar, John S.; and Runge, Marschall S., 5,364,771, Cl. 435-69.100.
Russell, William C.: *See—*
Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., 5,365,464, Cl. 364-580.000.
Russo, Kenneth J.; and Block, George, to Carsten Health Industries, Inc. Reinforcement tape for loose leaf sheet. 5,364,200, Cl. 402-79.000.
Rutgers University: *See—*
Drzewiecki, Gary M.; Butterfield, Robert D.; and Ciaccio, Edward J., 5,363,855, Cl. 128-672.000.
Rutkowski, David J.: *See—*
Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., 5,365,438, Cl. 364-424.030.
Rutkowski, John: *See—*
Carlo, Louis D.; Voiculescu, Danut; and Rutkowski, John, 5,365,215, Cl. 340-426.000.
Rutman, Grigory I.: *See—*
Pantukh, Boris I.; Logutov, Igor J.; Ljubimov, Nikolai V.; and Rutman, Grigory I., 5,364,974, Cl. 568-662.000.
Rutschle, Eugen; and Haninger, Rudolf, to Chiron-Werke GmbH & Co. KG. Machine tool. 5,364,210, Cl. 409-134.000.
Rycroft, David J.; and Madadi, Abi F., to Kaufel Group Ltd. Exit signs with LED illumination. 5,365,411, Cl. 362-20.000.
Ryobi Outdoor Products, Inc.: *See—*
Hoffman, Ronald J., 5,363,723, Cl. 74-606.00R.
S.J.A. Trust: *See—*
Haas, David J.; and Haas, Sandra F., 5,364,132, Cl. 283-67.000.
Saal, Marliese; Harreus, Albrecht; and Gutte, Richard, to Hoechst Aktiengesellschaft. Plastic film with fiber reinforcement and tubular casings produced therefrom. 5,364,674, Cl. 428-34.800.
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Simpson, W. Dwain; and Pyle, James H., 5,363,889, Cl. 141-208.000.
Sadlier, Claus E. Multi-layered insulated cup formed of one continuous sheet. 5,363,982, Cl. 220-441.000.
Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, to NEC Corporation; and Nippon Telegraph and Telephone Corporation. Cordless key telephone system with multiple tenant facility. 5,365,572, Cl. 379-61.000.
Safe-Strap Company, Inc.: *See—*
Shimer, Christine R., 5,364,137, Cl. 297-327.000.
Saffari, Akbar; Camps, Francis W.; Medema, Jerry A.; Turner, Charles J.; and Wolf, Jeffrey J., to Eaton Corporation. Photoelectric sensor assembly with transparent housing an integrally molded lens. 5,365,062, Cl. 250-239.000.
Saffer, Gary M.: *See—*
Hill, Peter C.; Saffer, Gary M.; Pugh, Robert v.; and Asbaghi, Ahmed, 5,364,299, Cl. 446-176.000.
Sager, Robert L., Jr.: *See—*
Kraai, Leon A.; Sager, Robert L., Jr.; and Hill, William E., 5,365,025, Cl. 181-249.000.
Saguchi, Ryuichi: *See—*
Sakurada, Toyohisa; Suzuki, Hiroshi; and Saguchi, Ryuichi, 5,364,969, Cl. 568-421.000.
Sahle-Demessie, Endalkachew: *See—*
Levien, Keith L.; Morrell, Jeffrey J.; Kumar, Satish; and Sahle-Demessie, Endalkachew, 5,364,475, Cl. 134-42.000.
Saikawa, Hideo: *See—*
Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsurou; Saikawa, Hideo, Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,262, Cl. 347-87.000.
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Saint Gobain Vitrage International: *See—*
Ripoche, Xavier; and Ast, Marc, 5,365,365, Cl. 359-267.000.
St. Vincent's Institute of Medical Research: *See—*
Burger, Henry G.; de Kretser, David M.; Findlay, John K.; Morgan, Francis J.; Hearn, Milton T. W.; Milne-Robertson, David M.; and Forage, Robert G., 5,364,837, Cl. 514-8.000.
Saito, Al, to Veggie Vac Company. Vegetable topper and method for topping tuber vegetables. 5,363,634, Cl. 56-121.420.
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Seki, Yoichi; and Saito, Hiroyuki, 5,365,305, Cl. 354-484.000.
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Ozawa, Yoshio; Matsumoto, Takashi; and Saito, Kimitoshi, 5,365,308, Cl. 355-74.000.
Saito, Takeshi: *See—*
Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi;

Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, 5,365,152, Cl. 315-291.000.

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Saito, Yoshiyuki: *See*—
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,365,386, Cl. 360-85.000.

Sakaguchi, Junichi: *See*—
Kikkawa, Yoshitsugi; Yamamoto, Osamu; Sakaguchi, Junichi; and Nakamura, Moritaka, 5,363,655, Cl. 62-9.000.

Sakakibara, Hironobu: *See*—
Hirano, Yutaka; Tsuji, Masayuki; and Sakakibara, Hironobu, 5,363,545, Cl. 29-527.400.

Sakakibara, Yasuyuki: *See*—
Yorita, Hiroshi; Igashira, Toshihiko; Sakakibara, Yasuyuki; Gotoh, Moriyasu; and Watanabe, Kazuhide, 5,363,816, Cl. 123-90.120.

Sakamaki, Yumiko; Naito, Tomijiro; and Yukinari, Toshiro, to Citizen Watch Co., Ltd. Ester derivatives. 5,364,558, Cl. 252-299.010.

Sakamoto, Kazunori, to Aisin Seiki Kabushiki Kaisha. Impact sensing apparatus. 5,363,710, Cl. 74-2.000.

Sakamoto, Ken: *See*—
Imai, Kiyoshi; Nio, Yutaka; Sakamoto, Ken; Miyoshi, Keiya; Okawa, Mitsuji; and Unemura, Toyoaki, 5,365,276, Cl. 348-556.000.

Sakamoto, Kiichi: *See*—
Oae, Yoshihisa; and Sakamoto, Kiichi, 5,364,718, Cl. 430-5.000.

Sakamoto, Masaaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, 5,364,523, Cl. 205-128.000.

Sakamoto, Masaharu; Mori, Tomoyuki; and Tsuboi, Akio, to N.E. Chemcat Corporation; and Mitsubishi Kasei Corporation. Recovery method of rhodium. 5,364,445, Cl. 75-426.000.

Sakamoto, Naruhiko; and Ishida, Shinjiro, to Casio Computer Co., Ltd. Cordless telephone system including detachable radio unit for communicating with a base unit and a mobile unit. 5,365,573, Cl. 379-61.000.

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Kisida, Hirosi; Shuto, Akira; Sakamoto, Noriyasu; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,364,966, Cl. 564-190.000.

Sakamoto, Seiji; Watanabe, Toshifumi; and Takisawa, Toshifumi, to Diafoil Hoechst Company, Limited. Magnetic recording medium comprising a polyethylene-2,6-naphthalate multilayered film coated on both sides by a coating layer. 5,364,684, Cl. 428-141.000.

Sakane, Shinsuke; Ichikawa, Hiroyuki; Fukushima, Satoru; and Hamada, Chiaki, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Anti-skid brake system for wheeled vehicle. 5,364,175, Cl. 303-97.000.

Sakaoka, Masaki: *See*—
Ota, Yoshiyuki; and Sakaoka, Masaki, 5,364,275, Cl. 439-65.000.

Sakashita, Takeshi; Shimoda, Tomoaki; Miura, Kimiyoshi; Tominari, Kenichi; and Kanezawa, Akio, to GE Plastics, Japan, Ltd. (GEP). Preparing method of polycarbonate resin compounds for the optical use. 5,364,926, Cl. 528-198.000.

Sakata, Gozyo: *See*—
Ura, Yasukazu; Sakata, Gozyo; Makino, Kenzi; Kawamura, Yasuo; Kawamura, Yuzi; Ikai, Takasi; and Oguti, Tosihiko, 5,364,831, Cl. 504-235.000.

Sakemi, Yuji; and Izumizaki, Masami, to Canon Kabushiki Kaisha. Image forming apparatus replenishing toner by detecting the ratio of toner and carrier and the density of the developer. 5,365,319, Cl. 355-246.000.

Sakuma, Tetsuro; and Okada, Junichi, to GC Corporation. Dental adhesive composition. 5,364,890, Cl. 522-92.000.

Sakurada, Toyohisa; Suzuki, Hiroshi; and Saguchi, Ryuichi, to Shiu-Etsu Chemical Co., Ltd. Method for the stabilization of a sex pheromone compound. 5,364,969, Cl. 568-421.000.

Sakurai, Kazuaki, to Yazaki Corporation. Waterproof connector. 5,364,285, Cl. 439-275.000.

Sakurai, Takeshi: *See*—
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,365,444, Cl. 364-426.040.

Sakurai, Toshikazu: *See*—
Fukuoka, Hisaji; Yoshida, Tatsuji; Kobayashi, Suminori; and Sakurai, Toshikazu, 5,364,386, Cl. 604-411.000.

Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, to Hitachi, Ltd. Semiconductor device. 5,365,113, Cl. 257-786.000.

Salama, Mamdouh M.: *See*—
Williams, Jerry G.; Monib, Monib M.; Salama, Mamdouh M.; Schwartz, David H.; and Dew, Edward G., 5,363,929, Cl. 175-107.000.

Salecker, Roy W., to Spartan Tool Div. of Pettibone Corp. Fluid pump with pulsing feature. 5,364,240, Cl. 417-427.000.

Salisbury, Kenneth A.: *See*—
Baker, Jay D.; Lemecha, Myron; McMillan, Richard K., II; Salisbury, Kenneth A.; Stevenson, Paul E.; Merala, Thomas B.; Green, Wells L.; Mikkor, Matti; and Meyer, Bernard A., 5,364,011, Cl. 228-180.210.

Salk Institute for Biological Studies, The: *See*—
Chu, Barbara; Kramer, Fred R.; Lizardi, Paul; and Orgel, Leslie E., 5,364,760, Cl. 435-6.000.

Salomon S.A.: *See*—
Montfort, Benoit, 5,363,571, Cl. 36-119.000.

Salpekar, Anil, to Bausch & Lomb Incorporated. Treating of contact lenses with compositions comprising PVP-H202. 5,364,601, Cl. 422-28.000.

Saltmarsh, Michael P.: *See*—
Chau, Kevin H. L.; Saltmarsh, Michael P.; and Church, Deborah A., 5,364,497, Cl. 156-645.000.

Sampsell, Jeffrey B.: *See*—
Doherty, Donald B.; Meyer, Richard C.; Marshall, Stephen W.; Sampsell, Jeffrey B.; and Gove, Robert J., 5,365,283, Cl. 348-743.000.

Samsung Display Devices Co., Ltd.: *See*—
Chang, Dong-Sik; and Chung, Su-Min, 5,364,567, Cl. 252-518.000.

SamSung Electronics Co., Ltd.: *See*—
Choi, Seung-lyul, 5,365,384, Cl. 360-72.200.
Harford, Jack R., 5,365,279, Cl. 348-678.000.
Jeong, Seong-ouk, 5,365,489, Cl. 365-230.030.
Ko, Jung-Wan; and Strolle, Christopher H., 5,365,281, Cl. 348-700.000.
Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Joong-Hyun; and Oh, Kyoung-Seok, 5,364,809, Cl. 437-52.000.
Lee, Chung G., 5,365,506, Cl. 369-75.200.

Sanada, Ryouichi: *See*—
Baba, Norimasa; Yamamoto, Ken; Yamamoto, Michiyasu; Sanada, Ryouichi; Torigoe, Eiichi; and Nakamura, Mitsugu, 5,363,910, Cl. 165-153.000.

Sanborn, Laura J.; Milam, Stanley N.; and Shiflett, Woodrow K., to Shell Oil Company. Hydrocarbon conversion process. 5,364,514, Cl. 208-58.000.

Sanchez, Jesse. Stove knob safety cap. 5,363,720, Cl. 74-553.000.

Sanders, James F.: *See*—
Fohrenkamm, Elsie A.; and Sanders, James F., 5,364,740, Cl. 430-294.000.

Sanderson, John R.; and Duranleau, Roger G., to Texaco Chemical Company. Use of supported chromium catalyst in the preparation of tertiary butyl alcohol from tertiary butyl hydroperoxide. 5,364,988, Cl. 568-909.800.

Sanderson, William R.: *See*—
Brown, Scott W.; Hackett, Anthony; King, Angela M.; Johnstone, Alexander; and Sanderson, William R., 5,364,982, Cl. 568-771.000.

Sandhu, Gurtej S.: *See*—
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., 5,364,187, Cl. 374-161.000.

Sandick, Haldon J.: *See*—
Derby, Jeffrey H.; Doeringer, Willibald A.; Drake, John E., Jr.; Dykeman, Douglas H.; Li, Liang; Peters, Marcia L.; Sandick, Haldon J.; and Vu, Ken Van, 5,365,523, Cl. 370-85.200.

Sandoz Ltd.: *See*—
Kissel, Thomas; Schrank, Henriette; and Hoffmann, Hans-Rainer, 5,364,628, Cl. 424-448.000.

Sands, William K., Jr., to APEX Microtechnology Corporation. Power operational amplifier having oscillation limiter and method therefor. 5,365,194, Cl. 330-253.000.

Sanford Redmond inc.: *See*—
Redmond, Sanford, 5,364,484, Cl. 156-250.000.

Sanghera, Jasbinder S.; Pureza, Pablo C.; and Aggarwal, Ishwar D., to United States of America, Navy. Plasma treatment of glass surfaces to remove carbon. 5,364,434, Cl. 65-30.100.

Saniez, Marie-Helene; and Serpelloni, Michel, to Roquette Freres. Process for manufacturing dairy products. 5,364,641, Cl. 426-34.000.

Sankyo Company Ltd.: *See*—
Laffan, David, 5,364,946, Cl. 549-407.000.
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Iijima, Yasuteru; Takahagi, Hidekuni; Kokubu, Tatsuo; and Hiwada, Kunio, 5,364,844, Cl. 514-18.000.

San Miguel, Frank J.: *See*—
Tilles, David J.; San Miguel, Frank J.; Grapes, Thomas F.; Deemer, Diane L.; Wakamiya, Stanley K.; Mullenix, James D.; Westerdale, Mark W.; and Bialik, David, 5,363,967, Cl. 209-539.000.

Sano, Hiroshi: *See*—
Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, 5,365,034, Cl. 219-121.830.

Santa Barbara Instrument Group, Inc.: *See*—
Holmes, Alan W.; and Iongmire, Mathew J., 5,365,269, Cl. 348-297.000.

Santa Barbara Research Center: *See*—
Myroszny k, James M., 5,365,088, Cl. 257-186.000.
Propst, Stephen H.; and Walter, Geoffrey A., 5,365,345, Cl. 359-359.000.

Santhanam, Anakkavur T.; Godse, Rajendra V.; Quinto, Dennis T.; Undercoffer, Kenneth E.; and Jindal, Prem C., to Kennametal Inc. CVD and PVD coated cutting tools. 5,364,209, Cl. 407-119.000.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, 5,364,533, Cl. 210-645.000.

Sanyo Chemical Industries, Ltd.: *See*—
Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.

Sanyo Electric Co., Ltd.: *See*—
Ito, Atsushi; and Okamoto, Yasuhiko, 5,365,209, Cl. 333-206.000.

SAR S.p.A.: *See*—
Mascitelli, Francesco; Bonelli, Enrico; and Donato, Berardinucci, 5,363,993, Cl. 222-321.000.

Sara Lee/DE N.V: *See*—
Kuhn, Petrus H. A. N., 5,364,027, Cl. 239-44.000.

Sargent, Charles L. Apparatus for clamping eyeglasses. 5,363,532, Cl. 15-268.000.

Sarkar, Arnab, to Cal-Optics, Inc. Methods of making optical waveguides. 5,364,430, Cl. 65-416.000.

Sarmast, Syed H.: *See*—
Sopko, Gary M.; Herbert, Gerald F.; and Sarmast, Syed H., 5,364,172, Cl. 301-37.420.

Sarrazin, Patrick; and Boitiaux, Jean-Paul, to Institut Francais Du Petrole. Process for the selective hydrogenation of hydrocarbons. 5,364,998, Cl. 585-259.000.

Sartaine, John J.: *See*—
Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.

SarTec Corporation: *See*—
Johnson, David M.; and McNeff, Larry C., 5,363,708, Cl. 73-865.800.

Sasa, Nobumasa: *See*—
Shimizu, Kunio; Sasa, Nobumasa; Watanabe, Manabu; Ide, Hiroshi; and Mayama, Shinya, 5,364,731, Cl. 430-143.000.

Sasaki, Goro, to Sumitomo Electric Industries, Ltd. Photodetector and opto-electronic integrated circuit with guard ring. 5,365,087, Cl. 257-184.000.

Sasaki, Kunihiko: *See*—
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Sasaki, Takayoshi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, 5,364,523, Cl. 205-128.000.

Sasaki, Toshiaki; and Shimizu, Hitoshi, to Fuji Electric Co., Ltd. Apparatus for manufacturing a thin-film photovoltaic conversion device. 5,364,481, Cl. 118-718.000.

Sato, Fumiki, to Mitsubishi Denki Kabushiki Kaisha. Divider for performing signed division using a redundant signed digit. 5,365,471, Cl. 364-746.200.

Sato, Heikichi; Kimura, Hitoshi; and Onodera, Osamu, to Sony Corporation. Magnetic head with shaped winding grooves. 5,365,392, Cl. 360-126.000.

Sato, Junko: *See*—
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.

Sato, Kenichi, to Fuji Photo Optical Co., Ltd. Lens system. 5,365,377, Cl. 359-718.000.

Sato, Kimihiko: *See*—
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.

Sato, Kiyotaka; and Togura, Kenji, to Clarion Co., Ltd. Method of producing a semiconductor laser. 5,365,537, Cl. 372-50.000.

Sato, Kozo: *See*—
Yamakawa, Katsuyoshi; Sato, Kozo; and Suginome, Takashi, 5,364,941, Cl. 546-114.000.

Sato, Motoaki: *See*—
Inoue, Makoto, deceased; Inoue, Tsuneo, heir; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,365,255, Cl. 347-45.000.

Sato, Motohiro: *See*—
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.

Sato, Naoki: *See*—
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

Sato, Nobuhiko, to Canon Kabushiki Kaisha. Method for forming crystals. 5,363,793, Cl. 117-2.000.

Sato, Shinichi: *See*—
Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, 5,364,676, Cl. 428-35.700.

Satoji, Fuminori; Hashimoto, Shoichi; Asai, Kuniaki; and Kobayashi, Tadayasu, to NTN Corporation; and Sumitomo Chemical Co., Ltd. Stripping fingers for copying machine. 5,364,670, Cl. 428-1.000.

Satou, Shoichi: *See*—
Imanara, Tohru; Satou, Shoichi; and Yamashita, Naomi, 5,364,584, Cl. 264-510.000.

Satterfield, Michael J.; Caramberis, Theodore C.; and Tharp, Glenn T., to Motorola, Inc. Cassette transporting apparatus. 5,364,144, Cl. 294-27.100.

Satterwhite, James R.; Horning, Sandra J.; Wyatt, Gerald A.; and Reisem, Daniel E., to Minnesota Mining and Manufacturing. Sensor array for circuit tracer. 5,365,163, Cl. 324-67.000.

Saucy, Francoise: *See*—
Loliger, Jurg; and Saucy, Francoise, 5,364,886, Cl. 514-772.000.

Sauer, Gale E., to Armstrong World Industries, Inc. Fire-rated drywall suspension system. 5,363,622, Cl. 52-506.070.

Saunders, Court A.: *See*—
Chappell, Joseph; Saunders, Court A.; Wolf, Fred R.; and Cuellar, Richard E., 5,365,017, Cl. 800-205.000.

Saunders, Dennis L.: *See*—
Gallup, Darrell L.; Kitz, Kevin R.; Obando, Manuel E.; Fenton, Donald M.; Peaden, Paul A.; Saunders, Dennis L.; and Kelly, Brian J., 5,364,439, Cl. 71-57.000.

Sausa, Rosario; Simeonsson, Josef; and Lemire, George, to United States of America, Army. Laser-based detection of nitro-containing compounds. 5,364,795, Cl. 436-106.000.

Sautter, Dietmar: *See*—
Speck, Norbert; Troster, Theodor; and Sautter, Dietmar, 5,363,681, Cl. 72-129.000.

Sauvage, Francis: *See*—
Gilles, Peru; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, 5,364,006, Cl. 228-4.100.

Savage, Donald V., to Bilanx Technology, Inc. Parallel beam force measurement apparatus having an optical light sensor means. 5,365,059, Cl. 250-231.100.

Saw, John C. B.; Cameron, Thomas P.; Suthers, Mark S.; Nisbet, John J.; and Tiller, Samuel A., to Northern Telecom Limited. Double mode surface wave resonators. 5,365,138, Cl. 310-313.00D.

Sawabe, James K.; and Youngborg, Lamont H., to General Electric Company. Water level measurement system. 5,365,555, Cl. 376-258.000.

Sawada, Masashi; and Takeuchi, Hiroaki, to Aisin Seiki Kabushiki Kaisha. Braking pressure control apparatus in a wheel slip control system. 5,364,176, Cl. 303-113.200.

Sawada, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having test mode and method of setting test mode. 5,365,481, Cl. 365-201.000.

Sawai, Kiichi: *See*—
Ogura, Shinji; Okada, Hiroshi; Uno, Shizuo; Iida, Takashi; Asai, Hiromoto; Kurono, Masayasu; and Sawai, Kiichi, 5,364,533, Cl. 210-645.000.

Sawano, Yoshiaki: *See*—
Iwashita, Kanau; Nishimoto, Yukimasa; Sawano, Yoshiaki; and Tsuchida, Tetsuo, 5,363,943, Cl. 188-72.500.

Sawicki, Richard H., to United States of America, Energy. Laser correcting mirror. 5,365,379, Cl. 359-846.000.

Sawyer, Thomas E.; and Hoback, James E., to T.V. Fanfare. Display card holder. 5,363,575, Cl. 40-308.000.

Saxton, John E.; Jennings, Michael L.; Bartlett, Jack F.; Dormer, James R.; and Massingberd-Mundy, Peter D. G., to Gilbarco Limited. Fuel dispenser controlled in dependence on an electrical signal from a gas detector of the dispenser. 5,363,988, Cl. 222-14.000.

Say, Jerome E.: *See*—
Rao, Pradip; King, David L.; Cooper, Michael D.; and Say, Jerome E., 5,365,010, Cl. 585-726.000.

Scapa Group, PLC: *See*—
Bowen, David, Jr.; and Smith, Gerald L., 5,364,692, Cl. 428-222.000.

Scarr, Robert F.: *See*—
Getz, Dale R.; Nardi, John C.; and Scarr, Robert F., 5,364,715, Cl. 429-229.000.

Schadt, Martin; and Seils, Frank, to Hoffmann-La Roche Inc. Halovinyl-derivatives. 5,364,556, Cl. 252-299.010.

Schaeffer, Howard J., III: *See*—
Kumar, Ranjit; Ritter, Ronald E.; and Schaeffer, Howard J., III, 5,364,516, Cl. 208-120.000.

Schafer-Sindlinger, Adolf: *See*—
Arntz, Dietrich; Haas, Thomas; and Schafer-Sindlinger, Adolf, 5,364,984, Cl. 568-862.000.

Schalk, Thomas B.: *See*—
Hunt, Alan K.; and Schalk, Thomas B., 5,365,574, Cl. 379-88.000.

Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., to Navistar International Transportation Corp. Electronic management system for heavy-duty trucks. 5,365,436, Cl. 364-424.030.

Schapira, Joseph; Cheminaud, Jean-Claude; Petitbon, Pascal; and Imbert, Dominique, to C F P I. Anti-clumping products, compositions containing the said products and treatments in which the said products are used. 5,364,440, Cl. 71-64.120.

Scharf, Curtis R., to Lubrizol Corporation, The. Lubricating compositions containing α-olefin polymers. 5,364,994, Cl. 585-3.000.

Schaub, Arthur, to Ascom Audiosys AG. Method for digitizing a band-limited, analog signal, analog-digital processing unit to implement the method, a method for digital filtering and a digital filter for its implementation. 5,365,233, Cl. 341-139.000.

Schaupp, John F.: *See*—
Cedoz, Roger T.; and Schaupp, John F., 5,364,033, Cl. 239-526.000.

Schaus, John M.: *See*—
Booher, Richard N.; Flaugh, Michael E.; Lawhorn, David E.; Paget, Charles J., Jr.; and Schaus, John M., 5,364,856, Cl. 514-253.000.

Scheele, Werner: *See*—
Poulsen, Knud J.; Scheele, Werner; and Jorgensen, Henning, 5,365,035, Cl. 219-137.0PS.

Scheffler, Robert G., to Magic Music Cassette Company. High speed recorded information duplicating equipment. 5,365,381, Cl. 360-15.000.

Scheible, Adolf, to Grass AG. Front adjustment for a panel with snap-on mechanism for a drawer. 5,364,181, Cl. 312-348.400.

Schempf, Hagen; and Albrecht, Brian, to Carnegie Mellon University. Reconfigurable mobile vehicle with magnetic tracks. 5,363,935, Cl. 180-9.100.

Schepky, Gottfried: *See*—
Gruber, Peter; Roth, Willy; and Schepky, Gottfried, 5,364,646, Cl. 424-464.000.

Schering Aktiengesellschaft: *See*—
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,364,614, Cl. 424-9.000.

Scheuerman, Robert. Apparatus for connecting pipe sections. 5,364,013, Cl. 228-212.000.

Schick, Herve, to Complications S.A. Bracelet, particularly watch bracelet. 5,363,640, Cl. 59-80.000.

Schieck, Richard A.; Kremers, Henry T.; and Gates, Douglas W., to Xerox Corporation. Tilting tray for feeding and stacking specialized forms. 5,364,087, Cl. 271-148.000.

Schielke, Rainer; Suhr, Holger; Wurdemann, Udo; and Heuer, Axel, to Linotype-Hell AG. Method and apparatus for setting the sharpness of an optical imaging system. 5,365,053, Cl. 250-201.700.

Schilling, Donald L., to InterDigital Technology Corporation. CDMA communications and geolocation system and method. 5,365,544, Cl. 375-1.000.

Schlecker, Hartmut: *See*—
Bulan, Andreas; Weber, Rainer; Muziol, Zbigniew; Schlecker, Hartmut; and Moretto, Hans-Heinrich, 5,364,507, Cl. 204-59.00F.

Schlegel, Gunter, to Hoechst Aktiengesellschaft. Processes for preparing sulfonylureas. 5,364,937, Cl. 544-194.000.

Schlitz, Franz: *See*—
Simon, Rudolf; Dryden, John C.; and Schlitz, Franz, 5,364,425, Cl. 55-385.200.

Schloegl, Gunter: *See*—
Murschall, Ursula; Speith, Angela; and Schloegl, Gunter, 5,364,704, Cl. 428-516.000.

Schlumberger Canada Limited: *See*—
Hartman, Marinus, 5,364,290, Cl. 439-517.000.

Schlumberger Industries: *See*—
Huang, Bao T., 5,363,704, Cl. 73-861.190.

Schlumberger Technology Corporation: *See*—
Moriarty, Keith A., 5,363,931, Cl. 175-325.500.

Schmaderer, Gerhard: *See*—
Hilke, Rainer; and Schmaderer, Gerhard, 5,364,490, Cl. 156-396.000.

Schmalstieg, Lutz: *See*—
Zwiener, Christian; Schmalstieg, Lutz; and Pedain, Josef, 5,364,955, Cl. 556-418.000.

Schmelzer, Richard A.; and Lambert, Trevor, to Cable Service Technologies, Inc. Method and apparatus for automatic insertion of a television signal from a remote source. 5,365,263, Cl. 348-9.000.

Schmid, Raimund; and Mronga, Norbert, to BASF Aktiengesellschaft. Luster pigments based on multiply coated plateletlike metalic substrates. 5,364,467, Cl. 106-404.000.

Schmidt, Douglas C., to Thermedics, Inc. Sonic ranging grade level controller. 5,365,442, Cl. 364-424.070.

Schmidt, George S., to General Electric Company. Digital taper/parallel gauge. 5,363,562, Cl. 33-567.100.

Schmidt, Manfred; Staudenmaier, Klaus; Schnee, Joachim; Mannsdoerfer, Walter; and Weber, Volker, to International Business Machines Corporation. Transparent plate-shaped component having a stepped edge totally surrounded by a seal. 5,364,673, Cl. 428-34.000.

Schmidt, Oskar: *See*—
Kirchner, Juergen; Schmidt, Oskar; Grossmann, Klaus; Rademacher, Wilhelm; Hepp, Michael; and Zierke, Thomas, 5,364,834, Cl. 504-319.000.

Schmitt, Karl R.; and Pherigo, Douglas E., to Textron Inc. Snap-fit right angle adjustor mechanism. 5,365,415, Cl. 362-66.000.

Schmitt, Thomas P., Jr.: *See*—
Willits, William G.; and Schmitt, Thomas P., Jr., 5,364,269, Cl. 433-178.000.

Schmitt-Willich, Heribert: *See*—
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,364,614, Cl. 424-9.000.

Schnee, Joachim: *See*—
Schmidt, Manfred; Staudenmaier, Klaus; Schnee, Joachim; Mannsdoerfer, Walter; and Weber, Volker, 5,364,673, Cl. 428-34.000.

Schneider, James S.: *See*—
Acharya, Arun; Gottzmann, Christian F.; Lockett, Michael J.; Schneider, James S.; Victor, Richard A.; and Zawierucha, Robert, 5,363,909, Cl. 165-111.000.

Schneider, John K.; Keeney, Frank W.; Leszczynski, Nicholas G.; and Weppner, Benjamin H., to North Coast Electronics, Inc. Appliance control system and method. 5,365,154, Cl. 318-103.000.

Schneider, Steven E.; Rogers, Rick L.; and Gardner, Eric E., to GenCorp Inc. Vehicle window weather seal retaining clip. 5,363,537, Cl. 24-289.000.

Schneider (USA) Inc.: *See*—
Aase, Brenda L., 5,364,357, Cl. 604-96.000.

Scholkens, Bernward: *See*—
Englert, Heinrich C.; Klaus, Erik; Mania, Dieter; and Scholkens, Bernward, 5,364,878, Cl. 514-422.000.

Scholtz, Arpad-Luwdig: *See*—
Rasinger, Josef; Scholtz, Arpad-Luwdig; and Bonek, Ernst, 5,365,246, Cl. 343-702.000.

Scholz, Thomas: *See*—
Weber, Georg; Scholz, Thomas; and Vollmann, Norbert C., 5,365,393, Cl. 360-132.000.

Scholz, Wolfgang: *See*—
Englert, Heinrich; Mania, Dieter; Lang, Hans-Jochen; Scholz, Wolfgang; Linz, Wolfgang; and Albus, Udo, 5,364,868, Cl. 514-331.000.

Schorr, Gordon R.: *See*—
Bauer, Richard G.; Burlett, Donald J.; Miller, Joseph W., Jr.; Schorr, Gordon R.; and Bapat, Pradeep M., 5,364,905, Cl. 525-53.000.

Schott Glaswerke: *See*—
Noky, Werner, 5,364,573, Cl. 264-40.100.

Schotter, Daniel K.: *See*—
Bailey, Wilbur M.; Hulderman, George H.; and Schotter, Daniel K., 5,364,489, Cl. 156-356.000.

Schowalter, Leo: *See*—
Fathauer, Robert W.; and Schowalter, Leo, 5,365,054, Cl. 250-214.100.

Schrank, Henriette: *See*—
Kissel, Thomas; Schrank, Henriette; and Hoffmann, Hans-Rainer, 5,364,628, Cl. 424-448.000.

Schreck, John F., to Texas Instruments Incorporated. Method and circuitry for refreshing a flash electrically erasable, programmable read only memory. 5,365,486, Cl. 365-222.000.

Schreiber, Christopher M.: *See*—
Crumly, William R.; Schreiber, Christopher M.; and Feigenbaum, Haim, 5,364,277, Cl. 439-67.000.

Schreiber, Harald, to Siemens Aktiengesellschaft. Switching DC converter. 5,365,419, Cl. 363-16.000.

Schrezenmeir, Jurgen. Process for the continuous and discontinuous administration of insulin to the human body. 5,364,346, Cl. 604-50.000.

Schroder, Hartmut: *See*—
Kaesdorf, Stefan; and Schroder, Hartmut, 5,365,063, Cl. 250-288.000.

Schroeder, Fred G.: *See*—
Hartsock, Dale L.; Caverly, John C.; Schroeder, Fred G.; Anderson, Claudia M.; and Breuhan, Ronald G., 5,364,131, Cl. 285-23.000.

Schroeder, Ronald. Hand held cordless electric saw with endless blade in "U"-frame. 5,363,558, Cl. 30-380.000.

Schuchman, Leonard; Bruno, Ronald; Rennard, Robert; and Moses, Charles, to Stanford Telecommunications, Inc. Hybrid GPS/data line unit for rapid, precise, and robust position determination. 5,365,450, Cl. 364-449.000.

Schuhmann-Giampieri, Gabriele: *See*—
Platzek, Johannes; Schmitt-Willich, Heribert; Gries, Heinz; Schuhmann-Giampieri, Gabriele; Vogler, Hubert; Weinmann, Hanns-Joachim; and Bauer, Hans, 5,364,614, Cl. 424-9.000.

Schuller, Klaus: *See*—
Eichholz, Raimund; and Schuller, Klaus, 5,363,717, Cl. 74-493.000.

Schulte, Steven M.: *See*—
Heyns, Garrett J.; McClure, Terry R.; Nicholl, Hugh; Read, Peter H.; Schulte, Steven M.; and Tabrizi, Mohammad F., 5,364,472, Cl. 134-7.000.

Schultz, Dieter, to Henke-Sass, Wolf GmbH. Front syringe attachment for hypodermic syringes for subcutaneous injection in veterinary medicine. 5,364,362, Cl. 604-115.000.

Schultz, Glen R., to Pioneering Concepts Incorporated. 17acuation system with universal lid for rigid containers. 5,364,241, Cl. 417-442.000.

Schultze-Kraft, Andreas. Artificial stones. 5,364,672, Cl. 428-15.000.

Schwab, Debra L.: *See*—
Mach, Patrick A.; Hesselroth, Karen E.; Adams, Carl A.; and Schwab, Debra L., 5,364,766, Cl. 435-34.000.

Schwartz, David H.: *See*—
Williams, Jerry G.; Monib, Monib M.; Salama, Mamdouh M.; Schwartz, David H.; and Dew, Edward G., 5,363,929, Cl. 175-107.000.

Schwarz, Lothar; and Kuntz, Guenther, to BASF Magnetics GmbH. Filter apparatus including filter cartridges and an inpermeable film bag. 5,364,528, Cl. 210-323.200.

Schwarz, Max; Grutze, Joachim; Hildebrand, Dietrich; Wolff, Joachim; and Stohr, Frank-Michael, to Bayer Aktiengesellschaft. Reactive dyestuff mixtures. 5,364,416, Cl. 8-549.000.

Schweckendiek, Jurgen: *See*—
Stiehl, Hans-H.; and Schweckendiek, Jurgen, 5,364,600, Cl. 422-186.070.

Schweer, Rainer: *See*—
Correa, Carlos; and Schweer, Rainer, 5,365,273, Cl. 348-452.000.

Schweitzer, Edmund O., III: *See*—
Roberts, Jeffrey B.; and Schweitzer, Edmund O., III, 5,365,396, Cl. 361-80.000.

Schweitzer Engineering Laboratories, Inc.: *See*—
Roberts, Jeffrey B.; and Schweitzer, Edmund O., III, 5,365,396, Cl. 361-80.000.

Sciuto, George J., to Emerson Electric Co. Filter drier and method of filtering a fluid stream. 5,364,540, Cl. 210-806.000.

Scully Signal Company: *See*—
Cadman, Gary R., 5,365,420, Cl. 363-50.000.

Seagate Technology, Inc.: *See*—
Jabbari, Iraj; and Tafreshi, Shahriar A., 5,365,389, Cl. 360-105.000.

Sebag, Henri; and Mahieu, Claude, to L'Oreal. Alkylthiopoly (ethylimidazolium) compounds, process for preparing them and their use as biocidal agents. 5,364,625, Cl. 424-401.000.

Sebek, Robert M., to Sebek, Robert M. Skill building apparatus for basketball players. 5,364,091, Cl. 273-1.50A.

Sechrist, Paul A.: *See*—
Lomas, David A.; Sechrist, Paul A.; and Haun, Edward C., 5,364,515, Cl. 208-113.000.

Sefton, Mark S.: *See*—
Choate, Martin T.; McGrail, Patrick; Sefton, Mark S.; and Carter, Jeffrey T., 5,364,914, Cl. 525-505.000.

Seifert, James J.: *See*—
Mooberry, Jared B.; Singer, Stephen P.; Seifert, James J.; Ross, Robert J.; and Kapp, Daniel L., 5,364,745, Cl. 430-359.000.

Seiko Epson Corporation: *See*—
Kodaira, Toshimoto; Oshima, Hiroyuki; and Mano, Toshihiko, 5,365,079, Cl. 257-59.000.
Minowa, Masahiro; Kobayashi, Naoki; Nakajima, Satoshi; and Furuhata, Tadashi, 5,365,257, Cl. 346-76.0PH.
Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, 5,365,261, Cl. 347-103.000.

Seiko Instruments Inc.: *See*—
Kasuga, Masao; Inoue, Tatsunori; Hirotomi, Jun; and Kitamura, Hiroshi, 5,365,139, Cl. 310-316.000.

Seikosha Co., Ltd.: *See*—
Seki, Yoichi; and Saito, Hiroyuki, 5,365,305, Cl. 354-484.000.

Seiler, Werner: *See*—
Manser, Josef; Friedrich, Egger; Seiler, Werner; and Resch, Heinz, 5,364,651, Cl. 426-451.000.

Seils, Frank: *See*—
Schadt, Martin; and Seils, Frank, 5,364,556, Cl. 252-299.010.

Seino, Kazuyuki: *See*—
Nishimura, Takashi; Seino, Kazuyuki; and Kamohara, Eiji, 5,365,142, Cl. 313-2.100.
Nishimura, Takashi; Seino, Kazuyuki; and Kamohara, Eiji, 5,365,143, Cl. 313-402.000.

Sekhar, Jainagesh A., to Moltech Invent S.A. Composite electrode for electrochemical processing having improved high temperature properties and method for preparation by combustion synthesis. 5,364,442, Cl. 75-229.000.

Sekhar, Jainagesh A.; and de Nora, Vittorio, to Moltech Invent S.A. Electrochemical cell component or other material having oxidation preventive coating. 5,364,513, Cl. 204-243.00R.

Seki, Akinori, to Toyota Jidosha Kabushiki Kaisha. Semiconductor laser. 5,365,536, Cl. 372-45.000.

Seki, Eiji; Aoyama, Hirokazu; Nakada, Tatsuo; and Koyama, Satoshi, to Daikin Industries, Ltd. Preparation of 1,1,1,4,4,4-hexafluorobutane. 5,364,991, Cl. 570-175.000.

Seki, Mitsuaki: *See*—
Ayata, Naoki; Yamamura, Mitsugu; Hamasaki, Bunei; Kosugi, Masao; Takahashi, Kazuo; and Seki, Mitsuaki, 5,365,342, Cl. 356-401.000.

Seki, Yasuyuki: *See*—
Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.

Seki, Yoichi; and Saito, Hiroyuki, to Seikosha Co., Ltd. Power supply control circuit for a display of a camera. 5,365,305, Cl. 354-484.000.

Seki, Yoshio; Tokoi, Masaki; Ishizu, Atsushi; and Miki, Yoichiro, to Matsushita Electric Industrial Co., Ltd. Video signal converting apparatus with reduced processing for aliasing interference. 5,365,274, Cl. 348-458.000.

Sekiguchi, Yoshi. Process for producing a display with moveable images. 5,364,274, Cl. 434-365.000.

Sekine, Teruyuki: *See*—
Kanada, Hiroshi; Nishizaki, Katsumi; Murakami, Masahiro; Sekine, Teruyuki; Seki, Yasuyuki; Echizenya, Kazuhiko; and Hidaka, Yusei, 5,363,795, Cl. 117-13.000.

Sekiya, Yasuhisa: *See*—
Kitajima, Masato; Soma, Shinji; Kamiya, Akimitsu; Suzuki, Akira; Sekiya, Yasuhisa; and Inagaki, Tomohiro, 5,364,422, Cl. 51-307.000.

Sekiyama, Nobuya: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Kawai, Tsuneo; and Kato, Yoshiki, 5,364,655, Cl. 427-129.000.

Sell, Anthony, to Spartus Corporation. Clock with lid-activated snooze alarm. 5,365,499, Cl. 368-262.000.

Sell, Leslie J., to Ingersoll-Rand Company. Free-chain device for a lever hoist. 5,364,073, Cl. 254-369.000.

Sematech, Inc.: *See*—
Carpio, Ronald A., 5,364,510, Cl. 204-153.100.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 5,364,835, Cl. 505-461.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,365,081, Cl. 257-67.000.

Senda, Atsuo; Morita, Kazuhiro; and Takano, Yoshihiko, to Murata Manufacturing Co., Ltd. Electroless plating solution. 5,364,459, Cl. 106-122.000.

Sendziak, Walter, to Gexco Ent. a division of Tennis Ball Saver, Inc. Self-adhesive wrap-on grip for sports racquets and other equipment handles. 5,364,677, Cl. 428-40.000.

Senoo, Hideaki: *See*—
Idei, Kouji; and Senoo, Hideaki, 5,364,702, Cl. 428-423.100.

Sens, Ruediger: *See*—
Etzbach, Karl-Heinz; Sens, Ruediger; and Killburg, Heike, 5,364,919, Cl. 526-265.000.

Sentry Equipment Corp.: *See*—
Henszey, Richard R.; and Weiss, Bruce, 5,363,874, Cl. 137-14.000.

Serac France: *See*—
Graffin, Andre , 5,363,629, Cl. 53-329.300.

Sereboff, Aaron P. Moisture absorbing and frictional grip enhancing composition and method of forming same. 5,364,464, Cl. 106-36.000.

Serita, Yasuaki: *See*—
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.

Serpelloni, Michel: *See*—
Saniez, Marie-Helene; and Serpelloni, Michel, 5,364,641, Cl. 426-34.000.

Serrand, Willibald, to Exxon Research and Engineering Company. Process and apparatus for dehydrogenating alkanes. 5,365,006, Cl. 585-501.000.

Serro, Tony. Personal bird perch. 5,363,803, Cl. 119-26.000.

Servoz, Serge: *See*—
Cottet, Jacques; and Servoz, Serge, 5,363,551, Cl. 29-837.000.

Seta, Katsuhiro; and Hara, Hiroyuki, to Kabushiki Kaisha Toshiba. BiCMOS logic circuit. 5,365,124, Cl. 326-110.000.

Seto, Kunio; Tanaka, Kensaku; Taniguchi, Yukari; and Kato, Takahiro, to Canon Kabushiki Kaisha. Method and system of converting delineative pattern. 5,365,599, Cl. 382-22.000.

Seto, Norio, to Osada Research Institute, Ltd. Power transmission device. 5,363,711, Cl. 74-25.000.

Seven, Ltd.: *See*—
Crawford, Danny E.; Hall, Gene A.; Jendro, Dennis A.; Rolph, Dennis P.; Nelson, Danny L.; Elst, Paul D.; Erlandson, Gregory E.; Mowry, Jack T.; Neiss, Robert L.; Loebig, Craig K.; and Helms, Richard A., 5,363,987, Cl. 221-195.000.

Sevier, Richard W., to Hendry Mechanical Works. Rigid supporting structures. 5,363,613, Cl. 52-263.000.

Sewell, Frank, Jr. Laparoscopic surgical staple. 5,364,406, Cl. 606-138.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Slemmer, William C.; and Doyle, Bruce A., 5,365,129, Cl. 327-65.000.

SGS-Thomson Microelectronics S.r.l.: *See*—
Botti, Edoardo; and Brasca, Guido, 5,365,188, Cl. 330-51.000.
Zuffada, Maurizio; Vai, Gianfranco; Gregori, Marco; Moloney, David; and Betti, Giorgio, 5,365,193, Cl. 330-253.000.

SGS-Thomson Microelectronics S.A.: *See*—
Pezzani, Robert, 5,365,086, Cl. 257-157.000.

Shaber, Steven H.; and Flynn, Katherine E., to Rohm and Haas Company. Fungicidal (2-aryl-2-substituted)ethyl-1,2,4-triazoles. 5,364,870, Cl. 514-340.000.

Shah, Pradeep L.: *See*—
Gill, Manzur; Shah, Pradeep L.; and McElroy, Dave J., 5,365,082, Cl. 257-374.000.

Shah, Shrenik K.: *See*—
Doherty, James B.; Firestone, Raymond A.; Finke, Paul E.; Hagmann, William K.; Shah, Shrenik K.; and Thompson, Kevan R., 5,364,848, Cl. 514-201.000.

Shah, Suresh D.: *See*—
Hlavaty, David G.; Shah, Suresh D.; and Compeau, David E., 5,364,252, Cl. 425-3.000.

Shah, Uresh S.: *See*—
Failli, Amedeo A.; Kreft, Anthony F., III; Musser, John H.; Banker, Annette L.; Nelson, James A.; Shah, Uresh S.; and Kubrak, Dennis M., 5,364,944, Cl. 548-341.100.

Shamayeli, Khalil: *See*—
Merz, Thomas; Shamayeli, Khalil; and Kuhlmann, Werner, 5,364,552, Cl. 252-174.220.

Shander, Douglas: *See*—
Ahluwalia, Gurpreet S.; and Shander, Douglas, 5,364,885, Cl. 514-563.000.

Shank, Thomas J., to Robotron Corporation. Induction heating coil for bonding metal sheets. 5,365,041, Cl. 219-633.000.

Sharifi, Fred: *See*—
Dynes, Robert C.; Hartford, Elliot H., Jr.; Hellman, Eric S.; Pargellis, Andrew N.; and Sharifi, Fred, 5,364,836, Cl. 505-190.000.

Sharkawy, Ahmed, to Advanced Cardiovascular Systems, Inc. Flow monitor and vascular access system with continuously variable frequency control. 5,363,852, Cl. 128-662.050.

Sharp Kabushiki Kaisha: *See*—
Abumi, Takao, 5,365,346, Cl. 348-708.000.
Fuji, Hiroshi; Yamaguchi, Takeshi; and Deguchi, Toshihisa, 5,365,501, Cl. 369-13.000.
Fuji, Hiroshi, 5,365,505, Cl. 369-59.000.
Fuji, Hiroshi; and Iwaki, Takashi, 5,365,507, Cl. 369-116.000.
Hirashima, Hiroyuki, 5,365,250, Cl. 345-94.000.
Matsumoto, Toshio; Yasuda, Shuhei; Kusada, Tokutarou; and Nagashima, Nobuyoshi, 5,365,284, Cl. 348-793.000.
Taniguchi, Kouji, 5,365,096, Cl. 257-296.000.

Shashin Kagaku Co., Ltd.: *See*—
Yoshimoto, Katsunobu; Hatta, Masayoshi; and Kumondai, Toshio, 5,363,777, Cl. 110-214.000.

Shaulis, John E., to Vinylex Corporation. Coaxial drive cable centering apparatus. 5,364,307, Cl. 464-52.000.

Shear, Victor H., to Electronic Publishing Resources Inc. Database usage metering and protection system and method. 5,365,584, Cl. 380-4.000.

Sheiham, Ivan; and Templey, Margaret P., to Wiggins Teape Group Limited, The. Record material using vinyl carbinol color formers. 5,364,830, Cl. 503-224.000.

Shekleton, Jack R.; and Treece, William D., to Sundstrand Corporation. Annular combustor. 5,363,644, Cl. 60-39.360.

Sheldahl, Inc.: *See—*
Swisher, Richard L., 5,364,707, Cl. 428-612.000.
Shell Oil Company: *See—*
Arnoldy, Peter; and Kremers, Antoon P. M., 5,364,957, Cl. 560-207.000.
Cowan, Kenneth M.; and Hale, Arthur H., 5,363,918, Cl. 166-295.000.
De Boer, Eric J. M.; Hage, Fred F.; Van Der Huizen, Adriaan A.; and Willis, Carl L., 5,364,911, Cl. 525-333.700.
Drent, Eit; and Kragtwijk, Eric, 5,364,970, Cl. 568-454.000.
Kemp, Richard A., 5,364,826, Cl. 502-315.000.
Sanborn, Laura J.; Milam, Stanley N.; and Shiflett, Woodrow K., 5,364,514, Cl. 208-58.000.
Shen, Wen-Chang, to Mei Shual Cosmetics Co., Ltd. Combined cosmetic case and picture stand. 5,363,969, Cl. 206-581.000.
Shepherd, Charles G., to Metagal North America Ltd. Spring-loaded bracket. 5,364,058, Cl. 248-479.000.
Sherman, Michael C.: *See—*
Lowery, Gary; Sherman, Michael C.; Ray, Eddie F., III; and Coates, Bradley J., 5,364,399, Cl. 606-69.000.
Shershin, Ann M.: *See—*
Latimer, Margaret G.; Matthews, Billie J.; and Shershin, Ann M., 5,364,382, Cl. 604-378.000.
Sherwin-Williams Company, The: *See—*
Cai, Rubing; and Yokoyama, Thomas W., 5,364,945, Cl. 549-253.000.
Shiau, David W.; Detlefsen, William D.; and Phillips, Earl K., to Borden, Inc. Resorcinol-glutaraldehyde resin as an accelerator for curing phenol-formaldehyde resins. 5,364,902, Cl. 524-541.000.
Shibata, Chiyoji; and Nakamura, Minoru, to Hitec Co., Ltd. Apparatus for manufacturing hams or the like. 5,364,302, Cl. 452-174.000.
Shibata, Masaharu, to Funai Electric Co., Ltd. Driving mechanism for kneading blade of a bread production device. 5,364,183, Cl. 366-98.000.
Shibata, Yoji; and Takizawa, Masaaki, to Hitachi, Ltd. Multipoint teleconference system employing communication channels set in ring configuration. 5,365,265, Cl. 348-15.000.
Shibata, Yukio: *See—*
Oishi, Masafumi; Nishimoto, Hiroshi; Ando, Takao; Shibata, Yukio; Okamoto, Toshiaki; and Gohda, Katsura, 5,364,908, Cl. 525-64.000.
Shiflett, Woodrow K.: *See—*
Sanborn, Laura J.; Milam, Stanley N.; and Shiflett, Woodrow K., 5,364,514, Cl. 208-58.000.
Shigematsu, Nobuharu: *See—*
Takase, Shigehiro; Hatanaka, Hiroshi; Ezaki, Masami; Tsujii, Eisaku; Okamoto, Masanori; Shigematsu, Nobuharu; and Okuhara, Masakuni, 5,364,624, Cl. 424-117.000.
Shigemitsu, Minoru: *See—*
Shimizu, Toshihide; and Shigemitsu, Minoru, 5,364,466, Cl. 106-162.000.
Shih, Fu-Yih: *See—*
Shih, Kelvin; and Shih, Fu-Yih, 5,365,201, Cl. 330-298.000.
Shih, Kelvin; and Shih, Fu-Yih. Power supply interruption circuit for an audio power amplifier. 5,365,201, Cl. 330-298.000.
Shihabi, David S.: *See—*
Chang, Clarence D.; Chu, Cynthia T.-W.; Degnan, Thomas F.; Rodewald, Paul G.; and Shihabi, David S., 5,365,003, Cl. 585-470.000.
Shiina, Masaru, to Asahi Glass Company Ltd. Glass antenna for a telephone of an automobile. 5,365,242, Cl. 343-713.000.
Shikoku Kakoki Co., Ltd.: *See—*
Ueda, Michio; Kondo, Yoshihito; and Umazume, Hiroaki, 5,363,753, Cl. 99-453.000.
Shimada, Atsushi: *See—*
Nishimura, Hiroyuki; Fujinoki, Akira; Matsuya, Toshikatsu; Inaki, Kyoichi; Kato, Toshiyuki; and Shimada, Atsushi, 5,364,433, Cl. 65-17.400.
Shimada, Keizo: *See—*
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.
Shimada, Makoto: *See—*
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,364,321, Cl. 477-42.000.
Shimamoto, Noboru: *See—*
Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, 5,364,676, Cl. 428-35.700.
Shimamoto, Takeshi: *See—*
Murata, Kazuyuki; and Shimamoto, Takeshi, 5,365,258, Cl. 346-108.000.
Shimane, Kazuo: *See—*
Tanaka, Shigeru; Tadakuma, Susumu; and Shimane, Kazuo, 5,365,158, Cl. 318-806.000.
Shimano Inc.: *See—*
Hitomi, Yasuhiro, 5,364,041, Cl. 242-242.000.
Okajima, Shinpei, 5,363,526, Cl. 12-133.00B.
Shimansky, David. Mobility aid for physically disabled people. 5,364,120, Cl. 280-650.000.
Shimazaki, Yuzuru: *See—*
Kumasaka, Takao; Shimazaki, Yuzuru; Miyasaka, Toru; and Otome, Yukio, 5,365,325, Cl. 355-326.000.
Shimer, Christine R., to Safe-Strap Company, Inc. Infant highchair. 5,364,137, Cl. 297-327.000.
Shimizu, Hiroyuki: *See—*
Ito, Kenji; Shimizu, Hiroyuki; and Hino, Seigo, 5,365,208, Cl. 333-204.000.
Shimizu, Hitoshi: *See—*
Sasaki, Toshiaki; and Shimizu, Hitoshi, 5,364,481, Cl. 118-718.000.
Shimizu, Kunio; Sasa, Nobumasa; Watanabe, Manabu; Ide, Hiroshi; and Mayama, Shinya, to Konica Corporation; and Mitsubishi Kasei Corporation. Multi-color transfer image forming method to form color proofs. 5,364,731, Cl. 430-143.000.
Shimizu, Takashi: *See—*
Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,365,452, Cl. 364-468.000.
Shimizu, Toshihide; and Shigemitsu, Minoru, to Shin-Etsu Chemical Co., Ltd. Polymer scale preventive agent, polymerization vessel effective in preventing polymer scale deposition, and process of producing polymer using said vessel. 5,364,466, Cl. 106-162.000.
Shimizu, Yo: *See—*
Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, 5,363,797, Cl. 117-68.000.
Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; Miura, Kimiyoshi; Tominari, Kenichi; and Kanezawa, Akio, 5,364,926, Cl. 528-198.000.
Shimohigashi, Katsuhiro; Masuda, Hiroo; Ikuzaki, Kunihiko; and Kawamoto, Hiroshi, to Hitachi, Ltd. Semiconductor memory. 5,365,478, Cl. 365-189.010.
Shimokawa, Kenji: *See—*
Minami, Takeshi; Shimokawa, Kenji; Hamato, Kazuhiko; Shiroto, Yoshimi; and Yoneda, Noriyuki, 5,364,963, Cl. 562-519.000.
Shimoyama, Hiroshi: *See—*
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.
Shimura, Yukihiro: *See—*
Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.
Shin-Etsu Chemical Co., Ltd.: *See—*
Aoki, Shunji; and Hara, Yasuaki, 5,364,888, Cl. 522-31.000.
Shimizu, Toshihide; and Shigemitsu, Minoru, 5,364,466, Cl. 106-162.000.
Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, 5,364,676, Cl. 428-35.700.
Shin-Etsu Quartz Products Company Limited: *See—*
Nishimura, Hiroyuki; Fujinoki, Akira; Matsuya, Toshikatsu; Inaki, Kyoichi; Kato, Toshiyuki; and Shimada, Atsushi, 5,364,433, Cl. 65-17.400.
Shin, Joong-Hyun: *See—*
Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Joong-Hyun; and Oh, Kyoung-Seok, 5,364,809, Cl. 437-52.000.
Shinbori, Hiroichi: *See—*
Shiomi, Tsutomu; and Shinbori, Hiroichi, 5,365,150, Cl. 315-209.00R.
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, to Canon Kabushiki Kaisha. Ferroelectric chiral smectic liquid crystal composition and liquid crystal device using same. 5,364,559, Cl. 252-299.600.
Shinko Electric Co., Ltd.: *See—*
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.
Shinko Electric Industries, Co., Lt.: *See—*
Kuraishi, Fumio; Wada, Norio; and Uchida, Hirofumi, 5,365,107, Cl. 257-673.000.
Shinmaywa Industries, Ltd.: *See—*
Maeda, Iwao, 5,365,291, Cl. 354-74.000.
Shinohara, Kibatsu; Obara, Kozo; and Umezawa, Tsuku, to Nichimen Kabushiki Kaisha; and Nihon Kosyuha Kabushiki Kaisha. Plasma stabilizing apparatus employing feedback controls. 5,365,147, Cl. 315-111.210.
Shinozaki, Kiminori: *See—*
Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, 5,365,521, Cl. 370-60.000.
Shiomi, Michio: *See—*
Katsumata, Ryoichi; Ohshiro, Takashi; Yokoi, Haruhiko; and Shiomi, Michio, 5,364,775, Cl. 435-107.000.
Shiomi, Tsutomu; and Shinbori, Hiroichi, to Matsushita Electric Works, Ltd. Inverter device having load voltage detection function. 5,365,150, Cl. 315-209.00R.
Shirai, Tomoyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Relative velocity sensing device. 5,365,060, Cl. 250-231.160.
Shirai, Yuuji: *See—*
Hatada, Toshio; Ohashi, Shigeo; Nakajima, Tadakatsu; Kuwahara, Heikichi; Matsushima, Hitoshi; Sato, Motohiro; Inouye, Hiroshi; Ohba, Takao; Yamagiwa, Akira; Otsuka, Kanji; and Shirai, Yuuji, 5,365,402, Cl. 361-699.000.
Shirakawa, Shinji: *See—*
Toyofuku, Katsuyuki; Nagamatsu, Ichiro; Shirakawa, Shinji; Iga, Hiroto; Kujiraoka, Takeshi; and Murakami, Kensei, 5,364,706, Cl. 428-607.000.

Shirose, Meizo: *See—*
Kojima, Haruji; Abe, Tsugio; Shoji, Toru; and Shirose, Meizo, 5,364,730, Cl. 430-137.000.
Shiroto, Yoshimi: *See—*
Minami, Takeshi; Shimokawa, Kenji; Hamato, Kazuhiko; Shiroto, Yoshimi; and Yoneda, Noriyuki, 5,364,963, Cl. 562-519.000.
Shishido, Osamu; Arai, Satoshi; Tomaru, Yuugo; and Nagayama, Eiji, to Amano Corporation. Dust scattering prevention device in floor polisher. 5,363,600, Cl. 451-397.000.
Shiu-Etsu Chemical Co., Ltd.: *See—*
Sakurada, Toyohisa; Suzuki, Hiroshi; and Saguchi, Ryuichi, 5,364,969, Cl. 568-421.000.
Shoji, Toru: *See—*
Kojima, Haruji; Abe, Tsugio; Shoji, Toru; and Shirose, Meizo, 5,364,730, Cl. 430-137.000.
Shono, Tomofumi; Ohnishi, Teruhito; and Fukumoto, Masanori, to Matsushita Electric Industrial Co., Ltd. Semiconductor memory device and process. 5,365,095, Cl. 257-295.000.
Showa Shell Sekiyu Kabushiki Kaisha: *See—*
Isozaki, Tadaaki; Mogamiya, Hiroyuki; Aihara, Yoshihiko; and Hagiwara, Takashi, 5,364,561, Cl. 252-299.650.
Shuto, Akira: *See—*
Kisida, Hiroei; Shuto, Akira; Sakamoto, Noriyasu; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,364,966, Cl. 564-190.000.
Sisto, Yoichi: *See—*
Kurachi, Yasuo; Yaegashi, Kaoru; Sisto, Yoichi; Wada, Yoshihiro; and Nakajima, Akihisa, 5,364,751, Cl. 430-527.000.
Sieburth, John M.: *See—*
Johnson, Kenneth M.; and Sieburth, John M., 5,364,594, Cl. 422-90.000.
Siedlecki, Tadeusz J., to Ford Motor Company. Reinforced cargo door assembly. 5,364,157, Cl. 296-146.600.
Sieg, Christopher. Test sample changer. 5,363,973, Cl. 211-41.000.
Siegel, John H.; and Nikias, Chrysostomos L., to University of Maryland, The. Advanced signal processing methodology for the detection, localization and quantification of acute myocardial ischemia. 5,365,426, Cl. 364-413.060.
Siekmann, James M., to Carter Automotive Company, Inc. Fuel pump assembly. 5,363,827, Cl. 123-509.000.
Siemens Aktiengesellschaft: *See—*
Bachhuber, Anton, 5,365,225, Cl. 340-825.310.
Franetzki, Manfred; and Wohlgemuth, Juergen, 5,364,227, Cl. 415-35.000.
Hoenlein, Wolfgang; and Lehmann, Volker, 5,365,405, Cl. 361-766.000.
Karmann, Klaus-Peter, 5,365,603, Cl. 382-48.000.
Lippert, Hans-Joachim; and Meier, Werner, 5,365,558, Cl. 376-445.000.
Maas, Michael, 5,365,566, Cl. 378-150.000.
Machui, Jurgen; and Ruile, Werner, 5,365,206, Cl. 333-195.000.
Meseth, Johann, 5,365,557, Cl. 376-439.000.
Noll, Bernd; Ebberg, Alfred; and Noe, Reinhold, 5,365,361, Cl. 359-161.000.
Rasinger, Josef; Scholtz, Arpad-Luwdig; and Bonek, Ernst, 5,365,246, Cl. 343-702.000.
Schreiber, Harald, 5,365,419, Cl. 363-16.000.
Sklebitz, Hartmut; Mattern, Detlef; and Hoheisel, Martin, 5,365,056, Cl. 250-214.0VT.
Stein, Karl-Ulrich, 5,365,358, Cl. 359-117.000.
von Gentzkow, Wolfgang; Huber, Juergen; Rogler, Wolfgang; and Wilhelm, Dieter, 5,364,893, Cl. 523-429.000.
Siemens Nixdorf Informationssysteme Aktiegesellschaft: *See—*
Baitz, Gunter; and Burchart, Joachim, 5,364,196, Cl. 400-691.000.
Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
Manzer, Hans, 5,364,089, Cl. 271-177.000.
Siemers, Paul A.: *See—*
Banholzer, William F.; Anthony, Thomas R.; Gilmore, Robert S.; Siemers, Paul A.; and McCloskey, John C., 5,363,556, Cl. 29-890.142.
Sierra Line Products, Inc.: *See—*
Kaiser, Robert, 5,364,154, Cl. 296-100.000.
Sieving, Paul F.; Watson, Alan D.; Quay, Steven C.; and Rocklage, Scott M. Polychelants containing macrocyclic chelant moieties. 5,364,613, Cl. 424-9.000.
Sigafus, Paul E., to Honeywell Inc. Fail-safe condition sensing circuit. 5,365,223, Cl. 340-693.000.
Sihon, Tanas M., to Chrysler Corporation. Sealing gasket with hard interior backbone and integral crush limiters. 5,364,109, Cl. 277-9.000.
Silva, Rafael E. Parallel laryngoscope with access opening. 5,363,840, Cl. 128-11.000.
silvretta-sherpes Sportartikel GmbH & Co. KG: *See—*
Burger, Simon; and Eugler, Norbert, 5,364,118, Cl. 280-614.000.
Simeonsson, Josef: *See—*
Sausa, Rosario; Simeonsson, Josef; and Lemire, George, 5,364,795, Cl. 436-106.000.
Simiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,365,080, Cl. 257-66.000.
Simmons, Kenneth G.: *See—*
Kresge, Charles T.; Roth, Wieslaw J.; Simmons, Kenneth G.; and Vartuli, James C., 5,364,999, Cl. 585-407.000.
Simo Industries A/S: *See—*
Simonsen, Knud, 5,364,251, Cl. 418-220.000.
Simon, Rudolf; Dryden, John C.; and Schlitz, Franz, to Meissner + Wurst GmbH + Co. Lufttechniache Anlagen Gebaude- Und Verfahrenstechnik. Cleaning device for a clean room. 5,364,425, Cl. 55-385.200.
Simonelli, David J.: *See—*
Braun, Phillip M.; and Simonelli, David J., 5,363,999, Cl. 227-119.000.
Simons, Stephen P.: *See—*
Carlson, Douglas W.; and Simons, Stephen P., 5,364,064, Cl. 251-5.000.
Simonsen, Knud, to Simo Industries A/S. Worm pump for thick media and/or media containing lumps, e.g. meat. 5,364,251, Cl. 418-220.000.
Simpson, Barry. Knock-down bookcase. 5,363,775, Cl. 108-187.000.
Simpson, Brian L.: *See—*
Pelto, Ralph H.; Simpson, Brian L.; Walker, Theodore E.; Crevelling, John W.; Logsdon, Kevin M.; Drake, Paul C.; and Hennenkamp, Jeffrey R., 5,364,418, Cl. 23-313.00R.
Simpson, W. Dwain; and Pyle, James H., to Saber Equipment Corporation. Fuel dispensing nozzle assembly. 5,363,889, Cl. 141-208.000.
Simroth, Donald W.: *See—*
Critchfield, Frank E.; Simroth, Donald W.; and Watson, Stuart L., 5,364,906, Cl. 525-53.000.
Sims, Bobby H.: *See—*
Philipp, Carl T.; and Sims, Bobby H., 5,364,447, Cl. 75-500.000.
Sims, David W.: *See—*
Kirkwood, Kenneth C.; Leng, Stephen A.; and Sims, David W., 5,364,995, Cl. 585-241.000.
Singer, Robert E.; and Ebel, James P., to Procter & Gamble Company, The. Use of H-2 antagonists for treatment of gingivitis. 5,364,616, Cl. 424-52.000.
Singer, Stephen P.: *See—*
Mooberry, Jared B.; Singer, Stephen P.; Seifert, James J.; Ross, Robert J.; and Kapp, Daniel L., 5,364,745, Cl. 430-359.000.
Singh, Tejinder: *See—*
Justice, Alan; Singh, Tejinder; Gohil, Kishor C.; and Valentino, Karen L., 5,364,842, Cl. 514-12.000.
Single Buoy Moorings Inc.: *See—*
Laurie, Jean-Phillippe R. L.; and Perratone, Rene , 5,363,789, Cl. 114-293.000.
Sion, Charles: *See—*
Gilles, Peru; Sauvage, Francis; Le Roy, Yvon; and Sion, Charles, 5,364,006, Cl. 228-4.100.
Siracusa, Robert J., to General Electric Company. Method for formatting compressed video data into transport cells. 5,365,272, Cl. 348-426.000.
Siviter, Carl: *See—*
Chadwick, Robert; Siviter, Carl; and Farmer, Anthony D., 5,364,570, Cl. 264-28.000.
Skarhar, Inc.: *See—*
Hara, James H., 5,364,218, Cl. 414-142.400.
Skenderi, Sabaudin. Self contained window cleaning implement. 5,364,198, Cl. 401-138.000.
Skidmore, Robert: *See—*
Lieber, Clement E.; Taimisto, Miriam H.; Swendson, David L.; Konno, Mark A.; Busse, Lawrence J.; and Skidmore, Robert, 5,363,853, Cl. 128-662.060.
Skitech S.r.l.: *See—*
Di Stefano, Vittorio; and Marini, Paolo, 5,364,548, Cl. 252-58.000.
Sklarew, Ralph, to AST Research, Inc. Handwritten keyboardless entry computer system. 5,365,598, Cl. 382-13.000.
Sklebitz, Hartmut; Mattern, Detlef; and Hoheisel, Martin, to Siemens Aktiengesellschaft. X-ray image intensifier having an image sensor with amorphous semiconductor material layer. 5,365,056, Cl. 250-214.0VT.
Skovira, Joseph F.: *See—*
Childs, Philip L.; Olnowich, Howard T.; and Skovira, Joseph F., 5,365,228, Cl. 340-825.800.
Slaga, Thomas J.: *See—*
Walaszek, Zbigniew; Slaga, Thomas J.; and Hanausek, Margaret, 5,364,644, Cl. 514-574.000.
Slemmer, William C.; and Doyle, Bruce A., to SGS-Thomson Microelectronics, Inc. Temperature-compensated voltage level sense circuit. 5,365,129, Cl. 327-65.000.
Sliskovic, Drago R.: *See—*
Picard, Joseph A.; and Sliskovic, Drago R., 5,364,882, Cl. 514-517.000.
Sloan, Walker M., III: *See—*
Polk, Lewis T., Jr.; Vartanian, Hugh; Brown, Phillip P.; and Sloan, Walker M., III, 5,364,597, Cl. 422-101.000.
Slongo, Mario: *See—*
Leppard, David G.; Burdeska, Kurt; and Slongo, Mario, 5,364,749, Cl. 430-507.000.
Smart VCR Limited Partnership: *See—*
Levine, Michael R., 5,365,282, Cl. 348-734.000.
Smayling, Michael C.; and Talamonti, Luciano, to Texas Instruments Incorporated. Method of forming a charge pump circuit. 5,364,801, Cl. 437-39.000.
SMC Kabushiki Kaisha: *See—*
Takada, Susumu; Hosono, Masayuki; Iahibashi, Kouichirou; and Kanda, Koichiro, 5,363,741, Cl. 92-13.500.
Smith, Adlai H.: *See—*
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Smith Berger Marine, Inc.: *See—*
Montgomery, James L., 5,364,075, Cl. 254-415.000.
Smith, Carl H.: *See—*
Ramanan, V. R. V.; and Smith, Carl H., 5,364,477, Cl. 148-304.000.

Smith, Darryl R. T.: *See—*
Tack, Robert D.; Smith, Darryl R. T.; and Gillingham, David P., 5,364,419, Cl. 44-371.000.
Smith, Gary A. Hand operated tool driver. 5,363,726, Cl. 81-57.290.
Smith, Gerald L.: *See—*
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Smith, Graham K. L.: *See—*
Van der Veen, Albertus C.; and Smith, Graham K. L., 5,365,247, Cl. 343-702.000.
Smith, Harold C. Hanger for lattice. 5,364,050, Cl. 248-227.000.
Smith International, Inc.: *See—*
Azar, Michael G., 5,363,932, Cl. 175-417.000.
Smith, James L.: *See—*
Guinn, Lloyd J.; and Smith, James L., 5,364,789, Cl. 435-262.500.
Smith, Michael W., to Porex Technologies Corp. Pipette device constructed to prevent contamination by aerosols or overpipetting. 5,364,595, Cl. 422-100.000.
Smith, Ronald P., to TRW Inc. Fast fourier transform multiplexed pipeline. 5,365,470, Cl. 364-726.000.
Smith Sport Optics, Inc.: *See—*
Grabos, Fred F., Jr.; and Dondero, George V., 5,363,512, Cl. 2-436.000.
Smith, Steven L.: *See—*
Brandorff, Alexander; and Smith, Steven L., 5,364,146, Cl. 294-86.400.
Smith, Timothy J.: *See—*
Tamburrino, Richard A.; Knieriem, Alan S.; Leseberg, Roger; and Smith, Timothy J., 5,365,331, Cl. 356-241.000.
Smith, Warren; and Pank, Donald. Hydraulic exercise apparatus. 5,364,326, Cl. 482-113.000.
Smith, Wayne: *See—*
Moore, Earl; Frick, Thomas; Smith, Wayne; and Lyon, James, 5,363,672, Cl. 62-258.000.
Smiths Industries Aerospace & Defense Systems, Inc.: *See—*
Page, L. Jerry; Bina, David R.; Lynch, Daniel R.; and Otten, William G., 5,365,337, Cl. 356-350.000.
Smitley, Ronnie G.: *See—*
Bradtmueller, Lynn E.; Wiedemann, Gustave F.; Pierre, David M.; and Smitley, Ronnie G., 5,363,546, Cl. 29-564.100.
SMS Schloemann-Siegmag Aktiengesellschaft: *See—*
Grafe, Horst, 5,363,731, Cl. 83-436.000.
Smurkoski, John A.; Leggitt, Gary L.; and Wilson, Gregory L., to Procter & Gamble Company, The. Papermaking belt and method of making the same using a textured casting surface. 5,364,504, Cl. 162-116.000.
Snellman, Donald L.; and Tonkin, Dean G., to Norfin, Inc. Method and apparatus for preparing book covers. 5,364,215, Cl. 412-3.000.
Snijders, Petrus; J.: *See—*
Meijer, Christophorus J.; van den Brule, Adrianus J.; Walboomers, Jan M.; and Snijders, Petrus; J., 5,364,758, Cl. 435-5.000.
Snodgrass, Charles K.; Allen, David H.; Tuttle, John R.; Rotzoll, Robert R.; and Pax, George E., to Micron Technology, Inc. Data communication transceiver using identification protocol. 5,365,551, Cl. 375-1.000.
Snow, Kevin M.: *See—*
Lee, Gim F., Jr.; and Snow, Kevin M., 5,364,898, Cl. 524-265.000.
Snow, Steven A.: *See—*
Hill, Randal M.; and Snow, Steven A., 5,364,633, Cl. 424-450.000.
Snyder, Michael D.: *See—*
Foley, Daniel M.; and Snyder, Michael D., 5,363,924, Cl. 172-326.000.
Societe Europeenne de Propulsion: *See—*
Pellet, Marc, 5,363,645, Cl. 60-267.000.
Societe Italiana Vetro-SIV-S.p.A.: *See—*
Boattini, Pier P.; D'Angio', Carlo; and Paudice, Ciro, 5,364,479, Cl. 156-100.000.
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Yokoyama, Koichi, 5,364,255, Cl. 425-171.000.
Soga, Hiroyuki; and Matsushita, Michiyo, to Uni-Charm Corporation. Air-permeable and liquid-impermeable backsheet for use in body fluid absorbent articles, and its manufacturing method. 5,364,381, Cl. 604-366.000.
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Solberg, Mark A.; and Hartwell, James A., to Thiokol Corporation. Propellant gas-generation system for canister ejection. 5,363,768, Cl. 102-430.000.
Solinas, Marco; and Murphy, Thomas H., to MacMillan Bloedel Limited. Nitric oxide treatment for ozone bleaching. 5,364,503, Cl. 162-65.000.
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Song, Joo H., to Wm. Wrigley Jr. Company. Gradual release structures made from fiber spinning techniques. 5,364,627, Cl. 424-443.000.
Soni, Bobby; Didday, Richard; and Hurley, Kean, to Cardiovascular Imaging Systems, Inc. Method for recognition and reduction of blood speckle in blood vessel imaging system. 5,363,850, Cl. 128-661.080.
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Nakabayashi, Toshiya; Nakayoshi, Hirokazu; and Hashimoto, Kazuo, 5,365,407, Cl. 361-794.000.
Sato, Heikichi; Kimura, Hitoshi; and Onodera, Osamu, 5,365,392, Cl. 360-126.000.
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Sopko, Gary M.; Herbert, Gerald F.; and Sarmast, Syed H., to Ford Motor Company. Wheel and cover assembly with radiused standoff. 5,364,172, Cl. 301-37.420.
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Sorko-Ram, Paul. Convex reflective sign. 5,365,378, Cl. 359-839.000.
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Souders, Roger: *See—*
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Spada, Alfred P.; Fink, Cynthia A.; and Myers, Michael R., to Rhone-Poulenc Rorer Pharmaceuticals Inc. Compounds having antihypertensive and anti-ischemic properties. 5,364,862, Cl. 514-303.000.
Spani, Wayne M.; and Kemper, William S., to Triton Technology, Inc. Variable illumination of a lumen for acoustic blood flow measurement. 5,363,848, Cl. 128-661.090.
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Spiegel, Norbert; and Pabst, Wolfgang, to Tridonic Bauelemente GmbH. Gas discharge lamp ballast circuit with frequency modulated pulse control. 5,365,151, Cl. 315-209.00R.
Spiess, Walter: *See—*
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Spiess, Wolfram; Franke, Friedrich; Himmelreich, Rolf, deceased (by Himmelreich, Margot Marie Charlotte, Petra Himmelreich, heirs); and Himmelreich, Ralf, heir. Vanadium(IV) oxide bis(dialkyldithiocarbamates), process for their preparation, and oil compositions containing them. 5,364,952, Cl. 556-44.000.
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Spink, Donald R.; and Nguyen, Kim D., to Turbotak Technologies Inc. Solute gas-absorbing procedure. 5,364,604, Cl. 423-210.000.
Spivey, Britt: *See—*
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Sprague, Harry F. Counterbalanced flex window. 5,363,898, Cl. 160-98.000.
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Stein, Robert A.; Logan, James D.; and Woringer, Charles A., to MicroTouch Systems, Inc. Position sensing computer input device. 5,365,461, Cl. 364-550.000.
Steinberg, Geoffrey D.; and Faley, Robert H. System for automatically programming a functional database. 5,365,433, Cl. 364-419.080.
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Sterile Systems, Inc.: *See—*
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Sugawara, Kenji, to Kabushiki Kaisha Shinkawa. Bonding wire inspection apparatus. 5,365,341, Cl. 356-394.000.
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Sullivan, Lawrence B.; and Hastings, Jeffrey H., to Atlantic Richfield Company. Marine seismic bottom geophone coupling and anchor. 5,365,491, Cl. 367-15.000.
Sullivan, Scott L.: *See—*
Anthon, John R.; Cox, James V.; and Sullivan, Scott L., 5,363,602, Cl. 451-540.000.
Sullivan, William B., to Wide Band Systems, Inc. Precision time measurements. 5,365,238, Cl. 342-195.000.
Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, to Daicel Chemical Industries, Ltd. Composite films. 5,364,669, Cl. 428-1.000.
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, to Teijin Limited. Method for preparing dialkylnaphthalene. 5,365,001, Cl. 585-411.000.
Sumitomo Chemical Company, Limited: *See—*
Kisida, Hirosi; Shuto, Akira; Sakamoto, Noriyasu; Matsuo, Noritada; Fujimoto, Hiroaki; and Umeda, Kimitoshi, 5,364,966, Cl. 564-190.000.
Satoji, Fuminori; Hashimoto, Shoichi; Asai, Kuniaki; and Kobayashi, Tadayasu, 5,364,670, Cl. 428-1.000.
Sumitomo Electric Industries, Ltd.: *See—*
Kyoto, Michihisa; Ishiguro, Yoichi; Urano, Akira; and Kakuzen, Hideo, 5,364,428, Cl. 65-397.000.
Nishiura, Yozo; and Nishi, Yasuhiko, 5,365,339, Cl. 356-350.000.
Sasaki, Goro, 5,365,087, Cl. 257-184.000.
Tonai, Ichiro, 5,365,101, Cl. 257-434.000.
Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, 5,363,797, Cl. 117-68.000.
Sumitomo Metal Industries, Ltd.: *See—*
Kobayashi, Sumio; Miyahara, Shunji; Fujiwara, Toshiyuki; Kubo, Takayuki; Fujiwara, Hideki; and Inami, Shuichi, 5,363,796, Cl. 117-30.000.
Summerfield, Stephen D.: *See—*
Evangelista, Richard A.; Summerfield, Stephen D.; and Cerovich, Leslie S., 5,363,690, Cl. 73-31.050.
Summit Polymers, Inc.: *See—*
Terry, Warren W., 5,364,303, Cl. 454-155.000.
Sun, Huifang: *See—*
Kwok, Wilson; and Sun, Huifang, 5,365,604, Cl. 382-54.000.
Sundhar, Shaam P. Light bulb electric life extender having a diactriac combination connecter in parallel with a capacitor. 5,365,162, Cl. 323-320.000.
Sundman, Kurt, to Aktiebolaget Electrolux. Hand pump for evacuating and charging a refrigerating system. 5,363,665, Cl. 62-125.000.
Sundstrand Corporation: *See—*
Anderson, W. Kyle; Hoppe, Richard J.; Durako, William J., Jr.; Metzler, Mark; Hughes, Lawrence; and Jackson, Stephen E., 5,365,108, Cl. 257-678.000.
Shekleton, Jack R.; and Treece, William D., 5,363,644, Cl. 60-39.360.

Suorsa, Veijo; and Brisken, Axel, to Cardiovascular Imaging Systems, Inc. Enhancing intravascular ultrasonic blood vessel image. 5,363,849, Cl. 128-661.080.
Superfos Emballage A/S: *See—*
Thorso, Holger, 5,363,979, Cl. 220-404.000.
Supp, Emil: *See—*
Konig, Peter; Moller, Friedrich-Wilhelm; and Supp, Emil, 5,364,887, Cl. 518-713.000.
Suprex Corporation: *See—*
Ashraf-Khorassani, Mehdi, 5,363,886, Cl. 141-5.000.
Sure Alloy Steel Corporation: *See—*
Wark, Rickey E., 5,363,776, Cl. 110-106.000.
Surface Combustion, Inc.: *See—*
Poor, Ralph P.; and Huber, Michael J., 5,364,476, Cl. 148-27.000.
Surgical Safety Products, Inc.: *See—*
Swor, G. Michael, 5,364,375, Cl. 604-278.000.
Surgin Surgical Instrumentation, Inc.: *See—*
Wortrich, Theodore S., 5,364,365, Cl. 604-158.000.
Survival Technology, Inc.: *See—*
Pearson, William R.; and Dalling, N. Lawrence, 5,364,363, Cl. 604-136.000.
Susla, John: *See—*
Addington, Larry C.; Addington, Robert R.; Addington, Larry M.; Lynch, Albert E.; Susla, John; Conley, David L.; Sartaine, John J.; and Price, David E., 5,364,171, Cl. 299-18.000.
Susumu Co., Ltd.: *See—*
Nakamura, Nakaba; and Kosaki, Makoto, 5,365,203, Cl. 333-161.000.
Suthers, Mark S.: *See—*
Saw, John C. B.; Cameron, Thomas P.; Suthers, Mark S.; Nisbet, John J.; and Tiller, Samuel A., 5,365,138, Cl. 310-313.00D.
Suto, Mark J.: *See—*
Hagen, Susan E.; and Suto, Mark J., 5,364,861, Cl. 514-300.000.
Sutor, Judy L.: *See—*
Phipps, John P.; Robb, Stephen P.; Sutor, Judy L.; and Terry, Lewis E., 5,365,099, Cl. 257-328.000.
Suttle, James P.: *See—*
Jones, Daniel A.; and Suttle, James P., 5,364,104, Cl. 273-292.000.
Suzuki, Akira: *See—*
Kitajima, Masato; Soma, Shinji; Kamiya, Akimitsu; Suzuki, Akira; Sekiya, Yasuhisa; and Inagaki, Tomohiro, 5,364,422, Cl. 51-307.000.
Suzuki, Eiichi: *See—*
Aikou, Kenichi; Suzuki, Eiichi; and Goto, Tugio, 5,363,765, Cl. 102-220.000.
Suzuki, Etsurou: *See—*
Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,262, Cl. 347-87.000.
Kitani, Masashi; Hattori, Yoshifumi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,260, Cl. 347-87.000.
Suzuki, Fumio; Kuroda, Takeshi; Kitamura, Shigeto; and Ohmori, Kenji, to Kyowa Hakko Kogyo Co., Ltd. Imidazonaphthyridine derivatives. 5,364,859, Cl. 514-293.000.
Suzuki, Hiroshi: *See—*
Asai, Makoto; Suzuki, Hiroshi; and Ichikawa, Takako, 5,364,977, Cl. 568-720.000.
Sakurada, Toyohisa; Suzuki, Hiroshi; and Saguchi, Ryuichi, 5,364,969, Cl. 568-421.000.
Suzuki, Hiroyuki; and Furukawa, Osamu, to Nikon Corporation. Projection exposure apparatus. 5,365,051, Cl. 250-201.200.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Daikoku, Keisuke, 5,363,814, Cl. 123-73.0AD.
Suzuki, Kiwamu: *See—*
Hosohara, Yasuharu; Suzuki, Kiwamu; Fujiwara, Shigeru; and Kawabe, Toshihide, 5,365,169, Cl. 324-233.000.
Suzuki, Masaaki: *See—*
Kishimoto, Yoshio; and Suzuki, Masaaki, 5,364,829, Cl. 503-201.000.
Suzuki, Masahiko: *See—*
Sumida, Katsuhiko; Iseki, Yuji; and Suzuki, Masahiko, 5,364,669, Cl. 428-1.000.
Suzuki, Masayuki: *See—*
Ebinuma, Ryuichi; Mizusawa, Nobutoshi; Suzuki, Masayuki; Uno, Shinichirou; Mori, Tetsuzo; and Kurosawa, Hiroshi, 5,365,561, Cl. 378-34.000.
Suzuki, Nobukazu: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.
Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, to Honda Giken Kogyo Kabushiki Kaisha. Method of estimating vehicle velocity and method of and system for controlling brakes. 5,365,444, Cl. 364-426.040.
Suzuki, Risuke: *See—*
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.
Suzuki, Shigehiko: *See—*
Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, 5,365,521, Cl. 370-60.000.
Suzuki, Shunji: *See—*
Nakazawa, Akihiko; Kato, Masayoshi; Ohno, Manabu; Okubo, Nobuyuki; and Suzuki, Shunji, 5,364,720, Cl. 430-106.600.
Suzuki, Takaya: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.
Suzuki, Tamio: *See—*
Nishina, Shingo; Suzuki, Tamio; and Kimura, Kazuhiko, 5,363,566, Cl. 33-810.000.
Suzuki, Tatsuya; Nagao, Masaki; and Yokoyama, Kunio, to Olympus Optical Co., Ltd. Camera capable of recording photographing information and printing apparatus therefor. 5,365,290, Cl. 354-64.000.
Suzuki, Yasuo: *See—*
Kanoto, Masanobu; and Suzuki, Yasuo, 5,365,259, Cl. 346-108.000.
Suzumura, Toshihiro; Iida, Hisashi; Kondo, Toshio; and Isomura, Shigenori, to Nippondenso Co., Ltd. Fuel vapor purging control system with air/fuel ratio compensating system for internal combustion engine. 5,363,832, Cl. 123-704.000.
Svejsemaskinefabrikken Migatronic A/S: *See—*
Poulsen, Knud J.; Scheele, Werner; and Jorgensen, Henning, 5,365,035, Cl. 219-137.0PS.
Svendsen, David A., to York Technology Limited. Apparatus and method for measuring refractive index. 5,365,329, Cl. 356-73.100.
Swain, James C., to General Motors Corporation. Compressor assembly having a clutch triggered by a small compressor and actuated by discharge pressure. 5,364,237, Cl. 417-319.000.
Sweeney, Niall, to Becton, Dickinson and Company. Drug access assembly for vials and ampules. 5,364,387, Cl. 604-411.000.
Swendson, David L.: *See—*
Lieber, Clement E.; Taimisto, Miriam H.; Swendson, David L.; Konno, Mark A.; Busse, Lawrence J.; and Skidmore, Robert, 5,363,853, Cl. 128-662.060.
Swenson, Eric T.: *See—*
Schaller, David A.; Kroll, Richard S.; Kosobucki, Zbigniew F.; Swenson, Eric T.; Cornell, Charles R.; and Pence, Gregory L., 5,365,436, Cl. 364-424.030.
Swingler, David N.: *See—*
Hughes, Timothy J.; and Swingler, David N., 5,363,856, Cl. 128-713.000.
Swisher, Richard L., to Sheldahl, Inc. Metal-film laminate resistant to delamination. 5,364,707, Cl. 428-612.000.
Swor, G. Michael, to Surgical Safety Products, Inc. Catheter device for the localized introduction and maintenance of pharmaceutical material in the uterine cervix and upper vagina. 5,364,375, Cl. 604-278.000.
Sydow, Chris W., to Graco Inc. Reduced icing low friction air valve. 5,363,739, Cl. 91-346.000.
Syrstone, Inc.: *See—*
Faulkner, David L., 5,363,614, Cl. 52-263.000.
Szarka, David D.: *See—*
Streich, Steven G.; Brandell, John T.; Szarka, David D.; and Sullaway, Bobby L., 5,364,110, Cl. 277-115.000.
Szczyrbowski, Joachim: *See—*
Hartig, Klaus; Dietrich, Anton; and Szczyrbowski, Joachim, 5,364,518, Cl. 204-298.220.
Szerlip, Gregg M.; and Wilk, Peter J. Hyprodermic needle assembly with safety cap. 5,364,370, Cl. 604-192.000.
Szu, Harold: *See—*
Solka, Jeffrey L.; Rogers, George W.; Priebe, Carey E.; Poston, Wendy L.; and Szu, Harold, 5,365,472, Cl. 364-807.000.
Szynal, Joseph M.: *See—*
Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; and Bradley, Greg A., 5,363,667, Cl. 62-131.000.
Janke, Donald E.; Szynal, Joseph M.; and Guess, Ronald W., 5,363,669, Cl. 62-155.000.
T-Systems, Inc.: *See—*
Oxley, L. Thomas, 5,364,598, Cl. 422-102.000.
T-Systems International, Inc.: *See—*
De Frank, Michael P., 5,364,032, Cl. 239-542.000.
T.V. Fanfare: *See—*
Sawyer, Thomas E.; and Hoback, James E., 5,363,575, Cl. 40-308.000.
Tab Products Company: *See—*
Hollis, Jeffrey C.; Bones, Chad; and York, Troy M., 5,364,090, Cl. 271-216.000.
Tabata Co. Ltd.: *See—*
Matsuoka, Matsushiro, 5,363,790, Cl. 114-315.000.
Tabata, Yasuko: *See—*
Nakagawa, Kenji; Kanazawa, Masao; Haruki, Tamae; and Tabata, Yasuko, 5,364,716, Cl. 430-5.000.
Taboada, John; and Poirier, Robert H., to Refractive Laser Research and Development, Inc. Handpiece and related apparatus for laser surgery and dentistry. 5,364,390, Cl. 606-10.000.
Tabrizi, Mohammad F.: *See—*
Heyns, Garrett J.; McClure, Terry R.; Nicholl, Hugh; Read, Peter H.; Schulte, Steven M.; and Tabrizi, Mohammad F., 5,364,472, Cl. 134-7.000.
Tabuchi, Takanori: *See—*
Aoki, Isao; Tabuchi, Takanori; and Minamida, Isao, 5,364,989, Cl. 568-946.000.
TACHI-S Co. Ltd.: *See—*
Aoki, Akira; Yasui, Takashi; Mizushima, Yoshihiro; and Fukushima, Mitsuru, 5,364,167, Cl. 297-452.180.
Tack, Robert D.; Smith, Darryl R. T.; and Gillingham, David P., to Exxon Chemical Patents Inc. Fuel oil additives. 5,364,419, Cl. 44-371.000.
Tada, Yoshihide, to Kawasaki Steel Corporation. Semiconductor device of band-to-band tunneling type. 5,365,083, Cl. 257-105.000.

Tadakuma, Susumu: *See*—
Tanaka, Shigeru; Tadakuma, Susumu; and Shimane, Kazuo, 5,365,158, Cl. 318-806.000.

Tafreshi, Shahriar A.: *See*—
Jabbari, Iraj; and Tafreshi, Shahriar A., 5,365,389, Cl. 360-105.000.

Tagami, Satoru: *See*—
Kawai, Jun; and Tagami, Satoru, 5,365,141, Cl. 310-359.000.

Taguchi, Akira, to Mori-Gumi Co., Ltd. Method of transferring objects with compressed air. 5,364,208, Cl. 406-85.000.

Taimisto, Miriam H.: *See*—
Cimino, William W.; Abrams, Robert; Taimisto, Miriam H.; Jenson, Marc; and Macaulay, Patrick E., 5,364,352, Cl. 604-95.000.
Lieber, Clement E.; Taimisto, Miriam H.; Swendson, David L.; Konno, Mark A.; Busse, Lawrence J.; and Skidmore, Robert, 5,363,853, Cl. 128-662.060.

Taiwan Semiconductor Manufacturing Company: *See*—
Ho, Yen-Shyh; and Chen, Chien-Yung, 5,364,804, Cl. 437-41.000.

Tajima, Katsuaki, to Minolta Camera Kabushiki Kaisha. Image reading apparatus having color image sensor in which a plurality of CCD arrays are formed integrally on one chip. 5,365,352, Cl. 358-500.000.

Tajiri, Akira: *See*—
Aoyama, Akihiro; Kaneko, Hitoshi; Tajiri, Akira; Okamura, Iwao; and Tanaka, Yuzo, 5,364,270, Cl. 434-55.000.

Taka, Shin-ichi; Kimura, Kouji; Naruse, Hiroshi; and Kumamaru, Kuniaki, to Kabushiki Kaisha Toshiba. Hetero bipolar transistor and method of manufacturing the same. 5,365,090, Cl. 257-197.000.

Takachiho Sangyo Kbushiki Kaisha: *See*—
Mizuno, Morio, 5,363,926, Cl. 175-45.000.

Takada, Susumu; Hosono, Masayuki; Ishibashi, Kouichirou; and Kanda, Koichiro, to SMC Kabushiki Kaisha. Slide actuator. 5,363,741, Cl. 92-13.500.

Takagi, Hiromi; Takehisa, Fumitaka; and Yokoi, Mitsuyoshi, to Nippondenso Co., Ltd. Method of discriminating quality of die-cast article and die-casting process using same. 5,363,899, Cl. 164-4.100.

Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, to Shin-Etsu Chemical Co., Ltd. Gasket-sealed casing for fixed disc memory unit. 5,364,676, Cl. 428-35.700.

Takahagi, Hidekuni: *See*—
Morisawa, Yasuhiro; Kataoka, Mitsuru; Yabe, Yuichiro; Koike, Hiroyuki; Iijima, Yasuteru; Takahagi, Hidekuni; Kokubu, Tatsuo; and Hiwada, Kunio, 5,364,844, Cl. 514-18.000.

Takahama, Koichi; Hirao, Shozo; Yokoyama, Masaru; Kishimoto, Takashi; and Yokokawa, Hiroshi, to Matsushita Electric Works, Ltd. Method for manufacturing inorganic porous layered member. 5,364,823, Cl. 502-62.000.

Takahama, Yo; and Yonezawa, Keitaro, to Kabushiki Kaisha Kosmek. Metal mould replacing apparatus. 5,364,328, Cl. 483-28.000.

Takahara, Hiroyuki: *See*—
Murakami, Junichi; Ogino, Shigeru; Wada, Hiroyuki; and Takahara, Hiroyuki, 5,365,296, Cl. 354-195.100.

Takahashi, Katsuji: *See*—
Ochiai, Akira; Takahashi, Katsuji; and Watanabe, Kouya, 5,364,190, Cl. 384-100.000.

Takahashi, Kazuo: *See*—
Ayata, Naoki; Yamamura, Mitsugu; Hamasaki, Bunei; Kosugi, Masao; Takahashi, Kazuo; and Seki, Mitsuaki, 5,365,342, Cl. 356-401.000.

Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, to Matsushita Electric Industrial Co., Ltd. Transmitting circuit and receiving circuit. 5,365,543, Cl. 375-1.000.

Takahashi, Kiyoshi; Murai, Mikio; Odagiri, Masaru; Ueda, Hideyuki; Ohchi, Yukikazu; and Hiwatashi, Tatsuya, to Matsushita Electric Industrial Co., Ltd. Magnetic recording medium comprising a ferromagnetic metal film and two carbon protective layers. 5,364,690, Cl. 428-212.000.

Takahashi, Kuniyuki; and Mochida, Tooru, to Kabushiki Kaisha Shinkawa. Ultrasonic wire bonding method. 5,364,009, Cl. 228-110.100.

Takahashi, Natsuko: *See*—
Emerson, H. Brad; Kalwitz, George A.; Takahashi, Natsuko; Russell, William C.; and Luther, Willis J., 5,365,464, Cl. 354-580.000.

Takahashi, Tetsuo; Miyauchi, Eisaku; Miyajima, Toshihiko; and Watanabe, Hideaki, to TDK Corporation. Apparatus for clean transfer of objects. 5,364,219, Cl. 414-217.000.

Takahashi, Tsutomu, to Canon Kabushiki Kaisha. Recording apparatus with recording medium conveyance control for fixing recorded ink. 5,365,256, Cl. 347-16.000.

Takahashi, Yoshinori: *See*—
Saito, Yoshiaki; Inomata, Koichiro; Okuno, Shiho; and Takahashi, Yoshinori, 5,365,212, Cl. 338-32.00R.

Takakura, Satoshi: *See*—
Yamada, Kazuyuki; and Takakura, Satoshi, 5,365,582, Cl. 379-265.000.

Takano, Masatoshi; and Hirano, Masakazu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Sheet warp prevention mechanism employed in a fixing unit of an electrophotographic printer. 5,365,320, Cl. 355-282.000.

Takano, Tsunesuke, to Kabushiki Kaisha T AN T. Slide switches. 5,365,028, Cl. 200-547.000.

Takano, Yoshihiko: *See*—
Senda, Atsuo; Morita, Kazuhiro; and Takano, Yoshihiko, 5,364,459, Cl. 106-122.000.

Takanobu, Kiyoshi: *See*—
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

Takaoka, Toshio, to Toyota Jidosha Kabushiki Kaisha. Air-fuel ratio control apparatus for an internal combustion engine. 5,363,826, Cl. 123-486.000.

Takasaki, Michiya: *See*—
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

Takase, Shigehiro; Hatanaka, Hiroshi; Ezaki, Masami; Tsujii, Eisaku; Okamoto, Masanori; Shigematsu, Nobuharu; and Okuhara, Masakuni, to Fujisawa Pharmaceutical Co., Ltd. WS7622A mono- or di-sulfate, process for preparation thereof and use thereof. 5,364,624, Cl. 424-117.000.

Takashima, Toshiharu: *See*—
Imai, Tomoyasu; Yoshimi, Takani; Matsuura, Akihiro; Takashima, Toshiharu; Tsutsui, Toshihiro; and Nakano, Hiroyuki, 5,363,598, Cl. 51-331.000.

Takasu, Hidemi, to Rohm Company Limited. Semiconductor device including ferroelectric nonvolatile memory. 5,365,094, Cl. 257-295.000.

Takasugi, Hisashi; Katsura, Yousuke; Tomishi, Tetsuo; and Inoue, Yoshikazu, to Fujisawa Pharmaceutical Co., Ltd. New thiazole derivatives, and pharmaceutical composition comprising the same. 5,364,871, Cl. 514-342.000.

Takata Corporation: *See*—
Fujimura, Yoshiichi; and Matsuura, Shizutaka, 5,364,048, Cl. 242-381.100.
Kuretake, Masato; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Yoshida, Yoshimi; Uda, Sawayo; and Zushi, Takayasu, 5,364,126, Cl. 280-730.00R.
Nishizawa, Muneo; and Hamaue, Tetsuya, 5,364,168, Cl. 297-476.000.

Takatsuka, Takashi: *See*—
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, 5,364,321, Cl. 477-42.000.

Takayama, Yuji; Wada, Hirotaka; and Komiya, Iwao, to Mitsubishi Rayon Company Limited. Thermosetting (meth)acrylate liquid resins, compositions containing said resin, and molds obtainable from said composition. 5,364,903, Cl. 524-555.000.

Takeda Chemical Industries, Ltd.: *See*—
Aoki, Isao; Tabuchi, Takanori; and Minamida, Isao, 5,364,989, Cl. 568-946.000.

Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, to Kawasaki Steel Corporation; and Kotobuki Sangyo Co., Ltd. Four-roller type sizing mill apparatus for producing round steel rods. 5,363,682, Cl. 72-224.000.

Takeda, Shoichi: *See*—
Nishimura, Eichi; Takeda, Shoichi; Fujiwara, Tohru; and Kobayashi, Nobushige, 5,364,063, Cl. 249-52.000.

Takeda, Shuzo: *See*—
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,365,386, Cl. 360-85.000.

Takeda, Takeshi: *See*—
Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,365,452, Cl. 364-468.000.

Takehisa, Fumitaka: *See*—
Takagi, Hiromi; Takehisa, Fumitaka; and Yokoi, Mitsuyoshi, 5,363,899, Cl. 164-4.100.

Takeishi, Minako: *See*—
Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, 5,365,543, Cl. 375-1.000.

Takemura, Yasuhiko: *See*—
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,365,080, Cl. 257-66.000.
Yamazaki, Shunpei; and Takemura, Yasuhiko, 5,365,081, Cl. 257-67.000.

Takenaka, Kenji: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Takenaka, Kenji; and Makino, Yoshihiro, 5,364,232, Cl. 417-222.100.

Takenaka, Toichi: *See*—
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

Takeuchi, Hiroaki: *See*—
Sawada, Masashi; and Takeuchi, Hiroaki, 5,364,176, Cl. 303-113.200.

Takeuchi, Setsuyuki, to A. K. Technical Laboratory, Inc. Injection orientation blow molding method. 5,364,585, Cl. 264-520.000.

Takiguchi, Takao: *See*—
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.

Takimoto, Akio; Akiyama, Koji; Miyauchi, Michihiro; Kuratomi, Yasunori; Nomura, Koji; Ogawa, Hisahito; and Asayama, Junko, to Matsushita Electric Industrial Co., Ltd. Spatial light modulator and a neural network circuit. 5,364,668, Cl. 428-1.000.

Takinishi, Fumitaka; Togo, Makiko; Endo, Masayuki; and Yokoyama, Yasuaki, to Japan Synthetic Rubber Co., Ltd. Material for forming coating film. 5,364,910, Cl. 525-327.300.

Takisawa, Toshifumi: *See*—
Sakamoto, Seiji; Watanabe, Toshifumi; and Takisawa, Toshifumi, 5,364,684, Cl. 428-141.000.

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Shibata, Yoji; and Takizawa, Masaaki, 5,365,265, Cl. 348-15.000.

Takizawa, Satoshi, to Nissan Motor Company, Ltd. Engine power trouble detecting method and apparatus by checking actual engine power condition. 5,365,445, Cl. 364-431.010.

Talamonti, Luciano: *See*—
Smayling, Michael C.; and Talamonti, Luciano, 5,364,801, Cl. 437-39.000.

Talley, John J., to Monsanto Company. Process for making optically active α-amino ketones. 5,364,961, Cl. 562-444.000.

Tam, Kwok C., to General Electric Company. Method and apparatus for acquiring a uniform distribution of radon data sufficiently dense to constitute a complete set for exact image reconstruction of an object irradiated by a cone beam source. 5,365,560, Cl. 378-8.000.

Tamai, Shoji: *See*—
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,364,967, Cl. 564-315.000.

Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, to Yamanouchi Pharmaceutical Co., Ltd. Dihydropyridine-3,5-dicarboxylic acid ester derivatives. 5,364,872, Cl. 514-343.000.

Tambrands, Inc.: *See*—
Hayes, Harry; and Wakeham, Charlotte C., 5,364,383, Cl. 604-384.000.

Tamburrini, Vincent: *See*—
Kroll, Richard E.; Tamburrini, Vincent; and Hansen, Frederick M., 5,363,621, Cl. 52-506.010.

Tamburrino, Richard A.; Knieriem, Alan S.; Leseberg, Roger; and Smith, Timothy J., to Welch Allyn, Inc. Self centering device for borescopes. 5,365,331, Cl. 356-241.000.

Tamburrino, Richard A.: *See*—
Wheeler, Robert; Tamburrino, Richard A.; and Wood, Robert J., 5,365,058, Cl. 250-216.000.

Tamglass Engineerng Oy: *See*—
Montonen, Jori, 5,364,436, Cl. 65-107.000.

Tammone, Michael R.: *See*—
Franzen, Paul H.; Alit, Ken J.; Michaud, Richard R.; Probstmeyer, Helmuth; and Tammone, Michael R., 5,364,335, Cl. 494-15.000.

Tampograf S.a.s. di J.E. Taylor & Co.: *See*—
Galassi, Angelo, 5,363,761, Cl. 101-163.000.

Tamura, Hidehiko: *See*—
Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; and Tanaka, Takuya, 5,364,682, Cl. 428-138.000.

Tamura, Ichiro: *See*—
Saegusa, Noboru; Shimura, Yukihiro; Kumataka, Shinji; Adachi, Hirokazu; Tamura, Ichiro; and Hashimoto, Kosuke, 5,365,572, Cl. 379-61.000.

Tamura, Itaru; and Toyama, Akira, to Nippon Densan Corporation. Motor eccentricity measuring apparatus. 5,365,458, Cl. 364-506.000.

Tamura, Tutsuya: *See*—
Kashiwagi, Takeshi; and Tamura, Tutsuya, 5,364,689, Cl. 428-195.000.

Tanabe, Yoshimitsu: *See*—
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,364,967, Cl. 564-315.000.

Tanaka Denshi Kogyo Kabushiki Kaisha: *See*—
Toyofuku, Katsuyuki; Nagamatsu, Ichiro; Shirakawa, Shinji; Iga, Hiroto; Kujiraoka, Takeshi; and Murakami, Kensei, 5,364,706, Cl. 428-607.000.

Tanaka, Hisakatsu: *See*—
Komiya, Chikako; and Tanaka, Hisakatsu, 5,365,048, Cl. 235-462.000.

Tanaka, Hitoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light intercepting apparatus of lens barrel. 5,365,373, Cl. 359-601.000.

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Suzuki, Osamu; Tanaka, Keishin; Hayashi, Tatsuo; Matsuto, Takushi; Kumagai, Chiaki; Sakurai, Takeshi; and Ota, Atsuo, 5,365,444, Cl. 364-426.040.

Tanaka, Kensaku: *See*—
Seto, Kunio; Tanaka, Kensaku; Taniguchi, Yukari; and Kato, Takahiro, 5,365,599, Cl. 382-22.000.

Tanaka, Masahiro; Tomita, Kazuhiro; and Ogawa, Kazumi, to Fujitsu Limited; and Fujitsu VLSI Limited. Integrated circuit device having signal discrimination circuit and method of testing the same. 5,365,167, Cl. 324-158.100.

Tanaka, Shigeru; Tadakuma, Susumu; and Shimane, Kazuo, to Kabushiki Kaisha Toshiba. Driving control apparatus for induction motor. 5,365,158, Cl. 318-806.000.

Tanaka, Shigetaka; Ohtake, Yukio; and Ohbuchi, Yutaka, to Toyota Jidosha Kabushiki Kaisha. Air/fuel ratio control device of a turbocharged engine. 5,363,652, Cl. 60-603.000.

Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, to Daido Metal Company, Ltd. Method of electroplating half sliding bearings. 5,364,523, Cl. 205-128.000.

Tanaka, Tadashi; Tamura, Hidehiko; Hiramatsu, Nobutaka; and Tanaka, Takuya, to Daido Metal Company Ltd. Composite sliding member with impregnated mesh layer. 5,364,682, Cl. 428-138.000.

Tanaka, Takuya: *See*—
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Tanaka, Toshio: *See*—
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.

Tanaka, Tsuyoshi: *See*—
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.

Tanaka, Yasuyuki, to Canon Kabushiki Kaisha. Variable-speed video signal reproducing apparatus able to switch video signal interpolation. 5,365,380, Cl. 360-10.300.

Tanaka, Yuzo: *See*—
Aoyama, Akihiro; Kaneko, Hitoshi; Tajiri, Akira; Okamura, Iwao; and Tanaka, Yuzo, 5,364,270, Cl. 434-55.000.

Taniguchi, Kouji, to Sharp Kabushiki Kaisha. Thin film capacitive memory device with a high dielectric constant. 5,365,096, Cl. 257-296.000.

Taniguchi, Tatsuya; and Collias, Dimitris I., to Procter & Gamble Company, The. Foam dispensing nozzles and dispensers employing said nozzles. 5,364,031, Cl. 239-330.000.

Taniguchi, Yukari: *See*—
Seto, Kunio; Tanaka, Kensaku; Taniguchi, Yukari; and Kato, Takahiro, 5,365,599, Cl. 382-22.000.

Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; Jinbo, Masashi; and Onuma, Tsutomu, to Canon Kabushiki Kaisha. Toner for developing electrostatic image and heat-fixing method comprising a hydrocarbon wax. 5,364,722, Cl. 430-110.000.

Tanimoto, Masaki: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Sasaki, Takayoshi; and Tanimoto, Masaki, 5,364,523, Cl. 205-128.000.

Taniyama, Yoshihiko. Container for plurality of stackable objects. 5,363,956, Cl. 206-312.000.

Tank, Klaus: *See*—
Damm, Oliver F. R. A.; and Tank, Klaus, 5,364,192, Cl. 384-420.000.

Tanno, Koichi: *See*—
Hattori, Yoshifumi; Kitani, Masashi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,262, Cl. 347-87.000.
Kitani, Masashi; Hattori, Yoshifumi; Suzuki, Etsurou; Saikawa, Hideo; Kojima, Masami; Kawano, Kenji; Tanno, Koichi; and Aono, Kenji, 5,365,260, Cl. 347-87.000.

Tanzer, Richard W.; Bruemmer, Mary A.; and Gossens, Anthonette A., to Kimberly-Clark Corporation. Absorbent article containing an anhydrous deodorant. 5,364,380, Cl. 604-359.000.

Tasaki, Hiroshi; Nishimura, Eiji; and Yamamoto, Yasunori, to Nippon Mining & Metals Company, Limited. Method for producing a color-coated article. 5,364,478, Cl. 148-533.000.

Tashima, Zunzi: *See*—
Ishida, Noritoshi; Tashima, Zunzi; Sato, Naoki; Takasaki, Michiya; Iijima, Masaaki; Kuroda, Kazuyuki; and Nitta, Kazunari, 5,364,958, Cl. 560-359.000.

Tasker, Peter A.: *See*—
Cupertino, Domenico C.; and Tasker, Peter A., 5,364,452, Cl. 75-710.000.

Tatterson, David F.: *See*—
Radlowski, Cecelia A.; Hagen, Gary P.; Grimes, Lewis E.; and Tatterson, David F., 5,364,979, Cl. 568-697.000.

Tauati, Reef L. Push control faucet handle. 5,364,065, Cl. 251-96.000.

Taura, Tadayuki; Asano, Masamichi; Kanebako, Kazunori; and Iwahashi, Hiroshi, to Kabushiki Kaisha Toshiba. Method of manufacturing an EEPROM having an erasing gate electrode. 5,364,805, Cl. 437-43.000.

Taylor, Jeffrey P.: *See*—
Cardellini, David A.; Biencourt, Michael P.; Taylor, Jeffrey P.; Haeber, John A.; and DeVires, John A., 5,363,696, Cl. 73-61.440.

Taylor, Jerry H.: *See*—
Morrison, Ian D.; Hsieh, Bing R.; and Taylor, Jerry H., 5,364,726, Cl. 430-115.000.

Taylor-McCune, Christopher J.; Kurth, Brian J.; and Golobay, Lloyd D., to Carr-Griff, Inc. Pump arrangement including flag type inlet valves with spherical seating. 5,364,244, Cl. 417-536.000.

Taylor, Paul D.; Narayanan, Kolazi S.; and Plotkin, Jeffrey S., to ISP Investments Inc. Alk-1-enyloxy carbonates. 5,364,691, Cl. 428-220.000.

Taylor, Philip L.: *See*—
Nield, Eric; Palasz, Peter D.; Taylor, Philip L.; and Lam, Peter H. L., 5,364,901, Cl. 524-521.000.

Taylor, William. Agricultural and other powered equipment. 5,364,310, Cl. 464-170.000.

Taylor, William H., to Kollmorgen Corporation. Optical scanner and printer. 5,365,364, Cl. 359-208.000.

Tchoryk, Peter, Jr.: *See*—
Dobbs, Michael E.; Tchoryk, Peter, Jr.; and Jones, Donald B., 5,364,046, Cl. 244-161.000.

TCI (Trans-Coil, Inc.): *See*—
Lowenstein, Michael Z.; and Mehlberg, Dean R., 5,365,164, Cl. 324-76.210.

TDK Corporation: *See*—
Takahashi, Tetsuo; Miyauchi, Eisaku; Miyajima, Toshihiko; and Watanabe, Hideaki, 5,364,219, Cl. 414-217.000.
Tominaga, Junji, 5,364,708, Cl. 428-626.000.

TDW Delaware, Inc.: *See*—
Toomey, Danny D.; Ralls, Gene R.; and Manley, Johnny M., 5,363,541, Cl. 29-890.140.

te me na Logistics: *See*—
Waskonig, Wilhelm; and Rodiera Olive, Jose J., 5,364,373, Cl. 604-272.000.

Tebbe, Frederick N.; and Baker, Ralph T., to Du Pont de Nemours, E. I., and Company. Borides and boride precursors deposited from solution. 5,364,607, Cl. 423-286.000.
Technion Research & Development Foundation: *See*—
Bar-David, Israel, 5,365,185, Cl. 329-308.000.
Technology Services, Inc.: *See*—
Layh, Hans-Dieter, 5,365,144, Cl. 315-58.000.
Tecnotessile Centro Di Ricerche S.R.L.: *See*—
Migliorini, Pier L.; Molta, Pier C.; and Torelli, Giorgio, 5,363,884, Cl. 139-455.000.
Tecogen, Inc.: *See*—
Hurley, James R.; Childs, Paul J.; and Norman, Timothy J., 5,363,749, Cl. 99-403.000.
Teijin Limited: *See*—
Bannai, Kiyoshi; Tanaka, Toshio; Kato, Yoshinori; Koyama, Tamotsu; Asano, Satoshi; Ohtsu, Akira; Kurozumi, Seizi; Ogawa, Makoto; and Mori, Yoshio, 5,364,883, Cl. 514-530.000.
Sumitani, Koji; Shimada, Keizo; Itoh, Seiji; Sato, Kimihiko; Suzuki, Risuke; and Namatame, Akio, 5,365,001, Cl. 585-411.000.
Yashida, Makoto; Kurome, Kanji; Asahina, Atsushi; Hanaoka, Yasuki; and Imose, Kazuo, 5,365,564, Cl. 378-55.000.
Teixeira, Charles: *See*—
Easton, James L.; Filice, Gary W.; Souders, Roger; and Teixeira, Charles, 5,364,095, Cl. 273-72.00A.
Tektronix, Inc.: *See*—
Anderson, Duwayne R., 5,365,328, Cl. 356-73.100.
Teledyne Industries Inc.: *See*—
Philpot, James E., 5,364,051, Cl. 248-229.000.
Teles De Menezes Junior, Antonio. Filter for washing and retention of exhaust gases in motorized vehicles. 5,364,424, Cl. 55-228.000.
Teletzke, Gary F., to Exxon Production Research Company. Injection procedure for gas mobility control agents. 5,363,914, Cl. 166-272.000.
Telxon Corporation: *See*—
Leppo, Lee E.; and Rinkes, Charles A., 5,365,160, Cl. 320-22.000.
Templey, Margaret P.: *See*—
Sheiham, Ivan; and Templey, Margaret P., 5,364,830, Cl. 503-224.000.
Tenbarge, J. Stephen: *See*—
Greenwood, Jean B.; and Tenbarge, J. Stephen, 5,365,593, Cl. 381-69.000.
Teng, Clarence W.: *See*—
Yashiro, Masaaki; Morinaga, Shigeki; and Teng, Clarence W., 5,364,812, Cl. 437-52.000.
Tennessee Gas Pipeline Company: *See*—
Kraai, Leon A.; Sager, Robert L., Jr.; and Hill, William E., 5,365,025, Cl. 181-249.000.
Terada, Hiroshi: *See*—
Sugita, Yukihiko; Terada, Hiroshi; and Nishida, Takao, 5,365,301, Cl. 354-400.000.
Terada, Masahiro: *See*—
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.
Teramura, Koji, to Kyo-Fi Industrial Corporation. Cap for fastening devices for motor vehicle wheels and the like. 5,364,213, Cl. 411-431.000.
Terashima, Katsu. Rolling massager. 5,364,338, Cl. 601-120.000.
Terraplas Limited: *See*—
MacLeod, Iain M., 5,364,204, Cl. 404-35.000.
Terry, Joseph L., to Ford Motor Company. Combination motor cooler and air aspirator for climate control system. 5,364,025, Cl. 236-49.100.
Terry, Lewis E.: *See*—
Phipps, John P.; Robb, Stephen P.; Sutor, Judy L.; and Terry, Lewis E., 5,365,099, Cl. 257-328.000.
Terry, Warren W., to Summit Polymers, Inc. Air vent adjustable vanes for controlling air flow direction. 5,364,303, Cl. 454-155.000.
Terui, Yoshiko: *See*—
Lang, Hans; Naumann, Christoph; Raiss, Ruth; Komiyama, Osamu; and Terui, Yoshiko, 5,364,846, Cl. 514-102.000.
Tetra Laval Holdings & Finance SA: *See*—
Bjorck, Bengt; and Carlsson, Lars, 5,364,019, Cl. 229-125.090.
Teulon, Jean-Marie: *See*—
Bru-Magniez, Nicole; Launay, Michele; and Teulon, Jean-Marie, 5,364,860, Cl. 514-300.000.
Teumac, Fred N.: *See*—
Zenner, Bruce D.; Teumac, Fred N.; Deardurff, Larrie A.; and Ross, Bert A., 5,364,555, Cl. 252-188.280.
Texaco Chemical Company: *See*—
Knifton, John F.; and Dai, Pei-Shing E., 5,364,981, Cl. 568-698.000.
Sanderson, John R.; and Duranleau, Roger G., 5,364,988, Cl. 568-909.800.
Texaco Chemical Inc.: *See*—
Su, Wei-Yang, 5,364,971, Cl. 564-498.000.
Texaco Inc.: *See*—
Castagnoli, Craig J.; Cha, Suk-Bae; and Wang, Hong P., 5,364,996, Cl. 585-241.000.
Texas Aluminum Industries, Inc.: *See*—
Christopher, Michael E.; and Cochran, Gerald N., 5,363,615, Cl. 52-272.000.
Texas Instruments Incorporated: *See*—
Cho, Chih-Chen, 5,364,468, Cl. 148-33.300.
Doherty, Donald B.; Meyer, Richard C.; Marshall, Stephen W.; Sampsell, Jeffrey B.; and Gove, Robert J., 5,365,283, Cl. 348-743.000.
Eastham, Gary B., 5,365,421, Cl. 363-71.000.
Gill, Manzur; Shah, Pradeep L.; and McElroy, Dave J., 5,365,082, Cl. 257-374.000.
Herman, Susan J.; Wallace, Richard H.; Stella, Michel; and Brantingham, George L., 5,364,272, Cl. 434-159.000.
Ikalainen, Pertti K., 5,365,197, Cl. 330-286.000.
Joyner, Keith A., 5,364,800, Cl. 437-28.000.
Krenik, William R.; and Izzi, Louis J., 5,365,126, Cl. 326-83.000.
Larson, Keith E., 5,365,465, Cl. 364-715.030.
Liu, David K.; Chen, Kueing-Long; and Riemenschneider, Bert R., 5,365,105, Cl. 257-530.000.
Mair, Hugh, 5,365,181, Cl. 327-116.000.
Patel, Vipul C.; Brown, David R.; and Tso, Jim C., 5,365,487, Cl. 365-226.000.
Schreck, John F., 5,365,486, Cl. 365-222.000.
Smayling, Michael C.; and Talamonti, Luciano, 5,364,801, Cl. 437-39.000.
Tohyama, Masao; and Ikeya, Kiyokazu, 5,364,284, Cl. 439-266.000.
Ward, M. Dwayne; Williams, Kenneth L.; and Craig, Kevin J., 5,365,485, Cl. 365-221.000.
Yashiro, Masaaki; Morinaga, Shigeki; and Teng, Clarence W., 5,364,812, Cl. 437-52.000.
Textron Inc.: *See*—
Schmitt, Karl R.; and Pherigo, Douglas E., 5,365,415, Cl. 362-66.000.
Thakur, Randhir P. S.; Sandhu, Gurtej S.; and Martin, Annette L., to Micron Semiconductor, Inc. System for repeatable temperature measurement using surface reflectivity. 5,364,187, Cl. 374-161.000.
Thalmann, Alfred, to Streng Plastic AG. Coupling for tubular plastic pipes with liner of socket and liner of pipes being heat weldable. 5,364,130, Cl. 285-21.000.
Tharp, Glenn T.: *See*—
Satterfield, Michael J.; Caramberis, Theodore C.; and Tharp, Glenn T., 5,364,144, Cl. 294-27.100.
Theobald, Jill L.: *See*—
Cannon, Gregory L.; Macko, William J.; Fuller, Gregory W.; and Theobald, Jill L., 5,365,227, Cl. 340-825.550.
Theoharides, Anthony D.: *See*—
Balani, Suresh K.; Kauffman, Laura R.; and Theoharides, Anthony D., 5,364,776, Cl. 435-118.000.
Thermal Engineering Corp.: *See*—
Best, Willie H., 5,363,567, Cl. 34-271.000.
Thermedics, Inc.: *See*—
Schmidt, Douglas C., 5,365,442, Cl. 364-424.070.
Thermo Trex Corporation: *See*—
Johnson, Paul A.; Chou, Ri-Chee; Martin, Chris A.; Spivey, Britt; and Lovberg, John, 5,365,237, Cl. 342-179.000.
Thetford Corporation: *See*—
Chlebek, Kevin B., 5,363,510, Cl. 4-321.000.
Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track-bound freight car. 5,364,221, Cl. 414-339.000.
Thiel, Rudolf; Klimt, Ulrich; and Doell, Andreas, to Alfred Teves GmbH. Floating-frame spot-type disc brake for high-torque automotive vehicles. 5,363,944, Cl. 188-73.310.
Thiele, Ernst E.: *See*—
Hecht, Lewis C.; Sulger, Merritt P., deceased; Sulgar, Ellen, executrix; Thiele, Ernst E.; Pierson, Mark V.; and Williams, Lawrence E., 5,364,225, Cl. 414-786.000.
Thiele, Glenn A.: *See*—
Batterham, Robin J.; Grant, Roderick M.; Happ, James V.; and Thiele, Glenn A., 5,364,446, Cl. 75-434.000.
Thiele, Hartmut: *See*—
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; Thiele, Hartmut; and Liepold, August, 5,363,962, Cl. 206-394.000.
Thiokol Corporation: *See*—
Solberg, Mark A.; and Hartwell, James A., 5,363,768, Cl. 102-430.000.
Thoenissen, Jochen: *See*—
Frank, Kurt; Liskow, Uwe; Thoenissen, Jochen; Loistl, Uwe; and Wahl, Oliver, 5,364,246, Cl. 418-15.000.
Thoes, Anthony M.: *See*—
Watters, Jeffrey R.; and Thoes, Anthony M., 5,363,801, Cl. 119-15.000.
Tholin, Keith: *See*—
Lowery, Guy R.; Bacich, Steven R.; and Tholin, Keith, 5,364,345, Cl. 604-49.000.
Thomas, Delbert D.; and Webb, Donald J. Seismic anchor. 5,363,610, Cl. 52-167.00R.
Thomas, Gerald W.: *See*—
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.
Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Bansal, Vinod, 5,364,020, Cl. 229-145.000.
Thome, Roland: *See*—
Wallau, Martin; Spichtinger, Rudolf; Unger, Klaus K.; Tissler, Arno; and Thome, Roland, 5,365,002, Cl. 585-418.000.
Thompson, Kevan R.: *See*—
Doherty, James B.; Firestone, Raymond A.; Finke, Paul E.; Hagmann, William K.; Shah, Shrenik K.; and Thompson, Kevan R., 5,364,848, Cl. 514-201.000.
Thompson, Ronald J.; Misner, Ned L.; and Winegard, Michael D., to Federal-Mogul Corporation. Method for forming a crankshaft bearing having hydrodynamic thrust flanges. 5,363,557, Cl. 29-898.041.

Thompson, Russell B.: *See*—
Edwards, Stuart D.; and Thompson, Russell B., 5,363,861, Cl. 128-772.000.
Thomson-CFS: *See*—
Guichard, Jacques; Buchner, Georges; Eouzan, Jean-Yves; and Hertaux, Jean-Claude, 5,365,270, Cl. 348-311.000.
Thomson Consumer Electronics: *See*—
Willis, Donald H., 5,365,278, Cl. 348-581.000.
Thomson Hybrides: *See*—
Groussin, Bernard, 5,365,533, Cl. 372-36.000.
Thornsberry, Willis L., Jr.: *See*—
Weston, Charles W.; Peacock, Lawrence A.; and Thornsberry, Willis L., Jr., 5,364,438, Cl. 71-29.000.
Thornton, Troy L.: *See*—
Alden, Donald L.; Gandionco, Isidro M.; Thornton, Troy L.; and Yambao, August R., 5,364,355, Cl. 604-96.000.
Thorso, Holger, to Superfos Emballage A/S. Container having a loose inner lining. 5,363,979, Cl. 220-404.000.
Thorud, Richard A.: *See*—
White, Donald M., III; Tonsager, Gregory P.; and Thorud, Richard A., 5,363,635, Cl. 56-255.000.
Throne, James L., to University of Akron, The. Method of depositing and fusing polymer particles onto moistened continuous filaments. 5,364,657, Cl. 427-185.000.
Thudium, Karl; and Rieger, Walter, to L. Schuler GmbH. Forming machine. 5,363,683, Cl. 72-405.000.
Thudium, Karl; Dangelmayr, Andreas; and Rieger, Walter, to L. Schuler GmbH. Device for transferring sheet metal parts in a press installation. 5,363,684, Cl. 72-405.000.
Thunderbird Technologies, Inc.: *See*—
Vinal, Albert W., 5,365,483, Cl. 365-203.000.
Thyssen Guss AG: *See*—
Betz, Gerhard, 5,363,900, Cl. 164-348.000.
Tibbetts, Clark; and Bowling, John M., to Vanderbilt University. Method and apparatus for automatic nucleic acid sequence determination. 5,365,455, Cl. 364-497.000.
Tieken, James B. Manually operated refrigerant recovery device. 5,363,666, Cl. 62-129.000.
Tiller, Samuel A.: *See*—
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Tilles, David J.; San Miguel, Frank J.; Grapes, Thomas F.; Deemer, Diane L.; Wakamiya, Stanley K.; Mullenix, James D.; Westerdale, Mark W.; and Bialik, David, to Westinghouse Electric Corporation. Modular mail processing method and control system. 5,363,967, Cl. 209-539.000.
Tillotson, Donald L.: *See*—
Dorste, David C.; Hoehne, Dennis L.; Friend, John W.; and Tillotson, Donald L., 5,364,066, Cl. 251-122.000.
Timmer, Robert S.: *See*—
Jennings, Alfred R.; Sprunt, Eve S.; and Timmer, Robert S., 5,363,917, Cl. 166-288.000.
Timmerman, Daniel M.; and Vandenabeele, Hubert, to Agfa-Gevaert, N.V. Photographic silver halide element having antistatic properties. 5,364,752, Cl. 430-529.000.
Tinschert, Andreas: *See*—
Kiener, Andreas; Tschech, Andreas; Tinschert, Andreas; and Heinzmann, Klaus, 5,364,940, Cl. 544-406.000.
Tinucci, Laura: *See*—
Marcotullio, Armando; Tinucci, Laura; and Ciali, Massimo, 5,364,960, Cl. 562-121.000.
Tisol, James S., to Illinois Tool Works Inc. Flexible tube clip. 5,363,539, Cl. 24-543.000.
Tissler, Arno: *See*—
Wallau, Martin; Spichtinger, Rudolf; Unger, Klaus K.; Tissler, Arno; and Thome, Roland, 5,365,002, Cl. 585-418.000.
Tobe, Koichiro: *See*—
Oguma, Tetsuya; Horiuchi, Tatsuo; and Tobe, Koichiro, 5,364,936, Cl. 536-103.000.
Todack, James J. Refrigerant recovery and recycling method and apparatus. 5,363,662, Cl. 62-85.000.
Togai, Kazuhide; Takatsuka, Takashi; Shimada, Makoto; Kawai, Junji; and Hayafune, Kazuya, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control device for internal combustion engine and a continuously variable transmission. 5,364,321, Cl. 477-42.000.
Togano, Takeshi: *See*—
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.
Toganoh, Shigeo: *See*—
Inoue, Makoto, deceased; Inoue, Tsuneo, heir; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,365,255, Cl. 347-45.000.
Togo, Makiko: *See*—
Takinishi, Fumitaka; Togo, Makiko; Endo, Masayuki; and Yokoyama, Yasuaki, 5,364,910, Cl. 525-327.300.
Togura, Kenji: *See*—
Sato, Kiyotaka; and Togura, Kenji, 5,365,537, Cl. 372-50.000.
Tohoyogyo Co., Ltd.: *See*—
Higashino, Tetsuo; Nakamura, Shosaku; Iimurou, Akira; Maeyama, Misao; Fukushige, Yoshimi; and Harada, Tomoyuki, 5,364,331, Cl. 492-43.000.
Tohyama, Masao; and Ikeya, Kiyokazu, to Texas Instruments Incorporated. Socket. 5,364,284, Cl. 439-266.000.
Toker, Emre, to Fischer Imaging Corporation. Digital imaging apparatus. 5,365,562, Cl. 378-37.000.
Tokico Ltd.: *See*—
Ichimaru, Nobuyuki, 5,364,122, Cl. 280-709.000.
Tokoi, Masaki: *See*—
Seki, Yoshio; Tokoi, Masaki; Ishizu, Atsushi; and Miki, Yoichiro, 5,365,274, Cl. 348-458.000.
Tokumaru, Hisashi: *See*—
Arimoto, Tetsuya; Kuwana, Minoru; Ishibashi, Kenji; Serita, Yasuaki; Ueyama, Masayuki; Ootsuka, Hiroshi; and Tokumaru, Hisashi, 5,365,297, Cl. 354-195.100.
Tokuno, Toshiro: *See*—
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.
Tokura, Norihito; and Yamamoto, Tsuyoshi, to Nippondenso Co., Ltd. Power semiconductor device with a current detecting function. 5,365,085, Cl. 257-139.000.
Tokyo Electron Kyushu Limited: *See*—
Akimoto, Masami; Yoshioka, Kazutoshi; and Iida, Naruaki, 5,364,222, Cl. 414-416.000.
Tokyo Electron Limited: *See*—
Akimoto, Masami; Yoshioka, Kazutoshi; and Iida, Naruaki, 5,364,222, Cl. 414-416.000.
Tokyo Gas Co., Ltd.: *See*—
Hosohara, Yasuharu; Suzuki, Kiwamu; Fujiwara, Shigeru; and Kawabe, Toshihide, 5,365,169, Cl. 324-233.000.
Tokyo Institute of Technology: *See*—
Furuya, Kazuhito; and Miyamoto, Yasuyuki, 5,364,717, Cl. 430-5.000.
Tokyo Ohka Kogyo Co., Ltd.: *See*—
Minato, Mitsuaki; Uehara, Akira; and Matsushita, Atsushi, 5,364,488, Cl. 156-345.000.
Tolan-Samilow, Kathleen R. Potty trainer timepiece. 5,365,496, Cl. 368-109.000.
Tomaru, Kazuhiko: *See*—
Takago, Toshio; Tomaru, Kazuhiko; Shimamoto, Noboru; Inomata, Hiroshi; and Sato, Shinichi, 5,364,676, Cl. 428-35.700.
Tomaru, Yuugo: *See*—
Shishido, Osamu; Arai, Satoshi; Tomaru, Yuugo; and Nagayama, Eiji, 5,363,600, Cl. 451-397.000.
Tomikawa, Fumio: *See*—
Iijima, Masaki; Yamada, Masakazu; Tomikawa, Fumio; Negoro, Masaaki; Minemoto, Masaki; and Haneda, Hisao, 5,364,611, Cl. 423-437.00R.
Tominaga, Junji, to TDK Corporation. Optical recording medium. 5,364,708, Cl. 428-626.000.
Tominari, Kenichi: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; Miura, Kimiyoshi; Tominari, Kenichi; and Kanezawa, Akio, 5,364,926, Cl. 528-198.000.
Tomisawa, Naoki, to Unisia Jecs Corporation. Method of and an apparatus for carrying out feedback control on an air-fuel ratio in an internal combustion engine. 5,363,831, Cl. 123-695.000.
Tomishi, Tetsuo: *See*—
Takasugi, Hisashi; Katsura, Yousuke; Tomishi, Tetsuo; and Inoue, Yoshikazu, 5,364,871, Cl. 514-342.000.
Tomita, Kazuhiro: *See*—
Tanaka, Masahiro; Tomita, Kazuhiro; and Ogawa, Kazumi, 5,365,167, Cl. 324-158.100.
Tomizawa, Hirotaka: *See*—
Arai, Katsuya; Tsukada, Toshikazu; and Tomizawa, Hirotaka, 5,364,545, Cl. 252-32.70R.
Tomoyuki, Yohji: *See*—
Okuda, Kouichi; Nakamura, Shunji; Ohtsuka, Yasumasa; Tomoyuki, Yohji; Hayakawa, Akira; and Fukuzawa, Daizo, 5,365,314, Cl. 355-208.000.
Tonsi, Ichiro, to Sumitomo Electric Industries, Ltd. Photo-sensing device. 5,365,101, Cl. 257-434.000.
Tondreault, Robert J., to Robinson Nugent, Inc. Electrical connector socket with daughtercard ejector. 5,364,282, Cl. 439-157.000.
Tonen Corporation: *See*—
Arai, Katsuya; Tsukada, Toshikazu; and Tomizawa, Hirotaka, 5,364,545, Cl. 252-32.70R.
Toner, Frank J., to Toner, Frank J.; and Atlantic Coast Alarm. Personal security system apparatus and method. 5,365,217, Cl. 340-539.000.
Tonkin, Dean G.: *See*—
Snellman, Donald L.; and Tonkin, Dean G., 5,364,215, Cl. 412-3.000.
Tonsager, Gregory P.: *See*—
White, Donald M., III; Tonsager, Gregory P.; and Thorud, Richard A., 5,363,635, Cl. 56-255.000.
Toomey, Danny D.; Ralls, Gene R.; and Manley, Johnny M., to TDW Delaware, Inc. Method for repairing a transport pipe. 5,363,541, Cl. 29-890.140.
Topical Testing, Inc.: *See*—
Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., 5,363,859, Cl. 128-739.000.
Toral, Jose; Brandstetter, Hermann; Lutz, Gottfried; Thiele, Hartmut; and Liepold, August, to BASF Magnetics GmbH. Multipack for magnetic tapes wound onto hubs. 5,363,962, Cl. 206-394.000.

Torelli, Giorgio: *See—*
Migliorini, Pier L.; Molta, Pier C.; and Torelli, Giorgio, 5,363,884, Cl. 139-455.000.

Torigoe, Eiichi: *See—*
Baba, Norimasa; Yamamoto, Ken; Yamamoto, Michiyasu; Sanada, Ryouichi; Torigoe, Eiichi; and Nakamura, Mitsugu, 5,363,910, Cl. 165-153.000.

Torma, Michael J.; Galing, Bernard W.; Palmer, Robert J.; and West, Suzanne K. S., to United States of America, Air Force. Method and system for measuring management effectiveness. 5,365,425, Cl. 364-401.000.

Toro Company, The: *See—*
Petersen, Walter J., 5,364,114, Cl. 280-95.100.
White, Donald M., III; Tonsager, Gregory P.; and Thorud, Richard A., 5,363,635, Cl. 56-255.000.

Torres, Robert J., to International Business Machines Corporation. Method and apparatus for presenting information contained within a data icon by assigning attributes to various dimensions of the data icon. 5,365,360, Cl. 395-159.000.

Torti, Francesca: *See—*
Hutchinson, Charles R.; Madduri, Krishna M.; Torti, Francesca; and Colombo, Anna L., 5,364,781, Cl. 435-193.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Horiguchi, Takeshi; and Katabira, Torao, 5,363,764, Cl. 101-485.000.
Ochiai, Akira; Takahashi, Katsuji; and Watanabe, Kouya, 5,364,190, Cl. 384-100.000.

Tournebize, Jean-Pierre: *See—*
Velluet, Pascal; and Tournebize, Jean-Pierre, 5,363,911, Cl. 165-173.000.

Towa Corporation: *See—*
Yoshimoto, Katsunobu; Hatta, Masayoshi; and Kumondai, Toshio, 5,363,777, Cl. 110-214.000.

Townsend, Carl W., to Hughes Aircraft Company. Dual porosity gas evolving electrode. 5,364,712, Cl. 429-42.000.

Toyama, Akira: *See—*
Tamura, Itaru; and Toyama, Akira, 5,365,458, Cl. 364-506.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Imai, Tomoyasu; Yoshimi, Takani; Matsuura, Akihiro; Takashima, Toshiharu; Tsutsui, Toshihiro; and Nakano, Hiroyuki, 5,363,598, Cl. 51-331.000.
Kitajima, Masato; Soma, Shinji; Kamiya, Akimitsu; Suzuki, Akira; Sekiya, Yasuhisa; and Inagaki, Tomohiro, 5,364,422, Cl. 51-307.000.

Toyoda Van Moppes Kabushiki Kaisha: *See—*
Kitajima, Masato; Soma, Shinji; Kamiya, Akimitsu; Suzuki, Akira; Sekiya, Yasuhisa; and Inagaki, Tomohiro, 5,364,422, Cl. 51-307.000.

Toyofuku, Katsuyuki; Nagamatsu, Ichiro; Shirakawa, Shinji; Iga, Hiroto; Kujiraoka, Takeshi; and Murakami, Kensei, to Tanaka Denshi Kogyo Kabushiki Kaisha. Clad bonding wire for semiconductor device. 5,364,706, Cl. 428-607.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Asahara, Norimi; Hojo, Yasuo; and Ohtubo, Hideaki, 5,363,724, Cl. 477-143.000.
Sakane, Shinsuke; Ichikawa, Hiroyuki; Fukushima, Satoru; and Hamada, Chiaki, 5,364,175, Cl. 303-97.000.
Seki, Akinori, 5,365,536, Cl. 372-45.000.
Takaoka, Toshio, 5,363,826, Cl. 123-486.000.
Tanaka, Shigetaka; Ohtake, Yukio; and Ohbuchi, Yutaka, 5,363,652, Cl. 60-603.000.

Toyota, Kenichi: *See—*
Yamamura, Kouichirou; Toyota, Kenichi; and Kawano, Yoshihiko, 5,365,480, Cl. 365-190.000.

Tracy, James E.; and Bartholomew, John T., to General Electric Company. Copper-clad polyetherimide laminates with high peel strength. 5,364,703, Cl. 428-460.000.

Transamerican Technologies International: *See—*
Crow, Lowell, 5,364,070, Cl. 251-322.000.

Travers, Phillipe: *See—*
Nocca, Jean-Luc; Travers, Phillipe; Mank, Larry; and Forestiere, Alain, 5,364,975, Cl. 568-697.000.

Treece, William D.: *See—*
Shekleton, Jack R.; and Treece, William D., 5,363,644, Cl. 60-39.360.

Tremblay, Francois; Turcotte, Gilles R.; Lavoie, Serge; Dube, Ghyslain; Tremblay, Sylvain P.; and Fortin, Jean-Yves, to Alcan International Limited. Process for combined decoating and melting of aluminum scrap contaminated with organics. 5,364,443, Cl. 75-403.000.

Tremblay, Sylvain P.: *See—*
Tremblay, Francois; Turcotte, Gilles R.; Lavoie, Serge; Dube, Ghyslain; Tremblay, Sylvain P.; and Fortin, Jean-Yves, 5,364,443, Cl. 75-403.000.

Tremco, Inc.: *See—*
Angeline, Barry D., 5,363,994, Cl. 222-529.000.
Portfolio, Donald C.; and Fensel, Fred A., 5,364,894, Cl. 524-60.000.

Tridonic Bauelemente GmbH: *See—*
Spiegel, Norbert; and Pabst, Wolfgang, 5,365,151, Cl. 315-209.00R.

Trimberger, Stephen M.: *See—*
Goetting, F. Erich; and Trimberger, Stephen M., 5,365,125, Cl. 326-39.000.

Trimble, Michael W.: *See—*
White, Joseph L.; and Trimble, Michael W., 5,365,014, Cl. 800-200.000.

Trimble Navigation Limited: *See—*
Wagner, Gary L.; and Lau, Chung Y., 5,365,192, Cl. 330-252.000.

Triner, James E.: *See—*
Cochran, Don W.; and Triner, James E., 5,365,084, Cl. 250-571.000.

Triton Technology, Inc.: *See—*
Spani, Wayne M.; and Kemper, William S., 5,363,848, Cl. 128-661.090.

Troponwerke GmbH & Co KG: *See—*
Bode-Greuel, Kerstin, 5,364,857, Cl. 514-259.000.

Troster, Theodor: *See—*
Speck, Norbert; Troster, Theodor; and Sautter, Dietmar, 5,363,681, Cl. 72-129.000.

Truong, Tri T.: *See—*
Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., 5,363,646, Cl. 60-274.000.

Trusov, Lev I.; Lapovok, Vladimir N.; and Novikov, Victor I., to Ultram International L.L.C. Process for the production of porous membranes. 5,364,586, Cl. 419-2.000.

TRW Inc.: *See—*
Budzik, John A., Jr.; Cartwright, Mark A.; Hoagland, Mark A.; Johnson, Samuel G., III; Nemani, Murthy N.; Oxley, Gerald K.; Peterson, Philip S.; Thomas, Gerald W.; Venable, Frederick D.; and White, Daniel L., 5,363,716, Cl. 74-493.000.
Bullock, Donald L., 5,365,541, Cl. 372-99.000.
Cuevas, Jess A., 5,364,127, Cl. 280-741.000.
Smith, Ronald P., 5,365,470, Cl. 364-726.000.

TRW Vehicle Safety Systems Inc.: *See—*
Brown, Louis R.; Steffens, Charles E., Jr.; Vos, Thomas H.; and Burley, Edward J., 5,364,125, Cl. 280-730.00A.

Tsann Kuen USA, Inc.: *See—*
Boehm, Michael W.; and Johnson, Robert W., 5,363,748, Cl. 99-372.000.

Tsao, Chein-Hwa: *See—*
Yeung, Michael; Lee, Robert N.; and Tsao, Chein-Hwa, 5,363,890, Cl. 141-364.000.

Tsao, Ying-Yen P.: *See—*
Girgis, Michael J.; and Tsao, Ying-Yen P., 5,364,997, Cl. 585-253.000.

Tschech, Andreas: *See—*
Kiener, Andreas; Tschech, Andreas; Tinschert, Andreas; and Heinzmann, Klaus, 5,364,940, Cl. 544-406.000.

Tschiderer, Paul E., to Eastman Kodak Company. Restacking tray for fan fold paper feeder. 5,363,998, Cl. 226-200.000.

Tseng, Shih-Tsung: *See—*
Chang, Kuo-Ching; Tseng, Shih-Tsung; and Huang, Jain-Sheng, 5,363,781, Cl. 110-250.000.

Tso, Jim C.: *See—*
Patel, Vipul C.; Brown, David R.; and Tso, Jim C., 5,365,487, Cl. 365-226.000.

Tsuboi, Akio: *See—*
Sakamoto, Masaharu; Mori, Tomoyuki; and Tsuboi, Akio, 5,364,445, Cl. 75-426.000.

Tsubota, Hiroyoshi: *See—*
Ohgawara, Masao; and Tsubota, Hiroyoshi, 5,365,357, Cl. 359-67.000.

Tsubouchi, Kazuo; and Masu, Kazuya, to Canon Kabushiki Kaisha. Process for non-selectively forming deposition film on a non-electron-donative surface. 5,364,664, Cl. 427-535.000.

Tsuchida, Tetsuo: *See—*
Iwashita, Kanau; Nishimoto, Yukimasa; Sawano, Yoshiaki; and Tsuchida, Tetsuo, 5,363,943, Cl. 188-72.500.

Tsuchiya, Koji, to Precision Fukuhara Works, Ltd. Dust sucking and discharging device for fiber wastes on knitting machine. 5,363,676, Cl. 66-168.000.

Tsuda, Masanori: *See—*
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.

Tsuji, Masayuki: *See—*
Hirano, Yutaka; Tsuji, Masayuki; and Sakakibara, Hironobu, 5,363,545, Cl. 29-527.400.

Tsuji, Nobuyuki: *See—*
Asada, Hidenori; Arakawa, Takeshi; and Tsuji, Nobuyuki, 5,364,721, Cl. 430-109.000.

Tsujihiro, Masami: *See—*
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,719, Cl. 430-106.000.
Ohta, Hideki; Imafuku, Tatsuo; Tsujihiro, Masami; Tokuno, Toshiro; Shimoyama, Hiroshi; and Hirano, Nobuhiro, 5,364,728, Cl. 430-137.000.

Tsujii, Eisaku: *See—*
Takase, Shigehiro; Hatanaka, Hiroshi; Ezaki, Masami; Tsujii, Eisaku; Okamoto, Masanori; Shigematsu, Nobuharu; and Okuhara, Masakuni, 5,364,624, Cl. 424-117.000.

Tsujimoto, Masanobu: *See—*
Morimoto, Keizin; Tsujimoto, Masanobu; Yaji, Tomomi; and Murakami, Tooru, 5,364,460, Cl. 106-1.230.

Tsukada, Toshikazu: *See—*
Arai, Katsuya; Tsukada, Toshikazu; and Tomizawa, Hirotaka, 5,364,545, Cl. 252-32.70R.

Tsukakara, Daiki: *See—*
Wakabayashi, Hiroshi; Tsukakara, Daiki; Katano, Yuji; and Aoki, Hitoshi, 5,365,292, Cl. 354-76.000.

Tsumura, Mihoji; and Hata, Masato, to Ricos Co., Ltd. Data and speech transmission device. 5,365,576, Cl. 379-93.000.

Tsurushima, Shinichiro; Matsumori, Satoru; Kon, Kazuyasu; and Kaneko, Kunihiro, to Kansei Corporation. Vehicle passenger restraint device for use in automotive vehicle or the like. 5,365,114, Cl. 307-10.100.

Tsuruta, Shinji: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Tsutsui, Hiroshi: *See—*
Ohtsuchi, Tetsuro; Tsutsui, Hiroshi; Ohmori, Koichi; and Baba, Sueki, 5,365,567, Cl. 378-156.000.

Tsutsui, Toshihiro: *See—*
Imai, Tomoyasu; Yoshimi, Takani; Matsuura, Akihiro; Takashima, Toshiharu; Tsutsui, Toshihiro; and Nakano, Hiroyuki, 5,363,598, Cl. 51-331.000.

Tsuyama, Toshiaki; Onaka, Toru; Nobumoto, Kazutoshi; and Kawamura, Makoto, to Mazda Motor Corporation. Traction control device for vehicles. 5,365,443, Cl. 364-426.030.

Tsymbalov, Sofya: *See—*
Hansen, Donald W., Jr.; Chandrakumar, Nizal S.; Peterson, Karen B.; Tsymbalov, Sofya; and Husa, Robert K., 5,364,850, Cl. 514-255.000.

Tuckett, Robert P.; Horch, Kenneth W.; Fisher, John H.; and Evans, Barry L., to Topical Testing, Inc. Tactile testing device and methods. 5,363,859, Cl. 128-739.000.

Tuebo, Paula M.: *See—*
Curtis, Gary L.; Johnson, Gregory A.; and Tuebo, Paula M., 5,364,330, Cl. 492-41.000.

Tuminello, William H.: *See—*
Dee, Gregory T.; and Tuminello, William H., 5,364,929, Cl. 528-491.000.

Tumminelli, Richard; Hakimi, Farhad; and Haavisto, John R., to Charles Stark Draper Laboratory Inc., The. Slab waveguide pumped channel waveguide laser. 5,365,538, Cl. 372-66.000.

Tuohy, Matthew J. Assembly and method of using a multi-part piston with a removable head. 5,363,822, Cl. 123-193.600.

Turbotak Technologies Inc.: *See—*
Spink, Donald R.; and Nguyen, Kim D., 5,364,604, Cl. 423-210.000.

Turcotte, Gilles R.: *See—*
Tremblay, Francois; Turcotte, Gilles R.; Lavoie, Serge; Dube, Ghyslain; Tremblay, Sylvain P.; and Fortin, Jean-Yves, 5,364,443, Cl. 75-403.000.

Turner, Charles J.: *See—*
Saffari, Akbar; Campa, Francis W.; Medema, Jerry A.; Turner, Charles J.; and Wolf, Jeffrey J., 5,365,062, Cl. 250-239.000.

Turner, David C.; and Gaber, Bruce P., to United States of America, Navy. Repositionable substrate for microscopes. 5,365,072, Cl. 250-491.100.

Turturro, Nicholas A. Flagpole and cap. 5,363,607, Cl. 52-40.000.

Tut Systems, Inc.: *See—*
Graham, Martin H., 5,365,515, Cl. 370-17.000.

Tuttle, John R.: *See—*
Snodgrass, Charles K.; Allen, David H.; Tuttle, John R.; Rotzoll, Robert R.; and Pax, George E., 5,365,551, Cl. 375-1.000.

Tymco, Inc.: *See—*
Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., 5,363,533, Cl. 15-339.000.

Uchida, Hirofumi: *See—*
Kuraishi, Fumio; Wada, Norio; and Uchida, Hirofumi, 5,365,107, Cl. 257-673.000.

Uchida, Ken: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Uchiyama, Jerome T.: *See—*
Alexander, John V.; Uchiyama, Jerome T.; and Penner, Arthur F., 5,363,920, Cl. 166-350.000.

Uchiyama, Naoki: *See—*
Morikawa, Masaki; Hosoda, Naoyuki; and Uchiyama, Naoki, 5,364,482, Cl. 156-182.000.

Uda, Sawayo: *See—*
Kuretake, Masato; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Yoshida, Yoshimi; Uda, Sawayo; and Zushi, Takayasu, 5,364,126, Cl. 280-730.00R.

Ueda, Hideyuki: *See—*
Takahashi, Kiyoshi; Murai, Mikio; Odagiri, Masaru; Ueda, Hideyuki; Ohchi, Yukikazu; and Hiwatashi, Tatsuya, 5,364,690, Cl. 428-212.000.

Ueda, Hiroshi: *See—*
Kojima, Kiyoshi; Amami, Kazuyoshi; Ueda, Hiroshi; Furuyama, Shizuo; Hara, Yoshihiro; Hasegawa, Kyoichi; and Kawamata, Tadashi, 5,364,253, Cl. 425-78.000.

Ueda, Kimio: *See—*
Nakase, Yasunobu; Makino, Hiroshi; and Ueda, Kimio, 5,365,123, Cl. 326-109.000.

Ueda, Michio; Kondo, Yoshihito; and Umazume, Hiroaki, to Shikoku Kakoki Co., Ltd. Machine for producing soybean curd. 5,363,753, Cl. 99-453.000.

Uehara, Akira: *See—*
Minato, Mitsuaki; Uehara, Akira; and Matsushita, Atsushi, 5,364,488, Cl. 156-345.000.

Uemiya, Takafumi: *See—*
Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, 5,363,797, Cl. 117-68.000.

Uenishi, Naota; Uemiya, Takafumi; Shimizu, Yo; Mizoguchi, Akira; Oogaki, Yasuji; Hattori, Yasuhiro; and Umegaki, Shinsuke, to Sumitomo Electric Industries, Ltd. Method for producing organic crystal and crystal growth cell therefor. 5,363,797, Cl. 117-68.000.

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Wark, Rickey E., to Sure Alloy Steel Corporation. Exhauster inlet venturi. 5,363,776, Cl. 110-106.000.

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Janke, Donald E.; Szynal, Joseph M.; Guess, Ronald W.; and Bradley, Greg A., 5,363,667, Cl. 62-131.000.
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White, Daniel L.: *See—*
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Kim, Sang H.; Adin, Anthony; Beal, Richard E.; Budz, Jerzy A.; Lam, Wai K.; and Whitson, Mark A., 5,364,754, Cl. 430-569.000.

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Bradtmueller, Lynn E.; Wiedemann, Gustave F.; Pierre, David M.; and Smitley, Ronnie G., 5,363,546, Cl. 29-564.100.

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Wilenken, Stephen P. Guitar holster. 5,363,734, Cl. 84-327.000.

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Ward, M. Dwayne; Williams, Kenneth L.; and Craig, Kevin J., 5,365,485, Cl. 365-221.000.

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Johnson, Jerry L.; Perko, Vincent L.; and Williams, Melanee J., 5,363,719, Cl. 74-502.400.

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Willits, William G.; and Schmitt, Thomas P., Jr., to Lab One Enterprises, L.C. Partial denture. 5,364,269, Cl. 433-178.000.

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Smurkoski, John A.; Leggitt, Gary L.; and Wilson, Gregory L., 5,364,504, Cl. 162-116.000.

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Campbell, John E.; Chan, Michael J.; Hajek, Steven F.; and Wiltgen, Paul L., 5,365,587, Cl. 380-25.000.

Wilzbach, Bernard L.: *See—*
Baker, Ronald W.; Burdick, Robert L.; DiGirolamo, Martin V.; Horrall, Paul D.; Rice, Larry J.; Roe, Ronald L.; Ward, Earl D., II; and Wilzbach, Bernard L., 5,365,315, Cl. 355-210.000.

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Henning, Hans-Heinrich; Frohn, Dieter; Hollmann, Carldieter; Winkelstroter, Walter; and Diedrichsen, Frank, 5,364,228, Cl. 415-55.100.

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Rosen, Terry J.; Godek, Dennis M.; Gut, Sally; and Wint, Lewin, 5,364,943, Cl. 546-223.000.

Wintime Technology Inc.: *See—*
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Wirsing, Timothy A., to General Motors Corporation. Arrangement of a vehicle door with extendable window. 5,363,595, Cl. 49-375.000.

Wirth Gallo Messtechnik AG: *See—*
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Wirth, Wayne M.; and Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Apparatus for analyzing tracking error in magnetic tapes. 5,365,333, Cl. 356-244.000.

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Partridge, Peter G.; and Wisbey, Andrew, 5,363,554, Cl. 29-889.710.

Wise, Henry: *See—*
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Wise, Kenneth J.: *See—*
Cox, Sherman D.; and Wise, Kenneth J., 5,364,828, Cl. 502-341.000.

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Davis, Richard A.; Witmore, Ronald K.; Fette, Charles J.; Brittain, Anthony J.; and Mathys, Peter, 5,365,577, Cl. 379-96.000.

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Wittmer, Gary G.: *See—*
Miller, Paul L.; Stignani, Mark D.; and Wittmer, Gary G., 5,363,603, Cl. 451-40.000.

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Clark, Robert A.; Puzon, Rory R.; and Wlodarczyk, James T., 5,363,747, Cl. 99-348.000.

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Hanko, Rudolf; Dressel, Jurgen; Fey, Peter; Hubsch, Walter; Kramer, Thomas; Muller, Ulrich E.; Muller-Gliemann, Matthias; Beuck, Martin; Kazda, Stanislav; Hirth-Dietrich, Claudia; Knorr, Andreas; Stasch, Johannes-Peter; Wohlfeil, Stefan; and Yalkinoglu, Ozkan, 5,364,942, Cl. 546-118.000.

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Mitchell, Clair E.; Wojcik, Karl W.; Rutkowski, David J.; Langer, Peter; and Dara, Paul C., 5,365,438, Cl. 364-424.030.

Wojtecki, Ronald J.: *See—*
Raddatz, Claus D.; Wojtecki, Ronald J.; and Zerndt, Norman E., 5,363,743, Cl. 92-98.00D.

Wolcott, John H., to Eaton Corporation. Electromagnetic coupling. 5,363,912, Cl. 166-72.000.

Wolf, Fred R.: *See—*
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Wolf, Jeffrey J.: *See—*
Saffari, Akbar; Camps, Francis W.; Medema, Jerry A.; Turner, Charles J.; and Wolf, Jeffrey J., 5,365,062, Cl. 250-239.000.

Wolfe, Gary E.: *See—*
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Wong, James F.: *See—*
Hershey, Howard P.; Katayama, Carol D.; Ralston, Edward J.; Stoner, Timothy D.; and Wong, James F., 5,364,780, Cl. 435-172.300.

Wong, Larry K., to Northern Telecom Limited. Backplane databus utilizing directional couplers. 5,365,205, Cl. 333-109.000.

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Wong, Stanley; Chang, Michael H.; and Lee, Robert, to Chang, Michael Hung. Conversation level warning device. 5,365,219, Cl. 340-573.000.

Wong, Stephen L., to Philips Electronics North America Corporation. Wideband amplifier circuit using npn transistors. 5,365,198, Cl. 330-288.000.

Wood, Robert J.: *See—*
Wheeler, Robert; Tamburrino, Richard A.; and Wood, Robert J., 5,365,058, Cl. 250-216.000.

Wooster Brush Company, The: *See—*
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Worner, Howard K., to Illawarra Technology Corporation Limited. Cotreatment of sewage and steelworks wastes. 5,364,441, Cl. 75-10.100.

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Wortrich, Theodore S., to Surgin Surgical Instrumentation, Inc. Safety device for laparoscopic instruments. 5,364,365, Cl. 604-158.000.

Wozniak, Walter E. Pneumatic timed spray dispenser. 5,364,028, Cl. 239-70.000.

Wrapco International B.V.: *See—*
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Wright Medical Technology, Inc.: *See—*
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Wu, An-hsiang, to Phillips Petroleum Company. Ethylene oligomerization and catalyst therefor. 5,365,007, Cl. 585-528.000.

Wu, Chun, to Amdahl Corporation. Trace system for an I/O channel. 5,365,526, Cl. 371-16.500.

Wu, Leon L.: *See—*
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Wu, Lung-Ming: *See—*
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Wu, Muh-Cheng M.; and Wasson, George E., to Consolidation Coal Company. Process for making high-strength synthetic aggregates. 5,364,572, Cl. 264-40.100.

Wu, Yeou-Jyh. Structure for key chain. 5,363,680, Cl. 70-456.00R.

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Wyman, Stuart J., to Minnesota Mining and Manufacturing Company. Spool adapter. 5,364,042, Cl. 242-348.000.

Xcorp, Inc.: *See—*
Catlin, Christopher S., 5,363,939, Cl. 180-291.000.

Xerox Corporation: *See—*
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Folkins, Jeffrey J.; Bray, Daniel M.; Fioravanti, Alex; Pietrowski, Kenneth W.; Lioy, Gerald T.; and Bebe, Thomas J., 5,365,317, Cl. 355-225.000.
Genovese, Frank C., 5,365,074, Cl. 250-560.000.
Georges, Michael K.; Listigovers, Nancy A.; Drappel, Stephan V.; McDougall, Maria V.; and Allison, Gerald R., 5,364,723, Cl. 430-110.000.
Gray, Gary A., Jr., 5,364,332, Cl. 493-23.000.
Jenkins, Everett W.; Wegeng, Donald L.; Lo Biondo, Martin F.; and Rubens, John M., 5,365,310, Cl. 355-202.000.
Kadakia, Vinod K.; Kellman, Jeffrey N.; and Kang, Christine, 5,365,601, Cl. 382-46.000.
Kmiecik-Lawrynowicz, Grazyna E.; Patel, Raj D.; and Hopper, Michael A., 5,364,729, Cl. 430-137.000.
Knodt, Kurt T.; Raymor, Herbert J.; Coy, Gerald L.; and Cole, Randall P., 5,365,349, Cl. 358-406.000.
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Morrison, Ian D.; Hsieh, Bing R.; and Taylor, Jerry H., 5,364,726, Cl. 430-115.000.
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Schieck, Richard A.; Kremers, Henry T.; and Gates, Douglas W., 5,364,087, Cl. 271-148.000.

Xilinx, Inc.: *See—*
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Xun, Luying: *See—*
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Xydis, Thomas G.: *See—*
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Y. T. Li Engineering, Inc.: *See—*
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Yabe, Yuichiro: *See—*
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Yamada, Kazuyuki; and Takakura, Satoshi, to Fujitsu Limited. Call distributing service system for a plurality of terminals. 5,365,582, Cl. 379-265.000.

Yamada, Masakazu: *See—*
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Yamada, Shuji: *See—*
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Yamagata, Kenji: *See—*
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Yamagishi, Mikio, to Hitachi, Ltd. Semiconductor integrated circuit device. 5,365,091, Cl. 257-203.000.

Yamagiwa, Akira: *See—*
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Yamaguchi, Akihiro: *See—*
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Yamaguchi, Atsuo, to Mitsubishi Denki Kabushiki Kaisha. IC card with clock signal input control. 5,365,047, Cl. 235-380.000.

Yamaguchi, Chiseki: *See—*
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Yamaguchi, Eiji; Hoshi, Hiroaki; Yamamoto, Masakuni; and Ikeda, Sotomitsu, to Canon Kabushiki Kaisha. Semiconductor laser and beam splitting devices, and optical information recording/reproducing, optical communication, and optomagnetic recording/reproducing apparatuses using semiconductor laser and beam splitting devices. 5,365,535, Cl. 372-38.000.

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Yamaguchi, Masato: *See—*
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Yamaguchi, Takeshi: *See—*
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Kakubo, Yuji; Kimura, Shigeki; Hamamatsuiromi; and Niimi, Koji, 5,365,468, Cl. 364-724.100.
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Noguchi, Yoshitaka; and Mizuguchi, Masaaki, 5,364,289, Cl. 439-501.000.
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Yamaichi Electronics Co., Ltd.: *See—*
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Yamakawa, Eiji: *See—*
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Yamakawa, Katsuyoshi; Sato, Kozo; and Suginome, Takashi, to Fuji Photo Film Co., Ltd. 5-acyl-4,5,6,7-tetrahydrothieno (3,2-C)pyridine-2-carboxylic acid derivative and process for producing the same. 5,364,941, Cl. 546-114.000.

Yamakawa, Kazuhiko: *See—*
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Yamamoto, Ken: *See—*
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Yamaguchi, Eiji; Hoshi, Hiroaki; Yamamoto, Masakuni; and Ikeda, Sotomitsu, 5,365,535, Cl. 372-38.000.

Yamamoto, Masao: *See—*
Yamada, Shuji; Kanda, Motoya; Yamamoto, Masao; Suzuki, Nobukazu; Kanazawa, Yoshiko; Hongu, Akinori; Kondou, Yuu; Uchida, Ken; Hasimoto, Koji; Niki, Hirokazu; Sasaki, Kunihiko; and Tsuruta, Shinji, 5,364,711, Cl. 429-15.000.

Yamamoto, Michiyasu: *See—*
Baba, Norimasa; Yamamoto, Ken; Yamamoto, Michiyasu; Sanada, Ryouichi; Torigoe, Eiichi; and Nakamura, Mitsugu, 5,363,910, Cl. 165-153.000.

Yamamoto, Osamu: *See—*
Kikkawa, Yoshitsugi; Yamamoto, Osamu; Sakaguchi, Junichi; and Nakamura, Moritaka, 5,363,655, Cl. 62-9.000.

Yamamoto, Takao: *See—*
Nagamura, Takashi; and Yamamoto, Takao, 5,363,656, Cl. 62-25.000.

Yamamoto, Tsuyoshi: *See—*
Tokura, Norihito; and Yamamoto, Tsuyoshi, 5,365,085, Cl. 257-139.000.

Yamamoto, Yasunori: *See—*
Tasaki, Hiroshi; Nishimura, Eiji; and Yamamoto, Yasunori, 5,364,478, Cl. 148-533.000.

Yamamura, Kouichirou; Toyota, Kenichi; and Kawano, Yoshihiko, to NEC Corporation. Memory cells and a memory apparatus using them. 5,365,480, Cl. 365-190.000.

Yamamura, Masato: *See—*
Akamatsu, Junichi; and Yamamura, Masato, 5,364,735, Cl. 430-271.000.

Yamamura, Mitsugu: *See—*
Ayata, Naoki; Yamamura, Mitsugu; Hamasaki, Bunei; Kosugi, Masao; Takahashi, Kazuo; and Seki, Mitsuaki, 5,365,342, Cl. 356-401.000.

Yamanaka, Eisuke: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

Yamanaka, Yuji: *See—*
Koshimizu, Masato; and Yamanaka, Yuji, 5,365,321, Cl. 355-285.000.

Yamanaka, Yutaka, to NEC Corporation. Vertical-to-surface optical semiconductor device and apparatus for coupling optical signals. 5,365,540, Cl. 372-92.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Tamazawa, Kazuharu; Kojima, Tadao; Arima, Hideki; Murakami, Yukiyasu; Isomura, Yasuo; Okada, Minoru; Takenaka, Toichi; and Takanobu, Kiyoshi, 5,364,872, Cl. 514-343.000.

Yamaoka, Tsuguo: *See—*
Kondo, Shunichi; Umehara, Akira; Aotani, Yoshimasa; and Yamaoka, Tsuguo, 5,364,738, Cl. 430-283.000.

Yamasaki, Masafumi; and Matsuzawa, Yoshinori, to Olympus Optical Co., Ltd. Shake-free image restoration system. 5,365,303, Cl. 354-430.000.

Yamashita, Kenkichi: *See—*
Kizuya, Isao; Yamashita, Kenkichi; Onuma, Kunihiko; and Hoshikawa, Akira, 5,365,285, Cl. 348-818.000.

Yamashita, Masataka: *See—*
Shinjo, Kenji; Takiguchi, Takao; Kitayama, Hiroyuki; Katagiri, Kazuharu; Yamashita, Masataka; Togano, Takeshi; Terada, Masahiro; Sato, Junko; Asaoka, Masanobu; Iwaki, Takashi; and Kimura, Yoshiko, 5,364,559, Cl. 252-299.600.

Yamashita, Naomi: *See—*
Imanara, Tohru; Satou, Shoichi; and Yamashita, Naomi, 5,364,584, Cl. 264-510.000.

Yamashita, Osao; and Nakatsu, Yasunori, to Aisan Kogyo Kabushiki Kaisha. Fuel vapor processing apparatus of internal combustion engine. 5,363,828, Cl. 123-520.000.

Yamashita, Teppei: *See—*
Kawano, Hitoshi; Okuno, Atsushi; Tsuda, Masanori; Hayashi, Mitsuhiro; Yamashita, Teppei; Murata, Masanao; Tanaka, Tsuyoshi; Morita, Teruya; and Nakamura, Akio, 5,363,867, Cl. 134-95.200.

Yamatoya, Hidemitsu: *See—*
Watanabe, Shigeaki; Nakagami, Shuichi; Watanabe, Yoshie; and Yamatoya, Hidemitsu, 5,364,158, Cl. 296-189.000.

Yamaya, Norimasa: *See—*
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,364,967, Cl. 564-315.000.

Yamazaki, Hideo: *See—*
Ozawa, Yoshiyuki; Yamazaki, Hideo; Fujino, Makoto; Fukushima, Tohru; and Miyazawa, Yoshinori, 5,365,261, Cl. 347-103.000.

Yamazaki, Katsumasa; Sugita, Shuichi; and Hirabayashi, Shigeto, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,364,753, Cl. 430-549.000.

Yamazaki, Midori: *See—*
Yamaguchi, Keizaburo; Urakami, Tatsuhiro; Tanabe, Yoshimitsu; Yamazaki, Midori; Tamai, Shoji; Yamaya, Norimasa; Ohta, Masahiro; and Yamaguchi, Akihiro, 5,364,967, Cl. 564-315.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of adding a halogen element into oxide superconducting materials by ion injection or thermal diffusion. 5,364,835, Cl. 505-461.000.

Yamazaki, Shunpei; and Takemura, Yasuhiko, to Simiconductor Energy Laboratory Co., Ltd. Field effect transistor with crystallized channel region. 5,365,080, Cl. 257-66.000.

Yamazaki, Shunpei; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Semiconductor device incorporating thermally contracted film. 5,365,081, Cl. 257-67.000.

Yambao, August R.: *See—*
Alden, Donald L.; Gandionco, Isidro M.; Thornton, Troy L.; and Yambao, August R., 5,364,355, Cl. 604-96.000.

Yanagi, Junichirou: *See—*
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; and Aoki, Kaoru, 5,365,519, Cl. 370-60.000.

Yanagisawa, Takuma; and Ohsawa, Seiichi, to Pioneer Electronic Corporation. Optical information reading apparatus with controlled numerical aperture relationship between focusing and receiving optical systems. 5,365,052, Cl. 250-201.500.

Yanase, Takao: *See—*
Fujita, Kouetsu; Yanase, Takao; Kinoshita, Shigenori; Motoyoshi, Osamu; and Ito, Yoshio, 5,365,153, Cl. 318-34.000.

Yancy, Edward L.: *See—*
Kauffman, Kathryn M.; and Yancy, Edward L., 5,364,368, Cl. 604-180.000.

Yang, Ming-Tzong; Hsue, Chen-Chiu; and Hong, Gary, to United Micro Electronics Corporation. Method of making a buried bit line DRAM cell. 5,364,808, Cl. 437-47.000.

Yano, Kazuo: *See—*
Makimura, Katsuyoshi; and Yano, Kazuo, 5,363,770, Cl. 104-172.500.

Yano, Yoshihiro: *See—*
Nakashima, Hiroshi; Yano, Yoshihiro; and Iida, Yasunobu, 5,364,685, Cl. 428-155.000.

Yashida, Makoto; Kurome, Kanji; Asahina, Atsushi; Hanaoka, Yasuki; and Imose, Kazuo, to Teijin Limited. Method and apparatus for bone morphometry and a morphometric bone assay system. 5,365,564, Cl. 378-55.000.

Yashiro, Masaaki; Morinaga, Shigeki; and Teng, Clarence W., to Texas Instruments Inc. High density dynamic RAM cell. 5,364,812, Cl. 437-52.000.

Yasuda, Shinji: *See—*
Ohnishi, Hirokazu; Yasuda, Shinji; Shinozaki, Kiminori; Kogure, Kouji; and Suzuki, Shigehiko, 5,365,521, Cl. 370-60.000.

Yasuda, Shuhei: *See—*
Matsumoto, Toshio; Yasuda, Shuhei; Kusada, Tokutarou; and Nagashima, Nobuyoshi, 5,365,284, Cl. 348-793.000.

Yasui, Takashi: *See—*
Aoki, Akira; Yasui, Takashi; Mizushima, Yoshihiro; and Fukushima, Mitsuru, 5,364,167, Cl. 297-452.180.

Yaung, Huann-Jen: *See—*
Yu, Foung-Hsoung; Lin, Chien-Hsing; Hsu, E-Chang; and Yaung, Huann-Jen, 5,363,933, Cl. 180-6.500.

Yazaki Corporation: *See—*
Sakurai, Kazuaki, 5,364,285, Cl. 439-275.000.

Yeh, Ten F. Middle sole sloping machine with length/width adjustable rolls. 5,364,257, Cl. 425-367.000.

Yesinowski, James P.: *See—*
Buess, Michael L.; Garroway, Allen N.; and Yesinowski, James P., 5,365,171, Cl. 324-307.000.

Yeung, Michael; Lee, Robert N.; and Tsao, Chein-Hwa, to Innostar, Inc. Nonspill bottled water replacement system with disposable seal member. 5,363,890, Cl. 141-364.000.

Yissum Research Development Company of the Hebrew University of Jerusalem: *See—*
Benita, Simon; and Levy, Menashe, 5,364,632, Cl. 424-450.000.

Yoda, Hiroaki: *See—*
Nakao, Takashi; and Yoda, Hiroaki, 5,363,668, Cl. 62-141.000.

Yoder, Max N., to United States of America, Navy. Large area semiconductor wafers. 5,363,798, Cl. 117-89.000.

Yokohama Rubber Co., Ltd., The: *See—*
Kogure, Tomohiko; Muraki, Takao; and Nakakita, Issey, 5,363,896, Cl. 152-543.000.

Yokoi, Haruhiko: *See—*
Katsumata, Ryoichi; Ohshiro, Takashi; Yokoi, Haruhiko; and Shiomi, Michio, 5,364,775, Cl. 435-107.000.

Yokoi, Mitsuyoshi: *See—*
Takagi, Hiromi; Takehisa, Fumitaka; and Yokoi, Mitsuyoshi, 5,363,899, Cl. 164-4.100.

Yokokawa, Hiroshi: *See—*
Takahama, Koichi; Hirao, Shozo; Yokoyama, Masaru; Kishimoto, Takashi; and Yokokawa, Hiroshi, 5,364,823, Cl. 502-62.000.

Yokoyama, Koichi, to Sodick Co., Ltd. Screw position adjusting device for an injection molding machine. 5,364,255, Cl. 425-171.000.

Yokoyama, Kunio: *See—*
Suzuki, Tatsuya; Nagao, Masaki; and Yokoyama, Kunio, 5,365,290, Cl. 354-64.000.

Yokoyama, Masaru: *See—*
Takahama, Koichi; Hirao, Shozo; Yokoyama, Masaru; Kishimoto, Takashi; and Yokokawa, Hiroshi, 5,364,823, Cl. 502-62.000.

Yokoyama, Thomas W.: *See—*
Cai, Rubing; and Yokoyama, Thomas W., 5,364,945, Cl. 549-253.000.

Yokoyama, Yasuaki: *See—*
Takinishi, Fumitaka; Togo, Makiko; Endo, Masayuki; and Yokoyama, Yasuaki, 5,364,910, Cl. 525-327.300.

Yon, James B.; and Waterman, Timothy G., to Westinghouse Electric Corporation. Wideband notch radiator. 5,365,244, Cl. 343-767.000.

Yoneda, Noriyuki: *See—*
Minami, Takeshi; Shimokawa, Kenji; Hamato, Kazuhiko; Shiroto, Yoshimi; and Yoneda, Noriyuki, 5,364,963, Cl. 562-519.000.

Yonehara, Takao; Nishigaki, Yuji; and Yamagata, Kenji, to Canon Kabushiki Kaisha. Method for growth of crystal. 5,363,799, Cl. 117-94.000.

Yoneyama, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 5,364,748, Cl. 430-505.000.

Yonezawa, Keitaro: *See—*
Takahama, Yo; and Yonezawa, Keitaro, 5,364,328, Cl. 483-28.000.

Yoo, Wan M.: *See—*
Ra, Jong O.; Lim, Joon Y.; and Yoo, Wan M., 5,364,320, Cl. 475-280.000.

Yorita, Hiroshi; Igashira, Toshihiko; Sakakibara, Yasuyuki; Gotoh, Moriyasu; and Watanabe, Kazuhide, to Nippon Soken, Inc. Valve drive device. 5,363,816, Cl. 123-90.120.

York Technology Limited: *See—*
Svendsen, David A., 5,365,329, Cl. 356-73.100.

York, Troy M.: *See—*
Hollis, Jeffrey C.; Bones, Chad; and York, Troy M., 5,364,090, Cl. 271-216.000.

Yoshida, Akira: *See—*
Kuwahara, Kiyoshi; Yoshida, Akira; and Kuwahara, Masako, 5,364,155, Cl. 296-136.000.

Yoshida, Eiji: *See—*
Nakamura, Takashi; Osumi, Kenji; Oga, Kiyomasa; Arai, Motohiro; Ikeda, Ryukichi; Yoshida, Eiji; Okada, Hirofumi; and Hamanaka, Ryusuke, 5,364,449, Cl. 75-650.000.

Yoshida, Hideo, to Mitsubishi Denki Kabushiki Kaisha. Error-correction encoding and decoding system. 5,365,530, Cl. 371-37.400.

Yoshida, Hiroaki: *See—*
Momose, Nobuo; and Yoshida, Hiroaki, 5,365,439, Cl. 364-424.050.

Yoshida, Noriaki: *See—*
Imafuku, Shigeki; Yoshida, Noriaki; Takeda, Takeshi; and Shimizu, Takashi, 5,365,452, Cl. 364-468.000.

Yoshida, Tatsuji: *See—*
Fukuoka, Hisaji; Yoshida, Tatsuji; Kobayashi, Suminori; and Sakurai, Toshikazu, 5,364,386, Cl. 604-411.000.

Yoshida, Tetsuo; and Heki, Tatsuo, to Fuji Photo Film Co., Ltd. Direct positive silver halide photosensitive material. 5,364,750, Cl. 430-509.000.

Yoshida, Tetsuo: *See—*
Fukanuma, Tetsuhiko; Kobayashi, Hisao; Yoshida, Tetsuo; and Kondo, Yoshitami, 5,364,247, Cl. 418-55.200.

Yoshida, Yoshimi: *See—*
Kuretake, Masato; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Yoshida, Yoshimi; Uda, Sawayo; and Zushi, Takayasu, 5,364,126, Cl. 280-730.00R.

Yoshikata, Mutsumi; and Maeda, Tsuneo, to Hitachi Medical Corporation. Magnetic resonance imaging apparatus. 5,365,174, Cl. 324-318.000.

Yoshikawa, Kuniyoshi: *See—*
Miyamoto, Junichi; Yoshikawa, Kuniyoshi; and Naruke, Kiyomi, 5,365,098, Cl. 257-316.000.

Yoshikawa, Nobuhisa: *See—*
Ozawa, Masataka; Kamitani, Takayuki; Koyama, Kazutaka; Horii, Shigeru; Miyazaki, Koji; Yoshikawa, Nobuhisa; Saito, Takeshi; Ito, Kazuhiko; Gyoten, Masayoshi; and Waki, Atsuo, 5,365,152, Cl. 315-291.000.

Yoshimi, Takani: *See—*
Imai, Tomoyasu; Yoshimi, Takani; Matsuura, Akihiro; Takashima, Toshiharu; Tsutsui, Toshihiro; and Nakano, Hiroyuki, 5,363,598, Cl. 51-331.000.

Yoshimoto, Katsunobu; Hatta, Masayoshi; and Kumondai, Toshio, to Towa Corporation; Shashin Kagaku Co., Ltd.; and Kabushiki Kaisha I.K.S. Waste heat treatment apparatus. 5,363,777, Cl. 110-214.000.

Yoshimoto, Masahiko: *See—*
Matsumura, Tetsuya; Uramoto, Shinichi; and Yoshimoto, Masahiko, 5,365,475, Cl. 365-154.000.

Yoshio, Hideaki: *See—*
Konishi, Akio; Saito, Yoshiyuki; Takeda, Shuzo; Yoshio, Hideaki; and Kurumatani, Hiroshi, 5,365,386, Cl. 360-85.000.

Yoshioka, Kazutoshi: *See—*
Akimoto, Masami; Yoshioka, Kazutoshi; and Iida, Naruaki, 5,364,222, Cl. 414-416.000.

Yoshioka, Ken: *See—*
Onisawa, Makoto; Yoshioka, Ken; Koizumi, Makoto; Nagae, Hiromitsu; and Koshida, Ryoichi, 5,363,829, Cl. 123-617.000.

Yoshioka, Tatsuo: *See—*
Kawamura, Tetsuya; Sano, Hiroshi; Furuta, Mamoru; Yoshioka, Tatsuo; and Miyata, Yutaka, 5,365,034, Cl. 219-121.830.

Yoshioka, Yukio: *See—*
Anada, Katsuya; and Yoshioka, Yukio, 5,363,774, Cl. 108-143.000.

Yoshizawa, Sadao: *See—*
Takeda, Ryo; Yamanaka, Eisuke; Kondo, Hidenori; Ino, Kiyoji; Hagihara, Hiroshi; Suzuki, Takaya; Yoshizawa, Sadao; and Nakamura, Atsumu, 5,363,682, Cl. 72-224.000.

Yost, Donald A.: *See*—
Close, Eric C.; Goff, Jerry K.; and Yost, Donald A., 5,365,422, Cl. 363-98.000.
Young, Gary B.; Hanel, Albert L.; and Veselka, Kenneth R., to Tymco, Inc. Surface sweeping machine with over-the-cab hopper dumping. 5,363,533, Cl. 15-339.000.
Young, Steven L.: *See*—
Haugland, Richard P.; Kang, Hee C.; Young, Steven L.; and Melner, Michael H., 5,364,764, Cl. 435-15.000.
Young, Wayne: *See*—
Green, David T.; Bolanos, Henry; Young, Wayne; DeFonzo, Stephan A.; McGarry, Richard A.; and Mastri, Dominick L., 5,364,002, Cl. 227-177.000.
Youngborg, Lamont H.: *See*—
Sawabe, James K.; and Youngborg, Lamont H., 5,365,555, Cl. 376-258.000.
Yu, David U. L.; and Conway, Patrick H., to Duly Research, Inc. Feed-forward digital phase and amplitude correction system. 5,365,190, Cl. 330-149.000.
Yu, Dequan, to Ford Motor Company. Divergent inlet for an automotive fuel pump. 5,364,238, Cl. 417-423.140.
Yu, Dingan, to Composite Materials Technology, Inc. Insulation for superconductors. 5,364,709, Cl. 428-662.000.
Yu, Foung-Hsoung; Lin, Chien-Hsing; Hsu, E-Chang; and Yaung, Huann-Jen, to Industrial Technology Research Institute. Automated carrier. 5,363,933, Cl. 180-6.500.
Yuda, Lawrence F. Air over oil intensifier. 5,363,742, Cl. 92-79.000.
Yui, Tomoyuki: *See*—
Mizukami, Masamichi; Yui, Tomoyuki; Johno, Masahiro; Arai, Yoshihisa; and Mineta, Hiroshi, 5,364,560, Cl. 252-299.650.
Yukinari, Toshiro: *See*—
Sakamaki, Yumiko; Naito, Tomijiro; and Yukinari, Toshiro, 5,364,558, Cl. 252-299.010.
Yum, Su H.: *See*—
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su H.; and Gale, Robert M., 5,364,630, Cl. 424-449.000.
Yundt, Albert P., Jr.: *See*—
Li, Yao-Tzu; Yundt, Albert P., Jr.; Ho, I-Chieng; and Huang, Henry, 5,363,660, Cl. 62-71.000.
Yurasits, James J., to Mack Trucks, Inc. Adjustable seat apparatus for utility vehicle. 5,364,151, Cl. 296-65.100.
Zaleski, Edward R., to Allergan, Inc. Ophthalmic instrument with curved suction conduit and internal ultrasound needle. 5,364,405, Cl. 606-107.000.
Zaluzec, Matthew J.: *See*—
McCune, Robert C., Jr.; Reatherford, Larry V.; and Zaluzec, Matthew J., 5,364,663, Cl. 427-449.000.
Zank, Gregg A.: *See*—
Bujalski, Duane R.; Zank, Gregg A.; and Barnard, Thomas D., 5,364,920, Cl. 528-5.000.
Zappe, Hans H.: *See*—
Fan, Long-Shen; and Zappe, Hans H., 5,364,742, Cl. 430-317.000.
Zarina Holdings C.V.: *See*—
Atkins, David S., 5,363,878, Cl. 137-526.000.
Zawierucha, Robert: *See*—
Acharya, Arun; Gottzmann, Christian F.; Lockett, Michael J.; Schneider, James S.; Victor, Richard A.; and Zawierucha, Robert, 5,363,909, Cl. 165-111.000.
Zeamer, Paul; and Lins, Delbert E., to DEC International, Inc. Automatic control apparatus for a beverage tap. 5,363,989, Cl. 222-16.000.
Zebra Technologies Corporation: *See*—
Hofer, Gene A.; and Longe, Karen M., 5,364,133, Cl. 283-75.000.
Zegeer, Peggy C. Arm rest for chairs, chaise lounges and the like. 5,364,166, Cl. 297-411.390.
Zeh, Meinrad: *See*—
Blenk, Gerhard; and Zeh, Meinrad, 5,363,581, Cl. 42-69.020.
Zehnpfennig, Theodore F.; and Rappaport, Saul A., to Visidyne, Inc. High-resolution synthetic aperture telescope system. 5,365,367, Cl. 359-399.000.
Zeneca Limited: *See*—
Byrom, David, 5,364,778, Cl. 435-135.000.
Moreland, Peter J.; and Jozef de Peuter, Frans L., 5,364,511, Cl. 204-196.000.
Morpeth, Fraser F., 5,364,874, Cl. 514-373.000.
Zenner, Bruce D.; Teumac, Fred N.; Deardurff, Larrie A.; and Ross, Bert A., to Advanced Oxygen Technologies, Inc. Polymer compositions containing salicylic acid chelates as oxygen scavengers. 5,364,555, Cl. 252-188.280.
Zerndt, Norman E.: *See*—
Raddatz, Claus D.; Wojtecki, Ronald J.; and Zerndt, Norman E., 5,363,743, Cl. 92-98.00D.
Zerow, Danne J. Weighted, foldable vehicle cover. 5,364,156, Cl. 296-136.000.
Zetterlund, Uno: *See*—
Forsberg, Erik; Lundstrom, Lennart; and Zetterlund, Uno, 5,363,548, Cl. 29-605.000.
Zexel USA Corporation: *See*—
Bearint, David E., 5,364,235, Cl. 417-295.000.
Zhang, Zhenyu; Ruderman, Warren; and Fehlner, James R., to Inrad, Inc. Selective functionalization of fullerenes. 5,364,993, Cl. 570-187.000.
Ziegler Coal Holding Company: *See*—
Westby, Timothy S.; McCord, Thomas G.; and Dicks, Lynton W. R., 5,364,421, Cl. 44-608.000.
Ziegler, William H., Jr.: *See*—
Cunard, Joel C.; Boudreau, Robert J.; and Ziegler, William H., Jr., 5,364,312, Cl. 472-118.000.
Zierke, Thomas: *See*—
Kirchner, Juergen; Schmidt, Oskar; Grossmann, Klaus; Rademacher, Wilhelm; Hepp, Michael; and Zierke, Thomas, 5,364,834, Cl. 504-319.000.
Zieve, Edward R. Air mixer. 5,364,305, Cl. 454-261.000.
Zilber, Steven A. Manual cassette system for overhead projection transparencies. 5,365,289, Cl. 353-120.000.
Zimlich, Glenn A.: *See*—
Orzel, Daniel V.; Zimlich, Glenn A.; and Truong, Tri T., 5,363,646, Cl. 60-274.000.
Zimmer, Agnes K.: *See*—
Beach, Bradley L.; Burns, Kathryn E.; Franey, Terence E.; Piekunka, Ann M.; Spivey, Paul T.; and Zimmer, Agnes K., 5,364,461, Cl. 106-22.00R.
Zimmer, Inc.: *See*—
Hayes, S. Kyle; and Allard, Randall N., 5,364,397, Cl. 606-61.000.
Petersen, Thomas D.; and Lane, Richard A., 5,364,403, Cl. 606-91.000.
Zimmerman, Norbert: *See*—
Degen, Helmut; Zimmerman, Norbert; Brueckmann, Ralf; Lamm, Gunther; Lange, Arno; and Reichelt, Helmut, 5,364,972, Cl. 568-306.000.
Zimmermann, Achim; Beck, Karl-Erhard; and Mohr, Klaus D., to Man Gutehoffnungshutte AG. Cylindrical combustion chamber housing of a gas turbine. 5,363,653, Cl. 60-751.000.
Zimmermann, Bernward, to Marquardt GmbH. Rotational speed control and use of same to control the rotational speed of an electric hand tool motor. 5,365,155, Cl. 318-268.000.
Zimmermann, Hans-Peter, to Hewlett-Packard Company. Apparatus for performing capillary electrophoresis. 5,364,521, Cl. 204-299.00R.
Zimmermann, Heinz; and Manteuffel, Hans J. M. Apparatus and process for treating water. 5,364,527, Cl. 210-243.000.
Zink, Deborah: *See*—
Harris, Guy H.; Zink, Deborah; Jones, E. Tracy T.; and Kong, Yu L., 5,364,948, Cl. 554-36.000.
Zizala Lichtsysteme GmbH: *See*—
Krammer, Gert, 5,365,413, Cl. 362-32.000.
Zola, Meyer J.: *See*—
Hiller, Thomas L.; Phelan, James J.; and Zola, Meyer J., 5,365,524, Cl. 370-94.200.
Zoller, Robert A., to Standard Products Company, The. Thick bodied heat set molding. 5,364,483, Cl. 156-242.000.
Zou, Xueming; Lampman, David A.; and Orlando, Paul T., to Picker International, Inc. Technique for driving quadrature dual frequency RF resonators for magnetic resonance spectroscopy/imaging by four-inductive loop over coupling. 5,365,173, Cl. 324-318.000.
Zuffada, Maurizio; Vai, Gianfranco; Gregori, Marco; Moloney, David; and Betti, Giorgio, to SGS-Thomson Microelectronics s.r.l. Circuit for neutralizing thermal drift in a transconductance stage. 5,365,193, Cl. 330-253.000.
Zushi, Shizuo: *See*—
Ashiwake, Noriyuki; Daikoku, Takahiro; Hatsuda, Toshio; Zushi, Shizuo; and Kobayashi, Satomi, 5,365,400, Cl. 361-752.000.
Zushi, Takayasu: *See*—
Kuretake, Masato; Kitagawa, Motonobu; Yamakawa, Kazuhiko; Yoshida, Yoshimi; Uda, Sawayo; and Zushi, Takayasu, 5,364,126, Cl. 280-730.00R.
Zwiener, Christian; Schmalstieg, Lutz; and Pedain, Josef, to Bayer Aktiengesellschaft. Compounds containing alkoxysilane and amino groups. 5,364,955, Cl. 556-418.000.
501 Hi-Trak Systems Limited: *See*—
Van der Veen, Albertus C.; and Smith, Graham K. L., 5,365,247, Cl. 343-702.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Atochem North America, Inc.: *See*—
Kazmierzak, Robert T.; and MacLeay, Ronald E., Re. 34,791, Cl. 525-142.000.
Blue Grass Electronics, Inc.: *See*—
DuRand, Elden E., III; and Logsdon, William K., Re. 34,788, Cl. 340-550.000.
BT&D Technologies Limited: *See*—
Musk, Robert W., Re. 34,790, Cl. 385-93.000.
DuRand, Elden E., III; and Logsdon, William K., to Blue Grass Electronics, Inc. Pressure change intrusion detector. Re. 34,788, Cl. 340-550.000.
Fraden, Jacob, to Thermoscan Inc. Infrared electronic thermometer and method for measuring temperature. Re. 34,789, Cl. 364-557.000.
Kazmierzak, Robert T.; and MacLeay, Ronald E., to Atochem North America, Inc. Polymer bound hindered amine light stabilizers. Re. 34,791, Cl. 525-142.000.
Kelly, James A.: *See*—
Westhoff, James A.; and Kelly, James A., Re. 34,787, Cl. 277-207.00A.
L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude: *See*—
Virey, Franck, Re. 34,785, Cl. 65-26.000.
Logsdon, William K.: *See*—
DuRand, Elden E., III; and Logsdon, William K., Re. 34,788, Cl. 340-550.000.
MacLeay, Ronald E.: *See*—
Kazmierzak, Robert T.; and MacLeay, Ronald E., Re. 34,791, Cl. 525-142.000.
Musk, Robert W., to BT&D Technologies Limited. Optical components. Re. 34,790, Cl. 385-93.000.
Poly-Tec Products, Inc.: *See*—
Westhoff, James A.; and Kelly, James A., Re. 34,787, Cl. 277-207.00A.
Slough, Donovan L. Molded plastic stud box support and box. Re. 34,786, Cl. 248-205.100.
Thermoscan Inc.: *See*—
Fraden, Jacob, Re. 34,789, Cl. 364-557.000.
Vinas, Jaime A. Method and apparatus for the dry treatment of a fabric. Re. 34,784, Cl. 34-629.000.
Virey, Franck, to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude. Process for lubricating a surface such as a mould for the manufacture of a glass object. Re. 34,785, Cl. 65-26.000.
Westhoff, James A.; and Kelly, James A., to Poly-Tec Products, Inc. Bidirectional gasket having water energizing pockets. Re. 34,787, Cl. 277-207.00A.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Aaltonen, Matti A.: *See*—
Karppo, Jukka S.; and Aaltonen, Matti A., B1 4,155,695, Cl. 425-445.000.
Actel Corporation: *See*—
Elgamal, Abbas; El-Ayat, Khaled A.; and Mohsen, Amr, B1 4,758,745, Cl. 307-465.000.
El-Ayat, Khaled A.: *See*—
Elgamal, Abbas; El-Ayat, Khaled A.; and Mohsen, Amr, B1 4,758,745, Cl. 307-465.000.
Elgamal, Abbas; El-Ayat, Khaled A.; and Mohsen, Amr, to Actel Corporation. User programmable integrated circuit interconnect architecture and test method. B1 4,758,745, 11-15-94, Cl. 307-465.000.
Engelson, Erik T., to Target Therapeutics. Catheter for guide-wire tracking. B1 4,739,768, 11-15-94, Cl. 128-658.000.
Gould, H. Daniel, to Shasta Industries, Inc. Pool cleaning head with rotary popup jet producing element. B1 4,466,142, 11-15-94, Cl. 4-490.000.
Karppo, Jukka S.; and Aaltonen, Matti A., to Oy Nokia AB. Continuous curing device for longitudinally extended products with cooling zone. B1 4,155,695, 11-15-94, Cl. 425-445.000.
Kipp, Heinrich, to Monroe Engineering Products, Inc. Hand lever turning mechanism. B1 4,598,614, 11-15-94, Cl. 81-58.300.
Mohsen, Amr: *See*—
Elgamal, Abbas; El-Ayat, Khaled A.; and Mohsen, Amr, B1 4,758,745, Cl. 307-465.000.
Monroe Engineering Products, Inc.: *See*—
Kipp, Heinrich, B1 4,598,614, Cl. 81-58.300.
Oy Nokia AB: *See*—
Karppo, Jukka S.; and Aaltonen, Matti A., B1 4,155,695, Cl. 425-445.000.
Shasta Industries, Inc.: *See*—
Gould, H. Daniel, B1 4,466,142, Cl. 4-490.000.
Target Therapeutics: *See*—
Engelson, Erik T., B1 4,739,768, Cl. 128-658.000.

LIST OF DESIGN PATENTEES

A Southern Season, Inc.: *See*—
Barefoot, Michael C., 352,473, Cl. D10-59.000.
AB Lectrostatic: *See*—
Andersson, Mats, 352,551, Cl. D23-365.000.
AB Maskinarbeten: *See*—
Johansson, Ingvar, 352,561, Cl. D26-9.000.
Abel, Steven D. Pliers. 352,436, 11-15-94, Cl. D8-52.000.
Advanced Container Corporation: *See*—
Bacchetti, Mark R.; Heiskell, Ronald E.; and Theys, Ezra E., 352,453, Cl. D9-418.000.
Allen United: *See*—
Sampson, Gerald A.; Sanden, Gordon J.; and Sampson, Harold D., 352,573, Cl. D30-119.000.
Andersson, Mats, to AB Lectrostatic. Fume filter for use with a soldering apparatus. 352,551, 11-15-94, Cl. D23-365.000.
Anness, Timothy W.: *See*—
Verduyn, Kevin R.; Tremont, Thomas G.; Anness, Timothy W.; and Walling, K. Neil, 352,483, Cl. D12-91.000.
Anthro Corporation: *See*—
McCaffrey, Jeffrey T., 352,587, Cl. D34-27.000.
Aqua-Leisure Industries, Inc.: *See*—
Shelton, Robert N., 352,514, Cl. D16-303.000.
Wolfe, Henry, 352,533, Cl. D21-157.000.
Arch Crown Tags, Inc.: *See*—
Liebman, Norman P., 352,526, Cl. D20-22.000.
Asai, Toshikazu, to Kato Spring Works Co., Ltd. Packaging box for optical disc shutters. 352,452, 11-15-94, Cl. D9-341.000.
Asner, Jerome L. Condiment dish holder. 352,424, 11-15-94, Cl. D7-600.000.
Assenburg B.V.: *See*—
Scheffers, Adrianus J. M., 352,405, Cl. D6-422.000.

Scheffers, Adrianus J. M., 352,406, Cl. D6-480.000.

Austin Innovations, Inc.: *See*—
Marischen, Joseph E., 352,564, Cl. D26-26.000.

Avia Group International, Inc.: *See*—
Foetsch, Linda, 352,387, Cl. D2-969.000.

Bacchetti, Mark R.; Heiskell, Ronald E.; and Theys, Ezra E., to Advanced Container Corporation. Box for shipping asparagus. 352,453, 11-15-94, Cl. D9-418.000.

Baker, Michael; and Coleman, Harold, to Ryobi Outdoor Products. Combined blower and vacuum. 352,579, 11-15-94, Cl. D32-15.000.

Ballard, Jacob R., to Vermont American Corporation. Telescoping display card holder. 352,413, 11-15-94, Cl. D6-566.000.

Ballone, Michael P.: *See*—
Meisner, Edward H.; Ballone, Michael P.; and Van Dyk, Thomas, 352,568, Cl. D28-48.000.

Balson, John E. Rim seal for a can. 352,455, 11-15-94, Cl. D9-434.000.

Bando Industrial Co., Ltd.: *See*—
Choi, Wonbaek, 352,429, Cl. D8-1.000.

Barefoot, Michael C., to A Southern Season, Inc. Weather vane. 352,473, 11-15-94, Cl. D10-59.000.

Barnard, Michael A., to Weecon Products Company. Actuator control assembly for motion furniture. 352,410, 11-15-94, Cl. D6-491.000.

Barrett, Joseph S. Vehicle steering wheel protection unit. 352,490, 11-15-94, Cl. D12-179.000.

Barry, Ernest J.: *See*—
Hubbach, Robert N.; Gale, Thomas C.; Barry, Ernest J.; and Walling, K. Neil, 352,494, Cl. D12-401.000.

Bassett, Robert D. Implement for guiding wires through flexible conduit. 352,431, 11-15-94, Cl. D8-14.000.

Baucom, Walter H., to DSC Industrial, Inc. Personal dolly. 352,586, 11-15-94, Cl. D34-23.000.

Bayerische Motoren Werke AG: *See*—
Boyer, Boyke, 352,492, Cl. D12-211.000.

Bedford, Thomas E. Dust collection device for floor sander. 352,439, 11-15-94, Cl. D8-70.000.

Beidler, David B.; and Cronrath, Scott, to Exide Corporation. Combined storage battery cover and movable handle. 352,498, 11-15-94, Cl. D13-119.000.

Beltempo, Maria E. Combined plush animal handbag set. 352,391, 11-15-94, Cl. D3-235.000.

Bemis Manufacturing Company: *See*—
Carlson, Arthur R., 352,479, Cl. D11-153.000.
Carlson, Arthur R., 352,480, Cl. D11-153.000.

Benson, John W.: *See*—
Weaver, Allan E.; Benson, John W.; Moore, Robert W.; and Schrenk, J. John, 352,501, Cl. D14-102.000.

Besson, Francis, to Girard-Perregaux SA. Watch. 352,470, 11-15-94, Cl. D10-39.000.

Besson, Francis, to Girard-Perregauz SA. Watch. 352,471, 11-15-94, Cl. D10-39.000.

Betts, John; and Krone, Irene, to Farberware, Inc. Coffee brewer. 352,418, 11-15-94, Cl. D7-310.000.

Bigelow, George, to Nor-Wol Products, Inc. Electric cheese grater with spring-loaded cheese compartment. 352,422, 11-15-94, Cl. D7-372.000.

Binning, Ronald L., to IDAB Incorporated. Cart. 352,585, 11-15-94, Cl. D34-17.000.

Boehm, James. Game board. 352,528, 11-15-94, Cl. D21-24.000.

Bonazza, Claudio, to Venice Trading Company, Inc. Pedicure stool. 352,401, 11-15-94, Cl. D6-336.000.

Bonner, Tor G.: *See*—
Sculler, Steven; Wall, Alexander; Ryan, James M.; Danielson, David C.; and Bonner, Tor G., 352,521, Cl. D18-15.000.

Bosten, Donald R.: *See*—
Kriaski, John R.; Cooper, Randy G.; Nichols, James P., Jr.; and Bosten, Donald R., 352,509, Cl. D15-133.000.

Boyd, Edward L., to Rubbermaid Specialty Products Inc. Cart. 352,584, 11-15-94, Cl. D34-16.000.

Boyer, Boyke, to Bayerische Motoren Werke AG. Front face of a wheel for an automobile. 352,492, 11-15-94, Cl. D12-211.000.

Bradstreet, James: *See*—
Ruffo, Angelo P.; Bradstreet, James; Glaug, Frank S.; McCoy, Sherilyn S.; and Ramacieri, Patricia, 352,554, Cl. D24-125.000.

Brand, Susan F.: *See*—
Luzzi, Robert; and Brand, Susan F., 352,445, Cl. D9-337.000.

Bransky, Jeffrey D.; and Sanderson, Kenneth L., to Duraco Products, Inc. Bird feeder. 352,575, 11-15-94, Cl. D30-127.000.

Brazeal, Charles: *See*—
Byrd, Rick; Gerschefsk, Kevin; and Brazeal, Charles, 352,536, Cl. D21-195.000.

Breny, Michel; Graas, Maurice; and Powell, Jenner, to Goodyear Tire & Rubber Company, The. Tire tread. 352,489, 11-15-94, Cl. D12-147.000.

Brown, Arthur C. Butterfly feeder. 352,574, 11-15-94, Cl. D30-121.000.

Brydalski, Paul A.; and Giotis, George A., to Flasher Handling Corp. Detachable base plate for a traffic sign. 352,527, 11-15-94, Cl. D20-41.000.

Burd, Wayne D., to Koller-Craft Plastic Products. Fish fillet board. 352,427, 11-15-94, Cl. D7-698.000.

Butler, Scott D. Time-out seat pad. 352,414, 11-15-94, Cl. D6-601.000.

Byrd, Rick; Gerschefsk, Kevin; and Brazeal, Charles, to Stamina Products, Inc. Multi-function exercise machine. 352,536, 11-15-94, Cl. D21-195.000.

Cadwell, Charles E. Recycling bin. 352,583, 11-15-94, Cl. D34-9.000.

Cannara, Raymond C.; Walling, K. Neil; and Janosko, Robert J., to Chrysler Corporation. Automobile. 352,482, 11-15-94, Cl. D12-90.000.

Canon Kabushiki Kaisha: *See*—
Fukushima, Hiroyuki; Kikuchi, Hiroshi; and Sakuta, Kazuaki, 352,518, Cl. D16-209.000.
Ito, Hitomi; Suzuki, Toyotoshi; and Dali, Ji, 352,519, Cl. D16-209.000.
Sugiyama, Yoshiaki, 352,517, Cl. D16-202.000.

Carlson, Arthur R., to Bemis Manufacturing Company. Planter. 352,479, 11-15-94, Cl. D11-153.000.

Carlson, Arthur R., to Bemis Manufacturing Company. Planter. 352,480, 11-15-94, Cl. D11-153.000.

Caron, Paul: *See*—
Close, Judith R.; Morris, E. Scott; and Caron, Paul, 352,389, Cl. D2-970.000.

Casio Computer Co., Ltd.: *See*—
Kubo, Tatsuya, 352,463, Cl. D10-31.000.

Che Shang Enterprise, Co., Ltd.: *See*—
Chuang, Ming-Chih, 352,382, Cl. D2-917.000.

Chen, Chan-Fu. Mechanical timer. 352,472, 11-15-94, Cl. D10-40.000.

Chen, Ming-Chang. Bicycle handlebar grip. 352,443, 11-15-94, Cl. D8-303.000.

Chi, William H. N. Stapler. 352,434, 11-15-94, Cl. D8-50.000.

Chi, William H. N. Stapler. 352,435, 11-15-94, Cl. D8-50.000.

Chin-Sheng, Yang. Ornament. 352,477, 11-15-94, Cl. D11-121.000.

Choi, Wonbaek, to Bando Industrial Co., Ltd. Handle of a rake. 352,429, 11-15-94, Cl. D8-1.000.

Chrysler Corporation: *See*—
Cannara, Raymond C.; Walling, K. Neil; and Janosko, Robert J., 352,482, Cl. D12-90.000.
Creed, Trevor M.; Ney, Clyde W.; Papai, Joseph T.; and Payne, Phillip E., 352,485, Cl. D12-98.000.
Hubbach, Robert N.; Gale, Thomas C.; Barry, Ernest J.; and Walling, K. Neil, 352,494, Cl. D12-401.000.
Mack, Kenneth S.; Payne, Phillip E.; Moore, Thomas S.; Walling, K. Neil; DeRees, Delbert D.; and Kenitz, Jack, 352,484, Cl. D12-96.000.
Verduyn, Kevin R.; Tremont, Thomas G.; Anness, Timothy W.; and Walling, K. Neil, 352,483, Cl. D12-91.000.

Chuang, Ming-Chih, to Che Shang Enterprise, Co., Ltd. Slipper. 352,382, 11-15-94, Cl. D2-917.000.

Chunn, Daniel A.; and Morikawa, Hiroshi, to Ryobi Motor Products Corp. Sander. 352,437, 11-15-94, Cl. D8-62.000.

Ciba-Geigy Corporation: *See*—
Newman, Edward F.; and Popps, John R., 352,516, Cl. D24-218.000.

Close, Judith R.; Morris, E. Scott; and Caron, Paul, to Reebok International Ltd. Shoe upper. 352,389, 11-15-94, Cl. D2-970.000.

Co-Union Industry Co., Ltd.: *See*—
Lee-Chang, Chen, 352,442, Cl. D8-303.000.

Coe, Matthew, to PharmaDesign, Inc. Information card index. 352,525, 11-15-94, Cl. D19-76.000.

Coleman, Harold: *See*—
Baker, Michael; and Coleman, Harold, 352,579, Cl. D32-15.000.

Coleman, Harriette. Medicine applying pet brush. 352,397, 11-15-94, Cl. D4-114.000.

Colgate-Palmolive Company: *See*—
Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; and Heinzelman, Bert D., 352,396, Cl. D4-104.000.
Sherman, Adam; and Stagl, Peter, 352,460, Cl. D9-542.000.

Compression Coolers, Inc.: *See*—
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Concrete Stone and Tile Corporation: *See*—
Krueger, Ronald G.; and Labouseur, Arthur A., 352,559, Cl. D25-113.000.

Cook, James A. Double-barrel composter. 352,580, 11-15-94, Cl. D34-1.000.

Cooper, Randy G.: *See*—
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Corbin Russwin, Inc.: *See*—
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Hoffman, Anthony J.; and Kearns, Robert E., 352,448, Cl. D8-347.000.
Kearns, Robert E., 352,447, Cl. D8-347.000.

Corum, Ries, Bannwart et Co. S.A.: *See*—
Ventrella, Roberto, 352,466, Cl. D10-32.000.

Costello, James J. J., to Igloo Products Corp. Thermoelectric heater and cooler unit for food. 352,420, 11-15-94, Cl. D7-350.000.

Courm, Ries, Bannweart et Co S.A.: *See*—
Ventrella, Roberto, 352,465, Cl. D10-32.000.

Covell, Douglas G.: *See*—
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Crawford, John C.: *See*—
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Creed, Trevor M.; Ney, Clyde W.; Papai, Joseph T.; and Payne, Phillip E., to Chrysler Corporation. Pickup truck body exterior surface. 352,485, 11-15-94, Cl. D12-98.000.

Cronrath, Scott: *See*—
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Crowley, Kevin J., to Fila U.S.A. Inc. Shoe sole. 352,385, 11-15-94, Cl. D2-952.000.

Curtis, John P.; Rustogi, Kedar N.; Crawford, John C.; Kemp, James H.; Mintel, Thomas E.; and Heinzelman, Bert D., to Colgate-Palmolive Company. Toothbrush. 352,396, 11-15-94, Cl. D4-104.000.

Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., to Dart Industries Inc. Food storage container. 352,425, 11-15-94, Cl. D7-602.000.

Dali, Ji: *See*—
Ito, Hitomi; Suzuki, Toyotoshi; and Dali, Ji, 352,519, Cl. D16-209.000.

Danielson, David C.: *See*—
Sculler, Steven; Wall, Alexander; Ryan, James M.; Danielson, David C.; and Bonner, Tor G., 352,521, Cl. D18-15.000.

Dart Industries Inc.: *See*—
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DeCoster, Pieter K. J.: *See*—
Daenen, Robert H. C. M.; and DeCoster, Pieter K. J., 352,425, Cl. D7-602.000.

De Frank, Angela M.: *See*—
Flanagan, Therese A.; and De Frank, Angela M., 352,461, Cl. D9-542.000.

Deioma, David B.; and Deioma, David M. Combined ski and boot bag. 352,394, 11-15-94, Cl. D3-261.000.

Deioma, David M.: *See*—
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Delta International Machinery Corp.: *See*—
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DeRees, Delbert D.: *See*—
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Digital Equipment Corporation: *See*—
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Diversey Corporation: *See*—
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Dornier Luftfahrt GmbH: *See*—
Krojer, Hubert, 352,493, Cl. D12-337.000.

Doskocil Manufacturing Company, Inc.: *See*—
Fiore, Joseph F., 352,393, Cl. D3-260.000.

Dowbrands Inc.: *See*—
Silvenis, Scott A.; Zurcher, John A.; and Ghighi, James L., 352,546, Cl. D23-226.000.

Dreibelbis, John S.; Hall, Charles C.; and Novak, Pat J., to Nordic-Track, Inc. Rowing machine exerciser. 352,534, 11-15-94, Cl. D21-191.000.

Drucker, John R., to Speer Lamp Corp. of New York, The. Table lamp. 352,567, 11-15-94, Cl. D26-110.000.

DSC Industrial, Inc.: *See*—
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Dunlop France SA: *See*—
Siramy, Jean-Pierre, 352,488, Cl. D12-147.000.

Duraco Products, Inc.: *See*—
Bransky, Jeffrey D.; and Sanderson, Kenneth L., 352,575, Cl. D30-127.000.

Durakon Industries, Inc.: *See*—
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Dutton, Lisa, to Determined Productions, Inc. Drinking straw with partial face mask. 352,416, 11-15-94, Cl. D7-300.200.

Ecco, Inc.: *See*—
Rupert, Samuel J., 352,462, Cl. D9-573.000.

Elizabeth Arden Co., Division of Conopco, Inc.: *See*—
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Elmo Company, Limited: *See*—
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Estee Lauder, Inc.: *See*—
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Exide Corporation: *See*—
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Farberware, Inc.: *See*—
Betts, John; and Krone, Irene, 352,418, Cl. D7-310.000.

Fila U.S.A. Inc.: *See*—
Crowley, Kevin J., 352,385, Cl. D2-952.000.

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Flanagan, Therese A.; and De Frank, Angela M., to Kraft General Foods, Inc. Bottle. 352,461, 11-15-94, Cl. D9-542.000.

Flasher Handling Corp.: *See*—
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Fredericks, John H. Recycle bin. 352,581, 11-15-94, Cl. D34-1.000.

Fukushima, Hiroyuki; Kikuchi, Hiroshi; and Sakuta, Kazuaki, to Canon Kabushiki Kaisha. Camera. 352,518, 11-15-94, Cl. D16-209.000.

Furman, Yury. Vest for discouraging supine posture. 352,377, 11-15-94, Cl. D2-830.000.

Galasso, Carlo. Hood protector. 352,491, 11-15-94, Cl. D12-190.000.

Gale, Thomas C.: *See*—
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Ghighi, James L.: *See*—
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Gilbert, Richard R.: *See*—
Rellinger, Michael; Gilbert, Richard R.; Green, Sara E.; and Jepsen, John, 352,398, Cl. D6-300.000.

Gillette Company, The: *See*—
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Hughes, William F., Jr.; and Kleinrath, Robert F., 352,457, Cl. D9-447.000.

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Brydalski, Paul A.; and Giotis, George A., 352,527, Cl. D20-41.000.

Girard-Perregaux SA: *See*—
Besson, Francis, 352,470, Cl. D10-39.000.

Girard-Perregauz SA: *See*—
Besson, Francis, 352,471, Cl. D10-39.000.

Glaug, Frank S.: *See*—
Ruffo, Angelo P.; Bradstreet, James; Glaug, Frank S.; McCoy, Sherilyn S.; and Ramacieri, Patricia, 352,554, Cl. D24-125.000.

Golan, Ilan Z. Radiator filter. 352,544, 11-15-94, Cl. D23-209.000.

Gonzalez, Ricardo J., to Kraft General Foods, Inc. Bell-shaped pasta. 352,371, 11-15-94, Cl. D1-106.000.

Gonzalez, Ricardo J., to Kraft General Foods, Inc. Candy cand-shaped pasta. 352,372, 11-15-94, Cl. D1-106.000.

Gonzalez, Ricardo J., to Kraft General Foods, Inc. Stocking-shaped pasta. 352,373, 11-15-94, Cl. D1-106.000.

Goodwin, David, to Thrislington Sales Limited. Door assembly for a cubicle. 352,399, 11-15-94, Cl. D6-332.000.

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CLASS 100

39 5,363,757
43 5,363,758
110 5,363,759

CLASS 101

91 5,363,760
163 5,363,761
177 5,363,762
349 5,363,763
485 5,363,764

CLASS 102

220 5,363,765
374 5,363,766
5,363,767
430 5,363,768
446 5,363,769

CLASS 104

172.5 5,363,770

CLASS 105

29.1 5,363,771

CLASS 106

1.23 5,364,460
22 R 5,364,461
5,364,462
33 5,364,463
36 5,364,464
122 5,364,459
124 5,364,465
162 5,364,466
404 5,364,467

CLASS 108

66 5,363,772
102 5,363,773
143 5,363,774
187 5,363,775

CLASS 110

106 5,363,776
214 5,363,777
232 5,363,778
236 5,363,779
238 5,363,782
250 5,363,781
346 5,363,780

CLASS 112

121.11 5,363,783
121.12 5,363,784
121.15 5,363,785
255 5,363,786

CLASS 114

74 A 5,363,787
125 5,363,788
293 5,363,789
315 5,363,790
318 5,363,791

CLASS 116

28 R 5,363,792

CLASS 117

2 5,363,793
7 5,363,794
13 5,363,795
30 5,363,796
68 5,363,797
[redacted] 5,363,798
94 5,363,799
95 5,363,800
105 5,364,492

CLASS 118

423 5,364,469
500 5,364,470
718 5,364,481

CLASS 119

15 5,363,801
18 5,363,802
25.5 5,363,804
26 5,363,803
51.11 5,363,805
[redacted] 5,363,806
166 5,363,808
792 5,363,809
795 5,363,810

CLASS 122

4 D 5,363,812

CLASS 123

18 R 5,363,813
41.7 5,363,815
73 AD 5,363,814
90.12 5,363,816
90.15 5,363,817
90.16 5,363,818
192.2 5,363,819
193.1 5,363,820
193.2 5,363,821
193.6 5,363,822
196 AB 5,363,823
456 5,363,825
486 5,363,826
506 5,363,824
509 5,363,827
520 5,363,828
617 5,363,829
674 5,363,830
695 5,363,831
704 5,363,832

CLASS 124

26 5,363,833
76 5,363,834

CLASS 125

40 5,363,835

CLASS 126

109 5,363,836
299 D 5,363,837

CLASS 127

65 5,364,471

CLASS 128

6 5,363,838
9 5,363,839
11 5,363,840
20 5,363,841
200.14 5,363,842
630 5,363,843
653.2 5,363,844
653.5 5,363,845
654 5,363,846
657 5,363,847
658 B1 4,739,768
661.08 5,363,849
5,363,850
661.09 5,363,848
5,363,851
662.05 5,363,852
662.06 5,363,853
665 5,363,854
672 5,363,855
713 5,363,856
718 5,363,857
731 5,363,858
739 5,363,859
760 5,363,860
772 5,363,861
846 5,363,862
876 5,363,863
898 5,363,864

CLASS 134

7 5,364,472
8 5,364,473
32 5,364,474
42 5,364,475
45 5,363,866
56 R 5,363,865
95.2 5,363,867

102.2	5,363,868
104.2	5,363,869
184	5,363,870
CLASS 136	
90	5,363,871
CLASS 137	
1	5,363,872
	5,363,873
14	5,363,874
218	5,363,875
301	5,363,876
526	5,363,877
	5,363,878
614.05	5,363,879
625.17	5,363,880
CLASS 138	
89	5,363,881
110	5,363,882
CLASS 139	
450	5,363,883
455	5,363,884
CLASS 141	
1	5,363,885
5	5,363,886
12	5,363,887
98	5,363,888
208	5,363,889
364	5,363,890
CLASS 144	
218	5,363,891
225	5,363,892
287	5,363,893
CLASS 148	
27	5,364,476
33.3	5,364,468
304	5,364,477
533	5,364,478
CLASS 152	
158	5,363,894
209 R	5,363,895
543	5,363,896
CLASS 156	
100	5,364,479
159	5,364,480
182	5,364,482
242	5,364,483
250	5,364,484
264	5,364,485
308.4	5,364,486
309.9	5,364,487
345	5,364,488
356	5,364,489
396	5,364,490
446	5,364,491
630	5,364,493
642	5,364,494
643	5,364,495
	5,364,496
645	5,364,497
650	5,364,498
662	5,364,499
CLASS 157	
1.3	5,363,897
CLASS 159	
49	5,364,500
CLASS 160	
98	5,363,898
CLASS 162	
5	5,364,501
49	5,364,502
65	5,364,503
116	5,364,504
238	5,364,505
CLASS 164	
4.1	5,363,899
348	5,363,900
451	5,363,901
485	5,363,902
CLASS 165	
1	5,363,905
2	5,363,904
9	5,363,903
	5,363,906
46	5,363,907
49	5,363,908
111	5,363,909
153	5,363,910
173	5,363,911
CLASS 166	
72	5,363,912
246	5,363,913
272	5,363,914
274	5,363,915
276	5,363,916
288	5,363,917
295	5,363,918
308	5,363,919
350	5,363,920
377	5,363,921
380	5,363,922
CLASS 172	
6	5,363,923
326	5,363,924
CLASS 173	
186	5,363,925
CLASS 174	
73.1	5,365,020
CLASS 175	
45	5,363,926
67	5,363,927
72	5,363,928
107	5,363,929
228	5,363,930
325.5	5,363,931
417	5,363,932
CLASS 177	
50	5,365,021
229	5,365,022
CLASS 180	
6.5	5,363,933
	5,363,934
9.1	5,363,935
9.21	5,363,936
192	5,363,937
233	5,363,938
291	5,363,939
CLASS 181	
131	5,365,023
176	5,365,024
249	5,365,025
CLASS 182	
62.5	5,363,940
187	5,363,941
CLASS 187	
376	5,363,942
CLASS 188	
72.5	5,363,943
73.31	5,363,944
281	5,363,945
CLASS 192	
3.58	5,363,946
45.1	5,363,947
58 R	5,363,948
CLASS 194	
206	5,363,949
CLASS 198	
382	5,363,950
606	5,363,951
848	5,363,952
CLASS 200	
1 R	5,365,026
16 D	5,365,027
547	5,365,028
CLASS 204	
59 F	5,364,507
59 R	5,364,506
128	5,364,508
149	5,364,509
153.1	5,364,510
196	5,364,511
228	5,364,512
243 R	5,364,513
298.22	5,364,518
298.38	5,364,519
299 R	5,364,520
	5,364,521
CLASS 205	
50	5,364,522
128	5,364,523
CLASS 206	
6.1	5,363,953
144	5,363,954
273	5,363,955
312	5,363,956
349	5,363,957
356	5,363,958
362.4	5,363,959
387	5,363,960
	5,363,961
394	5,363,962
425	5,363,963
449	5,363,964
554	5,363,965
	5,363,966
581	5,363,969
CLASS 208	
58	5,364,514
113	5,364,515
120	5,364,516
121	5,364,517
251 H	5,364,524
CLASS 209	
399	5,363,970
539	5,363,967
546	5,363,968
584	5,363,971
705	5,363,972
CLASS 210	
190	5,364,525
206	5,364,526
243	5,364,527
323.2	5,364,528
608	5,364,529
621	5,364,530
635	5,364,531
639	5,364,532
645	5,364,533
650	5,364,534
671	5,364,535
695	5,364,536
743	5,364,537
750	5,364,538
768	5,364,539
806	5,364,540
CLASS 211	
41	5,363,973
128	5,363,974
197	5,363,975
CLASS 219	
68	5,365,029
69.12	5,365,030
121.43	5,365,031
121.67	5,365,032
121.71	5,365,033
121.83	5,365,034
137 PS	5,365,035
137 WM	5,365,036
222	5,365,037
386	5,365,038
401	5,365,039
497	5,365,040
633	5,365,041
686	5,365,042
710	5,365,043
CLASS 220	
3.8	5,363,976
4.27	5,363,977
254	5,363,978
404	5,363,979
	5,363,980
416	5,363,981
441	5,363,982
717	5,363,983
CLASS 221	
24	5,363,984
46	5,363,985
63	5,363,986
195	5,363,987
CLASS 222	
14	5,363,988
16	5,363,989
135	5,363,990
207	5,363,991
309	5,363,992
321	5,363,993
529	5,363,994
600	5,363,995
CLASS 224	
314	5,363,996
CLASS 225	
25	5,363,997
CLASS 226	
200	5,363,998
CLASS 227	
119	5,363,999
124	5,364,000
175	5,364,001
177	5,364,002
178	5,364,003
CLASS 228	
1.1	5,364,004
	5,364,005
4.1	5,364,006
42	5,364,007
103	5,364,008
110.1	5,364,009
124.6	5,364,010
180.21	5,364,011
184	5,364,012
212	5,364,013
248.1	5,364,014
CLASS 229	
87.03	5,364,016
107	5,364,017
116.5	5,364,015
120.17	5,364,018
125.09	5,364,019
145	5,364,020
157	5,364,021
198.2	5,364,022
199	5,364,023
CLASS 235	
376	5,365,044
380	5,365,045
	5,365,046
	5,365,047
462	5,365,048
	5,365,049
472	5,365,050
CLASS 236	
44 C	5,364,024
49.1	5,364,025
49.3	5,364,026
CLASS 239	
44	5,364,027
70	5,364,028
127.3	5,364,029
310	5,364,030
330	5,364,031
526	5,364,033
542	5,364,032
565	5,364,034
690	5,364,035
CLASS 241	
21	5,364,036
93	5,364,037
189.1	5,364,038
CLASS 242	
35.5 A	5,364,039
242	5,364,041
347	5,364,040
348	5,364,042
381.1	5,364,048
397	5,364,043
530.4	5,364,044
588.6	5,364,045
CLASS 244	
161	5,364,046
CLASS 246	
122 R	5,364,047
CLASS 248	
205.1	Re.34,786
	5,364,049
227	5,364,050
229	5,364,051
245	5,364,052
302	5,364,053
304	5,364,054
316.1	5,364,055
447	5,364,056
475.1	5,364,057
479	5,364,058
584	5,364,059
588	5,364,060
610	5,364,061
674	5,364,062
CLASS 249	
52	5,364,063
CLASS 250	
201.2	5,365,051
201.5	5,365,052
201.7	5,365,053
214 R	5,365,055
214 VT	5,365,056
	5,365,057
214.1	5,365,054
216	5,365,058
231.1	5,365,059
231.16	5,365,060
237 R	5,365,061
239	5,365,062
288	5,365,063
305	5,365,064
330	5,365,065
341.2	5,365,066
341.8	5,365,067
370.09	5,365,069
372	5,365,068
423 R	5,365,070
484.4	5,365,071
491.1	5,365,072
492.3	5,365,073
560	5,365,074
571	5,365,075
	5,365,084
582	5,365,076
CLASS 251	
5	5,364,064
96	5,364,065
122	5,364,066
129.02	5,364,067
129.17	5,364,068
144	5,364,069
322	5,364,070
CLASS 252	
8.6	5,364,541
8.8	5,364,542
12.2	5,364,543
28	5,364,544
32.7 R	5,364,545
51.5 A	5,364,546
54	5,364,547
58	5,364,548
79.4	5,364,549
102	5,364,550
156	5,364,551
174.12	5,364,553
174.22	5,364,552
186.38	5,364,554
188.28	5,364,555
299.01	5,364,556
	5,364,557
299.60	5,364,558
299.65	5,364,560
	5,364,561
305	5,364,562
311	5,364,563
351	5,364,564
500	5,364,565
518	5,364,566
	5,364,567
CLASS 254	
8 B	5,364,071
126	5,364,072
369	5,364,073
375	5,364,074
415	5,364,075
CLASS 256	
22	5,364,076
69	5,364,077
CLASS 257	
15	5,365,077
24	5,365,078
59	5,365,079
66	5,365,080
67	5,365,081
105	5,365,083
139	5,365,085
157	5,365,086
184	5,365,087
186	5,365,088
195	5,365,089
197	5,365,090
203	5,365,091
232	5,365,092
233	5,365,093
295	5,365,094
	5,365,095
296	5,365,096
302	5,365,097
316	5,365,098
328	5,365,099
370	5,365,100
374	5,365,082
434	5,365,101
475	5,365,102
497	5,365,103
529	5,365,104
530	5,365,105
669	5,365,106
673	5,365,107
678	5,365,108
754	5,365,109
762	5,365,110
768	5,365,111
784	5,365,112
786	5,365,113
CLASS 261	
109	5,364,569
CLASS 264	
28	5,364,570
29.5	5,364,571
40.1	5,364,572
	5,364,573
46.5	5,364,574
50	5,364,575
69	5,364,577
71	5,364,578
82	5,364,579
138	5,364,580
182	5,364,581
211	5,364,582
335	5,364,583
510	5,364,584
520	5,364,585
CLASS 266	
233	5,364,078
246	5,364,079
262	5,364,080
CLASS 267	
64.25	5,364,081
108	5,364,082
140.4	5,364,086
CLASS 269	
21	5,364,083
41	5,364,084
CLASS 270	
58	5,364,085
CLASS 271	
148	5,364,087
164	5,364,088
177	5,364,089
216	5,364,090
CLASS 273	
1.5 A	5,364,091
	5,364,092
32 A	5,364,094
32 R	5,364,093
72 A	5,364,095
84 R	5,364,097
119 R	5,364,098
121 A	5,364,096
127 R	5,364,099
143 R	5,364,100
146	5,364,101
162 R	5,364,102
193 R	5,364,103
292	5,364,104
	5,364,105
304	5,364,106
430	5,364,107
	5,364,108
CLASS 277	
9	5,364,109
115	5,364,110
117	5,364,111
207 A	Re.34,787
CLASS 280	
30	5,364,112
81.6	5,364,113
95.1	5,364,114
288	5,364,115
442	5,364,116
459	5,364,117
614	5,364,118
647	5,364,119
650	5,364,120
688	5,364,121
709	5,364,122
728 A	5,364,123
730 A	5,364,125
730 R	5,364,124
	5,364,126
741	5,364,127
784	5,364,128
806	5,364,129
CLASS 283	
67	5,364,132
75	5,364,133
CLASS 285	
21	5,364,130
23	5,364,131
38	5,364,134
	5,364,135
176	5,364,136
CLASS 292	
1.5	5,364,138
169	5,364,139
259 R	5,364,140
318	5,364,141
CLASS 293	
117	5,364,142
CLASS 294	
8.6	5,364,143
27.1	5,364,144
82.27	5,364,145
86.4	5,364,146
118	5,364,147
171	5,364,148
CLASS 296	
39.2	5,364,150
65.1	5,364,151
	5,364,152
97.12	5,364,149
97.5	5,364,153
100	5,364,154
136	5,364,155
	5,364,156
146.6	5,364,157

189	5,364,158
192	5,364,159
CLASS 297	
195.1	5,364,160
195.11	5,364,161
284.8	5,364,162
327	5,364,137
344.21	5,364,163
364	5,364,165
408	5,364,164
411.39	5,364,166
452.18	5,364,167
476	5,364,168
479	5,364,169
483	5,364,170
CLASS 299	
18	5,364,171
CLASS 301	
37.42	5,364,172
CLASS 303	
11	5,364,173
97	5,364,174
	5,364,175
113.2	5,364,176
CLASS 307	
10.1	5,365,114
89	5,365,115
121	5,365,116
465	B1 4,758,745
CLASS 310	
12	5,365,131
58	5,365,132
68 D	5,365,133
114	5,365,134
214	5,365,135
252	5,365,136
258	5,365,137
313 D	5,365,138
316	5,365,139
328	5,365,140
359	5,365,141
CLASS 312	
116	5,363,611
194	5,364,177
263	5,364,178
333	5,364,179
334.14	5,364,180
348.4	5,364,181
CLASS 313	
2.1	5,365,142
402	5,365,143
CLASS 315	
58	5,365,144
86	5,365,145
94	5,365,146
111.21	5,365,147
194	5,365,148
200 A	5,365,149
209 R	5,365,150
	5,365,151
291	5,365,152
CLASS 318	
34	5,365,153
103	5,365,154
268	5,365,155
568.16	5,365,156
806	5,365,158
CLASS 320	
15	5,365,159
22	5,365,160
CLASS 323	
237	5,365,157
282	5,365,161
320	5,365,162
CLASS 324	
58.1	5,365,165
67	5,365,163
76.21	5,365,164
158 MG	5,365,166
158.1	5,365,167
207.16	5,365,168
233	5,365,169
239	5,365,170
307	5,365,171
309	5,365,172
318	5,365,173
	5,365,174
501	5,365,175
539	5,365,176
547	5,365,177
644	5,365,178
650	5,365,179
715	5,365,180
CLASS 326	
39	5,365,125
73	5,365,127
83	5,365,126
109	5,365,123
110	5,365,124
CLASS 327	
2	5,365,184
65	5,365,129
77	5,365,120
109	5,365,118
115	5,365,119
	5,365,182
116	5,365,181
141	5,365,128
144	5,365,183
170	5,365,121
278	5,365,130
306	5,365,122
374	5,365,117
CLASS 329	
308	5,365,185
CLASS 330	
4	5,365,186
10	5,365,187
51	5,365,188
126	5,365,189
149	5,365,190
252	5,365,191
	5,365,192
253	5,365,193
	5,365,194
284	5,365,195
286	5,365,197
288	5,365,198
291	5,365,199
293	5,365,200
298	5,365,201
CLASS 331	
12	5,365,202
57	5,365,204
CLASS 333	
109	5,365,205
161	5,365,203
195	5,365,206
196	5,365,207
204	5,365,208
206	5,365,209
CLASS 335	
238	5,365,210
300	5,365,211
CLASS 338	
32 R	5,365,212
CLASS 340	
321	5,365,213
328	5,365,214
426	5,365,215
439	5,365,216
539	5,365,217
550	Re.34,788
557	5,365,218
573	5,365,219
620	5,365,220
636	5,365,221
677	5,365,222
693	5,365,223
825.31	5,365,225
825.44	5,365,226
825.55	5,365,227
825.8	5,365,228
855.4	5,365,229
CLASS 341	
22	5,365,230
58	5,365,231
95	5,365,232
139	5,365,233
CLASS 342	
II	5,365,234
44	5,365,235
53	5,365,236
179	5,365,237
195	5,365,238
368	5,365,239
CLASS 343	
701	5,365,240
702	5,365,246
	5,365,247
	5,365,248
703	5,365,241
713	5,365,242
753	5,365,243
767	5,365,244
840	5,365,245
CLASS 345	
50	5,365,249
94	5,365,250
136	5,365,251
153	5,365,252
156	5,365,253
157	5,365,254
CLASS 346	
76 PH	5,365,257
108	5,365,258
	5,365,259
825.04	5,365,224
CLASS 347	
4	5,364,195
16	5,365,256
45	5,365,255
87	5,365,260
	5,365,262
103	5,365,261
CLASS 348	
9	5,365,263
10	5,365,264
15	5,365,265
61	5,365,266
65	5,365,267
76	5,365,268
297	5,365,269
311	5,365,270
402	5,365,271
426	5,365,272
452	5,365,273
458	5,365,274
493	5,365,275
556	5,365,276
571	5,365,277
581	5,365,278
678	5,365,279
699	5,365,280
700	5,365,281
708	5,365,346
734	5,365,282
743	5,365,283
793	5,365,284
818	5,365,285
CLASS 351	
204	5,365,286
CLASS 353	
31	5,365,287
98	5,365,288
120	5,365,289
CLASS 354	
64	5,365,290
74	5,365,291
76	5,365,292
81	5,365,293
112	5,365,294
173.1	5,365,295
195.1	5,365,296
	5,365,297
230	5,365,298
319	5,365,299
320	5,365,300
400	5,365,301
403	5,365,302
430	5,365,303
	5,365,304
484	5,365,305
CLASS 355	
38	5,365,306
45	5,365,307
74	5,365,308
75	5,365,309
202	5,365,310
205	5,365,311
206	5,365,312
208	5,365,313
	5,365,314
210	5,365,315
219	5,365,316
225	5,365,317
246	5,365,318
	5,365,319
282	5,365,320
285	5,365,321
316	5,365,322
321	5,365,323
326	5,365,325
326 R	5,365,324
CLASS 356	
28.5	5,365,326
73.1	5,365,328
	5,365,329
237	5,365,330
241	5,365,331
	5,365,332
244	5,365,333
326	5,365,334
345	5,365,335
350	5,365,337
	5,365,338
	5,365,339
357	5,365,340
394	5,365,341
401	5,365,342
427	5,365,343
CLASS 358	
261.1	5,365,347
298	5,365,348
406	5,365,349
426	5,365,350
500	5,365,352
518	5,365,353
CLASS 359	
15	5,365,354
59	5,365,355
62	5,365,356
67	5,365,357
117	5,365,358
124	5,365,344
139	5,365,359
161	5,365,361
174	5,365,362
208	5,365,364
267	5,365,365
330	5,365,366
341	5,365,368
359	5,365,345
399	5,365,367
457	5,365,369
464	5,365,370
483	5,365,371
515	5,365,372
601	5,365,373
619	5,365,374
629	5,365,375
686	5,365,376
718	5,365,377
839	5,365,378
846	5,365,379
CLASS 360	
10.30	5,365,380
15	5,365,381
51	5,365,382
69	5,365,383
72.2	5,365,384
73.03	5,365,385
85	5,365,386
94	5,365,387
99.04	5,365,388
105	5,365,389
107	5,365,390
110	5,365,391
126	5,365,392
132	5,365,393
CLASS 361	
33	5,365,394
56	5,365,395
80	5,365,396
93	5,365,397
117	5,365,398
699	5,365,402
704	5,365,399
707	5,365,403
752	5,365,400
760	5,365,404
766	5,365,405
777	5,365,406
794	5,365,407
807	5,365,408
813	5,365,409
816	5,365,410
CLASS 362	
20	5,365,411
32	5,365,412
	5,365,413
II	5,365,414
66	5,365,415
135	5,365,416
154	5,365,417
308	5,365,418
CLASS 363	
16	5,365,419
50	5,365,420
71	5,365,421
98	5,365,422
144	5,365,424
CLASS 364	
140	5,365,423
401	5,365,425
410	5,365,427
413.06	5,365,426
	5,365,428
413.13	5,365,429
419.08	5,365,430
	5,365,433
419.13	5,365,434
420	5,365,435
424.01	5,365,431
424.03	5,365,436
	5,365,438
424.05	5,365,432
	5,365,439
	5,365,440
424.07	5,365,442
424.1	5,365,437
426.03	5,365,441
	5,365,443
426.04	5,365,444
431.01	5,365,445
433	5,365,446
449	5,365,447
	5,365,448
	5,365,449
	5,365,450
	5,365,451
468	5,365,452
481	5,365,453
491	5,365,454
497	5,365,455
499	5,365,456
506	5,365,457
	5,365,458
509	5,365,459
516	5,365,460
550	5,365,461
557	Re.34,789
578	5,365,463
580	5,365,464
715.03	5,365,465
717	5,365,466
723	5,365,467
724.1	5,365,468
726	5,365,469
	5,365,470
746.2	5,365,471
807	5,365,472
829	5,365,473
CLASS 365	
51	5,365,474
154	5,365,475
162	5,365,476
174	5,365,477
189.01	5,365,478
189.29	5,365,479
190	5,365,480
201	5,365,481
	5,365,482
203	5,365,483
218	5,365,484
221	5,365,485
222	5,365,486
226	5,365,487
	5,365,488
230.03	5,365,489
CLASS 366	
25	5,364,182
98	5,364,183
273	5,364,184
CLASS 367	
1	5,365,490
15	5,365,491
21	5,365,492
144	5,365,493
CLASS 368	
10	5,365,494
79	5,365,495
109	5,365,496
230	5,365,497
239	5,365,498
262	5,365,499
CLASS 369	
2	5,365,500
13	5,365,501
II	5,365,502
32	5,365,503
44.41	5,365,504
59	5,365,505
75.2	5,365,506
116	5,365,507
124	5,365,508
CLASS 370	
13	5,365,509
16	5,365,510
	5,365,511
	5,365,512
17	5,365,513
	5,365,514
	5,365,515
III	5,365,516
58.1	5,365,518
58.3	5,365,517
60	5,365,519
	5,365,520
	5,365,521
60.1	5,365,522
85.2	5,365,523
94.2	5,365,524
CLASS 371	
2.1	5,365,525
16.5	5,365,526
25.1	5,365,527
	5,365,528
37.1	5,365,529
37.4	5,365,530
CLASS 372	
III	5,365,531
31	5,365,532
36	5,365,533
	5,365,534
38	5,365,535
45	5,365,536
50	5,365,537
66	5,365,538
75	5,365,539
92	5,365,540
99	5,365,541
CLASS 373	
64	5,365,542
CLASS 374	
28	5,364,185
126	5,364,186
161	5,364,187
CLASS 375	
1	5,365,543
	5,365,544
	5,365,550
	5,365,551
8	5,365,545
9	5,365,546
37	5,365,547
62	5,365,548
96	5,365,549
106	5,365,552
122	5,365,553
CLASS 376	
245	5,365,554
258	5,365,555
272	5,365,556
439	5,365,557
445	5,365,558
CLASS 377	
10	5,365,559
CLASS 378	
8	5,365,560
34	5,365,561
37	5,365,562
48	5,365,563
55	5,365,564
146	5,365,565
150	5,365,566
156	5,365,567
CLASS 379	
43	5,365,568
57	5,365,569
59	5,365,570
	5,365,571
61	5,365,572
	5,365,573
88	5,365,574
92	5,365,575
93	5,365,576
96	5,365,577
	5,365,578
101	5,365,579
189	5,365,580
196	5,365,581
265	5,365,582
390	5,365,583
CLASS 380	
3	5,365,586
4	5,365,584
9	5,365,585
25	5,365,587
42	5,365,588
43	5,365,589
49	5,365,590
	5,365,591
CLASS 381	
46	5,365,592
69	5,365,593
71	5,365,594
168	5,365,595
CLASS 382	
8	5,365,596
	5,365,597
13	5,365,598
22	5,365,599
41	5,365,600
46	5,365,601
47	5,365,602

420 5,364,192
493 5,364,194

CLASS 385

93 Re.34,790

CLASS 395

159 5,365,360
650 5,365,606

CLASS 400

691 5,364,196

CLASS 401

75 5,364,197
138 5,364,198

CLASS 402

68 5,364,199
79 5,364,200

CLASS 403

322 5,364,201
5,364,202
403 5,364,203

CLASS 404

35 5,364,204
72 5,364,205

CLASS 405

16 5,364,206
303 5,364,207

CLASS 406

85 5,364,208

CLASS 407

119 5,364,209

CLASS 409

134 5,364,210

CLASS 410

108 5,364,211

CLASS 411

404 5,364,212
431 5,364,213
536 5,364,214

CLASS 412

3 5,364,215
34 5,364,216
37 5,364,217

CLASS 414

142.4 5,364,218
217 5,364,219
272 5,364,220
339 5,364,221
416 5,364,222
526 5,364,223
703 5,364,224
786 5,364,225
5,364,226

CLASS 415

35 5,364,227
55.1 5,364,228
163 5,364,229

CLASS 416

134 A 5,364,230
157 R 5,364,231

CLASS 417

222.1 5,364,232
231 5,364,233
273 5,364,234
295 5,364,235
312 5,364,236
319 5,364,237
423.14 5,364,238
423.3 5,364,239
427 5,364,240
442 5,364,241
474 5,364,242
499 5,364,243
536 5,364,244

CLASS 418

9 5,364,245
15 5,364,246
55.2 5,364,247
178 5,364,248
191 5,364,249
201.1 5,364,250
220 5,364,251

CLASS 419

2 5,364,586
31 5,364,587

CLASS 420

67 5,364,588

CLASS 422

26 5,364,589
28 5,364,590

5,364,601
58 5,364,591
63 5,364,592
87 5,364,593
90 5,364,594
100 5,364,595
5,364,596
101 5,364,597
102 5,364,598
170 5,364,599
186.07 5,364,600
307 5,364,602

CLASS 423

104 5,364,603
210 5,364,604
236 5,364,605
239.2 5,364,606
286 5,364,607
344 5,364,608
387 5,364,609
432 5,364,610
437 R 5,364,611

CLASS 424

1.53 5,364,612
9 5,364,613
5,364,614
45 5,364,615
52 5,364,616
59 5,364,617
78.17 5,364,618
84 5,364,619
85.1 5,364,622
94.64 5,364,623
116 5,364,624
117 5,364,625
401 5,364,626
403 5,364,627
443 5,364,628
448 5,364,629
449 5,364,630
5,364,631
450 5,364,632
5,364,633
451 5,364,634
5,364,635
456 5,364,636
464 5,364,637
5,364,646
490 5,364,647
497 5,364,620
637 5,364,649

CLASS 425

3 5,364,252
78 5,364,253
133.1 5,364,254
171 5,364,255
174.4 5,364,256
367 5,364,257
445 B1 4,155,695
501 5,364,258

CLASS 426

16 5,364,639
33 5,364,640
34 5,364,641
74 5,364,642
102 5,364,643
248 5,364,645
327 5,364,648
331 5,364,650
451 5,364,651
549 5,364,652
660 5,364,653

CLASS 427

66 5,364,654
129 5,364,655
142 5,364,656
185 5,364,657
209 5,364,658
253 5,364,659
255.3 5,364,660
433 5,364,661
449 5,364,663
535 5,364,664
536 5,364,662
571 5,364,665
579 5,364,666
582 5,364,667

CLASS 428

1 5,364,668
5,364,669
5,364,670
14 5,364,671
15 5,364,672
34 5,364,673
34.8 5,364,674
35.7 5,364,675
5,364,676
40 5,364,677
76 5,364,679
96 5,364,678

126 5,364,680
137 5,364,681
138 5,364,682
141 5,364,683
5,364,684
155 5,364,685
174 5,364,686
184 5,364,687
187 5,364,688
195 5,364,689
212 5,364,690
220 5,364,691
222 5,364,692
263 5,364,693
288 5,364,694
318.6 5,364,696
323 5,364,695
5,364,697
5,364,698
357 5,364,699
373 5,364,701
394 5,364,700
423.1 5,364,702
460 5,364,703
516 5,364,704
601 5,364,705
607 5,364,706
612 5,364,707
626 5,364,708
662 5,364,709

CLASS 429

9 5,364,710
15 5,364,711
42 5,364,712
66 5,364,713
178 5,364,714
229 5,364,715

CLASS 430

5 5,364,716
5,364,717
5,364,718
106 5,364,719
106.6 5,364,720
109 5,364,721
110 5,364,722
5,364,723
5,364,724
5,364,725
115 5,364,726
119 5,364,727
137 5,364,728
5,364,729
5,364,730
143 5,364,731
201 5,364,732
203 5,364,733
230 5,364,734
271 5,364,735
280 5,364,736
281 5,364,737
283 5,364,738
292 5,364,739
294 5,364,740
300 5,364,741
317 5,364,742
320 5,364,743
321 5,364,744
359 5,364,745
488 5,364,746
504 5,364,747
505 5,364,748
507 5,364,749
509 5,364,750
527 5,364,751
529 5,364,752
549 5,364,753
569 5,364,754
584 5,364,755

CLASS 431

5 5,364,259
6 5,364,260
153 5,364,261
202 5,364,262
253 5,363,590
5,364,263
266 5,364,264

CLASS 432

106 5,364,265
254.1 5,364,266

CLASS 433

26 5,364,267
173 5,364,268
178 5,364,269

CLASS 434

55 5,364,270
61 5,364,271
159 5,364,272
365 5,364,274

CLASS 435

2 5,364,756

5 5,364,757
5,364,758
6 5,364,759
5,364,760
5,364,761
7.24 5,364,762
7.32 5,364,763
15 5,364,764
26 5,364,765
34 5,364,766
39 5,364,767
43 5,364,768
69.1 5,364,769
5,364,770
5,364,771
5,364,772
5,364,773
69.3 5,364,774
96 5,364,794
107 5,364,775
118 5,364,776
134 5,364,777
135 5,364,778
172.3 5,364,779
5,364,780
193 5,364,781
202 5,364,782
235.1 5,364,783
240.1 5,364,784
240.2 5,364,785
252.2 5,364,786
252.33 5,364,787
252.5 5,364,788
262.5 5,364,789
288 5,364,790
320.1 5,364,791

CLASS 436

73 5,364,792
86 5,364,793
106 5,364,795
500 5,364,796
501 5,364,797

CLASS 437

28 5,364,800
31 5,364,802
39 5,364,801
40 5,364,803
41 5,364,804
43 5,364,805
5,364,806
44 5,364,807
47 5,364,808
52 5,364,809
5,364,810
5,364,811
5,364,812
5,364,813
99 5,364,814
5,364,815
133 5,364,816
192 5,364,817
195 5,364,818

CLASS 439

65 5,364,275
66 5,364,276
67 5,364,277
69 5,364,278
76 5,364,279
5,364,280
100 5,364,281
157 5,364,282
201 5,364,283
266 5,364,284
275 5,364,285
330 5,364,286
358 5,364,287
404 5,364,288
501 5,364,289
517 5,364,290
607 5,364,291
610 5,364,292
620 5,364,293
676 5,364,294

CLASS 440

61 5,364,295
101 5,364,296

CLASS 441

23 5,364,297

CLASS 446

59 5,364,298
176 5,364,299
437 5,364,300

CLASS 451

40 5,363,603
69 5,363,597
326 5,363,599
397 5,363,600
540 5,363,601
5,363,602

CLASS 452

18 5,364,301
174 5,364,302

CLASS 454

155 5,364,303
258 5,364,304
261 5,364,305

CLASS 460

68 5,364,306

CLASS 464

52 5,364,307
5,364,308
82 5,364,309
99 5,364,310
170

CLASS 472

62 5,364,311
118 5,364,312
135 5,364,313

CLASS 473

94 5,364,314

CLASS 474

242 5,364,315

CLASS 475

80 5,364,316
132 5,364,317
224 5,364,319
280 5,364,320

CLASS 477

42 5,364,321
108 5,364,322
143 5,363,724

CLASS 482

45 5,364,323
46 5,364,324
111 5,364,325
113 5,364,326
122 5,364,327

CLASS 483

28 5,364,328
56 5,364,329

CLASS 492

41 5,364,330
43 5,364,331

CLASS 493

23 5,364,332
84 5,364,333
410 5,364,334

CLASS 494

15 5,364,335

CLASS 501

45 5,364,819
71 5,364,820

CLASS 502

5 5,364,821
24 5,364,822
62 5,364,823
209 5,364,824
311 5,364,825
315 5,364,826
338 5,364,827
341 5,364,828

CLASS 503

201 5,364,829
224 5,364,830

CLASS 504

235 5,364,831
272 5,364,832
289 5,364,833
319 5,364,834

CLASS 505

190 5,364,836
461 5,364,835

CLASS 514

3 5,364,838
8 5,364,837
12 5,364,839
5,364,840
5,364,841
5,364,842
15 5,364,843
5,364,844
54 5,364,845
102 5,364,846
182 5,364,847
201 5,364,848
212 5,364,849
230.2 5,364,854
248 5,364,855
253 5,364,856
255 5,364,850

259 5,364,857
279 5,364,858
293 5,364,859
300 5,364,860
5,364,861
303 5,364,862
304 5,364,863
318 5,364,864
5,364,865
321 5,364,866
326 5,364,867
331 5,364,868
332 5,364,853
340 5,364,869
5,364,870
342 5,364,871
343 5,364,872
354 5,364,873
373 5,364,874
375 5,364,875
381 5,364,876
414 5,364,877
422 5,364,878
452 5,364,879
469 5,364,880
508 5,364,881
517 5,364,882
530 5,364,883
551 5,364,884
563 5,364,885
574 5,364,644
772 5,364,886

CLASS 518

713 5,364,887

CLASS 521

159 5,364,852

CLASS 522

31 5,364,888
71 5,364,889
92 5,364,890
149 5,364,891

CLASS 523

218 5,364,892
429 5,364,893

CLASS 524

60 5,364,894
120 5,364,895
265 5,364,898
266 5,364,896
268 5,364,899
291 5,364,900
457 5,364,897
521 5,364,901
541 5,364,902
555 5,364,903
832 5,364,904

CLASS 525

53 5,364,905
5,364,906
54.1 5,364,907
64 5,364,908
69 5,364,909
142 Re.34,791
327.3 5,364,910
333.7 5,364,911
418 5,364,912
440 5,364,913
505 5,364,914

CLASS 526

105 5,364,915
161 5,364,916
242 5,364,917
245 5,364,918
265 5,364,919

CLASS 528

5 5,364,920
15 5,364,921
5,364,922
27 5,364,923
73 5,364,924
104 5,364,925
198 5,364,926
339.3 5,364,927
373 5,364,928
491 5,364,929

CLASS 530

326 5,364,930
331 5,364,931
345 5,364,851
385 5,364,932
412 5,364,933

CLASS 536

23.2 5,364,934
69 5,364,935
103 5,364,936

CLASS 544

194 5,364,937
333 5,364,938
406 5,364,939
5,364,940

CLASS 546

114 5,364,941
118 5,364,942
223 5,364,943

CLASS 548

341.1 5,364,944

CLASS 549

253 5,364,945
407 5,364,946
510 5,364,947

CLASS 554

36 5,364,948
161 5,364,949

CLASS 556

2 5,364,950
9 5,364,951
44 5,364,952
46 5,364,953
90 5,364,954
418 5,364,955

CLASS 560

89 5,364,956
207 5,364,957
359 5,364,958

CLASS 562

2 5,364,959
121 5,364,960
444 5,364,961
494 5,364,962
519 5,364,963
590 5,364,964
623 5,364,965

CLASS 564

190 5,364,966
315 5,364,967
416 5,364,968
498 5,364,971

CLASS 568

306 5,364,972
421 5,364,969
454 5,364,970
620 5,364,973
662 5,364,974
697 5,364,975
5,364,976
5,364,979
698 5,364,980
5,364,981
720 5,364,977
771 5,364,982
5,364,983
801 5,364,978
862 5,364,984
866 5,364,987
871 5,364,985
885 5,364,986
909.8 5,364,988
946 5,364,989

CLASS 570

159 5,364,990
175 5,364,991
176 5,364,992
187 5,364,993

CLASS 585

3 5,364,994
241 5,364,995
5,364,996
253 5,364,997
259 5,364,998
407 5,364,999
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06 : 8,979 | 8,980 | 8,981 | 8,982 | 26 : 8,978

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PATENT AND TRADEMARK OFFICE
Bruce Lehman, *Commissioner*

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UNITED STATES PATENT AND TRADEMARK OFFICE

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November 22, 1994



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November 22, 1994 Volume 1168 Number 4

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 19, 1991 for which maintenance fees due at 3 years

and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,065,457 through 5,067,173
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 17, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,706,301 through 4,707,859
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 15, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,414,691 through 4,416,024
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $480.00
By other than a small entity $960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $965.00
By other than a small entity $1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,450.00
By other than a small entity $2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 14, 1994
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,748	06/446,217	11/27/84
(4,349,443)	(06/239,079)	(09/14/82)
Re. 32,603	07/029,165	02/16/88
(4,610,832)	(06/654,391)	(09/09/86)
Re. 32,924	07/102,436	05/16/89
(4,610,644)	(06/579,965)	(09/09/86)
Re. 33,033	07/098,171	08/22/89
(4,611,081)	(06/752,323)	(09/09/86)
Re. 33,281	07/276,426	07/31/90
(4,611,099)	(06/666,836)	(09/09/86)
Re. 33,514	07/104,004	01/08/91
(4,610,339)	(06/790,789)	(09/09/86)
Re. 34,382	07/894,513	09/21/93
(4,955,510)	(07/342,247)	(09/11/90)
4,348,777	06/239,475	09/14/82
4,348,781	06/249,839	09/14/82
4,348,798	06/275,637	09/14/82
4,348,822	06/221,926	09/14/82
4,348,834	06/232,635	09/14/82
4,348,856	06/266,876	09/14/82
4,348,858	06/262,930	09/14/82
4,348,870	06/259,341	09/14/82
4,348,871	06/238,389	09/14/82
4,348,884	06/232,232	09/14/82
4,348,941	06/232,970	09/14/82
4,348,983	06/299,765	09/14/82
4,349,007	06/269,660	09/14/82
4,349,019	06/283,199	09/14/82
4,349,060	06/241,595	09/14/82
4,349,076	06/230,810	09/14/82
4,349,087	06/234,079	09/14/82
4,349,105	06/257,813	09/14/82
4,349,119	06/235,245	09/14/82
4,349,121	06/232,629	09/14/82
4,349,199	06/249,966	09/14/82
4,349,201	06/300,166	09/14/82
4,349,204	06/258,706	09/14/82
4,349,206	06/272,555	09/14/82
4,349,229	06/229,026	09/14/82
4,349,245	06/229,633	09/14/82
4,349,252	06/222,375	09/14/82
4,349,257	06/231,124	09/14/82
4,349,267	06/240,109	09/14/82
4,349,269	06/231,573	09/14/82
4,349,295	06/251,115	09/14/82
4,349,332	06/242,812	09/14/82
4,349,353	06/305,841	09/14/82
4,349,358	06/247,947	09/14/82
4,349,361	06/308,576	09/14/82
4,349,364	06/316,244	09/14/82
4,349,366	06/244,457	09/14/82
4,349,367	06/249,311	09/14/82
4,349,369	06/228,232	09/14/82
4,349,370	06/228,234	09/14/82
4,349,371	06/228,235	09/14/82

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4,349,374	06/226,965	09/14/82
4,349,376	06/271,459	09/14/82
4,349,380	06/250,009	09/14/82
4,349,395	06/217,689	09/14/82
4,349,399	06/247,778	09/14/82
4,349,409	06/262,793	09/14/82
4,349,411	06/308,270	09/14/82
4,349,417	06/223,590	09/14/82
4,349,419	06/231,022	09/14/82
4,349,420	06/224,280	09/14/82
4,349,422	06/225,639	09/14/82
4,349,424	06/264,378	09/14/82
4,349,429	06/254,575	09/14/82
4,349,433	06/247,483	09/14/82
4,349,434	06/259,710	09/14/82
4,349,438	06/281,338	09/14/82
4,349,442	06/251,944	09/14/82
4,349,450	06/249,873	09/14/82
4,349,470	06/246,660	09/14/82
4,349,478	06/310,576	09/14/82
4,349,488	06/317,613	09/14/82
4,349,489	06/247,717	09/14/82
4,349,497	06/252,087	09/14/82
4,349,534	06/321,871	09/14/82
4,349,537	06/245,959	09/14/82
4,349,574	06/305,918	09/14/82
4,349,576	06/220,680	09/14/82
4,349,580	06/265,710	09/14/82
4,349,588	06/299,722	09/14/82
4,349,632	06/244,731	09/14/82
4,349,636	06/263,665	09/14/82
4,349,639	06/247,982	09/14/82
4,349,647	06/232,064	09/14/82
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4,349,652	06/232,075	09/14/82
4,349,657	06/306,065	09/14/82
4,349,658	06/221,937	09/14/82
4,349,671	06/241,141	09/14/82
4,349,676	06/314,805	09/14/82
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4,349,680	06/316,609	09/14/82
4,349,685	06/296,761	09/14/82
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4,610,134	06/679,812	09/09/86
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4,610,378	06/605,491	09/09/86
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4,610,388	06/583,113	09/09/86
4,610,390	06/697,044	09/09/86
4,610,392	06/683,345	09/09/86
4,610,396	06/568,119	09/09/86
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4,610,420	06/702,191	09/09/86
4,610,421	06/540,562	09/09/86
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4,610,445	06/534,133	09/09/86
4,610,447	06/637,318	09/09/86
4,610,451	06/763,539	09/09/86
4,610,452	06/752,694	09/09/86
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4,610,713	06/685,849	09/09/86
4,610,716	06/558,140	09/09/86
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4,610,720	06/610,905	09/09/86
4,610,723	06/656,740	09/09/86
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4,610,752	06/508,450	09/09/86
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4,956,677	07/308,858	09/11/90
4,956,679	07/185,164	09/11/90
4,956,685	07/481,650	09/11/90
4,956,693	07/028,140	09/11/90
4,956,696	07/397,831	09/11/90
4,956,699	07/301,043	09/11/90
4,956,707	07/387,487	09/11/90
4,956,712	07/344,376	09/11/90
4,956,721	07/355,825	09/11/90
4,956,735	07/349,469	09/11/90
4,956,737	07/332,829	09/11/90
4,956,739	07/372,273	09/11/90
4,956,749	07/123,488	09/11/90
4,956,752	07/291,169	09/11/90
4,956,754	07/486,909	09/11/90
4,956,757	07/396,298	09/11/90
4,956,760	07/304,509	09/11/90
4,956,764	07/319,491	09/11/90
4,956,767	07/159,179	09/11/90
4,956,768	07/159,767	09/11/90
4,956,769	07/194,481	09/11/90
4,956,778	07/213,856	09/11/90
4,956,784	07/284,165	09/11/90
4,956,785	07/243,298	09/11/90
4,956,786	07/296,076	09/11/90
4,956,819	07/168,653	09/11/90
4,956,825	07/475,164	09/11/90
4,956,829	07/455,564	09/11/90
4,956,830	07/113,423	09/11/90
4,956,840	07/279,314	09/11/90
4,956,841	07/293,418	09/11/90
4,956,845	07/082,304	09/11/90
4,956,849	07/388,256	09/11/90
4,956,874	07/164,801	09/11/90
4,956,877	07/060,740	09/11/90

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,534,089	06/483,166	08/13/85	04/08/83	09/23/94
4,592,089	06/523,449	05/27/86	08/15/83	08/29/94
4,598,910	06/720,253	07/08/86	04/05/85	09/29/94
4,693,696	06/822,787	09/15/87	01/27/86	09/26/94
4,776,195	06/877,966	10/11/88	06/24/86	09/29/94
4,832,651	07/022,760	05/23/89	03/06/87	09/23/94
4,892,368	07/252,119	01/09/90	10/03/88	09/29/94
4,911,906	07/213,684	03/27/90	06/30/88	09/29/94
4,914,262	07/199,941	04/03/90	05/27/88	09/21/94
4,918,943	07/301,837	04/24/90	01/26/89	09/26/94
4,928,702	07/040,735	05/29/90	04/20/87	09/27/94
4,934,645	07/325,395	06/19/90	03/20/89	09/20/94
4,935,591	07/228,664	01/19/90	08/04/88	09/23/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,523,353, Re. S.N. 08/316,393, Sept. 30, 1994, Cl. 24/30.5R, CLOSURE MEMBER FOR SMALL ICE PACKS, Vance M. Hubbard, et. al., Owner of Record: *TCNL Technologies, Inc., Wilmington, Del.*, Attorney or Agent: Richard J. Moura, Ex. Gp.: 3507

4,894,739, Re. S.N. 08/305,777, Sept. 14, 1994, Cl. 360/97.02, DISC RECORDING AND/OR REPRODUCING APPARATUS, Ko Kobayashi, Owner of Record: *Teac Corp., Tokyo, Japan*, Attorney or Agent: William F. Westerman, Ex. Gp.: 2512

4,928,283, Re. S.N. 08/277,331, July 19, 1994, Cl. 378/20, X-RAY TOMOGRAPHY APPARATUS, Bernard M. Gordon, Owner of Record: *Analogic Corp., Peabody, Mass.*, Attorney or Agent: Toby H. Kusmer, Ex. Gp.: 2506

4,928,283, Re. S.N. 08/277,496, July 19, 1994, Cl. 378/20, X-RAY TOMOGRAPHY APPARATUS, Bernard M. Gordon, Owner of Record: *Analogic Corp., Peabody, Mass.*, Attorney or Agent: Toby H. Kusmer, Ex. Gp.: 2506

4,928,283, Re. S.N. 08/277,337, July 19, 1994, Cl. 378/20, X-RAY TOMOGRAPHY APPARATUS, Bernard M. Gordon, Owner of Record: *Analogic Corp., Peabody, Mass.*, Attorney or Agent: Toby H. Kusmer, Ex. Gp.: 2506

5,031,150, Re. S.N. 08/305,940, Sept. 19, 1994, Cl. 365/193, CONTROL CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE AND SEMICONDUCTOR MEMORY SYSTEM, Takashi Ohsawa, Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-Shi, Japan*, Attorney or Agent: Song K. Jung, Ex. Gp.: 2511

5,112,047, Re. S.N. 08/241,899, May 12, 1994, Cl. 273/85D, TABLE FOOTBALL MACHINE, Alain Monneret, Owner of Record: *Monneret Jouets, Lons Le Saunier, France*, Attorney or Agent: William P. Berridge, Ex. Gp.: 3304

5,126,653, Re. S.N. 08/266,961, June 27, 1994, Cl. 323/313, CMOS VOLTAGE REFERENCE STACKED WITH BASE-TO-EMITTER VOLTAGES, Apparajan Ganesan, et. al., Owner of Record: *Analog Devices, Incorporated, Norwood, Mass.*, Attorney or Agent: Howard M. Bollinger, Ex. Gp.: 2102

5,148,524, Re. S.N. 08/306,180, Sept. 14, 1994, Cl. 395/166, DYNAMIC VIDEO RAM INCORPORATING ON CHIP VECTOR/IMAGE MODE LINE MODIFICATION, Roy E. Harlin, et. al., Owner of Record: *Solbourne Computer Inc., Longmont, Colo.*, Attorney or Agent: Don W. Bulson, Ex. Gp.: 2307

5,149,278, Re. S.N. 08/310,250, Sept. 21, 1994, Cl. 439/412, TERMINAL BLOCK, Charles W. Waas, et. al., Owner of Record: *PSI Telecommunications, Inc., Burbank, Calif.*, Attorney or Agent: David L. Henty, Ex. Gp.: 3202

5,150,037, Re. S.N. 08/309,779, Sept. 21, 1994, Cl. 324/71.4, PARTICLE DETECTOR AND PARTICLE DETECTING APPARATUS HAVING THE DETECTOR, Chihiro Kouzuki, Owner of Record: *Toa Medical Electronics Co., Ltd., Kobe, Japan*, Attorney or Agent: Felix J. D'Ambrosio, Ex. Gp.: 2607

5,150,898, Re. S.N. 08/315,368, Sept. 30, 1994, Cl. 273/85C, GAME APPARATUS, Joel Hochberg, et. al., Owner of Record: *Rare Coin-It, Inc., Miami Fla.*, Attorney or Agent: Marcia S. Kelbon, Ex. Gp.: 3304

5,152,483, Re. S.N. 08/316,392, Sept. 30, 1994, Cl. 248/96, GOLF BAG WITH SUPPORT STAND, Seop Maeng, Owner of Record: *Inventor*, Attorney or Agent: John J. Connors, Ex. Gp.: 3505

5,237,390, Re. S.N. 08/307,428, Sept 19, 1994, Cl. 356/363, METHOD AND APPARATUS FOR MEASUREMENT OF ANGULAR DISPLACEMENT, Raymond J. Chaney, Owner of Record: *Renishaw PLC, Gloucestershire, United Kingdom*, Attorney or Agent: James A. Oliff, Ex. Gp.: 2505

5,261,882, Re. S.N. 08/308,683, Sept. 19, 1994, Cl. 604/135, NEGATOR SPRING-POWERED SYRINGE, Andrew I. Sealfon, Owner of Record: *Inventor*, Attorney or Agent: Myron Amer, P.C., Ex. Gp.: 3306

5,269,488, Re. S.N. 08/306,662, Sept. 15, 1994, Cl. 248/535, FLAG POLE BRACKET, Robert L. Lach, Owner of Record: *New Creative Enterprises, Inc., Cincinnati, Ohio*, Attorney or Agent: Thomas J. Burger, Ex. Gp.: 3204

5,276,476, Re. S.N. 08/305,778, Sept. 14, 1994, Cl. 354/400, AUTOMATIC FOCUSING DEVICE, Yukio Uenaka, Owner of Record: *Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: Bruce H. Berstein, Ex. Gp.: 2101

5,321,718, Re. S.N. 08/307,174, Sept. 16, 1994, Cl. 372/108, FREQUENCY CONVERTED LASER DIODE AND LENS SYSTEM THEREFOR, Robert G. Waarts et al., Owner of Record: *SDL, Inc., San Jose, Calif.*, Attorney or Agent: Thomas Schneck, Ex. Gp.: 2501

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 331,561, Reexam. No. 90/003,449, June 1, 1994, Cl. D12/300, BOAT HULL, Terry R. Stark, Owner of Record: *Waycross Skiff Corp., Waycross, Ga.*, Attorney or Agent: Roger D. Wylie, Jones & Askew, Atlanta, Ga., Ex. Gp.: 2901, Requester: Owner

4,095,108, Reexam. No. 90/003,451, June 6, 1994, Cl. 250/369, SIGNAL PROCESSING EQUIPMENT FOR RADIATION IMAGING APPARATUS, Dan Inbar, et. al., Owner of Record: *Elscint, Ltd., Haifa, Israel*, Attorney or Agent: Dr. Paul Fenster, Sandler, Greenblum & Bernstein, Arlington, Va., Ex. Gp.: 2506, Requester: Owner

4,349,962, Reexam. No. 90/003,440, May 20, 1994, Cl. 030/276, CUTTING DOWN MACHINE, Hidehiko Itagaki, et. al., Owner of Record: *Komatsu Zenoah Co., Tokyo, Japan*, Attorney or Agent: Sandler, Greenblum & Bernstein, Arlington, Va., Ex. Gp.: 3204, Requester: Owner

4,689,683, Reexam. No. 90/003,450, June 6, 1994, Cl. 348/722, COMPUTERIZED STUDIO FOR MOTION PICTURE FILM AMD TELEVISION PRODUCTION, Edward Efron, Owner of Record: *Inventor, Irvine, Calif.*, Attorney or Agent: Roy A. Ekstrand, Costa Mesa, Calif., Ex. Gp.: 2602, Requester: Samson Helfgott, Helfgott & Karas, New York, N.Y.

4,689,819, Reexam. No. 90/003,454, June 2, 1994, Cl. 318/068, CLASS D HEARING AID AMPLIFYER, Mead C. Killion, Owner of Record: *Knowles Electronic Corp., Itasca, Ill.*, Attorney or Agent: Thomas K. Stine, Wallenstein, Wagner & Hattis, Chicago, Ill., Ex. Gp.: 2608, Requester: Owner

4,763,440, Reexam. No. 90/003,448, May 31, 1994, Cl. 047/002, SYSTEM AND METHOD FOR PROTECTING PLANTS FROM FREEZE DAMAGE, Gregory S. James, Owner of Record: *Inventor, De Land, Fla.*, Attorney or Agent: Allen, Dyer, Doppelt, Franjola & Milbrath, Orlando, Fla., Ex. Gp.: 3506, Requester: Ronald W. Citkowski, Howard & Howard Attorneys, Bloomfield Hills, Mich.

4,928,694, Reexam. No. 90/003,443, May 25, 1994, Cl. 128/637, INTRAVASCULAR BLOOD PARAMETER MEASUREMENT SYSTEM, Thomas P. Maxwell, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: John T. Wiedmann, Pretty, Schroeder, Bruggemann & Clark, Los Angeles, Calif., Ex. Gp.: 3305, Requester: Owner

4,997,924, Reexam. No. 90/003,493, July 8, 1994, Cl. 536/026, 5'DEOXY-4',5'-UNSATURATED-5' SUBSTITUTED ADENOSINES, Esa T. Jarvi, et. al., Owner of Record: *Merrell Dow Pharmaceuticals, Inc., Cincinnati, Ohio*, Attorney or Agent: Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, D.C., Ex. Gp.: 1803, Requester: Owner

5,044,852, Reexam. No. 90/003,441, May 23, 1994, Cl. 411/258, VACUUM FIXED ADHESIVELY SECURED FASTENER, Theodore J. Sweeney, et. al., Owner of Record: *Theodore J. Sweeney & Co., Inc., Detroit, Mich.*, Attorney or Agent: Ralph M. Burton, Brooks & Cushman, Southfield, Mich., Ex. Gp.: 3508, Requester: Owner

5,092,227, Reexam. No. 90/003,447, May 31, 1994, Cl. 454/061, APPARATUS FOR CONTROLLING THE VENTILLATION OF LABORATORY FLUME HOODS, Osman Ahmed, et. al., Owner of Record: *Landis & Gyr Powers, Inc., Buffalo Grove, Ill.*, Attorney or Agent: Roger D. Greer, Greer, Burns & Crain, Ltd., Chicago, Ill., Ex. Gp.: 3404, Requester: Owner

5,101,485, Reexam. No. 90/003,444, May 26, 1994, Cl. 395/400, VIRTUAL MEMORY PAGE TABLE PAGING APPARATUS AND METHOD, Frank J. Perazzoli, Owner of Record: *Digital Equipment Corp., Maynard, Mass.*, Attorney or Agent: Gary S. Williams, Flehr, Hohbach, Test, Albritton & Herbert, San Francisco, Calif., Ex. Gp.: 2312, Requester: Owner

5,159,135, Reexam. No. 90/003,453, June 7, 1994, Cl. 800/205, GENETIC ENGINEERING OF COTTON PLANTS AND LINES, Paul F. Umbeck, Owner of Record: *Agracetus, Inc., Middleton, Wis.*, Attorney or Agent: Quarles & Brady, Madison, Wis., Ex. Gp.: 1804, Requester: U.S. Dept. of Agriculture, Washington, D.C.

5,160,171, Reexam. No. 90/003,446, May 27, 1994, Cl. 283/091, SECURITY CODING, Peter Gregory, et. al., Owner of Record: *Zeneca, Ltd. & Imperial Chemical Industries, London, Eng.*, Attorney or Agent: Cushman, Darby & Cushman, Washington, D.C., Ex. Gp.: 3206, Requester: Owner

5,196,759, Reexam. No. 90/003,445, May 26, 1994, Cl. 313/112, HIGH TEMPERATURE LAMPS HAVING UV ABSORBING QUARTZ ENVELOPE, Thomas G. Parham, et. al., Owner of Record: *General Electric Co., Cleveland, Ohio,* Attorney or Agent: Stanley C. Corwin, General Electric Co., Cleveland, Ohio, Ex. Gp.: 2604, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 03, 1994
DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
41,751	70/041,751	12/29/1903
94,790	71/065,212	12/30/1913
308,860	71/339,838	12/26/1933
308,895	71/340,945	12/26/1933
308,927	71/339,501	12/26/1933
308,944	71/285,882	12/26/1933
308,947	71/336,055	12/26/1933
308,970	71/334,153	12/26/1933
308,982	71/340,734	12/26/1933
308,989	71/332,856	12/26/1933
309,006	71/338,625	12/26/1933
309,014	71/341,310	12/26/1933
309,040	71/340,222	12/26/1933
309,041	71/340,223	12/26/1933
584,047	71/608,508	12/29/1953
584,056	71/613,652	12/29/1953
584,058	71/615,712	12/29/1953
584,069	71/622,469	12/29/1953
584,072	71/623,222	12/29/1953
584,074	71/623,994	12/29/1953
584,089	71/628,562	12/29/1953
584,110	71/632,918	12/29/1953
584,112	71/633,196	12/29/1953
584,120	71/634,730	12/29/1953
584,122	71/635,215	12/29/1953
584,129	71/635,767	12/29/1953
584,130	71/636,059	12/29/1953
584,134	71/637,053	12/29/1953
584,138	71/639,019	12/29/1953
584,156	71/640,277	12/29/1953
584,161	71/640,862	12/29/1953
584,166	71/641,460	12/29/1953
584,167	71/641,715	12/29/1953
584,174	71/642,346	12/29/1953
584,176	71/642,790	12/29/1953
584,184	71/643,415	12/29/1953
584,187	71/643,612	12/29/1953
584,192	71/643,745	12/29/1953
584,208	71/644,275	12/29/1953
584,209	71/644,396	12/29/1953
584,210	71/644,397	12/29/1953
584,212	71/644,434	12/29/1953
584,213	71/644,562	12/29/1953
584,215	71/644,870	12/29/1953
584,223	71/646,127	12/29/1953
584,224	71/646,184	12/29/1953
584,225	71/646,185	12/29/1953
584,229	71/647,448	12/29/1953
584,237	71/624,257	12/29/1953
584,245	71/634,617	12/29/1953
584,246	71/651,879	12/29/1953
969,405	72/435,655	09/25/1973
969,979	72/428,449	10/09/1973
975,256	72/449,656	12/25/1973
975,257	72/401,347	12/25/1973
975,262	72/442,678	12/25/1973
975,266	72/416,616	12/25/1973
975,270	72/443,709	12/25/1973
975,271	72/444,034	12/25/1973
975,272	72/446,496	12/25/1973
975,273	72/446,676	12/25/1973
975,274	72/446,677	12/25/1973
975,275	72/446,678	12/25/1973
975,279	72/452,382	12/25/1973
975,283	72/447,422	12/25/1973
975,287	72/443,223	12/25/1973
975,288	72/443,224	12/25/1973
975,289	72/344,200	12/25/1973
975,290	72/367,928	12/25/1973
975,291	72/401,147	12/25/1973
975,295	72/416,477	12/25/1973
975,297	72/418,095	12/25/1973
975,302	72/426,104	12/25/1973
975,303	72/427,115	12/25/1973
975,305	72/428,604	12/25/1973
975,306	72/430,155	12/25/1973
975,308	72/435,245	12/25/1973
975,311	72/444,932	12/25/1973
975,315	72/407,873	12/25/1973
975,323	72/434,537	12/25/1973
975,324	72/434,539	12/25/1973
975,328	72/439,724	12/25/1973
975,331	72/442,367	12/25/1973
975,332	72/442,545	12/25/1973
975,333	72/407,494	12/25/1973
975,334	72/427,656	12/25/1973
975,335	72/433 733	12/25/1973
975,348	72/416,159	12/25/1973
975,349	72/433,995	12/25/1973
975,351	72/437,930	12/25/1973
975,352	72/438,916	12/25/1973
975,354	72/441,466	12/25/1973
975,356	72/441,811	12/25/1973
975,357	72/451,824	12/25/1973
975,367	72/452,773	12/25/1973
975,373	72/453,713	12/25/1973
975,374	72/396,557	12/25/1973
975,378	72/423,668	12/25/1973
975,380	72/434,190	12/25/1973
975,387	72/376,866	12/25/1973
975,388	72/401,317	12/25/1973
975,389	72/401,928	12/25/1973
975,390	72/401,929	12/25/1973
975,393	72/407,402	12/25/1973
975,396	72/414,090	12/25/1973
975,397	72/414,942	12/25/1973
975,402	72/432,370	12/25/1973
975,407	72/443,091	12/25/1973
975,410	72/402,609	12/25/1973
975,411	72/415,799	12/25/1973
975,424	72/446,912	12/25/1973
975,425	72/446,937	12/25/1973
975,428	72/397,813	12/25/1973
975,432	72/405,704	12/25/1973
975,437	72/415,287	12/25/1973
975,438	72/419,548	12/25/1973
975,441	72/430,632	12/25/1973
975,448	72/439,289	12/25/1973
975,449	72/439,293	12/25/1973
975,452	72/413,374	12/25/1973
975,456	72/418,125	12/25/1973
975,458	72/421,689	12/25/1973
975,459	72/425,483	12/25/1973
975,462	72/426,951	12/25/1973
975,464	72/427,597	12/25/1973
975,468	72/432,685	12/25/1973
975,469	72/434,975	12/25/1973

Reg. No.	Serial Number	Reg. Date
975,472	72/383,686	12/25/1973
975,473	72/422,207	12/25/1973
975,482	72/419,319	12/25/1973
975,483	72/424,195	12/25/1973
975,488	72/423,592	12/25/1973
975,490	72/436,823	12/25/1973
975,491	72/438,693	12/25/1973
975,492	72/390,976	12/25/1973
975,496	72/435,493	12/25/1973
975,497	72/436,501	12/25/1973
975,499	72/436,716	12/25/1973
975,500	72/437,748	12/25/1973
975,513	72/414,853	12/25/1973
975,523	72/429,148	12/25/1973
975,524	72/430,878	12/25/1973
975,527	72/435,022	12/25/1973
975,538	72/439,626	12/25/1973
975,547	72/433,991	12/25/1973
975,548	72/435,718	12/25/1973
975,549	72/437,776	12/25/1973
975,551	72/442,345	12/25/1973
975,552	72/442,398	12/25/1973
975,558	72/446,949	12/25/1973
975,563	72/442,039	12/25/1973
975,566	72/435,816	12/25/1973
975,568	72/404,315	12/25/1973
975,572	72/426,432	12/25/1973
975,573	72/427,359	12/25/1973
975,578	72/442,523	12/25/1973
975,585	72/446,367	12/25/1973
975,587	72/449,133	12/25/1973
975,596	72/434,661	12/25/1973
975,600	72/443,499	12/25/1973
975,601	72/445,999	12/25/1973
975,612	72/402,830	12/25/1973
975,613	72/412,027	12/25/1973
975,618	72/437,610	12/25/1973
975,620	72/438,049	12/25/1973
975,621	72/446,918	12/25/1973
975,623	72/451,804	12/25/1973
975,624	72/451,818	12/25/1973
975,625	72/452,102	12/25/1973
975,627	72/452,459	12/25/1973
975,628	72/453,538	12/25/1973
975,630	72/448,273	12/25/1973
975,632	72/448,385	12/25/1973
975,634	72/451,968	12/25/1973
975,635	72/358,858	12/25/1973
975,636	72/419,865	12/25/1973
975,637	72/422,330	12/25/1973
975,638	72/422,685	12/25/1973
975,641	72/428,729	12/25/1973
975,646	72/434,199	12/25/1973
975,647	72/441,162	12/25/1973
975,650	72/453,829	12/25/1973
975,653	72/424,962	12/25/1973
975,655	72/425,796	12/25/1973
975,658	72/431,485	12/25/1973
975,659	72/431,702	12/25/1973
975,669	72/438,135	12/25/1973
975,670	72/424,209	12/25/1973
975,678	72/422,615	12/25/1973
975,679	72/427,917	12/25/1973
975,683	72/441,571	12/25/1973
975,684	72/419,403	12/25/1973
975,686	72/439,848	12/25/1973
975,687	72/429,707	12/25/1973
975,699	72/412,674	12/25/1973
975,701	72/432,245	12/25/1973
975,702	72/427,366	12/25/1973
975,704	72/437,227	12/25/1973

Registration To Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before January 6, 1995.

Astle, Jeffrey W., 412 Roywood Cres., Newmarket, Ont., L3Y 1A5, Canada
Bernier, Louise G., 2412 Park Row W., Montreal, Que., H4B 2G4, Canada
Reive, David M., 198 Hillsdale Ave., East, Toronto, Ont., M4S 1T5, Canada
Teitelbaum, Neil, 16 Carlyle Ave., Ottawa, Ont., K1S 0T4, Canada

October 26, 1994 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Special Boxes And "Fee/No Fee" Indicators For Trademark-Related Mail And Guidelines For Filing Requests To Extend Time To Oppose With The Trademark Trial And Appeal Board (TTAB)

On July 5, 1994, the Patent and Trademark Office opened a mailroom to receive mail related to trademark applications, registrations and matters before the Trademark Trial and Appeal Board at the following addresses:

Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

To facilitate mail-handling in the new mailroom, the special box designations have been expanded so that incoming mail can be presorted more efficiently. In addition to these box designations, filers are encouraged to indicate whether the contents of an envelope contain a "FEE" or "NO FEE." As shown below, the "FEE" and "NO FEE" indicators should be set forth on the line below the box designation for easy visibility. Envelopes will be batched based on the "FEE/NO FEE" indicator and box designation and sent unopened to the appropriate employee in the Pre-exam area for processing.

The "SPECIAL BOXES FOR MAIL" page in the *Official Gazette* will be changed. Please note that the "BOX 5" designation for "'No fee' mail related to trademarks" has been discontinued. Furthermore, the box designation "Box Trademark Application" has been changed to "BOX NEW APP."

The following box designations and "FEE/NO FEE" indicators will now be available:

BOX NEW APP FEE for any new trademark application. [All applications require fees; therefore a "NO FEE" indicator should not be used.]

BOX ITU FEE for papers such as Statements of Use (SOU), and extensions requests therefor, to be filled with the Intent to Use (ITU) Unit. [All ITU papers require fees; therefore a "NO FEE" indicator should not be used.]

BOX TTAB FEE for papers such as oppositions, cancellation petitions and ex parte appeals filed with the Trademark Trial and Appeal Board (TTAB).

BOX TTAB NO FEE for TTAB papers with no fee, such as extension requests, interferences and motions.

BOX STATUS NO FEE for written status inquiries. [Status inquiries do not require a fee; therefore a "FEE" indicator should not be used.]

BOX POST REG FEE for post registration documents such as Section 8 affidavits and Section 9 renewals.

BOX RESPONSES NO FEE	for responses to Examining Attorneys' Office actions; and for responses to Post Registration Examiners' rejections.

For best results, these box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document. However, although not preferred procedure, filers may continue to include documents destined for more than one location in a single envelope, provided each document references the box designation and "FEE/NO FEE" indicator on the cover sheet or first page of the document; and provided each complete filing is stapled or secured in some fashion. The envelope should list all the box designations and "FEE/NO FEE" indicators for its contents.

This notice does not apply to trademark-related documents intended for recordation with the Assignment Branch or for requests for certified and uncertified copies of trademark application and registration documents. These papers and patent-related mail should continue to be sent to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Labeling First Requests for Extensions of Time to Oppose

Although the Trademark Trial and Appeal Board reports to the Office of the Deputy Assistant Secretary of Commerce and Deputy Assistant Commissioner of Patents and Trademarks, it is located and receives its mail at the Arlington address of the Assistant Commissioner for Trademarks. As noted above, requests for extensions of time to oppose should be sent to BOX TTAB, including the "NO FEE" indicator.

Because first requests for extensions of time to oppose are critically time-sensitive documents, filers are encouraged to indicate on the cover sheet or first page of the extension request that the paper is a first request. The suggested title for these documents is: **First Request for Extension of Time to File a Notice of Oppositions.**

October 25, 1994

PHILIP G. HAMPTON, II
Assistant Commissioner for Trademarks

Erratum

In the notice of Certificate of Correction appearing at 1165 OG 14, delete Patent No. 5,240,265 the number was erroneously mentioned and should be deleted.

Certificate of Correction
For Week of November 22, 1994

P. 8,695	4,917,879	5,081,048	5,155,093
Re. 34,271	4,957,728	5,084,456	5,157,213
Re. 34,556	4,963,447	5,085,615	5,157,800
Re. 34,694	5,006,575	5,090,863	5,159,080
Re. 34,709	5,009,977	5,098,755	5,161,157
D. 339,591	5,017,003	5,100,889	5,164,146
D. 346,138	5,036,327	5,103,859	5,164,688
D. 346,390	5,036,863	5,104,423	5,170,100
D. 348,726	5,041,383	5,108,515	5,170,447
D. 348,756	5,049,253	5,110,093	5,171,120
D. 349,421	5,052,499	5,122,802	5,174,341
D. 349,778	5,053,408	5,130,468	5,174,681
D. 350,326	5,057,144	5,130,907	5,174,859
4,755,671	5,064,218	5,131,154	5,176,609
4,815,469	5,072,325	5,142,449	5,176,835
4,824,993	5,074,916	5,143,244	5,177,107
4,839,467	5,078,844	5,153,220	5,185,366
5,185,449	5,277,473	5,316,089	5,335,788
5,185,560	5,277,940	5,316,105	5,335,986
5,188,754	5,278,108	5,316,719	5,336,105
5,189,097	5,278,965	5,316,941	5,336,170
5,189,855	5,279,597	5,317,030	5,336,361
5,190,145	5,280,782	5,317,825	5,336,500
5,190,960	5,283,468	5,318,661	5,336,653
5,191,771	5,286,352	5,318,720	5,336,875
5,195,299	5,286,502	5,318,821	5,337,351
5,196,795	5,287,166	5,319,320	5,337,363
5,199,586	5,287,597	5,319,451	5,337,532
5,200,580	5,288,517	5,319,471	5,337,608
5,201,155	5,288,567	5,319,609	5,337,725
5,204,370	5,289,986	5,320,872	5,337,979
5,205,630	5,291,047	5,320,877	5,338,461
5,206,023	5,291,236	5,321,133	5,338,623
5,208,004	5,292,129	5,321,407	5,338,934
5,208,325	5,293,157	5,321,490	5,339,144
5,209,626	5,293,481	5,321,538	5,339,194
5,210,198	5,293,997	5,321,552	5,339,246
5,210,717	5,294,312	5,321,637	5,339,493
5,216,100	5,294,576	5,321,713	5,339,766
5,216,124	5,294,763	5,321,848	5,339,846
5,216,128	5,295,327	5,322,681	5,340,265
5,219,810	5,295,748	5,323,003	5,340,653
5,219,850	5,296,499	5,323,252	5,340,953
5,220,004	5,296,727	5,323,567	5,341,034
5,221,342	5,296,993	5,323,655	5,341,038
5,222,188	5,298,062	5,323,751	5,341,303
5,222,194	5,298,286	5,324,398	5,341,534
5,223,412	5,298,739	5,324,536	5,342,026
5,224,472	5,298,822	5,324,547	5,342,104
5,227,108	5,298,929	5,324,716	5,342,359
5,227,441	5,298,997	5,325,010	5,342,450
5,228,954	5,299,037	5,325,135	5,342,611
5,230,492	5,299,111	5,325,405	5,343,056
5,230,897	5,299,390	5,326,215	5,343,107
5,231,103	5,299,577	5,326,344	5,343,423
5,234,887	5,300,279	5,326,467	5,343,527
5,236,472	5,301,420	5,326,531	5,343,871
5,237,070	5,302,040	5,327,233	5,343,896
5,237,102	5,302,200	5,327,387	5,344,275
5,238,499	5,302,821	5,328,161	5,344,529
5,242,894	5,303,990	5,329,159	5,345,027
5,242,965	5,304,562	5,329,201	5,345,425
5,243,053	5,305,069	5,330,345	5,345,516
5,244,896	5,305,525	5,330,383	5,345,655
5,244,912	5,305,625	5,331,109	5,345,866
5,245,573	5,306,812	5,331,192	5,346,094
5,246,769	5,307,533	5,331,615	5,346,669
5,249,354	5,307,869	5,331,890	5,346,789
5,250,770	5,307,963	5,331,964	5,346,961
5,251,678	5,308,828	5,331,977	5,347,531
5,252,632	5,308,857	5,332,430	5,348,180
5,254,978	5,309,197	5,332,441	5,348,351
5,256,432	5,309,441	5,332,497	5,348,377
5,257,481	5,309,525	5,332,566	5,348,432
5,260,168	5,309,775	5,332,653	5,348,605
5,261,215	5,310,349	5,332,741	5,349,959
5,261,358	5,310,582	5,332,839	5,350,015
5,262,084	5,310,603	5,333,025	5,350,124
5,262,451	5,310,676	5,333,189	5,350,216
5,262,982	5,310,985	5,333,430	5,350,480
5,264,353	5,311,138	5,333,557	5,350,522
5,264,445	5,311,241	5,334,020	5,350,615
5,264,449	5,311,268	5,334,452	5,350,663
5,267,453	5,311,336	5,334,455	5,350,757
5,268,104	5,311,653	5,334,783	5,350,978
5,270,832	5,313,177	5,334,839	5,351,002
5,271,530	5,314,466	5,335,155	5,352,020
5,273,863	5,315,824	5,335,190	5,352,546
5,274,602	5,316,062	5,335,240	5,355,374
			5,366,141

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
October 10-14, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-11	EX	74/255,803	Publix Information Products, Inc.	whether matter asserted for registration is used as a service mark for services recited in the application	Refusal Reversed		"SYLLABUS PRESS" [placing and preparing advertising for others]		No
10-11	EX	74/200,001	Timber-Creek Co., Inc	whether matter asserted for registration is used as a trademark for goods recited in the application or is, instead, used only as a trade name	Refusal Affirmed		"TIMBERCREEK" [archery equipment]		No
10-12	EX	74/123,065	Bauer Industries, Inc.	2(e)(1); whether identification of goods is sufficiently definite	Refusal Affirmed (on 2(e)(1) ground only)		"SMART SINK" [wash stations for hand washing]		No
10-14	EX	74/313,923	Dover Leasing Co.	2(d)	Refusal Affirmed		"RSVP JET" [air plane chamfer services]	"R.S.V.P." (and design) [travel agency and tour services]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ. FOR RECONSIDERATION

SPECIAL BOXES FOR MAIL

Special PTO mail department numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special departments. If any documents other than the specified type identified for each department are addressed to that department, they will be significantly delayed in reaching the appropriate area for which they are intended.

The following special departments should be used only for their specified purpose. Address mail as follows:

Commissioner of Patents and Trademarks
Box _____
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No Fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O.Box 15667, Arlington, Va. 22215
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 15	Mail for the Advisory Commission on Patent Law Reform.
Box 16	Deposit Account Replenishment Checks
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Assignment	All assignment documents except those filed with new applications.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85 "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK APPLICATION	New trademark application and associated papers and application fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/15/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	09/09/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	01/25/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	11/25/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/10/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/11/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E, GARRETT, Director	308-0511	04/05/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	10/12/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	10/17/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/08/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	03/25/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	01/19/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	10/25/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	10/05/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	11/11/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	05/21/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/02/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during October 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents.....Numbers 4,051,552 to 4,055,851 inclusive
Plant Patents.....4,117 to 4,137

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Oct. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	08/30/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	07/27/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/20/94	07/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/03/94	07/05/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	07/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/94	07/05/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	06/27/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/94	07/13/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/17/94	06/04/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	09/08/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	04/26/94	—0—
Renewals (All Classes)	07/07/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure*.
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

NOVEMBER 22, 1994

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,616,495 (2431st)

MOLDING APPARATUS

Jerome H. Lemelson, Ste. 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451

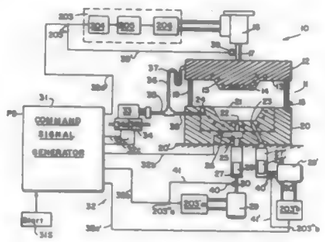
Reexamination Request No. 90/003,288, Dec. 23, 1993.

Reexamination Certificate for Patent No. 3,616,495, issued Nov. 2, 1971, Ser. No. 721,401, Apr. 15, 1968.

Continuation-in-part of Ser. No. 421,860, Dec. 29, 1964, abandoned, and a continuation-in-part of Ser. No. 421,817, Dec. 29, 1964, Pat. No. 3,462,524, and a continuation-in-part of Ser. No. 439,549, Mar. 15, 1965, abandoned, which in turn are continuations-in-part of application Ser. No. 734,340 May 9, 1958, Pat. No. 3,173,175, and is a continuation-in-part of Ser. No. 142,405, Oct. 2, 1961, Pat. No. 3,422,648.

Int. Cl.[5] B29C *45/77*

U.S. Cl. 425—155



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11, 14** and **15** is confirmed.

Claims **12, 13** and **16** were previously cancelled.

1. An automatic molding apparatus comprising in combination:

(a) a mold composed of first and second mold members defining a molding cavity when said mold members are operatively assembled together for molding,

(b) means for guiding at least one of said mold members into operative relation with each other for molding an article therebetween,

(c) first power means for driving said one mold member into operative relation with respect to the other, said first power means also operative for separating said mold members to permit removal of the molded article therebetween,

(d) first control means for said first power means to control the opening and closing of said mold,

(e) passageway means through which molding material may be flowed to said cavity,

(f) second power means for causing molding material to flow through said passageway means to said molding cavity,

(g) second control means for said second power means operative to control the flow of molding material to said mold,

(h) variably adjustable master control means having a plurality of control circuits and means for generating a respective control signal on said circuits which may be varied in their timed relationship to each other, said master control means being operatively connected to said first and second control means for said first and second power means and operative to predeterminately control the operation of each power means in a cycle which includes predeterminately variable controlling both the closure of said molds and the operation of said injection means, the opening and closing of the molds and the injection of molding material into the cavity being program controlled and predeterminately varied during a molding cycle.

REISSUES

NOVEMBER 22, 1994

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,792

ADDITIVE COMPOSITION FOR WATER-BASED INKS

Timothy J. Baker, Claremore; John H. Woods, Tulsa, both of Okla., and Jeffrey R. Zerr, deceased, late of Dallas, Tex. by Bernadine F. Zerr, administratrix , assignors to Petrolite Corporation, St. Louis, Mo.

Original No. 4,908,063, dated Mar. 13, 1990, Ser. No. 267,064, Nov. 4, 1988. Application for reissue Mar. 13, 1992, Ser. No. 851,430

Int. Cl.[5] C08L *91/06*

U.S. Cl. 106—271

33 Claims

1. [A water based ink containing a pigment and an effective amount of a formulation aid comprising in an] *An* aqueous dispersion *comprising:*

(a) water;

(b) a dispersant represented by the formula:



wherein R and R_1 are independently selected from the group consisting of hydrogen and C_1–C_{10} alkyl; R_2 is selected from the group consisting of hydrogen and methyl and x is about 8 to about 75 and n is about 2 to about 65; and

(c) a finely divided mostly linear aliphatic hydrocarbon [and/or] or modified hydrocarbon *or mixtures thereof* having a molecular weight of from about 300–3,000 [and an average particle size of less than about 20 microns.-] *selected from the group consisting of (i) a copolymer of ethylene and either propylene, butylene, vinyl acetate or acrylic acid; (ii) Fischer-Tropsch waxes; (iii) natural wax; (iv) petroleum-derived waxes; and (v) partially oxidized polyethylenes, polymethylenes and petroleum-derived waxes.*

Re. 34,793

LIFT FOR WATER VEHICLES

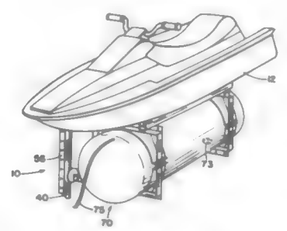
Ralph E. Peck; Todd A. Elson, both of Claremore, Okla., and Masoud Toofan, Shiraz, Islamic Rep. of Iran, assignors to Hydrohoist International, Inc., Claremore, Okla.

Original No. 5,016,551, dated May 21, 1991, Ser. No. 523,484, May 15, 1990. Application for reissue Feb. 10, 1993, Ser. No. 16,067

Int. Cl.[5] B63C *1/02*

U.S. Cl. 114—45

12 Claims



6. A lift for water vehicles comprising:

means attached to one side only of a dock structure for guiding the direction of movement of the lift upwardly and downwardly in relation to said structure;

a tank having upper and lower openings, said upper opening for introducing air into said tank to displace water therefrom through said lower opening so as to cause said tank to rise;

means mounted on said tank for supporting a water vehicle thereon; and

at least one pair of rollers fixed to said tank and engaged with and adapted for riding along said guiding means for rolling upwardly and downwardly thereon when said tank moves in response to the introduction of air into and the releasing of air from said tank, respectively.

Re. 34,794

GULL-WING ZIG-ZAG INLINE LEAD PACKAGE HAVING END-OF-PACKAGE ANCHORING PINS

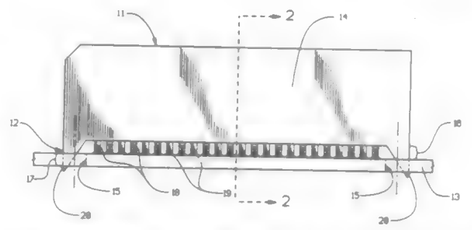
Warren M. Farnworth, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.

Original No. 4,967,262, dated Oct. 30, 1990, Ser. No. 432,598, Nov. 6, 1989. Application for reissue Jan. 28, 1993, Ser. No. 10,022

Int. Cl.[5] H01L *39/02, 23/16, 23/42, 23/44*

U.S. Cl. 257—678

18 Claims



13. A semiconductor package, designed for surface mounting on one of a pair of planar surfaces of a printed circuit board, said package comprising:

a body having a pair of substantially parallel, vertical planar faces, lower and upper horizontal edges, and a substantially vertical edge at both ends thereof;

a semiconductor die having a face on which integrated circuitry is constructed, said die being encapsulated within said body such that said face is positioned between and substantially parallel to the vertical planar faces of said body; and

a plurality of inline leads, each of which is electrically connected, within said body, to a portion of the circuitry on said die, and each of which extends in a downward direction through the lower edge of said body such that when said package is mounted on said circuit board, said leads are in compressive contact with said planar surface; and

at least one downward-facing anchoring pin integral with said body at each end thereof;

said anchoring pin having a barb on the end thereof which, when said anchoring pin is inserted from said one surface through properly sized and aligned holes in said circuit board, hooks on the other surface of said circuit board.

Re. 34,795

POTENTIOMETER

Jose C. L. Arriaza, Tudela, Spain, assignor to Navarra De Componentes Electronicos, S.A. (NACESA), Tudela, Spain

Original No. 4,792,778, dated Dec. 20, 1988, Ser. No. 18,343, Feb. 24, 1987. Application for reissue Aug. 14, 1991, Ser. No. 745,013

Claims priority, application Spain, Nov. 25, 1986, 86/03166

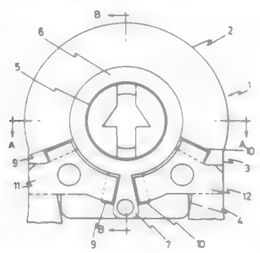
Int. Cl.[5] H01C *10/34*

U.S. Cl. 338—174

3 Claims

1. A potentiometer comprising:

(a) a frame having a circular crown-shaped depression on an inner face of a base portion;
(b) a slider-holder being guided by said depression, said slider-holder having a lateral projection which will butt against a projection on said depression for limiting rotation of said slider-holder *and a circular crown-shaped portion;*
(c) a slider connected to an angular projection on said slider-holder by means of pivots, said slider having a circular shape encompassing slightly more than 180° of [said] *a* circle, said slider comprising two oval segments;
(d) a resistance track contacting said oval segments and



bending said segments into a circular shape, said resistance track having a projection extending into a corresponding depression in said frame for restraining said track from rotating; and
(e) a collector attached to said slider-holder, said slider having two projections for contacting said collector; *wherein said collector comprises a circular crown-shaped body and is provided, on a minor radius of the body thereof with a circular crown shape and a perimetrical projection; and wherein said collector is fixed to said slider-holder by engagement of said perimetrical projection with a neck part formed on said circular crown-shaped portion of said slider-holder.*

Re. 34,796

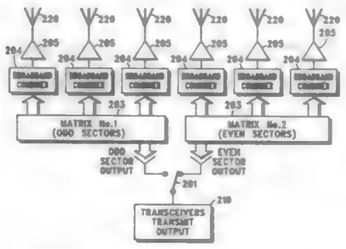
ANTENNA SWITCHING SYSTEM

John M. Smith, Elgin, and Joseph J. Schuler, Roselle, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Original No. 5,021,801, dated Jun. 4, 1991, Ser. No. 402,721, Sep. 5, 1989. Application for reissue Apr. 26, 1993, Ser. No. 51,925

Int. Cl.[5] H01Q *3/24*

U.S. Cl. 343—876 **10 Claims**



9. An antenna switching system comprising:
at least one signal transmission source for generating a plurality of radio frequency signals;
a switching circuit, coupled to the at least one signal transmission source, for switching the plurality of radio frequency signals;
a radio frequency combiner, coupled to the switching circuit, for combining the plurality of radio frequency signals;
an amplifier, coupled to the radio frequency combiner, for amplifying the combined plurality of radio frequency signals; and
at least one antenna coupled to the amplifier.
10. A dynamic frequency allocation system for allocating frequencies between sector antennas of a base station having a plurality of odd and even sector antennas, each odd sector antenna coupled to an odd sector switch matrix and each even sector antenna coupled to an even sector switch matrix, the system comprising:
at least one signal transmission source for generating at least one signal;
a sector switching circuit, coupled to a first signal transmission source of the at least one signal transmission source, for routing a first signal of the at least one signal from the first signal transmission source to the odd switch matrix or the even switch matrix;
a plurality of radio frequency signal combiners, a first radio frequency signal combiner of the plurality of radio frequency signal combiners coupled to either the odd or the even switch matrix;
a plurality of linear power amplifiers, a first linear power amplifier coupled to the first radio frequency signal combiner; and
a first odd or even sector antenna coupled to the first linear power amplifier.

Re. 34,797

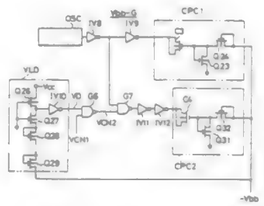
SEMICONDUCTOR MEMORY DEVICE HAVING A BACK-BIAS VOLTAGE GENERATOR

Katsuyuki Sato, Kodaira, and Kazumasa Yanagisawa, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,964,082, dated Oct. 16, 1990, Ser. No. 249,660, Sep. 27, 1988. Division of Ser. No. 763,615, Aug. 8, 1985, Pat. No. 4,775,959. Application for reissue Oct. 16, 1992, Ser. No. 962,329

Int. Cl.[5] G11C *7/02*

U.S. Cl. 365—189.09 **60 Claims**



1. A semiconductor memory device comprises of at least an insulated gate field effect transistor having a substrate gate to which a back-bias voltage is supplied, wherein said semiconductor memory comprises:
word lines;
data lines;
memory cells disposed to correspond to points of intersection between said word lines and said data lines, wherein each of said memory cells includes a capacitor coupled to a MOSFET, for storing a data signal;
a first selecting means for selecting one of said word lines;
a second selecting means for selecting one of said data lines;
an output means for outputting a data signal stored in a memory cell which is selected by said first and second selecting means;
a back-bias voltage generation means for generating said back-bias voltage; and
a level detection means for detecting a level of said back-bias voltage produced by said back-bias voltage generation means,
wherein said back-bias voltage generation means includes a first means for generating said back-bias voltage in response to pulse signals, and a second means controlled in response to an output of said level detection means, for generating said pulse signals,

2. A semiconductor memory device according to claim 1, wherein said level detection includes a level discrimination means, a level shift means disposed between an input terminal of said level discrimination means and said substrate gate and supplying a voltage level-shifted by a predetermined level with respect to said back-bias voltage to the input of said level discrimination means, and a bias element forming a bias current for said level shift means.
35. A semiconductor memory device according to claim 2, wherein said first means includes a first buffer circuit having a first inverter circuit receiving said pulse signals, a first rectification circuit having a first capacitor receiving an output of said first inverter circuit and a rectification element coupled to said first capacitor, a second buffer circuit having a second inverter circuit receiving said pulse signals and a second rectification circuit having a second capacitor receiving an output of said second inverter circuit and a rectification element coupled to said second capacitor,
wherein a driving capacity of said first inverter circuit is lower than a driving capacity of said second inverter circuit.

Re. 34,798

Patent Not Issued For This Number

Re. 34,799

REACTIVE GRAFT POLYMERS

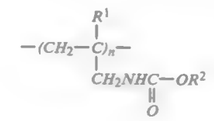
John R. Campbell, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 5,124,410, dated Jun. 23, 1992, Ser. No. 554,505, Jul. 19, 1990. Division of Ser. No. 473,127, Feb. 1, 1990, abandoned, which is a continuation of Ser. No. 188,829, May 2, 1988, abandoned. Application for reissue Apr. 14, 1993, Ser. No. 46,830

Int. Cl.[5] C08F *255/02*

U.S. Cl. 525—278 **8 Claims**

12. A graft polymer comprising molecules having:
a base polymer chain which is a polyethylene or polypropylene homopolymer chain, and grafted moieties thereon having the formula



(II)

wherein:
R^1 is hydrogen, halogen, an alkyl radical containing about 1–4 carbon atoms or an aryl radical containing about 6–10 carbon atoms;
R^2 is a tertiary alkyl radical containing about 4–10 carbon atoms;
n has an average value from 1 to about 5.

PLANT PATENTS

GRANTED NOVEMBER 22, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,983

BANANA PLANT "FHIA-01"

Phillip R. Rowe, La Lima, Honduras, assignor to Fundación Hondureña de Investigación Agrícola, San Pedro Sula, Honduras

Filed Jan. 28, 1994, Ser. No. 188,300
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—33.1 **1 Claim**

1. A new and distinct variety of banana plant, substantially as illustrated and described, which is a cold-tolerant and hardy plant with high levels of resistance to the yellow and black Sigatoka leaf spot diseases and practical immunity to races 1 and 4 of Panama disease; the fruit is further characterized by having a pleasant tart flavor, to having an excellent green life which permits it to be exported, and to not oxidizing to an unsightly brownish color when sliced or diced.

8,984

HEUCHERA 'PEWTER VEIL'

Dan M. Heims, Portland, Oreg., assignor to Terra-Nova Nurseries, Inc., Portland, Oreg.

Filed Dec. 30, 1993, Ser. No. 175,934
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct hybrid of Heuchera substantially as shown and described, characterized by unique metallic finish and coloration on evergreen foliage in U.S.D.A. zone 7 and above, and leaves that turn to a pewter sheen in summer.

8,985

CHRYSANTHEMUM PLANT NAMED VALERIE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 22, 1993, Ser. No. 155,236
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Valerie, as described and illustrated.

8,986

CHRYSANTHEMUM PLANT NAMED EMPIRE CHABLIS

Janet S. Fuess, 22 Country Club Dr., New York Mills, N.Y. 13417

Filed Dec. 7, 1993, Ser. No. 164,404
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Empire Chablis, as illustrated and described.

8,987

CHRYSANTHEMUM PLANT NAMED JENNIFER

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 22, 1993, Ser. No. 155,240
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct Chrysanthemum plant named Jennifer, as described and illustrated.

8,988

CHRYSANTHEMUM PLANT NAMED CHRISTINE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 22, 1993, Ser. No. 155,237
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct Chrysanthemum plant named Christine, as described and illustrated.

PATENTS

GRANTED NOV. 22, 1994

ERRATA

For CLASS	See PATENT NO.
015-022	5,365,624
007-158	5,365,625
451-007	5,365,699
451-028	5,365,700
451-028	5,365,701
451-038	5,365,702
124-035	5,365,911
124-044	5,365,912
124-075	5,365,913
125-021	5,365,914
125-023	5,365,915
137-014	5,365,962
137-067	5,365,963
137-068	5,365,964
137-115	5,365,965
138-089	5,365,976
138-099	5,365,977
141-001	5,365,980
141-007	5,365,981
141-051	5,365,982
114-362	5,366,028
182-018	5,366,050
182-046	5,366,051
182-088	5,366,052
222-001	5,366,108
251-368	5,366,199
269-013	5,366,208
405-036	5,366,318
426-116	5,366,364
453-002	5,366,404
453-003	5,366,407
483-001	5,366,431
117-003	5,366,583
422-026	5,366,693
422-037	5,366,694
505-477	5,366,770
505-329	5,366,953
514-002	5,366,958

ERRATA—CONTINUED

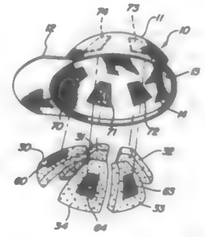
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514-025	5,367,062
585-022	5,367,097
585-452	5,367,098
585-475	5,367,099
585-640	5,367,100
585-667	5,367,101
570-164	5,367,102
570-177	5,367,103
570-211	5,367,104
570-234	5,367,105
562-526	5,367,112
562-623	5,367,113
564-220	5,367,114
585-723	5,367,115
588-252	5,367,116
505-190	5,367,178
327-033	5,367,200
327-543	5,367,201
327-540	5,367,202
327-078	5,367,203
327-075	5,367,204
326-007	5,367,205
326-026	5,367,206
326-038	5,367,207
326-044	5,367,208
326-045	5,367,209
326-026	5,367,210
327-073	5,367,211
327-105	5,367,212
327-056	5,367,213
328-001	5,367,265
347-002	5,367,319
347-043	5,367,324
347-017	5,367,325
347-022	5,367,326
348-626	5,367,380
242-347	5,367,421

PATENTS

GRANTED NOVEMBER 22, 1994

GENERAL AND MECHANICAL

5,365,607
CAP HAVING EVAPORATIVE COOLING INTERIOR APPARATUS
Vincenzo P. Benevento, Jr., and Barbara M. Benevento, both of 1 Meadowbrook, Aliso Veljo, Calif. 92656
Filed Aug. 26, 1993, Ser. No. 110,782
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—181.4 **15 Claims**



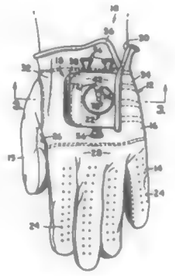
1. An evaporatively cooled cap comprising:
a head covering portion defining a lower edge and having an interior cavity for receiving a portion of a wearer's head;
a headband attached to said lower edge and having an inner surface for fitting snugly upon a wearer's head;
a plurality of first attachment members spaced about said interior cavity substantially above said headband and secured therein;
a plurality of elongated tapered porous pads each having side and bottom edges; and
a plurality of second attachment members secured to said porous pads above said bottom edges thereof, said second attachment members forming cooperative attachments with said first attachment members to removably secure said porous pads within said interior cavity and being spaced from said bottom edges a sufficient distance to maintain said bottom edges of said porous pads above said headband,
said porous pads forming a spaced-apart arrangement within said interior cavity such that a plurality of air passage channels are formed between adjacent side edges of each adjacent porous pad.

5,365,608
DISPOSABLE, ELASTOMERIC GLOVE
Conrad Flick, 3715 ½ State St., Bettendorf, Iowa 52722
Filed Jul. 21, 1992, Ser. No. 916,437
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—168 **12 Claims**



11. A disposable, elastomeric glove operable for safe removal without subjecting a wearer to contaminants on an exterior surface of the glove, said glove comprising:
an elastomeric envelope configured into the shape of a human hand including four finger segments, a thumb segment, a body portion and a cuff; and
means for facilitating safe removal of said glove from the hand of a wearer comprising a protuberance, said protuberance being a raised hollow member extending outwardly from the surface of said glove and being positioned upon the cuff of said glove within a location bound by a generally rectangular region of the cuff defined by a first imaginary line longitudinally bisecting a palm surface of the body portion of the glove, a longitudinal edge of the glove cuff extending generally parallel with said first imaginary line and adjacent to the base of the thumb segment, a second imaginary line extending generally normal to said first imaginary line at the base of the thumb segment and an outward edge of said cuff, said raised, hollow member comprising,
a generally conical protrusion with a spherical portion fashioned at the apex of said conical protrusion, and
said generally conical protrusion is fashioned with a generally elliptical base having a long axis of the elliptical base extending to form an acute angle with respect to said first imaginary line;
wherein a wearer of said glove may operably grasp said protuberance between a thumb and index finger of an opposing hand and peel the glove over the base of the thumb of the glove and invert the glove with a facile removal process.

5,365,609
GOLF GLOVE WITH TEE HOLDER
William E. Herzog, 600 S. Riverside Rd., St. Joseph, Mo. 64052
Filed Jun. 28, 1993, Ser. No. 83,667
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.4 **4 Claims**



2. A combination golf glove-holder for holding a golf tee, which comprises:
(a) a glove including finger-receiving portions coupled with a body having a palm portion and a back presenting first and second segments adjacent a hand opening, one of said back portion segments including a flap member having fastening means for fastening said first and second back portion segments in a closed relationship to said hand opening;
(b) said flap member including a first layer presenting a first fastening surface, a second layer, and a third tee-retaining layer including an elongate channel presenting openings at opposed ends for receiving golf tees therein;
(c) said fastening means comprises a hook-and-loop fastener with a hook portion mounted on one of said flap member and said other back portion segment and a loop portion mounted on the other of said flap member and said other back portion segment;
(d) said tee-retaining layer comprising an elastic material

attached to said flap member on an outer surface thereof by a plurality of stitch lines, each said stitch line extending through said elastic material, said flap member and one of said hook-and-loop portion;

(e) said stitch lines extending in parallel relation in a direction generally longitudinally aligned with said finger-receiving portions;

(f) said elongate channel being formed between said elastic material, said flap member and said stitch lines for receiving and retaining said tee therein; and

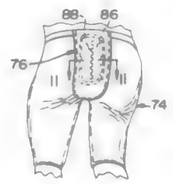
(g) said elastic material of said tee-retaining layer having a stretched configuration with said flap member fastened to said glove back portion and a relaxed configuration with said flap member disengaged from said glove back portion.

5,365,610

SPORTS PANTS WITH POCKETED TACKED PADS

Kathleen A. Lubahn, and Rick A. Lehman, both of Jackson, Mich., assignors to KBL Apparel Manufacturing Inc. and Austin Sports-gear, Inc., both of Jackson, Mich.

Filed Aug. 2, 1993, Ser. No. 100,768
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—23 **14 Claims**



1. In a padded sports garment for protecting the wearer wherein the garment includes a primary flexible envelope having inner and outer surfaces, a pocket panel mounted upon one of the surfaces defining a pocket and a thin shock absorbing flexible pad having a circumference including spaced opposed edges and a central region intermediate the circumference located within the pocket, the improvement comprising, a fastener directly attached to the pad central region and fastening only the pad central region with respect to the envelope and pocket whereby the pad circumference is free at the spaced opposed edges and only confined against movement by the pocket and the pad may conform itself within the pocket to the contour of the garment envelope and pocket.

5,365,611

APPARATUS FOR PROTECTING AN OBJECT FROM INCLEMENT WEATHER

Mary E. Chiles, 1527 Sutter, and Cathy E. Caldwell, 3215 Nebraska Ave., both of Dallas, Tex. 75216, assignors to Mary E. Chiles and Cathy E. Caldwell, Dallas, Tex.

Filed Dec. 11, 1992, Ser. No. 989,068
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 **6 Claims**

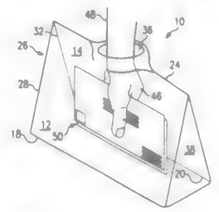
1. An apparatus for use by a person and for protecting an object from inclement weather, comprising:

a first rectangular panel member having a longitudinal edge and a side edge;

a second rectangular panel member having a longitudinal edge and a side edge, wherein said longitudinal edge of said second panel member is attached to said longitudinal edge of said first panel member defining an interface along said attachment and defining an interior area between said panel members, wherein said interface includes an aperture along said interface such that a hand of said person may be inserted through said aperture and into said interior area;

a resilient member attached along said aperture such that a hand of said person may be inserted through said resilient member and said aperture into said interior area; and

an end panel member having a first and second edge,



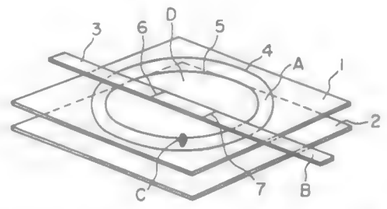
wherein said first edge of said end panel member is connected to said side edge of said first panel member, and wherein said second edge of said end panel member is connected to said side edge of said second panel member.

5,365,612

DISPOSABLE RAIN SHIELD

Toshiyoshi Yoshida, 11-5-205 1-chome, Akabaneminami Kitaku, Tokyo, Japan

Filed Feb. 22, 1993, Ser. No. 21,156
Int. Cl.[5] A42B *1/20*
U.S. Cl. 2—171 **1 Claim**



1. A method of forming a disposable rain shield comprising; superimposing a pair of rectangular plastic sheets in alignment one on top of the other; disposing an elongate plastic strap across and through the center of said superimposed plastic sheets, said elongate plastic strap extending beyond the edges of said pair of rectangular superimposed plastic sheets a predetermined amount; heating said pair of superimposed plastic sheets to produce a pair of bonded concentric circles to form an air chamber; simultaneously heating a pair of strips of said elongate plastic strap inside said pair of bonded concentric circles to bond said elongate plastic strap to said superimposed rectangular plastic sheets in two places; trimming off excess material of said pair of superimposed rectangular plastic sheets outside said pair of bonded concentric circles forming said air chamber; sealing an air valve in said air chamber when said pair of bonded concentric circles are formed; whereby a simple very inexpensive disposable rain shield is formed.

5,365,613

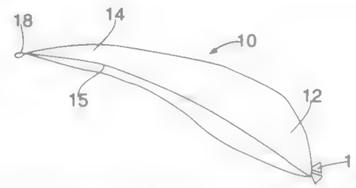
HAIR DRYING TOWEL TURBAN

Kym Henegan, New York, N.Y., assignor to Kymmania Enterprises, New York, N.Y.

Filed Jun. 18, 1993, Ser. No. 79,619
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—174 **16 Claims**

1. A hair drying turban made of a water absorbent material comprising a cap portion and a forwardly extending hair basket portion, said hair basket portion being tapered from said cap portion to a single pointed free end at which side edges of said hair basket portion intersect, said free end of said hair basket portion being capable of being twisted about its center axis and folded backwardly over said cap portion and over the center axis of said cap portion, as well, and secured thereto,

said hair basket portion being only of sufficient length so that the entire hair basket portion, after twisting and folding backwardly, extends from said forward portion of said cap portion to the rear portion of said cap portion.

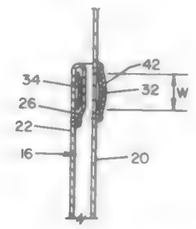


5,365,614

SPORTS VEST

David D. Perkins, Arlington, Vt., assignor to The Orvis Company, Inc., Manchester, Vt.

Filed Mar. 22, 1993, Ser. No. 35,253
Int. Cl.[5] A41D *27/20, 27/00*
U.S. Cl. 2—247 **5 Claims**



1. A garment adapted to cover a major portion of the trunk of a person, said garment comprising:

a front;

a pocket patch attached to said front to form a pocket between said patch and said front;

pocket closure means comprising an inner flexible lip having a first end and a second end and a length and a width, said inner flexible lip having a convex cross-section through said width and an outer flexible lip having a first end and a second end and a length and a width, said outer flexible lip having a convex cross-section through said width, said first end of said inner lip fastened to said first end of said outer lip and said second end of said inner lip fastened to said second end of said outer lip;

a keeper strip attached to said front, on a rear surface of said front, and enclosing said inner lip between said first and second ends thereof for retaining said inner lip on said front; and

foldover means attached to said patch and enclosing said outer lip between said first and second ends thereof for retaining said outer lip on said patch.

5,365,615

HEADGEAR FACESHIELD W/NON-INVASIVE UNIVERSAL-MOUNTING

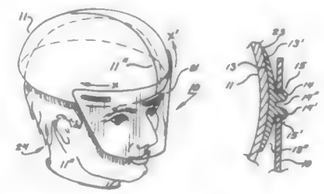
Thomas M. Piszkin, 11089 Turret Dr., San Diego, Calif. 92131

Filed Jan. 12, 1993, Ser. No. 3,288
Int. Cl.[5] A42B *1/24*
U.S. Cl. 2—422 **11 Claims**

1. A plastic faceshield system, universally adapted to conventional protective headgear of the type having a transverse frontal rim potion capable of receiving non-invasive appliance members, comprising:

two transversely spaced horizontally elongate male/retention-strips, each made of resilient material and formed with an outward projecting bifurcated lip-like engaging means, said lip-like engaging means having a vertically measured width, mounting means provided on said male/retention-strips for permanently attaching said male/retention-strips to said protective headgear rim portion, said strips being arranged equidistant from the longitudinal center of said headgear when attached to said rim portion;

a transparent flexible nonaberrant lens body, said lens body including two transversely spaced horizontally elongate female/retention-slots located proximal to extreme lateral outer margins of said lens body and adapted to receive



said engaging means, said slots being formed slightly narrower than the vertically measured width of said lip-like engaging means, causing said lip-like engaging means to resiliently tension against respective opposed linear edges of said female/retention-slots, thereby facilitating convenient manually swaged attachment and conversely manually avulsed detachment relative to said male/retention-strip lip-like engaging means;

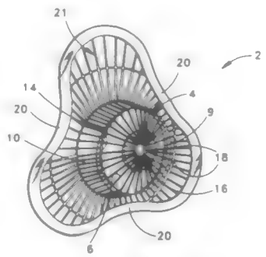
and said female/retention-slots being square-cut at their inboard facing ends and round-cut at their outboard facing ends.

5,365,616

NON-SPLASHING URINAL DEODORANT BLOCK HOLDER

Fred I. Morad, Toluca Lake, Calif., assignor to Worldwide Integrated Resources, Glendale, Calif.

Filed Aug. 17, 1993, Ser. No. 107,304
Int. Cl.[5] E03D *9/02*
U.S. Cl. 4—309 **4 Claims**



1. A non-splashing urinal deodorant block holder used in a urinal for minimizing the splashing of urine, comprising:

a. a plastic mesh body having a circular top, a base and a cylindrical circumferential sidewall, where the circular top, the base and the cylindrical circumferential sidewall are molded together, the base having a circular central portion;

b. said circular top, said circular central portion of said base and said cylindrical circumferential sidewall define an interior chamber for holding a deodorant block;

c. said circular top of said mesh body having a small circular central opening and a multiplicity of slot openings extending from the small circular central opening in a radial direction; and

d. said circular central portion of said base of said mesh body having a multiplicity of small openings, and said base having a bottom support shaped with three arches and a multiplicity of slot openings extending outwardly from said circular central portion of said base;

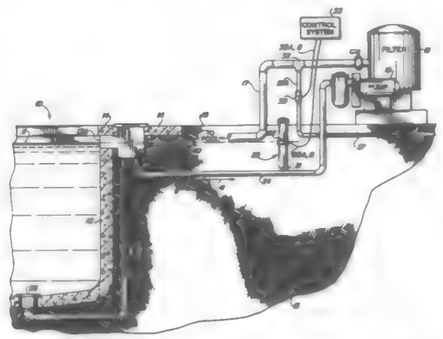
e. whereby when the urine strikes said small circular central opening at said circular top of said mesh body, said urine will flow through said circular top, thereby minimizing the splashing of said urine.

5,365,617

RETROFIT SWIMMING POOL WATER LEVELER AND METHOD

William C. Tarr, Glendale, Ariz., assignor to Shasta Industries, Inc., Phoenix, Ariz.

Filed Mar. 19, 1993, Ser. No. 34,735
Int. Cl.[5] E04H *4/12*
U.S. Cl. 4—508 **18 Claims**



1. A system for automatically maintaining a desired water level in a body of water in which the water is recirculated by a pump through a first tube coupled in fluid communication with the body of water and the pump and a second tube coupled in fluid communication with the pump and the body of water, the system comprising in combination:

(a) a float chamber located outside of the body of water and having an interior adapted to be coupled in fluid communication with the first tube;

(b) a float disposed in the float chamber;

(c) a sensor responsive to the level of the float located in fixed position relative to the float chamber at a level corresponding to the desired water level, the sensor assuming a first state if the water level of the body of water is at least equal to the desired water level and assuming a second state if the water level of the body of water is lower than the desired water level;

(d) a valve adapted to be connected between a pressurized water source and the second tube; and

(e) a circuit coupled to the valve and the sensor to (1) close the valve when the pump is operating to prevent pressure of water being pumped through the first tube from influencing the level at which water is maintained, and (2) open the valve only when the pump is not running and the sensor is in the second state.

5,365,618

SUPPORT SYSTEM FOR BATHER'S LIFT

Lloyd Gilbert, 4241 Colt Dr., Lake Havasu, Ariz. 86403

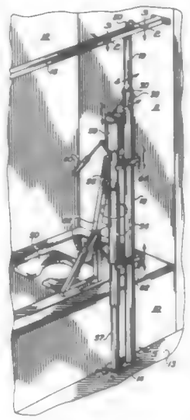
Filed Mar. 22, 1994, Ser. No. 215,697
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—563.1 **13 Claims**

1. A support system for a barber's lift for aiding invalids to enter and exit a bathtub located between first and second end walls, wherein the lift includes a vertical column, with lower and upper ends, and adjacent which a seat and seat support travel vertically to raise and lower a person in the seat, the support system including in combination:

a floor plate for location on a floor adjacent the bathtub;

at least one securing members for securing said floor plane to the floor against movement of said floor plate in a plane parallel to the floor;

an engagement member on said floor plate and extending upwardly therefrom for releaseably engaging the lower end of said vertical column;



a support bar member for being located a predetermined distance above the floor extending parallel to the floor and sized for attachment between the first and second end walls; and

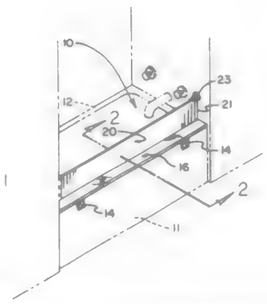
connecting means for releaseably attaching the upper end of said vertical column to said support bar, said connecting means comprising a hole extending at least part way through said support bar member, said hole facing said floor plate, and an extension on the upper end of said vertical column dimensioned to fit within the bole in said support bar member.

5,365,619

BATHTUB SHIELD ARRANGEMENT

Jeff Solomon, 22468 Easterferry Rd., Elkmont, Ala. 35620

Filed Feb. 9, 1994, Ser. No. 194,003
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—609 **6 Claims**



1. A bathtub shield arrangement for use on an edge of a bath tub which is positioned between two end supports, comprising:

a mounting plate, the mounting plate including a mounting plate bottom surface and a mounting plate top surface, with at least one pair of spring legs extending below the bottom surface for engaging sidewalls of an associated bathtub;

a sealing cushion mounted to the bottom surface

a support flange mounted to the top surface, with the support flange including a support flange side wall;

a hinge mounted to the support flange side wall;

a splash guard plate mounted to the hinge such that the splash guard plate may assume a lowered position and an upward splash guarding position extending above the tub rim between the two end supports; and,

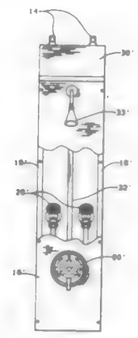
securement means mounted to the splash guard plate for permitting securement of the splash guard plate to the end supports while in said upward orientation.

5,365,620

OUTDOOR SHOWER APPARATUS

Robert P. MacLeod, 10 Main St., Ashburnham, Mass. 01430

Filed Jul. 26, 1993, Ser. No. 96,294
Int. Cl.[5] A47K *3/22*
U.S. Cl. 4—615 **14 Claims**



1. A substantially permanently positioned shower for disposition outside of a house or building having hot and cold water supply sources located on an exterior wall of the house or building, said shower comprising a casing adapted to be mounted on an exterior wall of the house or building, said casing having a shower head and a mixing valve with a handle and dial for mixing water mounted thereon said shower head being operatively connected to said mixing valve, said mixing valve having two pipes connected thereto, one for cold water, and one for hot water, connection means for each of these pipes adapted to be connected to said hot and cold water supply sources, respectively;

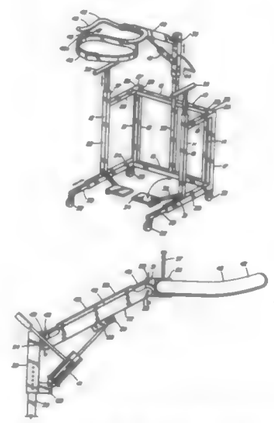
said casing comprising a front member in which the shower head and the handle and dial for the mixed water are mounted, the mixing valve being located below the shower head, said casing having an open back so that the shower head, the pipes and the mixing valve are readily accessible for maintenance, the casing having a closed top and a selective mounting means for detachably mounting the shower to the wall in position where the shower can be manually dissociated from the water supply sources and where access to the water supply sources is restricted by completely encasing said hot and cold water sources and said two pipes between said casing and said exterior wall.

5,365,621

INVALID LIFT

Joseph E. Blain, 1218 McKercher Dr., Saskatoon, Saskatchewan, Canada S7H 5L9

Filed Sep. 17, 1992, Ser. No. 946,758
Claims priority, application Canada, Sep. 24, 1991, 2052169
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—81.1 **6 Claims**



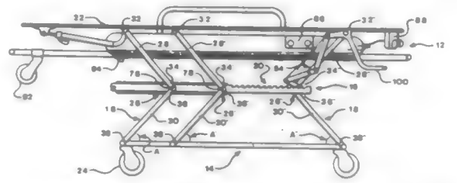
1. A lift to assist a person to stand comprising a supporting frame having a front portion extending in front of the person and side portions on each side of the person, wheels beneath the supporting frame to enable the lift to be manoeuvered, a rearwardly extending lift arm pivotally mounted at one end on the supporting frame for movement in a vertical plane, a generally U-shaped support member at the other end of the lift arm comprising a pair of supporting bars adapted to fit under the armpits of a person, means for maintaining the U-shaped support substantially parallel to the ground as the lift arm is raised or lowered and means for raising or lowering the lift arm in which the side portions of the frame include arm rests.

5,365,622

HYDRAULICALLY OPERATED RETRACTABLE AMBULANCE COT

Michael H. Schirmer, 517 Simcoe St. N., Oshawa, Ontario, Canada

Filed Jul. 24, 1992, Ser. No. 918,000
Int. Cl.[5] A61G *1/02*
U.S. Cl. 5—611 **13 Claims**



1. A collapsible ambulance cot comprising an upper frame having patient support means;

a lower frame;

an intermediate frame disposed between and cooperable with said upper frame and said lower frame;

support means Comprising a frame support pivotally connected to said upper frame, and said lower frame and said intermediate frame to support said upper frame and allow separation of said upper frame from said lower frame to a

selected height of said upper frame above said lower frame; and

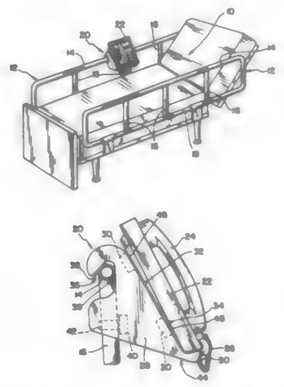
adjustable retaining means cooperable with said support means to retain said upper frame at said selected height.

5,365,623

TELEPHONE HOLDER FOR BED SIDE RAIL

Maurice D. Springer, 1509 Yoder Rd., Fort Wayne, Ind. 46819

Filed Aug. 27, 1993, Ser. No. 113,278
Int. Cl.[5] A47C *21/00*
U.S. Cl. 5—658 **21 Claims**



1. An apparatus for detachably attaching to a bed side rail and supporting a telephone, the bed side rail including a horizontal bar and a vertical bar, said apparatus comprising:

a pair of side walls, each side wall having a slot adapted for selectively receiving the horizontal bar;

a support wall extending between said side walls for supporting a telephone thereon; and,

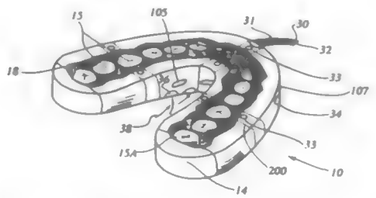
means vertically below said side wall slots for contacting the bed side rail vertical bar, whereby said apparatus is detachably attached to the bed side rail by placing the horizontal bar in said slots and said means in contact with the vertical bar below the horizontal bar.

5,365,624

APPARATUS FOR AUTOMATIC AND SIMULTANEOUS CARING FOR TEETH AND GUMS

Michael S. Berns, Apt. 270866 Isabella St., Toronto, Ontario, Canada M4Y 1N3

Filed Mar. 2, 1993, Ser. No. 25,277
Int. Cl.[5] A61C *17/38*
U.S. Cl. 15—22.1 **11 Claims**



1. An apparatus for automatic and simultaneous caring for the teeth and gums; said caring comprising brushing, cleaning, lubricating, massaging, oral irrigating, oral syringing, and polishing; said apparatus comprising:

(a) a housing of flexible material, formed to follow the shape of a gum arch and fit the teeth; said housing having:

(i) a top having holes therein;

(ii) flexible, expandable and compressible inner walls facing the teeth and gum, and flexible soft surfaces on all external portions of said housing which come into contact with mouth, teeth or gums;

(iii) channels or tubes through the housing to automatically conduct breathing air in and out of the mouth and exhaust fluids and exhaust substances out of the mouth, said exhaust fluids and exhaust substances comprising used paste, polish, mouthwash, saliva, water, blood and the like;

(iv) watertight covers on, or within, the holes in the top surface of the housing; said holes being for the introduction of paste, polish, mouthwash, or the like into compressible paste chambers inside the housing;

(v) one or more water-driven motors inside said housing having portals open to said teeth and to the channels or tubes in said housing;

(vi) a bellows or vacuum chamber inside each motor to automatically suction exhaust fluids and exhaust substances away from the teeth and gums, and a compression wall movable to automatically propel exhaust fluids through said channels or tubes and exhaust substances out of said housing;

(vii) a paste chamber inside each motor; said paste chamber being cyclically compressed by the compression wall and so automatically supplying paste, polish, mouthwash or the like to the teeth and gums through a dispenser hole or holes in a housing inner wall;

(viii) a vertically reciprocatable bridge linkage connected to each motor through a housing inner wall; the bridge integrally connected to a holder external to the housing; said holder having a head removeably attached thereto; said head moving up and down vertically with said linkage;

(ix) means to connect the housing to a faucet to provide a flow of fresh water to the housing; and

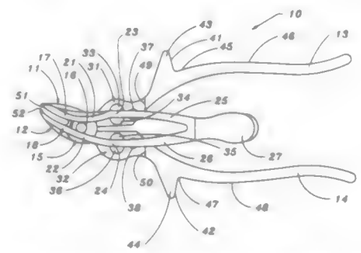
(x) means to monitor the fresh water temperature and pressure and duration of flow of water into the housing.

5,365,625

RING CUTTING AND REMOVING DEVICE

Sang I. Han, Northbrook, Ill., assignor to Han Medical Designs, Inc., Northbrook, Ill.

Filed May 20, 1993, Ser. No. 66,283
Int. Cl.[5] B26B *11/00*
U.S. Cl. 7—158 **24 Claims**



1. A combination ring cutting and removing device, the device comprising:

means for cutting a ring disposed on a finger including two opposingly directed cutting blades, each blade carried by a jaw, each jaw connected to a handle, the handles being pivotally mounted together,

means for separating two ends of a cut ring including two opposingly directed clamps, each clamp being pivotally connected to the means for cutting the ring,

the clamps assuming an open position when the jaws assume an open position, the clamps assuming a closed gripping position when the jaws assume a closed cutting position,

prying means for moving the clamps from a juxtaposed position with respect to cutting blades to a position disposed laterally outward from the cutting blades,

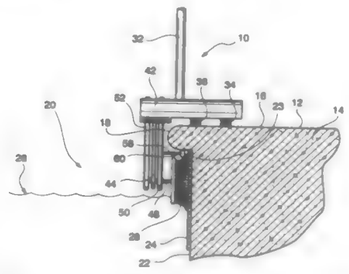
whereby after a ring is cut by the blades to create two cut ends of the ring and the opposing blades engage each other and the opposing clamps engage one cut end of the ring, inward pressure on the prying means results in the opposing clamps separating the two cut ends of the ring for removal of the ring from a finger.

5,365,626

SWIMMING POOL TILE BRUSHING DEVICE

Raymond M. Santi, 924 Forest Ave., Deerfield, Ill. 60015

Filed Mar. 17, 1993, Ser. No. 32,116
Int. Cl.[5] A46B *13/00*; A47L *11/38*
U.S. Cl. 15—49.1 **13 Claims**



1. A device for use with in the ground swimming pools having a pool deck and a coping around a perimeter of the pool deck, for brushing sides of the pool or ceramic tiles mounted on sides of the pool, comprising:

a housing;

a drive shaft mounted in said housing;

wheels mounted on said drive shaft, said wheels engaging a planar surface of the pool deck and rotating said drive shaft;

a handle extending upwardly from said housing;

an extension member extending downwardly from said housing;

a brush assembly for brushing the sides of the pool rotatably mounted to said extension member; and

means coupled to said drive shaft and said brush assembly for rotating said brush assembly when said housing is moved along the deck of the pool.

5,365,627

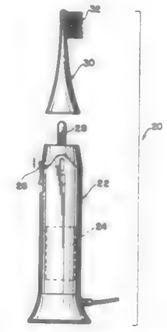
STEM BRUSH WITH AUTOMATIC INSERTION SYSTEM

Jean-Pierre Jousson, Chene-Bourg, and Michel Moret, Geneva, both of Switzerland, assignors to Les Produits Associes, LPA-Broxo S.A., Geneva, Switzerland

Filed Jul. 22, 1993, Ser. No. 95,964
Int. Cl.[5] A61C *17/34*; A46B *13/02*
U.S. Cl. 15—22.1 **19 Claims**

1. An oral hygiene device having an automatic stem insertion system comprising:

a handle and a motor driven shaft, a stem coupled with the shaft, the stem insertion system including at least one key, a base receiving the shaft, at least one slot, each slot receiving a key, at least one sleeve having a ramp for receiving and engaging the key when coupling the stem to the handle and with a camming action of the key on the ramp, guiding the key into the slot, and means for releasably coupling the stem on the handle the coupling means including a radially extending flange and at least one flexible arm having a recess receiving the flange whereby upon coupling the stem to the handle, the flange engaging the arm and flexes the arm outwardly and further movement of the stem onto the handle causes the flange to enter the recess with a snap action, and upon withdrawal of the



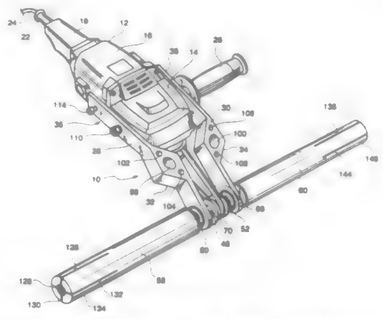
stem from the handle, the flange causes the arm to flex outwardly to release the flange from the recess.

5,365,628

ROLLER ASSEMBLY FOR ROTARY BUFFER

Kenneth Evensen, 820 Central, Roselle, Ill. 60172

Filed Dec. 15, 1993, Ser. No. 168,042
Int. Cl.[5] B24B *29/00*; A46B *13/02*
U.S. Cl. 15—23 **18 Claims**



1. A roller assembly adapted for use on a conventional hand held rotary disk buffing machine including a motor with a drive shaft extending from the motor, said roller assembly comprising:

a bracket assembly including a first bracket and a second bracket, each of said brackets having a proximal portion and a distal portion, and said proximal portion being mounted to said machine;

an axle;

means for rotably mounting said axle transversely of said machine on said distal portions of said brackets;

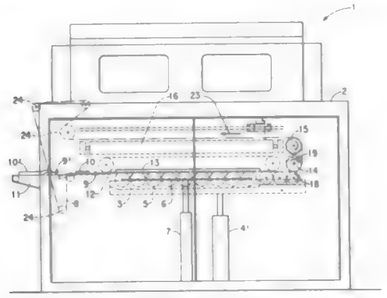
a first pulley attached to the drive shaft;

a second pulley attached to said axle;

means for coupling said pulleys and for rotating said axle when the drive shaft is driven by the motor; and

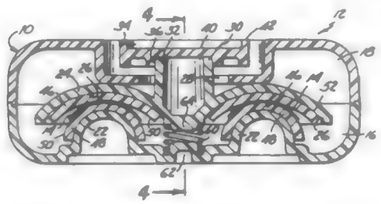
at least one roller mounted to said axle.

5,365,629
APPARATUS FOR WASHING OUT FLEXOGRAPHIC PRINTING PLATES
Hans-Peter Weihe, Frankfurt, and Herbert Konermann, Lengerich, both of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Sep. 7, 1993, Ser. No. 117,452
Claims priority, application Germany, Sep. 17, 1992, 4231106
Int. Cl.[5] B08B *11/02*; A46B *13/02*
U.S. Cl. 15—77 15 Claims



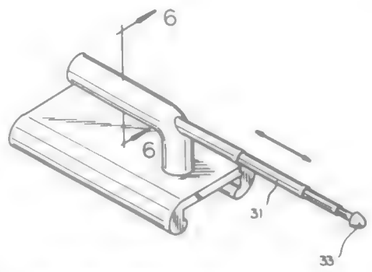
1. A device for washing out flexographic printing plates, the device comprising:
a tank for holding a liquid bath,
a large number of rotatable brushes adapted to be at least partly immersed in the liquid bath, the brushes for washing front sides of the plates,
a first turning roll, and
a plate conveying mechanism for conveying the plates in a first conveying direction past the rotatable brushes where the front sides of the plates are cleaned by the brushes and then partially around the first turning roll changing the direction of motion of the printing plates,
characterized by the fact that the turning roll is designed as a cleaning brush which is adapted to clean back sides of the printing plates.

5,365,630
APPARATUS FOR CLEANING CONTACT LENSES
Mary B. Beckrich, 13601 N. 18th St., Phoenix, Ariz. 85022
Continuation of Ser. No. 125,497, Sep. 22, 1993, abandoned, which is a continuation of Ser. No. 997,156, Dec. 11, 1992, abandoned, which is a continuation of Ser. No. 880,294, May 5, 1992, abandoned, which is a continuation of Ser. No. 678,731, Apr. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 305,195, Feb. 2, 1989, abandoned. This application Mar. 10, 1994, Ser. No. 208,919
Int. Cl.[5] B08B *11/02*; G02C *13/00*
U.S. Cl. 15—104.92 10 Claims



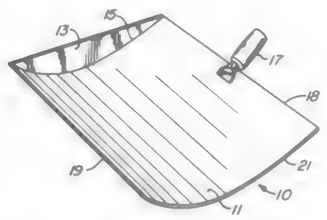
1. Apparatus for cleaning concave/convex contact lenses including:
(a) a pair of cleaning pads for each lens to be cleaned, each pad being partially defined by a pair of opposed, spaced-apart, roughly parallel, working surfaces, a first of such surfaces being a cleaning surface and a second of such surfaces being a handling surface, each pad being so constituted and constructed that its cleaning surface readily conforms to and comes into intimate contact with one of the concave and convex surfaces of a contact lens to be cleaned when the pads are positioned with their cleaning surfaces in facing relation to each other with the lens to be cleaned therebetween and when pressure toward the lens is applied to the opposed handling surfaces of the pads;
(b) wherein pressure and movement applying means is provided to apply such pressure to the pads toward the lens and to apply relative lateral movement to the handling surfaces of the pads to tend to move the pads laterally with respect to each other when said lens to be cleaned is so positioned between the pads;
(c) wherein cleaning surface portions of both pads are of materials which will not tend to abrade the lens being cleaned, and wherein the handling surface portions each have a coefficient of friction with respect to that part of the pressure and moving means in contact with that handling surface portion compared to the coefficient of friction between the pad cleaning surfaces and the lens such that movement of the pads laterally with respect to each other will result primarily in movement of the cleaning surfaces of the pads over the concave and convex surfaces of the lens when the lens to be cleaned is so positioned.

5,365,631
ERASER CARRIER
Matthew W. Emerick, P.O. Box 83, Port Hope, Mich. 48468
Filed Jul. 12, 1993, Ser. No. 89,322
Int. Cl.[5] A47L *13/16*
U.S. Cl. 15—105 13 Claims



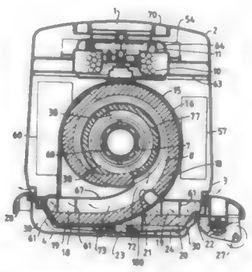
1. An eraser carrier, comprising:
a holder portion for receiving an eraser, the holder portion having a generally C-shaped cross-section and the holder portion including a generally rectangular-shaped top member having upper and lower surfaces, sidewalls connected to opposed edges of the top member to form an elongated channel for receiving the eraser, the sidewalls having inner and outer surfaces, and projections formed on the inner surfaces of the sidewalls for engaging the eraser to maintain the eraser in a fixed predetermined position;
a handle connected to the top surface of the holder portion for allowing the user to conveniently grasp the eraser carrier, the handle including a first member connected to the upper surface of the top member, and an elongated second member connected to the first member at an angle to the first member; and
an elongated collapsible pointer having a base at one end of the collapsible pointer and a tip formed at the other end of the collapsible pointer, the base of the collapsible pointer secured to the second member of the handle.

5,365,632
CLEAN-UP PAN
Dan J. Kirchnavy, 438 E. Gladstone, San Dimas, Calif. 91773
Filed Sep. 29, 1993, Ser. No. 128,091
Int. Cl.[5] A47L *13/52*
U.S. Cl. 15—257.3 19 Claims



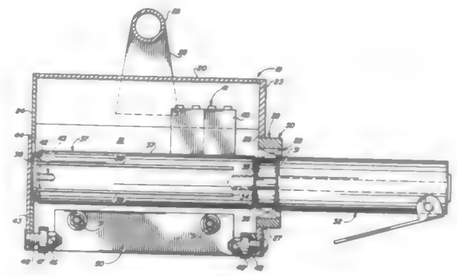
1. A clean-up pan comprising:
a pan body having a trough-shaped bottom wall with a front edge, a rear edge, and first and second opposite side edges,
the cross-sectional configuration of the bottom wall is defined in a first imaginary plane parallel to its side edges and generally symmetrical relative to a second imaginary plane disposed intermediate said front and rear edges,
said cross-section of the bottom wall is of concave curved configuration centered on an axis coincident with said second imaginary plane,
said first side edge of the bottom wall defining a pouring spout,
a side wall extending from the second side edge of the bottom wall, and
a handle on the bottom wall.

5,365,633
VACUUM CLEANER
Masao Sunagawa, Mito; Yukiji Iwase, Ushiku, and Shigenori Sato, Chiyoda, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 18, 1991, Ser. No. 687,016
Claims priority, application Japan, Apr. 18, 1990, 2-100324
Int. Cl.[5] A47L *9/00*
U.S. Cl. 15—326 16 Claims



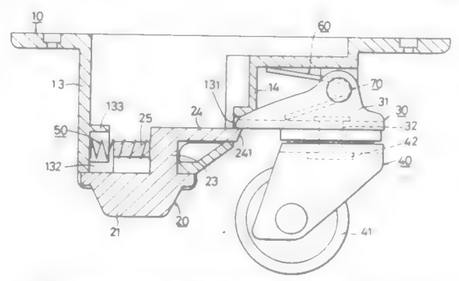
1. A vacuum cleaner comprising:
a main body;
a rigid blower casing disposed in said main body;
an electric blower having a blower axis and being mounted in said blower casing and defining a blower casing space extending in axial and radial directions with respect to said blower axis between said blower and said blower casing for passage of exhaust air from said blower; and
an exhaust transfer passage in said main body, said exhaust transfer passage communicating with an outwardly-directed exit opening of said blower casing, and
wherein said blower casing space opens gradually radially outwardly to said exit opening and wherein said exhaust transfer passage defines a gradually longitudinally curved exhaust flow path which curves from said exit opening away from said blower with a substantial non-radial directional component.

5,365,634
SURFACE TREATING TOOL
Joel Hughes, Wilmington, N.C., assignor to Container Products Corporation, Wilmington, N.C.
Continuation-in-part of Ser. No. 937,147, Aug. 31, 1992, Pat. No. 5,287,589. This application May 4, 1993, Ser. No. 56,750
Int. Cl.[5] A47L *5/30*
U.S. Cl. 15—366 8 Claims



1. A surface treating tool including a filtration vacuum for the recovery of material stripped from the surface to be cleaned comprising:
a) a housing providing an opening adapted to be appositioned with the surface to be treated,
b) a rotatable surface treating element mounted within said housing,
c) said surface treating element providing surface treating members exposed through said opening for impacting upon the surface to be treated,
d) an air drill for rotating said element about a longitudinal axis within said housing, and
e) means provided by said housing through which a vacuum is introduced into said housing for the recovery of air borne contaminants removed from said surface by said rotatable element.

5,365,635
RETRACTABLE CASTER ASSEMBLY
Shis-Wen Jang, No.7, Alley 73, Lane 81, Tung-Lai Rd., Ho-Mei Chen, Chang-Hua Hsien, Taiwan, Prov. of China
Filed Aug. 4, 1993, Ser. No. 102,006
Int. Cl.[5] B60B *33/06*
U.S. Cl. 16—34 5 Claims



1. A retractable caster assembly, comprising:
a mounting unit including a horizontal mounting plate and a hollow connector which projects downwardly from said mounting plate, said hollow connector having an open

lower end and a first side wall that is formed with an outward stop projection and a slot immediately below said stop projection;

a foot unit having a foot portion, a connecting shaft extending upwardly from said foot portion into said hollow connector via said open lower end, and a horizontal retaining plate extending from one side of said connecting shaft, said foot unit being mounted slidably to said hollow connector and being movable between a first position, wherein said retaining plate extends out of said slot of said hollow connector, and a second position, wherein said retaining plate is retracted into said hollow connector;

a first biasing means disposed inside said hollow connector for biasing said foot unit towards said first position;

a base plate mounted pivotally to said mounting plate adjacent to said first side wall of said hollow connector and movable between a released position, wherein said base plate is disposed away from said hollow connector, and a retained position, wherein said base plate has an edge portion retained between said stop projection and said retaining plate;

a second biasing means for biasing said base plate toward said released position; and

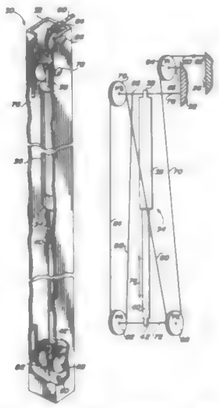
a caster unit mounted on said base plate, said caster unit extending lower than said foot portion when said base plate is in said retained position, said caster unit being disposed at a level higher than said foot portion when said base plate is in said released position.

5,365,636

APPARATUS FOR CLOSING SLIDING DOORS

James N. Jensen, 4127 W. Danbury Dr., Glendale, Ariz. 85308

Continuation of Ser. No. 776,219, Oct. 15, 1991, abandoned.
This application Oct. 27, 1993, Ser. No. 143,995
Int. Cl.[5] E05F *3/00*
U.S. Cl. 16—67 **19 Claims**



1. Apparatus for returning a sliding door from an opened position to a closed position, the sliding door sliding within a frame, the frame including a jamb against which the sliding door rests in its closed position, the sliding door being spaced apart from the jamb when in its opened position, said apparatus comprising in combination:

a. compressible spring means extending along a longitudinal axis between first and second opposing ends thereof, said compressible spring means having a first extended length when at rest and being compressible to assume a shortened length when a compressive force is applied between the first and second ends thereof, said compressible spring means exerting a biasing force tending to move the first and second ends thereof apart from one another toward said first extended length when the compressive force is released;

b. a cable;

c. first pulley means supported proximate the first end of said compressible spring means for rotatably supporting said cable;

d. second pulley means supported by the second end of said compressible spring means for rotatably supporting said cable, said second pulley means being movable with the second end of said compressible spring means as said compressible spring means moves between its first extended length and its shortened length, said cable extending about second pulley means; and

e. said cable extending between first and second opposing ends, the first end of said cable being fixedly secured relative to the door frame and the second end of said cable being fixedly secured relative to one of the first and second ends of said compressible spring means, said cable extending about said first pulley means;

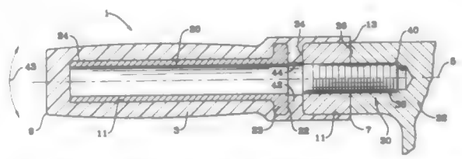
wherein the opening of the door applies a compressive force to said compressible spring means and causes said compressible spring means to move from the first extended length toward the shortened length, and wherein the release of the door releases such compressive force and permits said compressible spring means to return to its extended length, thereby sliding the door back to its closed position.

5,365,637

FLEX HANDLE FOR A POWER TOOL

Steven W. Bodell, and Robert R. Kimberlin, both of Troutville, Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 15, 1993, Ser. No. 77,829
Int. Cl.[5] B25D *17/04;* **B25G** *1/02*
U.S. Cl. 16—116 R **6 Claims**



1. A vibration absorbing handle for a power tool comprising:

(a) an elongated gripping member having a longitudinal axis of symmetry, a first end, a second end, and an inner bore coaxial with said axis, said bore forming an opening at said first end and extending substantially the length of said gripping member;

(b) an elongated, hollow tubular support member affixed in said bore, extending coaxially along said axis, said support member having an inner end adjacent said first end of said gripping member and an outer end adjacent said second end of said gripping member;

(c) a first mounting means for connecting said gripping member to a power tool, said mounting means affixed in said bore, at said first end of said gripping member, said mounting means extending coaxially along said axis, said mounting means being spaced from said inner end of said support member; and

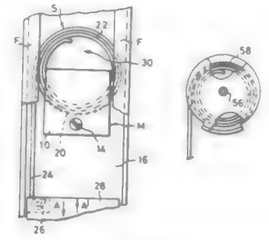
(d) said gripping member being a monolithic elastomeric body covering said support member and said first mounting means, said gripping member forming a flexible flange in said bore, said flange extending radially with respect to said axis and said flange positioned between, and in contact with said support member and said first mounting means.

5,365,638

SPRING MOUNTING FOR SASH FRAME TENSIONING ARRANGEMENTS

Harold K. Braid, The Sheilings, Braceborough, Lincolnshire, PE9 4NT, and Simon C. Braid, 13, Crowson Way, Deeping, St. James, Lincolnshire, both of England

Filed Jan. 21, 1993, Ser. No. 7,628
Claims priority, application United Kingdom, Jan. 21, 1992, 9201208.7; Feb. 25, 1992, 9204006.2; Mar. 4, 1992, 9204687.9
Int. Cl.[5] E05D *13/00*
U.S. Cl. 16—197 **8 Claims**



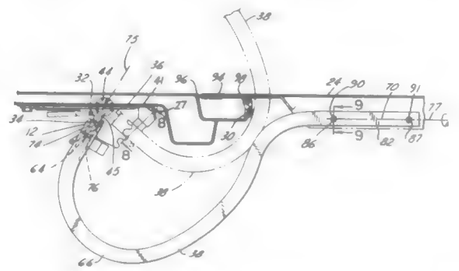
1. A mounting assembly comprising a channel means having a rear wall, side walls and at extremities of said side walls, inwardly turned opposed flanges, a sash frame support means slidable in said channel means, a coiled ribbon spring having a first end engaged with said sash frame support means, and a means for mounting said coiled ribbon spring, the coiled body portion of said coiled ribbon spring having the other end of said coiled ribbon spring within the coil being positioned in said mounting means, said other end of said coiled ribbon spring being free and unattached to said mounting means and said mounting means being secured in said channel means, said mounting means having a raised spine positioned between and in the same plane as said inwardly turned opposed flanges of said channel means whereby rotational motion of said mounting means is inhibited.

5,365,639

BALL AND SOCKET HINGE ASSEMBLY WITH TRANSLATABLE SCREW

Randolph D. Lewkoski, Penetanguishene, Canada, assignor to Techform Products Limited, Ontario, Canada

Filed Oct. 7, 1992, Ser. No. 957,679
Int. Cl.[5] B62D *25/12*
U.S. Cl. 16—224 **12 Claims**



1. A first hinge assembly for mounting, in cooperation with a second hinge assembly, a deck lid to a vehicle body so that the deck lid may pivot about a hinge axis extending between the hinge assemblies, the deck lid and vehicle body each having mounting surfaces, the first hinge assembly comprising:

a mount having a mounting surface engageable with the mounting surface of the vehicle body; and

an elongate strap having a mounting surface engageable with the mounting surface of the deck lid

the mount and the strap having a ball and socket joint formed therebetween for swivelably attaching the strap to the mount so that the strap may rotate relative to the mount about a second axis extending substantially perpendicular to the hinge axis;

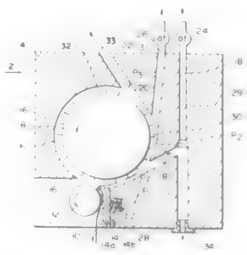
whereby the ball and socket joint attaches the strap to the mount and allows the strap to rotate about the second axis relative to the mount during the mounting of the deck lid to the vehicle so that the respective mounting surfaces on the vehicle body and the mount and the mounting surfaces on the strap and the deck lid can flushly mount to one another without having to apply a force deforming the first mounting assembly to bring the respective mounting surfaces into flush engagement.

5,365,640

APPARATUS FOR SORTING FIBERS

Shlomo Sterin, Rechov Barzani 305/16, Jerusalem, 92811, Israel

Filed Mar. 5, 1993, Ser. No. 26,581
Claims priority, application Israel, Mar. 6, 1992, 101168
Int. Cl.[5] D01B *3/00*
U.S. Cl. 19—200 **16 Claims**



1. An apparatus for sorting fibers and separating them into fractions with desirable and undesirable properties comprising a housing provided with a first chamber:

means for introducing fibers to be sorted into said first chamber;

a rotary element revolvably supported in said first chamber and provided with means for receiving said fibers and for applying a fast rotary movement thereto,

a multiplicity of material-receiving channels leading from said first chamber, a first of said material-receiving channels being provided with a first window adjacent to said rotary element for the reception of trash of relatively greater mass than the remaining material, a second material-receiving channel being provided with a second window for the reception of nep and undesirable fibers of intermediate mass and a third material receiving channel being provided with a third window adjacent to said rotary element for the reception of desired fibers;

said material-receiving channels being in fluid communication with means for applying varying degrees of air pressure therethrough;

wherein said fast rotary movement results in a centrifugal force, which in combination with the degree of air pressure applied in each of said material-receiving channels is sufficient to cause separation of trash of relatively greater mass than the remaining material as well as the separation of nep and undesirable fibers from fibers having desirable properties.

5,365,641

CORD STOPPER

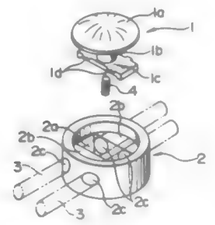
Hirokazu Watanabe, Toyama, and Akishige Utaza, Nara, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jan. 27, 1993, Ser. No. 9,678

Claims priority, application Japan, Feb. 12, 1992, 4-005219[U]; Sep. 4, 1992, 4-062363[U]

Int. Cl.[5] F16G *11/00*

U.S. Cl. 24—115 G **4 Claims**



1. A cord stopper comprising:

a plug having a plug head, a neck projecting centrally from a rear surface of said plug head and a plate-like cord clamp attached to a distal end of said neck substantially perpendicularly thereto and having two respective pairs of projections on the opposed longitudinal sides of said clamp, the lower-facing sides of said projections being tapered;

a socket having centrally in its bottom a recess and a pair of sidewalls located on opposite sides of said recess, said recess having a depth greater than the thickness of said cord clamp for receiving said cord clamp, said sidewalls having two pairs of cord thru-holes, said pair of cord thru-holes of one of said sidewalls being axially aligned with said pair of cord thru-holes of the other sidewall for threading therethrough a cord; and

moving means located between said plug and said socket for moving said cord clamp forwardly and backwardly in said recess wherein said cord clamp fits downwardly into said recess for said two pairs of projections to engage with the upper inner surfaces of said thru-holes.

5,365,642

SNAP HOOK ASSEMBLY

Richard J. Reiue, Pattenburg, and James O'Shea, Annandale, both of N.J., assignors to Royalox International, Inc., Philipsburg, N.J.

Continuation-in-part of Ser. No. 7,592, Jan. 22, 1993, Pat. No. 5,253,396. This application Jul. 29, 1993, Ser. No. 100,098

The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.

Int. Cl.[5] A44B *13/00*

U.S. Cl. 24—600.9 **7 Claims**

1. A swivel snap hook assembly, comprising:

an elongated web loop member;

a snap hook having a base member, a hook portion extending from said base member, and a spring-biased finger pivotal on said base member and normally closing said hook portion; and

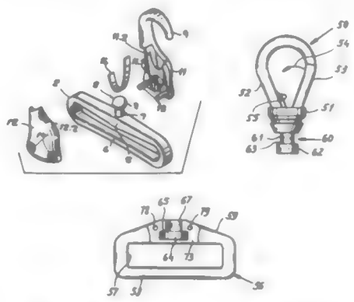
a swivel connecting said base member with said web loop member, said swivel comprising:

a post fixed on said base member and formed at a free end thereof with an enlarged head,

an undercut cavity formed in said web loop member rotatably receiving said post and having a shoulder engaging a shoulder of said post for preventing said post from withdrawing axially from said cavity,

a cover extending over said cavity and provided with a recess receiving said head and having a shoulder engaging said shoulder of said post for preventing lateral withdrawal of said post from said cavity, and

means for securing said cover to said other member.



5,365,643

INK JET PRINTING HEAD PRODUCING METHOD

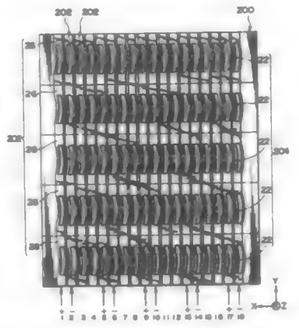
Hisayoshi Fujimoto, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 5, 1992, Ser. No. 956,916

Claims priority, application Japan, Oct. 9, 1991, 3-260917

Int. Cl.[5] H01L *41/22*

U.S. Cl. 29—25.35 **12 Claims**



1. A method of producing an ink jet printing head, comprising the steps of:

forming a plurality of aligned through channels, to be filled with ink, in a piezoelectric block of a piezoelectric material;

forming an electrode on internal walls of each channel;

applying positive and negative voltages to the electrodes of two adjacent channels to cause a polarization of a partition wall between the adjacent two channels;

mounting a front plate having a plurality of orifices for jetting the ink onto a front side of the piezoelectric block; and

mounting a back plate having an ink supply path onto a rear side of the piezoelectric block.

5,365,644

APPARATUS FOR CONTINUOUSLY CRIMPING THERMOPLASTIC THREADS

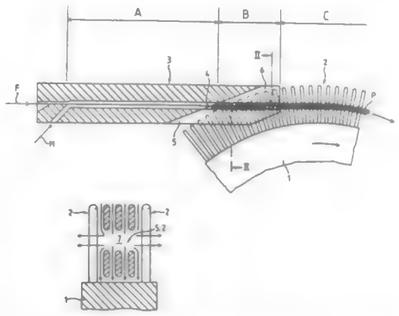
Werner Nabulon, Rüdlingen, Switzerland, assignor to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed May 19, 1993, Ser. No. 63,324

Claims priority, application Switzerland, May 20, 1992, 01613/92-4

Int. Cl.[5] D02G *1/12*

U.S. Cl. 28—263 **16 Claims**



1. An apparatus for the continuous crimping of thermoplastic threads comprising in combination:

a crimping nozzle, said crimping nozzle having a feed channel and a nozzle orifice;

a guide fork located axially in front of the nozzle orifice, said guide fork having a plug formation area including a lower guide member and an upper guide member;

a plug feed roller, said plug feed roller having two parallel, lateral means for guiding a plug, extending from and around the circumference of said plug feed roller, said means for guiding, extending through said plug formation area, said lateral guide means and said guide members defining the sides of a stuffer box; and

wherein at least one of said guide members comprises a plurality of spaced individual parts for improving the venting of said stuffer box, with the gaps between said spaced parts being slits, said slits being open on the side of said guide members remote from said nozzle orifice.

5,365,645

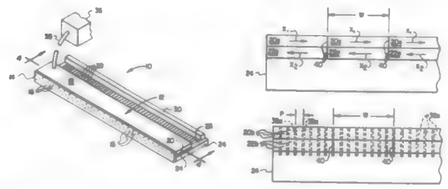
METHODS OF FABRICATING A PAGE WIDE PIEZOELECTRIC INK JET PRINTHEAD ASSEMBLY

Kelsey R. Walker, Hockley; Carol C. Scalf, Cypress, and Daniel B. Granzow, Spring, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 19, 1993, Ser. No. 34,743

Int. Cl.[5] H01L *41/22*; B41J *2/045, 2/16*

U.S. Cl. 29—25.35 **6 Claims**



1. A method of fabricating a page wide piezoelectric ink jet printhead, said method comprising the steps of:

providing a first series of piezoelectric body sections each having opposite sides and a width extending therebetween;

providing a second series of piezoelectric body sections each having opposite sides and a width extending therebetween,

the widths of said body sections in said first and second series thereof being substantially identical to one another;

poling said body sections in said first and second series thereof in widthwise directions;

intersecuring the poled first series of body sections in a side-to-side abutting relationship;

intersecuring the poled second series of body sections in a side-to-side abutting relationship;

attaching said first and second series of poled body sections to one another in a manner forming therefrom a first printhead body portion having parallel, essentially planar opposite first and second side surfaces between which aligned, generally planar side juncture areas of said first and second series of poled body sections transversely extend, and in which the polling directions of said first series of poled body sections are identically oriented, and the polling directions of said second series of poled body sections are identically oriented and extend oppositely to those of said first series of poled body sections;

providing a second printhead body portion having a generally planar first side surface;

securing said first side surface of said first printhead body portion to said first side surface of said second printhead body portion;

forming a series of equally spaced, parallel grooves through said first printhead body portion, after its securement to said second printhead body portion, each of said grooves extending from said second side surface of said first printhead body portion to at least said first side surface thereof, with a first number of said grooves extending through and removing all of said side juncture areas of said first printhead body portion, and a second number of said grooves being interdigitated with said first number of said grooves, said grooves having open front and rear ends and open side portions extending between said open front and rear ends;

providing a third printhead body portion having a generally planar first side surface;

securing said first side surface of said third printhead body portion to said second side surface of said first printhead body portion in a manner such that said third printhead body portion extends across and covers said open side portions of said grooves;

securing a plate member to said first, second and third printhead body portions over said open front ends of said grooves, said plate member having a spaced series of ink discharge orifices formed therein and communicating with said open front ends of said grooves; and

sealing off said open rear ends of said grooves.

5,365,646

METHOD OF MANUFACTURING AN ELONGATED SPRING MEMBER

Donald L. Stephens, Skagit, Wash., assignor to Paccar Inc., Bellevue, Wash.

Division of Ser. No. 761,488, Sep. 18, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 36,468

Int. Cl.[5] B23P *13/00*

U.S. Cl. 29—173 **14 Claims**

7. A method of forming an elongated spring member comprising the steps of:

procuring a blank of spring steel;

cutting a base elongated spring member from the blank;

forming a closed integral eye through the base elongated spring member; and



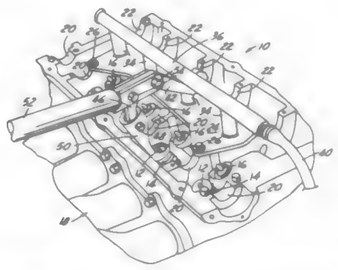
shaping the base elongated spring member to the dimensions of the elongated spring member.

5,365,647

ENGINE VALVE SERVICE APPARATUS

Anthony W. Senkow, Yale, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 22, 1994, Ser. No. 199,442
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—220 **2 Claims**



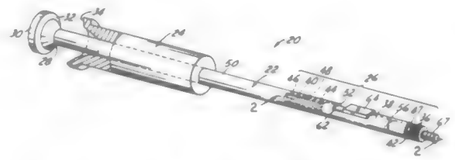
1. To service valve springs and associated valve components in an engine's overhead cam type cylinder head with an opening leading to each combustion chamber, normally for installation of a spark plug, an apparatus for simultaneously pressurizing all the combustion chambers, comprising: a generally flat base member with openings therethrough, said openings being arranged in alignment with the cylinder head's spark plug openings when said base member is attached to the cylinder head; an elongated tubular bar member extending in spaced relationship along said openings in said base member, said bar member having a closed end portion and an inlet end portion adapted to selectively receive pressurized air; a short feed tube associated with each openings in said base member for connecting each opening with the bar member; seal means interposed between the cylinder head and said pressurization apparatus about each opening in said base member whereby pressurized air is routed from the interior of said bar member into the combustion chambers through the head's spark plug openings.

5,365,648

SLIDE HAMMER HAVING REMOVABLE TIP

Peter M. Fuga, 9273 Wild Oaks Cir., South Lyon, Mich. 48178

Filed Mar. 18, 1994, Ser. No. 215,061
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—254 **14 Claims**



5. A slide hammer having a hammer end and a tip end, said slide hammer providing a pulling force in the direction of said hammer end, said slide hammer comprising:

a longitudinally extending shaft assembly extending substantially between said hammer end and said tip end, said shaft having a cross-section of a first dimension, said hammer end having a portion extending radially outwardly to define a cross-section of a second dimension, said second dimension being greater than said first dimension to define an impact surface, said shaft further including a longitudinally extending generally cylindrical cavity, said cavity including a threaded portion;

a hammer member received about said shaft assembly for sliding movement along said shaft assembly, said hammer member including an impact surface to correspond with said impact surface of said shaft assembly, said hammer member being adapted to impart a pulling force on said shaft assembly;

a tip having a corresponding threaded portion, said tip being threadably received within said cavity on said threaded portion, said tip further including a longitudinally extending locking bore, said locking bore having a non-circular cross-section;

a locking member received within said cavity interposed between an end wall of said cavity and said tip, said locking member including an extension having a cross-section corresponding approximately to the cross-section of said locking bore, said extension being adapted to be selectively received within said locking bore, said locking member being rotationally fixed to said shaft assembly, said extension being selectively inserted into said locking bore to prevent rotation of said tip, and thereby selectively prevent removal of said tip.

5,365,649

ASSIST TOOL FOR SEATING DOOR HINGE PIN

Richard M. Carl, Shelby Township, Macomb County, and Joseph J. Lasota, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

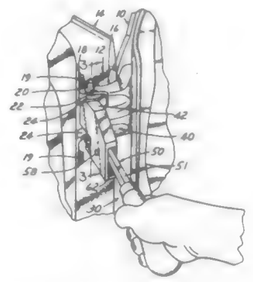
Filed Feb. 4, 1994, Ser. No. 191,698
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—267 **7 Claims**

1. In a hand tool for installing a hinge pin pivotally interconnecting first and second hinge plates hanging a door on a vehicle body, said hinge plates each having upper flange means and lower flange means with aligned apertures adapted to receive the hinge pin into a position establishing a door hinge pivot axis, said tool comprising:

an angle-shaped blockpiece defined by a forwardly extending bifurcated upper head portion terminating at an aft closed end in a downwardly extending bifurcated body portion, said bifurcated head portion defining a pin-receiving slot between a pair of forwardly extending head portion side walls cooperatively spaced apart to receive through a forward open end of said pin-receiving slot a vertically disposed hinge pin therebetween, said bifurcated body portion defining a lever-receiving slot with forward, aft, and bottom openings between a pair of downwardly extending body side walls cooperatively spaced apart to receive a lever therebetween;

said lever comprising an elongated handle section extending rearwardly through said body slot aft opening and a jaw section extending through said body slot forward opening, said lever handle section and said jaw section each having a proximate end thereof interconnected by an intermediate pivot section, wherein said pivot section inclined forwardly and downwardly from said handle section proximate end to said jaw section proximate end, means mounting said pivot section in said lever-receiving slot for pivotal movement about a horizontal pivot axis;

said head section cooperatively sized for a snug fit between upper and lower apertured flanges of the first hinge plate retaining said hinge pin on said hinge pin axis, said pin-receiving slot having seating means adapted to seat the hinge pin in a self-aligned manner on the hinge pin axis;



said lever handle section proximate end connection with said inclined pivot section defining an upper transverse extending edge juncture positioned a predetermined dimension aft of said pivot axis, said edge juncture adapted to engage an opposed rearwardly and upwardly extending beveled bight wall internal surface of said body portion lever-receiving slot with said lever biased in said open position; and

said lever movable against spring biasing means to a jaw section open position wherein said head portion being guided inwardly and seated in said pin-receiving seating slot means with said jaw section having driving means juxtaposed one end of the hinge pin, whereby in response to the operator exerting a closing force on the lever handle section said jaw section driving means applies an axial thrust against the hinge pin one end thereby moving the pin on the hinge axis to a predetermined position.

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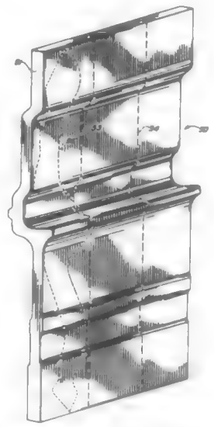
METHOD FOR MAKING AN EXTRUDED HANDLE FOR ARCHERY BOW

Allan F. Smith, and Paul E. Shepley, Jr., both of Tucson, Ariz., assignors to Precision Shooting Equipment, Inc., Tucson, Ariz.

Division of Ser. No. 13,357, Feb. 4, 1993, Pat. No. 5,335,644.
This application Mar. 14, 1994, Ser. No. 212,138
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—417 **9 Claims**

9. A method for making handles for archery bows, said handles having a predetermined side to side cross-sectional shape and front to rear outline, said method comprising the steps of:

cutting into blanks an extruded metal strip having the side to side cross-sectional shape of said handles; and



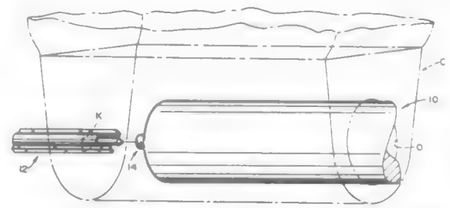
machining said blanks to the shape of the front to rear outline of said handles.

5,365,651

AIRBAG ASSEMBLY SYSTEM AND TOOL

Mark Rogers, Roy; Bradley L. Orme, North Odgen, and Larry D. Rose, Layton, all of Utah, assignors to Morton International, Inc., Chicago, Ill.

Filed Jul. 1, 1993, Ser. No. 86,249
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 29—468 **13 Claims**



1. The method of assembling an airbag inflator having a keyed end stud into an airbag module reaction canister having a wall defining an opening with a keyway having a profile adapted to receive said keyed end stud which comprises:

providing an alignment tool having means for engaging said keyed end stud and a profile matching the profile of said opening and keyway;

inserting said alignment tool from without said canister through said wall opening and keyway;

engaging the stud engaging means of said alignment tool with the keyed end stud of said airbag inflator;

retracting said alignment tool and keyed end stud through said opening to position said keyed end stud in said opening and keyway; and

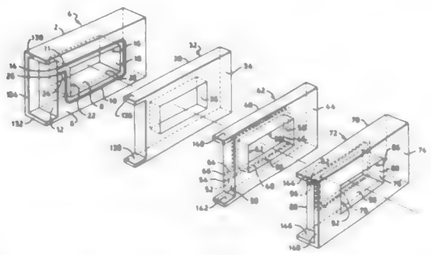
disengaging and removing said alignment tool from said end stud.

5,365,652

METHOD FOR MAKING A SEARCH COIL FRAME ASSEMBLY FOR METAL DETECTORS

Patrick A. Papa, Jr., Fitchburg, Mass., assignor to B&D Liquidation Corp., Bannockburn, Ill.

Division of Ser. No. 838,057, Feb. 19, 1992, Pat. No. 5,307,042.
This application Nov. 24, 1993, Ser. No. 157,697
Int. Cl.[5] H01F 4/02
U.S. Cl. 29—605 20 Claims



1. A method of making a search coil frame assembly for a metal detector, said method comprising

providing a plurality of frame members each having face surfaces,

forming first and second grooves in selected face surfaces of said frame members such that each groove has the configuration of a loop and extends to an edge of a respective frame member,

placing electrically conductive strands in the grooves and leading out from edges of respective frame members, and

bonding the frame members together to close said grooves with the strands in the grooves, said frame members as bonded together forming a frame assembly with a passage therethrough to permit passage of articles through the frame assembly, said grooves being disposed such that the strands therein extend generally adjacent said passage and lead out from the frame assembly, one of said strands in a respective groove forming a transmit coil and the other of said strands in a respective groove forming a first receiving coil.

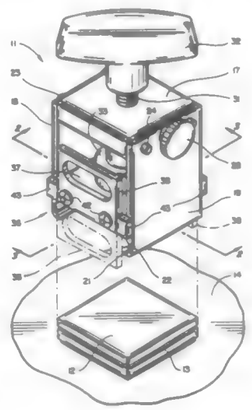
5,365,653

TOOL FOR INSERTING/REMOVING INTEGRATED CIRCUIT CHIPS

John Padrun, 2123-C Bering Dr., San Jose, Calif. 95131

Filed Aug. 3, 1993, Ser. No. 100,974
Int. Cl.[5] H05K 3/30
U.S. Cl. 29—741 5 Claims

1. In a tool for inserting an electronic component into and removing an electronic component from a socket on a circuit board: a base, a pair of side plates depending from opposite sides of the base, a drive screw threadedly mounted in the base, a reversible presser foot slidably mounted between the side plates and adapted to be driven in a downward direction away from the base by the drive screw, said presser foot having a drive surface on one side thereof for engagement with an upper drive surface of the component and a pair of feet on an opposite side thereof for engagement with an upper surface of the circuit board, and inwardly facing hooks at the lower ends of the side plates selectively engagable with either an under surface of the socket or an under surface of the component so that the component can be pressed into the socket by rotation of the drive screw with the hooks engaging the lower surface of the socket and the drive surface of the foot pressing against the upper surface of the component, and the component can be pulled from the socket by rotation of the drive screw with the



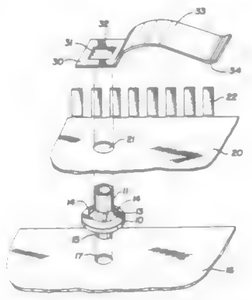
hooks engaging the lower surface of the component and the feet of the presser foot bearing against the circuit board.

5,365,654

INTERLOCKING ATTACHMENT ASSEMBLY

Keith R. Moulton, Argyle, Tex., assignor to Thermalloy, Inc., Nev.

Filed May 10, 1993, Ser. No. 58,380
Int. Cl.[5] H05K 3/34; B23P 19/04
U.S. Cl. 29—761 6 Claims



1. An interlocking assembly for securing a deformable sheet material to another member comprising:

(a) a fastener device having:

(i) a radially expanded head with first and second oppositely disposed major faces;

(ii) a shank having radial dimensions in a plane substantially parallel with the plane of said first major face extending from said first major face;

(iii) a chamfer at the junction of said expanded head and said shank having a radius which is larger adjacent said first major face than adjacent said shank; and

(iv) at least one shoulder extending from said chamfer;

(b) a first body of deformable sheet material having an aperture therein which substantially conforms to the radial dimensions of said shank; and

(c) a second body of material having a non-circular shaped aperture with walls surrounding said shank and cooperating with said shank to define at least one void between said shank and the walls of said aperture; wherein

a portion of said first body of deformable material adjacent the aperture therein is deformed to conform to the configuration of said chamfer and said shoulder to prevent rotation of said first body of material with respect to said fastener device; and

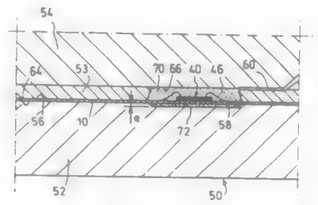
said portion of said first body of deformable material is deformed into said void to prevent rotation on said first body of deformable material with respect to said second body of material.

5,365,655

METHOD OF MAKING AN ELECTRONIC MODULE FOR A MEMORY CARD AND AN ELECTRONIC MODULE THUS OBTAINED

René Rose, Voisin-Le-Bretonneux, France, assignor to Schlumberger Industries, Montrouge, France

Filed Feb. 13, 1992, Ser. No. 835,246
Claims priority, application France, Feb. 18, 1991, 91 01904
Int. Cl.[5] H01R 43/00
U.S. Cl. 29—627 4 Claims



1. A method of making an electronic module for a memory card, the method comprising the following steps:

providing a strip of metal material having first and second faces;

cutting said strip to form a plurality of patterns, each pattern corresponding to a module and defining a plurality of peripheral flat conductor parts separate from one another and connected mechanically to the remainder of said strip by bridges, and a central conductor part connected to one of the peripheral parts, the first face of each peripheral conductor part forming an external contact, each conductor part comprising an attachment end adjacent said bridges and a connection end;

a semiconductor chip is fixed on the second face of the central conductor part and the terminals of said chip are connected to said connection ends;

said pattern of said strip is placed in a transfer mold having a cavity which comprises a first cavity part on the second face of said central conductor part and accommodating the chip therein, and a second cavity part on the first face of said central conductor part and opposite said first cavity part;

providing a resin inlet channel which opens into said first cavity part and not into said second cavity part;

a molding resin is introduced via said resin inlet channel into said mold so as to fill said first and second cavity parts and penetrate into the cuts in the metal strip, said cuts having dimensions in the region of the connection ends sufficient to allow said resin to pass from one part of the cavity to the other; and

the mold is opened and said pattern is separated from the remainder of the metal strip by cutting said bridges;

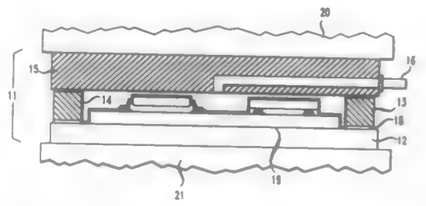
wherein the second cavity part of the mold has a depth in the range 0.05 mm to 0.08 mm, and the first cavity part has a greater depth.

5,365,656

SURFACE MOUNT ASSEMBLY OF DEVICES USING ADCON INTERCONNECTIONS

Donald W. Dahringer, Glen Ridge, and Alan M. Lyons, New Providence, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Continuation-in-part of Ser. No. 755,704, Sep. 6, 1991, abandoned. This application May 14, 1993, Ser. No. 61,753
Int. Cl.[5] H05K 3/30
U.S. Cl. 29—840 29 Claims



1. A process for mounting at least one electronic device having electrical contacts onto an interconnection substrate having electrical conductors so as to establish an electrical interconnection between said contacts and said conductors, which comprises:

applying an adhesive over a region on the interconnection substrate, said region including conductors to be electrically connected to contacts of said at least one device,

forming an assembly of said at least one device and said interconnection substrate by placing said at least one device on the interconnection substrate such that the contacts of said at least one device are in alignment with the conductors in said region of the substrate,

enclosing the assembly within a cavity provided with a resiliently stretchable membrane positioned above the assembly,

applying fluid pressure to said membrane so as to stretch the membrane and force portions of the membrane into a conformable engagement with said at least one device and areas of the substrate at least adjacent to said at least one device, the membrane forcing the contacts of said at least one device toward the conductors of the substrate, and

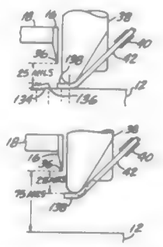
applying heat to said assembly such that said adhesive forms an electrical and mechanical interconnection between the contacts of the device and conductors of the substrate.

5,365,657

METHOD AND APPARATUS FOR CUTTING WIRE

Jerald L. Brown, Huntington, and Vaironis Berzins, Hicksville, both of N.Y., assignors to Advanced Interconnection Technology, Islip, N.Y.

Filed Feb. 1, 1993, Ser. No. 12,011
Int. Cl.[5] H01K 3/10; B23P 19/00
U.S. Cl. 29—850 26 Claims



1. An improved cutting apparatus in a device for scribing a

conductor to a surface of a substrate, the device having a wiring head positioned above the substrate and the device having a horizontal actuator for moving the wiring head and the substrate relative to each other in a horizontal direction, wherein the improved cutting apparatus comprises:

a cutter blade attached to the wiring head;

a z-axis actuator for precisely controlling the movement of the cutter blade in the z-direction; and

a gauge height finder attached to the wiring head for determining a distance between the wiring head and the substrate, wherein the determined distance is used to control the z-axis actuator for lowering the cutter blade so as to precisely cut the conductor on the surface of the substrate.

17. A method for cutting a conductor on a surface of a substrate, comprising the following steps:

(a) guiding and bonding the conductor along a predetermined path up to a predetermined end point, while discontinuing the bonding action at a point sufficiently distant from the end point so that no portion of the conductor is bonded to the surface of the substrate at any point beyond the end point;

(b) determining a precise vertical distance between a cutter blade positioned above the conductor and the top of the substrate at a point substantially near the end point;

(c) lowering the cutter blade in accordance with the determined distance so as to cut the conductor on the substrate at the end point; and

(d) raising the cutter blade above the substrate.

5,365,658

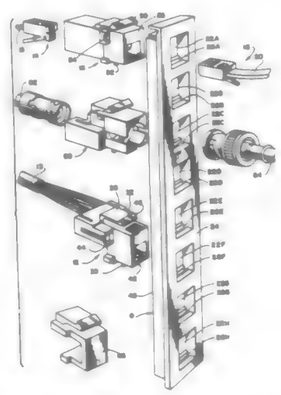
METHOD FOR FORMING AN ELECTRICAL INTERCONNECTION

Mike Freeman, Reading, England; Stuart K. Morgan, Westford, and Mike Romm, Brighton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 7,805, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 759,931, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 544,754, Jun. 27, 1990, abandoned. This application Oct. 29, 1993, Ser. No. 144,686

Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—861 **6 Claims**



1. A method for forming a connection between an insulative support housing having a plurality of receiving apertures with electrical contact elements therein, said housing being inelastically deformable along at least a portion thereof, and building cable having a plurality of twisted-pair wires grouped together and being surrounded by a covering layer, said method comprising the steps of:

removing said covering layer from a portion of said building cable to provide access to said plurality of twisted-pair wires;

ordering individual ones of said twisted-pair wires in accordance with said plurality of receiving apertures;

simultaneously inserting individual ones of said twisted-pair wires into said receiving apertures and positioning individual ones of said twisted-pair wires relative to said electrical contact elements and to said deformable portion; and

crimping said housing element to compress said deformable portion and inelastically deform said portion for mechanically retaining individual ones of said twisted-pair wires in position in said housing element independent of said covering layer and for compressing said electrical contact elements into surface-to-surface electrical contact with individual ones of said twisted-pair wires.

5,365,659

WIRING HARNESS FABRICATING SYSTEM

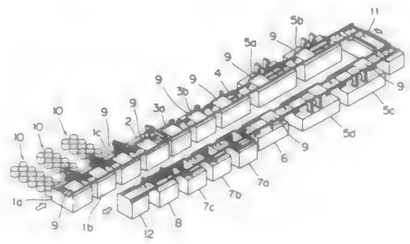
Koichi Ueda; Yutaka Nishide; Akira Gotoh, all of Osaka; Yoshio Takenami, Yokkaichi; Fujio Ogawa, Yokkaichi; Teiji Sakuma, Yokkaichi; Takashi Kobayashi, Yokkaichi, and Tomokazu Itoh, Yokkaichi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Sumitomo Wiring Systems, Ltd., Yokkaichi, both of Japan

Filed Jun. 22, 1993, Ser. No. 79,784

Claims priority, application Japan, Jun. 24, 1992, 4-165666; Sep. 17, 1992, 4-248300

Int. Cl.[5] H01R *43/04*; **B23P** *19/00*

U.S. Cl. 29—863 **14 Claims**



1. An automated method for producing a wiring harness, comprising:

laying out electric wires coated with insulative sheaths in an array on a wire lay-out board and cutting said wires to a predetermined length with a wire laying out step module;

stripping said insulative sheaths from ends of said wires with a stripping module;

pressing the stripped wire ends together with a terminal to provide a crimp contact in a crimping step module; and

inserting said terminals in crimp contact with said wire ends into a connector in an inserting step module,

wherein said modules are plural, independent modules connected to one another in a series, said modules including a base frame and a conveyor mounted on said base frame, wherein said conveyor includes a main conveyor element extending along said base frame and a projecting element extending from an edge of said base frame and intruding into a base frame of an adjacent module,

wherein a number of modules are arranged together to perform the laying out, stripping, pressing and inserting steps so as to generally even out processing times of each of said steps.

5,365,660

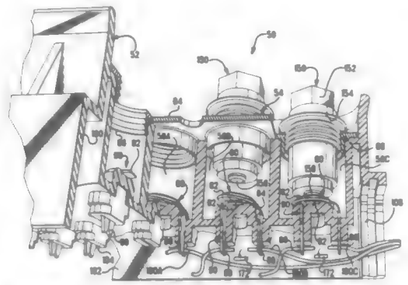
METHOD OF PROTECTING A CIRCUIT IN A TELEPHONE JUNCTION BOX

Harry M. Capper, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 863,626, Apr. 3, 1992, Pat. No. 5,296,646. This application Jan. 5, 1994, Ser. No. 177,889

Int. Cl.[5] H01H *39/00*; **H02H** *9/04*

U.S. Cl. 29—884 **1 Claim**



1. A method of interposing a protector element along a circuit defined by a conductor, comprising the steps of:

providing a housing including at least one cavity extending thereinto from an insertion face adapted to receive a respective said protector element thereinto;

providing a ground means groundingly connected to a ground electrode of said protector element upon full insertion into said cavity;

providing upper and lower contact members in said cavity, with said upper contact member having a first contact section adapted to be deflected into engagement with a first contact section of said lower contact member upon full insertion of said protector element thereinto;

electrically connecting a conductor element to a second contact section of said upper contact member so that a first portion of said conductor element extends from said upper contact member to a first electrical article;

electrically connecting said conductor element to a second contact section of said lower contact member so that a second portion of said conductor element extends from said lower contact member to a second electrical article; and

severing a portion of said conductor element between said second contact sections to isolate said first and second conductor portions which are electrical connectable by full insertion of said protector element into said cavity causing an electrical connection between said first contact sections in a manner creating an electrical discontinuity thereafter upon removal of said protector element from said cavity and said first and second contact members becoming disengaged.

5,365,661

CERAMIC-METAL COMPOSITE JOINT BODY

Takeyuki Mizuno, Toyohashi, and Hiroyuki Kawase, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 860,206, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 315,916, Feb. 27, 1989, abandoned. This application Nov. 19, 1993, Ser. No. 155,158

Claims priority, application Japan, Feb. 25, 1988, 63-22975[U]

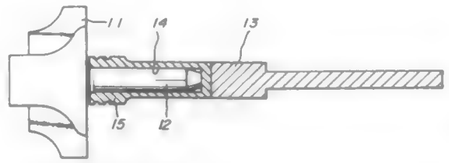
Int. Cl.[5] B23P *15/00*

U.S. Cl. 29—889.21 **6 Claims**

1. A method of producing a ceramic-metal composite joint body, comprising:

providing a rotary ceramic member having a substantially cylindrical axial projection formed thereon;

controlling a circularity of said projection dependent upon an outer diameter of said projection by grinding an outer surface of at least a portion of said projection to such an extent that cross-sections of said portion of said projection have a circularity value c, and a ratio D between said circularity c and an outer diameter d of said projection fulfills the following inequality:



$(c/d) \times 100(\%) \leqq 0.03\%$;

providing a metallic member having a substantially cylindrical recess formed therein; and

inserting and fixing said portion of said projection in said recess.

5,365,662

METHOD FOR MANUFACTURING AN INTERNAL STRUCTURE FOR INTEGRAL RAILWAY COACH BODIES

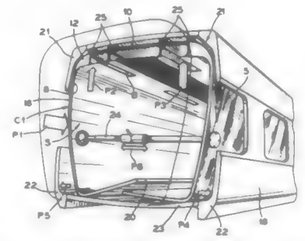
Kurt Anderegg, Rheineck, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Jul. 12, 1993, Ser. No. 89,720

Claims priority, application Switzerland, Jul. 10, 1992, 02180/92-4

Int. Cl.[5] B61D *17/00*

U.S. Cl. 29—897.2 **12 Claims**



1. A method for the manufacture of coach bodies comprising the steps of:

a. winding an inner covering layer on a winding core to form an internal structure, the winding core having a desired size and shape of a coach body, the inner covering layer having a generally rectangular cross section with a ceiling wall, a floor wall and a pair of spaced apart side walls connected by four curved corner regions;

b. attaching at least one channel segment to an outer surface of the ceiling wall, attaching insulation segments to outer surfaces of the corner regions, attaching heating fabric sheets to outer surfaces of the floor wall and the side walls for heating the floor wall and the side walls, and attaching a plurality of spaced apart longitudinally extending metal rails to outer surfaces of the floor wall and the side walls;

c. filling the spaces between the metal rails with insulating foam;

d. winding an outer covering layer about the internal structure;

e. removing the internal structure from the winding core;

f. forming apertures in the ceiling wall and the side walls and cutting the floor wall open longitudinally;

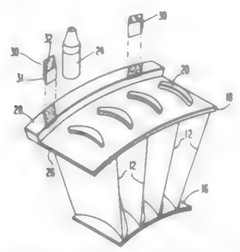
g. elastically deforming the internal structure to compress the internal structure and inserting the compressed internal structure into an outer structure; and
h. moving the floor wall, the side walls and the ceiling wall of the internal structure outwardly into engagement with the outer structure and attaching the internal structure to the outer structure to form a partial coach body.

5,365,663

METHOD OF ATTACHING A MONITOR TARGET TO A SHROUDED BLADE

John F. Demartini, Lake Mary, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1992, Ser. No. 874,949
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—889.21 **11 Claims**



1. In a steam turbine system comprising a rotor carrying a plurality of turbine blades and having a plurality of shroud segments connected to predetermined groups of said blades, a method for attaching at least one monitoring target on each of said shroud segments, wherein each said target comprises a shim plated on one surface with a highly conductive material, said method comprising the following steps for each said target:
abrading the non-plated surface of said shim;
solvent cleaning both the non-plated surface of said shim and the surface with a highly conductive material;
abrading the shroud segment surface for receiving said target;
solvent cleaning the shroud segment surface for receiving said target; and
spot welding the non-plated surface of said shim to the shroud segment surface for receiving said target,
whereby each said target is capable of interacting with a sensor for creating a signal to be read in a system for determining turbine blade vibration.

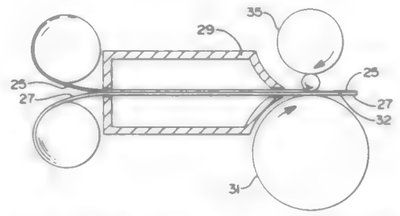
5,365,664

METHOD OF MAKING ALUMINUM ALLOY BEARING

Warren J. Whitney, Jr., Ypsilanti, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jun. 22, 1993, Ser. No. 81,780
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—898.12 **5 Claims**

1. A method of forming a bearing comprising an aluminum alloy lining bonded directly to a steel backing, comprising:
quench casting the aluminum alloy lining by feeding molten alloy into an interface formed between two internally-cooled rotating metallic rolls so that the alloy is rapidly cooled from a molten state to a solid state in less than one second; said internally-cooled rolls having smooth facing surfaces spaced a slight distance apart so that the aluminum alloy emerges from the rolls as a continuous solid strip having a thickness dimension that corresponds to the spacing between the roll surfaces;
providing a steel strip for forming said steel backing and mating said steel strip with said aluminum alloy strip; and
passing the mating strips through a roll assembly wherein the opposed roll surfaces are spaced closer together than the combined thickness of the two strips, such that the aluminum alloy strip is compressed so as to be bonded directly to the steel strip, and wherein the roll in contact with the aluminum alloy strip has a diameter substantially



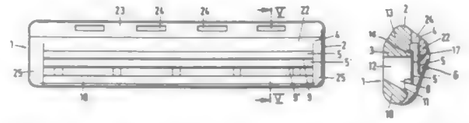
smaller than the diameter of the other roll so that, during the rolling operation, the thickness of the aluminum alloy strip is significantly reduced while the thickness of the steel strip remains essentially unchanged.

5,365,665

RAZOR HEAD WITH FLOW PASSAGES

Dave Coffin, Norfolk, Great Britain, assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 5, 1993, Ser. No. 27,084
Claims priority, application United Kingdom, Mar. 6, 1992, 9204855.2
Int. Cl.[5] B26B *21/00, 21/14, 21/16*
U.S. Cl. 30—50 **11 Claims**



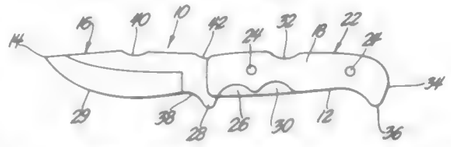
1. A razor head for a wet razor, said razor head having at least one razor blade with a cutting edge and comprising:
a plastic housing having a front guardbar, a rear wall, and a blade platform for supporting said at least one razor blade; and
at least two individual spacers, said individual spacers being affixed to said at least one razor blade and being spaced apart to form openings between them, with perforations being provided in at least one of said rear wall and said blade platform, with said perforations being aligned with said openings between said individual spacers.

5,365,666

ERGONOMIC KNIFE STRUCTURE

René G. Gonzalez, 28294 Pierce St., Southfield, Mich. 48076

Filed Feb. 7, 1994, Ser. No. 192,897
Int. Cl.[5] B26B *3/00, 9/00*
U.S. Cl. 30—340 **3 Claims**



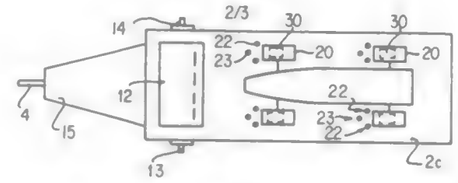
1. An improved ergonomic knife configuration the knife comprising: a blade with a sharpened edge, the blade having an integral tang extending away from the sharpened edge, the blade having a quillion projecting from the blade near the midportion of the blade between the tang and the edge, a choil is located juxtaposed the quillion, between the quillion and the sharpened edge, the blade has an unsharpened notch formed on the upper, back surface of the blade the unsharpened notch being located forward of the handle so as to be a comfortable position for a users thumb when the users index finger is in the choil, a thrust ramp is located approximately above the quillion at the beginning of the tang; and a handle firmly attached to the tang the handle including two shaped pieces one piece being mounted on each side of the tang, to form a shaped handle suitable for gripping, the handle formed by the two pieces has a first recess located on the lower handle juxtaposed the quillion, a second recess is formed on the handle adjacent the first recess, a depression is formed on the top surface of the handle, the handle having a contoured pommel at its free end and a hook on the lower portion of the pommel to prevent slippage.

5,365,668

DEVICE FOR MONITORING THE WEAR ON A TIRE AND THE GEOMETRY OF A VEHICLE'S ROAD WHEELS

Gines Canovas, Amberieux-d'Azergues; Marc Debilly, Fourcon, F-69620 Saint-Laurent-d'Oingt, and Christian Boireau, Saint-Didier-au-Mont-d'Or, all of France, assignors to Robert Galvin, Villeurbanne; Marc Debilly, Saint Laurent d'Oingt and Gerard Raffault, Lucenay, all of France

PCT No. PCT/FR91/00221, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/14919, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 19, 1991, Ser. No. 934,490
Claims priority, application France, Mar. 19, 1990, 90 03696; Jun. 25, 1990, 90 08198
Int. Cl.[5] G01B *7/26*
U.S. Cl. 33—203.11 **9 Claims**



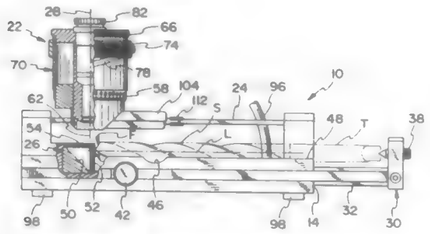
1. A device for monitoring the wear of a tire and the geometry of a wheel set of a vehicle, the wheel set comprising a plurality of tires, the device comprising:
a portable housing having a display;
a depth gauge provided in said portable housing and comprising a probe, said probe measuring groove depth in the tread, a first groove being located on one side of the tread and a second groove being on a laterally opposite side of the tread; and
a control system comprising:
first converter means for converting probe depth measurements into groove depth signals;
memory means for storing the groove depth signals;
activator means for displaying a modified form of at least one groove depth signal on said display;
a first reference value stored in the memory and representing a measurement of the groove depth of a groove having zero wear;
second converter means for converting the groove depth signals into wear rate signals by comparing the groove depth signals with the first reference value, at least one wear rate signal being displayed on the display and stored in the memory;
first comparator means for comparing at least a first groove depth signal representative of a depth of the first groove with a second groove depth signal representative of a depth of the second groove to determine a wear differential across the tire, the wear differential being displayed on the display and stored in the memory;
wear differential comparator means for comparing the wear differential with a maximum permissible differential value stored in the memory means;
means for storing a result of the differential comparison in the memory means;
means for determining a geometrical state of the tire from the stored result; and
means for sending a signal representative of the geometrical state of the tire to the display.

5,365,667

TOOL INSPECTION APPARATUS HAVING MOVABLE MICROSCOPE FOR VIEWING DIFFERENT PORTIONS OF A TOOL

David L. Golding, R.R. 3-11 137 St. Rte. 15, Montpelier, Ohio 43543

Filed Dec. 7, 1993, Ser. No. 162,829
Int. Cl.[5] G01B *11/26*
U.S. Cl. 33—201 **15 Claims**



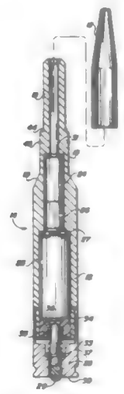
1. A tool inspection apparatus, comprising:
a) a bed configured for supporting a tool to be inspected;
b) a magnifying device associated with said bed, said magnifying device being configured for focusing on a plurality of portions of said tool supported by said bed;
c) a reflecting member associated with said bed, said reflecting member being configured for reflecting an image of at least a first portion of said tool supported by said bed towards said magnifying device; and
d) said magnifying device being movable from a reflected image-receiving position to a direct image-receiving position, said reflected image-receiving position being a position in which said magnifying device receives a reflected image of said first portion of said tool reflected by said reflecting member, and said direct image-receiving position being a position in which an image of at least a second portion of said tool supported by said bed is received directly by said magnifying device.

5,365,669

LASER BORESIGHT FOR THE SIGHTING IN OF A GUN

Joseph M. Rustick, 3043 E. Cypress, Phoenix, Ariz. 85008, and Charles A. Finn, 2955 Cottingham, Oceanside, Calif. 92054

Filed Dec. 23, 1992, Ser. No. 996,088
Int. Cl.[5] F41G *1/54;* G01B *11/27*
U.S. Cl. 33—234 7 Claims



1. A boresight for determining the accuracy of a sighting device affixed to a gun, said gun including a barrel, a cartridge chamber and a bolt having a bolt face with a firing pin positioned thereon, said boresight comprising:

a) a housing having first and second sections with a longitudinal axis extending therebetween, said housing including a tapered region intermediate said first and second end sections, said tapered region being dimensioned to conformabl(e)y contact the cartridge chamber and limit axial movement therein;

b) an end cap removably affixed to the second end section, said end cap having a centrally-located opening therein;

c) stabilizing means mounted on the first end section, said stabilizing means contacting the barrel when said boresight is inserted therein;

d) a collimated light source mounted in said housing proximate to the first end section thereof, the energization of said light source transmitting collimated light through the barrel;

e) a power source contained within said housing and electrically coupled to said light source; and

f) switch means electrically coupled to said power source and located in the second end section of said housing, said second end section and extending outwardly from said opening in the affixed end cap for contact with the firing pin(.) said contact member having an indentation therein to receive said firing pin.

5,365,670

HUNTING SCOPE ENHANCED MAGNIFICATION LENS ACCESSORY

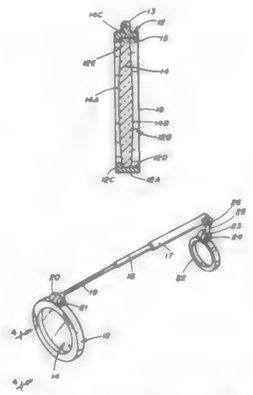
Vernon W. Klimochko, General Delivery, Binscarth, Manitoba, Canada R0J 0G0

Continuation of Ser. No. 84,921, Jul. 1, 1993. This application Feb. 25, 1994, Ser. No. 202,663
Int. Cl.[5] F41G *1/38*
U.S. Cl. 33—245 18 Claims

1. A magnification lens accessory for enhancing magnification of a hunting scope including an elongated tubular housing having a front end and optical means contained in the tubular housing for producing a first predetermined magnification of an object viewed through the optical means, said accessory accessory comprising:

(a) a magnifying lens adapted to produce a second predetermined magnification of an object viewed through said magnifying lens; and

(b) an annular mounting member having a central opening receiving said magnifying lens and an annular skirt extending away from said magnifying lens so as to adapt said annular mounting member to removably fit and mount



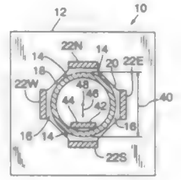
over the front end of the tubular housing of the hunting scope such that said second predetermined magnification of said magnifying lens will combine with the first predetermined magnification of the optical means of the hunting scope to thereby increase and enhance the overall magnification of an object viewed through the hunting scope.

5,365,671

INCLINOMETER

Stuart I. Yaniger, Ventura, Calif., assignor to Interlink Electronics, Inc., Camarillo, Calif.

Filed Aug. 5, 1993, Ser. No. 102,568
Int. Cl.[5] G01C *9/06*
U.S. Cl. 33—366 10 Claims



1. An apparatus for sensing tilt, comprising:

a housing having walls that define a cavity;

a generally spherical reference element rotatably positioned within the cavity;

a single magnet positioned within the spherical reference element imparting an asymmetrical weight distribution and a predetermined magnetic field orientation thereto;

a fluid supporting the reference element within the cavity;

a first pair of Hall effect sensors positioned within the housing on opposite sides of the reference element for generating a first pair of electrical signals in response to the orientation of the magnetic field relative to a first axis of the housing;

a second pair of Hall effect sensors positioned within the housing on opposite sides of the reference element for generating a second pair of electrical signals in response to the orientation of the magnetic field relative to a second axis of the housing; and

first and second balanced differential amplifiers electrically connected to the respective first and second pairs of electrical signals to produce first and second inclination angle signals related to a tilt of the respective first and second axes of the housing relative to the orientation of the magnetic field.

6. A method for sensing tilt, comprising:

positioning a single magnet within a spherical reference element to impart an asymmetrical weight distribution and a predetermined magnetic field orientation thereto;

providing a housing with a cavity therein;

placing the reference element within the cavity;

filling the cavity with a fluid to support the reference element such that it freely rotates within the cavity;

positioning a first pair of Hall effect sensors within the housing on opposite sides of the reference element for generating a first pair of electrical signals in response to the orientation of the magnetic field relative to a first axis of the housing;

positioning a second pair of Hall effect sensors within the housing on opposite sides of the reference element for generating a second pair of electrical signals in response to the orientation of the magnetic field relative to a second axis of the housing; and

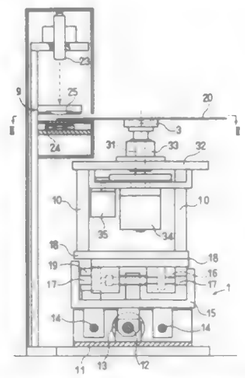
generating first and second inclination angle signals related to a tilt of the respective first and second axes of the housing relative to the orientation of the magnetic field by differentially amplifying the respective first and second pairs of electrical signals.

5,365,672

POSITIONING APPARATUS FOR A SEMICONDUCTOR WAFER

Katsuhiko Kato, Ichinomiya, Japan, assignor to MECS Corporation, Aichi, Japan

Filed Oct. 19, 1993, Ser. No. 137,768
Claims priority, application Japan, Jan. 26, 1993, 5-010557
Int. Cl.[5] B65G *47/24;* G01B *9/00*
U.S. Cl. 33—520 8 Claims



1. A positioning apparatus for a semiconductor wafer having a notched portion, said apparatus comprising:

a mounting bed;

an X.Y axis drive mechanism for moving said mounting bed on a horizontal plane;

a rotary part mounted on said mounting bed for horizontally supporting the wafer, and for positioning and rotating the wafer around a vertical axis;

a rotation drive mechanism for rotating and driving said rotary part;

an edge portion distance measuring means for optically measuring a distance from a center position of the rotary part to an edge portion of the wafer at intervals of a predetermined angle;

a distance and angle calculating means for calculating a distance between the center position of the wafer and a rotational center of said rotary part, and for calculating an angle of a line connecting the center position of the wafer and the rotational center of said rotary part, said distance and angle calculating means calculating the distance and angle based on the distance from the center position of said rotary part to the edge portion of the wafer measured by said edge portion distance measuring means and relative to a reference line of said apparatus;

a notched portion angle calculating means for calculating radius data from a center position of the wafer to the edge portion of the wafer at the intervals of the predetermined angle, and for calculating a deflection angle of the notched portion of the wafer with respect to the reference line based on the radius data having minimum values; and

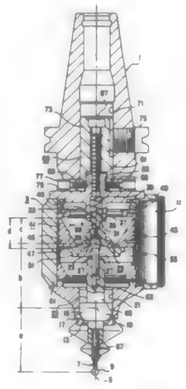
a deflection amount calculating means for calculating X.Y deflection of the center position produced by moving the center position of the wafer when the wafer is rotated based on the deflection angle by rotating said rotary part with said rotation drive mechanism, said deflection amount calculating means calculating the X.Y deflection based on data of the angle and distance calculated by said distance and angle calculating means.

5,365,673

MULTI-COORDINATE SENSING GAUGE

Franz Haimer, Weiherstrasse 21, W-8894 Igenhausen, and Josef Gail, Aichach-Unterwittelsbach, both of Germany, assignors to Franz Haimer, Igenhausen, Germany

PCT No. PCT/EP92/00024, § 371 Date Oct. 21, 1993, § 102(e) Date Oct. 21, 1993, PCT Pub. No. WO92/12397, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 7, 1992, Ser. No. 84,236
Claims priority, application Germany, Jan. 8, 1991, 4100323
Int. Cl.[5] G01B *5/03*
U.S. Cl. 33—559 12 Claims



1. A multi-coordinate sensing gauge comprising:

a housing (3),

a sensing arm (7), elastically prestressed into a rest position, and displaceable in the direction of a main coordinate axis (5) relative to the housing (3), the sensing arm (7) by means of a first universal joint (13) being guided on the housing (3) omnidirectionally pivotable about a first pivot point (19) located on the main coordinate axis (5), a sensing tip (9) of said sensing arm (7) being located on the main coordinate axis (5) when in the rest position,

a coupling (41) displaceably guided inside the housing (3) in the direction of the main coordinate axis (5),

a linkage arm (23) which in relation to the first pivot point (19) extends opposite and away from the sensing arm (7) and of which the end far from the first pivot point is

hinging in such manner on the coupling (41) that the linkage arm (23) drives the coupling (41) both when the sensing arm (7) is displaced in the direction of the main coordinate axis (5) and when the sensing arm (7) is displaced from its rest position about the first pivot point (19), in the direction of the main coordinate axis (5) and

a measuring device (11) detecting the position of the coupling (41) relative to the housing (3), characterized in that the end of the linkage arm (23) which is far from the first pivot point (19) is omnidirectionally pivotably connected by a second universal joint (25) in order to pivot about a second pivot point (27) to a drive element (29) which in turn is guided in omnidirectionally pivotable manner on the housing (3) by a third universal joint (31) about a third pivot point (33) displaceable along the main coordinate axis (5), in that the drive element (29) comprises an annular shoulder (51) enclosing the main coordinate axis (5) and pointing away from the first pivot point (19), said shoulder (51) resting against an oppositely directed annular shoulder (45) of the coupling and also enclosing the main coordinate axis (5), and in that spring means (49) are provided to compress the mutually facing annular shoulders (45,51) against each other.

5,365,674

DEVICE FOR MEASURING THE DISPLACEMENT OF A SWIVEL OF A DRILLING MAST

Didier Etchegoyhen, Agnos, and Henry Henneuse, Billere, both of France, assignors to Elf Aquitaine Production, France

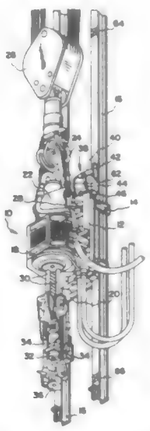
PCT No. PCT/FR92/00179, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/15772, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 27, 1992, Ser. No. 940,946

Claims priority, application France, Mar. 1, 1991, 91 02453

Int. Cl.[5] E21B *47/04*

U.S. Cl. 33—719 **4 Claims**



1. A device for measuring the displacement of one end of a drill pipe string comprising a fastening assembly for supporting the end of said drill-pipe string, said fastening assembly being movable along at least one guide rail, a motorized swivel mounted on said fastening assembly and being movable therewith along said guide rail, a sensor assembly mounted on said fastening assembly and comprising a roller fitted so as to roll on said guide rail during displacement of said fastening assembly and means for measuring the distance transversed by the roller, said guide rail including means for calibrating the sensor assembly including two fixed reference points for sensing the presence of said roller, said reference points being in spaced apart relation on said guide rail, whereby the distance measured by the sensor assembly between said reference points can be compared to the actual, fixed distance therebetween to calibrate the sensor assembly.

5,365,675

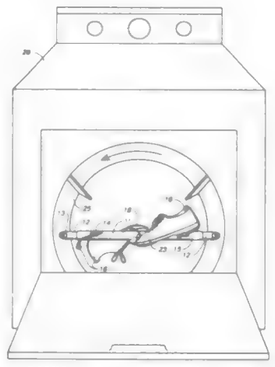
EXPANDABLE STRUT FOR HOLDING TENNIS SHOES IN A DRYER

Lyle F. Shabram, Jr., Salinas, Calif., assignor to Paul Anthony Palumbo, Monterey, Calif.

Filed Apr. 11, 1994, Ser. No. 226,269

Int. Cl.[5] F26B *11/02*

U.S. Cl. 34—109 **18 Claims**



1. An insertable and removable drying apparatus for enabling a plurality of tennis shoes to rotate in a secure and exposed fashion while diametrically braced between opposing sides of a rotary dryer drum, comprising:

a fixed main tube having an axis, and a plurality of through holes extending normal to said axis;

a plurality of pivoting heel support crossbars positioned in said respective through holes of said main tube;

a shoe toe support strut traversing said fixed main tube;

at least two movable tubes, each of which has a plurality of guide slots, each of which is sized so that it can be inserted into said fixed, main tube;

at least two retaining pegs and laterally extending stabilizer posts mounted onto said movable tubes at opposite ends thereof;

an urging means positioned between said pivoting heel support crossbars and said retaining pegs, said urging means arranged to urge said movable tubes to their most outwardly extended position;

a plurality of resilient pads mounted onto said respective laterally extending retaining pegs and stabilizer posts;

a means for attaching a plurality of tennis shoes to said pivoting heel support crossbars and said toe support strut; and

a plurality of bored tubular pins connected to said pivoting heel support crossbars.

5,365,676

TWO-STAGE SLUDGE DRYING APPARATUS AND METHOD

Daniel J. Bein, Waukesha, Wis., assignor to Oven Systems, Inc., Milwaukee, Wis.

Filed Aug. 2, 1993, Ser. No. 101,594

Int. Cl.[5] F26B *19/00*

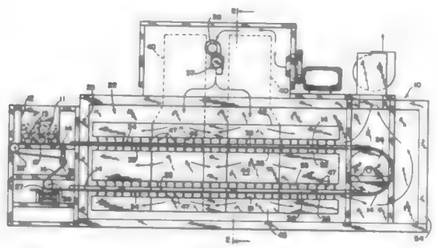
U.S. Cl. 34—424 **12 Claims**

1. An apparatus for drying moist sludge, which sludge has a high initial water content, said apparatus comprising:

a continuous conveyor belt having an open cellular construction defined by open ended pockets;

means for supplying moist sludge to the conveyor belt and for pressing the sludge into said pockets to fill the belt with sludge;

a drying chamber including means for supporting the conveyor belt for movement therein along an initial drying run and an inverted return drying run, said supporting means for each of said runs comprising a planar heat



conducting surface positioned to support the underside of the conveyor belt along the respective runs; and, means for directing heated air against the heat conducting supporting surface and directly against the opposite unsupported surface of the sludge-filled belt on each of said runs.

5,365,677

FOOTWEAR FOR FACILITATING THE REMOVAL AND DISSIPATION OF PERSPIRATION FROM THE FOOT OF A WEARER

Raymond E. Dalhgren, P.O. Box 614, Arcadia, Calif. 91066

Filed Jun. 30, 1992, Ser. No. 906,702

Int. Cl.[5] A43B *7/06, 23/26, 23/00*

U.S. Cl. 36—3 A **46 Claims**



1. A shoe for providing added comfort to the wearer by facilitating the removal and dissipation of perspiration from the foot of the wearer, said shoe comprising a tongue assembly adapted to overlie the instep and toe portion of the wearer's foot, a heel portion, a sole and an instep, the improvement comprising:

a tongue assembly having an outer layer, an intermediate layer, and an inner layer;

said outer layer being constructed of a hydrophilic fabric;

said intermediate layer being constructed of a hydrophilic fabric with a medial portion constructed of a hydrophobic fabric, said intermediate layer being positioned beneath said over!ying outer layer and in contacting engagement therewith;

said inner layer being constructed of a hydrophilic fabric, being positioned beneath said intermediate layer and being in contacting engagement therewith; and,

said inner layer adapted to overlie and be in contacting engagement with the instep and toe portion of the wearer's foot so that perspiration from the foot of the wearer is absorbed by said inner layer and wicked therefrom by said contacting engagement with the intermediate layer medial portion and thereby transferred to said overlying cuter layer of said tongue assembly of said shoe for evaporation therefrom to the atmosphere.

5,365,678

MID-SOLE OR SOLE OF SHOES

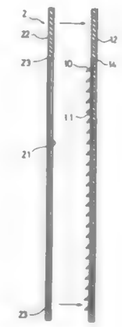
Osamu Shibata, Tokyo, Japan, assignor to Kabushiki Kaisha HIMIKO, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 52,493

Claims priority, application Japan, May 7, 1992, 4-141105; Apr. 2, 1993, 5-098316

Int. Cl.[5] A43B *13/18, 13/20, 13/38*

U.S. Cl. 36—29 **7 Claims**



1. A sole for shoes comprising:

a bottom member having a member recess and a member marginal portion extending about said member recess, said member recess having a bottom recess surface, said bottom member being an elongate member having a longitudinal axis;

a plurality of blades in said member recess extending slantingly upwardly from said bottom recess surface, said blades being elongated blades having elongate axes generally perpendicular to said longitudinal axis;

a cover disposed over said bottom member, said cover having a cover recess and a cover marginal portion disposed about said cover recess, said cover recess and said cover marginal portion each having a configuration corresponding to the configuration of said member recess and said member marginal portion, respectively, said cover recess and said cover marginal portion overlying said member recess and said member marginal portion, respectively;

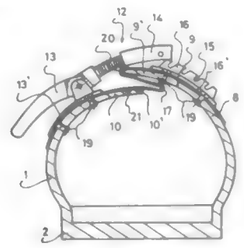
said cover recess having a top recess surface, said cover marginal portion having a lower surface, said cover recess having a sloping surface which extends between said top recess surface and the lower surface of said cover marginal portion, said sloping surface sloping downwardly with increasing thickness from said top recess surface to said lower surface of said cover marginal portion.

5,365,679

SKI BOOT INCORPORATING WATERTIGHT CLOSURE

Jean-Pierre Chemello, Annecy-Le-Vieux, France, assignor to Salomon S.A., Chavanod, France

Filed Jun. 4, 1993, Ser. No. 71,500
Claims priority, application France, Jun. 4, 1992, 92 07011
Int. Cl.[5] A43B *5/04*
U.S. Cl. 36—117 8 Claims



1. Ski boot in which at least one opening/closing area (7) designed to allow insertion of a foot when the boot is put on/taken off comprises interior and exterior flaps (9, 10) which join by overlapping and in which a movement by which said flaps are drawn together over one another is controlled by at least one tightening device (12) which connects said flaps when said boot is in a closed position, wherein a flexible watertight covering element (8, 28) is mounted on the outside of the boot and encloses said two flaps (9, 10) by sealing a gap (18) remaining between them in said closed position, said covering element (8, 28) forming a fold (17) extending inside said boot in said gap (18) formed by the overlapping of said flaps (9, 10) which gives said covering element a zigzag profile.

5,365,680

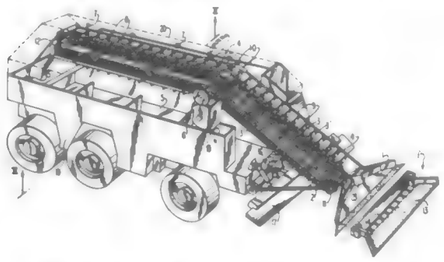
Patent Not Issued For This Number

5,365,681

VEHICLE FOR REMOVING SNOW ACCUMULATED ON ROADS

Frederick Miranda, Ameghino 1049, Avellaneda, (1870) Buenos Aires, Argentina

Continuation of Ser. No. 710,513, Jun. 3, 1991, abandoned. This application Jan. 6, 1993, Ser. No. 907
Claims priority, application Argentina, Mar. 18, 1991, 319.241
Int. Cl.[5] E01H *5/10*
U.S. Cl. 37—227 1 Claim



1. A self-propelled motor vehicle for removing snow accumulated on roads, comprising:

a chassis mounted upon wheels and having a front and rear end; said front end of said chassis having a height adjustable collecting shovel for feeding snow collected therein onto a longitudinally extending, permeable, worm chain conveyor belt;

said conveyor belt having an upwardly slanting front end snow input portion extending from said shovel to a second horizontal rear end portion which extends above a load box on said chassis;

a plurality of heating means distributed at both sides adjacent to said horizontal rear end portion of said conveyor belt for heating and melting the snow thereon into water; the water being discharged from said horizontal rear end portion to said load box below;

a first pair of parallel water conduits extending along the horizontal rear end portion of said conveyor belt and adjacent said plurality of heating means;

a second pair of parallel water conduits in fluid communication with said first pair of parallel water conduits extending along the upwardly slanting front end snow input portion of said conveyor belt;

a pump located at said rear end of said chassis and in communication with said first pair of parallel water conduits for transferring water from said load box in a direction forwardly from said pump through said first pair of parallel water conduits to said second pair of parallel water conduits; each said conduit of said second pair having a discharge end at said shovel to discharge water onto the shovel;

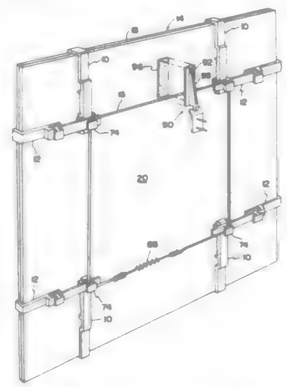
wherein said plurality of heating means heat the water in said first pair of parallel water conduits to a preselected temperature for discharge upon said shovel by said discharge ends of said second pair of parallel water conduits; the discharged water preheating the snow within said shovel before the snow is transferred to said upwardly slanting front end snow input portion of said conveyor belt.

5,365,682

PICTURE FRAME AND PICTURE HANGER

Joseph P. Eubank, Jr. deceased, late of Inverness, Calif. by Mary M. Eubank, executrix , assignor to Eubank Frame, Inc., Salisbury, Md.

Filed Nov. 6, 1990, Ser. No. 609,614
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152.1 8 Claims



1. A picture frame for holding a picture assembly having a front, a back and lateral edges defining a plurality of corners, said picture frame comprising:

bracket means mountable in pairs on each corner of the picture assembly for holding the picture assembly;

means carried on said bracket means for contacting the back of the picture assembly;

resilient body means angularly joined to said contacting means for engaging the back of the picture assembly at locations inwardly spaced from the lateral edges;

substantially flat body means joined to said resilient body means for carrying said contacting means;

turned end means angularly joined to said resilient body means for engaging the front of the picture assembly, said end means including web means angularly joined to said resilient body means for engaging a lateral edge of the picture assembly and flange means joined to said web means at an acute angle of approximately eighty degrees to extend toward said resilient body means, said flange means terminating at contact ends for engaging the front of the picture assembly, said resilient body means being angled relative to said contacting means to extend toward said end means in a direction away from said contact ends;

cooperating engaging means on said bracket means for securing said bracket means in pairs in crossed relation at each corner of the picture assembly to position said web means to engage a lateral edge of the picture assembly and to position said resilient body means to extend along the back of the picture assembly perpendicular to the engaged edge, said cooperating engaging means including at least a first pair of spaced post means on said flat body means of one of the bracket means of each pair and a second pair of spaced post means on said flat body means of said one bracket means spaced from said first pair of post means, said first and second pairs of post means extending perpendicularly from said flat body means toward said contacting means on said one bracket means, and at least a first foot means on said flat body means of the other of said bracket means of each pair and a second foot means on said flat body means of said other bracket means spaced from said first foot means, said first and second foot means extending toward said contacting means on said other bracket means for being frictionally retained alternatively between said first and second pairs of spaced post means, said first pair of post means defining first channel means in said flat body means and said second pair of post means defining second channel means in said flat body means spaced from said first channel means for alternatively frictionally retaining said first and second foot means;

a recess in said flat body means separating said first and second channel means;

indicia means carried on said flat body means of said one bracket means for visually distinguishing said first and second channel means from said recess; and

means for interconnecting all of said pairs of said bracket means to urge said pairs of bracket means toward a central location on the back of the picture assembly, whereby said resilient body means are forced in a forward direction against the back of the picture assembly at locations spaced from the lateral edges, said flange means are forced in a rearward direction against the front of the picture assembly to engage the front of the picture assembly with said contact ends at locations inwardly spaced from the lateral edges, and said web means are forced against the lateral edges in an inward direction toward the central location.

5,365,683

SPORTS CARD DISPLAY STAND

Javier Borja, Denver, Colo., assignor to Gary A. Dahyl and Jeffrey H. Anderson, both of Denver, Colo.

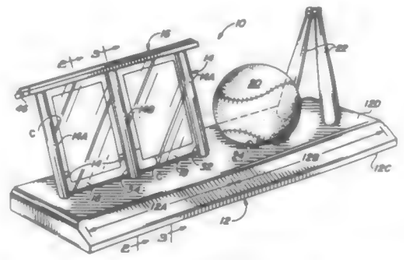
Filed Jun. 26, 1992, Ser. No. 905,272
Int. Cl.[5] A47G *1/00*
U.S. Cl. 40—152.1 8 Claims

1. A display stand for use in supporting and displaying a flat article holder, said display stand comprising:

(a) a base for supporting said display stand on a support surface;

(b) a plurality of elongated support posts mounted upright and laterally-spaced apart on said base, said plurality of support posts including a pair of side support posts having respective longitudinal grooves extending between upper and lower ends thereof and facing toward one another, said plurality of support posts also including a middle support post being disposed between and spaced from said side support posts and having a pair of longitudinal grooves extending between upper and lower ends of said middle support post and facing in opposite directions away from one another and toward said longitudinal grooves in said side support posts, said longitudinal grooves of said side and middle support posts extending substantially parallel to one another for slidably receiving flat article holders between said posts with opposite longitudinal edges of the holders extending within said grooves; and

(c) an elongated top cap member having at least a plurality of spaced cavities and a longitudinal channel extending between and intersecting with said cavities, said cavities and longitudinal channel being recessed in an underside of



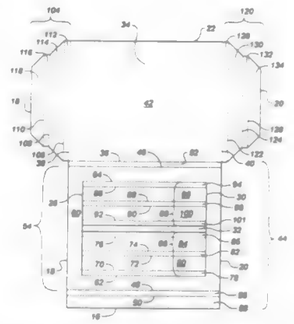
said top cap member for releasably receiving in an mated relationship said upper ends of said side and middle support posts and upper edges of the article holders in order to removably mount said top cap member onto said upper ends of said support posts such that said top cap member, base and support posts together form a frame which completely encloses peripheral edges of the holders while removal of said top cap member permits withdrawal and replacement of the holders past said upper ends of said side and middle support posts from and to said grooves of said support posts.

5,365,684

METHOD OF CONSTRUCTING AN ORIGAMI-STYLE OF FOLDABLE PICTURE FRAME FROM A UNITARY BLANK OF SHEET MATERIAL

Brian Cartmell, 10338-137 Street, Edmonton, Alberta, Canada T5N 2H2

Filed Aug. 26, 1993, Ser. No. 112,134
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—155 8 Claims



5. An origami-style of foldable picture frame constructed from a unitary blank, comprising:

a. a unitary blank of sheet material having a substantially rectangular head portion, a substantially rectangular depending neck portion, a first edge, a second edge, a third edge, a fourth edge, and an abbreviated fifth edge, the first edge defining an extremity of the neck portion, the fourth

edge defining an extremity of the head portion, the fifth edge being that portion of the head portion which extends beyond the neck portion;

b. a first cut line spaced from the second edge on the neck portion of the unitary blank defining a desired width for a picture viewing window, a second cut line spaced from the third edge of the neck portion in parallel spaced relation to the first cut line, the second cut line being the same length as the first cut line-and the spacing between the first cut line and the second cut line defining a desired length for the picture viewing window, and a third cut line extending transversely between the first cut line and the second cut line in an intermediate position, the width dimension of the second edge and the third edge are less than the length of the first cut line and the second cut line such that the second edge and the third edge of the head portion are adapted for insertion into the picture viewing window;

c. a substantially rectangular primary panel on the head portion defined by a first fold line spaced from the first edge, a second fold line spaced from the second edge, a third fold line spaced from the third edge and opposed to the second fold line, such that the fourth edge of the unitary blank is opposed to the first fold line and completes the primary panel, the primary panel having a top face;

d. a first foldable portion between the first fold line and the first edge consisting of three fold lines parallel to the first fold line dividing the first foldable portion into a first exterior thickness section, a substantially rectangular secondary panel substantially the same size as the primary panel and adapted to overlay the primary panel, a second exterior thickness section, and a retaining flap, the secondary panel having peripheral border sections defined by the cut lines for the picture viewing window and a first transverse fold line spaced from the first edge and extending between the first cut line and the second cut line, and a second transverse fold line extending between the first cut line and the second cut line opposed to the first transverse fold line;

e. interior foldable portions between the first transverse fold line and the third cut line and between the second transverse fold line and the third cut line, including at least two fold lines parallel to the transverse fold line dividing the interior portions into a thickness section and a retaining flap;

f. a second foldable portion between the second fold line and the second edge, including a series of three fold lines parallel to the second fold line dividing the second portion into an exterior thickness section, a border section, an interior thickness section, and retaining flap; and

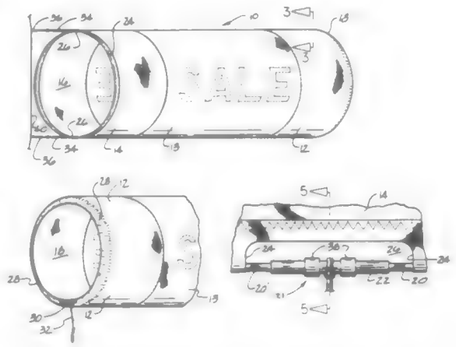
g. a third foldable portion between the third fold line and the third edge, including a series of three fold lines parallel to the third fold line dividing the third portion into an exterior thickness section, a border section, an interior thickness section, and retaining flap, the thickness sections of each of the foldable portions being of uniform dimension, the border sections of each of the foldable portions being of uniform dimension.

5,365,685
AERIAL ADVERTISING WIND TUBE
Lynn D. Shaak, 619 N. Park, Valley Center, Kans. 67147
Filed Apr. 9, 1993, Ser. No. 45,619
Int. Cl.[5] G09F *21/06, 21/12*
U.S. Cl. 40—212 **6 Claims**

1. An adjustable choke wind tube utilized for attachment to a substantially vertical line in a stationary position, comprising:

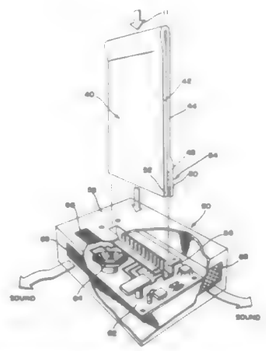
an elongated air inflatable tube constructed of fabric with a substantially constant diameter having an open entry end and an exit end; the entry end being formed with a first annular sleeve there around and a pair of lateral openings therein; the exit end being formed with a second annular sleeve there around;

a circular frame means positioned in the first annular sleeve for maintaining the entry end of the wind tube, the frame including at least one removable flexible rod with connecting means on the ends thereof;



a string means positioned in the second annular sleeve forming an adjustable loop for adjusting the choke in the exit end of the tube to accommodate different wind velocities and maintain constant pressure within the tube.

5,365,686
PICTURE HOLDER WITH A RECORDER/PLAYBACK INTEGRATED CIRCUIT
James G. Scott, P.O. Box 626, Lutz, Fla. 33549
Filed Dec. 29, 1992, Ser. No. 901,014
Int. Cl.[5] G09F *27/00*
U.S. Cl. 40—455 **9 Claims**



1. A display device and recorder/playback system combination, comprising:

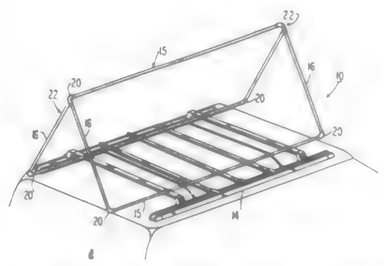
a plurality of display panels for displaying a photograph or some other display;

a recorder/playback system including electronic means to play a recorded message;

an integrated circuit memory chip embedded in each of said plurality of display panels to connect to said recorder/-playback system, where said integrated circuit memory chip stores recorded messages and is capable of receiving a recorded message in place of an original message; and

means for allowing said plurality of display panels to be disconnectable from said recorder/playback system.

5,365,687
MOTOR VEHICLE ROOF-TOP DISPLAY FRAME ASSEMBLY
William C. Sclater, Cos Cob, Conn., assignor to United States Tobacco Company, Greenwich, Conn.
Continuation-in-part of Ser. No. 556,190, Jul. 20, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 856,116
Int. Cl.[5] G09F *15/00*
U.S. Cl. 40—610 **16 Claims**



1. A collapsible frame assembly suitable for exhibition of flexible display means, which comprises:

frame means for holding said flexible display means, including a front perimeter comprising at least three support rods configured in a shape suitable for supporting said flexible display means, and a rear perimeter comprising at least three support rods configured in a shape suitable for supporting said front perimeter in an exhibition position, wherein the front perimeter and the rear perimeter are slidably interconnected such that the frame assembly can be collapsed from said exhibition position to a folded position and wherein an end of the rear perimeter slides along a side of the front perimeter when the frame means is collapsed from the exhibition position to the folded position;

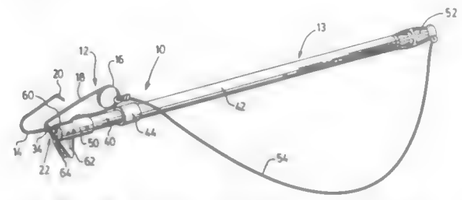
coupling means for connecting the support rods of the front perimeter together and the support rods of the rear perimeter together;

flexible display means mounted within the front perimeter of the frame means;

a plurality of fastening means for attaching the flexible display means to the front perimeter of the frame means; and

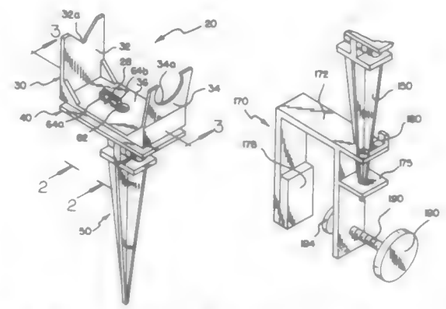
joint means for interconnecting the support rods of the front perimeter to the support rods of the rear perimeter.

5,365,688
FISH GAFF APPARATUS
Bernard Yong-Set, 273 Port Union Rd., Scarborough, Ontario, Canada M1C 2L3
Filed Jul. 6, 1993, Ser. No. 86,107
Int. Cl.[5] A01K *97/14*
U.S. Cl. 43—5 **6 Claims**



1. A fish gaff apparatus comprising a hook member and a pole member for supporting the hook member in use, the hook member having a hook portion and having a cover portion biased relative to the hook portion such that in a first configuration of the hook member one part of the cover portion covers a hook end of the hook portion, the pole member including a support member on its one end, the hook member being adapted to be supported on the support member by the bias between the hook portion and the cover portion in a second configuration of the hook member, the hook end of the hook portion being exposed for use when the hook member is in such second configuration, movement of the pole member relative to the hook member after insertion of the hook member in a fish resulting in separation of the hook member from the pole member and in the hook member changing from the second configuration to the first configuration, the fish being held between the hook portion and the cover portion of the hook member in the first configuration, wherein the hook portion and the cover portion are formed from an integral single length of wire, and wherein the bias between the hook portion and the cover portion is created by a looped section of such wire between those portions.

5,365,689
FISHING ROD HOLDER
Donald E. Holliman, P.O. Box 1865, Riverdale, Ark. 72377
Filed Dec. 29, 1993, Ser. No. 175,235
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **4 Claims**



1. A fishing rod holder for supporting a fishing rod, the fishing rod holder comprising:

a rod engaging section including a substantially planar base piece with a first upright extending substantially upwardly from said base piece, said first upright having a V-shaped cutout for receiving and supporting a portion of a fishing rod within said V-shaped cutout, said rod engaging section further comprising a second upright projecting upwardly from said base piece, said second upright having an O-shaped cutout for receiving and supporting a handle of said fishing rod in said O-shaped cutout;

a substantially planar base section pivotally mounted to said base piece of said rod engaging section, said base section having a centrally located hole extending therethrough and a plurality of through-extending holes arranged in an annular array positioned concentrically about said centrally located hole, said base section further having a top side and a bottom side with first and second drop-out pieces projecting from said bottom side thereof, said drop-out pieces being positioned in a spaced relationship;

and a stake section for insertion into a ground surface, said stake section having an upwardly projecting drop-up piece extending between said drop-out pieces;

a threaded tilt lock piece projecting through both said first and second drop out pieces and said drop-up piece of said stake section, said threaded tilt lock piece being operable to selectively permit and preclude pivoting of said base section relative to said stake section;

and,

means for selectively permitting and precluding pivoting of said rod engaging section relative to said base section, said

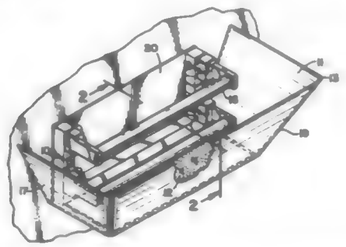
means comprising a spring loaded lock piece having a locking pin and a swivel release bar, said lock piece being slidably mounted through a hole in said base piece with said locking pin projecting therethrough to selectively engage one of said annular array of through-extending holes in said base section.

5,365,690

FLYING INSECT TRAP USING REFLECTED AND RADIATED LIGHT

Thomas D. Nelson, Maplewood, and Douglas G. Anderson, Lakeville, both of Minn., assignors to Ecolab, Inc., St. Paul, Minn.

Filed Jan. 4, 1993, Ser. No. 264
Int. Cl.[5] A01M *1/04*
U.S. Cl. 43—113 **24 Claims**



1. A flying insect trap that uses a display of insect attractant light reflected and radiated onto a vertical mounting surface, said trap comprising:
(a) a means for mounting a flying insect trap on a vertical mounting surface;
(b) a source of insect attractant light; and
(c) a housing enclosing the source, said housing comprising:
(i) an internal reflecting surface of the housing, positioned with respect to the horizontal such that light from the source of insect attractant light is directed onto the vertical mounting surface forming a diffused light pattern; and
(ii) an insect immobilization surface; wherein the housing comprises an upwardly facing opening for insect entry and the insect attractant light source is placed in the housing below an edge of the upwardly facing opening.

5,365,691

METHODS AND AGENTS FOR COMBATING COCKROACHES

Jürgen Scherkenbeck, Leverkusen; Günter Nentwig; Jürgen Lenz, both of Cologne; Jürgen Boeckh, Nittendorf; Gernot Wendler, Erftstadt; Martin Dambach, Burscheid, and Bernd-Wieland Krüger, Bergisch Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 108,100, Aug. 17, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 207,906
Claims priority, application Germany, Aug. 24, 1992, 4228002
Int. Cl.[5] A01M *1/10, 1/14;* **A01N** *25/00;* **C07C** *31/125*
U.S. Cl. 43—114 **10 Claims**

6. An agent for combating cockroaches, having a tacky surface to which cockroaches adhere and which in the tacky surface or adjacent thereto contains at least one compound of the formula



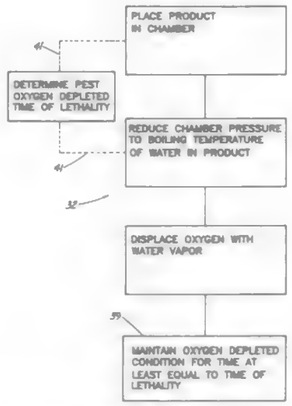
in which
R^1 represents C–C_5-alkyl or hydroxy-C_1–C_5-alkyl;
R^2 represents C_1–C_5-alkyl; and
m represents an integer from 10 to 20.

5,365,692

METHOD AND APPARATUS FOR EXTERMINATING PESTS

Keith W. Gustafson, Waleska, Ga., assignor to KGK Ecosystems, Inc., Marietta, Ga.

Filed May 7, 1993, Ser. No. 57,632
Int. Cl.[5] A01M *13/00, 1/24*
U.S. Cl. 43—124 **17 Claims**



1. In a method for killing animal pests infesting a product bearing water at a temperature and including placing the product in a chamber having at least some oxygen therewithin and reducing the pressure in the chamber below atmospheric pressure, the improvement comprising the steps of:
reducing the pressure in the chamber at least to that pressure at which the water boils at the temperature;
displacing oxygen in the chamber with water vapor until the chamber is substantially oxygen depleted;
and in any order with respect to the preceding steps, the step of:
determining a pest oxygen-depleted time of lethality;
and further including the step of:
maintaining the oxygen-depleted condition for a time at least equal to the time of lethality.

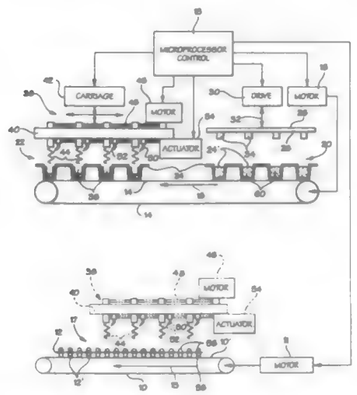
5,365,693

METHOD AND APPARATUS FOR TRANSPLANTING PLANTS FROM ONE CONTAINER TO ANOTHER

Teunis Van Wingerden, Huntersville, N.C., and Frank W. Van Dijk, Bergschenhoek, Netherlands, assignors to Metrolina Greenhouses, Inc., Huntersville, N.C.

Filed Sep. 10, 1992, Ser. No. 943,326
Int. Cl.[5] A01C *11/02*
U.S. Cl. 47—1.01 **8 Claims**

5. Apparatus for transplanting a plant from a first growing container, wherein the plant is rooted in a soil plug along a plug axis, to a second growing container, comprising:
(a) a spirally coiled shaft,
(b) means for selectively moving the shaft toward and away from the soil plug generally coaxially about the plug axis respectively for penetrating the soil plug and for removing the soil plug and the plant as a unit with the shaft from the first container,
(c) means for rotating the shaft in a first rotational direction to facilitate penetrating of the soil plug and in a second opposite rotational direction for withdrawal of the shaft from the soil plug,
(d) a movable holding implement associated with the shaft for selectively penetrating the soil plug during rotation in the second rotational direction to facilitate withdrawal of the shaft from the soil plug, and



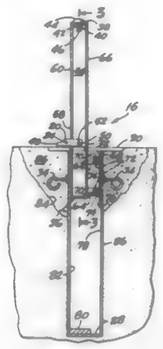
(e) means for supplying water to the plant through the holding implement.

5,365,694

VEHICLE ANTI-THEFT PARKING SPACE DEVICE

Ignazio Macaluso, 921 E. 98th St., Brooklyn, N.Y. 11236

Filed Apr. 27, 1993, Ser. No. 53,261
Int. Cl.[5] E01F *13/00*
U.S. Cl. 49—49 **19 Claims**



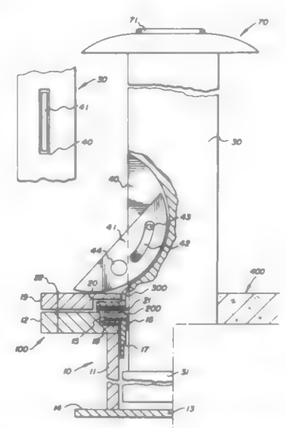
1. A vehicle anti-theft parking space device, comprising:
a hollow receptacle base for mounting underground in a vertical position extending downwardly from ground level;
a vertically slideable hollow post telescopingly received in said receptacle base so that said post can be lowered into said receptacle base to a telescoped retracted position and raised out of said receptacle base to a raised position above ground level;
said post including a vertically extending slot provided through a wall of a lower portion of said post, said slot being positioned within said receptacle base when said post is in said telescoped retracted position, and said slot being positioned out of said receptacle base adjacent to an upper portion of said receptacle base when said post is in said raised position;
hasp means for engaging said receptacle base to prevent said post from being telescopingly retracted into said receptacle base, said hasp means including a hasp pivotally mounted within said post, said hasp being an elongated bar-like member having .a first hole at one end thereof to receive a pin secured within said post so that said hasp can pivot around said pin, a tongue portion being provided on an opposite free end of said hasp, and a second hole being provided longitudinally between said first hole and said tongue portion;
said hasp being in an inclined position within said post when said post is in said telescoped retracted position, and said hasp being in a horizontal position extending outwardly from said post when said post is in said raised position;
said pin being transversely spaced from said slot so that said hasp freely pivots around said pin from said inclined position within said post, through said slot into said horizontal position to extend outwardly from said post;
said tongue portion and said second hole being disposed out of said post when said hasp is in said horizontal position; and
locking means for securing said hasp in said horizontal position so that said free end of said hasp engages said upper portion of said receptacle base to prevent said post from being lowered into said receptacle base, said locking means being removably engaged through said second hole in said hasp.

5,365,695

PARKING PLACE OBSTRUCTION

Toivo Kjellberg, Klockarvägen 91, S-151 62 Södertälje, Sweden

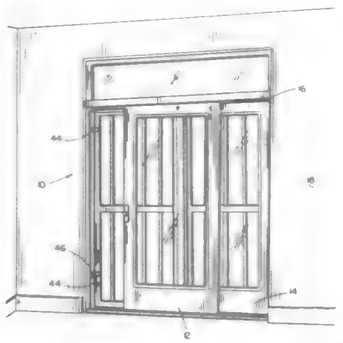
PCT No. PCT/SE92/00301, § 371 Date Nov. 9, 1993, § 102(e) Date Nov. 9, 1993, PCT Pub. No. WO92/20867, PCT Pub. Date Nov. 26, 1992
PCT Filed May 8, 1992, Ser. No. 146,019
Claims priority, application Sweden, May 14, 1991, 9101447
Int. Cl.[5] E01F *13/00;* **E06B** *11/00*
U.S. Cl. 49—49 **2 Claims**



1. A means at a parking lot having at its front end a barrier and, at its back end, a hindrance means (**10,30**) which is raisable from a retired position and which is lockable in a raised position, whereby the hindrance means (**10,30**) comprises a tubular part, which is recessedly mounted in the ground at the parking lot, and a post (**30**), which is telescopically mounted in said tubular part, which post is connected to a guide body (**31**) preventing the post (**30**) from being dragged out of a sleeve (**11**) by a second hindrance means (**16**), characterized in that the post (**30**) comprises a slot (**40**) wherein a catch (**41**) is pivotally mounted on the post between an inner position, wherein the catch lies within the cross section of the post, and an outer position in which the catch (**41**) projects outside said cross section and prevents the post from being pushed down from its raised, locked position, and in that an opening (**44**) is

arranged in the projecting part of the catch (41) in order to receive a padlock clamp.

5,365,696
SECURITY DOORS
Frank N. Ruiz, 2404 S. 18th St., Council Bluffs, Iowa 51501
Filed Mar. 31, 1994, Ser. No. 221,199
Int. Cl.[5] E05C *7/02*
U.S. Cl. 49—67 **2 Claims**



1. In a building having a wall with an opening therethrough, said wall having interior and exterior surfaces, and the opening having a fixed glass door and a slidable glass door therein selectively closing the opening, a security door structure, comprising:

a first metal frame affixed immediately adjacent said fixed glass door on the exterior of the wall within said opening and extending the same width and height as said fixed glass door, said first frame including horizontal top and bottom rails affixed to vertical spaced apart first and second side rails, the first side rail mounted adjacent one vertical side of the opening and the second side rail mounted generally centrally in said opening;

a plurality of rigid metal bars affixed between the rails of said first frame, and spaced apart a predetermined distance from each other to prevent passage of a human body therebetween;

a second metal frame operably mounted to said first frame second side rail for pivotal movement about a vertical axis;

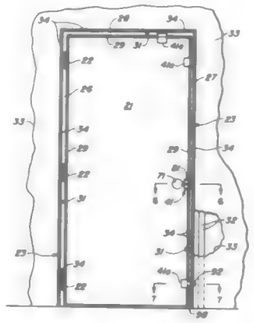
said second metal frame including top and bottom rails affixed to vertical spaced apart first and second side rails, said second metal frame having an exterior face and an interior face;

a plurality of rigid metal bars affixed between the rails of said second frame, and spaced apart a predetermined distance from each other to prevent passage of a human body therebetween;

means on said second frame for selectively locking the second frame in a closed position generally coplanar with the first metal frame;

said second metal frame pivotable between a closed position and an open position pivoted exteriorly out of the coplanar position.

5,365,697
DOOR FRAMING DEVICE FOR PRE-HUNG DOOR ASSEMBLIES AND METHOD
Ronald E. Vanderpan, 1430 Glenmoor Way, San Jose, Calif. 95129
Filed Jun. 2, 1992, Ser. No. 892,022
Int. Cl.[5] E06B *1/00*
U.S. Cl. 49—380 **20 Claims**



1. A door framing device comprising:

spacer means formed for positioning of a portion thereof between a door and a member for spacing of said door in a door opening relative to said member during installation of said door;

fastener means for fastening said spacer to both said door and said member; and

said spacer means further being formed with an L-shaped door element having one leg adapted to extend between said door and said member and another leg adapted to extend along a front surface of said door, said door element being formed for securement to said door by said fastener means; said spacer means including an L-shaped jamb element having one leg adapted to extend between said door and said member and another leg adapted to extend along a front surface of said member, said jamb element being formed for securement to said member by said fastener means; and said spacer means including a connecting portion separably connecting said door element to said jamb element to thereby releasably secure said door to said member during installation of said door in said door opening, and said one leg of said door element and said one leg of said jamb element having a combined thickness dimension substantially equal to a desired reveal space to be maintained between said door and said member.

5,365,698
DOOR GLASS FUN FOR AUTOMOBILE
Masahioro Nozaki, Nakashima, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan
Filed Jul. 20, 1993, Ser. No. 93,643
Claims priority, application Japan, Aug. 28, 1992, 4-066304[U]
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—441 **3 Claims**

1. A door glass run for an automobile which is adapted to be fitted into a U-shaped channel of a door frame, the door frame having a bottom portion and inner and outer side walls which define the U-shaped channel, each side wall having an engaging projection, a door glass being fitted into the channel at a position offset from a center of the channel, said door glass run comprising:

a bottom portion;

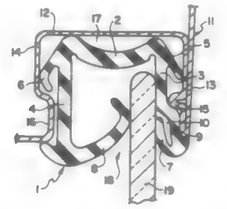
inner and outer side walls integrally connected to the bottom portion of the door glass run;

engaging lips which integrally extend from base portions of each said door glass run side walls toward the engaging projections of the frame, respectively; and

inner and outer seal lips extending from free ends of said door glass run side walls for sealing against the door glass,

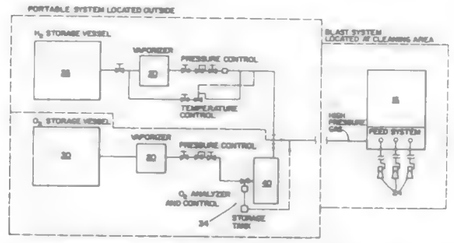
said outer side wall of said door glass run being in contact with the outer side wall of the door frame,

said outer side wall of the door glass run being thin-walled



from a portion extending from the engaging projection to the distal end of the outer side wall of the door frame so as to define a space between the door glass and the outer side wall of the door glass run, said outer seal lip being accommodated within said space when the door glass is fitted to the door glass run, and an end portion of said outer seal lip being disposed inside of the U-shaped channel and generally flush with a surface of said outer side wall of the door glass run.

5,365,699
BLAST CLEANING SYSTEM
Jay Armstrong, 1543 Weymouth Cir., Apt. 109, Westlake, Ohio 44145, and James R. Becker, 6272 Mills Creek La., North Ridgeville, Ohio 44039
Continuation-in-part of Ser. No. 589,042, Sep. 27, 1990, Pat. No. 5,184,427. This application Aug. 5, 1992, Ser. No. 925,525
Int. Cl.[5] B24B *49/00*
U.S. Cl. 451—7 **2 Claims**



1. A system for blast cleaning a surface, comprising:

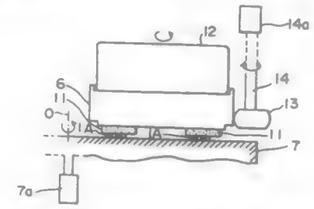
means for providing a high pressure stream of a cyrogenic substance having a temperature between −320 degrees F. and 150 degrees F.;

means for storing solid pellets of carbon dioxide;

means for mixing said solid pellets of carbon dioxide into said high pressure stream; and means for propelling the mixture of solid pellets and high pressure stream towards the surface to be cleaned,

the high pressure stream of said cyrogenic substance being propelled in a combined liquid and gaseous state.

5,365,700
APPARATUS AND METHOD FOR PRODUCING MAGNETIC HEAD SLIDERS
Shigetomo Sawada; Yoshimichi Asanai; Yoshio Tanaka, and Kikuo Yashiro, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 891,204, Jun. 1, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 165,578
Claims priority, application Japan, Jun. 4, 1991, 3-133054
Int. Cl.[5] B24B *1/00, 7/04*
U.S. Cl. 451—28 **61 Claims**



1. A magnetic head slider producing apparatus comprising:

a rotary lapping member having a lapping surface;

a work member having a surface; and

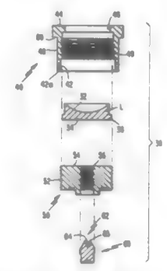
an elastic member fastened to the surface of the work member, said elastic member being formed of a rubber compound having adhesive characteristics,

magnetic head sliders each having a back surface, and rail surfaces in which magnetic heads are embedded,

The back surface of each of the magnetic head sliders being in contact with the elastic member, and the magnetic head sliders being adhesively held by the rubber elastic member in a dry state, and

the work member being positioned so that only the rail surface of each of the magnetic head sliders comes into contact with the lapping surface of the rotary lapping member.

5,365,701
MULTI-FOCAL CONTACT LENS
Howard J. Brown, Memphis, Tenn., assignor to Contact Lens Corporation of America, Memphis, Tenn.
Division of Ser. No. 521,620, May 10, 1990, Pat. No. 5,181,053. This application Jan. 15, 1993, Ser. No. 4,049
Int. Cl.[5] B24B *1/00*
U.S. Cl. 451—28 **2 Claims**



1. A method of fabricating a multi-focal contact lens from a lens blank having two opposed surfaces, comprising the steps of:

(a) cutting and polishing one of the opposed surfaces to a concave spherical shape;

(b) squeezing the lens blank to deflect and deform at least part of the spherical surface by a controlled amount;

(c) re-cutting at least preselected portions of the polished deformed surface to a desired concave spherical surface so that upon release of the deforming pressure the said desired cut concave spherical surface becomes an aspheric concave surface in said preselected portions of the concave surface; and

(d) finishing the other opposed surface to form a convex surface of the lens;

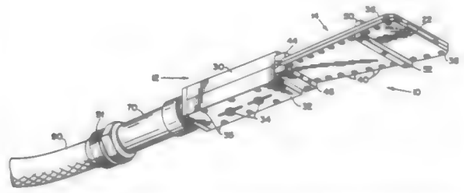
wherein the center portion of the concave surface formed under step (a) is not re-cut in step (c) so that upon release of deforming pressure the center portion of an optical zone of the lens remains a spherical surface with an aspheric curve of the optical zone surrounding it.

5,365,702

FAN NOZZLE

James D. Shank, Jr., Vestal, N.Y., assignor to Church & Dwight Co., Inc., Princeton, N.J.

Division of Ser. No. 979,300, Nov. 20, 1992, Pat. No. 5,265,383.
This application Aug. 3, 1993, Ser. No. 101,004
Int. Cl.[5] B24C *1/00*
U.S. Cl. 451—38 12 Claims



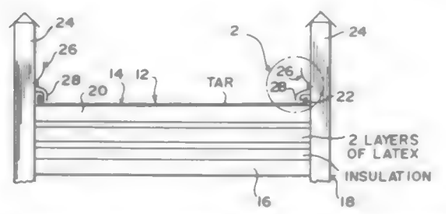
1. A process for removing contaminants from a solid surface by contacting said surface with a mass of water-soluble abrasive particles, comprising: passing a mixture of water-soluble abrasive particles and pressurized air from a supply hose to a blast nozzle, said blast nozzle including an inlet converging portion, a contiguous orifice and a fan-shaped expansion portion containing an outlet, said fan-shaped expansion portion being downstream and contiguous with said orifice to accelerate said abrasive particles in said blast nozzle, directing said stream of pressurized air and abrasive particles in a fan-shaped stream from said outlet to said solid surface.

5,365,703

TAR HOLDER AND ASSOCIATED ROOFING MATERIALS

Bernard Zeidler, 150-15 72 Rd. Studio A, Flushing, N.Y. 11267

Division of Ser. No. 926,196, Aug. 7, 1992, abandoned. This application Apr. 12, 1994, Ser. No. 229,426
Int. Cl.[5] E04D *1/36*
U.S. Cl. 52—62 12 Claims



1. A water, fire and heat proof roof with flashing mounted on a parapet wall inner surface at right angles to the roof comprising:

a) a plurality of layered waterproof roof covering materials applied onto said roof of a building, having an upper layer with curved ends which extend behind and spaced from said flashing; and

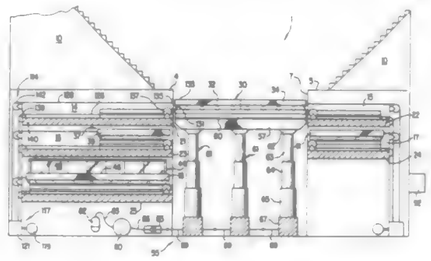
b) a tar holder with an upper portion and a lower portion affixed about said inner surface of said parapet wall so that said lower portion of said tar holder is spaced from behind and overlaps said curved ends to form a tar pocket for a better seal between said flashing and said roof covering materials to help keep the roof cool and waterproof.

5,365,704

ACTIVITY FLOOR CHANGING SYSTEM FOR MULTI-ACTIVITY COMPLEX

William W. Ray, 42 High St., Peterborough, N.H. 03458

Division of Ser. No. 27,201, Mar. 5, 1993, Pat. No. 5,319,895.
This application Apr. 15, 1994, Ser. No. 228,299
Int. Cl.[5] E04B *1/343*
U.S. Cl. 52—64 3 Claims



1. A method of alternating the playing surface in an activity area of an multi-activity complex comprising:

storing a plurality of activity floors, each of which has an associated playing surface, at vertically spaced intervals below and laterally outwardly of the activity area;

providing a lift assembly, having a support structure, below the activity area;

sectioning at least one of said plurality of activity floors and storing at least one of said plurality of activity floors in sections; and providing a locking mechanism for fixedly securing the sections of said at least one of said plurality of activity floors together when the sections are located upon the support structure of said lift assembly;

vertically moving said lift assembly such that the support structure is positioned at a height corresponding to the storage height of a selected one of said plurality of activity floors;

laterally shifting the selected one of said plurality of activity floors onto the support structure of said lift assembly; and

vertically moving said lift assembly until the selected one of said plurality of activity floors is located in the activity area.

5,365,705

ROOF PANEL DESIGN AND SINGLE BEAM ROOF ASSEMBLY

John S. Crowley, Portland, Me., and Michel R. Parent, Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

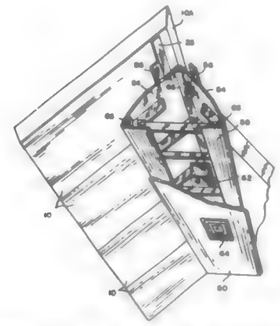
Filed Jun. 7, 1991, Ser. No. 712,202
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—90.1 11 Claims

1. A central support element for the roof of a structure defined by a plurality of walls, the support element comprising:

an elongate, three-sided beam having a substantially hollow interior and a substantially triangular cross-section;

means, disposed within the interior of the beam, for outwardly supporting the three sides of the beam;

means, disposed on first and second sides of the beam, for attaching the roof to the beam; and



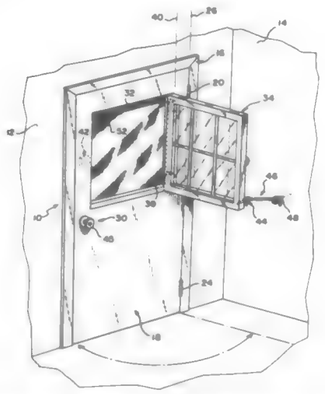
a reinforcement member disposed substantially along the length of the three-sided beam.

5,365,706

DOOR WITH VENT WINDOW

Jeffrey Elsenpeter, 2498 Stoney La., Brea, Calif. 92621; Timothy Elsenpeter, and Maryann Elsenpeter, both of 1314 W. Farlington, West Covina, Calif. 91790

Filed Jul. 12, 1993, Ser. No. 89,342
Int. Cl.[5] E06B *1/04*
U.S. Cl. 52—204.1 12 Claims



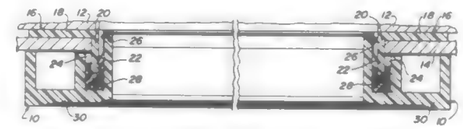
1. A double door assembly for a building having walls with an entryway through one of said walls and an inside wall surface within said building thereby defining as an inwardly direction a direction through said entryway proceeding therethrough toward said inside wall surface, and an outer frame located in said entryway, said outer frame having a primary vertical hinging edge located proximate said inside wall surface, comprising; an outer door mounted within said outer frame along said primary vertical hinging edge of said outer frame, a plurality of outer door hinges attached to said outer door and to said outer frame at said primary hinging edge thereof and vertically aligned to define a first vertical axis, an inner door opening defined entirely within and surrounded by said outer door and defining a secondary vertical hinging edge parallel to and spaced laterally on said outer door from said primary vertical hinging edge a distance no greater than one half the width of said inner door opening, an inner door having one vertical hinged edge and an opposite vertical free edge remote from said secondary vertical hinging edge, a plurality of inner door hinges attached to said inner door at said one hinged edge thereof and to said outer door at said secondary hinging edge and vertically aligned to define a second vertical axis about which said inner door is mounted for rotation between open and closed positions relative to said outer door, a catch on said inner door remote form said secondary hinging edge, an omnidirectional coupling mounted on said inside wall surface of said building and a rigid link at least as long as the distance between said first and second vertical axes and having a first end and an opposite second end, wherein said link is secured at said first end to said inside wall surface of said building by means of said omnidirectional coupling and releasably engageable at said second end with said catch wherein said catch captures said second end of said link therewith when said inner door is in said open position, whereby said rigid link constrains movement of said inner door in its open position when said outer door is opened relative to said outer frame to hold said free edge of said inner door at a distance from said inner wall and confine movement of said free edge to a controlled arcuate path to prevent said inner door from contacting said inside wall surface.

5,365,707

ARCHITECTURAL ELEMENT FOR ATTACHING TO A STRUCTURE

Dale C. Jones, and Michael A. Lacy, both of Conyers, Ga., assignors to Vantage Products Corporation, Conyers, Ga.

Filed Nov. 20, 1992, Ser. No. 979,566
Int. Cl.[5] E06B *1/04*
U.S. Cl. 52—211 24 Claims



1. An architectural product for mounting on a surface of a structure, comprising:

mounting frame means having

(a) a first portion disposed in a plane, the first portion adapted to contact a surface of a structure and lie substantially flush with the surface of the structure so that the mounting frame means may be adhered to said surface, and

(b) a second portion extending outwardly away from the plane of the first portion by a preselected distance and having an outer surface generally coplanar with the first portion;

body means attachable to the mounting frame means, the body means substantially covering the mounting frame means, including the outer surface, the body means having an attachment portion adapted to engage the mounting frame means second portion; and

means for affixing the body means attachment portion to the mounting frame means second portion.

5,365,708

DOOR FRAME SYSTEM

Felix J. Winston, Anniston, Ala., assignor to Jenkins Manufacturing Co., Inc., Anniston, Ala.

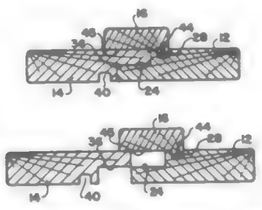
Filed Feb. 23, 1993, Ser. No. 21,045
Int. Cl.[5] E06B *1/10*
U.S. Cl. 52—212 9 Claims

1. A jamb assembly for use in a door frame system for installation within a wall having an opening for a door, said jamb assembly comprising:

a first elongated member having a top side and a bottom side, said top side being provided at one of its edges with an

L-shaped shoulder, said top side having a groove extending along the length of said first member;

a second elongated member having a shape substantially identical to said first member wherein when said members are inverted relative to one another, the shoulders of said



first and second members fit together thereby forming a base of said jamb assembly; and

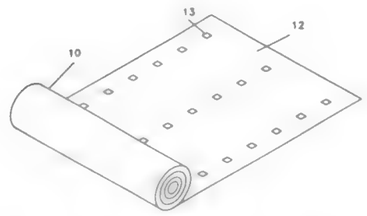
a third elongated member having a tongue extending along the length of said third member, said tongue fitting into the groove of one of said first and second members so that said third elongated member forms a cap for said base.

5,365,709

ROOFING MATERIAL WITH NAIL TABS

Robert F. Lassiter, 503 S. Barton La., Leveland, Tex. 79336

Filed Oct. 12, 1993, Ser. No. 133,989
Int. Cl.[5] E04B *5/00*
U.S. Cl. 52—408 **20 Claims**



1. A roofing material of the type generally applied to roofs prior to the application of roofing shingles; comprising:

a water resistant roofing material having two surfaces; and

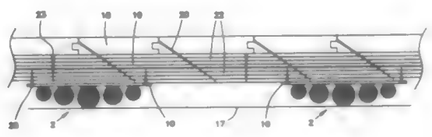
a plurality of nail tabs, having a water resistant coat over the nail tabs, secured, during manufacture, at spaced intervals, along the length of said water resistant roofing material, with an adhesive.

5,365,710

RESILIENT SUBFLOOR PAD

Erlin A. Randjelovic, Crystal Falls, Mich., assignor to Connor-/AGA Sports Flooring Corporation, Amasa, Mich.

Filed Feb. 12, 1993, Ser. No. 16,903
Int. Cl.[5] E04B *5/52*
U.S. Cl. 52—480 **14 Claims**



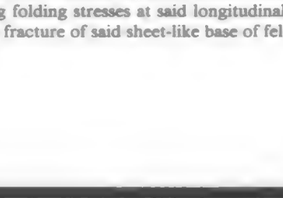
1. A resilient pad for placement under a flooring system having a floor surface, said pad comprising a plurality of pad elements each having a longitudinal axis and a thickness, said pad elements being oriented so that their longitudinal axes extend substantially parallel to the floor surface, said plurality of pad elements comprising a first pad element having a first thickness, and at least one second pad element having a second thickness, said second thickness being less than said first thickness.

5,365,711

LOW-COST HIGHLY AESTHETIC AND DURABLE SHINGLE

Joseph E. Pressutti, 2525 West Sierra Ave.; George E. Conley, 7616 N. Monte Ave., both of Fresno, Calif. 93711, and Alvis M. Rawlinson, 3904 Panorama, Bakersfield, Calif. 93306

Filed Apr. 28, 1993, Ser. No. 54,410
Int. Cl.[5] E04D *1/30*
U.S. Cl. 52—518 **25 Claims**



1. A ridge cover for roofing, said ridge cover comprising:

an elongate sheet of flexible and durable composition roofing material which is substantially uniform through its thickness, said sheet including a sheet-like base of felted inorganic fibers through impregnated with a modified asphaltic matrix material, said modified asphaltic matrix material including asphalt and at least three percent by weight of a flexibility improving additive selected from the group including styrene-butadiene-styrene, and atactic polypropylene;

said ridge cover further including on a top side thereof a coating of said modified asphaltic material adhering thereto an upper layer of granular mineral material;

said elongate sheet of composite roofing material being transversely back folded on itself at least twice at spaced apart fold lines intermediate the length of said sheet to define a transverse comparatively thickened portion for said ridge cover, and said modified asphaltic matrix material distributing folding stresses within said back folds to prevent fracture of said sheet-like base of felted inorganic fibers, said transverse thickened portion connecting comparatively thinner and elongate respective upper and lower portions of said cover member disposed on each side thereof;

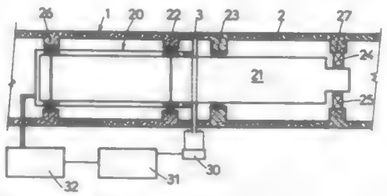
said elongate sheet further including a T-shaped through slit at said thickened portion and extending into an adjacent part said upper portion of said cover member, said sheet being folded lengthwise on itself with said upper layer of granular material outwardly to a shipping position in which said upper and lower portions define respective longitudinal fold lines, and said T-shaped slit opening to allow said transverse thickened portion to also fold and to be sandwiched within said adjacent part of said upper portion, said modified asphaltic matrix material also distributing folding stresses at said longitudinal fold lines to prevent fracture of said sheet-like base of felted inorganic fibers.

5,365,712

STRUCTURE FOR INTERCONNECTING TWO PART, SEPARATED BY AN EXPANSION JOINT, OF AN ASSEMBLY FORMING A VERY LONG BEAM, FOR EXAMPLE A BRIDGE DECK

Jean Muller, Suresnes, France, assignor to Societe Centrale D'etudes et de Realisations Routieres Scetauroute, Paris, France

Filed Nov. 18, 1992, Ser. No. 949,844
Claims priority, application France, Apr. 5, 1991, 91 04185
Int. Cl.[5] E04C *5/01*
U.S. Cl. 52—573.1 **7 Claims**



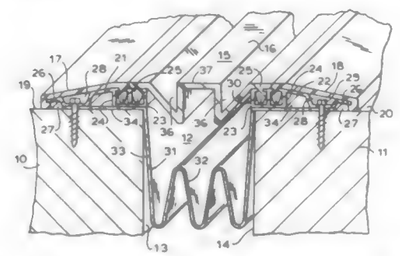
1. The combination of a first and second elongated elements of an assembly of elements which form a beam structure, said first and second elongated elements being separated by a transverse expansion joint, and a rigid support beam means for interconnecting said first and second elongated elements and preventing at least one of bending and shearing movements between said first and second elongated elements while allowing longitudinal expansions of said first and second elongated elements, said first and second elongated elements each providing first and second internal support means along a length thereof, said first support means being located between said transverse expansion joint and second support means, said support beach means extending across said transverse expansion joint and within said first and second elongated elements such that it extends from said second support means in said first elongated element to said second support means in said second elongated element, said support beams means being in contact with at least said first support means in said first and second elongated elements, and an adjustable jack positioned between said second support means in said first elongated element and said support beam for continuously adjusting a force applied between said support beam and said first elongated element transverse to a direction of longitudinal expansion of said first and second elongated elements.

5,365,713

ELASTOMERIC SEISMIC SEAL SYSTEM

John D. Nicholas, Lawrenceville, and David W. Rice, Decatur, both of Ga., assignors to Pawling Corporation, Pawling, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,006
Int. Cl.[5] E04B *1/684*
U.S. Cl. 52—573.1 **9 Claims**



1. In a sealing system for an architectural joint separating adjacent structural units, wherein the structural units have confronting, spaced-apart joint faces defining a joint space and wherein at least one of the structural units has an external surface disposed at a substantial angle to said joint faces, and which comprises,

(a) a first elongated mounting rail adapted to be secured to said external surface of said one structural unit and extending along one side of said joint space,

(b) said first mounting rail having longitudinally extending first cover strip-anchoring means adapted to be positioned adjacent to but without projecting significantly into said joint space,

(c) a second elongated mounting rail adapted to be secured to the other of said structural units and having second longitudinally extending cover strip-anchoring means, and

(d) a third cover strip-anchoring means being positioned adjacent to said first cover strip-anchoring means on said first mounting rail,

(e) an elongated sealing cover, formed of elastomeric material and adapted to flexibly span said joint space and overlying said mounting rails in order to cover and conceal said mounting rails, the improvement characterized by,

(f) said sealing cover being of multi-part construction and including a first elongated cover strip element having a distortable central portion flexibly spanning said joint space between said first and second elongated mounting rails, and provided adjacent opposite side edges thereof with longitudinally extending anchoring means adapted for interlocking engagement with cover strip-anchoring means of said first and second mounting rails, and

(g) at least one elongated second cover strip element, coextensive with said first cover strip element and separate therefrom, extending along and covering all exposed portions of said first mounting rail,

(h) said second cover strip element being provided with longitudinally extending anchoring means adapted for interlocking engagement with said third cover strip-anchoring means,

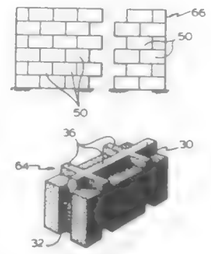
(i) said second cover strip element being a physically separate element from said first cover strip element and having a side edge substantially abutting with an adjacent side edge of said first cover strip element, to form an effectively continuous cover completely concealing said first and second mounting rails.

5,365,714

SAWDUST BUILDING BLOCKS ASSEMBLY

Ricardo Potvin, 854 - 5th Street, Chibougamau, Québec, Canada G8P 1V4

Filed Sep. 4, 1992, Ser. No. 941,200
Int. Cl.[5] E04B *2/08*
U.S. Cl. 52—590.2 **1 Claim**



1. The combination of at least three building blocks, each block consisting of slightly compacted sawdust or wood chips glued by a glue compound and lacking any void or hollow sections, two of said blocks comprising first relative interlocking means of the male female coupling type, for securing said two blocks one on top of the other, thus forming a first joint and defining a first and a second superposed blocks, each of said superposed blocks defining an upper face and a lower face,

said upper face of said first superposed block releasably abutting on said lower face of said second superposed block; and the third of said blocks as well as one of said two superposed blocks comprising second relative interlocking means of the male-female coupling type, for securing these two latter blocks in side by side fashion, thus forming a second joint and defining a first and a second side by side blocks, each of said side by side blocks defining a first and a second opposite lateral side faces, said first side face of said first side by side block releasably abutting against said second side face of said second side by side block; wherein said first and second joints are of high quality and can be easily and quickly disassembled; and wherein said first relative interlocking means consists of a cross-shaped groove being quadrangular in cross-section, and made on said upper face of said first superposed block, and of a cross-shape projection being quadrangular in cross-section, made on said lower face of said second superposed block so as to be frictionally releasably engaged into said groove.

5,365,715

ROD TYING APPARATUS

James W. Steinmetz, 0045 Rabbit Rd., Carbondale, Colo. 80623, and Roy C. Meller, III, 0140 Elk La., Redstone, Colo. 81623

Filed Nov. 9, 1993, Ser. No. 149,080
Int. Cl.[5] E04C *3/30*
U.S. Cl. 52—726.1 **24 Claims**



1. A tying apparatus for tying together first and second members comprising:

an attachment means for attachment to said first member;

a first and a second coil of wire each of said coils of wire attached to and wrapped around said attachment means in helical coils; and

a centering means for positioning on said second member to align said first and second member for tying, said centering means attached to said coils of wire and separable from said attachment means to tighten said coils of wire around said first and second members.

5,365,716

METHOD FOR INSTALLING INSULATION

Richard W. Munson, P.O. Box 440, Meadow Vista, Calif. 95722

Filed Aug. 2, 1993, Ser. No. 100,689
Int. Cl.[5] E04B *1/74*
U.S. Cl. 52—743 **5 Claims**

1. A method for placing cellulose fiber insulation into a stud cavity of a building, the stud cavity defined by an exterior wall surface, a pair of vertical studs, a lower plate and an upper sill, and wherein the studs, plate and sill have a co-planar interior face, comprising the steps of:

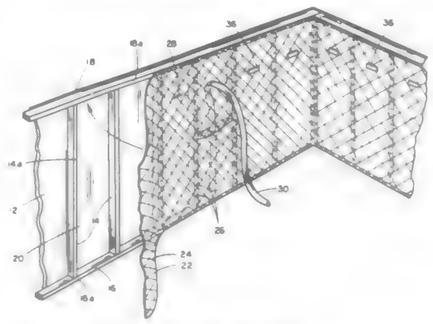
providing a non-elastic vapor barrier membrane reinforced with a mesh of polyester cords;

attaching said membrane to the interior faces of said studs, plate and sill to form an enclosing sixth wall for the stud cavity to retain insulation therein;

said attaching step including the steps of:

installing a plurality of staples through the membrane in a horizontal orientation along said plate and sill; and

installing a plurality of staples through the membrane in a vertical orientation along said studs and vertically spaced apart a distance to permit excess air pressure to escape between the membrane and stud interior faces between the staples;



forming an access hole in the membrane;

inserting a pneumatic hose through said access hole for blowing insulation into the stud cavity;

pneumatically blowing dry, cellulose fiber insulation into said stud cavity until filled to a density of at least three pounds per cubic foot;

withdrawing the hose; and

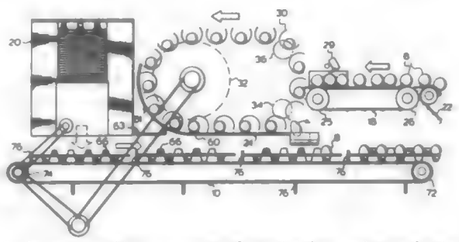
sealing said access hole.

5,365,717

EGG PACKER APPARATUS

Bruce A. McKinlay, R.R. #3, Ridgetown, Ontario, Canada N0 2C0

PCT No. PCT/CA91/00419, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993, PCT Pub. No. WO92/09483, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 26, 1991, Ser. No. 66,086
Claims priority, application United Kingdom, Nov. 26, 1990, 9025639
Int. Cl.[5] B65B *23/06*
U.S. Cl. 53—111 R **20 Claims**



1. An egg packing apparatus for orienting and transferring eggs from a loading station to an unloading station for depositing eggs in a transportable receiving means (**66**), said apparatus comprising,

a first endless conveyor means (**18**) for receiving and delivering eggs to the loading station,

a plurality of basket means (**30**) for receiving eggs from said first endless conveyor (**18**) at the loading station and cradling said eggs during transport from the loading station to the unloading station along a path, said basket means (**30**) spaced one behind the other and each basket means having a pair of laterally-spaced side walls and an egg receiving opening,

loading means (**28**) for directing eggs from said endless conveyor means (**18**) into the basket means (**30**) to cause each basket means to receive a predetermined number of eggs,

said basket means mounted on a transport means operating to orient and move each basket means along said path,

an egg rolling surface (**24**) extending along the path as the transport means orients the basket means from a cradling upright position to and during an inverted position, said egg rolling surface (**24**) spaced from the basket means while in an inverted position whereby the basket means pushes the egg to roll the egg over the said egg rolling surface to provide lateral movement of the egg in the direction of its pointed end,

a chute (**62, 64**) at the end of the egg rolling surface (**24**) and aligned to receive the blunt end of said egg, said chute having a length whereby the egg will roll off the chute orienting the egg,

a second endless conveyor means (**10**) for moving said transportable receptacle (**66**) under said chute for receiving said egg as it rolls from the chute,

drive means for driving said transport means and said first and second conveyor means, and

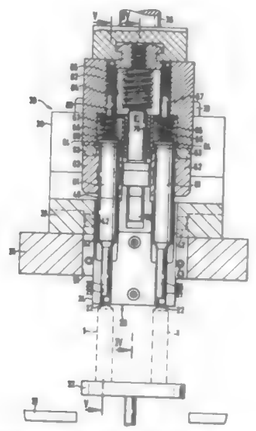
timing means for synchronising the movement of the transport means with the second conveyor means whereby the transportable receptacle (**66**) is positioned to receive said eggs as it rolls from said chute.

5,365,718

METHOD AND APPARATUS FOR CLOSING BOTTLE-LIKE CONTAINERS WITH A CAPSULE

Helmut Schott, Satteldorf, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 12, 1993, Ser. No. 30,961
Claims priority, application Germany, Mar. 18, 1992, 4208666
Int. Cl.[5] B67B *3/14;* **B65B** *7/28*
U.S. Cl. 53—202 **9 Claims**



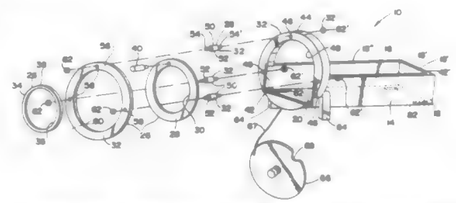
1. An apparatus for securing a closure cap having a depending cylindrical jacket onto a top portion of a bottle, which comprises, a female die (**20**), a bore (**21**) in said female die, a male die movable in said bore against a top portion of said closure cap that presses the top portion of the cap against the top of the bottle supported on a support, said female die having an annular rib (**22**) on a bottom portion thereof oriented radially inward, said annular rib has a concave side (**23**) adjoining a cylindrical guide (**21**), and that the male die (**26**) is axially displacable toward the annular rib (**22**) in the guide (**21**), said female die (**20**) is divided into two parts and the two parts (**24, 25**) are oriented for closing toward one another to secure said bottle in place and operable relative to each other for removal of said bottle subsequent to being capped, said female die (**20**) is split into two halves embodied as jaws (**2345, 25**) which are pivotably supported about parallel tangs (**41, 42**), which tangs extend transversely to an axial direction of an axis of the cylindrical guide (**21**) of the female die (**20**) and are located in a region of an upper end of the female die, the jaws (**24, 25**) have levers (**47, 48**) which cooperate with control faces (**72, 73; 77, 78** and **79, 80**) for swiveling the jaws.

5,365,719

APPARATUS FOR STORING ITEMS IN A FLEXIBLE WRAPPER AND FOR CLOSING AND OPENING THE MOUTH OF THE FLEXIBLE WRAPPER

David S. Council, 907 Walthour Rd., Savannah, Ga. 31410

Filed Jul. 8, 1993, Ser. No. 87,258
Int. Cl.[5] B65B *7/12, 51/100, 67/08, 51/04*
U.S. Cl. 53—370 **11 Claims**



1. Apparatus for holding items contained in a flexible wrapper and for closing and opening a mouth of the wrapper, said apparatus comprising:

a support;

a carriage slideably positioned on said support and configured for receiving and holding said items contained in said flexible wrapper;

means in operative relationship with said carriage and with said support for facilitating sliding movement of said carriage with respect to said support; and

first means in operative relationship with said support and with said carriage for grasping and for selectively twisting and untwisting said wrapper mouth to close and open, respectively, said wrapper mouth.

5,365,720

METHOD OF MAKING WINDOW BAG ASSEMBLY WITH HIGH RESOLUTION GRAPHIC CONTENT REPLICATING INDICIA

Joseph Bunch, Lockport, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Continuation-in-part of Ser. No. 707,857, May 30, 1991, abandoned. This application May 26, 1992, Ser. No. 887,953
Int. Cl.[5] B65B *11/58, 61/00*
U.S. Cl. 53—411 **10 Claims**

1. A process for preparing a bag-in-a-bag assembly which includes an inner opaque content-carrying bag and an outer windowed bag within which the inner bag is placed, said outer window bag having a window-defining aperture and a graphic content-replicating patch applied to the inner surface of the outer window bag so as to underlay the aperture and depict ontents of the inner bag, said method comprising the steps of:

(a) determining contents to be carried in the inner bag;

(b) selecting the opaque inner bag to be used in the assembly;

(c) selecting the outer window bag to be used in the assembly;

(d) preparing the content-replicating patch by:

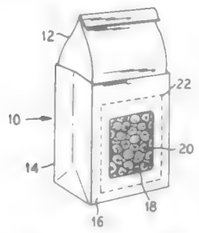
(1) providing an elongated web to be printed with a plu-

rality of longitudinally extending rows of content-replicating graphic indicia, each of said rows being of a single type of indicia and different than an adjacent row;

(2) printing said web with graphic indicia using high resolution techniques which graphic indicia replicates contents to be carried in the inner bag;

(3) separating said longitudinally extending rows into elongated strips of a single type of content-replicating indicia;

(4) forming from each elongated strip a plurality of individual patches to be applied to the outer window bag so as to underlie the aperture;



(e) securing a patch having graphic content-replicating indicia to the inner surface of said outer bag so as to underlay said aperture and expose at least a portion of the content-replicating indicia through said aperture;

(f) so as to depict contents of the inner bag assembly to a viewer of the outer bag;

(g) the outer bag having indicia printed thereon using a lower resolution technique than used for the patch graphic indicia whereby the outer bag is printed using low resolution indicia and the content-replicating patch is printed using high resolution printing.

5,365,721

PROCESS FOR THE PACKAGING OF ARTICLES OF DIFFERING SIZE

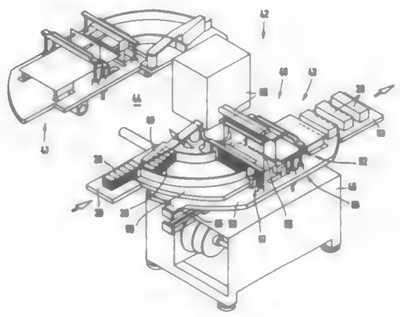
Heinz Focke, Verden, Germany, assignor to Focke & Co (GmbH & Co.), Verden, Germany

Continuation of Ser. No. 738,404, Jul. 31, 1991, abandoned, which is a division of Ser. No. 489,640, Mar. 7, 1990, Pat. No. 5,056,294. This application Jul. 28, 1993, Ser. No. 97,913

Claims priority, application Germany, Mar. 9, 1989, 3907615

Int. Cl.[5] B65B *51/14, 11/12*

U.S. Cl. 53—463 **6 Claims**



1. A process for packaging groups (30) of small packs (21) into a group wrapping (31) made of film, said process comprising the following steps:

(a) conveying each group (30) on a horizontal track (52) for movement in a conveying direction;

(b) severing from a film web (65) a single wrapping blank having a rear wall, and holding the single blank ready in an upright vertical plane transverse to said conveying direction and eccentrically offset in vertical height relative to the track (52), so that an upper longer longitudinal tab (32) of the blank extends above, and a lower shorter longitudinal tab (33) extends below, the track (52);

(c) wrapping the single blank around the group (30) in a U-shaped manner as a result of the conveying movement of the group (30), so that the upper longer longitudinal tab (32) and the lower shorter longitudinal tab (33) are directed against the conveying direction;

(d) extending the lower longitudinal tab (33) in a plane of the track (53) and as a continuation of a bottom side of the group (30);

(e) choosing dimensions of the lower longitudinal tab (33) such that it forms a first edge tab (98) which projects beyond a rear side of the group (30) and rests on the track (52), and folding downwards the upper longitudinal tab (32);

(f) choosing dimensions of the upper longitudinal tab (32) such that the rear wall of the wrapping (31) and a second edge tab (34) of the upper longitudinal tab (32) are formed when the upper longitudinal tab (32) is folded downwards, said second edge tab (34) of said upper longitudinal tab (32) adjoining a lower edge of the rear wall;

(g) folding the second edge tab (34) of the upper longitudinal tab (32) onto the first edge tab (98) of the lower longitudinal tab (33);

(h) choosing the width of the wrapping blank such that folding tabs (36, 37; 38, 39) of the wrapping (31) project beyond the group (30) on both opposite sides thereof;

(i) folding the folding tabs (36, 37; 38, 39) successively against opposite side faces of the group (30) to form side walls of the wrapping;

(j) placing a sealing tool in the track plane;

(k) causing the lower longitudinal tab (33) to come to rest on the sealing tool in the track plane, and there sealing together the second edge tab (32) and the first edge tab (98) to form a edge strip (35); and

(l) then moving said sealing tool (73) upwardly out of said track plane to fold the edge strip (35) against the upper longitudinal tab (32) and seal said edge strip (35) against said rear wall.

5,365,722

METHOD AND APPARATUS FOR FILLING A CONTAINER WITH A FLUID

Kenneth N. Edwards, Glendale, and Micheal C. Lapp, Sr., La Mirada, both of Calif., assignors to Dunn-Edwards Corp., Los Angeles, Calif.

Filed Mar. 5, 1993, Ser. No. 27,275

Int. Cl.[5] B65B *3/24, 3/28*

U.S. Cl. 53—502 **14 Claims**

9. A method for filling a container with a fluid comprising the steps of:

positioning the container upon a scale;

measuring the tare weight of the container via the scale;

calculating a target fill weight;

storing the target fill weight in a memory means;

filling the container with a first volume of fluid at a first flow rate; and

filling the container with a second volume of fluid at a second flow rate lower than the first flow rate;

the step of filling the container with the first volume of fluid comprising the steps of:

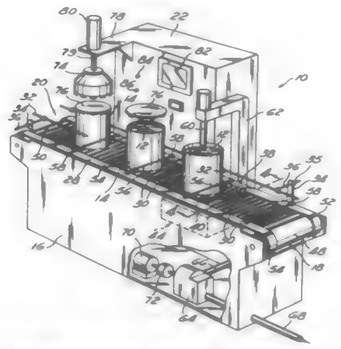
positioning the container under a nozzle valve;

activating a pump fluidly Coupled to the nozzle valve;

opening the nozzle valve to allow the fluid to be pumped from a fluid supply source coupled to the pump into the container at the first flow rate;

counting the number of rotations of an impeller disposed within the pump via an incremental encoder electrically interfaced to the pump;

deactivating the Rump in response to an electrical signal generated by the encoder establishing that the container



has been filled with the first volume based on a preselected number of impeller rotations counted by the encoder; and closing the nozzle valve.

5,365,723

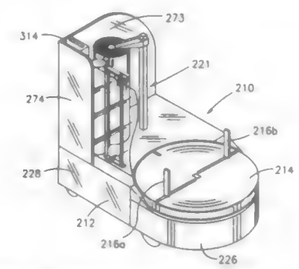
PORTABLE BAGGAGE WRAPPING APPARATUS

Enrique A. Ramos, 5104 Charles St., Omaha, Nebr. 68132

Continuation-in-part of Ser. No. 685,736, Apr. 16, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,483

Int. Cl.[5] B65B *11/04*

U.S. Cl. 53—556 **19 Claims**



1. A baggage protection device comprising:

a base carriage unit,

said base carriage unit comprising front and rear sections,

means for extendably connecting said front section to said rear section such that said front section may be extended from and retracted towards said rear section to accommodate oversized luggage for wrapping,

a generally circular turntable having a center point and top and bottom faces, said turntable rotatably mounted in a substantially horizontal plane on said front section of said base carriage unit,

securing means movably mounted on said turntable for securing baggage in substantially upright relation thereon,

said securing means comprising a pair of grip tongs,

said grip tongs comprising a pair of substantially upright members,

said turntable further comprising one or more slots formed on said turntable,

said grip tongs adapted to be movably mounted in at least one of said slots on said turntable,

means for urging said grip tongs towards each other for securing baggage placed on said turntable between said tongs,

means for rotating said turntable about a generally upright axis,

means for removably mounting a generally stretchable moisture-impervious sheet material on said rear section of said base carriage unit in substantially upright relation generally parallel with said turntable axis, whereby said sheet material can be used to wrap baggage secured on said turntable, and means for dispensing said sheet material.

5,365,724

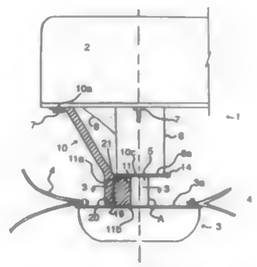
ANTI-WRAP DEVICE FOR ROTATING SHAFT

James H. Wagner, Essex Junction, Vt., assignor to Country Home Products, Inc., Charlotte, Vt.

Filed Apr. 6, 1993, Ser. No. 46,263

Int. Cl.[5] A01D *34/00*

U.S. Cl. 56—12.1 **10 Claims**



1. An anti-wrap device for a rotating shaft of an apparatus having a chassis, said shaft being journalled for rotation in a bearing housing fixed to said chassis, and said shaft being driven in rotation, comprising:

a stationary flange fixed to one of the chassis and the bearing housing and extending adjacent to an area of contact between the rotating shaft and the bearing housing; and

a single rotating flange fixed for rotation with the shaft and being disposed to pass in close proximity to said fixed flange during each revolution of the shaft.

5,365,725

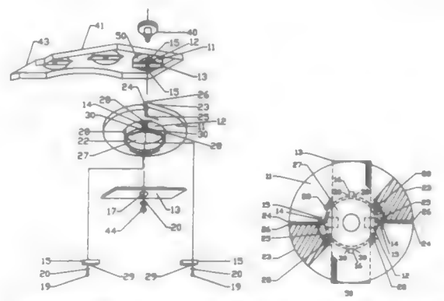
COMBINATION CHIPPER AND GRASS CUTTING BLADE ASSEMBLY FOR RIDING TYPE LAWN MOWERS AND THE LIKE

John D. McCance, 243 Spruce Ave., Byesville, Ohio 43723

Filed Nov. 9, 1993, Ser. No. 149,275

Int. Cl.[5] A01D *34/03*

U.S. Cl. 56—16.9 **2 Claims**



1. A combination blade assembly designed for use with a riding type lawn mower for chipping and mulching branches, brush and tough organic material during the normal operation of said mower, said combination blade assembly comprising a circular disc chipping blade having inner and outer edges, tubular spacer and grass cutting mower blade, formed from steel plate, said circular disc chipping blade having a plurality

of integrally formed and upwardly extending blade portions formed from cut slots located an equal distance from each other and being diagonally cut through the said circular disc chipping blade commencing from the outer edge of the said circular disc blade, cutting through the plate horizontally toward the center of the said circular disc chipping blade to an area which terminates before the inner edge of the said circular disc chipping blade and extending inwardly along the circumference of the center of the, the said slots form an arcuate slot, in a generally backward cut respectively parallel with the arc of the said circumference of the said circular disc chipping blade, which allows the said upwardly extending blade portions of the said circular disc chipping blade to be raised upwardly, exposing a plurality of cutting edges formed integrally of the said circular disc chipping blade, a said central opening of the said circular disc chipping blade accommodates the bearing housing of the said mower blade drive shaft, a said tubular spacer is attached directly to the said circular disc chipping blade at a plurality of welded points located equally around the uppermost edge of the said tubular spacer and on the underneath surface of the said circular disc chipping blade where the said circular disc chipping blade and the said tubular spacer are integrally connected, spacer notches accommodate the said grass cutting mower blade for attachment to the said tubular spacer, the said grass cutting mower blade comprises a central opening to accommodate the said mower blade drive shaft; welded to the upper surface of the said grass cutting mower blade is a plurality of blade stops, located at an equal distance from the edge of the said grass cutting mower blade and the outside of the said tubular spacer directly above the said spacer notches, the said grass cutting mower blade is secured in the said spacer notches, with a plurality of blade locks which in turn are secured by placing a bolt through a lock washer and through an opening in the said blade lock and finally into threaded blocks that has been welded to the outside of the lower edge of the said tubular spacer, located equally between the said spacer notches, the said combination blade assembly is held on the said mower blade drive shaft in a threaded arrangement, whereby the said circular disc chipping blade will be closely spaced near the inner upper surface of the said mower deck, while the said grass cutting mower blade will be situated in a position relative to the said mower blade drive shaft and secured with said lock washer and a nut.

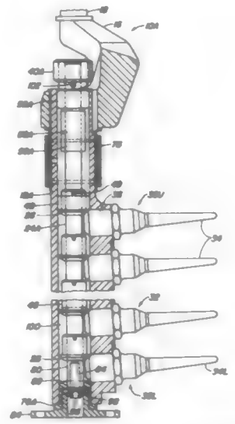
5,365,726

COTTON PICKER BAR WITH LOWER RETENTION

Leon F. Sanderson, Urbandale; Kenneth C. McConnell; John L. Hintzsche, both of Ankeny, and Donald K. Davenport, Woodburn, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jan. 18, 1994, Ser. No. 183,014
Int. Cl.[5] A01D *46/18*
U.S. Cl. 56—41 **20 Claims**

1. In a cotton picker drum having an upright hollow spindle bar, the spindle bar supporting a plurality of vertically spaced spindle assemblies including a lowermost spindle assembly, the spindle assemblies having spindles and spindle gears for rotating the spindles, a drive shaft supported for rotation about a shaft axis within the bar and having upper and lower ends, a plurality of bevel gears connected for rotation with the shaft in mesh with the spindle gears, an upper drive gear connected to the upper end of the drive shaft, and a thrust bearing supporting the lower end of the drive shaft and providing substantially all the axial retention of the drive shaft within the spindle bar.

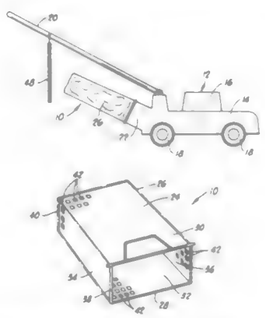


5,365,727

GRASS-BAGGING APPARATUS

Donald R. Cross, 5907 Northwest Williams Ave., Lawton, Okla. 73505

Filed Aug. 6, 1993, Ser. No. 102,893
Int. Cl.[5] D01D *34/12*
U.S. Cl. 56—194 **20 Claims**



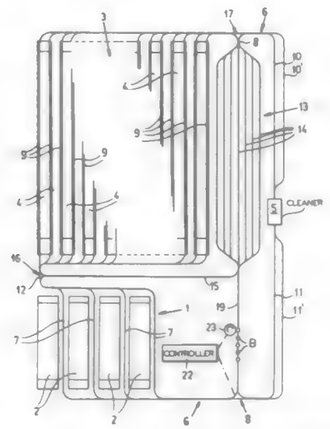
1. A grass-catching apparatus comprising:
a chute having opposite open ends, one of said open ends being adapted for positioning adjacent to a discharge portion of a lawn mower;
fastening means for fastening said chute to said lawn mower; and
a disposable bag with an open end disposed around said chute such that said bag is internally supported by said chute, said bag being retained by said fastening means.

5,365,728

RAIL CONVEYOR SYSTEM FOR ROVING BOBBINS IN A SPINNING MILL

Karl-Heinz Mack, Weilheim, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Apr. 20, 1993, Ser. No. 50,904
Claims priority, application Germany, Apr. 21, 1992, 4213122
Int. Cl.[5] D01H *11/00, 13/26*
U.S. Cl. 57—281 **4 Claims**



1. A conveyor-storage system for moving bobbins in a spinning plant between a fly frame, a ring-spinning frame, and a bobbin cleaner, the system comprising:
an annular single track having a first section extending from the fly frame to the ring-spinning frame, a second section extending from the ring-spinning frame to the cleaner, and a third section extending from the cleaner to the fly frame;
drive means for moving bobbins along the sections of the annular track in only one direction between the frames and cleaner;
a single large-capacity storage area immediately adjacent the track and having respective first, second, and third feed tracks extending to the respective track sections;
respective first, second, and third three-point intersections connecting each feed track with the respective track section; and
drive means for moving bobbins between the feed tracks and the respective track sections in each of two opposite directions.

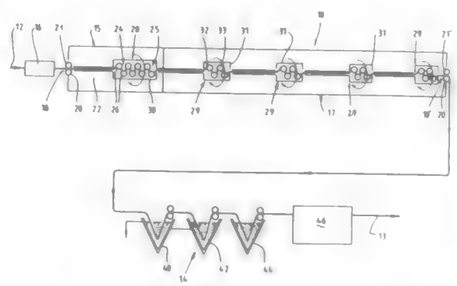
5,365,729

APPARATUS FOR STRETCHING STABLE FIBERS

David G. Phillips, Belmont, and John J. Warner, Jan Juc, both of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU90/00349, § 371 Date Feb. 14, 1992, § 102(e) Date Feb. 14, 1992, PCT Pub. No. WO91/02835, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 16, 1990, Ser. No. 834,313
Claims priority, application Australia, Aug. 17, 1989, PJ 5825
Int. Cl.[5] D01H *13/04*; D02G *1/02*
U.S. Cl. 57—310 **6 Claims**

1. Apparatus for stretching natural staple fibers to reduce their diameter comprising:
means to apply twist to a substantially untwisted travelling assembly of suitably treated natural fibers,
means to impart stretch to the twisted assembly and means to set the stretch;
wherein the twist applying means comprises two spaced twist blocks having at least one array of pulleys located therebetween, the assembly of fibers passing around successive pulleys in the array, and wherein the array is rotatable about a longitudinal axis corresponding to the direction of travel of the assembly of fibers through the apparatus, for applying false twist to the travelling assembly prior to stretching the assembly and while it is being stretched and the stretch set.

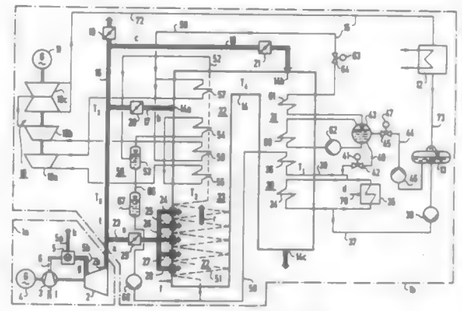


5,365,730

COMBINED GAS AND STEAM TURBINE SYSTEM

Hermann Brückner, Uttenreuth, and Erich Schmid, Marloffstein, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 19, 1993, Ser. No. 34,679
Claims priority, application Germany, Sep. 21, 1990, 4029991
Int. Cl.[5] F02C *6/00*
U.S. Cl. 60—39.182 **12 Claims**



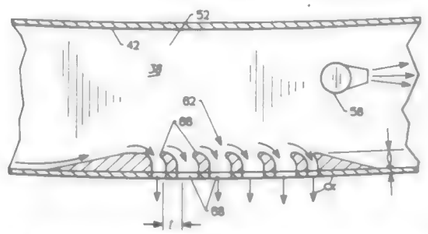
1. A combined gas and steam turbine system, comprising:
a steam turbine having a water/steam loop and a high-pressure stage in said water/steam loop, said water/steam loop defining water flow direction, said high-pressure stage having a preheater and a high-pressure heater connected downstream of said preheater as seen in the water flow direction;
a gas turbine defining a gas flow direction; and
a steam generator connected downstream of said gas turbine as seen in the gas flow direction, said steam generator including a firing system producing flue gases flowing in a given direction, said preheater, said high-pressure heater, an intermediate superheater connected downstream of said high-pressure stage as seen in the water flow direction, and a medium-pressure heater connected parallel to said high-pressure stage with respect to the water flow direction, said medium-pressure heater being disposed in said steam generator between said high-pressure heater and said preheater, as seen in the given flow direction of the flue gases.

5,365,731

EFFICIENT ANTI-ICE EXHAUST METHOD

John P. Nikkanen, West Hartford; Robert Bubello, Meridan, and Grant P. Maier, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 872,575, Apr. 23, 1992, Pat. No. 5,257,498. This application Apr. 8, 1993, Ser. No. 45,443
Int. Cl.[5] F02C *7/047*
U.S. Cl. 60—39.02 4 Claims



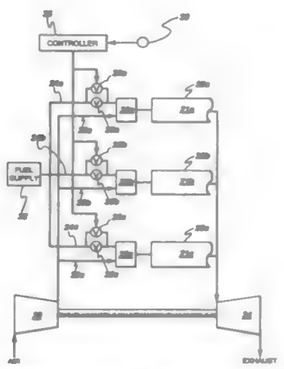
1. A method of preventing ice build-up on a nacelle of an aircraft powerplant, the powerplant including a source of heating fluid and an anti-icing system, the anti-icing system including means to flow heating fluid from the source to a cavity in the nacelle, means to inject heating fluid into the cavity, and means to exhaust fluid from the cavity into a medium external to the nacelle, the method including the steps of:
flowing heating fluid from the source to the cavity;
injecting heating fluid into the cavity such that the body of fluid within the cavity has a circumferentially directed component of velocity;
turning a portion of the fluid within the cavity to a direction substantially normal to the direction of flow of the medium external to the nacelle; and
ejecting fluid from the cavity into the medium external to the nacelle, the fluid being ejected from the cavity in a direction substantially normal to the direction of flow of the external medium, and the fluid being ejected with a flow velocity sufficient to penetrate the external medium.

5,365,732

RETROFITTABLE TRIM SYSTEM FOR FUEL-AIR OPTIMIZATION IN CANNULAR GAS TURBINE COMBUSTORS

Sanjay M. Correa, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1993, Ser. No. 47,671
Int. Cl.[5] F02C *9/28*
U.S. Cl. 60—39.281 6 Claims



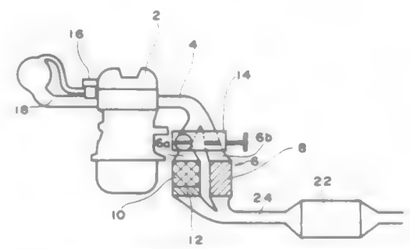
1. A fuel control device for controlling fuel flow through a fuel inlet section of a combustor in a gas turbine apparatus, said fuel control device comprising:
a first valve fluidly connected to said fuel inlet section;
a second valve fluidly connected to said fuel inlet section in parallel with said first valve, said second valve having a flow resistance which is greater than the flow resistance of said first valve; and
a controller which monitors NO_x output from said gas turbine apparatus and controls said second valve in response to the NO_x output.

5,365,733

EXHAUST GAS PURIFICATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Shinichi Takeshima, Susono; Toshiaki Tanaka, Numazu, and Tokuta Inoue, Mishima, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 709,000, May 21, 1991, Pat. No. 5,233,830. This application May 7, 1993, Ser. No. 60,375
Claims priority, application Japan, May 28, 1990, 2-135233
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—278 8 Claims



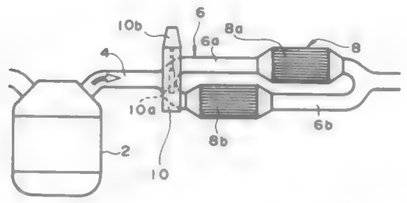
1. An exhaust gas purification system for an internal combustion engine comprising:
an internal combustion engine capable of fuel combustion at lean air-fuel ratios and having an exhaust manifold and an exhaust conduit connected to the exhaust manifold, wherein the engine operates at one of a stoichiometric air-fuel ratio and a rich air-fuel ratio while it is being warmed-up and wherein the engine operates at a lean air-fuel ratio after it has been warmed-up;
a dual passage portion provided in the exhaust conduit and located downstream of and close to the exhaust manifold of the engine, the dual passage portion including a first passage and a second passage which are connected in parallel to each other;
a first NO_x reducing catalyst installed in the first passage and constructed of zeolite carrying Copper to reduce nitrogen oxides included in exhaust gas from the engine under oxidizing gas conditions and in the presence of hydrocarbons;
a second catalyst installed in the first passage downstream of the first catalyst and constructed of one of a three-way catalyst and an oxidizing catalyst;
a third catalyst installed in the second passage and constructed of one of a three-way catalyst and an oxidizing catalyst, wherein said third catalyst is located within the second passage such that the temperature of the exhaust gas passing through the second passage is not affected by prior catalytic contact;
a flow switching valve for switching flow of exhaust gas from the engine between the first passage and the second passage; and
valve control means for switching the flow switching valve so as to cause exhaust gas to flow through the second passage while the engine is being warmed-up and while the engine is operating at one of a stoichiometric air-fuel ratio and a rich air-fuel ratio and to cause exhaust gas to flow through the first passage after the engine has been warmed-up and when the engine is operating at a lean air-fuel ratio.

5,365,734

NOX PURIFICATION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Shinichi Takeshima, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1993, Ser. No. 34,070
Claims priority, application Japan, Mar. 25, 1992, 4-097387; Mar. 25, 1992, 4-097388; Apr. 6, 1992, 4-112445
Int. Cl.[5] F01N *3/10*
U.S. Cl. 60—288 12 Claims



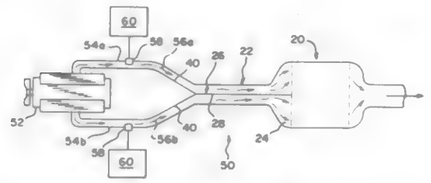
1. An NO^x purification apparatus for an internal combustion engine comprising:
an internal combustion engine having an exhaust conduit;
a plurality of lean NO_x catalysts including a first lean NO_x catalyst and a second lean NO_x catalyst arranged in parallel with each other in the exhaust conduit of the internal combustion engine;
space velocity changing means for periodically changing a first velocity of exhaust gas at the first lean NO_x catalyst and a second velocity of exhaust gas at the second lean NO_x catalyst so that when the first velocity is high, the second velocity is low, and when the first velocity is changed so that it is low, the second velocity is changed so that it is high, wherein the space velocity changing means operates so that, at all times while the engine is running, a first portion of the exhaust gas flows through the first lean NO_x catalyst and a second portion of the exhaust gas flows through the second NO_x catalyst.

5,365,735

BAFFLED CATALYTIC CONVERTER

David C. Weber, Toledo, Ohio, and Allan J. Kotwicki, Sterling Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 927,043, Aug. 10, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,926
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—323 15 Claims



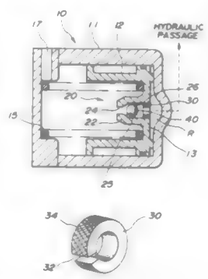
1. An engine exhaust system including:
a plurality of exhaust gas pipes extending, respectively, from a plurality of separate groups of at least one combustion chamber of an engine to convey separate exhaust gas streams from said groups;
at least one exhaust gas sensor disposed in each of said exhaust gas pipes;
at least one controlling means connected to said at least one exhaust gas oxygen sensor and said separate groups of at least one combustion chamber for regulating the air/fuel flow into said separate groups of combustion chambers; and,
a catalytic converter for an engine exhaust system, said catalytic converter comprising:
a housing;
a three-way catalytic converter material disposed in said housing having a plurality of flow paths therethrough;
at least one outlet pipe;
at least one inlet pipe having means for connecting said inlet pipe to said plurality of exhaust gas pipes conveying separate exhaust gas streams from said separate groups of at least one combustion chamber in an engine;
an inlet volume in said housing between said catalytic converter material and said inlet pipe; and
means for maintaining separation of said separate exhaust gas streams extending from said means for connecting said inlet pipe to said catalytic converter material, said means for maintaining separation of said exhaust gas streams disposed at least in part of said inlet volume;
whereby a plurality of exhaust gas streams from said groups may enter a single catalytic converter without substantial intermixing of said exhaust gas streams.

5,365,736

ACCUMULATOR WITH CHECK STOPPER

Tomokazu Yamamoto, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Mar. 11, 1993, Ser. No. 29,654
Claims priority, application Japan, Mar. 11, 1992, 4-087748
Int. Cl.[5] F16D *31/02;* F01B *31/18;* F16K *15/04*
U.S. Cl. 60—413 6 Claims



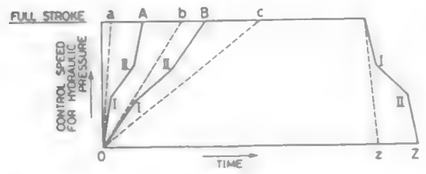
1. An accumulator for use in a hydraulic control circuit., the accumulator having a working fluid pressure chamber with a variable volume, the accumulator comprising:
a cylinder;
a piston slidably disposed within the cylinder; and
a check valve arranged to allow a suction of air into the working fluid pressure chamber from the atmosphere,
said check valve including a valve cylinder integrally formed with means for defining the working fluid pressure chamber, said valve cylinder having a first bore disposed on the side of the working fluid pressure chamber and a second bore communicating with the atmosphere,
said check valve including a check ball movably disposed in said first and second bores, and a ball stopper press fitted into said first bore for preventing said check ball from falling away therefrom,
said ball stopper having an outer peripheral surface formed with mesh-like grooves.

5,365,737

HYDRAULICALLY-OPERATED EQUIPMENT FOR CONSTRUCTION MACHINERY

Yukio Moriya; Takeshi Kobayashi; Takumi Onoda; Fujitoshi Takamura, and Toshio Yokoyama, all of Hirakata, Japan, assignors to Komatsu Ltd., Tokyo, Japan

Continuation of Ser. No. 920,463, Aug. 19, 1992, abandoned. This application Dec. 16, 1993, Ser. No. 168,720
Int. Cl.[5] F16D *31/02, 33/00*
U.S. Cl. 60—469 14 Claims



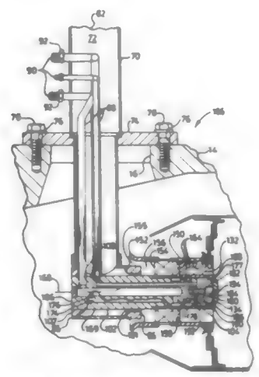
1. Hydraulically-operated equipment for construction machinery comprising:
(a) a hydraulic driving mechanism actuated by hydraulic pressure supplied by a hydraulic pipeline system;
(b) hydraulic pressure supply means for supplying hydraulic pressure to the hydraulic pipeline system for the hydraulic driving mechanism; and
(c) a controller for controlling the hydraulic pressure supply means such that the hydraulic pressure supplied to the hydraulic driving mechanism via said hydraulic pipeline increases at a first rate during a dead zone period in which the hydraulic pressure starts to rise without causing movement of the hydraulic driving mechanism, and then at a decreased rate for a period immediately following the dead zone period, to reduce shock on start-up or shutdown.

5,365,738

LOW EMISSION COMBUSTION NOZZLE FOR USE WITH A GAS TURBINE ENGINE

Colin J. Etheridge, Chula Vista, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

PCT No. PCT/US91/09554, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO93/13359, PCT Pub. Date Jul. 8, 1993
PCT Filed Dec. 26, 1991, Ser. No. 829,030
Int. Cl.[5] F02C *1/00;* F02G *3/00*
U.S. Cl. 60—742 14 Claims



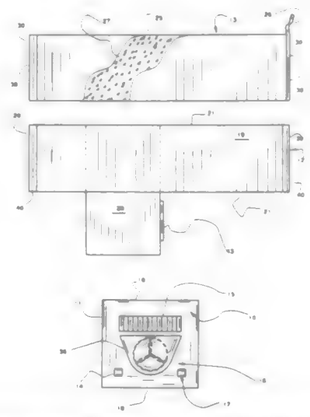
1. A fuel injector (60,166); comprising:
a main body assembly (133) having a combustor end (134), a second end (106) and an axis (62) and at least one fuel passage (116,120,176,190) through which a combustible fuel is directed;
a wrapper member (84) having a first end (85) and a second end (86), being generally coaxially positioned about said main body assembly (133), said wrapper member (84) axially extending about a portion of the main body assembly (133) and said wrapper member (84) and said main body assembly (133) forming a means for bleeding (101) therebetween;
a housing (150) being generally coaxially positioned about the main body assembly (133) and an inlet end (152) being generally coaxially positioned about the second end (86) of the wrapper member (84), said positioning of said housing (150) relative to said wrapper member (84) forming an inlet passage (155) therebetween and said positioning of said housing (150) relative to said main body assembly (133) forming an air/fuel premix passage (156) therebetween; and
each of said means for bleeding (101) and said inlet passage (155) being in fluid communication with the air/fuel premix passage (156).

5,365,739

COMPACTABLE THERMOELECTRIC COOLER

Daniel R. Fetterly, 1846 Preuss Rd., Los Angeles, Calif. 90035-4314

Filed Feb. 15, 1994, Ser. No. 196,529
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.62 7 Claims



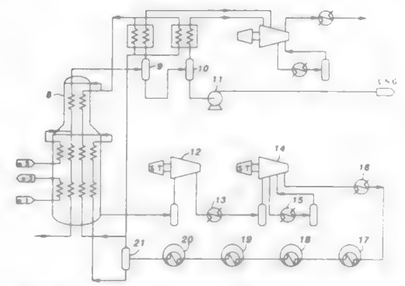
1. A compactable thermally insulated carrier comprising:
a) A Peltier effect thermal control device operable by 12 volts direct current and having a fan, a polarity switch, and power supply connection,
b) a block of rigid closed cell polymeric foam disposed about said Peltier device, said block having an outer contour comprised of four flat sides disposed in a rectangular array,
c) a first thermally insulative wall panel of semi-rigid structure foldable to form an elongated rectangular enclosure which surrounds and abuts the sides of said block, and extends to front and rear extremities, said wall material having reflective surfaces, and
d) a thermally insulative outer jacket comprised of a self-inflating second panel of rectangular perimeter having opposed short edges, said second panel further comprised of an air-impervious envelope equipped with valve for control of air passage and a resilient open-celled slab of polymer foam confined within said envelope, said envelope having interactive fastener material at said opposed short edges and having dimensions such that the panel can be folded about and secured upon said rectangular enclosure.

5,365,740

REFRIGERATION SYSTEM FOR A NATURAL GAS LIQUEFACTION PROCESS

Yoshitsugi Kikkawa; Osamu Yamamoto; Kenrou Ohmori; Motohiro Ohmori, and Noriyoshi Nozawa, all of Kanagawa, Japan, assignors to Chiyoda Corporation, Kanagawa, Japan

Filed Mar. 8, 1993, Ser. No. 28,479
Claims priority, application Japan, Jul. 24, 1992, 4-218505; Jan. 21, 1993, 5-024924
Int. Cl.[5] F25J *3/06*
U.S. Cl. 62—23 9 Claims



1. A cooling system suitable for use in a refrigeration system for pre-cooling natural gas or cooling a mixed refrigerant for liquefying natural gas by using a propane refrigerant in a natural gas liquefaction process, comprising:
a plate-fin heat exchanger including a plurality of passages for said natural gas or said mixed refrigerant which extend in a mutually separated relationship substantially over an entire length of said plate-fin heat exchanger, said propane refrigerant being passed vertically in said plate-fin heat exchanger; and
a separation drum for said propane refrigerant consisting of a laterally elongated, horizontally disposed tank connected to said plate-fin heat exchanger;
said plate-fin heat exchanger comprising a plurality of units disposed substantially parallel to each other wherein each of said units defines at least one of said passages, and said separation drum extends laterally across said units with conduits that connect said units with said separation drum extending in a mutually parallel relationship.

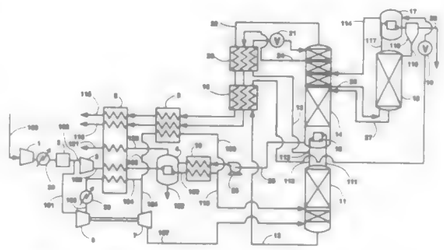
5,365,741

CRYOGENIC RECTIFICATION SYSTEM WITH LIQUID OXYGEN BOILER

Mark J. Roberts, Grand Island; Robert A. Beddome, Tonawanda, and Dante P. Bonaquist, Grand Island, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed May 13, 1993, Ser. No. 60,136
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—38 10 Claims

1. A method for producing oxygen by cryogenic rectification comprising:
(A) compressing feed air to a first pressure,
(B) further compressing at least 55 percent of the compressed feed air to a second pressure by passing it through a compressor coupled to a turboexpander;
(C) turboexpanding at least some of the further compressed feed air by passing it through said turboexpander but maintaining at least some feed air from undergoing said turboexpansion;
(D) introducing turboexpanded feed air into the higher pressure column of a double column cryogenic rectification plant;
(E) condensing at least some of the feed air which is not turboexpanded;
(F) introducing condensed feed air into the higher pressure column; and



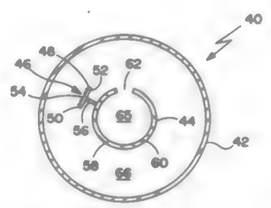
(G) withdrawing liquid oxygen from the cryogenic rectification plant, vaporizing liquid oxygen by indirect heat exchange with said condensing feed air, and recovering resulting oxygen gas as product.

5,365,742

DEVICE AND PROCESS FOR THE REMOVAL OF HYDROGEN FROM A VACUUM ENCLOSURE AT CRYOGENIC TEMPERATURES AND ESPECIALLY HIGH ENERGY PARTICLE ACCELERATORS

Claudio Boffito, and Bruno Ferrario, both of Milan, Italy, assignors to SAES Getters S.p.A., Milan, Italy

Continuation of Ser. No. 800,434, Nov. 29, 1991. This application May 17, 1993, Ser. No. 62,333
Claims priority, application Italy, Jan. 25, 1991, MI91A00186
Int. Cl.[5] H01J *7/18;* F17C *11/00;* B01D *8/00*
U.S. Cl. 62—46.2 12 Claims



1. A process for sorbing hydrogen-containing gases in order to create a vacuum essentially consisting of the steps of:
I. providing a device comprising:
A. a metal support; and
B. a hydrogen sorbing composition of matter adherent to said support said composition comprising:
i) a porous physical H_2O sorbent; and
ii) palladium oxide in contact with said porous physical H_2O sorbent; and then
II. contacting the hydrogen-containing gasses at cryogenic temperatures with said device.

5,365,743

MULTI-STAGE COLD ACCUMULATION TYPE REFRIGERATOR AND COOLING DEVICE INCLUDING THE SAME

Masashi Nagao; Hideto Yoshimura, and Takashi Inaguchi, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

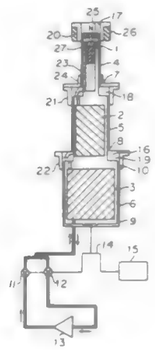
Continuation of Ser. No. 890,265, May 29, 1992, Pat. No. 5,293,749, which is a division of Ser. No. 722,547, Jun. 26, 1991, Pat. No. 5,154,063, Ser. No. 721,816, Jun. 26, 1991, Pat. No. 5,144,805, and Ser. No. 721,135, Jun. 26, 1991, Pat. No. 5,144,810, said Ser. No. 722,547, said Ser. No. 721,816, said Ser. No. 721,135, each is a division of Ser. No. 430,582, Nov. 1, 1989, Pat. No. 5,092,130. This application Nov. 5, 1993, Ser. No. 147,559

Claims priority, application Japan, Nov. 9, 1988, 63-284450; Nov. 9, 1988, 63-284452; Nov. 9, 1988, 63-284453; Nov. 9, 1988, 63-284454; Nov. 9, 1988, 63-284455; Nov. 11, 1988, 63-285991

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] F17C *5/02*

U.S. Cl. 62—47.1 **3 Claims**



1. In a superconducting magnet cooling device including a helium tank, radiation heat shields, a vacuum tank, and a helium refrigerator, the improvement wherein said helium refrigerator is a multi-stage cold accumulation type refrigerator comprising a compressor disposed at an ordinary temperature, a helium gas as a common operating fluid to be compressed by said compressor, and one or more expansion chambers and cold accumulators of different temperature levels and employing an alloy or a compound of rare earth metals as a cold accumulating material of at least one cold accumulator; wherein thermal stages other than a final stage of the multi-stage cold accumulation type refrigerator are connected to the radiation heat stages in vacuum and the final stage of the multi-state cold accumulation type refrigerator is exposed inside the helium tank.

5,365,744

AIR CONDITIONING AND REFRIGERATION SYSTEMS UTILIZING A CRYOGEN

Herman H. Viegas, Bloomington, Minn.; Roland L. Roehrich, Pittsburgh, Pa., and Dale T. Johnson, Minneapolis, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

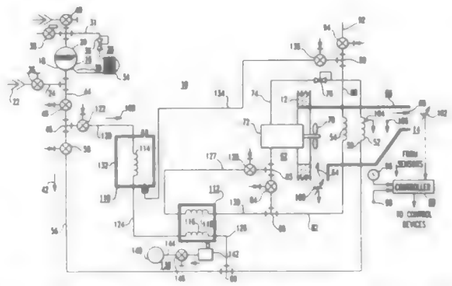
Filed Nov. 8, 1993, Ser. No. 147,369

Int. Cl.[5] F17C *9/04*

U.S. Cl. 62—50.3 **26 Claims**

16. A refrigeration system for controlling the temperature of a conditioned space to a predetermined temperature band adjacent to a predetermined set point temperature via heating and cooling cycles, including a supply of pressurized cryogen which includes cryogen in a liquid state, a flow path for the cryogen, heat exchanger means in the cryogen flow path associated with the conditioned space, control means for selectively configuring the cryogen flow path to provide cooling and heating cycle cryogen flow paths, and cryogen heating means in the heating cycle cryogen flow path, the improvement comprising:

said heating means and said heat exchanger means each having at least first and second cryogen flow paths,



said control means configuring the cryogen flow path during a heating cycle to successively direct cryogen in first and second passes through the cryogen heating means and the heat exchanger means via the first and second cryogen flow paths of the heating means and the first and second cryogen flow paths of the heat exchanger means.

5,365,745

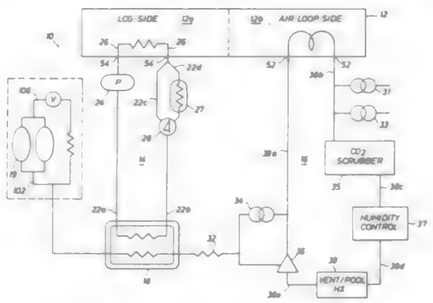
PORTABLE LIFE SUPPORT SYSTEM

Bruce D. Caldwell, Hitchcock, Tex., assignor to Oceaneering International, Inc., Houston, Tex.

Continuation of Ser. No. 869,249, Apr. 15, 1992. This application Dec. 30, 1992, Ser. No. 998,902

Int. Cl.[5] F17C *9/04*

U.S. Cl. 62—50.4 **5 Claims**



1. A portable life support system for underwater simulation of zero-gravity and low gravity activities, comprising:

a garment through which liquid coolant may be circulated to cool a wearer of the garment;

an externally charged, positive expulsion dewar for storing and delivering liquid cryogenic fluid while maintaining neutral bouyancy and trim;

means for circulating liquid cryogenic fluid expelled from said dewar in heat exchange relation with the liquid coolant so as to cool the wearer of the garment and vaporize the liquid cryogenic fluid; and

means forming a semi-closed breathing loop for delivering warmed, vaporized cryogen from said circulating means to the wearer of said garment for breathing purposes.

5,365,746

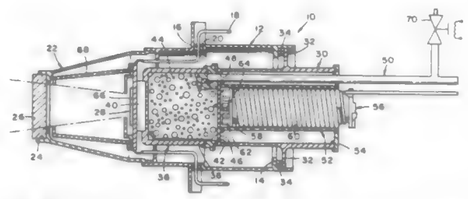
CRYOGENIC COOLING SYSTEM FOR AIRBORNE USE

H. Burt Warner, Orange; Matthew M. Skertic, Chatsworth; Roy B. Hasselquist, Malibu, and Joseph L. Hlava, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 23, 1989, Ser. No. 300,522

Int. Cl.[5] F25B *19/02*

U.S. Cl. 62—51.2 **13 Claims**



13. On-board cooling apparatus for an airborne vehicle comprising:

a metal-walled chamber;

a quantity of a gaseous first cryogen located within said chamber;

tubelike means soiled about and in contact with the metal-walled chamber; and

selectively disconnected conduit for interconnecting a source of second cryogen and the tubelike means.

5,365,747

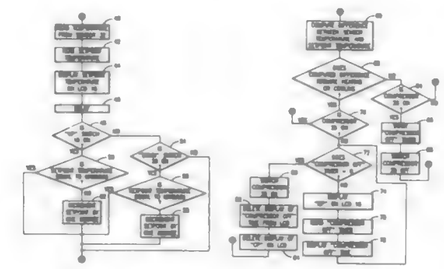
COMPRESSOR PROTECTION DISPLAY

Laurie L. Werbowsky, 6400 Hedgeroe La., Jamesville, N.Y. 13078, and Glenn D. Goodnough, 1506 Grant Blvd., Syracuse, N.Y. 13208

Filed Dec. 23, 1993, Ser. No. 172,318

Int. Cl.[5] F25B *49/02*

U.S. Cl. 62—126 **14 Claims**



1. In an air conditioning unit having a control panel for selecting a setpoint temperature and a heating or cooling system for providing conditioned air in response to a difference between selected setpoint temperature and a sensed temperature, a process for activating the heating or cooling system comprising the steps of:

defining an availability status of a compressor within the heating or cooling system, the availability status indicating whether the compressor can be immediately activated;

monitoring the difference between selected setpoint temperature and the sensed temperature;

checking the availability status of the compressor when the difference between the selected setpoint temperature and the sensed temperature reaches a predetermined amount; and

displaying a message on the control panel indicating the compressor cannot be immediately activated when the difference between selected setpoint temperature and the sensed temperature reaches a predetermined amount and the availability status of the compressor within the heating or cooling system indicates that the compressor cannot be immediately activated.

5,365,748

SCREW COMPRESSOR ICE MAKING PACKAGED UNIT

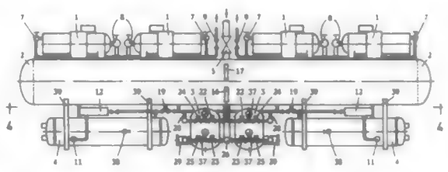
Guangjing Li, B8-9/F., Causeway Centre, Wanchai, Hong Kong

Continuation of Ser. No. 962,943, Oct. 19, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 166,604

Claims priority, application China, Oct. 23, 1991, 91108085.6

Int. Cl.[5] F25C *3/02*

U.S. Cl. 62—235 **7 Claims**



1. A screw compressor ice making packaged unit comprising:

a horizontal low pressure refrigerant receiver used for storing and circulating low pressure and low temperature refrigerant liquid;

at least a screw compressor mounted on top of the horizontal low pressure refrigerant receiver and parallel thereto;

two refrigerant liquid supply installations arranged symmetrically at the central position underneath said horizontal low pressure refrigerant receiver;

two horizontal high pressure refrigerant vessels arranged symmetrically at the exterior of the refrigerant liquid supply installations;

refrigerant system pipe lines for connecting all the parts arranged symmetrically;

the central axes of said screw compressor, horizontal low pressure refrigerant receiver together with the refrigerant liquid supply installations and horizontal high pressure refrigerant vessels being disposed in upper, middle and lower levels, and being basically lined up in the same vertical plane, all said parts of the same group being arranged symmetrically with respect to the middle perpendicular plane of the ice making packaged unit.

5,365,749

COMPUTER COMPONENT COOLING SYSTEM WITH LOCAL EVAPORATION OF REFRIGERANT

Warren W. Porter, Escandido, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 23, 1993, Ser. No. 172,309

Int. Cl.[5] F25D *23/12*

U.S. Cl. 62—259.2 **10 Claims**

1. In a computer system including at least one component which generates substantial thermal energy, a cooling system comprising:

a heat exchanger comprising a thermally conductive material, said heat exchanger and said thermally conductive material being in thermal contact with said component said heat exchanger including an internal expansion chamber;

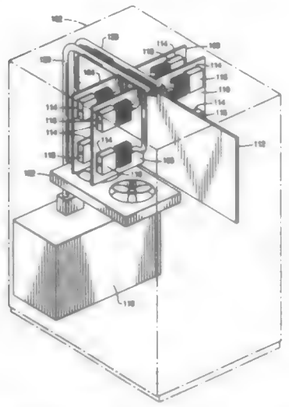
a first conduit having a first end which is connected with said expansion chamber for providing a pressurized refrigerant to said expansion chamber;

whereby said pressurized refrigerant is expanded within said expansion chamber absorbing heat from said heat exchanger and said attached component; and

a second conduit having a first end which is connected with

said expansion chamber for providing egress of the expanded refrigerant;

wherein said first conduit has a smaller diameter than said



second conduit and is placed coaxial with and within said second conduit;

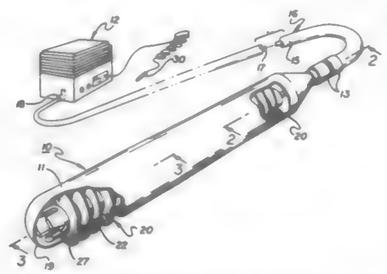
whereby said expanded refrigerant and said second conduit are heated through thermal contact with said first conduit.

5,365,750

REMOTE REFRIGERATIVE PROBE

Steven Greenthal, Newport Beach, Calif., assignor to California Aquarium Supply, Cerritos, Calif.

Filed Dec. 18, 1992, Ser. No. 993,733
Int. Cl.[5] F25B *3/00*
U.S. Cl. 62—293 **20 Claims**



1. A remote refrigerative probe system adapted for cooling an environment in which the probe is placed by transfer of heat to a refrigerant flowing through the interior of said probe, comprising:

a thin walled housing defining an exterior surface of said probe, having an interior surface;

an insert member having proximal and distal ends, sealingly contained within said housing means, having an exterior surface portion adapted to conform to said interior surface of said housing, which has channels therein configured to define an elongated fluid flowpath adjacent and in fluid contact with said interior surface of said housing when said insert member is inserted into the housing to form said probe;

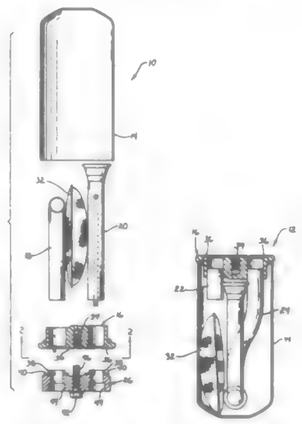
a refrigerant fluid conduit means for fluidly connecting said housing and insert member forming said probe to a source of liquid refrigerant and for carrying away gaseous refrigerant having absorbed heat from the environment of the probe.

5,365,751

UNIVERSAL ACCUMULATOR DEHYDRATOR ASSEMBLY

Donald E. Mikesell, and Kenneth B. Newman, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 13, 1993, Ser. No. 120,198
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—298 **1 Claim**



1. A universal, modular accumulator dehydrator assembly kit adapted for use with any of several different vehicle air conditioning systems each of which has input and output lines of varying predetermined orientation and location intended to be joined to said assembly, comprising,

a generally cylindrical canister body having an open end, closed end, and uninterrupted side wall,

an end cap sized to fit closely in said canister body open end and having an inlet pipe and an outlet pipe opening therethrough,

a pair of top feed inlet and outlet pipes and a pair of bottom feed inlet and outlet pipes adapted to be secured to said end cap pipe openings,

a detachable block sized to abut said cap and having a pair of protruding sleeves on an inner surface sized to fit into said end cap concentric to said inlet and outlet pipes and a pair of cylindrical bores concentric to said sleeves, and,

a bendable, cylindrical input tube and output tube adapted to be connected to said input and output lines respectively and sized to fit closely but movably within said block bores,

whereby, a top feed or bottom feed orientation may be chosen for said assembly, after which a pair of input and output tubes may be prebent and turned within said bores so as to be capable of connection to said lines, after which said tubes may be fixed in place in said block bores and said block attached to said end cap.

5,365,752

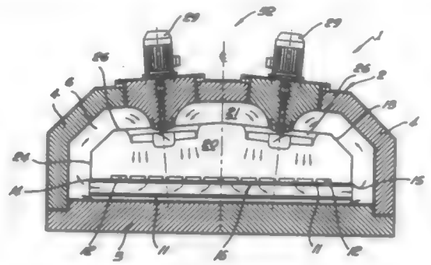
FREEZING APPARATUS

Paul A. Coffre, Chatswood, Australia, assignor to The Commonwealth Industrial Gases Limited, North Sydney, Australia

Filed Jul. 13, 1993, Ser. No. 90,728
Claims priority, application Australia, Jul. 13, 1992, PL3508
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—374 **17 Claims**

1. A freezing apparatus comprising: a longitudinally extending tunnel housing having first and second opposed ends for containing a cooling atmosphere which progresses longitudinally a from the first end of the housing to the second end; conveyor means for carrying articles to be frozen extending

through the tunnel housing and being substantially pervious to said cooling atmosphere; and a shroud located within and positioned along the longitudinally extended tunnel housing defining an inner region within the tunnel housing and an outer region between the inner region and the tunnel housing, said shroud terminating in an opening adjacent the conveyor means



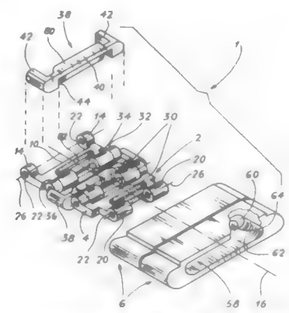
and comprising first and second longitudinally spaced shroud portions each having an aperture for allowing fluid communication between said inner and outer regions, and airflow means for directing said cooling atmosphere through the aperture and said opening and past said articles, wherein the cooling atmosphere progresses substantially longitudinally between said first and second portions in said outer region.

5,365,753

BRACELET WITH DECORATIVE ELEMENTS CARRIED ON AN INNER CHAIN

Rui Carrola, Fleurier, Switzerland, assignor to Montres Rado S.A., Lengnau b. Biel, Switzerland

Filed Dec. 28, 1992, Ser. No. 997,531
Claims priority, application France, Dec. 31, 1991, 91 16459
Int. Cl.[5] A44C *5/02*; F16G *13/08*
U.S. Cl. 63—4 **13 Claims**



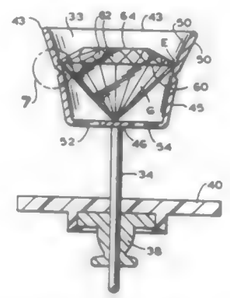
1. A bracelet including an inner chain comprising a series of articulated links extending in a longitudinal direction, each link including a central part and two lateral arms projecting from said central part, the central part of each link being inserted between the lateral arms of the following link of said series, said central part of said lateral arms having aligned transverse holes therein, pins inserted in said aligned holes for pivotally coupling each link to the adjacent links of said series, said bracelet further including a plurality of decorative elements arranged side by side, strung onto and at least partially surrounding the inner chain, and a blocking element for each decorative element for positioning said decorative element relative to the inner chain, each blocking element positioned on said inner chain and comprising two projecting parts extending laterally beyond said lateral arms in a direction perpendicular to the longitudinal direction of the bracelet, each decorative element comprising a passage having a shoulder, said shoulder bearing against said projecting parts of the blocking element when the blocking element is arranged on the inner chain and the decorative element is strung onto the inner chain.

5,365,754

MAGNIFYING GEM HOLDER

Gevork Nalbandian, Atwater Village, Calif., assignor to Pan American Diamond Corp., New York, N.Y.

Filed Aug. 22, 1991, Ser. No. 748,426
Int. Cl.[5] A44C *17/02*
U.S. Cl. 63—26 **15 Claims**



1. In combination, a gem holder and a gem, said gem holder comprising:

a reflective housing defining a top edge and an upwardly diverging sidewall therebelow; and

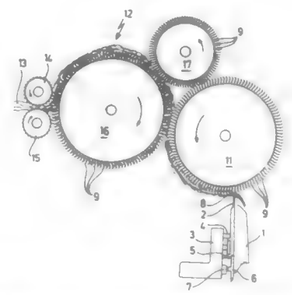
means for holding said gem securely and stationary within said reflective housing, said holding means being associated with said reflective housing and holding said gem in a manner such that said gem is recessed in its entirety below said top edge of said reflective housing.

5,365,755

CIRCULAR KNITTING MACHINE FOR MANUFACTURING PATTERNED HIGH-PILE KNITTED FABRICS

Erwin Schäberle, Gäufelden, Germany, assignor to Terrot Strickmaschinen GmbH, Stuttgart, Germany

Filed Nov. 22, 1993, Ser. No. 156,252
Claims priority, application Germany, Dec. 14, 1992, 4242064
Int. Cl.[5] D04B *9/14*
U.S. Cl. 66—9 B **5 Claims**



1. A circular knitting machine for manufacturing patterned high-pile knitted fabrics including needles moving up and down in a needle cylinder and at least one fiber feeding means controlled according to a pattern, said fiber feeding means comprising at least one opening cylinder wheel to which fibers are fed and one doffing wheel, said opening cylinder wheel transferring fibers fed thereto onto said doffer and said needles take off fibers from the doffer, wherein the improvement com-

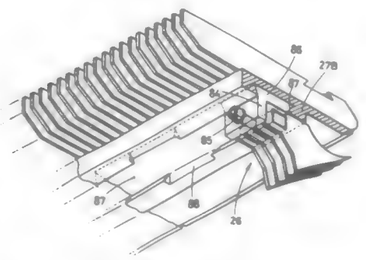
prises means mounting said opening cylinder wheel (16) and said doffer (11) for relative movement between a first position in which said opening cylinder wheel transfers fibers onto said doffer and a second position in which transfer of fibers from said opening cylinder wheel to said doffer is interrupted and means for moving said opening cylinder wheel and said doffer to said second position upon the interruption of fiber feed to said opening cylinder wheel in accordance with said pattern, said needles (2) adapted to take off fibers from said doffer in both said first and second positions.

5,365,756

FLAT KNITTING MACHINE HAVING SEPARATELY MOVABLE UPPER AND LOWER BEDS

Toshinori Nakamori, and Ikuhito Hirai, both of Wakayama, Japan, assignors to Shima Seiki Mfg., Ltd., Wakayama, Japan

Filed Dec. 16, 1993, Ser. No. 167,000
Claims priority, application Japan, Dec. 17, 1992, 4-337329
Int. Cl.[5] D04B *15/10, 15/12*
U.S. Cl. 66—64 **6 Claims**



1. A flat knitting machine, comprising:
a needle bed having plate grooves engraved on an upper face of said needle bed;
needle plates, each of which is mounted in each of said plate grooves;
needle grooves formed between said needle plates,
a supporting part attached to and extending upward from a number of specific needle plates; and
a transferring jack bed supported by said supporting part, said transferring jack bed being movable in a longitudinal direction of said needle bed along said supporting part.

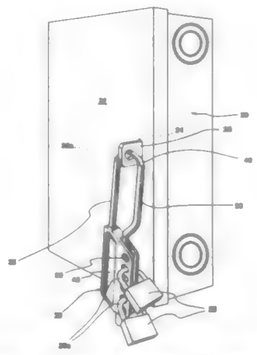
5,365,757

SAFETY LOCK

Mario Primeau, 6260, rue Marivaux, bureau 204, St-Léonard (Qué), Canada H1P 3K3

Filed Jun. 21, 1993, Ser. No. 78,858
Int. Cl.[5] E05B *73/00*
U.S. Cl. 70—14 **6 Claims**

1. A safety lock of monopiece construction consisting of a main rigid casing, from which transversely project a pair of first and second flanges spaced from one another, and each flange having at least one bore whereby the bores of said first and second flanges are axially aligned in pairs, wherein an elongated channel is defined between said spaced flanges; said channel defining an inner portion, between said casing and said bores, an intermediate portion, in register with said bores, and a lengthwise mouth, opposite said inner portion thereof; and a resilient bail member, defining an inner leg which is endwisely anchored to said casing, a free outer leg, and a web member integrally interconnecting said inner and outer legs, wherein said outer leg has an intermediate section which is releasably engageable through said channel mouth and into said channel, said outer leg intermediate section being sized to fit within said channel inner portion while positively clearing said channel intermediate portion whereby any one pair of axially aligned bores is then freely engageable by the shackle of a padlock for



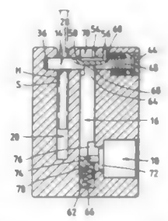
preventing release of said bail outer leg from said channel and thus for anchoring said bail member outer leg to said casing.

5,365,758

LOCK FOR INCAPACITATING MOTORCYCLE DISK BRAKE

Jin-Ren Shieh, No. 178, Shih Chia Rd., Taichung, Taiwan, Prov. of China

Filed Jul. 17, 1992, Ser. No. 913,966
Int. Cl.[5] B60R *25/00*
U.S. Cl. 70—33 **4 Claims**



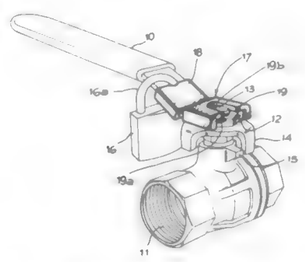
1. A lock for incapacitating a motorcycle disk brake having ventilation holes, said lock comprising:
(a) a lock body having a first lateral side, a second lateral side adjacent to said first lateral side, and a slot substantially perpendicular to said first lateral side and extending into said lock body for a predetermined length;
(b) a locking bolt disposed inside said lock body in such manners that it reciprocates between a first position and a second position, and that it is situated at said first position at such time when there is no external force exerting thereon, and further that it is actuated to move from said first position to said second position to seal off an open end of said slot at such time when there is an external force acting on said locking bolt, said locking bolt having a diameter which allows said locking bolt to be passed snugly through one of said ventilation holes in said disk brake, said predetermined length being long enough to receive said disk brake in said slot while allowing said bolt to pass through one of said ventilation holes;
(c) a braking bolt disposed inside said lock body in such manners that it reciprocates between a third position and a fourth position, and that it is situated at said third position so as to confine said locking bolt at said second position at such time when there is no external force exerting on said braking bolt, and further that said braking bolt moves from said third position to said fourth position to release said locking bolt so as to move back to said first position at such time when there is an external force acting on said braking bolt; and
(d) a locking and unlocking device disposed in said lock body and provided with a rotatable core, which confines said braking bolt to said fourth position at such time when said rotatable core is situated at an unlocking position of said device, and which releases said braking bolt to move to said third position at such time when said rotatable core is situated at a locking position of said device;
wherein said lock body is of substantially flat rectangular construction, and wherein said slot extends into said lock body from said first lateral side of said lock body in such a manner that it is parallel to said second lateral side of said lock body so as to divide said lock body into a first portion and a second portion, with said first portion being wider than said second portion;
wherein said lock body has a horizontal through hole, which traverses said lock body in such manners that it is parallel to said first lateral side and that it traverses said slot having an open end situated in said first lateral side, said horizontal through hole being divided into a front segment situated in said first portion, a mid-segment situated in said first portion and having an outer diameter smaller than that of said front segment, and a rear segment situated in said second portion;
wherein said locking bolt has a portion which is located at said front segment and is provided with a plastic cap having a recess to accommodate therein a first coil spring which has one end urging a shoulder formed by said front segment and said mid-segment and which has another end urging a bottom surface of said recess;
wherein said locking bolt includes a strip slot situated at said first position at such time when said locking bolt is pushed by said first coil spring until a front slot wall of said strip slot is in contact with a pin located at a position corresponding to said mid-segment of said horizontal through hole; and
wherein said locking bolt is situated at said second position at such time when said locking bolt is acted on by an external force until a rear slot wall of said strip slot is in contact with said pin, with a rear end of said locking bolt extending into said rear segment of said horizontal through hole.

5,365,759

LOCKING DEVICE IN THE CLOSING OR OPENING POSITION OF A VALVE

Silvio Bonomi, Vale Bornata, Italy, assignor to Rubinetierie Utensilerie Bonomi S.r.l., Civiverghe di Mazzano, Italy

Filed Feb. 22, 1993, Ser. No. 47,553
Int. Cl.[5] F16K *35/00*
U.S. Cl. 70—177 **16 Claims**



1. A locking valve comprising:
a valve body;
a retainer shoulder mounted on said valve body;
valve obturator means rotatably mounted inside said valve body for opening and closing said valve body in different rotational positions;
a handle connected to said valve obturator means, said handle including a lever tooth, said lever tooth being positioned to contact said retainer shoulder to block rotation of said handle;
fastening means for connecting said handle to said valve obturator means;
locking means slidably mounted on said handle for movement between a locked position and an unlocked position, and for securing said handle in a fixed position with respect to said valve body, said locking means also for enclosing said fastening means when said locking means is in said locked position, said locking means including a stopping tooth positionable adjacent said retainer shoulder to block rotation of said handle when said locking means is in said locked position, said locking means also including means for retaining said locking means in said locked position with a padlock, said locking means has a U-shaped part and a tubular part, said stopping tooth extends from said tubular part of said locking means.

5,365,760

KEY SECURITY DEVICE

Chang J. Song, 6740 Comstock Road, Richmond, British Columbia, Canada

Continuation of Ser. No. 990,614, Dec. 14, 1992, abandoned. This application Feb. 18, 1994, Ser. No. 198,676
Int. Cl.[5] E05B *19/24*
U.S. Cl. 70—460 **7 Claims**



1. A security and identifying apparatus comprising:
a key having a first aperture for receiving at least one of a key ring or key peg and having a second aperture;
a clip, folded over a top portion of said key and having an opening adjacent said first aperture, wherein said opening exposes said first aperture; and
said clip further including a leg for engaging said second aperture.

5,365,761

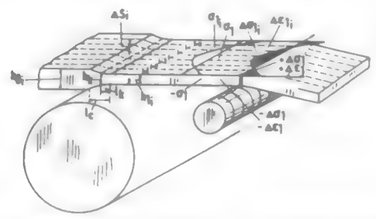
METHOD FOR THE PRODUCTION OF LOW-RESIDUAL-STRESS ROLLED STRIP

Alfred Knauschner; Bernd Richter, both of Freiberg; Gerhard Poppe, Hemer, and Lutz Hofmann, Wickede, all of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

PCT No. PCT/DE91/00484, § 371 Date Feb. 5, 1993, § 102(e) Date Feb. 5, 1993, PCT Pub. No. WO91/18688, PCT Pub. Date Dec. 12, 1991
PCT Filed Jun. 5, 1991, Ser. No. 960,456
Claims priority, application Germany, Jun. 5, 1990, 3412823
Int. Cl.[5] B21B *37/06*
U.S. Cl. 72—12 **2 Claims**

1. In the process for continuously rolling a strip having a forward speed between the rollers that have a peripheral speed, wherein the strip has a thickness, the rolling taking place in a reduction pass between rollers for reducing the thickness of the strip, wherein the point at which the rolls first contact the strip is the starting point of the rolling, and wherein the forward speed of the rolled strip between the rolls is identical to the surface speed of the rolls at a no-slip point, and wherein the thickness of the strip exiting from between the

rolls is the final thickness of the strip which undergoes elongation or contraction during the rolling, the rolling including the use of finishing rolls with a gap therebetween, an adjuster for adjusting the gap, and apparatus for continuously measuring in "n" number of measuring zones longitudinal stress over the width of the strip, the improvement which comprises (a) continuously adjusting with the adjuster the gap between the finishing rolls in n strip elements and a number of adjustment zones by an increment of S_i for a respective strip element i,



wherein said increment is calculated by continuously measuring the no-slip point from the average thickness reduction pass $\epsilon_{h,ges}$, and the amount $\epsilon_{h,k}$ of partial thickness reduction from the no-slip point to the exit side of the gap, the determination of the average reduction pass being made before or at the starting point of the pass, (b) determining the ratio of $\epsilon_{h,ges}/\epsilon_{h,k}$ that is a constant for a given pass of the rolls, and (c) forming the product of said ratio with h_1 which is the final thickness of the strip and with $\epsilon_{l,i}$ that is the value of the elongation or contraction measured on the strip element i.

5,365,762

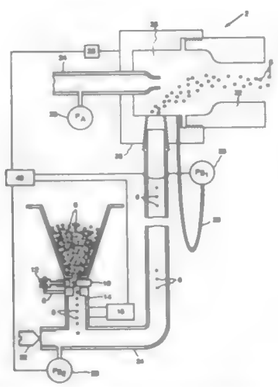
SUCTION-TYPE SHOT PEENING MACHINE SENSOR

Robert A. Thompson, Quaker Street, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 42,174, Apr. 2, 1993, abandoned. This application Dec. 8, 1993, Ser. No. 162,923

Int. Cl.[5] B24C *1/00*

U.S. Cl. 72—53 **10 Claims**



1. A suction-type shot peening machine sensor, wherein said sensor is comprised of:

a suction-type shot peening gun having a suction chamber; and

a pressure detection means operatively connected to said suction chamber for measuring a pressure in said suction chamber.

5,365,763

DEVICE FOR SHAPING OF HELICAL FINS ON THE OUTER WALL OF A TUBE

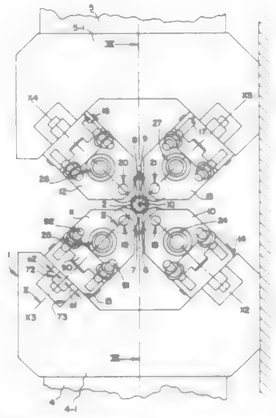
Michel Cretin, Mellecey, and Charles Marcon, Chagny, both of France, assignors to Escofier Technologie SA, Chalon-sur-Saone, France

Filed May 3, 1993, Ser. No. 55,254

Claims priority, application France, May 6, 1992, 92 05762

Int. Cl.[5] B21D *53/06*

U.S. Cl. 72—98 **24 Claims**



1. A device for the forming of at least one helical fin (3) on the outer wall of a tube (2) comprising:

first and second carriages (4, 5) arranged opposite each other symmetrically in a shaping zone on either side of the tube, the axis of the tube defining an axis of translation (XI—XI),

translation means for moving said first and second carriages to approach each other to a working position and for moving apart from each other,

each of said first and second carriages having a pair of carrier heads (10, 11), (12, 13),

each carrier head including a forming roll (6, 7, 8, 9), a carrier shaft (18, 19, 20, 21), a drive shaft (24, 25, 26, 27) for driving said carrier shaft and thus rotating the forming roll,

rotary transmission means (22, 23)

motor means (50),

said motor means driving the transmission means and said transmission means driving each drive shaft at the same speed,

each of said carrier heads having its orientation axis (X2, X3, X4, X5) and being movable about its axis, and

said carrier heads being arranged so that the relative angle formed between the orientation axes is 90, the orientation axes intersecting the tube shaping zone when the forming rolls are in working position.

5,365,764

CROSS ROLLING MILL, CROSS ROLLING METHOD AND CROSS ROLLING MILL SYSTEM

Toshiyuki Kajiwara, Tokyo; Tsuneo Ochiai, and Hidetoshi Nishi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 996,093

Claims priority, application Japan, Dec. 27, 1991, 3-347031

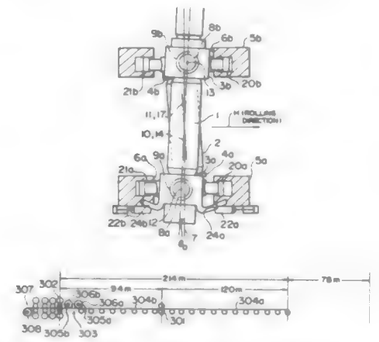
Int. Cl.[5] B21B *31/20, 1/34*

U.S. Cl. 72—229 **51 Claims**

1. A rolling mill comprising:

upper and lower work rolls defining a gap therebetween for passage of strip material being rolled while traveling in a rolling direction in a rolling plane, said work rolls having a drive side which is rotably driven and is located at one side of the gap and an operation side at an opposite side of the gap,

an operation side force-applying device and a drive side force-applying device for applying forces to at least one of the work rolls in a direction toward the gap, said operation side force-applying device and drive side force-applying device having respective centers of operation connected by a straight line which is inclined at a positive



angle with respect to a line extending perpendicular to the rolling direction and parallel to the rolling plane,

and work roll aligning devices for controlling strip crown of the strip material being rolled by changing a cross angle of said upper and lower work rolls with respect to one another, said straight line connecting respective centers of operation of the force-applying devices being inclined with respect to the line extending perpendicular to the rolling direction and parallel to the rolling plane in the same direction as one of said work rolls.

5,365,765

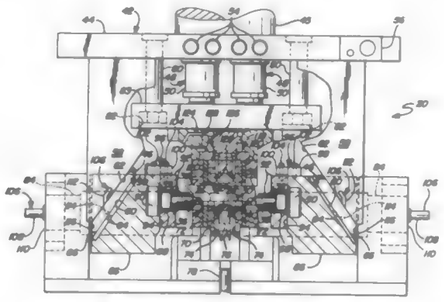
METHOD AND APPARATUS FOR SIMULTANEOUSLY UPSETTING THE ENDS OF A CYLINDRICL BLANK

Allen P. Gohl, 4501 Singh, Sterling Heights, Mich. 48310, and Edmund W. Gohl, 304 Coldiron, Rochester Hills, Mich. 48063-5873

Continuation of Ser. No. 925,508, Aug. 5, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 184,857

Int. Cl.[5] B21K *1/52*

U.S. Cl. 72—355.6 **16 Claims**



1. A press assembly (20) for upsetting the ends (22) of a cylindrical blank (24), said press assembly (20) comprising:

an actuation assembly (42) including two ends;

force applying means (45) operatively connected to said actuation assembly (42) for providing downward force to said actuation assembly (42);

a pair of upper wedge members (58) affixed one at each end of said actuation assembly (42);

upper die means (30) comprising an upper die recess (32);

lower die means (26) comprising a lower die recess (28) for receiving the cylindrical blank (24) such that said upper (32) and lower (28) die recesses loosely surround the cylindrical blank (24);

two punches (36) movable between a retracted position outside said die recesses (28,32) and an extended position within said die recesses (28,32) for upsetting the two ends (22) of the cylindrical blank (24);

said punches (36) each including an end (38);

a pair of lower wedge members (60) each operatively connected to a respective one of said punches (36) and positioned to coact with said upper wedge members (58) to provide axial movement of said punches (36) to said extended position;

compression means (48 and 50) for producing a clamping force between said upper die means (30) and said lower die means (26); and

characterized by said ends (38) of said punches (36) each including a concave end surface (40) for directing the flow of the ends (22) of the cylindrical blank (24) as they are punched to facilitate uniform flare-out of internal grain structure within the ends (22) of the blank (24) while avoiding flare-out within a cylindrical body portion (130) of the blank (24) to permit grain structure (134) along the cylindrical body portion (130) to remain parallel and maintain a smooth exterior surface on the cylindrical body portion (130).

5,365,766

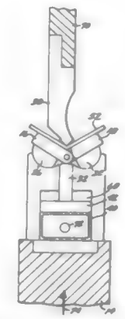
DIE ASSEMBLY HAVING MEANS FOR AUTOMATICALLY CONTROLLING IN THE ANGULAR ORIENTATION OF THE LOWER DIE PLATE MEMBERS

Yukio Takahashi, La Habra, and Etsuo Fukuda, Cerritos, both of Calif., assignors to Amada Engineering & Service Co., Inc., La Mirada, Calif.

Filed May 18, 1993, Ser. No. 62,759

Int. Cl.[5] B21D *5/01*

U.S. Cl. 72—387 **8 Claims**



1. A system for bending flat metal stock comprising:

means for supporting a tool member;

hinged plate members for supporting said flat metal stock;

rotatable means secured to and positioned below said hinged plate members for rotating said plate members to a predetermined angular position when a force is applied to said plate members;

means movable in the vertical direction and coupled to said hinged plate members to apply a force thereto;

an expandable pressure device having a wall portion in contact with said movable means, a pressure controllable

material being enclosed therein, the position of said wall portion being dependent upon the pressure of the material within said container;

means for controlling the pressure of said material whereby the position of said movable means is controlled to provide the desired angular orientation between said plate members; and

means positioned below and in contact with said pressure device for moving said metal stock into contact with said tool member whereby a bending force is applied to said metal stock.

5,365,767

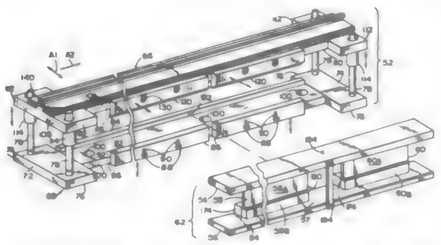
BRAKE PRESS ARRANGEMENT

William A. Kitchen, Grand Rapids, and Malcolm F. Hitchcock, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 23, 1992, Ser. No. 856,171

Int. Cl.[5] B21D *37/04, 37/12*

U.S. Cl. 72—481 **22 Claims**



1. An apparatus for prealigning one or more brake dies to facilitate die changes in a brake press having a ram, comprising:

a die holder including first means for operably mounting the same in the brake press, said first means including a floating adapter to minimize undesirable bending stresses on said die holder from misaligned and nonlinear movement of the ram of the brake press, said die holder further including a lower support surface; and

a pair of subplates adapted to receive the brake dies in a semipermanent arrangement to form a subassembly wherein the brake dies can be prealigned, said subplates being adapted to mateably removably engage said die holder, said die holder including second means for securely retaining said subassembly therein and further including guide means for guiding said subplates along a linear path toward and away from each other, said second means including a lower jaw movable between a raised position and a lowered position, said lower jaw being below said lower support surface when said lower jaw is in said lowered position;

whereby the brake dies can be semipermanently attached to said subplates, said die holder can be semipermanently attached to the brake press, and said subassembly can be removably installed in said die holder in the brake press in a time efficient manner.

5,365,768

SENSOR

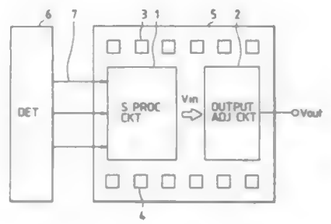
Seiko Suzuki, Hitachioota; Kazuo Kato, Toukai; Masahiro Matsumoto, Hitachi; Shigeki Tsuchitani, Mito; Masayuki Miki, and Yoshihiro Yokota, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 971,261, Nov. 4, 1992, abandoned, which is a continuation of Ser. No. 553,307, Jul. 17, 1990, abandoned. This application Dec. 14, 1993, Ser. No. 166,148

Claims priority, application Japan, Jul. 20, 1989, 1-186026

Int. Cl.[5] G01D *5/252, 3/04;* **G01P** *21/00*

U.S. Cl. 73—1 R **22 Claims**



1. A sensor for use in a vehicle, said sensor comprising:

(a) a detector for detecting a physical quantity, the physical quantity being at least one of pressure, acceleration, and flow rate,

(b) a signal control circuit coupled to said detector, and

(c) adjusting means coupled to said signal control circuit for adjusting a characteristic of said detector, said signal control circuit and said adjusting means being formed as an integrated circuit on a single semiconductor chip, said adjusting means comprising a plurality of input pads for receiving digital control signals, a resistor network, a plurality of switches connected to select the resistance of said resistor network, a plurality of current-responsive elements connected to said plurality of switches and responsive to digital control signals applied to said input pads for assuming a conductive state to control said plurality of switches, and voltage control means responsive to the conductive state of said switches for adjusting the characteristics of said detector in accordance with the digital control signals received by said input pads.

5,365,769

METHOD FOR VERIFYING THE CORRECT OPERATION OF A SAFETY VALVE OF AN OIL WELL

Jean-Claude Ferry, Pau, France, assignor to Elf Aquitaine Production, France

PCT No. PCT/FR92/00203, § 371 Date Dec. 14, 1992, § 102(e) Date Dec. 14, 1992, PCT Pub. No. WO92/15768, PCT Pub. Date Sep. 17, 1992

PCT Filed Mar. 5, 1992, Ser. No. 946,344

Claims priority, application France, Mar. 8, 1991, 91 02839

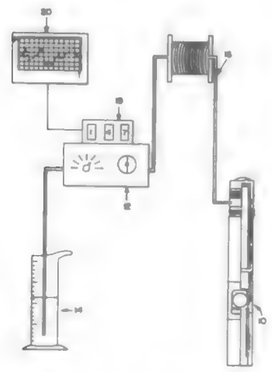
Int. Cl.[5] G01L *27/00;* **G01M** *19/00*

U.S. Cl. 73—4 R **3 Claims**

1. A method of verifying that an oil well safety valve, normally biased to a closed position and opened by hydraulic pressure applied thereto by a fluid supplied at a constant flow rate, is operating correctly when installed within the oil well comprising:

preparing a reference curve of applied hydraulic pressure versus elapsed time prior to installation of the safety valve in the well and when the safety valve is known to be operating correctly, said curve being prepared by applying hydraulic pressure to the safety valve by supplying fluid at a constant flow rate causing the safety valve to open;

preparing an operating curve of applied hydraulic pressure versus elapsed time when the valve is installed within the oil well, said operating curve also being prepared by applying hydraulic pressure to the safety valve by supplying fluid at a constant flow rate causing the safety valve to open; and



comparing the reference and operating curves in order to determine if the safety valve is operating correctly.

5,365,770

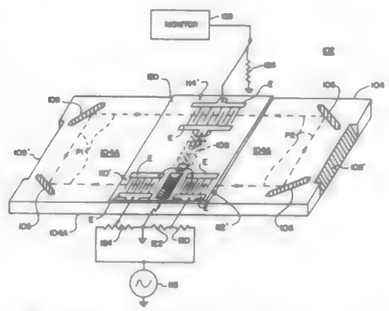
ULTRASONIC WAVE INTERFEROMETERS

Allen H. Meitzler, Ann Arbor, and Edward N. Sickafus, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1993, Ser. No. 43,957

Int. Cl.[5] G01P *15/08;* **H03H** *9/30*

U.S. Cl. 73—24.06 **21 Claims**



1. An ultrasonic wave interferometer device comprising:

a section of ultrasonic wave transmission media for defining substantially isolated coplanar first and second ultrasonic wave paths therethrough, said first and second ultrasonic wave paths each having an input end and an output end and defining substantially equal transmission characteristics from said input ends to said output ends for a neutral condition of said device;

ultrasonic wave transmitters coupled to said media for introducing ultrasonic waves into said input ends of said first and second ultrasonic wave paths;

an ultrasonic wave receiver coupled to said media for receiving and combining ultrasonic waves from said output ends of said first and second ultrasonic wave paths and for generating an output signal representative of the combination of ultrasonic waves from said first and second ultrasonic wave paths as said ultrasonic waves are received from said output ends of said first and second ultrasonic wave paths;

a drive circuit for driving said ultrasonic wave transmitters to generate ultrasonic waves in said first and second ultrasonic wave paths; and

a receiver circuit for receiving said output signal generated by said ultrasonic wave receiver.

5,365,771

PROCESS AND APPARATUS FOR TESTING BOTTLES FOR CONTAMINATION

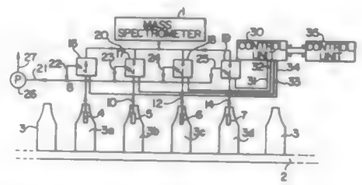
Peter Gysi, Bellikon; Theo Huesser, Rudolfstetten, and Melchior Zumbach, Dübendorf, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Jul. 7, 1993, Ser. No. 88,920

Claims priority, application Switzerland, Jul. 9, 1992, 02166/92-0; Sep. 1, 1992, 02715/92-6; Feb. 8, 1993, 00382/93-2

Int. Cl.[5] G01N *33/44*

U.S. Cl. 73—31.03 **16 Claims**



1. Process for testing bottles, in particular plastic bottles, conveyed along a conveyor line, for the presence of contamination, comprising the steps of;

feeding a plurality of bottles from a conveyor line to a carousel;

inserting one of a plurality of sampling lines into one of a plurality of bott'es as the bottles enter the carousel, each of the plurality of sampling lines being connected by a distribution unit to a common suction pump;

simultaneously and continuously withdrawing a plurality of gas samples from the plurality of bottles which are present on the carousel by means of the suction pump and the plurality of sampling lines;

during the step of withdrawing gas introducing air into each of the bottles present on the carousel by means of an air pump and a plurality of air lines introduced into the bottles;

feeding the plurality of gas samples, one at a time in succession and in a controlled sequence, through the distribution unit to the inlet of a testing unit common to several bottles while discharging the other of the plurality of gas samples from a bottle into the atmosphere;

removing the sampling lines and the air lines from each of the bottles when a gas sample from a bottle has reached the testing units; and

feeding the bottle to another conveyor line from the carousel.

5,365,772

LEAK DETECTION IN A REDUCED PRESSURE PROCESSING APPARATUS

Yasuhiro Ueda, Tokyo, and Hironari Takahashi, Itami, both of Japan, assignors to Tokyo Electron Limited and Mitsubishi Electric Corporation, both of Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 87,859

Claims priority, application Japan, Jul. 10, 1992, 4-206249

Int. Cl.[5] G01M *3/04*

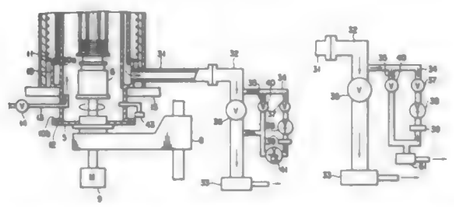
U.S. Cl. 73—40.7 **15 Claims**

1. A reduced pressure processing apparatus comprising:

a processing vessel for processing an object to be processed in a reduced pressure atmosphere;

exhaust means, including a main exhaust system having a relatively high exhaust pressure and a sub-exhaust system for performing an initial slow exhaust, said sub-exhaust

system having a relatively low exhaust pressure, relative to said high exhaust pressure of said main exhaust system for evacuating said processing vessel; and



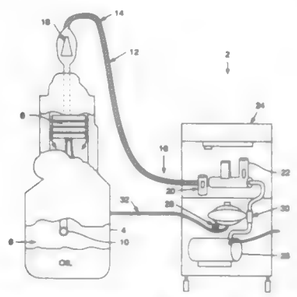
detection means for detecting an oxygen gas concentration or an oxygen gas partial pressure to detect leakage within said processing vessel during exhaust performed by said sub-exhaust system.

5,365,773

ENGINE BLOWBY MEASURING APPARATUS

Russell R. Graze, Jr., Dunlap, and Wayne A. Supak, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 12, 1993, Ser. No. 30,956
Int. Cl.[5] G01M *3/00*
U.S. Cl. 73—47 **12 Claims**



1. An apparatus for measuring blowby of gasses past a piston of an internal combustion engine, said engine having an oil sump positioned below and in communication with the piston and an opening positioned above a liquid level in the sump and in communication with gasses in the oil sump, comprising:

a conduit having first and second end portions and being connectable at the first end portion to the opening;

first means for maintaining the conduit at a preselected temperature;

second means for filtering particulate from fluid passing through the conduit;

a thermal flow meter connected to and being in communication with the conduit and adapted to measure the mass flow rate of gasses delivered from the engine by the conduit; and

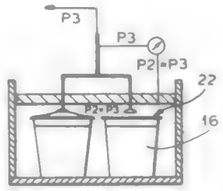
fourth means connected to and being positioned downstream of the thermal flow meter for maintaining the gaseous pressure within the oil sump at preselected values.

5,365,774

METHOD OF AND APPARATUS FOR TESTING THE SEAL OF FILLED CONTAINERS

Willy Horlacher, Vellberg, Germany, assignor to Gasti Verpackungsmaschinen GmbH, Schwabisch-Hall, Germany

Filed Sep. 8, 1993, Ser. No. 118,449
Claims priority, application Germany, Sep. 10, 1992, 4230025
Int. Cl.[5] G01M *3/36, 3/34*
U.S. Cl. 73—49.3 **17 Claims**



1. A method of testing the seal tightness of a cover sealed to a container closed by the cover and having an air space originally under atmospheric pressure P1 between contents of the container and the cover, said method comprising the steps of:

(a) introducing said container into a vacuum chamber evacuatable through a vacuum line opening into said chamber from above;

(b) evacuating said chamber at least above said cover through said vacuum line, thereby enabling pressure within said container to bulge said cover upwardly to an extent representing sealing tightness of the cover on the container;

(c) upon upward bulging of said cover, automatically blocking with said cover a mouth of said vacuum line and thereby signalling by the blocking of the mouth of the vacuum line a satisfactory seal, an unsatisfactory seal preventing said cover from bulging sufficiently to block said mouth; and

(d) measuring a pressure difference between a pressure P2 generated in said chamber by evacuation through said vacuum line and a pressure P3 applied by said vacuum line to said chamber.

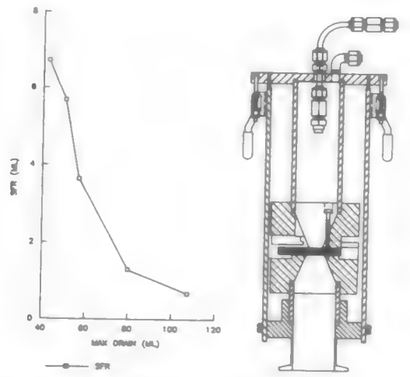
5,365,775

PROCESS FOR AUTOMATIC MEASUREMENT OF SPECIFIC FILTRATION RESISTANCE AND ELECTROSTATIC CHARGE OF A FIBROUS DISPERSION

John G. Penniman, P.O. Box 930, Carmel, N.Y. 10512

Filed Sep. 27, 1993, Ser. No. 127,007
Int. Cl.[5] G01N *11/02, 33/84;* **D21C** *1/10*
U.S. Cl. 73—53.04 **18 Claims**

11. A method for the continuous, accurate and simultaneous monitoring of streaming potential and specific filtration resistance of a solid material in a fluid which comprises passing the fluid through a screen until a pad of the solid material is formed between two electrodes on the screen, maintaining the pressure on the screen side of the pad at a predetermined value with respect to the pressure on the opposing side of the pad, measuring the temperature and conductance of the fluid while measuring the height of the liquid interface on the screen side of



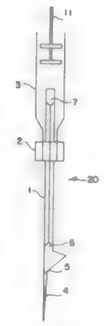
the pad, and calculating the zeta potential and specific filtration resistance from the measurements taken.

5,365,776

PROCESS AND DEVICE FOR DETERMINING THE VISCOSITY OF LIQUIDS

Jochen K. Lehmann, Rostock; Roland Glatzer, Bad Schwalbach; Jutta Hartmann, Weiterstadt, and Dieter Wagner, Wiesbaden, all of Germany, assignors to Schott Gerate GmbH, Hofheim, Germany

Filed Jul. 6, 1993, Ser. No. 86,168
Claims priority, application Germany, Jul. 6, 1992, 4222111; Jun. 23, 1993, 4320813
Int. Cl.[5] G01N *11/06*
U.S. Cl. 73—54.07 **17 Claims**



1. In a process for determining the viscosity of a Newtonian liquid with a capillary viscometer, comprising a storage vessel and a capillary tube, wherein said liquid flows from said storage vessel through said capillary tube, the improvement wherein:

the flow rate of liquid through said capillary tube changes with time, and

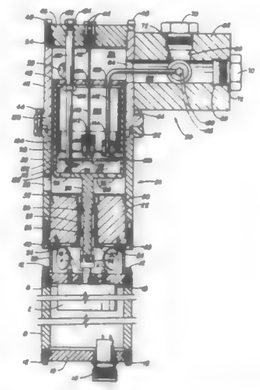
the change in the rate of flow of liquid through the viscometer is measured whereby viscosity of the liquid can be determined by the Hagen-Poiseuille law,

5,365,777

RHEOMETER WITH FLOW DIVERTER TO ELIMINATE END EFFECTS

Ken S. Layton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 3, 1993, Ser. No. 161,723
Int. Cl.[5] G01N *11/14*
U.S. Cl. 73—54.28 **10 Claims**



6. A rheometer, comprising:

a housing having a chamber defined therein for receiving a fluid under pressure;

a cup including a shaft, a cup end wall connected to said shaft and a cylindrical cup side wall connected to said cup end wall, wherein said cup is mounted in said housing so that said cup end wall and said cup side wall can be rotated in said chamber;

a motor connected to said housing and said shaft of said cup for rotating said cup;

a bob including a bob end member and a cylindrical bob side wall connected to said bob end member, said bob disposed in said cup so that said bob end member is parallel to said cup end wall and so that said bob side wall is concentric with said cup side wall;

a first flow diverter member, said first flow diverter member disposed fixedly in said cup between said cup end wall and said bob end member for eliminating adverse end effects of fluid under pressure adjacent said bob end member;

a second flow diverter member, said second flow diverter member disposed fixedly in said chamber of said housing adjacent an end of said bob side wall and an end of said cup side wall opposite said bob end member and said cup end wall for eliminating adverse end effects of fluid under pressure adjacent said end of said bob side wall opposite said bob end member;

means for connecting said bob to said housing so that said bob can rotate relative to said housing; and

means for connecting said first and second flow diverter members to said housing.

5,365,778

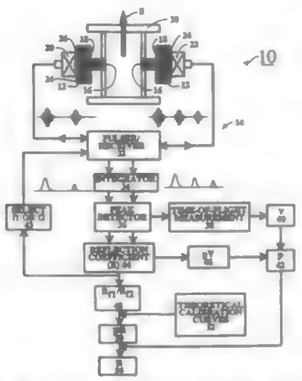
METHOD FOR MEASURING LIQUID VISCOSITY AND ULTRASONIC VISCOMETER

Shuh-Haw Sheen, Naperville; William P. Lawrence, Downers Grove; Hual-Te Chien, Naperville, and Apostolos C. Raptis, Downers Grove, all of Ill., assignors to The University of Chicago, Chicago, Ill.

Filed Jan. 28, 1994, Ser. No. 188,526
Int. Cl.[5] G01N *11/00, 29/02*
U.S. Cl. 73—54.41 **14 Claims**

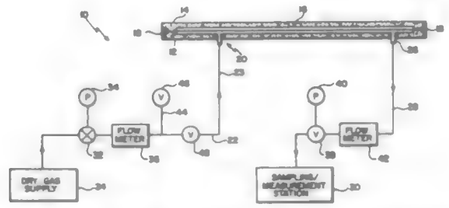
1. An ultrasonic viscometer for measuring viscosity of a fluid comprising:

means for generating ultrasonic shear waves coupled to the fluid;
means for generating ultrasonic longitudinal waves coupled to the fluid;
means for detecting reflections from said generated ultrasonic shear waves;



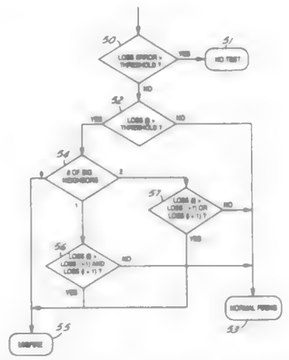
means for detecting reflections from said generated ultrasonic longitudinal waves;
means responsive to said ultrasonic longitudinal waves reflections detecting means for determining phase velocity of the fluid; and
means responsive to said ultrasonic shear waves reflections detecting means for determining viscosity of the fluid.

5,365,779
CORROSION CONDITION EVALUATION AND CORROSION PROTECTION OF UNBONDED POST-TENSION CABLES IN CONCRETE STRUCTURES
Henry Vander Velde, c/o 2199 Carling Avenue, Ottawa, Ontario, Canada K2B 7E8
Filed Apr. 14, 1993, Ser. No. 45,720
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—86 **64 Claims**



1. An on-site method for the corrosion condition evaluation of unbonded prestressing elements in post-tension concrete structures in service, said elements each being disposed within a respective conduit means, said conduit means containing a gaseous environment to which said elements are subjected, the method comprising the steps of:
(a) locating said prestressing element within said concrete structure;
(b) providing at least two openings in said concrete structure at respective positions along the longitudinal length of said prestressing element and between terminal ends thereof, one of said openings being an inlet port and the other of said openings being an outlet port, the said ports each permitting communication with said gaseous environment in said conduit means;
(c) accessing said gaseous environment through said outlet port by extracting a sample of gas from said environment through said outlet port;
(d) measuring said gaseous environment sample accessed through said outlet port to determine its humidity; and
(e) correlating said humidity of said gaseous environment sample to the corrosion condition of said prestressing element between said inlet port and said outlet port.

5,365,780
MISFIRE DETECTION IN INTERNAL COMBUSTION ENGINE WITH OVERLAPPING POWER STROKES
Timothy M. Feldkamp, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1993, Ser. No. 173,029
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117.3 **4 Claims**

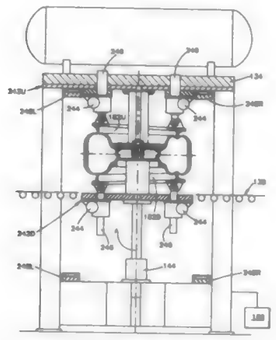


1. A method of detecting misfires of individual cylinder firings in a combustion engine wherein individual cylinder firings are classified as misfires and normal firings, said method comprising the steps of:
measuring engine acceleration corresponding to each of a plurality of cylinder firings during operation of said engine;
determining a power loss value for each cylinder firing with respect to others of said cylinder firings;
comparing each power loss value with a first predetermined loss indicative of misfire;
if a respective power loss value is greater than said first predetermined loss, then 1) comparing the immediate neighboring power loss values of said respective power loss value with a second predetermined loss, and 2) detecting a misfire corresponding to said respective power loss value in response to the number of said immediate neighboring power loss values which are greater than said second predetermined loss.

5,365,781
TIRE UNIFORMITY CORRECTION WITHOUT GRINDING
Timothy B. Rhyne, Greenville, S.C., assignor to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland
Filed Apr. 3, 1992, Ser. No. 863,256
Int. Cl.[5] G01M *17/02*
U.S. Cl. 73—146 **50 Claims**

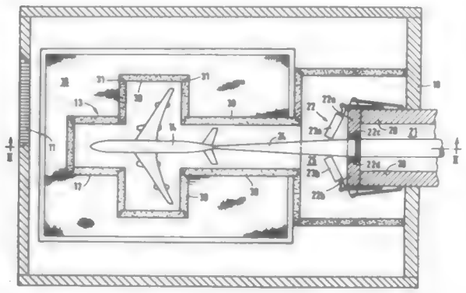
1. A method for reducing the magnitude of a uniformity characteristic in a cured tire, said method comprising the steps of:
generating a signal indicative of the magnitude of the uniformity characteristic and the location on the tire to be corrected; and

permanently deforming as a function of the magnitude of the uniformity characteristic at least a portion of at least one



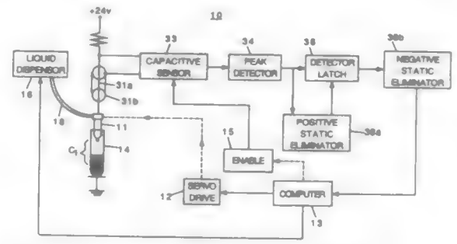
carcass reinforcing member of the tire at the location indicated by the signal.

5,365,782
HANDLING ROOM FOR WIND-TUNNEL CRYOGENIC MODELS
Xavier Bouis, Koeln-Porz; John Tizard, Bonn; Ian A. Price, Wachtberg-Villiprott, all of Germany; David Wigley, Southampton, United Kingdom, and Dieter Schimanski, Lohmar, Germany, assignors to European Transonic Windtunnel GmbH, Cologne, Germany
Filed Jul. 22, 1993, Ser. No. 96,616
Claims priority, application Germany, Jul. 30, 1992, 4225152
Int. Cl.[5] G01M *9/00*
U.S. Cl. 73—147 **10 Claims**



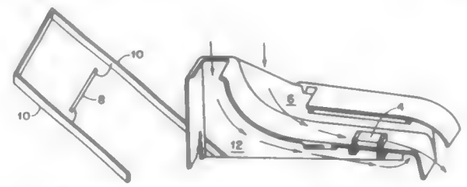
1. A handling room for a wind-tunnel cryogenic model, comprising:
a closeable working chamber adapted to be heated by dried air, and
an open-topped insulating box positioned in the working chamber and configured for receiving the wind-tunnel cryogenic model, the insulating box comprising heat-insulating material and defining a space adapted to be injected with cold gas.

5,365,783
CAPACITIVE SENSING SYSTEM AND TECHNIQUE
Ronald A. Zweifel, Naperville, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.
Filed Apr. 30, 1993, Ser. No. 55,538
Int. Cl.[5] G01F *23/26*
U.S. Cl. 73—304 C **10 Claims**



1. A capacitive liquid level apparatus, comprising:
a probe movably controllable over liquid in a vessel, the probe being constructed and arranged over the liquid to form a capacitance therebetween;
a supply circuit coupled to said probe;
a capacitive sensor coupled to the probe and arranged to provide an electrical signal representing the capacitance;
a peak detection circuit sensing a peak magnitude in the electrical signal;
a discrimination circuit providing a hysteresis control signal, the discrimination circuit, responsive to the peak detection circuit sensing said peak magnitude in the electrical signal and to the hysteresis control signal, determining a peak level corresponding to the peak magnitude and a level of liquid inside the vessel; and
an automated control circuit movably controlling the probe in response to the discrimination circuit determining said peak level.

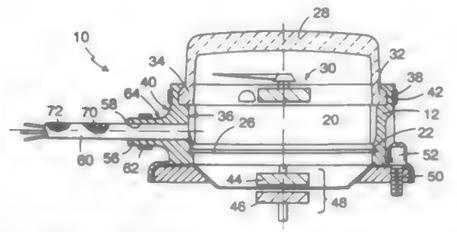
5,365,784
HUMIDITY SENSING APPARATUS AND METHOD
James F. Morrissey, Norwood, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 30, 1992, Ser. No. 876,836
Int. Cl.[5] G01W *1/11*
U.S. Cl. 73—335.02 **5 Claims**



1. A humidity sensing apparatus, said humidity sensing apparatus comprising:
a heat sink;
a Peltier cooler, said Peltier cooler having electrical leads for control current;
a relative humidity measuring sensor, said relative humidity measuring sensor having a changing resistance as a function of humidity, said relative humidity measuring sensor mounted on top of said Peltier cooler opposite to the electrical leads from said Peltier cooler, said relative humidity measuring sensor having electrical leads for outputting resistance values;
a thermistor, said thermistor mounted in intimate contact to said relative humidity measuring sensor, said thermistor

having a changing resistance as a function of temperature, said thermistor having output electrical leads for indicating resistance values therein;
control means, said control means for maintaining the relative humidity on the relative humidity measuring sensor at a predetermined value, said controls means connected to said relative humidity measuring sensor, said thermistor and said Peltier cooler; and
data collecting means, said data collecting means having input the leads from said thermistor to determine a resistance value thereof.

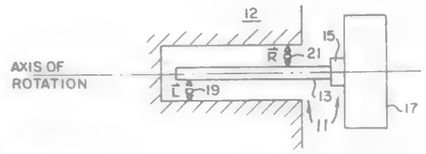
5,365,785
SUBMERSIBLE METER REGISTER CASE AND ASSEMBLY
James F. Martin, West Greenwich, R.I., assignor to Grinnell Corporation, Cranston, R.I.
Continuation-in-part of Ser. No. 900,141, Jun. 17, 1992, abandoned. This application Aug. 12, 1992, Ser. No. 928,959
Int. Cl.[5] G01F *15/14*
U.S. Cl. 73—431 **34 Claims**



1. A register case for a fluid meter totalizing register suitable for submerged service, comprising:
a housing comprising a water impermeable elastomeric material defining at least one wall of a cavity, said cavity having a top opening and a bottom opening and defining a volume therebetween for receiving and containing therewithin, in a region in between said top opening and said bottom opening, a fluid meter totalizing register,
a transparent lens closing said top opening in a direct, watertight sealing engagement with said wall of said housing, and
a magnetic-force transmitting element of water impermeable material closing said bottom opening in a direct, watertight sealing engagement with said wall of said housing,
the register having a rotatable register element disposed within said cavity adjacent an inner surface of said magnetic-force transmitting element, the rotatable register element adapted to be driven by magnetic coupling with a rotatable meter element disposed adjacent an opposite, outer surface of said magnetic-force transmitting element.

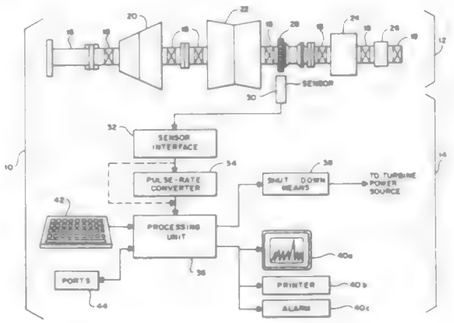
5,365,786
WHEEL BALANCING APPARATUS AND METHOD
Michael W. Douglas, St. Peters, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.
Filed Jun. 5, 1992, Ser. No. 893,768
Int. Cl.[5] G01M *1/08*
U.S. Cl. 73—462 **24 Claims**

1. Apparatus for balancing a wheel and tire assembly comprising:
means for sensing imbalance of a wheel and tire assembly;
means responsive to said sensing means for determining the magnitude and placement of at least one correction weight to correct the imbalance, said determining means further including means for compensating the determined magnitude of the correction weight to correct for curvature of said correction weight;
means for displaying to a user the compensated magnitude of the correction weight;
manually operable means for entering the diameter of the wheel being balanced, said determining means having stored therein different compensation factors for different wheel diameters;



said determining means being responsive to the entered wheel diameter and to the correction weight to compensate for curvature, for an entered wheel diameter, only said at least one correction weight heavier than a predetermined minimum correction weight limit, each of a plurality of wheel diameters having associated therewith its own said predetermined minimum correction weight limit above which compensation occurs.

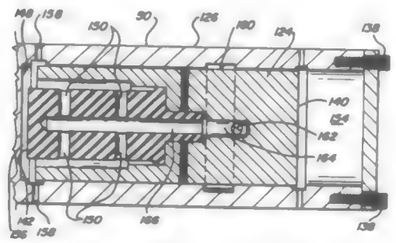
5,365,787
NONINVASIVE METHOD AND APPARATUS FOR DETERMINING RESONANCE INFORMATION FOR ROTATING MACHINERY COMPONENTS AND FOR ANTICIPATING COMPONENT FAILURE FROM CHANGES THEREIN
Walter Hernandez, Potomac, and Edward Page, Kensington, both of Md., assignors to Monitoring Technology Corp., Fairfax, Va.
Filed Oct. 2, 1991, Ser. No. 769,821
Int. Cl.[5] G01H *1/00, 11/00;* **G08B** *23/00;* **G01N** *29/00*
U.S. Cl. 73—660 **61 Claims**



1. An apparatus for measuring resonance information for at least one rotating element of a rotary machine, said machine's rotating elements:
comprising a shaft and one or more nonshaft rotating elements;
having at least one resonant vibration mode; and
rotating about an axis at a fundamental frequency of angular rotation modulated by oscillatory vibrations of at least one of said rotating elements;
said apparatus comprising:
a sensor providing a train of N sensor-pulses in each complete 360°-rotation of said shaft, where:
N is a positive integer;
each of said N sensor-pulses is representative of an angular-rotation increment by said shaft; and

said pulses, or the spacings therebetween, have an instantaneous frequency associated therewith;
means for deriving from said train of sensor-pulses digital signals representative of a modulation of said fundamental frequency of angular rotation being caused by oscillatory motions of at least one of said rotating elements; and
means for deriving from said digital signals a signal spectrum representative of frequency components present in said instantaneous frequency of said sensor-pulses, said signal spectrum containing signals representative of frequency and amplitude characteristics for said resonant mode, said means comprising spectral-analysis means for performing a Fourier Transform spectral analysis on said digital signals.

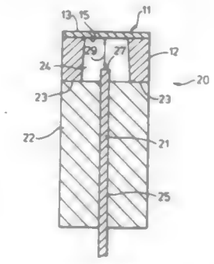
5,365,788
RANDOM VIBRATION GENERATING APPARATUS
Gregg K. Hobbs, Westminster, Colo., assignor to Qualmark Corporation, Westminster, Colo.
Continuation-in-part of Ser. No. 487,757, Mar. 1, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 950,631
Int. Cl.[5] G01M *7/02*
U.S. Cl. 73—665 **6 Claims**



1. An exciter for a shaker table comprising in combination:
a cylinder having a substantially cylindrical interior;
a piston slidable in said cylindrical interior of said cylinder;
means for randomly rotating said piston in said cylinder; and
means for admitting and exhausting air to and from the cylindrical interior in an amount dependent on the rotational position of said piston.

5,365,789
PRESSURE TRANSDUCERS WITH DIAMOND DIAPHRAGMS AND OPTICAL DEFLECTION DETECTION MEANS
David H. J. Totterdell, and Paul R. Chalker, both of Didcot, Great Britain, assignors to United Kingdom Atomic Energy Authority, Didcot, England
Filed Jul. 8, 1993, Ser. No. 87,325
Claims priority, application United Kingdom, Jul. 8, 1992, 9214479.9
Int. Cl.[5] G01L *9/06, 9/00*
U.S. Cl. 73—721 **5 Claims**

1. A pressure transducer which comprises a polycrystalline diamond diaphragm produced by vapor deposition of diamond onto a substrate and subsequent removal of the substrate to expose a rear surface of the diaphragm, means supporting the diaphragm such that the diaphragm can deflect in response to variations in pressure, and means to detect such deflection, said means to detect deflection comprising means for causing light to be incident on the rear surface of the diaphragm, and means



for detecting light reflected by the rear surface of the diaphragm and thereby to detect deflection of the diaphragm.

5,365,790
DEVICE WITH BONDED CONDUCTIVE AND INSULATING SUBSTRATES AND METHOD THEREFORE
Shiuh-Hui Chen, Lake Zurich; Carl Ross; Roseann M. Tomasello, both of Mundelein, and Anita G. Brandes, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 2, 1992, Ser. No. 862,142
Int. Cl.[5] G01L *9/12*
U.S. Cl. 73—724 **27 Claims**

16. A capacitive pressure sensor comprising:
a conductive semiconductor substrate having a first top surface, wherein said conductive semiconductor substrate is used as a first electrode of a capacitor;
an electrically insulating oxide layer disposed on a portion of the first top surface of said conductive semiconductor substrate and having a second top surface spaced apart from the first top surface of said conductive semiconductor substrate, said electrically insulating oxide layer having a feedthrough aperture disposed therein and originating at the second top surface of said electrically insulating oxide layer and concluding at the first top surface of said conductive semiconductor substrate;
a electrically conductive polysilicon layer disposed on a portion of said electrically insulating oxide layer and having a third top surface spaced apart from the second top surface of said electrically insulating oxide layer, said electrically conductive polysilicon layer extending through the feedthrough aperture of said electrically insulating oxide layer and conductively contacting said conductive semiconductor substrate, said electrically conductive polysilicon layer having a chamber aperture disposed therein and originating at the third top surface of said electrically conductive polysilicon layer and terminating at the second top surface of said electrically insulating oxide layer, said electrically conductive polysilicon

layer having an isolation trench disposed therein and originating at the third top surface of said electrically conductive polysilicon layer and terminating at the second top surface of said electrically insulating oxide layer and defining a boundary for a first electrically conductive contact area on the third top surface of said electrically conductive polysilicon layer, a portion of said electrically conductive polysilicon layer disposed separated from the first electrically conductive contact area providing a second electrically conductive contact area; and

an insulating glass substrate having a first surface and an opposing second surface, the opposing second surface having a first metal coating disposed on a portion thereon for providing a second electrode of a capacitor, the first metal coating connected via a first conductive feedthrough passageway through said insulating glass substrate to the first surface of said insulating glass substrate and providing a first external electrical contact, wherein a portion of the first metal coating, located on the opposing second surface, providing a third electrically conductive contact area, and wherein a second metal coating is disposed on the opposing second surface of said insulating glass substrate separate from the first metal coating, the second metal coating connected via a second conductive passageway through said insulating glass substrate to tile first surface of said insulating glass substrate and providing a second external electrical contact, wherein a portion of the second metal coating, located on the opposing second surface, providing a fourth electrically conductive contact area, and wherein said insulating glass substrate is bonded to said electrically conductive polysilicon layer and providing a sealed chamber, including the chamber aperture and the isolation trench, both located between the opposing second surface of said insulating glass substrate and second top surface of said electrically insulating oxide layer, and wherein the first electrically conductive contact area of said electrically conductive polysilicon layer and the third electrically conductive contact area of the first metal coating disposed on the opposing second surface of said insulating glass substrate, are electrically connected, and the second electrically conductive contact area of said electrically conductive polysilicon layer and the fourth electrically conductive contact area of the second metal coating disposed on the opposing second surface of said insulating glass substrate, are electrically connected.

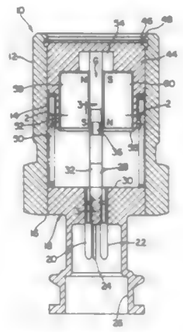
5,365,791

SIGNAL GENERATOR

Santo A. Padula, Lake Orion, Mich., and Duane R. Johnson, Wellington, Ohio, assignors to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 10, 1992, Ser. No. 974,648
Int. Cl.[5] G01L *9/14*
U.S. Cl. 73—745 **7 Claims**

6. Signal generator for generating an electrical signal which varies in accordance with movement of an input member comprising a housing defining a bore therewithin, means supporting a hall effect signal generator within said bore, means for supplying power to said hall effect signal generator and for carrying an output signal from said hall effect signal generator, said hall effect generator varying said output signal as a function of the strength of a magnetic field applied to the hall effect generator, and means for generating a magnetic field applied to said hall effect generator, said input member being movable in said bore for causing the magnetic field applied to said hall effect generator by said magnetic field generating means to vary as a function of the position of the input member whereby said output signal is also varied as a function of the position of the input member, said input member being a plunger slidably mounted in said bore for movement toward and away from said hall effect generator, said plunger having a circumferentially extending wall defining a cavity therewithin having an open end, said magnetic field generating means being mounted in said cavity, said hall effect generator being mounted on suspending means supporting said hall effect generator within



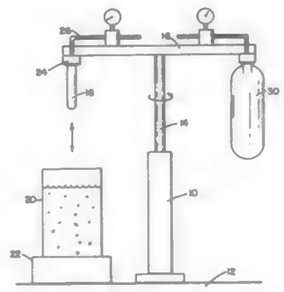
said bore, said suspending means and said hall effect generator being received through the open end of said cavity.

5,365,792

METHOD OF DETERMINING STRETCH CHARACTERISTICS OF THERMOPLASTIC ARTICLES

Max L. Carroll, Jr., Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.

Filed Oct. 21, 1992, Ser. No. 964,226
Int. Cl.[5] G01N *3/18*
U.S. Cl. 73—788 **16 Claims**



1. The method of determining the stretching characteristics of thermoplastic articles having a predetermined relation of natural stretch ratio to a selected physical property on a consistent basis which comprises the steps of

a) determining at least one initial dimension of a sample of said article at a selected temperature,

b) submerging said sample in a boiling liquid, the boiling temperature of which is sufficient to heat said sample at least to its glass transition temperature, for a time sufficient for said article to reach its glass transition temperature across its thickness but without attaining appreciable crystallization,

c) stretching said article in at least one direction to its onset of strain hardening,

d) determining the stretched dimension of said article,

e) determining the ratio of the stretched dimension to the initial dimension, and

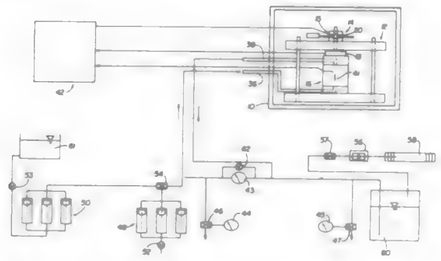
f) correlating the ratio determined in e) to a precalculated association with a selected physical property.

5,365,793

EQUIPMENT AND METHOD FOR ENVIRONMENTAL TESTING OF BITUMINOUS SPECIMENS

Ronald L. Terrel, Edmonds, Wash.; Saleh Al-Swailmi, Riyadh, Saudi Arabia, and Todd V. Scholz, Portland, Oreg., assignors to State of Oregon Acting By and Through Oregon State University, Corvalis, Oreg.

Filed Mar. 1, 1993, Ser. No. 25,047
Int. Cl.[5] G01N *3/32, 3/18, 15/08*
U.S. Cl. 73—813 **15 Claims**



1. A testing system for cylindrical compacted asphalt concrete specimens having a longitudinal center axis perpendicular to opposite end faces, said system comprising;

a test chamber;

temperature control means for selectively varying the temperature of the atmosphere in said chamber;

isolating means for shrouding and holding a specimen in testing position in said chamber with its pores isolated from communication with the chamber atmosphere, said isolating means including supply and discharge ports communicating with respective end faces of the specimen being tested;

a load cell seating on said isolating means;

compression loading means arranged in said chamber to engage said load cell such as to selectively axially compress a specimen in said testing position in a load/no-load cycle;

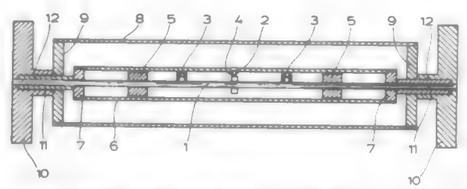
and fluid circulating means connected to said ports for selectively passing air or water endwise through the specimen being tested.

5,365,794

MASS FLOW METER

Yousif A. Hussain, Coulsdon, and Chris N. Rolph, Redhill, both of Great Britain, assignors to Krohne, AG, Basel, Switzerland

Filed Jul. 21, 1992, Ser. No. 917,577
Claims priority, application Germany, Jul. 22, 1991, 4124295
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.37 **21 Claims**



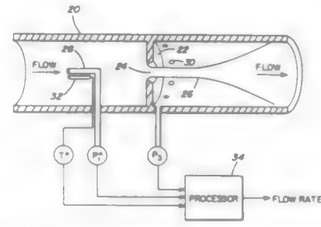
1. A mass flow meter for flowing media that works on the Coriolis Principle, with at least one basically straight Coriolis pipeline having opposite ends and carrying the flowing medium, at least one oscillator acting on the Coriolis pipeline, at least one transducer detecting Coriolis forces and/or Coriolis oscillations based on Coriolis forces and an inner cylinder (6) having opposite ends, Coriolis pipeline (1) being arranged inside the cylinder (6) and the Coriolis pipeline (1) and cylinder (6) being connected so as to prevent axial relative movements, the improvement wherein the Coriolis pipeline (1) is maintained under tension within the cylinder (6).

5,365,795

IMPROVED METHOD FOR DETERMINING FLOW RATES IN VENTURIS, ORIFICES AND FLOW NOZZLES INVOLVING TOTAL PRESSURE AND STATIC PRESSURE MEASUREMENTS

William B. Brower, Jr., 47 Second St., Troy, N.Y. 12180

Filed May 20, 1993, Ser. No. 64,967
Int. Cl.[5] G01F *1/44, 1/46*
U.S. Cl. 73—861.65 **20 Claims**



1. A method of ascertaining a flow rate of fluid traversing a conduit, said conduit having an overall flow area, said method comprising the steps of:

(a) passing said fluid through a flow constricting member in said conduit, said flow constricting member defining a fluid passage having a preselected flow area:

(b) sensing a fluid total-pressure p^* at a first pressure sensing location in said conduit upstream of said flow constricting member;

(c) sensing a fluid static-pressure p_3 at a second pressure sensing location downstream of an entrance of said flow constricting member; and

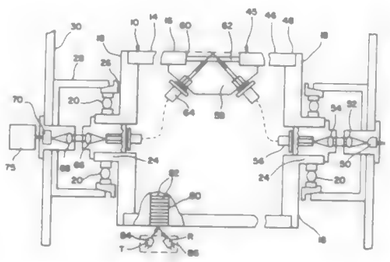
(d) determining said flow rate based on detected values of said fluid total-pressure p^* and said fluid static-pressure p_3, independent of a ratio of said flow area of said flow constricting member to said overall conduit flow area.

5,365,796

DEVICE FOR MEASURING THE TENSION ON A WEB OF A PRINTING PRESS

JiaShen P. Lin, Wheaton, and Xinxin Wang, Woodridge, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 18, 1992, Ser. No. 947,326
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.391 **10 Claims**



1. A device for measuring tension on a web of a printing press, comprising:

first means for determining the wrap angle of the web on a cylinder;

second means for determining the total force applied by the web on the cylinder; and

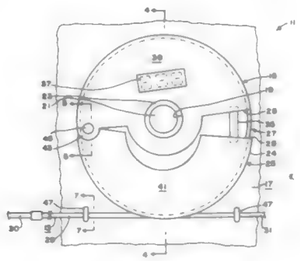
means responsive to the first and second determining means for calculating the tension of the web on the cylinder, wherein the first means for determining comprises sensing means for sensing the presence of the web on an outer surface of the cylinder rotates beneath the web and the sensing means comprises means for directing a source of electromagnetic waves beneath the outer surface of the cylinder against the web, and means for detecting the presence of reflected electromagnetic waves from the web.

5,365,797

DEVICE FOR MEASURING THE AMOUNT OF FORCE APPLIED TO A CABLE

Claud O. McCrory, III, 1161 Cotton Hill La., Collierville, Tenn. 38017

Filed Jan. 7, 1994, Ser. No. 178,867
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.44 **1 Claim**



1. A device comprising, in combination:

(a) an elongated cable having a first end, a second end, and a midportion located between said first and second ends thereof;

(b) a support member; said support member including a stub axle;

(c) a pulley rotatably mounted on said support member, said pulley having an outer edge about which said midportion of said cable is wrapped; said pulley having a slot through said outer edge thereof; said slot being transverse to the axis of rotation of said pulley; said slot having at least one opened end with opposing sides so that when said midportion of said cable is wrapped about said outer edge of said pulley and a force is applied to one end of said cable, said opposing sides of said opened end of said slot will be urged toward one another an amount proportion to the force applied to said cable; said pulley including a generally semicircular first part for being rotatably attached to said stub axle, and a generally semicircular second part for being positioned adjacent said first part to form a generally circular assembly;

(c) measuring means for measuring the movement of said opposing sides of said opened end of said slot toward one another to indicate the amount of force applied to said cable; and

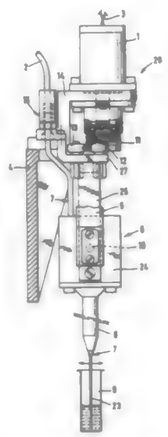
(d) pivot means for pivotally attaching said first and second parts of said pulley to one another.

5,365,798

PIPETTING DEVICE

Rudolf Kressirer, Kelkheim/Ts, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg/Lahn, Germany

Filed May 13, 1993, Ser. No. 60,570
Claims priority, application Germany, May 15, 1992, 4216128
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.11 **7 Claims**



1. A pipetting apparatus for mixing liquids, the apparatus comprising:

a holder;

a pipetting tube held by the holder;

a mounting device rotatably mounting the holder; and

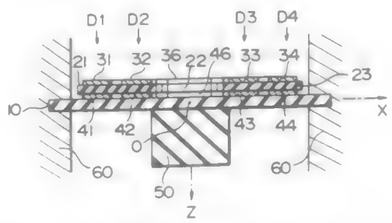
an eccentric drive for causing the pipetting tube to oscillate and mix liquids, the eccentric drive being connected to the mounting device by a first coupling.

5,365,799

SENSOR FOR FORCE/ACCELERATION/MAGNETISM USING PIEZOELECTRIC ELEMENT

Kazuhiro Okada, 73, Sugaya 4-Chome, Ageo-Shi, Saitama 362, Japan

PCT No. PCT/JP92/00882, § 371 Date Mar. 5, 1993, § 102(e) Date Mar. 5, 1993, PCT Pub. No. WO93/02342, PCT Pub. Date Feb. 4, 1993
PCT Filed Jul. 9, 1992, Ser. No. 984,435
Claims priority, application Japan, Jul. 17, 1991, 3-203876
Int. Cl.[5] G01L *1/00*
U.S. Cl. 73—862.041 **23 Claims**



20. A force sensor comprising a substrate (**10**), a working body (**50**), a sensor casing (**60**) and four detection elements (**D1, D2, D3, D4**), each of said detection elements comprising a piezoelectric element (**21, 23**) in a plate form, a first electrode (**31, 32, 33, 34**) formed on a first surface of said piezoelectric element, and a second electrode (**41, 42, 43, 44**) formed on a second surface of said piezoelectric element,

wherein an origin (O) is defined at a point within said substrate (**10**) and an X-axis is defined so that it passes through said origin and extends in a direction parallel to a substrate surface of said substrate, said four detection elements being arranged along said X-axis in such a manner that two of said detection elements (**D3, D4**) are located on one side of said origin and two of said detection elements (**D1, D2**) are located on an opposite side of said origin, and the respective second electrodes (**41, 42, 43, 44**) of said respective detection elements are fixed on said substrate,

wherein a peripheral portion of said substrate is fixed to said sensor casing (**60**),

wherein said working body (**50**) is fixed to said substrate so as to transmit a force applied to said working body to said origin,

wherein said substrate having enough flexibility to transmit a force applied to said working body to said detection elements,

wherein potentials of said first electrodes (**31, 32, 33, 34**) with respect to said second electrodes (**41, 42, 43, 44**) fixed on said substrate in said respective detection elements are obtained, and

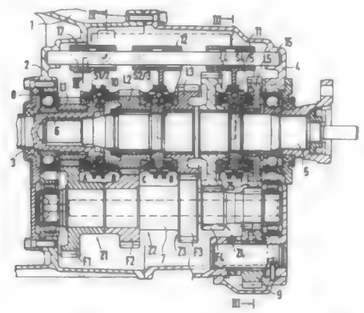
wherein an X-axis component of force applied to said working body is detected on the basis of a difference between a first sum (V1+V3) of potentials on two of said four detection elements having a first polarity and a second sum (V2+V4) of potentials on the other two of said four detection elements having a second polarity.

5,365,800

MANUAL TRANSMISSION OF A MOTOR VEHICLE

Robert Müller, Mönsheim, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Feb. 25, 1993, Ser. No. 22,108
Claims priority, application Germany, Feb. 25, 1992, 4205671
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—333 **12 Claims**



1. A manual transmission of a motor vehicle, comprising:

transmission gears that include a plurality of forward gears and one reverse gear;

synchronizer clutches which shift the gears, with all said transmission gears being arranged such that they can be shifted only by simultaneous closing of two of said synchronizer clutches which are assigned to each gear;

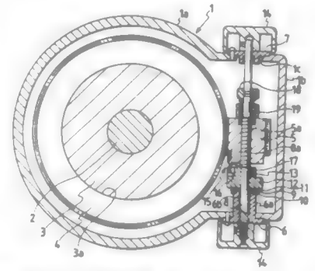
wherein the transmission gears are arranged such that a progressive gear grading is provided, with a first range shifting implemented between adjacent transmission gears and a second range shifting implemented between non-adjacent transmission gears.

5,365,801

COARSE/FINE ADJUSTMENT OF A ROTARY BODY

Kyoji Nakamura, Yokosuka, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,567
Claims priority, application Japan, Mar. 5, 1992, 4-083219
Int. Cl.[5] F16H *1/16*
U.S. Cl. 74—425 **5 Claims**



1. A coarse/fine adjustment of a rotary body, comprising:

a worm wheel fitted to a rotary shaft of said rotary body;

a worm meshing with said worm wheel and having a first screw;

a rotary driving shaft having a second screw engaging with said first screw;

a manipulation member for rotating said rotary driving shaft; and

switching means having first and second switching modes,

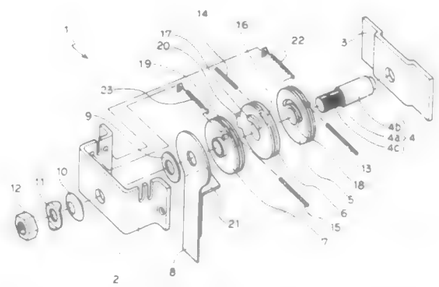
wherein said switching means integrally connects said rotary driving shaft to said worm and rotates said worm by transmitting a rotation of said rotary driving shaft directly to said worm in said first switching mode, and transforms the rotation of said rotary driving shaft into a rectilinear movement through said first screw engaging with said second screw in said second switching mode.

5,365,802

OPERATING DEVICE FOR ACCELERATOR

Kazuhiro Suzuki, Nishinomiya; Eriya Harada, and Akira Minoura, both of Sakai, all of Japan, assignors to Nippon Cable System Inc., Takarazuka and Kubota Ltd., Osaka, both of Japan

Filed Aug. 9, 1993, Ser. No. 103,515
Claims priority, application Japan, Aug. 10, 1992, 4-212800
Int. Cl.[5] G05G *11/00, 1/14, 7/10*
U.S. Cl. 74—482 **2 Claims**



1. An operating device comprising:

a housing, a shaft fixed on the housing, a first pulley, an output pulley and a second pulley coaxially rotatably supported on said shaft in that order, a first control cable wound and unwound with the first pulley, an output control cable for controlling the engine, wound and un-

wound by the output pulley, a second control cable wound and unwound by the second pulley, a first return spring for rotating the first pulley in the direction for winding the first control cable, a second return spring for rotating the second pulley in the direction for winding the second control cable and an accelerator lever supported rotatably on the housing,

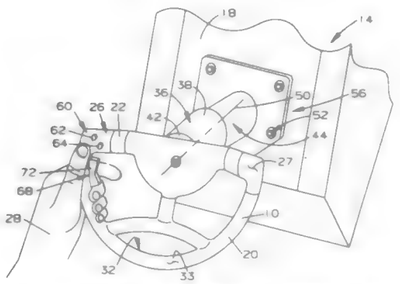
wherein an engaging latch is projected on the peripheral surface of said output pulley, a first engaging projection is provided on one said first pulley and said output pulley, and a "C" shaped first engaging hole in which said first engaging projection engages is provided on the other of said first pulley and said output pulley, a second engaging projection is provided on one of said second pulley and said output pulley and a "C" shaped second engaging hole in which the second engaging projection engages is provided on the other of said second pulley and said output pulley; said first engaging projection is capable of moving within said first engaging hole along the longitudinal direction thereof and said second engaging projection is capable of moving within said second engaging hole along the longitudinal direction thereof, and an accelerator lever is provided with an engaging piece engageable with said engaging latch.

5,365,803

STEERING AND TRANSMISSION SHIFTING CONTROL DEVICE

Craig B. Kelley, Dunlap; David E. Nelson, Peoria, and Peter M. Nelson, Sandwich, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 13, 1993, Ser. No. 91,146
Int. Cl.[5] B62D *1/04;* **H01H** *9/00, 3/12*
U.S. Cl. 74—484 R **3 Claims**



1. A steering and transmission shifting control mechanism for operating a vehicle having a reversible multi-speed transmission for moving the vehicle in forward and reverse directions at different speed ratios, comprising:

a steering wheel having a front portion defining a front surface facing an operator and a back portion defining a back surface facing away from the operator;

support means for mounting the steering wheel on the vehicle for rotatable movement by movement of an operator's hand;

means responsive to the rotatable movement of the steering wheel for steering the vehicle;

means for changing the speed ratio of the transmission of the vehicle including at least one control button mounted on the front portion of the steering wheel and extending from the front surface so that the control button may be conveniently controlled by an operator's thumb; and

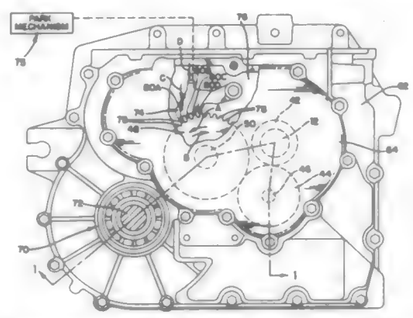
means for selecting either the forward or reverse drive condition of the transmission including a control trigger, the control trigger being a three-position switch mounted on the back portion of the steering wheel and extending from the back surface so that the control trigger may be conveniently controlled by an operator's finger.

5,365,804

PARKING MECHANISM FOR A POWER TRANSMISSION

Robert C. Downs, Clarkston, and Kyle K. Kinsey, Highland, both of Mich., assignors to Saturn Corporation, Troy, Mich.

Filed Jun. 2, 1993, Ser. No. 70,580
Int. Cl.[5] G05G *5/06, 1/00*
U.S. Cl. 74—535 **2 Claims**



1. In combination, a parking mechanism and power transmission having a working gear continuously drive connected with an output shaft comprising:

a pivotally mounted pawl having four park teeth formed thereon defining two forward parking tooth surfaces on two of said park teeth and two reverse parking gear surfaces on two other of said park teeth, each park tooth having a profile defining continuous engagement of only the forward parking tooth surfaces with respective teeth on the working gear when a park condition is being selected and the working gear has a forward rotation bias and continuous engagement of only the reverse parking tooth surfaces with respective teeth on the working gear when the park condition is being selected and the working gear has a reverse rotation bias; and

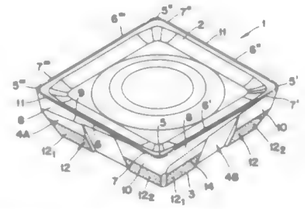
means for operatively selecting the park condition with movement of the pawl teeth into engagement with the teeth of the working gear.

5,365,805

PROCESS FOR PRODUCING A CUTTING INSERT

Göran Pantzar, Arsunda, and Sven-Erik Carlsson, Gimo, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jan. 14, 1993, Ser. No. 4,302
Claims priority, application Sweden, Feb. 5, 1992, 9200319-3
Int. Cl.[5] B21K *5/12;* **B22F** *5/00;* **B23C** *5/20*
U.S. Cl. 76—101.1 **7 Claims**



1. A process for producing cutting inserts for chipbreaking metal cutting comprising:

pressing a powder to form an insert body including a top chip surface, a bottom surface, and at least one edge surface interconnecting said top and bottom surfaces, said edge surface including a relief surface portion intersecting said top surface at an angle to form therewith a cutting edge;

sintering said press-formed insert body, and

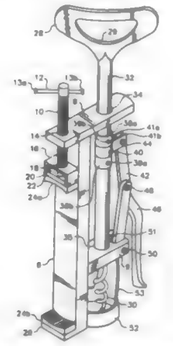
grinding said edge surface only along a lower portion thereof disposed below said relief surface portion.

5,365,806

MECHANICAL BOTTLE AND JAR OPENER

Sam S. Paramest, 17407 3rd Ave. SE., Bothell, Wash. 98012

Filed Jul. 26, 1993, Ser. No. 96,892
Int. Cl.[5] B67B *7/44*
U.S. Cl. 81—3.09 **3 Claims**



1. A three-in-one mechanical device for the removing of a bottle corks, bottle caps and various sizes of jar caps, comprising:

(a) a main frame structure of rigid material which consists of an elongated vertical post and a pair of horizontal bars, where an upper cross T bar has a shorter wing to support a grip screw of a vise grip system; and a longer wing to support a cork screw shaft of a cork screw and a lever handle and its connecting parts of a lever system, and said vise system is a mechanical functional device to open various sizes of said jar caps; however said cork screw and lever system is a mechanical functional device to remove said bottle corks,

(b) said shorter wing has an opening or hole with an internal threaded receptacle fastener for said grip screw to fit in, and

(c) the top end or head section of said grip screw has a cross hole for a rod to fit in as an adjustable rod handle of said screw, said handle has a lug head attached as stopper on each end of said rod,

(d) the bottom end of said screw which is located below said upper T bar is connected to a movable vise grip housing which has a curved, rectangular, toothed rubber grip as an adjustable grip installed,

(e) another curved, rectangular, toothed rubber grip is attached at the lowest part of said main vertical post as a stationary grip, and

(f) the toothed sides of said adjustable grip and stationary grip are set to face each other and they position at approximately 180 degree angle as the straight line along the wide surface of said vertical post,

(g) whereby to open a jar simply place the top of said jar cap against said post in-between said curved rubber grips and turn said grip screw to hold said cap very firmly, and then turn the main body of said device counter clockwise to open said jar cap,

(h) on the other wing of said T bar, an opening hole is made as an upper shaft slot for said cork screw shaft rod to slide through vertically with a loose fit relationship, and

(i) another lower horizontal bar that is connected to the middle lower part of said post at the right angle also has an opening hole as a lower shaft slot for said shaft to slide through vertically, and said upper and lower shaft slots are in line at approximately 180 degree relationship, said shaft rod, therefore, is installed through said upper T bar and said lower bar vertically parallel to said post,

(j) a thin metal, cone shape structure connected at the footing of said post as a bottle neck's rim strutter,

(k) said cork screw shaft rod has a flat, thin, wing type bottle cap opener connected above said upper T bar as a handle and at the lower end has a connecting cork screw which is extended beyond said lower bar, and said cork screw member is hung in the center of said cone strutter prior to a drilling process,

(l) said wing type bottle cap opener handle, screw shaft rod and cork screw is made into a single, connecting unit through a proper metal work process,

(m) at the position just below said upper bar, a lever connector ring is installed on said screw shaft rod, and said lever connector ring has it's arms connected to a long lever bar handle through pivot holes and rivet connection means,

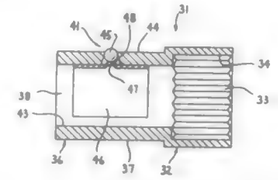
(n) whereby this wing of the device of said cork screw shaft and it's connecting parts as a drilling unit and said lever bar handle and it's connecting parts as a lever system unit are connected and have a mechanical working relationship for the removal of said bottle cork by a leverage means.

5,365,807

THROUGH-HOLE SOCKET

Scott A. Darrah, 7616 Wilderness Rd., Raleigh, N.C. 27613, and Vincent Lee, No. 17, Lane 232, Section 6, Roosevelt Road, P.O. Box 29-29, Taipei, Taiwan, Prov. of China

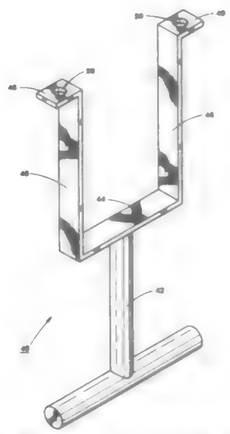
Filed Jun. 24, 1993, Ser. No. 81,809
Int. Cl.[5] B25B *13/46*
U.S. Cl. 81—60 **12 Claims**



1. In a socket tool having a socketlike opening which opens coaxially inwardly of the tool from one end thereof for creating a nonrotatable griping engagement with a fastener, such as a conventional nut or bolt head of polygonal shape, when the fastener is positioned within the socketlike opening, said socket tool including a fastener-receiving part which defines therein the socketlike opening, said fastener-receiving part having an annular wall which surrounds and defines the socketlike opening, said annular wall having an interior annular surface which is of an noncylindrical configuration to create a nonrotatable gripping engagement with a conventional fastener when the fastener is axially slidably inserted into the socketlike opening, the socket tool also including a drive end part which is coaxially fixed to said fastener-receiving part and which defines the other end of said socket tool, said drive end part having a surrounding exterior peripheral wall which projects axially inwardly from said other end and terminates at a shoulder and which of a noncircular profile having a size and flat-sided configuration so as to be axially slidably and nonrotatable engageable within a tool-receiving opening of a ratchet wrench, said drive end part also having an interior opening which is formed within the interior thereof and which projects axially inwardly from said other end for coaxial communication with said socketlike opening, said interior opening being defined by a surrounding interior peripheral wall so that said drive end part is also defined by an annular wall, the improvement comprising a ball-type detent means mounted on said drive end part for cooperation with the tool-receiving opening of the ratchet wrench, said detent means including a bore

formed in and extending generally radially through the annular wall of said drive end part, said bore projecting generally perpendicularly relative to and intersecting a flat sidewall of said drive end part substantially adjacent a center portion thereof, said bore where is communicates with said flat sidewall defining a first opening of a first diameter, said bore where it communicates with the inner peripheral wall defining a second opening of a second diameter which is greater than said first diameter, a ball disposed within said bore and having a third diameter which is smaller than said second diameter but greater than said first diameter so that said ball projects radially outwardly beyond said first opening but is constrained from moving radially outwardly through said bore, and spring means mounted on said drive end part and engaging a radially inner side of said ball for normally resiliently urging the ball outwardly of said bore, said spring means being disposed adjacent a radially inner end of said bore for preventing said ball from passing into said interior opening, said spring means comprising a one-piece spring member having a generally C-shaped configuration and constructed from a thin platelike spring material, said spring member being positioned within and extending partially around said interior opening so that said spring member resiliently grips said interior peripheral wall, said spring member having a central portion thereof which extends across the radial inner end of said bore and resiliently supportingly engages a radially inner side of said ball.

5,365,808
OIL FILTER SHUT OFF VALVE WRENCH AND METHOD
Michael A. Palmer, P.O. Box 1166, Marina, Calif. 93933
Filed Nov. 29, 1993, Ser. No. 158,453
Int. Cl.[5] B25B *13/02*
U.S. Cl. 81—176.1 **3 Claims**



1. An oil filter shut off valve wrench for use in rotating an engine oil filter assembly of the type requiring rotation thereof to shut off the supply of oil thereto, said oil filter assembly including an oil filter housing attached to an oil filter sleeve by means of bolts, said oil filter shut off valve wrench comprising:

(a) an upwardly open, U-shaped frame comprising:

a base member;

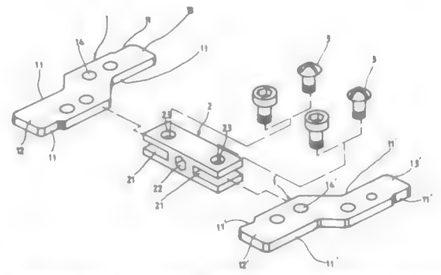
two, spaced apart, parallel, vertical side members proximally attached to said base member;

a flange perpendicularly attached to each of the side members; and

a circular opening, defined through each of said flanges, said circular opening sized to accommodate therein said bolts; and

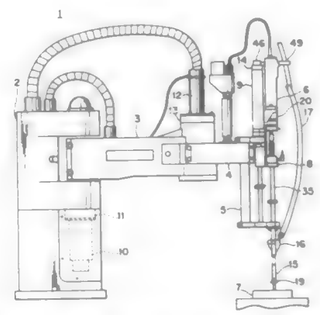
(b) an inverted T-shaped handle.

5,365,809
ADJUSTABLE SPANNER
Chia-Yuan Hsiao, No. 4, Lane 11, Tze-Chiang St., Tu-Cheng City, Taipei Hsien, an, Province of China
Filed Nov. 5, 1993, Ser. No. 147,484
Int. Cl.[5] B25B *13/10*
U.S. Cl. 81—176.3 **2 Claims**



1. An adjustable spanner comprising a connecting member which comprises a center tool hole for inserting a screw-driver for use as a handle, two horizontal openings longitudinally aligned on the same plane at two opposite sides by said center tool hole, two vertical screw holes spaced on one side thereof and respectively disposed in communication with either horizontal opening; and two symmetrical jaw plates connected in parallel to said connecting member and respectively retained in either horizontal opening of said connecting member, having each a plurality of vertical mounting holes spaced in a longitudinal direction and alternatively connected to either screw hole on said connecting member by a respective screw, and side notches bilaterally spaced along the respective length for clamping on the workpiece to be turned.

5,365,810
SCREW SUPPLY CONTROL APPARATUS FOR SCREW TIGHTENING ROBOT
Masahiro Inaniwa, and Yoshiaki Sato, both of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan
Filed Jul. 30, 1993, Ser. No. 99,540
Int. Cl.[5] B25B *23/04*
U.S. Cl. 81—430 **13 Claims**



1. A screw supply control apparatus for sequentially supplying to a robot a plurality of screws, comprising:

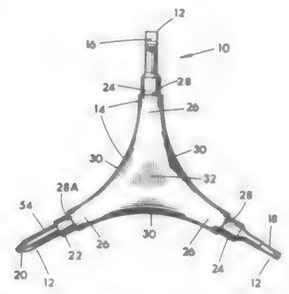
a screw feeder having a screw air-feed pipe through which the screws are air-fed to the robot, and an air-feed valve provided to said screw air-feed pipe wherein compressed air is fed into said screw air-feed pipe to air-feed the screw when said screw air-feed valve is open whereas compressed air is not fed into said screw air-feed pipe when said screw air-feed valve is closed;

a screw passage sensor provided at said screw air-feed pipe for sensing passage of the screw and producing a passage signal when the passage of the screw is sensed;

time measuring means for measuring a first predetermined period of time and producing a time-up signal when the first predetermined period of time is measured; and

control means for controlling said air-feed valve to open in response to the passage signal and then to close said air-feed valve in response to the time-up signal wherein said time measuring means is controlled to start measurement of the first predetermined period of time when said screw passage sensor produces the passage signal.

5,365,811
MULTIPURPOSE IN-LINE SKATE TOOL
Clive H. Chi, 10573 W. Pico Blvd., Ste. 283, Los Angeles, Calif. 90064
Filed Jun. 28, 1993, Ser. No. 83,950
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—439 **1 Claim**



1. A multipurpose hand tool structured for use with in-line roller skates, comprising;

a substantially rigid and hard handle made of plastics and having three generally rounded arms made of said plastics and positioned radially about a center of said handle and positioned so as to render said tool generally flat, each of said arms having a terminal end, at least one said terminal end of one said arm structured as a first abutment shoulder useful for pushing on a wheel bearing of an in-line roller skate to remove the bearing from the wheel, said center of said handle having curved side walls which taper into said arms so as to provide a comfortable grip for a human hand;

a first metal rod, a second metal rod, and a third metal rod;

each of the metal rods having an attachment end and an exposed oppositely disposed distal end, the attachment ends of the metal rods tightly encased within the plastic of said handle with the distal ends extending from said arms, one said rod per said arm,

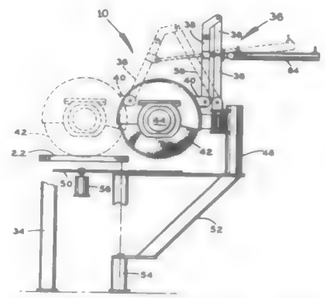
rotation preventing means on the attachment ends of the metal rods for preventing the metal rods from spinning within said plastics of said handle,

the distal end of said first metal rod structured into a flat head screw driver;

the distal end of said second metal rod structured into a hex key;

the distal end of said third metal rod structured into a phillips screw driver, said third metal rod affixed within and extending from the arm of said handle having said first abutment shoulder, said third metal rod further including a second abutment shoulder formed onto an outer surface of said third metal rod, said second abutment shoulder positioned between said phillips screw driver and said first abutment shoulder, said second abutment shoulder having means for pressing against a center spacer of a wheel bearing assembly of an in-line roller skate, a first shaft portion of said third metal rod supporting said phillips screw driver forming a stabilizing guide shaft means during use of said second abutment shoulder, said first abutment shoulder including means for pressing against a wheel bearing with said second abutment shoulder inserted within a center opening of the wheel bearing and serving as a guide and lateral stabilizer for said second abutment shoulder.

5,365,812
AUTOMATIC SAW MACHINE AND METHOD
Charles W. Harnden, Ft. Lauderdale, Fla., assignor to Alpine Engineered Products, Inc., Pompano Beach, Fla.
Continuation of Ser. No. 898,151, Jun. 15, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 129,781
Int. Cl.[5] B27B *5/20*
U.S. Cl. 83—34 **4 Claims**



2. A method of sawing lumber using a saw machine comprising a saw table with a pivoting saw blade mounted over said table on a telescoping arm which is rotatable relative to said table to various angles and activated to make a cut with a switch, the table being within a work piece-carrying track having a movable stop member at one end and a side rail, the angle of said arm over said table and the position of said stop member relative to said table being controlled by a computer having a program with an apparatus structure-to-be-cut options selection display and a display monitor with a screen and data input selection means having cursor moving means and an enter button, comprising the steps of:

operating said selection means to select the general type of structure-to-be-cut and pressing said enter button, thereby telling said computer to cause said specific variations of the selected general type of structure loaded into said computer to appear on said screen,

operating said selection means to select one of said specific variation to be cut, then pressing said enter button, thereby telling said computer to clear the list of said specific variations from said screen,

operating said selection means to make a program selection to communicate to said computer that the operator is loading a given work piece onto said track,

loading said given work piece onto said track,

pressing said enter button to tell said computer that said work piece is loaded onto said track, so that a graphic representation of said work piece appears on said screen oriented in its proper position to make the next cut for the user to visually confirm proper work piece orientation, and so that said computer causes said saw blade to automatically move to a position at the necessary angle and said stop member to automatically move to a position at a distance which gives the necessary length for said given work piece to be cut,

operating said switch to activate said telescoping saw arm,

waiting for said saw arm to complete a cut,

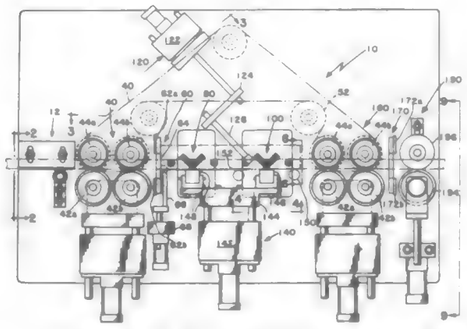
reading said screen on which said computer displays what the next operation will be,
reading said screen which tells the operator to laterally roll said given work piece over, following the first cut,
rolling said given work piece over so the angle just cut is directed away from said side rail,
pressing said enter button to signal to said computer that said given work piece has been rolled over, so that a graphic representation of said work piece appears on said screen oriented in its proper rolled over position to make the next cut for the user to visually confirm proper work piece orientation, and so that said computer causes said saw blade to automatically move to a position at the necessary angle to make said next cut,
waiting for said saw blade to be positioned by a motor and switches controlled by said computer at the necessary angle, and for said telescoping arm member to be positioned at the necessary length to make the next cut,
operating said switch to activate said telescoping saw arm to again cut said given work piece,
removing said given work piece from said track,
pressing said enter button to position said saw blade for said new work piece.

5,365,813

SYSTEM FOR MAKING PICTURE FRAMES

Thomas F. Greene, Amesbury, Mass., assignor to Production Plus, Inc., Amesbury, Mass.

Filed Oct. 7, 1992, Ser. No. 957,655
Int. Cl.[5] B26F *1/12*
U.S. Cl. 83—35 **6 Claims**



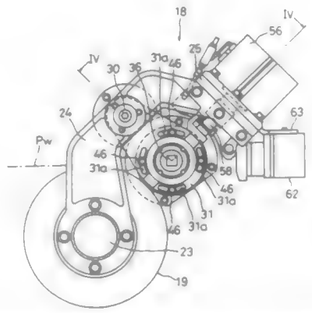
1. A method for the formation of a picture frame having planar and curvilinear surfaces which comprises:
moving the picture frame forwardly to a first punching station;
punching the picture frame through the surfaces to form a leading miter;
moving the picture frame rearwardly to a second punching station upstream from the first punching station;
punching a first notch in the picture frame;
repositioning the picture frame at the second punching station;
punching a second notch in the picture frame;
repositioning the picture frame at the first punching station; and
punching a trailing miter in the picture frame to form a finished picture frame.

5,365,814

SHREDDING DEVICE FOR PAPER WEB USED IN THE MANUFACTURE OF CIGARETTES WITH FILTERS

Takayuki Irikura, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,129
Claims priority, application Japan, Jun. 24, 1992, 4-165878
Int. Cl.[5] B26D *1/40, 1/43*
U.S. Cl. 83—74 **10 Claims**



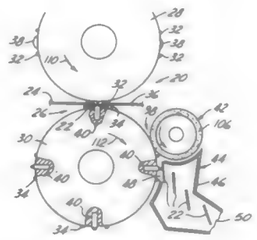
1. A shredding device for paper web used in the manufacture of cigarettes with filters, comprising:
a first drum rotatably arranged and having a peripheral surface for carrying paper web as it rotates; and
shredding means for shredding the paper web into paper pieces of a specified length in cooperation with said first drum, said shredding means including
a common shaft rotatably arranged in parallel to said first drum and having both ends,
the second drum mounted on said common shaft and rotated with said common shaft in the opposite direction from said first drum,
a pair of free rollers rotatably mounted on said common shaft at both sides of said second drum and having a larger outside diameter than said second drum, said pair of free rollers being rotated while contacting the peripheral surface of said first drum,
mounting means for mounting the free rollers on said common shaft, said mounting means permitting the displacement of the axes of the free rollers with respect to the axis of said common shaft,
a plurality of shredding blades which are arranged circumferentially on the peripheral surface of said second drum at equal intervals, said shredding blades passing said first drum with a specified gap between themselves and the peripheral surface of said first drum as said second drum is rotated, and shredding the paper web on said first drum into individual paper pieces while passing,
supporting means for supporting said second drum and said pair of free rollers so that they are allowed to move toward or away from the peripheral surface of said first drum, and
urging means for urging said second drum and said pair of free rollers toward the peripheral surface of said first drum, said pair of free rollers being pressed against the peripheral surface of said first drum with a specified force,
detecting means for detecting a parameter of said free rollers, and
controlling means for determining, from said parameter, an increase in the outside diameter of said free rollers, and controlling the urging force of said urging means in accordance with an increase in the outside diameter of said free rollers, and adjusting an eccentric distance between the axes of said free rollers and the axis of said common shaft by means of said mounting means.

5,365,815

ROTARY SCRAP STRIPPER

Alan R. Pfaff, Jr., 3512 MacNichol Trail, Orchard Lake, Mich. 48323

Continuation of Ser. No. 3,295, Jan. 12, 1993, abandoned. This application Dec. 13, 1993, Ser. No. 166,606
Int. Cl.[5] B26D *1/36, 1/40*
U.S. Cl. 83—154 **15 Claims**



1. A mechanism for removing pieces cut from a web of material comprising:
a pair of cylinders constructed and arranged to be mounted for rotation in generally superimposed relation with a web of material passing through the nip between them, a pin carried by one of the cylinders and having a tip constructed and arranged to pierce a piece of material cut from the web and receive the piece on the pin, a sleeve received over the pin, said sleeve and pin being relatively movable to a first position wherein the tip of the pin projects beyond one end of the sleeve and generally radially outwardly of such one cylinder, and to second position spaced from the first position in which said tip is received in said sleeve, a retainer releasably retaining the sleeve and pin in said relative first position thereof, said retainer having a plurality of circumferentially spaced apart cams operably associated with one of said sleeve and pin, an indexable ring having a plurality of circumferentially spaced apart followers operably associated with at least some of said cams, and a spring yieldably urging at least some of said followers and cams into operative relationship, an actuator carried by the other cylinder and constructed and arranged so that as the pin and sleeve pass through the nip of the cylinders a piece of material cut from the web is pierced by the tip and forced onto the pin, the pin and sleeve are relatively moved from their second position toward their first position and said retainer is actuated to retain them in their first position, and a release adjacent said one cylinder, downstream of the nip of said cylinders, and constructed and arranged to release said retainer when said pin and sleeve pass by said release so that said sleeve and pin relatively move to said second position and thereby strip and remove the cut piece from said pin to release the cut piece from said one cylinder.

5,365,816

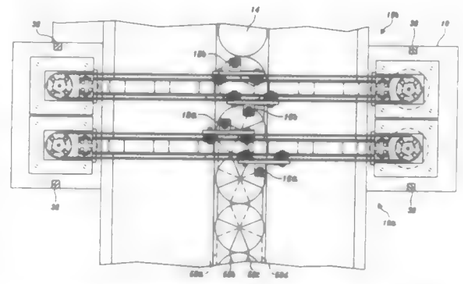
BEAM CUTTER

Norman A. Rudy, Renton, Wash., assignor to Design Systems, Inc., Redmond, Wash.

Filed Jun. 22, 1993, Ser. No. 80,913
Int. Cl.[5] B26F *1/26*
U.S. Cl. 83—177 **19 Claims**

1. An apparatus for cutting a predetermined repetitive pattern in at least one piece of material, comprising:
(a) a conveyor for advancing the material;
(b) a first drive mechanism disposed above the conveyor, wherein the first drive mechanism includes at least two spindles and a first endless drive belt trained on the spindles such that the drive belt moves relative to the conveyor in a direction transverse to the direction of movement of the conveyor, the first drive belt defining a forward span and a rearward span;
(c) a first beam cutter attached to the forward span of the first drive belt so as to move with the forward span of the first drive belt; and
(d) a second beam cutter attached to the rearward span of the first drive belt so as to move with the rearward span of the first drive belt, the second beam cutter being offset from the first beam cutter in a direction transverse to the direction of movement of the first beam cutter such that the cutters can pass each other transversely on the respective spans of the first drive belt.

19. An apparatus for cutting a predetermined repetitive pattern in at least one piece of material, comprising:
(a) a conveyor for advancing the material;
(b) a first drive mechanism disposed above the conveyor, wherein the first drive mechanism includes at least two spindles and a first endless drive belt trained on the spindles such that the drive belt moves relative to the conveyor in a direction transverse to the direction of movement of the conveyor, the first drive belt defining a forward span and a rearward span, the mechanism further including:



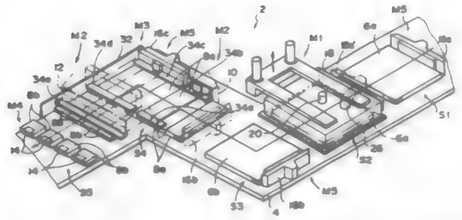
(i) a first track disposed adjacent and substantially parallel to the forward span of the first drive belt;
(ii) a first carriage attached to the forward span of the first drive belt to ride along the first track;
(iii) a second track disposed adjacent and substantially parallel to the rearward span of the first drive belt; and
(iv) a second carriage attached to the rearward span of the first drive belt to ride along the second track;
(c) a first beam cutter attached to the first carriage to move with the forward span of the first drive belt;
(d) a second beam cutter attached to the second carriage to move with the rearward span of the first drive belt;
(e) a third beam cutter attached to the forward span of the first drive belt to move with the forward span of the first drive belt;
(f) a fourth beam cutter attached to the rearward span of the first drive belt to move with the rearward span of the first drive belt;
(g) a third carriage attached to the forward span of the first drive belt to ride along the first track, the third carriage carrying the third beam cutter; and
(h) a fourth carriage attached to the rearward span of the first drive belt to ride along the second track, the fourth carriage carrying the fourth beam cutter.

5,365,817

SHEET CUTTING APPARATUS

Hiroshi Maeda, and Nobumitsu Takahashi, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 10, 1992, Ser. No. 989,046
Claims priority, application Japan, Dec. 19, 1991, 3-335421
Int. Cl.[5] B26D *7/32;* B65H *9/12*
U.S. Cl. 83—256 7 Claims



1. A sheet cutting apparatus for cutting a stack of sheets, comprising:

an air removing mechanism comprising:

an aligning means for aligning edges of said sheets in the stack of sheets, said stack of sheets having been placed on a table before being cut, by pushing on opposing sides of said stack of sheets towards a center of the stack of sheets, thereby aligning the edges of each of said sheets to one another,

a covering means for covering the stack of sheets on said table so that the stack of sheets is hermetically sealed on the table within a space between said table and said covering means,

a pushing means for pushing the stack of sheets, each of said sheets in said stack of sheets having been aligned to one another by said aligning means and having been covered by said covering means, from above,

an evacuating means for evacuating air from the space between said table and said covering means to hermetically seal said space between said table and said covering means thereby removing air between each of said sheets in said stack of sheets,

a means for moving said covering means, and

a means for returning said space between said table and said covering means to atmospheric pressure,

a first cutting means for cutting the stack of sheets received from said air removing mechanism into a plurality of stacks of cut sheets,

a second cutting means for cutting the plurality of stacks of cut sheets received from said first cutting means into a plurality of portions, and

a sheet overlap preventing mechanism comprising:

a first restriction means for restricting movement of the plurality of cut sheets while said first cutting means is cutting the stack of sheets, in a direction perpendicular to a surface of stacks of cut sheets, and

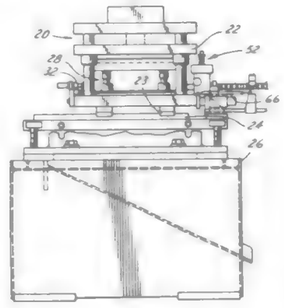
a second restriction means for restricting movement of said plurality of portions cut from said plurality of stacks of cut sheets while said second cutting means is cutting the plurality of stacks of cut sheets, said plurality of portions located adjacent to one another, said movement being in a direction perpendicular to a surface of each of said plurality of portions.

5,365,818

SEPARATELY MOVING HYDRAULIC PRESS AND DIE

Roger Levy, Bloomfield Hills, Mich., assignor to Tishken Products Co., Oak Park, Mich.

Continuation-in-part of Ser. No. 974,141, Nov. 10, 1992, abandoned. This application Jan. 19, 1993, Ser. No. 6,377
Int. Cl.[5] B26D *1/60*
U.S. Cl. 83—308 3 Claims



1. A machine comprising:

a fixed-base having at least one rail;

a hydraulic press having guides slidably disposed on said rail of said fixed base;

a die slidably mounted on said hydraulic press, said die having means for operably engaging apertures in a moving coil of material for movement therewith;

stop means disposed between said press and said die for providing engagement therebetween to stop relative motion therebetween when said die moves with said coil of material, the coil of material thereby overcoming the inertia of the press and die; and

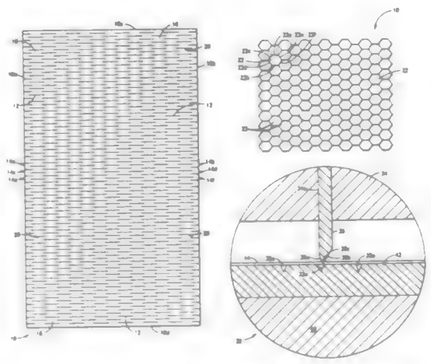
blocks mounted to said press, said blocks being received in said die to guide said die relative to said hydraulic press.

5,365,819

METHOD AND PROCESS FOR MANUFACTURING EXPANDABLE PACKING MATERIAL

Richard C. Maida, Staten Island, and Joseph Sferlazza, West Hempstead, both of N.Y., assignors to Prompac Industries, Inc., Staten Island, N.Y.

Continuation of Ser. No. 994,708, Dec. 22, 1992, abandoned. This application Mar. 15, 1994, Ser. No. 213,993
Int. Cl.[5] B23D *25/12*
U.S. Cl. 83—332 13 Claims



1. A process for forming a packing material, comprising:

positioning a paper material on a lower die plate; and

forcing a multitude of cutting blades completely through the paper material and into the lower die plate at a multitude of spaced apart locations to form a multitude of slits in the paper material;

wherein each of the cutting blades has a longitudinal axis and includes a multitude of notches and a multitude of cutting edges; along the longitudinal axis of each cutting blade, the notches of the blade alternate with the cutting edges of the blade; and the lower die plate forms a multitude of spaced apart recesses; and

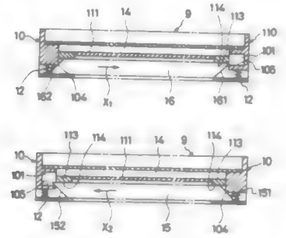
wherein the forcing step includes the step of forcing each of the cutting edges of each of the cutting blades into a respective one of the recesses in the lower die plate.

5,365,820

DEVICE FOR MOVING A HORIZONTAL LONG ARTICLE VERTICALLY

Chuzo Mori, Tokyo, Japan, assignor to Carl Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1993, Ser. No. 76,096
Claims priority, application Japan, Jun. 18, 1992, 4-186268; Jun. 18, 1992, 4-186269
Int. Cl.[5] B26D *1/18*
U.S. Cl. 83—455 3 Claims



1. A device comprising:

a first actuation lever having a first, upward-facing sloped end portion and a second, downward-facing sloped end portion, the first and the second sloped end portions having a same direction of inclination;

a second actuation lever having a first, upward-facing sloped end portion and a second, downward-facing sloped end portion, the first and the second sloped end portions of the second actuation lever having a same direction of inclination;

the first and second actuation levers being juxtaposed such that the first sloped end portion of the first actuation lever is adjacent to the second sloped end portion of the second actuation lever, and the second sloped end portion of the first actuation lever is located adjacent to the first sloped end portion of the second actuation lever;

a bedplate having a first guide member and a second guide member fixed on the bedplate for guiding the first and second actuation levers to slide horizontally;

a first drive member mounted on said first guide member and vertically movable relative to said bedplate, a second drive member mounted on said second guide member and vertically movable relative to said bedplate, compression springs between said bedplate and said first and second drive members for biasing said drive members upward to a predetermined upper position;

a lower portion of said first drive member abutting against the first sloped end portion of said first actuation lever, said first drive member also abutting against the second sloped end portion of said second actuation lever;

a lower portion of said second drive member abutting against the first sloped end portion of said second actuation lever, said second drive member also abutting against the second sloped end portion of said first actuation lever; and

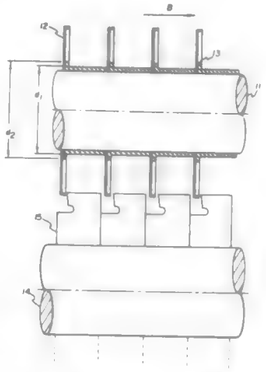
a rail fixed to the drive members extending parallel to the bedplate in a horizontal position, whereby upon depression of the rail, the actuation levers are moved horizontally in opposite directions by the drive members to cause the rail to move vertically such that the rail remains parallel to the bedplate.

5,365,821

SHOULDER KNIFE AND CUTTING DEVICE

Regis J. R. Munier, Les Marguerous-Rosey; Oliver L. E. Berne, Saint-Marcel, and Serge D. Serpillon, Gergy, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/FR90/00884, § 371 Date Jun. 12, 1992, § 102(e) Date Jun. 12, 1992, PCT Pub. No. WO91/09711, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 6, 1990, Ser. No. 861,858
Claims priority, application France, Dec. 12, 1989, 89 00016676
Int. Cl.[5] B23D *19/04*
U.S. Cl. 83—500 2 Claims



1. An apparatus for longitudinal cutting of web materials, the apparatus including a first shaft with a first diameter, a plurality of circular cutting knives mounted on the first shaft, each knife having a front face, a back face, a thickness, and a second diameter, and being provided with a central hole mounting the cutting knives directly on the first shaft; a plurality of spacer rings mounted on the first shaft, one spacer ring on each side of each cutting knife; a second shaft parallel to the first; a corresponding plurality of counter knives mounted on the second shaft in positions for engagement with the cutting knives, the improvement comprising:

an axially and radially extending shoulder on the periphery of the front surface of each cutting knife engaging the corresponding counter knife;

the cutting knives being mounted back face to front face directly on the first shaft; and

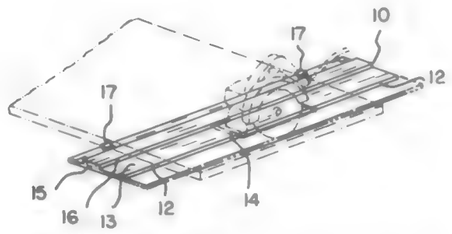
the first diameter, second diameter, shoulder and thickness of each cutting knife being formed such that each cutting knife is sufficiently flexible so that an axial movement of one of the shafts with respect to the other engages the shoulder of each cutting knife with each corresponding counter knife and causes each cutting knife to flex to produce a force of engagement whose intensity is a function of a flexure of each cutting knife due to the amplitude of the axial movement, the force of engagement against each corresponding counter knife varying with respect to a mean value of the forces of engagement against all corresponding counter knives by not more than 10% in absolute value.

5,365,822

CUTTING GUIDE

Michael F. Stapleton, and John Stapleton, both of 112 E. Grand Blvd., Detroit, Mich. 48207

Filed Sep. 17, 1993, Ser. No. 121,918
Int. Cl.[5] B27B 9/04
U.S. Cl. 83—745 2 Claims



1. A cutting guide comprising:

a rigid plate member, said plate member being substantially elongated and having a pair of opposed sides with a substantially flat, planar surface defined between said opposed sides of said plate member, said plate member having a plate member longitudinal axis, a plate member center area, and first and second plate member ends, said plate member being shaped so as to define a first elongated slot aligned substantially parallelly with said plate member longitudinal axis and extending from proximate said plate member first end towards said plate member center area, said plate member being further shaped so as to define a second elongated slot aligned substantially parallelly with said plate member longitudinal axis and extending from proximate said plate member second end towards said plate member center area;

a raised surface member integrally connected to said plate member along said planar surface thereof between said opposed sides, said raised surface member being substantially parallelly aligned with said plate member longitudinal axis, said raised surface member having a pair of opposed, straight edges with a first of said straight edges being operable to engage a guide edge of a platform of a cutting saw having a saw blade so as to guide said cutting saw along said first straight edge;

a first clamping means comprising a first L-shaped clamp, and a first bolt member extending through said first elongated sloe from said planar surface to threadably engage said first L-shaped clamp, whereby tightening of said first bolt member effects clamping of said first clamp against a workpiece;

a second clamping means comprising a second L-shaped clamp, and a second bolt member extending through said second elongated slot from said planar surface to threadably engage said second L-shaped clamp, whereby tightening of said second bolt member effects clamping of said second clamp against said workpiece, said first and second clamps being selectively slidable within said slots parallel to said longitudinal axis from said ends toward said center area of said plate member;

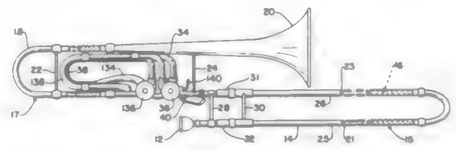
wherein said plate member is formed of a material capable of being cut by said cutting saw, whereby said plate member can be cut by said saw so as to define a new side of said plate member characterized by a distance between said new side and said first straight edge of said raised surface member being equal to a distance between said guide edge of said platform and said saw blade of said cutting saw.

5,365,823

IN-LINE DOUBLE ATTACHMENT SLIDE TROMBONE

B. P. Leonard, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Filed May 18, 1993, Ser. No. 63,239
Int. Cl.[5] G10D 7/10
U.S. Cl. 84—395 5 Claims



1. A slide trombone having a basic windpath comprising:

a mouthpiece, a slide assembly, a tuning loop, and a bell,

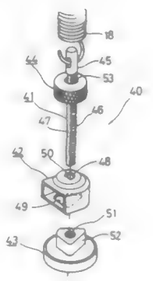
said slide trombone having a first activatable attachment and a second activatable attachment each of which independently and together lengthens the basic windpath to define a lengthened windpath when activated, said slide assembly including a slide which is positionable to lower the pitch of the basic windpath when said attachment is activated whereby the first attachment lengthens the windpath and lowers the pitch of the basic windpath by a minor third, the second attachment independently lengthens the windpath and lowers the pitch by approximately six semitones of the basic windpath, and the first and second attachment together lengthen the windpath to lower the pitch of the basic windpath by a minor sixth.

5,365,824

SPRING ADJUSTMENT MECHANISM FOR DRUM PEDAL BEATER

Yoshiki Hoshino, Aichi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Oct. 15, 1993, Ser. No. 138,130
Claims priority, application Japan, Mar. 19, 1993, 5-018601
Int. Cl.[5] G10D 13/02
U.S. Cl. 84—422.1 12 Claims



1. A spring adjustment mechanism for a drum pedal, comprising:

a support; a beater rotary shaft supported on the support and rotatable around the axis of the shaft;

a drum beater connected to the shaft to be swung toward and away from a drum as the shaft is rotated; an operating member on the shaft, a foot operating pedal connected with the operating member so that movement of the pedal moves the operating member to rotate the shaft for swinging the drum beater toward and away from a drum head of a drum as the shaft is selectively rotated in opposite directions;

a cam supported on the shaft for rotation therewith, the cam including a hanger part spaced away from the shaft;

a spring hooked to the hanger part of the cam, the spring tension returning the cam to the position of least spring tension, for rotating the cam and the attached beater shaft and the attached beater to move away from the drum;

the hanger part of the cam being mounted freely rotatably to the cam, such that as the cam swings together with the shaft, the hanger part freely rotates with respect to the cam;

an adjustment screw for adjusting the tension of the spring, the screw being spaced away from the hanger part of the cam, the spring being hooked to the adjustment screw, the adjustment screw being movable with respect to the support and the hanger part for adjusting the tension of the spring, and

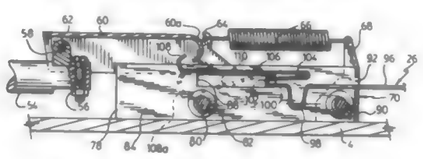
means for fixing the screw at a selected adjusted position relative to the support; the fixing means comprising an installation part on the support having an insertion hole for receiving the adjustment screw, the adjustment screw and the installation part insertion hole being respectively so shaped that the adjustment screw is prevented from rotation by the insertion hole.

5,365,825

SHEET TURNING DEVICE

Manuel Marin, 10134 Avenue des Laurentides, Apt. 4, Montréal Nord, Québec, Canada H1H 4V3

Filed Apr. 20, 1994, Ser. No. 230,229
Int. Cl.[5] G10G 7/00
U.S. Cl. 84—489 15 Claims



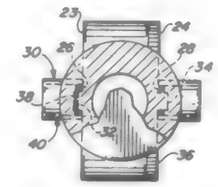
1. A sheet turning device comprising a support for holding a stack of sheets to be successively turned, a sheet turning rod rotatably secured to each sheet, said sheet turning rods extending side by side, journal means to rotatably support said rods for independent rotation about their longitudinal axis, a lever arm fixed to each rod whereby pulling on a selected lever arm causes rotation of the associated sheet turning rod and turning of the sheet to which said rod is fixed, a set of elongated selector members disposed side by side and each longitudinally movable, guide means to guide said selector members in their longitudinal movement, a common pulling member movable back and forth through an operative stroke and a return stroke in the direction of the longitudinal movement of said selector members and successively engageable with said selector members during its operative stroke to move said selector members from an initial to a final position to turn a sheet, each selector member having a pulling member engaging part and a selector member engaging part, the pulling member engaging part of one said selector member, of the set being in the path of said pulling member when said one selecting member is in its initial position, the pulling member engaging part of all the remaining selector members of the set clearing the path of said pulling member when said remaining selector members are in their initial position, the selector member engaging part of a selector member moving to its final position engaging only the next selector member of the set and transversely shifting said next selector member to a shifted position in which its pulling member engaging part is in the path of said pulling member ready to be pulled by said pulling member from its initial to its final position during the next pulling stroke of said pulling member.

5,365,826

ROTARY GUN BREECH

Larry D. Wedertz, Alta Loma, Calif., assignor to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jan. 19, 1993, Ser. No. 6,281
Int. Cl.[5] F41A 9/45
U.S. Cl. 89—46 6 Claims



1. A loading mechanism for a large-caliber gun having a barrel with a bore and a breech and supported on trunnions in first bearings on opposite sides of the barrel, comprising:

a rotary transfer member rotatably mounted inside said barrel near said breech, having a central passage therethrough to allow loading of said transfer member with a projectile when said transfer member is in a first orientation aligned with the orientation of the projectile and to accommodate said projectile for firing when said transfer member is rotated to a second angular orientation with said passage aligned with said bore;

pivotable support means installed within the gun barrel trunnions for supporting the transfer member, said support means comprising a pair of opposing shafts at opposite ends of said rotary transfer member extending into axial bores of respective ones of said trunnions on opposite sides of the gun barrel;

second bearings within the trunnion bores rotatably supporting said shafts therein; and

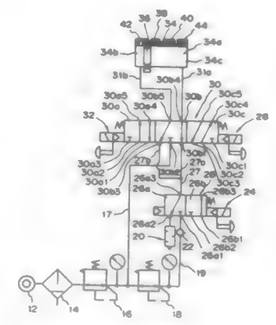
an actuator installed in one of said trunnions for driving one of said shafts to control the rotation of the transfer member.

5,365,827

CYLINDER APPARATUS AND METHOD OF CONTROLLING SAME

Masatoshi Morita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1993, Ser. No. 9,072
Claims priority, application Japan, Jan. 31, 1992, 4-016335
Int. Cl.[5] F01B 25/26, 31/12, 1/00
U.S. Cl. 91—1 3 Claims



1. A cylinder apparatus comprising:

a cylinder main body having a piston moved by fluid pres-

sure, said cylinder main body being separated into first and second chambers by the piston;

a fluid supply source for supplying fluid of a first pressure for driving the piston;

first and second fluid pathways for distributing the fluid at the first pressure, supplied from said fluid supply source, into first and second flow paths;

pressure regulation means, provided on the second fluid pathway, for regulating pressure of the fluid supplied from said fluid supply source to a second pressure lower than the first pressure;

third and fourth fluid pathways connected to said first and second chambers, respectively, of said cylinder main body;

first fluid-path switching means for connecting said first and second fluid pathways to said third and fourth fluid pathways by switching between a first state where said first fluid pathway and said third fluid pathway are connected while said second fluid pathway and said fourth fluid pathway are connected, and a second state where said first fluid pathway and said fourth fluid pathway are connected while said second fluid pathway and said third fluid pathway are connected;

second fluid-path switching means, provided on said second fluid pathway, for switching between a state where fluid at the second pressure from said pressure regulation means is supplied to said first fluid pathway switching means, and a state where the fluid discharged from one of said chambers of said cylinder main body through said first fluid-path switching means is discharged to a discharge path provided independently of said second fluid pathway;

first position detection means for detecting a position of the piston and generating a detection signal; and

control means for controlling a switching operation of said first and second fluid-path switching means, by controlling said first fluid-path switching means in accordance with a direction in which the piston is moved, and controlling said second fluid-path switching means based on the detection signal.

5,365,828

PNEUMATIC LINEAR DRIVE COMPRISING A LOCKING MECHANISM FOR END POSITIONS

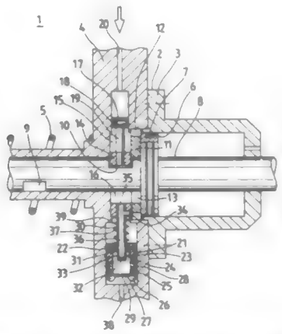
Franz Sperber, Kolbermoor; Arno Volt, Haunham, and Walter Stich, Miesbach, all of Germany, assignors to Deutsche Aerospace AG, Munich, Germany

Filed Jun. 23, 1993, Ser. No. 79,907

Claims priority, application Germany, Jun. 27, 1992, 4221238

Int. Cl.[5] F15B *15/26*

U.S. Cl. 91—41 **9 Claims**



1. A linear drive for a control valve in a liquid fuel line, comprising a single-acting pneumatic piston/cylinder unit having a piston connected to a piston rod and movable in a pressure space of a piston/cylinder unit housing, at least one spring which acts against a pneumatic force in the pressure space and loads the piston rod in a direction of one end position, and a locking device including one form-locking pneumatic locking mechanism respectively for each of two end positions of the piston rod, wherein the locking device includes:

a locking link which is selectively movable from diametrical sides into one recess of the piston rod respectively; a first control piston which is rigidly connected with the locking link, a second larger control piston which is disposed in a longitudinally movable manner on a supporting tube rigidly connected with the locking link; a spring which presses the second control piston in a direction of its extreme end position; a stop for the second control piston which is fixed to the housing; a valve piston which is coupled in a springing and sealing manner with the second control piston and has a closable throttle duct and an open flow connection from an interior of the second control piston and of the valve piston to the pressure space of the piston cylinder unit.

5,365,829

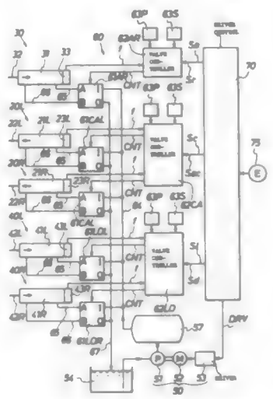
TRANSFER DRIVER FOR PRESSING MACHINE

Shozo Imanishi, Sagamihara, and Toshihiko Arai, Shiroyama, both of Japan, assignors to Aida Engineering, Ltd., Kanagawa, Japan

Filed Dec. 31, 1992, Ser. No. 997,946

Int. Cl.[5] F15B *13/16*

U.S. Cl. 91—361 **21 Claims**



1. A transfer device for a pressing machine, comprising:

a pair of feed bars for feeding a workpiece in a longitudinal direction in the pressing machine;

a feed cylinder device with an absolute encoder for applying force to said feed bars for advance and return movements in the longitudinal direction.

a pair of left and right clamp cylinder devices, each with an absolute encoder, for applying force to said feed bars for clamp or unclamp movements of said feed bars in lateral direction perpendicular the longitudinal direction,

hydraulic pressure supplier means, common to the cylinder devices, for supplying hydraulic pressure to each of the cylinder devices for motion generation,

hydraulic valve means, having a plurality of servo valves directly controlling each cylinder device in response to feedback signal from the absolute encoder of each cylinder device, for supplying hydraulic pressure from the hydraulic pressure supplier means to each of the cylinder devices so that each cylinder device is driven by a predetermined stroke at a predetermined speed and

driver control means for selecting between the hydraulic valve means for control according to a predetermined switching sequence.

5,365,830

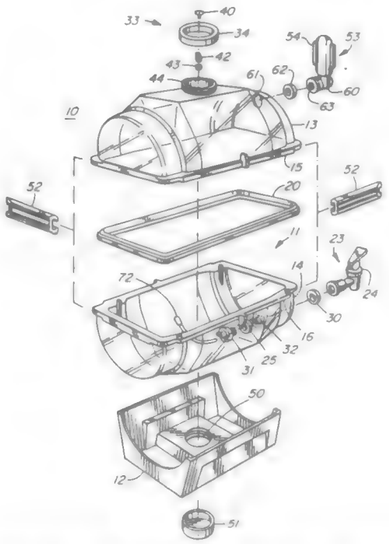
ASSEMBLY FOR THE DOMESTIC MAKING OF A FERMENTED BEVERAGE UNDER CHILLED PRESSURE CONDITIONS

Ian M. MacLennan, 1670-138 B Street, White Rock, British Columbia, Canada V4A 9J8 ; Clifford B. Hewson, West Vancouver, Canada; Marek Gnatowski, Coquitlam, Canada, and Andrew Koutsandreas, Vancouver, Canada, assignors to Ian M. MacLennan, Surrey, Canada

Division of Ser. No. 685,067, Apr. 12, 1991, Pat. No. 5,235,901, which is a continuation-in-part of Ser. No. 442,305, Nov. 27, 1989, abandoned. This application Aug. 16, 1993, Ser. No. 106,921

Int. Cl.[5] C12C *13/00*

U.S. Cl. 99—276 **25 Claims**



1. An assembly for fermenting a fermentable liquid mixture under chilled pressure conditions, said assembly comprising:

a) pressure vessel means defining a closed fermentation chamber for containing a bath including an amount of fermentable liquid mixture sufficient to provide an upper surface on the bath within the chamber and effective to produce a fermented beverage within the pressure vessel means,

b) the pressure vessel means being effective to fit into a usual home refrigerator for cooling the liquid mixture bath while under pressure within the pressure vessel means,

c) said pressure vessel means including ingredient inlet means for introducing the fermentable liquid mixture into the chamber and adding a cold fermenting yeast to the bath of said fermentable liquid mixture for fermenting the mixture under pressure while under chilled conditions,

d) pressure relief valve means for controlling the pressure within the fermentation chamber at a level sufficient to maintain safety conditions during the fermentation process,

e) gas input valve means for introducing pressurized gaseous material into the pressure vessel means, and

f) output discharge means including means for removing fermented beverage from adjacent the surface of the bath to draw the fermented beverage from the bath while a pressurized atmosphere remains in the pressure vessel means.

5,365,831

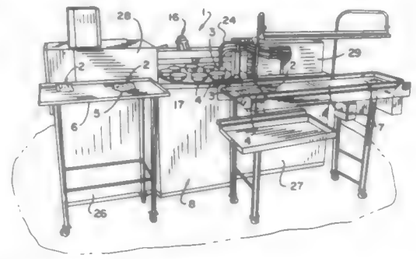
ON-SITE COOKING APPARATUS

Harvey G. Kuhlman, N56 W21456 Silver Spring Rd., Menomonee Falls, Wis. 53046

Division of Ser. No. 714,824, Jun. 13, 1991, Pat. No. 5,241,899. This application Sep. 3, 1993, Ser. No. 117,225

Int. Cl.[5] A47J *37/12*

U.S. Cl. 99—355 **15 Claims**



1. A self-contained food preparing apparatus for preparing individual servings of food, comprising a cabinet structure, an elongated cooking tank in said cabinet structure and having a length which is a substantial multiple of the width of said cooking tank, means for maintaining a bath of hot cooking liquid within the tank, a loop conveyor unit mounted within said cooking tank and including a cooking run located within said cooking tank and a food interchange run connected with said cooking run and located outwardly of said bath, a plurality of individual serving size food containers coupled in spaced relation to each other to said loop conveyor unit, a container transfer unit mounted in said cabinet structure and located in inter-transfer relationship to said cooking tank to move said individual containers from said interchange run of said conveyor unit and for depositing a cooked food product into a serving dish, a fluid food additive unit mounted to said structure in laterally spaced relationship to said cooking tank and adapted to contain a plurality of additive food products, and a passageway unit coupled to said food additive unit and terminating in operative alignment with said container transfer unit for supply of additive food product to said cooked food product, and control means for operating of said apparatus to selectively and sequentially move said loop conveyor unit and thereby said containers through said cooking tank and said transfer unit for cooking the food and actuating of said additive food unit to supply the additive food to said cooked food and provide automated preparation of a cooked food product with an additive food.

5,365,832

STEEL PAN

Annegret Gaydoul, Schwanheimer Str. 144, D-6140 Bensheim, Germany

PCT No. PCT/DE91/00272, § 371 Date Sep. 21, 1992, § 102(e) Date Sep. 21, 1992, PCT Pub. No. WO91/14390, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 27, 1991, Ser. No. 927,404

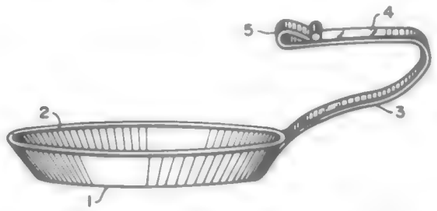
Claims priority, application Germany, Mar. 28, 1990, 903593[U]

Int. Cl.[5] A47J *37/10*

U.S. Cl. 99—422 **9 Claims**

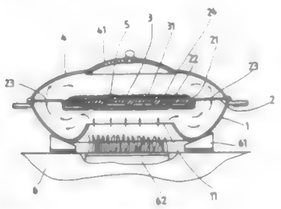
1. In a pan made of steel including a floor surrounded by an upstanding edge, said floor and said edge defining a central axis extending perpendicular to said floor, said pan further including a handle extending laterally outward on one side of the pan, the improvement wherein the handle is bent backwards toward

said central axis at about half its length and wherein the bent back part of the handle forms a grip disposed substantially



above the pat not bent back, said grip terminating at a free end that lies substantially outside the edge of the pan.

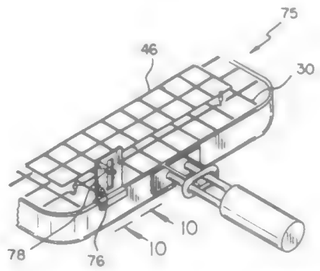
5,365,833
PIZZA BAKING PAN
Ming-Jing Chen, No. 29, Alley 39, Lane 206, Sec. 2, Tai-Ho Rd., Ah-Yi Li, Changhua City, Taiwan, Prov. of China
Filed Mar. 8, 1994, Ser. No. 207,060
Int. Cl.[5] A21B *1/00*
U.S. Cl. 99—447 **1 Claim**



1. A pizza baking pan comprising:
a wok having a circular through hole formed in a center section of a bottom of said wok at an elevation above a lowest portion of said bottom of said wok, said wok having a circular top edge;
a circular, solid rack supported on said top edge of said wok, said solid rack having (1) a recessed center portion disposed above the circular through hole of said wok, (2) an inside annular flange raised from said recessed center portion, and (3) a plurality of vent holes spaced around said recessed center portion at a higher elevation than said recessed center portion;
a ceramic baking plate received in the recessed center portion on said rack for baking pizzas, said ceramic baking plate having a plurality of curved, raised ribs on a bottom surface thereof supported on the inside annular flange of said rack and spaced above the recessed center portion of said rack by a space; and
a dome cover covering said rack over said ceramic baking plate, said dome cover having a transparent lid disposed in a center portion thereof for viewing the inside of the pizza baking pan.

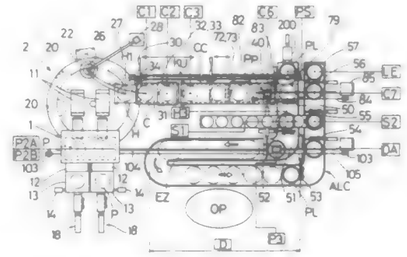
5,365,834
WIRE GRILL COOKING PAN
Dominic A. Sidoti, 292 Pleasantdale Rd., P.O. Box #382, Rutland, Mass. 01543
Filed May 20, 1993, Ser. No. 63,671
Int. Cl.[5] A47J *37/04*
U.S. Cl. 99—450 **15 Claims**

1. A new wire grill cooking pan comprising:
a container means whereby juices may be collected therein;
a grill means attached to said container means for facilitating elevated support of a food item above said container means; and
a handle fixedly secured to said container means;
further comprising a wire food holder pivotally connected to said grill means whereby food may be captured between said grill means and said wire holder;



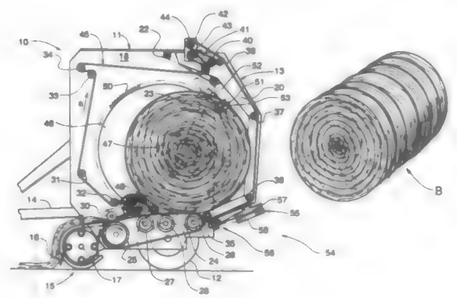
and further comprising a gauge means for determining a distance between said wire holder food holder and said grill means.

5,365,835
HAMBURGER FIXING APPARATUS
Michiyuki Naramura, Okayama, Japan, assignor to Kabushiki Kaisha Kyowa Kogyosho, Kurashiki, Japan
Filed Dec. 20, 1993, Ser. No. 170,430
Claims priority, application Japan, Apr. 6, 1993, 5-079644
Int. Cl.[5] A21D *13/08;* **A23L** *1/31;* **B65B** *25/16;* **G07F** *11/70*
U.S. Cl. 99—450.5 **5 Claims**



1. A hamburger fixing apparatus, comprising:
a food material conveyor having an upstream starting end region, and a downstream finishing end region;
a first automatic fixing section located at said upstream starting end region;
a second automatic fixing section located at said downstream finishing end region;
a manual fixing section located between said upstream starting end region and said downstream finishing end region,
a first input system;
means for displaying a plurality of ordered items input into said first input system;
means for controlling said first automatic fixing section and said second automatic fixing section;
said means for controlling sending commands to a plurality of food adding means of said first automatic fixing section for making said plurality of ordered items based on an information command sent from said first input system;
means for stopping a plurality of intermediate ordered items being carried by said food material conveyor from said first automatic fixing section to said manual fixing section, thereby causing said plurality of intermediate ordered items to accumulate in said manual fixing section;
a second input system;
said second input system sending an information command based on an operator input to said means for controlling;
said means for controlling sending a command to a plurality of food adding means of said second automatic fixing section, wherein said command instructs said plurality of food adding means to add at least one food material according to an information command sent from said second input system; and
said second input system sending a release command to said means for stopping so that said plurality of intermediate ordered items which have been through said manual fixing section may be conveyed further to said second automatic fixing section.

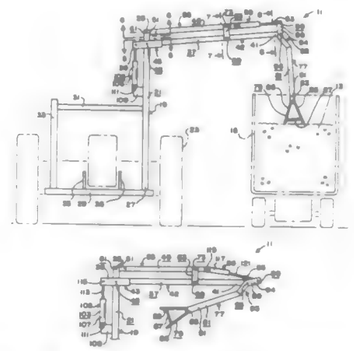
5,365,836
APPARATUS FOR WRAPPING ROUND BALES
Willis R. Campbell, Olathe, Kans., assignor to Ford New Holland, Inc., New Holland, Pa.
Filed Mar. 14, 1994, Ser. No. 212,532
Int. Cl.[5] B65B *63/04;* **A01D** *39/00*
U.S. Cl. 100—5 **16 Claims**



1. In a baler for forming cylindrical bales of crop material, said baler including
lower bale forming means,
upper bale forming means cooperating with said lower bale forming means to define a bale forming chamber,
means for feeding crop material into said bale forming chamber to form a cylindrical package of crop material, and
improved bale wrapping mechanism for wrapping said cylindrical package of crop material to form a bale, said improved wrapping mechanism comprising
a tape supply assembly comprising at least two rolls of tape, and
a tape dispensing assembly comprising at least two tape dispensers for dispensing tape from said rolls into said bale forming chamber along at least two predetermined paths around the periphery of said cylindrical package of crop material to form a bale.

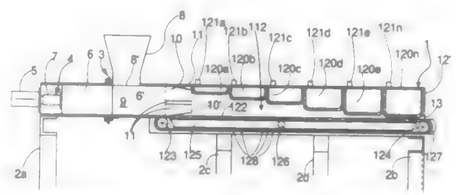
5,365,837
APPARATUS FOR PACKING MATERIAL IN AN OPEN TOP CONTAINER
P. Darrell Lowery, Rte. 1, Box 164, Gadsden, Tenn. 38337
Filed Jul. 16, 1993, Ser. No. 92,520
Int. Cl.[5] B30B *15/00*
U.S. Cl. 100—100 **7 Claims**

1. An apparatus for packing material in an open top container, said apparatus comprising:
(a) a support member;
(b) an elongated first arm member having a first end and a second end;
(c) first pivot means for pivotally attaching said first end of said first arm member to said support member;
(d) an elongated second arm member having a first end and a second end:
(e) second pivot means for pivotally attaching said first end of said second arm member to said support member;
(f) a link member having a first end and a second end;
(g) third pivot means for pivotally attaching said first end of said link member to said first arm member at a point between said first and second ends of said first arm member;
(h) fourth pivot means for pivotally attaching said second end of said link member to said second arm member at a point between said first and second ends of said second arm member;
(i) a packer member having a foot portion and a leg portion;
(j) fifth pivot means for pivotally attaching said leg portion of said packer member to said second end of said first arm member;
(k) sixth pivot means for pivotally attaching said leg portion



of said packer member to said second end of said second arm member; and
(l) urging means for causing said first arm member to pivot about said first pivot means so that said second end of said first and second arm members will move through an arc, said link member will move through an arc, said leg portion of said packer member will move through an arc, and said foot portion of said packer member will move substantially vertically;
said second arm member including means for causing rotation of said packer means about said fifth pivot means between a transport position and a use position.

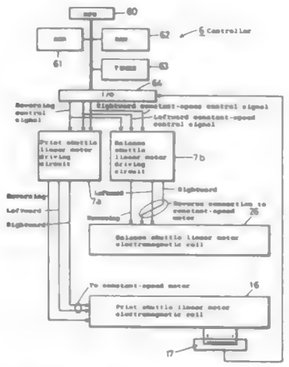
5,365,838
MACHINE FOR THE EXTRACTION OF JUICE FROM GRAPES
Valentino Valentini, Via Filippo de Grenet n. 26, 00129 Roma, Italy
Continuation of Ser. No. 691,035, Jun. 18, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 17,457
Claims priority, application Italy, Nov. 2, 1989, 48515 A/89
Int. Cl.[5] B30B *9/22*
U.S. Cl. 100—112 **28 Claims**



1. An apparatus for extracting juice from grapes in a continuous operation, comprising:
a compression chamber in which grapes are pressed to produce juice and pressed grape skins, said chamber having an opening in one portion thereof for receiving grapes therein and an outlet in another portion thereof from which pressed grape skins can be ejected, said compression chamber progressively decreasing in size from the

portion having the opening therein to the portion having the outlet therein;
means for introducing grapes in said opening of said compression chamber;
a moveable flexible filtering belt defining the bottom of the compression chamber through which the juice may be removed; and
an inflatable element defining the top of the compression chamber for applying predetermined pressure to the grapes.

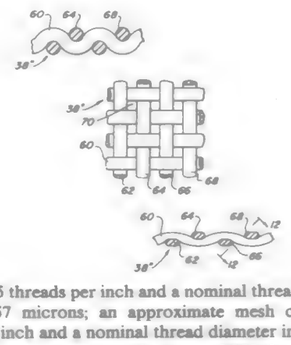
5,365,839
SHUTTLE PRINTER
Satoshi Yoshino, and Keiko Nojiri, both of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 91,651, Jul. 14, 1993. This application Dec. 14, 1993, Ser. No. 168,266
Claims priority, application Japan, Jul. 24, 1992, 4-202551
Int. Cl.[5] B41J *7/70, 19/00*
U.S. Cl. 101—93.04 **26 Claims**



1. A shuttle printer having a print shuttle unit capable of reciprocating with a print head mounted thereon, and a balance shuttle unit capable of reciprocating to generate counterforce to momentum of said print shuttle unit, said shuttle printer comprising:
means for driving said print shuttle unit to reciprocate;
means for driving said balance shuttle unit to reciprocate;
means for detecting a position of said print shuttle unit; and
means for synchronously controlling said two driving means in response to a result of detection by said print shuttle unit position detecting means.

5,365,840
SCREEN MATERIAL FOR AND METHOD OF SCREEN PRINTING
Donald E. Newman, 419 Rices Mill Rd., Wyncote, Pa. 19095
Continuation-in-part of Ser. No. 592,081, Oct. 3, 1990, abandoned. This application Apr. 2, 1993, Ser. No. 39,064
Int. Cl.[5] B05C *17/06*
U.S. Cl. 101—127.1 **9 Claims**

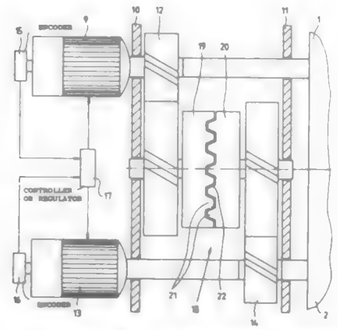
1. A method of screen printing, comprising the steps of: providing a printing frame, providing a screen material having threads of substantially uniform composition across the cross section on the frame, tensioning the screen material to a tension in excess of 40 Newtons per centimeter, and printing an image with the screen material as tensioned on the printing frame, wherein the mesh count and unwoven filament thread diameter qualities of the screen material are selected from the group consisting of an approximate mesh count of 60 threads per inch and a nominal thread diameter in excess of 149 microns; an approximate mesh count of 70 threads per inch and a nominal unwoven thread filament diameter in excess of 147 microns; an approximate mesh count of 76 threads per inch and a nominal thread diameter in excess of 149 microns; an approximate mesh count of 88 threads per inch and a nominal thread diameter in excess of 104 microns; an approximate mesh count of 92 threads per inch and a nominal thread diameter in excess of 104 microns; an approximate mesh count of 110 threads per inch and a nominal thread diameter in excess of 84 microns; an approximate mesh count of 115 threads per inch and a nominal thread diameter in excess of 84 microns; an approximate mesh count of 125 threads per inch and a nominal thread diameter in excess of 84 microns; an approximate mesh count of 137 threads per inch and a nominal thread diameter in excess of 74 microns; an approximate mesh count of 140 threads per inch and a nominal thread diameter in excess of 73 microns; an approximate mesh count of 156 threads per inch and a nominal thread diameter in excess of 69 microns; an approximate mesh count of 168 threads per inch and a nominal thread diameter in excess of 65 microns; an approximate mesh count of 175 threads per inch and a nominal thread diameter in excess of 59 microns; an approximate mesh count of 180 threads per inch and a nominal thread diameter in excess of 59 microns; an approximate mesh count of 195 threads per inch and a nominal thread diameter in excess of 59 microns; an approximate mesh



count of 205 threads per inch and a nominal thread diameter in excess of 57 microns; an approximate mesh count of 230 threads per inch and a nominal thread diameter in excess of 57 microns; an approximate mesh count of 255 threads per inch and a nominal thread diameter in excess of 41 microns; an approximate mesh count of 280 threads per inch and a nominal thread diameter in excess of 41 microns; an approximate mesh count of 305 threads per inch and a nominal thread diameter in excess of 41 microns; an approximate mesh count of 330 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 355 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 362 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 380 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 390 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 403 threads per inch and a nominal thread diameter in excess of 35 microns; an approximate mesh count of 420 threads per inch and a nominal thread diameter in excess of 35 microns; and an approximate mesh count of 460 threads per inch and a nominal thread diameter in excess of 35 microns.

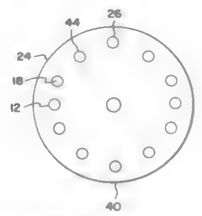
5,365,841
SAFETY DEVICE FOR CONTROL OR REGULATION SYSTEMS OF DRIVE UNITS OF A PRINTING MACHINE
Dieter Uhrig, Eberbach, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Feb. 1, 1993, Ser. No. 11,965
Claims priority, application Germany, Jan. 31, 1992, 4202722
Int. Cl.[5] B41F *5/00*
U.S. Cl. 101—212 **5 Claims**

1. Safety device for control or regulation systems of drive units of a printing machine having at least two individual sub-aggregates thereof mechanically disconnected from one another, the drive units having a plurality of motors, respective gear transmissions via which the plurality of motors are connected to the sub-aggregates for driving them in synchronous rotation, at least one measuring device for ensuring synchronous running of the sub-aggregates, and a device for controlling the rotary speed or the torque of the motors connected to



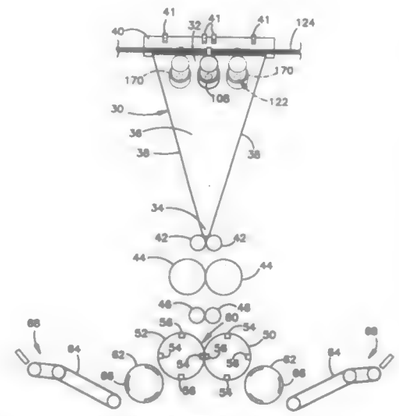
the measuring device, the safety device comprising a clutch disposable between the gear transmissions of the at least two individual sub-aggregates, said clutch having clutch halves respectively connectible to the respective gear transmissions, said clutch halves having a preset rotational-angle difference therebetween at which said clutch halves are disengaged, said clutch halves being engageable with one another for transmitting torque when the preset rotational-angle difference between said clutch halves is exceeded.

5,365,842
PRESS CYLINDER WITH NON-OBSTRUCTIVE PARTICLE DAMPING
Hagop V. Panossian, Tarzana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 10, 1992, Ser. No. 866,911
Int. Cl.[5] B41F *5/00*
U.S. Cl. 101—216 **15 Claims**



1. A printing press, comprising:
a rotatable cylinder having at least one cavity positioned within the cylinder;
means for rotating the cylinder; and
a damping material in said cavity to reduce the vibration amplitude of the cylinder, said damping material comprising a powder or larger particles.

5,365,843
PRINTING PRESS WITH WEB BREAKING ASSEMBLY
Harold B. House, Hope Valley, R.I.; Hubert J. Watson, Stonington, Conn., and Jeffrey S. Upchurch, Stratham, N.H., assignors to Heidelberg Druckmaschinen AG, Heidelberg, Germany
Filed May 26, 1993, Ser. No. 67,662
Int. Cl.[5] B41F *5/04*
U.S. Cl. 101—228 **4 Claims**



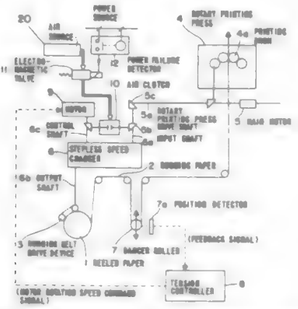
1. Apparatus for intentionally breaking a web in a printing press which moves the web and signatures formed from the web, said apparatus comprising:
an elongated punch member (**130**) having a longitudinal axis (**132**), a planar end surface (**134**) extending across said axis (**132**), and a peripheral edge surface (**136**) defining the peripheral shape of said end surface (**134**);
die means (**30**) having a planar web guide surface (**36**) and an inner edge surface (**120**) defining a die opening (**122**) at said planar web guide surface (**36**);
drive means (**106**) for moving the web (**14**) along a path of movement extending across said planar web guide surface (**36**);
reciprocating means (**112**) for moving said punch member (**130**) back and forth between a retracted position in which said punch member (**130**) is spaced from said path of movement and an extended position in which said punch member (**130**) extends across said path of movement and into said die opening (**122**);
fault detecting means (**100**) for detecting a fault condition of the web (**14**) or signature flow when the web (**14**) of signature is being moved along its path of movement by said drive means (**106**); and
actuating means (**104**) for causing said reciprocating means (**112**) to move said punch member (**130**) from said retracted position to said extended position in response to detection of said fault condition by said fault detecting means (**100**), said actuating means (**104**) thus causing said punch member (**130**) to punch a hole (**150**) through the web (**14**) which has said peripheral shape of said end surface (**134**) of said punch member;
said drive means (**106**) imparting tension to the web (**14**) which urges the web (**14**) to move along said path of movement past said punch member (**130**) when said punch member (**130**) is in said extended position, said drive means (**106**) thus cooperating with said punch member (**130**) to tear the web (**14**) into sections (**160,162**) that extend longitudinally from said punch member (**130**) in opposite directions along said path of movement.

5,365,844

DEVICE FOR CONTROLLING A WEB IN A PRINTING PRESS

Yoshiki Miyashige, Tokyo, Japan, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 29, 1993, Ser. No. 99,293
Int. Cl.[5] B41F *13/54*
U.S. Cl. 101—228 **10 Claims**



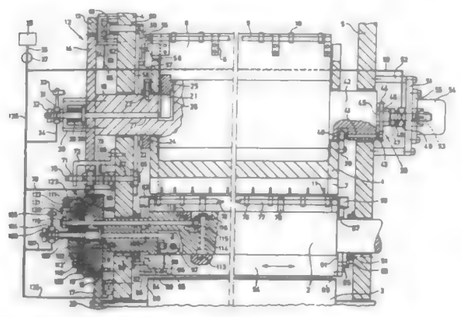
1. A device for controlling a web in a printing press, comprising:
a supply roll of the web;
a printing roll of the press;
means for detecting a power loss of the press; and
means responsive to the detecting means for controlling the tension of the web in the event of the power loss, including first means for driving the supply roll, and in which the controlling means controls the speed of the driving means, and including second means for driving the printing roll, and in which the controlling means controls the ratio of the first and second drive means to maintain the tension in the web in the event of the power loss.

5,365,845

METHOD AND DEVICE FOR STARTING AND STOPPING A SHEET-TURNING OPERATION AND FOR FORMAT ADJUSTING

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 15, 1993, Ser. No. 91,966
Claims priority, application Germany, Jul. 15, 1992, 4223190
Int. Cl.[5] B41F *5/02, 21/10, 1/20*
U.S. Cl. 101—230 **6 Claims**



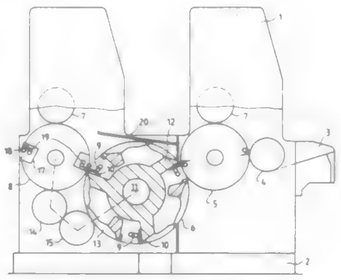
2. Device for starting and stopping a sheet-turning operation during sheet transport through a printing press, including a storage drum and a turning drum, respectively, having gripper-control elements, a gripper cam for the storage drum, drive means for adjusting relative phase positions of printing units of the printing press disposed up-line and down-line from the turning drum, the drive means including a part to be rotated and a part not to be rotated, locking means for locking in position the part of the drive means which is not to be rotated, means for adjusting the gripper-control elements of the storage drum and of the turning drum, position-locking means for fixing the turning-drum gripper-control elements and further position-locking means for fixing the storage-drum gripper cam, the turning-drum gripper-control elements being axially displaceable and the storage-drum gripper cam being rotatable about the axis of the storage drum, separate drive means for adjusting, relative to one another about the axis of the storage drum, two groups of elements of the storage drum for holding a leading edge and a trailing edge, respectively, of sheets being transported, pressure-medium actuated locking means for locking said sheet-edge holding elements in position relative to one another, and a control device connected to the adjusting means and to sensor elements for detecting the positions of the adjustable elements relative to respective non-adjustable elements, the control device containing a control part for pressure-medium actuated control elements, the device for starting and stopping the. Sheet-turning operation comprising a pressure-medium actuated clutch connected to the control part of the control device, between the means for adjusting the gripper control elements of the storage drum and the drive means for adjusting the phase position of the printing units to one another, and a pressure-medium actuated clutch connected to the control part of the control device, between the separate drive means for adjusting the elements of the storage drum holding the sheet edge and the adjustable elements holding the sheet edge, and the pressure-medium actuated control elements, respectively, including a working cylinder arranged so as to be fixed against torsion with respect to a frame of the printing press.

5,365,846

FORMAT-ADJUSTABLE SHEET-TURNING DEVICE WITH CHANGE-OVER GEARS ON A SHEET-FED ROTARY PRINTING PRESS

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Sep. 20, 1993, Ser. No. 124,164
Claims priority, application Germany, Sep. 18, 1992, 4231257
Int. Cl.[5] B41F *5/02*
U.S. Cl. 101—230 **14 Claims**



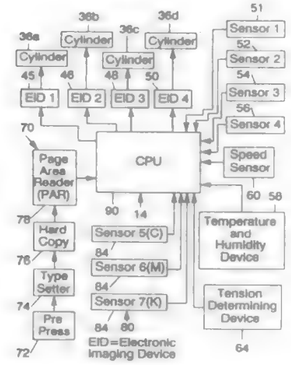
1. Sheet-fed rotary printing press for making one-sided multi-color prints or rector-and-verso prints, having at least one multi-size, driven sheet-guiding cylinder disposed between impression cylinders of two printing units, devices adjustable to a sheet-length format, and gripper systems associated with the cylinders, comprising at least two intermediate gears via which a drive of the cylinders is divertable, at least one of said intermediate gears being formed as a single-revolution double intermediate gear having an adjustable ring gear and a gearwheel.

5,365,847

CONTROL SYSTEM FOR A PRINTING PRESS

William F. Pers, Hinsdale, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 22, 1993, Ser. No. 125,622
Int. Cl.[5] B41F *13/24*
U.S. Cl. 101—248 **13 Claims**



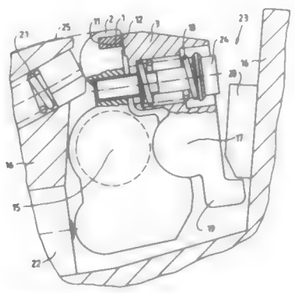
1. A control system for a printing press, comprising:
a printing cylinder having an outer surface;
means for determining a reference printing image for the cylinder;
means for modifying the reference printing image to a subsequent printing image dependent upon parameters associated with the press; and
means for forming the subsequent printing image on the outer surface of the cylinder, including means for determining a misregistration of said cylinder relative to another cylinder, and means responsive to the misregistration determining means for modifying the reference printing image to the subsequent printing image.

5,365,848

CLAMPING DEVICE WITH PARALLEL CLAMPING SURFACES

Manfred Löhrke, Leimen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 5, 1994, Ser. No. 177,434
Claims priority, application Germany, Jan. 5, 1993, 4300099
Int. Cl.[5] B41F *1/36*
U.S. Cl. 101—415.1 **8 Claims**



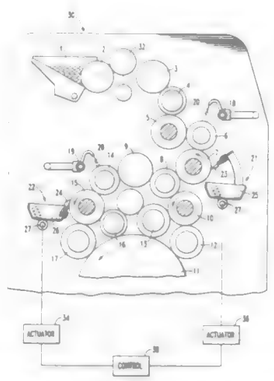
1. Clamping device for locking a printing plate on a cylinder of a printing press, the clamping device comprising two parallel clamping bars formed with respective clamping surfaces, at least one of said clamping bars being movable perpendicularly to said clamping surfaces, and an element for producing a clamping force between said clamping bars, a first one of said clamping bars comprising at least one leaf spring formed with said clamping surface of said first clamping bar, said clamping surface thereof being cooperatively clampable with said clamping surface of the second one of said clamping bars, said first clamping bar further comprising means formed with at least one concave segment-shaped recess, said leaf spring being formed with a corresponding convex segment-shaped protrusion supported in said recess.

5,365,849

DEVICE FOR WASHING AN INKING UNIT PROVIDED AT A PRINTING PRESS

Nikolaus Spiegel, Walldorf, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Sep. 14, 1993, Ser. No. 121,605
Claims priority, application Germany, Sep. 18, 1992, 9212582[U]
Int. Cl.[5] B41F *35/04*
U.S. Cl. 101—423 **20 Claims**



1. A washing arrangement for washing a plurality of inking rollers in a printing press, such a printing press comprising: a frame; a plate cylinder being rotatably mounted on said frame; an ink reservoir for holding a supply of ink; an inking mechanism for transferring the ink between said ink reservoir and said plate cylinder during operation of said printing press; said inking mechanism comprising a plurality of inking rollers, at least one ink fountain roller and at least one transfer means for transferring ink between said ink fountain roller and at least one of said plurality of inking rollers; a plurality of ink applicator rollers for being engaged with said plate cylinder and for applying ink to said plate cylinder; said plurality of ink applicator rollers comprising a first set of at least one ink applicator roller and a second set of at least one ink applicator roller; said plurality of inking rollers comprising a roller arrangement, said roller arrangement comprising a first set of at least one inking roller and a second set of at least one inking roller; said plurality of inking rollers further comprising a third set of at least one inking roller; said first set of at least one inking roller for providing ink to said first set of at least one ink applicator roller; said second set of at least one inking roller for providing ink to said second set of at least one ink applicator roller; said plurality of inking rollers further comprising bridge roller means, said bridge roller means being engaged with: at least one inking roller of said first set of at least one inking roller, and at least one inking roller of said second set of at least one inking roller; said third set of at least one inking roller for providing a primary stream of ink; means for dividing said primary stream of ink to provide a first subsidiary stream of ink to said first set of at least one inking roller and a second subsidiary stream of ink to said second set of at least one inking roller; said means for

dividing said primary stream of ink comprising said bridge roller means; said third set of at least one inking roller extending between said at least one transfer means and said bridge roller means; said bridge roller means being engaged with at least one inking roller of said third set of at least one inking roller so as to receive said primary stream of ink; said washing arrangement comprising:

means for supplying washing fluid to said plurality of inking rollers, said washing fluid for being transferred among the plurality of inking rollers to wash the plurality of inking rollers;

first removing means, for removing washing fluid, having been transferred among the plurality of inking rollers to wash the plurality of inking rollers, directly from one inking roller of the third set of at least one inking roller; and

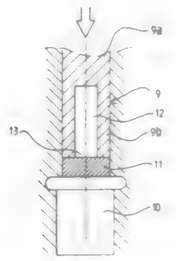
second removing means, for removing washing fluid, having been transferred among the plurality of inking rollers to wash the plurality of inking rollers, directly from one inking roller of the roller arrangement.

5,365,850

IGNITING DEVICE

Torsten Persson, and Staffan Calsson, both of Karlskoga, Sweden, assignors to Autoliv Development AB, Vargarda, Sweden

Filed Jun. 11, 1993, Ser. No. 66,176
Claims priority, application Sweden, Sep. 30, 1991, 9102826-6
Int. Cl.[5] F42C *1/04*
U.S. Cl. 102—272 **8 Claims**



1. Method of detonating a pyrotechnic charge, comprising the steps of:

displacing a percussion pin at a speed;

controlling a transfer of energy from the percussion pin to a percussion detonator cap using a substantially non-compressible deformable hydraulic medium disposed in a first cavity, the first cavity being connected via a constriction to a second cavity for receiving the medium when the percussion pin is displaced below a predetermined minimum speed, the constriction being dimensioned to prevent a substantial flow of the medium into the second cavity through the constriction when the percussion pin is displaced at at least a predetermined minimum speed;

transmitting energy from the percussion pin to the percussion detonator cap when the percussion pin is displaced at at least the predetermined minimum speed; and

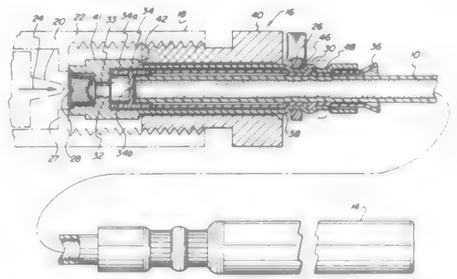
activating the percussion detonator cap when the percussion pin is displaced at at least the predetermined minimum speed.

5,365,851

INITIATOR DEVICE

Lester W. Shaw, Avon, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.

Filed Aug. 7, 1992, Ser. No. 926,832
Int. Cl.[5] F42C *19/12;* **F42B** *19/08;* **F42D** *1/04*
U.S. Cl. 102—275.6 **17 Claims**



10. An ignition transfer device comprising:

(a) an impulse transmission tube having a proximal end to be ignited by an initiating charge in order to generate a signal for propagation through the impulse transmission tube, and having a distal end; and

(b) an initiation fixture affixed to the impulse transmission tube at the proximal end thereof, the initiation fixture comprising (i) an end sleeve enclosing the proximal end of the impulse transmission tube and providing a mounting surface exteriorly of the impulse transmission tube, (ii) a retainer means slidably carried on the mounting surface for longitudinal travel thereon and dimensioned and configured to be engaged by an igniter device, (iii) first stop means to allow the retainer means to secure the proximal end of the end sleeve in an igniter device, (iv) an initiating charge carried by the end sleeve in operative proximity to the proximal end of the impulse transmission tube and accessible for detonation by the igniter device, whereby to initiate transmission of a signal through the impulse transmission tube, and (v) the device further comprising second stop means carried on the end sleeve dimensioned and configured to limit longitudinal travel of the retainer means on the mounting surface without engaging the igniter device.

5,365,852

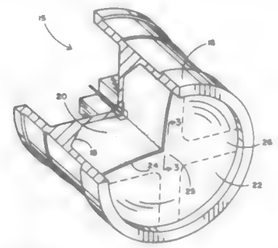
METHOD AND APPARATUS FOR PROVIDING AN EXPLOSIVELY FORMED PENETRATOR HAVING FINS

David E. Bender, Mission Viejo, and Joseph Carleone, Yorba Linda, both of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.

Filed Jan. 9, 1989, Ser. No. 294,448
The portion of the term of this patent subsequent to Mar. 22, 2007, has been disclaimed.
Int. Cl.[5] F42B *12/04, 1/02*
U.S. Cl. 102—476 **5 Claims**

1. An improved explosively formed penetrator assembly having a casing, a chamber in the casing, an explosive charge in the chamber and a deformable liner adjacent the explosive charge, the liner being deformed into an elongated penetrator upon explosion of the charge; the improvement comprising:

a foil between said explosive charge and said liner, said foil having a plurality of legs extending radially from a central



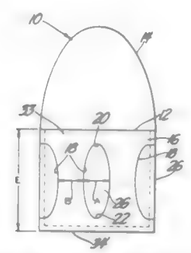
portion for altering the explosive deformation of said liner to induce rear end fins in said elongated penetrator.

5,365,853

HIGH VELOCITY PROJECTILE

Robert M. Petrovich, 10748 Bob White, P.O. Box 111, Hamburg, Mich. 48139, and Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Division of Ser. No. 35,863, Mar. 23, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 195,501
Int. Cl.[5] F42B *12/34, 14/04*
U.S. Cl. 102—507 **6 Claims**



1. A full caliber projectile suitable for firing from a rifled gun barrel, comprising:

a fore end;

an aft end;

a deformable body defining a nose of the projectile at the fore end and having a posterior portion at the aft end integral with the nose;

a jacket having a substantially uniform thickness, the jacket being of material denser and stronger than the body, the jacket adjacently surrounding only the posterior portion of the body;

the jacket defining a plurality of apertures therethrough adjacent a projectile exterior surface and disposed in an annular array about the jacket, the jacket sized diametrically in a vicinity of the apertures to engage rifling of the barrel, each aperture extending over a majority portion of a fore-to-aft dimension of the jacket;

dual purpose means for locking the body to the jacket and for reducing friction between the projectile and the barrel, the dual purpose means comprising peripheral portions of the posterior portion disposed in the apertures, the peripheral portions having greater lubricity than the jacket;

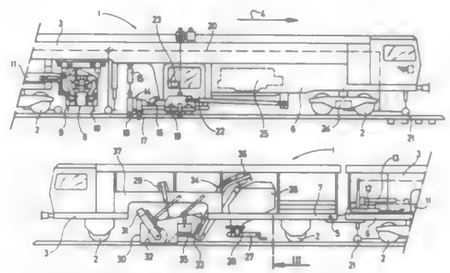
wherein the peripheral portions extend out from the body no further than an outer periphery of the jacket during a free state of the projectile.

5,365,854

MACHINE FOR DELIVERING BALLAST TO A TRACK AND FOR TAMPING THE BALLAST HAVING SENSOR CONTROLLED PIVOTAL BALLAST DISTRIBUTING CHUTES

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Division of Ser. No. 11,953, Feb. 1, 1993, Pat. No. 5,320,045. This application Mar. 22, 1994, Ser. No. 215,522
Claims priority, application Austria, Feb. 21, 1992, A329/92
Int. Cl.[5] E01B *27/02, 27/04*
U.S. Cl. 104—2 **6 Claims**



1. An installation for distributing ballast in a track bed supporting a track comprising rails and for tamping the ballast, which comprises

(a) a machine frame comprised of

(1) a first machine frame part and

(2) a second machine frame part,

(b) undercarriages supporting the machine frame on the track for movement in an operating direction,

(1) the first machine frame part preceding the second machine frame part in the operating direction,

(c) mounted on the first machine frame part

(1) a ballast tamping unit and

(2) a track lifting and lining unit, and

(d) mounted on the second machine frame part

(1) a ballast storage bin having outlet means for delivering ballast from the bin to the track, the outlet means comprising at least four outlet openings spaced transversely from each other relative to the track and a cylindrical or funnel-shaped ballast distributing chute associated with each outlet opening, at least two of the chutes being mounted on the bin for pivoting about an axis extending parallel to the track, and a respective drive for pivoting each pivotal chute,

(2) a ballast conveyor means having an output end above the ballast storage bin and an input end, and

(3) a vertically adjustable broom arrangement for sweeping excess ballast from the track to the ballast conveyor means input end.

5,365,855

TRACK FOR MAGNETIC LEVITATION TRAINS WITH STATOR CONNECTION HAVING SHEAR LOADED BELTS

Peter Wagner, Dortmund, Germany, assignor to Thyssen Industrie AG, Essen, Germany

Filed Jun. 10, 1993, Ser. No. 74,741
Claims priority, application Germany, Jun. 12, 1992, 4219199
Int. Cl.[5] B60L *13/04*
U.S. Cl. 104—124 **11 Claims**

1. A track for magnetic levitation trains, the track comprising:

a track support beam having a lateral side;

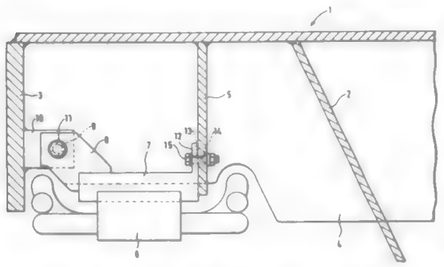
a cross beam extending substantially perpendicular from said track support beam and substantially perpendicular from said lateral side of said track support beam;

a longitudinal beam extending substantially perpendicular

from said cross beam and substantially perpendicular from said track support beam;

a stator plate positioned between said lateral side of said track support beam and said longitudinal beam, said stator plate being substantially perpendicularly spaced from said track support beam, said stator receiving a force from the magnetic levitation trains, which is substantially perpendicular to said track support beam;

first connection means for connecting said stator plate to said cross beam, said first connection means including a



cross beam bolt extending through said cross beam, said cross beam bolt having a longitudinal axis substantially perpendicular to and supporting a portion of said force of said stator plate;

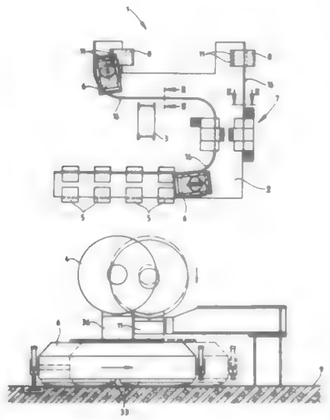
second connection means for connecting said stator plate to said longitudinal beam, said second connection means including a longitudinal beam bolt extending through said longitudinal beam, said longitudinal beam bolt having a longitudinal axis substantially perpendicular to and supporting a remainder of said force of said stator plate.

5,365,856

COIL TRANSPORTATION SYSTEM

Withold Richert, Hückelhoven; Martin Pfannschmidt, Heiligenhaus, both of Germany, and Johan Aelter, Maaseik, , assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed May 11, 1993, Ser. No. 60,338
Claims priority, application Germany, May 11, 1992, 4215430
Int. Cl.[5] B60F *1/00*
U.S. Cl. 104—243 **7 Claims**



1. A coil transportation system for straight line and curvillinear travel, comprising:

an air cushion vehicle having longitudinal sides;

side guides at said longitudinal sides;

means for mechanically actuating said side guides alternately on said longitudinal sides;

routing guides provided on a surface for associating with the side guides;

said means for mechanically actuating including means for raising and lowering each of the side guides, said raising and lowering means comprising:

pneumatically actuatable cylinders vertically

disposed at the ends of a longitudinal beam mounted to the; and

raisable and lowerable support rollers connected to said cylinder; and

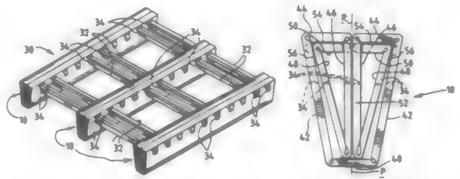
means for moving said side guides horizontally inward and outward for enabling transverse travel of the air cushion vehicle.

5,365,857

PALLET STRINGER

Ted D. Kilpatrick, Ponte Vedra Beach, Fla.; Arthur M. Wagner, Geneva, Ill., and Donald G. Young, La Crosse, Ind., assignors to Gate Pallet Systems, Inc., Crown Point, Ind.

Filed Mar. 29, 1993, Ser. No. 38,001
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 **10 Claims**



1. A pallet stringer folded from a single sheet of paperboard material so as to have at least eleven panels, which include five panels on each side of a generally vertical plane and a lower panel intersected by the generally vertical plane, wherein the panels on each side include

(a) an outer panel attached at a fold in the sheet to and extending upwardly from the lower panel,

(b) an outer panel attached at a fold in the sheet to and extending inwardly from the upwardly extending panel, and extending toward and approximately to the generally vertical plane,

(c) an inner panel attached to a fold in the sheet to and extending downwardly from the inwardly extending outer panel, and extending toward and approximately to the lower panel,

(d) an inner panel attached at a fold in the sheet to and extending upwardly and outwardly from the downwardly extending inner panel, and extending toward and approximately to the inwardly extending outer panel, at an acute angle relative to the downwardly extending inner panel,

(e) and an inner panel attached at a fold in the sheet to and extending inwardly from the upwardly and outwardly extending inner panel, and extending toward and approximately to the downwardly extending inner panel.

5,365,858

PLASTIC PALLET INCORPORATING ELECTROSTATIC DISCHARGE ELEMENT

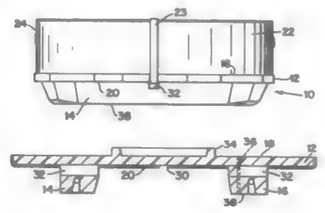
Joseph H. Kuhns, Glen Allen, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Apr. 1, 1993, Ser. No. 41,744
Int. Cl.[5] B65D *19/44*
U.S. Cl. 108—55.3 **12 Claims**

1. A plastic pallet for holding a coil of metal protected by plastic wrapping comprising:

a) a platform having an article-receiving upper surface and having a lower surface for contacting the ground;

b) positioning means extending upwardly from said upper surface for positioning a coil centrally on said upper surface and for restraining excessive transverse slippage of the coil along said upper surface; and



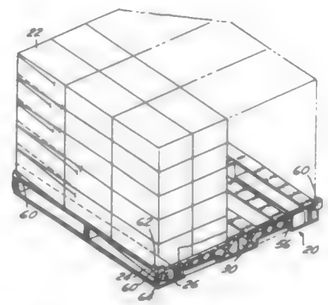
c) a non-load-bearing, non-structural electrically conductive element extending through the platform from the upper surface thereof to the lower surface thereof for providing a conductive path to discharge to ground static electrical charges generated when plastic wrapping is removed from a coil carried by the pallet.

5,365,859

RECYCLABLE PLASTIC PALLET

David A. Schrage, 27614 Parkview, Apt. 304, Warren, Mich. 48092

Filed Jul. 24, 1992, Ser. No. 919,595
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.1 **12 Claims**



1. A pallet upon which objects may be stacked and to which a wrapping sheet, or a strap, or both may be secured to retain the objects in relation to the pallet, the pallet comprising:

longitudinally spaced and laterally extending elongate front and back rails, the rails each having vertically spaced top and bottom surfaces; and

laterally spaced and longitudinally extending elongate slats, the slats being secured to the top and bottom surfaces of the rails;

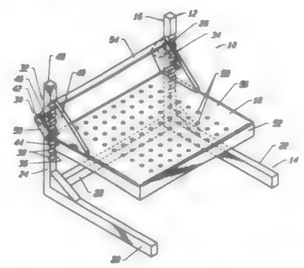
at least one of the rails further including anchoring means for frictionally retaining the wrapping sheet, the anchoring means including an elongate tongue with an opening formed thereabout.

5,365,860

MANUALLY-ADJUSTABLE CANTILEVERED WORK STATION PLATFORM

Charles J. Billington, III, Modesto, Calif., assignor to Billington Welding & Manufacturing, Inc., Modesto, Calif.

Filed Oct. 8, 1992, Ser. No. 957,773
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—108 **22 Claims**



10. A portable, manually-adjustable platform for use as a work station on a support surface comprising:

frame means having a base portion suitable for positioning on said support surface and a support portion extending vertically from said base portion, said support portion having first and second engagement surfaces;

platform means having a horizontally extending support surface of a size sufficient to support a person in a standing position thereon;

mounting means cantilever mounting said platform means to extend from at least one side of said support portion, said mounting means including pin means having a first securement pin in cooperative engagement with one of said first and second engagement surfaces and a second securement pin engaging the other of said first and second engagement surfaces at a position above said first securement pin, said mounting means being further formed for manual release of said platform means for movement along said support portion between a plurality of elevated positions upon unweighting of said platform means, and said mounting means automatically securing said platform means in a selected one of said plurality of elevated positions upon weighting of said platform means;

said base portion further being movable with respect to, and self-supporting on, said support surface and extending laterally from said support portion by an amount sufficient to support said platform means in a stable elevated position over said support surface with a person standing at any location on said platform means; and

at least one guardrail upwardly projecting from said platform means to a height preventing a person standing on said platform means from falling off said platform means.

5,365,861

LATCH MECHANISM FOR FOLDING TABLE LEG

David R. Gutgsell, Jasper, Ind., assignor to Ditto Sales, Inc., Jasper, Ind.

Filed Jan. 14, 1992, Ser. No. 820,511
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—132 **17 Claims**

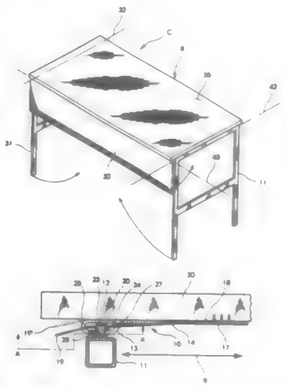
1. A latch mechanism for a folding table that includes stowable legs, a modesty panel and a horizontal table top supported by the legs, the latch mechanism latching the legs of the table into an upright position, the latch mechanism comprising:

a pin having a base and a tip, said base being rigidly fastened to a leg of the table such that said tip projects away from said leg;

a spring plate defining a bore sized to receive at least a portion of said tip of said pin therethrough, said spring plate being attached to said modesty panel such that said

pin aligns with said bore when the table leg is opened to its upright position;

a bracket attached to said modesty panel, said bracket defining a backstop surface positioned adjacent said bore of said spring plate to contact said pin when said pin is aligned with said bore;



means for resiliently biasing said spring plate away from said modesty panel and against said pin when the table leg is in its upright position to continuously urge said pin against said backstop; and

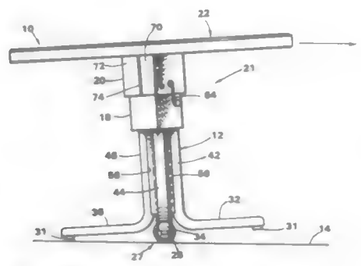
whereby said pin is freed from said bore allowing said legs of the table to move to their stowed position when said spring plate is moved toward said modesty panel against the action of said means for resiliently biasing.

5,365,862

TABLE HEIGHT ADJUSTING MECHANISM

Warren J. Peterson, Stevens Point, Wis., assignor to Joerns Healthcare Inc., Stevens Point, Wis.

Filed Dec. 9, 1992, Ser. No. 988,416
Int. Cl.[5] A47B *9/00*
U.S. Cl. 108—144 **20 Claims**



1. A height adjustable table comprising:

a table top shaped to selectively support articles thereon;

a base having a first end adapted to support said table top in a generally horizontal manner and a second end adapted to support said base on a support surface;

an elongated support member carried on one of said base and said table top, said support member having a longitudinal center axis;

a housing carried on the other one of said base and said table top;

a height adjustment mechanism carried on said housing and operably coupled to said support member;

at least one guide plate including an aperture having at least one edge, said aperture being larger than said support member in order to receive said support member such that said aperture circumscribes said support member; and

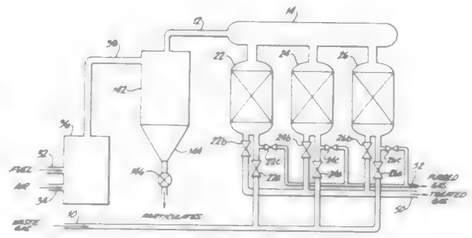
at least one fastener for adjustably supporting said at least one guide plate on said housing such that the angle between said guide plate and said center axis of said support member is other than ninety-degrees whereby the angular position of said guide plate is adjusted and then fixed using said at least one fastener such that said at least one edge of said aperture slidingly engages said support and said guide plate clamps said support member to support said top on said base securely while facilitating adjustment of the height of said table top.

5,365,863

REGENERATIVE THERMAL OXIDIZER WITH WOOD WASTE BURNER

Melanius D'Souza, San Dimas, Calif., assignor to Smith Engineering Company, Ontario, Calif.

Filed Jan. 21, 1994, Ser. No. 184,863
Int. Cl.[5] F23B *5/00*; F27D *17/00*
U.S. Cl. 110—211 **20 Claims**



1. A system for removing volatile organic compounds from a waste gas stream comprising:

a combustion chamber for burning a fuel stream containing solid organic material with excess oxygen to produce a hot oxidation gas stream;

means for removing particulates from the hot oxidation gas stream;

two regenerators, each containing heat exchange material;

means for selectively directing the waste gas stream to a regenerator in heating service for preheating the waste gas stream;

an oxidation chamber in open communication with the regenerators for oxidizing the volatile organic compounds in the waste gas stream with the hot oxidation gas stream to produce an oxidized waste gas stream; and means for selectively drawing the oxidized waste gas stream from the oxidation chamber through a regenerator in cooling service for cooling the oxidized waste gas stream.

5,365,864

LABORATORY SCALE INCINERATOR SIMULATION SYSTEM

Walter G. Switzer, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Nov. 2, 1993, Ser. No. 146,239
Int. Cl.[5] B09B *3/00*
U.S. Cl. 110—235 **6 Claims**

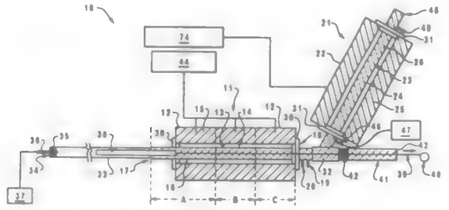
1. A laboratory scale incinerator simulation system comprising, in combination;

(a) a primary combustion means having a primary combustion zone in the interior thereof with a primary combustion chamber extending therethrough,

(b) a secondary combustion means having a secondary combustion zone in the interior thereof with a secondary combustion chamber extending therethrough, said secondary combustion chamber being in fluid-flow communication with said primariy combustion chamber,

(c) means operatively associated with said primary combustion means to introduce a specimen into said primary combustion chamber for incineration,

(d) control means associated with each of said primary and secondary combustion chambers to vary the combustion conditions in each, and



(e) sampling means associated with each of said primary and secondary combustion chambers for monitoring combustion conditions therein and resultant combustion by-products;

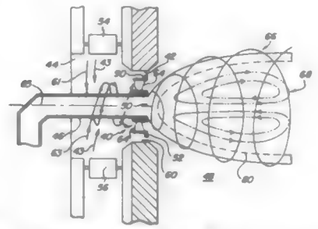
(f) each of said primary and secondary combustion zones being adapted to receive and function with combustion chambers of different volumes.

5,365,865

FLAME STABILIZER FOR SOLID FUEL BURNER

Richard J. Monro, 102 Ramapoo Rd., Ridgefield, Conn. 06877

Continuation-in-part of Ser. No. 785,744, Oct. 31, 1991, Pat. No. 5,131,334. This application Jul. 6, 1992, Ser. No. 909,042
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] F23D *1/02*
U.S. Cl. 110—264 **14 Claims**



1. A flame stabilizer for a solid fuel burner which has a central axis with a fuel feed conduit that terminates at a discharge end for use in or near the exit throat of a burner with combustion air being passed from a windbox around the fuel feed conduit, comprising:

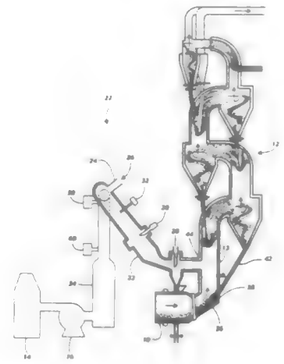
a vortex control apparatus having a periphery and being shaped to mount around the fuel feed conduit near its discharge end in the path of combustion air to enable a vortex downstream of the discharge end; said vortex control apparatus having a plurality of air deflecting vanes shaped to radially vary their exit flow angles, as measured relative to the central axis, along their lengths generally from tips to roots of the vanes so as to emphasize axial flow in the vicinity of the fuel feed conduit and enable swirl inducement toward the periphery of the vortex control apparatus; and with the radial size of the vortex control apparatus being selected to intercept an amount of combustion air, so that the integrated swirl number for the flame stabilizer is in the range from about 0.6 to about 2.0.

5,365,866

METHOD AND APPARATUS FOR TREATING EXHAUST GASES FROM PREHEATER AND PREHEATER/PRECALCINER KILNS BURNING HAZARDOUS WASTE FUELS

H. Michael Von Seebach; Charles W. Lamb, and F. MacGregor Miller, all of Houston, Tex., assignors to Southdown, Inc., Houston, Tex.

Filed Dec. 8, 1992, Ser. No. 986,759
Int. Cl.[5] C04B *7/02*; A47J *36/00*
U.S. Cl. 110—345 **23 Claims**



1. A method for treating the exhaust gases of a rotary cement kiln using hazardous waste as a component of the fuel, said exhaust gases comprising solid, solidifiable and condensable particulate matter and residual hazardous organic compounds and emanating from said rotary cement kiln at a first temperature, comprising the steps of:

a. introducing a portion of said exhaust gases to a bypass means coupled to said rotary cement kiln, said bypass means having an increased volume for carrying out the combustion of step b:

b. maintaining said portion of said exhaust gases within said bypass means at a temperature of at least 900° C. for a selected time of between 0.01 seconds and 5.0 seconds which is sufficient to combust a desired fraction of said hazardous compounds: and then

c. cooling said portion of said exhaust gases within said bypass means to a temperature lower than said first temperature to solidify or condense said condensable particulate matter in a period of time sufficient to prevent said particulate matter from solidifying or condensing on and adhering to said bypass means.

5,365,867

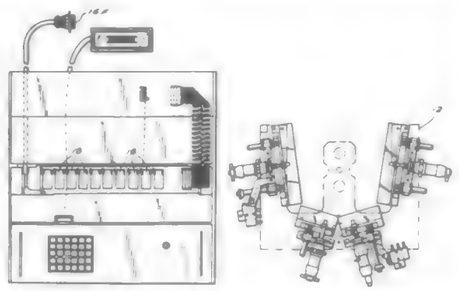
STYLE GROUP RECOGNITION SYSTEM FOR AUTOMATED SEWING PATTERNS

Nathaniel E. Hatch, Utica; Tadeusz Olewicz, Clinton, and Ernst Schramayr, BarneVeld, all of N.Y., assignors to Jet Sew Technologies, Inc., Bowling Green, Ky.

Filed Aug. 27, 1993, Ser. No. 113,429
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 **6 Claims**

3. An automated apparatus for effecting a multiplicity of apparel stitching patterns, each individual pattern defining in part a different apparel style comprising a stitching means, said apparatus including a hardware group including a folding apparatus and a clamping apparatus cooperating with said stitching means to define an individual stitching pattern unique to each apparel style, computerized control means for said stitching means and individual program means for directing and controlling the formation of said individual stitching pattern, means for providing a code to identify and match each

hardware group with a said program, a decoding means and a plurality of stitching programs individually integrated with said computer control means, means for connecting said individual hardware group to said decoding means for sensing a code corresponding to an individual hardware group after installation thereof in said apparatus and transmitting the



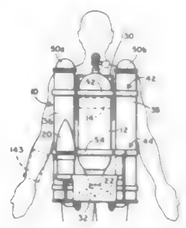
sensed code to said decoding means, said decoding means having means to scan respective code identifications of said plurality of stitching programs, and computerized control means to effect implementation of a program which has been code-identified by said decoding means to match the code of said installed hardware group.

5,365,868

UNDERWATER PROPULSION SYSTEM HAVING REDUCED WEIGHT PENALTY AND VARIABLE ANGLE OF THRUST

Kenneth W. Culotta, 1141 Wilis Vista Trail, Maitland, Fla. 32751

Filed Jun. 10, 1993, Ser. No. 74,368
Int. Cl.[5] B63G *8/00*
U.S. Cl. 114—315 **46 Claims**



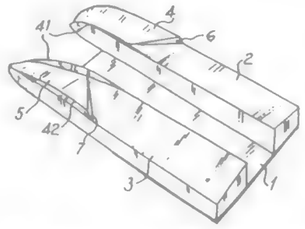
1. A propeller driven underwater propulsion system for use by a scuba diver, comprising at least one elongate air tank to be carried on the back of the diver, said tank having a front end as well as a rear end, with the longitudinal centerline of the tank substantially in line with the length direction of the diver's body, the longitudinal centerline of said tank residing in a plane approximately perpendicular to the plane of the shoulders of the diver, a propeller mounted on a propeller shaft, said propeller shaft being operatively mounted for rotation at a location closely adjacent said rear end of said tank, but neither rigidly connected to nor directly supported by said tank, the centerline of said propeller shaft being disposed in said plane approximately perpendicular to the shoulders of the diver, through which the longitudinal centerline of said tank passes, motor mounting means for operatively supporting a motor adjacent said tank and provided with an output shaft, said output shaft being operatively connected by a torque transmitting device for continuously supplying rotative power to said propeller shaft, so as to cause said propeller shaft to rotate and to cause said propeller to provide a line of thrust at a location directed essentially rearwardly of said tank, the angularity of said propeller shaft with respect to the longitudinal centerline of said tank being readily modified at the behest of the diver so as to enable the line of thrust of said propeller to be tilted away from the longitudinal centerline of said tank and the body of the diver, to an extent necessary to compensate for the fact that line of thrust of said propeller is inherently laterally offset from the body of the diver, the selective tilt of the line of thrust of said propeller enabling the diver to readily travel in a desired direction underwater, said propeller shaft being supported by at least one support arm disposed approximately parallel to said propeller shaft, an attachment point disposed at the forwardmost portion of said support arm, said attachment point serving as a pivot about which said arm is rotatable with respect to the longitudinal centerline of said tank, during the selective tilt of said propeller thrust line to compensate for the lateral offset of said thrust line from the diver's body.

5,365,869

CATAMARAN FOR PASTIME, MODEL CONSTRUCTION OR RACING IN ANY COMPETITION RATING, WITH INDUCED HYDRODINAMIC STABILITY

Giovanni Bulgarini, Riviera S. Nicolò, 72, Venezia Lido, Italy

PCT No. PCT/IT92/00027, § 371 Date Sep. 8, 1993, § 102(e) Date Sep. 8, 1993, PCT Pub. No. WO92/15479, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 10, 1992, Ser. No. 117,022
Claims priority, application Italy, Mar. 11, 1991, VE91A000013
Int. Cl.[5] B63B *1/20*
U.S. Cl. 114—61 **7 Claims**



1. A catamaran for pastime, model construction or racing particularly suitable to high speeds, having a hull with a board and a pair of longitudinally extended semi-immersible appendages arranged along parallel sides of the board and symmetrically to a center-line of the hull, each of said appendages having a bow tip, a stern, an inner edge, and a bottom; and

a runner on the inner edge of each appendage, said runner acting as a deflector;

wherein the respective bottoms at both bow tips of said appendages have mutually opposite slopes and the respective bottoms at both sterns of said appendages have mutually opposite slopes, the slope of each bow tip being contrary to the slope of the respective stern for each appendage, said contrary slopes defining a slope variation;

wherein each appendage has at least one step extending between the stern and the bow which defines said bow tips, said at least one step being symmetrically angled with respect to a median symmetry plane of the hull and having notches associated therewith, the notches being wedged into said appendages;

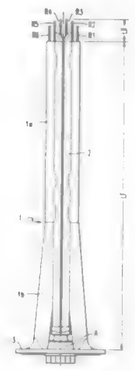
whereby said appendages provide an induced hydrodynamic stability to the catamaran.

5,365,870

BODY EQUIPPED WITH A STREAMLINED PROFILE, IN PARTICULAR A STABILIZER FIN FOR SHIPS WITH A TURBULENCE REDUCING STRUCTURE AND METHOD OF USING THE TURBULENCE REDUCING STRUCTURE

Heinz-Günter Ehluss, Tornesch, Germany, assignor to Blohm & Voss AG, Hamburg, Germany

Filed Aug. 21, 1992, Ser. No. 934,169
Claims priority, application Germany, Sep. 4, 1991, 4129358; Jan. 31, 1992, 4202745
Int. Cl.[5] B63B *39/06*
U.S. Cl. 114—126 **8 Claims**



1. A method of reducing turbulence at at least one surface of a vessel caused by the motion of the vessel through water, the vessel having a hull, said method comprising the steps of:

providing an elongated member, the elongated member having a length along the greatest dimension of the elongated member, and the elongated member having a longitudinal axis along the length of the elongated member;

attaching the elongated member to the hull;

the elongated member causes the at least one region of turbulence generated by the motion of the vessel through water;

the elongated member has at least one end located on the longitudinal axis of the elongated member, the at least one region of turbulence located adjacent to the at least one end of the elongated member;

the elongated member comprises at least one member of the group consisting of: a stabilizer fin of a ship, a keel fin of a sailboat without ballast bodies, a keel fin with ballast bodies, and a rudder blade on a ship;

positioning a plurality of planar bodies at the at least one end of the elongated member in the at least one region of turbulence caused by the motion of the vessel through water located adjacent to the at least one end of the elongated member, wherein:

each planar body has a length, a width and a thickness, said thickness being generally less than either of said width and said length;

each planar body has a longitudinal plane defined by the length and width dimensions; and

the plurality of planar bodies comprises at least a first group of the planar bodies;

said positioning comprising positioning the first group of the planar bodies such that the longitudinal planes of the members of the first group of the planar bodies are substantially parallel, such that members of the first group of the planar bodies are adjacent and side by side, and such that spaces are formed between the members of the first group of the planar bodies in a direction perpendicular to the longitudinal planes of the members of the first group of the planar bodies; and

reducing said turbulence in the at least one region of turbulence with said plurality of planar bodies;

said positioning comprises positioning the planar bodies such that the longitudinal planes of the planar bodies are substantially parallel to the longitudinal axis of the elongated member;

the members of the first group of the planar bodies have widths parallel to the longitudinal axis of the elongated member;

said widths are between approximately 1/10 and approximately 1/20 of the length of the elongated member; and

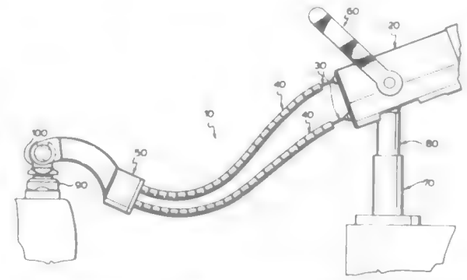
said positioning comprises positioning the first group of the planar bodies such that the longitudinal planes of the members of the first group of the planar bodies are substantially parallel to water flow across the elongated member.

5,365,871

ATTACHMENT TO ADAPT AN ELONGATED MEMBER

Nelson J. Whitehead, 204 Kingslynn Drive, P.O. Box 263, King City, Ontario, Canada L0G 1K0 , assignor to Nelson J. Whitehead, King City, Canada

Continuation-in-part of Ser. No. 894,903, Jun. 8, 1992, abandoned. This application Dec. 24, 1992, Ser. No. 996,591
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—218 **7 Claims**



1. An attachment to adapt a rope or cable so as to be useable with a female receptacle having cleat receiving means, the attachment comprising at least two cooperating parts which when assembled fit over a segment of the rope or cable and forming a cleat when assembled having two ends and having a male portion disposed proximate one end thereof remote said segment; said male portion to be received in said female receptacle; one of said at least two cooperating parts further comprising a first portion having rope or cable receiving means proximate one end thereof female cleat receptacle engaging means proximate the other end thereof and having detent means thereon distant the end of said rope or cable receiving means; another of said at least two cooperating parts further comprising a second portion having rope or cable receiving means cooperating with said first portion forming an aperture for passage of said rope or cable, said first and second portions being furthered secured by securing means which further secures said rope or cable with said first and second portions.

5,365,872

REMOTE CONTROLLED MOORING SYSTEM

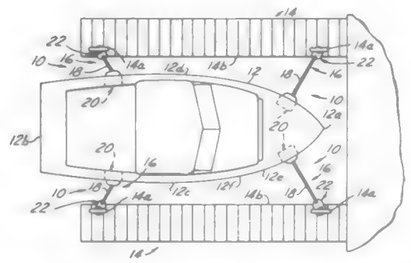
Bradley A. Obrinski, 47645 Jefferson, New Baltimore, Mich. 48047

Filed May 7, 1993, Ser. No. 58,957
Int. Cl.[5] B63B *21/00*
U.S. Cl. 114—230 **13 Claims**

1. A mooring system for mooring a vessel to at least one stationary mooring member, said mooring system comprising:

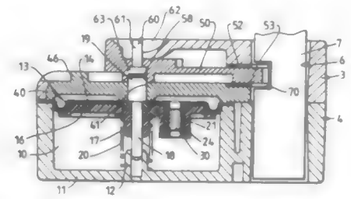
transmitter means for providing emission of at least one predetermined wireless signal; and

at least one morning line unit connected with the vessel, each mooring line unit of said at least one mooring line unit comprising:
a mooring line having a near end and a distal end;
mooring line connection member means entirely connected to said distal end of said mooring line for providing selective connection of said mooring line with respect to a stationary mooring member responsive to emission of said at least one predetermined wireless signal; and
connector assembly means for connecting said near end of said mooring line to the vessel, said connector assembly means comprising:
a housing connected to the vessel;
reel means connected with said housing and said near end of mooring line for providing reelable storage of said mooring line;



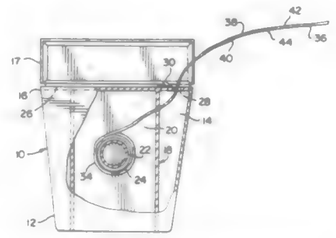
retraction means connected with said reel means for providing retraction of said mooring line with respect to the vessel reelably upon said reel means; and
control mechanism means for providing selective control over actuation of said retraction means responsive to emission of said at least one predetermined wireless signal;
wherein said at least one predetermined signal emitted from said transmitter means actuates said control mechanism means so as to cause said retraction means to effect retraction of said mooring line on said reel means, and substantially simultaneously actuates said mooring line connection member means so as to release said distal end of said mooring line from connection with the stationary mooring member.

5,365,873
HYDROSTATIC PRESSURE SENSORS
Richard I. Wigram, Fleet, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Oct. 21, 1993, Ser. No. 139,153
Claims priority, application United Kingdom, Nov. 4, 1992, 9223097
Int. Cl.[5] B63B *23/70*
U.S. Cl. 114—367 **9 Claims**



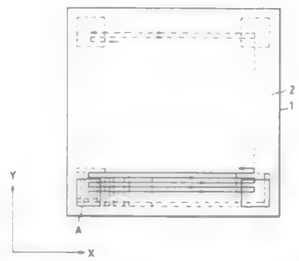
1. A pressure-responsive device comprising:
an outer casing;
a chamber within the casing;
a flexible diaphragm sealing the chamber on one side and exposed to pressure externally of the device on its opposite side;
a pressure-equalizing vent including a rigid cylindrical plug that is porous to gas and positioned to allow gradual equalization of gas pressure between the chamber and an external environment;
a hole through a wall of the chamber;
and a sleeve extending around the plug and within the hole to retain the plug in the hole, the sleeve being of a rubber-like material that is substantially more resilient than both the wall of the chamber and the plug.

5,365,874
END OF DENTAL FLOSS TAPE INDICATOR
Jason R. Dorfman, 1337 Oakmeadow Ct., Wheeling, Ill. 60090
Filed Dec. 18, 1992, Ser. No. 993,083
Int. Cl.[5] A61C *15/04*; G08B *5/00*
U.S. Cl. 116—200 **7 Claims**



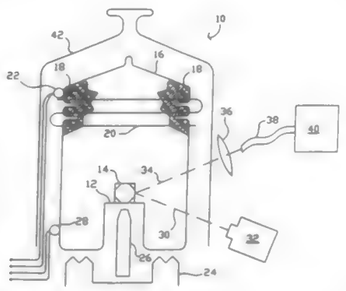
1. An indicator of depletion of a length of a tape of dental floss contained within an adapted to be fed sequentially from a dispenser, said indicator comprising:
an indicating segment of the length of tape having one of an indicia and an appearance different from a prior segment of the length of tape to be fed from said dispenser, said indicating segment being located at a predetermined distance from an end of the tape to indicate that the length of the tape remaining within the dispenser is nearing depletion.

5,365,875
SEMICONDUCTOR ELEMENT MANUFACTURING METHOD
Ichirou Asai; Noriji Kato, and Mario Fuse, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Sep. 18, 1992, Ser. No. 946,645
Claims priority, application Japan, Mar. 25, 1991, 3-84661; Jan. 14, 1992, 4-023341
Int. Cl.[5] C30B *1/06*
U.S. Cl. 117—7 **4 Claims**



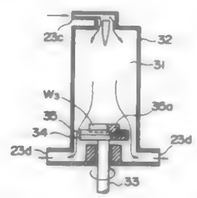
1. A semiconductor element manufacturing method comprising the steps of:
applying a first laser beam to a semiconductor layer of amorphous material formed on an insulating substrate, to form crystalline nuclei which are in a range of from 10 Å to 1000 Å in grain size, wherein an intensity of energy of said first laser beam is greater than 270 mJ/cm^2; and
applying a second laser beam to said semiconductor layer to remove defects therefrom, wherein an intensity of energy of said second laser beam is greater than said intensity of energy of said first laser beam.

5,365,876
CRYSTAL FACE TEMPERATURE DETERMINATION MEANS
Donald O. Nason, Goleta, Calif., and Arnold Burger, Nashville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Feb. 1, 1993, Ser. No. 11,634
Int. Cl.[5] C30B *25/16*
U.S. Cl. 117—85 **7 Claims**



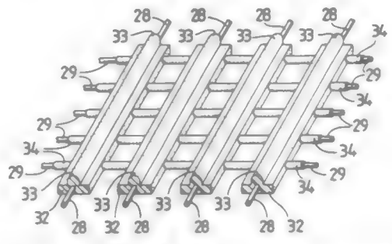
1. A method for determining the surface temperature of a growing crystal, comprising:
directing a light beam at the growing crystal;
directing a reflected portion of said light beam to an analysis unit;
causing the analysis unit to determine an energy peak position of the reflected portion of said light beam, wherein;
prior to directing said light beam at the growing crystal, said light beam is directed at a similar crystal of known surface temperature such that a correlation factor relating excitonic peak positions to temperatures is determined by said analysis unit.

5,365,877
METHOD OF GROWING SEMICONDUCTOR IN VAPOR PHASE
Hiroyasu Kubota, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 672,555, Mar. 20, 1991, abandoned. This application Jul. 16, 1993, Ser. No. 92,587
Claims priority, application Japan, Mar. 20, 1990, 2-70738
Int. Cl.[5] H01L *21/203*
U.S. Cl. 117—93 **17 Claims**



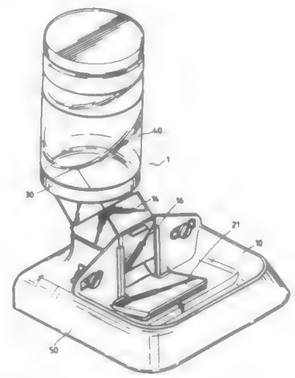
1. A method of vapor phase epitaxial growth, comprising the steps of:
removing a silicon oxide film on a surface of a semiconductor substrate wafer; and
growing a silicon layer on the surface of said semiconductor substrate wafer by blowing a reaction gas and a carrier gas towards the surface of said wafer along a shaft substantially vertical to said wafer while rotating said wafer about said shaft at a rotational speed of 1,000 to 3,000 rpm and at a reduced pressure of about 100 Torr.

5,365,878
POULTRY NEST PAD
Bill W. Dyer, Cullman, Ala., assignor to Dyer Poultry Supply, Inc., Cullman, Ala.
Filed Oct. 18, 1993, Ser. No. 137,350
Int. Cl.[5] A01K *31/14*
U.S. Cl. 119—50.5 **5 Claims**



1. An improved nesting pad for use in a nesting house, said improved nesting pad comprising wire mesh defining a concave upper surface covered with pliable material, said wire mesh further comprising a plurality of spaced-apart, longitudinal wires connected by a plurality of spaced-apart, horizontal cross wires, wherein said pliable material forms longitudinal ridges along an upper surface of each of said longitudinal wires.

5,365,879
ANIMAL OPERATED FEEDING APPARATUS
Ho Ying-Kuan, No. 22, Alley 18, Lane 75, An Ping Road, Tainan, Taiwan, Prov. of China
Filed Mar. 22, 1994, Ser. No. 215,537
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—54 **4 Claims**



1. A feeding apparatus comprising:
a tray including a bottom portion having a depression formed therein, a side portion having an opening formed therein, a chute secured to said tray and communicating with said opening;

a board pivotally supported in said chute and including an upper portion extended outward of said chute and a lower portion extended inward of said tray, a panel formed in said lower portion of said board and engaged in said depression of said tray, means for biasing said panel away from said depression;

a guide including a channel engaged in said chute and including an upper portion; and

a bottle for accommodating food including a lower portion engaged with said upper portion of said guide, said food moving into said tray via said chute and said opening;

said food being moved by said board when said panel is depressed.

5,365,880

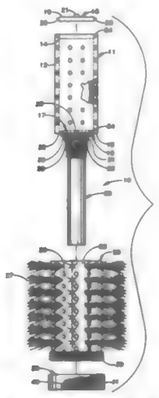
GROOMING AND DISPENSING BRUSH

Judith M. South, P.O. Box 1273, Yulee, Fla. 32097

Filed Apr. 14, 1994, Ser. No. 227,735

Int. Cl.[5] A01K *31/00;* **A45D** *24/22;* **A46B** *11/00*

U.S. Cl. 119—85 **3 Claims**



1. A pesticide dispensing and grooming brush comprising:

(a) an inner tubular wall comprising:

a plurality of first ports through the inner tubular wall; and

the inner tubular wall forming an open-ended chamber;

(b) a filler cap secured to a filler end of the inner tubular wall;

(c) an outer tubular wall rotatingly surrounding the inner tubular wall comprising:

a plurality of second ports through the outer tubular wall; and

a plurality of bristles attached to and extending outwardly from the outer tubular wall;

(d) a handle comprising:

a swivel member;

a lower surface of the swivel member attached to one end of the handle;

the swivel member swivelly connected to a swivel end of the inner tubular wall; and

a plurality of threads on the one end of the handle immediately below the swivel member; and

(e) an anti-rotational cap threadingly connected to a handle end of the outer tubular wall comprising a threaded handle port, in a cap wall of the anti-rotational cap through which the plurality of threads on one end of the handle is threaded.

5,365,881

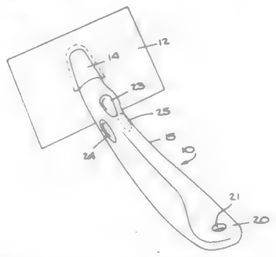
GROOMING BRUSH HANDLE

Joseph S. Sporn, 274 W. 86th St. #4B, New York, N.Y. 10024

Filed Jan. 3, 1994, Ser. No. 176,799

Int. Cl.[5] A01K *13/00;* **A46B** *5/02*

U.S. Cl. 119—94 **6 Claims**



1. A handle combined with a grooming brush for pets forming by an array of bristles anchored on a base plate which makes it possible for a groomer to grip the handle in a manner effecting optimal control of the brush for a selected mode of pet brushing activity, said handle comprising an elongated body having a leading end section attached to the base plate of the brush at its center at an angle thereto, said leading end section having an upper surface forming a center thumb rest, said leading end section having formed at opposite sides of the upper surface concave depressions defining side thumb rests that flank the center thumb rest, the elongated body being provided at its undersurface with a series of concave depressions defining finger rests for the fingers of the groomer's hand whereby the groomer who grasps the handle with the fingers of his hand may then press his thumb on said center thumb rest or in one of the side thumb rests, depending on the selected mode of brushing activity.

5,365,882

Patent Not Issued For This Number

5,365,883

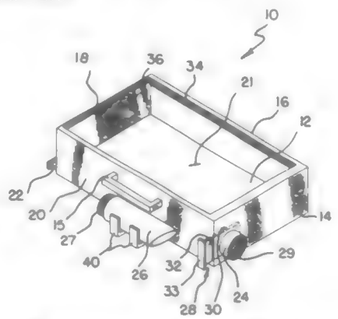
CAT LITTER BOX APPARATUS

Michel Laviolette, 25 Grenville Street, Apt. 1804, Toronto, Ontario, Canada M4Y 2X5

Filed Sep. 27, 1993, Ser. No. 127,177

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—170 **8 Claims**



1. A new and improved cat litter box apparatus, comprising:

a floor member,

four walls projecting upward from said floor member, said four walls including a first wall, a second wall, a third wall, and a fourth wall, said four walls and said floor member defining a container for litter,

a removable and replaceable cover member capable of being fitted onto said four walls for sealing the litter within said container, and

a discharge outlet located in one said four walls for permitting the litter within said container to be discharged from said container,

further including:

a discharge valve assembly for selectively closing or opening said discharge outlet,

wherein said discharge valve assembly includes:

a slot in said wall containing said discharge outlet adjacent to said discharge outlet, and

a valve member, capable of sliding within said slot, and capable of being placed in registration with said discharge outlet, for selectively controlling flow of the litter through said discharge outlet.

5,365,884

ORNAMENTAL ASSEMBLY FOR USE IN NON-AQUATIC VIEWING CAGES OR THE LIKE

Richard L. Jones, 7989 Lakeshore, Lexington, Mich. 48450

Continuation of Ser. No. 936,104, Aug. 26, 1992, Pat. No. 5,257,596, which is a division of Ser. No. 619,229, Nov. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 325,219, Mar. 17, 1989, Pat. No. 4,974,545. This application Sep. 14, 1993, Ser. No. 121,290

The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—256 **2 Claims**



1. An ornamental device for use in a viewing tank comprising:

a decorative artificial plant; and

at least one suction cup for semi-permanent securing of said artificial plant to an inner surface of said viewing tank so as to directly fixably locate said artificial plant thereto, said at least one suction cup being secured to said artificial plant.

5,365,885

DROP STALL

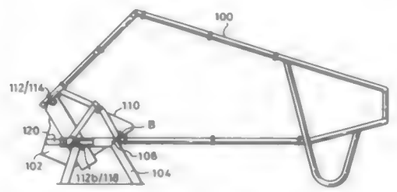
Seaton Baxter, Banchory, Scotland, assignor to Aco Severin Ahlmann GmbH & Co. KG, Rendsburg, Germany

Filed Feb. 3, 1993, Ser. No. 12,738

Claims priority, application United Kingdom, Feb. 5, 1992, 9202462.9

Int. Cl.[5] A01K *1/02*

U.S. Cl. 119—27 **17 Claims**



17. A stall for an animal comprising a frame having first and second spaced apart sides, each having a front end and a rear end, front end means joining said front ends of said first and second sides and rear end means joining said rear ends of said first and second sides to define a enclosed space adapted to surround said animal, means for pivoting said frame about a horizontal axis between a first position wherein said enclosed space is surrounded by said frame to inhibit entry or removal of said animal from said space and a second position at which said rear end means is pivoted upward to permit said animal to enter and leave said space, said pivot means including a support on which a pivot is mounted, a trough coupled to said support, said trough having a feed opening, and a linkage coupling said trough to the frame to move the feed opening of the trough between a position at which the trough is accessible to the animal when the frame is pivoted to said first position, and a position at which the trough is inaccessible to the animal when the frame is pivoted to said second position.

5,365,886

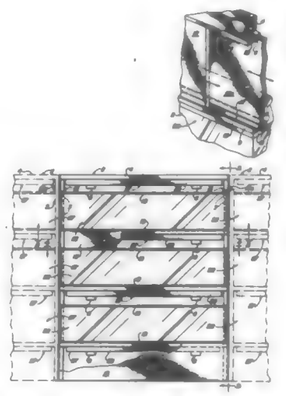
AQUARIUM CONTAIMENT SYSTEM

Robert W. Frost, Jr., 8600 Woodlake Dr., Haughton, La. 71037

Filed Feb. 19, 1993, Ser. No. 20,346

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—267 **25 Claims**



1. An aquarium containment system comprising a frame; at least two aquariums supported by said frame; at least one strip of light-dispersing material contacting each one of said aquariums; and a top light mounted on said frame above said aquariums for illuminating the top of said aquariums; a pair of lights mounted on said frame between each of said aquariums, with a first one of said pair of lights illuminating the bottom of said aquariums and a second one of said lights illuminating the top of said aquariums; and a bottom light mounted on said frame below said aquariums for illuminating the bottom of said aquariums.

5,365,887

ULTRA-HIGH EFFICIENCY ON-DEMAND WATER HEATER AND HEAT EXCHANGER

Gordon W. Fean, Dundee, Mich., assignor to Frontier, Inc., Ann Arbor, Mich.

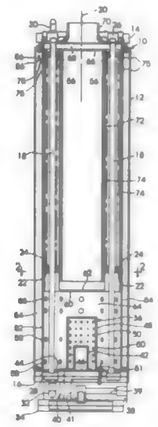
Filed Apr. 27, 1992, Ser. No. 874,649

Int. Cl.[5] F22B *5/00*

U.S. Cl. 122—16 **16 Claims**

1. Heat exchanger structure comprising plural concentric tube pairs arranged in parallel, each pair comprising an inner tube of good thermal conductivity that is arranged concentrically within an outer tube of good thermal conductivity, means providing for a first fluid to flow through said inner tubes in a given direction, means providing for a second fluid to flow through said outer tubes in counterflow to the flow of said first fluid through said inner tubes, and plural annular fin elements of good thermal conductivity stacked onto the exterior of each said inner tube and disposed within the corresponding said

second tube transverse to the flow of said second fluid, said fin elements comprising through-holes providing for passage of said second fluid through each fin element, in which the fin



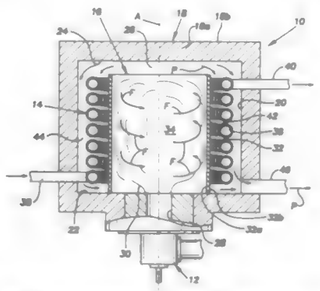
elements on each inner tube have an axially extending flange that embraces the inner tube and also abuts an immediately adjacent fin element.

5,365,888

FLUID HEATER AND METHOD

Michael A. Aronov, Mayfield Heights, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 2, 1993, Ser. No. 100,471
Int. Cl.[5] F22B *5/02*
U.S. Cl. 122—19 21 Claims



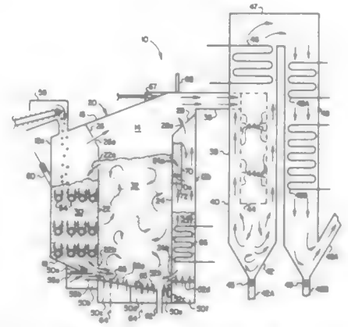
1. A fluid heater for heating a fluid, said fluid heater having a longitudinal axis extending from a proximal end to a distal end thereof, a housing having a housing sidewall extending along said axis to a housing distal end wall adjacent the distal end of the fluid heater, a powered burner for emitting a flame and products of combustion for heating said fluid, said flame having a flame length extending along said axis, a heat shield having inner shield and outer shield wall surfaces extending along said axis from said burner to a location spaced from said housing distal end wall, said inner shield wall surface providing a conduit shape flame region, and a heating tube for containing a flow of fluid, said heating tube having an axial length extending between said heat shield and housing sidewall, said outer shield wall surface and housing sidewall cooperating to define a passageway containing said heating tube, said burner being mounted adjacent a proximal end of said heat shield with said inner shield wall surface being arranged to confine said burner flame within said flame region along substantially all of said flame length to prevent impingement of the flame on the heating tube and to direct the flow of products of combustion along said axis, said housing distal end wall directing the flow of products of combustion from said flame region around the distal end of said heat shield and into said passageway for direct contact with said heating tube, said passageway being sized to increase the flow velocity of said products of combustion and the heat transfer coefficient upon contact with said heating tube for increasing the convective heat transfer to fluid passing through the heating coil, said inner shield wall surface being arranged to absorb heat from said flame and products of combustion along at least a major portion of its entire length and said outer shield wall surface being arranged to reradiate heat along at least a major portion of its entire length to said heating tube, whereby the temperature of said products of combustion is sufficiently decreased as said products of combustion flow through said flame region to enable direct contact with said heating tube without degradation of the fluid.

5,365,889

FLUIDIZED BED REACTOR AND SYSTEM AND METHOD UTILIZING SAME

John T. Tang, Easton, Pa., assignor to Fostyer Wheeler Energy Corporation, Clinton, N.J.

Filed Nov. 13, 1992, Ser. No. 976,024
Int. Cl.[5] F23D *19/00*; F23G *5/00*
U.S. Cl. 122—4 D 16 Claims



1. A method of combustion comprising the steps of:
introducing a combustible material into a first enclosure;
introducing air into said first enclosure at different areas thereof, at a plurality of vertically spaced levels within said material and at sufficient velocity to fluidize said material and promote the combustion of said material;
passing said material from said first enclosure to a second enclosure;
introducing air into said material in said second enclosure for fluidizing and combusting said material;
passing a portion of said material from said second enclosure back to said first enclosure; and
passing another portion of said material from said second enclosure to external equipment for further treatment.

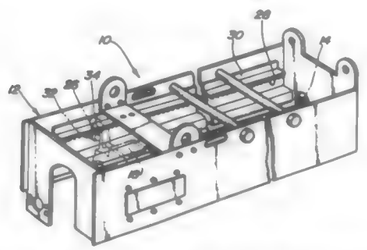
5,365,890

OPEN BEAM SOOTBLOWER

Jesse C. Johnston, Jr., Carroll; James S. Kulig; Steven F. Lewis, both of Lancaster, and Eric C. Collet, Columbus, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 34,251, Mar. 22, 1993, Pat. No. 5,299,533.
This application Sep. 29, 1993, Ser. No. 128,840
Int. Cl.[5] F23J *3/02*
U.S. Cl. 122—379 10 Claims

1. A mechanism for adjusting backlash in a retractable sootblower of the type including a lance tube and a carriage assembly moveable within a frame, the carriage assembly having a drive means for advancing and retracting the lance tube into and out of a combustion device the drive means including a drive gear engaging a stationary toothed rack mounted to the frame with a predetermined amount of backlash, said mechanism comprising:
a longitudinal track mounted to the frame;



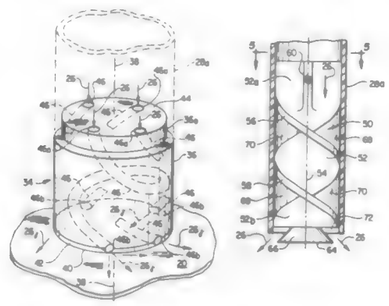
a carriage roller engaging said track for movement therealong during advancement and retraction of the lance tube;
means for mounting said carriage roller to the carriage assembly, said mounting means also including adjusting means for vertically adjusting the position of said carriage roller relative to the carriage assembly thereby varying the engagement between the drive gear and the rack to adjust the amount of backlash exhibited therebetween.

5,365,891

INLET WATER TURBULATOR FOR A WATER HEATER

David M. Hanning, Montgomery, Ala., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Dec. 16, 1993, Ser. No. 168,635
Int. Cl.[5] F24H *1/00*
U.S. Cl. 122—382 30 Claims



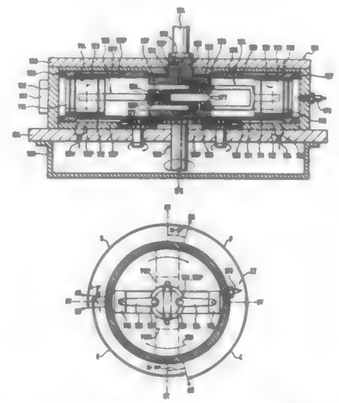
1. Water heater apparatus comprising:
a storage tank having vertically spaced apart top and bottom walls;
tube means through which pressurized water may be flowed into said storage tank for heating therein, said tube means extending inwardly through a wall portion of said storage tank and having an inner discharge end portion centered about a vertical axis and spaced upwardly apart from said bottom storage tank wall in a facing relationship therewith;
heating means for heating water flowed into said storage tank through said tube means;
outlet means through which heated water may be discharged from said storage tank; and
turbulator means for facilitating the dislodgement of sediment on said bottom storage tank wall by water discharged from said tubing means, said turbulator means including:
a turbulator body secured to said discharge end portion of said tubing means and having a lower end portion facing and spaced upwardly apart from said bottom storage tank wall, and
at least one vertically spiraling passage means extending through said turbulator body for receiving pressurized water from the interior of said tubing means and discharging the received water from said lower end portion of said turbulator body in the form of a water stream impinging on said bottom storage tank wall with substantial vertically directed and horizontally swirling force components.

5,365,892

ROTARY INTERNAL COMBUSTION ENGINE

Gerhard K. Kienle, Schönwalterstrasse 11, D-7000 Stuttgart 31, Germany

PCT No. PCT/EP88/00310, § 371 Date Dec. 15, 1989, § 102(e) Date Dec. 15, 1989, PCT Pub. No. WO88/08074, PCT Pub. Date Oct. 20, 1988
Continuation of Ser. No. 29,309, Mar. 8, 1993, abandoned, which is a continuation of Ser. No. 951,333, Sep. 25, 1992, abandoned, which is a continuation of Ser. No. 439,395, Dec. 15, 1990, abandoned. This PCT application Apr. 13, 1988, Ser. No. 126,741
Claims priority, application Germany, Apr. 16, 1987, 3712992
Int. Cl.[5] F02B *57/00*
U.S. Cl. 123—44 D 4 Claims



1. An internal combustion engine, comprising:
a housing having an inlet opening and an outlet opening;
a rotor rotatably supported in said housing, said rotor having an outside surface and at least two openings extending through said outside surface, each associated with a piston bore;
means in said rotor defining at least one pair of cylindrical piston bores, offset by 180° from one another;
a pair of pistons;
a crankshaft including a bearing journal at one end thereof;
a connecting rod associated with each piston for connecting its associated piston to the crankshaft for reciprocal displacement of the piston in a respective cylindrical piston bore, at least one of the connecting rods being embodied as substantially U-shaped;
at least one connecting rod bearing for mounting each connecting rod to the crankshaft for pivotable movement relative thereto; and
gear means for coupling said rotor for motion to said crank-

shaft, such that said rotor rotates in a direction opposite to that of said crankshaft, wherein:

the crankshaft includes lubricating bore means extending along its length for lubricating the bearing journal and each connecting rod bearing;

each piston bore communicates with a respective one of said openings in said rotor;

each opening in said rotor moves past the inlet opening and the outlet opening in said housing during rotation of said rotor; and

the inlet opening of said housing extends over an angle of between approximately 255° to 265° to approximately 390° to 420°.

5,365,893

FUEL-INJECTION ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

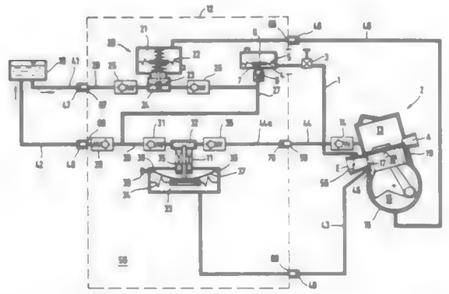
Michael Wissmann, Mettmann; Hans Nickel, Cottenweiler; Roland Schierling, Affalterbach; Roland Adam, Besigheim, and Werner Geyer, Waiblingen, all of Germany, assignors to Andreas Stihl, Waiblingen, Germany

Filed Jul. 19, 1993, Ser. No. 93,160

Claims priority, application Germany, Jul. 18, 1992, 4223758

Int. Cl.[5] F02B *33/04*

U.S. Cl. 123—73 C **12 Claims**



1. A fuel, injection arrangement for an internal combustion engine such as a two-stroke engine of a portable handheld work apparatus such as a motor-driven chain saw and the like, the engine having an intake channel for conducting combustion air into the engine, the fuel-injection arrangement comprising:

a fuel tank for supplying fuel for the engine;

a fuel-feed pump having a suction line connected to said fuel tank and a pressure line;

a fuel-injection pump having a suction end connected to said pressure line and a pressure end for supplying fuel;

an injection line connected to said pressure end for conducting the fuel to said engine;

a bypass line bypassing said fuel-injection pump for conducting fuel into said intake channel of said engine;

a switchable flow valve connected into said bypass line;

an injection-pump block; and,

said fuel-feed pump, said fuel-injection pump, said bypass line, said flow valve, and a section of said intake channel all being arranged in said injection-pump block.

5,365,894

VALVE ACTUATION DEVICE

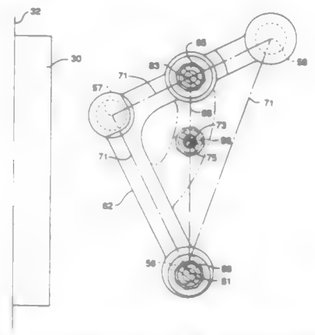
David E. Hackett, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

PCT No. PCT/US91/06227, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO93/05277, PCT Pub. Date Mar. 18, 1993

PCT Filed Sep. 3, 1991, Ser. No. 980,797

Int. Cl.[5] F01L *1/26*

U.S. Cl. 123—90.22 **5 Claims**



1. A valve actuation device for an internal combustion engine having a cylinder head and a valve arrangement with at least three valves operatively associated with a common combustion chamber, each of the valves having a stem portion for reciprocation along a respective axis, comprising:

the valves are movable between a first position at which the valves are opened and a second position at which the valves are closed, each of the stem portion of the valves having a valve end, the valve ends defining a plane when the valves are in the second position and being arranged in a geometric shape having a centroid;

a free-floating bridge seated on the stem portions of the valves;

means for applying a force to the free-floating bridge at a first contact point and a second contact point sufficient for actuating the valves simultaneously, the force applying means including a shaft mounted on the cylinder head and a movable rocker arm pivotably mounted on the shaft, the rocker arm having a first finger contacting the free-floating bridge at the first contact point and a second finger contacting the free-floating bridge at the second contact point;

another plane is defined which passes through the centroid parallel to the longitudinal axis of the shaft and perpendicular the first mentioned plane; and

the first and second fingers contact the free-floating bridge at points on opposite sides of the centroid of the geometric shape at any location along the another plane, the first contact point being a predetermined distance from the centroid and the second contact point being a predetermined distance from the centroid which is different than the predetermined distance between the first contact point and the centroid.

5,365,895

VARIABLE VALVE LIFT MECHANISM FOR INTERNAL COMBUSTION ENGINE

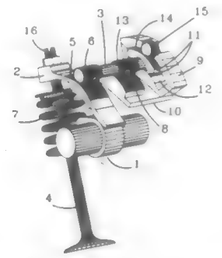
Michael B. Riley, Fort Collins, Colo., assignor to Motive Holdings Limited, Tortola, Virgin Islands (Br.)

Continuation-in-part of Ser. No. 800,920, Dec. 3, 1991. This application Sep. 15, 1993, Ser. No. 122,223

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **18 Claims**

1. An apparatus for varying the extent of opening of an internal combustion engine valve responsive to a cam on a camshaft, comprising: a rocker arm having a body with a rack of teeth, a cam follower in contact with said cam, and an actuator to open said valve; and a pivot shaft having a set of rocker arm-engaging teeth mating with the rocker arm body rack of teeth whereby the rocker arm rocks on said pivot shaft to open and close the valve as the cam follower is moved by the cam, the position of the pivot shaft being adjustable as the pivot shaft set of rocker arm-engaging teeth are engaged with the rocker arm body rack of teeth to adjust the rocking of the rocker arm body and thereby adjust the extent of opening of the valve; wherein there is a valve clearance space between the valve and the actuator which is varied by the rolling of the pivot shaft, and wherein the opening and closing of the valve are timed by the rocking of the rocker arm, the opening and closing of the valve being timed at a first timing when the pivot shaft is at a first position on the rocker arm and being timed at a second timing different from the first timing when the pivot shaft is at a second position on the rocker arm different from the first position.



4. An apparatus for varying the extent of opening of an internal combustion engine valve responsive to a cam on a camshaft, comprising: a rocker arm having a body with a rack of teeth, a cam follower in contact with said cam, and an actuator to open said valve; a pivot shaft having a set of rocker arm-engaging teeth mating with the rocker arm body rack of teeth whereby the rocker arm rocks on said pivot shaft to open and close the valve as the cam follower is moved by the cam; a stationary rack of teeth and wherein the pivot shaft includes a set of teeth to engage the stationary rack, the pivot shaft being rollable along the stationary rack of teeth; a pivot shaft guide to which the pivot shaft is rotatably attached, the position of the pivot shaft guide being adjustable to adjustably roll the pivot shaft; wherein the pivot shaft guide includes a guide mount and a block engaged with the pivot arm and slidably mounted on the mount whereby the sliding of the block on the mount rolls the pivot shaft; the position of the pivot shaft being adjustable as the pivot shaft set of rocker arm-engaging teeth are engaged with the rocker arm body rack of teeth to adjust the rocking of the rocker arm body and thereby adjust the extent of opening of the valve.

5,365,896

CAM SHAFT ASSEMBLY FOR USE IN INTERNAL COMBUSTION ENGINE

Seinosuke Hara; Yoshihiko Yamada; Shoji Morita; Yukio Yamakawa, and Akira Hidaka, all of Atsugi, Japan, assignors to Unisia JECS Corporation, Kanagawa, Japan

Filed Jun. 17, 1993, Ser. No. 77,510

Claims priority, application Japan, Jun. 17, 1992, 4-157909; Jun. 30, 1992, 4-172665

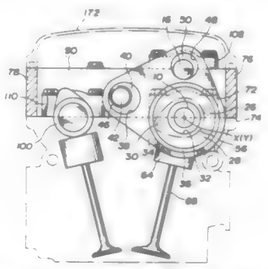
Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.17 **14 Claims**

1. A cam shaft assembly for use in an internal combustion engine with a cylinder head to control opening and closing of intake and exhaust valves thereof, the assembly comprising:

a driving shaft rotatable about a shaft axis;

a cam rotatable relative to said driving shaft, said cam having a drive connection from said driving shaft which includes a drive member rotatable with said driving shaft, a support, an intermediate member supported in said support for rotation about an axis so as to rotate eccentrically with respect to said shaft axis, a first coupling between said drive member and said intermediate member at a first position spaced from said shaft axis, and a second coupling between said intermediate member and said cam at a second position angularly spaced from said first position with respect to said shaft axis, said first and second couplings being so spaced from said shaft axis that they are at varying distances from the axis of said intermediate member during operation, each of said first and second couplings having a movable connection with said intermediate member to permit variation in its distance from said axis of said intermediate member;



means for holding said support for movement within a plane perpendicular to said shaft axis; and

means for varying the eccentricity of said intermediate member,

wherein said eccentricity varying means includes a control rod mounted for rotation about an axis, said control rod having an eccentric control cam, said support holding means includes pivot means for allowing movement of said support following said control cam, and said support has a hole rotatably coupled with said eccentric control cam.

5,365,897

MECHANICAL VALVE TAPPET

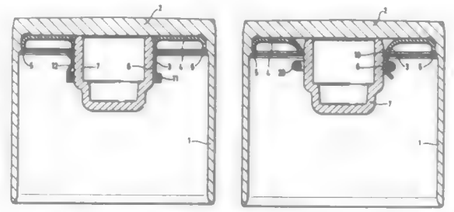
Walter Speil, Ingolstadt; Dieter Schmidt, Nuremberg, and Michael Zipprath, Weisendorf, all of Germany, assignors to Ina Walzlager Schaeffler KG, Germany

Filed Dec. 1, 1993, Ser. No. 159,842

Claims priority, application Germany, Dec. 10, 1992, 4241669

Int. Cl.[5] F01L *1/14*

U.S. Cl. 123—90.52 **9 Claims**



1. A mechanical valve tappet arranged in a guide bore of a cylinder head of an internal combustion engine comprising a cup-shaped housing with a hollow cylindrical wall (1) closed at one end by a bottom (2) which is contacted exteriorly by a control cam while a first flat end face of an adjusting element (7) bears against an inner surface of the bottom (2), a second flat end face of the adjusting element (7) which is parallel to the

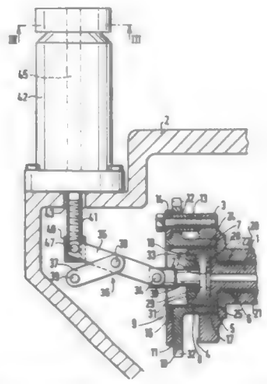
said first flat end face is in contact with an end of a valve stem of an engine valve, and the adjusting element (7) has a cylindrical peripheral surface and is retained by force engagement in a bore (6) of a hub (3) fixed to the said inner surface of the bottom (2), characterized in that an element (9, 11, 15, 16, 20, 21, 22, 26) which is resiliently biased with respect to the adjusting element (7) and the hub (3) is arranged between the hub (3) and the adjusting element (7).

5,365,898

DEVICE FOR CHANGING A ROTATIONAL POSITION OF A CONTROL SHAFT THAT CONTROLS GAS EXCHANGE VALVES OF AN INTERNAL COMBUSTION ENGINE

Martin Mueller, Moeglingen, Germany, assignor to Robert Boech GmbH, Stuttgart, Germany

Filed Feb. 25, 1994, Ser. No. 201,959
Claims priority, application Germany, Apr. 6, 1993, 4311264
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **20 Claims**



1. A device for changing a rotational position of a rotatable driven control shaft (1) that controls an opening and closing of gas exchange valves of an internal combustion engine with respect to a rotational position of a drive shaft that drives this control shaft, having a driving part (9) that is driven synchronously with the drive shaft and has a diagonal toothing, the driving part engages with diagonal teeth of a rotating power take-off part (18) driven synchronously with the control shaft (1), which driving part and power take-off part are adjustable relative to one another by means of a connecting part (29, 30) fixed in an axial direction to one of the parts to rotate around the axis of the one part and operated by means of an electric motor (42) controlled as a function of operating parameters, the electric motor (42) drives a threaded spindle (41) on which a screw socket (40, 140) is disposed in a manner fixed against twisting and is coupled with the connecting part (29, 30).

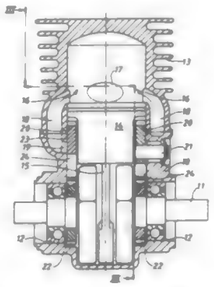
5,365,899

VALVE ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Gustaf F. A. Döragrip, Tenhult, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed May 3, 1993, Ser. No. 56,831
Claims priority, application Sweden, May 6, 1992, 9201421
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—192.2 **8 Claims**

1. Two-stroke engine comprising a crankcase (10; 40) with a crankshaft (11; 41), a cylinder (13; 43) with a piston (14; 44) movable therein, at least one passage (18; 48) for transferring an air/fuel mixture from the crankcase to the cylinder, and at least one balance wheel (20; 50) separate from and driven by the crankshaft and adapted to counteract vibrations caused by movable parts of the engine, wherein the balance wheel is provided with an axial opening (24; 54) and cooperates with at



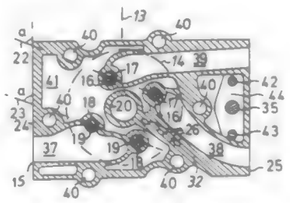
least one sealing surface (23; 53) surrounding an opening of said passage (18) into the crankcase such that the passage is alternately opened and closed by the balance wheel during rotation of the engine.

5,365,900

CYLINDER HEAD FOR AN INTERNAL COMBUSTION ENGINE

Jonny Färalund, Skärholmen, and Peter Sperle, Nykvarn, both of Sweden, assignors to Saab-Scania AB, Sweden

Filed Dec. 22, 1993, Ser. No. 172,040
Claims priority, application Sweden, Dec. 23, 1992, 9203899
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—193.5 **16 Claims**



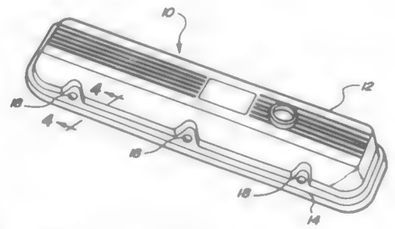
1. A combination comprising:
(A) a cylinder head for an internal combustion engine, the cylinder head having:
(1) first and second lateral sides;
(2) first and second intake ports into the cylinder head and having openings on the first lateral side;
(3) an exhaust port into the cylinder head and having an opening on the second lateral side;
(4) a vertically extending shaft extending from the top to the bottom of the cylinder head and located between the first and second in take ports;
(B) first and second intake valves housed in the first and second intake ports, respectively;
(C) an exhaust valve housed in the exhaust port;
(D) a fuel injector centrally housed in the cylinder head;
(E) a camshaft located below the cylinder head;
(F) respective rocker arms located above the cylinder head for driving the intake valves, the exhaust valves and the fuel injector; and
(G) a respective push rod coupling the camshaft to the respective rocker arms, and the push rods for the cylinder head extending through the vertically extending shaft in the cylinder head.

5,365,901

LOW CREEP FLANGE AND ENGINE COVER ASSEMBLY

Casimir R. Kiczek, Northville, Mich., assignor to Freudenberg-NOK General Partnership, Plymouth, Mich.

Filed Nov. 15, 1993, Ser. No. 151,831
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C **31 Claims**



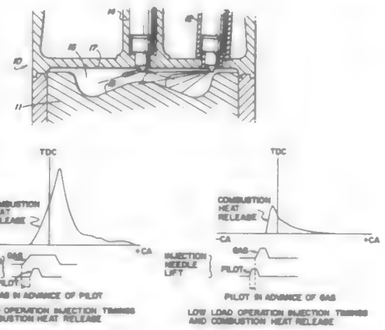
1. An engine cover assembly for use on an engine head or block in an internal combustion engine, comprising:
a cover body made of a composite plastic material which is lighter in weight and has a greater noise damping effect than metal;
a flange made of a low creep material that is connected to said cover body said flange generally having a square cross-section; and
a groove along the bottom edge of said plastic cover for inserting a seal to engage with the surface of the engine head or block.

5,365,902

METHOD AND APPARATUS FOR INTRODUCING FUEL INTO A DUEL FUEL SYSTEM USING THE H-COMBUSTION PROCESS

Bertrand D. Hsu, Erie, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1993, Ser. No. 120,620
Int. Cl.[5] F02D *19/08*; **F02M** *59/26*
U.S. Cl. 123—299 **10 Claims**



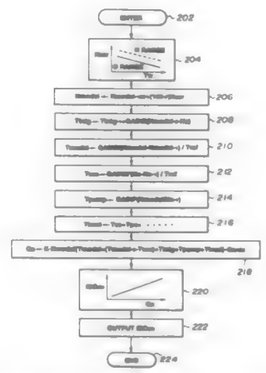
1. A method of introducing a main fuel and a pilot fuel which is more readily flammable than the main fuel into an internal combustion engine having at least one cylinder having a combustion chamber comprising:
a. defining a set of conditions to constitute high load conditions on the engine, and defining another set of conditions to constitute low load conditions on the engine;
b. detecting the load conditions on the engine; and,
c. at high load conditions,
(1) introducing the main fuel into the combustion chamber prior to introducing the pilot fuel;
(2) introducing the pilot fuel into the combustion chamber a predetermined amount of time after the introduction of the main fuel; and,
d. at low load conditions
(1) introducing the pilot fuel into the combustion chamber in advance of the main fuel;
(2) introducing the main fuel into the combustion chamber a predetermined amount of time after the introduction of the pilot fuel.

5,365,903

ENGINE IDLING SPEED CONTROL APPARATUS

Satoru Watanabe, Atsugi, Japan, assignor to Unisia Jecs Corporation, Atsugi, Japan

Filed Aug. 20, 1993, Ser. No. 109,537
Int. Cl.[5] F02D *41/08*
U.S. Cl. 123—339 **2 Claims**



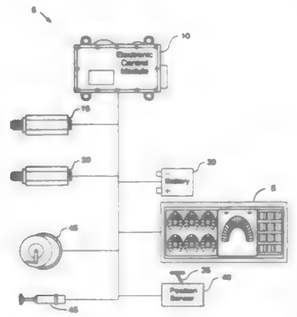
1. An apparatus for controlling the idling speed of an internal combustion engine including a throttle valve provided in an induction passage for controlling the amount of air flow through the induction passage, and an auxiliary air control valve provided in an auxiliary air passage bypassing the throttle valve for controlling the amount of air flow through the auxiliary air passage, the apparatus comprising:
sensor means sensitive to engine speed for producing an electrical signal indicative of a sensed engine speed;
means for calculating a target value for engine idling speed as a function of engine temperature;
means for calculating a model engine speed based upon the calculated target engine idling speed value;
means for calculating a model engine output torque based upon the calculated model engine speed, the model engine output torque being required to cause the sensed engine speed to follow the calculated model engine speed;
means for calculating a model correction torque based upon a difference of the sensed engine speed from the calculated model engine speed, the model correction torque being required to correct an error in the model engine output torque;
means for correcting the model engine output torque based upon the calculated model correction torque;
means for calculating an amount of air flow through the auxiliary air passage based upon the corrected model engine output torque and the calculated model engine speed; and
means for controlling the auxiliary air control valve to permit the calculated amount of air to flow through the auxiliary air passage.

5,365,904

REDUNDANT SPEED SENSOR FOR ENGINE CONTROL

Stephen C. Nofsinger, and Siamak Mirbakimi, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 23, 1993, Ser. No. 96,740
Int. Cl.[5] F02D *31/00*; F02M *51/00*
U.S. Cl. 123—359 **6 Claims**



1. An engine control system for an internal combustion engine having an electronic control module that employs closed loop engine speed control, comprising:

a throttle connected to the electronic control module;

a primary engine speed sensor having a first engine speed signal as an output wherein said primary sensor is electrically connected to the electronic control module;

a secondary engine speed sensor having a second engine speed signal as an output wherein said secondary sensor is electrically connected to the electronic control module;

detecting means for detecting a failure of the primary engine speed sensor or the secondary engine speed sensor;

a throttle position sensor connected to said throttle wherein said throttle position sensor produces a throttle position signal corresponding to a desired engine speed; and

wherein said electronic control module calculates a closed loop difference signal as a function of a difference between the second engine speed signal and the desired engine speed signal when said detecting means indicates the primary engine speed sensor has malfunctioned, said closed loop difference signal being a function of a difference between the first engine speed signal and the desired engine speed signal when said primary engine speed sensor has not malfunctioned.

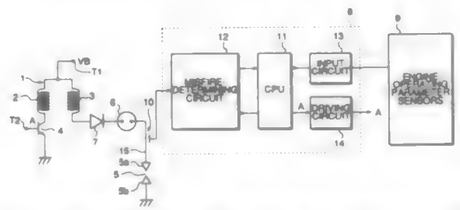
5,365,905

MISFIRE-DETECTING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Masaki Kanehiro; Yuichi Shimasaki; Takuji Ishioka; Shigeru Maruyama; Shigeki Baba; Takashi Hisaki; Kenichi Maeda; Kazutomo Sawamura; Jiro Takagi, and Shukoh Terata, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1993, Ser. No. 27,492
Claims priority, application Japan, Mar. 13, 1992, 4-89401; Mar. 16, 1992, 4-90358; Jan. 14, 1993, 5-22087
Int. Cl.[5] F02P *17/00*
U.S. Cl. 123—406 **22 Claims**

1. In a misfire-detecting system for an internal combustion engine having at least one cylinder, and a spark plug provided in each of the at least one cylinder, said system including engine operating condition-detecting means for detecting values of operating parameters of said engine, signal-generating means for determining ignition timing of said engine, based upon values of operating parameters of said engine detected by said engine operating condition-detecting means and for generating an ignition command signal indicative of the determined ignition timing, igniting means responsive to said ignition command signal for generating high voltage for causing generation of sparking voltage across said spark plug for discharging said spark plug, voltage value-detecting means for detecting a value of said sparking voltage generated across said spark plug when said high voltage is generated by said igniting means, comparing means for comparing the detected value of said sparking voltage with a predetermined reference voltage value, measuring means for measuring a time period over which the detected value of said sparking voltage exceeds said



predetermined reference voltage value, and misfire-determining means for determining that a misfire has occurred in said engine when the measured time period exceeds a predetermined time period value;

the improvement comprising:

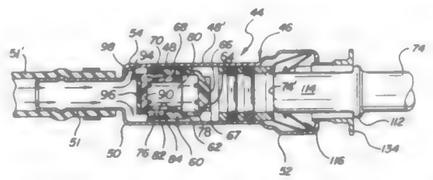
recharging command signal-generating means for generating a recharging command signal for applying high voltage to said spark plug, after generation of the ignition command signal.

5,365,906

FLUID FLOW CHECK VALVE FOR FUEL SYSTEM

Kevin R. Deweerdt, Walled Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 20, 1993, Ser. No. 169,245
Int. Cl.[5] F02M *41/00*; F16K *15/00*
U.S. Cl. 123—467 **10 Claims**



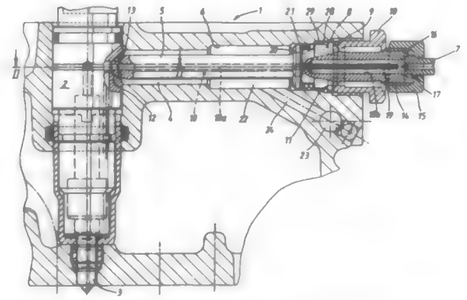
1. A fluid flow check valve for operatively connecting first and second flow conductors and being operative to open under the force of a sufficient fluid pressure in the first flow conductor to allow fluid to flow through the check valve from the first to the second flow conductor, said check valve comprising: a tubular housing with an inner cylindrical wall and valve seat means adjacent one end thereof; a valving member operatively mounted within said housing and movable away from and toward said valve seat means; a first sealing portion disposed on one end of said valving member and engageable with said valve seat means to block fluid flow through said housing when a force generated by said fluid pressure on said valving member is insufficient to unseat said first sealing portion; an annular lip seal means on said valving member spaced outward from said first sealing portion and being engageable with said inner surface of said housing to block fluid flow through said housing when said valving element is in a first pre-assembly position with said first sealing portion spaced from said valve seat means; means on said housing to deflect said lip seal means away from sealing engagement with said cylindrical wall as the valving member is moved toward the valve seating means; means for moving said valving member from said first pre-assembly operative position to a second operative position in which said lip seal means is deflected from fluid sealing engagement with said inner surface and said first sealing portion of said valving member is positioned to engage said valve seat means.

5,365,907

CYLINDER HEAD FOR AN INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION

Markus Dietrich, Oberrot, and Walter Aupperle, Korb, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Oct. 27, 1993, Ser. No. 141,525
Claims priority, application Germany, Nov. 21, 1992, 4239173
Int. Cl.[5] F02M *55/02*
U.S. Cl. 123—470 **5 Claims**



1. A cylinder head for a fuel injected internal combustion engine comprising a nozzle holder with a fuel injection nozzle mounted in said cylinder head, said cylinder head further having a cylindrical recess accommodating a pressure tube, which extends to said nozzle holder and is engaged therewith and which has a conical sealing surface at the nozzle holder end, and said nozzle holder having a matching surface with which said conical surface is in contact, a compression screw mounted in said cylindrical recess at the outer end thereof and engaging said pressure tube and axially clamping it with its remote inner end against said matching contact surface on said nozzle holder for sealingly engaging and appropriately locating said nozzle holder, said pressure tube extending through and outwardly beyond said compression screw, with its free end projecting from the compression screw and provided with a union nut by which an injection pipe is clamped to said pressure tube so as to form a seal therewith, said pressure tube having two passage sections with the section at the free end of said pressure tube adjacent the injection pipe having an increased diameter for accommodating a fuel filter.

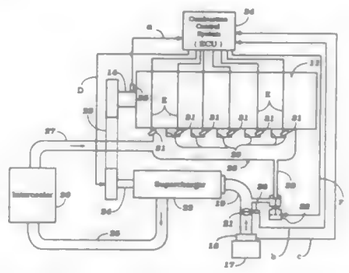
5,365,908

BURNING CONTROL SYSTEM FOR ENGINE

Osamu Takii; Motoshi Baba; Takao Mori, and Sumito Abe, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 15, 1992, Ser. No. 961,456
Claims priority, application Japan, Oct. 15, 1991, 3-295189; Jan. 24, 1992, 4-34080
Int. Cl.[5] F02B *33/34*; F02D *23/00*
U.S. Cl. 123—564 **21 Claims**

1. An internal combustion engine having at least one combustion chamber, an induction system for delivering at least an air charge to said combustion chamber, a charge forming system for delivering at least a fuel charge to said combustion chamber, boost means for boosting the pressure of said air charge supplied to said combustion chamber by said induction system, means for sensing engine running conditions, and a control for said charge forming system and said boost means for maintaining a leaner than stoichiometric air/fuel ratio under all running conditions and for varying the pressure supplied by said boost means for producing the desired torque



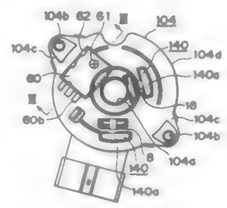
without necessitating enrichment of the air/fuel ratio so that the torque is varied primarily by varying the boost pressure.

5,365,909

IGNITOR FOR AN INTERNAL COMBUSTION ENGINE

Nobuyuki Sawazaki; Masaaki Taruya, and Mitsuru Koiwa, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1993, Ser. No. 76,200
Claims priority, application Japan, Jun. 15, 1992, 4-040766[U]; Sep. 17, 1992, 4-247981; Sep. 17, 1992, 4-247982
Int. Cl.[5] F02P *7/02, 3/00*
U.S. Cl. 123—617 **10 Claims**



1. An ignitor for an internal combustion engine, comprising:

a base;

an ignition coil unit mounted to said base;

a control unit mounted to said base and electrically connected to said ignition coil unit for controlling a primary current to said ignition coil unit; and

a rotary shaft rotatably supported by said base for rotation in synchronization with the rotation of an internal combustion engine, said rotary shaft having a distributor rotor on an extended end thereof;

said control unit comprising: a base plate attached to said base; a crank angle sensor,, attached to said base plate, for detecting the turning angle of an engine crank shaft; and a molded power switch package containing a power transistor for interrupting an electric current flowing through a primary coil of said ignition coil, an integrated controlling circuit for controlling said power transistor, and a hard mold resin hermetically sealing said power transistor and said integrated controlling circuit into said molded power switch package.

5,365,910

MISFIRE DETECTOR FOR USE IN INTERNAL COMBUSTION ENGINE

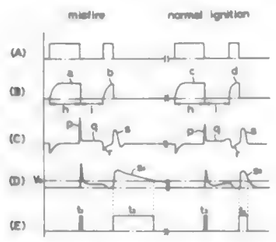
Shigeru Miyata; Hideji Yoshida; Yoshihiro Matsubara, and Yasuo Ito, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Apr. 9, 1992, Ser. No. 865,910

Claims priority, application Japan, May 14, 1991, 109098; Jun. 5, 1991, 134458; Jul. 3, 1991, 163129; Oct. 1, 1991, 252679

Int. Cl.[5] F02P *17/00*

U.S. Cl. 123—627 **4 Claims**



1. A misfire detector for use in an internal combustion engine comprising:
an ignition coil having a primary coil and a secondary coil;
an interrupter means which on-off actuates primary current flowing through a primary circuit of the ignition coil;
a current flow-back prevention means provided in a secondary circuit of the ignition coil so as to prevent a current flow back to the ignition coil;
a spark plug provided for an internal combustion engine and adapted to be energized from the coil through the current flow-back prevention means;
a voltage charging means which reenergizes the primary coil to induce an electromotive voltage in the secondary coil so as to electrically charge a stray capacity inherent in the spark plug immediately after an end of a spark action of the spark plug;
a spark plug voltage characteristic detector means which detects an attenuation time period of a voltage waveform derived from a spark plug voltage applied across the spark plug by the voltage charging means; and
a distinction means provided to determine a misfire on the basis of the attenuation time period length of the spark plug voltage waveform.

5,365,911

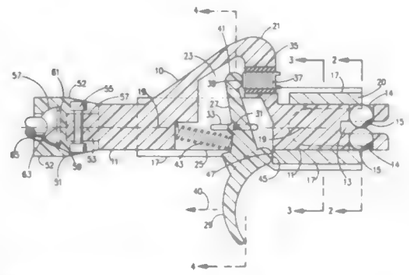
TRIGGER-OPERATED BOW STRING RELEASE DEVICE HAVING AN ADJUSTABLE PRE-TRAVEL

Gary J. Todd, 33551 Giftos, Mt. Clemens, Mich. 48043

Filed Nov. 18, 1992, Ser. No. 977,929

Int. Cl.[5] F41B *5/00*

U.S. Cl. 124—35.2 **12 Claims**



1. A bow string release device comprising:
an elongated string-engagement member having a forward end and a rearward end spaced to define a movement axis;
two opposed string-retention elements floatably positioned in the forward end of said string-engagement member; slidable holding means normally holding said string-retention elements together to prevent release of the bow string; said holding means comprising a sleeve slidably mounted on said string-engagement member for movement along the movement axis; said string-engagement member having a side surface and a cavity extending into said member from said side surface; a lever positioned in said cavity; a finger-operated trigger extending from said lever out of the cavity; a pivot pin extending transversely through said lever and into fixed anchorages in said sleeve, whereby operation of the trigger produces a swinging motion of the lever around the pivot pin axis; and abutment structure having a screw thread adjustment in said string-engagement member; said lever having an end surface in said cavity spaced from the pivot pin and slidably engaged with said abutment structure; said sleeve having a rearwardly-facing shoulder; said lever having a stop surface normally engaged with said shoulder; and spring means normally biasing the lever to a position in which the lever stop surface is engaged with the shoulder; said pivot pin being located between the lever end surface and the lever stop surface, whereby rearward motion of the trigger causes the lever to move the sleeve in a rearward direction as the lever end surface abuts the abutment structure, such that the string-retention elements are freed for release of the bow string; said abutment structure being adjustable to vary the position of the sleeve with respect to the string-engagement member prior to commencement of the rearward trigger motion and the distance the trigger has to be moved before the holding means releases the string retention elements.

5,365,912

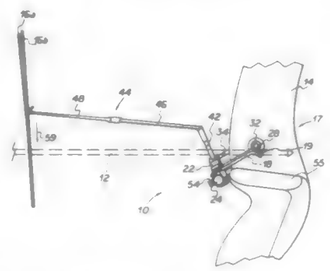
ARROW REST ASSEMBLY AND METHOD THEREOF

Leon Pittman, Rte. 2, Box 2097, Pendergrass, Ga. 30567

Filed Oct. 9, 1992, Ser. No. 959,140

Int. Cl.[5] F41B *5/22*

U.S. Cl. 124—44.5 **13 Claims**



1. An arrow rest assembly for a bow, comprising:
an arrow cradle;
first means for causing said arrow cradle to support an underside of an arrow while a bow string associated with said bow is moved away from said bow;
second means for forcing said arrow cradle away from said arrow after release of said bow string;
a coarse vertical adjustment means for adjusting a vertical level of arrow support provided by said arrow cradle, said coarse vertical adjustment means comprising an adjustable arm member configured to support at a first end an elongated axis member and adjustably mounted at a second end to said bow; and
a fine vertical adjustment means for finely adjusting said vertical level, said fine vertical adjustment means comprising a set screw situated transversely relative to said elongated axis member and adapted to selectively rotate said arrow cradle about said elongated axis member by turning of said set screw to thereby raise and lower said arrow cradle.

5,365,913

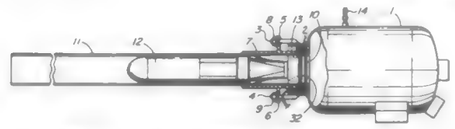
RUPTURE DISC GAS LAUNCHER

Garry L. Walton, 2818 Bayview St., British Columbia, Canada V4A 2Z4

Filed Jul. 20, 1993, Ser. No. 93,758

Int. Cl.[5] F41B *11/00*

U.S. Cl. 124—75 **12 Claims**



1. A rupture disc gas launcher comprising:
a) a compressed gas storage tank, having means for receiving compressed gas from a compressed gas source;
b) a rupture disc receptacle tube mounted to the compressed gas storage tank;
c) a rupture disc that bursts at a known gas pressure range being reached and that fits into the rupture disc receptacle tube to block it until it bursts upon the known gas pressure range being reached;
d) a rupture disc retention tube that detachably fits within the rupture disc receptacle tube in order to retain the rupture disc in a compressed gas blocking position within the rupture disc receptacle tube;
e) detachable mounting means for holding the rupture disc retention tube in a detachably fitted position within the rupture disc receptacle tube despite compressed gas pressure and for allowing the replacement of the rupture disc that after a launching with the rupture disc gas launcher;
f) a launch tube mounted to the rupture disc retention tube for guiding a projectile launched from the rupture disc gas launcher.

5,365,914

MULTIPURPOSE TOOL

Ernst Wenger, Gwatt, Switzerland, assignor to Reserwa AG, Gwatt, Switzerland and Vitesse Etablissement, Vaduz, Liechtenstein, a part interest

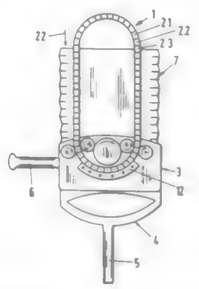
PCT No. PCT/CH92/00208, § 371 Date Jun. 15, 1993, § 102(e) Date Jun. 15, 1993, PCT Pub. No. WO93/08001, PCT Pub. Date Apr. 29, 1993

PCT Filed Oct. 12, 1992, Ser. No. 66,041

Claims priority, application Switzerland, Oct. 25, 1991, 3130/91-9

Int. Cl.[5] B28D *1/08*

U.S. Cl. 125—21 **11 Claims**



1. Multipurpose tool wherein several cutter rings (2.1 to 2.6) are driven forward on a guide yoke (1) of round cross section, wherein the guide yoke (1) comprises at least two helical grooves (8, 9) extending along its outside in opposite sense of rotation, and wherein consecutive cutter rings (2.1, 2.2) engage with a guide element (10) into the contrarotating grooves (8, 9) in such a way that the consecutive cutter rings (2.1, 2.2) rotate in opposite directions when they are driven forward.

5,365,915

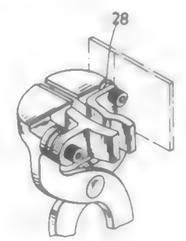
TILE CUTTING TOOL

Chin-Yung Yu, No. 5, Cheng Te Lane 3, Shu Te Li, South Area, Taichung, Taiwan

Filed Jun. 7, 1993, Ser. No. 71,964

Int. Cl.[5] B28D *1/32*

U.S. Cl. 125—23.02 **1 Claim**



1. A tile cutting tool comprising two opposing pivoted blades moved to work against each other, a cutter unit comprised of two cutters integrally and respectively extended from said pivoted blades and disposed in reversed directions, a chuck unit comprised of a first jaw plate and a second jaw plate respectively fastened to said cutters at one side, a cutting wheel fastened between said cutter unit and said chuck unit for making a scratch on the tile to be cut, said jaw plates including one having a concave middle part and the other having a convex middle part fitting over said concave middle part, whereby said cutters are worked against each other to cut the edge of the workpiece; said jaw plates of said chuck unit are worked against each other to break the workpiece along the scratch being made on the workpiece by said cutting wheel.

5,365,916

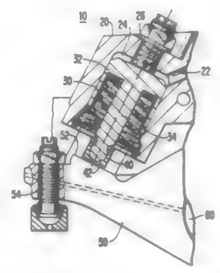
COMPRESSION RELEASE ENGINE BRAKE SLAVE PISTON DRIVE TRAIN

Kurt E. Freiburg, West Hartford, Conn., and James D. Liebel, Springfield, Mass., assignors to Jacobs Brake Technology Corporation, Wilmington, Del.

Filed Jun. 23, 1993, Ser. No. 81,978

Int. Cl.[5] F01L *1/14, 13/06*

U.S. Cl. 123—320 **1 Claim**



1. In a compression release engine braking system, apparatus for transmitting force and motion from a hydraulic circuit in the engine brake to open an exhaust valve in an internal combustion engine associated with the engine brake comprising:

a slave piston disposed in contact with said hydraulic circuit for reciprocation along a first axis, said slave piston having a main body and an extension rigidly attached to said main body and extending from said main body parallel to said first axis in a direction away from said hydraulic circuit, the end of said extension which faces away from said main body being substantially spherically convex;

a bearing pad rotatably secured to said spherically convex end of said extension, said bearing pad having a spherically concave inner surface which is substantially concentric with said spherically convex end received in said inner surface, and a substantially flat outer surface opposite said inner surface; and

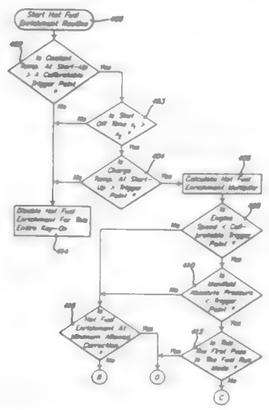
an exhaust valve rocker arm mounted for oscillation about a shaft in a first plane which is perpendicular to said shaft, said rocker arm having a substantially flat bearing surface which is substantially perpendicular to said first plane and to said first axis and which is radially spaced from said shaft, said outer surface bearing on said bearing surface in order to cause reciprocation of said slave piston to oscillate said rocker arm and thereby open an exhaust valve controlled by said rocker arm.

5,365,917

HOT SOAK FOR A FLEXIBLE FUEL COMPENSATION SYSTEM

Joseph B. Adams, Northville; William D. Rotramel, Plymouth, and James M. Witalec, Brighton, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 4, 1993, Ser. No. 57,248
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—491 **6 Claims**



1. A method of hot soak fuel enrichment to eliminate fuel/air control deviations in an internal combustion engine capable of using a flexible fuel, said method comprising the steps of:

determining if a coolant temperature (CLTEMP) value at start-up of the internal combustion engine is greater than a predetermined hot fuel enrichment enable coolant temperature (HFECLT) value;

calculating a hot fuel enrichment multiplier (HOTMUL) value if the CLTEMP value at start-up of the internal combustion engine is greater than the HFECLT value;

determining if an engine speed of the internal combustion engine is less than a predetermined hot fuel enrichment enable RPM (HFERPM) value;

determining if a manifold absolute pressure (MAP) value of the internal combustion engine is less than a predetermined not fuel enrichment enable MAP level (HFEMAP) value if the engine speed of the internal combustion engine is less than the HFERPM value;

determining if a current pass of said method is a first pass in a run fuel mode of the internal combustion engine if the MAP value of the internal combustion engine is less than the HFEMAP value;

determining if a hot fuel enrichment value is at a predetermined minimum allowed correction value if the engine speed of the internal combustion engine is not less than the HFERPM value or the MAP value of the internal combustion engine is not less than the HFEMAP value;

determining if a hot fuel enrichment value is at a predetermined maximum allowed correction value if the current pass of said method is not the first pass in the run fuel mode of the internal combustion engine;

determining if a predetermined number of cylinders of the internal combustion engine have fired if the hot fuel enrichment value is not at the predetermined maximum allowed correction value;

incrementing the HOTMUL value if the predetermined number of cylinders of the internal combustion engine have fired;

determining if a predetermined number of cylinders of the internal combustion engine have fired if the hot fuel enrichment value is not at the predetermined minimum allowed correction value;

decrementing the HOTMUL value if predetermined number of cylinders of the internal combustion engine have fired;

determining if a throttle of the internal combustion engine is at wide open throttle if the hot fuel enrichment value is at the predetermined minimum allowed correction value or the hot fuel enrichment value is at the predetermined maximum allowed correction value or the current pass of said method is the first pass in the run fuel mode of the internal combustion engine or the predetermined number of cylinders of the internal combustion engine have not fired or after said stem of decrementing or incrementing;

applying the HOTMUL value to a run fuel injector pulsewidth if the throttle of the internal combustion engine is not at wide open throttle;

saving the HOTMUL value if the throttle of the internal combustion engine is at wide open throttle; and

adjusting the flexible fuel being sent to fuel injectors of the internal combustion engine based on the run fuel injector pulsewidth.

5,365,918

OVEN WITH SHORT RADIUS DOOR

Donald P. Smith, Dallas, and Jarald E. High, Grand Prairie, both of Tex., assignors to Patentsmith Corporation, Dallas, Tex.

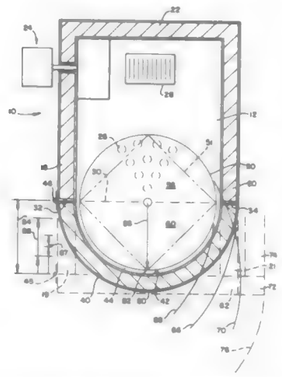
Filed Oct. 16, 1992, Ser. No. 962,897
Int. Cl.[5] A21B *1/00*
U.S. Cl. 126—21 A **47 Claims**

1. An oven comprising:

(a) a heated interior volume;

(b) an open face access into said heated interior volume; and

(c) a concave door mounted on an axis aligned with said open face access adjacent to said heated interior volume for pivoting between closed access and opened access positions and having a concave interior surface defining an interior space adjacent to said heated interior volume so that a pivot radius is defined that is shorter than a pivot



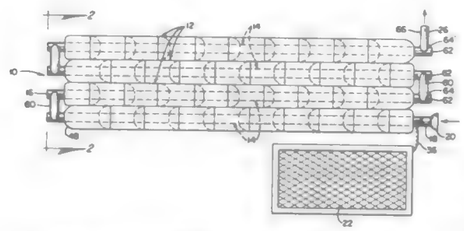
radius for an imaginary flat door configured for enclosing a same size interior space and heated interior volume.

5,365,919

SOLAR ENERGY COLLECTOR ASSEMBLY

James L. Lenhart, 4721 Carr St., Wheatridge, Colo. 80033

Filed Dec. 18, 1992, Ser. No. 992,929
Int. Cl.[5] E04D *13/18*
U.S. Cl. 126—629 **13 Claims**



1. A solar collector assembly comprising:

a collector tube defined by a plurality of transparent, generally bottle-shaped members, each said bottle-shaped member provided with openings at opposite ends which are substantially symmetrical with a longitudinal axis of said collector tube, said bottle-shaped members disposed in end-to-end relation to one another;

an absorber tube having an external heat-absorptive surface disposed within said collector tube and defined by a plurality of thin-walled can bodies open at opposite ends and disposed in end-to-end relation to one another;

means for mounting said absorber tube for axial extension through said collector tube wherein a longitudinal axis of said absorber tube is substantially coincident with said longitudinal axis of said collector tube;

air-directing means for directing air through said absorber tube; and

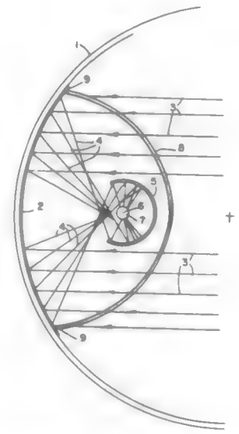
conducting means for conducting fluid from said absorber tube into a space to be heated.

5,365,920

SOLAR CONCENTRATOR SYSTEM

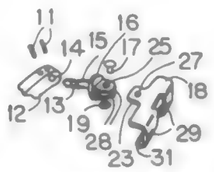
Rudolf Lechner, Singen, Germany, assignor to Bomin Solar GmbH & Co. KG, Lorrach, Germany

PCT No. PCT/DE90/00118, § 371 Date Aug. 22, 1991, § 102(e) Date Aug. 22, 1991, PCT Pub. No. WO90/10182, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 21, 1990, Ser. No. 743,327
Claims priority, application Switzerland, Mar. 1, 1989, 749/89-5; Jan. 16, 1990, 126/90-7
Int. Cl.[5] F24J *2/10*
U.S. Cl. 126—696 **21 Claims**



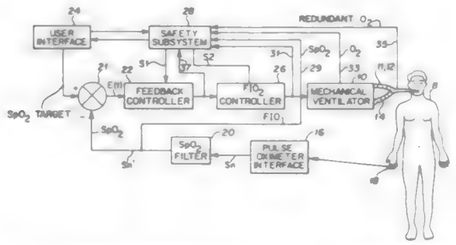
1. A solar concentrator system comprising at least one metallized foil strip, a heat exchanger means located in front of said metallized foil strip along a lengthwise direction of the tubular foil, such that solar radiation hitting on metallized surface of said metallized foil strip is reflected towards said heat exchanger means, said metallized foil strip being curved in the shape of a circular arc in cross-section and being part of a foil having one surface subjected to a pressure substantially different from the atmospheric pressure, wherein said metallized foil strip forms a primary concentrator mirror means, said system further comprising a secondary concentrator mirror means having a reflecting surface and cooperating with said primary concentrator mirror means, said first concentrator mirror means reflecting solar radiation from its metallized surface to said reflecting surface of said secondary concentrator mirror means, and said system further comprising the heat exchanger means located in the focus line of said secondary concentrator mirror means such that solar radiation reflected by said reflecting surface of said secondary concentrator mirror means impinges on said heat exchanger means, wherein said primary concentrator mirror means and said secondary concentrator mirror means are connected to each other to form an integral constructive unit, whereby said heat exchanger means and said integral constructive unit are rotatable relative to each other around the focus line of said secondary concentrator mirror means, wherein said primary concentrator mirror means is located on the inner surface of an envelope having the shape of a circular cylinder jacket made of flexible plastic material with a horizontally running central axis, said envelope being sealed at its both ends and being in tensioned condition de to an interior pressure which is higher than the atmospheric pressure, wherein said tensioned tubular plastic envelope rests on support means located in the region of both ends of said tubular envelope, and comprising annular supporting means which are arranged concentrically to said heat exchanger means.

5,365,921
FLIP-UP STERNAL RETRACTOR
John R. Bookwalter, 9 Belmont Ave., Brattleboro, Vt. 05301, and William H. Bookwalter, 337 College St., Burlington, Vt. 05401
Filed Jan. 22, 1993, Ser. No. 7,909
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **6 Claims**



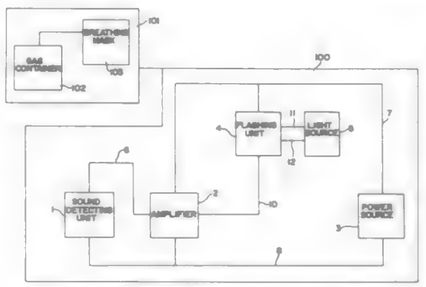
5. A flip-up sternal retractor comprising
a U-shaped frame formed by two long rigid arms essentially in parallel and a cross bar connecting the two arms at one end;
mechanical means to move one arm relative to the other along the cross bar to separate the arms and bring them together:
at an end of the arms opposite the cross bar positioned between the arms, a retractor blade substantially shorter than the arms attached to each of the arms at a midpoint on each of the retractor blades for contacting and retracting each side of a sternum of a patient as the arms are separated;
a pivot means connecting each retractor blade to each arm allowing 360 degree rotation of the frame relative to the blade through a horizontal axis, thereby allowing repositioning of the cross bar either above or below the operative field without obstructing the operative field while the retractor blades are engaging the sternum, wherein each blade is attached to the pivot means by a joint which is slightly rotatable horizontally.

5,365,922
CLOSED-LOOP NON-INVASIVE OXYGEN SATURATION CONTROL SYSTEM
Daniel B. Raemer, Brookline, Mass., assignor to Brigham and Women's Hospital, Inc., Boston, Mass.
Filed Mar. 19, 1991, Ser. No. 671,586
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—204.23 **28 Claims**



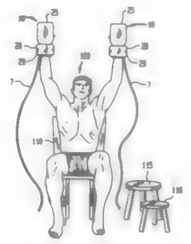
1. An adaptive controller for delivering a fractional amount of oxygen to a patient, said controller comprising:
oximeter means coupled by a non-invasive sensor to said patient for measuring blood hemoglobin saturation in the patient, said oximeter generating a plurality of blood hemoglobin saturation output signal values over a given period of time, sequentially representative of said blood hemoglobin saturation;
means for generating a running average of said blood hemoglobin saturation output values;
means for generating pseudo-output signals that are a function of said running average;
processing means including means for identifying possibly invalid output signal values and being responsive to said blood hemoglobin saturation output signal values for evaluating a plurality of said blood hemoglobin saturation output signal values and, based on said evaluation, providing a processed output signal;
means for substituting respective pseudo-output signals for each of said possibly invalid output signal values thereby forming a sequence of valid output signals.

5,365,923
SOUND RESPONSIVE OPTICAL WARNING APPARATUS AND METHOD FOR SCBA
Mats E. Lundberg, Jupiternagen 29, 181 63 Lidingo, Sweden
Filed Jun. 21, 1993, Ser. No. 79,283
Claims priority, application Sweden, Dec. 29, 1992, 9203931
Int. Cl.[5] A62B *7/00, 9/00;* **H04B** *13/02;* **G08B** *5/22*
U.S. Cl. 128—205.23 **12 Claims**



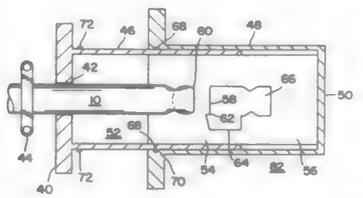
1. A warning apparatus in combination with a self-contained breathing apparatus comprising a container for storing a breathing gas under pressure and a breathing mask connected to the container and adapted to be worn by the user the warning apparatus comprising:
means responsive to sensing a predetermined low value of gas pressure in the container for generating an audible alarm signal having predetermined frequency characteristics and a predetermined minimum amplitude only when the gas pressure reaches said predetermined low level; and
means for visually signalling to the user of the warning apparatus and also to other persons who are within visual range of the user that the gas pressure in the container has reached such predetermined low level, said visual signaling means comprising:
a. means for continuously monitoring said audible alarm signal;
b. means for generating a light signal at a location visible to at least the user only in response to said audible alarm signal having said predetermined frequency characteristics and an amplitude at least as great as said predetermined minimum amplitude; and
means for controlling said light signal and for generating said light signal only when said audible alarm signal is present to thereby provide assurance that said light signal is a valid indication of the occurrence of low pressure in said container.

5,365,924
METHOD AND APPARATUS FOR NON-INVASIVE CARDIOVASCULAR DIAGNOSIS
Frank H. Erdman, Newtown Square, Pa., assignor to Frederick Erdman Association, Havertown, Pa.
Filed Jul. 31, 1992, Ser. No. 922,780
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **14 Claims**



1. A method of determining cardiovascular conditions comprising the steps of:
removably attaching a sensor unit having at least one light emitter and a light detector to a surface of each of a pair of upper extremities of a patient for illuminating a surface of each of said pair of upper extremities with light emitted from said at least one light emitter and detecting light reflected from said surface of each of said pair of upper extremities by said light detector as a measure of a physical parameter indicative of cardiovascular conditions;
measuring said parameter substantially simultaneously on both extremities while both extremities are in a raised, steady-state condition;
measuring said parameter substantially simultaneously on both extremities while both extremities are in a lowered, steady-state condition;
comparing the measurements obtained in the raised, steady-state condition with the measurements obtained in the lowered, steady-state condition to determine cardiovascular conditions; and
recording the result of said comparing step.

5,365,925
DISPOSABLE CALIBRATION BOOT FOR MULTI-POINT CALIBRATION IN FIBER OPTIC SENSORS
Wylie I. Lee, Laguna Hills, Calif., assignor to Ohmeda Inc., Liberty Corner, N.J.
Filed Aug. 13, 1993, Ser. No. 106,247
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—634 **19 Claims**



1. A disposable calibration boot for an optical catheter having a distal end and having at least one optical means for emitting light radiation from the distal end and at least one optical means for receiving light radiation at the distal end, said disposable boot comprising:
a body,
a cavity defined in said body to receive the distal end of the optical catheter, said body shielding the distal end of the catheter from ambient light when the distal end is positioned within said cavity;
said body having a plurality of isolated compartments, each of said plurality of compartments containing a material having a known reflectivity to return a signal into the receiving optical means upon transmission of a known radiation from the emitting optical means,
said body adapted to be positioned on the end of the optical catheter and being movable with respect thereto to position the distal end of the optical catheter adjacent each of said plurality of materials within said body such that the emitting and receiving optical means of the optical catheter selectively interacts individually with each of said plurality of materials to obtain separate backscattered signals from each of said plurality of materials within said calibration boot from light radiation caused to be emitted from the optical means of the optical catheter.

5,365,926
CATHETER FOR MAPPING AND ABLATION AND METHOD THEREFOR
Jawahar M. Desai, 4141 Cowell Blvd., No. 38, Davis, Calif. 95616
Continuation of Ser. No. 548,107, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 68,833, Jun. 30, 1987, Pat. No. 4,940,064, which is a continuation-in-part of Ser. No. 931,696, Nov. 14, 1986, abandoned. This application Oct. 13, 1992, Ser. No. 960,118
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/04;* **A61N** *1/04*
U.S. Cl. 128—642 **18 Claims**



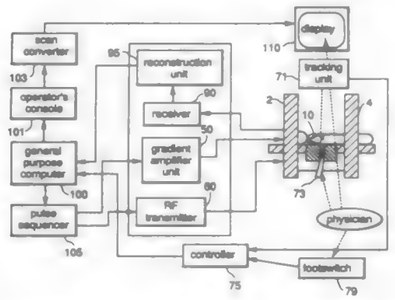
1. A multipolar electrode catheter having an elongated body defining a distal end and an opposite, proximal end, a plurality of electrodes mounted adjacent said distal end, said plurality of electrodes being spaced a first distance from each other, and expansion means operable by advancing the catheter with the distal end against a site to thereby produce an axial force on said catheter for expanding the distance that said electrodes are spaced from adjacent electrodes a second distance larger than said first distance and further including retraction means operable by reversing the advancement of said catheter thereby relieving said axial force for retracting said electrodes from said second distance to said first distance, wherein the number of electrodes is four, and wherein said expansion means expands said electrodes into said second distance which is in the same plate, and wherein said electrodes are equally spaced from adjacent electrodes, and still further including a fifth electrode centrally disposed intermediate said four electrodes.

5,365,927

MAGNETIC RESONANCE IMAGING SYSTEM WITH POINTING DEVICE

Peter B. Roemer, Schenectady, N.Y.; Samuel M. Blumenfeld, Milwaukee, Wis.; Kirby G. Vosburgh; Harvey E. Cline, both of Schenectady, N.Y.; William D. Barber; William E. Lorensen, both of Ballston Lake, N.Y.; Richard L. St. Peters; John F. Schenck, both of Schenectady, N.Y.; Charles L. Dumoulin, Ballston Lake, N.Y.; Robert D. Darrow, Scotia, N.Y., and Christopher J. Hardy, Schenectady, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1993, Ser. No. 146,345
Int. Cl.[5] A61B 5/055
U.S. Cl. 128—653.2 6 Claims



1. An open magnetic resonance (MR) imaging system allowing access to a patient being imaged comprising:

a) an open main magnet having an imaging volume accessible by a physician outside of the main magnet, for producing a static magnetic field over a desired region of said patient to be imaged positioned in the imaging volume;

c) open gradient coils which provide access to the imaging volume, for producing a magnetic field gradient over the desired region of said patient in the imaging volume when energized;

d) a gradient amplifier coupled to the open gradient coils for energizing the gradient coils;

e) RF coils which provide access to the imaging volume, for transmitting RF radiation into said patient causing nutation of nuclear spins within the desired region of said patient when energized;

f) radiofrequency (RF) transmitter coupled to the RF coils for energizing the RF coils;

g) a pointing device adapted to interact with the physician to specify an orientation and position of an imaging plane within the desired region in which an image is to be acquired;

h) a pulse sequencer coupled to the gradient amplifier and the RF transmitter for activating the gradient amplifier and RF transmitter to a prescribed sequence thereby causing MR response signals to be emitted from nuclear spins in an imaging plane;

i) a general purpose computer coupled to the pointing device, and the pulse sequencer, directing the pulse sequencer to activate the gradient amplifier and RF transmitter with timing offsets to cause the imaging plane to have a position and orientation defined by the pointing device;

j) receiver for receiving a plurality of MR response signals from the nuclear spins within the desired imaging plane defined within said patient;

k) reconstruction unit coupled to the receiver for computing an image signal from the received MR response signals; and

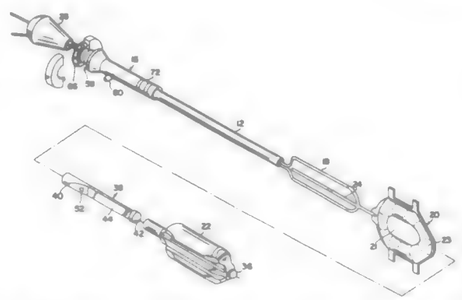
l) display means coupled to the reconstruction unit, for displaying an image from the image signal.

5,365,928

ENDORECTAL PROBE WITH PLANAR MOVEABLE MRI COIL

Edward J. Rhinehart, Moaroeville, and Michael A. Spohn, Butler, both of Pa., assignors to Medrad, Inc., Indianapola, Pa.

Filed Nov. 25, 1992, Ser. No. 982,177
Int. Cl.[5] A61B 5/055; A61M 25/10
U.S. Cl. 128—653.5 9 Claims



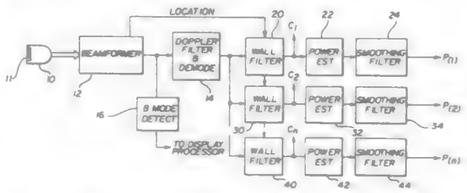
2. An insertable intracavity probe for use in magnetic resonance imaging of an anatomical area of interest within a body cavity, comprising an elongate shaft having a proximal and a distal end, a handle on the proximal end of the shaft, and a balloon structure on the distal end of the shaft, the balloon structure including an outer balloon, a pickup coil in the outer balloon lying in a plane, and at least one internal balloon for controlling the shape of the pickup coil by selective inflation, wherein the internal balloon includes a sealed center area defining a peripheral channel, which, when inflated, will accommodate the anatomical area of interest, the probe further comprising an electrical lead for connecting the coil to an interface network, means for inflating the internal balloon, and means connected to the coil within the outer balloon for selectively deflecting the coil in a plane normal to the plane of the coil.

5,365,929

MULTIPLE SAMPLE VOLUME SPECTRAL DOPPLER

Roy B. Peterson, Redmond, Wash., assignor to Advanced Technology Laboratories, Inc., Bothell, Wash.

Filed Oct. 4, 1993, Ser. No. 131,235
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—661.10 20 Claims



1. An ultrasonic diagnostic system for displaying Doppler information indicative of fluid flow within the body of a patient comprising:

means for transmitting ultrasonic energy into the body and receiving ultrasonic echo information from a plurality of sample volumes within the body;

means for processing said received ultrasonic echo information to obtain Doppler information associated with respective ones of said plurality of sample volumes;

means for comparing said Doppler information of said sample volumes to identify a sample volume most closely associated with Doppler information of a desired characteristic; and

means, responsive to identification of a sample volume by said comparing means, for uniquely displaying a Doppler information attribute of said identified sample volume,

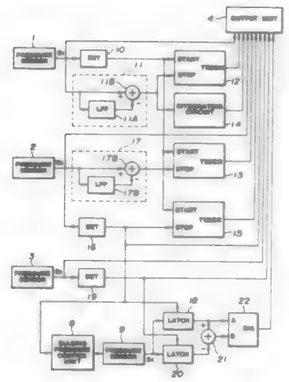
wherein said comparing means monitors the Doppler information of said sample volumes while Doppler information of said identified sample volume is displayed to monitor the continued association of said sample volumes with said Doppler information of a desired characteristic.

5,365,930

APPARATUS FOR MEASURING AND EVALUATING BLOOD CIRCULATION

Mitsuru Takashima, and Yoshiki Satoh, both of Tokyo, Japan, assignors to Sony Corporation, Japan

Filed Mar. 16, 1992, Ser. No. 851,662
Claims priority, application Japan, Mar. 18, 1991, 3-077269
Int. Cl.[5] A61B 5/021
U.S. Cl. 128—672 26 Claims



1. An apparatus for observing and evaluating blood circulation, comprising:

first and second pressure sensors adapted to be disposed along an artery outputting respective first and second pressure signals, wherein, the first pressure sensor is adapted to detect an artery pulse in said artery on a heart side and the second pressure sensor is adapted to detect said artery pulse between said heart side and a peripheral side;

a first level detecting means for detecting when the first pressure signal exceeds a predetermined level and providing an output signal representative thereof;

a second level detecting means for detecting when the second pressure signal exceeds a predetermined level and providing an output signal representative thereof;

biasing pressure controlling means responsive to the output of the second level detecting means for controlling the biasing force exerted by a biasing means; wherein, said biasing means is adapted to exert said biasing force upon the blood flow through the artery;

measuring means for measuring a first period of time after the first level detecting means detects that the first pressure signal exceeds a predetermined level and a second period of time from when a notch occurs in the first pressure signal until a notch occurs in the second pressure signal; and outputting means for outputting an output signal from said measuring means.

5,365,931

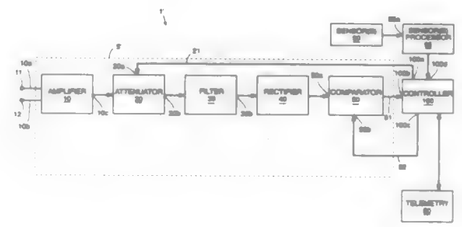
Patent Not Issued For This Number

5,365,932

CARDIAC SIGNAL SENSING DEVICE HAVING SENSITIVITY AUTOMATICALLY CONTROLLED IN RESPONSE TO METABOLIC DEMAND

Saul E. Greenhut, Aurora, Colo., assignor to Telectronics Pacing System, Inc., Englewood, Colo.

Filed Sep. 2, 1993, Ser. No. 116,135
Int. Cl.[5] A51B 5/0428
U.S. Cl. 128—696 16 Claims



1. A patient heartbeat sensing apparatus comprising:

first means for measuring a physiological parameter of the patient and for providing an output signal which is responsive to the patient's metabolic demand as indicated by the measured parameter;

second means for sensing a signal which is responsive to cardiac activity and noise;

third means, having an adjustable sensitivity, for operating on said cardiac activity and noise signal, to determine therefrom the occurrence of a natural heartbeat; and

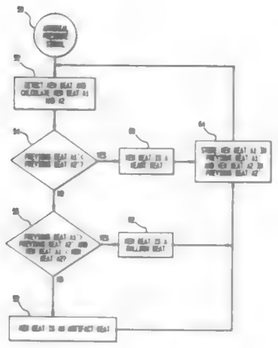
fourth means for adjusting the sensitivity of said third means in response to said metabolic demand output signal, being responsive to increases in the patient's metabolic demand by increasing said sensitivity, and being responsive to decreases in the patient's metabolic demand by decreasing said sensitivity.

5,365,933

APPARATUS AND METHOD FOR DISTINGUISHING HEART BEATS FROM INTRA-AORTIC BALLOON PUMP BEATS

Ziad Elghazzawi, Roslindale, Mass., assignor to Siemens Medical Systems, Inc., Danvers, Mass.

Filed Mar. 12, 1993, Ser. No. 30,927
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—697 **17 Claims**



1. Apparatus for identifying heart beats and intra-aortic balloon pump beats during an intra-aortic balloon pump assist procedure, comprising:

a pressure transducer responsive to arterial blood pressure variations caused by beats during the procedure to generate a corresponding pressure signal;

circuitry connected to receive the pressure signal from the transducer, the circuitry including:

processing means responsive to the pressure signal for identifying consecutive beats by determining successive minimum pressure values and maximum pressure values of the pressure signal,

determining means responsive to the identification of consecutive beats for determining a first and second portion of a beat, wherein the first portion of a beat begins at a minimum pressure value of said pressure signal and ends at an immediately succeeding maximum pressure value of said pressure signal, and wherein the second portion of a beat begins at said maximum pressure value of said pressure signal and ends at an immediately succeeding minimum pressure value of said pressure signal,

first calculating means responsive to the pressure signal and the determining means for calculating a first value for an attribute of said pressure signal over time during said first portion of a first beat and a second value for said attribute during said second portion of said first beat,

second calculating means responsive to the pressure signal and the determining means for calculating a first value for an attribute of said pressure signal over time during said first portion of a second beat which consecutively follows said first beat, and a second value for said attribute during said second portion of said second beat,

first comparing means responsive to said first calculating means for comparing the first value calculated for the first beat with the second value calculated for the first beat,

second comparing means responsive to said second calculating means for comparing the first value calculated for the second beat with the second value calculated for the second beat,

identifying means responsive to said first and second comparing means for identifying the second beat as being one of a group consisting of an intra-aortic balloon pump beat, a heart beat and an artifact,

means for associating at least one pressure value with said second beat when it is identified as an intra-aortic balloon beat or a heart beat; and

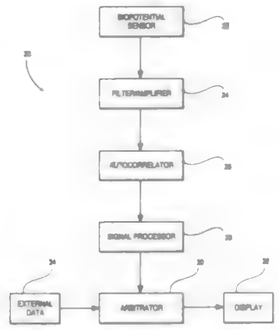
display means responsive to said means for associating for displaying said at least one pressure value associated with said second beat.

5,365,934

APPARATUS AND METHOD FOR MEASURING HEART RATE

Tomas Leon, Chicago; Teng Y. E. Hong, Naperville; Emil S. Golen, Barrington, all of Ill., and Donald J. Alexander, Milwaukee, Wis., assignors to Life Fitness, Franklin Park, Ill.

Continuation-in-part of Ser. No. 722,800, Jun. 28, 1991, Pat. No. 5,243,993. This application Apr. 26, 1993, Ser. No. 53,511
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—707 **18 Claims**



1. An apparatus for measuring the heart rate of a person during exercise, comprising:

a biopotential sensor adapted for contact with the user and capable of generating an input signal that includes the biopotential signal produced by the user's heart;

an autocorrelator responsive to the input signal, the autocorrelator generating an autocorrelation signal of the input signal;

signal processing means for detecting the indications of periodic signals in the autocorrelation signal and generating candidate signals corresponding to each of the detected indications, the indications being pulses in the autocorrelation signal which meet all of a predetermined plurality of filtering criteria;

arbitration means for selecting that one of the candidate signals which is most likely a true heart rate in accordance with a plurality of predetermined arbitration criteria; and

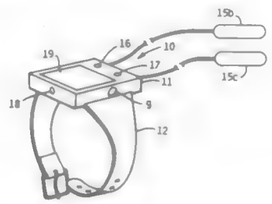
memory means for storing a current heart rate value, the memory means being responsive to the arbitration means for setting the current heart rate value to the value of the candidate signal selected by the arbitration means.

5,365,935

PORTABLE, MULTI-CHANNEL ECG DATA MONITOR/RECORDER

William H. Righter, Aloha; Andrew J. Nicoll, Hillsboro, both of Oreg., and Harold L. Kennedy, St. Louis, Mo., assignors to Ralin, Inc., Bannockburn, Ill.

Continuation-in-part of Ser. No. 983,798, Nov. 30, 1992, Pat. No. 5,226,425, which is a division of Ser. No. 757,254, Sep. 10, 1991, Pat. No. 5,191,891. This application Jul. 12, 1993, Ser. No. 90,298
Int. Cl.[5] A61B *5/0404*
U.S. Cl. 128—710 **32 Claims**



1. A portable, encased apparatus having electronic circuitry for continuously monitoring a user's electrocardiographic (ECG) data signals, said apparatus comprising:

a first conductive electrode coupled to the electronic circuitry and disposed on a surface of the apparatus casing so as to facilitate electrical contact with a first of three ECG lead positions which constitute an Eindoven's triangle on the user's body, wherein a wristband is provided for securing the casing to a wrist of the user and the first conductive electrode is disposed on the back surface of the casing such that it lies in continuous electrical contact with the user's wrist;

a second conductive electrode coupled to the electronic circuitry and adapted to facilitate continuous electrical contact with the user's body in a second Eindoven's triangle ECG lead position, the second electrode being separate from the apparatus casing; and

a third conductive electrode coupled to the electronic circuitry and adapted to facilitate electrical contact with the user's body in a third Eindoven's triangle ECG lead position;

wherein the electronic circuitry includes a microprocessor which controls selective monitoring of the user's ECG data signals from one or more of six standard Eindoven's triangle ECG lead configurations when each of the three electrodes is in electrical contact with its associated ECG lead position on the user's body.

5,365,936

APPARATUS FOR DISPLAYING WAVEFORM OF PHYSIOLOGICAL SIGNAL

Kanki Kyu, Tokyo, Japan, assignor to Nihon Konden Corporation, Tokyo, Japan

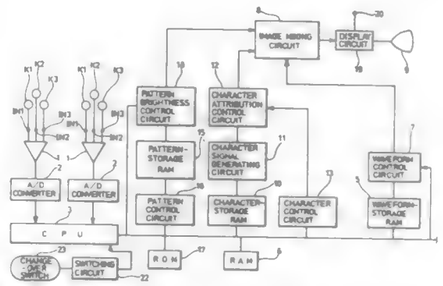
Continuation of Ser. No. 750,502, Aug. 27, 1991, abandoned. This application Sep. 1, 1993, Ser. No. 115,204
Claims priority, application Japan, Aug. 31, 1990, 2-90656
Int. Cl.[5] A61B *5/0402*
U.S. Cl. 128—710 **8 Claims**

1. An apparatus for displaying a waveform of a physiological signal, comprising:

waveform display control means for picking up said physiological signal and for conducting a control for displaying the waveform of said physiological signal;

switching means having a first mode of operation and a second mode of operation for displaying the waveform of said physiological signal as one of a continuous waveform and a freeze waveform, wherein said waveform is displayed as a continuous waveform in said first mode and said waveform is displayed as a freeze waveform in said second mode;

pattern display control means for forming a pattern signal of a back scale which is displayed simultaneously with the waveform of said physiological signal and for conducting a control to vary the brightness of the display of said backscale to increase said back scale brightness when said switching means is in said second mode to facilitate instantaneous evaluation of the freeze waveform and decrease said back scale brightness so as not to hinder observation of said continuous waveform when said switching means is in said first mode;



display processing means for synthesizing a monitor display signal from said physiological signal output from said waveform display control means and said pattern signal of said backscale; and

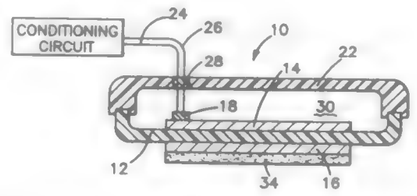
display monitor means for receiving said monitor display signal from said display processing means so as to simultaneously display one of the continuous and freeze waveforms of said physiological signal and said backscale on a display screen thereof thereby enabling instantaneous evaluation of said continuous and freeze waveforms without a recorder.

5,365,937

DISPOSABLE SENSING DEVICE WITH CONTANEOUS CONFORMANCE

William Reeves, New Haven; Christian Hilmer, Essex, and Douglas R. Miller, Westport, all of Conn., assignors to MCG International, Inc., New Haven, Conn.

Filed Sep. 9, 1992, Ser. No. 942,286
Int. Cl.[5] A61B *7/04*
U.S. Cl. 128—715 **10 Claims**



1. A sensing device for capturing cardiac output and acoustic output, said sensing device comprising:

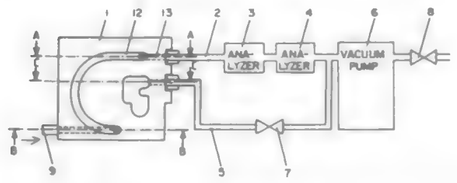
a pliable diaphragm formed from a piezoelectric transducer material for generating voltage signals in response to excitation by acoustic and vibratory outputs;

metallization layers on opposed surfaces of said diaphragm for receiving and transmitting said excitation signals generated by said diaphragm;

a layer of adhesive material attached to one of said metallization layers for mechanically coupling the sensing device to a subject's flesh in a way that said sensing device and

said flesh conform and become one so as to insure a maximum amount of said acoustic and vibratory outputs being received by said diaphragm;
electrical contacts electrically connected to said metallization layers;
an electrical lead connected to each of said electrical contacts;
a bow-shaped member for applying a tension force to said diaphragm; and
said diaphragm being mechanically connected to said bow-shaped member.

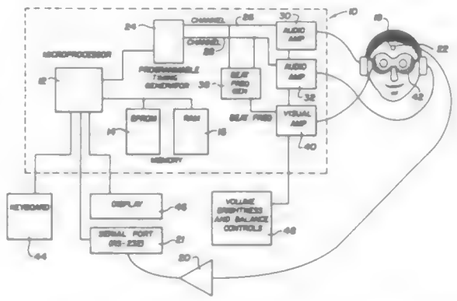
5,365,938
APPARATUS FOR SEPARATING A LIQUID COMPONENT FROM EXHALATION AIR TO BE DELIVERED TO AN ANALYZING UNIT
Esa Eskelä, Espoo, Finland, assignor to Instrumentarium Corporation, Finland
Continuation of Ser. No. 990,601, Dec. 14, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 195,575
Claims priority, application Finland, Dec. 20, 1991, 916041
Int. Cl.[5] A61B *5/097*
U.S. Cl. 128—719 **24 Claims**



1. An apparatus for separating out a liquid entrained in the exhalation gas of a patient and for delivering the exhalation gas to at least one analyzing unit, said apparatus comprising:
first chamber means (10) for receiving exhalation gas from the patient;
second chamber means (12) downstream of said first chamber means in a gas flow path through said apparatus, said second chamber means delivering exhalation gas from said apparatus to the analyzing unit;
a gas-permeable, liquid-impermeable wall (11) separating said first and second chamber means and through which exhalation gas passes from said first chamber means to said second chamber means;
means for dividing the exhalation gas received in said first chamber means into a first portion which is discharged from said first chamber means and a second portion which passes through said gas-permeable wall; and
a filter (20) upstream of said wall along the gas flow path of said apparatus through which liquid material entrained in the gas flows, said filter separating said entrained liquid material from the exhalation gas and discharging said entrained liquid material from said first chamber means with said first gas portion.

5,365,939
METHOD FOR EVALUATING AND TREATING AN INDIVIDUAL WITH ELECTROENCEPHALOGRAPHIC DISENTRAINMENT FEEDBACK
Len Ochs, Concord, Calif., assignor to Neurotrain, L.C., Galveston, Tex.
Filed Oct. 15, 1993, Ser. No. 137,909
Int. Cl.[5] A61B *5/0482*
U.S. Cl. 128—732 **6 Claims**

1. A method for treating an individual, comprising in combination the steps of:
selecting at least one reference site for determining a brain wave frequency of the individual;
beginning a first sequence of steps, wherein the first sequence of steps is stopped upon a predetermined stop condition;
producing a stimulation detectible by the individual with a frequency component at a predetermined difference from the brain wave frequency, the difference being at a first polarity;
determining if a first predetermined time has elapsed from the initiation of the first sequence of steps;
determining if the brain wave frequency has reached a first limit corresponding to the first polarity;
if the first predetermined time has not elapsed and the brain wave frequency has not reached the first limit, then repeating the first sequence of steps;
if the first predetermined time has elapsed or the brain wave frequency has reached the first limit, then beginning at least one second sequence of steps, wherein either the first

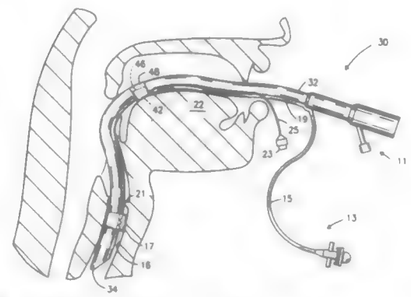


or the second sequence of steps is stopped upon a predetermined stop condition;
producing a stimulation detectible by the individual with a frequency component at a predetermined difference from the brain wave frequency, the difference being at a second polarity which is opposite to the first polarity;
determining if a second predetermined time has elapsed from the initiation of the second sequence of steps;
determining if the brain wave frequency has reached a second limit corresponding to the second polarity;
if the second predetermined time has not elapsed and the brain wave frequency has not reached the second limit, then repeating the second sequence of steps;
if the second predetermined time has elapsed or the second reference brain wave frequency has reached the second limit, then beginning the first sequence of steps.

5,365,940
ENDOTRACHEAL TUBE HAVING TONGUE-CONTACTING TEMPERATURE SENSOR
Leonides Y. Teves, Bradenton, Fla., assignor to Advanced Medical Concepts, Inc., Bradenton, Fla.
Filed Jun. 22, 1993, Ser. No. 81,454
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—736 **5 Claims**

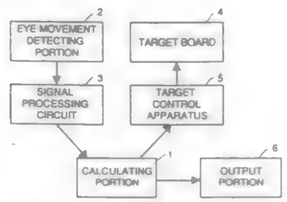
1. An endotracheal tube, comprising:
an elongate tubular member forming the body of said endotracheal tube;
said elongate tubular member having a proximal end and a distal end, said distal end being positioned distal of a patient's larynx when said endotracheal tube is in a position for use; and
a temperature-sensing means fixedly secured to an exterior surface of said elongate tubular member;
a temperature insulating means disposed between said exterior surface of said endotracheal tube and said temperature-sensing means;

an electrically insulating means disposed in overlying relation to said temperature-sensing means;



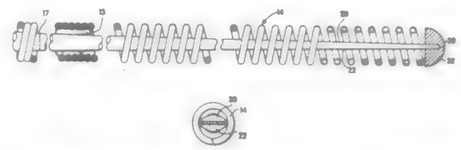
said temperature-sensing means being positioned on said endotracheal tube at the tongue-contacting proximal end of said endotracheal tube.

5,365,941
APPARATUS FOR DETECTING SMALL INVOLUNTARY MOVEMENT
Hiroshi Yoshimatsu, Kanagawa; Shinji Murakami, Hokkaido; Mitsuho Yamada, Tokyo; Kenya Uomori, Osaka; Hitoshi Hongo, Gifu; Keiichi Ueno, Tokyo; Mitsuru Fujii, Hokkaido; Norihito Nakano, Hokkaido; Jiro Miyazawa, Hokkaido; Ryo Fukatsu, Hokkaido, and Naohiko Takahata, Hokkaido, all of Japan, assignors to ATR Auditory and Visual Perception Research Laboratories, Kyoto, Japan
Filed Jun. 16, 1993, Ser. No. 76,047
Claims priority, application Japan, Nov. 27, 1992, 4-318423
Int. Cl.[5] A61B *13/00*
U.S. Cl. 128—745 **11 Claims**



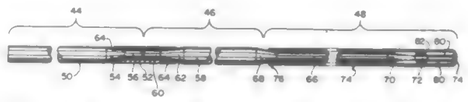
1. An apparatus for detecting small involuntary eye movement for determining disease related to brain function by detecting eye movement of a subject, comprising:
eye movement detecting means for detecting a point of gazing by detecting eye movement of said subject;
target presenting means for presenting a target to said subject; and
calculating means for discriminating abnormality of the small involuntary movement component by fractal dimension analysis, from time-change of a movement of line-of-sight base on the eye movement detected by said eye movement detecting means while said subject is gazing at the target presented by said target presenting means, for determining a disease related to brain function.

5,365,942
GUIDEWIRE TIP CONSTRUCTION
Peter J. Shank, Burlington, Mass., assignor to C. R. Bard Inc., Billerica, Mass.
Continuation-in-part of Ser. No. 620,796, Dec. 3, 1990, abandoned, which is a continuation of Ser. No. 532,381, Jun. 4, 1990, Pat. No. 5,147,317. This application Jun. 25, 1992, Ser. No. 904,436
Int. Cl.[5] A61M *5/178*
U.S. Cl. 128—772 **35 Claims**



1. In a guidewire adapted for use with a catheter, the guidewire including a helical coil at its distal end and a core wire having a longitudinal axis and extending through the helical coil, the improvement comprising:
the core wire having a distal tip portion that is tapered and includes a pair of opposed flattened surfaces along the tapered portion, the flattened surfaces extending distally at an angle outward to the longitudinal axis of the core wire, the juncture of the flattened and unflattened surfaces being free of sharp cross-sectional transitions.

5,365,943
ANATOMICALLY MATCHED STEERABLE PTCA GUIDEWIRE
Lex P. Jansen, Londonberry, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Mar. 12, 1993, Ser. No. 30,808
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **26 Claims**



1. A small diameter steerable PTCA guidewire comprising:
an elongate flexible shaft having a proximal section, an intermediate section connected to the proximal section and a distal section connected to the intermediate section;
the distal section being more flexible than the intermediate section;
the intermediate section being more flexible than the proximal section;
the distal section being approximately fifteen to thirty centimeters in length;
the intermediate section being approximately twelve to eighteen centimeters in length whereby the intermediate section may extend through the region of a human aortic arch when the distal section is disposed, at least in part, in a coronary artery;
the proximal section being formed from a material different from that of the intermediate and distal sections and has a modulus of elasticity that is substantially greater than about 30 million p.s.i., the intermediate and distal sections being formed from a material having a modulus of elasticity substantially less than that of the material from which the proximal section is formed;
said shaft being not substantially greater in diameter than about 0.018 inches;
said shaft being sufficiently torsionally rigid along its length

so that when the intermediate section is in a configuration corresponding to that of a human aortic arch and with the distal segment having at least one bend of a shorter radius than that of a human aortic arch, the shaft is capable of transmitting controllably from its proximal to its distal end rotation applied at the proximal end.

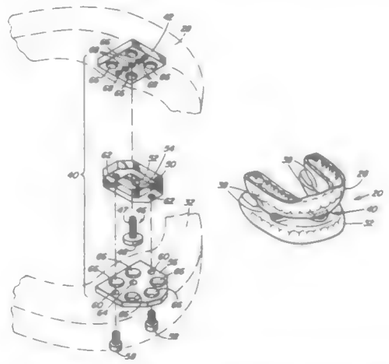
5,365,944
GUIDEWIRE EXTENSION WITH SELF-LATCHING DETACHABLE CONNECTOR
Richard A. Gambale, Tyngsboro, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Continuation of Ser. No. 958,686, Oct. 9, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 231,359
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **14 Claims**



1. A guidewire extension for telescopic connection with a tubular socket at the proximal end of a medical guidewire comprising:
an elongate flexible shaft having proximal and distal ends;
a self-latching connector element mounted on the distal end of the shaft, the connector element being constructed and arranged to be detachably self-latching to the inner surface of the socket and to be reconnectible after detachment, the connector element being insertable, at least in part, into the socket;
the connector element having at least two distinct, elongate segments, each defining a uniform diameter and extending along the shaft, the more distal segment having a smaller diameter than the proximal segment whereby the distal segment may be inserted into a smaller diameter socket than that into which the proximal segment may be inserted, the proximal segment being insertable into a larger diameter socket;
whereby the extension wire may be detachably connected selectively to guidewires of different sizes.

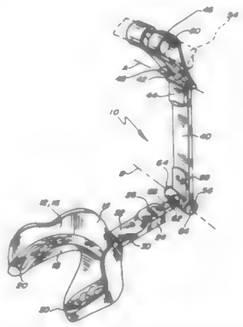
5,365,945
ADJUSTABLE DENTAL APPLICANCE FOR TREATMENT OF SNORING AND OBSTRUCTIVE SLEEP APNEA
Leonard W. Halstrom, 140 Isleview Pl., Lions Bay, British Columbia, Canada V0N 2E0
Filed Apr. 13, 1993, Ser. No. 46,549
Int. Cl. A61F *5/56*
U.S. Cl. 128—848 **17 Claims**

1. A connecting assembly for use in an intra-oral dental appliance to be worn by a patient during sleep for treatment of obstructive sleep apnea and snoring, the dental appliance comprising an upper bite block conforming to the patient's maxillary dentition and a lower bite block conforming to the patient's mandibular dentition, said connecting assembly comprising:
(a) a first element securable to an undersurface of said upper bite block in an anterior region thereof;
(b) a second element securable to an upper surface of said lower bite block in an anterior region thereof; and
(c) an elongated connector for releasably coupling said first and second elements together, said connector having an upper end which is fixedly connectable to said first element and a lower end which is loosely connectable to said second element to adjustably maintain said lower bite block in an anterior, protruded position relative to said upper bite block while permitting lateral movement of said lower bite block relative to said upper bite block,
wherein said connector comprises a stylus having a threaded portion located at said upper end and an enlarged head located at said lower end; said first element comprises a retention plate



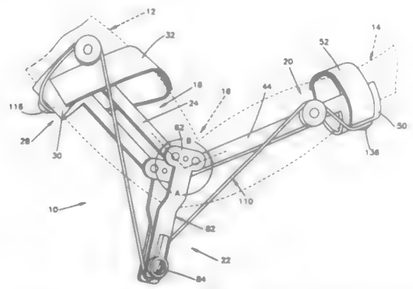
having a plurality of spaced-apart internally threaded apertures for adjustably receiving said stylus threaded portion; and said second element comprises an internal cavity for capturing said stylus head, said cavity having an elongated opening formed on an upper portion of said second element through which said stylus extends.

5,365,946
QUICK RELEASE TETHER FOR MOUTHGUARDS
Norm J. V. McMillan, Plymouth, Minn., assignor to E-Z Gard Industries, Inc., Minneapolis, Minn.
Filed Aug. 21, 1992, Ser. No. 933,484
Int. Cl.[5] A61C *5/14*
U.S. Cl. 128—861 **21 Claims**



1. A mouthguard releasable in-line tether assembly, comprising:
a) a forwardly extending tether connecting tab adapted to connect and extend from an anterior portion of a mouthguard, the tab having a forward end adapted to releasably receive and hold a breakaway tab fastener in parallel, in-line arrangement with the tab; and
b) a stiff tether having a mouthpiece end adapted to pivotally hold the tab fastener and to permit pivotal movement of the fastener along a first axis perpendicular to both the tab and the tether, the tether having a face mask end adapted to pivotally hold a face mask catch connectable to a face mask and to permit pivotal movement of the tether along a second axis parallel to the first axis thereby keeping the mouthguard in-line and properly oriented for correct insertion into a user's mouth and facilitating breakaway of the tab and fastener should the face mask be moved away from the user's face.

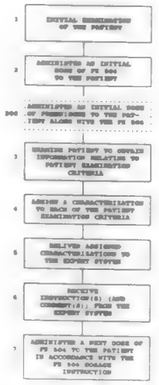
5,365,947
ADJUSTABLE ORTHOSIS
Peter M. Bonutti, Watson, Ill.
Division of Ser. No. 559,700, Jul. 30, 1990, Pat. No. 5,167,612.
This application Nov. 18, 1992, Ser. No. 978,103
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—898 **67 Claims**



1. A method of moving a joint to stretch tissue around the joint comprising the steps of connecting a flexible force transmitting element with a first portion of a limb disposed on a first side of the joint, connecting the flexible force transmitting element with a second portion of a limb disposed on a second side of the joint, and pulling on the flexible force transmitting element to cause relative movement between the first and second portions of the limb, the joint and first and second portions of the limb define on one side of the joint an inner sector which decreases in angle as the joint is flexed and define on the opposite side of the joint an outer sector which decreases in angle as the joint is extended, and wherein said step of pulling on the flexible force transmitting element includes pulling on the flexible force transmitting element at a location in the outer sector.

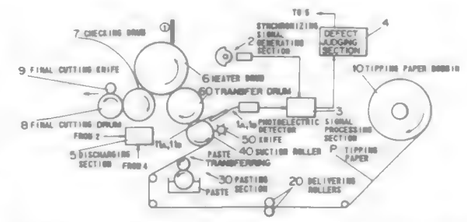
5,365,948
METHOD FOR USE IN TREATING A PATIENT WITH FK 506 TO PREVENT AN ADVERSE IMMUNE RESPONSE
John P. McMichael, Wexford, Pa., assignor to J & W McMichael Software Inc., Waterloo, Canada
Filed Aug. 21, 1992, Ser. No. 934,208
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **37 Claims**

1. A method for treating a patient to prevent an adverse immune response by partially suppressing the patient's immune system without unduly suppressing the ability of the immune system to combat infection, comprising the steps of:
(a) administering an initial dose of FK 506 to the patient;
(b) examining the patient to determine information concerning patient examination criteria;
(c) assigning a characterization to each of the patient examination criteria, each such characterization being selected from a predetermined standardized range of characterizations applicable to each patient examination criterion;
(d) providing the assigned characterizations to a computing device comprising:
a knowledge base comprising rules which include one of a plurality of treatment instructions in response to at least one of various combinations of the characterizations which can be assigned to the patient examination criteria, and
an expert computer program including a first routine for prompting, through an output means, a user to enter, through an input means, the assigned characterizations; a second routine for selecting a treatment instruction by locating a rule which covers the assigned characterizations, and thereby determines the treatment instruction; and a third routine for communicating the treatment instruction to the output means;



(e) receiving from the computing device the treatment instruction; and
(f) administering a next FK 506 dose to the patient in accordance with the treatment instruction.

5,365,949
METHOD OF DETECTING DEVIATION IN POSITION AND MISSHAPE OF TRANSPORTED OBJECTS
Toshiaki Nishizaka; Hirokazu Takamori, and Tuyoshi Hashimoto, all of Fukuoka, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan
Filed Jul. 15, 1992, Ser. No. 913,364
Claims priority, application Japan, Jul. 15, 1991, 3-173795
Int. Cl.[5] A24C *5/00*
U.S. Cl. 131—280 **30 Claims**



1. A method of detecting deviation in position and misshape of transported objects which have a predetermined shape and are successively transported at predetermined intervals along a path with said transported objects being maintained in a predetermined orientation, comprising the steps of:
transporting the object along the path;
generating synchronizing signals corresponding to said transportation intervals on a predetermined cycle;
detecting passage of end portions of said transported objects at predetermined path positions;
calculating a interval between the generation of said synchronizing signal and the passage of said end portions;
calculating a mean value and a standard deviation for a prescribed number of said transported objects from time series information;
judging a transported object as an object of which position is deviated or shape is deformed when the difference

between measured time interval and said mean time interval is larger than a criterion which is calculated based on said standard deviation;

replacing the oldest information on the time interval in said time series information with information on time interval of a transported object which is judged that a position thereof is not deviated or a shape thereof is not deformed to renew the time series information; and

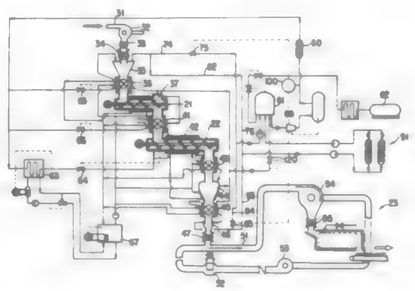
calculating a mean value and a standard deviation for said renewed time series information so as to be used for said judgment.

5,365,950

EXPANDING APPARATUS FOR AGRICULTURAL PRODUCT OR THE LIKE

Kazuo Yoshimoto; Takashi Ogawa; Hiromi Uematsu; Manabu Takeuchi, and Kensuke Uchiyama, all of Hiratsuka, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Continuation of Ser. No. 885,439, May 20, 1992, abandoned.
This application Feb. 9, 1994, Ser. No. 193,878
Claims priority, application Japan, May 20, 1991, 3-145556; May 20, 1991, 3-145557; May 20, 1991, 3-145562
Int. Cl.[5] A24B *3/18*
U.S. Cl. 131—291 **3 Claims**



1. An expanding apparatus for impregnating an agricultural product material such as a tobacco material with carbon dioxide as an expanding agent, and thereafter expanding said carbon dioxide impregnated in the material by heating, thereby expanding the material, the material being continuously supplied and expanded, comprising:

an impregnating vessel to which said carbon dioxide is supplied to maintain an impregnating pressure and the material to be expanded is continuously supplied;

supply-side valve means for continuously supplying the material to said impregnating vessel and supplying said carbon dioxide to said impregnating vessel while increasing a pressure of said carbon dioxide around the material;

discharge-side valve means for continuously discharging the material from said impregnating vessel and discharging said carbon dioxide from said impregnating vessel while decreasing the pressure of said carbon dioxide around the material;

carbon dioxide recovering/separating means comprising a low-pressure recovery system for recovering said carbon dioxide at a low pressure in a low-pressure tank, an intermediate-pressure recovery system for recovering said carbon dioxide at an intermediate pressure in an intermediate-pressure tank, and booster means for pressure-increasing said carbon-dioxide recovered in said low- and intermediate-pressure tanks to a high pressure and supplying said carbon-dioxide to a high-pressure tank; and

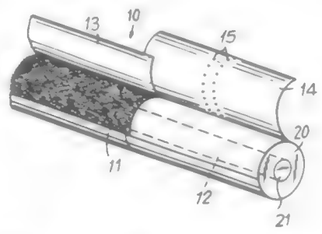
hermetic vessels arranged respectively at an upstream side of said supply-side valve means and at a downstream side of said discharge-side valve means, the supply-side valve means and the discharge-side valve means being connected to the respective hermetic vessels by both a port and a bypass pipe, low-pressure carbon dioxide being supplied to said hermetic vessels by at least said bypass pipe connected thereto, the material being supplied to or exhausted from said impregnating vessel passing through said ports and said hermetic vessels and being freshened with carbon dioxide contained in said hermetic vessels when passing therethrough, supply of low-pressure carbon dioxide to the hermetic vessels by the bypass pipes preventing air from entering said impregnating vessel.

5,365,951

CONCENTRIC SMOKING FILTER HAVING CELLULOSE ACETATE TOW PERIPHERY AND CARBON-PARTICLE-LOADED WEB FILTER CORE

Cynthia W. Arterbery, Midlothian; W. Timothy Callaham; Gus D. Keritsis, both of Richmond; Donald E. Laslie, Midlothian; Kenneth A. Newman, Prince George; Roger S. Slagle, and Morris F. White, Jr., both of Chesterfield, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 796,631, Nov. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 571,878, Aug. 24, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,650
Int. Cl.[5] A24D *3/02, 3/06*
U.S. Cl. 131—339 **62 Claims**



1. A smoking filter comprising:

a first filter plug having:

a central core of a gathered corrugated web filter material, and

a peripheral layer of a fibrous tow filter material surrounding said central core; wherein:

each of said central core and said peripheral layer has a resistance-to-draw, said central core having a resistance-to-draw of between about 285 mm W.G. and about 500 mm W.G. and said filter having a resistance-to-draw of between about 115 mm W.G. and about 225 mm W.G., said peripheral layer having a lower resistance-to-draw than said central core, to initially direct, when said filter is attached to a smoking article and said smoking article is smoked, a greater fraction of smoke through said peripheral layer than through said central core; said first filter plug further having:

carbon particles distributed throughout said central core, said carbon particles having:

a size distribution such that 94% of said particles are between about 20 mesh and about 70 mesh,

a moisture content between about 15.5% and about 20.5% of dry weight of the carbon particles, and

CCl_4 activity between about 50% and about 60%;

means for admitting ventilation air through said peripheral layer toward said central core, whereby smoke initially directed into said peripheral layer flows back into said central core; whereby:

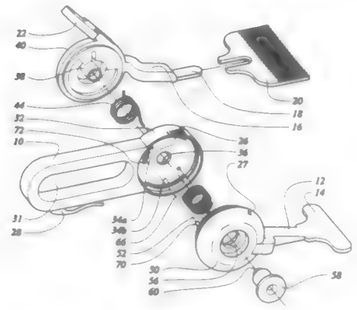
when said filter is attached to a smoking article and said smoking article is smoked, said filtered smoking article delivers smoke containing a particular level of total particulate matter, and the taste of said smoking article is a taste associated with smoke having a level of total particulate matter higher than said particular level.

5,365,952

HAIRCUTTING DEVICE

Edward J. Noble, Corona Del Mar; Timothy Payne, Santa Ana, and Rex O. Bare, Lake Forest, all of Calif., assignors to Edward J. Noble, Corona Del Mar, Calif.

Filed Mar. 17, 1993, Ser. No. 32,306
Int. Cl.[5] A45D *24/38*
U.S. Cl. 132—144 **21 Claims**



1. A haircutting device for aiding in cutting selected lengths of hair comprising

a handle member having a hand grip section and a hub section, said handle member having detents thereon,

a first comb member including a comb arm and a comb hub, the comb hub being pivotally mounted with respect to the section of the handle member, and including detents for cooperating with the detents of the handle member to enable the first comb member to be rotated and selectively locked in a predetermined angular relationslip with respect to the handle member, and

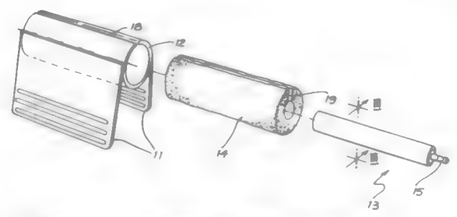
a second comb member including a comb arm and a comb hub, the comb hub of the second comb member being rotatably mounted on and with respect to the handle member, the second comb member having a comb attached to the comb arm thereof, and further including a lever member for allowing the second comb member to be rotated with respect to the handle member and also with respect to the first comb member to enable a length of hair engaged by the comb to be raised for cutting.

5,365,953

HAIR SETTING APPARATUS

Max Feughelman, Ryde, Australia, assignor to Fibrous Keratin Pty Limited, Castle Hill, Australia

PCT No. PCT/AU90/00251, § 371 Date Feb. 4, 1992, § 102(e) Date Feb. 4, 1992, PCT Pub. No. WO90/14780, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 7, 1990, Ser. No. 781,209
Claims priority, application Australia, Jun. 7, 1989, PJ4625
Int. Cl.[5] A45D *4/18*
U.S. Cl. 132—231 **14 Claims**



1. A permanent hair setting apparatus comprising:

i) a hollow infrared radiation transparent hair former adapted to have hair wound thereon;

ii) an infrared radiation source comprising a hot wire within the hair former, the hot wire being capable of being heated continuously up to a temperature of 1100° C. using a voltage in the range of from 4 to 30 volts;

iii) means to cover the hair wound on the hair former to an extent sufficient to maintain the hair moist during the time in which the infrared source is activated, the means comprising a water impermeable member of sufficient size and shape to substantially cover all the hair being set on the hair former; and

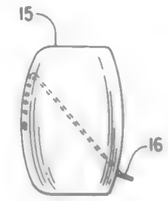
iv) a water absorbent member in contact with the means to cover the hair and disposed such that it is between the means and the hair former, but spaced apart from, the hair former by a distance sufficient to allow hair to be wound onto the hair former.

5,365,954

HAIR DRESSING TOOL

Shirley M. Rude, 616 E. 28th St., Sioux Falls, S. Dak. 57105

Filed Mar. 14, 1994, Ser. No. 209,733
Int. Cl.[5] A45D *8/12*
U.S. Cl. 132—275 **3 Claims**



1. An ornamental clasp for use with hair arrangements having hair strands gathered together in a tail form, said ornamental clasp comprising:

an ornamented plate having edges;

prong means fixed to said ornamented plate at a fixed point on an inner surface near one edge thereof, said prong means extending away from the fixed point in a direction away from said one edge and across said ornamented plate to an end point positioned below said fixed point and spaced away from said ornamented plate, whereby said prong means is adapted to engage said tail form diagonally across said tail form.

5,365,955

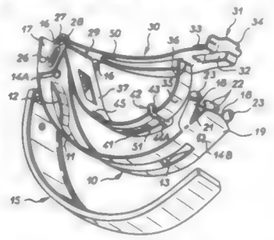
HAIR CLIP MOUNT

Michel Desgroux, Esvres; Guy Pignon, Vouneuil sous Biard Poitiers, and Denis Weber, Dissay, all of France, assignors to Etablissements DELSOL, Paris, France

Filed Mar. 4, 1993, Ser. No. 26,448
Claims priority, application France, Mar. 13, 1992, 92 03003
Int. Cl.[5] A45D *8/22*
U.S. Cl. 132—279 **16 Claims**

1. A hair clip mount, comprising: a generally curved baseplate, a closure member having one end articulated to the baseplate and another latching end, said closure member comprising an outer tang and, facing the baseplate and having the same general curvature as the baseplate, a pressure member, said pressure member comprising first and second tangs extending towards each other and having overlapping end portions, said first and second tangs of the pressure member being

longitudinally moveable relative to each other, and means interconnecting said first and second tangs of the pressure



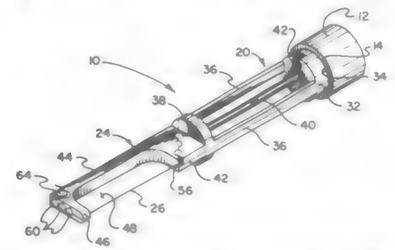
member for preventing separation of said tangs from each other.

5,365,956

TOOTHBRUSH AND DENTAL FLOSS HOLDER

Gregorio G. Guadiana, 41 Hiran, Nacogdoches, Tex. 75961

Filed Jan. 10, 1994, Ser. No. 179,389
Int. Cl.[5] A45D *44/18*
U.S. Cl. 132—309 **6 Claims**



1. A toothbrush and dental floss holder comprising:
tapered neck member having a narrow end and a wide end;
an upper axle mount secured to said wide end, said upper axle mount being substantially circular and having a perimeter and a center with an axle slot extending from said perimeter to said center thereof;
a pair of substantially parallel, spaced, elongated side members projecting longitudinally from said upper axle mount;
a lower axle mount secured to said side members and positioned in a spaced and substantially parallel relationship to said upper axle mount, said lower axle mount having a slotted aperture formed therein;
an axle projecting from said lower axle mount into said axle slot, said axle being substantially parallelly aligned with said side members, said axle being operable to rotatably support a dental floss spool thereon;
a first end member fixedly secured to said lower axle member, said end member having a slotted aperture formed therein;
a bridge member projecting from said first member;
a second end member fixedly secured to said bridge member and positioned substantially parallel with respect to said first end member, said second end member having a slotted aperture formed therein, said first end member and said bridge member and said second end member cooperating to define an opening across which a length of dental floss may span;
at least one slotted projection secured to said first end member for anchoring said length of dental floss;
at least one further slotted projection secured to said second end member for anchoring said length of dental floss; and,
a toothbrush head coupled to said narrow end of said neck member, wherein said at least one slotted projection comprises three projections colinearly arranged, each of said projections having a semi-circular, planar slot formed therein for receiving a portion, of said length of dental floss, said semi-circular planar slots extending in opposite directions with respect to adjacent projections.

5,365,957

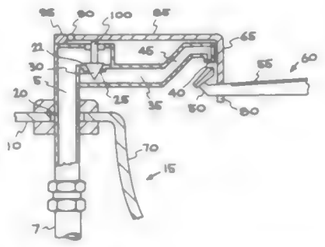
Patent Not Issued For This Number

5,365,958

RAZOR CLEANING DEVICE

Glen Stuhlmacher, II, 45 Cuenca Ct., San Ramon, Calif. 94583

Filed Apr. 7, 1993, Ser. No. 44,302
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—44 **12 Claims**



6. A device for cleaning a blade of a razor, the razor having both a handle and a head containing the blade, comprising:
(a) a body containing a conduit, the conduit having an inlet and an outlet, the inlet in liquid communication with a pressurized source of liquid;
(b) a nozzle attached to the body, the nozzle having an inlet aperture and an outlet aperture, the inlet aperture in liquid communication with the outlet of the conduit, a pressurized shower of liquid originating at the outlet aperture and aligned with the razor blade;
(c) a valve having an open state and a shut state, the valve allowing liquid communication between the conduit and the outlet aperture in the open state and the valve obstructing liquid communication between the conduit and the outlet aperture in the shut state;
(d) means for switching the valve between the shut state and the open state with the razor;
(e) a period of time that the valve is in the shut state, the period of time that the valve is in the shut state causing the pressure of the liquid near the valve to increase; and
(f) a reservoir of liquid disposed between the valve and the outlet aperture with the valve in the shut state, whereby the increase in pressure of the liquid near the valve is transferred to the shower of liquid with the valve in the open state.

5,365,959

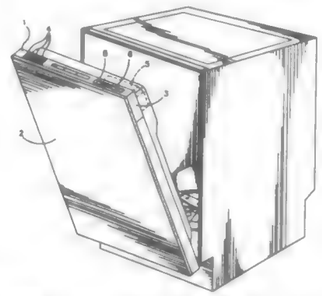
BUILT-IN DISHWASHER WITH HIDDEN CONTROL PANEL

Daniele Favaro, Venice, Italy, assignor to Zanussi Elettrodomestici S.P.A., Italy

Filed Jul. 20, 1993, Ser. No. 94,557
Claims priority, application Italy, Jul. 23, 1992, PN92U000027
Int. Cl.[5] A47L *15/42*
U.S. Cl. 134—113 **8 Claims**

1. A built-in dishwasher having a front-loading door covered with an external decorative panel and a control panel having an electro-mechanical timer with cams mounted on a substantially horizontal rotating shaft, the timer being adjustable by means of a front knob (6) having a side, characterized

by a niche (7) in the control panel (3), said knob (6) being built into said niche (7), and an opening (8) on a top edge of the



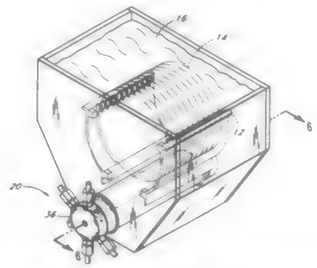
control panel (3) providing access to the side of the knob (6) from above.

5,365,960

MEGASONIC TRANSDUCER ASSEMBLY

Mario E. Bran, Garden Grove, Calif., assignor to Verteq, Inc., Santa Ana, Calif.

Filed Apr. 5, 1993, Ser. No. 42,889
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—184 **23 Claims**



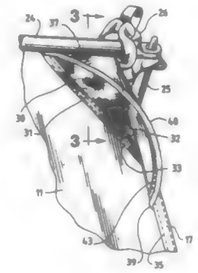
1. Apparatus for cleaning semiconductor wafers, including a transducer assembly for applying megasonic energy into fluid surrounding the wafers, said assembly comprising:
a rigid tube made of metal or other material that is strong, a good thermal conductor and a good transmitter of megasonic energy;
a partition in the interior of said tube extending substantially throughout the length of the tube to form a transducer chamber and a coolant chamber in combination with said tube, said partition having edges that are formed integral with the tube or are sealed with respect to the tube so as to prevent communication between said chambers;
one or more arcuate transducers in said chambers coupled to an adjacent side wall of the tube to direct energy through the side wall when megasonic energy is applied to the transducers;
a cap on each end of the tube; and
passages in communication with the interior of said tube to conduct an inert gas through the transducer chamber, and to conduct liquid coolant through the coolant chamber to cool said assembly.

5,365,961

VENTILATOR FOR TENT

David J. Bamber, and Martin W. Park, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Dec. 17, 1993, Ser. No. 168,142
Int. Cl.[5] E04H *15/10*
U.S. Cl. 135—91 **8 Claims**



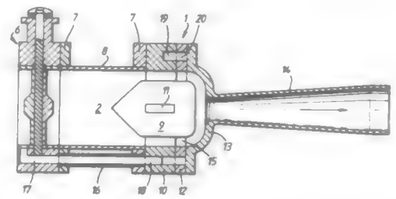
1. A tent having at least a pair of side panels and a top panel, the pair of side panels being secured together along a side seam, the top panel being secured to the side panels along a top seam, one of the side panels having an opening adjacent the side seam and the top seam, a screen covering the opening in said one side panel and secured to said one side panel and to said side seam and top seam, a skirt extending over the screen and having a first edge which is attached to the side seam, a second edge which is attached to the top seam, and a free edge which is spaced from said one side panel and the screen, and stiffening means secured to the skirt adjacent the free edge thereof for maintaining the free edge spaced from said one side panel and the screen.

5,365,962

FLOW CONTROL SYSTEM AND METHOD OF OPERATING A FLOW CONTROL SYSTEM

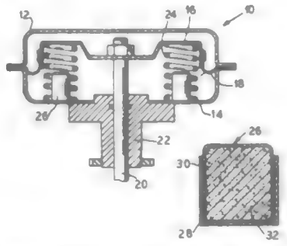
Stephen A. Taylor, Preston, United Kingdom, assignor to United Kingdom Atomic Energy Authority, Didcot, United Kingdom

Filed Jul. 28, 1992, Ser. No. 920,640
Claims priority, application United Kingdom, Sep. 3, 1991, 9119196.5
Int. Cl.[5] F15C *1/16*
U.S. Cl. 137—14 **7 Claims**



1. A method of operating a fluid flow control system including a vortex valve comprising a vortex chamber having an inlet for a main fluid flow to be controlled by the vortex valve and an inlet for a control fluid, together with a non-fluidic control valve in the main fluid flow line upstream of the vortex valve, comprising the operation of varying the operating state of the non-fluidic control valve to create a difference between the pressure of fluid flowing in the main fluid flow line and that of a control fluid in the control flow line thereby to effect the operation of the vortex valve to control the flow of fluid in the main fluid flow line.

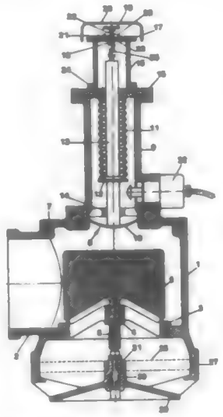
5,365,963
ACTUATING DRIVE HAVING A SAFETY DEVICE
Heinfried Hoffmann, Frankfurt, Germany, assignor to Samson Aktiengesellschaft, Frankfurt, Germany
Filed Nov. 12, 1993, Ser. No. 151,159
Claims priority, application Germany, Nov. 25, 1992, 4239580
Int. Cl.[5] F16K *17/38*
U.S. Cl. 137—67 **11 Claims**



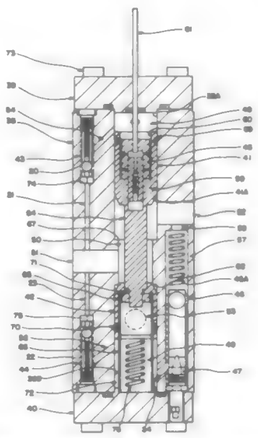
1. An actuating drive for a control valve having control valve element, comprising:
an actuation element which is mechanically connected to the control valve element;
a safety means for moving the actuation element in a first direction to a safety position to bring the control valve element into a safety condition; and
a swelling compound that restricts retreat of the actuation element in a second direction away from the safety position, the swelling compound expands and multiplies in volume upon formation of cavities when a limit temperature, that upwardly exceeds a normal temperature range, is upwardly exceeded.

5,365,964
VACUUM VALVE TO BE USED IN AN EMERGENCY SYSTEM TO REDUCE THE RISK OF ESCAPE OF LIQUID FROM TANKERS DUE TO INJURIES UNDER THE WATERLINE
Emil A. Sørensen, Schützenmatte 2A, CH-6362 Stansstad, Switzerland
PCT No. PCT/DK91/00147, § 371 Date Dec. 1, 1992, § 102(e) Date Dec. 1, 1992, PCT Pub. No. WO91/19126, PCT Pub. Date Dec. 12, 1991
Continuation of Ser. No. 665,803, Mar. 6, 1991, Pat. No. 5,213,127. This PCT application May 31, 1991, Ser. No. 949,628
Claims priority, application Denmark, Jun. 1, 1990, 1357/90
The portion of the term of this patent subsequent to Aug. 25, 2009, has been disclaimed.
Int. Cl.[5] F16K *17/32, 17/40*
U.S. Cl. 137—68.1 **14 Claims**

1. A vacuum valve comprising:
a) a valve housing having a valve opening;
b) a valve body within said valve housing having inner and outer sides, and being adapted to close and to open, said valve opening under the influence of a biasing closing force counteracted by an opening force resulting from the difference of fluid pressure between the outer and inner sides of the valve body;
c) biased actuating means mounted in a position to act on said valve body for applying a supplemental biasing closing force thereto; and
d) means sensitive to the pressure difference between the ambient atmosphere and the interior of the valve housing and constructed to withhold said actuating means from acting on the valve body as long as said pressure difference remains below a predetermined critical value, and for liberating said actuating member for action if the pressure difference assumes a value exceeding said critical value.

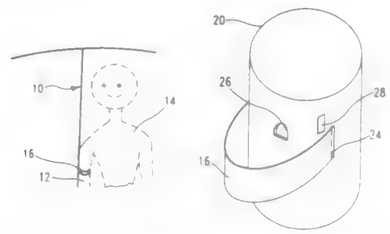


5,365,965
HYDRAULIC AUTOMATIC SHUTDOWN VALVE SYSTEM
Wayne Dunn, Newcastle, Wyo., assignor to Cambria Valve Corporation, Newcastle, Wyo.
Filed Nov. 12, 1993, Ser. No. 151,407
Int. Cl.[5] F16K *17/00*
U.S. Cl. 137—115 **3 Claims**



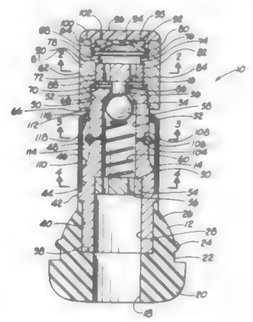
1. An automatic shutdown hydraulic valve system comprising:
(a) a housing including an inlet port and an outlet port; wherein the housing further includes an elongated cavity; wherein the inlet port and outlet port each communicate with the cavity; and wherein the cavity includes first and second sections;
(b) piston means within the cavity; wherein the piston means comprises first and second interconnected piston members which are movable in the first and second cavity sections, respectively;
(c) first and second charging valve means communicating between the inlet port and the first and second cavity sections, respectively;
(d) An unloading valve means communicating between the second cavity section and the outlet port for pressure sensing.

5,365,966
CARRY FREE UMBRELLA
Errol McLaren, Rt. 1 Box 312, W. Hurley, N.Y. 12491
Filed Jun. 11, 1992, Ser. No. 871,000
Int. Cl.[5] A45B *25/00*
U.S. Cl. 135—16 **16 Claims**



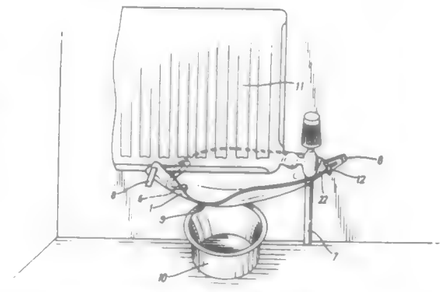
1. An umbrella for carrying on an arm, comprising a collapsable canopy, a central rod mounting said canopy, a handle on the lower end of said rod for holding the umbrella, and a mechanism including a broad band on said handle for mounting the handle upright on a person's arm, said handle having a top, a bottom, and a side, said handle including two slots located in said side, said broad band emanating from said two slots.

5,365,967
SAFETY TIRE VALVE
John C. Moore, Palm Harbor, Fla., assignor to Capital Data, Palm Harbor, Fla.
Filed Nov. 3, 1993, Ser. No. 145,158
Int. Cl.[5] F16K *15/20, 37/00*
U.S. Cl. 137—226 **11 Claims**



1. A pressure indicator device for air-inflated vehicle tires, comprising:
a valve stem for receiving air under pressure;
a check actuator for closing the valve stem and preventing reverse flow of said air;
a valve cap housing having an open axial portion and being sealingly secured on said valve stem;
a translucent panel secured across the top of said valve cap housing open axial portion;
a diaphragm spring normally downwardly convex secured across said valve cap housing axial portion, said spring being round and uniformly thick with a colored upper surface having a line etched thereon to provide visual indication when in engagement with said translucent panel; and
air distributor means secured across said open axial portion below said diaphragm spring and including a foot member for urging the check actuator open to permit normal inflation air pressure communication into the valve cap housing open axial portion;
whereby the normal inflation air pressure distends the diaphragm to an upwardly convex position in contact with the translucent panel to provide visual indication.

5,365,968
APPARATUS FOR FLUID DRAINAGE
Frederick Mills, 17 Burnell Road, Esh Winning, Durham, United Kingdom DH7 9PB
Filed Mar. 24, 1993, Ser. No. 35,753
Claims priority, application United Kingdom, Mar. 24, 1992, 9206343
Int. Cl.[5] B65B *3/04;* **F16K** *51/00*
U.S. Cl. 137—312 **12 Claims**



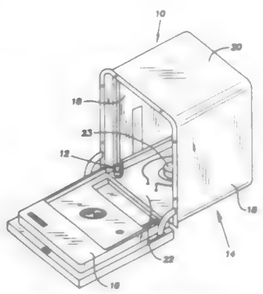
1. An apparatus for fluid drainage comprising:
a sheet of flexible, waterproof material having an opening at one end for surrounding a water supply line and providing a substantially water-tight seal around the water supply line, and having at least one elongate, reinforcing portion positioned about a portion of said sheet and being spaced from said opening for deforming said sheet into a specific configuration defining a barrier for allowing a collection of leaking fluid when said opening is positioned around the water supply line and for directing the leaking fluid from said water supply line in a predetermined direction to an edge of said sheet at a predetermined point thereon, which is determined by said configuration for collection into a container, said sheet having its other end secured to a device to be drained and said reinforcing portion being intermediate said ends.

5,365,969
FLOAT WITH SKIRT TO PREVENT LEAKAGE DUE TO OVERSUDSING
James M. Edwards, Kinston, N.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 21, 1994, Ser. No. 184,569
Int. Cl.[5] H01H *35/18;* **F16K** *31/18, 33/00*
U.S. Cl. 137—387 **17 Claims**

1. In a dishwasher having a tub with a bottom wall, means for controlling the introduction of water into said tub, a stand pipe providing communication between an interior of the tub and said control means, and an improved float for preventing overfilling of the tub, the improved float comprising:
a main float body having a generally cylindrical sidewall, an upper end, an open lower end, and a generally hollow interior;
a skirt attached to the main float body and extending out-

wardly and downwardly therefrom, said skirt being located intermediate said main float body upper and lower ends;

a float stem projecting from the open lower end of the main float body and being slidably received by the stand pipe, said float stem being operable to actuate said control means to prevent further introduction of water into the tub when a predetermined desired water level has been



reached, wherein a portion of the main float body sidewall extends downwardly beyond a lower terminal edge of the skirt and provides a lower edge near said tub bottom wall, said portion serving as a suds stop to prevent suds from building up within the hollow interior of the main float body and flowing down the stand pipe as the float moves up and down in response to variations in the level of water in said tub.

5,365,970

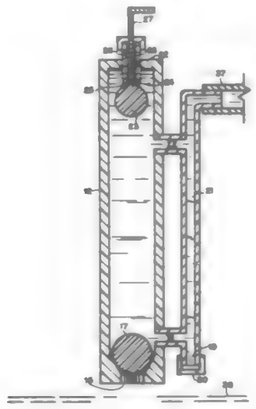
GRAVITY FLOW CHEMIGATION SYSTEM AND LOW LEVEL SHUTOFF VALVE

Larry D. Butler, 25503 Simplot Blvd., Wilder, Id. 83676

Filed Apr. 7, 1993, Ser. No. 45,032

Int. Cl.[5] F16K *31/22, 33/00*

U.S. Cl. 137—192 **24 Claims**



1. A chemigation system comprising:

an irrigation channel;

a chemical supply tank;

a chemical supply line having a first end connected to the tank;

a one-shot water operated valve means being connected to a second end of the supply line and in fluid communication with the chemical supply tank, the valve means being partially submerged in an irrigation water supply and having a float valve responsive to, and open in, the presence of irrigation water within said channel;

the float valve further being responsive to, and closed in, an absence of irrigation water within said channel; and

the float valve includes a buoyant valve member having a specific gravity less than that of water and any fluid within the one-shot water operated valve means, the buoyant valve member being configured to have a portion of its surface area positioned out of fluid contact with any fluid within the one-shot water operated valve means in the absence of irrigation water within said channel to thereby reduce the fluid displacement of the valve member and seal the valve closed allowing an accumulation of fluid and a build-up of fluid pressure from said chemical supply tank within the one-shot water operated valve means to keep the valve means closed even in renewed presence of irrigation water in said irrigation channel.

5,365,971

SEAL SYSTEM, PARTICULARLY SUITABLE FOR PROCESS VALVES

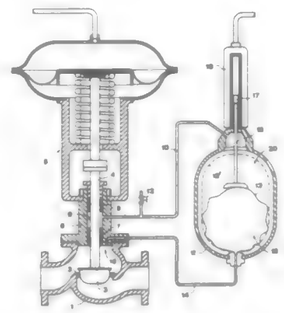
Giorgio Bergamini, Bari, Italy, assignor to Nuovopignone-Industrie Meccaniche E Fonderia S.P.A., Florence, Italy

Filed Oct. 5, 1993, Ser. No. 131,547

Claims priority, application Italy, Oct. 9, 1992, M192A002328

Int. Cl.[5] F16K *37/00*

U.S. Cl. 137—556 **4 Claims**



1. A seal system for a process valve comprising a valve body, a valving element for controlling flow of process fluid through said valve body, said valving element having a stem that is slidingly supported by two spaced apart seal members arranged in series to define between said serially disposed seal members an intermediate chamber, a static separator having first and second inlet means and an interior volume containing a chamber having a highly elastic wall, means for supplying auxiliary fluid in the form of a biodegradable, non-contaminating, non-aggressive lubricant fluid to said intermediate chamber and said first inlet means whereby said lubricant fluid is fed to the interior of said static separator to contact an exterior surface of said highly elastic chamber wall, fluid conduit means connected at one end to said valve body upstream of said serially disposed seal members and at another end to said second inlet means to supply process fluid to an interior of said highly elastic walled chamber, said highly elastic wall isolating said process fluid from said auxiliary fluid, and position sensor means having a movable head in contact with and cooperating with said highly elastic chamber wall.

5,365,972

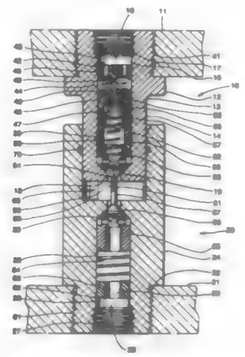
UNDERSEA HYDRAULIC COUPLING WITH BLEED VALVE

Robert E. Smith, III, Missouri City, Tex., assignor to National Coupling Co., Inc., Stafford, Tex.

Filed Jul. 30, 1993, Ser. No. 100,455

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.04 **20 Claims**



1. An undersea hydraulic coupling, comprising:

a male member and a female member, each of the members having a poppet valve biased to the closed position, the poppet valves having mutually engageable valve actuators which urge the poppet valves open upon connection of the male and female members; at least one of the poppet valves having a bleed passage and a bleed valve assembly operable in response to fluid pressure, whereby fluid can escape through the bleed passage when the members are disconnected until the fluid pressure is below a preselected amount.

5,365,973

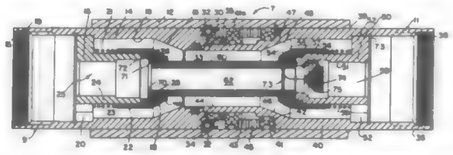
BREAK-AWAY CONCENTRIC HOSE COUPLING

Arthur C. Fink, Jr., Lonedell, and Thomas O. Mitchell, Maryland Heights, both of Mo., assignors to Husky Corporation, Pacific, Mo.

Filed Oct. 25, 1993, Ser. No. 140,525

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.04 **14 Claims**



1. In a break-away coupling to be mounted in a flexible fuel line between the fuel source and the fuel dispensing nozzle of the type that allows fuel flow therethrough during usage but capable of disconnecting and shutting off flow through the line when subject to excessive tensioning force exerted on the line comprising:

a first fitting of generally cylindrical shape connectable to said nozzle or one section of fuel line leading to a nozzle;

a second fitting of generally cylindrical shape connectable to the other section of fuel line;

said first and second fittings forming a fuel flow passage therein and an inner disposed concentric vapor return passage;

said first and second fittings each having a check valve, said valves being opposed to each other, one of said valves having an extension therewith, and disposed for engaging the other valve during coupling to hold said valves unseated from their respective valve seats to allow fluid and vapors to flow through the coupling, and disposed to retract and allow said valves to seat on their respective valve seats thereby shutting off flow through the coupling when the coupling is severed;

said first and second fittings having finned spider means connector mounts of generally cylindrical shape, for securing the check valve to the fittings, said spider means connector mounts disposed to allow fluid flow through the said spider means connector mounts and to allow vapors to flow out through the inner concentric passage;

said engaged check valve each having cooperating internal vapor passages, said vapor passages internal to the fluid flow passage, said vapor passages being cooperatively connected with said respective spider means connector mounts to allow vapor to flow through said device and out through the fuel line;

said first and second fittings being slidably connected within a sleeve, said fittings being held together in said sleeve by detent means, said detent means being disposed to release upon application of predetermined tensioning force; and

a further check valve means disposed within the vapor passage to prevent the escape of collected vapors from the second fitting when the break-away coupling disengages.

5,365,974

FLOW-CONTROL VALVE

Dusko Maravic, Kirchweg 27c, CH-5415 Nussbaumen, Switzerland

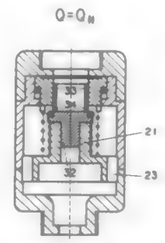
PCT No. PCT/CH92/00092, § 371 Date Jan. 27, 1993, § 102(e) Date Jan. 27, 1993, PCT Pub. No. WO92/21903, PCT Pub. Date Dec. 10, 1992

PCT Filed May 12, 1992, Ser. No. 962,240

Claims priority, application Switzerland, May 28, 1991, 1573/91-0

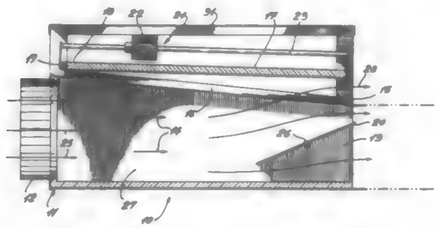
Int. Cl.[5] F16K *17/30*

U.S. Cl. 137—493 **8 Claims**



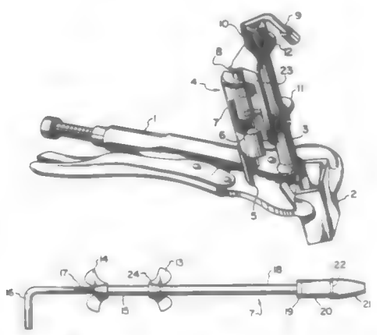
1. In a flow control valve having a housing (1) in which an insert (2) around all sides of which a fluid can flow is disposed and which has a guide cylinder (21) on an inlet side, the improvement comprising: a shaft (32) of a first spring-loaded control element (3) is guided and axially displaceable in said guide cylinder (21), said first control element (3) having a valve disk (31) with a collar (33), said collar (33) having at least one lateral bore (34), said collar (33) enclosed by a second control element (5) forming a spring-loaded control sleeve which is guided and axially displaceable in said housing (1), and during zero flow-through a rim of said valve disk (31) resting against a control sleeve bottom of said second control element (5) thereby blocking said at least one lateral bore (34) in said collar (33) of said first control element (3).

5,365,975
CONSTANT AIR PRESSURE UNIT FOR AIR HANDLING SYSTEM
Anthony Côté, Prévost, Canada, assignor to E. H. Price Ltd., Winnipeg, Canada
Filed Mar. 22, 1994, Ser. No. 215,593
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—875 **11 Claims**



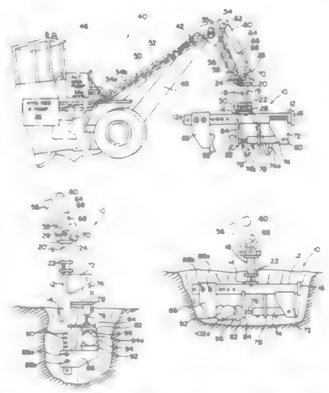
1. A constant air pressure unit for an air handling system, said unit comprising a housing having an air inlet opening for admitting pressurized air in said housing, said housing having a top wall with a by-pass opening therein, a door displaceably retained over said by-pass opening, said door having loading means whereby said door is caused to lift away from said by-pass opening when the pressure of said airflow in said housing exceeds the pressure required to lift said load of said door and to release excess pressurized air at a substantially constant pressure from said housing so as to maintain a substantially constant maximum air pressure at said air inlet.

5,365,976
APPARATUS FOR STOPPING THE FLOW OF NATURAL GAS
Peter Tozer, 115 Barrett Court, Apt. 907, Kingston, Ontario, Canada K7L 5H6
Filed May 18, 1992, Ser. No. 884,016
Claims priority, application Canada, Jun. 3, 1991, 2043778
Int. Cl.[5] F16L *55/128*
U.S. Cl. 138—89 **13 Claims**



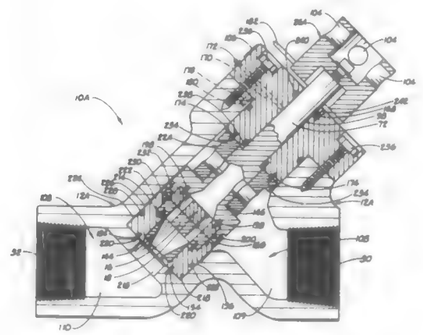
1. A device for stopping the flow of fluid under pressure from an open-ended pipe including:
i) clamp means adapted to grasp said pipe adjacent its open end;
ii) stopper holder means attached to and extending from said clamp means and being alignable with the open end of said pipe; and
iii) stopper means adapted to be held by said stopper holder means in a position aligned with the open end of said pipe and insertable from said aligned position into said pipe to stop the flow of fluid from said pipe, said stopper means comprising a threaded rod having a handle at one end and an expandable washer at the other end, said expandable washer being seated in a first nut adapted to be inserted into said open pipe, there being a flat washer above said expandable washer on said rod and a first sleeve on said threaded rod above said flat washer, for transmitting compressive forces from the handle end of said stopper means to said flat washer, thereby to deform said expandable washer and cause said expandable washer to seal against the inner surface of a pipe and stop the flow of fluid from said pipe, said stopper holder means being adapted to hold said stopper means securely in a first position outside said pipe and aligned with the open end thereof, and a second position with a portion of said stopper means inserted in said pipe;
wherein above said first sleeve on said stopper means is located a collar having radially outwardly extending means for engaging said stopper holder means when said stopper means is in said second position, said stopper holder means being adapted by the provision of slots to engage said engaging means.

5,365,977
PIPE SEAL
Robert L. Goad, Woodstock, and Ronald G. Marotta, Antioch, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.
Continuation of Ser. No. 846,159, Mar. 5, 1992, Pat. No. 5,297,584. This application Dec. 1, 1993, Ser. No. 160,485
Int. Cl.[5] F16L *55/168*
U.S. Cl. 138—99 **15 Claims**



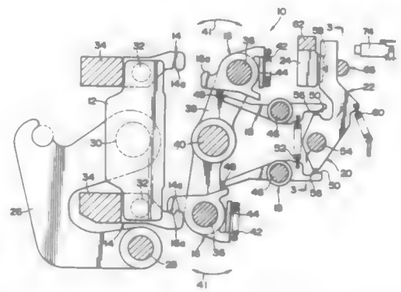
1. Apparatus for sealing a leak in a pipe, said apparatus comprising:
an elongated frame;
first and second discrete mounting means coupled to and at spaced locations on said frame for individually and separately attaching said frame to an articulated arm, said first mounting means enabling said frame to be oriented in a generally horizontal orientation or one slightly angled from the horizontal and said second mounting means enabling said frame to be oriented in a generally vertical orientation or one slightly angled from the vertical, whereby said articulated arm provides support for and allows for movement of said frame;
first and second pipe engaging blocks, wherein said second pipe engaging block is fixedly attached to said frame; and
hydraulic means mounted to said frame and coupled to said first pipe engaging block for positioning and applying pressure to said first pipe engaging block, with either said first or second pipe engaging block disposed over a leak for sealing a leak in an upper or lower portion of a pipe when said frame is oriented generally vertical or for sealing a leak in a lateral portion of a pipe when said frame is generally horizontal, and wherein at least one of said first and second pipe engaging blocks disposed over the leak is comprised of a resilient, compressible material for encompassing and sealing the leak.

5,365,978
TOP ENTRY FLOW CONTROL VALVE WITH TWO SETS OF ORIFICES
John B. Woods, Tulsa, Okla., assignor to Baker Hughes Incorporated, San Antonio, Tex.
Continuation-in-part of Ser. No. 919,687, Jul. 27, 1992, Pat. No. 5,217,046. This application May 3, 1993, Ser. No. 56,559
Int. Cl.[5] F16K *3/00*
U.S. Cl. 137—614.11 **11 Claims**



1. A flow control valve comprising:
a body having a sidewall, an inlet port, an outlet port and a cavity communicating with the inlet port and the outlet port;
a rotatable cylinder positioned within the cavity and having an open end, a closed end and a sidewall, the open end extending into said cylinder to define a chamber, the sidewall of said cylinder having a plurality of cylinder orifices therethrough into the chamber and an access opening communicating with the cavity of said body;
a pair of discs positioned within the cavity, each one of said discs having a plurality of orifices therethrough, one of said discs being rotatable with said cylinder and the other of said discs being substantially stationary;
a wear sleeve positioned within the cavity of said body, said wear sleeve having an inlet end, an outlet end and a flow opening extending therethrough from the inlet end to the outlet end thereof, the flow opening communicating with the orifices of said stationary disc;
a plurality of cylinder flanges extending from the open end of said cylinder; and
a plurality of wear sleeve flanges extending from the inlet end of said wear sleeve;
wherein said cylinder is rotatable to locate said cylinder flanges between said wear sleeve flanges such that said cylinder and said wear sleeve are separately insertable into and removable from said body and wherein said cylinder is rotatable to overlap said cylinder flanges with said wear sleeve flanges such that said cylinder and said wear sleeve are insertable into and removable from said body together.

5,365,979
DOBBY FOR ELECTROMAGNETICALLY CONTROLLING A HEALD FRAME
Fumio Yoshida, Iwakura, Japan, assignor to Kabushiki Kaisha Yamada Dobby, Bisai, Japan
Filed Mar. 19, 1993, Ser. No. 34,558
Claims priority, application Japan, Dec. 25, 1992, 4-357921
Int. Cl.[5] D03C *1/06*
U.S. Cl. 139—66 R **17 Claims**

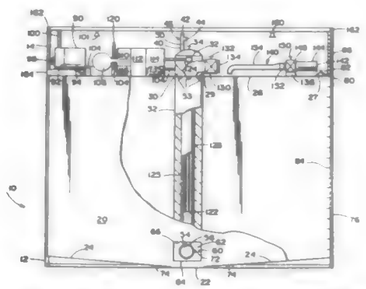


1. A dobby comprising:
first and second hooks with means for moving at least one of said first and second hooks in the direction of approaching and leaving each other, said first hook being connected to a heald frame, said second hook being pivotally movable to a first position where said second hook cannot be engaged with said first hook and to a second position where said second hook can be engaged with said first hook;
a first lever selectively displaceable to a third position for controlling said second hook to be pivotally displaced to said first position and to a fourth position for controlling said second hook to be pivotally displaced to said second position;
a pusher selectively displaceable to a fifth position for controlling said first lever to be displaced to said third position and to a sixth position for controlling said first lever to be displaced to said fourth position;
a second lever for selectively displacing said pusher to said fifth and sixth positions; and
a magnet for releasably holding said second lever so as to maintain said pusher at one of said fifth and sixth positions;
a cam-shaped contact face on one of said first lever and pusher; and
means for continuously contacting said cam-shaped contact face on a part of the other of said first lever and said pusher.

5,365,980
TRANSPORTABLE LIQUID PRODUCTS CONTAINER
Nicholas W. deBerardinis, Houston, Tex., assignor to Instant Terminalling and Ship Conversion, Inc., Kailua, Hi.
PCT No. PCT/US91/03748, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO92/21591, PCT Pub. Date Dec. 10, 1992
PCT Filed May 28, 1991, Ser. No. 829,027
Int. Cl.[5] B65D *88/10*
U.S. Cl. 141—1 **27 Claims**

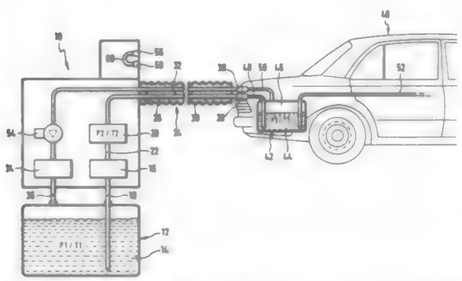
1. A liquid production container comprising:
a hollow body adapted for containing a bulk liquid cargo having an upper portion and a lower portion and an opening in said upper portion, said hollow body having the shape of a substantially rectangular parallelpiped with sloping bottom surfaces, having the footprint of a standardized cargo container, and having a width and a height, said height being equal to approximately four times said width, whereby said hollow body is configured to be transportable by dry cargo vessels without stacking;

pressure control means connected to said hollow body for controlling pressure within said hollow body;
lifting means attached to said hollow body for receiving lifting devices; and



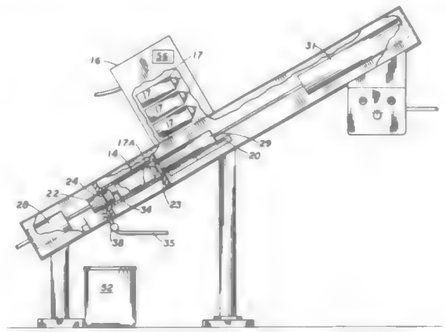
unloading means, including a pump, connected to said hollow body for unloading liquid products from said hollow body.

5,365,981
METHOD AND REFUELLING MEANS FOR FILLING A CRYOTANK
Walter Peschka, Sindelfingen, and Gottfried Schneider, Stuttgart, both of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Bonn, Germany
Filed Aug. 19, 1992, Ser. No. 932,066
Claims priority, application Germany, Aug. 31, 1991, 4129020
Int. Cl.[5] B67D *5/06*
U.S. Cl. 141—7 **12 Claims**



1. A method for filling a cryotank of a hydrogen-powered vehicle with liquid hydrogen from a storage tank, comprising the steps of:
connecting a liquid hydrogen line to said cryotank for transferring hydrogen therethrough;
connecting a gas return line between said cryotank and said storage tank for safety purposes, said gas return line being used for removal of hydrogen gas from said cryotank;
opening said gas return line to reduce the pressure in said cryotank prior to commencement of a hydrogen transferring step;
transferring hydrogen at a pressure and a temperature corresponding to an undercooled state of liquid hydrogen from said storage tank through said liquid hydrogen line to said cryotank, said undercooled state of said liquid hydrogen being sufficient to reduce the vaporization of the hydrogen caused by thermal energy introduced into the hydrogen during transfer to the cryotank to such a degree, that under normal conditions, no hydrogen gas has to be removed from said cryotank;
closing said gas return line during said hydrogen transferring step;
connecting said liquid hydrogen line to said gas return line by a short-circuit line opening said gas return line after said hydrogen transferring step; and
cooling said liquid hydrogen line, said short-circuit line and said gas return line with hydrogen flowing through said lines during the intervals between filling events.

5,365,982
AEROSOL CAN COMPACTION AND EVACUATION APPARATUS
Paul J. O'Neill, Novato, Calif., assignor to Aervoe-Pacific Company, Inc., Gardenerville, Nev.
Continuation-in-part of Ser. No. 758,793, Sep. 12, 1991. This application Nov. 22, 1993, Ser. No. 155,487
Int. Cl.[5] B65B *31/00*
U.S. Cl. 141—51 **16 Claims**

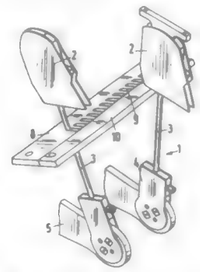


1. An aerosol can compaction apparatus comprising a housing having a sealable compaction chamber closeable on each end, and a pair of opposed moving pistons, the said compaction chamber being closeable by said pair of opposed moving pistons, the first of which pistons includes a needle for piercing an aerosol can, and a second piston for crushing an aerosol can, all within said compaction chamber;
and a passageway from said first piston for evacuation of the fluid content of said aerosol can's contents from said compaction chamber and wherein said pistons enter said compaction chamber axially to seal said chamber during compaction.

5,365,983
METHOD AND DEVICE FOR HOUSING NON-SHEDDING LOOM SHAFT RODS
Gustav Oertli, Brütten, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland
Filed Sep. 7, 1993, Ser. No. 118,059
Claims priority, application European Pat. Off., Nov. 13, 1992, 92810885.1
Int. Cl.[5] D03C *1/14*
U.S. Cl. 139—57 **12 Claims**

1. In a loom a device for housing a shaft rod not required for shedding comprising:

a member including a plurality of recesses having an open side, the open side being adapted to receive the shaft rod,



the plurality of recesses having means for permitting movement of the shaft rod within the recess.

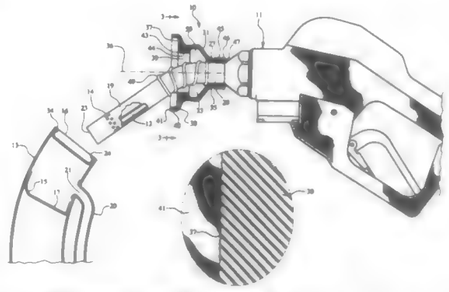
5,365,984
ELECTRICAL CONNECTOR AND FUEL DISPENSING HOSE WITH ELECTRICAL CONDUIT FOR A FUEL DISPENSING SYSTEM
W. Dwain Simpson, Wilton; James H. Pyle, Weston, and Geoffrey P. Wilcox, Roxbury, all of Conn., assignors to Saber Equipment Corporation, Fairfield, Conn.
Continuation-in-part of Ser. No. 986,095, Dec. 4, 1992, Pat. No. 5,267,592. This application Dec. 2, 1993, Ser. No. 161,679
Int. Cl.[5] B65B *1/04, 3/00*
U.S. Cl. 141—387 **22 Claims**



1. A fuel dispensing system comprising:
a fuel dispensing nozzle having an electrically operated device contained therein;
a fuel dispensing hose in communication between a fuel dispenser and said nozzle, and including a first closed passageway for carrying fuel in a first direction toward said nozzle, a second closed passageway for carrying fuel vapor in a second opposite direction toward said dispenser, and means for carrying a safety-approved electrical signal between said fuel dispenser and said fuel dispensing nozzle in order to selectively provide electronic communication between said electrically operated device and said fuel dispenser, said means being disposed within one of said first and second passageways.

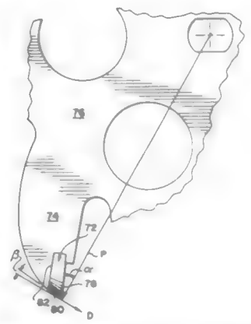
5,365,985
VAPOR GUARD FOR VAPOR RECOVERY SYSTEM
John A. Todd, Salisbury, Md., and William H. Constantine, Chesapeake, Va., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 18, 1993, Ser. No. 154,770
Int. Cl.[5] B65B *3/00*
U.S. Cl. 141—392 **12 Claims**

1. In a vapor recovery system for
delivering volatile fuel into a vehicle tank through an end opening of a fill pipe having a restricter plate with a nozzle port located therein downstream of an inlet flange,
simultaneously recovering fuel vapors displaced from the tank by the inflow of fuel and
delivering the vapors through a vapor recovery line to a remote storage vessel, the combination of:
a fuel dispenser with a body;
a nozzle with a base end attached to said body and a free end with a fuel outlet therein, said nozzle being insertable into the fill pipe through said nozzle port with said fuel outlet located downstream of said restricter plate;
a vapor inlet hole formed in said nozzle and located upstream from said outlet and below said restricter plate when dispensing fuel, said hole communicating with said vapor recovery line;
retainer means on said nozzle for catching on said inlet flange of said fill pipe for hands-free fuel dispensing and substantially straight-pull removal; and
a tubular mixture barrier formed as a unitary member of a resiliently flexible elastomeric material and having an overall length when mounted on said nozzle enabling an operator's unobstructed simultaneous view of both the end of the nozzle and said restricter plate for relative alignment of said nozzle with said nozzle port immediately preceding insertion of said nozzle therethrough, said barrier further including a first end section sized to fit over said nozzle and into sealing contact therewith adjacent said base end,
a second end section having
an annular end surface containing finish irregularities and being sized and positioned for contact with said inlet flange when said nozzle is inserted into said end opening of said fill pipe, and



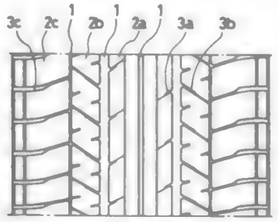
an intermediate section integrally formed with and extending between said first and second end sections,
said intermediate section when relaxed having
an inside surface defining a chamber around said nozzle when mounted thereon, and
being resiliently collapsible between said first and second end sections to a variable length along said nozzle dependent upon engagement of said annular end surface with said fill pipe and the depth of insertion of said nozzle into said fill pipe,
said elastomeric material being of a flexible resiliency sufficient to provide throughout said variable length of collapse of said intermediate section a force tending to expand said intermediate section, said force being limited in magnitude
to enable said retainer means to catch on said flange for hands-free fuel dispensing and essentially a straight-pull removal and
to maintain said annular end surface into contact with said fill pipe flange without causing said finish irregularities to be substantially deformed
thereby ensuring the existence of a non-sealing contact between said annular end surface and said fill pipe flange regardless of the depth of insertion of said nozzle into said fill pipe and the difference existing, if any, between the pressure in said chamber and atmospheric pressure during normal fuel dispensing conditions.

5,365,986
CUTTER GRINDER
Steven M. Hoosier, 15726 Ott Ave., Glen Ellyn, Ill. 60137
Filed Feb. 26, 1993, Ser. No. 23,552
Int. Cl.[5] B27G *13/00*
U.S. Cl. 144—231 17 Claims



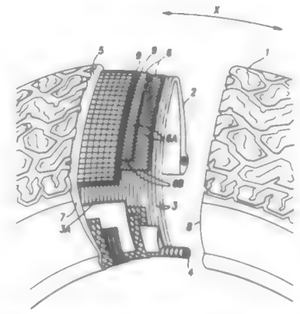
15. A rotatable cutter grinder which comprises:
a rigid, substantially planar hub portion;
plural arcuate arms unitary with said hub portion, substantially uniformly spaced about the hub portion, and at least some of the arms being laterally offset relative to the plane of the hub portion; and
a cutting tool mounted at a positive rake angle to each of said plural arms at a distal end portion thereof so as to provide an array of cutting tools about the periphery of the cutter grinder.

5,365,987
PNEUMATIC TIRE WITH VARYING ANGLE LUG GROOVES
Fumito Ishii; Kenichiro Sugitani, both of Hiratsuka, and Kunihiko Kakigi, Atsugi, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1992, Ser. No. 963,207
Claims priority, application Japan, Dec. 26, 1991, 3-344598
Int. Cl.[5] B60C *11/08*
U.S. Cl. 152—209 R 4 Claims



1. A pneumatic tire of the type wherein a plurality of main grooves extending in a tire circumferential direction are disposed on a tread surface in such a manner as to define a plurality of rib lines and wherein a plurality of lug grooves are disposed in said rib lines to define a plurality of blocks in a non-directional tread pattern, characterized in that the angles of the lug grooves with respect to the tire circumferential direction in each of said rib lines vary as successive values in a geometric progression pattern and the maximum-to-minimum lug groove angle ratio is 1.1 to 1.4, the lug groove angles in said rib lines positioned on the shoulder side with respect to the tire circumferential direction are set to be greater than the lug groove angles in said rib lines positioned on the center side to the tire circumferential direction, and the lug groove angles in the rib lines at the center portion, middle portion and shoulder portion are within the ranges of 45° to 60°, 50° to 70° and 65° to 85° with respect to the tire circumferential direction, respectively.

5,365,988
PNEUMATIC TIRE WITH FABRIC OVERLAY
Roger H. Soderberg, and Michael J. Chekan, both of LaGrange, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.
Continuation-in-part of Ser. No. 846,135, Mar. 5, 1992, abandoned. This application Mar. 1, 1993, Ser. No. 56,438
Int. Cl.[5] B60C *9/00, 9/18*
U.S. Cl. 152—527 8 Claims

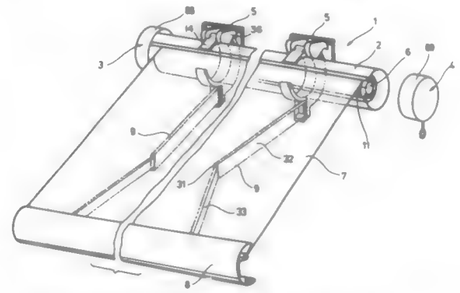


1. A pneumatic tire comprising: a carcass having at least one ply of tire cord, a belt having at least one belt ply extending circumferentially of the tire and a cap ply fabric over and in contact with said carcass, said cap ply being a fabric of open square weave construction and having a tackified finish, said open weave fabric having a warp set of about 100–240 threads per decimeter and a weft set of about 32–100 threads per decimeter, said cap ply fabric being an open weave fabric of a thickness of 0.25–0.55mm with the yarns having counts in the range of 230 to 1400 decitex, said cap ply fabric comprising a plurality of wraps of said open weave fabric covering said belt, being of a width greater than said belt and adhered to said belt and said carcass.

5,365,989
AWNING HAVING A CONVEX DROP BLADE WHICH FITS ON AN AWNING CASE WHEN THE AWNING IS ROLLED-UP
Heinz Eger, Binzingen-Ochsenwang, and Alfred Bodentien, Kirchheim-Otlingen, both of Germany, assignors to MHZ Sonnenschutztechnik GmbH, Kirchheim/Teck, Germany
Filed Mar. 24, 1993, Ser. No. 36,428
Claims priority, application Germany, Mar. 27, 1992, 4209972
Int. Cl.[5] E04F *10/06*
U.S. Cl. 160—22 20 Claims

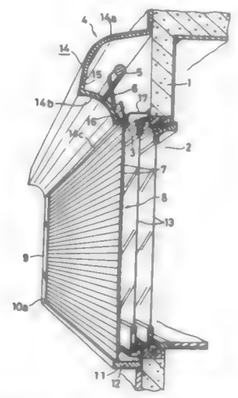
1. An awning having
an elongated awning case (2) formed with a cloth feed slot (11) extending over the entire length of said awning case,
said cloth feed slot defining an upper edge (12) and a lower edge (13);
a roll-up shaft (6) in said awning case;
an elongate awning cloth (7) fastened at a first end onto the roll-up shaft (6);
an elongate rigid drop member (8) secured to a second end of said awning cloth, remote from the first end thereof and extending across the width of said awning cloth;
a plurality of wall-attachable holding brackets (5) for attaching said awning case (2) to a wall;
articulated arms (9, 32, 33) coupled at first ends thereof to said drop member (8); and hinge means (29) defining

parallel hinge axes pivotably connecting second ends of said arms (9, 32, 33) to said wall-attachable holding brackets (5), to permit swinging movement of said arms about parallel axes at said respective wall attachable holding brackets; and wherein,
when the awning is closed and the awning cloth (7) is re-



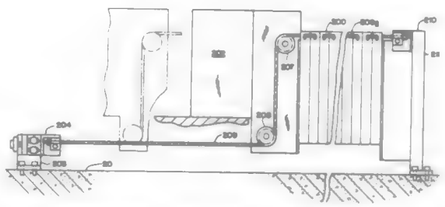
tained in said awning case (2), the drop member (8) covers the cloth feed slot (11);
the drop member (8) overlaps the upper edge (12) and the lower edge (13) of said cloth feed slot (11); and
the hinge means (29) are located below the awning case, and the articulated arms (9, 32, 33), when the awning is closed, are folded beneath the awning case (2).

5,365,990
HEAT INSULATING SHUTTER DEVICE
Kenji Ueda, Tokyo, Japan, assignor to Showa Orifa Co., Ltd., Tokyo, Japan
Filed Feb. 14, 1992, Ser. No. 835,302
Claims priority, application Japan, Feb. 18, 1991, 3-006664[U]
Int. Cl.[5] E06B *9/08*
U.S. Cl. 160—23.1 19 Claims



1. A heat insulating shutter device, comprising:
a coiled shutter housing adapted to be provided on an upper edge portion of an outside surface of a vertical wall of a building defining an opening in the wall, the housing having a lower end formed with a shutter outlet, a shutter winding-unwinding horizontal drive roller disposed within the housing, and a shutter attached to the drive roller;
said shutter including a multiplicity of slats connected to one another so as to be wound up to a coiled form;
a hollow side frame provided on each of opposite side edge portions of the wall defining the opening;
grooved shutter guides opposed to each other and each provided on inner walls of the side frames;
the shutter guides having movably fitted therein respective opposite side edge portions of the shutter;
the slats of the shutter and the side frames each having a hollow portion filled with a heat insulating material; and
wherein the shutter housing includes
(a) a cover having an upper sidewall portion, a front sidewall portion and a lower sidewall portion,
(b) said shutter outlet being in said lower sidewall portion,
(c) the upper sidewall portion being forwardly downwardly inclined over a substantial portion thereof and being fixable at its upper edge to the outside vertical wall of the building, and
(e) the lower sidewall portion providing a concave surface, thereby being rearwardly inclined downward over a substantial portion thereof in front of the shutter outlet.

5,365,991
CURTAIN SUPPORT
Robert M. Wright; Jerry D. Wisbey, and William T. Slaughter, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Jun. 25, 1993, Ser. No. 81,871
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 C 15 Claims



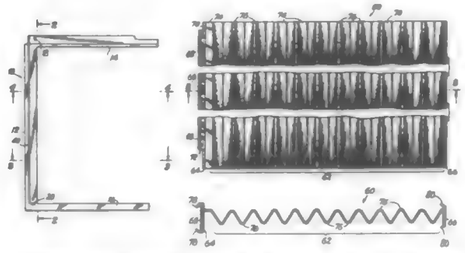
6. In a device having a relatively stationary member, a relatively movable member and an extensible curtain connected at respective opposite ends to the members, the curtain being supported across its span by a tensioned cable which runs between the stationary member and the movable member, a cable overload protector, comprising:
a cable of predetermined length, L;
means for guiding said cable;
means for connecting an end of said cable to one of said stationary member and movable member;
means for tensioning said cable to a first tension force, T_1;
means for releasing said cable end when a predetermined maximum cable tension force T_2 has been exceeded;
means for connecting a tether of predetermined length, L_2, to said cable end and to said one member and maintaining said cable within said cable guide means at a second tension force, T_3, when said cable end is released.

5,365,992
SELF-LOCKING ROOM AIR CONDITIONING PANELS
Henry L. Swain, Bridgewater, and Glenn J. Gray, Hampton, both of N.J., assignors to Illinois Tool Works, Inc., Glenview, Ill.
Filed Jun. 8, 1992, Ser. No. 895,088
Int. Cl.[5] E06B *7/02*
U.S. Cl. 160—84.1 E 18 Claims

1. Means for mounting a room air conditioning unit in a window opening comprising:
a C-shaped frame, said frame including a side member, an upper leg, and a lower leg; said upper leg and said lower leg being parallel to one another and substantially perpendicular to said side member, said upper leg and said lower

leg being adapted to straddle said room air conditioning unit from above and below, respectively, in said window opening; said side member, said upper leg and said lower leg each including a substantially U-shaped channel, said channel in said upper leg facing said channel in said lower leg, and said channel in said side member communicating with said channels in said upper leg and said lower leg; said channel in said side member having at least one pair of opposed ridges, said opposed ridges narrowing said channel in the space therebetween; and

a self-locking room air conditioning panel, said panel including a substantially planar first end member having a pair of inwardly curving edgewise flanges, a Z-fold central portion, and a second end member; said panel having a height substantially equal to the length of said channel in said side



member of said frame, so that said panel may be held in an upright position within said frame between said channel sin said upper leg and said lower leg; said first end member being adapted to be attached to said room air conditioning unit so that an air-tight seal may be formed between said panel and said air conditioning unit when said first end member is attached to said air conditioning unit; said second end member having a width substantially equal to the width of said channel in said side member of said frame, and being a substantially planar member having a pair of outwardly directed edgewise flanges, said flanges being engagable by said at least one pair of opposed ridges in said channel of said side member, so that said second end member may be locked within said channel of said side member by an interference fit of said flanges behind said opposed ridges.

5,365,993

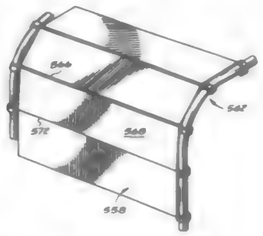
SECTIONAL DOOR

John F. Jellá, 1949 E. Carver, Tempe, Ariz. 85282

Continuation-in-part of Ser. No. 492,771, Mar. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 236,548, Aug. 25, 1988, abandoned. This application Jul. 1, 1991, Ser. No. 724,212

Int. Cl.[5] E05D *15/06*

U.S. Cl. 160—201 **6 Claims**



1. A sectional door assembly comprising:

a) an upper section having a lower longitudinal edge;

b) a lower section having an upper longitudinal edge;

c) hinge means for pivotably securing said lower section to said upper section for rotation about a first longitudinal axis; and

d) a guide assembly for affixing said door to a building and allowing reciprocal movement along an upright axis, said guide assembly including

i) a tubular guide portion securable to said building, said guide portion including a guiding surface,

ii) a guide member including

a semi-cylindrical body portion having a guide surface slidably encompassing said guiding surface, and

attachment means for securing said body portion to said door, said attachment means having a longitudinal axis coinciding with said first longitudinal axis.

5,365,994

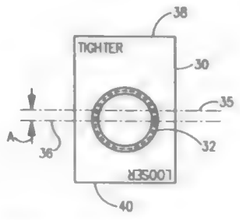
ADJUSTABLE FASTENER FOR TONNEAU COVER

Donald G. Wheatley, and Douglas A. Steward, both of Ann Arbor, Mich., assignors to Donald G. Wheatley, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 888,020, May 26, 1992, which is a continuation-in-part of Ser. No. 612,482, Nov. 14, 1990, Pat. No. 5,121,960. This application Feb. 22, 1993, Ser. No. 20,759

Int. Cl.[5] A47H *23/00*

U.S. Cl. 160—354 **14 Claims**



1. A cover assembly, comprising:

an elongated rail structure;

a fabric cover that is dimensionally changeable;

a first fastener attached to the fabric cover;

a second fastener suited to be coupled with the first fastener;

mounting structure slidably mounted along the rail structure and supporting the second fastener so as to be rotatable with the second fastener in a selected position along the rail structure between either a first coupling position or in a second coupling position, the second fastener in the first coupling position being spaced with respect to the location of the second fastener in the second coupling position in a direction transverse to the length of the rail structure, whereby the tautness of the cover may be adjusted to accommodate a change in dimensions of the cover according to whether the second fastener is coupled to the first fastener in said first coupling position or in said second coupling position.

5,365,995

METHOD OF CURING HOT BOX SAND CORES

Thomas E. Warner, Medina, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 172,996

Int. Cl.[5] B22C *7/06, 9/12*

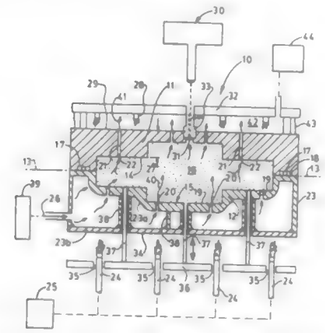
U.S. Cl. 164—12 **9 Claims**

1. A method of making resin bonded sand cores using heat activated catalysts comprising:

(a) providing a core box having (i) a thermally conductive cope and drag resiliently sealingly mating at essentially a horizontal parting plane, and (ii) core defining walls enclosing an interior and perforated by sand-filtered ports;

(b) blowing a sand, resin and liquid catalyst mixture into said interior to form a sand body;

(c) conductively heating at least the outer skin of said sand body to a first temperature; and



(d) essentially simultaneously with said conductive heating, convectively heating the remainder of said sand body by flowing a heated gas therethrough at a second temperature lower than said first temperature, said heated gas entering said sand body from the drag and exiting said sand body by way of said cope.

5,365,996

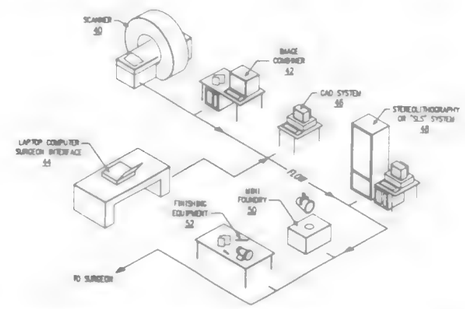
METHOD AND APPARATUS FOR MAKING CUSTOMIZED FIXATION DEVICES

David F. Crook, Garland, Tex., assignor to Amei Technologies Inc., Wilmington, Del.

Filed Jun. 10, 1992, Ser. No. 896,595

Int. Cl.[5] G06F *15/42;* **B29C** *35/08;* **B22C** *7/02*

U.S. Cl. 164—45 **15 Claims**



1. An apparatus for making a custom fixation device comprising:

means for scanning a treatment site and for producing image data representative of the treatment site;

means for generating a set of vectors defining a set of points, the set of vectors representative of the treatment site, the points associated with a surface, part of the surface representative of part of the treatment site, part of the surface hidden from view;

means for associating each point with a pole of a control polygon of a non-uniform rational B-spline;

means responsive to the non-uniform rational B-spline for constructing a model of the treatment site; and

means responsive to the model for constructing the fixation device.

5,365,997

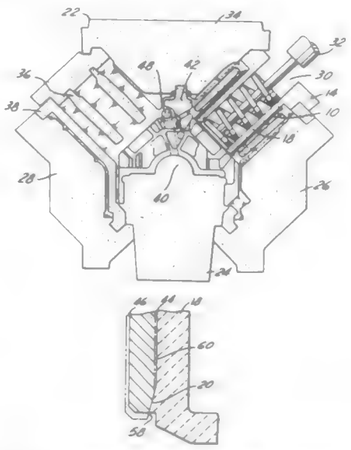
METHOD FOR PREPARING AN ENGINE BLOCK CASTING HAVING CYLINDER BORE LINERS

Gary D. Helgesen, Romulus; Robert G. Rentschler, Dearborn, and Thomas J. Heater, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1992, Ser. No. 972,793

Int. Cl.[5] B22D *19/08, 19/04*

U.S. Cl. 164—103 **10 Claims**



1. A method for preparing an engine block casting having mechanically bonded, cast-in place cylinder bore liners, comprising the steps of:

inserting the cylinder bore liners within a core box adapted for shaping a barrel slab core, the barrel slab core including barrel cores, the bore liners surrounding the barrel cores so that the liners are integrally associated with the barrel slab core by mechanical cooperation therebetween;

removing the barrel slab core with the cylinder bore liners from the core box, the cylinder bore liners being fixed in relation to the barrel slab core;

assembling a cylinder block sand mold package from the barrel slab core, end cores, crankcase cores, and side cores and other related cores;

heating the liners while they are within the cylinder block sand mold package by induction heating before filling the cylinder block mold package with molten metal casting to prevent premature freezing of the molten metal casting and thus assuring optimum integrity of mechanical bonding between a solidified cylinder block casting and the cylinder bore liners; and

filling the cylinder block sand mold package with molten metal casting.

5,365,998

MEASURING, MONITORING AND REGULATION SYSTEM FOR DETERMINING THE LOCKING PRESSURE OR COLUMN FORCE AND/OR THE CASTING FORCE IN PRESSURE DIE CASTING MACHINES

Friedrich Stummer, Fellbach, Germany, assignor to Maschinenfabrik Mueller-Weingarten AG, Weingarten, Germany

Filed Jun. 16, 1993, Ser. No. 77,408

Claims priority, application Germany, Jun. 17, 1992, 4219762; Sep. 25, 1992, 4232179

Int. Cl.[5] B22D *17/26, 17/32*

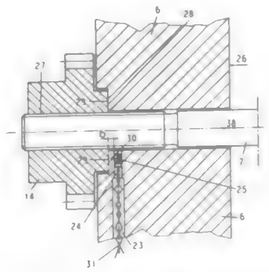
U.S. Cl. 164—154.1 **5 Claims**

1. In a diecasting machine including a transverse member;

a column passing through said transverse member; said column having a length dimension; and

a column nut mounted on said column and having an underface being in a face-to-face engagement with a surface area of said transverse member; said column nut applying, with said underface thereof, pressure forces on said surface area of said transverse member; the pressure forces being derived from forces generated in said diecasting machine, taken up by said column and transmitted by said column to said column nut;

the improvement comprising



(a) means for defining a measuring bore situated in said transverse member adjacent said surface area of said transverse member; said measuring bore having an axis oriented transversely to said length dimension of said column;

(b) a measuring plug accommodated in said measuring bore for detecting the pressure forces applied to said surface area by said underface of said column nut and for emitting signals representing magnitudes of said pressure forces; and

(c) regulating means for receiving said signals from said measuring plug and for regulating diecasting operations of the diecasting machine as a function of said signals.

5,365,999

METHOD FOR THE PROCESS CONTROL OF A PRESSURE DIECASTING MACHINE AND AN APPARATUS FOR CARRYING OUT THE METHOD

Friedrich Stummer, Fellbach; Rolf Frey, Winterbach; Albert Reinhardt, Berg, and Wolfgang Lutz, Kernen, all of Germany, assignors to Maschinenfabrik Mueller-Weingarten AG, Weingarten, Germany

Filed May 10, 1993, Ser. No. 58,254

Claims priority, application Germany, Jun. 5, 1992, 4218556

Int. Cl.[5] B22D *17/32*

U.S. Cl. 164—457 **14 Claims**

1. A pressure diecasting machine, comprising:

a casting chamber for a metal bath;

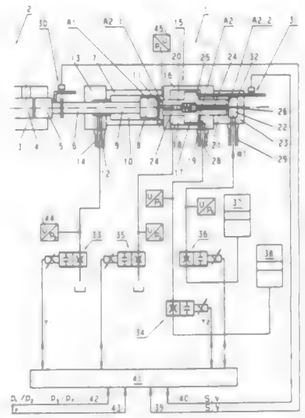
an injection plunger movably disposed within the casting chamber;

a pressing cylinder having a pressure chamber, disposed behind the casting chamber and provided with a ram for driving the injection plunger, the pressure chamber being divided by the ram so that there is a front pressure chamber in front of the ram;

a multiplier device having a multiplier plunger, a closed multiplier cylinder casing divided into front and first and second rear cylinder pressure chambers by the multiplier plunger, disposed behind the pressing cylinder, the multiplier plunger being guided therein, the multiplier plunger including an operative rear, circular annular pressure surface A_2 in the closed multiplier cylinder casing, a first, front plunger rod having an operative front pressure surface $A_{2.1}$ leading into the pressure chamber of the pressing cylinder, and a second, rear plunger rod having an operative pressure surface $A_{2.2}$ leading into the second rear cylinder pressure chamber, the multiplier plunger together with the two plunger rods, which have a common longitudinal axis, having a longitudinal bore containing a nonreturn valve;

a dual-circuit casting drive system for controlling a pressure medium which acts directly on the ram and which acts on the multiplier plunger;

wherein the dual-circuit casting drive system includes a valve control system which comprises quick-adjustment servo-proportional valves, wherein one of the quick-adjustment servo-proportional valve is provided in each case at least in an inlet/outlet to the pressing cylinder front pressure chamber in front of the ram and in an inlet/-out of the first rear cylinder pressure chamber behind the multiplier plunger;



wherein displacement/speed measuring means are provided for measuring movements of the ram, and thus of the injection plunger, and movements of the multiplier plunger, and pressures in at least one of the pressing cylinder and the multiplier device pressure chambers;

wherein a computer is provided to control the valve control system servo-proportional valves in dependence on one another and in dependence on the movements of the ram and the multiplier plunger, and in dependence on pressures in the mold cavity, so that an injection operation during at least one of a prefilling phase, a mold filling phase, and a dwell phase is optimized by a controlled movement of the ram in conjunction with the movement of the multiplier plunger.

5,366,000

METHOD AND APPARATUS FOR FORMING RINGS FROM AN ACTIVE BRAZING ALLOY

Peter Reimann, Buckten; Heinz Breitenstein, Bättwil, and Stephan Messmer, Allschwil, all of Switzerland, assignors to Endress u. Hauser GmbH u. Co., Germany

Filed Mar. 2, 1993, Ser. No. 25,264

Claims priority, application European Pat. Off., Mar. 5, 1992, 92810172.4

Int. Cl.[5] B22D *11/06*

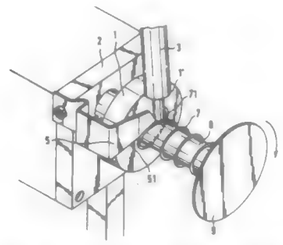
U.S. Cl. 164—463 **8 Claims**

1. A method of forming rings of substantially uniform thickness from an active brazing allow by melt-spinning the liquid alloy, the method comprising the following steps:

liquefying the alloy in a crucible having a lateral opening whose height is approximately equal to the width of the ring material;

forcing the liquid alloy out of the crucible onto a side surface of a metal drum of high thermal conductivity at a radial distance from the drum center approximately equal to the ring diameter, said metal drum rotating at a high circumferential velocity at a distance from the crucible approximately equal to the ring thickness;

lifting the active brazing alloy which has solidified on thermal drum into ring material off the metal drum after an approximately quarter to three-quarter turn of the metal drum to form a ring helix;



guiding the ring helix around a lateral, coaxial extension of the metal drum which serves as a winding mandrel, and has an end flange and a diameter slightly smaller than the inner diameter of the rings; and

cutting off rings from the ring helix.

3. The method of claim 1, wherein the lifting step is performed by a sharp-edged mechanical deflector.

5,366,001

METHOD OF MANUFACTURING ROLLED MATERIAL FROM OXYGEN-FREE COPPER

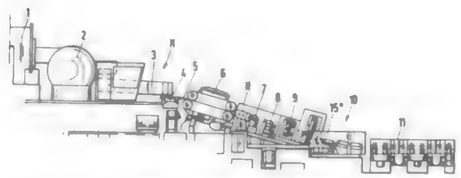
Lev P. Freedman, Uliza Funsie; Yermek B. Khafizov, Uliza Gorkowo, both of Kazakhstan; Elmar Buch, Essen, Germany; Kurt Siebel, Kreuztal, Germany, and Herbert Berendes, Mülheim, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Oct. 30, 1992, Ser. No. 969,884

Claims priority, application Germany, Oct. 30, 1991, 4136085

Int. Cl.[5] B22D *11/12*

U.S. Cl. 164—475 **9 Claims**



1. A method of manufacturing rolled material of oxygen-free copper in a casting and rolling plant including a melting plant, a continuous casting mold and a subsequently arranged continuous rolling mill, wherein the continuous casting mold produces a billet which leaves the continuous casting mold in a straight line, the method comprising reducing the billet in at least one shaping pass and subsequently bending the billet into a horizontal direction.

5,366,002

APPARATUS AND METHOD TO ENSURE HEAT TRANSFER TO AND FROM AN ENTIRE SUBSTRATE DURING SEMICONDUCTOR PROCESSING

Avi Tepman, Cupertino, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed May 5, 1993, Ser. No. 58,855

Int. Cl.[5] B25B *11/00;* **F28F** *7/00*

U.S. Cl. 165—1 **13 Claims**

1. An apparatus useful in semiconductor processing of substrates, said apparatus comprising:

a) a substrate support platform having a substrate-facing surface, said substrate-facing surface comprising:

1) at least one fluid supply means, whereby a heat transfer fluid can be supplied to said substrate-facing surface;

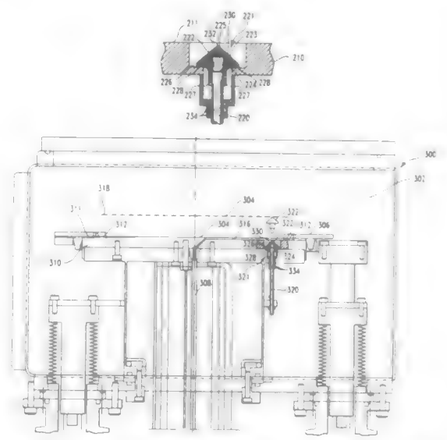
2) a continuous, platform fluid flow barrier which extends upward from said substrate-facing surface at a location such that contact between said continuous platform fluid flow barrier and a substrate placed on said support platform occurs near the edge of said substrate;

3) at least one lift finger opening through said substrate-facing surface, through which a substrate lift finger can be operated; said lift finger opening being located on said substrate-facing surface interior from said continuous, platform fluid flow barrier; and

b) at least one lift finger which can be extended upward from said substrate-facing surface of said support platform and which is positioned to operate through said lift finger opening, wherein said lift finger comprises:

1) a lift finger pin member; and

2) a lift finger sealing cover which extends from said lift finger pin member to a contact surface on said support platform during semiconductor processing, whereby a lift finger fluid flow barrier is formed by said contact surface between said lift finger sealing cover and said support platform surface so that a heat transfer fluid



supplied to said substrate-facing surface does not flow through said lift finger opening.

10. A method useful in obtaining even and repeatable heat transfer over essentially an entire substrate used in a semiconductor process, said method comprising the steps of:

a) providing a support platform, upon which a substrate to be processed is positioned;

b) attaching said substrate to said support platform;

c) causing a build up of heat transfer fluid between said substrate and said support platform;

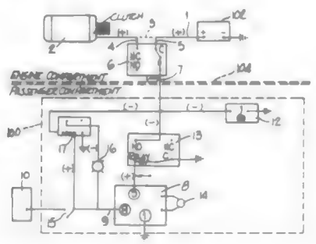
d) controlling the leakage of heat transfer fluid from between said substrate and said support platform using a continuous, platform fluid flow barrier located near the edge of said substrate, wherein said platform fluid flow barrier is in contact with both said support platform and said substrate to be processed;

e) locating at least one lift finger, which can be used to raise substrate above said support platform, interior to said continuous, platform fluid flow barrier; and

f) providing a means for preventing fluid flow through at least one opening on the surface in said support platform through which said at least one lift finger is operated, wherein said means for preventing flow of said heat transfer fluid through said lift finger opening comprises a lift finger sealing cover which contacts a surface upon said

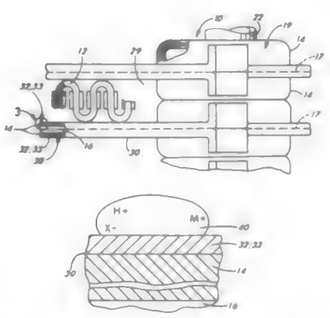
support platform in a manner which creates a barrier to the flow of fluid through said at least one lift finger opening.

5,366,003
AUTOMOTIVE AIR CONDITIONER COMPRESSOR CONTROLLER
Vito Raso, 2191 South Newark Way, Aurora, Colo. 80014
Filed Mar. 3, 1993, Ser. No. 25,938
Int. Cl.[5] F25B *19/00*
U.S. Cl. 165—2 **4 Claims**



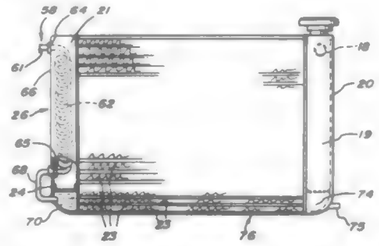
1. An automotive air conditioner system employing a continuously operating engine-driven refrigerant compressor, heater, and blower, but not employing a temperature sensor for sensing an inside temperature, said automotive air conditioner system being of the type that is manually regulated to effect a desired mixing of cold air form the refrigerant compressor and hot air from the heater, the improvement comprising adjustable timer means coupled to the refrigerant compressor for repeatedly cycling the refrigerant compressor on and off in accordance with a timed duty cycle that is adjustable by the user.

5,366,004
BIOSTATIC/BIOCIDAL COATINGS FOR AIR CONDITIONER CORES
David P. Garner, Sterling Heights; Robert A. Ottaviani, Washington; Dexter D. Snyder, Birmingham; James H. Lindsay, Fenton; June-Sang Siak, Troy, and Richard M. Schreck, Bloomfield Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 892,429, Jun. 1, 1992, abandoned, which is a continuation of Ser. No. 753,244, Aug. 30, 1991, abandoned. This application Mar. 4, 1994, Ser. No. 205,752
Int. Cl.[5] F28F *19/02*
U.S. Cl. 165—133 **4 Claims**



1. An air conditioning evaporator of brazed aluminum alloy fin and plate construction in which a plurality of said plates define an internal refrigerant flow passage and a plurality of said fins together with said plates also define an external surface in heat exchange relationship with said refrigerant passage, whereby in the operation of said evaporator moisture-containing air flows over said external surfaces and is cooled and dehumidified by the condensation of water from said air onto said external surface, said evaporator further comprising a coating applied directly to at least a portion of said external surface, said coating consisting essentially of a thermoset binder resin having dispersed therein particles of a microbial growth inhibitor precursor selected from the group consisting of oxygen-containing inorganic compounds of copper, silver and zinc, said inhibitor particles being substantially insoluble in water at a pH of 7 but soluble in acidic aqueous condensate forming on said evaporator surface to function in said dissolved form as said inhibitor.

5,366,005
HEAT EXCHANGER ASSEMBLY INCORPORATING A HELICAL COIL OIL COOLER
Prasad S. Kadle, Getzville, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 28, 1993, Ser. No. 82,636
Int. Cl.[5] F28D *7/02*
U.S. Cl. 165—140 **15 Claims**



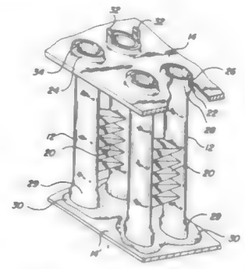
1. An integrated heat exchanger for the cooling of first and second cooling fluids for a motor vehicle, said heat exchanger characterized by:
- a first tank member having a first chamber constructed for receiving said first cooling fluid;
- a plurality of cooling tubes extending from said first chamber for allowing said first cooling fluid to pass therethrough and be cooled;
- said first tank member having a second chamber constructed for receiving said second fluid, said first chamber and second chamber being sealed from one another;
- at least one second fluid cooling tube extending from said second chamber for allowing said second fluid to pass therethrough and be cooled;
- said plurality of cooling tubes extending from said first chamber and said at least one second fluid cooling tube having air centers interposed therebetween for transferring heat from said tubes; and
- a first coil tube mounted within said first chamber, said coil tube having a first end means, said coil tube having a second end means fluidly connected to said second chamber.

6. A heat exchanger assembly for the cooling of a first, second and third fluids for a motor vehicle said heat exchanger characterized by:
- a first tank member having an inlet for receiving said first fluid;
- a plurality of cooling tubes extending from said first tank for allowing said first fluid to pass therethrough and be cooled;
- a coil tube mounted within said first tank, said coil tube having a first open end for connection with tubing for transporting a second fluid, said coil tube having a second open end for allowing said second fluid to pass through said coil;

- a second tank having a first chamber for receiving and delivering said second fluid;
- at least one second fluid cooling tube extending from said second chamber for allowing said second fluid to pass therethrough to be cooled;
- said second tank member having a second chamber with a passage for passing a third fluid, said first chamber and second chamber being sealed from one another; and
- a plurality of cooling tubes extending from said second chamber for allowing said third fluid to pass therethrough and be cooled.

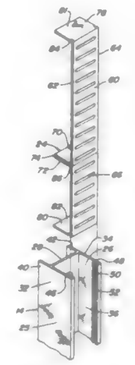
11. An oil cooler assembly for an automotive motor, said assembly characterized by;
- a first coil tube mounted within a tank of a radiator for a motor;
- said coil tube having an inlet end means for receiving lubricant fluid from without said tank and for allowing heat transfer from said lubricant fluid within said coil tube and through said coil tube to coolant flowing through said radiator; and
- said coil tube having an outlet end for transferring said lubricant fluid from within said coil to an inlet of an air-to-oil cooler where said lubricant fluid is further cooled by air flow about said air-to-oil cooler.

5,366,006
TAB JOINT BETWEEN COOLANT TUBE AND HEADER
James W. B. Lu, West Bloomfield; Norman F. Costello, Farmington Hills, both of Mich.; Kevin E. Stay, Grapevine, Tex., and Herbert Damsohn, Aichwald, Germany, assignors to McCord Heat Transfer Corporation, Walled Lake, Mich. and Behr GmbH & Co., Stuttgart, Germany
Filed Mar. 1, 1993, Ser. No. 24,414
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 **11 Claims**



1. A heat exchanger (10) for exchanging heat with a cooling fluid comprising:
- first and second fluid tanks (16, 16');
- first and second headers (14, 14') fixedly secured to said tanks (16, 16'), respectively, and having a plurality of apertures (22) extending therethrough;
- each of said apertures (22) including an outwardly extending ferrule (24) disposed circumferentially about said apertures (22);
- a plurality of fluid coolant tubes (12) having first (28) and second (29) ends connected between said first and second tanks (16, 16') for communicating fluid therebetween;
- a plurality of joints (26) formed by said ends (28, 29) of said coolant tubes (12) disposed within said apertures (22) of said headers (14, 14');
- each of said joints (26) including sealant means (30) for sealing flow of fluid through said joints (26) between said headers (14, 14') and said coolant tubes (12); and
- each of said joints (26) including at least one tab (32) extending from said ferrule (24) and deformed over said end (28, 29) of said coolant tube (12) to mechanically lock said coolant tube (12) to said header (14, 14').

5,366,007
TWO-PIECE HEADER
Scott L. Hutto, and John M. McCrady, both of Burleson, Tex., assignors to Wynn's Climate Systems, Inc., Ft. Worth, Tex.
Filed Aug. 5, 1993, Ser. No. 102,694
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 **18 Claims**



1. A heat exchanger comprising in combination:
- a pair of header channels, each header channel having a hollow interior and a longitudinally extending open portion;
- a pair of header plates, each header plate being substantially flat and having opposite side edges and a series of holes extending along the length of the plate;
- retaining means for securing each header plate to each of the header channels so that the header plate extends over the open portion;
- a fluid partition joined to and integral with at least one of the header plates which projects within the interior of at least one of the header channels for diverting fluid flow through the interior of said at least one of the header channels, the fluid partition being formed by a folded portion of said at least one of the header plates; and
- a plurality of generally parallel tubes having opposite ends, the tubes being disposed between the pair of header channels so that the ends of each tube extend through the holes of each header plate.

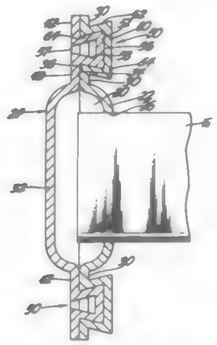
5,366,008
METHOD OF MANUFACTURING HEADERED CONDENSERS
Prasad S. Kadle, Getzville, and Larry A. O'Keefe, Newfane, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 16, 1993, Ser. No. 106,663
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—173 **1 Claim**

1. A heat exchanger apparatus of the type including a pair of longitudinal tank units supporting a core therebetween, the core having a plurality of parallel flow tube passes extending between the tank units and including air centers connected between for directing air flow therethrough and conductive heat transfer with the tube passes, said apparatus comprising:
- a pair of tank units providing a fluid chamber therein in fluid communication with the tube passes;
- said tank units comprising a separate header and tank each having flat coplanar flanges extending along the periphery of said header and tank providing parallel flat abutting surfaces along the periphery to seal the tank to the header forming the tank unit during brazing thereof, said abutting surfaces of said flanges of the header being parallel to said

flanges of said tank for providing uniform contact surfaces therealong;

said flanges including locking means extending through and along the parallel surfaces of the flanges for locking the tank to the header with the flat flanges adjacent one another;

said header including an opening through the flange thereof, said locking means including a projection extending from the flange of the tank and through the opening of said



header to maintain the header adjacent the tank and said uniform contact surfaces around said opening and said projection;

said locking means including a longitudinal pocket formed through said flange of said header extending from said opening for receiving said projection therein, said projection extending from said abutting surface of said flange of said tank, said projection and pocket having a complimentary configuration to provide abutting surfaces between said pocket and said projection.

5,366,009

GRAVEL PACK WELL COMPLETIONS WITH AUGER-LINER

Holley M. Cornette, Houston, and Michael H. Johnson, Spring, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 12, 1991, Ser. No. 668,003

Int. Cl.[5] E21B *43/04*

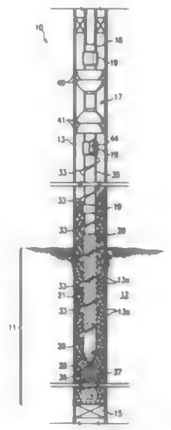
U.S. Cl. 166—51 **19 Claims**

1. An auger-liner assembly for gravel-pack well completions comprising:

a fluid-permeable liner;

a perforated, torque sleeve positioned over said liner and having an upper end affixed to said liner;

a nose sub affixed to the lower end of said torque sleeve whereby a substantially amount of any torque applied to said liner will be transmitted to said nose sub through said sleeve; and



an auger blade secured to and extending along said torque sleeve and said nose sub.

5,366,010

RETRIEVABLE BRIDGE PLUG AND A RUNNING TOOL THEREFOR

Klaas J. Zwart, Drumgarth, Inchgarth Road, Cults, Aberdeen AB1 9NX, United Kingdom

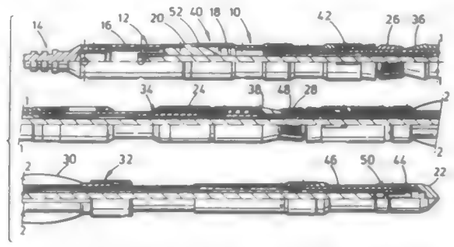
PCT No. PCT/GB92/00605, § 371 Date Oct. 5, 1993, § 102(e) Date Oct. 5, 1993, PCT Pub. No. WO92/17681, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 3, 1992, Ser. No. 129,100

Claims priority, application United Kingdom, Apr. 6, 1991, 9107282

Int. Cl.[5] E21B *23/00*

U.S. Cl. 166—120 **21 Claims**



1. A tool for downhole use in oil and gas wells comprising: a body having first and second locking means moveable between a retracted configuration to permit movement of the tool through a bore and a radially extended configuration for locking engagement with a bore wall, the first locking means being mounted on a locking assembly via biasing means; a resilient ring member between the locking means and compressible into sealing engagement with a bore wall by relative axial movement of the locking means towards each other and at least the first locking means being moveable axially on the body to provide compression of the ring member; and cam means between the ring member and the first locking means for extending the first locking means from the retracted configuration into the extended configuration, the setting force to compress the ring member into engagement with the bore wall being applied via the locking assembly and the cam means, the proportion of said setting force transmitted to said first locking means being limited by said biassing means.

5,366,011

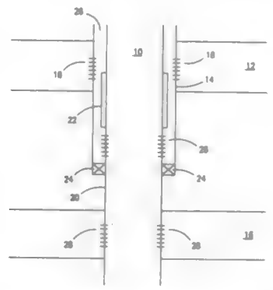
METHOD FOR PRODUCING HIGH WATER-CUT GAS WITH IN SITU WATER-DISPOSAL

Alfred R. Jennings, Jr., Plano, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 9, 1993, Ser. No. 164,271

Int. Cl.[5] E21B *43/12, 43/38*

U.S. Cl. 166—265 **5 Claims**



1. A method for producing high water-cut gas comprising:

a) placing a casing into a formation so as to penetrate a gas producing interval where gas from said interval contains a substantial amount of water therein;

b) perforating the casing so as to fluidly communicate said casing with the gas producing interval;

c) directing a tubing through said casing thereby penetrating a lower non-productive zone and forming an annulus with the casing from the surface for a desired distance below the gas producing interval;

d) perforating said tubing at a first location below the gas producing interval thereby fluidly communicating said tubing with the gas producing interval;

e) perforating said tubing at a second location so as to fluidly communicate the tubing with the non-productive interval;

f) placing a production packer below perforations in the first location and between said casing thereby closing the lower end of the annulus and causing the perforated first location to fluidly communicate with the gas producing interval along with the non-productive interval;

g) positioning a sliding sleeve in the annulus around the tubing so as to open or close perforations as desired in said first location; and

h) producing gas from the producing interval to the surface via the perforated casing while water from that interval flows into the non-productive interval via perforation in the second location.

5,366,012

METHOD OF COMPLETING AN UNCASED SECTION OF A BOREHOLE

Wilhelmus C. M. Lohbeck, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 7, 1993, Ser. No. 72,290

Claims priority, application European Pat. Off., Jun. 9, 1992, 92201669.6

Int. Cl.[5] E21B *23/00, 29/08, 43/10*

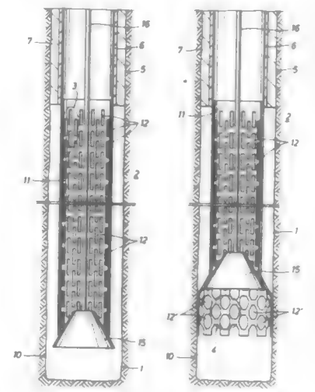
U.S. Cl. 166—277 **9 Claims**

1. A method of completing an uncased section of a borehole in an underground formation comprising the steps of:

(a) placing at a predetermined position in the borehole a slotted liner provided with overlapping longitudinal slots;

(b) fixing the slotted liner; and

(c) moving through the slotted liner an expansion mandrel which is tapered in the direction in which the mandrel is moved through the slotted liner, which mandrel has a largest diameter which is larger than the inner diameter of the slotted liner whereby the inner diameter of the slotted



liner is increased to a diameter that is greater than the largest diameter of the mandrel and slots of the slotted liner are expanded.

5,366,013

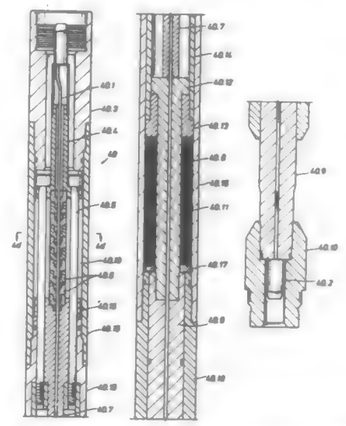
SHOCK ABSORBER FOR USE IN A WELLBORE INCLUDING A FRANGIBLE BREAKUP ELEMENT PREVENTING SHOCK ABSORPTION BEFORE SHATTERING ALLOWING SHOCK ABSORPTION AFTER SHATTERING

A. Glen Edwards, Hockley; Joe C. Hromas; Klaus B. Huber, both of Sugarland, and Edward G. Smith, Jr., San Leon, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 955,816, Oct. 2, 1992, Pat. No. 5,318,126, which is a continuation-in-part of Ser. No. 858,400, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 32,817, May 16, 1993, Pat. No. 5,293,940. This application May 5, 1993, Ser. No. 57,948

Int. Cl.[5] E21B *43/116*

U.S. Cl. 166—297 **21 Claims**



4. A method for absorbing a shock, comprising the steps of: propagating a detonation wave through a detonating cord, said detonating cord being disposed within a frangible member;

shattering said frangible member when said detonation wave in said detonating cord passes through said frangible member;

receiving a shock in a shock absorption member only after said frangible member shatters; and

absorbing said shock when said shock is received in said shock absorption member.

16. A shock absorber adapted to be disposed in a wellbore for absorbing a shock, comprising:

shock absorbing means for absorbing said shock;

a frangible apparatus having a hollow interior; and

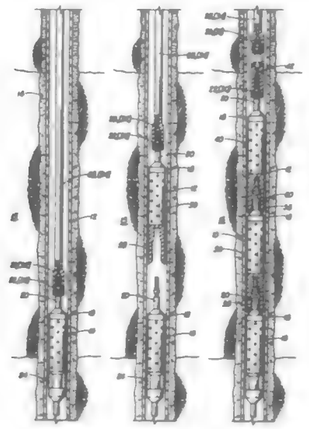
a detonating cord adapted for conducting a detonation wave and disposed within the hollow interior of said frangible apparatus, said frangible apparatus shattering when said detonation wave conducting in said detonating cord passes through the hollow interior of said frangible apparatus, said shock absorbing means absorbing said shock but only after said frangible apparatus shatters.

5,366,014

METHOD AND APPARATUS FOR PERFORATING A WELL USING A MODULAR PERFORATING GUN SYSTEM

Flint R. George, Flower Mound, Tex., assignor to Halliburton Company, Houston, Tex.

Filed Nov. 4, 1993, Ser. No. 148,145
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—297 **18 Claims**



1. A method of perforating a casing of a well, said method comprising the steps of:

lowering a first perforating gun section into the casing;

supporting said first perforating gun section in said casing adjacent to a first portion of a subsurface formation to be perforated;

lowering an additional perforating gun section into said casing;

supporting said additional perforating gun section on said first perforating gun section adjacent to another portion of said subsurface formation; and

firing said perforating gun sections and perforating said casing.

5,366,015

METHOD OF CUTTING HIGH STRENGTH MATERIALS WITH WATER SOLUBLE ABRASIVES

Jim B. Surjaatmadja; Gary W. Bradley, and Brett L. Tisch, all of Duncan, assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 12, 1993, Ser. No. 151,484
Int. Cl.[5] E21B *43/114*
U.S. Cl. 166—298 **25 Claims**

1. A method of forming at least one opening in a structural substrate comprising:

providing a supply of a preselected liquid;

providing a supply of preselected abrasive particles which are soluble in the liquid;

combining the soluble abrasive particles and the liquid to form an abrasive particle laden solution having a predetermined concentration ratio;

pressurizing the abrasive particle laden solution to a predetermined pressure;

routing the abrasive particle laden solution to at least one jetting nozzle capable of expelling the abrasive-laden solution; and

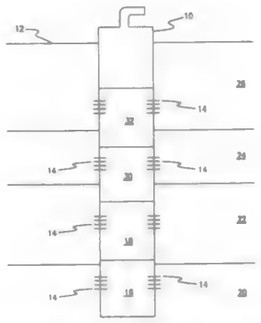
subjecting the substrate in which an opening is to be formed to the expulsion of the abrasive particle laden solution at a distance and for a period of time necessary to form an opening therethrough.

5,366,016

USE OF VARIABLE DENSITY CARRIER FLUIDS TO IMPROVE THE EFFICIENCY OF SCALE DISSOLUTION

Eleanor R. Fieler, Dallas; Alfred R. Jennings, Jr., Plano, and James M. Paul, DeSoto, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 10, 1993, Ser. No. 164,861
Int. Cl.[5] E21B *37/00, 43/28*
U.S. Cl. 166—312 **11 Claims**



1. A method to improve the efficiency of scale dissolution in a formation containing multiple productive intervals where variable density carrier liquids are utilized comprising:

a) directing into a perforated wellbore a liquid composition sufficient to solubilize an alkaline-earth metal sulfate scale deposit from perforations and productive intervals communicating therewith with which composition is of a known density; and

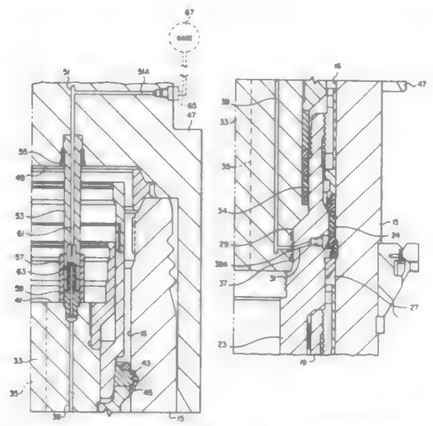
b) directing into said wellbore on top of said first liquid a second liquid composition sufficient to solubilize an alkaline-earth metal sulfate scale in a higher perforated interval of said wellbore which communicates fluidly with said productive intervals where said second liquid has a density less than that of the first liquid thereby efficiently removing said scale deposit from said perforations and productive intervals.

5,366,017

INTERMEDIATE CASING ANNULUS MONITOR

Robert K. Voss, Jr., Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Sep. 17, 1993, Ser. No. 122,994
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—368 **14 Claims**



1. In a subsea well having a wellhead housing secured to a string of outer casing, a lower casing hanger landed in the wellhead housing and secured to a string of intermediate casing extending through and below the outer casing, an upper casing hanger sealed by a casing hanger seal in the wellhead housing above the lower casing hanger and secured to a string of inner casing extending through and below the intermediate casing, the upper casing hanger having a bore which sealingly receives a lower end of a tubing hanger assembly, and a subsea tree assembly which mounts on the wellhead housing, the improvement comprising:

casing hanger communication passage means extending through the upper casing hanger from the exterior of the upper casing hanger below the casing hanger seal to an outlet in the bore of the upper casing hanger for communicating annulus pressure between the inner casing and intermediate casing to the bore of the upper casing hanger; and

tubing hanger and tree assembly communication passage means in communication with the outlet of the casing hanger communication passage means, extending through at least a portion of the tubing hanger assembly and tree assembly to the exterior of the tree assembly, for communicating the annulus pressure to a production monitoring equipment.

5,366,018

MINIATURE ROPE SOCKET ASSEMBLY FOR COMBINED MECHANICAL AND ELECTRICAL CONNECTION IN A BOREHOLE WIRELINE

Donald H. Van Steenwyk, San Marino, and Raymond W. Teys, Pismo Beach, both of Calif., assignors to Scientific Drilling International, Houston, Tex.

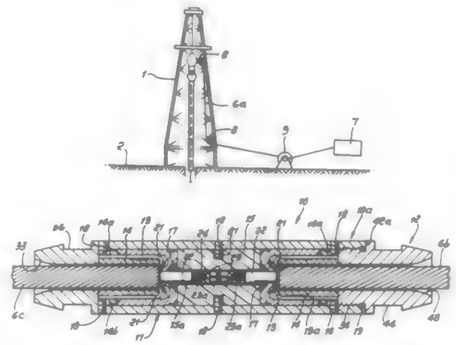
Filed Aug. 16, 1993, Ser. No. 106,441
Int. Cl.[5] E01B *23/00;* H01R *13/00*
U.S. Cl. 166—385 **27 Claims**

1. A rope socket assembly for making a combined electrical and mechanical connection in a wireline having an inner electrical conductor, a coaxial insulation layer about the conductor, and an outer protection wire covering about the insulation layer for survey, steering or logging use in a borehole, said wireline having opposite end portions and associated inner conductor end portions comprising:

a) a rope socket housing having a bore to receive said opposite end portions of said wireline,

b) two tubular threading plugs positioned in said bore for receiving said respective end portions of the wireline,

c) two sleeves positioned in said bore to extend about the respective plugs, and



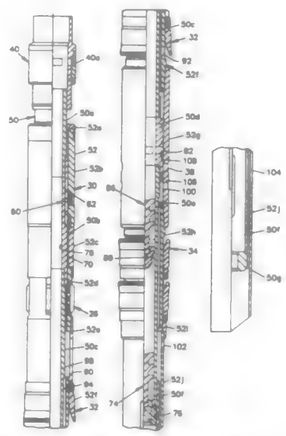
d) an insulator block received in said bore between said sleeves, and means within said block for establishing electrical connection between said inner conductor end portions associated with said wireline end portions.

5,366,019

HORIZONTAL INFLATABLE TOOL

Robert T. Brooks, Houston, Tex., assignor to CTC International, Houston, Tex.

Filed Mar. 30, 1993, Ser. No. 40,345
Int. Cl.[5] E21B *33/00*
U.S. Cl. 166—387 **15 Claims**



1. A method for inflating an inflatable packer in a well bore where the inflatable packer is on a string of pipe in the well bore and inflatable to seal off a well bore in response to an inflation liquid being admitted through an pressure inflation valve opening to a central bore in the inflatable packer, said method comprising the steps of:

lowering a straddle inflation tool on a string of tubing through the string of pipe to a communication location within the central bore of the inflatable packer where the pressure inflation valve in said inflatable packer can be

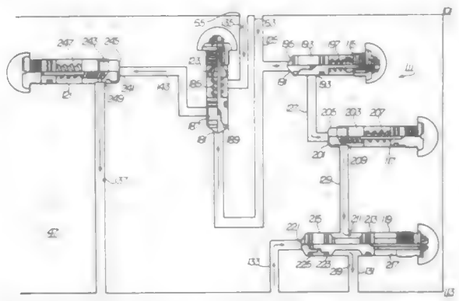
placed in fluid communication with a flow valve in said inflation tool;
coupling the inflation tool to said inflatable packer in the communication location to prevent movement by positively locking elements on the inflation tool in a profile recess in the inflatable packer so that manipulation of the string of tubing can be used with the inflation tool to operate the flow valve in said inflation tool;
opening the flow valve in said inflation tool by a longitudinal movement of the string of tubing relative to the inflation tool;
supplying an inflation liquid through said string of tubing to said flow valve in said inflation tool to the pressure inflation valve in said inflatable packer for inflating said inflatable packer to seal off the well bore;
after inflating said inflatable packer, closing the flow valve in said inflation tool by a longitudinal movement of said string of tubing; and
uncoupling the inflation tool from said inflatable packer so that said inflation tool can be moved with the string of tubing to another location.

5,366,020

REINFLATABLE EXTERNAL CASTING PACKER AND METHOD OF CASING

Vel Berzin, and John R. Abarca, both of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 788,349, Nov. 6, 1991, Pat. No. 5,201,369.
This application Apr. 12, 1993, Ser. No. 46,429
The portion of the term of this patent subsequent to Apr. 13, 2010, has been disclaimed.
Int. Cl.[5] E21B *33/127*
U.S. Cl. 166—387 **26 Claims**



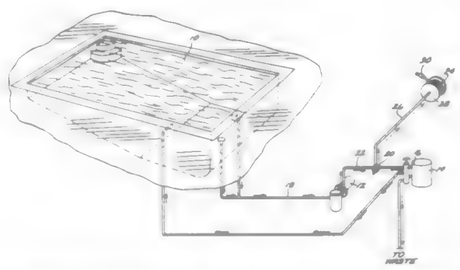
1. A method of casing an openhole wellbore, comprising the steps of:
providing a tubular casing string, which defines a central casing bore having an internal casing diameter, for placement in said openhole wellbore;
providing at least one inflatable packer which includes a mandrel which defines a central packer bore having an internal mandrel diameter substantially similar to said internal casing diameter of said tubular casing string, an inflatable wall disposed exteriorly of said mandrel and at least in-part defining an inflation chamber disposed exteriorly of said mandrel, and a valve system for selectively directing pressurized fluid from said central packer bore of said mandrel to said inflation chamber;
coupling said at least one inflatable packer in said tubular casing string;
placing said tubular casing string and said at least one inflatable packer in a selected location within said openhole wellbore;
directing a wellbore fluid through said valve system of said at least one inflatable packer and into said inflation chamber;
inflating, with said wellbore fluid, said inflatable wall of said at least one inflatable packer radially outward from said mandrel into at least a sealing engagement with said openhole wellbore;
closing said valve system of said at least one inflatable packer to prevent further inflation of said inflatable wall;
lowering a wellbore tool into said wellbore and within said tubular casing string to a position for reinflating said at lease one inflatable packer; and selectively directing wellbore fluid through said valve system of said at least one inflatable packer to reinflate said inflatable wall of said inflatable packer.

5,366,021

FIRE FIGHTING EQUIPMENT FOR USE IN ASSOCIATION WITH HOMES EQUIPPED WITH SWIMMING POOLS

Lynn Coleman, Scottsdale, Ariz., assignor to Aquapad USA, Inc., Huntington Beach, Calif.

Filed Apr. 23, 1993, Ser. No. 52,367
Int. Cl.[5] A62C *35/68*
U.S. Cl. 169—16 **15 Claims**



1. Equipment for providing water for use in fire emergency in combination with a building, a reservoir for water which is maintained in association with the building, conduits for water which permit circulation of the water of the reservoir through a filter, and a pump in operative association with the conduits for circulating the water through the filter, the water being circulated through the filter by the pump during normal use of the pump and filter when there is no fire emergency, the equipment comprising:
a fire hose, and
valve means operatively connected with the conduits for normally allowing circulation of the entire water output of the pump through the filter and back into the reservoir during normal use of the pump and for optionally diverting a substantial amount of the water output of the pump into the fire hose for emergency use, the fire hose being fluidly connected to the valve means.

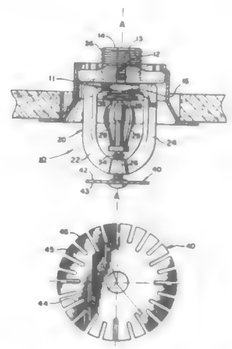
5,366,022

EXTENDED COVERAGE CEILING SPRINKLERS AND SYSTEMS

George G. Meyer; Stephen J. Meyer, both of Malvern, and George S. Polan, Harleysville, all of Pa., assignors to Central Sprinkler Corporation, Lansdale, Pa.

Continuation-in-part of Ser. No. 769,917, Sep. 30, 1991, abandoned. This application Apr. 29, 1992, Ser. No. 875,928
Int. Cl.[5] A62C *37/08*
U.S. Cl. 169—37 **80 Claims**

1. A ceiling sprinkler comprising:
a generally tubular body having an outlet orifice at one end, the tubular body having a K factor greater than 8.7, where K equals the flow of water in gallons per minute through the tubular body divided by the square root of the pressure of the water fed into the tubular body in pounds per square inch;
a plug at least generally closing the orifice;
a triggering element releasably retaining the plug closing the orifice;
a deflector having a major surface facing the orifice; and
a support coupling the deflector and the sprinkler body with the major surface spaced from and generally aligned with the orifice so as to be impacted by a flow of water issuing in a column from the orifice upon release of the plug, the major surface being substantially planar with a generally



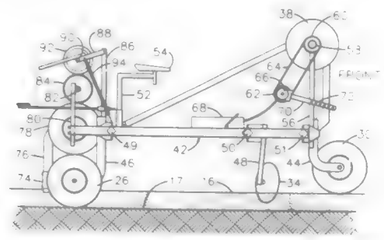
circular outer perimeter, a plurality of slots angularly spaced around a center of the major surface, each of the slots extending through the deflector and at least generally radially inwardly from the perimeter to no closer than one-half inch from the center of the major surface, the major surface having an outer diametric dimension of at least 1.7 inches and a central annular flat area facing the outlet with an outer diametric dimension greater than 0.8 inches.

5,366,023

APPARATUS FOR RETRIEVING DRIP TAPE

Ronald H. Souza, 370 Silva Pl., Nipoma, Calif. 93444

Filed Jun. 21, 1993, Ser. No. 78,868
Int. Cl.[5] F16L *1/00*
U.S. Cl. 171—10 **1 Claim**



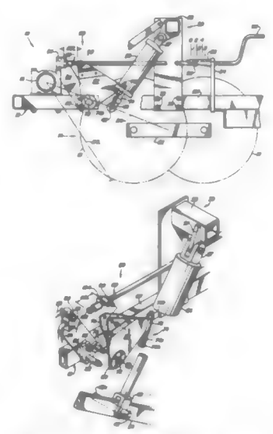
1. Apparatus for retrieving drip tape that has been buried in the soil of an elongated bed, comprising in combination:
a wagon having ground-contacting wheels;
a cultivator disc attached to said wagon near the front of said wagon and extending down and into the soil of the bed to break up the soil to facilitate extraction of the drip tape from the soil;
a guide member attached to said wagon near a central rear portion of said wagon for altering the direction of the drip tape and for removing any soil and weeds that may be sticking to the drip tape;
a drum having a horizontal axis extending laterally across said wagon;
means for rotating said drum at such a speed that a point on the circumference of said drum moves at a linear speed approximately equal to the groundspeed of said wagon;
a wringer wheel having an axis parallel to the axis of said drum;
means for mounting said wringer wheel in rolling contact with said drum;
means for urging said wringer wheel against said drum;
a reel for receiving the drip tape after it has passed between said drum and said wringer wheel; and,
drive means for rotating said reel at a speed controlled by an operator;
whereby, after being freed by said cultivator disc the drip tape is pulled upwardly and rearwardly through said guide member by said drum, and is passed between said wringer wheel and said drum to remove any water that might be inside the drip tape, and then the drip tape is drawn toward the front of said wagon where it is wound on said reel.

5,366,024

REMOTELY ADJUSTABLE DEPTH CONTROL

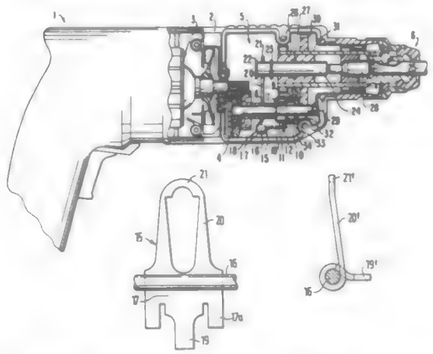
David A. Payne, Urbandale, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 9, 1993, Ser. No. 74,233
Int. Cl.[5] A01B *63/22*
U.S. Cl. 172—318 **14 Claims**



1. In a framed implement having a lift wheel assembly for varying the height of the frame above the ground, the lift assembly including a cylinder with an extendible rod wherein the extension of the rod determines the operating height of the frame, a depth control comprising:
a movable link connected to the frame adjacent the cylinder and responsive to the extension of the rod;
a control valve connected to the cylinder and to a source of hydraulic fluid under pressure for controlling cylinder extension, the valve including an actuator located adjacent the link;
an adjustable operating member supported from the link and movable with the link along a path which intercepts the valve actuator; and
means for adjusting the operating member from a location remote from the link to provide an adjustable frame operating height directly dependent on cylinder rod extension.

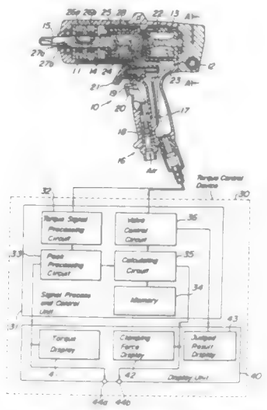
5,366,025
DRILL AND/OR PERCUSSION HAMMER
Axel Dutschik, Filderstadt, and Joachim Hecht, Magstadt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE92/00510, § 371 Date Feb. 26, 1993, § 102(e) Date Feb. 26, 1993, PCT Pub. No. WO93/00201, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 20, 1992, Ser. No. 27,159
Claims priority, application Germany, Jun. 27, 1991, 4121279
Int. Cl.[5] B23B *45/16*
U.S. Cl. 173—109 **21 Claims**



1. A hammer, comprising a motor; a striking mechanism including a striker having an axis and a driver member connected with said striker and accelerating said striker so that said striker can periodically strike a shaft of a tool, said driver member being driven in a reciprocating manner from said motor, said driver member which is driven in a reciprocating manner being formed as a one-piece member which is resilient in a springing manner, said driver member forming an angular lever member which is tiltable around an axis of tilting and being articulated on said striker with play in an axial direction and in a radial direction of said striker, so that said striker is freely axially displaceable relative to said driver member for a certain distance.

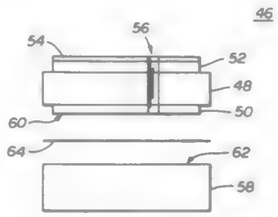
5,366,026
IMPACT TYPE CLAMPING APPARATUS
Junichi Maruyama; Teruo Fukumura, both of Yokohama, and Toru Takeuchi, Zushi, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan
Filed Aug. 27, 1993, Ser. No. 112,362
Claims priority, application Japan, Aug. 28, 1992, 4-254028; Sep. 7, 1992, 4-238609; Sep. 7, 1992, 4-238616
Int. Cl.[5] B25B *23/14*; B23P *19/06*
U.S. Cl. 173—180 **20 Claims**

1. An impact type clamping apparatus comprising:
a motor unit for generating a pulsatory driving torque;
a switching means for switching on and off said motor unit;
a main spindle driven by said pulsatory driving torque generated by said motor unit for rotating a fastening member;
a torque detecting means for detecting a pulsatory torque applied to said main spindle to produce a torque signal;
a calculating means for receiving said torque signal and calculating a clamping force in accordance with a peak value of a pulsatory torque applied to the main spindle and detected by said torque detecting means and a dependency of an increasing coefficient which represents an increasing rate of a clamping force applied to the fastening member by a unit amount of said peak value of the pulsatory torque upon said clamping force to derive a calculated clamping force; and



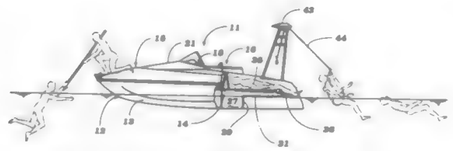
a controlling means for performing a predetermined control in accordance with said calculated clamping force generated by said calculating means.

5,366,027
CIRCUIT BOARD HAVING A BONDED METAL SUPPORT
Joseph A. Turek, Downers Grove; Joel S. Dryer, Morton Grove, both of Ill., and Harold L. Sexson, Glendora, Calif., assignors to Poly Circuits, Inc., Bensenville, Ill.
Division of Ser. No. 732,665, Jul. 19, 1991, Pat. No. 5,210,941. This application Feb. 10, 1993, Ser. No. 16,111
Int. Cl.[5] H05K *1/02*
U.S. Cl. 174—261 **11 Claims**



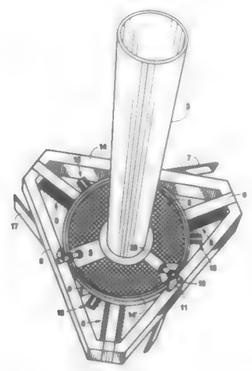
1. A circuit board comprising in combination:
a dielectric having opposing sides;
a metal support having a surface;
first and second foils of conductive material being affixed to the opposing sides of the dielectric, a first surface of the first foil being arranged for bonding to the metal support, the first surface, prior to bonding, being free of any coating material, and the first surface being configured to substantially conform to the metal support surface; and
an electrically conductive adhesive bonded directly to the first uncoated surface of the first foil and to the metal support surface thereby providing an electrical and mechanical bond between the first foil and the metal support.

5,366,028
PATROL BOAT
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 23, 1993, Ser. No. 35,942
Claims priority, application Japan, Apr. 9, 1992, 4-088785
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—362 **7 Claims**



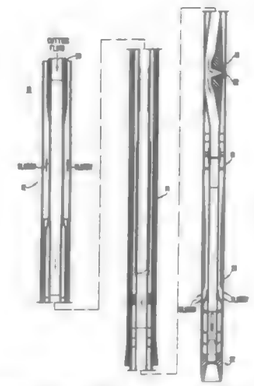
1. A rescue boat comprising a hull having a transom, a deck opening through said transom and having a rear portion disposed substantially at the water level for facilitating the entry of injured persons onto said deck, selectively openable drain means for draining water from the deck area, and means for delivering coolant from an engine to the deck area for heating an injured person's body.

5,366,029
LARGE SHAFT OVER-REAMER APPARATUS AND METHOD
August H. Beck, III, 10 Hearthwood, San Antonio, Tex. 78248
Filed Apr. 9, 1993, Ser. No. 45,818
Int. Cl.[5] E21D *1/00*
U.S. Cl. 175—53 **30 Claims**



16. A method for large shaft over-reaming comprising:
connecting a driver with a rotating kelly bar for transmitting rotational force to the driver;
releasably connecting the driver to an over-reamer cutter for over-reaming a pilot bore shaft to form a larger shaft having an outer edge;
detaching the driver from the over-reamer cutter; and
removing the driver from the larger shaft while leaving the over-reamer cutter in the larger shaft, thereby allowing the over-reamer cutter to remain in the larger shaft and not require hoisting the over-reamer cutter when removing cuttings from the pilot bore shaft and larger shaft.

5,366,030
HYDRAULIC DEVICE FOR FORMING A CAVITY IN A BOREHOLE
F. W. Pool, II, 370 Clayton St., Denver, Colo. 80206; MacDonald Hawley, 2659 Bridger Ct., Evergreen, Colo. 80439, and Gregory J. Abramov, ulitsa Udaltsova, 14, kv .96, Moscow, Russian Federation
Filed Nov. 2, 1992, Ser. No. 969,966
Int. Cl.[5] E21B *7/18, 17/18*
U.S. Cl. 175—215 **17 Claims**



1. An hydraulic device for forming a cavity in a borehole drilled from a surface, comprising:
(a) a hub section being connectable to a drill pipe, and being sealable against a casing,
wherein only the drill pipe extends to the surface, and
wherein the hub section includes
an inner tube,
a drill pipe connector on an upper portion of the inner tube,
an outer tube concentric with the inner tube, and
a seal attached to an upper end of the outer rude;
(b) a hydromonitor section, including
an inner tube, and
an outer tube generally concentric with the inner tube,
wherein the hydromonitor includes an hydraulic nozzle having a first end in fluid connection with the inner tube of the hydromonitor and a second end connected to the outer tube of the hydromonitor and being open to an exterior of the device, said hydraulic nozzle for forming a cavity in the borehole; and
(c) a hydroelevator, located below the hydromonitor, which is below the hub section, for removing a slurry from the borehole as the cavity is formed,
wherein the hydroelevator includes
an inner blast tube,
an eductor connected to the blast tube and including a perforated inlet portion, and
an outer tube concentric with the inner blast tube and connected to the perforated inlet portion of the eductor,
wherein the eductor comprises:
an inner tube;
an outer tube concentric with the inner tube;
a hole formed in the inner tube of the eductor to render the inner and outer tubes of the eductor in fluid communication with each other, and
a cone portion extending from the outer tube of the eductor which extends toward but is spaced from the inner blast tube by an annular space,
wherein the outer tube of the hydroelevator includes a removable sleeve located on an inner surface thereof,
wherein the casing has a first end and a second end, the first

end being near the surface and the second end being near a coal seam,

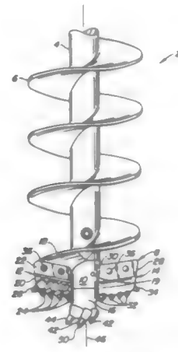
wherein the device is received by the casing witch the seal abutting adjacent the second end of the casing.

5,366,031

AUGER HEAD ASSEMBLY AND METHOD OF DRILLING HARD EARTH FORMATIONS

Brian Rickards, Fremont, Calif., assignor to Pengo Corporation, Union City, Calif.

Filed May 3, 1993, Ser. No. 56,642
Int. Cl.[5] E21B *10/40*
U.S. Cl. 175—354 **23 Claims**



1. An auger shank assembly for drilling rock, said shank assembly comprising:

a shank plate having a proximal end and a distal end, said proximal end adapted for mounting to the head of an auger; and

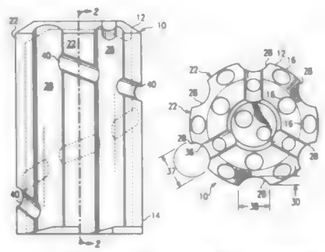
a group of drilling elements, each including a proximal end rotatably coupled to said shank plate and a distal end adapted for drilling into rock, said drilling elements being arranged in a row that extends between said proximal and distal ends, each drilling element being angled toward the proximal end of said shank plate.

5,366,032

ROCK BIT

Mark A. Kay, P.O. Box 29325, Dallas, Tex. 75229

Filed Jun. 9, 1993, Ser. No. 74,774
Int. Cl.[5] E21B *10/38*
U.S. Cl. 175—393 **27 Claims**



1. A rock bit adapted for rotative and percussive drilling of a borehole in a rock formation, comprising:

(a) a generally cylindrical body having a leading end, a trailing end, and a generally cylindrical outside surface, the leading end suitable for boring against the rock formation, the trailing end suitable for attachment to a drill rod, the body also having:

(b) a plurality of circumferentially spaced and substantially parallel longitudinal grooves machined along the outside surface of the body from the leading end of the body to the trailing end of the body, the longitudinal grooves having a depth that increases towards the trailling end and sized such that cuttings from the rock formation can readily pass from the leading end of the bit to the trailing end of the bit along the longitudinal grooves during operation of the bit;

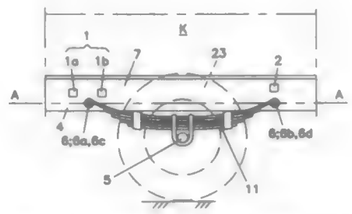
(c) at least one channel machined into the outside surface of the body at a depth not more than the depth of the longitudinal grooves and extending between two of the plurality of longitudinal grooves at an oblique angle to the longitudinal grooves.

5,366,033

PROCEDURE AND APPARATUS FOR THE WEIGHING OF A LOAD

Vesa Koivisto, Piiluvankatu 33 D 40, SF-53950 Lappeenranta, Finland

PCT No. PCT/FI91/00171, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO91/19172, PCT Pub. Date Dec. 12, 1991
PCT Filed May 29, 1991, Ser. No. 956,879
Claims priority, application Finland, May 30, 1990, 902688; Aug. 30, 1990, 904271
Int. Cl.[5] G01G *19/08*
U.S. Cl. 177—136 **5 Claims**



1. A method for weighing a load in a vehicle such as a truck, a trailer or the like, in which method at least one strain gauge is mounted on a rigid frame, such as a frame girder, of the vehicle, wherein the strain gauge is used to measure deformation and stress of the rigid frame caused by the load, a weight of the load being determined on a basis of the measured deformation and stress, the method comprising the steps of:

mounting the strain gauge on the rigid frame, such as the frame girder, in a vicinity of a supporting point of an axle assembly in the frame girder;

mounting a second strain gauge in the vicinity of the supporting point, so that at least two strain gauges are placed in the vicinity of each supporting point;

applying the load on the truck; and

measuring the deformation and stress of the rigid frame by the strain gauges.

5,366,034

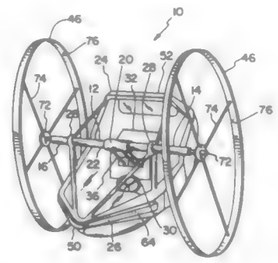
IMPACT ENERGY DISSIPATION VEHICLE

William L. Meyers, 9726 N. 300 E., Syracuse, Ind. 46567

Continuation-in-part of Ser. No. 709,508, Jun. 3, 1991, abandoned. This application Mar. 8, 1993, Ser. No. 27,368
Int. Cl.[5] B62D *63/02*
U.S. Cl. 180—21 **14 Claims**

1. An automotive vehicle having a passenger compartment, an axle having opposite ends, a pair of wheels mounted at said opposite ends of said axle, said passenger compartment being suspended between said wheels and beneath and from said axle so as to be able to move in an unrestrained fashion about said axle upon impact, said axle being generally perpendicular to the direction of travel, said wheels being larger in diameter than said passenger compartment, a power source connected

to said passenger compartment and including a drive shaft extending therefrom, a belt drive on said power source driving both said axle and said drive shaft, drive wheels on said drive



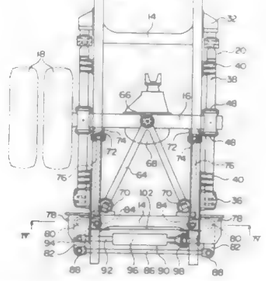
shaft engaging each of said wheels, a first wing mounted on the axle, and a second wing positioned about said drive shaft, wherein said first wing and said second wing are operatively connected together.

5,366,035

REAR WHEEL STEERING DEVICE AND METHOD FOR REAR WHEEL STEERING

Tatsuaki Hayashida, Kanagawa; Shozo Kawasawa, Tokyo, and Katsushi Matsuda, Kanagawa, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1993, Ser. No. 21,984
Claims priority, application Japan, Feb. 27, 1992, 4-090399; Sep. 24, 1992, 4-305802
Int. Cl.[5] B62D *5/26*
U.S. Cl. 180—24.01 **21 Claims**



1. A rear wheel steering device comprising:

a chassis,

a rear axle housing for supporting a pair of rear wheels at both end portions of said rear axle housing along a width direction of said chassis,

a pair of leaf spring devices provided between said rear axle housing and said chassis for supporting said rear axle housing at a middle portion of each pair of said leaf spring devices along a longitudinal direction of said chassis,

a rear wheel steering mechanism for rotating said rear axle housing around a rotational center positioned on a central line of said chassis along said longitudinal direction of said chassis;

wherein one of said pair of said leaf spring devices is connected to each side of said chassis, respectively, and both end portions of said leaf spring devices being connected to said chassis through a respective pair of shackle links;

said rear wheel steering mechanism including,

an upper radius rod provided along said central line of said chassis, a cross point of said upper radius rod pivotably attached to said rotational center and both end portions of said upper radius rod being connected to said chassis,

a pair of lower radius rods provided symmetrically with respect to said central line of said chassis, each of said lower radius rods being connected to said rear axle housing at one end portion of each of said lower radius rods, respectively,

a pair of L-shaped levers pivotably supported at a middle portion of a long edge of each of said L-shaped levers for horizontally rotating one end of each of said L-shaped levers being connected to the opposite end of a respective one of said lower radius rods, and

a connecting rod provided along said width direction, and both end portions of said connecting rod being connected to the opposite end of said long edge of each of said L-shaped levers; and

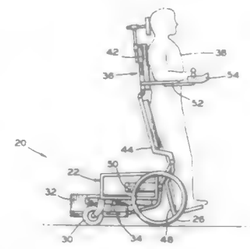
a rear wheel steering actuator provided at said chassis for rotating said rear axle housing around said rotational center by moving the pair of said lower radius rods in the opposite directions along said longitudinal direction, respectively in accordance with a rotation degree of the pair of said L-shaped levers by driving said L-shaped levers or said connecting rod.

5,366,036

POWER STAND-UP AND RECLINING WHEELCHAIR

Dale E. Perry, 3915 N. Park Ave., Studio #1, Tucson, Ariz. 85719

Filed Jan. 21, 1993, Ser. No. 6,469
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.1 **11 Claims**



1. A wheelchair apparatus having a front and a rear, said wheelchair apparatus comprising:

a) frame means for supporting an operator in a substantially reclining position, a sitting position, and a substantially standing position;

b) chassis means for supporting said frame means above a ground surface for movement therealong said frame means connected to said chassis means to form a front, a rear and a body of the wheelchair apparatus;

c) positioning means, mounted on said frame means and connected to said chassis means, for selectively moving said frame means from the sitting position to the substantially standing position and for selectively moving said frame means from the sitting position to the substantially reclining position;

d) drive means, mounted on said chassis means, for selectively moving the wheelchair apparatus over the ground surface;

e) control means for controlling said positioning means and said drive means, said control means being mounted on said frame means and in communication with said positioning means and said drive means; and

f) a weight distribution means for adjusting a center of gravity of the wheelchair with operator, said weight distribution means being slidably attached to said chassis means and linked to said frame means, said weight distribution means simultaneously shifting said frame means for supporting said operator towards the rear of the wheelchair

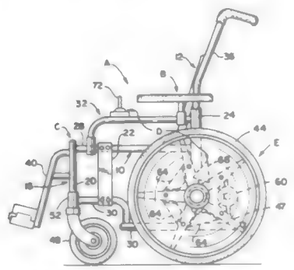
apparatus when said frame means and operator are moved from the sitting position into the substantially standing position and simultaneously shifted towards the front of the wheelchair apparatus when said frame means and operator are moved from the substantially standing position to the sitting position.

5,366,037

POWERED WHEELCHAIR HAVING DRIVE MOTORS INTEGRATED INTO DRIVEN WHEELS

Joseph B. Richey, Shaker Heights, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Nov. 23, 1992, Ser. No. 980,469
Int. Cl.[5] B60K *1/02*
U.S. Cl. 180—65.5 **17 Claims**



1. A powered wheelchair comprising:
a seat;
first and second side frames extending in spaced, generally parallel relationship and supporting opposite sides of the seat;
first and second driven wheels rotatably mounted on the first and second side frames through a fixed axle shaft means, respectively, and adapted for rotation relative thereto; and
first and second drive motors fixedly mounted on the first and second driven wheels, respectively, operatively connected by first and second drive means to the first and second driven wheels, respectively, whereby operation of the first and second drive motors causes rotation of the first and second driven wheels, which in turn causes the first and second motors to be rotated in a circumferential path defined first and second driven wheels.

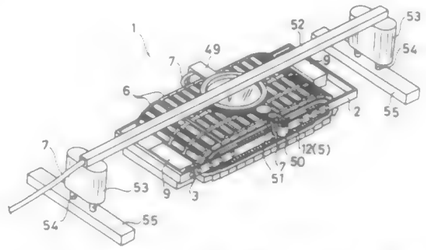
5,366,038

ROBOT TRAVELING ON WALL FACE

Nishiguchi Hidetsugu, 22-28, Kawasaki 2 chome, Ise-shi, Mie, Japan, and Nishiguchi Kenji, Taki, Japan, assignors to Nishiguchi Hidetsugu, Mie, Japan

Filed Jun. 24, 1993, Ser. No. 80,948
Claims priority, application Japan, Aug. 25, 1992, 4-250816; Dec. 22, 1992, 4-356852
Int. Cl.[5] B60B *39/00;* **B62D** *55/07*
U.S. Cl. 180—164 **4 Claims**

1. A robot traveling on a wall face comprising:
a rectangular frame body;
a pair of drive wheel and coupled follower wheel, which is provided on one end side of said frame body with a specified distance left therebetween;
another pair of drive wheel and coupled follower wheel, which is on another opposite end side of said frame body with the specified distance left therebetween such that said drive wheel, as one element of the latter pair, is located at a position diagonally opposed to that of said drive wheel, as one element of the former pair, whereas said coupled follower wheel, as another resting element of the latter pair, is located at a position diagonally opposed to that of said coupled follower wheel, as another resting element of the former pair;
one unit of rotatable belt which is wound around these two pairs of drive wheels and coupled follower wheels, so that said rotatable belt may be rotated;
a plurality of movable adsorption discs fixed to an outer face of said rotatable belt;
a suction pipe connecting said adsorption discs to vacuum equipment; and



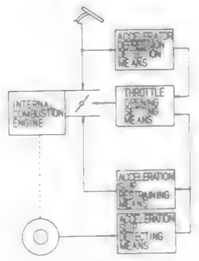
controllers, provided in the middle of pipings for said suction pipe, for making a connection with said vacuum equipment upon contact between said movable adsorption discs and said wall face and breaking said connection with said vacuum equipment upon detachment of said movable adsorption discs from said wall face.

5,366,039

ACCELERATION SLIP CONTROL DEVICE FOR A MOTOR VEHICLE

Mamoru Sawada, Aichi, Japan, assignor to Nippondenso Co. Ltd., Kariya, Japan

PCT No. PCT/JP91/00854, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO93/00507, PCT Pub. Date Jan. 7, 1993
PCT Filed Jun. 26, 1991, Ser. No. 977,438
Int. Cl.[5] B60K *28/16;* **B60L** *3/10*
U.S. Cl. 180—197 **13 Claims**



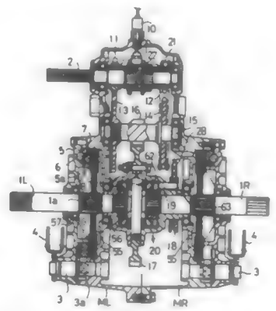
1. An acceleration slip control device for a motor vehicle for restraining an acceleration slip from occurring at driving wheels of a motor vehicle which are driven by an internal combustion engine by adjusting an opening of a throttle valve mounted in an intake system of said internal combustion engine to control a quantity of intake air, said acceleration slip control device comprising:
accelerator depression detecting means for detecting an amount of depression of an accelerator which controls said opening of said throttle valve;
accelerator increase detecting means for detecting said amount of depression of said accelerator that has increased greater than an accelerator position reference value at which said occurrence of acceleration slip is expected;
acceleration slip detecting means for detecting said occurrence of acceleration slip during an acceleration of said driving wheels;
throttle valve initial setting means for setting said opening of said throttle valve to an initial opening to restrain said expected occurrence of acceleration slip until said occurrence of acceleration slip is detected by said acceleration slip detecting means when said greater amount of depression of said accelerator than said accelerator position reference value has been detected by said accelerator increase detecting means; and
acceleration slip restraining means for restraining said occurrence of acceleration slip at said driving wheels, by driving said throttle valve in accordance with said acceleration slip when said occurrence of acceleration slip has been detected by said acceleration slip detecting means.

5,366,040

BRAKING DEVICE FOR A WORKING VEHICLE

Koji Irikura, Hyogo, and Atsuo Yoshina, Amagasaki, both of Japan, assignors to Kanzaki Kokyukoki Mfg. Co., Ltd., Hyogo, Japan

Filed Oct. 19, 1993, Ser. No. 137,987
Int. Cl.[5] B60K *17/354*
U.S. Cl. 180—244 **6 Claims**



1. A braking device for a vehicle comprising:
a transmission case having right and left side walls;
a pair of output shafts disposed within said transmission case;
a differential disposed within said transmission case and coupling said pair of output shafts;
means for driving said differential disposed within said transmission case;
a joint provided at an end of each of said output shafts;
a driving axle coupled with each of said output shafts by said joints;
a drive wheel driven by each of said driving axles;
a recess provided in each of said right and left side walils of said transmission case;
a braking unit disposed in each of said recesses for braking each of said output shafts; and
a lid covering each of said recesses and said braking units;
wherein each of said output shafts projects from said transmission case through one of said right and left side walls, one of said recesses, and one of said lids.

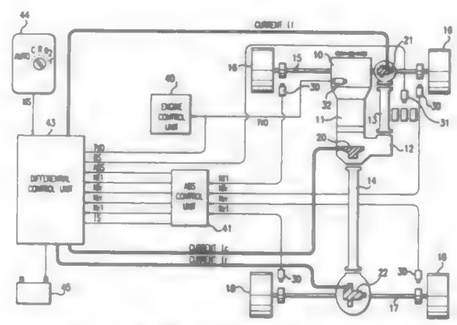
5,366,041

VEHICLE CONTROL SYSTEM

Masaru Shiraishi, Hatsukaichi, and Yuji Tashiro, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 29, 1992, Ser. No. 906,284
Claims priority, application Japan, Jun. 27, 1991, 3-156959
Int. Cl.[5] B60K *17/35*
U.S. Cl. 180—248 **23 Claims**

19. A vehicle control system for controlling a four-wheel drive vehicle, comprising:
center differential means, disposed between front and rear propeller shafts, for driving front and rear wheels at the same time but allowing said front and rear wheels to turn at different wheel speeds, said center differential means being able to be locked and unlocked;
rear differential means, disposed between left and right rear axles, for driving left and right rear wheels at the same time but allowing said left and right rear wheels to turn at different wheel speeds, said rear differential means being able to be locked and unlocked;
front differential means, disposed between left and right front axles, for driving left and right front wheels at the same time but allowing said left and right front wheels to turn at different wheel speeds, said front differential means being able to be locked and unlocked;
driving condition detecting means for detecting driving conditions of said vehicle;
differential mode control means for operating in a first mode to variably restrict differential action of each of said center differential means and said rear differential means between an unlocked state and a locked state according to driving conditions detected by said driving condition



detecting means and maintaining said front differential means in an unlocked state, in a second mode for forcibly locking said center differential means, variably restricting differential action of said rear differential means between said unlocked state and said locked state according to said driving conditions and keeping said front differential means in said unlocked state, in a third mode for forcibly locking both said center differential means and said rear differential means and keeping said front differential means in said unlocked state, in a fourth mode for variably restricting differential action of said center differential means, forcibly locking said rear differential means and keeping said front differential means in said unlocked state, and in a fifth mode for forcibly locking all of said center differential means, said rear differential means and said front differential means; and
manually operated mode selection means for selectively causing said differential mode control means to operate among said first mode, said second mode, said third mode, said fourth mode and said fifth mode.

5,366,042

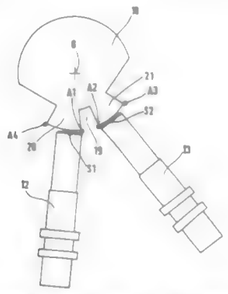
DEVICE FOR DETECTING DIFFERENT STEERING ANGLES

Eberhard Wilks, Hutthurm; Peter Sigl, Pocking, and Manfred Ritzer, Thyrnau, all of Germany, assignors to ZF Friedrichshafen AG, Germany

PCT No. PCT/EP92/00486, § 371 Date Sep. 2, 1993, § 102(e) Date Sep. 2, 1993, PCT Pub. No. WO92/15842, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 4, 1992, Ser. No. 108,757
Claims priority, application Germany, Mar. 6, 1991, 4107130
Int. Cl.[5] B60K *17/30*
U.S. Cl. 180—253 **12 Claims**

1. A detection device for detecting discrete steering angle of a wheel, said device comprising:

an originator unit;
a receiver unit (11) interacting with said originator unit, said receiver unit comprising two sensors (12, 13); and
a signal-processing unit (17), communicating with said receiver unit (11), for determining different steering angles of a driven wheel of an axle for a motor vehicle;
wherein said originator unit (10) and said two sensors (12, 13) operate in conjunction with one another for identifying a discrete steering angle ($\alpha 1$ to $\alpha 6$) of the wheel and, based upon the possible switch conditions (I, O) of said sensors (12, 13), said signal-processing unit (17) detects the discrete steering angles ($\alpha 1$ to $\alpha 6$) according to a direction and a magnitude of the steering angle and, when the wheel is located in a straight-ahead travel position and said two sensors are activated, said two sensors (12, 13) are positioned adjacent a web portion of said originator unit (10) and generate an identical switch condition (I or O).

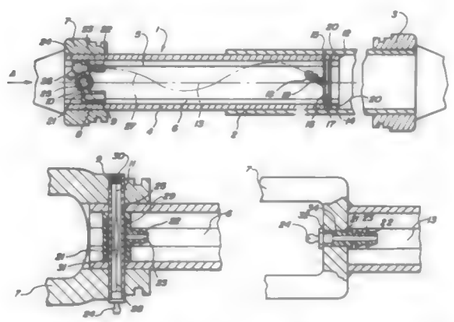


5,366,043

LUBRICATING DEVICE FOR TWO PLUNGING PROFILES SLIDABLE INSIDE ONE ANOTHER, ESPECIALLY OF A PROPELLER SHAFT

Horst Kretschmer, Cologne, and Hans-Jürgen Langen, Frechen, both of Germany, assignors to GKN Walterscheid GmbH, Lohmar, Germany

Filed Nov. 3, 1993, Ser. No. 146,749
Claims priority, application Germany, Nov. 4, 1992, 4237176
Int. Cl.[5] F16C *17/00, 21/00, 1/24*
U.S. Cl. 184—5 10 Claims



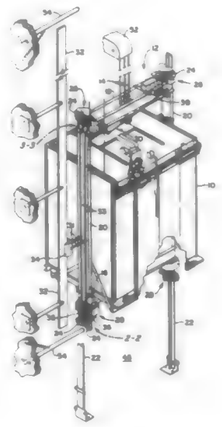
1. A lubricating device for two tubular plunging profiles slidably arranged inside one another, especially for a propeller shaft, comprising:
one end of an inner tubular plunging profile is slid into an outer plunging profile, a formed part is inserted in one end, the said formed part is provided with a through-bore which extends transversely to a longitudinal axis of the plunging profiles and which opens towards an inner face of the outer plunging profile, said formed part including a connecting sleeve with a channel which opens towards the through-bore, a further formed part including a connecting sleeve with a continuous lubricating channel is introduced into the other end of the inner plunging profile;
a lubricating nipple is coupled with said further formed part, said nipple is accessible from the outside and connected to the lubricating channel of the further formed part for passing on lubricant;
and a hose connecting the two formed parts, ends of said hose are slid onto the connecting sleeves.

5,366,044

BIDIRECTIONAL EDDY CURRENT OVERSPEED PROTECTION FOR ELEVATORS

Eric K. Jamieson, Farmington; Young S. Yoo, Avon, and Breffni X. Baggot, New Britain, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 965,477, Jun. 3, 1991,. This application Jun. 28, 1993, Ser. No. 84,045
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—359 7 Claims



1. A device for exerting a braking force on an elevator guide rail to brake the movement of an elevator car without the use of a governor, comprising:
(a) at least one safety for contacting said elevator guide rail and producing said braking action;
(b) a magnet disposed on said elevator car; and
(c) a conductive vane disposed vertically along the entire length of a hoistway such that as said magnet moves along said conductive vane a current is induced in said conductive vane in a direction so as to generate a magnetic field to oppose a changing field that induced said current so that said magnet causes said safety to contact said elevator guide rail and exert said braking force on said elevator guide rail, wherein the device may exert said braking force at any point along the said hoistway.

5,366,045

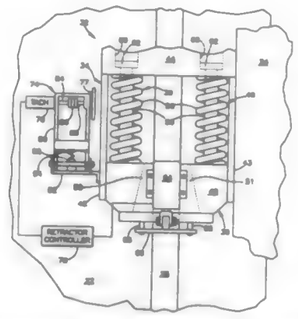
BRAKE MECHANISM FOR A STORAGE AND RETRIEVAL VEHICLE

Sergay Liston, Centerville, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 3, 1993, Ser. No. 115,617
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—376 5 Claims

1. A brake apparatus for a load carriage mounted for vertical movement along an elongated mast, comprising a brake block

attached to said load carriage, one or more wedge members acting between said brake block and said mast and movable between a first position permitting relative movement between said load carriage and said mast and a second position preventing movement between said load carriage and said mast, means biasing said wedge members into said second position, retracting means operable to apply a force to said wedge members opposing said biasing means to hold said wedge members in said first position, a tachometer generator having its input member in engagement with said mast to generate an electrical signal proportional to the relative speed between said load carriage and said mast, control means connected to said retracting means and responsive to said signal to de-actuate said retracting means when said relative speed reaches a predetermined value, and permanent magnet means attached to said one or more wedge members in position to apply a magnetic attractive force to said brake block.

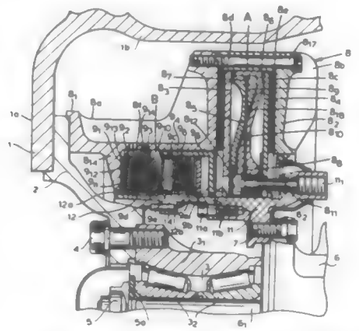


5,366,046

FULL-LINING DISK BRAKE WITH HEAT DISSIPATION FEATURES

Hermann Klaue, Tour D'Ivoire, CH-1820 Montreux, Switzerland

Filed Feb. 12, 1993, Ser. No. 17,194
Claims priority, application Germany, Feb. 12, 1992, 4204139
The portion of the term of this patent subsequent to Aug. 17, 2010, has been disclaimed.
Int. Cl.[5] F16D *65/78*
U.S. Cl. 188—71.6 12 Claims



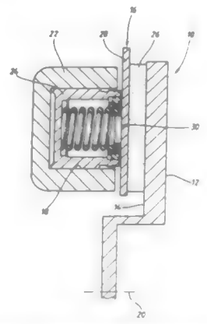
1. A full-lining disk brake for a wheel of a commercial vehicle, comprising:
an annular metal two-part brake housing formed on an exterior of the housing with radial ribs effecting dissipation of braking heat to ambient air;
an operating disk brake component in said housing having at least one lined brake disk frictionally engageable directly with said housing to generate at least part of said braking heat by the frictional engagement therewith, and means responsive to compressed air for direct actuation of the brake disk of said operating disk brake component;
a blocking brake component in said housing formed with a plurality of brake disks in friction pairs with at least one member of each pair in direct heat conducting relation with said housing to generate a remainder of said braking heat upon frictional engagement of said pairs, said blocking brake component further including force-storing spring means acting upon said brake disks of said blocking brake component to bias said friction pairs into mutual frictional engagement, and compressed-air-responsive means effective until released to retain said force-storing spring means against biasing of said friction pairs into engagement, whereby friction heat is transferred to said housing and dissipated to ambient air predominantly by convection.

5,366,047

DISC BRAKE WITH RING-SHAPED PRESSING ELEMENT

Erich Beck, Winterbach; Manfred Minning, Ebersbach; Emil Näumann, Reichenbach, and Joseph Wese, Dorfen, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 7, 1992, Ser. No. 987,467
Claims priority, application Germany, Dec. 6, 1991, 4140279
Int. Cl.[5] F16D *65/38*
U.S. Cl. 188—73.37 6 Claims



1. A disc brake comprising a pressure member guided, in the direction of a brake shoe, in a brake caliper, and a pressing element operatively arranged with radial play in the pressure member such that, in an initial position of the pressure member, the pressing element projects from a front end of the pressure member facing the brake shoe, is supported on the brake shoe and can be pressed back into the pressure member counter to the effect of a return force which results from mutual contact between the pressing element and brake shoe and is lower than a pressing force of the pressure member, wherein the pressing element is a ring supported on a metal spring inserted into the pressure member, the metal spring is a spring sleeve elastically resilient both radially and axially, the ring is a shoulder ring seated on an outer spring-sleeve end face, and the spring sleeve has slot-like recesses arranged at an angular distance from one another and extend along generatrices, and which are open-edged on the outer spring-sleeve end face turned away from the pressure member.

5,366,048

VIBRATION DAMPING DEVICE

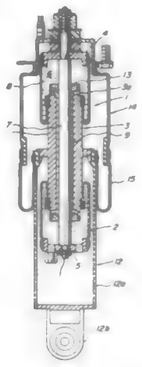
Isao Watanabe; Makoto Nakao; Kiyoshi Ohno, and Masatoshi Ohishi, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 29,944, Mar. 9, 1993, abandoned, which is a continuation of Ser. No. 570,659, Aug. 21, 1990, abandoned. This application Apr. 12, 1994, Ser. No. 226,365

Claims priority, application Japan, Aug. 25, 1989, 1-217204; Jun. 26, 1990, 2-165682

Int. Cl.[5] F16F *9/04*

U.S. Cl. 188—267 **3 Claims**



1. A vibration damping device comprising; two cylindrical rolling lobe type flexible membrane members each having an inwardly folded portion, two face plates each connected at an end to an end portion of each of the membrane members, a restricted passage constituting member connected at each end portion thereof to an opposite end portion of each of the membrane members to form a closed chamber in such a manner that the folded portions of both membrane members face each other for rolling movement on said restricted passage constituting member, a rigid member passing through the restricted passage constituting member and connecting both the face plates to each other and disposed inside the closed chamber, an electrorheological fluid filled in the closed chamber, electrodes arranged on the restricted passage constituting member in the closed chamber and contacting with the electrorheological fluid, and two fastening members disposed on sides of the restricted passage constituting member and the face plates.

5,366,049

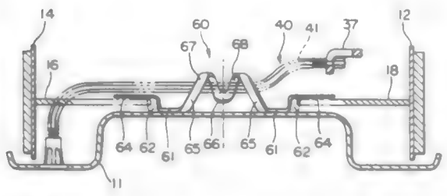
DRUM BRAKE SHOE HOLD-DOWN BRACKET AND CABLE GUIDE

Mark E. Allen, Mishawaka, Ind., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Dec. 7, 1993, Ser. No. 163,020

Int. Cl.[5] F16D *51/00*

U.S. Cl. 188—340 **4 Claims**



1. A drum brake having a combination brake shoe hold-down bracket and cable guide, comprising a backing plate supporting thereon a pair of drum brake shoes, each of said drum brake shoes including a brake shoe web, actuation means for causing a first pair of brake shoe ends to move away from one another and into engagement with an adjacent rotatable drum, resilient means extending between the first pair of brake shoe ends and second resilient means extending between an opposite and second pair of brake shoe ends, a parking brake lever cooperating with means for effecting a parking application of said drum brake shoes, a combination hold-down bracket and cable guide connected with said backing plate and adjacent the second pair of brake shoe ends, and parking brake cable means extending into said drum brake and connected with an end of said parking brake lever, the combination hold-down bracket and cable guide comprising a metal member securely attached to said backing plate and having laterally extending projections which extend axially away from said backing plate and then transversely to a center of rotation of the drum brake such that respective bracket ends extend over respective brake shoe webs and assist in retaining the brake shoes axially in operative position, a center portion of the bracket extending axially away from said backing plate and then extending in a annular path toward said backing plate to terminate in an end located adjacent the backing plate in order to provide an enclosed cable guide path, the cable means disposed in said cable guide path so that the position of the cable means is maintained and interference prevented with other brake components.

5,366,050

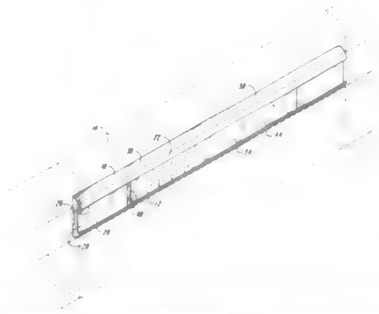
BRAILLE INSERT IN A CONTINUOUS CARTRIDGE FOR HANDRAILS

Coco Raynes, 11-13 Remington St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 5,088, Feb. 23, 1993. This application Mar. 15, 1993, Ser. No. 32,351

Int. Cl.[5] G09B *1/00*

U.S. Cl. 182—18 **4 Claims**



1. A continuous cartridge system for applying braille messages to the inside of handrails, comprising:

a continuous length of cartridge, having a cartridge back wall and front extending overhanging portions defining a longitudinal groove, said front extending overhanging portions having edges spaced apart a distance less than the width of said back wall, to capture a braille insert therein,

one or more braille inserts, bearing braille messages, each said insert comprising a longitudinal strip having front and back walls and upper and lower surfaces with edge portions spaced apart more than said edges of said front extending overhanging portions, each said braille insert inserted in said groove,

a handrail, said handrail defining a handrail back wall and handrail front extending overhanging portions defining a longitudinal handrail groove, said handrail front extending overhanging portions having edges spaced apart a distance less than the width of said handrail back wall, to capture said continuous length of cartridge,

said continuous length of cartridge having upper and lower surfaces with edge portions spaced apart a distance more than said edges of said handrail front extending portions, said continuous length of cartridge inserted in said handrail groove.

5,366,051

HOLLOW PLASTIC LADDER

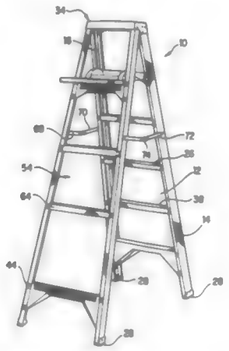
Frederick J. Bartnicki, Greenville, and Robert Beggs, Fredonia, both of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Continuation of Ser. No. 565,966, Aug. 10, 1990, Pat. No. 5,131,495. This application Apr. 29, 1992, Ser. No. 875,354

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] E06C *7/00*

U.S. Cl. 182—46 **8 Claims**



1. A plastic ladder comprising:

a first plastic side rail, at least a portion of which is hollow;

a second plastic side rail, at least a portion of which is hollow, said second side rail in parallel with the first side rail;

a plurality of steps, each of which is attached to the first and second rails at predetermined locations such that each step forms a flat weight bearing platform upon which a user can stand; and

wherein the first and second rails each have a plurality of pockets having solid cross sections disposed therealong at predetermined positions, and each of said steps are attached to the first and second rails at corresponding pockets therein with fasteners through holes in the solid cross sections.

5,366,052

REVERSIBLE FOLDING LADDER

Jeng Keh-Lin, No. 1-1, Sec. 2, Yang-Hwu Rd., Yangmei, Taoyuan Hsien,

Filed Jul. 20, 1993, Ser. No. 93,628

Int. Cl.[5] E06C *5/00*

U.S. Cl. 182—88 **5 Claims**

1. A reversible folding ladder assembly moveable between extended and retracted positions on a vehicle comprising:

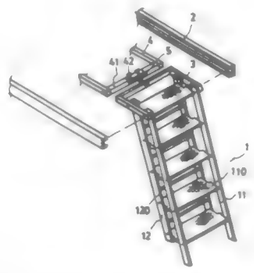
a pair of longitudinally extending channel members adapted to be secured, in a spaced, substantially parallel manner, to a vehicle;

a rear frame including a pair of spaced, substantially parallel rear frame members adapted to be slidably received within said pair of channel members, said rear frame further including a rotating part positioned between and rotatably mounted to said rear frame members;

a longitudinally extending pivot shaft carried by said rotating part at a central portion thereof;

a front frame rotatably attached to said rear frame through said pivot shaft, said front frame including a pair of spaced, substantially parallel front frame members adapted to be slidably received within said pair of channel members;

a ladder assembly movable between folded and unfolded positions, said ladder assembly including a front staircase defined by a pair of elongated, spaced front staircase members having respective top and bottom portions, a pair of elongated, spaced rear staircase members having respective top and bottom portions, and a plurality of foot pedals hingedly attached to the front and rear staircase members at spaced intervals, the top portions of each of said front and rear staircase members being rotatably mounted to respective ones of said front frame members



wherein, when said reversible folding ladder assembly is in said extended position and said ladder assembly is unfolded, the bottom portions of said front staircase members engage a support area with said plurality of pedals assuming positions substantially parallel to said front frame members; and

conveyor means carried by said rear staircase at a side remote from said front staircase members and spaced from said plurality of foots pedals wherein, when said reversible folding ladder is in said extended position with ladder assembly folded, said front frame and said ladder assembly can be rotated relative to said rear frame about said pivot shaft such that said conveyer means is positioned above said plurality of foot pedals.

5,366,053

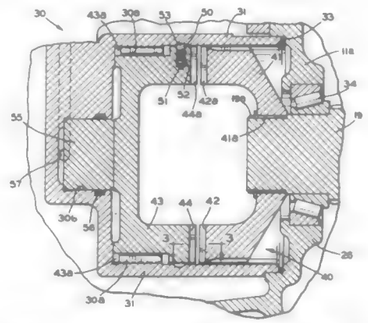
VEHICLE TRANSMISSION HILL HOLDER WITH RELEASABLE TOOTHED CLUTCH

Kenneth B. Yant, Oregon, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 5, 1992, Ser. No. 956,677

Int. Cl.[5] B60K *41/26*

U.S. Cl. 192—4 A **20 Claims**



1. A hill holder for a vehicle transmission including a shaft which normally rotates in a predetermined rotational direction about an axis, said hill holder for preventing the shaft from

rotating in a direction opposite to the predetermined rotational direction and comprising:

a housing;

a hub member adapted to be connected to the shaft for rotation therewith about the axis, said hub member having at least one axially extending tooth formed thereon;

a reaction member connected to said housing, said reaction member having at least one axially extending tooth formed thereon; and

means for moving one of said hub member and said reaction member axially toward the other for selectively causing axial engagement of said hub member tooth with said reaction member tooth to prevent said hub member from rotating in the direction opposite to the predetermined rotational direction.

5,366,054

FRICTION CLUTCH COVER ASSEMBLIES

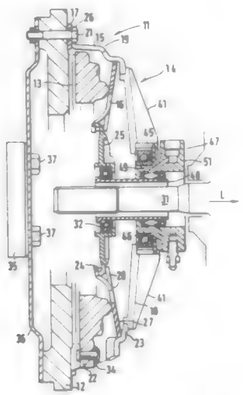
Richard D. M. Cooke, Warwick, and Robert J. Murphy, Leamington Spa, both of United Kingdom, assignors to Automotive Products, plc, Leamington Spa, United Kingdom

Filed Apr. 29, 1993, Ser. No. 50,050

Claims priority, application United Kingdom, Nov. 2, 1990, 9023913

Int. Cl.[5] F16D *25/08*

U.S. Cl. 192—70.17 **7 Claims**



1. A pull type friction clutch assembly for an internal combustion engine and which includes a flywheel, a driven plate adjacent the flywheel, a coaxial annular clutch cover assembly mounted on one side of the flywheel to envelope the driven plate and including a diaphragm spring having radially inwardly projecting fingers and urging a pressure plate towards the flywheel to clamp the driven plate therebetween, the clutch assembly being attachable to an associated vehicle crankshaft via an intermediate plate which transmits the torque load from the crankshaft to the flywheel, and an annular hydraulic slave cylinder mounted on the cover via a bearing arranged to support the slave cylinder in a concentric relationship surrounding an associated clutch driven shaft, the bearing allowing the slave cylinder to rotate relative to the cover, the slave cylinder acting on the radially inner ends of the diaphragm spring fingers and being operable to move the inner ends of the fingers away from the flywheel to relieve the clamp load acting on the driven plate.

5,366,055

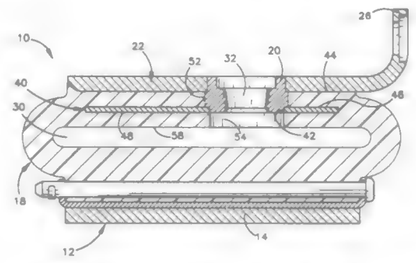
COUPLING ASSEMBLY COMPONENT

Karen L. Pudelski, Bedford, Ohio; Joseph W. Lowry, Laurinburg, N.C.; Thomas W. Thompson, Westlake, Ohio; Robert A. Pearl, Brunswick, Ohio; Paul H. Elphingstone, Lakewood, Ohio; Mars Patterson, Cleveland, Ohio, and Theodore C. Kelly, North Olmsted, Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 2, 1993, Ser. No. 41,570

Int. Cl.[5] F16D *25/04*

U.S. Cl. 192—88 B **6 Claims**



1. A coupling assembly component for use in transmitting force between first and second elements, said coupling assembly component comprising an annular base adapted to be connected with the first element, a first annular friction surface which is coaxial with said base and is movable relative to said base, annular fluid extensible tube means which is coaxial with said base and is radially extensible under the influence of fluid pressure in said tube means to move said first friction surface relative to said base, fitting means for conducting fluid pressure into said tube means, and annular mounting ring means coaxial with said base and said tube means, said annular mounting ring means being embedded in said tube means and connected with a portion of said fitting means, said mounting ring means including first surface means for defining a first opening which extends through said mounting ring means and is engaged by said fitting means and second surface means for defining a second opening which extends through said mounting ring means and is spaced from said first opening in a circumferential direction along an outer side surface of said mounting ring means, said second opening being filled by a portion of said tube means.

5,366,056

CLUTCH FRICTION WHEEL, ESPECIALLY FOR A MOTOR VEHICLE CLUTCH

Thomas Grabis, Kirchardt, Germany, assignor to Valeo, Paris, France

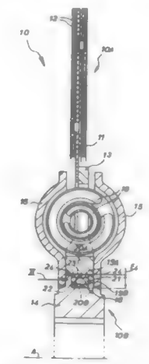
Filed May 5, 1993, Ser. No. 57,760

Claims priority, application France, May 7, 1992, 92 05640

Int. Cl.[5] F16D *3/12, 3/76, 3/77*

U.S. Cl. 192—106.1 **9 Claims**

1. A clutch friction wheel comprising a first rotatable part, a second rotatable part having a common axis with said first part, means mounting the two said parts for relative rotation of one with respect to the other, one of said parts having a first annular surface, the other having a second annular surface, a damping means consisting of an annular assembly comprising two coaxial rings in contact with said first and second annular surfaces respectively, and resilient means joining said rings together, wherein one of said rotatable parts defines a groove, the damping means being disposed in said groove and being divided into at least two ring segments, each segment comprises equivalent portions of each of said rings, and wherein said groove defines a pair of opposed flanks defining a radial depth thereof, the damping means having in the relaxed state a radial thickness greater than said radial depth of the flanks,



whereby to be under compression between the two said rotatable parts in service.

5,366,057

CLUTCH FRICTION WHEEL FOR AN INDUSTRIAL VEHICLE

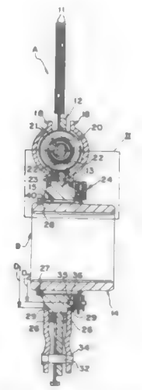
Dominique Despres, Amiens, France, and Thomas Grabis, Kirchardt, Germany, assignors to Valeo, Paris, France

Filed Mar. 25, 1993, Ser. No. 36,854

Claims priority, application France, Mar. 26, 1992, 92 03638

Int. Cl.[5] F16D *3/14*

U.S. Cl. 192—106.2 **10 Claims**



1. A clutch friction wheel comprising: a hub and a support ring, together defining loose coupling means whereby the support ring is mounted on the hub for limited relative rotation with respect to the hub; a damper plate carried on the support ring for rotation with respect to the support ring; abutment means carried by the support ring for limiting the rotation of the damper plate with respect to the support ring; a friction disc secured to the damper plate; a pair of guide rings secured to the support ring and arranged respectively on either side of the damper plate; a damping device operatively disposed between the damper plate and the guide rings; and a predamper device operatively arranged between the support ring and the hub, wherein, in combination: firstly, the friction disc, damper plate, guide rings, support ring and damping device together define a first sub-assembly in which the guide rings are secured directly to the support ring through their inner perimeter; secondly, the predamper device and the hub together define a second sub-assembly in which the predamper device is disposed on a first side of the guide rings, the second sub-assembly further including means defining a retaining abutment element disposed axially on the hub on second side of said guide rings opposite said first side with respect to said damper plate; and thirdly, the clutch friction wheel further includes a mating rotary coupling directly coupling the predamper device and the support ring at a position radially inside the innermost portion of said guide rings.

5,366,058

COIN SELECTOR AND SELECTION METHOD FOR COIN-OPERATED MACHINES FOR DETECTING FRAUD IN COIN INSERTION

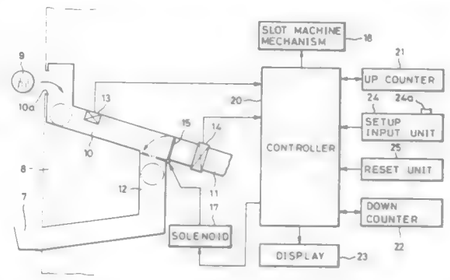
Makoto Kurosu, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Oyama, Japan

Filed Dec. 17, 1992, Ser. No. 992,435

Claims priority, application Japan, Dec. 17, 1991, 3-333444

Int. Cl.[5] G07D *5/08*

U.S. Cl. 194—202 **30 Claims**



30. A coin selector for selecting acceptable and unacceptable coins from among coins inserted in a coin passageway, comprising:

an upstream sensor in said coin passageway for discriminating between acceptable coins and unacceptable coins;

a first counter for counting only acceptable coins detected by said upstream sensor;

a downstream sensor for detecting only acceptable coins that have moved a substantial distance downstream beyond said upstream sensor;

a second counter for counting only acceptable coins detected by said downstream sensor;

means between said upstream and downstream sensors for diverting unacceptable coins from said downstream sensor, whereby only acceptable coins pass said downstream sensor; and

means for emitting an error signal when the counts of said first and second counters differ from each other by more than a predetermined amount.

5,366,059

STEERING SYSTEM FOR PLURALITY OF VEHICLES

Maurice Demong, N. Saskatoon, Canada, assignor to Prairie Machine & Parts Mfg. Ltd., Saskatoon, Canada

Filed Aug. 25, 1993, Ser. No. 112,758

Claims priority, application Canada, Aug. 27, 1992, 2077139

Int. Cl.[5] B65G *41/00*

U.S. Cl. 198—303 **37 Claims**

1. A steering system capable of steering a plurality of vehicles in a train comprising:

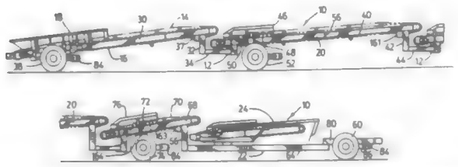
a selected pair of transversely aligned propelling devices, each separately connected at a generally vertical pivot to an axle of a selected vehicle in said train;

means for steering said selected pair of propelling devices as the train moves over the ground;

at least two further pairs of steerable, transversely aligned propelling devices, each of said further pairs being connected to its own respective vehicle and supporting same, each propelling device in each of said further pairs being separately connected at a generally vertical pivot to an axle of the respective vehicle;

power means for steering each of said further pairs of propelling devices; and

control means for controlling said power means in order to set the steering angle of each of said further pairs of propelling devices, said control means including means for determining the current steering angle of said selected pair



of propelling devices and generating an electrical signal indicative thereof, means for storing a series of said electrical signals as the train is travelling on the ground, means for determining the distance the propelling devices in the train have been travelling, and means for sending electrical turn signals to said power means for said further pairs of propelling devices in order to operate said power means, wherein said control means sets the steering angle of each further pair at substantially the same steering angle that said selected pair of propelling devices had when they were at the location where the particular further pair is currently located.

5,366,060

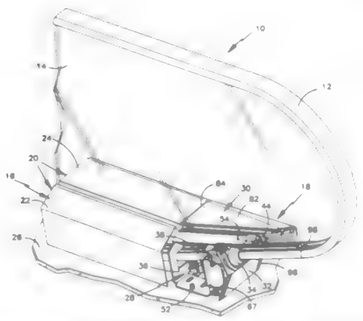
BALUSTRADE HANDRAIL ENTRY HOUSING

Gerald E. Johnson, 11 Field Rock Rd., Farmington, Conn. 06032; Ronald Laliberte, 101 Waterbury Rd., Prospect, Conn. 06712; Frank M. Sansevero, 385 Addison Rd., Glastonbury, Conn. 06033; Willy Adrian, Hauptstrasse 33, 31683, Obernkirchen, Germany; Gerald Wente, Meinserstrasse 2, 31867, Pohle, Germany, and R. Zimmerman, Schillerstr. 15, 89179, Beimerstetten, Germany

Filed Oct. 7, 1993, Ser. No. 132,513

Int. Cl.[5] B65G *17/00*

U.S. Cl. 198—323 **9 Claims**



1. A balustrade handrail entry housing for a balustrade having a base, a handrail, and a balustrade panel, comprising:

a frame, independent of said balustrade base and balustrade panel;

a shell, independent of said frame, wherein said shell mounts on and is supported by said frame;

a channel, formed within said frame, for receiving said balustrade panel;

means for clamping said balustrade panel in said channel; and

a face plate, attached to said frame, having means for mounting a safety device for sensing obstructions entering the handrail entry housing around the handrail.

5,366,061

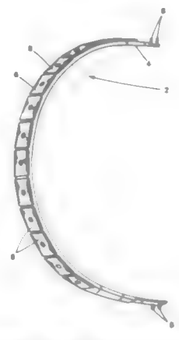
HANDRAIL GUIDE ASSEMBLY FOR ESCALATOR NEWEL

Michael Kruse, Minden, and Hans-Dietrich Riedel, Berlin, both of Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 30, 1992, Ser. No. 998,098

Int. Cl.[5] B65G *15/00*

U.S. Cl. 198—335 **7 Claims**



1. A moving handrail guide assembly for use in newel portions of an escalator or moving walkway balustrade, said guide assembly comprising:

a) a curved basal support mounted on said balustrade newel; and

b) a plurality of plastic handrail-contacting guide pads fixed to said basal support, said guide pads being spaced apart from each other along said basal support to provide an immobile guide surface for the handrail.

5,366,062

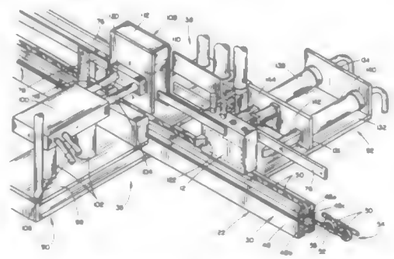
RESTRAINING APPARATUS FOR A CONVEYOR SYSTEM

Rodney S. Markin, Omaha; Eldon L. Tackett, Neola, and Stephen J. Hoskinson, Omaha, all of Nebr., assignors to Board of Regents Univ. of Nebraska, Omaha, Nebr.

Division of Ser. No. 75,682, Jun. 7, 1993. This application Mar. 15, 1994, Ser. No. 213,259

Int. Cl.[5] B65G *47/00*

U.S. Cl. 198—345.3 **3 Claims**



1. An automated laboratory conveyor system, comprising:

a conveyor track for transporting a specimen carrier;

a plurality of specimen carriers for transporting a laboratory specimen carried within a specimen tube, each specimen carrier comprising a carrier body having a forward face and opposing rearward face, a top surface and opposing bottom surface, a right end wall and opposing left end wall;

each carrier body further including a notch formed in the left end wall and extending from the forward face to the rearward face, having dimensions to receive an extendable arm;

restraining apparatus operably mounted on said track for restraining movement of said specimen carrier transported on said conveyor track, said restraining apparatus comprising:

a first cylinder with an extensible arm, mounted adjacent said conveyor track, said arm operable between an extended position projecting over said conveyor track and located to engage a specimen carrier notch to prevent passage of a specimen carrier, and a retracted position permitting passage of a carrier along the conveyor track;

a second cylinder with an extensible arm, mounted adjacent said conveyor track spaced upstream of said first cylinder, said second cylinder arm operable between an extended position projected over said conveyor track and located to engage a specimen carrier notch to prevent passage of a specimen carrier, and a retracted position permitting passage of a carrier along said conveyor track; and

a sensor means mounted between said first and second cylinders for detecting the presence of a specimen carrier restrained by said first cylinder arm.

5,366,063

ACCUMULATOR FOR CONVEYOR SYSTEM

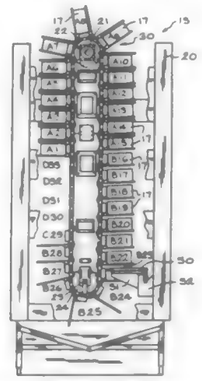
Daniel A. Pollock, Perrysburg, Ohio, assignor to Roe Incorporated, Perrysburg, Ohio

Continuation of Ser. No. 6,614, Jan. 21, 1993, Pat. No. 5,255,773. This application Oct. 25, 1993, Ser. No. 141,775

The portion of the term of this patent subsequent to Oct. 26, 2010, has been disclaimed.

Int. Cl.[5] B65G *1/00*

U.S. Cl. 198—347.3 **18 Claims**



1. An accumulator for movably supporting an article comprising:

a frame;

a wheel rotatably supported upon said frame, said wheel defining a radius;

means for selectively rotating said wheel;

a member engaged with said wheel for movement when said wheel is rotated;

a link carried on said member for movement therewith, said link having at least one aperture formed therethrough and at least one slot formed therethrough, said aperture and said slot having first edges which define a straight line and having second edges which define a radius which is substantially equal to said radius defined by said wheel; and

means secured to said link for supporting an article thereon for movement with said link and said member when said wheel is rotated.

5,366,064

PRODUCT MANUFACTURING METHOD, PARTICULARLY FOR TOBACCO ITEMS

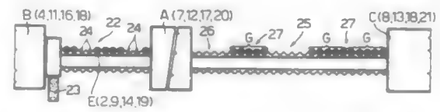
Antonio Gamberini, Bologna; Fabio Sassi, Imola, and Antonio Gigante, Bologna, all of Italy, assignors to G. D. Societa'Per Azioni, Bologna, Italy

Filed Dec. 16, 1993, Ser. No. 168,872

Claims priority, application Italy, Dec. 18, 1992, B092A000440

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—426 **8 Claims**



1. A method of manufacturing products (2), particularly tobacco items, on a production line (1), particularly a line (1) for producing and processing cigarettes; the line (1) comprising at least a first product manufacturing machine (4), and at least a second product grouping machine (8); and the method comprising stages wherein, by means of said first machine (4), a first succession (22) is formed possibly presenting randomly distributed vacancies (24), each defined by at least one missing said product (2); and, via transfer means (A) for connecting said two machines (4, 8) rigidly and in time with each other, said first succession (22) is fed to said second machine (8) for forming the products (2) into groups (G), each comprising a given number (n) of products (2); characterized by the fact that it comprises a further stage wherein, via said transfer means (A), said first succession (22) is manipulated and converted into a second succession (25) for supply to said second machine (8) and comprising a succession of gaps (26) and full portions (27), in which each said gap (26) and each said full portion (27) is composed of a number of products which is a multiple of said given number (n) and in time with said second machine (8).

5,366,065

TEXTILE ARTICLE REMOVAL APPARATUS FOR REMOVING TEXTILE ARTICLES FROM SUPPORTED DISPOSITIONS ON THE POSTS OF SUPPORT MEMBERS

Hans Grecksch; Heinz Buhren, both of Monchen-Gladbach; Dieter Vits, Neuss, and Manfred Hauers, Viersen, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Division of Ser. No. 803,327, Dec. 4, 1991, Pat. No. 5,277,295. This application Oct. 22, 1993, Ser. No. 112,110

Claims priority, application Germany, Apr. 12, 1990, 4038628

Int. Cl.[5] B65G *47/26*

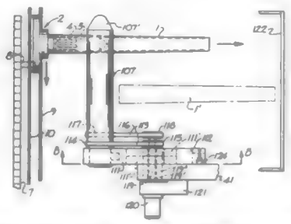
U.S. Cl. 198—457 **2 Claims**

1. An apparatus for removing textile articles from supported dispositions on support members, each textile article being a substantially rigid tube or a substantially rigid tube having textile strand material built thereon and each support member having a post for supporting a tube inserted thereon in co-axial relation thereto, the apparatus comprising:

means for advancing the support members and the textile articles supported thereon along a travel path;

means for displacing a textile article in a direction generally parallel to the axis of the post on which it is supported as the support member advances along the travel path to thereby effect removal of the textile article from the post readily without inclination of the textile article relative to the post during the removal of the textile article sufficient to resist removal, said displacing means including a pair of opposed article engaging surfaces forming an elongate opening therebetween and means for supporting said opposed article engaging surfaces with the elongate opening aligned with a portion of the travel path for entry of textile articles into the elongate opening during advancing movement of the support members along the travel path, the pair of opposed article engaging surfaces engaging each textile article advancing along the travel path and displacing it outwardly beyond its associated post as the post is advanced along the aligned portion of the travel path;

means for mounting at least one of the pair of opposed article engaging surfaces for resilient movement thereof in a



direction transverse to the longitudinal extent of the elongate opening, the at least one opposed article engaging surface and the other opposed article engaging surface forming the elongate opening with a width extent transverse to the travel path slightly less than the corresponding width of the textile article which enters the elongate opening, the mounting means being operable to bias the at least one opposed engaging surface yieldably inwardly toward the other surface for compressive engagement of a textile article therebetween, said displacing means including a first elongate roller having a conical receiving end forming one of the opposed engaging surfaces and a second elongate roller having a conical receiving end forming the other opposed engaging surface, means for mounting the elongate rollers with their axes parallel to the direction of advancement of the support members along the aligned portion of the travel path for entry of textile articles into the elongate opening formed between the elongate rollers during advancing movement of the support members along the travel path, and means for rotating at least one of the elongate rollers about its axis in a direction causing removal of an article from the post on which it is supported.

5,366,066

AUTOMATIC BRICK PLACING MACHINE LOADER

Phillip H. Boot, Sydney, Australia, assignor to Panelbrick Industries Pty. Limited, Australia

PCT No. PCT/AU91/00561, § 371 Date Jun. 1, 1993, § 102(e) Date Jun. 1, 1993, PCT Pub. No. WO92/10626, PCT Pub. Date Jun. 25, 1992

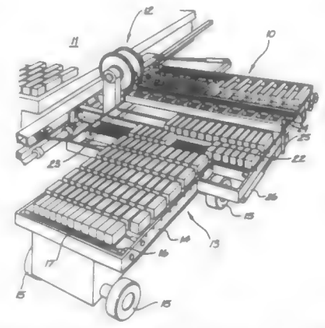
PCT Filed Dec. 3, 1991, Ser. No. 70,323

Claims priority, application Australia, Dec. 4, 1990, PK 3702

Int. Cl.[5] B65G *47/12*

U.S. Cl. 198—458 **6 Claims**

1. A loader for an automatic brick placing machine comprising a frame, means for attachment of the frame to a receptacle of a brick placing machine for translational movement therewith, a plurality of motor driven rollers for the receipt of bricks arranged on the frame, said rollers being arranged in parallel at a plurality of stations and being constructed and arranged to move bricks towards a station from which the bricks are transferred to a brick placing machine, said stations including a first station having means for receiving a row of bricks in a close side by side configuration and moving said bricks into a configuration in which they are equally spaced apart at a predetermined interval, means at each station actuable to prevent movement of any brick caused by the rotation of one of said rollers, a final station for receiving a predetermined number of bricks arranged in predetermined position in accordance with the requirements of the brick placing machine



in the formation of a brick panel, means to transfer said last mentioned bricks from the said final station to the receptacle of a brick placing machine while preserving the relative positions of said bricks, a pre-final station prior to said final station having means for moving bricks received from a previous station along the pre-final station to predetermined positions for transfer to the final station and a programmable logic controller control device programmed to control the movement of moving parts of the loader to effect movement of the bricks through the loader to transfer bricks to the brick placing machine in accordance with the requirements of a brick panel being formed by the brick placing machine.

5,366,067

EXTRACTION DEVICE AND STORAGE AREA EQUIPPED WITH SUCH A DEVICE

Jean-Marie Courtois, Wailly Beaucamp, and Albert Suratteau, 1,square Raynouard-78150, Rocquencourt, both of France, assignors to J M C (S.A.); Comet (S.A.) and Albert Surratteau, all of France

Filed Oct. 1, 1993, Ser. No. 130,655

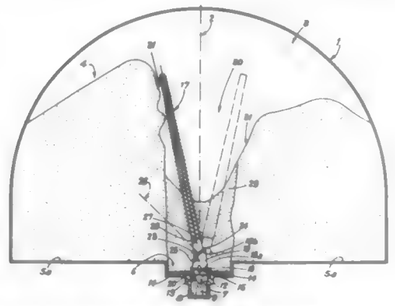
Claims priority, application France, Oct. 5, 1992, 92 12310

Int. Cl.[5] B65G *65/16*

U.S. Cl. 198—518 **11 Claims**

1. An extraction device for the extraction of bulk products stored over a storage area having at least one evacuation opening, said device comprising a support piece having its foundation mounted to rotate above the evacuation opening along a first vertical axis of rotation and defining a supporting base that is inclined by an angle β with respect to the horizontal; first means for driving the support piece in rotation about the first axis of rotation; an inclinable scraper shaft being rotable together with the support piece along the first axis of rotation, wherein the foundation of the scraper is inclined with respect to the axis of the scraper shaft by an angle α complementary of said angle β, and mounted on the supporting base to be rotatable along a second axis of rotation perpendicular to said base;

and second means for driving the scraper shaft in rotation about the second axis of rotation for adjusting the inclination of



the scraper shaft with respect to the vertical by an angle between 0° and 90°.

5,366,068

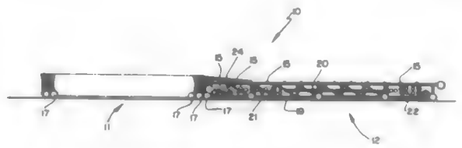
CONVEYOR BELT/CUTTING HEAD ADVANCE MECHANISM

Kevin R. Hall, Wollongong, and Gordon Wilkinson, Unanderra, both of Australia, assignors to Australian Longwall Pty. Limited, New South Wales, Australia

Filed May 20, 1993, Ser. No. 65,544

Int. Cl.[5] B65G *21/14*

U.S. Cl. 198—812 **7 Claims**



1. An apparatus comprising:

an extendable/contractible conveyor belt support structure comprising a plurality of structural elements interconnected in a scissor-like configuration, wherein a pair of elements pivotally cross at respective mid-points thereof, and an adjacent pair of like-crossed elements is pivotally connected at upper and lower distal ends thereof to respective upper and lower distal ends of the first said crossed pair of elements, the conveyor belt support structure further comprising a plurality of conveyor belt advancing roller sets, each mounted to respective structural elements and including a plurality of conveyor rollers forming a trough-like support for the conveyor belt, and a plurality of ground engaging wheels directly supported by at least some of said structural elements nearby the lower ends thereof,

a conveyor belt gathering structure connected to one end of the support structure and comprising a plurality of rollers,

a conveyor belt supported upon the support structure and gathered upon the rollers of the gathering structure, and

means to effect extension and contraction of the support structure wherein the conveyor belt is gathered upon or ungathered from the gathering structure.

5,366,069

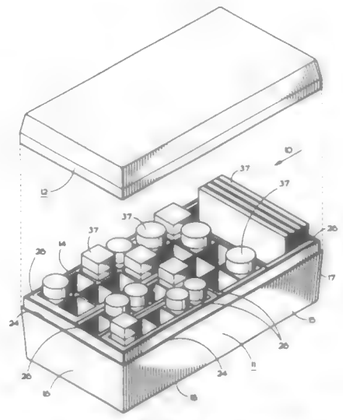
MODULAR COIN STORAGE ASSEMBLY

Mark W. Seidner, 9602 N. 121st Pl., Scottsdale, Ariz. 85259

Continuation of Ser. No. 904,460, Jun. 26, 1992, abandoned. This application Oct. 20, 1993, Ser. No. 139,458

Int. Cl.[5] A45C *1/00;* **B65D** *85/62*

U.S. Cl. 206—0.84 **10 Claims**



1. A modular coin storage system comprising: a plurality of discrete coin holders; a base member; a plurality of modular racks, each having a plurality of discrete coin-holder receiving compartments defined thereby of preselected section and depth to conform to the size of one of said coin-holders to be stored therewithin; means for suspending said modular racks within said base member; and means for covering said base member in interlocking engagement therewith to prevent the passage of dust thereinto while simultaneously securing said modular racks from movement relative thereto.

5,366,070

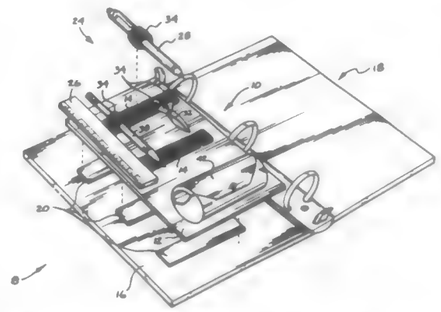
ARTICLE HOLDING KIT

Samantha E. Wolov, 3607 Husted Dr., Chevy Chase, Md. 20815

Filed Jul. 5, 1994, Ser. No. 267,751

Int. Cl.[5] B65D *71/00*

U.S. Cl. 206—214 **5 Claims**

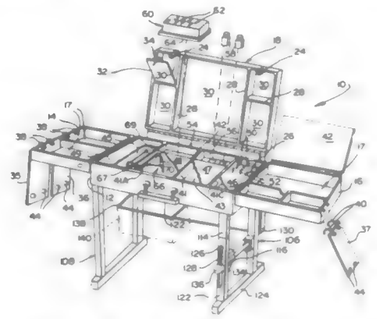


1. An article holder kit adapted to receive writing, drawing, and paper working articles thereon and for being detachably secured to a flat surface, the article holder kit comprising:

a) a predetermined number of elongated, thin permanent magnet strips, each having an adhesive backing and a release liner covering said adhesive backing, for attachment to a flat supporting surface;

b) a thin ferrous metal plate, dimensioned and configured to overlie said number of magnet strips;
c) a predetermined amount of first, upwardly directed fastening material adhesively attached to an upper face of said ferrous metal plate; and
d) at least one, narrow, short length of second fastening material cooperating with said first fastening material, and having an adhesive backing and a release liner covering said adhesive backing, for attachment to an article, thus to detachably mount the article on said first fastener material and onto said metal plate.

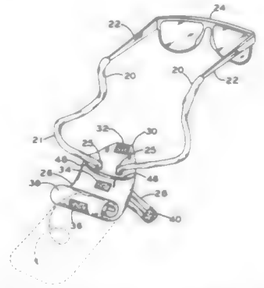
5,366,071
COMBINED WORKBENCH AND CARRY-CASE
Andrew Laszlo, 3 Locust La., Glen Head, N.Y. 11545
Filed Feb. 15, 1994, Ser. No. 196,571
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—218 **25 Claims**



1. A combined workbench and carry-case adapted for fly-tying, comprising a main body unit defining a work surface, said main body unit including at least one stowage compartment below said work surface, said stowage compartment being adapted to accommodating a fly-tying vise, means for securing the vise in an operational mode projecting above the work surface and in an alternate stowed mode below the work surface, a lid member hingedly attached to the main body unit, and lid member being selectively swingable to an operative position extending upwardly from the main body unit, said lid member further being adapted for closure in an overlying interlocked relationship with regard to the main body unit for conversion to a carry-case.

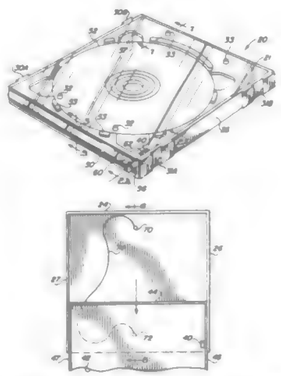
5,366,072
STORAGE POUCH AND EYEGLASS NECKSTRAP TENSIONING DEVICE
Michael P. Goldenberg, 248 Seminole Dr., Chapel Hill, N.C. 27514
Filed Dec. 14, 1993, Ser. No. 167,320
Int. Cl.[5] A45C *11/04*
U.S. Cl. 206—5 **10 Claims**

1. An improved protective pouch assembly for storing objects, including eyeglasses having lenses, a frame and a pair of foldable arms and for positioning the frame on the head of a user comprising:
a flexible strap having opposite ends, each of said opposite ends having attaching means to selectively attach said protective pouch to the ends of said foldable arms of said eyeglasses;
a hollow, flexible collapsible pouch having a closed end and an open end enabling compacting of said pouch from an extended profile to a compact profile;
connecting means for linking said pouch to said strap;
said connecting means comprising at least one aperture in one end of said pouch through which at least one of said portions of flexible strap passes;
said compact profile being adjacent said one end of said pouch;
said pouch in said extended profile enabling insertion of and providing protection to said eyeglasses when said pouch is in said extended profile; and
said at least one aperture providing a frictional force against



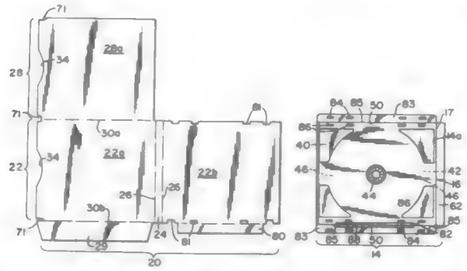
movement of said flexible strap to enable selective positioning of said pouch along said flexible strap relative to the head of said user including a tensioning position securing said pouch adjacent the head of said user to retain said eyeglasses;
whereby said eyeglasses may be selectively secured to and retained on the head of said user in said compact profile.

5,366,073
STORAGE CONTAINER FOR MEDIA RECORDS
Daniel D. Turrentine, Scottsdale, and Michael W. Tibshraeny, Paradise Valley, both of Ariz., assignors to JaJa, Inc., Scottsdale, Ariz.
Filed Aug. 2, 1993, Ser. No. 100,248
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—309 **20 Claims**



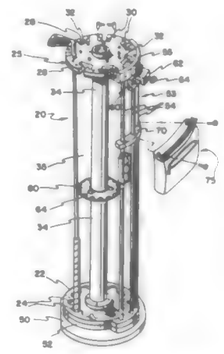
1. A storage container for media records including in combination:
a rectangular outer casing having top, bottom, first and second side walls, a rear wall, and an open front;
a media record storage tray having a bottom, first and second side walls, a rear wall and a front wall movably mounted in said outer casing with said front wall of said tray closing the open front of said outer casing in a storage position of said tray and said tray being extendable through the open front of said outer casing to an access position thereof to permit access to a media record stored therein;
a releasable locking member for releasably locking said tray in said outer casing in said storage position and operated to release said tray for movement to said access position;
guide ribs on one of the outside of the bottom of said tray and the inside of the bottom of said outer casing for providing a predetermined space of approximately 1/32 inches high between the bottom of said outer casing and the bottom of said tray; and
an elongated, flat, serpentine, non-coil wire spring having first and second ends located in said predetermined space between the bottom of said tray and the bottom of said outer casing in the storage position of said tray for biasing said tray to the access position thereof, with the first end of said spring attached to the inside of the bottom of said outer casing and the second end of said spring attached to the outside of the bottom of said tray, said elongated spring having a thickness which is less than said predetermined space between the bottom of said tray and the bottom of said rectangular outer casing.

5,366,074
CD PACKAGE COMPRISING NON-PLASTIC PANELS
Patrick J. O'Brien, Hackensack; Herbert Friedman, Fort Lee, both of N.J.; Donald R. Ford, Louisville, Ky., and Larry Durham, Terra Haute, Ind., assignors to Ivy Hill Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 983,634, Dec. 1, 1992, and a continuation-in-part of Ser. No. 807,477, Dec. 12, 1991, Pat. No. 5,219,417, which is a continuation-in-part of Ser. No. 698,201, May 10, 1991, Pat. No. 5,205,405, said Ser. No. 983,634, is a continuation of Ser. No. 817,897, Jan. 8, 1992, Pat. No. 5,188,230. This application Mar. 3, 1993, Ser. No. 25,982
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—312 **40 Claims**



1. In a storage package for a recording medium comprising:
A. a plurality of non-plastic panels including a pair of end panels, said plurality of panels being movable between an open orientation enabling access to contents of the package and a collapsed orientation for storage purposes, each of said panels having a generally planar and generally rectangular panel body, a pair of opposed transverse panel ends, and a pair of opposed lateral panel sides; and
B. a holder formed of plastic disposed on one of said panels for receiving and maintaining a recording medium thereon, said holder having a generally planar and generally rectangular holder body, a pair of opposed lateral holder sides, and a pair of opposed transverse holder ends;
the improvement wherein
a given panel, which is one of said end panels and is not said one panel on which said holder is disposed, defines a compartment having a pair of opposed lateral compartment sides and a pair of opposed transverse compartment ends, said compartment having an open transverse compartment end at one end of said plurality of panels and being configured and dimensioned to removably receive printed matter therein through said open end;
said one panel additionally defines at least one lateral spine visible when said plurality of panels is in said collapsed orientation; and
said holder is releasably secured to said one panel and easily removable therefrom.

5,366,075
GOLF EQUIPMENT CARRIER WITH ROTATING CLUB FRAME
S. Dwight Mills, 1010 American Eagle Blvd., Sun City Center, Fla. 33573
Filed Jul. 6, 1993, Ser. No. 86,654
Int. Cl.[5] A63B *55/00, 55/02*
U.S. Cl. 206—315.6 **2 Claims**



1. In a golf equipment carrier, a club holding frame comprising:
a bottom member having a plurality of upwardly facing cup members arranged in at least one circle of predetermined radius to receive handle ends of inverted clubs,
a top member having a plurality of pockets corresponding in number to said cup members and arranged inwardly of the periphery of said top member in a pocket circle of approximately the same radius as the cup member circle for receiving the shank portions of the clubs,
the top member having slots extending inward from its periphery to adjacent one side of said pockets and a corresponding number of narrow passages connecting said slots to said pockets providing passages for inserting and removing the shank end of a club shaft with respect to the related pockets, and
a shaft centrally connecting the centers of said top and bottom members and spacing said top and bottom members from one and other to form an elongated club receiving frame;
the improvement comprising
shaft retaining means comprising a disc member mounted on said shaft and having a rim of a radius slightly greater than the radius of at least one of the cup member circle and pocket circle, said disc member having a plurality of recesses around its rim corresponding in number and in peripheral alignment to said cup members and being of a depth sufficient to pass the shafts of clubs inserted into said club receiving frame, each said recess having an open face presented radially outward of said disc member,
a resilient band extending about said rim of said disc member and having portions traversing the open faces of said recesses whereby only said portions of said band exert a holding force against the shaft of each club inserted into said holding frame,
said bottom member being formed as an integral member having said cup members defined by walls separating the cup members from each other,
said walls of said cup members sloping downward and inward of said bottom member and terminating in radially

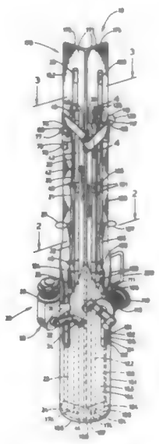
inwardly edges, and therefore being of greater height at the perimeter of said bottom member than at the radially inward edges of said cup members.

5,366,076

CONTAINER FOR FISHING ROD AND REEL

John M. Lyles, 5723 N. 6th St., Fresno, Calif. 93710

Filed May 28, 1993, Ser. No. 68,924
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—315.11 8 Claims



1. A container for a work object composed of a pair of subassemblies interconnected by a linking member, the container comprising a housing having an internal chamber dimensioned to receive at least a potion of said work object therewithin, a passage in the housing laterally bounded by edges of said housing and through which said linking member of the work object extends when the work object is in a position in the internal chamber ready for removal therefrom and said edges of the housing are operable substantially to restrain the linking member, and thereby the work object, against lateral dislocation from the ready position and wherein said housing and the internal chamber thereof are composed of a first section, enclosing said portion of one subassembly of said pair of subassemblies with the linking member extending through the passage to support the other subassembly of said pair of subassemblies externally of the housing in the ready position, and a second section, having a back wall and an entrance opening communicating with the passage for movement of the work object to and from said ready position.

5,366,077

HINGED-LID CIGARETTE BOXES WITH FOLD-IN LOCKS TO FACILITATE CONSISTENT LID CLOSURE

Xuan M. Pham, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

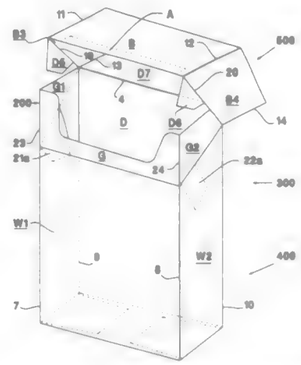
Filed Jul. 20, 1993, Ser. No. 94,752
Int. Cl.[5] B65D *85/10, 5/66*
U.S. Cl. 206—268 52 Claims

1. A pack for containing a plurality of cigarettes, said pack comprising:

a lower main portion having an inner surface facing the inside of the pack and an outer surface facing outwardly from the pack; wherein said lower main portion is substantially box-shaped having at least four substantially vertical walls and a bottom wall;

an innerframe member partly inside at least an upper portion of said lower main portion, said innerframe member having an inner surface facing the inside of the pack and an outer surface facing outwardly from the pack, at least a portion of said innerframe member extending above said lower main portion; wherein said innerframe member has at least one substantially vertical wall; and

a lid having an inner surface facing the inside of the pack and an outer surface facing outwardly from the pack; wherein at least one of said innerframe member and said lid includes retention means for providing interference between said outer surface of said innerframe member and said inner surface of said lid to substantially prevent said lid from inadvertently opening to any degree; wherein said lid has a top wall and at least a substantially vertical front wall, a substantially vertical rear wall, a substantially vertical left side wall and a substantially vertical right side wall, each said wall having an inner surface facing the inside of the pack and an outer surface facing outwardly from the pack; and



at least one of said right side wall and said left side wall of said lid includes said retention means for providing interference between said outer surface of said innerframe member and said inner surface of said lid to substantially prevent said lid from inadvertently opening to any degree; wherein:

said retention means comprises at least one tab member extending downwardly from a bottom edge of one of said right side wall and said left side wall of said lid;

said tab member can be folded about a hinge-line forming said bottom edge; and

said folded tab member is substantially adjacent to said inner surface of one of said right side wall and said left side wall of said lid.

5,366,078

VENTED CARRYING CASE FOR CONTACT LENSES

Alan J. Braun, Livonia, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sep. 28, 1993, Ser. No. 127,937
Int. Cl.[5] B08B *3/04*
U.S. Cl. 206—5.1 9 Claims

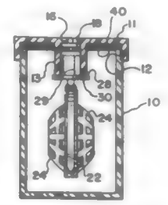
1. A case for disinfecting, cleaning or storing contact lenses, wherein said case is vented, comprising;

a container having side walls, a bottom wall and an open top;

a removable, sealable cap, fitted to the open top of the container, said cap having an inner surface including a hollow pedestal having an end adjacent said inner cap surface that encompasses an aperture venting said cap to the environment and a distal open end that extends into the container;

a gas and liquid impermeable gasket fitted inside the hollow end of the pedestal adjacent the encompassed aperture of the cap, wherein said gasket permits venting of gas but not liquid through said adjacent cap aperture; and

a support for holding and positioning contact lenses in said container, said support comprising a post that is fitted into the distal end of the hollow pedestal, said pedestal and



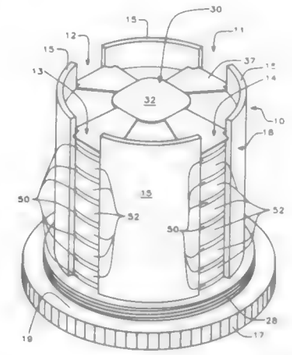
post including a channel permitting venting of gas from the container interior through the cap aperture.

5,366,079

INTEGRATED CIRCUIT WAFER AND RETAINER ELEMENT COMBINATION

Chih-Ching Lin; Jiin C. Tai; Jane-Hong Huang, and Ying-Kuang Peng, all of Hsin-Chu, Taiwan, Prov. of China, assignors to Taiwan Semiconductor Manufacturing Company, Hsin-chu, Taiwan, Prov. of China

Filed Aug. 19, 1993, Ser. No. 108,249
Int. Cl.[5] B65D *73/02, 85/42, 85/02*
U.S. Cl. 206—328 11 Claims



1. The combination of an integrated circuit wafer container and a retainer element for stabilizing wafers within the container comprising:

a wafer container having an enclosure member and a body member, said body member having a base, a plurality of arcuate, longitudinally directed, members supported on said base adapted to encircle wafers stacked on the base, said arcuate members spaced from each other by longitudinal slots;

said enclosure member having a top wall and a cylindrically shaped wall to encompass and enclose said plurality of arcuate members, and means to secure said body member and said enclosure member together;

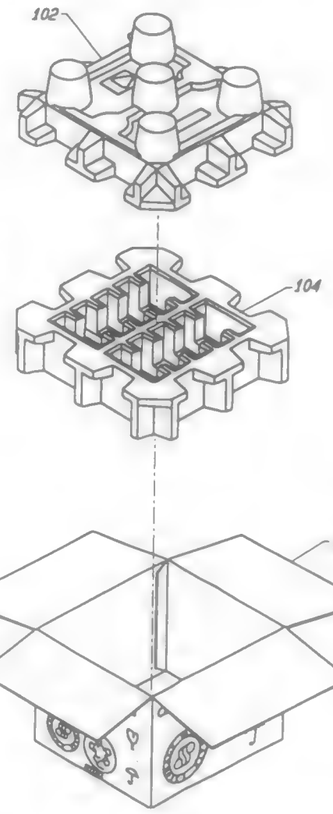
said retainer element having a flat central portion, and a plurality of flexible radially extending flaps depending from said central portion, said flaps inclined downwards from the plane of said flat central portion, each of said flaps of said retainer element has two opposed notches in the outer end that provide parallel surfaces which engage said slots between said arcuate members and abutting surfaces which engage the inside surfaces said arcuate members, said retainer element positioned within said arcuate members of said body member with the end 20 portions of said flaps positioned in said slots.

5,366,080

MOLDED RIDGE TOLERANCE COMPENSATOR

Ronald T. Carstersen, Santa Cruz, and William R. Phillips, Soquel, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Oct. 21, 1993, Ser. No. 140,741
Int. Cl.[5] B65D *81/02, 85/30*
U.S. Cl. 206—334 17 Claims



1. A reusable shipping apparatus for encompassing and fixably maintaining a plurality of disc drives in a shipping container comprising:

first and second holding members,

said first holding member having a first face with a plurality of receptacles including at least one crushable rib extending from at least one wall of said plurality of receptacles,

said second holding member having a second face opposing said first face of said first holding member, said second face with a like plurality of receptacles including at least one crushable rib extending from at least one wall of said like plurality of receptacles, whereby upon insertion of each of said plurality of disc drives in each of said receptacles of said first and said second holding members, said crushable rib is compressed thereby fixably maintaining said each of said plurality of disc drives in an enclosure formed by said first and said second holding members.

5,366,081

PACKAGED SYNTHETIC ABSORBABLE SURGICAL ELEMENTS

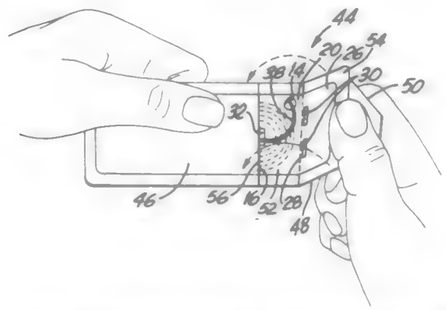
Donald S. Kaplan, Weston; Matthew E. Hermes, Easton; Ross R. Muth, Brookfield; David L. Brown, Wallingford, and Henry A. Holzwarth, Weston, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 568,089, Aug. 16, 1990, Pat. No. 5,222,978, which is a continuation-in-part of Ser. No. 529,740, May 22, 1990, Pat. No. 5,037,429, which is a continuation-in-part of Ser. No. 89,735, Aug. 26, 1987, abandoned, and a continuation-in-part of Ser. No. 221,308, Jul. 19, 1988, Pat. No. 5,051,272, and a continuation-in-part of Ser. No. 388,152, Aug. 1, 1989, abandoned, and a continuation-in-part of Ser. No. 395,476, Aug. 18, 1989, abandoned, and a continuation-in-part of Ser. No. 491,215, Mar. 9, 1990, Pat. No. 5,019,093, which is a continuation of Ser. No. 344,745, Apr. 28, 1989, abandoned, and a continuation-in-part of Ser. No. 227,699, Aug. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 89,732, Aug. 26, 1987, abandoned. This application Jul. 10, 1992, Ser. No. 911,981

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/06*

U.S. Cl. 206—339 31 Claims



1. The combination of a synthetic absorbable surgical suture and a package for the synthetic absorbable surgical suture which comprises:

a) an outer envelope of substantially moisture impervious material characterized by longitudinal side edges and top and bottom transverse edges, the envelope including first and second walls, said second wall adhered to said first wall along the bottom transverse edge and portions of the first wall longitudinal side edges with the top transverse edge of said second wall terminating a distance below the top transverse edge of said first wall such that said second wall is shorter than said first wall to define an accessible pocket between them for receiving a surgical suture retainer member;

b) a peelable closure flap adhered to the outer peripheral portion of said first wall along the top transverse edge and the remaining portions of the first wall longitudinal side edges not adhered to the second wall, the peelable closure flap further adhered to the second wall and sealing access to the pocket of the outer envelope, the closure flap terminating in a grip-facilitating tab whose free edge terminates a distance away from the top and bottom transverse edges of the outer envelope; and

c) a surgical suture retainer member received within the pocket of the outer envelope and a synthetic absorbable surgical suture disposed in said retainer member, whereby said package is opened by peeling of said closure flap away from the second wall and at least the longitudinal side edges of the first wall.

5,366,082

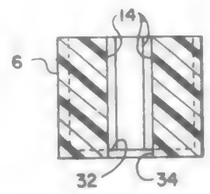
NAIL SUPPORT STRIPS

Harry M. Haytayan, 32 Indian Rock Rd., Nashua, N.H. 03063

Filed Jan. 25, 1994, Ser. No. 186,792

Int. Cl.[5] B65D *85/24*

U.S. Cl. 206—343 8 Claims



1. A nail support strip for supporting a plurality of nails in series with one another, such strip comprising a series of parallel sleeves each having a first end and a second end, with each sleeve being connected to an adjacent sleeve and comprising (1) a plurality of internal mutually converging ribs that define a passageway for receiving the shank of a nail, and (2) an end wall at said second end of said sleeve connected to said ribs and providing support against lateral deformation of said sleeve.

5,366,083

PACKING AND STORING RECEPTACLE, PARTICULARLY FOR KNITTING MACHINE NEEDLES

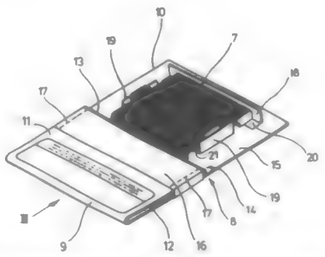
Siegmund Sos, and Artur Hoch, both of Albstadt, Germany, assignors to Theodor Groz & Söhne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Germany

Filed Jul. 16, 1993, Ser. No. 92,424

Claims priority, application Germany, Jul. 17, 1992, 9209580[U]

Int. Cl.[5] B65D *85/24*

U.S. Cl. 206—380 17 Claims



1. A packing and storing receptacle particularly for knitting needles, comprising

(a) a bottom panel;

(b) a top panel superposed on the bottom panel and defining a pouch therewith for receiving at least a longitudinal part of contents; said bottom and top panels being formed by a single, flexible sheet and being separated from one another by a transverse folding edge defining an end of the receptacle; said top panel having a terminal edge remote from said transverse folding edge and defining, together with said bottom panel, a removal opening of said pouch; said bottom and top panels having longitudinal lateral edges extending generally perpendicularly to said transverse folding edge along a length dimension of said receptacle;

(c) lateral tab means cut out and/or bent out from and integrally attached to said sheet for laterally guiding and positioning the contents; said lateral tab means including at least two lateral tabs being spaced from one another in a direction parallel to said transverse folding edge and each being oriented at an angle other than 90° to said transverse folding edge; and

(d) connecting means for attaching the longitudinal lateral edges of said bottom and top panels to one another at transversely opposite zones.

6. A packing and storing receptacle particularly for knitting needles, comprising

(a) a bottom panel;

(b) a top panel superposed on the bottom panel and defining a pouch therewith for receiving at least a longitudinal part of contents; said bottom and top panels being formed by a single, flexible sheet and being separated from one another by a transverse folding edge defining a first end of the receptacle; said top panel having a terminal edge remote from said transverse folding edge and defining, together with said bottom panel, a removal opening of said pouch; said bottom and top panels having longitudinal lateral edges extending generally perpendicularly to said transverse folding edge along a length dimension of said receptacle; said receptacle having a second end remote from said first end;

(c) lateral tab means cut out and/or bent out from and integrally attached to said sheet for laterally guiding and positioning the contents;

(d) connecting means for attaching the longitudinal lateral edges of said bottom and top panels to one another at transversely opposite zones; and

(e) a rectangular parallelepiped-shaped housing portion situated at said second end and extending parallel to said transverse folding edge; said housing portion projecting from said bottom panel and being formed from a multiply-folded flap constituting part of said flexible sheet; said housing portion having a side wall oriented towards and spaced from said removal opening; said side wall of said housing portion having a receiving opening for allowing passage of one part of the contents into said housing portion.

7. A packing and storing receptacle particularly for knitting needles, comprising

(a) a bottom panel;

(b) a top panel superposed on the bottom panel and defining a pouch therewith for receiving at least a longitudinal part of contents; said bottom and top panels being formed by a single, flexible sheet and being separated from one another by a transverse folding edge defining an end of the receptacle; said top panel having a terminal edge remote from said transverse folding edge and defining, together with said bottom panel, a removal opening of said pouch; said bottom and top panels having longitudinal lateral edges extending generally perpendicularly to said transverse folding edge along a length dimension of said receptacle;

(c) lateral tab means cut out and/or bent out from and integrally attached to said sheet for laterally guiding and positioning the contents; and

(d) connecting means for attaching the longitudinal lateral edges of said bottom and top panels to one another at transversely opposite zones situated solely at locations spaced from said transverse folding edge; said transversely opposite zones being situated at said removal opening.

5,366,084

CONTAINERS POSITIONABLE OVER OIL FILTERS OF MOTORS FOR PRECLUDING THE SPILLAGE OF OIL

George Post, 319 Paseo Venado, Rio Rico, Ariz. 85648

Filed Mar. 21, 1994, Ser. No. 215,100

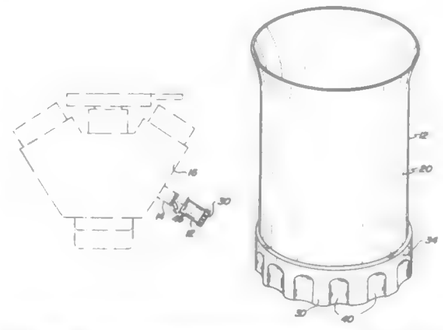
Int. Cl.[5] B65D *85/00*

U.S. Cl. 206—319 4 Claims

1. A new and improved container positionable over oil filters of motor for precluding the spillage of oil comprising:

sidewalls in a cylindrical configuration over the majority of their extent, the sidewalls forming free lower ends and free upper ends, the upper ends being formed with an outwardly flare in a cone-like configuration, the sidewalls being fabricated of an absorbent cardboard-like material;

a cap formed with a lower generally planar base and upstanding cylindrical walls, the cylindrical walls including an upper interior surface of a size to receive the lower ends of the sidewalls, a lower exterior surface of said cap being formed with axially extending flutes;



the flutes extending from the exterior surface to the interior surface and adapted to mate with flutes on the lower exterior surface of an oil filter to be removed; and

an adhesive coupled to the exterior lower surface of the sidewalls and the interior upper surface of the cap.

5,366,085

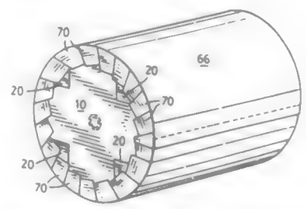
HEADER ASSEMBLY FOR PAPER ROLL PACKAGING

Daniel D. Kewin, 16, Dogwood Dr., Brantford, Ontario, Canada

Filed Apr. 8, 1994, Ser. No. 225,290

Int. Cl.[5] B65D *85/66*

U.S. Cl. 206—407 6 Claims



1. A packaged roll of paper or other sheet material comprising:

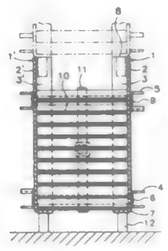
a roll of paper or other sheet material,

a protective sheet of material wrapped around the circumference of the roll and having overlapping longitudinally-extending edge portions secured together, said protective sheet extending beyond the roll at opposite ends thereof to provide projecting protective sheet portions,

the projecting portion of the protective sheet at each end being crimped radially inwardly over the outer annular portion of the end of the roll, and

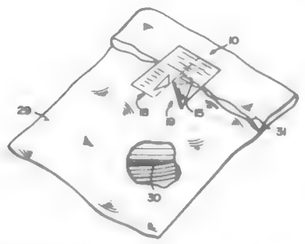
a header assembly at at least one end of the roll located internally of the crimped over projecting protective sheet portion, said header assembly comprising a header body with a generally circular periphery with a diameter substantially equal to the diameter of the roll, said header body having a circumferentially extending portion adjacent the periphery of increased thickness relative to the central portion thereof located between the crimped over protective sheet portion and the end of the roll to protect the radially outer portion of the end of the roll from damage by the crimped over projecting protective sheet portion.

5,366,086
CONTAINER FOR TUBULAR AND ROD-SHAPED WORKPIECES
Hans E. Weerth, Simriweg 6, D-7967 Bad Waldsee-Reute, and Wolfgang Krug, Reinhold-Abele-Strasse 22, D-7981 Waldburg, both of Germany
PCT No. PCT/DE90/00706, § 371 Date Mar. 30, 1992, § 102(e) Date Mar. 30, 1992, PCT Pub. No. WO91/04203, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 13, 1990, Ser. No. 838,272
Claims priority, application Germany, Sep. 15, 1989, 3930920; Mar. 17, 1990, 4008683
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—443 **7 Claims**



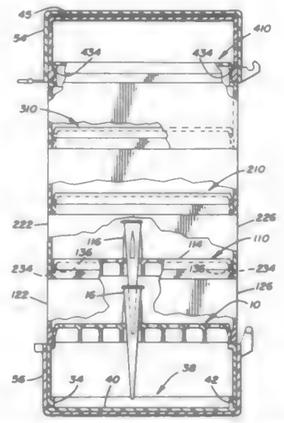
1. A transport container for tubular and rod-shaped workpieces, comprising:
two container components forming opposite side walls of the container for receiving opposite respective ends of each workpiece, each container component being in the shape of a half shell with a generally flat shell floor having first and second opposite edges and two opposite side edges, a circumferential shell wall attached to said second edge and said two opposite side edges of said shell floor and open on said first edge, and foot support means for supporting the container, said foot support means extending from the shell wall at said second edge, and
attachment elements located on the side edges of the container components for attachment of tension devices for urging the container components towards each other.

5,366,087
RESEALABLE PRESSURE SENSITIVE CLOSURE LABEL
John C. Bane, Grand Island, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Dec. 28, 1992, Ser. No. 997,540
Int. Cl.[5] B65D *33/20*
U.S. Cl. 206—459.5 **6 Claims**



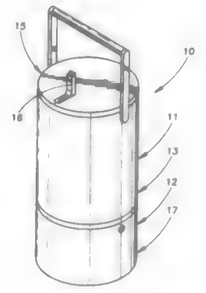
1. A package comprising:
a packaging material including an end edge portion defining an end of said packaging material, and comprising thin sheet wrapping material, said end edge overlying another portion of said thin sheet wrapping material;
a label placed over said end edge portion to hold said end edge portion to said another portion, in a closed position;
said label including indicia imaged on said top face thereof including price per increment indicia, incremental units indicia, and total price indicia;
said label including means for providing an indication that said end edge portion has been opened while allowing resealing of said end edge portion; and
wherein said label comprises a substrate having first and second portions with a top face and a bottom face, and wherein said means for providing an indication that said end edge portion has been opened while allowing resealing of said end edge portion comprises permanent, pressure sensitive adhesive associated with said first portion bottom face, repositional pressure sensitive adhesive associated with said second portion bottom face, and a single line of weakness at the border between said first and second portions allowing ready separation of said label at said line of weakness, said line of weakness extending generally transverse to said end edge portion; said permanent and repositional adhesive disposed substantially immediately adjacent each other on opposite sides of said single line of weakness; and
both said repositional and permanent adhesives engaging both said edge portion and said another portion of said package.

5,366,088
STACKABLE PIPETTE TIP RACK
Bob Hill, Novato, and Tom Moulton, San Anselmo, both of Calif., assignors to Larcon, North America, San Rafael, Calif.
Filed Sep. 1, 1993, Ser. No. 115,467
Int. Cl.[5] B65D *21/02, 6/04*
U.S. Cl. 206—499 **13 Claims**



1. A pipette tip rack formed to lockingly nest with a second pipette tip rack of the same construction, the pipette tip rack for holding a plurality of conically shaped pipette tips in an upright position and comprising:
a top rectangular surface defining a plurality of holes, each hole having a diameter less than the largest outside diameter of a pipette tip;
four subtending walls affixed to said top surface thereby forming a generally rectangular parallelepipedal shaped member;
at least one of the four subtending walls defining locking means for releasably lockingly nesting said rack to a second rack;
said locking means comprising a first pivotable member integrally formed with one of the four subtending walls and pivotable about an axis substantially parallel to the top rectangular surface, said pivotable member defining an integrally extending boss along its lower edge distal from said top rectangular surface, so that said boss is movable outwardly of the plane of the subtending wall when the first pivotable member is pivoted.

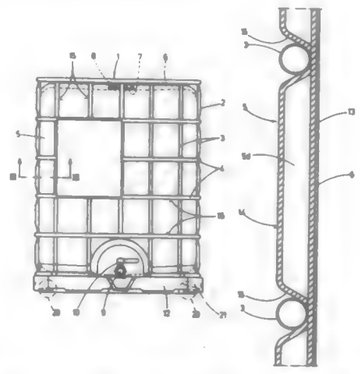
5,366,089
SEPARABLE FOOD AND BEVERAGE CONTAINER COMBINATION
Eddy D. Parker, Rte. 2, Box 4B, Comanche, Tex. 76442
Filed Apr. 18, 1994, Ser. No. 228,878
Int. Cl.[5] A45C *11/20*
U.S. Cl. 206—546 **18 Claims**



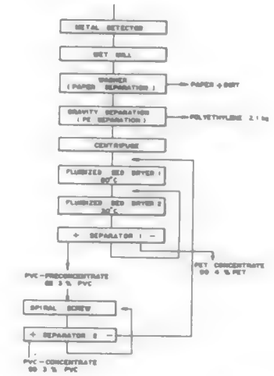
1. A separable food and beverage combination comprising:
(a) an upper chamber formed by a first circumferential wall and a first bottom wall attached to the first circumferential wall;
(b) a first lid, releasably connected to the first circumferential wall, opposing the first bottom wall;
(c) a lower chamber formed by a second circumferential wall and a second bottom wall attached to the second circumferential wall;
(d) a lid plate, releasably connected to the first bottom wall and releasably connected to the second circumferential wall, opposing the second bottom wall;
(e) a bowl removably placed within the lower chamber;
(f) a sealing lid removably attached to the bowl;
(g) a first handle locking recess in the first circumferential wall; and
(h) a second handle locking recess in the second circumferential wall.

5,366,090
PALLET CONTAINER
Udo Schutz, Ruckersteg 4, D-5418 Selters, Germany
Continuation of Ser. No. 977,201, Nov. 16, 1992, abandoned. This application Mar. 25, 1994, Ser. No. 217,757
Claims priority, application Germany, Nov. 14, 1991, 4137494
Int. Cl.[5] B65D *19/06, 19/42*
U.S. Cl. 206—599 **9 Claims**

1. Pallet container for use as a disposable and reusable container for liquids, comprising: a flat pallet made of one of metal and wood designed for handling by one of a forklift and shelf serving device, a thin-walled inner container made of synthetic resin standing on the pallet, said inner container having respectively one sealable filling opening and discharge fitting, a collapsible outer jacket made of one of a metal latticework and of sheet metal, detachably mounted on the pallet, and a supporting insert, in contact with the outer jacket, made up of wall sections foldable into a parcel, the collapsible outer jacket being made of a metal latticework, and the wall sections of the supporting insert comprising double-panel wall sections with smooth inner walls and outer walls, and with vertical and horizontal troughs for accommodating vertical and horizontal lattice rods of said metal latticework, said lattice rods being completely integrated into the wall sections to form a continuous external wall plane, and said wall sections being joined together by hinge parts.



5,366,091
METHOD OF SEPARATING POLY(ETHYLENE TEREPHTHALATE) (PET) AND POLY(VINYL CHLORIDE) (PVC)
Ingo Stahl, Vellmar; Axel Hollstein, Kassel; Ulrich Kleine-Kleffmann; Iring Geisler, both of Bad Hersfeld, and Ulrich Neitzel, Kassel, all of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Germany
PCT No. PCT/EP92/01514, § 371 Date Apr. 9, 1993, § 102(e) Date Apr. 9, 1993, PCT Pub. No. WO93/03851, PCT Pub. Date Mar. 4, 1993
PCT Filed Jul. 4, 1992, Ser. No. 39,271
Claims priority, application Germany, Aug. 21, 1991, 4127575
Int. Cl.[5] B03C *7/00*
U.S. Cl. 209—11 **10 Claims**



1. Process for the separation of plastic particles of a plastic mixture of plastics of a chemically different type which, however, are in an overlapping density range, whereby the plastic mixture has a particle size of under 10 mm, comprising the steps of
subjecting the plastic mixture prior to a triboelectric charge to a thermal treatment at 70° to 100° C. over a time period of at least five minutes;
maintaining a temperature of the plastic mixture during

triboelectric charging at 15° C. to 50° C. in a relative humidity of the ambient air of 10 to 40%; and

electrostatic separating the plastic mixture by means of a free-fall separator.

5,366,092

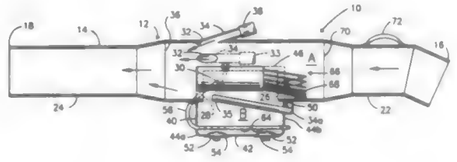
SEPARATION OF VALUABLE MINERALS FROM MATERIAL FOUND IN THE BEDS OF BODIES OF WATER

Howard M. Schmidt, Sr., 1503 Graham Rd., Venice, Sarasota County, Fla. 34293

Continuation-in-part of Ser. No. 879,309, May 7, 1992, abandoned. This application Jul. 27, 1993, Ser. No. 53,909

Int. Cl.[5] B03B *5/66, 7/00*

U.S. Cl. 209—17 **17 Claims**



12. A device for separating a portion of entrained solid materials from a stream of fluid of the type primarily for use in combination with a pump, said device comprising:

a pipe comprising a wall, an open inlet end, an open outlet end and an interior, said wall having a first opening and a second opening therethrough, and said pipe further comprising a mid portion, an inlet portion including said inlet end, and an outlet portion including said outlet end, a portion of said wall of said pipe that is intermediate said first opening and said second opening being offset inwardly in relation to said pipe interior such that said intermediate portion of said pipe defines a reduced circumference;

a container comprising a hollow body having an interior, a bottom, at least one side, and an open top, said open top being attached to said pipe such that said interior of said pipe is in fluid flow communication with said interior of said container through each of said first and second openings; and

a suction means attached to said pipe providing suction at said inlet end, whereby the fluid and the materials are drawn into said inlet end of said pipe, a portion of the stream of fluid and material passing through said mid portion of said pipe and out said outlet end, and the remaining portion of the stream of fluid and material passing through said first opening, a portion of the material being captured in said container and the remaining portion of the fluid and material passing through said second opening and out said outlet end.

5,366,093

APPARATUS FOR SEPARATING PARTICULATE MATERIALS

Ronald W. Huber, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 10, 1993, Ser. No. 120,114

Int. Cl.[5] B07B *4/00*

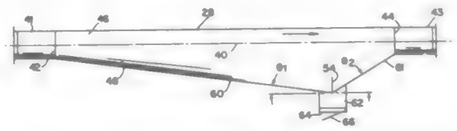
U.S. Cl. 209—135 **20 Claims**

1. A particle separation conduit for receiving and conveying a stream of shredded aluminum particles and relatively heavier weight contaminant particles and for separating the relatively heavier weight contaminant particles contained within the stream from the lighter weight aluminum particles contained within the stream, said conduit comprising:

a) an inlet for receiving relatively heavier weight contaminant particles and relatively lighter weight aluminum particles carried by an air stream;

b) an outlet spaced from and coaxial with the inlet for receiving and conveying relatively lighter weight aluminum particles carried by the air stream after the relatively lighter weight particles pass through the conduit; and

c) an intermediate section positioned between the inlet and the outlet, the intermediate section including a first, diverging portion having an enlarging cross-sectional area,



and a second, converging portion having a diminishing cross-sectional area, and a particle outlet at a lower portion of the intermediate section at a region where the first and second portion join for permitting removal from the intermediate section of relatively heavier weight contaminant particles that settle out from a stream of particles that are drawn into the inlet in a direction toward the outlet, wherein the length of the second, converging portion of the intermediate section is shorter than that of the first, diverging portion.

5,366,094

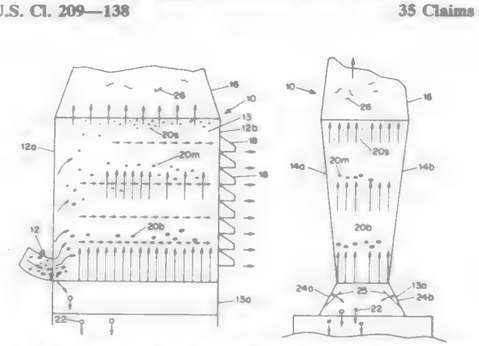
WIND TUNNEL FOR CLEANING AND CLASSIFYING SOLID PARTICLE FORM MATERIAL

Peter Stein, Caracas, Venezuela, assignor to Grana, Inc, New York, N.Y.

Continuation-in-part of Ser. No. 872,603, Apr. 23, 1992, Pat. No. 5,281,278. This application Dec. 6, 1993, Ser. No. 135,742

Int. Cl.[5] B08B *5/00;* **B07B** *4/00, 7/00*

U.S. Cl. 209—138 **35 Claims**



1. An apparatus for cleaning and classifying solid particles having different weights comprising:

a vertical chamber having a top, bottom and side walls;

means for introducing particles of different weights into the chamber;

means for creating a vertically upward suspension airstream in the chamber whose air speed varies with height, to thereby classify the particles by weight at different heights;

a plurality of outlet channel means arranged vertically along the side wall of the chamber for removing particles classified by weight; and

means for creating a horizontal conveyor airstream into the chamber which is substantially continuous throughout the vertical extent of the chamber to direct the suspended, classified particles toward the respective outlet channel means.

5,366,095

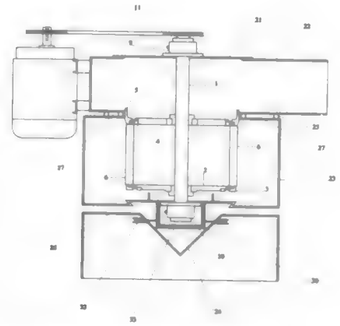
AIR CLASSIFICATION SYSTEM

Christopher Martin, P.O. Box 2158, Sylacauga, Ala. 35150

Filed Nov. 15, 1993, Ser. No. 151,756

Int. Cl.[5] B07D *4/00*

U.S. Cl. 209—139.2 **2 Claims**



1. An air classification system comprising

primary and secondary classification chambers mechanically separated in order to create a zone of atmospheric air,

turbine type wheel incorporating an integral tubular rotary discharge, said turbine type wheel with means for variable speed drive provided to create centrifugal product classification upon a feed material intimately mixed in an air stream provided by means of an external fan at sub atmospheric pressure, said turbine type wheel positioned inside said primary and secondary classification chambers such that said rotary discharge can transport the separated fine product from the primary classification chamber into the secondary classification chamber passing through said zone of atmospheric air, the fine product is separated from the air stream by means of a cyclonic collector or dust collector.

5,366,096

APPARATUS FOR AND METHOD OF AUTOMATICALLY DETECTING AND ELIMINATING CIGARETTES WITH VISUAL DEFECTS DURING CIGARETTE MANUFACTURE

Lewis H. Miller, Macon, Ga., assignor to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Nov. 17, 1993, Ser. No. 153,705

Int. Cl.[5] B07C *5/00*

U.S. Cl. 209—535 **6 Claims**

1. An apparatus for inspecting cylindrically shaped articles comprising:

means to feed cylindrically shaped articles to a first inspection means;

said first inspection means including means to inspect approximately 120° of the circumference of said article;

means to remove said articles from said first inspection means;

first means to rotate said articles 120°;

second inspection means including means no inspect a second 120° portion of the circumferences of said article;

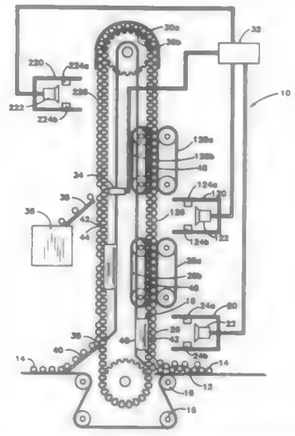
means to remove said articles from said second inspection means;

means to rotate said articles 120°;

third inspection means including means to inspect a third 120° portion of the circumference of said article;

removal means from said third inspection means; and,

each of said first, second, and third means to rotate said articles 120° includes a conveyor having grooves therein sized to receive said cylindrical articles, a first movable belt and a second movable belt disposed on opposite sides of said conveyor, said first belt and said second belt being in spaced relationship to each other, said spacing between said belts being equal to approximately the diameter of said cylindrical shaped articles and said second belt being



in contacting relation with said articles on said conveyor, said first belt and said conveyor moving at a slower speed than said second belt whereby the cylindrically-shaped articles are rotated 120° during travel between said belts.

5,366,097

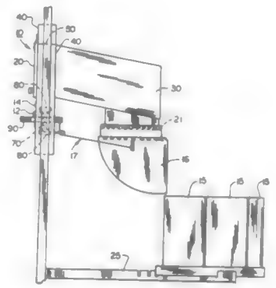
RECYCLABLE MATERIAL SEPARATING DEVICE

Lewis Hazelwood, P.O. Box 1268, Stuart, Va. 24171

Filed Mar. 31, 1993, Ser. No. 40,882

Int. Cl.[5] B07C *7/04*

U.S. Cl. 209—704 **3 Claims**



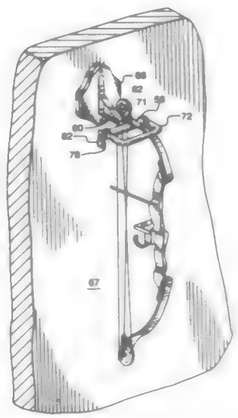
1. A recyclable material separating device for segregating various types of refuse operably placed into a window opening or a cut-out of a wall of a building comprising:

a main body including a front and rear panel constructed from a durable material, said front and rear panel being spaced from one another so as to form a hollow structure and having an access door; a slide bar and slide bar track mounted within the hollow structure, said slide bar carrying a selection handle mounted therethrough; said front panel having an elongated slot through which a first end of the selection handle extends; said slot having a plurality of discrete locations along its length, each location corresponding to one of the various types of refuse; and

a moveable elbow chute operatively connected at a first open end to said said hollow structure and having a second open end selectively aligned with one of a plurality of receiving means; actuation means interconnecting said elbow chute and a second end of said selection handle;

whereby said selection handle is selectively moved with the slide bar along the slide bar track to one of said discrete locations, said actuation means moves the discharge end of said elbow chute into alignment with a desired receiving means.

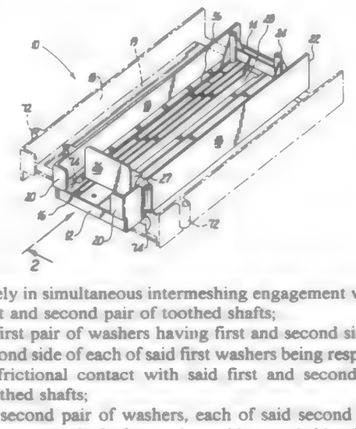
5,366,098
HANGER FOR ARCHERY BOWS
Charles A. Henry, 4554 Malden Road, Windsor, Ontario, Canada N9E 3T1
Filed Oct. 21, 1993, Ser. No. 139,146
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—4 **8 Claims**



1. A hanger for archery bows, comprising:
(a) an attachment portion adapted to be fitted to a vertical surface of a building structure at a sufficient height that when one end of an archery bow is supported on the hanger the other end of the bow is positioned above the floor;
(b) an extension portion secured to the attachment portion so as to extend away from the vertical surface of the building when the attachment portion is fitted to that surface;
(c) a bow support bar secured to the extension portion so as to extend in generally parallel spaced relation with the vertical surface of the building structure when the attachment portion is fitted to that surface, whereby, with the hanger fitted to the vertical surface of the building, a bow may be supported on the bow support bar of the hanger such that the bar extends between the limb and the string on the one end of the bow, the limb of the bow being oriented to face away from the vertical surface; and
(d) locking means securable to opposite ends of said bow support bar to form a closed loop with said bow support bar, said closed loop passing around said bow to prevent removal of said bow.

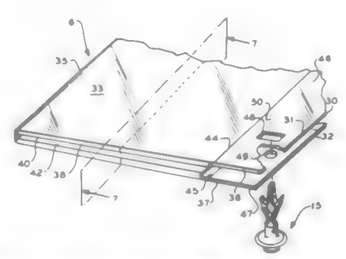
5,366,099
ADJUSTABLE DISPLAY UNIT
Michael Schmid, Black Rock, Conn., assignor to Consumer Promotions, Inc., Mount Vernon, N.Y.
Filed Feb. 2, 1994, Ser. No. 190,662
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—59.3 **16 Claims**

1. An adjustable tray unit for use in storing and displaying products, said tray unit comprising:
(a) a main body for supporting a plurality of products, said main body having a front end portion, a rear end portion, a base for supporting said product, and a pair of side walls disposed at right angles to said base, each of said side walls having first and second ends;
(b) adjusting means associated with said base and said side walls to adjust the horizontal width of said body so as to accommodate products of various widths, said adjusting means comprises:
(c) a first pair of toothed shafts, each of said first toothed shafts being respectively supported from said first end of each of said pair of side walls at right angles thereof;
(d) a second pair of toothed shafts, each of said second toothed shafts being respectively supported from said second end of each of said pair of side walls at right angles thereof;
(e) a pair of toothed wheels mounted to said base for relative rotation thereof, each of said toothed wheels being respectively in simultaneous intermeshing engagement with said first and second pair of toothed shafts;



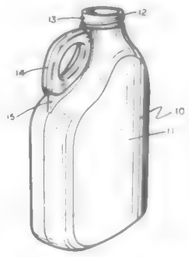
(f) a first pair of washers having first and second sides, said second side of each of said first washers being respectively in frictional contact with said first and second pair of toothed shafts;
(g) a second pair of washers, each of said second washers being respectively fastened to said second side of each of said first washers;
whereby rotation of said pair of toothed wheels in a first direction causes said side walls to translate away from said base and subsequent rotation of said pair of toothed wheels in a second direction causes said side walls to translate towards said base so as to allow products of various lengths to be accommodated on said tray.

5,366,100
CORRUGATED DISPLAY STAND
Stephan T. Maglione, 15 Ava Maria Ct., Millington, N.J. 07946
Division of Ser. No. 744,872, Aug. 14, 1991, Pat. No. 5,273,169. This application Oct. 12, 1993, Ser. No. 133,990
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—153 **9 Claims**



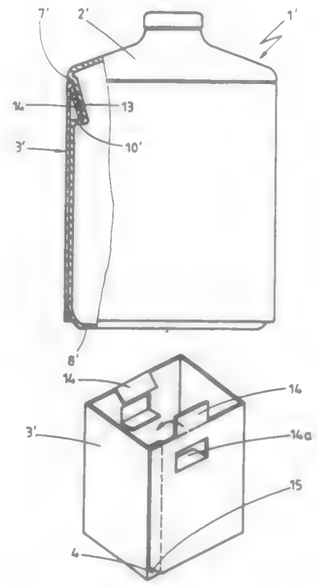
1. A shelf for use in a display stand comprising:
a sheet member folded at a fold to form two juxtaposed sheets; and
a crease in each of the juxtaposed sheets spaced from an edge distal said fold to form a hinge in that sheet, said crease forming a hinge member between the crease and distal edge of that sheet such that the two sheets between the fold and crease thereof are each rotatable relative to its corresponding hinge member, said hinge members each having at least one aperture, said hinge members being juxtaposed, the at least one aperture in each of the two sheets being aligned for receiving hinge fastening means therethrough, one of said aligned apertures being enlarged relative to the fastening means portion passing therethrough to permit the one hinge member to displace relative to the other during rotation of said sheets when fastened to a support by said received hinge fastening means passing through said aligned apertures.

5,366,101
MULTI-LAYER PLASTIC BOTTLE WITH A HANDLE
Thomas J. Krall, Toledo, and Robert A. Myers, Perrysburg, both of Ohio, assignors to Owen-Illinois Plastic Products, Inc., Toledo, Ohio
Continuation of Ser. No. 58,705, May 7, 1993, abandoned, which is a division of Ser. No. 990,152, Dec. 14, 1992, Pat. No. 5,232,107, which is a division of Ser. No. 804,826, Dec. 6, 1991, Pat. No. 5,188,849, which is a division of Ser. No. 489,122, Mar. 5, 1990, Pat. No. 5,087,406. This application Mar. 31, 1994, Ser. No. 221,547
Int. Cl.[5] B65D *23/00*
U.S. Cl. 215—1 C **2 Claims**



1. A blown hollow container comprising
a hollow body portion,
an integral annular hollow handle defining generally annular hollow space,
said handle having an upper portion and a side and bottom portion,
an integral wall connecting the handle to said body portion along said side portion and bottom portion of said handle comprising a double layer between said side portion and bottom portion of said handle and said body portion,
an integral neck connected integrally to said body portion,
said annular hollow handle having a hand receiving opening which is seamless in the area of the upper portion of the handle which is gripped by the fingers,
said handle having a passage through said upper portion of said handle to the exterior of said handle,
said integral wall connecting said handle and said body portion being without any passage between said handle and said body portion.

5,366,102
PLASTIC CONTAINER PACK WITH A PAPERBOARD JACKET
Rainer Bergner, Duesseldorf; Hubert Droessler, Erkrath; Siegfried Konkel, Duesseldorf; Volker Weiss, Langenfeld, and Paul-Otto Weltgen, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany
PCT No. PCT/EP92/00561, § 371 Date Sep. 22, 1993, § 102(e) Date Sep. 22, 1993, PCT Pub. No. WO92/16420, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 13, 1992, Ser. No. 119,175
Claims priority, application Germany, Mar. 22, 1991, 4109425
Int. Cl.[5] B65D *1/42, 1/48*
U.S. Cl. 215—100 R **18 Claims**



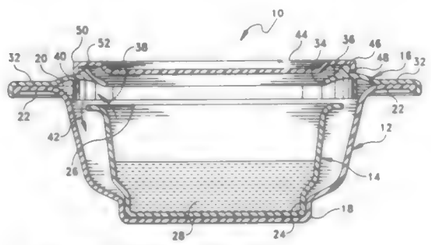
1. A plastic container pack including a plastic container for storing a pourable product, said plastic container including a bottom, side walls, and a top portion, said pack further including a close fitting jacket, wherein the improvement comprises:
an upper retaining edge about the top portion of said plastic container protruding away from the associated side walls of said container;
detent ramps forming retaining shoulders formed in a lower portion of said plastic container;
said jacket being installed on said plastic container by pushing said jacket onto said plastic container from a base, and pushing the jacket over said detent ramps, whereby said jacket encircles said container and is held captively thereon between said upper retaining edge and said retaining shoulders of said detent ramps;
a plurality of individual, inwardly formed indentations in the side walls of said plastic container proximate said upper retaining edge in areas underlying said jacket when installed on said plastic container; and
said jacket including a plurality of inwardly directed flaps located for permitting said flaps to be pushed into an associated one of said indentations, respectively, of said plastic container, for locking said jacket onto said plastic container.

5,366,103

SPILL-RESISTANT BOWL

Alexia Abernathy, Cedar Rapids, Iowa by Terry J. Abernathy, guardian for minor , and Keith D. Patterson, Providence, R.I., assignors to Little Kids, Inc., East Providence, R.I., a part interest

Filed Sep. 30, 1993, Ser. No. 129,591
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—23.83 **9 Claims**



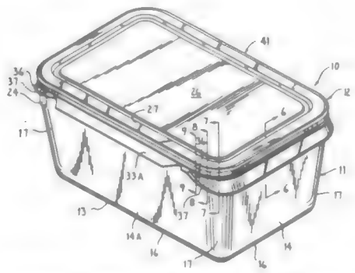
1. A spill-resistant bowl comprising:
a larger diameter outer bowl;
a smaller diameter inner bowl which is substantially concentrically positioned inside said outer bowl, said inner bowl being operable for receiving a liquid therein;
means for releasably mounting said inner and outer bowls together; and
an annular cover which is releasably received onto a rim portion of said outer bowl, said annular cover including a central opening that is substantially concentrically positioned over said inner bowl, said central opening having a smaller diameter than said inner bowl,
said annular cover being operative for deflecting said liquid downwardly into said outer bowl when said liquid rises up and spills over the edge of the inner bowl.

5,366,104

CONTAINER WITH HINGED LID

David R. Armstrong, Otsego, Mich., assignor to Fabri-Kal Corporation, Kalamazoo, Mich.

Filed Sep. 13, 1993, Ser. No. 120,677
Int. Cl.[5] B65D *43/16*
U.S. Cl. 220—339 **7 Claims**



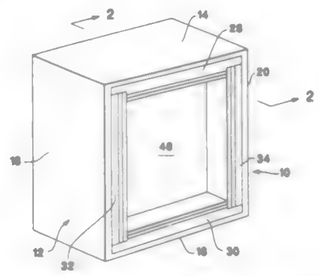
1. A container comprising a base and a lid connected together at a common juncture defining a hinge, said base having a bottom wall, an upstanding sidewall connected to the bottom wall, said hinge being oriented along a region adjacent an upper edge of said sidewall, and a first flange extending generally laterally from at least opposite ends of said hinge and oriented adjacent said upper edge of said upstanding sidewall and extending outwardly from said sidewall, said first flange having an upwardly facing surface, said lid having a top wall and a downwardly depending skirt connected to said top wall and extending at a perimeter of said top wall at least laterally from said opposite ends of said hinge outside of and in close juxtaposition to said first flange, said skirt solely adjacent opposite ends of said hinge having an externally facing lower edge inclined to a plane containing said top wall which, in a closed position of said lid, terminates outside of and at a position below said first flange, said lower edge, in an open position of said lid, becoming oriented above and resting on said upwardly facing surface of said first flange so as to releasably hold said lid in a predetermined open position.

5,366,105

CONTAINMENT DEVICE FOR SAFELY INSPECTING, LOADING AND UNLOADING FIREARMS

Edward H. Kerman, and Robert R. Crovatto, both of c/o 6270 Montrose Rd., Rockville, Md. 20852

Filed Nov. 9, 1993, Ser. No. 149,388
Int. Cl.[5] B65D *90/06*
U.S. Cl. 220—453 **7 Claims**



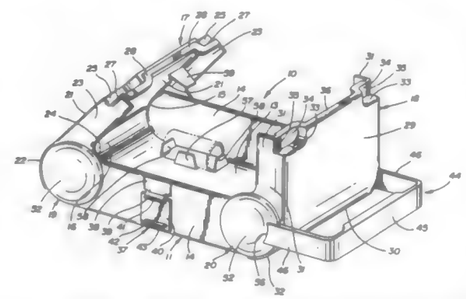
1. A portable containment device for safely inspecting, loading and unloading firearms, comprising:
an outer container having a size and weight which enables it to be manually transported from one location to another;
said outer container having a rear wall, opposed top and bottom walls, opposed side walls, and a front opening, all of which circumscribe and define a container interior;
a plurality of separate composite protective panels, each composed of:
an elastomeric ricochet prevention layer;
a ballistic shield layer adjacent to the elastomeric ricochet prevention layer; and
an energy absorbing layer adjacent to the ballistic shield layer;
five of said protective panels being removably disposed within said outer container, with one of said panels being disposed adjacent to said container rear wall, two of said protective panels being disposed adjacent to said side walls, and the remaining two protective panels being disposed adjacent to said top and bottom walls;
each of said protective panels being positioned within said outer container with the energy absorbing layer adjacent to the outer container wall and the elastomeric ricochet prevention layer being disposed toward said interior of the outer container;
said device being adapted for insertion of the muzzle of a firearm through the front opening and into the interior of the outer container during loading, unloading, and inspection of the firearm;
said elastomeric ricochet prevention layer being penetrable by a projectile discharged from the firearm and capable of preventing the projectile from ricocheting out of the interior of the outer container;
said ballistic shield layer being impenetrable by a projectile discharged from the firearm;
said energy absorbing layer being capable of absorbing the impact of a projectile which strikes the ballistic shield layer to prevent any deformation of the walls of the outer container; and
said protective panels being individually removable from said outer container to permit any of said panels to be replaced in the event that such panels have become damaged from repeated projectile discharges against them.

5,366,106

LUNCHBOX

W. Henry Kahl, Wooster, Ohio, assignor to Rubbermaid Inc., Wooster, Ohio

Filed Dec. 7, 1992, Ser. No. 986,604
Int. Cl.[5] B65D *43/16*
U.S. Cl. 220—555 **23 Claims**



1. A container comprising a base container portion having a bottom surface and side walls extending generally laterally from said bottom surface to form an opening for the container, a cover portion for closing the opening, said cover portion including a first door and a second door, first hinge means attaching one end of said first door to one end of said side walls for rotation relative to said side walls, second hinge means attaching one end of said second door to the other end of said side walls for rotation relative to said side walls, latch means having one end pivotally mounted on said side walls, and lug means near the other end of said first and second doors to receive the other end of said latch means so that said cover portion may be maintained closed on said base container portion said lug means including a first lug member positioned in a recess near said other end of said first door and a second lug member positioned in a recess near said other end of said second door, said first and second lug members being aligned with each other to receive said other end of said latch means when said cover portion is closed on said base container portion.

6. A container comprising a base container portion having a bottom surface and side walls extending generally laterally from said bottom surface to form an opening for the container, a cover portion for closing the opening, said cover portion including a first door and a second door, first hinge means attaching one end of said first door to one end of said side walls for rotation relative to said side walls, second hinge means attaching one end of said second door to the other end of said side walls for rotation relative to said side walls, latch means having one end pivotally mounted on said side walls, lug means near the other end of said first and second doors to receive the other end of said latch means so that said cover portion may be maintained closed on said base container portion, and a handle member carried by one of said hinge means for rotation relative to said side walls and to one of said doors having said one of said hinge means, said handle member including side arms, a gripping portion spanning said side arms, and a hoop member carried by each said side arm, said hoop members being received by said hinge means.

7. A container comprising a base container portion having a bottom surface and side walls extending generally laterally from said bottom surface to form an opening for the container, a cover portion for closing the opening, said cover portion including a first door and a second door, first hinge means attaching one end of said first door to one end of said side walls for rotation relative to said side walls, second hinge means attaching one end of said second door to the other end of said side walls for rotation relative to said side walls, latch means having one end pivotally mounted on said side walls, and lug means near the other end of said first and second doors to receive the other end of said latch means so that said cover portion may be maintained closed on said base container portion, each said hinge means including a hinge assembly carried by each said side wall, each said hinge assembly including a hub member extending outwardly from each said side wall, a lock flange on said hub member, a hinge cap, a flange on said hinge cap, and a lug carried by said flange, said lug engaging said lock flange.

16. A container comprising a base container portion having a bottom surface and side walls extending generally laterally from said bottom surface to form an opening for the container, at least one door for closing the opening, hinge means attaching said door to said side walls for rotation relative to said side walls, and a handle member carried by said hinge means for rotation relative to said side walls and said door, said hinge means including a hinge assembly carried by each said side wall, each said hinge assembly including a hub member extending outwardly from each said side wall, a lock flange on said hub member, a hinge cap, a flange on said hinge cap, and a lug carried by said flange, said lug engaging said lock flange.

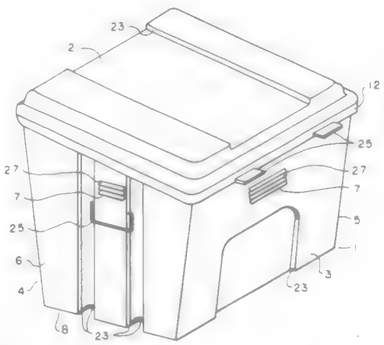
19. A container comprising a base container portion having a bottom surface and side walls extending generally laterally from said bottom surface to form an opening for the container, at least one door for closing the opening, hinge means attaching said door to said side walls for rotation relative to said side walls, and means extending from said bottom surface and means extending from said door cooperating with each other to confine an accessory within said base container portion.

5,366,107

VENTED STORAGE BOX

John P. Rostkowski, 680 Old Joppa Rd., Joppa, Md. 21085

Filed Jan. 22, 1993, Ser. No. 7,971
Int. Cl.[5] B65D *85/00*
U.S. Cl. 220—676 **16 Claims**



1. A container comprising a molded plastic box possessing shielded venting means and a moisture proof rectangular molded plastic lid;
said molded plastic box possessing a horizontal, rectangular floor and four substantially vertical walls extending from the periphery of said floor disposed substantially perpendicular to said floor and to each adjacent wall forming a box interior comprising a rectilinear volume bounded by the contiguous interior surfaces of said floor and said four walls which, further, terminate in a continuous edge distal said floor and possessing a preformed configuration;
said moisture proof rectangular molded plastic lid possessing a perimeter comprising a preformed U-shaped configuration of sufficient resilience to grip said preformed configu-

ration of said terminal edge of said four walls such that said lid provides a removable closure of said box interior retained by resilient distortion of said preformed resilient U-shaped configuration when in full communication with said terminal edge of said four walls, said full communication providing a moisture resistant barrier;

at least two of said four walls possessing shielded venting means comprising at least one aperture through one said wall entirely covered by corrosion resistant screening fixedly attached to said wall comprising a matrix of members defining a plurality of apertures each of a dimension smaller than 0.10 inches thus providing said box interior with means of gaseous exchange with the exterior ambient atmosphere while providing an effective barrier against the migration of insects.

5,366,108

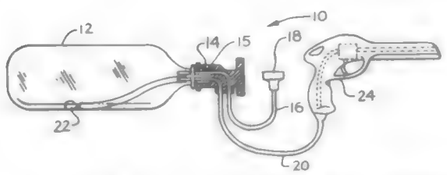
TOY WATER GUN SYSTEM

Michael Darling, P.O. Box 8054, Long Beach, Calif. 90808

Continuation-in-part of Ser. No. 932,699, Aug. 20, 1992, abandoned. This application Nov. 15, 1993, Ser. No. 151,927

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **18 Claims**



1. A toy water gun system designed to release pressurized water therefrom in an extended stream comprising:

a toy water gun containing a trigger mechanism, said trigger releasing said pressurized water from said toy water gun;

a receptacle for containing both pressurized water and pressurized air having a cylindrical body, said cylindrical body having a circular neck on one end of said cylindrical body;

a source of water under pressure, said source of water under pressure being furnished by a municipal water supply;

a hose bib having external threads and associated therewith an on and off valve, said hose bib attached to a pipe which is further connected to said municipal water supply;

means for fluid flow from inside said receptacle to said toy water gun comprising a first flexible tubing, said first flexible tubing having a first end and a second end, said first end being connected and extending into said toy water gun, said second end terminating inside on the bottom of said cylindrical body;

means for fluid flow from said source of water under pressure to said receptacle comprising a second flexible tubing, said second flexible tubing having a first end and a second end, said first end connected to said receptacle and second end having means to connect to said hose bib;

a one way valve means for filling said receptacle with pressurized water from said source of water under pressure associated with said second flexible tubing and; wherein said pressurized water entering said receptacle also pressurizes an air space contiguous to a space for accommodating said pressurized water in said receptacle, said pressurized air space in said receptacle becoming equal in pressure to the pressure of said water flowing from said municipal water supply;

a flexible bag for containing said receptacle therein;

an adjustable flexible belt worn by an operator;

means for mounting said flexible bag on said belt;

means for mounting said toy water gun on said belt.

16. A method of releasing pressurized water from a toy water gun system in an extended stream comprising:

providing a toy water gun having a trigger mechanism;

providing a receptacle containing air with a one way spring biased valve attached thereto;

charging said receptacle through said valve with pressurized water from a source of water under pressure furnished by a municipal water supply through a hose bib having external threads when said water is released by a valve on said hose bib from said municipal water supply through fluid flow means to said one-way spring biased valve and further to said receptacle, said pressurized water compressing said air in said receptacle until said pressure inside said receptacle is equal to the pressure of said municipal water supply, wherein said fluid flow means comprises a first flexible tubing, said first flexible tubing having a first end and a second end, said first end having a rotating connector having internal threads to be connected to said external threads of said hose bib, said second end connected to said one way spring biased valve attached to said receptacle;

providing fluid flow means from said receptacle to said toy water gun, said fluid flow

means comprising a second flexible tubing, said second flexible tubing having a first end

and a second end, said first end connected to a tube extending into said receptacle, said

second end extending into said toy water gun;

proving an adjustable belt worn by an operator;

providing a flexible bag for containing said receptacle;

providing a holster to hold said water gun;

mounting said flexible bag containing said receptacle on said adjustable belt worn by an operator;

attaching said holster to said adjustable belt worn by an operator:

providing release of water from said toy water gun when activated by said trigger mechanism, said trigger being spring biased whereby activating said trigger mechanism allows pressurized water to be released from said toy water gun.

5,366,109

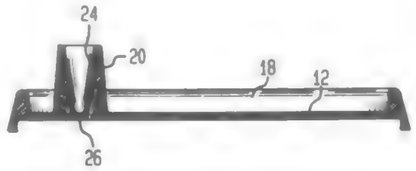
REMOVABLE CAP FOR DISPOSABLE CONTAINERS OF LIQUID

Mary-Elizabeth Proshan, Suite 194. 301 N. Harrison St., Princeton, N.J. 08540

Filed Apr. 7, 1994, Ser. No. 224,159

Int. Cl.[5] A47G *19/22*

U.S. Cl. 220—717 **5 Claims**



1. A cap for detachably enclosing an upper open end of a hollow vertical disposable container with liquid therein, the container having a closed lower end, said cap comprising:

a flat horizontal disc having first and second openings disposed in spaced apart positions therein, the first opening being a pin hole, the second opening being relatively large, the disc having a peripheral socket adapted to engage the periphery of the upper end of the container in such manner that liquid cannot flow out therebetween

a hollow vertical hollow spout for delivery of said liquid, said spout tapering upwardly and outwardly from the disc and having an open lower end coincident with said second opening, the spout having an upper open end defining a first permanently open slot therein, the upper end being smaller in area than the lower end; and

a hollow member disposed within the spout with an upper open end coincident with the upper end of the spout, the member having walls which are immobile with respect to each other and which extend downwardly and inwardly from the upper end of the spout to a lower end horizontally aligned with the lower end of the spout, the lower end of the member having a second permanently open slot always smaller in area than that of the first slot;

the disc, spout and member constituting a single integral unit which when positioned in place on the container will not exhibit any substantial leakage of liquid when the liquid in the container surges therein because of sudden movement of the container or when the container is disposed horizontally on its side.

5,366,110

GAME TOKEN DISPENSER

Takatoshi Takemoto, Tokyo; Yoshihide Kurihara, Hanamaki; Koshiro Nakai, Hanamaki; Sakuji Yaegashi, Hanamaki; Hiroyasu Obara, Hanamaki, and Mitsuhiro Tada, Hanamaki, all of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

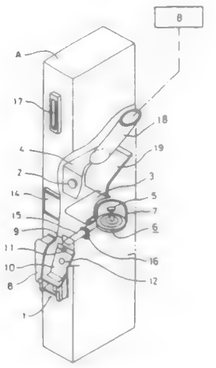
PCT No. PCT/JP91/01654, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/09346, PCT Pub. Date Nov. 6, 1992

PCT Filed Nov. 19, 1991, Ser. No. 915,718

Claims priority, application Japan, Nov. 29, 1990, 2-333224; Nov. 29, 1990, 2-333226; Nov. 29, 1990, 2-333228

Int. Cl.[5] G07F *11/00*

U.S. Cl. 221—2 **12 Claims**



1. A game token dispenser equipped with a token hopper for dispensing a predetermined number of tokens supplied from a token reservoir to a token receiving port, characterized in that:

said token hopper is divided into a sequentially functioning preliminary hopper and a dispensing hopper;

said preliminary hopper having a sensor for detecting whether or not there is any token received from the reservoir, and conveying means for conveying the token from said preliminary hopper to said dispensing hopper; and

said dispensing hopper having a sensor for detecting whether or not there is any token received from said preliminary hopper and a total amount of tokens in said dispensing hopper, and means for discharging the tokens one by one to the token receiving port.

5,366,111

DEVICE FOR FEEDING SUPPORTING MEMBER OF CONSTRUCTION PANEL

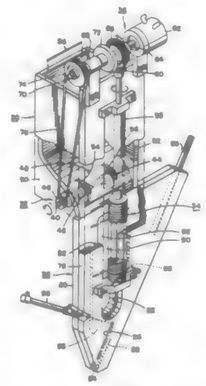
Se-Hong Ahn, Sin Banpo 3rd Apartment 25-505, #1-1, Banpo-dong, Seocho-ku, Seoul, Rep. of Korea

Filed Jul. 23, 1993, Ser. No. 97,070

Claims priority, application Rep. of Korea, Mar. 6, 1993, 1993-3284

Int. Cl.[5] B65H *5/00*

U.S. Cl. 221—75 **6 Claims**



1. A device for feeding supporting members of a construction panel, comprising a hopper adapted to contain a plurality of supporting members; a plurality of gears having teeth which partially extend into an interior of said hopper to transport the supporting members through said hopper; means forming a chute for discharging the supporting members from said hopper and provided with at least one through-hole; and a spiral conveyor having teeth extending into said chute through said hole and transporting the supporting members through said chute, said chute forming means having a guide rail provided with at least two protuberances for guiding the supporting members.

5,366,112

TABLET DISPENSER

Ignaz Hinterreiter, Linz, Austria, assignor to Patrafico AG, Zug, Switzerland

PCT No. PCT/AT90/00030, § 371 Date Feb. 27, 1992, § 102(e) Date Feb. 27, 1992, PCT Pub. No. WO90/11947, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 12, 1990, Ser. No. 768,775

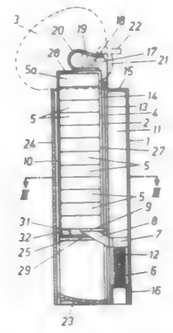
Claims priority, application Austria, Apr. 12, 1989, 856/89-1

Int. Cl.[5] B65H *1/04, 1/12*

U.S. Cl. 221—198 **10 Claims**

1. A tablet dispenser comprising a tubular protective housing having a guide shaft for guiding and accommodating tablets that are insertable in said guide shaft in a column-like stack having first and second ends and a longitudinal direction, a spring shaft disposed adjacent said guide shaft, and a longitudinal slot through which said guide shaft and said spring shaft communicate with each other, said guide shaft being provided with longitudinal tracks for said tablets; an ejector arranged to engage said stack adjacent said first end of said stack for individually displacing said tablets transversely to said longitudinal direction of said stack; lateral guides adjacent said ejector for guiding said tablets; a pressure-loaded ram adjacent said second end of said stack for feeding said tablets along said longitudinal tracks; a spring accommodated in said spring shaft for biasing said ram; a guide member biased by said spring and guided in said spring shaft, said guide member extending through said longitudinal slot and including an arm that carries

said ram; and a magazine that is provided with said longitudinal tracks for said tablets and is adapted to be replaceably inserted into said guide shaft, said magazine having a first end including an opening for receiving said ram, a second end

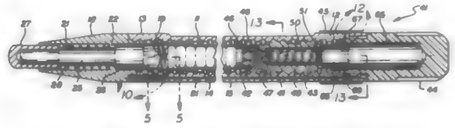


including lateral openings for receiving said ejector and for ejecting said tablets, and a longitudinal slot in said housing for receiving said arm when said magazine is inserted in said guide shaft.

5,366,113
PILL DISPENSER

David S. Kim, 2529 Date Cir., Torrance, Calif. 90505, and Jae S. Kim, 2343 W. 227th St., Torrance, Calif. 90501

Filed Dec. 13, 1993, Ser. No. 165,484
Int. Cl.[5] B65H *1/08*
U.S. Cl. 221—232 **13 Claims**



1. In a pill dispenser, the combination of:

a barrel having an input end and an output end;

a sleeve for holding a stack of pills, with said sleeve positioned within said barrel;

an output end cap removably positioned at said output end of said barrel, said output end cap including cup means for receiving a pill while said output end cap is positioned on said barrel, said plunger means for ejecting the pill from said cup means when said output end cap is removed from said barrel; and

an input end cap positioned at said input end of said barrel, said input end cap including pusher means sliding in said sleeve for pushing a pill from said sleeve into said cup;

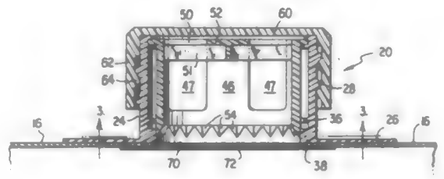
said input end cap including drive means engaging said pusher means for advancing said pusher means through said sleeve,

said input end cap further including a top rotatably mounted in said barrel and fixed to said sleeve for rotating said sleeve, with said sleeve coupled to said drive means, said drive means and said barrel including interengaging threads for advancing said drive means in said barrel and sleeve as said top and sleeve are rotated.

5,366,114
POUR SPOUT WITH PIERCING INSERT

Linda A. Bernstein, Campbell Hall, and Robert L. Gordon, Monroe, both of N.Y., assignors to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 874,161, Apr. 27, 1992, Pat. No. 5,297,696. This application Aug. 26, 1993, Ser. No. 112,069
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—83 **7 Claims**



1. A pour spout fitment construction including a pour spout having an upper and a lower portion, a flange integrally secured to said spout lower portion, said pour spout having an interior passage, said interior passage having at least three integral, radially inwardly extending ribs axially spaced along said passage to thereby define three vertically disposed ribs, including an uppermost and a lowermost rib, a hollow, annular piercing insert slidably mounted within said spout interior passage, said piercing insert having an upper and a lower portion, said upper piercing insert portion having a plurality of radially outwardly extending protrusions, said protrusions lying in a single plane, said protrusions positioned between the uppermost and the next uppermost of said ribs of said spout, said upper piercing insert portion having at least one axial opening to thereby permit the flow of a liquid axially through the length of said hollow piercing element, the lower portion of said piercing insert having teeth which project downwardly, said pour spout ribs normally selectably engagable with said piercing insert protrusions to normally prevent axial movement of said insert within said spout, at least one of (A) said coplanar piercing insert protrusions and (B) said uppermost spout rib and said spout ribs between said uppermost and said lowermost spout ribs, being radially deformable, to thereby permit said piercing insert protrusions to pass over said uppermost spout rib and said spout ribs which are located between said uppermost and said lowermost spout ribs, said piercing element being annularly continuous at its said lower portion and having annularly disposed discontinuities at its said upper portion, a plurality of annularly disposed cutouts around the circumference of said piercing element, the lower regions of said cutouts bordering said annularly continuous lower piercing element portion, the upper regions of said cutouts defining said piercing element upper portion discontinuities, whereby said piercing insert can assume a plurality of normal axial positions in said pour spout, and whereby said piercing element is movable from its uppermost to its lowermost position within said pour spout without rotation.

5,366,115
DEFORMABLE CONTAINER FOR DELIVERING LIQUID

Jens-Heinrich Kersten, Kamen-Heeren, and Detlef Schmitz, Lunen, both of Germany, assignors to Perfect-Valois Ventil GmbH, Dortmund-Wickede, Germany

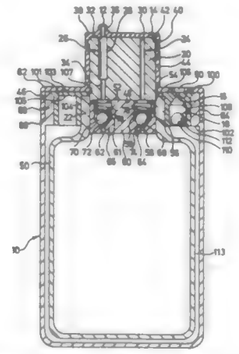
Filed Jun. 16, 1993, Ser. No. 78,549
Claims priority, application Germany, Jun. 17, 1992, 4219857
Int. Cl.[5] B65D *35/56*
U.S. Cl. 222—105 **6 Claims**

1. A deformable container for delivering a liquid from a dispensing opening of a sealing part provided with a dispensing nozzle, which sealing part can be brought by a rotary motion into a closed setting or into an open setting, there being assigned to a ventilating opening a ventilating valve which is open in the event of underpressure in the container, which comprises the following features:

a) the sealing part is disposed on a metering element, which is inserted sealingly in the opening in the container and is provided with two outlet ducts;

b) the outlet openings of the outlet ducts have the same radial distance from the principal axis of the metering element and are mutually offset in the peripheral direction of the metering element;

c) the first outlet duct is of smooth-walled configuration for the dispensing of a liquid jet and the second outlet duct exhibits, for the dispensing of liquid drops, a longitudinal section having a stepped, widened cross section;



d) the linear and diametrical relationship of the narrower longitudinal section to the widened longitudinal section of the second outlet duct is chosen for the drop application such that the flow velocity of the liquid in the widened longitudinal section of the second outlet duct is lower than the drip velocity of the liquid from this widened longitudinal section of the second outlet duct;

e) the sealing part can be twisted with its dispensing opening into a position coaxial with either of the outlet openings of the meeting element;

f) the metering element bears upon a valve body provided with two pass-through ducts, which are connected to the outlet ducts of the metering element and respectively exhibit a shut-off valve, which can be actuated by the liquid, counter to a return spring, in the direction of opening.

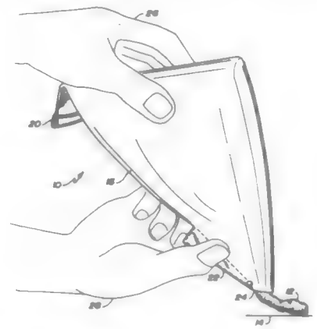
5,366,116
GROUT TOOL

Warren A. Burtis, 12 Ash Ave., Kentfield, Calif. 94904

Continuation-in-part of Ser. No. 776,971, Oct. 15, 1991, Pat. No. 5,222,630. This application Jun. 29, 1993, Ser. No. 84,546
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—107 **9 Claims**

1. A tool for dispensing a grout material to a working surface, said tool comprising;

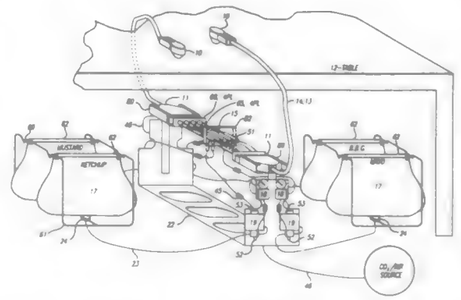
a body portion defining a generally triangular envelope member made of a flexible and expandable elastic material, said envelope member having a first edge, a second edge, and a third edge, said first edge providing an open top sealable by folding said first edge, said second edge including a grip portion of a size to be grasped by a user's hand, said envelope member further having a spout portion at the junction of said second edge and said third edge proximate said grip portion, said spout portion enabling manual regulation of grout dispensing to said working surface.



5,366,117
CONDIMENT DISPENSER

John M. Mesenbring, Westlake Village; Lawrence J. Patriquin, Phillips Ranch; Rory F. Ramirez, Yuba City, and Dell W. Smith, Burbank, all of Calif., assignors to Bar Master International, Los Angeles, Calif.

Continuation of Ser. No. 864,406, Apr. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 689,630, Apr. 23, 1991, abandoned. This application May 9, 1994, Ser. No. 239,846
Int. Cl.[5] B67D *5/46*
U.S. Cl. 222—132 **6 Claims**



1. In a system for selectively dispensing condiments on demand from a plurality of collapsible condiment containers storing condiments at atmospheric pressure, the combination of:

a support for each of said condiment containers;

a gas driven metering pump for each of said condiment containers, each of said pumps having a drive gas inlet, a drive gas outlet, a condiment inlet, and a condiment outlet;

a plurality of dispenser heads, each dispenser head having a plurality of input passages, an outlet nozzle, and a valve for each of said input passages for controlling condiment flow from the input passage to said outlet nozzle; and

for each of said pumps, first means for connecting a pump drive gas under pressure to said drive gas inlet, said drive gas outlet being vented,

second means for connecting said collapsible condiment container to said condiment inlet, and

third means for connecting said condiment outlet to one of said dispenser head input passages,

said third means including a plurality of manifolds each

having a single manifold inlet connected to one of said pump condiment outlets, a plurality of manifold outlets connected to one of each of said dispenser head input passages, and

interengaging connectors for connecting each dispenser head to the manifold outlets and disconnecting the dispenser head from the manifold outlets;

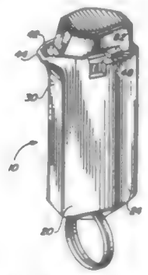
whereby the connected pump is started by opening the corresponding dispenser head valve to draw condiment direct from said collapsible condiment container through said pump and said dispenser head valve to said outlet nozzle, collapsing said collapsible condiment container as the contents are withdrawn.

5,366,118

DISPENSER FOR AEROSOL DEVICE

Sam Ciammitti, Phoenix, and Jody L. Numbers, Tempe, both of Ariz., assignors to Guardian Personal Security Products, Inc., Phoenix, Ariz.

Filed Apr. 30, 1993, Ser. No. 54,148
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—153 **12 Claims**



1. A dispenser for an aerosol container of the type having a canister with a valve-actuated discharge mechanism, said dispenser comprising:

(a) a housing defining an interior compartment having an open end adapted to receive the said canister, said housing having an exterior surface defining a slot and adapted to be grasped by the user; and

(b) a cap positioned at said open end of said housing and moveable between first and second positions relative to said housing, said cap defining an area receiving at least a part of said discharge mechanism and defining a passageway communicating with said discharge mechanism and terminating at a nozzle whereby movement of said cap to said second position will cause the contents of said canister to be released to said passageway, said cap being provided with at least one depending leg having a detent therein engageable in said slot in said housing.

5,366,119

DISPENSER BOTTLE WITH INTERNAL PUMP

James B. Kline, 902 Lincoln Ave., Grove City, Pa. 16127

Filed May 26, 1993, Ser. No. 72,842
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—180 **1 Claim**

1. A dispenser bottle comprising:

a bottle having a flat exterior base, a sidewall extending around said exterior base and projecting upwardly to terminate in a neck, and a sloped internal base which tapers from said sidewall at a first height from an edge of said internal base to said flat exterior base, to a second height from a center of said internal base to said flat exterior base, with said first height being greater than said second height, said internal base having an integrally formed sump in said center thereof, with said sump having a bottom and a top;

a pump removably mounted to said neck, said pump having a draw tube extending into said sump, said draw tube having a plurality of radially spaced slots with said slots extending from said bottom of said sump to said top of said sump such that fluid present within said sump will be drawn into said slots by said pump;

and,

mounting means for securing said bottle to a vertical surface, said mounting means comprising a first magnetic plate fixedly secured to said exterior base, a second magnetic

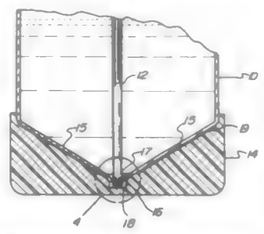


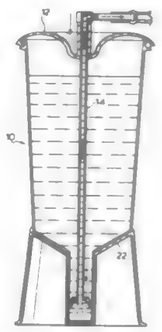
plate having opposed first and second faces, with said first race being magnetically coupled to said first magnetic plate, and a plurality of frangible, adhesive-containing capsules coupled to said second face of said second magnetic plate, whereby said capsules will rupture under pressure when said second face of said second magnetic plate is pressed against said vertical surface, thereby releasing adhesive contained therein and adhesively bonding said second face of said second magnetic plate to said vertical surface.

5,366,120

PAINT PUMP

Tonis Tollasepp, 120 Applefield Dr., Scarborough, Ontario, Canada M1P 3Y2

Filed Apr. 19, 1994, Ser. No. 229,789
Int. Cl.[5] B67D *5/40*
U.S. Cl. 222—377 **6 Claims**



1. Paint pump comprising:

a open-topped container;

a lid detachably attached to the top of said container at its periphery;

a central location on said lid;

said lid when so attached being adapted to assume a rest attitude, providing an upper position for said central location and a deflected attitude providing a lower position for said central location;

said lid, when deflected, being resiliently biased toward rest positon;

said upper and lower positions defining a stroke direction;

a rigid tube extending upwardly out of said lid at said location, and vertically movable therewith;

and extending downwardly to an opening adjacent to bottom of said container in said lower position;

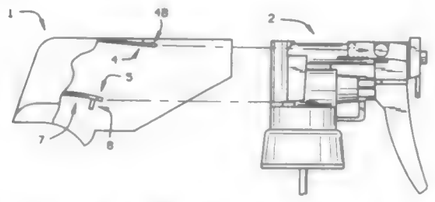
one-way means cooperating between said tube and said container to cause transfer of an amount of paint from said container to said tube on the downstroke of said tube, which exceeds the amount of paint transferred from said tube to said container on the upstroke.

5,366,121

UNIVERSAL HOUSING FOR FLUID DISPENSER

Donald D. Foster, St. Charles, and Marvin B. Levy, University City, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Continuation of Ser. No. 530,409, May 30, 1990, abandoned.
This application Mar. 4, 1992, Ser. No. 844,942
Int. Cl.[5] B67D *5/40*
U.S. Cl. 222—383 **15 Claims**



10. A housing for use with a fluid dispensing apparatus adapted for attachment to a fluid container using a snap-action coupler, said housing comprising means for attaching said housing to the fluid dispensing apparatus, said housing further comprising a lower portion configured to extend generally downward over the snap-action coupler and at least partially over the circumference of an upper portion of the fluid container when said housing is attached to the fluid dispensing apparatus and the fluid dispensing apparatus is coupled to the fluid container, wherein at least said lower portion of said housing is configured to substantially complement that portion of the fluid container adjacent said lower portion of said housing when said housing is attached to the fluid dispensing apparatus and the fluid dispensing apparatus is coupled to the fluid container, and further comprising means for centering said housing on the fluid dispensing apparatus, said means for centering comprising a horizontal member extending from the interior of said housing, said horizontal member having a front-facing surface adapted to conform to a rear-facing surface of the fluid dispensing apparatus by engagement of said front-facing surface with the rear-facing surface upon attachment of said housing to the fluid dispensing apparatus.

5,366,122

DISPENSER FOR FLOWABLE MEDIA

Bernhard Guentert, Ehingen, Germany; Michael Wolter, Steckborn, Switzerland; Stefan Ritsche; Reinhold Jaeger-Waldau, both of Radolfzell,, Germany, and Karl-Heinz Fuchs, Radolfzell, Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Germany

Filed Aug. 27, 1992, Ser. No. 936,743
Claims priority, application Germany, Aug. 27, 1992, 4128295
Int. Cl.[5] B65D *83/06*
U.S. Cl. 222—401 **57 Claims**

1. A media dispenser comprising:

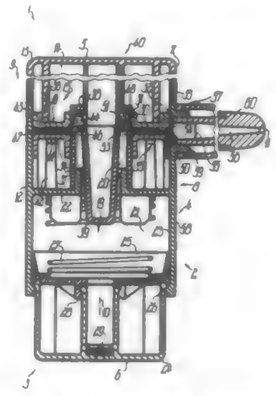
a discharge actuating means (3) for manually operating said dispenser;

a discharge conveyor (2) for transporting said media;

a discharge outlet (11) for discharging said media to an outside environment;

a media magazine (15) that is insertable into said dispenser (1) to provide at least one individual magazine chamber (30) for receiving at least one dosage unit, said media magazine (15), when inserted, being operationally displaceable in a transverse direction between a discharge position and an inoperative position of said magazine chamber (30), said magazine chamber (30) having remote first and second chamber ends (46, 47),

duct means (20) for conducting a conveyor stream of a conveyor medium into said magazine chamber (30), for entraining said dosage unit in said conveyor stream, and for expelling said conveyor stream commonly with said



dosage unit out of said magazine chamber (30) towards said discharge outlet (11), said magazine chamber (30) being disconnected from said duct means (20) in said inoperative position, and said dispenser (1) defining a dispenser axis (10),

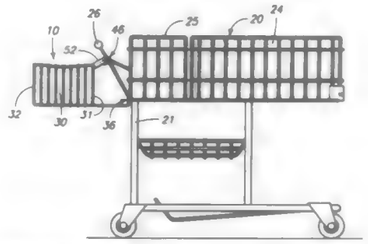
wherein in said discharge position said magazine chamber (30) is oriented transverse to said dispenser axis (10), said first and second chamber ends providing radially inner and outer chamber ends, and control means are provided for passing said conveyor stream through said magazine chamber (30) between said radially inner and outer chamber ends (47).

5,366,123

DETACHABLE CARRIER FOR SHOPPING CARTS

Clyde M. Range, P.O. Box 1649, Oroville, Wash. 98844

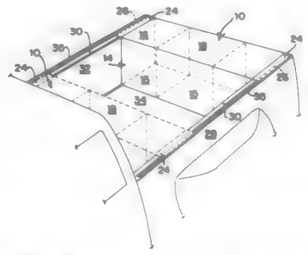
Filed Sep. 14, 1993, Ser. No. 120,936
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—42.43 **12 Claims**



1. A detachable carrier for a shopping cart having a cart basket defined in part by forward and rearward cart basket walls, the rearward cart basket wall including elevationally spaced horizontal top and bottom cart basket frame members, and having a handle situated rearwardly of the rearward cart basket wall, the carrier comprising:

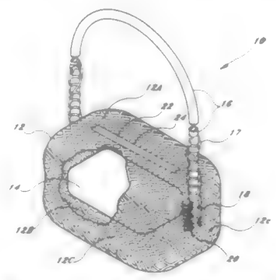
a carrier basket including a carrier basket front wall;
first hook members attached to the carrier basket and extending forwardly of the carrier basket front wall;
each of said first hook members defining an associated open cart basket frame member receiving recess;
second hook members attached to the carrier basket and extending forwardly of the carrier basket front wall, each of the second hook members defining an associated open cart basket frame member receiving throat substantially facing the front carrier basket wall;
latch tubes slidably mounted on each of the second hook members, said latch tubes having with length dimensions substantially spanning the associated open cart basket frame member receiving throat;
each of the latch tubes being movable from a latching position wherein the latch tube substantially spans the associated open cart basket frame member receiving throat, and an open position wherein the latch tube is substantially clear of the associated open cart basket frame member receiving throat.

5,366,124
VEHICLE BED LOAD CONTAINER AND STABILIZER
Arthur G. Dearborn, IV, 231A Essex St., Bangor, Me. 04401
Filed Aug. 9, 1993, Ser. No. 104,431
Int. Cl.[5] B60R *7/00*
U.S. Cl. 224—42.46 R **31 Claims**



1. A load container and stabilizer for a vehicle bed such as a pickup truck, van, or utility vehicle bed having a floor, and sidewalls along the opposite sides of the bed, for carrying a load, said vehicle bed comprising:
an elongate container constructed with a length dimension in the elongate direction extending between the sidewalls on opposite sides of the vehicle bed;
said elongate container comprising elongate front, back, and bottom panels of pliable, foldable, flexible material defining a load carrying container smaller in volume than the vehicle bed for subdividing the vehicle bed;
first and second flaps of pliable, foldable, flexible material formed at the top of respective sides of the elongate container so that the flaps extend over surfaces of the sidewalls on opposite sides of the vehicle bed;
complementary first and second fastening means, said first fastening means being formed on the respective first and second flaps, and said second fastening means being formed at selected locations along the sidewalls, said second fastening means being aligned on opposite sides of the vehicle bed, said complementary first and second fastening means securing the elongate container at a specified location of the vehicle bed with the flaps fastened to the sidewalls by the first and second fastening means;
said elongate front and back panels being formed with sufficient depth between the flaps and bottom panel so that the bottom panel rests on the floor of the vehicle bed when the flaps are secured to the sidewalls on opposite sides of the vehicle bed and the weight of a load in the elongate container is supported by the floor of the vehicle bed, said container preventing shifting of said load on the floor of the vehicle bed during travel;
said elongate container being collapsible and foldable to a relatively small package for storage.

5,366,125
SOAP CONTAINER AND SUPPORT
Frieda Procido, 5379 Evening Star Way, Lake Worth, Fla. 33467
Filed Feb. 15, 1994, Ser. No. 196,694
Int. Cl.[5] A45F *3/02;* **A47K** *7/02, 5/08*
U.S. Cl. 224—202 **18 Claims**

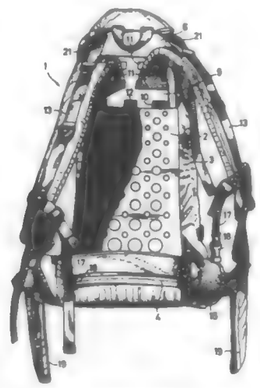


1. A soap container and support combination to be worn around a person's neck for washing a person's body, comprising:
a receptacle for containing soap, said receptacle comprising a resilient, pliable, water pervious material, said receptacle having a top surface, a bottom surface, and a plurality of side surfaces, said top surface having an opening therein, said top surface opening having a perimeter, said top surface opening further having a means for releasably closing said top surface opening disposed around said top surface opening perimeter; and
a stretchable strap having two ends, said strap having a predetermined length when said strap is in a relaxed, non-stretched position, said strap fixedly attached to said receptacle at each of said strap ends, forming a partial loop, said strap having a sufficient stretchability so that the person can grasp said receptacle, apply manual force, and stretch said strap while said strap remains around the neck of the person and touch any portion of the person's body with said receptacle, thereby allowing the person to contact other areas of the person's body with the receptacle without removing the strap from around the person's neck.

5,366,126
KNAPSACK WITH REINFORCING ELEMENT
Ulrich Dausien, Starkenburgstr. 2, D-6082 Mörfelden-Walldorf, Germany
PCT No. PCT/EP90/01325, § 371 Date Mar. 10, 1993, § 102(e) Date Mar. 10, 1993, PCT Pub. No. WO92/02158, PCT Pub. Date Feb. 20, 1992
PCT Filed Aug. 10, 1990, Ser. No. 969,141
Int. Cl.[5] A45F *3/08*
U.S. Cl. 224—211 **29 Claims**

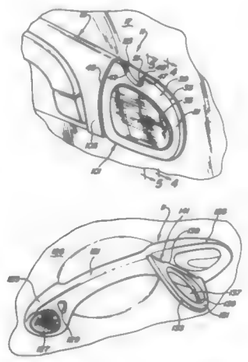
1. A back pack comprising:
a rear wall having upper and lower pockets;
a one-piece, plate-shaped reinforcing element having upper and lower ends and having a curved region curved to define a concave side and a convex side;
said reinforcing element fitted to said rear wall with said convex side of said reinforcing element directed toward said rear wall, thus concavely deforming said rear wall, and with said reinforcing element being retained longitudinally and transversely on said rear wall solely by said upper and lower ends of said reinforcing element being received detachably in said upper and lower pockets, respectively;

a support net stretched over and bridging said concave side of said reinforcing element and having upper and lower ends retained by respective upper and lower portions of said reinforcing element; and



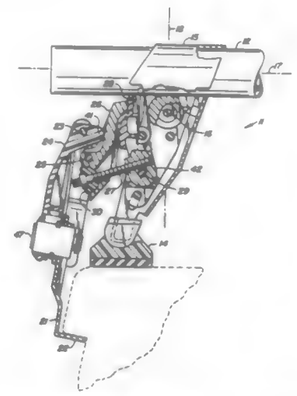
said upper and lower pockets being dimensioned to deform said reinforcing element concavely when said upper and lower ends of said reinforcing element are fitted into said upper and lower pockets.

5,366,127
DEVICE FOR SUPPORTING GARMENT HANGERS WITHIN AN AUTOMOTIVE VEHICLE
Mark F. Heinz, Toledo, Ohio, assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed May 18, 1993, Ser. No. 63,406
Int. Cl.[5] G60R *13/02*
U.S. Cl. 224—313 **34 Claims**



1. A device used in an automotive vehicle having a panel thereof, said device employed for supporting a garment hanger, said device comprising:
a loop being defined by a peripheral surface and an inside surface thereof, said inside surface defining an aperture therewithin, said loop further having an upper portion and a mounting portion thereof, said loop being a rigid member functionally oriented in a substantially vertical plane such that a hooked portion of said garment hanger is horizontally insertable through said aperture and is vertically supported by a substantially inclined portion of said inside surface thereof, said loop being attached to said panel of said automotive vehicle.

5,366,128
CROSSBAR SUPPORT FOR VEHICLE ROOF RACK
Michael Grim, Arcata, Calif., assignor to Yakima Products, Inc., Arcata, Calif.
Filed Nov. 5, 1993, Ser. No. 147,371
Int. Cl.[5] B60R *9/00*
U.S. Cl. 224—330 **8 Claims**

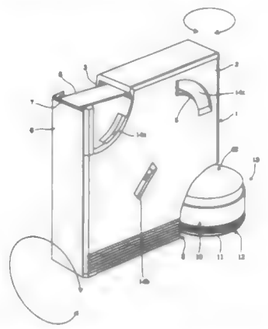


1. A device for securing a support bar to a vehicle roof, said device comprising:
a pedestal adapted to support a bar along a longitudinal axis, said pedestal having a centerline intersecting said longitudinal axis to define a plane;
a curved ramp on said pedestal defining a convexly curved path of travel within said plane;
a follower movably mounted to said pedestal and contacting said curved ramp;
a clamp member adapted to engage a vehicle door frame, said clamp member pivotally mounted to said follower; and
a lever arm pivotally mounted to said clamp member and containing a protuberance contacting said follower, whereby rotation of said lever arm to urge said protuberance against said follower causes said follower to pivot relative to said clamp member and to travel along said curved ramp, thereby urging said clamp member toward said longitudinal axis.

5,366,129
TAPE CUTTER
Shinsuke Nakamura; Satoshi Mochizuki, and Naoki Hariu, all of Tokyo, Japan, assignors to Midori Co., Ltd., Tokyo, Japan
Filed Dec. 18, 1992, Ser. No. 993,042
Int. Cl.[5] B65D *85/672;* **B26F** *3/02*
U.S. Cl. 225—42 **7 Claims**

1. A tape dispenser comprising:
a housing including side plates and a front plate, one of said side plates being removable from the remainder of the housing;
a cylindrical member for rotatably supporting a roll of adhesive tape, protruding into said housing from an inner surface of the other of said side plates;
a cutter provided on said front plate of housing;
a support rod rotatably mounted to said housing such that said housing can rotate about a longitudinal axis of said support rod;
a ring-shaped support disposed at an end of said support rod and integral therewith; and
adhering means for adhering the tape dispenser to a supporting surface, said adhering means being supported within said ring-shaped support, and said ring-shaped support being rotatable relative to said adhering means such that

when said adhering means is adhered to a supporting surface, the casing of the tape dispenser and said support



rod integral with said ring-shaped support can be rotated about said adhering means.

5,366,130

DANCER ROLLER HAVING MULTI-RACK AND PINION TENSION CONTROL

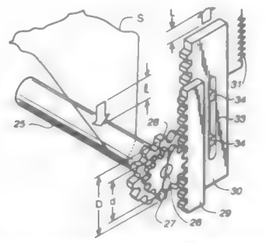
Masao Fukuda, Shiga, Japan, assignor to Ishida Co., Ltd., Japan

Continuation of Ser. No. 89,457, Jul. 9, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 194,822

Claims priority, application Japan, Aug. 24, 1992, 4-273365

Int. Cl.[5] B65H *23/18*

U.S. Cl. 226—44 **4 Claims**



1. A device for reducing the effective length of a spring for providing a load, said device comprising:

a mobile member which is movable under the influence of a load provided by said spring;

a first gear wheel and a second gear wheel having different diameters and coaxially attached to said mobile member;

a linearly mobile means for converting linear motion thereof into rotational motion of said second gear wheel, and

a fixed means engaging with said first gear wheel for converting rotary motion of said first gear wheel to a linear motion thereof parallel to the linear motion of said linearly mobile means.

5,366,131

CABLE AND WIRE PRE-FEED APPARATUS, USING ENDLESS BELT WIRE DRIVE

Jack L. Hoffa, Brea, and Lloyd A. Talley, Valinda, both of Calif., assignors to Eubanks Engineering Company, Monrovia, Calif.

Continuation-in-part of Ser. No. 792,634, Nov. 15, 1991, abandoned. This application Feb. 11, 1993, Ser. No. 16,296

Int. Cl.[5] B65H *59/38, 51/30*

U.S. Cl. 226—118 **33 Claims**

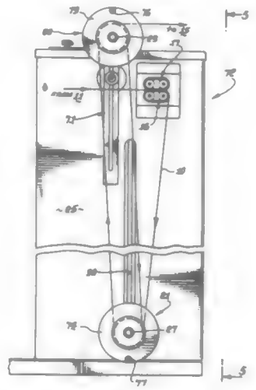
1. In a wire feeding system, for use with apparatus that processes the wire in conjunction with intermittent advancement of the wire, said feeding system operating to de-reel the wire from a reel and to supply the de-reeled wire to said apparatus, said system comprising in combination:

a) a first endless element and a second endless element, and means mounting said elements so that the second element is movable relatively toward and away from the first element, and below the first element,

b) first means for urging the second element away from the first element,

c) wire drive means to positively advance the wire toward said apparatus,

d) and second means for controlling the speed of said drive means in response to sensing the position of said second element,



e) said wire drive means comprising belt means having elongated wire gripping stretch means, said belt means comprising two endless belts forming said stretch means comprising two elongated belt stretches between which the wire is gripped as it is driven endwise,

f) there being means positioning said wire drive means to feed wire to the second element, and whereby wire successively passes between and entrains said elements, in passing from said reel to said apparatus, and whereby the wire is maintained taut as said second element moves toward and away from said first element.

5,366,132

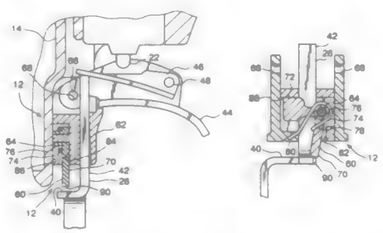
PORTABLE FASTENER DRIVING DEVICE WITH INADVERTENT IMPACT ACTIVATION PREVENTION

David J. Simonelli, Coventry, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Apr. 14, 1993, Ser. No. 45,733

Int. Cl.[5] B25C *1/04*

U.S. Cl. 227—8 **14 Claims**



1. A fastener driving device comprising

a housing having a handle portion enabling a user to manually operate said device in portable fashion and a drive portion disposed forwardly of said handle portion,

power operator structure in said housing drive portion actuatable to be moved through successive operating cycles each of which includes a drive stroke and a return stroke,

a nosepiece and magazine assembly carried by said housing including structure defining an elongated drive track and a feed track leading laterally into said drive track,

a fastener driving element slidably mounted in said drive track and operatively connected with said power operated structure so as to drive a leading fastener fed into said drive track from said feed track outwardly of said drive track and into a workpiece during the drive stroke of said power operated structure,

an actuating mechanism including a contact trip element mounted for movement adjacent the nosepiece for movement from an inoperative position to an operative position when said nosepiece is normally moved into engagement with a workpiece and a trigger member mounted on said housing adjacent said handle portion for movement by digital pressure from an inoperative position into an operative position,

said actuating mechanism being operable to actuate said power operated structure to move through one operative cycle in response to the movement of said contact trip element and said trigger member into their respective operative positions,

an actuation preventing mechanism constructed and arranged to be movable between (1) a normal inoperative position permitting actuation of said power operated structure, and (2) an operative position preventing an unwanted actuation of said power operated structure in response to an inadvertent impact of the housing with a foreign object during an upward manual movement of the housing while the operator is exerting digital pressure on the trigger member.

5,366,133

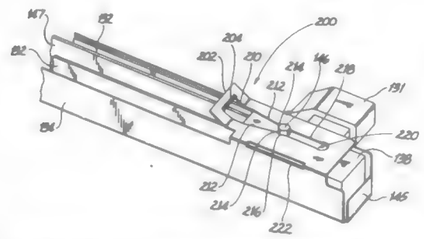
SURGICAL FASTENING APPARATUS WITH SHIPPING INTERLOCK

Robert J. Geiste, Milford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 779,063, Oct. 18, 1991, abandoned. This application Nov. 24, 1992, Ser. No. 982,019

Int. Cl.[5] A61B *17/072*

U.S. Cl. 227—175 **29 Claims**



1. A surgical fastener applying apparatus, which comprises:

a) a frame;

b) a stationary carrier receivable into said frame;

c) a cartridge for carrying a plurality of surgical fasteners, said cartridge being mountable to said stationary carrier;

d) closure means mounted to said frame for effecting closure of said fasteners;

e) a pusher assembly slidably mountable within said stationary carrier, said pusher assembly including at least one cam bar for pushing said fasteners from said cartridge into said closure means, a cam bar retainer for mounting said at least one cam bar, said cam bar retainer being longitudinally movable in response to user applied pressure; and,

f) a shipping interlock including deformable means engageable with said cam bar retainer for preventing premature actuation of said apparatus, said deformable means being laterally deformed upon actuation of the apparatus to permit disengagement of the cam bar retainer, wherein a projection extends from said cam bar retainer and said deformable means includes an elongated and longitudinally oriented aperture for receiving said projection of said cam bar retainer.

5,366,134

SURGICAL FASTENING APPARATUS

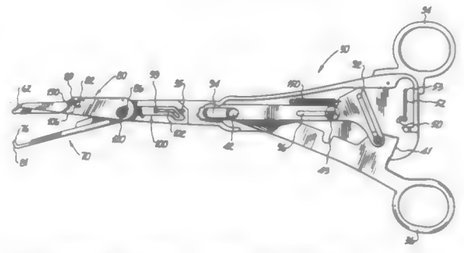
David T. Green, Westport; Henry Bolanos, East Norwalk; Daniel E. Alesi, Sherman, all of Conn., and Kenneth E. Toso, Port Chester, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 781,696, Oct. 18, 1991, abandoned, and a continuation-in-part of Ser. No. 778,785, Oct. 18, 1991, abandoned. This application Oct. 6, 1992, Ser. No. 957,246

The portion of the term of this patent subsequent to Aug. 16, 2011, has been disclaimed.

Int. Cl.[5] A61B *17/068*

U.S. Cl. 227—176 **24 Claims**



1. A surgical fastening apparatus comprising:

first and second handles;

an anvil jaw pivotally connected to at least one of said handles and movable in response to a first movement of at least one of said handles between an open position and a closed position;

fastener pushing means for advancing an individual fastener into contact with said anvil jaw in response to a subsequent movement of at least one of said handles;

means for tactilely indicating to a user the termination of said first movement, said indicating means including means for providing a dwell period comprising a time during which said handles move between a position in which said anvil jaw is in said closed position and a position in which said fastener pusher means is actuated; and

means for preventing incomplete actuation of said fastener pushing means during said subsequent movement.

5,366,135

METHOD OF MAKING COMPOSITE ELECTRICAL CONTACT

Seiichi Tanaka, Tokyo, and Shigeru Tabei, Machida, both of Japan, assignors to Chugai Denki Kogyo K.K., Japan

Continuation-in-part of Ser. No. 952,570, Sep. 28, 1992, Pat. No. 5,268,237. This application Jul. 16, 1993, Ser. No. 92,611

Claims priority, application Japan, Oct. 28, 1991, 3-347579

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

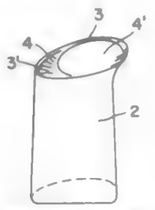
Int. Cl.[5] B23K *20/00*

U.S. Cl. 228—116 **2 Claims**

1. Method of making a composite electrical contact having a head portion of a silver alloy, and a shank portion of copper or copper alloy being directly cold bonded to one end of said

head portion and being completely coated with a protective metallic thin layer between its opposite ends;

which comprises cutting a silver alloy wire to form a short piece of wire for the head portion, and cutting a copper or copper alloy wire coated with the protective metallic thin layer to form a short piece of wire cut at opposite ends thereof for the shank portion,



aligning the short piece of wire for the head portion and the shank portion so that said shank portion is juxtaposed to said head portion, and

directly cold bonding said short piece of wire under pressure.

5,366,136

PROCESS FOR FORMING A COATING ON A SUPERALLOY COMPONENT, AND THE COATED COMPONENT PRODUCED THEREBY

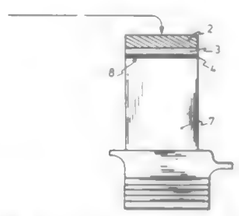
Claude A. C. Pagnon, Voisins, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma" , Paris, France

Filed May 24, 1993, Ser. No. 65,763

Claims priority, application France, May 27, 1992, 92 06474

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—119 **8 Claims**



1. A process for forming a coating on at least one localized area of a superalloy component, said process comprising the following successive steps:

(a) depositing an inner layer of a material including flux elements on said localized area by plasma flame spraying said material directly onto said localized area;

(b) depositing an intermediate layer comprising a mixture of materials on said inner layer by plasma flame spraying;

(c) depositing on said intermediate layer by plasma flame spraying an outer layer of a material selected to provide said component with the desired operational surface properties in said localized area;

(d) subjecting said layers deposited in steps (a), (b) and (c) to a brazing heat treatment cycle wherein the temperature and duration are determined experimentally according to the materials used in said layers;

said material forming said inner layer being selected to procure the melting of said inner layer and then its solidification during said brazing heat treatment cycle, and said mixture of materials forming said intermediate layer consisting of a mixture of said materials used for said inner and outer layers.

5,366,137

METHOD AND APPARATUS FOR SHAPING METAL SHEETS INTO CAN BODIES AND FEEDING THE CAN BODIES TO A WELDING STATION

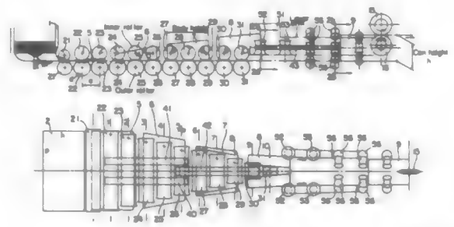
Peter Gysi, Bellikon; Armin Ineichen, Wohlen, and Gideon Levy, Orselina, all of Switzerland, assignors to Elpatronic AG, Zug, Switzerland

Filed Jun. 3, 1993, Ser. No. 72,178

Claims priority, application Switzerland, Jun. 18, 1992, 01 925/92-1

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—147 **9 Claims**



1. Method for shaping metal sheets into can bodies and feeding the can bodies to a welding station, comprising the steps of:

providing a series of profiling rollers disposed at both surfaces of a metal sheet along a first portion of a substantially linear conveying route leading to a welding station to preshape a can body;

providing a series of sizing rollers acting on the external surfaces of preshaped can bodies along a second portion of the conveying route;

providing at least one belt conveyor disposed on the rollers at the one surface of each metal sheet along the first and second portions of the conveying route;

taking each metal sheet from a destacking table disposed on an axis of the conveying route; and

feeding each metal sheet through the profiling and sizing rollers toward the welding station by means of the at least one belt conveyor to shape the can body.

5,366,138

WEAR RESISTANT DIE FACE AND METHOD

Timothy M. Vela, Montgomery, N.Y., and David H. Atkinson, Oradell, N.J., assignors to Alloy Technology International Inc., West Nyack, N.Y.

Filed May 5, 1993, Ser. No. 57,715

Int. Cl.[5] B23K *28/00, 103/16*

U.S. Cl. 228—176 **5 Claims**

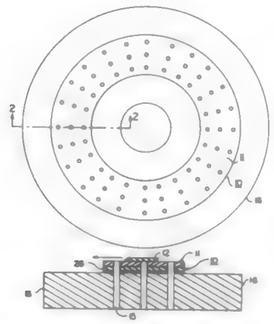
1. The method of making a die plate for an extrusion die body comprising:

a. in a gas impermeable metal container having a bottom and a top, each with a planar surface, placing a first layer of powdered constituents of a steel and titanium carbide alloy on the planar surface of the bottom layer, placing a steel substrate plate atop said first layer, said substrate plate having a pair of opposite faces, placing a second layer of said powdered constituents atop the other said surface and laying said top over and against said second layer, said container including a peripheral sidewall encircling said layers and substrate plate, said container being made of a weldable material and of thickness such as to transmit process pressure to its contents;

welding together the top and bottom, heating and evacuating the container, and closing it;

placing the container in a hot isostatic reactor vessel heating the container, and applying fluid pressure in said vessel whereby to heat and strongly compress the container and its contents together, maintaining said heat and pressure for a length of time sufficient for the steels to bond with one another at a bond and for the steel and titanium carbide to alloy with one another to form Fe/TiC as an outer surface;

removing said container from the vessel and heat treating it



to conditions wherein the contents of the container can be machined;

mechanically removing the container from its contents;

dividing the contents into two individual plates, each with a single surface of steel and Fe/TiC bonded thereto by cutting through the plate by a cut which is parallel to said faces.

5,366,139

CATALYTIC CONVERTERS - METAL FOIL MATERIAL FOR USE THEREIN, AND A METHOD OF MAKING THE MATERIAL

Sunil C. Jha, North Attleboro, Mass., and James A. Forster, Barrington, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1993, Ser. No. 111,384

Int. Cl.[5] B23K *20/04*

U.S. Cl. 228—193 **11 Claims**



1. A method for making a foil substrate material having various metal constituents for catalytic converters comprising the steps of:

providing a layer of a first material chosen from the group consisting of chromium containing ferrous metals and aluminum and aluminum alloys, sandwiching said layer of first material between first and second layers of a second material chosen from the group consisting of chromium containing ferrous metals and aluminum and aluminum alloys not chosen for the first material, metallurgically bonding said layers together by reducing thickness of said layers thereby forming a multilayer composite material of said first and second materials, reducing thickness of the composite material to a final thickness and heating said composite material in situ at a temperature between 900° C. and 1200° C. for a sufficient period of time to cause diffusion of various metal constituents of said layers throughout the composite material thereby providing a uniform solid solution material for the foil substrate.

5,366,140

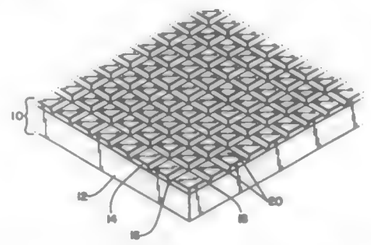
PATTERNED ARRAY OF UNIFORM METAL MICROBEADS

David C. Koskenmaki, St. Paul, and Clyde D. Calhoun, Grant Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1993, Ser. No. 129,668

Int. Cl.[5] B23K *35/00, 35/14*

U.S. Cl. 228—246 **18 Claims**



1. A method of providing an array of microspheres on a substrate, comprising the steps of:

a) providing a metal layer on a substrate, said metal layer sufficiently partitioned into a plurality of metal regions to permit beading of the metal regions;

b) heating said metal layer to a temperature sufficient to melt the metal regions and o permit beading of the metal regions into discrete microspheres, thereby providing an array of discrete microspheres on a substrate.

5,366,141

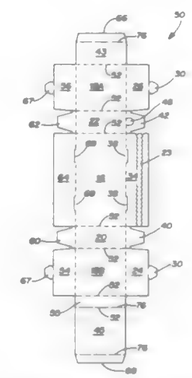
RECLOSEABLE PAPERBOARD CONTAINER WITH OPTIONAL CLOSURE MEANS

James L. Stone, Grand Rapids, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 989,208, Dec. 11, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 194,820

Int. Cl.[5] B65D *5/48, 5/54*

U.S. Cl. 229—120.03 **8 Claims**



1. A recloseable paperboard container, comprising:

opposing top and bottom walls, opposing front and back walls, and opposing side walls;

a main partition wall, extending between and connected to

the opposing front and back walls, thereby dividing the container into first and second main cells; and

a secondary partition wall extending between said main partition wall and one of said side walls, thereby dividing said first main cell into first and second sub cells;

wherein the back wall includes first and second major top flaps associated with the respective first and second main cells and hingedly connected to an upper transverse edge of the back wall, the first major top flap having a first top edge lock tab protruding from an outer edge of the first major top flap, and the second major top flap having a second top edge lock tab protruding from an outer edge of the second major top flap;

wherein the front wall includes a third major top flap hingedly connected to an upper transverse edge of the front wall, the third major top flap having first and second top edge slits disposed on the upper transverse edge of the front wall, the first and second top edge slits being adapted for receiving the respective first and second top edge lock tabs of the respective first and second major top flap, the third major top flap including an integral tear strip extending across the third major top flap substantially parallel to the upper transverse edge of the front wall;

further including closure means for folding the third major top flap over the first and second major top flaps and securing an inner surface of the third major top flap to outer surfaces of the first and second major top flaps to form the top wall; and

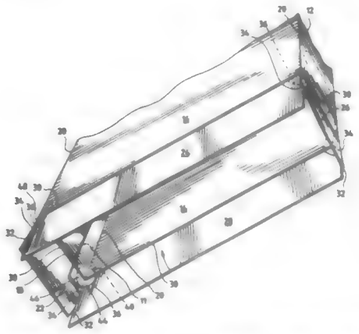
wherein the top wall is opened by pulling the tear strip to disengage the outer surface of the first and second major top flaps from the inner surface of the third major top flap, and wherein the top wall is reclosed by engaging the first and second top edge lock tabs with the respective first and second top edge slits.

5,366,142

CARDBOARD BOX HAVING CORNER SEALS

Graham Hough, Lake Villa, Ill., assignor to Field Container Co. L.P., Elkgrove Village, Ill.

Filed Apr. 28, 1994, Ser. No. 234,538
Int. Cl.[5] B65D *5/06*
U.S. Cl. 229—133 **16 Claims**



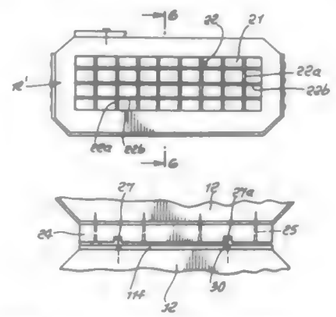
1. A rectangular cardboard box made from a cardboard piece, which comprises a rectangular, tubular body having four walls terminating in end flaps which respectively connect to said walls through fold lines, said end flaps being foldable along said fold lines to close at least one end of said tubular body; said end flaps which are adjacent to each other being separated by a corner and defining a first slit through the cardboard piece, said first slit extending partway along said corner between said flaps from the outer flap ends to a position which is outwardly spaced from said fold lines of said adjacent flaps and terminating there; said adjacent end flaps defining a second slit on the inner surfaces of said adjacent end flaps, said second slit extending outwardly only partially through the thickness of said cardboard piece and defining a line that extends outwardly from the fold line of one adjacent end flap, across said corner, and inwardly to the fold line of the other adjacent end flap, whereby folding of said adjacent flaps causes a tearing and inward folding of a portion of said cardboard defined by said line to serve as a corner seal.

5,366,143

PRODUCE BOX WITH CELLULAR PLASTIC WALLS

Gary L. Vollers, 11471 Tampa Ave., #149, Northridge, Calif. 91326

Continuation-in-part of Ser. No. 130,872, Oct. 4, 1993. This application Nov. 22, 1993, Ser. No. 153,527
Int. Cl.[5] B65D *5/32, 5/42*
U.S. Cl. 229—199 **16 Claims**



1. In a box structure, the combination comprising

a) box side walls, bottom wall, and two end walls, said two end walls each having substantially greater thickness than said side walls, and said bottom wall,

b) the end walls having peripheral edges, said bottom wall and side walls having edge portions overlapping certain of said peripheral edges of the end walls,

c) there being attachment means attaching said bottom wall and side wall edge portions to said end wall peripheral edges,

d) said end walls consisting essentially of lightweight, cellular synthetic resin,

e) said side walls and bottom wall defined by thin, inner and outer sheets and webs interconnecting said sheets, said webs being elongated whereby parallel, lengthwise elongated cells are formed by said inner and outer sheets and webs, said inner and outer sheets consisting of synthetic resin, said cells having length direction,

f) said bottom wall and side walls forming a continuous strip which is folded to fit against said certain peripheral edges of said end walls, said certain peripheral edges being flat,

g) successive of said webs extending at the same slant angles between said sheets, whereby said elongated cells have parallelogram configuration in planes normal to the length direction of said elongated cells,

h) said elongated cells between said webs extending toward said end walls,

i) each of said end walls being generally rectangular and having beveled corners.

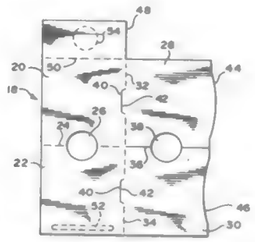
5,366,144

INTERNAL SUPPORT FOR CARTONS

Larry Eisman, Elkins Park, Pa., assignor to Dopaco, Inc., Downingtown, Pa.

Filed Feb. 23, 1994, Ser. No. 200,523
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—199 **23 Claims**

1. A carton support for the stabilization of an overlying top member relative to a base; said support being adapted to extend substantially perpendicular to and between said base and overlying top member and comprising a central member with opposed sides, said central member having opposed first and second edges, said central member having opposed first and second ends extending between said edges, first and second side members, each side member having opposed edges, each side member having one of said ends thereof adjacent said first end of said central member, said side members, in a support position, being outward of the opposed sides of said central member and extending at an angle thereto from said first end of said central



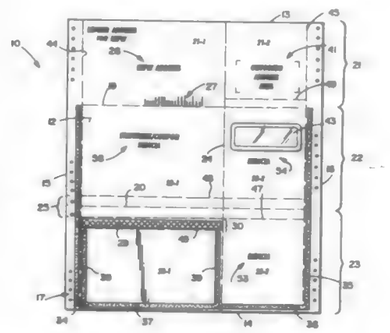
member adapted for engaging and securing said first edge of said central member to one of said top member and said base for extension of said central member substantially perpendicular thereto, the height of each side member between said opposed edges thereof being substantially equal to the height of said central member between said first and second edges thereof, each side member, at said end adjacent said first end of said central member, being foldably joined to said central member for pivotal movement between a first closed position, wherein said side members overlie each other and extend outward from said central member substantially parallel thereto, and said support position.

5,366,145

SINGLE PLY ECCENTRIC C-FOLD

Dean N. Sauerwine, Emmaus, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 6, 1993, Ser. No. 43,299
Int. Cl.[5] B65D *27/04, 27/06*
U.S. Cl. 229—304 **22 Claims**



1. An intermediate for a mailer type business form comprising a single sheet of paper having front and back faces, parallel top and bottom edges, and first and second parallel side edges; first and second lines of weakness extending parallel to said top and bottom edges, and defining the sheet into first, second, and third panels, said first and second lines of weakness being positioned so that said first panel is bordered by said top edge and said first line of weakness, and is smaller than said second and third panels, which are substantially identical in size, said second panel between said first and third panels;

a third line of weakness extending between said top and bottom edges parallel to said side edges and spaced a substantial distance from said side edges to define each of said panels into first and second sub-panels, said first sub-panel of each being defined by said first side edge, and said second sub-panel of each being defined by said second side edge;

said first sub-panel of said first panel back face comprising reply addressee indicia imaged thereon;

said first sub-panel of said third panel back face having a first non-heat seal adhesive pattern disposed thereon generally parallel to said top edge, and adjacent said second line of weakness; and

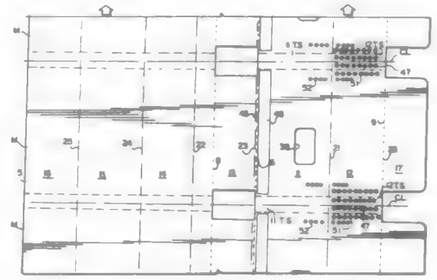
a second adhesive pattern disposed adjacent said first and second side edges, and said bottom edge, for sealing said panels together when folded into a mailer about said first and second lines of weakness.

5,366,146

SINGLE-PART STATEMENT MAILER

Henk Haan, Niagara Falls; Mark S. Casper, Williamsville, both of N.Y.; Martha Balshaw, Gurnee, Ill., and Kevin A. Schindler, Frederick, Md., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 9, 1993, Ser. No. 88,637
Int. Cl.[5] B65D *27/06, 27/04*
U.S. Cl. 229—304 **19 Claims**



1. A mailer comprising:

a single ply having longitudinally and transversely extending edges, first, second, third, fourth, fifth and sixth panels, and first, second, third, fourth and fifth foldlines transversely spaced one from the other and extending in a longitudinal direction;

a pair of marginal lines of perforations extending transversely along said ply generally parallel to said transversely extending edges and inset therefrom, respectively, defining marginal tear strips for the mailer in said first, second, fifth and sixth panels and at least one of said third and fourth panels;

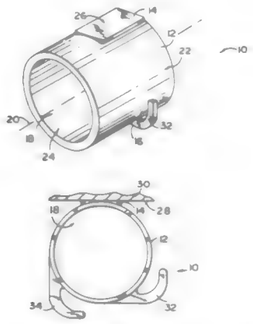
said first and second panels being folded about said first foldline to register said first and second panels with one another and the marginal tear strips thereof with one another;

adhesive along at least one of said registering marginal tear strips of said first and second panels to secure said registering marginal tear strips to one another, and adhesive along at least portions of one of said first and second panels inset from said marginal lines of perforations to secure said first and second panels to one another, respectively, to form a return envelope;

said third, first and second panels being folded about said second foldline such that said third panel registers with said fourth panel and said first and second panels register with said fifth panel, the marginal tear strips of said second

and fifth panels lying in opposition to one another and said third and fourth foldlines lying in registry with one another;
adhesive along at least one of the registering marginal tear strips of said fifth and second panels to secure said fifth and second panels to one another;
said registering third and fourth panels being folded about registering third and fourth foldlines to register with said registering first, second and fifth panels;
adhesive along at least one of the marginal tear strips of said first panel and the marginal strip of said one of said third and fourth panels to secure said first panel and said one panel to one another;
said sixth panel being folded about said fifth foldline to overlie said fourth panel; and
adhesive along at least one of said sixth and said one of said third and fourth panels to secure said sixth and said one of said third and fourth panels to one another.

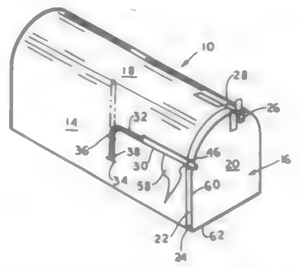
5,366,147
DELIVERY RECEPTACLE
John P. Morgan, Grand Rapids; Jack E. Hendricks, Allegan, and Kurt Post, Zeeland, all of Mich., assignors to Flashes Publishers, Inc., Allegan, Mich.
Filed Feb. 1, 1993, Ser. No. 12,018
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—1 C **12 Claims**



1. A delivery receptacle comprising a body defining an interior cavity wherein a first item delivered to said receptacle is releasably received and held, said cavity opening through one of two opposing ends of said body; said body having an exterior surface, said exterior surface having a portion defining a mount integrally formed in one piece with said body, whereby said receptacle is mounted to support surface, said mount having a mounting surface; said body having a first hanger integrally formed in one piece with said body, said first hanger extending generally radially outward from said exterior surface in a direction about parallel with said mounting surface; said body also having a second hanger integrally formed in one piece with said body, said second hanger extending generally radially outward from said exterior surface in a direction about perpendicular to said mounting surface, whereby a second item delivered to said receptacle is releasably received and held.

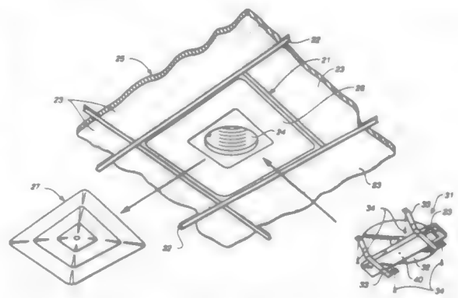
5,366,148
MAILBOX AND SIGNAL
Harold C. Schreckengost, 233 Parallel St., Pleasantville, Pa. 16341-9752
Filed Aug. 23, 1993, Ser. No. 26,608
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—35 **6 Claims**

1. In combination a mailbox and a signal;
said mailbox having a side, a door and a hinge means connecting said door to said mailbox;
said signal comprising a staff having a lower end and an upper end, a helical spring attached to said lower end of said staff, a first attaching means and a second attaching means;
said first attaching means and said second attaching means attaching said helical spring to said side of said mailbox;
a third attaching means comprising a cotter pin having a ring and legs;



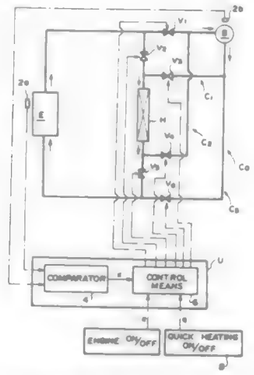
said staff being adapted to be swung to a generally horizontal position with said upper end of said staff received in said ring whereby said staff is held in generally horizontal position by said ring;
said staff being adapted to be urged to a generally vertical position by said helical spring indicating that mail has been delivered when said door is opened moving said ring off said staff;
said legs are fixed to said ring and extending through a flange on said door.

5,366,149
METHOD AND APPARATUS FOR CONVERTING A FIXED-OPENING AIR DIFFUSER TO AN INDIVIDUALLY-CONTROLLED VARIABLE AIR VOLUME DIFFUSER
James R. Kline, Moraga, Calif., assignor to Acutherm Limited, Hayward, Calif.
Division of Ser. No. 53,099, Apr. 26, 1993, Pat. No. 5,297,326.
This application Dec. 6, 1993, Ser. No. 161,477
Int. Cl.[5] F24F *13/14*
U.S. Cl. 236—49.5 **5 Claims**



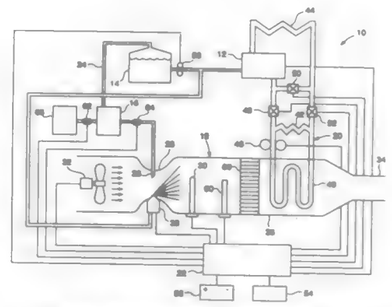
1. An apparatus for converting a fixed-opening air diffuser to an individually-controlled variable air volume diffuser substantially without disturbing a support structure in which a housing of said fixed-opening air diffuser is mounted comprising:
a mounting bracket assembly formed to be attached to one of: (i) existing mounting posts for a diffusion assembly carried by said fixed-opening air diffuser, and (ii) said housing of said fixed-opening air diffuser;
a thermal sensor-actuator assembly carried by said mounting bracket assembly including a room air sensor-actuator positioned to sense room air temperature; and
at least one vane coupled to said sensor-actuator assembly and responsive to room air sensor-actuator to displace said vane relative to said diffuser housing in a manner varying the flow of air from said diffuser housing when said sensor-actuator is mounted in said diffuser housing by said mounting bracket assembly.

5,366,150
AUTOMOTIVE HEATING SYSTEM
Shinshi Kaimoto; Takahiro Sato; Hiroshi Hamamoto, and Masanori Ishikawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 17, 1993, Ser. No. 153,900
Claims priority, application Japan, Nov. 20, 1992, 4-311717
Int. Cl.[5] B60H *1/02*
U.S. Cl. 237—2 A **4 Claims**



1. An automotive heating system comprising
an engine coolant circuit for circulating engine coolant through an engine of a vehicle, a heat exchanger for transferring heat between the engine coolant and air, and a heat accumulator which stores heat of the engine coolant, the engine coolant circuit having a first coolant circulating path through which the engine coolant from the engine passes the heat accumulator and the heat exchanger in this order and a second coolant circulating path through which the engine coolant from the engine passes the heat exchanger and the heat accumulator in this order,
a path switching means which selectively opens one of the first and second coolant circulating paths,
a temperature detecting means which detects whether the temperature of heat stored in the heat accumulator is higher than the temperature of the engine coolant,
a heating requirement detecting means which detects whether heating is required, and
a control means which controls the path switching means on the basis of whether the temperature of heat stored in the heat accumulator is higher than the temperature of the engine coolant and whether heating is required, the control means controlling the path switching means so that the engine coolant circulates through the first coolant circulating path when the temperature of heat stored in the heat accumulator is higher than the temperature of the engine coolant while heating is required and through the second coolant circulating path when the former temperature is lower than the latter temperature while heating is required.

5,366,151
HYBRID VEHICLE FUEL VAPOR MANAGEMENT APPARATUS
Edward T. King, Dearborn, and Larry R. Brandenburg, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 27, 1993, Ser. No. 173,240
Int. Cl.[5] B60H *1/04*
U.S. Cl. 237—2 A **18 Claims**



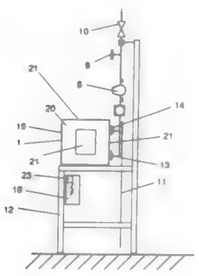
15. A fuel vapor management apparatus for heating the interior of a motor vehicle capable of being powered by electricity or a liquid fuel, the apparatus comprising:
a fuel tank for storing the liquid fuel to be supplied to an internal combustion engine;
a canister for storing vapors released from the fuel tank;
a heater in communication with the canister and adapted to combust the vapors stored therein to generate heated exhaust gases;
a circuit for circulating coolant between a heating coil where the coolant absorbs heat from the heated exhaust gases generated by the heater and a heater core where at least a portion of the heat absorbed by the coolant may be transmitted to the interior of the vehicle; and
a system controller adapted to receive a first input indicative of a demand for heat in the interior of the vehicle, a second input indicative of the state of charge of an electrical storage battery, and a third input indicative of a time interval since the canister was previously purged;
the system controller signalling an ignitor to begin combustion in the heater if the first input indicates a demand for heat, the second input indicates the state of charge of the battery is high, and the third input indicates a time interval greater than a predetermined amount.

5,366,152
HEAT CHARGING APPARATUS
Hans Gössi, Oberdorf 25 (6403), Küssnacht am Rigi, Switzerland
Filed Oct. 7, 1993, Ser. No. 133,228
Claims priority, application Switzerland, Oct. 8, 1992, 92/3152.4
Int. Cl.[5] F25B *27/00*
U.S. Cl. 237—2 B **12 Claims**

1. A heat charging apparatus for water reservoirs and boilers in heating and warm water installations designed for keeping a selectable minimum temperature, said heat charging apparatus comprising:
a water circulation pump located in a piping system for pumping water to and from the reservoir or boiler,
a temperature control,
a three-way mixing valve located in piping system for receiving water from different locations of the reservoir or boiler and mixing the same,
an electric control panel on which the temperature control is located, and

a heat pump located in the piping system for receiving and heating the water from the reservoir or boiler,

wherein said charging apparatus includes a frame structure with a chair-like support area for the heat pump built into a housing,



wherein the frame structure includes pipe connections and a wired control panel, and

wherein the housing is cube-shaped and is removably connected to a water circuit via the pipe connections and to the control panel by means of an electric connector.

5,366,153

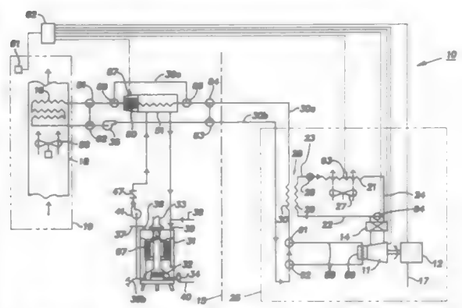
HEAT PUMP SYSTEM WITH REFRIGERANT ISOLATION AND HEAT STORAGE

Paul F. Swenson, Shaker Heights, Ohio, assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 984, Jan. 6, 1993, Pat. No. 5,320,166. This application Mar. 17, 1994, Ser. No. 214,686

Int. Cl.[5] F24D *11/00*

U.S. Cl. 237—19 **3 Claims**



1. In combination, a building enclosing a space, a heat pump system, a storage-type hot water heater having a thermostat and a heating element controlled by the thermostat, heat exchanger means for transferring heat from said heat pump system and said water heater to air in the building, the water heater including a substantially isothermal heat storage material therein, said isothermal heat storage material being adapted to store and discharge a quantity of heat equal to at least the heat output of the heat pump in a period of operation of 15 minutes at a generally constant temperature whereby said water heater is adapted to supplement the heat output of the heat pump to heat the space without a significant reduction in temperature of water stored in the tank so that the frequency of operation of the thermostat to activate the heating element for supplying heat to the air in the space is reduced.

5,366,154

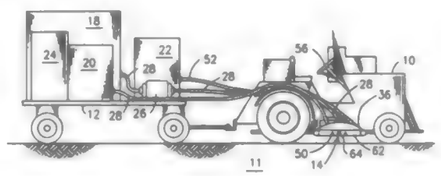
APPARATUS AND METHOD FOR CONTROLLING VEGETATION USING HIGH PRESSURE LIQUID SPRAY

James E. Thompson, Winter Haven, Fla., assignor to Aquaheat Technology, Inc., Fridley, Minn.

Continuation-in-part of Ser. No. 935,865, Aug. 26, 1992, Pat. No. 5,297,730, which is a continuation-in-part of Ser. No. 906,032, Jun. 26, 1992, abandoned, which is a continuation of Ser. No. 583,576, Sep. 14, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 972,595

Int. Cl.[5] B05B *1/24, 1/20*

U.S. Cl. 239—13 **10 Claims**



1. Apparatus for controlling vegetation by the application of a high pressure liquid spray, said apparatus comprising: a supply of liquid to be sprayed, said liquid being selected from the group consisting of water, herbicide, insecticide oil, surfactant, fertilizer and aqueous mixtures thereof; a first boom comprising at least one first spray tip mounted thereon; means for delivering said liquid from said supply to said first spray tip; said means comprising pump means for delivering said liquid to said first spray tip at a pressure of from about 100 psi to about 4,000 psi, whereby a high pressure liquid spray may be applied to the vegetation.

5,366,155

BY-PASS ARRANGEMENT FOR CONTROLLING THE RETURN FLOW OF A PILOT VALVE CONNECTED INTO AN IRRIGATION NETWORK

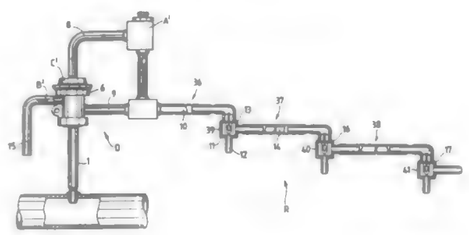
Adamo Gazzoni, Cesena, Italy, assignor to Enichem Agricoltura S.p.A., Palermo, Italy

Filed Dec. 4, 1992, Ser. No. 985,869

Claims priority, application Italy, Dec. 4, 1991, MI91A003251

Int. Cl.[5] B05B *1/08*

U.S. Cl. 239—66 **6 Claims**



1. An irrigation system comprising a valve arrangement for providing a pulsating supply of an irrigation fluid to a distribution network, said valve arrangement comprising a bypass arrangement connected between an outlet connection from the pilot valve and a return connection to the pilot valve, the bypass arrangement eliminating a need for an irrigation system return circuit and enabling said valve arrangement to be connected to an open circuit network to pulse delivery of the irrigation fluid to the distribution network,

said valve arrangement comprising said bypass arrangement and said pilot valve,

said pilot valve including a diaphragm, a diaphragm chamber, an exhaust port, said return connection, said outlet connection, and said inlet connection, wherein fluid pressure in said diaphragm chamber controls the position of the diaphragm to alternatingly direct a pressurized liquid source between the exhaust port and the pilot valve outlet connection,

said bypass arrangement comprising a flow control valve, a three-way connector, and first and second delivery line sections connected between the three-way connector and the flow control valve and between the flow control valve and said pilot valve return connection, respectively, to allow for continuous restricted connection between the diaphragm chamber and said first delivery line section.

5,366,156

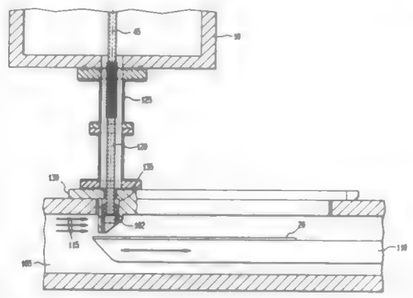
NOZZLE APPARATUS FOR PRODUCING AEROSOL

Tibor L. Baner, Hopewell Junction; William A. Cavaliere, Verbank; David C. Linnell, Poughkeepsie, and Jin J. Wu, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 76,053

Int. Cl.[5] B05B *1/26;* **F17C** *7/02*

U.S. Cl. 239—135 **20 Claims**



1. A nozzle apparatus for producing aerosol from a substance, comprising:

a delivery line having an inlet for receiving a substance at a first pressure;

a nozzle connected to said delivery line for receiving the substance from said delivery line, said nozzle having at least one exit opening which allows passing of the substance therethrough for expanding the substance from the first pressure to a second pressure which is lower than the first pressure for solidifying the substance and producing aerosol, said nozzle further including mounting means for mounting said nozzle to a support structure, said mounting means having an interface between the nozzle and the support means; and

condensation preventing means for preventing condensation from forming on said delivery line and on said nozzle.

5,366,157

ROBOTIC LAWN SPRINKLER

Frank M. Pleasants, 9076 W. Geddes Pl., Littleton, Colo. 80123

Continuation of Ser. No. 792,285, Nov. 14, 1991, Pat. No. 5,248,093. This application Jun. 18, 1993, Ser. No. 79,330

The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.

Int. Cl.[5] B05B *3/16*

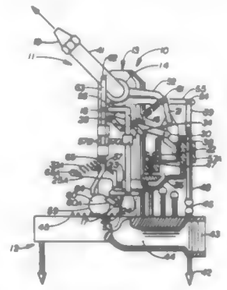
U.S. Cl. 239—239 **25 Claims**

13. In a lawn sprinkler having a body rotatably connected to a base, said body having a fluid communication passageway formed therein and connection means for connecting said body to a water source, a nozzle in fluid communication with said passageway for ejecting water, said nozzle rotatably connected to said body so that the ejected water travels through a varying trajectory path defined by the elevational angle of said nozzled from a point at a minimum distance from said lawn sprinkler to a point a maximum distance from said lawn sprinkler, the improvement comprising:

flow control means for adjusting the flow rate of water through said body dependent upon the elevational angle of said nozzle;

indexing means for rotating said body relative to said base upon the completion of a predetermined cycle of elevational changes of said nozzle, whereby along any radius from said sprinkler a uniform amount of water is ejected from said sprinkler; and

a trajectory data storage means and linkages operative upon engagement with said storage means controlling said point a maximum distance from said lawn sprinkler, coordinated with said indexing means position.



5,366,158

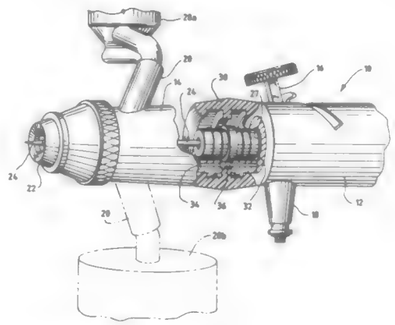
VERSATILE AIRBRUSH

Herman Robisch, Schiller Park, and Walter Schlotfeldt, Bartlett, both of Ill., assignors to Badger Air Brush Co., Franklin Park, Ill.

Filed Sep. 29, 1993, Ser. No. 128,242

Int. Cl.[5] B05B *7/30*

U.S. Cl. 239—289 **5 Claims**



1. An airbrush which comprises:

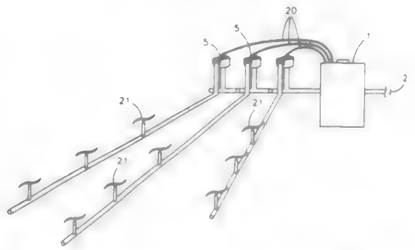
a handle and a front body;

a unitary outer coupling member comprising an outer portion bridging both said handle and said front body and an inwardly extending projection having a first bearing surface on which said front rides body and a second bearing surface on which said handle rides;

said handle defining a first tubular cavity, said front body defining a second tubular cavity, and said handle and front body defining a longitudinal axis;

said front body being rotationally connected to said handle through said unitary outer coupling member such that said first tubular cavity is in communication with said second tubular cavity when said front body is rotated about said longitudinal axis to different positions.

5,366,159
AUTOMATIC LAWN AND GARDEN FEEDING APPARATUS
Lance L. Childers, 1582 Laurel St., Gridley, Calif. 95948
Filed Sep. 14, 1992, Ser. No. 928,858
Int. Cl.[5] B05B *7/26*
U.S. Cl. 239—310 **1 Claim**



1. An apparatus for automatically dispensing a controlled amount of fertilizer into a water supply line of a sprinkler system, said apparatus comprising:

A. a non-pressurized reservoir for holding the fertilizer;

B. an injection assembly comprising an injection piston, said injection piston being movable from a first position to a second position within said injection assembly to transfer a predetermined amount of said fertilizer from said reservoir to said injection assembly, and movable from said second position to said first position to inject said fertilizer into said water supply line;

C. a control piston assembly comprising a control piston for controlling movement of said injection piston between said first and second positions;

D. a means for connecting said reservoir to said injection piston assembly to allow said fertilizer to be transferred to said injection piston assembly, said connecting means comprising a check valve to prevent the fertilizer from flowing back into the reservoir;

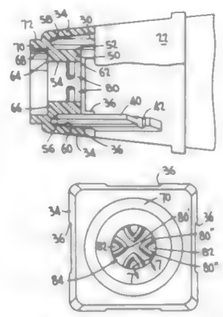
E. a means for connecting said control piston assembly to said water supply line;

F. a means for connecting said control piston assembly to said injection assembly to control the movement of said injection piston; and

G. a means for connecting said injection piston to said water supply line to allow fertilizer to be injected into said water supply line, said connecting means comprising a solenoid valve to control the flow of fertilizer into the water supply line.

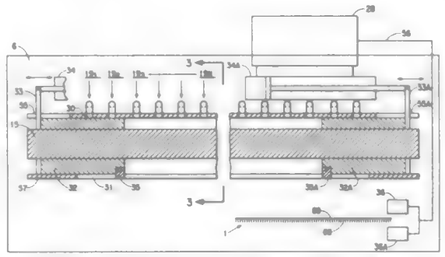
5,366,160
FOAMER NOZZLE WITH LOOPED RIB FLOW DISRUPTERS
Mark A. Balderrama, Colton, Calif., assignor to Calmar Inc., City of Industry, Calif.
Filed Mar. 9, 1994, Ser. No. 207,610
Int. Cl.[5] B05B *7/24, 11/00*
U.S. Cl. 239—333 **33 Claims**

1. A foamer nozzle for a trigger operated pump sprayer comprising, a wall containing a discharge orifice, a foam generating means extending outwardly of said wall and including disrupter means for disrupting spray of foamable liquid discharged from said orifice as a generally conical spray plume, said foam generating means having air aspiration openings in communication with said disrupter means, said disrupter means lying in the path of the spray plume, said disrupter means comprising opposing pairs of individual looped ribs lying in a common plane substantially parallel to and spaced from said wall containing said discharge orifice, each of said ribs having a tip and a pair of spaced legs defining an opening between said legs, each of said ribs being spaced apart and separate from an adjacent rib to define further openings between adjacent ribs, and each of said ribs presenting rear edges against which the spray plume impinges to disrupt and deflect spray particles



mixed with air entering the aspiration openings to generate foam.

5,366,161
APPARATUS FOR FOAM TREATING PILE FABRICS
Jerry F. Potter, Seaford, Del., and W. Lamar Brown, Ringgold, Ga., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 735,579, Jul. 25, 1991, Pat. No. 5,219,620. This application Mar. 19, 1993, Ser. No. 38,039
Int. Cl.[5] D06B *1/08*
U.S. Cl. 239—455 **2 Claims**



1. A foam applicator, comprising:

a) an applicator body comprising a round applicator pipe containing a bore therethrough with injection ports extending through said applicator pipe to the bore and an applicator slot extending from the bore through said applicator pipe to a slot bottom, said applicator pipe having a diameter of one to three inches, and

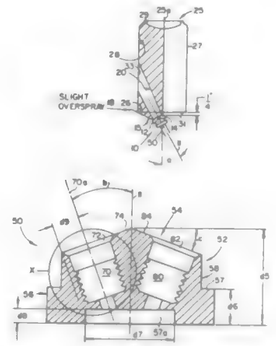
b) an internal distribution means contained within the bore, comprising:

i) an internal distribution pipe attached to the applicator body;

ii) a pair of pistons slideably fitted into the bore and adapted to slide over the distribution pipe and toward the slot, said pistons being in communication with a source of pressurized fluid; and

iii) a sealing means affixed to each piston and adapted to extend through the slot as the pistons move toward the slot, thereby controlling the width of the slot.

5,366,162
DUAL ORIFICE NOZZLE AND METHOD FOR INTERNALLY COATING CONTAINERS
Thomas C. Strizki, Denver, Colo., assignor to Ball Corporation, Muncie, Ind.
Division of Ser. No. 779,794, Oct. 21, 1991, Pat. No. 5,232,739, which is a continuation-in-part of Ser. No. 597,251, Oct. 15, 1990, Pat. No. 5,096,746. This application Apr. 12, 1993, Ser. No. 46,098
Int. Cl.[5] B05B *13/06*
U.S. Cl. 239—548 **38 Claims**



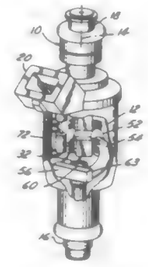
14. A dual-orifice spray nozzle for internally coating metal containers, comprising:

a body having a forward portion, a middle portion, a rear portion, a first conduit extending generally longitudinally therethrough terminating in a first opening disposed in the forward portion, and a second conduit extending generally longitudinally therethrough terminating in a second opening formed in the forward portion,

said first opening disposed in a first planar surface which is at an acute angle with respect to a central longitudinal axis of said body, said second opening being disposed in a second planar surface which is oriented at an acute angle with respect to said central longitudinal axis, each of said first and second openings being adapted to direct separate sprays of coating fluid forwardly of the body and generally in separate patterns diverging from said central longitudinal axis to coat separate interior portions of said container.

5,366,163
FUEL INJECTOR VALVE HAVING A SPHERE FOR THE VALVE ELEMENT
Paul D. Daly, Troy, and Robert A. McArthur, Waterford, both of Mich., assignors to Siemens Automotive L.P., Auburn Hills, Mich.
Filed Sep. 2, 1993, Ser. No. 116,179
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—585.2 **7 Claims**

1. In an electromagnetically operated valve which comprises a sphere, a valve body, a valve seat member received in a mounting in said body and comprising a frusto-conical surface of revolution about an axis of said valve seat member having its narrowest diameter leading to an outlet of the valve seat member and a sidewall extending away from the widest diameter of said frusto-conical surface, said sphere being bounded by said sidewall and disposed for coaction with said frusto-conical surface to open and close flow through the valve, resilient means acting to resiliently urge said sphere along said axis toward concentrically seating on said frusto-conical surface at a circular seating locus on said frusto-conical surface and thereby closing flow through the valve by blocking flow to said outlet, and sphere-actuating means, including electromagnetic operating means, for bodily displacing said sphere from concentric seating on said frusto-conical surface comprising a movable bar that is disposed at an opening through said sidewall of said valve seat member along side said sphere and operated by said electromagnetic operating means to execute motion that is predominantly along the direction of an imaginary line that intersects said axis, said bar executing such motion toward and away from said axis in accordance with a control signal applied to said electromagnetic operating means, such motion of said bar toward said axis creating a force acting on said sphere at the end of a radial of said sphere, which radial, when viewed along said axis, is substantially coincident with said imaginary line, and such force created by such motion of said bar along said imaginary line being effective, in cooperation with said frusto-conical surface and said resilient means, to cause said sphere to be bodily displaced from concentricity with said axis to eccentricity with said axis thereby opening flow through the valve by unblocking flow to said outlet, and such motion of said bar away from said axis being effective to allow said resilient means, in cooperation with said frusto-conical surface, to cause said sphere to be restored to concentricity with said axis and thereby close flow through the valve by blocking flow to said outlet, the improvement which comprises a further opening through said sidewall of said valve seat member that is disposed beyond said circular seating locus relative to said outlet in a semi-circumference of said valve seat member that is opposite a semi-circumference of said valve seat member containing the first-mentioned opening.



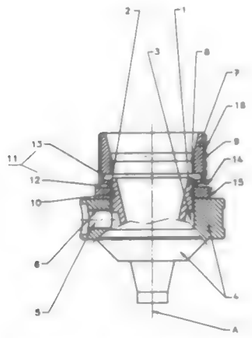
5,366,164
NOZZLE COMPRISING BREAK-OFF REGION
Manfred Jagiella, Karlsruhe; Michael Holzmann, Rastatt; Georg Spörl, Gaggenau, and Ahmet Topkaya, Karlsruhe, all of Germany, assignors to Precitec GmbH, Gaggenau-Bad Rotenfels, Germany
Filed Mar. 10, 1992, Ser. No. 847,264
Claims priority, application Germany, Mar. 22, 1991, 4109567
Int. Cl.[5] B05B *5/00, 1/00*
U.S. Cl. 239—600 **29 Claims**

1. Nozzle for a device for machining materials, which is rigidly connected at its end opposite a nozzle tip to a connector head of the device, wherein:

the nozzle is connected to the connector head by a connecting element made of a brittle material, said connecting element being separable from the nozzle; and

the connecting element comprises a break-off region,

the connecting element is constructed as a cylinder which is coaxial with the longitudinal axis of the nozzle and a side



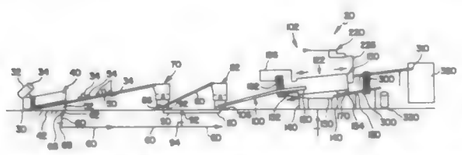
wall of the connecting element has at least one peripheral groove defined therein forming the break-off region.

5,366,165

SYSTEM AND METHOD FOR RECYCLING OF AUTOMOTIVE OIL FILTERS

Raymond P. Jackman, Melbourne, Fla., assignor to United Recyclers, Inc., Suffern, N.Y.

Continuation-in-part of Ser. No. 838,188, Feb. 18, 1992, abandoned. This application Feb. 18, 1993, Ser. No. 19,472
Int. Cl.[5] B02C *19/12, 23/20*
U.S. Cl. 241—24 **40 Claims**



29. A recycling process for used automotive oil filters; comprising;

(a) shredding the used automotive oil filters into shredded pieces of predetermined size and configuration;
(b) providing washing means;
(c) washing the shredded pieces, at said washing means, to separate oil, paper and metal;
(d) providing first conveyor means for conveying the shredded pieces to be washed;
(e) providing second conveyor means for conveying thereon paper particles and pieces away from said washing means;
(f) providing third conveyor means for conveying thereon any remaining paper, metal particles and pieces away from said washing means; and
(g) collecting oil from the shredded pieces and from said washing means, and said first, second and third conveyor means.

5,366,166

MECHANICAL ALLOYING OF BRITTLE AND HARD MATERIALS BY USE OF PLANETARY MILLS

Jürgen Schilz, and Marius Kürten, both of Cologne, Germany, assignors to Deutsche Forschungsanstalt fur Luft- und Raumfahrt e.V., Cologne, Germany

Filed Dec. 23, 1993, Ser. No. 173,378
Claims priority, application Germany, Dec. 23, 1992, 4243794
Int. Cl.[5] B22F *1/00*
U.S. Cl. 241—30 **8 Claims**

1. A method for mechanically alloying brittle and hard materials, comprising:

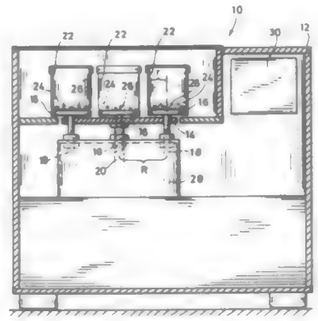
providing a planetary mill having a rotatable first disk and at least one rotatable second disk arranged on the first disk, the first disk defining a radius,

providing a grinding drum on the second disk, the grinding drum defining an inner radius,

placing brittle and hard materials to be alloyed into the grinding drum,

placing grinding bodies into the grinding drum,

determining the ratio between the inner radius of the grinding drum and the radius of the first disk,



rotating the first disk at a first angular speed and rotating the second disk at a second angular speed, the first and second angular speeds being selected based upon the ratio between the inner radius of the grinding drum and the radius of the first disk,

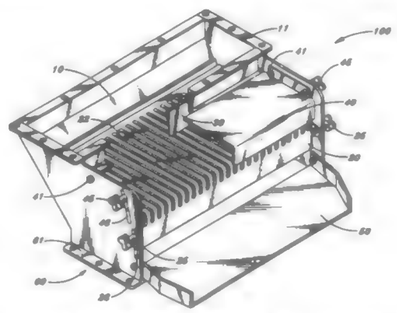
whereby the grinding bodies impinge on the brittle and hard materials with an energy sufficient to mechanically alloy the brittle and hard materials.

5,366,167

FULL WIDTH STATIONARY SCALPER FOR ROLL MILL GRINDERS

Bradley J. McCarthy, Waterloo, Iowa, assignor to Roskamp-Champion, Waterloo, Iowa

Filed Jun. 17, 1993, Ser. No. 77,264
Int. Cl.[5] B65G *69/12*
U.S. Cl. 241—81 **4 Claims**



1. A scalper for removing trash from feed material prior to entry of said feed material into a roll mill grinder, comprising:

a scalper housing having a top feed material inlet, a bottom product discharge outlet, and a trash discharge chute;

a grate located within said housing below said feed material inlet and inclined downwardly therefrom above said discharge outlet toward said trash discharge chute, said grate comprising parallel uniformly spaced grate bars extending from said inlet toward said trash discharge chute;

means for adjusting the downward incline of said grate rigid door means, situated above said grate, for controlling flow of coarse trash along said grate bars toward said trash discharge chute; and

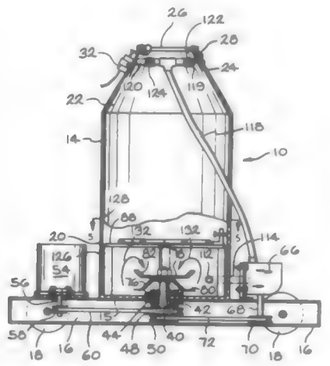
means for adjusting said rigid door means for defining a gap between door means and said grate.

5,366,168

YARD WASTE LIQUEFIER

Paul F. Dymarkowski, 3960 Imperial Blvd., Toledo, Ohio 43623

Filed Oct. 4, 1993, Ser. No. 131,334
Int. Cl.[5] B02C *23/36*
U.S. Cl. 241—101.7 **13 Claims**



1. A device for dispersing yard waste comprising:

a tank for receiving a predetermined quantity of said yard waste and a predetermined quantity of liquid, said tank having a substantially cylindrical lower portion and an upper portion that converges to form an opening;

a lid hingably connected to said upper portion of said tank, said lid being disposed to close said opening in said upper portion of said tank;

at least one rotatable blade positioned in said tank, said blade being disposed to engage and cut said yard waste;

a baffle positioned in said tank adjacent said blade, said baffle having a plurality of cutting members positioned substantially perpendicular to the plane of rotation for said rotatable blade, said cutting members having a sharp edge that further cuts and redirects said waste material in said tank, said rotatable blade and said baffle producing a substantially liquified slurry from said yard waste and liquid in said tank;

pump means for discharging said slurry from said tank;

a drive motor operatively connected to said rotatable blade and said pump means, said motor acting to cause said blade and said pump means to rotate; and,

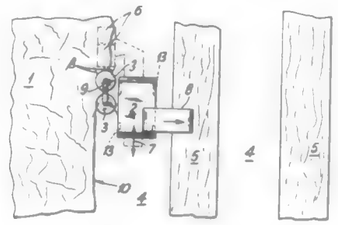
a safety switch positioned on said upper portion of said tank, said safety switch being operatively connected to said drive motor, said safety switch being disposed to be engaged by said lid when said lid closes said opening in the upper portion of said tank, said safety switch being positioned to allow said drive motor to operate only when said lid engages said safety switch.

5,366,169

APPARATUS FOR COMMINUTING AND COMPOSTING OF ORGANIC WASTE MATERIALS PILED UP IN LOOSE HEAPS

Josef Willibald, Altheim, Germany, assignor to J. Willibald GmbH Maschinenfabrik, Wald-Sentenhart, Germany

Continuation-in-part of Ser. No. 991,793, Dec. 17, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 202,863
Claims priority, application Germany, Dec. 20, 1991, 4142135
Int. Cl.[5] B02C *21/02*; C05F *9/00*; C09K *17/00*
U.S. Cl. 241—101.7 **6 Claims**



1. A self-propelled apparatus for comminuting organic waste material, which is piled up in loose heaps and comprises at least one of graveyard trash, shrubbery, branches, municipal rottable waste, and private rottable waste, said apparatus comprising:

precompression means and means for adjustably supporting said precompression means on the body of said apparatus;

means for comminuting the precompressed waste material;

means for adjustably supporting said comminuting means on the body of said apparatus; and

orbiting transport means, which is adjustably supported by support means on the body of said apparatus, and is displaceable therewith, and projects sideward of a traffic lane of said apparatus, for piling up the comminuted waste material in a stack;

wherein said comminuting means comprises a pair of milling rollers operable in opposite directions and driven about spaced vertical axes, and a common cross-bar means for supporting said milling rollers, said milling rollers being provided with cutter tip working surfaces and said cross-bar means being adjustable over a predetermined angle relative to a verticle axis to move said rollers to a side of one to a heap of the waste material and a stack of the waste material.

5,366,170

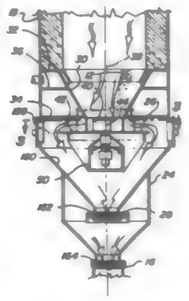
VERTICAL SHAFT PROCESSOR INCLUDING AN IMPROVED REMOVAL GRATE

John B. Jones, Jr., 12557 E. Kentucky Pl., Aurora, Colo. 80012, and Robert V. Zimmerman, Denver, Colo., assignors to John B. Jones, Jr., Aurora, Colo.

Filed Sep. 17, 1993, Ser. No. 123,376
Int. Cl.[5] B02C *23/02*
U.S. Cl. 241—275 **12 Claims**

1. A vertical shaft processor comprising in combination a substantially cylindrical shell having a vertical longitudinal axis and an inner wall, processing means in said shell for treating materials that flow by gravity through said shell, a funnel shaped wall adjacent to the lower end of said shell defining a central discharge opening, and removal grate means beneath said discharge opening, said removal grate means including a substantially horizontal plate having an outer periphery spaced from said inner wall of the shell to define a discharge opening between said outer periphery and said inner wall, and an eccentric distributor wheel positioned on said plate in alignment

with said central discharge opening, said distributor wheel being mounted for eccentric rotation to urge material deliv-



ered thereto from said central discharge opening to said discharge opening.

5,366,171

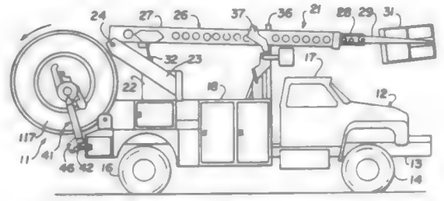
VEHICLE MOUNTED REEL LIFTING, DRIVING AND BRAKING APPARATUS

Leon Kononov, Denver, Colo., assignor to Holan Manufacturing, Inc., Westminster, Colo.

Continuation of Ser. No. 792,811, Nov. 15, 1991, abandoned. This application Jul. 23, 1993, Ser. No. 96,729

Int. Cl.[5] B65H *75/40*

U.S. Cl. 242—422.2 **15 Claims**



1. In a vehicle mounted reel lifting apparatus for use in loading and unloading a reel, a vehicle having a motor driven wheeled framework and having a longitudinal axis, an elongate shaft, means pivotally mounting said shaft on said framework so that it extends in a direction at substantially right angles to the longitudinal axis of the vehicle, means for rotating the shaft, a pair of spaced-apart arms mounted on said shaft in spaced-apart positions, a spindle having first and second ends and an axis and adapted to extend through the reel, lifting claw means on the end of each of said arms for receiving and carrying said spindle in an at-home position, drive means for driving said spindle, said drive means including first and second gears, means mounting said first gear on one of said arms, means securing said second gear to the first end of said spindle, motor and brake means carried by said one arm and coupled to said first gear for applying driving or braking forces to said first gear and cooperative means carried by the lifting claw means on said one arm and the spindle including a spherical bearing mounted on said spindle and inclined surfaces formed on said lifting claw means adapted to be engaged by said spherical bearing whereby when a spindle having a reel mounted thereon overlies the lifting claw means in general registration therewith and the arm thereafter is raised the spherical bearing will come into engagement with the inclined surfaces formed on the lifting claw means and will roll on the inclined surfaces to the at-home position to cause the spindle to be centered longitudinally and to bring the first and second gears into registration.

5,366,172

CINE CAMERA EMPLOYING INTERCHANGEABLE FILM MAGAZINES WITH DISPLACEMENT OF THE SPINDLES OF THE FILM TAKE-OFF AND TAKE-UP REELS

Jean-Pierre Beauviala, Grenoble, France, assignor to Aaton, Grenoble, France

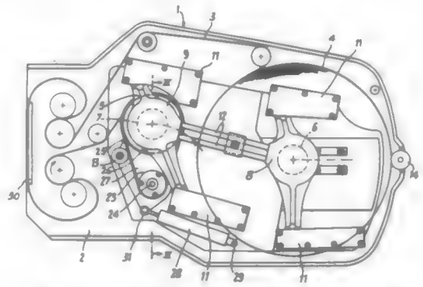
Continuation of Ser. No. 405,956, Sep. 12, 1989, abandoned, which is a division of Ser. No. 185,077, Apr. 22, 1988, Pat. No. 4,877,200. This application Sep. 16, 1991, Ser. No. 759,856

Claims priority, application France, Apr. 28, 1987, 87 06000

The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.

Int. Cl.[5] G03B *1/04*

U.S. Cl. 242—342 **17 Claims**



1. A film magazine for supplying unexposed film to a cine camera and for receiving exposed film, comprising:

a casing;

a driving pinion within said casing, said driving pinion releasably coupleable to a motor external to said casing;

a driven pinion operably connected to said driving pinion by a driving means, said driven pinion longitudinally translatable within said casing along an arc about said driving pinion, said driving pinion being positioned at a center of curvature of the arc;

a take-off reel longitudinally movable along a path separate from the arc of the driven pinion within said casing, said take-off reel supplying unexposed film to the cine camera; and

a take-up reel mounted on said driven pinion and coupled to said take-off reel.

5,366,173

TAPE CARTRIDGE REEL BRAKE RELEASE TECHNIQUE

Gerald B. Lammers, Boulder; Patrick M. Barton, Golden; Lynn C. Jacobs, and Michael V. Konshak, both of Louisville, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

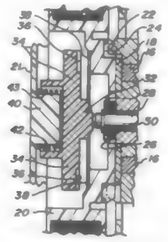
Filed Mar. 1, 1993, Ser. No. 24,683

Int. Cl.[5] G11B *23/08*

U.S. Cl. 242—338.1 **19 Claims**

1. In a tape drive mechanism including a motor and a drive hub connected to be rotated about a rotational axis by the motor, the drive hub adapted for rotating a tape reel of a tape cartridge about a rotational axis which is the same rotational axis as the hub, the cartridge having a rotationally stationary reel brake located at the rotational axis of the tape reel for preventing the rotation of the reel until released; an improved apparatus for releasing the reel brake upon operative engagement of the reel with the hub, comprising:

a contact member located at the rotational axis of the hub to allow the hub to rotate relative to the contact member, the contact member extending to a position to contact and release the reel brake upon operative engagement of the hub and the tape reel, the contact member remaining



stationary relative to the reel brake while in contact with the reel brake during rotation of the tape reel and the hub.

5,366,174

TAPE WINDING APPARATUS

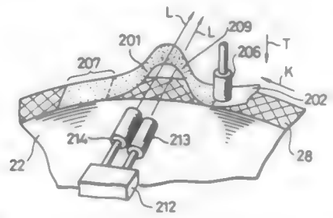
Hideharu Tsukamoto; Shiro Matsuzaki, and Yoshihiko Miyasaka, all of Kanagawa, Japan, assignors to Sony Magnescale, Inc., Tokyo, Japan

Division of Ser. No. 957,473, Oct. 7, 1992. This application Aug. 5, 1993, Ser. No. 102,306

Claims priority, application Japan, Oct. 8, 1991, 3-260386; Oct. 30, 1991, 3-285072; Nov. 11, 1991, 3-302033

Int. Cl.[5] B65H *16/00*

U.S. Cl. 242—532.1 **14 Claims**



1. A tape winding apparatus in which a tape is drawn from a pancake reel loaded onto a reel base and the tape thus drawn is wound and accommodated within a cassette, comprising:

means for bonding a portion of a leading end of the tape wound on the pancake reel to a surface of an underlying layer of the tape, whereby the leading end is prevented from becoming loose and another portion of the leading end defines a free end of said magnetic tape;

slack forming means for forming a slack portion in the tape and being movable in a radial direction relative to the pancake reel to engage said free end and push said free end in said radial direction, and being further movable in a circumferential direction relative to the pancake reel to form a slack portion in said free end while pushing said free end; and

holding means for holding the tape in a position for maintaining the slack formed by said slack forming means.

5,366,175

APPARATUS FOR DISPENSING WEB MATERIAL FROM A CORELESS ROLL HAVING ANTI-THEFT DEVICE

Rudolph W. Schutz, Walnut Creek, Calif., assignor to James River Paper Company, Inc., Richmond, Va.

Filed Oct. 7, 1993, Ser. No. 132,878

Int. Cl.[5] B65H *75/02*

U.S. Cl. 242—597.6 **10 Claims**

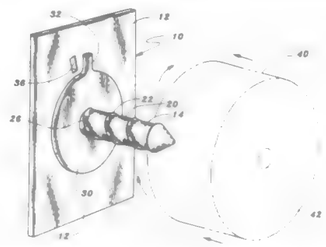
1. Apparatus for dispensing web material from a coreless roll comprised of a plurality of convolutions of web material and having a central opening defined by the innermost convolution of said web material, said apparatus comprising, in combination:

support means for supporting a coreless roll;

a shaft rotatably mounted on said support means and having an outer peripheral surface, said shaft for insertion into the central opening of a coreless roll whereby the coreless roll can be rotated relative to said support means to dispense web material from said coreless roll;

lock means for selectively preventing rotation of said shaft relative to said support means; and

roll retention means operatively associated with said shaft and a coreless roll on said shaft to allow axial movement of the coreless roll relative to said shaft and axial removal of said coreless roll from said shaft when said lock means



is activated to prevent rotation of said shaft relative to said support means and to substantially resist axial movement of said coreless roll relative to said shaft and axial removal of said coreless roll from said shaft when said lock means is deactivated to allow rotation of said shaft relative to said support means, said lock means including a manually actuable movable lock element connected to said shaft and rotatable with said shaft, said lock element movable between a first location wherein said lock element engages said support means and prevents rotational movement of said shaft relative to said support means and a second location wherein said lock element is disengaged from said support means and allows rotational movement of said shaft relative to said support means.

5,366,176

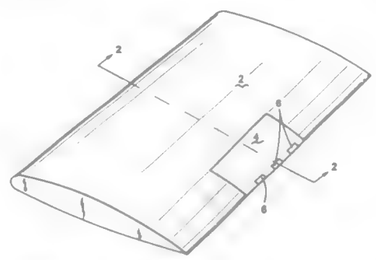
FEEDBACK-STABILIZED AERODYNAMICALLY OVERBALANCED LIFTING/CONTROL SURFACE FOR AIRCRAFT

Robert G. Loewy, Loudonville, N.Y., and Wen-Liu Miao, Trumbull, Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Apr. 16, 1993, Ser. No. 48,864

Int. Cl.[5] B64C *9/10*

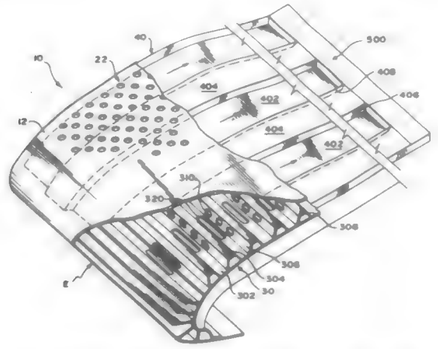
U.S. Cl. 244—75 R **7 Claims**



1. A control system for use in controlling the direction of movement of a craft through an oncoming fluid stream, said control system comprising a control member mounted on the craft for rotational movement relative to the oncoming fluid

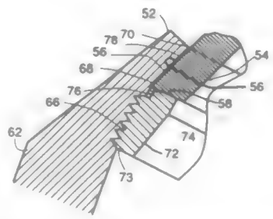
stream about a hinge line which renders the control member substantially mechanically unstable when rotated to any position angularly offset from a reference neutral position relative to the direction of flow of the oncoming fluid stream, said control member having a rounded leading edge facing into the oncoming fluid stream, and a tapered trailing edge, said trailing edge being provided with at least one tab zone therein which will deform when subjected to electrical energy and which is operable, when deformed, to alter the angle of attack of the control member relative to the oncoming fluid stream; means for measuring an actual angle of deflection of said control member away from said neutral position; and electrical energy control means operably connected to said means for measuring, said electrical energy control means being operable to selectively vary the electrical energy applied to said tab zone in response to variations in the actual control member angle of deflection.

5,366,177
LAMINAR FLOW CONTROL APPARATUS FOR AERODYNAMIC SURFACES
Steven P. DeCoux, Long Beach, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Oct. 5, 1992, Ser. No. 956,323
Int. Cl.[5] B64C *21/08*
U.S. Cl. 244—201 **16 Claims**



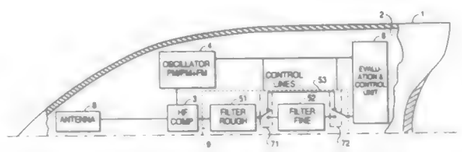
1. A system in an aerodynamic structure for controlling flow of ambient fluid over a surface of said structure, said surface including laminar flow control perforations extending over substantially the entire surface of said structure, said system comprising:
- a first array of channel-defining members in said aerodynamic structure for fluidly communicating one interior volume with at least a subset of said perforations, all of said first array channel-defining members being disposed in a first pattern,
- a second array of channel-defining members in said aerodynamic structure for fluidly communicating another interior volume with the fluid in the first array, all of said second array channel-defining members being disposed in a second pattern crossing said channel-defining members of said first array, and
- means for applying a suction force to said second array of channel members,
- means for controlling fluid flow in said second array to provide discrete zones of pressure at said surface such that said suction force acts, via said arrays, to entrain ambient fluid along said aerodynamic structure surface.

5,366,178
SENSOR WINDOW COMPLIANT MOUNTING ASSEMBLY
William Hsiong, Agoura, and Thomas P. Marshall, Topanga, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Aug. 23, 1993, Ser. No. 110,525
Int. Cl.[5] F42C *13/00*
U.S. Cl. 244—3.16 **20 Claims**



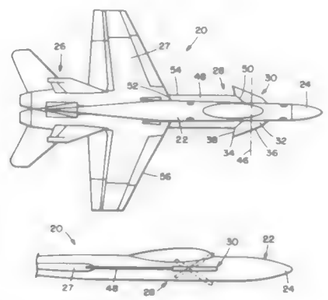
1. A sensor window compliant mounting assembly, comprising:
- a sensor window having a window base with an exterior surface and a lower surface;
- a window mount housing, the window mount housing including
  - a hollow tube with an opening at a mounting end thereof, an internal circumferential thread adjacent to the opening, and
  - a bezel retainer ring extending circumferentially around the opening of the window mount housing at the mounting end and having an interior surface, the bezel retainer ring being sized to engage the exterior surface of the window base with the interior surface of the bezel retainer ring and thereby retain the window base therein;
- a spanner nut threadably engaged to the internal circumferential thread of the window mount housing; and
- means for biasing the window toward the bezel retainer ring of the window mount housing, the means for biasing reacting between the spanner nut and the lower surface of the window base.

5,366,179
METHOD OF INITIATING THE DETONATION OF A WARHEAD AND ARRANGEMENT FOR IMPLEMENTING THE METHOD
Anton Manhalter, Nersingen, Germany, assignor to Deutsche Aerospace AG, Munich, Germany
Filed Jul. 22, 1993, Ser. No. 94,976
Claims priority, application Germany, Jul. 22, 1992, 4224020
Int. Cl.[5] F41G *7/28;* **F42C** *13/04*
U.S. Cl. 244—3.19 **14 Claims**



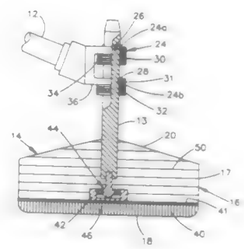
11. In an arrangement for initiating the detonation of a warhead which is a component of a guided missile for combatting the warhead of an incoming enemy missile wherein the guided missile includes an active radar target seeker provided with a transmit/receive antenna, a high frequency component, an oscillator, a range gate filter bank and an evaluation and control unit, with the transmit/receive antenna, the high frequency component, the range gate filter bank and the evaluation and control unit being connected in series, and with the oscillator being connected to the high frequency component, and wherein said evaluation and control unit is responsive to ranging signals produced by the oscillator and transmitted via the antenna and, after reflection from an enemy missile, received by said antenna to measure the range of the enemy missile and to guide the guided missile, during its target tracking and target approach phases, toward the enemy missile and to initiate detonation of the warhead when the enemy missile is reached; the improvement wherein: said range gate filter bank comprises a first filter bank for rough range discrimination, a second filter bank for fine range discrimination, a first switch, a second switch, and a bridging branch for bridging said second filter bank, with said first switch selectively connecting the output of said first filter bank either to the input of said second filter bank or to one end of said bridging branch, and said second switch selectively connecting the input of said evaluation and control unit either to the output of said second filter bank or to the other end of said bridging branch; and said evaluation and control unit controls said first and second switches to connect said bridging branch between said output of said first filter bank and said input of said evaluation and control unit to provide rough range discrimination during the tracking phase of said guided missile, and is responsive to the received ranging signals to cause said oscillator to produce a modulated additional signal for transmission together with the ranging signal and to control said first and second switches to connect said second filter bank between said output of said first filter bank and said input of said evaluation and control unit to provide fine range discrimination during the approach phase of said guided missile.

5,366,180
HIGH-LIFT DEVICE FOR AIRCRAFT
Barnaby S. Wainfan, Long Beach, and Matthew N. Mrdeza, Norwalk, both of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed Jun. 30, 1993, Ser. No. 85,441
Int. Cl.[5] B64C *5/04*
U.S. Cl. 244—45 A **23 Claims**



1. In combination with an aircraft including a fuselage having a longitudinal axis and extending fore and aft, apparatus for producing high lift comprising:
- a foreplane mounted on said fuselage extending away from said fuselage in a deployed, position in a plane between a root end at said fuselage and a tip end distant therefrom and between a leading edge generally facing in the fore direction and a trailing edge generally facing in the aft direction, a distance perpendicular to the longitudinal axis of said fuselage between said root end and said tip end being a span of said foreplane;
- a wing mounted on said fuselage aft of said foreplane extending from said fuselage generally in said plane between a leading edge generally facing in the fore direction and a trailing edge generally facing in the aft direction said wing being generally coplanar with said foreplane in said deployed position; and
- a strake mounted on said fuselage between said foreplane and said wing, said strake extending from said fuselage generally in said plane, said strake being generally coplanar with said foreplane in said deployed position and with said wing, said strake including a leading edge, a trailing edge, and an outboard edge distant from said fuselage, said leading edge of said strake being substantially coincident with said trailing edge of said foreplane, said trailing edge of said strake being substantially coincident with said leading edge of said wing, said strake extending continuously from said leading edge of said strake to said wing, said strake having a span extending from said fuselage to said outboard edge, said span being a forward span at said leading edge of said strake which is less than said span of said foreplane.

5,366,181
LANDING GEAR ENERGY ABSORPTION SYSTEM
Christopher P. Hansen, League City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Dec. 1, 1993, Ser. No. 159,606
Int. Cl.[5] B64C *25/58*
U.S. Cl. 244—104 R **15 Claims**



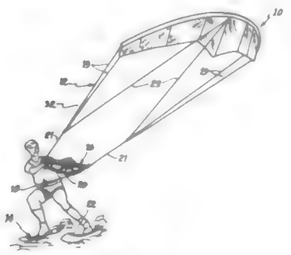
1. A landing pad system for a vehicle for controlling G-loading resulting from an impact landing with a landing surface in transverse directions, said landing pad system comprising:
- landing strut members disposed circumferentially about a central longitudinal axis of a base on a vehicle;
- first energy absorbing means attached to each strut member and including a rod member and friction elements in engagement with an upper portion of said rod member for absorbing energy upon relative movement between said friction elements and said rod member, said rod member having a longitudinal stroking axis in a first alignment with respect to said central longitudinal axis for absorbing impact energy in a first direction relative to said vehicle;
- a landing pad housing attached to each rod member, said landing pad housing having a bottom surface for engaging a landing surface;
- second energy absorbing means disposed in said housing about a lower portion of said rod member and including a slidable mounting of said lower portion of said rod member relative to said housing for movement independent of said first energy absorbing means and further including energy absorbing elements disposed about said lower portion of said rod member for absorbing impact energy in a second direction transverse to said stroking axis upon relative movement between the lower portion of the rod member and said housing.

5,366,182

KITESKI

William G. Roeseler, 2101 Salina, Wichita, Kans. 97203, and Cory Roeseler, 555 Santa Fe St. Ste. E, San Diego, Calif. 92109

Filed Nov. 30, 1993, Ser. No. 160,434
Int. Cl.[5] B64C *31/06*
U.S. Cl. 244—155 R 18 Claims



1. A high performance, high lift wind powered system operative in wind conditions of wind speed between 15 and at least on the order of 35 to 40 knots whereby tractive force from an airfoil is harnessed to draw a conveyance means over an underlying surface, comprising:

(a) an airfoil;

(b) a conveyance means for traversing across said surface and having tracker means for establishing a preferred linear traverse vector;

(c) tether means operatively connected between said conveyance means and said airfoil to deliver tractive force from said airfoil to said conveyance means and to provide control means for said airfoil from said conveyance means;

(d) dynamic tether length control means comprising a reel capable of withstanding tensile force on said tether of at least 150 lbs operative with said tether means to adjust the length thereof while said system is in use; and,

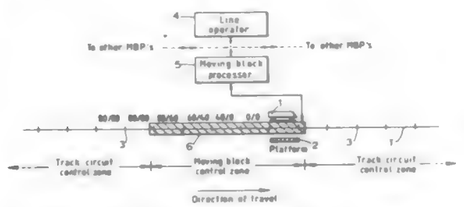
(e) said tether means including steering means operable substantially independently of said reel such that said reel can be operated to pay out and reel in said tether means while said conveyance means is in controlled operation traversing a surface.

5,366,183

RAILWAY SIGNALLING SYSTEM

David C. Gill, Chippenham, United Kingdom, assignor to Westinghouse Brake and Signal Holdings Limited, Pew Hill, United Kingdom

Filed Feb. 1, 1993, Ser. No. 12,007
Claims priority, application United Kingdom, Feb. 11, 1992, 9202829
Int. Cl.[5] B61L *23/14*
U.S. Cl. 246—28 R 5 Claims



1. A railway signalling system, comprising:

a) a track along which railway vehicles travel, the track having a moving block control zone; and

b) means for achieving inter-vehicle headway spacing for vehicles travelling along the track, said means comprising:

i) fixed block signalling means, for controlling the inter-vehicle headway spacing of such vehicles on a fixed block basis;

ii) moving block signalling means, for controlling the inter-vehicle headway spacing of such vehicles when in the moving block control zone on a moving block basis via communication between the vehicles, there being the facility of two-way data transmission between the vehicles throughout the moving block control zone; and

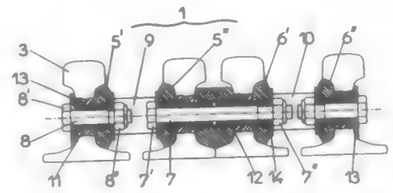
iii) the fixed block signalling means and the moving block signalling means being adapted so that vehicles are controlled by the fixed block signalling means when in the moving block control zone only if the moving block signalling means fails.

5,366,184

SEAT FOR THE MOVABLE POINT IN A CRADLE OF A CROSSING FROG INCORPORATED IN LONG WELDED RAILS AND PROCESS FOR THE PRODUCTION OF SUCH A SEAT

Gerard Testart, and Frederic Hege, both of Strasbourg, France, assignors to Cogifer-Compagnie Generale d'Installations Ferroviaires, Croissy sur Seine, France

Filed Sep. 2, 1993, Ser. No. 115,424
Claims priority, application France, Sep. 11, 1992, 92 11016
Int. Cl.[5] E01B *7/00*
U.S. Cl. 246—385 5 Claims



1. A seat comprising a movable point (1) in a cradle (2) of a crossing frog incorporated in long welded rails, said cradle (2) being comprised by a monoblock element (2') and two rails (3 and 4) secured to the monoblock element (2'), crosspieces (5 and 6) secured to the movable point (1) by means of bolts (7) and to the rails (3 and 4) by means bolts (8), said crosspieces being in the form of pairs of profiles (5', 5'' and 6', 6'') secured against the rails (3 and 4), the profiles of each pair being interconnected respectively by means of small bars (9 and 10), said bolts being surrounded by sleeves (11 and 12) that pass through said rails (3 and 4) and through said profiles (5', 5'' and 6', 6'').

5,366,185

CONTROL BOARD MOUNTING MEANS AND METHOD

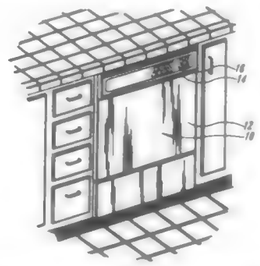
Daryl A. Michael, Newton, and Herbert E. Scott, Kellogg, both of Iowa, assignors to Maytag Corporation, Newton, Iowa

Filed Aug. 31, 1993, Ser. No. 114,680
Int. Cl.[5] G12B *9/00*
U.S. Cl. 248—27.1 27 Claims

1. A control board mounting system, comprising:

a control panel having a planar surface containing an opening therein, the opening having a periphery associated therewith and coupling means located on the periphery of the opening;

a carrier plate having a periphery associated therewith and reciprocal coupling means located on the periphery of the carrier plate, the carrier plate capable of slidable movement relative to the opening of the control panel between a first position wherein the coupling means and the reciprocal coupling means are disengaged and a second position wherein the coupling means and the reciprocal coupling means are engaged.

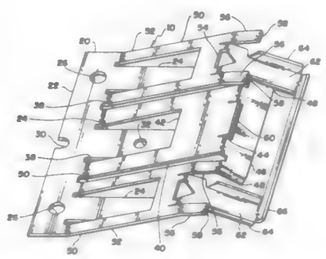


5,366,186

MODULE RETENTION SPRING CLIP

Gregory A. Weyeneth, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 19, 1993, Ser. No. 108,220
Int. Cl.[5] G12B *9/00*
U.S. Cl. 248—27.3 13 Claims



1. A retention clip for securing an instrument module in an installed position within an opening in an instrument panel of a vehicle comprising:

a base affixed to the instrument module;

a primary support member, extending a first distance from the base, including biasing for securely contacting against the panel peripheral to the opening in the instrument panel in the installed position and which allows a slip-in fit installation, and for retaining the instrument module in the installed position; and

a secondary support member, extending a second distance different than the first distance from the base, including biasing for securely positioning behind but not in contact with the panel peripheral to the opening in the instrument panel in the installed position and which allows a slip-in fit installation, and for retaining the module in the installed position after the primary support member retracts in response to the different extensions of the support members from the base.

5,366,187

MULTI-POSITION POWER CORD HOLDING DEVICE

Naoki Ishihara, Hilltop Apartment B-18, 60 Cloud View Road, Hong Kong, Hong Kong

Filed Apr. 26, 1993, Ser. No. 52,503
Int. Cl.[5] H01R *13/56*
U.S. Cl. 248—52 2 Claims

1. A cord holder device for use in an appliance comprising a body, said cord holder device enabling an operator to move a power cord from one side of the appliance to another side of the appliance, said cord holder device comprising

first means for holding said power cord, said first means being positionable in and movable between a first position and a second position; and

second means for releasably holding said first means in each of said first and second positions;

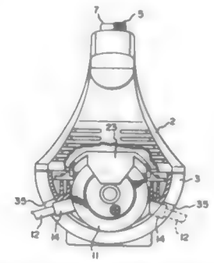
said first means comprising a wheel shaped assembly for holding said power cord therein, said wheel shaped assembly comprising a face having a pair of stopper means thereon;

said second means comprising detent means for holding one of said pair of stopper means when said first means is in said first position, and for holding the other of said pair of stopper means when said first means is in said second position;

said wheel shaped assembly comprising a first wheel, a second wheel, and means for connecting together said first wheel and said second wheel, said first wheel comprising an inner side wherein a guide well is provided for threading and holding securely said power cord, said first wheel also having a center hole for exiting of said power cord, and said first wheel also comprising said face with said pair of stopper means disposed on an outer side thereof; and wherein

said second means comprises a holder means for said wheel shaped assembly; and wherein

said first wheel and said second wheel each comprises and alignment wall and a center cylindrical axle, said cylindrical axle of each of said first and second wheels being used to rotatably hold said wheel shaped assembly in said holder means, and said alignment wall of each of said first and second wheels being used to align said wheel shaped assembly within said holder means, and to prevent external elements from entering said appliance.



5,366,188

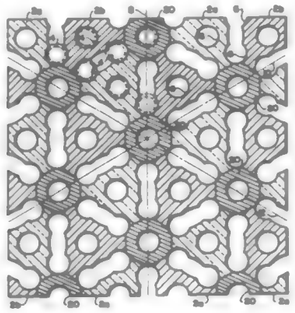
SUPPORT FOR SHEAVES OF PIPE

Rudolf Kramer; Friedrich Güthuber, both of Metten, and Ludwig Brandl, Deggendorf, all of Germany, assignors to Deggendorfer Werft und Eisenbau GmbH, Deggendorf, Germany

Filed Apr. 28, 1993, Ser. No. 54,817
Claims priority, application European Pat. Off., May 5, 1992, 92107549.5
Int. Cl.[5] F16L *3/22*
U.S. Cl. 248—68.1 6 Claims

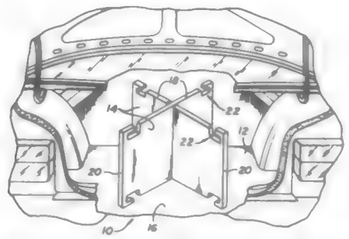
1. In a support for sheaves of pipe that prevents each pipe individually and the sheaf as a whole from sagging, whereby each pipe extends through a more or less matching perforation, the improvement comprising at least two parallel, and mutually attached disks containing perforations uniformly distributed at an angle of 60° and matching the outer cross-section of the pipe, thus forming three major axes Of distribution which intersect at an angqle of 60°, wherein every nth perforation in every nth line along one of said major axes of distribution of each disk is concentrically expanded into the vicinity of the

(n-1)th surrounding perforations, with n=2 or 3, and wherein the particular expansions in subsequent disks are displaced



such that every expansion in one disk is coaxial with a perforation left complete in the other disk.

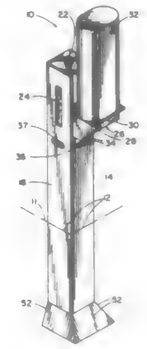
5,366,189
SHOPPER'S CADDY
Thomas P. Thompson, 38 Camino Katia, San Clemente, Calif. 92672-9420
Filed Oct. 1, 1993, Ser. No. 130,268
Int. Cl.[5] A63B *55/04*
U.S. Cl. 248—97 **20 Claims**



1. A shopper's caddy for supporting a filled limp plastic grocery bag, said shopper's caddy comprising: a pair of panel members each configured to connect with the other in cooperative mutually-supporting angular configuration to define a bag-receiving area therebetween, each one of said pair of panel members at a top edge thereof including a bag-engagement feature for supporting a corresponding one of a pair of handles of said plastic grocery bag, whereby said plastic grocery bag is supported in said bag-receiving area between said angularly disposed mutually-supporting panel members and spans between said bag-engagement features of said pair of panel members.

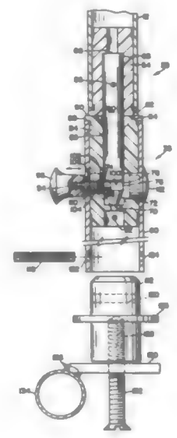
5,366,190
REPEATER HOUSING MOUNTING UNIT
Charles C. Schaefer; Donald Christiansen, and Charles G. Machledt, all of 1450 Rainville Rd., Tarpon Springs, Fla. 34689
Filed Feb. 1, 1993, Ser. No. 11,723
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—122 **9 Claims**

1. A repeater housing mounting unit, comprising:
an elongate, hollow post having a plurality of sidewalls;
a bracket-holding means associated with at least one of said sidewalls;
a preselected sidewall of said plurality of sidewalls having predetermined length that is less than that of the other sidewalls;
said preselected sidewall and said other sidewalls each having an upper edge positioned at a top end of said post;
a closure plate having a predetermined length;
means for removably securing said closure plate to said unit so that an upper edge of said closure plate abuts a lower edge of said preselected sidewall;



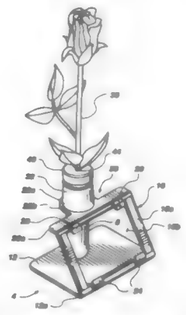
said post being mounted in upstanding relation to a ground surface, said post having a lower end embedded in said ground surface;
said lower edge of said preselected sidewall being positioned above said ground surface and said lower edge of said closure plate being positioned below said ground surface.

5,366,191
SUPPORT APPARATUS FOR A PATIENT INFUSION DEVICE
Joseph Bekanich, 243 Sullivan St., Exeter, Pa. 18643
Filed Feb. 19, 1992, Ser. No. 836,829
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—125 **20 Claims**



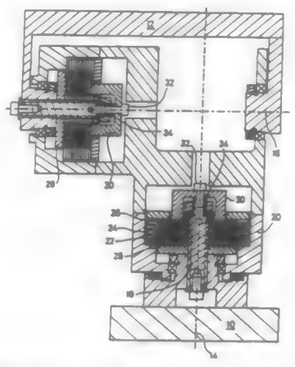
1. Apparatus for carrying a patient infusion device, such as an intravenous-fluid-carrying bag or an infusion pump, and for releasable connection of the infusion device with an infusion device support carried by a stationary or a movable receptacle, said apparatus comprising:
a. an infusion device carrier including a support bar for supporting an infusion device, the support bar having an end defining a support connector adapted for releasable connection with a support receptacle, the support connector including a coupling rod extending from the support bar and terminating in a conical end that defines a conical camming surface, the coupling rod including a longitudinal axis and a pair of opposed recesses, each recesses having an axis extending transversely of the coupling rod longitudinal axis for receiving a transversely shiftable detent rod; and
b. a support receptacle for receiving the coupling rod and supporting the support connector, the support receptacle including a tubular sleeve having a bore for slidably receiving the coupling rod, the bore having a longitudinal axis adapted to be coaxially aligned with the longitudinal axis of the coupling rod, said sleeve having a pair of coaxial transverse bores, a detent rod carried by the support receptacle for slidable transverse movement within one of said transverse bores toward and away from the support receptacle longitudinal axis, the detent rod being spring biased toward the support receptacle longitudinal axis and having an end including a camming face inclined relative to the support receptacle longitudinal axis for engagement with the conical camming surface of the coupling rod, the detent end being receivable within one of the recess in the coupling rod for preventing relative axial and rotational movement of the support connector and the support receptacle for locking the coupling rod in position within the support receptacle bore, the other of said coaxial transverse bores being larger than said one transverse bore to facilitate assembly of said detent rod in said one transverse bore.

5,366,192
APPARATUS FOR DISPLAYING A CARD AND AN OBJECT HAVING A STEM
William G. Carroll, Salt Lake City, Utah, assignor to Maxim, Inc., Salt Lake City, Utah
Filed Oct. 8, 1992, Ser. No. 957,829
Int. Cl.[5] A47G *7/00*
U.S. Cl. 248—152 **5 Claims**



1. A card and vial holder comprising
a base for resting on a support surface,
a card holding section extending upwardly from the base for receiving and holding a card in a generally upright position, said card holding section including an upper edge, and a front side and rear side, and
a vial holding section extending rearwardly of the card holding section from the upper edge thereof, and including a receptacle means into which a vial may be placed and held in a generally upright position with a vial opening directed upwardly,
wherein said base, card holding section, and vial holding section are formed integrally with one another to include a base plate having a front portion and a rear portion, for lying generally flat on said support surface, said card holding section being formed to curve upwardly and rearwardly from the front portion of the base plate to an upper edge to present a generally planar surface for holding a card, and said vial holding section being formed to curve from the upper edge of the card holding section, rearwardly into a generally horizontal section having an opening into which a vial may be inserted.

5,366,193
DRAG/DAMPER DEVICE
Richard A. Lindsay, Eye, United Kingdom, assignor to Vinten Group plc, Buckinghamshire, United Kingdom
PCT No. PCT/GB91/01306, § 371 Date Jan. 13, 1993, § 102(e) Date Jan. 13, 1993, PCT Pub. No. WO92/03683, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 1, 1991, Ser. No. 961,930
Claims priority, application United Kingdom, Aug. 21, 1990, 9018312.0
Int. Cl.[5] F16M *11/12*
U.S. Cl. 248—183 **14 Claims**

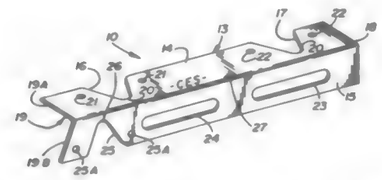


1. A rotary damper comprising two torque resisting rotary damping devices coupled together in series, one of said rotary damping devices having an input, an output and a viscous fluid coupling to provide a resistance torque to relative rotation between the input and output which is zero when the relative speed between the input and output is zero and which rises generally linearly with relative speed between the input and output, the other rotary damping device having an input and an output and a torque resisting friction coupling which resists relative rotation between the input and output up to a certain torque above which the friction coupling allows slippage between the input and output with a substantially constant torque resistance whereby the two rotary damping devices provide a combined speed/torque characteristic in which resistance torque generated by the viscous coupling rises with speed to a certain level at which the resistance torque generated by the viscous coupling causes the friction coupling to slip whereafter the torque resistance offered by the damper remains substantially constant for higher speeds.

5,366,194
UNIVERSAL MOUNTING BRACKET FOR ENGINEERING SURVEYING INSTRUMENTS
William Finney, 3130 Beal St. NW., Warren, Ohio 44485
Filed Jun. 29, 1993, Ser. No. 83,298
Int. Cl.[5] G03B *17/00*
U.S. Cl. 248—218.4 **3 Claims**

1. A mounting bracket device for supporting, engineering and surveying instruments on a support column and related surfaces comprises; an elongated body member having a first right angular portion forming a mounting surface, a second right angular portion extending from said first right angular portion, said first and second right angular portions are of an equal known thickness, a pair of oppositely disposed mounted

notches on said first right angular portion and a single mounting notch on said second right angular portion, said mounting notches are V-shaped extending inwardly on said respective right angular mounting portions, said first right angular portion has opposing free ends, multiple edges on said free ends, one of said edges is angularly disposed toward said adjacent mounting notch defining an angular inclination inwardly from



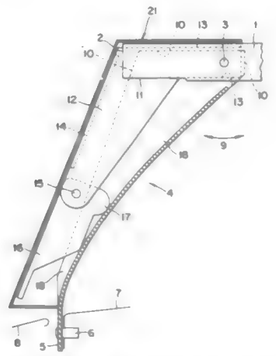
said respective free ends, said second right angular portion has opposing free end edges one of said edges is angularly disposed towards said adjacent mounting notches, a pair of elongated longitudinally spaced mounting apertures on said second right angular portion defining mounting areas therebetween, means for securing said elongated body member to a support column and related surfaces, means for securing said surveying instrument on said respective mounting notches.

5,366,195

ARRANGEMENT IN A LOAD CARRIER

Jan-Ivar Arvidsson, Hillerstorp, Sweden, assignor to Industri AB Thule, Sweden

Filed Sep. 9, 1992, Ser. No. 942,197
Claims priority, application Sweden, Sep. 9, 1991, 9102584-1
Int. Cl.[5] B60R *9/052, 9/058*
U.S. Cl. 248—231.3 **32 Claims**



1. A device for affixing a load-bearing element to a roof of a vehicle, the load-bearing element extending transversely to a longitudinal direction of the vehicle, the device comprising:

a supporting and fixing element to be anchored to the vehicle;

a contact support member extending downward from a region of the load-bearing element, said contact support member being generally rigid with respect to the load-bearing element;

a pivot pin attached to at least one of the load-bearing element and the contact support member, an upper part of the supporting and fixing element being swingably attached to at least one of the load-bearing element and the contact support member about the pivot pin, the pivot pin being generally parallel to the longitudinal direction of the vehicle;

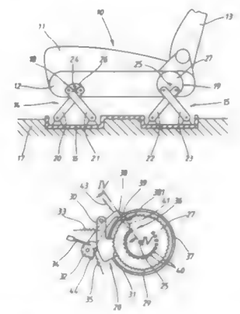
a clamping device disposed on the contact support member, the clamping device including a single actuator movable to a locked position to press a lower part of the supporting and fixing element into locking engagement with holding members on the vehicle, and the actuator, in an open position, releasing the supporting and fixing element so that the lower part of the supporting and fixing element is swingable to disengage from the vehicle.

5,366,196

DEVICE FOR ADJUSTING VEHICLE SEATS

Rolf Mitschelen, Kirchheim, and Gunter Siegel, Horb, both of Germany, assignors to Mercedes-Benz AG, Germany

Filed Jun. 15, 1992, Ser. No. 897,935
Claims priority, application Germany, Jun. 13, 1991, 4119418
Int. Cl.[5] B60N *2/04*
U.S. Cl. 248—424 **15 Claims**



1. A device for adjusting a seat of a motor vehicle wherein the seat includes a cushion-receiving seat frame, the device comprising link mechanisms arranged near front and rear ends of said cushion-receiving seat frame and mounted upon longitudinal sides thereof for adjustable securing of the seat to a vehicle floor, and a locking unit engaging into at least one of the link mechanisms for locking seat movement in a desired seat position, wherein each of the link mechanisms has a link pivotably mounted on one of the seat frame and the vehicle floor and two mutually intersecting cross-links, each cross-link being attached at a first end to the link at a distance from a bearing point of the link, and each cross-link being pivotably secured at a second end, which is spaced apart from the second end of the other cross-link, to the other one of the vehicle floor and the seat frame, the locking unit being operatively arranged to act upon at least one of the links such that, upon release of the locking unit, longitudinal displacement of the seat is permitted.

5,366,197

TWO-WAY ADJUSTABLE COPYHOLDER

Donald Westland, Marina Del Rey, Calif., assignor to Microcomputer Accessories, Inc., Los Angeles, Calif.

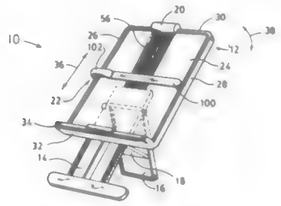
Filed Apr. 30, 1993, Ser. No. 56,310
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—456 **25 Claims**

1. An adjustable copyholder comprising:

a supporting member having a substantially planar front surface and a lower support ledge for supporting a sheet of copy;

means for pressing the sheet of copy against the front surface of the supporting member;

vertical positioning means for jointly raising or lowering the front surface and lower support ledge of the supporting member with respect to a supporting surface, whereby a sheet of copy pressed against the supporting member is



jointly raised and lowered with the supporting member; and

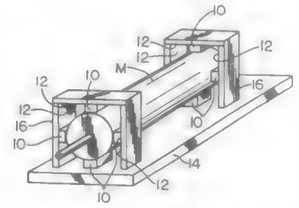
tilt positioning means for tilting the supporting member.

5,366,198

VIBRATION ISOLATION MOUNT WITH LOCKING MEANS

Stuart C. Dickinson, Bristol, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1993, Ser. No. 37,878
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **11 Claims**



1. A vibration isolation mount comprising:

a frame adapted for attachment to a support member;

a spring means mounted on said frame and adapted for attachment to a protected device, said spring means being movable on said frame to permit movement of said protected device relative to said support member; and

locking means for limiting movement of said spring means on said frame, thereby to limit movement of the protected device relative to the support member, said locking means comprising support wires of a shape memory alloy material interconnecting said frame and said spring means, said support wires being in communication with an electrical power source.

5,366,199

GATE VALVE

Mitsunori Isoyama, Souraku, Japan, assignor to Kubota Corporation, Osaka, Japan

Filed May 16, 1994, Ser. No. 243,323
Claims priority, application Japan, Feb. 28, 1994, 6-029960
Int. Cl.[5] F16K *3/00*
U.S. Cl. 251—368 **7 Claims**

1. A gate valve comprising:

a valve body;

a ring-like seal box placed on an inner face of said valve body;

a first fastening member for fastening said ring-like seal box to said inner face of said valve body;

a backup ring fittingly held on a face of said ring-like seal box which opposes a sliding valve disc;

a ring-like seal member extending over said opposing face of said ring-like seal box, and a face of said backup ring which opposes said sliding valve disc;

a ring-like valve body seat which opposes said backup ring with said ring-like seal member between, and which contacts with said sliding valve disc;

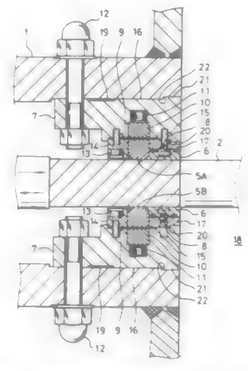
a ring-like spacer which is adjacent to an inner side of said ring-like valve body seat in a radial direction, and which opposes said ring-like seal box with said ring-like seal member between;

a second fastening member for fastening said ring-like spacer to said ring-like seal box;

a ring-like retainer which is adjacent to an outer side of said ring-like valve body seat in a radial direction, and which opposes said ring-like seal box with said ring-like seal member between;

a third fastening member for fastening said ring-like retainer to said ring-like seal member;

a seat ring for preventing said valve body seat from slipping



out, said seat ring being placed to oppose said ring-like seal box with said ring-like spacer between, said seat ring contacting with said sliding valve disc;

a first spring which is interposed between said ring-like spacer and said seat ring to urge said seat ring toward said sliding valve disc;

a second spring which are interposed between said ring-like seal box and said backup ring to urge said ring-like valve body seat toward said sliding valve disc through said backup ring and said ring-like seal member;

a ring-like gasket which is interposed at a mating face between said ring-like seal box and said valve body;

a fitting portion which is formed on said ring-like seal box, and which holds said ring-like retainer and said ring-like spacer while disabling said ring-like retainer and said ring-like spacer from moving in a radial direction; and

a fitting portion which is formed on said valve body, and which holds said ring-like seal box while disabling said ring-like seal box from moving in a radial direction.

5,366,200

SHOCK MOUNT ASSEMBLY

John E. Scura, 3094 Wild Horse Ct., Thousand Oaks, Calif. 91360

Filed Sep. 29, 1992, Ser. No. 953,921
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—632 **9 Claims**

3. A vibration mount and disk drive system comprising:

a disk drive;

a mounting base;

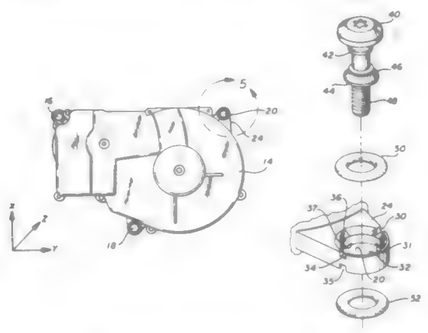
at least three mounting flanges located on said disk drive;

mounting means on said mounting base in locations corresponding to said mounting flanges;

at least one O-ring located between each of said mounting

means and said mounting flanges to provide a resilient mount having a spring constant;

a preloading means located on and connecting said mounting flanges with said mounting means and applying a predetermined force to said O-rings; and

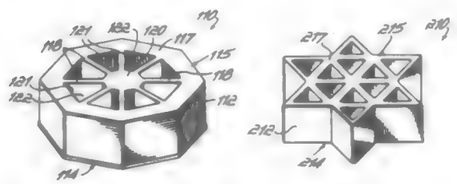


pressure relief means located in at least one of said mounting flanges to provide a spring constant different from the spring constant of the resilient mount associated with the remaining mounting flanges.

5,366,201
INDENTED, INVERTABLE FOOD MOLD WITH RAISED CENTER

Jacqueline H. Diaz, 3169 Woodside Dr., Fairfield, Ohio 45014

Filed May 14, 1992, Ser. No. 882,806
Int. Cl.[5] B29C *33/42*
U.S. Cl. 249—119 **9 Claims**



1. A food molding comprising:

a pan having a peripheral side wall, an open end and a closed end closed by an end wall, the peripheral side wall being noncircular in shape with a plurality of flat surfaces;

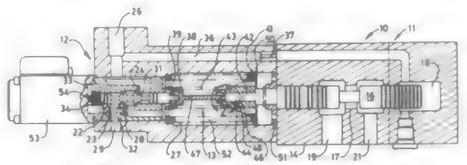
the end wall having a plurality of indentions separated by a plurality of unindented dividers to form a plurality of intermediate recessed portions and an unindented peripheral portion adjacent the side wall, the peripheral portion and the unindented dividers located at the closed end and the intermediate recessed portions spaced inwardly from the closed end; and

interior walls depending from the peripheral portion and the unindented dividers and laterally bounding the intermediate recessed portions, thereby to define a plurality of hollow volumes on a closed end side of the end wall and a complementarily shaped hollow volume at an open end side of the end wall, whereby the flat surfaces indicate the locations of the recessed portions so that a composite, inverted and stacked food product made with the mold can be readily cut into equal serving portions, with each serving portion including a completely concealed filler formed from a respective recessed portion.

5,366,202
DISPLACEMENT CONTROLLED HYDRAULIC PROPORTIONAL VALVE

Stephen V. Lunzman, Chillicothe, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Jul. 6, 1993, Ser. No. 90,375
Int. Cl.[5] F16K *31/124*
U.S. Cl. 251—30.05 **4 Claims**



1. A displacement controlled hydraulic proportional valve having a main valve spool, a pilot valve hydraulically controlling the displacement of the main valve spool and having a pilot valve spool in axial alignment with the main valve spool, means for biasing the main valve spool toward the pilot valve spool and a force module disposed to selectively move the pilot valve spool toward the main valve spool comprising:

an extension on the main valve spool;

a first spring retainer seated on the extension of the main valve spool;

an extension on the pilot valve spool;

a second spring retainer disposed on the extension of the pilot valve spool;

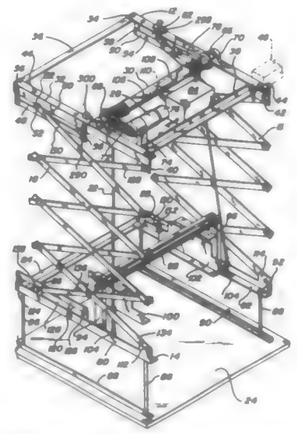
a compression force feedback spring positioned between the first and second spring retainers to exert a feedback force against the pilot valve spool in proportion to the displacement of the main valve spool; and

a dashpot disposed between the first and second spring retainers to dampen relative movement therebetween.

5,366,203
PROJECTOR CEILING LIFT

Charles E. Huffman, Parker, Colo., assignor to Safety Lock and Lift, Ltd., Aurora, Colo.

Continuation of Ser. No. 768,033, Sep. 30, 1991, Pat. No. 5,261,645, which is a continuation-in-part of Ser. No. 387,118, Jul. 3, 1989, abandoned. This application Jul. 22, 1993, Ser. No. 94,699
Int. Cl.[5] A47B *81/00, 88/22*
U.S. Cl. 254—362 **15 Claims**



1. An improved lifting device for suspending from and concealing an object within a ceiling structure of an enclosure, the lifting device comprising:

a) support framework means including means for mounting the framework means within the ceiling structure whereby the lifting device will be completely concealed when in a raised position;

b) carriage structure means including an object mounting means whereby the object is at least partially recessed within said carriage structure means;

c) cable drum means mounted on said support framework means, said cable drum means having at least one cable attached to said carriage structure means so as to support the carriage structure means from said support framework means, said cable drum means includes a drive means to controllably rotate the cable drum means to lower or raise the cable and the carriage structure means between a lowered position where the object can be mounted on said carriage structure means and a raised position wherein the carriage means is in a nested position with said support framework means;

d) stabilizing means mounted between the support framework means and the carriage structure means to restrict lateral movement of the carriage means when the carriage means and object are suspended in a position between said lowered position and said raised position, said stabilizing means being arranged to allow the support and carriage means to be closely coupled in the raised position to minimize the overall height of the lifting device;

e) said carriage structure means includes a pair of spaced parallel side members and said object mounting means is an inverted U-shaped bracket connected between said side members, said U-shaped bracket being adapted to mount and support the object whereby the object will be at least partially recessed between and above the side members of said carriage structure means to facilitate the concealment of the object and lifting device within the ceiling structure; and

f) said parallel side members having an outside surface arranged opposite the inverted U-shaped bracket, said stabilizing means is mounted to the outside surface of at least one of said spaced parallel side members so that the carriage structure means in the raised position is recessed within the stabilizing means to allow the carriage structure means and mounted object to be recessed within the lifting device and concealed within the ceiling structure.

5,366,204
INTEGRAL INDUCTION HEATING OF CLOSE COUPLED NOZZLE

Michael F. X. Gigliotti, Jr., Scotia; Steven A. Miller, Amsterdam, and Raymond A. White, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1992, Ser. No. 898,602
Int. Cl.[5] B22F *9/08*
U.S. Cl. 266—202 **16 Claims**

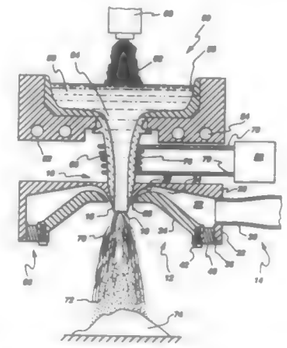
5. A close coupled gas atomization system for the atomization of metals having melting temperatures above 1000° C., the system comprising:

means for supplying melt to be atomized at a superheat of at most 50° C.;

a melt guide tube having an orifice, operatively connected to the melt supply means, for delivering the melt to an atomization zone;

gas supply means, operatively positioned relative to the melt guide tube orifice, for supplying atomizing gas at a temperature significantly below that of the melt, into the atomization zone so that the melt flowing thereinto from the melt guide tube is atomized, the gas supply means including at least one gas inlet, a gas manifold for distributing gas around the melt guide tube, at least one gas orifice operatively positioned relative to the atomization zone; and

melt guide tube heating structure, operatively connected to the melt guide tube, for heating the melt to a temperature

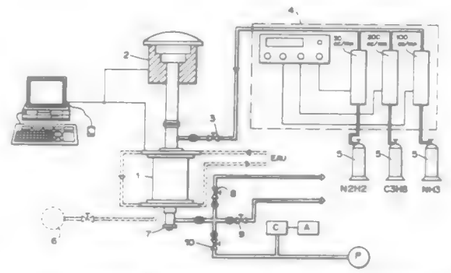


at least about 100° C. higher before exiting the guide tube then upon entry therein.

5,366,205
CARBURIZATION INSTALLATION

Michel Gantois, Nancy, France, assignor to Solo Fours Industriels SA, Biel, Switzerland

Continuation of Ser. No. 894,350, Jun. 4, 1992, abandoned, which is a division of Ser. No. 549,968, Jul. 9, 1990, Pat. No. 5,139,584. This application Feb. 25, 1994, Ser. No. 206,021
Claims priority, application Switzerland, Jul. 13, 1989, 2632/89; France, Dec. 14, 1989, 89 16541
Int. Cl.[5] C21D *11/00*
U.S. Cl. 266—79 **7 Claims**



1. An installation for heat or thermochemical treatment on workpieces of a steel material, said workpieces having an initial composition including an initial surface concentration of carbon, comprising:

a furnace;

a muffle within said furnace for receiving a load of said workpieces;

a feeder for feeding said muffle with a gaseous flux having a flux composition including a defined flux rate of at least one hydrocarbon;

a circulator for circulating said gaseous flux within said muffle in contact with surface zones of said workpieces;

a heater for heating said load and said gaseous flux and for maintaining said load and said flux at a defined temperature;

a rate controller for varying said defined flux rate of at least one hydrocarbon in said flux composition during said treatment for carrying out at least one first phase of said treatment, said at least one first phase comprising carbon enrichment of said workpieces; and

a data processor for monitoring said rate controller as a function of time the data processor including:

control means for controlling the defined rate of said at least one hydrocarbon in the flux along said first phase, to provide an increase in the surface concentration of carbon up to a maximal value corresponding to a saturation state of said steel with carbon in a surface layer of said workpiece and to maintain this said surface layer as said saturation state until said workpiece is enriched by a defined amount of carbon,

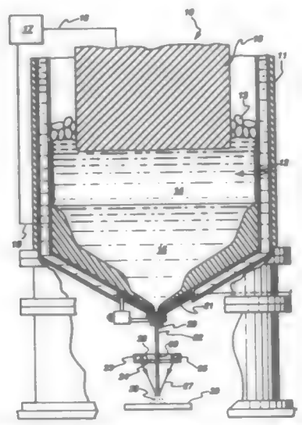
wherein said control means maintains the defined rate at a first constant value during a first time period of said first phase, then instantaneously lowers the said rate and provides then during a second time period of said first phase, a regulated value of said rate to maintain the surface concentration at said saturation state.

5,366,206

MOLTEN METAL SPRAY FORMING ATOMIZER

Thomas F. Sawyer, Stillwater; William T. Carter, Jr., Ballston Lake, and Mark G. Benz, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1993, Ser. No. 168,283
Int. Cl.[5] C23C *4/12*
U.S. Cl. 266—202 **17 Claims**



1. A molten metal spray forming atomizer comprising:

a peripheral manifold defining an aperture having a center through the manifold adapted to pass a molten metal stream through the aperture, the manifold having gas jets positioned therein surrounding the aperture at different radial dimensions from the center of the aperture, the manifold being adapted to receive a gas therein under pressure and to direct the gas through the gas jets to engage the molten metal stream after the molten metal stream has passed through the aperture so that the metal stream is atomized into a spray pattern of metal droplets; and

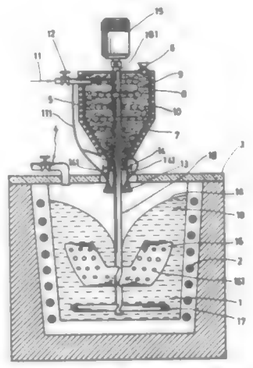
mounting means for angular adjustment rotation of the atomizer about a transverse axis of the aperture.

5,366,207

APPARATUS FOR MAKING METAL-MATRIX COMPOSITES REINFORCED BY ULTRAFINE REINFORCING MATERIALS

Ching-Bin Lin, c/o Hung Hsing Patent Service Center, P.O. Box 55-1670, Taipei (104), Taiwan, Prov. of China

Division of Ser. No. 103,049, Jul. 28, 1993. This application Jan. 31, 1994, Ser. No. 188,754
Int. Cl.[5] C21C *7/00*
U.S. Cl. 266—216 **7 Claims**



1. An apparatus a heating furnace having a ceramic cover covering an upper opening of the furnace;

an gas supply means having a conduit connected to the furnace;

a closed feeding container mounted on an upper position of the furnace, having a suspension-liquid valve provided on an upper portion of the feeding container, a heating medium surrounding the feeding container for producing heat convection in the container for heating the suspension liquid in the feeding container, an inert-gas pipe disposed in the feeding container having a plurality of perforations drilled in the inert-gas pipe for bubbling inert gas supplified from an inert gas source through a gas valve formed on an inlet portion of the inert-gas pipe, at least a distributing pipe having a distribution-control valve formed on the distributing pipe and a nozzle secured on a lowest end portion of the distributing pipe for distributing the suspension liquid from the feeding container into the furnace;

an agitating means provided in the furnace for thoroughly mixing the alloy matrix with the suspension liquid distributed from the feeding container; and

a degassing means provided in the furnace for removing gases existing in the molten solution by mixing the alloy matrix with the suspension liquid containing the ultrafine reinforcing material for preventing porosity therein.

5,366,208

CUTTING BOARD RECEPTACLE TRAY

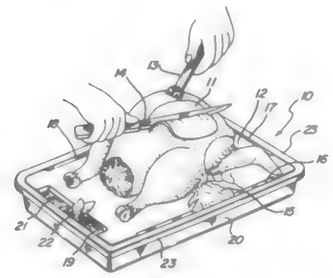
William Benjamin, 10408 Stonebank St., Bellflower, Calif. 90706

Filed Jun. 17, 1993, Ser. No. 79,149
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 269—13 **11 Claims**

1. A cutting board, comprising:

a cutting board surface for supporting a food workpiece for cutting, the workpiece providing drippings when being cut, the cutting board having four corners and four notches located alternatively therebetween along a periphery of the cutting board through which the drippings may pass; and

a drip pan tray receptacle for receiving the drippings, the drip pan tray receptacle supporting the cutting board surface in a cutting position only at the four corners,



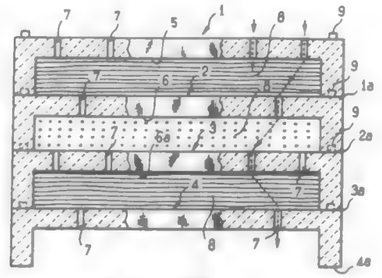
thereby providing an unobstructed path through which drippings may flow into the drip pan tray receptacle.

5,366,209

FILTER FOR MOLTEN METAL

Gérard Daussan; André Daussan, both of Longeville-les-Metz, and Jean-Charles Daussan, Metz, all of France, assignors to Daussan & Compagnie, Woippy, France

Filed Jun. 3, 1993, Ser. No. 70,873
Int. Cl.[5] C22B *9/02*
U.S. Cl. 266—227 **13 Claims**



1. Filter for molten metal comprising a series of at least two refractory material plates in contact with each other at their periphery and defining between them one or more cavities, wherein said plates each comprise a series of holes through which said molten metal passes and by which said molten metal is filtered, said cavities are at least in part filled with a filter material resistant to the temperature of the molten metal to be filtered and provide additional filtering of said metal and said filter material is fibers resistant to the temperature of said molten metal that are not bonded together and which are parallel to said plates.

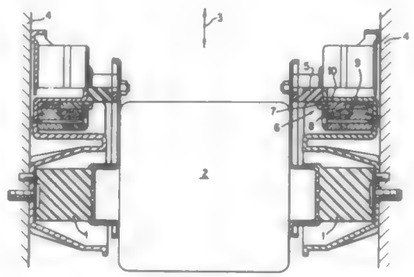
5,366,210

SPRING SYSTEM WITH ELASTOMERIC AND TEMPERATURE RESPONSIVE SPRINGS IN PARALLEL

Rudi Grunau, Gross-Gerau; Herwig Höulinger, Gross-Rohrheim, and Jürgen Morr, Wald-Michelbach, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Mar. 18, 1993, Ser. No. 33,592
Claims priority, application Germany, Mar. 25, 1992, 4209610
Int. Cl.[5] F16F *15/08*
U.S. Cl. 267—140.4 **13 Claims**

1. A vibration absorber comprising: an absorber mass and at least one spring element formed of an elastomer material, said absorber mass being arranged for movement on said at least one spring element, said absorber mass being movable with a phase displacement relative to vibrations introduced due to operating conditions, said at least one spring element being fixed on a vibration generator; a supplementary spring assigned to said at least one spring element and acting in parallel therewith to compensate for temperature effects, said supplementary spring having a spring stiffness; and, means for changing the spring stiffness of the supplementary spring.

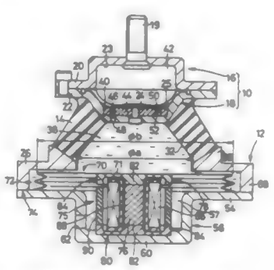


5,366,211

ELASTIC MOUNT HAVING FLUID CHAMBER PARTIALLY DEFINED BY OSCILLATING PLATE ACTUATED BY ELECTROSTRICTIVE/MAGNETOSTRICTIVE ELEMENT

Masaaki Hamada, and Yumi Sekiguchi, both of Komaki, Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Continuation of Ser. No. 989,516, Dec. 11, 1992. This application Mar. 30, 1994, Ser. No. 220,015
Claims priority, application Japan, Dec. 24, 1991, 3-356936
Int. Cl.[5] F16M *1/00*
U.S. Cl. 267—140.14 **10 Claims**



1. A fluid-filled elastic mount comprising:

a first support;

a generally annular second support which is spaced apart from said first support, said second support having a first portion and a second portion which are arranged in an axial direction of the mount and which define a first bore and a second bore, respectively, said first bore being smaller than said second bore, said first portion having an open axial end which is opposed to said first support in said axial direction;

an elastic body which is interposed between said first and second supports for elastically connecting the first and second supports and which partially defines a fluid chamber filled with a non-compressible fluid, said elastic body being secured at one end to said first support and at the other end to said open axial end of said first portion of said second support;

an oscillating plate which is supported by said second portion of said second support to close said second bore and partially define said fluid chamber, said oscillating plate being displaceable relative to said second support, said oscillating plate having a surface area which is larger than

an area of said first bore of said first portion of said second support;

a support member fixed to said second support such that said support member is disposed on one of opposite sides of said oscillating plate remote from said fluid chamber;

said oscillating plate and said support member cooperating with each other to at least partially define an air chamber; and

an electrostrictive or magnetostrictive element disposed in said air chamber between said oscillating plate and said support member, for oscillating said oscillating plate to thereby change a pressure of the fluid in said fluid chamber, upon expansion and contraction of said electrostrictive or magnetostrictive element due to a strain produced therein when an electric or magnetic field, respectively, is applied to the element, said air chamber permitting oscillation of said oscillating plate by said electrostrictive or magnetostrictive element.

5,366,212

WEB-FED SHEET STACKER AND SEPARATOR

H. W. Crowley, Newton; John W. Clifford, Ashland, both of Mass.; Thomas Connolly, Nashua, N.H.; John R. Fairhurst, Lawrence, Mass., and Bruce Taylor, Manchester, N.H., assignors to Roll Systems, Inc., Burlington, Mass.

Filed Apr. 27, 1992, Ser. No. 874,046
Int. Cl.[5] B65H *33/04*
U.S. Cl. 270—95 **53 Claims**

1. An apparatus for stacking and separating sheets comprising:

conveyor means that transports sheets from a source in a first orientation in a stream aligned in a downstream direction to a stacking location, the conveyor means including a table that supports the sheets thereon as they are transported in the downstream direction;

kicker means located along the conveyor means that offsets selected of the sheets in a direction substantially transverse to the downstream direction, the kicker means including a reciprocating member having a frictional surface that engages and withdraws from each of the selected sheets to drive the selected sheets transverse to the downstream direction into an offset position;

stacking means positioned at the stacking location that receives each of the sheets from the first orientation in the conveyor means and overlays each of the sheets in a second orientation in a stack extending downstream; and

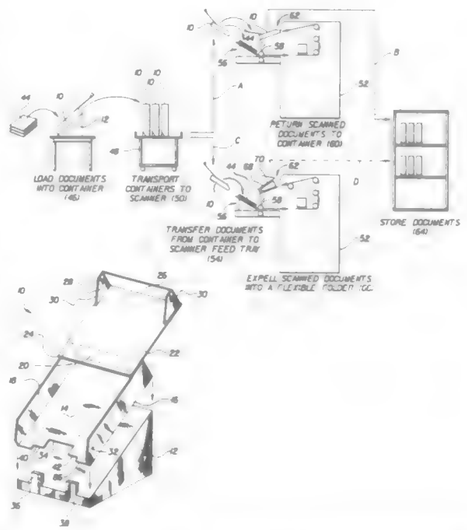
a weighted roller located on a face of each of the sheets opposite a face of each of the sheets that faces the table, the kicker means being located remote from the weighted roller and the roller being constructed and arranged so that it enables movement of each of the sheets in each of the downstream direction and a direction transverse to the downstream direction.

5,366,213

METHOD FOR HANDLING DOCUMENTS AT A HIGH VOLUME SCANNER

Nicholas G. Polachak, and Robert J. Brasch, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1993, Ser. No. 159,023
Int. Cl.[5] B65H *5/22, 1/00;* **B65D** *85/48*
U.S. Cl. 271—3 **3 Claims**



1. A method of handling documents before and after scanning, comprising the steps of:

a. providing a document container having: a body comprising a bottom, two side walls, and one end wall; a lid hinged to the body near said one end wall, said lid defining a top and an opposite end wall; said bottom having a cutout opposite said one end wall to facilitate manually removing a stack of documents from said container when said lid is open; and latch means for releasable holding said lid closed against said body;

b. supporting said container at an angle with its lid open and said one end wall at the top on a container support having alignment means for aligning a bottom edge of documents placed in said container and stack height limiting means for limiting the height of a stack of documents placed in said container;

c. loading a stack of documents in said container;

d. closing and latching said container and transporting said container with the aligned edge of said documents pointing down to a document scanner input station;

e. removing the stack of documents from the container and placing the stack of documents in the scanner input station with the aligned edge toward a set of feed rollers in said input station

f. providing a document receiving container at an output station of said document scanner for receiving scanned documents in the order of scanning;

g. scanning said stack of documents; and

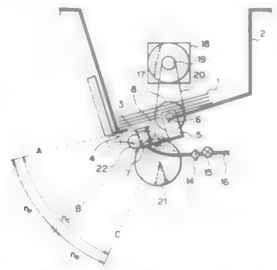
h. removing said document receiving container containing said scanned documents in the order of scanning from said output station and storing said document receiving container with said scanned documents.

5,366,214

ENCLOSURE FEED DEVICE FOR ENCLOSING AND SEALING APPARATUS AND METHOD OF ENCLOSING AND SEALING ENCLOSURES

Koki Sato, Tokyo, Japan, assignor to Juki Corporation, Chofu, Japan

Filed Oct. 26, 1993, Ser. No. 142,679
Claims priority, application Japan, Oct. 29, 1992, 4-291331
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—100 **9 Claims**



1. In an enclosing and sealing apparatus including a rocking arm having a sucking cap attached to the tip end thereof and rockably mounted adjacent to a hopper for stacking and storing enclosures, and a feeder mechanism disposed adjacent to said sucking cap, said enclosures in said hopper being sucked one by one by said sucking cap under a rocking movement of said rocking arm and being fed to said feeder mechanism, said enclosures which have been sucked and carried by said sucking cap being conveyed by said feeder mechanism to a predetermined station an enclosure feed apparatus, comprising:

a drive motor for rockably moving said rocking arm;

an input section for inputting a set value to so indicate a desired position where said sucking cap is operated so as to accommodate the thickness or quality of paper of said stacked enclosures; and

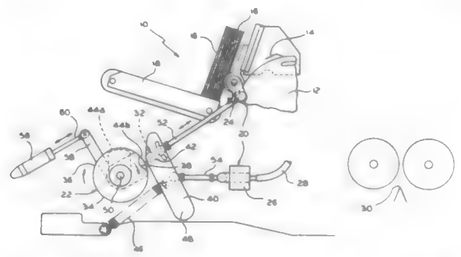
a control unit adapted to drive said drive motor according to said set value to so rockably move said cap to assume a position where said sucking cap is operated so as to accommodate the thickness or quality of paper for said enclosures, thus sucking said enclosures one by one.

5,366,215

DISABLING MECHANISM FOR SIGNATURE FEEDING APPARATUS

Ronald W. Hastie, Elk Grove Village, and Lawrence D. Magee, Bolingbrook, both of Ill., assignors to R. R. Donnelley & Sons Co., Lisle, Ill.

Filed Nov. 29, 1993, Ser. No. 159,435
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—107 **17 Claims**



1. In a cyclically operable signature feeding apparatus including a driven rotary drum having a plurality of signature grippers disposed about the periphery thereof, said signature grippers being adapted to grip signatures seriatim from a signature supply means, vacuum means driven by cam means for shifting signatures seriatim from said signature supply means to said rotary drum for gripping by said signature grippers, said vacuum means including a source of vacuum operatively associated with oscillating vacuum grippers, the improvement comprising:

a cam follower operatively associated with said vacuum means to control operation of said vacuum means responsive to engagement with a surface of said cam means; and

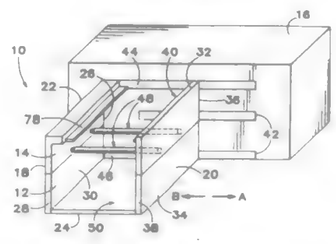
means for masking said surface of said cam means to disable operation of said vacuum means upon demand to disable operation of said signature feeding apparatus wherein said surface of said cam means includes a high dwell region and a low dwell region both of which are normally in driving engagement with said cam follower, said masking means selectively disabling said source of vacuum and said oscillating vacuum grippers when said masking means is moved from a position exposing said low dwell region to a position masking said low dwell region.

5,366,216

ADJUSTABLE PRINT MATERIAL HANDLING SYSTEM HAVING AN INPUT AND OUTPUT TRAY

Eric L. Ahlvin, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 3, 1993, Ser. No. 71,431
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—171 **8 Claims**



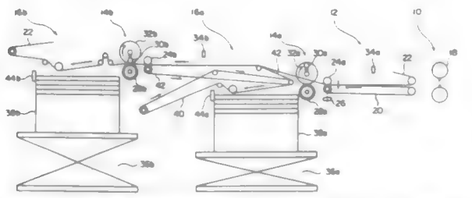
1. A print medium handling system comprising:

a stationary, side wall;

a moveable side wall, the moveable side wall facing the stationary side wall and being moveable laterally relative to the stationary side wall to define various widths therebetween; and

plural support structures extending between the side walls, a first of the plural support structures combining with opposing regions of the side walls to form an input tray therebetween to hold print medium for feeding to a printer, and a second of the plural support structures combining with other opposing regions of the side walls to form an output tray therebetween for receiving print medium from a printer, the output tray and the input tray having common side walls such that the output tray has substantially the same width as the input tray, and such that movement of the moveable side wall adjusts the width of the support structures such that the support structures can support print medium of various widths.

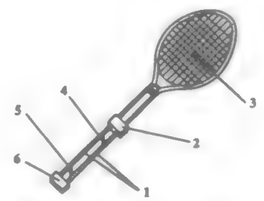
5,366,217
SHEET STACKER
Masateru Tokuno, Tokyo, and Tatsuyuki Miyagawa, Yokohama, both of Japan, assignors to SK Engineering, Ltd., Tokyo and Reliance Electric Ltd., Kanagawa, both of Japan
PCT No. PCT/JP91/01399, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991
PCT Filed Oct. 15, 1991, Ser. No. 777,340
Claims priority, application Japan, Oct. 19, 1990, 2-283178
Int. Cl.[5] B65H *43/00*
U.S. Cl. 271—176 **5 Claims**



1. A device for slowing down sheets, the device comprising:
conveyor means for moving the sheets at a conveyor speed and with the sheets separated at a predetermined interval;
clamping means positioned downstream of said conveyor means and for receiving the sheets from said conveyor means, said clamping means including a slowdown roll rotating at a stacking speed and positioned on a first side of the sheets, said clamping means also including a rotating device with a rotating shaft, a rotating arm connected on one end to said rotating shaft and a free roll rotatably connected to another end of said rotating arm, said clamping means clamping the sheets between said free roll and said slowdown roll once during a complete rotation of said rotating shaft and at a clamping position on the sheets, said clamping position being spaced from a tail end of the sheets, said clamping means slowing the sheets from said conveyor speed to said stacking speed by said clamping between said free roll and said slowdown roll;
servo motor means connected to said rotating shaft and for driving said rotating shaft;
tail end position sensor means installed on said conveyor means and for detecting the tail end of the sheets as the sheets move along said conveyor means;
conveyor speed sensor means for detecting a speed of said conveyor means:
motor speed sensor means for detecting a speed of said servo motor means:
arm position sensor means for detecting when said rotating arm passes a predetermined point;
position control means for controlling said servo motor means to control rotation of said rotating shaft, said position control means controlling said servo motor means to have said free roll contact the sheets at said clamping position when said clamping position is adjacent said slowdown roll, said position control means controlling said servo motor means dependent on information from said tail end position sensor means, said conveyor speed sensor means, said motor speed sensor means and said arm position speed sensor means.

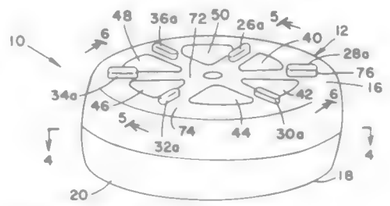
5,366,218
TENNIS RACKET
Shao-Wei Gong, P.O. Box 251, Cookeville, Tenn. 38503-0251
Filed Sep. 28, 1992, Ser. No. 952,067
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 J **3 Claims**

1. A racket having a head connected to a single handle, said handle comprising a two-bar grip;
said grip comprising two extension bars extending from the racket head and being parallel to the longitudinal axis of the racket;
a thumb shaft mounted on one of said extension bars on one side of a plane defined by said racket head at an angle to engage the thumb of a player;



a palm shaft mounted on the other of said extension bars on the other side of said plane at an angle to engage the palm side of a player.

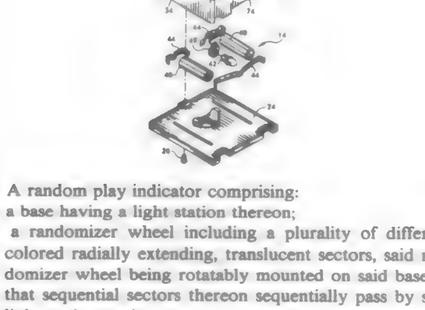
5,366,219
HOCKEY PUCK
William Salcer, and I. Martin Spier, both of New York, N.Y., assignors to Loraney Sports, Inc., New York, N.Y.
Filed Dec. 6, 1993, Ser. No. 163,478
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—128 R **22 Claims**



1. A hockey puck comprising
a) a molded inner structure formed of a first plastic material,
b) a disk-shaped main body formed of a second plastic material and molded over said molded inner structure, said main body having a central axis, a circular periphery surrounding said central axis and opposite parallel surfaces generally perpendicular to said central axis,
c) said molded inner structure having a plurality of ground-engaging projections extending axially from each of said opposite parallel surfaces, each of said ground engaging projections being joined together within said main body such that the molded inner structure including the ground engaging projections forms a single molded unit and the ground engaging projections are non-movable with respect to said main body and non-removable from said main body.

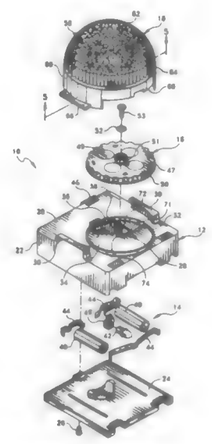
5,366,220
BALL AND MALLET GAME DEVICE
M. Deane Harper, 218 22nd St., Dunbar, W. Va. 25064
Filed Jun. 8, 1993, Ser. No. 73,048
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—138 R **5 Claims**

1. A game device comprising a hollow spherical ball constructed of rigid, transparent material to enable observation of the interior of the ball, a block oriented interiorly of the ball and being freely moveable therein with the major external dimension of the block being substantially less than the internal diameter of the ball to enable the block to roll and tumble as the ball rolls along a supporting surface, said block including a plurality of flat external surface areas and indicia on at least one surface area of the block to enable observation of the indicia when the ball comes to rest with the indicia providing instructions for subsequent game play, and a mallet for striking



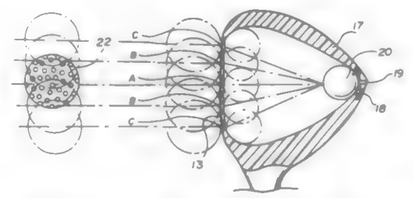
the ball, said mallet including a generally cylindrical body member having a laterally extending handle attached thereto, said body member including a soft, resilient member on each end thereof to provide a soft resilient engagement with the ball for projecting the ball in a desired direction toward a target.

5,366,221
RANDOM PLAY INDICATOR
Stephen Schwartz, 507 Cole Ave., Providence, R.I. 02906; Howard Kamentsky, 215 A St., Boston, Mass. 02210, and Michael Gorker, Sharon, Mass., assignors to Stephen Schwartz, Providence, R.I. and Howard Kamentsky, Boston, Mass.
Filed Jul. 29, 1993, Ser. No. 99,931
Int. Cl.[5] A63F *5/04*
U.S. Cl. 273—142 A **9 Claims**



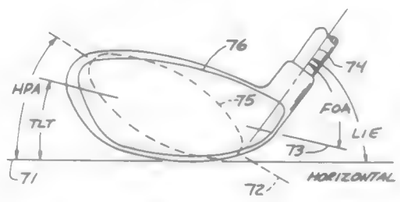
1. A random play indicator comprising:
a. a base having a light station thereon;
b. a randomizer wheel including a plurality of different colored radially extending, translucent sectors, said randomizer wheel being rotatably mounted on said base so that sequential sectors thereon sequentially pass by said light station; and
c. light source means on said base for selectively illuminating the sector located at the light station at any given time.

5,366,222
GOLF CLUB HEAD HAVING A WEIGHT DISTRIBUTING SYSTEM
Steven P. Lee, 25 - 5th St., North Arlington, N.J. 07031
Filed Nov. 23, 1993, Ser. No. 155,832
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—170 **9 Claims**



1. A golf club head having a weight distributing system, said golf club defining a front surface face and a back surface, said golf club head comprising:
a movable ball;
a golf club head cavity disposed within the golf club head, the movable ball being disposed within said golf club head cavity and the cavity having a size such that the movable ball is movable therein in a direction nonperpendicularly to the front surface face of the golf club;
a permanent magnet plate attached to the back side of said golf club head cavity for securing the movable ball during non-operation; and
an air aperture disposed at said back surface thereof and in communication with said golf club cavity for forming an air passage, whereby upon hitting a golf ball, the movable ball always moves and hits an interior sweet point of a sweet point corresponding to the exterior of the front surface face from the permanent magnet plate, so that the struck golf ball will fly in a straight direction and a longer distance compared with an expected golf ball distance, the interior sweet point being changeable between swings of the golf club dependent upon where the golf ball strikes the front surface face.

5,366,223
GOLF CLUB FACE FOR DRIVERS
Frank D. Werner, Box SR9, Jackson, Wyo. 83001, and Richard C. Greig, Jackson, Wyo., assignors to Frank D. Werner, Teton Village, Wyo.
Filed Oct. 28, 1993, Ser. No. 144,794
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—175 **9 Claims**



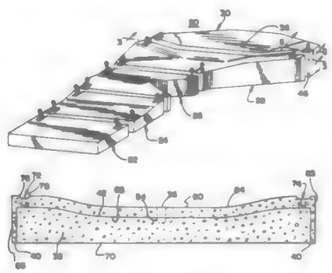
1. A driver golf club head having an elongated face region having a face outline defined by an edge so oriented that the moment axis of the smaller of two principal moments of inertia of an area bounded by the edge of the face as projected onto a plane containing an axis of a shaft connected to the head and the centroid of the face region is oriented at least 74 degrees from the shaft axis in such direction as to cause a toe end of the face outline to become higher than a heel end with the club head in ball striking position and where increasing such angle causes the toe end to move higher.

5,366,224

MODULAR HOLES FOR A MINIATURE GOLF COURSE AND A METHOD THEREFOR

Jon J. Stanwyck, Slinger, and Richard T. Haas, Brown Deer, both of Wis., assignors to Cost of Wisconsin, Germantown, Wis.

Filed Sep. 24, 1992, Ser. No. 950,806
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—176 R 20 Claims



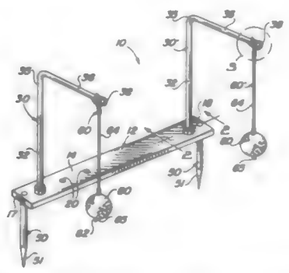
1. A hole for a miniature golf course comprising:
a plurality of modules each of which modules being formed of a core having surfaces with at least some of the surfaces including a top surface of said core having a cement coating;
anchoring means disposed in said core to provide a plurality of fastener receiving means in each of said modules:
troughs made in each of said cores that are adapted to have said anchoring means disposed therein, said anchoring means cemented into said troughs so as to retain said anchoring means in said core;
anchoring plate means adapted to extend between adjoining modules to secure said modules together, said anchoring plate means being adapted to fit into recesses in said cement coating on the top of said modules; and
fastening means extending through said anchoring plate means into said fastener receiving means of said anchoring means for fastening said anchoring plate means to said modules.

5,366,225

GOLF SWING TRAINING APPARATUS

Lester Lazar, 12150 SW. 92nd Ave., Miami, Fla. 33176

Filed Apr. 25, 1994, Ser. No. 231,743
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—185 C 7 Claims



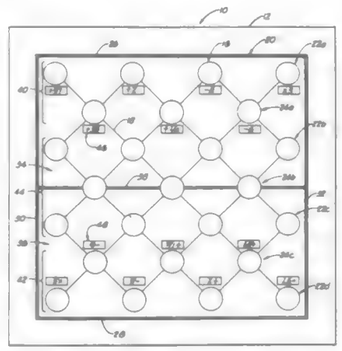
1. A golf training apparatus for use on a support surface, comprising:
a base plate including a top side, a bottom side, and opposite ends,
a pair of individual arm members each including a vertical extension having a lower proximal end zone and a horizontal extension having a distal end zone, said horizontal extension defining a horizontal axis,
means for anchoring said base plate in fixed relation to the support surface,
attachment means for releasably attaching said proximal end zones of each of said arm members to said base plate at one of a plurality of select locations between said opposite ends thereof such that said distal end zones of said arm members are disposed in spaced relation to one another above the support surface,
first and second tether assemblies each being associated with a respective one of said arm members and each including:
a tethering cord including a lower end and an opposite upper end rotatably secured to said distal end zone of said respective arm member,
a spherical member resembling a golf ball and fixedly attached to said lower end of said tethering cord and supported in spaced relation above the support surface, and
wherein each of said tether assemblies are structured and disposed to cause said respective ball to rotate about said horizontal axis upon applying an external striking force to said ball.

5,366,226

MATH GAME

Bernard W. McGowan, 4341 Will Rogers Pkwy., Oklahoma City, Okla. 73108, and Stephen P. Scully, Fort Lauderdale, Fla., assignors to Bernard W. McGowan, Oklahoma City, Okla.

Continuation of Ser. No. 765,216, Sep. 23, 1991, Pat. No. 5,149,102. This application Jun. 22, 1992, Ser. No. 902,140
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—258 4 Claims



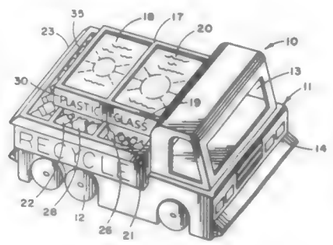
1. A method for playing a math game comprising:
providing a game board having a plurality of defined spaces, the defined spaces consisting of horizontally disposed odd and even rows of spaces wherein each horizontal odd row of spaces is disposed between two horizontal even rows of spaces, each of the spaces of each of the rows being connected so as to define playing paths between the odd and even rows of defined spaces, a portion of the spaces comprising goals with some of the goals being designated first home goals, some of the goals being designated second home goals, a plurality of first goal math indicia with each first goal math indicia being associated with one of the first home goals, a plurality of second goal math indicia with each second goal math indicia being associated with one of the second home goals;
providing a plurality of first playing pieces, each of the first playing pieces having a first playing piece math indicia, each of the first goal math indicia and the first plying piece math indicia comprising a numeral and at least one of the first goal math indicia and each of the first playing piece math indicia further comprising a math sign;
providing a plurality of second playing pieces, each of the second playing pieces having a second playing piece math indicia, each of the second goal math indicia and the second playing piece math indicia comprising a numeral and at least one of the second goal math indicia and the second playing piece math indicia further comprising a math sign;
disposing each of the first playing pieces on one of the first home goals at a start of game position such that the numeral of each playing piece is visible;
disposing each of the second playing pieces on one of the second home goals at the start of game position such that the numeral of each playing piece is visible;
moving sequentially each of the first playing pieces from the first home goals along a selected playing path to at least some of the field goals and toward one of the second home goals;
moving sequentially each of the second playing pieces alternately with the moving of the first playing pieces from the second home goals along a selected playing math to at least some of the field goals and toward the first home goals until the first and the second playing pieces have been positioned in an end of game position wherein either all of the first playing pieces are disposed on one of the second home goals or all of the second playing pieces are disposed on one of the first home goals or the first and the second playing pieces no longer are movable on the field goals toward one of the first and the second home goals; and
determining a score for the first playing pieces by combining the math indicia on the first playing piece with the second goal math indicia associated with the second goal where the first playing piece is disposed at the end of game position; and
determining the score of the second playing pieces by combining the math indicia on the second playing pieces with the first goal math indicia associated with each first home goal where each second playing piece is disposed at the end of game position.

5,366,227

RECYCLING GAME

Patrick Duffy, 214 Duncan Ct., Longwood, Fla. 32779

Filed Apr. 18, 1994, Ser. No. 228,707
Int. Cl.[5] A63F *3/00, 1/10*
U.S. Cl. 273—287 10 Claims



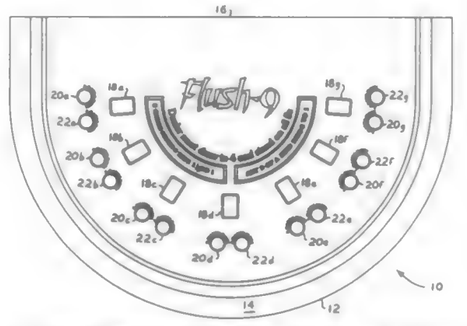
1. A recycling game comprising:
a toy vehicle having a plurality of bins for holding game pieces and having a card caddy thereon;
a plurality of cards supported in said toy vehicle card caddy;
a plurality of game pieces, each game piece having a shape emulative of a recycling member and stored in one said toy vehicle bin;
each card having information concerning one recycling item which is emulated by at least one game piece whereby a game can be played which teaches players about recycling.

5,366,228

CARD GAME

Adisorn Kangsanaraks, 2658 Karen Ct. #621, Las Vegas, Nev. 89109

Filed Jul. 5, 1994, Ser. No. 267,229
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 9 Claims



1. A method of playing a card game, comprising the following steps:
(a) Providing at least one deck of playing cards comprising four suits totaling fifty two cards, with each suit including thirteen cards ranking from ace through king;
(b) assigning a value to each of the cards, with the ace through nine of each suit respectively being assigned values of one through nine points, and the ten through king of each suit each being assigned a value of zero;
(c) forming dealer and player hands by dealing two of the cards randomly to each player and to the dealer of the game, with the first card to the dealer being dealt face up and all others face down;
(d) placing wagers on the outcome of play of the card game;
(e) adding the values of the cards in each of the hands and dropping the tens digit to provide a number between zero and nine points, and determining a winning hand by determining which hand is closest to a total of nine points;
(f) determining whether any of the hands are formed entirely of cards of the same suit to form a flush hand, and;
(g) providing a payoff for any wagers placed upon winning and flush hands.

5,366,229

SHOOTING GAME MACHINE

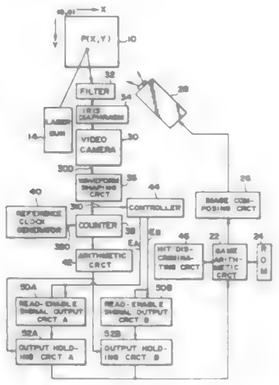
Kenzi Suzuki, Odawara, Japan, assignor to Namco Ltd., Tokyo, Japan

Filed May 17, 1993, Ser. No. 61,589
Claims priority, application Japan, May 22, 1992, 4-156092
Int. Cl.[5] A63F *9/22*; F41G *3/26*
U.S. Cl. 273—310 20 Claims

1. A shooting game machine comprising:
a projector projecting a shooting video image on a screen, the video image having a target;
shooting means for emitting a light beam toward the screen, the light beam distinguishable from said video image;
photographing means for photographing the screen and producing a picture signal;
coordinate computing means for computing X and Y coordinates of a beam point of said light beam on the screen based on the picture signal from said photographing means; and
on-target discriminating means for comparing the computed X and Y coordinates of the beam point with a displayed

position of said target and for outputting an on-target discrimination signal,

wherein said coordinate computing means includes a pulse generator outputting clock pulses, a counter counting said clock pulses during a period from an output of a vertical



synchronous signal of said picture signal until an output of a beam point signal of said picture signal and an arithmetic circuit dividing a clock pulse count value of the counter by a predetermined reference pulse number to compute the X coordinate and the Y coordinate of said beam point on the screen.

5,366,230

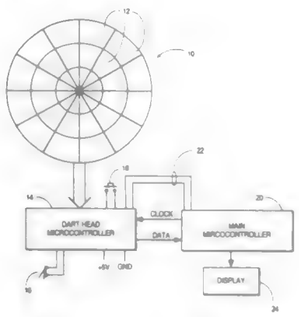
DART GAME WITH DART HIT VERSUS NON-DART HIT IMPACT DISCRIMINATION

Jorge J. Sanquinetti-Trigo, 600 S. Cloverdale Ave. #406, Los Angeles, Calif. 90036

Filed May 18, 1993, Ser. No. 63,219

Int. Cl.[5] F41J *3/00, 5/052*

U.S. Cl. 273—371 **12 Claims**



1. In a dart game having a dart head with a plurality of scoring segments each actuatable by an impact thereon including a dart hit impact and a non-dart hit impact, a controller comprising:

means for determining the occurrence of an event representing the actuation of a scoring segment; and

dart hit discrimination means responsive to said scoring segment actuation event determination for determining whether said actuated scoring segment was actuated by a dart hit impact or a non-dart hit impact.

5,366,231

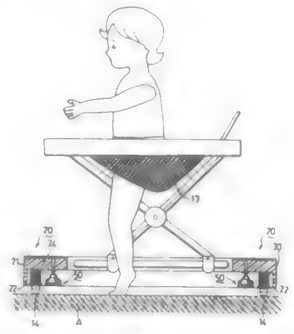
MOVABLE BASE FOR A BABY WALKER

Chin-Pin Hung, No. 58, Lane 200, Sec. 1, An-Ho Rd., Tainan City, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 60,728, May 12, 1993, abandoned. This application Feb. 23, 1994, Ser. No. 200,473

Int. Cl.[5] B62B *9/08*

U.S. Cl. 280—87.051 **1 Claim**



1. A movable base for a baby walker, comprising:

a looped base frame having a horizontal ring portion with an outer peripheral edge and a surrounding wall which extends downwardly from the outer peripheral edge;

a number of casters;

a corresponding number of compression spring members, each of said spring members having a first end connected to the ring portion of said base frame and a second end connected to a respective one of said casters, said spring members being compressible so as to permit movement of said base frame between a first position, wherein the lowermost edge of said surrounding wall is located above said casters, and a second position, wherein said lowermost edge of said surrounding wall is in contact with the floor; and

a corresponding number of suction cup units, each of said suction cup units being disposed adjacent to a respective one of said casters such that said casters are disposed between the surrounding wall of said base frame and the respective one of said suction cup units, each of said suction cup units including a shank portion having a first end connected to the ring portion of said base frame and a second end that is provided with a suction cup, the suction cup having a mount disposed above the lowermost edge of the surrounding wall of said base frame, the suction cup gripping the floor when one of said casters ceases to contact the floor, said suction up units being disposed farther than said spring members and said casters from the surrounding wall of said base frame.

5,366,232

ADJUSTMENT DEVICE FOR SPORTS IMPLEMENTS

Alessandro Pozzobon, Paderno Di Ponzano Veneto, and Mariano Sartor, Montebelluna, both of Italy, assignors to Nordica S.p.A, Trevignano, Italy

PCT No. PCT/EP91/02343, § 371 Date Aug. 4, 1992, § 102(e) Date Aug. 4, 1992, PCT Pub. No. WO92/10251, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 6, 1991, Ser. No. 917,094

Claims priority, application Italy, Dec. 10, 1990, 28992 B/90; Dec. 10, 1990, 40162 A/90; Dec. 10, 1990, 40163 A/90

Int. Cl.[5] A63C *17/04*

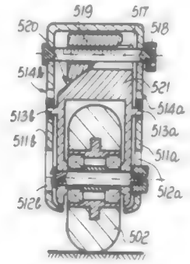
U.S. Cl. 280—11.22 **8 Claims**

3. A skate comprising:

a support frame;

a carriage; means for slidably supporting said carriage on said support frame such that said carriage is positionable in a plurality of stable positions along a substantially vertical direction of the support frame;

at least two wheels;



means for rotatably supporting said at least two wheels on said carriage;

thereby upon positioning of said carriage with respect to said support frame the at least two wheels both assume a relative position with respect to said support frame.

5,366,233

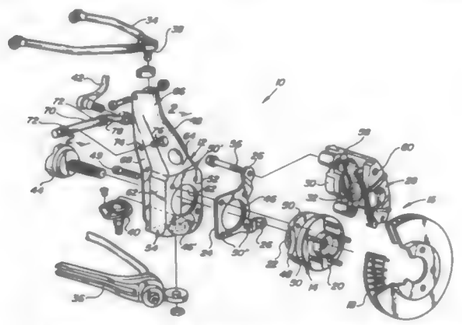
WIRE FORM STEERING ARM LINK

William L. Kozyra, Rochester Hills; Ronald M. Revyn, Roseville, and Victor A. Utykanski, Warren, all of Mich., assignors to The Budd Company, Troy, Mich.

Filed May 18, 1992, Ser. No. 885,123

Int. Cl.[5] B62D *7/18*

U.S. Cl. 280—96.1 **9 Claims**



1. A steering knuckle assembly for a motor vehicle, said steering knuckle assembly having mounting provisions for suspension components including a steering arm, said assembly comprising:

a unitarily formed stamped steering knuckle housing having an upper end, a middle portion, a lower end, a pair of generally opposed side walls and a transverse wall, said transverse wall extending between and connecting said side walls, said steering knuckle housing forming a generally U-shaped channel in horizontal cross-section, said channel being open on one side as defined by a gap between said side walls and opposite of said transverse wall;

a unitary wire-form steering arm link including a portion adapted for mounting said steering arm thereto; and

mounting means on said knuckle housing for providing a mounting for said steering arm link and said steering link being mounted to said knuckle housing so as to extend across said gap between said side walls forming a box-type structure and thereby increasing the structural integrity of said knuckle housing.

5,366,234

SKI WITH A PROFILED TOP

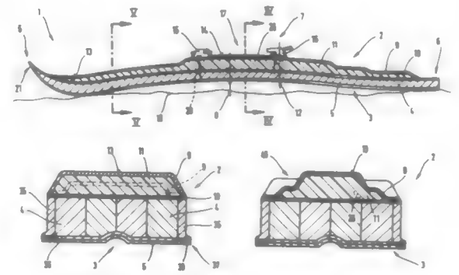
Alois Rohrmoser, Wagrain, Austria, assignor to Atomic Skifabrik Alois Rohrmoser, Wagrain, Austria

Continuation of Ser. No. 101,678, Aug. 2, 1993, abandoned, which is a continuation of Ser. No. 762,555, Sep. 18, 1991, abandoned. This application Mar. 14, 1994, Ser. No. 215,407

Claims priority, application Australia, Sep. 27, 1990, A 1962/90

Int. Cl.[5] A63C *5/14*

U.S. Cl. 280—610 **4 Claims**



1. A longitudinally extending ski with a profiled top surface and a level binding contact surface, comprising:

(a) a top strap including

(i) a top surface ply;

(ii) an intermediate ply located below and connected to said top surface ply, said intermediate ply has an intermediate ply thickness; and

(iii) a covering layer located below said intermediate ply;

(b) said top strap is arranged as at least one step having surfaces which are generally parallel to each other;

(c) a bottom strap;

(d) a pair of side faces;

(e) a core disposed between and bonded to said covering layer, said bottom strap and said side faces, said core has a core thickness, wherein said intermediate ply thickness and said core thickness vary in the region of the level binding contact surface, the combined thickness of said intermediate ply and said core is approximately the same across the level binding contact surface; and

(f) said top surface ply is deformed in a direction toward said covering layer at least along the length of the level binding contact surface and above said core and said side faces, wherein said top surface ply extends down around either side of said intermediate ply and is bonded to said covering layer of said top strap above said side faces to enclose said intermediate ply.

5,366,235

SKI BINDING

Norbert Eugler, Karlsfeld; Werner Schindler, and Hernan H. Dominguez, both of Munich, all of Germany, assignors to silvrette - sherpas Sportartikel GmbH, Karlsfeld, Germany

Filed Dec. 17, 1992, Ser. No. 991,956

Claims priority, application Germany, Dec. 20, 1991, 4142434

Int. Cl.[5] A63C *9/083*

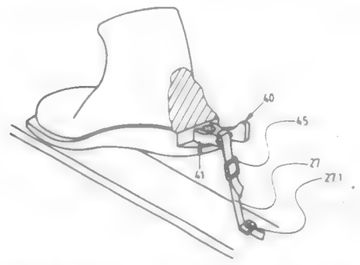
U.S. Cl. 280—622 **1 Claim**

1. A ski binding for securing a boot to a ski comprising:

a front sole holding device; and

a heel holding device which can be lifted from the ski, said heel holding device including a tension member which is movable in every direction, connects the boot heel with the ski and allows the boot heel to be raised to a height which can be predetermined, said tension member also being voluntarily detachable and permitting release of the

connection between boot heel and ski when a tensile force acting on the boot heel exceeds a predetermined value, wherein said heel holding device includes a clamp of resilient material provided at an end of the tension member associated with the boot heel and a cylindrical peg



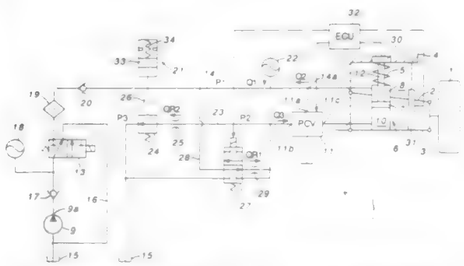
extending vertically relative to a surface of the boot sole, said clamp having two flanges for receiving said peg therebetween in a positive locking manner with the flanges extending transversely relative to a vertical axis of said peg, said clamp adapted to release said peg upon the tensile force exceeding said predetermined value.

5,366,236

HYDRAULIC CONTROL DEVICE FOR ACTIVE SUSPENSION SYSTEM

Nobuharu Kuriki; Seiji Ohsaki, Saitama; Hideaki Shibue, and Yoshiaki Noro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1992, Ser. No. 925,991
Claims priority, application Japan, Aug. 6, 1991, 3-220987
Int. Cl.[5] B60G *17/00*
U.S. Cl. 280—707 **6 Claims**



1. A hydraulic control device for an active suspension system employing a linear hydraulic cylinder including a piston connected in parallel with a spring between a wheel and a vehicle body, said piston having two pressure receiving surfaces of different areas, comprising:

a pressure source; and

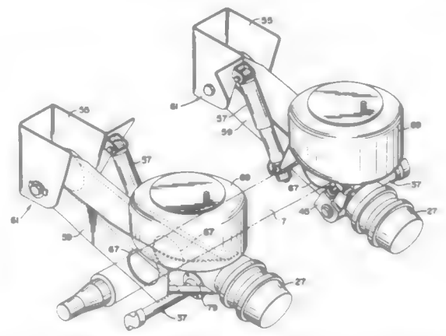
pressure relieving means for reducing pressures in two pressure chambers separated by said piston in said hydraulic cylinder so as to balance upward and downward thrusts acting upon said piston as a level of hydraulic pressure supplied to said hydraulic cylinder is reduced.

5,366,237

AXLE SUSPENSION SYSTEMS

Scott Dilling; Michael J. Keeler; John Ramsey, all of Canton, and Joseph M. Ross, North Canton, all of Ohio, assignors to The Boler Company, Itasca, Ill.

Continuation of Ser. No. 963,450, Oct. 19, 1992, abandoned. This application Apr. 20, 1994, Ser. No. 230,136
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—711 **29 Claims**



1. In an axle bearing suspension system of the leading or trailing beam type for a wheeled vehicle wherein external forces imposed on the vehicle to which said suspension system is attached, result in torsional forces being imposed on said axle such that a portion of said axle is placed in compression and a portion of said axle is placed in tension to alter the cross-sectional configuration of said axle, said suspension system including a pair of elongated beams, one of said beams being located adjacent each side of said vehicle and each spaced from the other, each said beam including a pair of side walls extending in substantially the vertical direction with respect to said vehicle, said axle being of a hollow cross-sectional configuration and extending across substantially the entire width of the vehicle and having at least one wheel located on each end thereof, a pneumatic bellows located on each said beam, a hanger bracket located on one end of each said beam for connecting said beam to a frame member of said vehicle, means for rigidly connecting said axle to each said beam, and a pivot connection for resiliently connecting said beam to said hanger bracket, the improvement comprising:

wherein said means for rigidly connecting said axle to said beam includes means for preventing said alteration of the cross-sectional configuration of said axle, comprising an orifice in each said side wall of each said beam through which said axle extends and which substantially surrounds said axle and is rigidly attached thereto, said axle extending completely through and beyond each of said orifices, whereby said axle cross-sectional configuration is prevented from assuming a cross-sectional configuration substantially different from an unaltered configuration when said torsional forces are imposed upon said axle.

5,366,238

LIGHTWEIGHT SUSPENSION SYSTEM FOR A WHEELED VEHICLE, SPRING ARM AND METHOD OF MANUFACTURE

Donald L. Stephens, Unincoporated Area, Wash., assignor to Paccar Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 761,488, Sep. 18, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,611
Int. Cl.[5] B60G *11/46*
U.S. Cl. 280—712 **22 Claims**

1. A suspension for a wheeled vehicle having a frame, an axle, and a spring means supporting the frame on the axle, the improvement comprising:

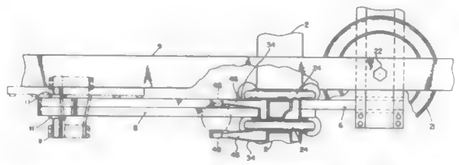
a first flexible elongated spring member having opposite first and second ends and a tapered vertical depth that is greater than its horizontal width;

said first end pivotally mounted relative to said frame;

said axle being mounted on said first elongated spring member;

said spring means connected between said first elongated spring member and said frame;

a second elongated spring member having opposite first and second ends;



said second elongated spring member having a tapered vertical depth greater than its horizontal width; and

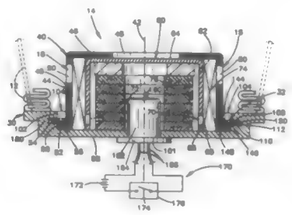
said second elongated spring member pivotally mounted at its first end immediately adjacent said first elongated spring member and coupled to said axle, the elongated spring members touching each other along a vertical plane substantially along the entire length of one of the elongated spring members.

5,366,239

AIR BAG INFLATOR ASSEMBLY

Paul S. Headley, Mesa, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Sep. 27, 1993, Ser. No. 127,749
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **21 Claims**



1. Apparatus comprising:

an inflatable vehicle occupant restraint;

inflating means for inflating said restraint, said inflating means including an inflator housing which comprises a first structure containing a source of inflation fluid for inflating the restraint, said first structure having a plurality of fluid outlet openings, said first structure further having a cylindrical wall surface centered on an axis and a first annular surface portion facing in a first direction along said axis;

a second structure having a cylindrical surface which extends circumferentially around said axis, said second structure further having a second annular surface portion facing in a second direction along said axis opposite said first direction; and

connecting means for connecting said first structure to said second structure, said connecting means including an elongated flexible connector member having first and second opposite longitudinal end surfaces, said connector member having an installed position extending circumferentially around said axis between said cylindrical wall surface of said first structure and said cylindrical surface of said second structure, said connector member having first and second abutment surface portions which respectively abut said first and second annular surface portions of said first and second structures when said connector member is in said installed position, said connector member thus blocking movement of said first and second structures axially relative to each other when said connector member is in said installed position;

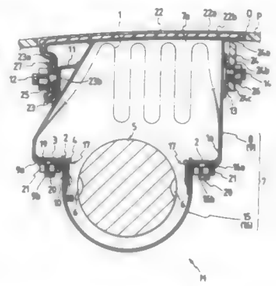
one of said structures further having surface means for defining a passage through which said connector member can move longitudinally into said installed position in a direction transverse to said axis upon longitudinal movement of said connector member through said passage.

5,366,240

AIR BAG DEVICE INCLUDING A TWO PIECE CASING

Hisao Hanabusa; Kazumi Ichimaru; Yuji Kuriyama, and Masao Ando, all of Aichi, Japan, assignors to Toyoda Cosei Co., Ltd., Nishikasugai, Japan

Filed Mar. 30, 1993, Ser. No. 40,364
Claims priority, application Japan, Apr. 10, 1992, 4-091102
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **5 Claims**



1. An air bag device comprising:

an air bag disposed in a deflated condition;

an inflator having a gas jetting outlet for supplying gas into said air bag to inflate said air bag;

a case including an upper case member and a lower case member, said upper case member having a chamber for accommodating said air bag and a flange portion extending inwardly from a lower end of said upper case member, said lower case member having a receiving chamber for receiving said inflator and a flange portion extending outwardly from an upper end of said lower case member;

a retainer disposed on the flange portion of the upper case member through a peripheral edge of opening of said air bag; and

means for fastening together said retainer, said peripheral edge of said air bag, said flange portion of said upper case member and said flange portion of said lower case member.

5,366,241

AUTOMOBILE AIR BAG SYSTEM

Philip W. Kithil, 1274 Vallecita Dr., Santa Fe, N. Mex. 87501

Filed Sep. 30, 1993, Ser. No. 130,089
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—735 **13 Claims**

1. Air bag deployment system, for inflation and deployment of an air bag in front of a passenger in a motor vehicle during

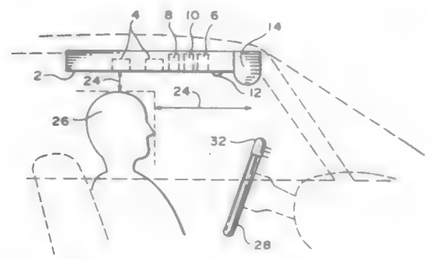
a collision, said motor vehicle having a passenger compartment for passengers in said motor vehicle, and having a steering wheel for use by a passenger who acts as a driver of said motor vehicle, said passenger compartment also having an interior roof, and a dashboard forward of said steering wheel, and having a seat for said passenger, said air bag deployment system comprising:

(a) an air bag;

(b) yieldable housing means, for housing said air bag in a folded configuration when said air bag is not deployed, and for yielding and allowing release of said air bag from said housing means into said passenger compartment for deployment of said air bag in front of said passenger, when said air bag is inflated;

(c) inflation means, connected to said air bag, for inflating said air bag with a gas;

(d) passenger sensor means, for sensing position and velocity of said passenger, with respect to said passenger compartment, and for generating electrical signals indicative of said position and velocity of said passenger;



(e) vehicle deceleration sensor means, for sensing deceleration of said vehicle, and for generating an electrical signal indicative of said acceleration of said vehicle;

(f) microprocessor means, electrically connected to said passenger sensor means, to said vehicle deceleration sensor means, and to said inflation means, for comparing and performing an analysis of said electrical signals from said passenger sensor means and said vehicle deceleration sensor means, and for activating said inflation means to inflate and deploy said air bag, when said analysis indicates that said vehicle is involved in a collision and that deployment of said air bag would likely reduce a risk of serious injury to said passenger which would exist absent deployment of said air bag; and

(g) automatic release means, connected to said air bag and to said inflation means, to automatically release said air bag from said inflation means, and allow deflation of said air bag and freeing of said passenger from said air bag when said collision is over.

5,366,242

APPARATUS FOR CONTROLLING INFLATION OF AN AIR BAG

Ernst M. Faigle, Imlay City; John H. Semchena, Royal Oak; Richard J. Thompson, Imlay City, and Charles E. Steffens, Jr., Washington, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Nov. 1, 1993, Ser. No. 145,808

Int. Cl.[5] B60R *21/26*

U.S. Cl. 280—736 **16 Claims**

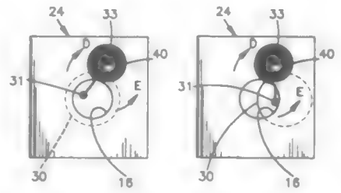
1. An inflatable vehicle occupant restraint system comprising:

an inflatable air bag having fabric panels defining an interior cheer into which inflation fluid flows to inflate said air bag;

an air bag reaction canister having walls defining a storage chamber in which said air bag is stored, said reaction canister having a vent opening in at least one of said walls;

a source of inflation fluid for inflating said air bag;

a valve member mounted on one of said walls of said air bag reaction canister, said valve member being movable relative to said vent opening to control flow of inflation fluid through said vent opening; and



means for moving said valve member relative to said vent opening in response to ambient temperature variations in the vicinity of said source of inflation fluid.

5,366,243

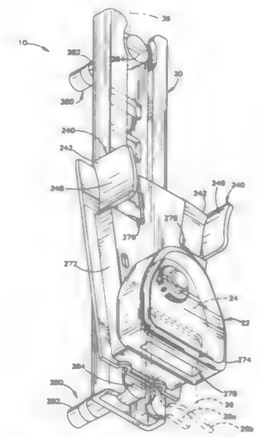
HEIGHT ADJUSTER FOR SEAT BELT SHOULDER STRAP

Gary M. Ray, Royal Oak, Mich.; Kathleen K. Stawara, Gilbert, Ariz., and Carl M. Petersen, III, Waterford, Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Mar. 25, 1993, Ser. No. 37,990

Int. Cl.[5] B60R *22/20*

U.S. Cl. 280—801.2 **19 Claims**



1. An apparatus comprising:

a base mountable on a vehicle body, said base having an axis and a plurality of apertures, said base having a plurality of projections spaced from each other along said axis of said base;

a carriage axially slidable on said base;

a seat belt guide carried on said carriage;

a latch mechanism carried on said carriage, said latch mechanism being pivotable about a first axis relative to said carriage, said latch mechanism having a locking portion receivable in one of said apertures for blocking sliding movement of said carriage on said base, said latch mechanism including a latch member pivotable about said first axis and having a first end portion and a second end portion, said first end portion being supported for pivotal movement about said second end portion upon pivotal movement of said latch member about said first axis, said first end portion of said latch member being said locking portion of said latch mechanism, said latch mechanism including a pilot member having a ramp surface in sliding contact with said base and engageable with said projections upon sliding movement of said carriage, said projections lifting said pilot member relative to said base when said ramp surface on said pilot member moves in sliding contact with said projections on said base, said pilot member being engaged with said latch member to move said first end portion of said latch member out of said one of said apertures;

spring means for biasing said latch member toward said apertures in said base; and

lever means for releasing said latch mechanism to permit sliding movement of said carriage on said base, said lever means including a release lever carried on said carriage, said release lever being pivotable about a second axis transverse to said first axis, said release lever having an unlocking portion engageable with said latch mechanism for pivoting said latch mechanism about said first axis to remove said locking portion of said latch mechanism from said one of said apertures, said release lever having a manually engageable portion for pivoting said release lever about said second axis.

5,366,244

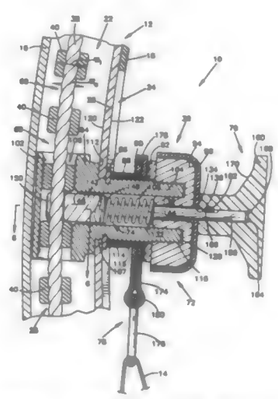
FLEXIBLE HEIGHT ADJUSTER FOR A VEHICLE SAFETY BELT

Wendell C. Lane, Jr., Romeo, Mich., assignor to TRW Vehicle Safety System Inc., Lyndhurst, Ohio

Filed Oct. 25, 1993, Ser. No. 142,729

Int. Cl.[5] B60R *22/20*

U.S. Cl. 280—801.2 **15 Claims**



1. An adjustable vehicle safety belt guide assembly, said assembly comprising:

(a) carriage means for engaging a portion of a safety belt and for guiding the safety belt;

(b) base means for attachment to a portion of a vehicle and for supporting said carriage means;

said base means including:

anchor means for connection with the portion of the vehicle; and

flexible cable means for extending along the portion of the vehicle, said flexible cable means being connected to said anchor means;

(c) means for mounting said carriage means for movement relative to said base means along the length of said cable means; and

(d) means for releasably locking said carriage means in one of a plurality of adjustment positions along said flexible cable means, said means for releasably locking including a plurality of stop means spaced along said cable means, each stop means having a bearing surface means for blocking movement of said carriage means.

5,366,245

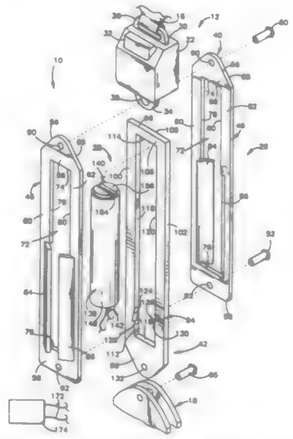
LINEAR BUCKLE PRETENSIONER DEVICE

Wendell C. Lane, Jr., Romeo, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 10, 1993, Ser. No. 165,370

Int. Cl.[5] B60R *21/00*

U.S. Cl. 280—806 **15 Claims**



1. Apparatus for use with safety belt webbing which extends across a vehicle occupant, said apparatus comprising:

a member connectable with the safety belt webbing;

an anchor connectable with the vehicle;

telescoping frame means for interconnecting said member and said anchor including a first frame segment and a second frame segment;

said first frame segment having first and second end portions, said first end portion of said first frame segment being connected to said member;

said second frame segment having first and second end portions, said second end portion of said second frame segment being connectable with said anchor;

said first and second frame segments being coaxial and being axially slidable relative to each other so as to shorten said telescoping frame means; and

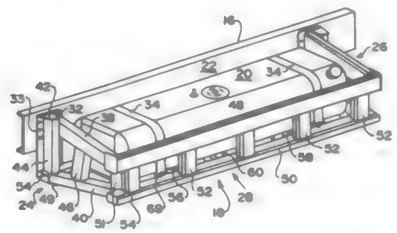
drive means for moving said first and second frame segments relative to each other to shorten said telescoping frame means, said drive means being coaxial with said telescoping frame means, said drive means including two parts and means for forcing said two parts to move axially relative to each other in response to vehicle deceleration, one of said two parts of said drive means being a cylinder, the other of said two parts of said drive means being a piston received within said cylinder, said piston being axially slidable relative to said cylinder to lengthen said drive means and shorten said telescoping frame means, thereby moving said member toward said anchor and tensioning the safety belt webbing.

5,366,246

VEHICLE FUEL TANK MOUNTING AND PROTECTIVE CAGE

David E. Chen; Brad A. Hively, and Patrick G. Gerardot, all of Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed May 11, 1993, Ser. No. 60,457
Int. Cl.[5] B60K *15/07*
U.S. Cl. 280—834 **23 Claims**



1. For use with a vehicle of the type having a fuel tank and a longitudinally extending frame rail a web section of which extends vertically to provide a outwardly facing vertical surface, a fuel tank mounting and protection cage adapted to be secured to the outwardly facing vertical surface of the frame rail comprising:

a front section having inner and outer ends,

a rear section having inner and outer ends,

a side section having front and rear ends, and

a shelf section,

said front and rear sections, side section and shelf section being weldments constructed of low carbon, high strength steel tubing having rectangular cross-sections,

said front and rear sections, side section and shelf section being welded to each other to produce stiff joints between each of said sections and less rotation and localized deformation of the protection cage in the event of an accident; and

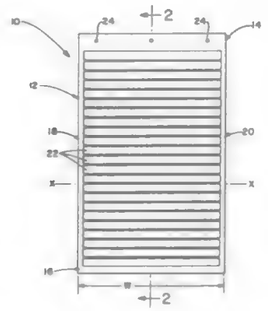
hold down devices carried by the protection cage for securing said fuel tank solely to the protection cage and independently of said frame rail.

5,366,247

VEHICLE SPLASHGUARD

Kenneth J. Fischer, 208 Lenox Ave., Apt. 3, Pittsburgh, Pa. 15221

Filed May 10, 1993, Ser. No. 58,216
Int. Cl.[5] B62D *25/16*
U.S. Cl. 280—851 **24 Claims**



1. A splashguard for mounting on a road vehicle at a position rearwardly of at least one wheel to disperse liquid and other substances which may be sprayed rearwardly by the action of a rotating tire comprising:

a molded polymeric body having a substantially rectangular shape as may be defined by a top end adapted for mounting connection to the vehicle, a bottom end, and substantially parallel side members interconnecting the top and bottom ends;

a plurality of vane members interposed between the side members and integrally molded therewith in spaced-apart positions from the top end to the bottom end, each vane member being disposed at an acute angle with respect to a vertical plane of the body, said vane members each having a surface width extent defined by a leading marginal edge at a forward position in the body and a lower trailing marginal edge at a rearward position in the body, each vane member leading marginal edge being slightly higher than the trailing marginal edge of the above adjacent vane member; and

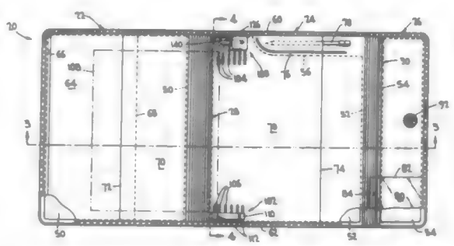
a body fastening means mounting the splashguard on the vehicle at the top of the body.

5,366,248

STUDENT CASE AND FILE FOR USE THEREWITH

Robert G. Donvan, and Michael D. Donovan, both of 15 East La., Pittston, Pa. 18640

Filed Aug. 20, 1993, Ser. No. 109,360
Int. Cl.[5] B42D *1/06*
U.S. Cl. 281—46 **18 Claims**



1. In combination, a case, a multi-leafed device supported by said case, said case including front and back portions the major parts of which are of relatively stiff construction, said front and back portions having outer and inner sides, hinge means interconnecting said front and back portions for swinging movement relative to one another, said front and back portions each including upper and lower longitudinal edges, a pair of spaced brackets secured to the relatively stiff part of said back portion, a first one of said brackets being disposed adjacent the upper longitudinal edge of said back portion, a second one of said brackets being disposed adjacent the lower longitudinal edge of said back portion, each of said brackets having a plurality of spaced prongs extending therefrom toward the other bracket, the prongs on said first one of said brackets being longer than the prongs on said second one of said brackets, the distance between the opposed tips of the prongs on the brackets being less than the length of said multi-leafed device, said distance plus the length of the prongs on said first bracket being at least as great as the length of said multi-leafed device, said distance plus the length of the prongs on said second bracket being less than the length of said multi-leafed device, at least one prong of each of said brackets being inserted between leaves of said multi-leafed device with said multi-leafed device being freely movable along said prongs, and stop means selectively movable to prevent inadvertent release of said multi-leafed device from said prongs so as to retain the multi-leafed device within said case, said stop means including a first portion fixedly mounted on said case adjacent said first bracket, and a second portion movably connected to said first portion for movement into and out of engagement with the prongs on said first

bracket, said second portion when in engagement with the prongs of said first bracket including a surface for engaging a lateral edge of the multi-leafed device to limit movement of said multi-leafed device along the prongs of said first bracket so as to retain at least one prong of each of said brackets inserted between leaves of said multi-leafed device, and a plurality of support pockets disposed on the inner sides of said front and back portions, said support pockets being formed by sheets of material having opposite longitudinal edges, the opposite longitudinal edge of said sheets of material extending between and being secured to the upper and lower longitudinal edges respectively of said front and back portions, and a support pocket disposed on said front portion and a support pocket disposed on said back portion being formed by a single sheet of material having an intermediate part thereof sealed to said hinge means.

5,366,249

STRIP BAGGAGE TAG

Kurt Diemert, Gleisweiler, Germany, assignor to Fix GmbH, Germany

Filed Oct. 15, 1992, Ser. No. 961,441
Claims priority, application Germany, Oct. 16, 1991, 4134231
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—80 **7 Claims**

1. A strip baggage tag having a tag part which is adapted for being written on, on a front side thereof, and applied to an article of luggage, and a control section;

the control section comprising a tear-off part which can be detached from the tag part along a transversely extending separation line;

adhesive areas arranged on a back side of the tag part and the tear-off part on both sides of the separation line;

the control section further comprising a single-piece lower web section which covers the adhesive areas and has means on its top side for copying of impressions made on said tag part;

said lower web section being substantially continuously coated with separating agent except for a partial region below the adhesive area of the tear-off part for adhering the lower web section to the tear-off part.

5,366,250

WIRE AND OUTLET BOX MARKERS

Thomas S. Sunabe, 1100 South Lincoln Ave., Monterey Park, Calif. 91754

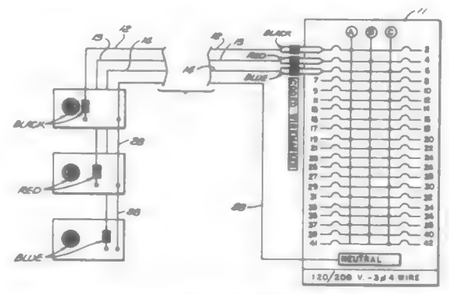
Filed Oct. 13, 1992, Ser. No. 959,638
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **4 Claims**

1. An article of manufacture for marking a plurality of separate electrical wires and electrical outlet locations in electrical construction wiring between a circuit breaker panel and a plurality of outlet boxes pursuant to a wiring diagram, comprising

marker carrier means for carrying a plurality of separably adhered markers,

a set of wire markers on said carrier means, said set of wire markers comprising a plurality of pairs of separable wire markers distinctively coded in a first manner to be different from other pairs of said wire markers, and divided into a plurality of subsets with said wire markers of each subset further distinctively coded in a second manner to be different from pairs of said wire markers of other of said subsets, and

a set of outlet box markers on said carrier means, said set of outlet box markers comprising a corresponding plurality of separable box markers distinctively coded in said first manner, and further distinctively coded in said second manner to be different from other of said box markers, wherein said first manner of distinctive coding is numerical and said second manner of distinctive coding is color,



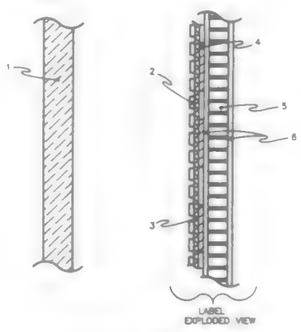
with said outlet box markers positioned on said marker carrier means at a location spaced from the location of said wire markers.

5,366,251

CONTAINER LABEL AND METHOD FOR APPLYING SAME

Thomas L. Brandt, Windsor, and Daniel N. Willkens, Elmira, both of N.Y., assignors to Brandt Technologies, Windsor, N.Y.

Continuation of Ser. No. 431,967, Nov. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 267,877, Nov. 7, 1988, abandoned. This application May 10, 1993, Ser. No. 58,810
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 **15 Claims**



1. A label for a container, comprising:

a label layer carrying information thereon and having first and second sides, with said first side facing to the container; and

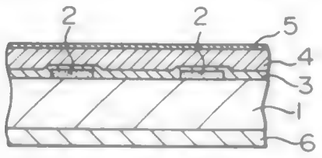
a composite heat-activated adhesive of first and second layers, said first layer comprising a bonding material adhered to said first side of said label layer and to said second layer for bonding said second layer to said label layer, and said second layer comprising a heat activated adhesive material disposed on a side of said bonding material facing to the container for adhering said bonding material, and thereby said label layer, to said container.

5,366,252

INFRARED-ABSORBING MARK PRINTED MATTER

Masato Nishida, Ibaraki; Toshio Oshima, Toride; Tsunemi Ohiwa, Osaka, and Takato Karashima, Nishinomiya, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Jan. 14, 1993, Ser. No. 4,271
Claims priority, application Japan, Jan. 16, 1992, 4-026147
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—94 **5 Claims**



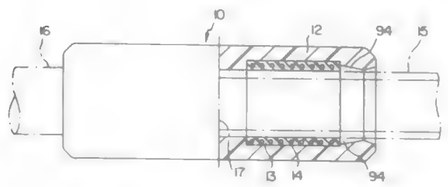
1. An infrared-absorbing mark printed matter, comprising a substrate, an infrared-absorbing mark formed to a predetermined configuration on at least one surface of said substrate, said infrared-absorbing mark comprising an ink having high light absorptivity in the infrared region, a colored concealing layer comprising an ink having high light absorptivity in the visible region and pervious to light in the infrared region formed on said infrared-absorbing mark, and a white concealing layer comprising an ink containing a white pigment and extender pigment particles, formed on said colored concealing layer, at least a part of said particles of said extender pigment having an average size of from 3 to 30 μm.

5,366,253

ELECTROFUSION JOINT AND HOT WATER SUPPLY HEADER USING THE SAME

Akio Nakashiba; Hiroyuki Nishimura, both of Osaka; Fumio Nagatani; Kazunori Mito, both of Kuga; Toshio Shibabuchi, and Mikio Nakaoka, both of Osaka, all of Japan, assignors to Osaka Gas Co., Ltd., Osaka; Mitsui Petrochemical Industries, Ltd., Tokyo and Shinwa Sangyo Co., Ltd., Osaka, all of Japan

Division of Ser. No. 462,717, Jan. 9, 1990, Pat. No. 5,150,922.
This application Jul. 16, 1992, Ser. No. 913,632
Claims priority, application Japan, Jan. 11, 1989, 1-4496; Mar. 24, 1989, 1-72331; Mar. 24, 1989, 1-72332; Mar. 24, 1989, 1-72333; Mar. 24, 1989, 1-72337; Mar. 24, 1989, 1-72340; Mar. 28, 1989, 1-75955; Mar. 28, 1989, 1-75960
Int. Cl.[5] F16L *47/02*
U.S. Cl. 285—21 **10 Claims**



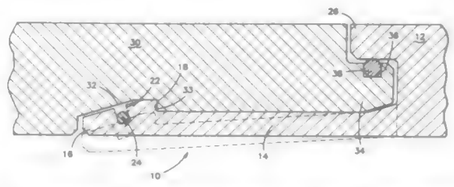
1. An electrofusion joint comprising a main body portion comprised of a crosslinked thermoplastic resin and integrally molded therewith at least one joining portion which is adapted to be heat-welded to a pipe, wherein
said main body portion has an interior surface and an exterior surface and a tubular configuration at the end opposite to said end provided with said joining portion;
said joining portion comprising a non-crosslinkable thermoplastic resin, and has an electrical heating wire associated in contact therewith so that the joining portion may be heat-welded to a pipe brought into contact with said joining portion;
said joining portion is embedded in at least one major surface of said main body portion without extending to the extreme end of the electrofusion joint;
a recess in the surface of the main body portion in which the joining portion is embedded, said recess being adjacent said joining portion on the side of the extreme end of the electrofusion joint without extending to the extreme end of the electrofusion joint;
said recess being capable of receiving the molten non-crosslinkable thermoplastic resin upon the electrofusion of the joint; and
said electrofusion joint further comprising a connecting member fitted into and fixedly secured to said tubular end of the main body portion on its interior, said connecting member being provided with a mechanically connecting means,
wherein said connecting member is firmly secured to said tubular end of the main body portion, by an intervening layer comprising a modified thermoplastic resin.

5,366,254

SMART MATERIAL JOINT BAND

Michael A. Tucchio, East Lyme; Robert A. Stoodt, Uncasville, both of Conn., and Robert A. Livsey, Warwick, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1993, Ser. No. 176,373
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—23 **10 Claims**



1. An improved connector for joining together a first tubular member and a second tubular member, said connector comprising:
a plurality of fingers extending longitudinally from an end of a first one of said tubular members, each of said fingers having a head portion with locking means thereon and a notch in said head portion, said notches in said fingers defining a first circumference;
a ring-shaped wire member positioned within said notches for retaining said fingers in a desired position, said ring-shaped wire member being formed from a shape memory alloy; and
said second one of said tubular members having at least one locking groove formed on an interior surface thereof, said locking means and said head portions of said fingers being seated within and engaging said at least one locking groove for locking said first and second tubular members together when said first tubular member is joined to said second tubular member.

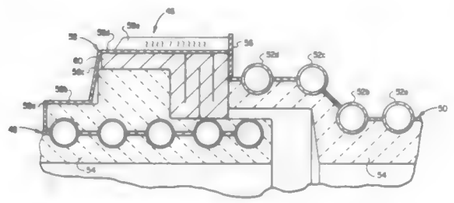
5,366,255

EXPANSION SEAL ASSEMBLY

Michael Garkawe, Madison, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation of Ser. No. 844,023, Mar. 2, 1992, abandoned. This application Jan. 27, 1994, Ser. No. 187,375
Int. Cl.[5] F16L *53/00, 27/00*
U.S. Cl. 285—41 **20 Claims**

1. An expansion seal assembly for joining two conduits, comprising:
means defining a passage extending between said conduits to allow the passage of material from one conduit to the other conduit and to permit relative movement between said conduits, said passage defining means including a plurality of hollow tubes for inhibiting flow of heat from said material;



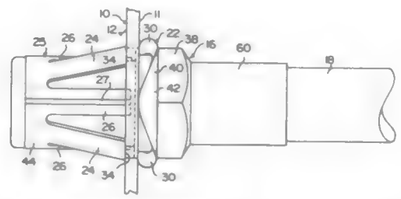
means attached to said passage defining means for sealingly connecting said conduits, said connecting means able to maintain said seal during said relative movement; and
means disposed between said passage defining means and said connecting means for inhibiting flow of heat from said material.

5,366,256

SPRING RETAINERS FOR HOSE COUPLINGS

Michael J. Pruzin, 4308 Beaver Ave., Fort Wayne, Ind. 46807

Filed Feb. 18, 1994, Ser. No. 198,065
Int. Cl.[5] F16L *3/08*
U.S. Cl. 285—62 **11 Claims**



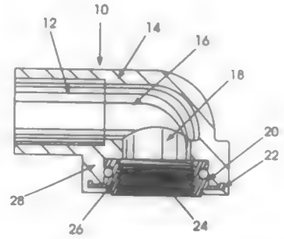
1. In an assembly including a hose and an end coupling connected to the hose, wherein the end coupling includes a barrel with first and second ends, the first end being coupled to the hose and the second end being passed through an opening of a selected diameter in a panel when the barrel is retained in the opening, the improvement comprising:
a groove proximate the first end of the barrel and a shoulder facing the groove proximate the second end of the barrel;
a spring washer disposed in the groove, means for retaining said spring washer in said groove, the spring washer having a diameter greater than the diameter of the opening through the panel to engage a first surface of the panel when the barrel is inserted through the opening;
an anchor spring disposed around the barrel in proximity with the shoulder at the second end of the barrel intermediate said shoulder and said spring washer, the anchor spring having a collar abutting the shoulder and radially expanded resilient portions, the radially expanded resilient portions being radially contractable from a diameter greater than the opening through the panel to a diameter less than the opening through the panel, wherein the radially expanded resilient portions contract upon inserting the barrel through the opening and re-expand engaging a second surface of the panel to cooperate with the spring washer so as to form a spring assembly for retaining the end coupling in the opening of the panel.

5,366,257

PIPE CONNECTOR

Terry R. McPherson; Paul A. Spirkowyc, and Daniel W. Womeldorff, all of Charlotte, N.C., assignors to Eslon Thermoplastics, a Division of Sekisui America Corporation, Charlotte, N.C.

Filed Dec. 30, 1992, Ser. No. 998,392
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—174 **12 Claims**



1. An internally threaded, fluid-tight tubular connector device, comprising:
a tubular body of a plastic material;
an annular insert situated within said body of said plastic material, said insert being made of a second material dissimilar to that of said tubular body;
said insert having an internal thread;
said insert having a thin annular flange means extending a substantial distance radially outward from the outer circumferential surface of said insert for locking said insert into the material of said tubular body;
a measurable difference between the outer circumference of said annular flange means and said outer circumferential surface of said insert being substantially greater than the thickness of said annular flange means;
said annular flange means providing at least one surface normal to said outer circumferential surface of said annular insert;
said insert having an annular recess in said outer circumferential surface and a sealing O-ring positioned in said recess.

5,366,258

FLEXIBLE COUPLINGS FOR FLEXIBLE TUBES DESIGNED TO BE ROLLED UP FLAT ON THEMSELVES

Jean Lamouche, 1161, rue Charles-Madame, F-60880 Jaux, France

PCT No. PCT/FR91/00018, § 371 Date Jul. 9, 1992, § 102(e) Date Jul. 9, 1992, PCT Pub. No. WO91/10858, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 11, 1991, Ser. No. 890,598
Claims priority, application France, Jan. 12, 1990, 90 00356
Int. Cl.[5] F16L *47/00*
U.S. Cl. 285—260 **9 Claims**



1. A flexible assembly for coupling the ends of flexible tubes together, comprising:
a sleeve which is sufficiently flexible to permit said tubes to be rolled up upon themselves defining a longitudinal axis and including an internal wall defining an annular chamber and a pair of shoulders located on opposite sides of the annular chamber relative to each other, each shoulder

being formed by a surface inclined relative to the longitudinal axis;

a pair of stop portions, which are sufficiently flexible to permit said tube to be rolled up upon themselves, each being coupled to the end of a respective flexible tube and defining an outer diameter substantially corresponding to the inner diameter of the internal wall and received within the annular chamber, and an edge surface inclined relative to the longitudinal axis of the sleeve for abutting against a respective shoulder of the sleeve, wherein the length of the annular chamber is greater than the length of the two stop portions in the direction of the longitudinal axis of the sleeve defining an annular space within the annular chamber between the stop portions.

5,366,259

QUICK CONNECT/DISCONNECT FLUID COUPLING

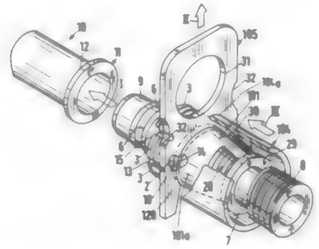
Ralf Hohmann, and Ralf Spors, both of Bruchköbel, Germany, assignors to Rasmussen GmbH, Maintal, Germany

Filed Jan. 8, 1993, Ser. No. 2,326

Claims priority, application Germany, Jan. 10, 1992, 4200424; Nov. 28, 1992, 4240136

Int. Cl.[5] F16L *37/08*

U.S. Cl. 285—305 **18 Claims**



1. A device for separably connecting an end of a first conduit with a second conduit having an end with a substantially radially extending retaining portion, comprising an elongated tubular coupling member having a first terminal connectable with the end of the first conduit, a second terminal engageable with the end of the second conduit, and arms movable substantially radially of said coupling member into and from engagement with the retaining portion of the second conduit upon engagement of said second terminal with the end of the second conduit; a sleeve surrounding and movable longitudinally of said coupling member between first and second positions in which said arms are respectively held against disengagement and are free to become disengaged from the retaining portion at the end of the second conduit; and means independent of said sleeve for releasably locking said sleeve in said second position, including a resilient clamp releasably attached to said coupling member and having legs movable relative to each other between inoperative positions of disengagement from said coupling member in which said sleeve is free to move from said second to said first position and operative positions of engagement with said coupling member to thus lock said sleeve in said second position.

5,366,260

PLASTIC PIPE COUPLER

Donald W. Wartluft, Broken Arrow, Okla., assignor to Continental Industries, Inc., Tulsa, Okla.

Filed Apr. 14, 1993, Ser. No. 48,419

Int. Cl.[5] F16L *21/04*

U.S. Cl. 285—323 **9 Claims**

1. A coupler for securing a plastic pipe having uniform internal and external diameter and a planar end comprising:

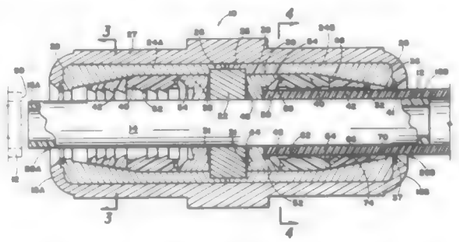
a hollow rigid coupler shell;

a rigid tube stiffener secured internally of said shell by a hub member, said stiffener having ends at least one of which extends outwardly to adjacent an opening provided in said coupler shell, the stiffener having an external diameter less than said internal diameter of a pipe to be received by the coupling, the hub member being in the form of a short length tubular member having an internal diameter dimensioned to sideably receive said stiffener, the hub internal diameter being less than said external diameter of the pipe to be received by the coupling;

said coupler shell opening communicating via a separate narrowing internal portion with a separate straight internal portion provided within said coupler shell, said hub member being positioned in the straight portion;

a flexible hollow rear boot seal provided within said straight portion adjacent said hub means, the rear boot seal receiving said stiffener;

a flexible hollow front boot seal being movably provided in



said coupler shell straight portion contiguous with said rear boot seal, an interior surface of said front boot seal being provided with a plurality of serrations;

a rigid hollow gripper having a frusto-conical external surface being in slidable engagement with said coupler shell narrowing internal portion, said gripper being movably retained within said coupler shell internal straight and narrowing portions, a plurality of gripper serrations being provided on an interior surface of said gripper, a rear face of said gripper movably engaging an outer end of said front boot seal; and

gripper retaining means being provided on said coupler shell to prevent said gripper from exiting said coupler shell internal narrowing portion through said coupler opening, whereby a pipe can be positioned within said coupler shell to encompass a portion of said stiffener, said end of said pipe being adjacent said rear boot seal.

5,366,261

PIPE JOINT WITH A GASKET RETAINER

Tadahiro Ohmi, Miyagi; Tsutomu Shinohara, Osaka; Michio Yamaji, Osaka; Nobukazu Ikeda, Osaka, and Kenji Yamamoto, Osaka, all of Japan, assignors to Fujikin Incorporated, Osaka, Japan

Filed Apr. 21, 1993, Ser. No. 49,366

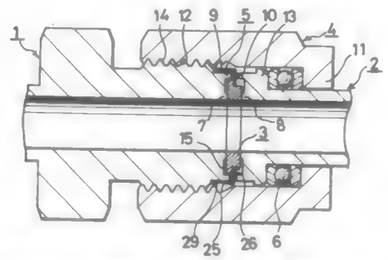
Claims priority, application Japan, Apr. 27, 1992, 4-108080

Int. Cl.[5] F16L *23/032, 19/03*

U.S. Cl. 285—328 **4 Claims**

1. A pipe joint comprising a pair of tubular joint members, each joint member having a butting face and a gasket holding annular projection on each said butting face extending from an inner surface of each of said tubular joint members, an annular gasket interposed between said butting faces of said joint members, said annular gasket having an inner peripheral annular surface on opposite faces of said gasket for contact, respectively, with said gasket holding annular projection on each said butting face as said butting faces contact said opposite faces of said gasket, a retainer for holding said gasket at a butting face of one of said pair of joint members and threaded means for connecting said joint members together with said retainer and said gasket held thereby therebetween, said pipe joint being

characterized in that when said threaded means is tightened, indentations are formed in opposite surfaces of said gasket pressed by said gasket holding annular projections, forming a



substantially smooth, recess-free surface between said tubular joint members along the inner surface of said tubular joint members and said retainer is held and said gasket is pressed by said abutting faces of said joint members.

5,366,262

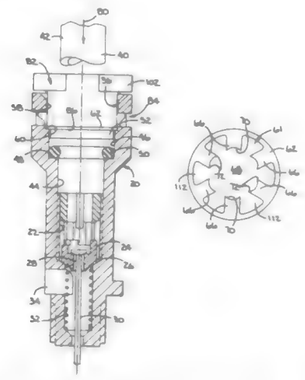
QUICK CONNECT FLUID FITTING

Jean-Francois Couvreur, Warrenville, Ill., assignor to Furnas Electric Co., Batavia, Ill.

Filed Jul. 23, 1992, Ser. No. 918,247

Int. Cl.[5] F16L *19/08*

U.S. Cl. 285—340 **9 Claims**



6. A quick connect fitting for connecting a tube of "X" outside diameter in a fluid circuit comprising:

a fitting body having a circular, tube receiving opening;

said opening, within said body having a first section with a diameter somewhat larger than "X", a second section having a diameter larger than said first section and joined thereto by a first step, and a third section having a diameter greater than that of said second section and joined thereto by a second step;

an O-ring seal having an inner diameter somewhat less than "X" and an outer diameter slightly larger than the diameter of said second section, said O-ring seal being located in said second section and against said first step;

a resilient retaining ring in said third section and abutted against said second step, said retaining ring having a central opening provided with a plurality of radially inward directed fingers which in turn define a tube receiving area having a diameter less than "X", said fingers including biting surfaces for biting into the exterior of a tube in said receiving area;

means in said third section for allowing said fingers to deflect from a first position to one side toward said O-ring seal and preventing said fingers from deflecting from said first position toward the opposite side away from said O-ring seal; and

means for holding said retaining ring in said third section against said second step.

5,366,263

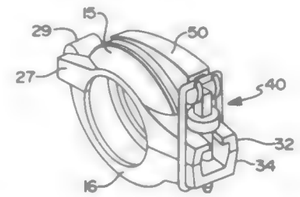
RELEASABLE FASTENER FOR PIPE COUPLINGS

Thomas R. Hendrickson, Pelkie, Mich., assignor to Quikcoup, Inc., Houghton, Mich.

Filed Oct. 22, 1993, Ser. No. 142,169

Int. Cl.[5] F16L *23/08*

U.S. Cl. 285—364 **6 Claims**



1. A releasable fastener for use in place of a fastener bolt which is normally used in a pipe coupling having curved segments which are arranged end to end around a central axis to encircle the adjacent end portions of a pair of co-axially aligned pipes for clamping said pipe end portions within the coupling, and with the adjacent ends of the segments being fastened together, and including a means for fastening at least one pair of adjacent segment ends together comprising radially outwardly extending bolt lugs formed upon each of the adjacent segment ends, with the lugs having aligned bolt receiving openings through which a conventional bolt may be inserted for securing the two adjacent lugs together, said fastener comprising:

an elongated pin arranged within the aligned bolt holes in said lugs in place of a normally used fastener bolt, with the pin having a head formed on one of its ends for engaging one of the lugs, and a pivot extension formed on said head, and the opposite end of the pin extended through the opposite lug and extending outwardly a short distance relative to the exterior surface defining the bolt hole of the opposite lug to provide a pin extension portion;

an elongated lever having an end pivotally connected to the head pivot extension;

a stiff wire-like loop attached to the lever near the pivotal connection between the lever and the head pivot extension with said loop normally encircling and engaging both aligned lugs and being of a size to normally fit between and tightly engage against the pin extension portion and the adjacent segment;

the lever being normally positioned adjacent an exterior surface of one of the segments, but being normally swingable about its pivotal connection with the head extension, away from the segment for releasing said loop engagement and to permit the loop to swing around, clear of the free end of the pin extension, for thereby permitting manual movement of the pin endwise out of the aligned bolt holes in the adjacent lugs to thereby unfasten said adjacent segment ends for unclamping pipe end portions with the coupling and to permit inserting pipe ends within the coupling.

5,366,264

RAM BAR ATTACHMENT FOR VEHICLE BUMPER

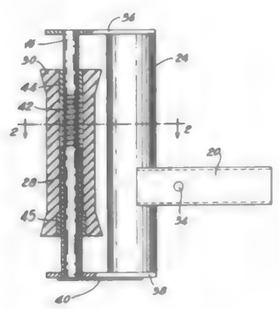
André Guay, Dubreuilville, Canada, assignor to Guay's Enterprises Ltd., Dubreuilville, Canada

Filed Oct. 4, 1993, Ser. No. 131,311

Claims priority, application United Kingdom, May 11, 1993, 930961407

Int. Cl.[5] B60R *19/16, 19/54*

U.S. Cl. 293—125 13 Claims



1. A motor vehicle ram guard assembly of the type wherein the ram guard assembly includes protective ram guards attachable to the front end of a pushing vehicle, each protective ram guard comprising:

(a) bracket means including a framework attachable to the front end of the pushing vehicle and further including a U-shaped bracket having an upright portion and two essentially parallel arms adapted to receive a shaft therebetween in an essentially upright position;

(b) a shaft for mounting rotatively a pushing element between said parallel arms of said U-shaped bracket;

(c) a generally tubular pushing element having an axial bore adapted to receive said shaft, said pushing element being of a length shorter than said shaft; and

(d) biasing means for resiliently maintaining said pushing element in a generally midpoint position between said parallel arms, said biasing means comprising an elastically deformable member mounted between said pushing element and the bracket means; whereby said pushing element is rotatively displaceable about said shaft and is resiliently displaceable in a direction parallel to said shaft between said parallel arms of said U-shaped bracket.

5,366,265

SPRING HINGE FOR AUTOMOBILE SUNVISORS

José Aymerich, and Jesús Prat, both of Rubi, Spain, assignors to FICO I.I.M.,S.A., Barcelona, Spain

PCT No. PCT/ES93/00001, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO93/13957, PCT Pub. Date Jul. 22, 1993

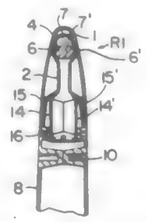
PCT Filed Jan. 11, 1993, Ser. No. 94,127

Claims priority, application Spain, Jan. 15, 1992, 9200077

Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.12 6 Claims

1. A spring hinge for automobile sunvisors, comprising a one-piece member composed of a resilient material and having a longitudinal center line and a transverse center line, an upper region formed as a longitudinal housing for grippingly receiving a pivot pin of a bracket member of a sunvisor, an intermediate region formed as a longitudinal narrowing, and a lower region formed as a substantially rectangular longitudinal portion with two side walls, said longitudinal portion having two bent extensions extending inwardly from lower ends of said side walls and two terminal flanges extending from free ends of said extensions toward said housing, each of said side walls and said bent extensions being provided with two transverse slits starting from said narrowing and arranged at opposite sides from said transverse center line so as to form a central flexing grip tab and two lateral attachment tabs in each said side wall and said bent extension so that when the spring hinge is fully



housed in a hollow body member of the sunvisor said attachment tabs are located permanently at a relatively short distance from inner walls of the hollow body member.

5,366,266

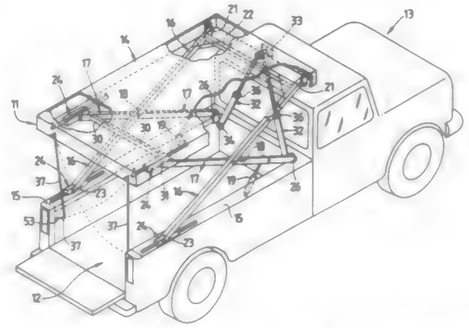
LIFTABLE VEHICLE COVER WITH A LOW PROFILE FRAME

Charles H. Harbison, 3217 Georgetown Pl., Birmingham, Ala. 35216

Filed Oct. 18, 1993, Ser. No. 137,349

Int. Cl.[5] B60P *7/04*

U.S. Cl. 296—100 15 Claims



1. A cover for use on the bed of a pickup truck wherein said bed comprises a pair of longitudinally disposed parallel side walls, said cover comprising a rectangular planar member of sufficient dimension to simultaneously extend to both sidewalls of said bed, a first pair of parallel support members hingedly attached at a forward end thereof to said planar member, a second pair of parallel support members hingedly attached at a forward end thereof to a top portion of said sidewalls, each one of said first pair of parallel support members being pivotally attached to one of said second pair of parallel support members, and a hinge means for connecting each of said first pair of support members to said top portion of said side wall, said hinge means further comprising:

a longitudinal member extending parallel to said sidewalls;

a block having a longitudinal opening formed therein such that said longitudinal member may be received therein in sliding longitudinal relation, said block surrounding said longitudinal member with said opening having a transverse dimension smaller than the transverse dimension of said longitudinal member;

connective means carried by said block for hingedly connecting one of said parallel support members to said block; and

means extending into said opening for affixing said longitudinal member to a support surface.

5,366,267

WEATHER STRIP FOR MOTOR VEHICLE

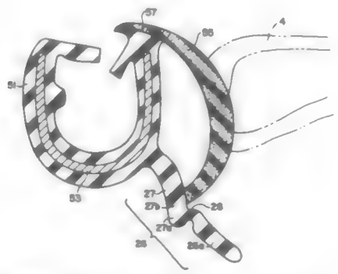
Masahiro Nozaki, Ama, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 73,618, Jun. 8, 1993, abandoned, which is a continuation of Ser. No. 780,846, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 595,820, Oct. 10, 1990, abandoned. This application Dec. 30, 1993, Ser. No. 175,680

Claims priority, application Japan, Oct. 11, 1989, 1-118834[U]

Int. Cl.[5] B60J *10/12*

U.S. Cl. 296—216 3 Claims



3. A weather strip for attachment to a vehicle sun roof having a front, rear, right and left sides comprising:

a substantially U-shaped base portion for attachment about the sun roof;

a sealing portion connected to said U-shaped base portion that deforms when in pressure contact with a body panel of the vehicle, said sealing portion extending from a top end of said U-shaped base portion and downwardly along one side thereof;

a sloping section extending substantially diagonally downwards from a bottom area of said U-shaped base portion, said sloping section providing a connection and reinforcement between the U-shaped base portion and said sealing portion;

a vertical section that extends substantially vertically downwardly from a junction formed between said sloping section and said sealing portion and terminates at an outer end; and

a flap member extending outwardly from the weather strip, said flap member being connected to the outer end of said vertical section by a thin-walled joint.

5,366,268

HIGH STRENGTH SEAT BACK

Harold J. Miller, Mt. Clemens, and Edward W. Clancy, III, Livonia, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1993, Ser. No. 131,247

Int. Cl.[5] B60N *2/42*

U.S. Cl. 297—216.1 10 Claims

1. A recliner seat for a vehicle comprising:

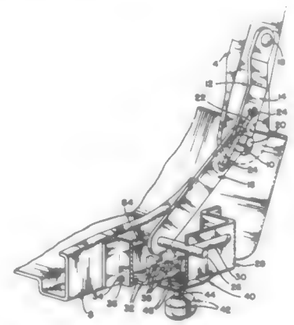
a first frame member providing a bun frame;

a second frame member providing a seat back frame pivotally mounted with respect to the first frame member;

means to adjust the inclination of the second frame member with respect to the first frame member;

a strut pivotally mounted to one of the frame members along a fixed pivotal axis, the strut having means of lost motion pivotal attachment with the other frame member;

latch activation means to cause latch means to prevent translational movement of the pivotal attachment of the strut with the other frame member,



when the vehicle accelerates forwardly over a predetermined level of acceleration, causing the strut to tend to limit further rearward motion of the seat back.

5,366,269

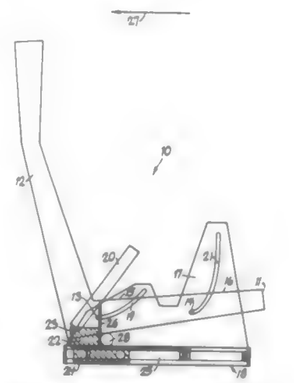
APPARATUS FOR RESTRAINING A PASSENGER IN A VEHICLE

Randall R. Beauvais, Fenton, Mo., assignor to Life Force Associates, L.P., Imperial, Mo.

Filed Aug. 20, 1992, Ser. No. 932,816

Int. Cl.[5] B60N *2/42*

U.S. Cl. 297—216.19 27 Claims



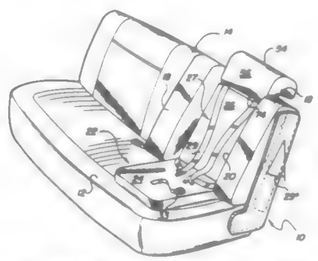
1. An apparatus for restraining a passenger in a vehicle comprising:

an anchor member movably coupled to the vehicle such that the anchor member may move along a predetermined path relative to the vehicle, said predetermined path including an anchor member rest position; and

a restraining member selectively coupleable about the passenger to maintain the passenger in a vehicle seat, said restraining member being coupled to said anchor member such that, upon an acceleration of the vehicle of at least a predetermined magnitude, the anchor member moves away from the anchor member rest position along at least a portion of the predetermined path, wherein the path is oriented so that the restraining member is gradually tightened about the passenger as the anchor member moves further from the anchor member rest position, and wherein an inertial force of the passenger is transmitted to the anchor member via the restraining member so that the

inertial force of the passenger contributes to the motion of the anchor member.

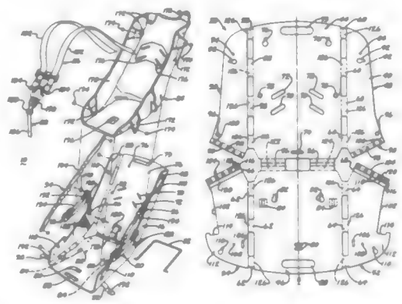
5,366,270
CHILD RESISTANT SEAT INCLUDING FOAM AND FLEX LAYER COMBINATION
Edward R. Heussner, Warren, and Jeffrey L. Goins, Sr., New Haven, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.
Filed Oct. 13, 1992, Ser. No. 959,630
Int. Cl.[5] A47C *15/00*
U.S. Cl. 297—238 **9 Claims**



1. A child restraint seat for disposition in the backrest cushion on an adult passenger seat for restraining a child in a vehicle comprising:
an adult passenger seat having a generally horizontal seat portion and a generally vertical backrest portion;
a cavity recessed in said adult backrest portion for storing said child restraint seat;
a main support frame and a secondary support frame, said secondary support frame pivotally coupled to said main support frame;
a child seat portion coupled to one of said main and secondary support frames and pivotal between a folded position recessed in said cavity forming a portion of said adult backrest and an unfolded use position pivoted downwardly against said adult seat portion;
a child backrest portion disposed in said cavity; each of said child seat portion and said child backrest portion including a layer of resilient foam material covered by a layer of upholstery material;
and characterized by said child backrest portion including a suspension system comprising a plurality of resilient torsion bars suspended by said secondary support frame and positioned adjacent said foam material for providing resilient seat support in both said child backrest portion in said unfolded use position and in said adult backrest when said child seat is recessed in said cavity in said folded position.

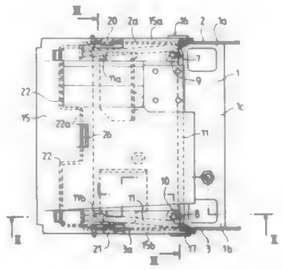
5,366,271
FOLDING INFANT RESTRAINT SEAT
G. Gilbert Johnston, Federal Way; Robert R. McAusland, Seattle, both of Wash., and William M. Dieter, Portland, Oreg., assignors to Shanli Corporation, Federal Way, Wash.
Filed Nov. 30, 1992, Ser. No. 983,361
Int. Cl.[5] A47D *7/04*; A47C *1/11*; B60N *2/26*
U.S. Cl. 297—250.1 **23 Claims**

1. A seat for use with a seat belt in a vehicle to restrain an infant, said seat comprising:
a frame having first and second edges, said frame being collapsible to a folded position and extendible to an open position about a first hinge, said first hinge being located between said first and second edges; and
an arm including a slot, movable between a first position and a second position, said slot slidably engaging said first and second edges across said first hinge when said arm is in



said first position, inhibiting said frame from collapsing to the folded position.

5,366,272
MECHANISM SUPPORTING A THIGH-REST CUSHION
Jean Lebrun, Orne, France, assignor to Bertrand Faure Automobile "BFA", Massy, France
Filed Dec. 19, 1991, Ser. No. 908,343
Claims priority, application France, Dec. 19, 1990, 90 15919
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—284.11 **6 Claims**



3. A mechanism, supporting a thigh-rest cushion located at a front of a vehicle seat, for displacing said thigh-rest cushion back and forth in a plane of a sitting portion of said seat; said mechanism comprising:
a lower frame member connected to said sitting portion of said seat, having upwardly bent side portions each having a respective cutout;
a chassis arranged above said lower frame member, said chassis having connected to a top portion thereof said thigh-rest cushion;
guiding pins fixedly connected to said chassis and engaging said cutouts of said lower frame member; and
an adjusting means, connected to said frame member and cooperating with said chassis, for displacing said chassis relative to said frame member so as to adapt to a morphology of a passenger; and
wherein said adjustment means further comprises:
a) a toothed rack connected to an upper end of each one of said side portions;
b) projections connected to an underside of said chassis and cooperating with said toothed racks;
c) a U-shaped resilient element, with free ends thereof being connected to said frame member, for assisting displacement of said chassis;
d) rollers fixedly connected to said underside of said chassis, with said resilient element being guided about said rollers at an end opposite said free ends; and

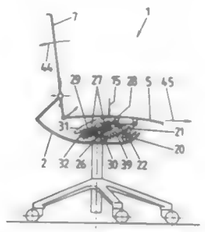
e) a U-shaped spring, connected with a center portion thereof to said chassis, for forcing said chassis in a downward direction towards said frame member and thereby forcing said projections into engagement with said toothed racks.

5,366,273
CHAIR OR THE LIKE
Gotthard Bresch, Am Berg 24, D-7077, Alfdorf, Germany
Filed Feb. 10, 1993, Ser. No. 15,176
Claims priority, application Germany, Feb. 11, 1992, 4236834
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—316 **27 Claims**



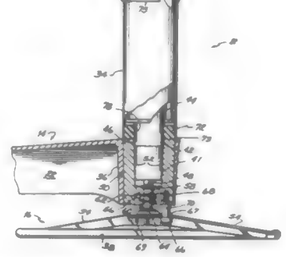
1. A chair with an undercarriage (1), having a seat surface (2) that is connected only with its front end in a resilient manner to the undercarriage and a backrest (3) connected in a resilient manner to the back of the seat surface (2), said seat surface is formed by a plurality of flexible seat strips (4) disposed next to one another and attached in a front end area in a nearly horizontal orientation to the undercarriage (1) and perform as a seat surface (2), and that a plurality of backrest strips (5) disposed next to each other in a nearly perpendicular orientation relative to said flexible seat strips (4) act as a backrest (3), each said backrest strip (5) has one end directly connected to an end area of a corresponding flexible seat strip (4) of the seat surface (2) and with an upper free end facing away from the seat surface (2).

5,366,274
SYNCHRONOUS ADJUSTING DEVICE FOR OFFICE CHAIRS OR THE LIKE
Hans Roericht, Ulm; Horst Fleischmann, München; Franz Biggel, Wangen, and Burkhard Schmitz, Ulm, all of Germany, assignors to Wilkhahn Wilkening + Hahne GmbH + Co., Bad Münder, Germany
Division of Ser. No. 752,503, Aug. 29, 1991, Pat. No. 5,251,958.
This application Apr. 7, 1993, Ser. No. 43,552
Claims priority, application Germany, Dec. 29, 1989, 3943282
Int. Cl.[5] A47C *1/032*
U.S. Cl. 297—321 **11 Claims**



1. A chair comprising
(a) a carrier structure of fixed location; said carrier structure having front and rear regions;
(b) a back part having first and second locations of articulation; said first location of articulation being at a height level above said second location of articulation; said first and second locations of articulation defining a length portion of said back part; said first location of articulation of said back part being pivotally jointed to said rear region of said carrier structure, whereby upon pivotal movement of said back part, said second location of articulation moves along a circular path about said first location of articulation;
(c) a seat part having front and rear regions; said rear region of said seat part being pivotally jointed to said second location of articulation of said back part;
(d) a block affixed to said front region of said seat part and having an end; and
(e) means for compelling said end of said block to travel in a circularly arcuate path having a center of curvature being fixed relative to said carrier structure; said end of said block being situated at all times at a height level below the second location of articulation of said back part; said means for compelling said end of said block to travel in a circularly arcuate path including a fixed curved guide forming part of said front region of said carrier structure; said end of said block being in contact with said fixed curved guide and being movable therealong upon movement of the front region of said seat part relative to the carrier structure.

5,366,275
GAS OPERATED FOOT STOOL
James H. Sulzer, Cedarburg, Wis., assignor to L & P Property Management Company, Chicago, Ill.
Filed Jun. 16, 1993, Ser. No. 78,431
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—347.19 **5 Claims**



1. A vertically adjustable stool comprising:
a seat to receive the weight of a sitting person;
a vertically telescoping column to support the seat having an upper and lower end and a longitudinal axis, the column being attached to the seat at its upper end;
a spoked base having a hub opening to receive the bottom end of the column and support the column generally vertically upright, the spokes projecting radially outward from the hub to support the hub above a floor surface;
a seat lifting mechanism mounted within the telescoping column to telescope the column and raise the seat height when actuated, the mechanism including actuation means for actuating the lifting mechanism located proximate the bottom end of the column and proximate the base;
a ring actuator rockably attached below the base, and suspended above the floor surface in a plane generally parallel to the floor surface, the ring actuator extending concentrically around the hub below the base so as to be

accessible between the spokes to a foot of the sitting person from any position around the base, the ring actuator rockable about said plane and in operable communication with the actuation means when rocked to raise the height of the seat;

whereby a person sitting in the seat is able to rock the ring actuator with his foot and thereby effect raising and lowering of the seat.

5,366,276

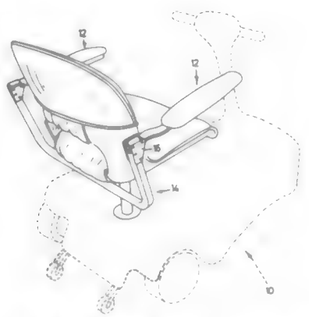
ADJUSTABLE ARM REST

Blaine M. Hobson, 69 Carmichael Cresc, Log Iko, King City; Douglas G. Broadhead, 25 Bamburgh Clr., Ste. 731, Scarborough, Ontario M1W 3W2 , and Donald B. Hovis, 4328 Wellsborough Pl., Mississauga, Ontario, all of Canada L5M 3J4

Filed Feb. 5, 1993, Ser. No. 14,444

Int. Cl.[5] A47C *7/54*

U.S. Cl. 297—411.35 **5 Claims**



1. An arm rest for a chair having a frame, said arm rest comprising:

(a) a coupling means rigidly attached to said frame; and

(b) a one piece arm support member carried by said coupling means, said arm support member having a first end for attaching to the coupling means and a second end, said arm support member extending along a first generally horizontal longitudinal axis from the first end and along a second generally horizontal longitudinal axis from the second end, said second generally horizontal longitudinal axis being substantially parallel but not co-linear to the first generally horizontal longitudinal axis, and a portion of said arm support member about said second generally horizontal longitudinal axis carrying an arm pad;

wherein the second end and second generally horizontal longitudinal axis may be positioned around the first generally horizontal longitudinal axis to permit horizontal and vertical adjustment of said arm pad to suit the individual needs of an occupant of said chair, by securing the first end of the arm support member in said coupling means in one of a plurality of positions about the first generally horizontal longitudinal axis.

5,366,277

MODULAR PEDIATRIC SEATING SYSTEM

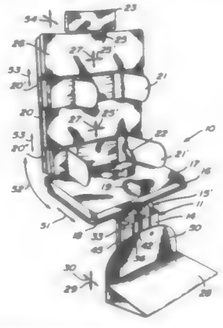
Camille Tremblay, Montreal, Canada, assignor to Hopital Marie-Enfant, Montreal, Canada

Filed Dec. 21, 1992, Ser. No. 993,401

Int. Cl.[5] A47C *7/00, 7/36*

U.S. Cl. 297—464 **15 Claims**

15. A modular pediatric seating system for supporting a disabled person, said system comprising an articulated frame having an expandable seat frame section, a back support frame section and a leg support frame section, at least said back and leg support frame sections have interconnecting means disposed longitudinally within said frame sections, articulated connector means to interconnect said frame sections together through said connector means and permitting replacement of one or more of said frame sections to modify one or more dimensions of said seating system, platform means connected to attachment means of at least said back and leg support frame sections to permit displaceable positioning and securement of said platform means to said support frame sections, at least said platform means of said back support frame having adjustable lateral restraining means for maintaining a disabled person's upper body in substantially a straight position, said interconnecting means and attachment means being provided by slots formed in said frame sections, said support frame sections being rectangular extruded elongated hollow support frame members of predetermined length, said straight connecting slots extending from end to end of said frame sections at least in a connecting surface thereof, said articulated connector means being a hinge connector comprised of a pair of having supports, each support having hinge pin connectors, said hinge



pin connectors of each hinge support being offset and alignable in frictional side contact with each other to receive a connecting hinge bolt to interconnect said hinge supports and said frame sections in alignment and disposed at a desired angle, each hinge support having a connecting flange at opposed ends thereof on an opposite side from said hinge pin connectors, said connecting flanges being removably secured in an end of said frame sections and extending therein, said support frame sections being aluminum extruded elongated hollow support frame sections, said frame sections being symmetrical sections defining at least two of said connecting slots spaced apart on opposed sides thereof, said slots extending into side cavities, there being a longitudinal end-to-end cavity in opposed side edges of said frame sections, said pediatric seat being modifiable in dimension by interchanging said frame sections with frame sections of different lengths whereby adapting said pediatric seat to a disabled person of different size.

5,366,278

SNAP-ON RETENTION DEVICE AND SYSTEM FOR WHEEL COVER

John H. Brumfield, 553 Air La., Colorado Springs, Colo. 80929

Continuation of Ser. No. 930,796, Aug. 17, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 209,308

Int. Cl.[5] B60B *7/10*

U.S. Cl. 301—37.34 **19 Claims**

1. A retention device for releasably securing a disc to a wheel comprising:

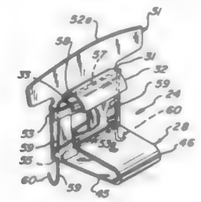
fastening means adapted to be attached to and extend along an outer face and extend substantially radially of a wheel, said fastening means including

a hook portion for hooking over a rim section of a wheel and

a base portion connected to said hook portion and shaped to extend along an outer axial section of said wheel, said base portion being arranged for engaging said outer

axial section to retain said hook and base portions on said wheel,

a cantilever-like movable arm connected at an axially inner end to said base portion at a bend and extending axially out from said bend and extending in spaced relation to said base portion for extending in a direction substantially axially of said wheel, said movable arm having a movable end portion opposite said bend that is movable in a direction along said fastening means substantially axially of said wheel between a disc hold position and a disc release position, said base portion and movable arm being formed of a one-piece strip of resilient material whose spring



action is such that when said bend is forcibly deformed by moving said movable end portion relative to said base portion said bend provides a means for exerting a disc retaining force along said fastening means in a direction substantially radially of said wheel against an axial section of said disc, and

connecting means connected to said movable end portion having a coupling portion that releasably connects to a mating coupling portion on a disc in said disc hold position and releases said disc from said connecting means in said disc release position, said disc retaining force being directed against an axial section of said disc.

5,366,279

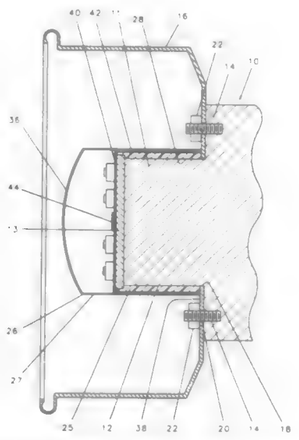
OIL HUB COVER FOR TRUCK WHEELS

John G. Polka, 1355 Margate, Libertyville, Ill. 60048

Filed Nov. 3, 1993, Ser. No. 145,148

Int. Cl.[5] B60B *7/00*

U.S. Cl. 301—108.1 **5 Claims**



1. A cover for an oil hub of a wheel having a given outer diameter comprising in combination:

a tubular body having a transverse surface at one end thereof,

said tubular body have an inner diameter which is greater than said outer diameter of said oil hub,

a compressible sleeve for fitting over said oil hub and within said tubular body, and,

a retaining means positioned over an outer surface of said sleeve and within an inner surface of said tubular body.

5,366,280

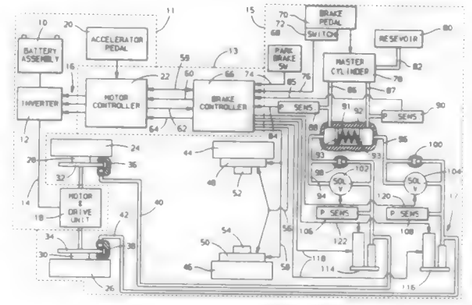
METHOD OF ADAPTIVELY HOMING BRAKE ACTUATORS

Deron C. Littlejohn, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1994, Ser. No. 196,026

Int. Cl.[5] B60T *13/74*

U.S. Cl. 303—3 **3 Claims**



1. A method of controlling an electric brake comprising the steps of:

(i) retracting a brake actuator after a braking operation;

(ii) measuring a parameter indicative of work during the retraction; and

(iii) moving the brake actuator to a position at which the brake actuator is ready for a next brake operation,

wherein step (iii) is responsive to the measured parameter.

5,366,281

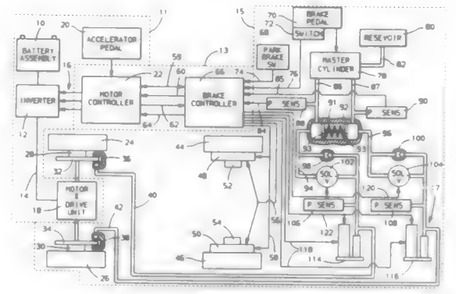
METHOD OF INITIALIZING A BRAKE ACTUATOR

Deron C. Littlejohn, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 14, 1994, Ser. No. 196,351

Int. Cl.[5] B60T *13/74*

U.S. Cl. 303—3 **3 Claims**



1. An apparatus comprising:

an input device for receiving a brake input;

a brake actuator; and

a control device coupled to the input device and the brake actuator and receiving brake commands from the input device and providing actuator commands to control cur-

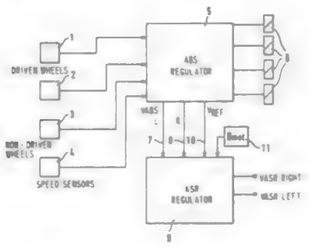
rent and voltage to the brake actuator, wherein, when a brake command is first received, the controller outputs, for a first predetermined time period, a brake torque command to the brake actuator commanding maximum current to the actuator, wherein, after the first predetermined time period, the controller outputs, for a second predetermined time period, a brake torque command to the brake actuator commanding voltage to the actuator responsive to the brake command and a first gain factor, and wherein after the second predetermined time period, the controller outputs the brake torque command to the brake actuator commanding current to the actuator responsive to the brake command and a second gain factor, wherein the first gain factor is greater than the second gain factor wherein brake initialization is responsive to the brake input.

5,366,282

DRIVE SLIP REGULATING SYSTEM

Johannes Schmitt, Markgroeningen, and Peter Rupp, Steinheim/Murr, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1992, Ser. No. 932,337
Claims priority, application Germany, Sep. 30, 1991, 4132490
Int. Cl.[5] B60T *8/70*
U.S. Cl. 303—110 **7 Claims**



1. A system for regulating wheel slippage of a motor vehicle having two driven wheels, said system comprising

means for measuring speeds of the driven wheels,

means for measuring engine speed $N_{mot}(n)$ at moments $(n-1)$, n, . . . ,

means for determining the gradient DN_{mot} of the engine speed based on successively measured engine speeds,

means for determining when the vehicle is in first gear,

an ABS which generates wheel speed signals VABS(n−1) and VABS(n) at moments (n−1) and n from the measured wheels speeds,

an ASR which generates wheel speed signals VASR(n−1) and VASR(n) for said driven wheels from said wheel speed signals VABS (n−1) and VABS(n), said wheel speed signals VASR(n) being generated by subjecting said wheel speed signals VABS(n) to a rise limitation dependent upon the gradient DN_{mot} of the engine speed when the vehicle is in first gear, the gradient DN_{mot} is positive, and VABS(n) is greater than or equal to VASR $(n-1)+DN_{mot}/K$, where K is a constant, and

means for controlling slippage of said driven wheels using said signals VASR(n).

5,366,283

FILE FOLLOWER LOCKING ASSEMBLY

Jeffrey J. Crose, Illinois City, Ill., assignor to Hon Industries Inc., Muscatine, Iowa

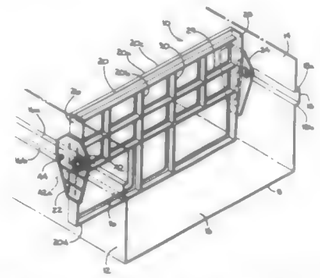
Filed Dec. 31, 1992, Ser. No. 988,995
Int. Cl.[5] A47B *63/00*
U.S. Cl. 312—183 **17 Claims**

1. A file follower locking assembly for use in a cabinet drawer with opposed sides defining a longitudinal drawer space, comprising, in combination:

a side channel extending at an intermediate height along each of said sides in communication with said drawer space and each side channel including parallel upper and lower inner surfaces;

a follower plate for substantially spanning said drawer between said opposed sides for supporting materials in said drawer;

a first follower guide coupled with said follower plate and including a support element for projecting into one of said channels of the drawer, said support element being of a configuration and size to permit sliding movement thereof along said one of said channels to permit tilting of said follower plate and guide between first and second angular



positions about a lateral axis, and gripper means mounted on said support element and disposed to present opposed external peripheral engagement surface portions spaced from one another by a first distance which exceeds the spacing between said upper and lower inner surfaces of said channel, said opposed peripheral engagement surface portions being positioned on said support element for locking engagement with said upper and lower inner surfaces of said channel in said first angular position to retain said follower in a fixed position in said drawer and to be free of said inner surfaces to permit sliding of said follower plate and locking assembly along said drawer in said second angular position.

5,366,284

REFRIGERATOR STORAGE COMPARTMENT WITH SLIDE BEARING SYSTEM

Phillip D. Baker, Morgantown, N.C.; John T. Ulmer, Jeffersontown, Ky., and Claude L. Blake, Lanesville, Ind., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 6, 1992, Ser. No. 972,636
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—404 **8 Claims**

1. A storage drawer system in a refrigerator, comprising:

a drawer having opposed, generally vertical side walls, the upper portion of each of said side walls being formed with an outwardly projecting ledge terminating in a lip projecting downwardly generally parallel to the corresponding drawer side wall;

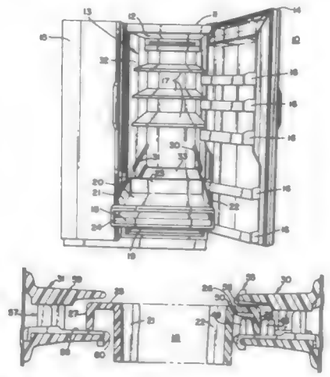
a pair of stationary support structures, each structure being mounted in the refrigerator and extending front to rear of said refrigerator adjacent to a corresponding drawer side wall and including an elongated support wall positioned below the corresponding drawer lip;

a plurality of support bearings mounted on each of said support structures in spaced apart relationship along its support wall, each of said support bearings projecting above the corresponding support wall to provide sliding support to the corresponding drawer lip, each of said plurality of support bearings including a front and a rear bearing;

said support bearings projecting above one of said support walls include open top channel structures closely receiving the corresponding drawer side wall lip for smooth,

non-binding movement of said drawer along said support walls; and

said support bearings projecting above the other of said support walls providing support surface for the lip of the



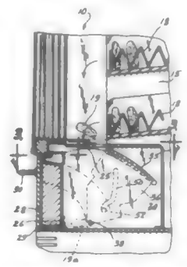
corresponding drawer side wall, said support surfaces being wide in the direction perpendicular to the corresponding drawer side wall lip to accommodate dimensional tolerances of said drawer system.

5,366,285

SEALING VENDING DRAWER FOR REMOVING DISPENSED PRODUCTS FROM A VENDING MACHINE

Arden L. Borgen, Des Moines, and Damon E. Rockwell, Grimes, both of Iowa, assignors to Fawn Engineering Co., Clive, Iowa

Filed Apr. 28, 1993, Ser. No. 54,397
Int. Cl.[5] F25D *25/02, 11/00;* A47F *3/04*
U.S. Cl. 312—404 **16 Claims**



1. A vending machine for dispensing products, comprising:

housing chamber means for storing products to be dispensed;

a holding bin, said holding bin having an opening for permitting a user access to said holding bin and door means for sealingly covering said opening, said door means having a closed position wherein said opening is covered, an open position wherein said opening is not covered, and an intermediate position between said open position and said closed position;

dispensing means disposed within said housing chamber means for dispensing products stored in said housing chamber means into said holding bin, said dispensing means including an opening between said housing chamber means and said holding bin;

sealing means for selectively sealing said opening between said housing chamber means and said holding bin whereby energy transfer between said housing chamber means and said holding bin is minimized, said sealing means having a first position permitting open communication between said housing chamber means and said holding bin and a second position sealing said housing chamber means from said holding bin; and

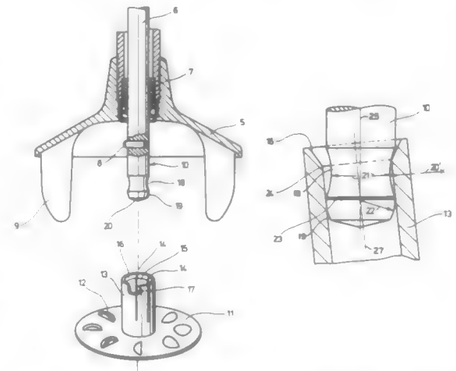
means for positioning said sealing means wherein said sealing means is in said first position when said door means is in said closed position, wherein said sealing means is in said second position when said door means is in said intermediate position, and wherein said sealing means stays in said second position when said door means is at every position between said intermediate position and said opening position.

5,366,286

WAND-TYPE HAND MIXER HAVING A REMOVABLE MIXING HEAD

Max Rüttimann, Märstetten, Switzerland, assignor to Maweva Holding AG (Ltd.), Rickenbach b. Wil, Switzerland

Filed Dec. 16, 1993, Ser. No. 168,651
Claims priority, application Germany, Jan. 19, 1993, 4301209
Int. Cl.[5] B01F *13/04*
U.S. Cl. 366—129 **16 Claims**



1. Hand mixer, for combination with a selectively removable mixing head (H);

said hand mixer having:

a housing (**1**) having a shaft guiding portion (**4**);

a mixing head (H);

a motor-driven shaft (**6**) located within the shaft guiding portion, and defining an axis (**25**);

said shaft having an end portion (**10**) which is at least in part, cylindrical, and is adapted to selectively removably receive said mixing head (H), and including rotation transmitting coupling means (**8**) between the shaft and the mixing head;

said mixing head (H) having an essentially cylindrical hub (**13**);

said hub (**13**) being adapted to be selectively removably fitted on said end portion of the shaft, and engageable with said rotation-transmitting coupling means;

and resilient means (**14**, **15**) coupling said hub to said shaft for mutual frictional engagement of said hub (**13**) on said shaft end portion (**10**);

and wherein, in accordance with the invention;

said hand mixer is formed with a fast attachment arrangement for the mixing head (H) while permitting unintended misalignment of the mixing head with the end portion of the shaft during attachment;

said attachment arrangement comprising:

a convex and rounded, or essentially part ball-shaped section (**19**) terminating the end portion (**10**) of said shaft (**6**);

a shallow, circumferential ring groove (**18**), having an axial length which is greater than its depth formed between the convex and rounded, or the essentially part ball-shaped

end portion (19) and a cylindrical part of the end portion (10) of the shaft (6); and wherein:

the hub (13) of the mixing head (H) has an open end including an inner edge (24) defining a guide surface;

the circumferential ring groove (18), in axial cross section, has a minimum diameter (21) which is less than the diameter of the end portion (10) of said shaft (6); and

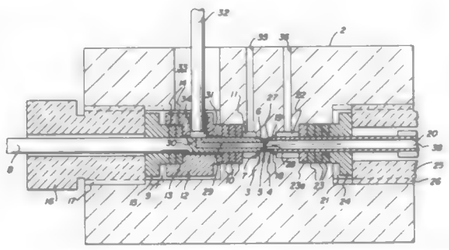
wherein the circumferential ring groove (18) is shaped to define guide surfaces which gradually smoothly increase towards the diameter of said end portion (10), said guide surfaces forming a groove guide surface for said edge (24) formed on the hub (13).

5,366,287

APPARATUS FOR HOMOGENIZING ESSENTIALLY IMMISCIBLE LIQUIDS FOR FORMING AN EMULSION

Adrian Verstallen, Schiffhorst 208a, D-4600 Dortmund 16, Germany

Filed Feb. 8, 1993, Ser. No. 14,840
Int. Cl.[5] B01F 5/06
U.S. Cl. 366—173 7 Claims



1. Apparatus for homogenizing essentially immiscible liquids for forming an emulsion, comprising

a housing;

two expansion valves disposed in said housing mutually opposite one another; said expansion valves being formed of flat-conical valve seats and corresponding valve cones and said expansion valves defining a mixing region therebetween;

pressure means for subjecting an inner phase of a liquid to a given high pressure and for guiding the inner phase towards said mixing region under the given high pressure, and

for subjecting an outer phase of a liquid to a relatively lower pressure and for guiding the outer phase towards said mixing region independently of the inner phase;

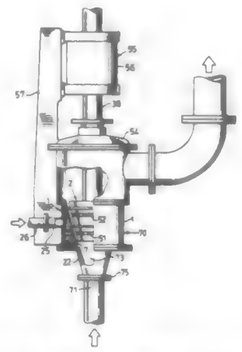
a mixing and outlet valve disposed centrally between said expansion valves communicating with said mixing region; said expansion valves being a first expansion valve with a first valve cone having an axis and a second expansion valve with a second valve cone, and said mixing and outlet valve being defined by an outlet bore formed centrally and axially in said first valve cone, and a cylindrical stamp telescopingly disposed in said second valve cone, said cylindrical stamp being adjustable independently from said second valve cone.

5,366,288

APPARATUS FOR MIXING A SUSPENSION OF CELLULOSIC FIBROUS MATERIAL AND FLUID

Hakan Dahlöf, Edsvalla; Rolf Ekholm, and Ulf Jansson, both of Karlstad, all of Sweden, assignors to Kamyr Aktiebolag, Karlstad, Sweden

PCT No. PCT/SE92/00058, § 371 Date Sep. 9, 1993, § 102(e) Date Sep. 9, 1993, PCT Pub. No. WO92/16288, PCT Pub. Date Oct. 1, 1992
PCT Filed Jan. 30, 1992, Ser. No. 117,078
Claims priority, application Sweden, Mar. 20, 1991, 9100838
Int. Cl.[5] B01F 5/06
U.S. Cl. 366—176 18 Claims



1. An apparatus for mixing a suspension of cellulosic fibrous material and a fluid comprising a housing having a center line, an inlet and an outlet for the fiber suspension, said inlet and said outlet being spaced apart axially from each other along said center line of said housing, a fluid inlet and two cooperating walls in said housing at a distance from each other, said walls having sides facing each other to define a gap through which the fiber suspension will flow, said apparatus including a gap inlet opening for the suspension and a gap outlet opening, each respectively in communication with said inlet and outlet for the fiber suspension, wherein said walls are disposed concentrically in said housing and are non-rotatable, said sides of said walls extending around said center line of said housing and spaced therefrom, said gap having the shape of a concentric annular space having an extension greater than 20 mm in the main flow direction of the medium and wherein said housing includes a distribution chamber in communication with and axially upstream of said annular gap to distribute the fiber suspension uniformly around the entire concentric inlet opening of said annular gap.

5,366,289

PORTABLE AGITATOR FOR FLUIDIZING BOTTOM SOLIDS IN TANKS

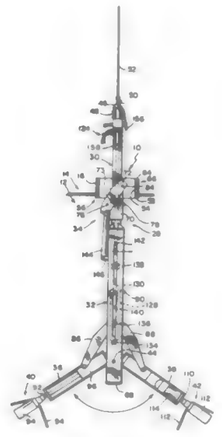
Ralph A. Supelak, Strongsville, Ohio, assignor to Cadence Environmental Energy, Inc., Michigan City, Ind. and Ash Grove Cement Company, Overland Park, Kans.

Division of Ser. No. 921,321, Jul. 29, 1992, Pat. No. 5,282,681.
This application Dec. 6, 1994, Ser. No. 161,405
Int. Cl.[5] B01F 7/00
U.S. Cl. 366—308 16 Claims

1. A portable agitator for extending into an interior region of a tank through a manway tube mounted on the tank to fluidize material contained in the tank, the manway tube including an axially inner end lying adjacent to the tank and an axially outer end extending away from the tank, the agitator comprising

a frame including an upright column and foot means for engaging a bottom wall in the tank to stabilize the upright column in the interior region of the tank,

means for mixing solid and liquid material contained in the interior region of the tank to produce a pumpable slurry, the mixing means being mounted on the frame and including first and second platforms, each platform being pivotably connected to the upright column to move between a retracted position situated to lie alongside the upright column to facilitate insertion of the platform into the interior region of the tank through the manway tube and a pivoted position oriented to lie at an angle to the longitudinal axis of the upright column, a first impeller rotatably mounted on a distal end of the first platform and arranged to face in a first direction, a second impeller rotatably mounted on a distal end of the second platform and arranged to face in a second direction opposite to the first direction, a drive member, means for slidably mounting the drive member to the upright column for reciprocating movement relative to the upright column, a first pivot arm



having a first end pivotably coupled to the first platform and a second end pivotably coupled to the drive member, a second pivot arm having a first end pivotably coupled to the second platform and a second end pivotably coupled to the drive member, and means for reciprocating the drive member between a platform-projecting position to move the first and second platforms to their pivoted positions by pivoting the first ends of the first and second pivot arms away from the upright column and a platform-retracting position to move the first and second platforms to their retracted positions by pivoting the first ends of the first and second pivot arms toward the upright column, and

means for selectively wedging against the axially inner end of the manway tube to anchor the frame and position the mixing means in the interior region of the tank, the wedging means being mounted on the frame.

5,366,290

HIGH TEMPERATURE OPTICAL PROBE

Christopher R. Mayer, Windham, N.H., and Leon Reznikov, Salem, Mass., assignors to Ametek, Inc., New York, N.Y.

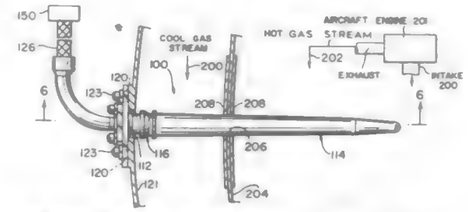
Continuation-in-part of Ser. No. 916,791, Jul. 17, 1992, Pat. No. 5,277,496, which is a continuation of Ser. No. 599,403, Oct. 17, 1990, abandoned. This application Jun. 2, 1993, Ser. No. 71,247
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] G01K 1/14, 1/10, 1/12, 13/02; G01J 5/04
U.S. Cl. 374—130 15 Claims

1. An optical probe for a gas temperature sensor for sensing the temperature of a high-temperature, high-velocity gas stream, comprising:

(A) a generally conical hollow tip for insertion into the gas stream formed of a ceramic selected from the group consisting of silicon carbide and silicon nitride to emit electromagnetic radiation at the high temperatures to be sensed, said tip defining a longitudinally-extending tip sidewall;

(B) support means for mounting said tip for interaction with the high-temperature, high-velocity gas stream;

(C) a joint physically interconnecting and spacing apart said support means and said tip, said joint being of a material and geometry to accommodate the thermal stresses caused by differences in thermal coefficients of expansion between said tip, said joint and said support means and the mechanical stresses caused by the interaction of said probe and the gas stream during high velocity movement of the



gas stream past said tip, thereby to enable said probe to withstand said stresses said joint being welded to said support means and defining a longitudinally-extending joint sidewall having a portion thereof with a thickness of about 0.008–0.012 inch overlapping and supporting a longitudinally-extending portion of said tip sidewall; and

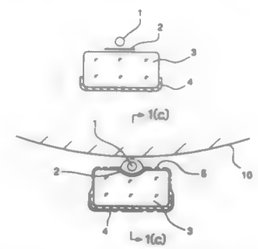
(D) optical means, disposed in said tip and responsive to the temperature of the gas stream proximate said tip, for focusing and transmitting electromagnetic radiation emitted from said tip in response to the temperature of the gas stream proximate said tip in order to effect a measurement of the temperature of the gas stream.

5,366,291

TEMPERATURE SENSING DEVICE FOR A ROTATING FIXING ROLLER

Kiyohari Nakagama, and Kouichi Hanada, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 929,958, Aug. 14, 1992, abandoned.
This application Feb. 22, 1994, Ser. No. 200,352
Claims priority, application Japan, Sep. 6, 1991, 3-227274; Dec. 2, 1991, 3-318026; Jan. 13, 1992, 4-003948
Int. Cl.[5] G01K 1/14, 13/08
U.S. Cl. 374—153 2 Claims



1. A temperature sensing device for sensing a temperature of a fixing roller in a fixing device for fixing a toner image on a recording material, with heat, said temperature sensing device comprising;

(a) a temperature sensing element;

(b) a resilient support member having a continuous, flat uppermost surface on which said element is supported;

(c) a thin metal plate provided between said element and said support member, a portion of said plate protruding from

an outer surface of said element along said uppermost surface; and

(d) a protective sheet by which at least said element, said plate, and said member are integrally wound, said protective sheet holding said temperature sensing element against said resilient support member so that said sensing element partly sinks into said support member, wherein, when said sensing device is placed in pressing contact with said roller, one side of said element is urged to sink further into said support member while an opposite side of said element is kept in contact with said roller through said protective sheet.

5,366,292

SENSOR FORMED FROM A DEFORMATION HEAT RECOVERABLE MATERIAL HAVING A PREDETERMINED RANGE OF TEMPERATURES IN WHICH RECOVERY OCCURS AND USED FOR MEASURING A PHYSICAL CHARACTERISTIC OF A SYSTEM

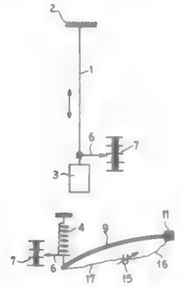
Guenter Voss, Much, Germany, assignor to Leybold AG

Filed Feb. 1, 1990, Ser. No. 473,588

Claims priority, application European Pat. Off., Feb. 1, 1989, 89101676.8; Jan. 11, 1990, 90100477.0

Int. Cl.[5] **G01K** *5/48, 5/62, 5/72;* **G01N** *25/00*

U.S. Cl. 374—188 **20 Claims**



1. In a measuring instrument, a sensor including a sensor element responsive to changes in a quantity to be measured by said instrument;

wherein said sensor element is formed from a deformation heat-recoverable material having a predetermined range of temperatures in which recovery occurs; and

said sensor comprises control means for maintaining the temperature of said sensor element substantially within said predetermined range.

16. A method of sensing a physical characteristic of a system within a predetermined range of values, said method comprising the following steps:

providing a sensor having a sensor element formed from a deformation heat-recoverable material;

selecting said material such that it has a predetermined range of temperatures in which recovery occurs;

placing said sensor in said system;

controlling said sensor element to be maintained within said predetermined range of temperatures; and

using said sensor element to sense a physical characteristic of said system.

5,366,293

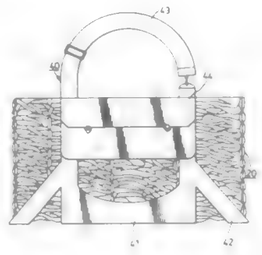
HANDBAG PARTIALLY CONVERTIBLE INTO A LONG CORD FOR EMERGENCY USE

Shyr-Dong Lii, No. 4-1, Chung-Nan Lane, Kuang-Hsing Rd., Tai-Ping Hsiang, Taichung Hsien, Taiwan, Prov. of China

Filed Dec. 7, 1993, Ser. No. 163,302

Int. Cl.[5] **B65D** *30/06*

U.S. Cl. 383—13 **4 Claims**



1. A handbag with an elongated cord, said handbag comprising:

a frame unit having a hollow body which includes a bracket member on a lower portion thereof, and two handle members respectively secured to upper portions of two opposite sides of said bracket member; and

a pocket unit including a pocket body which is knitted from said cord and which is mounted removably on said hollow body of said frame unit, and two fasteners having hook portions which are respectively secured to two end portions of said cord, the hook portions of which are locked in said pocket body, said cord having a predetermined length so as to be knitted into said pocket body;

whereby, when said pocket unit is removed from said frame unit, said fasteners of said pocket unit can be unlocked from said pocket body so as to pull outward said end portions of said cord, thereby unravelling said pocket body.

5,366,294

RECLOSEABLE PACKAGE HAVING RECLOSEABLE PROFILE STRIPS WITH A HEAT BARRIER

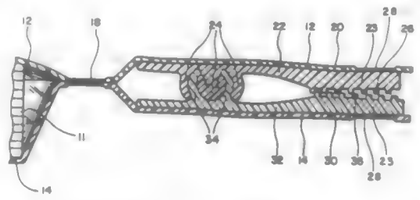
Lawrence W. Wirth, Neenah; Wayne M. Wegner, Appleton; Mladomir Tomic, Appleton; Raymond Buchko, Appleton, all of Wis., and Johann Natterer, Bavaria, Germany, assignors to Reynolds Consumer Products, Inc., Appleton, Wis.

Continuation of Ser. No. 983,637, Dec. 1, 1992, abandoned, which is a division of Ser. No. 789,282, Nov. 8, 1991, Pat. No. 5,198,055, which is a division of Ser. No. 342,257, Apr. 24, 1989, Pat. No. 5,067,822. This application Dec. 2, 1993, Ser. No. 161,499

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] **B65D** *33/16*

U.S. Cl. 383—61 **23 Claims**



1. A recloseable package comprising:

a) film walls sealed to each other and to recloseable profile strips located along one side of said film walls to form the package,

b) the recloseable profile strips each comprising:

i) a flange element having a front and back side; and

ii) a recloseable element on the front side of the flange element; and

c) a heat barrier forming a part of the recloseable profile strips and associated with the front side of at least one of the flange elements sufficient so that at least one of the film walls may be heat sealed to the respective back side of the pair of recloseable profile strips by the concurrent application of heat and pressure while the recloseable elements of the profile strips are mated, without also fusing the flange elements of the recloseable profile strips in the area of the heat barrier, due to the presence of said heat barrier.

5,366,295

FLEXIBLE EASY-OPENING PACK

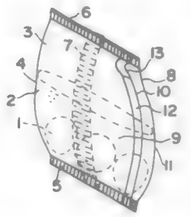
Giancarlo Montesissa, Robbio, and Giovanni Prella, Vercelli, both of Italy, assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 19, 1991, Ser. No. 732,622

Claims priority, application European Pat. Off., Aug. 13, 1990, 90115485.6

Int. Cl.[5] **B65D** *30/02, 27/38*

U.S. Cl. 383—201 **9 Claims**



1. A flexible liquid impermeable package comprising:

a tubular bag of liquid impermeable monoaxially or biaxially stretched polyolefin film, the tubular bag having opposed transverse welds and a longitudinal weld which is parallel to a stretched orientation of the polyolefin film for sealing the bag; and

a tear strip heat-welded to an outer surface of a wall of the bag, disposed away from and parallel to the longitudinal weld, the tear strip being comprised of polyolefin and having a thickness greater than a thickness of the polyolefin film of the bag.

5,366,296

DISCHARGING DEVICE FOR A PACKAGING CONTAINER

Lennart A. Stenstrom, Tross; Lennart S. Wahlstrom, Saltsjobeden, and Bert S. Wikholm, Tullinge, all of Sweden, assignors to AB Tetra Pak, Sweden

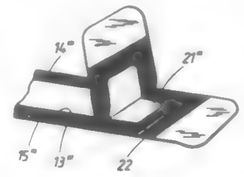
Division of Ser. No. 967,555, Oct. 27, 1992, Pat. No. 5,251,982, which is a continuation of Ser. No. 623,800, Mar. 6, 1991, abandoned. This application Jun. 10, 1993, Ser. No. 75,224

Claims priority, application Sweden, Jul. 8, 1988, 8802557

Int. Cl.[5] **B65D** *33/36*

U.S. Cl. 383—210 **2 Claims**

1. A packaging container comprising reservoir means for storing a dispensable material and dispensing means for dispensing the material from said reservoir, said dispensing means comprising first and second superimposed flexible panels non-peelably sealed together along a pair of spaced parallel edges to define a hollow channel therebetween and extending from said reservoir means to a predetermined termination point, said first and second superimposed panels extending beyond said predetermined termination point to define first and second grip means, said predetermined termination point of said hollow channel being defined by a peelable seal displaced inwardly from said first and second grip means and extending between



said spaced edges, whereby said hollow channel may be opened by exerting a sufficient force upon said first and second grip means to open said peelable seal.

5,366,297

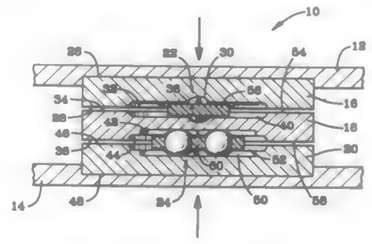
BEARING/FLEXIBLE COUPLING FOR ORBITAL MOTION

Steven R. Wolverton; Terry L. Kietzman, both of Mooresville, N.C., and Keith E. Meyers, Collegeville, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 13, 1993, Ser. No. 106,001

Int. Cl.[5] **F16C** *29/04*

U.S. Cl. 384—9 **11 Claims**



1. An antifriction apparatus comprising:

a first plate having first and second surfaces, the second surface having formed thereon at least one race;

a second plate having first and second surfaces, the first surface having formed thereon at least one race dimensioned and oriented to mate with the at least one race of the first plate, the second surface having formed thereon at least one race oriented perpendicular to the at least one race of the first surface;

a third plate having first and second surfaces, the first surface having formed thereon at least one race dimensioned and oriented to mate with the at least one race of the second surface of the second plate;

a first pair of load carrying members rollingly disposed in the mating races of the first and the second plates; and

a second pair of load carrying members rollingly disposed in the mating races of the second and the third plates.

5,366,298

HYDRODYNAMIC BEARING

Manabu Toshimitsu, Fujisawa, and Hiroko Fuse, Tokyo, both of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Dec. 2, 1993, Ser. No. 160,189

Claims priority, application Japan, Dec. 3, 1992, 4-350411

Int. Cl.[5] **F16C** *32/06*

U.S. Cl. 384—107 **15 Claims**

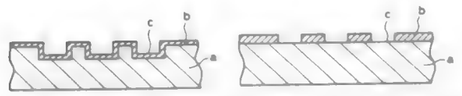
1. A hydrodynamic bearing comprising:

a cylindrical radial bearing member having an outer circumferential surface;

first and second thrust plates held against the respective

axially opposite ends of said cylindrical radial bearing member, said first and second thrust plates having confronting surfaces, respectively;

a cylindrical radial sleeve having an inner circumferential surface facing said outer circumferential surface of said cylindrical radial bearing member, and a pair of axially opposite end surfaces facing said confronting surfaces, respectively, of said first and second thrust plates; wherein said outer circumferential surface of said cylindrical radial bearing member and said inner circumferential surface of said cylindrical radial sleeve serving as sliding surfaces jointly making up a radial hydrodynamic bearing assembly;



said confronting surfaces of said first and second thrust plates and said end surfaces of said cylindrical radial sleeve serving as sliding surfaces jointly making up a thrust hydrodynamic bearing assembly;

at least one of said sliding surfaces of said thrust hydrodynamic bearing assembly having grooves formed therein for generating a hydrodynamic pressure;

at least one of the sliding surfaces of said radial hydrodynamic bearing assembly being coated with a uniform hydrogenated amorphous carbon film; and

at least one of the sliding surfaces of said thrust hydrodynamic bearing assembly being coated with a uniform hydrogenated amorphous carbon film.

5,366,299

ARTICULATED VEHICLE AND HINGE ASSEMBLY

Daniel L. Hughes, Portland, Oreg., assignor to Wagner Mining and Construction Equipment Co., Portland, Oreg.

Filed Mar. 11, 1993, Ser. No. 31,176
Int. Cl.[5] F16C *33/58;* **B62D** *53/02*
U.S. Cl. 384—571 **15 Claims**

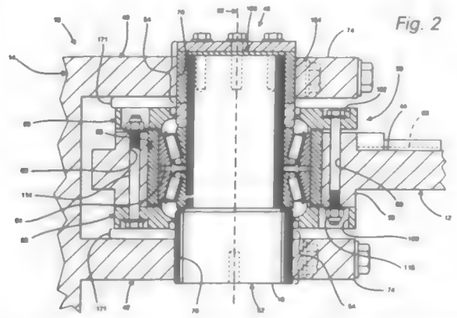


Fig. 2

1. A hinge assembly for an articulated vehicle comprising:

a first vehicle frame portion;

a first bearing assembly attached to the first vehicle frame portion;

a second bearing assembly attached to the first vehicle frame portion;

the first bearing assembly including a first roller bearing rotatably supporting a first trunnion, the first roller bearing being fixed against radial and axial displacement relative to the first trunnion, with the first trunnion being rotatable on a hinge axis;

the second bearing assembly including a second roller bearing rotatably supporting a second trunnion, the second roller bearing being fixed against radial and axial displacement relative to the second trunnion, the second trunnion being rotatable on the hinge axis;

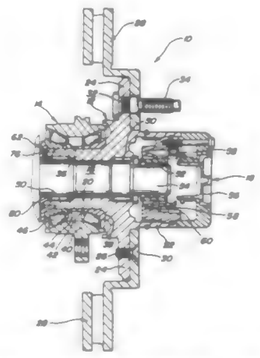
a second vehicle frame portion attached to the first and second trunnions.

5,366,300

LIVE SPINDLE HUB WITH INBOARD BEARING RETENTION

Alastair R. Deane, Novi; Stanley J. Kulczycki, Sterling Heights, and Vincent Mastrangelo, Ann Arbor, all of Mich., assignors to The Budd Company, Troy, Mich.

Filed Jun. 24, 1993, Ser. No. 81,640
Int. Cl.[5] F16C *19/38*
U.S. Cl. 384—585 **20 Claims**



1. In a vehicle wheel assembly having a live spindle supported by a wheel bearing for rotation relative to a mounting member, the live spindle having inboard and outboard ends and also having a central bore defined therein through which extends an axle driven for rotation, the vehicle wheel assembly also having a hub lock for coupling the axle to the spindle and transferring rotation therebetween, said improvement comprising:

a bearing retainer adapted to engage an outer diameter on the inboard end of the live spindle for rotation therewith, said bearing retainer including portions defining a central aperture through which the axle extends and also including a portion adapted to restrain inboard movement of the wheel bearing relative to the live spindle; and

locking means for preventing disengagement of said bearing retainer from the live spindle, said locking means including a mounting portion engageable with the inboard end of the live spindle to support said locking means thereon and also including an interfering portion adapted to prevent relative movement between said bearing retainer and said live spindle and disengagement thereof.

5,366,301

RECORD MEDIA GAP ADJUSTMENT SYSTEM FOR USE IN PRINTERS

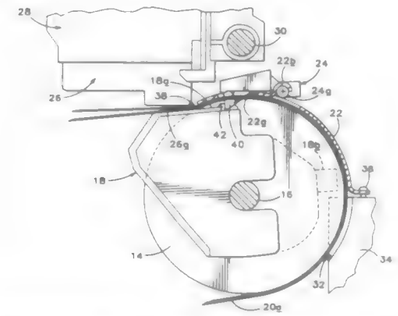
Paul W. Martin, Battle Ground, and Cathy A. Rotering, Camas, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 14, 1993, Ser. No. 166,418
Int. Cl.[5] B41J *11/20*
U.S. Cl. 400—56 **9 Claims**

1. In a printer which defines a path along which record media passes, and which includes a printhead and an opposing platen capable of movement toward and away from the printhead to define a record media gap therebetween, a record media gap adjustment system comprising:

a record media detector including a tab nominally positioned in the path of the record media, but movable from such path upon engagement by record media passing therealong; and

a stop mechanism operatively coupled with said record media detector, said stop mechanism nominally being configured to halt platen movement at a first predetermined position so as to define a first predetermined record media gap, said stop mechanism automatically being reconfigurable upon detection of record media having a predetermined characteristic to allow movement of the platen to a second predetermined position so as to define a second predetermined record media gap.

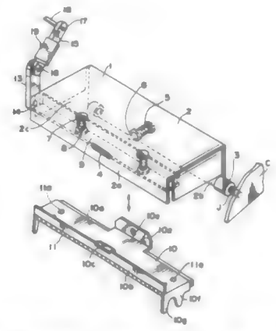


5,366,302

THERMAL PRINTER

Yoshinobu Masumura, Amagasaki; Motoki Matsubara, Takaishi; Takayasu Hongo, Kobe, and Hisashi Uemura, Nishinomiya, all of Japan, assignors to Kanzaki Seishi Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 916,881, Jul. 20, 1992, abandoned. This application Oct. 27, 1993, Ser. No. 143,378
Claims priority, application Japan, Jul. 25, 1991, 3-066367[U]; Feb. 29, 1992, 4-079073
Int. Cl.[5] B41J *2/335*
U.S. Cl. 400—120.16 **6 Claims**



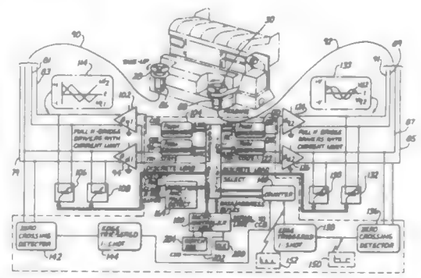
1. A thermal printer comprising a platen roller, a head mounting bracket having front and rear portions, said head mounting bracket having a thermal head attached thereto, a head holder for removably containing the head mounting bracket at a predetermined stationary position relative to the platen roller, said head holder including a pivotable support assembly pivotable about a supporting shaft, said pivotal support assembly housing said thermal head, head holder, and said head mounting bracket for pivotal movement of said thermal head, head holder, and said head mounting bracket toward and away from the platen roller, said head holder being a boxlike supporting frame having an opening at its bottom for fitting said head mounting bracket therethrough, said head mounting bracket and said supporting frame having respective front portions opposite to one another and being provided with an engaging tab on the front portion of said head mounting bracket for locating the head mounting bracket in said head holder at a predetermined fixed lateral position, said head mounting bracket and said supporting frame are disposed opposite to each other and have respective rear portions with second engaging means for locating the head mounting bracket in said head holder at a predetermined fixed front to rear position, said head mounting bracket and said supporting frame having respective top portions opposite to one another, pressure means located between said respective top portions for positioning in association with said engaging tab and said second engaging means said head mounting bracket in said head holder at a predetermined fixed vertical position, said pressure means having a hold down plate disposed below the top portion of the supporting frame, and a spring disposed between said hold down plate and the top portion of said supporting frame, a horizontally extending slot opposite to said boxlike supporting frame for engagement with said engaging tab, said second engaging means having an engaging hole on the rear portion of said head mounting bracket, and a spring loaded pressure pin on the rear of said boxlike supporting frame for engagement with said engaging hole.

5,366,303

PRINTER RIBBON MOTOR CONTROLLER

Gordon B. Barrus, San Juan Capistrano; Ricky T. K. Choy, Santa Ana, and Ryan Takakawa, Fullerton, all of Calif., assignors to Printronix, Inc., Irvine, Calif.

Continuation of Ser. No. 807,114, Dec. 13, 1991, abandoned. This application May 11, 1993, Ser. No. 59,535
Int. Cl.[5] B41J *33/14*
U.S. Cl. 400—234 **15 Claims**



1. A dot matrix printer comprising:

means to feed a continuous sheet of paper;

platen means on which said paper can be fed;

an elongated printer bar having a plurality of striking means for actuation toward said paper;

a ribbon which can be driven between said striking means and said paper against which said striking means can strike to impress a dot on said paper against said platen;

a pair of spools around which said ribbon is wound for holding said ribbon to allow it to unwind and be fed from one of said spools and be wound with velocity and tension on the other of said spools wherein one spool can be a winding spool while the other spool has the ribbon unwound from it as a feed spool and in the alternative said spools provide for reverse operational functions;

a stepper motor connected to each of said spools for rotationally driving said spools;

a controller having means for driving one of said stepper motors as a take-up motor in connected relationship to one of said spools to provide a rotational torque thereon to wind said ribbon on said spool with an angular velocity;

said controller further having means for causing the other of

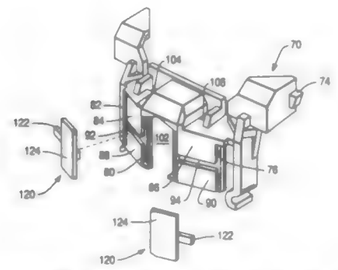
said stepper motors to function as a feed motor connected to the other spool;
variable electrical load means for connection to the coils of said feed motor to provide a drag on the other of said stepper motors by being operated with an electrical waveform having zero crossings in a regenerative mode to provide tension on the ribbon as it is being fed out from the spool to which it is connected;
said controller further having means for counting the number of zero crossings on the back of the waveform of the feed motor in a given period of time; and,
said controller further having means for controlling the two respective motors based on said zero crossings.

5,366,304

PRINTING RIBBON CASSETTE AND METHOD OF ASSEMBLY THEREOF

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Filed Apr. 28, 1993, Ser. No. 55,180
Int. Cl.[5] B41J *33/32*
U.S. Cl. 400—248 **7 Claims**



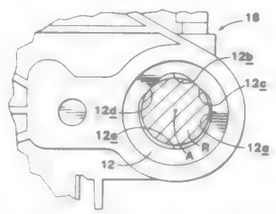
1. A continuous or endless loop printing ribbon cassette for use with an impact printer having a print head, said continuous or endless loop printing ribbon cassette comprising:
a printing ribbon cassette body having an inlet port, an outlet port and a continuous or endless loop printing ribbon storage area therebetween;
a continuous or endless loop inked printing ribbon, a portion of which extends from said continuous or endless loop printing ribbon storage area, out of said continuous or endless loop printing ribbon cassette through said outlet port and back into said continuous or endless loop printing ribbon storage area through said inlet port;
a printing ribbon cassette nose clip member on said continuous or endless loop inked printing ribbon intermediate said outlet port and said inlet port, said printing ribbon cassette nose clip member including a first slot, a second slot, a third slot and a fourth slot for threading said continuous or endless loop inked printing ribbon therethrough;
said printing ribbon cassette nose clip member further including a first downwardly extending tab, a first upwardly extending tab and a first opening therebetween intermediate said first slot and said second slot, a second opening intermediate said second slot and said third slot for orienting said continuous or endless loop inked printing ribbon in relation to the print head and a second downwardly extending tab, a second upwardly extending tab and a third opening therebetween intermediate said third slot and said fourth slot;
said continuous or endless loop printing ribbon being threaded through said printing ribbon cassette nose clip by entering inwardly through said first slot to be positioned behind said first downwardly extending tab, said first upwardly extending tab and said first opening, exiting outwardly through said second slot and across said second opening, entering inwardly through said third slot to be positioned behind said second downwardly extending tab, said second upwardly extending tab and said third opening, and exiting outwardly through said fourth slot;
a first nose clip modification insert adhered to an outer surface of said first downwardly extending tab and to an outer surface of said first upwardly extending tab to cover said first opening and block the passage of said continuous or endless loop inked printing ribbon therethrough;
a second nose clip modification insert adhered to an outer surface of said second downwardly extending tab and to an outer surface of said second upwardly extending tab to cover said third opening and block the passage of said continuous or endless loop inked printing ribbon therethrough; and wherein said first nose clip modification insert includes a horizontally extending portion which enters into said first opening and said second nose clip modification insert includes a horizontally extending portion which enters into said third opening.

5,366,305

TWO-LINE CONTACT CARRIAGE BEARING SUBSYSTEM

John A. Christianson, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 9, 1993, Ser. No. 75,061
Int. Cl.[5] B41J *11/22*
U.S. Cl. 400—354 **13 Claims**



2. For use in a printer having a reciprocable printhead carriage, a glide bearing subsystem comprising:
a generally cylindrical elongate rail for mounting a carriage for reciprocal movement of the carriage, and
one or more carriage-mounted laterally spaced bearings each including an expanse having formed therein a generally pear-shaped hole for receiving said rail therethrough, said hole being dividable into hole-peripheral first and second regions wherein said first region defines an area which is smaller than an area defined by said second region such that said first region provides arcuately spaced dual contact surfaces which engage said rail to support the carriage slidably on said rail.

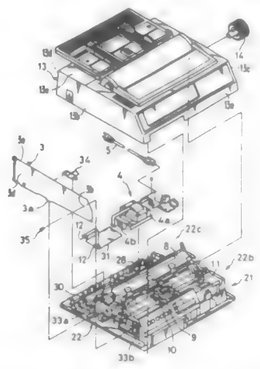
5,366,306

PRINTER INCLUDING INTEGRAL ONE-PIECE MAIN FRAME

Minoru Mizutani, and Shyoichi Watanabe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 972,353, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 653,228, Feb. 8, 1991, abandoned. This application May 6, 1993, Ser. No. 57,974
Claims priority, application Japan, Feb. 14, 1990, 2-12783
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—694 **32 Claims**

1. A printer comprising:
a main frame comprising a horizontal bottom plate having four edges and front, rear and side walls extending upwardly from respective said edges or the vicinities of respective said edges of said bottom plate to define an inner space inside said walls and above said bottom plate, at least one of said walls extending from said bottom plate at a location spaced inwardly from the corresponding said edge of said bottom plate to form an outer space outside said at least one of said walls and above said bottom plate;
said main frame being formed of an integral, one-piece structure molded from a plastic material;
a catch and a hold-down formed by integral molding with said bottom plate of said main frame;
a platen and a carriage having a print head mounted thereon, said platen and said carriage being positioned in said inner space and being mounted directly and individually to said main frame;



a controller board and a power unit positioned in said outer space and fixed to said main frame so that said controller board is oriented vertically with respect to said bottom plate and parallel with one of said side walls, said power unit being fixed to said main frame by engagement of a projection of said power unit with said catch and engagement of a flexible hook of said power unit with said hold-down; and
a removable upper cover which is mounted on said main frame and extends, when it is closed, to said edges of said bottom plate and which covers, when it is closed, from above and from sides, said plate, said carriage, said controller board and said power unit.

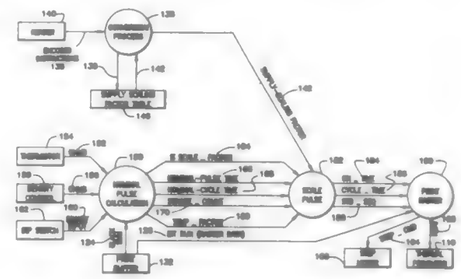
5,366,307

PRINTING CONTROL SYSTEM AND METHOD FOR SCALABLY CONTROLLING PRINT ENERGY AND CYCLE TIME

Thomas K. McGourty, 9570 Chimney Rock Rd., and Lawrence F. McGourty, 6680 Linne Rd., both of Paso Robles, Calif. 93446

Continuation of Ser. No. 821,008, Jan. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 527,037, May 22, 1990, Pat. No. 5,085,529, which is a continuation-in-part of Ser. No. 258,375, Oct. 17, 1988, abandoned. This application Jun. 22, 1993, Ser. No. 81,061
Int. Cl.[5] B41J *29/00*
U.S. Cl. 400—708 **20 Claims**

1. A printer control system, comprising:
(a) a thermal printer having thermal printing elements for transferring information to print sheets in a print sheet set, the printer pre-programmed to apply a standard energy level to the printing elements during a portion of a total print cycle time;
(b) advancement means operatively connected to the thermal printer for moving the print sheets from the print sheet set past the thermal printing elements;
(c) control means operatively connected to the thermal printer for selectively heating the elements to transfer information to the print sheets and for selectively controlling the advancement means to move the print sheets past the thermal printing elements; and
(d) means, operatively connected to the control means, for reading and interpreting coded instructions from the print sheet set and for directing the control means to selectively heat the elements and move the print sheets past the thermal heating elements in response thereto, wherein the coded instructions are specific to the print sheet set and specify a thermal scaling factor to adjust the standard energy level for the thermal printing elements and to adjust the total print cycle time.

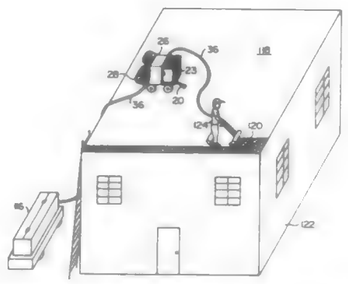


5,366,308

HOT ASPHALT TRANSFER AND APPLICATION DEVICE

Louis T. Crispino, 2215 Cross Country Blvd., Baltimore, Md. 21209

Filed Jun. 11, 1993, Ser. No. 74,623
Int. Cl.[5] B05B *1/24;* **B05C** *17/035*
U.S. Cl. 401—1 **20 Claims**



1. A portable machine for transferring and applying molten asphaltic material to roofs or other surfaces, comprising:
a mobile structure defining the rigid framework of said machine;
an outer rectangular shell connected to said mobile structure and having a front and a back portion wherein the front portion of said outer rectangular shell is a mesh screen for the circulation of air therethrough;
electric power generation means located inside of said outer rectangular shell and attached to said structure;
a first heater means comprising a number of heating elements;
a second heater means comprising a number of electrically conductive heating wires, said first and second heating means both receiving electric current flow from said electric power generation means;
storage means for containing said asphaltic material, said storage means located inside said rectangular shell and attached to said structure, said storage means including automatic level control valve means comprised of a ball

valve and float combination for regulating the amount of said asphaltic material contained therein, said first heater means disposed on the inner surface of said storage means; said storage means provided with insulating means;

insulated tube means for carrying and transferring said molten asphaltic material, said insulated tube means having an inner tube member wrapped with said second heater means, said insulated tube means connected to said storage means;

pump means, located inside said outer rectangular shell and external to said storage means and connected thereto by said insulated tube means, for circulating said asphaltic material through said insulated tube means;

a filter means disposed inside said storage means for filtering said asphaltic material;

applicator means comprising a number of hand-held devices for dispensing said asphaltic material, said applicator means connected to said insulated tube means; and

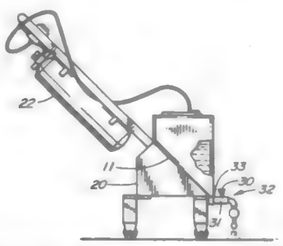
a number of asphalt jet nozzles disposed on said applicator means, said asphalt jet nozzles connected to the terminal ends of said insulated tube means, said asphalt jet nozzles providing the discharge ports for said molten asphaltic material, said asphalt jet nozzles having said second heater means attached thereto.

5,366,309

APPARATUS FOR APPLYING ADHESIVE

Ernest G. L. Springall, P.O. Box 1192, Kitchener, Ontario, Canada N2G 4G8

Filed Jul. 8, 1993, Ser. No. 87,299
Int. Cl.[5] B65D *83/60*
U.S. Cl. 401—48 **4 Claims**



1. An apparatus for applying a water based adhesive having a viscosity in the range of about 11,000–13,500 centipoise to a substrate comprising:

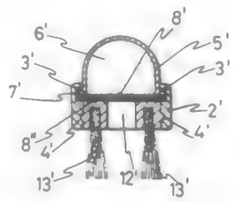
a reservoir for holding the adhesive, said reservoir having a bottom wall defining a plane inclined to the horizontal defining a vertex, a pair of spaced apart parallel support rails extending upwardly from the plane of said bottom wall, a pair of side walls secured to the support rafts forming a base, a set of wheels depending from said base for portability, a pair of spaced apart cross members secured to said support rails, a pressure tank for receiving a gas under pressure removably attached to said cross members, a conduit for conducting a gas from the pressure tank to the reservoir, a pressure regulator in series with said conduit, said pressure regulator having control means for regulating the pressure of the gas supply to said reservoir, an applicator head for dispensing the adhesive to the substrate, said applicator head comprising means for rotatably mounting said applicator head on said reservoir in proximity to the base thereof whereby said applicator head can be rotated into an operative adhesive dispensing position or rotated through 180° into an inoperative position for preventing discharge of adhesive therefrom.

5,366,310

TOOTHBRUSH WITH SLIDE IN SUPPLY

Luisa Armelles Flors, Artana, 2-7°, Castellon, Spain 12005

Filed Feb. 4, 1993, Ser. No. 13,974
Claims priority, application Spain, Feb. 7, 1992, 9200260; Dec. 24, 1992, 9202612
Int. Cl.[5] A46B *11/00, 11/02*
U.S. Cl. 401—132 **4 Claims**



1. A toothbrush comprising:

a handle having a first end and a second end, said handle having a recess disposed in said first end that includes at least one pair of grooves, said grooves increasing in width from said first end to said second end;

a container having a parametric wing; and

a strip removably attached to said parametric wing, said parametric wing and said strip being received in said at least one pair of grooves, said strip comprising an elongated sheet of material that is folded over upon itself and includes an end portion which projects beyond said first end of said handle.

5,366,311

COSMETIC PENCIL WITH DESCENDING SHEATH

Ronald J. Powers, 4010 Ischia Dr., Oxnard, Calif. 93035

Filed Dec. 20, 1993, Ser. No. 169,193
Int. Cl.[5] A45D *40/06, 40/20*
U.S. Cl. 401—194 **2 Claims**



1. A cosmetic pencil for dispensing a soft cosmetic mass, said cosmetic pencil comprising:

a generally cylindrical elongated hollow barrel having a bottom, a top, an outer surface and an inner surface, said inner surface being threaded;

an elongated push rod having a bottom and a top and being affixed at the bottom to the bottom of the barrel;

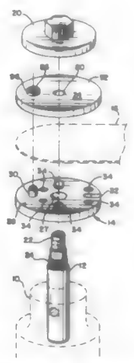
a hollow sheath having a bottom, a top, an outer surface and an inner surface, said sheath having a threaded portion on its outer surface at the bottom thereof which mates with the threaded inner surface of the barrel, and said sheath being at least partially filled with a cosmetic mass, whereby when said push rod and sheath are turned with respect to each other, the sheath moves downwardly into the barrel and the push rod extends into the sheath and pushes the cosmetic mass out of the top end of the sheath, and wherein the push rod has peripheral grooves and the sheath has at least one tab which moves in and out of the grooves on the push rod as the sheath moves downwardly on said push rod to provide a tactile indication of inward movement of the sheath into the barrel.

5,366,312

SURGICAL SAW BLADE ATTACHMENT ASSEMBLY

Aaron T. Raines, Dallas, Tex., assignor to Surgiquip, Inc., Dallas, Tex.

Filed Aug. 18, 1993, Ser. No. 108,340
Int. Cl.[5] F16B *7/00;* **B24B** *41/04*
U.S. Cl. 403—3 **5 Claims**



1. An attachment mechanism for securing a plurality of different blades having different mounting configurations formed on the ends thereof to an oscillating saw employing an oscillating actuator shaft comprising:

a receptor plate mounted in fixed position on the shaft for receiving one end of a saw blade;

a first mounting disk mountable on the shaft, each side of the disk being profiled to mate with a different one of the configurations of such saw blades; and

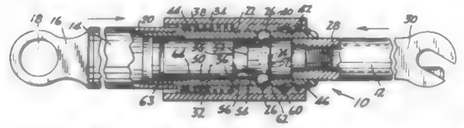
locking means mountable over the end of the shaft to press the disk, blade and receptor plate together in fixed operating position with respect to the shaft.

5,366,313

STRUT CONSTRUCTION

Berger A. LaBarre, Bethel, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Continuation-in-part of Ser. No. 970,016, Nov. 2, 1992, Pat. No. 5,265,970. This application May 12, 1993, Ser. No. 59,569
The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.
Int. Cl.[5] F16B *21/00*
U.S. Cl. 403—108 **26 Claims**



1. A strut comprising, in combination:

a) outer and inner strut members being capable of extending or collapsing movements, the outer strut member having a socket,

b) a locking piece captive and moveable in the socket, and

c) a release member movable on the strut between locking and releasing positions, said release member having means to provide a shallow pocket and a deep pocket for respectively receiving, depending on its locking or releasing position, a portion of said locking piece,

d) said inner strut member having a shallow pocket and a deep pocket to respectively receive another portion of said locking piece,

e) said locking piece, socket of the outer strut member, and shallow pocket of the inner strut member restricting movement of the release member and restricting collapsing movement of the strut members when the release member is in its locking position wherein portions of the locking piece occupy the shallow pockets of both the release member and inner strut member, and alternatively enabling full collapsing movement of the strut members to be effected when the release member is in its releasing position and portions of the locking piece occupy the deep pocket of the release member,

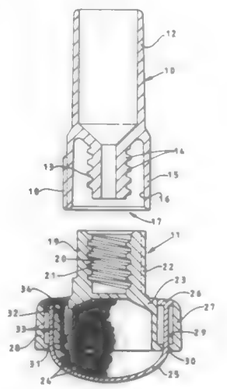
f) said pockets of the inner strut member enabling a limited relative movement of the strut members to be had for the purpose of freeing the locking piece for movement into the deep pocket of the inner strut member so as to enable the release member to be shifted from its locking position to its releasing position for permitting collapse of the strut.

5,366,314

CONNECTOR FOR DETACHABLY CONNECTING A SHAFT TO AN IMPLEMENT

Ronald A. Young, Stourbridge, England, assignor to Scot Young Research Limited, West Midlands, England

Filed Nov. 30, 1992, Ser. No. 982,987
Claims priority, application United Kingdom, Nov. 28, 1991, 9125324
Int. Cl.[5] B25G *3/30*
U.S. Cl. 403—299 **7 Claims**



1. A connector comprising two engageable plastic components for mounting on a shaft and an implement respectively, one of said components having a boss formed with an internal circular cross-section screw-threaded socket and having an outer peripheral surface surrounding the socket, said one component being mounted to said implement, and the other component having a central circular cross-section screw-threaded spigot for screw-threaded engagement with the socket and a circular cross-section shroud surrounding the spigot and spaced therefrom and adapted to frictionally engage said outer peripheral surface of the boss when the spigot is screwed into the socket, the spigot and shroud being integral parts of said

other component and at least one of the inner surface of the shroud and the outer surface of the boss being tapered so that the frictional engagement between the shroud and boss increases as the spigot is screwed into the socket, and said other component including a socket substantially coaxial with the spigot and shroud, and which retains an end of said shaft.

5,366,315

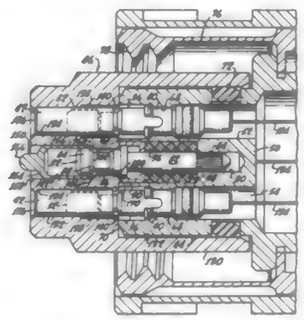
RETENTION AND RELEASE MECHANISM FOR FIBER OPTIC ALIGNMENT SLEEVE RETAINER

James T. Hartley, Tustin, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 960,602, Oct. 13, 1992, Pat. No. 5,265,182. This application Aug. 26, 1993, Ser. No. 116,591

Int. Cl.[5] H01R *13/00;* **F16B** *17/00*

U.S. Cl. 403—326 **7 Claims**



1. Apparatus for detachably connecting a first part to a second part comprising:

a post fixed to said first part and extending forwardly therefrom, said post having a head section having a first external diameter, a latch section of decreased external diameter and an inclined post shoulder between said sections,

a resilient sleeve axially slidable on said post at said latch section having an outwardly flared end positioned at said shoulder,

said second part having a bore receiving said post, said bore having an inner section of a first internal diameter and a latch section of decreased internal diameter, said bore latch section being positioned at said post latch section and having an inclined bore shoulder between said bore inner section and said bore latch section, said sleeve flared end being captured between said post shoulder and said bore shoulder, and

means for axially shifting said sleeve relative to said shoulders.

5,366,316

INTERMEDIATE STEERING SHAFT ASSEMBLY AND METHOD

William D. Cymbal, Freeland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 892,835, Jun. 2, 1992, abandoned. This application Nov. 19, 1993, Ser. No. 155,344

Int. Cl.[5] B62D *1/00;* **F16B** *3/00*

U.S. Cl. 403—378 **5 Claims**

1. An intermediate steering shaft assembly in a motor vehicle including a steering gear input shaft having a straight-ahead center position and a steering shaft having a straight-ahead center position comprising:

means defining a plug-in end on said steering gear input shaft having a unique angular position in said straight-ahead center position of said steering gear input shaft,

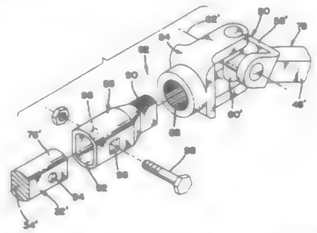
means defining a plug-in end on said steering shaft having a unique angular position in said straight-ahead center position of said steering shaft,

an intermediate steering shaft,

a "phased" first Cardan joint having an inner yoke mounted on a first end of said intermediate steering shaft in the true joint plane of said first Cardan joint and an outer yoke connected to said inner yoke through a bearing spider,

a "phased" second Cardan joint having an inner yoke mounted on a second end of said intermediate steering shaft in the true joint plane of said second Cardan joint and an outer yoke including a yoke portion connected to said inner yoke of said second Cardan joint through a bearing spider,

means defining a socket in said outer yoke of said first Cardan joint for reception of said plug-in end on one of said steering gear input shaft and said steering shaft whereby a unique center position of said intermediate steering shaft is defined corresponding to said straight-ahead center position of said one of said steering gear



input shaft and said steering shaft and the unique angular position of said plug-in end thereon,

a yoke shaft portion having a socket in a first end thereof for reception of said plug-in end on the other of said steering gear input shaft and said steering shaft when said socket has an angular orientation matching the angular orientation of said plug-in end on said other of said steering gear input shaft and said steering shaft, and

means on said yoke portion and on said yoke shaft portion at a second end thereof operative to effect a driving connection between said yoke portion and said yoke shaft portion in any of a plurality of relative angular positions therebetween including a relative angular position in which the angular orientation of said socket in said yoke shaft portion matches said angular orientation of said plug-in end on said other of said steering gear input shaft and said steering shaft when said intermediate steering shaft is in said unique center position and said other of said steering gear input shaft and said steering shaft is in said straight-ahead center position.

5,366,317

MANHOLE COVER APPARATUS AND METHOD

Keith F. Solimar, 1289 Brighton Sq., New Brighton, Minn. 55112

Filed Dec. 31, 1992, Ser. No. 999,092

Int. Cl.[5] E02D *29/14*

U.S. Cl. 404—25 **22 Claims**

5. A manhole apparatus comprising:

a collar having an inner perimeter defining an opening, the collar including a first portion and a second portion oppositely disposed on the collar;

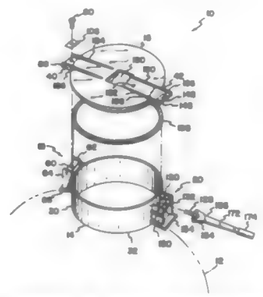
a cover having an outer perimeter greater than the inner perimeter of the collar, the cover including a first portion and a second portion oppositely disposed on the cover, the second portion of the cover including a projection defining a slot;

a hinge disposed at the first portion of the collar connecting the first portion of the cover to the first portion of the collar, the second portion of the cover defining a free end

pivotally movable relative to the second portion of the collar;

a block pivotally mounted to the second portion of the collar, the block including a threaded opening;

a rod member including an enlarged head and a shaft extending from the head, the shaft received by the slot of the cover, the head engaged with the projection of the cover, the shaft including a threaded portion disposed in the



threaded opening of the block, the rod member further rotatable relative to the block to move the second portion of the cover relative to the second portion of the collar to close the cover to the collar; and

a lever arm pivotally mounted to the head of the rod member for rotation thereof, the lever arm being devoid of cam means, whereby the cover is secured solely by threaded action of the rod member.

5,366,318

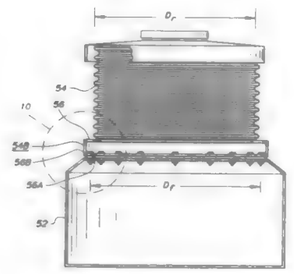
SUMP ASSEMBLY

Rodney E. Brancher, Media, Pa., assignor to Environ Products, Inc., Lionville, Pa.

Division of Ser. No. 718,436, Jun. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 555,210, Jul. 18, 1990, abandoned. This application Aug. 19, 1993, Ser. No. 108,537

Int. Cl.[5] E03F *5/00*

U.S. Cl. 405—36 **7 Claims**



1. A sump assembly comprising:

a hollow base having a bottom wall, an upstanding side wall and a circumferentially extending radially inwardly directed flange extending from the upper edge of the base;

an elongated generally tubular riser section having a circumferentially extending radially inwardly directed flange at its lower terminal edge confronting and overlying the base flange;

a cover mounted over the open upper end of the riser;

seal means disposed between the confronting faces of the riser and base flanges; and

a plurality of circumferentially spaced fasteners for securing the riser flange and base flange together with the seal means interposed therebetween, said fasteners engaging through holes located on a circle generally greater in diameter than that of the tubular riser section.

5,366,319

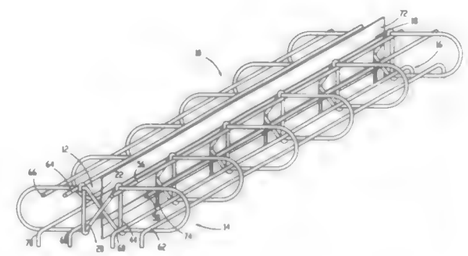
EXPANSION JOINT ASSEMBLY HAVING LOAD TRANSFER CAPACITY

Kuo-Kuang Hu; Philip G. Kirmser; Stuart E. Swartz, and Mustaque Hossain, all of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Feb. 4, 1993, Ser. No. 13,688

Int. Cl.[5] E01C *5/08*

U.S. Cl. 404—52 **15 Claims**



1. An expansion joint assembly for a pair of adjacent concrete slabs having an elongated expansion joint therebetween, said assembly comprising:

a pair of elongated load transfer bars each presenting a pair of opposed ends and a leg section extending from each end,

said bars being oriented obliquely relative to said joint to cooperatively present a general X-configuration of bars bridging said joint, with the opposed leg sections of each bar being embedded in respective and; a resilient sleeve covering each of said obliquely oriented load transfer bars slabs,

said load transfer bars being connected to each other throughout the obliquely oriented lengths thereof so that tensile and compressive loading is separately carried by each of the load transfer bars.

5,366,320

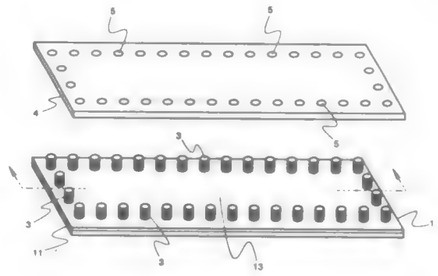
SCREED FOR PAVING MACHINES

Brian G. Hanlon, 51 Winding Way, and Lawrence C. Hanlon, 33 Haskell Ave., both of South Portland, Me. 04106

Continuation-in-part of Ser. No. 41,131, Mar. 31, 1993, abandoned, which is a continuation of Ser. No. 810,851, Dec. 20, 1991, abandoned. This application Oct. 8, 1993, Ser. No. 133,568

Int. Cl.[5] E01C *19/22*

U.S. Cl. 404—118 **10 Claims**



1. An screed for leveling paving material, wherein said

screed is affixable to a road paving machine, said screed comprising:

a plurality of mounting bolts, with said bolts having a Brinell hardness;

a first metal layer having a leading edge, top and bottom surfaces; said first metal layer having a Brinell hardness corresponding to that of said mounting bolts, wherein said mounting bolts are attached to the top surface of said first metal layer;

a second metal layer having a leading edge, a top and bottom surface and having a Brinell hardness that is substantially harder that the hardness of said first metal layer, said second metal layer being substantially the same size as said first layer, and wherein said first metal layer is joined to said second layer by fusing the bottom metal surface of said first metal layer to the top metal surface of said second metal layer substantially over the entire respective surfaces such that the leading edges of first metal layer and said second metal layer are aligned adjacent to one another.

5,366,321

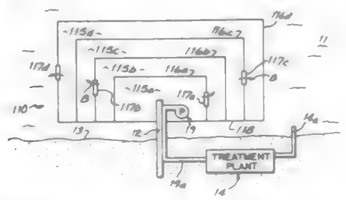
Patent Not Issued For This Number

5,366,322

APPARATUS FOR CONTAINMENT OF OVERFLOW AND RUNOFF WATER

Steven Hurwitt, Park Ridge, N.J., assignor to Fresh Creek Technologies, Inc., Fairfield, N.J.

Filed Aug. 9, 1993, Ser. No. 103,199
Int. Cl.[5] E03F *1/00*
U.S. Cl. 405—52 **23 Claims**



1. An apparatus for containing the flow of effluent material comprising a tank having a plurality of compartments defined by compartment side walls adapted to extend from the bottom of a receiving body of water to the surface thereof, said plurality of compartments including a central inner compartment for communicating with an effluent discharge conduit and at least one outer compartment which surrounds said inner compartment, said compartment side walls formed of a flexible material which is incapable of self-support and which includes weighted material along lower edges thereof for holding said lower edges against and conforming said lower edges to an irregular contour of the bottom of the receiving body of water, said side walls further including gates for allowing fluid communication between said inner and outer compartments and between said outer compartment and said receiving body of water.

5,366,323

DRAINAGE AND EROSION REDUCTION MEANS

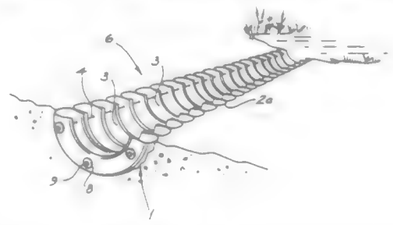
Ian C. Nicholson, Cooranbong, Australia, assignor to Graham Lee Whitehead, Baldoon Neville Via Blayney, Australia

PCT No. PCT/AU91/00082, § 371 Date Sep. 15, 1992, § 102(e) Date Sep. 15, 1992, PCT Pub. No. WO91/14049, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 8, 1991, Ser. No. 930,420
Claims priority, application Australia, Mar. 15, 1990, PJ9147
Int. Cl.[5] E02B *13/00*
U.S. Cl. 405—119 **9 Claims**

1. A drainage construction comprising:

a plurality of elements connected by connecting means to form an elongate channel through which liquid can flow from a first area containing the liquid to a drainage area,

each of said elements comprising a curved sector of a tire having at least one side wall and a rim, wherein the side wall of each tire sector abuts the side wall of an adjacent tire sector, each said tire sector comprising from ⅛ to ¼ of a tire circumference, said channel being defined by the rims of successive adjacent said tire sectors, whereby at least part of a liquid introduced into said channel at said



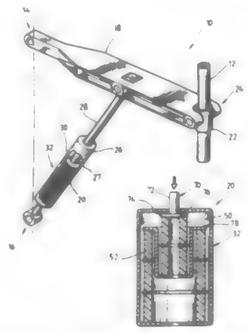
first area will flow through the tire sectors to said drainage area, the side wall of each tire sector comprising side wall means for retarding the flow of liquid through the tire sectors such that liquid flowing through the elongate channel is retarded by the side walls of the tire sectors and liquid passing through the channel from said first area must fill and overflow each of said plurality of tire sectors before proceeding to said drainage area.

5,366,324

RISER TENSIONER SYSTEM FOR USE ON OFFSHORE PLATFORMS USING ELASTOMERIC PADS OR HELICAL METAL COMPRESSION SPRINGS

Edward J. Arlt, Ft. Worth, and Charles J. Moses, Alvarado, both of Tex., assignors to LTV Energy Products Co., Del.

Continuation of Ser. No. 628,439, Dec. 13, 1990, abandoned. This application Jun. 18, 1992, Ser. No. 902,391
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—195.1 **18 Claims**



5. A riser tensioner system adapted for use in an offshore drilling platform to support a riser while allowing limited vertical movement therebetween, comprising:

a strut having a first and second end portion and an intermediate portion, said first end portion being adapted for being coupled to said offshore drilling platform, and said second end portion being adapted for being connected to said riser;

a first shock absorber having a rod and plate assembly telescoping into and out of a housing adapted for being coupled to said offshore drilling platform, said rod being coupled at a first end portion to said plate and at a second end portion to the intermediate portion of said strut; and

a spring positioned in said housing between said housing and said plate, whereby movement of said riser and strut in a first direction is resisted by said spring being compressed between said plate and housing.

18. A method for using a shock absorber and strut to support a riser on an offshore drilling platform while allowing limited vertical movement therebetween, comprising the steps of:

coupling a strut between said riser and said offshore drilling platform; coupling said shock absorber between said strut and said drilling platform; and

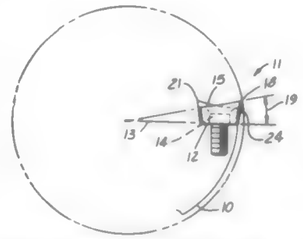
positioning a spring mechanism within said shock absorber so that movement of said riser and strut in a first direction is resisted by compression of said spring.

5,366,325

END MILL WITH POSITIVE RAKE INDEXABLE INSERT

Daniel R. Stashko, Holly, Mich., assignor to Valenite Inc., Madison Heights, Mich.

Continuation of Ser. No. 259,647, Oct. 19, 1988, abandoned. This application Jul. 26, 1991, Ser. No. 627,450
Int. Cl.[5] B23C *5/20*
U.S. Cl. 407—42 **8 Claims**



1. A generally rectangular indexable insert having a flat seating surface and an opposite top face, said top face having a diagonally concave arcuate surface which provides two diagonally opposite, indexable, generally right angle high point cutting corners, wherein said top face is entirely concave.

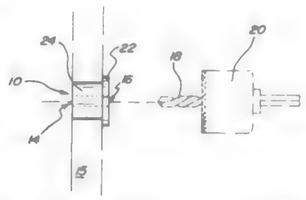
2. An end mill in combination with the indexable insert as set forth in claim 1, wherein said end mill is rotatable about an axis, and said top face is located ahead of a radial plane of said end mill substantially coextensive with or parallel to said seating surface.

5,366,326

HOLE SAW GUIDE

Jeffrey M. Converse, 548 Morgan Dr., Mt. Morris, Mich. 48458

Filed Oct. 21, 1993, Ser. No. 138,998
Int. Cl.[5] B23B *49/02*
U.S. Cl. 408—72 B **7 Claims**



1. A hole saw guide for use in combination with a hole saw for enlarging an existing hole in a work piece, said hole saw guide comprising:

an alignment means to maintain a hole saw rotational axis in a concentric relationship with an existing hole axis; and,

a bearing means disposed in said alignment means to permit free rotation of a hole saw pilot member within said alignment means;

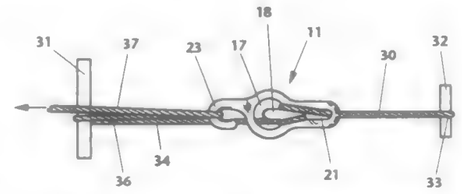
wherein said alignment means is an insertable plug fitting the existing hole, the plug comprising a tapered right cylinder with a central concentric hole comprising said bearing means.

5,366,327

TIEDOWN HITCH

Bergen Nelson, 1065 Northgate Dr., Willows, Calif. 95988

Filed Feb. 9, 1993, Ser. No. 15,231
Int. Cl.[5] B61D *45/00;* **B65D** *63/16*
U.S. Cl. 410—96 **7 Claims**



1. A tiedown hitch for securing a rope under tension between two relatively fixed members, including:

a medial body portion, a hook portion, and an eye portion; said hitch having a front face;

said medial body portion including finger cleat means for securing the rope thereabout, said medial body portion, said hook portion, said eye portion, and said finger cleat means formed integrally in a planar member and extending in a common plate parallel to said front face;

said hook portion including an elongated, arcuate hook;

said eye portion including an eye slot for receiving the rope therethrough;

said hitch including a longitudinal axis extending in said common plane through said medial body portion and defining first and second opposed ends of said medial body portion, said hook portion extending from said first end of said medial body portion and said eye portion extending from said second end of said medial body portion in axial opposition to said hook portion;

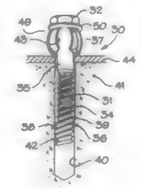
said finger cleat means including an arcuate slot formed in said medial body portion, said arcuate slot having a closed-end, U-shaped conformation in said common plane and defining a finger cleat, said finger cleat disposed generally coaxially with said longitudinal axis and directed toward said hook portion.

5,366,328

ASSEMBLY FOR INSERTING AN ATTACHMENT COIL IN CONCRETE

J. F. Helderman, 414 S. Maple St., Graham, N.C. 27253

Filed Jun. 7, 1993, Ser. No. 72,923
Int. Cl.[5] F16B *13/04, 39/02;* **B21D** *39/00*
U.S. Cl. 411—17 **38 Claims**



1. A releasable spacer for use on the shank of a screw that is used to insert and expand an expandable helical attachment coil in a cylindrical hole in a concrete structure by axially inserting the screw into the hole a predetermined distance with the

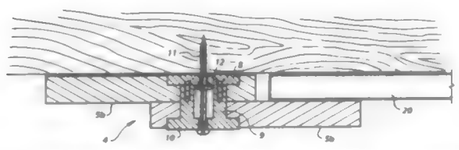
unexpanded coil at the tip of the screw to seat the coil in the hole at a predetermined axial location and then rotating the screw to helically advance it into the coil to expand the coil radially into the wall of the hole to provide for attachment of a threaded element in the hole, said releasable spacer comprising a yieldable member of a non-metallic resilient material having a through bore for mounting of the member on the shank of the screw with the screw extending through the bore, said member having one end at one end of the bore for engagement under the head of the screw and having an opposite end at the other end of the bore for engagement against the concrete structure adjacent the hole, said member having a length sufficient to locate said opposite end a distance from the coil on the tip of the screw equivalent to the predetermined distance the coil is to be located axially in the hole for radial expansion, contact of the member against the head of the screw and the concrete structure providing an indication that the coil has been inserted a desired predetermined distance in the hole, said member being releasable from the screw in response to the axial compressive force imposed by screwing the screw into the inserted coil.

5,366,329

DRYWALL HOOK

James R. Burgess, 49 Tanglewood Estates, 52411 Range Road 214, Ardrossan, Alberta, Canada T0B 0E0

Filed Nov. 4, 1992, Ser. No. 971,082
Int. Cl.[5] F16B *33/00*
U.S. Cl. 411—368 **4 Claims**



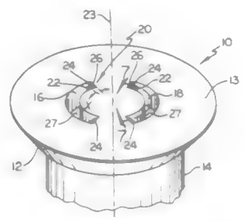
1. A hook adapted for the temporary support of a drywall board being secured to ceiling joists, said hook comprising an integral, z-shaped body defining two outwardly extending, generally rectangular sections, having an overlapping central section therebetween, and a threaded fastener extending through said overlapping section and therebeyond, thereby being adapted to releasably and rotatably secure said hook to said ceiling joist.

5,366,330

FASTENER HEAD WITH INTERNAL RECESS HAVING A RADIAL SLOT CONFIGURATION AND INSTALLATION TOOL THEREFOR

Frank J. Cosenza, Santa Barabara, Calif., assignor to VSI Corporation, Chantilly, Va.

Filed Jul. 26, 1993, Ser. No. 96,233
Int. Cl.[5] F16B *23/00, 35/06*
U.S. Cl. 411—405 **18 Claims**



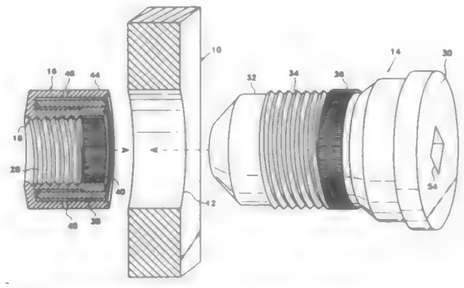
1. In a fastener having a first recess formed in its head, said recess adapted to engage a torque providing tool, the improvement wherein said first recess comprises a radially shaped first wall portion, a radially shaped second wall portion spaced from said first wall portion, first and second end wall portions extending in a direction substantially parallel to the axis of said fastener for a first predetermined distance from the surface of said fastener head; third and fourth end wall portions extending in a direction substantially parallel to the axis of said fastener for a second predetermined distance and ledge portions extending in a predetermined radial distance in a plane that is parallel with said head surface, said ledge portions joining said first and second end wall portions to said third and fourth end wall portions, respectfully.

5,366,331

SHAPE MEMORY LOCK FASTENER

John G. Erbes, Mt. View, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Feb. 10, 1993, Ser. No. 15,990
Int. Cl.[5] F16B *19/00, 37/08*
U.S. Cl. 411—433 **17 Claims**



1. A lock fastener adapted for cooperating with a bolt, comprising:

a tubular collar having radially outer and inner surfaces and first and second spaced ends, said inner surface having a plurality of protuberances extending radially inwardly therefrom and adapted for cooperating with said bolt to retain said collar on said bolt; and

a lock ring surrounding said collar outer surface and having an initial inner diameter, said lock ring being formed of a shape memory metal alloy effective for shrinking said lock ring to a final inner diameter less than said initial inner diameter in response to a change in the temperature thereof to in turn compress said collar for clamping said protuberances in contact with said bolt, wherein said collar protuberances comprise screw threads extending around said collar inner surface.

5,366,332

COMPLIANT FASTENER

Morgan D. Murphy, Kokomo, Ind., assignor to Delco Electronics Corp.

Filed Aug. 23, 1993, Ser. No. 110,259
Int. Cl.[5] F16B *19/00, 21/00*
U.S. Cl. 411—509 **19 Claims**

1. A fastener for securing two or more members together, said fastener comprising:

an upper portion;

a radially contractible lower portion flexibly interconnected with said upper portion, said lower portion being biased to assume a radially expanded configuration;

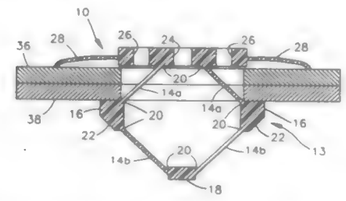
means interconnected with said lower portion for radially contracting said lower portion when said lower portion is longitudinally extended, said contracting means further including a plurality of upper interconnecting members pivotably attached to said upper portion and said engaging means, a plurality of lower interconnecting members

pivotably attached to said engaging means, and an abutment member pivotably attached to said plurality of lower interconnecting members;

means interconnected with said lower portion for engaging at least one of said two or more members;

means associated with said upper portion for generating a clamping load between said upper portion and said engaging means; and

means formed in said upper portion for providing access to said contracting means so as to enable said lower portion to be longitudinally extended;



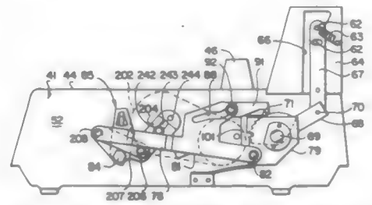
whereby said fastener is receivable through a series of apertures in said two or more members while a force is applied to said contracting means so as to radially contract said lower portion, said lower portion radially re-expanding when said force is withdrawn from said contracting means, such that said engaging means engages said at least one of said two or more members, and such that said fastener is retained within said series of apertures and imposes said clamping load on said two or more members.

5,366,333

MOTORIZED BINDING MACHINE

Phillip M. Crudo, and Luis de Leon, both of Sparks, Nev., assignors to Velo-Bind, Inc., Sparks, Nev.

Filed Sep. 11, 1992, Ser. No. 943,734
Int. Cl.[5] B42B *5/08*
U.S. Cl. 412—16 **12 Claims**



1. An apparatus used for binding sheets formed at spaced intervals with first apertures using a first strip having a plurality of thermoplastic studs spaced at the same intervals as said first apertures and a second strip formed with second apertures spaced to receive said studs with said sheets between said strips and said studs through said first apertures, comprising: compression means for compressing said strips towards each other comprising a frame, a platen on said frame for supporting said sheets, means for receiving said second strip, a pressure bar extending transversely of said frame and means on said frame formed with guide slots for guiding said pressure bar for movement towards said first strip; a first crank mounted on said frame for oscillatory movement; linkage articulately connecting said first crank and said pressure bar whereby said pressure bar moves toward said first strip as said first crank moves; a second crank pivotally mounted relative to said frame; a third crank pivoted to said frame; actuating means for oscillating said third crank; a first link pivotally interconnecting said third and second cranks; whereby said actuating means causes said third crank to move said first link to oscillate said second crank and said first crank to pull said pressure bar toward said platen, said first link being longitudinally elongated and having forward and rearward ends, said rearward end of said first link being pivoted to said second crank, the improvement comprising:

said actuating means having a motor mounted on said frame with a motor shaft intermediate said forward and rearward ends of said first link, and means for energizing said motor for one rotation of said motor shaft;

a second link;

means connected to said third crank for reciprocating said second link; and

means located at said forward end of said first link for articulately connecting said second link to said first link to longitudinally reciprocate said first link;

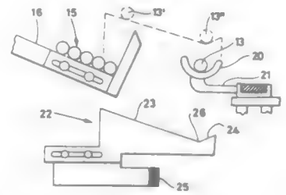
whereby said motor causes downward movement of said pressure bar to apply pressure to said first strip to compress said sheets between said first and second strip.

5,366,334

LOADING DEVICE FOR SEQUENTIAL LOADING OF BARS IN MACHINE TOOLS

Pietro Cucchi, Bussero, Italy, assignor to Pietro Cucchi S.p.A., Italy

Filed Sep. 7, 1993, Ser. No. 118,102
Claims priority, application Italy, Sep. 9, 1972, MI92A002087
Int. Cl.[5] B23B *13/00*
U.S. Cl. 414—15 **12 Claims**



1. Loading device for loading of bars in a machine tool comprising in combination:

downwardly inclined chutes for moving a bar downwardly in an inclined plane and against chute stops located adjacent the lower ends of said chutes, and into a withdrawal position on said chutes,

a plurality of guides for supporting a bar for axial sliding movement, said guides being arranged adjacent said stops and disposed to support a bar for axial insertion into the machine tool,

raising elements extending between the chutes and the guides and having thereon upper surfaces inclined in part downwardly and terminating with upwardly inclined stop parts, and the raising elements being movable vertically between a first nonoperating position below the chutes and the guides, and a second operating position in which said upper surfaces thereof move above the chute stops and the guides thereby raising the bar placed in the withdrawal position to a height above the chute stops and causing said bar to slide on the downwardly inclined surfaces of said elements toward the guides to a stop position against the stop parts, and upon return of the raising elements into their nonoperating position causing the bar in the stop position to be laid on the underlying guides,

pushing and gripping means registering coaxially with the bar in said guides and operable to move axially the bar laid thereon along the guides to introduce the bar into the machine tool and subsequently to extract therefrom at least a remnant of the bar from the machine tool along the guides, and

means for effecting disengagement of the bar remnant from the pushing and gripping means so that the remnant falls to an unloading position.

5,366,335

DEVICE AND METHOD FOR TRANSFERRING BARS IN SPATIAL STORING SYSTEM

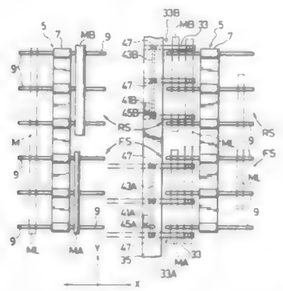
Toru Tokiwa, Hadano, Japan, assignor to Amada Company, Limited, Japan

Filed Oct. 6, 1992, Ser. No. 957,086

Claims priority, application Japan, Oct. 8, 1991, 3-260367; Oct. 9, 1991, 3-261670; Jun. 12, 1992, 4-153404; Jul. 9, 1992, 4-182153

Int. Cl.[5] B65G *1/04*

U.S. Cl. 414—282 5 Claims



1. A transfer device for transferring elongate bars with respect to a spatial storing system which includes a shelf frame provided with vertically arranged multiple shelves including a plurality of supporting beams for carrying the bars, comprising:

a movable beam disposed above the shelf frame and extending in a longitudinal direction of the bars, the movable beam being movable in a direction perpendicular to the longitudinal direction of the elongate bars;

a lifting beam vertically movably mounted on the movable beam, and

a plurality of lifting arms attached to the lifting beam and extending, for carrying the bar, in the direction perpendicular to the longitudinal direction of the bars, the lifting arms being extrudable and recedable separately or simultaneously in a longitudinal direction thereof in relation to length of the bar to be carried, the plurality of lifting arms are grouped in an least two groups consisting of a first group and a second group; and a plurality of motors are provided to actively and independently move the lifting arms of the first group and lifting arms of the second group; said motors operable in coordination with said movable beam movement so as to permit simultaneous receding of unnecessary lifting arms while said movable beam is being moved.

5,366,336

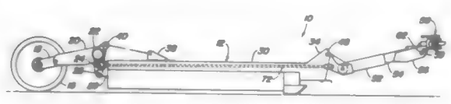
LEVELING ROD ASSEMBLY COUPLED BETWEEN TOWED IMPLEMENT HITCH AND GROUND WHEEL AXLE

Henry Friesen, Niagara Falls, and Karl H. Friesen, Niagara-on-the-Lake, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jun. 14, 1993, Ser. No. 75,437

Int. Cl.[5] A01B *63/00*

U.S. Cl. 414—476 6 Claims



1. In an implement including a main central frame, a wheel axle mounted to a rear location of the frame for pivotal movement about a first horizontal transverse axis, wheels being mounted to the wheel axle and moveable vertically relative to the frame to effect raising and lowering of the frame, a hitch mounted to a front location of the frame for pivotal movement about a second horizontal transverse axis, a clevis having an articulated connection with a forward end of the hitch and being adapted for connection to the drawbar of a towing vehicle, and a pair of parallel transversely spaced leveling rods connected between the wheel axle and the hitch for maintaining the frame level as the frame is raised and lowered by vertical movement of the wheels relative to the frame when the clevis is coupled to the drawbar of a towing vehicle, the improvement comprising: an equalizer member extending between said first and second leveling rods and being pivotally mounted to one of said wheel axle and said hitch for movement about a third horizontal transverse axis; and an end of each of said pair of leveling rods being pivotally coupled to said equalizer member at respective locations offset radially in different directions from said third axis, whereby the equalizer member will act to equalize forces imposed on the leveling rods as the implement is towed over the terrain.

5,366,337

ARTICULATED LOAD CARRIER FOR VEHICLES

Peter Eriksson, Box 4, S-810 20 Österfärnebo, Sweden

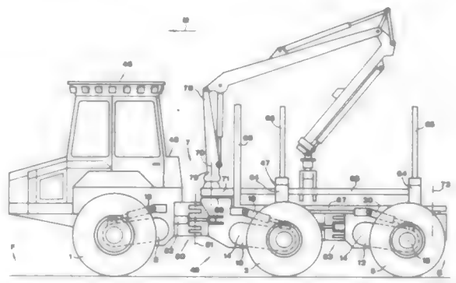
PCT No. PCT/SE91/00190, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/14610, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 13, 1991, Ser. No. 949,527

Claims priority, application Sweden, Mar. 20, 1990, 9000983-8

Int. Cl.[5] B62D *53/00*

U.S. Cl. 414—550 22 Claims



1. A device for a load vehicle having a chassis (7) comprising a front member (48') having contact elements (1, 2) and a rear member (49') having contact elements (3–6), said front and rear members being mutually pivotally interconnected by a first hinge (50') forming a first substantially vertical pivot axis (51'), a load carrier arrangement (47') on the rear chassis member (49'), the rear chassis member (49') comprising a front chassis portion (61') and a rear chassis portion (62'), which are mutually pivotally interconnected by a second hinge (63') forming a second substantially vertical pivot axis, each of said chassis portions (61', 62') having contact elements (3, 4; 5, 6), the device comprising: the load carrier arrangement (47') being rotatably connected to the front chassis portion (61') of the rear chassis member (49') by means of a first connection (69') comprising a first substantially vertical axis of rotation (70'), the load carrier arrangement (47') being rotatably connected to the rear chassis portion (62') of rear chassis member (49') by means of a second connection (72') forming a second substantially vertical axis of rotation (73'), at least one of the first and second connections being structured to allow relative movement of the load carrier arrangement (47') and an associated chassis portion in a longitudinal direction of one of the load carrier arrangement and the associated chassis portion, and support means (81) engaged to the load carrier arrangement for supporting the load carrier arrangement at a location between the first and second connections (69', 72'), the support means being engaged to and supported by at least one of the front and rear chassis portion (61', 62') of the rear chassis member (49').

5,366,338

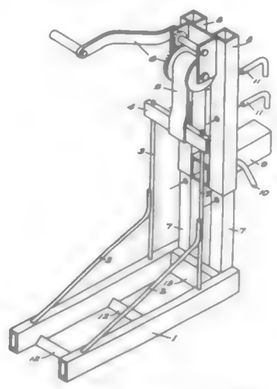
LIFT AND TOW MOTORCYCLE TRANSPORTER

Ernest P. Mortensen, 5605 S. Robin Ave., Tucson, Ariz. 85746

Filed May 3, 1993, Ser. No. 55,551

Int. Cl.[5] B60D *7/00*

U.S. Cl. 414—563 13 Claims



1. A motorcycle towing device comprising:

a) a top section having,

1) a tongue secured to a trailer hitch of a towing vehicle,

2) at least one mast having a bottom end and a top end, said bottom end securely attached to said tongue, said at least one mast extending vertically up from said tongue,

3) a hand winch attached to said top end of said at least one mast, and,

4) a winch strap having a first end and a second end, said first end attached to said hand winch such that said hand winch extends and retracts said winch strap; and,

b) a bottom section having,

1) at least one upright having a bottom end and a top end, said at least one upright traversing inside said at least one mast of said top section, and,

2) cradle means attached to said bottom end of said at least one upright for supporting a front wheel of the motorcycle, said second end of said winch strap attached to said cradle means for lifting and lowering said bottom section, said cradle means having,

A) two horizontal rails attached to said at least one upright,

B) at least one spacer attached between said two horizontal rails and forming a cradle for a front wheel of said motorcycle,

C) two vertical pull rods having a top end, a middle portion and a bottom end, said bottom end attached to one of said two horizontal rails, and

D) a cross bar attached to said top ends of said two vertical pull rods and attached to said second end of said winch strap.

5,366,339

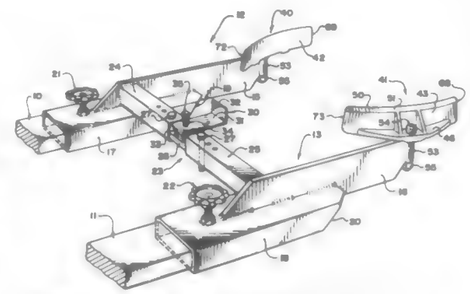
LIFTING DEVICE FOR BARRELS

Dale Gould, 289 Bedson Street, Winnipeg, Manitoba, Canada

Filed May 17, 1993, Ser. No. 61,734

Int. Cl.[5] B66F *9/18*

U.S. Cl. 414—607 18 Claims



1. A lifting device for a barrel comprising a first arm and a second arm, means mounting the arms in parallel spaced substantially horizontal arrangement having a spacing therebetween for receiving a peripheral wall of the barrel therebetween with an axis of the barrel vertical, a pair of grippers for engaging sides of the barrel at positions thereon spaced at 180° around the peripheral wall of the barrel, each gripper comprising an arcuate gripper body arranged to extend around a part only of the peripheral wall of the barrel, means mounting each gripper body on a respective arm for pivotal movement about a substantially vertical pivot pin on the arm, the pivot pin being arranged at an intermediate location along the gripper body such that a forward part of each gripper body projects forwardly of the pin and a rearward part of each gripper body projects rearwardly of the pin, and spring means biasing the forward part of the gripper bodies apart to allow the peripheral wall of the barrel to enter therebetween as the arms are moved forwardly to engage the barrel, each gripper body comprising an inner surface facing an outer wall of the barrel and defining an upper gripper edge at a top of the inner surface and an upper surface extending outwardly relative to the barrel from the upper edge, the inner surface being inclined upwardly and inwardly to the upper edge and the upper surface being inclined outwardly and downwardly from the upper edge to define a sharp edge at the upper edge for engaging under a bead of the barrel, the inner surface and the upper edge extending along the full arcuate extent of the gripper body.

5,366,340

ROBOTIC END EFFECTOR

Thong H. Vo, Webster, and William A. Hammond, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1992, Ser. No. 937,073

Int. Cl.[5] B66C *1/54*

U.S. Cl. 414—732 9 Claims

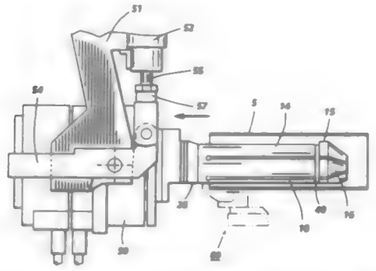
4. An apparatus for acquiring, manipulating and positioning a hollow cylindrical object having a shell thickness and interior walls defining an interior aperture, the apparatus comprising:

(a) a stop member;

(b) means for moving the object from a generally vertical orientation into a generally horizontal orientation for positioning against said stop member; and

(c) a plurality of expandable members connected to said means for moving and having a common core and a generally cylindrical outer surface insertable into the interior aperture of the object for gripping the object by the interior walls, said generally cylindrical outer surface including a flat surface portion for facing downwardly when the

object is moved into said generally horizontal orientation for positioning against the stop member, said flat surface portion allowing the stop member to project inwardly beyond the shell thickness of the object towards said



common core of said expandable members, thereby enabling non-interference withdrawal of said expandable members from the interior aperture of the acquired such object stopped against the stop member.

5,366,341

HELICAL HYDRAULIC PUMP

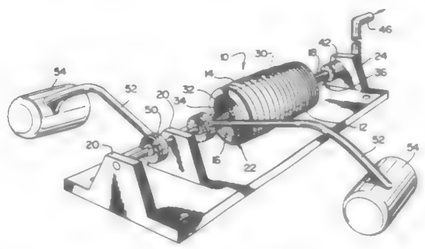
Giovani Marino, 6070 Lanquedoc, Montreal PQ, Canada H1M 3C9

Continuation of Ser. No. 886,870, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 749,333, Aug. 23, 1991, abandoned. This application May 6, 1993, Ser. No. 57,401

Claims priority, application United Kingdom, Aug. 24, 1990, 9018585

Int. Cl.[5] F03B *13/14*

U.S. Cl. 415—6 **1 Claim**



1. A fluid pump capable of raising fluid comprising:
a conduit in the form of a helix of tubing to provide a closed path;
support means including a shaft for rotationally supporting said helix for rotary motion about its longitudinal axis;
means to prevent said pump from being totally submerged;
one or more additional helix, superimposed on said helix;
an inlet means defined by an open end of semi-circular coil on one end of said helix for scooping fluid on rotation of the helix;
each helix having an inlet spaced radially about the shaft;
an outlet means on the other end of the said helix, aligned with said shaft;
a rotary coupling and seal on said shaft; and
ratchet means on said shaft for rotating said shaft intermittently in one direction only whereby on being driven by said ratchet means fluid entering said inlet means moves through said helix to said outlet and to a second conduit which extends above a level of the fluid to be pumped.

5,366,342

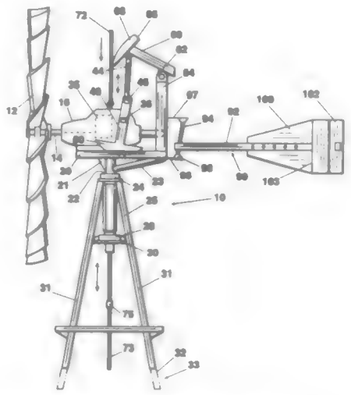
WATER PUMPING PUSH-PULL WINDMILL

Richard K. Sutz, Scottsdale, Ariz., assignor to Softwind Limited Partnership, Scottsdale, Ariz.

Filed Aug. 13, 1992, Ser. No. 930,120

Int. Cl.[5] F03D *7/04*

U.S. Cl. 416—12 **5 Claims**



1. A water pumping windmill, comprising:
a tower mountable in a stationary position;
a horizontal platform rotatably mounted on said tower;
a transmission mechanism mounted on said platform and having a rotary torque driven input shaft and a rotary torque driven output shaft operatively intercoupled with said input shaft and axially perpendicular thereto, the transmission mechanism serving to convert rotary input torque to rotary output torque in a predetermined speed ratio;
a wind driven rotary fan connected to said input shaft to drive the same;
a rotatable crank coupled to said output shaft;
a pitman arm coupled to said crank to convert rotary motion of said output shaft to reciprocating motion of said pitman arm;
a rocking beam pivotally carried by said platform and connected to said pitman arm for rocking said beam in a vertical plane parallel to said input shaft, said beam having a head movable up and down when said beam is rocked;
an axially vertical reciprocatable pump rod for cyclically lifting a pumped load of water;
a flexible cable connected between said pump rod and said head so that said pump rod is reciprocated by said head;
bearing means rotatably supporting said platform to permit said platform to rotate on a vertical axis, said pump rod having its axis of reciprocation coinciding with said vertical axis, said input shaft being spaced laterally from said vertical axis so that said fan said and platform rotate under a turning moment when the direction of wind force impinging on said fan changes;
a horizontal tail tracking assembly operatively connected to said platform to track said wind so that said fan is unfurled and faces into said wind as long as the magnitude of speed of said wind impinging on said fan remains below a predetermined magnitude; and
coupling means on said platform, said tracking assembly being movably connected to said coupling means to rise up thereon to load said platform with gravitational force when said fan is furled, and to descend on said coupling means when said magnitude of speed of said wind decreases sufficiently to turn said platform and unfurl said fan.

5,366,343

SELF-ADJUSTING TORQUE-RESPONSIVE VARIABLE-PITCH BOAT PROPELLER

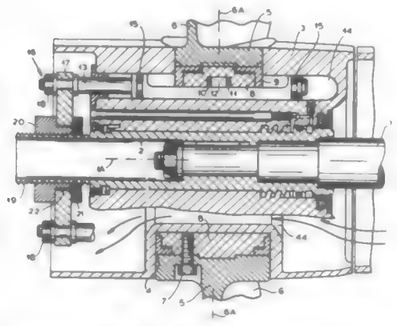
Peter Müller, Adliswil, Switzerland, assignor to Dr. Alexander Landolt, Zurich, Switzerland

Filed Sep. 23, 1993, Ser. No. 126,082

Claims priority, application Germany, Sep. 23, 1992, 4231814

Int. Cl.[5] B63H *3/00*

U.S. Cl. 416—133 **14 Claims**



1. A self-adjusting variable-pitch propeller comprising:
a drive shaft rotatable about a shaft axis in a predetermined forward rotational sense;
a hub carried on the drive shaft, axially displaceable thereon, and limitedly rotatable relative thereto about the shaft axis both in the forward rotational sense and in an opposite backward rotational sense;
spring means operatively braced between the hub and the shaft for rotationally urging the hub on the shaft in the forward rotational sense;
a plurality of blades projecting radially from the hub and each rotatable about a respective blade axis generally perpendicular to the shaft axis;
respective rods extending axially in the hub parallel to the shaft axis, fixed axially to the shaft, and each having an inner end at a respective one of the blades and an outer end;
respective linkages connecting the inner ends of the rods to the respective blades for angular displacement of the blades about the respective blade axes on displacement of the hub axially of the shaft axis relative to the shaft and rods;
coupling means operatively engaged between the shaft and the hub for displacing the hub relative to the shaft and rods to an extent corresponding to the relative rotation in the backward rotational sense against a force exerted on the hub by the spring means; and
hydraulic damping means for inhibiting relative rotation between the hub and the shaft below a predetermined torque applied to the hub by the blades.

5,366,344

LINEAR FRICTION WELDING OF BLADES

Peter J. Gillbanks, and Keith C. Moloney, both of Bristol, England, assignors to Rolls-Royce plc, London, England

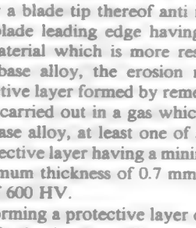
Filed Oct. 7, 1993, Ser. No. 132,893

Claims priority, application United Kingdom, Oct. 23, 1992, 9222256

Int. Cl.[5] F01D *5/30;* **B23K** *20/12*

U.S. Cl. 416—213 R **5 Claims**

1. A method of friction welding a blade having internal cooling passages to a disc during which the blade and the disc are reciprocated relatively while being urged together with sufficient force to generate frictional heating, the method comprising the steps of:
forming the blade having an aerofoil section with the internal cooling passages and a root section containing an internal passageway communicating with the internal cooling passages of the aerofoil section;
forming the root section with a taper having converging opposed surfaces;
forming in the periphery of the disc a slot with radially diverging surfaces for receiving the tapered root section of the blade;
inserting said root in said slot with said converging surfaces of the root section engaged with said diverging surfaces of the disc slot;



relatively reciprocating the blade and the disc while pressing the root of said blade into said slot thereby generating frictional welding heat and applying a generally radial weld generating force; and
subsequently forming an axial passage through a weld region thereby intersecting the internal passageway of the blade root section thereby providing open communication with the internal cooling passages of the aerofoil section of the blade.

5,366,345

TURBINE BLADE OF A BASIC TITANIUM ALLOY AND METHOD OF MANUFACTURING IT

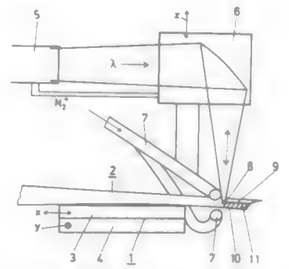
Claus Gerdes, and Carlo Maggi, both of Baden, Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Dec. 4, 1991, Ser. No. 802,320

Claims priority, application European Pat. Off., Dec. 19, 1990, 90124757.7

Int. Cl.[5] B63H *1/26*

U.S. Cl. 416—241 R **9 Claims**



1. A turbine blade of a titanium base alloy having a blade region located near a blade tip thereof anti including a blade leading edge, the blade leading edge having a surface of an erosion resistant material which is more resistant to erosion than the titanium base alloy, the erosion resistant material comprising a protective layer formed by remelt alloying of the titanium base alloy carried out in a gas which forms together with the titanium base alloy, at least one of a boride, carbide and nitride, the protective layer having a minimum thickness of 0.1 mm and a maximum thickness of 0.7 mm and a maximum Vickers hardness of 600 HV.

3. A method of forming a protective layer on a blade region of a turbine blade of a titanium base alloy, comprising steps of:

melting a surface layer of a turbine blade consisting essentially of a titanium base alloy by applying a high-power energy source to the surface layer, the surface layer being located in a blade leading edge of the turbine blade;

remelt alloying of the surface layer by exposing the surface layer to a gas during the melting step, the gas and the titanium base alloy reacting and forming at least one of a boride, carbide and nitride during the remelt alloying step, the protective layer having a minimum thickness of 0.1 mm and a maximum thickness of 0.7 mm and a maximum Vickers hardness of 600 HV.

5,366,346

ELECTRONICALLY CONTROLLED INTRAVENOUS FLUID INFUSION DEVICE

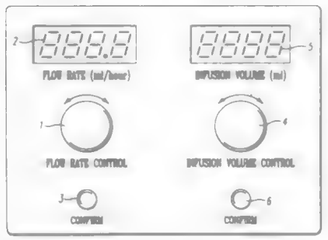
Hal C. Danby, Sudbury, England, assignor to Danby Medical Limited, Essex, England

Filed Oct. 30, 1992, Ser. No. 969,572

Claims priority, application United Kingdom, Nov. 4, 1991, 9123325

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—18 **10 Claims**



1. An electronically controlled infusion device for controlling fluid to be infused intravenously in the treatment of a patient, comprising:

at least one manually operated control for producing a signal generated by manual operation of the control to set at least one fluid infusion operating parameter; and

means for producing an extent of change in said operating parameter for a given extent of movement of said at least one control in dependence upon the speed with which the as least one control is manually operated.

5,366,347

SUSPENSION PUMP WITH BUILT-IN VARIABLY ECCENTRIC LIQUID RING PUMP

Ronny Hoglund, Skoghall, Sweden, assignor to Kamyr Aktiebolag, Karlstad, Sweden

PCT No. PCT/SE91/00865, § 371 Date Jun. 14, 1993, § 102(e) Date Jun. 14, 1993, PCT Pub. No. WO92/11458, PCT Pub. Date Jul. 9, 1992

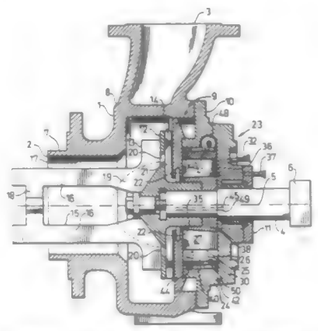
PCT Filed Dec. 16, 1991, Ser. No. 75,558

Claims priority, application Sweden, Dec. 19, 1990, 9004050

Int. Cl.[5] F04C *19/00;* **F04D** *29/02*

U.S. Cl. 417—53 **8 Claims**

1. A pump comprising a main housing including a suspension inlet and a suspension outlet generally transverse to said suspension inlet, a shaft rotatable about an axis of rotation substantially in alignment with said inlet, a fluidizing impeller mounted on said shaft for rotation therewith for effecting fluidization of suspension pumped by said fluidizing impeller from said inlet to said outlet, said fluidizing impeller when rotating causing gas to separate from the suspension and to collect adjacent said shaft; a vacuum pump including a vacuum pump housing and a vacuum impeller, said vacuum impeller being mounted on said shaft for rotation with said shaft and said fluidizing impeller, means defining gas passageways extending between said main housing to said vacuum impeller, to be exhausted from said main housing to an area remote from said main housing by said vacuum pump, said vacuum pump housing having a common wall with said main housing, means defining an open annular volume in said vacuum pump housing, an annular element being disposed in said annular volume, said vacuum impeller having blades extending from an imperforate hub so that, in operation, said blades of said vacuum impeller will form a liquid ring with said blades intersection with said liquid ring defining blade pockets to transport gas collecting in the pockets from said inlet to said outlet of said vacuum housing, said vacuum pump having an actuator for moving said element relative to said shaft between different operating positions including a position where said element is concentric relative to said axis of rotation and where said



element is eccentric relative to said axis of rotation, said blades of said vacuum impeller and the liquid ring forming gas pockets which decrease in volume upon rotation of said vacuum impeller toward said outlet of said vacuum housing when said element is in one eccentric position relative to said axis of rotation, said blades of said vacuum impeller and the liquid ring forming gas pockets which increase in volume upon rotation of said vacuum impeller toward said outlet of said vacuum housing when said element is in another position relative to said axis of rotation and said blades of said vacuum impeller and the liquid ring forming gas pockets which remain substantially constant in volume upon rotation of said vacuum impeller toward said outlet of said vacuum housing when said element is in said concentric position relative to said axis or rotation.

5,366,348

METHOD AND APPARATUS FOR SELECTIVELY VARYING THE FLOW RATE OF SERVICE LIQUID THROUGH A TWO STAGE LIQUID RING VACUUM PUMP

Kevin J. Skelton, Oakfield, N.Y., assignor to Graham Manufacturing Co., Inc., Batavia, N.Y.

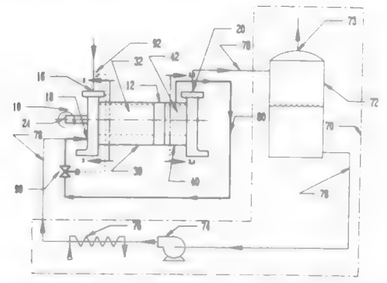
Filed Sep. 24, 1993, Ser. No. 126,908

Int. Cl.[5] F04C *19/00;* **F04B** *3/00*

U.S. Cl. 417—68 **13 Claims**

1. A two stage liquid ring vacuum pump having a suction port and a discharge port, and a first stage and a second stage intermediate of the suction port and the discharge port, the first stage defining a first pumping volume and the second stage defining a second smaller pumping volume, wherein upon operation of the pump a given flow rate of service liquid passes through the first stage to the second stage to exit the pump through the discharge port, comprising:

(a) a bypass line fluidly connected to the second stage intermediate the first stage and the discharge port, and to the first stage for permitting fluid flow from the second stage to the first stage so that the flow rate of service liquid



through the first stage is greater than the flow rate of service liquid passing through the discharge port.

5,366,349

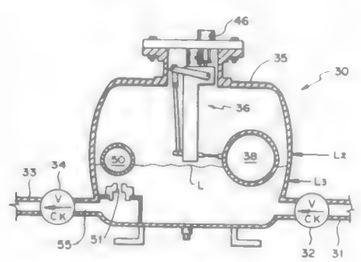
AUTOMATIC LIQUID PUMP WITH VAPOR FLOW PREVENTION FLOW OUTLET VALVE

Edmond Ilg, Ridgefield Park, N.J., assignor to Gestra, Inc., West Caldwell, N.J.

Filed Jun. 25, 1993, Ser. No. 83,650

Int. Cl.[5] F04F *1/06;* **F04B** *21/02*

U.S. Cl. 417—132 **18 Claims**



1. An automatic liquid pump having a sealed pressure vessel with a bottom and a top, the bottom including a vapor and liquid inlet opening having an inlet pressure and a liquid outlet opening having an outlet pressure, the top having a gas inlet adapted to be connected to a compressed gas source, a gas outlet, a gas inlet valve controlling the gas inlet, and a gas outlet valve controlling the gas outlet, and a gas valve actuator for alternately opening and closing the valves, first opening the gas outlet valve and closing the gas inlet valve and second closing the gas outlet valve and opening the gas inlet valve, said automatic liquid pump comprising:

means connecting the gas outlet to the vapor and liquid inlet opening,

a valve operatively coupled to the liquid outlet opening, the liquid outlet opening being below a first predetermined level, said valve selectively:

(i) operating as a steam trap by closing the liquid outlet opening in the presence of steam when the inlet pressure exceeds the outlet pressure and the liquid in the vessel drops below the first predetermined level so that steam is prevented from escaping through the liquid outlet opening;

(ii) operating as an air vent by opening the liquid outlet opening in the presence of cool air when the inlet pressure exceeds the outlet pressure and the liquid in the vessel drops below the first predetermined level so that cool air escapes through the liquid outlet opening; and

(iii) opening the liquid outlet opening in the presence of a condensate.

5,366,350

GAS GUIDING MECHANISM IN A PISTON TYPE COMPRESSOR

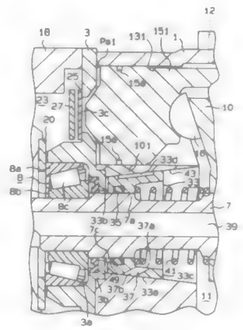
Toshiro Fujii; Hitoshi Inukai; Koichi Ito, and Yuichi Kato, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 199,812, Feb. 22, 1994, which is a continuation-in-part of Ser. No. 195,366, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 154,279, Nov. 18, 1993, which is a continuation-in-part of Ser. No. 103,888, Aug. 6, 1993, abandoned, which is a continuation-in-part of Ser. No. 102,588, Aug. 5, 1993, which is a continuation-in-part of Ser. No. 101,927, Aug. 4, 1993, which is a continuation-in-part of Ser. No. 101,178, Aug. 3, 1993. This application Apr. 12, 1994, Ser. No. 226,818

Claims priority, application Japan, Apr. 13, 1993, 5-086563

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—242 **9 Claims**



1. A piston type compressor comprising:

a housing including a cylinder block;

a gas suction chamber formed in said housing, for receiving uncompressed gas;

a rotatable drive shaft mounted in said housing to extend into said cylinder block, said cylinder block having a plurality of cylinder bores formed around said drive shaft;

a plurality of pistons respectively disposed in said cylinder bores, each of said pistons defining a compression chamber in the associated cylinder bore;

a piston driving mechanism for causing said pistons to reciprocate in cooperation with said drive shaft;

a discharge chamber formed in said housing, for providing compressed gas contained in said compression chambers outside the compressor;

a valve receiving chamber formed around said drive shaft in said cylinder block and having an inner wall surrounding said drive shaft;

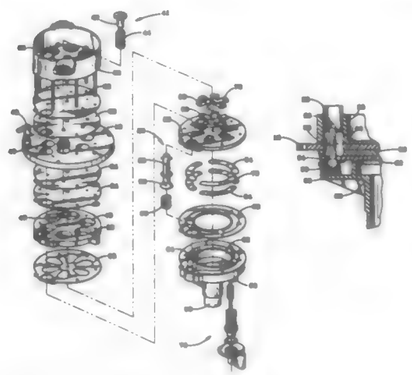
a rotary valve fittingly received in said valve receiving chamber and having an outer surface urged in contacting relationship with said inner wall of said valve receiving chamber, said rotary valve being supported on said drive shaft to rotate in synchronism with the rotation of said drive shaft, said rotary valve having a suction passage formed therein for providing gases contained in said gas suction chamber to said compression chamber during said compression chamber's gas suction stroke;

a plurality of communication passages formed in said cylinder block for providing gas communication between said compression chambers and said valve suction passage;

a bypass passage formed in said rotary valve for permitting gas communication between one of the compression chambers completing a compression stroke, and one of the compression chambers starting a compression stroke; and

means, provided between an outer surface of each piston and an inner wall surface of each associated cylinder bore, for capturing gas leaking in an axial direction along said outer surface of said piston, and for providing the captured gas to one of said communication passages.

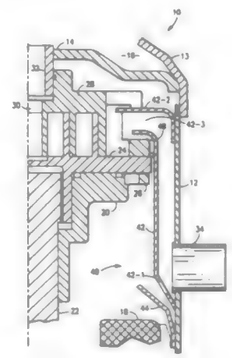
5,366,351
PUMP WITH FAILURE RESPONSIVE DISCHARGE VALVE
Paul A. Nolte, Memphis, Tenn., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.
Filed Jul. 29, 1993, Ser. No. 99,671
Int. Cl.[5] F04B *1/12*
U.S. Cl. 417—271 3 Claims



1. A pump comprising:
a pump body having an inlet, an outlet and a pump therein;
a motor for operating the pump;
attachment means for detachably coupling the motor to the pump body;
valve means for controlling the flow of fluid from the pump body outlet, the valve means opening in response to the motor being attached to the pump body and closing in response to the removal of the motor, the valve means comprising a valve within the pump body outlet and a biasing means for biasing the valve towards a closed position; and
a discharge pipe attached to the pump body outlet, the biasing means tending to expel the discharge pipe from the pump body outlet, the discharge pipe being restrained by the attached motor.

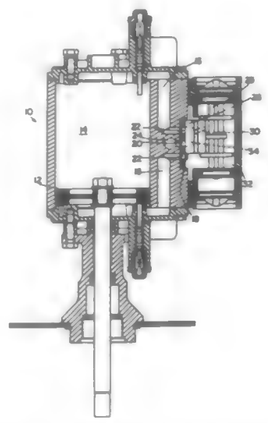
5,366,352
THERMOSTATIC COMPRESSOR SUCTION INLET DUCT VALVE
Raymond L. Deblois, 76 Carriage Dr., Tolland, Conn. 06084; David G. Cutts, 41 Wadsworth St., Glastonbury, Conn. 06033, and Anthony J. Marchese, 314 Thatcher Ter., Neshanic Station, N.J. 08853
Filed Dec. 13, 1993, Ser. No. 166,368
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—292 8 Claims

1. A low side hermetic compressor means comprising:
shell means;
running gear within said shell means and having an inlet for supplying fluid to said running gear;
motor means for driving said running gear to cause compression of fluid supplied thereto;
a suction inlet extending through said shell means;
suction inlet duct means within said shell means and including a portion facing said suction inlet, port means, thermostatic valve means coacting with said port means and a fluid path leading to said inlet of said running gear;
said valve means being in heat transfer relationship with at



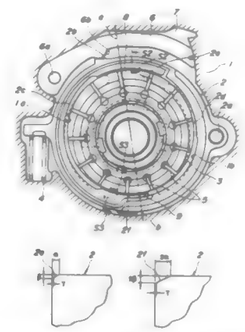
least one of said shell means and said motor means whereby said thermostatic valve means obturates or uncovers said port means to regulate a motor cooling bypass flow responsive to motor temperature.

5,366,353
AIR VALVE WITH BLEED FEATURE TO INHIBIT ICING
Kent P. Hand, 244-126th Ave. NW., Coon Rapids, Minn. 55448
Filed Apr. 13, 1994, Ser. No. 223,936
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—375 4 Claims



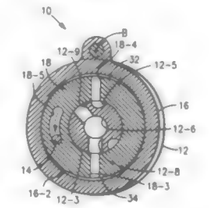
1. In a reciprocating air-operated pump having an air valve chamber filled with pressurized air and wherein a portion of said chamber is bounded by a valve plate having at least one chamber orifice connected to an air motor chamber and an exhaust orifice, connected to an exhaust port, said orifices being selectively connected by a valve cup, the improvement comprising said valve cup having a bleed orifice therein whereby said pressurized air is bled into said exhaust port.

5,366,354
VARIABLE FLUID VOLUME VANE PUMP ARRANGEMENT
Kazuyoshi Yuge, Fuji, Japan, assignor to Jatco Corporation, Fjui, Japan
Filed Mar. 4, 1993, Ser. No. 26,034
Claims priority, application Japan, Mar. 6, 1992, 4-49401
Int. Cl.[5] F04C *2/344, 15/04*
U.S. Cl. 418—26 6 Claims



1. A variable fluid volume vane type rotary pump comprising:
a pump housing;
fluid inlet and outlet ports in communication with an interior portion of said housing;
a cam ring arranged in an inner chamber of said pump housing, for enabling adjustment of fluid flow volume in said pump, said cam ring being provided with a pivot for allowing eccentric displacement of said cam ring;
a rotor rotatably arranged in a space defined within an inner circumference of said cam ring;
a plurality of vanes arranged in a radial direction of said rotor and slidingly movable in said radial direction so as to make touching contact with an inner circumferential surface of said cam ring according to rotation of said rotor;
a first containment defined between an outer circumference of said rotor and said inner circumferential surface of said cam ring, at a circumferential edge of said rotor, a cross sectional area of said first containment varying according to eccentric displacement of said cam ring;
a second containment defined between said outer circumference of said rotor and said inner circumferential surface of said cam ring, at a circumferential edge of said rotor opposite said first containment, a cross sectional area of said second containment varying according to eccentric displacement of said cam ring;
a first concave recess formed in said inner circumferential surface of said cam ring in the vicinity of said inlet port;
a second concave recess formed in said inner circumferential surface of said cam ring in the vicinity of said outlet port;
a first communication groove having a first cross sectional area and formed in the circumferential direction of said cam ring at a location corresponding to that of said first containment and providing fluid communication between said first concave recess and said second concave recess;
a second communication groove having a second cross sectional area and formed in the circumferential direction of said cam ring at a location corresponding to that of said second containment and providing fluid communication between said first concave recess and said second concave recess;
a regulating piston operatively associated with said cam ring and disposed at an outer circumferential portion of said cam ring; and
a fluid chamber associated with said regulating piston such that fluid variation in said fluid chamber regulates motion of said piston such that said piston applies pressure for eccentrically displacing said cam ring on said pivot thereof, displacement of said cam ring varying said cross sectional areas of said first and second containments and controlling an output volume of fluid through said outlet port.

5,366,355
POSITIVE DISPLACEMENT PUMP
Douglas T. Patterson, 750 Tall Oaks Dr., Apt. 12100 I, Blacksburg, Va. 24060
Filed Nov. 10, 1993, Ser. No. 149,899
Int. Cl.[5] F01C *21/16*
U.S. Cl. 418—32 10 Claims



1. A positive displacement pump for a fluid machine having an oil supply comprising:
a shaft having a rotational axis and including oil distribution means;
rotor means drivingly received on said shaft and located eccentrically with respect to said rotational axis;
means defining a cylinder which receives said rotor means;
said means defining a cylinder pivoting about a fixed point and having a bore defined by a pair of semicircular portions joined by straight sections corresponding in extent to a distance by which said rotor means is located eccentrically with respect to said rotational axis;
means for supplying oil from said oil supply to said cylinder;
means for delivering oil from said cylinder to said oil distribution means;
said rotor means and said bore coacting to define at least one trapped volume and said shaft and rotor means having means for supplying oil from said oil supply to said trapped volume during a suction stroke and for supplying oil from said trapped volume to said oil distribution means during a discharge stroke;
said shaft having a limited rotational movement with respect to said rotor means and said means for supplying oil and said means for delivering oil each including a pair of alternative flow paths whereby said pair of alternative flow paths for supplying oil from said oil supply to said trapped volume during a suction stroke and said pair of alternative flow paths for supplying oil from said trapped volume to said oil distribution means during a discharge stroke reverse function between paths of said pairs of alternative paths upon reverse rotation of said shaft;
whereby said rotor coacts with said cylinder to draw oil from said oil supply and to pump said oil into said oil distribution means.

5,366,356
ROTARY-VANE MACHINE
Leonid Volftsun, Ofakim, Israel, assignor to Savgal Compressors Ltd., Ofakim, Israel
Filed May 3, 1993, Ser. No. 55,094
Claims priority, application Israel, May 5, 1992, 101787
Int. Cl.[5] F04C *18/063*
U.S. Cl. 418—38 7 Claims

1. A rotary-vane machine, comprising:
a first stationary end member and a second stationary end

member, fixedly connectable to each other at a predetermined distance;

rotor means including a cup-shaped rotor body having a bottom and at least partly contacting one face of said first end member, and having a first shaft means rotatably mounted in said first end member;

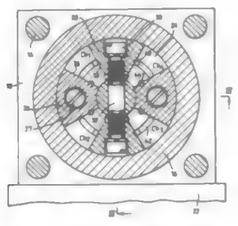
at least two first vane means located inside said rotor body and rigidly connected thereto so as to be stationary relative to said rotor body;

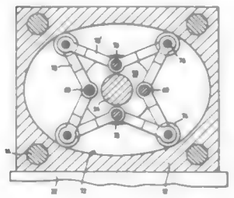
a rotor cover plate fluid-tightly attachable to said rotor body and defining with said rotor body and said first vane means a plurality of fluid-handling chambers;

second shaft means mounted in, and extending beyond, said rotor body and rotor cover plate, and rotatable relative to said rotor body;

at least two second vane means located inside said fluid-handling chambers of said rotor body and fixedly attached to said second shaft means;

a plurality of duct means in said first end member and in the bottom of said rotor body, enabling communication, at predetermined angular relationships between said rotor and said first end member, between said fluid-handling chambers and an area outside of said machine, and





camming means comprising a stationary camming surface and a plurality of movable cam followers, said camming means, upon rotation of said rotor means, being adapted to act upon said second shaft means and, thereby, on said second vane means so as to periodically accelerate said second vane means relative to the rotational speed of said rotor means and periodically decelerate said second vane means relative to said rotational speed, whereby said second vane means periodically increase the volumes of some of said chambers, while reducing the volumes of others of said chambers, the volume of each chamber being alternatingly increased and reduced wherein said cam followers comprise a plurality of levers arranged in pairs, the levers of each pair being interlinked at one of their ends by first pivot means carrying at least one roller adapted to roll along said cam surface, and being articulated at the other one of their ends to second and third pivot means, said second pivot means being fixedly attached to, and driven by, a portion of said rotor means, and said third pivot means being fixedly attached to, and adapted to act upon, a member integral with said second shaft means to the effect of periodically and alternatingly accelerate and decelerate said second vane means relative to the speed of said rotor means.

5,366,357

SCROLL TYPE COMPRESSOR HAVING A COUNTERWEIGHT MOUNTED WITH A CLEARANCE ON A DRIVESHAFT

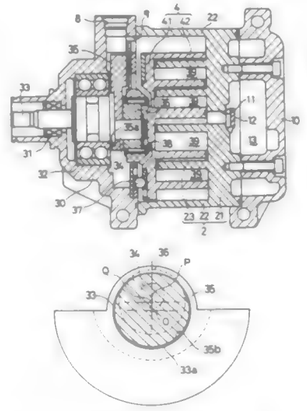
Tetsuhiko Fukanuma; Shinya Yamamoto; Masao Iguchi; Kiyohiro Yamada; Kunifumi Goto; Tetsuo Yoshida; Tetsuya Yamaguchi; Tatsuaki Mori, and Kazuhiro Kuroki, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 21,760, Feb. 24, 1993, abandoned. This application Nov. 12, 1993, Ser. No. 152,825

Claims priority, application Japan, Feb. 28, 1992, 4-43621; Nov. 13, 1992, 4-303475

Int. Cl.[5] F04C *18/04, 29/02*

U.S. Cl. 418—55.1 12 Claims



1. A scroll type compressor comprising:

a housing;

a stationary scroll member disposed fixedly with respect to said housing, and having an end plate and an involute spiral element;

an orbiting scroll member having an end plate and an involute spiral element;

said spiral elements of the stationary and orbiting scroll members being interfitted at an offset angle to form line contacts defining at least one fluid pocket;

a drive shaft rotatably supported in said housing through a bearing, said drive shaft having an outer end, a cylindrically shaped inner end and a sliding guide portion projecting axially inward from said inner end;

a drive bush for coupling said drive shaft to said orbiting scroll member, which is supported within said housing by the drive bush;

said drive bush having a engaging recess for engagement with said sliding guide portion, whereby said drive bush is slidable with respect to said drive shaft;

an anti-spin mechanism for causing said orbiting scroll member to rotate in cooperation with said drive bush, without said orbiting scroll rotating on its own axis;

a counterweight mounted on said sliding guide portion between said drive bush and the inner end of said drive shaft, and coupled to said drive bush for conjoint movement therewith for balancing the centrifugal force exerted by said orbiting scroll member; and

said counterweight having a first cylindrical recess for receiving said cylindrical inner end of the drive shaft, with a clearance maintained between the radially inner perimeter of said recess and radially outer perimeter of said inner end, so as to allow said drive bush and counterweight to slide relative to said sliding guide portion.

5,366,358

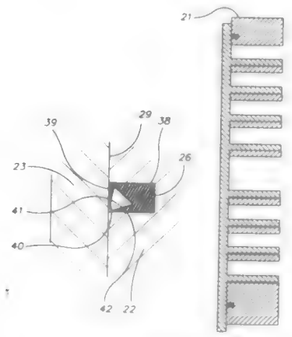
OIL FREE SCROLL VACUUM PUMP

Charles A. Grenci, 205 Brown Rd., Montrose, Colo. 81401, and R. Dallas Clayton, 200 Altez SE., Albuquerque, N. Mex. 87123

Filed Jan. 27, 1993, Ser. No. 9,851

Int. Cl.[5] F04C *18/04, 27/00;* F16J *15/02, 15/48*

U.S. Cl. 418—55.4 8 Claims



1. In an oil-free, scroll vacuum-pump comprising a first plate-half having a first, interior, spiral pathway, and a second plate-half having a second, interior, spiral pathway in operative engagement with said first, spiral pathway, at least one of said first plate-half and said second plate-half being capable of orbital motion; an inlet, and an exhaust, whereby, during the orbital motion of said at least one plate-half, a volume of gas is compressed along said spiral pathways until it is exhausted at said exhaust; said first plate-half having a first, annular surface-face, and said second plate-half having a second, annular surface-face for contact against said first, annular surface-face of said first plate-half, wherein the improvement comprises:

said first plate-half having an annular groove formed in said first, annular surface-face, and vacuum-seal means in said annular groove for creating a vacuum seal to prevent ambient air entering into said spiral pathways, said vacuum-seal means in said annular groove comprising an annular, elastomeric, sealing ring;

said annular, elastomeric, sealing ring comprising a cutout formed therein, said cutout being located in said groove closer to said second, annular surface-face of said second plate-half, said cutout being bounded by a first, radially-interior, narrow lip-section which is contact with a section of said annular groove to form a static seal, and a second, narrow lip-section juxtapositioned opposite, and in engagement with, said second, annular surface-face of said second plate-half, to form a dynamic seal, whereby the pressure differential between the interior and exterior of the pump loads said tapering sections against respective surfaces.

5,366,359

SCROLL COMPRESSOR ORBITAL SCROLL DRIVE AND ANTI-ROTATION ASSEMBLY

Mark J. Bookbinder, Detroit, Mich.; Christopher M. Bellinger, Lockport, and Michael E. Daniels, Depew, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 20, 1993, Ser. No. 109,545

Int. Cl.[5] F04C *18/04*

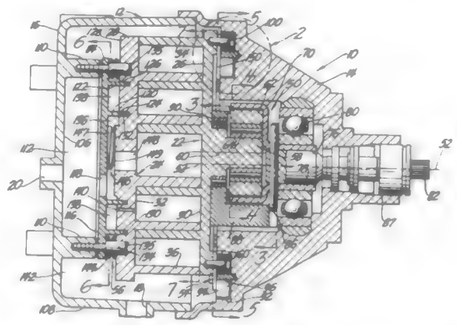
U.S. Cl. 418—55.5 2 Claims

1. In a scroll type compressor including a housing having a central rotation axis, a non-orbital scroll and an orbital scroll, said orbital scroll having an end plate with a generally cylindrical stub shaft that is parallel to and offset from said rotation axis, a drive mechanism for said orbital scroll, comprising,

a drive shaft supported within said housing, said drive shaft being substantially coaxial to said rotation axis,

a bushing rotatably received on said stub shaft and having an outer edge including a cylindrical portion coaxial to said stub shaft and a flattened portion lying in a predetermined plane,

a cup on said drive shaft and having a bore with a cylindrical portion and a flat surface and which is slidably receivable over said bushing with sufficient radial clearance to allow said bore flat surface to slide along said predetermined plane so as to allow compliance between said orbital and non cylindrical scrolls,



an inertial balance weight rotatably mounted directly on said stub shaft and against said orbital scroll end plate, between said end plate and said bushing, centrifugally opposed to said stub shaft, and,

a connection and drive means fixing said balance weight to said drive shaft so as to drive said weight one to one with said drive shaft, while allowing said cup to slide on said bushing independently of said weight,

whereby, said balance weight acts directly on and axially close to said orbital scroll, and will constantly maintain its position relative to said orbital stub regardless of the sliding of said cup on said bushing.

5,366,360

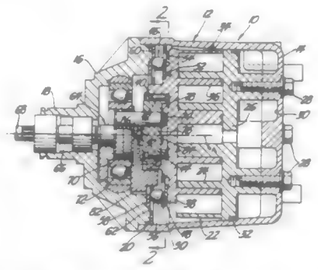
AXIAL POSITIONING LIMIT PIN FOR SCROLL COMPRESSOR

Mark J. Bookbinder, Detroit, Mich.; Michael E. Greene, Kettering, Ohio; Dwayne L. Johnson, La Crescent, Minn.; Christopher M. Bellinger, and Susan C. Vasko, both of Lockport, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1993, Ser. No. 150,311

Int. Cl.[5] F04C *18/04*

U.S. Cl. 418—55.5 1 Claim



1. In a scroll compressor of the type having a housing with a central axis, and an orbital scroll with a cylindrical bearing that is eccentric relative to said central axis, an improved orbital scroll drive, comprising,

a drive shaft rotatably mounted in said housing which is basically structurally coaxial to said central axis

a cylindrical bushing disposed in said orbital scroll bearing and having a rearward facing surface that faces toward said orbital scroll, an opposed forward facing surface that faces toward said drive shaft, and a cylindrical bore eccentric to said central axis,

a counterweight fixed to said bushing in abutment with said forward facing surface and located axially between said drive shaft and bushing, said counterweight having a cylindrical opening coaxial to said central axis that is covered by said bushing

a central cylindrical axial locating pin integral to, and comprising the forwardmost portion of, said drive shaft said locating pin being received axially through said counterweight cylindrical opening and being of sufficiently smaller diameter so as to allow a relatively small motion therewithin in a direction normal to said central axis, and,

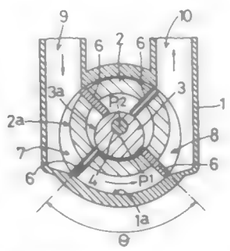
a cylindrical drive pin separate from said drive shaft with a diameter that fits closely, but slidably through said bushing cylindrical bore and having a fastener at one end larger in diameter that said bushing cylindrical bore and an opposite end that is secured to said drive shaft so as simultaneously maintain said axial locating pin in abuttment with said bushing forward facing surface and said fastener in abuttment with said bushing rearward facing surface,

whereby, prior to assembly of said compressor, said shaft may be machined by turning about a single axis, and after assembly, said bushing is completely axially located between said drive shaft locating pin and drive pin fastener, while said counterweight may rotate slightly relative to said drive shaft about said drive pin, limited by the confinement of said axial locating pin within said counterweight opening.

5,366,361
VANE PUMP

Hiromitsu Mori, Ikoma, and Chikara Kobayashi, Hamamatsu, both of Japan, assignors to Osaka Gas Co., Ltd., Osaka, Japan

Filed Sep. 4, 1992, Ser. No. 940,472
Int. Cl.[5] F01C *1/00*
U.S. Cl. 418—261 **1 Claim**



1. A vane pump comprising:

a casing including an inner peripheral wall which has a substantially cylindrical shape and a center;

a rotor rotatably mounted in said casing and including an outer peripheral wall having a substantially cylindrical shape, said rotor having an axis of rotation offset from said center of said inner peripheral wall of said casing;

a plurality of vanes mounted in said rotor and having a portion projectable in variable amounts from said outer peripheral wall of said rotor, each of said plurality of vanes having a proximal end and a distal end, said distal ends of said vanes being movable along said inner peripheral wall of said casing; and

at least one cam fixed to said casing so as to be substantially coaxial with said inner peripheral wall of said casing, said cam having a substantially cylindrical outer peripheral wall defining a guide surface for acting on said proximal ends of said vanes;

wherein said proximal ends of said vanes are subjected to the guiding action of said guide surface of said cam to project said vanes from said rotor, said inner peripheral wall of said casing in turn acting on said distal ends of said vanes to retract said vanes within said rotor and against said guide surface of said cam;

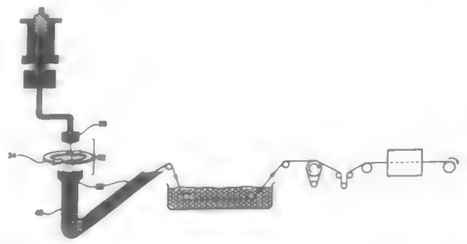
wherein a portion of said inner peripheral wall of said casing and a portion of said outer peripheral wall of said cam are shaped, in a range of vane revolution from an inlet to an outlet of said casing, to be substantially concentric with a portion of said outer wall of said rotor, said rotor and said vanes being maintained in a constant position relative to each other in said range such that said portion of said vanes being projected from said rotor is constant throughout said range of vane revolution and so that there occurs no sliding of said vanes relative to said rotor;

whereby wear due to sliding contact between said vanes and said rotor throughout said range of vane revolution is avoided.

5,366,362
APPARATUS FOR EXTRUDING A SINGLE AROMATIC HETEROCYCLIC POLYMERIC FIBER

Satish Kumar, Duluth, Ga.; Marilyn Hunsaker, St. Paul, Minn.; Walter W. Adams, and Thaddeus E. Helminiak, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Froce, Washington, D.C.

Division of Ser. No. 671,988, Mar. 14, 1991, Pat. No. 5,174,940, which is a continuation-in-part of Ser. No. 456,009, Dec. 22, 1989. This application Sep. 4, 1992, Ser. No. 941,336
Int. Cl.[5] D01D *5/06*
U.S. Cl. 425—66 **2 Claims**



1. An apparatus for air gap wet spinning an aromatic heterocyclic polymer dope through a single extrusion nozzle, comprising:

(a) a tank with a single extrusion orifice for extruding an aromatic heterocyclic polymer dope;

(b) means for supplying the aromatic heterocyclic polymer dope to the tank;

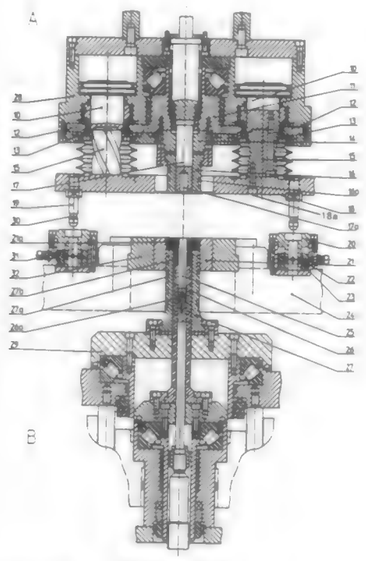
(c) a coagulation bath located below the extrusion orifice with an air gap between them; and,

(d) means for full twisting and drawing the extruded polymer dope in the air gap before the extruded polymer dope enters the coagulation bath.

5,366,363
MODULAR APPARATUS FOR COMPRESSION FORMING OR CALIBRATING OF POWDER METAL WORKPIECES

Hermann Good, Buchs/SG, Switzerland, and Peter Rauch, Dünserberg, Austria, assignors to Werkzeugbau Alvier AG, Buchs/SG, Switzerland

Filed Aug. 14, 1992, Ser. No. 930,848
Claims priority, application Switzerland, Aug. 17, 1991, 02418/91-4
Int. Cl.[5] B22F *3/00*
U.S. Cl. 425—78 **12 Claims**



1. Apparatus for shaping a powder metal workpiece (W) having at least in part an outer helical contour or surface (1), said apparatus comprising

a press mold (21) having an inner helical contour or surface;

a first rotatable and axially movable plunger or punch or ram (16);

a second rotatable and axially movable plunger or punch or ram (27);

a helical cam system (13, 15) controlling rotary movement of the first plunger or punch or ram (16) upon axial movement relative to the press mold,

the helical cam system (13, 15) comprising a core element (15) having a helical outer contour and a matrix element (13) having an inner contour complementary to said helical outer contour;

a gear transmission (11, 12) between said helical cam system (13, 15) and said first plunger or punch or ram (16); and

a guide plate (18) relatively movable with respect to said first plunger or punch or ram (16);

wherein one of said core element (15) and said matrix element (13) is securely connected to said guide plate (18);

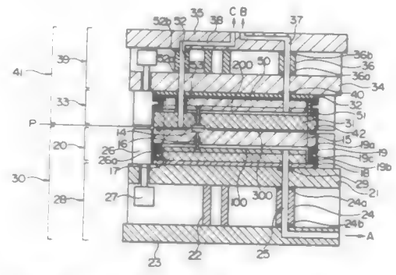
the other one of said matrix element (13) and said core element (15) is coupled to a first gear (12) of said gear transmission, and

wherein said first plunger or punch or ram (16) is coupled to a second gear (11) of said gear transmission, in rotation-transmitting engagement with said first gear (12).

5,366,364
PLASTIC MOLDING APPARATUS

Sueyoshi Tanaka; Zyunzi Sakakibara, and Yasutsugu Tsutsumi, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,823
Claims priority, application Japan, Sep. 1, 1992, 4-233488
Int. Cl.[5] B29C *45/02, 45/14, 45/36*
U.S. Cl. 425—116 **8 Claims**



1. A plastic molding apparatus including:

a lower die comprising a lower die chase block having a plurality of cavities, an ejector chamber, and a parting surface, and a lower die common surface table;

an upper die comprising an upper die chase block having a plurality of cavities opposing corresponding cavities in said lower die chase block, an ejector chamber, and a parting surface, and an upper die common surface table, said upper die opposing said lower die for plastic packaging of semiconductor devices in the cavities in said lower die chase block and said upper die chase block;

a first evacuation passage for evacuation of the ejector chamber in said upper die chase block through said upper die common surface table; and

a third evacuation passage for evacuating a parting chamber formed by said parting surfaces of said lower die chase block and said upper die chase block through one of said lower die common surface table and said upper die common surface table.

5,366,365
MEANS FOR CONTROLLING FEEDSTOCK COMPACTION IN FORMING FLEXIBLE POROUS PIPES OF CONTROLLED PORE SIZE

Henry W. Sullivan,, 10814 Jaycee La., Houston, Tex. 77024; Charles R. Killian, 14525 O'Day Rd., Pearland, Tex. 77581, and Paul D. Bettencourt, 13910 Kingsride, Houston, Tex. 77079

Filed Jun. 4, 1992, Ser. No. 893,386
Int. Cl.[5] B29C *67/22*
U.S. Cl. 425—144 **6 Claims**

1. An apparatus for making flexible porous pipe of controlled uniform porosity, said apparatus comprising:

(a) first delivery means for transporting a thermoplastic material at a first predetermined rate;

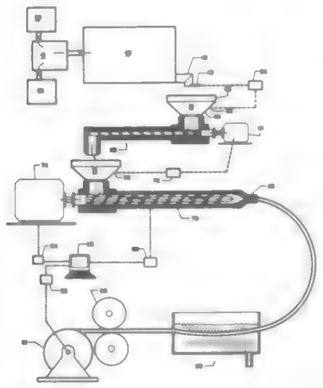
(b) second delivery means for transporting a thermoset material at a second predetermined rate;

(c) a blender means for receiving said thermoplastic material and said thermoset material and blending said materials in a controlled, uniform manner and discharging a blended mixture therefrom, said blended mixture having a predetermined feed composition which is determined by said first predetermined rate and said second predetermined rate;

(d) an extruder means having a receiving means at one end and a die head at the other end for making pipes of a predetermined dimension from said blended mixture of materials;

(e) a delivery means for transporting said blended mixture

from said blender means to said receiving means of said extruder means in a substantially compaction-free state during transportation by said delivery means, said delivery means comprising at least one low clearance screw conveyor and at least one feed hopper, said feed hopper containing a level controlling means to insure a constant gravity head therewithin, said feed hopper being positioned immediately after said conveyor means and before said receiving means in said extruder means;



(f) temperature control means in said extruder means for melting or softening said thermoplastic material contained therein without substantially affecting said thermoset material; and

(g) cooling means positioned after said extruder means to quickly cool said pipes whereby said porous pipes so formed having a composition substantially equal to feed composition to assure a controlled porosity of said porous pipes.

5,366,366

INJECTION MOLDING MACHINE HAVING A MACHINE SCREW DRIVING GEAR

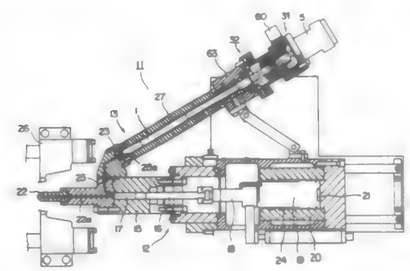
Koichi Yokoyama, Matsuto, Japan, assignor to Sodick Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1993, Ser. No. 82,840

Claims priority, application Japan, Jul. 1, 1992, 4-197643

Int. Cl.[5] B29C *45/77*

U.S. Cl. 425—145 **9 Claims**



1. An apparatus, comprising:

a screw cylinder having a screw rotatably and axially movably disposed therein;

a cylinder member having one end secured to said screw cylinder;

a rotary motor at another end of said cylinder member;

a piston member in said cylinder member, said piston member being coupled with said screw for rotational and axial movement therewith at one end thereof and rotatably coupled with said rotary motor at another end thereof;

a hydraulic chamber, defined by a first surface of said cylinder member and a first surface of said piston member, for axially moving said piston member relative to said cylinder member when supplied with hydraulic fluid;

a thrust bearing disposed between said first and second surfaces; and

radial support members between said cylinder member and said piston member for rotatably supporting said piston member in said cylinder member;

wherein said hydraulic chamber, having said thrust bearing therein, is in fluid communication with said radial support members, whereby said thrust bearing and said radial support members are lubricated by hydraulic fluid supplied to said hydraulic chamber.

5,366,367

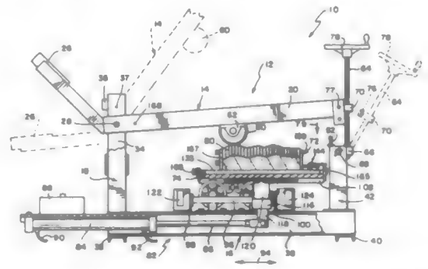
COMPACTING APPARATUS

Don L. Dekker, and Robert R. Hasbrouck, both of Terre Haute, Ind., assignors to Koch Materials Company, Witchita, Kans.

Continuation of Ser. No. 885,155, May 18, 1992, Pat. No. 5,334,005. This application Apr. 21, 1994, Ser. No. 230,851

Int. Cl.[5] B29C *43/00*

U.S. Cl. 425—194 **4 Claims**



1. An apparatus for compressing a material in a mold, the apparatus comprising:

a frame;

a support plate coupled to the frame for mounting the mold thereon;

means for coupling the support plate in a fixed vertical position relative to the frame to permit reciprocating movement of the support plate only in a horizontal direction relative to the frame along a predetermined path;

a roller rotatably coupled to the frame above the support plate for compressing the material in the mold;

means for moving the support plate in the horizontal direction relative to the frame along the predetermined path so that the support plate passes back and forth below the roller; and

means for moving the roller vertically downward relative to the frame and the support plate to adjust the compressive force applied to the material by the roller incrementally during reciprocating horizontal movement of the support plate.

5,366,368

MULTI-PLUNGER MANUAL TRANSFER MOLD DIE

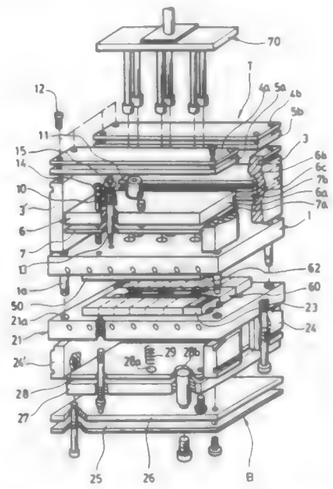
Keun Y. Jang, Kyungsangbook-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Oct. 14, 1992, Ser. No. 960,649

Claims priority, application Rep. of Korea, Nov. 14, 1991, 19459/1991

Int. Cl.[5] B29L *45/00*

U.S. Cl. 425—544 **5 Claims**



1. A multi-plunger manual transfer mold die comprising:

a multi-plunger assembly, having a plurality of plungers, which is lowered and raised by a press so as to press resin tablets;

a tablet loader for containing a plurality of tablets which is inserted in an upper mold die to charge the tablets into a plurality of plunger bushes of the upper mold die and then pulled out of the upper mold die;

the upper mold die including means to receive the tablet loader and to receive the tablets from the tablet loader so that the tablets can be pressed by the plungers; and

a lower mold die which is to be clamped to the upper mold die and then receives in cavities of chases thereof the resin from the upper mold die to mold half-finished products mounted in the chases;

wherein said multi-plunger assembly includes a retainer fixed to an end of a connecting rod integrally formed with a press cylinder rod, a plurality of plunger rods downwardly projected from the retainer, and a plurality of plunger tips each welded to each of ends of the plunger rods;

wherein said connecting rod is provided with a flange at a lower end thereof, a connector is inserted on the connecting rod and mounted on the flange, and screws are engaged with the retainer through holes formed at the connector, thereby causing the connecting rod to be coupled to the retainer; and

wherein said retainer is formed with a plurality of holes each having an enlarged step portion and an upper threaded portion, bushes are mounted in the enlarged portions of the holes respectively, each of the plunger rods is inserted in the bush at a head end thereof, and each of the upper threaded portions of the holes is engaged with a fixing nut, thereby causing the plunger rods to be coupled to the retainer.

5,366,369

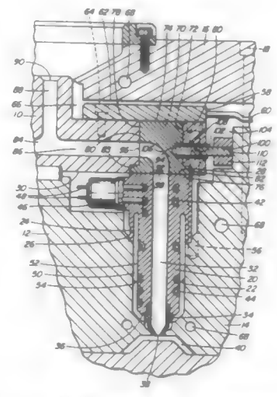
INJECTION MOLDING INSERT HAVING AN ALIGNED PIN AND MELT INLET

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Jul. 26, 1993, Ser. No. 96,934

Int. Cl.[5] B29C *45/20*

U.S. Cl. 425—549 **5 Claims**



1. In a multi-cavity injection molding apparatus having a plurality of spaced heated nozzles seated in a mold, each of the nozzles having a rear end extending in a common plane and a melt bore extending therethrough to convey melt to a gate leading to a cavity, a heated melt distribution manifold mounted to extend across the rear ends of the nozzles, the melt distribution manifold having a melt passage and a plurality of spaced transverse openings, each transverse opening aligned with one of the nozzles, the melt passage having a plurality of branches extending outwardly from a common inlet portion towards each of the nozzles, and a plurality of inserts each having a rear face, a front face, an outer surface, and a melt duct extending therethrough, each insert being removably seated in one of the transverse openings in the melt distribution manifold with the front face abutting against the rear end of a respective nozzle, the melt duct having a smoothly curved bend extending through substantially 90° from an inlet on the outer surface in matching alignment with one of the branches of the melt passage in the melt distribution manifold to an outlet on the front face in matching alignment with the melt bore through the respective nozzle, having the improvement wherein;

each insert has an alignment pin extending outwardly from the outer surface into a matching aperture in the melt distribution manifold to accurately align the inlet to the melt duct extending through the insert with said one of the branches of the melt passage in the melt distribution manifold, the alignment pin having an inner end which fits in an alignment pin bore extending inwardly from the outer surface of the insert opposite from and in alignment with the inlet to the melt duct extending through the insert.

5,366,370

INJECTION MOLDING APPARATUS WITH PERPENDICULAR HOT TIP GATES

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada L7G 2X1

Filed Dec. 21, 1993, Ser. No. 170,827

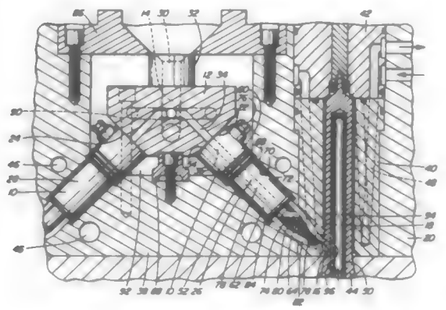
Int. Cl.[5] B29C *45/22*

U.S. Cl. 425—549 **3 Claims**

1. In an injection molding apparatus having a plurality of heated nozzles extending from a common elongated manifold with a melt passage inlet to convey melt from the melt passage

inlet to a plurality of gates, each gaze extending through a mold to a separate cavity extending from a common parting line, the parting line extending substantially perpendicular to the melt passage inlet, each nozzle being seated in a well in the mold and having a longitudinal axis, a rear end abutting against the manifold, and a pointed tip aligned with a respective one of the gates, having the improvement wherein;

the gates extend substantially parallel to the parting line, the



manifold has at least one longitudinally extending diagonal surface against which the rear ends of the nozzles abut, whereby each nozzle extends forwardly and outwardly from the manifold at a first predetermined angle to the parting line, the pointed tip of each nozzle extending outwardly at a second predetermined angle to the longitudinal axis of the nozzle, whereby the pointed tip is aligned with the respective one of the gates in a direction substantially parallel to the parting line.

5,366,371

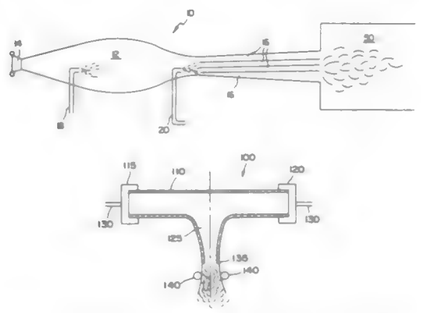
PROCESS AND APPARATUS UTILIZING AN IMPROVED PULSE COMBUSTOR FOR ATOMIZING LIQUIDS AND SLURRIES

Montaz N. Mansour, Columbia, and Ravi Chandran, Ellicott City, both of Md., assignors to Manufacturing and Technology Conversion International, Inc., Columbia, Md.

Continuation-in-part of Ser. No. 793,834, Nov. 18, 1991, Pat. No. 5,205,728. This application Apr. 26, 1993, Ser. No. 53,129

Int. Cl.[5] F23C *11/04*

U.S. Cl. 431—1 **8 Claims**



1. A liquid or slurry atomization apparatus comprising:

a) a pulse combustor for generating a stream of atomization fluid and an oscillating flow field of same, said pulse combustor including means for introducing a fuel and air to a combustion chamber, said combustion chamber being formed in a generally T-shape wherein said fuel and air introduction means are at opposing ends of said T-shape, and wherein said combustion chamber terminates in an outlet located at the end of the perpendicular portion of said T-shape to provide a high velocity oscillation area thereat;

b) a vessel in communication with said outlet for receiving said atomization fluid stream and said oscillating flow field; and

c) means for introducing a liquid or slurry to be atomized to said pulse combustor, said introduction means being located at said high-velocity oscillation area to introduce said liquid or slurry to said oscillating flow field of atomization field for atomization of said liquid or slurry.

5,366,372

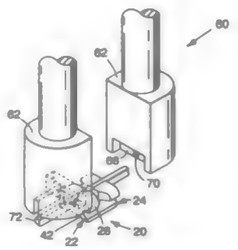
METHOD AND APPARATUS FOR DEBONDING CERAMIC ORTHODONTIC BRACKETS

James D. Hansen, Duarte, and Evangelos G. Georgakis, Altaloma, both of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 29, 1993, Ser. No. 158,709

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—4 **15 Claims**



1. A method of debonding a ceramic orthodontic bracket from a tooth comprising the steps of:

engaging a mesial side and a distal side of the bracket in areas located buccolabially of a base of the bracket; and

urging the engaged mesial and distal sides toward each other in order to pivot at least one of a mesial section and a distal section of the bracket away from underlying areas of the tooth and about a reference axis generally parallel to a longitudinal axis of a channel that extends in a generally occlusal-gingival direction between the mesial section and the distal section of the bracket.

13. An orthodontic bracket debonding tool for debonding an orthodontic bracket having a labial side, a mesial section with a mesial side, a distal section with a distal side, and a slot extending in a generally mesial-distal direction in said mesial section and said distal section for receiving an archwire, said tool comprising:

a pair of opposed jaws;

a pair of handles, each handle being connected to one said jaws; and

a coupling movably connecting said handles to each other, said coupling enabling movement of said jaws toward each other as said handles are moved toward each other,

said jaws each including an outer end portion having a wall for engaging the mesial side and the distal side respectively of the bracket, a stop for engaging the labial side of the bracket and a groove extending through the wall for straddling an archwire received in the slot of the bracket.

5,366,373

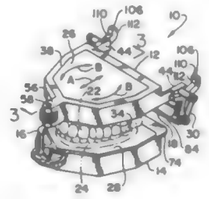
DENTAL ARTICULATOR

Frank Mumolo, 1042 Beamore Ave., Franklin Square, N.Y. 11010, and Helmut W. Pufal, 58-44 78th Ave., Glendale, N.Y. 11385

Filed Dec. 10, 1993, Ser. No. 164,559

Int. Cl.[5] A61C *11/00*

U.S. Cl. 433—58 **3 Claims**



1. A dental articulator of a type having a pivotal mounting for a denture in a dental cast upper jaw and for a denture in a dental cast lower jaw preparatory to testing the accuracy of said dentures during occlusion thereof, the improvements in said pivotal mounting comprising a first horizontally oriented pivot member disposed rearwardly of said dental cast lower jaw having opposite ends serving as male connection means, a second horizontally oriented pivot member disposed rearwardly of said dental cast upper jaw having opposite ends serving as pivot axle means for said dental cast upper jaw, a pair of third pivot members each having at opposite ends a female connection means and an arcuate support for said pivot axle means of said dental cast upper jaw, each said third pivot member having an operative position in angular relation to said dental cast lower jaw first pivot member determined by a corresponding rotative position of said cooperating female and male connection means for positioning said denture of said dental cast upper jaw in a horizontal plane relative to said denture of said dental cast lower jaw after which said dental cast upper jaw is provided with an operative position in which said pivot axle means of said dental cast upper jaw is disposed in a pivotal relation in a said cooperating arcuate support of said third pivot member, and a pair of closed loop rubber bands each disposed in encircling relation about one said axle means of said dental cast upper jaw and female connection means of said third pivot member, whereby said dental cast upper jaw can be urged through pivotal traverses relative to said dental cast lower jaw to test the accuracy during occlusion of said dentures thereof.

5,366,374

DENTAL IMPLANT

James M. Vlassis, 2900 S. Geasner, #1104, Houston, Tex. 77063

Filed May 18, 1993, Ser. No. 63,532

Int. Cl.[5] A61C *3/02, 8/00*

U.S. Cl. 433—165 **10 Claims**

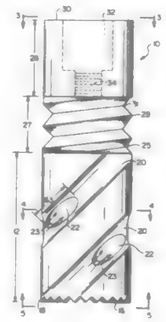
1. A permanently implantable endosseous implant apparatus, adapted to trephine a bone during implantation therein, comprising:

an elongated, substantially cylindrical body, having a proximal portion, a distal hollow portion and an open distal end;

cutting means disposed on said distal end of said body for trephining said bone;

means for attachment to a handpiece for rotation therewith about an axis of said body;

at least one spiral osteogroove, disposed on an external surface of said body, and extending from said distal portion generally toward said proximal portion for channeling a flow of bone fragments away from said cutting means;



at least one osteovent disposed in said osteogroove for admitting bone therethrough, said osteovent having a beveled leading margin.

5,366,375

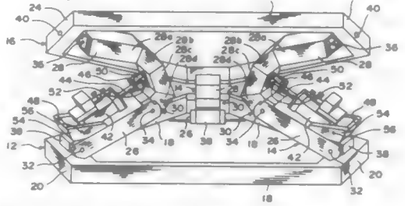
MOTION SIMULATOR

John F. Sarnicola, R.D. 1, Box 379 B, Gratsinger Rd., Binghamton, N.Y. 13903

Filed May 11, 1992, Ser. No. 881,511

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—37 **17 Claims**



1. A motion simulator apparatus, comprising:

a base support;

a plurality of hinged legs connected to said base support;

a motion platform connected to said legs at three separate points defining a plane; and

an actuator for moving said platform relative to said base; wherein said actuator is connected to one or more of said legs; wherein one of said legs is defined by leg portions hinged together with said actuator connected between said leg portions to fold and unfold said leg about a knee to move said motion platform relative to said support.

5,366,376

DRIVER TRAINING SYSTEM AND METHOD WITH PERFORMANCE DATA FEEDBACK

Norman S. Copperman, Palo Alto; Alan S. Gray, Sunnyvale, and Wade O. Winblad, Hayward, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Filed May 22, 1992, Ser. No. 888,375

Int. Cl.[5] G09B *9/04*

U.S. Cl. 434—69 **36 Claims**

MICROFICHE APPENDIX INCLUDED

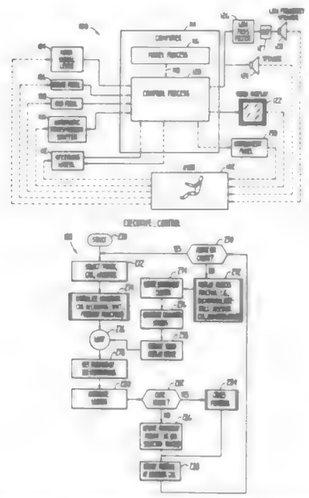
(29 Microfiche, 1 Pages)

1. A driver training system for a user of a simulated vehicle, comprising:

a plurality of simulated input devices for controlling the simulated vehicle, at least one input device generating a

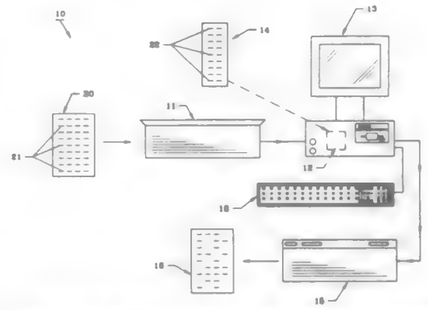
set of input device states indicative of input device position;
a video display for presenting the user with a view of a simulated environment;
modeling means responsive to the input devices for determining position information of the simulated vehicle in the simulated environment;
means responsive to the position information for displaying on the video display a present route of the simulated vehicle through the simulated environment;
a memory having a plurality of buffers including a present route buffer;
means for storing the input device states in the present route buffer of the memory at selected times during traversal of the present route; and
means responsive to the input device states stored in the present route buffer for displaying on the video display a graphical representation indicative of the input device states.

15. A method of training a driver of a simulated vehicle by providing performance data feedback from a driver training system having a computer, a video display, a plurality of simu-



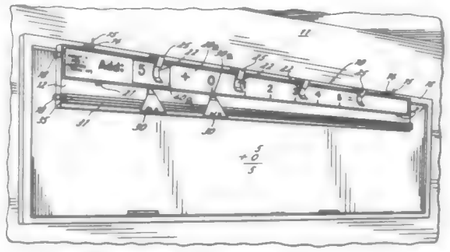
lated input devices, a memory having a plurality of buffers for storing position information and means for selecting a buffer in the memory, said method comprising the steps of:
storing a representation of a simulated environment inside the computer;
using the simulated input devices to control the position of the simulated vehicle in the simulated environment;
determining present state information of at least one of the input devices;
storing the present state information in the computer;
presenting the user with a view of the simulated environment on the video display;
determining position information of the simulated vehicle in the simulated environment;
storing the position information in the computer;
displaying a present route of the simulated vehicle through the simulated environment on the video display, wherein the present route is represented by the position information; and
selectively storing under user control the present route as an ideal route and the present state information as ideal state information in a buffer in the computer.

5,366,377
METHOD OF MANUFACTURING READING MATERIALS TO IMPROVE READING SKILLS
Edward R. Miller, Rte. 3, Box 329C Windy Gap Rd., North Wilkesboro, N.C. 28659
Filed Jul. 30, 1993, Ser. No. 99,583
Int. Cl.[5] G09B *17/00*
U.S. Cl. 434—178 **10 Claims**



1. A method of improving the skill of a reader comprising the steps of:
(a) testing the ability of the reader;
(b) determining the reader's skill;
(c) preparing text having a plurality of words;
(d) artificially comparing each word in the text to a specific list of sight words;
(e) deleting words from the text that match the sight words; and
(f) printing the text with the matching words deleted.

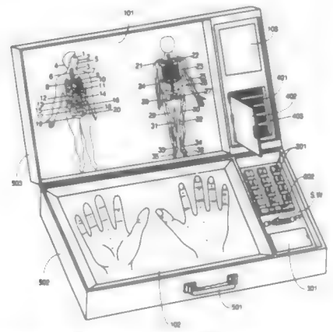
5,366,378
VISUAL TEACHING AID
Kenneth L. Johannsen, Arlington Heights, and Raymond Avischious, Rolling Meadows, both of Ill., assignors to NEK Enterprises, Inc., Arlington Heights, Ill.
Continuation of Ser. No. 714,858, Jun. 13, 1991, abandoned. This application May 3, 1993, Ser. No. 57,183
Int. Cl.[5] G09B *19/00*
U.S. Cl. 434—187 **39 Claims**



1. A visual teaching aid comprising
a board,
means for mounting said board on a wall, a plurality of insert cards each having a forward face defined between top and bottom peripheral edges, said insert cards each having indicia on the forward face thereof, said cards being interchangeably mountable on said board with the forward face having indicia thereon forwardly directed,
means releasably supporting said card when mounted on said board with the forward face entirely free of any obstructions from viewing,
at least one pointer, and

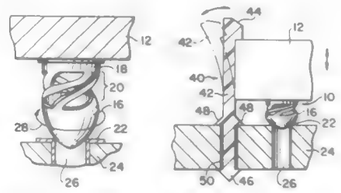
means supporting said pointer for movement along said board for pointing to selected indicia on the insert card mounted thereon.

5,366,379
NEEDLE-PUNCTURING POSITION INDICATING APPARATUS UTILIZING A LIGHTING DISPLAY PANEL IN FINGERS ACUPUNCTURE
Hong-Mo Yang, Banpo Apartment 105-505, 955, Banpo-dong, Seocho-ku, Seoul, and Chang-Gyu Kim, 1130-18, Hwagok-bondong, Kangseo-ku, Seoul, both of Rep. of Korea
Filed Nov. 12, 1991, Ser. No. 792,494
Claims priority, application Rep. of Korea, Aug. 5, 1991, 12458/1991
Int. Cl.[5] G09B *25/00*
U.S. Cl. 434—365 **4 Claims**



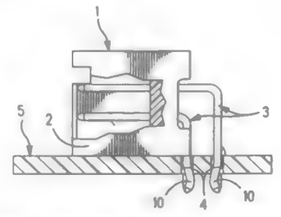
1. A portable apparatus for utilizing needle-puncturing positions of acupuncture on a palm and a back of a hand, said apparatus comprises:
a portable case having a cover portion hinged to a body portion;
human body anatomical charts attached to a first section of a interior surface of said cover portion for showing proper code numbers for organs of a human body;
a code reference symptoms book describing symptoms of affected regions with the corresponding symptom reference codes, said symptoms book attached to a second section of said interior surface of said cover portion and adjacent to said human body anatomical charts;
a display panel means mounted on a first section of said body portion for displaying the puncturing positions of acupuncture on a palm and a back of a hand;
a keyboard means mounted on a second section of said body portion and adjacent to said display panel means, said keyboard means having a plurality of input keys for inputting a symptom reference code identified by said human body anatomical charts and a power supply switch; and
control means coupled to said keyboard means and said display panel means for controlling said display panel means to display the puncturing positions of acupuncture on a palm and a back of a hand corresponding to said inputted symptom reference code.

5,366,380
SPRING BIASED TAPERED CONTACT ELEMENTS FOR ELECTRICAL CONNECTORS AND INTEGRATED CIRCUIT PACKAGES
Welles K. Reymond, Waterbury, Conn., assignor to General DataComm, Inc., Middlebury, Conn.
Continuation-in-part of Ser. No. 892,684, May 27, 1992, Pat. No. 5,256,073, and Ser. No. 898,346, May 27, 1992, Pat. No. 5,215,471, which is a continuation of Ser. No. 605,523, Oct. 29, 1990, abandoned, said Ser. No. 892,684, is a continuation of Ser. No. 605,521, Oct. 29, 1990, abandoned, said Ser. No. 605,523, said Ser. No. 605,521, each is a continuation-in-part of Ser. No. 366,546, Jun. 13, 1989, Pat. No. 4,966,556. This application Mar. 29, 1993, Ser. No. 38,175
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **46 Claims**



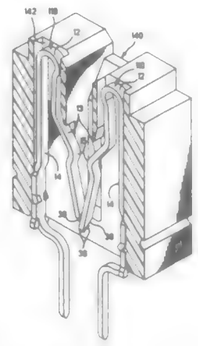
1. A contact element for an electrical connector which provides an electrical connection between a first object and a conductive rim of a hole of a second object, said electrical connector for use with a fastening means for fastening said electrical connector and said second object, said contact element comprising:
a) a conductive tapered contact portion which contacts said conductive rim, said contact portion electrically coupled to said first object;
b) a spring portion mechanically coupled to said contact portion and said first object, said spring portion constructed and coupled such that compression of said spring portion effects a torsional rotation of said contact portion.

5,366,381
ELECTRICAL CONNECTOR WITH ANTIROTATION FEATURE
Richard A. Kile, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Aug. 5, 1993, Ser. No. 102,657
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—79 **9 Claims**



1. An electrical connector comprising: an insulating body, electrically conductive posts projecting from the body and extending outwardly for insertion along apertures of a circuit board, each of said posts being one of three types, a third type having a protrusion adapted to engage a circuit board and prop the body to prevent the body from tipping over while the body is engaged against a circuit board, a second type having a retention feature tending to retain the body engaged against a circuit board, and a first type having neither said protrusion nor said retention feature.

5,366,382
ELECTRICAL CONNECTOR WITH SHORTING CONTACTS
Mark R. Thumma, Oberlin, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Continuation-in-part of Ser. No. 6,069, Jan. 15, 1993, Pat. No. 5,277,607. This application Nov. 15, 1993, Ser. No. 152,808
Int. Cl.[5] H01R *23/68*
U.S. Cl. 439—188 3 Claims



1. A pair of shorting contacts for a printed circuit board assembly, comprising a pair of terminal members, each of which has a longitudinal axis,

a leading edge on each of the terminal members is provided with an acute angle with respect to the longitudinal axis of the respective terminal member,

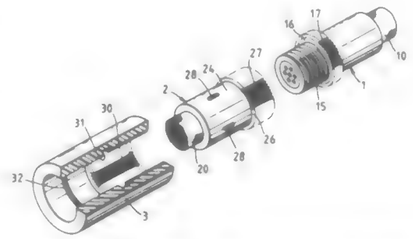
the terminal members being in a side-by-side relationship so that their respective angled surfaces confront one another substantially in a transverse configuration,

wherein the edge of each angled surface is opposite the edge of each confronting angled surface so that the respective sides of the angled surfaces on the terminal members initially engage each other at an initial point contact, thereby providing a very high stress concentration therebetween, and so that the terminal members thereafter wipe against each other and come to engage each other at a final point contact, and

such that the path from the initial point contact to the final point contact constitutes a line between the respective terminal members.

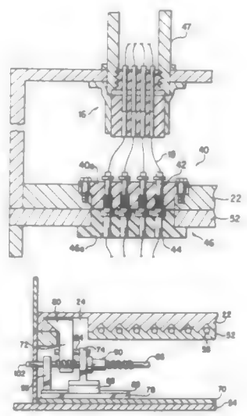
5,366,383
CONNECTOR ASSEMBLIES
Kenneth W. J. Dearman, Slough, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Sep. 10, 1993, Ser. No. 118,716
Claims priority, application United Kingdom, Sep. 19, 1992, 9219944; Oct. 22, 1992, 9222223; Apr. 28, 1993, 9308744; Jun. 5, 1993, 9311656
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—321 9 Claims

1. An electrical connector assembly comprising: first and second components, said first and second components being rotatable relative to one another; a surface formation on an outer surface of each component; a locking ring having a surface formation on an inner surface that is shaped to cooperate with the surface formation on the components, said locking ring being displaceable axially along the assembly between a first position in which the surface formation on the locking ring is out of engagement with at least the surface formation on one of the components so as to allow relative rotation of the two components and a second position in which the locking ring embraces the first and second components and the surface formation on the locking ring engages the surface formations on both the components so as to prevent relative rotation of



the components and thereby lock the two components together.

5,366,384
SERVICE EQUIPMENT FOR USE IN HOSTILE ENVIRONMENTS
James L. Dolce, Lakewood, and Andrew L. Gordan, Cleveland, both of Ohio, assignors to The United States of America, as represented by the Administrator National Aeronautics and Space Administration, Washington, D.C.
Division of Ser. No. 889,572, May 28, 1992, Pat. No. 5,290,121. This application Jul. 26, 1993, Ser. No. 104,951
Int. Cl.[5] H01R *13/639;* B25B *5/00*
U.S. Cl. 439—372 9 Claims

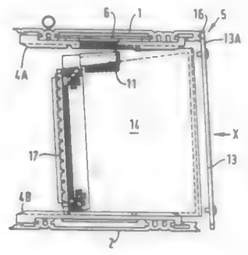


1. Service equipment for use in hostile environments comprising:

a detachable service unit including an exterior plate, a power control interface for connection to an exterior power source, at least two locating pins located in said exterior plate, a first electrical connector in said exterior plate electrically coupled to said power control interface, and a pair of clamping receptacles formed in said exterior plate and located on adjacent opposite edges of said exterior plate; and

a stationary unit including a second electrical connector for connection to said first electrical connector, a clamping apparatus having a pair of movably mounted spaced protrusions adapted to enter said clamping receptacles for clamping and unclamping said detachable service unit from said stationary unit, a clamp assembly for mounting said clamping apparatus onto said stationary unit, at least two locating pin holes for receiving said locating pins and aligning said detachable service unit onto said stationary unit, and means for cooling said stationary unit thereby removing heat from said service equipment.

5,366,385
ELECTRONIC CIRCUIT MODULE AND EQUIPMENT RACK FOR THE MODULE
Paul J. Treleaven, Kent, United Kingdom, assignor to Avitel Electronics Ltd., London, United Kingdom
Filed Jun. 21, 1993, Ser. No. 78,834
Claims priority, application United Kingdom, Oct. 15, 1992, 9221711
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—377 5 Claims



1. An equipment rack assembly comprising:

at least one housing having two parallel walls, at least one recess formed in a first of said walls, a first electrical contact located in said recess, and electrically connected to a bus member adjacent said first wall, and a first pivot surface on a leading edge of said first wall;

two parallel tracks each attached to an opposite wall, wherein a first of said tracks is mounted on said first wall, and aligned with said recess and said first electrical contact;

a circuit module comprising a card and circuitry mounted on said card, wherein said circuit modifier is adapted to slide along said tracks between said walls, said modifier further comprises:

a second electrical contact mounted adjacent a first side of said card, and adapted to engage said first electrical contact;

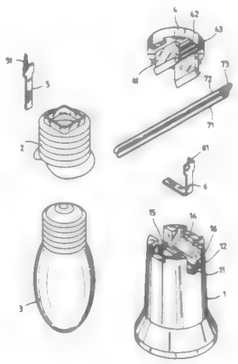
a guide projection extending from a first side of said card, and adapted to slidably co-act with the first track;

a front panel mounted on a transverse rear edge of said card, said panel having a second pivot surface adapted to contact and pivot about the first pivot surface;

wherein said recess, guide projection, first and second pivot surfaces, and first and second electrical contacts are arranged so that the initial inserting movement of the card between the two walls causes the card to skew with respect to the tracks to allow the second electrical contact to clear the first track and the first electrical contact as the card slides inwardly along the tracks, and upon further insertion of the card, the first and second pivot surfaces contact causing the front panel and card to pivot about the two pivot surfaces to bring the first and second electrical contacts into electrical contact.

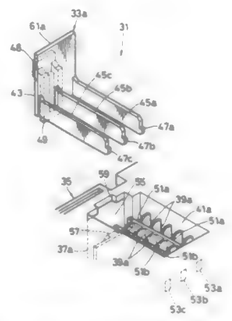
5,366,386
CONNECTING STRUCTURE OF A SERIES-PARALLEL LIGHTING STRING
Nan W. Liao, No. 18, Tzu Yu Road, Hsinchu,
Filed Jul. 20, 1993, Ser. No. 93,869
Int. Cl.[5] H01R *11/20*
U.S. Cl. 439—419 7 Claims

1. A connecting structure of a series-parallel lighting string comprising a base on the top of which is covered a top cap that secures conducting wires therein and inside which is associated therewith a safety contact cap on which a light bulb is mounted and being characterized in that said base has provided thereon three semicircular grooves in which the inbetween one has a depth larger than that of the others to receive a cord composed



of three conducting wires in such a manner that two upper wires lie on the grooves arranged on two sides and the middle wire routes through the deepest central groove and all of them are secured thereon by the top cap.

5,366,387
WATERPROOF CONNECTOR
Makoto Yamanashi, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Feb. 24, 1993, Ser. No. 21,598
Claims priority, application Japan, Feb. 28, 1992, 4-043640
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—468 5 Claims



1. A waterproof connector comprising:

a connector housing having a plurality of terminal receiving chambers for containing a plurality of terminals, each of said terminal receiving chambers having a terminal inserting opening and each of said terminals being connected to an electric wire;

a holder removably attached to said terminal inserting opening to prevent said terminals from being released from said terminal receiving chambers, said holder including a spread preventing portion having a plurality of holding fingers extending from a wall of the holder defining spaces of a comb for preventing a bundle of wires extending from said terminals and between said holding fingers from unnecessarily spreading out; and

a waterproof cover engaged with said connector housing for covering said terminal inserting opening and said bundle of wires extending from said terminals.

5,366,388

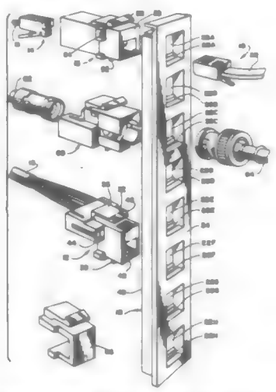
WIRING DISTRIBUTION SYSTEM AND DEVICES FOR BUILDING WIRING

Mike Freeman, Reading, England; Stuart K. Morgan, Westford, and Mike Romm, Brighton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 147,040, Nov. 1, 1993, abandoned, which is a continuation of Ser. No. 7,805, Jan. 22, 1993, abandoned, which is a continuation of Ser. No. 759,931, Sep. 16, 1991, abandoned, which is a continuation of Ser. No. 544,754, Jun. 27, 1990, abandoned. This application May 10, 1994, Ser. No. 240,604

Int. Cl.[5] H01R *13/518*

U.S. Cl. 439—540 **5 Claims**



1. A modular building wiring distribution system for establishing a plurality of building wiring connections between any of a plurality of points of origin through any of a plurality of points of connection to any of a plurality of points of termination, comprising:

(a) a panel having a plurality of aligned receiving apertures, each of said receiving apertures providing one of said plurality of points of connection;

(b) a point-of-origin cable having a first point-of-origin cable end and a second point-of-origin cable end, said point of origin cable having a first plurality of twisted-pair wires and a first covering layer surrounding said first plurality of twisted-pair wires except for a portion of said first point-of-origin end, said point-of origin cable having a first modular connector connected to said first point-of-origin cable end, said first modular connector being either a first modular coupler or a first modular jack, each of said receiving apertures being adapted to receive said first modular connector, both said first modular coupler and said first modular jack being interchangeably positionable within any one of said receiving apertures, said first modular connector being releasably positionable within a first selected one of said receiving apertures corresponding to a first selected point of connection, said second point-of-origin cable end providing an electrical connection with a first selected one of said points of origin, said first modular connector establishing a wiring connection between said first selected point of connection and said first selected point of origin without the use of a hardwire connection, said first modular jack comprising:

(i) an insulative modular housing having a box-like head section and a tail section integrally associated therewith, said head section defined by four sidewalls and a face wall, said face wall having an aperture defining a receiving cavity for receiving a complementary modular plug, said tail section including a passageway for receiving said first plurality of twisted-pair wires, a stop surface, and an inelastically deformable knuckle portion transversely inwardly compressed for retaining said individual ones of said first plurality of twisted-pair wires between said knuckle portion and said stop surface for strain relief engagement of said point-of-origin cable to said housing;

(ii) a plurality of longitudinal slots formed in said head section for receiving said individual ones of said first plurality of twisted-pair wires; and

(iii) a plurality of electrical contacting elements, each of said contacting elements having at least a portion disposed in respective ones of said longitudinal slots and having a crimped knife portion compressed into electrical engagement with one of said first plurality of twisted-pair wires, and a cantilevered leg portion extending from said knife portion into said receiving cavity for forming an electrical interconnection with said complementary modular plug;

(c) a connecting cable having a first connecting cable end and a second connecting cable end, said connecting cable having a second modular connector connected to said first connecting cable end, said second modular connector being either a second modular coupler or a second modular jack, each of said receiving apertures being adapted to receive said second modular connector, both said second modular coupler and said second modular jack being interchangeably positionable within any one of said receiving apertures, said second modular connector being releasably positionable within a second one of said plurality of panel receiving apertures corresponding to a second selected point of connection, said second connecting cable end providing an electrical connection with a second selected one of said points of origin, said second modular connector establishing a wiring connection between said second selected point of connection and said second selected point of origin without the use of a hardwire connection;

(d) a twisted-pair cable having a first twisted-pair cable end and a second twisted-pair cable end, said second twisted-pair cable end providing an electrical connection to a first point of termination, said twisted-pair cable including a second plurality of twisted-pair wires and a second coveting layer surrounding said second plurality of twisted-pair wires except for at least a portion of said first twisted-pair cable end, said first twisted-pair cable end having a first modular plug being adapted to engage said first modular connector to provide an electrical connection from said first point of origin through said first point of connection to said first point of termination;

(e) a point-of-termination cable having a first point-of-termination cable end and a second point-of-termination cable end, said second point-of-termination cable end providing an electrical connection to a second point of termination, said point-of-termination cable including a third plurality of twisted-pair wires and a third coveting layer surrounding said third plurality of twisted-pair wires except for at least a portion of said first point-of-termination cable end, said first point-of-termination cable end having a second modular plug being adapted to engage said second modular connector to provide an electrical connection from said second point of origin through said second point of connection to said second point of termination; and

(f) said first modular connector being alternatively releasably positionable within said first one of said panel receiving apertures for establishing a wiring connection between said first selected point of connection and said second selected point of termination and said second modular connector being alternatively releasably positionable within said second one of said receiving apertures for establishing a wiring connection between said second selected point of connection and said first selected point of termination, said first modular plug and said second modular plug each being alternatively releasably positionable within one of said first modular connector and said second modular connector, but not both at the same time, to alter the order of connection of said points of origin through said points of connection to said points of termination regardless of the type of connector associated with any point of termination or any point of origin.

5,366,389

CONNECTOR PEG HOLDOWN

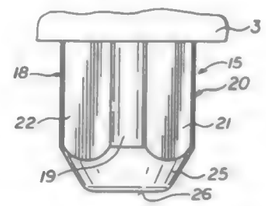
Erich Kreutter, Winterbach, Germany, assignor to ITT Industries, Inc., Secaucus, N.J.

Filed May 21, 1993, Ser. No. 64,472

Claims priority, application Germany, Jun. 4, 1992, 4218431

Int. Cl.[5] H01R *13/73*

U.S. Cl. 439—571 **5 Claims**



1. An electrical connector which is designed to mount to a circuit board which has a plurality of round holes that are each of a predetermined hole radius, comprising:

a connector housing which has a lower surface for lying on said board, and which has a plurality of pegs integral therewith for insertion into said round holes of said board;

each of said pegs has an axis and has at least three vertically-extending interference ridges each spaced from said axis by more than said hole radius, with each peg formed of rigid material and with said ridges being angularly spaced about said peg axis to enable peg insertion into one of said holes only in an interference fit, and each of said pegs has at least three ridge-connecting sides each spaced from said axis by less than said hole radius, with each of said ridges having an outer surface which, as seen in a sectional view taken normal to said axis, has a radius of curvature which is about the same as said hole radius.

5,366,390

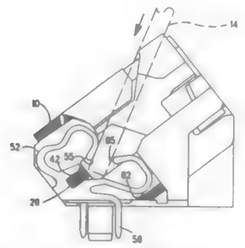
LOW PROFILE CAM-IN SOCKET HAVING TERMINALS ENGAGING A RIB

Timothy J. Kinross, Greensboro, and Roger L. Thrush, Clemmons, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Sep. 15, 1993, Ser. No. 122,080

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—636 **10 Claims**



1. A socket for electrically connecting a circuit panel to a substrate, the socket comprising:

an insulative housing defining an elongated slot for receiving the circuit panel, and a plurality of terminal-receiving cavities spaced apart along a length of the slot, each of the cavities being open to the slot on opposite sides thereof, the housing including a rib extending beneath the slot along the length thereof; and,

a plurality of electrically-conductive terminals disposed in respective ones of the cavities, each of the terminals comprising an integral body including a housing engaging section having opposed surfaces each gripping a respective opposite side of the rib, a lead extending to an exterior of the housing for electrically engaging the substrate, and a pair of resilient contact arms extending into the slot from respective ones of the opposite sides of the slot for electrically engaging opposite sides of the circuit panel, the contact arms having respective free ends, and one of the free ends being relatively higher above the rib than the Other of the free ends.

5,366,391

CONNECTOR USING STANDARD HOUSING AND MODIFIED SOCKET CONTACT

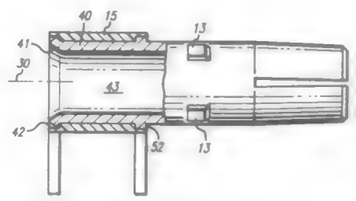
Werner Deiss, Waiblingen, Germany, assignor to ITT Corporation, New York, N.Y.

Filed Nov. 29, 1993, Ser. No. 159,019

Claims priority, application Germany, Dec. 1, 1992, 4240261

Int. Cl.[5] H01R *13/42*

U.S. Cl. 439—740 **3 Claims**



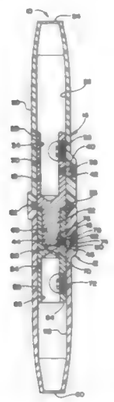
1. A connector which includes a standard housing for receiving and holding a socket terminal, where the standard housing has front and rear ends and has walls forming a horizontal through passage extending between said ends, said passage having a housing axis and having passage front and rear end portions, with said passage rear end portion including a plurality of radially inwardly projecting ribs that are circumferentially spaced and that have front and rear ends, with said ribs constructed to receive a prior art socket contact that has a spring clip that can snap forward of said ribs, characterized by:

a socket contact which comprises a substantially cylindrical tube having a tube axis, said tube having a front portion with a plurality of axially-extending slots forming a plurality of tines for engaging a pin contact, said tube having a middle portion lying behind said front portion and said socket terminal having a plurality of projections spaced about said tube and projecting radially outwardly from the outside surface of said middle portion, said projections each having rear ends, and said projections each being narrow enough and being circumferentially spaced about said tube axis so said projections can slide axially between pairs of said ribs of said standard housing to locations where said projection rear ends lie immediately forward of said rib front ends, said socket contact including a collar lying rearward of said projection rear ends by a distance equal to the distance between said rib front and rear ends so said collar lies against the rear ends of said ribs;

said tube has a rear portion lying rearward of said collar and has an extreme rear end that is slightly outwardly deformed; and including

a connector device having an inside diameter equal to the outside diameter of said tube and lying around said tube rear portion, with said device having a front end abutting said collar and a rear end having a groove that receives and abuts said outwardly deformed tube extreme end.

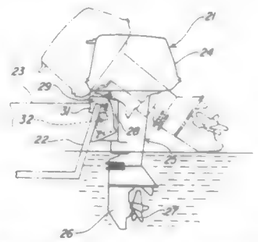
5,366,392
QUICK CONNECT ELECTRICAL CABLE CONNECTOR
Valgene E. Raloff, Grant Park, and Christopher Haczynski, Beecher, both of Ill., assignors to Bernard Welding Company, Beecher, Ill.
Filed Jan. 21, 1993, Ser. No. 6,480
Int. Cl.[5] H01R *9/24*
U.S. Cl. 439—889 11 Claims



1. An electrical cable connector for releasably electrically connecting ends of an electrical cable, the cable connector comprising:
a) a female conductive element coupled to one end of the electrical cable;
b) a male conductive element coupled to another end of the electrical cable and releasably connectable with the female conductive element;
c) a locking groove disposed on one of the female conductive element and the male conductive element;
d) a screw disposed on another one of the female conductive element and the male conductive element, said screw having a cam surface engageable with the locking groove after the male conductive element is inserted in the female conductive element, wherein said cam surface cams along the locking groove responsive to rotation of the female conductive element relative to the male conductive element to releasably connect the female conductive element and the male conductive element, thereby electrically connecting the ends of the electrical cable;
e) a slot formed in the conductive element which has the locking groove disposed thereon and being operatively associated with the locking groove; and the slot being contractible responsive to camming of the cam surface along the locking groove to facilitate releasable connection of the female conductive element and the male conductive element.

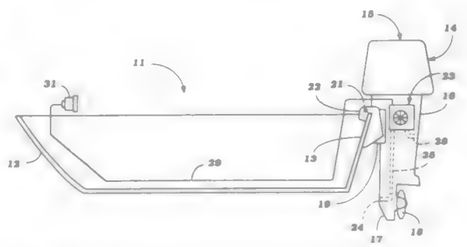
5,366,393
AUTOMATIC TRIM CONTROLLER FOR MARINE PROPULSION UNIT
Toshihiko Uenage, and Yoshihide Hirano, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushuiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 847,486, Apr. 3, 1986, abandoned. This application Nov. 19, 1992, Ser. No. 979,407
Claims priority, application Japan, Apr. 4, 1985, 60-70041
Int. Cl.[5] B63H *21/22*
U.S. Cl. 440—1 10 Claims

1. In a watercraft comprising a hull, a propulsion unit adapted to be submerged in the water for propelling said hull, means for mounting said propulsion unit upon said hull for pivotal movement about a generally horizontally extending trim axis for adjusting the trim angle of said propulsion unit, power means for pivoting said propulsion unit about said trim axis for adjusting said propulsion unit trim angle, the improvement comprising automatic control means for controlling said power means to control the trim angle to achieve maximum watercraft speed for a given speed of said propulsion unit comprising means for sensing a rate of change in velocity of the watercraft, said automatic control means being operative between manual position wherein manual trim control by said



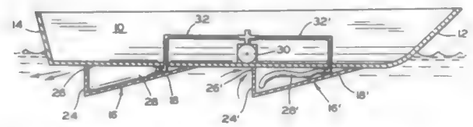
power means can be effective and an automatic position for automatic control, said control means being effective upon initial activation to said automatic control position and regardless of speed or trim condition for initially operating said power means to effect full trim down of said propulsion unit and thereafter operating said power means for incrementally increasing said trim angle in response to a sensed rate of change of velocity to optimize the velocity of the watercraft for a given propulsion unit speed.

5,366,394
SPEED DETECTING SYSTEM FOR MARINE PROPULSION UNIT
Isao Kanno, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Nov. 30, 1992, Ser. No. 982,834
Claims priority, application Japan, Dec. 5, 1991, 3-348333
Int. Cl.[5] H01H *35/24*
U.S. Cl. 440—2 9 Claims



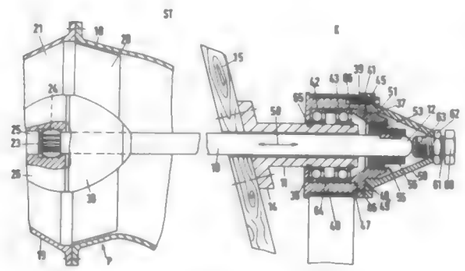
1. A marine propulsion unit having an outer housing containing a lower unit and propulsion device submerged in a body of water in which an associated watercraft is operating for propelling the watercraft, a speed sensor comprising an element driven by the flow of water through said speed sensor contained within said outer housing and above the water level, a pressure receiving port formed in said lower unit below the water level and in a forwardly facing direction for receiving water, conduit means within said outer housing for delivering water from said pressure receiving port to said speed sensor and for delivering water from said speed sensor back to the body of water in which said watercraft is operating, and means for providing a digital electrical output signal in response to the water flow through said speed sensor.

5,366,395
PULSATING IMPELLER
Naser Mostaghel, and Edward Lumsdaine, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio
Filed Dec. 2, 1992, Ser. No. 985,170
Int. Cl.[5] B63H *1/30*
U.S. Cl. 440—17 13 Claims



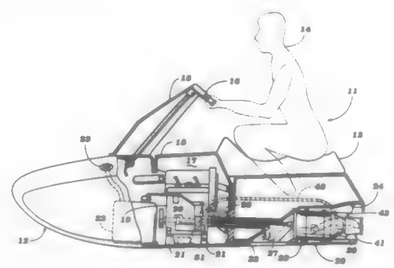
1. An impeller for moving a body through a fluid medium comprising:
an enclosure having a fixed volume and an aperture to facilitate the movement of a fluid medium into and of said enclosure;
means for attaching said enclosure to an associate body such that the aperture is positioned in the fluid medium;
expansible member permanently disposed within said enclosure; and
pumping means for varying the volume of the expansible member; said pumping means mounted in the associated body and connected to said expansible member in said enclosure, the deflation of said expansible member permits fluid medium to enter said enclosure and the inflation of said expansible member causes fluid medium within said enclosure to be expelled through the aperture to move the body.

5,366,396
WATER-JET DRIVE
Manfred Schulze, Melle, Germany, assignor to Jetmarine AG, Zug, Switzerland
PCT No. PCT/EP92/02852, § 371 Date Jul. 23, 1993, § 102(e) Date Jul. 23, 1993, PCT Pub. No. WO93/11998, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 10, 1992, Ser. No. 90,068
Claims priority, application Germany, Dec. 11, 1991, 4140881
Int. Cl.[5] B63H *11/00*
U.S. Cl. 440—38 8 Claims



1. A water-jet drive comprising:
a housing having an inlet and an outlet nozzle;
a stator and a rotor enclosed by said housing;
a shaft for supporting and rotating said rotor, said shaft being positioned in an aperture in a boat transom and being rotatable therein;
first and second shaft bearings arranged upstream and downstream of the boat transom, respectively for rotatably supporting said shaft, said shaft bearings being constructed so as to enable axial displacement of said rotor shaft, said first shaft bearing being fixed with respect to the transom and said second shaft bearing being positioned within said housing; and
an external adjusting member for adjusting the axial displacement of the rotor shaft.

5,366,397
WATER JET PROPULSION UNIT
Noboru Suganuma; Shigeyuki Ozawa, and Ryoichi Nakase, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 14, 1993, Ser. No. 47,708
Claims priority, application Japan, Apr. 14, 1992, 4-120047
Int. Cl.[5] B63B *13/00*
U.S. Cl. 440—39 12 Claims

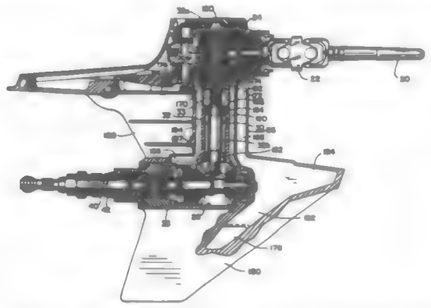


1. A jet propulsion unit for a watercraft, said jet propulsion unit being comprising a water inlet section through which water may be drawn from the body of water in which the watercraft is operating, an impeller section containing an impeller for pumping water, a discharge nozzle through which the water pumped by the impeller is discharged, and a water outlet tap from which a portion of the water pumped by said impeller may be discharged, a conduit having an inlet end detachably connected to said jet propulsion unit water outlet tap for receiving water pumped by said impeller and for circulating at least a portion of the water pumped by said impeller to another location, and a filter in said inlet end of said conduit for preventing foreign particles from entering said conduit.

5,366,398
MARINE DUAL PROPELLER LOWER BORE DRIVE ASSEMBLY
Gary L. Meisenburg; Edward C. Eick; Phillip D. Magee; Charles M. Mixon, all of Stillwater, Okla.; Robert B. Weronke, Oshkosh, Wis.; Waylon D. Shields; Woody R. Smith, both of Stillwater, Okla., and Steven J. Pavey, Carney, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.
Continuation-in-part of Ser. No. 889,530, May 27, 1992, Pat. No. 5,249,995, and a continuation-in-part of Ser. No. 69,162, May 28, 1993. This application May 28, 1993, Ser. No. 69,163
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.[5] B63H *5/10*
U.S. Cl. 440—81 5 Claims

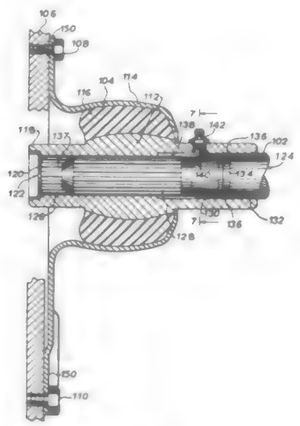
1. A marine drive comprising:
a housing having a horizontal bore and an intersecting vertical bore therein;
a first inner propeller shaft;
a second hollow outer propeller shaft positioned over said first propeller shaft so as to form a dual propeller shaft assembly,
said dual propeller shaft assembly positioned in said horizontal bore,
said first propeller shaft counter-rotating with respect to said second propeller shaft;
a vertical driveshaft positioned in said vertical bore;
a pinion driving gear mounted on the lower end of said vertical driveshaft;

a fore driven gear on said first inner propeller shaft and engaged by said pinion gear to drivingly rotate said first propeller shaft in a first rotational direction;
an aft driven gear on said second propeller shaft and engaged by said pinion gear to drivingly rotate said second propeller shaft in a second rotational direction;
a tapered roller bearing supporting said aft driven gear for rotation in said housing, said tapered roller bearing having an inner race engaging said aft driven gear, and
an outer race engaging said housing;



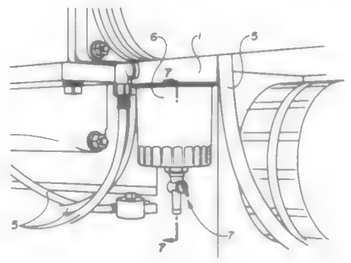
a threaded locking member engaging said housing in thread mounted relation within said horizontal bore and holding said tapered roller bearing in place and preventing rearward movement of said tapered roller bearing and said aft driven gear;
said threaded locking member is thread mounted at a thread set within said horizontal bore, and comprising a passage in said housing communicating with said horizontal bore aft of said thread set.

5,366,399
MARINE STERN DRIVE WITH LUBRICATED AND SEMI-SEALED ENGINE OUTPUT COUPLER
Raymond Reid, and Edward C. Eick, both of Stillwater, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.
Filed Dec. 13, 1993, Ser. No. 149,328
Int. Cl.[5] B63H *23/00*
U.S. Cl. 440—83 9 Claims



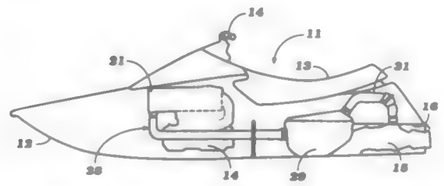
1. A marine drive comprising:
an engine output coupler driven to rotate about an axis, the engine coupler having an axial opening therein extending along the axis, wherein a section of the axial opening is splined and the axial opening has a forward end and a rearward end;
an output driveshaft that is received through the rearward end of the axial opening of the engine coupler, the output driveshaft having a splined section that engages with the splined section of the axial opening in such a manner that the driveshaft can slide axially relative to the engine coupler and also be rotated by the engine coupler when the engine coupler is driven to rotate;
a seal between the driveshaft and the axial opening for sealing the spline sections from the rearward end of the axial opening; and
an end plug for plugging the forward end of the axial opening.

5,366,400
APPARATUS AND METHOD FOR DRAINING OUT THE RESIDUAL OIL IN A REPLACEABLE OIL FILTER USED IN A MARINE ENGINE FOR AVOIDING POLLUTION TO THE ENVIRONMENT WHEN CHANGING FILTERS
Michael Kucik, 4603 Hazelwood Ave., Baltimore, Md. 21206
Filed Dec. 27, 1993, Ser. No. 173,659
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 6 Claims



1. In a marine engine, wherein the marine engine is in the close quarters of an engine compartment having a bilge, wherein the bilge has a bilge pump for pumping out the bilge into the water, wherein the marine engine includes a crankcase and further includes a replaceable oil filter cartridge having a top opening in communication with the marine engine, wherein the replaceable oil filter cartridge is replaced following drainage of the oil from the crankcase of the marine engine, and wherein the replaceable oil filter cartridge has residual oil therein, the residual oil spilling out and flowing into the bilge when the replaceable oil filter cartridge is replaced, and the bilge pump pumping out the oil in the bilge and thereby polluting the water, the improvement comprising the replaceable oil filter cartridge having a bottom surface provided with a bottom opening formed therein, a nipple cartridge the replaceable oil filter, the nipple being in communication with the bottom opening, extending below the bottom surface of the oil filter cartridge, and having a lower portion, such that a hose may be fitted onto the lower portion of the nipple, and a valve means in the nipple in the replaceable oil filter cartridge in communication with the bottom opening therein, and disposed between the bottom opening and the lower portion of the nipple such that after the oil has been drained from the crankcase, the valve means may be opened to drain the residual oil out of the opening in the replaceable oil filter cartridge, through the nipple and hose, and into a suitable container prior to removal of the replaceable oil filter cartridge, thereby preventing the residual oil from flowing into the bilge, and thereby preventing the water from being polluted when the bilge is pumped out.

5,366,401
EXHAUST CLEANING SYSTEM FOR MARINE PROPULSION ENGINE
Masayoshi Nanami; Atsushi Isogawa, and Honda Masahiro, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jun. 4, 1993, Ser. No. 71,477
Claims priority, application Japan, Jul. 10, 1992, 4-207208
Int. Cl.[5] B63H *21/32*
U.S. Cl. 440—89 45 Claims



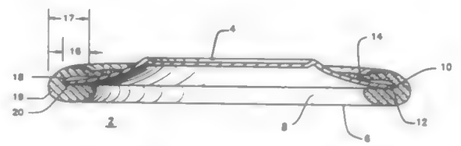
1. An exhaust system for a watercraft comprised of a hull containing an internal combustion engine mounted within said hull and having at least one exhaust port, said exhaust system being comprised of an exhaust conduit having an inlet end communicating with said exhaust port for receiving exhaust gases therefrom and an outlet end exiting through said hull for discharging the exhaust gases to the atmosphere in proximity to the body of water in which the watercraft is operating in at least some conditions of said watercraft, said exhaust conduit including means defining an expansion chamber and a tube containing a catalyst bed contained within said expansion chamber and through which exhaust gases must pass, and means for precluding water in said exhaust conduit from entering said tube end.

5,366,402
TOY BUBBLE MACHINE
Elliot Rudell, 1619 Gramercy Ave., Torrance, Calif. 90501; George T. Foster, Signal Hill, and Alan R. Pitkanen, Manhattan Beach, both of Calif., assignors to Elliot A. Rudell, Torrance, Calif.
Filed Nov. 23, 1992, Ser. No. 980,537
Int. Cl.[5] A63H *33/28, 5/00;* A47B *96/06*
U.S. Cl. 446—16 9 Claims



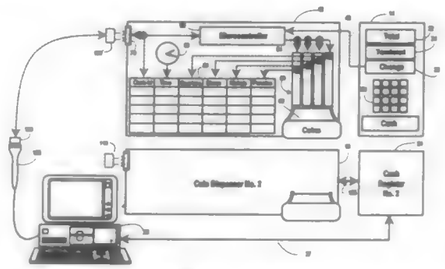
1. A toy assembly that can be attached to a vehicle, comprising:
a housing;
a reservoir filled with a bubble fluid;
a ring adapted to move between a down position and an up position, said ring being within said reservoir in the down position and out of said reservoir in the up position, wherein said ring can retain a film of bubble film when moving from the down position to the up position;
a fan adapted to direct air through said ring when said ring is in the up position such that there is created a bubble;
a motor operatively connected to said fan and said ring to rotate said fan and move said ring between the up and down positions;
a propeller that extends from said housing and is operatively connected to said motor; and
a clutch coupled to said propeller to allow said propeller to remain stationary when said motor is energized.

5,366,403
FLYING DISC
Barney Weiss, 3410 Paul Ave., Bronx, N.Y. 10468
Filed Aug. 11, 1993, Ser. No. 105,867
Int. Cl.[5] A63H *27/00;* A63B *65/10*
U.S. Cl. 446—46 9 Claims



1. A throwable flying disc comprising: a plate, of a plurality of interchangeable plates, said plates all being round, and of the same size;
an annular foam ring of an essentially circular shape having sufficient memory to return to said shape after deformation;
groove means, disposed on an inside surface of said annular foam ring, for receiving an outer edge of the plate therein and thereby removably securing said foam to said plate, said groove means having a depth and an outer circumference, said depth extending the groove means' outer circumference to a circumference similar to an outer circumference of the plate, said depth being sufficient to comprise means for grasping the plate securely in the ring.

5,366,404
AUXILLARY COIN DISPENSER WITH TRANSACTION DATA RECORDING AND TRANSFER MECHANISMS
Michael F. Jones, Nashua, N.H., assignor to Telequip Corporation, Hollis, N.H.
Filed Oct. 9, 1992, Ser. No. 902,691
Int. Cl.[5] G07D *1/06*
U.S. Cl. 453—2 7 Claims



1. An automatic coin dispenser for use with a point-of-sale data entry device for handling a sequence of sales transactions, said device including a keyboard for accepting, for each transaction, a purchase-price value and an amount-tendered value and further including means for calculating and displaying a change-due value based upon said purchase-price and said amount-tendered values, said coin dispenser comprising, in combination,
a coin storage bin for storing a plurality of coins of different denominations,
processing means responsive to said change-due value for

calculating the number of coins to be dispensed for each of said denominations,

coin vending means for vending the number of coins for each of said denominations as calculated by said processing means,

data entry means for accepting an identification code for each of a sequence of non-overlapping time periods during each of which a sub-sequence of said transactions may occur,

means including a memory for storing a data record for each of said time periods, said data record including values specifying the identification code for that period and the value of coins dispensed during that period, and

and data collection means for communicating the accumulated data records for said time periods to a utilization device.

5,366,405

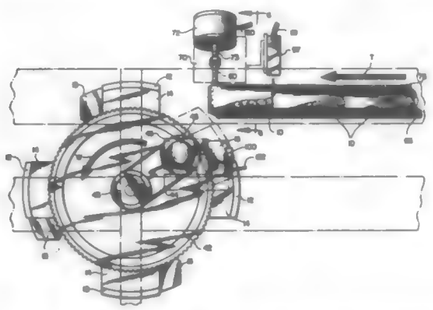
SEMI-AUTOMATIC SHRIMP PEELING MACHINE

Jon T. Keith, Wheeling; E. Douglas Betts, Libertyville; Michael J. Dancy, Vernon Hills, and James E. Pershinske, McHenry, all of Ill., assignors to Gregor Jonsson, Inc., Highland Park, Ill.

Continuation-in-part of Ser. No. 944,834, Sep. 14, 1992, abandoned. This application Mar. 12, 1993, Ser. No. 30,827

Int. Cl.[5] A22C *29/02*

U.S. Cl. 452—5 **52 Claims**



1. A shrimp peeling machine comprising a rotatable shrimp transport wheel;

a plurality of spaced clamp assemblies disposed on said wheel;

shrimp feed means for feeding shrimp, each shrimp having a tail section and a body section, to said clamp assemblies;

said feed means being substantially axially aligned with the longitudinal axis of said clamp assemblies;

means for sensing the location of shrimp on said shrimp feed means; means, acting in response to said sensing means, for delivering said shrimp sensed in said feed means to a clamp assembly whereby said shrimp is properly oriented with respect to said clamp assembly; and,

means for clamping said shrimp in said clamp assembly.

5,366,406

APPARATUS AND METHOD FOR CONVEYING A BIRD ALONG A POULTRY PROCESSING LINE

Arend Hobbel, and Bastiaan Verrijp, both of Numansdorp, Netherlands, assignors to Systemate Holland B.V., Numansdorp, Netherlands

Filed Jan. 18, 1994, Ser. No. 184,491

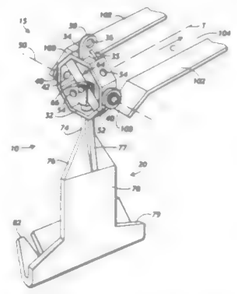
Int. Cl.[5] A22C *21/00*; B07C *5/20*

U.S. Cl. 452—179 **24 Claims**

1. An angularly displaceable grading shackle for carrying poultry to be weighed as the shackle moves along an overhead conveyor system of a poultry processing line in a poultry processing plant, said grading shackle comprising:

a tiltable support frame for suspension from an overhead conveyor system, said support frame including means for tilting said support frame in response to the movement of said shackle along an inclined portion of the processing line;

bird support means suspended from said support frame;



said tiltable support frame and said bird support means including means responsive to the tilting of said support frame for rotating said bird support means about a generally upright axis.

5,366,407

COIN RECEIVING AND DISPENSING MACHINE

Hideshi Sentoku, Tokyo, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan

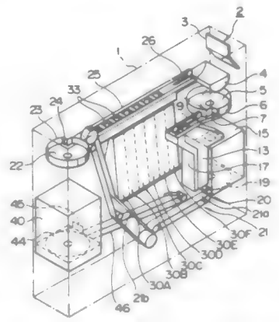
PCT No. PCT/JP92/01285, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO93/07592, PCT Pub. Date Apr. 15, 1993

PCT Filed Oct. 5, 1992, Ser. No. 70,357

Claims priority, application Japan, Oct. 3, 1991, 3-256807

Int. Cl.[5] G07D *3/16*

U.S. Cl. 453—3 **4 Claims**



1. A coin receiving and dispensing machine comprising:

a transaction opening through which coins are deposited;

first sensor means provided in a coin passage for discriminating whether or not coins deposited through the transaction opening are acceptable, for determining denominations of coins and for determining a number of received coins in accordance with their denominations;

coin sorting means for sorting acceptable coins in accordance with their denominations;

a plurality of coin storing means each for accommodating and storing coins sorted by the coin sorting means in accordance with their denominations;

second sensor means provided one for each coin storing means for detecting whether or not the number of coins stored in the associated coin storing means is lower than a first predetermined number;

third sensor means provided one for each coin storing means for detecting whether or not the number of coins stored in the associated coin storing means exceeds a second predetermined number greater than the first predetermined number;

replenishment coin storing means for storing coins for replenishing the coins stored in the coin storing means when the associated second sensor means detects that the number of coins stored in the coin storing means has become lower than the first predetermined number and for storing coins when the associated third sensor means detects that the number of coins stored in the coin storing means has exceeded the second predetermined number; and

discrimination means for storing information regarding a number of coins stored in the replenishment coin storing means in accordance with their denominations, for discriminating whether or not the number of coins of each denomination stored in the replenishment coin storing means has become lower than a third predetermined number and outputting a judgment signal when the number of coins of one of the denominations has become lower than the third predetermined number;

notification means for, when the number of coins of one of the denominations has become lower than the third predetermined number and the discrimination means outputs a judgment signal, receiving a notification signal to such effect;

coin replenishing means removable from the machine and adapted for storing coins for replenishing the coins in the coin storing means and the replenishment coin storing means when the notification signal is output to the notification means;

fourth sensor means for discriminating the denominations of coins fed out from the coin replenishing means and the replenishment coin storing means and for counting the number of coins in accordance with their denominations; and

transporting means for transporting coins fed out from the replenishment coin storing means and the coin replenishing means to the coin sorting means;

the coin sorting means for sorting coins fed out from the replenishment coin storing means and the coin replenishing means and for replenishing coins in the coin storing means in accordance with their denominations.

5,366,408

DISTRIBUTION UNIT FOR A VENTILATION INSTALLATION FOR A VEHICLE

Roland Andersson, Sollebrunn, Sweden, assignor to Saab Automobile Aktiebolag, Sweden

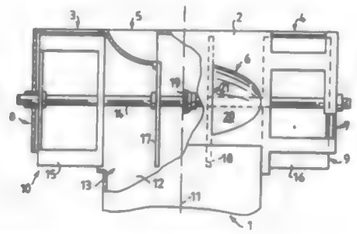
PCT No. PCT/SE92/00185, § 371 Date Sep. 27, 1993, § 102(e) Date Sep. 27, 1993, PCT Pub. No. WO92/17345, PCT Pub. Date Oct. 15, 1992

PCT Filed Mar. 24, 1992, Ser. No. 122,402

Claims priority, application Sweden, Mar. 28, 1991, 9100930-8

Int. Cl.[5] B60H *1/24*

U.S. Cl. 454—121 **17 Claims**



1. A distribution unit for a ventilation installation for a vehicle for distributing ventilation air to various locations in the vehicle, the distribution unit comprising:

a housing defined by an at least partly cylindrical shell surface; at least one outlet defined in the shell surface and comprising a concavity in the shell surface, the concavity having one axial side which is open for defining an aperture oriented to be directed substantially toward a radial plane in the interior of the housing;

a valve device disposed inside the housing and rotatable therein on an axis parallel to the shell surface of the housing for controlling air flow to the at least one outlet in the shell surface; the valve device including a circular valve element located in the housing at the aperture of the concavity, the valve element including a cut out therein which is opposable to the aperture of the concavity, and the valve device being rotatable in the housing for the cut out to completely open, partially open or close off the aperture selectively, the valve element also forming a separating wall in the housing.

5,366,409

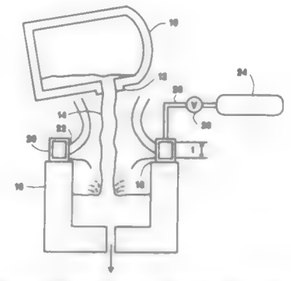
CONTROLLING POURING STREAM AND RECEIVER ENVIRONMENT

Michael F. Riley, Danbury, Conn., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Nov. 22, 1993, Ser. No. 155,265

Int. Cl.[5] F27B *1/10*

U.S. Cl. 454—188 **9 Claims**



1. A method for providing a controlled gaseous environment at the opening to a receiver and around a free liquid stream downwardly entering the receiver opening, said method comprising laminarly emitting, at a modified Froude number from about 0.2 to about 0.5, at least two gas flows to extend and intersect over the receiver opening thereby forming an upward plume enveloping the free liquid stream.

5,366,410

BUSINESS FORM WITH TRANSFER TAPE AND REPOSITIONAL ADHESIVE

Leo Lombardo, Manchester, N.H., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Mar. 4, 1993, Ser. No. 26,688

Int. Cl.[5] B41L *1/20*

U.S. Cl. 462—6 **20 Claims**

1. A business form comprising:

a first ply having inner and outer faces and peripheral edges;

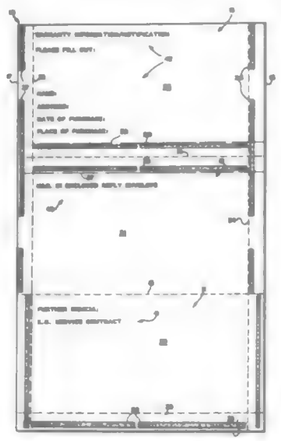
a second ply having inner and outer faces and peripheral edges;

attachment means for operatively attaching said plies together along peripheral edges thereof;

a reply envelope, with reply address indicia thereon, nested within and between said first and second plies; and

a pattern of readily removable adhesive disposed on said

outer face of said second ply, and covering less than said entire outer face of said second ply, including not cover-

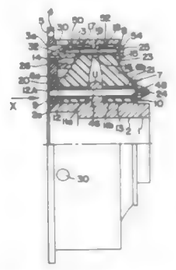


ing at least a portion of at least one of said peripheral edges.

5,366,411
FLEXIBLE COUPLING INCORPORATING ELASTOMERIC ELEMENTS WITH EMBEDDED BUSHES

Graham E. Harpin, Halifax, England, assignor to Holset Engineering Company, Ltd., Huddersfield, United Kingdom

Continuation of Ser. No. 918,151, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 553,495, Jul. 13, 1990, abandoned. This application Jan. 25, 1993, Ser. No. 8,821
Claims priority, application United Kingdom, Jul. 13, 1989, 8916045
Int. Cl.[5] F16D *3/50*
U.S. Cl. 464—17 **7 Claims**

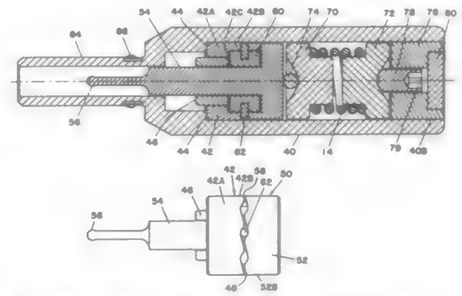


1. A flexible coupling comprising:
a first coupling member having an inwardly facing generally annular surface;
a second coupling member, coaxial with said first coupling member and having an outwardly facing generally annular surface positioned radially inward from and opposing the annular surface on said first coupling member.
at least one means for flexibly coupling said first and second coupling members, said one flexible coupling means formed from elastomeric material having axial end faces and being at least partly maintained between said opposed generally annular surfaces;
means for fastening said one flexible coupling means to said coupling members, said fastening means comprising:
a plurality of rigid bushes embedded in said one flexible coupling means, said bushes having an axial length less than the axial length of said one flexible coupling means in its unclamped condition, clamping means comprising radially extending flanges immovably carried by said first and second coupling members against which one axial end face of said one flexible coupling means is positioned, and annular plates movable with respect to the first and second coupling members and positioned on the opposite axial end face of said one flexible coupling means to sandwich said one flexible coupling means between said flanges and said annular plates,
fastening elements extending through said bushes and connected to said annular plates and flanges for clamping against said bushes and holding them immovably with respect to said coupling members, the relative dimensions of said one flexible coupling means and said opposed annular surfaces being selected so that a clearance is provided between said opposed annular surfaces and said one flexible coupling means in the unclamped state thereof and when said annular plates are clamped against said bushes, said one flexible coupling means is forced outward toward the annular surface on said first coupling member and inward toward the annular surface on second coupling member to maintain said one flexible coupling means in compression against the opposed coaxial generally annular surfaces on said first and second coupling members.

5,366,412
TORQUE LIMITING CLUTCH AND ITS USES

Keith D. Beaty, West Palm Beach, and Dan P. Rogers, Royal Palm Beach, both of Fla., assignors to Implant Innovations, Inc., West Palm Beach, Fla.

Filed May 19, 1992, Ser. No. 885,619
Int. Cl.[5] F16D *7/04;* **A61C** *8/00*
U.S. Cl. 464—38 **41 Claims**

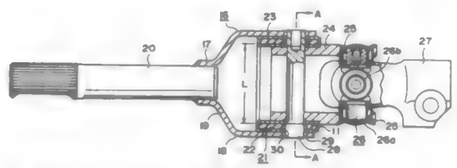


28. A torque-limiting clutch comprising a driving member and a driven member each with a confronting surface, said members being rotatable around a common axis, and means to apply prescribed force parallel to said axis to said members to urge said confronting surfaces together, each confronting surface having on it a periodic wave of like frequency to the other confronting surface in which the wave pattern of each cycle has an up-slope rising gradually at a first slope angle from its dwell followed by a return slope falling at a second steeper slope angle to the dwell at the beginning of the next-following up-slope.

5,366,413
ELASTIC UNIVERSAL COUPLING

Mikio Yamaguchi, and Hiroshi Sekine, both of Takasaki, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 741,562, Aug. 7, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 26,197
Claims priority, application Japan, Aug. 13, 1990, 2-84536[U]
Int. Cl.[5] B62D *1/16;* **F16D** *3/76*
U.S. Cl. 464—89 **6 Claims**



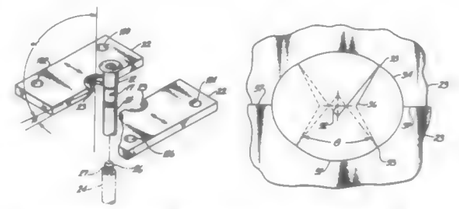
1. An elastic universal coupling comprising:
a first yoke constituted by a cylindrical sleeve having a first end formed with a bifurcated portion and a second end;
a second yoke having a bifurcated end coupled to said first end of said first yoke through a cross shaft having respective shaft portions pivotally connected to said first end of said first yoke and said bifurcated end of said second yoke;
a one-piece housing having a substantially frusto-conical intermediate portion from opposite axial ends of which extend, respectively, a first end portion fitted to a surface of a shaft and a second end portion of greater internal diameter and in which said second end of said first yoke is received, said second end portion of said housing being formed with a pair of coaxially aligned through-holes; an elastic member elastically coupling said second end of said first yoke to said second end portion of said housing and having an inner diameter which is greater than that of said bifurcated portion of said first yoke, said elastic member including an outer cylinder securely fitted to an inner peripheral surface of said second end portion of said housing, an inner cylinder securely fitted to an outer peripheral surface of said second end of said first yoke, and an elastic body disposed between and secured to said outer cylinder and said inner cylinder, said outer cylinder having a pair of through-holes aligned with said through-holes of said housing; and
a pin inserted through said housing, said elastic member, and said second end of said first yoke, and having opposite ends projecting from said first yoke and each received, with clearance, in a corresponding said through-hole of said housing and a corresponding said through-hole of said outer cylinder of said elastic member.

5,366,414
PREVAILING TORQUE FASTENER

Jack Rath, 9823 Kincardine Ave., Los Angeles, Calif. 90034

Division of Ser. No. 26,683, Mar. 5, 1993, Pat. No. 5,302,067, which is a continuation-in-part of Ser. No. 928,849, Aug. 11, 1992, abandoned. This application Dec. 10, 1993, Ser. No. 166,237
Int. Cl.[5] B21D *53/24*
U.S. Cl. 470—25 **10 Claims**

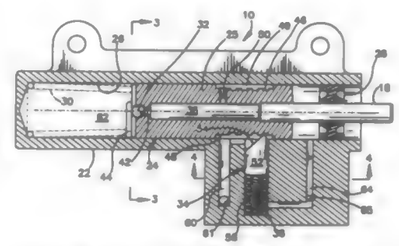
1. A method for making a prevailing torque fastener comprising the steps of:
forming a cylindrical hole in a fastener body;
forming a female thread in the hole;
threading the fastener body onto a male thread until an end of the body engages a stop which determines the angular position of the thread in a crimping apparatus; and
crimping a portion of an exterior surface of the body with a pair of dies for forming a generally elliptical cross section in a portion of the thread, each crimping die comprising an arcuate jaw having upper and lower edges skewed from a plane normal to the axis of the hole at an angle equal to the lead of the thread, the edges of each crimping die each having a fixed elevation relative to the stop.



5,366,415
HYDRAULIC BELT TENSIONER

Kynan L. Church, Ceresco; David W. Deppe, Marshall; Richard L. Madden, Marshall, and Nandakumar Srinivasan, Marshall, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 31,188, Mar. 12, 1993, Pat. No. 5,304,099. This application Dec. 6, 1993, Ser. No. 161,850
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—110 **17 Claims**



1. A hydraulic belt tensioner assembly for an internal combustion engine comprising a housing having a closed axial first bore formed therein; a plunger received in said first bore, the volume between the closed end of said bore and a first end of said plunger defining a first chamber; a second chamber formed in said plunger, the clearance between said plunger and said bore defining a controlled leakdown path therebetween; check valve means received in said plunger operable to provide a flowpath only in the direction from said second chamber to said first chamber; passage means operable to direct pressurized oil from said engine to said second chamber; seal means acting between said plunger and said first bore effective to prevent the flow of oil outward of said housing; and one or more slots formed in said first end of said plunger, said slots extending from substantially the center of said first end to the outside diameter of said plunger.

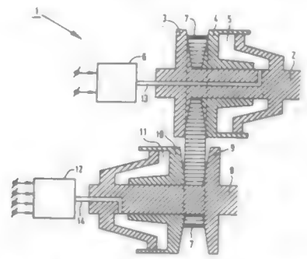
5,366,416
CONTINUOUSLY VARIABLE TRANSMISSION WITH CONTROL SYSTEM

Wilhelmus C. W. M. Roovers, Prinsenbeek; Chi C. Choi, Eindhoven, and Bastiaan A. d'Herripon, Tilburg, all of Netherlands, assignors to Van Doorne's Transmissie B.V., Netherlands

Filed Mar. 11, 1993, Ser. No. 29,835
Claims priority, application Netherlands, Apr. 6, 1992, 9200638
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—18 **10 Claims**

1. Continuously variable transmission (1) provided with a primary pulley and a secondary conical pulley, between which

pulleys is mounted a driving belt (7), whereby each of the pulleys includes a pair of discs (3, 4; 9, 10), one of which discs (4, 10) is axially adjustable for the purpose of influencing the working radius of the driving belt (7) by exerting desired hydraulic pressures in respective pressure chambers (5, 11) of the adjustable disc (4, 10), and provided with control systems (6, 12) connected to the respective pressure chambers (5, 11), each of which control systems is provided with a feedback loop which includes a subtractor (15), a regulator (16) which is



connected to the subtractor (15), and a hydraulic pressure device (18) mounted in a feedback loop to the subtractor (15), characterised in that a summing unit (17) is fitted between the regulator (16) and the hydraulic pressure device (18), to which summing unit (17) is supplied a rest state signal via an additive input (23) of the summing unit (17), which rest state signal (23) is furnished by a rest state device (20) connected to the additive input (23), which rest state device (20) has an input (21) to which is supplied a signal which represents the desired value of the hydraulic pressure.

5,366,417

ROTATING RING SHOE FOR TENSIONING CHAINS AND BELTS

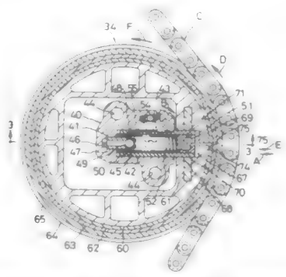
Kazuhiko Shimaya, Hidaka, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed Jun. 8, 1993, Ser. No. 73,750

Claims priority, application Japan, Jun. 18, 1992, 4-048238

Int. Cl.[5] F16H *7/10*

U.S. Cl. 474—112 **1 Claim**



1. In a mechanical power transmission comprising an endless, flexible power transmission means for transmitting rotating power from at least one rotating shaft to at least one other rotating shaft, a tensioner comprising:

a rotatable ring-shaped tensioner shoe having an outer periphery in contact with said endless, flexible means;

means providing a support frame for rotatably supporting said ring-shaped tensioner shoe; and

piston means for urging said support frame in a direction such that the ring-shaped tensioner shoe is pressed against said endless, flexible means to apply tension thereto;

wherein said support frame and said piston means are encircled by said rotatable ring-shaped tensioner shoe.

5,366,418

CHAIN GUIDE DEVICE IN ENGINE

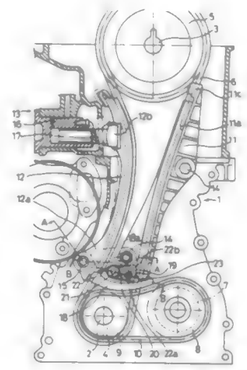
Yuji Fukushima, Ikeda, and Atsushi Kumakura, Takatsuki, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Feb. 28, 1994, Ser. No. 203,455

Claims priority, application Japan, Mar. 1, 1993, 5-007664[U]

Int. Cl.[5] F16H *7/00*

U.S. Cl. 474—111 **4 Claims**



1. A chain guide device in an engine for guiding a first chain which interlocks a crankshaft with a camshaft, and a second chain which interlocks said crankshaft with an attachment or auxiliary machinery disposed adjacent to the crankshaft, comprising:

a fixed guide disposed on one side of a path of rotational movement of a first chain;

a first movable guide disposed on the other side of the path of rotational movement of the first chain, the lower portion being pivotally supported on the main body of an engine;

pressing means for pressing and urging the upper portion of the first movable guide toward the first chain;

a second movable guide a base end of which being pivotally supported at a shaft which pivotally supports the first movable guide for regulating a path of rotational movement of a second chain; and

spring means provided between free end portion of the second movable guide and the fixed guide for pressing the second movable guide toward the second chain.

5,366,419

POWER TRANSMISSION DEVICE INCLUDING A LUBRICATED ELECTROMAGNETIC CLUTCH

Atsushi Oda, Tochigi, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed Jan. 22, 1993, Ser. No. 7,513

Claims priority, application Japan, Jan. 22, 1992, 4-008935

Int. Cl.[5] F16H *57/04*

U.S. Cl. 475—160 **8 Claims**

1. A power transmission device comprising:

a casing in which oil is enclosed;

a power transmitting section contained in said casing;

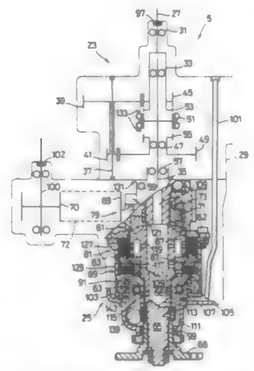
an electromagnetic clutch for controlling said power transmitting section, said electromagnetic clutch having an electromagnet fixed to said casing;

an oil sump adjacent to said electromagnet; and

an oil gutter for collecting oil splashed by centrifugal force from said power transmitting section and said electromagnetic clutch and to direct the collected oil into said oil sump;

wherein said power transmitting section has an oil path for

introducing oil from said oil sump, directing the introduced oil to an area about said electromagnetic clutch,



and supplying the introduced oil to said electromagnetic clutch by means of the centrifugal force.

5,366,420

AUTOMATIC TRANSMISSION CONTROL SYSTEM

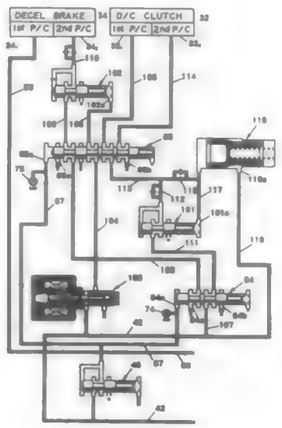
Minoru Kuriyama; Shinya Kamada; Shigeru Nagayama, and Takayuki Sumimoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 19, 1993, Ser. No. 47,753

Claims priority, application Japan, Apr. 20, 1992, 4-128172; Aug. 27, 1992, 4-254009

Int. Cl.[5] B60K *41/00;* **F16D** *25/14*

U.S. Cl. 475—129 **6 Claims**



2. A control system for an automatic transmission which has a main transmission mechanism and a sub transmission mechanism and a hydraulic circuit for controlling supply of engaging pressures to friction coupling elements in the main transmission mechanism and the sub transmission mechanism characterized in that

said hydraulic circuit is provided, for a predetermined friction coupling element of the sub transmission mechanism which is involved in a predetermined gear-shifting where the main transmission mechanism and the sub transmission mechanism shift in opposite directions, with a first hydraulic passage having a hydraulic pressure control means including an accumulator, a second hydraulic passage which is provided in parallel to the first hydraulic passage and is provided with an electrically controlled hydraulic pressure control means, and a shift valve which connects the predetermined friction coupling element to the second hydraulic passage during the predetermined gear-shifting and to the first hydraulic passage during gear-shiftings other than the predetermined gear-shifting.

5,366,421

DIFFERENTIAL APPARATUS

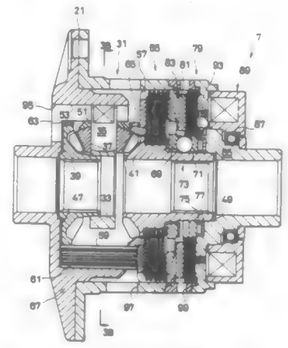
Isao Hirota, Tochigi, Japan, assignor to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed May 3, 1993, Ser. No. 57,347

Claims priority, application Japan, May 6, 1992, 4-113451

Int. Cl.[5] F16H *1/445*

U.S. Cl. 475—231 **6 Claims**



1. A differential apparatus comprising:

(a) a differential casing driven by an engine;

(b) a bevel gear type differential mechanism having:

(i) pinion shafts extending radially and supported within said differential casing;

(ii) pinion gears rotatably supported by said pinion shafts, respectively; and

(iii) a pair of side gears disposed on both sides of said pinion shafts and in mesh with said pinion gears respectively, one of said side gears being coupled to a first output shaft and the other of said side gears being coupled to a second output shaft;

(c) differential limiting means linked with one of said side gears; and

(d) gear transmission means engaged between said differential limiting means and the other of said side gears.

5,366,422

END-THRUST DESIGN FOR PARALLEL-AXIS DIFFERENTIAL

James S. Dye, Walworth, and Gordon B. Tseng, Rochester, both of N.Y., assignors to Zexel-Gleason USA, Inc., Rochester, N.Y.

Division of Ser. No. 986,100, Dec. 4, 1992, abandoned, which is a continuation of Ser. No. 735,441, Jul. 25, 1991, Pat. No. 5,169,370. This application Nov. 18, 1993, Ser. No. 154,605

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] F16H *1/42*

U.S. Cl. 475—249 **17 Claims**

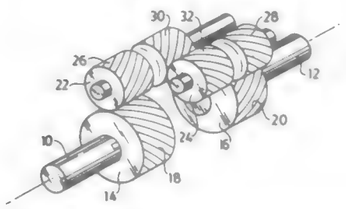
1. A gear differential for proportioning the torque between a pair of relatively rotating axles at a predetermined torque bias, said differential comprising:

a differential housing;

a pair of sun gears positioned in said housing for receiving the ends of said pair of respective axles for rotation therewith about a common axis;

at least one pair of planetary combination gears supported in said housing, each respective combination gear in each said pair having a first toothed portion in meshing engagement with a respective one of said sun gears and having a second toothed portion in meshing engagement with its paired combination gear, the meshing engagement of said sun and combination gears interconnecting said respective axle ends in a mutual driving relationship;

said combination gears being supported in said housing with their respective axes aligned in parallel with the common axis of said sum gears;



said sun and combination gears having helical teeth of predetermined hand selected to develop axial-thrust forces on said combination gears so that the end faces of said combination gears create frictional resistance for controlling the torque bias of the differential assembly; and

said first and second toothed portions of a first one of said combination gears of each said pair being separated by a non-meshing portion that straddles the sun gear that is in mesh with its paired combination gear.

5,366,423

SMALL-SIZED REDUCTION GEAR WITH RADIAL BEAM BETWEEN AXIALLY EXTENDING COLUMNS OF A CARRIER

Ryosuke Mori; Kazunori Miyashita, and Minoru Tanaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

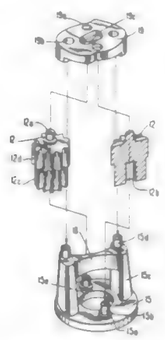
PCT No. PCT/JP91/01562, § 371 Date Jul. 13, 1992, § 102(e) Date Jul. 13, 1992, PCT Pub. No. WO92/08910, PCT Pub. Date May 29, 1992

PCT Filed Nov. 14, 1991, Ser. No. 910,180

Claims priority, application Japan, Nov. 14, 1990, 2-307840

Int. Cl.[5] F16H *1/28*

U.S. Cl. 475—346 **8 Claims**



1. A small-sized reduction gear comprising: a stationary internal gear (10) having an internal gear whose number of teeth is n; a movable internal gear (20) moving relative to said stationary internal gear (10) having an internal gear whose number of teeth is n±m, where m=1 through 4, and an output shaft (20c), at least one planet gear (12) each planet gear having z external teeth that mesh with said stationary internal gear (10) and said movable internal gear (20); a holder member (15) and a holder clamp (19), said at least one planet gear (12) being supported between said holder member (15) and said holder clamp (19); and a sun gear (4) which has e teeth, said sun gear meshing with said at least one planet gear (12); a motor shaft 3 directly connected to said sun gear (4); at least two columns (15c) extending axially said holder member, and at least one column beam (18) extending radially across said sun gear (4) and mechanically coupled to said first columns and said second column.

5,366,424

POWER TRAIN CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE OF MOTOR VEHICLE

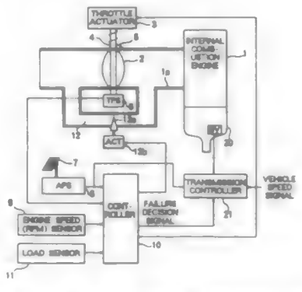
Seiji Wataya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1993, Ser. No. 50,822

Claims priority, application Japan, Apr. 28, 1992, 4-109827

Int. Cl.[5] F02D *41/22, 9/02*

U.S. Cl. 477—107 **4 Claims**



1. A power train control system for an internal combustion engine system of a motor vehicle, comprising:

throttle valve control means for electrically controlling an opening degree of a throttle valve in response to an accelerator actuation signal indicative of an actuation level of an accelerator means;

backup control means for controlling an auxiliary air flow which bypasses said throttle valve upon an occurrence of abnormality in said throttle valve control means in accordance with said accelerator actuation signal; and

transmission control means for shifting a speed change pattern of an automatic transmission to a lower gear ratio during a backup operation under the control of said backup control means when compared with that of normal operation.

5,366,425

CONTROL SYSTEM FOR SELECTING A RETARDER MODE SHIFTING PATTERN FOR A SELF-PROPELLED MOTOR VEHICLE

Kohei Kusaka, and Yasunori Ohkura, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

PCT No. PCT/JP90/01714, § 371 Date Jul. 8, 1992, § 102(e) Date Jul. 8, 1992, PCT Pub. No. WO91/10085, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 26, 1990, Ser. No. 862,765

Claims priority, application Japan, Dec. 26, 1989, 1-334974

Int. Cl.[5] F16H *59/22, 61/10*

U.S. Cl. 477—118 **8 Claims**

1. A shift control system for an automatic power transmission for a self-propelled motor vehicle having a retarder, comprising:

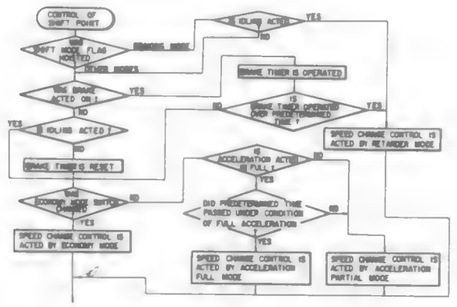
vehicle speed detecting means for detecting a vehicle speed;

accelerator off state detecting means for detecting an accelerator being held at a fully released position;

shifting pattern storing means for storing shifting pattern data for said automatic power transmission, which shifting pattern data includes a first mode pattern representative of a standard shifting pattern and a second mode pattern distinct from said first mode pattern and having shifting points at respective transmission speed ratios which are at a higher engine speed than said, first mode pattern;

retarder active state detecting means for detecting an active state of said retarder;

shift control means for operating said automatic power transmission for selecting an optimal speed ratio on the basis of said vehicle speed and an engine torque output



according to a selected one of said first and second mode patterns; and

shifting pattern selecting means for normally selecting said first mode pattern and responsive to said accelerator off state detecting means detecting a fully released position of the accelerator and said retarder active state detecting means detecting an active state of said retarder, for selecting said second mode pattern when said retarder active state is detected for said predetermined period of time, said timer means being reset when neither said retarder active state nor said accelerator fully released position are detected.

5,366,426

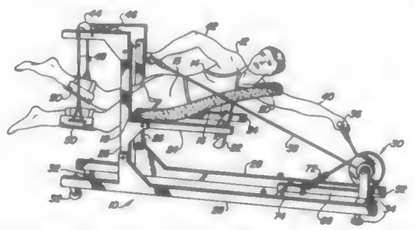
SWIMMING EXERCISER WITH IMPROVED LEG MOTION

James P. Glavin, Old Chase, The Avenue, Godalming, Surrey GU7 1PE, United Kingdom

Filed Nov. 5, 1993, Ser. No. 147,967

Int. Cl.[5] A63B *69/10*

U.S. Cl. 482—56 **18 Claims**



1. An exercise apparatus for simulating a swimming motion, said apparatus comprising:

a substantially horizontal bench for supporting a person in a prone position having a front and back end;

means for attaching a cable to a user's hands;

a pair of cables attaching each of said means for attaching to a resistance pulley located ahead of the front of said bench to provide abduction resistance to arm movement when a user's arm is extended above the shoulder and extensive resistance to arm movement when the a user's arm is below the shoulders;

a pair of leg supports;

means for providing resistance to downward movement of said leg supports comprising a pair of cable ends depending from a resistance pulley assembly located above the users legs and a pair of sleeves fixed to the ends of said pulley and adapted to receive the lower portion of a users legs and,

means for removing tension from said cable ends to facilitate the attachment of the user's leg to said sleeve.

5,366,427

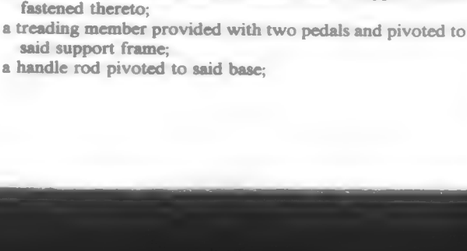
EXERCISE GAME SYSTEM

Bill Price, II, 2112 W. Ridge Center, Morehead City, N.C. 28557

Filed Oct. 23, 1991, Ser. No. 781,364

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—92 **9 Claims**



1. An exercise system for one or more persons comprising:

a frame;

a playing surface connected to the frame;

at least one movable game element movable along the playing surface;

at least one striking member that is movable by a person to engage the movable element and move the game element along said playing surface, the movement of said striking member being resisted by a first inherent resistance that is not intended to provide an exercise-inducing resistance; and

an intended, exercise-inducing resistance system including means for providing an additional preselected second resistance to movement of the striking member by the person at least until the striking member engages the game element,

whereby the person performs exercise by overcoming the additional resistance of the resistance system while moving the striking member to move the game element,

wherein the striking member includes an elongated member connected to the resistance system, and the elongated member is substantially cylindrical except for a substantially flat portion for engaging the playing surface.

5,366,428

GYMNASTIC APPARATUS CAPABLE OF ANIMATING HORSE RIDING

Nien-Yuan Liao, No. 264, Sec. 2, Shi-Ting Rd., Yaichung,

Filed Mar. 15, 1994, Ser. No. 212,936

Int. Cl.[5] A63B *69/06, 21/068*

U.S. Cl. 482—96 **4 Claims**

1. A gymnastic apparatus capable of animating a horse riding and comprising:

a base having a front end provided with a support frame fastened thereto;

a treading member provided with two pedals and pivoted to said support frame;

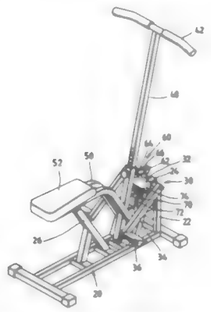
a handle rod pivoted to said base;

a seat rod pivoted to said base and located behind said handle rod, said seat rod having a seat cushion fastened thereto; and

a plurality of linking members for transmitting motion among said treading member, said handle rod and said seat rod;

wherein said treading member has a rotary shaft pivoted to said support frame, two pedal rods fastened respectively to both ends of said rotary shaft, and two pedals fastened respectively to two free ends of said two pedal rods; and

wherein said linking members include a first linking member



and a second linking member, with said first linking member being located between said rotary shaft of said treading member and said handle rod for linking a rotational motion of said rotary shaft with an angular displacement motion of said handle rod, and with said second linking member being mounted on said base or said support frame such that two extension ends of said second linking member are connected respectively with said handle rod and said seat rod for linking an angular displacement motion of said handle rod with an angular displacement motion of said seat rod, said two extension ends of said second linking member capable of bringing about a reverse motion.

5,366,429

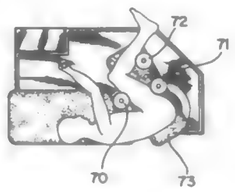
APPARATUS FOR EXERCISING MUSCLES OF THE UPPER LEGS AND LOWER TORSO

Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation of Ser. No. 913,430, Jul. 15, 1992, Pat. No. 5,273,508, which is a continuation-in-part of Ser. No. 666,219, Mar. 7, 1991, Pat. No. 5,171,200. This application Sep. 28, 1993, Ser. No. 127,591

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—136 **11 Claims**



1. A machine for exercising the hip flexors and abdominal muscles of the human body, the machine comprising in combination a generally horizontal support including a fixed support portion and a movable support portion rotatable about a generally vertical axis, resistance means for opposing movement of the movable support portion between first and second positions spaced about said vertical axis, a plurality of vertically extending pads secured to the movable support portion at spaced locations to be rotatable with the movable support about said vertical axis, said pads including a first pad located to be engageable with the crease of the buttocks of the exerciser, a second pad located to be engageable with the backs of the legs above the ankle of the exerciser and a third pad located to be engageable with the front of the exerciser's body at the pelvis area, said movable support portion in the first position being such that the user's thighs are extended from the user's torso and in the second position the user's thighs are curled towards the torso.

5,366,430

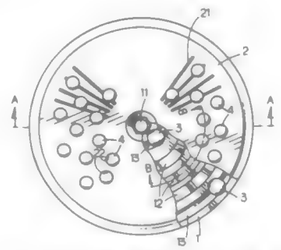
TWIST DISC

Ching-Hui Yao, P.O. Box 10780, Taipei, Taiwan, Prov. of China

Filed Feb. 14, 1994, Ser. No. 195,646

Int. Cl.[5] A63B *22/14*

U.S. Cl. 482—147 **4 Claims**



1. An improved twist disc for intermittently stimulating the soles of the user when the user stands on said twist disc and twists, said twist disc comprising:

a base disc having a vertical axle in the center thereof;

a movable disc pivotally fitted onto said axle on said base disc;

a plurality of support elements provided between said base disc and said movable disc for supporting said movable disc, wherein

a plurality of undulating tracks are provided on said base disc, and

a multiplicity of through holes are provided in said movable disc and a multiplicity of lifting elements are accommodated in the corresponding through holes for moving up and down therein by means of a counter-force of said tracks on said base disc when said movable disc and said base disc perform relative motion, said lifting elements projecting from said movable disc when moving up the corresponding through holes.

5,366,431

AUTOMATED PRESS BRAKE DIE TRANSFER SYSTEM

Dana C. Smith, Benton, and Russell C. Cantrell, Wichita, both of Kans., assignors to Uniflo Conveyor, Inc., Wichita, Kans.

Filed Dec. 13, 1990, Ser. No. 626,990

Int. Cl.[5] B23Q *3/155*

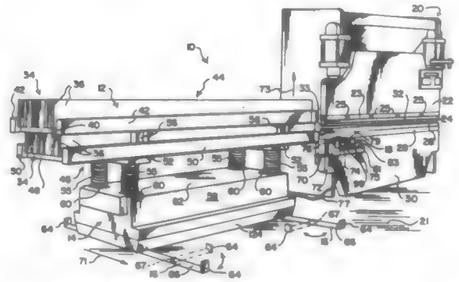
U.S. Cl. 483—1 **21 Claims**

1. A press brake die handling system for storing multiple elongated press brake dies and for positioning same adjacent to a press brake including a press brake bed adapted to receive pairs of said dies, each said die being longitudinally transferable between a stored position on said handling system and a use position in said press brake bed along a transfer path generally parallel to a longitudinal axis of said press brake bed, said die handling system comprising:

(a) die storage means including a plurality of die storage spaces each adapted for selectively receiving a respective die, said die storage spaces being positioned in generally juxtaposed relationship and extending in substantially parallel relationship with respect to said longitudinal axis, said storage means further including a plurality of roller means each associated with a respective die storage space and adapted for supporting a respective die in its stored position and transferring same between its stored and use positions;

(b) carriage means mounting said storage means and including:

(1) drive means for selectively moving said transfer system along a horizontal path of movement extending generally perpendicularly with respect to said press brake die longitudinal axis; and



(2) storage elevating means for raising and lowering said storage means along a vertical path of movement with respect to said press brake bed; and

(c) control means connected to said drive means and said storage elevating means for selectively controlling said drive means and said storage elevating means to move said storage means in said horizontal and vertical paths, respectively for selectively positioning respective die storage spaces in said storage means in longitudinal alignment with a respective die receiving location in said press brake bed in a die transfer relationship.

5,366,432

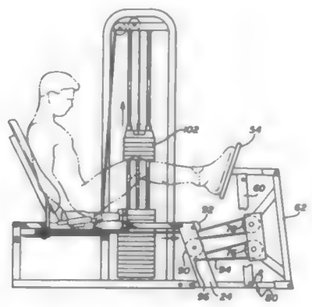
LEG PRESS

Theodore G. Habing, Long Beach, and Ron Gibson, Valencia, both of Calif., assignors to Pacific Fitness Corporation, Cypress, Calif.

Filed Jun. 18, 1992, Ser. No. 900,602

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—138 **11 Claims**



1. An exercising apparatus, comprising:

a frame;

a weight adapted to move relative to said frame;

a cable coupled to said weight;

a push member operatively connected to said frame, said push member being adapted to move between a rest position and an extended position;

a linkage bar mechanism operatively connected to said frame, said push member and said weight such that said weight moves when said push member moves between said rest position and said extended position;

a first cable guide connected to said linkage bar mechanism for guiding said cable, said first cable guide being adapted to be moved through an arc by said linkage bar mechanism, so that when said push member moves from the rest position to the said extended position said first cable guide moves along the arc in a manner where each successive incremental movement of said first cable guide is greater than a preceding incremental movement of said first cable guide, wherein each successive incremental movement of said push member produces an incremental movement of said weight that is greater in length than a preceding incremental movement of said weight;

wherein said linkage bar mechanism includes a first linkage arm connected to said push member, a second linkage arm pivotally connected to said frame and said first linkage arm, a third linkage arm pivotally connected to said frame and said first linkage arm, said pulley assembly also including a first pulley support arm connected to said third linkage arm and said first cable guide,

wherein said frame and said first, second, and third linkage arms are arranged as a trapezoid, and said second linkage arm is shorter than said third linkage arm.

5,366,433

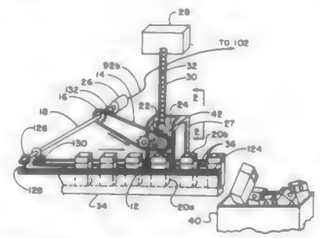
SAFETY CLUTCH AND ITS USE IN CAPPING MILK CARTONS

Charles M. McCormick, 122 Cherokee Hills Dr., Antioch, Tenn. 37013

Filed Jun. 24, 1993, Ser. No. 80,814

Int. Cl.[5] B31B *3/84, 1/90;* **F16D** *7/00, 43/20*

U.S. Cl. 493—38 **3 Claims**



3. Apparatus for capping cartons, comprising conveying means for conveying cartons along a path, applying means along the path for applying spout caps to the cartons, and drive means for driving said conveying means, said drive means including a safety clutch comprising a sprocket, a circular clutch drive plate adjacent said sprocket, a retaining plate adjacent said circular clutch drive plate for retaining said drive plate, a clutch driven shaft, a clutch driven plate encircling said clutch driven shaft, and a steel ball adapted to move from a position half in a hemispherical recess in said clutch drive plate, and half in a cylindrical hole in said clutch driven plate to a position entirely in said cylindrical hole for stopping the capping of the cartons in the event of a malfunction.

5,366,434

FOLDING APPARATUS FOR NARROW PAPER

Robert L. Green, Jr., Hillsboro, Ohio, assignor to G. Fordyce Company, Inc., Hillsboro, Ohio

Filed Nov. 6, 1992, Ser. No. 973,051

Int. Cl.[5] B65H *45/107, 45/20*

U.S. Cl. 493—414 **4 Claims**

1. Apparatus for zig-zag folding a length of paper having longitudinally spaced, transversely oriented perforations, comprising:

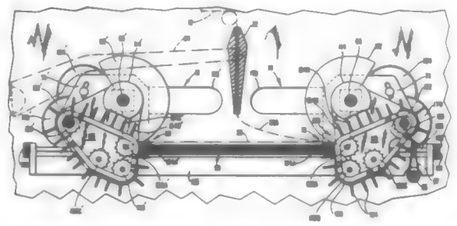
a frame having forward and rearward ends, opposed sides and a main drive shaft;

a swing chute which receives the length of paper, said swing chute being drivingly connected to said main drive shaft for movement in a forward and rearward direction between spaced first and second folding stations;

sheet folding device located at each of said first and second folding stations, each of said sheet folding devices including:

(i) a drive sprocket and at least one idler sprocket;

(ii) an endless chain connected to said drive sprocket and to said at least one idler sprocket, said endless chain mounting a number of spaced paddles and being effective to move said paddles with respect to one of said



first and second folding stations between a substantially vertical folding position and a substantially horizontal folding position;

(iii) a series of interconnected gears, one of said gears being drivingly connected to said main drive shaft and another of said gears being directly connected to said drive sprocket, said series of interconnected gears being effective to control the speed of rotation of said drive sprocket to provide a delay in the movement of each of said paddles upon reaching said substantially vertical folding position, and to then rapidly move each of said paddles from said substantially vertical folding position to said substantially horizontal folding position.

5,366,435

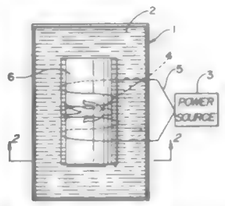
THERAPEUTIC TREATMENT OF MAMMALS

Jerry I. Jacobson, 153 Raintree Trail, Jupiter, Fla. 33458

Continuation of Ser. No. 973,230, Nov. 6, 1992, Pat. No. 5,269,746, which is a continuation-in-part of Ser. No. 172,388, Mar. 24, 1988, abandoned, which is a continuation-in-part of Ser. No. 840,881, Mar. 16, 1986, abandoned, which is a continuation-in-part of Ser. No. 451,021, Dec. 20, 1982, abandoned. This application Dec. 14, 1993, Ser. No. 166,687 The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[5] A61N *1/00*

U.S. Cl. 600—13 **12 Claims**



1. A method for therapeutically treating patients suffering from disease conditions, comprising:

calculating an electromagnetic field by equating a gravitational energy of a target element with the energy per unit charge of an electromagnetic field induced therein, using the formula $mc^2 = Bvl$ coulomb, thereby deriving a magnetic flux density of between about 6×10^{-6} to 6×10^{-10} gauss; and

subjecting said patients over an extended period of time to an electromagnetic field at said flux density.

5,366,436

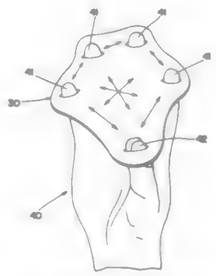
NON-INVASIVE METHOD FOR TREATING CARPAL TUNNEL SYNDROME

Joel Gibney, 6 Harbor Way, Ste. 258, Santa Barbara, Calif. 93109

Filed Jun. 6, 1991, Ser. No. 711,079

Int. Cl.[5] A61H *1/02*

U.S. Cl. 601—40 **2 Claims**



1. A method for relieving the symptoms of carpal tunnel syndrome comprising repetitive radially outward movement of the extended fingers and thumb of the affected hand against a radially inward-directed elastic opposing force.

5,366,437

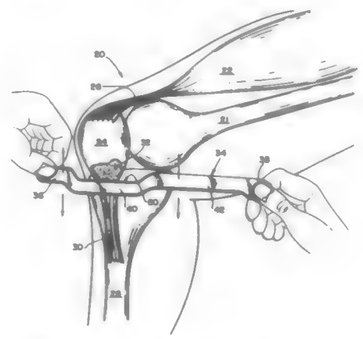
TOOLS FOR PERFORMING SOFT TISSUE MASSAGE

David A. Graston, 9133 Lansburgh Ct., Indianapolis, Ind. 46234

Continuation of Ser. No. 758,871, Sep. 11, 1991, Pat. No. 5,231,977. This application Jun. 25, 1993, Ser. No. 83,029

Int. Cl.[5] A61H *7/00*

U.S. Cl. 601—135 **6 Claims**



1. A massage tool for use by a trainer to apply pressure to the skin of a patient for the removal of fibrous scar tissue adhesions from underlying soft tissue, comprising:

an elongate rigid body having a first end and a second end, a first flat surface and a second flat surface opposite from said first flat surface, and a peripheral edge extending about the circumference of said body, wherein a first portion of said peripheral edge is configured in the shape of an arc corresponding to the shape of a contour of a selected part of a patient's body from which a scar tissue adhesion is to be loosened from the underlying soft tissue, wherein a second portion of said peripheral edge includes a first tapered surface and a second tapered surface, said first and second tapered surfaces intersecting one another to define a beveled edge.

5,366,438

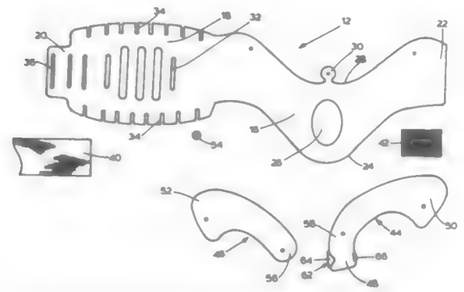
CERVICAL COLLAR

Bill Martin, Sr., P.O. Box 99, 238 Saltwell Rd., Shepherdsville, Ky. 40165

Filed May 20, 1993, Ser. No. 64,221

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—5 **10 Claims**



1. An improved cervical collar comprised of

a two-piece chin support brace secured to an elongated neck encircling band wherein said two-piece chin support brace is comprised of first chin support element and a second chin support element, wherein each chin support element has a first and second end, wherein the first end of each of said first and second chin support elements is fixedly secured in place to the elongated neck encircling band and the second end of each of said first and second chin support elements is rotatable secured to the neck encircling band, wherein the second end of the first chin support element overlaps the second end of the second chin support element to permit the two-piece chin support brace to be held in a bowed forward position and wherein said first and second chin support elements are capable of being locked in a bowed forward position by a locking means secured to the chin support brace.

5,366,439

ANKLE BRACE WITH BUBBLE CUSHIONING

Rick E. Peters, Louisville, Ky., assignor to Active Ankle Systems, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 653,667, Feb. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 404,125, Sep. 7, 1989, Pat. No. 5,031,607. This application Jun. 30, 1992, Ser. No. 906,574

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—27 **5 Claims**

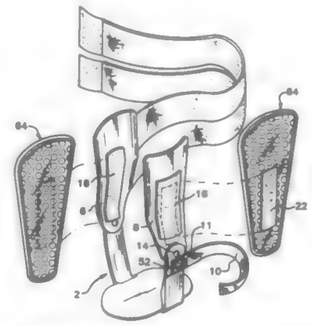
1. An ankle brace to be worn by a wearer to prevent ankle injury or encourage healing of an injured ankle, comprising:

a heel stirrup, including a bottom portion and inner and outer upright portions;

inner and outer pivot legs pivotally attached to said inner and outer upright portions at inner and outer pivot points, respectively, wherein the inner pivot point is higher above the bottom portion of the heel stirrup than is the outer pivot point;

at least one bubble cushion pad adapted to lie between the wearer's leg and said inner pivot leg or said outer pivot leg, said bubble cushion pad defining at least one flexible thermoplastic multi-layer bubble pad containing a plurality of non-porous pressurized bubbles therein;

said bubble pad is of multi-layer construction having an outer first film adhering to the top surface of a plurality of bubble caps extending outward formed within an intermediate second film and forming an air tight seal in the interstitial area between said outer first film, said intermediate second film, and the walls of said bubble caps, and having an outer third film adhering to the bottom of the intermediate second film forming an air tight seal at the base of said bubble cap; and



attachment means for adjustably and releasably attaching said bubble cushion pad to its respective pivot leg and adjusting said bubble cushion pad in either the horizontal or vertical axis.

5,366,440

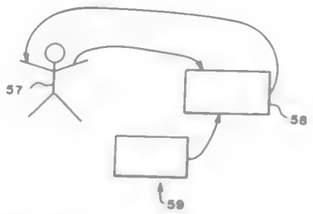
METHODS FOR TREATING DISEASE STATES USING OXIDIZED LIPOPROTEINS IN CONJUNCTION WITH CHEMOTHERAPEUTIC EFFECTOR AGENTS

Eric T. Fossel, Chestnut Hill, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Division of Ser. No. 592,553, Oct. 4, 1990, Pat. No. 5,192,264, which is a continuation-in-part of Ser. No. 418,382, Oct. 6, 1989, abandoned. This application Jan. 13, 1993, Ser. No. 4,079

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—4 **5 Claims**



1. A method for treating a disease state characterized by diseased cells with an increased number of lipoprotein receptors or an enhanced ability to take-up lipoproteins, which method comprises

(a) supplying blood,

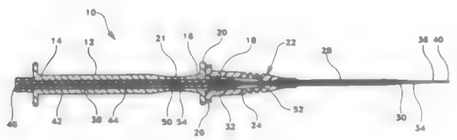
(b) oxidizing the lipoproteins in the blood,

(c) injecting the oxidized lipoprotein-containing blood of step (b) into the patient to be treated, and

(d) administering a chemotherapeutic effector agent to further increase the number of lipoprotein receptors on said diseased cells

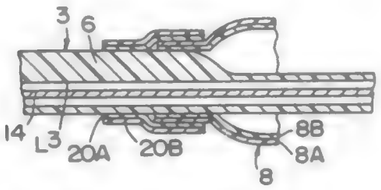
wherein said chemotherapeutic effector agent is taurine or lovastatin.

5,366,441
CATHETER INTRODUCER ASSEMBLY WITH GUIDEWIRE
Mark A. Crawford, Sandy, Utah, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Sep. 28, 1993, Ser. No. 127,725
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—53 16 Claims



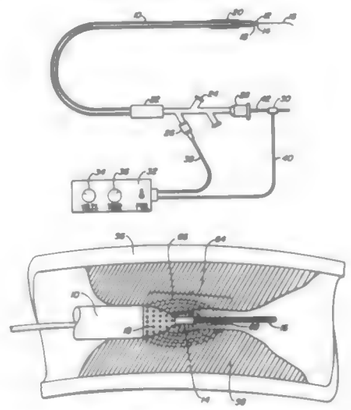
1. A catheter introducer set comprising:
a hollow housing having an axial lumen, a proximal end and a distal end;
a needle hub at the distal end of the housing;
a needle having an axial lumen, a proximal end and a distal end, the proximal end being secured to the needle hub;
a guidewire slidably located axially within the lumen of the needle;
a catheter assembly slidably located axially over the needle, the catheter assembly including a catheter adapter;
a plunger slidably located axially within the lumen of the housing, the plunger having a proximal end and a distal end; and
retaining means for releasably retaining the guidewire within the needle lumen such that axial movement of the plunger causes axial movement of the guidewire, the retaining means being adapted to be moveable between a first position in which the guidewire is secured to the plunger and a second position in which the guidewire is released from the plunger.

5,366,442
SLEEVE FOR ATTACHING A MEDICAL BALLOON TO A CATHETER
James C. Wang, Norton; George T. Roberts, Weston, and Brian A. Pederson, Sr., South Attleboro, all of Mass., assignors to Boston Scientific Corp., Watertown, Mass.
Division of Ser. No. 691,999, Apr. 26, 1991, Pat. No. 5,195,969. This application Feb. 4, 1993, Ser. No. 13,339
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—103 9 Claims



1. A sleeve for attaching a medical balloon to a catheter shaft, said sleeve comprising an elongated tubular body having a predetermined diameter and capable of adhering to both said medical balloon and said catheter shaft, said sleeve comprising a plurality of co-extruded and coextensive layers consisting essentially of different polymeric materials having different chemical compositions, one of said layers being a base structural layer and another being a bonding layer that is heat-sealable to the catheter shaft, said base structural layer having a thickness between about 0.2 and about 2.5 mil. and the other layer having a thickness between about 0.15 and 1.0 mil.

5,366,443
METHOD AND APPARATUS FOR ADVANCING CATHETERS THROUGH OCCLUDED BODY LUMENS
Philip E. Eggers, Dublin, Ohio, and Hira V. Thapliyal, Mountain View, Calif., assignors to Thapliyal and Eggers Partners, Mountain View, Calif.
Continuation-in-part of Ser. No. 817,575, Jan. 7, 1992, abandoned. This application Oct. 9, 1992, Ser. No. 958,977
Int. Cl.[5] A61B *1/00*
U.S. Cl. 604—114 44 Claims

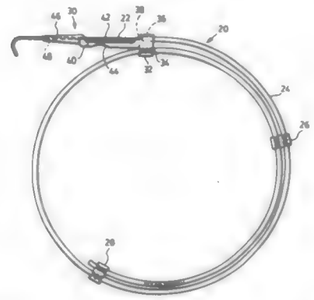


1. A catheter system comprising:
a catheter body having a proximal end and a distal end;
an electrode array disposed near the distal end of the catheter body, said array including a plurality of electrically isolated electrode terminals disposed over a contact surface which is forwardly disposed to contact an occluding surface in a body lumen as the catheter is advanced through the lumen;
a common electrode; and
means for supplying high frequency power to said electrode array, wherein current flow to each individual electrode terminal is selectively limited or disrupted when a low resistance path exists between said electrode terminal and the common electrode.

5,366,444
HAND OPERATED GUIDE WIRE ADVANCEMENT DEVICE
Geoffrey S. Martin, Mississauga, Canada, assignor to Med-Pro Design, Inc., Mississauga, Canada
Filed Jul. 6, 1993, Ser. No. 88,040
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—159 12 Claims

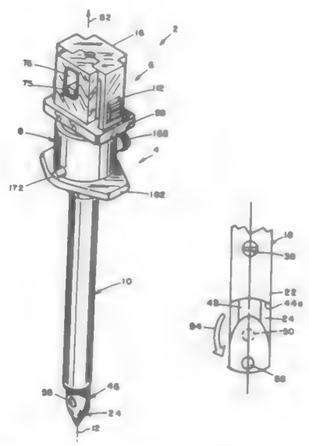
1. A device for feeding a guide wire into a hollow needle inserted into a patient's blood vessel to facilitate use of the wire for sliding a catheter over the wire into the blood vessel, the device comprising:
an elongate coiled tube adapted to retain the wire with the wire in sliding engagement within the tube;
a discharge head coupled to one end of the tube, the head including a guide opening adjacent said end of the tube, a platform having a surface adjacent the guide opening, and an outlet tip having a discharge opening, the platform extending longitudinally between the guide opening and the discharge opening, and the guide opening and discharge being proportioned to be in sliding contact with the wire and positioned to guide the wire over said surface; and
the platform defining a transverse depression positioned between the guide opening and the discharge opening and

facing the coiled tube, the spacing between the platform and the coiled tube being selected such that the user can control the device by gripping the device in one hand



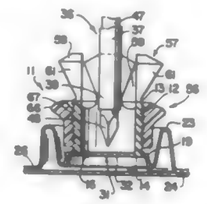
with the index finger held in the depression by resilient engagement with the coiled tube, and the thumb being in contact with the wire to push the wire over said surface to thereby feed the guide wire.

5,366,445
TROCAR WITH ROTATING SAFETY SHIELD
Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Laguna Niguel, all of Calif., assignors to Habley Medical Technology Corp., Laguna Hills, Calif.
Filed Mar. 30, 1993, Ser. No. 39,910
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 23 Claims



1. A trocar, used to provide an opening through a tissue layer, comprising:
a trocar body having a hollow interior; and
an obturator assembly having proximal and distal ends, the distal end of the obturator assembly sized to pass through the hollow interior of the trocar body, the obturator assembly including:
a cutting element at the distal end, the cutting element having a tip;
a safety shield pivotally mounted to the distal end and adjacent the cutting element, the safety shield being pivotal between a cutting position, with the cutting element exposed to the tissue layer, and a safe position, with the safety shield shielding the cutting element; and
means for automatically rotating the safety shield from the cutting position to the safe position upon passage of at least the tip of the cutting element through the tissue layer.

5,366,446
INTRODUCER ASSEMBLY
Elisha A. Tal, San Francisco, and Michael J. Orth, San Jose, both of Calif., assignors to Unisurge, Inc., Cupertino, Calif.
Filed Nov. 17, 1993, Ser. No. 153,879
Int. Cl.[5] A61M *5/32, 5/178*
U.S. Cl. 604—110 13 Claims

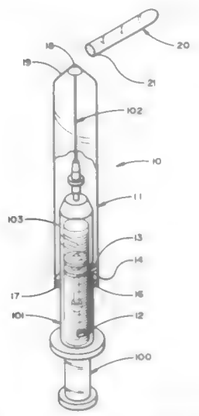


1. Introducer assembly for use on the skin of a patient overlying a cavity to be formed in a patient permitting the introduction of any one of a variety of introducer tubes having different outer diameters and forming a substantially fluid-tight seal with the introducer tube, each introducer tube having a distal extremity and having a trocar therein having a distal extremity which extends beyond the distal extremity of the introducer tube, comprising a sleeve having proximal and distal extremities and having a passage extending therethrough from the proximal to the distal extremities, the diameter of the passage being at least as great as the outer diameter of the largest introducer tube to be introduced therethrough a flange having inner and outer margins, said outer margin having a bottom side adapted to make a sealing engagement with the skin of the patient, means forming a fluid-tight seal between the inner margin of the flange and the sleeve, membrane means extending across the passage and forming a fluid-tight seal with respect to said sleeve, said membrane means being formed of a material and having a thickness which can be readily pierced by the trocar of the selected introducer tube and which forms a substantially fluid-tight seal with the trocar as it penetrates the same and with the selected introducer tube after it extends through the membrane means, and releasable clamping means carried by the sleeve and spaced from the membrane means adapted to receive the selected introducer tube and adapted to retain the selected introducer tube in a desired longitudinal position of the sleeve.

5,366,447
PROTECTIVE SLEEVE FOR A HYPODERMIC SYRINGE
Carol A. Gurley, Rte. 2, Box 115, Marks, Miss. 38646
Filed Dec. 13, 1993, Ser. No. 165,174
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 1 Claim

1. A protective apparatus, for a hypodermic syringe having a barrel and a needle, comprising:
(a) an elongated sleeve slidingly engaging the barrel of the syringe;
(b) a L-shaped locking and guide groove on the barrel of the syringe;
(c) a locking and guide tab, on an inside wall of the sleeve, slidingly engaging and traversing the locking and guide groove;
(d) a locking slot in the locking and guide groove to receive and lock in place the locking and guide tab;
(e) a first seal, in one end of the sleeve and abutting the inside wall of the sleeve and an outside wall of the barrel of the syringe, to seal the one end against the barrel of the syringe;

(f) a second seal in another end of the sleeve to seal around an outer wall of the needle when the sleeve is in a retracted position on the barrel of the syringe and to seal off the another end of the sleeve when the sleeve is in an extended position on the barrel of the syringe; and



(g) a break-away needle cover releasingly attached by a plurality of filament-like arms to the another end of the sleeve to protect the needle prior to use of the syringe.

5,366,448

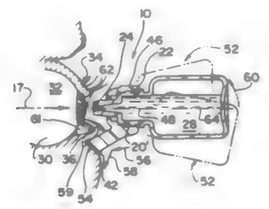
DISPENSING EYE DROPS

Vincent P. Basilice, 2500-50 Nesconset Hwy., Bldg. 14, Stony Brook, N.Y. 11790, and Joseph P. Basilice, 10 Landview Dr., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 871,100, Apr. 20, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 81,351

Int. Cl.[5] A61M *35/00*

U.S. Cl. 604—290 **2 Claims**



2. A method of administering fluid eye medication in drop dosages to a patient from a squeeze bottle of medication having a dispensing nozzle portion and an eye drop dispensing device, the dispensing device including a lower eyelid-engaging surface at a first end and being secured to the bottle at a second end, comprising the steps of:

(1) positioning the patient's head in an erect orientation to provide a corresponding horizontal primary gaze position to a patient's eye selected to receive medication;

(2) engaging the patient's lower eyelid with the first end of the dispensing device whereby said squeeze bottle is maintained in a spaced clearance position from said engaged lover eyelid;

(3) moving the first end of he dispensing device in a descending direction while maintaining contact with the lover eyelid to cause the engaged lover eyelid to bow away from the eye;

(4) moving the second end of said dispensing device through a pivotal traverse while maintaining dispensing device contact with the lower eyelid to correspondingly move the squeeze bottle from the clearance position into an adjacent position above and proximate the bowed lower eyelid;

(5) dispensing one or more drops from the squeeze bottle for drip receipt behind the bowed lower eyelid; and

(6) wherein the head remains in the erect orientation of step (1) during steps (2)–(5).

5,366,449

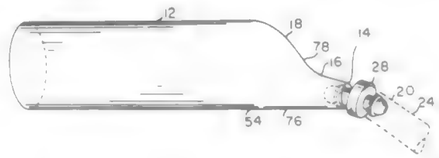
MALE EXTERNAL CATHETER ASSEMBLY AND METHOD

Samuel L. Gilberg, 2900 Ossenfort Rd., Glencove, Mo. 63038

Filed Mar. 16, 1993, Ser. No. 33,159

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—349 **18 Claims**



1. A damless catheter condom for fitting around a human penis having a shaft portion and a head portion, said damless catheter condom comprising:

a tubular portion comprising a tubular wall and a tubular portion average diameter and a longitudinal axis, said tubular portion average diameter being sized to encircle and sealingly grip said shaft portion and said head portion,

a walled end of said tubular portion,

a discharge port in said walled end wherein said discharge port is offset in position from said longitudinal axis and toward a point on said tubular wall.

5,366,450

AN ENVELOPED COILED TAMPON

Hans F. DeGroot, Strängnäs, Sweden, assignor to SanPoint AB, Mariefred, Sweden

Filed Mar. 30, 1993, Ser. No. 40,118

Claims priority, application European Pat. Off., Apr. 9, 1992, 92106112

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—366 **8 Claims**



1. A female hygiene tampon having an absorptive body consisting of:

a core of a coiled nonwoven fabric strip;

a water-permeable envelope formed from a nonwoven band consisting of 10 to 80% hydrophilic fibers and the balance thermoplastic fibers wound around said core, said envelope closely fitting around said core upon wetting of the envelope; and

a single weld line securing said envelope to said core at one end of said band, said band overlapping a turn of the envelope at a free end of the band opposite said one end of said band.

5,366,451

DISPOSABLE ABSORBENT PRODUCT

Yvon Levesque, Montreal, Canada, assignor to Johnson & Johnson Inc., Montreal, Canada

Filed Aug. 2, 1991, Ser. No. 739,936

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—378 **49 Claims**



1 A composite absorbent structure, comprising:

a cover sheet;

a highly absorbent fluid transfer sheet with a low fluid retentiveness; and

a wicking, laminated reservoir wherein said fluid transfer sheet is located between said reservoir and said cover sheet said reservoir, having a high fluid retentiveness in fluid communication with said fluid transfer sheet to draw fluid therefrom by capillary action, said laminated reservoir including superposed inner and outer layers, said inner layer being located between said outer layer and said fluid transfer sheet and including a recessed area defining a fluid distribution well, a highly porous and hydrophilic spacer element between said layers establishing a high void volume area which forms an extension of said fluid distribution well between said layers.

5,366,452

METHOD FOR THE FLAT MANUFACTURE OF THREE-DIMENSIONAL ARTICLES, PARTICULARLY ABSORBENT, DISPOSABLE ARTICLES, AND AN ARTICLE PRODUCED IN ACCORDANCE WITH THE METHOD

Leif U. R. Widlund, Mölnlycke, and Roy Hansson, Mölndal, both of Sweden, assignors to Mölnlycke AB, Gothenburg, Sweden

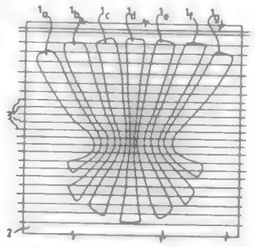
PCT No. PCT/SE90/00838, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO91/09580, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 14, 1990, Ser. No. 861,871

Claims priority, application Sweden, Dec. 21, 1989, 8904317-8

Int. Cl.[5] A61F *13/15, 13/20;* **B65H** *81/00;* **B32B** *31/00*

U.S. Cl. 604—385.2 **16 Claims**



1. An absorbent disposable article having a crotch region, comprising:

an inner casing layer;

an outer casing layer;

an absorbent body having a longitudinal and a transverse direction enclosed between said inner and said outer casing layers;

said absorbent body including a plurality of elongated, narrow, and flexible absorbent bodies having longitudinally extending edge surfaces, the bodies disposed in a transverse adjacent relationship, a longitudinally intermediate part of the absorbent body forming a crotch region;

each of said elongated bodies being enclosed between said two casing layers;

said two casing layers being mutually joined at parts which lie externally of said elongated bodies;

contractable means for substantially joining together the longitudinally extending edge surfaces of said elongated bodies, at least in parts which lie outside the crotch region of the article, to opposing longitudinally extending edge surfaces of adjacent bodies;

said contractable means being attached to at least one of said casing layers; and

the article having a three-dimensionally curved configuration.

5,366,453

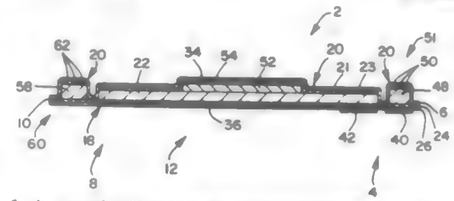
NEWBORN'S GROWTH ADJUSTABLE ABSORBENT DIAPER HAVING VARIABLE OVERLAPPING AND NON-OVERLAPPING EARS

Georgia L. Zehner, Larson; Paulette M. Rosch, Menasha; Thomas W. Odorzynski, Green Bay; Bruce M. Siebers, Appleton, and Timothy J. Blenke, Neenah, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 757,789, Sep. 11, 1991, abandoned. This application Aug. 20, 1993, Ser. No. 109,776

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.2 **38 Claims**



1. A growth adjustable absorbent article having a length, said article comprising:

a backsheet including a front section having a front edge, a back section having a back edge, and an intermediate crotch section,

a liquid-permeable topsheet adhered to said backsheet,

a main absorbent body being disposed on at least said intermediate crotch section and being positioned between said topsheet and said backsheet,

a foldable absorbent panel being disposed on said front section between said main absorbent body and said front edge of said front section, said foldable absorbent panel being positioned between said topsheet and said backsheet and being movable between a first position wherein said foldable absorbent panel is substantially coplanar with said main absorbent body and a second position wherein said foldable absorbent panel is folded inwardly upon said main absorbent body, whereby the length of said article is adjustable to accommodate growth of a newborn baby, and

an elastic member positioned between said foldable absorbent panel and said topsheet wherein said front section curves concavely in the direction of said topsheet when said foldable panel is substantially coplanar with said main absorbent body and when said elastic member is relaxed.

5,366,454

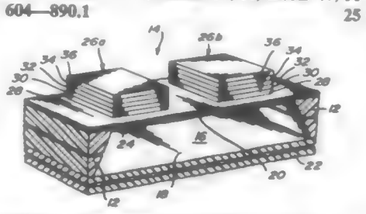
IMPLANTABLE MEDICATION DISPENSING DEVICE

John F. Currie, Montreal; Dentcho V. Ivanov, Pierrefonds, and Andre Lecours, Longueuil, all of Canada, assignors to La Corporation de l'Ecole Polytechnique, Montreal, Canada

Filed Mar. 17, 1993, Ser. No. 32,991

Int. Cl.[5] A61K *9/11;* **A61M** *37/00;* **B65D** *47/10*

U.S. Cl. 604—890.1 **25 Claims**



1. A medication dispensing device for implantation into an animal or human body, said device comprising:

a plurality of compartments each containing a dose of medicine to be dispensed and having a delivery opening permitting delivery of said medicine;

a rupturable membrane sealing the delivery opening of each compartment, said membrane having a predetermined elastic deformation limit and a predetermined rupture point;

a plurality of membrane rupturing systems each associated with a respective one of said compartments and attached to the membrane thereof for rupturing same in response to an electrical signal, each said membrane rupturing system including stress-inducing means maintaining said membrane stressed to substantially the elastic deformation limit thereof, and piezoelectric transducer means responsive to said electrical signal for applying to said membrane additional stress sufficient to exceed the rupture point of said membrane and thereby cause rupture thereof, whereby to allow body fluids to enter into the compartment for mixing with the medicine contained therein so that said medicine is released in admixture with said body fluids through said delivery opening into the animal or human body; and

means for supplying said electrical signal to a respective piezoelectric transducer means of each said membrane rupturing system to activate said respective piezoelectric transducer means.

5,366,455

PEDICLE ENGAGING MEANS

John Dove, Staffs; Abdul A. Rahmatalla, Harpfields, and Philip J. Sell, Sutton Coldfield, all of Great Britain, assignors to Surgicraft Limited, Worcs., England

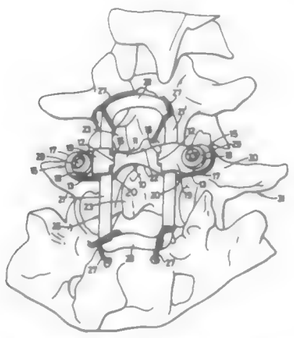
PCT No. PCT/GB89/01013, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/04948, PCT Pub. Date May 17, 1990

PCT Filed Nov. 2, 1989, Ser. No. 536,589

Claims priority, application United Kingdom, Nov. 4, 1988, 8825909.8

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—61 **5 Claims**



4. Pedicle engaging device comprising a bridge member having an arched middle portion with an aperture in each side of the arch, and a pair of generally coplanar end portions each with a hole for rotatably receiving a pedicle screw, a bend formed between the arched portion and each end portion; a pair of clip members each having a tip engageable in one aperture in the arched portion of the bridge member, and each having a fixing portion with a hole for rotatably receiving a pedicle screw, a bent portion formed between the tip and the fixing portion of each clip member; the hole in a clip member being in register with the hole in the respective end portion of the bridge member when the tip of the clip member is engaged in the respective aperture in the arched portion of the bridge member, and a pair of clamping parts being formed by the bent portion of each clip member and the corresponding bend in the bridge member, these clamping parts for embracing a rod or rod-like portion of a spinal fixation device wherein the width of the arched portion of the bridge member is reduced between the apertures for engagement by the tips of the clip members.

5,366,456

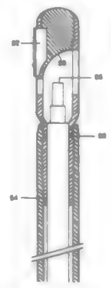
ANGLE FIRING FIBER OPTIC LASER SCALPEL AND METHOD OF USE

John L. Rink; Kwok H. Ngai, both of San Francisco; King J. J. Yu, Oakland, and Herrick Tam, San Francisco, all of Calif., assignors to Xintec Corporation, Oakland, Calif.

Filed Feb. 8, 1993, Ser. No. 14,814

Int. Cl.[5] A61B *17/36*

U.S. Cl. 606—16 **22 Claims**



22. An improved angle firing fiber optic surgical scalpel for cutting and coagulating tissue by means of radiant energy, said scalpel comprising:

a fiber optic waveguide having a receiving end and a transmitting end;

a rigid cannula member, said cannula member having a proximal end and a distal end, said waveguide being axially disposed within said cannula member such that the transmitting end of said waveguide is adjacent to said distal end of said cannula member;

a waveguide locking means adjacent to said proximal end of said cannula member for locking said waveguide within said cannula member thereby maintaining said transmitting end of said waveguide adjacent to said distal end of said cannula member, said proximal end of said cannula member comprising a rotatable coupling means for coupling said cannula member to said waveguide locking means and allowing rotation of said cannula member about said waveguide, said rotatable coupling means comprising an inner member disposed within a sleeve, said inner member having a plurality of small stubs, said sleeve having a plurality of slots, and said inner member rotating within said sleeve into a plurality of predetermined indexed positions by engagement of said small stubs on said inner member and said slots within said sleeve;

and a firing tip, said firing tip comprising:

an attachment means attaching said firing tip to the distal end of said cannula member;

a central hollow body portion having a distal end, a proximal end and a central axis, said attachment means attaching said proximal end of said central hollow body portion of said firing tip to said distal end of said cannula member, said central hollow body portion having at least one cooling vent, said waveguide capable of transmitting radiant energy along said central axis toward the distal end of said central hollow body portion, said central hollow body portion defining an opening;

and an insert member axially disposed within said central hollow body portion having a first end and a second end, said second end being adjacent to the distal end of said central hollow body portion, said first end having a highly reflective surface, said highly reflective surface being positioned within said central hollow body portion of said firing tip in an operative position reflecting said radiant energy through said opening at an operative angle with respect to said central axis.

5,366,457

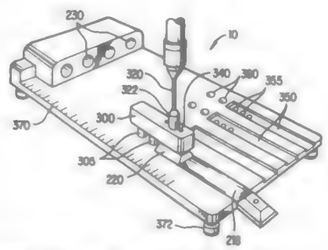
METHOD AND APPARATUS FOR PREPARING A BONE AND TENDON GRAFT

David A. McGuire, 3418 Lakeside Dr., Anchorage, Ak. 99515, and Stephen D. Hendricks, Anchorage, Ak., assignors to David A. McGuire, Anchorage, Ak.

Continuation-in-part of Ser. No. 806,906, Dec. 13, 1991, Pat. No. 5,257,996. This application Feb. 19, 1993, Ser. No. 19,525

Int. Cl.[5] A61F *5/00, 2/32*

U.S. Cl. 606—86 **17 Claims**



1. A bone block drill guide for use in drilling a hole in a bone block comprising:

a base plate having a plurality of troughs of different widths, each of the troughs having a bottom surface with at least one hole therein and dimensions suitable for receiving a bone block therein;

a drill guide member having at least one hole therethrough for alignment with the at least one hole in the bottom surface of one of the troughs; and

means, adjustably mountable on said base plate, for aligning said drill guide member over said one of the troughs.

5,366,458

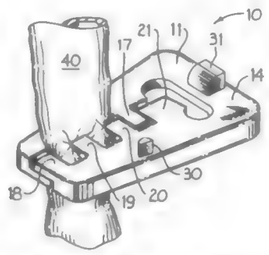
LATCHLESS SURGICAL CLIP

Herbert W. Korthoff, Westport; Daniel Shichman, Trumbull; Ross R. Muth, Brookfield, and Charles E. Gorman, Jr., Hamden, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 13, 1990, Ser. No. 626,841

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—151 **23 Claims**



1. A latchless surgical clip for application to body tissue, which comprises:

a polymeric clip body possessing a pair of legs, opposed surfaces of which constitute tissue clamping surfaces in the tissue clamping configuration of the applied clip, and a hinge region possessing an elastic spring back property to which one end of each leg is attached, the other end of each leg being free, each leg being movable about the hinge region; and,

latchless tissue clamping means on the tissue clamping surface of at least one leg, the tissue clamping means of said at least one leg cooperating with the opposed tissue clamping surface in the tissue clamping configuration of the clip to impart a tissue clamping force to said tissue,

wherein the latchless tissue clamping means comprises upper and lower staggered tooth-like projections on said at least one leg.

5,366,459

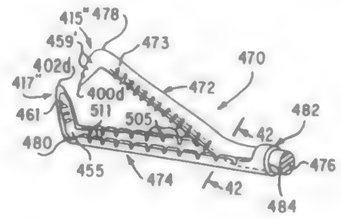
SURGICAL CLIP AND CLIP APPLICATION PROCEDURES

Inbae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 450,301, Dec. 15, 1989, Pat. No. 5,100,418, which is a continuation-in-part of Ser. No. 49,504, May 14, 1987, abandoned, and Ser. No. 515,641, Apr. 2, 1990, Pat. No. 5,171,250, which is a continuation of Ser. No. 49,526, May 14, 1989, abandoned. This application Sep. 18, 1991, Ser. No. 719,281

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—151 **20 Claims**



1. An adjsutably tensionalbe surgical clip, comprising:

an elongated member comprised of at least one pair of first and second leg members, each of the leg members having a proximal portion and a distal portion having a tissue engaging portion which terminates at a distal end, a longitudinal channel means formed along at least a part of one of the leg members for engaging and retaining a corresponding part of the other leg member, the respective proximal portions of each leg member pair being pivotably connected to one another to permit relative displacement of the leg members, the distal portion of at least one leg member of each leg member pair being bendable relative to the distal portion of the other leg member of the pair to effect approximation of the leg member distal ends to close the clip prior to relative pivotable displacement of the leg members.

5,366,460

APPARATUS AND METHOD FOR LAPAROSCOPE HERNIA REPAIR

Mark A. Eberbach, Tampa, Fla., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 595,956, Oct. 11, 1990, Pat. No. 5,141,515. This application Aug. 24, 1992, Ser. No. 934,776

Int. Cl.[5] A61B *19/00*

U.S. Cl. 606—151 **21 Claims**

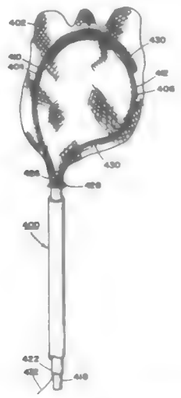
1. Apparatus for laparoscopically patching hernias comprising:

a tubular sheath having a distal end and a proximal end;

a tubular plunger located within and moveable with respect to the sheath, the tubular plunger having a proximal end and a distal end with the proximal end of the tubular plunger extending proximally outwardly of the sheath for manipulation by a surgeon;

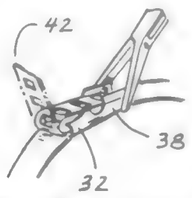
elongated means having a proximal end and a bifurcated

distal end adapted to form a loop, the proximal end of the elongated means extending proximally outwardly of the sheath for manipulation by a surgeon; and



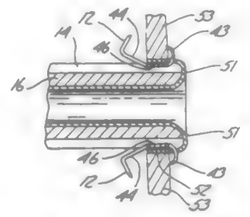
a patch supported on the loop for movement therewith, the patch having passageway means for receipt of the loop to retain the patch in a planar configuration.

5,366,461
STERNUM BANDING ASSEMBLY
William Blasnik, 1512 Palisade Ave., Fort Lee, N.J. 07024
Filed Jan. 25, 1993, Ser. No. 8,603
Int. Cl.[5] A61B *17/08*
U.S. Cl. 606—151 13 Claims



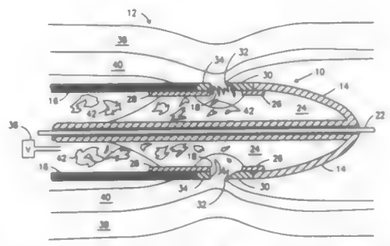
1. An assembly for banding the sternum for use with a hand held clamp having a pair of clamp arms moveable between proximate and remote positions, said assembly comprising a flexible band having first and second ends, a needle attached to one of said ends of said band, a buckle, means for attaching said buckle proximate said other end of said band, said buckle comprising a band receiving channel, means for locking said band in position within said channel and normally spaced, substantially parallel extending elements, each having an opening adapted to receive a different one of the clamp arms such that when the clamp arms are moved from the remote to the proximate position, the buckle is engaged and retained by the clamp as the band is drawn through the channel to the locking position.

5,366,462
METHOD OF SIDE-TO-END VASCULAR ANASTOMOTIC STAPLING
Robert L. Kaster, 2730 Vagabond La., Plymouth, Minn. 55447, and Perry M. Domaas, Brooklyn Center, Minn., assignors to Robert L. Kaster, Plymouth, Minn.
Division of Ser. No. 573,856, Aug. 28, 1990, Pat. No. 5,234,447.
This application Aug. 6, 1993, Ser. No. 103,290
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—153 9 Claims



1. A method of using a staple for joining first and second blood vessels comprising:
providing a staple having first and second engaging members;
placing a free end of a first blood vessel through the staple;
holding the free end of the first blood vessel over upon the first engaging members of the staple to pierce the first blood vessel;
deflectively bending the first engaging members radially outwardly and proximally;
forming an opening in a side wall of a second blood vessel having inner and outer walls:
inserting the free end of the first blood vessel and the first engaging members through the opening in the second blood vessel; and
deflectively bending the second engaging members radially outwardly and distally toward the outer wall of the opening in the second blood vessel until the ends thereof pierce the outer wall.

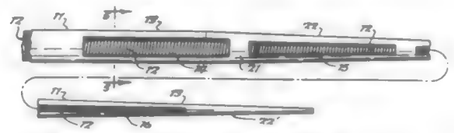
5,366,463
ATHERECTOMY CATHETER FOR THE REMOVAL OF ATHEROSCLEROSIS FROM WITHIN BLOOD VESSELS
William J. Ryan, 10670 Rosewood Ct., Pinellas Park, Fla. 34666
Continuation-in-part of Ser. No. 896,736, Jun. 9, 1992, which is a continuation of Ser. No. 518,017, May 2, 1990, abandoned.
This application Mar. 5, 1993, Ser. No. 27,221
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 9 Claims



1. An atherectomy catheter for the removal of atherosclerosis from within the blood vessels of a patient, said catheter comprising: a substantially hollow catheter body mounted on a guide wire, said guide wire and said catheter body being insertable into a vessel from which atherosclerosis is to be removed; said body comprising a substantially ridged tip and a flexible

segment remote from said tip, said flexible segment being attached to said tip such that a circumferential gap is provided in said body between said tip and said flexible segment; and a cutting means operatively disposed in said circumferential gap such that manipulation of said body may cause said cutting means to remove atherosclerosis from the interior of the vessel and to direct the removed atherosclerosis into said hollow catheter body for disposal wherein said guide wire extends through said tip and said segment, and wherein said segment is attached to said tip by internal brace means, said cutting means being mounted to said tip by said internal brace means such that a cutting edge is disposed toward said flexible segment and is spaced apart therefrom in said circumferential gap.

5,366,464
ATHERECTOMY CATHETER DEVICE
John C. Belknap, 1740 Amherst St., Buffalo, N.Y. 14214
Filed Jul. 22, 1993, Ser. No. 95,946
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—159 18 Claims



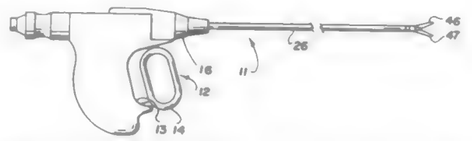
1. An atherectomy catheter comprising elongated flexible tubular means having a longitudinal axis and a circumference for placement next to a lesion in a blood vessel, window means defining an opening of less than 360 degrees in said circumference of said elongated flexible tubular means for receiving said lesion, a flexible edge portion on said window means, flexible cutting edge means on said flexible edge portion for flexing with the curvature of said blood vessel and for excising said lesion which enters said window means, said elongated tubular means comprising a flexible helical coil member, said flexible cutting edge means comprising exposed adjacent severed ends of said flexible coil member, and a flexible casing on said flexible coil member for retaining said coil member in assembled relationship at said window means.

5,366,465
ENDOSCOPIC SURGICAL PROCEDURE AND INSTRUMENT FOR IMPLEMENTATION THEREOF
M. Ather Mirza, 1 Piper La., St. James, N.Y. 11780, assignor to M. Ather Mirza, St. James; Theodor Esser, Stony Brook and Eugene T. King, East Northport, all of N.Y.
Continuation of Ser. No. 986,523, Dec. 7, 1992. This application Feb. 10, 1993, Ser. No. 16,048
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 36 Claims



15. An instrument for implementing an endoscopic surgical procedure at a selected operative site on a patient through an incision on said patient at a locale proximate said operative site to establish an entry portal; said instrument comprising an elongate cannula guide member including a longitudinal bore having open proximal and distal ends and an open slot extending along the length thereof communicating with said open ends; an elongate insertion member being slidably receivable within said cannula guide member and being configured so that at least portions thereof conform with said open distal end and said open slot of the guide member to form a smooth exterior surface in combination therewith,
said cannula guide member and the inserted insertion member being advanceable a predetermined distance relative to said operative site, said insertion member being sized for withdrawal from said cannula guide member while permitting said cannula guide member to remain in place at said operative site; endoscopic viewing means being inserted into said cannula guide member for direct visualization of said operative site and the positioning of said cannula guide member relative thereto and thereafter sized for withdrawal from said cannula guide member;
a further endoscopic viewing means; a surgical instrument being mounted proximate a leading end of said further viewing means;
said cannula guide member being sized to provide clearance for said composite further endoscopic viewing means and surgical instrument which is to be inserted into and passed through said cannula guide member such that the surgical instrument protrudes through the open slot in said cannula guide member to advance said composite further endoscopic viewing means and surgical instrument so as to contact tissue at said operative site with said surgical instrument,
said tissue being operatively engageable with said surgical instrument under direct visualization through said further endoscopic viewing means so as to perform a desired operative procedure on said tissue,
said composite further endoscopic viewing means and surgical instrument being sized for withdrawal from said cannula guide member, and
said guide member being sized for withdrawal from said entry portal.

5,366,466
SURGICAL SCISSORS
Jeffrey J. Christian, and Christina W. Forston, both of San Jose, Calif., assignors to Unisurge, Inc., Cupertino, Calif.
Filed Jul. 9, 1992, Ser. No. 911,871
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—174 5 Claims



1. In a surgical scissors, first and second blades having cutting edges and having proximal and distal extremities, a tubular member having proximal and distal extremities, the distal extremity having an open end, the tubular member having an outer diameter, a nose mounted in the open end of the tubular member and having a diameter no greater than the outer diameter of the tubular member, means carried by the nose pivotally interconnecting said first and second blades between the proximal and distal extremities of the first and second blades within the nose to permit movement of the first and second blades between open and closed positions, first and second linkage arms disposed within the nose, means in the nose pivotally connecting the first linkage arm to the proximal extremity of the first blade, means in the nose pivotally connecting the second linkage arm to the proximal extremity of the second blade, a push-pull rod slidably mounted in the tubular member and in the nose and having a distal extremity and means in the nose pivotally connecting the distal extremity of the push-pull rod to the first and second linkage arms for moving the blades between open and closed positions as the push-pull rod is moved rectilinearly, the proximal extremities of said first and second blades being positioned with respect to the means pivotally interconnecting the first and second blades so that as

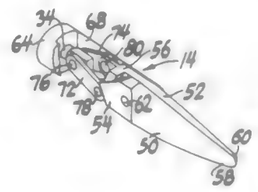
said push-pull rod is pushed, said cutting edges will be moved to a closed position.

5,366,467

ENDOSCOPIC SCISSORS

Robert S. Lynch, Durham, N.C., and Peter Wester, Millburn, N.J., assignors to Linvatec Corporation, Largo, Fla.

Filed Jul. 15, 1992, Ser. No. 914,253
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—174 2 Claims



1. Scissors for use in an endoscopic surgical procedure comprising:

actuating means at the proximal end of the scissors to longitudinally reciprocate the elongated interconnecting means described below;

a pair of scissor blades at the distal end of the scissors, said scissor blades each having a proximal end and a distal end;

hinge means connected to the proximal ends of said scissor blades to pivot said scissor blades relative to each other in response to longitudinal motion of the elongated interconnecting means described below;

elongated interconnecting means for operatively joining said actuating means and said hinge means, said elongated interconnecting means having a proximal end and a distal end and adapted to be longitudinally reciprocated by said actuating means, said proximal end connected to said actuating means and said distal end connected to said hinge means; and

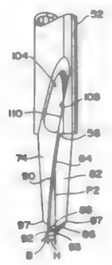
stop means for preventing said distal ends of said scissor blades from crossing over each other, said stop means comprising an abutment affixed only to the proximal end of at least one of said scissor blades and engageable with the other of said scissor blades.

5,366,468

DOUBLE BLADED SURGICAL ROUTER HAVING ASPIRATION PORTS WITHIN FLUTES

Joseph Fucci, Port Richey, Fla., and Terry L. Whipple, Richmond, Va., assignors to Linvatec Corporation, Largo, Fla.

Filed Nov. 9, 1993, Ser. No. 149,447
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—180 33 Claims



1. A surgical router comprising:

an elongate outer tubular member having a distal end and a proximal end;

an elongate inner member rotatably disposed in said outer member and having a distal section protruding distally beyond said outer member distal end, a proximal end and a longitudinal axis;

a pair of cutting blades on said distal section equally spaced about said axis and having cutting edges for cutting anatomical tissue;

a pair of flutes on said inner member disposed between said cutting blades for carrying anatomical tissue cut by said cutting blades;

a pair of aspiration ports defined in said inner member, each aspiration port disposed within a respective one of said flutes; and

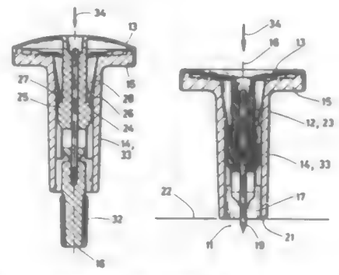
a passage in said inner member communicating with said aspiration ports and a source of suction for aspirating cut tissue through the surgical router.

5,366,469

LANCET DEVICE FOR PUNCTURING THE SKIN

Hans-Henning Steg, Haninge, and Helmut Seidl, Älvajö, both of Sweden, assignors to Arta Plast AB, Tyresö, Sweden

Filed Apr. 2, 1993, Ser. No. 42,616
Claims priority, application Germany, Apr. 16, 1992, 4212723
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—182 13 Claims



1. A lancet device for puncturing the skin of mammals, said lancet device comprising:

a bushing having a grip portion and opposite said grip portion a free end defining a plane;

an insert axially slidably connected within said bushing, said insert having a first and a second end, said first end having a grip element and said second end having a projecting lancet with a tip for puncturing the skin; and

said grip element comprising a diaphragm with a preset pressure point in the form of a spring-elastic body having a concave cross-section, wherein in an initial state of said diaphragm the outer convex curvature is axially outward relative to said bushing and, upon surpassing said pressure point of said diaphragm with an axially directed force in the direction toward said free end of said bushing, said lancet is released via said insert with a preset impulse and penetrates said plane defined by said free end to puncture the skin.

5,366,470

LANCET DEVICE

Urs A. Ramel, 1331 Los Arboles Ave., Sunnyvale, Calif. 94087

Continuation of Ser. No. 790,376, Nov. 12, 1991, abandoned.
This application Sep. 13, 1993, Ser. No. 121,035
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—183 15 Claims

2. A lancet device, comprising:

a lance, including a needle and a shaft;

a base, including a well wherein said lance is located, said well having a bottom;

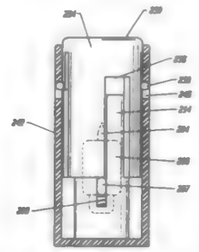
a spring, located in said well between said shaft of said lance and said bottom of said well;

a trigger, including a barrel to slidably accept said lance, means for retaining said lance and spring in a compressed armed position prior to use, and an end with an orifice to allow said needle to protrude through said orifice when said lance and spring are released from said armed position to pierce human or other animal tissue;

means for controlling the depth of penetration of said needle into said tissue;

a body, including a barrel to slidably accept said trigger and fixedly accept said base, an open end distal from said base, said open end being in about the same plane as the face of said orifice-containing end of said trigger when said trigger inserted into said body, and means for retaining said trigger in said barrel;

means for fixedly attaching said base to said body;



means for aligning said orifice-containing end of said trigger in about the same plane as said open end of said body;

means for centering and guiding said trigger rotatably in said body about the central longitudinal axis of said body, and axially in said body along the central longitudinal axis of said body and towards said base, said central longitudinal axis of said body identical to said central longitudinal axis of said trigger; and

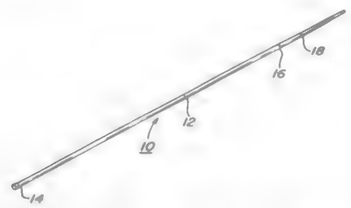
said trigger further including rotational means for rotating said means for centering and guiding said trigger about its central longitudinal axis of rotatably release said lance and spring from said armed position when said trigger is moved axially along its central longitudinal axis towards said base.

5,366,471

ESOPHAGEAL DILATION BOUGIE

Richard G. Jones, West Chester, Pa., and Jeffrey A. Miner, Sanford, Mich., assignors to Pilling Co., Fort Washington, Pa.

Filed Oct. 26, 1993, Ser. No. 143,446
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—191 8 Claims



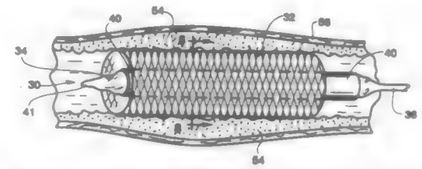
1. An esophageal dilation bougie for treating esophageal strictures comprising a flexible tube of silicone rubber having a distal end and a proximal end, with a tapered tip at the distal end and having an enclosed, hollow space extending proximally from the tapered tip, the hollow space being filled with a substantially homogeneous material; wherein a portion of the bougie extending proximally from the tip is radiopaque and sufficiently heavy to effect dilation, and in which the material comprises Tungsten particles suspended in a fluid silicone material.

5,366,472

DILATATION BALLOON WITHIN AN ELASTIC SLEEVE

Richard A. Hillstead, Miramar, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 362,251, Jun. 6, 1989, Pat. No. 5,116,318. This application Sep. 30, 1991, Ser. No. 769,005
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—194 9 Claims



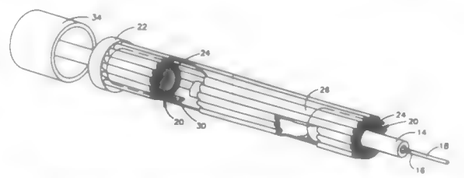
1. In a dilatation balloon catheter assembly for insertion into a blood vessel during a vascular procedure comprising a single catheter body having a distal end, a distal end portion, and a proximal end, the improvement residing in double wall dilatation balloon means including an inner inflatable balloon wall and an outer balloon wall with a space therebetween, said balloon walls each having a distal end and a proximal end, each balloon wall surrounding and being connected at both its distal and proximal ends to said distal end portion of said single catheter body and said catheter body distal end portion not being open to the blood vessel.

5,366,473

METHOD AND APPARATUS FOR APPLYING VASCULAR GRAFTS

Thomas R. Winston, Leawood, and John M. Neet, Shawnee, both of Kans., assignors to Ultrasonic Sensing and Monitoring Systems, Inc., Leawood, Kans.

Filed Aug. 18, 1992, Ser. No. 931,675
The portion of the term of this patent subsequent to Apr. 26, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/06*
U.S. Cl. 606—198 11 Claims



1. Apparatus for treating a damaged portion of a vessel, comprising:

an elongated core;

a pair of stents on said core at spaced apart locations, each stent comprising a thin flexible sheet tightly wound around the core in a roll having a contracted condition and urged to unwind to an expanded condition,

each of said stent rolls being spirally wound on said core and having a tendency to radially expand, each said roll presenting a plurality of adjacent, arcuate layers of said sheet in a direction transverse to the longitudinal axis of said core;

a flexible graft extending around both stents in a collapsed state and being expansible against the vessel to span the damaged portion thereof, each of said sheets including a tab secured to said graft; and

means for maintaining said rolls in the contracted condition thereof to permit the core to be inserted into the vessel, said maintaining means being selectively releasable to allow said rolls to assume the expanded condition thereof to effect expansion of said graft against the vessel wall,

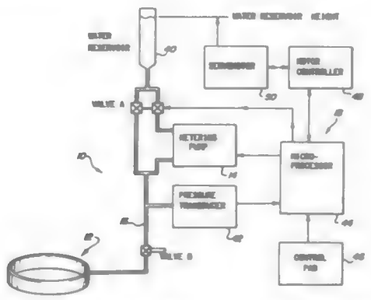
said rolls in the expanded condition thereof each having at least an inner and an outer layer which overlap and bear against one another over a substantial portion of the circumstance of the inner layer, said expanded rolls securing said graft in said vessel.

5,366,474

APPARATUS AND METHOD FOR INDENTING THE OCULAR COATS OF AN EYE

Mark S. Blumenkranz, Royal Oak, Mich., and Carl Wang, Alameda, Calif., assignors to Escalon Ophthalmics, Inc., Skillman, N.J.

Division of Ser. No. 737,370, Jul. 29, 1991, Pat. No. 5,181,922.
This application Aug. 13, 1992, Ser. No. 929,282
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—202 4 Claims



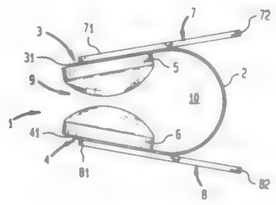
1. A device for indenting the ocular coats of an eye, said device comprising:
gripping means for gripping the eye about the forniceal conjunctival surface;
pressure applying means operatively connected to said gripping means for applying a pressure about at least a portion of said forniceal conjunctival surface to indent the eye; and
fluid control means for controlling the flow of fluid into and out of said tubular member and from said pumping means, said fluid control means including fluid volume control means for controlling the volume of fluid flow and intraocular pressure means for sensing intraocular pressure and controlling said fluid volume control means in response thereto.

5,366,475

TRAGUS ACUPRESSURE CLIP

Theodore N. Voss; Barbara Curran; Karl D. Kirk, III, and Ellen R. Cohen, all of New York, N.Y., assignors to Shatzu Health Products, Inc., New York, N.Y.

Filed Dec. 21, 1992, Ser. No. 994,195
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—204 25 Claims



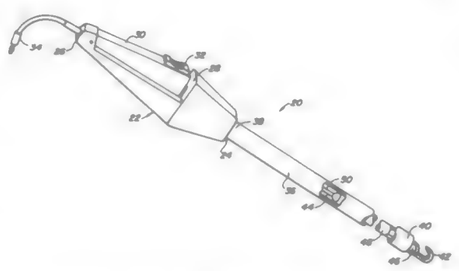
1. A tragus clip comprising:
a concave spring having two opposing jaws separated by an opening of a slot delineated by an inner surface of said concave spring,
two opposing pressure pads for stimulating nerve endings of said tragus, each positioned on the end of a different jaw, on said inner surface of said spring, and separated by said slot,
two mutually non-touching finger tabs, each having one end attached to the end of a different jaw, on an outer surface of said spring and having a second end extending away from said end of said jaw, along said outer surface of said spring approximately only as far as a portion of said spring opposite to said opening separating said jaws,
whereby said second ends of said finger tabs are urged towards one another, against a compression bias of said spring to enlarge said slot separating said pressure pads.

5,366,476

HANDLE FOR LAPAROSCOPIC INSTRUMENT

Wayne A. Noda, Mission Viejo, Calif., assignor to Laparomed Corporation, Irvine, Calif.

Filed Apr. 2, 1993, Ser. No. 42,329
Int. Cl.[5] A61B *10/00*
U.S. Cl. 606—206 31 Claims



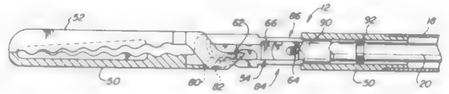
1. An actuator handle for a surgical instrument, the surgical instrument including an elongate shaft having distal and proximal ends with an axial lumen therebetween, interventional means at the distal end and a linkage slidably disposed in the axial lumen coupled to the interventional means, the actuator handle comprising:
a tubular housing axially aligned with the shaft having a distal end attached to the proximal end of the shaft, a proximal end opposite the distal end and an axially-aligned elongate opening on a lateral side thereof;
a lever disposed in the elongate opening having a first end pivotally coupled to the housing and a second end opposite the first end, the lever being pivotable between an outward position and an inward position, the actuator handle further comprising means for biasing the lever in the outward position;
means in the housing for coupling the second end of the lever to the linkage, wherein the linkage is translated axially by pivoting the lever relative to the housing; and
means for locking the lever in the inward position, the means for locking comprising a thumb switch slidably disposed on the lever near the second end, a portion of the thumb switch being axially extendable from the second end, the housing having an internal aperture disposed adjacent the second end of the lever wherein the thumb switch may be extended into the aperture when the lever is in the inward position.

5,366,477

ACTUATING FORCES TRANSMISSION LINK AND ASSEMBLY FOR USE IN SURGICAL INSTRUMENTS

Norman J. LeMarie, III, Taunton; Francis J. DiFrancesco, Foxboro; Paul DiCarlo, E. Falmouth; Peter D. Naugler, Manchester, and George J. Sikora, Brockton, all of Mass., assignors to American Cyanamid Company, Wayne, N.J.

Filed Oct. 17, 1991, Ser. No. 779,431
Int. Cl.[5] A61B *17/24*
U.S. Cl. 606—208 15 Claims



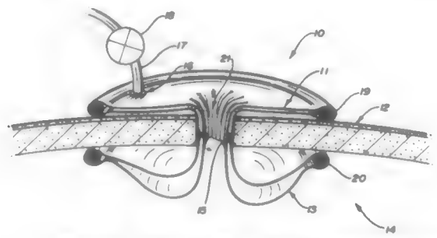
14. A surgical instrument comprising:
a first movable jaw member;
a second jaw member;
a conduit having an inner passage extending through it;
an actuating member having a first distal region and a second distal region, and slidably disposed within said conduit;
a first link body having a distal end and a proximal end;
distal means, attached proximate to said distal end of said link body, for movably interconnecting said link body with said first movable jaw member;
proximal means, attached proximate to said proximal end of said first link body, for pivotally interconnecting said first link body with said actuating member at said first distal region, and for transmitting a first actuating force from said actuating member to said first movable jaw member; and
a shoulder, disposed on said link body longitudinally spaced from said proximal means for interconnecting, having a curvilinear surface for engaging said second distal region of said actuating member when a second, greater actuating force is applied to said actuating member in a direction opposite to that of said first actuating force to transmit said second force to said first movable jaw member.

5,366,478

ENDOSCOPIC SURGICAL SEALING DEVICE

Ronald J. Brinkerhoff, New Richmond; Ramesh S. Candadai, Loveland; John A. Cartmill, Cleveland, and Jack B. Stubbs, Waynesville, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 27, 1993, Ser. No. 98,011
Int. Cl.[5] A61B *17/04*
U.S. Cl. 660—213 5 Claims



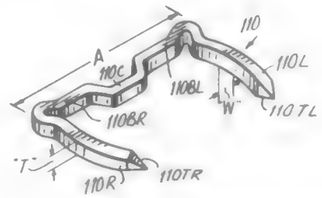
1. An endoscopic surgical sealing device for maintaining gas pressure within an inflated abdominal cavity during endoscopic surgery; said device comprising:
a first inflatable toroidal section for positioning outside the abdominal cavity;
a second inflatable toroidal section for positioning inside the abdominal cavity;
a transitional section communicating with said first and second inflatable sections;
said first and second inflatable toroidal sections and said transitional section defining a continuous lumen providing a passageway from the outside of the abdominal cavity to the inside of the abdominal cavity; and,
inflation means attached to said first inflatable section for selectively:
a) inflating said first and second inflatable sections so as to close said lumen and prevent pressurized gas from escaping the abdominal cavity, or
b) deflating said first and second inflatable sections.

5,366,479

SURGICAL STAPLE FOR ATTACHING AN OBJECT TO BODY TISSUE

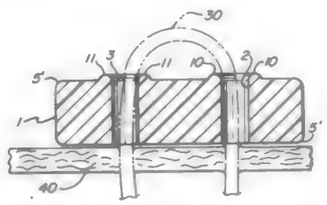
Richard A. McGarry, Norwalk; David T. Green, Westport; Henry Bolanos, East Norwalk, all of Conn., and Wayne P. Young, Brewster, N.Y., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 782,290, Oct. 18, 1991, Pat. No. 5,289,964.
This application Jul. 30, 1993, Ser. No. 100,613
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—219 5 Claims



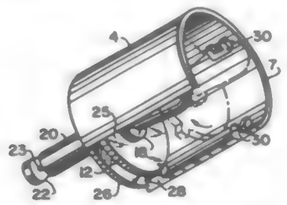
1. A surgical staple formed from a continuous length of wire for attaching objects such as mesh materials to body tissue which comprises:
a) a central wire portion having a middle portion and first and second end portions, each said end portion extending at respective angles from said middle portion in a first direction;
b) first and second wire leg members extending generally perpendicular to said middle portion of said central wire portion, each said wire leg member having a free end portion for penetrating the object and body tissue when positioned in adjacent engaged relation therewith and advanced thereinto; and
c) a bridge portion connecting each said first and second end portions to each said first and second wire leg members, respectively, each said bridge portion having a generally straight portion substantially parallel to said middle portion, each said bridge portion further having a first generally arcuate portion connected to each said straight portions and having a concave surface portion facing in a direction generally inwardly toward the opposing leg member, each said first generally arcuate portions connected to each said wire leg member and at least a portion of each said first generally arcuate portions extending from said straight portions and generally in said first direction, each said first and second wire leg members having a curved portion adjacent said bridge portion, each said curved portion being of generally concave configuration and facing in a direction generally opposite the direction of said first generally arcuate portion such that when each said bridge portion is supported against anvil member and force it is applied to said bridge portions on said wire leg members bend inwardly toward said central wire portion at respective locations inward of said first generally arcuate portions.

5,366,480
SYNTHETIC ELASTOMERIC BUTTRESSING PLEDGET
Paul G. Corriveau, Sparta, N.J., and John A. Riley, Brookfield, Conn., assignors to American Cyanamid Company, Wayne, N.J.
Continuation of Ser. No. 632,555, Dec. 24, 1990, abandoned. This application Dec. 15, 1992, Ser. No. 990,367
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—233 16 Claims



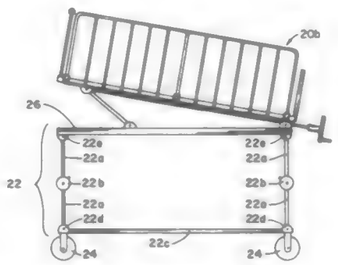
1. An article of manufacture comprising a buttressing pledger having essentially a rectangular parallelpiped form and two openings, the two openings being essentially parallel to each other and each of said two openings having a proximal end on a first side and a distal end on a second side of the rectangular parallelpiped form, each of said two openings being continuous from the proximal to the distal end, and a raised surface adjacent to at least each of the proximal ends, and in combination with a wound closure device, the buttressing pledger manufactured from a nonporous, synthetic elastomer in combination with a radiopaque material.

5,366,481
SANITARY RETRACTABLE BABY PACIFIER
Ismail Y. Zade, 25 Larissa La., Thornwood, N.Y. 10594
Filed Jan. 18, 1994, Ser. No. 181,822
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—236 1 Claim



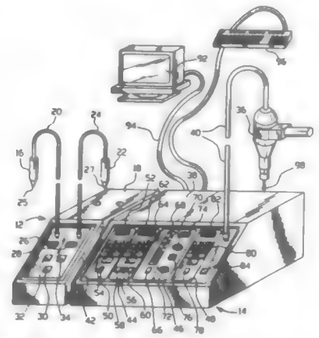
1. A pacifier device comprising a nipple having a base, retractable and extendable within a cylindrical storage container having an interior cylindrical wall and a bottom end with a bottom wall with a central aperture therein, a top end of said cylindrical storage container having a protective shield extending laterally outwardly from said top end of said cylindrical storage container, said shield having at least two apertures therein to provide air passage to the infant user's mouth, said nipple being mounted at its said base on an upper side of a circular disk having a periphery, said disk being transversely mounted in said cylindrical storage container, a handle extending from a lower side of said disk and through said central aperture in said bottom wall of said cylindrical storage body, said handle moveable longitudinally with respect to said cylindrical storage container, spaced nibs extending from said periphery of said disk and engageable in corresponding retainer slots on said interior cylindrical wall adjacent said top and bottom ends for locking said nipple in an extended position as said disk is in a raised position with one of said spaced nibs in one of the retainer slots adjacent the top end, and in a retracted position as said disk is in a lowered position with one of said spaced nibs in one of the retainer slots adjacent the bottom end, said shield having a central aperture through which said nipple may pass.

5,366,482
MOBILE TRACTION BED
David H. Brazeau, 9 Andrew Court, Newcastle, Ontario, L1B 1J5, Canada
Filed Mar. 1, 1993, Ser. No. 24,075
Int. Cl.[5] A61F *5/00*; A47C *21/08*
U.S. Cl. 606—244 1 Claim



1. A mobile traction bed comprising:
a plurality of wheel supports;
a plurality of wheels, with each of said wheels being rotatably mounted to an individual one of said wheel supports;
a first horizontal support bar extending between a first and a second of said wheel supports, and a second horizontal support bar extending between a third and a fourth of said wheel supports;
a plurality of central flex joints;
a plurality of vertical support posts, said vertical support posts being pivotally joined in pairs by said central flex joints, with each of said pairs of vertical support posts being mounted to and projecting upwardly from an individual one of said wheel supports, said central flex joints permitting said pairs of vertical support posts to be folded upon each other;
a modified top having a substantially rectangular shape defining four corners thereof, said modified top being mounted at said corners thereof to said pairs of support posts, said modified top having opposed sides and first and second ends;
a pair of raising arms pivotally mounted to said modified top at said opposed sides thereof, said raising arms each having a distal end with a bar extending between said distal ends of said raising arms;
a bed having first and second ends, said bed being pivotally mounted at said first end thereof to said first end of said modified top, said bed having a first sleeve mounted to and depending downwardly from said first end of said bed;
a rotating bar rotatably supported by said first sleeve and threadably engaged to a portion of said bar such that a rotation of said rotating bar will cause a pivoting of said raising arms relative to said modified top, said raising arms each having a support block which engages said bed to effect a pivoting of said bed about said first end of said bed during pivoting of said raising arms relative to said modified top;
a side rail structure slidably mounted to said bed, said side rail structure including a horizontal top section having a center and first and second ends, with outer vertical sections connected to and depending downwardly from said ends of said horizontal top section, a center rail connected to and extending downwardly from said center of said horizontal top section, and a plurality of intermediate vertical rails connected to and extending downwardly from said horizontal top section, with said outer vertical sections and said center rail having a plurality of longitudinally spaced holes;
a flat supporting rail mounted to said bed;
a rotatable pin holding bar having pins extending therefrom, said pin holding bar being pivotally mounted to said supporting rail, said pins being rotatably positionable within said longitudinally spaced holes so as to secure said side rail structure relative to said bed; and,
a handle fixedly secured to said pin holding bar for facilitating a rotation of said pin holding bar such that as said side rail structure is being lowered relative to said bed, said handle can be pivoted by a user to rotatably position said pins into said longitudinally spaced holes during said lowering of said side rail structure.

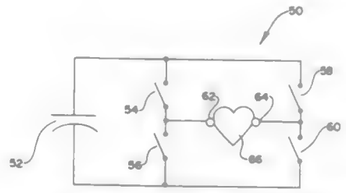
5,366,483
METHOD AND APPARATUS FOR USE IN TREATING BIOLOGICALLY ACTIVE POINTS ON A PATIENT'S SKIN
Grigory Sadkhin, 1776 West 13th St., Brooklyn, N.Y. 11223
Filed May 12, 1993, Ser. No. 60,758
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—3 37 Claims



1. A method for use in treating a patient, comprising the steps of:
measuring at least one predetermined physiological parameter at a predetermined point on the patient's skin, said parameter being taken from the group including temperature and electrical skin resistance;
generating an electrical signal encoding the measured physiological parameter;
transmitting said electrical signal to a computer;
operating said computer to automatically determine a range of normal values of said physiological parameter at said predetermined point;
displaying said range and a value of the measured physiological parameter on a display; and
upon displaying said range and said value of the measured physiological parameter, treating a selected point on the patient's skin with at least one of a plurality of treatment modes including pressure treatment, heat treatment, and electrical treatment.

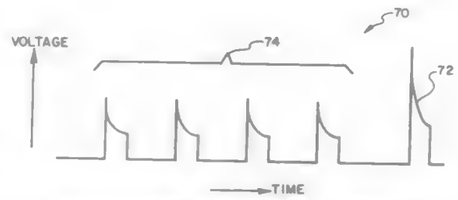
5,366,484
SHORT-PULSE CARDIOVERSION SYSTEM FOR AN IMPLANTABLE CARDIOVERTER DEFIBRILLATOR
Mark W. Kroll, Minnetonka, Minn., assignor to Angeion Corporation, Plymouth, Minn.
Filed Apr. 9, 1992, Ser. No. 866,460
Int. Cl.[5] A61N *1/39*
U.S. Cl. 607—5 31 Claims

1. An improved implantable apparatus for producing a cardioversion waveform of less than about 5 Joules to be delivered to a plurality of implanted electrodes in a human patient the implantable apparatus including capacitor means for storing a preselected amount of electrical energy for the cardioversion waveform, high voltage charging circuit means for charging the capacitor means to the preselected amount of electrical energy, and switch means for selectively controlling a time-



truncated discharge of the capacitor means through the plurality of electrodes in response to a means for sensing of the cardiac arrhythmia, the improvement comprising:
the cardioversion waveform comprising at least one electrical pulse having a predetermined optimum pulse duration of between 0.5 ms and 6.0 ms.

5,366,485
APPARATUS FOR DEFIBRILLATION PRETREATMENT OF A HEART
Mark W. Kroll, Minnetonka, and Theodore P. Adams, Edina, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Continuation-in-part of Ser. No. 783,763, Oct. 28, 1992, Pat. No. 5,314,448. This application Oct. 27, 1992, Ser. No. 967,215
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—5 10 Claims



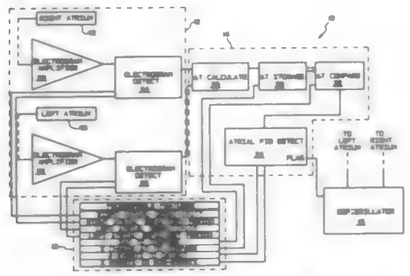
1. An improved implantable defibrillator apparatus for producing a capacitor-discharge defibrillation pulse, the implantable defibrillator apparatus being a self-contained human implantable device including a pulse-generating capacitor means for storing an electrical charge, means for internally charging the pulse-generating capacitor means, and means for selectively discharging the electrical charge in the pulse-generating capacitor means through electrodes adapted to be implanted in a human patient in response to a sensing of a fibrillating heart, the improvement comprising:
pulse means for providing a plurality of low-energy pretreatment pulses for application through the electrodes to the heart before application of the defibrillation pulse, the plurality of pretreatment pulses being a train of low-energy pulses spaced away from the defibrillation pulse by a time interval.

5,366,486

AUTOMATIC FIBRILLATION DETECTOR AND DEFIBRILLATOR APPARATUS AND METHOD

Douglas P. Zipes, Carmel, and David E. Adams, Indianapolis, both of Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Continuation-in-part of Ser. No. 904,409, Jun. 25, 1992, abandoned. This application Feb. 9, 1993, Ser. No. 15,650
Int. Cl.[5] A61N *1/39*; A61B *5/046*
U.S. Cl. 607—5 50 Claims



49. An apparatus for use in detecting fibrillation in the atrium, said apparatus comprising:

first and second electrodes capable of being disposed at different locations in the atrium, each of said first and second electrodes having means for detecting local electrical signals in the atrium;

means for monitoring said electrical signals detected by said first and second electrodes to determine the occurrence of an activation, said monitoring means including means for measuring the time interval between said activations; and

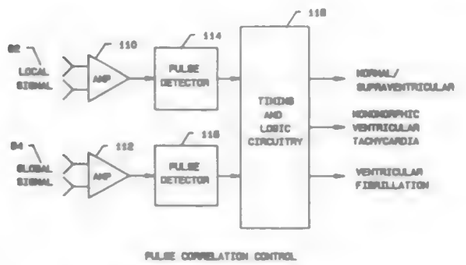
means for comparing the measured time interval with a reference time interval value and calculating whether the measured time interval substantially deviates from the reference time interval value, said comparing means including means for indicating the presence of a fibrillation condition in the heart.

5,366,487

FIBRILLATION AND TACHYCARDIA DETECTION

Theodore P. Adams, Edina, and Mark W. Kroll, Minnetonka, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Continuation of Ser. No. 848,147, Mar. 9, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 147,464
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—5 13 Claims



1. (Twice Amended) An improved fibrillation and tachycardia detection system for a cardioversion-defibrillation system including means for detecting whether a patient's heart is in a normal cardiac rhythm or an abnormal cardiac rhythm and, in response to detection of an abnormal cardiac rhythm, means for automatically delivering an electrical countershock therapy of greater than about 1.0 joules of electrical energy to treat the abnormal cardiac rhythm, the improvement comprising:

local detection means for sensing a local electrical signal representing cardiac activity in one of a plurality of local areas of the patient's heart, each local area having a local electrical signal;

global detection means for sensing a global electrical signal representing cardiac activity in a global area of the patient's heart, the global area including the plurality of the local areas such that the global electrical signal represents an electrical average of the local electrical signals of the plurality of local areas;

means for successively measuring a delay value between a first time when the local electrical signal meets a predetermined trigger criteria and a second time when the global electrical signal meets the predetermined trigger criteria;

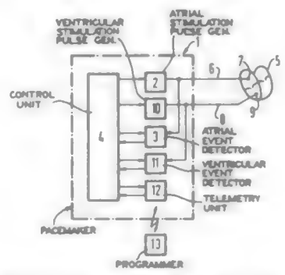
means for storing and comparing a series of the delay values to detect whether the patient's heart is in the abnormal cardiac rhythm and should be treated by the cardioversion defibrillation system or whether the patient's heart is in the normal cardiac rhythm and should not be treated by the cardioversion defibrillation system.

5,366,488

DUAL CHAMBER PACEMAKER AND METHOD FOR OPERATING SAME

Per Franberg, Stockholm, and Anders Lindgren, Taeby, both of Sweden, assignors to Siemens Elema AB, Solina, Sweden

Filed Feb. 25, 1993, Ser. No. 22,450
Claims priority, application Sweden, Mar. 24, 1992, 9200907-5
Int. Cl.[5] A61N *1/00*
U.S. Cl. 607—9 16 Claims



1. A dual chamber implantable cardiac pacemaker comprising:

first generator means for generating atrial stimulation pulses;

second generator means for generating ventricular stimulation pulses;

an atrial electrode lead connected to said first generator means and adapted for delivering said atrial stimulation pulses in vivo to the right atrium of a heart;

a ventricular electrode lead connected to said second generator means and adapted for delivering said ventricular stimulation pulses in vivo to the right ventricle of said heart and for sensing ventricular events;

detector means connected to said ventricular electrode lead for detecting said ventricular events sensed by said ventricular electrode lead; and

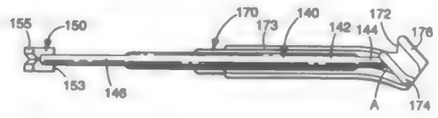
control means, connected to said first and second generator means and to said detector means, for inhibiting said detector means, after an atrial stimulation pulse has been generated, for a preset blanking interval, and for ordering emission of a ventricular stimulation pulse after a lapse of a preset first A-V interval if no ventricular event is detected between an end of said blanking interval and an end of said first A-V interval, and for ordering generation of a ventricular stimulation pulse after a lapse of a preset second A-V interval, which is shorter than said first A-V interval, if at least one ventricular event is detected in a preset crosstalk interval after said blanking interval, and for inhibiting emission of a ventricular stimulation pulse if a ventricular event is detected after the lapse of said crosstalk interval, and for obtaining a relationship, for a number of cardiac cycles, between the number of detections by said detector means in said crosstalk interval and a number of cardiac cycles, and for ordering a change in said blanking interval by increasing said blanking interval if the obtained relationship exceeds a preset relationship value and by reducing said blanking interval if the obtained relationship is less than said preset relationship value.

5,366,489

ANESTHESIA ELECTRODE AND APPLICATOR ASSEMBLY

Paul A. Bargio, Grant Township, Washington County, and Richard J. Simonsen, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 71,665, Jun. 2, 1993. This application Feb. 8, 1994, Ser. No. 193,430
Int. Cl.[5] A61N *1/34*
U.S. Cl. 607—47 15 Claims



1. A transcutaneous electrical nerve stimulation assembly comprising:

an elongated applicator having a shaft with an external surface and a head connected to said shaft;

an electrode having an electrically conductive pad portion releasably connected to said head of said applicator;

a lead electrically coupled to said pad portion; and

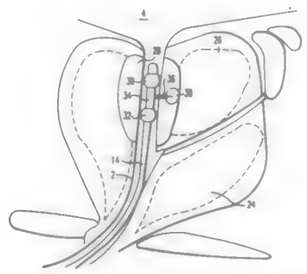
an adhesive releasably connecting said lead to said external surface of said shaft such that said lead extends along at least a portion of the length of said shaft.

5,366,490

MEDICAL PROBE DEVICE AND METHOD

Stuart D. Edwards, Los Altos; Ronald G. Lax, Grass Valley; Ingemar H. Lundquist, Pebble Beach, and Hugh R. Sharkey, Redwood City, all of Calif., assignors to Vidamed, Inc., Menlo Park, Calif.

Continuation of Ser. No. 929,638, Aug. 12, 1992, abandoned. This application Dec. 22, 1993, Ser. No. 172,014
Int. Cl.[5] A61N *5/02*
U.S. Cl. 607—99 17 Claims



1. A method for medical treatment of the prostate, comprising the steps of:

a) introducing a catheter through the urethra to a zone adjacent to the prostate;

b) advancing a flexible radio-frequency electrode with a sharpened tip from the catheter through the wall of the urethra into the prostate tissue to be treated, the electrode being retained within an insulating sleeve which is movable relative to the electrode and which sleeve extends through the urethra wall, the sharpened tip puncturing and penetrating the urethra wall;

c) retracting the insulating sleeve within the prostate tissue to expose a predetermined length of electrode in the prostate tissue; and

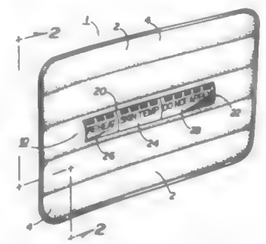
d) passing sufficient electric current through the electrode to raise the temperature of prostate tissue adjacent the predetermined length of electrode to a temperature causing destruction of cells of said prostate tissue.

5,366,491

MOIST HEAT APPARATUS

Aaron N. Ingram, Canton; Mark H. Bruder, Dunwoody, both of Ga., and Eric Flam, East Brunswick, N.J., assignors to Bruder Healthcare Company, Marietta, Ga.

Filed Jun. 10, 1993, Ser. No. 75,057
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—108 12 Claims



1. An improved moist heat pack, comprising:

a. an envelope having a top surface, an opposite bottom surface, and an inner body portion defined therebetween, the bottom surface being adapted to be applied to a subject's skin, thereby forming an interface therewith;

b. a heat source positioned in the inner body portion of the envelope for applying moist heat therapy to the subject; and

c. a means on the top surface for monitoring a temperature at the interface of the bottom surface of the envelope and the subject's skin while the bottom surface is in contact with the subject's skin.

5,366,492

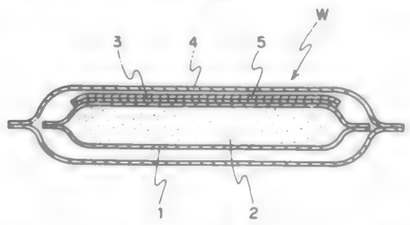
DISPOSABLE BODY WARMER

Akio Ueki, Osaka, Japan, assignor to Kiribai Chemical Industry Co., Ltd., Osaka, Japan

Filed Aug. 19, 1993, Ser. No. 109,060
Int. Cl.[5] A61F *7/00*
U.S. Cl. 607—114 14 Claims

1. A disposable body warmer comprising a flat inner bag, a heat-generating component which generates heat under presence of air being enclosed in the flat inner bag and an airtight bag enclosing the flat inner bag therein, the heat-generating

agent component containing an unheated mixture of potassium chloride, water, water-holding material, activated carbon, iron



powder and at least one material selected from sodium thiosulfate and potassium thiosulfate.

5,366,493

DOUBLE HELIX FUNCTIONAL STIMULATION ELECTRODE

Avram Scheiner, University Heights; E. Byron Marsolais, Shaker Heights; J. Thomas Mortimer, Cleveland Heights, and Thomas P. Kicher, South Euclid, all of Ohio, assignors to Case Western Reserve University, Cleveland, Ohio

Filed Feb. 4, 1991, Ser. No. 652,039
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—116 **14 Claims**



1. A functional electrical stimulation electrode assembly comprising:
- a first lead portion in which a first insulated electrical conductor is wrapped helically around an elongated, flexible core;
- a second lead portion in which the core with the insulated helically wound conductor is wrapped in an open helix to define an open double helical lead portion;
- an electrical connection portion electrically connected with the second lead portion and including an uninsulated electrical conductor portion wrapped helically around the core, the helically wrapped core and uninsulated electrical conductor portion also being formed in an open helix.

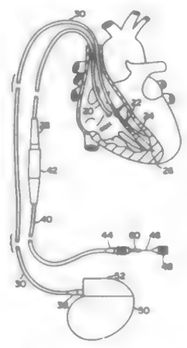
5,366,494

METHOD AND APPARATUS FOR IMPLANTATION OF DEFIBRILLATION ELECTRODES SYSTEM

Timothy W. Holleman, Ham Lake; Clare P. Ulrich, Minneapolis, and Brian L. Fideler, Columbia Heights, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1993, Ser. No. 56,282
Int. Cl.[5] A61N *1/05*
U.S. Cl. 607—119 **4 Claims**

1. An implantable medical lead system, comprising:
- a medical electrical lead having an elongated lead body, an electrode located along said lead body, a first connector assembly mounted to a proximal end of said lead body, a first conductor coupling said electrode to said first connector assembly, and a first stylet lumen extending from said first connector assembly to a point adjacent said electrode;
- a lead extender mounted to said medical electrical lead, said extender having an elongated body, a receptacle having means for coupling to said first connector assembly, said lead extender being mounted to a distal end of said elongated lead body, a second connector assembly mounted to a proximal end of said lead body, a second conductor coupling said receptacle to said second connector assembly, and a second stylet lumen extending from said second connector assembly to said receptacle, said coupling means of said receptacle being coupled to said first connector assembly on said lead, such that said first and second stylet lumens communicate with one another allowing passage of a stylet through both said first and second lumens; and
- an elongated stylet removably inserted within said first and second stylet lumens, extending from said first connector assembly to a point adjacent the distal end of said lead.



5,366,495

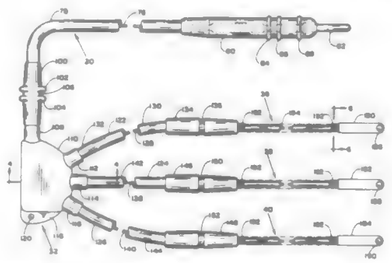
Patent Not Issued For This Number

5,366,496

SUBCUTANEOUS SHUNTED COIL ELECTRODE

Roger W. Dahl, Andover; Jayne G. Fangel, White Bear Lake, both of Minn., and David K. Swanson, Mountain View, Calif., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Apr. 1, 1993, Ser. No. 41,096
Int. Cl.[5] A61N *1/36*
U.S. Cl. 607—132 **26 Claims**



1. A body implantable tissue stimulating device, including:
- an elongate, flexible electrically conductive lead; and
- a tissue stimulating electrode array including at least two electrically common electrodes, each electrode including a body compatible primary conductor providing a convoluted electrically conductive path from a first end region of the electrode to a second and opposite end region of the electrode, a shunt conductor adjacent the primary conductor providing a substantially linear electrically conductive shunt path between said first and second end regions, said primary conductor and shunt conductor being electrically coupled at the first and second end regions and electrically isolated from one another between the first and second end regions;

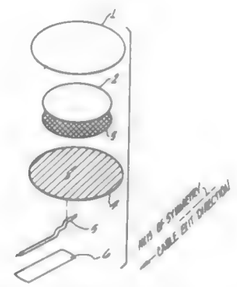
wherein the first end region of each electrode is coupled with respect to a distal end region of the lead, to enable the electrode to receive tissue stimulating electrical pulses from a pulse generating means at a proximal end of the lead.

5,366,497

NON-INVASIVE, RADIOLUCENT CARDIAC ELECTRODE

Joseph P. Ilvento, Santa Barbara; Bruno T. Bisceglia, Jr., Oceanside, and Tim J. Way, Carlsbad, all of Calif., assignors to Cardiotronics, Inc., Carlsbad, Calif.

Filed Mar. 31, 1992, Ser. No. 860,995
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[5] A61B *5/04*
U.S. Cl. 607—142 **38 Claims**



1. A non-invasive radiolucent electrode comprising:
- an adhesive conductive polymer pad having a first surface adapted for contacting a patient's skin, and having a second surface;
- a stainless steel wire mesh backing to said pad configured to have between about 15 to 50 wires/inch and having wires with a diameter of between about 5 to 10 mils, the mesh having a front surface substantially covering the second surface of the pad, and having a back surface;
- a plastic foam cover adapted to contact the back surface of the wire mesh backing and having a hole exposing at least a part of the wire mesh backing;
- an insulated wire having a first exposed end which is adapted for insertion into the hole in the plastic foam cover, and electrically coupling to the exposed part of the wire mesh backing; and
- a wire retainer adapted to be placed over the hole in the plastic foam cover after the wire has been inserted, and adhered to the plastic foam cover.

5,366,498

DEVICE FOR TREATING FINE SUPERFICIAL FACIAL LINES

Ann Brannan, San Francisco; Roseann Burheane, Los Altos Hills; Frank A. Delustro, Belmont; Thomas L. Smestad, Palo Alto; Louis Fries, Los Altos, and Rees M. Orland, Los Altos Hills, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation of Ser. No. 677,403, Mar. 29, 1991, abandoned. This application Feb. 10, 1993, Ser. No. 16,490
Int. Cl.[5] A61F *2/10*
U.S. Cl. 623—11 **6 Claims**

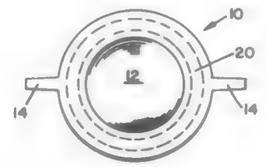
1. A device for use in correcting fine superficial facial lines comprising:
- (a) a syringe having a barrel fitted with a fine gauge needle, the needle having a gauge in the range from 31 to 33, inclusive,
- (b) an aqueous suspension of fibrillar noncrosslinked atelopeptide collagen contained within the barrel, the collagen having a concentration in the suspension in the range of 10 to 50 mg/ml, the collagen further being comprised of fibrils of uniform size whereby the uniform size of the fibrils results in improved flow characteristics and enhanced extrudability of the suspension through the fine gauge needle such that the suspension exhibits an extrusion plot in which there is a smooth substantially linear increase in force up to a substantially constant force in the range of 10 to 30 newtons with an average of about 25 newtons.

5,366,499

INTRAOCULAR PROSTHESIS

Daniel Py, Natick, Mass., assignor to Keratos, Inc., Wellesley, Mass.

Continuation of Ser. No. 978,645, Nov. 19, 1992, Pat. No. 5,300,115. This application Jan. 5, 1994, Ser. No. 178,946
The portion of the term of this patent subsequent to Apr. 5, 2011, has been disclaimed.
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—4 **12 Claims**



1. A prosthesis suitable for implantation in an eye, comprising:
- a lens having a peripheral edge, the peripheral edge being configured with a groove therein; and
- a plurality of eye interface members coupled to the lens along the peripheral edge, each interface member having a portion which is configured in a shape which corresponds to said groove and which lines at least an arc of the groove along the peripheral edge for receiving conjunctiva eye tissue, and each interface member having an upper layer and a lower layer which project outwardly from the lens peripheral edge, the upper layer and the lower layer defining a gap therebetween for receiving corneal stroma tissue of an eye.

5,366,500

ONE-PIECE BIFOCAL INTRAOCULAR LENS CONSTRUCTION

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Richard H. Keates, 456 W. 10th Ave., Columbus, Ohio 43210, assignors to Richard T. Schneider, Alachua, Fla. and Richard H. Keates, Irvine, Calif.

Continuation of Ser. No. 928,141, Aug. 11, 1992, Pat. No. 5,192,318, which is a continuation of Ser. No. 561,256, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 297,966, Jan. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 182,253, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 15,878, Feb. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 871,077, Jun. 5, 1986, abandoned. This application Nov. 6, 1992, Ser. No. 972,823
The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **3 Claims**

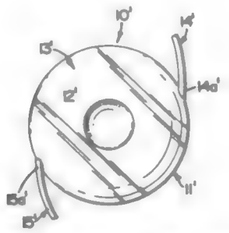
1. A rigid intraocular lens implant adapted for use as an artificial lens implant in a posterior chamber of an eye; said intraocular lens comprising:

(a) means for non-movably retaining said lens implant within a posterior chamber of a user's eye; and,

(b) a lens body comprising a material having a first index of refraction and substantially no index of refraction gradient therein; said lens body having a first circular lens portion and a second annular lens portion, said second annular lens portion surrounding said first circular lens portion;

(i) said first lens portion comprising a portion of said lens body having said first index of refraction and a first radius of curvature defining a first optical power;

(ii) said second lens portion comprising a portion of said lens body having said first index of refraction and a second radius of curvature defining a second optical power;



(iii) said second lens portion being constructed and arranged for viewing relatively distant objects and said second optical power being between about +15 and about +25 diopters;

(iv) said first lens portion being constructed and arranged for viewing relatively near objects and said first optical power being at least about +3.5 diopters greater than said second optical power; and, a diameter of no greater than about 2.0 mm;

(v) said first lens portion having an area of between about 6% and 14% of a total combined area of said first and second lens portions;

(vi) said first lens portion disposed in a center portion of said lens body, said second lens portion defining an outermost portion of said lens body relative to said first lens

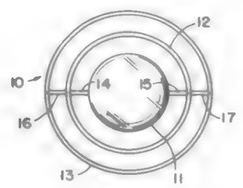
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5,366,501

INTRAOCULAR LENS WITH DUAL 360 DEGREE HAPTICS

David W. Langerman, 99 Dutch Hill Plz., Orangeburg, N.Y. 10962

Filed May 12, 1993, Ser. No. 60,636
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **9 Claims**



1. A posterior chamber intraocular lens for implantation into an eye between the posterior capsule and the anterior capsular flap of the residual capsular bag that remains in the eye following an extracapsular cataract extraction, comprising:

(a) an optic having anterior and posterior surfaces; and

(b) a pair of haptics connected with said optic for positioning said optic properly in said residual capsular bag,

(i) said haptics being constituted by two resiliently flexible, concentric, closed, planar rings having different diameters and extending around the entire perimeter of said optic,

(ii) the smaller of said rings being connected to the peripheral edge of said optic by a first pair of bridging elements extending generally diametrally of said smaller ring,

(iii) the larger of said rings being connected to said smaller ring by a second pair of bridging elements extending generally diametrally of said larger ring, with each of said first bridging elements being proximate to a respective one of said second bridging elements,

(iv) the plane of said larger ring being parallel to but offset anteriorly from the plane of said smaller ring, and

(v) the outer diameter of said larger ring at its outer periphery being slightly larger than the inner diameter of said residual capsular bag in the equatorial region thereof;

(c) whereby, upon proper implantation of the lens into the eye,

(i) said larger ring presses along its entire circumference against the interior surface of said residual capsular bag in the equatorial region thereof without overstressing the latter and without engendering an unfurling of said anterior capsular flap, said larger ring thereby constituting a primary mechanical barrier for inhibiting migration of epithelial cells from said equatorial region onto and toward the optic region of said posterior capsule of said residual capsular bag,

(ii) said smaller ring presses along its entire circumference against the anterior surface of said posterior capsule a short distance radially inwardly of said equatorial region to constitute a secondary mechanical barrier for inhibiting migration, over said posterior capsule and toward said optic region thereof, of epithelial cells that were not blocked by said larger ring, and

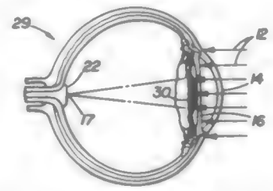
(iii) the optic region of said posterior capsule is maintained flush and taut against said posterior surface of said optic for inhibiting formation of Elschnig's pearls in the optic region of said posterior capsule.

5,366,502

SUPPLEMENTARY INTRAOCULAR LENS SYSTEM

Anilbhai Patel, Seattle, Wash., assignor to Nestle S.A., Vevey, Switzerland

Continuation of Ser. No. 72,362, Jun. 4, 1993, which is a continuation of Ser. No. 956,450, Oct. 2, 1992, abandoned, which is a continuation of Ser. No. 859,640, Mar. 23, 1992, abandoned, which is a continuation of Ser. No. 653,863, Feb. 8, 1991, abandoned, which is a continuation of Ser. No. 344,705, Apr. 28, 1989, abandoned. This application Dec. 16, 1993, Ser. No. 168,563
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **8 Claims**



5. A method of altering the refractive power of an implanted primary intraocular lens, comprising the steps of:

a. providing a supplemental intraocular lens formed of a biocompatible transparent material with a predetermined diopter power wherein the predetermined diopter power will alter the refractive power of the implanted primary intraocular lens; and

b. connecting the supplemental intraocular lens to the implanted primary intraocular lens in situ without removal of said primary intraocular lens.

5,366,503

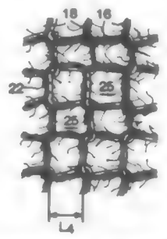
Patent Not Issued For This Number

5,366,504

TUBULAR MEDICAL PROSTHESIS

Erik Andersen, Roskilde, Denmark, and Ernst P. Strecker, Karlsruhe, Germany, assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 886,518, May 20, 1992. This application Jul. 13, 1992, Ser. No. 912,902
Int. Cl.[5] A61F *2/02, 2/06;* **A61M** *29/02*
U.S. Cl. 623—11 **29 Claims**



1. An implantable tubular prosthesis comprising:

a tubular wall portion of loosely interlocked knitted loops defining open areas in said tubular wall, said wall being formed of at least two separate strands of different materials that are parallel co-knitted to form a unitary wall structure including a first strand that is a metal wire that structurally defines the tubular shape of said prosthesis and maintains said shape when positioned in said lumen and

a second strand, parallel co-knitted with said first strand, and comprising a predetermined material selected to provide desired characteristics to the wall of said prosthesis.

5,366,505

METHOD OF REDUCING MEDICAL DEVICE RELATED INFECTIONS

Bruce Farber, Port Washington, N.Y., assignor to North Shore University Hospital Research Corporation, Manhasset, N.Y.

Continuation-in-part of Ser. No. 802,891, Dec. 6, 1991, abandoned. This application Mar. 23, 1993, Ser. No. 35,553
Int. Cl.[5] A61F *2/02*
U.S. Cl. 623—11 **21 Claims**

1. An insertable or implantable medical device having distributed thereon an effective concentration of a biofilm-inhibiting compound that is sufficient to cause an effect on microbial biofilm in the microenvironment of a surface of said device, but which concentration is otherwise insufficient to cause a substantial therapeutic systemic effect in an organism in which said device is implanted or inserted.

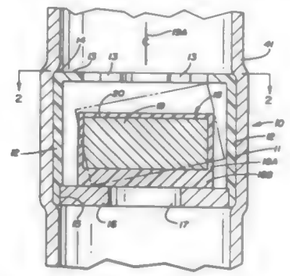
5,366,506

PROXIMITY INTRAURETHRAL VALVE USING PERMANENT MAGNET CHECK

Phillip J. Davis, 521 Hahaione Street, #12K, Honolulu, Hi. 96825

Filed Apr. 5, 1993, Ser. No. 42,689
Int. Cl.[5] A61F *2/04, 2/24, 2/00, 2/02*
U.S. Cl. 623—12 **18 Claims**

1. An intraurethral magnetic valve for insertion into the urethra of a person's body comprising in combination a tubular housing, a valve element within said housing, and a valve seat sealingly engaged by said valve element, said tubular housing is non-magnetic having an internal recessed area adjacent one end thereof, a plurality of spaced fingers extending inwardly from said tubular housing in spaced relation to said recessed area, said valve seat in annular registration with said recessed area in said tubular housing, said valve element comprising an encapsulated permanent magnet magnetized along a center line axis, a nonferromagnetic means for encapsulation spacing said permanent magnet, means for spacing said permanent magnet in respect to said valve seat, said element being normally attracted to said valve seat occluding and sealing same, means



for opening said valve comprising a source of magnetic attraction in spaced relation to said person's body, said magnetic attraction selectively imposes a magnetic field on said valve element pivoting same away from said sealing relation with said valve seat, and means for inserting said magnetic valve assembly within the urethra of said person's body.

5,366,507

METHOD FOR USE IN BONE TISSUE REGENERATION

John S. Sottosanti, 2326 Calle Chiquita, La Jolla, Calif. 92037

Filed Mar. 6, 1992, Ser. No. 847,626
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **5 Claims**

1. A method of regenerating bone tissue comprising the steps of:

(a) filling a recipient graft site with graft material, the graft material comprising demineralized, freeze-dried allogenic bone (DFDBA) and calcium sulfate; and

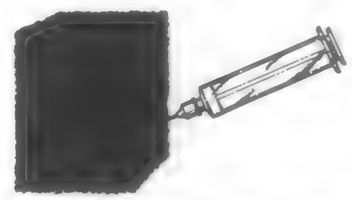
(b) placing a layer of barrier material over at least a portion of the graft material, wherein said barrier material consists of calcium sulfate.

5,366,508

APPARATUS FOR BIODEGRADABLE, OSTEOGENIC, BONE GRAFT SUBSTITUTE DEVICE

John H. Brekke, Duluth, Minn., assignor to THM Biomedical, Inc, Duluth, Minn.

Division of Ser. No. 541,627, Jun. 21, 1990, Pat. No. 5,133,755, which is a continuation of Ser. No. 167,370, Mar. 14, 1988, abandoned, which is a continuation of Ser. No. 823,445, Jan. 28, 1986, abandoned. This application Jul. 7, 1992, Ser. No. 909,605
Int. Cl.[5] A61F *2/28, 2/02, 13/00, 2/00*
U.S. Cl. 623—16 **22 Claims**



1. A biodegradable device for facilitating healing of structural voids in bone, cartilage as well as soft tissue comprising, in combination:

a. a porous macrostructure, formed from a biodegradable polymer, providing a porous architecture as well as struc-

tural and mechanical integrity to the structural void being treated, with the porous macrostructure including interconnecting voids; and

b. a porous microstructure, formed from a chemotactic ground substance and located in the interconnecting voids of the porous macrostructure and carried by and separate from the biodegradable polymer forming the porous macrostructure.

CHEMICAL

5,366,509
METHOD FOR BLEACHING CLOTHS

Masanori Ota; Masashi Nakamura, both of Chiba, and Takashi Kamiyama, Tokyo, all of Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 537,829, Jun. 14, 1990, abandoned. This application Dec. 11, 1992, Ser. No. 989,880
Claims priority, application Japan, Jun. 19, 1989, 1-156080
Int. Cl.[5] D06L *3/06*
U.S. Cl. 8—108.1 **18 Claims**

1. A method of bleaching a denim dyed with an indigo dye by using a processing solution containing a single bleaching agent and a cationic surfactant, wherein said processing solution is an aqueous solution, said bleaching agent consists of dichloroisocyanuric acid salt in a concentration of from 0.05 to 0.4% by processing solution, in terms of available chlorine, and said cationic surfactant is present in a concentration of from 0.005 to 0.5% by weight of said processing solution.

5,366,510
PROCESS FOR DESIZING AND COLOR FADING GARMENTS

Eric Wasinger, P.O. Box 886, Adamsville, Tenn. 38310, and David Hall, Auburn, Ala., assignors to Eric Wasinger, Adamsville, Tenn.

Filed Jun. 9, 1992, Ser. No. 895,920
Int. Cl.[5] D06L *3/02;* **B01D** *19/00*
U.S. Cl. 8—110 **13 Claims**

1. A method for simultaneously desizing and decolorizing a dyed fabric or dyed garment having a sizing and a reducible dye which comprises treating said fabric or garment with an effective amount of reducing agent in an aqueous bath whereby the fabric or garment is both desized and decolorized prior to any subsequent oxidation or bleaching.

5,366,511
WOOL DYEING UTILIZING CONTROLLED DYE ADDITION

Winfried T. Holfeld, and Dale E. Mancuso, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 884,500, May 15, 1992, abandoned. This application May 28, 1993, Ser. No. 68,883
The portion of the term of this patent subsequent to Jul. 24, 2010, has been disclaimed.
Int. Cl.[5] D06P *5/00*
U.S. Cl. 8—400 **7 Claims**

1. A process for dyeing a fibrous article containing wool with at least one anionic dye comprising:

immersing said article in a liquid bath of a solvent medium for said anionic dye, said solvent medium being selected from the group consisting of aqueous solvent mediums and substantially nonaqueous solvent mediums;

heating said bath and said article in said dyeing bath to a temperature at least equal to the dyeing transition temperature of wool;

adding said anionic dye to said dyeing bath as a liquid concentrate, at least 33% of said total dye to be applied during said process being added while said bath and said article are at a temperature at least equal to said dyeing transition temperature; and

stirring said bath as said liquid concentrate is being added to said bath to mix said concentrate with said solvent in said bath to form a dilute dye solution and to provide a flow of said dilute dye solution relative to said article to cause said dye to be transported to said article, said stirring further providing, on the average, essentially uniform dye transport of said anionic dye to said article;

said dye being added to said bath at an addition rate of about 0.0005 to about 0.5% dye/minute based on the weight of said article.

5,366,512
LOW-DUST OR DUST-FREE DYE PREPARATIONS

Peter Mischke, Bad Soden am Taunus; Konrad Opitz, Liederbach, and Karl Rebsamen, Hofheim am Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP91/00868, § 371 Date Nov. 10, 1992, § 102(e) Date Nov. 10, 1992, PCT Pub. No. WO91/18059, PCT Pub. Date Nov. 28, 1991
PCT Filed May 8, 1991, Ser. No. 949,557
Claims priority, application Germany, May 11, 1990, 4015183; Nov. 3, 1990, 4035029
Int. Cl.[5] C09B *67/42*
U.S. Cl. 8—524 **12 Claims**

1. A solid, pulverulent dye preparation, containing a direct dye, an acid dye, a vat dye, a disperse dye, or a fiber-reactive dye and, as a dusting inhibition agent for said solid, pulverulent dye preparation,1 to 10% by weight based on the total weight of the preparation of an alkanediol of from 4 to 8 carbon atoms which is liquid at room temperature, or mixture, which is liquid at room temperature, of alkane diols of 4 to 8 carbon atoms.

5,366,513
PREPARATION OF GRANULATED ALKALINE EARTH METAL CARBONATE

Dieter Goldmann, Hanover; Ludwig Pfeifer, Bad Hoenningen; Karl Koehler, Diekholzen; Peter Wallbrecht, Hanover, and Norbert Mingels, Dinslaken, all of Germany, assignors to Solvay Barium Strontium GmbH, Hanover, Germany

Filed Mar. 11, 1993, Ser. No. 29,651
Claims priority, application Germany, Mar. 13, 1992, 4207923
Int. Cl.[5] B01J *2/28;* **C01F** *5/24*
U.S. Cl. 23—293 R **8 Claims**

1. A method for preparing granulated calcium carbonate, barium carbonate or strontium carbonate, comprising the steps of:

granulating an alkaline earth metal carbonate selected from the group consisting of calcium carbonate, barium carbonate and strontium carbonate in the presence of water and a binding agent, wherein said water is present in an amount up to 17 wt.-% based on the dry weight of the alkaline earth metal carbonate and said binding agent is present in an amount of from 1 to 5 wt.-% based on the dry weight of the alkaline earth metal carbonate; and

subsequently drying the granulated alkaline earth metal carbonate in a separate drying step at a temperature of from 100° to 250 ° C.; and

wherein said alkaline earth metal carbonate is maintained out of contact with inorganic refractory materials during and after said granulating step and said drying step.

5,366,514
SALT PLANT EVAPORATION

Lawrence F. Becnel, Jr., Sugarland; John E. Currey, Fair Oaks Ranch, and Raymond W. Ver Hoeve, Houston, all of Tex., assignors to Texas Brine Corporation, Houston, Tex.

Filed Dec. 30, 1992, Ser. No. 998,927
Int. Cl.[5] C01D *1/30;* **B01D** *1/28*
U.S. Cl. 23—303 **26 Claims**

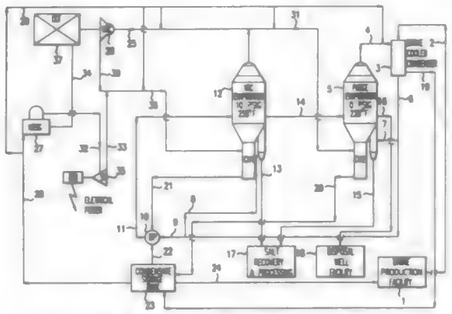
1. A method for producing high purity salt of at least about 99.99% NaCl content from brine in an evaporative salt plant installation which comprises:

employing the shaft energy produced by a combustion gas turbine to drive a vapor recompressor while employing the gas turbine exhaust gases in a heat recovery steam generator to produce high pressure steam,

employing this high pressure steam to drive a topping steam turbine which produces the electrical energy requirements of the evaporative salt plant installation,

combining the discharging vapors from the topping steam turbine with the discharge vapors from the vapor recompressor,

employing the combined vapors to heat the brine in the circulating heater of at least one vapor recompression evaporator, said vapor recompression evaporator being supplied with preheated brine to produce a salt slurry, separating the solid salt from the mother liquor, and purging a minor portion of the mother liquor which is supplied to a purge evaporator where it is evaporated to produce a



second salt slurry, recycling the major portion of the mother liquor to said vapor recompression evaporator and supplying the gaseous overhead vapors to the vapor recompressor, and

condensing the vapors produced by the purge evaporator in a brine cooled condenser where the input brine is used as the coolant, preheated and then supplied to the vapor recompression evaporator.

5,366,515

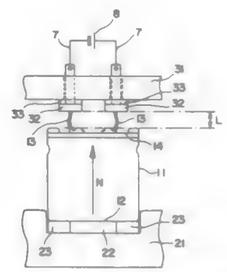
METHOD OF ELECTRICALLY AGING AN ELECTRONIC COMPONENT

Hiromu Kunugihara, Kyoto; Tooru Yamaguchi, Uji; Gousuke Mieno; Junkichi Kawamura, both of Kyoto; Akiyoshi Asou, Osaka; Tsutomu Sakashita; Toshiyuki Hata, both of Uji, and Tetsuya Nakamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 30, 1992, Ser. No. 998,544

Int. Cl.[5] H01G *9/00*

U.S. Cl. 29—25.03 **16 Claims**



1. A method of electrically aging an electronic component having a pair of lead terminals comprising the steps of:

(a) placing said component on a support means;

(b) connecting each one of said pair of lead terminals to a respective one of a pair of electrode sections; and

(c) applying an electric voltage across said pair of lead terminals through said pair of electrode sections,

wherein each of said electrode sections provides a force for maintaining contact with each of said lead terminals and wherein each of said electrode sections does not provide a counter force opposite to said force for maintaining contact with each of said lead terminals.

5,366,516

HETEROCYCLIC COMPOUNDS USEFUL AS ADDITIVES FOR LUBRICANT AND FUEL COMPOSITIONS

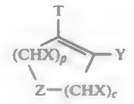
Joseph W. Pialet, Euclid, and Paul E. Adams, Willoughby Hills, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 387,405, Jul. 31, 1989, Pat. No. 5,308,520, which is a continuation of Ser. No. 119,466, Nov. 10, 1987, abandoned, which is a division of Ser. No. 845,204, Mar. 27, 1986, Pat. No. 4,784,782. This application Apr. 8, 1994, Ser. No. 224,921

Int. Cl.[5] C10L *1/18, 1/22*

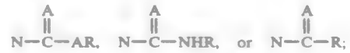
U.S. Cl. 44—333 **3 Claims**

1. A fuel composition comprising a major amount of a fuel and a minor amount of at least one compound represented by the formula



wherein:

Z is S, NR,



T is NH_2, NHR, SH, OH or their tautomers, hydrocarbyl acyl or hydrocarbyl phenolate;

Y is



COOH or CH_2NH_2;

each X is independently H, COOH, NH_2, $CONH_2$, $NHNH_2$, OR, COR, NHR, OH, SH or CN;

p is zero to 2;

e is zero to 2;

e+p is 2 to about 4;

A is O or S; and

R is H, alkyl, alkenyl, hydrocarbyl acyl, hydrocarbyl phenolate or $—(CH_2)_mQ$, wherein m is 1 to about 12 and Q is O-alkyl or N-alkyl.

5,366,517

FUEL ADDITIVE COMPOSITIONS CONTAINING POLY(OXYALKYLENE) HYDROXYAROMATIC ETHERS AND POLY(OXYALKYLENE) AMINES

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

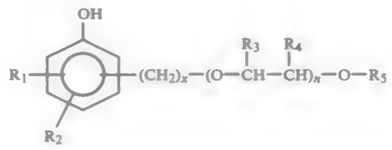
Filed Dec. 18, 1992, Ser. No. 993,219

Int. Cl.[5] C10L *1/22, 1/18*

U.S. Cl. 44—387 **44 Claims**

1. A fuel additive composition comprising:

(a) a poly(oxyalkylene) hydroxyaromatic ether having the formula:



or a fuel-soluble salt thereof; wherein

R_1 and R_2 are each independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

R_3 and R_4 are each independently hydrogen or lower alkyl having 1 to 6 carbon atoms;

R_5 is hydrogen, alkyl having 1 to 30 carbon atoms, phenyl, aralkyl or alkaryl having 7 to 36 carbon atoms, or an acyl group of the formula:



wherein R_6 is alkyl having 1 to 30 carbon atoms, phenyl, or aralkyl or alkaryl having 7 to 36 carbon atoms; n is an integer from 5 to 100; and x is an integer from 0 to 10; and

(b) a poly(oxyalkylene) amine having at least one basic nitrogen atom and a sufficient number of oxyalkylene units to render the poly(oxyalkylene) amine soluble in hydrocarbons boiling in the gasoline or diesel range.

5,366,518

MOTOR FUEL ADDITIVE AND FUEL COMPOSITION

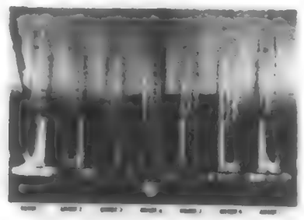
Thomas F. DeRosa, Passaic, N.J.; Joseph M. Russo, Poughkeepsie, N.Y.; Rodney L. Sung, Fishkill, N.Y., and Benjamin J. Kaufman, Hopewell Junction, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,484

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

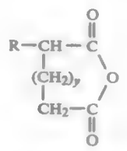
Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—331 **15 Claims**



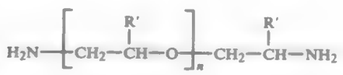
1. An imide composition obtained by reacting, at a temperature of 30° C.–200° C.:

(a) a hydrocarbyl-substituted dibasic acid anhydride of the formula:



where R is a hydrocarbyl radical having a molecular weight range of 500–3,500 and y has a value of 0–2; and

(b) a random backbone polyoxyalkylene diamine of the formula:



in which R′ represents hydrogen or an alkyl radical having from 1 to 2 carbon atoms and the backbone polyoxyalkylene radical consists of from about 5 to 65 weight percent of ethylene oxide and n has a value from 5 to 200.

5,366,519

FUEL ADDITIVE COMPOSITIONS CONTAINING POLY(OXYALKYLENE) HYDROXYAROMATIC ESTERS AND POLY(OXYALKYLENE) AMINES

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

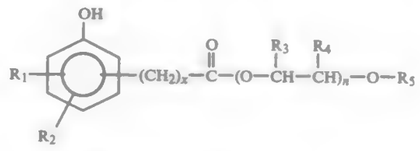
Filed Dec. 18, 1992, Ser. No. 993,174

Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—400 **44 Claims**

1. A fuel additive composition comprising:

(a) a poly(oxyalkylene) hydroxyaromatic ester having the formula:

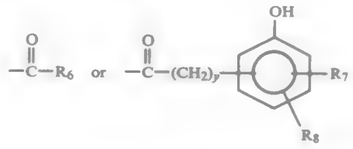


or a fuel-soluble salt thereof; wherein

R_1 and R_2 are each independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

R_3 and R_4 are each independently hydrogen or lower alkyl having 1 to 6 carbon atoms;

R_5 is hydrogen, alkyl having 1 to 30 carbon atoms, phenyl, aralkyl or alkaryl having 7 to 36 carbon atoms, or an acyl group having the formula:



wherein R_6 is alkyl having 1 to 30 carbon atoms, phenyl, or aralkyl or alkaryl having 7 to 36 carbon atoms; R_7 and R_8 are each independently hydrogen, hydroxy, lower alkyl having 1 to 6 carbon atoms, or lower alkoxy having 1 to 6 carbon atoms;

n is an integer from 5 to 100; and x and y are each independently an integer from 0 to 10; and

(b) a poly(oxyalkylene) amine having at least one basic nitrogen atom and a sufficient number of oxyalkylene units to render the poly(oxyalkylene) amine soluble in hydrocarbons boiling in the gasoline or diesel range.

5,366,520

FILTRATION FUEL APPARATUS AND METHOD

Eric Tiemeyer, 375 E. Las Colinas #173, Irving, Tex. 75039

Filed Jul. 28, 1992, Ser. No. 920,860

Int. Cl.[5] C10L *5/48*

U.S. Cl. 44—629 **2 Claims**

2. A method for processing petroleum related hazardous waste material, in a transportable vehicle, to remove the water content, capture the suspended solids, and thereby produce a high BTU-content burnable fuel, comprising the steps of:

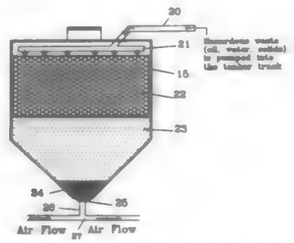
pumping the waste material to a filtering tank in the form of a modified transportable dry chemical/cement tanker;

filtering the waste material through a first fibrous hydrophobic filter of a Kenaf material of one particle size to absorb the petroleum related products while capturing suspended solids and passing the water content through the first hydrophobic material, and

filtering the waste material through a second fibrous hydrophobic filter of a Kenaf material of a particle size smaller than the size of said first hydrophobic material adjacent said first hydrophobic material to absorb the petroleum related products while capturing suspended solids and passing the water content through the second hydrophobic material,

filtering the water through a granular activated carbon;

wherein said first and second hydrophobic materials and carbon are arranged such that hazardous waste is filtered



through the first hydrophobic material, through said second hydrophobic material and said granular activated carbon, removing the water content thereof and capturing the suspended solids, and petroleum related content of said waste material is absorbed and held by said hydrophobic material; and

removing the water from the processing tanker utilizing pneumatic pressure;

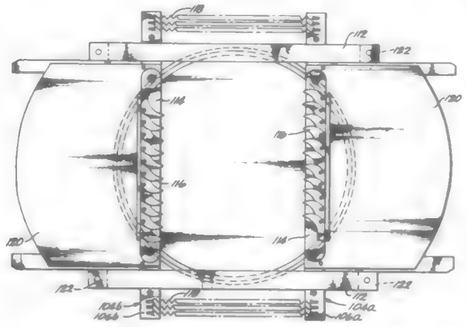
wherein the hydrophobic material with the petroleum related material is transported in the filtering tank and used as a fuel in a licensed industrial furnace.

5,366,521

TREE TRUNK SMOOTHING DEVICE

John W. Wootton, 739 S. Pennsylvania Ave., Glendora, Calif. 91740

Filed Feb. 19, 1993, Ser. No. 19,618
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—1.01 **5 Claims**



1. A device for trimming and smoothing a tree trunk comprising:

a frame positionable about the trunk;

means disposed on the frame for engaging the trunk, centering the device, and driving the frame upwardly and downwardly along said trunk;

a generally circular carriage disposed on the frame to encircle the trunk;

means for rotating the carriage about the trunk;

trimming means for easily engaging branch segments extending from the tree trunk, including first and second blade members horizontally positioned on opposite sides of the carriage to form chords of a circle defined by the carriage and to bracket the trunk therebetween, each blade member comprising a blade arm slidably positioned in a non-pivoting manner within slots formed by top and bottom portions of the carriage to permit inward and outward reciprocating sliding movement of each blade arm within the slots;

a plurality of cutting means mounted on each of said first and second blade arms, said cutting means being positioned to engage the trunk when said blade arms are horizontally slid into operating position adjacent the trunk; and

means for urging the blade arms inward to engage the tree trunk, rotation of the carriage causing the cutting means to trim branch segments from the trunk of the tree to produce a clean, relatively smooth surface, wherein the urging means comprise spring biasing means connecting end portions of each opposed blade arm to produce said inward and outward reciprocating movement within the slots in a non-articulating manner toward and away from each other as the tree trunk decreases or increases in diameter.

5,366,522

POLYCRYSTALLINE DIAMOND CUTTING TOOL AND METHOD OF MANUFACTURING THE SAME

Tsutomu Nakamura; Yasuyuki Kanada, and Tetsuo Nakai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 3, 1992, Ser. No. 970,798
Claims priority, application Japan, Nov. 7, 1991, 3-291629; Aug. 31, 1992, 4-232027
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **39 Claims**

1. A polycrystalline diamond cutting tool comprising a tool holder, a tool member, and a brazing layer made of a brazing filler mental having a melting point of at least 950° C. and not more than 1300° C., said brazing layer bonding said tool member to said tool holder, said tool member comprising a polycrystalline diamond layer that has been synthesized on a substrate by low-pressure vapor deposition, said polycrystalline diamond layer having a thickness within the range of at least 0.1 mm and not more than 1.0 mm, said tool member having a rake surface and, opposite said rake surface, a bonding surface bonded to said tool holder through said brazing layer, said polycrystalline diamond layer having a grain size distribution that increases from said rake surface to said bonding surface, and wherein diamond grain sizes are within the range of 0.01 μm to 1.0 μm on the side of said rake surface and within the range of at least 5% and not more than 15% of said diamond layer thickness on the side of said bonding surface.

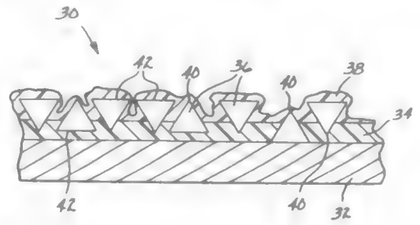
5,366,523

ABRASIVE ARTICLE CONTAINING SHAPED ABRASIVE PARTICLES

Donley D. Rowenhorst, Maplewood, and Todd A. Berg, St. Louis Park, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 23, 1992, Ser. No. 919,180
Int. Cl.[5] B24B *11/00*
U.S. Cl. 51—293 **19 Claims**

1. An abrasive article comprising a binder and abrasive grits, wherein at least 10% by weight of said abrasive grits are abrasive particles, each of said abrasive particles having a front face and a back face, said front face having substantially the same geometric shape as said back face, said faces being separated by the thickness of said particle, the ratio of the length of the



shortest facial dimension of said particle to the thickness of said particle being at least 1 to 1.

5,366,524

CERAMIC-BONDED ABRASIVE GRINDING TOOLS

Cressie E. Holcombe, Jr., Farragut; Andrew H. Gorin, Knoxville, and Roland D. Seals, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Nov. 12, 1993, Ser. No. 152,629
Int. Cl.[5] B24D *18/00*
U.S. Cl. 51—293 **10 Claims**

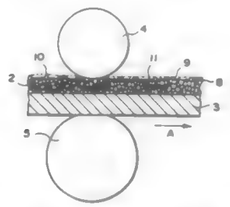
1. An abrasive composition comprising abrasive grains dispersed throughout a solidified cement comprising a product of a reaction of zinc oxide with a reactive liquid setting agent selected from the group consisting of ethoxyacetic acid, methoxyacetic acid, ethyl acetoacetate, ethyl pyruvate, acetylacetone, eugenol, acetic acid, formic acid, lactic acid, pyruvic acid, guaiacol, o-ethoxybenzoic acid, and mixtures thereof.

5,366,525

MANUFACTURE OF ABRASIVE TAPE

Masaaki Fujiyama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1993, Ser. No. 78,646
Claims priority, application Japan, Jun. 22, 1992, 4-162921
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 **2 Claims**



1. A manufacturing method for an abrasive tape comprising the steps of:

applying a coating liquid of abrasive particles and a binder resin to a flexible substrate to form a layer so that the abrasive particles on a surface of the layer farthest from the substrate have tip ends located farthest from the substrate;

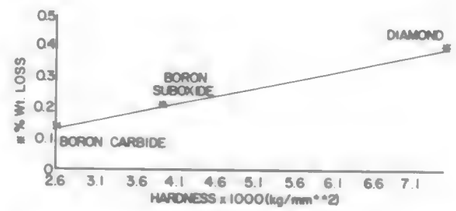
drying the flexible substrate to produce an abrasive layer; and aligning the tip ends of the abrasive particles to be equally distant from the substrate by passing the abrasive layer between pressure rollers in such a manner that the flexible substrate comes in contact with an elastic roller, whereas the abrasive layer comes in contact with a metal roller, and wherein the pressure rollers are composed of the elastic roller having a hardness of 50–80 measured by a spring type hardness tester A and the metal roller, and are arranged opposite to each other and wherein the elastic roller is heated to a temperature in the range of 30 to 70 degrees Celsius.

5,366,526

METHOD OF ABRADING WITH BORON SUBOXIDE (BXO) AND THE BORON SUBOXIDE (BXO) ARTICLES AND COMPOSITION USED

Cristan Ellison-Hayashi, Salt Lake City, Utah; George T. Emond, Southington, Conn., and Shih Y. Kuo, Salt Lake City, Utah, assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 920,357, Jul. 28, 1992, which is a continuation-in-part of Ser. No. 729,467, Jul. 12, 1991, Pat. No. 5,135,892. This application Apr. 21, 1993, Ser. No. 51,114
Int. Cl.[5] C09K *3/14*
U.S. Cl. 51—307 **18 Claims**



1. A method of removing material from a surface comprising the step of:

abrading a surface with an abrasive powder comprising a boron suboxide (BxO) composition, wherein during the abrading step at least 60% by weight of the boron suboxide (BxO) in the boron suboxide (BxO) composition does not degrade.

10. A method of removing material from a surface comprising the step of:

abrading a surface with an abrasive tool comprising a boron suboxide (BxO) composition, wherein during the abrading step at least 60% by weight of the boron suboxide (BxO) in the boron suboxide (BxO) composition does not degrade.

5,366,527

METHOD AND APPARATUS FOR COATING OPTICAL WAVEGUIDE FIBERS

Lynn G. Amos; Paul A. Chludzinski, both of Wilmington, N.C.; Heidi B. Leoni, Painted Post, N.Y.; Johnnie E. Watson, Hampstead, and Richard R. Williams, Wilmington, both of N.C., assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 5, 1993, Ser. No. 43,448
Int. Cl.[5] C03B *37/025*
U.S. Cl. 65—382 **17 Claims**

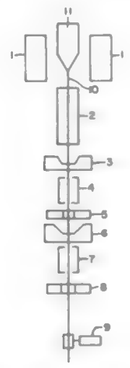
1. A method for coating an optical waveguide fiber, comprising the steps of

a. passing an optical waveguide fiber through a coating die containing a coating material, said coating material being a curable material, and said coating die including a sizing die,

b. coating said fiber with a layer of said coating material,

c. measuring the coated fiber diameter and generating a diameter signal which is representative of said coated fiber diameter, and

d. controlling the coated fiber diameter by varying the temperature of at lest a portion of said sizing die in response to



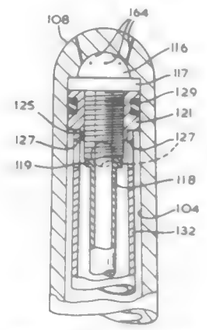
the difference between said diameter signal and a predetermined target value.

5,366,528

PARISON FORMING AND PLUNGERS FOR USE THEREIN

Philip A. Mann, Pontefract, United Kingdom, assignor to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Nov. 5, 1993, Ser. No. 147,999
Claims priority, application United Kingdom, Nov. 13, 1992, 9223839.3; Sep. 2, 1993, 9318223.6
Int. Cl.[5] C03B *11/10*
U.S. Cl. 65—25.1 17 Claims



1. A plunger assembly for use in forming parisons in a glassware forming machine comprising

a metal plunger having a base, a closed nose portion and an internal recess extending from the base to the nose portion

a barrier in the recess providing a small chamber at the nose portion,

a pattern of small holes extending through the nose portion from the chamber to the exterior of the plunger,

a pipe extending from the base to the barrier through which water can be supplied to the chamber,

means for supply cooling air to the recess.

10. A method of forming a parison in a glassware forming machine comprising the steps of

(a) supplying a gob of molten glass to a parison mould

(b) advancing a plunger assembly according to claim 1 into the gob while providing cooling air to the recess,

(c) supplying a measured quantity of water to the chamber of the plunger assembly

(d) completing the advancing movement of the plunger assembly to form the parison,

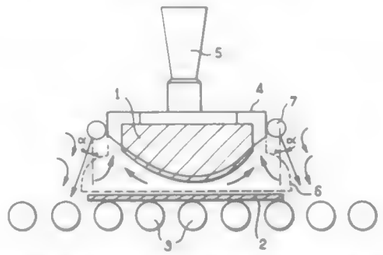
(e) withdrawing the plunger assembly.

5,366,529

PROCESS FOR BENDING GLASS SHEETS USING FLUID BARRIER

Jean-Marc Petitcollin, Thourotte; Jean-Luc Lesage, Compiegne, and Arnaud Borderiou, Compiegne, all of France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Continuation of Ser. No. 709,207, Jun. 3, 1991, Pat. No. 5,135,558. This application Mar. 6, 1992, Ser. No. 846,886
Claims priority, application France, Jun. 1, 1990, 90 06842
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] C03B *23/035*
U.S. Cl. 65—106 6 Claims



1. Process for bending a glass sheet comprising the steps of:

heating the glass sheet in a horizontal position to a bending temperature thereof;

bending the glass sheet by bringing the heated glass sheet into contact with an upper bending form in an air atmosphere by use of a pneumatic force; and

generating a fluid barrier adjacent a periphery of the glass sheet during said bending step, said fluid barrier comprising the high pressure gas jets and limiting entry of air from an exterior of the fluid barrier at the immediate vicinity of the upper bending form,

wherein the fluid barrier extends about substantially an entirety of the perimeter of the glass sheet to be bent.

5,366,530

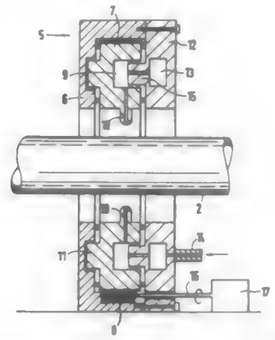
METHOD AND APPARATUS FOR FABRICATING AN OVAL CROSS-SECTIONAL OPTICAL WAVEGUIDE

Dieter Weber, Kornwestheim, Germany, assignor to Alcatel, N.V., Amsterdam, Netherlands

Filed Apr. 13, 1993, Ser. No. 46,983
Claims priority, application Germany, Apr. 15, 1992, 4212602
Int. Cl.[5] C03B *37/075*
U.S. Cl. 65—403 6 Claims

1. A method of fabricating a preform for an optical waveguide with an oval cross-section comprising the steps of:

forming a core and a cladding of the optical waveguide by vapor deposition of glass layers to an inside surface of a substrate tube of quartz glass; and



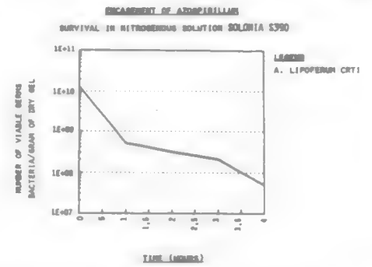
cooling simultaneously two diametrically opposed surface areas of the substrate tube during deposition of the glass layers.

5,366,532

FERTILIZERS CONTAINING MICROORGANISMS AND THEIR PRODUCTION PROCESSES

Jacques Fages, Portet sur Garonne; Jacques Rigal, Toulouse, and Daniel Mulard, Cugnaux, all of France, assignors to Lipha, Lyonnaise Industrielle, Lyon, France

PCT No. PCT/FR88/00106, § 371 Date Oct. 27, 1989, § 102(e) Date Oct. 27, 1989
PCT Filed Feb. 25, 1988, Ser. No. 434,698
Claims priority, application France, Feb. 27, 1987, 87 02634
Int. Cl.[5] C05F *11/08*
U.S. Cl. 71—6 20 Claims



1. A mixture of fertilizer and a minor amount of microorganisms isolated from the rhizosphere, said microorganisms being packaged by microencapsulation in a polysaccharide matrix.

5,366,533

MICRONUTRIENT DELIVERY SYSTEM USING CITRUS BY-PRODUCT

Allan D. Behel, Jr., Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Dec. 13, 1993, Ser. No. 165,786
Int. Cl.[5] C05F *5/00*
U.S. Cl. 71—23 9 Claims

1. A composition of matter consisting essentially of a CBP Mix, said CBP Mix containing from about 70% to about 95% by weight citrus by-product, and from about 5.0% to about 30% by weight of an iron constituent comprising ferric sulfate or ferrous sulfate or both such that juxtapositioning such CBP Mix with plant growth media provides effective isolation of said iron constituent therefrom to thereby ensure that said iron constituent remains substantially water soluble for a period of time of at least about 14 days.

5,366,531

PREPARATION OF A PREFORM OF OPTICAL FIBERS

Hiroyuki Koide; Hitoshi Iinuma, and Hideo Hirasawa, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1993, Ser. No. 131,450
Claims priority, application Japan, Oct. 21, 1992, 4-307532
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—415 4 Claims

1. In a method for the preparation of a glassy preform of optical fibers comprising the steps of combustion of a silicon-containing starting gas in an oxyhydrogen flame formed from hydrogen gas and oxygen gas by using a multiplex-tube burner nozzle having five concentrically arranged nozzle openings to effect flame hydrolysis of the silicon-containing starting gas in the oxyhydrogen flame to form fine silica particles, deposition of the fine silica particles on a substrate to form a porous silica body and vitrification of the porous silica body by heating into a transparent glassy preform of optical fibers, an improvement which comprises ejecting a gaseous mixture of the silicon-containing starting gas and oxygen gas from one of the nozzle openings, ejecting hydrogen gas from another of the nozzle openings and ejecting a gaseous mixture of oxygen gas and an inert gas in a mixing ratio in the range from 0.05 to 1.0 by volume from a nozzle opening, which is between the two nozzle openings for ejection of the gaseous mixture of the silicon-containing starting gas and oxygen gas and for ejection of hydrogen gas, in the concentric arrangement of the nozzle openings.

5,366,534

GRANULAR POTASSIUM SULFATE PREPARATION AND PROCESS FOR PRODUCTION THEREOF

Milton Fischbein, Cold Lake Alberta, Canada, and Arthur R. Shirley, Jr., Florence, Ala., assignors to Sherritt Inc., Fort Saskatchewan, Canada

Filed Nov. 30, 1992, Ser. No. 984,068
Int. Cl.[5] C05D *1/02*
U.S. Cl. 71—63 13 Claims

1. A granular potassium sulfate composition comprising bound granules of a mixture of:

a) potassium sulfate;

b) from about 4 to 15% by weight of ammonium phosphate; and

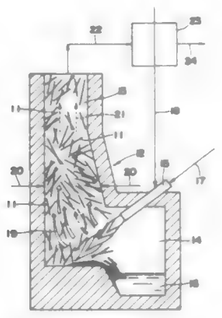
c) from about 2 up to about 5% by weight of a lignosulfonate;

said granules further characterized as being coated with alum, imparting abrasion resistance to said granules.

5,366,535
BASIC TUNDISH COVERING COMPOUND
Lawrence J. Heaslip, Scarborough, and James D. Dorricott, Burlington, both of Canada, assignors to Premier Services Corporation, King of Prussia, Pa.
Continuation-in-part of Ser. No. 986,366, Dec. 7, 1992, abandoned. This application Dec. 9, 1992, Ser. No. 989,057
Int. Cl.[5] C22B *9/10*
U.S. Cl. 75—305 45 Claims

1. A flux composition for use in covering liquid metal comprising a non-liquid composition that melts, when contacted with the liquid metal, to form a liquid flux layer in contact with the liquid metal while maintaining a non-liquid layer above the liquid flux layer, the liquid flux layer having a viscosity greater than the viscosity of the liquid metal.

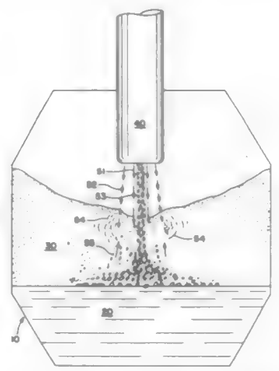
5,366,536
METHOD OF MELTING METALS
Toshio Sawa, and Nobuaki Kobayashi, both of Yamanashi, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan
Filed Mar. 26, 1993, Ser. No. 37,168
Claims priority, application Japan, Mar. 27, 1992, 4-071528
Int. Cl.[5] C21B *11/00*
U.S. Cl. 75—414 5 Claims



1. A method of melting a metallic material, which comprises melting a metallic material introduced to a melting furnace by heating the metallic material directly with a flame from a fuel burner using an oxygen gas having an oxygen content of 60 to 100% as a combustion assisting gas; wherein said oxygen gas fed to said burner is burned at an oxygen-to-fuel ratio of 0.55 to 0.99 to produce a combustion gas, while an unburned portion of the combustion gas is burned by O_2 supplied separately.

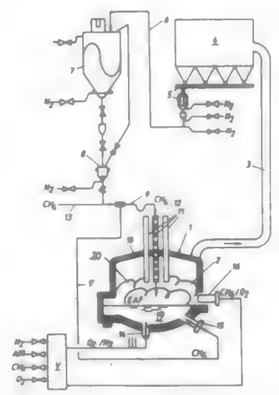
5,366,537
FUEL AND OXYGEN ADDITION FOR METAL SMELTING OR REFINING PROCESS
Mark R. Schlichting, Chesterton, Ind., assignor to Steel Technology Corporation, Washington, D.C.
Filed Jan. 5, 1993, Ser. No. 722
Int. Cl.[5] C22B *15/00*
U.S. Cl. 75—528 34 Claims

1. An improved smelting or refining process in which a carbonaceous material is used as a fuel source or reducing agent or both in a furnace in which is contained a molten metal layer having an upper surface upon which rests a slag layer having an upper surface, the process including the steps of introducing a stream of the carbonaceous material and a stream of oxygen to the furnace from a location above the upper surface of the slag layer, the improvement comprising the step



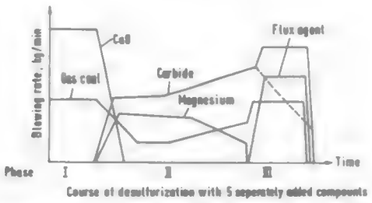
of interposing a stream of an inert gas between the stream of carbonaceous material and the stream of oxygen.

5,366,538
PROCESS FOR THE PRODUCTION OF A METAL MELT
Harald Berger, Linz; Johannes Steins, Gallneukirchen, both of Austria, and Klaus Klintworth, Buxtehude, Germany, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria and KCT Technologies GmbH, Hamburg, Germany
Filed Jul. 13, 1993, Ser. No. 90,709
Claims priority, application Austria, Jul. 16, 1992, A 1463/92
Int. Cl.[5] C21B *3/04*; C21C *5/38*
U.S. Cl. 75—528 15 Claims



1. A process for producing a metal melt in a metallurgical vessel from metalliferous filter dusts formed during the production of a metal melt which comprises:
providing a gaseous conveying medium comprised of a reducing carrier gas,
conveying said metalliferous filter dusts in a closed system to said metallurgical vessel by means of said reducing carrier gas,
reducing said metalliferous filter dusts in said vessel to metal by means of said reducing carrier gas, and
melting said metal produced from said filter dusts.

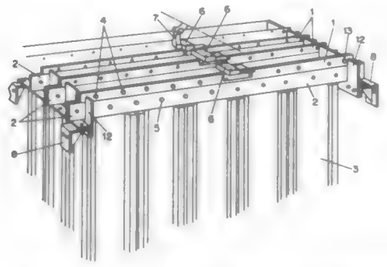
5,366,539
PROCESS FOR THE DESULPHURIZATION TREATMENT OF PIG IRON MELTS
Karl-Heinz Abele, Dinslaken; Heinz van den Boom; Alfred Euler, both of Duisburg; Eckart Hees, Dinslaken, and Walter Meichsner, Krefeld, all of Germany, assignors to Thyssen Stahl AG, Duisburg, Germany
Filed Aug. 18, 1992, Ser. No. 931,716
Claims priority, application Germany, Aug. 28, 1991, 4128499
Int. Cl.[5] C21C *7/06, 7/064*
U.S. Cl. 75—532 23 Claims



Course of desulfurization with 5 separately added components

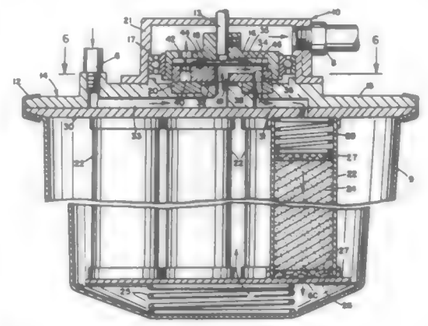
1. A three-phase process for injecting fine-grained solids into a pig iron melt having an acid oxidized initial slag, comprising:
a) in a first phase, injecting solids into said melt that deoxidize and increase the basicity of said initial slag, and produce a circulatory movement of said melt;
b) in a second phase which follows said first phase, injecting into said melt at least one desulfurizing agent into said melt; and
c) in a third phase which follows said second phase, injecting into said melt solids that purify said melt and produce a final desulfurization of said melt, and decrease an iron content of a desulfurization slag formed in said melt,
said fine-grained solids being injected into said melt by a carrier gas via an injection lance.

5,366,540
RAPPING MECHANISM FOR RAPPING THE ELECTRODES OF AN ELECTROSTATIC PRECIPITATOR
Erik M. Bojsen, Valby, Denmark, assignor to FLS MILJØ A/S, Denmark
Filed Aug. 26, 1993, Ser. No. 112,859
Claims priority, application Denmark, Aug. 28, 1992, 1076/92
Int. Cl.[5] B03C *3/76*
U.S. Cl. 96—33 6 Claims



1. A rapping mechanism for rapping or vibrating collecting electrodes of an electrostatic precipitator, said electrostatic precipitator comprising a housing, and collecting electrodes, wherein the collecting electrodes (3) comprise vertically suspended, substantially rectangular plates, and a pair of horizontally arranged support carriers (2,2') having a top surface and a bottom surface, the support carriers being secured to the precipitator housing and surrounding the upper ends of the electrodes (3), wherein the rapping mechanism comprises:
a drop hammer (7) with means for horizontally rapping the collecting electrodes, the drop hammer being rotatable about the cylindrical axis of a horizontal shaft;
a pair of impact beams (1,1') having a top surface and a bottom surface, between which impact beams the collecting electrodes are suspended, wherein the bottom surface is slidably positioned on the top surface of the pair of support carriers (2,2') such that the impact beams are horizontally slidable;
an anvil (6) secured to the top surface of the impact beam pair (1,1'); and
a pair of bias elements (12) fixed to the precipitator housing and engaging the longitudinal ends of the impact beam pair (1,1'), for moving the impact beams (1,1') back to their starting position after a horizontal rapping or vibrating movement.

5,366,541
FLUID FRACTIONATOR
Charles C. Hill, Del Mar, and Theodore B. Hill, San Diego, both of Calif., assignors to Dynotec Corporation, San Diego, Calif.
Continuation of Ser. No. 835,918, Feb. 28, 1992, Pat. No. 5,268,021, which is a continuation-in-part of Ser. No. 660,177, Feb. 25, 1991, Pat. No. 5,112,367, which is a continuation of Ser. No. 438,786, Nov. 20, 1989, abandoned. This application Oct. 25, 1993, Ser. No. 142,614
Int. Cl.[5] B01D *53/04*
U.S. Cl. 96—124 48 Claims



1. In combination,
a plurality of columns disposed in a closed loop, each of the columns having a length-to-width ratio of at least six to one (6:1),
means for providing a fluid under pressure, the fluid having a first component and having components other than the first component,
means operatively coupled to the fluid pressure means and the columns in the plurality for directing the fluid under pressure into first progressive ones of the columns in the plurality and for providing for the flow of the fluid in the columns from second progressive ones of the columns in the plurality at the same time as the direction of the fluid under pressure into the first progressive ones of the columns in the plurality,
the fluid directing means being also operative to equalize the pressure of the fluid in third progressive ones of the columns in the plurality between the first and second progressive ones of the columns in the plurality at the same time as the directing of the fluid under pressure into the first progressive ones of the columns in the plurality,
means disposed in the columns for passing the first component of the fluid and for adsorbing other components of the fluid,
means for collecting the first component from the first progressive ones of the columns in the plurality, and

means for exhausting to the atmosphere the fluid from the second progressive ones of the columns in the plurality.

5,366,542

POLISHING COMPOSITION

Tsutomu Yamada, Machida; Taizo Okajima, Kitakyushu; Kouichi Ootani, Nougata, and Hitoshi Morinaga, Kitakyushu, all of Japan, assignors to Fujimi Incorporated, Aichi, Japan

Continuation of Ser. No. 748,809, Aug. 22, 1991, abandoned. This application Dec. 7, 1992, Ser. No. 988,360

Claims priority, application Japan, Aug. 29, 1990, 2-227580; Mar. 18, 1991, 3-052750

Int. Cl.[5] C09G *1/00*

U.S. Cl. 106—3 **14 Claims**

1. A polishing composition comprising water, alumina as abrasive particles, and a chelating agent, wherein the alumina is present in an amount of from 2 to 30% by weight, based on the total amount of the composition and the chelating agent is selected from the group consisting of polyaminocarboxylic acid, and sodium and potassium salt thereof.

5,366,543

ALCOHOL-SOLUBLE DYE AND INK COMPOSITION CONTAINING THE SAME

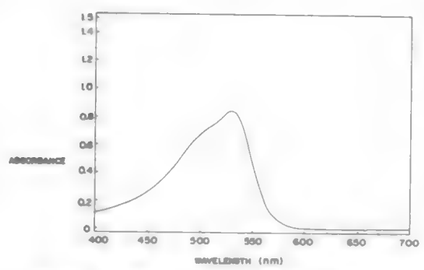
Takashi Ono, Takatsuki; Tatsuya Yagyu, Neyagawa, and Tetsui Akase, Moriguchi, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 9, 1993, Ser. No. 73,477

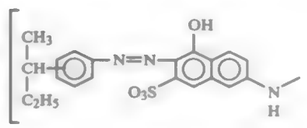
Claims priority, application Japan, Jun. 9, 1992, 4-149305

Int. Cl.[5] C09B *69/00*

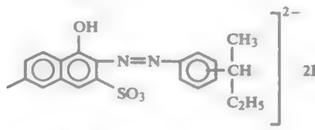
U.S. Cl. 106—22 K **15 Claims**



14. An ink composition comprising a disazo salt-forming dye represented by one of the following formulae:

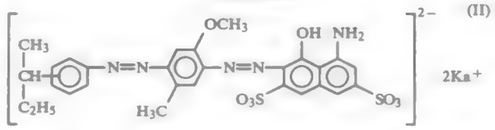


(I)



or

-continued



(II)

wherein Ka^+ represents a cation of an amine which is substituted with at least one linear or cyclic alkyl group or aralkyl group having 6–12 carbon atoms which may be branched or interrupted by oxygen.

5,366,544

ANTISTATIC LAYERS FOR PHOTOGRAPHIC ELEMENTS AND COATING COMPOSITIONS FOR PREPARING THE SAME

Raymond T. Jones, Webster, and Jack J. Holt, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 27, 1993, Ser. No. 67,895

Int. Cl.[5] C09D *5/24, 101/12*

U.S. Cl. 106—187 **12 Claims**

1. A coating composition for applying a vanadium pentoxide antistatic layer on a photographic element comprising from about 0.02 to about 0.08 percent by weight of vanadium pentoxide, from about 0.04 to about 1.6 percent by weight of a cellulose acetate binder polymer, said binder polymer having an acetyl content of from about 15 percent to about 35 percent by weight and the balance a solvent mixture of from 7.5 to 70 percent by weight of a C_1–C_2 dialkyl ketone, from 10 to 60 percent by weight of a C_1–C_4 alkanol and from 3 to 50 percent of water based on the weight of the solvent mixture.

5,366,545

COATING COMPOSITIONS

Eiichi Yajima, Fuchu; Yoshitane Watanabe, Tokyo; Keitaro Suzuki, Funabashi, and Tetsunori Matsukura, Sodegaura, all of Japan, assignors to Hoya Corporation and Nissan Chemical Industries, Ltd., both of Tokyo, Japan

Filed Jul. 7, 1993, Ser. No. 86,802

Claims priority, application Japan, Jul. 7, 1992, 4-203063

Int. Cl.[5] C09D *143/04, 183/04*

U.S. Cl. 106—286.4 **9 Claims**

1. A coating composition comprising an organosilicon compound and modified stannic oxide - zirconium oxide composite colloidal particles which are obtained by partially or fully coating the surface of stannic oxide - zirconium oxide composite colloidal particles with tungstic oxide - stannic oxide composite colloidal particles.

5,366,546

PRODUCTION OF PIGMENT COMPOSITIONS

James M. McCrae, Stewarton; Anne M. Keirs, Paisley, and John A. Nimmo, Troon, all of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 17, 1992, Ser. No. 977,338

Claims priority, application United Kingdom, Nov. 23, 1991, 9125114

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—410 **17 Claims**

1. A process for the production of a pigment composition, comprising combining a) a dispersion of one or more non-polar components of a surface coating vehicle or a non-polar additive for the pigment composition in an aqueous solution of a salt of a polar pigment additive, with b) an aqueous slurry of a pigment or a precursor thereof, before, during or after the synthesis of the pigment; and then isolating the pigment composition so obtained.

5,366,547

SETTING CONTROL FOR ALKALI-ACTIVATED SILICATE BINDERS

William N. Brabston; Philip G. Malone; Toy S. Poole, and Joe G. Tom, all of Vicksburg, Miss., assignors to U.S. Army Corps of Engineers as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1993, Ser. No. 64,998

Int. Cl.[5] C04B *12/02, 12/04*

U.S. Cl. 106—690 **17 Claims**

1. An alkali-activated silicate composition comprising:

(A) 100 parts by weight of a silicate based, largely amorphous, calcium-rich material;

(B) from about 0.5 to about 10 weight percent based upon (A) of an alkali; and

(C) an efficacious amount of a phosphate retarder selected from the group consisting of sodium metaphosphate, sodium polyphosphate, potassium metaphosphate and potassium polyphosphate for retarding cure of the composition.

5,366,548

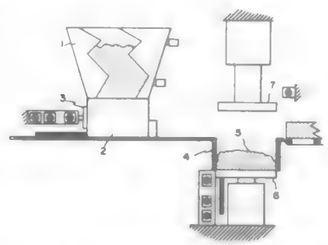
VOLCANIC FLY ASH AND KILN DUST COMPOSITIONS, AND A PROCESS FOR MAKING ARTICLES THEREFROM

Mitchell S. Riddle, 1671 Domain Loop, Rio Rancho, N. Mex. 87124

Continuation-in-part of Ser. No. 725,312, July 5, 1991, abandoned. This application Apr. 17, 1992, Ser. No. 870,147

Int. Cl.[5] C04B *14/36*

U.S. Cl. 106—705 **22 Claims**



1. A process for the production of volcanic fly ash or kiln dust bodies consisting essentially of:

(a) blending a dry material with water, wherein said dry material consists essentially of a material selected from the group consisting of volcanic fly ash and kiln dust;

(b) transferring the blended material to a compression zone, which is sized such that it contains an amount of blended material to produce a blended material body; and

(c) compressing the blended material at a pressure of 1000 to 2500 psi to form the kiln dust or volcanic fly ash body.

5,366,549

METHOD FOR FABRICATING FIBER-REINFORCED SLAG GYPSUM CEMENT-BASED, LIGHTWEIGHT SET ARTICLES

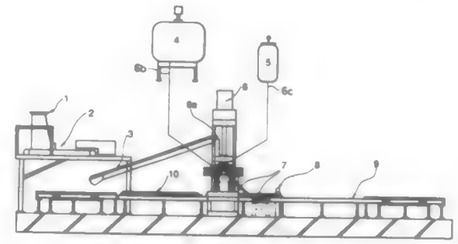
Shokichi Imaizumi, Tokyo; Tsuyoshi Aoyama, Houya; Nagao Hori, Tokorozawa; Katsumi Takenami, Tsuragashima; Kiyoshi Koibuchi, Yokohama; Youich Ishikawa, Tokyo; Seiji Kazama, Kawanishi, and Koji Nasu, Nishinomiya, all of Japan, assignors to Kyowa Giken Co., Ltd.; Takeda Chemical Industries, Ltd., both of Osaka; Dai-Ichi Cement Co., Ltd., Kanagawa; Naigai Technos Corporation and Obayashi Corporation, both of Osaka, all of Japan

Continuation of Ser. No. 997,637, Dec. 18, 1992, abandoned, which is a continuation of Ser. No. 715,483, Jun. 14, 1991, abandoned. This application Mar. 24, 1994, Ser. No. 217,025

Claims priority, application Japan, Nov. 28, 1990, 2-322431

Int. Cl.[5] C04B *7/14*

U.S. Cl. 106—715 **16 Claims**



1. A method for making a fiber-reinforced slag gypsum cement lightweight hardened product which consists essentially of the steps of:

adding from 5 to 140 parts by weight of aggregates having a maximum size of not larger than 2000 μm to 100 parts by weight of a mixture which comprises 100 parts by weight of Portland cement, from 20 to 350 parts by weight of slag fine powder which has a fineness ranging from 6,000 to 12,000 cm^2/g as Blaine's specific surface area, from 0 to 20 parts by weight of lime, and from 20 to 100 parts by weight of calcium aluminate and gypsum fine powder in total, provided that a ratio by weight of the gypsum fine powder and the calcium aluminate is in the range of 0.5 to 2.0:1;

adding from 0.01 to 1.5 parts by weight of a setting retardant to the mixture;

mixing water, prefoamed foams and reinforcing fibers with the mixture to obtain a slurry;

subjecting the slurry to molding to obtain a molded product;

removing the molded product to obtain a hardened product; and

curing the hardened product with steam;

wherein the amount of the prefoamed foams to be added to the slurry is the amount necessary to obtain a hardened product having an air-dried specific gravity of from 0.4 to 1.5.

5,366,550

LATEX MODIFIED CEMENT-BASED THIN SET ADHESIVE

Gregory W. Schad, Algonquin, Ill., assignor to TEC Incorporated, Palatine, Ill.

Filed Apr. 2, 1993, Ser. No. 42,478

Int. Cl.[5] C04B *24/10*

U.S. Cl. 106—730 **12 Claims**

1. A cement adhesive composition for a cellulosic or non-porous substrate comprising:

(a) about 5 to 99 parts by weight of a cement powder;

(b) about 0.25 to 75 parts by weight, based on the polymeric solids content, of a polymeric latex composition selected

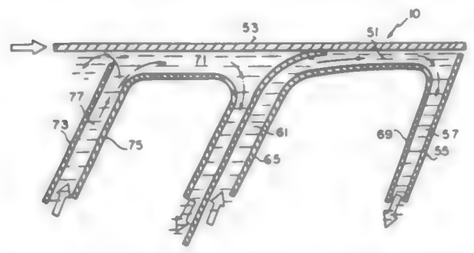
from the group consisting of liquid polymeric latexes and dried polymeric latex solids;
(c) about 0.01 to 10 parts by weight of a water soluble polysaccharide compound selected from the group consisting of starch esters and ethers;
(d) about 0 to 90 parts by weight of a filler; and
(e) a sufficient amount of water to form a smooth, moist, evenly-consistent composition;
wherein the components are combined to form composition having about 100 parts by weight exclusive of water.

5,366,551

COATING DEVICE FOR TRAVELING WEBS

Cyrus K. Aidun, Marietta, Ga., assignor to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 849,530, Mar. 11, 1992, abandoned. This application May 12, 1992, Ser. No. 881,512
Int. Cl.[5] D05C *5/00*
U.S. Cl. 118—411 2 Claims



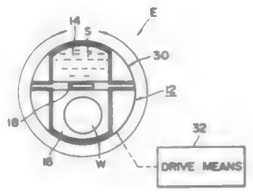
1. A coating device for coating a traveling web of material comprising:
(a) a web of material which is guided for movement past the coating device;
(b) a doctor element spaced from said web for defining the thickness of a coating on said web, the doctor element extending across said web transversely of the direction of said web motion;
(c) means defining a coating composition application chamber also extending across said web transversely of the direction of said web motion, the chamber having upstream and downstream sides with respect to movement of said web, said doctor element defining a downstream boundary wall of said chamber, said means including an interior wall and an upstream boundary wall terminating in contact with said web, said interior wall and said upstream wall also extending across the web transversely of the direction of web motion;
(d) said doctor element, said interior wall and said upstream boundary wall, in combination, defining in successive fluid communication;
(i) an entrance plenum for receiving a moving stream of a liquid coating material;
(ii) a coating chamber adjacent said web for transporting said moving stream of liquid coating material in contact with said web and in the same direction as the direction of said web motion; and
(iii) an exit plenum for discharge of said moving stream of coating material, said entrance plenum being spaced from said exit plenum by the length of the coating chamber;
(e) said interior wall comprising in cross-section an upstream side wall spaced from and parallel to said upstream boundary wall to define said entrance plenum, a top wall spaced from and parallel to said web to define said coating chamber and a downstream wall spaced from and parallel to said doctor element to define said exit plenum, the junction of said upstream wall and said downstream wall of said interior wall with said top of said interior wall being curvilinear and substantially parallel defining a curvilinear path therebetween;
(f) means defining a pre-coating composition application chamber also extending across said web transversely of the direction of said web motion, the pre-coating chamber having upstream and downstream sides with respect to movement of said web, said upstream wall of said coating chamber defining a downstream boundary wall of said pre-coating chamber, said means including a second interior wall and a second upstream boundary wall terminating in spaced relationship with said web to provide an overflow baffle, said second interior wall and said second upstream wall also extending across the web transversely of the direction of web motion; and
(g) said second upstream wall, said second interior wall of said pre-coating chamber and said upstream boundary wall of said coating chamber, in combination, defining in successive fluid communication;
(i) a second entrance plenum for receiving a moving stream of a liquid coating material;
(ii) a pre-coating chamber being adjacent said web for transporting said moving stream of liquid coating material in contact with said web through said overflow baffle and in the same direction as the direction of said web motion; and
(iii) a second exit plenum for discharge of said moving stream of coating material, said second entrance plenum being spaced from said second exit plenum by the length of said pre-coating chamber.

5,366,552

APPARATUS FOR LIQUID-PHASE EPITAXIAL GROWTH

Masato Yamada; Takao Takenaka, both of Annaka, and Masahisa Endo, Gunma, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1992, Ser. No. 897,169
Claims priority, application Japan, Jun. 14, 1991, 3-170501
Int. Cl.[5] C30B *19/06*; H01L *21/208*
U.S. Cl. 118—416 7 Claims



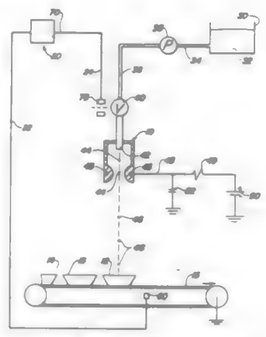
1. An apparatus for liquid-phase epitaxial growth, comprising:
a circular cylindrical tube;
a sealable growth chamber for receiving therein at least one row of thin plate-like substrates;
a sealable solution chamber connected with said growth chamber for holding therein a solution to be used for the liquid-phase epitaxial growth;
a gate valve disposed between said growth chamber and said solution chamber for selectively connecting together said growth chamber and said solution chamber and separating apart said growth chamber and said solution chamber;
said growth chamber, said solution chamber, and said gate valve being non-rotatably disposed in said tube; and
drive means operatively connected to said tube for rotating said tube to turn said growth chamber, said solution chamber and said gate valve concurrently about the horizontal axis to cause them to tilt or overturn.

5,366,553

SEQUENCE CONTROLLER

James H. Lair, and John E. Fagan, both of Norman, Okla., assignors to Burford Corporation, Maysville, Okla.

Division of Ser. No. 407,531, Sep. 15, 1989, Pat. No. 5,110,616, which is a continuation-in-part of Ser. No. 231,588, Aug. 8, 1988, Pat. No. 4,925,699, which is a continuation of Ser. No. 937,961, Dec. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 796,083, Nov. 7, 1985, abandoned. This application May 5, 1992, Ser. No. 878,739
Int. Cl.[5] B05C *11/10*
U.S. Cl. 118—682 20 Claims



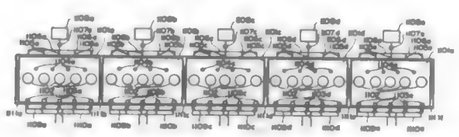
1. Sequence control apparatus comprising: an electrical circuit; delay time control means in said electrical circuit for initiating a first output pulse of a sequence of pulses; repeat time control means in said electrical circuit for controlling time between pulses; pulse control means in said electrical circuit for controlling the number of output pulses of each sequence of pulses; pan sensor means for detecting the presence of an object connected to said electrical circuit; and computer means in said electrical circuit, said computer means being adapted to deliver an output signal for controlling a sequence of events in response to actuation of said sensor means indicating the presence of an object, said output signal having a controlled delay time, repeat time, and number of pulses.

5,366,554

DEVICE FOR FORMING A DEPOSITED FILM

Masahiro Kanai, Tokyo; Masaaki Hirooka, Toride; Jun-Ichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 989,891, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 860,211, Mar. 27, 1992, abandoned, which is a continuation of Ser. No. 441,224, Nov. 27, 1989, abandoned, which is a continuation of Ser. No. 3,048, Jan. 13, 1987, abandoned. This application Aug. 10, 1993, Ser. No. 104,497
Claims priority, application Japan, Jan. 14, 1986, 61-5979; Jan. 14, 1986, 61-5980; Jan. 14, 1986, 61-5981
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 16 Claims



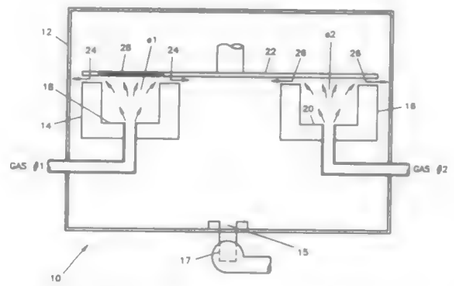
1. An apparatus for forming a deposited film on a substrate by bringing a gaseous starting material for formation of the deposited film into contact with a gaseous oxidizing agent having the property of oxidation action on said gaseous starting material and thereby to effect the formation of said deposited film comprising:
a plural number of chambers in which to form the deposited film, said chambers positioned adjacent to one another, each of said chambers including:
(1) a gas releasing means including a plurality of first orifices for introducing said gaseous starting material to said chamber and a plurality of second orifices for introducing said gaseous oxidizing agent to said chamber, said plurality of first orifices and said plurality of second orifices being positioned alternately to each other in said chamber so as to create a sufficient reaction mixture between said gaseous starting material and said gaseous oxidizing agent so as to generate a plurality of precursors including at least one precursor in an excited state, wherein said at least one precursor functions as the feeding source for the constituent element of said film;
said gaseous starting material being at least one selected from the group consisting of straight chain silane compound having the formula Si_nH_{2n+2} where n=1 to 8, $SiH_3SiH(SiH_3)SiH_2SiH_3$, and cyclic silane compounds having the formula Si_mH_{2m} where m=3, 4, 5, 6;
said gaseous oxidizing agent being at least one selected from the group consisting of oxygen, ozone, air N_2O_4, N_2O_3, NO_2, NO, H_2O_2, F_2, Cl_2, Br_2, I_2 and ClF; and
(2) a means for positioning said substrate in said film forming space.

5,366,555

CHEMICAL VAPOR DEPOSITION UNDER A SINGLE REACTOR VESSEL DIVIDED INTO SEPARATE REACTION REGIONS WITH ITS OWN DEPOSITING AND EXHAUSTING MEANS

Michael A. Kelly, 35 Lerida Ct., Portola Valley, Calif. 94028

Continuation of Ser. No. 753,867, Sep. 3, 1991, abandoned, which is a division of Ser. No. 535,888, Jun. 11, 1990, Pat. No. 5,071,670. This application Jun. 1, 1993, Ser. No. 69,679
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719 14 Claims



1. Apparatus for a sequential continuous vapor deposition process in a plurality of physically separated process environments defined within the apparatus, the apparatus comprising:
single reactor vessel means for enclosing the process within an interior space thereof at a predetermined environmental pressure,
substrate mounting means in the interior space for movably positioning a substrate means mounted thereon sequentially through the plurality of separated process environments,
each separated process environment comprising:
gas emission and directing means in the interior space for continuously emitting a predetermined gas from a separate source thereof into the separate process environment, the continuously emitted gas emitted adjacent to the substrate

means when the substrate means is moved into the process environment, the gas emission and directing means emitting the gas at a rate sufficient to prevent diffusion of gas from the interior space into said process environment,

gas exhaust means structurally located to surround the separate process environment, for continuously exhausting substantially all of the gas emitted by the gas emission and directing means from the separate process environment across a pressure differential into the interior space, the pressure differential sufficient to prevent intermixture of gases by diffusion of gases from the interior space, and

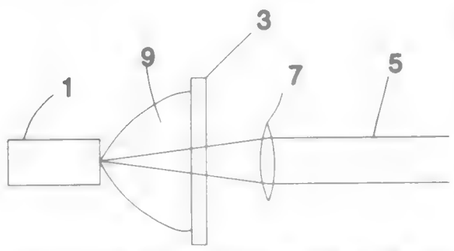
evacuation means communicating with the single reactor vessel means for exhausting gas from the interior space to maintain the interior space at the predetermined environmental pressure.

5,366,556

PROCESS AND APPARATUS FOR PRODUCTION OF DIAMOND-LIKE FILMS

Robert Prince, R.R. #3, Stouffville, Ontario, Canada L4A 7X4 , and Elias Bourdon, #8 Apaco Avenue, Scarborough, Ontario, Canada M1E 5A8

Filed Jan. 14, 1982, Ser. No. 821,416
Int. Cl.[5] C23C *14/00*
U.S. Cl. 118—722 **13 Claims**



1. Apparatus for the production of diamond-like films comprising:

a) a substrate;

b) a source of carbon;

c) means for physically ablating said source of carbon in the vicinity of said substrate such that a carbon film grows on said substrate through bonding of carbon atoms in graphitic form and aliphatic form; and

d) means for directing laser light onto said carbon film, said laser light having a predetermined wavelength selected so as to physically discriminate against formation or retention in said carbon film of said graphitic form of carbon atoms in said carbon film during growth thereof by etching or suppressing said graphitic form while permitting said aliphatic form to remain thereby resulting in a diamond like film on said substrate.

5,366,557

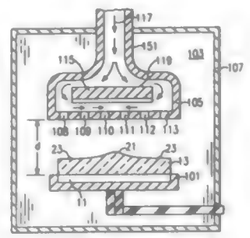
METHOD AND APPARATUS FOR FORMING INTEGRATED CIRCUIT LAYERS

Chen-Hua D. Yu, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 845,502, Feb. 28, 1992, Pat. No. 5,212,116, which is a continuation of Ser. No. 691,070, Apr. 24, 1991, abandoned, which is a continuation of Ser. No. 539,635, Jun. 18, 1990, abandoned. This application Jan. 26, 1993, Ser. No. 8,942
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—725 **1 Claim**

1. An apparatus for forming a material layer upon a substrate comprising a shower head positioned generally above a susceptor;

said shower head enclosing a baffle plate, said baffle plate having a plurality of radial grooves, the width of said



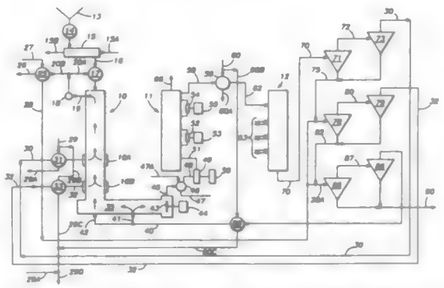
grooves being less near the center of said plate than at the edge.

5,366,558

METHOD OF TREATING BIOMASS MATERIAL

David L. Brink, 1068 Woodside Rd., Berkeley, Calif. 94708

Division of Ser. No. 676,836, Mar. 28, 1991, Pat. No. 5,221,357, which is a continuation of Ser. No. 58,814, Jun. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 324,032, Nov. 23, 1981, Pat. No. 4,384,897, Ser. No. 23,338, Mar. 23, 1979, abandoned, and Ser. No. 681,435, Dec. 13, 1984, abandoned, which is a continuation-in-part of Ser. No. 653,065, Sep. 21, 1984, Pat. No. 4,706,903. This application Jun. 8, 1993, Ser. No. 73,780
Int. Cl.[5] C13K *1/02*; D21B *1/16*; D21C *3/16*
U.S. Cl. 127—43 **1 Claim**



1. Finely ground solids resulting from treatment of lignocellulosic material by mild hydrolysis followed by mechanical disintegration, said hydrolysis being such as to depolymerize principally the hemicellulose content of the lignocellulosic material without substantial depolymerization of the more difficultly depolymerizable cellulosic content of the lignocellulosic material, said finely ground solids having a substantially reduced content or substantially zero content of hemicellulose.

5,366,559

METHOD FOR PROTECTING A SUBSTRATE SURFACE FROM CONTAMINATION USING THE PHOTOPHORETIC EFFECT

Ravindran Periasamy, Cary, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

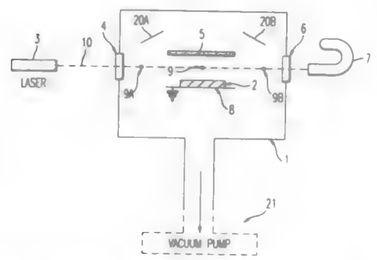
Filed May 27, 1993, Ser. No. 67,795
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—1 **20 Claims**

1. A process for processing a substrate to protect it from particle contamination, comprising the steps of:

disposing a substrate in a processing chamber;

processing a surface of the substrate; and

projecting a first laser beam along a first trajectory which does not contact the substrate surface during the processing step, so that if the first laser beam intersects a particle



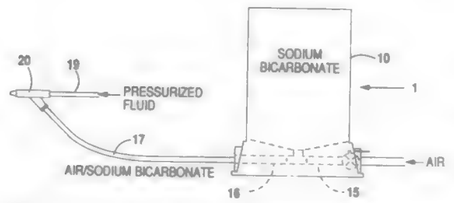
in the processing chamber a photophoretic force is generated by interaction of the first laser beam with that particle so that the photophoretic force captures the particle in the first laser beam.

5,366,560

CLEANING METHOD UTILIZING SODIUM BICARBONATE PARTICLES

Arthur C. Rubey, III, and Andrew M. Taylor, both of San Antonio, Tex., assignors to Yelapa Enterprises, Inc., San Antonio, Tex.

Filed Sep. 3, 1993, Ser. No. 116,405
Int. Cl.[5] B08B *7/00*; B24B *1/00*
U.S. Cl. 134—7 **4 Claims**



1. The method of blasting a contaminated surface by baking soda particles comprising the steps of:

depositing a mass of sodium bicarbonate particles having substantially uniform particle size in a hopper having an inwardly tapering conical bottom surface defining a discharge passage;

exposing the top of said mass to atmospheric pressure;

inserting an orifice ring in said discharge passage having a bore diameter selected for the particle size of the sodium bicarbonate;

disposing a horizontal pipe beneath said orifice ring and sealingly connecting said discharge passage with the bore of said pipe, thereby limiting the gravity flow of said particles from said hopper;

providing a blasting nozzle having a Venturi configuration bore;

supplying pressured fluid to said nozzle to flow through said Venturi configuration bore;

connecting one end of a hose transversely with the minimum diameter portion of said Venturi configuration bore;

connecting the other end of said hose to one end of said pipe, thereby applying a suction force to the bore of said pipe to move said sodium bicarbonate particles in said pipe in a continuous flow stream through said hose and into the pressured water stream issuing from said nozzle; and

adjusting atmospheric air flow into the other end of said pipe to limit the volume of particles flowing through said hose to less than 25 per cent of the flow area of said hose.

5,366,561

AIR PREHEATER CLEANING METHOD

Christopher C. Ginn, Houston, Tex., assignor to Butterworth Jetting Systems, Inc., Houston, Tex.

Filed May 6, 1993, Ser. No. 58,543
Int. Cl.[5] B08B *7/00*
U.S. Cl. 134—18 **8 Claims**

1. A method for automatically cleaning a preheater rotor used in an electrical power plant, the method comprising the steps of:

(a) providing a computer for controlling the cleaning, said computer including user interface means;

(b) entering parameters into the computer defining an area of the rotor to be cleaned and one of a rotor rotation rate and a time to complete the rotor cleaning;

(c) calculating with the computer the other of the rotor rotation rate and the time to complete the rotor cleaning;

(d) moving cleaning means operably coupled to the computer to a starting position in response to a signal from the computer;

(e) activating cleaning means wherein said cleaning means produces a track width;

(f) rotating the rotor at a speed in response to a signal from the computer such that said cleaning means a width of the rotor thereby making a clean track on the rotor;

(g) determining with the computer when a complete clean track has been made on the rotor;

(h) moving said cleaning means in response to a signal from the computer so that a portion of the rotor adjacent the previously cleaned portion is cleaned; and

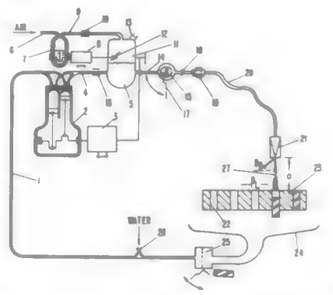
(i) repeating steps f, g and h until the area defined by step b is cleaned.

5,366,562

METHOD FOR REMOVING VISCOELASTIC CONTAMINANTS FROM HOLES

Heinz J. Schwarze, Northeim, and Robert Kopp, Rollhausen, both of Germany, assignors to Continental Aktiengesellschaft, Hanover, Germany

PCT No. PCT/DE91/00098, § 371 Date Oct. 14, 1992, § 102(e) Date Oct. 14, 1992, PCT Pub. No. WO91/12124, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 7, 1991, Ser. No. 923,876
Claims priority, application Germany, Feb. 16, 1990, 4004837
Int. Cl.[5] B08B *3/02*; B29C *47/08*
U.S. Cl. 134—22.12 **9 Claims**



1. A cleaning method for removing tacky, plug-shaped residues of an elastoplastic material from holes having a depth greater than their inner diameter D_L, whereby the elastoplastic material is forced out in one direction while essentially maintaining its plug shape; said method comprising the steps of:

accelerating a liquid jet by employing high pressure of between 150 to 190 bar within a fluid jet valve to a velocity v with which liquid droplets in said liquid jet hit the residues of elastoplastic material, with $v \geqq c$, c being the speed of sound of the residues of elastoplastic material;

forcing out the residues of elastoplastic material by said liquid jet;

wherein the residues of elastoplastic material have a density ρ_K and the liquid of said liquid jet has a density ρ_F with $\rho_K > \rho_F$; and

further comprising the step of adjusting said liquid velocity v and said speed of sound c according to the equation

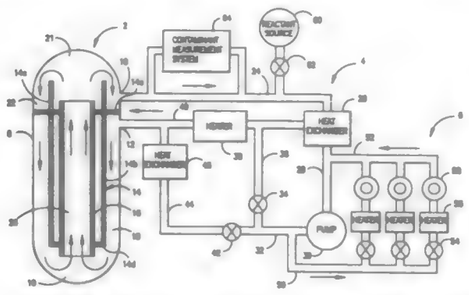
$$V \geq \frac{\rho_K}{\rho_F} \times c.$$

5,366,563

HOT ARGON CLEANING AND PROTECTIVE COATING OF COMPONENTS MADE OF METAL OR ALLOY

Gerald W. McKenzie, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 28, 1992, Ser. No. 997,054
Int. Cl.[5] C23C *22/00*
U.S. Cl. 148—216 **3 Claims**



1. A method for treating a surface of a component made of a zirconium alloy, comprising the steps of:

placing said component inside a channel having an inlet and an outlet;

scrubbing the surfaces of said component by circulating a stream of argon gas through said channel at a velocity on the order of or greater than 100 ft/sec and at a temperature which is below a predetermined temperature at which said zirconium alloy of said component would interact with any reactive gas contaminating said argon gas stream, said argon gas stream entering via said inlet and exiting via said outlet;

recirculating said argon gas stream from said outlet to said inlet;

diverting a portion of said recirculating argon gas stream;

heating said diverted portion of said recirculating argon gas stream to a temperature which is above said predetermined temperature;

removing contaminants from said heated diverted portion of said recirculating argon gas stream by bringing said heated diverted portion of said recirculating argon gas stream into contact with a gettering alloy containing zirconium;

monitoring a level of reactive gas in said recirculating argon gas stream;

in response to detection of a purity level of said recirculating argon gas stream, heating said recirculating argon gas stream to a temperature at which said component surface readily reacts with a protective layer-forming gas; and

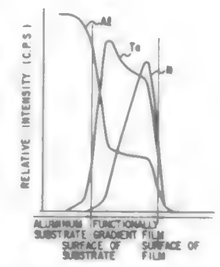
injecting an amount of said protective layer-forming gas into said recirculating argon gas stream sufficient to form a uniform protective layer on said component surface.

5,366,564

HARD WEAR-RESISTANT FILM AND METHOD FOR PRODUCTION THEREOF

Hiroshi Yamagata, Toyama; Akihisa Inoue, 11-806, Kawauchijutaku, Mubanchi, Kawauchi Aoba-ku, Sendai-shi, Miyagiken, and Tsuyoshi Masumoto, Sendai, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan; Ysuyoshi Masumoto and Akihisa Inoue, both of Miyagi, Japan

Filed Sep. 14, 1993, Ser. No. 120,735
Claims priority, application Japan, Sep. 16, 1992, 4-270807
Int. Cl.[5] C22C *21/00*
U.S. Cl. 148—403 **14 Claims**



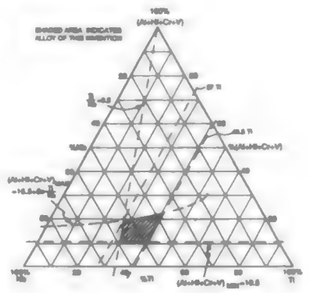
2. A hard wear-resistant film which has a composition and a structure thereof which is obliquely varied from a substantially amorphous metal of a composition of Al_cTa_d (wherein "c" and "d" stand for atomic percentages respectively in the ranges of 60 at %≦c≦80 at % and 20 at %≦d≦40 at %, providing c+d=100 at %) to an (Al, Ta)N crystalline ceramic phase with a nitrogen content thereof increased in the direction of a surface of the film.

5,366,565

NBTIALCRHF ALLOY AND STRUCTURES

Melvin R. Jackson, Niskayuna, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 3, 1993, Ser. No. 25,497
Int. Cl.[5] C22C *27/00*
U.S. Cl. 148—426 **6 Claims**



1. An alloy having a composition consisting essentially of in atom percent according to the following expression:

$$Nb\text{-}Ti_{27\text{-}40.5}\text{-}Al_{4.5\text{-}10.5}\text{-}Hf_{1.5\text{-}5.5}Cr_{4.5\text{-}7.9}V_{0\text{-}6},$$

wherein the ratio of concentrations of Ti to Nb(Ti/Nb) is greater than or equal (≧) to 0.5, and

wherein the maximum concentration of the Hf+V+Al+Cr additives is less than or equal (≦) to the expression:

$$16.5+(5\times Ti/Nb),$$

wherein the minimum concentration of the Hf+V+Al+Cr additives is 10.5,

said alloy being ductile and having higher tensile and rupture strength at temperatures above 1,000 degrees centigrade, and

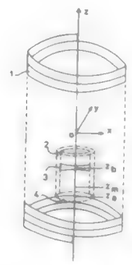
wherein the balance is essentially niobium.

5,366,566

METHOD FOR PREPARING A VERY HIGH QUALITY MAGNETIC MATERIAL

Robert Tournier, Bilieu, France, assignor to Centre National de la Recherche Scientifique, Paris, France

PCT No. PCT/FR90/00724, § 371 Date Jul. 31, 1991, § 102(e) Date Jul. 31, 1991, PCT Pub. No. WO91/05880, PCT Pub. Date May 2, 1991
PCT Filed Oct. 10, 1990, Ser. No. 730,912
Claims priority, application France, Oct. 13, 1989, 89 13869
Int. Cl.[5] H01F *1/02*
U.S. Cl. 148—103 **11 Claims**



1. A method for preparing a sample of a magnetic compound having a magnetic susceptibility (χ), comprising the following steps:

(a) providing a magnetic induction (B), which has a magnetic induction gradient (dB/dz) along a vertical reference axis z in a Cartesian set of mutually orthogonal reference axes x, y, and z, such that a product (χ·B·dB/dz) of said magnetic induction (B), said magnetic induction gradient (dB/dz) and said magnetic susceptibility (χ) has a direction along said z axis and opposed to the direction of the gravitational force being exerted on the sample so that a magnetic force (χ·B·dB/dz)/μ0, where μ0 is $4\pi\times10^{-7}$, is at least equal to the gravitational force acting on the sample being also subjected to said magnetic force at a particular point on said vertical reference axis z, and

(b) heating the sample.

5,366,567

METHOD FOR CHROMATING TREATMENT OF ZINC COATED STEEL

Takao Ogino; Arata Suda, both of Hiratsuka; Takayuki Aoki, Yokohama, and Mitsuyuki Koga, Sakura, all of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US91/07305, § 371 Date Apr. 7, 1993, § 102(e) Date Apr. 7, 1993
PCT Filed Oct. 7, 1991, Ser. No. 39,155
Claims priority, application Japan, Oct. 8, 1990, 2-270131
Int. Cl.[5] C23C *22/37*
U.S. Cl. 148—258 **20 Claims**

1. A method for the chromate treatment of zinc coated steel, said method comprising steps of:

(1) providing an aqueous liquid chromate containing composition as made by substeps (1.1)–(1.2) or by substeps (1.1')–(1.3'), where substeps (1.1)–(1.2) are:

(1.1) preparing a preliminary aqueous liquid composition which consists essentially of water and:

(1.1.1) a source of ions containing hexavalent chromium to provide from 3.5 to 50.0 grams per liter (hereinafter "g/L") of dissolved hexavalent chromium;

(1.1.2) a source of trivalent chromium ions to provide from 2.0 to 40.0 g/L of trivalent chromium: and

(1.1.3) a source of phosphate ions to provide from 1.0 to 100 g/L of phosphate ions; and, optionally,

(1.1.4) the residue from a reducing agent added to reduce some of the hexavalent chromium originally present to trivalent chromium,

said preliminary aqueous liquid composition having a weight ratio of trivalent chromium to hexavalent chromium in the range from 0.25 to 1.5 and a weight ratio of phosphate ions to total chromium ion in the range from 0.1 to 1.2,; and

(1.2) adding to the preliminary aqueous liquid composition prepared in step (1.1):

(1.2.1) an amount of colloidally dispersed silica that provides a ratio of from 0.1 to 1.2 for the weight of dispersed silica to total weight of chromium ions in the resulting composition; and

(1.2.2) an amount of silane coupling agent that provides a ratio of the moles of silane coupling agent in the resulting composition to the moles of hexavalent chromium in the resulting composition in the range from 0.05 to 0.3;

and substeps (1.1') - (1.3') are:

(1.1') preparing a first aqueous partial composition comprising a source of hexavalent chromium and a source of trivalent chromium and, optionally, also comprising the residue from a reducing agent added to reduce some of the hexavalent chromium originally present to trivalent chromium;

(1.2') preparing a second aqueous partial composition comprising phosphate ions, dispersed colloidal silica, and a silane coupling agent; and

(1.3') mixing said first and second aqueous partial compositions to produce an aqueous liquid chromate containing composition that could have been prepared by steps (1.1)–(1.2);

(2) covering the surface of the zinc coated steel with a layer of the aqueous liquid chromate containing composition provided in step (1), said layer containing from 10 to 150 milligrams of total chromium per square meter of zinc coated steel surface covered;

and

(3) drying into place on the coated steel surface the covering liquid put in place in step (2).

5,366,568

METHOD OF PRODUCING PRIMARILY TEMPERED MARTENSITE STEEL

Douglas G. Bruce, 2223 Fourth St., Perry, Iowa 50220

Filed Oct. 13, 1993, Ser. No. 135,718
Int. Cl.[5] C21D *8/00, 9/00*
U.S. Cl. 148—651 **13 Claims**

1. A method of producing primarily tempered martensite steel comprising:

heating steel to approximately 1650° F., the steel including carbon present in the range of 0.20–0.35 weight percent, manganese present in the range of 1.30–1.65 weight percent, sulfur present in an amount not to exceed 0.015 weight percent, and phosphorus present in an amount not to exceed 0.015 weight percent; and

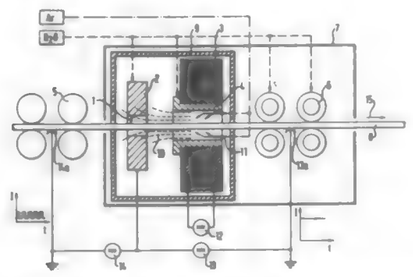
quenching the steel in water before it cools below approximately 1475° F.

5,366,569

METHOD FOR PRODUCING A CORROSION-RESISTANT COMPOSITE WIRE

Volker Müller; Manfred Fehn; Hans Sommer, all of Saalfeld; Hans-Jürgen Grunwald, and Ulf Höltge, both of Magdeburg, all of Germany, assignors to SKET Schwermaschinenbau Magdeburg GmbH, Magdeburg, Germany

Filed Mar. 30, 1993, Ser. No. 40,011
Claims priority, application Germany, Mar. 31, 1992, 4211167
Int. Cl.[5] C22F *3/00*; C21D *9/52*; H05B *7/18*
U.S. Cl. 148—525 10 Claims



1. A process for producing a corrosion-resistant composite wire, comprising:

providing a surface-treated core wire;

forming a composite wire by sheathing the core wire in a longitudinally curved trimmed metal strip and welding the metal strip longitudinally to provide a metal sheath on the core wire;

drawing the composite wire to form fit the metal sheath to the core wire and to reduce the cross section of the composite wire by at least approximately 65%; and

annealing the composite wire by raising the temperature of the metal sheath to an annealing temperature and raising the temperature of the core wire to a temperature less than an annealing temperature.

5,366,570

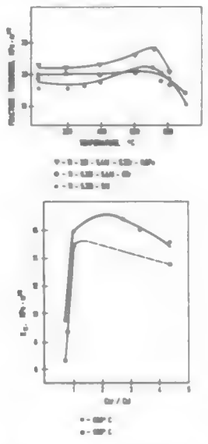
TITANIUM MATRIX COMPOSITES

Vladislav I. Mazur; Yuri N. Taran; Svetlana V. Kapustnikova, all of Dnepropetrovsk; Viktor I. Trefilov, Kiev; Sergey A. Firstov, Kiev, and Leonid D. Kulak, Kiev, all of Ukraine, assignors to Cermics Venture International, Dublin, Ireland

Filed Mar. 2, 1993, Ser. No. 25,223
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—669 61 Claims

1. A titanium matrix composite having titanium-ceramic reinforcement therein, said composite not containing manganese and iron, said composite comprising:

between about 9% to about 20% by weight silicon, between about 2% to about 13% by weight aluminum, between about 0.01% to about 15% at least one element



selected from the group consisting of zirconium, chromium, molybdenum, carbon, and boron, and

the balance is titanium.

5,366,571

HIGH PRESSURE-RESISTANT NONINCENDIVE EMULSION EXPLOSIVE

Thomas C. Rube, Duquesne, Pa., and Pilaka P. Rao, Baghlingampalli, India, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 15, 1993, Ser. No. 2,860
Int. Cl.[5] C06B *31/28, 45/00, 29/08*
U.S. Cl. 149—2 20 Claims

1. An emulsion explosive composition having improved sympathetic deterioration capability and enhanced pressure resistance against static and dynamic pressure desensitization caused by shooting other explosive charges in adjacent boreholes in mines, comprising:

high density, high strength hollow microspheres/bulking agents present in the composition in amounts ranging from 1.0 to 15.0 weight percent;

inorganic nitrates selected from the group consisting of sodium nitrate, ammonium nitrate and calcium nitrate present in the composition in amounts ranging from about 10.0 to about 90.0 weight percent;

organic nitrate selected from the group consisting of monomethylamine nitrate, monoethylamine nitrate and hydrazine nitrate present in the composition in amounts ranging from 1.0 to 30.0 weight percent;

water present in the composition in amounts ranging from about 4.0 to about 20.0 weight percent;

an emulsifier present in the composition in amounts ranging from about 0.2 to about 5.0 weight percent;

hydrocarbon fuels present in the composition in amounts ranging from about 2.0 to about 10.0 weight percent; and

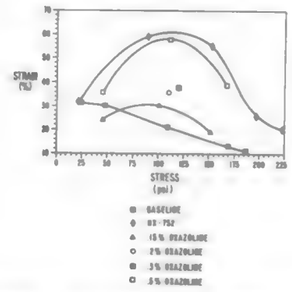
chlorinated paraffin oil present in the composition in amounts ranging from 1.0 to 20.0 weight percent.

5,366,572

OXAZOLINE BONDING AGENTS IN COMPOSITE PROPELLANTS

R. Scott Hamilton, Bear River City; Robert B. Wardle, Logan, and Jerald C. Hinshaw, Pleasant View, all of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed May 20, 1993, Ser. No. 65,173
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.9 20 Claims



1. A composite rocket propellant formulation comprising:

a polymeric binder;

an oxidizing salt which functions as a cationic polymerization catalyst; and

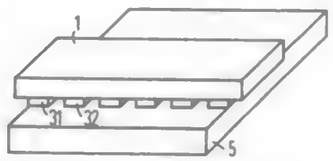
a bonding agent comprising a compound containing multiple oxazoline functional groups which are capable of being polymerized by said oxidizing salt, wherein said bonding agent is incorporated into the composite rocket propellant at a concentration greater than about 0.1% by weight.

5,366,573

UV-CURABLE ADHESIVE SEMICONDUCTOR CHIP MOUNTING PROCESS

Heiner Bayer, Olching; Barbara Lehner, Munich; Oskar Wirbeer, and Gregor Unger, both of Germering, all of Germany, assignors to Siemens Nixdorf Informationssysteme AG, Paderborn, Germany

PCT No. PCT/DE90/00290, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/01043, PCT Pub. Date Jan. 24, 1991
Continuation of Ser. No. 809,482, Feb. 21, 1992, abandoned.
This PCT application Apr. 17, 1990, Ser. No. 111,023
Claims priority, application Germany, Jul. 12, 1989, 3923023
Int. Cl.[5] B32B *31/00*; B23K *1/00*
U.S. Cl. 156—64 6 Claims



1. A process for mounting semiconductor chips on a device with the aid of an adhesive composition, which comprises the following process steps:

applying a UV-curable adhesive layer to regions of a temporary carrier provided as adhesion sites,

placing semiconductor chips to be mounted over the adhesion sites on the temporary carrier with an active side opposite a later soldering site in a mirror-inverted arrangement with respect to a later mounting on the device,

determining precise positions of the semiconductor chips on the temporary carrier (1) relative to a specified position and, if necessary, aligning the semiconductor chips in accordance with said precise positions,

fixing positions of the semiconductor chips by irradiating the adhesive layer with UV light,

curing the adhesive layer at elevated temperature,

soldering a rear side of the semiconductor chips glued to the temporary carrier to the device in a soldering process, and

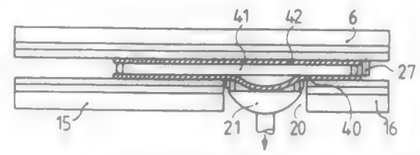
releasing an adhesive bond between the semiconductor chips and the temporary carrier and dissolving substantially all adhesive residues on the semiconductor chips by a solvent.

5,366,574

PROCESS FOR ASSEMBLING INSULATING GLASS PANES WHICH ARE FILLED WITH A GAS OTHER THAN AIR

Karl Lenhardt, Neuhausen-Hamberg, and Uwe Bogner, Pforzheim-Huchenfeld, both of Germany, assignors to Lenhardt Maschinenbau GmbH, Neuhausen-Hamberg, Germany

PCT No. PCT/EP89/00493, § 371 Date Nov. 5, 1990, § 102(e) Date Nov. 5, 1990, PCT Pub. No. WO89/11021, PCT Pub. Date Nov. 16, 1989
PCT Filed May 4, 1989, Ser. No. 613,504
Claims priority, application Germany, May 4, 1988, 3815139; Sep. 28, 1988, 3832836
Int. Cl.[5] B32B *31/16*; E06B *3/24*
U.S. Cl. 156—102 11 Claims



1. A process of assembling insulating glass panes having an interior space, which is filled with a gas other than air and is disposed between a first glass plate and a second glass plate, which along their edges are spaced apart by a spacer and are adhesively joined, comprising the steps of:

attaching the spacer said first glass plate

bending an edge portion of at least one glass plate,

attaching the spacer to said second glass plate while the bending is maintained so that an access to the interior space between the glass plates remains open,

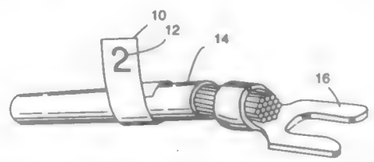
feeding gas into the interior space through the access, and sealing the access.

5,366,575

PERMANENT MARKING ARTICLE AND METHOD OF APPLICATION

Karen E. Staff, Cedar Park, Tex., and James M. Scott, Jacksonville, Fla., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 4, 1992, Ser. No. 925,571
Int. Cl.[5] B31C *13/00*
U.S. Cl. 156—185 7 Claims



1. A permanent marking article for use with an elongate object, comprising a sheet of transparent film consisting of a polymer selected from the group consisting of uncured

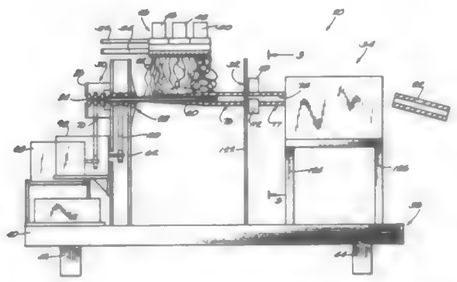
EPDM, partially cured EPDM, Fully cured EPDM, uncured self-fusing silicone gum, partially cured self-fusing silicone gum, fully cured self-fusing silicone gum, nitrile and mixtures thereof, said film having an upper and a lower surface, at least a portion of the upper surface being imprintable, said polymeric film further being capable of self-adherence and fusible to itself in the relaxed state with the passage of time in the absence of applied heat, said marking article remaining transparent after fusion such that any marking placed on any portion of the article remains readable even if covered by one or more overwrapping portions of said sheet.

5,366,576

METHOD FOR PRODUCING TUBULAR PRODUCTS FROM NONWOVEN FIBERS

Robert A. Clack, Sun Prairie, Wis., assignor to Clack Corporation, Windsor, Wis.

Filed Apr. 14, 1993, Ser. No. 48,281
Int. Cl.[5] B32B *1/10*
U.S. Cl. 156—173 **12 Claims**



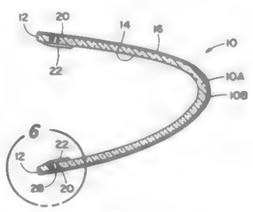
1. A method of manufacturing tubular products comprising:
A. forming a tube by depositing nonwoven fibers on a mandrel as said mandrel is rotated at a designated rotational velocity; and then
B. withdrawing said tube from said mandrel by engaging a periphery of said tube with a rotating threaded roller.

5,366,577

METHOD OF MANUFACTURING A LENS FOR USE AS A PART OF AN AIRCRAFT

Robert N. Hart, and David M. Trebes, both of Tulsa, Okla., assignors to Nordam, Tulsa, Okla.

Continuation-in-part of Ser. No. 791,881, Nov. 13, 1991, abandoned. This application Mar. 22, 1993, Ser. No. 34,261
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—222 **11 Claims**



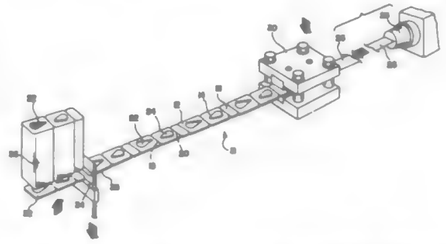
1. A method of manufacturing a lens for use as a part of an aircraft comprising:
cutting a sheet of a laminate of acrylic and polycarbonate of selected thickness into a blank having a configuration required by the ultimate lens configuration;
heating the blank and forming it around a mold to provide a three dimensional lens body of desired size and configuration having an uninterrupted circumferential edge;
applying a narrow strip seal of compressible material and of selected thickness on said lens body inner surface adjacent substantially the full circumferential edge of said lens body;
forming spaced apart openings in said lens body adjacent said circumferential edge, such openings passing through said strip seal; and
inserting a bushing in each of said openings in said lens body and said strip seal, each bushing having a length greater than the thickness of said lens body and less than the thickness of said lens body and said strip seal.

5,366,578

FITMENT FORMING PROCESS

William Z. Vanbook, Fort Mill; John T. Roberts, Clover, both of S.C., and Larry J. Mattson, Charlotte, N.C., assignors to Robert Systems, Inc., Charlotte, N.C.

Continuation of Ser. No. 807,157, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 676,267, Mar. 26, 1991, Pat. No. 5,134,765. This application Jul. 16, 1993, Ser. No. 93,310
Int. Cl.[5] B29C *43/22*
U.S. Cl. 156—245 **4 Claims**



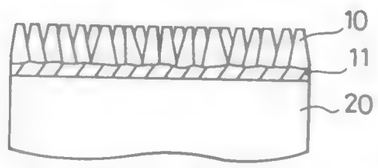
1. A process for forming a cartridge of fitments comprising the steps of:
providing a generally continuous strip of thermoplastic material;
applying pressure to an end portion of said strip while said strip is in cold form to deform a portion of said strip into a raised plug, said applied pressure further forming an aperture in said strip, said plug and said aperture being part of a predetermined configuration, said configuration retaining continuity with said generally continuous strip;
repeating said step of applying pressure in cold form to deform said strip into a plurality of said plugs and further forming a plurality of apertures along said strip to form a chain of predetermined configurations with said chain being generally continuous with said generally continuous strip of thermoplastic material;
severing one of said predetermined configurations from said chain to terminate said chain with a terminal predetermined configuration;
continuing to sever the terminal predetermined configurations from said chain to form a plurality of terminated predetermined configurations; and
stacking said terminal predetermined configurations to form a cartridge containing a plurality of said terminal predetermined configurations.

5,366,579

INDUSTRIAL DIAMOND COATING AND METHOD OF MANUFACTURING

Shunpei Yamazaki, Tokyo, and Masaya Kadono, Atsugi, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Mar. 7, 1991, Ser. No. 666,671
Claims priority, application Japan, Mar. 26, 1990, 2-76308
The portion of the term of this patent subsequent to Oct. 19, 2010, has been disclaimed.
Int. Cl.[5] B32B *9/00*
U.S. Cl. 156—247 **24 Claims**



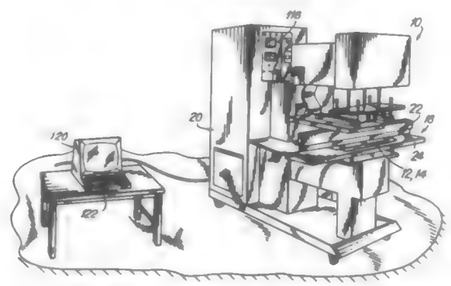
1. A method of forming a diamond coating comprising a number of diamond crystals on a surface comprising:
forming said diamond coating directly on a substrate;
treating said diamond coating with a plasma or sand blast in order to enhance the adhesivity of the coating to said surface;
joining said diamond coating after the plasma treating or sand blast treating to said surface by means of an adhesive; and
removing said substrate from said diamond coating.

5,366,580

HIGH FREQUENCY WELDING MACHINE

Richard W. Czach, West Babylon, N.Y., assignor to Cosmos Electronic Machine Corp., Farmingdale, N.Y.

Filed Jan. 8, 1992, Ser. No. 818,141
Int. Cl.[5] B32B *31/00*; G05G *15/00*
U.S. Cl. 156—359 **7 Claims**



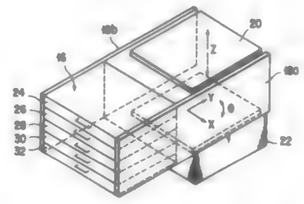
1. A computing device for a high frequency welding machine for thermoplastic materials, comprising:
a central processing unit;
means for sensing a plate current in an oscillator tube of the machine;
means for sensing operating temperature of dies of the machine, each sensing means being connected to the central processing unit to convey operating parameters of the machine to the central processing unit; and
means for activating components of the machine, connected to the central processing unit so that commands can be issued to adjust operating parameters of the machine.

5,366,581

FILM PASTING APPARATUS

Takashi Kuramoto; Tetsuji Utsuda; Takeo Onga, all of Tokyo; Takashi Kominato, Kanagawa; Hidenori Kaneda, Tokyo, and Mitsuo Taga, Kodaira, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo and Fuji Photo Film Co., Ltd., Minami-ashigara, both of Japan

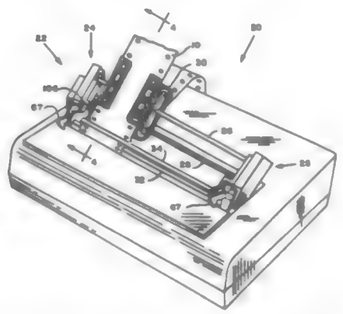
Filed May 20, 1992, Ser. No. 885,851
Claims priority, application Japan, May 24, 1991, 3-120437; May 24, 1991, 3-120438; Sep. 27, 1991, 3-249882
Int. Cl.[5] B32B *35/00*; G03B *27/52, 27/04*
U.S. Cl. 156—364 **35 Claims**



1. A film pasting apparatus for pasting a color separation film on a base film in a photomechanical process, comprising:
a lower table on which a base film is placed, said lower table having optical sensors;
an upper table disposed above said lower table and having suction means and pasting means;
a color separation film tray for storing a color separation film on which a first registration mark having two line segments defining a predetermined angle and a second registration mark having two line segments parallel to the two line segments of the first registration mark are formed at positions corresponding to said sensors;
film picking means for changing a positional relationship between said color separation film tray and said upper table to locate said color separation film tray at a position below said upper table and to draw the color separation film to said upper table by said suction means;
film registering means for changing a positional relationship between said color separation film tray and said upper table to withdraw said color separation film tray from the position below said upper table and to detect the registration marks of the color separation film drawn to said upper table by using said sensors, for aligning a positional relationship between said upper table and said lower table based on a result of detection of the registration marks, and for placing the color separation film on the base film placed on said lower table; and
means for operating said pasting means to paste the color separation film on the base film, said pasting means further including:
means for holding a distal end portion of a tape supplied from a tape source provided on said upper table;
a shuttle member, capable of moving on said upper table, for supporting first and second clamps for clamping the distal end portion of the tape, the first and second clamps being separated from each other by a predetermined distance;
tape feed means for feeding the tape from said tape source by moving said shuttle member in a direction apart from the tape source by the predetermined distance with the first clamp clamping the distal end of the tape and the second clamp opening, stopping the shuttle when the second clamp passes through said holding means, and closing the second clamp to clamp the tape;
means for cutting the tape fed by said tape feed means at a position between said second clamp and said holding means; and
means for transferring said shuttle member to a tape pasting head disposed at a predetermined position on said

upper table and supplying the tape clamped by said first and second clamps to the tape pasting head.

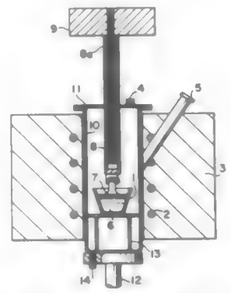
5,366,582
LABEL SEPARATING APPARATUS
Gerald C. Freeman, Norwalk, and John J. Balogh, Jr., Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 21, 1990, Ser. No. 631,527
Int. Cl.[5] B32B *35/00*
U.S. Cl. 156—584 8 Claims



1. An apparatus, for separating labels from a web of release liner, comprising:
(a) a pair of bars for defining a label release path;
(b) first means for mounting said bars; said bars being mounted in said first mounting means so that at least one of said bars is movable, relative to the other bar, between a first position in which said bars define said label release path and a second position in which a gap is formed between said bars to facilitate threading of said web between said bars; and,
(c) second means for laterally mounting said first mounting means to the platen of an electronic computer printer or typewriter.

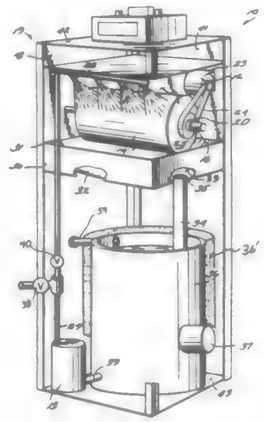
5,366,583
PROCESS FOR PREPARING BARIUM TITANATE SINGLE CRYSTALS
Akihito Kuroasaka, Toda; Kazuhiko Tomomatu, Tokyo; Osamu Nakao, Tokyo; Shoji Ajimura, Tokyo, and Haruo Tominaga, Sakura, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan
Filed Oct. 8, 1992, Ser. No. 957,902
Claims priority, application Japan, Oct. 8, 1991, 3-289076; Apr. 28, 1992, 4-108235
Int. Cl.[5] C30B *29/32*
U.S. Cl. 117—3 8 Claims

1. A process for preparing a single crystal of barium titanate comprising the steps of:
a) melting a starting material mixture of titanium dioxide and an oxide or carbonate of barium to make a melt;
b) growing a single crystal on the surface of a seed crystal of $BaTiO_3$ by bringing said seed crystal into contact with said melt obtained in step a) in a closed atmosphere comprising an inert gas and oxygen and having an oxygen partial pressure of 0.02 atm. or less; and



c) heating the single crystal obtained in step b) in a closed atmosphere comprising an inert gas and oxygen and having a higher oxygen partial pressure than that in step b).

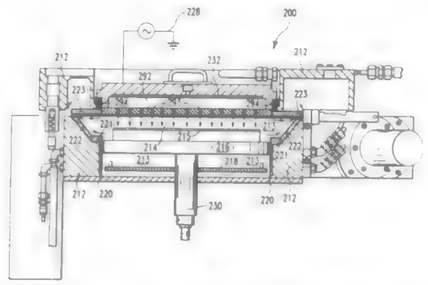
5,366,584
REMOVING UNCURED EMULSION FROM STENCILS DURING PHOTOMASK PRODUCTION
Raymond L. Zakowski, and Randy S. Willis, both of Vista, Calif., assignors to Rayzist Photomask, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 833,848, Feb. 11, 1992. This application Apr. 6, 1993, Ser. No. 44,063
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—642 17 Claims



1. Apparatus for removing uncured emulsion from a stencil in the production of photomasks, comprising:
a drum having an exterior surface for receipt of a stencil thereon;
means for holding a stencil onto said drum exterior surface;
means for mounting said drum for rotation about an axis;
a nominal 1/32 to ½ horsepower electrical motor for rotating said drum about its axis of rotation;
means for directing streams of high pressure liquid at sufficient temperature, and with sufficient force, and for a sufficient period of time, against a stencil mounted on said drum and rotating therewith to remove uncured emulsion from the stencil;
control means for controlling operation of said motor;
a portable cabinet containing said drum, said means for mounting said drum for rotation, and said means for directing streams of liquid; and an access door to said cabinet;
means for collecting liquid running off a stencil mounted on said drum; and
conduit means for connecting said pump, nozzles, and collecting means for recirculating liquid.

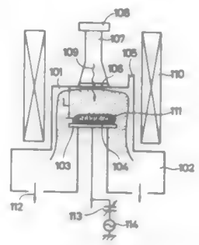
13. Apparatus for removing uncured emulsion from a stencil in the production of photomasks, comprising:
a drum having an exterior surface for receipt of a stencil therein;
means for holding a stencil onto said drum exterior surface;
means for mounting said drum for rotation about an axis;
means for rotating said drum about its axis of rotation at an angular speed between about 50–100 rpm;
means for directing streams of high pressure liquid at sufficient temperature, and with sufficient force, for a sufficient period of time, against a stencil mounted on said drum and rotating therewith to remove uncured emulsion from the stencil; said means comprising a high pressure pump and a plurality of V-jet nozzles;
means for collecting liquid running off a stencil mounted on said drum;
conduit means connecting said pump, nozzles and collecting means for recirculating liquid;
control means for controlling operation of said motor and said pump;
a portable cabinet containing said drum, said means for mounting said drum for rotation, and said means for directing streams of liquid; and
an access door to said cabinet.

5,366,585
METHOD AND APPARATUS FOR PROTECTION OF CONDUCTIVE SURFACES IN A PLASMA PROCESSING REACTOR
Robert Robertson, Palo Alto; Kam S. Law, Union City, and John M. White, Hayward, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.
Filed Jan. 28, 1993, Ser. No. 10,975
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—643 29 Claims



17. A method of protecting conductive portions of a plasma processing chamber, comprising the steps of:
providing an insulative barrier material having an effective plasma electrical barrier thickness greater than 200 Angstroms on electrically conductive portions of said processing chamber otherwise exposed to ions of a plasma; and
generating said plasma in a region of said processing chamber containing a substrate to be processed.

5,366,586
PLASMA FORMATION USING ELECTRON CYCLOTRON RESONANCE AND METHOD FOR PROCESSING SUBSTRATE BY USING THE SAME
Seiji Samukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Feb. 3, 1993, Ser. No. 12,933
Claims priority, application Japan, Feb. 3, 1992, 4-17396; Feb. 18, 1992, 4-29820
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 18 Claims



1. Method for generating plasma by utilizing electron cyclotron resonance, comprising the steps of:
introducing a microwave having a frequency bandwidth into a plasma formation chamber, said frequency bandwidth having a range of at least +/−4% of a center frequency for increasing absorbing efficiency of the microwave to produce a high density plasma; and
applying a magnetic field to said microwave in a direction perpendicular to an electric field of said microwave, said magnetic field having a flux density range dependent upon the range of said frequency bandwidth of said microwave so as to meet a condition of electron cyclotron resonance.

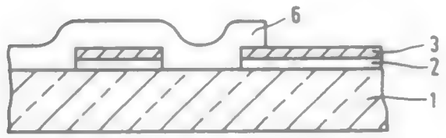
5,366,587
PROCESS FOR FABRICATING MICROMACHINES
Minoru Ueda, and Michitomo Iiyama, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 26, 1992, Ser. No. 887,749
Claims priority, application Japan, May 24, 1991, 3-149461; May 24, 1991, 3-149462; May 24, 1991, 3-149463
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—651 20 Claims

1. A process for manufacturing a micromachine comprising a machine element supported on a substrate, comprising the steps of:
(a) successively depositing on the substrate machine part layers and removable sacrificial layers made of an oxide ceramic material containing a rare earth, Ba, and Cu, and
(b) partially removing said sacrificial layers and said machine parts layers so as to leave said machine element.

5,366,588
METHOD OF MANUFACTURING AN ELECTRICALLY CONDUCTIVE PATTERN OF TIN-DOPED INDIUM OXIDE (ITO) ON A SUBSTRATE
Monica Scholten; Johannes E. A. M. Van Den Meerakker, and Johannes W. M. Jacobs, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 3, 1993, Ser. No. 25,683
Claims priority, application European Pat. Off., Mar. 13, 1992, 92200732
Int. Cl.[5] H01L *21/00, 21/02, 21/312*
U.S. Cl. 156—656 16 Claims

1. A method of manufacturing an electrically conductive pattern of tin-doped indium oxide (ITO) on a substrate, in which method a layer of tin-doped indium oxide is provided on

the substrate after which the layer is etched in accordance with a pattern using an aqueous etching bath which contains halogen acid and a liquid having a lower dielectric constant than water.

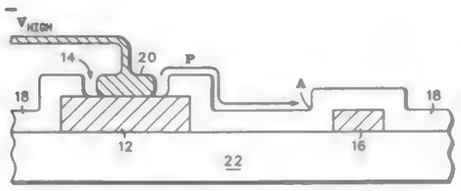


5,366,589

BONDING PAD WITH CIRCULAR EXPOSED AREA AND METHOD THEREOF

Li-Hsin Chang, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1993, Ser. No. 152,355
Int. Cl.[5] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—657 **15 Claims**



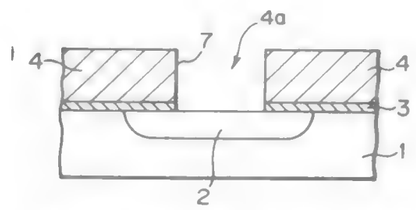
6. A method of bonding to a pad, comprising the steps of:
providing a metal area for receiving a high voltage input signal;
disposing a passivation layer on top of said metal area for providing insulation;
shaping said passivation layer on top of said metal area to create an exposed portion of said metal area having a smooth curvature; and
attaching a bonding wire to said exposed portion of said metal area for receiving said high voltage input signal.

5,366,590

DRY ETCHING METHOD

Shingo Kadomura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 17, 1994, Ser. No. 214,122
Claims priority, application Japan, Mar. 19, 1993, 5-060755
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—662 **8 Claims**



1. A dry-etching method which comprises performing etching on a silicon oxide layer formed on a silicon nitride layer with a plasma of etching gas composed mainly of a fluorocarbon compound represented by the formula of C_xF_y (where $y \leqq x+2$, x and y being natural numbers), said plasma being generated in an etching apparatus capable of generating a plasma having an ion density higher than $10^{11}/cm^3$.

5,366,591

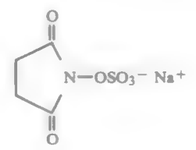
METHOD AND APPARATUS FOR CROSSLINKING INDIVIDUALIZED CELLULOSE FIBERS

Richard A. Jewell, 5215 146th Ave. SE., Bellevue, Wash. 98006

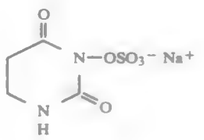
Continuation-in-part of Ser. No. 665,761, Mar. 7, 1991, Pat. No. 5,252,275, and Ser. No. 607,268, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 395,208, Aug. 17, 1989, Pat. No. 5,225,047, which is a continuation-in-part of Ser. No. 284,885, Dec. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 140,922, Dec. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 4,729, Jan. 20, 1987, abandoned. This application Jan. 13, 1992, Ser. No. 820,333
Int. Cl.[5] D21H *11/20*
U.S. Cl. 162—9 **6 Claims**

1. A method of forming a crosslinked cellulose product, comprising the steps of:
exposing cellulose fibers to a solution comprising a catalyst and a crosslinking agent comprising a cyclic N-sulfatoimide wherein the cyclic N-sulfatoimide is selected from the group consisting of:

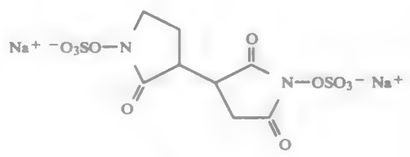
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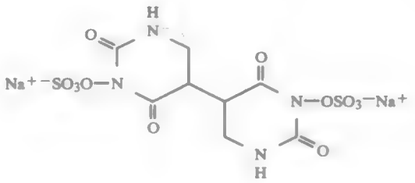
II



III



IV



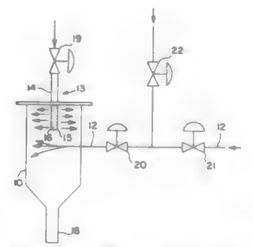
and the catalyst is a basic catalyst, the catalyst and crosslinking agent being exposed to the cellulose fiber in a sufficient amount for a sufficient period of time at a sufficient temperature to crosslink molecules of cellulose in the fibers.

5,366,592

DIGESTER SAMPLING DEVICE

Jerry C. Ford, Fernandina Beach, Fla., assignor to ITT Rayonier Inc., Stamford, Conn.

Filed Oct. 9, 1992, Ser. No. 960,483
Int. Cl.[5] D21C *7/12*
U.S. Cl. 162—49 **5 Claims**



STEP	19	20	21	22	PURPOSE
1	OPEN	CLOSED	OPEN	OPEN	CLEAR VALVE C TO DIGESTER
2	OPEN	OPEN	OPEN	CLOSED	TAKE SAMPLE
3	OPEN	CLOSED	OPEN	OPEN	CLEAR VALVE C TO DIGESTER
4	OPEN	OPEN	CLOSED	OPEN	CLEAR VALVE B TO SAMPLER
5	CLOSED	CLOSED	CLOSED	CLOSED	SEQUENCE COMPLETE

1. A wood pulp sampling device for obtaining a sample wood pulp from a wood chip digester comprising:
a conduit from a digester;
an array of valve means comprised of individual valve means on said conduit for sequentially opening and closing said individual valve means,
said array of valves comprising at least a first valve means for clearing said conduit from said digester;
a second valve means for opening and closing said conduit from said digester; and
a third valve means for opening and closing said conduit for ingress of a pulp sample from said digester into a flash vessel means;
said flash vessel means interconnected via said conduit with said digester comprising an outlet means and a quench means;
said quench means for said flash vessel means comprising a quench medium conduit; a quench medium injecting means for injecting a quench medium into said flash vessel means; and a quench medium valve means,
said array of valve means of individual valve means and quench medium valve means sequentially operably, interconnected with said digester and said flash vessel means; wherein the array of valve means further comprises a valve control means for said first, second and third valve means sequentially opening and closing in a predetermined manner; and
means for catching a sample of wood pulp from said outlet for said flash vessel means.

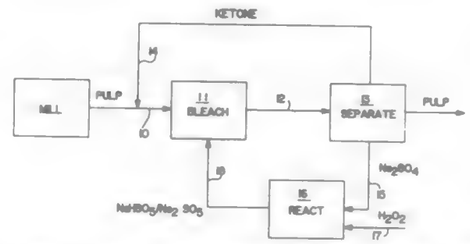
5,366,593

BLEACHING OF LIGNOCELLULOSIC MATERIAL WITH IN-SITU-GENERATED DIOXIRANE

Chung-Li Lee, Vancouver, Canada; Robert W. Murray, St. Louis, Mo.; Kenneth Hunt, West Vancouver, Canada; James T. Wearing, Vancouver, Canada; Robert M. Hogikyan, Burnaby, Canada; Colin W. Oloman, Vancouver, Canada, and Jianxin Chen, North Vancouver, Canada, assignors to Pulp & Paper Research Institute of Canada, Pointe Claire, Canada and The Curators of the University of Missouri, Columbia, Mo., a part interest

Continuation-in-part of Ser. No. 653,639, Feb. 12, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 927,164
Int. Cl.[5] D21C *3/20, 9/16*
U.S. Cl. 162—72 **35 Claims**

1. A process for bleaching a chemical pulp which comprises the steps of (a) mixing the pulp at a pH of from 6.5 to 8 and at a temperature of from 20° to 50° C. with amounts of reactants comprising a peroxy sulfate as an oxygen donor and at least 4% by weight based on oven-dried pulp of a ketone, in proportions



effective to produce in-situ an amount effective to bleach the pulp of a water-soluble dioxirane; and (b) bleaching the pulp with the dioxirane generated in-situ therein.

5,366,594

PROCESS OF FORMING A CELLULOSE PRODUCT HAVING A HIGH CONTENT OF SILICATE CROSS-LINKED CELLULOSE POLYMER

Charles Capps, Little Rock, Ark., assignor to Biofoam Industries, Inc., Little Rock, Ark.

Division of Ser. No. 421,094, Oct. 13, 1989, Pat. No. 5,133,834, which is a continuation-in-part of Ser. No. 268,747, Nov. 8, 1988, abandoned. This application May 4, 1992, Ser. No. 877,752
Int. Cl.[5] D21C *3/06*
U.S. Cl. 162—84 **6 Claims**

1. The process of forming a slurry containing a cellulose product having a relatively high content of silicate cross-linked cellulose polymer comprising the steps of:
(a) heating rice hulls under pressure in an aqueous solution containing sodium sulfite while maintaining the pH of the rice hull pulp formed at about pH 6.0 to about pH 8.0;
(b) withdrawing the formed liquor from the rice hull pulp formed; and
(c) heating the rice hull pulp under pressure in the presence of sodium bisulfite and sulfuric acid, thereby forming said slurry containing a cellulose product having a relatively high content of silicate cross-linked cellulose polymer.

5,366,595

MOBILE APPARATUS FOR PYROLYZING CARBONACEOUS MATERIAL AND RELATED METHOD

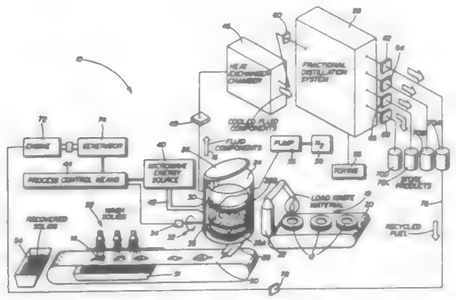
Michael A. Padgett, 1550 Trent Blvd. Apt. 807, Lexington, Ky. 40515; Douglas B. Kuiper, 457 Winfield Pl., Lexington, Ky. 40517, and Steven R. Rehnborg, 410 Willowbrook Dr., Winchester, Ky. 40391

Filed May 11, 1993, Ser. No. 60,633
Int. Cl.[5] C10B *53/00, 1/10*
U.S. Cl. 201—19 **15 Claims**

1. A method for breaking down carbonaceous waste material to produce solid and fluid products comprising the steps of:
loading the waste material into a porous inner cylinder in an air-tight housing;
sealing the housing;
evacuating oxygen from the housing;
heating the waste material in the housing/cylinder by applying microwave energy;
rotating the cylinder at high speed simultaneously with said heating step;
recovering solid and fluid products separated by pyrolysis during said simultaneous heating and rotating steps.

8. An apparatus for breaking down carbonaceous waste material comprising:
an air-tight housing;
means for evacuating oxygen from said housing;
an inner cylinder mounted for relative rotation within and with respect to said housing;

means for loading the waste material into said cylinder;
rotary drive means operatively connected to rotate said cylinder at sufficiently high speed to create a centrifugal force on the waste material in said cylinder;
a microwave heating means proximately located with respect to said housing for heating the waste material in said cylinder;



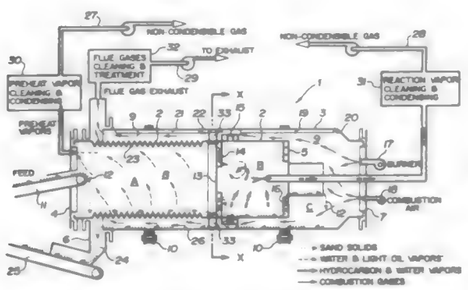
control means operatively connected to said rotary drive means and said heating means whereby said waste material is simultaneously heated and subjected to centrifugal force to break down the carbonaceous waste material into solid and fluid products; and
means for recovering said solid and fluid products.

5,366,596

DRY THERMAL PROCESSOR

William Taciuk; Roderick Caple; Sean Goodwin, and Gordon Taciuk, all of Calgary, Canada, assignors to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Filed Jun. 9, 1993, Ser. No. 73,438
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] C10B *1/10*
U.S. Cl. 202—100 **5 Claims**



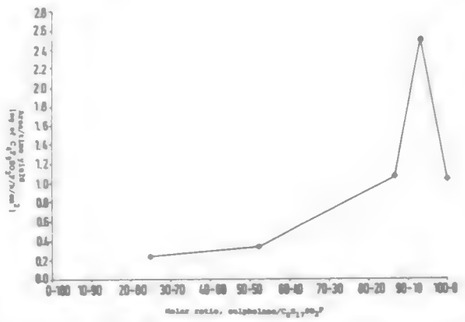
1. An interconnecting structural support in combination with a rotary processor having metal inner and outer tubular members, wherein the inner member is subjected to higher temperatures than the outer, said members being generally coextensive, concentric, and spaced apart, forming an annular space therebetween that is hot when the processor is operating, whereby the tubular members form a unitary rotatable tube assembly with the tubular members being thereby fixed together against relative axial displacement, the support comprising:
a plurality of radially extending spokes rigidly connecting the tubular members;
the inner tubular member and spokes being manufactured of a material having a lower coefficient of expansion than the material of the outer member, the inner tubular member and spokes being therefore adapted to expand and contract substantially the same amount as the wall section of the outer tubular member, for reduction of differential expansion induced stresses.

5,366,597

PROCESS FOR THE PREPARATION OF PERFLUOROBUTYLSULPHONYL FLUORIDE

Andreas Bulan, Langenfeld, and Rainer Weber, Odenthal, both of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed May 27, 1993, Ser. No. 67,585
Claims priority, application Germany, Jun. 5, 1992, 4218562
Int. Cl.[5] C07C *309/80*
U.S. Cl. 204—59 F **12 Claims**



4. A process for the preparation of perfluorobutylsulphonyl fluoride by electrochemical fluorination of a mixture of sulpholene in anhydrous hydrogen fluoride and octylsulphonyl fluoride, wherein the molar ratio of sulpholene to octylsulphonyl fluoride is 87:13 to 99:1.

5,366,598

METHOD OF USING A METAL SUBSTRATE OF IMPROVED SURFACE MORPHOLOGY

Kenneth L. Hardee, Middlefield; Lynne M. Ernes, Willoughby; Richard C. Carlson, Euclid, all of Ohio, and David E. Thomas, Northbridge, Mass., assignors to Eltech Systems Corporation, Chardon, Ohio

Continuation of Ser. No. 686,963, Apr. 18, 1991, Pat. No. 5,262,040, which is a continuation-in-part of Ser. No. 374,429, Jun. 30, 1989, abandoned. This application Oct. 7, 1993, Ser. No. 132,975
Int. Cl.[5] C25B *1/04, 1/16, 1/00*
U.S. Cl. 204—92 **10 Claims**

1. The method of electrolyzing a bath containing a dissolved species to be electrolyzed, using in said method an electrocatalytically coated anode having as its operative surface an electrochemically active surface coating and as its substrate a substrate metal that has an average roughened surface of at least about 250 microinches and an average surface peaks per inch of at least about 40, both as measured by profilometer with said peaks per inch being basis a lower profilometer threshold limit of 300 microinches and an upper profilometer threshold limit of 400 microinches.

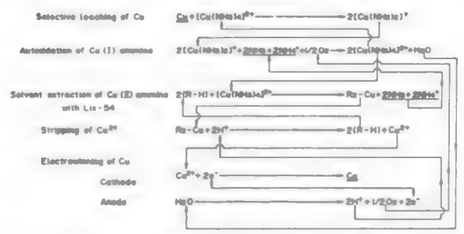
4. The method of claim 1, wherein electrolyzing said bath includes sodium sulfate electrolysis.

5,366,599

METHOD OF SELECTIVE RECOVERY OF FERROUS AND NONFERROUS METALS FROM INDUSTRIAL WASTES AND SCRAP HOME ELECTRIC APPLIANCES

Hiroshi Majima, Kobe, and Satoru Nigo, Okayama, both of Japan, assignors to Dowa Iron Powder Co., Ltd., Okayama, Japan

Filed Mar. 22, 1993, Ser. No. 34,119
Claims priority, application Japan, Mar. 30, 1992, 4-105454; Feb. 12, 1993, 5-47349
Int. Cl.[5] C25C *1/12*
U.S. Cl. 204—106 **6 Claims**



1. A method for selective recovery of copper from wastes containing enamel coated copper wire selected from the group consisting of small motor's scrap and iron cladding containing both copper and copper alloys, said method comprising the steps of:
heating or shot blasting the scrap or iron cladding to destroy the enamel coat on the copper wires so that they become amenable to leaching;
depositing the heated or shot blasted scrap or iron cladding in a leaching tank which has been initially supplied with a leaching solution that contains Cu(II) ammine complex ions, $[Cu(NH_3)_4]^{2+}$, in a concentration sufficient to be an oxidizer;
permitting copper to dissolve out selectively in the leaching solution in the form of Cu(I) ammine complex ions, $[Cu(NH_3)_2]^{+}$;
taking out the leaching solution from the leaching tank for circulation and bringing it into positive contact with air outside the leaching tank to regenerate the leaching solution by immediately converting Cu(I) ammine complex ions, $[Cu(NH_3)_2]^{+}$ to Cu(II) ammine complex ions, $[Cu(NH_3)_4]^{2+}$; thereafter, returning a portion of the regenerated leaching solution to the leaching tank; and
mixing the remaining portion of the regenerated leaching solution with an extracting solvent to extract Cu^{2+} selectively, followed by steps including Cu^{2+} stripping and electrowinning of Cu to obtain metallic copper.

5,366,600

CEMENTITIOUS COMPOSITION

Luc B. J. Westhof, Arendonk, Belgium; Ibrahim Turham, Levitown; George G. Tessier, Holland, Both of Pa.; Frans L. J. Depeuter, Mol, Belgium, assignors to ICI Americas, Inc., Wilmington, Del.

Division of Ser. No. 836,662, Feb. 14, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 123,164
Claims priority, application United Kingdom, Feb. 12, 1991, 9102891
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—147 **35 Claims**

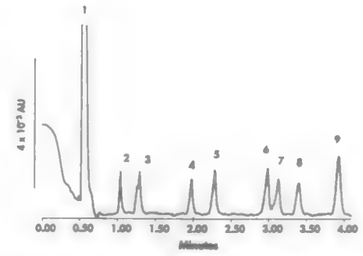
18. A method of cathodically protecting a concrete structure comprising a cathode, a primary anode and a secondary anode which is a conducting cementitious composition containing metal coated fibres wherein the primary anode is embedded in said conducting cementitious composition.

5,366,601

METHOD FOR SEPARATING IONIC SPECIES USING CAPILLARY ELECTROPHORESIS

William R. Jones, Northborough, and Petr Jandik, Framingham, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Continuation-in-part of Ser. No. 642,685, Jan. 17, 1991, Pat. No. 5,156,724, which is a continuation-in-part of Ser. No. 471,535, Jan. 29, 1990, Pat. No. 5,104,506. This application Oct. 20, 1992, Ser. No. 963,685
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] B01D *57/02*
U.S. Cl. 204—180.1 **13 Claims**



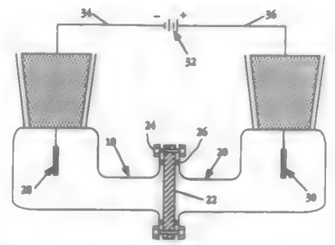
1. A method for detecting anions in a sample using capillary zone electrophoresis comprising the steps of:
a) introducing the sample into a capillary;
b) immersing the capillary in a carrier electrolyte containing a salt selected from the group consisting of molybdate, tungstate, ferrocyanide, ferricyanide, bromide, iodide and dichromate;
c) applying an electrical current under conditions appropriate for the anions in the sample to move along the capillary toward the detection electrode, thereby causing separation of the anions to occur; and
d) detecting the anions indirectly using a UV/visible photometric detector.

5,366,602

METHOD OF PROTECTING EMBEDDED REINFORCING MEMBERS

Samson Hettiarachchi, Menlo Park, and Ann T. Gaynor, Union City, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Dec. 11, 1989, Ser. No. 448,940
Int. Cl.[5] C25D *13/00*
U.S. Cl. 204—180.1 **18 Claims**



1. A method of applying an anti-corrosive coating agent to a corrodible reinforcing member embedded within a cementitious microporous matrix in a structure having an exposed matrix surface, wherein said coating agent is known to retard the corrosion of metals and is either a positively charged species or a neutral species combined with a positively charged surfactant, which method comprises the steps of:

(a) contacting an electrolyte solution containing said agent with said exposed matrix surface of the structure;
(b) placing a first electrode in contact with the electrolyte solution;
(c) providing a second electrode which is located at a position spaced from the first electrode, such that application of a voltage across the first and second electrodes is effective to produce an electric field in a region of the structure which includes the reinforcing member and cementitious matrix between said exposed matrix surface with which the electrolyte solution is in contact and the reinforcing member;
(d) applying across the two electrodes, a selected-polarity voltage effective to cause migration of the anti-corrosive agent in the electrolyte solution through the cementitious matrix in said structure region; and
(e) by said migration, causing the anti-corrosive agent to contact and coat the reinforcing member to protect it from corrosion.

5,366,603

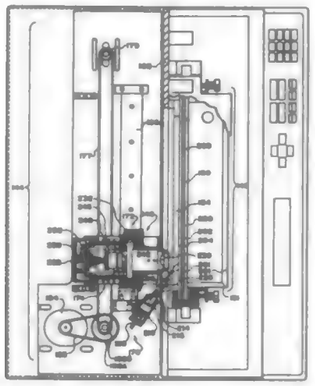
SEQUENCING NEAR INFRARED AND INFRARED FLUORESCENCE LABELED DNA FOR DETECTING USEING LASER DIODES

Lyle R. Middendorf, Lincoln, Nebr., and Gabor Patonay, Stone Mountain, Ga., assignors to Li-Cor, Inc., Lincoln, Nebr.

Division of Ser. No. 763,230, Sep. 20, 1991, Pat. No. 5,230,781, which is a continuation-in-part of Ser. No. 570,503, Aug. 21, 1990, Pat. No. 5,207,880, which is a continuation-in-part of Ser. No. 78,279, Jul. 27, 1987, abandoned, which is a division of Ser. No. 594,676, Mar. 19, 1984, Pat. No. 4,729,947. This application Mar. 30, 1992, Ser. No. 860,140

Int. Cl.[5] G01N *27/26, 27/447;* **B01D** *57/02*

U.S. Cl. 204—182.8 **21 Claims**



1. A method of identifying strands of DNA comprising the steps of:
marking the strands with fluorescent labels that emit light in a region of wavelengths including at least one wavelength within the infrared and near infrared region;
electrophoresing the strands in a gel contained within soda lime glass;
irradiating the strands with light having a wavelength within one of the infrared and near infrared regions; and
detecting the light emitted from the fluorescent labels.

5,366,604

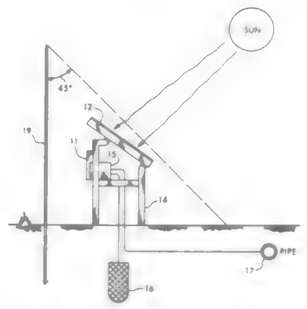
SOLAR POWERED CATHODIC CORROSION PROTECTION SYSTEM

Troy R. Stilley, 1007 Ridge St., Montrose, Colo. 81401

Filed Jun. 29, 1993, Ser. No. 85,319

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—196 **10 Claims**



8. A cathodic corrosion protection system comprising:
a metallic body to be protected from corrosion;
a ground bed;
a photovoltaic panel for generating current through said metallic body and said ground bed in response to sunlight, said photovoltaic panel having a capacity under nominal daytime conditions to generate sufficient current ("nominal current") to polarize said metallic body;
a battery charged by a voltage placed across said battery by said photovoltaic panel during daytime, for supplying current through said metallic body and said ground bed at a reduced level during nighttime;
a solid state voltage regulator for sensing said voltage of said battery; and
a solid state relay means controlled by said voltage regulator for shunting current from said photovoltaic panel when said battery voltage exceeds a selected value so that said battery current during nighttime is approximately 30% or less of said nominal current, and for shunting excess current back to said photovoltaic panel.

5,366,605

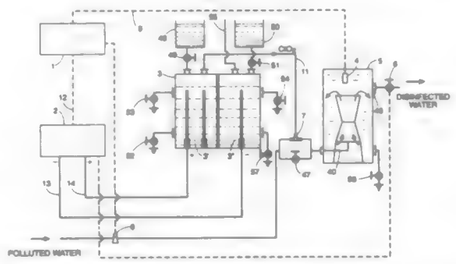
WATER DISINFECTING APPARATUS AND PROCESS

Baicheng Wang, Xianwei Jiashu Beiyuan, China, assignor to Xiangshun Song, Xiaojia, China

Continuation-in-part of Ser. No. 19,224, Feb. 18, 1993, abandoned. This application Apr. 1, 1993, Ser. No. 41,711

Int. Cl.[5] C02F *1/467*

U.S. Cl. 204—228 **4 Claims**



1. An apparatus for disinfecting polluted water comprising:
an electrolytic generator comprising an anodic cell provided with an anode and a neutral electrode and a cathodic cell provided with a cathode, the anodic cell and the cathodic cell being separated by a plurality of cation permeable membranes;
a reactor comprising a mixer in the shave of two truncated cones joined fixedly at the smaller end for thoroughly mixing polluted water with oxidant gas produced by said generator
a wye comprising two portions, a right portion connected to said reactor via a pipe and a left portion connected to a supply of polluted water via a pipe connected to a pump:
a regulating valve connected in parallel with the left and right portions of said wye;
a monitor for regulating the voltage and current applied to said electrodes;
a sensing element for continuously detecting the amount of ClO_2 in the reactor as an electrical signal and sending the electrical signal representing the amount of ClO_2 detected to said monitor; and
an electric power source connected to said monitor which in turn is connected to said sensing element mounted in the upper portion of the reactor, and connected to said anode, neutral electrode and cathode for applying an electric potential in volts and current in amperes to the electrodes.

5,366,606

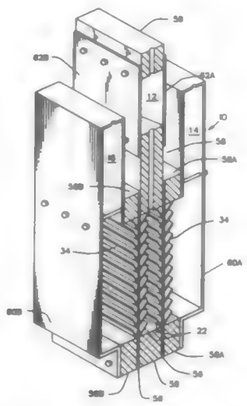
ELECTROLYTIC GAS GENERATOR

Gregorio Tarancon, High Springs, Fla., assignor to Florida Scientific Laboratories Inc., High Springs, Fla.

Filed May 17, 1993, Ser. No. 63,943

Int. Cl.[5] C25B *9/00, 11/02, 15/08*

U.S. Cl. 204—257 **24 Claims**



1. An electrolytic gas generator, comprising:
a) at least one anode compartment for receiving electrolyte having a vertically-disposed anode side;
b) a plurality of anode electrodes in said at least one anode compartment being mounted at an angle alpha relative to said anode side;
c) said angle alpha being between 15° and 75°;
d) at least one cathode compartment for receiving electrolyte having a vertically-disposed cathode side;
c) a plurality of cathode electrodes in said at least one cathode compartment being mounted at an angle beta relative to said cathode side;
f) said angle beta being between 15° and 75°;
g) an electrolyte-feeding compartment disposed between said at least one anode compartment and said at least one cathode compartment for supplying electrolyte to both said anode compartment and said cathode compartment; and
h) said electrolyte-feeding compartment includes an anode membrane through which electrolyte passes to said anode compartment, a cathode membrane through which electrolyte passes to said cathode compartment, and an electrolyte-feeding chamber for holding electrolyte therein under pressure and disposed between said anode and cathode membranes.

5,366,607

SPUTTERING TARGET AND ASSEMBLY

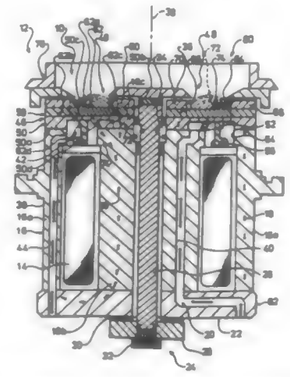
Brij B. Lal, San Jose, and Tadashi Shinohara, Fremont, both of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Continuation-in-part of Ser. No. 740,436, Aug. 5, 1991, Pat. No. 5,174,880, and Ser. No. 837,855, Feb. 18, 1992. This application Dec. 23, 1992, Ser. No. 995,688

The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—298.19 **8 Claims**



1. A target assembly for use in a magnetron sputtering apparatus having a source of a magnetic flux comprising
an annular sputtering target disposed around a central axis and having a sputtering surface extending transverse of the central axis, an inner surface proximal to the central axis, and an outer surface distal from the central axis, the sputtering surface extending between the inner and outer surfaces, said target having a selected composition;
ferromagnetic outer pole means surrounding the target against the outer surface, having an outer extension extending beyond the target sputtering surface and defining an outer pole surface, and positioned for conducting magnetic flux corresponding to a first magnetic pole from the magnetic flux source;
ferromagnetic inner pole means surrounded by the target against the inner surface, having an inner extension extending beyond the target sputtering surface and defining an inner pole surface, and being positioned for conducting magnetic flux corresponding to a second magnetic pole from the magnetix flux source;
the inner and outer pole means producing a flux path extending across the target between the confronting inner and outer pole surfaces;
inner and outer target rings disposed adjacent said inner and outer pole surfaces, respectively, at least one of said rings having a composition different from that of said target; and
a shunt portion included in one of the inner and outer pole means extending toward the target opposite from the sputtering surface for conducting a portion of magnetic flux associated with one of the inner and outer pole means in a second flux path extending through a portion of the target intermediate the inner and outer surfaces to the

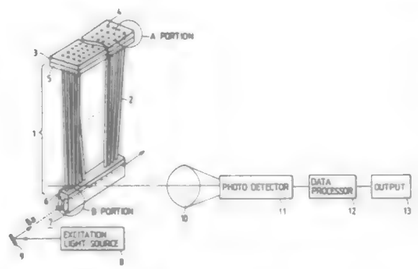
extension of the other of the inner pole means and the outer pole means.

5,366,608

ELECTROPHORESIS GEL MIGRATION APPARATUS

Hideki Kambara, Hachiouji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 942,605, Sep. 10, 1992, Pat. No. 5,277,780. This application Oct. 12, 1993, Ser. No. 133,851
Claims priority, application Japan, Sep. 13, 1991, 3-234427
The portion of the term of this patent subsequent to Jan. 11, 2011, has been disclaimed.
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—299 R **5 Claims**



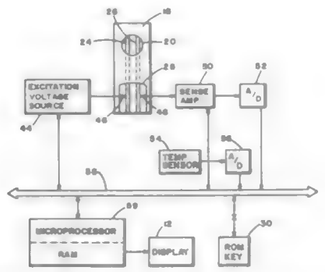
1. An electrophoresis gel migration apparatus comprising gel capillaries being filled with gel, an excitation light source, fluorescent light detecting means, and means applying an electric field to the gel; characterized in that the gel capillaries are arranged to provide a density of sample introduction ends of the gel capillaries that is less than that of fluorescence detecting ends of the gel capillaries.

5,366,609

BIOSENSING METER WITH PLUGGABLE MEMORY KEY

Bradley E. White, Indianapolis; Robert A. Parks, Springport; Paul G. Ritchie, and Terry A. Beaty, both of Indianapolis, all of Ind., assignors to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Jun. 8, 1993, Ser. No. 73,316
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—403 **12 Claims**



1. A biosensing meter for receiving a sample strip that includes a sample well with an analyte reactant therein, said biosensing meter comprising:

sense means for outputting signals indicative of manifestations of a reaction in said sample well between an analyte-containing fluid and said analyte reactant;

pluggable memory key means for insertion into an electrical receptacle in said meter, said pluggable memory key means including a plurality of stored parameter values and procedure routine specifications that are employed in controlling execution of an algorithm performed by said meter that enables determination of an analyte concentration value, said procedure routine specifications including stored values from which time values can be determined for controlling said sense means during execution of said algorithm; and

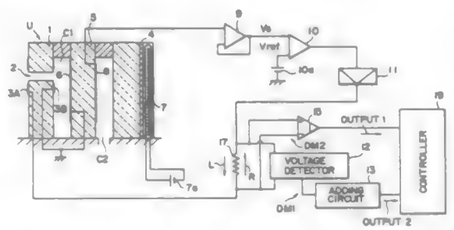
processor means coupled to said memory key means and responsive to parameter values and procedure routine specifications accessed from said pluggable memory key means, for controlling operation of said sense means in accordance with said algorithm and for calculating from signal outputs from said sense means a concentration value of an analyte in said analyte-containing fluid in said sample well.

5,366,610

AIR FUEL RATIO DETECTING DEVICE

Osamu Hirako; Yoshiaki Danno, and Makoto Shimada, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 79,329, Jul. 30, 1987, Pat. No. 4,391,121. This application Dec. 28, 1989, Ser. No. 458,469
Claims priority, application Japan, Jul. 30, 1986, 61-179210
The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.
Int. Cl.[5] G01N *27/407*
U.S. Cl. 204—406 **16 Claims**



1. An air fuel ratio detecting device, comprising:

a cell unit disposed within the vicinity of an exhaust gas discharged from a combustion chamber and defined by means of three laterally spaced wall members, first and second ones of said three laterally spaced wall members defining an enclosed detecting chamber therebetween, and second and third ones of said three laterally spaced wall members defining a reference chamber, open at one end thereof for admission thereinto of a reference gas, therebetween;

said second one of said three laterally spaced wall members having a first sensor electrode disposed upon a first one of a pair of opposite side walls so as to be disposed within, and exposed to said exhaust gas introduced into, said detecting chamber, and a second reference electrode disposed upon a second one of said pair of opposite side walls so as to be disposed within, and exposed to said reference gas introduced into, said reference chamber, whereby said second one of said three laterally spaced wall members, said first sensor electrode, and said second reference electrode define a sensor cell for developing an electrical signal in response to the difference between the concentration of oxygen, present within said exhaust gas after an air-fuel mixture has been burned within said combustion chamber, and the concentration of oxygen present within said reference gas;

a controlling means for developing an electrical control signal having a polarity determined from an output of said sensor cell;

said first one of said three laterally spaced wall members having a first pump electrode disposed upon a first one of a pair of opposite side walls so as to be exposed to said exhaust gas discharged from said combustion chamber, a second pump electrode disposed upon a second one of said pair of opposite side walls so as to be disposed within, and exposed to said exhaust gas introduced into, said detecting chamber, and a diffusion hole defined through said first one of said three laterally spaced wall members so as to extend from said first one of said pair of opposite side walls to said second one of said pair of opposite side walls and thereby provide fluidic communication between said vicinity of said exhaust gas as discharged from said combustion chamber and said detecting chamber, whereby said first one of said three laterally spaced wall members, said first and second pump electrodes, and said diffusion hole define a pump cell for moving oxygen ions into and out of said detecting chamber in response to said electrical control signal received from said controlling means;

a control current detecting means for detecting control current flow transmitted between said controlling means and said pump cell;

a stoichiometric air fuel ratio detecting means for detecting the direction of said control current flow so as to determine the stoichiometric air fuel ratio;

a storage means for storing therein a linear air fuel ratio value which is determined in a predetermined functional relationship with respect to the magnitude of said control current flow;

a linear air fuel ratio detecting means for detecting the magnitude of said control current flow detected by said control current detecting means so as to compare said detected control current flow with said stored linear air fuel ratio value from said storage means; and

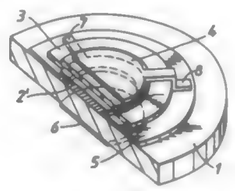
a correcting means for correcting said predetermined functional relationship stored within said storage means when a stoichiometric air fuel ratio signal is developed from said stoichiometric air fuel ratio detecting means.

5,366,611

OXYGEN SENSOR

Andreas Ioannou, and William C. Maskell, both of London, United Kingdom, assignors to British Gas plc, London, United Kingdom

Filed Jul. 30, 1992, Ser. No. 922,698
Claims priority, application United Kingdom, Jul. 30, 1991, 9116385.7
Int. Cl.[5] G01N *27/417*
U.S. Cl. 204—412 **3 Claims**



1. An oxygen sensor comprising:

a substrate (1) having two opposite faces;

a nonelectrically conducting layer (5) having a centrally arranged aperture and being arranged on one face of the substrate (1);

a first electrode layer (2') being applied on a part of the nonelectrically conducting layer (5) and having a lower body portion extending through the centrally arranged aperture thereof and arranged on the one face of the substrate (1);

an electrolyte layer (3) applied on and overlapping the first electrode layer (2');

a second electrode layer (4) applied on the electrolyte (3);

a third electrode layer (6) applied on the other face of the substrate (1),

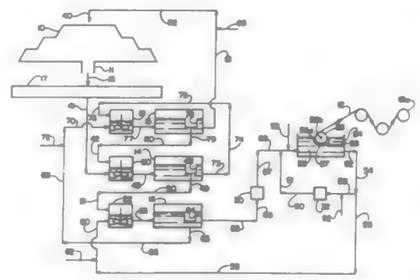
wherein the first electrode layer (2'), the electrolyte layer (3), the second electrode layer (4) and the third electrode layer (6) comprise a metal oxide oxygen ion conductor, whereby the first electrode layer (2'), the electrolyte layer (3), the second electrode layer (4) and the third electrode layer (6) are physically compatible with each other so the adhesion therebetween is excellent.

5,366,612

PROCESS FOR MAKING COPPER FOIL

Sidney J. Clouser, Chardon, Ohio; Michael A. Eamon, Tucson, Ariz.; Thomas L. Jordan, Oracle, Ariz., and Stephen I. Kohut, Chandler, Ariz., assignors to Magma Copper Company, Tucson, Ariz. and Gould Electronics Inc., Eastlake, Ohio

Filed Apr. 19, 1993, Ser. No. 49,176
Int. Cl.[5] C25D *1/04, 1/20*
U.S. Cl. 205—73 **23 Claims**



1. A process for making copper foil from a copper-bearing material comprising:

(A) contacting said copper-bearing material with an effective amount of at least one aqueous leaching solution to dissolve copper ions into said leaching solution and form a copper-rich aqueous leaching solution;

(B) contacting said copper-rich aqueous leaching solution with an effective amount of at least one water-insoluble extractant to transfer copper ions from said copper-rich aqueous leaching solution to said extractant to form a copper-rich extractant and a copper-depleted aqueous leaching solution;

(C) separating said copper-rich extractant from said copper-depleted aqueous leaching solution;

(D) contacting said copper-rich extractant with an effective amount of at least one aqueous stripping solution to transfer copper ions from said extractant to said stripping solution to form a copper-rich stripping solution and a copper-depleted extractant;

(E) separating said copper-rich stripping solution from said copper-depleted extractant;

(F) flowing said copper-rich stripping solution between an anode and a rotating cathode, and applying an effective amount of voltage across said anode and said cathode to deposit copper on said cathode; and

(G) continuously removing copper foil from said cathode.

5,366,613

METHOD OF ELECTROCHEMICAL FINE PROCESSING

Masayuki Suda; Toshihiko Sakuhara; Masataka Shinogi; Fumiharu Iwasaki, and Akito Ando, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed Mar. 29, 1993, Ser. No. 38,921
Claims priority, application Japan, Mar. 30, 1992, 4-074733; Mar. 31, 1992, 4-078031
Int. Cl.[5] C25D *11/00;* C25F *3/00*
U.S. Cl. 205—221 **9 Claims**

1. An electrochemical fine processing method comprising the steps of:

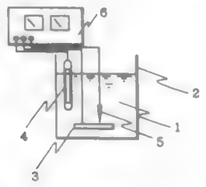
providing a workpiece having a surface which exhibits, with

respect to a given etchant, an etching resistance having a first value;

providing a counter electrode having a small forward end;

forming, on the workpiece surface, by an electrochemical reaction between the workpiece and the counter electrode in an electrolyte solution, a patterned region having, with respect to the given etchant, an etching resistance having a second value different from the first value, by:

placing the workpiece and the forward end of the counter electrode in an electrolytic solution, with the forward end of the counter electrode close to the surface of the workpiece; and



establishing an electric potential between the counter electrode and the workpiece surface, with the electrolytic solution present between the counter electrode and the workpiece surface, in order to form, on the workpiece surface, localized regions which have the second etching resistance value and make up the patterned region; and

etching the workpiece, after said forming step, in an etching solution of the given etchant in order to form, at the workpiece surface, a relief pattern corresponding to the patterned region.

4. An electrochemical fine processing method according to claim 1 wherein the electrochemical reaction is a deposition reaction to deposit a substance from the electrolytic solution on the surface of the workpiece in the patterned region.

5,366,614

CATALYTIC REFORMING PROCESS WITH SULFUR PRECLUSION

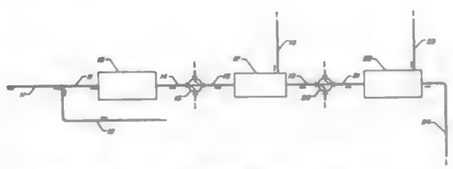
Michael B. Rnes, Villa Park; Frank R. Whitsura, Schaumburg; Roger L. Peer, LaGrange; Joseph Zmich, Hanover Park, and Chi-Chu D. Low, Lisle, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 842,835, Feb. 27, 1992, Pat. No. 5,211,837, which is a continuation-in-part of Ser. No. 555,962, Jul. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 408,577, Sep. 18, 1989, abandoned. This application May 18, 1993, Ser. No. 63,284

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] C10G *35/06, 25/00*

U.S. Cl. 208—65 **20 Claims**



1. A process for the catalytic reforming of a hydrocarbon feedstock comprising a combination of:

(a) contacting a combined feed comprising the hydrocarbon feedstock and free hydrogen in the absence of added halogen in a first reforming zone at first reforming conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 260° to 560° C., a liquid hourly space velocity of from about 1 to 40 hr^{-1}, and a hydrogen to hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a catalyst system comprising a mixture of a reforming catalyst containing a platinum-group metal component and a solid sulfur sorbent comprising a manganese component to produce a halogen-free first effluent;

(b) contacting the first effluent in a sulfur-removal zone at sulfur-removal conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 260° to 560° C., a liquid hourly space velocity of from about 5 to 200 hr^{-1}, and a hydrogen to hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a solid sulfur sorbent comprising a manganese component to remove hydrogen sulfide and produce a halogen-free second effluent containing less than 20 parts per billion sulfur; and,

(c) contacting the second effluent in a second reforming zone in the presence of free hydrogen and in the absence of added halogen at second reforming conditions comprising a pressure of from atmospheric to 20 atmospheres, a temperature of from 425° to 560° C., a liquid hourly space velocity of from about 1 to 10 hr^{-1}, and a hydrogen to hydrocarbon ratio of from about 0.1 to 10 moles of hydrogen per mole of hydrocarbon with a dehydrocyclization catalyst comprising a non-acidic L-zeolite and a platinum-group metal component to produce a halogen-free aromatics-rich effluent.

5,366,615

PROCESS FOR PRODUCING A HYDROCARBON PRODUCT HAVING SELECTIVITY FOR JET FUEL

Richard D. Bezman, Richmond, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Division of Ser. No. 644,056, Jan. 22, 1991, Pat. No. 5,141,909. This application Apr. 28, 1992, Ser. No. 874,885

Int. Cl.[5] C10G *45/52*

U.S. Cl. 208—111 **8 Claims**

1. A process for hydrocracking a hydrocarbon feedstock to produce a hydrocarbon product having improved selectivity for jet fuel which comprises:

(a) contacting a hydrocarbon with hydrogen under hydrocracking conditions in the presence of a catalyst comprising an inorganic oxide component, a hydrogenation component consisting of at least one noble metal or a compound thereof, and a zeolite component characterized as an ultra-stable Y zeolite having a silica to alumina mole ratio in the crystal lattice of from about 27 to about 33 and wherein the acid sites on the zeolite have been selectively passivated with a basic nitrogen-containing compound; and

(b) recovering a hydrocarbon product.

5,366,616

HYDROCARBON CONVERSION PROCESS USING A CHROMIUM SUBSTITUTED MOLECULAR SIEVE

Gary W. Skeels, Brewster; Diane M. Chapman, Ossining, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 645,866, Jan. 25, 1991, Pat. No. 5,186,918, which is a continuation-in-part of Ser. No. 450,931, Dec. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 133,372, Dec. 15, 1987, abandoned. This application Nov. 24, 1992, Ser. No. 980,834

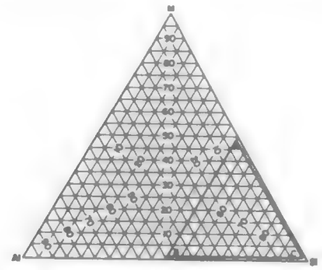
Int. Cl.[5] C10G *47/02, 11/02;* **C07C** *5/22, 2/68*

U.S. Cl. 208—111 **20 Claims**

1. A hydrocarbon conversion process comprising contacting a hydrocarbon under hydrocarbon conversion conditions with a catalyst to give a hydroconverted product, the catalyst comprising a molecular sieve having a three-dimensional microporous framework structure which has a unit empirical formula on an anhydrous basis of:

$(Cr_wAl_xSi_y)O_2$

where "w", "x" and "y" are the mole fractions of chromium,



aluminum and silicon, respectively, present as framework tetrahedral oxide units said mole fractions being such that they are within the trigonal area defined by points A, B, and C of FIG. 1, which points have the following values of w, x and y

Point	w	x	y
A	0.49	0.01	0.50
B	0.01	0.49	0.50
C	0.01	0.01	0.98.

5,366,617

SELECTIVE CATALYTIC REFORMING WITH HIGH-STABILITY CATALYST

Steven A. Bradley, Arlington Heights, and Leonid B. Galperin, Chicago, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 28, 1992, Ser. No. 997,971

Int. Cl.[5] C10G *35/09, 35/095*

U.S. Cl. 208—137 **10 Claims**

1. A process for the reforming of a hydrocarbon feedstock comprising contacting the feedstock at reforming conditions with a catalyst comprising a platinum-group metal component, a nonacidic large-pore molecular sieve, an inorganic-oxide binder, and nickel having a higher concentration on the binder than on the molecular sieve to obtain an aromatics-rich effluent stream.

5,366,618

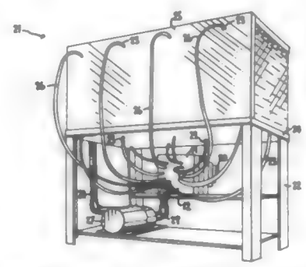
WATER DISTRIBUTION DEVICE

Joseph E. Foster, 64 N. 12th St., Harrlburg, Pa. 17103

Filed Sep. 23, 1992, Ser. No. 950,400

Int. Cl.[5] A01K *63/04*

U.S. Cl. 210—138 **14 Claims**



12. An aquarium system having time varying internal water currents, comprising:

an aquarium having a plurality of ports;

a distributor body having two end walls and a middle wall disposed between said end walls, said middle wall having a said cut-out section;

an input pipe stem providing a passageway to said cut-out section;

a plurality of secondary nozzles essentially defining a circle, said secondary nozzles providing a passageway into said cut-out section;

a rotor within said cut-out section and between end said walls, said rotor having an open chamber, at least one of said plurality of secondary nozzles connected with said open chamber;

an output pipe stem providing a passageway through an end wall through said cut-out section, said output stem connected with said open chamber;

pipe means comprising at least one pump for forcing water into said input pipe stem, said water exiting the distributor body through secondary nozzles isolated from said open chamber and for drawing water out of the distribution valve through said out-put pipe stem, said water entering the distribution valve through secondary nozzles connected with said open chamber;

conduit means for providing individual passageways between said secondary nozzles and said ports;

a motor for rotating said rotor wherein various ones of said plurality of secondary nozzles are brought into connection with said open chamber as other of said secondary nozzles disconnect from said open chamber thereby becoming isolated from said open chamber, said secondary nozzles cyclically connected with or isolated from said open chamber as a function of rotor rotation to establish time varying currents within said aquarium.

13. A fluid distribution valve, comprising:

a distributor body having end walls defining a front wall and a back wall and means defining a chamber between the front and back walls;

a plurality of secondary nozzles positioned on said front wall arranged in at least one circle, said secondary nozzles providing a passageway through said front wall into said chamber;

an input pipe stem positioned on said front wall outside said at least one circle defined by said secondary nozzles, providing a passageway through said front wall to said chamber;

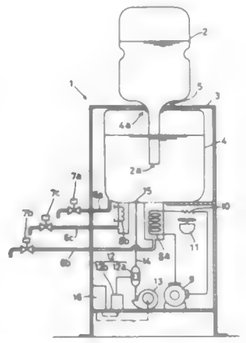
a rotor disposed in the chamber, the rotor having a contact portion for movably sealing a wall of the chamber at the secondary nozzles, and the rotor having an opening for passing at least one of said plurality of secondary nozzles communicating with said opening;

an output pipe stem disposed on said front wall within said at least one circle defined by said secondary nozzles, providing a passageway through said front wall to said chamber, said output pipe stem communicating with said opening of said rotor;

pump means comprising at least one pump for forcing fluid into said input pipe stem, said fluid exiting the distribution valve through at least one of the secondary nozzles isolated from the opening, and for drawing water out of the distribution valve through said output pipe stem, said water entering the distribution valve through secondary nozzles communicating with said opening;

a motor mounted on an outside face of said back wall operable to move said rotor, whereby various ones of said plurality of secondary nozzles are brought into communication with said opening as others of said secondary nozzles become isolated from said opening, said secondary nozzles cyclically communicating with and becoming isolated from said opening as a function of rotor motion.

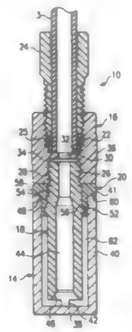
5,366,619
GERMFREE DRINKING WATER DISPENSER
Nobuya Matsui, Osaka; Yasuhiro Morimura, Tokyo; Shinichi Kunisaki, Osaka; Goro Fujiwara, Osaka; Mitsunobu Masuda, Osaka, and Masaru Kanazawa, Kyoto, all of Japan, assignors to Suntory Limited and Takuma Co., Ltd., both of Osaka, Japan
Filed Oct. 13, 1993, Ser. No. 134,893
Int. Cl.[5] B01D *21/30*
U.S. Cl. 210—139 5 Claims



1. A drinking water dispenser for dispensing drinking water, such as mineral water, under a germfree condition, comprising:
a reservoir for receiving and reserving said drinking water;
a bottle filled with said drinking water, said bottle having only one opening, said opening being a bottle-neck opening;
an inlet opening formed at an upper portion of said reservoir for allowing introduction of said bottle-neck opening and thereby rendering said reservoir airtight; and
an ozone injecting means including an ozone generator and an injection opening for injecting ozone generated by the ozone generator into said drinking water reserved at said reservoir through a feed pipe;
wherein said injection opening is provided with an anti-reverse means for preventing reverse flow of said water from said reservoir to said feed pipe.

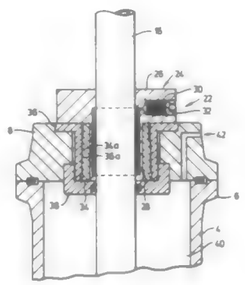
5,366,620
INLET FILTER
Hans G. Schick, Anacortes, Wash., assignor to Upchurch Scientific, Inc., Oak Harbor, Wash.
Filed Apr. 1, 1993, Ser. No. 41,481
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 17 Claims

1. A liquid filter assembly for connection with a tube comprising:
a filtering member; and
means for removably connecting a tube for drawing a liquid therethrough to said filtering member, wherein said connecting means is removably secured to said filtering member and allows said filtering member to be replaced while the tube remains connected to said connecting means, wherein said connecting means comprises;
a connection member having at least one recess therein;
means for removably attaching the tube to said connection member;
an expansion member having a channel therethrough, and wherein said expansion member has at least one portion which removably fits within the recess of said connection member to form a sealing engagement with said connection member, and said expansion member further has an expansion portion; and
a seal ring which removably fits around at least the expansion portion of said expansion member, wherein the expansion portion pushes at least a portion of said seal ring against an inner surface of said filtering member to



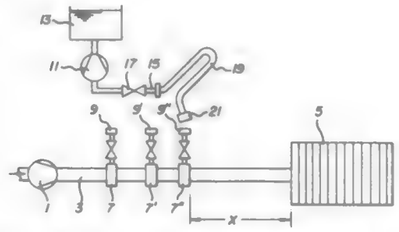
removably secure said seal ring and said filtering member together.

5,366,621
CHROMATOGRAPHY COLUMN
Christopher R. Bidell, Kings Stanley; Colin K. Lanyl, Stroud; Anthony F. Mann, Malmesbury, and Phillip Stafford, Stroud, all of England, assignors to Amicon Limited, Stonehouse, England
Continuation of Ser. No. 8,279, Jan. 25, 1993, abandoned, which is a continuation of Ser. No. 757,871, Sep. 11, 1991, abandoned.
This application Oct. 28, 1993, Ser. No. 144,456
Claims priority, application United Kingdom, Sep. 9, 1990, 9020451.2
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 9 Claims



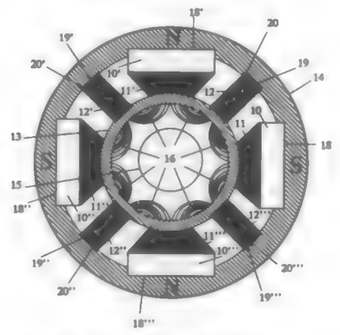
1. A chromatography column including: a column tube; a movable piston within the column tube; an axially slidable unthreaded piston rod carrying said piston; a releasable friction clamp for releasing said piston rod for rapid axial traversing of the piston and for clamping the piston rod at or near a desired final position; and means for fine adjustment of the position of the friction clamp axially relative to the column tube, for fine positioning of the piston relative to the column tube.

5,366,622
PROCEDURE AND INSTALLATION FOR CONDITIONING AND SUBSEQUENT DEWATERING OF SLUDGE
Stephan Geyer, Allendorf, Germany, assignor to Passavant-Werke AG, Germany
Filed Sep. 20, 1991, Ser. No. 762,301
Claims priority, application Germany, Sep. 20, 1990, 4029825
Int. Cl.[5] C02F *1/52*
U.S. Cl. 210—199 14 Claims



1. An installation for conditioning and dewatering of sludge wherein flocculent may be introduced at one or more positions along a pipe carrying the sludge, said positions being modifiable during dewatering, said installation comprising:
dewatering equipment;
a feed pump;
a sludge pipe connecting a discharge of said feed pump to an inlet of said dewatering equipment; and
means for dosing the sludge with a flocculent in at least two dosing positions along said sludge pipe at different distances from said dewatering equipment, said dosing means operable to add the flocculent to sludge in said sludge pipe at different locations in said sludge pipe, whereby a distance traveled by a mixture of sludge and flocculent in the sludge pipe before reaching the inlet of said dewatering equipment is varied to achieve an optimum retention time necessary for formation and consolidation of sludge floc particles.

5,366,623
APPARATUS FOR MAGNETICALLY TREATING A FLUID
Colonel Clair, P.O. Box 94321, Las Vegas, Nev. 89199
Filed Sep. 11, 1992, Ser. No. 943,899
Int. Cl.[5] C02F *1/48*
U.S. Cl. 210—222 17 Claims



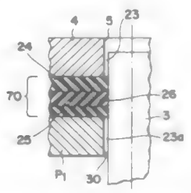
17. A device for treating fluid, comprising:
a surrounding ferrous cylindrical case having an enclosing configuration and a hollow interior, said case having an outside surface, an inside surface, and a central axis,
a plurality of magnets attached to said inside surface of said case at spaced circumferential locations around said inside surface, said magnets being charged so that their poles are radially aligned, said magnets alternating in polarity so that each adjacent pair of magnets have two inside pole surfaces of respectively opposite polarities facing said central axis, and two outside pole surfaces of respectively opposite polarities attached to said inside surface of said case,
a corresponding plurality of pole piece concentrators attached to said inside pole surfaces of said magnets, respectively, each pole piece concentrator having two radially opposite ends, one radially opposite end being an inside end and the other radially opposite end being an outside end, each pole piece tapering radially inwardly from a relatively large cross-sectional area at its outside end adjacent said inside pole surface of its respective magnet to a relatively small cross-sectional area at its opposite and inside end,
a ferrous well tube comprising a hollow ferrous cylindrical core which is coaxial with and concentrically inside said surrounding ferrous cylindrical case, said magnets, and said pole pieces,
said ferrous cylindrical core having a central axis which coincides with said axis of said surrounding ferrous cylindrical case,
said ferrous cylindrical core comprising a surrounding wall having an outside surface, an inside surface, and a central axis, said outside surface being a convex, curved, outside cylindrical surface, said outside surface being contiguous said inside ends of said pole pieces,
said inside end of said pole pieces being a concave, curved, inside cylindrical surface which is shaped and sized to conformingly mate with said outside surface of said ferrous cylindrical core,
each of said plurality of magnets having a radially outside surface which is in contact with said surrounding ferrous cylindrical case and a radially inside surface which is in contact with the radially outside end of its respective pole piece, said inside end of each pole piece being in contact with said outside surface of said ferrous cylindrical core so that a continuous, gapless magnetic path exists between the poles of each of said magnets,
each of said plurality of magnets being of sufficient strength to create enough flux in its respective pole piece concentrator that said concentrator carries sufficient flux to said ferrous cylindrical wall to create surplus magnetic flux in said wall in excess of the magnetic flux carrying capacity of said wall of said core so that said surplus flux will penetrate to and extend within the interior of said core perpendicular to said axis of said core and the direction of fluid flow in said interior of said core,
a corresponding plurality of ferrous struts, each strut extending radially between and contiguous to said surrounding ferrous cylindrical case and said wall of said ferrous well tube, each strut being positioned between an adjacent pair of magnets and their respective pole piece concentrators,
whereby said fluid ionizer and protector can be attached to a well pump or in well tubing so that pumped fluid will flow through said ferrous cylindrical core and cut said protector's perpendicular magnetic lines of force, thereby generating electrical currents and charges that will charge said well pump and tubing negative, thereby protecting said well pump and tubing from scale, corrosion, paraffining, and algae buildup.

5,366,624

SEALING RING FOR A BUNDLE OF INORGANIC MEMBRANES IN A FILTERING MODULE

Pierre Bathelet, Sainte Foy Les Lyon, France, assignor to TECHSEP, Courbevoie Cedex, France

Filed Nov. 8, 1993, Ser. No. 148,572
Claims priority, application France, Nov. 12, 1992, 9213604
Int. Cl.[5] B01D *24/00*
U.S. Cl. 210—232 **10 Claims**



1. A filtration module comprising a housing defining a longitudinal axis; a bundle of longitudinally extending filtering membranes disposed in said housing; and holding means disposed at respective ends of said bundle for holding said membranes in longitudinal positions, each holding means comprising a sealing plate sandwiched between an inner plate and an outer plate, said sealing plate, inner plate, and outer plate including sets of longitudinally aligned holes through which said membranes extend, said holes of said sealing plate defined by walls arranged in sealing relationship with said membranes, said sealing plate including:

an outer portion,

an inner portion disposed longitudinally inwardly of said outer portion; and

an intermediate portion situated between said outer and inner portions;

each of said outer and inner portions having a Shore A hardness value of no less than about 65, and said intermediate portion having a Shore A hardness value no greater than about 55.

5,366,625

CARTRIDGE OF HYBRID UNITARY WAFERS OF HOLLOW FIBER MEMBRANES AND MODULE CONTAINING A STACK OF POST-POTTED CARTRIDGES

Steven K. Pedersen, 498 Rothesay Pl., Burlington, Ontario L7N 3E2; Christopher J. Lipski, 75 Royal Avenue, Burlington, Ontario L8S 2C6, and Pierre L. Cote, 22 Pearl Street South, Hamilton, Ontario L8P 3W5, all of Canada

Continuation-in-part of Ser. No. 845,641, Mar. 4, 1992, Pat. No. 5,232,593. This application Dec. 18, 1992, Ser. No. 992,560
Int. Cl.[5] B01D *63/00*
U.S. Cl. 210—321.78 **26 Claims**



1. In a cartridge to be inserted in a module for use in a membrane device, the improvement comprising, plural repeating units, each being a unitary wafer consisting essentially of

(i) an array comprising a single monolayer of individual spaced apart hollow fibers of selectively perucable material secured near their terminal portions in near-fluid-tight relationship therewith, without being interconnected intermediate said terminal portions, each said array held non-displaceably by said terminal portions in

(ii) a unitary laminar frame having a continuous periphery, a through-passage within said frame defining a perforate planar border having opposed elongated slots within opposed portions of said border, within which border said fibers are secured;

(iii) a multiplicity of said unitary laminar frames assembled vertically, one in direct contact upon another, so that said opposed end portions of elongated slots in successive said laminar frames are in open fluid communication with one and another; and,

(iv) an end unitary laminar frame secured in fluid-tight relationship with the last and uppermost array,

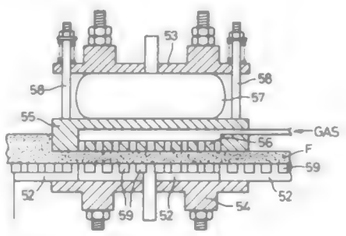
whereby each array is sandwiched between an upper and a lower frame so that a predetermined number of arrays "n" have been sequentially secured in position, each in fluid-tight relationship with the preceding prior array, and capped by said end unitary laminar frame, so that the number of arrays held between successive frames is one less than the number of frames in which the fibers are held, where n represents an integer greater than 2.

5,366,626

FILTER APPARATUS

Henri G. W. Pierson, Tenerife, Spain, assignor to D & C Limited, Monrovia, Liberia

Filed Apr. 12, 1993, Ser. No. 46,191
Claims priority, application United Kingdom, Apr. 28, 1992, 9209125.5
Int. Cl.[5] B01D *33/04, 33/052*
U.S. Cl. 210—216 **10 Claims**



1. Filter apparatus comprising:

an endless filter belt;

guide means guiding said belt to provide a substantially horizontal upper run and a lower return run;

first feed means for feeding slurry to be filtered onto said upper run;

vacuum means arranged below the upper run of the belt and operative through the belt to suck liquid from slurry on the upper run and leave a filter cake deposited thereon;

a plurality of second feed means for supplying wash liquor to successive sections of the upper run to wash filter cake deposited thereon;

progressing means operative to progress the belt by alternate incremental motion of the upper run and the lower run, the upper run moving from an upstream end to a downstream end thereof, said progressing means comprising a reciprocal guide element at the downstream end of the upper run and a one way device and tensioning means, both operative on the lower run of the belt;

means for washing the belt in its lower run and for collecting wash liquor therefrom and recycling same to at least some of said plurality of second feed means; and

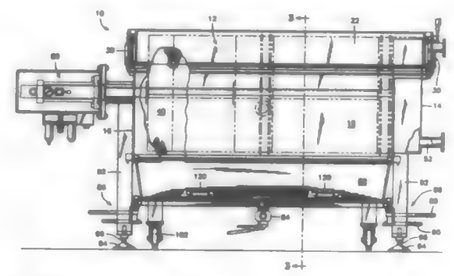
compression means in the form of a plurality of devices mounted at spaced locations above the upper run and operative to apply pressure to filter cake deposited thereon at locations subsequent to each section supplied with wash liquor from said plurality of second feed means, each device including a perforated pressure plate and means being provided to supply gas through said plates during compression of the respective sections of filter cake.

5,366,627

ENCLOSED THOROUGH WASH FILTER PRESS

William P. Kearney, Kingston, and George T. Quigley, Cottekill, both of N.Y., assignors to Stavo Industries, Inc., Kingston, N.Y.

Filed Jul. 22, 1993, Ser. No. 95,800
Int. Cl.[5] B01D *25/12*
U.S. Cl. 210—224 **18 Claims**



18. A filter press comprising:

a housing,

a plurality of filter plates arranged in said housing for filtration of a principal liquid,

means including four ports in said housing for passage of a principal liquid into said housing through a first one of said four ports and passage of a wash liquid into said housing through a second one of said four ports and through said plurality of filter plates and for removal of said principal liquid and said wash liquid through a third and fourth one of said four ports after passage through said plurality of filter plates,

a drip pan hopper including means for removably securing said drip pan hopper to said housing,

a liquid drain in said hopper for allowing passage of liquid from said hopper, said liquid collecting in said hopper after having escaped from between said filter plates,

a hood for sealing said housing, and means for pivotally mounting said hood on said housing.

5,366,628

PAINT THINNER RECYCLING TOWER

James A. Utter, Rte. 2, Box 77, Bristol, W. Va. 26332

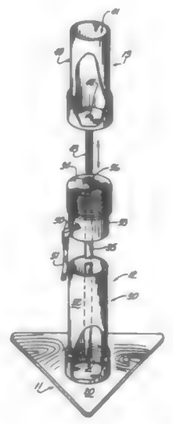
Filed Feb. 25, 1993, Ser. No. 22,210
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—232 **5 Claims**

1. A paint thinner recycling tower device for recycling mineral spirits based contaminated paint thinner; wherein, the device consists of:

an enlarged base unit;

a reduced diameter reservoir unit associated with said base unit wherein the reservoir unit includes a central elongated generally hollow cylindrical body element whose upper and lower ends are threaded, an internally threaded sealed end inverted cap element threadedly attached to the lower end of said body element and attached to said base unit and an internally threaded upper cap element attached to the upper end of said body element and having an elongated hollow inlet tube which projects through the upper cap element and extends a substantial distance into said body element;

a filler unit including a filler member having an upper end provided with an enlarged opening and a lower end provided with a relatively small opening;



a filler tube operatively associated with the relatively small opening in the filler unit and the inlet opening in the upper cap member of the reservoir member for introducing contaminated paint thinner at a predetermined location within the lower portion of the reservoir member; and,

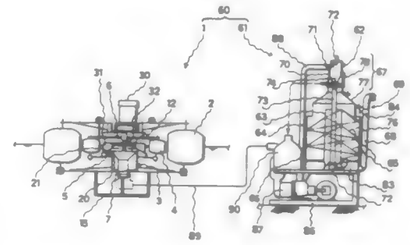
an outlet unit including a generally elongated flexible outlet hose having one end operatively connected to the upper portion of the reservoir member.

5,366,629

LIQUID RECOVERING APPARATUS

Yozi Mori; Motonori Suzuki, both of Misato; Hiroshi Kikuchi, and Kenrou Motoda, both of Tokyo, all of Japan, assignors to Motoda Electronic Industry Co., Ltd., Tokyo and World Chemical Co., Ltd., Saitama, Japan

Filed Mar. 18, 1993, Ser. No. 32,981
Claims priority, application Japan, Jan. 14, 1993, 5-005121
Int. Cl.[5] E02B *15/10*
U.S. Cl. 210—242.3 **11 Claims**



1. A liquid recovering apparatus comprising:

a main container capable of floating in liquid having an inlet port and main body floats for supporting said main container in said liquid;

an inflow gate means loosely fitted about an outer periphery of said main container, said inflow gate means having a sloping face which gradually rises toward said main con-

tainer for introducing a liquid into said container through said inlet port;

discharge means arranged in a lower part of said main container for discharging recovered liquid accumulated in said main container; and

raking means arranged on the sloping face of said inflow gate means for raking substances floating on said sloping face into said main container.

5,366,630

ARTIFICIAL KIDNEY AND A METHOD OF CONTROLLING IT

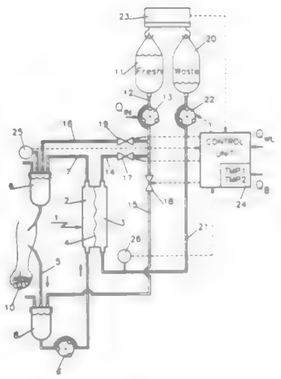
Jacques Chevallet, Serezin du Rhone, France, assignor to Hospal Industrie, Meyzieu Cedex, France

Filed Jul. 23, 1992, Ser. No. 917,408

Claims priority, application France, Aug. 14, 1991, 91 10463

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—645 23 Claims



14. A method for controlling an artificial kidney, comprising the steps of:

establishing a positive transmembrane pressure between first and second compartments of an exchanger having two compartments separated by a semipermeable membrane, the first compartment being connected to a blood circuit for conveying blood outside of a human body, and the second compartment having an inlet connectable to a source of treatment liquid;

measuring a value representative of the transmembrane pressure in the exchanger to thereby establish a measured value;

comparing said value with a threshold value; and

flow connecting a source of treatment liquid with the inlet of the second compartment of the exchanger when the measured value is greater than the threshold value.

5,366,631

COMPOSITE, SUPPORTED FLUOROCARBON MEDIA

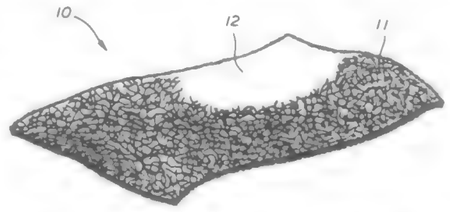
Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Feb. 10, 1992, Ser. No. 833,122

Int. Cl.[5] B01D *71/32*

U.S. Cl. 210—651 37 Claims

1. A composite, supported microporous medium comprising a microporous membrane having secured directly to at least one surface thereof a web of microfibers, each of said microporous membrane and said web of microfibers being formed from a polyperfluoroolefin.



5,366,632

GLASS MICROBEAD FILTER AND METHOD OF FILTERING

William V. Balsimo, Afton, and Steven J. St. Mary, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1993, Ser. No. 25,932

Int. Cl.[5] B01D *39/06*

U.S. Cl. 210—777 23 Claims

22. A method for filtering a liquid mixture comprising suspended solids, said method comprising the step of passing the liquid mixture through a layered filter composite comprising

a filter medium, comprising a nonwoven web, wherein said nonwoven web is a particles-loaded polytetrafluoroethylen web, and

on the upstream surface thereof a layer of nonporous essentially spherical glass microbeads in a packed bed, said microbeads having an average size in the range of 1 to 90 micrometers as a filter aid.

5,366,633

PROCESS FOR THE TREATMENT OF WATER CONTAINING SULPHUR COMPOUNDS

Cees J. Buisman, Harich, Netherlands, assignor to Paques B.V., Balk, Netherlands

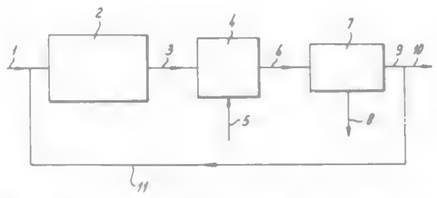
PCT No. PCT/NL91/00059, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO91/16269, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 11, 1991, Ser. No. 775,991

Claims priority, application Netherlands, Apr. 12, 1990, 9000877; Apr. 12, 1990, 9000878; Apr. 12, 1990, 9000879; Apr. 12, 1990, 9000880

Int. Cl.[5] C02F *3/06*

U.S. Cl. 210—614 15 Claims



1. Process for the purification of waste water containing sulfide which comprises: subjecting said waste water to an oxidation treatment in a reactor using sludge containing aerobic bacteria, using a sludge load of at least 10 mg of sulfide per mg of nitrogen present in the sludge per hour in the reactor whereby the sulfide is substantially oxidized to elemental sulfur, said sludge load being calculated on the basis of the sulfide oxidizing part of the sludge.

5,366,634

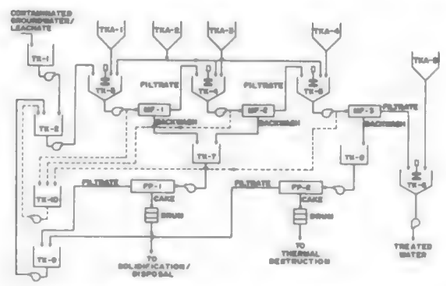
WASTE TREATMENT PROCESS FOR REMOVAL OF CONTAMINANTS FROM AQUEOUS, MIXED-WASTE SOLUTIONS USING SEQUENTIAL CHEMICAL TREATMENT AND CROSSFLOW MICROFILTRATION, FOLLOWED BY DEWATERING

Sivaraman Vijayan, Deep River; Chi F. Wong, Pembroke, and Leo P. Buckley, Deep River, all of Canada, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 26, 1992, Ser. No. 935,328

Int. Cl.[5] C02F *9/00*

U.S. Cl. 210—638 13 Claims



1. A waste treatment process for removal of contaminants including metals, radionuclides and organic matter from a feed of water containing contaminants including metals, radionuclides and organic matter, comprising the following steps:

treating said feed of water with a base, a powdered ion-exchange material, sodium carbonate, and a powdered adsorbent to remove contaminants; and

separating suspended solids, produced from the treatment, from said feed by passing said feed through a crossflow microfiltration means.

5,366,635

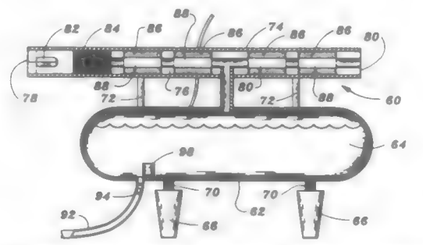
DESALINIZATION SYSTEM AND PROCESS

Larry O. Watkins, Sacramento, Calif., assignor to Global Water Technologies, Inc., Sacramento, Calif.

Continuation of Ser. No. 982,593, Nov. 27, 1992, abandoned. This application Jan. 24, 1994, Ser. No. 185,676

Int. Cl.[5] B01D *61/00*

U.S. Cl. 210—651 7 Claims



1. A desalinization method for removing salt from sea water, said desalinization method comprising, in combination, the steps of:

positioning a filter and separator means for filtering sea water and separating salt from the filtered sea water at a first predetermined location at a substantial distance below the surface of a body of sea water, said filter and separator means including a housing defining a fluid flow path, an inlet to said fluid flow path, an exit from said fluid flow path, and a desalinated sea water outlet located between said inlet and said exit, said inlet, said exit and said desalinated sea water outlet being in communication with said fluid flow path, said separator means further including at least one membrane separating salt from the sea water;

flowing sea water filtered by the filter in a controlled flow through said housing along said fluid flow path between the inlet and exit, said controlled flow maintained at the head pressure of said body of sea water at said first predetermined location;

establishing communication between the inlet, the exit, the desalinated sea water outlet and said body of sea water while said separator means is at said first predetermined location and pressurizing said fluid flow path with the head pressure of said body of sea water to force sea water through said at least one membrane and through said desalinated sea water outlet;

removing salt from the sea water forced through said at least one membrane and through said desalinated sea water outlet to produce at least partially desalinated sea water at said desalinated sea water outlet;

maintaining a pressure at said desalinated sea water outlet which is less than the head pressure of said body of sea water at said first predetermined location to promote flow of sea water through said desalinated sea water outlet and said at least one membrane; and

transporting the at least partially desalinated sea water from said desalinated sea water outlet to a predetermined discharge location by pumping the at least partially desalinated sea water from said first location to said predetermined discharge location.

5,366,636

METHOD OF TREATING WATER WITH RESIN BOUND IONIC SILVER

George L. Marchin, and Jack L. Lambert, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Mar. 18, 1994, Ser. No. 210,876

Int. Cl.[5] B01D *15/00;* C07C *51/42;* B01J *39/00*

U.S. Cl. 210—665 5 Claims

1. A method of treating drinking water for disinfecting and/or removing iodide, comprising contacting the drinking water with porous granules of a chelating resin having iminodiacetate acid chelating groups bonded to silver ions, said resin containing not over 0.5 mol of silver ion per mol of iminodiacetate, and separating the treated water from the granules.

5,366,637

METHOD FOR DEWATERING MUNICIPAL SOLID WASTE REFUSE

Umit Turunc, Doylestown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 24, 1993, Ser. No. 66,836

Int. Cl.[5] C02F *11/14*

U.S. Cl. 210—728 6 Claims

1. A method for dewatering the ash collected in an ash extractor which is generated during the combustion of municipal solid waste comprising partially dewatering the ash by mechanical means and adding to the ash from about 0.1 to 10 ppm, by weight, of a copolymer comprising repeat units of from about 3 to 97%, by weight, of an ethylenically unsaturated compound and from about 97 to 3%, by weight, of 2-acrylamido-2-methyl propane sulfonic acid wherein the molecular weight of the copolymer is from about 5,000,000 to about 10,000,000, and from about 10 to about 1000 ppm, by weight, of at least one surfactant selected from the group consisting of primary alcohol ethoxylates, secondary alcohol ethoxylates and alkylphenol ethoxylates; wherein said ethylenically unsat-

urated compound is selected from the group consisting of acrylic acid, methacrylic acid, acrylamide, maleic acid and maleic anhydride.

5,366,638

SPECIFIC GRAVITY SEPARATING UNIT

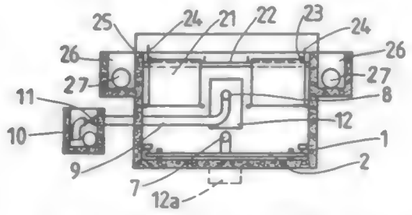
Richard P. Moore, c/o Black Reef Rd. & Moore St., Germiston, South Africa

Filed May 5, 1992, Ser. No. 878,775

Claims priority, application South Africa, May 7, 1991, 91/3427

Int. Cl.[5] B01D *21/04*

U.S. Cl. 210—802 18 Claims



1. A process whereby in inclined plate settling systems having a tank with an inlet for liquid to be treated, an outlet for treated liquid, means to remove floated and sedimented material, and wherein a multiplicity of spaced inclined plates or sheets in two parallel rows form passages for the settling, clarification or processing passage of liquids therethrough, the improvement comprising the inlet admitting the liquid to be processed into the lower portion of a central area between the two rows such that entry of the liquid into the passages takes place from two adjoining sides, one of which is an underside and the other adjacent to the central area, of the substantially rectangular shaped inclined sheets and the outlet removing the clarified or processed liquid from the passages between the inclined sheets from the upper corner of the sides of the two rows of sheets opposite to the central area by an overflow weir, thereby forming a substantially oblique flow pattern through the passages between the sheets.

5,366,639

PROCESS OF SEPARATING USING A ROTATING SCREEN

Thomas R. Jones, and Reginald L. Phillips, both of St. Austell, Great Britain, assignors to ECC International Ltd., Cornwall, United Kingdom

PCT No. PCT/GB90/01115, § 371 Date Jul. 14, 1992, § 102(e) Date Jul. 14, 1992, PCT Pub. No. WO91/01815, PCT Pub. Date Feb. 21, 1991

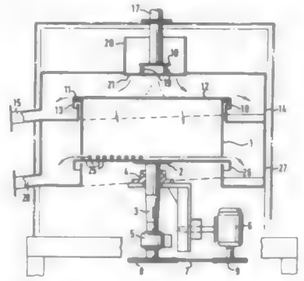
PCT Filed Jul. 20, 1990, Ser. No. 910,140

Claims priority, application United Kingdom, Aug. 4, 1989, 8917893

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—787 15 Claims

1. A process for continuously separating coarse particles and fine particles from a suspension of a mixture of particles in a liquid wherein the suspension is caused to impinge upon a surface of a screening medium which is rotating in its own plane about a vertical axis so that the coarse particles are retained on the surface of the screening medium and are caused to move radially outwardly towards the periphery of the screening medium while the liquid containing relatively fine particles passes through the screening medium wherein the screening medium comprises a pervious material which is substantially planar and whose periphery lies in the same plane as the surface of the screening medium and the coarse particles



are caused to pass unencumbered outwardly and downwardly from the periphery of the screening medium.

5,366,640

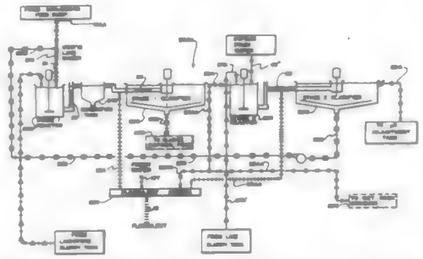
CONVERSION OF PHOSPHORIC ACID WATERS

Gordon W. Palm, late of Lakeland; by Marcella W. Palm, Legal Representative, and R. George Hartig, both of 2729 Oakland Ave., all of Lakeland, Fla. 33803

Continuation-in-part of Ser. No. 782,989, Oct. 28, 1991, which is a continuation-in-part of Ser. No. 727,606, Jul. 9, 1991, abandoned. This application Sep. 14, 1993, Ser. No. 120,331

Int. Cl.[5] C02F *1/62*

U.S. Cl. 210—724 7 Claims



1. Method of converting an existing pond of acidic gypsum pond water, resulting from conventional wet-process phosphoric acid manufacturing and containing contaminants, to nearly neutral water substantially freed of contaminants, comprising the steps of

processing the water through a two-stage neutralization and clarification system, including neutralizing the water to a pH of about 4.5 in a first stage and clarifying it, wherein contaminants insoluble at that pH are removed by precipitation, then alkalizing the clarified water to a pH of about 10.5 to 12 in a second stage and further clarifying it, wherein contaminants insoluble at the latter pH though previously soluble are removed by precipitation, and then acidifying the further clarified water and thereby providing a pond of pH-adjusted water (pH-AW) substantially free of contaminants; and including

subdividing the existing pond into a manageable number of separate but equal volumes, establishing a secondary pond initially empty and with a volume at least as large as the separate but equal volume, transferring the acidic water from an arbitrarily selected first of successive separate but equal volumes of water from the existing pond into the new secondary pond, processing the transferred water through said two stages of pH increase and said subsequent acidification to pH-AW, and back into said first still separate but equal volume of the existing pond.

5,366,641

HYDROCYCLONES FOR OIL SPILL CLEANUP WITH OIL SLUG MONITOR

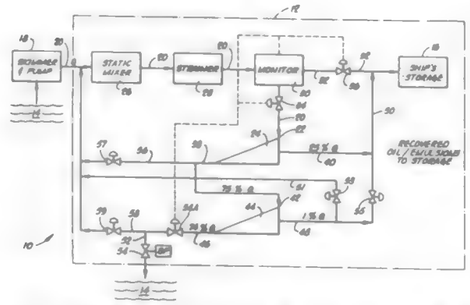
David A. Hadfield, and Mark F. Schubert, both of Houston, Tex., assignors to Conoco Specialty Products, Inc., Houston, Tex.

PCT No. PCT/US91/02888, § 371 Date Dec. 21, 1992, § 102(e) Date Dec. 21, 1992

PCT Filed May 2, 1991, Ser. No. 971,901

Int. Cl.[5] B01D *17/12, 17/038*

U.S. Cl. 210—739 4 Claims



1. An oil spill recovery process for recovering spilled oil from a body of water, comprising the steps of:

(a) recovering from the body of water a recovered fluid containing oil and water;

(b) separating said recovered fluid in a first hydrocyclone separator into a first more dense stream and a first less dense stream;

(c) removing additional oil from said first more dense stream in a second hydrocyclone separator which separates said first more dense stream into a second more dense and a second less dense stream;

(d) storing at least a majority portion of said first overflow stream in a storage zone located on a floating vessel floating on said body of water;

(e) returning at least a majority portion of said second more dense stream to said body of water;

(f) monitoring a makeup of the recovered fluid; and

(g) diverting said recovered fluid around said first hydrocyclone separator and directly to said storage zone when said recovered fluid contains an oil slug as determined by said monitoring step.

5,366,642

COMPACT WATER FILTRATION AND PURIFICATION PUMP

Sanford Platter; Jeffrey K. Aldred, and Richard J. Kraemer, all of Boulder, Colo., assignors to KPA, Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 682,650, Apr. 9, 1991. This application Dec. 15, 1992, Ser. No. 990,526

Int. Cl.[5] B01D *35/26*

U.S. Cl. 210—767 20 Claims

1. A pump for fluid filtration, said pump comprising:

a housing having an inlet and an outlet;

filtering means within said housing operatively connected to said inlet and to said outlet for filtering fluid;

a cylinder in the interior of said housing operatively connected to said inlet and to said filtering means;

a piston assembly disposed in said cylinder and comprising a piston cross head and a piston rod and a piston;

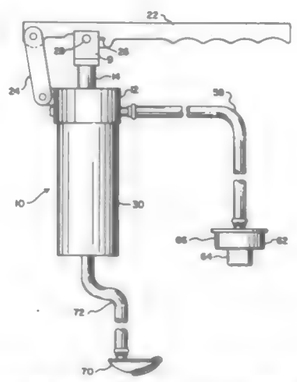
an elongated lever means pivotally connected at one end to said housing, and connectable to said piston cross head by an elongated pin;

said piston being slidably positioned within said cylinder and movable by said lever means for pumping fluid from said inlet through said cylinder and said filtering means and out of said outlet;

means including said elongated pin for engaging said lever means and said piston cross head at a location on said lever means intermediate the ends of said lever means to move said piston with mechanical advantage within said cylinder and for disengaging said lever means and said piston cross head to allow said lever means to be moved to a storage position;

wherein said means for engaging includes:

detent means formed on a front surface of said piston cross head;



said elongated pin being inserted transversely through said lever means and a portion of said piston cross head;

means for rotating said elongated pin in a first direction about its longitudinal axis;

cam follower means connected to said elongated pin and responsive to said rotation in said first direction for resiliently engaging said detent means for preventing said lever means from disengagement from said piston cross head; and

means for rotating said elongated pin in a second direction for enabling the disengagement of said lever means from said elongated pin to allow said lever means to be moved to a storage position.

5,366,643

METHOD AND COMPOSITION FOR ACIDIZING SUBTERRANEAN FORMATIONS

Michael L. Walker, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 608,877, Nov. 5, 1990, abandoned, which is a continuation of Ser. No. 258,925, Oct. 17, 1988, abandoned. This application May 24, 1993, Ser. No. 66,817

Int. Cl.[5] E21B *43/27*

U.S. Cl. 252—8.555 21 Claims

12. A method of acidizing a subterranean formation penetrated by a well bore whereby the corrosive effect of an acidic solution on metal present in said well bore is minimized, said method comprising contacting said formation with an aqueous acidic solution comprising hydrochloric acid which contains a corrosion-reducing effective amount of a corrosion inhibitor which does not contain an acetylenic alcohol, said corrosion inhibitor consisting of a blend of a source of antimony ions and a reaction product,

said reaction product being prepared by reacting at least four reaction constituents together in the presence of from about 0.8 to about 1.2 equivalents of an aqueous mineral acid catalyst at a temperature in the range of from about 140° F. to about 250° F. for a time in the range of from about 4 hours to about 48 hours to thereby yield said reaction product;

wherein at least one of said four reaction constituents is one equivalent of a group (i) compound, at least one of said four reaction constituents is from about 0.6 to about 10 equivalents of a group (ii) compound, at least one of said four reaction constituents is from about 0.5 to about 10 equivalents of a group (iii) compound and at least one of said four reaction constituents is from about 0.10 to about 10 equivalents of a group (iv) compound and further wherein each of said reaction constituents are from different compounds;

said group (i) compounds have at least one reactive hydrogen atom and have no groups reactive under the conditions of reaction other than hydrogen and include compounds selected from the group consisting of amines, amides, aldehydes, nitrogen heterocycles, ketones, phenols, and acetylenic alcohols;

said group (ii) compounds include a carbonyl group and have at least one hydrogen atom on the carbon atom adjacent to the carbonyl group;

said group (iii) compounds are aldehydes, and

said group (iv) compounds are selected from a fatty compound having from 5 to 60 carbon atoms, an alkyl nitrogen heterocycle having at least one alkyl group having from 1 to 18 carbon atoms and 3 to 9 carbon atoms in the heterocyclic ring structure and admixtures thereof.

5,366,644

LUBRICANT FOR FUEL

Robert T. Wicks, Richton Park, Ill., assignor to Gold Eagle Co., Chicago, Ill.

Continuation of Ser. No. 881,122, May 11, 1992, abandoned, which is a continuation of Ser. No. 719,329, Jun. 20, 1991, abandoned. This application May 6, 1993, Ser. No. 58,585

Int. Cl.[5] C10M *141/02;* **C10L** *1/18*

U.S. Cl. 252—12 **20 Claims**

1. A hydrocarbon fuel soluble, solid lubricant for addition to two-cycle engine fuel and substantially spontaneous dispersion therein, to provide lubrication to a two-cycle engine using said fuel, said solid lubricant being shaped in the form of a pellet having a diameter of at least 1 mm. up to 4 cm.; said solid lubricant comprising (1) from 25 to 75 weight percent of a saturated fatty acid having 12 to 22 carbon atoms; (2) from 5 to 40 weight percent of at least one polymer selected from the group consisting of polyisobutylene having a molecular weight of at least about 800, and polymerized, unsaturated fatty acids having an average of at least about 24 carbon atoms per polymerized molecule; and (3) from 10 to 50 weight percent of a polybasic ester of a polyol molecule and 2 to 4 fatty acid molecules, each fatty acid molecule having 4 to 22 carbon atoms.

5,366,645

ANTI-BLOCKING AGENT CONTAINING MODIFIED AMORPHOUS SILICA

Richard Sobottka, Worms, Germany, assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed May 15, 1992, Ser. No. 883,072

Claims priority, application Germany, May 18, 1991, 4116396

Int. Cl.[5] C08K *5/16*

U.S. Cl. 252—28 **14 Claims**

1. An anti-blocking agent comprising (a) porous amorphous silica particles having a BET surface area of 100–650 m^2/g and pore volume of 0.8–2 cm^3/g, and (b) a liquid selected from the group consisting of paraffin oil, silicone oil, vegetable oil, ethylene glycol and mixtures thereof, wherein said agent contains 15–60 wt. % of said liquid based on the combined weight of said silica and said liquid and wherein when said liquid consists of ethylene glycol, said agent contains 25–60 wt. % ethylene glycol based on said combined weight.

5,366,646

LUBRICATING OIL COMPOSITION

Takehisa Sato; Toshiaki Kuribayashi, and Hironari Ueda, all of Ohi, Japan, assignors to Tonen Corporation, Tokyo, Japan

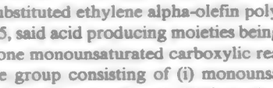
Filed Apr. 27, 1993, Ser. No. 52,688

Claims priority, application Japan, Apr. 28, 1992, 4-109903

Int. Cl.[5] C10M *129/66*

U.S. Cl. 252—49.8 **5 Claims**

1. A lubricating oil composition comprising a lubricating oil base containing 0.1 to 20% by weight of an aromatic glycidyl carboxylate of the formula



wherein R is an aryl or alkylaryl group having 6 to 14 carbon atoms and n is 1 or 2.

5,366,647

DERIVATIZED ETHYLENE ALPHA-OLEFIN POLYMER USEFUL AS MULTIFUNCTIONAL VISCOSITY INDEX IMPROVER ADDITIVE FOR OLEAGINOUS COMPOSITION (PT-796)

Antonio Gutierrez, Mercerville; Robert D. Lundberg, Bridgewater, and Won R. Song, Short Hills, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 473,628, Feb. 1, 1990, Pat. No. 5,275,747. This application Sep. 9, 1993, Ser. No. 118,559

Int. Cl.[5] C10M *133/52, 129/93*

U.S. Cl. 252—51.5 A **8 Claims**

1. A lubricating oil concentrate containing from about 20 to 60 wt. % of an oil soluble composition useful as a multifunctional viscosity index improver additive comprising adduct of:

(a) ethylene alpha-olefin polymer substituted with mono- or dicarboxylic acid producing moieties, said polymer comprising monomer units derived from ethylene and at least one alpha-olefin of the formula $H_2C{=}CHR^1$ wherein R^1 is an alkyl group of from 1 to 18 carbon atoms, wherein said polymer has a number average molecular weight of from above 20,000 to about 500,000, wherein an average of at least about 30% of said polymer chains contain terminal ethenylidene unsaturation, and wherein the functionality of the substituted ethylene alpha-olefin polymer is at least about 0.5, said acid producing moieties being derived from at least one monounsaturated carboxylic reactant selected from the group consisting of (i) monounsaturated C_4 to C_{10} dicarboxylic acids wherein (a) the carboxyl groups are attached to adjacent carbon atoms and (b) at least one, preferably both of said adjacent carbon atoms are part of said monounsaturation; (ii) anhydride or C_1 to C_5 alcohol derived mono- or diester derivatives of (i); (iii) monounsaturated C_3 to C_{10} monocarboxylic acids wherein the carbon-carbon double bond is allylic to the carboxy group and (iv) C_1 to C_5 alcohol derived mono- or diester derivatives of (iii) and

(b) at least one nucleophilic reagent selected from the group consisting of amines, alcohols, amino alcohols, metal reactants and mixtures thereof, said nucleophilic reagent having been reacted with said substituted ethylene alpha-olefin polymer through said mono- or dicarboxylic acid producing moieties.

5,366,648

FUNCTIONAL FLUIDS USEFUL AT HIGH TEMPERATURES

Mary F. Salomon, Cleveland Heights; Donald J. Mara, Wickliffe; Franklin P. Abbott, Middleburg Hts., and Joseph W. Pialet, Euclid, all of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Feb. 23, 1990, Ser. No. 484,338

Int. Cl.[5] C10M *1/38*

U.S. Cl. 252—42.7 **33 Claims**

1. A high temperature functional fluid comprising

(A) at least about 85% by weight of a liquid synthetic base oil comprising at least one polyol ester, and at least one hydrogenated polyolefin;

(B) from about 0.1 to about 10% by weight of at least one phenolic compound selected from the group consisting of

(B-1) metal-free, hindered phenols substituted with at least one alkyl group containing at least about 6 carbon atoms, and alkylene coupled derivatives thereof;

(B-2) neutral and basic alkaline earth metal salts of hindered phenols which are not alkylene- or sulfur-coupled;

(B-3) metal-free alkyl phenol sulfides prepared by reacting an alkyl phenol with sulfur monochloride, sulfur dichloride or elemental sulfur or neutral and basic alkaline earth metal salts of said alkyl phenol sulfides; and

(B-4) neutral and basic alkaline earth metal salts of alkylene-coupled phenols prepared by reacting a phenol with an aldehyde or ketone; and

(C) from about 0.01 to about 10% by weight of at least one non-phenolic antioxidant.

5,366,649

COPOLYMERS USABLE AS MULTIFUNCTIONAL ADDITIVES FOR LUBRICANTS AND LUBRICATING COMPOSITIONS CONTAINING SAID COPOLYMERS

Jean-Pierre Durand, Chatou; Catherine Keromest, Rouen, and Maurice Born, Nanterre, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 15, 1993, Ser. No. 76,680

Claims priority, application France, Jun. 16, 1992, 92 07395

Int. Cl.[5] C10M *157/08, 157/06;* **C08F** *220/38*

U.S. Cl. 252—46.6 **11 Claims**

1. A polyolefin copolymer usable as a multifunctional additive for lubricants, comprising a polyolefin copolymer based on ethylene, propylene and optionally an unconjugated diene, modified so as to contain sulphur and phosphorus, said copolymer being obtained by the esterification of an ethylene-propylene copolymer or an ethylene-propylene-diene terpolymer containing fixed succinic anhydride groups, with a phosphorosulphur alcohol of the formula:

$$(RO{-})_2P(S)S{-}CH_2{-}CHR'{-}OH \quad (1)$$

or the formula:

$$((RO{-})_2P(S)S{-}CH_2{-}CHR'{-}O{-})_2P(S)S{-}CH_2{-}CHR'{-}OH \quad (2)$$

in which R represents an alkyl radical containing 1 to 30 carbon atoms and R' represents a hydrogen atom or an alkyl radical containing 1 to 30 carbon atoms.

5. A lubricating composition, comprising a major proportion of lubricating oil having a mineral or synthetic origin and, as an additive, a proportion of 0.25 to 10% by weight of at least one copolymer according to claim 1.

5,366,650

ICE-MELTING COMPOSITION HAVING ANTI-CORROSION PROPERTIES

Arnold Wiesenfeld, Mahwah, and James K. Barbour, Red Bank, both of N.J., assignors to Castlebar Industries Corp., Woodbridge, N.J.

Filed Aug. 13, 1993, Ser. No. 105,955

Int. Cl.[5] C09K *3/18*

U.S. Cl. 252—70 **18 Claims**

1. An ice-melting composition having anti-corrosion properties, comprising:

a) an ice-melting chemical selected from the group consisting of a chloride salt, urea, ammonium sulfate, calcium magnesium acetate, and combinations thereof, said ice-melting chemicals being at least 95% by weight of said ice-melting composition;

b) said ice-melting chemicals having a ph value of less than 7 so as to be acidic; and

c) an anti-corrosion compound being 2-butyne-1,4 diol in said ice-melting composition in the range of 0.20% to 5% by weight of said ice-melting composition.

5,366,651

CORROSION-INHIBITED ANTIFREEZE FORMULATIONS HAVING MONOCARBOXYLIC, TRIAZOLE, AND IMIDAZOLE COMPOUNDS

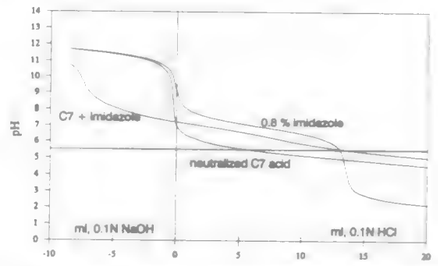
Jean-Pierre Maes, Merelbeke, and Walter A. van Neste, St. Amandsberg, both of , assignors to Texaco Services (Europe) Ltd., White Plains, N.Y.

Filed Mar. 26, 1993, Ser. No. 39,591

Claims priority, application European Pat. Off., Apr. 6, 1992, 92303005.0

Int. Cl.[5] C09K *5/00*

U.S. Cl. 252—76 **12 Claims**



1. An antifreeze concentrate comprising a water soluble liquid alcohol freezing point depressant and a corrosion inhibitor comprising carboxylic acids or their salts and a triazole compound, wherein the concentrate contains: (1) from 0.1 to 15 weight percent, calculated as the free acid, of a C_5–C_{16} aliphatic monobasic acid or the alkali metal, ammonium or amine salt thereof; (2) from 0.1 to 0.5 weight percent of a hydrocarbyl triazole; and (3) from 0.05 to 5 weight percent unsubstituted or alkyl substituted imidazole; said weight percentages being based on the amount of liquid alcohol present.

5,366,652

PROCESS FOR MAKING HIGH DENSITY DETERGENT AGGLOMERATES USING AN ANHYDROUS POWDER ADDITIVE

Scott W. Capeci, North Bend; James W. Osborn, Cincinnati, both of Ohio; Adrian J. W. Angell, Strombeek-Bever, and Paul van Dijk, Putte, both of , assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 27, 1993, Ser. No. 113,572
Int. Cl.[5] C11D *11/00*
U.S. Cl. 252—89.1 14 Claims

1. A process for preparing high density detergent agglomerates comprising the steps of:

(a) charging a viscous surfactant paste into a mixer/densifier wherein said surfactant paste has a viscosity of from about 10,000 cps to about 100,000 cps and contains from about 70% to 85%, by weight of said surfactant paste, of a detersive surfactant and the balance water;

(b) adding from about 1% to about 20% by weight of an anhydrous material selected from the group consisting of carbonates, sulfates, carbonate/sulfate complexes, tripolyphosphates, tetrasodium pyrophosphate, citrates, aluminosilicates, cellulose-based materials and organic synthetic polymeric absorbent gelling materials into said surfactant paste just prior to entrance into said mixer/densifier to absorb at least a minor amount of said water from said surfactant paste; and

(c) agglomerating said surfactant paste and said anhydrous material by treating said surfactant paste and said anhydrous material initially in a high speed mixer/densifier and subsequently in a moderate speed mixer/densifier so as to form detergent agglomerates having a density of at least about 650 g/l.

5,366,653

PROCESS FOR PREPARING CONCENTRATED DETERGENT COMPOSITIONS FOR USE IN AUTOMATIC DISHWASHERS

Robert J. Corring, Rockaway Township, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed May 12, 1993, Ser. No. 60,630
Int. Cl.[5] C11D *11/00*
U.S. Cl. 252—135 7 Claims

1. A process for preparing a concentrated detergent composition comprising the following steps sequentially:

a. preparing a dry blend of a thickening polymer and sodium trimetaphosphate in a ratio of about 1:8 to about 1:60, wherein the sodium trimetaphosphate is present in an amount of from about 23% to about 35% by weight based on total composition;

mixing the dry blend into water to form a homogeneous dispersion;

c. subsequently adding from about 3% to about 12% by weight of a potassium hydroxide base to form sodium potassium tripolyphosphate;

d. adding about 2% to about 20% by weight of a sodium silicate to the solution of step (c); and

adding about 0.2% to about 8% by weight of a nonionic surfactant;

f. mixing one or more optional additives selected from the group consisting of perfumes, dyes, pigments, preservatives, the amount of each additive being up to 0.5% by weight,

wherein the resulting composition contains both sodium and potassium ions in a K^+/Na^+ weight ratio of greater than 0.5 to about 1, is substantially free of added potassium salts, and has a viscosity of about 1,800 to about 3,500 centipoises.

5,366,654

RINSE AID COMPOSITIONS CONTAINING ALKYL POLYCYCLOSIDE AND A KETONE ANTIFOAMING AGENT

Guido C. Van Den Brom, Maarssen, and Leendert Los, Houten, both of Netherlands, assignors to Unilever Patent Holdings, B.V., Rotterdam, Netherlands

Continuation of Ser. No. 628,846, Dec. 11, 1990, abandoned. This application Dec. 15, 1993, Ser. No. 166,895
Claims priority, application United Kingdom, Dec. 11, 1989, 8927956
Int. Cl.[5] C11D *3/00, 3/22, 3/60*
U.S. Cl. 252—174.17 8 Claims

1. In a ware washing process wherein polycarbonate ware is sprayed and cleaned with an alkaline wash liquor and then rinsed with hot water including a rinse aid, the improvement whereby chemical attack of the polycarbonate care is minimized, said improvement comprising using, as the rinse aid, an alkyl polyglycoside surfactant having the formula $C_nH_{2n+1}O(C_6H_{10}O_5)_xH$ wherein n equals 9–16, and $1<x<2$ together with an anti-foaming agent which is a ketone having more than 25 carbon atoms.

5,366,655

STABLE SODIUM PERCARBONATE PARTICLE AND PROCESS FOR PREPARING SAME

Hiroyuki Yamashita; Kouichi Hatano, both of Wakayama, and Mutsumi Kuroda, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 791,060
Claims priority, application Japan, Nov. 21, 1990, 2-320057
Int. Cl.[5] C01B *15/04, 15/10, 31/00*
U.S. Cl. 252—186.27 9 Claims



1. A stable sodium percarbonate particle comprising a sodium percarbonate particle having pores and 2–8% by weight of a borate based on sodium percarbonate; wherein the inside of said particle is penetrated and the surfaces of said pores in said particle are coated with said borate, and the outer surface of said particle is also coated with said borate.

5,366,656

OPTICALLY ACTIVE ALCOHOL AND DERIVATIVES THEREOF, LIQUID CRYSTAL COMPOSITION CONTAINING SAME AND LIQUID CRYSTAL DEVICE

Wen-Liang Tsai, Hsinchu, and Shu-Hui Yang, Taipei, both of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 830,134, Jan. 31, 1992, abandoned. This application Feb. 24, 1994, Ser. No. 201,393
Int. Cl.[5] C09K *19/52, 19/12;* C07C *69/76, 43/02*
U.S. Cl. 252—299.01 28 Claims

25. A liquid crystal composition comprising an optically active organic compound having the following general formula:



$$R_1OCH_2-\underset{CH_3}{\overset{\bullet}{CH}}-A-(CH_2)_m-(O)_n-CH_2-\underset{CH_3}{\overset{\bullet\bullet}{CH}}-R_2 \qquad (I_a)$$

wherein A is O or S, R_1 is a hydrogen atom, an alkyl group

having 1–22 carbon atoms, a hydroxy containing alkyl group, para-alkyl substituted phenyl, para-alkyl substituted biphenyl, hydroxyphenyl, hydroxybiphenyl or tosyl; R_2 is an alkyl group having 2–8 carbon atoms; m is an integer of 0–5; n is 0 or 1, where when m=0, n is not 1, and * and ** are asymmetric centers.

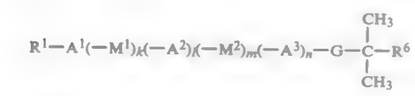
5,366,657

GEMINAL DIMETHYLALKYL COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN LIQUID-CRYSTALLINE MIXTURES

Gerhard Illian, Frankfurt am Main; Ingrid Müller, Hofheim, both of Germany, and Takamasa Harada, Chiba, Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

PCT No. PCT/EP91/00129, § 371 Date Jul. 24, 1992, § 102(e) Date Jul. 24, 1992, PCT Pub. No. WO91/11441, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 24, 1991, Ser. No. 915,687
Claims priority, application Germany, Feb. 2, 1990, 4003012
Int. Cl.[5] C09K *19/06, 19/34, 19/12, 19/20*
U.S. Cl. 252—299.6 11 Claims

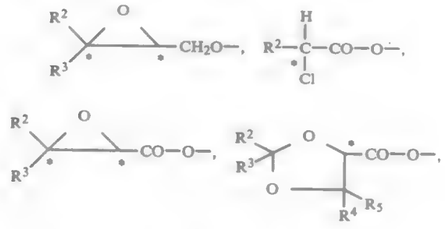
1. A geminal dimethylalkyl compound of the formula (I)



$$R^1-A^1(-M^1)_k(-A^2)_l(-M^2)_m(-A^3)_n-G-\underset{CH_3}{\overset{CH_3}{C}}-R^6 \qquad (I)$$

in which:

R^1 is CH_3, straight-chain or branched (with or without an asymmetric carbon atom) alkyl having 2 to 16 carbon atoms, it also being possible for one or two non-adjacent $-CH_2-$ groups to be replaced by —O—, —CO—O—, —O—CO—, or is one of the following radicals



A^1, A^2 and A^3 are identical or different 1,4-phenylene, in which 2H may be replaced by F, 1,4-cyclohexylene, pyridine-2,5-diyl, pyrimidine-2,5-diyl or (1,3,4)-thiadiazole-2,5-diyl,

M^1 and M^2 are identical or different —CO—O—, —O—CO—,

G and is straight-chain or branched alkylene having 1 to 16 carbon atoms in which, in addition, one $-CH_2-$ group may be replaced by —O—, —O—CO—, —CO—O—,

R^2, R^3, R^4 and R^5 are identical or different, H or straight-chain or branched alkyl having 1 to 16 carbon atoms,

k, l, m and n are zero or 1, and

R^6 is straight-chain alkyl having 1 to 10 carbon atoms.

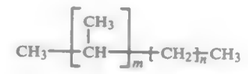
5,366,658

USE OF POLYMETHYLALKANES AS BIODEGRADABLE BASE OILS IN LUBRICANTS AND FUNCTIONAL FLUIDS

Dirk Hoppe, Hilden; Horst Pennewiss, Darmstadt; Frank Kraushaar, Essen; Michael Stehr, Gelsenkirchen; Roland Streck; Jaroslaw Monkiewicz, both of Marl, and Hans G. Wey, Mülheim/Ruhr, all of Germany, assignors to Huls Aktiengesellschaft, Marl, Germany

Filed Jan. 10, 1994, Ser. No. 179,246
Claims priority, application Germany, Jan. 9, 1993, 4300418; Oct. 25, 1993, 4336317
Int. Cl.[5] C10M *107/04, 107/06, 105/32*
U.S. Cl. 252—56 S 9 Claims

1. A lubricant comprising a biodegradable base oil comprising mixture of polymethylalkanes of the formula I:



wherein the total number of carbon atoms, n+2m+2, is 20 to 100, the ratio of methyl and methylene groups to ethylidene groups is of from 3 to 20:1, and said ethylidene groups are always separated by at least one methylene group.

5,366,659

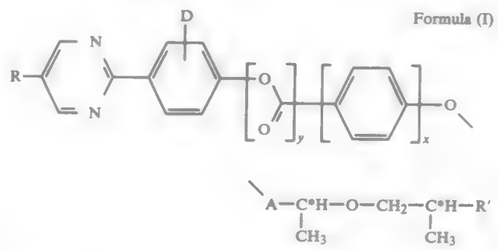
FERROELECTRIC LIQUID CRYSTALS CONTAINING PYRIMIDINE AND CHIRAL COMPOUNDS AND LIQUID CRYSTAL COMPOSITIONS CONTAINING THE SAME

Wen-Liang Tsai, Hsing-Ying; Hwei-Long Kuo, Taipei, and Shih-Yiing Shen, Tainan, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Mar. 22, 1994, Ser. No. 215,525
Int. Cl.[5] C09K *19/34, 19/52;* C07C *41/00;* C07D *239/02*
U.S. Cl. 252—299.61 14 Claims

1. An optically active liquid crystal compound represented by the following formula:

Formula (I)



wherein:

A: is selected from the group consisting of $-CH_2-$ and —CO—;

R: is an alkyl or alkoxyl group having 1 to 22 carbons;

R′: is an alkyl group having 2 to 8 carbons;

x,y: are integers of either 0 or 1, provided that when x=0, y≠1;

D: is selected form the group consisting of hydrogen and halogen atoms; and

*: represents a chiral center.

5,366,660

DISPERSIONS

Carole A. M. Tapley, Stockton on Tees, England, assignor to Tioxide Specialties Limited, London, England

Filed Sep. 30, 1992, Ser. No. 953,219

Claims priority, application United Kingdom, Oct. 4, 1991, 9121143.3

Int. Cl.[5] B01J *13/00;* **A61K** *7/42;* **C09C** *1/04;* **G02B** *5/23*

U.S. Cl. 252—309 **29 Claims**

1. An oil dispersion comprising an oil, particles of zinc oxide having an average size of from 0.005 to 0.15 micron and an organic dispersing agent for said particles, the amount of said particles being such that the dispersion has a solids content of greater than 30 percent by weight and said dispersion being substantially transparent to visible light and having an absorbance for ultraviolet light such that the extinction coefficient (E(308)) at a wavelength of 308 nm is at least 9 liters per gram per centimeter, the extinction coefficient (E(360)) at a wavelength of 360 nm is at least 9 liters per gram per centimeter and the ratio E(360):E(308) is in the range 0.75:1 to 1.5:1.

5,366,661

METHOD FOR FORMING A STABILIZED AQUEOUS DISPERSION OF INORGANIC PARTICLES OR ORGANIC PARTICLES FOR FOOD STUFFS

Sakae Katayama, deceased, late of Nishinomiya by Hirohiko Katayama, executor ; Atsushi Tsuda, Takatsuki, and Kenzi Hanno, Hirakata, all of Japan, assignors to Katayama Chemical, Inc., Osaka, Japan

Continuation-in-part of Ser. No. 866,091, Apr. 6, 1992, abandoned, which is a continuation of Ser. No. 598,806, Oct. 12, 1990, abandoned, which is a continuation of Ser. No. 215,632, Jul. 6, 1988, abandoned. This application Jun. 2, 1992, Ser. No. 892,326

Claims priority, application Japan, Jul. 27, 1987, 62-188639

Int. Cl.[5] A23J *3/18, 3/30;* **B01F** *17/30;* **B01J** *13/00*

U.S. Cl. 252—314 **10 Claims**

1. A method for forming a stabilized dispersion in an aqueous medium of water insoluble inorganic and/or organic particle additives for food stuffs, said method comprising mixing said inorganic and/or organic particle additives with from 0.2%–20% by weight of said inorganic and/or organic particle additives of a grain protein partial degradation product which acts as a particle dispersing agent in said aqueous medium to form a stabilized aqueous dispersion of said inorganic and/or organic particle additives, said grain protein partial degradation product having a weight average molecular weight of from 500 to 110,000, and being obtained by subjecting a grain protein to:

(i) a single degradative treatment with a degradation agent selected from the group consisting of alkali, acid, proteinase, reducing agent, and oxidizing agent, or

(ii) a combination of degradative treatments with two degradative agents selected from the group consisting of acid, proteinase, reducing agent and oxidizing agent.

5,366,662

STABILIZED COMPOSITIONS COMPRISING HYDROFLUOROALKANES, PREMIXTURES INTENDED FOR THE PREPARATION OF POLYMERIC FOAMS AND POLYMERIC FOAMS OBTAINED BY THE USE THEREOF

Pierre Barthelemy, Pietrebais, and Annie Leroy, Fauvillers, both of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Claims priority, application Belgium, Sep. 29, 1992, 09200847

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—393 **7 Claims**

1. A composition comprising at least one hydrofluoroalkane and at least one stabilizing agent for the hydrofluoroalkane, selected from the group consisting of quinones, compounds containing a nitroso group and mixtures thereof.

5,366,663

MIXTURES OF LIQUID CRYSTALLINE COPOLYMERS, POLYETHER IMIDES AND COMPATIBILIZERS AND USE THEREOF

Michael Römer, Gross-Gerau, and Andreas Schleicher, Einhausen, both of Germany, assignors to Hoechst AG, Frankfurt, Germany

Filed Nov. 25, 1992, Ser. No. 981,560

Claims priority, application Germany, Nov. 30, 1991, 4139532

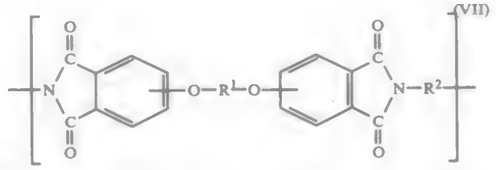
Int. Cl.[5] C08L *67/00, 77/12, 79/08*

U.S. Cl. 525—425 **17 Claims**

1. A mixture comprising

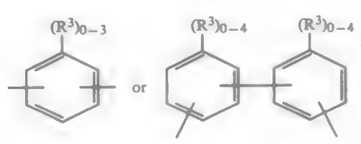
A) at least one liquid crystalline polyester or poly(esteramide),

B) at least one polyether imide with recurring units of the formulae:

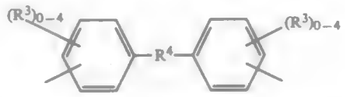


(VII)

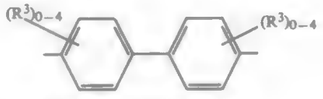
where R^1 is selected from a substituted or unsubstituted aromatic radical of the formula



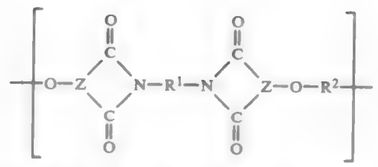
or a divalent radical of the formula



in which R^3 is C_1–C_6-alkyl or halogen and R^4 is a direct bond or a divalent —O—, —S—, —CO—, —SO_2— or —SO radical, alkylene or alkylidene with in each case 1 to 6 carbon atoms, or cycloalkylene or cycloalkylidene with in each case 4 to 8 carbon atoms, R^2 is an aromatic hydrocarbon radical with 6 to 20 carbon atoms, or a halogen-substituted or alkyl-substituted derivative thereof, the alkyl group containing 1 to 6 carbon atoms, an alkylene or cycloalkylene radical with 2 to 20 carbon atoms, or a divalent radical of the formula

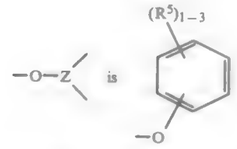


where R^3 has the above meaning or b)

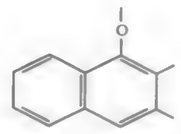


(VIII)

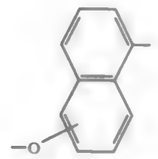
in which R^1 and R^2 are as defined above, and where



R^5 in the —)—Z═radical is, independently of one another, hydrogen, alkyl or alkoxy with 1 to 6 carbon atoms in the alkyl radical, or is



and



where the oxygen atom is coupled to one of the rings and is in the ortho- or para-position to one of the bonds of the imidocarbonyl group, and

C) at least one compatibilizer which contains structural units of the formula

$$(X—)_i—((R^7)_l—(Y)_m—(R^8)_n)_j—(—Z)_p \qquad (IX)$$

X and Z are identical or different and are, independently of one another, a hydroxyl or amino group, or —COOH, —CO—O—CO— or —COOR, i and p are in each case identical or different and are integers, the sum of the two indices being 2 to 10, R^7 and R^8 are in each case identical or different and are alkyl radicals with 1 to 8 carbon atoms or aryl radicals with 6 to 30 carbon atoms or mixtures of the two, l and n are zero or 1, the sum of the two indices being at least 1, Y is a divalent O, C═O, SO_2, SO═, S or NR^9 group, R^9 being a substituted or unsubstituted alkyl or aryl group with 1 to 18 carbon atoms, m is zero or 1, and j is the integer 1, 2 or 3.

5,366,664

ELECTROMAGNETIC SHIELDING MATERIALS

Vijay K. Varadan; Vasundara V. Varadan; Neil R. Williams, and Joseph W. Cresko, all of State College, Pa., assignors to The Penn State Research Foundation, University Park, Pa.

Filed May 4, 1992, Ser. No. 878,153

Int. Cl.[5] H01B *1/00, 1/20, 1/22*

U.S. Cl. 252—512 **59 Claims**

1. An electromagnetic shielding composition comprising a mixture of:

i) a matrix component selected from the group consisting of silicone oils, curable elastomers, thermoplastic polymers, thermosetting polymers and mixtures thereof; and

ii) a synergistic combination of electromagnetic shield enhancing additives comprising a mixture of:

a) from about 1 to about 10% by weight of said composition of at least one conductive fiber material;

b) from about 5 to about 60% by weight of said composition of a conductive powder material, said powder comprising a metal oxide or metal sulfide core coated with a conductive metal, wherein the weight range of said powder to said fiber is in the range of about b 1:10 to about 20:1 respectively;

c) from about 0 to about 35% by weight of said composition of a conductive metal flake material;

d) from 0 to about 25% by weight of said composition of a liquid organic compound containing at least one cyano group per molecule;

said additives being uniformly dispersed in said matrix material.

5,366,665

COMPOSITIONS COMPRISING ALKYL SULFOOXYALKANOATE COMPOUNDS CONTAINING A BENEFICIAL REAGENT COMPONENT

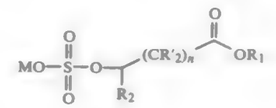
Suk H. Cho, Teaneck, N.J., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 738,082, Jul. 30, 1991, abandoned. This application Mar. 9, 1993, Ser. No. 28,500

Int. Cl.[5] C11D *1/12*

U.S. Cl. 252—549 **4 Claims**

1. A personal product composition selected from the group consisting of soap bar compositions, facial or body cleansing compositions, shampoo compositions, conditioner compositions, cosmetic compositions, dental compositions and underarm deodorant/anti-perspirant compositions wherein said compositions contain an alkyl sulfooxy alkanoate molecule having the formula



wherein:

M is selected from the group consisting of an alkali-metal, an alkaline earth metal, a cationic amino acid and salt forming cations;

R′ is hydrogen;

R_2 is hydrogen or CH_3;

R_1 is a straight chain carbon having 12 or more carbons;

n≦0; and

while molecule is capable of forming a hydroxy carboxylic acid ester, a hydroxy carboxylic acid, a sulfooxy carboxylate and/or alcohol when the surfactant is metabolized or hydrolyzed.

5,366,666

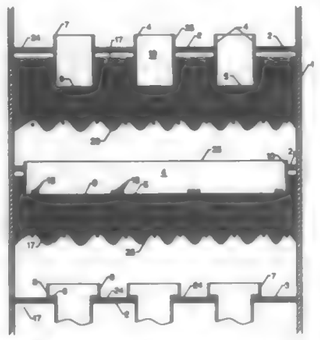
MULTIPLE DOWNCOMER FRACTIONATION TRAY HAVING PACKING BETWEEN DOWNCOMERS

Karl T. Chuang, Edmonton, Canada; Chong-Si Xu, Hangzhou, China, and Guangxin Chen, Edmonton, Canada, assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 941,609, Sep. 8, 1992, Pat. No. 5,262,094, which is a continuation-in-part of Ser. No. 528,199, May 25, 1990, abandoned. This application Oct. 13, 1993, Ser. No. 136,073

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—97 11 Claims



1. A fractionation tray comprising:

(a) a perforated tray deck having upper and lower surfaces and at least two downcomers, each downcomer comprising two parallel sidewalls and extending through the tray deck, with the tray having means for the upward passage of vapor through the tray deck;

(b) a bed of packing material at least partially located between the downcomers; and,

(c) means to distribute liquid over the bed of packing material comprising perforations in a downcomer sidewall.

5,366,667

TRICKLING FILM GAS-LIQUID CONTACTOR AND USE

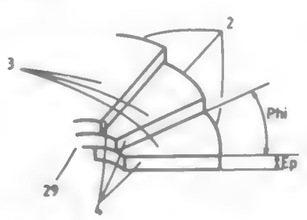
Pierre Le Goff, Nancy, France, assignor to Pechiney Recherche, Courbevoie, France

Filed Sep. 15, 1993, Ser. No. 120,907

Claims priority, application France, Sep. 15, 1992, 92 11234

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—153 35 Claims



1. A trickling film gas-liquid contactor for the transfer of matter and heat between gas and liquid, comprising a helical support of heat conductive material permitting a liquid to be treated (evaporation or absorption) to flow by force of gravity in the form of a trickling film, a wall of heat conductive material and in thermal contact with the said support, separating in sealing-tight fashion the said liquid and a heat exchanging fluid, and is characterised in that the said helical support of the said liquid and the said wall are formed by a vertical stack of open work plates of heat conductive material, offset angularly in respect of one another by an angle Phi by rotation about the axis of the said helical support, each plate thus forming an element of the said support, like a step on a spiral staircase, and an element of the said wall, by means ensuring the rigid and sealing-tight assembly of the said plates in such a way as to obtain an evaporator or an absorber which is economical and efficient by virtue of the said support favouring the mixing of the said liquid and increasing the transfer of heat between the said liquid and the heat exchanging fluid.

5,366,668

POLYMERIC BIFOCAL LENS PRODUCTION PROCESS

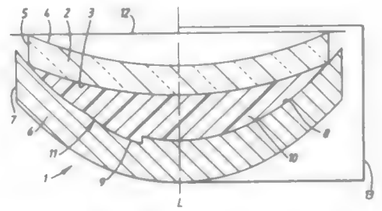
Matthew J. Cuthbertson, Colonel Light Gardens, and Philip H. Squires, Reynella, both of Australia, assignors to Pilkington Visioncare Inc., Menlo Park, Calif.

Filed Nov. 25, 1992, Ser. No. 981,419

Claims priority, application United Kingdom, Nov. 29, 1991, 91/25480.5

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.8 10 Claims



1. A polymeric bifocal lens production process including the steps of selecting a single vision lens or lens blank with a convex surface, and a bifocal mould with a smaller radius of curvature; toughening the convex surface of the lens or lens blank; assembling the mould and lens or lens blank with catalysed monomer between the mould and the lens or lens blank; holding the lens or lens blank and the mould in position relative to one another so that the lens or lens blank contacts the mould along a periphery of the lens or lens blank; curing the monomer; removing the mould and post-curing to relieve stress in the bifocal lens and to allow the cured monomer to shrink in a controlled manner thereby causing a power decrease in the bifocal segment.

5,366,669

INJECTION MOLDING OF CERAMIC ARTICLES USING AQUEOUS BASED THERMOPLASTIC RESIN

Tariq Quadir, Columbia, Md.; James D. Jones, Shreve, and Jyoti P. Chakraverty, Wooster, both of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Jun. 21, 1993, Ser. No. 80,271

Int. Cl.[5] C04B *33/30, 33/32*

U.S. Cl. 264—6 13 Claims

1. A method of forming a sintered ceramic body, said method comprising:

a) combining ceramic powder, water and a water soluble copolymer of polyvinyl alcohol and poly(alkyleneoxy) acrylate to form a slurry containing about:

35–40 parts by weight of ceramic powder,

7.0–10.0 parts by weight of copolymer, and

50–60 parts by weight of water,

b) drying said slurry to form coated ceramic particles,

c) heating said coated particles,

d) injecting said heated particles into a mold to form a green ceramic body,

e) cooling said green ceramic body,

f) recovering said cooled body, and

g) firing said recovered body to remove said copolymer and to sinter said ceramic.

5,366,670

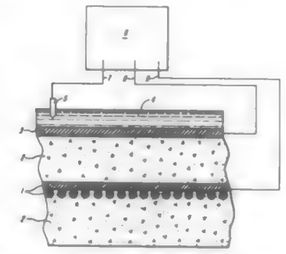
METHOD OF IMPARTING CORROSION RESISTANCE TO REINFORCING STEEL IN CONCRETE STRUCTURES

Jose D. Giner, Brookline, and Nancy D. Kackley, Cambridge, both of Mass., assignors to Giner, Inc., Waltham, Mass.

Filed May 20, 1993, Ser. No. 32,504

Int. Cl.[5] C23F *13/00;* E04B *1/16*

U.S. Cl. 264—22 11 Claims



1. A method for improving corrosion resistance of steel reinforcing bars embedded in concrete, said method comprising the steps of:

embedding said steel reinforcing bars in wet freshly poured concrete having a high ionic conductivity;

positioning a counter electrode a distance from said embedded steel reinforcing bars;

applying and maintaining a specific, constant voltage difference between said steel reinforcing bars and said counter electrode while said steel reinforcing bars are embedded in said wet freshly poured concrete to take advantage of said high ionic conductivity of said wet freshly poured concrete at an interface between said steel reinforcing bars and said freshly poured concrete to thereby improve said corrosion resistance of said steel reinforcing bars by creating a protective iron oxide film on said steel reinforcing bars.

5,366,671

METHOD OF PRODUCING A GLUCOMANNAN SPONGE

Kumiko Kimura, Onomichi, Japan, assignor to Shimizu Chemical Corporation, Japan

Filed Feb. 15, 1994, Ser. No. 196,727

Int. Cl.[5] B29C *67/20*

U.S. Cl. 264—28 12 Claims

1. A process for producing a spongy material comprising the steps of;

(a) dissolving glucomannan-rich flour in water to make a solution;

(b) suspending in said solution a quantity of finely divided particles of a thermally reversible gel;

(c) adding an alkali to the suspension;

(d) allowing said suspension in a mold to coagulate into a solid mass containing said thermally reversible gel particles enclosed in the matrix of a water-insoluble, thermally irreversible glucomannan gel;

(e) freezing said solid mass;

(f) thawing and leaching said frozen mass with water at an elevated temperature to remove said thermally reversible gel particles leaving a skeleton of said matrix gel; and

(g) drying said skeleton.

5,366,672

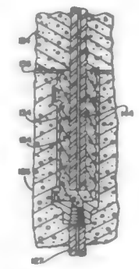
METHOD OF FORMING CONCRETE STRUCTURES WITH A GROUT SPLICE SLEEVE WHICH HAS A THREADED CONNECTION TO A REINFORCING BAR

Julian Albrigo; Edward D. Ricker, both of Chagrin Falls, and Louis J. Colarusso, Macedonia, all of Ohio, assignors to Erico International Corporation, Solon, Ohio

Filed Mar. 18, 1993, Ser. No. 33,122

Int. Cl.[5] B28B *1/16;* B32B *31/06;* E04B *1/16*

U.S. Cl. 264—35 13 Claims



1. A method of forming concrete structures comprising the steps of forming steel reinforced cast concrete structural members by constructing a form for each said member placing in each said form a steel reinforcing rod, said rod terminating in a threaded end near a form wall and having secured to said threaded end a splice sleeve, said splice sleeve including a threaded section at a first end connected to said threaded end of said rod, and a second end of said splice sleeve including an enlarged generally cylindrical chamber having an open mouth adapted to receive another rod end for grout splicing therein, said chamber being axially aligned with said threaded section of said sleeve and said threaded end of said rod whereby when said sleeve is secured to said rod said sleeve and rod end become aligned tensile and compression extensions of each other positioning said rod and sleeve such that said open mouth is in engagement with said form wall whereby said chamber is sealed between said form wall and said threaded section of said sleeve, and then casting concrete in each said form to form said steel reinforced structural members with said mouth of each said chamber being exposed by removal of each said form, and then joining said members by grout splicing to form said structures.

5,366,673

METHOD OF AUTOCLAVING POROUS PIECE-GOODS ESPECIALLY MOULDED BODIES OF POROUS CONCRETE

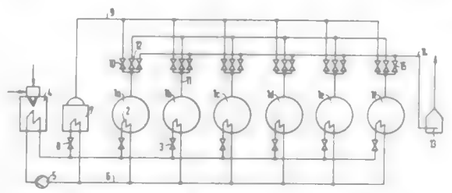
Franz Wosnitza, Aachen, Germany; Georg Beckmann, Vienna, Austria, and Georg Zimmermann, Aachen, Germany, assignors to Hebel Aktiengesellschaft, Emmering and SICOWA Verfahrenstechnik fuer Baustoffe GmbH & Co. KG, Aachen, both of Germany

Filed Oct. 20, 1992, Ser. No. 963,983

Claims priority, application Germany, Oct. 24, 1991, 4135119

Int. Cl.[5] F26B *3/00*

U.S. Cl. 264—37 7 Claims



1. A method of autoclaving porous bodies containing water

during the course of an autoclaving operation, comprising the sequential steps of:

heating an inner chamber of a first autoclave containing the porous bodies with pressurized steam during which heating a temperature level and a pressure level within the inner chamber are increased until predetermined pressure and temperature values are reached;

holding the pressure and temperature values substantially constant for a predetermined time necessary for autoclaving said porous bodies;

during the holding step producing additional steam within the inner chamber of said first autoclave by indirectly heating the inner chamber to an increased temperature level above a vaporization temperature of the water thus vaporizing the water contained in said porous bodies so that the porous bodies are dried, the additional steam being controllably discharged from the inner chamber to maintain the pressure and the temperature values within the inner chamber substantially constant during the holding step while the porous bodies are autoclaved;

using the discharged additional steam from said first autoclave to at least partially heat up a second autoclave operating in a heating step and containing further porous bodies; and

lowering the pressure and temperature levels within the inner chamber of said first autoclave for discharging the autoclaved porous bodies.

5,366,674

PROCESS FOR PRODUCING EXPANDED PLASTICS WITH SKIN

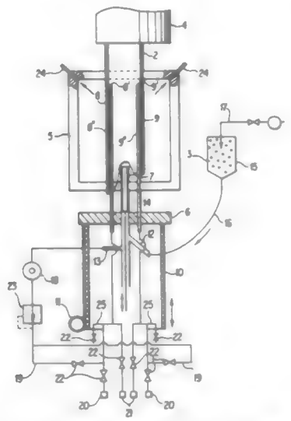
Kazuhide Hattori; Hiroyuki Yamaji, both of Mie; Yoshikazu Hatakeyama; Yoshiyuki Shida, both of Niigata; Atsushi Tamura, Tokyo; Takumi Kitaoka, Tokyo, and Takashi Kobama, Tokyo, all of Japan, assignors to Aronkasei Co., Ltd., Osaka; Mitsubishi Yuka Badische Co., Ltd., Yokkaichi and Sanko Sogyo Co., Ltd., Sanjo, all of Japan

Filed Mar. 26, 1993, Ser. No. 37,982

Claims priority, application Japan, Jul. 13, 1992, 4-209761; Jul. 13, 1992, 4-209762; Jul. 13, 1992, 4-209763; Jul. 17, 1992, 4-213582; Jul. 17, 1992, 4-213583

Int. Cl.[5] B29C *67/22*

U.S. Cl. 264—45.4 **10 Claims**



1. A process for producing expanded plastic with a skin comprising:

1) blowing a parison held in a blow mold with compressed air to obtain a hollow article, said blow mold being equipped with

one or more pipes capable of being inserted into and withdrawn from the mold and connected via valves to a blowing air source, a heating steam source and a vacuum extractor, and

a feeder for supplying thermoplastic pre-expanded resin beads,

said compressed air being introduced through said one or more pipes,

2) filling the inside of the hollow article with thermoplastic pre-expanded resin beads by means of the feeder while the hollow article is still warm and within said blow mold,

3) heat-fusing said beads with steam introduced through said one or more pipes to obtain an expanded article, and

4) cooling the expanded article while drawing the inside of the expanded article via said one or more pipes with vacuum.

5,366,675

FOAMABLE POLYETHYLENE-BASED COMPOSITION FOR ROTATIONAL MOLDING

Donald G. Needham, Rte. 1, Box 300, Ramona, Okla. 74061

Filed Mar. 2, 1994, Ser. No. 204,855

Int. Cl.[5] C08J *9/34*

U.S. Cl. 264—45.5 **20 Claims**

1. A method of molding a foamed hollow article having a closed cell structure and smooth outer skin, said method comprising

preparing a foamable, polyethylene-based, powder mixture comprising about 0.5 to 7.5 parts by weight of an ester group-bearing, ethylenic polymer having a melt index higher than that of the polyethylene base polymer; an effective amount of a suitable chemical foaming agent; and about 0.01 to 2 parts by weight of a suitable nucleating agent; and

rotomolding said powder mixture under suitable foaming and melting conditions to provide said foamed hollow article.

5,366,676

METHOD AND APPARATUS FOR MANUFACTURING CONCRETE PANELS BY CONTINOUS PRESSING

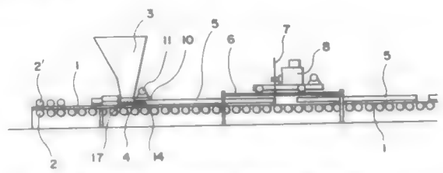
Shigeru Kobayashi, 401-2, Karigane-cho, Ayakoji sagaru, Iwagamidori, Shimogyo-ku, Kyoto-shi, Kyoto, Japan

Continuation of Ser. No. 855,594, Mar. 20, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 80,695

Claims priority, application Japan, Dec. 17, 1991, 3-333445

Int. Cl.[5] B28B *1/08, 5/00, 11/14*

U.S. Cl. 264—70 **3 Claims**



1. A method for manufacturing concrete panels by continuously pressing, the method comprising the steps of:

continuously feeding pallets onto a moving roller conveyor;

feeding a concrete material onto the pallets;

continuously pressing pressure frames against the concrete material from an upper side and both lateral sides of the concrete material while vibrations are imparted to the pressure frames;

forming hollows in the concrete material by thrusting a rotary screw core rod therethrough and molding the material into a panel shape; and

cutting the molded concrete material into a predetermined length corresponding to a length of each pallet in synchronism with the moving roller conveyor to manufacture concrete panels of predetermined length.

3. An apparatus for manufacturing concrete panels by continuously pressing, the apparatus comprising:

concrete material feeding means for continuously feeding a concrete material onto pallets which are continuously conveyed by a roller conveyor, each of said pallets having a defined length;

pressure frames for vibrating and pressing the concrete material from an upper side and both lateral sides thereof;

a rotary screw core rod for forming hollows in the concrete material being vibrated and pressed; and

cutting means shifting in accordance with movement of the roller conveyor to cut the concrete material when molded into a length equal to the length of each of the pallets to manufacture concrete panels of a predetermined length.

5,366,677

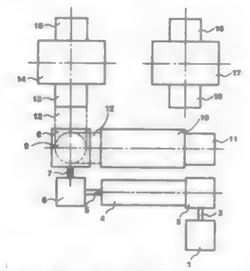
METHOD FOR PRODUCING PRESSED PRODUCTS USING WOOD OR VEGETABLE MATERIAL WITHOUT ADDING BINDING SUBSTANCES AND WITHOUT PRELIMINARY PROCESSING

Leonard V. Mahanov, Kulbysheva, Russian Federation, assignor to DCD, Ltd., Moscow, Russian Federation

Filed May 28, 1993, Ser. No. 69,553

Int. Cl.[5] B29C *43/00*

U.S. Cl. 264—113 **9 Claims**



1. A method for the fabrication of pressed articles from wood or another vegetable material in the absence of bonding agents which comprises the steps of

(a) drying wood or other vegetable material which has been ground to a particle size of less than $2\times10^{31\ 3}$ m to a moisture content ranging from 9–11%;

(b) heating hermetically sealed first press molds to a temperature within the range of 200°–220° C. and pressing the ground dried material which has been heated to a temperature not less than 120° C. in heated second press molds under a pressure of not less than 30.0 MPa for a time period ranging from 1 to 1.5 min per 1×10^{-3} m of resultant pressed material thickness;

(c) cooling the first press molds under full pressure without depressurization and gradually releasing the pressure; and

(d) removing the pressed material from said first press molds.

5,366,678

METHOD OF MANUFACTURING CUSHION MATERIAL

Fumio Nomizo, Toyota, Japan, and Takashi Nagase, Birmingham, Mich., assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 16, 1993, Ser. No. 46,740

Claims priority, application Japan, Apr. 24, 1992, 4-106465

Int. Cl.[5] B29C *35/02*

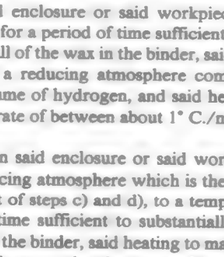
U.S. Cl. 264—122 **19 Claims**

1. A method of manufacturing a cushion material comprising:

filling a mold part for forming a cushion material with a mixed fiber material containing a thermofusible fiber,

engaging said mold part with another mold part, and

continuously varying a hardness between two surfaces of said cushion material by applying heat to a specific region of said mixed fiber material in the engaged mold parts so



that said thermofusible fiber in said specific region of said mixed fiber material melts before said thermofusible fiber in another region of said mixed fiber.

5,366,679

PROCESS FOR THERMAL DEBINDING AND SINTERING OF A WORKPIECE

Eric Streicher, Virofly, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed May 27, 1992, Ser. No. 888,645

Int. Cl.[5] B29C *45/00;* **B22F** *1/00*

U.S. Cl. 264—125 **13 Claims**

1. A process for thermal debinding and sintering of a workpiece made by molding a mixture of a binder containing wax and a powder, the process comprising:

a) injection molding of a workpiece comprising at least 30% by volume of a binder, said binder comprising from about 70% to about 90% by weight of at least one low molecular weight binder and from about 10% to 30% by weight of a high molecular weight polymer,

b) introducing said molded workpiece in an enclosure at ambient temperature,

c) injecting a reducing atmosphere into said enclosure, said reducing atmosphere comprising at least 95% by volume of hydrogen,

d) heating said enclosure or said workpiece or both to a temperature for a period of time sufficient to substantially decompose all of the wax in the binder, said heating taking place under a reducing atmosphere comprising at least 95% by volume of hydrogen, and said heating occurring at a heating rate of between about 1° C./min and about 2° C./min,

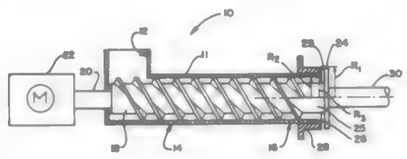
e) heating again said enclosure or said workpiece or both, under a reducing atmosphere which is the same or different from that of steps c) and d), to a temperature and for a period of time sufficient to substantially eliminate the remainder of the binder, said heating to maximum temperature occurring at a heating rate of between about 2° C./min and about 5° C./min,

f) maintaining said temperature until said workpiece is substantially sintered,

g) cooling the enclosure under a reducing atmosphere which is the same or different from that of steps c) and d), and the workpiece to reach a temperature where no substantial oxidation can occur, and then

h) withdrawing the workpiece from the enclosure.

5,366,680
ANNULAR GAP EXTRUDER
James D. Foresman, Hughesville, Pa., assignor to Andritz Sprout-Bauer, Inc., Muncy, Pa.
Filed May 7, 1993, Ser. No. 59,236
Int. Cl.[5] B29C 47/92
U.S. Cl. 264—141 17 Claims



1. An annular gap extruder comprising:
a cylindrical housing with an inlet port at a first end and a discharge section with a discharge opening at a second end;
a conveying screw coaxially located within the cylindrical housing and including an inlet end at the housing inlet port and a discharge end at the housing discharge opening;
means for rotating the conveying screw;
a plate coaxially transversely mounted to the discharge end of the conveying screw near the discharge opening of the housing, thereby defining an annular gap (26) between the plate and the discharge opening, said plate having an outside radius;
a cylindrical sleeve around the discharge section of the cylindrical housing, thereby defining a discharge gap (29) in confronting relation with the plate, said sleeve having an inside radius wherein said sleeve radius is less than said plate radius; and
means for sliding the cylindrical sleeve laterally along the cylindrical housing, so that said discharge gap can be adjusted.

15. A method of conditioning and extruding material by rotating a screw within a substantially cylindrical housing, comprising the steps of:
conveying the material with said screw from an inlet port to a discharge opening in the housing whereby the material is conditioned;
rotating a resistance plate with the rotating screw at the discharge opening, where a discharge gap is formed in confronting relationship between said plate and the housing such that material extrudes out of the housing substantially radially through said discharge gap; and
adjusting the size of said discharge gap with a cylindrical sleeve to adjust the amount of conditioning of the material.

5,366,681
METHOD OF MANUFACTURING RELEASE SHEET
Shuzo Ohara, Kawanishi, and Ryoichi Kitamura, Takaishi, both of Japan, assignors to Goyo Paper Working Co., Ltd., Osaka, Japan
Continuation of Ser. No. 641,633, Jan. 17, 1991, Pat. No. 5,213,743, which is a continuation of Ser. No. 300,684, Jan. 19, 1989, abandoned, which is a division of Ser. No. 65,469, Jun. 23, 1987, abandoned. This application Apr. 2, 1993, Ser. No. 42,253
Claims priority, application Japan, Jun. 24, 1986, 61-147734
The portion of the term of this patent subsequent to May 25, 2010, has been disclaimed.
Int. Cl.[5] B29C 47/88
U.S. Cl. 264—171 2 Claims

1. A method of manufacturing a release sheet consisting of the steps of:
extruding a mixture consisting of a) a polyolefin resin and b) a graft polymer onto a substrate to form a laminate, said graft polymer having been formed by reacting an organopolysiloxane compound having at least one hydrogen atom with a hydrocarbon compound having at least one double bond reactive with that hydrogen atom; and
heating the laminate to cause the graft polymer contained in the extruded mixture to bleed onto and become localized at the surface of the mixture.

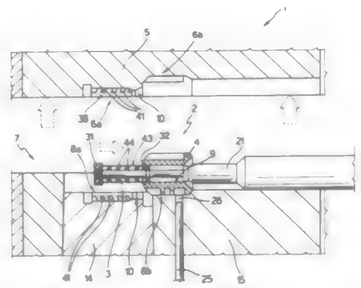
5,366,682
PROCESS FOR PRODUCING PHASE RETARDER
Michitaka Morikawa, Ibaraki; Koji Higashi, Takatsuki, and Tadashi Shindo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Dec. 9, 1992, Ser. No. 987,803
Claims priority, application Japan, Dec. 9, 1991, 3-324644
Int. Cl.[5] B29C 61/02
U.S. Cl. 264—230 14 Claims

1. A process for producing a phase retarder film or sheet, comprising the steps of subjecting a uniaxially stretched thermoplastic resin film or sheet to thermal relaxation at a temperature of at least the glass transition temperature of the thermoplastic resin to shrink the film or sheet in a stretching axis direction while suppressing expansion of the film or sheet in a direction parallel to the film or sheet surface and perpendicular to the stretching axis, wherein the thermal relaxation and expansion suppression are conducted until the retardation ratio of the film or sheet satisfies the following formula:

$$0.900 < R_{40}/R_0 < 1.100$$

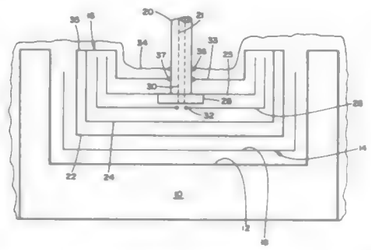
where R_{40} is the retardation value measured with the film or sheet tilted 40° from horizontal around an axis corresponding to the slow axis if the thermoplastic resin has a positive intrinsic birefringence or the fast axis if the thermoplastic resin has a negative intrinsic birefringence and R_0 is the retardation value measured with the film or sheet arranged horizontally.

5,366,683
PROCESS FOR MOULDING A LOCKING FASTENER, PRODUCED AS TWO MEMBERS
Silvano Cibin, Prato Nuovo, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy
Filed May 17, 1993, Ser. No. 61,940
Claims priority, application Italy, May 15, 1992, TO92 A 000420
Int. Cl.[5] B29C 45/32, 45/33, 65/72
U.S. Cl. 264—238 7 Claims



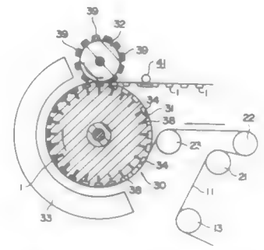
1. A process for moulding and assembling a locking fastener (2), comprising a first member (3) and a second member (4), said first member (3) being substantially tubular and adapted to be housed within a through-hole (9) defined within said second member (4), comprising the steps of:
moulding said first (3) and second (4) members from a plastic material within separate moulding cavities (6a,8a and 6b,8b) defined within the same mould (1) so that said first (3) and second (4) members are formed separate from each other, said two members (3 and 4) being formed upon a common core (21) so that said first member (3) is formed facing and coaxial with said through-hole (9) defined within said second member (4);
opening said mould (1) by moving one moulding die (5) away from a second moulding die (7) which is formed in at least two distinct parts (11 and 12) and wherein each one of said two distinct parts (11 and 12) has a moulding cavity (8a and 8b) for moulding one of said members (3 and 4);
displacing said two parts (11 and 12) of said second die (7) relative to each other so as to cause said first member (3) to be withdrawn from its moulding cavity (8a) while at the same time said second member (4) is retained within its moulding cavity (8b);
withdrawing said core (21) from said through-hole (9) defined within said second member (4) from the end disposed opposite that end facing said first member (3), while said second member (4) is retained within its mould cavity (8b) by being disposed in contact with at least one wall of said mould cavity (8b), so as to cause said first member (3) to be inserted into said through-hole (9) of said second member (4);
extracting said core (21) from said first member (3) after said first member (3) is disposed within said second member (4); and
expelling said second member (4), containing said first member (3) within said through-hole (9), from said moulding cavity (8b) of said second moulding die (7).

5,366,684
MOLDING COMPOSITE METHOD USING AN INFLATABLE BLADDER PRESSURIZED IN AN AUTOCLAVE
Louis P. Corneau, Jr., Kings Park, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Dec. 31, 1992, Ser. No. 999,131
Int. Cl.[5] B29C 67/14, 43/10
U.S. Cl. 264—510 2 Claims



1. A molding method for fabricating laminates comprising the steps:
laying up a plurality of layers of flexible material on a stiffened bladder;
inverting the laid-up material and contacting bladder;
inserting the bladder and laid-up material into a female mold form wherein an exposed surface of the material directly contacts a recess of the mold;
positioning the assembly of mold, material, and bladder in an autoclave;
enclosing the bladder within a bag while maintaining exposure of an inflation tube;
evacuating the bag so as to allow full differential pressure to develop within the bag during inflation;
inflating the bladder to force increased conformance of the exposed surface of the material to edges of the mold recess; and
bonding the layers to form a laminate as the bladder remains inflated.

5,366,685
PROCESS OF MOLDING THERMOPLASTIC SHEET BY PLUG ASSIST VACUUM FORMING
Atsushi Fujii, Himeji, and Kouzaburo Matsuzawa, Tokyo, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 799,901, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 530,638, May 30, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 948,072
Claims priority, application Japan, Jul. 18, 1989, 1-185711; Apr. 24, 1990, 2-109485
Int. Cl.[5] B29C 51/10, 51/22
U.S. Cl. 264—547 15 Claims

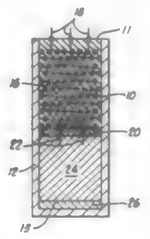


1. A process of molding a thermoplastic sheet by plug assist vacuum forming, comprising the steps of:
a premolding step, which includes:
bringing a thermoplastic sheet into close contact with the outer cylindrical surface of a molding drum, the molding drum having plural circumferentially spaced cavities therein, each having edge surfaces defined by a heat insulation layer;
externally heating the thermoplastic sheet and concurrently vacuum sucking the thermoplastic sheet into the cavities of the molding drum to premold a plurality of partially formed pockets in the thermoplastic sheet; and
a full-molding step, which includes:
vacuum sucking of the partially formed premolded pockets into the cavities of the molding drum in which they reside and concurrently and sequentially inserting a plug into each pocket to fully form and thermally mold the pocket in conformance with the shape of the plug, the magnitude of vacuum sucking being insufficient to pull the thermoplastic sheet out of engagement with the plug.

5,366,686
METHOD FOR PRODUCING ARTICLES BY REACTIVE INFILTRATION
Andreas Mortensen, and David C. Dunand, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, a Massachusetts Corporation, Cambridge, Mass.
Filed Mar. 19, 1993, Ser. No. 34,731
Int. Cl.[5] B22F 7/08; B22D 19/00; C04B 35/02, 35/65
U.S. Cl. 419—5 35 Claims

1. A method for producing an article including a refractory compound comprising:
(a) providing a preform having a first location and a second location;
(b) infiltrating said preform with a liquid infiltrant so that said liquid infiltrant enters said preform at a first location; and
(c) initiating a reaction between said preform and said liquid

infiltrant at a second location to establish a reaction front which propagates toward said first location, and where



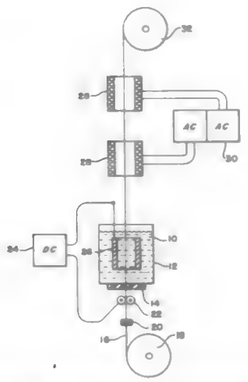
said liquid infiltrant and said preform react to produce said article including said refractory compound.

5,366,687

ELECTROPHORESIS PROCESS FOR PREPARATION OF CERAMIC FIBERS

William J. Dalzell, Jr., Jupiter; Robert J. Wright, Tequesta, and Jarrett L. Spence, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 637,850, Jan. 7, 1991, Pat. No. 5,336,381. This application Dec. 10, 1993, Ser. No. 165,129
Int. Cl.[5] B22F *1/02*; C25D *13/00*
U.S. Cl. 419—35 7 Claims



1. A method for the continuous production of a metal oxide fiber, comprising:

a) continuously passing an electrically conductive fiber core through an electrophoresis cell containing a sol prepared by the steps of:

(1) concurrent hydrolysis and alcoholization of an organometallic compound in an aqueous medium comprising water and an alcohol;

(2) peptization of this reaction mixture with a monovalent acid or acid source;

(3) dehydration and de-alcoholization of the reaction mixture by removal of the excess aqueous phase;

(4) dewatering and further removal of unreacted alcohol by evaporation; and

(5) re-alcoholization by introduction of additional alcohol to the concentrated sol to form a sol wherein the molar ratio of alcohol to metal hydrate is from about 50 to about 70, and the particle size of said metal hydrate is from about 10 to about 150 Angstroms;

b) applying a potential between said fiber core and another electrode immersed in said sol, whereby metal hydrate particles are continuously deposited on said fiber core to a thickness greater than the diameter of said fiber core;

c) decreasing the evolution of hydrogen by operating said electrophoresis cell at a potential of from about 1 to about 50 volts;

d) providing means for the dispersal and removal of hydrogen gas from the electrophoresis cell;

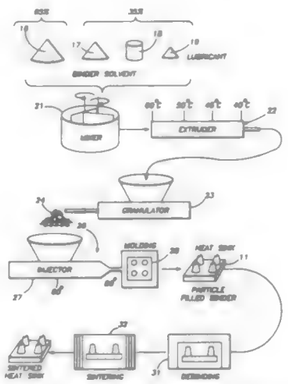
e) heating the fiber core and metal hydrate particles deposited thereupon after said fiber core emerges from said sol, so as to form a metal oxide fiber.

5,366,688

HEAT SINK AND METHOD OF FABRICATING

Robert L. Terpstra; Barbara K. Lograsso; Iver E. Anderson, and Jeffrey A. Moore, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 988,217, Dec. 9, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 208,809
Int. Cl.[5] B22F *3/16*
U.S. Cl. 419—36 14 Claims



1. The method of fabricating a heat sink comprising the steps of selecting a thermally conductive material having a high conductivity and selecting a powder of the thermally conductive material which has a high packing density, mixing particles of the powder with a polymer binder to form a particle/-binder mixture, heating the mixture to melt the polymer binder in the particle/binder mixture and molding the mixture into a heat sink having the desired shape and size, allowing the heat sink to cool, debinding the molded heat sink to remove the polymer binder by positioning the heat sink in a vacuum environment and progressively heating the heat sink, and processing the debound heat sink to form interparticle metallurgical bonds between adjacent particles of the powder.

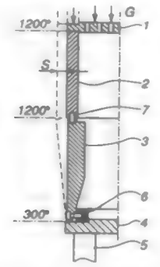
5,366,689

HOT-ISOSTATIC PRESS WITH HINGE-LIKE MOVEMENT TO ACCOMODATE EXPANSION

Bengt O. Säiner, Helsingborg, Sweden, assignor to Asea Brown Boveri AB, Västeras, Sweden

Filed Jan. 21, 1992, Ser. No. 822,947
Claims priority, application Sweden, Mar. 12, 1991, 9100743-5
Int. Cl.[5] B22F *1/02*; A23G *3/00*
U.S. Cl. 419—49 6 Claims

1. A hot-isostatic press comprising a load-carrying member , preferably in the form of a plate, arranged to be supported by a substantially annular support member, wherein the annular support member is arranged on an underlying support, preferably in the form of a bottom plate, and wherein the annular support member is adapted to enclose a heat insulation, wherein at least part of the annular support member is arranged in the form of a number of axial segments arranged side by side, said axial segments are adapted to be connected at the top and bottom to adjacent members by means of an attachment, the attachment being adapted to guide the segment in a



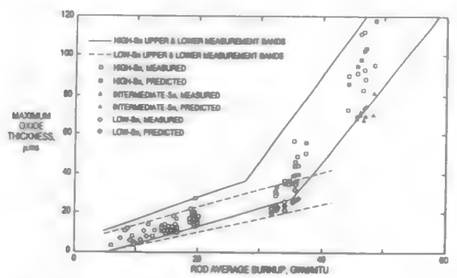
hinge-like movement relative to the adjacent members to take up the radial movements which arise in the segment as a result of a temperature gradient between the upper and lower parts of the axial segments.

5,366,690

ZIRCONIUM ALLOY WITH TIN, NITROGEN, AND NIOBIUM ADDITIONS

Anand M. Garde, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jun. 18, 1993, Ser. No. 77,936
Int. Cl.[5] C22C *16/00*
U.S. Cl. 420—422 15 Claims



1. A zirconium alloy for use in nuclear core structure elements and fuel cladding, which comprises an alloy composition as follows:

tin, in a range of greater than 0 to about 1.50 wt. %;

iron, in a range of greater than or equal to 0 to about 0.24 wt. %;

chromium, in a range of greater than or equal to 0 to 0.15 wt. %;

niobium, in a range of greater than 0 to about 0.5 wt. %;

nitrogen, in a range of greater than or equal to 0 to about 2300 ppm;

silicon, in a range of 0 to 100 ppm;

oxygen, in a range up to 1600 ppm; and

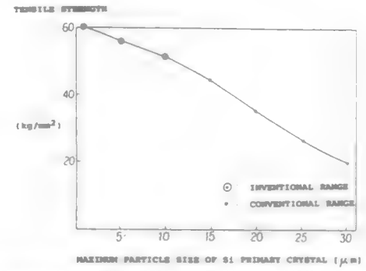
the balance being of zirconium.

5,366,691

HYPER-EUTECTIC ALUMINUM-SILICON ALLOY POWDER AND METHOD OF PREPARING THE SAME

Yoshinobu Takeda; Tetsuya Hayashi; Toshihiko Kaji; Yusuke Odani; Kiyoaki Akechi, all of Hyogo; Jun Kusui, Osaka; Takamasa Yokote, Osaka; Akiei Tanaka, Osaka, and Takashi Watsuji, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd. and Toyo Aluminum K.K., both of Osaka, Japan

PCT No. PCT/JP91/01488, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO92/07676, PCT Pub. Date May 14, 1992
PCT Filed Oct. 31, 1991, Ser. No. 863,285
Claims priority, application Japan, Oct. 31, 1990, 2-295018; Oct. 31, 1990, 2-295019; Oct. 31, 1990, 2-295099
Int. Cl.[5] C22C *21/00*
U.S. Cl. 420—548 14 Claims



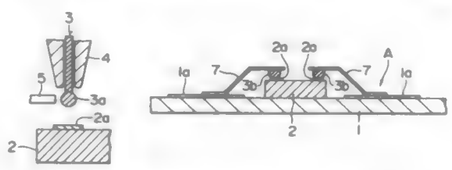
1. A hyper-eutectic aluminum-silicon alloy powder, comprising primary crystal silicon within the range of at least 12 percent by weight and at the most 50 percent by weight of said alloy powder, and phosphorus within the range of at least 0.0005 percent by weight and at the most 0.1 percent by weight of said alloy powder, said primary crystal silicon having a grain size of 10 μm at the most, said alloy powder having a particle size of 400 μm at the most, the remainder being aluminum and unavoidable impurities.

5,366,692

ALLOY CONNECTING MATERIALS FOR SEMICONDUCTORS

Toshinori Ogashiwa, Tokyo, Japan, assignor to Tanaka Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1990, Ser. No. 618,900
Claims priority, application Japan, Dec. 27, 1989, 1-340132; Jun. 29, 1990, 2-171991; Aug. 24, 1990, 2-222729
Int. Cl.[5] C22C *13/00*, *11/00*
U.S. Cl. 420—565 6 Claims



1. A connecting material for a semiconductor having aluminum alloy wiring line, comprising a ball having a Brinell hardness which is greater than 6, said ball having been formed by heating the tip of an alloy wire, the alloy wire produced by drawing a rapidly-quenched alloy, said alloy comprising:

a principal element selected from the group consisting of Pb and Sn;

0.01–10 wt % Sb; and

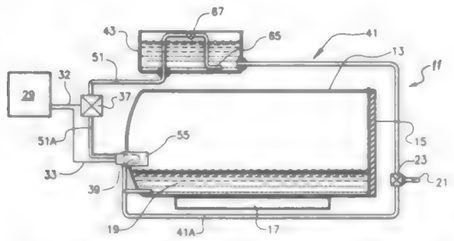
0.01–10 wt % Zn, having an intermetallic compound formed between Sb and the aluminum alloy wiring line, and said Zn occluded into the aluminum alloy wiring line.

5,366,693

AIR/STEAM/LIQUID EXHAUST DEVICE FOR SINGLE CYCLE PRESSURE VESSEL

Mel-Angeli M. Burgos, Bellflower, Calif.; Charles H. Feathers, III, Hilton, N.Y., and John C. Schmoegner, Redondo Beach, Calif., assignors to MDT Corporation, Torrance, Calif.

Filed Jan. 21, 1992, Ser. No. 822,939
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—26 16 Claims



1. An improved exhaust structure for a pressure vessel within a system, said system being structured and arranged such that liquid is introduced to said vessel to a selected liquid level and vapors are created within said vessel to first displace air from said vessel, to then elevate the pressure within said vessel and to thereafter displace vapors and/or liquid from said vessel, said improved exhaust structure comprising:

a valve, including an inlet, an outlet and drive means for selectively operating said valve between respective open and closed conditions;

a first passageway connecting said outlet to a receiver;

a second passageway fluidly connecting said inlet to the interior of said vessel above said liquid level; and

a third passageway fluidly connecting said inlet to the interior of said vessel at the bottom of said interior.

5,366,694

ONE-STEP CONTACT LENS STERILIZATION PROCESS

Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807

Continuation-in-part of Ser. No. 991,335, Dec. 16, 1992, Pat. No. 5,312,586, which is a continuation-in-part of Ser. No. 719,169, Jun. 21, 1991, abandoned. This application May 5, 1994, Ser. No. 238,533
The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.
Int. Cl.[5] A61L *2/18;* C02F *1/42;* B01J *39/24*
U.S. Cl. 422—37 8 Claims

1. A process for sterilizing a contact lens which comprises contacting the lens with (a) about 5 to 25 ml of an aqueous solution containing a sterilant and (b) activated carbon, said sterilant being selected from the group consisting of:

(i) about 1 to 5 wt. %, based on the weight of the aqueous solution, of a peroxygen disinfectant;

(ii) about 0.0005 to 0.5 wt. %, based on the weight of the aqueous solution, of an inorganic hypochlorite compound; and

(iii) about 0.0005 to 0.5 wt. %, based on the weight of the aqueous solution, of a hypochlorite precursor compound;

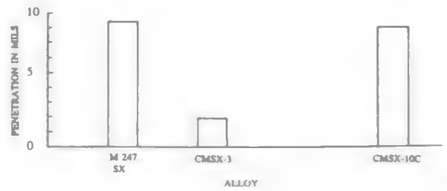
said activated carbon being present in an amount of about 0.1 to 1.0 gram per 10 ml of solution and having a surface area in excess of about 500 m^2/g and a pore volume of at least about 0.75 ml/g, the contacting of the lens with the solution and the activated carbon occurring for a period of time sufficient to effect sterilization of the lens and to decompose substantially all of any sterilant remaining after sterilization of the lens to ophthalmologically innocuous by-products.

5,366,695

SINGLE CRYSTAL NICKEL-BASED SUPERALLOY

Gary L. Erickson, Muskegon, Mich., assignor to Cannon-Muskegon Corporation, Muskegon, Mich.

Filed Jun. 29, 1992, Ser. No. 905,462
Int. Cl.[5] C22C *19/05*
U.S. Cl. 420—448 32 Claims



1. A nickel-based superalloy comprising the following elements in percent by weight:

Rhenium	about 5.0–7.0
Chromium	about 1.8–4.0
Cobalt	about 1.5–9.0
Tantalum	about 7.0–10.0
Tungsten	about 3.5–7.5
Aluminum	about 5.0–7.0
Titanium	about 0.1–1.2
Columbium	about 0–0.5
Molybdenum	about 0.25–2.0
Hafnium	about 0–0.15
Carbon (Incidental Impurity)	about 0–0.04
Nickel + Other Incidental Impurities	balance

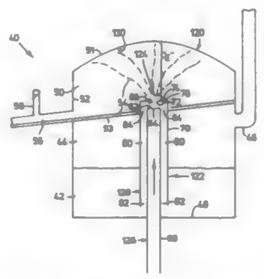
said superalloy having a phasial stability number N_{v3B} less than about 2.10.

5,366,696

OXYGENATION APPARATUS FOR OXYGENATING A CARRIER LIQUID BY SPRAYING

Michael R. Williams, Burlington, Canada, assignor to 1077075 Ontario Inc., Oakville, Canada

Filed Jan. 7, 1993, Ser. No. 1,630
Int. Cl.[5] A61M *11/00*
U.S. Cl. 422—45 11 Claims



1. An oxygenation apparatus for introducing a flow of oxygen gas molecules into a carrier liquid in a one-pas operation, said apparatus comprising:

a receiving chamber for receiving said carrier liquid therein;

a carrier liquid inlet for introducing said carrier liquid to be oxygenated into said receiving chamber;

a contacting chamber in fluid communication with said spray orifice for allowing said carrier liquid;

a separating partition located between said receiving chamber and said contacting chamber, said separating partition constructed and adapted to substantially physically separate said receiving chamber and said contacting chamber from each other so as to preclude the return of oxygenated carrier liquid from said contacting chamber to said receiving chamber;

an oxygen gas inlet for introducing said oxygen gas molecules at a gas pressure slightly above the ambient surrounding air pressure into said apparatus, said oxygen gas inlet terminating in an end portion having a gas introduction orifice therein, said gas introduction orifice located in said receiving chamber, said gas introduction orifice being adapted to cause a jet of oxygen gas molecules to be emitted therefrom;

a spray orifice located in said separating partition, said spray orifice being constructed and adapted to allow earlier liquid to be sprayed therethrough into said contacting chamber by said jet of oxygen gas molecules;

a passageway having a first end and a second end in fluid communication with each other, said first end located within said receiving chamber in fluid communication with said carrier liquid and said second end attached to said spray orifice to form a space between said gas introduction orifice and said spray orifice, such that said earlier liquid can pass from said receiving chamber to the space between said gas introduction orifice and said spray orifice into the receiving chamber; and

an oxygenated earlier liquid outlet for allowing said oxygenated carrier liquid to exit from said contacting chamber;

wherein said oxygen gas molecules include molecules in the diatomic form (O_2), and molecules in at least one of either the triatomic form (O_3) and the monatomic form ($^1O_2$); and

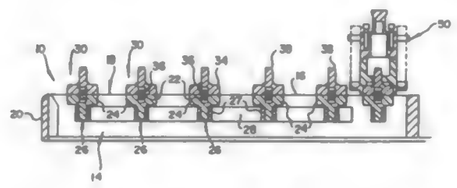
whereby, when said oxygen gas molecules are introduced into said apparatus through said oxygen gas inlet, said oxygen gas molecules exit said oxygen gas inlet through said gas introduction orifice so as to force the carrier liquid that is located in said space between said gas introduction orifice and said spray orifice to be sprayed through said spray orifice into said contacting chamber in a manner such that no bubbles are formed by said spray, thus causing said oxygen gas molecules to thoroughly contact said carrier liquid so as to thereby oxygenate said carrier liquid.

5,366,697

TRAY AND MAGNETIC CONVEYOR

David A. Tomasso, Rochester; Johannes J. Porte, Webster; William D. Vanarsdale, Spencerport; Raymond F. Jakubowicz, Rush, and James D. Riall, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 859,780, Mar. 30, 1992, abandoned. This application Mar. 25, 1993, Ser. No. 36,800
Int. Cl.[5] G01N *35/02*
U.S. Cl. 422—64 8 Claims



1. A recirculating mechanism for continuously supplying trays to a clinical analyzer, said mechanism comprising a support impermeable to liquid, a conveyor under said support comprising a plurality of magnets and means for generating a moving magnetic field with said magnets,

said conveyor being mounted along a recirculating path under said support and said support being permeable to a magnetic field,

and at least one tray mounted above said support and comprising a base having a magnet for cooperating with said magnets of said conveyor, and a frame on said base,

said tray further including means for freely rotatably mounting said frame on said base,

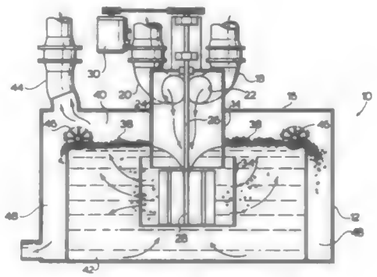
and said tray frame comprising a plurality of receptacles constructed to receive either sample tubes or aspirating tips useful to aspirate sample from a tube, said receptacles including a fixed bottom support.

5,366,698

APPARATUS FOR EFFECTING GAS LIQUID CONTACT

James W. Smith, Toronto; David T. R. Ellenor, Scarborough, and John N. Harbinson, Aurora, all of Canada, assignors to The University of Toronto, Innovations Foundation and Apollo Environmental Systems Inc.

Division of Ser. No. 622,485, Dec. 5, 1990, Pat. No. 5,174,973, which is a continuation-in-part of Ser. No. 582,423, Sep. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 446,776, Dec. 6, 1989, abandoned. This application May 20, 1992, Ser. No. 863,692
Claims priority, application Canada, Dec. 5, 1989, 2004652; United Kingdom, May 2, 1990, 9002462
Int. Cl.[5] B01D *53/34;* B01F *05/12, 13/02;* F01N *03/00*
U.S. Cl. 422—168 20 Claims



1. A gas-livid contact apparatus, comprising:

enclosed tank means,

inlet gas manifold means for feeding at least one gas stream through an inlet in an upper closure to said tank means,

standpipe means communicating with said inlet and extending downwardly within said tank from said upper closure,

impeller means comprising a plurality of blades located towards the lower end of said standpipe means and mounted to a shaft for rotation about a generally vertical axis,

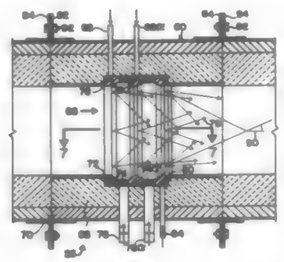
drive means for rotating said shaft,

shroud means surrounding said impeller means and having a plurality of openings extending through the wall of said shroud means,

each of said openings through said shroud means having an equivalent diameter of less than about 1 inch and such that the ratio of the equivalent diameter to the diameter of the impeller is less than about 0.15, and

vent means from said tank means.

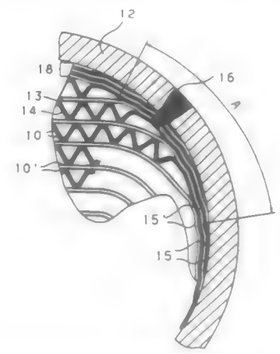
5,366,699
APPARATUS FOR THERMAL DESTRUCTION OF WASTE
Leslie R. Milfeld, Fontana, Calif., and Keith J. Goodrich, Guanaba, Australia, assignors to Bonnie June Goodrich and Keith Joseph Goodrich, Guanaba, Australia
Filed Sep. 22, 1993, Ser. No. 125,402
Int. Cl.[5] B01D *53/34*
U.S. Cl. 422—169 **20 Claims**



1. An apparatus for thermal destruction of waste, comprising:
(a) a first combustion chamber;
(b) inlet means for introducing waste into said first combustion chamber;
(c) first injection means for injecting a mixture of hydrogen and oxygen into said first combustion chamber, said first injection means comprising an annular-shaped injector member having:
(i) a first circumferentially extending water circulating passageway for circulating cooling water through said injector member;
(ii) first and second circumferentially extending gas passageways for respectively directing flow of hydrogen and oxygen around said injector member; and
(iii) a plurality of circumferentially spaced angularly inwardly extending first and second gas passageways in communication with said first and second circumferentially extending gas passageways for respectively directing the flow of said hydrogen and oxygen inwardly of said injector member in a substantially conically shaped pattern;
(d) ignition means located in the first chamber for igniting said hydrogen and oxygen, whereby the waste introduced into said first combustion chamber is pyrolyzed to produce a pyrolyzed product; and
(e) outlet means for expelling said pyrolyzed product from the first chamber.

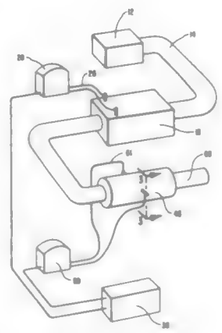
5,366,700
APPARATUS FOR CATALYTICALLY DECONTAMINATING EXHAUST GASES AND METHOD FOR PRODUCING THE APPARATUS
Bohumil Humpolik, Ludwigsburg, and Jürgen Bayer, Esslingen, both of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany
Filed Oct. 18, 1993, Ser. No. 138,342
Claims priority, application Germany, Apr. 16, 1991, 4112354
Int. Cl.[5] B01J *32/00*
U.S. Cl. 422—180 **12 Claims**

1. An apparatus for catalytically decontaminating exhaust gases, comprising:
a metal carrier body having a periphery and having a plurality of sheet metal layers at least some of which are corrugated, said sheet metal layers having smooth end segments overlapping one another, said overlapping smooth end segments forming an outer layer on the periphery of said metal carrier body;
a jacket encompassing said metal carrier body; and



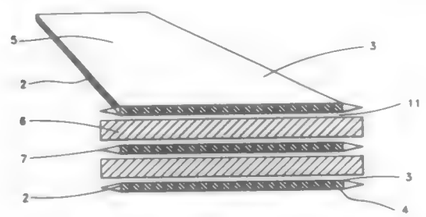
at least one weld seam connecting said smooth end segments to one another and to said jacket.

5,366,701
APPARATUS AND METHOD FOR REDUCING POLLUTANTS IN EFFLUENT GAS FLOW UTILIZING AN IONIZING AND RESONANCE MEANS
Edward O. Taylor, and Carole A. Taylor, both of Sandy, Utah, assignors to Environmental Plasma Arc Technology, Inc., Sandy, Utah
Filed Nov. 1, 1991, Ser. No. 786,261
Int. Cl.[5] B01J *19/12;* **H05H** *1/24;* **B01D** *53/32*
U.S. Cl. 422—186.04 **25 Claims**



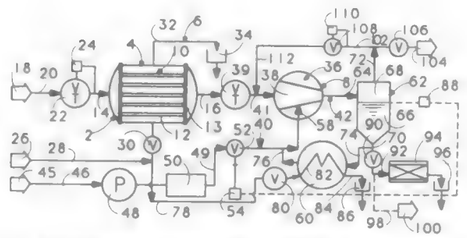
1. A pollution control device comprising:
(a) means for subjecting an effluent gas flow containing contaminants to an alternating current passing through a wire grid within a resonance chamber to create a harmonic resonance field such that ionization of the effluent gas occurs; and
(b) means, in gaseous communication with said means for subjecting an effluent gas flow containing contaminants to an alternating current passing through a wire grid, for subjecting an effluent gas flow containing contaminants to a continuous electric arc such that the effluent gas undergoes photochemical reaction which reduces the amount of contaminants.

5,366,702
APPARATUS FOR GENERATING OZONE UTILIZING AN OSCILLATING PLATE ELECTRODE
Manfred Rimpler, Rabeasberg 19, D-3002 Wedemark, Germany
PCT No. PCT/EP92/02875, § 371 Date Oct. 8, 1993, § 102(e) Date Oct. 8, 1993, PCT Pub. No. WO93/12035, PCT Pub. Date Jun. 24, 1993
PCT Filed Dec. 11, 1992, Ser. No. 98,358
Claims priority, application Germany, Dec. 12, 1991, 4141025
Int. Cl.[5] B21J *19/12;* **C01B** *13/11*
U.S. Cl. 422—186.07 **16 Claims**



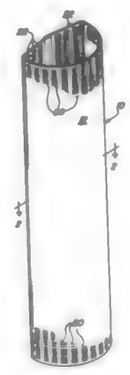
1. Apparatus for the generation of ozone comprising
a high-voltage source;
at least two plate electrodes arranged at a distance to one another and with an interposed dielectric generating at least one flow path, at least one of the plate electrodes being oscillatable in part;
said oscillatable plate electrode having two layers of an electrically conductive material, at least one layer of which is oscillatable; and
a means effective to oscillate at least one layer of the electrically conductive material of said oscillatable plate;
a material which is resilient and has attenuating qualities being arranged between said two layers; and
wherein said two layers are fixed to enable oscillations of said oscillatable plate electrode.

5,366,703
METHODS AND SYSTEMS FOR FORMING PROCESS GASES HAVING HIGH EFFECTIVE OZONE CONTENT UTILIZING ISOTHERMAL COMPRESSION
Pierre A. Liechti, Regensdorf; Franco Gaia, Zurich, both of Switzerland, and Marc Andre, Paris, France, assignors to Ozonia International S.A., Rueil-Malmaison, France
Filed Feb. 10, 1992, Ser. No. 833,487
Int. Cl.[5] B01J *19/12;* **C01B** *13/11*
U.S. Cl. 422—186.11 **19 Claims**



1. A method for the generation of a supply of ozone containing process gas exhibiting high effective ozone content which comprises:
providing a stream of an oxygen containing feed gas having a temperature not greater than about 50° C. and an absolute pressure between about 1 and 3 bar,
subjecting said stream of feed gas to an electric discharge that transforms some of its oxygen content into ozone to produce a stream of ozone containing gas, and
isothermally compressing said ozone containing gas to produce a stream of ozone containing process gas having a temperature not greater than about said temperature of said feed gas, an absolute pressure greater than 3 bar and an absolute ozone partial pressure of at least 0.2 bar.

5,366,704
RADIAL FLOW REACTOR WITH DOUBLE PERFORATED SCALLOPS
William J. Koves, Hoffman Estates; Roger L. Throndson, Schaumburg, and Kenneth D. Peters, Elmhurst, all of Ill., assignors to UOP, Des Plaines, Ill.
Division of Ser. No. 729,977, Jul. 15, 1991, Pat. No. 5,209,908, which is a continuation-in-part of Ser. No. 412,051, Sep. 25, 1989, abandoned. This application Dec. 17, 1992, Ser. No. 992,342
Int. Cl.[5] B01J *8/02;* **C01G** *11/00*
U.S. Cl. 422—218 **11 Claims**

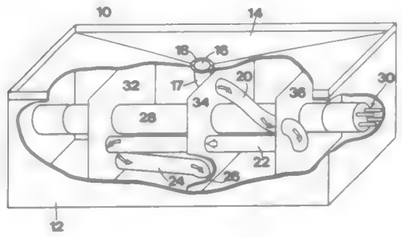


1. A radial flow device for contacting particles and fluid comprising:
a) a vertically extending vessel having a fluid inlet and a fluid outlet;
b) a plurality of vertically extended outer conduits having a transverse cross-section, defined by a first radius to provide a front side and a second radius that is larger than said first radius to define a horizontally extended back side, arranged circumferentially about the interior of said vessel, said conduits having a hollow interior, said back side located proximate the wall of said vessel, at least one end communicating with one of said fluid inlet and said fluid outlet, a plurality of perforations defined by said back side of said conduit, a plurality of perforations defined by said front side of said conduit, and said front side facing the interior of said vessel;
c) a perforated central conduit located in the center of said vessel and communicating with the other of said fluid inlet and said fluid outlet that is not communicating with said outer conduits; and,
d) a particle retaining space in said vessel for retaining particles, defined by at least one of said vessel, said central conduit, and said outer conduits, said interior space communicating with said plurality of perforations and said central conduit.

5,366,705
GRAVITY FEED ULTRAVIOLET LIQUID STERILIZATION SYSTEM

James J. Reidy, 1260 Main St., Holden, Mass. 01520-1020, assignor to James J. Reidy, Holden, Mass.

Filed Jun. 8, 1993, Ser. No. 73,948
Int. Cl.[5] A61L *2/10*
U.S. Cl. 422—243 8 Claims



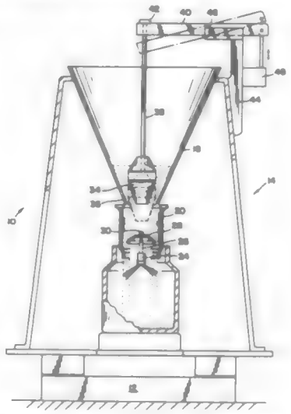
1. An ultraviolet liquid sterilization system, comprising:
a liquid tight enclosure having a bottom, top, and plurality of sides there between, said top being sloped inward towards and opening to drain liquid into said liquid-tight enclosure
a series of spaced baffle plates in said liquid tight enclosure dividing said liquid tight enclosure into a first series of adjacent, liquid tight chambers, said series of spaced baffle plates each including an opening;
an ultraviolet lamp supported within the baffle plate openings;
an opening through the lower side of said baffle plate adjacent a first liquid chamber of said first series of adjacent, liquid tight chambers to allow the first liquid tight chamber and a second chambers liquid tight chamber to fill, and to pass liquid from the first liquid tight chamber to the second chamber tight chambers, and
an opening through the upper side of said baffle plate adjacent the second liquid tight chamber to pass liquid out of the second liquid tight chamber, said series of spaced baffle plates and openings creating a tortuous liquid flow path past said ultraviolet lamp to increase the liquid's light exposure time for greater sterility.

5,366,706
CAKE-LIKE DETERGENT AND METHOD OF MANUFACTURE

Hubert A. Perry, Jr., and Kenneth E. Perry, both of Wellesley, Mass., assignors to Winbro Group, Ltd., Woburn, Mass.

Division of Ser. No. 725,278, Jul. 3, 1991, Pat. No. 5,209,864.
This application Apr. 19, 1993, Ser. No. 49,153
Int. Cl.[5] B01F *3/12*; C11D *17/00*
U.S. Cl. 422—266 7 Claims

1. An apparatus for forming a solid cake-like detergent for ware and hard surface washing which comprises:
means to hold a dry powdered detergent mixture comprising an alkali metal hydroxide and a hardness sequestering agent;
means to discharge the powdered detergent mixture as a flowing particulate stream;
means to moisten the flowing particulates with water;



containing a gaseous HNO_3/H_2O mixture for further processing to nitric acid or to a nitrate solution,

wherein the reaction step is carried out at a temperature which is at least sufficient to support the reactions and at a temperature below 180° C., and the hydrogen peroxide is brought into contact with the catalyst as a solution.

5,366,712

CERAMIC CATALYTIC MEMBRANE REACTOR FOR THE SEPARATION OF HYDROGEN AND/OR ISOTOPES THEREOF FROM FLUID FEEDS

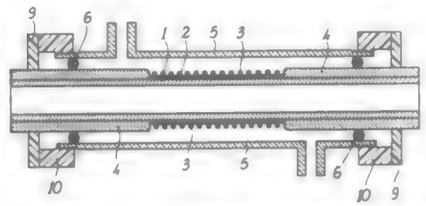
Vittorio Violante; Livio Bettinali; Luigi Bimbi, and Enrico Drioli, all of Rome, Italy, assignors to ENEA-Ente per le Nuove Tecnologie, l'Energia e l'Ambiente, Rome, Italy

Filed Feb. 3, 1993, Ser. No. 12,854

Claims priority, application Italy, Feb. 7, 1992, 92-A/000086

Int. Cl.[5] C01B *3/00*

U.S. Cl. 423—248 **11 Claims**



1. A catalytic membrane reactor for the separation of hydrogen, isotopes of hydrogen, or hydrogen and its isotopes from fluid feeds, wherein the catalytic membrane comprises a hydrogen permeable tubular support made of a porous ceramic material, coated with a film of metal or of metal alloy, having catalytic activity and selective permeability to hydrogen, on a central outside portion only of said reactor length, both ends of said tubular support being coated on the outside with a gas-tight material and tight-fitted to the reactor shell by means of seals.

5,366,713

METHOD OF FORMING P-TYPE SILICON CARBIDE

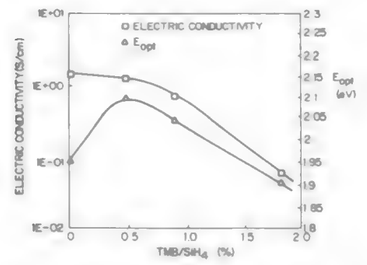
Porpoath Sichanugrist, Kanagawa; Tetsuro Nii, and Takahisa Kase, both of Tokyo, all of Japan, assignors to Showa Shell Sekiyu K.K., Tokyo, Japan

Filed May 28, 1993, Ser. No. 68,186

Claims priority, application Japan, Jun. 3, 1992, 4-142661

Int. Cl.[5] C01B *31/36*

U.S. Cl. 423—346 **8 Claims**



1. A method of forming p-type silicon carbide which comprises performing plasma chemical vapor deposition with reactive source gases comprising silane, hydrogen, trimethylboron, and diborane, thereby to attain a band gap from about 1.9 to about 2.26 eV and an electric conductivity of at least about 1×10^{-1} S/cm by the action of the carbon contained in the trimethylboron.

5,366,714

HYDROGEN PEROXIDE-BASED CHLORINE DIOXIDE PROCESS

Tomas D. Biganskas, Mississauga, Canada, assignor to Sterling Canada Inc., Islington, Canada

Filed Jun. 9, 1992, Ser. No. 895,675

Int. Cl.[5] C01B *11/02*

U.S. Cl. 423—478 **26 Claims**

1. A continuous process for the production of chlorine dioxide, comprising the steps of:

reducing chlorate ions with hydrogen peroxide in an aqueous acid reaction medium having a total acid normality of about 0.1 to about 11N in a reaction zone,

maintaining said reaction medium at a boiling point of the reaction medium while a subatmospheric pressure is applied to said reaction zone,

maintaining substantially steady state conditions in said reaction zone by continuously feeding into said reaction zone an aqueous chlorate solution, hydrogen peroxide and strong mineral acid in such manner that said hydrogen peroxide is rapidly and uniformly distributed throughout said reaction medium to avoid localized concentrations of hydrogen peroxide, in said reaction medium,

pre-mixing the hydrogen peroxide feed to said reaction medium with at least a portion of said aqueous chlorate solution or of said strong mineral acid or mixture thereof in a mixing zone prior to feeding the pre-mixed hydrogen peroxide from said mixing zone into said reaction zone to provide a diluted hydrogen peroxide feed permitting rapid and uniform distribution of hydrogen peroxide in said reaction medium,

feeding the pre-mixed hydrogen peroxide to said reaction zone at a rate such that consumption of hydrogen peroxide therein is from about 0.25 to about 0.28 tons of hydrogen peroxide per ton of chlorine dioxide produced, and

removing chlorine dioxide, oxygen and steam from said reaction zone.

5,366,715

METHOD FOR SELECTIVELY REMOVING ANTIMONY AND BISMUTH FROM SULPHURIC ACID SOLUTIONS

David B. Dreisinger, Delta, and Brenna J. Y. Leong, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Oct. 19, 1993, Ser. No. 138,024

Int. Cl.[5] C01B *17/90*; C02F *1/42*; C25C *1/14*

U.S. Cl. 423—531 **12 Claims**

1. A method for the purification of sulphuric acid solutions having a sulfuric acid concentration of at least 50 grams per liter containing ferric ions and at least one of antimony ions and bismuth ions, which comprises:

reducing the ferric ions to ferrous ions in the solution;

selectively removing the antimony and bismuth ions by passing the reduced solution through an ion exchange resin;

recovering purified sulphuric acid solution.

5,366,716

METHOD FOR RECOVERING SULPHUR DIOXIDE FROM THE CHEMICAL CIRCULATION OF A SULPHATE PULP MILL

Esko Mattelmäki, Varkaus, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Nov. 30, 1992, Ser. No. 983,160

Claims priority, application Finland, Dec. 2, 1991, 915672

Int. Cl.[5] C01B *17/48*

U.S. Cl. 423—539 **9 Claims**

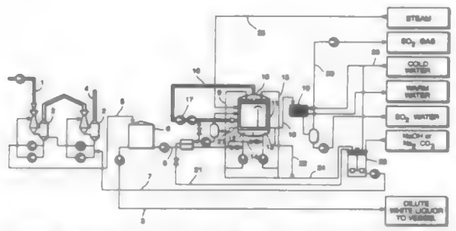
1. A method of recovering sulphur dioxide from a chemical recovery circulation loop of a cellulose pulp mill, comprising the steps of:

a) bringing sulphur-containing flue gas from a cellulose pulp mill into absorptive contact with a washing solution containing sodium sulphite, so that a sodium bisulphite-containing solution is formed;

b) utilizing a falling film evaporator, effecting thermal decomposition of the sodium bisulphite-containing solution to produce water in the form of steam mixed with sulphur dioxide, and sodium sulphite, the sodium sulphite crystallized from the solution;

c) using the sodium sulphite crystals from step (b) as the washing solution in step (a) by dissolving the crystals to form a washing solution;

d) recovering sulphur dioxide from the mixture of steam and sulphur dioxide produced in step (b);



wherein the evaporator is divided at least into first and second compartments containing lamella heat transfer surfaces, and wherein step (b) is practiced by passing the sodium bisulfite-containing solution from step (a) into the first compartment, and then passing at least some remaining solution after evaporation in the first compartment to the second compartment; and

(e) in response to the initiation of crystalline sodium sulphite precipitation on the transfer surfaces of the second compartment, practicing step (b) to pass the sodium bisulfite-containing solution from step (a) into the second compartment first, to remove the precipitation.

5,366,717

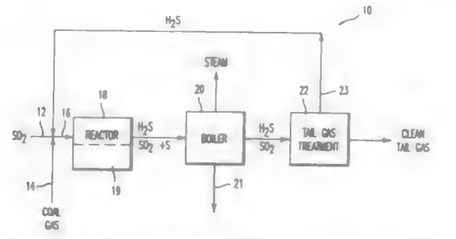
METHOD FOR PRODUCING ELEMENTAL SULFUR FROM SULFUR-CONTAINING GASES

Thomas P. Dorchak, Morgantown, W. Va.; Santosh K. Gangwal, and Scott M. Harkins, both of Durham, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Continuation of Ser. No. 729,392, Jul. 12, 1991, abandoned, which is a continuation of Ser. No. 415,680, Oct. 2, 1989, abandoned. This application Mar. 30, 1993, Ser. No. 40,077

Int. Cl.[5] B01D *53/36*; C01B *17/02*

U.S. Cl. 423—570 **3 Claims**



1. A method for producing elemental sulfur and sulfur compounds from sulfur-containing gases comprising:

mixing a primary gas stream comprising sulfur-containing gases consisting essentially of sulfur dioxide with a secondary reducing gas stream comprising at least one of H_2 and CO to prepare a gaseous mixture feed material,

Contacting a catalyst selected from the group consisting of alumina, with a feedstock consisting essentially of said gaseous mixture feed material at a pressure of 7–40 atmospheres and a temperature of 449°–700° C., and

recovering 75.9%–94.5% sulfur of said primary gas stream as elemental sulfur from the gas produced by said catalyst-/feed material contacting step.

5,366,718

PROCESS FOR PRODUCING COLUMBITE-TYPE NIOBATE AND PROCESS FOR PRODUCING PEROVSKITE-TYPE COMPOUND THEREFROM

Teiji Sato; Hitoshi Nakata; Takayuki Ishizaki; Shoichi Iwaya; Koji Takahashi; Yuuiti Sannobe, and Hitoshi Tanaka, all of Tokyo, Japan, assignors to Mizusawa Industrial Chemicals Ltd. and TDK Corporation, both of Tokyo, Japan

Filed Nov. 10, 1993, Ser. No. 149,956

Claims priority, application Japan, Nov. 10, 1992, 4-323819

Int. Cl.[5] C01G *21/00, 33/00*

U.S. Cl. 423—594 **11 Claims**

1. A process for producing a columbine-type niobate of the formula

$$MO_{n/2}\cdot Nb_2O_5$$

wherein M is a divalent or trivalent metal which is selected from the group consisting of Mg, Ca, Zn, Ni, Co, Fe, Mn, Cr, Cu and In, and m is the valency of the metal M, which comprises mixing an aqueous slurry of fresh niobiumhydroxide that is just formed, said niobium hydroxide having the capability of completely dissolving when added in an amount of 0.5 g as Nb_2O_5 to 40 ml. of 6N H_2SO_4, an acetate of said metal M of a stoichiometric amount with respect to the niobium hydroxide, and an aqueous ammonia solution in an amount that the pH of the resultant mixture solution is from 7 to 10.4, spray or freeze drying the resultant mixture solution to form a powdery mixture and calcining the powdery mixture.

5,366,719

METHOD OF PERFORMING A CHEMICAL REACTION AND A REACTOR FOR USE THEREWITH

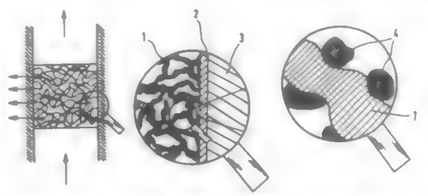
Antonius J. M. van Wingerden, Apeldoorn; Andries Q. M. Boon, Utrecht, and John W. Geus, Bilthoven, all of Netherlands, assignors to Veg-Gasinstituut N.V., Apeldoorn, Netherlands

Continuation of Ser. No. 579,357, Sep. 7, 1990, abandoned. This application Aug. 17, 1993, Ser. No. 107,466

Claims priority, application Netherlands, Sep. 8, 1989, 8902250

Int. Cl.[5] B01J *19/00*; C01B *17/16*

U.S. Cl. 423—659 **11 Claims**



1. A method of conducting a chemical reaction in the presence of a heterogeneous catalyst, said method comprising the steps of:

a. selecting a heterogeneous catalyst for use in a catalytic reactor;

b. forming said catalytic reactor so as to include at least one heat supplying and/or discharging reactor wall having an inside surface and an outside surface and defining a reactor volume;

c. forming a solid reactor bed comprising elementary particles of carrier material sintered together to form sintered material and having said heterogeneous catalyst applied thereon, said sintered material being sintered to the inside

surface of the reactor wall and substantially filling said reactor volume, there being no sintered material present on the outside surface of the reactor wall; said reactor bed being formed such that the maximum distance in meters (X_{max}) of any point of the reactor bed to a nearest heat supplying and/or discharging reactor wall is determined by the following formula:

$$X_{max} \leq -\frac{\lambda a'}{\alpha i \cdot a \cdot 2} + \sqrt{\left(\frac{\lambda a'}{\alpha i \cdot a \cdot 2}\right)^2 + \frac{\lambda \cdot \Delta T_{max}}{a \cdot q}}$$

in which

λ is the effective coefficient of heat conductivity in W/mK of the sintered catalyst and has a value between 2 and 250;

αi is the coefficient of heat transfer in $W/m^2/K$ on the inside surface of the heat transferring reactor wall and equals $\epsilon \cdot \alpha$, where ϵ has a value of between 1.0 and 10 and indicates the increase in heat transfer by sintering the catalyst, and α is the coefficient of heat transfer from the reactor bed in the non-sintered state;

ΔT_{max}, measured across a radial cross-section through the reactor bed, is the absolute value of the difference in temperature between any point in this cross-section and the nearest heat transferring reactor wall, the maximum permissible value of which ranges between 1 and 1000K;

a is a form factor determined only by the geometrical shape of the reactor and has a value between 0.25 and 0.5, respectively;

a' is a form factor representing the ratio between the area of the reactor cross-section and the heat exchanging circumference of said reactor cross-section multiplied by X_{max} and has a value between 0.5 and 1; and

q is the maximum reaction heat, in $W/^3$, generated in the reactor bed and which must be transferred through the reactor wall in a radial direction;

4. positions said catalytic reactor within an outside heat exchanger; and

5. passing a feedstock through said catalytic reactor.

5,366,720

PROCESS FOR PREPARING LOW SILICA FORMS OF ZEOLITES HAVING THE FAUJASITE TYPE STRUCTURE

Alex J. Caglione, Nyack; Thomas R. Cannan, Congers; Nanette Greenlay, Putnam Valley, and Richard J. Hinchey, Thornwood, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Dec. 23, 1993, Ser. No. 171,801

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—713 **6 Claims**

1. Process for decreasing the framework Si/Al_2 molar ratio of a zeolite having the faujasite structure and a Si/Al_2 molar ratio of greater than 2.0 which comprises contacting said zeolite at a temperature in the range of about 25° to about 200° C. with an aqueous sodium aluminate solution containing at least some extraneous aluminate and having a composition, in terms of mole ratios of oxides, of:

H_2O/Na_2O=10 to 100

Na_2O/Al_2O_3=at least 1.0

and maintaining such contact until the number of aluminum atoms in the zeolite framework is increased.

5,366,721

METHOD FOR DETECTION OF LONG-LIVED RADIOISOTOPES IN SMALL BIOCHEMICAL SAMPLES

Kenneth W. Turteltaub, Livermore; John S. Vogel, Union City; James S. Felton, Danville; Barton L. Gledhill, Alamo, and Jay C. Davis, Livermore, all of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 553,080, Jul. 13, 1990, abandoned. This application Apr. 26, 1991, Ser. No. 699,385 The portion of the term of this patent subsequent to May 11, 2010, has been disclaimed.

Int. Cl.[5] A61K *43/00*; A61N *5/00*; A61B *6/00*

U.S. Cl. 424—1.11 **2 Claims**

1. A method for detection of long-lived radioisotopes in small biochemical samples, comprising:

a. selecting a biological host in which selected radioisotopes are present at a concentration equal to or less than the concentration in the ambient biosphere,

b. preparing a long-lived radioisotope-labeled chemical specie,

c. administering said chemical specie to said biological host in one or more doses that do not cause either significant damage to the host's biological system or a significant increase in radiological exposure to the host over the ambient radiation environment or from natural internal sources of radiation,

d. allowing dissemination and reaction of said chemical specie with said biological system of said host,

e. isolating a reacted fraction of a biological substance from said host in a manner sufficient to avoid contamination of the fraction from extraneous sources of the radioisotope,

f. converting said fraction of biological substance to a solid, inert, non-volatile, thermally conductive inorganic sample which efficiently produces charged ions in an ion source without introduction of significant isotopic fractionation, and

g. measuring the radioisotope concentration in the inorganic sample using an accelerator mass spectrometer.

5,366,722

CONTRAST MEDIA COMPRISING A NON-IONIC CONTRAST AGENT AND SODIUM IONS

Torsten Almen, Malmo; Laars BÅÅth, Malmö, both of Sweden, and Audun Oksendal, Oslo, Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/EP90/00393, § 371 Date Sep. 24, 1991, § 102(e) Date Sep. 24, 1991, PCT Pub. No. WO90/11094, PCT Pub. Date Oct. 4, 1990

Continuation of Ser. No. 761,738, Sep. 24, 1991, abandoned. This PCT application Mar. 9, 1990, Ser. No. 156,998

Claims priority, application United Kingdom, Mar. 17, 1989, 89 06130.3

Int. Cl.[5] A61B *5/055*; A61K *49/04*

U.S. Cl. 424—4 **10 Claims**

1. A contrast medium comprising a non-ionic contrast agent in a physiologically tolerable aqueous carrier medium characterized in that said medium has a sodium ion concentration of from 26 up to 36 mM, whereby a beneficial balance between the lowering of red blood cell aggregate formation, lowering of echinocyte formation, increasing of rouleaux formation, lowering of contractile force reduction and lowering of the occurrence of ventricular fibrillation is achieved.

5,366,723

METHOD OF ALLEVIATING TOXICITY ORIGINATING FROM TREATMENT WITH ANTICANCER PLATINUM COMPOUNDS

Istvan Tulok, 1525 Budapest PF. 21. XII., Ráth GY. U. 7/9, Hungary

Filed Mar. 5, 1993, Ser. No. 27,135

Int. Cl.[5] A61K *49/00, 33/24, 31/28, 31/195*

U.S. Cl. 424—10 **11 Claims**

1. A method of alleviating toxicity originating from treatment with anticancer platinum compound(s), comprising administering an effective amount of the amino acids L-glutamic acid, L-aspartic acid and L-cysteine to a patient subject to the treatment with the anticancer compound(s).

5,366,724

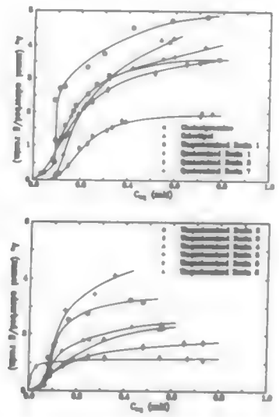
INGESTIBLE POLYMERIC AMINES FOR THE LOWERING OF BLOOD CHOLESTEROL

Leon E. St. Pierre, Frelighsburg; George R. Brown, Dollard-des-Ormeaux, and Gaoming Wu, Montreal, all of Canada, assignors to Lowchol Scientific, Inc., Frelighsburg, Canada

Division of Ser. No. 381,988, Jul. 19, 1989, Pat. No. 5,236,701. This application Feb. 7, 1991, Ser. No. 652,004

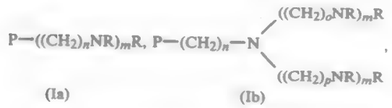
Int. Cl.[5] A61K *31/74*

U.S. Cl. 424—78.12 **15 Claims**

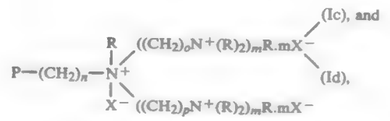


1. A pharmaceutical composition for the treatment of hypercholesterolemia, comprising

a water-swellable, water-insoluble amine, homopolymer from the group consisting of those having the chemical formula



(Ia) (Ib)



wherein compounds (1c) and (1d) are the pharmaceutically acceptable salts of chemical formulas (1a) and (1b);

P represents a hydrophilic, water-insoluble, covalently cross-linked, non-digestible homopolymer backbone;

R is hydrogen or lower alkyl;

X^- is a pharmaceutically acceptable anion;

m is an integer of 1 to 10; and

n, o and p are each, independently integers of 2 to 12; and a pharmaceutically acceptable carrier.

5,366,725

METHOD FOR THE TREATMENT OF CANCER

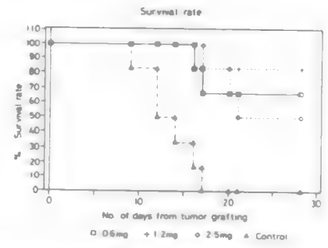
Shinya Okubo, 6-1, Noboricho 2 chome; Mitsunobu Sato, 187-10, Shimofukuman, Hachiman-cho, and Kunisuke Himeno, 188-18, Shimofukman, Hachiman-cho, all of, Tokushima-shi, Tokushima 770, Japan

Division of Ser. No. 834,309, Feb. 26, 1992, abandoned. This application Apr. 20, 1993, Ser. No. 48,206

Claims priority, application Japan, Jun. 27, 1990, 2-171978

Int. Cl.[5] A61K *35/78, 35/12, 37/04*

U.S. Cl. 424—85.4 **3 Claims**



1. A method for suppression of tumor cell proliferation in a human or animal, comprising administering an extract of seeds of *Aeginetia indica* in distilled water to a human or animal in need of said suppression in an amount effective to suppress proliferation of said tumor cells.

5,366,726

SUPPRESSION OF PNEUMOCYSTIS CARINII USING AEROSOLIZED PENTAMIDINE TREATMENT

Robert J. Debs, Mill Valley; Alan B. Montgomery, Redwood City; John E. Conte, Corte Madera, and Jeffrey A. Golden, San Francisco, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 532,263, Jun. 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 485,042, Feb. 26, 1990, abandoned, which is a continuation of Ser. No. 355,134, May 16, 1989, abandoned, which is a continuation of Ser. No. 180,414, Apr. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 137,208, Dec. 23, 1987, abandoned. This application Jul. 23, 1992, Ser. No. 918,884

Int. Cl.[5] A61L *9/04*; A61K *31/125*

U.S. Cl. 424—45 **17 Claims**

1. A method of treating Pneumonia caused by *Pneumocystis carinii* in a human patient by providing a pentamidine aerosol having a mean particle diameter from about 0.25 to about 5 μm and administering an Pharmaceutically effective amount of said aerosol to a patient suffering from *Pneumocystis carinii* pulmonary infection, whereby said aerosol is delivered to said patient's alveoli using a nebulizer consisting essentially of:

(a) a tube providing an oxygen flow into the nebulizer;

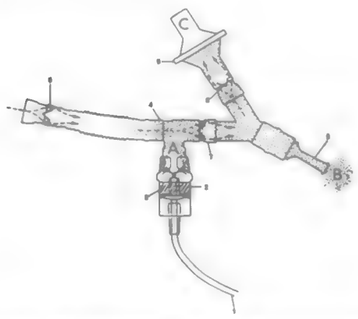
(b) a nebulizer container holding the pentamidine solution for generation of aerosolized particles in a conduit;

(c) the conduit;

(d) a mouthpiece;

(e) a one way valve having a baffle for reducing larger

particle sizes to particles having a mean diameter from about 0.25 to about 5 μm; and



(f) a one way valve leading to particle filter for removal of residual pentamidine during exhalation.

5,366,727

ANTIBACTERIAL AGENT

Akihiko Kanazawa, Tokyo; Takeshi Endo, and Tomiki Ikeda, both of Yokohama, all of Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00187, § 371 Date Oct. 21, 1992, § 102(e) Date Oct. 21, 1992, PCT Pub. No. WO92/14365, PCT Pub. Date Sep. 3, 1992

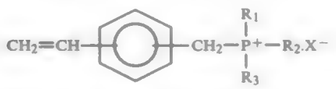
PCT Filed Feb. 21, 1992, Ser. No. 937,846

Claims priority, application Japan, Feb. 21, 1991, 3-047289; Feb. 21, 1991, 3-047290; Aug. 30, 1991, 3-244313

Int. Cl.[5] A61K *31/80, 31/66*

U.S. Cl. 424—78.35 4 Claims

1. A method for providing antibacterial property to an object in need thereof, comprising contacting said object with an effective amount of a bactericidal composition comprising a vinyl benzyl phosphonium salt of formula (1)



(I)

wherein R_1, R_2 and R_3 each, independently, represent a hydrogen atom, a linear or branched alkyl group having 1–18 carbon atoms, an aryl group, a hydroxyl group, or an alkoxyl-substituted alkyl, aryl or aralkyl group and X^- is an anion; a phosphonium salt polymer prepared by polymerization of said vinyl benzyl phosphonium salt, or a mixture thereof.

5,366,728

STABLE FORMS OF ANTIGENIC *TAENIA OVIS* POLYPEPTIDES

Gavin B. L. Harrison; Robert P. Dempster, both of Upper Hutt, New Zealand; Michael D. Rickard, Werribee; Marshall W. Lightowlers, Victoria, both of Australia; David D. Heath, Paremata; Stephen B. Lawrence, Upper Hutt, both of New Zealand, and Kim L. O'Hoy, Pascoe Vale, Australia, assignors to Pitman-Moore New Zealand Limited, Upper Hutt, New Zealand; The University of Melbourne, Melbourne, Australia and Her Majestry the Queen in right of New Zealand through the Ministry of Agriculture & Fisheries, Wellington, New Zealand

Continuation of Ser. No. 818,453, Jan. 3, 1992, Pat. No. 5,192,538, which is a continuation of Ser. No. 470,691, Jan. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 349,723, May 9, 1989. This application Oct. 30, 1992, Ser. No. 969,450

Claims priority, application New Zealand, Jan. 6, 1988, 24862; Dec. 5, 1988, 224597

The portion of the term of this patent subsequent to Mar. 9, 2010, has been disclaimed.

Int. Cl.[5] A61K *39/00;* C12N *15/12;* C07K *9/00, 15/08*

U.S. Cl. 424—191.1 27 Claims

1. A stable antigenic immunologically active protective peptide essentially free from naturally occurring admixtures, said peptide comprising a fragment of a *T. ovis* oncosphere antigen which runs as a 47–52 kDa doublet on SDS-PAGE, which fragment:

(a) has a molecular weight of from about 23 kDa to about 24 kDa; and

(b) generates a protective immunological response to *T. ovis* infection in a ruminant;

or a stable protective subfragment of said 23–24 kDa fragment which subfragment generates a protective immunological response to *T. ovis* infection.

5,366,729

NON-GLYCOSYLATED VARIANTS OF EXTRACELLULAR SUPEROXIDE DISMUTASE (EC-SOD)

Stefan Marklund, and Thomas Edlund, both of Umeå, Sweden, assignors to Symbicom Aktiebolag, Umea, Sweden

PCT No. PCT/DK90/00238, § 371 Date May 13, 1992, § 102(e) Date May 13, 1992, PCT Pub. No. WO91/04315, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 17, 1990, Ser. No. 856,077

Claims priority, application Denmark, Sep. 15, 1989, 4557/89

Int. Cl.[5] A61K *37/50;* C12N *5/10, 9/02, 15/53*

U.S. Cl. 424—94.4 14 Claims

1. A non-naturally occurring EC-SOD-like polypeptide, comprising an amino acid sequence substantially corresponding to amino acids 1–222 of human EC-SOD type C as given in FIGS. 1A and 1B, except that said polypeptide lacks glycosylation sites,

where said polypeptide exhibits superoxide dismutasing and heparin binding activities, and also exhibits increased heparin binding relative to human EC-SOD type C.

5,366,730

STABILIZED COMPOSITIONS HAVING HUMAN TISSUE TYPE PLASMINOGEN ACTIVATOR ENZYMATIC ACTIVITY

Ulrich Kohnert, Habach, and Rainer Rudolph, Weilheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Continuation-in-part of Ser. No. 720,796, Jul. 19, 1991, abandoned. This application Apr. 6, 1993, Ser. No. 43,619

Claims priority, application Germany, Dec. 2, 1989, 3942145

Int. Cl.[5] A61K *37/547, 37/553, 37/48;* C12N *9/50*

U.S. Cl. 424—94.64 20 Claims

1. A pharmaceutical composition consisting essentially of a protein having human tissue type plasminogen activator (t-PA) enzymatic activity of at least 0.25 MU/ml and a substance selected from the group consisting of ascorbic acid, Tris and EDTA, said substance being present in a concentration of from 0.3 mole/l to 1 mole/l, said composition having a pH of from 4.5 to 9.

5,366,731

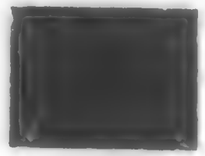
COSMETIC COMPOSITIONS CONTAINING SECOSTEROL COMPOUNDS

Hector F. DeLuca, Deerfield, and Connie M. Smith, Madison, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

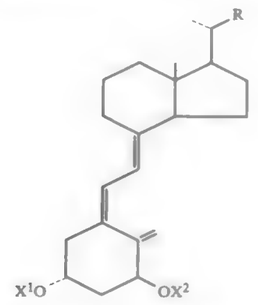
Continuation of Ser. No. 572,857, Aug. 24, 1990, abandoned. This application Feb. 3, 1993, Ser. No. 13,260

Int. Cl.[5] A61K *31/59*

U.S. Cl. 424—401 5 Claims



1. A method of treating cosmetic skin conditions consisting of lack of adequate skin firmness, wrinkles, lack of dermal hydration and insufficient sebum secretion which comprises topically applying to the skin a cosmetic composition having a compound of the formula:



where R is hydrogen, methyl, ethyl or propyl and where each of X^1 and X^2 represent, independently, hydrogen, an acyl group, or a hydroxy-protecting group, said compound present in the composition in an amount from about 0.001 μg/gm to about 10.0 μg/gm of the composition.

5,366,732

METHOD OF MILKING COWS

Jaime Zighelboim R, 20281 E. Country Club Dr., Apt. #1107, Aventura, Fla. 33180

Continuation of Ser. No. 50,523, Apr. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 529,888, May 29, 1990, abandoned. This application Apr. 18, 1994, Ser. No. 229,144

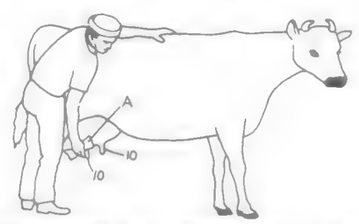
Int. Cl.[5] A61K *9/70*

U.S. Cl. 424—411 7 Claims

1. The method of preparing cows for milking while treating the teats to reduce contamination by reducing the concentration of bacteria of the milk collected consisting of the following steps performed sequentially:

A. washing the teats of a milk bearing cow by applying water or an aqueous soap solution thereto so as to leave the teats wet therewith;

B. manually massaging the tests while still wet with a flexible wipe constructed of a hydrophilic material selected from the group consisting of wool, silk, jute, hemp, cotton, linen, sisal, ramie, rayon, cellulose esters, polyvinyl materials, polyolefins, polyamides, polyesters, paper or a combination thereof including about 0.5–5% by weight of a moisture-activated antimicrobial composition selected from the group consisting of biguanides, quaternary ammonium compounds and carbanilides releasable from the wipe by uptake of water;



C. continuing to manually massage the teats with said wipe after moistening thereof so as to apply said moisture-activated antimicrobial composition released from the wipe to the teats to dry and to sanitize the teats;

D. discarding said flexible wipe prior to preparing and treating another cow; and

E. thereupon milking the thus-prepared cow;

whereby washing and drying of the teats of a cow are accomplished.

5,366,733

METHOD FOR THE TREATMENT OF PERIODONTAL DISEASE BY SUSTAINED DELIVERY OF A THERAPEUTIC AGENT TO THE PERIODONTAL POCKET, AND COMPOSITION OF MATTER THEREFOR

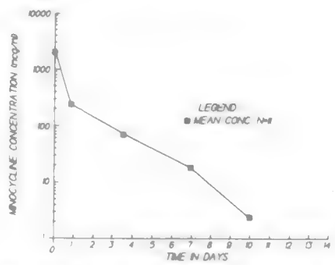
Nancy S. Brizzolara, Congers; Michael G. Lanzilotti, Pearl River, and James R. Lawter, Goshen, all of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 289,076, Dec. 22, 1988, abandoned. This application May 28, 1991, Ser. No. 706,327

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

Int. Cl.[5] A61K *6/00, 9/52*

U.S. Cl. 424—426 35 Claims



1. An oral composition adapted for the local administration of a therapeutic agent to the periodontal pocket over an extended period of time, said composition adapted to be administered as a plurality of dry, discrete microparticles, the composition comprising dry microcapsules comprised of:

(i) an effective amount of at least one therapeutic agent

(ii) said microcapsule being prepared by a phase separation process, said composition having a residual hardening agent content of less than about 3% by weight.

5,366,734

CONTINUOUS RELEASE PHARMACEUTICAL COMPOSITIONS

Francis G. Hutchinson, Lymm, United Kingdom, assignor to Zeneca Limited, London, England

Continuation of Ser. No. 611,644, Nov. 13, 1990, abandoned, which is a continuation of Ser. No. 861,839, May 12, 1986, Pat. No. 5,004,602, which is a division of Ser. No. 640,855, Aug. 15, 1984, abandoned, which is a continuation of Ser. No. 344,722, Feb. 1, 1982, abandoned. This application Aug. 22, 1991, Ser. No. 751,584

Claims priority, application United Kingdom, Feb. 16, 1981, 8014734

Int. Cl.[5] A61K *47/34, 9/52*

U.S. Cl. 424—426 **1 Claim**

1. A method for continuously administering a pharmaceutically active peptide to a subject in need of such administration which comprises:

(1) providing an implantable or injectable composition consisting essentially of (a) from 50% to 99.999% of a polylactide which is a polymer of lactic acid alone, a copolymer of lactic acid and glycolic acid wherein the ratio of glycolide to lactide units is from 0 up to 3:1, a mixture of such polymers, a mixture of such copolymers, or a mixture of such polymers and copolymers, the lactic acid being either in racemic or in optically active form, and such polylactide being either soluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml. in chloroform) to 0.5 (1 g. per 100 ml. in benzene), or insoluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml in chloroform) to 4 (1 g. per 100 ml in chloroform or dioxan), and (b) from 0.001% to 50% of a pharmacologically active polypeptide which has a molecular weight of at least about the same as the molecular weight of tetragastrin, which is not significantly hydrolyzed under the conditions encountered within the composition during the period of use envisioned, and which contains four or more amino acid residues, said polypeptide being dispersed in said polylactide so that some of the said polypeptide is present at the external surface of the composition, which composition, when placed in an aqueous physiological-type environment absorbs water and exhibits two successive phases of release of polypeptide, the first phase being release by initial diffusion through aqueous polypeptide domains communicating with the exterior surface of the composition, and the second phase being release consequent upon degradation of the polylactide, characterized in that the diffusion phase and the degradation-induced phase overlap in time, said composition being further characterized by the fact that, when placed in an aqueous physiological type environment, water diffuses into the matrix and is partitioned between polypeptide and polylactide to form aqueous polypeptide domains, the said domains increasing with increasing absorption of water until the continuity of the said domains reaches a sufficient level to communicate with the exterior surface of the composition, whereupon polypeptide starts to be released from said composition by diffusion through aqueous polypeptide channels formed from said domains, which second phase continues until substantially all of the remaining polypeptide is released over at least a week;

(2) implanting or injecting said composition into the body of said subject, so that the composition releases said peptide initially by leaching from the surface of said composition and also by absorption of water into said composition, which results in (a) the formation of aqueous peptide solution, (b) the formation of aqueous channels in the composition through which said aqueous peptide solution diffuses into the subject body, and (c) ultimately, the complete degradation of the polylactide; and

(3) permitting such release to proceed continuously over a period of at least one week until said composition is completely utilized for the intended treatment wherein said release is not biphasic or discontinuous.

5,366,735

METHOD AND COMPOSITION FOR POST-SURGICAL ADHESION REDUCTION

Raymond L. Henry, Grosse Pointe Woods, Mich., assignor to Mediventures, Inc., Dearborn, Mich.

Division of Ser. No. 517,283, May 1, 1990, abandoned, which is a continuation-in-part of Ser. No. 449,215, Dec. 12, 1989, Pat. No. 5,135,751, which is a division of Ser. No. 272,199, Nov. 16, 1988, Pat. No. 4,911,926. This application Nov. 17, 1992, Ser. No. 977,483

Int. Cl.[5] A61K *9/08, 31/74, 9/10*

U.S. Cl. 424—426 **31 Claims**

1. An isotonic aqueous composition for reducing post-surgical adhesion formation/reformation following injury to organs situated in mammalian body spaces, wherein said composition is a liquid at room temperature or below and a gel at mammalian body temperature, said composition consisting essentially of a polyoxyalkylene block copolymer of the formula

$$Y[(A)n—E—H]_x \qquad (I)$$

wherein A is a polyoxyalkylene moiety having an oxygen/carbon atom ratio of less than 0.5, x is at least 2, Y is derived from water or an organic compound containing x reactive hydrogen atoms, E is a polyoxyethylene moiety constituting at least about 60% by weight of the copolymer, n has a value such that the average molecular weight of A is at least about 500, as determined by the hydroxyl number of an intermediate of formula

$$Y[(A)_n—H]_x \qquad (II)$$

and the total average molecular weight of the copolymer is at least about 5000; and a material selected from the group consisting of humectants, bactericides, bacteriostatic agents, and fibrinolytic agents.

5,366,736

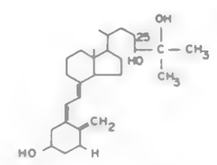
VITAMIN D DERIVATIVE FEED COMPOSITIONS AND METHODS OF USE

Hardy M. Edwards, Jr., Winterville, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 861,109, Mar. 31, 1992, Pat. No. 5,316,770, which is a continuation-in-part of Ser. No. 630,748, Dec. 20, 1990, Pat. No. 5,154,925, which is a continuation of Ser. No. 311,540, Feb. 16, 1989, abandoned. This application Aug. 10, 1993, Ser. No. 103,904

Int. Cl.[5] A61K *31/59*

U.S. Cl. 424—442 **20 Claims**



8

1. An animal feed composition comprising a vitamin D_3 derivative selected from the group consisting of 1,25-dihydroxycholecalciferol; 1,25-dihydroxy-26,27-hexadeuterocholecalciferol; 1-hydroxycholecalciferol; 1,24,25-trihydroxycholecalciferol; and 1,25-dihydroxy-24-fluorocholecalciferol; 25-hydroxycholecalciferol; and mixtures thereof in combination with an animal feed for growing animals, wherein the concentration of vitamin D_3 derivative is between 1 and 10 micrograms per kilogram feed for growing animals, and is in an amount effectively inhibiting development of tibial dyschondroplasia in growing animals ingesting the feed.

5,366,737

N-[ω,(ω−1)-DIALKYLOXY]- AND N-[ω,(ω−1)-DIALKENYLOXY]-ALK-1-YL-N,N,N,-TETRASUBSTITUTED AMMONIUM LIPIDS AND USES THEREFOR

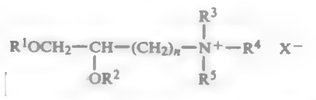
Deborah A. Eppstein, Menlo Park; Philip L. Felgner, Los Altos; Thomas R. Gadek, Oakland; Gordon H. Jones, Cupertino, all of Calif., and Richard B. Roman, Fairhope, Ala., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 614,412, Nov. 16, 1990, Pat. No. 5,208,036, which is a division of Ser. No. 524,257, May 15, 1990, Pat. No. 5,049,386, which is a division of Ser. No. 428,815, Oct. 27, 1989, Pat. No. 4,946,787, which is a division of Ser. No. 114,809, Oct. 29, 1987, Pat. No. 4,897,355, which is a continuation-in-part of Ser. No. 877,916, Jun. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 689,407, Jan. 7, 1985, abandoned. This application Feb. 10, 1993, Ser. No. 15,738

Int. Cl.[5] A61K *37/22, 9/70;* **C12N** *1/20;* **B01J** *13/02*

U.S. Cl. 424—450 **6 Claims**

1. A liposome formulation which comprises up to 10% by weight of a biologically active substance, 1 to 20% lipid component by weight comprising a compound of Formula I in a quantity of about 1 to 100% by weight of said lipid component, wherein Formula I is represented by the formula



I

or an optical isomer thereof wherein R^1 and R^2 are the same or different and are an alkyl or alkenyl group of 6 to 24 carbon atoms; R^3, R^4 and R^5 are the same or different and are alkyl of 1 to 8 carbon atoms, aryl, aralkyl of 7 to 11 carbon atoms, or when two or three of R^3, R^4, and R^5 are taken together to form quinuclidino, pyrrolidino, piperidino, or morpholino; n is 1 to 8; and X is a pharmaceutically acceptable anion; and an aqueous solution in a quantity sufficient to make 100% by volume.

5,366,738

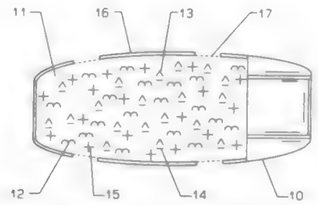
CONTROLLED RELEASE DRUG DISPERSION DELIVERY DEVICE

Gerald S. Rork, and James D. Pipkin, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 902,188, Jul. 29, 1982, abandoned, which is a continuation-in-part of Ser. No. 815,304, Dec. 27, 1991, abandoned. This application Sep. 8, 1993, Ser. No. 118,836

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **18 Claims**



1. A drug delivery device for the controlled in situ production and release of a dispersion containing a beneficial agent, consisting essentially of:

(A) a compressed core prepared from an admixture comprising

(i) a therapeutically effective amount of a beneficial agent; and

(ii) a polymer which upon hydration forms gelatinous microscopic particles, the polymer selected from the group consisting of sodium polyacrylate and carboxypolymethylenes prepared from acrylic acid crosslinked with allylethers of sucrose or pentaerythritol and the pharmaceutically acceptable salts thereof:

(B) a water insoluble, water impermeable polymeric coating comprising a polymer and a plasticizer, which surrounds and adheres to the core, the polymer being selected from the group consisting of polyvinyl chloride, cellulose acetate, cellulose acetate butyrate or ethylcellulose, or combinations of these polymers, the plasticizer being selected from the group consisting of diethylphthalate, dibutylsebacate or triethylcitrate, the coating having apertures, exposing between about 1 and about 75% of the core surface, wherein the release rate of drug from the device is a function of the number and size of the apertures.

5,366,739

METHOD OF OPHTHALMIC DRUG DELIVERY

Donald L. MacKeen, Bethesda, Md., assignor to DEO Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 926,244, Aug. 6, 1992, Pat. No. 5,290,572. This application Dec. 19, 1992, Ser. No. 986,932

Int. Cl.[5] A61K *33/42, 33/06, 33/10*

U.S. Cl. 424—602 **5 Claims**

1. A method of topically delivering one or more therapeutic agents to the corneal surface of a human eye for the treatment or prevention of human ophthalmological diseases, said method comprising:

a) providing an ophthalmological composition comprising a pharmacologically acceptable carrier having a viscosity sufficient to prevent said composition from dripping or running after said composition is applied and a therapeutically effective dose of one or more therapeutic agents combined with the carrier; and

b) applying said ophthalmological composition to a position on skin adjacent to the lateral or inferior lid margins exterior to an ocular surface; wherein blinking action of the lid margins cuts off and carries into the eye small amounts of the composition thereby effecting treatment or prevention of human opthamological diseases.

5,366,740

CHEWING GUM CONTAINING WHEAT GLUTEN

James J. Shaw, Morristown; Lucy L. Wong, Lake Hiawatha; Allan H. Graff, Randolph; Hector Olaya, Parsippany; Shirley A. Barcelon, Randolph; Marc Degady, Morris Plains, and Charles J. Brine, Princeton, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 4, 1993, Ser. No. 13,595

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 **6 Claims**

1. A chewing gum base composition comprising:

(a) wheat gluten; and

(b) a texturizing agent selected from the group consisting of rice flour, corn starch, polydextrose and calcium carbonate.

5,366,741

INFUSION PACKETS

Petrus W. Van Der Zon, Zwijndrecht, Netherlands, assignor to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.

Filed Oct. 1, 1993, Ser. No. 131,262
Claims priority, application European Pat. Off., Oct. 2, 1992, 92309014.6
Int. Cl.[5] B65D *81/34;* B65B *29/04*
U.S. Cl. 426—79 7 Claims



1. An infusion packet having a first end and an opposite, second end and a pair of opposing side edges, said packet comprising a pair of superimposed compartments, each of said compartments containing a quantity of infusible or soluble material and extending to opposite ends of the packet and means joining the compartments together at each of said ends, said joining means at said first end comprising an inverted folded region of said packet, said folded region lying between the compartments at said first end and extending across the packet transverse to said ends, said inverted folded region forming a concavity at said first end of said pocket and said concavity projecting towards the opposite, second end, each of said opposing side edges of said packet Comprising both the adjacent side edges of said compartments and the adjacent respective side edges of said folded region, the packet further comprising a thread having an intermediate portion and two end portions extending therefrom, said thread intermediate portion being located in the concavity of the folded region of the packet between the compartments and extending across the packet from said adjacent side edges of said folded region to the opposite adjacent side edges of the folded region, the thread on each side of said intermediate portion extending along the compartments to said opposite second end to form a loop in said folded region, and attachment means in the region of said opposite second end of the packet holding the two thread end portions, the thread being held by said attachment means sufficiently securely to prevent the intermediate portion from slipping out from said folded region, yet the thread being displaceable in said attachment means by applying tension to the end portions such that the thread will slide easily through the attachment means to tighten the thread in the folded region and contract the packet.

5,366,742

COLLOIDAL MICROCRYSTALLINE CELLULOSE AND BARRIER DISPERSANT COMPOSITION AND METHOD FOR MANUFACTURE

Domingo C. Tuason, Jr., Bensalem, and Emanuel J. McGinley, Morrisville, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 3, 1993, Ser. No. 57,058
Int. Cl.[5] A23L *1/0532, 1/0534*
U.S. Cl. 426—96 27 Claims

1. A dry composition dispersible in aqueous media comprising attrited microcrystalline cellulose (MCC) particles at least partially coated with at least a barrier-effective and dispersant-effective amount of an alginate salt complex barrier dispersant.

5,366,743

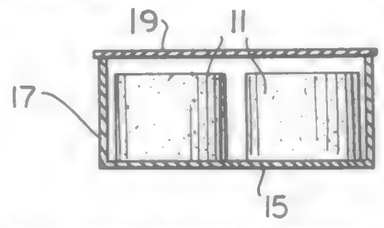
Patent Not Issued For This Number

5,366,744

REFRIGERATED DOUGH PACKAGE AND METHOD

Rashmi Drummond, Vernon Hills; Karen Westerman-Courtright, Evanston; John C. Little, DesPlaines; Marcia Baxter, Chicago, and David L. Wengerhoff, Buffalo Grove, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.

Continuation of Ser. No. 858,080, Mar. 26, 1992, abandoned.
This application Mar. 9, 1994, Ser. No. 208,782
Int. Cl.[5] B65B *31/00;* B65D *81/20*
U.S. Cl. 426—128 14 Claims



1. A packaging system for storage of refrigerated, chemically leavened dough products comprising:
(a) a substantially rigid tray having at least one well for receiving a chemically leavened dough product, said tray having a bottom wall and upstanding peripheral side walls;
(b) a leavened unbaked dough product deposited within said well, said dough product having a size to allow a headspace of at least about 10% of the depth of the well, the leavening of said unbaked dough product being at least partially reacted to provide carbon dioxide distributed throughout said dough product;
(c) a gas from a source outside the tray displacing the ambient air in said headspace, said gas consisting essentially of carbon dioxide or a carbon dioxide and inert gas mixture disposed in said headspace of said tray in a volume ratio of carbon dioxide in the headspace of the tray to carbon dioxide in the dough product of from about 0.3:1 to about 1.7:1 to inhibit the leavening reaction of the unbaked dough product to prevent further production of carbon dioxide in the dough product and to maintain the leavening capability of the unbaked dough over the shelf life of the dough product; and
(d) a hermetically sealed cover extending over at least the top of said side walls to define a chamber containing said unbaked dough product and a headspace containing said gas surrounding said dough product.

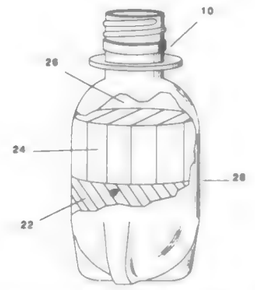
9. A method for making a packaged dough product suitable for extended refrigerated storage comprising:
(a) combining flour, a leavening agent and a fluid in amounts sufficient to form a dough mass;
(b) subjecting said dough mass to mixing under conditions whereby the leavening agent is at least partially reacted;
(c) forming said dough mass into a unbaked dough product;
(d) placing said unbaked dough product into a container which has sufficient volume to provide headspace to at least partially surround said dough product;
(e) displacing ambient air in the headspace surrounding said unbaked dough product with a gas consisting essentially of carbon dioxide or carbon dioxide and inert gas mixture from outside the container; and
(f) hermetically sealing said container after displacing the ambient air in the headspace with the gas, the carbon dioxide filling said headspace in a volume ratio of carbon dioxide in the headspace to carbon dioxide in the dough product of from about 0.3:1 to about 1.7:1 thereby inhibiting and minimizing the leavening reaction of the unbaked dough to prevent further production of carbon dioxide in the dough and to maintain the dough leavening capability over the shelf life of the unbaked dough.

5,366,745

LOW PRESSURE BEVERAGE CARBONATOR USING A CHEMICAL SOURCE OF CARBON

William G. Daden, 10631 Taupe St., Alta Loma, Calif. 91701

Continuation of Ser. No. 963,746, Oct. 20, 1992. This application Dec. 10, 1993, Ser. No. 166,318
Int. Cl.[5] B01F *3/04*
U.S. Cl. 426—477 1 Claim



1. A method of carbonating a volume of beverage from a chemical source of carbon dioxide, comprising the steps of:
(a) filling a beverage vessel with said volume of beverage smaller than the volume of the vessel thereby defining an ullage space when the beverage is placed in the vessel, and
(b) placing in a carbonation chamber an adequate quantity of said chemical and ice to provide the level of carbonation required, and
(c) substantially purging atmospheric gasses from said ullage space, and
(d) fluidly coupling said carbonation chamber with said beverage vessel, and
(e) placing the fluidly coupled combination into a frigid environment greater than 0° celsius so that said ice will gradually melt thereby causing the generation of carbon dioxide to persist for at least 12 hours whereby a level of carbonation may be achieved at a pressure not significantly greater than the pressure required to sustain said level of carbonation.

5,366,746

ULTRA-HIGH TEMPERATURE PASTEURIZATION AND ELECTRON BEAM TECHNOLOGY FOR STERILIZATION OF MEAT AND MEAT PRODUCTS

Von T. Mendenhall, Hyde Park, Utah, assignor to Utah State University Foundation, Logan, Utah

Continuation-in-part of Ser. No. 944,792, Sep. 14, 1992, abandoned, which is a continuation of Ser. No. 573,358, Aug. 27, 1990, abandoned. This application Oct. 4, 1993, Ser. No. 131,321
Int. Cl.[5] A23L *3/00*
U.S. Cl. 426—521 22 Claims

1. A method of accelerating the aging process and producing pasteurized raw meat which can be stored for extended periods at refrigerated temperatures comprising the steps of:
(a) treating said meat at ultra-high temperature of between about 900° and 1200° C. for a time sufficient to denature surface proteins, without burning, to a depth of not more than about 2 mm;
(b) cooling said meat to a refrigerated temperature of between about 2° and 4.4° C.; and
(c) hermetically sealing the cooled meat in an inert atmosphere.

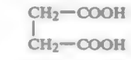
5,366,747

ACONITIC ACID, GLUCONIC ACID AND/OR SUCCINIC ACID TAKEN ALONE OR FURTHER TOGETHER WITH SCLAREOLIDE IN ENHANCING THE ORGANOLEPTIC PROPERTIES OF FOODSTUFFS

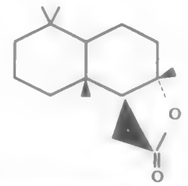
Lawrence L. Buckholz, Jr., Middletown, and Lewis G. Scharpf, Fair Haven, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 981,522, Nov. 25, 1992, abandoned.
This application Dec. 17, 1993, Ser. No. 168,338
Int. Cl.[5] A23L *1/226, 1/231*
U.S. Cl. 426—536 2 Claims

1. A process for imparting, augmenting or enhancing the umami taste and mouthfeel of a meaty-flavored foodstuff consisting of adding to said foodstuff from 0.001% up to 0.05% of an umami taste and mouthfeel-imparting, augmenting or enhancing quantity of a mixture of succinic acid having the structure:



or a salt thereof and sclareolide having the structure:



with the weight ratio of sclareolide:succinic acid or salt thereof being from 0.5:1.5 up to 1.5:0.5, in the absence of:
(i) amino acids except sulfur-bearing amino acids;
(ii) salts of amino acids except sulfur-bearing amino acids;
(iii) pyrollidone carboxylic acid;
(iv) salts of pyrollidone carboxylic acid; and
(v) nucleotides.

5,366,748

METHOD OF PRODUCTION OF EXTRUDED CEREAL GRAIN-BASED FOOD PRODUCTS HAVING IMPROVED QUALITIES

Maria D. Villagran; David A. Lauser; Lori J. Toman; Martin A. Mishkin, and Nancy C. Dawes, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 14, 1992, Ser. No. 943,833
The portion of the term of this patent subsequent to Nov. 8, 2011, has been disclaimed.
Int. Cl.[5] A23L *1/10;* A23P *1/12*
U.S. Cl. 426—549 9 Claims

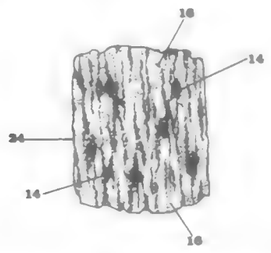
1. A process for the production of cereal grain-based extruded fried food product comprising the steps of:
feeding cereal grain flour and water together with a gum and a protein source to an extruder;
extruding said admixture to form a dough, said dough comprising from about 70 to 95 percent by weight (dry basis) of said cereal grain flour, from about 4.5 to 25 percent by weight of said protein source (dry basis), and from about 0.1 to about 3.0 percent by weight (dry basis) of said gum, said cereal grain flour comprised of non-pregelatinized cereal grain and the remainder from 0 up to about 40% by weight (dry basis) of partially pregelatinized cereal grain;
forming said dough into a sheet and cutting said sheet into multiple segments of desired shape; and
deep frying said segments to form said food product.

5,366,749

PROCESS AND PRODUCT OF MAKING A SNACK FROM COMPOSITE DOUGH

Bradley C. France, Idaho Falls; Clifford A. Stubbs, Iona; Veldon M. Hix, Idaho Falls, and Miles J. Willard, 154 E. 49th S., Idaho Falls, all of Id. 83402, assignors to Miles J. Willard, Idaho Falls, Id.

Filed May 19, 1993, Ser. No. 64,544
Int. Cl.[5] A21D *8/02*
U.S. Cl. 426—549 22 Claims



1. A process for forming a sheeted fried snack with discontinuous characteristics comprising:

a. forming a first gelatinized dough having a moisture content of about from 20%–40% by weight and a high degree of cohesion from starch-containing foodstuffs;

b. combining dry starch-containing ingredients separately from the first dough, which when mixed with water in a later step, will provide a second ungelatinized dough matrix with a moisture content of about 30%–70% by weight and a lower degree of cohesion than the first dough;

c. subdividing the first dough into portions having a range of random sizes and simultaneously distributing said random-sized portions throughout the second dough dry ingredients to provide a random mixture;

d. adding water to the random mixture to provide a composite dough exhibiting separate, distinguishable consistencies and rheological properties of the first and second doughs;

e. passing the composite dough between rollers to produce a sheeted composite dough with a non-uniform distribution of the randomly sized, first dough portions in the second dough matrix;

f. cutting the composite dough sheet into a multiplicity of snack-size dough pieces; and

g. frying the dough pieces to produce a snack with discontinuous characteristics.

5,366,750

THERMOSTABLE EDIBLE COMPOSITION HAVING ULTRA-LOW WATER ACTIVITY

James R. Morano, Somerset, N.J., assignor to Crompton & Knowles Corporation, Stamford, Conn.

Filed Jan. 13, 1993, Ser. No. 4,051
Int. Cl.[5] A23L *1/0534*
U.S. Cl. 426—572 69 Claims

1. A non-aqueous thermostable composition comprising:

a non-aqueous hydrophilic liquid and

an ultrahigh surface area cellulose in sufficient quantity to heat stabilize said composition up to 450° F. wherein said ultrahigh surface area cellulose is a member selected from the group consisting of fibril cellulose, microfibril cellulose, and combinations thereof dried with at least one chaotropic agent and sheared with said non-aqueous hydrophilic liquid.

5,366,751

LOW FAT, LOW CHOLESTEROL, AND LOW CALORIE DAIRY CREAMER

William T. Pordy, 10 E. End Ave., New York, N.Y. 10021

Filed Jun. 1, 1992, Ser. No. 890,803
Int. Cl.[5] A23C *9/15, 11/04*
U.S. Cl. 426—580 20 Claims

1. A liquid coffee whitener which consists essentially of skim milk having approximately 8.5% milk solids by weight and 1–2% butterfat by weight; 2–12% by weight of additional milk solids added to said skim milk; and an all natural fat substitute 0.3–5% by weight, said coffee whitener having total solids contents within the range of 11–28% by weight and total fat and fat mimetic content to simulate the taste, body, appearance and mouthfeel properties of "Half & Half", while being substantially lower in total fat, saturated fat, and calorie content of and not exceeding the cholesterol content of conventional creamers.

5,366,752

TRANS-HARDENED FATS WITH GOOD GLOSS

Frederick W. Cain, Voorburg; Adrian D. Hughes, Den Haag, both of Netherlands; Josipa Paska, Lisle, Ill., and Nico Zwikstra, Heemstede, Netherlands, assignors to Van Den Bergh Foods Co., Division of Conopco Inc., Lisle, Ill.

Filed May 3, 1993, Ser. No. 56,722
Claims priority, application European Pat. Off., May 8, 1992, 92304164.4
Int. Cl.[5] A23D *7/00*
U.S. Cl. 426—607 7 Claims

1. Fat blend comprising at least a fat A with a C_{18} trans-content of 15–70 wt % and another fat B, characterised by the presence of 0.2–30 wt %, on fat phase of fat B, which fat B is a vegetable fat of the (H_2M+HM_2) type, wherein

H=saturated fatty acid$\geqq C_{16}$

M=saturated fatty acid with C_8–C_{14} and wherein the carbon number distribution of the fat constituents is such that

$$\frac{C40 - C46}{C30 - C38} = 1\text{-}20$$

C40–C46 being compounds with a total carbon number distribution of the fatty acid substituents of 40, 42, 44 and 46 carbon atoms and C_{30}–C_{38} meaning compounds with 30, 32, 34, 36, and 38 carbon atoms.

5,366,753

FAT SUBSTITUTE COMPOSITIONS HAVING REDUCED LAXATIVE EFFECTS AT LOW LEVELS OF INCLUSION

Richard S. Meyer, Federal Way, and Michael L. Campbell, Kent, both of Wash., assignors to Curtice-Burns, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 941,711, Sep. 8, 1992, which is a continuation-in-part of Ser. No. 857,063, Mar. 24, 1992, Pat. No. 5,294,451, which is a continuation-in-part of Ser. No. 677,553, Mar. 29, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 138,630
The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.
Int. Cl.[5] A23D *9/00*
U.S. Cl. 426—611 10 Claims

1. A fat substitute composition, comprising: an edible, substantially nondigestible fat substitute material having a melting point of about 37° C. or less, in combination with an anti-laxative agent selected from the group consisting of: non-liquid polyglyceryl esters of at least one C1–C18 fatty acid; non-liquid C1–C18 fatty acid mono- and di-glycerides; ethoxylated mono- and di-glycerides; sorbitan esters of at least one C1–C18 fatty acid; glyceryl-lacto esters of at least one C1–C18 fatty acid; and digestible polyol fatty acid polyesters having at most 3 fatty acid groups, wherein the polyol is a sugar or sugar alcohol containing from 4 to 8 hydroxyl groups and wherein each acid group has from 8 to 18 carbon atoms, said anti-laxative agent being contained in said composition at a level of greater than 5% by weight of said fat substitute material to reduce leakage of said non-digestible fat substitute material through the anal sphincter of a mammal.

5,366,754

REDUCED FAT PEANUT BUTTER PRODUCT AND METHOD OF MAKING

Brenda J. Rudan, Ithaca, N.Y.; Marguerite L. Yang, Mundelein; Anthony M. Miller, Northbrook, both of Ill.; Stephen P. Lombardo, Grayslake; Russell K. Moroz, Mundelein, both of Ill.; Lynn B. Deffenbaugh, Grayslake; David W. Mehnert, Antioch, both of Ill.; John Peluso, Chicago, and R. G. Krishnamurthy, Gleaview, both of Ill., assignors to Kraft General Foods, Inc., Oak Brook, Ill.

Filed Jun. 22, 1993, Ser. No. 80,313
Int. Cl.[5] A23L *1/38*
U.S. Cl. 426—633 8 Claims

1. A high moisture, reduced fat peanut butter composition comprising from 0 to 50% peanut flour having less than 1% peanut oil, from 0 to 50% of a fat containing peanut paste having from about 50% peanut oil, to about 1% peanut oil, from 0 to 10% of a protein source selected from the group consisting of whey protein isolate, peanut protein isolate and whey protein concentrate, from 23% to about 40% moisture, and a humectant and an emulsifier system having sorbitol at a level of from 0 to about 2.0% , lecithin at a level of from about 0.05% to about 0.3%, glycerine at a level of from about 0.5% to about 2.0%, sodium stearoyl lactylate at a level of from about 0.05% to about 0.4%, xanthan gum at a level of from about 0.03% to about 0 6% and polyphosphate at a level of from 0 to about 0.4%, said peanut butter composition having an Aw of less than about 0.91, having from less than about 1% to about 25% peanut oil and having from about 10% to about 24% of peanut protein.

5,366,755

FOODSTUFFS CONTAINING NOVEL DEGRADED CELLULOSE DERIVATIVES

Maritta Timonen, Kantelettarentie 8E 57, Helsinki, Finland; ChoKyun Rha, 285 Commonwealth Ave., Boston, Mass. 02114; Timo Vaara, It. Puistot 16 L 14, Helsinki, Finland; Lindsey Bagley, 4, Barn Close, Maidenhead, Berkshire; Sarah Boedet, 45, All Saints Close, Wokingham, Berkshire, both of England; Michael Lindley, 17, Highway, Edgecomb Park, Crowthorne, Berkshire, England; Tarja Lahtinen, Myllykalliontie 2 L 32, 00200 Helsinki, Finland; Marja Turunen, Aino Ackteantie 10 A 7,, 00400 Helsinki, Finland, and Martti Vaara, Aino Ackteantie 10 A7, 00400 Helsinki, Finland

Continuation-in-part of Ser. No. 309,387, Feb. 10, 1989, abandoned, Ser. No. 370,629, Jun. 23, 1989, abandoned, Ser. No. 730,029, Jul. 12, 1991, abandoned, Ser. No. 464,291, Jan. 12, 1990, abandoned, and Ser. No. 565,346, Aug. 10, 1990, abandoned. This application Aug. 9, 1991, Ser. No. 743,152
Claims priority, application United Kingdom, Aug. 9, 1990, 9017452.5
Int. Cl.[5] A23G *3/00*
U.S. Cl. 426—658 14 Claims

1. A foodstuff composition comprising:

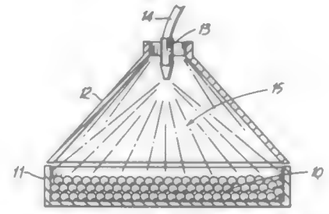
a first fat or carbohydrate ingredient, wherein between about 1 and about 100% of the first ingredient is replaced with an enzymatically degraded product of a cellulose derivative consisting essentially of a mixture of oligomers of the cellulose derivative a majority of said oligomers having an average DP of between about 5 and about 50.

5,366,756

METHOD FOR TREATING BIOABSORBABLE IMPLANT MATERIAL

Michael P. Chesterfield, Norwalk, and Robert D. Torgerson, Branford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 15, 1992, Ser. No. 898,340
Int. Cl.[5] A61F *2/28*
U.S. Cl. 427—2.26 12 Claims



1. A process for preparing surgical implant material comprising:

a) providing a quantity of particles of bioabsorbable implant material; and

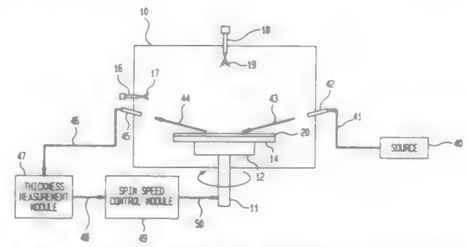
b) coating said particles of bioabsorbable implant material with at least one tissue ingrowth promoter.

5,366,757

IN SITU RESIST CONTROL DURING SPRAY AND SPIN IN VAPOR

Burn J. Lin, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 968,744
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—9 30 Claims



1. A spin coating process for producing a resist coating having a particular film thickness on a substrate, said process comprising the steps of:

a) obtaining a substrate having a coating of a liquid resist material thereon,

b) spinning said substrate in a vapor rich environment,

c) measuring the resist coating thickness in situ, and

d) providing feedback to adjust spin speed to obtain the particular film thickness of the resist coating in response to the measurement result.

7. Apparatus for treating a polymer coated substrate to produce a polymer coating having a particular film thickness, said apparatus comprising:

a) a support for said substrate,

b) a chamber surrounding said substrate and said support, said chamber having a means for controlling the concentration of solvent vapor in the chamber,

c) means for introducing a solvent vapor into said chamber,

d) means for introducing said polymer into said chamber and applying said polymer onto said substrate,

e) means for removing said solvent from said chamber,

f) means for in situ thickness measurement, and

g) feedback means to adjust spin speed to obtain the particu-

lar film thickness of the polymer coating, which feedback means is responsive to the means for in situ thickness measurement.

5,366,758

METHOD OF COATING AN INNER SURFACE OF A CATHODE RAY TUBE WITH LINING GRAPHITE

Hyung I. Jang, 150-27, Shinpyung1-dong, Kumi-si, Kyungsangbuk-do, Rep. of Korea

Filed Apr. 8, 1992, Ser. No. 865,093
Claims priority, application Rep. of Korea, Apr. 15, 1991, 6026/1991
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—64 8 Claims

1. A method of coating an inner surface of a cathode ray tube with a graphite lining which acts as an inner conductive film between a screen portion of the cathode ray tube and an electron gun to be disposed within the cathode ray tube, comprising the steps of:

coating the inner surface of the funnel portion of the cathode ray tube with the graphite lining, with the exception of a reserved area of the inner surface on which a getter is to be located, and

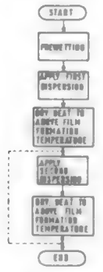
positioning a getter at the reserved area of the inner surface.

5,366,759

METHOD OF LACQUERING THE LUMINOPHORE LAYER OF A COLOUR PICTURE TUBE

Heinz Beckerle, and Rolf Reidinger, both of Ebersbach, Germany, assignors to Nokia (Deutschland) GmbH, Pforzheim, Germany

Continuation-in-part of Ser. No. 788,171, Nov. 5, 1991. This application Jul. 1, 1992, Ser. No. 907,328
Claims priority, application Germany, Nov. 14, 1990, 4036239
The portion of the term of this patent subsequent to Aug. 2, 2011, has been disclaimed.
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—64 8 Claims



1. A method of lacquering the luminophore layer on the screen trough of a colour picture tube, wherein

a first aqueous dispersion of a lacquer is applied to the luminophore layer,

the first dispersion is fully dried and heated to above the film formation temperature of the lacquer, thereby producing a first lacquer film,

a second aqueous dispersion of a lacquer is applied to the lacquer film, and

this second dispersion is fully dried and heated to above the film formation temperature, thereby producing a second lacquer film

characterized in that

identical components are used for both dispersions and the concentration of the components in the second dispersion is less than the concentration of the components in the first dispersion, and

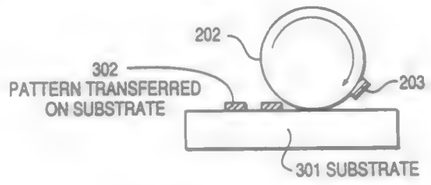
the luminophore layer is prewetted before the first aqueous dispersion is applied, while the second aqueous dispersion is applied directly to the first lacquer film.

5,366,760

CONDUCTIVE INK COMPOSITION AND METHOD OF FORMING A CONDUCTIVE THICK FILM PATTERN

Satoru Fujii, Takatsuki, and Hirotoshi Watanabe, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 683,183, Apr. 11, 1991, Pat. No. 5,174,925.
This application Sep. 25, 1992, Ser. No. 950,596
Int. Cl.[5] B05D *1/00*
U.S. Cl. 427—96 2 Claims



1. A method of forming a conductive thick film pattern comprising the steps of:

filling grooves of an intaglio with a conductive ink;

transferring the conductive ink in the grooves of the intaglio onto a blanket of which surface is coated with an elastic material mainly made of silicone resin, a hardness of the elastic material being 30 to 60 degrees as measured by JIS K 6301, 5.2, type A;

transferring and printing a conductive thick film pattern transferred or the blanket onto a substrate by rotating the blanket;

firing the conductive pattern to scatter an organic material; and

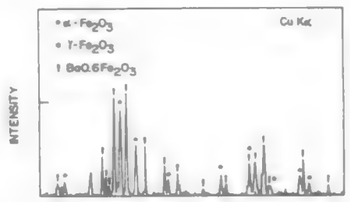
sintering the conductive pattern.

5,366,761

METHOD FOR PREPARING BARIUM-FERRITE-COATED γFE_2O_3 MAGNETIC POWER

Tsung-Shune Chin; Sung-Lin Hsu, and Ming-Cheng Deng, all of Hsinchu, Taiwan, Prov. of China, assignors to National Science Council, Taipei, Taiwan, Prov. of China

Filed Jun. 11, 1993, Ser. No. 76,074
Int. Cl.[5] B05D *5/12*
U.S. Cl. 427—127 24 Claims



1. A method for preparing a barium-ferrite-coated γ-Fe_2O_3 magnetic powder comprising the following steps:

(a) letting an iron-containing solution undergo a reaction to precipitate a needle-shaped α-FeOOH phase powder;

(b) mixing said α-FeOOH powder with a barium-containing solution to obtain a barium-bearing α-FeOOH powder;

(c) filtering and stoving said barium-bearing α-FeOOH powder;

(d) subjecting said stoved barium-bearing α-FeOOH powder to a first heat treatment of calcination to obtain a powder containing a barium-ferrite phase and a α-Fe_2O_3 phase;

(e) subjecting the resultant powder of step (d) to a second heat treatment to reduce said α-Fe_2O_3 phase of said powder to a Fe_3O_4 phase; and

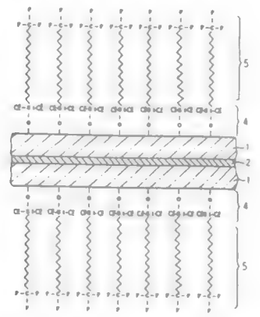
(f) subjecting the resultant powder in step (e) to a third heat treatment to oxidize said Fe_3O_4 phase of said powder to a γ-Fe_2O_3 phase.

5,366,762

METHOD OF MANUFACTURING A RECORDING MEDIUM

Mamoru Soga, Osaka, and Kazufumi Ogawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 2,163, Jan. 7, 1993, Pat. No. 5,296,263.
This application Oct. 4, 1993, Ser. No. 130,721
Claims priority, application Japan, Jan. 17, 1992, 4-006163; Apr. 20, 1992, 4-099381
The portion of the term of this patent subsequent to Mar. 22, 2011, has been disclaimed.
Int. Cl.[5] H01F *10/02*
U.S. Cl. 427—130 11 Claims



1. A method of manufacturing a recording medium having a recording layer on a surface of a plastic substrate, comprising contacting a halogenated silane chemical adsorbent with the surface of the plastic substrate under vapor phase to induce a dehydrochlorination rejection, reacting the chemical adsorbent with moisture to form a chemical adsorption film, and then depositing the recording layer on the surface of the chemical adsorption film formed on the plastic substrate.

5,366,763

METHODS OF PRODUCING DURABLE LUSTROUS COATING ON VITREOUS OBJECTS

Harry C. McDaniel, 2101 Grandin Rd., Apt. 405, Cincinnati, Ohio 45208

Continuation-in-part of Ser. No. 894,826, Jun. 8, 1992, abandoned. This application Jun. 1, 1993, Ser. No. 68,775
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—193 37 Claims

1. A method of producing a durable lustrous coating on a vitreous surface of a substrate object, comprising the steps of:

(a) applying a surface coating of a flux-free and frit-free inorganic based luster pigment to a fused vitreous surface of the object; and

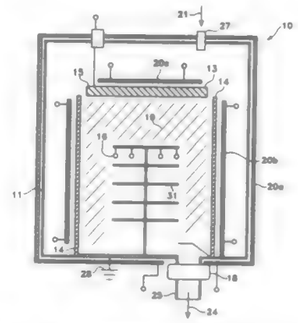
(b) heating the vitreous surface to a temperature and for a time sufficient to fix the luster pigment thereto so as to provide the durable lustrous coating.

5,366,764

ENVIRONMENTALLY SAFE METHODS AND APPARATUS FOR DEPOSITING AND/OR RECLAIMING A METAL OR SEMI-CONDUCTOR MATERIAL USING SUBLIMATION

Mandar B. Sunthankar, 1713 Hull St., Fort Collins, Colo. 80526

Filed Jun. 15, 1992, Ser. No. 898,577
Int. Cl.[5] B05D *3/06*; C23C *16/00, 14/24*
U.S. Cl. 427—248.1 28 Claims



1. A method for depositing a material onto at least one substrate within a chamber comprising the steps of:

a. providing at least one substrate within said chamber;

b. providing at least one source material within said chamber

c. providing a secondary emission surface within said chamber;

d. heating said source material;

e. vaporizing said source material to create a vaporized source material;

f. depositing a portion of said vaporized source material on said secondary emission surface;

g. heating said secondary emission surface to a temperature at which re-vaporization of said originally vaporized source material occurs;

h. re-emitting said deposited source material from said secondary emission surface; and

i. depositing said re-emitted source material onto said substrate.

5,366,765

AQUEOUS SLURRY COATING SYSTEM FOR ALUMINIDE COATINGS

Michael S. Milaniak, Middlefield; Dennis J. Orzel, Meriden; Foster P. Lamm, South Windsor, all of Conn., and David E. DeSaulniers, North Hampton, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 17, 1993, Ser. No. 63,342
Int. Cl.[5] B05D *3/02, 7/22*
U.S. Cl. 427—229 3 Claims

1. A method for forming a high temperature oxidation resistant protective coating on internal surfaces of a hollow superalloy article which comprises:

a. providing a slurry consisting of a source of aluminum in particulate form, an inert ceramic particulate, a halide compound activator in particulate form, and an aqueous base dispersant which includes an organic thickening agent and has a viscosity of from about 100 centipoise to 1,000 centipoise;

b. filling the internal cavity of the article with the slurry;

c. evaporating the solvent to leave the aluminum source particles, the inert ceramic particles and the halide compound particles in an organic matrix, said matrix resulting from the organic thickening agent; and

d. heating the filled superalloy article to a temperature of between about 1,300° F. and 2,300° F. for a period of

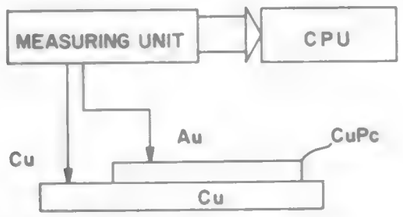
between about 1 and about 20 hours in a non-oxidizing atmosphere to decompose the organic matrix, and leave a network of voids, and to permit the halide activator to interact with the aluminum source to generate aluminum compound vapors which coat the internal surfaces and to diffuse into the surface to produce an integral aluminide coating.

5,366,766

METHOD OF MANUFACTURING THIN FILM AND THIN FILM DEVICE

Atsushi Sekiguchi, and Nobuo Shimo, both of Chiba, Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Filed Mar. 30, 1992, Ser. No. 860,020
Claims priority, application Japan, May 10, 1991, 3-105496
Int. Cl.[5] C23C *16/04*
U.S. Cl. 427—255.4 6 Claims



1. A method of selectively forming a polymer film of a cyano-benzene compound or a derivative thereof on a patterned layer of copper or copper alloy which is disposed upon a surface of a silicon or sapphire substrate without formation of the polymer film on the silicon or sapphire substrate, which method comprises:

contacting said patterned layer with a vapor of a polymerizable cyano-benzene compound or a derivative thereof having cyano groups which react with the copper or copper alloy patterned layer, said contacting being carried out under conditions sufficient to selectively react the cyano groups of the cyano-benzene compound or derivative with the copper or copper alloy without reacting the cyano groups with the silicon or sapphire substrate and under conditions sufficient to polymerize the cyano-benzene compound or derivative which is reacted with the copper or copper alloy layer,

whereby a polymer film of said cyano-benzene compound or derivative is obtained which is selectively formed on said copper or copper alloy patterned layer of the silicon or sapphire substrate.

5,366,767

COMPOSITION AND METHOD FOR PREVENTING MOSS GROWTH ON ROOFS

Richard Howard, 30311 Camas Swale Rd., Creswell, Oreg. 97426

Filed Sep. 14, 1993, Ser. No. 120,949
Int. Cl.[5] B05D *3/00*; C09D *5/14*
U.S. Cl. 427—294 15 Claims

15. A method of preventing parasitic growth on a porous weather exposed surface material, the method comprising the steps of:

enclosing the porous material in a pressure chamber;

lowering the pressure in the chamber substantially below one atmosphere;

providing an aqueous penetrant solution having a pH of at least 11.0 comprising Na_2O and SiO_2 at a combined concentration between 10% and 30% (W/V);

contacting the porous material with the penetrant solution; and

significantly increasing the pressure in the chamber so that the penetrant solution is driven deeply into the pores of the material.

5,366,768

METHOD OF FORMING COATING FILMS

Akira Kasari, Hiratsuka; Satoru Ito, Kanagawa, and Shigeru Nakamura, Owariasahi, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Apr. 28, 1992, Ser. No. 875,271
Claims priority, application Japan, May 9, 1991, 3-104423; May 10, 1991, 3-105925; May 13, 1991, 3-138491; May 13, 1991, 3-138492
Int. Cl.[5] B05D *1/36*
U.S. Cl. 427—407.1 8 Claims

1. A method of forming a coating film by forming in sequence a pigmented base coat and a clear top coat on a substrate followed by finishing by the two-coat one-bake technique, the method being characterized by using, as a coating composition for pigmented base coat formation, an organic solvent-based coating composition comprising,

(1) an OH-containing resin,

(2) an amino resin,

(3) a crosslinking agent which has, on an average, at least two groups, per molecule, each selected from the group consisting of a silanol group and an alkoxysilane group and which has a number average molecular weight of at least 1,000, said crosslinking agent being (A) or (B) as defined below;

(A) a polyorganosiloxane which is prepared by subjecting silane compound(s) comprising not less than 30% by weight, based on the total weight of silane compound, of trifunctional silane of the general formula

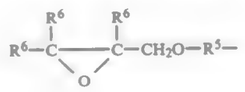
$$R^1{}_xSi(OR^2)_{4-x} \quad (I)$$

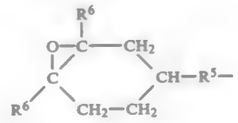
wherein R^1 and R^2 may be the same or different and each is a hydrocarbon group containing 1 to 13 carbon atoms and x is 1, to hydrolysis condensation,

(B) an epoxy-containing polyorganosiloxane which is prepared by subjecting to hydrolysis cocondensation a silane represented by the general formula (I) wherein x is 1, 2 or 3 and an epoxy-containing silane of the general formula

$$G-Si(OR^3)_{4-y} \quad (II)$$
$$|$$
$$(R^4)_{y-1}$$

wherein R^3 and R^4 may be the same or different and each is a hydrocarbon group containing 1 to 13 carbon atoms, y is 1, 2 or 3, G is a group of the formula (III) or (IV) given below:


(III)


(IV)

wherein R^5 is a bivalent hydrocarbon group containing 1 to 13 carbon atoms and the R^6 groups may be the same or different and each is a hydrogen atom or a methyl group, providing that the silane of formula (I) in which x is 1 and the silane of formula (II) in which y is 1 combinedly account for not less than 30% by weight in the total weight of the hydrolyzed silane compounds,

(4) a flaky metal powder and/or a mica powder, and

(5) an organic solvent,

and using, as a coating composition for clear top coat formation, a composition comprising,

(1) a base resin, wherein the base resin is (i) a resin mixture comprising three component resins comprising (a) an OH-containing resin, (b) an epoxy-containing resin and (c) a resin containing one or more groups each selected from the group consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom, (ii) a resin mixture comprising two component resins comprising (a) an epoxy-containing resin and (b) a resin containing one or more groups each selected from the group consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom, either one or both of the resins being OH-containing resins, or (iii) an OH- and epoxy-containing base resin which further contains at least one group selected from the group consisting of a silanol group and a hydrolyzable group bound directly to a silicon atom,

(2) a curing catalyst, and

(3) an organic solvent.

5,366,769

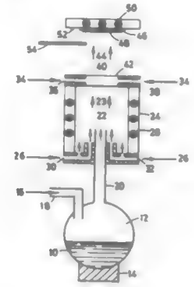
Patent Not Issued For This Number

5,366,770

AEROSOL-PLASMA DEPOSITION OF FILMS FOR ELECTRONIC CELLS

Xingwu Wang, 113 N. Main St., Alfred, N.Y. 14802

Continuation-in-part of Ser. No. 871,278, Apr. 20, 1992, Pat. No. 5,260,105, which is a continuation-in-part of Ser. No. 510,011, Apr. 17, 1990, Pat. No. 5,120,703. This application Sep. 13, 1993, Ser. No. 120,581
Int. Cl.[5] B05D *3/06, 3/02*
U.S. Cl. 505—477 10 Claims



1. A process for coating a first layer of material and a second layer of material onto a nickel-containing substrate, comprising the steps of:

(a) providing a first solution comprised of a first compound selected from the group consisting of an yttrium compound, a calcium compound, and admixtures thereof, and a second zirconium compound, wherein said first compound and said second zirconium compound are present in said solution at a concentration of from about 0.01 to about 1,000 grams per liter;

(b) subjecting said first solution to ultrasonic sound waves at a frequency in excess of 20,000 hertz, and to a substantially atmospheric pressure of at least about 600 millimeters of mercury, thereby causing said solution to form into a first aerosol;

(c) providing a radio frequency plasma reactor;

(d) generating a plasma gas within said radio frequency plasma reactor;

(e) contacting said first aerosol with said plasma gas within said plasma reactor while subjecting said first aerosol to a substantially atmospheric pressure of at least about 600 millimeters of mercury and to a radio frequency alternating current at a frequency of from about 100 kilohertz to about 30 megahertz, thereby forming a first vapor;

(f) providing a nickel-containing substrate disposed outside of said reactor, wherein said substrate is comprised of at least 40 mole percent of nickel;

(g) contacting said first vapor with said substrate; thereby forming a coated nickel-containing substrate;

(h) providing a second solution comprised of an yttrium compound, a barium compound, and a copper compound, wherein said yttrium, said barium, and said copper are present in said solution in an atomic ratio of 1:2:3, and wherein said solution is comprised of from about 0.01 to about 1,000 grams of a mixture consisting essentially of said yttrium compound, said barrium compound, and said copper compound per liter of said second solution;

(i) subjecting said second solution to ultrasonic sound waves at a frequency in excess of 20.000 hertz, and to a substantially atmospheric pressure of at least about 600 millimeters of mercury, thereby causing said second solution to form into a second aerosol;

(j) providing a radio frequency plasma reactor;

(k) generating a plasma gas within said radio frequency plasma reactor;

(l) contacting said second aerosol with said plasma gas within said plasma reactor of step (k) while subjecting said second aerosol to a substantially atmospheric pressure of at least about 600 millimeters of mercury and to a radio frequency alternating current at a frequency of from about 100 kilohertz to about 30 megahertz, thereby forming a second vapor; and

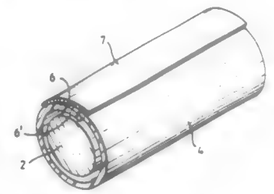
(m) contacting said second vapor with said coated substrate while said coated substrate is disposed outside of said plasma reactor of step (k), thereby forming an electronic cell.

5,366,771

RECOVERABLE FABRIC SLEEVE

Jozef V. Beersel, Temse; Noel K. M. Overbergh, Rotselaar, and Firmin Roos, Waarschoot, all of Belgium, assignors to NV Raychem SA, Belgium

PCT No. PCT/GB90/01472, § 371 Date Mar. 25, 1992, § 102(e) Date Mar. 25, 1992, PCT Pub. No. WO91/04844, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 25, 1990, Ser. No. 842,404
Claims priority, application United Kingdom, Sep. 29, 1989, 8921967
Int. Cl.[5] B65B *53/00*
U.S. Cl. 428—34.9 15 Claims

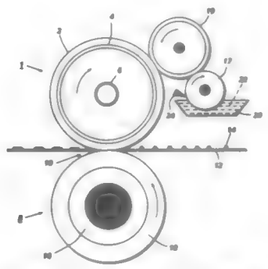


1. A recoverable wraparound article having a recovery ratio of 15 to less than 40%, and comprising

(a) a fabric having 7 to 13 heat recoverable fibers per cm in one direction which is the predominant recovery direction and 4 to 8 fibers, at least one of which are heat recoverable and some of which are heat stable, in a substantially perpendicular direction, and

(b) polymeric material laminated to at least one side of the fabric wherein said fabric comprises less than 0.5 times as many heat recoverable fibers in said perpendicular direction as in said predominant recovery direction.

5,366,772
FUSER MEMBER
Santokh S. Badesha, Pittsford; Robert M. Ferguson, Penfield; Louis D. Fratangelo, Fairport; George J. Heeks, Rochester; Arnold W. Henry, Pittsford, and David H. Pan, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 28, 1993, Ser. No. 98,088
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B32B *1/08*
U.S. Cl. 428—35.8 14 Claims



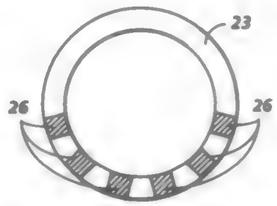
1. A fuser member comprising a supporting substrate, and a outer layer comprised of a substantially uniform integral interpenetrating hybrid polymeric network comprised of a haloelastomer, a coupling agent, a functional polyorganosiloxane and a crosslinking agent wherein the functional polyorganosiloxane is derived from a compound having the formula:



where R is independently an alkyl or alkenyl with from 1 to about 20 carbon atoms, or an alkylaryl or aryl group wherein the aryl of the alkylaryl or aryl group contains from 6 to about 30 carbons atoms and is optionally substituted with an amino, hydroxy, mercapto, or alkyl or alkenyl group having from about 1 to about 18 carbon atoms, the functional group A is independently an alkoxy or aryloxy group with from 1 to about 10 carbon atoms in each alkoxy or aryloxy groups, a hydroxy, or a halogen, and n is a number of from 2 to about 350 and represents the number of disubstituted siloxane monomeric units in the polyorganosiloxane; wherein the hybrid polymeric network is formed by the sequential reaction of the haloelastomer with a dehydrohalogenating agent, reaction with the coupling agent, condensation with the functional polyorganosiloxane, and crosslinking with the crosslinking agent.

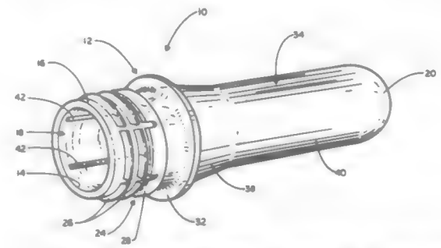
5,366,773
TUBULAR PULTRUDED MEMBER HAVING UNIFORM WALL THICKNESS
Ross E. Schroll, Fairport; Joseph A. Swift, Ontario, and Peter A. Sardano, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 21, 1992, Ser. No. 993,845
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.9 12 Claims

1. A tubular pultruded member having a longitudinal axis comprising a plurality of reinforcing fibers in a solid polymer matrix defining the wall of said tubular member, said wall having embedded therein a series of wall spacers parallel to said longitudinal axis, said wall spacers having the dimensions of the walls and wherein said wall spacers have been used to control the wall thickness of said tubular pultruded member



during its manufacture when the fiber reinforced liquid polymer was drawn over a mandrel and through a die.

5,366,774
ANTINESTING PREFORMS FOR BLOW-MOLDED ARTICLES
Henry M. Pinto, Candler; John Bombace, Fletcher, both of N.C., and Paul La Barre, St. Adresse, France, assignors to Southeastern Container, Enka, N.C.
Continuation of Ser. No. 583,214, Sep. 14, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 21,731
Int. Cl.[5] B65D *1/00*
U.S. Cl. 428—36.92 9 Claims

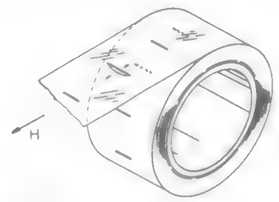


1. A preform for a blow-molded container, comprising a generally tubular body formed about a central axis and having inner and outer surfaces surrounding the axis, a first end open to the inner surface, a second end opposite to the first end, a wide portion of the tubular body adjacent the first end, a narrow portion of the tubular body axially spaced from the second end, the outer surface at the narrow portion having a radial dimension smaller than the radial dimension of the inner surface at the wide portion, wherein the improvement comprises at least one axially extending rib located along the inner surface at the wide portion and protruding radially inwardly from the inner surface of the wide portion a radial distance greater than the distance between the radial dimension of the outer surface of the narrow portion and the radial dimension of the inner surface of the wide portion to prevent a narrow portion of a similar preform from nesting within the wide portion.

5,366,775
EASE-PEELING AND SAFE-DISPENSING TAPE ROLL FOR PACKING OR SEALING
Cheng-Kang Kao, Sanchung, Taiwan, Prov. of China, assignor to Four Pillars Enterprise (M) SDN. BHD., Selangor Darul Ehsan, Malaysia
Filed May 12, 1993, Ser. No. 63,223
Int. Cl.[5] B32B *3/02, 3/10*
U.S. Cl. 428—40 11 Claims

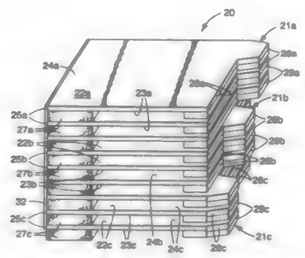
1. An easy-peeling safe-dispensing tape roll for packing or sealing purposes which is made from thin plastic film with one side thereof coated with adhesive and the opposite side thereof

coated with a release agent so as to permit said tape to be easily peeled off when dispensing same and to facilitate the relocation of a starting end of the cut tape roll in next use, wherein said adhesive is present in a discontinuous layer whereby the mid-



dle of the lateral span of said side coated with adhesive is provided with a continuous strip-like area to which no adhesive is applied, wherein said continuous strip-like area is provided with a plurality of spaced punch holes so as to permit said tape to be easily torn apart at any selected position.

5,366,776
PAD ASSEMBLY
Timothy A. Mertens, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 29, 1993, Ser. No. 84,798
Int. Cl.[5] B42D *15/00*
U.S. Cl. 428—40 12 Claims



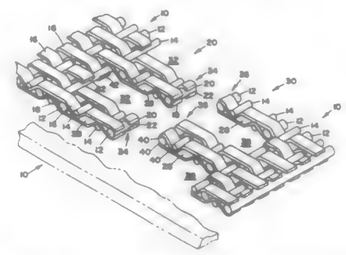
1. A pad assembly comprising:
a multiplicity of flexible sheets, each sheet having front and rear surfaces, having a body portion generally of the same size as the body portions of the other sheets, having peripheral edges including first and second opposite edges, having a tab portion smaller in surface area than said body portion projecting beyond said second edge of said body portion, and having a layer of pressure sensitive adhesive on said rear surface of said body portion, said sheets being disposed in a stack with the corresponding peripheral edges of the body portions of the sheets aligned, the front and rear surfaces of adjacent sheets facing each other, and the layer of pressure sensitive adhesive on each sheet releasably adhering that sheet to the adjacent sheet in the stack, and said sheets including a plurality of different sets of sheets with the sheets in each of said sets of sheets having the same peripheral shape and having tabs at a different location along said second edges of said body portions than the locations of the tabs along said second edges of said body portions in the other sets of sheets.

5,366,777
DISPLAY STRIP FOR PACKAGES OF CONSUMER PRODUCT
Thomas E. Bown, Dallas, and Dennis L. Pauling, Plano, both of Tex., assignors to Recot, Inc., Plano, Tex.
Filed Jun. 30, 1993, Ser. No. 83,485
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—43 7 Claims



1. A display strip for packages of consumer product, comprising:
(a) a backing member;
(b) a fascia disposed on a face of the backing member, the fascia comprising a discrete section which is detachable from the remainder of the fascia; and
(c) a package attached to the detachable section, wherein the force required to remove the detachable section from the strip is less than the force required to remove the package from the detachable section, whereby a consumer can remove the package from the display by grasping the package and simultaneously removing the package and the detachable section from the display.

5,366,778
WOVEN PAPERMAKERS FABRIC HAVING A UNIBODY SEAM AND METHOD FOR MAKING THE SAME
C. Barry Johnson, Summerville, S.C., assignor to Asten Group, Inc., Charleston, S.C.
Continuation of Ser. No. 775,047, Aug. 10, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 951,311
Int. Cl.[5] D21F *1/00;* B32B *3/06*
U.S. Cl. 428—58 5 Claims



1. An endless papermakers belt formed from a length of woven fabric having two ends, the fabric consists of interwoven machine direction and cross machine direction yarns, the machine direction yarns are woven so that paired upper and

lower yarns are stacked in the same relative vertical alignment throughout the body of the fabric, and the ends of the fabric are joined together to form the endless belt, said belt characterized by:

interleaving joining means at each end of the fabric which are formed entirely from the original woven fabric with both the machine and cross machine direction yarns retaining their original woven orientation and position within the fabric, a cross machine direction yarn at least one yarn back from each end is removed to form a void, the void is formed in a complementary position in the projections on each end of the fabric.

5,366,779

FLOOR COVERING WITH BITUMEN BACKING LAYER

Andrew Thompson, Belfast, United Kingdom, assignor to Interface, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 930,608, Sep. 29, 1992, abandoned. This application Feb. 3, 1994, Ser. No. 191,802

Claims priority, application United Kingdom, Apr. 10, 1990, 9008166.2

Int. Cl.[5] **B32B** *5/02, 11/10;* **C08L** *95/00*

U.S. Cl. 428—96 **18 Claims**

1. A floor covering having a bitumen composition backing layer, which bitumen composition comprises:

a) a dispersed phase of straight run bitumen; and

b) a continuous phase of a mixture consisting essentially of low density polyethylene and a high density polyethylene, the low density polyethylene concentration less than about 12 percent by weight of the composition;

the bitumen composition having a softening point of about 110° C. to 128° C. and a penetration value of about 10 dmm to 15 dmm.

5,366,780

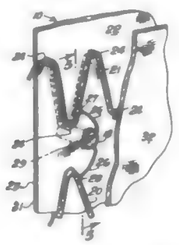
ARTICLE DECORATED WITH LIGHT EMITTING DIODES USING STRANDED CONDUCTIVE WIRE

Carmen Rapisarda, 1715 Edgecomb, Covina, Calif. 91724

Continuation-in-part of Ser. No. 437,193, Nov. 16, 1989, Pat. No. 5,019,438. This application Nov. 8, 1990, Ser. No. 610,686

Int. Cl.[5] **F21L** *15/08;* **F21V** *21/00*

U.S. Cl. 428—102 **4 Claims**



1. An article decorated with light emitting diodes comprising:

an area of material of the type used to make clothing having an outer surface and an inner surface;

a first length of thin, flexible, stranded conductive wire sewn against the inner surface of said area of material;

a second length of thin, flexible, stranded conductive wire sewn against the inner surface of said area of material, said second length being sewn spaced from said first length;

a plurality of holes formed in said area of material between said first and second lengths;

a plurality of light emitting diodes, each diode having a lens portion, and a first and a second lead extending therefrom and positioned on the back of said area of material, each first lead being electrically connected to said first length of thin, flexible, stranded conductive wire, and each second lead being electrically connected to said second length of thin, flexible, stranded conductive wire, and said lens portion of each light emitting diode extending through one of said plurality of holes in said area of material; and

battery means connected through switch means to said first and second lengths whereby when said switch means is closed, the light emitting diodes are energized.

5,366,781

ORIENTED, SHAPE ARTICLES OF LYOTROPIC/THERMALLY-CONSOLIDATABLE POLYMER BLENDS

John C. Coburn, Wilmington, Del., and Hung H. Yang, Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 337,505, Apr. 13, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 892,145

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] **B32B** *5/12, 27/34;* **C08L** *77/00, 77/10*

U.S. Cl. 428—113 **19 Claims**

1. An oriented, shaped article comprising 55% to 80% by weight of a first polymer phase consisting essentially of at least one lyotropic para-aramid polymer and 20% to 45% by weight of a second polymer phase consisting essentially of at least one thermoplastic polyamide, said first polymer phase being longitudinally continuous fibrils extending along the length of the article in the direction of orientation of said article when viewed at a magnification of 9000× in a transmission electron micrograph and with said second polymer phase interpenetrating said first polymer phase throughout said article, wherein said article is formed from a biphasic spinning dope having an anisotropic phase consisting essentially of the lyotropic para-aramid polymer and an isotropic phase consisting essentially of the thermoplastic polyamide.

5,366,782

POLYMERIC WEB HAVING DEFORMED SECTIONS WHICH PROVIDE A SUBSTANTIALLY INCREASED ELASTICITY TO THE WEB

John J. Curro, and Michele A. Maden, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 25, 1992, Ser. No. 936,195

Int. Cl.[5] **B32B** *3/10*

U.S. Cl. 428—137 **15 Claims**



1. An elastic, three-dimensional, fluid pervious, polymeric web having a first direction and a second direction perpendicular thereto, said web comprising: a plurality of three-dimensional, beam-like elements having a base portion in an uppermost plane and a pair of sidewall portions depending from said base portion connected to one another forming apertures in said web, a plurality of said three-dimensional, beam-like elements having permanently deformed sections such that said base portion of said permanently deformed section is below said uppermost plane while said web is in a substantially non-tensioned state, said base portion of said permanently deformed section being elevated towards said uppermost plane when said web is subjected to tension in the first direction allowing said web to extend in the first direction and said base portion of said permanently deformed section returning to its non-tensioned position below said uppermost plane when the tension in said web is released.

5,366,783

LAMINATED POLYESTER FILM FOR MAGNETIC TAPE HAVING SPECIFIC SURFACE PROPERTIES

Shigeo Utsumi; Masashi Inagaki, both of Kanagawa, and Yuko Watanuki, Tokyo, all of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 845,427

Claims priority, application Japan, Mar. 8, 1991, 3-043710

The portion of the term of this patent subsequent to Mar. 5, 2009, has been disclaimed.

Int. Cl.[5] **B32B** *5/16;* **D06N** *7/04*

U.S. Cl. 428—141 **18 Claims**

1. A polyester film suitable for a magnetic tape and prepared through a lamination of at least two layers by coextrusion, comprising:

a layer of a polyester (A) with an exposed surface having a center line average roughness of from 0.002 to 0.015 μm,

a layer of a polyester (B) laminated to polyester (A), polyester (B) having a lower melting point than polyester (A), wherein the layer of polyester (B) has an exposed surface with a degree of planar orientation of not larger than 0.100.

5,366,784

CORROSION INHIBITING OFFSET PRINTING BLANKET

Paul R. Herbison, 27 Pine Loop, Cedar Crest, N. Mex. 87008

Continuation of Ser. No. 660,958, Feb. 26, 1991, abandoned. This application Feb. 3, 1993, Ser. No. 13,090

Int. Cl.[5] **B32B** *5/16;* **B41F** *30/00*

U.S. Cl. 428—141 **43 Claims**

1. In a printing apparatus including a metal blanket cylinder susceptible to corrosion during normal printing operations, and a printing blanket having an exposed printing surface and a cylinder-contacting surface mounted on the cylinder, the improvement comprising a mounted printing blanket consisting essentially of a printing blanket material and a sacrificial metal for the metal of the cylinder disposed within or on the cylinder-contacting surface of the mounted blanket in substantial electrochemical contact with the surface of the cylinder in an amount and disposition sufficient to inhibit corrosion of the blanket cylinder, but not also upon the exposed printing surface during printing of the blanket in an amount which substantially covers said printing surface.

5,366,785

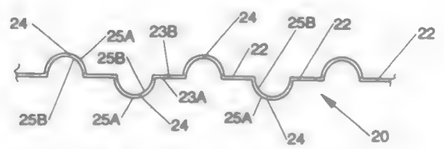
CELLULOSIC FIBROUS STRUCTURES HAVING PRESSURE DIFFERENTIAL INDUCED PROTUBERANCES AND A PROCESS OF MAKING SUCH CELLULOSIC FIBROUS STRUCTURES

Albert H. Sawdai, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 800,804, Nov. 27, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 130,536

Int. Cl.[5] **D21F** *11/14;* **D21H** *5/02*

U.S. Cl. 428—156 **3 Claims**



1. A generally planar single lamina cellulosic fibrous structure comprising an essentially continuous macroscopically monoplanar network, said network having first and second faces, and first and second pluralities of discrete protuberances dispersed therein, said first plurality of protuberances extending outwardly from the plane of said lamina in a first direction generally perpendicular to the plane of lamina and said second plurality of protuberances extending outwardly from the plane of said lamina in the opposite direction; wherein said protuberances of said first and second pluralities have a density less than the density of said continuous network; wherein said essentially continuous network has a particular thickness, and said protuberances of either plurality extend outwardly from the respective face of said network a distance greater than said particular thickness; and wherein the protuberances are convexo-concave.

5,366,786

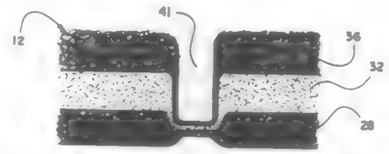
GARMENT OF DURABLE NONWOVEN FABRIC

Linda A. Connor, Atlanta, Ga., and Peter Maddern, Gwernymynydd, Great Britain, assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 15, 1992, Ser. No. 884,967

Int. Cl.[5] **A41D** *31/02;* **B32B** *5/14, 5/26, 7/04*

U.S. Cl. 428—171 **5 Claims**



1. A garment for protecting a worker constructed from a fabric comprising a durable nonwoven laminate comprising at least one spunbond layer comprising thermoplastic filaments formed from a mixture of a thermoplastic polymer and an effective amount of a fumed silica nucleating agent having particles sizes up to 1 micron in diameter and at least one layer of a meltblown web of thermoplastic microfibers, wherein the layers of the laminate are thermally bonded together in discrete areas.

5,366,787

PANEL STRUCTURE FABRICATION

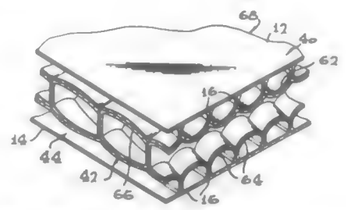
Ken K. Yasui, Huntington Beach, and Richard G. Pettit, La Habra, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation-in-part of Ser. No. 709,695, Jun. 3, 1991, Pat. No. 5,204,161. This application Oct. 22, 1992, Ser. No. 964,716

The portion of the term of this patent subsequent to Oct. 22, 2009, has been disclaimed.

Int. Cl.[5] **B32B** *3/12;* **F04C** *2/34*

U.S. Cl. 428—174 **17 Claims**



1. A panel structure comprising

a first core element comprised of superplastic material, said superplastic material being a metal or a metal alloy having superplasticity characteristics, and including a plurality of

successive inwardly extending superplastically formed first bulges, and

at least one other core element comprised of superplastic material adjacent said first core element, and including a plurality of successive inwardly extending superplastically formed second bulges disposed at an angle to and extending toward said first bulges, said second bulges being dissimilar to said first bulges, said second bulges being formed around and contacting said first bulges, and said first and second bulges being diffusion bonded at the contacting areas.

5,366,788

COMPACT CASSETTE HAVING A LINER MADE OF HIGH GLASS-TRANSITION-TEMPERATURE POLYMER MATERIALS

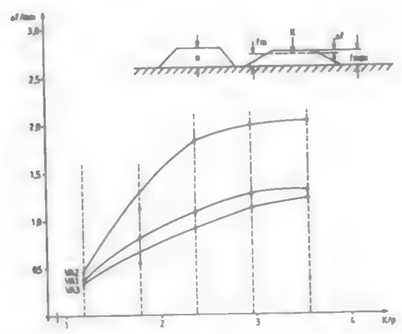
Klaus Manzke, Westheim, and Juergen Ahlers, Gross-Rohrheim, both of Germany, assignors to BASF Magnetics GmbH, Mannheim, Germany

Continuation of Ser. No. 868,901, Apr. 16, 1992, abandoned, which is a continuation of Ser. No. 494,549, Mar. 16, 1990, abandoned. This application Nov. 17, 1993, Ser. No. 153,891

Claims priority, application Germany, Mar. 28, 1989, 8903787[U]

Int. Cl.[5] G11B *23/087*

U.S. Cl. 428—174 **13 Claims**



1. A compact cassette having a central axis, tape rolls and two substantially rectangular plastic support liners arranged above and below the tape rolls and substantially covering the tape rolls and each of which liners has at least one longitudinal bend for elastic side support of the tape rolls, the liners consisting of a plastic material selected from the group consisting of a polysulfone, a polyethersulfone, a copolymer of a polysulfone, a copolymer of a polyethersulfone, a polyetherimide, a polyaryletherketone, and a blend of polysulfone and a polyethersulfone, having a glass transition temperature of TG≧80° C. and being exposed to a load in the range of about 1.5 to about 3.6 p, each of the liners having the following temperature dependent elastic characteristics:

a first deflection Δf_V measured under a specific load value in the above load range before the liner has been exposed to a temperature of about 85° C. and

a second deflection Δf_N measured under the above specific load value after the liner has been exposed to said temperature of about 85° C.

the quotient of the second and first deflections $\Delta f_N/\Delta f_V$ divided by said specific load value being in the range between 1.2/p and 0.2/p.

5,366,789

SHEET MATERIAL

Robin Mackinnon, London, United Kingdom, assignor to Marketech Limited, London, United Kingdom

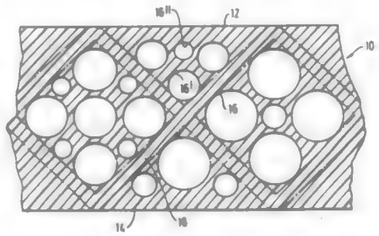
PCT No. PCT/GB91/00583, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/16243, PCT Pub. Date Oct. 31, 1991

PCT Filed Apr. 12, 1991, Ser. No. 941,061

Claims priority, application United Kingdom, Apr. 17, 1990, 9008539

Int. Cl.[5] B32B *1/00*

U.S. Cl. 428—178 **9 Claims**



1. A rigid or semi-rigid sheet material which comprises a pair of opposed faces between which run a series of elongate voids, the voids being arranged so that there are at least two series of uninterrupted interconnections between the two opposite faces which join one another where they cross and characterised in that the voids are of a cross sectional shape such that there is a substantial absence of sharp corners having a minimum radius of 0.1 mm.

5,366,790

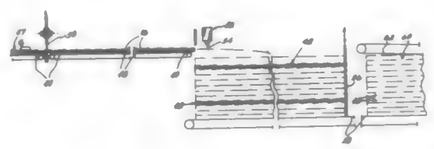
COMPOSITE ARTICLE MADE FROM USED OR SURPLUS CORRUGATED BOXES OR SHEETS

Henry L. Liebel, 10 Tower Dr., Newport, Ky. 41071

Continuation-in-part of Ser. No. 715,442, Jun. 14, 1991, abandoned. This application Dec. 21, 1992, Ser. No. 994,205

Int. Cl.[5] B32B *3/28*; B65D *19/00*

U.S. Cl. 428—184 **10 Claims**



1. A composite article useful as a material of construction comprising a plurality of substantially aligned, individual pieces of corrugated cardboard cut from scarp corrugated boxes or sheets, said pieces being disposed and adhered with respect to one another such that they lie in a shingle-shaped configuration, a configuration of unconnected pieces being adjoined by a piece deposited on top thereof and spanning said unconnected pieces, or a combination thereof, and forming multiple, generally planar layers comprised of said individual corrugated cardboard pieces having a length only a fraction of the full length of the article.

5,366,791

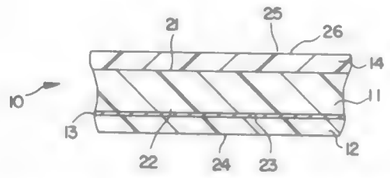
THERMOFORMABLE LAMINATE MATERIAL WITH REGISTERED PRINT AND METHOD OF MAKING THE SAME

John Carr, Phoenixville; Joseph Kucherovsky, Philadelphia, and Harry R. Peppiatt, Doylestown, all of Pa., assignors to Paramount Packaging Corporation, Chalfont, Pa.

Continuation-in-part of Ser. No. 548,781, Jul. 6, 1990. This application Oct. 17, 1991, Ser. No. 778,360

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 **41 Claims**



1. A plurality of like, thermoformable plastic laminate structures, each structure comprising:

a rigid thermoformable plastic core; and

a flexible transparent plastic sheet permanently laminated to the core so that the shape of the sheet conforms to the shape of the core, the sheet having an ink disposed on one face thereof,

the ink being disposed at the same predetermined location with respect to the core for all of the plurality of structures, the ink being in a shape and/or a color which is predistorted.

5,366,792

LAMINATED THREE LAYER NON-WOVEN FABRIC WITH IMPROVED INTERFACE AND PROCESS FOR PRODUCING THE SAME

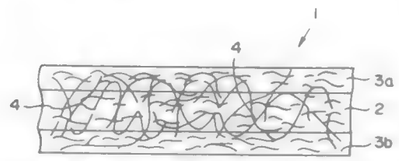
Ryutaro Shirayanagi; Masaki Shimizu, and Masami Shimokawa, all of Waki, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Dec. 22, 1992, Ser. No. 994,959

Claims priority, application Japan, Dec. 27, 1991, 3-347429

Int. Cl.[5] B32B *3/10, 7/14*

U.S. Cl. 428—196 **14 Claims**



1. A laminated non-woven fabric comprising a laminated material of an intermediate layer of a melt-blown non-woven fabric obtained by melt-blowing a polyolefin resin, and inner and outer layers of a spun-bonded non-woven fabric which chiefly consists of polyester fibers, wherein said spun-bonded non-woven fabric has locally bonded portions of fibers, where the fibers are weakly-bonded together in such a manner that they are not completely melted together and said laminated non-woven fabric is obtained by water-jet treating the laminated material comprising the intermediate layer and the inner and outer layers so that the fibers of the inner and outer layers are inserted in the melt-blown non-woven fabric and are intermingled with fibers in the melt-blown non-woven fabric to form coupled layers as a unitary structure.

5,366,793

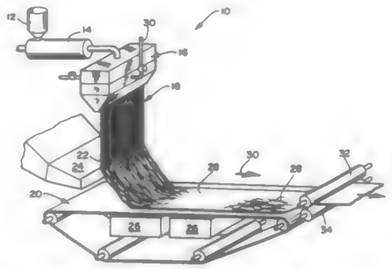
ANISOTROPIC NONWOVEN FIBROUS WEB

James R. Fitts, Jr., 8930 Bridgewater Dr., Gainesville, Ga. 30506; William D. Musselwhite, 95 Bobwhite Trail, Canton, Ga. 30114; Eugenio G. Varona, 3309 Woodrun Trail, Marietta, Ga. 30062, and Robert D. Wright, 1740 Beverly Wood Ct., Atlanta, Ga. 30341

Filed Apr. 7, 1992, Ser. No. 864,808

Int. Cl.[5] B32B *27/14*

U.S. Cl. 428—198 **21 Claims**



1. An anisotropic nonwoven fibrous web comprising a substantially homogenous arrangement of meltblown fibers generally aligned along one of the planar dimensions of the web.

5,366,794

TAPE CARRIER FOR SEMICONDUCTOR APPARATUS

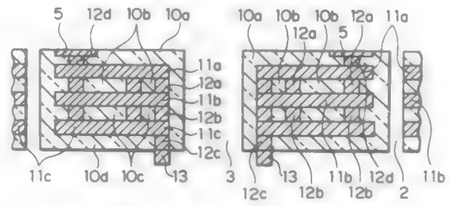
Shin Nakao, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 834,818

Claims priority, application Japan, Jul. 30, 1991, 3-189863

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 **4 Claims**



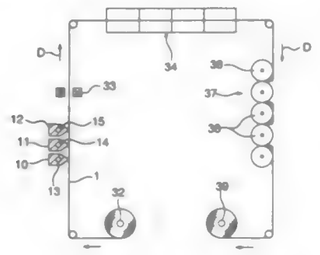
1. A tape carrier for a semiconductor element comprising an electrically insulating tape including opposed first and second surfaces, an opening for receiving a semiconductor element, a plurality of generally parallel electrically conducting films embedded in the electrically insulating tape, electrical conductors embedded in the electrically insulating tape transverse to the electrically conducting films selectively electrically interconnecting the electrically conducting films, a projecting electrode projecting from the first surface of the electrically insulating tape and electrically connected to at least one of the electrically conducting films by one of the electrical conductors, and a test electrode flush with the second surface of the electrically insulating tape and electrically connected to at least one of the electrically conducting films by one of the electrical conductors.

5,366,795

MAGNETIC RECORDING MEDIUM HAVING THREE LAYERS EACH CONTAINING PARTICLES AND A BINDER WHEREIN THE RELATIONSHIP OF PARTICLE CRYSTAL SIZE IN THE SECOND AND THIRD LAYERS IS SPECIFIED

Narito Goto, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 139,279
Claims priority, application Japan, Oct. 21, 1992, 4-283031
Int. Cl.[5] G11B 5/00
U.S. Cl. 428—212 6 Claims



1. A magnetic recording medium comprising
a support;
a first magnetic layer remote from said support and comprising magnetic particles and a first binder;
a second layer, in contact with an inner face of said first layer, between said first layer and said support, said second layer comprising a second binder and particles having a crystal size, measured in nanometers, of S_2; and
a third layer, between said second layer and said support, comprising a third binder and particles having a crystal size, measured in nanometers, of S_3;
wherein $S_1 \leqq 35$ and $S_2 < S_3$ and, in at least one of said second layer and said third layer, said particles are non-magnetic.

5,366,796

SEALABLE, MATT, BIAXIALLY ORIENTED MULTILAYER POLYOLEFIN FILM

Ursula Murschall, Nierstein; Angela Speith, Wiesbaden, and Gunter Schloegl, Kelkheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 20, 1992, Ser. No. 963,628
Claims priority, application Germany, Oct. 24, 1991, 4135096
Int. Cl.[5] B32B 7/02
U.S. Cl. 428—216 27 Claims

1. A biaxially oriented multilayer film comprising
(a) a base layer containing a propylene polymer,
(b) at least one outer layer containing a blend of two components (A) and (B),
wherein component (A) is composed of a high density polyethylene (HDPE), and
wherein component (B) is composed of at least one copolymer selected from the group consisting of:
ethylene and propylene,
ethylene and butylene, propylene and butylene,
ethylene and an α-olefin containing 5 to 10 carbons, and
propylene and an α-olefin containing 5 to 10 carbon atoms,
c) wherein the film has a haze value, measured by ASTM D 1003, of greater than 40, and
d) wherein the film has a gloss, measured by ASTM D 523-78, of less than 35 at an angle of 85°.

5,366,797

BONDED YARN BUNDLE, AND TEXTILE SHEET MATERIALS OBTAINABLE THEREFROM

André Rötgers, Bobingen, and Wolfgang Gessner, Kelkheim, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Jan. 13, 1993, Ser. No. 3,798
Claims priority, application Germany, Jan. 15, 1992, 4200834
Int. Cl.[5] D03D 3/00
U.S. Cl. 428—229 13 Claims

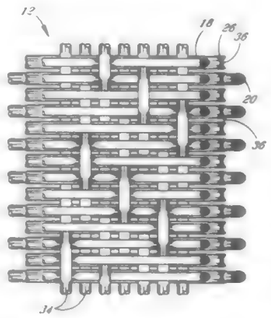
1. A hydrolysis resistant filter fabric prepared by drawing under heat and tension a yarn bundle comprising two mutually twisted together multifilament yarns wherein at least one of said yarns is composed of a first synthetic polyester polymer and the other of said yarns is composed of a second thermoplastic synthetic polyester polymer whose melting point is at least 10° C. below the melting or decomposition point of the first synthetic polymer, and wherein the first synthetic polymer is polyethylene terephthalate or a copolyester comprising polyethylene terephthalate units and the second synthetic polymer is polybutylene terephthalate or a copolyester comprising polybutylene terephthalate units, the drawn yarn bundle having a tenacity of at least 38 cN/tex.

5,366,798

MULTI-LAYERED PAPERMAKING FABRIC HAVING STABILIZED STACKED WEFT YARN

Volker Ostermayer, Greenville, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Filed Nov. 30, 1993, Ser. No. 159,839
Int. Cl.[5] D03D 3/00
U.S. Cl. 428—229 15 Claims



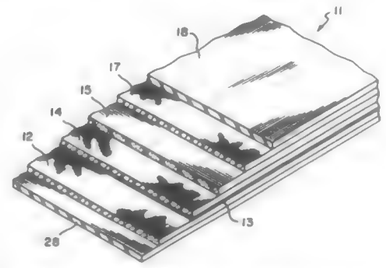
1. A woven multi-layer papermaking fabric having uniform drainage characteristics and knuckle pattern comprising:
a system of warp yarns arranged side-by-side across the width of said fabric;
a system of vertically stacked weft yarns arranged in layers comprising support surface layer weft yarns intermediate layer weft yarns and running surface layer weft yarns;
said support surface layer weft yarns and said running surface layer weft yarns having circular cross-sections;
said intermediate layer weft yarns having shaped cross-sections which form a plurality of channels extending longitudinally along the length of said weft yarns; whereby
said support surface layer weft yarns and said running surface layer weft yarns of said vertically stacked system of weft yarns engage in said channels of said intermediate layer weft yarns to be stably held in said stacked condition against lateral shifting.

5,366,799

PRINTING BLANKET HAVING SMOOTH NONTEXTURED BASE SURFACE

Melvin D. Pinkston, Hendersonville, and Stephen B. Edwards, Hazelwood, both of N.C., assignors to Day International, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 637,817, Jan. 7, 1991, abandoned, which is a division of Ser. No. 282,387, Dec. 9, 1988, Pat. No. 5,006,400. This application Nov. 30, 1992, Ser. No. 982,958
Int. Cl.[5] B32B 7/00; D03D 15/00
U.S. Cl. 428—250 9 Claims



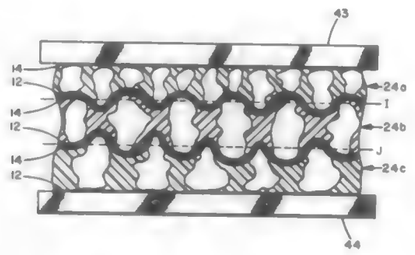
1. A laminated printing blanket comprising at least one base ply of a woven fabric, a surface printing face layer of a polymeric material, an intermediate compressible layer positioned between said base ply and said surface layer, and a reinforcing fabric ply positioned between said compressible layer and said surface layer, and wherein the opposite surface of said base ply is coated with a natural rubber or synthetic elastomer at a coating weight of from about 80 to about 400 gm/m^2 to provide a substantially smooth surface such that, when mounted on a blanket cylinder, the pressures to which the blanket is subjected are spread substantially over the entire surface of said blanket in contact with said cylinder.

5,366,800

ABRASIVE ARTICLE

Jeffrey S. Johnson, Ivoryton, Conn., assignor to Northeast Abrasives Diamond and Tools Corporation, Ivoryton, Conn.

Filed Mar. 9, 1992, Ser. No. 848,331
Int. Cl.[5] B24B 1/00; D04H 1/08; B32B 7/00
U.S. Cl. 428—281 8 Claims



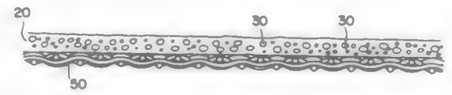
1. An abrasive product which comprises laminations of a plurality of layers, each layer comprising outer sheets of fibre sandwiching a layer of abrasive particles therebetween, the major cross section dimension of said abrasive particles being greater than the thickness of said fibre sheets, said layers of fibre and abrasive particles being laminated together with an adhesive under pressure whereby the abrasive particles of one layer penetrate within the interstices of abrasive particles of another layer.

5,366,801

FABRIC WITH REVERSIBLE ENHANCED THERMAL PROPERTIES

Yvonne G. Bryant, Raleigh, and David P. Colvin, Apex, both of N.C., assignors to Triangle Research and Development Corporation, Raleigh, N.C.

Filed May 29, 1992, Ser. No. 891,236
Int. Cl.[5] B32B 5/16
U.S. Cl. 428—283 16 Claims



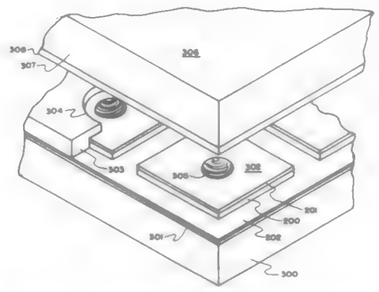
1. An article having enhanced thermal storage properties and repeatability of thermal response consisting essentially of:
a base material selected from the group consisting of fabrics and fibers, and
a coating covering at least a portion of the surface of said base material and comprising:
a polymeric binder, and
a plurality of microcapsules dispersed throughout and submerged within said binder on the surface of said base material so as to be surrounded thereby, said microcapsules containing a temperature stabilizing means selected from the group consisting of phase change materials and plastic crystals, whereby the article exhibits enhanced thermal stability when subjected to heat or cold.

5,366,802

THIN PYROELECTRIC IR DETECTOR COMPOSED OF SINTERED METAL OXIDES

Elizabeth H. Nelson, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 693,470, Apr. 30, 1991, Pat. No. 5,242,537. This application Dec. 1, 1992, Ser. No. 983,903
Int. Cl.[5] G01D 15/10
U.S. Cl. 428—336 13 Claims



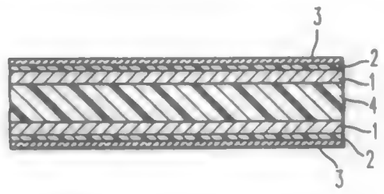
1. An imaging pyroelectric detector element for an infrared imager, comprising:
a thin wafer of precipitated, highly compacted and sintered metal oxides, having a homogeneous structure at its surface and throughout its bulk;
said wafer also having a smooth and even imaging surface and a uniform thickness of the order of one mil.

5,366,803

COATED METAL PLATE WITH EASILY CONTROLLED GLOSS AND REDUCED HEAT BLOCKING DURING LAMINATION

Tokuaki Nakazawa; Joseph J. Rudisi, and Osamu Suzuki, all of Virginia Beach, Va., assignors to Mitsubishi Kasei America, Inc., White Plains, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,216
Int. Cl.[5] B32B *15/08*
U.S. Cl. 428—335 21 Claims



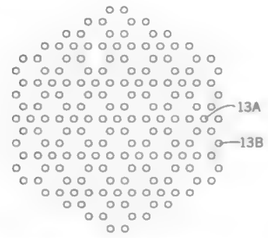
1. A coated metal sheet, comprising:
(a) a metal substrate;
(b) a layer of a cured polyvinylidene fluoride paint produced by heat curing a polyvinylidene fluoride paint, wherein said polyvinylidene fluoride paint comprises a polyvinylidene fluoride, a hardening agent, and a pigment, coated on a surface of said metal substrate; and
(c) a layer of a cured fluorinated ethylene vinyl ether paint produced by heat curing a fluorinated ethylene vinyl ether paint, wherein said fluorinated ethylene vinyl ether paint comprises a fluorinated ethylene vinyl ether and a curing agent, coated on said layer of cured polyvinylidene fluoride paint (b).

5,366,804

COMPOSITE FIBER AND MICROFIBERS MADE THEREFROM

Jeffrey S. Dugan, Asheville, N.C., assignor to BASF Corporation, Parsippany, N.J.

Filed Mar. 31, 1993, Ser. No. 40,715
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—373 12 Claims



1. A composite fiber with an island-in-a-sea cross section comprising at least two different polymers, one of which is a water-insoluble polymer and selected from the group consisting of polyester, polyamide and copolymers therefrom, and an other is water-dissipatable polymer having a plurality of at least 19 islands of the water insoluble polymer, the islands having an average fineness of not greater than 0.3 denier per filament and being uniformly distributed across the cross section of the fiber and being continuous over the length of the composite fiber and being surrounded by the sea of the water-dissipatable polymer.

5,366,805

POLYCARBONATE RESIN/SILICONE RUBBER INTEGRALLY MOLDED ARTICLE AND METHOD FOR MAKING

Hironao Fujiki, Takasaki; Shigeki Shudo; Akira Matsuda, both of Annaka; Noriyoshi Ogawa, and Toshiaki Takata, both of Toyonaka, all of Japan, assignors to Shin-Etsu Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 9, 1993, Ser. No. 163,543
Claims priority, application Japan, Dec. 10, 1992, 4-352676
Int. Cl.[5] B32B *27/28, 25/20;* B29K *69/00;* B29C *45/16*
U.S. Cl. 428—412 3 Claims

1. A polycarbonate resin/silicone rubber integrally molded article wherein a polycarbonate resin having an aliphatic unsaturated group or a composition containing the same is integrally joined to an addition type silicone rubber containing a tackifier component.

5,366,806

INTEGRATED THERMOPLASTIC RESIN/SILICONE RUBBER ARTICLES AND METHOD FOR MAKING

Hironao Fujiki, Takasaki, and Shigeki Shudo, Annaka, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,303
Claims priority, application Japan, Oct. 23, 1991, 3-304173
Int. Cl.[5] B29C *43/20;* B29K *19/00*
U.S. Cl. 428—412 18 Claims

1. An integrated thermoplastic resin/silicone rubber article comprising
a molded shape of a thermoplastic resin modified with a silicon-containing compound being compatible with the resin and having at least one hydrogen atom directly attached to a silicon atom, as an $—SiR_2H$ or $—SiRH_2$ group, and an aliphatic unsaturated group in a monomeric or polymeric molecule, where R is a monovalent hydrocarbon group having 1 to 10 carbon atoms, optionally substituted by halogen atoms, and
a silicone rubber layer integrally joined to the molded shape.

5,366,807

PRIMER COMPOSITION, COATING METHOD AND COATED SILICONE SUBSTRATES

Kenneth C. Fey, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 283,334, Dec. 12, 1988, Pat. No. 5,248,334.
This application Jun. 11, 1993, Ser. No. 75,269
Int. Cl.[5] B32B *27/40*
U.S. Cl. 428—425.5 9 Claims

1. An article comprising a cured silicone substrate bearing a coating composition durably adhered thereto with a continuous primer layer consisting essentially of the composition obtained by drying a primer composition consisting essentially of a primer component and a solvent component, said primer component consisting essentially of an aminoalkyl-substituted trialkoxysilane, a carboxylic acid salt of tin and, optionally, an organic amine compound selected from the group consisting of alkanolamines and polyamines; the weight ratio of aminoalkyl-substituted trialkoxy silane to carboxylic acid salt of tin having a value of from 5/1 to 20/1 and the weight ratio of organic amine compound to aminoalkyl-substituted trialkoxysilane having a value of from 0/1 to 1/1.

5,366,808

WATER REDUCIBLE SILICONE WEATHERSTRIP COATING

Chak-Kai Yip, North York, Canada, assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 17, 1993, Ser. No. 78,704
Claims priority, application Canada, Jun. 25, 1992, 2072288
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—447 31 Claims

1. A water reducible coating composition for EPDM-based rubber comprising:
(A) an amine functional polysiloxane emulsion;
(B) a cross-linking composition comprising:
(i) a methyl methoxypolysiloxane resin solution, and
(ii) an organofunctional silane of the general formula:

$$XSi(OR^1)_3$$

where R^1 is a monovalent hydrocarbon having from 1 to 4 carbon atoms and X is an organofunctional group;
(C) a catalytic amount of a catalytic organometallic compound; and
(D) an effective amount of an emulsifying agent sufficient to emulsify the composition.

5,366,809

SILICONE PRESSURE-SENSITIVE ADHESIVES

Randall G. Schmidt, and Gary A. Vincent, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 2, 1993, Ser. No. 114,862
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—447 22 Claims

1. A silicone pressure sensitive adhesive composition consisting essentially of:
(A) 50 to 80 parts by weight of a non-reactive solvent soluble organopolysiloxane resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ siloxane units and $SiO_{4/2}$ siloxane units wherein each R denotes a monovalent radical selected from the group consisting of hydrocarbon and halogenated hydrocarbon radicals, at least $\frac{1}{3}$ of all R radicals being methyl and the mole ratio of $R_3SiO_{\frac{1}{2}}$ siloxane units to $SiO_{4/2}$ siloxane units in the soluble organopolysiloxane having a value of from 0.6/1 to 1.2/1;
(B) 20 to 50 parts by weight of a polydiorganosiloxane, the organic radicals thereof being selected from the group consisting of hydrocarbon and halogenated hydrocarbon radicals wherein at least $\frac{1}{3}$ of said organic radicals are methyl, said polydiorganosiloxane having at least 3 alkenyl groups in its molecule, with the proviso that the alkenyl group content of said polydiorganosiloxane is 0.1 to 4 mole percent, the total amount of components (A) and (B) being 100 parts by weight;
(C) an organohydrogenpolysiloxane crosslinking agent having, on average, at least 3 SiH groups per molecule, the amount of said organohydrogenpolysiloxane being sufficient to provide a molar ratio of said SiH groups of component (C) to said alkenyl groups of component (B) in the range of 0.1 to <0.9; and
(D) a curing amount of a hydrosilation catalyst.

5,366,810

WATER-REPELLENT WALLBOARD

James H. Merrifield, Ballston Spa, and Donna A. Riccio, Watervliet, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Oct. 9, 1992, Ser. No. 959,307
Int. Cl.[5] B32B *9/06*
U.S. Cl. 428—448 2 Claims

1. A method for preparing a water-repellent wallboard comprising the steps of:
(a) delivering a water-repellent composition consisting essentially of water, at least one surfactant, a hydrogen-modified siloxane, and a high molecular weight silicone to a mixer;
(b) delivering gypsum to said mixer and mixing to form a gypsum-containing mixture of water, at least one surfactant, a hydrogen-modified siloxane, a high molecular weight silicone, and gypsum;
(c) and applying said gypsum-containing mixture in between at least two sheets of gypsum paper to form water-repellent wallboard.

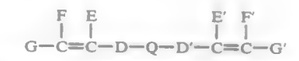
5,366,811

ORGANIC ELECTROLUMINESCENCE DEVICE

Hisahiro Higashi; Chishio Hosokawa, and Hiroshi Tokailin, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01228, § 371 Date May 4, 1992, § 102(e) Date May 4, 1992, PCT Pub. No. WO92/05131, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 17, 1991, Ser. No. 856,028
Claims priority, application Japan, Sep. 20, 1990, 2-248749; Oct. 19, 1990, 2-279304
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—457 28 Claims

1. In an organic electroluminescence device, which comprises a light emitting layer, the improvement comprising said light emitting layer comprising a dimerized styryl compound of the formula (a):



(a)

wherein D and D' are the same or different from each other and are each an arylene group having 6 to 20 carbon atoms or a divalent aromatic heterocyclic group having 3 to 20 carbon atoms, which are unsubstituted or are mono-substituted or poly-substituted with substituents (a'),
E, E', F, F', G and G' are the same or different from each other and are each a hydrogen atom, or an aryl group having 6 to 20 carbon atoms, a cyclohexyl group, an alkyl group having 1 to 10 carbon atoms, an aralkyl group having 7 to 20 carbon atoms, an alkoxyl group having 1 to 10 carbon atoms, which are unsubstituted or are mono-substituted or poly-substituted with substituents (a'), or a monovalent aromatic heterocyclic group having 3 to 20 carbon atoms which is unsubstituted or mono-substituted or poly-substituted with substituents (a'), with the proviso that F and G are not both hydrogen atoms, and F' and G' are not both hydrogen atoms;
the substituents (a') are an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an acyl group having 1 to 6 carbon atoms, an aralkyl group having 7 to 8 carbon atoms, an aryloxy group having 6 to 20 carbon atoms, an alkoxy-carbonyl group having 2 to 7 carbon atoms, an aryloxy-carbonyl group having 7 to 21 carbon atoms, an acyloxy group having 1 to 6 carbon atoms, an acylamino group having 1 to 6 carbon atoms, halogen atoms, a carboxyl group, an amino-carbonyl group, a hydroxyl group, a cyano group, a nitro group, or an amino group;
E and D, or E'and D' may combine with each other to form a saturated or unsaturated five-membered or six-membered ring, F and G, or F' and G' may combine with each other to form a saturated or unsaturated five-membered or six-membered ring; and
Q is a divalent group to break the conjunction.

5,366,812

THERMOPLASTIC MATERIALS AND ARTICLE MADE THEREFROM

Nobukazu Takahashi, Yokohama; Teiji Kohara, Kawasaki, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 630,640, Dec. 20, 1990, Pat. No. 5,187,012. This application Nov. 12, 1992, Ser. No. 974,224

Claims priority, application Japan, Dec. 26, 1989, 1-335192; Nov. 28, 1990, 2-331114

The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.

Int. Cl.[5] B32B *27/00*; B29C *47/88*; C08F *32/04*

U.S. Cl. 428—523 19 Claims

1. A film or sheet article having a tensile strength of at least 800 kg/cm^2 and substantially free from microvoids, which is obtained by molding a thermoplastic composition comprising a thermoplastic saturated norbornene polymer which has a number-average molecular weight (Mn) of 50,000 to 500,000 and a weight-average molecular weight (Mw) of 100,000 to 2,000,000 which are measured by high performance liquid chromatography, and a molecular weight distribution (Mw/Mn) of at least 2.2, wherein said thermoplastic saturated norbornene polymer has a maximum volatile content of 0.1% by weight.

5,366,813

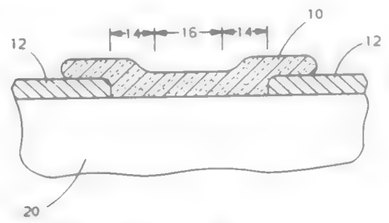
TEMPERATURE COEFFICIENT OF RESISTANCE CONTROLLING FILMS

Carl W. Berlin, Bringhurst, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Division of Ser. No. 806,193, Dec. 13, 1991, abandoned. This application May 7, 1993, Ser. No. 57,921

Int. Cl.[5] H01B *1/02*

U.S. Cl. 428—546 2 Claims



1. A conductor composition comprising:
51.9% palladium powder,
34.7% silver powder,
5.5% glass powder,
7.8% screening agent and
0.2% by weight thinner.

5,366,814

COPPER FOIL FOR PRINTED CIRCUITS AND PROCESS FOR PRODUCING THE SAME

Keisuke Yamanishi; Hideo Oshima, and Kazuhiko Sakaguchi, all of Hitachi, Japan, assignors to Nikko Gould Foil Co., Ltd., Tokyo, Japan

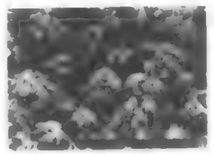
Filed Nov. 16, 1993, Ser. No. 153,327

Claims priority, application Japan, Nov. 19, 1992, 4-332220

Int. Cl.[5] B32B *15/20*; H05K *1/09*; C25D *7/06*

U.S. Cl. 428—607 14 Claims

1. A copper foil for printed circuits comprising a copper foil having a roughened layer formed on the side of the foil to be bonded to a base, said roughened layer consisting of a number of protuberant copper electrodeposits containing chromium, tungsten or both, in an amount effective to form rounded



protuberances in said roughened layer and inhibit the growth of dendrites therein.

5,366,815

MAGNETIC MULTILAYER AND MAGNETORESISTANCE EFFECT ELEMENT

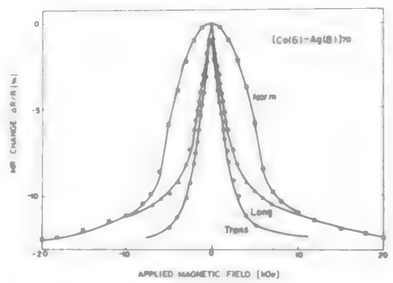
Satoru Araki; Kiyomi Yasui, both of Tokyo, and Yoshikazu Narumiya, Chiba, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 741,332, Aug. 7, 1991, abandoned. This application May 24, 1993, Ser. No. 65,443

Claims priority, application Japan, Mar. 22, 1991, 3-083290; Jul. 1, 1991, 3-186906

Int. Cl.[5] H01F *1/00*; B32B *15/01*

U.S. Cl. 428—611 9 Claims



1. A magnetoresistance effect element comprising a magnetic multilayer having a surface comprising
alternating layers of at least one magnetic thin film containing at least one member selected from the group consisting of Fe, Co, and Ni, and at least one Ag thin film deposited by a molecular beam epitaxial method, wherein the particles deposited by the molecular beam epitaxial method had a kinetic energy of 0.01 to 5 eV and a center energy of 0.05 to 0.5 eV during deposition,
said multilayer having an axis of easy magnetization in a plane parallel to the surface and a squareness ratio Br/Bs in the plane of up to 0.5.

5,366,816

POTASSIUM HEXATITANATE WHISKERS HAVING A TUNNEL STRUCTURE

Hidefumi Harada; Yasuo Inoue, and Eiji Sadanaga, all of Yamaguchi, Japan, assignors to Titan Kogyo Kabushiki Kaisha, Ube, Japan

Filed Jun. 19, 1992, Ser. No. 901,232

Claims priority, application Japan, Jun. 20, 1991, 3-148836; Feb. 6, 1992, 4-021281

Int. Cl.[5] C22C *1/09*; C01G *23/00*

U.S. Cl. 428—614 2 Claims

2. An alloy-base composite material comprising a light alloy matrix and potassium hexatitanate whiskers having a tunnel structure, said whiskers containing aluminum and niobium impurities in such amounts that the Al_2O_3/Nb_2O_5 molar ratio is at least 0.6 and containing 1% or less by weight in total of the whiskers impurities as oxides other than aluminum and niobium.

5,366,817

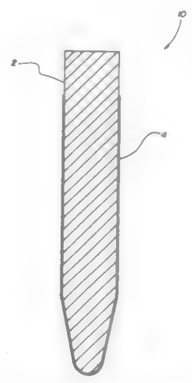
PROCESS FOR MITIGATING CORROSION AND INCREASING THE CONDUCTIVITY OF STEEL STUDS IN SODERBERG ANODES OF ALUMINUM REDUCTION CELLS

Laurance L. Oden; Jack C. White, both of Albany, and James A. Ramsey, The Dalles, all of Oreg., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 27, 1992, Ser. No. 874,139

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—653 18 Claims



1. A process for decreasing corrosion of steel Soderberg studs during production of aluminum by electrolysis, comprising the step of coating the surface of said studs with a coating material comprising a member selected from the group consisting of aluminum and an alloy containing aluminum, said coating material being resistant to sulfidation and carburization.

5,366,818

SOLID POLYMER FUEL CELL SYSTEMS INCORPORATING WATER REMOVAL AT THE ANODE

David P. Wilkinson, Vancouver; Henry H. Voss, West Vancouver; David S. Watkins, Coquitlam, and Keith B. Prater, Vancouver, all of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Continuation-in-part of Ser. No. 641,601, Jan. 15, 1991, Pat. No. 5,260,143. This application Nov. 3, 1992, Ser. No. 970,614

Int. Cl.[5] H01M *8/00*, *8/04*, *8/10*

U.S. Cl. 429—13 54 Claims

1. An electric power generation system comprising:
(A) a hydrogen-containing inlet fuel stream;
(B) an oxygen-containing inlet oxidant stream;
(C) a fuel cell stack comprising at least one fuel cell comprising:
(1) an anode having an inlet for directing said inlet fuel stream to the catalytically active portion of said anode, said anode producing cations from said fuel stream and an outlet fuel stream;
(2) a cathode having an inlet for directing said inlet oxidant stream to the catalytically active portion of said cathode, said cathode producing anions from said oxidant stream, said anions reacting with said cations to form water at said cathode;
(3) a cation exchange membrane interposed between said anode and said cathode, said membrane facilitating the migration of cations from said anode to said cathode and isolating said inlet fuel stream from said inlet oxidant stream; and
(4) an electrical path for conducting electric current between said anode to said cathode; and
(5) means for maintaining the partial pressure of water vapor in said outlet fuel stream below the saturation pressure of water vapor contained therein;
(D) a water separator for removing water from said outlet fuel stream to produce a dehumidified fuel stream and a removed water stream;
whereby a substantial portion of water accumulated at said cathode is absorbed in said outlet fuel stream.

5,366,819

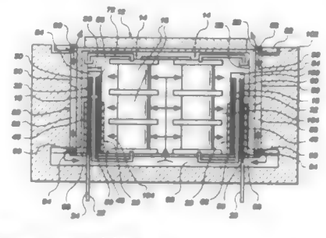
THERMALLY INTEGRATED REFORMER FOR SOLID OXIDE FUEL CELLS

Joseph J. Hartvigsen, Kaysville, and Ashok C. Khandkar, Salt Lake City, both of Utah, assignors to Ceramatec, Inc., Salt Lake City, Utah

Filed Oct. 6, 1993, Ser. No. 133,444

Int. Cl.[5] H01M *8/06*

U.S. Cl. 429—17 28 Claims



1. A reformer comprising:
a reactor bed positioned in the reformer for reforming a feedstock to a fuel;
an inlet for conducting the feedstock into the reformer;
a heat exchanger for exchanging heat between a solid oxide fuel cell and the feedstock at a rate proportional to the rate of formation of the fuel; and
an outlet positioned to receive the fuel from the reactor bed for conducting the fuel to the solid oxide fuel cell.

5,366,820

FUEL CELL SYSTEM

Masaru Tsutsumi, Hyogo; Nobuyoshi Nishizawa, Neyagawa; Tsukasa Itoh, Sumoto; Takaaki Matsubayashi, Hirakata; Takehiro Yonesaki, Tokorozawa; Koichi Satoh, Kobe; Akio Furukawa, Osaka; Ikuo Yonezu, Hirakata; Shin Fujitani, Hirakata; Kenji Nasako, Hirakata, and Toshihiko Saito, Kyoto, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Division of Ser. No. 790,474, Nov. 12, 1991, Pat. No. 5,229,222. This application Apr. 12, 1993, Ser. No. 20,687

Claims priority, application Japan, Nov. 14, 1990, 2-309198; Nov. 30, 1990, 2-339944; Aug. 20, 1991, 3-207792

Int. Cl.[5] H01M *8/18*

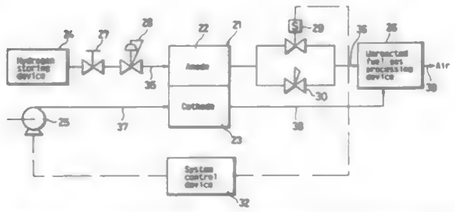
U.S. Cl. 429—19 9 Claims

1. A fuel cell system for directly convening chemical energy of a fuel into electrical energy by electrochemical means, the system comprising:
first means for storing hydrogen, said first means for storing hydrogen having a hydrogen-absorbing alloy for dissociating a hydrogen gas at a temperature from approximately −20° C. to room temperature;
a fuel cell having a hydrogen electrode and an oxidizer electrode;
means for supplying air to said oxidizer electrode at least when said system starts operating;
said fuel cell including means for generating electricity from

hydrogen supplied to said hydrogen electrode from said first means storing hydrogen and from oxygen supplied from a vicinity of said oxidizer electrode;

first means for supplying an amount of an oxidizer gas to said oxidizer electrode;

said first means for supplying being driven by an output from said fuel cell;



second means for supplying an amount of hydrogen to said hydrogen electrode;

said second means for supplying including means for connecting said first means for storing hydrogen and said hydrogen electrode; and

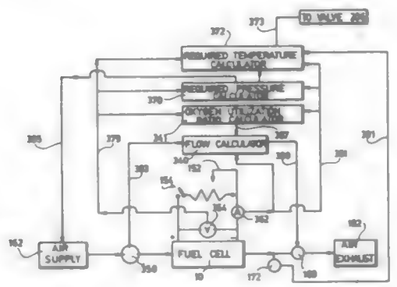
said second means for supplying being driven by an output from said fuel cell.

5,366,821

CONSTANT VOLTAGE FUEL CELL WITH IMPROVED REACTANT SUPPLY AND CONTROL SYSTEM

Robert D. Merritt, Vancouver, and James D. Blair, Burnaby, both of Canada, assignors to Ballard Power Systems Inc., North Vancouver, Canada

Filed Mar. 13, 1992, Ser. No. 850,570
Int. Cl.[5] H01M *8/06*
U.S. Cl. 429—21 **23 Claims**



1. A method for regulating the utilization of a reactant gas in an electric power generation system comprising at least one fuel cell, an input to said fuel cell of a reactant gas comprising at least one reactant constituent, and an output from said fuel cell of the reactant gas and an electrical output characterized by a voltage and a current, said method comprising the steps of:

A. selecting for said fuel cell a reactant utilization ratio, said ratio defined as the amount of the reactant constituent delivered to said reactant input per unit time divided by the amount of the reactant constituent consumed in said fuel cell per unit time;

B. determining a mass flow rate of the reactant gas through the fuel cell which will provide the selected reactant utilization ratio;

C. measuring the actual mass flow rate of the reactant gas at the reactant gas input and the output current of said fuel cell; and

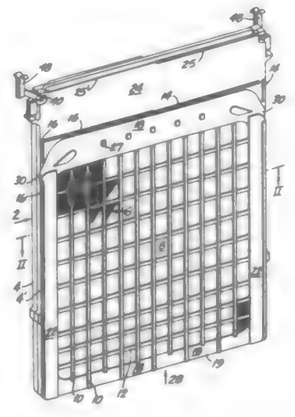
D. regulating the mass flow rate of the reactant gas at the reactant gas output of said fuel cell, responsive to the output current and the mass flow rate measured at said reactant gas input, to maintain said determined mass flow rate.

5,366,822

CELL FOR A METAL-AIR BATTERY

Menachem Korall, and Yehuda Harats, both of Jerusalem, Israel, assignors to Electric Fuel (E.F.L.) Ltd., Jerusalem, Israel

Filed Mar. 15, 1994, Ser. No. 213,674
Int. Cl.[5] H01M *12/06*
U.S. Cl. 429—27 **19 Claims**



1. A modular cell for a multi-cell metal-air battery system, comprising a relatively flat cell housing having two major surfaces and accommodating a pair of oppositely disposed, spaced-apart, air-permeable, liquid-impermeable cathodes in the form of air electrodes defining between themselves a space open towards the upper edges of said cell housing and closed at the lateral edges and the bottom of said cell housing, said space being configured to accommodate an anode of said battery, substantial portions of the major surfaces of said housing being removed, thus exposing major portions of said air electrodes, characterized in that said two major surfaces are partly recessed in such a way as to form, in conjunction with a similarly recessed outer surface of a major wall of an adjacent cell housing, an air space with air access and exits, and that the exposed portions of said air electrodes are supported and reinforced by ribbing constituted at least by a plurality of slender rails, which rails define ducts for guiding a flow of air across said portions of said air electrodes from said air access toward said exits.

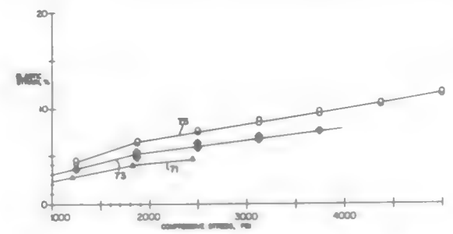
5,366,823

METAL COMPRESSION PAD

Andrei Leonida, West Hartford; Lawrence C. Moulthrop, Windsor, and Kurt M. Critz, Enfield, all of Conn., assignors to United Technologies Corporation, Windsor Locks, Conn.

Filed Dec. 17, 1992, Ser. No. 991,906
Int. Cl.[5] H01M *8/02*
U.S. Cl. 429—34 **6 Claims**

1. An improved fuel cell having an anode electrode, a cathode electrode, and an electrolyte disposed therebetween, wherein the improvement comprises: a compression pad for compensating for component dimensional variations at pressures exceeding about 1,500 psig, said compression pad comprising: an elastic metal that returns to its original thickness after it has been compressed having sufficient porosity to attain



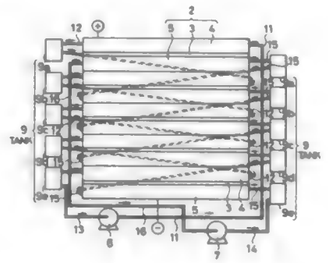
an elastic strain between about 3% and about 40% at about 2,500 psig.

5,366,824

FLOW BATTERY

Ken Nozaki, Tsukuba; Kosuke Kurokawa, Kodaira; Izumi Tsuda, Tsukuba; Osamu Hamamoto, Tokyo, and Keiiti Watanabe, Chiba, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Oct. 20, 1993, Ser. No. 138,085
Claims priority, application Japan, Oct. 21, 1992, 4-283244
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—34 **5 Claims**



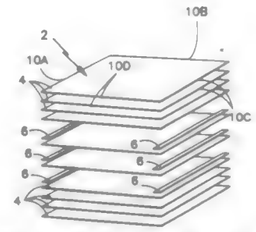
1. A flow battery comprising a plurality of unit cells each constituted of stacked unit cells each consisting of a prescribed number of stacked diaphragms and positive electrode chambers and negative electrode chambers separated by the diaphragms, a positive electrode fluid tank associated with each unit cell to have its outlet connected with an inlet of the positive electrode chamber of the unit cell and its inlet connected with an outlet of the positive chamber of an immediately preceding unit cell, a negative electrode fluid tank associated with each unit cell to have its outlet connected with an inlet of the negative chamber of the unit cell and its inlet connected with an outlet of the negative chamber of an immediately preceding unit cell, positive electrode fluid supply means for supplying positive electrode fluid from the positive electrode fluid tanks to the positive electrode chambers, negative electrode fluid supply means for supplying negative electrode fluid from the negative electrode fluid tanks to the negative electrode chambers, and means for electrically connecting the plurality of unit cells in series.

5,366,825

LAMINATED ELECTROLYTE RESERVOIR PLATE

Richard D. Breault, Coventry, and Michael E. Gorman, Glastonbury, both of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Division of Ser. No. 40,955, Mar. 31, 1993, Pat. No. 5,300,124.
This application Jan. 6, 1994, Ser. No. 178,074
Int. Cl.[5] H01M *2/18*
U.S. Cl. 429—34 **9 Claims**



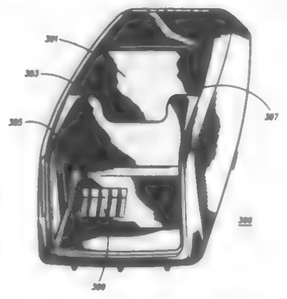
1. A laminated electrolyte reservoir plate, comprising: a mixture of graphite powder, reinforcing fibers, cellulosic fibers, and thermosetting resin formed into a planar sheet, wherein said sheet has been cut into a plurality of main sheets having at least two opposing edges and a plurality of edge strips which have been laid-up such that said edge strips are located along the perimeter of said main sheet along said opposing edges, laminated together, carbonized, and graphitized.

5,366,826

BATTERY PACK RETENTION SYSTEM AND APPARATUS THEREFOR

Timothy P. McCormick, and Brian J. Hassemer, both of Gurnee, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1993, Ser. No. 123,653
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 **8 Claims**



1. A battery pack retention system comprising:

an electronic apparatus having a first housing shaped to form a retention area for receiving a battery pack, the retention area having a first rail disposed on an internal surface thereof; and

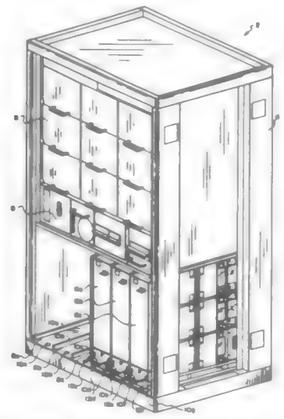
a battery pack having a weight and a battery pack housing having a shape to fit within the retention area, the battery pack housing having a first channel on a first outer surface such that the first channel and the first rail mate when the battery pack is inserted into the retention area, the first channel having a first compliance rib disposed therein generating a first force on the first rail.

5,366,827

MODULAR HOUSING FOR BATTERIES AND BATTERY CHARGER

Daniel L. Belanger, Westford, and James A. Daly, Chelsea, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 10, 1992, Ser. No. 896,251
Int. Cl.[5] H01M 2/10
U.S. Cl. 429—99 32 Claims



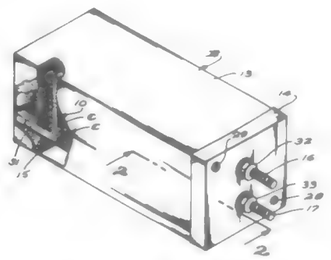
1. A power module which is part of a power supply, said power module comprising:
- a load-bearing frame having wheels and defining a plurality of compartments, a plurality of said compartments for holding batteries having external terminals;
- a plurality of elongated insulating members for insulating the terminals of the batteries from the environment external to said compartments and for inhibiting movement of the batteries from the compartments; and
- a plurality of stabilizers secured to said frame and automatically deployable to enhance said power module's mechanical stability when said power module is free-standing and automatically retractable when said power module is inserted into a companion cabinet.

5,366,828

METAL ALLOY LADED CARBON AEROGEL HYDROGEN HYDRIDE BATTERY

Ralph C. Struthers, 39503 Calle El Fuente, Saugus, Calif. 91350

Filed Nov. 8, 1993, Ser. No. 148,964
Int. Cl.[5] H01M 10/36
U.S. Cl. 429—101 11 Claims



1. A micro-porous metal-laded hydride battery negative anode electrode structure including; micro-porous carbon aerogel comprising a three-dimensional reticulate structure of randomly disposed interengaged carbon fibers; and, a fiber form reticulate structure of hydrogen-absorbing metal made to substantially conform with and extending throughout the carbon aerogel in supported engagement with the carbon fibers thereof.

5,366,829

METHOD OF FORMING AN ANODE MATERIAL FOR LITHIUM-CONTAINING SOLID ELECTROCHEMICAL CELLS

Eileen S. Saidi, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Jun. 14, 1993, Ser. No. 77,489
Int. Cl.[5] H01M 4/04
U.S. Cl. 429—216 3 Claims

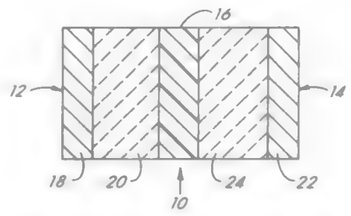
1. A method of making a lithium anode material for solid electrochemical cells comprising the steps of:
- dispersing particles of lithium or lithium alloy metal in a polymer precursor composition;
- coating a lithium or lithium alloy metal surface with said polymer precursor composition; and
- partially or totally curing said polymer precursor composition.

5,366,830

VANADIUM OXIDE CATHODE ACTIVE MATERIAL AND METHOD OF MAKING SAME

Rene Koksbang, San Jose, Calif., assignor to Valence Technology, Inc., San Jose, Calif.

Filed Feb. 12, 1993, Ser. No. 16,962
Int. Cl.[5] H01M 4/02
U.S. Cl. 429—218 22 Claims



1. A method of forming a positive electrode active material comprising electrochemically reacting crystalline vanadium pentoxide with lithium to a voltage below about 2 V to thereby provide lithiated amorphous vanadium oxide.

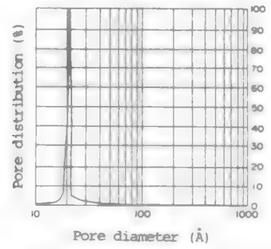
5,366,831

NICKEL ELECTRODE FOR ALKALINE BATTERY

Masaharu Watada; Masahiko Oshitani, and Masuhiro Onishi, all of Takatsuki, Japan, assignors to Yuasa Corporation, Osaka, Japan

PCT No. PCT/JP92/00740, § 371 Date Feb. 9, 1993, § 102(e) Date Feb. 9, 1993, PCT Pub. No. WO92/22934, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 10, 1992, Ser. No. 975,579
Claims priority, application Japan, Jun. 14, 1991, 3-170587; Oct. 28, 1991, 3-309960
Int. Cl.[5] H01M 4/62
U.S. Cl. 429—223 2 Claims

1. A nickel electrode for an alkaline battery comprising nickel hydroxide powder having an inner pore volume of less than 0.1 ml/g inclusive as an active material, said nickel hydroxide powder comprising cobalt and at least two II-group elements in a solid solution, said II-group elements comprising zinc and barium, wherein said II-group elements are present in an amount of more than 1 Wt % when converted to zinc only,



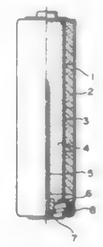
and said cobalt is present in an amount of more than 2 wt % inclusive.

5,366,832

SEPARATOR FOR ALKALINE BATTERIES

Hideo Hayashi, Yamatotakada; Hiroyuki Kawai, Okayama; Tomoyasu Sonetaka, Okayama; Shingo Nakanishi, Okayama; Junichi Asaoka, Ikoma, and Yuji Mototani, Yawata, all of Japan, assignors to Kuraray Co., Ltd., Okayama and Matsushita Electric Industrial Co., Ltd., Osaka, both of Japan

Filed Jun. 1, 1993, Ser. No. 69,512
Claims priority, application Japan, Jun. 1, 1992, 4-166838
Int. Cl.[5] H01M 2/16
U.S. Cl. 429—249 10 Claims



1. A separator for alkaline batteries containing a fibrillated product of a cellulose fiber, having a wet Young's modulus of 20 g/d or more and an orientation degree Δn of 42×10^{-3} or more, obtained by solvent-spinning a solution of cellulose.

5,366,833

SECURITY DOCUMENTS

Joel F. Shaw, 64 Hobin St., Stittsville, Canada K0A 3G0 , and Gary A. Van Beek, 3065 Mackey Road, North Gower, Canada K0A 2T0

Filed Mar. 22, 1993, Ser. No. 35,356
Int. Cl.[5] G03G 15/22
U.S. Cl. 430—10 14 Claims

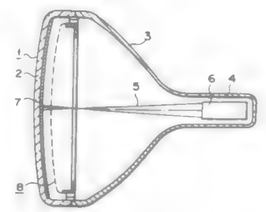
1. A process for printing a security document which comprises:
- (i) creating an image pattern by means of an electro photographic printer;
- (ii) applying to the generated image, within the electro photographic printer, at least one particulate toner, which toner includes a first dye, and at least a minor proportion of a second dye;
- (iii) transferring and bonding the at least one particulate toner to the surface of the document to provide a document including an electro photographically printed image; and
- (iv) exposing at least a part of the electro photographically printed image on the document to an accelerator in liquid or vapour form to cause a major proportion of the second dye to migrate into the document, in registration with at least a part of the electro photographically printed image.

5,366,834

METHOD OF MANUFACTURING A CATHODE RAY TUBE PHOSPHOR SCREEN

Masahiro Yoneda; Shoichi Bando, and Ichiro Takeoka, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Continuation-in-part of Ser. No. 591, Jan. 5, 1993, abandoned, which is a continuation of Ser. No. 610,956, Nov. 9, 1990, abandoned. This application May 5, 1993, Ser. No. 56,934
Claims priority, application Japan, Nov. 15, 1989, 1-298684; Nov. 15, 1989, 1-298685
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—23 16 Claims



1. A method of manufacturing a cathode ray tube phosphor screen, comprising the steps of:
- selectively forming a first photosensitive layer on the inner surface of a faceplate except the region in which a phosphor layer is to be formed, said first photosensitive layer being removable by a reverse developing agent;
- coating the inner surface of a faceplate with a phosphor slurry containing a second photosensitive agent which cannot be removed by the reverse developing agent for said first photosensitive layer;
- exposing the inner surface of the faceplate to light emitted from outside and running through the faceplate, and forming a phosphor layer in a region in which a phosphor layer is to be formed on the faceplate and on the first photosensitive layer; and
- developing the phosphor layer using a reverse developing agent for the first photosensitive layer to remove the first photosensitive layer and phosphor layer formed thereon;

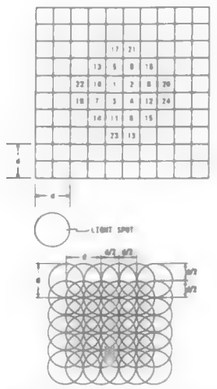
wherein said phosphor comprises:
- phosphor particles;
- a first layer formed on the surface of each of said phosphor particles in an amount of 0.1 to 5.0% by weight based on the weight of the phosphor particles, and consisting of a substantially uniform silicon dioxide film; and thereover
- a second layer in an amount of 0.008 to 1.5% by weight based on the weight of the phosphor particles, formed on said first layer and containing at least one metal selected from the group consisting of zinc and aluminum, and an alkali earth metal and at least one member selected from the group consisting of a colloidal silica, an alumina sol, and a titania sol each having a particle size of 50 nm or less.

5,366,835

GRADUATION REPRODUCTION IN OPTICAL RECORDING

Kazunori Namiki, Yokosuka, and Takashi Yamamura, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 11, 1993, Ser. No. 16,369
Claims priority, application Japan, Feb. 14, 1992, 4-061304
Int. Cl.[5] G03C 5/00
U.S. Cl. 430—30 8 Claims



2. A method of reproducing tonal graduation in optical recording, comprising the steps of:

modulating an intensity of a light beam in response to digital image data;

applying the light beam to a photosensitive member and forming a spot of the light beam on the photosensitive member;

scanning the photosensitive member by the spot of the light beam;

setting a unit illumination time shorter than a predetermined normal illumination time required for illuminating the photosensitive member with the spot of the light beam to record a predetermined minimum dot thereon;

determining a desired illumination time for illuminating the photosensitive member with the spot of the light beam;

varying the desired illumination time for recording a variable halftone in response to the spot of the light beam on the photosensitive member according to a variable screen percentage;

using the unit illumination time as a unit in said step of varying the desired illumination time;

holding the photosensitive member actually illuminated with the spot of the light beam during the desired illumination time when the desired illumination time is longer than the normal illumination time; and

preventing the photosensitive member from being illuminated with the spot of the light beam when the desired illumination time is equal to or shorter than the normal illumination time.

5,366,836

SUBLIMABLE DYE TONER, METHOD OF MANUFACTURE AND METHOD OF USE

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1991, Ser. No. 802,981
Int. Cl.[5] G03G 13/01, 13/22
U.S. Cl. 430—45 8 Claims

1. A method of forming a color xerographic image comprising:

a) forming an image on a recording medium by a process comprising:

i) forming a latent image on a photoreceptor;

ii) developing said latent image with a color toner comprising finely divided toner particles consisting essentially of a polymer having dispersed therein a dye capable of vaporizing, diffusing or subliming;

iii) transferring the resulting developed image to said recording medium by contacting said recording medium with said toner; and

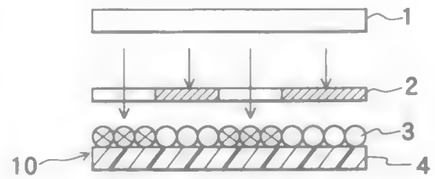
b) after forming said image on said recording medium, fusing said toner on said recording medium to form a substantially uniform non-granular image, wherein said dye is substantially retained in said non-granular image.

5,366,837

IMAGE RECEIVING SHEET AND IMAGE TRANSFERRING METHOD EMPLOYING THE IMAGE RECEIVING SHEET

Jun Sakai, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 10, 1992, Ser. No. 911,978
Claims priority, application Japan, Jul. 12, 1991, 3-172323; Aug. 9, 1991, 3-200461
Int. Cl.[5] G03G 13/06
U.S. Cl. 430—97 10 Claims



1. A method for forming a desired image on a support layer, comprising the steps of:

preparing an image receiving sheet which includes a support layer and an absorbing layer provided on the support layer, the absorbing layer including solid heat-meltable or thermoplastic particles so as to absorb and retain color-forming material in spaces defined exterior to and among the heat-meltable or thermoplastic particles, the heat-meltable or thermoplastic material forming a film when heated to a temperature between the range of 50° C. to 200° C. to melt or soften the thermoplastic particles, and said heat-meltable or thermoplastic material being selected from the group consisting of polyethylene, polypropylene, polystyrene, polyvinyl acetate, polyvinyl chloride, polyethyl methacrylate, wax, ethylene-propylene copolymer, ethylene-vinyl-acetate copolymer, styrene-methacrylic acid ethylene copolymer, styrene-butadiene copolymer, styrene-acryl copolymer, and ionomer,

allowing the absorbing layer of the image receiving sheet to selectively absorb the color-forming material into said spaces defined exterior to and among the heat-meltable or thermoplastic particles so that the color-forming material may be distributed in the absorbing layer to form a desired visible image; and

heating the absorbing layer to change the heat-meltable or thermoplastic particles among which the color-forming material is retained into a film shape in which the color-forming material is distributed to form the desired visible image.

5,366,838

TONER FOR ELECTROSTATIC DEVELOPMENT

Yuichi Moriya, Shizuoka, Japan, assignor to Tomoegaw Paper Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 15,797
Claims priority, application Japan, Feb. 14, 1992, 4-059125
Int. Cl.[5] G03G 9/083
U.S. Cl. 430—106.6 8 Claims

1. An electrostatic developer comprising a mixture of an electrically conductive magnetic toner and an insulating nonmagnetic toner, the electrically conductive magnetic toner being a toner which is formed by attaching or fixing a frictionally chargeable substance to a surface of a main electrically conductive magnetic toner component containing 30 to 70% by weight of a magnetic powder and which has a volume specific resistance of $1\times10^3\Omega$.cm or less, the frictionally chargeable substance being chargeable to have a polarity reverse to the polarity of the insulating nonmagnetic toner, the insulating nonmagnetic toner being a toner which is chargeable to have the same polarity as a polarity of the main electrically conductive magnetic toner component when the electrostatic developer is transferred to a photoconductive drum and which has a volume specific resistance of $1\times10^9\Omega$.cm or more.

5,366,839

TONER FOR ELECTROSTATIC CHARGE IMAGE

Nobuyuki Aoki, Shimizu, Japan, assignor to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 737,233, Jul. 29, 1991, abandoned. This application Sep. 21, 1992, Ser. No. 948,178
Claims priority, application Japan, Aug. 3, 1990, 2-205098
Int. Cl.[5] G03G 9/081
U.S. Cl. 430—109 5 Claims

1. A toner for an electrostatic charge image, which contains, as main components, a colorant and at least one binder resin selected from the group consisting of a styrene homopolymer and a styrene-based copolymer, and which further contains a charge control agent and from 1% by weight to less than 10% by weight, based on a total weight of the toner, of an ethylene-acrylic ester-maleic anhydride terpolymer resin, the terpolymer resin containing from 1% by weight to 40% by weight, based on the terpolymer resin, of an acrylic ester.

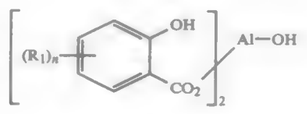
5,366,840

LIQUID DEVELOPER COMPOSITIONS

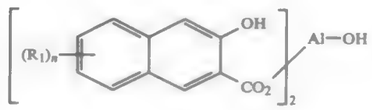
James R. Larson, Fairport; Frank J. Bonsignore; Roger N. Ciccarelli, both of Rochester; Thomas R. Pickering, Webster; Denise R. Bayley, Fairport, and Jacques C. Bertrand, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1993, Ser. No. 113,115
Int. Cl.[5] G03G 9/135
U.S. Cl. 430—115 25 Claims

1. A liquid developer comprised of thermoplastic resin particles, an optional charge director, and a charge additive or adjuvant comprised of a component of the formulas



or



wherein R_1 is selected from the group consisting of hydrogen and alkyl, and n is 0 (zero), 1,2,3, or 4.

5,366,841

TONER AGGREGATION PROCESSES

Raj D. Patel, Oakville; Grazyna E. Kmiecik-Lawrynowicz, Burlington; Michael A. Hopper, Toronto, and Melvin D. Croucher, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1993, Ser. No. 129,476
The portion of the term of this patent subsequent to Nov. 15, 2011, has been disclaimed.
Int. Cl.[5] G03G 9/08
U.S. Cl. 430—137 21 Claims

1. A process for the preparation of toner compositions comprising:

(i) preparing a pigment dispersion in water, which dispersion is comprised of a pigment, an ionic surfactant and optionally a charge control agent;

(ii) shearing the pigment dispersion with a latex blend comprised of resin particles, a counterionic surfactant with a charge polarity of opposite sign to that of said ionic surfactant and a nonionic surfactant thereby causing a flocculation or heterocoagulation of the formed particles of pigment, resin and optional charge control agent to form a uniform dispersion of solids in the water, and surfactant;

(iii) heating the uniform disperion of solids in water and surfactant of (ii) at a critical temperature region about equal to or above the glass transition temperature (Tg) of the resin, while continuously stirring, to form electrostatically bounded toner size aggregates with a narrow particle size distribution and wherein said critical temperature is from about 0° C. to about 10° C. above the resin Tg, and wherein the resin Tg is from about 30° C. to about 65° C. and preferably in the range of from about 45° C. to about 65° C.;

(iv) heating the electrostatically bounded toner size aggregates from about 10° C. to about 45° C. above the Tg of the resin particles to provide a toner composition comprised of polymeric resin, pigment and optionally a charge control agent; and

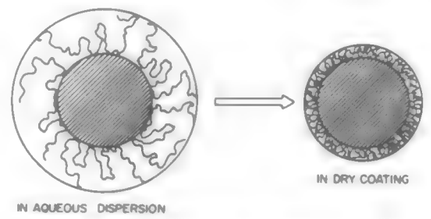
(v) optionally separating and drying said toner.

5,366,842

OXYGEN BARRIER COATED PHOTOGRAPHIC COUPLER DISPERSION PARTICLES FOR ENHANCED DYE-STABILITY

Pranab Bagchi, Webster; James L. Edwards, Rochester; Wendell F. Smith, Jr., Fairport, and Brian Thomas, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 974,768, Nov. 12, 1992, Pat. No. 5,264,317, which is a division of Ser. No. 753,527, Sep. 3, 1991, Pat. No. 5,185,230. This application Jul. 23, 1993, Ser. No. 96,085
Int. Cl.[5] G03C 1/733
U.S. Cl. 430—138 12 Claims



1. A composition comprising photographically active particles surrounded by a sorbitol oxygen barrier polymer layer and

a gelatin layer, wherein said particles have a diameter of between about 10 and 800 nm.

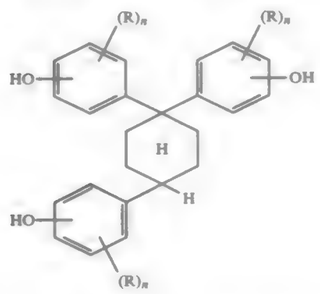
5,366,843

COATED SUBSTRATE UTILIZING COMPOSITION INCLUDING SELECTED PHENOLIC DERIVATIVES OF 4-(4-HYDROXYPHENYL)-CYCLOHEXANONE AS SENSITIVITY ENHANCERS

Alfred T. Jeffries, III, Providence, R.I., assignor to OCG Microelectronic Materials, Inc., West Paterson, N.J.

Division of Ser. No. 148,235, Nov. 8, 1993, which is a division of Ser. No. 45,024, Apr. 5, 1993, Pat. No. 5,283,374. This application May 2, 1994, Ser. No. 236,605
Int. Cl.[5] G03F *7/023, 7/09*
U.S. Cl. 430—165 9 Claims

1. A coated substrate comprising a substrate coated with a film of a radiation-sensitive composition comprising an admixture of at least one alkali-soluble binder resin, at least one photoactive compound and an effective sensitivity enhancing amount of at least one phenolic derivative of 4-(4-hydroxyphenol) cyclohexanone compound of formula (I):



(I)

wherein each R is individually selected from the group consisting of hydrogen and a lower alkyl group having 1–4 carbon atoms and each n is 0, 1, or 2; the amount of said binder resin being about 60 to 95% by weight, the amount of photoactive compound being about 5% to about 40% by weight, based on the total solids content of said radiation-sensitive composition.

5,366,844

HEAT MODE RECORDING MATERIAL FOR MAKING IMAGES OR DRIOGRAPHIC PRINTING PLATES

Yves Verburgh, Puurs, and Luc Leenders, Herentals, both of , assignors to AGFA-Gevaert, N.V., Mortsel,

Filed Sep. 29, 1993, Ser. No. 128,244
Claims priority, application European Pat. Off., Sep. 30, 1992, 92203008.5
Int. Cl.[5] G03C *11/12;* G03F *7/26*
U.S. Cl. 430—258 4 Claims

1. A method for making an image comprising the steps of:
exposing a heat mode recording material comprising on the same side of a non-conductive support a conductive recording layer and an elastomeric image forming layer being non-conductive and a peelable polymeric film provided as an outermost layer on the side of said support containing said elastomeric image forming layer to actinic radiation thereby causing heating of said heat mode recording material at the exposed areas,
peeling said peelable polymeric film and
rubbing said recording material to remove said elastomeric image forming layer in said exposed areas.

5,366,845

SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL AND A METHOD OF PROCESSING SAME

Nobuaki Inoue; Seiichi Yamamoto, and Takahiro Goto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 22, 1993, Ser. No. 139,847
Claims priority, application Japan, Oct. 22, 1992, 4-284562
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 12 Claims

1. A silver halide photographic photosensitive material comprising a support, at least one silver halide emulsion layer provided on said support, a non-photosensitive hydrophilic colloid layer provided between said support and said at least one silver halide emulsion layer, and a backing layer containing a dye provided on the side of said support which is opposite to the side having said at least one silver halide emulsion layer; wherein
(a) said at least one silver halide emulsion layer contains silver halide grains having an average grain size of not more than 0.2 μm, and a silver chloride content of at least 90 mol %.
(b) said non-photosensitive hydrophilic colloid layer contains a dye which is solid-dispersed in the form of fine crystals and is coated in an amount of from 10–80 mg/m^2, and
(c) said dye contained in said backing layer has an absorbance at 340–380 nm from 0.30–0.90.

5,366,846

PHOTOIMAGEABLE COMPOSITIONS COMPRISING POLYBUTADIENE HAVING INTERNAL EPOXIDE GROUPS

Philip D. Knudsen, Northboro; Charles R. Shipley, Newton, and Daniel Y. Pai, Millbury, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Division of Ser. No. 862,343, Apr. 2, 1992, Pat. No. 5,262,280. This application Jun. 28, 1993, Ser. No. 82,548
Int. Cl.[5] G03F *7/038, 7/032, 7/029, 7/028*
U.S. Cl. 430—280 37 Claims

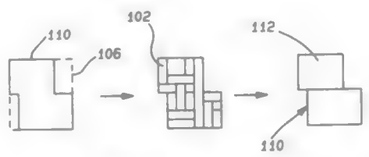
1. A photoimageable composition, comprising a resin binder, a polybutadiene that comprises one or more internal epoxide groups, and a radiation sensitive component that is a photoacid generator or a photobase generator.

5,366,847

METHOD AND APPARATUS FOR OPTIMIZING SEMICONDUCTOR EXPOSURE PROCESS

Robert Powers, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 840,480, Feb. 24, 1992, abandoned. This application Aug. 30, 1993, Ser. No. 113,889
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—296 11 Claims



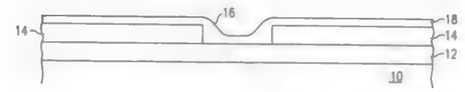
1. In a method of fabricating a semiconductor comprising the steps of coating a surface with a resist material, defining a desired exposure pattern formed by a plurality of rectangular figures wherein at least some of said rectangular figures are abutting, and focusing an electron beam on said rectangular figures to expose the resist material, a method of optimizing said fabricating method comprising the steps of:
identifying sliver rectangular figures having at least one dimension less than a focus dimension of said electron beam;
identifying at least one neighbor rectangular figure adjacent to said sliver rectangular figure;
combining said at least one neighbor rectangular figure with said sliver rectangular figure to create at least one new rectangular figure with dimensions larger than said focus dimension and to reduce sliver rectangular figures; and
exposing said new rectangular figure identified on the resist material.

5,366,848

METHOD OF PRODUCING SUBMICRON CONTACTS WITH UNIQUE ETCHED SLOPES

Nathan Thane, Austin, Tex., and William Hata, Milpitas, Calif., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 682,568, Apr. 9, 1991, abandoned. This application Apr. 1, 1993, Ser. No. 41,524
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—313 7 Claims



1. A method of producing integrated circuit, comprising the steps of:
forming an insulating layer over the integrated circuit;
forming a first photoresist layer over the insulating layer, wherein the first photoresist layer has a first thickness;
forming a first opening through the first photoresist layer;
forming a second photoresist layer over the first photoresist layer and in the first opening, wherein the second photoresist layer has a second thickness less than the first thickness;
forming a second opening in the second photoresist layer within the first opening, wherein the second opening is smaller than the first opening; and,
etching a contact opening in the insulating layer through the second opening.

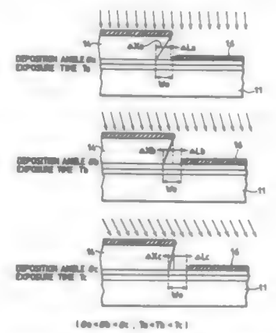
5,366,849

PHOTORESIST PATTERN FORMATION THROUGH ETCHING WHERE THE IMAGING EXPOSURE CHANGES IN A GIVEN DIRECTION IN THE DESIRED PATTERN AND INCLINED VAPOR DEPOSITION IS UTILIZED TO DEPOSIT A FILM

Yoshikazu Nakagawa, and Masayuki Sonobe, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Nov. 18, 1992, Ser. No. 978,263
Claims priority, application Japan, Jan. 27, 1992, 4-037203
Int. Cl.[5] G03C *5/58*
U.S. Cl. 430—314 4 Claims

1. A fine processing method comprising:
forming a photoresist layer on the surface of a substrate in which a spaced pattern of fine openings is to be produced;
exposing the photoresist layer to a radiation pattern in which the exposure changes in a given direction in the pattern;
developing the photoresist layer to produce a pattern of spaced openings in the layer having taper angles which change with the change in exposure;
depositing a film on the photoresist layer and in the spaced openings by inclined vapor deposition in which the angle of deposition changes in the given direction in accordance with the changing taper angles of the openings to produce a pattern of gaps having substantially the same width in the spaced openings in the photoresist layer; and
etching the substrate in the pattern of openings exposed between the photoresist layer and the film to produce a spaced pattern of fine openings in the substrate having substantially the same width.



5,366,850

SUBMICRON PLANARIZATION PROCESS WITH PASSIVATION ON METAL LINE

Kuang-Chao Chen, and Shaw-Tzeng Hsia, both of Taipei, Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Apr. 14, 1993, Ser. No. 46,776
Int. Cl.[5] G03F *7/26*
U.S. Cl. 430—314 14 Claims

1. The method of planarizing the passivation layer overlying a conductive layer in submicron integrated circuits comprising:
providing semiconductor device structures in and on a semiconductor substrate;
providing at least one conductive layer for contacting the active elements of said device structures;
depositing a passivation layer overlying said conductive layer;
patterning said conductive and said passivation layers wherein there are both wide spaces of greater than 0.6 microns and narrow spaces of less than 0.6 microns between said patterned conductive and passivation layers;
depositing a thin oxide layer having a thickness of between about 1000 to 3000 Angstroms over said patterned conductive and passivation layers;
covering said thin oxide layer with a spin-on-glass layer to fill the valleys of said patterned conductive and passivation layers and curing said spin-on-glass layer;
etching backs said spin-on-glass layer through its thickness and said thin oxide layer through its thickness to the underlying said passivation layer at its highest point and leaving said spin-on-glass layer portions in said valleys; and
depositing a top dielectric layer over said spin-on-glass layer to complete said planarizing.

5,366,851

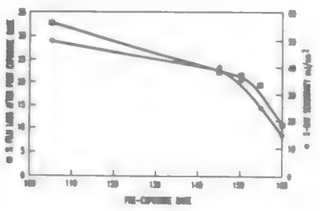
DEVICE FABRICATION PROCESS

Anthony E. Novembre, Union, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 734,423, Jul. 23, 1991, abandoned. This application Sep. 16, 1993, Ser. No. 122,817
Int. Cl.[5] G03C *5/00*
U.S. Cl. 430—322 8 Claims

1. A process for producing a device comprising the steps of depositing a radiation sensitive material on a substrate baking said material, exposing said material to patterned actinic radiation, baking said material after said exposure, subjecting said material to a developer to delineate a pattern, and employing

said material with said pattern in fabricating said device characterized in that said radiation sensitive material comprises a material having a substituent including a protective group and that after said baking after exposure but before said subjecting



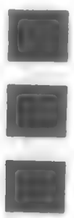
said material to developer a sufficient amount of said protective groups are removed from said material such that the difference in thickness between exposed and non-exposed regions is less than 30 percent of the thickness of said material in non-exposed regions.

5,366,852

METHODS FOR TREATING PHOTORESISTS

Edward K. Pavelchek, Waltham, Mass.; Peter W. Freeman, Austin, Tex.; John F. Bohland, Berlin, Mass.; Susan K. Jones, Raleigh, and Bruce W. Dudley, Durham, both of N.C., assignors to Shipley Company, Inc., Marlborough and Digital Equipment Corporation, Maynard, both of Mass.

Filed Sep. 21, 1992, Ser. No. 948,022
Int. Cl.[5] G03F *7/30, 7/36, 7/40*
U.S. Cl. 430—326 3 Claims



1. A method of dry developing a photoresist coating using an organometallic material comprising:

(a) applying a coating of a negative-acting photoresist composition on a substrate;

(b) exposing the photoresist to patterned activating radiation to crosslink the photoresist coating where exposed;

(c) partially developing the photoresist coating to form depressions in the photoresist coating by removal of a portion only of unexposed areas of the photoresist coating;

(d) filling the depressions within the partially developed photoresist coating with organometallic material; and

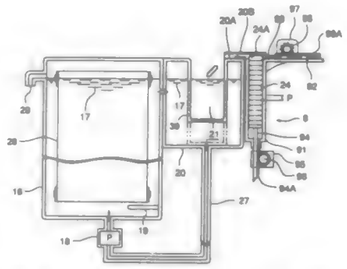
(e) dry developing the photoresist coating to provide a relief image comprising organometallic material overlying the unexposed portions of the photoresist coating.

5,366,853

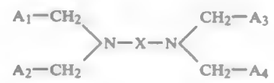
TABLET-SHAPED PROCESSING AGENT AND METHOD FOR PROCESSING SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIALS

Hiroshi Yoshimoto, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 965,881, Oct. 23, 1992, abandoned. This application Nov. 9, 1993, Ser. No. 150,273
Claims priority, application Japan, Nov. 6, 1991, 3-288992
Int. Cl.[5] G03C *5/38, 7/00, 5/44, 5/18*
U.S. Cl. 430—400 8 Claims



1. A tablet-shaped bleaching agent for providing a photographic bleaching solution for a silver halide color photographic light-sensitive material; said bleaching agent having a bulk density of 1.00 to 3.00 g/cm^3 and comprising a ferric complex salt of a compound represented by the following Formula (L);



Formula (L)

wherein A_1, A_2, A_3 and A_4 each represent $—CH_2OH$, —COOM or $—PO_3M_1M_2$ wherein M, M_1 and M_2 each represent a hydrogen atom, an alkali metal atom or an ammonium group, provided that A_1, A_2, A_3 and A_4 may be the same as or different from each other; and X represents a substituted or unsubstituted alkylene group having 3 to 6 carbon atoms, an ammonium cation content not higher than 50 mol % based on the total cation content, and a compound represented by the following Formula (C);

Formula (C)

$$A_5—(COOM)_n$$

wherein A_5 is an organic group; M is a hydrogen atom, an alkali metal atom or an ammonium group, provided that a plurality of M's may be the same as or different from each other; and n is an integer of not less than 2.

5,366,854

PHOTOGRAPHIC PRINTING PAPER SUPPORT

Takahito Miyoshi; Yasuo Nishikawa; Takanori Sato, and Sugihiko Tada, all of Onakazato Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1994, Ser. No. 233,898
Claims priority, application Japan, Apr. 28, 1993, 5-128019
Int. Cl.[5] G03C *1/775;* B32B *27/08*
U.S. Cl. 430—538 11 Claims

1. A photographic printing paper support comprising a raw paper provided with resin coatings on both sides, said resin coating on the emulsion side (or the side where emulsions are to be coated) comprising a resin component consisting of polyethylene terephthalate or a resin blend of polyethylene terephthalate and a resin other than polyethylene terephthalate and titanium oxide incorporated and dispersed in the resin component, and said resin coating on the back side of the raw paper comprising the same resin component as used in the resin coating on the emulsion side and inorganic grains which have a number average grain size of from 1.5 μm to 12 μm and are incorporated in the resin component.

5,366,855

PHOTOGRAPHIC SUPPORT COMPRISING AN ANTISTATIC LAYER AND A PROTECTIVE OVERCOAT

Charles C. Anderson, and Yongcai Wang, both of Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1994, Ser. No. 221,719
Int. Cl.[5] G03C *1/85*
U.S. Cl. 430—530 15 Claims

1. An imaging element comprising a support, a light-sensitive layer and an antistatic layer, the antistatic layer being overcoated with a protective layer of a coalesced layer of film-forming colloidal polymeric particles and non-film-forming colloidal polymeric particles.

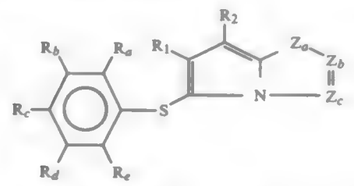
5,366,856

SILVER HALIDE COLOR PHOTOSENSITIVE MATERIALS

Yasuhiro Shimada, and Hiroyuki Yoneyama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 21, 1993, Ser. No. 64,586
Claims priority, application Japan, May 26, 1992, 4-157332
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—558 22 Claims

1. A silver halide color photosensitive material comprising a support having thereon a layer containing a coupler represented by formula (I) below:



(I)

wherein Za represents —NH— or —CH(R_3)—, and Zb and Zc each represents —C(R_4)= or —N=; when Zb is —C(R_4)=, Zc is not —C(R_4)= at the same time as Za is —NH— and Zc is not —N= at the same time as Za is —CH(R_3); R_1, R_2 and R_3 each represents an electron withdrawing group of which the Hammett substituent group constant σ_p is 0.20 or above, the sum of the up values of R_1 and R_2 is 0.65 or above; R_4, R_a, R_b, R_c, R_d and R_e each represents a hydrogen atom or a substituent group; when there are two R_4 groups in formula (I) these may be the same or different; at least one of R_a, R_b, R_c, R_d and R_e represents an electron withdrawing group; and the sum of the respective Hammett substituent groups constant σ_p values of R_a, R_b, R_c, R_d and R_e is 0.5 or above, or at least two of R_a, R_b, R_c, R_d and R_e are fluorine atoms and the sum of the respective Hammett substituent group constant σ_p values of R_a, R_b, R_c, R_d and R_e is 0.15 or above.

5,366,857

HYDROPHILIC COLLOID COMPOSITION FOR A PHOTOGRAPHIC MATERIAL

Alan R. Pitt, Sandridge; Bernard A. Clark, Maidenhead, and John F. Padday, Beaconsfield, all of United Kingdom, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP91/00898, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO91/18321, PCT Pub. Date Nov. 28, 1991
PCT Filed May 11, 1991, Ser. No. 952,719
Claims priority, application United Kingdom, May 16, 1990, 9010967
Int. Cl.[5] G03C *1/38*
U.S. Cl. 430—631 4 Claims

1. A coating composition comprising an aqueous solution of a hydrophilic colloid and a surface active agent present as a coating aid characterized in that the surface active agent is present in an amount of 0.01 to 0.5 percent by weight of the composition and has the formula:

$$CF_3(CF_2)_nCH_2O(glycidyl)_mH$$

wherein

n is an integer from 4 to 7; and,

m is an integer from 6 to 45.

5,366,858

METHOD OF AND APPARATUS FOR DETECTING MICROORGANISMS

Naohisa Koizumi, Kawasaki; Shokichi Nakajima, Machida; Naoki Yuguchi, and Kazumi Tanaka, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Meiji Seika Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 454,648, Dec. 21, 1989. This application Sep. 18, 1992, Ser. No. 946,775
Claims priority, application Japan, Dec. 23, 1988, 63-324987
Int. Cl.[5] G01N *33/53*
U.S. Cl. 435—5 7 Claims

1. A method of detecting the presence or absence of a microorganism of interest in a sample comprising the steps of:

providing a reacted sample which is reacted with an antibody capable of binding specifically to said microorganism of interest, wherein a plurality of said microorganisms of interest agglutinate each other to form clumps of said microorganisms of interest by antigen-antibody reaction;

providing a non-reacted sample which is not reacted with said antibody;

measuring optical response of suspended substances in said non-reacted sample;

measuring optical response of suspended substances including said clumps in said reacted sample;

comparing statistics of measured values obtained by said measurements of said non-reacted sample and said reacted sample; and

determining the presence or absence of said microorganism of interest in said sample as a result of said comparison, wherein said microorganism of interest is determined to be absent when said statistics are found identical to each other, and the microorganism of interest is determined to be present when said statistics are found to be different.

5,366,859

RADIOIMMUNOASSAY METHOD

Kinya Miyoshi; Masato Okada; Makoto Takada, and Mayumi Goto, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1992, Ser. No. 967,980
Claims priority, application Japan, Oct. 31, 1991, 3-311506
Int. Cl.[5] G01N *33/53, 33/534, 33/543*
U.S. Cl. 435—5 19 Claims

1. A radioimmunoassay method comprising the steps:

(i) reacting a first antibody (A) which is specific for an antigen (B) and immobilized on an insoluble solid; an

antigen (B); and a second antibody (C) which is derived from a different animal species than that of antibody (A); wherein the concentration of the second antibody (C) is higher than the dissociation constant between the second antibody (C) and the antigen (B), to obtain an immune complex (D);

(ii) reacting the immune complex (D) and a radio-labeled probe (E) specific for the second antibody (C); and

(iii) measuring the radioactivity of the insoluble solid or the reaction mixture obtained in step (ii) and determining the amount of antigen (B).

5,366,860

SPECTRALLY RESOLVABLE RHODAMINE DYES FOR NUCLEIC ACID SEQUENCE DETERMINATION

B. John Bergot, Redwood City; Vergine Chakerian, San Mateo; Charles R. Connell, Redwood City, all of Calif.; J. Scott Eadie, Indianapolis, Ind.; Steven Fung, Palo Alto, Calif.; N. Davis Hershey, San Carlos, Calif.; Linda G. Lee, Palo Alto, Calif.; Steven M. Menchen, Fremont, Calif., and Sam L. Woo, Redwood City, Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Sep. 29, 1989, Ser. No. 415,050

Int. Cl.[5] C12Q *1/68*

U.S. Cl. 435—6 **10 Claims**

1. A method of distinguishing polynucleotides having different 3′-terminal dideoxynucleotides in the chain termination method of DNA sequencing, the method comprising the steps of:

forming a mixture of a first, a second, a third, and a fourth class of polynucleotides, each polynucleotide in the first class having a 3′-terminal dideoxyadenosine and being labeled with a first dye selected from the going consisting of tetramethylrhodamine, rhodamine X, rhodamine 6G, and rhodamine 110; each polynucleotide in the second class having a 3′-terminal dideoxycytidine and being labeled with a second dye selected from the group consisting of tetramethylrhodamine, rhodamine X, rhodamine 6G, and rhodamine 110; each polynucleotide in the third class having a 3′-terminal dideoxyguanosine and being labeled with a third dye selected from the group consisting of tetramethylrhodamine, rhodamine X, rhodamine 6G, and rhodamine 110; and each polynucleotide in the fourth class having a 3′-terminal dideoxythymidine and being labeled with a fourth dye selected from the group consisting of tetramethylrhodamine, rhodamine X, rhodamine 6G, and rhodamine 110; wherein each class of polynucleotide in the mixture is labeled with a different dye;

electrophoretically separating on a gel the polynucleotides in the mixture so that bands of similarly sized polynucleotides are formed;

illuminating with an illumination beam the bands on the gel, the illumination beam being capable of causing the dyes to fluoresce; and

identifying the classes of the polynucleotides in the bands by the fluorescence or absorption spectrum of the dyes.

5,366,861

IMMUNOASSAY AND REAGENT KIT USED THEREFOR

Kenji Hosoda, Kawagoe; Takaharu Kubota; Hitomi Honda, both of Hino, and Hideaki Suzuki, Koganei, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 815,868, Jan. 3, 1992, abandoned, which is a continuation of Ser. No. 362,415, Apr. 12, 1989, abandoned. This application Mar. 1, 1993, Ser. No. 26,110

Claims priority, application Japan, Aug. 12, 1987, 62-200043; Nov. 10, 1987, 62-281975

Int. Cl.[5] C12Q *1/00, 1/48;* G01N *33/536*

U.S. Cl. 435—7.1 **6 Claims**

1. An immunoassay method to detect presence of an antigen selected from the group consisting of α2 plasmin inhibitor-plasmin conjugate, protein C, protein S. acidic glutathione S-transferase derived from human placenta, chrondrocalcin and IgA type immune complex in a sample suspected of containing said antigen comprising:

a. performing an antigen-antibody reaction in an aqueous solution by mixing an antibody which specifically binds said antigen in said sample in the presence of a non-specific reaction controller consisting of skim milk, wherein the final concentration of the non-specific reaction controller in the aqueous solution is 0.02 to 0.8% by weight, and

b. detecting the amount of antigen-antibody complexes in said aqueous solution, wherein the amount of said complexes correlates with the amount of antigen in said sample.

5,366,862

METHOD FOR GENERATING AND SCREENING USEFUL PEPTIDES

Duane L. Venton, Lombard; Anton J. Hopfinger, Lake Forest, and Guy Le Breton, Oak Park, all of Ill., assignors to Receptor Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 813,315, Aug. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 480,865, Feb. 14, 1990, abandoned. This application Aug. 21, 1992, Ser. No. 932,200

Int. Cl.[5] G01N *33/558;* C12P *21/06;* C12Q *1/37*

U.S. Cl. 435—7.1 **17 Claims**

1. A method of identifying peptides which bind specifically to a predetermined target, comprising the steps of:

(a) subjecting a mixture initially comprising a starting protein and/or a plurality of starting peptides to scrambling conditions, said scrambling conditions comprising exposure to proteolytic enzymes in a scrambling zone, under which the starting proteins and/or peptides and derivatives thereof in said zone undergo both random degradation into smaller peptide and free amino acid derivatives, and random recombination of the starting proteins and/or peptides, and/or their peptide and amino acid derivatives, into new scrambled peptide derivatives, the component amino acids of the starting mixture being scrambled as a result of the activity of said proteolytic enzymes to generate a diverse population of scrambled peptides of different sequences, said scrambled peptides not being characterized by a predetermined amino acid sequence;

(b) allowing the scrambled peptides to contact a specific predetermined target and to compete with each other to bind therewith to form a specifically bound peptide-target complex;

(c) protecting only those peptides bound to the target from further scrambling by physically removing or withholding the bound peptides from said scrambling zone so that they are no longer exposed to said scrambling conditions, while allowing peptides which were contacted with the target but did not become bound ("rejected peptides") to return to the scrambling zone and be scrambled therein, steps (b) and (c) then being repeated with respect to said scrambled rejected peptides; wherein repeated step (b) includes contact with specific predetermined target and, if already formed, specifically bound peptide-target complex;

(d) recovering the specifically bound peptide from the peptide-target complex; and

(e) sequencing the specifically bound peptide.

5,366,863

TOTAL GONADOTROPAL ALPHA PEPTIDE CHAIN ASSAY

Kathleen M. Clough, Acton, and Francis X. Cole, Stow, both of Mass., assignors to Hygeia Sciences, Inc., Newton, Mass.

Filed Apr. 5, 1990, Ser. No. 505,307

Int. Cl.[5] C12Q *1/00;* G01N *33/53;* C07K *17/00*

U.S. Cl. 435—7.1 **7 Claims**

1. In an assay procedure for determining preovulatory surging of luteinizing hormone, the steps of obtaining a plurality of samples of urine from a host and comparing the total gonadotropal alpha peptide chain content in said samples.

5,366,864

BUFFERED WASH COMPOSITION, INSOLUBILIZING COMPOSITION, TEST KITS AND METHOD OF USE

Gregory J. McClune, Portage, Mich., and Karen L. Findling, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 447,332, Dec. 7, 1989, Pat. No. 5,176,999. This application Sep. 30, 1992, Ser. No. 953,905

The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.

Int. Cl.[5] G01N *33/53, 33/547, 33/76*

U.S. Cl. 435—7.5 **15 Claims**

9. A diagnostic test kit comprising:

a. a peroxidase-labeled receptor for a specific binding ligand, and

b. a buffered aqueous wash composition consisting essentially of:

i. a leuco dye capable of providing a dye in response to peroxidase and hydrogen peroxide,

ii. a buffer,

iii. a water-soluble organic solvent which has a molecular weight between about 40 to about 100 and is present in an amount of from about 2.5 to about 25 volume %,

iv. an electron transfer agent,

v. a water-soluble or water-dispersible polymer, and

vi. hydrogen peroxide.

5,366,865

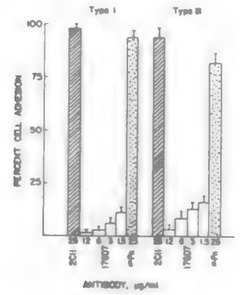
ANTI-PLATELET MONOCLONAL ANTIBODY

Harvey R. Gralnick, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Apr. 6, 1989, Ser. No. 334,708

Int. Cl.[5] G01N *33/574, 33/53;* C12N *5/12;* C07K *15/28*

U.S. Cl. 435—7.23 **6 Claims**



1. The hybridoma deposited as ATCC HB 10973 secreting monoclonal antibody 176D7, said monoclonal antibody having the following properties:

(a) recognizes a 157/130 kDa heterodimeric antigen of platelet and surfaces

(b) inhibits platelet reactions with collagenous surfaces, adhesion to type I and type III collagen and collagen induced platelet aggregation even in the presence of plasma.

5,366,866

METHOD OF DIAGNOSING OVARIAN AND ENDOMETRIAL CANCER WITH MONOCLONAL ANTIBODIES OXA AND OXB

Fengi J. Xu; Yinhua Yu, both of Durham, and Robert C. Bast, Jr., Chapel Hill, all of N.C., assignors to Duke University, Durham, N.C.

Continuation-in-part of Ser. No. 735,513, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 735,601, Jul. 25, 1991, abandoned. This application May 6, 1992, Ser. No. 879,860

Int. Cl.[5] G01N *33/574, 33/53, 33/567*

U.S. Cl. 435—7.23 **21 Claims**

1. A method of screening for the presence of cancer in a human subject, the cancer selected from the group consisting of ovarian, breast and endometrial cancer, the method comprising:

contacting a sample comprising a biological fluid taken from said subject with an antibody selected from the group consisting of monoclonal antibody OXA, monoclonal antibody OXB, antibodies which specifically bind the epitope bound by monoclonal antibody OXA or OXB, and fragments thereof which specifically bind the epitope bound by monoclonal antibody OXA or OXB, under conditions permitting said antibody to specifically bind an antigen in the sample to form an antibody-antigen complex; and then

determining the amount of antibody-antigen complex in the sample as a measure of the amount of antigen in the sample, wherein an elevated level of the antigen in the sample is associated with the presence of ovarian, breast or endometrial cancer.

5,366,867

METHOD OF DETERMINING VIABLE MICROBIAL CELL COUNT

Masaya Kawakami, Sagamihara; Susumu Seto, and Seiken Tei, both of Yokohama, all of Japan, assignors to Nihon Millipore Kogyo, Yonezawa, Japan

Filed Mar. 30, 1993, Ser. No. 40,331

Claims priority, application Japan, Apr. 1, 1992, 4-105299; Jan. 20, 1993, 5-023420

Int. Cl.[5] C12Q *1/66;* G01N *21/76*

U.S. Cl. 435—8 **7 Claims**

1. In a method for determining a viable microbial cell count in a sample wherein the method comprises the steps of filtering a microbe-containing sample solution through a hydrophilic membrane, thereby trapping viable microbes thereon; spraying an extracting reagent onto the viable microbes entrapped on said membrane thereby lysing microbial cells and extracting adenosine triphosphate (ATP); spraying a solution of luminescence inducing luciferin-luciferase reagent onto said membrane thereby inducing luminescence; and measuring the quantity of luminescence; wherein the improvement comprises using a volatile alcohol as said extracting reagent to extract ATP; and evaporating said volatile alcohol extracting reagent prior to said spraying of said luciferin-luciferase reagent, thereby enhancing detection of extracted ATP.

5,366,868

MULTILAYER ANALYTICAL ELEMENT FOR ASSAYING FRUCTOSAMINE

Hisashi Sakamoto, Kyoto, Japan, assignor to Kyoto Daiichi Kagaku Co., Ltd., Kyoto, Japan

Filed Aug. 30, 1991, Ser. No. 753,371

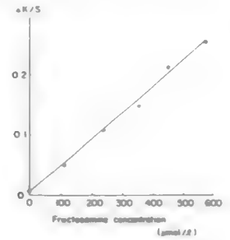
Claims priority, application Japan, Aug. 30, 1990, 2-230912

Int. Cl.[5] C12Q *1/62;* G01N *31/22*

U.S. Cl. 435—10 **21 Claims**

1. A multilayer analytical element for assaying fructosamine, comprising a liquid-impermeable support, a buffer-containing layer which contains a buffer having a pH of 8 to 12 formed on said support, wherein said buffer-containing layer contains

uricase, a tetrazolium salt-containing layer which is formed on said buffer-containing layer, and an intermediate layer inter-



posed between said buffer-containing layer and said tetrazolium salt-containing layer to prevent contact of said buffer-containing layer and said tetrazolium salt-containing layer.

5,366,869

MULTIPLE COAGULATION TEST DEVICE AND METHOD

Sheldon Goldstein, 30 S. Adelaid Ave., Penthouse K, Highland Park, N.J. 08904

Filed Nov. 8, 1991, Ser. No. 790,631
Int. Cl.[5] C12Q *1/56, 1/00;* G01N *31/00;* A61K *37/547*
U.S. Cl. 435—13 **8 Claims**

1. A method for determining the treatment required to arrest hemorrhaging in a patient comprising

a) providing a series of different agents capable of enhancing blood clotting;

b) obtaining a series of samples of the patient's blood;

c) mixing a sample of blood with each of the individual agents to prepare a series of mixtures, each mixture of said series containing a different agent;

d) simultaneously measuring the clotting time for each mixture in said series; and

e) selecting the agent in said series which produces the most rapid clotting time.

5,366,870

LIMITED ENZYME ASSAY FOR AMINOTRANSFERASES

Gerald Odstrchel, San Juan Capistrano, and George Leung, San Diego, both of Calif., assignors to Xytronyx, Inc., San Diego, Calif.

Filed Apr. 2, 1993, Ser. No. 42,417
Int. Cl.[5] C12Q *1/52, 1/34;* G01N *21/00*
U.S. Cl. 435—16 **28 Claims**

1. Method for determining the presence of an aminotransferase (AT_1), other than aspartate aminotransferase (AST), in a biological sample, comprising the steps of;

reacting said sample with:

an amino donor substrate for said AT_1;

a second aminotransferase (AT_2), different from AT_1, in excess as to not limit the rate of the AT_1 to form beta-keto acid;

an amino acceptor substrate for said AT_1, nonreactive with said AT_2;

cysteine sulfinic acid (CSA) in excess as to not limit the rate of reaction of AT_2; and

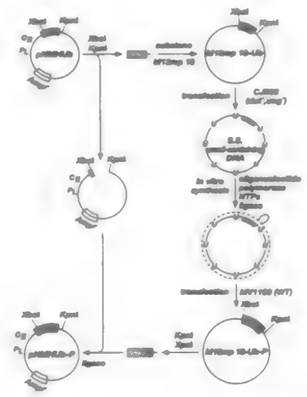
an indicator for the presence of sulfite ions, nonreactive with said AT_1, said AT_2, said CSA, said amino donor substrate, and said amino acceptor substrate; under conditions in which the concentration of said AT_1 in the sample can be determined by the amount of the indicator which forms a detectable signal.

5,366,871

UBIQUITIN-PEPTIDE EXTENSIONS AS ENZYME SUBSTRATES

Martin C. Rechsteiner, and Yung J. Yoo, both of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Filed Nov. 13, 1991, Ser. No. 791,935
Int. Cl.[5] C12Q *1/37, 1/48;* C12P *19/04*
U.S. Cl. 435—24 **32 Claims**



1. A method for assaying for enzymes that modify peptide chains which comprises,

(a) providing a substrate comprising a ubiquitin-peptide extension wherein said ubiquitin-peptide extension contains a sequence known to be modified in the presence of an enzyme being assayed for;

(b) incubating a test sample with said ubiquitin-peptide extension in a reaction mixture solution containing one or more reagents needed for said enzyme to modify said peptide extension when said enzyme is present;

(c) terminating said incubation and analyzing the reaction mixture solution for the presence of said ubiquitin-peptide extension in modified form.

5,366,872

TEST KITS AND METHODS FOR EVALUATING STERILIZATION CYCLES

Robert F. Hird, Pleasant Hill, and Edward F. Cosgrove, Danville, both of Calif., assignors to Envirocon International Corporation, Concord, Calif.

Filed Dec. 9, 1992, Ser. No. 989,797
Int. Cl.[5] C12Q *1/22;* G01N *21/00*
U.S. Cl. 435—31 **13 Claims**

1. A method of detecting the presence of viable microorganisms after a sterilization cycle comprising the steps of:

(a) exposing a source of viable microorganisms to a sterilization cycle;

(b) contacting the viable microorganisms after the sterilization cycle with an aqueous buffer and a substrate which is specific for and reacts with the viable microorganisms at about room temperature to form a substrate-microorganism complex;

(c) adding a color developer which is specific for and reacts with the substrate-microorganism complex to generate a color in the presence of viable microorganisms at about room temperature;

(d) determining the existence of said color by visual means in about ten minutes to about one hour; and

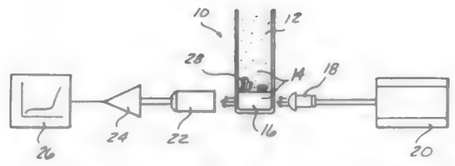
(e) correlating the existence of said color with the presence of viable microorganisms.

5,366,873

DEVICE AND METHOD FOR USE IN DETECTING MICROORGANISMS IN A SAMPLE

Gideon Eden, and Ruth Eden, both of 2210 Brockman Blvd., Ann Arbor, Mich. 48104

Filed Jun. 3, 1992, Ser. No. 892,581
Int. Cl.[5] C12Q *1/04;* C12M *1/34*
U.S. Cl. 435—34 **14 Claims**



1. A device for detecting microbial growth from a sample substance, said device comprising:

a container which is at least partially transparent and includes an inner chamber;

a fluid layer contained within said container for cultivating microorganisms therein, said fluid layer having a volume;

a soluble growth media and at least one indicator substance mixed with said fluid layer for undergoing transformation in the presence of microorganism growth; and

a barrier layer having a volume smaller than said volume of said fluid layer contained within said container adjacent to said fluid layer, said barrier layer composed of a matrix phase containing a fluid which contains at least one indicator substance and soluble growth media essentially identical to that contained in said fluid layer, said barrier layer fluid being in equilibrium with said fluid layer, said barrier layer providing a barrier to solid substances introduced into said fluid layer while providing a fluid zone within said matrix which facilitates change in said indicator substance and growth media contained in said fluid in said matrix, said change occurs and can be detected in said indicator substance contained in said fluid in said matrix due to microbial growth occurring in said fluid layer.

8. A method for the detection of microorganisms and microorganism activity in a substance, the method comprising the steps of:

adding the substance to a fluid layer having a volume contained within a container, the fluid layer containing soluble growth media and at least one indicator substance mixed therein, said indicator substance undergoing a transformation in the presence of microorganisms;

equilibrating concentrations of all soluble materials present in the fluid layer with a fluid contained within a barrier layer while the barrier layer prevents solid substances from entering therein, said barrier layer having a volume smaller than said volume of said fluid layer, and being composed of a matrix phase containing at least one indicator substance and soluble growth media essentially identical to that contained in said fluid layer; and

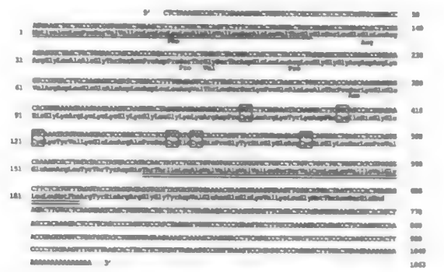
detecting the transformations of the indicator substance and growth media occurring in both the fluid layer and the barrier layer by detecting changes in the fluid contained in the barrier layer.

5,366,874

MOLECULAR CLONING AND EXPRESSION OF BIOLOGICALLY-ACTIVE DIPHTHERIA TOXIN RECEPTOR

Leon Eidels, Dallas, Tex.; Joseph G. Naglich, Lawrenceville, N.J., and James E. Metherall, Salt Lake City, Utah, assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 899,071, Jun. 12, 1992, which is a continuation-in-part of Ser. No. 816,701, Jan. 2, 1992, abandoned. This application Aug. 24, 1992, Ser. No. 935,309
Int. Cl.[5] C12N *15/12*
U.S. Cl. 435—69.1 **3 Claims**



1. A method for expressing a diphtheria toxin receptor in a host cell comprising:

(a) preparing a recombinant expression vector comprising a DNA segment encoding a diphtheria toxin receptor characterized as having the amino acid sequence as set forth in SEQ ID NO:2;

(b) transforming a eukaryotic host cell with said recombinant expression vector;

(c) culturing the transformed host cell to express the diphtheria toxin receptor; and

(d) selecting transformed cells that are sensitive to diphtheria toxin.

5,366,875

METHODS FOR PRODUCING BMP-7 PROTEINS

John M. Wozney, Hudson; Elizabeth A. Wang, Carlisle, and Vicki A. Rosen, Brookline, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 370,549, Jun. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 347,559, May 4, 1989, abandoned, and Ser. No. 329,610, Mar. 28, 1989, abandoned, each is a continuation-in-part of Ser. No. 179,100, Apr. 8, 1988, Pat. No. 5,013,649, Ser. No. 179,101, Apr. 8, 1988, and Ser. No. 179,197, Apr. 8, 1988, each is a continuation-in-part of Ser. No. 28,285, Mar. 20, 1987, abandoned, and Ser. No. 31,346, Mar. 26, 1987, Pat. No. 4,877,864, each is a continuation-in-part of Ser. No. 943,332, Dec. 17, 1986, abandoned, and Ser. No. 880,776, Jul. 1, 1986. This application Sep. 24, 1991, Ser. No. 764,731
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] C12P *21/02, 19/34;* C12N *15/00, 7/00, 5/00;* C07H *15/12;* C07K *3/00*
U.S. Cl. 435—69.1 **8 Claims**

1. A method for producing a BMP-7 protein which comprises transforming mammalian cells with an expression vector, said vector having inserted therein a DNA sequence which encodes the amino acid sequence of SEQ ID NO: 8, culturing said cells in a suitable culture medium, and isolating said BMP-7 protein produced by said cells.

5,366,876

METHOD FOR PRODUCTION OF BOVINE GROWTH HORMONE USING A SYNTHETIC GENE

Joong M. Cho, Seoul; Tae H. Lee, Chungcheongnam; Hyun H. Chung, Seoul; Yong B. Lee, Chungcheongnam; Tae G. Lee, Seoul; Young W. Park, and Kyu B. Han, both of Chungcheongnam, all of Rep. of Korea, assignors to Lucky Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 698,329, May 6, 1991, abandoned, which is a continuation of Ser. No. 465,522, Jan. 17, 1990, abandoned. This application May 19, 1992, Ser. No. 885,689

Claims priority, application Rep. of Korea, Dec. 31, 1986, 86-11711; Dec. 31, 1986, 86-11712

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[5] C12P *21/02;* **C12N** *1/21, 1/15, 15/18*

U.S. Cl. 435—69.4 **10 Claims**

1. A plasmid for the expression of bovine growth hormone in *Escherichia coli,* which provides for expression of said bovine growth hormone in excess of 30% of total *E. coli* proteins, which is the plasmid ptrphsBGH 1–13.

5,366,877

RESTRICTION/LIGATION LABELING FOR PRIMER INITIATED MULTIPLE COPYING OF DNA SSEQUENCES

Douglas H. Keith, Oakland, Calif., assignor to Applied Biosystems, Inc., Foster City, Calif.

Continuation-in-part of Ser. No. 148,757, Jan. 26, 1988, Pat. No. 5,093,245. This application Oct. 22, 1990, Ser. No. 601,962

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[5] C12N *15/10;* **C12Q** *1/68*

U.S. Cl. 435—91.2 **13 Claims**

1. A method for amplifying dsDNA comprising a target sequence., said method comprising:

combining a dsDNA sample with labeling DNA moieties in registry with termini of restriction fragments of said sample dsDNA, wherein said labeling DNA moieties comprise at least one primer binding site sequence, said labeling DNA moieties comprise a 5'-3' first strand and a ligaid or truncated ligaid strand, at least partially complementary to said first strand, and said restriction fragments are formed prior to, during, or after said combining;

covalently joining both strands of the labeling DNA to the associated strands of said dsDNA in register, with the proviso that said truncated ligaid may be displaced or substituted with a ligaid strand comprising said primer binding site sequence prior to said covalent joining;

denaturing said dsDNA labeled stranda to produce labeled single stranded DNA comprising a primer binding site sequence proximal to the 3'-terminus of said labeled single stranded DNA and complementary sequence on the 5'-terminus;

substantially separating any single stranded labeled DNA comprising said target sequence from single stranded labeled DNA lacking said target sequence; and

amplifying said single stranded labeled DNA comprising said target sequence employing primers complementary to said primer binding site sequence.

5,366,878

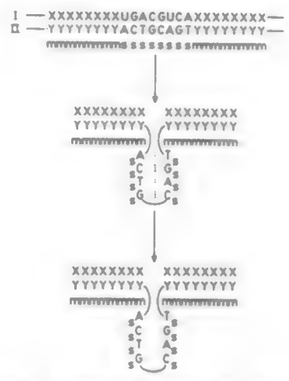
METHOD OF SITE-SPECIFIC ALTERATION OF RNA AND PRODUCTION OF ENCODED POLYPEPTIDES

Thora Pederson, Worcester; Sudhir Agrawal, Shrewsbury; Sandra Mayrand, Shrewsbury, and Paul C. Zamecnik, Shrewsbury, all of Mass., assignors to The Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Continuation of Ser. No. 839,472, Feb. 19, 1992, Pat. No. 5,220,007, which is a continuation of Ser. No. 480,269, Feb. 15, 1990, Pat. No. 5,149,797. This application Mar. 24, 1993, Ser. No. 36,503

Int. Cl.[5] C12N *15/11;* **C12P** *19/34;* **C07H** *21/00*

U.S. Cl. 435—91.3 **1 Claim**



1. A method of site-specific cleavage of a target RNA segment of an RNA molecule consisting essentially of combining the RNA molecule, in the presence of RNase H, with a mixed phosphate backbone oligonucleotide which is complementary to all or a portion of the RNA molecule wherein the mixed phosphate backbone oligonucleotide has an internal segment which activates RNase H and two flanking nucleotide sequences which are unable to activate RNasc H, one of the two flanking nucleotide sequences being present on either side of the internal segment, and wherein the internucleoside bridging phosphate residues of the internal segment are modified phosphates which are phosphorothioates and the internucleoside bridging phosphate residues of the two flanking modified nucleotide sequences are modified phosphates selected from the group consisting of methyl phosphonates, phosphoromorpholidates, phosphoropiperazidates, and phosphoramidates, under conditions appropriate for hybridization of complementary nucleotide sequences and activation of RNase H, thereby cleaving the target RNA segment.

5,366,879

METHOD OF PREPARING BRANCHED CYCLODEXTRIN

Sumio Kitahata, 621-440, Noda, Kumatori-cho, Sennan-gun, Osaka; Koji Hara, Yokohama; Koki Fujita, Yokohama; Nobuhiro Kuwahara, Yokohama, and Hirofumi Nakano, 14-3, 3-chome, Hattorinishi-machi, Toyonaka-shi, Osaka, all of Japan, assignors to Ensuiko Sugar Refining Co., Ltd., Yokohama; Sumio Kitahata and Hirofumi Nakano, both of Osaka, all of Japan

Filed Dec. 17, 1992, Ser. No. 992,862

Claims priority, application Japan, Apr. 8, 1992, 4-114303

Int. Cl.[5] C12P *19/18, 19/16, 19/22*

U.S. Cl. 435—101 **11 Claims**

1. A method of producing a branched cyclodextrin, which comprises reacting a liquid containing a cyclodextrin and a branched oligosaccharide selected from the group consisting of α-maltosyl-(1,6)-maltose, α-maltotriosyl-(1,6)-maltotriose, isopanose, pullulan, a partial decomposed product of pullulan, and a mixture thereof with a debranching enzyme.

5,366,880

ANTIBIOTIC AGENT

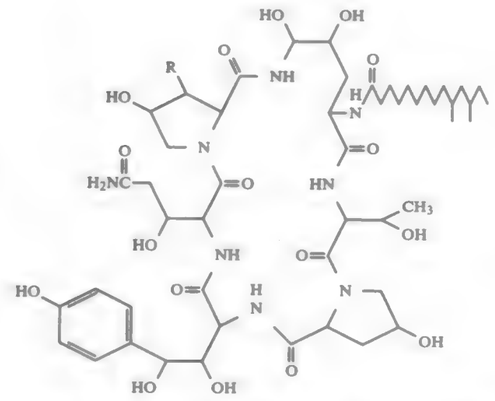
Robert E. Schwartz, Westfield; Prakash S. Masurekar, Warren; David F. Sesin, Rahway; Jerrold M. Liesch, Princeton Junction; Thomas C. Hallada, Westfield, and Otto D. Hensens, Red Bank, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 640,457, Dec. 19, 1990. This application May 21, 1993, Ser. No. 66,282

Int. Cl.[5] C12P *17/18, 13/00, 7/24, 7/02*

U.S. Cl. 435—119 **1 Claim**

1. A method for producing a compound having the formula



wherein R is hydrogen or hydroxyl comprising cultivating Zalerion arboricola MF 5533, ATCC 74030, in a nutrient medium containing assimilable sources of carbon, nitrogen and inorganic salts under aerobic conditions and thereafter separating the compound from the medium.

5,366,881

POLYMERIZABLE LIPIDS FOR PREPARING VESICLES THAT CONTROLLABLY RELEASE AN ENCAPSULANT

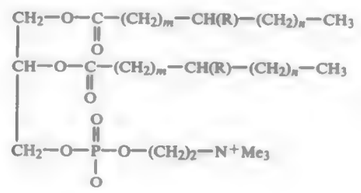
Alok Singh, Springfield, and Joel M. Schaur, Burke, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1993, Ser. No. 23,834

Int. Cl.[5] C12N *11/02;* **B29C** *39/10;* **A61K** *37/22, 7/46*

U.S. Cl. 435—177 **18 Claims**

1. A polymerizable lipid having the following structure:

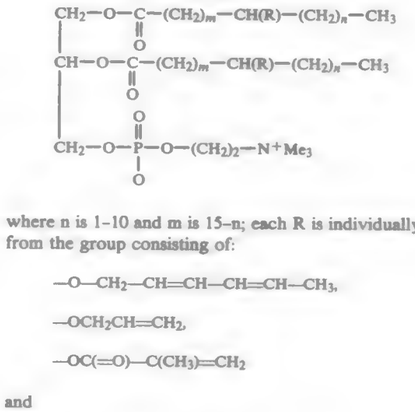


where n is 1–10 and m is 15–n; and each R is individually selected from the group consisting of:

—O—CH_2—CH═CH—CH═CH—CH_3,

—OCH_2CH═CH_2,

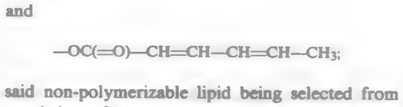
and



where n is 1–10 and m is 15–n; each R is individually selected from the group consisting of:

—O—CH_2—CH═CH—CH═CH—CH_3,

—OCH_2CH═CH_2,

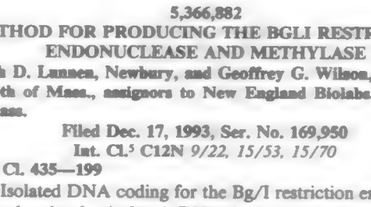


and

—OC(═O)—CH═CH—CH═CH—CH_3;

12. A method of encapsulating an encapsulant in vesicles and releasing the encapsulant from the vesicles comprising the steps of:

forming vesicles from at least one lipid selected from the group consisting of polymerizable lipid and mixtures of polymerizable lipid and up to 90 mole percent of non-polymerizable lipid, based on said polymerizable lipid and said non-polymerizable lipid, said polymerizable lipid having the following structure:



where n is 1–10 and m is 15–n; each R is individually selected from the group consisting of:

—O—CH_2—CH═CH—CH═CH—CH_3,

—OCH_2CH═CH_2,

and

—OC(═O)—CH═CH—CH═CH—CH_3;

said non-polymerizable lipid being selected from the group consisting of ammonium surfactants, phosphate surfactants, and saturated phosphatidylcholines;

encapsulating at least one encapsulant in the vesicles in an amount of about 20–200 by weight, based on the weight of said vesicles; and

subjecting the vesicles to an environmental change which causes the vesicles to release the encapsulant.

5,366,882

METHOD FOR PRODUCING THE BGLI RESTRICTION ENDONUCLEASE AND METHYLASE

Keith D. Lunnen, Newbury, and Geoffrey G. Wilson, Boxford, both of Mass., assignors to New England Biolabs, Beverly, Mass.

Filed Dec. 17, 1993, Ser. No. 169,950

Int. Cl.[5] C12N *9/22, 15/53, 15/70*

U.S. Cl. 435—199 **7 Claims**

1. Isolated DNA coding for the Bg/I restriction endonuclease, wherein the isolated DNA is obtainable from ATCC Accession No. 69510.

5,366,883

α-AMYLASE GENE

Kiyozo Asada; Takashi Uemori; Hiroyuki Mukai, all of Shiga; Ikunoshin Kato, Kyoto, all of Japan; Kenneth Laderman, and Christian B. Anfinsen, both of Baltimore, Md., assignors to Takara Shuzo Co., Ltd., Kyoto, Japan and The Johns Hopkins University, Baltimore, Md.

Filed Jun. 9, 1992, Ser. No. 894,212
Int. Cl.[5] C12N *15/56, 15/63, 15/75, 1/21*
U.S. Cl. 435—202 13 Claims

1. A DNA fragment encoding Pyrococcus furiosus α-amylase which has the amino acid sequence shown in FIG. 1 (SEQ ID NO: 8).

5,366,884

THERMOSTABLE PURIFIED ENDOGLUCANASE II FROM ACIDOTHERMUS CELLULOLYTICUS ATCC 43068

William S. Adney, Golden; Steven R. Thomas, Denver; Rafael A. Nieves, Lakewood, and Michael E. Himmel, Littleton, all of Colo., assignors to Midwest Research Institute, Kansas City, Mo.

Continuation-in-part of Ser. No. 826,089, Jan. 27, 1992, Pat. No. 5,275,944, which is a continuation-in-part of Ser. No. 412,434, Sep. 26, 1989, Pat. No. 5,110,735. This application Sep. 21, 1993, Ser. No. 125,115
Int. Cl.[5] C12N *9/42, 1/00, 1/12*
U.S. Cl. 435—209 4 Claims

1. A purified low molecular weight cellulase endoglucanase II from *Acidothermus cellulolyticus* (ATCC 43068) having a molecular weight of between about 50,000 to about 70,000 daltons, said cellulase is water soluble, possesses both C_1 and C_x types of enzyme activity, a high degree of stability toward heat, an optimum temperature activity at about 81° C. at pH's from about 2 to about 9, and an inactivation temperature of about 100° C. at pH's from about 2 to about 9; said endoglucanase II having an N-terminal amino acid peptide of ASSDTGLFGSASPTYDGVYROG LAVAGLIAAGOH-PAAXAIDXLL→; and an amino acid composition in relative pmol percent of:

asx	3.3
glx	5.5
ser	5.4
gly	10.5
his	0.60
arg	2.5
thr	10.2
ala	26.0
pro	8.4
tyr	1.5
val	3.7
met	0.90
ile	2.9
leu	9.4
phe	7.8
lys	1.52.

5,366,885

METHOD AND KIT FOR TESTING TUMORS FOR DRUG SENSITIVITY

Sam C. Barranco, III, 1005 Dartford Mews, Virginia Beach, Va. 23452

Filed Jun. 9, 1992, Ser. No. 895,782
Int. Cl.[5] C12Q *1/02, 1/18*
U.S. Cl. 435—6 12 Claims

1. A method of screening tumor tissue of a patient for susceptibility or resistance to chemotherapy agents using tumor cell kinetics as an indicator thereof, comprising the steps of:

(a) obtaining a sample of normal tissue and a sample of tumor tissue from the patient:

(b) measuring the baseline level of glutathione in a portion of each of the two samples;

(c) dissociating a further portion of the tumor sample into 1–3 mm^3 fragments and suspending the dissociated tumor tissue in tissue culture medium;

(d) dispensing suspended tumor tissue into a plurality of vessels;

(e) pretreating the suspended tumor tissue in a first portion of the vessels from step (d) by adding buthionine sulfoximine thereto and incubating under conditions suitable for cell growth for a period of time sufficient to achieve 80–90% reduction in GSH;

(f) incubating a second portion of the vessels from step (d) for the same amount of time as the first portion of vessels is incubated in step (e).

(g) adding a chemotherapy agent to a portion of the vessels containing the pretreated dissociated tumor tissue following incubation in step (e), the remainder of the vessels from step (e) and the vessels from step (f) serving as controls;

(h) incubating the suspended tumor tissue in the presence of the chemotherapy agent from step (g) for a further period of time sufficient to achieve an effect on cell cycle kinetics;

(i) incubating the controls from step (g) for the same amount of time as the suspended tumor tissue in the presence of the chemotherapy agent is incubated in step (h).

(j) recovering the suspended tumor tissue after incubation in steps (h) and (i); and

(k) evaluating the effects of the chemotherapy agent on tumor cells from the tumor tissue in the presence and absence of buthionine sulfoximine pretreatment whereby the effectiveness of the chemotherapy agent against the tumor cells and the desirability of pretreatment to reduce levels of glutathione may be determined.

2. A method according to claim 1, further comprising the steps of:

(l) measuring the baseline level of p-glycoprotein in a portion of each of the two samples from step (a):

(m) pretreating the suspended tumor tissue in a third portion of the vessels from step (d) by adding a calcium channel blocker thereto and incubating under conditions suitable for cell growth for a period of time sufficient to achieve 80–90% reduction in PGP content;

(n) incubating a fourth portion of the vessels from step (d) for the same amount of time as the second portion of vessels is incubated in step (m);

(o) adding the chemotherapy agent to a portion of the vessels containing the pretreated dissociated tumor tissue following incubation in step (m), the remainder of the vessels from step (m) and the vessels from step (n) serving as controls;

(p) incubating the suspended tumor cells in the presence of the chemotherapy agent from step (o) for a further period of time sufficient to achieve an effect on cell cycle kinetics;

(q) incubating the controls from step (o) for the same amount of time as the suspended tumor tissue in the presence of the chemotherapy agent is incubated in step (p);

(r) recovering the suspended tumor tissue after incubation in steps (p) and (q); and

(s) evaluating the effects of the chemotherapy agent on the tumor cells from the tumor tissue in the presence and absence of calcium channel blocker pretreatment, whereby the effectiveness of the chemotherapy agent against the tumor cells and the desirability of pretreatment to reduce levels of p-glycoprotein may be determined.

5,366,886

HUMAN TISSUE PLASMINOGEN ACTIVATOR VARIANT

Stephen P. Anderson; Deborah L. Higgins, both of San Mateo; Adair J. Hotchkiss, Half Moon Bay, and Cara B. Marks, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 846,245, Feb. 19, 1992, Pat. No. 5,314,818, which is a continuation of Ser. No. 170,510, Mar. 31, 1988, Pat. No. 5,094,953. This application Feb. 11, 1993, Ser. No. 16,815
Int. Cl.[5] C12N *9/64, 15/00, 9/48, 9/72*
U.S. Cl. 435—226 1 Claim

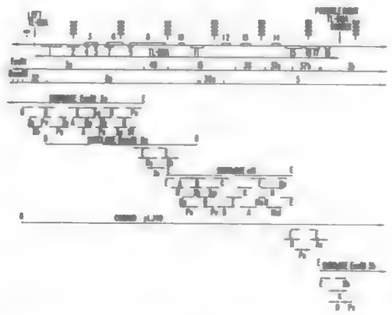
1. A human tissue plasminogen activator which is des 1–44N238E275 t-PA.

5,366,887

RI T-DNA PROMOTERS

Jerry L. Slightom, Kalamazoo, Mich., and David A. Tepfer, Paris, France, assignors to Mycogen Plant Sciences, Inc., San Diego, Calif.

Division of Ser. No. 725,368, Apr. 22, 1985, Pat. No. 5,182,200. This application Jan. 25, 1993, Ser. No. 8,216
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] C12N *5/00, 15/00;* C07H *17/00*
U.S. Cl. 435—240.4 4 Claims



1. A transformed dicotyledonous plant cell having a phenotype distinguishing it from naturally occurring dicotyledonous plant cells, wherein said transformed dicotyledonous plant cell comprises:

(a) a pRi T_L-DNA promoter from a gene selected from the group consisting of genes for T_L-DNA ORFs 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17, and

(b) a heterologous structural gene wherein said structural gene is not natively under control of said promoter,

the promoter and structural gene being integrated in the plant cell genome in such position and orientation with respect to one another that the structural gene is expressed in the [a]plant cell under control of the promoter.

5,366,888

ENHANCED MAINTENANCE OF PREGNANCY USING LEUKAEMIA INHIBITORY FACTOR IN EMBRYO CULTURING

Richard C. Fry, Altona North, and Ronald A. Parr, Hoppers Crossing, both of Australia, assignors to Amrad Corporation Limited, Australia

PCT No. PCT/AU91/00307, § 371 Date Apr. 16, 1992, § 102(e) Date Apr. 16, 1992, PCT Pub. No. WO90/08188, PCT Pub. Date Jul. 26, 1990
PCT Filed Jul. 9, 1991, Ser. No. 838,425
Claims priority, application Australia, Jul. 9, 1990, PK1064/90
Int. Cl.[5] A61B *17/42;* A61D *7/00;* C12N *5/06*
U.S. Cl. 435—240.21 11 Claims

1. A method of enhancing the maintenance of pregnancy in a mammal into which an embryo has been introduced, wherein said mammal is selected from the group consisting of ruminants, humans, pigs, donkeys, horses, dogs and cats, said method comprising prior to said introducing,

culturing at least one embryo in a medium containing an amount of leukemia inhibitory factor for sufficient time and under appropriate conditions so as to effect an enhancement of the maintenance of pregnancy in said mammal.

5,366,889

DNA ENCODING A PROTEIN-COUPLED RECEPTOR KINASE

Marcy E. MacDonald, Lexington; James F. Gusella, Framingham, and Christine Ambrose, Charlestown, all of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Nov. 30, 1992, Ser. No. 980,526
Int. Cl.[5] C12N *15/12, 15/63*
U.S. Cl. 435—252.3 11 Claims



1. An isolated DNA segment encoding IT-11, wherein IT-11 comprises the amino acid sequence set forth in SEQ ID NO:2.

5,366,890

HAPALOSIPHON HIBERNICUS

Roseanne Bonjouklian, Zionsville, Ind.; Richard E. Moore; Gregory M. L. Patterson, both of Honolulu, Hi., and Tim A. Smitka, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 946,501, Sep. 16, 1992, Pat. No. 5,292,650, which is a continuation-in-part of Ser. No. 784,299, Oct. 29, 1991, abandoned. This application Oct. 13, 1993, Ser. No. 135,931
Int. Cl.[5] C12N *1/12, 1/20*
U.S. Cl. 435—252.1 2 Claims

1. A biologically pure culture of *Hapalosiphon hibernicus*

ATCC 55225, or an A89271 factor B- or factor F-producing mutant thereof.

5,366,891

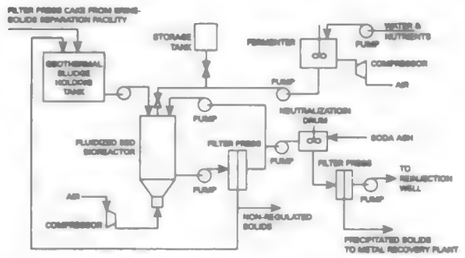
BIOCHEMICAL SOLUBILIZATION OF TOXIC SALTS FROM RESIDUAL GEOTHERMAL BRINES AND WASTE WATERS

Eugene T. Premuzic, East Moriches, and Mow S. Lin, Rocky Point, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 853,199, Mar. 18, 1992, abandoned. This application Sep. 3, 1993, Ser. No. 115,760

Int. Cl.[5] B09B *3/00;* **C12N** *1/12;* **C02F** *3/00*

U.S. Cl. 435—262 **13 Claims**



1. A process for the dissolution and removal of metal salts in geothermal brine or sludge which comprises:

(a) preparing a mixture of microorganisms which mixture contains at least one Thiobacillus which solubilizes metal salts at elevated temperatures of at least about 50° C.;

(b) contacting the geothermal brine or sludge which comprises metal salts with the microorganism mixture in an aqueous environment at a temperature of at least about 50° C.;

(c) incubating the geothermal brine or sludge with the microorganism mixture under conditions and for a period of time sufficient to solubilize the metal salts to form solubilized metal; and

(d) removing said solubilized metal so that the concentration of metal salts in the brine or sludge is reduced.

5,366,892

GENE ENCODING A COLEOPTERAN-ACTIVE TOXIN

Luis Foncerrada, Vista; August J. Sick, Oceanside, and Jewel M. Payne, Davis, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 642,112, Jan. 16, 1991, Pat. No. 5,277,905. This application Jan. 2, 1992, Ser. No. 812,180

Int. Cl.[5] A01N *63/00;* **C12N** *1/21, 15/70, 15/32*

U.S. Cl. 435—252.33 **11 Claims**

1. An isolated polynucleotide encoding a *Bacillus thuringiensis* toxin active against coleopteran pests wherein said toxin has a molecular weight of ≈130 kDa and a predicted peptide sequence as shown in Sequence ID No. 2.

5,366,893

CULTURE VESSEL

Timothy A. Stevens, Madison; Edward F. Musel, Hewitt; Douglas P. Henderson, Morristown, and Tadeusz A. Tyndorf, Manalapan Township, Monmouth County all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jan. 13, 1993, Ser. No. 3,774

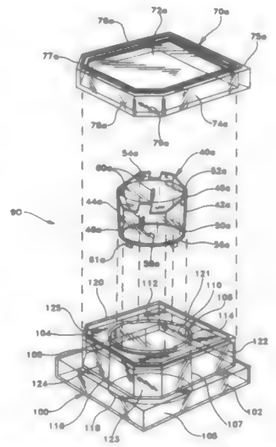
Int. Cl.[5] C12M *3/06*

U.S. Cl. 435—284 **8 Claims**

1. Apparatus for use in growing tissue cultures in vitro comprising:

a culture vessel comprising an upper surface, a lower surface, a plurality of wells extending from said upper surface to said lower surface, a raised mouth surface extending from said upper surface of each well for supporting a cell culture insert and projecting portions extending from said raised mouth surface of each well for positioning a cell culture insert; and

a cell culture insert suspended in one of said wells and comprising an upper portion, a lower portion, a sidewall comprising an inner and outer surface and extending from said



upper portion to said lower portion, a permeable membrane attached to said lower portion means for suspending said insert in said one of said wells, and means for restricting, movement of said cell culture insert in said one of said wells of said culture vessel extending from said outer surface of said sidewall wherein said means for suspending is positioned on said raised mouth portion between said projecting portions to position said insert.

5,366,894

PEPTIDE PRODUCTION

Anthony J. Clark, Edinburgh, Scotland, and Richard Lathe, Strasbourg, France, assignors to Pharmaceutical Proteins Limited, Edinburgh, Scotland

Division of Ser. No. 165,988, Apr. 29, 1988, abandoned. This application Nov. 22, 1991, Ser. No. 796,439

Claims priority, application United Kingdom, Jun. 30, 1986, 8615942

Int. Cl.[5] C12N *15/00, 5/00*

U.S. Cl. 435—320.1 **4 Claims**

1. A DNA construct comprising:

(a) a DNA sequence encoding a polypeptide chain of a proteinaceous molecule; and

(b) a β-lactoglobulin promoter operably linked to said DNA sequence encoding said polypeptide chain;

said construct being capable, when present in the germline of a female transgenic non-human placental mammal, of expressing said polypeptide chain in the mammary gland so that said polypeptide is present in the milk of said mammal.

5,366,895

METHOD FOR LYSING LIPOSOMES USING POLYETHYLENEGLYCOL MONONONYLPHENYL ETHERS

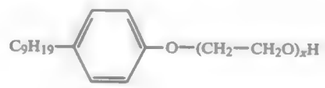
Herman Rutner, Hackensack, N.J.; Abdul M. Butt, New City, N.Y.; Josephine D. Readio, Sparta, N.J., and Lewis Pollack, Riverdale, N.Y., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Mar. 5, 1990, Ser. No. 489,304

Int. Cl.[5] G01N *33/543, 33/546*

U.S. Cl. 436—17 **11 Claims**

1. A method for lysing liposomes comprising saturated fatty acid phosphatides and having transition temperatures in the range of 35° C. to 65° C. comprising treating the liposomes to be lysed with a surfactant selected from



wherein the average value of x is 9 or 12.

5,366,896

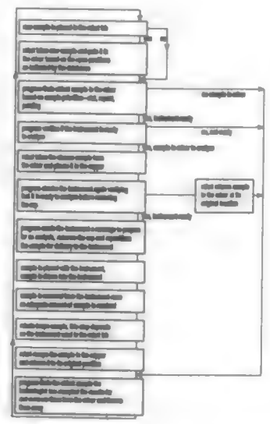
ROBOTICALLY OPERATED LABORATORY SYSTEM

Keith S. Margrey; Robin A. Felder; James C. Boyd, all of Charlottesville; J. William Holman, Earlysville; Jonathan H. Roberts, Charlottesville; John Savory, Keswick, and Antonia Martinez, Charlottesville, all of Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesvile, Va.

Filed Jul. 30, 1991, Ser. No. 739,204

Int. Cl.[5] G06F *15/42;* **G01N** *1/00*

U.S. Cl. 436—48 **7 Claims**



1. A method of analyzing a plurality of sample specimens, each contained within a syringe using a computerized robotic system having:

at least one computer, said at least one computer having a database capable of receiving information from sensors, transmitting information to a power means within said system, maintaining and transmitting test data to a remote second location based on an input from an analytical instrument within said system;

a specimen receiving station, said specimen receiving station having a syringe receiving area and a plurality of sensors within said syringe receiving area, said sensors indicating the presence or lack of presence of a syringe in said syringe receiving area;

a refrigerated, specimen storage unit, said specimen storage unit having;

a specimen holding area, said specimen holding area having a plurality of specimen holding means being recessed from a table surface,

each of said plurality of specimen holding means having an individual identification code registered within said database,

said plurality of specimen holding means being rotatable at a rate and for a length of time which is determined by said computer, said rotation commencing at the time of placing a first sample specimen syringe into one of said plurality of specimen holding means,

said refrigerated specimen storage unit maintaining an essentially constant, preset temperature for a period of time,

a plurality of syringes, each of said plurality of syringes having a syringe cap and containing a substance to be analyzed, each syringe being given a syringe identification code within said database to trace said syringe from receipt in said specimen receiving station to disposal,

decapping means, said decapping means comprising:

a decapping area, said decapping area having a plurality of sensors, said sensors recognizing the presence or lack of presence of a syringe and syringe cap,

a cap receiving area, said cap receiving area being dimensioned to receive a syringe,

a gripping device, said gripping device being dimensioned to receive a narrow portion of said syringe cap and being moved by a power source,

power means, said power means moving said gripping device in response to commands from said computer,

an analytical instrument, said analytical instrument having:

syringe analysis means,

sensor means, said sensor means being proximate said syringe analysis means to indicate the presence or lack of presence of a syringe,

a robot, said robot having

a movable arm and

at least one pair of specimen gripping means, said at least one pair of specimen gripping means being attached to said movable arm and having sensors, said sensors indicating the presence or absence of a syringe,

wherein said movable arm moves said gripping means between a plurality of locations, including at least said specimen receiving station, said refrigerated specimen storage unit, said decapping means and said analytical instrument, said robot receiving commands from at least one of said at least one computer to grasp, release and move said sample specimen syringe;

comprising the steps of:

a- placing a first of a plurality of sample specimen syringes in said syringe receiving area of said specimen receiving station, thereby activating said sensors therein and notifying said database of the presence of said first syringe,

b- assigning aid first syringe a syringe identification code in said database,

c- said database commanding said robot to move to said specimen receiving station,

d- said robot notifying said database when said specimen gripping means are in position to grasp said first syringe,

e- said database commanding said specimen gripping means to close around said first syringe, said sensors registering the proximity of said syringe and sending said proximity to said database until said database commands said specimen gripping means to cease closing at a predetermined proximity,

f- said database checking said specimen storage unit to determine which of said plurality of specimen holding means is vacant and memorizing its individual identification code and rotating said specimen storage unit to a position which is accessible to said robot;

g- said database commanding said robot to move said first syringe from said sample receiving station to the vacant

specimen holding means corresponding to said specimen holding means individual identification code,

h- said robot releasing said first syringe and notifying said database of the time of placing said sample in said vacant specimen holding means,

i- said database determining a next sample specimen syringe to be analyzed and relaying a next syringe identification code to said specimen holding means, causing said specimen holding means to rotate such that said next syringe is accessible to said robot,

j- said database commanding said robot to remove said next syringe from said specimen storage unit by transmitting the specimen holding means identification code of said next syringe to said robot,

k- said robot arm moving to said specimen holding means, repeating step (e), and removing said next syringe, said sample specimen storage unit continuing rotation after removal of said syringe,

l- robotically transferring said next sample specimen syringe from said specimen holding means to said decapping means and notifying said database that said gripping means are located in position over said decapping means,

m- said database commanding said gripping device of said decapping means to be in a position to receive said syringe and said syringe cap,

n- upon verification that said gripping means is in a position to receive said next syringe and syringe cap, said database commands said robot to place said next syringe into said decapping means until said decapping mans sensors notify said database that said syringe cap is positioned in said cap receiving area and that a syringe is present,

o- said database commanding said power means to activate said gripping device to move into a position to lock said syringe cap in said cap receiving area,

p- said database checking said analytical instrument to determine if said analytical instrument is ready to analyze said next syringe and receiving from said analytical instrument a proceed or hold signal,

q- repeating step (p) until said analytical instrument sends said proceed signal,

r- said database notifying said analytical instrument that said next syringe is being transferred and commanding said robot to remove said next syringe from said decapping means, said syringe cap being retained in said cap receiving area by said gripping device,

s- said database commanding said robot to remove said next syringe from said decapping means and place said next syringe in said syringe analysis means of said analytical instrument, said sensor means in said syringe analysis means notifying said database when said next syringe is positioned within said syringe analysis means,

t- said database commanding said movable arm to hold said next syringe proximate said analytical instrument and then commanding said analytical instrument to withdraw an aliquot of said substance contained within said next syringe into said analytical instrument,

u- said analytical instrument notifying said database when said aliquot has been withdrawn,

v- said database commanding said robot to remove said next syringe from said analytical instrument and return said syringe to said decapping means,

w- said database verifying said syringe cap is in position within said cap receiving area to recap said syringe and, once verification is received, commanding said robot to place said next syringe into said decapping means until said sensors transmit to said database that said cap is locked onto said next syringe,

x- said database commanding said gripping device to release said syringe cap,

y- said database commanding said robot to repeat step (e) and lift said next syringe from said decapping means, move said next syringe to a storage area and place said next syringe in said storage area, the location in said storage area being given a storage area code,

z- transferring test results obtained from the analysis of said next syringe with said syringe identification code to a computer at a remote second location through a computer data transfer link, said test results being viewed and an acceptance or rejection issued by a technologist at said remote second location,

aa- said database receiving said acceptance or rejection of each of said syringes tested, said acceptance or rejection corresponding to said syringe identification code,

bb- said database responding to an acceptance of said test results by commanding said robot to dispose of said syringe and entering into the database that said syringe was disposed of,

cc- said database responding to a rejection of said test results by repeating steps i–bb,

dd- repeating steps i–cc, until all syringes are tested,

ee- repeating steps a–cc upon activation of said specimen receiving station sensors.

5,366,897

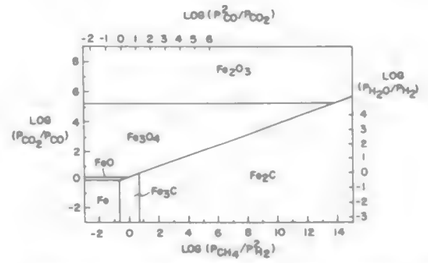
METHOD FOR CONTROLLING THE CONVERSION OF IRON-CONTAINING REACTOR FEED INTO IRON CARBIDE

John P. Hager, Golden; Frank A. Stephens, Arvada, and Frank M. Stephens, Jr., Lakewood, all of Colo., assignors to Iron Carbide Holdings, Ltd., Lakewood, Colo.

Continuation-in-part of Ser. No. 561,100, Aug. 1, 1990, abandoned. This application Jan. 27, 1993, Ser. No. 9,859

Int. Cl.[5] C22B *5/14*; C01B *31/30*

U.S. Cl. 436—55 **20 Claims**



8. A process for converting iron-containing feed to a product comprising iron carbide, the process comprising the steps of:

(a) inputting to a reactor an iron-containing reactor feed;

(b) contacting said reactor feed in said reactor with a gas mixture comprising a reducing gas and a carburizing gas at a pressure from about 3 atmospheres absolute to about 5 atmospheres absolute;

(c) evaluating whether the rate of conversion of reactor feed into iron carbide is acceptable; and

(d) adjusting as necessary reactor pressure to convert reactor feed into iron carbide at an acceptable rate; and

(e) converting at least a portion of said reactor feed to iron carbide at an acceptable rate.

5,366,898

METHOD FOR QUANTITATIVE DETERMINATION OF TOTAL BASE OR ACID NUMBER OF OIL

Richard A. Hagstrom, Cheshire; Stephen R. Finch, Durham, and Timothy D. Lynn, Hamden, all of Conn., assignors to Dexsil Corporation, Hamden, Conn.

Filed Mar. 27, 1992, Ser. No. 858,565

Int. Cl.[5] G01N *33/26, 31/16*

U.S. Cl. 436—60 **17 Claims**

1. A method for determining the quantity of a resident species present in a sample of oil, the method comprising the steps of:

(a) taking an oil sample of measured quantity;

(b) contacting the oil sample with an excess quantity of a reactant species which will react with the resident species and reacting the reactant species with resident species, if any, present in the oil sample, thereby consuming a quantity of the reactant species commensurate with the quantity of resident species present in the oil sample;

(c) after step (b), contacting the oil sample with a fixed quantity of an extractant in which the reactant species is soluble but which is immiscible with the oil sample, to extract any unconsumed reactant species from the oil sample, and then separating the extractant from the oil sample to thereby provide an extractant phase containing reactant species, if any, extracted from the oil sample; and

(d) measuring the reactant species content of the extractant phase to determine the quantity therein of unreacted reactant species as a measure of the resident species content of the oil sample.

5,366,899

METHODS OF DIAGNOSING COMPLICATED UROLITHIASIS AND PREDICTING UROLITHIASIS

Vladimir N. Shabalin, ulitsa B. Galushkina, 3, korpus 1, kv. 21, Moscow; Svetlana N. Shatokhina, prospekt Mira, 70, kv. 76, Moscow; Valery V. Dutov, Moscow; Margarita F. Trapeznikova, Moscow; Andrei P. Morozov, Moscow; Andrei N. Mitroshnikov, Moscow; Leonid G. Makushin, Moscow, and Sergei A. Yakovlev, Mytischi, all of Russian Federation, assignors to Vladimir N. Shabalin and Svetlana N. Shatokhina, both of Moscow,

Continuation of Ser. No. 895,324, Jun. 8, 1992. This application Sep. 9, 1993, Ser. No. 119,254

Claims priority, application U.S.S.R., Aug. 8, 1990, 4858034; Oct. 11, 1990, 4873890

Int. Cl.[5] G01N *33/493*

U.S. Cl. 436—88 **3 Claims**



1. A method for diagnosing pyelonephritis of a non-calculous origin by examination of a urine sample comprising separating the urine sample into at least two portions, testing a first of said two portions for presence of albumen,

drying a second of said portions so that it crystallizes, and examining for the presence of a marginal amorphous area in the dried crystallized second portion.

5,366,900

PROCESS FOR HPLC-CHEMILUMINESCENCE DETECTION OF NON-VOLATILE N-NITROSO COMPOUNDS

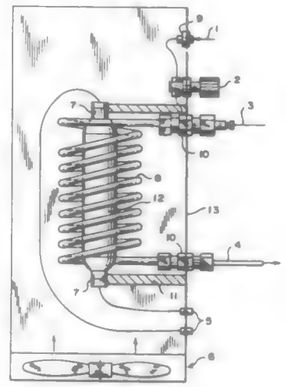
James J. Conboy, and Joseph H. Hotchkiss, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

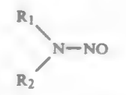
Continuation of Ser. No. 798,490, Dec. 24, 1991, abandoned, which is a division of Ser. No. 195,923, May 18, 1988, Pat. No. 5,094,815. This application Jan. 28, 1993, Ser. No. 10,578

Int. Cl.[5] G01N *33/00*

U.S. Cl. 436—107 **6 Claims**

1. A process for analyzing and detecting in an aqueous based mobile phase sample one or more N-nitroso compounds having the formula:





wherein R_1 and R_2 are the same or different organic radicals including those radicals which together with the non-nitroso nitrogen in said formula constitute a nitrogen heterocyclic radical, which process comprises the steps of:

a) injecting said aqueous based sample into a high pressure chromatograph to produce a liquid eluent where the nitroso compounds are resolved and separated;

b) mixing the liquid eluent with an inert gas to produce a biphasic gas/liquid mixture having a specified gas flow rate and a specified liquid flow rate;

c) irradiating the biphasic gas/liquid mixture under ultraviolet radiation at a temperature and gas flow rate sufficient to convert the nitroso compounds to a nitric oxide gas; and

d) detecting the nitric oxide gas produced to determine the present of the N-nitroso compounds in the sample;

5,366,901

APPARATUS FOR ANALYZING CARBON PRODUCTS

Knut Bergli, Bødalen; Trygve Foosnæs, Årdalstangen, and Tormod Naterstad, Asker, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Mar. 1, 1993, Ser. No. 24,315

Claims priority, application Norway, Feb. 28, 1992, 920790

Int. Cl.[5] G01N *33/00*

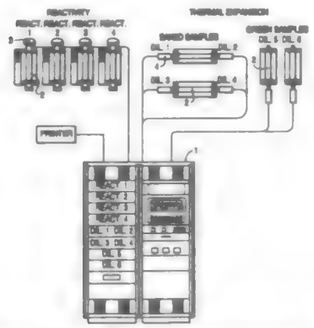
U.S. Cl. 436—133 **8 Claims**

1. An analyzing apparatus for determining in a single analysis operation the parameters of air reactivity, CO_2reactivity, soot index and coefficient of thermal expansion of carbon products, said apparatus comprising:

plural tube furnaces for receipt of respective carbon product samples to be analyzed, each said furnace having operatively associated therewith a device for determining temperature of a respective carbon product sample, and at least one said furnace having a device for determining weight of a respective carbon product sample and a device for collecting soot dust, and at least one other said furnace having a device for determining dilation of a carbon product sample, and each said furnace having at one end thereof an inlet having means for communicating with sources of air and carbon dioxide for the selective introduction thereinto of air or CO_2; and

a processing unit operatively connected to all of said temper-

ature determining, said weight determining, said soot dust collecting and said dilation determining devices to receive therefrom data representative of determinations made thereby for respective carbon product samples, and to,



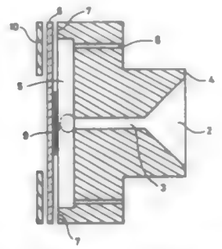
based on such data, automatically regulate operation of said furnaces, said devices and said inlets, and to analyze respective said parameters for the respective carbon product samples.

5,366,902

COLLECTION AND DISPLAY DEVICE

Stephen J. Cox, and Thomas Lydford, both of Suffolk, England, assignors to Hypoguard (UK) Limited, Suffolk, England

PCT No. PCT/GB91/01896, § 371 Date Jun. 22, 1993, § 102(e) Date Jun. 22, 1993, PCT Pub. No. WO92/07655, PCT Pub. Date May 14, 1992
PCT Filed Oct. 30, 1991, Ser. No. 50,168
Claims priority, application United Kingdom, Oct. 30, 1990, 9023965.8; Nov. 8, 1990, 9024305.6
Int. Cl.[5] B01L *3/00*; G01N *33/52*
U.S. Cl. 436—165 13 Claims



1. A device for assessing a fluid sample, which device comprises:

a. a fluid receptor means for receiving a sample of a fluid from an external source, said fluid receptor means comprising a cup or recess having an exposed open top having a rim across which a user may wipe his finger so as to transfer a sample of blood from the finger into the cup or recess;

b. a substantially closed chamber adapted to receive fluid from the receptor means;

c. a bore connecting the fluid receptor means and the chamber for transferring said fluid from the receptor means to the chamber, which bore has an outlet at said chamber end of the bore;

d. a generally planar member removably mounted upon the device and providing at least part of one wall of said chamber, said member carrying one or more reagents adapted to respond to one or more components of the fluid sample and adapted to give an indication of that response which can be detected from the exterior of the chamber, said reagents being located generally centrally on said member and in register with the outlet of said bore into the chamber;

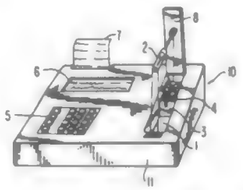
wherein the diameter of the outlet of said device is selected such that the fluid in the bore is adapted to form a droplet or meniscus at the outlet to the bore, whereby the bore is adapted to conduct the fluid from the receptor to the chamber and to deposit the fluid substantially centrally onto the reagent carrying area of the said reagent carrying member.

5,366,903

METHOD OF PHOTOMETRIC IN VITRO DETERMINATION OF THE CONTENT OF AN ANALYTE IN A SAMPLE OF WHOLE BLOOD

Finn C. Lundegaard, Tastrup; Niels-Henrik Jensen, Farum, and Willy Andersen, Espergaerde, all of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Continuation of Ser. No. 720,531, Jun. 21, 1991, Pat. No. 5,288,646. This application Feb. 22, 1994, Ser. No. 199,858
Claims priority, application Denmark, Dec. 22, 1988, 7162/88
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] G01N *21/03*
U.S. Cl. 436—165 12 Claims



3. A method of photometric determination of the content of an analyte in a sample of whole blood, comprising the steps of:

a) transferring a sample of whole blood directly from an in vivo locality to a sampling device, wherein the sampling device comprises:

at least one measuring chamber which has two wall parts located opposite one another, at least one of the wall parts being locally transparent, at least one of the wall parts being sufficiently deformable to facilitate displacement of the whole blood sample from the at least one measuring chamber for photometric analysis,

the at least one measuring chamber further including a transparent body disposed between the wall parts, the transparent body being capable of selectively absorbing the analyte or reacting with the analyte such that upon contact of the analyte with the transparent body a detectable radiation modification is caused in the transparent body which is dependent upon the concentration of the analyte in the whole blood sample, wherein the transparent body maintains the radiation modification after displacement of the whole blood sample from the at least one measuring chamber so that photometric analysis of the analyte in the absence of the whole blood sample can be performed;

b) placing the sampling device in a sampling device station wherein the sampling device station is arranged relative to an optical system comprising a radiation source and a means for detecting radiation, such that the sampling device is located between the radiation source and the radiation detection means;

c) deforming the at least one measuring chamber of the sampling device in a controlled manner to reduce the volume of the at least one measuring chamber, thereby substantially draining the sample of whole blood from the measuring chamber;

d) transmitting radiation from the radiation source through the deformed, substantially drained at least one measuring chamber to the radiation detector;

e) detecting the radiation transmitted in step d); and

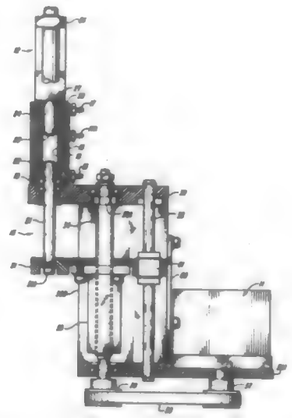
f) determining the analyte content of the sample of whole blood from the radiation detected in step e).

5,366,904

METHOD OF METERING A FLUID USING A MULTI-MODE DIFFERENTIAL FLUID DISPLACEMENT PUMP

Humayun Qureshi, Wayland; Stanley M. Liffmann, Andover, and John D. Czaban, Beverly, all of Mass., assignors to DRD Diluter Corporation, Danvers, Mass.

Continuation of Ser. No. 514,758, Apr. 26, 1990, abandoned, which is a continuation of Ser. No. 213,169, Jun. 29, 1988, Pat. No. 4,941,808. This application Apr. 21, 1992, Ser. No. 871,491
Int. Cl.[5] G01N *1/00, 33/48*
U.S. Cl. 436—180 8 Claims



1. A method of metering a measured amount of a first fluid into a measured amount of a second fluid comprising,

confining a fluid within a first chamber of defined volume,

mechanically moving a first displacement solid into said defined chamber volume to displace a first measured amount of said confined fluid therefrom,

mechanically moving a second displacement solid into said defined chamber volume to displace a second volume of said confined fluid therefrom different from said first volume whereupon said first and second volumes can be mixed in predetermined proportion.

5,366,905

METHOD FOR PRODUCING CONDUCTING LAYERS FOR A SEMICONDUCTOR DEVICE

Ryoichi Mukai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

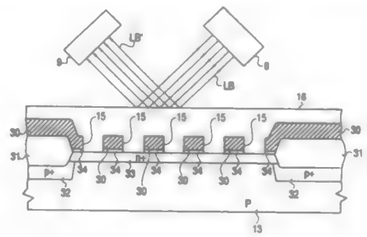
Filed Oct. 30, 1992, Ser. No. 968,674
Claims priority, application Japan, Nov. 5, 1991, 3-288188
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—7 17 Claims

1. A method for producing an interconnect layer on an insulating layer having steps or grooves under said interconnect layer, said insulating layer being formed on a surface of a semiconductor substrate, comprising the steps of:

(a) forming a layer of a conducting material, capable of being fluidified when heated on and contouring said steps or said grooves of said insulating layer, to leave no discontinuity at least in the region of said steps or said grooves of said insulating layer;

(b) heating said layer of said conducting material to a fluid state;

(c) irradiating said layer of said conducting material at least in the region having said steps or said grooves of said insulating layer by an energy beam and monitoring an



intensity of the reflected energy beam in a real time basis in situ during said heating; and

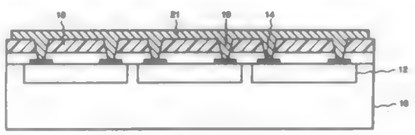
(d) controlling heating power during said heating to permit said layer of said conducting material to be planarized in conjunction with changes of said intensity of said reflective energy beam.

5,366,906

WAFER LEVEL INTEGRATION AND TESTING

Robert J. Wojnarowski, Ballston Lake; Constantine A. Neugebauer; Wolfgang Daum, both of Schenectady; Bernard Gorowitz, Clifton Park; Eric J. Wildi, Niskayuna; Michael Gdula, Knox; Stanton E. Weaver, Jr., Northville, and Anthony A. Immorlica, Jr., Manlius, all of N.Y., assignors to Martin Marietta Corporation, Philadelphia, Pa.

Filed Oct. 16, 1992, Ser. No. 962,000
Int. Cl.[5] H01L *21/66*; G01R *31/26*
U.S. Cl. 437—8 13 Claims



1. A method for testing enhanced wafer level integration interconnects, comprising the steps of:

applying a dielectric layer to a wafer containing a plurality of chips, each chip having thereon input pads and output pads:

providing a plurality of vias in the dielectric layer, each of the vias being aligned with at least one predetermined different one of the chip input/output pads:

providing a testing pattern of electrical conductors and overlay test pads on the dielectric layer:

contacting each of a selected configuration of the chip input-/output pads through an associated one of the overlay test pads, to form a wafer level conductive interconnect test pattern; and

routing a plurality of boundary scan signals and a power signal for each of the chips to a boundary of the wafer; and

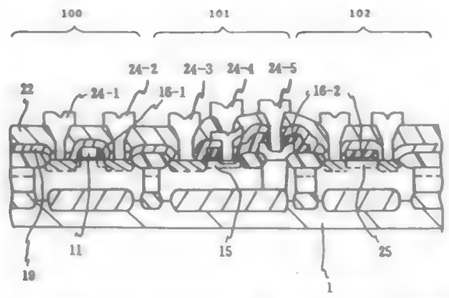
connecting the input pads and output pads of each of the chips in pairs.

5,366,907

METHOD OF FABRICATING A BI-CMOS INTEGRATED CIRCUIT DEVICE

Masakazu Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 24,730
Claims priority, application Japan, Feb. 26, 1992, 4-075436
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 10 Claims



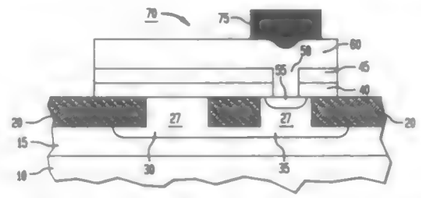
1. A method of fabricating a semiconductor integrated circuit device involving a bipolar transistor, said method comprising the steps of:
- forming a semiconductor layer of a first conductive type on a semiconductor substrate;
- forming selectively field oxide films in a surface region of said first conductive type layer;
- forming a first collector contact on a first area of said first conductive type semiconductor layer;
- forming an active base region of a second conductive type in an exposed surface of said first conductive type semiconductor layer by accomplishing an ion-implantation of a second conductive type dopant;
- forming an oxide film on an entire surface of said device;
- forming both side-wall oxide films at opposite side portions of said collector contact and an active base region protective oxide film in a second area within said active base region by accomplishing an etching of said oxide film with using a photo-resist pattern so that said active base region protective oxide film protects said second area in said active base region from any damage caused by said etching;
- forming a graft base region in said active base region at its part which is not covered with said active base region protective oxide film by accomplishing an ion-implantation of said second conductive type dopant thereby said active region remains only in said second area which has no damage caused by said etching;
- forming an inter-layer insulator on an entire surface of said device;
- forming a first emitter contact made of a polycrystalline silicon film doped with said first conductive type dopant so as to be in contact with a part of said active base region; and
- forming an emitter region in said active base region by a diffusion of said first conductive type dopant from said emitter contact into said active base region; and
- forming base, second emitter and second collector contacts in said inter-layer insulator.

5,366,908

PROCESS FOR FABRICATING A MOS DEVICE HAVING PROTECTION AGAINST ELECTROSTATIC DISCHARGE

Mario M. A. Pelella, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 930,872, Aug. 14, 1992. This application Nov. 16, 1993, Ser. No. 152,640
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 23 Claims



1. A process for fabricating a MOS device having protection against electrostatic discharge, comprising the steps of:
- providing a semiconductor substrate;
- growing an epitaxial layer on said semiconductor substrate;
- forming a tie-down region in said epitaxial layer;
- growing a layer of insulating material on said epitaxial layer for forming an insulating layer of an electrode of a MOS device;
- forming a buried protection diode window through said electrode insulating layer at a location directly above said tie-down region so as to expose said tie-down region;
- depositing a layer of conductive material over said electrode insulating layer for forming a conductive layer of said electrode of the MOS device, said layer of conductive material filling said buried protection diode window and forming a protection diode in said tie-down region; and
- etching said layer of conductive material and said layer of insulating material so as to form said electrode of the MOS device, said protection diode being formed directly below said electrode insulating layer such that said protection diode is formed integrally as part of the MOS device;
- wherein excess charge buildup in the MOS device is conducted through said electrode conductive layer and away from the MOS device by said protection diode.

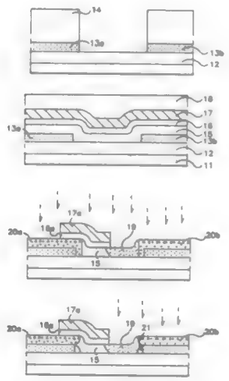
5,366,909

METHOD FOR FABRICATING THIN FILM TRANSISTOR

Seung R. Song, Seoul, and Hong S. Kim, Chungcheongbuk-do, both of Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Rep. of Korea

Filed Feb. 23, 1994, Ser. No. 200,770
Claims priority, application Rep. of Korea, Jan. 7, 1994, 229/1994
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 4 Claims

1. A method for fabricating a thin film transistor, comprising the steps of:
- sequentially depositing an insulating film and a first, high concentration semiconductor layer of a first conductivity type over a substrate;
- selectively removing a portion of said first semiconductor layer corresponding to a channel region, thereby forming a source region and a drain region;
- depositing a second, undoped semiconductor layer over the entire exposed surface of the resulting structure and implanting ions for controlling a threshold voltage in said second semiconductor layer;
- sequentially depositing a gate insulating film and a third semiconductor layer for a gate electrode over the entire exposed surface of the resulting structure and patterning said third semiconductor layer and said gate insulating film such that the third semiconductor layer and the gate insulating film are overlapped with said source region while being offset to said drain region, thereby forming said gate electrode;
- implanting impurity ions of the first conductivity type in a low concentration in an exposed portion of the second semiconductor layer using the gate electrode as a mask; and
- diffusing said first conductivity type impurity ions doped in both the source region and the drain region into the second semiconductor layer.

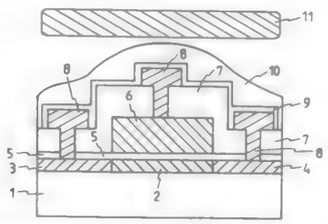


5,366,910

PROCESS FOR THE PRODUCTION OF THIN FILM TRANSISTORS USING ON SOG FILM

Hyoung C. Ha, and Dong K. Choi, both of Seoul, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Sep. 28, 1993, Ser. No. 127,994
Claims priority, application Rep. of Korea, Sep. 29, 1992, 92-17793
Int. Cl.[5] H01L *21/469*
U.S. Cl. 437—40 11 Claims



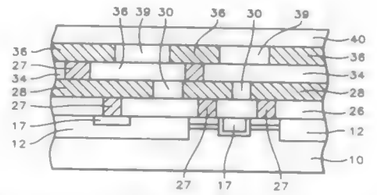
1. A process for producing a thin film transistor, said process comprising the steps of:
- (a) providing a thin film transistor structure having a source, a drain, a channel polysilicon layer, and an upper surface above the source, the drain, and the channel polysilicon layer;
- (b) following said step (a), forming an inter-layer insulating film on the upper surface of the thin film transistor structure;
- (c) following said step (a), depositing a metal to contact the source, the drain, and the channel polysilicon layer, respectively, to form a resulting TFT structure having an upper surface;
- (d) following said steps (b) and (c), forming an insulating film on the upper surface of the resulting TFT structure;
- (e) following said step (d), coating the insulating film with a spin-on-glass film having a hydrogen content;
- (f) following said step (e), treating the spin-on-glass film with a plasma including an oxygen atom;
- (g) following said step (f), exposing the spin-on-glass film to a hydrogen-containing atmosphere to increase the hydrogen content of the spin-on-glass film;
- (h) following said step (g), depositing a protective film on the spin-on-glass film; and
- (i) following said step (h), applying a heat treatment to the spin-on-glass film to infiltrate the hydrogen into the channel polysilicon layer.

5,366,911

VLSI PROCESS WITH GLOBAL PLANARIZATION

Water Lur, Taipei, and Ben Chen, Hsin-chu, both of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed May 11, 1994, Ser. No. 240,572
Int. Cl.[5] H01L *21/335, 21/265*
U.S. Cl. 437—40 22 Claims



1. The method of fabricating an integrated circuit wherein global planarization is maintained throughout the process flow comprising:
- providing trenched isolation regions within a silicon substrate;
- forming trenched polysilicon gate electrodes within said silicon substrate and within said trenched isolation regions;
- forming source and drain regions within said silicon substrate wherein the top surfaces of said trenched isolation regions, said trenched polysilicon gate electrodes, and said source and drain regions form a planarized top surface of said silicon substrate;
- depositing a pre-metal dielectric layer over said planarized top surface of said silicon substrate;
- etching through said pre-metal dielectric to form contact openings to said trenched polysilicon gate electrodes and to said source and drain regions;
- filling said contact openings with metal plugs wherein the top surfaces of said pre-metal dielectric and said metal plugs form a planarized top surface of said silicon substrate;
- depositing a first metal layer over said planarized top surface of said silicon substrate;
- implanting oxygen ions into portions of said first metal layer not covered by a mask wherein said portions of said first metal layer are transformed into an insulator layer and wherein the top surface of said first metal layer forms a planarized top surface of said silicon substrate;
- depositing an inter-metal dielectric layer over said top planarized surface of said silicon substrate;
- etching through said inter-metal dielectric to form contact openings to said first metal layer;
- filling said contact openings with metal plugs wherein the top surfaces of said inter-metal dielectric and said metal plugs form a planarized top surface of said silicon substrate;
- depositing a second metal layer over said planarized top surface of said silicon substrate;
- implanting oxygen ions into said portions of said second

metal layer not covered by a mask wherein said second metal layer is transformed into an insulator layer and wherein the top surface of said second metal layer forms a planarized top surface of said silicon substrate; and

covering said planarized top surface of said silicon substrate with a passivation layer to complete fabrication of said integrated circuit wherein global planarization is maintained throughout the process flow.

5,366,912

FABRICATION METHOD OF THIN-FILM TRANSISTOR

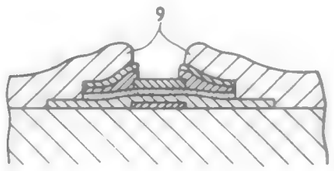
Kenichi Kobayashi, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1989, Ser. No. 409,803

Claims priority, application Japan, Sep. 21, 1988, 63-234712

Int. Cl.[5] H01L *21/336, 21/84*

U.S. Cl. 437—40 **6 Claims**



1. In a method of fabricating a thin-film transistor which comprises an insulating substrate, a gate electrode formed on the substrate, a gate insulating layer covering the gate electrode, a first amorphous semiconductor layer formed on the gate insulating film, a second amorphous semiconductor layer containing trivalent or pentavalent impurity atoms and formed on the first amorphous semiconductor layer, source and drain electrodes electrically connected to the second amorphous semiconductor layer, and a diffusion preventive layer provided between each of the source and drain electrodes and the second amorphous semiconductor layer for preventing diffusion of metal constituting the source and drain electrodes into the second amorphous semiconductor layer, the improvement comprising the steps of:

(a) depositing a film of a diffusion preventive material on a film of a second amorphous semiconductor material;

(b) forming a patterned resist film on said film of diffusion preventive material;

(c) forming the diffusion preventive layer by removing a portion of said film of diffusion preventive material not being covered by said patterned resist film by dissolving said portion with a first etchant; and

(d) forming the second amorphous semiconductor layer by removing a portion of a film of a second amorphous semiconductor material not being covered by the diffusion preventive layer by dissolving said portion with a second etchant which dissolves said film of second amorphous semiconductor material but does not dissolve the diffusion preventive layer, wherein said second etchant is a phosphoric-acid-based etchant.

5,366,913

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE EMPLOYING OXIDE SIDEWALLS

Hironobu Nakao, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Oct. 15, 1992, Ser. No. 962,323

Claims priority, application Japan, Oct. 25, 1991, 3-279070

Int. Cl.[5] H01L *21/336*

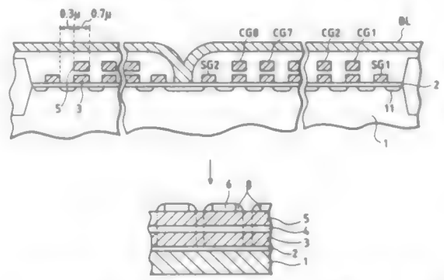
U.S. Cl. 437—41 **2 Claims**

1. A method of manufacturing a semiconductor NAND device by using a resist mask for photolithography, comprising the steps of:

providing a semiconductor substrate coated with a tunneling oxide film and a NAND control gate structure including a first control gate layer, an intervening insulating film and a second control gate layer,

providing a mask in which a plurality of lines with a desired width are arranged in parallel with intervening spaces on the control gate structure,

forming a continuous CVD oxide film on the mask lines and on the control gate structure in the intervening spaces between the mask lines,



removing a selected thickness of the oxide film by an anisotropic etching so that sidewalls of said oxide film are left on the side faces of the mask lines to reduce the width of the intervening spaces,

etching to remove the portions of the first and second control gate layers and the intervening insulating layer in the spaces between the sidewalls,

injecting ions into the Si wafer with self align through the intervening spaces between lines with the mask line sidewalls,

wherein the resulting NAND control gate line width is greater than the width of the intervening spaces, and

forming a bit line array extending transversely across the NAND control gate lines.

5,366,914

VERTICAL POWER MOSFET STRUCTURE HAVING REDUCED CELL AREA

Nobumitsu Takahashi; Mitsuasa Takahashi, and Hitoshi Kubota, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jan. 29, 1993, Ser. No. 11,151

Claims priority, application Japan, Jan. 29, 1992, 4-013575; Feb. 28, 1992, 4-042698

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—41 **2 Claims**

1. A method for manufacturing a vertical power field effect transistor comprising the steps of:

forming a first insulating film covering on a principal surface of a semiconductor substrate of a first conductivity type;

forming a conducting layer on said first insulating film;

forming a first interlayer insulating film covering said conducting layer;

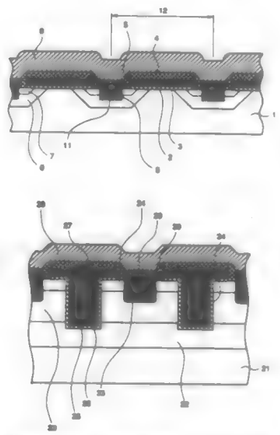
patterning a stacked structure formed of said first insulating film, said conducting layer and said first interlayer film so as to form a patterned stacked structure and to expose a portion of said substrate uncovered by said patterned stacked structure, said first insulating film of said patterned stacked structure forming a gate insulator film, said conducting layer of said patterned stacked structure forming a gate electrode;

introducing an impurity of a second conductivity type opposite to said first conductivity type into said exposed portion of said substrate by using the patterned stacked structure as a mask, so that a base region extending under said gate electrode is formed;

introducing an impurity of said first conductivity type by using the patterned stacked structure as a mask, so that a source region smaller than said base region is formed in said base region and extends under said gate electrode;

forming a second interlayer insulating film on said principal surface of said substrate;

anisotropically etching said second interlayer insulating film so as to form a side insulating film which covers only each side surface of the gate electrode and the gate insulator film;



anisotropically etching said substrate by using the side insulating films as a mask, so as to form, in a self-alignment manner, a groove which extends downward from said principal surface of said silicon substrate to pass through said source region and to reach said base region;

filling said groove with a metal film;

forming a metal film evaporated on the entire resulting surface; and

patterning said metal film to form a source electrode which is electrically connected to said metal filled in said groove.

5,366,915

PROCESS OF FABRICATING FLOATING GATE TYPE FIELD EFFECT TRANSISTOR HAVING DRAIN REGION GENTLY VARIED IN IMPURITY PROFILE

Noriaki Kodama, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 16, 1993, Ser. No. 107,921

Claims priority, application Japan, Aug. 28, 1992, 4-230163

Int. Cl.[5] H01L *21/266*

U.S. Cl. 437—43 **13 Claims**

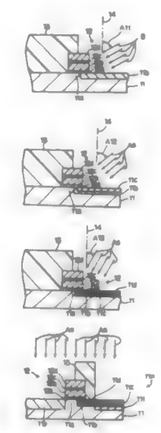
1. A process of fabricating a floating gate type field effect transistor, comprising the steps of:

a) preparing a semiconductor substrate of one conductivity type;

b) forming a gate structure on a channel region in a major surface of said semiconductor substrate, said gate structure having a first gate insulating layer on said channel region, a floating gate electrode on said first gate insulating layer, a second gate insulating layer on said floating gate electrode and a control gate electrode on said second gate insulating layer;

c) repeating an oblique ion-implantation with impurity atoms of the opposite conductivity type to said one conductivity type into a first area of said major surface on one side of said gate structure at different angles for forming a first drain sub-region varied in impurity concentration, a dose of said oblique ion-implantation being regulated to a middle value less than $1\times10^{15}\,cm^{-2}$ so as to hardly convert said first drain sub-region into an amorphous state and to produce hot carriers injected into said floating gate electrode;

d) ion-implanting with impurity atoms of said opposite conductivity type into a part of said first area spaced from said gate structure for forming a second drain sub-region hav-



ing an impurity concentration which is larger than the impurity concentration of said first drain sub-region, said first drain sub-region and said second drain sub-region being partially overlapped for forming a drain region; and

e) completing said floating gate type field effect transistor.

5,366,916

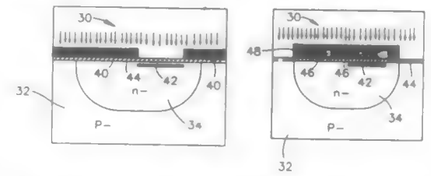
METHOD OF MAKING A HIGH VOLTAGE IMPLANTED CHANNEL DEVICE FOR VLSI AND ULSI PROCESSES

Richard A. Summe; Randy A. Rusch; Douglas R. Schnabel, and Jack D. Parrish, all of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Feb. 4, 1993, Ser. No. 13,947

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—44 **12 Claims**



1. A method for forming a non-self aligned implanted channel in a high voltage device so as to form a high voltage transistor on a substrate which includes low voltage devices, the method being compatible with VLSI and ULSI processes and comprising the steps of:

doping the substrate to be a first conductivity-type;

forming a lightly-doped well of a second conductivity-type in the substrate;

implanting through a mask an implant of the first conductivity-type in the lightly-doped well;

diffusing and activating the implant so as to form the non-self aligned implanted channel without adversely effecting implants formed in the low voltage devices of the substrate;

forming a gate oxide layer over at least a portion of the substrate;

forming a gate electrode over a portion of the non-self

aligned implanted channel, the gate electrode defining a gate region of the high voltage transistor;

forming a drain region of the second conductivity-type in the lightly-doped well to form an ohmic contact;

forming a source region within the non-self aligned implanted channel, the source region having a doped first region of the first conductivity-type which is contiguous with a heavily doped second region of the second conductivity-type, the first region providing an ohmic contact between the source region and the non-self aligned implanted channel, the second region providing a conduction path to the non-self aligned implanted channel; and

forming conductive electrodes to the source, drain and gate regions;

whereby the step of forming the non-self aligned implanted channel does not effect the electrical characteristics of the low voltage devices of the substrate.

5,366,917

METHOD FOR FABRICATING POLYCRYSTALLINE SILICON HAVING MICRO ROUGHNESS ON THE SURFACE

Hirohito Watanabe, and Toru Tatsumi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 19, 1991, Ser. No. 672,073

Claims priority, application Japan, Mar. 20, 1990, 2-72462; Sep. 19, 1990, 2-249154; Nov. 28, 1990, 2-327069

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—47 **8 Claims**

1. A method of fabricating a semiconductor device, comprising the steps of:

forming a first silicon oxide film on a silicon substrate;

depositing a first polycrystalline silicon film on said first silicon oxide film and said silicon substrate;

doping an impurity into said first polycrystalline silicon film;

forming a second silicon oxide film on said first polycrystalline silicon film;

forming a second polycrystalline silicon film on said second silicon oxide film;

selectively etching said first polycrystalline silicon film, said second silicon oxide film and said second polycrystalline silicon film to form a first pattern including respective portions of said first polycrystalline silicon film, said second oxide film and said second polycrystalline silicon film;

depositing a silicon film having a surface with a micro roughness on said first pattern and said first silicon oxide film;

doping an impurity into said silicon film to produce a doped silicon film;

selectively etching said doped silicon film to form a second pattern covering said first pattern;

forming a capacitor insulating film; and

depositing an impurity-doped polycrystalline silicon film.

5,366,918

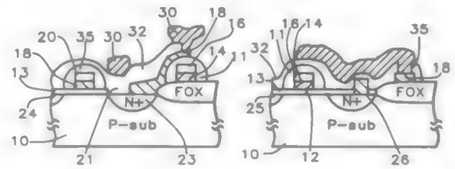
METHOD FOR FABRICATING A SPLIT POLYSILICON SRAM CELL

Ming-Tzong Yang, Hsin Chu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Feb. 7, 1994, Ser. No. 192,366

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **10 Claims**



1. A method of fabrication of an semiconductor device comprising

a) applying a first dielectric layer to a silicon substrate,

b) forming a first polysilicon layer on said first dielectric layer,

c) applying a second dielectric layer to said first polysilicon layer,

d) forming a first polysilicon masking layer on the surface of said substrate,

e) etching said first polysilicon layer and said second dielectric layer through openings in said first masking layer,

f) forming a third dielectric layer over the remaining portions of said first polysilicon layer, and then performing a spacer etch for forming a fourth dielectric layer,

g) forming a buried contact masking layer on the surface of said device,

h) etching said first dielectric layer down to form buried contact openings to said substrate for a buried contact through openings in said first buried contact masking layer, forming a second polysilicon layer on said device extending down into said buried contact openings into contact with said substrate,

j) forming a fifth dielectric layer over said second polysilicon layer,

k) forming a second polysilicon masking layer on the surface of said substrate,

l) etching said second polysilicon layer and said fifth dielectric layer through openings in said second polysilicon masking layer,

m) forming a sixth dielectric layer over the remaining portions of said second polysilicon layer,

n) implanting dopant ions of a source/drain mask through a source drain mask in regions in said substrate,

o) forming a seventh dielectric layer over the entire exposed surfaces,

p) forming via openings in said seventh dielectric layer down to said second polysilicon layer,

q) forming a third polysilicon layer on said device extending down into said via openings,

r) forming a third polysilicon masking layer on the surface of said third polysilicon layer, and

s) etching said third polysilicon layer to form a configuration through said third polysilicon masking layer.

5,366,919

METHOD OF MAKING A MEMORY CELL OF A SEMICONDUCTOR MEMORY DEVICE

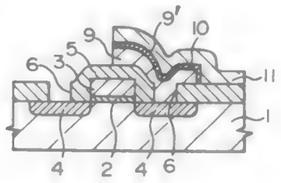
Kimiaki Tanaka, and Hideki Takeuchi, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 13, 1993, Ser. No. 135,532

Claims priority, application Japan, Oct. 14, 1992, 4-301732

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **4 Claims**



1. A method of making a memory cell having a transistor and a capacitor of a semiconductor memory device, comprising the steps of:

forming, on a substrate in a surface of which the transistor is formed, an interlayer insulating film having a contact hole reaching a source/drain region of said transistor;

introducing a metal into a surface of said source/drain region of said transistor exposed to said contact hole and a surface portion of said interlayer insulating film at portions thereof where a lower electrode of said capacitor is to be formed;

forming a first conductive film having a pattern of the lower electrode of said capacitor by depositing a conductive material on the portions where said metal has been introduced;

forming a capacitor insulating film on said conductive film; and

forming a second conductive film which provides an upper electrode of said capacitor on said capacitor insulating film;

wherein said conductive material and said metal have such a relationship with each other that, when said first conductive film is formed by depositing the conductive material on the portions where the metal has been introduced, said metal acts as a catalyzer to cause said conductive material to develop whisker crystal growth, thereby forming fine projections on an upper surface of said first conductive film.

5,366,920

METHOD FOR FABRICATING A THIN FILM CAPACITOR

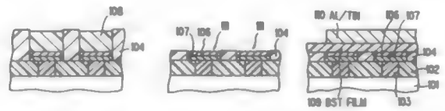
Shintaro Yamamichi; Hirohito Watanabe; Toshiki Hashimoto, and Toshiyuki Sakuma, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 229,423

Claims priority, application Japan, Apr. 12, 1993, 5-083684

Int. Cl.[5] H01L *21/70, 27/00*

U.S. Cl. 437—52 **11 Claims**



1. A method for fabricating a thin film capacitor, comprising the steps of:

forming a first insulating layer on a substrate;

providing a first aperture through said first insulating layer on a region for defining said thin film capacitor;

filling said first aperture with a conductive material for a lower interconnection to be connected to said substrate;

forming a second insulating layer on said first insulating layer and said conductive material in said first aperture, said second insulating layer being made flat on a surface thereof;

providing a second aperture through said second insulating layer to expose said conductive material for said lower interconnection;

depositing a conductive film for a lower electrode on a bottom of said second aperture and on said second insulating layer;

covering said conductive film on said bottom of said second aperture and said second insulating layer with a third insulating layer,

removing said third insulating layer, said conductive film on said second insulating layer, and said second insulating layer to expose said conductive film on said bottom of said second aperture, an exposed surface of said conductive film for said lower electrode being coplanar with a removed surface of said second insulating layer;

depositing a dielectric film on said conductive film for said lower electrode; and

depositing a conductive film for an upper electrode on said dielectric film.

5,366,921

PROCESS FOR FABRICATING AN ELECTRONIC CIRCUIT APPARATUS

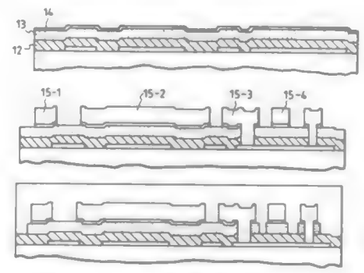
Kazuaki Tashiro, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 829,624, Jan. 31, 1992, abandoned, which is a continuation of Ser. No. 483,310, Feb. 21, 1990, abandoned, which is a continuation of Ser. No. 265,569, Nov. 1, 1988, abandoned. This application Dec. 22, 1993, Ser. No. 171,764

Claims priority, application Japan, Nov. 13, 1987, 62-285619

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—56 **4 Claims**



1. A process for fabricating an electronic circuit apparatus comprising:

a substrate having an insulating surface, a plurality of electronic circuit elements disposed on said substrate, each of said electronic circuit elements having a thin film transistor provided with a gate electrode, a gate insulating layer, a semiconductor active layer, a source electrode and a drain electrode, each of said electronic circuit elements further having a capacitor, wherein said capacitor and said thin film transistor of each circuit element have a common semiconductor layer;

a wiring unit electrically connected with respective electronic circuit elements and disposed on said substrate, said wiring unit having a plurality of lower wirings, an insulating layer, a semiconductor layer and a plurality of upper wirings; and

a protective layer covering said plurality of electronic circuit elements and said wiring unit;

said process comprising the steps of:

forming said gate electrodes and said plurality of lower wirings on said substrate;

applying an insulating film with a first thickness over said gate electrodes and said plurality of lower wirings, said gate insulating layers and said insulating layer being made of said insulating film;

applying a semiconductor film on said insulating film, said semiconductor active layers and said semiconductor layer being made of said semiconductor film;

forming said source electrodes, said drain electrodes and said plurality of upper wirings, whereby said plurality of electronic circuit elements and said wiring unit are formed on said substrate;

isolating said electronic circuit elements, respectively, by means of a plasma etching, by removing a part of said semiconductor film and a part of said insulating film between adjacent electronic circuit elements, wherein a remaining part of said insulating film between adjacent electronic circuit elements remains, and the remaining part of said insulating film has a second thickness less than the first thickness; and

applying said protective layer over said electronic circuit elements and said wiring unit, whereby said protective layer is in contact with the surface of said insulating film between adjacent electronic circuit elements and at an outer side of said plurality of electronic circuit elements.

5,366,922

METHOD FOR PRODUCING CMOS TRANSISTOR

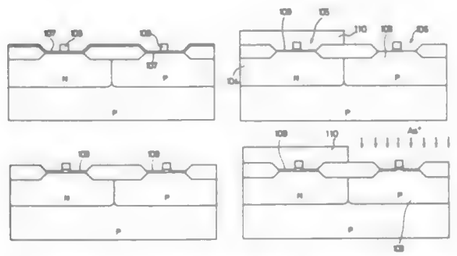
Kenji Aoki, and Naoto Saito, both of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Continuation of Ser. No. 839,689, Feb. 24, 1992, abandoned, which is a continuation of Ser. No. 623,163, Dec. 6, 1990, abandoned. This application Nov. 22, 1993, Ser. No. 155,341

Claims priority, application Japan, Dec. 6, 1989, 1-318552; Dec. 6, 1989, 1-318559; Dec. 6, 1989, 1-318561

Int. Cl.[5] H01L *21/80*

U.S. Cl. 437—57 **3 Claims**



1. A method of producing a CMOS transistor device, comprising:

the first step of forming a P type MOS device region and an N type MOS device region adjacent to each other in a surface portion of a semiconductor substrate;

the second step of forming sequentially a gate insulating film and a gate electrode on the gate insulating film on each of the device regions;

the third step of removing the gate insulating film on each of the device regions using the associated gate electrode as a mask, and then exposing an active semiconductor surface on each of the device regions;

the fourth step of applying a gas containing an impurity component of P conductivity type to the exposed active semiconductor surface to form thereon an adsorption film composed of the impurity component of P conductivity type;

the fifth step of forming a resist layer on the P type MOS device region;

the sixth step of removing the adsorption film formed in the fourth step from the N type MOS device region, using the resist layer formed in the fifth step as a mask;

the seventh step of ion implanting an N conductivity type impurity component into the N type MOS device region to form N type MOS device source and drain regions using the resist layer as a mask; and

the eighth step of effecting solid-phase diffusion of the impurity component of P conductivity type from a diffusion source composed of the adsorption film to form source and drain regions of P conductivity type in said P type MOS device region.

5,366,923

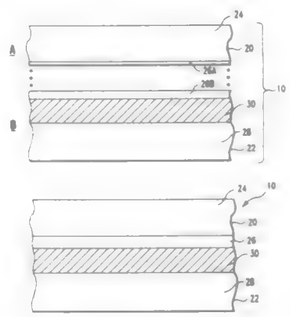
BONDED WAFER STRUCTURE HAVING A BURIED INSULATION LAYER

Klaus D. Beyer, Poughkeepsie; Chang-Ming Hsieh; Louis L. Hsu, both of Fishkill, and Tsorng-Dih Yuan, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 883,082, May 15, 1992, Pat. No. 5,276,338. This application Dec. 8, 1993, Ser. No. 164,094

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—62 **22 Claims**



1. A method of producing a wafer structure upon which semiconductor devices may subsequently be formed, said method comprising the steps of:

a) forming a first thin silicon oxide layer of a thickness less than 0.05 μm on a bottom surface of a first original substrate of a thickness on the order of 100–650 μm and being substantially free of lattice mismatch defects, the first substrate having a characteristic thermal expansion coefficient;

b) depositing a chemical vapor deposited (CVD) diamond insulation layer of a thickness less than 1.0 μm on a top surface of a second original substrate, the insulation layer having a characteristic thermal expansion coefficient substantially matched with the characteristic thermal expansion coefficient of the first substrate, the insulation layer further having a high thermal conductivity;

c) forming a second thin silicon oxide layer of a thickness less than 0.05 μm on a top surface of the insulation layer and planarizing the second thin oxide layer to a prescribed thickness; and

d) bonding the first thin oxide layer to the second thin oxide layer to form a single combined thin silicon oxide layer having a thickness in the range of 0.025 to 0.1 μm.

5,366,924

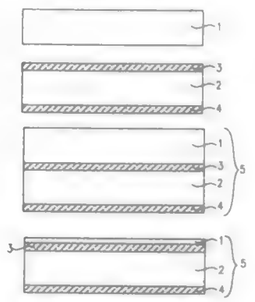
METHOD OF MANUFACTURING AN INTEGRATED CIRCUIT INCLUDING PLANARIZING A WAFER

William G. Easter, Wernersville, and Richard H. Shanaman, III, Myerstown, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 16, 1992, Ser. No. 852,442

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—63 **10 Claims**



1. A method of making an integrated circuit, CHARACTERIZED BY THE STEPS OF:

forming on first and second major surfaces of a handle wafer corresponding first and second oxide layers;

bonding a working wafer to the handle wafer to form a bonded wafer, wherein the working wafer, handle wafer and first and second oxide layers become in the bonded wafer a working layer, a handle layer, the first oxide layer between the working layer and the handle layer, and the second oxide layer being an exposed oxide layer, respectively; and

polishing both major surfaces of the bonded wafer to thin the working layer to a specified thickness using the second oxide layer as a planar reference so as to form a substantially planar wafer;

wherein the second oxide layer remains after the polishing step.

5,366,925

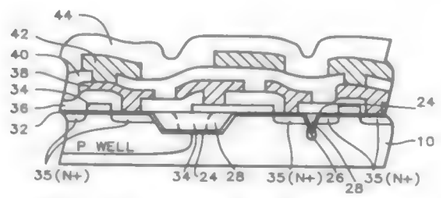
LOCAL OXIDATION OF SILICON BY USING ALUMINUM SPIKING TECHNOLOGY

Water Lur, Taipei; Jiunn Y. Wu, Dou-Lio, and Shim F. Tzou, Chu-Tung, all of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Sep. 27, 1993, Ser. No. 126,872

Int. Cl.[5] H01L *21/76*

U.S. Cl. 437—70 **28 Claims**



1. The method of forming device isolation regions of an integrated circuit using aluminum spiking technology comprising:

providing a first thin silicon oxide layer over the surface of a silicon substrate;

depositing a silicon nitride layer overlying said first thin silicon oxide layer;

etching through portions of said silicon nitride layer and said first thin silicon oxide layer not covered by a mask pattern to said silicon substrate so as to provide a plurality of wide and narrow openings exposing portions of said silicon substrate that will form the said device isolation regions;

depositing a layer of aluminum overlying said patterned silicon nitride and first thin silicon oxide layers;

depositing a first layer of silicon oxide overlying said aluminum layer;

annealing said substrate whereby said aluminum layer reacts with said exposed portions of said silicon substrate within said openings to form an aluminum-silicon alloy wherein said alloy forms trenches into the surface of said substrate;

removing said first silicon oxide layer;

removing said aluminum and said aluminum-silicon alloy layers leaving trenches in the substrate where device isolation regions are to be formed;

growing a second thin layer of silicon oxide over the surfaces of said silicon nitride layer and conformally within said trenches;

selectively ion implanting channel-stops through said openings into said substrate underneath said trenches;

depositing a second layer of silicon oxide over the surface of said substrate and within said trenches;

etching back said second silicon oxide layer to leave spacers on the sidewalls of said trenches wherein said spacers fill said trenches within said narrow openings and wherein said spacers do not fill the central portion of said trenches within said wide openings;

covering the surface of said substrate with a spin-on-glass material and baking and curing said spin-on-glass layer;

etching back said spin-on-glass layer leaving said spin-on-glass material only within said central portion of said trenches within said wide openings; and

removing said silicon nitride layer and said first thin silicon oxide layer thereby completing said device isolation of said integrated circuit.

5,366,926

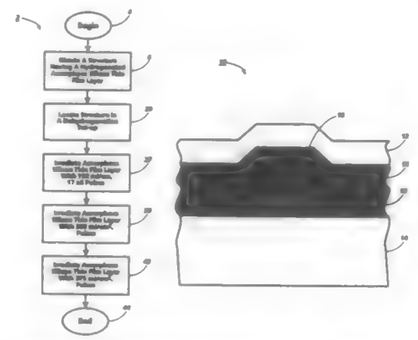
LOW TEMPERATURE PROCESS FOR LASER DEHYDROGENATION AND CRYSTALLIZATION OF AMORPHOUS SILICON

Ping Mei, Palo Alto; James B. Boyce, Los Altos; Richard I. Johnson, Menlo Park; Michael G. Hack, Mountain View, and Rene A. Lujan, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 7, 1993, Ser. No. 73,022

Int. Cl.[5] H01L *21/26*

U.S. Cl. 437—173 **9 Claims**



1. A method of removing hydrogen from a hydrogenated amorphous silicon structure having a surface melt threshold

and a melt through threshold, said method comprising the steps, in the sequence set forth, of:

irradiating an area of the hydrogenated amorphous silicon structure with a plurality of laser beam pulses at a first energy density; and

irradiating said area with a plurality of laser beam pulses at a second energy density, said second energy density being greater than said first energy density.

5,366,927

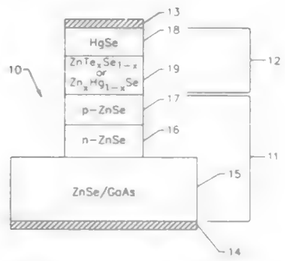
METHOD OF FABRICATING EPITAXIALLY DEPOSITED OHMIC CONTACTS USING GROUP II-VI SEMICONDUCTOR MATERIALS

Jan F. Schetzina, Cary, N.C., assignor to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 881,599, May 12, 1992, and Ser. No. 934,190, Aug. 21, 1992, Pat. No. 5,294,833, which is a continuation-in-part of Ser. No. 881,599, Aug. 21, 1992. This application Sep. 28, 1993, Ser. No. 128,634

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—185 **37 Claims**



1. A method of forming an ohmic contact for a Group II-VI compound semiconductor device including a layer of p-type zinc selenide (ZnSe) or an alloy thereof, said ohmic contact forming method comprising the steps of:

epitaxially forming a zinc telluride selenide ($ZnTe_xSe_{1-x}$) layer on said layer of p-type ZnSe or an alloy thereof, where $0<x<1$;

epitaxially forming a mercury selenide (HgSe) layer on said $ZnTe_xSe_{1-x}$ layer; and

forming a conductor layer on said HgSe layer.

5,366,928

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE, IN WHICH A METAL CONDUCTOR TRACK IS PROVIDED ON A SURFACE OF A SEMICONDUCTOR BODY

Robertus A. M. Wolters, and Alexander G. M. Joukers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 290,924, Dec. 28, 1988, abandoned. This application Jun. 4, 1993, Ser. No. 73,244

Claims priority, application Netherlands, Jan. 29, 1988, 8800220

Int. Cl.[5] H01L *21/283*

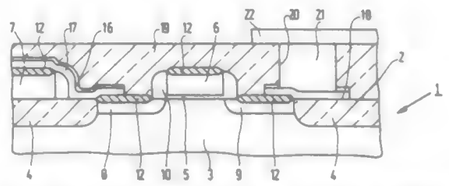
U.S. Cl. 437—192 **10 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of

(a) forming a layer of at least one semiconductor region and at least one field oxide region within a semiconductor body, said field oxide region surrounding said semiconductor region,

(b) forming conductive tracks from a metal layer formed from a nitrogen-containing alloy of titanium and tungsten in which the atomic ratio of titanium to tungsten is 1:4 and the atomic percent of nitrogen is 10%–30% at a surface of said semiconductor body, said conductive tracks contacting semiconductor regions of said semiconductor body,

(c) forming a layer of an oxidation-preventing material of amorphous silicon with a thickness ranging from 3 nm to 50 nm on said conductive tracks to prevent oxidation of said conductive tracks, and



(d) thereafter exposing said layer of amorphous silicon to a gas containing silicon and oxygen while heating said body at a temperature above 650° C. to thereby form a layer of silicon oxide on said layer of amorphous silicon.

5,366,929

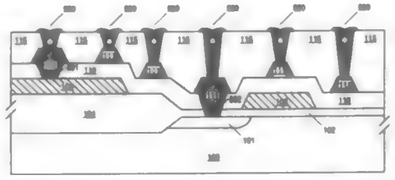
METHOD FOR MAKING RELIABLE SELECTIVE VIA FILLS

James M. Cleeves, Redwood City; Changhae Park, Santa Clara, and Rosemary Gettle, San Jose, all of Calif., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed May 28, 1993, Ser. No. 68,900

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—195 **12 Claims**



1. A method of treating openings in a dielectric layer comprising the steps of:

depositing said dielectric layer on an underlying layer, said dielectric layer comprising an insulative material selected from the group consisting of spin-on-glass and a thermal chemical vapor deposited oxide;

forming a plurality of said openings in said dielectric layer, each of said openings exposing a region of said underlying layer, each of said openings having a sidewall, said sidewall exposing said insulative material, and wherein at least one of said openings has a depth different from another of said openings;

performing an etch such that material from said region is deposited on said sidewall.

5,366,930

METHOD FOR MAKING HIGHLY INTEGRATED SEMICONDUCTOR CONNECTING DEVICE USING A CONDUCTIVE PLUG

Jae K. Kim, Bubaleub, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Filed Nov. 23, 1993, Ser. No. 156,364

Claims priority, application Rep. of Korea, Nov. 24, 1992, 1992/22251

Int. Cl.[5] H01L *21/441*

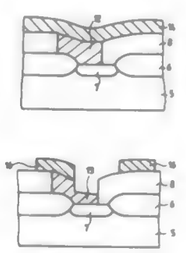
U.S. Cl. 437—195 **8 Claims**

1. A method for making a highly integrated semiconductor, comprising the steps of:

coating an interlayer insulating film entirely over a semiconductor substrate sectioned into an active region and a device separation region by the formation of a device separation insulating film, a gate electrode, a source region and a drain region being formed in said active region;

forming a contact hole to expose a portion of said drain region and a portion of said device separation insulating film;

depositing a conductive material for forming a plug entirely over the resulting structure;



applying an etch back process to said conductive material for forming a plug to form a first conductive material plug;

depositing a conductive material for bit line, entirely over the resulting structure;

etching completely said conductive material for bit line positioned on said first conductive material plug formed on said drain region within said contact hole to form a bit line; and

etching not completely but partially said first conductive material plug formed on said drain region within said contact hole to form a second conductive material plug.

5,366,931

FABRICATION METHOD FOR ON-CHIP DECOUPLING CAPACITOR

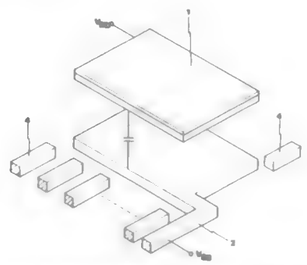
Hong S. Kim, Kyoungki, Rep. of Korea, assignor to Hyundai Electronics Industries, Co., Ltd., Kyoungki, Rep. of Korea

Filed Oct. 28, 1992, Ser. No. 967,893

Claims priority, application Rep. of Korea, Oct. 30, 1991, 91-19160

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **5 Claims**



1. A method for fabricating a decoupling capacitor in semiconductor IC, comprising the steps of:

using a back side of the semiconductor chip as one electrode of the decoupling capacitor, which is designed to enlarge the capacitor area; and

using a lead-frame as the remaining electrode of the decoupling capacitor, said lead-frame being so constructed as to package the semiconductor chip,

wherein the voltage is applied between the semiconductor chip and lead-frame, and said chip and lead-frame are used as each electrode of the capacitor.

5,366,932

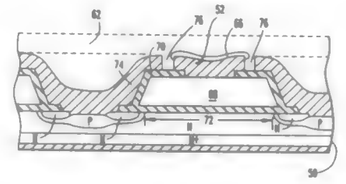
SEMI-CONDUCTOR CHIP PACKAGING METHOD AND SEMI-CONDUCTOR CHIP HAVING INTERDIGITATED GATE RUNNERS WITH GATE BONDING PADS

Victor A. K. Temple, Clifton, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Apr. 26, 1993, Ser. No. 51,832

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **12 Claims**



1. In semiconductor device having a cellular semiconductor chip and a lid for covering an upper surface thereof, the chip upper surface having a first electrode in intercellular spaces and a second electrode overlying the cells, the lid lower surface having first and second conductive foils associated therewith for making electrical contact with the respective first and second electrodes, and wherein the lid is positioned on top of the chip with a predetermined tolerance that exceeds the width of the intercellular spaces, the method of making an electrically conductive contact between said first electrode and said first foil comprising the steps of:

providing plural first electrode runners in the intercellular spaces on top of and in contact with the first electrode, each of said first electrode runners having a wide segment with a width sufficient to allow said first foil to be bonded thereto when the lid is positioned on top of the chip with the predetermined tolerance; and

bonding said first foil to each said wide segment to form an electrically conductive contact.

5,366,933

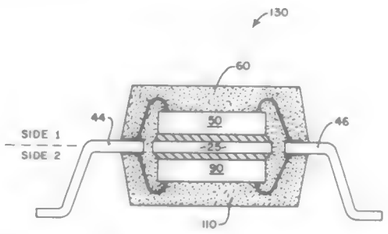
METHOD FOR CONSTRUCTING A DUAL SIDED, WIRE BONDED INTEGRATED CIRCUIT CHIP PACKAGE

Suresh V. Golwalkar, Folsom; Richard Foehringer, Fair Oaks; Michael Wentling, Cameron Park, all of Calif.; Ryo Takatsuki, Ibaraki, and Shigeo Kawashima, Kitakyusyu, both of Japan, assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 13, 1993, Ser. No. 135,732

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—215 **19 Claims**



1. A method for constructing a dual sided integrated circuit chip package, comprising the steps of:

forming a leadframe comprising a set of die pads, and a set of

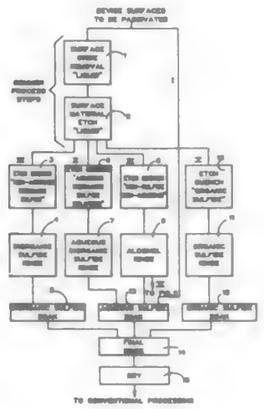
lead fingers corresponding to each die pad, the lead frame having a first side and a second side;
disposing a metal plating on the first side and the second side of a tip of each lead finger;
disposing a tape to the second side of the leadframe with a tape adhesive layer;
disposing a side one integrated circuit die on the first side of each die pad, such that the side one integrated circuit dies are held to the die pads with a first adhesive layer;
wire bonding each side one integrated circuit die to the first side of the corresponding lead fingers;
forming a side one plastic mold over each side one integrated circuit die;
removing the tape from the second side of the lead frame;
cleaning the tape adhesive layer from the second side of the leadframe to remove a mold flash of the side one plastic molds from the metal plating on the second side of the tip of each lead finger;
disposing a side two integrated circuit die on the second side of each die pad, such that the side two integrated circuit dies are held to the die pads with a second adhesive layer;
wire bonding each side two integrated circuit die to the second side of the corresponding lead fingers using a mechanical force and an ultrasonic energy to overcome an energy absorption of the side one plastic molds;
forming a side two plastic mold over each side two integrated circuit die.

5,366,934

METHOD FOR SULFIDE SURFACE PASSIVATION

Theodore J. La Chapelle, Jr., Orange, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 61,376, Jun. 15, 1987, abandoned. This application Feb. 10, 1989, Ser. No. 310,034
Int. Cl.[5] H01L *21/00, 21/02*
U.S. Cl. 437—225 **10 Claims**



1. A passivation method comprising the steps of:
selecting a compound semiconducting material having a solid surface, said material being able to chemically form stable sulfide compounds in the presence of sulfide ions, or in the presence of hydrogen sulfide ions, or in the presence of molecules containing sulfur, or in the presence of free radicals of sulfur, when the surface is at the same electrical potentials as the ions, molecules, or radicals;
removing surface oxide from said solid surface;
etching said solid surface to obtain a periodic atomic structure of said solid surface;
applying a nonaqueous inorganic sulfide solution to said solid surface, said nonaqueous inorganic sulfide solution being selected from a group of materials comprising solid ammonium sulfide, dissolved in carbon disulfide or dissolved in ethyl disulfide;
rinsing said solid surface to remove contaminants from said solid surface; and
applying a passivating material to said solid surface in order to chemically form a native sulfide film on said surface, said passivating material containing sulfide ions, or hydrogen sulfide ions, or free radicals of sulfur, or molecules containing sulfur, and said surface being at the same electrical potential as the ions, molecules, or radicals.

5,366,935

PASSIVATING COATING FOR METAL OXIDE VARISTORS

Mohammad A. Alim, Medina, and Karen C. Beal, Peninsula, both of Ohio, assignors to Hubbell Incorporated, Orange, Conn.

Filed Mar. 14, 1994, Ser. No. 209,919
Int. Cl.[5] C03C *8/16*
U.S. Cl. 501—20 **8 Claims**

1. A passivating coating composition suitable for application as a collar to metal oxide varistor valve block cylindrical surfaces comprising a mixture of 64–74 parts by weight of a glass powder, 22–35 parts by weight of water, and 0.5–2 parts by weight of an additive comprising fumed silica, clay and urea.

5,366,936

CHALCOGENIDE ION SELECTIVE ELECTRODES

Yuri G. Vlasov, Department of Chemistry, St. Petersburg University, St. Petersburg 199034, U.S.S.R., and Yaegeni A. Bychkov, Max-Plande-Str. 7, 76344 Leopoldshafen, Germany

Filed Nov. 24, 1993, Ser. No. 157,950
Int. Cl.[5] C03C *3/32, 4/18;* G01N *27/26*
U.S. Cl. 501—40 **12 Claims**

1. A composition useful as a sensing element for the selective detection of cadmium comprising 1 to 7% by weight cadmium, 8 to 30% by weight silver, 15 to 30% by weight arsenic, 6 to 18% iodide, 2 to 10% antimony and being sulfur.

5,366,937

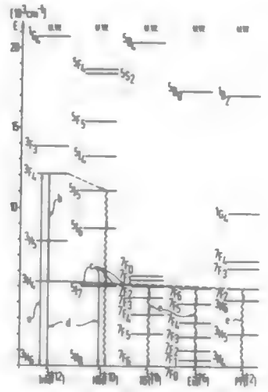
OPTICAL FIBER COMPOSED OF GLASS DOPED WITH LASER-ACTIVE IONS OF AN ELEMENT FROM THE RARE EARTHS

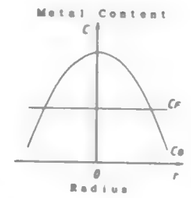
Hartmut Schneider, Munich; Christian Geradt, Geretsried, and Armin Staudt, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 728,513, Jul. 11, 1991, abandoned. This application Mar. 2, 1994, Ser. No. 204,809
Claims priority, application Germany, Sep. 11, 1990, 4028821
Int. Cl.[5] C03C *3/247, 13/04*
U.S. Cl. 501—40 **5 Claims**

1. An optical transmission fiber composed of an oxygen-free fluoride glass comprising a heavy metal fluoride glass, doped with less than 0.1 mol percent thulium ions and another rare earth ion selected from the group consisting of Ho, Tb, Eu and Pr, where the amount of the other rare earth ion is in a higher doping concentration on the order of up to 50 times higher and where the other rare earth ion has an energy term ($^5I_7$, $^7F_2$, $^7F_6$) that lies close to the level of an energy term $^3H_4$ of the thulium ions, such that said optical transmission fiber laser-amplifies, by a pump wavelength in a wavelength range of 700 to 890 nm, optical signals having a wavelength in a transmission window of the optical transmission fiber at 1.5 μm.

$|\Delta C_f/\Delta C_z| \cdot 100 \leq 5$





wherein ΔC_z is a difference between maximum value and minimum value of absolute value of metal oxides of the first metal doping and ΔC_f is a difference between maximum value and minimum value of absolute value of metal oxides of the second metal doping.

5,366,938

SHAPED ARTICLES BASED ON PYROGENICALLY PRODUCED TITANIUM DIOXIDE

Klaus Deller, Hainburg; Bertrand Despeyroux, Hanau, and Helmfried Krause, Rodenbach, all of Germany, assignors to Degussa AG, Hanau, Germany

Filed Apr. 13, 1990, Ser. No. 508,564
Claims priority, application Germany, Apr. 27, 1989, 3913938
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—134 **3 Claims**

1. Shaped articles comprising pyrogenically produced titanium dioxide which have the following physico-chemical characteristics:

Outer diameter	0.8–15 mm
Length	1–15 mm
BET surface according to DIN 66 131	<20 m^2/g
Pore volume	0.01–0.29 cm^3/g
Pore distribution	no pores <10 nm, at least 90% of the pores in a range of 10–80 nm
Breaking Strength	30–500 N/pressed part
TiO_2 phase	rutile 100%
Composition	$>99.5\%$ TiO_2
Form	cylindrical, spherical or annular.

5,366,939

GRADIENT INDEX OPTICAL ELEMENT

Yuko Kurasawa, Hachiohji; Satoshi Noda, Akishima, and Morinao Fukuoka, Hachiohji, all of Japan, assignors to Olympus Optical Company Limited, Japan

Filed Sep. 30, 1992, Ser. No. 954,319
Claims priority, application Japan, Sep. 30, 1991, 3-278347
Int. Cl.[5] C03C *3/076*
U.S. Cl. 501—55 **37 Claims**

1. A gradient index optical element comprising: at least one first metal dopant selected from the group consisting of La, Zr, Sn, In, Y, Ge, Zn, Ba, Ca, As, Sr, Ga and Gd distributed in a glass medium with a concentration gradient, and at least one second metal dopant selected from the group consisting of Nb, Ta, Ti, Bi, Pb, Sb, Zr, Sn, In, Y and Tl, which is distributed equally in the glass medium so as to satisfy the following equation as an absolute amount

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5,366,940

TRANSPARENT, FIXED TINT GLASS LENSES

Bolton James R., LeRoy, and J. Raymond Hensler, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jan. 28, 1994, Ser. No. 188,532
Int. Cl.[5] C03C *3/085, 3/089, 3/091, 3/093*
U.S. Cl. 501—69 **6 Claims**

1. A transparent, fixed tint glass lens having a thickness of between about 1.0 mm and about 1.8 mm and a transmittance of not more than 1% of ultraviolet radiation at a wavelength of 380 nm, said lens derived from a composition, expressed in terms of weight percent on the oxide basis, consisting essentially of:
SiO_2 65.0%–72.0%
Al_2O_3 0%–2%
Na_2O 5%–15%
K_2O 5%–10%
ZnO 4%–8%
B_2O_3 0%–6%
Fe_2O_3 6.2%–9.0%
Co_3O_4 0.03%–0.06%
NiO 0.12%–0.30%
As_2O_3 0.1%–0.5%.

5,366,941

COMPOSITE CERAMICS AND THEIR PRODUCTION PROCESS

Tomonori Takahashi, Aichi, and Manabu Isomura, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Oct. 13, 1992, Ser. No. 960,333
Claims priority, application Japan, Oct. 30, 1991, 3-284507
Int. Cl.[5] C04B *35/54, 35/56*
U.S. Cl. 501—92 **21 Claims**

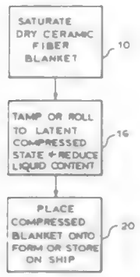
1. A composite ceramic material comprising:
a matrix comprised of Si_3N_4 and Si_2N_2O, the weight ratio of Si_3N_4 to Si_2N_2O in said matrix in terms of Si_3N_4 and SiO_2 being within the range of 98:2 to 85:15; and
a dispersion phase comprised of SiC dispersed in said matrix, said material being resistant to loss of strength at elevated temperature such that a strength of said material at elevated temperatures up to 1600° C. is approximately the same as a strength of said material at room temperature.

5,366,942

CERAMIC FIBER PRODUCT AND STRUCTURE FOR HIGH TEMPERATURE SEVERE APPLICATION ENVIRONMENTS AND METHOD OF MAKING SAME

Alan Ferguson, Kingwood, Tex., and Perry B. Lassiter, Johnson City, Tenn., assignors to American Premier, Inc., Pa.

Filed Apr. 13, 1992, Ser. No. 867,770
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—95 16 Claims



1. A method of forming a ceramic fiber product from a ceramic fiber form which has an initial dry thickness in its dry state and which tends to spring back towards the initial dry thickness after it has been wetted, compressed and subsequently dried, the method comprising the steps of:

wetting the ceramic fiber form with a non-binding aqueous solution;

compressing the ceramic fiber form while wet to make its thickness less than the initial dry thickness;

placing the ceramic fiber form in a support structure while wet, the support structure limiting the ability of the wet fiber form to expand to the dry thickness; and

drying the ceramic fiber form so that it tends to expand and remain in the support structure in a compressed state.

5,366,943

POLYCRYSTALLINE SILICON CARBIDE FIBERS

Jonathan Lipowitz, and James A. Rabe, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 918,736, Jul. 22, 1992, Pat. No. 5,279,780. This application Sep. 10, 1993, Ser. No. 118,855
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—95 16 Claims

1. A polycrystalline silicon carbide fiber produced by a process comprising:

heating an amorphous or microcrystalline ceramic fiber containing silicon, carbon and at least one element selected from the group consisting of titanium, zirconium and chlorine in an environment comprising a volatile sintering aid is selected from the group consisting of iron, magnesium, lithium, beryllium, boron, aluminum, thorium, yttrium, lanthanum, cerium and compounds thereof at a temperature sufficient to convert the ceramic fiber to a polycrystalline silicon carbide fiber and for a time sufficient to allow incorporation of the sintering aid into the ceramic fiber.

5,366,944

VIBRATABLE REFRACTORY COMPOSITIONS

Charles R. Rumpeltin, Flanders, N.J., and Julie A. Dody, Easton, Pa., assignors to Minteq International Inc., New York, N.Y.

Continuation of Ser. No. 847,972, Mar. 6, 1992, abandoned. This application Aug. 27, 1993, Ser. No. 112,869
Int. Cl.[5] C04B *35/04, 35/52*
U.S. Cl. 501—99 28 Claims

1. A refractory composition for forming a disposable lining consisting essentially of a refractory aggregate;

a high temperature binder selected from the group of Al, Al-Si alloys, Al-Si mixtures, and Mg-Al alloys;

a phenolic resin binder in an amount sufficient to provide low temperature strength properties to the composition; and

a density reducing inorganic material in an amount sufficient to reduce the density of the composition.

5,366,945

SUPPORTED HETEROPOLY ACID CATALYSTS

Charles T. Kresge, West Chester, Pa.; David O. Marler, Deptford; Gayatri S. Rav, Sewell, both of N.J., and Brenda H. Rose, Rosemont, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 22, 1992, Ser. No. 995,091
Int. Cl.[5] B01J *29/04, 29/06, 27/185, 21/02*
U.S. Cl. 502—60 9 Claims

1. A catalyst comprising a sufficient catalytic amount of a heteropoly acid supported on a porous support material comprising an inorganic, porous, crystalline phase material having pores with diameters of at least about 13 Angstroms and which exhibits, after calcination, an X-ray diffraction pattern with at least one d-spacing greater than about 18 Angstroms with a relative intensity of 100, wherein said heteropoly acid comprises at least one element selected from the group consisting of P, Si, B, Ge, As, Se, Ti, Zr, Mn, F, V, Ce, and Th as a central element and at least Mo and/or W as a coordinating element, and wherein the weight ratio of heteropoly acid to support material is from about 20:1 to about 1:1.

5,366,946

STABILIZED 1,1-DICHLORO-1-FLUOROETHANE, PREMIXTURES INTENDED FOR THE PREPARATION OF POLYMERIC FOAMS AND POLYMERIC FOAMS OBTAINED BY THE USE THEREOF

Pierre Barthelemy, Pietrebais; Mireille Paulus, Brussels, and Annie Leroy, Fauvillers, all of Belgium, assignors to Solvay (Société Anonyme), Brussels,

Filed Sep. 23, 1993, Ser. No. 125,186
Claims priority, application Belgium, Sep. 29, 1992, 09200849
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—167 14 Claims

1. A composition consisting essentially of 1,1-dichloro-1-fluoroethane, at least one halide Lewis acid and at least one stabilizing agent for 1,1-dichloro-1-fluoroethane, selected from the group consisting of C_3–C_8 epoxides, C_1—C_8hydrocarbons substituted by a nitro group and mixtures thereof.

5,366,947

INITIATORS FOR MATERIALS WHICH CAN BE POLYMERIZED CATIONICALLY

Beat Müller, Marly, and Dieter Baumann, Möhlin, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 874,782, Apr. 27, 1992, Pat. No. 5,179,179, which is a division of Ser. No. 496,557, Mar. 19, 1990, Pat. No. 5,130,406. This application Aug. 18, 1992, Ser. No. 931,755
Claims priority, application Switzerland, Mar. 21, 1989, 1037/89
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] B01J *31/00*
U.S. Cl. 502—172 3 Claims

1. A compound of the formula II

$$[(L^1)_aM^{+n}(L^2)_b]^{n+}nX^- \quad \text{(II)}$$

in which n is 2 or 3, M is a metal cation selected from the group consisting of Zn^{2+}, Mg^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cr^{2+}, Ru^{2+}, Mn^{2+}, Sn^{2+}, VO^{2+}, Fe^{3+}, Al^{3+} and Co^{3+}, X^- is an anion which is selected from the group consisting of AsF_6^-, SbF_6^-, BiF_6^- and derivatives derived from these anions in which a fluorine atom is replaced by hydroxyl groups, or in which up to 50% of the anions X^-, based on the total amount of anions, can also be any desired anions, L^1 is a mono-to hexadentate σ-donor ligand and is an aliphatic, cycloaliphatic, aromatic or araliphatic compound having one or two ketone, anhydride, carbonate or ester groups or one to six ether groups per molecule, it being possible for the ligands L^1 of a compound of the formula II to differ in the context of the definitions given, L^2 is water, b is an integer from 0 to 2, preferably 0, and, if L^1 is a monodentate ligand, a is an integer from 4 to 6 and the sum of a and b is in each case 6, and, if L^1 is a bidentate ligand, a is an integer from 2 to 3 and the sum of 2a and b is in each case 6, and, if L^1 is a tridentate ligand, a is 2 and the sum of 3a and b is 6, and if L^1 is a tetra-, penta- or hexadentate ligand, a is 1 and the sum of 4a and b or of 5a and b is 6 and the sum of 6a and b is 6 or 8, excluding bis{[12]-crown-4}-iron(II) hexafluoroantimonate, bis{[15]-crown-5}-iron(II) hexafluoroantimonate and ([12]-crown -4)([15]-crown5)-iron(II) hexafluoroantimonate.

5,366,948

CATALYST AND CATALYTIC CONVERSION THEREWITH

Robert P. L. Absil, Mantua, and Jocelyn A. Kowalski, Clarksboro, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 667,854, Mar. 12, 1991, Pat. No. 5,231,064. This application Jul. 13, 1993, Ser. No. 90,869
Int. Cl.[5] B01J *21/06, 27/14, 29/06*
U.S. Cl. 502—68 22 Claims

22. A catalyst composition comprising a large-pore molecular sieve component selected from the group consisting of zeolites Y, USY, REY, and REUSY, and from about 2 wt. % to about 50 wt. % catalyst component manufactured by the steps of:

(1) preparing an aqueous slurry comprising clay;

(2) adding to the slurry of step (1) a source of phosphorus in an amount which will result in a final dried product of step (5) having from at least about 0.9 wt. % to about 3.6 wt. % phosphorus;

(3) adding to the slurry of step (2) an aqueous slurry of crystalline zeolite having the structure of ZSM-5 in an amount which will result in a final dried product of step (5) having from at least about 15 wt. % to less than about 60 wt. % zeolite component;

(4) adding to the slurry of step (3) a non-zeolitic secondary binder component;

(5) spray drying the slurry of step (4) at a pH of less than about 3; and

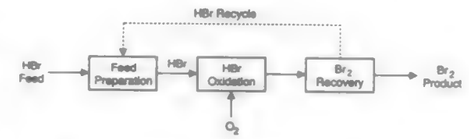
(6) recovering a spray-dried product of step (5) having from at least about 0.9 wt. % to about 3.6 wt. % phosphorus and, on a phosphorus-free basis, from at least about 15 wt. % to less than about 60 wt. % zeolite component.

5,366,949

$CEBR_3$ CATALYST

Paul F. Schubert, Campbell, Calif., assignor to Catalytica, Inc., Mountain View, Calif.

Continuation of Ser. No. 831,276, Feb. 4, 1992, abandoned. This application Jun. 4, 1993, Ser. No. 73,300
Int. Cl.[5] B01J *27/135*
U.S. Cl. 502—227 14 Claims



1. An HBr oxidation catalyst composition comprising cerium bromide present in at least a catalytic amount and a baddeleyite phase zirconia-containing catalyst support.

5,366,950

CATALYST AND PROCESS FOR REMOVING NITROGEN OXIDES

Shoji Shirouchi; Takeshi Sugiyama, and Kouichi Morioka, all of Kakogawa, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 6, 1993, Ser. No. 86,204
Claims priority, application Japan, Jul. 6, 1992, 4-178442
Int. Cl.[5] B01J *23/02*
U.S. Cl. 502—328 12 Claims

1. A catalyst for removing nitrogen oxides which comprises as the major constituent a multiple oxide of CaO-Fe_2O containing 5–50 wt. % CaO, said catalyst promoting the reduction of nitrogen oxides, and said catalyst being in contact with exhaust gas.

5,366,951

THIAZOLYLAZOANILINE DYES FOR USE IN THERMAL DYE SUBLIMATION TRANSFER

Luc Vanmaele, Lochristi, , assignor to AGFA-Gevaert, N.V., Mortsel,

Filed Jun. 10, 1993, Ser. No. 74,453
Claims priority, application European Pat. Off., Jul. 14, 1992, 92202156.3
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 10 Claims

1. Dye-donor element for use according to thermal dye sublimation transfer, said dye-donor element comprising a support having thereon a dye layer containing a thiazolylazoaniline dye, characterized in that said thiazolylazoaniline dye contains on the 4-position of the thiazolyl ring a substituent selected from the group consisting of hydroxy, alkoxy, cycloalkoxy, aryloxy, mercapto, thioalkyl, thiocycloalkyl and thioaryl.

5,366,952

DOUBLE-SURFACE HEAT-SENSITIVE RECORD MATERIAL

Russell E. Granquist, Charlton City, Mass., assignor to Kanzaki Specialty Papers, Ware, Mass.

Filed Jun. 22, 1992, Ser. No. 902,019
Int. Cl.[5] B41M *5/30, 5/34, 5/40*
U.S. Cl. 503—204 7 Claims

1. A heat-sensitive record material for providing separable thermally printed surfaces, comprising:

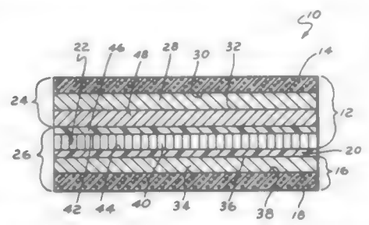
a. a first heat-sensitive record surface comprising a first base

support sheet, having a top surface and a bottom surface, and a first heat sensitive record layer affixed to the top surface of the first base support sheet;

b. a second heat-sensitive record surface comprising a second base support sheet, having a top surface and a bottom surface, and a second heat sensitive record layer affixed to the bottom surface of the second base support sheet; and

c. a binder layer for affixing the first and second heat-sensitive record surfaces in opposed relation, so that the first heat-sensitive record surface produces a first printed surface and the second heat-sensitive record surface produces a second printed surface

wherein the binder layer comprises at least one thermoplastic polymer having a vicat softening point of less than 180° C:,



wherein the thermoplastic polymer is selected from the group including low density polyethylene, atactic polypropylene, ethylene-vinyl acetate copolymer, ethylene-acrylic acid copolymer salt, ethylene-methacrylic methacrylic acid copolymer salt, ethylene-isobutyl acrylate copolymer, ethylene-ethylacrylate copolymer, vinyl acetate-crotonic acid copolymer, vinyl acetate-phthalic anhydride copolymer, styrene-isoprene-styrene block copolymer, styrene-butadiene-styrene block copolymer, styrene-ethylene-butylene-styrene block copolymer, nylon-12, terephthalic acid-1,4-butanediol copolymer, polymethyl acrylate, polymethyl methacrylate, polyethyl acrylate, polyethyl methacrylate, polypropyl acrylate, polypropyl methacrylate, polybutyl acrylate and polybutyl methacrylate.

5,366,953

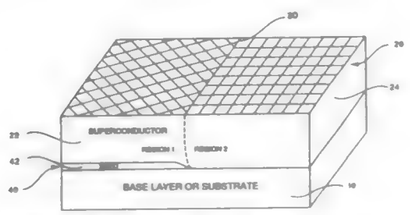
METHOD OF FORMING GRAIN BOUNDARY JUNCTIONS IN HIGH TEMPERATURE SUPERCONDUCTOR FILMS

Kookrin Char; Stephen M. Garrison, both of Palo Alto; Nathan Newman, Montara, all of Calif., and Gregory G. Zaharchuk, Hamilton Square, N.J., assignors to Conductus, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 672,664, Mar. 19, 1991, Pat. No. 5,157,466. This application Dec. 22, 1993, Ser. No. 119,133

Int. Cl.[5] H01L *39/22;* **H01B** *12/00;* **B05D** *5/06, 5/12*

U.S. Cl. 505—329 **34 Claims**



1. A method of fabricating a weak-link junction on a planar surface of a uniform substrate having a first region and a second region adjacent said first region and a border between said first region and said second region comprising:

(a) a first deposition step of depositing one or more intermediate layers of materials onto said substrate, at least one of said layers being a seed layer which overlies said first region only,

(b) a second deposition step of depositing a film of superconducting material over said substrate and said intermediate layers, said superconducting film in said first region having a different crystal orientation than said superconducting film in said second region,

whereby a weak-link junction is formed in said superconducting film by the mismatch in orientation along said border between the superconducting film in said first region and the superconducting film in said second region.

5,366,954

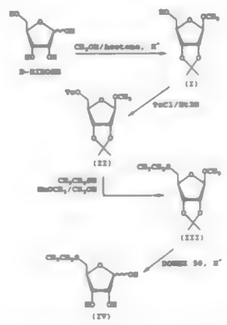
FLORAL PRESERVATIVE COMPRISING 5-DEOXY-5-ETHYLTHIO-D-RIBOSE AND METHOD OF USE

Richard K. Bestwick, Portland; Vijaya K. Mokkapati, Beaverton, and Adolph J. Ferro, Lake Oswego, all of Oreg., assignors to Epitope, Inc., Beaverton, Oreg.

Filed Sep. 15, 1992, Ser. No. 944,916

Int. Cl.[5] A01N *3/02*

U.S. Cl. 504—114 **5 Claims**



1. A method of extending bloom life of a cut flower comprising

providing a storage solution containing 5-deoxy-5-ethylthio-D-ribose, and

bathing the stem of a cut flower in the solution.

5,366,955

PYRIMIDONE DERIVATIVES AND THEIR USE

Eiki Nagano, Raleigh, N.C.; Susumu Takemura, Takarazuka, Japan; Masayuki Enomoto, Nishinomiya, Japan; Masaharu Sakaki, Toyonaka, Japan, and Satoru Kizawa, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

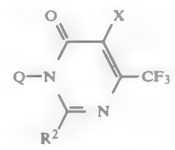
Filed Apr. 28, 1993, Ser. No. 53,399

Claims priority, application Japan, Apr. 28, 1992, 4-109860

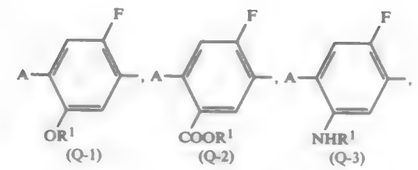
Int. Cl.[5] C07D *498/02, 403/04, 239/22;* **A61K** *31/505*

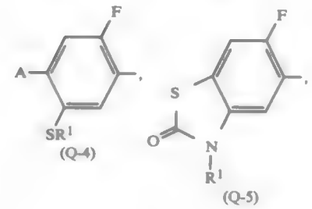
U.S. Cl. 504—225 **18 Claims**

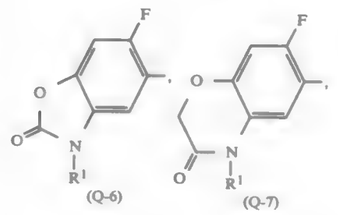
1. A compound of the formula:

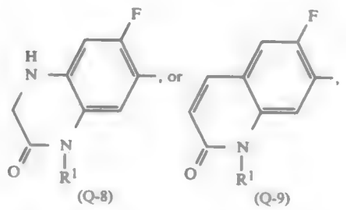


wherein R^2 is hydrogen or methyl; X is hydrogen, chlorine, methyl or ethyl; Q is of the formula:









A is fluorine, chlorine or bromine; and R^1 is alkyl, alkenyl, alkynyl, alkoxyalkyl or haloalkyl.

5,366,956

HERBICIDAL ACRYLONITRILE DERIVATIVES

Christopher J. Foster, Faversham; Terence Gilkerson, Canterbury, and Richard Stocker, Strood, all of England, assignors to Shell Research Limited, United Kingdom

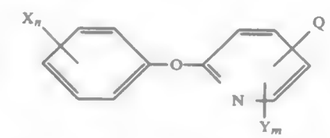
Continuation of Ser. No. 616,353, Nov. 21, 1990, abandoned. This application Mar. 1, 1993, Ser. No. 26,184

Claims priority, application United Kingdom, Dec. 18, 1989, 8928524.1

Int. Cl.[5] A01N *43/40;* **C07D** *213/643, 213/84*

U.S. Cl. 504—255 **10 Claims**

1. A compound of formula I



(I)

in which Q represents a group of formula —C(O)—C(CN)=CH—NR^1R^2 wherein R^1 and R^2 each independently represents a C_{1-6} alkyl group, m is 0 or an integer from 1 to 3, each Y independently represents a halogen atom or a C_{1-4} alkyl group, n is 0 or an integer from 1 to 5, and each X independently represents a halogen atom or a group selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, and cyano.

5,366,957

HERBICIDAL 4-ACYL-5-ARYL ISOXAZOLE DERIVATIVES

Paul A. Cain; Susan M. Crump, both of Ongar, England, and Claude Lambert, Lyon, France, assignors to Rhone-Poulenc Argriculture Ltd, Essex, England

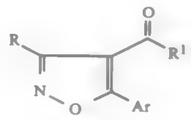
Filed Jul. 17, 1992, Ser. No. 913,914

Claims priority, application United Kingdom, Jul. 17, 1991, 9115377

Int. Cl.[5] A01N *43/80;* **C07D** *261/08, 261/12, 261/14*

U.S. Cl. 504—271 **45 Claims**

1. A compound of the formula



(I)

wherein:

Ar represents a phenyl radical substituted by from one to five R^2 groups;

R represents:

hydrogen, —CO_2R^3, —COR^4, cyano, halogen, or a straight- or branched-chain alkyl radical having up to 4 carbon atoms which is optionally substituted by one or more halogen atoms;

R^1 represents:

a straight- or branched-chain alkyl radical having up to 6 carbon atoms which is optionally substituted by one or more halogen atoms or by a cycloalkyl radical having from 3 to 6 carbon atoms; or

a cycloalkyl radical having from 3 to 6 carbon atoms optionally substituted by one or more R^4 groups or one or more halogen atoms;

each R^2 is independently selected from the group consisting of:

a halogen atom, R^4, nitro, —CO_2R^3, —OR^4, —$S(O)_mR^4$, —$S(O)_mR^5$, —O—$(CH_2)_p$—OR^4, and a straight- or branched-chain alkyl radical having up to 6 carbon atoms which is substituted by —OR^4;

R^3 and R^4, which may be the same or different, each represent:

a straight- or branched-chain alkyl radical having up to 6 carbon atoms which is optionally substituted by one or more halogen atoms;

R^5 represents a phenyl radical optionally substituted by from one to five groups selected from halogen, nitro, R^4 and —OR^4;

p represents an integer from 1 to 3; and

m represents zero, 1 or 2;

with the provisos that:

(a) when R represents hydrogen, R^1 is:

(1) a straight- or branched-chain alkyl radical having up to 6 carbon atoms substituted by a cycloalkyl radical having from 3 to 6 carbon atoms; or

(2) a cycloalkyl radical having from 3 to 6 carbon atoms optionally substituted by one or more R^4 groups or one or more halogen atoms; and

(b) when R and R^1 both represent methyl, Ar is not 2,3,4,5,6-pentamethylphenyl.

5,366,958

LOCALIZED DELIVERY USING FIBRONECTIN CONJUGATES

Alan L. Weiner, Plainsboro; Robert P. Lenk, Lambertville; Sharon S. Carpenter-Green, Cranbury, and Michael W. Fountain, Plainsboro, all of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 611,336, Nov. 9, 1990, abandoned, which is a continuation of Ser. No. 533,583, Sep. 19, 1983, abandoned. This application Aug. 20, 1993, Ser. No. 110,193

Int. Cl.[5] A61K *37/02, 9/127, 9/133;* **C07K** *7/02*

U.S. Cl. 514—2 **25 Claims**

1. A lipid vesicle, comprising a lipid bilayer and an entrapped aqueous compartment in which a component of the bilayer comprises a carboxyl-containing lipid directly attached to fibronectin via a peptide bond between a carboxyl group of the lipid and an amino group of the fibronectin, and in which the fibronectin is present in an amount of at least 0.1% by weight of the lipids in the lipid vesicle.

5,366,959

MIXTURES OF 2-(2-BORNYLOXY)-ETHYL-1-ETHANOLS AND PERFUMERY USES THEREOF

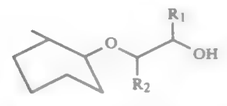
Richard M. Boden, Ocean; William L. Schreiber, Freehold; Joseph A. McGhie, South Orange, all of N.J., and Karen A. Geiger, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 10, 1993, Ser. No. 164,817

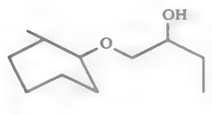
Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—19 **7 Claims**

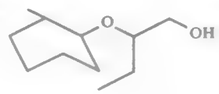
1. A mixture of 2-(2-bornyloxy)-ethyl-1-ethanols defined according to the structure:



wherein in the mixture one of R_1 or R_2 is ethyl and the other of R_1 or R_2 is hydrogen and wherein the weight ratios of the compounds in the mixture having the structures:



and



is 89:11, respectively.

5,366,960

METHOD OF TREATING CEREBRAL AND CARDIOVASCULAR DISORDERS EMPLOYING [R]3-(2-DEOXY-β-D-ERYTHRO-PENTOFURANOSYL)-3,6,7,8-TETRAHYDROIMIDAZ 0-[4,5-D][1,3]DIAZEPIN-8-OL

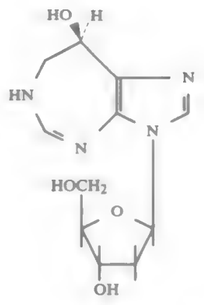
Kim Gallagher, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 26, 1993, Ser. No. 112,746

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—43 **9 Claims**

1. A method of reducing infarct formation in a mammal comprising administering to an individual in need thereof a therapeutically effective amount of a compound having the Formula I



or a pharmaceutically acceptable acid addition salt thereof as the sole pharmaceutically active ingredient.

5,366,961

PESTICIDAL PRODUCTS

Kevin J. Harrington, East Bentleigh, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU91/00360, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/03048, PCT Pub. Date Mar. 5, 1992

PCT Filed Aug. 13, 1991, Ser. No. 961,697

Claims priority, application Australia, Aug. 13, 1990, PK1700/90

Int. Cl.[5] A01N *25/32*

U.S. Cl. 514—53 **10 Claims**

1. A pesticidal material which comprises an inclusion compound or molecular complex of a pesticide and a host molecule, characterised in that the host molecule is a mono-, oligo- or poly-saccharide ester.

5,366,962

LOW CALORIE SWEETENER

Jacques Biton; Gerard Gellf, both of La Croix Saint Ouen; Jean-Marc Michel, Compiegne; Francois B. Paul, Toulouse, and Pierre F. Monsan, Blagnac, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 337,641, Apr. 13, 1989, Pat. No. 4,978,751. This application Oct. 9, 1990, Ser. No. 593,982

Claims priority, application France, Apr. 14, 1988, 88 04944

Int. Cl.[5] C07H *3/00;* **C08B** *37/00;* **A61K** *31/715*

U.S. Cl. 514—54 **8 Claims**

3. An improved dietetic product for use in a method for the reduction of the total daily energy intake in a human or animal subject which comprises at least one edible ingredient combined with a calorific sweetener; wherein the improvement comprise replacement of all or a part of the calorific sweetener with a fructosyl oligosaccharide; said fructosyl oligosaccharide having 3 to 8 carbohydrate units joined by beta bonds with the final carbohydrate unit being a fructose molecule and the remaining carbohydrate units being glucose molecules.

5,366,963

GANGLIOSIDES WITH IMMUNOSUPPRESSIVE CERAMIDE MOIETIES

Stephan Ladisch, Chevy Chase, Md., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 738,591, Jul. 31, 1991, abandoned. This application Feb. 23, 1993, Ser. No. 21,734

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—54 **8 Claims**

1. A composition for suppressing an immune response comprising:

a mixture of gangliosides which is more heterogeneous than human brain gangliosides, and/or which consists essentially of gangliosides having a carbohydrate moiety and a ceramide moiety, said ceramide moiety consisting of a long chain base portion and a fatty acid portion, wherein the majority of the fatty acid portions of the gangliosides in said mixture consist of a carbon chain having less than 18 carbon atoms; and

a physiologically acceptable carrier for said mixture of gangliosides.

5,366,964

VISCOELASTIC SOLUTION

Richard L. Lindstrom, 20050 Lakeview Ave., Excelsior, Minn. 55331, and Debra Skeinik, P.O. Box 758, Rte. 1, Cambridge, Minn. 55008

Division of Ser. No. 284,533, Dec. 15, 1988, Pat. No. 5,013,714. This application Nov. 13, 1989, Ser. No. 434,305

Int. Cl.[5] A61K *31/715*

U.S. Cl. 514—57 **1 Claim**

1. A viscoelastic solution consisting essentially of:

a. a buffered solution which is at least one of a buffered balanced salt solution (BSS), a HEPES buffered minimum essential medium (MEM), phosphate buffered saline (PBS) or tissue culture medium 199;

b. at least one of hydroxyprophyl methylcellulose, carboxypropyl methylcellulose, a cellulose gum, dextran or dextran sulfate;

c. chondroitin sulfate; and,

d. sodium hyaluronate;

the composition having a pH of 6.0–8.0 and an osmolality of 200–400 mOSmol/L.

5,366,965

REGIMEN FOR TREATMENT OR PROPHYLAXIS OF OSTEOPOROSIS

Klaus Strein, Hemsbach, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Jan. 29, 1993, Ser. No. 11,008

Int. Cl.[5] A61K *31/66*

U.S. Cl. 514—102 **12 Claims**

1. A method for the treatment of osteoporosis in a patient in need of such treatment, while minimizing the occurrence of patient gastrointestinal problems, said method comprising administering to said patient an effective amount of a bone resorption inhibiting polyphosphonate compound, or a physiologically acceptable salt or ester thereof, wherein the polyphosphonate compound is administered according to a schedule comprising at least two cycles, each said cycle comprising:

(a) an inhibiting period of from about 4 to about 90 days, during which the said polyphosphonate is administered intermittently to the patient, said inhibiting period being divided into at least two intermittent cycle drug administration periods of 2 days to about 14 days, with the drug being administered on only one day of each intermittent cycle drug administration period; and, thereafter,

(b) a rest period of from about 20 days to about 120 days.

5,366,966

COMPOUND UCE6

Hirofumi Nakano; Noboru Fujii; Yoshinori Yamashita; Youichi Uosaki; Shigeru Chiba, all of Tokyo; Shigeo Katsumata, and Yukari Tsuji, both of Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

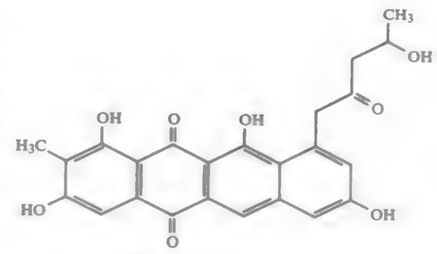
Filed Jun. 4, 1993, Ser. No. 70,962

Claims priority, application Japan, Jun. 10, 1992, 4-150854

Int. Cl.[5] C07C *15/38;* **C12P** *15/00*

U.S. Cl. 514—152 **2 Claims**

1. A compound represented by formula (I):



(I)

or a pharmaceutically acceptable salt thereof.

5,366,967

POTENTIATION OF THE ANTI-REACTIVE-ANTIASTHMATIC EFFECT OF INHALED LOOP DIURETICS BY INHALED NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Sebastiano Bianco, Milan, Italy, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 832,165, Feb. 6, 1992, abandoned. This application May 21, 1993, Ser. No. 65,450

Claims priority, application European Pat. Off., Feb. 9, 1991, 91101817.4

Int. Cl.[5] A61K *31/60, 31/62, 31/615, 31/16*

U.S. Cl. 514—59 **2 Claims**

1. A method of treating asthma, which comprises administering by inhalation to a host in need thereof a combination of furosemide and acetylsalicylic acid in an amount effective to treat asthma.

5,366,968

MODULATION OF RECEPTOR-MEDIATED ION TRANSPORT

David H. Farb, Cambridge, Mass., assignor to Trustees of Boston University, Boston, Mass.

Division of Ser. No. 758,129, Sep. 12, 1991, Pat. No. 5,212,167. This application Jan. 21, 1993, Ser. No. 7,068

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—178 **11 Claims**

1. A method for inhibiting non-NMDA glutamate receptor-mediated ion channel activity comprising contacting a neuronal cell with pregnenolone sulfate at a concentration of from about 1 to about 500 micromolar.

5,366,969

AMIDINE GROUP CONTAINING MONOCYCLOHETERACYCLIC OR BICYCLOHETEROCYCLIC DIPHOSPHONIC ACID DERIVATIVES AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Elmar Bosies, Weinheim, and Harald Zilch, Mannheim, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

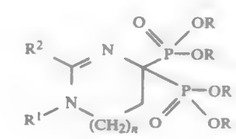
Filed Mar. 6, 1992, Ser. No. 829,019

Claims priority, application Germany, Sep. 9, 1989, 3930130

Int. Cl.[5] A61K *31/66;* **C07F** *9/38, 9/40*

U.S. Cl. 514—81 **9 Claims**

1. Compound of formula I:



(I)

wherein

R is hydrogen or C_1–C_4-alkyl, R^1 is hydrogen, C_1–C_6-alkyl, aryl, aryl-C_1–C_4-alkyl, amino-C_1–C_6-alkyl, C_1–C_6-alkylamino-C_1–C_4-alkyl, di-C_1–C_6 alkylamino-C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, or C_3–C_7-alkenyl; R^2 is R^1 or C_1–C_7-alkenyl, C_1–C_6-alkylmercapto, C_1–C_6-alkoxy, phenoxy-C_1–C_4-alkyl, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, morpholino, thiomorpholino, pyrrolidino, piperidino, hexamethyleneimino, pyrazolino, or imidazolino; or R^1 and R^2, together with carbon and the nitrogen atoms to which they are attached, form a heterocyclic ring selected from the group consisting of pyrroline, pyrazoline, imidazoline, triazoline, oxazoline, isoxazoline, thiazoline, isothiazoline, thiadiazoline, oxadiazoline, pyridine, pyrimidine, pyrazine, pyridazine, oxazine, thiazine, triazine, tetrazine, diazepine, azacycloheptane, azacycloheptene, azacycloheptadiene, oxaazacycloheptane, oxaazacycloheptene, oxaazacycloheptadiene, thiaazacycloheptane, thiaazacycloheptene and thiaazacycloheptadiene; and the annelated ring is optionally substituted by at least one of C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkyl-mercapto, hydroxyl, amino, nitro, halogen or halomethyl; and; n is 1;

and a pharmacologically acceptable salt thereof.

5,366,970

CEPHEM COMPOUNDS AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF

Kazuo Sakane, Kawanishi; Kohji Kawabata, Osaka, and Yoshiko Inamoto, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 714,995, Jun. 14, 1991, Pat. No. 5,173,485, which is a continuation of Ser. No. 317,981, Mar. 2, 1989, abandoned. This application Sep. 2, 1992, Ser. No. 939,943

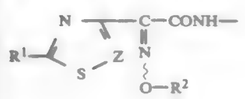
Claims priority, application United Kingdom, Mar. 9, 1988, 88005642; Philippines, Feb. 27, 1989, 38249

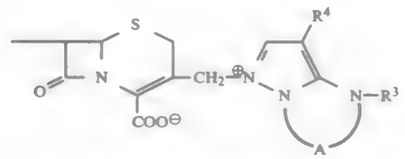
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.

Int. Cl.[5] C07D *501/46;* A61K *31/545*

U.S. Cl. 514—202 **19 Claims**

1. A compound of the formula:





wherein R^1 is amino or a protected amino group,

R^2 is selected from the group consisting of lower alkyl, mono (or di or tri) halo(lower)alkyl, lower alkenyl, lower alkynyl, aryl, ar(lower)alkyl, carboxy(lower)alkyl and protected carboxy(lower) alkyl,

R^3 is hydrogen, lower alkyl, hydroxy(lower)alkyl, protected hydroxy(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl or an imino protective group,

R^4 is hydrogen, lower alkyl or lower alkylthio,

A is lower alkylene which may be substituted with oxo, hydroxy or protected hydroxy and

Z is N or CH, or a pharmaceutically acceptable salt thereof.

5,366,971

USE OF 11,28-DIOXA-4-AZATRICYCLO[22.3.1.0^{4,9}]OCTACOS-18-ENE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Maximilian Grassberger, Vienna; Josef G. Meingassner, Perchtoldsdorf; Anton Stütz, and Peter Stütz, both of Vienna, all of Austria, assignors to Sandoz Ltd., Basel, Switzerland

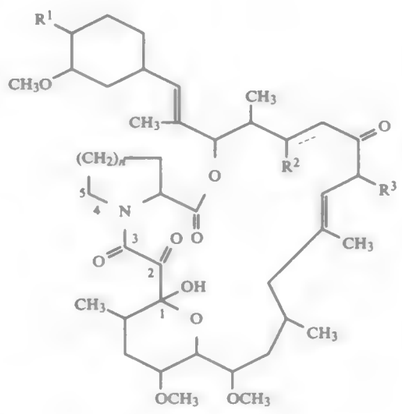
Continuation of Ser. No. 608,430, Nov. 2, 1990, abandoned, which is a continuation of Ser. No. 268,114, Nov. 7, 1988, abandoned. This application Nov. 30, 1992, Ser. No. 982,925

Claims priority, application Austria, Nov. 9, 1987, A2952/87; Germany, Dec. 17, 1987, 3742805

Int. Cl.[5] A61K *31/44, 31/40*

U.S. Cl. 514—291 **3 Claims**

1. A method of topically treating psoriasis in a mammal in need of said treatment, which comprises administering topically to said mammal in an amount effective for the treament of psoriasis a compound of formula I:



I

wherein

R^1 is optionally protected hydroxy,

R^2 is hydrogen or optionally protected hydroxy,

R^3 is methyl, ethyl, propyl or allyl,

n is 1 or 2 and

the symbol of a line and dotted line is a single bond or a double bond,

in free form or in pharmacuetically acceptable salt form.

5,366,972

5,11-DIHYDRO-6H-DIPYRIDO(3,2-B:2',3'-E(1,4)DIAZEPINES AND THEIR USE IN THE PREVENTION OR TREATMENT OF HIV INFECTION

Karl D. Hargrave, Brookfield; John R. Proudfoot, Newtown; Julian Adams; Karl G. Groninger, both of Ridgefield, all of Conn.; Gunther Schmidt, deceased, late of Munich, Germany by Margaret Schmidt, legal representative ; Wolfhard Engel, Biberach, Germany; Gunther Trummlitz, Warthausen, Germany, and Wolfgang Eberlein, Biberach, Germany, assignors to Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, Conn.

Continuation of Ser. No. 740,828, Aug. 5, 1991, abandoned, which is a continuation-in-part of Ser. No. 600,390, Oct. 19, 1990, abandoned, which is a continuation-in-part of Ser. No. 579,001, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 438,923, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 372,974, Jun. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 340,970, Apr. 20, 1989, abandoned. This application Jul. 13, 1993, Ser. No. 91,418

Int. Cl.[5] A61K *31/55;* C07D *471/14*

U.S. Cl. 514—220 **3 Claims**

1. 11-Cyclopropyl-5,11-dihydro-4-methyl-6H-dipyrido[3,2-b:2',3'-e][1,4]diazepin-6-one, or a pharmaceutically acceptable salt thereof.

2. A method for treating HIV-1 infection which comprises administering to a human being infected by HIV- 1 a therapeutically effective amount of 11-cyclopropyl-5,11-dihydro-4-methyl-6H-dipyrido[3,2-b:2',3'-e][1,4]diazepin-6-one or a pharmaceutically acceptable salt thereof.

5,366,973

MERCAPTOACETYLAMIDO PYRIDAZO [1,2]PYRIDAZINE, PYRAZOLO[1,2]PYRIDAZINE PYRAZOLO[1,2]PYRIDAZINE, PYRIDAZOL[1,2-A][1,2]DIAZEPINE AND PYRAZOLOL[1,2-A][1,2]DIAZEPINE

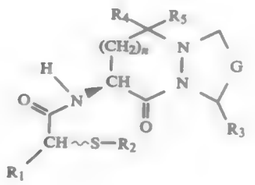
Gary A. Flynn, Cincinnati, Ohio, and Patrick W. Shum, West Chester, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 40,003, Apr. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 884,963, May 15, 1992, abandoned. This application Nov. 3, 1993, Ser. No. 146,857

Int. Cl.[5] C07D *487/04;* A61K *31/50, 31/415*

U.S. Cl. 514—221 **31 Claims**

1. A compound of the Formula



wherein

G represents a methylene, ethylene or vinylene group;

R_1 represents a hydrogen, C_1–C_8 alkyl, —$CH_2OCH_2CH_2OCH_3$ or an Ar—Y— group wherein Ar is a phenyl or naphthyl group unsubstituted or substituted with from one to three substitutents selected from the gorup consisting of methylenedioxy, hydroxy, C_1–C_4 alkoxy, amino, nitro, fluoro and chloro and Y is a saturated straight or branched chain hydrocarbyl radical of zero to four carbon atoms;

R_2 represents a hydrogen, acetyl, —CH_2O—$C(O)C(CH_3)_3$ or benzoyl;

R_3 represents a carboxyl, alkoxycarbonyl or an Ar—Y—O carbonyl group;

R_4 and R_5 each represent a hydrogen atom or R_4 and R_5 together represent an oxo group;

n stands for zero, 1 or 2, and

pharmaceutically acceptable salts and individual optical isomers thereof.

5,366,974

Patent Not Issued For This Number

5,366,975

INVERTEBRATE PHENYLETHANOLAMINE TRANSPORTER AND THE USE THEREOF

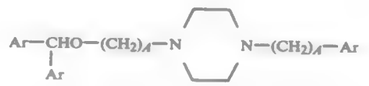
James A. Nathanson, Wellesley, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 814,877, Jan. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 721,322, Jul. 1, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,698

Int. Cl.[5] A01N *43/60*

U.S. Cl. 514—255 **4 Claims**

1. A method of controlling an invertebrate pest, comprising contacting said post with an effective pest-controlling amount of a 1,4-disubstituted piperazine having the formula



wherein:

Ar is independently phenyl which can be substituted by halogen, CF_3, C_1–C_6 alkoxy, C_2–C_6 dialkoxymethyl, C_1–C_6alkyl, cyano, C_3–C_{15} dialkylaminoalkyl, carboxy, carboxamido, C_1–C_6 haloalkyl, C_1–C_6 haloalkylthio, allyl, C_3–C_6cycloalkyl, C_2–C_6 acyl, C_1–C_6 alkylthio, C_1–C_6 alkylsulfonyl, C_1–C_6 haloalkylsulfonyl, C_1–C_6 alkylsulfinyl, C_1–C_6 haloalkylsulfinyl, C_1–C_6 haloalkoxy, amino, C_1–C_6 alkylamino, C_2–C_{15} dialkylamino, hydroxy, carbamoyl, C_1–C_6 N-alkylcarbamoyl, C_2–C_{15} N,N-dialkylcarbamoyl, nitro and C_2–C_{15} dialkylsulfamoyl; and

A is independently 1 to 6.

5,366,976

NITRO-SUBSTITUTED HETEROCYCLIC COMPOUNDS

Kozo Shiokawa, Kanagawa; Shinichi Tsuboi, Toyko; Shoko Sasaki, Tokyo; Koichi Moriya, Tokyo; Yumi Hattori, Tokyo, and Katsuhiko Shibuya, Tokyo, all of Japan, assignors to Nihon Bayer Agrochem K.K., Tokyo, Japan

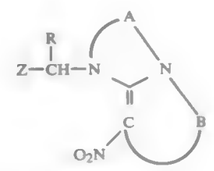
Division of Ser. No. 998,337, Dec. 30, 1992, Pat. No. 5,290,779, which is a division of Ser. No. 823,240, Jan. 21, 1992, Pat. No. 5,231,098, which is a division of Ser. No. 699,068, May 13, 1991, Pat. No. 5,122,527, which is a division of Ser. No. 510,509, Apr. 18, 1990, Pat. No. 5,036,082, which is a division of Ser. No. 353,370, May 17, 1989, Pat. No. 4,960,780, which is a division of Ser. No. 208,421, Jun. 17, 1988, Pat. No. 4,876,263. This application Sep. 27, 1993, Ser. No. 126,950

Claims priority, application Japan, Jun. 26, 1989, 62-157528

Int. Cl.[5] A01N *43/90*; C07D *487/04, 513/04*

U.S. Cl. 514—258 4 Claims

1. A nitro-substituted heterocyclic compound of the formula (I):



(I)

wherein

R represents hydrogen or C_{1-4}-alkyl;

Z represents C_{6-10}-aryl, or a 5- to 6-membered heterocyclic group containing 1 to 2 hetero atoms selected from the group consisting of O, S and N, at least one of which is a nitrogen atom, and said aryl and heterocyclic group is unsubstituted or substituted by a member selected from the group consisting of halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-haloalkyl, C_{1-4}-alkylthio, C_{1-4}-haloalkoxy, C_{1-4}-haloalkylthio, nitro and cyano;

A represents unsubstituted propylene or propylene substituted by methyl; and

B represents 2 members of a heterocyclic ring which is formed, together with the adjacent C-atom and N-atom, and at least one of said members represents a nitrogen atom or a sulfur atom and the members of B are unsubstituted or substituted by at least one substituent selected from the group consisting of halogen, C_{1-6}-alkyl, C_{1-4}-alkoxy, alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy part, unsubstituted or substituted C_{6-10}-aryl, keto, imino, phenoxy, C_{1-4}-alkylthio, alkoxycarbonylimino having 1 to 4 carbon atoms in the alkoxy part, phenoxycarbonylimino, benzoylimino, benzyl, cyano, thioketo, hydroxy and C_{1-2}-alkylidene.

5,366,977

METHOD OF TREATING CYSTIC FIBROSIS USING 8-CYCLOPENTYL-1,3-DIPROPYLXANTHINE OR XANTHINE AMINO CONGENERS

Harvey B. Pollard, Potomac; Philip J. M. van Galen, Rockville, and Kenneth A. Jacobson, Silver Spring, all of Md., assignors to The United States of America, as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 29, 1992, Ser. No. 952,965

Int. Cl.[5] A61K *31/52, 31/505*

U.S. Cl. 514—263 14 Claims

1. A method of treating cystic fibrosis in a mammal in need of such treatment, which method comprises administering a therapeutically effective amount to said mammal of 8-cyclopentyl-1,3-dipropylxanthine or xanthine amino congener.

5,366,978

TREATMENT FOR KAWASAKI DISEASE

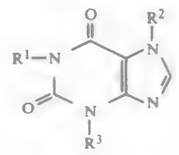
Susumu Furukawa, and Tomoyo Matsubara, both of Tokyo, Japan, assignors to MK Medical Ltd., Tokyo, Japan

Filed Nov. 3, 1993, Ser. No. 145,137

Int. Cl.[5] A61K *31/52*

U.S. Cl. 514—263 4 Claims

1. A treatment for Kawasaki disease, which comprises administering an amount effective to prevent coronary lesions, of a xanthine derivative represented by the general formula (1):



(1)

wherein at least one of R^1, R^2 and R^3 means a group expressed by $CH_3CO(CH_2)_n$—, in which n stands for a number of 1–5, and the remaining groups denote individually an alkyl group having 1–6 carbon atoms.

5,366,979

ORALLY ACTIVE NONADDICTING ANALGESICS

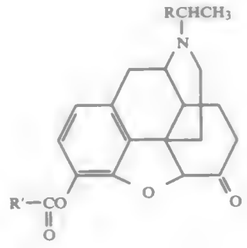
John A. Lawson, Fremont, Calif., assignor to Pharmaco Development Partners, Menlo Park, Calif.

Filed Jun. 7, 1990, Ser. No. 534,702

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—282 24 Claims

1. A pharmaceutical composition comprising, in combination with a pharmacologically acceptable excipient, an analgetically effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein:

R is cyclopropyl or cyclobutyl; and

R′ is C_1–C_{10} aliphatic, phenyl or 2-pyridyl.

5,366,980

USE OF DEXTROMETHORPHAN AND AN OXIDASE INHIBITOR TO TREAT DERMATITIS

Richard A. Smith, 7569 Cabrillo Ave., La Jolla, Calif. 92037

Continuation-in-part of Ser. No. 896,053, Jun. 9, 1992, abandoned, which is a continuation-in-part of Ser. No. 859,105, Mar. 27, 1992, Pat. No. 5,206,248, and Ser. No. 717,424, Jun. 17, 1991, Pat. No. 5,166,207. This application Sep. 2, 1993, Ser. No. 114,845

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—289 5 Claims

1. A method of treating dermatitis in humans, comprising administering to a patient suffering from dermatitis which does not respond adequately to non-prescription drugs a therapeutically effective quantity of a drug selected from the group consisting of:

(a) dextromethorphan, and

(b) pharmaceutically acceptable salts and analogs of dextromethorphan which are effective in treating dermatitis.

5,366,981

N-ACYL-SUBSTITUTED AZACYCLIC COMPOUNDS, PROCESSES FOR THEIR PREPARAION, AND THEIR USE AS PHARMACEUTICALS

Vittorio Vecchietti; Roberto Colle; Giulio Dondio, and Giuseppe Giardina, all of Milan, Italy, assignors to Dr Lo Zambeletti S.p.A., Milan, Italy

PCT No. PCT/EP90/01961, § 371 Date May 22, 1992, § 102(e) Date May 22, 1992, PCT Pub. No. WO91/08205, PCT Pub. Date Jun. 13, 1991

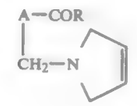
PCT Filed Nov. 14, 1990, Ser. No. 859,389

Claims priority, application United Kingdom, Nov. 24, 1989, 8926560

Int. Cl.[5] C07D *401/06, 495/04*; A61K *31/47, 31/445*

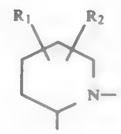
U.S. Cl. 514—301 13 Claims

1. A compound, or a solvate or salt thereof, of the formula (I):

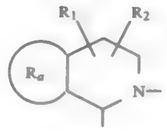


(I)

wherein



or

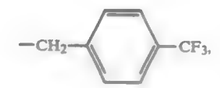


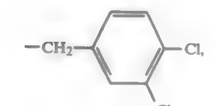
A is

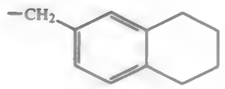
R_1 and R_2 are simultaneously hydrogen, or are both C_{1-6}alkyl groups on the same carbon atom;

R_a comprises a substituted or unsubstituted phenyl or thienyl group; and

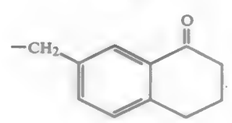
R is selected from







and



5,366,982

SUBSTITUTED BICYCLIC BIS-ARYL COMPOUNDS EXHIBITING SELECTIVE LEUKOTRIENE B_4 ANTAGONIST ACTIVITY, THEIR PREPARATION AND USE IN PHARMACEUTICAL COMPOSITIONS

Norbert Dereu, Viry-Chatillon, France; Wolfram Hendel, Leonding, Austria, and Richard Labaudiniere, Vitry-sur-Seine, France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/EP91/01341, § 371 Date Feb. 17, 1993, § 102(e) Date Feb. 17, 1993, PCT Pub. No. WO92/01675, PCT Pub. Date Feb. 6, 1992

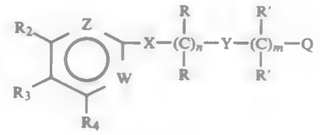
PCT Filed Jul. 18, 1991, Ser. No. 966,151

Claims priority, application France, Jul. 24, 1990, 90 09453

Int. Cl.[5] A61K *31/44*; C07D *213/62, 213/64, 401/12*

U.S. Cl. 514—340 13 Claims

1. A compound of the formula:



where

m is 1–8, n is 0–8 and n+m is 3–8;

X is S, O, NR″, CR′R′, CR′═CR′, CO—NR″, NR″—CO, CHR′—O or a bond;

Y is S, O, NR″, CR′R′, CR′═CR′, CO—NR″, NR″—CO, CO or CR′—OH;

W and Z are independently CR′ or N provided that one of W or Z is CR′ and the other;

R and R′ are independently R_1 or R_1–C_{1-6} loweralkyl;

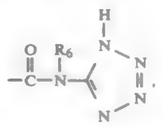
R″ is hydrogen, C_{1-6}alkyl or aralkyl;

R_1 is hydrogen, C_{1-6}alkyl, C_{2-6}alkenyl, cyclopropyl, aralkyl, phenyl, hydroxy, alkoxy, aryloxy, aralkoxy, acyl, halo, amino, mono- and di-C_{1-6}alkyl-amino, aralkylamino, acylamino, carboxy, carbalkoxy, carbamyl or mono- and di-C_{1-6}alkylcarbamyl;

R_2, R_3 and R_4 are independently R_1, R_1-C_{1-6}loweralkyl- or an optionally substituted phenyl provided further that at least one of R_2, R_3 and R_4 is said phenyl;

R_4 also may be X_1-$(CH_2)_r$-R_3 provided that R_3 is phenyl, X_1 is S, O, NR'', CR'R' or CO and t is 1–4; and

Q is $COOR_6$, COOM, $CONR_7R_7$, CN, $CONHSO_2R_6$, tetrazolyl or tetrazolyl substituted with alkyl, carboxyalkyl or carbalkoxyalkyl and



where R_6 is hydrogen, C_{1-6}alkyl or aralkyl, R_7 is hydrogen, C_{1-6}alkyl, aralkyl or cycloalkyl, M is a metal or ammonia salt, and R_7, and R_7 together form a 3–6 membered ring provided that R_7, is hydrogen when R_2 and R_3 together or R_3 and R_4 together form a fused ring and $n+m<5$; or a pharmaceutically acceptable salt thereof.

5,366,983

USE OF QUATERNARY AMMONIUM COMPOUNDS TO REMOVE SALMONELLA CONTAMINATION FROM MEAT PRODUCTS

Danny L. Lattin; Philip J. Breen; Cesar M. Compadre, all of Little Rock; E. Kim Fifer, North Little Rock; Michael F. Slavik, Springdale; Hamid Salari, Little Rock, and Phillip V. Engler, Fayetteville, all of Ark., assignors to The Board of Trustees of The University of Arkansas, Little Rock, Ark.

Filed Apr. 3, 1992, Ser. No. 863,445

Int. Cl.[5] A01N *43/40*

U.S. Cl. 514—358 **18 Claims**

1. A method for removing Salmonella contamination from meat products during processing, comprising the step of:

treating a meat product with an effective amount of a quaternary ammonium compound in an aqueous solution to remove Salmonella contamination.

5,366,984

METHYL α-ARYLACRYLATES SUBSTITUTED BY A HETEROCYCLIC RADICAL AND THEIR USE

Franz Schuetz, Ludwigshafen; Hans-Juergen Neubauer, Muenster-Hiltrup; Thomas Kuekenhoehner, Frankenthal; Ulrich Schirmer, Heidelberg; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt, and Uwe Kardorff, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 94,580, Jul. 16, 1993, Pat. No. 5,294,628, which is a division of Ser. No. 921,765, Jul. 30, 1992, Pat. No. 5,250,553, which is a division of Ser. No. 701,019, May 13, 1991, Pat. No. 5,166,216, which is a continuation of Ser. No. 418,664, Oct. 10, 1989. This application Dec. 3, 1993, Ser. No. 160,836

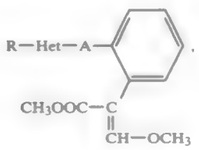
Claims priority, application Germany, Oct. 27, 1988, 3836581

Int. Cl.[5] A01N *43/76, 43/78, 43/82;* **C07D** *263/32*

U.S. Cl. 514—361 **8 Claims**

1. Methyl α-arylacrylates substituted by a heterocyclic radical and having the general formula

(I)



where R is C_1–C_8-alkyl, C_2–C_8-alkenyl, C_1–C_4-haloalkyl, C_3–C_6 -cycloalkyl, C_1–C_4-alkoxy, C_1–C_4-alkylcarbonyl, C_1–C_4-alkoxycarbonyl, halogen or aryl, the aromatic ring being unsubstituted or substituted by C_1–C_8-alkyl, C_3–C_6-cycloalkyl, C_1–C_2-haloalkyl, C_1–C_4-alkoxy, halogen, cyano or nitro, Het is selected from the group consisting of pyrrolyl, N-methypyrazolyl, imidazolyl, 1,2,4-triazolyl, 1-N-methyl-1,2,4-triazolyl, furyl, oxazolyl, thienyl, thiazolyl, isothiazolyl, 1,3,4-thiadiazolyl and 1,2,4-thiadiazolyl, which is unsubstituted or substituted by methyl at a nitrogen atom, and is bonded to A via a carbon atom, and A is ethenylene, ethylene, methyleneoxy or methylenethio.

5,366,985

METHOD FOR PREPARATION OF AN AQUEOUS SUSPENSION

Hisayuki Nakayama; Kazumichi Ushio, both of Nishinomiya, and Katsuhiro Inada, Osaka, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP91/00932, § 371 Date Nov. 16, 1992, § 102(e) Date Nov. 16, 1992, PCT Pub. No. WO92/17174, PCT Pub. Date Oct. 15, 1992

PCT Filed Jul. 11, 1991, Ser. No. 946,443

Claims priority, application Japan, Mar. 27, 1991, 3-062909

Int. Cl.[5] A61K *31/425*

U.S. Cl. 514—369 **9 Claims**

9. An aqueous ophthalmic preparation for topical application having a pH value of not higher than 7 and which comprises an aqueous suspension of finely divided 5-(3-ethoxy-n-pentyloxyphenyl)thiazolidine-2,4-dione having a particle diameter of not greater than 10 μm and at least one water-soluble macromolecular compound selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, hydroxypropylmethylcellulose, methylcellulose and hydroxyethylcellulose.

5,366,986

COMPOUNDS WHICH INHIBIT COMPLEMENT AND/OR SUPPRESS IMMUNE ACTIVITY

Robert D. Sindelar, Oxford, Miss.; Bartow J. Bradbury, West Chester, Ohio; Teodoro S. Kaufman, Rosario, Argentina; Stephen H. Ip, Sudbury; Henry C. Marsh, Jr., Reading, both of Mass., and Chew Lee, Oxford, Miss., assignors to T Cell Sciences, Inc., Cambridge, Mass. and The University of Mississippi, University, Miss.

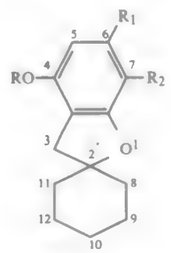
Continuation-in-part of Ser. No. 182,275, Apr. 15, 1988, Pat. No. 5,173,499. This application Dec. 6, 1990, Ser. No. 623,849

Int. Cl.[5] A61K *31/42, 31/41;* **C07D** *307/94*

U.S. Cl. 514—374 **30 Claims**

1. A compound of the general formula, 4:

4



in which R represents a hydrogen atom, a lower alkyl group having more than 2 carbon atoms, a substituted lower alkyl group, a benzyl group, a substituted benzyl group, a phenyl group or a substituted phenyl group; R_1 represents a carboxylic acid group or a bioisosteric acid group selected from the group consisting of carbamoyl group, sulfamoyl group, an N-acylcarbomoyl group and a tetrazole ring or a bioisosteric base group; R_2 represents a formyl group or a bioisosteric neutral group; or a pharmaceutically acceptable acid or base addition salt or ester thereof.

5,366,987

ISOXAZOLYL-SUBSTITUTED ALKYL AMIDE ACAT INHIBITORS

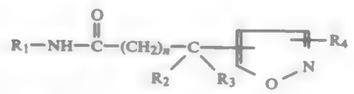
Helen T. Lee, Ann Arbor; Patrick M. O'Brien, Stockbridge; Joseph A. Picard, Ypsilanti; Claude F. Purchase, Jr.; Bruce D. Roth, both of Ann Arbor; Drago R. Sliskovic, Ypsilanti, and Andrew D. White, Lakeland, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 913,643, Jul. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 748,568, Aug. 22, 1991, abandoned. This application Feb. 18, 1993, Ser. No. 19,411

Int. Cl.[5] A61K *31/42;* **C07D** *261/08*

U.S. Cl. 514—378 **12 Claims**

1. A compound of the formula



wherein n is 0, 1, or 2;

R_1 is selected from:

(a) phenyl which is unsubstituted or is substituted with from one to three substituents selected from:

alkyl having from one to four carbon atoms and which is straight or branched,

alkoxy having from one to three carbon atoms and which is straight or branched,

alkylthio having from one to three carbon atoms and which is straight or branched,

hydroxy,

phenyl,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from one to four carbon atoms and which is straight or branched,

$-(CH_2)_mNR_5R_6$ wherein m is 0 or 1, and each of R_5 and R_6 is hydrogen or a straight or branched alkyl group having one to four carbon atoms;

(b) 1- or 2-naphthyl which is unsubstituted or substituted with one to three substituents selected from:

alkyl having from one to four carbon atoms and which is straight or branched,

alkoxy having from one to three carbon atoms and which is straight or branched,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

cyano,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from one to four carbon atoms and is straight or branched,

$-(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;

R_2 and R_3 are the same or different and are selected from:

(a) hydrogen;

(b) a straight or branched alkyl group having from one to 12 carbon atoms, or a cycloalkyl group having from three to eight carbon atoms;

(c) a phenyl or phenylalkyl group where alkyl is from one to four carbon atoms and which the phenyl ring is unsubstituted or substituted with from one to three substituents selected from straight or branched alkyl having from one to four carbon atoms, straight or branched alkyl alkoxy having from one to four carbon atoms, alkythio, straight or branched having one to four carbon atoms, hydroxy, fluorine, chlorine, bromine, trifluoromethyl, cyano, nitro, phenyl, cycloalkyl, or $(CH_2)_mNR_5R_6$ wherein m, R_5, and R_6 have the meanings defined above;

(d) a straight or branched alkenyl group having from two to six carbon atoms;

R_4 is a straight or branched hydrocarbon chain having from one to 20 carbon atoms and is saturated or is unsaturated and has one double bond or has two nonadjacent double bonds or is alkyl substituted with trifluoromethyl, phenyl; is alkoxy having one to 20 carbon atoms and is saturated or unsaturated and has one double bond or has two nonadjacent double bonds; is alkylthio having one to 20 carbon atoms and is saturated; or a pharmaceutically acceptable salt or individual enantiomeric isomer; thereof.

5,366,988

BENZOHYDROXIMOYLAZOLE DERIVATIVES AND INSECTICIDE INCLUDING THE SAME

Keiji Toriyabe; Takayoshi Takehi, both of Shizuoka; Yukio Neza, Fujieda; Yuki Nakano, Shizuoka, and Tomonori Shimazu, Hamamatsu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP91/01614, § 371 Date Jul. 28, 1992, § 102(e) Date Jul. 28, 1992, PCT Pub. No. WO92/09581, PCT Pub. Date Jun. 11, 1992

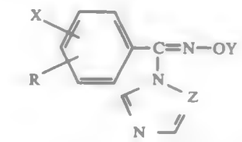
PCT Filed Nov. 25, 1991, Ser. No. 915,817

Claims priority, application Japan, Nov. 29, 1990, 2-331896; Jun. 5, 1991, 3-159834

Int. Cl.[5] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 514—383 **13 Claims**

1. A benzohydroximoylazole compound having the formula:



wherein R is a branched C_{5-8} alkyl group, a fluorine-substituted C_{2-6} alkyl group, a branched C_{3-7} alkoxy group, a halogen-substituted C_{3-7} alkoxy group, a C_{3-7} cycloalkyl group, a C_{4-7} cycloalkylmethyl group which may be substituted with one or two methyl groups, a trimethylsilylethyl group, a silyl C_{1-2} alkoxy group which is trisubstituted with, independently, methyl, ethyl, chloromethyl or vinyl groups, a C_{3-6} cycloalkoxy group which may be substituted with one or two methyl groups, a butylthio group, a halogen-substituted C_{4-5} alkoxymethyl group, a C_{5-6} alkenyl group, a C_6 alkynyl group, or a halogen-substituted vinyloxy group;

X is a hydrogen atom, a chlorine atom or a fluorine atom;

Y is a C_{1-4} alkyl group; and

Z is a nitrogen atom.

5,366,989

TRIAZOLE DERIVATIVES AND SALTS THEREOF AND ANTIFUNGAL AGENT CONTAINING THE SAME

Hiroyuki Imaizumi, Toyama; Tetsuya Kajita, Takaoka; Kenichi Takashima, Oyabe; Misako Yotsuji, Toyama; Keiko Takakura, Toyama; Akira Yotsuji, Toyama; Junichi Mitsuyama, Toyama; Katsumi Shimizu, Toyama; Hiroshi Sakai, Takaoka, and Hirokazu Narita, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

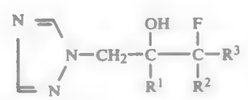
Filed Dec. 8, 1992, Ser. No. 986,800

Claims priority, application Japan, Dec. 9, 1991, 3-350318; Oct. 8, 1992, 4-293961

Int. Cl.[5] A01N *43/653;* C07D *249/08*

U.S. Cl. 514—383 21 Claims

1. A triazole derivative represented by the formula (1) or its salt:



(1)

wherein R^1 represents a substituted or unsubstituted phenyl or naphthyl group; R^2 represents a fluorine atom; and R^3 represents a group of the formula



in which R^4 is a group of the formula



(R^7 and R^8, which may be the same or different, are hydrogen atoms or substituted or unsubstituted C_{1-10} alkyl, C_{2-10} alkenyl, C_{2-10} alkynyl, C_{3-8} cycloalkyl, phenyl, naphthyl, amino, C_{1-10} alkoxy or hydroxyl groups), wherein the phenyl and naphthyl groups for R^1; the C_{1-10} alkyl group for R^2; and the C_{1-10} alkyl, C_{1-10} alkenyl, C_{2-10} alkynyl, C_{3-8} cycloalkyl, phenyl, naphthyl, amino, C_{1-10} alkoxy and hydroxy groups for R^7 and R^8 may each be substituted by at least one substituent selected from the group consisting of halogen atoms, unsubstituted or cyano-substituted C_{1-4} alkyl groups, C_{1-4} alkoxy groups, halo-C_{1-4} alkoxy groups, C_{1-4} alkylthio groups, C_{1-4} alkoxycarbonyl groups, hydroxyl group, mercapto group, carboxyl group, amino group, N—C_{1-4} alkylamino groups, N,N-di-C_{1-4} alkylamino groups, cyano group, nitro group, halo-C_{1-4} alkyl groups, unsubstituted or halogen-substituted phenyl groups, unsubstituted or halogen-substituted naphthyl groups, unsubstituted or halogen-substituted formyl groups, unsubstituted or halogen-substituted C_{2-10} alkanoyl groups unsubstituted or halogen-substituted benzoyl groups and unsubstituted or C_{1-10} alkyl-, C_{3-8} cycloalkyl-, phenyl- or naphthyl-substituted carbamoyl groups.

5,366,990

METHOD FOR TREATING ALCOHOL ABUSE AND ALCOHOLISM

Larry D. Reid, 65 23rd St., Troy, N.Y. 12180

Filed Nov. 14, 1991, Ser. No. 792,237

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—397 12 Claims

1. A method for decreasing appetite for alcohol in humans which comprises administering to said humans an effective dosage of methoxyidazoxan.

5,366,991

PYRAZOLECARBOXAMIDES EXHIBITING INSECTICIDE AND ACARICIDE ACTIVITY

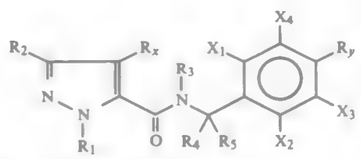
Franco Bettarini; Luigi Capuzzi; Piero La Porta, all of Novara; Sergio Massimini, Milan; Franca Reggiori, Novara, and Giovanni Meazza, Saronno, all of Italy, assignors to Eni Chem Synthesis S.p.A., Palermo, Italy

Filed Sep. 27, 1993, Ser. No. 127,622

Int. Cl.[5] A01N *43/56;* C07D *231/14*

U.S. Cl. 514—406 8 Claims

1. 5-pyrazolecarboxylic acid amide-bused compounds of general formula (I):



(I)

in which:

R_1 represents a hydrogen atom, a linear or branched C_1–C_4 alkyl group or a benzyl group;

R_2 represents a hydrogen atom or a linear or branched C_1–C_4 alkyl group;

R_x represents a hydrogen atom, a halogen, atom or a linear or branched C_1–C_4 alkyl or haloalkyl group; or R_2 and R_x together represent an



group in which R represents a hydrogen atom or a C_1–C_3 alkyl group and n is a whole number between 1 and 2;

R_3, R_4, R_5 represent, each independently, a hydrogen atom or a linear or branched C_1–C_4 alkyl group;

X_1, X_2, X_3 and X_4 represent, each independently, a hydrogen atom or a halogen atom;

R_y represents a linear or branched C_3–C_6 haloalkoxyhaloalkoxy or haloalkoxyhaloalkylthio group, or a linear or branched C_3–C_6 haloalkoxyhaloalkenyl group.

5,366,992

BENZOIC ACID SUBSTITUTED DERIVATIVES HAVING CARDIOVASCULAR ACTIVITY

Alberto Sala; Aldo Banfi; Francesca Benedini, and Roberta Cereda, all of Milan, Italy, assignors to Italfarmaco S.p.A., Milan, Italy

PCT No. PCT/EP91/01326, § 371 Date Jan. 19, 1993, § 102(e) Date Jan. 19, 1993, PCT Pub. No. WO92/01668, PCT Pub. Date Feb. 6, 1992

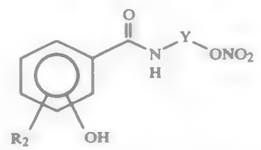
PCT Filed Jul. 15, 1991, Ser. No. 966,078

Claims priority, application Italy, Jul. 26, 1990, 21075 A/90

Int. Cl.[5] A61K *31/21;* C07C *203/04*

U.S. Cl. 514—409 3 Claims

1. A compound of the formula IX



(IX)

wherein

Y is an ethylene or a C_3–C_6 straight or branched alkylene, or a cyclopentylene, cyclohexylene or cycloheptylene group; and

R_2 is hydrogen, hydroxy, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, trifluoromethyl, sulfo, nitro, amino, or mono- or di-C_{1-4} alkylamino.

5,366,993

TETRONIC, THIOTETRONIC AND TETRAMIC ACID DERIVATIVES AS PHOSPHOLIPASE A_2 INHIBITORS

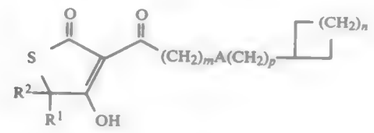
Guy A. Schiehser, Yardley, Pa.; Craig E. Caufield; Nancie A. Senko, both of Plainsboro, N.J., and Gregory F. VonBurg, Princeton, N.J., assignors to American Home Products Corporation, Madison, N.J.

Continuation-in-part of Ser. No. 874,928, Apr. 28, 1992, abandoned. This application Jun. 3, 1993, Ser. No. 71,627

Int. Cl.[5] C07D *333/16;* A61K *31/38*

U.S. Cl. 514—445 8 Claims

2. A method for treating immunoinflammatory conditions in mammals which comprises administering to a mammal so afflicted an effective amount of a compound having the formula:



wherein:

R^1 and R^2 are each, independently, hydrogen, C_1–C_{10} alkyl, C_3–C_{20} cycloalkyl, phenylloweralkyl, or substituted phenylloweralkyl substituted by halo, lower alkyl, lower alkoxy, halo lower alkyl, amino, monoloweralkylamino, diloweralkylamino or sulfonamido;

A is O, S, NR or a chemical bond;

R, if present, is hydrogen or lower alkyl;

m is 0–15;

n is 0–20;

p is 0.15;

where $m+p \leqq 15$;

and pharmaceutically acceptable salts thereof.

5,366,994

USE OF A COMBINATION OF ANGIOTENSIN-CONVERTING ENZYME INHIBITOR AND CALCIUM ANTAGONIST FOR THE TREATMENT OF PROTEINURIA

Reinhard Becker, Wiesbaden; Rainer Henning, Hattersheim am Main; Volker Teetz, Hofheim am Taunus, and Hansjörg Urbach, Kronberg/Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 798,501, Nov. 26, 1991, Pat. No. 5,236,933. This application May 6, 1993, Ser. No. 57,516

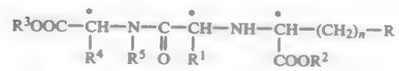
Claims priority, application Germany, Nov. 27, 1990, 4037691

Int. Cl.[5] A61K *31/47, 31/40, 31/275*

U.S. Cl. 514—523 4 Claims

1. A method for the prevention and/or treatment of proteinuria comprising the step of administering to a mammal in need thereof

(a) an ACE inhibitor of formula I



(I)

wherein

n is 1 or 2,

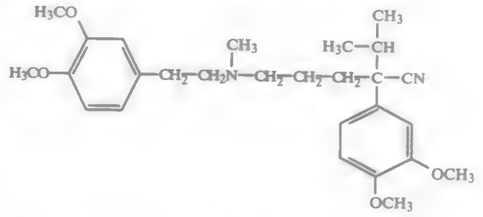
R is (C_1–C_6)-alkyl or (C_6–C_{12})-aryl,

R^1 is hydrogen or (C_1–C_6)-alkyl which may be optionally substituted by an amino group,

R^2 and R^3 can be identical or different and are selected from hydrogen, (C_1–C_6)-alkyl, and (C_6–C_{12})-aryl-(C_1–C_4)-alkyl, and

R^4 and R^5, together with the atoms carrying them, form a ring system selected from tetrahydroisoquinoline, decahydroisoquinoline, octahydroindole, and octahydrocyclopenta[b]pyrrole, or a physiologically tolerable salt thereof; and

(b) a calcium antagonist of the formula



or a physiologically tolerable salt thereof;

wherein said ACE inhibitor and said calcium antagonist are administered in an amount effective to prevent or treat proteinuria and its symptoms.

5,366,995

FATTY ACID BASED COMPOSITIONS FOR THE CONTROL OF ESTABLISHED PLANT INFECTIONS

Steven D. Savage, San Marcos; Steven L. Evans; Robert A. Haygood, both of San Diego, and Paul S. Zorner, La Costa, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 694,193, May 1, 1991. This application Apr. 23, 1992, Ser. No. 871,511

Int. Cl.[5] A01N *37/02, 37/06*

U.S. Cl. 514—558 4 Claims

1. A method for the control of established fungal plant disease on non-dormant grape plant tissue without phytotoxicity to said tissue, said method comprising the application of a fungicidal amount of a fatty acid or its salt to said tissue, wherein said fatty acid or its salt is selected from the group consisting of C9 to C18 fatty acids and the sodium, potassium, and aliphatic amine salts of these fatty acids, and wherein the concentration of said fatty acid or its salt is from about 0.1 to about 1%.

5,366,996

METHOD OF TREATING HEMOGLOBINOPATHIES

Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222

Filed Dec. 7, 1992, Ser. No. 986,861

Int. Cl.[5] A61K *31/19*

U.S. Cl. 514—575 10 Claims

1. A method for treating anemias in primates which comprises administering to an anemic primate in need of treatment for said anemia a dose of a compound of the formula



wherein n is 2–5, R is NHOH, R′ is O, or pharmaceutically-acceptable salts thereof and readily hydrolyzable phenolic esters thereof effective to treat said anemia.

5,366,997

OXYGEN SUBSTITUTED DERIVATIVES OF NUCLEOPHILE-NITRIC OXIDE ADDUCTS AS NITRIC OXIDE DONOR PRODRUGS

Larry K. Keefer, Bethesda, Md.; Tambra M. Dunams, Florence, Ala., and Joseph E. Saavedra, Thurmont, Md., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

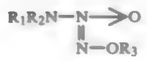
Continuation-in-part of Ser. No. 764,908, Sep. 24, 1991, abandoned. This application Sep. 23, 1992, Ser. No. 950,637

Int. Cl.[5] A61K *31/13, 31/535, 31/445;* **C07C** *243/04*

U.S. Cl. 514—611 **25 Claims**

8. A method for treating cardiovascular disorders in a patient in need thereof, wherein said disorders may be treated by lowering the patient's blood pressure, the method comprising:

administering to the patient in need thereof, a blood pressure lowering effective amount of a compound of the formula:



wherein:

R_1 and R_2 are the same or different and are selected from the group consisting of:

C_{2-12} straight chain alkyl,

C_{1-12} straight chain alkyl substituted by alkoxy or acyloxy,

C_{2-12} straight chain alkyl substituted by hydroxy or halo,

C_{3-12} branched chain alkyl,

C_{3-12} branched chain alkyl substituted hydroxy, alkoxy, acyloxy or halo,

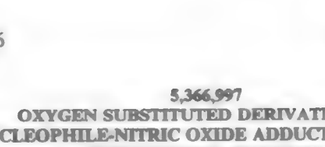
C_{3-12} straight chain olefinic,

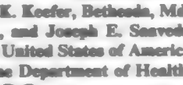
C_{3-12} straight chain olefinic substituted by hydroxy, alkoxy, acyloxy, halo or benzyl,

C_{3-12} branched chain olefinic, and

C_{3-12} branched chain olefinic substituted by hydroxy, alkoxy, acyloxy, halo or benzyl; or

R_1 and R_2 join together with the nitrogen atom to which they are bonded to form a heterocyclic ring selected from the group consisting of:





wherein w is 1 to 12, y is 1 or 2, z is 1 to 5, X is NH or O, R_4 is hydrogen, C_{1-8} straight chain alkyl, C_{3-8} branched chain alkyl, C_{3-8} cycloalkyl, or unsubstituted or substituted aryl, and R_5 is hydrogen, C straight chain alkyl or C_{3-6} branched chain alkyl; and

R_3 is selected from the group consisting of

C_{1-12} straight chain alkyl,

C_{1-12} straight chain alkyl substituted by hydroxy, alkoxy, acyloxy or halo,

C_{3-12} branched chain alkyl,

C_{3-12} branched chain alkyl substituted by hydroxy, alkoxy, acyloxy or halo,

C_{2-12} straight chain olefinic,

C_{2-12} straight chain olefinic substituted by hydroxy, alkoxy, acyloxy or halo,

C_{3-12} branched chain olefinic,

C_{3-12} branched chain olefinic substituted by hydroxy, alkoxy, acyloxy or halo,

C_{1-12} acyl, a sulfonyl derivative, sulfinyl derivative, and a sulfenyl derivative; or

R_3 is a group of the formula $—(CH_2)_nONN(O)NR_1R_2$, wherein n is an integer of 2–8, and R_1 and R_2 are as defined above;

with the proviso that R_1, R_2 and R_3 do not contain a halo or a hydroxy substituent α to an oxygen or a nitrogen atom; and a pharmaceutically acceptable carrier therefore.

5,366,998

COMPOSITION FOR REMOVING ADHESIVES FROM POLYMERIC FILM AND PROCESS FOR USING SAME

John A. Schwartz, Jr., Spartanburg, S.C., assignor to Partek, Inc., Duncan, S.C.

Continuation-in-part of Ser. No. 855,075, Mar. 23, 1992, Pat. No. 5,286,463. This application Mar. 22, 1993, Ser. No. 34,255

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] C08J *11/04;* **B03B** *1/00*

U.S. Cl. 521—40 **20 Claims**

1. A process for separating an adhesive polymeric resin, from a polymeric film, where said adhesive resin is adhered to said polymeric film, said process for separating comprising the steps of:

(a) providing said polymeric film with said adhesive polymeric resin adhered thereto to a slurry within a reaction vessel;

(b) adding a base to said reaction vessel to adjust the pH of said slurry above about 9 to remove said adhesive polymeric resin from said polymeric film;

(c) adding an anti-redeposition surfactant to said reaction vessel in an amount sufficient to prevent adhesive polymeric resin from being redeposited onto said polymeric film;

(d) adding an acid in an amount sufficient to adjust the pH of said slurry to below about 9 to precipitate said resin from said slurry; and

(e) separating said film from said precipitated adhesive polymeric resin and said slurry.

5,366,999

FILLER-MODIFIED POLYURETHANE FOAM SUPPORTS FOR BIOCONVERSION PROCESSES

Edmund Glez, Leichlingen; Imre Pascik, Monheim, and Joachim Priemer, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 15,720, Feb. 9, 1993, Pat. No. 5,252,616. This application Jul. 9, 1993, Ser. No. 90,225

Claims priority, application Germany, Nov. 12, 1992, 4238126

Int. Cl.[5] C08J *9/224*

U.S. Cl. 521—54 **6 Claims**

1. A filler-modified polyurethane foam support for a bioconversion process, having foam pores which are freely accessible from the surface, are coated with a coherent, elastic, firmly adhering copolymer film which is obtained by crosslinking a cationic styrene/butadiene copolymer latex or an anionic butadiene/acrylonitrile copolymer latex and in which inorganic and/or organic filler particles are embedded, wherein

a) the polyurethane foam content is about 20 to 80% by weight,

b) the copolymer content is about 8 to 40% by weight, and

c) the filler content is about 10 to 60% by weight, based on the weight of the filler-modified polyurethane foam support.

5,367,000

PROCESS FOR THE PRODUCTION OF RIGID FOAMS CONTAINING URETHANE AND ISOCYANURATE GROUPS

Rolf Wiedermann, Odenthal; Stephan Wendel, and Ulrich Weber, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 24, 1994, Ser. No. 186,189

Claims priority, application Germany, Jan. 29, 1993, 4302460

Int. Cl.[5] C08G *18/00*

U.S. Cl. 521—131 **5 Claims**

1. A process for the production of rigid foams containing urethane and isocyanurate groups comprising reacting

a) polyisocyanates with

b) compounds containing at least two isocyanate-reactive hydrogen atoms and having molecular weights of from 400 to 10,000 and

c) optionally compounds containing at least two isocyanate-reactive hydrogen atoms and having molecular weights of from 32 to 399 in the presence of

d) one or more isocyanurate trimerization catalysts,

e) mixtures of hydrocarbons as blowing agents, and

f) optionally, other blowing agents and auxiliaries and additives,

wherein mixtures of n-pentane and isopentane with cyclopentane are used as the mixtures of hydrocarbons.

5,367,001

IMPRESSION COMPOSITION

Kunio Itoh; Yoshio Inoue, both of Annaka; Hironao Fujiki, Takasaki, and Masachika Yoshino, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 501,715, Mar. 30, 1990, abandoned. This application Apr. 9, 1993, Ser. No. 48,577

Claims priority, application Japan, Mar. 31, 1989, 1-82531

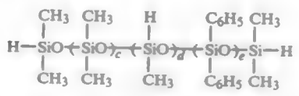
Int. Cl.[5] C08K *5/15*

U.S. Cl. 523—109 **9 Claims**

1. A dental impression composition comprising:

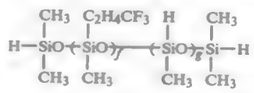
(A) a polyether polymer having at least two alkenyl groups in its molecule,

(B) a polyorganohydrogensiloxane having at least three silicone-bonded hydrogen atoms in its molecule, selected from the compounds represented by the formulas:



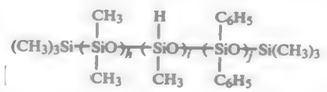
(i)

where c and e are an integer of 0 or more, and d is an integer of 1 or more,



(ii)

where f is an integer of 0 or more, and g is an integer of 1 or more, or



(iii)

where h and j are an integer of 0 or more, and i is an integer of 3 or more;

(C) a platinum catalyst,

(D) an inorganic filler, and

(E) vitamin E.

5,367,002

DENTAL COMPOSITION AND METHOD

Chin-Teh Huang, Dover; Paul D. Hammesfahr, Wyoming, and Steven R. Jefferies, Milford, all of Del., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Feb. 6, 1992, Ser. No. 832,202

Int. Cl.[5] C08K *3/40*

U.S. Cl. 523—116 **48 Claims**

1. A dental composition, comprising:

a) polyalkenoic acid,

b) from about 10 to about 90 percent by weight elutable glass filler,

c) effectively partially neutralized acid functional polymerizable organic ester,

d) water,

e) polymerizable monomer and/or prepolymer, and

f) polymerization catalyst system,

said elutable glass filler (b) being adapted to elute cations which are reactive with said polyalkenoic acid (a), and said monomer and/or prepolymer (e) being non-reactive with cations from the elutable glass filler.

5,367,003

DISPOSABLE DEGRADABLE RECYCLABLE PLASTIC ARTICLES AND SYNTHETIC RESIN BLENDS FOR MAKING THE SAME

Robert J. Petcavich, 4136 Palisades Rd., San Diego, Calif. 92116

Continuation-in-part of Ser. No. 847,960, Mar. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 690,106, Apr. 23, 1991, abandoned. This application Jun. 18, 1993, Ser. No. 80,079

Int. Cl.[5] C08J *5/00*

U.S. Cl. 523—124 **7 Claims**

3. A disposable, degradable, plastic article of manufacture made from a miscible, high molecular weight, water dispersable, thermoplastic polymeric resin blend consisting of from about 65% to about 95% high molecular weight poly(ethylene oxide), from about 35% to about 5% of at least one high molecular weight thermoplastic polymer that is functionally compatible with said poly(ethylene oxide) and selected from the group consisting of polyethylene-co-acrylic acid, polyethylene-co-methacrylic acid, polyethylene-co-vinyl acetate, polyethylene-co-vinyl alcohol, Nylon 11 and Nylon 12, and up to about 10% of plasticizer, lubricant and fillers.

5,367,004

AMBIENT CURING WATER-BORNE COMPOSITIONS COMPRISING HALF ESTERS OF ANHYDRIDE POLYMERS CROSSLINKED BY EPOXIES

Robert J. Barsotti, Franklinville, N.J.; Lee R. Harper, Media, and Michele R. Lock, Willow Grove, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1992, Ser. No. 977,864

Int. Cl.[5] C08G *59/42;* **C08L** *63/00, 43/00, 31/06*

U.S. Cl. 523—414 **14 Claims**

1. A coating composition, in the form of a multipackage system, for producing a clearcoat, said coating composition comprising 20–80% by weight of reactive binder components and 80–20% by weight of an aqueous liquid carrier comprising at least 60% by weight water; wherein the binder comprises:

(a) 25–90% by weight, based on the weight of the binder, of a half-ester product of an acrylic copolymer having at least two reactive anhydride groups and comprising polymerized monomers of an ethylenically unsaturated arthydride or an ethylenically unsaturated dicarboxylic acid, which has been converted to an anhydride, and polymerized monomers selected from the group consisting of alkyl methacrylate, alkyl acrylate and any mixtures thereof, wherein the alkyl groups have 1–8 carbon atoms and the polymer has a weight average molecular weight of about 2,000–100,000, wherein equal to or greater than 90% of

the arthydride groups on said acrylic copolymer have been half-esterifed by reaction with an alcohol;
(b) 5–50% by weight, based on the weight of the binder, of a glycidyl ether or ester or cycloaliphatic epoxy compound containing at least two reactive glycidyl groups;
(c) an effective amount of a base to neutralize the half-ester acrylic copolymer (a) above; and
(d) 0.1–8% by weight, based on the weight of binder, of a curing catalyst, wherein the components are selected such that the composition is capable of forming a clearcoat automotive refinish that can be cured at 10° to 90° C. after being applied, and wherein components (a) and (b) are kept separate in said multi-package system until shortly before application.

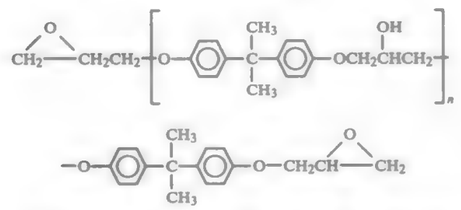
5,367,005

HEATSET SECURITY INK

Solomon J. Nachfolger, Monsey, N.Y., assignor to Sun Chemical Corporation, Fort Lee, N.J.

Continuation-in-part of Ser. No. 144,757, Oct. 29, 1993, abandoned. This application May 12, 1994, Ser. No. 241,871
Int. Cl.[5] C09D *11/10;* **C08L** *63/02;* **C08F** *283/01*
U.S. Cl. 523—403 **14 Claims**

1. A heatset intaglio printing ink comprising:
a) Resin A present in an amount of about 15 to 35 wt. %, based on the weight of the ink, Resin A comprising the reaction product of (i) about 65–75 parts per hundred of the ester obtained from the esterification of about 40–60 parts per hundred of an epoxy resin with about 60–40 parts per hundred of a drying oil partially conjugated unsaturated fatty acid having an iodine number of about 125–185, an acid number of about 180–210 and a degree of conjugation of about 20–25%, said ester having an acid number below about 10, and (ii) about 35–25 parts per hundred of a mixture of about 20–28% of one or more unsaturated monobasic acids having a polymerizable double bond and about 80–72% of one or more reactive monomers having a polymerizable double bond, said epoxy resin comprising the condensation product of bisphenol A and epichlorohydrin and having an epoxide equivalent weight of about 400 to 1100 and represented by the structure below wherein n has a value of 0 to about 8:



b) Resin B comprising a cationic polyamide/ epichlorohydrin resin present in an amount of about 0.1 to 8 wt. % (calculated as 100% solids), based on the weight of the ink, as an aqueous solution containing about 30–40 wt. % Resin B wherein the solvent for such aqueous solution comprises water alone or a mixture of water and up to about 35 wt. %, based on the solution, of a diol, a glycol, a glycol ether or a mixture of a diol, glycol and a glycol ether, Resin B having been prepared by reacting about 0.5–1.8 moles of epichlorohydrin per secondary amine group of the polyamide which is prepared by reacting a C_3–C_{10} aliphatic dicarboxylic acid with a C_2–C_9 polyalkylene polyamine;
c) at least one glycol and/or glycol ether present in an amount of about 5 to 30 wt. %, based on the weight of the ink;
d) at least one inorganic and/or organic pigment present in an amount of about 5 to 45 wt %, based on the weight of the ink; and
e) at least one drier, present in an amount of about 0.1 to 5 wt. %, based on the weight of the ink.

5,367,006

SUPERIOR THERMAL TRANSFER ADHESIVE

Ralph D. Hermansen, Northridge, and Steven E. Lau, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 852,059, Mar. 16, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,341
Int. Cl.[5] C08K *3/22, 3/36;* **C09J** *163/02, 163/04;* **C08G** *59/08, 59/36, 59/38*
U.S. Cl. 523—428 **2 Claims**

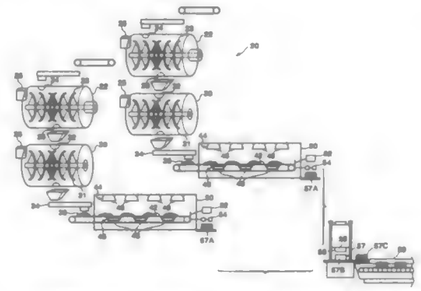
1. A thermal transfer adhesive for electronic components consisting essentially of:
(a) about 9 wt % of the trifunctional novolac epoxy of cardanol;
(b) about 9 wt % of the diglycidyl ether of a p-hydroxyphenylcardanol;
(c) about 0.95 wt % of the monoepoxide of cardanol as diluent;
(d) about 3.8 wt % of the diprimary amine of linoleic dimer acid obtained by hydrogenation of the dimer nitrile which is formed by reaction of the dimer acid with ammonia as curative;
(e) about 7.25 wt % of polybutadiene polyol having a molecular weight greater than about 1000;
(f) about 3.8 vol % fumed silica; and
(g) about 37.2 vol % alumina powder.

5,367,007

MULTI-LAYER COMPOSITE BLOCK & PROCESS FOR MANUFACTURING

Denis C. Richards, Mississauga, Canada, assignor to Enviropaver Inc., Brampton, Canada

Continuation-in-part of Ser. No. 804,068, Dec. 9, 1991, Pat. No. 5,221,702. This application May 3, 1993, Ser. No. 55,387
Int. Cl.[5] C08L *95/00;* **B32B** *11/00;* **D06N** *5/00*
U.S. Cl. 524—59 **15 Claims**



1. A multiple-layer molded composite paving block for use in paving roads, parking lots and driveways, comprising:
a first layer of a first composite material comprising reclaimed asphalt in a proportion of about 25% to about 95% by volume, a thermoplastic constituent in a proportion of about 2% to about 40% by volume, monofilament fibre material in a proportion of about 2% to about 35% by volume, and elastomeric material in a proportion of about 0% to about 30% by volume; and
a second layer of a second composite material comprising a thermoplastic constituent in a proportion of about 20% to about 100% by volume, and an aggregate material in a proportion of about 0% to about 80% by volume;
wherein said first and second layers contact each other in intimate association at opposed surfaces;

wherein said first layer comprises from about 75% to about 95% of the total volume of said composite paving blocks;
wherein said second layer comprises from about 5% to about 25% of the total volume of said composite paving blocks;
wherein said thermoplastic constituent in either of said first and second layers is chosen from the group consisting of phenolic resin, polyethylene, and a polyethylene blend having at least 10% polyethylene; and
wherein at least a portion of the thermoplastic constituent of each of said first and second layers at said opposed surfaces thereof are heat and pressure bonded with thermoplastic constituent in the other layer of said first and second layers so as to form a securely interlocked structural interface between said first and second layers, so as to thereby form a single integral structure.

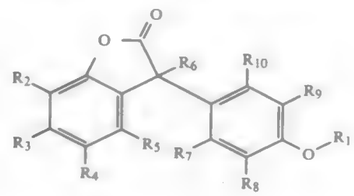
5,367,008

3-(ALKOXYPHENYL)BENZOFURAN-2-ONES AS STABILISERS

Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 17, 1993, Ser. No. 64,186
Claims priority, application Switzerland, May 22, 1992, 1654/92-7
Int. Cl.[5] C08K *5/15;* **C09K** *15/06*
U.S. Cl. 524—111 **14 Claims**

1. A composition comprising
a) an organic material subject to oxidative, thermal or light-induced degradation and
b) at least one compound of the formula (1),



(1)

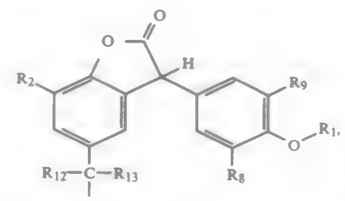
in which R_1 is C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalyl; C_3–C_{25}alkenyl, C_3–C_{25}alkynyl or C_3–C_{25}alkyl which is interrupted by oxygen, sulfur or >N—R_{16}, and R_{16} is hydrogen or C_1–C_8alkyl, R_2, R_3, R_4 and R_5, independently of one another are hydrogen, C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, hydroxyl, C_1–C_{25}alkanoyloxy, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_{16}; C_6–C_9cycloalkylcarbonyloxy, benzoyloxy or benzoyloxy which is substituted by C_1–C_{12}alkyl, and R_{16} is as defined above, or, furthermore, the radicals R_2 and R_3 or the radicals R_4 and R_5 together with the carbon atoms to which they are bound form a benzo ring, R_4, is additionally —$(CH_2)_n$—COR_{11}, in which n is 0, 1 or 2, R_{11} is hydroxyl,



C_1–C_{18}alkoxy or

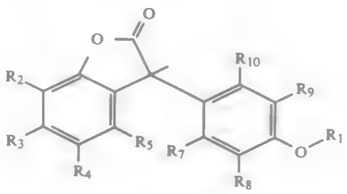


R_{14} and R_{15}, independently of one another are hydrogen or C_1–C_{18}alkyl, M is an r-valent metal cation and r is 1, 2 or 3, R_7, R_8, R_9 and R_{10}, independently of one another, are hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, with the proviso that at least one of the radicals R_7, R_8, R_9 and R_{10} is hydrogen, and, in the case where R_3, R_5, R_6, R_7 and R_{10} are hydrogen, R_4 is additionally a radical of the formula (2)

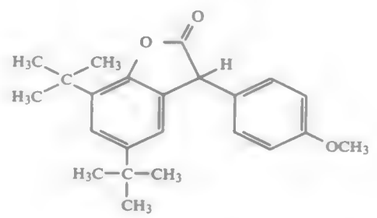


(2)

in which R_1, R_2, R_8 and R_9 are defined above and R_{12} and R_{13}, independently of one another, are hydrogen, CF_3, C_1–C_{12}alkyl or phenyl, or R_{12} and R_{13} together with the carbon atom to which they are bound form a C_5–C_8cycloalkylidene ring which is unsubstituted or substituted by 1 to 3 C_1–C_4alkyl; R_6 is hydrogen or a radical of the formula (3)



(3)



(4)

in which R_1, R_2, R_3, R_4, R_5, R_7, R_8, R_9 and R_{10} are as defined above and the compound of the formula (4) is excluded.

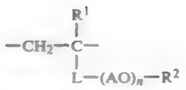
5,367,009

AQUEOUS ROSIN EMULSION AND DISPERSANT COMPOSITION USEFUL THEREIN

Tetsuya Inoue; Yoshihiro Sasaki, and Hirofumi Yoshimura, all of Osaka, Japan, assignors to Arakawa Chemical Industries Ltd., Osaka, Japan

PCT No. PCT/JP91/00460, § 371 Date Dec. 9, 1991, § 102(e) Date Dec. 9, 1991, PCT Pub. No. WO91/16128, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 8, 1991, Ser. No. 778,076
Claims priority, application Japan, Apr. 12, 1990, 2-98033
Int. Cl.[5] C08J *3/21;* **C08L** *93/00;* **B01F** *17/18;* **B01J** *13/00*
U.S. Cl. 524—272 **17 Claims**

1. A dispersant composition suitable for the production of an aqueous rosin emulsion which comprises as an active ingredient a water-soluble copolymer salt comprising
(1) a monomer unit a of the general formula



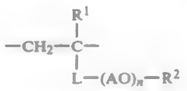
(I)

wherein R^1 means a hydrogen atom or a methyl group; L means —COO— or —CH_2O—; A means an alkylene group of 2 to 4 carbon atoms; n means a whole number of not less than 1; R^2 means an alkyl group of 1 to 24 carbon atoms or an aralkyl group and

(2) a tertiary and/or quaternary nitrogen-containing monomer unit b.

16. An aqueous rosin emulsion containing 1 to 30 weight parts of a water-soluble copolymer salt per 100 weight parts of rosin material, the copolymer salt comprising

(1) a monomer unit a of the formula



(I)

wherein R^1 means a hydrogen atom or a methyl group; L means —COO— or —CH_2O—; A means an alkylene group of 2 to 4 carbon atoms; n means a whole number of not less than 1; R^2 means an alkyl group of 1 to 24 carbon atoms or an aralkyl group and

(2) a tertiary and/or quaternary nitrogen-containing monomer unit b.

5,367,010

ADHESIVE COMPOSITIONS BASED ON CHLORINATED ETHYLENE/VINYL ACETATE COPOLYMERS

Nicholas J. Gervase, and Louie G. Manino, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Mar. 22, 1993, Ser. No. 34,067

Int. Cl.[5] C08K *5/32*

U.S. Cl. 524—260 **22 Claims**

1. An adhesive composition comprising a chlorinated ethylene/vinyl acetate copolymer and at least one adhesion-promoting additive selected from the group consisting of a phenolic resin and an aromatic nitroso con, pound.

5,367,011

STABILIZATION OF LOW MOLECULAR WEIGHT OF POLYBUTYLENE TEREPHTHALATE/POLYESTER BLENDS WITH PHOSPHORUS COMPOUNDS

Eileen B. Walsh, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 994,738, Dec. 22, 1992. This application Dec. 8, 1993, Ser. No. 164,642

Int. Cl.[5] C08K *3/32*

U.S. Cl. 524—417 **15 Claims**

1. A thermoplastic resin blend comprising:

(a) a relatively low molecular weight polybutylene terephthalate resin having a melt viscosity of 450 poise;

(b) a relatively high molecular weight polyester resin having a melt viscosity of greater than 900 poise; and

(c) an effective melt viscosity stabilizing amount of stabilizer selected from the group consisting of acidic phosphate salts, Group IB metal phosphate salts, and Group IIB metal phosphate salts.

5,367,012

STABILIZER FOR GLASS/POLYMER ALLOYS

Bruce G. Aitken; Dana C. Bookbinder; James E. Dickinson, Jr., and Brent M. Wedding, all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation-in-part of Ser. No. 943,014, Sep. 10, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 100,835

Int. Cl.[5] C08K *3/32;* **C08L** *67/00, 71/00, 23/00*

U.S. Cl. 523—451 **5 Claims**

1. An alloy of increased resistance to moisture comprising a mixture of the following components, in the following approximate indicated weight proportions:

(a) **5–80%** of a matrix material comprised of at least one organic thermoplastic polymer;

(b) **15–90%** of at least one phosphate glass possessing a working temperature such that it is thermally codeformable with the polymer, wherein the phosphate glass consists essentially, expressed in terms of mole percent on the oxide basis, of at least 65% total of 10–55% ZnO, 28–40% P_2O_5 and 10–35% R_2O, wherein R_2O consists of at least two alkali metal oxides in the indicated proportions selected from the group consisting of 0–25% Li_2O, 0–25% Na_2O and 0–25% K_2O, and up to 35% total of optional ingredients in the indicated proportions selected form the group consisting of 0–10% Al_2O_3, 0–15% B_2O_3, 0–15% Cu_2O, 0–25% Sb_2O_3, 0–35% PbO, 0–35% SnO, 0–5% ZrO_2, 0–4% SiO_2, 0–20% MgO, 0–20% CaO, 0–20% SrO, 0–20% BaO, 0–10% MnO and 0–5% rare earth metal oxide, and 0–5% F, as analyzed in weight percent, wherein $Al_2O_3+B_2O_3$ does not exceed 15%, PbO+SnO does not exceed 35%, and MgO+CaO+SrO+BaO+MnO does not exceed 20%; and,

(c) an amount of at least one water soluble stabilizer component which provides a source of metal cations having a valency of 2^+ or higher, whereby the amount is effective to improve the alloy's resistance to moisture, the stabilizer component exhibiting a solubility within the range of 0.00001 to 0.01 g/100 cm^3 in 25° C. H_2O after 24 hours.

5,367,013

PROCESS FOR PRODUCING REINFORCED CRYSTALLINE ENGINEERING PLASTIC COMPOSITION

Tadayuki Ohmae; Yoshiki Toyoshima; Hisao Tanaka; Noboru Yamaguchi, and Kenzo Chikanari, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 9, 1992, Ser. No. 958,727

Claims priority, application Japan, Oct. 9, 1991, 3-261895

Int. Cl.[5] C08K *3/00*

U.S. Cl. 524—494 **6 Claims**

1. A process for producing a reinforced crystalline engineering plastic composition, which comprises melt-kneading (A) 60 to 97 parts by weight of at least one crystalline engineering plastic selected from the group consisting of a saturated polyester resin, a polyphenylene sulfide resin, and a polyamide resin, and (B) 5 to 100 parts by weight, per 100 parts by weight of the sum of (A) and (C), of glass fibers, and melt-kneading the resulting mixture with (C) 3 to 40 parts by weight of an ethylene copolymer which is either

(i) an epoxy group-containing ethylene copolymer comprising (a) from 50 to 99% by weight of an ethylene unit, (b) from 0.1 to 50% by weight of an unsaturated carboxylic acid glycidyl ester unit, and (c) up to 50% by weight of an ethylenically unsaturated ester compound unit, based on the weight of said ethylene copolymer, or

(ii) an acid anhydride group-containing ethylene copolymer comprising (a) from 40 to 90% by weight of an ethylene unit, (b) from 0.3 to 10% by weight of a maleic anhydride unit, and (c) from 5 to 60% by weight of an α,β-unsaturated carboxylic acid alkyl ester unit, based on the weight of said ethylene copolymer.

5,367,014

HIGH MODULUS LOW HYSTERESIS RUBBER COMPOUND FOR PNEUMATIC TIRES

Christine L. Morehart, North Canton, Ohio, assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Continuation of Ser. No. 680,497, Apr. 4, 1991, abandoned. This application Jul. 26, 1993, Ser. No. 96,846

Int. Cl.[5] C08K *9/06*

U.S. Cl. 524—526 **33 Claims**

1. A sulfur-vulcanizable rubber compound having high modulus and low hysteresis consisting essentially of:

a blend of

from about 0 to 65 parts by weight of polyisoprene;

from about 25 to 35 parts by weight of a masterbatch comprising emulsion SBR and high styrene resin, providing a total weight of available styrene in said masterbatch of greater than 40 percent by weight; and

from about 0 to 65 parts by weight of polybutadiene to total 100 parts by weight;

from about 50 to 60 parts by weight of a reinforcing filler, per 100 parts by weight of rubber; and

at least 5 parts by weight of sulfur, per 100 parts by weight of rubber;

said compound having a Tan δ of less than 0.2, measured at 100° C., 7% deflection and 10 Hz.

5,367,015

POLYVINYL ACETALS HAVING IMPROVED MELT VISCOSITY CHARACTERISTICS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Matthias Gutweiler, Taunusstein, and Matthias Kroggel, Kelkheim, both of Germany, assignors to Hoechst Aktinegesellschaft, Germany

Filed Oct. 2, 1992, Ser. No. 955,645

Claims priority, application Germany, Oct. 4, 1991, 4133023

Int. Cl.[5] C08L *29/04*

U.S. Cl. 524—557 **16 Claims**

1. A polyvinyl acetal having improved melt viscosity characteristics, prepared from polyvinyl alcohol and aldehyde or aldehyde acetal under acetalization conditions, which polyvinyl acetal is derived from water-soluble polyvinyl alcohol having a low degree of crosslinking, which result from hydrolysis or alcoholysis of an organic solvent soluble copolymer, having a low degree of crosslinking, of a vinyl ester and copolymerizable monomer units from acrylamides or methacrylamides having multiple ethylenic unsaturation, and have been reacted with an aldehyde or aldehyde acetal under acetalization conditions to give an organic-solvent soluble polyvinyl acetal having a low degree of crosslinking.

5,367,016

REINFORCED RESIN COMPOSITION

Osamu Miyama, Osaka; Katsutoyo Fujita, Hyogo; Hayato Nishimura, Mie; Shigemi Matsumoto, Hyogo, and Satoshi Tonoki, Osaka, all of Japan, assignors to Kanegafuchi Chemical Industry Co., Ltd., Osaka, Japan

Filed Nov. 23, 1992, Ser. No. 980,008

Claims priority, application Japan, Nov. 28, 1991, 3-314684

Int. Cl.[5] C08L *69/00*

U.S. Cl. 524—537 **13 Claims**

1. A reinforced resin composition comprising 100 parts by weight of a resin component comprising a polycarbonate resin, a thermoplastic polyester resin and an impact modifier in a ratio, by weight, of 90–10:10–90:0–40 and 0.5 to 100 parts by weight of a kaolin with a mean particle diameter of 0.2 to 2.0 μm.

5,367,017

AQUEOUS POLYUREA DISPERSIONS PREPARED BY AN EMULSION POLYMERIZATION PROCESS

James W. Rosthauser, Glendale, and Robin E. Tirpak, Wheeling, both of W. Va., assignors to Miles Inc., Pittsburgh, Pa.

Filed May 1, 1992, Ser. No. 877,686

The portion of the term of this patent subsequent to May 18, 2010, has been disclaimed.

Int. Cl.[5] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—589 **16 Claims**

1. A process for the preparation of an aqueous polyurea dispersion which comprises

I) dispersing in water at an NCO:NH equivalent ratio of 0.5:1.0 to 2.0:1.0

a) a polyisocyanate which has an average functionality of 1.5 to 4.0 and an isocyanate content of at least 12% by weight and

b) a polyamine component containing

i) 30 to 70 mole percent of a polyamine having at least two primary and/or secondary amino groups and a molecular weight of 1000 to 5000 and

ii) 30 to 70 mole percent of a polyamine having at least two primary and/or secondary amino groups, a molecular weight of less than 400 and at least one anionic or potential anionic group and

II) allowing the polyisocyanate and polyamine component to react to form an aqueous polyurea dispersion.

5,367,018

ODOR FREE, AIR DRY, DECORATIVE LATEX PAINTS

F. Louis Floyd, Strongsville, and Gary P. Craun, Berea, both of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Division of Ser. No. 115,109, Sep. 2, 1993, and a continuation-in-part of Ser. No. 19,633, Feb. 18, 1993, Pat. No. 5,326,808. This application Apr. 4, 1994, Ser. No. 222,036

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—773 **12 Claims**

1. A process for producing an aqueous ambient dry paint coating composition containing a polymeric binder free of organic coalescing solvent, the process steps for producing the polymeric binder comprising:

providing an organic mixture comprising vinyl acetate monomer and chlorinated modifier having a number average molecular weight between 150 and 5,000 and a Tg below about −20° C., where the organic mixture contains between 1% and 90% by weight of said chlorinated modifier;

dispersing the organic mixture into water to produce an aqueous dispersion;

micronizing the aqueous dispersion under high shear to produce a micro-dispersion having organic phase particle size droplets less than 5 microns; and

polymerizing the vinyl acetate monomer to produce a polymeric binder having a Tg less than 20° C. comprising an emulsion vinyl acetate polymer containing said chlorinated modifier.

5,367,019

COATING COMPOSITION AND ARTICLE COATED THEREBY

Fujio Sawaragi, Kanagawa, Japan, assignor to Nippon Arc Co., Ltd., Japan

Division of Ser. No. 938,526, Sep. 2, 1992, Pat. No. 5,314,947, which is a continuation of Ser. No. 703,816, May 21, 1991, abandoned. This application Feb. 1, 1994, Ser. No. 189,737

Claims priority, application Japan, Jun. 11, 1990, 2-152356; Mar. 22, 1991, 3-58749

Int. Cl.[5] C08K *3/10;* **B32B** *9/04*

U.S. Cl. 524—780 **5 Claims**

1. A scratch-resistant coating composition capable of forming a coating having a high refractive index on a transparent

solid material, the coating composition comprising the following components:

(A) 100 parts by weight of an epoxy group-containing silicon compound of the formula:

$$R^1R^2_nSi(OR^3)_{3-n}$$

wherein R^1 is an epoxy-containing group having 2 to 12 carbon atoms, R^2 is an alkyl, alkenyl, or halogenated alkyl group having 1 to 6 carbon atoms or a halogenated aryl group , R^3 is a hydrogen atom or an alkyl, acyl or alkylacyl group having 1 to 4 carbon atoms, and n is an integer of 0 to 2, or a partial hydrolysis product thereof,

(B) 0 to 100 parts by weight of an organosilicon compound of formula:

$$R^4_pR^2_qSi(OR^3)_{4-p-q}$$

wherein R^2 and R^3 are as defined above, R^4 is an alkyl or halogenated alkyl group having 1 to 4 carbon atoms, an aryl or halogenated aryl group having 6 to 12 carbon atoms, a methacryloxyalkylene group having 5 to 8 carbon atoms, or a ureidoalkylene, aromatic ureidoalkylene, halogenated aromatic alkylene or a mercaptoalkylene group having 2 to 10 carbon atoms, p is an integer of 1 to 3 and q is an integer of 0 to 2,

or a partial hydrolysis product thereof,

(C) 0 to 130 parts by weight of at least one metal oxide selected from the group consisting of antimony oxide, tin oxide and titanium oxide, said metal oxide being in the form of a sol,

(D) 0.25 to 30 parts by weight of a bisphenol compound, and

(E) 0.01 to 30 parts by weight of a curing catalyst.

5,367,020

THERMOPLASTIC RESIN COMPOSITION

Akira Kobayashi, Saitama Prefecture; Tetsuya Kawamura, Tokyo; Tatsuo Teraya, Saitama Prefecture; Eiji Kuchiki, Saitama Prefecture, and Yuji Fujita, Saitama Prefecture, all of Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 897,404, Jun. 12, 1992, abandoned. This application Nov. 22, 1993, Ser. No. 156,092

Claims priority, application Japan, Jun. 12, 1991, 3-166232; Jun. 13, 1991, 3-167468; Jun. 19, 1991, 3-173288; Jun. 28, 1991, 3-183934

Int. Cl.[5] C08L *77/00, 51/06*

U.S. Cl. 525—64 **6 Claims**

1. A thermoplastic resin composition comprising

(A) 5 to 95 parts by weight of an olefinic resin, at least a part of which is modified with a glycidyl compound represented by the following formula:

$$(CH_2{=}\underset{R}{\underset{|}{C}}{-}\overset{O}{\overset{\|}{C}}{-}NH{-}CH_2\rangle_n Ar$$

wherein R represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, Ar represents a C_{6-20} aromatic hydrocarbon radical which has at least one glycidyloxy substituent and may have other substituents, and n represents an integer of 1 to 4,

(B) 95 to 5 parts by weight of an acrylonitrile-styrenic copolymer, at least a part of which is an acrylonitrile-styrenic copolymer modified with an epoxy compound, and

(C) 0.5 to 100 parts by weight of at least one polymer selected from the group consisting of polyamides and polyesters, the total of (A) and (B) being 100 parts by weight.

5,367,021

POLYMER MIXTURE COMPOSED OF AN AROMATIC POLYCARBONATE, OPTIONALLY A POLYALKYLENETEREPHTHALATE AND A GRAFT COPOLYMER

Wilhelmus M. M. Roovers, Steenbergen, and Wilhelmus J. D. Steendam, Bergen op Zoom, both of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 11, 1994, Ser. No. 180,165

Claims priority, application Netherlands, Jan. 14, 1993, 9300069; European Pat. Off., Nov. 20, 1993, 93118688.6

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **10 Claims**

1. A polymer mixture comprising

A) 55–90% by weight of an aromatic polycarbonate (A1) or a mixture oil an aromatic polycarbonate (A1) and a polyalkylene terephthalate (A2)

B) 10–30% by weight of a graft copolymer built up from a diene rubber graft base on which at least one of the following vinyl monomers has been grafted: styrene, acrylonitrile, methyl methacrylate;

C) 0–15% by weight of a copolymer of styrene, alpha-methyl styrene, methyl methacrylate or mixtures thereof and acrylonitrile, methacrylonitrile, methyl methacrylate or mixtures thereof, the weight percentages being calculated with respect to the sum of the constituents A, B and C, the diene rubber graft base having a mono disperse particle size distribution having such a narrow particle size distribution that the diameter of more than 50% by weight of the particles lies between 200 and 300 nanometers and the diameter of more than 70% by weight of the particles lies between 200 and 400 nanometers.

5,367,022

GRAFTED POLYMERIC PRODUCTS, AND ADHESIVE BLENDS

Webster W. Kiang, West Chester, Ohio; Edward M. Kajiwara, Park Ridge, Ill., and Diana C. Mattson, Loveland, Ohio, assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 800,443, Nov. 27, 1991, abandoned. This application Oct. 7, 1992, Ser. No. 954,225

Int. Cl.[5] C09J *123/16, 151/06;* **C08F** *255/04;* **B32B** *15/08*

U.S. Cl. 525—74 **36 Claims**

1. A grafted polymeric product comprising a polymeric composition containing a thermoplastic impact ethylene-propylene copolymer comprising a reactor-made intimate mixture of propylene homopolymers and statistical copolymers of propylene and ethylene comprising about 5 to about 30 wt. % ethylene, said polymeric composition comprising greater than 50 wt. % propylene units, and at least about 1 wt. %, based on total grafted polymeric composition, of a grafting monomer comprising one or both of maleic anhydride and maleic acid grafted thereto, said grafted polymeric product having an MFR of about 700 g/10 min. or less and greater than that of said polymeric composition prior to grafting as measured according to ASTM D-1238, Condition L.

9. An adhesive blend, comprising

(a) about 0.1 wt. % to about 25 wt. % of a grafted polymeric product comprising a polymeric composition containing a thermoplastic impact ethylene-propylene copolymer comprising a reactor-made intimate mixture of propylene homopolymers and statistical copolymers of propylene and ethylene comprising about 5 to about 30 wt. % ethylene, said polymeric composition comprising greater than 50 wt. % propylene units, and at least about 1 wt. %, based on total grafted polymeric composition, of a grafting monomer comprising one or both of maleic anhydride and maleic acid grafted thereto, said grafted polymeric product having an MFR of about 700 g/100 min. or less and greater than that of said polymeric composition prior to grafting as measured according to ASTMD-1238, Condition L; and,

(b) up to about 99.9 wt. % of an ungrafted polyolefin blending resin.

5,367,023

MODIFIED FLUOROHYDROCARBON POLYMERS

Gerardo Caporiccio, Milan, Italy, and Gerald A. Gornowicz, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 677,926, Apr. 1, 1991, abandoned. This application Apr. 12, 1993, Ser. No. 50,754

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—102 **13 Claims**

1. A fluorohydrocarbon polymer selected from the group consisting of polyvinylidene fluoride, copolymers of vinylidene fluoride with chlorotrifluoroethylene, copolymers of vinylidene fluoride with hexafluoropropene, copolymers of vinylidene fluoride with tetrafluoroethylene, copolymers of chlorotrifluoroethylene with ethylene, copolymers of tetrafluoroethylene with ethylene, polyvinylfluoride, copolymers of vinylidene fluoride with perfluoromethylvinylether, copolymers of tetrafluoroethylene and propylene, and terpolymers of vinylidene fluoride, hexafluoropropene and tetrafluoroethylene; the fluorohydrocarbon polymer is melt-processable and contains a modifying substituent attached to a carbon atom of the polymer chain by a bond to a nucleophilic atom of the modifying substituent, the nucleophilic atom is either a nitrogen atom of an amino group or an oxygen atom of an oxy group; where the modifying substituent is represented by the general formula

—YRZ

where Y represents an oxy or an amino; R represents a linking segment containing 2 to 20 carbon atoms, and Z represents a latent reactive segment selected from a group consisting of a vinyl group, an allyl group, an acrylate group, a silane with a hydrolyzable group, an amide group, a sulfonic acid salt group, a pyridine group, a carboxylic ester group and a carboxylic acid salt group, with the proviso that the nucleophilic atom of Y is bonded to a carbon atom of R and Z is not bonded to the same carbon atom of R to which the nucleophilic atom of Y is bonded.

5,367,024

COMMINUTED STYRENE ACRYLONITRILE (SAN) FOR USE AS AN ANTI-SLIP OR ABRASIVE GRIT, TEXTURIZER, AND FILLER, AND METHOD OF MAKING THE SAME

Edwin F. Neckermann, Kalamazoo, Mich., assignor to American Fillers & Abrasives Co., Inc. a corporation of Michigan, Bangor, Mich.

Filed Jul. 17, 1992, Ser. No. 916,171

Int. Cl.[5] C08F *8/30;* **C08L** *75/04*

U.S. Cl. 525—123 **11 Claims**

1. A liquid coating material for producing an anti-slip texturized coating, said coating material comprising a paint material including a mixture of a vehicle, a pigment material, and comminuted styrene acrylonitrile co-polymer grit having a particle size corresponding to 20 mesh openings per inch and finer.

5,367,025

CROSSLINKABLE POLYETHYLENE-BASED COMPOSITION FOR ROTATIONAL MOLDING

Donald G. Needham, Ramona, Okla., assignor to Wedtech, (USA) Inc., Bartlesville, Okla.

Continuation-in-part of Ser. No. 774,564, Oct. 8, 1991, Pat. No. 5,260,381. This application Oct. 29, 1993, Ser. No. 145,888

Int. Cl.[5] C08L *23/04, 23/26*

U.S. Cl. 525—166 **19 Claims**

1. A crosslinkable polyethylene-based, rotomolding composition comprising a thermoplastic polymer of ethylene selected from the group consisting of an ethylene homopolymer, an ethylene copolymer comprising a C3–C8 alpha-olefin, and mixtures thereof, said ethylene homopolymer and copolymer each having a density in the range of about 0.92 to 0.97 gm/cc;

a crosslinking amount of an organic peroxide initiator;

at least about 0.2 parts by weight based on 100 parts of the ethylene polymer, of a polyalkylene benzenepolycarboxylate, wherein said polyalkylene benzenepolycarboxylate is used in an amount of up to about 8 parts by weight; and

from about 0.2 to 2 parts by weight based on 100 parts of the ethylene polymer, of a suitable crosslinking co-agent.

5,367,026

RESIN COMPOSITION AND COATING COMPOSITION CONTAINING THE SAME

Yoshitaka Okude; Tsuneyoshi Hisai, both of Hirakata; Akira Fushimi, Ikoma; Kazuhiko Takeoka, Kawanishi, and Seigo Miyazoe, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 65,910, May 25, 1993, abandoned. This application Sep. 2, 1993, Ser. No. 114,303

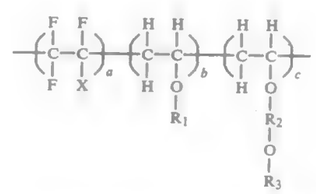
Claims priority, application Japan, May 27, 1992, 4-134826

Int. Cl.[5] C08L *37/00, 35/02, 33/14, 27/22*

U.S. Cl. 525—199 **19 Claims**

1. A thermosetting resin composition comprising the following components:

(a) from about 0.5 to 40% by weight of a fluorinated polymer having a hydroxyl group and/or an acid group, represented by

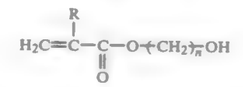


wherein said R_1 represents a linear or branched alkyl group or an alkyloyl group, having 2 to 10 carbon atoms, R_2 represents an alkylene group having 2 to 10 carbon atoms, R_3 represents a hydrogen atom or —CO—R_6—COOH in which R_6 represents a residue of a dibasic acid anhydride, X is a hydrogen atom, a chlorine atom or a fluorine atom, a, b and c are integers satisfying $a \leqq b+c$,

(b) from about 10 to 60% by weight of a polymer having a carboxyl group and a carboxylic ester, prepared by copolymerizing from about 15 to 40% by weight of an ethylenically unsaturated monomer having an acid anhydride group, and from about 60 to 85% by weight of another ethylenically unsaturated copolymerizable monomer to obtain a polymer having acid anhydride groups which are then reacted with a hydroxyl compound having 1 to 12 carbon atoms in a molar ratio of acid anhydride group to hydroxyl group of from about 1/1 to 1/1.5; % by weight of monomers being based on total monomer weight, and

(c) from about 30 to 60% by weight of a polymer having a hydroxyl group and an epoxy group, prepared by copolymerizing

(i) from about 5 to 40% by weight of a hydroxyalkyl (meth)acrylate represented by:



wherein R represents a hydrogen atom or a methyl group and n is an integer of 2 to 8,

(ii) from about 10 to 60% by weight of an epoxy group-containing ethylenically unsaturated monomer, and

(iii) from about 0 to 85% by weight of another copolymerizable ethylenically unsaturated monomer; the % by weight being based on total monomer weight.

5,367,027

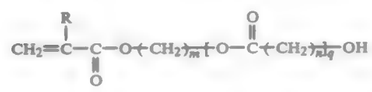
CURABLE RESIN COMPOSITION, A COATING COMPOSITION AND A PROCESS FOR FORMING A COATING FILM

Akira Fushimi, Ikoma; Tsuneyoshi Hisai, Hirakata; Kazuhiko Takeoka, Kawanishi, and Yoshitaka Okude, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jul. 22, 1993, Ser. No. 95,834
Claims priority, application Japan, Jul. 22, 1992, 4-195129
Int. Cl.[5] C08L *37/00, 35/02, 33/14*
U.S. Cl. 525—208 17 Claims

1. A curable resin composition comprising:

(a) 5 to 50% by weight of a carboxyl and hydroxyl group containing polymer prepared by copolymerizing, (i) 20 to 100% by weight of an ethylenically unsaturated monomer mixture comprising (1) an ethylenically unsaturated monomer having a carboxyl group and (2) a hydroxyalkyl (meth)acrylate of the formula:



[I]

wherein, R represents a hydrogen atom or a methyl group, m represents an integer of 2 to 8, n represents an integer of 3 to 7 and q represents an integer of 0 to 4, said monomer mixture (i) being prepared by mixing and reacting the hydroxyalkyl (meth)acrylate with an anhydride group containing compound in an molar ratio of hydroxyl group to anhydride group of 1/0.9 to 1/0.5, and optionally (ii) 0 to 80% by weight of a copolymerizable ethylenically unsaturated monomer;

(b) 20 to 60% by weight of a carboxyl and carboxylate group containing polymer prepared by reacting, (i) an anhydride group containing polymer prepared by copolymerizing 15 to 40% by weight of (1) an ethylenically unsaturated monomer having an anhydride group and 60 to 85% by weight of (2) the other copolymerizable ethylenically unsaturated monomer, with (ii) a hydroxyl group containing compound having 1 to 12 carbon atoms in a molar ratio of anhydride group to hydroxyl group of 1/1.5 to 1/1; and

(c) 30 to 60% by weight of a hydroxyl and epoxy group containing polymer prepared by copolymerizing, (i) 5 to 40% by weight of said hydroxyalkyl (meth)acrylate, (ii) 10 to 60% by weight of an ethylenically unsaturated monomer having an epoxy group, and optionally (iii) 0 to 85% by weight of the other copolymerizable ethylenically unsaturated monomer.

5,367,028

GOLF BALL

Akihiko Hamada, Kakogawa; Kuniyasu Horiuchi, Kobe, and Akira Kato, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Sep. 9, 1992, Ser. No. 942,456
Claims priority, application Japan, Sep. 9, 1991, 3-258554
Int. Cl.[5] C08L *33/02*
U.S. Cl. 525—221 13 Claims

1. A golf ball comprising a core and a cover for covering said core, wherein said cover comprises a base resin comprising a mixture of an ionomer resin having at least one carboxyl group, and a thermoplastic resin containing an oxazoline group as a main component microdispersed in said ionomer resin, wherein said mixture has been heated during mixing, and said oxazoline group has reacted with said carboxyl groups of said ionomer resin to form a mixed system with said thermoplastic resin microdispersed in said ionomer resin.

5,367,029

THERMOPLASTIC MOLDING MATERIAL

Wolfgang Fischer, Ludwigshafen; Norbert Guentherberg, Speyer, and Norbert Niessner, Friedelsheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Oct. 18, 1993, Ser. No. 136,932
Claims priority, application Germany, Oct. 24, 1992, 4235976
Int. Cl.[5] C08F *265/04, 265/06, 279/02*
U.S. Cl. 525—301 1 Claim

1. A particulate graft copolymer comprising a grafting base A consisting essentially of, based on A,

A11: from 75 to 99.8% by weight of at least one alkyl acrylate A11 having 1–8 carbon atoms in the alkyl radical,

A12: from 0.1 to 5% by weight of at least one polypolyfunctional, crosslinking copolymerizable monomer A12 having at least two ethylenic double bonds which are conjugated in the 1,3-position, and

A13: from 0.1 to 20% by weight of at least one ethylenically unsaturated monomer A13 having one or more acidic groups

or

A111: at least 50% by weight of one or more dienes A111,

A112: up to 50% by weight of at least one further ethylenically unsaturated monomer A112, and

A113: from 0.1 to 20% by weight of at least one ethylenically unsaturated monomer A113 having one or more acidic groups

and

a graft sheath B grafted thereon, comprising, based on B,

B1: from 0 to 99.8% by weight of at least one aromatic vinyl monomer B1,

B2: from 0 to 99.8% by weight of at least one polar, copolymerizable, ethylenically unsaturated monomer B2,

B3: from 0.1 to 20% by weight of at least one ethylenically unsaturated monomer B3 having one or more basic groups, and

B4: from 0.1 to 10% by weight of at least one hydroxyalkyl acrylate or hydroxyalkyl methacrylate B4.

5,367,030

PROCESS FOR CROSSLINKING THERMOPLASTIC SILANE POLYMERS

Yimsan Gan; Michael J. Keogh; James R. Leech, all of Somerset, and Hugh E. McGee, Somerville, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 14,705, Feb. 8, 1993, abandoned. This application Feb. 14, 1994, Ser. No. 196,893
Int. Cl.[5] C08F *30/08*
U.S. Cl. 525—326.5 12 Claims

1. A process for crosslinking a thermoplastic ethylene silane copolymer which comprises forming said ethylene silane copolymer in a processing zone into a shaped article in the absence of a catalyst, removing said shaped article from said processing zone and thereafter subjecting said thermoplastic ethylene silane copolymer shaped article to a solution of benzoic acid in an amount and for a time sufficient to crosslink said thermoplastic ethylene silane copolymer.

5,367,031

OXIDIZING RESIN FOR IODIDE CONVERSION AND RETENTION

George L. Marchin, and Jack L. Lambert, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Jan. 25, 1994, Ser. No. 187,176
Int. Cl.[5] C08F *36/20*
U.S. Cl. 525—328.3 3 Claims

1. Zirconium peroxide resin granules exhibiting the property of oxidizing iodide in aqueous solution to iodine, comprising porous granules of chelating resin containing chelating groups with zirconium peroxide bound thereto, said zirconium peroxide having been applied by contacting said resin granules with an alcohol solution of zirconium peroxide.

5,367,032

PROCESS FOR THE PRODUCTION OF CARBONYL-CONTAINING COMPOUNDS FROM EPOXIDES

David A. Hancock; David J. Moreton, and Lee J. Morton, all of Hull, England, assignors to BP Chemicals Limited, London, England

Filed Jan. 11, 1994, Ser. No. 180,076
Claims priority, application United Kingdom, Jan. 15, 1993, 9300739
Int. Cl.[5] C08F *8/06, 8/08*
U.S. Cl. 525—333.8 8 Claims

1. A process for converting epoxides to the corresponding carbonyl-containing compounds which process comprises reacting the epoxide with an oxidising agent in a liquid aqueous/organic two-phase system, which system comprises:

(a) an organic phase substantially containing the epoxide and

(b) an aqueous acidic phase substantially containing the oxidising agent, in the presence of an onium compound capable of achieving phase partitioning and a catalytic system comprising a first catalyst component which is at least one element selected from tungsten, molybdenum, vanadium and chromium, or a compound containing at least one of the aforesaid elements, and a second catalyst component which is a phosphorus (V) acid or a species convertible to a phosphorus (V) acid.

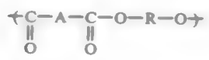
5,367,033

BIODEGRADABLE ETHYLENE POLYMER HAVING ESTER BONDS IN THE MAIN CHAIN AND PROCESS FOR PRODUCTION OF THE SAME

Naohiro Mikawa; Satoshi Ueki; Naomi Koyama; Hiroyuki Furuhashi; Tetsuya Morioka, and Shigeyuki Toki, all of Saitama, Japan, assignors to Tonen Corporation, Tokyo, Japan

Division of Ser. No. 761,241, Sep. 17, 1991, abandoned. This application Jan. 25, 1993, Ser. No. 8,838
Int. Cl.[5] C08G *63/12*
U.S. Cl. 525—343 21 Claims

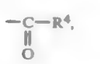
1. A process for the preparation of an ethylene polymer comprising a recurring unit represented by the formula



in which R is a divalent hydrocarbon group containing 2 to 20 carbon atoms and A is a polyethylene segment comprising a recurring unit represented by the formula $—CH_2.CH_2—$ and having a number average molecular weight ($\overline{Mn}$) of 300 to 300,000, and the ethylene polymer having a number average molecular weight ($\overline{Mn}$) of 500 to 5,000,000 which comprises the polycondensation of an ethylene polymer (I) comprising a recurring unit represented by $—CH_2.CH_2—$ and having



at both the ends and an Mn of 300 to 300,000 with a compound (II) represented by the formula YO—R—OY, in which X is —OH or $—OR^1$, Y is a hydrogen atom or



R^1 is a hydrocarbon group containing 1 to 5 carbon atoms, R^4 is a hydrocarbon containing 1 to 5 carbon atoms, and R has the same meaning as described above, the polycondensation being carried out at 50° to 250° C. for 1 hour to 100 hours and in the presence of a catalyst selected from the group consisting of titanium-tetrapropoxide, titaniumtetrabutoxide and titaniumtetrahexyloxide.

5,367,034

PROCESS AND ISOMERIZING AGENT ISOMERIZING PARTIALLY HYDROGENATED DIENE POLYMERS

William L. Hergenrother, and John M. Dostak, both of Akron, Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Division of Ser. No. 111,359, Aug. 24, 1993, Pat. No. 5,314,967.
This application Feb. 14, 1994, Ser. No. 194,961
Int. Cl.[5] C08F *8/00*
U.S. Cl. 525—366 10 Claims

1. A process for isomerizing a solution of partially hydrogenated diene polymer containing at least 50 percent by weight of diene monomer contributed units and 0 to 50 percent by weight of ethynically unsaturated monomer contributed units in an inert organic solvent in the presence of a soluble hydrogenation catalyst comprising admixing an isomerizing effective amount of a alkali alkoxide compound having the formula:

$$MeOR_4$$

wherein Me is selected from the group consisting of Li, Na and K, and R_4 is an alkyl radical containing from 5 to 20 carbon atoms, including alkyl and cycloalkyl radicals;

to the solution and heating the solution to isomerize the diene monomer contributed units of the partially hydrogenated diene polymer to produce a diene polymer having an unsaturation ratio of at least 3 to 1, said unsaturation ratio being defined as a ratio of a combined total of unsaturation groups in the diene monomer contributed units in an endo and an exo configuration to a combined total of unsaturation groups in the diene monomer contributed units in a 1,4-cis, 1,4-trans and vinyl configuration.

5,367,035

POLY(VINYLAMMONIUM FORMATE) AND PROCESS FOR MAKING THE SAME

Michael E. Ford, Coopersburg, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 36,757, Mar. 25, 1993. This application Nov. 2, 1993, Ser. No. 146,261
Int. Cl.[5] C08F *8/12*
U.S. Cl. 525—378 4 Claims

1. A process for making poly(vinylammonium formate) which comprises:

(a) subjecting a polymer of N-vinylformamide to hydrolysis conditions in an aqueous solution in the presence of a hydrolysis agent selected from ammonia or amine having a boiling point below 100° C., and

(b) degassing the polymer solution of step (a) to remove ammonia or amine present.

5,367,036

MOISTURE-CURABLE URETHANE-BASED SEALING COMPOSITION

Hitoshi Saito, Hiratsuka; Tetsuji Kitamura; Hideyuki Matsuda, both of Fujisawa; Masamichi Danjo, Hadano, and Eiji Nishi, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,786
Claims priority, application Japan, Oct. 23, 1991, 3-275497; Mar. 9, 1992, 4-050912
Int. Cl.[5] C08F *283/04*
U.S. Cl. 525—458 16 Claims

1. A moisture-curable urethane-based sealing composition comprising:

(I) an urethane prepolymer resulting from the reaction of a polyether polyol having a number-average molecular weight of 1,000 to 7,000 with a polyisocyanate compound in an equivalent ratio of isocyanate group to hydroxyl group of 1.1 to 2.5; and

(II) a polyurethane compound containing no free isocyanate groups and resulting from the reaction of a polyether polyol having a number-average molecular weight of 500 to 3,000 or a polyester polyol having a number-average molecular weight of 500 to 6,000 with a polyisocyanate compound in an equivalent ratio of 1.1 to 2.5 and from the subsequent reaction of the resultant intermediate prepolymer with a monoalcohol having a carbon number of 1 to 22 to thereby binds all isocyanate groups in the intermediate prepolymer,

wherein components (I) and (II) are blended in a total amount of 100 parts by weight, and component (I) is added in an amount of 81 to 99 parts by weight and component (II) in an amount of 1 to 19 parts by weight.

5,367,037

PROCESS FOR PRODUCING ETHYLENE/PROPYLENE/ETHYLIDENE NORBORNENE RUBBERS

Kin H. Lee, South Charleston, W. Va.; Mahmoud R. Rifi, Kendall Park, N.J.; Mark J. Kriss, St. Albans, W. Va., and Han-Tai Liu, Belle Mead, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 405,204, Sep. 11, 1989, abandoned. This application Mar. 31, 1994, Ser. No. 220,738

Int. Cl.[5] C08F *2/34, 4/68*

U.S. Cl. 526—133 **7 Claims**

1. A process for the production of an EPDM wherein about 20 to about 50 percent by weight of the terpolymer chains contain less than about 15 percent by weight of the total moieties based on ethylidene norbornene comprising reacting ethylene, propylene, ethylidene norbornene, and hydrogen, in the gas phase, in a fluidized bed, under polymerization conditions, in the presence of a catalyst system comprising:

(a) the reaction product of a vanadium compound and an electron donor, which is an organic Lewis base in which the vanadium compound is soluble;

(b) at least one modifier having the formula BX_3 or $AlR_{(3-a)}X_a$ wherein each R is independently alkyl or aryl having 1 to 14 carbon atoms; each X is independently chlorine, bromine, or iodine; and a is 0, 1, or 2,

wherein components (a) and (b) are impregnated into an inorganic support;

(c) a halocarbon promoter; and

(d) a hydrocarbyl aluminum cocatalyst with the following provisos;

(i) the partial pressure of ethylene is in the range of about 80 to about 150 psi;

(ii) the molar ratio of propylene to ethylene is in the range of about 0.35:1 to about 0.8:1;

(iii) the molar ratio of hydrogen to ethylene is in the range of about 0.0005:1 to about 0.008:1; and

(iv) the amount of ethylidene norbornene is about 2 to about 10 percent by weight based on the weight of the fluidized bed.

5,367,038

POLYISOQUINOLINEDIYLS AND USES THEREOF

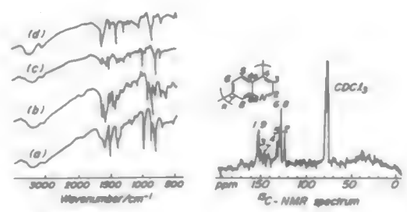
Takakazu Yamamoto, and Takaki Kanbara, both of Yokohama, Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Mar. 10, 1992, Ser. No. 848,193

Claims priority, application Japan, Sep. 13, 1991, 3-234809

Int. Cl.[5] C08F *126/06*

U.S. Cl. 526—259 **4 Claims**



IR spectra of (a) polyquinoline-5,8-diyl, (b) polyquinoline-4,7-diyl, (c) polyisoquinoline-1,4-diyl, and (d) polyisoquinoline-5,8-diyl.

1. A quinolinediyl polymer having substantial heat stability and consisting essentially of:

a recurring structural unit which is selected from a divalent group consisting of quinoline-5,8-diyl and quinoline-4,7-diyl, which has a number of recurring structural units which is an integer of at least 5, and which has an ignition loss of at most about 18% by weight when heated to about 900° C. in a nitrogen atmosphere.

5,367,039

PRODUCTION OF COLORED VINYL POLYMER PARTICLES BY POLYMERIZING A VINYL POLYMERIZABLE MONOMER WITH A POLYMERIZABLE DYE

Naoya Yabuuchi, Hirakata; Chikayuki Otsuka, Kadoma, and Akio Kashihara, Hirakata, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

Continuation of Ser. No. 587,731, Sep. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 376,028, Jul. 6, 1989, abandoned. This application Jan. 12, 1993, Ser. No. 3,669

Claims priority, application Japan, Jul. 6, 1988, 63-167973

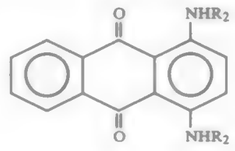
Int. Cl.[5] C08F *220/60, 226/02, 2/22, 2/20*

U.S. Cl. 526—284 **5 Claims**

1. A process for preparing colored vinyl polymer particles which comprises suspension-polymerizing, dispersion-polymerizing or emulsion polymerizing:

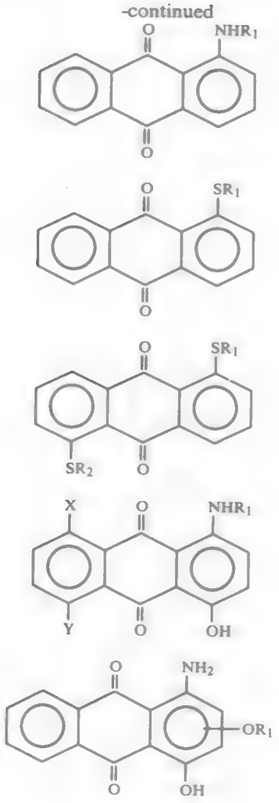
(A) 100 parts by weight of a vinyl polymerizable monomer, and

(B) 0.1 to 99.9 parts by weight of a polymerizable dye prepared by reacting a (meth)acryloyl compound having a group reactive with an active hydrogen selected from the group consisting of (meth)acryloyl chloride, (meth)acryloyl isocyanate, isocyanatoethyl (meth)acrylate, ethoxalyloxyethyl (meth)acrylate and 2-vinylazlactone, with a dye represented by the formula:



(1)

-continued



(2)

wherein R_1 and R_2, which are the same or different, represent a group having the formula:



(3)

wherein R_3 represents $—(CH_2)m-NH_2$, or $[—(CH_2),-OH]—(CH_2)m-OH$, R_4 represents a hydrogen atom, an alkyl group, a cycloalkyl group or an allyl group, n is an integer of 1 to 5 and m is 0 or an integer of 1 to 5, and X and Y, which are different, represent —OH or $—NHR_1$,

in the presence of a polymerization initiator, and a color difference between the dye (1) to (6) and the obtained colored vinyl polymer particles is within ±3nm as measured by absorption spectrum.

5,367,040

PRECURE RESISTANT THERMOSET RESIN FOR MOLDED WOOD COMPOSITES

Zygmunt Teodorczyk, Batavia, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed Dec. 29, 1992, Ser. No. 997,867

Int. Cl.[5] C08G *8/04*

U.S. Cl. 528—137 **29 Claims**

1. A process for the preparation of a modified, pre-cure resistant phenol-formaldehyde resole resin comprising:

reacting a difunctional phenolic compound with formaldehyde in the presence of an alkaline catalyst to form said resole, wherein the molar ratio of formaldehyde to difunctional phenolic compound is at least about 1:1.

5,367,041

SELF-DOPED ZWITTERIONIC POLYMERS

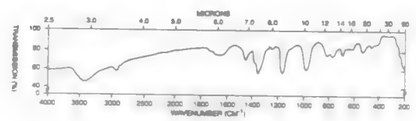
Fred Wudl, and Alan Heeger, both of Santa Barbara, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 616,743, Nov. 16, 1990, Pat. No. 5,310,781, which is a continuation of Ser. No. 243,530, Sep. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 156,928, Dec. 14, 1987, abandoned. This application Jan. 2, 1991, Ser. No. 636,914

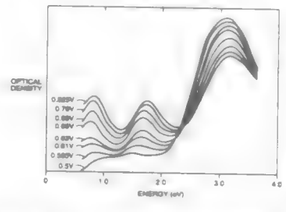
Int. Cl.[5] C08G *83/00*

U.S. Cl. 528—167 **6 Claims**

(4)

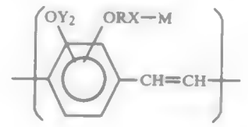


(5)



(6)

1. A water-soluble conducting self-doped homopolymer having along its backbone a π-electron conjugated system which comprises approximately 100–500 monomer units, between about 0.01 and 100 mole % of said units having covalently linked thereto at least one Bronsted acid group, wherein said monomer units having said Bronsted unit covalently linked thereto have the structural formula



wherein

Y_2 is selected from the group consisting of hydrogen and —R—X—M;

R is a linear or branched (C_1–C_{10}) alkyl ester, ether or amide;

X is a Bronsted acid anion; and

M is a positive monovalent counterion;

5,367,042

PROCESS FOR FABRICATING ORIENTED POLYBENZAZOLE FILMS

Peter E. Pierini, Berkeley; Robbert M. Vermeulen, Concord, both of Calif., and Susan E. Dollinger, Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1992, Ser. No. 937,327

Int. Cl.[5] C08G *75/32, 73/22;* **C08J** *5/00*

U.S. Cl. 528—183 **23 Claims**

1. A process for preparing an oriented polybenzazole film or sheet comprising the steps of:

(1) extruding a dope to form a dope film or sheet, that contains: (a) a polybenzazole polymer selected from the group consisting of polybenzoxazole and polybenzothiazole

polymer or copolymer and (b) a solvent capable of dissolving the polybenzazole polymer, through a slit die wherein the faces of the die do not move substantially with respect to each other in a direction that is transverse to the direction of extrusion, whereby a dope film or sheet having transverse edges is formed;

(2) stretching the dope film or sheet in a direction that is approximately the transverse to the direction in which the film was extruded, using a device that grips the transverse edges of the dope film or sheet and draws the transverse edges apart from each other at a temperature and a rate at which the dope film or sheet does not tear; and

(3) coagulating the stretched dope film or sheet, whereby a polymer film or sheet is formed.

5,367,043

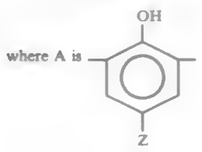
DURABLE FORMALDEHYDE-FREE PHENOLIC RESINS, AND METHOD OF PREPARING SUCH RESINS

John M. Butler, Dayton, and Richard L. Brandon, Chillicothe, both of Ohio, assignors to Enzymol International, Inc., Columbus, Ohio

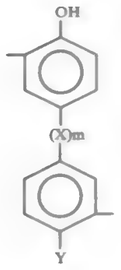
Filed Nov. 6, 1991, Ser. No. 788,791
Int. Cl.[5] C08G 63/18
U.S. Cl. 528—193 12 Claims

1. A curable formaldehyde-free phenolic resin having the formula (I):

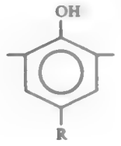
$$[(A)_a\,(B)_b]_n \qquad (I)$$



or

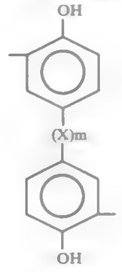


and B is



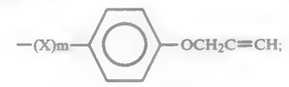
or

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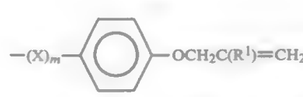


wherein a and b each represent an integer equal to or greater than 1, a+b multiplied by n is an integer of about 3 to 100;

Z is $-OCH_2C{\equiv}CH$, $-OCH_2C(R^1){=}CH_2$,

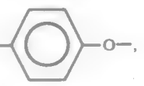


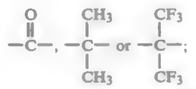
or



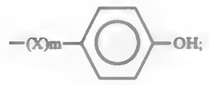
Y is $-OCH_2C{\equiv}CH$ or $-OCH_2C(R^1){=}CH_2$;

R^1 is hydrogen or methyl,

X is —O—, —O—  —O—,



m is 0 or 1; and R is hydrogen, halogen, alkyl having about 1 to 12 carbon atoms, aryl having about 6 to 12 carbon atoms, allyl having 3 or 4 carbon atoms, aralkyl having about 7 to 13 carbon atoms, alkaryl having about 7 to 13 carbon atoms, alkoxy having about 1 to 4 carbon atoms, aryloxy having about 6 to 12 carbon atoms, or



5,367,044

BLOW MOLDED ARTICLE MOLDED FROM A COMPOSITION COMPRISING A RANDOMLY BRANCHED AROMATIC POLYMER

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 596,186, Oct. 12, 1990, abandoned. This application Aug. 12, 1992, Ser. No. 928,075
Int. Cl.[5] C08G 64/00
U.S. Cl. 528—204 4 Claims

1. A blow molded article which is a bottle molded from a composition comprising a randomly branched aromatic polymer said randomly branched aromatic polymer comprising:

(1) a carbonate precursor.

(2) a dihydric phenol; and

(3) 1,1,1-tris-(4-hydroxyphenyl) ethane as a branching agent; wherein said branching agent is present in said polymer in a quantity ranging from about 0.28 to about 0.36 mole percent based on the amount of said dihydric phenol present in said polymer.

5,367,045

POLYURETHANE MATERIAL FOR MOLDING PAD COVER

Masahiro Takimoto; Hisashi Mizuno, and Shinji Jinushi, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 17, 1993, Ser. No. 107,311
Claims priority, application Japan, Sep. 4, 1992, 4-262890
Int. Cl.[5] C08G 18/18
U.S. Cl. 528—53 5 Claims

1. A material for producing a polyurethane molded pad cover, comprising a polyol, an isocyanate and an urethane reaction retarding catalyst comprising a tertiary amine blocked with an acid, said material containing no foaming agent.

5,367,046

LOW DIELECTRIC POLYIMIDE FIBERS

William E. Dorogy, Jr., Newport News, and Anne K. St. Clair, Poquoson, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 10, 1992, Ser. No. 870,003
Int. Cl.[5] C08G 73/12; B32B 27/02; B29C 47/88; D01F 6/00
U.S. Cl. 528—353 10 Claims

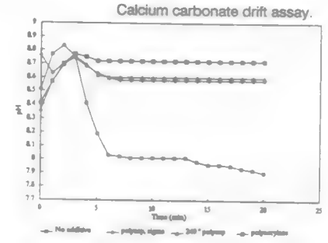
1. A high temperature resistant, fluorine-containing aromatic polyimide fiber having a dielectric constant less than 3, wherein the fluorine-containing aromatic polyimide is prepared by reacting 2,2-bis[4-(4-aminophenoxy)phenyl]hexafluoropropane with 2,2-bis(3,4-dicarboxyphenyl) hexafluoropropane dianhydride followed by converting the polyamic acid so formed to the corresponding polyimide by standard means.

5,367,047

PREPARATION OF POLYASPARTIC ACID BY HIGH TEMPERATURE REACTION

Louis L. Wood, Rockville, Md., assignor to Srchem Incorporated, Elkridge, Md.

Division of Ser. No. 7,376, Jan. 21, 1993, Pat. No. 5,288,783, and Ser. No. 882,919, May 14, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 199,652
Int. Cl.[5] C08G 69/00
U.S. Cl. 528—363 1 Claim



1. A process for the preparation of polysuccinimide comprising reacting an acid selected from the group consisting of maleic acid and fumaric acid, with ammonia in a molar ratio of 1:1–2.1 at 200°–300° C.

5,367,048

POLYMER ALLOY MATERIAL AND PROCESS FOR PRODUCTION THEREOF

William J. D. Shaw, Calgary, Canada, assignor to University Technologies International Inc., Alberta, Canada

Filed Jun. 19, 1992, Ser. No. 901,163
Int. Cl.[5] C08G 73/00
U.S. Cl. 528—367 34 Claims



1. A polymer alloy material when produced by the step of: consolidating a powdered precursor material consisting essentially of mechanically milled polymer particles having an average particle size less than about 1000 μm at a temperature less than the melting point of the polymer and at a pressure of at least about 5 MPa to thereby produce the polymer alloy material.

5,367,049

PROCESS FOR THE MANUFACTURE OF POLY(ARYLENE SULPHIDE)

Danny Van Hoyweghen, Heverlee, and Jean-Marc Coisne, Jemeppe-Sur-Sambre, both of , assignors to Solvay (Société Anonyme), Brussels,

Filed Aug. 16, 1993, Ser. No. 106,980
Claims priority, application Belgium, Sep. 25, 1992, 09200842
Int. Cl.[5] C08G 75/14
U.S. Cl. 528—388 9 Claims

1. A process for the manufacture of poly(arylene sulphide), consisting in the steps of:

(A) preparing a reaction mixture consisting of the following ingredients:

(a) an alkali metal or alkaline-earth metal sulphide, which may be anhydrous or hydrated;

(b) a polar organic solvent;
(c) an alkali metal or alkaline-earth metal carboxylate selected from formates, acetates, propionates, butyrates, valerates, hexanoates, laurates, cyclohexylacetates, oxalates, malonates, succinates, glutarates, adipates, pimelates, suberates, azelates, sebacates, benzoates, toluates, phenylacetates, β-phenylpropionates, γ-phenylbutyrates, phthalates, isophthalates and terephthalates;
(d) water;
(e) a dihalogenated aromatic compound; and
(f) up to about 1×10^{-2} mole per mole of dihalogenated aromatic compound of a trihalogenated aromatic compound; in quantities such that:
the molar ratio R_{H2O} of the water to the sulphide (a) (i.e. the total number of moles of water, either introduced in the form of free water (d) or present in the form of water of hydration of the sulphide (a), divided by the number of moles of sulphide) is such that $2.6 \leqq R_{H2O} \leqq 3.8$;
the molar ratio R_{add} of the carboxylate (c) to the sulphide (a) (i.e. the number of moles of carboxylate divided by the number of moles of sulphide) is such that $0.2 \leqq R_{add} \leqq 0.9$;
(B) heating the reaction mixture to a polymerisation temperature, which is greater than 235° C. and less than the decomposition temperature of poly(arylene sulphide);
(C) maintaining the reaction mixture at the polymerization temperature for about 1 to 30 hours to produce poly(arylene sulphide); and
(D) separating the poly(arylene sulphide) obtained from the reaction mixture.

5,367,050

POLYETHER POLYOL PRODUCTION OF A FLEXIBLE URETHANE FOAM AND SHAPED ARTICLE THEREFROM

Yoshihiko Tairaka, Sakai; Mitsuhiro Nishimura, Osaka, and Katsuhisa Kodama, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 141,942, Oct. 28, 1993. This application Feb. 16, 1994, Ser. No. 197,321
Claims priority, application Japan, Oct. 28, 1992, 4-290087
Int. Cl.[5] C08G *18/50*
U.S. Cl. 528—423 **6 Claims**

1. A polyether polyol obtainable by addition-polymerization of an alkylene oxide to an N-aminoethylpiperazine-ethylene oxide adduct as an initiator, said polyether polyol and having a molecular weight of about 2000 to 7000.

5,367,051

AMINE-CONTAINING POLYMERIZABLE MONOMERS AND POLYMERS FUNCTIONALIZED WITH FULLERENES TO PROVIDE POLYMERS WITH HIGH TEMPERATURE STABILITY

Subhash C. Narang, Redwood City; Susanna C. Ventura; Sivapackia Ganapathiappan, both of Mountain View, all of Calif.; Tilak R. Bhardwaj, Chandigarh, India, and Asutosh Nigam, Fremont, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 22, 1993, Ser. No. 96,045
Int. Cl.[5] C08G *73/00*
U.S. Cl. 528—424 **17 Claims**

1. A fullerene-functionalized amine-containing polymeric or polymerizable monomeric material, characterized by high temperature stability in polymerized form, having at least one fullerene group bonded to each amine group on the polymeric or polymerizable monomeric material to thereby impart said high temperature stability to said polymeric material or to a polymeric material formed from said polymerizable monomeric material.

5,367,052

AMYLIN PEPTIDES

Garth J. S. Cooper, Solana Beach, Calif., and Antony C. Willis, Witney, England, assignors to Amylin Pharmaceuticals, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 275,319, Nov. 23, 1988, abandoned, and a continuation-in-part of Ser. No. 236,985, Aug. 26, 1988, abandoned, said Ser. No. 275,319, is a continuation-in-part of Ser. No. 186,520, Apr. 27, 1988, abandoned. This application May 1, 1989, Ser. No. 346,624
Claims priority, application United Kingdom, Apr. 27, 1987, 8709871; Aug. 26, 1987, 8720115
Int. Cl.[5] A61K *37/02;* **C07K** *7/10, 7/36*
U.S. Cl. 530—307 **21 Claims**

1. An amylin peptide having thirty-seven amino acids, in which the C-terminal tyrosine of said peptide is carboxyamidated, said peptide contains an intramolecular linkage between cysteine resides at positions 2 and 7, and wherein said peptide is capable of reducing insulin-induced incorporation of glucose into glycogen in isolated rat soleus muscle.

5,367,053

OPIOID PEPTIDE INHIBITORS

Colette T. Dooley, San Diego, and Richard A. Houghten, Del Mar, both of Calif., assignors to Houghten Pharmaceuticals, Inc., San Diego, Calif.

Filed May 19, 1993, Ser. No. 64,517
Int. Cl.[5] A61K *37/02;* **C07K** *5/00, 7/00, 15/00*
U.S. Cl. 530—329 **4 Claims**

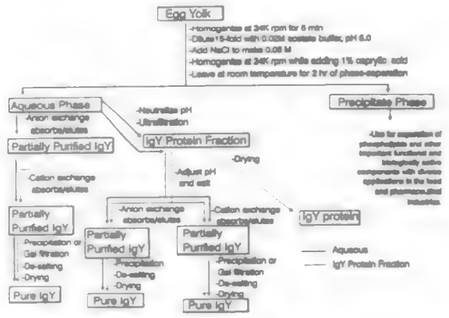
1. A peptide having the structure:
Ac-L-Arg-L-Phe-L-Met-L-Trp-L-Met-L-Thr-L-Xaa-NH_2;
wherein L-Xaa is an L-amino acid selected from the group consisting of L-Lys, L-Arg, L-Thr, L-Ser, L-Gln, L-Pro, L-His, L-Ala, L-Asn, L-Met, L-Gly, L-Leu, L-Tyr, L-Val, L-Trp, L-Asp, L-Cys, L-Glu, L-Phe, and L-Ile (SEQ ID NO: 1).

5,367,054

LARGE-SCALE PURIFICATION OF EGG IMMUNOGLOBULIN

Young-Zoon Lee, Cincinnati, Ohio, assignor to Stolle Research & Development Corp., Cincinnati, Ohio

Filed Apr. 12, 1993, Ser. No. 45,061
Int. Cl.[5] C07K *3/20, 3/22;* **A61K** *37/04, 39/385*
U.S. Cl. 530—359 **15 Claims**



1. A method for the purification of IgY from non-immune or immune egg yolk comprising the following steps:
(a) diluting egg yolk 5- to 30-fold with water or buffer;
(b) homogenizing the diluted egg yolk of step (a) until a uniform mixture is obtained:
extracting the homogenate of step (b) by adding one or more medium-chain fatty acids to a final concentration sufficient to cause the resultant mixture to separate into an aqueous bottom phase and a precipitate top phase; and

(d) recovering the aqueous phase of step (c) containing said IgY.

5,367,055

PROCESS FOR TREATING ZEIN CONTAINING MATERIAL

Hidekazu Takahashi; Kohji Yamada, and Norimasa Yanai, all of Funabashi, Japan, assignors to Showa Sangyo Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 868,907
Claims priority, application Japan, Apr. 23, 1991, 3-117893
Int. Cl.[5] A23J *1/12*
U.S. Cl. 530—373 **8 Claims**

1. A process for pre-treating a zein-containing material, prior to extracting and purifying, which consists essentially of the steps of contacting the zein-containing material with (1) a 80–100% (V/V) acetone solution at a temperature of 25–60° C., or (2) a 70–80% (V/V) acetone solution at a temperature of 25–40° C., and separating the resulting solid from the solution.

5,367,056

ENDOTHELIAL CELL-LEUKOCYTE ADHESION MOLECULES (ELAMS) AND MOLECULES INVOLVED IN LEUKOCYTE ADHESION (MILAS)

Catherine A. Hession, South Weymouth; Roy R. Lobb, Westwood; Susan E. Goelz, Winchester; Laurelee Osborn, Brighton; Christopher D. Benjamin, Beverly, and Margaret D. Rosa, Winchester, all of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Division of Ser. No. 452,675, Dec. 18, 1989, Pat. No. 5,272,263, which is a continuation-in-part of Ser. No. 359,516, Jun. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 345,151, Apr. 28, 1989, Pat. No. 5,217,870. This application Mar. 23, 1993, Ser. No. 35,674
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—380 **6 Claims**

1. An isolated vascular cell adhesion molecule 1 as depicted by the amino acid sequence shown in FIG. 3.

5,367,057

TYROSINE KINASE RECEPTOR FLK-2 AND FRAGMENTS THEREOF

Ihor R. Lemischka, Princeton, N.J., assignor to The Trustees of Princeton University, Princeton, N.J.

Division of Ser. No. 977,451, Nov. 19, 1992, Pat. No. 5,270,458, which is a continuation-in-part of Ser. No. 975,049, Nov. 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 906,397, Jun. 26, 1992, which is a continuation-in-part of Ser. No. 813,593, Dec. 24, 1991, Pat. No. 5,185,438, which is a continuation-in-part of Ser. No. 793,065, Nov. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 728,913, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,666, Apr. 2, 1991, abandoned. This application Apr. 30, 1993, Ser. No. 55,269
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—350 **4 Claims**

1. An isolated protein that is murine flk-2 having the sequence shown in FIG. 1 SEQ. ID. NOS. 1 and 2.

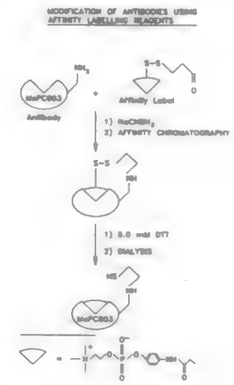
5,367,058

MODIFIED ANTIBODIES WITH INCREASED AFFINITY

J. Bruce Pitner; Linn, Jr. C. Preston, and Patrick D. Mize, all of Durham, N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 25, 1993, Ser. No. 111,699
Int. Cl.[5] C07K *15/28*
U.S. Cl. 530—391.9 **6 Claims**

1. A thiopropyl modified antibody wherein a thiopropyl moiety is located on the antibody such that a covalent bond is formed between the thiopropyl moiety, which has been reactivated with a thiol-containing group, and an antigen, which has



been modified by a maleimide or a thiol-containing group to increase the antigen-antibody binding affinity.

5,367,059

CYS-SER-VAL-THR-CYS-GLY SPECIFIC TUMOR CELL ADHESION RECEPTOR

George P. Tuszynski, Williamstown, N.J.; Jacob Eyal, Baltimore, and Bruce K. Hamilton, Silver Spring, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y. and The Medical College of PA, Philadelphia, Pa.

Filed May 14, 1992, Ser. No. 883,659
Int. Cl.[5] C07K *15/14*
U.S. Cl. 530—395 **4 Claims**

1. A purified receptor protein capable of specifically binding the hexapeptide Cys Ser Val Thr Cys Gly (SEQ ID NO: 1) having the following properties:
(i) a molecular weight of about 50 kD determined by SDS-PAGE under non-reducing conditions;
(ii) two proteins of molecular weights of about 50 kD and 60 kD determined by SDS-PAGE under reducing conditions;
(iii) an isoelectric focus point ranging from about 7.1–7.5; and
(iv) a glycoprotein comprising two subunits linked by intrachain disulfide bonds.

5,367,060

STRUCTURE, PRODUCTION AND USE OF HEREGULIN

Richard L. Vandlen, Hillsborough, and William E. Holmes, Pacifica, both of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Filed Mar. 6, 1992, Ser. No. 847,743
Int. Cl.[5] C07K *13/00;* **A61K** *37/36*
U.S. Cl. 530—399 **27 Claims**

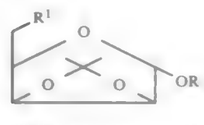
1. An isolated heregulin polypeptide that has a heregulin effector or antigenic function, said polypeptide consisting essentially of a polypeptide selected from the group consisting of heregulin-alpha (Seq. ID No. 26), heregulin-β1 (Seq. ID No. 27), heregulin β2 (Seq. ID No. 28), heregulin-β2-like (Seq. ID No. 29), and heregulin -β3 (Seq. ID No. 30).

5,367,061
METHOD OF DETECTING NITRATE ESTERS
Joseph M. Leginus, Silver Spring, Md., assignor to Westinghouse Electric Company, Pittsburgh, Pa.
Filed May 6, 1993, Ser. No. 57,386
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—405 4 Claims

1. An antigen for inducing, in a warm blooded mammal, the production of nitrate ester-specific antibodies, which antigen comprises pentaerythritol trinitrate coupled to a carrier protein selected from Bovine Serum Albumin and thyroglobulin via an alkyl carboxy linking group.

5,367,062
DISUBSTITUTED AND DEOXYDISUBSTITUTED DERIVATIVES OF ALPHA-D-LYXOFURANOSIDES HAVING ANTI-INFLAMMATORY AND ANTI-PROLIFERATIVE ACTIVITY
Sudershan K. Arora, Lansdale, and Peter J. Schied, Southampton, both of Pa., assignors to Medicarb Inc., Southampton, Pa.
Filed Aug. 21, 1992, Ser. No. 933,312
Int. Cl.[5] C07H *15/04, 17/02*
U.S. Cl. 514—25 12 Claims

1. A pentofuranoside compound of formula I



wherein R is nonyloxypropyl or phenylpropyl;
R^1 is $-YR^2$ or pyrrolidinyl, C_5–C_{15} -alkylamino, or amino-C_2–C_5-pyrrolidinyl;
Y is O and
R^2 *is* N-C_2–C_4-pyrrolidinyl or N-C_2–C_4-piperidinyl.

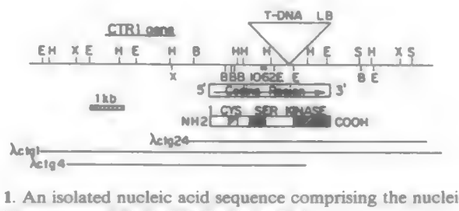
5,367,063
HUMAN PHOSPHOLIPASE ACTIVATING PROTEIN AND METHODS FOR DIAGNOSIS OF RHEUMATOID ARTHRITIS
John S. Bomalaski, 11 Chestnut La., Wayne, Pa. 19087; Mike A. Clark, 15 Westmore Dr., Denville, N.J. 07835, and Robert Shorr, 36 Overbrook Pky., Wynnewood, Pa. 19096
Division of Ser. No. 626,589, Dec. 6, 1990, Pat. No. 5,294,698. This application Nov. 4, 1993, Ser. No. 147,925
Int. Cl.[5] C12N *15/00, 9/20;* C12P *21/06*
U.S. Cl. 536—23.1 4 Claims

1. A substantially purified nucleic acid sequence coding for a fragment of human phosphilipase A_2 activating protein wherein said fragment is from about six to about thirty amino acids in length and wherein said fragment comprises at least one of amino acids 131, 132, 192, 193, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279 and 280 of said phospholipase A_2 activating protein, and the remainder of the amino acids of said fragment are selected from the amino acid sequence of phospholipase A_2 activating protein continguous with said at least one amino acid in the direction of the amino terminus of phospholipase A_2 activating protein, the carboxy terminus of phospholipase A_2, or both.

5,367,064
α-1-ANTICHYMOTRYPSIN, ANALOGUES AND METHODS OF PRODUCTION
Harvey Rubin; Zhi M. Wang, both of Philadelphia; Barry S. Cooperman, Penn Valley, and Norman Schechter, Philadelphia, all of Pa., assignors to The Trustees of The University of Pennsylvania, Philadelphia, Pa.
Division of Ser. No. 735,335, Jul. 24, 1991, Pat. No. 5,252,725, which is a division of Ser. No. 370,704, Jun. 23, 1989, Pat. No. 5,079,336. This application Jan. 15, 1993, Ser. No. 5,908
Int. Cl.[5] C07H *21/04;* C07K *13/00;* C12N *15/22*
U.S. Cl. 536—23.2 1 Claim

1. An isolated nucleic acid sequence coding for α-1-antichymotrypsin and having the sequence shown in FIG. 1.

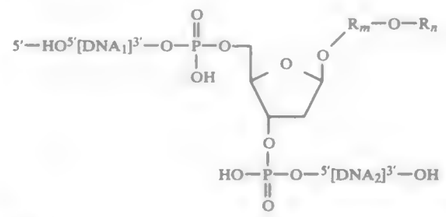
5,367,065
CONSTITUTIVE TRIPLE RESPONSE GENE AND MUTATIONS
Joseph R. Ecker, Erial, N.J., and Joseph J. Kieber, Philadelphia, Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Aug. 10, 1992, Ser. No. 928,464
Int. Cl.[5] C07H *17/00, 21/04;* C12N *15/00*
U.S. Cl. 536—23.6 6 Claims



1. An isolated nucleic acid sequence comprising the nucleic acid sequence of SEQUENCE ID NO: 1.

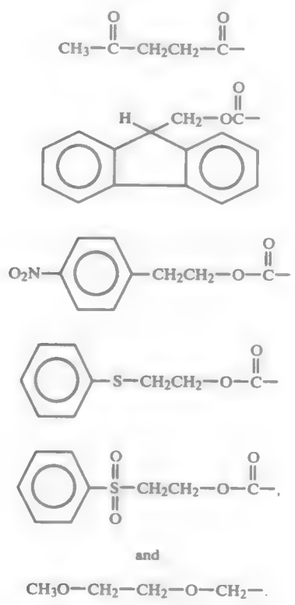
5,367,066
OLIGONUCLEOTIDES WITH SELECTABLY CLEAVABLE AND/OR ABASIC SITES
Michael S. Urdea, Alamo, and Thomas Horn, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.
Continuation-in-part of Ser. No. 559,961, Jul. 27, 1990, which is a continuation-in-part of Ser. No. 398,711, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 251,152, Sep. 29, 1988, Pat. No. 5,118,605, which is a continuation-in-part of Ser. No. 661,508, Oct. 16, 1984, Pat. No. 4,775,619. This application Jul. 24, 1991, Ser. No. 736,445
Int. Cl.[5] C07H *21/04, 21/00*
U.S. Cl. 536—24.3 23 Claims

1. A polynucleotide reagent having the structure



wherein
DNA_1 is a first segment of DNA;
DNA_2 is a second segment of DNA; and
R_m is C_1–C_{16} alkylene or an oxyethylene oligomer $-(CH_2CH_2O)_z-$ where z is an integer in the range of 1 to

16 inclusive, and R_n is selected from the group consisting of



and

$CH_3O-CH_2-CH_2-O-CH_2-$.

5,367,067
WATER-RESISTANT STARCH MATERIALS FOR THE PRODUCTION OF CAST SHEETS AND THERMOPLASTIC MATERIALS
Rainer Frische, Frankfurt am Main; Renate Gross-Lannert, Dietzenbach; Klaus Wollmann, Eschenhofen; Bernd Best, Moerfelden, all of Germany; Eduard Schmid, Bonaduz, and Fritz Buehler, Thusis, both of Switzerland, assignors to EMS-Inventa AG, Zurich, Switzerland
Filed Mar. 1, 1993, Ser. No. 958,103
Claims priority, application Germany, Apr. 30, 1991, 4114185
Int. Cl.[5] C08L *3/06;* C08K *5/10;* C08J *5/18*
U.S. Cl. 536—45 11 Claims

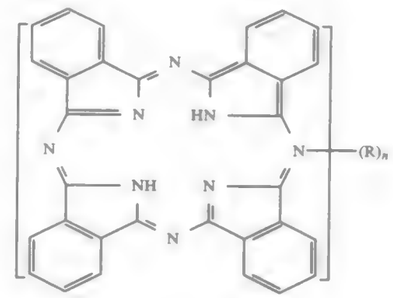
1. A water-resistant, thermoplastic starch material processable into environmentally safe, thermoplastically produced products and cast sheets, comprising (a) at least one acyl modified starch or derivative thereof, said acyl modified starch having a degree of substitution of at least 1.86, is sparingly soluble in water and is prepared from the reaction of (i) high amylose starch having an amylose content of greater than or equal to 70% and (ii) an acylation agent which is a free acid or chloride or anhydride of at least one fatty acid, and (b) at least one biodegradable plasticizer.

5,367,068
GLASS-LIKE POLYSACCHARIDE ABRASIVE GRIT
Christopher C. Lane, Laprairie; Ruben P. Lenz, Laval-sur-le-Lac, and Costa Athanassoulias, Montreal, all of Canada, assignors to ADM Agri-Industries, Ltd., Montreal, Canada
Continuation of Ser. No. 658,747, Feb. 21, 1991, abandoned, which is a division of Ser. No. 346,504, May 2, 1989, Pat. No. 5,066,335. This application Nov. 25, 1992, Ser. No. 982,060
Int. Cl.[5] C07G *17/00;* C07H *1/00, 1/06;* C08G *79/00*
U.S. Cl. 536—124 33 Claims

1. A process for producing chemically cross-liked, polysaccharide grit particles, comprising the steps of:
a) heating a homogeneous, aqueous mixture of dispersed polysaccharide molecules produced from starch and a chemical cross-linking agent to anneal the mixture whereby at normal ambient temperatures the mixture forms a solid product having a moisture content of about 10–70% by weight;
b) reacting the chemical cross-linking agent with said polysaccharide molecules to produce intermolecular chemical cross-linkages between the polysaccharide molecules; and
c) grinding the solid product obtained thereby to form grit particles having an apparent hardness of up to about 4.0 moh.

5,367,069
METAL-FREE, SUBSTITUTED PHTHALOCYANINES IN THE χ-MODIFICATION
Gunther Beck, Leverkusen, and Bernd Kaletta, Langenfeld, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed May 10, 1993, Ser. No. 59,481
Claims priority, application Germany, May 15, 1992, 4216120
Int. Cl.[5] C09B *47/30*
U.S. Cl. 540—122 4 Claims

1. A metal-free phthalocyanine in the χ-modification having the formula



(I)

in which
R represents fluorine, chlorine, bromine, iodine, —CN, $-NO_2$, $-CF_3$, OR^2, $-SR^2$, $-COOR^2$, $-CON(R^2)(R^3)$, -N (R) (R), and C_1–C_4-alkyl, and is bound in the ortho position, and
R^2 and R^3, independently of each other, represent hydrogen or C_1 –C_4-alkyl, and
n is from 0.1 to 4.0 and represents a statistical degree of substitution.

5,367,070
METHOD FOR MAKING FERROMAGNETIC PORPHIN COMPOUNDS
Amar Nath, Bala Cynwyd; Nikolai Kopeley, Philadelphia, both of Pa., and Som D. Tyagi, Wilmington, Del., assignors to Drexel University, Philadelphia, Pa.
Filed Feb. 5, 1993, Ser. No. 13,885
Int. Cl.[5] C07D *487/22*
U.S. Cl. 540—145 14 Claims

1. A method for making a ferromagnetic porphin compound comprising heating a non-ferromagnetic porphin compound having a central transition metal atom in the non-ferromagnetic porphin molecule and having pyrrole rings of the non-ferromagnetic porphin molecule having benzene or phenyl groups substituted on or fused with said rings in the substantial absence atmospheric oxygen to a temperature sufficient to pyrolyze at least a portion of the benzene or phenyl groups of the non-ferromagnetic porphin compound, whereby a ferromagnetic porphin compound is formed.

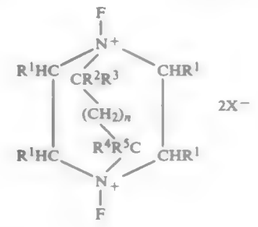
5,367,071

PROCESS FOR PREPARING DIFLUORINATED DIAZONIABICYCLOALKANE DERIVATIVES

Robert G. Syvret, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 7, 1993, Ser. No. 163,254
Int. Cl.[5] C07D *487/08;* C07B *39/00*
U.S. Cl. 540—472 **7 Claims**

1. A process for preparing N,N′-difluorinated diazoniabicyclo-alkane derivatives represented by the Formula (I)



(I)

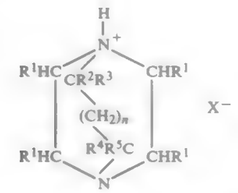
wherein

n represents 0, 1 or 2;

each R^1, R^2, R^3, R^4 and R^5 independently represents hydrogen, C_1–C_6 alkyl, aryl, C_1–C_6 alkyl-substituted aryl or aryl-substituted C_1–C_6 alkyl; and

each X^- represents a counterion or $2X^-$ represents a single divalent counterion,

which process comprises fluorinating the corresponding 1-hydro-4-aza-1-azoniabicycloalkane salts of the following Formula (II)



(II)

wherein n, R^1, R^2, R^3, R^4, R^5, and X^- are as defined above, in the presence of an alkali metal salt M^+X^-, wherein X^- is as defined above and M^+ is an alkali metal cation.

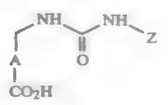
5,367,072

REAGENTS FOR AUTOMATED SYNTHESIS OF PEPTIDE ANALOGS

Thomas R. Webb, Encinitas, Calif., assignor to Corvas International, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 627,753, Dec. 14, 1990, Pat. No. 5,283,293. This application Dec. 13, 1991, Ser. No. 807,474
Int. Cl.[5] C07D *225/00*
U.S. Cl. 540—483 **14 Claims**

1. A compound of the formula:



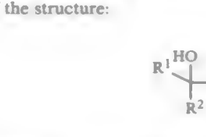
wherein

(a) A is a non-reactive hydrocarbyl group having from 2 to about 15 carbon atoms; and

(b) Z is selected from

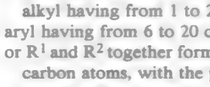
—NH—Pr; (i)

-continued



(ii)

and



(iii)

alk

wherein Pr is a protecting group removable under non-adverse conditions and R_1 is hydrogen; or alkyl, cycloalkyl, aryl or aralkyl, optionally substituted with 1 to 3 substituents independently selected from hydroxy, alkoxy, sulfhydryl, alkylthio, carboxy, amide, amino, alkylamino, indolyl, 3-N-formylindolyl, benzyloxy, halobenzyloxy, guanido, nitro-guanido or optionally substituted imidazolyl substituted with alkoxyalkyl; and alk is an alkylene group of about 3 to about 12 carbon atoms optionally substituted with 1 to 3 substituents independently selected from hydroxy, alkyl, aryl or guanido; and provided that any functional groups of R_1 or alk which are reactive under conditions of peptide synthesis are optionally protected by a protecting group which is removable under non-adverse conditions.

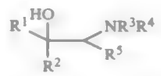
5,367,073

ASYMMETRIC SYNTHESIS OF β-AMINO ALCOHOLS FROM CHIRAL OR ACHIRAL ENAMINES

Bakthan Singaram, Santa Cruz; Gary B. Fisher, Boulder Creek, both of Calif.; Christian T. Goralski, and Lawrence W. Nicholson, both of Midland, Mich., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 847,171, Mar. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 848,427, Mar. 6, 1992, abandoned. This application Oct. 15, 1993, Ser. No. 138,613
Int. Cl.[5] C07C *213/00, 215/08, 213/38;* C07D *207/12, 295/08*
U.S. Cl. 544—170 **17 Claims**

1. A process for the synthesis of a chiral beta-aminoalcohol of the structure:



wherein

R^1 and R^2 are each independently selected from hydrogen, alkyl having from 1 to 20 carbons;

aryl having from 6 to 20 carbons;

or R^1 and R^2 together form a cyclic ring having from 4 to 10 carbon atoms, with the proviso that one of R^1 or R^2 contains a carbon atom;

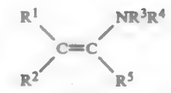
R^3 and R^4 are each independently selected from alkyl or aryl, or R^3 and R^4 together form a ring structure including the nitrogen atom in the ring having from 4 to 10 carbon atoms, or

R^3 and R^4 together form a ring structure having from 4 to 10 carbon atoms including the nitrogen atom in the ring structure and includes in the ring a second heteroatom independently selected from oxygen, nitrogen or sulfur;

R^5 is independently selected from hydrogen, alkyl or aryl as defined hereinabove;

from a chiral or achiral enamine, which process comprises:

(a) reacting a chiral or achiral enamine of the structure



wherein R^1, R^2, R^3, R^4 and R^5 are defined hereinabove with a chiral borane of the structure:



wherein R^6 is independently selected from an aliphatic group, aromatic group, arylalkyl group, or alicyclic group having 6 to 50 carbon atoms, each group including at least one chiral atom, and

R^7 is independently selected from hydrogen or R^6,

in a dipolar aprotic solvent at a temperature of between about 50° C. and −50° C. at ambient pressure for a time effective to react with the C=C bond,

(b) reacting the reaction product of step (a) with solid or aqueous base and 5% to 50% by weight of a mild oxidizing agent is added gradually under ambient conditions for a time effective to produce the chiral beta-amino alcohol, wherein the amino alcohol product has an enantiomeric excess of one enantiomer over the other of about 50% or greater than 50%.

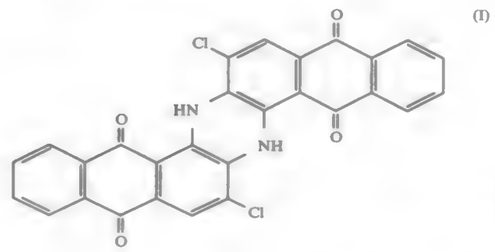
5,367,074

PREPARATION OF 7,16-DICHLORODIANTHRAQUINONE-N,N′-DIHYDROAZINE

Michael Schmitt, Worms, and Matthias Niedenbrueck, Limburgerhof, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

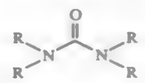
Filed Jun. 23, 1993, Ser. No. 79,939
Claims priority, application Germany, Jul. 1, 1992, 4221605
Int. Cl.[5] C07D *241/46*
U.S. Cl. 544—339 **4 Claims**

1. A process for preparing 7,16-dichlorodianthraquinone-N,N′-dihydroazine (I)



(I)

which comprises condensing 1-amino-3-chloroanthraquinone (II) in the presence of an alkaline condensing aid, of an oxidizing agent and of a urea derivative of the formula (III)



(III)

where the radicals R are identical or different alkyl groups of from 1 to 4 carbon atoms, which may also be joined together to form a 5- or 6-membered ring that contains the urea group.

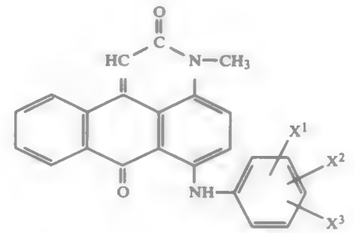
5,367,075

ANTHRAPYRIDONE COMPOUNDS, THEIR PRODUCTION PROCESS AND THEIR USE

Toshio Nakamatsu, Osaka; Yoshitaga Egashira, Hyogo, and Yasuyuki Suzuki, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited and Sumika Fine Chemical Company, Ltd., both of Osaka, Japan

Continuation of Ser. No. 773,129, Oct. 8, 1991, abandoned, which is a continuation of Ser. No. 430,663, Nov. 11, 1989, abandoned, which is a continuation of Ser. No. 126,596, Nov. 30, 1987, Pat. No. 4,902,798. This application Dec. 14, 1993, Ser. No. 167,443
Claims priority, application Japan, Dec. 1, 1986, 61-287093; May 29, 1987, 62-135695; Sep. 3, 1987, 62-221755
Int. Cl.[5] C09B *5/14*
U.S. Cl. 546—76 **4 Claims**

1. A process for producing an anthrapyridone compound represented by the formula (I):



(I)

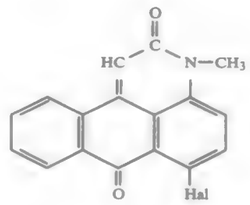
wherein

if X^1 and X^2 are hydrogen, X^3 is selected from the group consisting of chloro and methyl; and

if X^2 and X^3 are hydrogen, X^1 is $—SO_2N(CH_3)_2$;

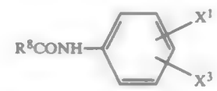
said process comprising the steps of:

reacting an alpha-haloanthrapyridone compound represented by the formula (III):



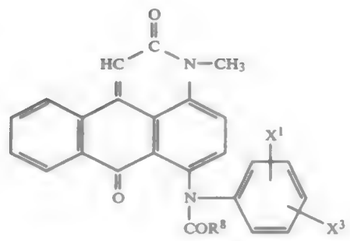
(III)

wherein Hal is halogen, with a compound represented by formula (VI):



(VI)

wherein X^1 and X^3 are as defined above, and R^8 is C_{1-4} alkyl, in the presence of at least one of a metallic copper and a copper compound, and wherein said compound (VI) is reacted in an amount of 1.1 to 1.6 moles per mole of said compound (III); and hydrolyzing the resulting compound represented by formula (VII):



(VII)

wherein R^8, X^1 and X^3 are as defined above, in an aqueous acidic solution.

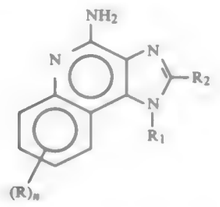
5,367,076

PROCESS FOR IMIDAZO[4,5-C]QUINOLIN-4-AMINES

John F. Gerster, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 593,078, Oct. 5, 1990, abandoned. This application Apr. 30, 1992, Ser. No. 879,149
Int. Cl.[5] C07D *471/02, 471/04*
U.S. Cl. 546—82 6 Claims

1. A process for preparing a compound of the formula:



I

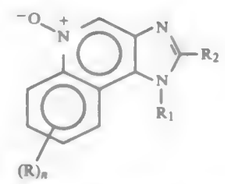
wherein

R_1 is straight chain or branched chain alkyl of one to about 10 carbon atoms; straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation in the alkenyl group is at least one carbon atom removed from the 1-nitrogen; substituted straight chain or branched chain alkenyl of 3 to about 10 carbon atoms wherein the olefinic unsaturation is at least one carbon atom removed from the 1-nitrogen, wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl; and substituted straight chain or branched chain alkyl of one to about 10 carbon atoms, wherein the substituent is selected from the group consisting of lower alkyl, cycloalkyl of 3 to about 6 carbon atoms, and cycloalkyl of 3 to about 6 carbon atoms substituted by lower alkyl;

R_2 is selected from the group consisting of hydrogen, straight chain or branched chain alkyl containing one to about eight carbon atoms; benzyl, (phenyl)ethyl and phenyl, the benzyl, (phenyl)ethyl or phenyl substituent being optionally substituted on the benzene ring by one or two moieties independently selected from the group consisting of lower alkyl, lower alkoxy, and halogen, with the proviso that when the benzene ring is substituted by two such moieties, then the moieties together contain no more than 6 carbon atoms;

each R is independently selected from the group consisting of lower alkoxy, halogen, and lower alkyl, and n is an integer from zero to 2, with the proviso that if n is 2, then said R groups together contain no more than 6 carbon atoms; or a pharmaceutically acceptable acid addition salt thereof, which process comprises the steps of:

(i) providing a compound of Formula II



II

wherein R, n, R_1, and R_2 are as defined above;

(ii) reacting the compound of Formula II with an alkylsulfonyl chloride or an arylsulfonyl chloride; and

(iii) reacting the product of step (ii) with an aminating agent in an inert solvent to provide a compound of Formula I; and

(iv) isolating the compound of Formula I or a pharmaceutically acceptable acid addition salt thereof.

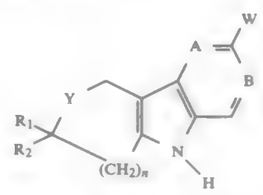
5,367,077

CERTAIN CYCLOALKYL AND AZACYCLOALKYL PYRROLOPYRIDINES; A NEW CLASS OF GABA RAIN RECEPTOR LIGANDS

Charles A. Blum, Guilford; Alan J. Hutchison, Madison, and Raymond F. Horvath, North Branford, all of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Apr. 8, 1992, Ser. No. 866,802
Int. Cl.[5] C07D *471/14*
U.S. Cl. 546—82 27 Claims

1. A compound of the formula:



and pharmaceutically acceptable non-toxic salts thereof wherein:

A represents C—H, and

B represents nitrogen:

n is 1;

R_1 and R_2 are the same or different and represent hydrogen or straight chain or branched lower alkyl having 1–6 carbon atoms;

W is

phenyl, 2 or 3-thienyl, 2-pyridyl, or 2-pyrimidinyl, each of which is mono or disubstituted with halogen, hydroxy, straight or branched chain lower alkyl having 1–6 carbon atoms, amino, mono or dialkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms: and

Y is

N—R_3 where R_3 is

hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, pyridyl, or phenylalkyl or pyridylalkyl where the alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms: aminoalkyl where the alkyl is a straight or branched chain lower alkyl having 1–6 carbon atoms, or mono or dialkyl aminoalkyl where each alkyl is a straight or branched chain lower alkyl having 1–6 carbon atoms: 1-indanyl, 4-(thio)chromanyl, 1-(1,2,3,4-tetrahydronaphthyl);

1-indanyl, 4-(thio)chromanyl, 1-(1,2,3,4-tetrahydronaphthyl) each of which is monosubstituted with halogen, straight or branched chain lower alkyl having 1–6 carbon atoms, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

—COR_4 or —SO_2R_4 where R_4 is straight or branched chain lower alkyl having 1–6 carbon atoms, phenyl, phenylalkyl or pyridylalkyl where the alkyl is a straight or branched chain lower alkyl having 1–6 carbon atoms, or phenylalkoxy or pyridylalkoxy where the alkoxy is a straight or branched chain lower alkoxy having 1–6 carbon atoms.

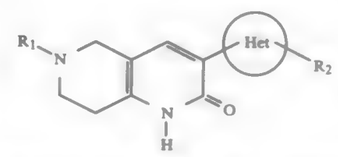
5,367,078

3-OXADIAZOLYL-1,6-NAPHTHYRIDINE DERIVATIVES

Kazunori Ohno, Higashiosaka; Osamu Oda, Takatsuki; Yukio Tominaga, Toyonaka; Kiyoshi Furukawa, Shiga, and Makoto Oka, Ibaraki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 27, 1993, Ser. No. 112,660
Claims priority, application Japan, Sep. 2, 1992, 4-260796; Apr. 28, 1993, 5-124964
Int. Cl.[5] C07D *471/04*
U.S. Cl. 546—122 18 Claims

1. A 3-oxadiazolyl-5,6,7,8-tetrahydro-1,6-naphthyridine derivative of the formula (I):



(I)

wherein Het is an oxadiazole ring, R_1 is hydrogen atom, an acyl group, a lower alkyl group or a group of the formula: —CH_2R_1' (in which R_1' is a cyclo-lower alkyl group, a lower alkenyl group, a lower alkynyl group, benzyl group, aryl group or a heteroaromatic group), R_2 is a lower alkyl group, a cyclo-lower alkyl group, a lower alkenyl group, a lower alkynyl group, aryl group, a heteroaromatic group, a halogeno-lower alkyl group, a lower alkoxy-lower alkyl group, a lower alkoxy group, a lower alkenyloxy group, a phenoxy group or a lower alkylthio group, or a pharmaceutically acceptable acid addition salt thereof.

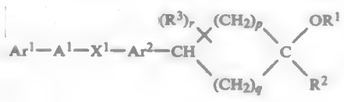
5,367,079

CYCLOALKANE DERIVATIVES

Pierre A. R. Bruneau, Ludes, and Christine M. P. Lambert-van der Brempt, Echenay, both of France, assignors to Zeneca Limited, London, England and Zeneca-Pharma, S.A., Cergy Cedex, France

Filed Apr. 23, 1993, Ser. No. 51,395
Claims priority, application European Pat. Off., Apr. 23, 1992, 92401159.6
Int. Cl.[5] C07D *215/48, 215/38, 215/20, 215/18*
U.S. Cl. 546—157 8 Claims

1. A cycloalkane derivative of the formula I



I

wherein

Ar^1 is quinolyl, or a hydrogenated derivative thereof and Ar^1 may optionally bear up to four substituents selected from halogeno, hydroxy, cyano, oxo, thioxo, (1–4C)alkyl, (1–4C)alkoxy, fluoro-(1–4C)alkyl, phenyl, benzoyl and phenyl-(1–4C)alkyl and wherein any phenyl, benzoyl or phenyl-(1–4C)alkyl substituent may optionally bear one or two substituents selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy;

A^1 is a direct link to X^1 or is (1–3C)alkylene;

X^1 is oxy, thio, sulphinyl or sulphonyl;

Ar^2 is phenylene, pyridylene, pyrimidinylene, thiophenediyl, furandiyl, thiazolediyl or oxazolediyl which may optionally bear one or two substituents selected from halogeno, hydroxy, amino, nitro, cyano, carbamoyl, trifluoromethyl, (1–4C)alkyl and (1–4C)alkoxy;

p is 1 to 4;

q is 0 to 2;

R^1 is hydrogen, (1–4C)alkyl, (2–4C)alkenyl or (3–4C)alkynyl;

R^2 is hydrogen, hydroxy, (1–4C)alkyl, (1–4C)alkoxy, (2–4C-)alkenyloxy or (3–4C)alkynyloxy;

or the OR^1 and R^2 groups together form a (1–4C)alkylenedioxy, oxo, thioxo, imino, hydroxyimino or (1–4C)alkoxyimino group;

r is 0 to 3; and

R^3 is halogeno, trifluoromethyl or (1–4C)alkyl;

or a pharmaceutically-acceptable salt thereof.

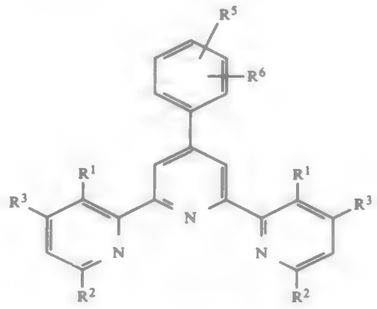
5,367,080

COMPLEXING AGENTS AND TARGETING RADIOACTIVE IMMUNOREAGENTS USEFUL IN THERAPEUTIC AND DIAGNOSTIC IMAGING COMPOSITIONS AND METHODS

John L. Toner, Downingtown, Pa.; David A. Hilborn, Henrietta; Bruce J. Murray, Walworth, both of N.Y., and Timothy Z. Hossain, Dallas, Tex., assignors to Sterling Winthrop Inc., New York, N.Y.

Continuation-in-part of Ser. No. 610,861, Nov. 8, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 784,333
Int. Cl.[5] C07D *213/22*
U.S. Cl. 546—257 7 Claims

1. A compound having the structure



wherein

R^1 represents hydrogen, alkyl, alkoxy, alkylthio, alkylamino, alkylformamido, phenyl, phenoxy, or a protein reactive group;

R^2 represents hydroxy, carboxy, hydroxyalkyl, carbonyliminodiacetic acid, methyleneiminodiacetic acid, methylenethioethyleneiminodiacefic acid, hydrazinylylidenediacetic acid, or a salt of such acids;

R^3 represents hydrogen, alkyl, alkoxy, alkylthio, alkylamino, alkylformamido, phenyl, phenoxy, or a protein reactive group;

R^5 represents alkyl or alkoxy; and

R^6 represents a amino, isothiocyanato, thiocarbazido or thiosemicarbazido.

5,367,081

1,4-DIHYDROPYRIDINE DERIVATIVES

Hiroshi Ikawa; Akiyoshi Kadoiri; Yasuko Konagai; Tetsuaki Yamaura, and Noriko Kase, all of Tokyo, Japan, assignors to Fujirebio Inc., Tokyo, Japan

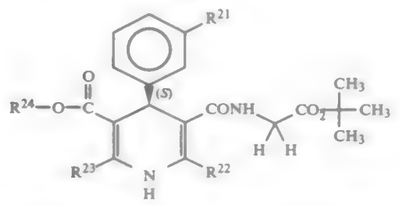
Filed Nov. 29, 1991, Ser. No. 800,249

Claims priority, application Japan, Nov. 30, 1990, 2-330005; Jul. 25, 1991, 3-207283; Jul. 25, 1991, 3-207284

Int. Cl.[5] C07D *213/51*

U.S. Cl. 546—316 7 Claims

1. 1,4-dihydropyridine compounds of formula (I):



wherein R^{21} is selected from the group consisting of NO_2, Cl, and CN, R^{22} is selected from the group consisting of hydrogen and methyl group, R^{23} is selected from the group consisting of hydrogen and C_nH_{2n+1}, wherein n is an integer of from 1 to 4, and R^{24} is selected from the group consisting of C_nH_{2n+1} and alkoxyl-substituted C_nH_{2n+1}, wherein n is an integer of from 1 to 4, wherein the configuration of the 1,4-dihydropyridine ring is specified as S.

5,367,082

PROCESS FOR THE PREPARATION OF 2-MERCAPTOBENZOTHIAZOLE

Manfred J. Bergfeld, Erlenbach-Mechenhard; Norbert Gutlein, Oberhofen; Klaus Wohlfahrt, Elsenfeld, and Eberhard Aust, Grossostheim, all of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 755,151, Sep. 5, 1991, abandoned. This application Feb. 1, 1993, Ser. No. 11,767

Claims priority, application Germany, Sep. 7, 1990, 4028473

Int. Cl.[5] C07D *277/72*

U.S. Cl. 548—175 34 Claims

1. A process for the preparation of 2-mercaptobenzothiazole, comprising:

reacting aniline, sulfur and carbon disulfide under autogenous pressure in a reactor, without releasing hydrogen sulfide, for a reactor residence time and at a reaction temperature of 220–280° C. to form a crude reaction product, said residence time ranging from at least one hour to a time before the 2-mercaptobenzothiazole product thus-formed decomposes in an undesirable manner, resulting in irreversible by-products;

discontinuing the reaction when the residence time has elapsed, without releasing hydrogen sulfide produced;

quenching said hot crude reaction product, without removing hydrogen sulfide present in the crude reaction product, by mixing the crude reaction product with carbon disulfide, said carbon disulfide being at a temperature sufficient to obtain a homogeneous quenched mixture;

cooling said homogeneous quenched mixture to a temperature sufficient to crystallize said 2-mercaptobenzothiazole without removing hydrogen sulfide present in the cooled reaction product and thereby maintaining a maximum hydrogen sulfide pressure until after crystallizing a substantial amount of said 2-mercaptobenzothiazole;

further cooling the mixture;

removing hydrogen sulfide from said reactor; and

isolating the crystallized 2-mercaptobenzothiazole from a mother liquor.

5,367,083

EXTENDED ACID HALIDE CAPPING MONOMERS

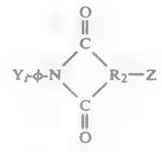
Clyde H. Sheppard, Bellevue, Wash., and Hyman R. Lubowitz, Rolling Hills Estates, Calif., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 831,145, Jan. 13, 1992, Pat. No. 5,216,117, which is a division of Ser. No. 181,013, Apr. 13, 1988, Pat. No. 5,104,967, which is a continuation-in-part of Ser. No. 92,740, Sep. 3, 1987, abandoned. This application Apr. 6, 1993, Ser. No. 43,824

Int. Cl.[5] C07D *207/456, 209/48, 209/72*

U.S. Cl. 548—431 19 Claims

1. An intermediate useful in synthesizing crosslinking polyamideimide oligomers, comprising a compound selected from the group consisting of:



wherein

ϕ=phenyl;

i=1 or 2;

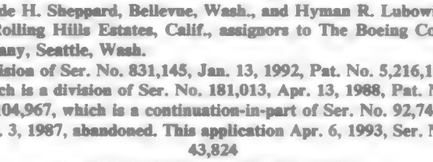
R_2=a trivalent organic radical;

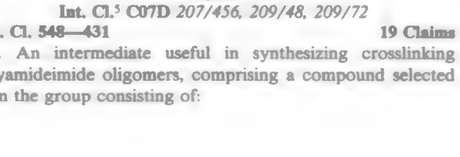
z=—COOH or —COX;

x=halogen;

Y=







R_1=lower alkyl, lower alkoxy, aryl, aryloxy, substituted alkyl, substituted aryl, or halogen, and each R_1 may be the same or different when j=2;

j=0, 1, or 2;

G=—CH_2—, —O—, —S—, —SO_2—, —SO—, —CO—, —CHR—, or —CR_2—;

R=hydrogen, lower alkyl, or phenyl;

T=methallyl or allyl; and

Me=methyl.

5,367,084

PREPARATION OF PYRROL AND OXAZOLE COMPOUNDS: FORMATION OF PORPHYRINS AND C-ACYL-ALPHA-AMINO ACID ESTERS THEREFROM

John Verkade, and Jiansheng Tang, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 26, 1993, Ser. No. 142,775

Int. Cl.[5] C07D *207/323, 207/333*

U.S. Cl. 548—518 19 Claims

1. A method of producing a pyrrol compound, said method comprising a step of reacting the following:

(a) an isocyanoacetate compound of general formula:

$CNCH_2CO_2R^3$

wherein R^3 is a substituent which is nonreactive under conditions of the reaction mixture;

(b) a prophosphatrane base; and

(c) a nitro compound selected from: a nitroalkane according to the formula $(H)(Z)(R^2)C—C(NO_2)(R^1)(H)$; a nitroalkene according to the formula $(H)(R^2)C=C(NO_2)(R^1)$; or mixtures thereof wherein R^1 and R^2 are each independently substituents which are nonreactive under conditions of the reaction; and Z is a leaving group under the conditions of the reaction.

5,367,085

PREPARATION OF $TiCl_3$ COORDINATION COMPLEXES

Jamie R. Strickler, Baton Rouge, La., assignor to Albemarle Corporation, Richmond, Va.

Filed Sep. 20, 1993, Ser. No. 123,666

Int. Cl.[5] C07F *17/00, 3/00*

U.S. Cl. 549—206 11 Claims

1. A process for preparing a $TiCl_3$ coordination complex with an ether, said process comprising adding $TiCl_3.\frac{1}{3}AlCl_3$ to an ether solvent so as to form a solid $TiCl_3$-ether coordination complex in said solvent, wherein said solvent is selected from the group consisting of cyclic ethers and acyclic polyethers having from 4 to about 10 carbon atoms.

5,367,086

PROCESS FOR THE PREPARATION OF TAXOL AND 10-DEACETYLTAXOL

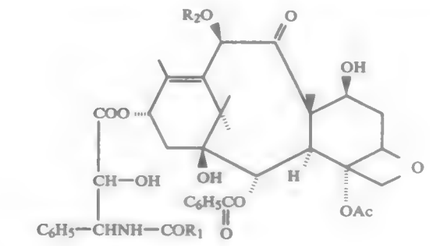
Koppaka V. Rao, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 851,469, Mar. 13, 1992, Pat. No. 5,200,534. This application Mar. 10, 1993, Ser. No. 29,078

Int. Cl.[5] C07D *305/14*

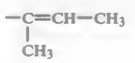
U.S. Cl. 549—510 28 Claims

1. A process for the preparation of a taxane of the formula



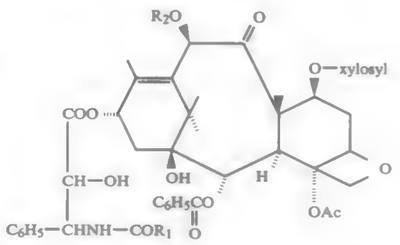
(I)

wherein R_1 is C_6H_5, C_5H_{11}, or



and R_2 is hydrogen or acetyl, said process comprising the steps of:

(a) reacting an oxidizing reagent selected from the group consisting of periodate and lead tetraacetate with a taxane 7-xyloside of the formula:



(II)

wherein R_1 and R_2 are as defined, in a reaction-inert solvent at a temperature of from about 20° C. to about 60° C.; and

(b) hydrolyzing the glycosyl bond of the product obtained in step (a) with a substituted hydrazine, wherein said substituted hydrazine is selected from the group consisting of an alkyl hydrazine, acyl hydrazine, and aryl hydrazine, and acetic acid or by acid hydrolysis in a reaction-inert solvent at a temperature of from about 20° C. to about 100° C.

5,367,087

PROCESS FOR PRODUCING EPOXIDE

Shun-Ichi Murahashi, Ikeda, and Yoshiaki Oda, Toyanaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

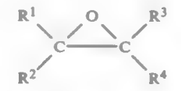
Filed Oct. 29, 1992, Ser. No. 968,414

Claims priority, application Japan, Oct. 30, 1991, 3-284651; Mar. 11, 1992, 4-052438; Mar. 11, 1992, 4-052441

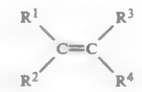
Int. Cl.[5] C07D *301/06, 303/04*

U.S. Cl. 549—533 11 Claims

1. A process for producing an epoxide represented by the formula (2)



wherein R^1, R^2, R^3 and R^4 may be the same or different and each denotes a hydrogen atom, (C_1–C_{20}) alkyl group, alkyl group substituted with a halogen, hydroxy, alkoxy, phenoxy, acyloxy, acyl, alkoxycarbonyl or phenoxycarbonyl; phenyl group, phenyl group substituted with a halogen, alkyl, alkoxy, phenoxy, acyloxy, acyl, alkoxycarbonyl or phenoxycarbonyl; phenylalkyl group, phenylalkyl group substituted with a halogen, alkyl, alkoxy, phenoxy, acyloxy, acyl, alkoxycarbonyl, or phenoxycarbonyl; acyl group, alkoxycarbonyl group or phenoxycarbonyl group; provided that R^1 and R^2 or R^1 and R^3 may combine with each other to form a ring, or R^1, R^2 and R^3 may combine altogether to form a condensed ring, which comprises reacting an olefin represented by the formula (1)



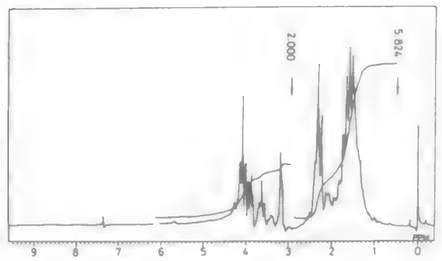
wherein R^1, R^2, R^3 and R^4 are the same as defined above with oxygen in the presence of a (C_3–C_7) aldehyde and a Fe or Fe_2O_3 catalyst.

5,367,088

PROCESS FOR PRODUCING A COMPOSITION COMPRISING AN EPOXY COMPOUND HAVING A HYDROXYL GROUP

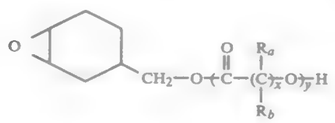
Takaaki Fujiwa, Hiroshima, and Tomohisa Isobe, Yamaguchi, both of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 925,618, Aug. 6, 1992, abandoned, which is a division of Ser. No. 773,653, Oct. 15, 1991, Pat. No. 5,155,243. This application Sep. 21, 1993, Ser. No. 123,980
Claims priority, application Japan, Feb. 15, 1990, 2-34511
Int. Cl.[5] C07D *301/00, 303/16*
U.S. Cl. 549—539 **5 Claims**



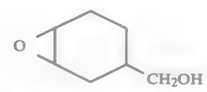
1. A process for producing a composition comprising compounds having the following structural formula:

(I)



wherein x represents an integer of 3 to 7, y represents a statistical distribution of integers of 0 to 50, R_a and R_b each independently represents a hydrogen atom, a methyl group or a propyl group, comprising reacting a compound having the following structure:

(II)



with a lactone at 30° to 200° C. in the presence of a catalyst.

5,367,089

POLYETHERCYCLICPOLYOLS FROM EPIHALOHYDRINS, POLYHYDRIC ALCOHOLS AND METAL HYDROXIDES OR EPOXY ALCOHOL AND OPTIONALLY POLYHYDRIC ALCOHOLS WITH ADDITION OF EPOXY RESINS

Anne H. Zazich, and George C. Blytas, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 960,035, Oct. 13, 1992, Pat. No. 5,286,882. This application Nov. 8, 1993, Ser. No. 148,701
Int. Cl.[5] C07D *319/12*
U.S. Cl. 549—378 **3 Claims**

1. A method for forming polyetherpolycyclicpolyol, comprising:

a) reacting an epoxy alcohol and a polyol reactant selected from the groups consisting of (1) a polyol having at least two hydroxyl groups, (2) precursors of the polyol, (3) cyclic derivatives of the polyol, and (4) mixtures thereof, in the presence of an alkali and/or alkaline earth metal hydroxide catalyst, wherein the said polyol reactant and the metal hydroxide catalyst are first mixed to form a first mixture and heated;

b) the epoxy alcohol is added to the first mixture to form a second mixture, and an epoxy resin is added concurrently with or subsequent to the epoxy alcohol addition to form a final mixture; and

c) heating of the final mixture is continued until the reaction is substantially complete.

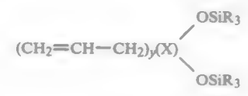
5,367,090

INCORPORATION OF FUNCTIONAL GROUPS IN POLYMERS

Andrew J. Sivak, Edgewood Borough, and Leonard A. Cullo, Hempfield Township, Westmoreland County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 532,850, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 257,895, Oct. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,960, May 8, 1987, abandoned. This application Feb. 24, 1993, Ser. No. 21,442
Int. Cl.[5] C07F *7/08, 7/18*
U.S. Cl. 556—443 **2 Claims**

1. A compound of the formula



where y is 1 or 2, each R is independently selected from alkyl, alkoxy, alicyclic, aryloxy, alkaryl and aryl groups having from 1 to about 20 carbon atoms, and (X) is a connecting hydrocarbyl fragment other than an unsaturated non-cyclic hydrocarbyl, and other than an unsaturated cyclic non-aromatic hydrocarbyl, having from 1 to about 20 carbon atoms, provided that the total of carbon atoms in all R's together with all carbons directly attached to the carbon in (X) connected to an O is at least 7.

5,367,091

OPTICAL RESOLUTION OF DL-3-ACETYLTHIO-2-METHYLPROPIONIC ACID USING L-(+)-2-AMINOBUTANOL AS RESOLVING AGENT

Alberto Stampa Díez Del Corral; Maria del Carmen Onrubia Miguel, and José Irurre Pérez, all of Barcelona, Spain, assignors to Medichem, S.A., Barcelona, Spain

Filed Oct. 19, 1993, Ser. No. 138,693
Claims priority, application Spain, Apr. 16, 1993, 9300781
Int. Cl.[5] C07C *307/06;* C07B *57/00*
U.S. Cl. 558—255 **8 Claims**

1. A process for the preparation of D-(−)-3-acetylthio-2-methylpropionic acid from its racemic mixture, comprising the following steps:

i) forming, in an appropriate solvent, a mixture of the two possible diastereomeric salts of DL-(+) -3-acetylthio-2-methylpropionic acid with the enantiomer base L-(+)-2-aminobutanol;

ii) selectively crystallizing the diastereomeric salt of D-(−)-3-acetylthio-2-methylpropionic acid with L-(+)-2-aminobutanol;

iii) separating said diastereomeric salt; and

iv) releasing the D-(−)-3-acetylthio-2-methylpropionic acid through the displacement of the base with a stronger acid.

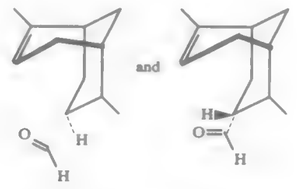
5,367,092

SUBSTITUTED 2,6-DIMETHYLBICYCLO[3,3,1]NON-6-ENES, PROCESSES FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

Anubhav P. S. Narula; Matthew J. McGinnis, both of Hazlet; Charles E. J. Beck, Summit; Marie R. Hanna, Keyport, all of N.J., and Franc T. Schiet, New York, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

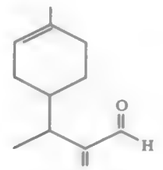
Division of Ser. No. 130,396, Oct. 1, 1993. This application Dec. 17, 1993, Ser. No. 168,337
Int. Cl.[5] C07C *45/61*
U.S. Cl. 558—374 **3 Claims**

1. A process for preparing a mixture of isomers consisting of the compounds defined according to the structures:

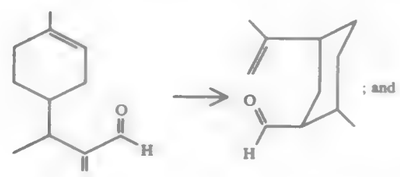


in substantially pure form consisting of the steps of:

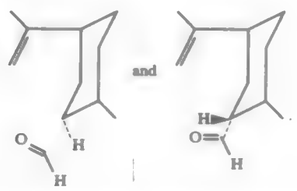
(i) heating the compound having the structure;



in the absence of catalyst at a temperature in the range of from about 180° C. up to about 200° C. according to the reaction:



(ii) recovering from the reaction product a mixture of isomers consisting of the compounds defined according to the structures:

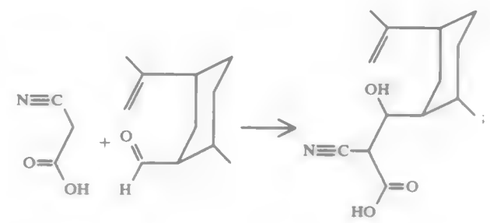


3. A process for preparing a mixture of compounds defined according to the structure:



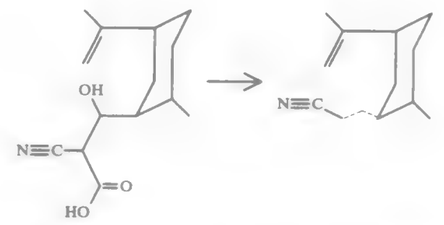
wherein in the mixture one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond comprising the steps of carrying out the reactions:

(i)



and then

(ii)

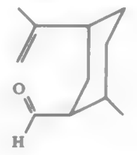


in the presence of an inert solvent at reflux conditions; and then

(iii) recovering from the reaction mass a mixture of compounds defined according to the structure:



wherein the compound having the structure:



is prepared according to the process of claim 1 or claim 2.

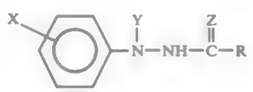
5,367,093

INSECTICIDAL PHENYLHYDRAZINE DERIVATIVES

Mark A. Dekeyser, Waterloo, Canada, and Paul T. McDonald, Middlebury, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn. and Uniroyal Chemical LTD/LTEE, Elmira, Canada

Continuation-in-part of Ser. No. 796,506, Nov. 22, 1991, abandoned. This application Nov. 20, 1992, Ser. No. 979,095
Int. Cl.[5] C07C *271/08;* A01N *37/10*
U.S. Cl. 560—27 17 Claims

1. A compound having the structural formula:



(I)

wherein

X is a) phenyl; phenoxy; or benzyl; the phenyl ring of each substituent being optionally substituted with one or more of halogen, nitro, lower alkyl, lower alkoxy, lower haloalkyl or diaklylamino; or b) one substituent from group a) and one or more substituents selected from C_1–C_4 alkoxy; halogen; lower alkyl; and lower alkylthio;

Y is H, C_1–C_4 alkanoyl, C_1–C_4 haloalkanoyl, dialkoxyphosphoryl, alkylaminocarbonyl, haloalkylsulfonyl, or C_1–C_4 alkoxy carbonyl;

R is H, C_1–C_6 alkoxy, C_3–C_6 cycloalkoxy, haloalkyl, alkoxyalkyl, arylalkoxy, alkenyl, alkylthio, alkoxycarbonyl, alkylamino, thiophenyl, furyl, arylalkyl, haloalkoxy, aryloxy, or C_3–C_6 cycloalkyl; and

Z is O or S;

with the proviso that when X is phenyl, then R is not alkylamino or alkoxycarbonyl.

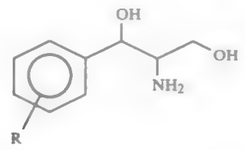
5,367,094

CONVENIENT PROCESS FOR THE PREPARATION OF CHIRAL OR RACEMIC PHENYLALANINOLS AND THEIR N-BLOCKED DERIVATIVES

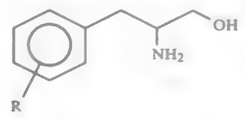
Dae-won Chung, Parsippany, N.J., assignor to Yukong, Ltd., Seoul, Rep. of Korea

Filed Jun. 4, 1993, Ser. No. 72,161
Int. Cl.[5] C07C *209/68, 271/16*
U.S. Cl. 560—29 12 Claims

1. A process which comprises hydrogenating a phenylalaninol derivative of the structure,



in which R=H, C_1–C_7 alkyl, or halogen in the presence of member selected from the group consisting of anhydrous hydrochloric acid and a strong volatile anhydrous organic acid in the presence of a hydrogenation catalyst to yield



in which R=as above.

10. A process of preparing N-blocked phenylalaninol directly from a reaction mixture of the process of forming phenylalaninol without isolation of phenylalaninol which comprises carrying out the process of claim 1, removing the acid by evaporation and reacting the appropriate N- blocking agent with the residue in situ.

5,367,095

POLYAMINE COMPOUNDS CONTAINING SECONDARY AMINO SUBSTITUENTS AND COMPOSITIONS CONTAINING SUCH COMPOUNDS

Toshiyuki Ohshima, Ibaraki; Hideo Ishibashi, Neyagawa; Rie Tamura, Toyonaka; Satoshi Yamamoto, Hirakata, and Takaharu Izumo, Shimamoto, all of Japan, assignors to Nippon Paint Company, Ltd., Japan

Division of Ser. No. 834,100, Feb. 12, 1992, abandoned. This application Sep. 4, 1992, Ser. No. 941,294
Claims priority, application Japan, Feb. 14, 1991, 3-041324; Apr. 30, 1991, 3-128417; Apr. 30, 1991, 3-128418
Int. Cl.[5] C07C *229/00, 255/00, 211/00;* C01B *3/00*
U.S. Cl. 560—44 5 Claims

1. A secondary aromatic diamine compound having on a benzene ring a secondary amino substituent of the formula:

$$—NH—CH_2CH_2—Y$$

wherein Y is an electron-withdrawing group, which compound is selected from the group consisting of N,N'-bis(2-alkoxycarbonylethyl)tolylenediamine and N,N'-bis(2-alkoxycarbonylethyl) diaminodiethyltoluene whose alkoxy moiety contains at least 4 carbon atoms.

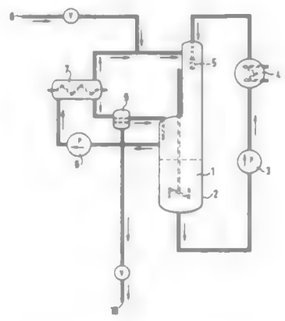
5. A composition containing a compound according to claim 1, and further containing one or more primary aromatic diamines which correspond to the compound of claim 16 with the exception that one or both of the $—NH_2$—CH_2—CH_2—Y substituents are replaced by $—NH_2$.

5,367,096

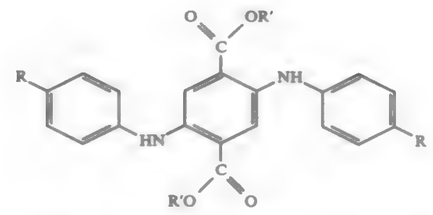
PROCESS FOR THE PREPARATION OF 2,5-DI(PHENYLAMINO)TEREPHTHALIC ACID AND DIALKYL ESTERS THEREOF IN HIGH PURITY

Eberhard Ritter, Mörfelden-Walldorf; Hans Schäfer, Bad Soden am Taunus; Thomas Vollheim, Hanau, and Martin Schottler, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 20, 1992, Ser. No. 932,757
Claims priority, application Germany, Aug. 22, 1991, 4127736
Int. Cl.[5] C07C *229/00*
U.S. Cl. 560—48 20 Claims



1. A process for preparing a dialkyl 2,5-di(phenylamino)-terephthalate and optionally hydrolyzing said dialkyl 2,5-di(-phenylamino)terephthalate to the corresponding 2,5-di(-phenylamino)terephthalic acid, said 2,5-di(phenylamino)-terephthalate having the formula (I)



(I)

in which R is a hydrogen atom or a methyl group and R' is a methyl group or ethyl group, or, in the case of the optional hydrolysis to the corresponding 2,5-di(phenylamino)terephthalic acid, R' is a hydrogen atom, by dehydrogenation (oxidation) of the corresponding dialkyl 2,5-di(phenylamino)-3,6-dihydroterephthalate with oxygen, which comprises blanksting with an oxygen-containing gas a solution or suspension of the dialkyl 2,5-di(phenylamino)-3,6-dihydroterephthalate in aromatic hydrocarbons in a stirred vessel, circulating this reaction mixture via a spraying device, so that the sprayed reaction mixture is distributed over the reaction mixture present in the stirred vessel, and circulating said gas, the sprayed reaction mixture being mixed with the circulating gas, and optionally hydrolyzing the resulting dialkyl 2,5-di(-phenylamino)terephthalate.

5,367,097

LUBRICANT COMPOSITION AND METHOD FOR INCREASING DIAMONDOID INCORPORATION IN POLYALPHAOLEFIN-CONTAINING LUBRICANT

Dong-Ming Shen, Langhorne, Pa., and Margaret M. Wu, Skillman, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 3, 1993, Ser. No. 70,815
Int. Cl.[5] C07C *13/615*
U.S. Cl. 585—22 12 Claims

1. A lubricant composition comprising alkyl-substituted diamondoids containing more than one added alkyl group having at least about 6 carbon atoms, wherein the ratio of linear to branched added alkyl substituents is at least about 1:1, and wherein the average number of alkyl substitutions per diamondoid molecule is from about 1.5 to about 4, which lubricant composition is characterized by a Bromine Number of less than about 13.

5,367,098

PROCESS FOR PRODUCING MONOALKENYL ARMOMATIC HYDROCARBON COMPOUND

Norio Fushimi; Ko Kedo; Kenji Inamasa, and Makoto Takagawa, all of Tsukuba, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 47,812
Claims priority, application Japan, May 12, 1992, 4-118996
Int. Cl.[5] C07C *2/72*
U.S. Cl. 585—452 16 Claims

1. A process for producing a monoalkenyl aromatic hydrocarbon compound which comprises alkenylating under alkenylating conditions, a side chain of an aromatic hydrocarbon having at least one hydrogen atom bonded at an α-position of the side chain with a conjugated diene having 4 or 5 carbon atoms, a molar ratio of said conjugated diene to said aromatic hydrocarbon having at least one hydrogen bonded at an α-position of the side chain being 0.03 to 0.5, in the presence of a catalyst comprising a mixture obtained by heat treating metallic sodium together with a mixture of an aluminum oxide and at least one potassium compound selected from the group consisting of potassium hydroxide, potassium carbonate, potassium hydrogencarbonate and potassium aluminate, in an inert gas atmosphere.

5,367,099

SELECTIVE TOLUENE DISPROPORTIONATION PROCESS (STDP) WITH EX SITU SELECTIVATED ZEOLITE CATALYST

Jeffrey S. Beck, Princeton; David H. Olson, Pennington, both of N.J., and Sharon B. McCullen, Newtown, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 28, 1993, Ser. No. 69,254
Int. Cl.[5] C07C *5/52*
U.S. Cl. 585—475 34 Claims

1. A process for enhanced shape selective disproportionation of toluene comprising:

contacting a reaction stream comprising toluene, under disproportionation conditions, with a catalytic molecular sieve which has been modified by being exposed to at least two ex situ selectivation sequences, wherein the ex situ selectivation sequence includes the steps of contacting the catalytic molecular sieve with a silicon compound selected from the group consisting of silicones, silicone polymers, silanes, and alkoxysilanes in an organic carrier and subsequently calcining the catalytic molecular sieve.

5,367,100

PROCESS FOR THE CONVERSION OF METHANOL TO LIGHT OLEFINS AND CATALYST USED FOR SUCH PROCESS

Wang Gongwei; Ying Muliang; Wang Xingchun, and Chen Guoquan, all of Dalian, China, assignors to Dalian Institute of Chemical Physics, Dalian, China

Filed Apr. 29, 1993, Ser. No. 54,591
Claims priority, application China, May 3, 1992, 92106213.3
Int. Cl.[5] B01J *29/28;* C07C *1/20*
U.S. Cl. 585—640 8 Claims

1. A process for the conversion of methanol or dimethyl ether to light olefins comprising contacting said methanol or dimethyl ether at a temperature of at least 400° C. with a zeolite ZSM-5 based catalyst, wherein such catalyst contains at least 0.7% by weight of phosphorus and at least 0.97% by weight of rare earth elements incorporated within the structure of the catalyst.

5,367,101

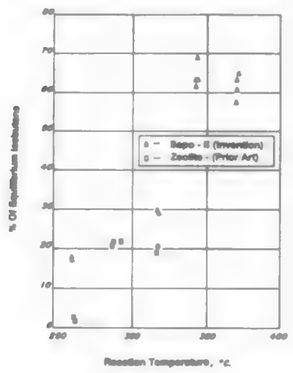
PENTENE ISOMERIZATION PROCESS

Randy J. Lawson, Palatine; Dorothy M. Richmond, La Grange Park; Gregory J. Gajda, Mt. Prospect, and Paul T. Barger, Arlington Heights, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 814,167, Dec. 30, 1991, Pat. No. 5,191,146, which is a continuation-in-part of Ser. No. 670,139, Mar. 15, 1991, Pat. No. 5,132,484, which is a continuation-in-part of Ser. No. 442,879, Nov. 29, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 995,455
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] C07C *5/23, 5/22, 5/25*
U.S. Cl. 585—667 17 Claims

1. A process for the isomerization of pentenes which comprises contacting a pentene-containing feedstock at isomeriza-

tion conditions in the substantial absence of hydrogen with a catalyst containing at least one non-zeolitic molecular sieve to provide a product containing at least one pentene isomer in greater concentration than in the feedstock.



5,367,102

PROCESS FOR THE PREPARATION OF 1,1-DICHLORO-1-FLUOROETHANE

Francine Janssens, Vilvoorde, and James Franklin, Brussels, both of , assignors to Solvay (Société Anonyme), Brussels,

PCT No. PCT/BE91/00034, § 371 Date Dec. 8, 1992, § 102(e) Date Dec. 8, 1992, PCT Pub. No. WO91/18852, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 4, 1991, Ser. No. 952,495

Claims priority, application Belgium, Jun. 8, 1990, 09000579

Int. Cl.[5] C07C *17/08*

U.S. Cl. 570—164 **9 Claims**

1. A process for the preparation of 1,1-dichloro-1-fluoroethane, comprising:

reacting hydrogen fluoride and vinylidene chloride in a liquid medium at a molar ratio of hydrogen fluoride to vinylidene chloride of between 1.5 to 3 mol/mol at a temperature above 70° C. in the absence of catalysts to produce 1,1-dichloro-1-fluoroethane; and

recovering said 1,1-dichloro-1-fluoroethane.

5,367,103

PROCESS FOR PURIFYING FLUOROETHANES AND CHLOROFLUOROETHANES

Giorgio Guglielmo, Venice, and Giampaolo Gambaretto, Padova, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 22, 1992, Ser. No. 995,128

Claims priority, application Italy, Dec. 23, 1991, MI91A 003466

Int. Cl.[5] C07C *17/38, 17/08*

U.S. Cl. 570—177 **9 Claims**

1. A process for purifying a mixture selected from the group consisting of:

(a) a mixture comprising 1,1,1-trifluoro-2-fluoroethane or the isomers thereof with a 1,1-difluoro-2-chloroethylene impurity; and

(b) a mixture comprising 1,1,1-trifluoro-2,2-dichloroethane or the isomers thereof, 1,1,1-trifluoro-2-chloro, 2-fluoroethane or the isomers thereof or pentafluoroethane, with impurities selected from the group consisting of 1,1-difluoro-2,2-dichlorethylene, 1,2-difluoro-1,2-dichlorethylene and mixtures thereof;

which consisting essentially of reacting the mixture with elemental fluorine in the liquid phase and at temperature ranging from −80° C. to −40° C. to selectively and quantitatively add the fluorine to the double bond of the olefinic impurity or impurities.

5,367,104

PROCESS FOR THE PURIFICATION OF ORGANIC COMPOUNDS CONTAMINATED BY DISSOLVED METAL COMPOUNDS

Ernst I. Leupold, Neu-Anspach; Udo Dettmeier, Kelkheim; Gustav Gimpel, Frankfurt am Main, and Walter Reimann, Hofheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 16, 1994, Ser. No. 213,923

Claims priority, application Germany, Mar. 18, 1993, 4308569

Int. Cl.[5] C07C *17/38*

U.S. Cl. 570—211 **13 Claims**

1. A process for the purification of organic compounds contaminated by dissolved metal compounds which comprises bringing a thus—contaminated organic compound into contact with an ion exchange resin, the functional group of which contains both a secondary amine group and a phosphonate salt radical or phosphonic acid radical or a combination of a phosphonate salt radical and a phosphonic acid radical.

5,367,105

PROCESS AND DEVICE FOR PRODUCTION OF ALLYL CHLORIDE

Hidetaka Miyazaki, Tokuyama; Toshiaki Hasegawa, Kawaguchi; Yoshihiko Kajimoto, Tokuyama, and Susumu Mochida, Yokohama, all of Japan, assignors to Tokuyama Corporation, Yamaguchi and Nippon Furnace Kogyo Kaisha, Ltd., Kanagawa, both of Japan

Filed Oct. 22, 1993, Ser. No. 139,851

Claims priority, application Japan, Oct. 23, 1992, 4-286041

Int. Cl.[5] C07C *17/10*

U.S. Cl. 570—234 **9 Claims**

1. A process for the production of allyl chloride, which comprises introducing propylene and chlorine into a reactor having at least one propylene-injection opening and at least one chlorine-injection opening, these openings being independent of each other, through the respective injection openings, and reacting them in a vapor phase, wherein propylene and chlorine are introduced into the reactor by injecting them in almost the same direction from the propylene-injection opening and the chlorine-injection opening which is closest to said propylene-injection opening, with a linear velocity in the propylene-injection opening, calculated as a value of at 300° C. and 1 kg/cm^2.G, of 100 m/sec or higher and a linear velocity of the chlorine-injection opening, calculated as a value of at 100° C. and 1 kg/cm^2.G, of 70 m/sec or higher, and the propylene-injection opening and the chlorine-injection opening are situated to meet the following expression (1),

$$0.5 \leqq L/(dp+dc) \leqq 20 \quad (1)$$

wherein dp is a diameter of the propylene-injection opening, dc is a diameter of the chlorine-injection opening which is closest to said propylene-injection opening, and L is a distance between centers of these two injection openings.

5,367,106

COUPLED SECONDARY OXO REACTION SYSTEM

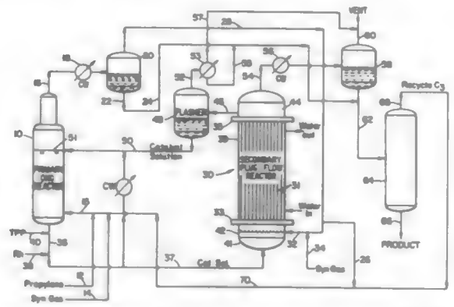
Jerry D. Unruh, Corpus Christi; Wendell L. Pieper, Portland, and Milo C. Pass, Corpus Christi, all of Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Sep. 20, 1993, Ser. No. 123,075

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—453 **20 Claims**

1. In a primary rhodium-catalyzed hydroformylation process for producing aldehydes, wherein an olefin, carbon monoxide and hydrogen are reacted in the presence of a solubilized rhodium-phosphorus complex catalyst, to produce an aldehyde product, and wherein a gaseous effluent comprising unreacted olefin and any of said aldehyde product, hydrogen, carbon monoxide, alkane and inerts is vented from the process, the improvement which comprises: conducting a coupled secondary rhodium-catalyzed hydroformylation process simultaneous with said primary process, wherein said gaseous



effluent from primary reactor together with make-up carbon monoxide and hydrogen is employed as the reactant feed to the secondary process and wherein said solubilized rhodium-phosphorus complex catalyst is circulated between said primary and secondary process.

5,367,107

PROCESS FOR THE PREPARATION OF ALDEHYDES

Helmut Bahrmann, Hamminkeln, and Peter Lappe, Dinslaken, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Dec. 13, 1993, Ser. No. 166,577

Claims priority, application Germany, Dec. 17, 1992, 4242723

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 **8 Claims**

1. A process for the preparation of aldehydes, at a temperature of 20° to 150° C. and under a pressure of 0.1 to 20 MPa, by reaction of olefins having 6 to 20 carbon atoms with carbon monoxide and hydrogen in a liquid phase in the presence of at least one solubilizer and a catalyst comprising an aqueous solution containing at least one water-soluble complex, said complex comprising a rhodium-containing component and a phosphine portion, said solubilizer comprising a salt of at least one quaternary phosphonium compound.

5,367,108

PROCESS FOR THE PREPARATION OF DINITRO-POLYALKYLBENZENES

Heinz-Ulrich Blank, Odenthal-Gloebusch, and Bernd-Michael König, Duesseldorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

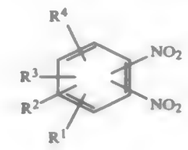
Filed Jun. 18, 1993, Ser. No. 80,026

Claims priority, application Germany, Jun. 24, 1992, 4220565

Int. Cl.[5] C07C *205/06*

U.S. Cl. 568—932 **19 Claims**

1. A process for the preparation of a dinitro-polyalkylbenze of the formula



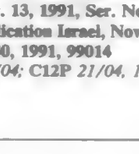
in which

R^1 and R^2, independently of each other, denote straight-chain or branched C_1–C_8-alkyl,

R^3 represents hydrogen, straight-chain or branched C_1–C_4-alkyl and

R^4 denotes hydrogen, straight-chain or branched C_1–C_4-alkyl chlorine or bromine,

where, in the absence of chlorine or bromine, the total number of the alkyl C atoms is at least 4, by nitration of a polyalkylbenzene of the formula



in which R^1 to R^4 have the meanings given, a solid being produced during the reaction, using HNO_3 in the presence of H_2SO_4, wherein

a) sulphuric acid of 81 to 96% by weight strength is introduced as reaction medium, without the accompanying use of an organic solvent, in an amount of from 180 to 1000 g per mole of polyalkylbenzene; at least 30% of the sulphuric acid amount being introduced prior to the introduction of any reactants,

b) the polyalkylbenzene, 95 to 100% strength by weight HNO_3 and any remaining sulphuric acid are fed simultaneously in the range of from 0° to 60° C., in such manner that the added substances polyalkylbenzene and HNO_3, during addition, are in the molar ratio of 1:2–10,

c) after the addition, the reaction mixture is kept at 10 to 70° C. for further reaction and

d) the dinitro-polyalkylbenzene is separated from the reaction mixture.

5,367,109

INBRED CORN LINE PHHB9

Robert L. Segebart, Shelbyville, Ill., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Feb. 5, 1993, Ser. No. 5,953

Int. Cl.[5] A01H *5/00, 4/00; C12N 5/04*

U.S. Cl. 800—200 **11 Claims**

1. Inbred corn seed designated PHHB9.

5,367,110

TRANSGENIC PLANTS OVERPRODUCING THREONINE AND LYSINE

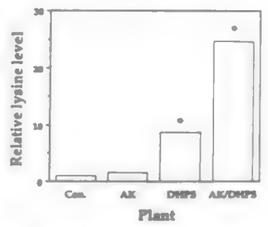
Gad Galili, Rehovot; Orit Shaul, Petah Tivka, and Avihai Perl, Rishon-le-Zion, all of Israel, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Nov. 13, 1991, Ser. No. 792,466

Claims priority, application Israel, Nov. 13, 1990, 96340; Jun. 27, 1991, 98650; Jul. 30, 1991, 99014

Int. Cl.[5] A01H *1/04; C12P 21/04, 13/08; C12N 9/12*

U.S. Cl. 800—205 **1 Claim**



1. A transgenic plant whose cells contain (i) a recombinant DNA molecule which comprises (a) the sequence of the lysC gene from *E. coli* encoding an enzyme having aspartate kinase

(AK) activity, and (b) sequences capable of enabling the expression of the enzyme in a plant cell, such expression causing the subsequent production of high levels of threonine therein, and (ii) a further recombinant DNA molecule which comprises (a) the sequence of the dapA gene from *E. Coli* encoding an enzyme having dihydrodipicolinate synthase (DHPS) activity, and (b) sequences capable of enabling the expression of the enzyme in a plant cell which comprise (1) a plant promoter, (2) a plant polyadenylation and termination sequence and (3) a sequence encoding a chloroplast transit peptide, said chloroplast transit peptide sequence being fused to the 5'-end of the sequence of the dapA gene from *E. coli* encoding an enzyme having dihydrodipicolinate synthase (DHPS) activity.

5,367,111

HYBRID PLANTS OF ONION AND GARLIC OR CHINESE CHIVE AND METHOD FOR BREEDING AND PROPAGATING THE SAME

Chieko Ohsumi, Kawasaki, and Takahisa Hayashi, Uji, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 21, 1990, Ser. No. 616,509

Claims priority, application Japan, Nov. 21, 1989, 1-300770; Mar. 5, 1990, 2-52940; Oct. 19, 1990, 2-281086

Int. Cl.[5] A01H *5/00, 1/00;* **C12N** *5/00*

U.S. Cl. 800—200 **11 Claims**

1. A hybrid cell of an onion and garlic or a hybrid cell of an onion and a Chinese chive, which is characterized by having totipotency including both embryogenic ability and differentiation potency and which is obtained by crossing an onion with either garlic or a Chinese chive by (a) fertilization of an onion with garlic pollen or of garlic with onion pollen or (b) fertilization of an onion with Chinese chive pollen or of Chinese chive with onion pollen, in which the hybrid cell is further characterized by genetic characteristics in the cytoplasm which are inherited exclusively from the maternal plant.

4. A hybrid plant of an onion and garlic or of an onion and a Chinese chive obtained by regenerating the hybrid cell or culturing the hybrid embryo or the hybrid secondary embryo according to claims 1, 2 or 3.

5,367,112

PROCESS TO PREPARE AMINO CARBOXYLIC ACID SALTS

Thaddeus S. Franczyk, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 44,682, Apr. 12, 1993, Pat. No. 5,292,936. This application Dec. 13, 1993, Ser. No. 165,793

Int. Cl.[5] C07C *51/00, 51/097*

U.S. Cl. 562—526 **10 Claims**

1. A process to manufacture carboxylic acid salt which comprises contacting an aqueous solution of a primary alcohol with an alkali metal hydroxide in the presence of an effective amount of a copper catalyst containing from about 50 parts per million to about 10,000 parts per million of an element selected from the group consisting of chromium, titanium, niobium, tantalum, zirconium, vanadium, molybdenum, manganese, tungsten, cobalt, nickel and mixtures thereof.

5,367,113

METHOD FOR SYNTHESIS OF DESFERRIOXAMINE B, ANALOGS AND HOMOLOGS THEREOF

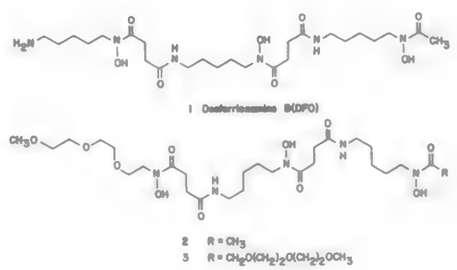
Raymond J. Bergeron, Jr., Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Alachua, Fla.

Division of Ser. No. 784,949, Oct. 30, 1991, Pat. No. 5,254,724. This application Jun. 23, 1993, Ser. No. 80,184

Int. Cl.[5] C07C *259/06*

U.S. Cl. 562—623 **6 Claims**

1. A method for synthesizing a polyether analog of desferrioxamine B or a homolog thereof having the formula:



1 Desferrioxamine B(DFO)

2 R = CH_3

3 R = $CH_3O(CH_2)_2O(CH_2)_2OCH_3$

$$R_1O(CH_2)_m—O—(CH_2)_m—O—(CH_2)_mN— \quad (II)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad OH$$

$$—CO(CH_2)_aCONH(CH_2)_n—N— \quad (OH)$$

$$CO(CH_2)_bCONH—(CH_2)_n—N— \quad (OH)$$

$$—CO(CH_2)_{m-1}O(CH_2)_mO(CH_2)_m—OR_2$$

wherein each

n may be the same or different and is an integer from 1 to 10,

a is an integer from 1 to 6,

b is an integer from 1 to 6,

m is an integer from 2 to 6,

R_1 and R_2 may be the same or different and are alkyl, straight or branched chain, having 1–10 carbon atoms, comprising:

(a) reacting a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mOACT \quad (13)$$

wherein ACT is an alcohol activating group, with a compound of the formula:

$$Q—NH—OZ$$

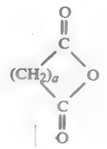
wherein
Q is an amino protecting group and
Z is a hydroxyl protecting group,
to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_m—N—Q \quad (14)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ$$

and cleaving Q to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_m—NH \quad (15)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ$$

(b) reacting compound (15) with an anhydride of the formula:



to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mN—CO(CH_2)_aCOOH \quad (16)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ$$

(c) reacting compound (16) with a compound of the formula:

$$H_2N(CH_2)_nN—Q \quad (7)$$
$$\qquad\quad |$$
$$\qquad\quad OZ$$

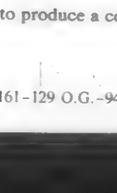
to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mN—CO(CH_2)_aCONH(CH_2)_nN—Q \quad (17)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ\qquad\qquad\qquad\qquad\qquad\quad OZ$$

and cleaving Q therefrom to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mNCO(CH_2)_aCONH(CH_2)_nN—H \quad (18)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ\qquad\qquad\qquad\qquad\qquad\quad OZ$$

(d) reacting compound (18) with an anhydride of the formula:



to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mNCO(CH_2)_a— \quad (19)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ$$

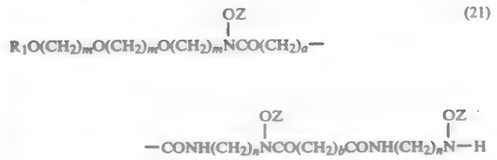
$$—CONH(CH_2)_nNCO(CH_2)_bCOOH$$
$$\qquad\qquad\quad |$$
$$\qquad\qquad\quad OZ$$

(e) reacting compound (19) with compound (7) to produce a compound of the formula:

$$R_1O(CH_2)_mO(CH_2)_mO(CH_2)_mNCO(CH_2)_a— \quad (20)$$
$$\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\qquad\qquad\qquad\quad OZ$$

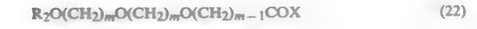
$$—CONH(CH_2)_nNCO(CH_2)_bCONH(CH_2)_nN—Q$$
$$\qquad\qquad\quad |\qquad\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad\quad OZ\qquad\qquad\qquad\qquad\qquad\quad OZ$$

and cleaving Q therefrom to produce a compound of the formula:



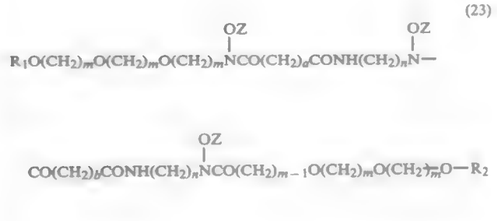
(21)

(f) reacting compound (21) with a compound of the formula:



(22)

wherein X is any leaving group which renders the compound sufficiently active to acylate (21), and R_2 is alkyl, straight or branched chain, having 1–10 carbon atoms, to produce a compound of the formula:



(23)

and

(g) reducing said compound (23) to produce said compound of formula (II).

5,367,114

Patent Not Issued For This Number

5,367,115

THERMAL AND CATALYTIC DEFLUORINATION OF ALKYLATE

Scott D. Love, Borger, Tex., and Stone P. Washer, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 23, 1992, Ser. No. 979,988
Int. Cl.[5] C07C *2/62, 7/04*
U.S. Cl. 585—723 **9 Claims**

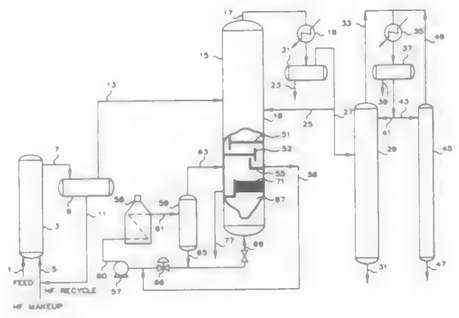
1. A process for defluorinating a liquid hydrocarbon mixture containing organic fluorides, hydrogen fluoride, and low-boiling point hydrocarbons comprising:

(a) introducing said liquid hydrocarbon mixture through an inlet, into a vertically extended distillation column containing a vertical series of trays spaced above and below said inlet such that said liquid hydrocarbon mixture flows generally downward;

(b) maintaining the liquid hydrocarbon mixture in said distillation column at a temperature above the vaporizing temperature of said hydrogen fluoride and said low-boiling hydrocarbons under the existing pressure such that said hydrogen fluoride and said low-boiling point hydrocarbons separate from said liquid hydrocarbon mixture and flow generally upward in countercurrent contact with said downwardly flowing liquid hydrocarbon mixture;

(c) withdrawing said liquid hydrocarbon mixture remaining after said separation of said hydrogen fluoride and said low-boiling point hydrocarbons from said distillation column at an outlet located below said inlet;

(d) passing said thus withdrawn liquid hydrocarbon mixture to a heating means;



(e) heating said liquid hydrocarbon mixture in said heating means sufficiently to cause at least some of said organic fluorides in said liquid hydrocarbon to decompose producing a vaporous effluent containing hydrogen fluoride and a liquid effluent containing less organic fluorides than said liquid hydrocarbon mixture introduced into said heating means;

(f) passing said vaporous effluent and liquid effluent to a phase separation chamber wherein said vaporous effluent separates from said liquid effluent;

(g) introducing said vaporous effluent into said distillation column below said inlet so that upwardly flowing hydrogen fluoride vapors are in countercurrent contact with said downwardly flowing liquid hydrocarbon mixture;

(h) withdrawing a first portion of said liquid effluent from said phase separation chamber;

(i) returning a second portion of said liquid effluent to said heating means for further thermal decomposition of organic fluoride;

(j) passing said first portion of said liquid effluent to a defluorination zone located within said distillation column and below said outlet; and

(k) passing said first portion of said liquid effluent through a contacting material in said defluorination zone so that said organic fluorides in said liquid effluent are further decomposed by contact with said contacting material.

5,367,116

PROCESS FOR THE DISPOSAL OF FLUE GAS RESIDUES

Rudolf Frey, Effretikon, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Jun. 2, 1993, Ser. No. 70,205
Claims priority, application Switzerland, Jun. 5, 1992, 01 817/92-9
Int. Cl.[5] B09B *1/00;* B28B *3/00;* E04B *1/16*
U.S. Cl. 588—252 **10 Claims**

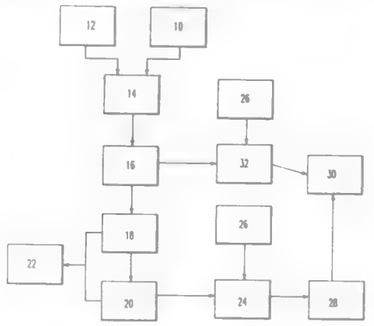
1. A process for disposal of solid residues obtained from flue gas purification, comprising:

acid extracting heavy metals from the solid residues, thereby forming a solid extracted material of extracted solid residues and an acid phase containing heavy metals;

precipitating the heavy metals from the acid phase with subsequent mechanical separation of the precipitate containing the heavy metals from a mother liquor;

subjecting the separated precipitate to shear forces, whereby water contained in the precipitate is released, and resuspending the precipitate containing the heavy metals in the released water;

adding a hydraulic binder to the resuspended precipitate containing the heavy metals or to the extracted solid residues or to the resuspended precipitate containing the heavy metals and to the extracted solid residues while keeping the resuspended precipitate and the extracted solid residues separate from each other to obtain at least one binder-containing mixture;



preparing molded objects with the binder-containing mixture, the molded objects being then allowed to harden; and

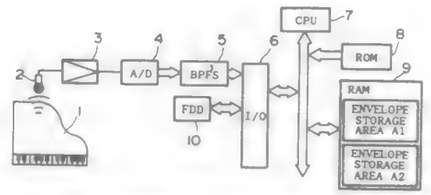
forming walls which define a space within a landfill with the hardened molded objects.

5,367,117

MIDI-CODE GENERATING DEVICE

Takeshi Kikuchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 29, 1991, Ser. No. 752,034
Claims priority, application Japan, Nov. 28, 1990, 2-328395
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—603 **6 Claims**



1. A MIDI-code generating device for generating a MIDI-code corresponding to sound produced by a musical instrument, comprising:

a musical instrument for producing a plurality of musical tones which comprise a fundamental tone and a harmonic tone corresponding to the fundamental tone, the fundamental and harmonic tones being discrete frequencies and having different envelope wave-forms;

conversion means for converting a produced musical tone from the musical instrument into an electrical audio signal and converting the electrical audio signal into a digital signal having wave-form data;

a group of band-pass filters for extracting wave-form data having frequency components respectively corresponding to each of the fundamental tones, from wave-form data outputted by the conversion means;

envelope detection means for detecting envelope data of wave-form data extracted by the group of band-pass filters;

fundamental tone envelope storage means for storing reference envelope data of the fundamental tone corresponding to the envelope wave-form of each fundamental tone of the musical tones produced by the musical instrument;

fundamental tone decision means for comparing envelope data detected by the envelope detection means with reference fundamental tone envelope data stored in the fundamental tone envelope means to determine a produced fundamental tone when the musical tone is produced by the musical tone producing means; and

coding means for generating a MIDI-code according to a result of a decision of the fundamental tone decision means and the envelope data detected by the envelope detection means, the MIDI-code corresponding to the musical tones produced by the musical instrument.

5,367,118

DIGITAL PITCH SHIFTER FOR READING OUT PITCH-SHIFTED WAVEFORM DATA FROM A MEMORY

Makoto Iwaooji, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1992, Ser. No. 839,184
Claims priority, application Japan, Mar. 19, 1991, 3-054274
Int. Cl.[5] G10H *1/057, 7/02*
U.S. Cl. 84—604 **14 Claims**

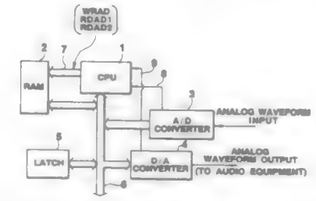
11. A digital pitch shifting method, comprising:

cyclically and sequentially storing input waveform data in a waveform storage means;

generating a write address signal for writing the input waveform data in said waveform storage means at a predetermined rate;

generating a plurality of read address signals, simultaneously with said writing of the input waveform data in said waveform storage means, which plurality of read address signals are changed at a rate different from the rate of the write address signal, have an address difference of a designated magnitude therebetween, and which are used for simultaneously reading out waveform data from said waveform storage means; and

a processing step of obtaining control data, which is changed over time, on the basis of address differences between the write address signal and the plurality of read address signals in correspondence with the plurality of read address signals, performing a weighting calculation according to the control data for a plurality of waveform data cyclically read out from said waveform storage means by the plurality of read address signals, adding the weighted waveform data to each other to obtain sum waveform data, and outputting the sum waveform data as output waveform data having a pitch obtained by changing a pitch of the input waveform data.

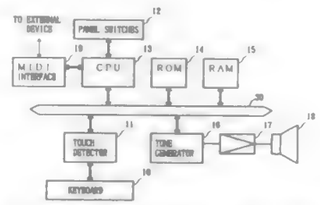


5,367,119

LOCAL CONTROL FUNCTION APPARATUS HAVING A SINGLE SWITCH

Toshinori Matsuda, Shizuoka, and Yoshito Nishitani, Hamamatsu, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Feb. 8, 1993, Ser. No. 14,976
Claims priority, application Japan, Mar. 27, 1992, 4-100287
Int. Cl.[5] G10H *1/06, 1/18, 1/40, 1/46*
U.S. Cl. 84—617 **8 Claims**



1. An electronic musical instrument, which, depending upon the state of a local control function, plays music independently or in conjunction with an external device that is in electrical communication with said electronic musical instrument, said electronic musical instrument having a power switch having an "on" and an "off" state, comprising:

a plurality of operational terminals, each operational terminal of said plurality of operational terminals having an "on" state and an "off" state;

a predetermined operational terminal of said plurality of operational terminals being designated as a local control function switch;

detecting means for detecting depression of said predetermined operational terminal immediately after said power switch is placed in its "on" position;

said detecting means including scanning means for scanning said plurality of operational terminals;

an event map means for providing data to said detecting means concerning a prior setting of said predetermined operational terminal;

initial setup means for setting an initial state of said local

control function in accordance with data acquired by said detecting means;

the local control function of said electronic musical instrument being placed into its previous setting immediately after power switch-on if the event map means indicates that there has been no change in the position of the predetermined operational terminal from a previous position thereof; and

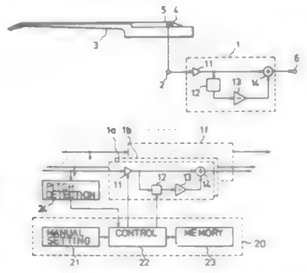
said local control function being changed from its previous position immediately after power switch-on if the event map indicates that a change has occurred in the position of the predetermined operational terminal relative to a previous position thereof.

5,367,120

MUSICAL TONE SIGNAL FORMING DEVICE FOR A STRINGED MUSICAL INSTRUMENT

Atsushi Hoshiai, Hannan, Japan, assignor to Roland Corporation, Osaka, Japan

Filed Aug. 5, 1992, Ser. No. 924,979
Claims priority, application Japan, Oct. 1, 1991, 3-282124
Int. Cl.[5] G10H *5/00*
U.S. Cl. 84—654 24 Claims



1. A musical tone signal forming device for an electric string music instrument having at least one pickup for detecting and delivering vibration of a string as an electric musical sound signal, comprising:

at least one comb filter having said electric musical sound signal as an input therefor; and

means for

producing parameters corresponding to

a specific position, which differs from a position of said pickup with respect to said string, at which an imaginary pickup is disposed and

a reference vibration frequency of said string and

supplying said parameters to said at least one comb filter to determine a frequency characteristic of said at least one comb filter,

wherein said frequency characteristic of said at least one comb filter simulates a frequency characteristic of said electric musical sound signal delivered from said imaginary pickup disposed at said specific position.

5,367,121

ELECTRONIC MUSICAL INSTRUMENT WITH MINUS-ONE PERFORMANCE FUNCTION RESPONSIVE TO KEYBOARD PLAY

Tsutomu Yanase, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 5, 1993, Ser. No. 630
Claims priority, application Japan, Jan. 8, 1992, 4-001631
Int. Cl.[5] G10H *1/36*
U.S. Cl. 84—666 15 Claims

1. An electronic musical instrument having an automatic performance function, comprising:

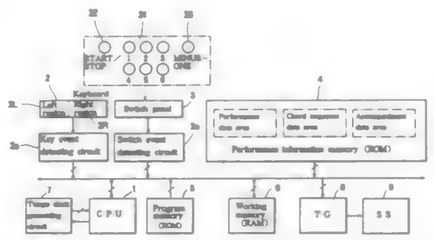
an input implement operable to input manual performance information;

detecting means for detecting operation and non-operation of the input implement;

musical tone generating means receptive of the manual performance information from the input implement for generating instant musical tones accordingly;

automatic performance means for feeding automatic performance information of a given musical composition composed of plural parts to the musical tone generating means so as to generate programmed musical tones accordingly;

allotting means for allotting a particular one of the plural



parts of the given musical composition to the input implement; and

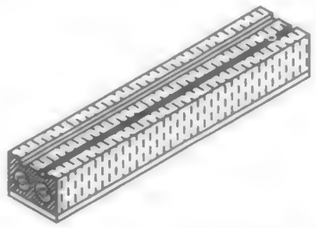
minus control means operative when the detecting means detects operation of the input implement for controlling the musical tone generating means to inhibit generation of programmed musical tones of the particular part while allowing generation of instant musical tones of the same part, and being operative when the detecting means detects non-operation of the input implement for controlling the musical tone generating means to restart generation of programmed musical tones of the particular part.

5,367,122

ORNAMENTAL ELECTRICAL MOLDING

Luis A. R. de Olano, P. DeLedesma No. 1733 (5000), Cordoba, Argentina

Filed Jun. 7, 1991, Ser. No. 711,874
Int. Cl.[5] H02G *3/26;* H01B *7/04*
U.S. Cl. 174—48 4 Claims



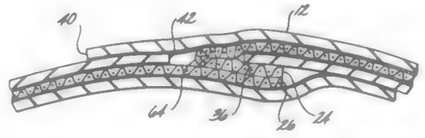
1. An electrical conductor unit for mounting on an exposed surface, said unit comprising an ornamental molding of flexible electrically insulating material, an electrically conductive tube of helically wound wire, said tube being located within said molding, and means on said molding for affixing said molding to the exposed surface.

5,367,123

ELECTRICALLY CONDUCTIVE SHEATH FOR RIBBON CABLE

Walter A. Plummer, III, Santa Ana; Vernon L. Shrader, Laguna Hills, and Ray W. Alpuche, South Gate, all of Calif., assignors to The Zippertubing Co., Los Angeles, Calif.

Filed Mar. 15, 1993, Ser. No. 31,820
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 25 Claims



1. An electrically shielded strip for forming a tubular sheath comprising:

top and bottom flexible, electrically insulating sheets, each having upper and lower surfaces and left and right edges; and sandwiched therebetween

an electrically conductive sheet shield having upper and lower surfaces and left and right edges, wherein:

the lower surface of the top sheet is substantially in contact with and attached to the upper surface of the conductive shield;

the upper surface of the bottom sheet is substantially in contact with and attached to the lower surface of the conductive shield;

the upper surface of the bottom sheet has an overlap section partially bounded by the right edge of the bottom sheet and extending beyond the right edge of the shield;

the upper surface of the shield has an overlap section partially bounded by the right edge of the shield and extending beyond the right edge of the top sheet;

the lower surface of the conductive shield has an overlap section partially bounded by the left edge of the shield and extending beyond the left edge of the bottom sheet; and

the lower surface of the top sheet has an overlap section partially bounded by the left edge of the top sheet and extending beyond the left edge of the bottom sheet and which is not attached to the upper surface of the shield.

21. A tubular electrical shielding sheath comprising a sandwich of:

an inner flexible electrically insulating sheet forming an inside surface of the sheath, edge portions of the inner sheet being adhesively bonded together for forming an inner wall of the tube;

an intermediate flexible electrically conductive fabric shield, the edges of the shield being overlapped for electrical contact; and

an outer flexible electrically insulating sheet forming an outside surface of the sheath, edge portions of the outer sheet being adhesively bonded together for forming an outer wall of the tube, the electrically conductive shield being completely enclosed by the inner and outer sheets; and

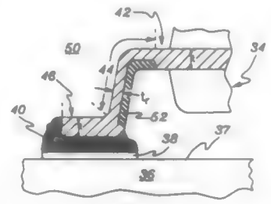
a pair of parallel, longitudinally extending fold zones of reduced thickness in the outer sheet for facilitating folding of the sheath into a flattened tube.

5,367,124

COMPLIANT LEAD FOR SURFACE MOUNTING A CHIP PACKAGE TO A SUBSTRATE

Herman S. Hoffman, and Richard W. Noth, both of Milton, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 28, 1993, Ser. No. 84,643
Int. Cl.[5] H01H *9/02*
U.S. Cl. 174—52.4 21 Claims



1. A compliant lead for electrically and mechanically mounting an integrated circuit chip package to a surface of a substrate, said compliant lead comprising:

a finger of conductive material having a length with at least two regions of different thickness along said length;

a first region of said finger of conductive material having a uniform thickness 't', said first region of uniform thickness being disposed so as to be located adjacent to the integrated circuit chip package when said compliant lead electrically and mechanically connects the integrated circuit chip package to said surface of the substrate; and

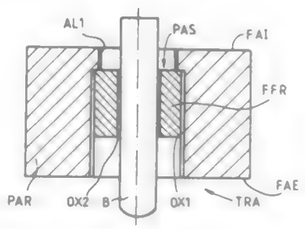
a second region of said finger of conductive material having a substantially uniform, reduced thickness 't_r', wherein 't_r' < 't', said second region of reduced thickness being located so as to improve lead compliancy during thermal cycling when said compliant lead electrically and mechanically connects the integrated circuit chip package to said surface of the substrate.

5,367,125

ALUMINUM BASED ARTICLE HAVING AN INSERT WITH VITREOUS MATERIAL HERMETICALLY SEALED THERETO

Paul Viret, marly Le Roi, and Bernard Ledain, Plaisir, both of France, assignors to Dassault Electronique, Saint Cloud, France

Continuation of Ser. No. 862,602, Apr. 1, 1992, abandoned, which is a continuation of Ser. No. 562,756, Aug. 3, 1990, abandoned. This application Jan. 4, 1994, Ser. No. 177,206
Claims priority, application France, Jan. 20, 1989, 89 00709
Int. Cl.[5] H01L *23/06*
U.S. Cl. 174—52.4 30 Claims



1. An article comprising:

a wall comprising an aluminum based material and which includes therein a seating surface;

an insert in said seating surface of said wall, said insert comprising, at least on its periphery adjacent to said seating surface, a sintered phosphate-glass material which is

sealed directly to at least a portion of the interior of the seating surface;

said sintered phosphate-glass material including an agent for increasing the temperature range for working said phosphate-glass material.

5,367,126

BRANCH LINE APPARATUS FOR A WIRE HARNESS AND A METHOD THEREOF

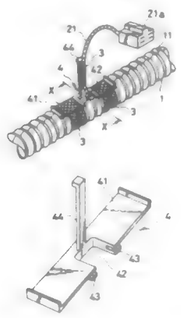
Masanori Kikuchi, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1992, Ser. No. 977,852

Claims priority, application Japan, Dec. 4, 1991, 3-108355[U]

Int. Cl.[5] H02G *3/04*

U.S. Cl. 174—71 R **7 Claims**



1. A branch line supporting apparatus for use with a wire harness which wire harness has a bunch line formed of a bundle of a plurality of electric wires, and a branch line divided from said bunch line and a cover tube with a slit in a lengthwise direction of said cover tube for drawing out said wire harness bunch line, the apparatus comprising:

a joint portion provided to connect to said cover tube;

a drawing out mouth provided in said joint portion as a cutout having an open end for drawing out said branch line from said bunch line to an outside of said cover tube;

an insert groove outwardly provided on the outer periphery of said drawing out mouth for engaging with an edge of said slit of said cover tube; and

a branch line support member perpendicularly extended from said joint portion in opposite direction of said insert groove for supporting said branch line with a fastener so as to correctly decide a drawing out direction of said branch line and to firmly fix said wire harness without damage.

5,367,127

LINE ORGANIZING DEVICE

William B. Dormon, 25615 NW. Pumpkin Ridge Rd., Cornelius, Oreg. 97113

Filed May 29, 1992, Ser. No. 891,226

Int. Cl.[5] H02G *1/00;* **E02F** *5/10*

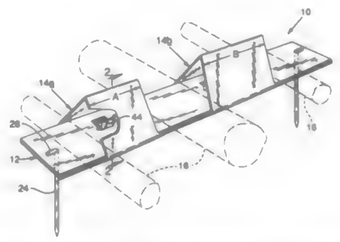
U.S. Cl. 174—146 **3 Claims**

1. A device for positioning lines in a trench comprising:

a sheet of stiff material including a first elongate base portion adapted to rest on the ground and a substantially parallel second elongate base portion stacked over and bearing against the first base portion,

the sheet further including multiple spacer portions disposed in a row and spaced along the length of said stacked base portion, said spacer portions having one set of extremities joined through a first fold axis to said first base portion and another set of extremities joined through a second fold axis to said second base portion, said spacer portions between their extremities arching above the stacked base portions,

said first base portion having an elongate linear margin substantially coincident with said first fold axis delineating one side of a space separating a pair of spacer portions, and said second base portion having a linear margin substantially coincident with said second fold axis delineating the opposite side of the space separating said pair of spacer portions,



a line positioned by the device extending across said margins while supported intermediate said margins directly on said stacked base portions.

5,367,128

FAST-RESPONSIVE ELECTROMAGNETIC BALANCE-TYPE WEIGHING APPARATUS

Fumihiro Tsukasa, Ohimachi; Hideya Fujimoto, Atsugi; Kazuhiko Horikoshi, Atsugi; Osamu Tanaka, Atsugi, and Kunio Kikuchi, Minamiashigara, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

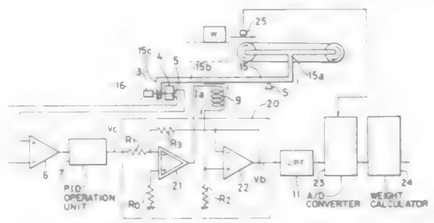
PCT No. PCT/JP90/01639, § 371 Date May 8, 1991, § 102(e) Date May 8, 1991, PCT Pub. No. WO91/11688, PCT Pub. Date Aug. 8, 1991

PCT Filed Dec. 15, 1990, Ser. No. 678,334

Claims priority, application Japan, Aug. 21, 1989, 1-214558; Jan. 26, 1990, 2-17455; Feb. 13, 1990, 2-32119; Mar. 31, 1990, 2-87274; Mar. 31, 1990, 2-87275

Int. Cl.[5] G01G *1/38, 3/14*

U.S. Cl. 177—212 **10 Claims**



1. An electromagnetic balance-type weighing apparatus comprising:

weighing pan means for holding an object of weighing having a weight, said weighing pan means being displaceable as a function of the weight of the object of weighing placed thereon;

electromagnetic coil means for generating an electromagnetic force to counterbalance a displacement of said weighing pan means;

displacement detector means for detecting the displacement of said weighing pan means and for providing a detection signal in response thereto;

operation means having an input terminal and an output terminal for providing a control voltage in accordance with the detection signal from said displacement detector means, said input terminal being coupled to said detector means;

first resistor means for transmitting said control voltage provided by said operation means, said first resistor means having one end and another end, the one end being connected to said output terminal of said operation means;

driving amplifier means for amplifying and outputting said control voltage, said driving amplifier means having an inverted input terminal, a non-inverted input terminal and an output terminal, said inverted input terminal being connected to said another end of said first resistor means, said output terminal being connected to one end of said electromagnetic coil means;

second resistor means for determining a reference potential of said driving amplifier means, said second resistor means being connected between said non-inverted input terminal of said driving amplifier means and a reference potential point;

third resistor means for generating a voltage which corresponds to a current supplied to said electromagnetic coil means from the output terminal of said driving amplifier means, said third resistor means being connected between another end of said electromagnetic coil means and the reference potential point;

buffer amplifier means for amplifying and outputting the voltage generated by said third resistor means, said buffer amplifier means having an inverted input terminal, a non-inverted input terminal and an output terminal, said non-inverted input terminal being connected to a contact point between the other end of said electromagnetic coil means and said third resistor means, said inverted input means being connected to said output terminal; and

fourth resistor means for providing a feedback voltage in accordance with a predetermined ratio, outputted from the output terminal of said buffer amplifier means, to the inverted input terminal of said driving amplifier means, said fourth resistor being connected between the output terminal of said buffer amplifier means and the inverted input terminal of said driving amplifier means, said predetermined ratio being determined by a ratio of a value of said first resistor means to that of said fourth resistor means; and

weight calculator means for calculating the weight of the object of weighing according to an output voltage from the output terminal of said buffer amplifier means;

wherein said electromagnetic coil means is in a negative feedback loop to said driving amplifier means, and is driven by electric current supplied from said buffer amplifier means, so that the electric current quickly responds to changes in load applied to said weighing pan means and so that a time from detection of a change in load caused by the object of weighing to determination of the weight of the object is reduced.

5,367,129

BOWLING BALL TOTAL WEIGHT/TOP WEIGHT SCALE

Clarence G. Lahl, Jr., 881 Penny's Dr., Brunswick, Ohio 44212

Filed Jan. 7, 1993, Ser. No. 1,448

Int. Cl.[5] G01G *19/22, 23/18, 3/08;* **G01M** *1/12*

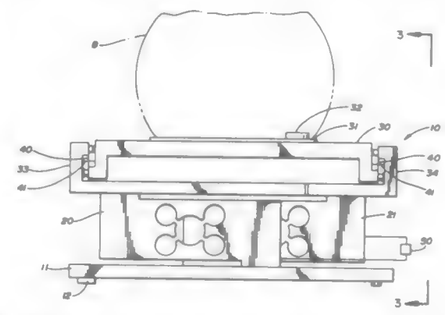
U.S. Cl. 177—229 **15 Claims**

15. A method of determining top weight and total weight of a bowling ball, comprising the steps of:

a) supporting the ball on a locating ting connected to a top weight load cell and a total weight load cell;

b) locating a heavy spot of the ball in a predetermined position relative to one of the load cells;

c) transmitting the outputs of the load cells to an electronic meter; and



d) displaying an output of said meter in ounces of top weight and pounds of total weight.

5,367,130

GRAPHICS TABLET SCANNING AND ERROR REDUCTION

Ko Isono, Fremont, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 27, 1992, Ser. No. 889,552

Int. Cl.[5] G08C *21/00;* **G06K** *9/00*

U.S. Cl. 178—18 **9 Claims**



1. In a graphics tablet, a method for determining a valid stylus position comprising the steps of:

reading a plurality of sample points from the graphics tablet;

sorting the sample points to form a sorted set of points;

selecting the median sample point from the sorted set of points as the stylus position; and

signaling an error if the difference between the highest and lowest points in the sorted set exceeds an error threshold value.

5,367,131

APPARATUS FOR TREATING HYDROCARBON AND CARBON MONOXIDE GASES

Milton M. Bemel, 5716 N. 10th St., No. 1, Phoenix, Ariz. 85014

Filed Nov. 8, 1993, Ser. No. 148,963

Int. Cl.[5] F01N *7/02, 3/10*

U.S. Cl. 181—232 **9 Claims**

1. An exhaust device for use in an automobile catalytic converter system, said exhaust device being disposed downstream of the catalytic converter in the exhaust gas stream to further reduce the noxious components of the exhaust gases received from the catalytic converter, said exhaust device comprising:

a housing defining a chamber for containing a catalytic substance,

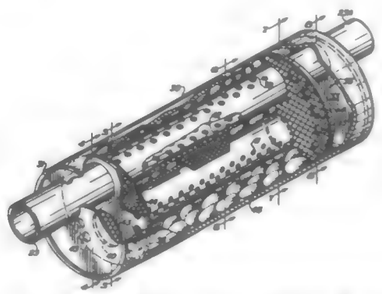
a first conduit connectable at one end to a source of exhaust gases from said catalytic converter system and extending longitudinally through said housing,

two pairs of spaced baffles each pair defining a reservoir therebetween in said housing at different ends thereof,

one of the baffles of each reservoir being apertured to provide passageways into said housing,

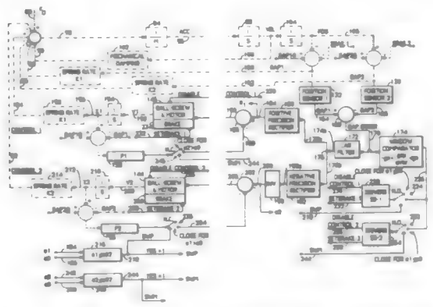
a second conduit arranged to extend longitudinally in said

housing spaced from said first conduit and interconnecting the reservoirs at each end of said housing,
each of the conduits being provided with a plurality of aperture means extending therethrough and longitudinal thereof within said housing, and
volcanic ash particles arranged in said housing between the reservoirs,



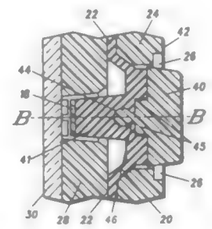
whereby a portion of the exhaust gases flowing through said first conduit flows out of said aperture means therein and into said housing for bathing the volcanic ash and then flows into said second conduit through its aperture means and out each end, thereof into each of the reservoirs,
the exhaust gases flowing out of said reservoirs flows back into said housing and into said first conduit through a part of its aperture means and then to atmosphere.

5,367,132
CENTERING CONTROL FOR ELEVATOR HORIZONTAL SUSPENSION
Clement A. Skalski, and Boris Traktovenko, both of Avon, Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed May 27, 1993, Ser. No. 68,491
Int. Cl.[5] B66B *1/44*
U.S. Cl. 187—393 **17 Claims**



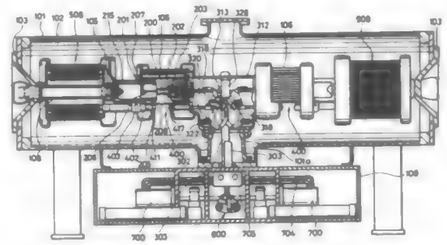
1. An improved centering control for an elevator having a horizontal suspension comprising a passive, mechanical part and an active, electromechanical part including an actuator, the centering control comprising means responsive to an error signal indicative of a difference between a reference signal and a sensed signal, for providing a control signal for controlling the actuator, the improved centering control further comprising:
means responsive to the sensed signal and to a second reference signal indicative of a centered condition of the elevator for providing one or more control signals for disabling the control and for braking the actuator in the presence of the centered condition.

5,367,133
KEYPAD INCLUDING MEMBRANE WITH REPLACEABLE KEY ELEMENTS
Hans-Jurgen Schmidt, Hunstetten; Klaus Lindner, and Theo L. Eversloh, both of Hohenstein, all of Germany, assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 23, 1993, Ser. No. 51,429
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—5 A **15 Claims**



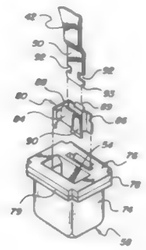
1. A keypad comprising:
a) a membrane having:
i) a plurality of switch actuating portions comprising conductive material deposited on an underside of the membrane;
ii) key portions corresponding to said switch actuating portions and located on an opposite side of the membrane to said switch actuating portions; and
iii) a plurality of switch elements located beneath said switch actuating portions of the membrane for selective contact with the switch actuating portions of the membrane;
wherein the membrane extends across the keypad and provides a water resistant barrier between the switch elements and the key portions of the membrane; and
b) an independently replaceable button for attachment to a key portion of the membrane;
whereby pressing of the button causes flexing of the membrane and actuation of a switch element by the switch actuating portion of the membrane.

5,367,134
CIRCUIT BREAKER
Toshiaki Yoshizumi; Mikio Hidaka, and Yoshiki Hirano, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 16, 1993, Ser. No. 46,997
Claims priority, application Japan, Apr. 16, 1992, 4-096515
Int. Cl.[5] H01H *33/34, 33/42, 33/52*
U.S. Cl. 200—148 F **17 Claims**



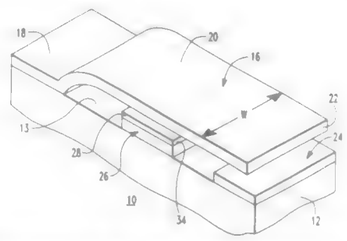
1. A circuit breaker, comprising:
a tank filled with an insulation gas and having an axial direction along a horizontal axis;
two main contacts which are electrically connected in series in said tank in a manner such that main moving contacts of said main contacts are driven in the axial direction of said tank for contacting and departing from stationary main contacts of said main contacts;
series connections of resistors and a resistor contact which are respectively provided in said tank in such a manner that they are electrically connected in parallel with said main contacts when they and the main contacts are closed;
a first insulation operation rod and a second insulation operation rod which are driven in a direction that is perpendicular to the horizontal axis of said tank and provided between said main contacts;
a first link mechanism for coupling between a top end of said first insulation operation rod and one main contact of the two main contacts;
a second link mechanism for coupling between a top end of said second insulation operation rod and said resistor contact;
a first hydraulic operation apparatus and a second hydraulic operation apparatus which are provided below said tank;
a third link mechanism for coupling between a bottom end of said first insulation operation rod and said first hydraulic operation apparatus; and
a fourth link mechanism for coupling between a bottom end of said second insulation operation rod and said second hydraulic operation apparatus.

5,367,135
PUSH BUTTON CONSTRUCTION FOR PLAYER CONTROL
Steven F. Selby; Dewayne E. Green, Winchester, Tenn.; Edward C. Sarkisian, both of Huntsville, Ala., and Sigmund Klueger, Huntsville, Ala., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Oct. 26, 1993, Ser. No. 140,994
Int. Cl.[5] H01H *13/70*
U.S. Cl. 200—345 **2 Claims**



1. A spring construction for yieldably connecting a manually movable push button to a push button lever wherein said lever is operatively connected to a player unit and said push button has a cavity formed therein and wherein a finishing panel with push button openings therein is adapted to be fixed to said unit;
the improvement comprising a unitized three arm clip operatively mounted in said cavity, said clip having two side arm portions connected by an end wall and a spring arm portion connected to one of said side arm portions and located intermediate said side arm portions and extending in side by side relationship to said side arm portions;
said spring arm portion cooperating with another of said side arm portions to define an opening therebetween extending a substantial distance along oppositely facing sides of said spring arm portion and said other side arm portion to receive the end of said lever, said spring arm portion and said One side arm portion being adapted to deflect to yieldably hold a button in a stabilized position on the end of said lever while permitting said push button to move with respect to said lever in order to enable said push button to be inserted into an opening therefor in the finishing panel structure for said player unit.

5,367,136
NON-CONTACT TWO POSITION MICROELETRONIC CANTILEVER SWITCH
Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 26, 1993, Ser. No. 96,237
Int. Cl.[5] H03K *17/975*
U.S. Cl. 200—600 **9 Claims**

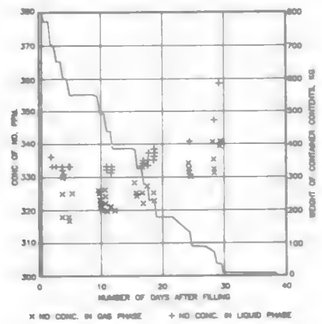


1. A microelectronic cantilever switch, comprising a substrate;
a conductive cantilever beam fixed at one end to the substrate and having an elongate unsupported portion overhanging the substrate, said unsupported portion terminating at a free end;
a pull down electrode, attached through a switch to a voltage source, for attracting the cantilever beam toward the substrate, and fixed to the substrate between the substrate and the cantilever beam;
a metallic contact pad fixed to the substrate between the substrate and the cantilever beam, the cantilever beam being spaced from the contact pad when the switch is in the open position; and
an insulative layer deposited on an opposing surface of one of the cantilever beam and contact pad, the cantilever beam being in engagement with the insulative layer when the switch is in the closed position.

5,367,137
METHOD OF PRODUCING A PROTECTIVE GAS AND A GAS MIXTURE THEREFOR
Nils Hammarlund; Kjell-Arne Persson, both of Sollentuna, and Ladislav Sipek, Täby, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden
PCT No. PCT/SE91/00133, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13720, PCT Pub. Date Sep. 19, 1991
PCT Filed Feb. 21, 1991, Ser. No. 934,473
Claims priority, application Sweden, Mar. 14, 1990, 9000916-8
Int. Cl.[5] B23K *9/16*
U.S. Cl. 219—74 **11 Claims**

1. A method of producing a protective gas comprising 0.0020–0.100 percent by volume nitric oxide, 0–90 percent by volume helium, 0–5 percent by volume hydrogen, 0–50 percent by volume carbon dioxide, and the remainder argon, characterized by dissolving nitric oxide in condensed argon to a concentration of 0.0010–0.100 percent by volume, calculated

on gas phase, vaporizing the resultant solution and admixing remaining constituents in the vaporized solution in such pro-



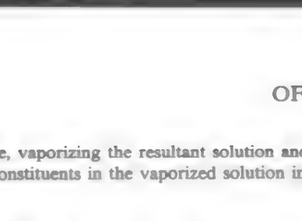
portions as to obtain a protective gas of predetermined composition.

5,367,138

WELDING ASSURANCE CONTROL TECHNIQUES

Larry E. Moss; Randolph P. Formanek, Both of Danville, Ill.; Johnny B. Hogg, deceased, late of Danville, Ill. by Carol Hogg, executrix , and William M. Derby, Jr., Bethlehem, Pa., assignors to Automation International Incorporated, Danville, Ill.

Filed Jun. 28, 1993, Ser. No. 84,864
Int. Cl.[5] B23K *11/04*
U.S. Cl. 219—109 28 Claims



1. In an electrical welder including a movable platen for carrying a part to be welded and for spacing a first end and a second end of said part, a transformer having a primary winding and having a secondary winding electrically coupled to said platen, and tap means for coupling a primary voltage to an adjustable portion of said primary winding, improved apparatus for ensuring that said tap means is correctly adjusted for the welding of said part comprising in combination:

means for spacing said first and second ends of said part by at least a predetermined distance;

means for measuring said primary voltage and said secondary voltage;

means for generating a first signal having a first value proportional to the ratio of the primary voltage to the secondary voltage and for determining whether said first value lies within a predetermined range of values; and

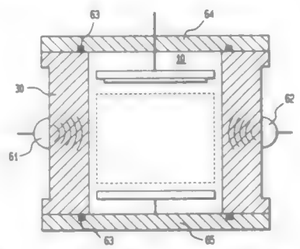
means for indicating to an operator the presence of said first value in relation to said predetermined range.

5,367,139

METHODS AND APPARATUS FOR CONTAMINATION CONTROL IN PLASMA PROCESSING

Reid S. Bennett, Wappingers Falls, N.Y.; Albert R. Ellingboe, Palo Alto, Calif.; George G. Gifford, Croton-on-Hudson; Kurt L. Haller, Peekskill, both of N.Y.; John S. McKillop, Satellite Beach, Fla.; Gary S. Selwyn, and Jyothi Singh, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1989, Ser. No. 425,659
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.59 32 Claims



1. A method for prevention of plasma contamination in a plasma reactor system comprising performing a plasma process including the steps as follows:

a) applying an RF voltage to establish a plasma within said reactor,

b) periodically interrupting said RF voltage for a brief interval and reestablishing said RF voltage after said brief interval, providing a series momentary interruptions of said RF voltage and said plasma periodically, between longer periods of time during which said RF voltage is applied causing said plasma to be applied in said reactor during said longer periods, and

c) continuously repeating the application of said RF voltage to said reactor interrupted by said brief intervals of interruption of said RF voltage until the completion of said plasma process

whereby elimination of particle contamination situ in said plasma reactor system is achieved.

5,367,140

METHOD FOR LASER WELDING OF OPTICAL PACKAGES

Musa K. Jouaneh, Narragansett, R.I., and Sabbir S. Rangwala, Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 27, 1993, Ser. No. 173,849
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 6 Claims

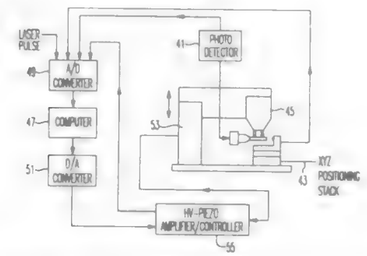
1. A method of manufacturing an optical package comprising the steps of:

attaching a laser to a base;

positioning an optical fiber in a fiber tube in a saddle in an approximate desired position with respect to said laser,

laser welding said optical fiber in said position by selectively heating the interface between said fiber tube and said saddle to weld said fiber tube and said saddle;

monitoring the position of said fiber during said welding; and



using a piezoelectric actuator to move said fiber to said final desired position during said laser welding.

5,367,141

PHOTOCHEMICAL CUTTING OF FABRICS

Martin S. Piltch, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 26, 1993, Ser. No. 38,203
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.67 9 Claims

1. Apparatus for cutting a garment pattern from one or more layers of fabric comprising:

a laser capable of producing ultraviolet light;

pattern means in optical communication with said laser light, said pattern means defining pathways for said laser light in the shape of said garment pattern;

lens means receiving said laser light in the shape of said garment pattern for focussing said laser light onto said one or more layers of fabric.

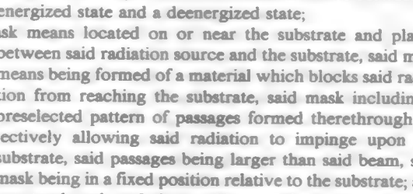
5,367,142

APPARATUS FOR THE THEMIC CUTTING OF MATERIALS

Jacek T. Gabzdyl, Guildford, and Alcan V. Fernandes, London, both of England, assignors to BOC Group plc, Windlesham, England

Filed Sep. 15, 1992, Ser. No. 945,088
Claims priority, application United Kingdom, Sep. 18, 1991, 9119919
Int. Cl.[5] D23K *26/14*
U.S. Cl. 219—121.67 12 Claims

1. An apparatus for the continuous thermal cutting of material comprising a thermic cutter and a gas delivery system including source of assist gas under pressure, conduit means for the passage of said gas from the source to the thermic cutter and control means located in the conduit means between the gas source and the thermic cutter and capable, when operated,



of supplying said assist gas to the thermic cutter in the form of pulses at predetermined frequencies.

5,367,143

APPARATUS AND METHOD FOR MULTI-BEAM DRILLING

Russell T. White, Jr., Conklin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1992, Ser. No. 996,929
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.68 10 Claims

1. A multi-beam drilling apparatus for selectively removing material from a substrate, comprising:

at least one radiation source producing at least one beam of coherent radiation, said at least one beam being formed into a plurality of coherent beams, said radiation being directed toward said substrate and being capable of vaporizing said substrate;

means to selectively switch said radiation source between an energized state and a deenergized state;

mask means located on or near the substrate and placed between said radiation source and the substrate, said mask means being formed of a material which blocks said radiation from reaching the substrate, said mask including a preselected pattern of passages formed therethrough selectively allowing said radiation to impinge upon the substrate, said passages being larger than said beam, said mask being in a fixed position relative to the substrate; and

means to alter the relative positions of the radiation source and the substrate and said mask.

5,367,144

AIR PERMEABILITY DETECTING METHOD AND APPARATUS FOR THE SAME

Takeshi Matsumura, and Mikio Komori, both of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Oct. 18, 1993, Ser. No. 136,924
Claims priority, application Japan, Oct. 20, 1992, 4-281456
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.84 7 Claims

1. An air permeability detecting apparatus for detecting an air permeability of a hole portion of a belt-like sheet material which is formed by a laser beam, comprising:

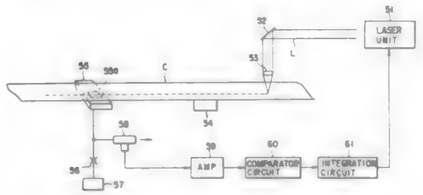
hole forming means for radiating a light beam on the belt-like sheet material to form fine holes,

means for detecting an amount of air passing through the fine holes, said detecting means including

a base having a window above which the fine holes formed in the belt-like sheet material pass,

adjusting means for allowing entrance of an external reference air flow and capable of adjusting the entrance of said reference air flow,

suction means, coupled to the window of said base and said adjusting means, respectively, for sucking the belt-like sheet material onto the window in order to draw a detection air flow through the fine holes and for drawing said reference air flow through said adjusting means, and



converting means for converting said reference air flow and said detection air flow to a reference pressure and a detection pressure, respectively;

detecting means for generating a difference detection electrical signal by detecting a pressure difference between said reference pressure and said detection pressure; and

control means for controlling said hole forming means in response to a detection signal, thereby adjusting an optical intensity of said light beam.

5,367,145

HEATING APPARATUS WITH AUTOMATIC HEATING PERIOD SETTING FUNCTION

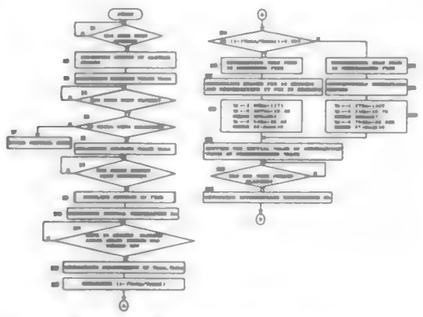
Minoru Takagi, Aichi, Japan, assignor to Kabushi Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 17, 1993, Ser. No. 107,457

Claims priority, application Japan, Aug. 17, 1992, 4-217777

Int. Cl.[5] H05B *6/68*

U.S. Cl. 219—494 **12 Claims**



1. A heating apparatus comprising:

a) a heating chamber for accommodating food to be cooked by way of heating;

b) a heater for heating the food accommodated in the heating chamber;

c) a temperature sensor for sensing a temperature in the heating chamber, thereby generating a temperature signal indicative of the sensed temperature;

d) first means connected to the temperature sensor for obtaining an initial temperature on the basis of the temperature signal generated by the temperature sensor at an initial stage of the heating;

e) second means connected to the temperature sensor for obtaining an intermediate temperature on the basis of the temperature signal generated by the temperature sensor a predetermined period after the initial stage of the heating;

f) third means connected to the first and second means for obtaining the difference (Y_β) between the initial temperature obtained by the first means and the intermediate temperature obtained by the second means;

g) fourth means connected to the third means for determining a calorific capacity of the food on the basis of the difference (Y_β) obtained by the third means; and

h) heating time period determining means connected to the fourth means for setting a heating period of time for the food on the basis of the calorific capacity determined by the fourth means.

5,367,146

METHOD AND CIRCUIT ARRANGEMENT FOR MONITORING AND LIMITING THE OPERATING TEMPERATURE OF ELECTRICALLY HEATED EQUIPMENT, AS WELL AS THE USE OF THE METHOD

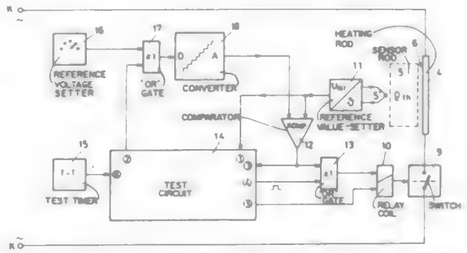
Kurt Grunig, Kuttigen, Switzerland, assignor to Zehnder Electronic AG, Granichen, Switzerland

Filed May 28, 1992, Ser. No. 889,679

Claims priority, application Switzerland, Jun. 20, 1991, 828/91-7

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—497 **13 Claims**



1. A method for monitoring and limiting the operational temperature of an electrically heated device whose temperature is normally regulated by the application of heat energy derived from a primary energy source on a continuing basis so long as the temperature of the device is below a reference whereby operation of said primary energy supply is controlled, comprising the steps of:

a) disconnecting said primary energy source from said device;

b) measuring the actual temperature of the device;

c) supplying a defined amount of heating energy to the device heater over a momentary time interval;

d) measuring the resulting temperature rise of the device after an appropriate equilibrium time;

e) comparing the temperature rise to a reference range; and

f) maintaining the disconnected state of the primary energy source if the temperature rise is outside the reference range and reconnecting said primary energy source to said heater if the temperature rise is within the reference range.

5,367,147

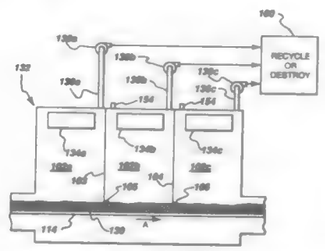
METHOD AND APPARATUS FOR CONTINUOUS MICROWAVE REGENERATION OF ADSORBENTS

Bang M. Kim, Schenectady; James J. Carroll, Sr., Ballston Lake, and Donald E. Woodmansee, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 787,184, Nov. 4, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,474

Int. Cl.[5] H05B *6/78*

U.S. Cl. 219—698 **16 Claims**



10. An apparatus for regenerating a sorbated adsorbent comprising:

a first heating cavity;

a second heating cavity;

a conveyor belt arranged to pass through said first and second heating cavities;

a first microwave heating device disposed in said first heating cavity for heating an adsorbent to a temperature at which sorbates in said adsorbent are desorbed;

a second microwave heating device disposed in said second heating cavity for heating an adsorbent to a higher temperature at which other sorbates in said adsorbent are desorbed;

a first vent formed in said first heating cavity;

a second vent formed in said second heating cavity; wherein said first and second vents are for removing desorbed materials from said first and second cavities, and

means for receiving adsorbent discharged from said conveyor belt.

5,367,148

COUNTERFEIT DETECTION USING ID NUMBERS WITH AT LEAST ONE RANDOM PORTION

Leonard Storch, and Ernst Van Haagen, both of New York, N.Y., assignors to Clas, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 420,101, Oct. 11, 1989, and a continuation-in-part of Ser. No. 292,569, Dec. 30, 1988, which is a continuation-in-part of Ser. No. 853,745, Apr. 18, 1986, Pat. No. 4,814,589. This application Mar. 15, 1991, Ser. No. 669,904

Int. Cl.[5] G06F *15/21*

U.S. Cl. 235—375 **11 Claims**



1. A method for identifying unauthorized objects comprising:

on at least one less accessible location of each authorized object associating identifying information therewith which includes at least two distinct randomly selected portions;

on at least one other more accessible location of each authorized object associating said identifying information therewith but omitting at least one said distinct portion;

storing said identifying information with said at least two distinct portions aside from said associations with said authorized objects;

reading identifying information from at least one of said locations associated with an object being checked for authenticity;

comparing said read information with corresponding said stored information to detect one or more discrepancies therebetween, whereby an unauthorized object is identified.

9. A system for identifying an unauthorized object from a set of authorized objects, each authorized object of said set having identifying information associated therewith of which a portion has been calculated using an algorithm dependent on a randomly selected number, the system comprising:

means for securely storing said randomly-selected numbers at a single location only;

means for reading identifying information from an object;

means coupled to receive said information read from said object for at least temporarily storing that information; and

means for automatically detecting when information read from any object includes a different said portion than that calculated using said algorithm, whereby an unauthorized object is identified.

11. A method for identifying unauthorized objects comprising:

associating with each authorized object identifying information which includes a plurality of randomly selected portions, at least one said randomly selected portion being concealed in a given condition of said objects and at least one said randomly selected portion being visible in said given condition of said object;

storing said information aside from said association with said authorized objects;

reading said information from an object being checked for authenticity; and

comparing said read information with said stored information to detect discrepancy therebetween, whereby an unauthorized object is identified.

5,367,149

IC CARD AND METHOD OF CHECKING PERSONAL IDENTIFICATION NUMBER OF THE SAME

Kenichi Takahira, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1993, Ser. No. 108,221

Claims priority, application Japan, Aug. 27, 1992, 4-250418

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—380 **6 Claims**

1. An IC card comprising:

data processing means for processing data;

a memory in which a personal identification number is stored;

a power-supply terminal to which a power-supply voltage is applied from an external unit;

an input/output terminal for inputting data from and outputting data to the external unit;

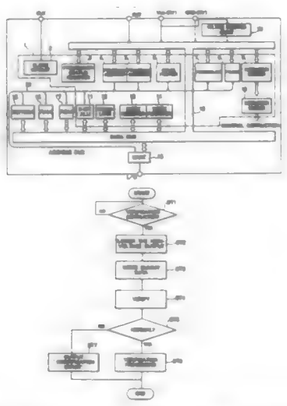
a voltage detecting circuit for detecting the power-supply voltage applied to said power-supply terminal from the external unit; and

check-processing means for verifying a personal identification number input from the external unit by comparison with the personal identification number stored in said memory in response to a command for verifying the identification number from the external unit applied to said input/output terminal when the power-supply voltage

detected by said voltage detecting circuit is at least a predetermined threshold voltage, said check-processing means constantly responding to the command that an error occurred in the comparison when the power-supply voltage detected in said voltage detecting circuit is lower than the predetermined threshold voltage.

5. A method of checking a personal identification number in an IC card, said method comprising:

writing predetermined dummy data in a memory in an IC card in response to a command to check a personal identification number input to the IC card from an external unit;



reading out from the memory the dummy data written into the memory;

determining whether accurate writing occurred by comparing the read-out dummy data with the written-in dummy data;

checking an identification number input from the external unit in the IC card by comparison with a personal identification number stored in the memory in the IC card, upon determination that accurate writing occurred; and

constantly responding to the external unit that an identification error has occurred upon determination that accurate writing has not occurred.

5,367,150

DATA PROCESSING SYSTEM USING IC CARD

Kenichi Kitta, Toride; Kunihiro Okada, Yokohama; Mitsuo Mimura, Toride; Makoto Ochiai, Oyama, and Naotake Nakamura, Kashiwa, all of Japan, assignors to Hitachi Maxell, Ltd., Ibaraki, Japan

PCT No. PCT/JP89/00970, § 371 Date May 22, 1990, § 102(e) Date May 22, 1990, PCT Pub. No. WO90/03607, PCT Pub. Date Apr. 5, 1990

Continuation of Ser. No. 490,598, May 22, 1990, abandoned. This PCT application Sep. 25, 1989, Ser. No. 917,678

Claims priority, application Japan, Sep. 26, 1988, 63-240257; Sep. 26, 1988, 63-240258; Nov. 21, 1988, 63-294035

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—380 **16 Claims**

1. A data processing system using an IC card comprising:

a central computer for performing data processing;

said IC card for storing confirmation information, said confirmation information including identifying information of an IC card owner; and

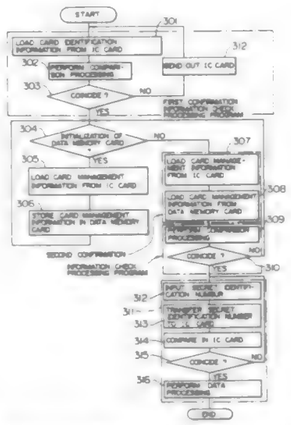
a terminal connected to said central computer through a communication line, said terminal including means for mounting said IC card,

input means for entering input information,

internal memory means for storing transaction information for data processing between the IC card owner and said central computer, and

processor means connected to said mounting means and said internal memory means, for performing processing in said terminal;

wherein said processor means permits said IC card to access the transaction information stored in said internal memory means so that said IC card can designate an information part stored therein or perform processing on an information part stored therein to obtain a synthesized data part,



upon a coincidence determination being made that said input information entered by said input means coincides with said confirmation information in said IC card, and

said processor means performs processing on the synthesized data part or the designated information part, and transfers a processing result to said central computer via said communication line.

5,367,151

SLIM SCAN MODULE WITH INTERCHANGEABLE SCAN ELEMENT

Paul Dvorkis, Stony Brook, and Howard Shepard, Great River, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 943,232, Sep. 10, 1992, and Ser. No. 789,705, Nov. 8, 1991, which is a continuation-in-part of Ser. No. 520,464, May 8, 1990, Pat. No. 5,168,149, which is a continuation-in-part of Ser. No. 428,770, Oct. 30, 1989, Pat. No. 5,099,110. This application Sep. 29, 1992, Ser. No. 952,414

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **44 Claims**

1. A self-contained optical scanning module for reading optically encoded indicia having portions of differing light reflectivity, said module comprising:

a base;

an emitter, fixedly mounted on said base, for emitting a beam of light;

optical means for directing the beam of light toward the optically encoded indicia;

support means, attached to said base, for mounting the optical means for oscillating movement;

means for producing a reciprocal motion of the optical means on said support means such that the beam of light scans across a surface on which said indicia appears;

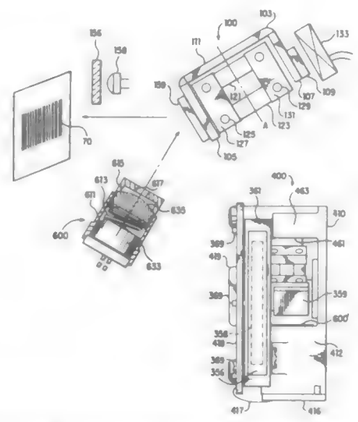
detector means for receiving light reflected back from the surface and producing electrical signals corresponding to the differing light reflectivity of the optically encoded indicia;

a first circuit board mounted orthogonal to said base at one end of said base;

first circuit means mounted on said first circuit board;

a second circuit board mounted orthogonal to said first circuit board and parallel to said base;

second circuit means mounted on said second circuit board; and



an electrical cable connecting said first and second circuit means to each other, wherein said first and second circuit means operate together to produce signals to drive the emitter, to produce signals to drive the means for producing a reciprocal motion and to process the electrical signals produced by the detector means.

5,367,152

METHOD OF READING INDICIA FROM EITHER SIDE OF SCANNER HOUSING

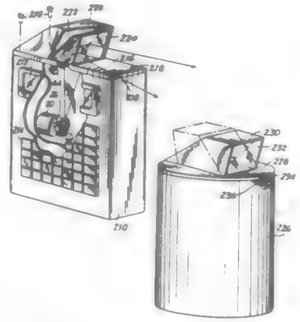
Mark J. Krichever, Hauppauge, and Boris Metlitsky, Stony Brook, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 823,588, Jan. 17, 1992, Pat. No. 5,254,844, which is a continuation of Ser. No. 626,612, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 193,365, May 11, 1988, Pat. No. 5,144,120. This application Jul. 19, 1993, Ser. No. 92,851

The portion of the term of this patent subsequent to Sep. 19, 2007, has been disclaimed.

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **20 Claims**



1. A method of reading indicia having parts of different light reflectivity in a light scanning system of the type including:

(A) a housing having an interior, a stationary portion, and a movable portion with an exit port,

(B) a light source component in the interior of the housing, and operative for emitting a light beam,

(C) an optical component in the interior of the housing, and operative for modifying and directing the light beam along an optical path through the exit port along a beam direction toward indicia located in the vicinity of a reference plane located exteriorly of the housing,

(D) a photodetector component having a field of view and mounted in the interior of the housing, and operative for detecting at least a portion of light of variable intensity reflected off the indicia, and for generating a photodetector signal indicative of the detected light intensity, and

(E) a scanning component in the interior of the housing, and operative for scanning at least one of said light beam and said field of view,

said method comprising the steps of:

changing the beam direction by moving the movable portion and the exit port relative to the stationary portion, and positioning the exit port at a desired location on the housing so that the beam direction is changed.

5,367,153

APPARATUS FOR DETECTING THE FOCUS ADJUSTING STATE OF AN OBJECTIVE LENS BY PERFORMING FILTER PROCESSING

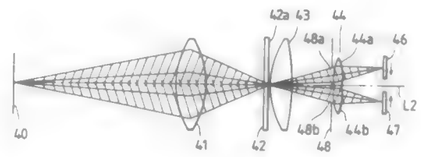
Yasuo Suda; Akira Yamada; Yukio Odaka, and Akira Akashi, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1992, Ser. No. 969,352

Claims priority, application Japan, Nov. 1, 1991, 3-315503; Nov. 1, 1991, 3-315505

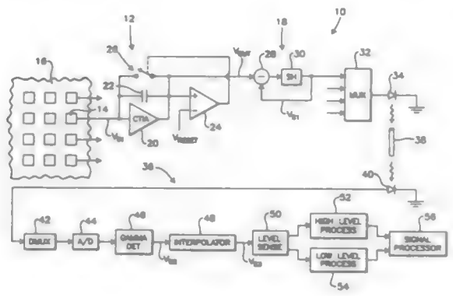
Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.8 **15 Claims**



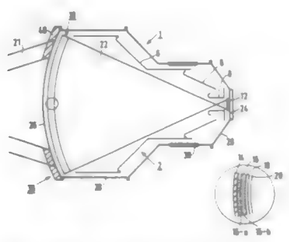
1. A focus detection apparatus comprising an optical system for forming first and second optical distributions associated with object images whose relative positional relationship is changed in accordance with an imaging state of an imaging optical system subjected to focus detection, photoelectric converting means, having a plurality of picture elements, for outputting first and second signals respectively corresponding to the first and second optical distributions, and calculating means for performing filter processing of the first and second signals, wherein the first and second signals are respectively processed through filters having mutually different characteristics, processed sequentially displacing the first and second signals relative to each other, calculating an evaluation amount representing a coincidence between the first and second signals at the relatively displaced positions, obtaining positional deviations between the first and second object images on the basis of a change in evaluation amount, and detecting the imaging state of the imaging optical system on the basis of the deviations, the filter processing being performed using a filter determined by the relatively displaced positions.

5,367,154
PHOTOSENSOR READOUT DETECTOR HAVING DYNAMIC RESET RATE
Carl G. Pfeiffer, Hermosa Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 29, 1992, Ser. No. 953,640
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—208.1 21 Claims



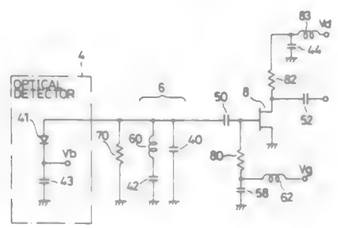
1. A readout detector responsive to an electrical input signal from a photosensor, comprising:
integrating means for integrating said input signal to produce an electrical output signal;
sampling means for periodically sampling said output signal and producing electrical sample signals corresponding to said output signal; and
resetting means for causing the integrating means to reset said output signal to a predetermined minimum value when the amplitude of said output signal has increased from said predetermined minimum value to a predetermined maximum value.

5,367,155
X-RAY IMAGE INTENSIFIER TUBE WITH IMPROVED ENTRANCE SECTION
Johannes K. E. Colditz, Heerlen; Henricus F. C. Diebels, Eindhoven; Tiemen Poorter, Heerlen; August L. H. Simons, Heerlen, and Johnny W. Van Der Velden, Heerlen, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1992, Ser. No. 959,811
Claims priority, application European Pat. Off., Oct. 10, 1991, 91202628.3
Int. Cl.[5] H01J 31/50
U.S. Cl. 250—214 VT 18 Claims



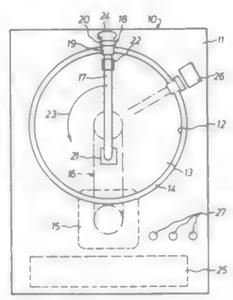
1. An X-ray image intensifier tube comprising an entrance section which includes an entrance window and entrance screen, an exit section which includes an exit window and an exit phosphor screen and an electron-optical system for projecting electrons from said entrance screen to said exit phosphor screen, wherein said exit screen comprises an entrance luminescent layer, a photocathode and a chemical separating layer between the luminescent layer and the photocathode, said separating layer having a electrical conductivity through said separating layer between said carrier layer and said photocathode which varies at different points along the surface area of said separating layer in a manner in order to prevent disturbing charging phenomenon on the photocathode.

5,367,156
RESONANCE-TYPE OPTICAL RECEIVER AND RECEIVING METHOD FOR LOW-FREQUENCY SIGNALS
Wataru Domon, and Makoto Shibutani, both of Tokyo, Japan, assignors to NEC Corporation, Japan
Division of Ser. No. 5,594, Jan. 19, 1993. This application Nov. 2, 1993, Ser. No. 146,739
Claims priority, application Japan, Jan. 31, 1992, 4-46187; Jun. 9, 1992, 4-147825
Int. Cl.[5] H04B 10/06
U.S. Cl. 250—214 RC 11 Claims



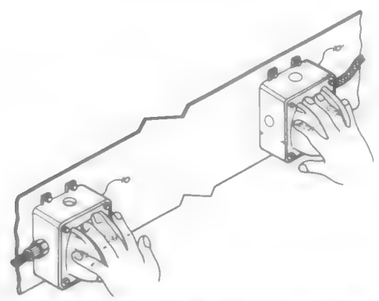
1. A resonance-type optical receiver circuit including an optical detector, an amplifier and a tuning circuit interposed between said optical detector and said amplifier, wherein the output of said optical detector and the ground are interconnected through at least one inductor, characterized in that said optical receiver circuit comprises
an impedance element connected in series to said inductor between the output of said optical detector and the ground for blocking a low frequency band.

5,367,157
DEVICE FOR RAPIDLY PERFORMING A SEDIMENTATION-RATE TEST
Sven-Erik Nilsson, and Jan E. Lilja, both of Helsingborg, Sweden, assignors to Hemocue AB, Angelholm, Sweden
PCT No. PCT/SE91/00806, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO92/09879, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 27, 1991, Ser. No. 66,174
Claims priority, application Sweden, Nov. 29, 1990, 9003799
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.13 11 Claims



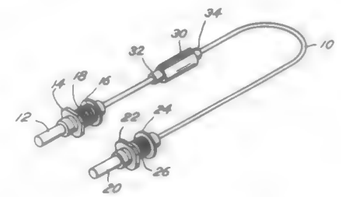
1. A device for rapidly performing a sedimentation-rate test, comprising an elongate vessel, which is equipped with a lid and has a longitudinal axis, said vessel being adapted to receive a given amount of blood, and a frame with a holder for said vessel which, when disposed in the frame, is rotatable in a vertical plane about a horizontal axis perpendicular to the longitudinal axis, and rotatable about the longitudinal axis, wherein said holder is adapted to rotate the vessel a predetermined number of revolutions at a first speed about the horizontal axis, while simultaneously turning the vessel about the longitudinal axis, and then stop the vessel, for a given period of time, in an angled position in which the longitudinal axis forms a predetermined angle with a vertical position, to subsequently turn the vessel about the horizontal axis from said angled position to said vertical position and a sedimentation-rate-measuring site at a second speed which is but a fraction of said first speed also while turning the vessel about the longitudinal axis.

5,367,158
PHOTOELECTRIC SWITCH FOR USE WITH A MACHINE CONTROL CIRCUIT
Jeffrey G. Herman, Lake Orion, and Mark C. Matzka, Rochester Hills, both of Mich., assignors to Break-A-Beam, Inc., Warren, Mich.
Filed Oct. 25, 1991, Ser. No. 782,420
Int. Cl.[5] G01V 9/04
U.S. Cl. 250—221 45 Claims



1. A photoelectric switch for use in conjunction with a machine for performing a machining operation and a control circuit responsive to a pair of said photoelectric switches generating an input signal to activate said machine, said control circuit preventing said machine from performing said machining operation unless said control circuit receives an input signal from both of said photoelectric switches within a predetermined period of time, said machine being actuated by an AC electrical power source providing an AC voltage within a predetermined AC voltage range, each photoelectric switch of said pair of photoelectric switches comprising:
a cover having a contoured finger rest surface;
means for generating a light beam above said finger rest surface, said light beam being occluded by an operator placing at least one finger on said finger rest surface;
a relay having an activated state in which it generates said input signal;
means for activating said relay to said activated state in response to said beam being occluded by said at least one finger being placed on said finger rest surface;
means for deactivating said relay in response to the termination of said occlusion of said light beam; and
low voltage protection means responsive to said AC voltage being below a predetermined value to generate a low voltage signal inhibiting the activation of said relay.

5,367,159
OPTICAL LOOPBACK TESTER WITH AIR GAP ATTENUATOR
Philip W. Schofield, Oak Park; Paul R. Stonikas, Darien, and James W. McGinley, Schaumburg, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.
Filed Aug. 25, 1992, Ser. No. 935,005
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.11 16 Claims



1. An optical network loopback tester shaped to be interchangeable with a complementary connector that intermates with an optical connector having an optical emitter and an optical detector said loopback detector comprising, in combination: an alignment fixture having a pair of fiber optic connectors for intermatting said optical emitter and said optical detector, respectively, and an optical fiber formed in a loop and mounted within said alignment fixture with one end of said fiber loop aligned through one of said fiber connectors with said emitter and the other end of said fiber loop aligned through the other one of said fiber optic connectors with said detector, and an air gap formed in said fiber loop to provide a predetermined attenuation of optical power to said detector, said air gap formed in a sleeve means frictionally holding two spaced ends of said fiber by a pair of holding means, one holding means being attached to each of the spaced ends of said sleeve and each of said holding means being frictionally inserted into opposite ends of the sleeve means which retains said spaced ends of said fiber in a desired spaced relation.

5,367,160
METHOD FOR FORMING AND DENATURING PARTICLES
Masazumi Ishikawa, Uji; Hiroaki Misawa, Takatsuki, and Noboru Kitamura, Kyoto, all of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan
Filed Mar. 1, 1993, Ser. No. 24,314
Claims priority, application Japan, Mar. 2, 1992, 4-044847
Int. Cl.[5] B01J 19/08
U.S. Cl. 250—251 7 Claims



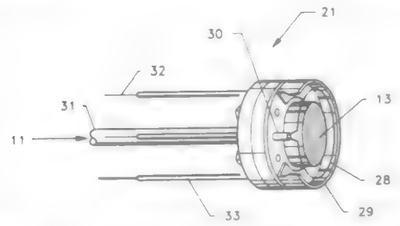
1. A method for forming a polymer particle, which comprises the steps of:
irradiating a polymer solution with a laser beam having a focal area in the polymer solution, and
forming a polymer particle in the polymer solution at the focal area of the laser beam.

5,367,161

SMALL UHV COMPATIBLE HYPERTHERMAL OXYGEN ATOM GENERATOR

Ronald A. Outlaw, Newport News, Va., and Mark R. Davison, Florahome, Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 2, 1993, Ser. No. 88,963
Int. Cl.[5] H05H *3/00*
U.S. Cl. 250—251 **4 Claims**



1. An ultrahigh vacuum compatible hyperthermal oxygen atom generator, which comprises:

a membrane having two sides, the membrane having the capability of dissociating molecular oxygen into atomic oxygen and dissolving the atomic oxygen into its bulk;

means for exposing a first side of the membrane to molecular oxygen;

means for providing an ultrahigh vacuum environment having a pressure of less than 1×10^{-0} Torr on the second side of the membrane;

heating means in operative association with the membrane for providing a temperature sufficient for the dissociative adsorption of O_2 and promotion of atomic oxygen permeation to the second side of the membrane; and

exciting means for exciting the atomic oxygen at the second side of the membrane to a non-binding state so that it is released from the second side of the membrane as an excited atomic oxygen beam, the exciting means comprising the cooperative combination of a circular cathode in operative association with the membrane in a plane above the plane of the second side of the membrane and a circular electron reflector plate positioned concentrically outwardly from the circular cathode so that a uniform electron bombardment over the membrane will be produced.

5,367,162

INTEGRATING TRANSIENT RECORDER APPARATUS FOR TIME ARRAY DETECTION IN TIME-OF-FLIGHT MASS SPECTROMETRY

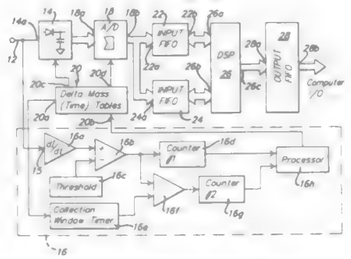
John F. Holland, Lansing, and Christie G. Enke, East Lansing; Michael R. Danenport, Lansing, all of Mich. Lawrence W. Janow, Seattle, Wash., assignors to Meridian Instruments, Inc., Okemos and Michigan State University, Board of Trustees Operating Michigan State University, East Lansing, both of Mich.

Filed Jun. 23, 1993, Ser. No. 81,731
Int. Cl.[5] B01D *59/04;* **H01J** *49/00*
U.S. Cl. 250—287 **31 Claims**

1. Apparatus for detecting a plurality of ion peaks within at least one transient in time of flight mass spectrometry, said transient being generated in response to an ion source extraction pulse, said apparatus comprising:

signal detector means responsive to said ion peaks for detecting each of said ion peaks and generating an output signal indicative of the intensity of each of said ion peaks;

means for turning on said signal detector means only for a data collection time window beginning just prior to an expected arrival time of each said ion peak; and



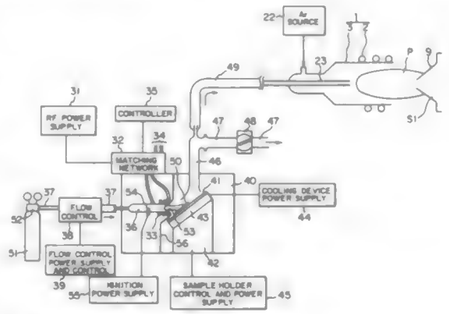
means for processing said ion peaks to generate a mass spectrum file indicative of intensities of said ion peaks.

5,367,163

SAMPLE ANALYZING INSTRUMENT USING FIRST AND SECOND PLASMA TORCHES

Kiichiro Otsuka, and Mitsuyasu Iwanaga, both of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Dec. 14, 1993, Ser. No. 167,517
Claims priority, application Japan, Dec. 17, 1992, 4-337043
Int. Cl.[5] H01J *49/02*
U.S. Cl. 250—288 **19 Claims**



1. An analytical instrument for analyzing a sample excited in a plasma, comprising:

a first plasma torch for generating a first plasma flame;

a second plasma torch for generating a second plasma flame;

a sample positioning means for placing a sample in a position where the sample is ablated by said first plasma flame;

a sample gas collection means for extracting the sample vaporized by said first plasma flame and for transferring the collected gaseous sample into said second plasma flame; and

means for analyzing the sample excited within said second plasma flame.

5,367,164

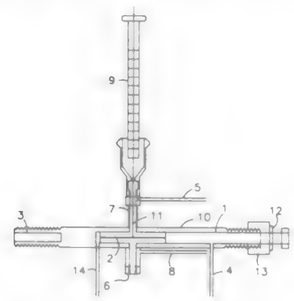
AUTOMATED PYROLYZER METHOD AND APPARATUS

Gary A. Schultz, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 14, 1993, Ser. No. 76,594
Int. Cl.[5] H01J *49/04*
U.S. Cl. 250—288 **4 Claims**

1. In an apparatus for pyrolyzing a sample prior to analysis by a gas chromatograph or a mass spectrometer comprising an insertion probe for bearing said sample, a reaction chamber which is mounted to the insertion probe so as to encompass the sample, said insertion probe having a ribbon for depositing said sample and maintaining said sample during pyrolysis, said insertion probe being removable from said reaction chamber, means for rapidly heating said sample so as to pyrolyze said sample, and an outlet from said reaction chamber to a gas chromatograph or a mass spectrometer; the improvement comprising:

means for automatically depositing a series of samples onto said ribbon while said insertion probe is in said reaction



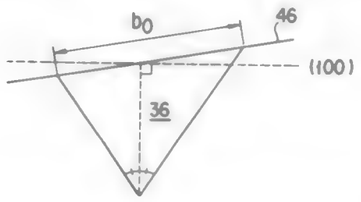
chamber, said means including an automated liquid sampling device which comprises a syringe for depositing discrete amounts of solutions of said samples on said ribbon, said device being mounted above said reaction chamber and connected to an injection port of said reaction chamber so that said syringe is positioned to deposit solution directly onto said ribbon while said insertion probe is mounted in said reaction chamber.

5,367,165

CANTILEVER CHIP FOR SCANNING PROBE MICROSCOPE

Akitoshi Toda, and Katsuhiro Matsuyama, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,322
Claims priority, application Japan, Jan. 17, 1992, 4-006774; Jul. 30, 1992, 4-203757; Aug. 19, 1992, 4-219969
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—306 **9 Claims**



1. A cantilever chip for a scanning probe microscope, comprising:

a cantilever having a fixed end and a free end; and

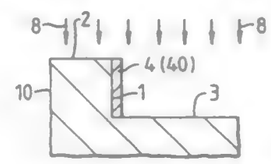
an inclined probe arranged at the free end of said cantilever and extending along an axis inclined with respect to a normal extending from a surface of said cantilever, a distal end portion of said inclined probe having a sectional shape in a plane perpendicular to the axis which is a symmetrical quadrangular pyramid shape when viewed from a longitudinal direction of said cantilever, said inclined probe having first and second pairs of surfaces converging on a point, said first pair of surfaces facing each other and being shaped in a form of quasi-triangles congruent with each other and each of which has three sides of different lengths, and said second pair of surfaces facing each other and being shaped in a form of quasi-triangles similar to each other and each of which has two equal length sides.

5,367,166

INFRARED DETECTOR DEVICES AND THEIR MANUFACTURE

Brian E. Matthews, and Michael D. Jenner, both of Hampshire, United Kingdom, assignors to Philips Electronics UK Limited, London, United Kingdom

Filed Mar. 15, 1993, Ser. No. 31,354
Claims priority, application United Kingdom, Mar. 18, 1992, 92059336
Int. Cl.[5] H01L *27/14*
U.S. Cl. 250—338.1 **15 Claims**



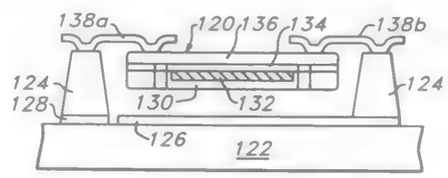
13. An infrared detector device comprising a substrate having a conductor pattern at a surface thereof, the detector element comprising an aperture which extends through the body to the conductor pattern of the substrate and which is lined at its side-wall with a conductive layer forming an electrical connection between the detector element and a first part of the conductor pattern, characterised in that the aperture surrounds a pillar portion of the body, and a conductive layer on the pillar portion forms an electrical connector which extends to a second part of the conductor pattern of the substrate.

5,367,167

UNCOOLED INFRARED DETECTOR AND METHOD FOR FORMING THE SAME

William F. Keenan, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 951,928, Sep. 25, 1992, Pat. No. 5,288,649, which is a continuation of Ser. No. 768,801, Sep. 30, 1991, abandoned. This application Aug. 16, 1993, Ser. No. 107,398
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] H01L *31/08*
U.S. Cl. 250—338.4 **22 Claims**



1. A bolometer for detecting radiation in a spectral range comprising:

an integrated circuit substrate; and

a pixel body spaced from said substrate by at least one pillar, said pixel body comprising:

an absorber material for absorbing radiation in said spectral range, said absorber material heating said pixel body to a temperature in proportion to the absorbed radiation;

an insulating material formed over said absorber material; and

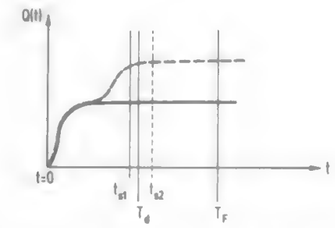
a variable resistor material with an electrical resistance corresponding to the temperature of said pixel body, said variable resistor material formed over said insulating material.

5,367,168

METHOD FOR DISCRIMINATION AND SIMULTANEOUS OR SEPARATE MEASUREMENT OF SINGLE OR MULTIPLE ELECTRONIC EVENTS IN AN OPTO-ELECTRONIC DETECTOR

Fritz Berthold, Pforzheim, and Manfred Pfleger, Wildbad, both of Germany, assignors to Laboratorium Prof. Dr. Rudolph Berthold GmbH & Co. KG, Bad Wildbad, Germany

Filed Jul. 19, 1993, Ser. No. 92,804
Claims priority, application Germany, Jul. 18, 1992, 4223773
Int. Cl.[5] G01D *21/00*
U.S. Cl. 250—362 **11 Claims**



1. A method for discrimination and measurement of single electron and multiple electron events in an opto-electronic detector having an output providing a signal representing each event, each signal being associated with a center of gravity which has a time coordinate, comprising:

creating a time window having a selected duration commencing with the beginning of each signal at said output;

determining a parameter value of each signal dependent on the time coordinate of the center of gravity of the signal within the time window; and

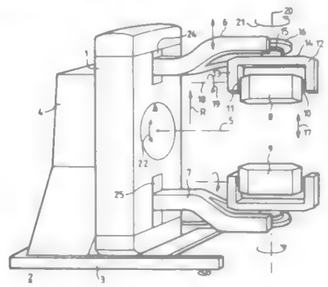
comparing the parameter value with a reference value corresponding to the parameter value for a single electron event.

5,367,169

GAMMA CAMERA WITH TWO OPPOSITE DETECTORS HAVING INDEPENDENT RADIAL MOVEMENTS

Michel Pierfitte, Villepreux, France, assignor to SOPHA Medical, Paris, France

Filed Jun. 4, 1992, Ser. No. 894,026
Claims priority, application France, Jun. 7, 1991, 91 06961
Int. Cl.[5] G01T *1/166*
U.S. Cl. 250—363.05 **20 Claims**



1. A gamma camera comprising

a rotating stand bearing two detector heads mounted on two respective holding arms that are radially movable with respect to a rotation axis of said stand,

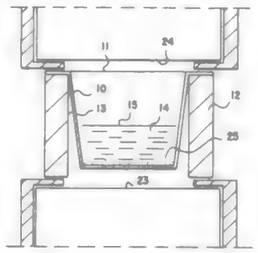
said arms comprising a translational means mounted and connected to provide independent translations of said heads perpendicularly to said arms.

5,367,170

METHOD FOR MEASURING SAMPLES WITH LIQUID SCINTILLATION COUNTING AND A COUNTER

Stuart Webb; Tapio Yrjönen; Tuula Stark, and Timo Oikari, all of Turku, Finland, assignors to Wallac Oy, Turku, Finland

Filed Nov. 9, 1992, Ser. No. 973,745
Claims priority, application Finland, Nov. 8, 1991, 915285
Int. Cl.[5] G01T *1/204*
U.S. Cl. 250—364 **8 Claims**



1. In a method for measuring a sample in a liquid scintillation counter, where an asymmetric sample comprised of a mixture of a specimen to be analysed and a liquid or a solid scintillator is measured using upper and lower photodetectors situated on opposite sides of the sample and operating in coincidence, the improvement comprising the steps of:

determining the amount of counted coincident scintillation pulses using both of the upper and lower photodetectors;

determining the amplitude and the pulse height distribution of the scintillation pulses using only one of the photodetectors;

determining counting efficiency using the amount of coincidence pulses counted with the lower and upper photodetectors; and

determining quench level of the sample using either one of the lower and the upper photodetector.

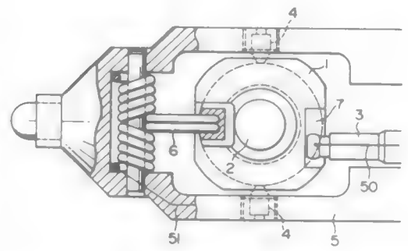
5,367,171

ELECTRON MICROSCOPE SPECIMEN HOLDER

Takashi Aoyama, Ibaraki; Kishu Hosoi, Hitachi; Yutaka Misawa, Katsuta; Koji Kimoto, Hitachi; Shigeto Isakozawa, Katsuta, and Kazuhiro Ueda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1992, Ser. No. 965,423
Claims priority, application Japan, Oct. 24, 1991, 3-277450; Jun. 18, 1992, 4-159133
Int. Cl.[5] H01J *37/20*
U.S. Cl. 250—443.1 **19 Claims**

1. An electron microscope specimen holder having a specimen support within an outer frame, wherein a thermal conductivity of material of said specimen support is greater than that



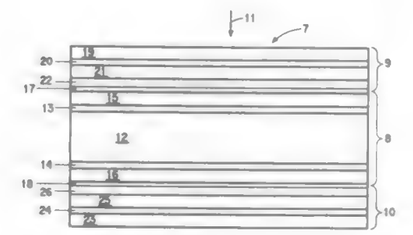
of material of said outer frame and wherein the specimen support includes a heater.

5,367,172

RADIOLOGICAL SYSTEM EMPLOYING PHOSPHORS OF DIFFERENT DENSITIES

Jacob Beutel, Hockessin; Sandra L. Issler, and Daniel J. Mickewich, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 1, 1993, Ser. No. 69,564
Int. Cl.[5] G03C *1/46*
U.S. Cl. 250—483.1 **9 Claims**



7. A radiographic recording system comprising, in combination, a front intensifying screen, a back intensifying screen and a double emulsion film element in operative contact disposed therebetween; said front intensifying screen comprises a front phosphor layer coated on a support, wherein said front phosphor is selected from the group consisting of:

(1) $BaSO_4$ activated with lead;

(2) Y_2O_3 activated with gadolinium, cerium, bismuth, lead or combinations of the elements chosen from gadolinium, cerium, bismuth and lead;

(3) DP_2O_7 wherein D is hafnium or zirconium;

(4) GFCl activated with europium where G represents barium or partial substitution thereof by an alkali metal, trivalent metal; or combination thereof;

(5) YOX activated with cerium, gadolinium, bismuth or lead where X is fluorine, chlorine, or bromine;

(6) Y_2O_2S activated with bismuth, cerium, gadolinium, lead or combinations of the elements chosen from bismuth, cerium, gadolinium and lead;

(7) $BaSiO_3$ activated with lead;

(8) YPO_4 activated with gadolinium, indium or combinations of gadolinium and indium;

(9) $Ca_2ZrSi_4O_{12}$ activated with lead;

(10) $BaZnSiO_2$ activated with lead; and

(11) combination of phosphors chosen from (1)–(10); said back intensifying screen comprises a back phosphor layer coated on a support, wherein said back phosphor is selected from the group consisting of:

(a) $YTaO_4$, unactivated or activated with niobium, thulium, gadolinium, terbium or combinations of the elements chosen from niobium, thulium, gadolinium, terbium;

(b) $LuTaO_4$, unactivated or activated with niobium, thulium, gadolinium, terbium or combinations of the elements chosen from niobium, thulium, gadolinium and terbium;

(c) a solid solution of (a) and (b);

(d) $GdTaO_4$, activated with terbium;

(e) a solid solution of at least two of (a), (b) and (d);

(f) any of (a) to (e) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;

(g) any of (a) to (f) wherein up to 15 mole percent the yttrium, lutetium or gadolinium is replaced by ytterbium; and

(h) any of (a), (b) and (c) wherein up to 15 mole percent of the yttrium or lutetium is replace by gadolinium;

(i) $Mg_4Ta_{2-2x}Nb_{2x}O_9$: $MyNa_{y'}$ wherein
M is at least one of potassium, rubidium, cesium;
x is 5×10^{-4} to 0.5;
y is at least 2×10^{-3}, and
$y+y'$ is less than 1.0;

(j) hafnium zirconium germanate unactivated or activated with titanium;

(k) $Hf_{1-z}Zr_zM_yTi_xE_aO_a$ wherein
E represents at least one of germanium and silicon;
e is in the range of from greater than 1×10^{-3} to 0.1;
M represents at least one alkali metal;
x is in the range of from 3×10^{-4} to 1.0;
y is in the range of 1×10^{-4} to 1.0;
z is in the range of from 4×10^{-4} to 0.3; and
a is sufficient to balance the charge.

(l) $CaWO_4$;

(m) hafnium zirconium oxide containing at least one alkali metal and activated with titanium, at least one rare earth element or a combination of titanium and at least one rare earth element;

(n) $Li_2Hf_{1-x-y-z}Zr_zSn_yTi_xL_wO_3$
where L is at least one rare earth;
$w+x+y$ collectively are 0 to 0.2; and
z is up to 0.2;

(o) LnOX activated with terbium, thulium, cerium, ytterbium, or bismuth wherein Ln is gadolinium or lanthanum and X is fluorine, chlorine, or bromine;

(p) Ln_2O_2S activated with at least one rare earth element, where Ln is gadolinium, lanthanum or lutetium.

5,367,173

METHOD FOR RECORDING AND REPRODUCING A RADIATION IMAGE, APPARATUS USING SAID METHOD, PANEL FOR STORING THE RADIATION IMAGE AND PHOTOSTIMULABLE PHOSPHOR

Romano Moriotti, Varazze, Italy, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sep. 30, 1993, Ser. No. 128,651
Claims priority, application Italy, Nov. 12, 1992, MI92A 002593
Int. Cl.[5] G01N *23/04*; C09K *11/67*
U.S. Cl. 250—484.4 **18 Claims**

10. A photostimulable green emitting terbium activated alkali metal tantalate phosphor, wherein said phosphor is represented by the following general formula:

$$Li_{1-x}A_xTaO_3.yMe:zTb$$

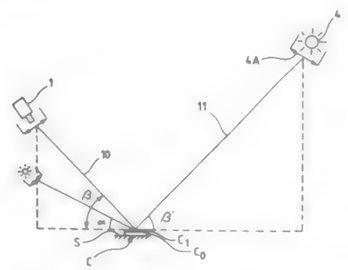
wherein A is an element selected from the group consisting of Na, K, Rb and Ce; Me is at least one metal selected from the group consisting of Mg, Ca, Sr, Ba, Al, Ga, Ge, Pb, Bi, transition elements and lanthanides, and x, y, and z are numbers satisfying the conditions $0\leqq x<1$, $0\leqq y<0.1$ and $0<z\leqq0.1$.

5,367,174

DEFECT DETECTING DEVICE FOR TWO-LAYER PARTS, IN PARTICULAR FOR SOLAR CELLS

Jean-Luc Bazile, Sur Siange; Paul Billon, Grasse, and Patrick Mallea, Nice, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Filed Jan. 27, 1993, Ser. No. 9,680
Claims priority, application France, Jan. 27, 1992, 92 00834
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—572 **12 Claims**



1. A device for detecting defects in a planar substrate covered by a clear coating, said device comprising:

a polychromatic spotlight producing a beam of polychromatic light having an optical axis, said polychromatic spotlight being placed at an observation area such that said beam of polychromatic light intercepts said planar substrate at an angle larger than π-β, where β is the Brewster angle;

a viewing apparatus having an optical axis lying in the same plane as said optical axis of said polychromatic beam of light, said optical axis of said viewing apparatus being at an angle larger than π-β with said planar substrate;

a first secondary source of monochromatic light producing a beam of monochromatic light having a secondary optical axis, said first secondary source being located adjacent said viewing apparatus, said secondary optical axis intercepting said observation area;

a movable carriage supporting said polychromatic spotlight, said viewing apparatus, and said first secondary source of monochromatic light; and

means for controlling displacement of said movable carriage relative to said planar substrate.

5,367,175

METHOD OF MEASURING LIQUID LEVEL WITH A THERMAL INTERFACE DETECTION

Lloyd C. Bobb, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1993, Ser. No. 159,962
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—577 **14 Claims**

1. A method of measuring the position of a liquid surface within a vessel, comprising the steps of:

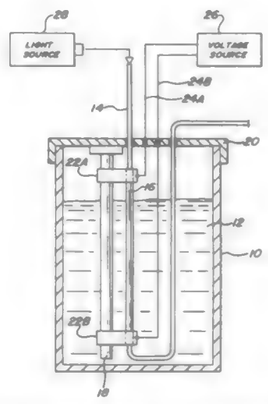
providing an optical fiber having first and second ends and having an energy-absorbing element of a predetermined length disposed upon a portion of the cladding thereof such that there is a thermal interface between the energy absorbing element and the cladding;

positioning the optical fiber in the vessel so that the energy absorbing element disposed thereon extends a known distance into the vessel along a known depth gradient of the vessel and so that the energy-absorbing element will intersect the liquid surface over the anticipated range of positions thereof;

transmitting single-frequency, coherent light through the core of the optical fiber by launching the light into the first end of the optical fiber;

applying a pulse of energy across the entire length of the energy-absorbing element to heat it;

receiving the transmitted light from the second end of the optical fiber;



measuring the change in phase of the transmitted light resulting from applying the pulse of energy; and

determining the position of the liquid surface in accordance with the change in phase.

5,367,176

PHOTOSTIMULABLE STORAGE PHOSPHOR AND ITS USE IN RADIOGRAPHY

Paul Leblans, Berchem, , assignors to AGFA-Gevaert, N.V., Mortsel,

Filed May 17, 1993, Ser. No. 61,522
Claims priority, application European Pat. Off., Jun. 10, 1992, 92201688.6
Int. Cl.[5] G01N *23/04;* **C09K** *11/71*
U.S. Cl. 250—585 **2 Claims**

1. A method for recording and reproducing an X-ray image which method comprises the steps of:

(1) causing a photostimulable phosphor to absorb imagewise or pattern-wise modulated X-rays,

(2) photostimulating said phosphor with visible light in the wavelength range of 488 to 532 nm to release from the phosphor in accordance with the absorbed X-rays electromagnetic radiation different in wavelength characteristic from the radiation used in the photo-stimulation, and

(3) detecting said electromagnetic radiation emitted by photostimulation, wherein said phosphor is within the scope of the following formula (I):

$$M_3(PO_4)_2{:}xEu^{2+},\ yT^{3+},zZr^{4+}$$

wherein:

M represents Ba and/or Sr,

x corresponds with an atom fraction value $10^{-4} \leqq x \leqq 10^{-1}$,

y corresponds with an atom fraction value $10^{-4} \leqq y \leqq 10^{-1}$,

$T^{3+}$is a member selected from the group consisting of La^{3+}, Lu^{3+}, $y^{3+}$and Gd^{3+},

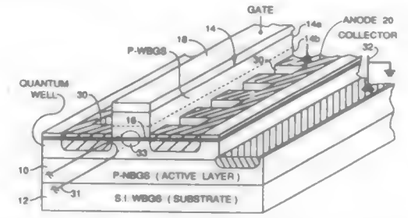
z corresponds with an atom fraction value $10^{-4} \leqq z \leqq 10^{-1}$, and $5 \times 10^{-5} \leqq z+y \leqq 10^{-1}$.

5,367,177

WAVELENGTH SELECTIVE HETEROJUNCTION FIELD EFFECT TRANSISTOR

Geoffrey W. Taylor, and Steve Sargood, both of Holmdel, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 731,689, Jul. 17, 1991, abandoned. This application May 28, 1993, Ser. No. 70,649
The portion of the term of this patent subsequent to May 29, 2010, has been disclaimed.
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—20 **2 Claims**



1. An optical device comprising a heterojunction field effect detector (HFED) having a gate, a grounded collector, and a cathode, said device having wavelength selectivity, said device incorporating a Grinsch layer structure with at least one GaAs quantum well formed as a waveguide;

a source of optical power focused on an end of said quantum well for coupling said power into a guided mode, the absorbing region for said power being the quantum well;

a positive bias applied to the gate, the depleted GaAs quantum well below the gate absorbing the photons and generating electron-hole pairs; and

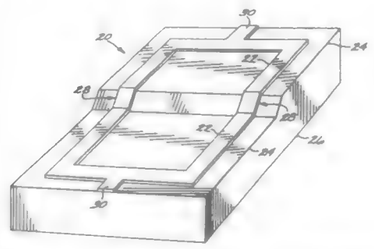
a wavelength selective means comprising an ion implanted grating self aligned and adjacent to said quantum well and optically coupled thereto.

5,367,178

HIGH-TC MICROBRIDGE SUPERCONDUCTOR DEVICE UTILIZING STEPPED EDGE-TO-EDGE SNS JUNCTION

Mark S. DiIorio; Shozo Yoshizumi, and Kai-Yueh Yang, all of San Diego, Calif., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Continuation of Ser. No. 644,905, Jan. 22, 1991, Pat. No. 5,134,117. This application Jun. 5, 1992, Ser. No. 894,079
The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.
Int. Cl.[5] H01L *39/22*
U.S. Cl. 505—190 **3 Claims**



1. A microbridge superconductor device, comprising:

a substrate having an inclined surface thereon, the inclined surface dividing the substrate surface into a lower planar substrate surface and an upper planar substrate surface; and

a junction on the surface of the substrate at the inclined surface, the junction comprising

a superconductor layer of a c-axis type superconductor material epitaxially deposited overlying the lower planar substrate surface with the c-axis perpendicular to the plane of the lower substrate surface and deposited over the upper planar substrate surface with the c-axis perpendicular to the plane of the upper substrate surface, there being a break in the superconductor layer at the inclined surface, and

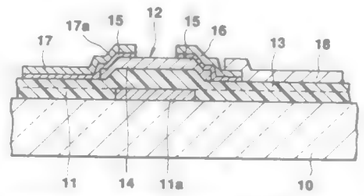
a layer of normal material deposited overlying the inclined surface and contacting both the upper and the lower superconductor layers.

5,367,179

THIN-FILM TRANSISTOR HAVING ELECTRODES MADE OF ALUMINUM, AND AN ACTIVE MATRIX PANEL USING SAME

Hisatoshi Mori, Hachioji; Syunichi Sato, Kawagoe; Naohiro Konya, Hino; Ichiro Ohno, Hachioji; Hiromitsu Ishii, Tokorozawa; Kunihiro Matsuda, Sagamihara, and Junji Shiota, Tachikawa, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 762,937, Sep. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 690,816, Apr. 23, 1991, Pat. No. 5,284,789. This application Nov. 12, 1992, Ser. No. 975,282
Claims priority, application Japan, Apr. 25, 1990, 2-107376; Apr. 25, 1990, 2-107377; Sep. 7, 1990, 2-235675; Sep. 12, 1990, 2-239940; Sep. 12, 1990, 2-239941; Sep. 14, 1990, 2-242576; Sep. 14, 1990, 2-242577; Sep. 21, 1990, 2-250381; Sep. 21, 1990, 2-250383; Mar. 28, 1991, 3-87248; Nov. 15, 1991, 3-326773; Nov. 15, 1991, 3-326774; Nov. 15, 1991, 3-326775; Nov. 15, 1991, 3-326777; Dec. 24, 1991, 3-355633
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—59 **19 Claims**



13. A thin-film transistor assembly comprising:

an insulating substrate; and

a thin-film transistor, formed on the insulating substrate, the thin-film transistor including:

a semiconductor layer having opposite ends;

an insulating film;

a source electrode and a drain electrode electrically connected to the opposite ends of said semiconductor layer; and

a gate electrode formed on the insulating film to face the semiconductor layer,

at least one of said electrodes contacting the insulating substrate and being made of aluminum alloy containing a high-melting-point metal, and about 4 at % or more of oxygen, nitrogen, or both.

5,367,180

THIN-FILM SEMICONDUCTOR DEVICE WITH FIELD PLATE

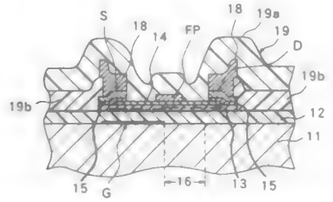
Ichiro Asai; Takao Tomono, and Takeshi Nakamura, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 739,529, Aug. 2, 1991, abandoned. This application Apr. 9, 1993, Ser. No. 46,397

Claims priority, application Japan, Aug. 10, 1990, 2-210421; Jul. 18, 1991, 3-202321

Int. Cl.[5] H01L *29/78, 27/12*

U.S. Cl. 257—66 **3 Claims**



1. A thin-film semiconductor device comprising:
an insulating substrate;
a gate electrode having first and second ends on the substrate;
a gate-insulating film overlaying the gate electrode;
a semiconductor layer on the gate-insulating film having a first portion overlaying the gate electrode and a second portion;
an inorganic channel-protecting film overlaying the semiconductor layer;
a source electrode connected with the first portion of the semiconductor layer and overlaying the first end of the gate electrode;
a drain electrode connected with the second portion of the semiconductor layer, wherein the gate electrode is disposed closer to the source electrode than to the drain electrode;
an offset region in the semiconductor layer between the drain electrode and the second end of the gate electrode;
a field plate electrode adapted to produce an electric field, the field plate electrode being directly disposed on the channel-protecting film and overlaying the second end of the gate electrode; and
an organic interlayer insulating film overlaying the channel-protecting film and the field plate electrode.

5,367,181

MICROMINIATURE VACUUM TUBE

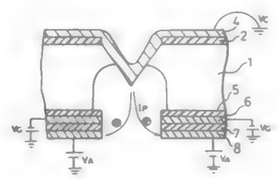
Masahiro Yoshida, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 720,611, Jun. 25, 1991, Pat. No. 5,270,258. This application Oct. 20, 1993, Ser. No. 138,080

Claims priority, application Japan, Jun. 27, 1990, 2-170462

Int. Cl.[5] H01J *1/30, 9/02;* **H01L** *21/465*

U.S. Cl. 257—91 **6 Claims**



1. A microminiature vacuum tube comprising:
a single crystal semiconductor substrate having opposed first and second surfaces;
a V-shaped groove extending into the substrate from the first surface;
an aperture extending into the substrate from the second surface and intersecting the V-shaped groove;
an electron-emitting material disposed on the substrate in the V-shaped groove, extending into the aperture, and having a sharp edge in the aperture; and
a first insulating layer, a metal gate layer, a second insulating layer, and a metal anode layer successively disposed on the second surface of the substrate adjacent the aperture and spaced from the sharp edge of the electron-emitting material.

5,367,182

COMPOUND SEMICONDUCTOR DEVICE FOR REDUCING THE INFLUENCE OF RESISTANCE ANISOTROPY ON OPERATING CHARACTERISTICS THEREOF

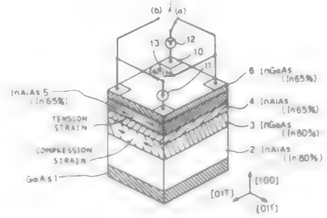
Kazuoki Matsugatani, Nishikamo; Takashi Taguchi, Anjo, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 24, 1993, Ser. No. 35,754

Claims priority, application Japan, Mar. 25, 1992, 4-067227; Mar. 25, 1992, 4-067235

Int. Cl.[5] H01L *29/06, 29/203*

U.S. Cl. 257—190 **4 Claims**



1. A compound semiconductor comprising:
a semiconductor substrate having (100) plane as a crystal growth plane;
a first semiconductor layer for an electron traveling layer said first semiconductor layer being located on said semiconductor substrate and constituted by a material having a greater lattice constant than that of said semiconductor substrate, wherein said first semiconductor layer has a first strain in a first strain direction therein; and
a second semiconductor layer for an electron supplying layer, said second semiconductor layer located on said first semiconductor layer and constituted by a material having a smaller lattice constant than that of said first semiconductor layer to thereby apply a second strain to said second semiconductor layer, said second strain having a direction inverse to said first strain direction, wherein a thickness ratio of said second semiconductor layer to said first semiconductor layer is used to control a dislocation running direction in said electron traveling layer and a thickness of said second semiconductor layer having a value which decreases a resistance in a (011) direction as compared to that in a (01$\bar{1}$) direction; and
a source electrode, a gate electrode and a drain electrode disposed on said second semiconductor layer in a direction along said (011) direction in order of said source electrode, said gate electrode and said drain electrode.

5,367,183

SEMICONDUCTOR DEVICE WITH COMPLEMENTARY TRANSISTORS

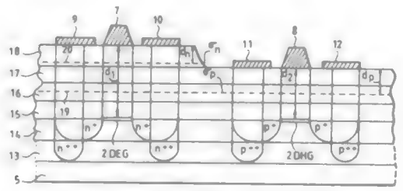
Ernesto Perea, Gif sur Yvette, and Daniel Delagebeaudeuf, Saclay, both of France, assignors to Thomson-CSF Semiconducteurs Specifiques, Puteaux, France

Filed Apr. 7, 1993, Ser. No. 43,558

Claims priority, application France, Apr. 7, 1992, 92 04216

Int. Cl.[5] H01L *29/80, 29/205*

U.S. Cl. 257—194 **8 Claims**



1. A semiconductor device using complementary transistors, comprising at least two field-effect transistors made by means of a heterostructure of layers of semiconductor materials of the III–V group, at least one of said transistors having an n type 2DEG channel and at least one other of said transistors having a p type 2DHG channel, said two channels being located at the same heterojunction in the heterostructure, wherein said device further includes, in two distinct layers of the heterostructure, for each of said transistors, a delta doped layer, said delta doped layer of each transistor being located between the channel of the transistor and the gate metallization of the transistor, a first of the delta doped layers being a p type layer and a second being an n type layer.

5,367,184

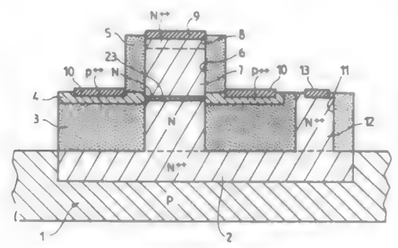
VERTICAL JFET TRANSISTOR WITH OPTIMISED BIPOLAR OPERATING MODE AND CORRESPONDING METHOD OF FABRICATION

Alain Chantre, Saint Egréve, France, assignor to France Telecom, Paris, France

Filed Jul. 2, 1993, Ser. No. 87,427

Int. Cl.[5] H01L *29/161, 29/205, 29/225*

U.S. Cl. 257—192 **13 Claims**



1. A vertical junction field-effect transistor, comprising:
a semiconductor structure comprising an internal semiconductor layer extending within a channel region between portions of a semiconductive gate region, the internal semiconductor layer having a band gap smaller than that an other portion of the channel and smaller than the portions of the gate region, wherein the internal semi-conductor layer and the channel region are of a same conductivity; and
a heterojunction formed between the internal semiconductor layer and the other portion of the channel region having a discontinuity in the valance band if the channel is an N-type channel or in a conduction band if the channel is a P-type channel.

5,367,185

NON-VOLATILE SEMICONDUCTOR MEMORY WITH THIRD ELECTRODE COVERING CONTROL GATE

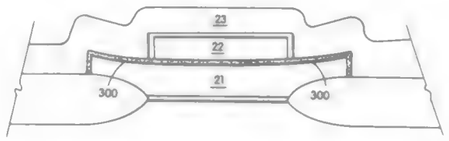
Takahiro Fukumoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 723,216, Jun. 28, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 555

Claims priority, application Japan, Jun. 29, 1990, 2-173801

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—320 **8 Claims**



1. A non-volatile semiconductor memory comprising:
a semiconductor substrate;
drain and source regions provided in the substrate surface having a conductivity type different from that of the substrate;
a first floating gate electrode covering a portion of a channel region formed between the drain and source regions, wherein the drain region is a self-aligned with the first floating gate electrode and the source region is offset from the first floating gate electrode through an offset region in the channel region having a different doping density from the doping density of the substrate to permit electron injection from the source region to the first floating gate electrode;
a second control gate electrode provided over and insulated from the first floating gate electrode and the offset region for controlling a surface potential of the offset region and the channel region beneath the first floating gate electrode; and
a third gate electrode provided over and insulated from the second control gate electrode and partially overlapping and capacitively coupled to a substantial portion of the first floating gate electrode including portions of the first floating gate electrode that are not covered with the second control gate electrode for enhancing the potential of the first floating gate electrode to permit selective storage and erasure of electrical charge.

5,367,186

BOUNDED TUB FERMI THRESHOLD FIELD EFFECT TRANSISTOR

Albert W. Vinal, Cary, and Michael W. Dennen, Raleigh, both of N.C., assignors to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 37,636, Feb. 23, 1993, which is a continuation-in-part of Ser. No. 977,689, Nov. 18, 1992, which is a continuation of Ser. No. 826,939, Jan. 28, 1992, Pat. No. 5,194,923. This application Apr. 21, 1993, Ser. No. 50,852

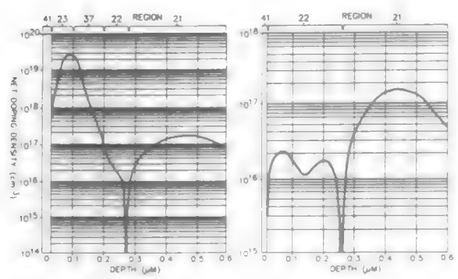
Int. Cl.[5] H01L *29/784, 29/70, 27/105*

U.S. Cl. 257—327 **10 Claims**

1. A field effect transistor comprising:
a semiconductor substrate of first conductivity type and which is doped at a first doping concentration N_{sub}, has permittivity e_s, and a Fermi-potential ϕ_f at temperature T degrees Kelvin;
a tub region of second conductivity type in said substrate at a surface thereof, and which is doped at a second doping concentration N_{tub} which is a factor α times N_{sub};
spaced apart source and drain regions of said second conductivity type in said tub region at said substrate surface;
a gate insulating layer on said substrate at said substrate surface, between said spaced apart source and drain regions; and
source, drain and gate electrodes electrically contacting said

source and drain regions and said gate insulating layer, respectively;

said tub region extending into said substrate a predetermined depth from said substrate surface, said predetermined



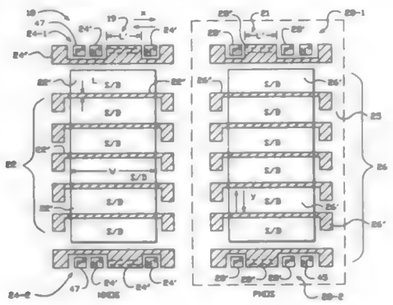
depth being greater than $(2\epsilon_s\phi_s N_{sub}/qN_{tub}(N_{tub}+N_{sub}))^{\frac{1}{2}}$ and being less than $(2\epsilon_s V_t/qN_{tub})^{\frac{1}{2}}$; where q is 1.6×10^{-19} coulombs, V_t is the threshold voltage of said field effect transistor, and ϕ_s is $2\phi_f+(KT/q)\ \ln\alpha$, and K is 1.38×10^{-23} Joules/°Kelvin.

5,367,187

MASTER SLICE GATE ARRAY INTEGRATED CIRCUITS WITH BASIC CELLS ADAPTABLE FOR BOTH INPUT/OUTPUT AND LOGIC FUNCTIONS

Alex Yuen, Sunnyvale, Calif., assignor to Quality Semiconductor, Inc., Santa Clara, Calif.

Filed Dec. 22, 1992, Ser. No. 995,224
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—401 **23 Claims**



1. A master-slice gate array integrated circuit device comprising;

a semiconductor medium; and

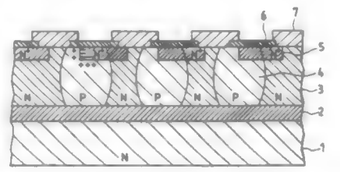
an array of basic transistors in the medium forming sea-of-gate structures, wherein said sea-of-gate structures each comprises a plurality of wide channel transistors whose channel length is less than channel width and at least one pair of long channel transistors whose channel length is at least four times greater than its channel width.

5,367,188

PHOTODIODE ARRAY DEVICE AND METHOD FOR PRODUCING SAME

Koichi Kudo, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 17, 1992, Ser. No. 992,115
Claims priority, application Japan, Dec. 20, 1991, 3-355876
Int. Cl.[5] H01L *29/74*
U.S. Cl. 257—461 **5 Claims**



1. A photodiode array having at least a structure that comprises:

a substrate;

an insulating film laminated on said substrate;

a first impurity diffused layer having a first surface and provided on said insulating film;

second impurity diffused regions that have a conductivity type opposite to that of said first impurity diffused layer and which are formed in spaced relation in a direction parallel to the first surface of the first impurity diffused layer in said first impurity diffused layer so as to form a row of pn-junctions spaced in a direction parallel to the first surface of the first impurity diffused layer within said first impurity diffused layer;

high-density impurity diffused regions that have the same conductivity type as said first impurity diffused layer and which are formed in spaced relation at the first surface of the first impurity diffused layer on a side away from said insulating film, each of the high-density impurity diffused regions being located at and spanning a pn-junction formed by said first impurity diffused layer and a second impurity diffused region;

spaced thin-film oxide layers each provided on one of said high-density impurity diffused regions and extending across the pn-junction to a second impurity diffused region having a conductivity type opposite to said first impurity diffused layer; and

thin-film electrode layers at the surface of the first impurity diffused layer and located between said spaced thin-film oxide layers.

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VERTICAL SEMICONDUCTOR DEVICE

Shunji Nakamura, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 729,239, Jul. 12, 1991, Pat. No. 5,202,273. This application Nov. 4, 1992, Ser. No. 971,235
Claims priority, application Japan, Jul. 12, 1990, 2-186203
Int. Cl.[5] H01L *23/48, 27/00, 29/40, 49/02*
U.S. Cl. 257—508 **30 Claims**

1. A semiconductor device comprising:

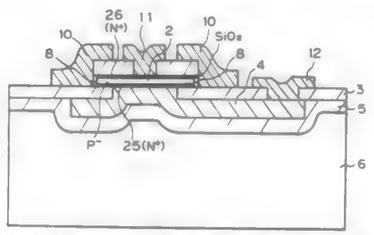
a substrate having a main surface;

a first electrode having first and second main surfaces and sidewall surfaces transverse to and extending between the first and second main surfaces, the first electrode being recessed within the substrate with the sidewall surfaces and the second main surface thereof disposed within the substrate and the first main surface thereof exposed at the substrate main surface, a first portion of the first main surface thereof being disposed at, and a second portion of the first main surface thereof projecting from, the substrate main surface;

a field oxide film covering the exposed, first portion of the first main surface of the first electrode and having a first opening therein through which the projecting, second portion of the first main surface of the first electrode extends and is exposed, and further having a second opening therein displaced from the first opening and through which second opening a corresponding part of the first portion of the first main surface of the first electrode is exposed;

a semiconductor layer disposed on the field oxide film and extending over the first opening in the field oxide film and contacting and thereby being connected with the exposed and projecting, second portion of the first main surface of the first electrode, the semiconductor layer being displaced from the second opening in the field oxide film and having a first main surface and end wall surfaces which are exposed;

an insulator layer disposed on and covering the exposed, first main surface of the semiconductor layer and having an exposed first main surface and exposed end walls and further having an opening therein through which a corresponding surface portion of the first main surface of the semiconductor layer is exposed, at least one end wall of the insulator layer and a corresponding end wall surface of the semiconductor layer being substantially transverse to the substrate main surface and being substantially, mutually aligned;



a second electrode formed on and extending from the exposed, first main surface of the insulator layer and through the opening in the insulator layer and contacting and thereby being connected with the corresponding, exposed surface portion of the first main surface of the semiconductor layer;

a control electrode having corresponding portions respectively formed on the insulator layer and the field oxide film and electrically coupled to the at least one end wall surface of the semiconductor layer, the control electrode being spaced form the first electrode; and

an output electrode, spaced from the control electrode, extending from a surface of and through the second opening in the field oxide film and contacting and thereby being connected to the corresponding, exposed part of the first portion of the first main surface of the first electrode.

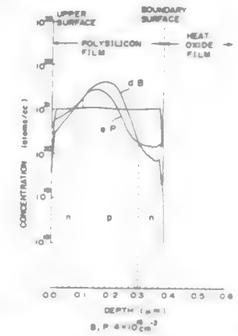
5,367,190

POLYSILICON SEMICONDUCTOR ELEMENT HAVING RESISTIVITY AND WORK FUNCTION CONTROLLED TO REQUIRED VALUES

Masaki Funaki, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 24, 1992, Ser. No. 950,223
Claims priority, application Japan, Sep. 24, 1991, 3-271983
Int. Cl.[5] H01L *29/167, 29/207, 29/227*
U.S. Cl. 257—607 **4 Claims**

1. A semiconductor device, comprising semiconductor element of polysilicon to which donors having high concentration and acceptors having high concentration have both been introduced in substantially the same amounts to such an extent



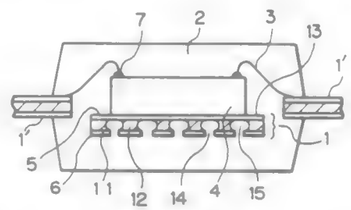
that the concentrations of said donors and said acceptors exceeds a concentration of silicon in a portion of the polysilicon.

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LEADFRAME AND RESIN-SEALED SEMICONDUCTOR DEVICE

Kazumi Ebihara, Satsuma, Japan, assignor to Fujitsu Limited, Kawasaki and Kyushu Fujitsu Electronics Ltd., Kagoshima, both of Japan

Filed Sep. 16, 1992, Ser. No. 945,713
Claims priority, application Japan, Sep. 18, 1991, 3-237952
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—666 **8 Claims**



1. A lead frame having a body defining a chip-mounting surface, the body comprising:

a first layer, of a first material, having upper and lower surfaces and a plurality of openings positioned in spaced relationship extending through the first layer from the lower surface and to the upper surface thereof;

a second layer, of a second material, having upper and lower surfaces with the lower surface thereof laminated on the upper surface of the first layer and having a plurality of individual hollow cavities therein, respectively corresponding to and in communication with the plurality of openings in the first layer, each cavity having a larger dimension in a plane parallel to the lower surface of the second layer than the corresponding dimension of the respective opening;

a third layer, of a third material, having upper and lower surfaces with the lower surface thereof laminated on the upper surface of the second layer, the upper surface of the third layer defining the chip-mounting surface of the lead frame; and

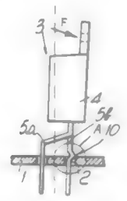
at least the second material of the second layer being different from the first and third materials and having a greater etching rate than the respective etching rates of the first and third materials.

5,367,192

PACKAGE FOR INTEGRATED DEVICES

Angelo Massironi, Concorezzo, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Catania, Italy

Continuation of Ser. No. 183,209, Apr. 19, 1988, abandoned. This application Dec. 6, 1993, Ser. No. 165,043
Claims priority, application Italy, Apr. 22, 1987, 20210 A/87
Int. Cl.[5] H01L *23/48*; H05K *1/08*
U.S. Cl. 257—678 **20 Claims**



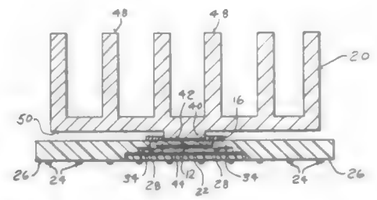
1. A package for integrated devices, to be fixed onto a supporting plate having holes, said holes defining edges at the intersections with said plate, said package comprising a plurality of substantially straight contact pins to be loosely inserted in the holes of the supporting plate and to be soldered thereto, said contact pins extending at a substantially right angle with respect to the supporting plate, said contact pins having a diameter that is substantially smaller than that of said holes, said contact pins extending parallel to each other, wherein at least some of said contact pins have means for allowing only limited inclination of the package with respect to the supporting plate, said means being configured to rest on said supporting plate, and defining therewith abutments cooperating with the respective edges of the holes of the support plate.

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LOW COST, THERMALLY EFFICIENT, AND SURFACE MOUNTABLE SEMICONDUCTOR PACKAGE FOR A HIGH APPLIED POWER VLSI DIE

Deviprasad Malladi, Campbell, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jun. 17, 1993, Ser. No. 78,417
Int. Cl.[5] H01L *23/02*
U.S. Cl. 257—707 **14 Claims**



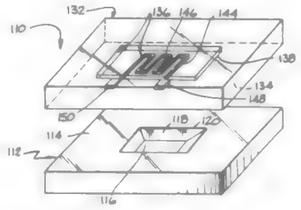
1. A semiconductor package comprising:
a) a VLSI semiconductor die having a plurality of electrical bond pads, an active side, an inactive side, and electrical power W applied to it during operation;
b) a substrate having a housing cavity, at least one wiring plane, and a plurality of electrical contacts, for accommodating said VLSI die and electrically connecting said VLSI die to a PWB, said housing cavity being disposed at a center of said substrate having a top surface opening, an underside opening, and a plurality of steps, at least one of said steps exposing at least partially said at least one wiring plane, said VLSI die being accommodated at said top surface opening of said stepped housing cavity, wire bonded to said at least partially exposed at least one wiring plane, and sealed with a sealant material, said electrical contacts being suitable for surface mounting said semiconductor package onto said PWB;
c) a heat slug having a ring of support surface area and an access cavity for supporting said VLSI die at said top surface opening of said stepped housing cavity and providing access to said inactive side of said VLSI die, said ring of support surface area of said heat slug, said top surface opening of said stepped housing cavity of said substrate, and said VLSI die being coordinated in sizes;
d) a heat sink having a stem for accessing and contacting said inactive side of said VLSI die through said access cavity of said heat slug and removing heat generated by said VLSI die during operation, said heat sink being made of a thermally conductive material having a thermal conductivity of K, said VLSI die, said top surface opening of said stepped housing cavity of said substrate, said access cavity, and said stem being coordinated in sizes, allowing said stem to contact sufficient surface area of said inactive side of said VLSI die in view of said W and said K to remove heat at a sufficient dissipation rate to keep temperature in said stepped housing cavity of said substrate from rising above an unacceptable threshold during operation.

5,367,194

MICROCHIP ASSEMBLY WITH ELECTRICAL ELEMENT IN SEALED CAVITY

Christopher C. Beatty, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 605,282, Oct. 29, 1990, Pat. No. 5,177,595. This application Apr. 23, 1992, Ser. No. 872,467
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] H01L *23/02, 23/12, 23/16*
U.S. Cl. 257—727 **7 Claims**



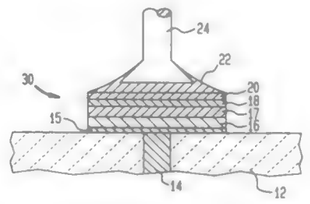
1. A microchip assembly comprising:
a first substrate assembly having a generally planar exterior surface portion and having a cavity therein with an opening encompassed by said planar exterior surface portion;
a second substrate assembly having a generally planar exterior surface portion positioned in opposite parallel relationship with said exterior surface portion of said first substrate assembly;
a patterned conductive film layer sandwiched between said exterior surface portions of said first and second substrate assemblies comprising:
a sealing ring portion positioned in continuous circumscribing relationship with said cavity opening and continuous engaging relationship with said exterior surface portions of said first and second substrate assemblies and sealingly bonded thereto;
an electrical circuit element portion, having at least a part thereof encompassed by said sealing ring portion, bonded to said exterior surface portion of said second substrate assembly.

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STRUCTURE AND METHOD FOR A SUPERBARRIER TO PREVENT DIFFUSION BETWEEN A NOBLE AND A NON-NOBLE METAL

Giulio DiGiacomo, Hopewell Junction, N.Y.; Jung-Ihl Kim, Seoul, Rep. of Korea; Chandrasekhar Narayan, Hopewell Junction, and Sampath Purushothaman, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1993, Ser. No. 1,524
Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*
U.S. Cl. 257—767 **19 Claims**



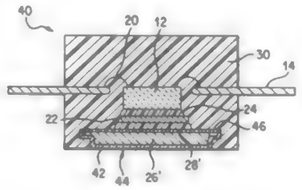
1. A multilayered interconnecting metallurgical structure to prevent diffusion between at least one non-noble metal layer and at least one noble or relatively less noble metal layer for an electronic component comprising, a structure over a substrate, wherein said structure comprises sequentially formed layers of at least one electrically conductive metal adhesion layer, at least one non-noble metal layer, a titanium layer, a molybdenum layer and at least one noble or relatively less noble metal layer and wherein at least a portion of said at least one electrically conductive metal adhesion layer is in direct electrical contact with at least one via in said substrate and wherein the combination of said titanium layer and said molybdenum layer prevents diffusion between said at least one non-noble metal layer and said at least one noble or relatively less noble metal layer.

5,367,196

MOLDED PLASTIC SEMICONDUCTOR PACKAGE INCLUDING AN ALUMINUM ALLOY HEAT SPREADER

Deepak Mahulikar, Madison, Conn.; Jeffrey S. Braden, Livermore, Calif., and Szuchain F. Chen, Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Sep. 17, 1992, Ser. No. 946,119
Int. Cl.[5] H01L *23/28, 23/02, 23/48, 29/44*
U.S. Cl. 257—787 **29 Claims**



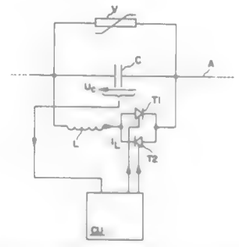
1. A semiconductor package, comprising:
at least one semiconductor device;
a heat spreader formed from an aluminum based material and at least partially coated with an adhesion enhancing layer;
a leadframe having a plurality of inner and outer leads, said inner leads electrically interconnected to said semiconductor device; and
a molding resin encapsulating said semiconductor device, said inner leads of said leadframe and at least a portion of said heat spreader wherein said molding resin and said adhesion enhancing layer are the same color.

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SERIES CAPACITOR EQUIPMENT

Bertil Klerfors, Västerås, Sweden, assignor to Asea Brown Boveri AB, Västerås, Sweden

Continuation of Ser. No. 655,025, Feb. 14, 1991, abandoned. This application Aug. 24, 1993, Ser. No. 110,831
Claims priority, application Sweden, Feb. 16, 1990, 9000554-7
Int. Cl.[5] H02J *1/02*
U.S. Cl. 307—105 **10 Claims**



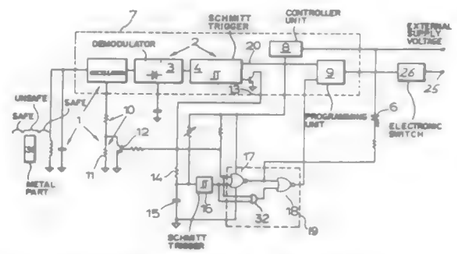
1. Series capacitor equipment with a capacitor bank adapted for connection in series into an electric power line and with a controllable circuit, connected to the capacitor bank, for damping sub-synchronous resonance oscillations, the controllable circuit being connected in parallel with the capacitor bank and including an inductor connection, controllable in both directions, with at least one inductive component and at least one controllable semiconductor valve connected to said component, and the equipment further comprising a control member which, on the occurrence of a sub-synchronous resonance oscillation, controls the semiconductor valve to generate a current through the capacitor bank and the controllable circuit, which current creates a sub-synchronous voltage that counteracts a sub-synchronous voltage across the capacitor bank caused by a sub-synchronous current in the power line.

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PROXIMITY DETECTOR WITH ERROR-PREVENTING AMBIENT CONDITION COMPENSATION

Johannes Buergel, Tettnang; Jean-Luc Lamarche, Langenargen; Andreas Schiff, Eriskirch, and Klaus-Peter Westrup, Markdorf, all of Germany, assignors to i f m electronic gmbh, Essen, Germany

Continuation-in-part of Ser. No. 712,899, Jun. 11, 1991, abandoned. This application Dec. 11, 1991, Ser. No. 804,733
Claims priority, application Germany, Jun. 11, 1990, 4018680; Jul. 24, 1990, 4023529; Apr. 8, 1991, 4111297
Int. Cl.[5] H01H *36/00*
U.S. Cl. 307—116 **7 Claims**



1. An electronic detecting device, comprising:

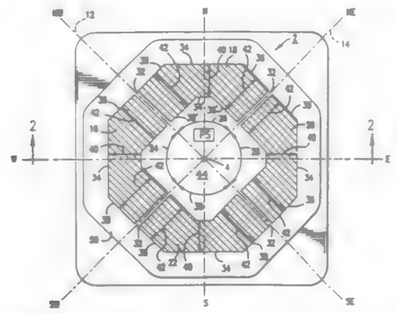
detecting means for responding to a location of a detected object;
signal processing means connected to the detecting means and providing a variable detection output having signal characteristics;
electronic switching means connected to the signal processing means and having a plurality of states and changing states in response to changes in detection output signal characteristics at a threshold level affected by ambient conditions;
state indicating means for indicating the operating state of the detecting means or the electronic switching means;
said state indicating means indicating whether the detected object is within a region having a predetermined boundary or outside the region, and indicating when the detected object is near to said boundary such that the state indicated is subject to error due to the influence of ambient conditions on circuit elements of the device;
wherein the device is constructed as an inductive proximity switch, and the detecting means is an oscillator having its operation influenced by the proximity of an approaching or retreating metal part;
further comprising:
sensing distance adjustment means for operating in an operation to vary the signal characteristics of the detection output produced in response to detection of a detected object at a particular location; and
automatic adjusting means connected to the sensing distance adjustment means for adjusting the signal characteristics of the detection output to prevent further switching of the electronic switching means for a defined time period following a change in state of the electronic switching means.

5,367,199

SLIDING CONTACT CONTROL SWITCH PAD

Leonard R. Lefkowitz, and Albert L. Armstrong, Jr., both of Latham, N.Y., assignors to Triax Technologies, Albany, N.Y.

Continuation-in-part of Ser. No. 877,077, May 1, 1992, abandoned. This application Sep. 15, 1992, Ser. No. 944,918
Int. Cl.[5] A06F *3/02*
U.S. Cl. 307—116 **33 Claims**



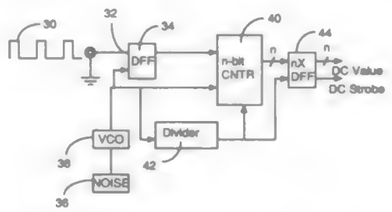
1. A sliding contact touch activated switch pad, comprising:
a plurality of sensors disposed about an intersection of at least two intersecting axes, each sensor of said plurality of sensors being a capacitive sensor and being separated from an adjacent sensor of said plurality of sensors by a non-conductive area;
a null zone disposed concentric with said plurality of sensors and located between said intersection and said plurality of sensors; and
means electrically connected to each sensor for producing (a) a final first-output signal when a controlling object is in conductive engagement with a sensor or a pair of adjacent sensors, and (b) a final second-output signal when said controlling object is not in conductive engagement with a sensor or pair of sensors.

5,367,200

METHOD AND APPARATUS FOR MEASURING THE DUTY CYCLE OF A DIGITAL SIGNAL

Dan Leonida, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 29, 1993, Ser. No. 158,546
Int. Cl.[5] H03K *3/017, 3/84, 5/26*
U.S. Cl. 327—33 **11 Claims**



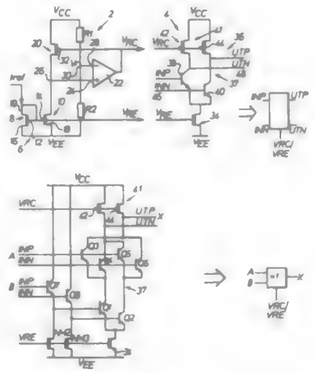
1. A method of measuring the duty cycle of a digital signal of a fixed repetition rate, comprising steps of:
sampling the digital signal at a sampling frequency which is incoherent with the fixed repetition rate;
producing a total number of samples N_t of the digital signal;
counting a number of samples N_1 which are at one of two digital levels; and
calculating a ratio of N_1 to N_t which is indicative of the duty cycle.

5,367,201

CONTROL CIRCUIT SYSTEM FOR CONTROL OF PARAMETERS IN LOGIC CIRCUITS OR SIMILAR

Mats O. J. Hedberg, Haninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jul. 1, 1993, Ser. No. 84,122
Claims priority, application Sweden, Jul. 1, 1992, 9202033-8
Int. Cl.[5] H03K *17/16*
U.S. Cl. 327—543 **12 Claims**



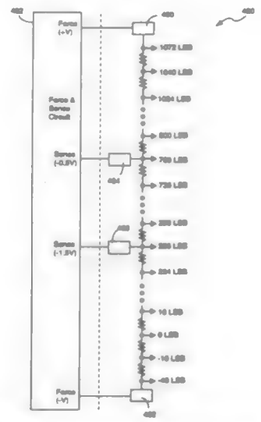
1. A control circuit system for controlling one or more parameters in a circuit with
at least one first stage in the form of delay stage or a logic stage said stage including
at least one operational stage, at least one operational current source for supplying a first drive current to said operations stage, and at least one operational load,
a plurality of first controllable current source and load components of said operational current source and said operational load for allowing control of the magnitude of said first drive current and of said operational load,
at least one reference stage comprising essentially an image circuit of said first stage with
a reference current source for supplying a second drive current for said reference stage, and a reference load, said reference current source and said reference load comprising a plurality of second controllable current source and load components for allowing control of the magnitude of said second drive current and of said reference load and being essentially identical to said first current source and load components, said reference stage also comprising;
an input stage connected for receiving an adjustable reference parameter and for controlling, by means of said reference parameter, current supply from said reference current source and said operational current source to said second and first controllable load components, respectively,
a comparison and control circuit connected for comparing the magnitude of said reference load with a load reference and for controlling an operational parameter of said reference load and operational load components so as to keep the relationship between said reference load and said load reference the same irrespective of the magnitude of the current through said reference load, and thereby keeping the operational point of said first stage constant for various drive currents in the latter.

5,367,202

VOLTAGE REFERENCE LADDER HAVING IMPROVED LINEARITY

Philip W. Yee, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 972,829, Nov. 6, 1992, abandoned. This application Apr. 28, 1994, Ser. No. 234,940
Int. Cl.[5] H03K *3/01;* **H03F** *1/30*
U.S. Cl. 327—540 **3 Claims**



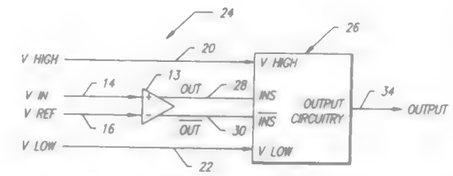
1. A voltage reference ladder for providing a plurality of reference voltages, comprising:
a resistive line having a first end and a second end, a multiplicity of reference voltage tap points, and first and second sense points, wherein at least one of said reference voltage tap points is located between said first sense point and said first end of said resistive line; and
a force and sense circuit having first and second force terminals respectively connected to said first and second ends of said resistive line, and first and second sense terminals connected to said resistive line at said first and second sense points displaced from said first and second ends of said resistive line, respectively, said force and sense circuit including means for varying first and second force potentials respectively impressed upon said first and second force terminals so as to minimize a nonlinear error function related to voltage difference between said plurality of reference voltages and a corresponding plurality of ideal reference voltages.

5,367,203

SYSTEM FOR DETERMINING THE TIME AT WHICH AN ANALOG VOLTAGE CROSSES A VOLTAGE THRESHOLD

Wylie J. Plummer, Poway, Calif., assignor to Brooktree Corporation, San Diego, Calif.

Filed Jan. 21, 1993, Ser. No. 6,823
Int. Cl.[5] H03K *5/22*
U.S. Cl. 327—78 **38 Claims**



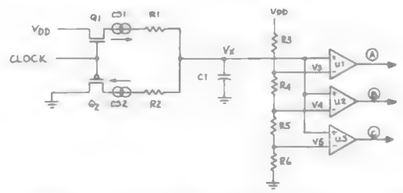
1. In combination, for use in a comparator for determining the time at which the magnitude of a variable analog input voltage crosses the magnitude of an analog reference voltage in two opposite directions,
means for providing the analog input voltage,
means for providing the analog reference voltage,
means for providing first and second clamping voltages related to the analog reference voltage,
coupling means respectively responsive to the first and second clamping voltages and to the difference between the analog input voltage and the analog reference voltage for providing first and second control voltages respectively different by a particular magnitude from the first and second clamping voltages, and
driver means responsive to the first and second control voltages and the first and second clamping voltages for providing first and second output voltages respectively representative of the times when the magnitude of the input voltage crosses the magnitude of the reference voltage in the two opposite directions.

5,367,204

MULTIPLE DIGITAL CLOCK EDGE GENERATOR CIRCUIT AND METHOD

Phillip E. Mattison, Gilbert, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 1, 1992, Ser. No. 939,502
Int. Cl.[5] H03K *5/153, 5/04*
U.S. Cl. 327—75 **12 Claims**



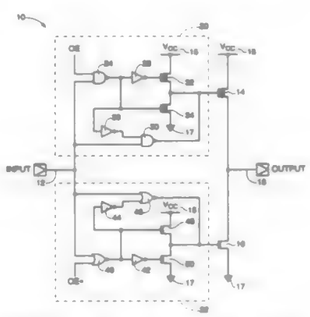
1. A multiple digital clock edge generator circuit comprising, in combination:

input means coupled to a digital clock signal;
switching means coupled to said input means for enabling a charging circuit and a discharging circuit depending on the state of said input means wherein said discharging circuit being disabled and said charging circuit being enabled when said input means is in a first state and said charging circuit being disabled and said discharging circuit being enabled when said input means is in a second state;
capacitor means coupled to said charging circuit and to said discharging circuit for providing a voltage that increases when said switching means enables said charging circuit and that decreases when said switching means enables said discharging circuit; and
comparator output means having an input coupled to said capacitor means for comparing said voltage on said capacitor means to a plurality of fixed reference voltages and for generating a plurality of outputs, each output of said plurality of outputs having a fixed delay from a rising clock edge of said digital clock signal on said input means to a corresponding clock edge of said output, and having a fixed delay from a falling clock edge of said digital clock signal on said input means to a corresponding clock edge of said output.

7. A method for generating multiple digital clock edges in response to a single clock input comprising the steps of:
providing input means coupled to a digital clock signal;
providing switching means coupled to said input means to enable a charging circuit and a discharging circuit depending on the state of said input means, said discharging circuit being disabled and said charging circuit being enabled when said input means is in a first state, and said charging circuit being disabled and said discharging circuit being enabled when said input means is in a second state;
providing capacitor means coupled to said charging circuit and to said discharging circuit, having a voltage that increases when said switching means enables said charging circuit, and that decreases when said switching means enables said discharging circuit; and
providing comparator output means having an input coupled to said capacitor means for comparing said voltage on said capacitor means to a plurality of fixed reference voltages and for generating a plurality of outputs, each output of said plurality of outputs having a fixed delay from a rising clock edge of said digital clock signal on said input means to a corresponding clock edge of said output, and having a fixed delay from a falling clock edge of said digital clock signal on said input means to a corresponding clock edge of said output.

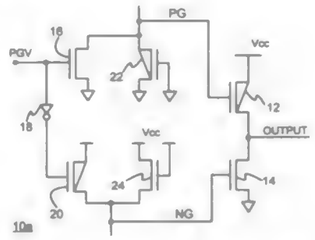
5,367,205
HIGH SPEED OUTPUT BUFFER WITH REDUCED VOLTAGE BOUNCE AND NO CROSS CURRENT
Stanley J. Powell, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.
Filed May 13, 1993, Ser. No. 61,607
Int. Cl.[5] H03K *19/003*
U.S. Cl. 326—27 **9 Claims**

1. An IC output driver device, comprising:
an output line;
a power supply bus;
a ground bus;
an input line;
a P-channel driver transistor, having its source coupled to the power supply bus and its drain coupled to the output line, for amplifying a logic high output signal, having circuitry coupled to the gate of the P-channel driver transistor for controlling a output current bounce on the output line, including:
an output enable signal line;
a first NAND gate, having first and second inputs, the first input being coupled to the input line and the second input being coupled to the output enable signal line;
first and second inverters, each inverter receiving an input from the first NAND gate;
a second NAND gate having first and second inputs, the first input being coupled to the output of the second inverter and the second input being coupled to the input line;
a P-channel pull-up transistor, having its gate coupled to the output of the first inverter, its drain coupled to the gate of



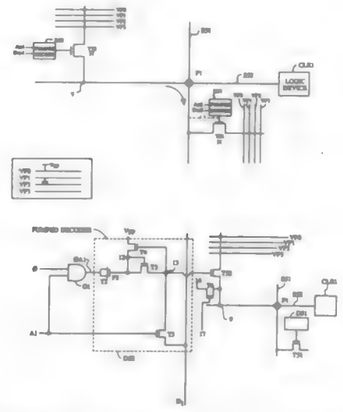
the P-channel driver transistor, and its source coupled to the power supply bus;
a P-channel pull-down transistor having its gate coupled to the output of the first NAND, its source coupled to the drain of the P-channel pull-up transistor and the gate of the P-channel driver transistor, and its drain coupled to the ground bus; and
the gate of the P-channel driver transistor coupled to the output of the second NAND gate.

5,367,206
OUTPUT BUFFER CIRCUIT FOR A LOW VOLTAGE EPROM
James Yu, and Tiao-Huo Kuo, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 17, 1993, Ser. No. 78,711
Int. Cl.[5] H03K *17/16*
U.S. Cl. 326—26 **23 Claims**



1. An output buffer circuit for a low voltage device for allowing for high speed performance while also minimizing noise, the circuit comprising:
a pull-up transistor for providing a drive potential to an output;
a pull-down transistor for providing a drive potential to the output;
means for receiving a logic signal, the logic signal providing an indication that the output buffer circuit is to be operated at a high voltage; and
means coupled between the receiving means and the pull-up and pull-down transistors for reducing the turn-on speed of the pull-up and pull-down transistors when the logic signal is detected, whereby the output buffer circuit operates at a high speed when the logic signal is not present, indicating that the output buffer circuit is to be operating at a low voltage and at a slower speed when the logic signal is present.

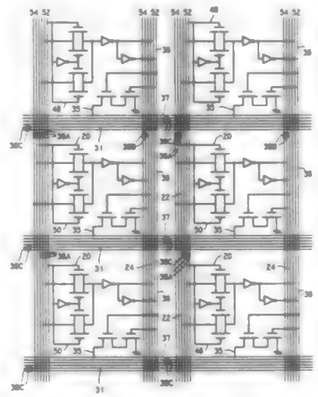
5,367,207
STRUCTURE AND METHOD FOR PROGRAMMING ANTIFUSES IN AN INTEGRATED CIRCUIT ARRAY
F. Erich Goetting, Cupertino, Calif.; David B. Parlour, Pittsburgh, Pa., and John E. Mahoney, San Jose, Calif., assignors to Xilinx, Inc., San Jose, Calif.
Filed Dec. 4, 1990, Ser. No. 625,732
Int. Cl.[5] H03K *19/177, 5/08, 19/092, 3/01*
U.S. Cl. 307—465 **18 Claims**



1. A structure for programming an array of antifuses in an integrated circuit structure comprising:
a set of programming voltage lines to which programming voltages can be applied;
a plurality of antifuses;
a plurality of interconnect line segments, each connected to one terminal of at least one of said antifuses; and
means for selectively connecting each of said interconnect line segments to one of said programming voltage lines and applying a known voltage difference across each of said antifuses regardless of the states of other antifuses.

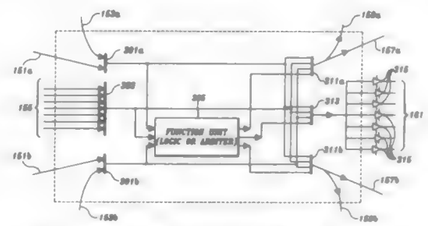
5,367,208
RECONFIGURABLE PROGRAMMABLE INTERCONNECT ARCHITECTURE
Abbas El Gamal, Palo Alto, and Steve S. S. Chiang, Saratoga, both of Calif., assignors to Actel Corporation, Sunnyvlae, Calif.
Continuation of Ser. No. 869,488, Apr. 15, 1992, Pat. No. 5,187,393, which is a continuation of Ser. No. 621,452, Jan. 15, 1991, Pat. No. 5,172,014, which is a division of Ser. No. 309,306, Feb. 10, 1989, Pat. No. 5,015,885, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Jan. 13, 1993, Ser. No. 2,873
The portion of the term of this patent subsequent to Jul. 19, 2005, has been disclaimed.
Int. Cl.[5] H03K *19/177*
U.S. Cl. 326—44 **43 Claims**

1. In an integrated circuit, an electrically programmable interconnect architecture, comprising:
a plurality of function circuit modules placed in an array, said modules having connection nodes;
a plurality of sets of wiring channels, each of said plurality of sets of wiring channels comprising at least one wiring channel, at least one of said wiring channels comprising at least two wiring segments and wherein at least one of said wiring segments is electrically connectable to at least one of said connection nodes;
a plurality of two-terminal, normally-open, electrically-programmable elements, said elements located between selected pairs of said wiring segments comprising one of said wiring channels, said programmable elements being characterized by a high impedance before programming and being selectively programmable by the user in order to create a permanent bidirectional low impedance electrical



connection between said selected pairs of said wiring segments;
means for supplying a first programming potential to a first one of said wiring segments of said selected pair of wiring segments; and
means for supplying a second programming potential to a second one of said wiring segments of said selected pair of wiring segments, the difference between said first and second programming potentials being sufficient to program said electrically-programmable elements.

5,367,209
FIELD PROGRAMMABLE GATE ARRAY FOR SYNCHRONOUS AND ASYNCHRONOUS OPERATION
Scott A. Hauck, 5219 22nd Ave. NE., #4, Seattle, Wash. 98105; Gaetano Borriello, 8045 Bagley Ave. N., Seattle, Wash. 98103; Steven M. Burns, 6033 31st Ave. NE., Seattle, Wash. 98115, and William H. C. Ebeling, 4002 Burke Ave. N., Seattle, Wash. 98103
Continuation-in-part of Ser. No. 817,697, Jan. 7, 1992, Pat. No. 5,208,491. This application Apr. 30, 1993, Ser. No. 56,434
Int. Cl.[5] H03K *19/173*
U.S. Cl. 326—45 **18 Claims**



1. A field programmable gate array (FPGA) having at least one logic block, each of said logic blocks having inputs for receiving a plurality of input signals and outputs for outputting a plurality of output signals, the FPGA further comprising:

(a) at least one arbiter block, said arbiter block having inputs for receiving a plurality of input signals and outputs for outputting a plurality of output signals, and wherein said arbiter block is programmable to provide an arbiter function, an enabled arbiter function, or a synchronizer function; and

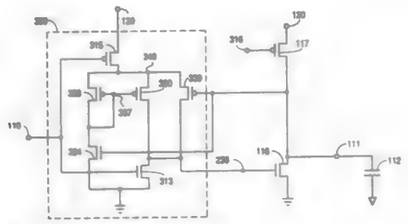
(b) interconnect resources for providing electrical communication between said inputs of either said arbiter blocks or logic blocks and the outputs of either said arbiter blocks or logic blocks.

5,367,210

OUTPUT BUFFER WITH REDUCED NOISE

Robert J. Lipp, 15881 Rose Ave., Los Gatos, Calif. 95030

Filed Feb. 12, 1992, Ser. No. 836,048
Int. Cl.[5] H03K *19/092, 17/16*
U.S. Cl. 326—26 **13 Claims**



1. An output buffer comprising:

a driver stage including an output transistor having a gate terminal for receiving a voltage, said output transistor having low impedance and high impedance states determined by whether said voltage is higher or lower than a threshold voltage, said driver stage providing a feedback signal to indicate whether said voltage is higher or lower than said threshold voltage; and

means for controlling said driver stage, receiving said feedback signal, said means for controlling causing said output transistor to transition from said high impedance state to said low impedance state by providing at said gate terminal of said output transistor, prior to said voltage reaching said threshold voltage, as indicated by said feedback signal, a varying rate of voltage increase, and providing, after said threshold voltage is reached, as indicated by said feedback signal, a substantially constant rate of voltage increase less than said varying rate of voltage increase.

5,367,211

DIFFERENTIAL AMPLIFIER WITH HYSTERESIS

Raymond L. Giordano; Robert H. Isham, and Arthur J. Leidich, all of Flemington, N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 28, 1993, Ser. No. 82,546
Int. Cl.[5] H03K *5/22*
U.S. Cl. 327—73 **18 Claims**

1. The combination comprising:

a plurality of transistors, each transistor having first and second electrodes defining the ends of a main conduction path and a control electrode, each transistor being turned-on when the potential between its control and first electrodes exceeds a minimum turn-on value and is of a polarity to turn on the transistor;

a first and a second one of said plurality of transistors being differentially connected with their first electrodes being connected in common to a first node to which is connected a first relatively constant current source for producing a first current having an amplitude IA;

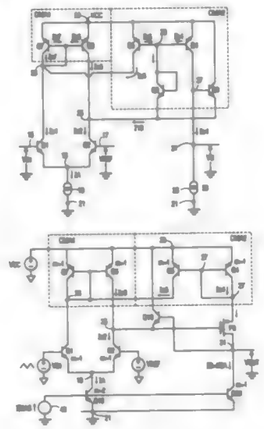
means for applying a differential input voltage between the control electrodes of said first and second transistors;

first and second current mirror amplifiers (CMAs), each CMA having an input terminal and an output terminal; each CMA producing an output current at its output terminal which is proportional to the input current at its input terminal;

means connecting the input terminal of the first CMA and the outpost terminal of the second CMA to the second electrode of the first transistor;

means connecting the output terminal of the first CMA to the second electrode of the second transistor;

a second current source for producing a second current IB;



means coupling the second current source to the input terminal of the second CMA and including means responsive to a difference in the current flowing between the output of the first CMA and the second electrode of the second transistor, for enabling the current IB of the second current source to flow in the input terminal of the second CMA and for causing a current proportional to IB to flow between the output terminal of the second CMA and the second electrode of the first transistor.

5,367,212

GEOMETRY CORRECTION WAVEFORM SYNTHESIZER

Khosro M. Rabii, Arlington Heights, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Oct. 30, 1992, Ser. No. 969,866
Int. Cl.[5] H03L *7/16*
U.S. Cl. 327—105 **16 Claims**

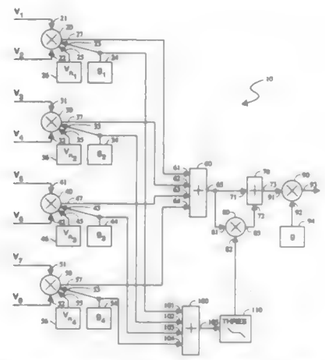
9. For use in producing a geometry control signal, a synthesizer comprising:

means for receiving a plurality of complementary pair correction signals;

means for forming a plurality of correction signal components from each of said pairs of correction signals;

means for combining said signal components to form a composite correction signal;

means for controlling the amplitude of said composite correction signal to form a gain controlled composite correction signal; and



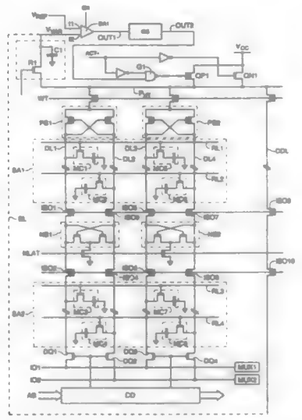
means for adjusting the amplitude of said gain controlled composite correction signal applied to a scan system.

5,367,213

P-CHANNEL SENSE AMPLIFIER PULL-UP CIRCUIT INCORPORATING A VOLTAGE COMPARATOR FOR USE IN DRAM MEMORIES HAVING NON-BOOTSTRAPPED WORD LINES

Stephen L. Casper, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Jun. 9, 1993, Ser. No. 75,200
Int. Cl.[5] G11C *7/06*
U.S. Cl. 327—56 **7 Claims**



1. A pull-up circuit for P-channel sense amplifiers in a dynamic random access memory array having non-bootstrapped word lines, said circuit comprising:

a pull-up node coupled to the P-channel sense amplifiers, said P-channel sense amplifiers being coupled to digit lines within said array;

a power supply bus;

a reference voltage;

a variable voltage;

a logic gate;

a differential amplifier for comparing said reference voltage to said variable voltage, said differential amplifier having an output that is coupled to a first input of said logic gate, said logic gate also having a second input for receiving an active pull-up control signal or the complement thereof, said logic gate also having an output;

at least one P-channel field effect transistor, the gate of which is coupled to the output of said logic gate, and the channel of which couples said power supply bus to said pull-up node during the active pull-up cycle whenever said variable voltage is less than said reference voltage; and

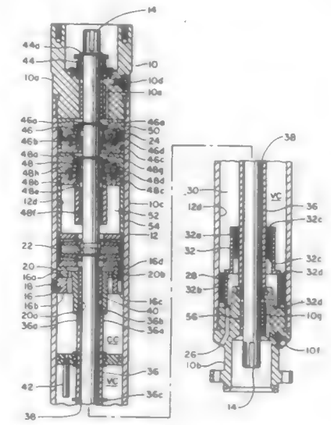
at least one N-channel field effect transistor, the channel of which couples said power supply bus to said pull-up node during the active pull-up cycle at least during periods that the channel of said P-channel transistor does not couple the power supply bus to said pull-up node.

5,367,214

SUBMERSIBLE MOTOR PROTECTION APPARATUS

John W. Turner, Jr., 2727 Kenross, Houston, Tex. 77043

Filed Nov. 18, 1992, Ser. No. 978,140
Int. Cl.[5] H02K *5/10, 5/12*
U.S. Cl. 310—87 **15 Claims**



12. In an improved submersible pump assembly having a downhole pump powered by a fluid-filled submersible electric motor with a fluid-filled protective device for the motor oriented therebetween and in fluid communication with the interior of the motor mounted below, an improved means in the protective device for avoiding well fluid invasion of the motor, comprising in combination:

a housing including a tubular body with a head, a bottom, and a base disposed at said bottom, and configured to connect to the pump and motor;

a shaft carried by, and extending axially through, the housing and operably connected between the pump and motor and carrying a dynamic component of a thrust bearing operably engaging companion static components carried by the housing to orient the shaft and absorb axial forces from the pump;

a rotating seal between the shaft and an upper portion of the housing creating the upper closure for the interior of the housing;

a tube axially aligned about the shaft forming an annular passage with the shaft and adapted to receive motor fluid from a chamber and communicating with the interior of the motor;

a variable capacity chamber within the housing comprising;

a flexible, tubular bladder means radially disposed about and attached to the tube providing a pressure sensitive partition between the motor fluid in the housing from well fluid in the housing, thereby creating a variably capacity chamber having a motor fluid pressure zone and a well fluid pressure zone having a top and a bottom

and responsive to move when biased by differential pressure therebetween, whereby exertion of an increase of external force from the well fluid on the bladder means urges motor fluid upward in the chamber before being directed downward toward the motor through the annular passage;

a vent proximate the bottom of the well fluid pressure zone and extending through the housing and communicating with the well bore and the well fluid pressure zone wherein heavier components of the well fluid can separate and exit the housing through the vent while being displaced by well fluid having a lower specific gravity;

at least one constant capacity chamber for receiving motor fluid in fluid communication with the motor fluid pressure zone and the interior of the motor; and

means to exhaust excess motor fluid from the protective device to relieve internal pressure.

5,367,215

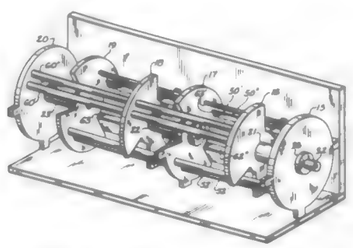
MAGNETIC POLE STATOR DC MOTOR ASSEMBLY

Elmer B. Mason, Del City, Okla., and Robert E. Stark, 1101 Schmieding, Springdale, Ark. 72764, assignors to Robert E. Stark, Springdale, Ark.

Continuation-in-part of Ser. No. 4,153, Jan. 13, 1993, Pat. No. 5,283,492. This application Dec. 6, 1993, Ser. No. 161,494

Int. Cl.[5] H02K *16/00, 5/00*

U.S. Cl. 310—114 **18 Claims**



16. A DC motor assembly, comprising:

magnetic flux generating means including a pair of magnetic members operatively disposed between pairs of magnetic flux responsive plates for forming North and South magnetic plates of each pair of plates of said pairs of plates;

an armature having a winding span of predetermined width operatively supported between the pair of magnetic members;

a source of direct current connected with the armature;

first and second opposing pairs of elongated dual pole shoe pairs extending in longitudinal interdigitated selected spaced relation with respect to the periphery of said armature and connected respectively at their respective dual pole shoe pair opposing ends with selected like polarity North or South polarity plates for forming a uniform concentrated magnetic flux field on the periphery of the armature and normal to its longitudinal axis,

whereby edge of the respective armature winding span in the direction of rotation is magnetically attracted to the adjacent pole shoe of the respective dual pole shoes of the pairs of dual pole shoes and the spacing between each pair of the respective pairs of dual pole shoes precludes any counter electromotive force on the edge of the respective armature winding span opposite the direction of rotation which decrease the intensity of magnetic flux acting on the armature during switching change and is magnetically repelled in the direction of armature rotation by the other pole shoe of the respective pair of dual pole shoes of the pairs of dual pole shoes.

5,367,216

SURFACE ACOUSTIC WAVE ELEMENT AND COMMUNICATION SYSTEM USING THE SAME

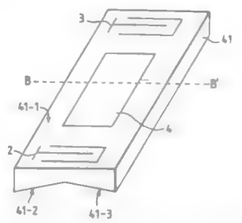
Koichi Egara, Tokyo; Kenji Nakamura, Atsugi, and Norihiro Mochizuki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1992, Ser. No. 921,746

Claims priority, application Japan, Aug. 2, 1991, 3-194125; Aug. 2, 1991, 3-194128; Nov. 5, 1991, 3-288625; Nov. 6, 1991, 3-289933

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 R **113 Claims**



1. A surface acoustic wave element comprising:

a piezoelectric substrate having a first surface and a second surface opposing said first surface;

a first input transducer, formed on said first surface of said substrate, for generating a first surface acoustic wave which propagates in a predetermined direction;

a second input transducer, formed on said first surface of said substrate, for generating a second surface acoustic wave which propagates in a direction opposite to the predetermined direction; and

output means, formed on said first surface of said substrate, for extracting a signal produced by an interaction of said first and second surface acoustic waves,

wherein at least part of said second surface is inclined with respect to the first surface so that the thickness of the piezoelectric substrate is varied in a direction perpendicular to the predetermined direction, and

wherein said at least part of said second surface comprises two surfaces having opposite inclinations along the direction perpendicular to the predetermined direction.

5,367,217

FOUR BAR RESONATING FORCE TRANSDUCER

Brian L. Norling, Mill Creek, Wash., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Nov. 18, 1992, Ser. No. 978,264

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—370 **64 Claims**



1. A resonant element adapted to be secured to a mounting structure in a force sensing transducer, said resonant element comprising:

a generally planar substrate having three elongated slots formed therein defining four generally parallel, spaced-apart beams including a pair of inner beams and a pair of outer beams, said inner pair of beams and said outer pair of beams all joined together at opposite ends by integrally-formed end portions; and

means for coupling said beams to an excitation source, said coupling means being responsive to the excitation source for causing said outer beams to vibrate generally in phase and out of plane relative to said substrate while said inner beams vibrate out of plane and generally in phase with each other, but out of phase with said outer beams.

5,367,218

CERAMIC ELECTRON MULTIPLYING STRUCTURE, PARTICULARLY FOR A PHOTOMULTIPLIER AND ITS PRODUCTION PROCESS

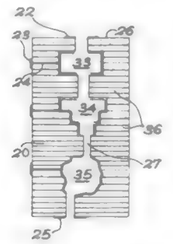
Georges Comby, Rambouillet, France, assignor to Commissariet a l'Energie Atomique, Paris, France

Filed May 21, 1992, Ser. No. 887,352

Claims priority, application France, May 21, 1991, 91 06099

Int. Cl.[5] H01J *43/00, 43/20*

U.S. Cl. 313—105 CM **9 Claims**



1. Compact, secondary emission electron multiplying structure having a plurality of multiplying channels (43,), said multiplying structure comprising a tight, compact, insulating ceramic block, said ceramic block having distributed therein three-dimensional form cavities (21, 31, 33, 34, 35, 37, 41) having conductive walls formed from a conductive deposit (28), said cavities being appropriately activated and interconnected by a connecting duct (63) permitting the transit of the amplified electron flux, as well as the polarization means of said cavities, said multiplying structure being a high temperature sintered stack of ceramic plates or sheets (51 to 56), originally in a crude state, whereof each has been previously perforated and machined in order to create connecting ducts (60) and cavities (21, 31, 33, 24, 35, 37, 41), the polarization means being constituted by conductive walls on the surface of the cavities and conductive tracks (24) on a surface (59) of each ceramic plate in order to connect each cavity to external electrical lateral contacts (23).

5,367,219

IMPROVED ELECTRIC REFLECTOR LAMP FOR USER WITH IEC STANDARD

Winand H. A. M. Friederichs, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 15, 1992, Ser. No. 961,556

Claims priority, application European Pat. Off., Nov. 18, 1991, 91202979

Int. Cl.[5] H01K *1/46*

U.S. Cl. 313—113 **6 Claims**

1. In an electric lamp complying with both the ANSI standard and the IEC standard, said electric lamp comprising

(a) a hollow molded reflector body with an optical axis and having a neck-shaped portion, said neck-shaped portion having a free end portion,

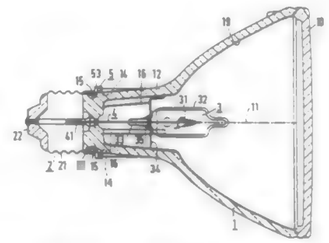
(b) a lamp cap having contacts and being connected to said neck-shaped portion,

(c) a light source disposed in said reflector body and being electrically connected to said contacts of said lamp cap by current conductors, and

(d) an insulator body around said free-end portion of said neck-shaped portion,

wherein the improvement comprises for IEC standard only said electric lamp further comprising

(e) a ring-shaped structure providing said insulator body, said ring-shaped structure entirely surrounding said neck-shaped portion at said free end portion, and said ring-shaped structure being wider than said lamp cap, and



(f) at least one stop of said neck-shaped portion for limiting axial position of said ring-shaped structure on said neck-shaped portion, said lamp cap being directly fastened to and surrounding said free end portion.

5,367,220

ELECTRIC LAMP WITH A HOLDING FRAME FOR A LAMP FILAMENT

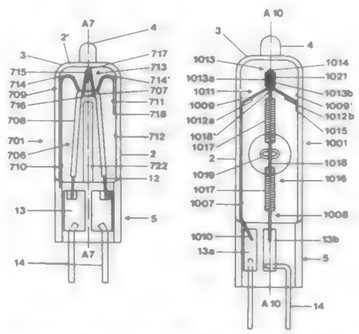
Karl Stadler, Adelschlag; Roland Stark, Wellheim, and Ruediger Klam, Eichstaett, all of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany

Continuation-in-part of Ser. No. 661,593, Feb. 26, 1991, Pat. No. 5,146,134. This application May 22, 1992, Ser. No. 887,091

Claims priority, application Germany, Mar. 15, 1990, 4008334; Mar. 15, 1990, 4008337; Sep. 24, 1990, 9013457[U]; Mar. 4, 1991, 4106851

Int. Cl.[5] H01K *1/24*

U.S. Cl. 313—578 **24 Claims**



1. In combination with a lamp (1, 1001) having

an essentially tubular bulb (2);

a pinch or press seal (5) at one end of the bulb; and

a filament (6) positioned within the bulb,

a holding frame (709) for said filament, said holding frame comprising

a unitary wire element devoid of a cross strap or cross bar, said frame having

two leg portions (710, 711; 1007, 1015) and an intermediate holding portion (714, 714', 715; 1012, 1013) formed intermediate said leg portions and dimensioned and shaped to engage said filament and hold said filament in position within the bulb;

wherein one of said leg portions forms a shorter leg portion (11; 25; 711; 1015) which is substantially shorter than the

other leg portion, said other leg portion forming a longer leg portion (10; 26; 710; 1007),

said longer leg portion being melt-sealed in, and retained in said seal (5),

at least part of said longer leg portion (10; 26; 710; 1007) extending parallel to the lamp axis, engaging against an inner wall surface of said bulb at a first region (1009) thereof, said shorter leg portion (11; 25; 711; 1015) engaging against the inner wall of the bulb at a region (712; 1009') opposite said first region and said longer leg portion,

said shorter leg portion terminating intermediate the length of the bulb,

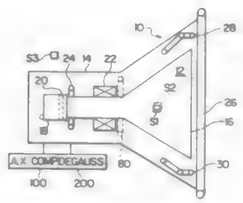
whereby said longer leg portion and said shorter leg portion will be, with respect to longitudinal extent of the bulb, nonsymmetrically positioned therein.

5,367,221

MAGNETIC IMMUNITY SYSTEM (MIS) AND MONITOR INCORPORATING THE MIS

Patrick Santy, Roeselare, and Gerrit Verstraete, Pittem, both of , assignors to Barco N. V.,

Filed May 28, 1993, Ser. No. 68,702
Int. Cl.[5] H01J *29/06*
U.S. Cl. 315—8 **31 Claims**



1. An apparatus for compensating for a magnetic field which influences a partially magnetic-shielded predetermined volume that is magnetically unshielded at a region in a plane through the volume, said apparatus comprising:

a first magnetic field sensor for providing a first sensing signal which indicates a magnetic field value at a first location with respect to said predetermined volume, said first sensor having a first primary axis of sensitivity which extends from said first location substantially through said region;

a second magnetic field sensor for providing a second sensing signal which indicates a magnetic field value at a second location with respect to said volume, said second sensor having a second primary axis of sensitivity which extends from said second location substantially through said region and which is non-parallel with respect to said first axis of sensitivity, such that a summation of said first value and said second value provides a summation value which substantially indicates an axial component of a magnetic field introduced into said volume through said region in an axial direction which is substantially perpendicular to said plane;

adding means, responsive to a first sensing signal from said first sensor and a second sensing signal from said second sensor, for adding a first value indicative of said first location and a second value indicative of said second location to provide a summation signal which indicates said summation value; and

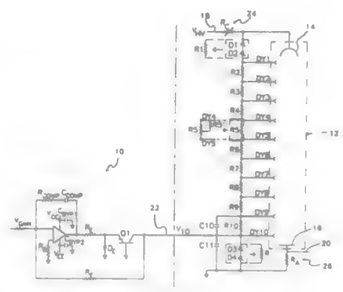
control means, responsive to a summation signal provided by said adding means, for generating an axial magnetic field component compensation signal.

5,367,222

REMOTE GAIN CONTROL CIRCUIT FOR PHOTOMULTIPLIER TUBES

David M. Binkley, Knox County, Tenn., assignor to CTI Pet Systems, Inc., Knoxville, Tenn.

Filed Jun. 1, 1993, Ser. No. 69,773
Int. Cl.[5] H01J *29/41*
U.S. Cl. 315—12.1 **21 Claims**



1. A circuit for precisely controlling the gain of a photomultiplier tube, said photomultiplier tube including a plurality of electrodes, said plurality of electrodes including a cathode, an anode, and a plurality of dynodes connected between said cathode and said anode, a first of said plurality of dynodes being nearest said cathode, a last of said plurality of dynodes being nearest said anode, a cathode biasing network being connected to said cathode, an anode biasing network being connected to said anode, a photomultiplier tube biasing voltage being applied between said cathode and said anode biasing network, said circuit comprising:

a plurality of resistive networks for controlling gain between successive pairs of said plurality of electrodes, said plurality of resistive networks being connected in series, at least one each of said resistive networks being connected between successive pairs of said plurality of dynodes; and

an active control circuit connected to said last of said plurality of dynodes for controlling said gain at least between each successive pair of said plurality of dynodes in order to precisely control said gain of said photomultiplier tube at a predetermined level, said active control circuit consisting of a negative feedback circuit for regulating a voltage at said last of said plurality of dynodes, said negative feedback circuit including at least a high-voltage transistor powered by photomultiplier tube bias network.

5,367,223

FLUORESENT LAMP CURRENT LEVEL CONTROLLER

Joseph A. Eccher, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 816,025, Dec. 30, 1991, abandoned.
This application Oct. 14, 1993, Ser. No. 137,390
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—97 **17 Claims**

1. A document scanner, comprising:

(a) at least one fluorescent lamp comprising at least one filament;

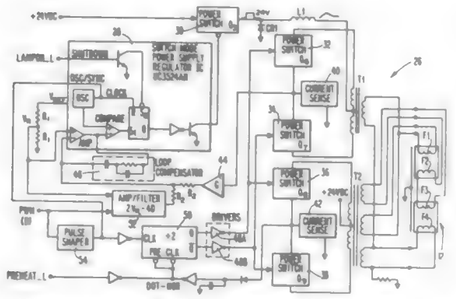
(b) light detection means comprising a plurality of light detectors for scanning a predefined area illuminated by said lamp and detecting light reflected therefrom, and for providing output signals indicative of detected light intensity levels;

(c) microprocessor means, coupled to said light detection means, for receiving said output signals and generating a first control signal indicative of a desired level of current in said lamp and a second control signal; and

(d) a current level controller coupled between said microprocessor means and said lamp(s) and comprising:

(i) preheating means for applying, in response to a predefined state of said second control signal, low voltage pulses of alternating polarity across said filament(s), said low voltage pulses sufficient to preheat said filament(s) but insufficient to cause said lamp to fluoresce, said preheating means comprising a first transformer comprising a secondary coil coupled to at least one filament and a primary coil adapted to be coupled to a DC voltage source;

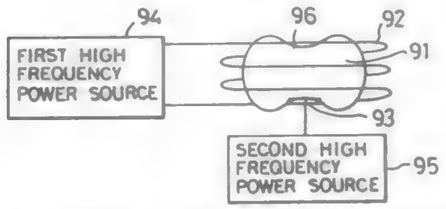
(ii) high voltage means for applying high voltage pulses of alternating polarity across said filament(s), said high voltage pulses being generated at times when said light



around an outer periphery of said lamp tube for generating a high frequency electromagnetic field acting upon said discharge gas in said lamp tube;

a first high frequency power source for supplying a first high frequency current to said induction coil;

a foil type auxiliary electrode disposed adjacent to said outer peripheral wall of said lamp tube substantially the same distance from points around said induction coil and electrostatically coupled to an interior space of said lamp tube



for generating a preliminary discharge of the discharge gas in said lamp tube prior to generation of an excitation luminescence by means of said induction coil; and

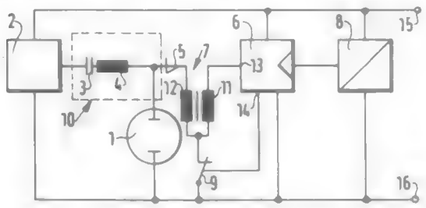
a second high frequency power source for applying a second high frequency voltage to said foil type auxiliary electrode, wherein said lamp tube includes a recess formed by a substantially concave portion of said outer peripheral wall, said foil type auxiliary electrode being disposed within said recess.

5,367,227

CIRCUIT ARRANGEMENT FOR OPERATING A GAS-DISCHARGE LAMP

Lothar Gademann, Rottenburg; Ulrich Drews, Schwieberdingen; Wolfgang Jakob, Horb, and Anton Mindl, Tübingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 21, 1992, Ser. No. 840,731
Claims priority, application Germany, Sep. 1, 1989, 3929029
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—290 **21 Claims**



1. Circuit arrangement for operating a gas-discharge lamp, comprising:

a burning circuit, connected in parallel to the gas-discharge lamp, having a voltage generator and an inductor as a ballast; and

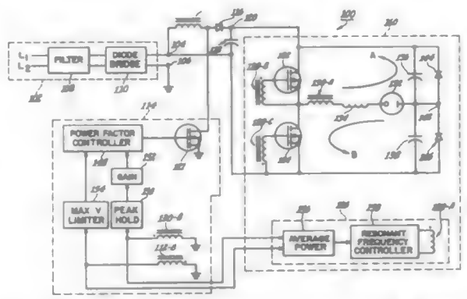
a starting circuit, connected in parallel with both the gas-discharge lamp and the burning circuit via a voltage-controlled switch, having a transformer with a primary winding and a secondary winding which is connected in parallel to the gas-discharge lamp, and a control circuit which acts on the primary winding of the transformer, wherein the secondary winding of the transformer is connected in parallel with the burning circuit via the voltage-controlled switch.

5,367,228

HIGH-PRESSURE SODIUM LAMP CONTROL CIRCUIT PROVIDING CONSTANT PEAK CURRENT AND COLOR

David J. Kachmarik, North Olmsted; Louis R. Nerone, Brecksville, and Douglas M. Rutan, Cleveland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 5, 1992, Ser. No. 972,036
Int. Cl.[5] G05F *1/00*
U.S. Cl. 315—307 **12 Claims**



1. A control circuit for providing a substantially constant peak current to a high-pressure sodium lamp, said control circuit comprising:

a first and second node capable of having a rectified voltage signal electrically connected therebetween;

a ballast circuit electrically connected to said first and a third node, said ballast circuit having a first and a second contact wherein the lamp is operatively connectable between said first and second contacts, said ballast circuit to generate and control a peak current through the lamp based on the value of a voltage as said third node;

a current sensor to sense the amount of current through the lamp;

a buck-boost voltage control circuit electrically connected to said first, second and third nodes, said buck-boost voltage control circuit being effective to control the value of the voltage at said third node in order to provide a substantially constant peak current through the lamp based on the amount of current sensed by said current sensor;

wherein said buck-boost voltage control circuit includes an energy storage device, a capacitor and, a voltage control circuit to control the amount of energy stored by said energy storage device based on the amount of current sensed by said current sensor; and,

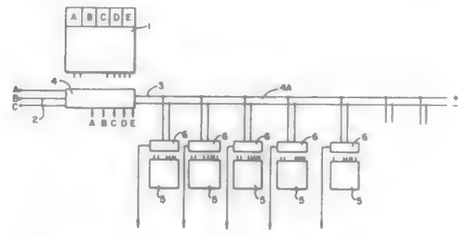
wherein said voltage control circuit includes a controllable switch having a first contact electrically connected to said energy storage device and a controllable input, said voltage control circuit further including a peak hold circuit electrically connected to said current sensor and effective so as to output a peak current signal based on a peak current sensed by said current sensor, and, a controller operatively connected to the controllable input of said controllable switch so as to control the operation thereof based on said peak current signal and thus controlling the amount of energy stored in said energy storage device.

5,367,229

LAMP BALLASTS

Thien S. Yang, 292 Connells Point Rd., Connells Point, New South Wales, Australia 2221

PCT No. PCT/AU92/00134, § 371 Date Nov. 2, 1992, § 102(e) Date Nov. 2, 1992, PCT Pub. No. WO92/17993, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 27, 1992, Ser. No. 952,862
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—324 **5 Claims**



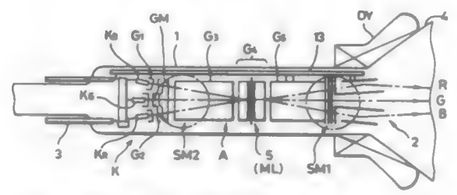
1. A circuit for a plurality of electric discharge lamps having a multiplicity of functions, said circuit comprising a common DC power supply/control unit, electrical socket means, a bus network and ballasts for respective ones of said plurality of lamps, the electric socket means connecting both the input of said power supply/control unit to an AC mains supply and the output of said power supply/control unit to an input of the bus network, said bus network having socket outputs for connection to said ballasts and said power supply/control unit including a plurality of plug-in function modules common to all of said plurality of lamps, each one of said plurality of function modules containing all necessary circuitry and components for a desired one of said lighting functions and said ballasts being constructed as low cost disposable items comprising driving circuits only.

5,367,230

CATHODE-RAY TUBE WITH CONVERGENCE YOKE LENS SYSTEMS

Yukinobu Iguchi, and Koji Hasegawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,714
Claims priority, application Japan, Nov. 14, 1991, 3-299203
Int. Cl.[5] H01J *29/46, 29/56, 29/51*
U.S. Cl. 315—368.15 **5 Claims**



1. A cathode-ray tube comprising:

a phosphor screen;

a deflection yoke; and

an electron gun disposed in confronting relationship to said phosphor screen, electrons from said electron gun passing through said deflection yoke, said electron gun comprising:

emitting means for emitting three electron beams;

main lens means for passing said three electron beams therethrough, said main lens means including a quadruple lens system responsive to focusing voltages for canceling an undesired astigmatic effect produced on said three electron beams at a peripheral region of said phosphor screen when said three electron beams are deflected by said deflection yoke;

a first quadruple convergence yoke lens system disposed between said main lens means and said deflection yoke for generating a first correcting astigmatic effect opposite to said undesired astigmatic effect produced on said three electron beams when said three electron beams are deflected, said first quadruple convergence yoke lens system comprising first, second and third flat electrodes arranged substantially perpendicularly to an axis of the cathode-ray tube, said first electrode being positioned closer to said main lens means, said third electrode being positioned closer to said phosphor screen, each of said first and third electrodes having an elongate rectangular beam passage hole defined therein for passing said electron beams therethrough, said second electrode being positioned between said first and third electrodes and having three separate elongate rectangular beam passage holes defined therein for passing said electron beams respectively therethrough; and

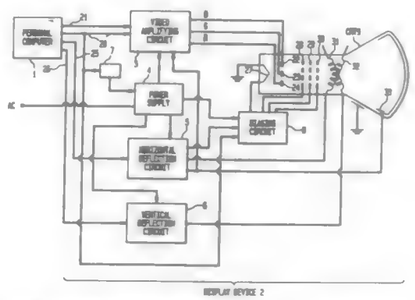
a second quadruple convergence yoke lens system disposed between said emitting means and said main lens means for generating a second correcting astigmatic effect in the same direction as said first correcting astigmatic effect generated by said first quadruple convergence yoke lens system, said second quadruple convergence yoke lens system comprising an electrode arranged substantially perpendicularly to an axis of the cathode-ray tube, said electrode having a plurality of successive beam passage holes defined therein for passing the electron beams respectively therethrough.

5,367,231

DISPLAY SYSTEM

Masaki Kobayashi, Machida, and Rieko Kataoka, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1993, Ser. No. 54,512
Claims priority, application Japan, Apr. 28, 1992, 4-110324
Int. Cl.[5] H01J *29/52*
U.S. Cl. 315—383 **6 Claims**



1. A display system comprising:

a data processing means including means for generating video signals and means for detecting absence of input signals from an input device to said data processing means and for generating a control signal representing said absence of input signals, when no input signal has occurred for a predetermined time; and

a display means including:

signal processing means connected to said data processing means for responding to absence of said control signal to amplify said video signals to generate amplified video signals which vary between a first voltage level representing a lowest luminance of an image and a second voltage

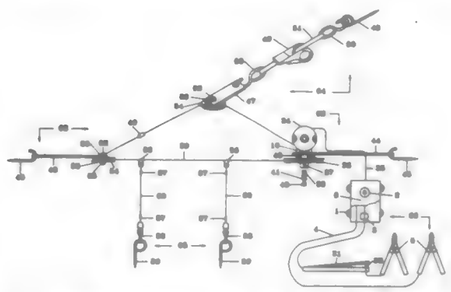
level representing a highest luminance of said image, and for responding to said control signal to generate a constant voltage signal at a voltage level shifted from said first voltage level toward said second voltage level, a cathode ray tube including at least one cathode for receiving said amplified video signals or said constant voltage signal, and voltage supply means for responding to absence of said control signal to apply a normal operating voltage to a heater element of said cathode ray tube, and for responding to presence of a said control signal to apply a voltage lower than said normal operating voltage.

5,367,232

SUSPENDED MOVING TARGET SYSTEM

Ronald R. Netherton, 409 Kolb Rd., and James E. Majka, 196 Hayes Rd., both of Binghamton, N.Y. 13905

Filed Apr. 23, 1993, Ser. No. 52,640
Int. Cl.[5] H02P *7/14*
U.S. Cl. 318—3 **17 Claims**



1. A portable motorized system for moving and turning at least one target, including at least one power drive unit assembly, at least one tension ratchet pulley assembly, at least one idler pulley assembly, and a drive cable configured as a continuous loop and arranged for being set into motion by the said at least one power drive unit assembly and driven through a series of pulleys;

said at least one power drive unit assembly each containing at least one motor pulley assembly arm and having at least one support arm means with two ends, each end having one or more fabricated apertures through which at one end a motor is attached and at the other end a mounting means is inserted for attachment to a support, the motor through a shaft drives a drive pulley;

said at least one tension ratchet pulley assembly each containing at least one tension ratchet assembly arm having at least one support arm means with two ends, each end having one or more fabricated apertures through which at one end an idler pulley is attached and at the other end a tension ratchet is attached and the tension ratchet is connected to a mounting means for attachment to a support;

said at least one idler pulley assembly each containing at least one idler pulley assembly arm having at least one support arm means with two ends, each end having one or more fabricated apertures through which at one end an idler pulley is attached and at the other end a mounting means is inserted for attachment to a support;

joining means for attachment of the drive cable to form a continuous loop;

attachment means for attaching at least one target cable clip to the drive cable from which the said at least one target is to be attached wherein the said at least one target cable clip is allowed to revolve around the series of pulleys while being attached to said drive cable;

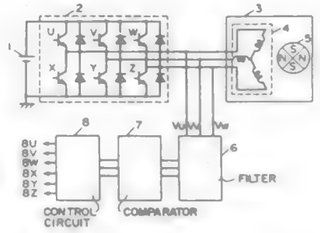
a means for energizing the motor through a line from a power source, the means for energizing contains a system switch for speed selection and at least one power interrupter switch for remote operation.

5,367,233

BRUSHLESS MOTOR OPERATING APPARATUS PROVIDED WITH A FILTER HAVING A VOLTAGE DIVIDER CIRCUIT

Shiro Maeda, Kusatsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 768,545, Sep. 30, 1991, abandoned. This application Apr. 29, 1993, Ser. No. 53,807
Claims priority, application Japan, Feb. 14, 1990, 2-034321
Int. Cl.[5] H02F *7/00*
U.S. Cl. 318—254 **2 Claims**



1. A brushless motor operating apparatus comprising:

a brushless motor having a plural-phase armature winding connected with an ungrounded neutral point and a magnet rotator;

a DC power source;

a group of semiconductor switching elements for passing/interrupting current to said armature winding,

a plurality of filter circuit means, each operatively associated with a phase of said armature winding, for wave-form processing induced voltages in said armature winding, each of said filter circuit means comprising:

a voltage divider circuit having an input end, operatively associated with a phase of said armature winding, and an output end,

a condenser having a first end, operatively connected in series with said output end of said voltage divider circuit, and a second end, and

an integrating circuit having an input end, operatively connected with said second end, and an output end;

a comparison circuit means for comparing outputs from said integrating circuit of said plurality of filter circuit means with a composite wave comprising a plurality of said outputs, and generating an output; and

a control circuit for controlling said semiconductor switching element group in accordance with said output of said comparison circuit.

5,367,234

CONTROL SYSTEM FOR SENSORLESS BRUSHLESS DC MOTOR

Joseph DiTucci, 16 August Rd., Simsbury, Conn. 06070

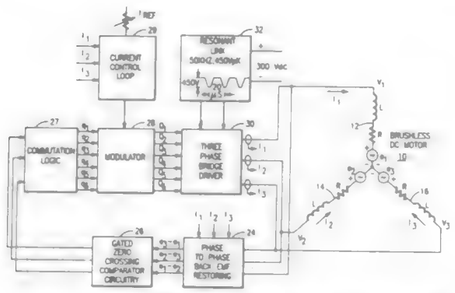
Filed Aug. 26, 1993, Ser. No. 112,036
Int. Cl.[5] H02P *5/06*
U.S. Cl. 318—254 **14 Claims**

1. A drive system for a brushless direct current motor having a plurality of phase windings which are energized by the timed application of drive voltages producing drive currents and back electromotive force voltage conditions in the respective windings, said drive system comprising:

a plurality of circuits for defining differences between back electromotive force voltage conditions present on two successive phase windings of the brushless direct current motor, each circuit including a pair of resistance and capacitance configurations, each resistance and capacitance configuration adjusting a drive voltage of one the successive phase windings and a differential amplifier downstream of the resistance capacitance configurations

for defining the difference in adjusted voltages from the respective resistance capacitance configurations;

a plurality of circuits for sensing the drive currents being applied to the respective phase windings of the brushless direct current motor, each current sensing circuit defining a current source for particular resistance and capacitance configurations in the circuits for defining differences between back electromotive force voltage conditions present on two successive phase windings wherein each particular resistance capacitance configuration experiences current source effect corresponding to the drive current in the phase winding to which the drive voltage is to be adjusted;



a plurality of comparator circuits, each associated with a respective differential amplifier in one of the circuits for defining differences between back electromotive force voltage conditions present on two successive phase windings, wherein each comparator circuit is operative to detect zero voltage levels in the output signals from the respective differential amplifier; and

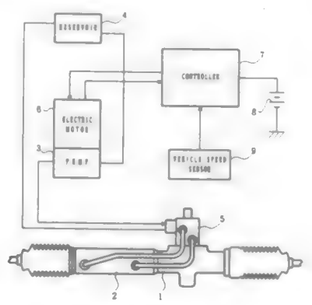
circuitry responsive to the detected zero voltage levels for defining switching signals that control the application of drive voltages to the respective phase windings of the brushless direct current motor.

5,367,235

POWER STEERING DEVICE HAVING ELECTRICALLY DRIVEN PUMP

Fukuo Fukudome, Kashiwara, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,714
Claims priority, application Japan, Nov. 20, 1991, 3-095249[U]
Int. Cl.[5] B62D *5/04*
U.S. Cl. 318—286 **2 Claims**



1. A power steering device having a pump to be driven by an electric motor and adapted to assist in steering a vehicle with hydraulic pressure produced by the pump, the power steering device being characterized in that the device comprises:

control means for interrupting application of voltage to the motor for a predetermined period of time, calculating the number of revolutions of the motor based on the resulting counter-electromotive force between motor terminals and controlling the flow rate of the pump based on the calculated number of revolutions;

a sensor for detecting the speed of the vehicle;

said control means having stored therein a relationship between the vehicle speed and the desired value of flow rate of the pump and controlling the flow rate of the pump to a desired value of flow rate corresponding to the vehicle speed detected by said sensor;

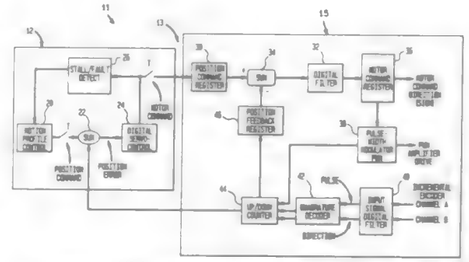
said relationship between the vehicle speed and the desired value of flow rate of the pump being such that the desired value of pump flow rate is a constant first specified value for vehicle speeds of from 0 to a predetermined first speed, a constant second specified value smaller than the first specified value for vehicle speeds in excess of a predetermined second speed greater than the first speed, and a value having a negative gradient for vehicle speeds of from the first speed to the second speed.

5,367,236

DC MOTOR STALL-DETECTION SYSTEM

Edilberto I. Salazar, Brookfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 947,604, Sep. 21, 1992, abandoned. This application Mar. 25, 1994, Ser. No. 218,042
Int. Cl.[5] G05B *19/00;* **H02H** *7/085*
U.S. Cl. 318—567 **2 Claims**



1. A method of detecting a motor stall condition of a dc motor under the control of a motor control system having a programmable microcontroller in connection with a motor controller and a motor driver, said motor driver drives a dc motor, said dc motor being coupled to a position encoder which encoder is in communication with said microcontroller, wherein the method comprises the steps of:

providing an average stall threshold value ASV;

providing said motor controller with a time counter for keeping a count of each time interval T, to a maximum count N;

programming said motor controller to issue a motor command representing the position error between a desired motor position and an actual motor position for said time interval T;

programming said motor controller to perform the following steps for each of said time interval T:

(a) comparing said motor command to said ASV, if said motor command is greater than said ASV then proceed to step (b), if said motor command is less than said ASV then proceed to step (c);

(b) comparing said count in said time counter to said N, if said count is equal to said N then signal said microcontroller a "motor stall" fault, if said count is less than said N then proceed to step (c);

(c) signaling said microcontroller a motor "OK"; and

(d) repeating steps (a) through (c) for next time interval T.

2. A method of detecting a motor stall condition of a dc motor under the control of a motor control system having a programmable microcontroller in connection with a motor controller and a motor driver, said motor driver communicates with a dc motor, said dc motor being coupled to a position encoder which encoder is in communication with said microcontroller, said method comprising the following programmable steps for each time interval T:

(a) comparing a motor command to an average stall threshold value ASV, if said motor command is greater than said ASV then proceed to step (b), if said motor command is less than said ASV then proceed to step (d);

(b) comparing a count in a time counter in said motor controller to zero, if said count is equal to zero then signal a motor "stall fault" if said count is non-zero then proceed to step (c);

(c) decrementing said count in said time counter and then proceed to step (e);

(d) if said count in said time counter equals N, wherein N is a predetermined maximum value, then signal a motor "OK" and proceed to step (e), if said count is not equal to said N then increment said count up to said N and proceed to step (e); and

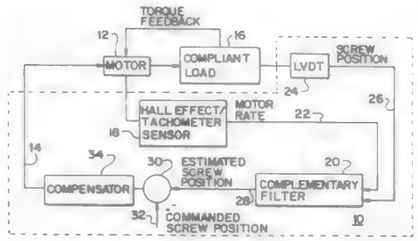
(e) repeat steps (a) through (e) for next time interval T.

5,367,237

ELECTROMECHANICAL ACTUATOR CONTROLLER

Jeffrey R. Ring, Palm Harbor, and Reinhold Matulenko, Clearwater, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 15, 1992, Ser. No. 898,148
Int. Cl.[5] G05B *5/01*; G05D *15/00*
U.S. Cl. 318—616 **6 Claims**



1. A method of controlling a motor driven electromechanical actuator for driving a compliant load, said method comprising the steps of:

generating a position signal representative of said motor driven electromechanical actuator;

generating a rate signal representative of a rate of a motor of said motor driven electromechanical actuator;

applying a frequency dependent weight to said position signal and said rate signal utilizing complementary filters;

summing said weighted position signal and said weighted rate signal utilizing said complementary filters to generate a combined estimated position actuator signal having a positive phase lead; and

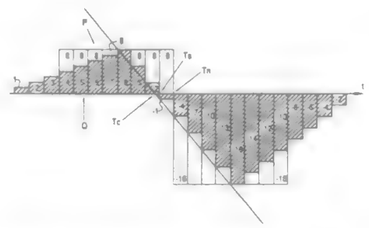
comparing said combined estimated position actuator signal to a command position signal to generate a motor control signal for control of said motor.

5,367,238

BACKLASH ACCELERATION CONTROL METHOD

Keiji Sakamoto, Hachioji, and Yasusuke Iwashita, Oshino, both of Japan, assignors to Fanuc Ltd., Japan

PCT No. PCT/JP92/00666, § 371 Date Jan. 21, 1993, § 102(e) Date Jan. 21, 1993, PCT Pub. No. WO92/21075, PCT Pub. Date Nov. 26, 1992
PCT Filed May 22, 1992, Ser. No. 934,662
Claims priority, application Japan, May 24, 1991, 149614
Int. Cl.[5] G05B *19/407*
U.S. Cl. 318—630 **6 Claims**



1. A backlash acceleration control method for the feed rod of a machine tool driven by a servo motor, which is designed to be effective when a shifting direction of the feed rod is reversed, comprising steps of:

obtaining a feedforward amount through a smoothing processing in which a shift command of a position and speed loop processing period and other shift commands respectively corresponding to several periods arrayed before and after this position and speed loop processing period are averaged;

executing a feedforward control on the basis of said feedforward amount; and

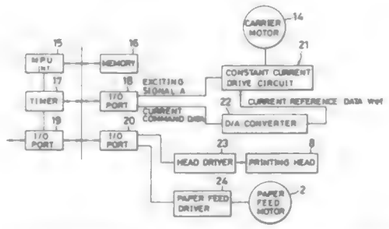
initiating a backlash acceleration correction at a time when said feedforward amount is reversed from positive to negative or vice versa.

5,367,239

PRINTER CARRIER DRIVING METHOD

Tsuyoshi Matsushita; Eiichi Furuya; Narumi Kikuchi; Katsuya Endo, and Yutaka Wada, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 866,367
Claims priority, application Japan, Apr. 12, 1991, 3-79535
Int. Cl.[5] G05B *19/04*
U.S. Cl. 318—685 **7 Claims**



1. A driving method for driving a printer carrier comprising the steps of:

storing current command data designating acceleration, constant speed printing and deceleration of a printer carrier motor for a plurality of speed patterns, each of the plurality of speed patterns designating a different print density;

selecting current command data of one of said plurality of speed patterns to control said printer carrier motor;

latching said current command data of the selected speed pattern in a latch means;

converting the latched current command data of the selected speed pattern into a current reference voltage; and

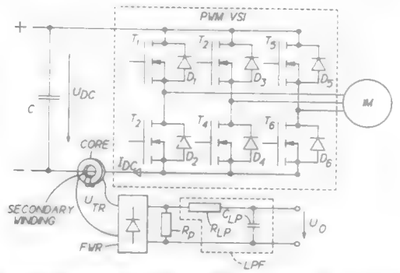
varying an output current of a constant current drive circuit in accordance with the current reference voltage.

5,367,240

LOW COST CURRENT SENSOR FOR FAST-SWITCHING INVERTER APPLICATIONS

Helmut L. Schröder-Brumloop, and Rüdiger Löb, both of of Berlin, Germany, assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 11, 1992, Ser. No. 989,444
Int. Cl.[5] H02P *1/24*
U.S. Cl. 318—727 **2 Claims**



1. A method for sensing the load current in an induction motor controlled by a voltage source inverter, comprising:

providing a DC link current of said voltage source inverter through a primary winding of an AC current transformer for providing a voltage across a secondary winding of said current transformer;

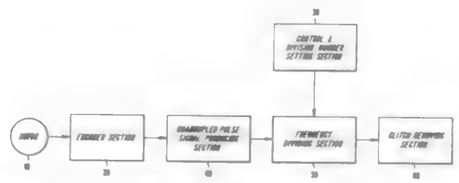
integrating said voltage for providing an envelope of said voltage indicative of a fundamental component of said DC link current and therefore said load current.

5,367,241

ROTATION SPEED DETECTING APPARATUS FOR A MOTOR HAVING AN ENCODER

Jin W. Lee, and Dong I. Kim, both of Seoul, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 7, 1993, Ser. No. 86,826
Claims priority, application Rep. of Korea, Jul. 9, 1992, 92-12188
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—799 **18 Claims**



1. A rotation speed detecting apparatus for a motor comprising:

encoder means attached to said motor, for producing at least two encoder pulse signals out of phase with one another;

means for detecting the speed of said motor, and calculating and producing a division control signal based on the magnitude of said detected speed;

means for producing an up/down pulse signal according to forward and reverse rotation directions of said motor and a quadrupled pulse signal according to state transitions in said at least two encoder pulse signals; and,

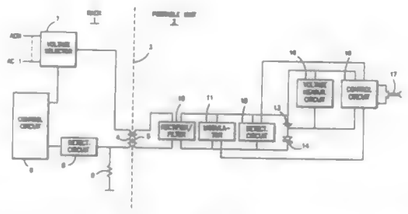
means for counting up or down said quadrupled pulse signal and dividing said quadrupled pulse signal by said division control signal.

5,367,242

SYSTEM FOR CHARGING A RECHARGEABLE BATTERY OF A PORTABLE UNIT IN A RACK

Fredericus W. M. Hulman, Deventer, Netherlands, assignor to Ericsson Radio Systems B.V., Va Emmen, Netherlands

Filed Sep. 18, 1992, Ser. No. 946,581
Claims priority, application Netherlands, Sep. 20, 1991, 9101590
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—2 **17 Claims**



1. In a system including a rack and a portable unit that includes a rechargeable battery, an apparatus for charging the rechargeable battery comprising:

a supply circuit located in the rack and having an input connected to a power source and an output, the supply circuit supplying energy alternatively at least at a normal rate or at a higher than normal rate in response to a control signal;

a detection circuit located in the rack and coupled to the supply circuit for detecting the presence of the portable unit in the rack and generating a signal indicative thereof;

transfer means for communicating messages between the portable unit and the rack;

a rack control circuit coupled to receive the signal from the detection circuit and the messages from the transfer means, and generating the control signal at an output that is connected to a control input of the supply circuit;

a charging circuit located in the portable unit and connected to the rechargeable battery to supply energy thereto during a rechargeable operation; and

transmission circuit in the portable unit and connected to the rechargeable battery and to the transfer means for transmitting a message to the rack control circuit indicative of the presence of the portable unit in the rack;

wherein said transfer means, connected to the supply circuit in the rack and to the charging circuit in the portable unit, conveys energy from the supply circuit to charging circuit, comprising a first coil located in the rack and coupled to receive energy from the supply circuit, and a second coil located in the portable unit and coupled to convey energy to the charging circuit, the first and second coils forming an inductive coupling after placement of the portable unit in the rack;

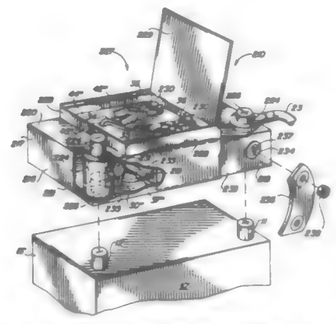
wherein, if the rack control circuit does not receive said message from the portable unit after receiving the signal indicative of the presence of the portable unit in the rack, the rack control circuit generates the control signal which causes the supply circuit to supply energy at the higher than normal rate.

5,367,243

JUMPER CABLE ATTACHMENT FOR BATTERY

Mickey D. Wells, 8220 Breeze Cove La., Orlando, Fla. 32819, and Mark E. McDonough, 1750 Thunderbird Trail, Maitland, Fla. 32751

Continuation-in-part of Ser. No. 815,248, Dec. 31, 1991, Pat. No. 5,214,368. This application May 25, 1993, Ser. No. 66,963
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—2 11 Claims



1. An add-on jumper cable attachment for a battery of a vehicle having a casing with positive and negative terminal posts projecting outwardly from said casing for establishing respective electrical communication with corresponding positive and negative sides of an electrical system of said vehicle, said attachment comprising:

a container defining a chamber and including positive and negative terminal displacement posts;

positive and negative jumper cables having first and second ends;

means connecting said cable first ends respectively to said terminal displacement posts;

clamping means, respectively connected to said cable second ends, for establishing contact with corresponding terminal posts of a remote battery of another vehicle; and

means for automatically retracting said cables from extended positions drawn out of said chamber to storage positions retrieved into said chamber;

said terminal displacement posts having first ends dimensioned and configured for respectively fitting over and establishing electrical connection with said positive and negative battery terminal posts when said container is brought into abutment with said casing, and second ends electrically connected to said terminal displacement post first ends and dimensioned and configured for respectively simulating said positive and negative battery terminal posts when said terminal displacement post first ends are fitted over said positive and negative battery terminal posts, for establishing said electrical communication of said positive and negative battery terminal posts with said electrical system sides through said terminal displacement posts.

5,367,244

BATTERY CHARGING METHOD WITH STEPPED CURRENT PROFILE AND ASSOCIATED CHARGER

Stephen D. Rose, Irvine; Joseph A. Cates, Lexington, both of Ky., and Jeffrey A. Rose, La Jolla, Calif., assignors to Premier Engineered Products, Inc., Winchester, Ky.

Filed Jan. 19, 1993, Ser. No. 5,632
Int. Cl.[5] H02J 7/04
U.S. Cl. 320—23 19 Claims

1. A method of charging a battery utilizing a variable charge current supply comprising the steps of:

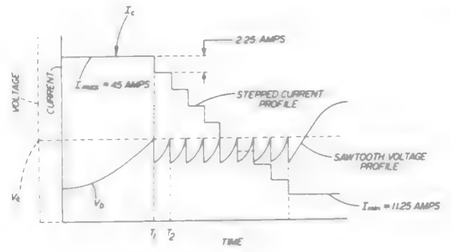
applying a charging current to the battery from said charge current supply;

sensing battery voltage;

reducing said charging current when said battery voltage equals a target voltage such that said reduction in said charging current causes a decrease in said battery voltage;

maintaining said battery voltage not greater than said target voltage during said applying and reducing steps,

repeating said applying and reducing steps to provide a



stepped current profile until said charging current is reduced to a minimum value;

applying said charging current at said minimum value after said reduction until the battery is at substantially full charge; and

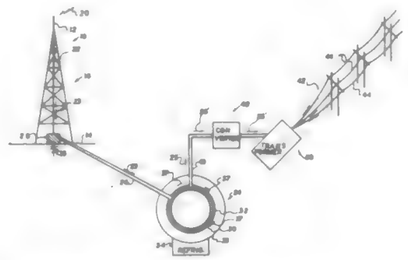
detecting said substantially full charge of the battery, and in response terminating application of said minimum value charging current.

5,367,245

ASSEMBLY FOR THE INDUCTION OF LIGHTNING INTO A SUPERCONDUCTING MAGNETIC ENERGY STORAGE SYSTEM

Goren Mims, 19790 SW. 101 Ct., Miami, Fla. 33157

Filed Dec. 7, 1992, Ser. No. 985,649
Int. Cl.[5] H02J 15/00
U.S. Cl. 322—212 14 Claims



1. An assembly designed for collection and storage of electrical energy, said assembly comprising:

a) a collection assembly structured and disposed to attract lightning and transfer electrical current therefrom,

b) a storage assembly formed of a superconductive material and structured and disposed to store said electrical current therein,

c) a power take-off means structured and disposed to distribute said electrical current for use,

d) a first conductive path interconnected between said collection assembly and said storage assembly and defining a path of electrical current flow and structured and disposed to transfer said electrical current from said collection assembly to said storage assembly,

e) a second conductive path interconnected between said storage assembly and said power take-off means and defining a path of electrical current flow and structured and disposed to transfer said electrical current from said storage assembly to said power take-off means, and

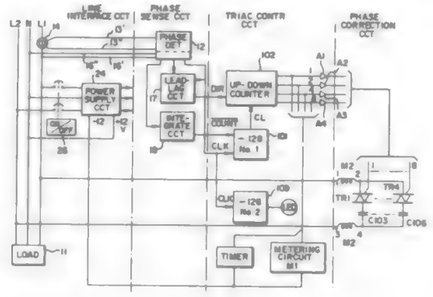
f) said first and second conductive path each defining a flow path of said electrical current and each formed of a superconductive material.

5,367,246

ELECTRONIC ENERGY SAVING DEVICE

Hans J. Kaiser, 2200 NW. 32nd St., Suite 400, Pompano Beach, Fla. 33069

Filed Feb. 12, 1993, Ser. No. 16,891
Int. Cl.[5] G05F 5/02
U.S. Cl. 323—212 16 Claims



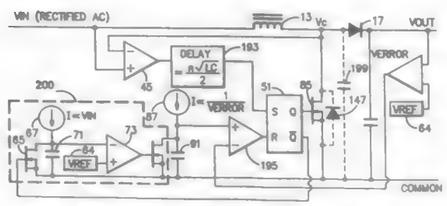
1. An automatic power factor correcting device for correcting the power factor of a load connected to a power line having a plurality of conductors including a neutral conductor, comprising a power line interface circuit for interfacing the device with the power line, a phase sensing circuit connected via said interface circuit to at least two of said conductors for sensing a phase shift between voltage and current in said two conductors, a phase correction circuit including a plurality of weighted capacitors, and capacitor connecting means having a control input connected to said phase sensing circuit for connecting at least one of said weighted capacitors to said power line for correcting the phase shift on said two conductors.

5,367,247

CRITICALLY CONTINUOUS BOOST CONVERTER

William S. Blocher, Tucson, Ariz.; Bruce M. Cassidy, Boca Raton, Fla.; James O. Groves, Jr., Endicott, N.Y.; Randhir S. Malik, Lexington, Ky., and Stephen F. Newton, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1992, Ser. No. 927,590
Int. Cl.[5] G05F 1/613
U.S. Cl. 323—222 9 Claims



1. A boost converter operating in a critically continuous mode having an input connectable to voltage source, comprising:

an inductor;

a power switch in series with said inductor, the series combination connectable to the voltage source for receiving power therefrom;

a rectifier means connected between a load and the junction of said inductor and said power switch, said rectifier means poled to conduct power to said load when said power switch is not conducting; and

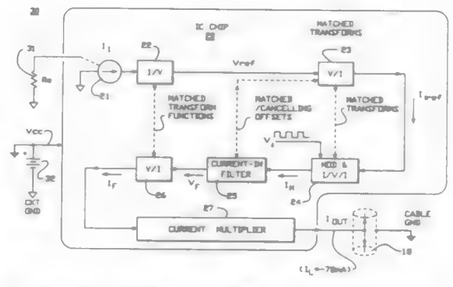
means for terminating the off time of said power switch including means for monitoring the voltage across the inductor, means responsive to the monitored voltage for determining when said inductor voltage falls to zero, and delay means responsive to said inductor voltage falling to zero for introducing a delay sufficient to minimize the power switch turn on switching losses.

5,367,248

METHOD AND APPARATUS FOR PRECISE MODULATION OF A REFERENCE CURRENT

San L. Lin, San Jose, Calif., assignor to Winbond Electronics North America Corporation, San Jose, Calif.

Filed Oct. 13, 1992, Ser. No. 960,514
Int. Cl.[5] G05F 3/20; H03K 3/01
U.S. Cl. 323—312 35 Claims



1. A current generating apparatus comprising:

(a) a reference current source for generating a first reference current where the reference current source defines part of an upstream portion of the current generating apparatus;

(b) a first current-to-voltage (I/V) converter for converting the first reference current into a reference voltage;

(c) a first voltage-to-current (V/I) converter for converting the reference voltage into a second reference current;

(d) a voltage-operated switch for modulating the second reference current to produce therefrom a modulated current signal;

(e) a current-driven filter which receives the modulated current signal and produces therefrom a filtered voltage signal where the current-driven filter defines part of a downstream portion of the current generating apparatus;

(f) a second voltage-to-current (V/I) converter for converting the filtered output voltage signal of the filter into a filtered current and

(g) a current multiplier for multiplying the magnitude of the filtered current output by the V/I converter to thereby produce an output current.

5,367,249

CIRCUIT INCLUDING BANDGAP REFERENCE

Edward H. Honnigford, Russiaville, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 21, 1993, Ser. No. 48,847
Int. Cl.[5] G05F 3/16, 3/20
U.S. Cl. 323—313 4 Claims

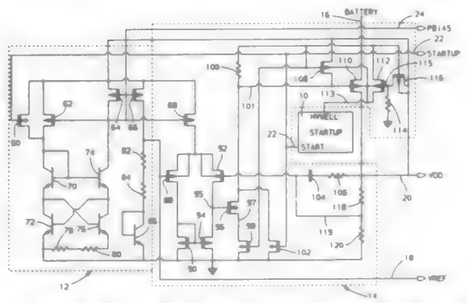
4. An apparatus comprising:

a bandgap reference voltage circuit means for generating a bandgap reference voltage based upon an input of regulated voltage, wherein the bandgap reference voltage circuit means requires an input of startup current when the

regulated voltage is below a predetermined startup level to insure stable operation;

a voltage regulator circuit means for generating the regulated voltage on a regulator output line based upon the bandgap reference voltage and a supply voltage on a power supply line, wherein the regulated voltage increases to a desired regulated voltage level during a startup period when the supply voltage is initially applied to the supply line;

a startup circuit means coupled to the supply line and the voltage regulator circuit means for sensing the regulated voltage and for generating a startup signal from the supply



voltage during the startup period when the regulated voltage is below the predetermined startup level;

a current supply means responsive to the startup signal for inputting startup current to the bandgap reference voltage circuit means when the regulated voltage is below the predetermined startup level; and

wherein, the voltage regulator circuit means further includes a regulator control means responsive to the startup signal for generating the regulated voltage directly from the supply voltage by switchably connecting the supply line to the regulator output line during the startup period while the regulated voltage increases to the predetermined startup level.

5,367,250

ELECTRICAL TESTER WITH ELECTRICAL ENERGIZABLE TEST PROBE

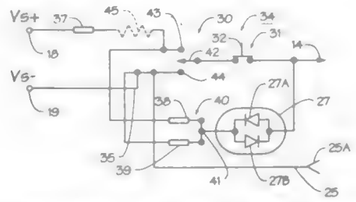
Jeffery E. Whisenand, Pilotystrasse 77, 8500 Nuernberg 10, Germany

Filed Dec. 22, 1992, Ser. No. 994,723

Claims priority, application Germany, Jun. 11, 1992, 4219079

Int. Cl.[5] G01R *31/02, 19/16*

U.S. Cl. 324—133 **16 Claims**



1. An instrument for performing electrical tests comprising;

a. a first power input terminal adapted for connection to the first polarity output terminal of a dc power source,

b. a second power input terminal adapted for connection to a second output terminal of said dc power source, said second output terminal being of opposite polarity to said first terminal,

c. a voltage divider having first input terminal connected to said first power input terminal, a second input terminal connected to said second power input terminal, and an output terminal,

d. a first voltage responsive indicator device responsive to a voltage applied thereto, said indicator device having a first input terminal connected to said output terminal of said voltage divider, and a second input terminal,

e. a second voltage responsive indicator device having a first input terminal connected to said output terminal of said voltage divider, and a second input terminal,

f. a conductive probe conductively coupled to said second input terminals of said first and second indicator devices, whereby contacting said probe with an electrical potential different by at least a first threshold voltage from the voltage at the output terminal of said voltage divider causes said first indicator device to provide a first sensible indication, and said second indicator device to provide a second sensible indication when said probe is in electrically conductive contact with an electrical potential different from said output voltage of said voltage divider by at least a second threshold voltage, and

g. a switch having a transfer contact connected to said probe, a first normally open contact connected to said first power input terminal, and a second normally open contact connected to said second power input terminal, whereby actuating said switch to a first active position causes said probe to be conductively coupled to said first power input terminal, and actuating said switch to a second active position causes said probe to be conductively coupled to said second power input terminal.

5,367,251

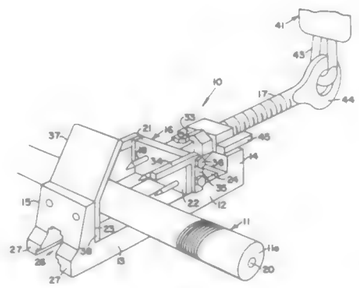
TOOL FOR GRASPING AND PIERCING INSULATED ELECTRICAL CABLE FOR DETERMINING WHETHER CONDUCTOR OF CABLE IS ENERGIZED

James F. McTigue, 10 Brookhill Dr., W. Nyack, N.Y. 10994

Filed Jan. 19, 1993, Ser. No. 5,828

Int. Cl.[5] G01R *19/145;* **H01R** *4/24, 13/621*

U.S. Cl. 324—133 **9 Claims**



1. A tool for grasping and piercing insulated electrical power cable to determine whether or not a conductor of the cable is energized, comprising:

a clamp body having a fixed lower clamp leg and a fixed upper clamp leg spaced and separated from said lower clamp leg by a distance sufficient for the reception of a cable between said legs, a platform mounted for vertical movement between said upper and lower clamp legs, said lower clamp leg having a flat upper surface for supporting a cable during piercing and said platform having a flat lower face in parallel, spaced opposed relationship to said flat upper surface of the lower clamp leg, said platform being mounted on screw means extending through said upper clamp leg for moving the platform, at least two pointed pins carried by the platform, said pins being spaced apart in a direction transverse to the conductor by a distance smaller than the diameter of the conductor of a cable to be pierced, and a pair of arms mounted on and extending downward from opposite sides of the platform for movement therewith to trap a cable between the platform and the flat upper surface of the lower clamp leg.

5,367,252

TEST FIXTURE FOR ELECTRONIC CIRCUIT BOARDS

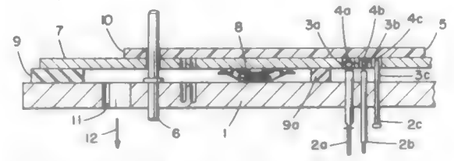
Ulf Peisker, Jettingen, and Wilhelm Braunwald, Gaeufelden, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 5, 1992, Ser. No. 971,939

Claims priority, application Germany, May 7, 1992, 9206126[U]

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158.1 **19 Claims**



10. A test fixture for electronic circuit boards, comprising:

a contact carrier plate having a plurality of upwardly extending contact pins;

a pressure plate running essentially parallel to and separated by a space from the contact carrier plate and movable towards the contact carrier plate, said pressure plate being provided with holes for receiving the upwardly extending contact pins, said pressure plate for receiving in face to face engagement a said electronic circuit board and having an upper surface including a depression holding an upwardly extending air barrier sealing means, said sealing means compressible so as to not extend above said upper surface by a contacting electronic circuit board; and

a connection for a vacuum source to apply a vacuum to the space between the contact carrier plate and the pressure plate, whereby application of said vacuum to said connection causes said pressure plate and an electronic circuit board resident thereon to be drawn towards said contact carrier plate to enable said upwardly extending contact pins to make contact with an underside surface of said circuit board, said holes in said pressure plate enabling said vacuum to hold said circuit board flat on said pressure plate thereby fully compressing said sealing means into said depression.

5,367,253

CLAMPED CARRIER FOR TESTING OF SEMICONDUCTOR DIES

Alan G. Wood; David R. Hembree, both of Boise, and Warren M. Farnworth, Nampa, all of Id., assignors to Micron Semiconductor, Inc., Boise, Id.

Continuation-in-part of Ser. No. 973,931, Nov. 10, 1992, Pat. No. 5,302,891, which is a continuation of Ser. No. 709,858, Jun. 4, 1991. This application Apr. 14, 1993, Ser. No. 46,675

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158.1 **45 Claims**

1. A method for testing bare semiconductor die, comprising:

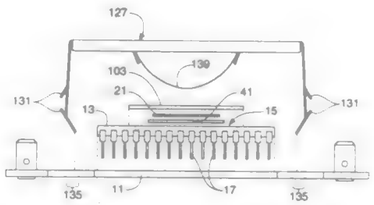
a) providing a carrier tray, said tray having at least one housing location therein, and having a property of remaining substantially intact from −55° C. to 175° C.;

b) providing at least one die receiving housing on said tray, each of said die receiving housing comprising a die receiving cavity, an electrical termination, and conductive traces, said traces forming an electrical pathway between said cavity and said electrical termination;

c) providing a bare semiconductor die in said housing as a device under test;

d) providing a lid portion to cooperate with each of said die receiving housings, wherein said lid portion and said die receiving housing form first and second opposing members;

e) providing a clamping member and using the clamping member to clamp the lid portion to the die receiving



housings, the clamping member engaging said carrier tray to secure the lid portion against the die receiving housing and further securing the die within said die receiving housing in electrical communication with said conductive traces;

f) performing burn-in and characterization tests on the die while the lid portion is secured against the die receiving housing; and

g) removing the die from the die receiving housing.

5,367,254

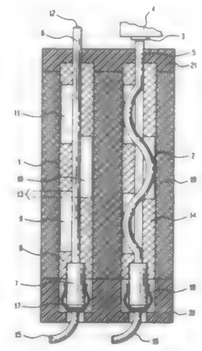
TEST PROBE ASSEMBLY USING BUCKLING WIRE PROBES WITHIN TUBES HAVING OPPOSED OVERLAPPING SLOTS

Louis H. Faure, Poughkeepsie, and Terence W. Spoor, Marlboro, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1993, Ser. No. 11,556

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—761 **4 Claims**



2. A test probe assembly comprising:

a multiplicity of integral test probe units, wherein each integral test probe unit comprises a conductive wire and a tube, said wire having a first end and a second end, said wire undergoing buckling beam displacement when subjected to axially opposing forces, said tube having an inner diameter for slidably receiving said wire, the first end of said wire extending beyond said tube and the second end of said wire being fixed to said tube, said tube further having slots, said slots being at a plurality of locations along the longitudinal axis thereof to provide spaces for the buckling beam displacement of said wire when pres-

sure is applied axially to said first end of said wire relative to said tube, said slots further being staggered so that adjacent ones are disposed radially opposite to each other with an amount of overlap along the longitudinal axis of said tube; and

an electrical insulating block, said block having a removable end portion and being apertured to receive said multiplicity of integral test probe units, said units being inserted in the apertures of said block so that respective first ends of respective wires of said units extend beyond said block through said removable end portion thereof,

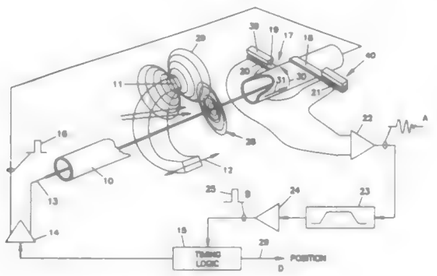
said removable end portion of said block being apertured to allow only respective wires of said units to pass through but not respective tubes of said units.

5,367,255

MAGNETOSTRICTIVE POSITION TRANSDUCER WITH BAND PASSED MODE CONVERTER OUTPUT FOR REJECTING MECHANICAL NOISE

David S. Nyce, 2633 Whistling Quail Run, Apex, N.C. 27502; Wade D. Peterson, 2422H Gazebo Dr., Morrisville, N.C. 27560, and Theophile R. Lerebours, 200 Howland Ave., Cary, N.C. 27513

Filed Dec. 2, 1991, Ser. No. 800,974
Int. Cl.[5] G01B *7/14*
U.S. Cl. 324—207.13 **6 Claims**



1. A magnetostrictive transducer comprising:

a magnetostrictive waveguide forming a measurement gauge;

excitation means coupled for said waveguide for generating a magnetic field surrounding said waveguide forming a broad band excitation pulse;

position magnet means located near said waveguide and mounted for motion with respect to said waveguide, for generating an acoustic pulse in said waveguide at the location of said position magnet means, as a reaction to the magnetic field surrounding said waveguide;

mode converter means coupled to said waveguide for producing a mode converter output signal in response to the passage of said acoustic pulse past the location of said mode convertor means;

passband filter means coupled to said mode converter means for filtering said mode converter output signal and for rejecting mechanical noise present on said waveguide, and for producing a passband filter output indicative of the detection of said acoustic pulse;

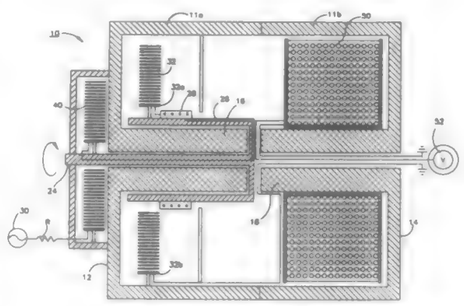
timer means coupled to said excitation means and to said passband filter means for measuring the time between generation of said excitation pulses and the reception of acoustic pulses, for producing an indication of the location of said position magnet means along said waveguide.

5,367,256

MULTI-TURN POSITION SENSOR HAVING VARIABLE COUPLING TRANSFORMER

Stephen R. W. Cooper, Tustin, and Mark R. Wheeler, Caditlor, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Nov. 12, 1992, Ser. No. 974,453
Int. Cl.[5] G01B *7/14;* **H01F** *21/02*
U.S. Cl. 324—207.17 **10 Claims**



1. An inductive sensing apparatus for sensing a rotational position of a shaft comprising:

a) an elongated transformer core means;

b) a sensor coil wound about a first segment of the transformer core means;

c) transmission means coupled to the shaft for rotation with the shaft, the transmission means surrounding a second segment of the transformer core means, the first and second segments of the transformer core means being spaced apart along the transformer core means;

d) a spiral conductor including an inner and outer end and having a configuration including a plurality of turns, the inner end of the conductor electrically coupled to the transmission means, the outer end of the conductor held in a stationary position so that as the shaft rotates back and forth about an axis of rotation the spiral conductor is wound more or less tightly thereby changing the configuration of the spiral conductor;

e) electrical conduction means connected to said outer end of the spiral conductor for maintaining the outer end of said spiral conductor at a fixed electrical potential;

f) means for applying an alternating current voltage to said spiral conductor thereby magnetically inducing a voltage in the sensor coil, the voltage induced in the sensor coil being dependent upon the configuration of the spiral conductor; and

g) output means connected to said sensor coil for monitoring induced voltage in the sensor coil and correlating said induced voltage with the rotational position of the shaft.

5,367,257

NON-CONTACT, MAGNETIC SENSOR FOR DETERMINING DIRECTION OF MOTION AND VELOCITY OF A MOVABLE MEMBER

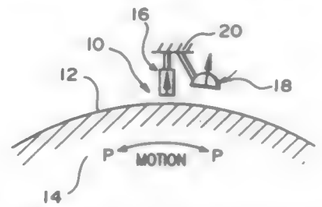
Ivan J. Garshelis, 176 S. Mountain Rd., Pittsfield, Mass. 01201

Filed May 14, 1992, Ser. No. 883,339
Int. Cl.[5] G01B *7/14;* **G01P** *3/42, 13/00*
U.S. Cl. 324—207.22 **21 Claims**

1. A motion sensor for detecting the direction of ongoing motion, last occurring motion and/or velocity along a predetermined line of travel of a smooth, uninterrupted, generally flat or gently curved, ferromagnetic, conductive or ferromagnetic and conductive target surface of a movable member comprising:

permanent magnet means providing a magnetic field presenting a constant polarity to said target surface, the magnetic field of said permanent magnet creating, upon movement of said target surface relative to said permanent magnet means along said line of travel, asymmetric magnetic fields from and along said target surface on either side of and close being axis of the permanent magnet means magnetic moment, said fields being unequal in strength in a way which is dependent upon the relative direction of motion of the target surface;

at least one active field sensor means for sensing the magnetic field intensity at a position along the line of travel, whereby the asymmetry of total magnetic fields on either



side of said axis can be sensed and the direction of ongoing motion, direction of last occurring motion and/or velocity determined therefrom; and

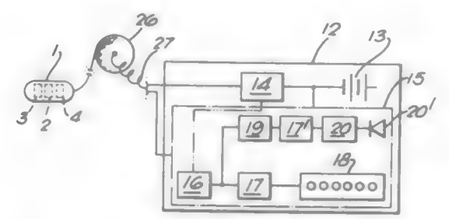
means for mounting said permanent magnet means with the axis of its magnetic moment oriented substantially normal to the target surface along the line of travel and for mounting said permanent magnet means and said at least one active field sensor means along said line of travel in fixed spatial relationship to said target surface and to each other, the distance between said axis and said at least one active field sensor means being less than the uninterrupted distance along the line of travel of said target surface.

5,367,258

JOINT OR DISCONTINUITY DETECTOR FOR USE WITH PIPES AND THE LIKE

Frank V. Philpot, Rowlands Castle, United Kingdom, assignor to British Gas plc, London, United Kingdom

Continuation of Ser. No. 573,311, Oct. 5, 1990, Pat. No. 5,302,895. This application Mar. 31, 1992, Ser. No. 861,121
Claims priority, application United Kingdom, Mar. 26, 1988, 8807301
Int. Cl.[5] G01N *27/82, 27/72*
U.S. Cl. 324—220 **17 Claims**



1. A detector for detecting discontinuities from inside a medium to be researched, the detector comprising:

DC pulse generating means for generating switched DC pulses,

a sonde being disposed inside the medium, having

a transmitting coil responsive to each switched DC pulse, for providing a discrete magnetic field which is retained in the medium adjacent with the transmitting coil, and

a pair of receiving coils spacedly arranged on respective opposite sides of the transmitting coil, each subsequently responsive to the discrete magnetic field retained in the medium upon termination of each switched DC pulse, for providing an induced voltage signal if the magnetic coupling from the medium to one of the receiving coils differs from the magnetic coupling from the medium to the other receiving coil due to a discontinuity in the medium, and

induced voltage sampling means for measuring subsequent to each switched DC pulse a respective induced voltage signal from the pair of receiving coils, and for generating a corresponding sampled voltage signal representative of the magnitude of the voltage of the respective induced voltage signal; and

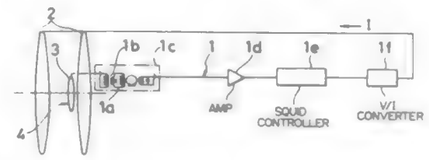
discontinuity indication means responsive to the corresponding sample voltage signal, for indicating when a discontinuity in the medium has been detected.

5,367,259

ACTIVE SHIELDING DEVICE BASED ON SQUID AND FEEDBACK THEREFROM FOR THE REDUCTION OF ENVIRONMENTAL MAGNETIC NOISE

Kazutake Matsumoto; Atsushi Wakasawa, and Koji Fujioka, all of Tsukuba, Japan, assignors to Hoxan Corporation, Sapporo, Japan

Filed May 12, 1992, Ser. No. 881,795
Claims priority, application Japan, May 13, 1991, 3-137175
Int. Cl.[5] G01R *33/035*
U.S. Cl. 324—248 **4 Claims**



1. A magnetic noise reducing device comprising an appropriate number of noise canceling coils and corresponding matching SQUID flux meters each having a magnetic flux detecting coil arranged within a specific space defined between the corresponding noise canceling coils, the output of each of said SQUID flux meters being supplied to said corresponding noise canceling coils as a feedback current to thereby isolate each of the magnetic flux detecting coils from the effects of any external magnetic noise.

5,367,260

APPARATUS TO OBTAIN FLOW RATES (MELT INDEX) IN PLASTICS VIA FIXED FREQUENCY, PULSED NMR

Ronald L. Dechene, Boxford, Mass.; Thomas B. Smith, Atkinson, N.H.; Scott A. Marino, Haverhill, Mass.; Ronald J. Tache, Malden, Mass., and Ajoy K. Roy, Danvers, Mass., assignors to Auburn International, Inc., Danvers, Mass.

Filed Oct. 15, 1992, Ser. No. 961,264
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—307 **14 Claims**

1. In a nuclear magnetic resonance system for measuring flow rates in plastics comprising:

(a1) means for accessing and then (a2) removing successive samples of plastic material from an industrial process and then (a3) placing them in a sample measuring region,

(b) means for applying a base magnetic field to said region to effect precession of nuclei of the samples of material therein,

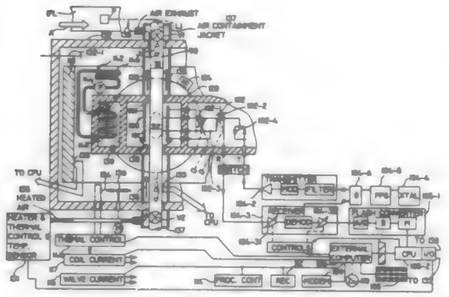
(c) means for applying a local excitation pulse of energy to said region to modify the precession,

(d) said means (c) including transmit-receive antenna coil means and means for translating a received relaxation signal detected at the coil means in the form of a free induction decay, said relaxation signal being based on free induction decay of the sample material nuclei,

(e) means for digitizing the free induction decay and analyzing the free induction decay into component equations,

(f) means for further analyzing the component equations

comprising means utilizing an iteration technique for converting said digitized version of said free induction decay into the component equations of said decay and establishing said zero intercepts and time parameters of said equations corresponding to flow rates in plastics, by forming a calibration relationship between the component equation parameters and known flow rates of known



plastics, including MI and FRR for polyethylene and MF for polypropylene,

means to input a sample temperature set point,

means, responsive to said set point, to maintain said sample temperature at about said set point throughout said sampling and nuclear magnetic resonance measuring, and

then discarding the samples from said region.

5,367,261

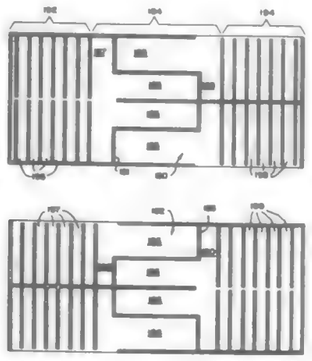
SHIELD FOR A MAGNETIC RESONANCE IMAGING COIL

Perry S. Frederick, Waukesha, Wis., assignor to General Electric Company, Milwaukee, Wis.

Continuation of Ser. No. 907,891, Jul. 2, 1992, abandoned. This application Feb. 14, 1994, Ser. No. 194,798

Int. Cl.[5] G01R *33/28*

U.S. Cl. 324—318 **15 Claims**



1. A shield for a radio frequency NMR coil comprising:

a tube made of dielectric material and having an inner curved surface and an outer curved surface;

a first layer of electrically conductive material on the inner curved surface of said tube, and having a first and second conductive patterns that are noncontiguous with each other, wherein:

the first conductive pattern forms a first ring extending around said tube with the first ring having first and second opposite sides, a first plurality of bars extending from the first side of and contiguous with the first ring, and

the second conductive pattern forms a second ring extending around said tube with the second ring having first and second opposite sides, and a second plurality of bars extending from the first side of and contiguous with the second ring wherein bars of the second plurality of bars extend in-between bars in the first plurality of bars; and

a second layer of electrically conductive material on the outer curved surface of said tube, and having third and fourth conductive patterns that are noncontiguous with each other, wherein:

the third conductive pattern forms a third ring extending around said tube with the third ring having first and second opposite sides, a third plurality of bars extending from the first side of and contiguous with the third ring, and

the fourth conductive pattern forms a fourth ring extending around said tube with the fourth ring having first and second opposite sides, and a fourth plurality of bars extending from the first side of and contiguous with the fourth ring, wherein bars of the fourth plurality of bars extend in-between bars in the third plurality of bars.

5,367,262

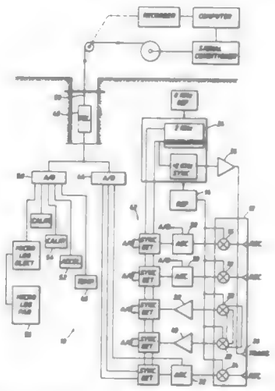
ADVANCES IN HIGH FREQUENCY DIELECTRIC LOGGING

Michael J. Manning, Houston, Tex., assignor to Halliburton Logging Serivces, Inc., Houston, Tex.

Continuation of Ser. No. 729,293, Jul. 12, 1991, abandoned. This application Feb. 14, 1994, Ser. No. 194,811

Int. Cl.[5] G01V *3/30, 3/38*

U.S. Cl. 324—341 **8 Claims**



1. A method of forming a quality curve useful in evaluating high frequency dielectric well logging measurements wherein the method comprises the steps of propagating a high frequency electromagnetic signal through an earth formation adjacent a well borehole using at least one transducer and making measurements relating to the high frequency signal propagated through the formation; determining the formation's complex propagation constant, said constant having a resistivity component and a dielectric constant component; determining the formation's complex apparent water filled porosity as a function of said resistivity and dielectric constant components, said complex apparent water filled porosity having a real component and an imaginary component; and providing a quality indicator corresponding to the imaginary component of said complex water filled porosity.

5,367,263

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND TEST METHOD THEREFOR

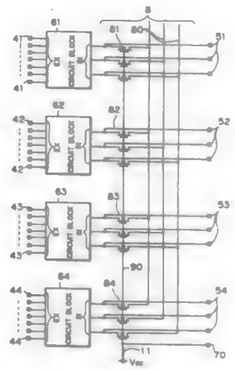
Kiyotoshi Ueda, and Kazuhiro Nishimura, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1992, Ser. No. 997,920

Claims priority, application Japan, Jan. 23, 1992, 4-009860

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—537 **3 Claims**



1. A test method for testing a semiconductor integrated circuit device which includes n circuit blocks having internal and external signal input/output means, n being an integer greater than or equal to 2, n electrodes for transmission of an external signal, each of said n electrodes being respectively connected to said external signal input/output means of said n circuit blocks, internal wiring lines for transmission of an internal signal between said n circuit blocks, n switching means disposed in correspondence to said n circuit blocks between said internal signal input/output means of said n circuit blocks and said internal wiring lines, each of said n switching means turing on and off in accordance with a control signal supplied thereto, and n electrodes for transmission of an internal signal, each of said n electrodes being respectively connected to said internal signal input/output means of said n circuit blocks, said test method comprising the steps of:

turning off at least one of said n switching means in accordance with said control signal; and

supplying a predetermined test signal to one of said n electrodes for transmission of said internal signal and to one of said n electrodes for transmission of said external signal of one of said n circuit blocks which corresponds to said at least one of said n switching means, and obtaining an output signal at said one of said n electrodes for transmission of said internal signal and at said one of said n electrodes for transmission of said external signal of said one of said n circuit blocks.

5,367,264

MEASURING INSTRUMENT AND METHOD FOR DETERMINING THE ALCOHOL CONTENT OF A MIXTURE

Ludwig Brabetz, Tournefeuille, France, assignor to Siemens AG, Munich, Germany

Filed May 12, 1993, Ser. No. 61,177

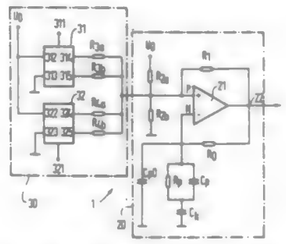
Claims priority, application European Pat. Off., Nov. 16, 1990, 90121970.9

Int. Cl.[5] G01R *27/26, 27/22;* **G01N** *27/10, 27/22*

U.S. Cl. 324—674 **10 Claims**

1. A measuring instrument for determining the alcohol content of a mixture, comprising;

a measuring configuration through which a mixture flows, said measuring configuration including a casing with a wall, part of said wall forming a first electrode, and a sensor element around which the mixture flows, said sensor element forming a second electrode, said first and second electrodes forming a capacitor and the mixture flowing between said first and second electrodes forming a dielectric of said capacitor, said capacitor having a capacitance and the dielectric having a conductance, and wherein an alcohol content of the mixture is to be determined from a dielectric constant of the mixture determined from the capacitance and from the conductance;



a measuring circuit having an oscillator with a first input connected to said measuring configuration and a second input;

a control circuit connected to said second input for generating a given number of control voltages and transmitting the control voltages to said second input of said oscillator; and

means for measuring an oscillator frequency for each of the control voltages.

5,367,265

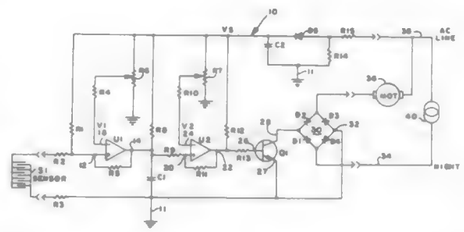
MOISTURE-SENSING CONTROLLER FOR A CLOTHES DRYER

Marvin F. Gaudette, Rockton, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 12, 1993, Ser. No. 45,155

Int. Cl.[5] G08B *13/18*

U.S. Cl. 328—1 **5 Claims**



1. A moisture-sensing control circuit for a clothes dryer in which clothes are dried by tumbling, comprising:

sensor means for sensing the electrical resistance of said clothes when the clothes contact said sensor means, and for providing a wetness signal accordingly;

first comparator means, including means for providing a fixed predetermined wetness threshold, said first comparator means being for comparing (a) said wetness signal with (b) said fixed predetermined wetness threshold, and outputting a first output signal according to whether (a) or (b) is greater;

capacitor means connected to receive said first output signal, and including a capacitor connected for discharging when said first output signal indicates clothes wetness greater than said wetness threshold, and for charging gradually

when said first output signal indicates wetness less than said wetness threshold;

second comparator means, including means for providing a capacitor-charge threshold, said second comparator means being for comparing (c) the charge of said capacitor means with (d) said capacitor-charge threshold, and outputting a second output signal according to whether (c) or (d) is greater.

5,367,266

FREQUENCY DISCRIMINATOR OF HORIZONTAL SYNCHRONIZING SIGNAL FOR MULTI-MODE MONITOR

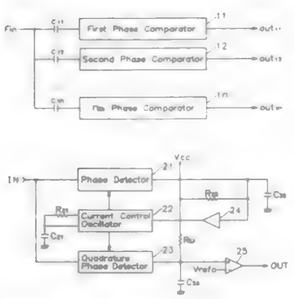
Keehyun Kang, Pusan, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Hwasung-kun, Rep. of Korea

Filed Dec. 15, 1992, Ser. No. 991,862

Claims priority, application Rep. of Korea, Jun. 15, 1992, 92-10651[U]

Int. Cl.[5] H03L *7/00*; H03K *9/06*

U.S. Cl. 327—47 **4 Claims**



1. A frequency discriminator of a horizontal synchronizing signal for a multi-mode monitor comprising:

a plurality of filter capacitors connected to horizontal synchronizing signal lines for rejecting noises of a direct current component of the horizontal synchronizing signal; and

a plurality of phase comparator means each connected to a respective filter capacitor for comparing local oscillating frequencies set differently according to each mode with the horizontal synchronizing signal inputted to a specific phase comparator means.

5,367,267

BROADBAND AMPLIFIER HAVING INDIVIDUAL INPUT CIRCUITS WITH PLURALITIES OF CAPACITORS AND RESISTORS

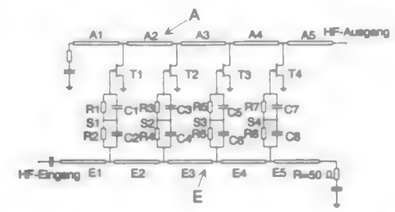
Hans-Peter Fuchs, Kirchheim, Germany, assignor to Rohde & Schwarz GmbH & Co., KG, Munich, Germany

Filed Apr. 7, 1993, Ser. No. 43,811

Claims priority, application Germany, Apr. 23, 1992, 4213357

Int. Cl.[5] H03F *3/60*

U.S. Cl. 330—54 **7 Claims**



1. A broadband amplifier having an upper limit frequency of several GHz, comprising: a plurality of transistors connected in parallel and having control terminals connected via an input circuitry to line sections of an input line, said input circuitry having a plurality of individual input circuits, and said plurality of transistors having outputs connected to line sections of an output line; each individual input circuit being composed of a plurality of capacitors operatively connected in parallel with a plurality of resistors that form a plurality of interconnected resistor-capacitor circuits.

5,367,268

TRANSMISSION SIGNAL OUTPUT CONTROL CIRCUIT

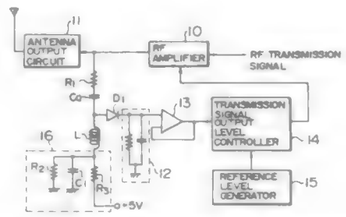
Yoshihiko Baba, Ichikawa, Japan, assignor to Uniden Corporation, Ichikawa, Japan

Filed Mar. 9, 1993, Ser. No. 28,191

Claims priority, application Japan, Dec. 7, 1992, 4-351205

Int. Cl.[5] A03G *3/20*

U.S. Cl. 330—129 **9 Claims**



1. A transmission signal output control circuit comprising:

an antenna output circuit;

an RF amplifier for amplifying an RF transmission signal, said RF transmission signal amplified by the RF amplifier being supplied to the antenna output circuit;

a first impedance circuit coupled to an output side of said RF amplifier,

a detector coupled to the first impedance circuit for detecting a transmission signal output level of said RF amplifier through said first impedance circuit, said detector having electrostatic capacitance inherent therein;

a reference signal generator for generating a reference signal;

a transmission signal output level controller coupled to said detector and said reference signal generator for comparing an output signal from said detector with the reference signal from said reference signal generator to generate a control signal, said control signal being supplied to said RF amplifier to control an amplification degree of said RF amplifier to a level corresponding to a level of said reference signal;

a second impedance circuit coupled to said detector and having an inductance, and

a DC bias supply coupled to said second impedance circuit for supplying a DC bias to said detector through said second impedance circuit;

said electrostatic capacitance of said detector and said inductance of said second impedance circuit forming a parallel resonant circuit and being selected such that resonance of the parallel resonant circuit occurs in response to a frequency of said RF transmission signal, and said impedance of the parallel resonant circuit being considerably larger than that of said first impedance circuit with respect to said RF transmission signal.

5,367,269

SYSTEM FOR PRODUCING AN OSCILLATING JAMMING SIGNAL UTILIZING A PHASE-LOCKED LOOP

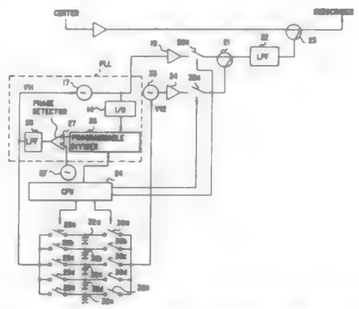
Masatoshi Yanagidaira, and Takashi Hashimoto, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 788,679, Nov. 6, 1991, Pat. No. 5,228,082. This application Apr. 20, 1993, Ser. No. 48,225

Claims priority, application Japan, Nov. 8, 1990, 2-303330; Sep. 19, 1991, 3-268760

Int. Cl.[5] H03L *7/06, 7/08, 7/16*; H04K *3/00*

U.S. Cl. 331—14 **6 Claims**



1. A system for producing an oscillating signal, said system comprising:

a phase-locked loop (PLL) including a control voltage producing circuit,

the control voltage producing circuit being provided for producing a plurality of predetermined control voltages, with each predetermined control voltage corresponding to a desired frequency;

a plurality of memories provided in the phase-locked loop for storing the predetermined control voltages;

control means connected to the plurality of memories for storing the predetermined control voltages in the memories in a state where the phase-locked loop is closed and for deriving at least one of the predetermined control voltages stored in the memories in a state where the phase-locked loop is opened;

a voltage-controlled oscillator provided in the phase-locked loop to be operated by the predetermined control voltage derived from one of the memories for producing said oscillating signal having a desired frequency dependent on the derived voltage.

5,367,270

VOLTAGE CONTROLLED OSCILLATOR OPERABLE OVER A LARGE FREQUENCY RANGE

Perry Lorenz, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 18, 1993, Ser. No. 62,875

Int. Cl.[5] H03K *3/282*; H03B *5/24*

U.S. Cl. 331—113 R **5 Claims**

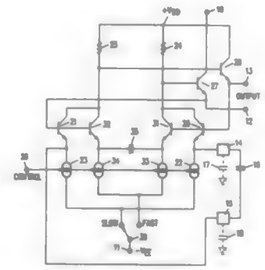
1. A voltage controlled oscillator circuit having positive and negative supply rails connectable to a source of operating power, the circuit comprising:

first and second bipolar transistors (**20** and **21**) having their collectors respectively coupled to one of said supply rails by means of a pair of load elements (**24** and **25**), their emitters coupled to the opposite supply rail by means of a first pair (**22** and **23**) of current control elements;

means for coupling a first capacitor (**16**) between said emitters of said first and second bipolar transistors;

a pair of emitter follower bipolar transistors (**27** and **28**) connected to cross couple the bases and collectors of said first and second bipolar transistors whereby a regenerative feedback is created between said first and second bipolar transistors;

third and fourth bipolar transistors (**31** and **32**) having their respective base and collector electrodes connected in parallel with those elements in said first and second bipolar transistors and having their emitters respectively coupled to said opposite supply rail by means of a second pair of current control elements (**33** and **34**);



a second capacitor (**35**) coupled between said emitters of said third and fourth bipolar transistors and having a minimum capacitance value; and

means (**30**) for selectively switching either said first pair or said second pair of current control elements to said opposite supply rail whereby only said first and second or said third and fourth bipolar transistors respectively, are operative at a time.

5,367,271

QUADRATURE MODULATOR HAVING PHASE SHIFT AND AMPLITUDE COMPENSATION CIRCUITS

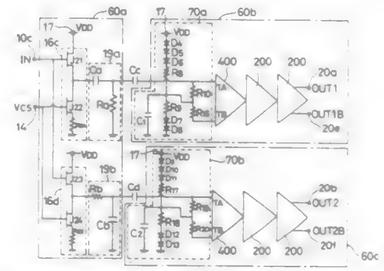
Kazuya Yamamoto, and Kousei Maemura, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1993, Ser. No. 130,551

Claims priority, application Japan, Feb. 3, 1993, 5-016125

Int. Cl.[5] H04L *27/36*

U.S. Cl. 332—105 **24 Claims**



24. A quadrature modulator comprising:

a 0°/90° phase shifter for separating an input carrier wave into two sinusoidal carrier signals having a 90° phase difference from each other, said 0°/90° phase shifter consisting of resistors and capacitors and generating the two carrier signals by differentiation and integration, respectively;

two amplitude compensating circuits connected to said 0°/90° phase shifter, respectively converting the two sinusoidal carrier signals into rectangular signals having predetermined amplitudes: and

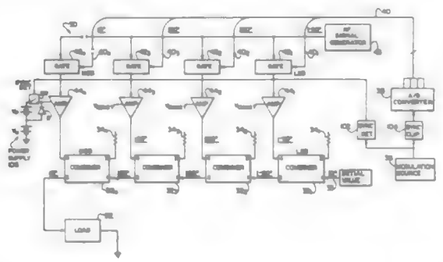
two double-balanced mixers for respectively mixing base band signals with the respective rectangular signals produced by said two amplitude compensating circuits.

5,367,272

DIGITAL AMPLITUDE MODULATORS INVOLVING (1) MODIFICATION OF AMPLITUDE DURING SYNCHRONIZATION PULSE, (2) AUTOMATIC GAIN CONTROL OF SIGNAL COMPONENTS, AND/OR (3) ANALOG REPRESENTATION OF LESS SIGNIFICANT SIGNAL COMPONENTS

Timothy P. Hulick, Schwenksville, Pa., assignor to Acrodyne Industries, Inc., Blue Bell, Pa.

Continuation of Ser. No. 924,525, Aug. 4, 1992, Pat. No. 5,260,674. This application Jun. 30, 1993, Ser. No. 84,026
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] H03C *1/00*
U.S. Cl. 332—149 **33 Claims**



1. A modulator for receiving an input information signal and providing a modulated information signal, the modulator comprising:

a) means for determining when a magnitude of the input information signal is at or above a given magnitude threshold;

b) means for providing a modified input information signal in response to the means for determining;

c) a plurality of component signal generation devices, responsive to the modified input information signal, the component signal generation devices outputting a corresponding plurality of component signals having respective magnitudes which are affected by the modified input information signal;

d) means for compensating for a difference between the input information signal and the modified input information signal, the means for compensating including means for increasing the magnitude of a component signal output by a component signal generation device other than a mathematically least significant component signal generation device; and

e) means for combining the plurality of component signals output from the component signal generation devices and for providing the modulated information signal as indicative of a combination of the component signals.

5,367,273

ADAPTER FOR VIDEO AND AUDIO TRANSMISSION

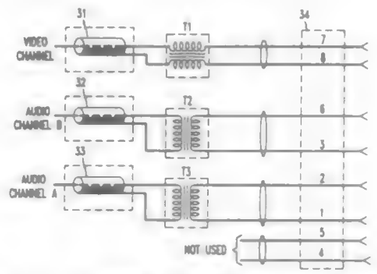
William H. Georger, Dover Township, Ocean County, and John A. Rutkowski, Jackson Township, Ocean County, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Sep. 11, 1992, Ser. No. 943,664
Int. Cl.[5] H03H *7/00*
U.S. Cl. 333—1 **7 Claims**

1. A device for applying video and audio baseband signals to a cable including twisted pairs of wires, the device comprising:

first and second ports for coupling the device to a video and at least one audio channel;

a first transformer electrically coupled to the first port and a second transformer electrically coupled to the second port, each transformer exhibiting a high degree of balance, the transformer coupled to the video channel having a common mode rejection greater than 40 dB for frequencies up to 50 MHz and the transformer coupled to the audio channel having a common mode rejection greater than 40 dB for frequencies up to 100 kHz; and



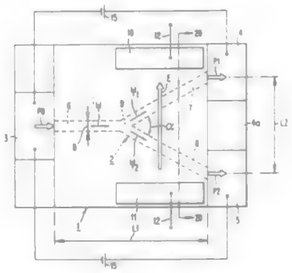
a third port electrically coupled to said transformers, the said port being adapted for electrical coupling to said twisted pairs of wires.

5,367,274

QUANTUM WAVE GUIDING ELECTRONIC SWITCH

Lars H. Thylén, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jun. 26, 1992, Ser. No. 906,271
Claims priority, application Sweden, Jun. 28, 1991, 9101988-5
Int. Cl.[5] H01P *1/15*
U.S. Cl. 333—103 **16 Claims**



1. A quantum wave guiding electronic switch comprising:

a substrate;

a plurality of electron waveguides disposed on the substrate;

electrodes disposed on the substrate beside the electron waveguides for generating an electric field in a direction transverse to the electron waveguides in response to an electrical voltage applied thereto; and

electron reservoirs disposed on the substrate and between which the electron waveguides extend;

wherein the electron waveguides have lengths in the transverse direction that are of the same order of magnitude as a wavelength of an electron wave function in the electron waveguides, wherein

the electron waveguides are disposed in a fork-like configuration, with at least one incoming electron waveguide which is connected in a connection region to at least two outgoing electron waveguides;

the electron waveguides have lengths in a longitudinal direction which have a magnitude that is less than or approximately equal to a magnitude of a coherence length of the electron wave function in the electron waveguides;

the incoming and the outgoing electron waveguides are each connected to a respective one of the electron reservoirs, said reservoirs being isolated electrically from one another; and

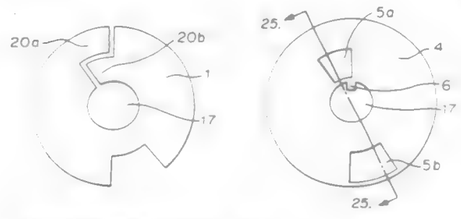
the electrodes are disposed beside at least the outgoing electron waveguides, wherein when the electric field is passed through at least one of the outgoing electron waveguides, a phase mismatch of the electron wave function results, so that electrons in the incoming electron waveguide will be switched to substantially only the particular outgoing electron waveguide which has a lowest energetic potential.

5,367,275

LAMINATE LC FILTER HAVING COMBINED CONDENSER AND COIL FUNCTIONS

Mitsunobu Esaki; Shigefumi Kimura; Chiharu Miyazaki; Sunao Hiraki; Katsumi Tomiyama; Naoto Oka, all of Kamakura; Hironobu Tsutsumi; Sachio Igawa, both of Sagamihara; Toshio Ootake, and Mitsuhiko Kanda, both of Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 824,605, Jan. 23, 1992, Pat. No. 5,227,746. This application Mar. 5, 1993, Ser. No. 27,225
Claims priority, application Japan, Jan. 23, 1991, 3-006460; Apr. 17, 1991, 3-085211; Dec. 9, 1991, 3-324443
Int. Cl.[5] H03H *7/01*
U.S. Cl. 333—184 **1 Claim**



1. An LC filter which comprises:

at least two conductive sheets each having a first opening provided at a central portion of the conductive sheet, cut-off portions provided from the first opening to a periphery of each of the conductive sheets, each of said conductive sheets including first and second terminals consisting of first and second projections disposed in the same plane and formed by said cut-off portion; and

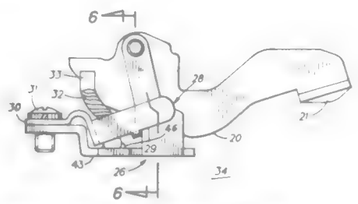
at least one dielectric film having a second opening with a width substantially equal to the width of said terminals of said conductive sheets, for connecting the conductive sheets situated above and below said dielectric film.

5,367,276

METHOD CASE CIRCUIT BREAKER MOVABLE CONTACT ARM ARRANGEMENT

Roger N. Castonguay, Terryville, Conn., assignor to General Electric, New York, N.Y.

Filed Oct. 18, 1993, Ser. No. 136,835
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **1 Claim**



1. A movable contact arm support assembly for molded case circuit breakers comprising:

a metal support base having one end of a conductor braid attached thereto;

a pair of support posts upstanding from said support base defining a predetermined separation distance at one end;

a movable contact arm having a movable contact attached to a first end and an opposite end of said conductor braid attached to a second end, said contact arm being pivotally-supported intermediate said support posts, said conductor braid being arranged completely within said support posts and said support posts being electrically connected to said support base, said movable contact arm comprising a thickness less than said predetermined separation distance, said contact arm further including an aperture intermediate said first and second ends;

a screw retainer-contact spring having a pair of arms extending from one end and an apertured tab extending from an opposite end, said pair of arms encompassing said support posts to hold said support posts to promote electrical transport between said support base and said contact arms, said apertured tab being arranged to receive and retain a terminal screw; and

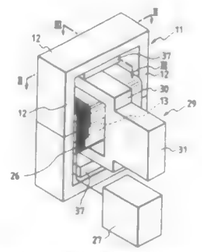
a raised perimeter about said aperture, said raised perimeter providing a dimension equivalent to said separation distance.

5,367,277

ELECTROMAGNETIC ENERGY CONVERTER

Chikara Kaidou, Futtsu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 24, 1992, Ser. No. 917,982
Claims priority, application Japan, Jul. 25, 1991, 3-186656; Oct. 15, 1991, 3-293783
Int. Cl.[5] H01F *7/00*
U.S. Cl. 335—229 **31 Claims**



1. An electromagnetic energy converter comprising:

a magnet core formed of a magnetic material and comprising a central leg, two first legs parallel to said central leg and having respective surfaces facing said central leg, and four second legs connecting both ends of said central leg with each of said first legs, said first legs, said second legs and said central leg forming a closed magnetic path therealong;

an electrically conductive winding wound around said central leg and adapted to connect to a power supply or an electrical load circuit;

an armature conductor having a frame-like body which forms a closed circuit and which is movably mounted about said central leg so as to be movable longitudinally therealong; and

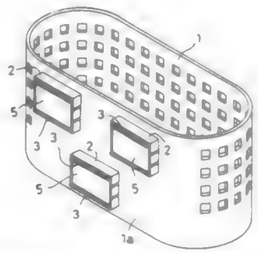
two opposing field magnets respectively attached to said surfaces of said first legs which face said central leg, each of said field magnets having two pole faces, one of which is disposed parallel to said central leg, wherein said field magnets are disposed so that a magnetic flux thereof passes through said magnet core and said armature conductor, and wherein said pole faces of said field magnets which face said central leg are of the same polarity.

5,367,278

MAGNET HOLDING STRUCTURE

Toshimichi Yoshikawa, Nara, Japan, assignor to Kabushiki Kaisha Yoshikawakun Kogyosho, Nara, Japan

Filed Jun. 7, 1993, Ser. No. 72,080
Claims priority, application Japan, Sep. 19, 1992, 4-275384
Int. Cl.[5] H01F *7/20, 7/02;* A41H *31/00;* A45F *5/00*
U.S. Cl. 335—285 7 Claims



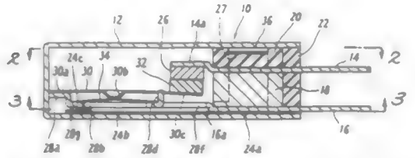
1. A magnet holding structure comprising a magnet holder means for holding a permanent magnet and a mounting frame means formed integrally with a container having a bottom wall portion and adapted to accept said magnet holder means, said mounting frame means including at least one pair of projecting walls and an engaging pawl on each inner surface of said projecting walls and spaced outwardly of said bottom wall portion and said magnet holder means having engaging projections corresponding to said engaging pawls, said projections being biased by their own innate resiliency against the inner surfaces of said projecting walls such that a portion of said projections engages a portion of said corresponding engaging pawls to prevent removal of said holder from said frame, and wherein said engaging projections of said magnet holder means are provided in a plurality of pairs, and further wherein said mounting frame means comprises a surrounding wall including top and bottom wall portions and left and right wall portions, said surrounding wall projecting from a container body, the inner surfaces of said right and left wall portions being integrally formed each with an engaging pawl and being capable of resilient deformation in the direction perpendicular to the top and bottom wall portions of said surrounding wall.

5,367,279

OVERCURRENT PROTECTION DEVICE

Akira Sakai, Ami, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 16, 1993, Ser. No. 33,706
Claims priority, application Japan, Mar. 30, 1992, 4-105482
Int. Cl.[5] H01H *61/02, 71/16*
U.S. Cl. 337—104 11 Claims



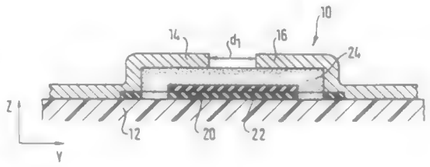
1. An overcurrent protection device comprising a fixed contact electrically connected to a first terminal, a movable contact connected to a second terminal adapted to engage and disengage with the fixed contact, a thermally resistive element connected in series to the fixed and movable contacts between the first and second terminals, a thermally responsive snap-acting first bimetal member positioned near said thermally resistive element which moves from a first position to a second position upon being heated to a first prescribed temperature, said second position causing the disengagement of said movable and said fixed contacts, a current bypass means adapted to be connected in parallel with said thermally resistive element, and a second thermally responsive bimetal member positioned near said thermally resistive element adapted to electrically connect said current bypass means in parallel with said thermally resistive element when heated to a second prescribed temperature lower than the first prescribed temperature associated with the first bimetal member.

5,367,280

THICK FILM FUSE AND METHOD FOR ITS MANUFACTURE

Egon Thiel, Altdorf; Theo Grieb, and Konrad Walch, both of Landshut, all of Germany, assignors to Roederstein Spezialfabriken fuer Bauelemente der Elektronik und Kondensatoren der Starkstromtechnik GmbH, Landshut, Germany

Filed Jul. 7, 1993, Ser. No. 88,542
Claims priority, application Germany, Jul. 7, 1992, 4222278
Int. Cl.[5] H01H *85/04*
U.S. Cl. 337—297 11 Claims



1. Method of manufacturing electrical thick-layer fuses having:

providing a supporting substrate;

placing a thick-layer fusible conductor on said substrate generated on the substrate by printing on a conductive paste;

placing two electrodes supported on said substrate extending over said thick-layer fusible conductor, said two electrodes applied with a spacing from one another preferably onto said thick-layer fusible conductor;

the improvement to said process including the step of:

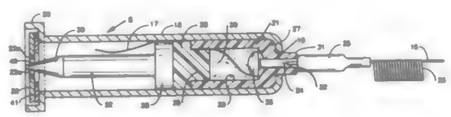
forming the width of the thick-layer fusible conductor relative to said electrodes by laser ablation of said thick-layer fusible conductor to form a resistive path under said electrodes whereby a fuse of known tolerance to current flow is formed.

5,367,281

STRIKER PIN DEVICE FOR AN ELECTRIC FUSE

William R. Crooks, Mt. Lebanon, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 30, 1993, Ser. No. 175,836
Int. Cl.[5] H01H *37/02, 85/30*
U.S. Cl. 337—417 15 Claims



1. A striker pin device for an electric fuse, comprising:

a tubular electrically conductive housing,

a one-piece integrally formed closure member disposed in said tubular housing and having a projecting end portion extending through a first end of said housing and an opened end portion and a cavity communicating with said opened end portion,

piston means having a central projection received in said opened end portion of said closure member for forming an enclosure with said cavity of said closure member,

a striker pin disposed in said housing adjacent to said piston means and arranged to move toward a second end of said housing in coordination with operating movement of said piston means,

pyrotechnic material disposed within said enclosure formed by said closure member and said piston means,

electrically conductive pin means projecting through said projecting end portion of said closure member and protruding through said tubular housing,

an elongated ignition element secured to said pin means, extending through said pyrotechnic material in said enclosure, and interposed between abutting surfaces of said closure member and said piston means and between contacting surfaces of an inner wall of said housing and an outer wall of said piston means for an electrical connection of said ignition element to said housing, and

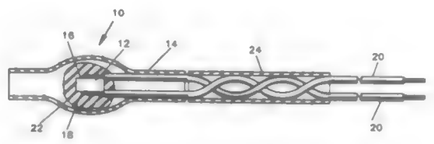
means for electrically activating said ignition element for igniting said pyrotechnic material, thereby imparting said operating movement of said piston means and said striker pin to said second end of said tubular housing.

5,367,282

ELECTRIC MOTOR PROTECTOR SENSOR

Thomas A. Clem, Woonsocket, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 21, 1992, Ser. No. 918,712
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—22 R 14 Claims



1. A sensor for an electric motor comprising a thermistor with selected temperature coefficient of resistance properties, said thermistor having opposite surface portions for connection to an electrical circuit, a covering member of electrically insulating material in which said thermistor is contained, a pair of elongated electrically conductive lead members secured in electrically conductive relation to the thermistor surface portions and extending out from said cover member, and an electrically insulating, thermally conductive elastomer having a thermal conductivity of between $1.5–6.0\times10^{-3}$ (cal/°C.-cm-sec) positioned around the thermistor within the covering member for protecting the thermistor from external forces and maintaining the integrity of the electrical contact between the lead members and the thermistor while providing good heat transfer to the thermistor.

5,367,283

THIN FILM HYDROGEN SENSOR

Robert J. Lauf, Oak Ridge; Barbara S. Hoffheins, Knoxville, and Pamela H. Fleming, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Oct. 6, 1992, Ser. No. 957,337
Int. Cl.[5] H01C *7/00*
U.S. Cl. 338—34 22 Claims

1. A hydrogen sensor element comprising:

an essentially inert, electrically-insulating substrate;

a thin-film metallization deposited on said substrate, said metallization forming at least two resistors on said substrate, said metallization comprising a layer of Pd or a Pd alloy for sensing hydrogen and an underlying intermediate metal layer for providing enhanced adhesion of said metallization to said substrate; and

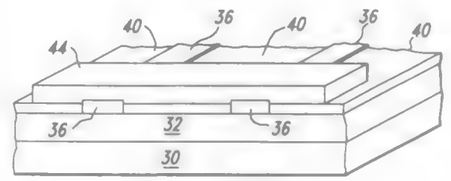
an essentially inert, electrically insulating, hydrogen impermeable passivation layer covering at least one of said resistors, at least one of said resistors being left uncovered, the difference in electrical resistances of said covered resistor and said uncovered resistor being related to hydrogen concentration in a gas to which said sensor element is exposed.

5,367,284

THIN FILM RESISTOR AND METHOD FOR MANUFACTURING THE SAME

Frank J. Morris, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 10, 1993, Ser. No. 62,526
Int. Cl.[5] H01C *1/012;* H01L *21/00*
U.S. Cl. 338—306 27 Claims



13. A microelectronic inverted thin film resistor structure comprising:

a substantially planar interlevel dielectric layer overlaying a supporting layer;

a metallic interconnect layer having predetermined patterns delineating two or more metallic interconnect leads overlaying said supporting layer, wherein an exposed portion of said leads extends between 1 and 1000 angstroms above said dielectric layer; and

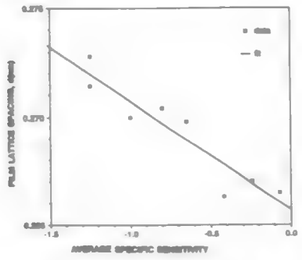
an inverted thin film resistor overlaying a portion of said planar interlevel dielectric layer and overlaying said exposed portion of said metallic interconnect leads, wherein said inverted thin film resistor structure does not contain a protective metal layer on said resistor and does not contain any vias in direct contact with said resistor.

5,367,285

METAL OXY-NITRIDE RESISTANCE FILMS AND METHODS OF MAKING THE SAME

Philip R. Swinehart; S. Scott Courts, both of Columbus, and D. Scott Holmes, Westerville, all of Ohio, assignors to Lake Shore Cryotronics, Inc., Westerville, Ohio

Filed Feb. 26, 1993, Ser. No. 25,411
Int. Cl.[5] H01C *1/012*
U.S. Cl. 338—308 27 Claims



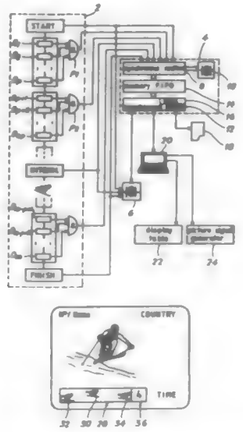
1. A film resistor comprising an alloy of both an electrically insulating oxide and an electrically conducting nitride of at least one metal wherein said electrically insulating oxide of said at least one metal is present in said film sufficient to impart a predetermined average specific sensitivity to said film resistor.

5,367,286

SYSTEM FOR INSTANTANEOUSLY DISPLAYING THE RANKING OF A COMPETITOR IN A RACE WITH SEQUENTIAL STARTS

Jean-Pierre Voillat, Bassecourt, Switzerland, assignor to Swiss Timing Ltd., St.-Imier, Switzerland

PCT No. PCT/CH92/00052, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO92/17862, PCT Pub. Date Oct. 15, 1992
PCT Filed Mar. 13, 1992, Ser. No. 952,718
Claims priority, application Switzerland, Apr. 2, 1991, 00971/91; France, May 16, 1991, 91 05994
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—323 R 12 Claims



1. A display system of the instantaneous ranking of a competitor in a race with sequential starts, said display system comprising:

memorization means of the instant when each competitor C_j, $1 \leqq j \leqq n$, passes in front of a detector D_k, $1 \leqq k \leqq m$,

means for classifying the competitors passing each detector to establish, for each detector, a classification list of the competitors according to their times, and

processing means for performing the following steps when a competitor C_i passes in front of a detector D_k:

determining the instantaneous ranking of the competitor C_i reaching the detector D_k by comparing his time of passage with the times of passage of a plurality of already classified competitors,

calculating the time differences R and A between time of passage of competitor C_i and the times of passage of the competitors with immediately adjacent rankings,

converting each time difference R and A into a calculated distance using a conversion function f, and

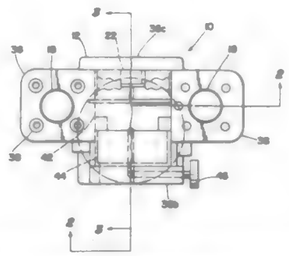
displaying in a predetermined display area a symbol representing the competitor C_i and at least one other symbol selected from symbols representing each of the competitors of the immediately adjacent rankings by spacing said symbols out as a function of the calculated distances.

5,367,287

DEVICE FOR MARKING MOTOR VEHICLES

Rick L. Blossom, 5752 David Pl., Fairfield, Ohio 45014-3508, and Michael T. Riley, 648 Rockford Dr., Hamilton, Ohio 45013

Filed Sep. 20, 1991, Ser. No. 763,315
Int. Cl.[5] B60R *25/10*
U.S. Cl. 340—429 6 Claims



1. A self-contained, portable device for marking motor vehicles, comprising: a sac containing dye; explosive means, proximate said sac, for rupturing said sac and expelling said dye onto an exterior surface of a motor vehicle; electronic control means for firing said explosive means; switch means comprising an inertia switch for detecting motion of the motor vehicle and for activating said electronic control means; a container holding said sac, said explosive means, said electronic control means, and said switch means; and means for attaching said container to the exterior of the motor vehicle whereby, upon activation of said electronic control means by said switch means, said sac is ruptured, expelling dye onto the exterior of the motor vehicle.

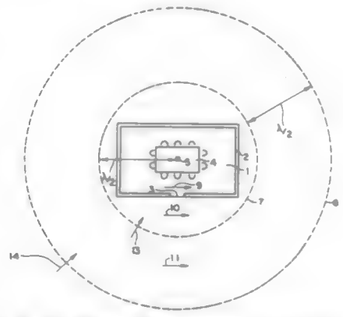
5,367,288

PORTABLE ALARM DEVICE FOR DETECTING OBJECTS TRANSGRESSING DISTANCE THRESHOLDS

Saar M. El Marry, 58, rue Moillebeau, 1209 Geneva, Switzerland

Filed Feb. 17, 1993, Ser. No. 18,620
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—553 15 Claims

1. An alarm apparatus comprising an oscillator circuit (**20**) having an LC element (L1, C3) and an antenna (A) coupled to the LC element, the antenna and the oscillator circuit each having a resonance frequency, the resonance frequency of the antenna being slightly mismatched with respect to the resonance frequency of the oscillator circuit, the oscillator circuit having an oscillator current including an amplitude, the amplitude of the oscillation current being increased when electromagnetic waves emitted from the antenna and reflected by an object at a distance corresponding to a multiple of a half wavelength ($\lambda/2$) of the emitted waves are received by the antenna, the increased amplitude being indicative of a transgression of a



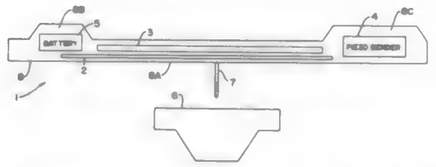
perimeter by the object, the perimeter comprising a circle having a radius corresponding to the multiple of the half wavelength of the emitted waves, the alarm apparatus also comprising a switch circuit (**30**) coupled to the oscillator circuit, the switch circuit being actuated by the increased amplitude of the oscillation current to provide an indication of the transgression.

5,367,289

ALARM TAG FOR AN ELECTRONIC ARTICLE SURVEILLANCE SYSTEM

Anthony Baro, Boca Raton; Alan E. Willard, and Doug Narlow, both of Coral Springs, all of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Nov. 27, 1991, Ser. No. 800,576
Int. Cl.[5] G08B *13/00;* E05B *65/00*
U.S. Cl. 340—566 24 Claims



1. An antitheft tag for use in an electronic article surveillance system, comprising:

tag housing means;

piezoelectric means attached to said tag housing means in a way such that a force applied to said tag housing means is mechanically coupled to said piezoelectric means, said piezoelectric means generating an electrical signal in response to said mechanically coupled force and comprising a piezoelectric film; and

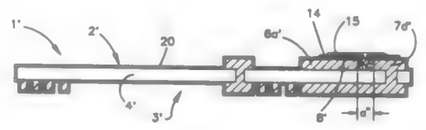
alarm detection means for generating an alarm indication in response to said electrical signal generated by said piezoelectric means.

5,367,290

DEACTIVATABLE RESONANCE LABEL

Burckart C. Kind, Zürich, and Philipp Müller, Barstwiesenstrasse, both of Switzerland, assignors to Actron Entwicklungs AG, Letzenstrasse, Switzerland

PCT No. PCT/CH90/00287, § 371 Date Aug. 20, 1991, § 102(e) Date Aug. 20, 1991, PCT Pub. No. WO91/09387, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 19, 1990, Ser. No. 752,505
Claims priority, application Switzerland, Dec. 20, 1989, 04565/89-4
Int. Cl.[5] G08B *13/187*
U.S. Cl. 340—572 20 Claims



1. Resonance label (**1**) comprising:

an insulating support layer (**4**) having two sides (2,3);

a first conductor on one side (**3**) of the insulating supporting layer (**4**) and forming a capacitor plate (*6b*) and an induction coil (**5**) having a number of individual turns spaced apart from each other;

a second conductor on the other side (**2**) of the insulating supporting layer (**4**) and forming another capacitor plate (*6a*) so as to define a resonant circuit;

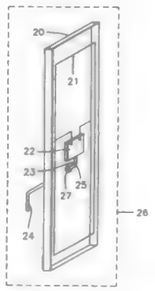
at least one of the first and second conductors including two adjacent conductor areas (*6a*, *7d*) which are spaced apart at a distance (**a**) from each other closer to one another than the spacing between the individual turns of the induction coil (**5**), the distance (**a**) between the adjacent conductor areas (*6a*, *7d*) defining a desired breakdown point (**8**) on the respective side (**2**) of the insulating support layer (**4**).

5,367,291

SHOPLIFTING DETECTION SYSTEM WITH PARTLY SCREENED ANTENNAS

Tallienco W. Fockens, Elbergen, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, Groenlo, Netherlands

PCT No. PCT/NL91/00074, § 371 Date Nov. 30, 1992, § 102(e) Date Nov. 30, 1992, PCT Pub. No. WO91/17533, PCT Pub. Date Nov. 14, 1991
PCT Filed May 1, 1991, Ser. No. 952,835
Claims priority, application Netherlands, May 1, 1990, 9001033
Int. Cl.[5] G08B *13/187*
U.S. Cl. 340—572 15 Claims



1. An electromagnetic shoplifting detection system operating with a high-frequency detection field at least within the

range of 1 to 10 MHz mounted adjacent to or on at least one checkout unit for detecting labels having an integrated resonant circuit, said at least one checkout unit having electrically conducting elements providing at least one parasitic signal path producing parasitic currents in use, said detection system comprising:

at least one antenna coil mounted adjacent to or on said at least one checkout unit for generating an alternating electromagnetic field for detecting said detecting labels positioned in proximity to said at least one antenna coil; and

shield means comprising electrically conducting mesh disposed between said at least one antenna coil and said at least one adjacent checkout unit for providing an electromagnetic shield between said at least one antenna coil and said at least one checkout unit and preventing parasitic signal paths and parasitic currents in said electrically conducting elements.

5,367,292

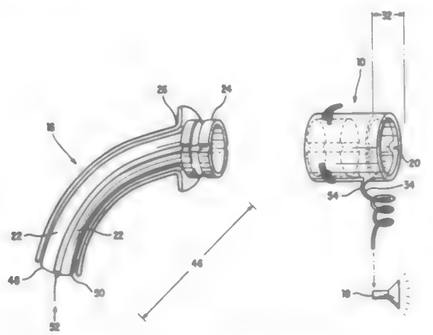
WARNING APPARATUS FOR A TRACHEOTOMY TUBE

Istvan Szoke, 135 Willow St., Apt. 312; Robert K. Einhorn, 138 Amity St., Apt. 1B, both of Brooklyn, N.Y. 11201, and Yosef P. Krespi, 1441 3rd. Ave., New York, N.Y. 10028, assignors to Istvan Szoke; Robert K. Einhorn, both of Brooklyn; Yosef P. Krespi, New York, all of N.Y. and Ansel M. Schwartz, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 539,694, Jun. 18, 1990, Pat. No. 5,070,321. This application Apr. 30, 1992, Ser. No. 876,525

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—608 **11 Claims**



1. An apparatus for monitoring the flow of inspired and expired air comprising:

a respiratory air tract; and

a pressure sensor for sensing the pressure within the air tract relative to ambient pressure and generating a corresponding pressure signal, said pressure sensor disposed adjacent to said air tract, said pressure sensor includes a piezoelectric element which is tubular in shape.

5,367,293

MECHANICALLY ACTUATABLE ALARM DISABLE ASSEMBLY

Carol Z. Howard, Oxford, and Thomas J. Batko, Wallingford, both of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Jun. 14, 1993, Ser. No. 76,164

Int. Cl.[5] G08B *21/00*

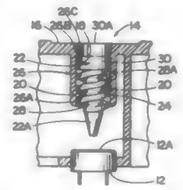
U.S. Cl. 340—687 **20 Claims**

1. A mechanically actuatable assembly for disabling an alarm, comprising:

(a) a guide housing stationarily positioned relative to and spaced from an alarm to be disabled and defining an interior guide passageway axially aligned with an active portion of the alarm which functions in response to a predetermined interaction to disable the alarm;

(b) an internal thread structure in said housing protruding into said interior guide passageway; and

(c) an elongated actuatable member having an external thread structure complementary to said internal thread structure and rotatably interfitted therewith such that said actuatable member is rotatably and axially movable relative to said housing and in opposite directions along said guide passageway between a reset position wherein said actuatable member is displaced from the active portion of



the alarm and an actuate position wherein said actuatable member interacts with the active portion of the alarm to cause disabling of the alarm;

(d) said actuatable member having spaced opposite ends, said external thread structure being located on said actuatable member between said spaced opposite ends thereof and having a stop means defined thereon between and spaced from said spaced opposite ends of said actuatable member for limiting further movement of said actuatable member away from said and actuate position so as to prevent removal of said actuatable member from said housing.

5,367,294

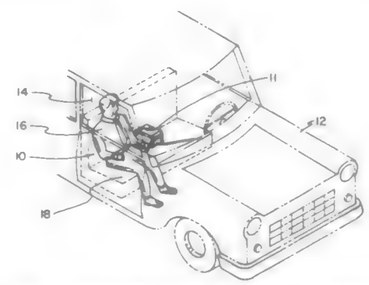
INFLATABLE SECURITY MANNEQUIN

Edwin B. Brown, 3550 Calle Principal, Chico, Calif. 95926

Filed Feb. 12, 1993, Ser. No. 16,997

Int. Cl.[5] G08B *15/00*

U.S. Cl. 340—692 **13 Claims**



1. A crime deterring apparatus for use by an operator in a structure having a window, said apparatus comprising:

an inflatable member capable of being supported by a support in the structure and capable of being seen from outside the structure through the window;

electrically powered means for inflating said inflatable member;

means, under operator control, for activating said inflating means;

electrically powered means for emitting sound; and

means, under operator control, for activating said sound-emitting means.

5,367,295

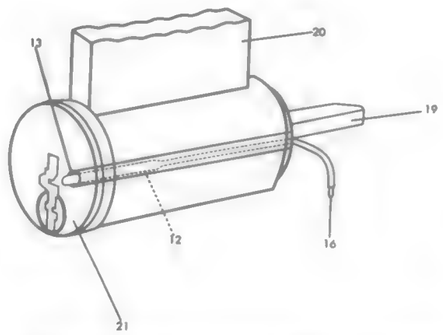
CONVENTIONAL MECHANICAL LOCK CYLINDERS AND KEYS WITH ELECTRONIC ACCESS CONTROL FEATURE

Asil T. Gokcebay, San Francisco, and Yucel K. Keskin, Cupertino, both of Calif., assignors to Security People, Inc., San Francisco, Calif.

Filed Feb. 14, 1992, Ser. No. 836,206

Int. Cl.[5] G06K *9/78, 9/62*

U.S. Cl. 340—825.31 **10 Claims**



1. A conventional mechanical lock cylinder and mechanical key with an electronic access control feature, comprising:

a mechanical lock cylinder having a cylinder plug having a cylindrical outer surface adapted to rotate inside the mechanical lock cylinder, the cylinder plug being of electrically conductive metal and having a key slot and having a generally longitudinal bore closely adjacent to but spaced from the key slot with one end of the bore at an outer surface of the plug, the longitudinal bore extending through the length of the cylinder plug,

an electrical connector unit within the bore and having a connector head extending out through the bore at the surface of the cylinder plug, the connector head being electrically insulated from the conductive metal of the cylinder plug and in position to be adjacent to the key when the key is inserted into the key slot, and a conductor wire connected to the connector head, electrically insulated from the metal of the cylinder plug and extending rearwardly in the bore from the plug's outer surface and out of the back of the cylinder plug in a way so as not to interfere with the mechanical function of the cylinder as accessed by the mechanical key,

the mechanical key having a head, with a recess formed in the head and a generally flat, low-profile memory cell fitted in the recess so as to substantially maintain the profile of the key head, the memory cell having a pair of electrical contact surfaces, serving as terminals, one terminal being in grounded contact with the metal of the key, and

another of said terminals of the memory cell being engaged with a contact extension which is insulated from the metal key and which extends to a position to make contact with the connector head at the outer surface of the cylinder plug when the key is inserted in the key slot, thereby connecting said other electrical contact surface of the memory cell to the conductive wire extending out of the cylinder plug,

whereby the memory cell may be accessed electrically when the key is inserted into the key slot of the cylinder plug, the conductor wire and the metal lock cylinder providing two electrical conductors for accessing the memory cell.

5,367,296

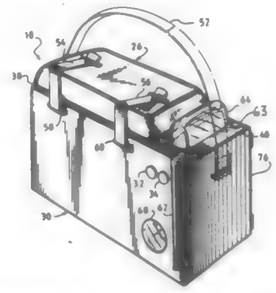
COMMUNICATION SIGNAL DEVICE

William F. Schell, P.O. Box 6152, Kamuela, Hi. 96743

Filed Feb. 18, 1993, Ser. No. 19,631

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—984 **1 Claim**



1. A communication signal device mounted on a boat, comprising:

a) means that can be used verbally;

b) means that can be used visually;

c) means that can be used through an emergency position indicating radio beacon;

d) at least one integral unit contains all the electronic hardware and circuits, comprising externally charged power jacks, a transmitter, and a transmitter cover containing a separate microphone from a receiver and is connected to said integral unit by a cable with an integral microphone therein adding greater protection to microphone from damage and waterproofing, which is substantially rectangular so as to be easily mounted to a vertical surface;

e) a non-corrosive integral unit is constructed from molded plastic, is constructed from stainless steel, having a cover chosen from a group consisting of international orange and other bright colors; and

f) a waterproof gasket disposed between a radio unit and said cover comprising a fold-down antenna and a rear portion containing two horizontal bars one on the top and one on the bottom, the ends of said bars contain slots for mounting to a vertical surface having projectiles standing out in the positions.

5,367,297

DISPLAY SYSTEM FOR VESSEL

Kazuhiko Yokoyama, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 706,578, May 28, 1991, abandoned. This application Mar. 30, 1993, Ser. No. 41,284

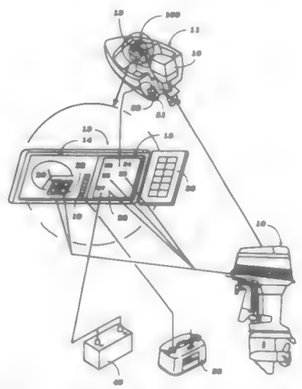
Claims priority, application Japan, May 29, 1990, 2-137052

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—984 **11 Claims**

1. A display system for a vessel comprising a plurality of sensors including at least one warning information sensor for sensing a plurality of operating and navigating conditions of the vessel and a single display unit comprised of a variable display screen having a standby state during which no information is displayed and a display state comprised of a first display mode for displaying information from certain of said sensors including sensors of operating conditions and at least one alternate display mode for displaying information received from other of said sensors including sensors of navigating conditions and a warning display mode which automatically displays warning information received from at least one warning information sensor regarding at least one of the plurality of operating and navigating conditions when that particular condition is detected to be outside of a predetermined range for that particular condition regardless of which display mode is being displayed, means for selecting one of said display modes

when warning information is not being displayed on said warning display, and means for controlling the state of said variable display based on output signals received from at least one warning information sensor indicating that at least one of the conditions is outside of the predetermined range for the particular condition and based on whether said alternate display mode has been selected, said display system further comprising a circuit for either illuminating said variable display when a warning signal is present and/or when a display mode is selected or applying a minimum amount of power to said variable display to establish its standby state at other times.

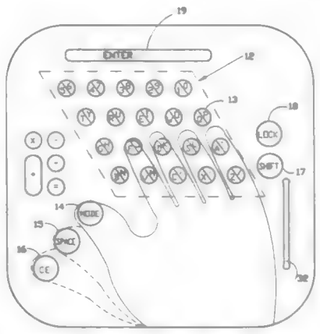


5,367,298

DATA INPUT TERMINAL

John K. Axthelm, 4780 Roberts Rd., Caledonia, Ohio 43314

Filed Oct. 25, 1991, Ser. No. 782,818
Int. Cl.[5] B41J *5/10*
U.S. Cl. 341—22 **2 Claims**



1. A manual-entry data input terminal for entering of data into a data processing system comprising

a keyboard having a first set and a second set of selectively operable, manually actuable electrical key switches which, when actuated, are effective to generate respective electrical signals, each of said electrical key switches having a respective actuator pad mechanically coupled therewith and adapted to be actuated upon contacting engagement thereof by a finger or thumb of an operator's hand, said key switches mounted on said keyboard with the actuator pads thereof accessible to an operator's hand at a top surface of said keyboard, said first set of key switches including a plurality of key switches having their actuator pads disposed in a planar array with their respective operating surfaces engageable by respective fingers of an operator's one hand and positioned in a substantially common plane, the actuator pads of said first set of key switches being relatively oriented to each other in an arrangement of either the right or the left one-half of a QWERTY typewriter keyboard having manually operated actuating keys for each of selected alphabetic characters disposed in each of three spaced parallel, elongated rows, each of said first set of key switches and its respective actuator pad being identifiable with one indicia from each of a first and a second indicia series that are each related to the characters of a respective one-half of the typewriter keyboard, said first indicia series having indicia data bits that correspond to each respective key switch of said first set of key switches in accordance with the characters of either the left or the right one-half of the typewriter keyboard and said second indicia series having indicia bits that correspond to each respective key switch of said first set of key switches in accordance with a mirror image orientation of the characters of the other of the left or the right one-half of the typewriter keyboard, said second set of key switches includes a mode selector key switch for effecting selection of said first or second indicia series for input as data into the data processing system, said mode selector key switch having its actuator pad disposed in offset relationship to said first set of key switch actuator pads at a location to be physically conveniently engaged by the thumb of the operator's one hand when that hand is positioned where the fingers of that hand are used to actuate respective ones of the actuator pads of said first set of key switches, and

signal-generating, electrical circuit means responsive to actuation of said key switches for forming a data signal stream in accordance with the indicia of key switches that are actuated and providing the data signal stream at an outlet port for transmission to the data processing system, said circuit means including an encoder circuit connected to said outlet port and operable to form a data signal stream in accordance with data bits applied to inputs thereof and selector circuit means coupled to said first set of key switches and to inputs of said encoder circuit for applying data bits thereto pursuant to actuation of said key switches, said selector circuit means coupled with said mode selector switch for responding to operation of said mode selector switch and to apply data bits corresponding with the indicia of either of the first or the second indicia series of the actuated switches of said first set of key switches in accordance with the indicia series selected by said mode selector switch.

5,367,299

METHOD FOR 5-BIT CHUNK ENCODING OF BIT SERIAL DATA BY A DATA PROCESSOR HANDLING DATA IN 8-BIT BYTE SEGMENTS

Pablo M. Calamera, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 1, 1993, Ser. No. 69,905
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—95 **10 Claims**

1. A method for 5-bit chunk encoding of bit serial data by a data processor handling data in 8-bit byte segments, the method comprising the steps of:

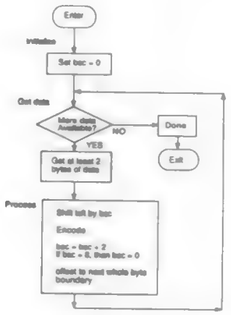
for a bit shift counter counting from zero to 6 by increments of 2, modulo base 8, the data processor repeating the steps of;

receiving data in 8-bit bytes so long as there is available data;

shifting left the data by the value of the bit shift counter;

encoding the data in two 5-bit chunks;

incrementing the bit shift counter by an increment of 2, and



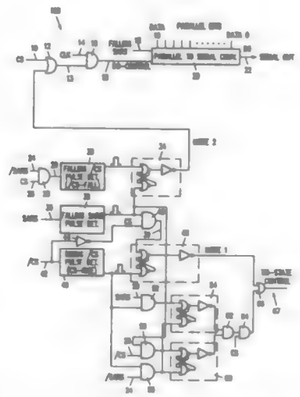
offsetting to the next whole byte boundary of the data, by moving the position of a pointer to the starting position of the next byte of data.

5,367,300

SERIAL DATA COMMUNICATION INTERFACE ARCHITECTURE

Edison Fong, Sunnyvale; Smaragda Denton, Belmont, and Nghiem Nguyen, Mountain View, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 829,725, Jan. 30, 1992, abandoned. This application Jun. 22, 1993, Ser. No. 80,687
Int. Cl.[5] H03M *9/00*
U.S. Cl. 341—101 **11 Claims**



1. A process of converting a set of parallel input data bits received from a data converter into a serial format, said process comprising the steps of:

providing a set of serial interface input signals, said set of serial interface input signals comprising:

an input clock signal;

a chip select signal;

an internal data conversion status signal; and

said set of parallel input data bits; and

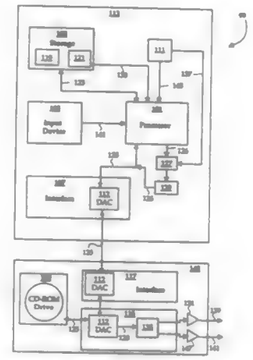
detecting said signal status of said chip select signal and said internal date conversion status signal, wherein said serial interface provides said received set of parallel input data bits as a set of serial data output bits in synchronization to said clock signal upon detecting an unasserted state of said chip select signal in combination with an unasserted state of said internal conversion status signal.

5,367,301

METHOD AND SYSTEM FOR DECODING DIGITAL AUDIO FILES

Nelson H. Stiltner, Pensacola, Fla.; Jesse M. Martinez, Denver, and Roger S. Hutchison, Golden, both of Colo., assignors to CD ROM, Inc., Colo.

Filed Nov. 10, 1992, Ser. No. 969,779
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 **10 Claims**



1. A system for decoding digital audio files in computer systems having peripheral devices attached to the computer system and containing digitally encoded audio data, comprising:

a processor for executing instructions and for receiving from and transmitting to any attached peripheral devices digital data;

a storage device coupled to the processor for storing instructions and data;

at least one peripheral device interface coupled to the processor for transmitting instructions and data to and from a peripheral device coupled thereto, the peripheral device interface containing at least one circuit capable of performing digital to analog conversions on digital audio data transmitted from the processor in response to instructions sent by the processor;

a controller means coupled to the processor for identifying any peripheral devices attached to a peripheral device interface, identifying on any peripheral device interface any circuits capable of performing digital to analog data conversions, scanning the peripheral device interface during the transmission of data from the peripheral device to the computer system, determining the presence and file format of digitally encoded audio data, and instructing the processor to transmit such data to the circuit identified as capable of digital to analog conversions, said circuit performing such conversions on received digitally encoded audio data; and

an audio output channel coupled to the peripheral device for outputting digital audio data converted to analog signals by the circuit of the peripheral device.

5,367,302

ISOLATING A CDAC ARRAY IN A CURRENT INTEGRATING ADC

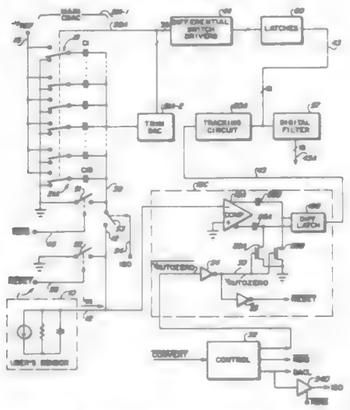
Timothy V. Kalthoff, and Gregory S. Waterfall, both of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.

Filed Aug. 24, 1993, Ser. No. 111,113
Int. Cl.[5] H03M *1/50*
U.S. Cl. 341—166 **18 Claims**

1. A current integrating ADC, comprising in combination:

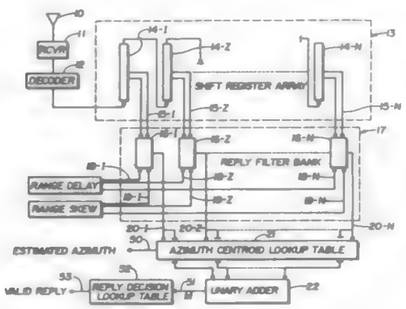
(a) a comparator having a non-inverting input coupled to receive a ground voltage and an inverting input coupled

to an input conductor, an analog input current flowing through the input conductor;
(b) an integrating capacitor having a first terminal coupled to the input conductor;
(c) a reset circuit coupled to the integrating capacitor and operative to reset the integrating capacitor before an integrating cycle;
(d) a digital-to-analog converter having an output coupled to a second terminal of the integrating capacitor;
(e) tracking means coupled to an output of the comparator



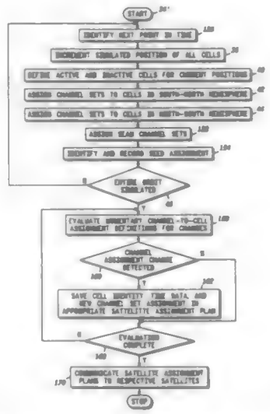
for producing digital signals on digital inputs of the digital-to-analog converter to maintain the inverting input close to a virtual ground voltage, wherein the digital signals on the inputs of the digital-to-analog converter at the end of an integrating cycle represent the integral of the input current;
(f) an isolation switch coupled between the first terminal and the input conductor; and
(g) a control circuit operative to open the isolation switch during resetting of the integrating capacitor by the reset circuit.

5,367,303
PARALLEL OBSERVER SPATIAL EVALUATOR
Edward L. Waltz, Sparks, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed Sep. 17, 1993, Ser. No. 126,961
Int. Cl.[5] G01S *13/74, 13/78*
U.S. Cl. 342—37 **10 Claims**



1. The method of evaluating signals received by a secondary radar in response to interrogation signals transmitted by said radar for distinguishing valid replies from false replies, comprising the steps of:
decoding said received signals to establish conformity of said received signals with a predetermined format, said decoded signals conforming with said format constituting reply signals;
storing each of said reply signals received during each of the intervals following N successive interrogation signals, said reply signals being stored in separate storage means for each of said intervals at locations in said storage means corresponding to the times of reception of said replies and being stored for the duration of said N intervals;
scanning said storage means with means for detecting replies stored therein, said scanning being conducted in steps, said detecting means, at each of said scanning steps, contacting in parallel each of said storage locations corresponding to the same time of reply in each of said intervals;
temporarily storing, for a time corresponding to a time duration represented by at least two successive ones of said storage locations, replies detected at each step of said scan;
determining the total number M of said replies detected at each of said scanning steps plus the number of said replies temporarily stored; and
generating a valid reply signal whenever said number M exceeds a predetermined threshold.

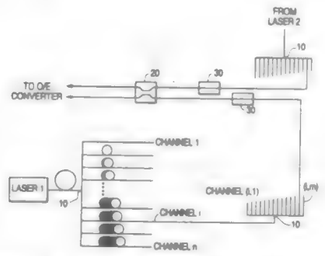
5,367,304
COMMUNICATION SYSTEM EMPLOYING SPECTRUM REUSE ON A SPHERICAL SURFACE
Yih G. Jan, and Kenneth M. Peterson, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Continuation-in-part of Ser. No. 909,487, Jul. 6, 1992, Pat. No. 5,268,694. This application Mar. 15, 1993, Ser. No. 31,586
Int. Cl.[5] H04B *7/185, 7/15;* **H04M** *11/00;* **H04Q** *7/00*
U.S. Cl. 342—352 **24 Claims**



1. A method of operating M antennas traveling around the earth substantially in N different orbits, where M and N are integer numbers, wherein each of said antennas projects a footprint earthward which is divided into a plurality of cells and each of said antennas is controlled by a transceiver corresponding thereto, said method comprising steps of:
generating definitions comprising a multiplicity of momentary channel-to-cell assignment definitions, each of said definitions associating channels with said cells in accordance with a spectrum assignment plan that spaces co-channel cells at least a predetermined distance apart, said multiplicity of momentary channel-to-cell assignment definitions characterizing cell locations at a multiplicity of points in time succeeding one another;

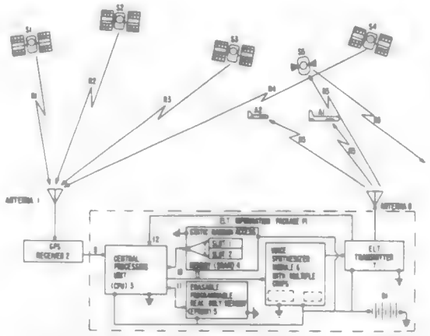
evaluating said multiplicity of definitions to determine ones of said cells and corresponding points in time for which channel assignments change and to determine new channel assignments; and
controlling said transceivers to operate in accordance with said evaluating step.

5,367,305
METHOD AND APPARATUS FOR CONTROLLING AN ACTIVE ANTENNA
Michael Völker, Markdorf; Stefan Weiss, Friedrichshafen, and Rudolf Zahn, Markdorf, all of Germany, assignors to Dornier GmbH, Germany
Continuation of Ser. No. 854,976, Mar. 20, 1992, abandoned. This application Jul. 26, 1993, Ser. No. 96,857
Claims priority, application Germany, Mar. 20, 1991, 4109067
Int. Cl.[5] H01Q *3/22*
U.S. Cl. 342—368 **22 Claims**



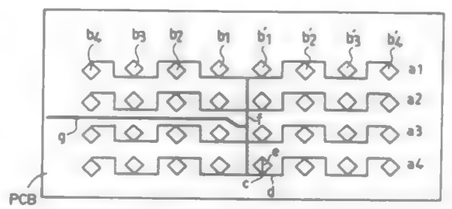
1. A method for controlling an active antenna having a plurality of transmitting/receiving elements, said method comprising the steps of:
dividing light of a first narrow-band continuous wave laser light source into a first plurality of optical paths of different lengths, the number of said optical paths being equal to the number of said transmitting/receiving elements;
dividing light of a second narrow-band continuous wave laser light source into a second plurality of optical paths, the number of said optical paths being equal to the number of said transmitting/receiving elements,
respective optical paths of each of said first and second pluralities of optical paths being mechanically and thermally closely coupled with one another, whereby outside influences of acoustic, thermal and other conditions affect all such path within each said plurality in a like manner;
length differences between individual optical paths within each of said first and second pluralities being much greater than wave lengths of the two light sources;
coherently superposing light in each of the respective optical path of said plurality of optical paths with light in different optical path of said second plurality of optical paths, whereby a plurality of beat signals is generated;
converting said optical beat signals to a plurality of electrical signals;
transmitting said electrical signals to respective individual transmitting/receiving elements;
changing frequencies of the coherent light sources, thereby accomplishing at least one of: shaping and beam steering antenna lobes in at least one direction and changing frequency of the electric signals which are present at the transmitting/receiving elements.

5,367,306
GPS INTEGRATED ELT SYSTEM
Blake D. Hollon, 1941 Park Dr., and Edmund D. Hollon, 130 Frontier Dr., both of, Douglas, Wyo. 82633
Filed Jun. 4, 1993, Ser. No. 72,138
Int. Cl.[5] G01S *1/08, 5/02*
U.S. Cl. 342—386 **18 Claims**



1. A method for locating an aircraft in the event said aircraft is downed, the method comprising the steps of:
(a) providing a GPS receiver on said aircraft for receiving position information, latitude and longitude, from a GPS satellite system;
(b) providing an ELT information package on said aircraft; wherein said ELT package includes:
(i) processing means adapted to receive said position information from said satellite system;
(ii) storage means for storing said position information;
(iii) transmitting means for transmitting an emergency signal comprising said position information upon activation of said transmitting means;
(c) providing said storage means with a static random access memory chip adapted to store updated position information from said processing means; and further providing said static random access memory chip with two locations for storing said position information received from said processing means; wherein updated position information is alternately stored in said two locations.

5,367,307
MICROWAVE PLATE ANTENNA PRINTED ON A SUBSTRATE
Philippe Dupuis, Lannion Cedex; Eduardo Motta Cruz, Rennes Cedex, and Daniel Jean-Pierre, Rennes, all of France, assignors to Critt & Universite' de Rennes 1, France
Filed Sep. 19, 1991, Ser. No. 762,922
Claims priority, application France, Oct. 3, 1990, 90 12273
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS **21 Claims**



1. A microwave antenna comprising a printed circuit on a printed circuit board, a central feed line on said printed circuit board for connection to an antenna lead of a microwave sys-

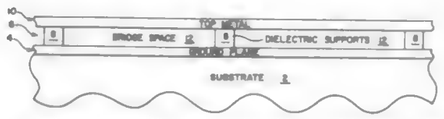
tem, a plurality of printed sub-network feed lines connected perpendicularly to opposite sides of said central feed line, each of said sub-network feed lines having a plurality of elementary radiating elements connected thereto with adjacent radiating elements projecting in opposite directions away from said sub-network feed lines, each of said radiating elements having an opposite end remote from said connection between said radiating elements and said sub-network feed line, and bends formed in said sub-network feed line between adjacent radiating elements, said bends causing said opposite ends of adjacent radiating elements to be separated by a distance perpendicular to said sub-network feed line which is no more than a distance between the sub-network feed line and said opposite end of a radiating element.

5,367,308

THIN FILM RESONATING DEVICE

Robert J. Weber, Boone, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 29, 1992, Ser. No. 891,436
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS **21 Claims**



1. A microelectronic antenna formed on a substrate of the type used for semiconductor devices, and adapted for operation at very high frequencies, the antenna comprising, in combination:

a supporting substrate of the type used to support microelectronic circuits,

a first thin film conductive layer deposited on the substrate and connected to serve as a ground plane for the antenna,

an array of dielectric posts projecting from the ground plane on the order of five microns,

a top thin film conductive layer supported by said posts, the top thin film conductive layer being fed as the radiating element of the antenna, and

the array of dielectric posts and the first and top thin film conductive layers forming a bridge structure separating said first and top thin film conductive layers where the majority of a space between said first and top thin film conductive layers defined by the bridge structure is occupied by air, the minority of the area being occupied by the dielectric material of the posts, thereby to reduce the ohmic losses in the antenna structure and enhance the signal gain thereof.

5,367,309

CELLULAR PHONE SHIELD

Richard Tashjian, 700 Kinderkamack Rd., River Edge, N.J. 07661

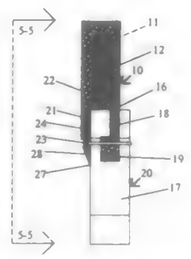
Filed Jul. 9, 1993, Ser. No. 44,014
Int. Cl.[5] H01Q *1/24*
U.S. Cl. 343—702 **10 Claims**

1. A shielding device to protect a user from microwave energy emitted from a hand-held cellular phone having a top surface, rear surface and an antenna extending upwardly from the top surface thereof comprising:

an upper shield portion extending upwardly from the top surface of the cellular phone adjacent to the antenna to form a barrier to deflect the energy from the antenna away from the user,

an intermediate shield portion extending at an angle to the upwardly extending shield portion and along the top surface of the phone and then downwardly along the rear surface of the phone, terminating in an enlarged paddle area,

a slide arm portion extending downwardly from the shield portion on one side thereof adjacent the paddle area side, said slide arm portion having an inner edge to engage the phone and an outer edge comprising a continuation of the



shield portion, said slide arm outer edge having a notch and an inwardly sloping lower edge portion joining the slide arm inner edge, and

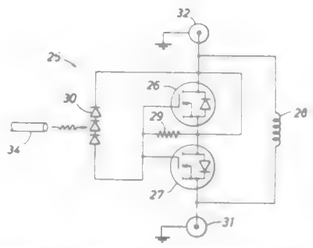
an O-ring mounted about the phone and in engagement with the notch on the slide arm and about the paddle arm to maintain the shielding device in position.

5,367,310

FIBER OPTIC ANTENNA RADIATION EFFICIENCY TUNER

Thomas J. Warnagiris, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Oct. 11, 1991, Ser. No. 775,035
Int. Cl.[5] H01Q *9/00*
U.S. Cl. 343—745 **13 Claims**



9. A switch for controlling adjacent sections of an antenna system which is divided into two or more sections wherein said switch is connected between the two sections and wherein said switch comprises a three terminal solid state switching device, and has input and output terminals which are connected for switching manner, and said input and output terminals are connected to adjacent antenna sections, and wherein a third terminal is a gate terminal; bias circuit means for defining an operative state of said gate terminal to trigger switching, and wherein said bias means includes means for receiving a signal thereto free of interaction with the electromagnetic field of the antenna, the switch including:

(a) a pair of field effect transistors coupled in series at a common node, the source of each transistor or the drain of each transistor connected to the node,

(b) a two-terminal photovoltaic cell coupled at one terminal to the node and at the other terminal to a common bias resistor coupled to the node, and

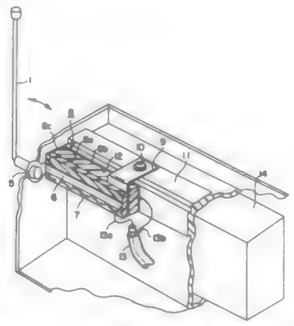
(c) a shunt inductor in parallel with the series combination of transistors with an inductance selected to provide a preselected resonant frequency with the inherent parasitic capacitance of the transistors.

5,367,311

ANTENNA FOR BROAD-BAND ULTRAHIGH FREQUENCY

Yoshimi Egashira, and Hai Xu, both of Tokyo, Japan, assignors to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1992, Ser. No. 973,289
Claims priority, application Japan, Nov. 8, 1991, 3-292958
Int. Cl.[5] H01Q *9/30*
U.S. Cl. 343—749 **2 Claims**



1. A broad-band ultrashort antenna characterized in that said antenna comprises:

an ultrashort antenna element, the electrical length of said antenna element being substantially lambda/2 in which lambda is a wavelength at a high end of a frequency band used;

a sheet-form transmission path member connected at one end directly to one end of said ultrashort antenna element;

a ground plane made of a sheet-form conductive member that has an electrical length of lambda/4 and is bent at an intermediate portion of said conductive member into a U shape so as to have a first portion and a second portion which face each other, said first portion being installed parallel to said transmission path member in close proximity to said transmission path member so as to be capacitively coupled with said transmission path member;

a capacitive coupling member electrically connected to one end of said first portion of said ground plane so that capacitive coupling is created between said capacitive coupling member and ground; and

a coaxial cable with its central conductor connected directly to an other end of said transmission path member and its outer conductor connected to one end of said second portion of said ground plane, and wherein

said antenna element resonates in a high end of said frequency band used, an LC circuit formed between said first portion of said ground plane including said capacitive coupling member and said ground resonate in a middle of said frequency band used, and an LC circuit formed between said first and second portions of said ground plane resonates in a low end of said frequency band used whereby a triple-tuned antenna is provided.

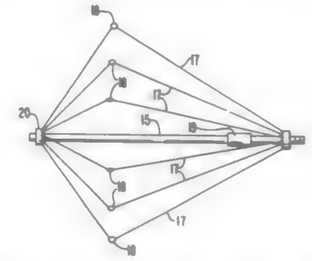
5,367,312

BICONICAL DIPOLE ANTENNA

R. Wayne Masters, Falls Church, Va., assignor to Antenna Research Associates, Inc.

Filed Mar. 20, 1992, Ser. No. 854,822
Int. Cl.[5] H01Q *9/28*
U.S. Cl. 343—807 **5 Claims**

1. In a biconical dipole antenna comprising a pair of electrically conducting support rods, each having a proximal and a distal end, a plurality of electrically conducting wires distributed around each end of each of said support rods, each wire having one end electrically connected to the distal end of the corresponding support rod and a second end electrically connected to the corresponding support rod at a location between said distal end and the proximal end of the rod, said wires being spaced uniformly around the corresponding support rod to define a conical cavity around each rod, and means for mounting said rods and wires in a dipole configuration, said dipole configuration producing an output voltage in response to incident radiation and being susceptible to resonance induced



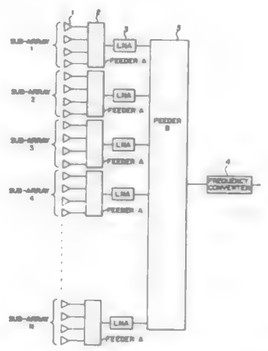
within each of said conical cavities by detected incident radiation and causing a sharp peak in the curve representing the variation with frequency of the ratio of the intensity of the incident electric field to output voltage from said dipole configuration, the improvement comprising means mounted in each of said cavities to suppress said resonance induced within said cavities by preventing resonant current flow in said rods.

5,367,313

ARRAY ANTENNA FOR RECEIVING RADIO COMMUNICATION

Nobutake Orime; Morio Higa, and Yoshiyuki Chatani, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00422, § 371 Date Dec. 2, 1992, § 102(e) Date Dec. 2, 1992, PCT Pub. No. WO92/17916, PCT Pub. Date Oct. 15, 1992
PCT Filed Apr. 6, 1992, Ser. No. 952,532
Claims priority, application Japan, Aug. 4, 1991, 3-075115
Int. Cl.[5] H01Q *21/00*
U.S. Cl. 343—853 **18 Claims**



1. An array antenna for receiving radio communication, and having a gain over temperature index G/T, comprising:

(a) a number of subarrays, each of said subarrays including:

(i) a plurality of radiating elements each having a noise temperature Ta;

(ii) a first feeder, having a loss La, for combining the outputs of said plurality of radiating elements and providing a combined output; and

(iii) a low noise amplifier having a gain Gl, an equivalent input noise temperature Te and an input connected to the combined output of the first feeder for amplifying

the combined output of said first feeder and providing an amplified output as an output of the subarray;

(b) a second feeder having a loss Lb and inputs connected to the amplified outputs of the low noise amplifiers for combining the outputs of said subarrays and outputting the combined output, and

(c) a frequency converter connected to the output of the second feeder for converting the frequency of the output of said second feeder and having an equivalent noise temperature Tc,

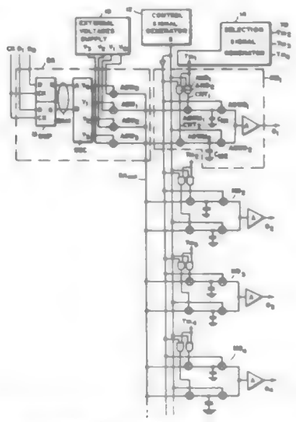
wherein the gain of the low noise amplifier is such that an influence of the loss of the second feeder on the gain over temperature index G/T of the antenna is reduced and wherein at an environmental temperature To, a noise temperature T of the antenna is Ta+(La−1)To+LaTe+La((Lb−1-)To+LbTc)/Gl, and an overall gain G of the antenna is such that G/T is greater than a predetermined threshold.

5,367,314

DRIVE CIRCUIT FOR A DISPLAY APPARATUS

Hisao Okada, Ikoma, and Kuniaki Tanaka, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1991, Ser. No. 766,724
Claims priority, application Japan, Sep. 28, 1990, 2-261473
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—100 **7 Claims**



1. A drive circuit for a display apparatus into which a digital video signal is input and in which a plurality of parallel signal electrodes are provided, said circuit comprising:

voltage supplying means for supplying a plurality of signal voltages, the levels of said signal voltages being different;

voltage selecting means, connected to said voltage supplying means, for receiving said digital video signal, for selecting one of said signal voltages in accordance with said digital video signal, and for supplying said selected signal voltage;

signal voltage means provided for each of said signal electrodes, and each having a plurality of signal lines for receiving selected signal voltages from said voltage selecting means, each of said signal lines being provided with a signal input switching element, a signal holding capacitor and a signal output switching element;

selection signal generating means for generating selection signals, each of said selection signals having a first on-state and a first off-state, said selection signals sequentially becoming said first on-state, said first on-state being a state in which said selected signal voltages from said voltage selecting means are sequentially accepted, said first off-state being a state in which said selected signal voltages from said voltage selecting means are sequentially accepted, said first off-state being a state in which said selected signal voltages are not accepted at all, said selection signal generating means being connected to said signal input switching elements of said plurality of signal lines in each of said signal voltage means, respectively;

control signal generating means for generating control signals by which a second on-state and a second off-state are alternately repeated, said second off-state being a state in which said accepted voltages are output to said signal electrodes, said second on-state being a state in which said accepted voltages are not output, said control signal output switching elements of said plurality of signal lines in each of said voltage means, respectively; and

wherein each of said plurality of signal lines consists of a pair of signal lines, each of said pair of signal lines including said signal input switching element, said signal holding capacitor and said signal output switching element.

5,367,315

METHOD AND APPARATUS FOR CONTROLLING CURSOR MOVEMENT

Shaugan Pan, Iowa City, Iowa, assignor to Eyetech Corporation, Iowa City, Iowa

Filed Nov. 15, 1990, Ser. No. 613,385
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—156 **9 Claims**



1. A method for controlling the movement of a cursor on a computer display in response to corresponding movement of a user's head and eyes, said method comprising: causing light at frequencies within the infrared spectrum to be generated and transmitted from one or more light sources throughout a relatively large defined active area within which the user's head is normally positioned and moved during operation of the computer; providing one or more non-imaging detectors capable of measuring the intensity of the infrared light reflected thereto from the user's head and eyes from anywhere within the defined area so as to produce signals from the detectors, the amplitude of each signal corresponding to the intensity of the infrared light reflected to each detector; comparing the amplitude of the signals received by the detectors so as to determine the relative position of the head of the user within the defined area based upon the differences and the rate of change in the amplitude of each of the signals; and using the information from the comparison to control movement of the cursor to a position on the computer display that corresponds to the position of the user's head within the defined active area.

5,367,316

REMOTE-CONTROL APPARATUS FOR ELECTRONICS APPARATUS

Masao Ikezaki, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 975,958, Nov. 13, 1992, abandoned, which is a continuation of Ser. No. 499,582, Mar. 27, 1990, abandoned. This application Feb. 14, 1994, Ser. No. 195,847
Claims priority, application Japan, Mar. 28, 1992, 1-77598
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—158 **13 Claims**

1. A remote-control apparatus comprising:

a transmitter for transmitting a wireless signal; said transmitter comprising:

a cursor key having at least one switch;

an enter key and a menu key; and

wireless signal generating means for transmitting a wireless signal which corresponds to operation of said cursor key, enter key or menu key;

a receiver for receiving and processing the wireless signal, said receiver comprising:

a receiving part for receiving and decoding the wireless signal;

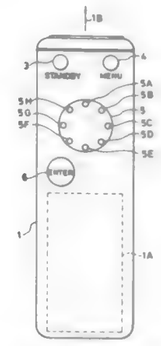
connecting means for connecting one of at least one electronics apparatus to said receiver based on the decoded wireless signal;

a video signal memory for memorizing video image data of icons representing functional information for operation of said at least one electronics apparatus;

display means for displaying a video image output from said one of at least one electronics apparatus and said video signal memory;

a display control apparatus controlling output of said video signal memory and a display of a cursor on said display means; said display control apparatus also controlling discrete movement of the cursor to a new position, the new cursor position being determined by a predetermined rule embodied in a reference table which determines the new cursor position based on a present cursor position and said wireless signal transmitted by operation of a cursor key switch, the predetermined rule controlling at least one cursor key switch, and wherein a single cursor key switch controlled by said rule corresponds to different cursor movement directions and different cursor positions depending on the present cursor position, such that actuation of said one cursor key switch corresponds to a first movement, when the cursor is in a first position, and corresponds to a second movement, different than said first movement when the cursor is in a second position different than said first position; and

wherein when said display control apparatus discretely moves the cursor to a new position in compliance with the predetermined rule, said display control apparatus erases the cursor which is presently displayed, and displays the cursor at the new cursor position.



5,367,317

SCREEN DISPLAY DEVICE

Osamu Hosotani, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 16, 1993, Ser. No. 78,127
Claims priority, application Japan, Oct. 21, 1992, 4-307690
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—193 **6 Claims**

1. A screen display device comprising:

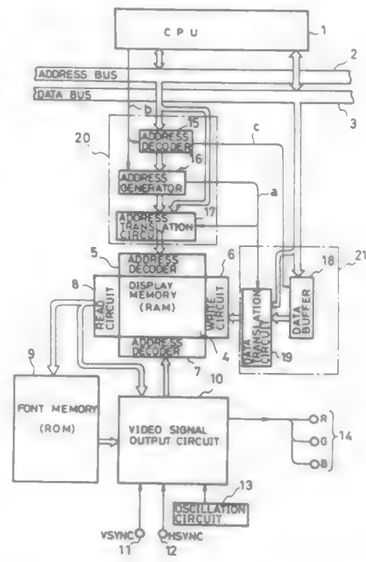
a display screen for displaying one or more lines of characters;

a display memory in which code and display color data for each character to be displayed on the display screen is stored and data is rewritten by the instruction of a processor, wherein the display memory includes one or more blocks, each block comprising sequential addresses in memory corresponding to the display of a line of characters on the display screen;

a font memory in which font data for said character or pattern is stored and from which said font data is read out according to the character code outputted from said display memory;

an output circuit which reads out said display memory in sequence and outputs the data outputted from said font memory to the display screen;

a processor for outputing normal addresses within the display memory and block rewrite addresses outside of the display memory;



address generation means for selectively generating addresses to access a given block when activated, wherein sequential addresses for display memory locations in the given block are generated in response to a corresponding block rewrite address;

a write address control means for controlling the addressing of the display memory, wherein when an address output by the processor is a normal address within the display memory area the normal address is used to address the display memory, and when said address is a block rewrite address corresponding to a first block of the display memory area, making a translation signal go active and activating the address generation means to generate addresses to the display memory to write to locations in the first block; and

a write data control means which temporarily stores write data outputted by the processor, wherein when said translation signal goes inactive the write data is sent to the display memory and wherein the temporarily stored data is sent to the display memory when the translation signal goes active.

5,367,318

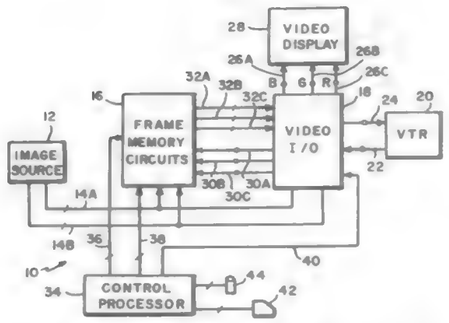
METHOD AND APPARATUS FOR THE SIMULTANEOUS DISPLAY OF ONE OR MORE SELECTED IMAGES

Raymond A. Beaudin, Windham, N.H.; Joseph R. Fallon, Boxford, and Leslie I. Halberg, North Reading, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 318,028, Mar. 2, 1989, Pat. No. 5,250,933. This application May 10, 1993, Ser. No. 59,904

Int. Cl.[5] G09G *1/02*

U.S. Cl. 345—201 25 Claims



1. A system for periodically refreshing a display frame on a display device, which display frame is formed from a plurality of display pixels and is adapted to display a plurality of images, each image appearing as a separate image frame, the image frames being displayed forming said display frame, the system comprising;

at least one source for providing image frames;

frame memory means which is divided into a plurality of memory frames, each of said memory frames having a sufficient number of memory positions to store pixel data for a single display frame, and each of said memory frames being subdividable into a plurality of memory image frames, each of which has a sufficient number of memory positions to store an image frame;

means for selectively storing image frames from said at least one source in selected memory image frames in selected memory frames in said frame memory means;

means operative during each periodic refreshing of the display device, where the device is displaying a plurality of images which were stored in memory image frames of different memory frames, for selectively reading out the image frames from said frame memory means, said read-out means reading out image frames from at least two memory frames within the frame memory, each read-out image frame corresponding to an image frame of the display frame, and each image frame of the display frame, each image frame being read out from the memory frame in which it is stored which memory frame is independent of and may be different than the memory frame for other readout images; and

means for utilizing each readout image frame to control refresh of at least one image frame displayed on said display device.

5,367,319

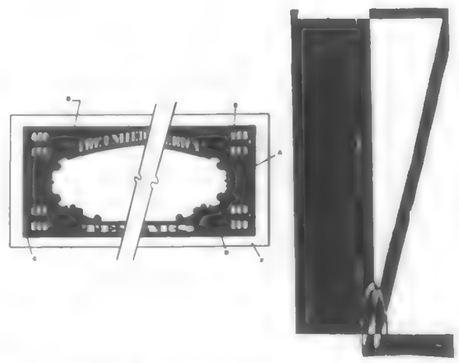
SECURITY PROTECTION FOR IMPORTANT DOCUMENTS AND PAPERS

Louis A. Graham, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 26,488, Mar. 16, 1987, abandoned, and a continuation of Ser. No. 276,637, Nov. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 81,004, Aug. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 26,413, Mar. 16, 1987, Pat. No. 4,797,687, which is a continuation-in-part of Ser. No. 908,289, Sep. 17, 1986, abandoned, which is a division of Ser. No. 729,412, May 1, 1985, Pat. No. 4,650,694. This application Jul. 30, 1992, Ser. No. 921,399

Int. Cl.[5] G01D *15/18;* B42D *15/00;* B41M *3/14*

U.S. Cl. 347—2 30 Claims



1. A method of detecting document counterfeiting using a fluid jet applicator having a fluid plenum and an associated orifice array and means for selectively passing droplets onto a moving document substrate only during controlled print times having a print time duration T, comprising the steps of:

purposefully generating standing waves within the fluid plenum;

establishing an on/off print cycle pattern including, during said on print cycle, selectively passing droplets onto a moving document substrate only during controlled print times having the print time duration T;

maintaining the print time duration T below a predetermined maximum value, including selecting the print time duration T such that no more than about one droplet per orifice of the orifice array is formed during such print time duration T, thereby causing, during such print time duration T, an interaction between the standing waves and the on/off print cycle pattern to form a unique random pattern on said substrate; and

applying the unique random pattern through the orifice array to a predetermined portion of each of a set of original document substrates, whereby, after a plurality of such documents have been distributed, counterfeit documents may be detected by visually comparing documents and checking for documents having random patterns which are exact copies.

5,367,320

THERMAL HEAD AND SYSTEM INCLUDING THE SAME

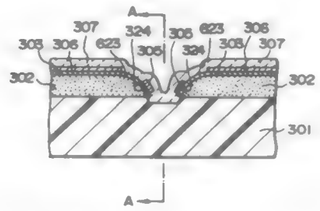
Hideo Taniguchi, and Hiroaki Onishi, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 24, 1992, Ser. No. 824,949

Claims priority, application Japan, Jan. 30, 1991, 3-031581; Jan. 30, 1991, 3-031582; Jan. 31, 1991, 3-032312; Jan. 31, 1991, 3-032313

Int. Cl.[5] B41J *2/335*

U.S. Cl. 346—76 PH 33 Claims



1. A thermal head used for printing in a thermal transfer manner by electrically heating a resistive film, said thermal head comprising:

a substrate having a top surface, a side surface and an edge between the top surface and the side surface of said substrate;

a glaze layer formed on the top surface of said substrate, said glaze layer at least partially covering the top surface and extending to the edge of the substrate without covering the side surface of the substrate, said glaze layer having a top glaze portion parallel to the top surface of the substrate, a side glaze portion flush with the side surface of said substrate, and having a corner glaze portion formed at an intersection between said top glaze portion and said side glaze portion; and

a heating section sandwiched between two electrodes, said heating section having a resistive film pattern formed on the top, corner, and side glaze portions, said electrodes formed on the resistive film at preselected positions.

5,367,321

THERMAL LINE PRINTER WITH PLURAL THERMAL HEAD SUBSTRATES

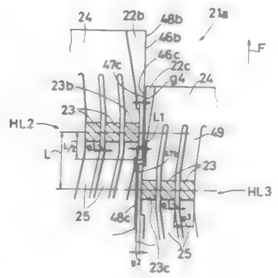
Ota Shigenori, and Kawata Akihiko, both of Aira, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 26, 1991, Ser. No. 766,818

Claims priority, application Japan, Sep. 29, 1990, 2-261964

Int. Cl.[5] B41J *2/335, 2/345*

U.S. Cl. 346—76 PH 25 Claims



16. A thermal head defining a principal scanning direction comprising:

a plurality of insulating substrates extending in the principal scanning direction, each of the insulating substrates having an upper surface;

a plurality of angle-shaped heat reserve layers extending in the principal scanning direction, each of the heat reserve layers being disposed on an associated insulating substrate and protruding from the upper surface of the associated insulating substrate;

a plurality of rows of heating resistance elements, each of the rows being linearly disposed on an associated heat reserve layer;

wherein adjacent two of the rows of the linear heating resistance elements are deviated from each other by a distance ranging from 0.2 to 1.5 mm in a subscanning direction perpendicular to the principal scanning direction; and

at least one common electrode electrically connected to each of the heating resistance elements in each of the rows of heating resistance elements and a plurality of individual electrodes, each of the individual electrodes being electrically connected to an associated heating resistance element for energizing selected heating resistance elements, wherein adjacent two of the insulating substrates have extreme end portions facing each other and wherein at least a portion of the common electrode and at least one of the individual electrodes located in a closest proximity of the extreme end portion of each of the adjacent two insulating substrates are warped in a convex form toward the heating resistance element.

5,367,322

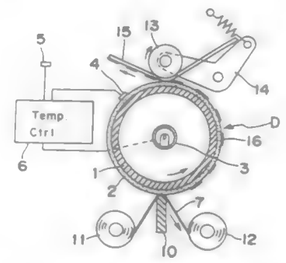
THERMAL RECORDING APPARATUS

Atsushi Sogami, Sanda; Noboru Katakabe, Uji; Yoshikawa Masanori, Neyagawa, and Kouji Ikeda, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 7, 1992, Ser. No. 957,102

Int. Cl.[5] B41J *2/325*

U.S. Cl. 346—76 PH 12 Claims



1. A thermal recording apparatus which comprises:

an intermediate transfer member having a layer of silicone rubber formed on one surface thereof;

an ink sheet having a thermally fusible ink layer formed on an ink backing;

an image forming means operable to press the ink sheet against the intermediate transfer member and also to heat the ink layer so as to selectively form an inked image on the intermediate transfer member while the ink sheet is pressed against the intermediate transfer member;

an ink sheet drive means for separating the ink sheet away from the intermediate transfer member after the inked image has been formed by the image forming means on the intermediate transfer member;

a pressing means for pressing a recording sheet against the intermediate transfer member having the inked image formed thereon;

a heating means for heating the intermediate transfer member to a predetermined temperature at which a of an ink material forming the ink layer is higher that an adhesive strength between the ink material and the intermediate

transfer member and at which the inked image on the intermediate transfer medium is softened enough to be transferred onto the recording sheet for deposit thereon; and

said inked image being formed on the intermediate transfer member which is heated to the predetermined temperature and being subsequently transferred onto the recording sheet while the recording sheet is pressed against the intermediate transfer member, to thereby complete a recording of the inked image on the recording sheet.

5,367,323

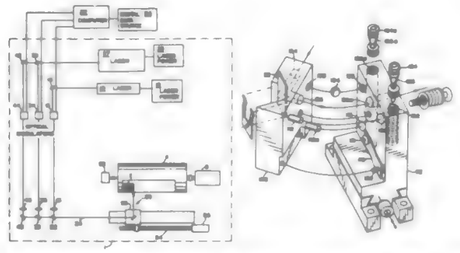
MIRROR MOUNT FOR USE IN EQUIPMENT FOR CONVERTING DIGITAL DATA INTO A LIGHT IMAGE

Malcolm Winsor, Mont Vernon, N.H., assignor to Cirrus Technology Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 462,009, Jan. 8, 1990, abandoned, which is a division of Ser. No. 252,670, Oct. 3, 1988, Pat. No. 4,933,687. This application Jun. 10, 1992, Ser. No. 896,183

Int. Cl.[5] B41J *2/435*

U.S. Cl. 346—139 R **2 Claims**



1. In a system for converting digital information into a light image, a mirror mount for independent adjustment of angles of azimuth and elevation including

a mirror,

a mounting block supporting said mirror and having a surface with a first spherical recess,

an adjustable stand in face-to-face relationship with said mounting block and having a second spherical recess,

a ball occupying said recesses,

a first adjustment means for moving said mounting block with respect to said stand angularly about said ball in a first plane, and

a second adjustment means for moving said mounting block with respect to said stand angularly about said ball in a second plane perpendicular to said first plane.

5,367,324

INK JET RECORDING APPARATUS FOR EJECTING DROPLETS OF INK THROUGH PROMOTION OF CAPILLARY ACTION

Nobumasa Abe; Kiyoharu Momose; Ko J. Watanabe; Yuichi Nakamura; Tsuneo Handa, and Mitsutaka Nishikawa, all Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

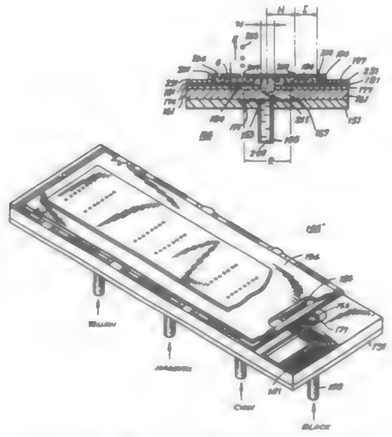
Division of Ser. No. 677,024, Mar. 28, 1991, Pat. No. 5,148,185, which is a continuation of Ser. No. 499,233, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 60,206, Jun. 10, 1987, Pat. No. 4,914,562. This application Sep. 10, 1992, Ser. No. 942,902

Claims priority, application Japan, Jun. 10, 1986, 61-134187; Jun. 25, 1986, 61-148651; Jul. 15, 1986, 61-165751; Aug. 7, 1986, 61-185570; Sep. 11, 1986, 61-214322; Sep. 29, 1986, 61-230748

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] B41J *2/21*

U.S. Cl. 347—43 **3 Claims**



1. A multi-color ink jet recording head for ejecting ink droplets from nozzles, comprising:

a substrate having a front surface and a back surface, at least two ink supply portions passing through said substrate from said back surface to said front surface, and a plurality of heating elements disposed in rows on the front surface in at least two groups, one row arranged on each side of the ink supply portion, each of said groups of heating elements being associated with a single color ink;

at least one nozzle plate having a plurality of nozzles and disposed on said substrate, said at least one nozzle plate and said substrate defining a space between said at least one nozzle plate and said substrate in registration with each of said groups of heating elements and a corresponding group of nozzles associated with a single color ink, each said space being independent of the space in registration with the other of said groups of nozzles and heating elements, each said space defining a first reservoir means for storing said ink formed between said at least one nozzle plate and said heating elements and having a first cross-sectional area;

means for independently delivering ink of one color from the side of said substrate defined by the back surface thereof to each of said spaces, whereby printing can be independently effected in at least two colors of ink, each said independent ink delivery means including support means for supporting the substrate and having a slit therethrough for supplying the ink of the associated color to the first reservoir means, the slit having a second cross-sectional area; and

second reservoir means for storing the ink of the associated color in fluid communication with said slit and having a third cross-sectional area, said first cross-sectional area being smaller than said second cross-sectional area and said second cross-sectional area being smaller than said third cross-sectional area for promoting capillary action in ejecting droplets of ink through said plurality of nozzles.

5,367,325

RECORDING APPARATUS WITH TEMPERATURE DETECTION AND COMPENSATION

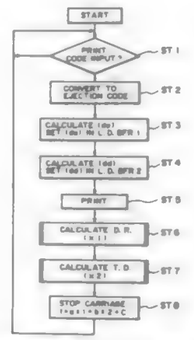
Kentaro Yano; Noribumi Koitabashi, both of Yokohama; Naoji Otsuka, Kawasaki; Miyuki Matsubara, Tokyo; Hitoshi Sugimoto, Yokohama; Atsushi Arai, Kawasaki; Hiroshi Tajika, and Hiromitsu Hirabayashi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 682,364, Apr. 9, 1991, Pat. No. 5,166,699. This application Sep. 10, 1992, Ser. No. 942,613

Claims priority, application Japan, Apr. 11, 1990, 2-095408

Int. Cl.[5] B41J *2/05*

U.S. Cl. 347—17 **38 Claims**



1. A recording apparatus using a recording head with plural energy generating elements for generating energy for ejecting ink through plural ejection outlets, the apparatus comprising:

detecting means for detecting temperatures of plural regions of said recording head;

calculating means for calculating a ratio or difference of the detected temperatures; and

control means for controlling a recording speed of said recording head responsive to an output of said calculating means,

wherein said detecting means predicts temperatures based on duties of driving signals applied to said energy generating elements per unit time in corresponding regions.

5,367,326

INK JET PRINTER WITH SELECTIVE NOZZLE PRIMING AND CLEANING

Stephen F. Pond, Pittsford, and David G. Anderson, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1992, Ser. No. 955,766

Int. Cl.[5] B41J *2/165*

U.S. Cl. 347—22 **14 Claims**

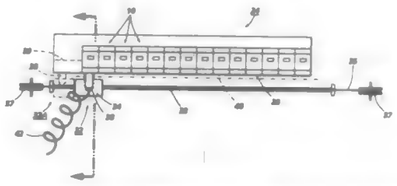
1. An ink jet printer for printing ink images on a recording medium by ejecting ink from a printhead in the form of droplets comprising:

a fixed, pagewidth printhead having a length equal to at least the width of recording medium to be printed thereon by the printer and a linear extended array of nozzles located in a planar surface portion of a nozzle-containing face of said printhead, said printhead face being coated by a material that is non-wetting to the ink and having a ledge along one edge thereof, spaced from and parallel to the linear array of nozzles, said ledge having a surface parallel to and spaced a predetermined distance from said surface portion containing the array of nozzles;

a movable cleaning and priming station having a vacuum port for cleaning and priming at least one nozzle in said extended array of nozzles at a time by selectively applying a vacuum to said vacuum port when the vacuum port is selectively positioned to confront said at least one nozzle of said extended array of nozzles, the cleaning and priming station including:

a carriage adapted for movement along and parallel to the extended array of nozzles;

a support member movably mounted in said carriage for movement therewith and having a surface which is resiliently urged toward said surface of the printhead face



ledge for moving contact therewith when said carriage is moved relative to the printhead;

a vacuum conduit fixedly attached to said support member for movement therewith and having an open end confronting said nozzles and spaced a predetermined distance from said printhead face, so that the vacuum conduit open end serves as the vacuum port and is maintained a predetermined distance from said extended array of nozzles;

means for moving the carriage along said printhead length, so that the vacuum conduit open end is selectively locatable adjacent at least one nozzle at a time in said extended array; and

a vacuum source with means to vary the vacuum being selectively applied to said vacuum conduit, so that selected nozzles may be cleaned and/or primed dependent on the vacuum applied to the vacuum conduit open end.

5,367,327

SINGLE PASS FULL COLOR PRINTING SYSTEM USING A QUAD-LEVEL XEROGRAPHIC UNIT AND A TRI-LEVEL XEROGRAPHIC UNIT WITH IMPROVED EXPOSURE OF THE PHOTORECEPTOR

Ellis D. Harris, Claremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1993, Ser. No. 170,947

The portion of the term of this patent subsequent to Jun. 22, 2010, has been disclaimed.

Int. Cl.[5] G03G *15/01;* **G01D** *15/14*

U.S. Cl. 346—157 **6 Claims**

1. A single pass full color printing system comprising:

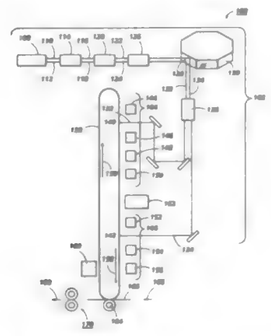
a raster output scanner optical system for generating a first modulated beam and a second modulated beam,

a photoreceptor means,

a quad-level xerographic unit for charging said photoreceptor means, said photoreceptor means then being exposed to said first modulated beam, said quad-level xerographic unit having means for depositing a first blue color toner, a second black color toner, and a third yellow color toner on said photoreceptor means based on the charge, after exposure to said first modulated beam, and

a tri-level xerographic unit for charging said photoreceptor means, subsequent to said quad-level xerographic unit, said photoreceptor means then being exposed to said second modulated beam, said tri-level xerographic unit having means for depositing a fourth magenta color toner

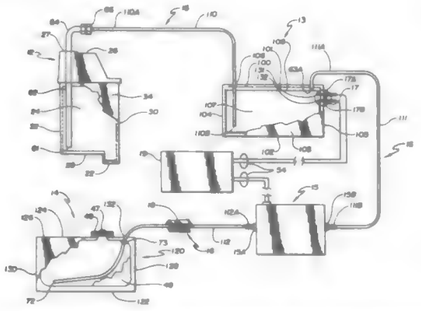
and a fifth cyan color toner on said photoreceptor means based on the charge, after exposure to said second modulated beam, whereby said color toners produce pixels for black and white and all six primary colors.



5,367,328
AUTOMATIC INK REFILL SYSTEM FOR DISPOSABLE INK JET CARTRIDGES

Paul R. Erickson, Prior Lake, Minn., assignor to LaserMaster Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 139,576, Oct. 20, 1993. This application Apr. 22, 1994, Ser. No. 231,275
Int. Cl.[5] B41J *2/175*
U.S. Cl. 347—7 **11 Claims**



1. An active ink refill system for an ink jet printer having a print carriage that traverses across a print medium, the ink refill system comprising:

(a) a disposable ink jet cartridge removably mountable in the print carriage and constructed as a self-contained unit that includes a print head and an ink supply container that stores a first quantity of liquid ink at a given sub-atmospheric pressure hydrodynamic condition;

(b) an ink reservoir that stores a second quantity of ink for replenishing the first quantity of ink in the ink supply container;

(c) tubing means, operatively coupled to the ink reservoir and the ink supply container, for supplying ink from the second quantity of ink to the first quantity of ink during operation of the ink jet printer as the print carriage traverses across the print medium;

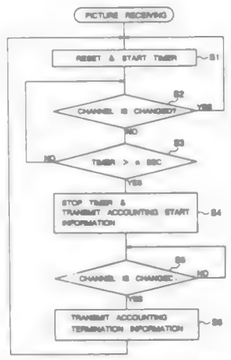
(d) sensor means for sensing when the first quantity of ink is below a predetermined threshold: and

(e) refilling means, operatively coupled to the tubing means, for refilling the ink supply container from the ink reservoir during operation of the ink jet printer as the print carriage traverses across the print medium in response to the sensor means sensing when the first quantity of ink is below the predetermined threshold such that the refilling of the ink supply container is accomplished in a manner that maintains the sub-atmospheric pressure hydrodynamic condition of the ink jet cartridge.

5,367,329
ACCOUNTING SYSTEM IN NETWORK FOR OFFERING VIDEO PROGRAMS

Tatsuru Nakagaki, and Toshimasa Fukui, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1992, Ser. No. 967,626
Claims priority, application Japan, Oct. 24, 1991, 3-277544
Int. Cl.[5] H04N *7/16, 7/173*
U.S. Cl. 348—1 **17 Claims**



1. An accounting system in a network offering video programs to a plurality of subscriber terminals coupled thereto, said accounting system comprising:

first timer means, provided in each of said subscriber terminals, for counting a time, said first timer means starting to count a time when a subscriber terminal receives a video program offered from said network;

an account controller provided in each of said subscriber terminals and including:

determination means for determining whether or not a count time in said first timer means has reached a first reference value,

start means for transmitting account starting information to said network when said determination means determines that the count time in said first timer means has reached the first reference value, and

termination means for transmitting account termination information to said network when the subscriber terminal discontinues receipt of the video program; and

accounting means, provided in said network, for performing an accounting process with respect to each of said subscriber terminals from which the account starting information and the account termination information are transmitted, the accounting process starting from a time at which said network receives the account starting information and ending at a time at which said network receives the account termination information.

5,367,330
PAY-PER-VIEW TELEVISION DELIVERY SYSTEM

Luther Haave, 5224 - 143 Street, Edmonton, Alberta, Canada T6H 4E2 , and Carle T. Proskin, 7711 Canada Way, Burnaby, British Columbia, Canada V3N 1K4

Filed Aug. 1, 1991, Ser. No. 739,153
Int. Cl.[5] H04H *1/00*
U.S. Cl. 348—7 **11 Claims**

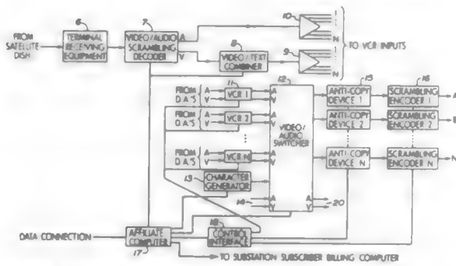
1. An apparatus for controlling and delivering television programming to one or more television substations from a control station, wherein each substation transmits television programming on one or more channels in a scrambled form and a program schedule on a separate barker channel over a multi-channel cable or over-the-air distribution system to all of a plurality of remote subscriber receiving locations on a pay-per-view basis, comprising:

a) means for receiving television programming at the substation;

b) a plurality of television program record and playback means at the substation;

c) first audio and video transmitting means at the control station for transmitting television programming to the substation to be recorded on the record and playback means;

d) second audio and video transmitting means at the substation for transmitting the television programming from the record and playback means over the one or more channels to the remote subscriber locations, the second transmitting means including one or both of audio and video signal scrambling means on one or more of the channel outputs;



e) first computer means at the control station for generating record schedule information and playback schedule information;

f) second computer means at the substation;

g) data communications means for transferring signals indicative of the record and playback schedule information between the first and second computer means; and

h) control interface means at the substation connected to the second computer means operative to switch the record and playback means, the second transmitting means and scrambling means in response to the signals indicative of the record and playback schedule information from the second computer, wherein

the record and playback means at the substation are controlled in accordance with the record and playback schedule information transmitted from the control station, and

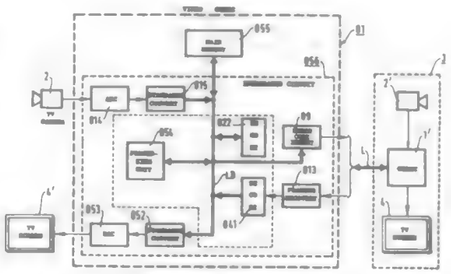
i) means at the substation for selectively enabling descrambling of the television programming to individual subscriber receiving locations in response to a request from the individual subscribers for a particular television program on a pay-per-view basis.

5,367,331
VIDEO CODEC, FOR A VIDEOPHONE TERMINAL OF AN INTEGRATED SERVICES DIGITAL NETWORK

Fernand Secher, Pleumeur Bodou; Jean Thiberville, Trebeurden; Gérard Doubet, Fegersheim; Christian Freund, and Yves Rasse, both of Strasbourg, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Feb. 23, 1993, Ser. No. 21,042
Claims priority, application France, Feb. 24, 1992, 92 02103
Int. Cl.[5] H04M *11/00*
U.S. Cl. 348—14 **9 Claims**

1. A video codec particularly for videophone applications, and more particularly for a videophone terminal of an integrated services digital network, said codec being organized to receive firstly image signals coming from a local television camera so as to transmit them, after compressing and encoding them, to a compatible remote video decoding unit, in particular of another video codec, via a digital transmission line, in particular of the telephone type, and secondly image signals similarly compressed and encoded by a remote video encoding unit, in particular of said other video codec, the similarly compressed image signals being received via the digital transmission line, and then being decompressed and decoded for a television screen receiver locally connected to said video codec, wherein said video codec includes a processing unit co-operating with a single external memory plane both to compress and encode



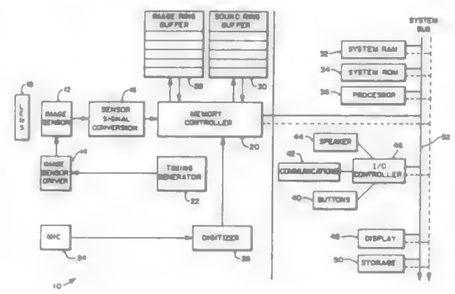
data to be transmitted, and also to decompress and decode received data, with the assistance of time-shared internal operational components;

wherein the processing unit includes a discrete cosine transform operator and a quantifier connected together in series and time shared in association with a loop filter firstly, directly and then inversely as regards the assembly comprising the transform operator and the quantifier, for processing macroblocks of image to be transmitted, and secondly, inversely as regards said assembly, for processing macroblocks of received image.

5,367,332
DIGITAL CAMERA WITH TIME BRACKETING FEATURE

Charles Kerns, Half Moon Bay; Eric Zarakov, Los Gatos, and Thomas S. Gilley, Pleasanton, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 9, 1992, Ser. No. 959,206
Int. Cl.[5] H04N *5/225*
U.S. Cl. 348—61 **5 Claims**



1. A digital still image camera for taking and storing still photographs comprising:

image capture means for capturing images;

digitizing means coupled to the image capture means for converting the images to digital images;

first memory means for storing a plurality of digital images, the first memory means being coupled to the image cap-

ture means, the first memory means storing a user defined number of digital images, with successive digital images being written over older stored digital images when the user defined number of stored digital images is exceeded;

processor means coupled to the image capture means and the first memory means for controlling the number of images taken by the image capture means and the number of digital images stored by the first memory means; and

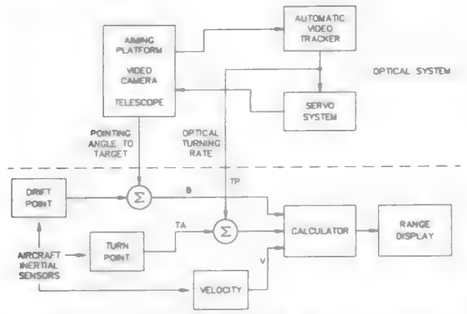
second storage means for permanently storing digital images selected by a user from the first memory means, the second memory means being coupled to the processor means.

5,367,333

PASSIVE RANGE MEASUREMENT SYSTEM

Walter L. Harriman, Riverton, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 27, 1992, Ser. No. 921,863
Int. Cl.[5] H04N *7/18*
U.S. Cl. 348—117 **7 Claims**



1. An onboard device to determine the range between an aircraft and a target, using available turning rates, comprising:

an airborne aircraft having an optical system and aiming platform onboard and a heading and a platform turning rate relative to a target, and a velocity relative to the ground;

sensors on said aircraft for determining said heading and turning rate and said velocity, wherein said turning rate sensor comprises an automatic video tracker, a gyro-stabilized aiming platform aimed at said target mounted to said aircraft, and an inertial aircraft turning rate sensor; and

a calculator connected to said sensors which computes (Sin a÷Sin b)V for determining the range between the aircraft and the target:

[*Range*=(Sin a/Sin b) *V*.]

WHERE:

a=Angle to the target relative to air vehicle heading

b=Total turning rate, and

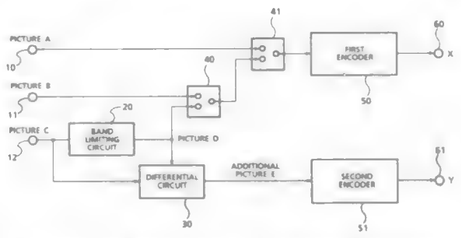
V=Ground velocity.

5,367,334

VIDEO SIGNAL ENCODING AND DECODING APPARATUS

Masakazu Nishino, Kashiwara; Chojuro Yamamitsu, Kawanishi; Tatsuro Juri, Osaka; Toyohiko Matsuta, Katano, and Shigeru Awamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1992, Ser. No. 882,927
Claims priority, application Japan, May 20, 1991, 3-114326; Sep. 24, 1991, 3-243097
Int. Cl.[5] H04N *7/13*
U.S. Cl. 348—389 **19 Claims**



1. An encoding apparatus for a video signal, comprising:

input terminals for inputting a picture A having a horizontal to vertical screen frame ratio of 4:3, a picture B for a wide screen having a larger horizontal to vertical screen ratio than the picture A and a picture C having a larger number of vertical pixels than that of the picture A and the picture B with the same horizontal to vertical screen frame ratio as that of the picture B, and

band limiting means for limiting band of the picture C to obtain a picture D having the same numbers of horizontal and vertical pixels as those of the picture B;

differential means for obtaining a difference between the picture C and the picture D to have an additional picture E;

first encoding means for high-efficiency encoding the picture A, the picture B and the picture D; and

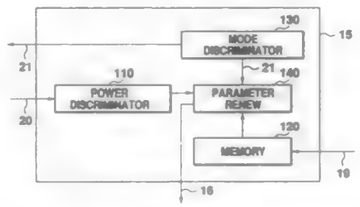
second encoding means for high-efficiency encoding the additional picture E.

5,367,335

IMAGE CODING SYSTEM AND METHOD INCLUDING A POWER CALCULATOR

Tokumichi Murakami, and Toshiaki Shimada, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 884,635, May 15, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 118,939
Claims priority, application Japan, May 24, 1991, 3-120162; May 24, 1991, 3-120163; Aug. 20, 1991, 3-208025
Int. Cl.[5] H04N *7/133*
U.S. Cl. 348—405 **11 Claims**



1. In an image coding system having a coder for coding a sequence of image signals, as dictated by a control signal that sets coding parameters for the coder, a controller for controlling the coder, comprising:

a) a power calculator for calculating an estimated output power as a sum of a size of a data that is output by an image processor; and

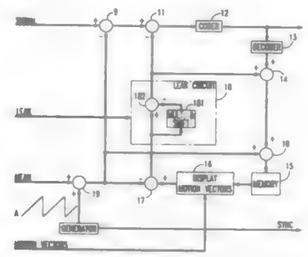
b) a coding update means for generating the control signal based on current coding parameters and the estimated output power.

5,367,336

TRUNCATION ERROR CORRECTION FOR PREDICTIVE CODING/ENCODING

George J. Kustka, Marlboro, and John N. Mailhot, Somerville, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 8, 1992, Ser. No. 910,592
Int. Cl.[5] H04N *7/137*
U.S. Cl. 348—416 **16 Claims**



1. Apparatus having a first means responsive to an input signal and an attenuated prediction signal for creating a desired output signal and a second means responsive to a prediction signal and to a leak control signal for creating the attenuated prediction signal, the improvement comprising:

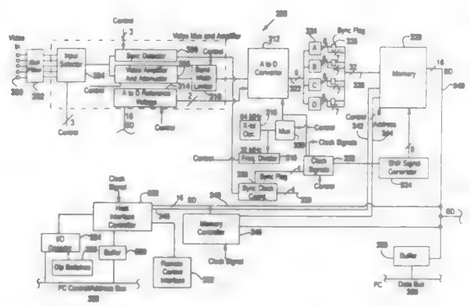
third means for temporally altering the attenuated prediction signal with the aid of a truncation-correction (TC) control signal.

5,367,337

METHOD AND APPARATUS FOR CAPTURING VIDEO IMAGES

Harry S. Pyle; Norman H. Bahr, and Paul G. Nietfeld, all of San Antonio, Tex., assignors to Image Data Corporation, San Antonio, Tex.

Filed Apr. 30, 1992, Ser. No. 876,580
Int. Cl.[5] H04N *5/08*
U.S. Cl. 348—521 **22 Claims**



1. A method of determining unknown video parameters of an input video signal that represents images scanned at an unknown input pixel frequency and vertical and horizontal synchronization (sync) frequencies, that define fields and lines of the image, respectively, comprising the steps of:

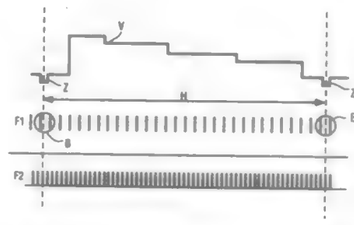
determining a horizontal sync pulse length parameter and a horizontal line length parameter by (1) receiving said input video signal, (2) sampling a portion of said input signal with a sampling frequency that is asynchronous to the scanning frequencies of said input signal, thereby obtaining a set of digital samples representative of said vertical and horizontal sync pulses, (3) storing said set of samples, (4) determining a start sample and a stop sample of each of said sync pulses, (5) counting the number of samples that represent each of said sync pulses, such that a set of sync pulse length values is obtained, (6) processing said sync pulse length values to determine a horizontal sync pulse length parameter, (7) counting the number of samples per period of said sync pulses, such that a set of line length values is obtained, (8) processing said line length values to determine a horizontal line length parameter, and (9) storing said horizontal sync pulse length parameter and said horizontal line length parameter in memory.

5,367,338

METHOD AND APPARATUS FOR CONVERTING THE SAMPLING RATES OF A DIGITAL VIDEO SIGNAL

Albrecht Rothermel, Villingen; Rainer Schweer, Niedereschach; John Stolte, Tannheim, all of Germany, and David Gillies, Strasbourg, France, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Feb. 8, 1993, Ser. No. 14,579
Claims priority, application Germany, Feb. 7, 1992, 4203478
Int. Cl.[5] H04N *7/01, 7/04, 5/04*
U.S. Cl. 348—538 **4 Claims**



1. A method for converting an input digital video signal having a first sampling raster which has an asynchronous phase relationship with a video line to an output digital signal having a second sampling raster which has a synchronous phase relationship with said video line, by use of an interpolator, comprising the steps of:

measuring, for each line of the input digital video signal, the phase of a sample pulse relative to the line synchronization pulse;

determining, for each line of the input digital video signal, the total number of the samples which occur during the line interval of the line; and

controlling said interpolator in accordance with said phase and said total number of samples.

5,367,339

BLACK IMAGE DETECTION CIRCUITRY

Louis A. Lippincott, Roebling, N.J., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 954,742, Sep. 30, 1992, abandoned. This application Jan. 6, 1994, Ser. No. 178,459
Int. Cl.[5] H04N *5/275*
U.S. Cl. 348—592 **6 Claims**

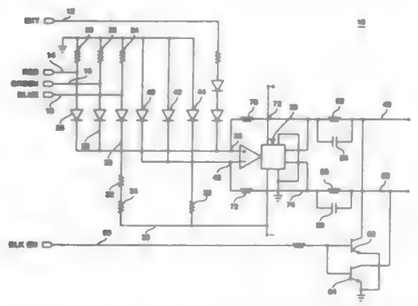
1. A chroma keying device having means for receiving an input signal to provide a switching signal to select one of at least two image signals in accordance with said input signal, comprising:

reference signal means for providing a reference signal;

said input signal having input signal color information with

an information level of substantially zero when said input signal is representative of a black image;

comparison means having first and second substantially equally biased comparison inputs for receiving said input signal color information and said reference signal to pro-



vide a switching signal in accordance with said first and second comparison inputs when said information level is substantially zero;

selecting means for selecting one of said image signals in accordance with said switching signal.

5,367,340

APPARATUS AND METHOD FOR NOISE REDUCTION OF VIDEO SIGNAL DEPENDENT UPON VIDEO GAIN

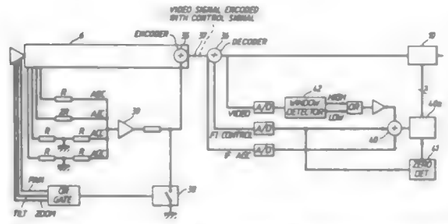
Simon H. Spencer, Essex, United Kingdom, assignor to GEC-Marconi Limited, Stanmore, United Kingdom

Filed Oct. 18, 1991, Ser. No. 776,443

Claims priority, application United Kingdom, Oct. 19, 1990, 9022743

Int. Cl.[5] H04N *5/21, 5/213*

U.S. Cl. 348—607 **20 Claims**



1. A circuit for the noise reduction of a video signal from an imager means for generating a video signal comprising:

means for detecting a gain signal from the imager means as encoded on said video signal; and

means responsive to the detected gain signal for controlling an amount of noise reduction wherein an increase in gain of said imager means increases an output noise of said imager means.

5,367,341

DIGITAL VIDEO EDITOR HAVING LOST VIDEO FRAME PROTECTION

Peter Schnorf, Palo Alto, Calif., assignor to Canon Information Systems, Inc., Costa Mesa, Calif.

Filed Oct. 20, 1992, Ser. No. 963,737

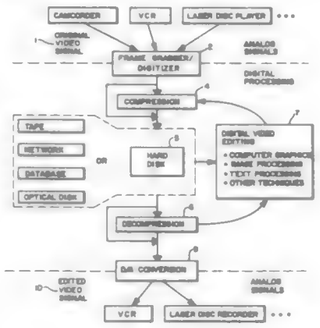
Int. Cl.[5] H04N *5/907*

U.S. Cl. 348—616 **49 Claims**

1. Apparatus for storing frames of digital video information from corresponding frames of analog video information, said apparatus comprising:

a digital frame memory for storing frame of digital video information;

an analog-to-digital convertor which converts successive frames of analog video information into corresponding successive frames of digital video information and which stores individual frames of digital video information in said digital frame memory;



a frame number extractor which extracts a frame number from non-visible portions of the frame of digital video information stored in said digital frame memory;

means for comparing the extracted frame number with a prior extracted frame number to determine whether a frame of digital video information is missing;

control means for causing said digital frame memory to store missing frames of digital video information; and

storage means for successively storing frames or digital video information from said digital frame memory.

5,367,342

ADAPTIVE Y/C SEPERATION WITH ARTIFACTS REMOVAL VIA SWITCHABLE TRAP IN LUMINANCE CHANNEL

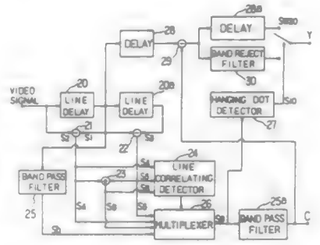
Joon W. Bang, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 9, 1992, Ser. No. 866,213

Claims priority, application Rep. of Korea, Apr. 9, 1991, 4809/1991[U]

Int. Cl.[5] H04N *9/78*

U.S. Cl. 348—667 **5 Claims**



1. An apparatus for separating a chrominance signal and a luminance signal from a composite video signal, comprising:

line delaying means for delaying the composite video signal by one and two horizontal scanning lines,

first subtracting means for subtracting the original composite video signal and a one line-delayed video signal from said line delaying means to produce a first subtract signal and for subtracting the one line-delayed video signal and a two line-delayed video signal from said line delaying means to produce a second subtract signal,

adding means for adding said first subtract signal to said second subtract signal to produce an add signal,

first filtering means for band pass-filtering the one line-delayed video signal from said line delaying means to produce a filtered one line-delayed video signal,

line correlation detecting means for receiving said first subtract signal, said second subtract signal, and said add signal and detecting a correlation between adjacent horizontal scanning lines of said video signal to produce an n-bit comparison signal,

selecting means for selecting one of said first subtract signal, said second subtract signal, said add signal and said filtered one line delayed video signal, in response to said n-bit comparison signal from said line correlation detecting means as an output signal,

hanging dot detecting means for detecting hanging dots from said output signal from said selecting means to produce a hanging dot signal,

second filtering means for band pass-filtering said output signal from said selecting means to output said chrominance signal,

first delay means for delaying the composite video signal by a predetermined period of time to produce a time delayed video signal,

second subtracting means for subtracting said time delayed video signal from said first delay means and said chrominance signal from said second filtering means to produce a third subtract signal,

second delay means for delaying said third subtract signal from said second subtracting means by the predetermined period of time to produce a delayed third subtract signal,

third filtering means for rejecting a vertical frequency band of said third subtract signal from said second subtracting means to produce a filtered third subtract signal, and

switching means for selecting one of said delayed third subtract signal from said second delay means and said filtered third subtract signal from said third filtering means in response to said hanging dot signal from said hanging dot detecting means, to output said luminance signal.

5,367,343

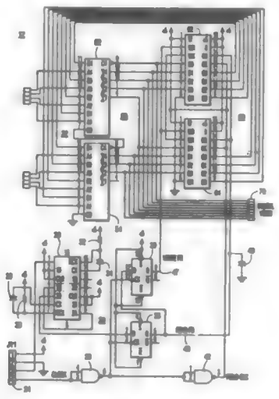
MOTION ENHANCED COMPRESSED VIDEO SYSTEM

Bruce A. Blair, San Diego, Calif., assignor to Global Telecommunications Industries, Inc., Washington, D.C.

Filed Jul. 30, 1992, Ser. No. 922,700

Int. Cl.[5] H04N *5/14*

U.S. Cl. 348—700 **11 Claims**



1. A method of enhancing the visual perception of motion in the display of a compressed video system having a frame rate of less than 24 frames per second comprising:

a. decompressing video digital signals

b. processing said decompressed video digital signals to introduce a visual smearing effect in the displayed moving images of a single frame, and

c. converting the processed video digital signals to analog signal representations.

5,367,344

EYEGLASSES WITH IMPROVED LENS HOLDER

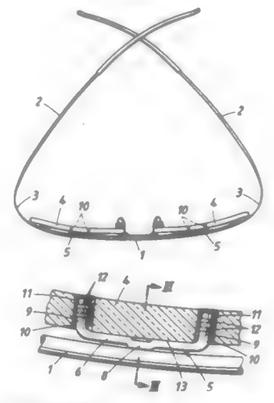
Gerhard Fuchs, Pasching, Austria, assignor to Silhouette International Gesellschaft m.b.H., Linz, Austria

Filed Mar. 12, 1993, Ser. No. 30,560

Claims priority, application Austria, Mar. 16, 1992, 519/92

Int. Cl.[5] G02C *5/00*

U.S. Cl. 351—41 **8 Claims**



1. Eyeglasses comprising

(a) an eyeglass frame comprising a lens-holding portion, the eyeglass frame lens-holding portion having an inside facing a wearer of the eyeglasses,

(b) two eyeglass lenses, each of said lenses being formed with two spaced apart bores, and

(c) two lens-holding U-shaped wires for said lenses, each of said lens-holding U-shaped wires comprising

(1) a cross-piece fixedly connected to the inside of said lens-holding eyeglass frame portion and

(2) a pair of legs constituting retaining pins extending into the bores of a respective one of the lenses and being directed away from the eyeglass frame, the crosspiece connecting the legs and being positioned between the inside of the lens-holding eyeglass frame portion and the lens.

5,367,345

AUDIO-ADAPTED EYEGLASS RETAINER

Jean-Pierre M. da Silva, 5233 S. Cobble Creek Rd., Salt Lake City, Utah 84117

Filed Feb. 14, 1992, Ser. No. 835,782

Int. Cl.[5] G02C *5/14*

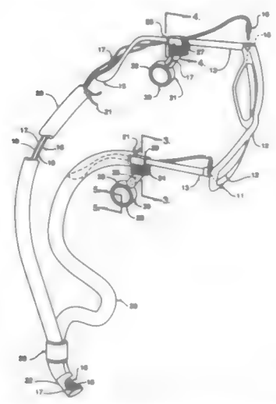
U.S. Cl. 351—123 **10 Claims**

6. A hollow stem sleeve member for attaching a retainer strap to a pair of spectacle stems as well as providing structure to hold certain accessory devices in a certain selected position with respect to said hollow stem sleeve, comprising:

a hollow, semi-flexible sleeve having an internal bore shaped and structured to fit securely about the stem of a spectacle temple and to provide conduit space for a fine wire;

fastening means on said hollow stem sleeve structured to receive and have secured to it the open end of a hollow, flexible retainer strap;

accessory support means on said hollow stem sleeve to secure an electrical and/or audio accessory to said hollow



stem sleeve so that said accessory can be positioned within certain relationships to said hollow stem sleeve.

5,367,346

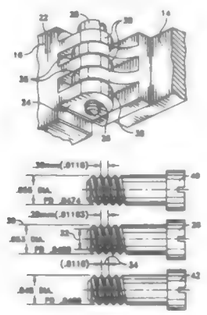
EYEGLASS HINGE SYSTEM AND BOLT THEREFORE

Melvin C. Branning, Attleboro, Mass., assignor to The Hilsinger Company L.P., Plainville, Mass.

Continuation-in-part of Ser. No. 695,445, May 3, 1991, abandoned. This application Dec. 28, 1992, Ser. No. 997,344

Int. Cl.[5] G02C *5/22*

U.S. Cl. 351—153 **4 Claims**



1. In an eyeglass hinge system having a threaded bore for connecting an eyeglass bow to a main frame, a bolt for use with a hinge element of either metric or U.S. standard, comprising a hinge bolt adapted to be threaded into a threaded bore wherein the outside diameter and pitch diameter, and pitch of the hinge bolt are intermediate in size to the corresponding dimensions of the metric and U.S. standard threads, said hinge bolt pivotally fastening an eyeglass bow to an eyeglass main frame.

5,367,347

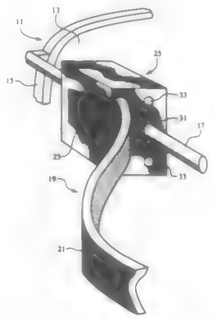
RETAINER STRAP FOR EYEGLASSES

William M. Wilson, P.O. Box 540713, Dallas, Tex. 75220, and Stevan M. Waller, 3221 Harvard St. N., Irving, Tex. 75062

Filed Jul. 29, 1993, Ser. No. 98,717

Int. Cl.[5] G02C *3/00*

U.S. Cl. 351—156 **7 Claims**



1. A retainer strap for eyeglasses having a pair of temple bows, comprising:

an elongated band, having two ends; and

a pair of end pieces, one end piece being attached to each end of the band, wherein each end piece is made of a resilient material and has a slit extending through the end piece for receiving a temple bow of the eyeglasses, wherein the slit in each end piece has two sides, and wherein each of the end pieces has an anti-splitting hole extending through the end piece, along one end of the slit, for preventing splitting of the end piece along the slit.

5,367,348

METHOD OF SUBTITLING MOTION PICTURE FILMS

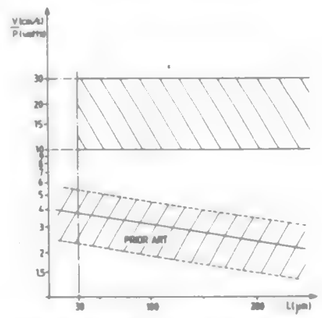
Savely Nachmanson, Poverstraat, , assignors to Titra Film, Joinville Le Pont, France and Titra Europe Holding BV, Amsterdam, Netherlands

Filed Oct. 9, 1992, Ser. No. 958,786

Claims priority, application France, Oct. 11, 1991, 91 12580

Int. Cl.[5] G03B *21/32*

U.S. Cl. 352—90 **13 Claims**



1. A method of subtitling motion picture film in which graphics elements, characters, or texts are added to a motion picture film by means of a laser beam travelling over the zone to be marked of the film, the method comprising two steps:

a first step, in which a laser etching operation is performed by applying a laser beam whose speed of displacement over the film lies in the range about 1 cm/s to about 200 cm/s, with its power on the fill lying in the range about 100 milliwatts to about 20 watts, and with the ratio V/P of the displacement speed V expressed in cm/s divided by the power on the film P expressed in watts lying in the range 10 to 30 so as to be high enough for the laser beam to achieve complete transformation of the emulsion in the etched zones by causing the emulsion to be heated, softened, and dislocated, but without totally eliminating the transformed emulsion; and

a second step, in which the etched film is subjected to cleaning treatment for cleaning the etched zones so that the particles of emulsion that have been heated and dislocated by the laser beam are eliminated from those zones of the film that have previously been marked by the low power laser beam, thereby causing transparent subtitles to appear.

5,367,349

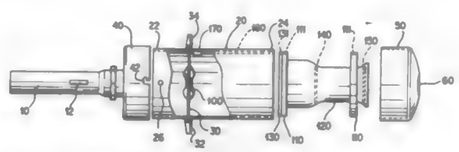
AMUSEMENT PROJECTOR

Robert Zeiler, 452 Girard St., Johnstown, Pa. 15905-3320

Filed Nov. 17, 1993, Ser. No. 153,156

Int. Cl.[5] G03B *21/14*

U.S. Cl. 353—43 **16 Claims**



6. An amusement projector comprising:

an elongated motion rod housing having an axis, a proximal end and an objective end;

a light source connected to the proximal end of the elongated motion rod housing;

a continuously rotatable motion rod having a first end and a second end, said continuously rotatable motion rod being connected to the motion rod housing substantially perpendicular to the axis of the motion rod housing;

a dynamic silhouette producing mask mounted on the motion rod;

a first motion knob mounted on the first end of the motion rod; and

a second motion knob mounted on the second end of the motion rod,

wherein the motion rod extends through the motion rod housing twice.

5,367,350

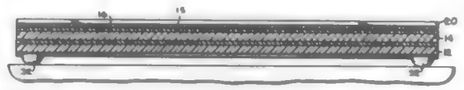
OVERHEAD PROJECTOR ILLUSTRATION SLATE

David M. Winfrey, 5066 N. Oak Trafficway, Kansas City, Mo. 64118

Filed Mar. 18, 1994, Ser. No. 214,854

Int. Cl.[5] G03B *21/00*

U.S. Cl. 353—120 **3 Claims**



3. An overhead projector illustration slate comprising:

(a) a plurality of rigid and transparent sheets secured in fixed registry in relationship with one another;

(b) a transparent, dry-eraseable overlay, substantially the same size and shape as said rigid and transparent sheets, peripherially attached to at least one rigid and transparent sheet at opposing ends;

(c) a spacing element peripherally interposed between said at least one rigid and transparent sheet and said transparent, dry-eraseable overlay, in a manner which maintains said transparent, dry-eraseable overlay in a spaced apart relationship with said at least one rigid and transparent sheet, creating an air pocket which accommodates insertion of an arbitrary transparency;

(d) a protective cap disposed over peripherally-secured edges of said transparent, dry-eraseable overlay and one or more of said rigid and transparent sheets, in a manner which bars said edges from disassociation or undue wear and tear.

5,367,351

CAMERA HAVING A VARIABLE PHOTOGRAPHING APERTURE

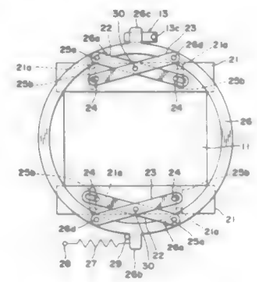
Shinya Suzuka, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1993, Ser. No. 45,197

Claims priority, application Japan, Apr. 13, 1992, 4-092500

Int. Cl.[5] G03B *17/02*

U.S. Cl. 854—159 **19 Claims**



1. A camera capable of photographing with a plurality of photographing aperture sizes, said camera comprising:

circuitry to which electrical power is to be supplied;

a single operating member capable of setting at least three different operating conditions of the camera, said single operating member comprising a manually operable, linearly movable member, linear movement of said linearly movable member providing a source of motive force for changing a photographic aperture size; and

control means for turning said circuitry ON or OFF and for changing a photographing aperture size from among one of said plurality of photographing aperture sizes depending upon the operating condition set by said single operating member, said control means comprising conversion means for converting said linear movement of said linearly movable member into a rotary movement, for converting said rotary movement into a further linear movement, and for changing a photographing aperture size by said further linear movement.

5,367,352

DIRECTION-CHANGING ROLLER FOR SUSPENSION FRAMES OF PHOTOGRAPHIC MATERIAL DEVELOPING MACHINES

Detlef Schulz-Lelcies, Ratingen, Germany, assignor to Hostert GmbH, Germany

Filed Sep. 30, 1992, Ser. No. 954,567

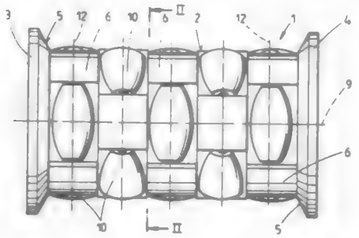
Claims priority, application Germany, Oct. 2, 1991, 9112272[U]

Int. Cl.[5] G03D *3/08*

U.S. Cl. 354—321 **6 Claims**

1. A direction-changing roller for suspension frames of photographic material developing machines, said photographic material to be developed being in strip form and guided by and running over said direction-changing roller in a meandering path, said roller having an axis of rotation and comprising a

roller body with a cylindrical surface and two axial ends, there being sockets in said cylindrical surface, means comprising a collar-shaped flange being arranged on each said axial end of said body having a diameter greater than the diameter of the roller body for preventing the material in strip form from slipping off the axial ends of the direction-changing roller, said roller body being provided with barrel-shaped rollers positioned in said sockets, each said barrel-shaped roller having a



surface substantially flush with said surface of said roller body such that a strip of photographic material running over the direction-changing roller may make contact with the barrel-shaped roller and sliding contact with the cylindrical surface between the sockets and each said barrel-shaped roller being freely rotatably mounted about an axis, said axis extending perpendicular to said axis of rotation of said direction-changing roller and being radially offset from said axis of rotation.

5,367,353

OPERATION CONTROL DEVICE FOR A CAMERA

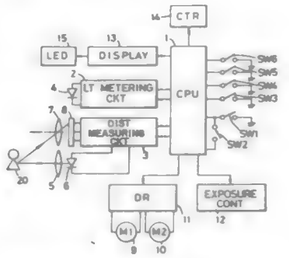
Tatsuo Amanuma, Tokyo; Yoshiaki Ohtsubo, Yokohama; Akira Katayama, Koganei, and Jun Nagai, Chigasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 653,475, Feb. 11, 1991, Pat. No. 5,216,459, which is a continuation of Ser. No. 333,009, Apr. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 307,264, Feb. 7, 1989, abandoned. This application Apr. 21, 1993, Ser. No. 49,782

Claims priority, application Japan, Feb. 10, 1988, 63-30588; Apr. 7, 1988, 63-46951[U]; Apr. 12, 1988, 63-90957; Apr. 15, 1988, 63-93091; Apr. 25, 1988, 63-103634; Jun. 7, 1988, 63-76083[U]; Jul. 1, 1988, 63-88191[U]; Jul. 4, 1988, 63-88623[U]; Sep. 5, 1988, 63-116628[U]; Sep. 6, 1988, 63-223253; Sep. 7, 1988, 63-225155; Sep. 7, 1988, 63-225156

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—409 **6 Claims**



1. A camera comprising:
driving means for driving a photo-taking lens;
focus adjusting information producing means for producing focus adjusting information for driving the photo-taking lens in focus to an object to be photographed;
focus lock means for performing a focus lock operation according to said focus adjusting information;
a focus lock hold operating member;
focus lock holding means responsive to the operation of said focus lock hold operating member for holding the operation of said focus lock means;
inhibiting means for counting a predetermined period in response to the start of the holding of the operation of said focus lock means, and inhibiting said focus lock holding means from holding the operation of said focus lock means after the counting of said predetermined period; and
display means for performing a first display operation and a second display operation, said predetermined period including a first period and a second period following said first period, said display means performing said first display operation during said first period and performing said second display operation during said second period.

5,367,354

MOTOR DRIVEN LENS AND CAMERA SYSTEM

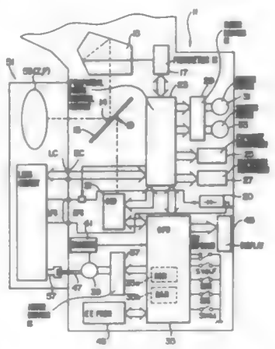
Masahiro Kawasaki; Hiroyuki Takahashi, and Yoshinari Tanimura, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,701

Claims priority, application Japan, May 21, 1991, 3-218146; Nov. 29, 1991, 3-342123

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—400 **31 Claims**



1. A camera system having a detachable lens, comprising:
a motor for driving the lens at a driving speed selected from a plurality of driving speeds;
a counter that counts a time in which a movement of the lens is impeded during an operation of said motor; and
means for controlling said motor driving the lens in response to said counter and for stopping said motor, in which said movement of the lens is impeded, depending on an actual driving speed of the motor and a predetermined driving speed of said plurality of driving speeds.

5,367,355

FLASH READY CONDITION DEPENDENT ON FOCAL LENGTH

Gregory B. Foust, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

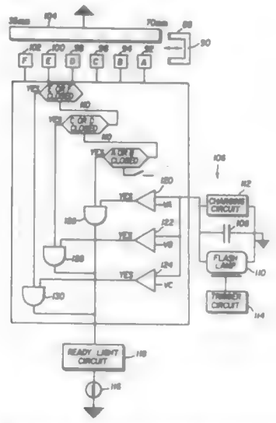
Filed Apr. 9, 1993, Ser. No. 44,665

Int. Cl.[5] G03B *15/05*

U.S. Cl. 354—418 **7 Claims**

1. A photographic camera having optical elements adjustable for setting a plurality of focal lengths, a chargeable flash device for illuminating a subject, and a signaling mechanism for indicating an exposure ready condition when the flash

device reaches a predetermined state of charge; characterized in that:



said camera includes means for adjusting said predetermined state of charge in response to said focal length setting.

5,367,356

CAMERA PROVIDED WITH RED-EYE PHENOMENON PREVENTING FEATURE

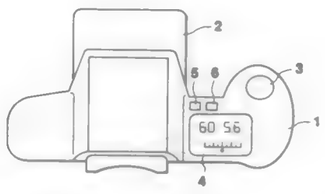
Ryuichi Kobayashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,713, Jul. 16, 1992, abandoned. This application Mar. 10, 1993, Ser. No. 29,355

Claims priority, application Japan, Jul. 16, 1992, 3-175402

Int. Cl.[5] G03B *17/18*

U.S. Cl. 354—471 **42 Claims**



1. A camera comprising:
means for causing a red-eye phenomenon preventing light to be emitted;
means for performing a red-eye phenomenon preventing exposure operation; and
display means for displaying a time period extending from a time when the red-eye phenomenon preventing light is emitted to a time when the red-eye phenomenon preventing exposure operation can be performed.

5,367,357

INSTANT PHOTOCOPYING APPARATUS

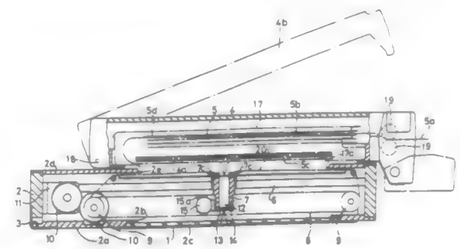
Hiroshi Sudo; Masanori Fujita; Tadahiko Yamaoka, all of Tokyo; Hajime Oda, and Hiroaki Ishida, both of Chiba, all of Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 875,850, Apr. 29, 1992. This application Oct. 18, 1993, Ser. No. 140,332

Claims priority, application Japan, May 17, 1991, 3-034957[U]

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—27 **8 Claims**



1. An instant photocopying apparatus, comprising:
illuminating means for illuminating an object;
an instant film disposed in an instant film cassette, said instant film having a photosensitive surface and a printing surface for forming a reverse image of the image imaged on the photosensitive surface as a visible image and wherein the instant film has different exposure characteristics, said instant film including a developer which is applied between said photosensitive surface and said printing surface to thereby develop and fix the instant film;
optical means mounted to be movable in parallel to said object for imaging fine areas of said object on said photosensitive surface of said instant film and forming an image thereon;
an optical filter positioned on at least one optical path among optical paths between said illuminating means and said object, between said object and said optical means and between said optical means and said photosensitive surface of said instant film for changing exposure characteristics of said photosensitive surface of said instant film; and
said optical filter being removably mounted in said optical path.

5,367,358

PROJECTION EXPOSING APPARATUS AND PROJECTION EXPOSING METHOD

Kazuya Kamon, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1993, Ser. No. 131,969

Claims priority, application Japan, Oct. 9, 1992, 4-271972; Jul. 23, 1993, 5-182659

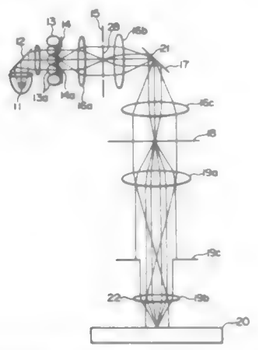
Int. Cl.[5] G03B *27/72, 27/42*

U.S. Cl. 355—71 **18 Claims**

1. A projection exposing apparatus comprising:
a light source for producing light beams as a first light surface;
a first aperture for shaping light beams supplied from said light source to form a second light source surface for producing deformed irradiation;
a blind having an aperture for determining an exposure region of the light beams supplied from said second light source surface;
a second aperture for shaping the light beams supplied from said second light source surface to form a third light source surface;
a first photo-mask having a circuit pattern for irradiation

with the light beams supplied from said third light source surface;

a projection optical system for imaging onto a substrate to be exposed to light diffracted light beams passed through said



first photo-mask to project the circuit pattern of said first photo-mask; and

a second photo-mask having a pattern corresponding to the circuit pattern of said first photo-mask and disposed in the aperture of said blind.

5,367,359

PLATE-MAKING METHOD AND PLATE-MAKING APPARATUS FOR PRINTING

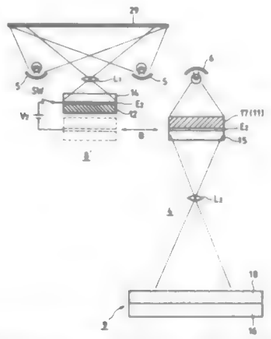
Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Tsutou Asakura; Masato Furuya, both of Yokohama; Yoshihisa Koyama, Yokosuka, and Yuji Uchiyama, Chigasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 696,411, May 6, 1991, abandoned. This application Apr. 19, 1993, Ser. No. 47,337

Claims priority, application Japan, May 17, 1990, 2-127766

Int. Cl.[5] G03G *16/00*

U.S. Cl. 355—71 **1 Claim**



1. An apparatus for making a print plate, comprising:

light-light transforming means including a photoconductive layer and a light-modulation layer which are in confronting relation to each other and which are interposed between a pair of electrodes, said photoconductive layer and said light-modulation layer are arranged to be separable from each other;

information supplying means for supplying electromagnetic wave information to said photoconductive layer of said light-light transforming means;

power source means for applying a voltage to said pair of electrodes so that an electric field is generated between said pair of electrodes;

photosensitive means having a characteristic to be denatured or hardened in response to light having a predetermined wavelength;

light source means for emitting the light having said predetermined wavelength to denature or harden said photosensitive means; and

illumination means for illuminating the light from said light source means to said light-modulation layer to generate reflection light or transmission light modulated in correspondence with the electromagnetic wave information supplied from said information supplying means to said photoconductive layer, said illumination means being arranged so as to illuminate said photosensitive means with the reflection light or the transmission light.

5,367,360

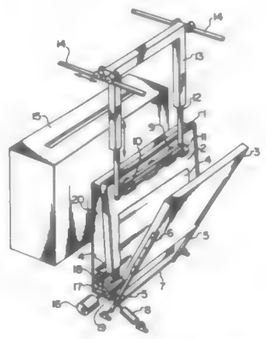
AUTOMATIC LOADER FOR UNEXPOSED PRINTING PLATES

Lou W. McIlwraith, Delta, and Timothy J. Henthorne, Vancouver, both of Canada, assignors to Creo Products Inc., Burnaby, Canada

Filed Oct. 25, 1993, Ser. No. 140,922

Int. Cl.[5] G03B *27/04*

U.S. Cl. 355—85 **5 Claims**



1. An automatic loader for printing plates capable of picking up plates directly out of their shipping container, comprising:

a plurality of light sensitive unexposed printing plates packed in a re-closable closeable shipping container, said plates having the light sensitive side facing down and the back of the plate facing the cover or said container and having a thin sheet of separator material between every two plates;

means of opening and closing said container;

a plurality of suction cups for picking up said plates from their back side;

a motorized elastomeric roller applied to the back side of said plates in order to remove said separator material from the area said suction cup need to contact said plates;

a pair of motorized pinch rollers located at the bottom of said automatic loader and rotating in a direction pulling any separator material caught by the rollers out of said shipping container in order to prevent any accumulation of separator material in the shipping container.

5,367,361

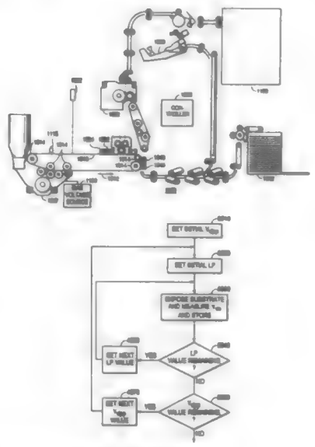
SYSTEM AND METHOD FOR CONTROLLING VOLTAGES OF ELEMENTS IN AN ELECTROSTATIC PRINTING APPARATUS

Thomas A. Henderson, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1992, Ser. No. 991,402

Int. Cl.[5] G03G *15/02, 15/04, 21/00*

U.S. Cl. 355—208 **12 Claims**



7. A reproduction system comprising:

a substrate;

means for depositing toner onto the substrate;

means for receiving a first number N1 representing a relative substrate voltage;

means for receiving a second number N2 representing another relative substrate voltage;

means for receiving a third number N3 representing a ratio between two voltage quantities;

means for charging the depositing means to a first voltage;

means for charging the substrate to produce a second voltage, such that a difference between the second voltage and the first voltage is N1;

means for discharging selected areas of the substrate to produce a third voltage, such that a difference between the third voltage and the first voltage is N2, and a ratio between the third voltage minus a residual voltage, and the second voltage minus the residual voltage is N3.

5,367,362

ELECTRONIC REPRODUCTION APPARATUS AND METHOD WITH CHECK FOR IMPROPER DOCUMENT FEED

Paul H. Forest, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 28, 1993, Ser. No. 99,112

Int. Cl.[5] G03G *15/00, 21/00*

U.S. Cl. 355—208 **20 Claims**

1. An electrostatographic copier apparatus for producing copies of an original multisheet document set, the apparatus comprising:

means for inputing parameters for reproduction of the document set as a copy job;

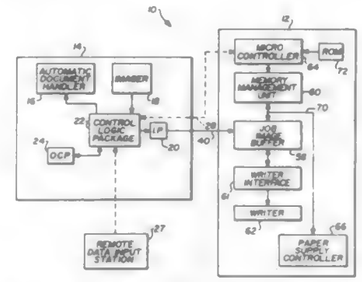
means for feeding document sheets from said set seriatim to an image reader means and then to a storage hopper during a first sheet feeding operation;

means responsive to said feeding for counting the sheets a first time and for providing a first count of the number of document sheets counted in said document set during the first sheet feeding operation;

image reader means operative during the first sheet feeding operation for reading optical image information on the document sheets and converting the optical image information read to electronic image data;

electrostatographic reproduction means for printing image data on copy sheets;

means for feeding the document sheets during a second sheet feeding operation;



means for counting the sheets in said document set during said second sheet feeding operation and for generating a second count without reading of the optical image information on the document sheets during said second sheet feeding operation; and

means for processing the image data for printing during said second sheet feeding operation.

5,367,363

IMAGE FORMING APPARATUS HAVING ROTATABLE ELECTROPHOTOGRAPHIC PROCESS UNIT

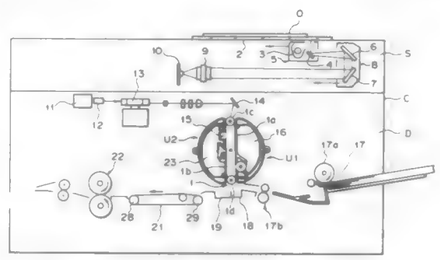
Tsukuru Kai, Fujisawa; Masayuki Ohtani, Yokohama; Takaaki Yanagisawa, Tokyo; Hisashi Ishijima, Yokohama, and Masaaki Nagano, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,240

Claims priority, application Japan, Nov. 30, 1990, 2-330686; Nov. 30, 1990, 2-330688; Nov. 30, 1990, 2-330689; Nov. 30, 1990, 2-330698; Apr. 30, 1991, 3-124553; May 21, 1991, 3-144247; May 23, 1991, 3-146495

Int. Cl.[5] G03G *13/00, 15/00, 15/30*

U.S. Cl. 355—210 **35 Claims**



34. An image forming apparatus comprising:

an image carrier; and

a plurality of electrophotographic process means arranged around said image carrier;

at least part of said plurality of electrophotographic process means being constructed into two units each being engageable with said image carrier and rotatable integrally with said image carrier, such that the integral arrangement itself including said image carrier and said two units are bodily rotatable together as a unit about an axis in a body of said image forming apparatus, wherein a closed space is defined within said image carrier, and said axis is located

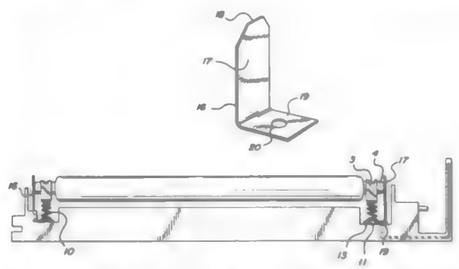
in said closed space, and further wherein said two units comprise a developing unit and a cleaning unit.

5,367,364

CHARGE ROLLER CONTACT STABILIZER SPRING

Steven B. Michlin, 5310 Bentley, Ste. 105, West Bloomfield, Mich. 48322, and Jeffrey B. Graber, West Hills, Calif., assignors to Steven B. Michlin, West Bloomfield, Mich.

Filed May 19, 1993, Ser. No. 63,294
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **20 Claims**



1. A spring-contact means for preventing the shifting in a longitudinal direction of a primary charge roller used in a toner cartridge assembly for copy, printing and facsimile machines, whereby the quality of the image provided by said machines is improved, said spring-contact means being made of a material which aids in the electrical connection and reduces electrical resistance through said toner cartridge assembly to said primary charge roller to allow said charge roller to better perform said charge roller's charging function, said primary charge roller being fixed to a mount which fits onto said toner cartridge assembly, said mount having an end, said end including a nub said primary charge roller having a length extending between two endposts, said spring-contact means comprising a removable modular spring-contact device including a long portion which contacts one of said endposts and a short portion, said short portion having a hole which fits over said nub and attaches said spring-contact device to said mount.

5,367,365

IMAGE FORMING APPARATUS WITH CHARGER OF IMAGE CARRIER USING MAGNETIC BRUSH

Satoshi Haneda; Kunio Shigeta; Sachie Hosokoezawa; Masakazu Fukuchi; Shizuo Morita, and Hiroyuki Nomori, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 12, 1993, Ser. No. 134,981
Claims priority, application Japan, Nov. 16, 1992, 4-305565; Nov. 17, 1992, 4-307050; Nov. 26, 1992, 4-317350
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **7 Claims**

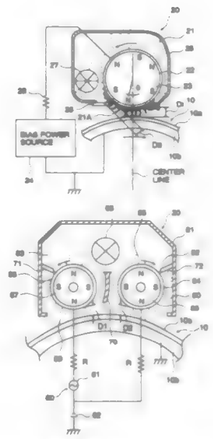
1. An image forming apparatus having an image forming body, comprising:

(a) magnetic particles;

(b) a carrying sleeve for carrying the magnetic particles, thereby for forming a magnetic brush on said carrying sleeve to charge said image forming body, said carrying sleeve being provided in the vicinity of said image forming body so that said magnetic brush comes into contact with said image forming body, said magnetic brush being in an alternating electric field and moving in accordance with the rotation of said carrying sleeve;

(c) a regulating member for regulating amount of passage of said magnetic particles between said regulating member and the surface of said carrying sleeve, wherein the following inequality is satisfied;

$$0.7\ DB \leqq DI \leqq 1.0\ DB$$



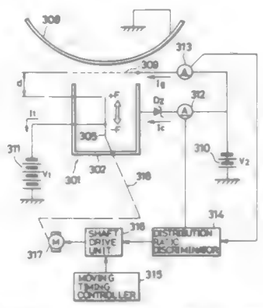
where DB represents the distance between said regulating member and the surface of said carrying sleeve, and DI represents the distance between the surface of said image forming body and the surface of said regulating member.

5,367,366

CORONA CHARGER FOR IMAGE FORMING APPARATUS PROVIDING UNIFORM SURFACE CHARGE OF A RECORDING MEDIUM

Eiichi Kido, Yamato-Koriyama; Yuhi Yui, Nabari; Syunju Anzai, Nara; Syoichiro Yoshiura, Yamato-Koriyama; Shinji Imagawa, Yao; Hiroaki Yoshida, Yamato-Koriyama; Yoshikazu Kawasaki, Kagoshima; Itaru Kawabata, Kashiba; Keizo Fukunaga, Ikoma; Toyokazu Mori, Yamato-Koriyama, and Masaru Tsuji, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1993, Ser. No. 49,443
Claims priority, application Japan, Jun. 4, 1992, 4-170275; Jun. 26, 1992, 4-169133
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—225 **7 Claims**



1. A charger for charging a recording medium before irradiation of light to form an electrostatic latent image by irradiating light as an optical image onto a surface of said recording medium, said charger comprising:

a discharging electrode having a plurality of projections for generating corona discharge to charge said recording medium surface;

a conductive shield case having an opening face opposite to said recording medium and opposed to said discharging electrode;

a holding member for holding said discharging electrode in said shield case in a state in which said discharging electrode is electrically insulated from said shield case;

a conductive grid electrode electrically insulated from said discharging electrode and said conductive shield and held between said discharging electrode and said recording medium; and

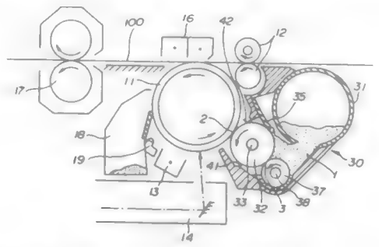
a power supplying device for supplying a high voltage for discharge to said discharging electrode and setting a ratio of electric currents flowing through said grid electrode and said shield case such that these electric currents are approximately equal to each other.

5,367,367

TONER SUPPLYING MEMBER IN A DEVELOPING DEVICE USED IN AN IMAGE FORMING APPARATUS

Masae Ikeda; Hideki Kamaji, and Kazunori Hirose, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP92/00284, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO92/15925, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 10, 1992, Ser. No. 946,418
Claims priority, application Japan, Mar. 11, 1991, 3-45228
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **16 Claims**



1. An image forming device comprising:

a developing unit comprising a developing portion and a developing agent transporting body having a first surface, said developing agent transporting body transporting a developing agent from a supply thereof contained in the developing unit, the developing agent comprising minute grains, by carrying said developing agent to the developing portion on the first surface of the developing agent transporting body;

a developing agent supplying body having a second surface contacting said developing agent transporting body with the respective first and second surfaces thereof in surface-to-surface contact, said developing agent supplying body supplying the developing agent, contained in said developing unit, to the first surface of said developing agent transporting body by moving in a direction opposite to that of said developing agent transporting body at said surface-to-surface contact therewith; and

said second surface of said developing agent supplying body being made of a conductive soft synthetic foam resin material, having a property of F maintained between the values of 72 and 114, F being defined by $F = S \cdot \rho / H$, where H is hardness in kgf, ρ is density in kg/m^3, and S is cell count in cells/inch.

5,367,368

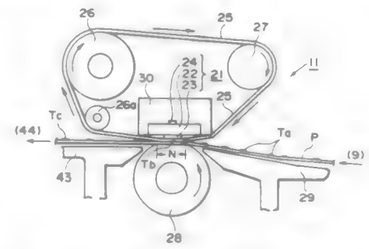
Patent Not Issued For This Number

5,367,369

IMAGE HEATING APPARATUS CAPABLE OF CONTROLLING NUMBER OF WAVES IN AC POWER SUPPLY

Hironobu Nakai, Yokohama, and Shokyo Koh, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 12, 1993, Ser. No. 45,307
Claims priority, application Japan, Apr. 10, 1992, 4-118392
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—285 **5 Claims**



1. An image heating apparatus comprising:

a heater which is stationary in use;

a film movable together with a recording material in sliding contact with said heater, an image on the recording material being heated through said film by the heat from said heater, in a predetermined heating width;

power supply means for supplying alternating power to said heater; and

control means for controlling a number of waves of the power imparted to said heater in a predetermined unit of time,

wherein the unit of time, a moving speed of said film, and the heating width of said heater satisfy;

the unit of time $\leqq$ (the heating width)/(the film speed), and

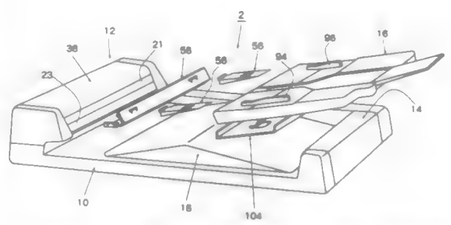
wherein the unit of time is an integer multiple of a half cycle of the alternating power.

5,367,370

MOUNTING APPARATUS FOR A DOCUMENT-PLACING TABLE ON AN IMAGE FORMING MACHINE DOCUMENT FEEDER

Takeshi Yoshida; Takeshi Matsuo; Yasuhiko Kida; Masayuki Kakuta, and Tsuyoshi Nagao, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 9, 1993, Ser. No. 74,413
Claims priority, application Japan, Jun. 11, 1992, 4-151955; Jun. 12, 1992, 4-153647; Jun. 25, 1992, 4-167165
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—321 **5 Claims**



1. An automatic document feeder for an image processing machine having an optical axis and a housing with a platen glass, said automatic document feeder comprising a main frame adapted to be mounted on the housing of the image processing machine for pivoting between a closed position and an open

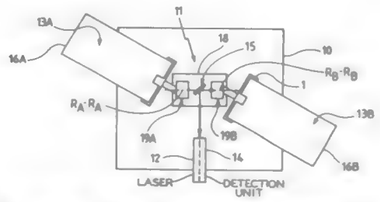
position with respect to the platen glass; and a paper feeding unit provided on said main frame, said paper feeding unit including means defining a document introduction passage having an inlet, table support means adjacent said document introduction passage inlet, a document placing table, means for mounting said document placing table on said table support means to permit adjustment, in the back-and-forth direction of the image processing machine, of the position of said document placing table on said table support means, and means for conveying a document placed on said document placing table through said document introduction passage onto the platen glass; whereby any deviation between the optical axis of the image processing machine and the center line of a document fed by said automatic document feeder onto the platen glass can be adjusted by adjusting the position of said document placing table on said table support means.

5,367,371

OBSERVATION SPACE VEHICLE HAVING A LASER-BASED MEASUREMENT SYSTEM

Rodolphe Krawczyk, Antibes, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jan. 21, 1993, Ser. No. 7,631
Int. Cl.[5] G01P *3/36;* **G01C** *1/00*
U.S. Cl. 356—28.5 **21 Claims**



1. An observation space vehicle for quantitatively evaluating, a fluid mass above a surface of a planet while said observation space vehicle orbits said planet along an orbital path, said observation space vehicle comprising:

a platform having a roll axis which is substantially parallel to said orbital path and a yaw axis which approximately intersects the center of said planet, said platform having a forward end and a rearward end relative to a direction of travel of said observation space vehicle along said orbital path;

means supported by said platform for generating a laser beam;

first and second telescopes supported by said platform;

first sight means operatively associated with said first telescope for relaying said laser beam toward said planet along a first sight axis and for receiving a first reflected laser beam along said first sight axis, said first sight axis being oriented in a first direction toward said forward end of said platform such that said first telescope is a forward scanning telescope;

first means supported by said platform for pivoting said first sight means about an axis which is substantially parallel to said roll axis;

second sight means operatively associated with said second telescope for relaying said laser beam toward said planet along a second sight axis and for receiving a second reflected laser beam along said second sight axis, said second sight axis being oriented in a second direction toward said rearward end of said platform such that said second telescope is a rearward scanning telescope;

second means supported by said platform for pivoting said second sight means about an axis substantially parallel to said roll axis; and

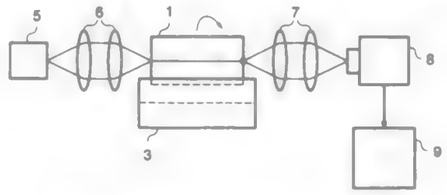
means operatively associated with said first and second sight means for measuring and evaluating a frequency of said first and second reflected laser beams.

5,367,372

METHOD OF AND APPARATUS FOR MEASURING THE GEOMETRIC CHARACTERISTICS OF NOMINALLY CYLINDRICAL GUIDING STRUCTURES

Pietro DiVita, Cascina Vica, and Pierangelo Morra, Moncalieri, both of Italy, assignors to Sip - Societa Italiana Per L'Esercizio Delle Telecomunicazioni, Turin, Italy

Filed Nov. 3, 1992, Ser. No. 971,515
Claims priority, application Italy, Nov. 15, 1991, TO91A000884
Int. Cl.[5] G01N *21/88;* **G01B** *11/27*
U.S. Cl. 356—73.1 **10 Claims**



1. A method of measuring geometrical characteristics of a guiding structure comprising a body with a nominally cylindrical external surface and a central element nominally coaxial with the body, said method comprising the steps of:

placing the structure in to a V-section groove;

rotating the structure through by 360° in the groove and generating a curve described by a point of a central element of said structure on a plane perpendicular to a longitudinal direction of the groove;

detecting the curve described by said point of said central element of the structure on said plane perpendicular to the longitudinal direction of the groove;

storing coordinates of the points of the curve with respect to a system of coordinate axes; and

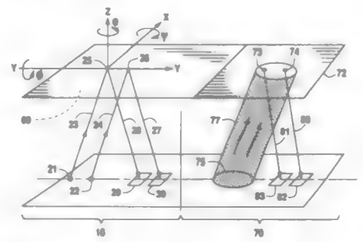
numerically analysing the curve to obtain from such coordinates the desired geometrical characteristics.

5,367,373

NONCONTACT POSITION MEASUREMENT SYSTEMS USING OPTICAL SENSORS

Ilene J. Busch-Vishniac; Alvin B. Buckman; Wanjun Wang, all of Austin; Dahong Qian, Dallas, and Vladimir Mancevski, Austin, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 19, 1992, Ser. No. 978,227
Int. Cl.[5] G01B *11/26;* **G01C** *1/00*
U.S. Cl. 356—139.03 **17 Claims**



1. An improved method for measuring position of a sensed object in space without physically contacting the object, comprising the steps of:

providing on a sensed object a first reflective surface and an in-plane target, the in-plane target comprising a plurality of point reflectors on a substantially non-reflective background;

emitting a first projected beam of light from a first emitter to impinge upon the first reflective surface;

emitting a second projected beam of light from a second emitter to impinge upon the first reflective surface;

reflecting the first projected beam of light from the first reflective surface to form a first reflected beam;

reflecting the second projected beam of light from the first reflective surface to form a second reflected beam;

determining a position of the first reflected beam and a position of the second reflected beam;

projecting a target beam of light adapted to impinge upon the in-plane target;

reflecting the target beam of light from the point reflectors to produce a plurality of target-reflected beams;

determining positions of the target-reflected beams; and

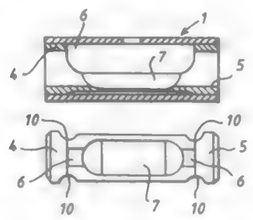
calculating the position of the sensed object in space using the determined positions of the first and second reflected beams and target-reflected beams.

5,367,374

PLATFORM FOR A TRANSVERSELY-HEATED ELECTROTHERMAL ATOMIZER FURNACE FOR ATOM ABSORPTION SPECTROSCOPY

Klaus Eichardt, Jena, Germany, and Bruno Hütsch, St. Vith, , assignors to Carl Zeiss Jena GmbH, Jena, Germany

Filed Dec. 23, 1993, Ser. No. 178,382
Claims priority, application Germany, Dec. 23, 1992, 4243767
Int. Cl.[5] G01N *21/74*
U.S. Cl. 356—312 **26 Claims**



1. A platform for a transversely-heated electrothermal atomizer furnace which includes a furnace tube having a predetermined tube length and an inner wall surface defining an inner tube diameter, the platform comprising:

first and second current-conducting holding rings provided in said furnace tube at first and second ends thereof, respectively, thereby narrowing the cross section of said furnace tube;

said holding rings each having an outer diameter corresponding approximately to said inner tube diameter and said rings taken together having a total thickness less then 40% of said tube length;

a specimen carrier fixedly connected to at least one of said holding rings;

said specimen carrier and said one holding ring conjointly defining an integral structural unit made of the same material; and,

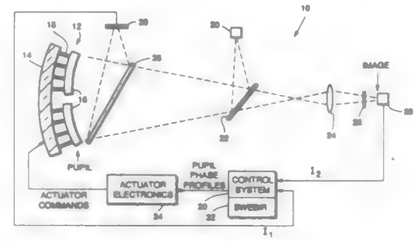
said specimen carrier being configured so as to be in spaced relationship to said inner wall surface so that said specimen carrier has no electrical or direct thermal contact thereto.

5,367,375

SPATIAL WAVEFRONT EVALUATION BY INTENSITY RELATIONSHIP

Edward T. Siebert, New Fairfield, Conn., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 7, 1992, Ser. No. 832,282
Int. Cl.[5] G01B *9/02;* **G01J** *1/00*
U.S. Cl. 356—345 **15 Claims**



1. A method for determining a phase profile of a wavefront at a first plane, the wavefront propagating from the first plane to a second plane, comprising the steps of:

providing an intensity of the wavefront at the first plane;

measuring an intensity of the wavefront at the second plane; and

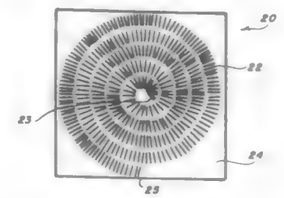
determining the phase profile of the wavefront at the first plane in accordance with a transfer function that employs the provided intensity of the wavefront at the first plane and the measured intensity of the wavefront at the second plane.

5,367,376

PLANAR AND LINEAR FIBER OPTIC ACOUSTIC SENSORS EMBEDDED IN AN ELASTOMER MATERIAL

Nicholas Lagakos, Silver Spring, Md., and Joseph A. Bucaro, Herndon, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1992, Ser. No. 932,685
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **28 Claims**



1. A system, comprising:

a light source;

an interferometric fiber sensor responsive to light from said source for producing at its output an optical signal containing an interference pattern proportional to a phase shift produced by an acoustic field being sensed by said interferometric fiber sensor, said interferometric fiber sensor comprised of an elastomer plate, a sensing fiber arm wound in a coil, spirally configured and embedded within said elastomer and a reference fiber arm made of a reference fiber; and

detection means responsive to said optical signal from said interferometric fiber sensor for developing from said optical signal a peak-to-peak photocurrent signal that has a peak-to-peak amplitude proportional to the amplitude of the interference pattern.

5,367,377

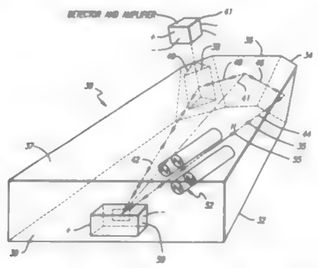
SOLID STATE SPLIT-GAIN MULTIOSCILLATOR RING LASER GYROSCOPE

John P. Rahn, West Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 744,784, Jul. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 517,647, Apr. 20, 1990, abandoned. This application Feb. 14, 1994, Ser. No. 195,984

Int. Cl.[5] G01B 9/02; H01S 3/083

U.S. Cl. 356—350 19 Claims



1. A multioscillator ring laser gyroscope, powered from a power source, comprising:

a solid-state active medium ring resonator, including a non-planar resonant bi-directional pathway, suitable for supporting clockwise and anti-clockwise longitudinal modes;

laser means for driving said active medium above a threshold for oscillation, said laser means operatively associated with said ring resonator; and,

magnetic means for achieving a magnetic gain detuning effect within said resonator, said magnetic means being external to said resonant pathway;

output means for combining the clockwise and anti-clockwise longitudinal modes and for providing an output signal;

whereby, a solid state split gain multi-oscillator is achieved.

5,367,378

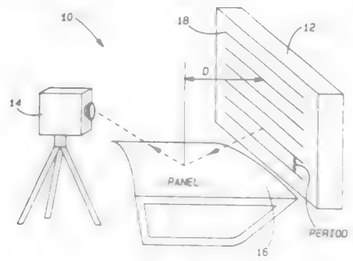
HIGHLIGHTED PANEL INSPECTION

Kevin G. Harding, Ann Arbor, and Albert J. Boehnlein, Ypsilanti, both of Mich., assignors to Industrial Technology Institute, Ann Arbor, Mich.

Filed Jun. 1, 1993, Ser. No. 70,565

Int. Cl.[5] G01B 11/30

U.S. Cl. 356—371 2 Claims



1. A method of evaluating defects in a surface for evaluation as compared with a reference surface, comprising the steps of:

providing said surface for evaluation;

providing illumination means for providing a pattern of lines having a periodic configuration having features having a separation period(P) which can be projected on said surface for evaluation;

providing a camera for recording an image of said pattern of lines as reflected from said surface;

quantifying said image by calculating a slope of a defect observed by said camera using the relationship;

slope$=\tan^{-1}$ (Period)/2D

where D is the distance between said illumination means and said surface; and

generating a defect depth value using the relationship;

Defect Depth=(length of defect area)/2(slope).

5,367,379

LUSTER DETECTOR

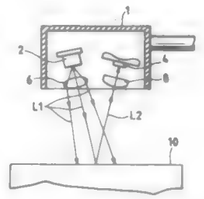
Kazuhiro Makino, Osaka, Japan, assignor to Keyence Corporation, Osaka, Japan

Filed Jun. 16, 1992, Ser. No. 899,285

Claims priority, application Japan, Jun. 17, 1991, 3-144631

Int. Cl.[5] G01N 21/47

U.S. Cl. 356—446 10 Claims



1. A luster detector comprising:

a light emitting section for applying light to a surface under test;

a light detecting section including a line sensor having a plurality of light detecting elements arranged linearly, and which output light detection signals according to respective quantities of light received thereby;

an optical system provided for said light detecting section, said optical system gathering light reflected from said surface under test to form a light spot on said light detecting section from light reflected regularly from said surface, said light spot being formed in such a manner to define a lengthwise dimension thereof which is substantially larger than a widthwise dimension thereof and which is perpendicular to the direction of arrangement of said light detecting elements; and luster determining means receiving said light detection signals from said light detecting section to determine the luster of said surface according to a light reception distribution of said light detecting elements.

5,367,380

VELOCITY MODULATION APPARATUS FOR THREE-TUBE PROJECTION TV

Tsuyoshi Hirano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 20, 1992, Ser. No. 963,835

Claims priority, application Japan, Oct. 25, 1991, 3-306642

Int. Cl.[5] H04N 3/32, 9/16, 9/18, 9/31

U.S. Cl. 348—626 2 Claims

2. A velocity modulation apparatus for velocity modulation electron beams of display tubes on the basis of a luminance component of a composite color video signal in a three-tube projection television, comprising:

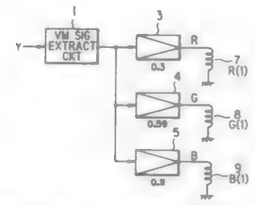
a velocity modulation extracting circuit for extracting a velocity modulation signal from the luminance component;

a red color velocity modulation coil having a first predetermined number of turns;

a green color velocity modulation coil connected in series with said red color velocity modulation coil and having a second, different predetermined number of turns;

a blue color velocity modulation coil connected in series with said red and green color velocity modulation coils and having a third, different predetermined number of turns; and

a single driving circuit receiving said velocity modulation signal from said velocity modulation extracting circuit for



energizing the series connected red, green, and blue color velocity modulation coils,

wherein said first, second, and third predetermined number of turns are selected in accordance with the human eye's relative visibility characteristics with respect to three primary colors constituting a chrominance component of the composite color video signal.

5,367,381

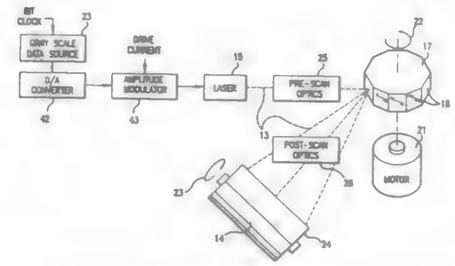
METHOD AND APPARATUS FOR ENHANCED RESOLUTION AND CONTRAST VIA SUPER INTENSITY CONTROLLED OVERSCANNED ILLUMINATION IN A TWO DIMENSIONAL HIGH ADDRESSABILITY PRINTER

Douglas N. Curry, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 918,092, Jul. 24, 1992, Pat. No. 5,357,273, which is a continuation-in-part of Ser. No. 736,989, Aug. 8, 1991, Pat. No. 5,138,339. This application Aug. 10, 1992, Ser. No. 926,429

Int. Cl.[5] H04N 1/40; G01D 9/42

U.S. Cl. 358—298 24 Claims



1. A method for resolution conversion comprising the steps of:

microaddressing an image transition in a printer;

writing successive print lines by intensity modulation of a writing device to write a print bit in a print line of the successive print lines;

separating the successive print lines by a pitch distance in a process direction, the print line having a print line center and a print line width greater than the pitch distance, the image transition being a transition between (1) a current image bit characterized by one of a first state and a second state, and (2) an adjacent image bit characterized by the other of the first state and the second state;

printing the current image bit and the adjacent image bit so as to be separated in the process direction by an image raster width; and

producing the image transition based on a function of a plurality of transition print lines, each transition print line being a print line which has a corresponding print line center displaced in the process direction from the image transition by a displacement distance which is less than one-half of a corresponding print line width, the displacement distance being a distance in the process direction from the corresponding print line center to the image transition.

5,367,382

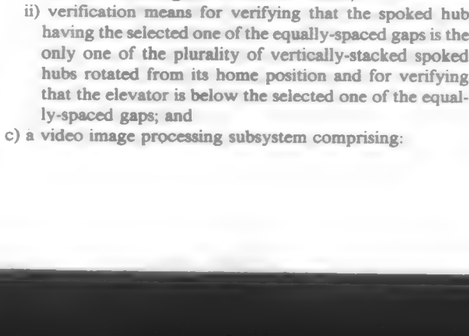
ON-LINE MICROFILM STORAGE AND RETRIEVAL SYSTEM

Nikhil A. Bhatt, 100 Edwards Rd., Parsippany, N.J. 07054, and David Black, 41 Clinton Rd., Ridgewood, N.J. 07450

Filed Sep. 6, 1991, Ser. No. 754,994

Int. Cl.[5] H04N 1/00

U.S. Cl. 358—403 2 Claims



1. A microfilm storage and retrieval system comprising:

a) cartridge handling means for storing and retrieving microfilm cartridges comprising:

i) a rotatable center column assembly including a vertical column;

ii) a plurality of vertically stacked spoked hubs, each having a center ring disposed around the vertical column and from which a plurality of spokes extend, wherein the spokes form:

A) a plurality of essentially equally-spaced gaps within each of which one of the microfilm cartridges may be stored;

B) an additional gap larger than the equally-spaced gaps used to establish a rotational home position for the spider assembly and to establish a vertical column through which a selected one of the microfilm cartridges may pass through,

iii) and rotation means for rotating a selected one of the vertically stacked spoked hubs so that a selected one of the equally-spaced gaps may be aligned within the vertical column so that the selected one of the microfilm cartridges may pass vertically through;

b) a microfilm handling subsystem comprising:

i) elevator means for transporting the selected one of the microfilm cartridges from the selected one of the equally-spaced gaps through the vertical column and to a display position including

A) an elevator, and

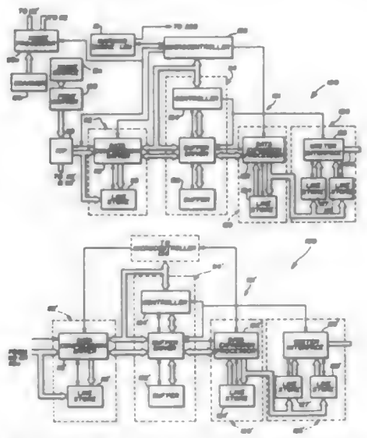
B) electrical lifting means for raising and lowering the elevator through the vertical column;

ii) verification means for verifying that the spoked hub having the selected one of the equally-spaced gaps is the only one of the plurality of vertically-stacked spoked hubs rotated from its home position and for verifying that the elevator is below the selected one of the equally-spaced gaps; and

c) a video image processing subsystem comprising:

i) a projection means for projecting an image from a selected frame of microfilm onto a projection plane;
ii) a scanning array means comprising a linear array of sensors for converting light intensities on the projection plane into proportional electrical voltages,
iii) array moving means for moving the scanning array means through the projection plane, and
iv) an image enhancement processor means to determine for each of the proportional electrical voltages whether a pixel represented thereby is a foreground or a background pixel;
wherein each subsystem is accessible and controllable as part of a local area computer network.

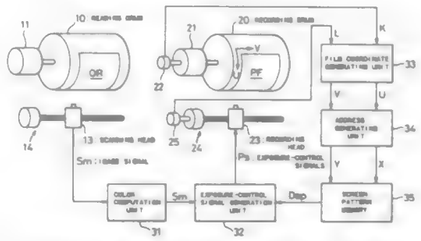
5,367,383
METHOD AND APPARATUS FOR MAXIMIZING DATA STORAGE IN A PROCESSOR OF IMAGE DATA
Russell L. Godshalk, and Thomas J. Wetzel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 27, 1992, Ser. No. 982,365
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **18 Claims**



1. An apparatus for processing image data, comprising:
means for generating a digital image signal of plural bits representing a grey value of each of plural pixels of image data;
plural processing means each for separately processing a respective one of said plural bits, each one of said plural processing means including means for compressing, buffering and expanding image data bits; and
means for selecting one of said plural processing means for processing a particular bit in response to a remaining capacity of a buffer.

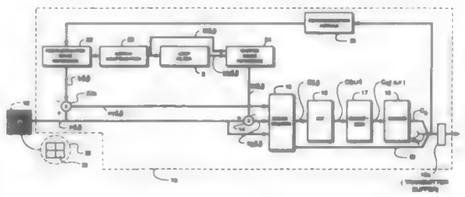
5,367,384
METHOD OF AND APPARATUS FOR GENERATING HALFTONE DOTS
Takashi Sakamoto, Kamikyo, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Sep. 30, 1992, Ser. No. 953,355
Claims priority, application Japan, Oct. 24, 1991, 3-306954; Feb. 26, 1992, 4-075159
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—456 **18 Claims**

1. A method of generating halftone dots each consisting of a plurality of pixels as a function of a given image signal, comprising the steps of:
(a) preparing a screen pattern memory for memorizing threshold values arranged in a predetermined matrix in a Cartesian X-Y coordinate system;
(b) arranging pixels at lattice points in a Cartesian U-V coordinate system, said U and V denoting a primary scanning direction and a secondary scanning direction, respectively, said U-V coordinate system being set in predetermined relation to said X-Y coordinate system;
(c) setting a predetermined number Nex of exposure-decision points for each pixel in said U-V coordinate system, said number Nex being an integer more than one; and
(d) determining whether or not to expose each pixel, said step (d) including the steps of:
(d-1) converting U-V coordinates of each of said number Nex of said exposure-decision points for each pixel to X-Y coordinates;



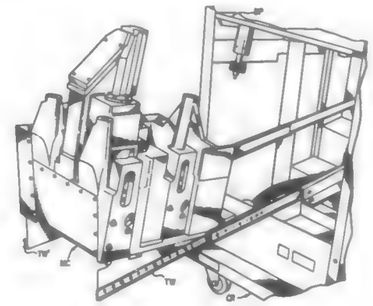
(d-2) reading out said threshold values according to said X-Y coordinates of said number Nex of said exposure-decision points from said screen pattern memory;
(d-3) comparing said threshold values for said number Nex of said exposure-decision points with said image signal to thereby produce a preliminary decision value indicating said result of said comparison at each of said exposure-decision points;
(d-4) summing up said preliminary decision value over said number Nex of said exposure-decision points to make a total value for each pixel; and
(d-5) accumulating said total value over a plurality of said pixels in said primary scanning direction U in order of scanning to thereby make a total-sum value for each pixel, and determining whether or not to expose each pixel according to said total-sum value.

5,367,385
METHOD AND APPARATUS FOR PROCESSING BLOCK CODED IMAGE DATA TO REDUCE BOUNDARY ARTIFACTS BETWEEN ADJACENT IMAGE BLOCKS
Xiancheng Yuan, Boston, Mass., assignor to PictureTel Corporation, Danvers, Mass.
Filed May 7, 1992, Ser. No. 866,031
Int. Cl.[5] H04N *1/415*
U.S. Cl. 358—465 **7 Claims**



1. A method for processing reconstructed, previously encoded block coded image data wherein each block comprises a plurality of pixels, said block collectively forming a reconstructed image, the method comprising the steps of:
selecting a local pixel from a first reconstructed block of pixels, said local pixel being near a border between said first block of pixels and a second reconstructed block of pixels, said second block being adjacent said first block, said local pixel having a first pixel value,
selecting at least one external pixel from said second block of pixels, said external pixel having a second pixel value and being near said border, and
modifying said selected local pixel to reduce the difference between said first pixel value of said local pixel and said second pixel value of said at least one external pixel while not modifying pixels of said first block more distant from said external pixel than said local pixel.

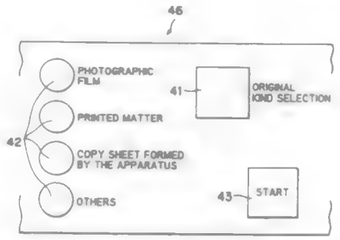
5,367,386
IMAGE SCANNING APPARATUS ADAPTED FOR THERMALLY AND OPTICALLY ISOLATING IMAGING COMPONENTS
Gary Copenhaver, Canton; Johan Bakker, Union Lake, and John Vala, Plymouth, all of Mich., assignors to Unisys Corporation, Blue Bell, Pa.
Continuation of Ser. No. 737,949, Aug. 29, 1991, Pat. No. 5,144,457, which is a division of Ser. No. 419,045, Oct. 10, 1989, Pat. No. 5,063,461. This application May 4, 1992, Ser. No. 878,087
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—474 **27 Claims**



1. Document imaging apparatus including transport means disposed on a transport platform and associated document imaging means including lamp means and associated imaging optic means, said imaging means being integrated in a single mount casting MC, disposed on said platform; said casting providing a protective package housing optical components for said imaging, said casting being adapted to be conveniently, removably coupled to this platform, and arranged to thereby thermally and optically isolate these components from interference with, or by, other operating structure; said apparatus also including one or more tower-castings TC, mounted removably on mount-casting MC, each tower-casting including light filter means adapted to condition document-images for image lift by associated camera means.

5,367,387
COLOR IMAGE FORMING APPARATUS FOR REPRODUCING COLOR IMAGE WITH HIGH REPRODUCIBILITY
Toshiyuki Yamaguchi, Toyoake, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jan. 16, 1992, Ser. No. 821,087
Claims priority, application Japan, Jan. 16, 1991, 3-003170
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—518 **24 Claims**

1. A color image forming apparatus for reproducing a first picture element color data representative of a color of each picture element of an original color image formed on an image input medium and forming, on an image output medium, a color image corresponding to the original color image, said color image forming apparatus comprising:
input means for receiving the first picture element color data for the corresponding picture element color of the original color image;
control signal producing means for producing a control signal from the first picture element color data, on the basis of information of a color state, in a human visual sense as defined using the CIE 1931 standard colormetric system, of the each picture element color on the image input medium, the color state being determined dependently on both human visual sensitivity defined using the CIE 1931 standard colormetric system and a kind of the image input medium; and
image recording means for recording the color image on the image output medium on the basis of the control signal, wherein said control signal producing means comprises:
storing means for storing a plurality of combination data,



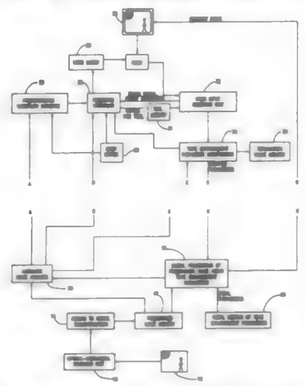
each group corresponding to a kind of the image input medium and consisting of a plurality of combination data, each combination data of the each group consisting of a first color data receivable by said input means and a record signal for controlling said image recording means to record a color corresponding to the first color data, the record signal being calculated on the basis of an information of a color state, in the human visual sense, of a color on the corresponding kind of the image input medium corresponding to the first color data; and
selecting means including:
group selecting means for selecting one group out of the plural groups, in accordance with the kind of the image input medium; and
combination data selecting means for selecting at least one combination data out of the plural combination data of group selected by said group selecting means, in accordance with the first picture element color data, to thereby produce control signal.

5,367,388
ELECTRONIC SEPARATION SCANNER
Yoav Ossia, Tel Aviv, Israel, assignor to Scitex Corporation Ltd., Herzliya, Israel
Filed Jul. 27, 1992, Ser. No. 920,035
Int. Cl.[5] G03F *3/08*; H04N *1/46*
U.S. Cl. 358—518 **30 Claims**

1. An electronic separation scanner comprising:
a tool library comprising a plurality of tools, each individual one of the plurality of tools comprising a user interface operative to prompt a user to select values for at least one tone enhancement parameter;
an optical-mechanical scanning unit operative to electronically scan a color image in accordance with at least one user-selected tone enhancement parameter value;
a selective tool disabler operative to selectively disable access of the user to at least one of the plurality of tools, said selective tool disabler comprising a tool sequence generator operative to determine a tool sequence in which at least said first and second tools are sequentially presented to the user, the first tool comprising an indication

prompting the user to select values for a first set of first tone enhancement parameters and the second tool comprising an indication prompting the user to select values for a second set of second tone enhancement parameters;

a user querying unit operative to prompt a user to enter a user evaluation of at least one characteristic of the color image and to transit user evaluation information to the tool sequence generator, wherein the tool sequence generator determines the tool sequence at least are in accordance with the user evaluation information;



a query sequence generator operative to receive a user response to an individual query from the user querying unit and to determine, at least partly in accordance therewith, a sequence of further queries to be presented to the user by the user querying unit; and

a user expertise level coding system comprising, for each of a plurality of users, a stored indication of an expertise level code value, wherein the query sequence generator determines the sequence of queries presented to an individual user at least partly in accordance with the user's ordinal expertise level code value.

5,367,389

Patent Not Issued For This Number

5,367,390

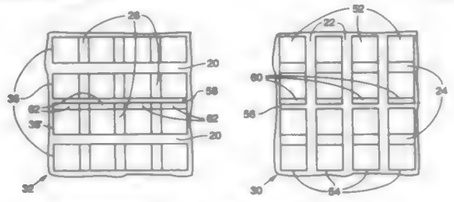
CONTRAST IMPROVEMENT FOR DISPLAY PANELS WITH MASKS BETWEEN ELECTRODES AND COVERING SPLIT BETWEEN ELECTRODE PORTIONS

Terry J. Scheffer, Portland; Kurt R. Munson, Tigard, and Arlie R. Conner, Portland, all of Oreg., assignors to In Focus Systems, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 757,886, Sep. 11, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,676

Int. Cl.[5] G02F *1/1343, 1/1335*

U.S. Cl. 359—54 **10 Claims**



1. In a non-emissive flat panel display having overlapping patterns of spaced electrodes, one pattern on each of first and second spaced, opposed, substrates at least one of which is transparent and between which electro-optical material is disposed, the electrodes on the first substrate being split at a dividing line into two portions with a space between them overlying a selected electrode on the second substrate, the selected electrode having a width different from that of other electrodes on the second substrate, the electrodes defining a plurality of pixels at their areas of overlap, contrast improvement apparatus, comprising:

a plurality of opaque first mask elements on the first substrate overlying spaces between the electrodes on the second substrate;

a plurality of opaque second mask elements on the second substrate overlying spaces between the electrodes on the first substrate; and

a plurality of opaque third mask elements overlying the dividing line and being positioned on the selected electrode on the second substrate, the first and third mask elements being similar to each other so that the display appears uniform across the dividing line.

5,367,391

METHOD FOR DRIVING AN ANTIFERROELECTRIC LIQUID CRYSTAL CELL

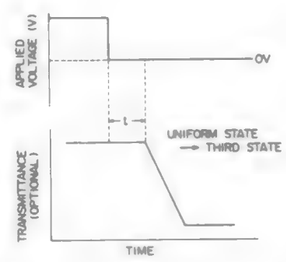
Masahiro Johno, Tsukuba, and Tomoyuki Yui, Nagareyama, both of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Mar. 2, 1993, Ser. No. 24,762

Claims priority, application Japan, Mar. 3, 1992, 4-045507

Int. Cl.[5] G02F *1/137, 1/1343*

U.S. Cl. 359—56 **7 Claims**



1. A method for driving an antiferroelectric liquid crystal cell with an antiferroelectric liquid crystal or antiferroelectric liquid crystal composition held between a pair of substrates having electrodes, wherein when threshold voltages for the transitions from a third state to uniform states are V_1 and $-V_1$ and those for the transitions from the uniform states to the third state are V_2 and $-V_2$, a voltage of at least V_1 or at most $-V_1$ is first applied to perform switching from the third state to a uniform state, a voltage Vk in the range of $-V_2<V\text{-}k<V_2$ is applied during a memory time period for a uniform state→third state switching to retain said uniform state and subsequently, a driving voltage of at least V_1 or at most—V_1 is applied within said memory time period for the uniform state→third state switching to select one of the uniform states, after which the application of said voltage Vk and said driving voltage is repeatedly performed.

5,367,392

ACTIVE MATRIX DISPLAY PANEL HAVING CONNECTABLE SECONDARY SWITCHES

Meir I. Jaaai, Haifa, Israel, assignor to Quick Technologies Ltd., Haifa, Israel

Filed Mar. 16, 1993, Ser. No. 32,013

Claims priority, application Israel, Oct. 27, 1992, 103566

Int. Cl.[5] G02F *1/133;* **H01L** *27/10*

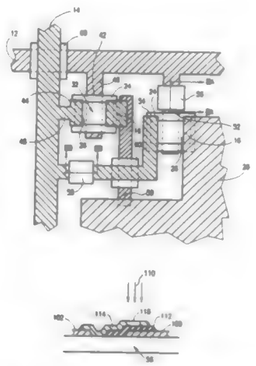
U.S. Cl. 359—59 **10 Claims**

1. An active matrix of a display panel having a plurality of array elements and at least two data busses, each array element comprising:

a primary switch initially connected to said data busses;

at least one connectable secondary switch, wherein, when said primary switch is disconnected from said busses, one of said at least one secondary switches is connected to said busses; and

a fuse between said primary switch and each of said data busses; and



wherein said at least one secondary switch is connected to said data busses by normally open links; and

wherein said links comprise an insulator located between two, partially overlapping, metal branches, and

wherein said two metal branches comprise an upper and a lower branch and wherein said upper branch has an opening exposing said insulator.

5,367,393

ELECTRO-OPTICAL APPARATUS WITH METAL LIGHT SHIELD AND CONDUCTOR BETWEEN COLOR FILTERS

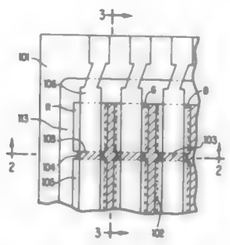
Hiroshi Ohara; Hiroshi Watanabe, and Kunio Wanikawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 3, 1993, Ser. No. 25,796

Claims priority, application Japan, Mar. 6, 1992, 4-049888; Jan. 20, 1993, 5-007898

Int. Cl.[5] G02F *1/1343, 1/1335, 1/1333*

U.S. Cl. 359—67 **28 Claims**



21. An electro-optical apparatus comprising:

first and second transparent substrates cooperating with a sealing member to hold a liquid crystal material in a gap defined by said sealing member between inner surfaces of said transparent substrates;

a color filter located on the inner surface of at least one of said transparent substrates and including a plurality of color filter elements;

a smoothing layer located on said color filter, said smoothing layer comprising a material selected from the group consisting essentially of: at least one inorganic layer, at least one organic layer, and a laminate of at least one inorganic layer and at least one organic layer;

transparent display electrodes disposed above said color filter; and

a light shielding metal layer, located directly on said inner surface of said first transparent substrate between said color filter elements, which serves as a light shield and as an electrical conductor, said light shielding metal layer electrically connected with said transparent display electrodes on said first transparent substrate via through-holes located in said color filter and said smoothing layer;

said transparent display electrodes on said first transparent substrate extending to an edge of said first transparent substrate to form terminals for electrical attachment to external devices, ends of said light shielding layer located at a portion of said first transparent substrate speed from said edge so that the ends of said light shielding layer are located radially inward from said terminals.

5,367,394

TEST APPARATUS

Jeremy B. Chuter, Suffolk; Michael A. Hale, and Donald E. A. Clarke, both of Essex, all of England, assignors to British Telecommunications public limited company, London, England

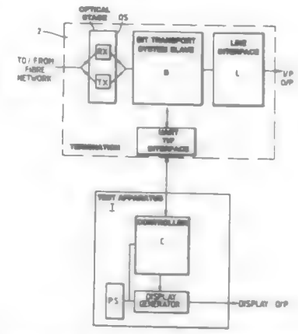
PCT No. PCT/GB91/02060, § 371 Date Apr. 29, 1993, § 102(e) Date Apr. 29, 1993, PCT Pub. No. WO92/10036, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 21, 1991, Ser. No. 50,028

Claims priority, application United Kingdom, Nov. 22, 1990, 9025399; Nov. 23, 1990, 9025492

Int. Cl.[5] H04B *10/08*

U.S. Cl. 359—110 **5 Claims**



1. A test apparatus for use with a passive optical network (PON) system having a head-end station connected via a fibre optic network to a plurality of terminations, each termination including means to carry out self-diagnostic procedures and to generate status signals for transmission to the head-end station, said test apparatus comprising:

means for direct connection with one of said terminations at the site of the connected termination and for data communication with that termination,

first detection means to detect status signals generated by the termination connected thereto.

second detection means to detect alarm signals in a data frame transmitted from the head-end station via the PON and received at the termination connected thereto, and

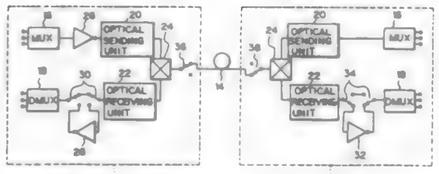
indication means responsive to the first and second detection means to provide an output indicative of the condition of the termination connected thereto.

5,367,395

APPARATUS FOR DETECTION AND LOCATION OF FAULTS IN TWO-WAY COMMUNICATION THROUGH SINGLE OPTICAL PATH

Noboru Yajima; Hiroshi Yoshida, and Yasuko Komuro, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,281
Claims priority, application Japan, Jan. 30, 1992, 4-015496
Int. Cl.[5] H04B *10/08*
U.S. Cl. 359—110 4 Claims



3. An apparatus for detecting and locating a fault having occurred in a two-way communication system between a first station and a second station, said system using a single optical path in normal operation, comprising:

means for transmitting from said first station a first optical signal distinguishable from a second optical signal transmitted from said second station, said transmitting means including;

means for generating said first optical signal in said first station, and

means for generating said second optical signal in said second station;

said transmitting means in the first station further including a first logic inverter for inverting logic levels of a first electrical signal to be input to said first optical sending unit of said first station to thereby distinguish the first optical signal from the second optical signal;

switching means for switching from the normal operation to a loopback test operation wherein the first optical signal is returned back to said first station that sent said first optical signal; and

first receiving means in said first station, operating together with the switching means, for receiving only the second optical signal via said optical path in normal operation, and for reception of only the first optical signal in the loopback test operation, the first receiving means in the first station including a second logic inverter, and a first switch for connecting the second logic inverter to the first optical receiving unit in the loopback test operation to thereby receive only the first optical signal in the loopback test operation, and for bypassing the second logic inverter in normal operation to thereby receive only the second optical signal in normal operation, and

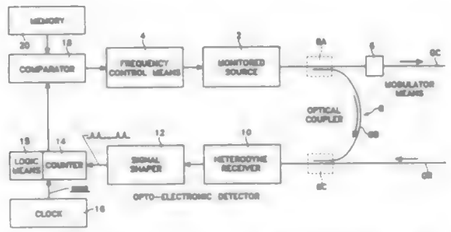
second receiving means in the second station including a third logic inverter, and a second switch for connecting the third logic inverter to a second optical receiving unit in normal operation to thereby receive only the first optical signal sent in normal operation, and for bypassing the third logic inverter in the loopback test operation to thereby accept only the second optical signal in the loopback test operation.

5,367,396

OPTICAL FREQUENCY MARKING METHOD AND DIFFERENT FREQUENCY CHANNEL COMMUNICATION NETWORK USING IT

Michel Sotom, Villebon sur Yvette; Olivier Audouin, Savigny sur Orge, and Jean-Michel Gabriagues, Le Val Saint-Germain, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 21, 1992, Ser. No. 947,463
Claims priority, application France, Sep. 26, 1991, 91 11856
Int. Cl.[5] H04B *17/00*
U.S. Cl. 359—124 6 Claims



6. Different frequency channel communication network comprising:

a succession of terminals each comprising optical send means and optical receive means for sending and receiving data conveyed by a succession of modulated waves occupying a succession of different frequency channels and resulting from the modulation of a succession of carrier frequencies of said channels, respectively, the set of said frequency channels occupying a predetermined communication band,

a reference unit sending a reference wave having a reference frequency, said reference frequency effecting at least one scanning half-cycle according to a predetermined function of time and during which said frequency progressively moves from a first end to a second end of a scanning band on a first path and then progressively returns from said second to said first end on a second path, said scanning band being such that said scanning half-cycle produces a first frequency coincidence during said first path and then a second frequency coincidence during said second path, and

optical fibers linking said terminals to each other and to said reference unit to transmit said modulated waves and said reference wave,

wherein the send means of each of said terminals further comprises

a monitored source consisting of a semiconductor laser emitting a monitored wave to constitute the carrier wave of a channel, said wave having a monitored frequency constituting a carrier frequency of said channel,

frequency control means for controlling said monitored frequency,

modulator means for modulating said monitored wave to thereby produce a respective one of said modulated waves, and

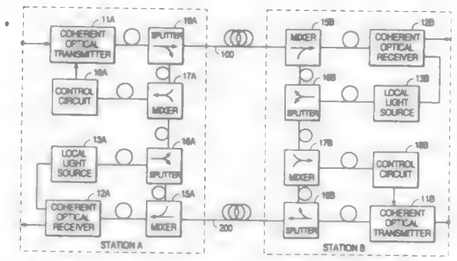
frequency comparator means for measuring a marker interval consisting of the time interval between the first and second frequency coincidences of a same scanning half-cycle, and producing an error signal representing a difference between the measured marker interval and a predetermined set point interval, said error signal being supplied to said frequency control means to thereby lock said monitored frequency to a set point frequency defined by said predetermined set point interval.

5,367,397

WAVELENGTH-STABILIZING METHOD AND ITS ASSOCIATED CIRCUITRY FOR AN OPTICAL COMMUNICATION SYSTEM

Tsutomu Tajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 775,415, Oct. 15, 1991, abandoned.
This application Dec. 27, 1993, Ser. No. 173,276
Claims priority, application Japan, Oct. 15, 1990, 2-273314
Int. Cl.[5] H04B *10/12, 10/08*
U.S. Cl. 359—152 5 Claims



1. A wavelength-stabilizing circuitry for stabilizing the wavelength of signal light in a communication system which is to transmit and receive signal light between a pair of stations, each equipped with a coherent optical transmitter, a coherent optical receiver, and local light source used for generating a local light required by the receiver to receive signal light being transmitted from the opposite station, wherein each of said stations comprises:

a first optical splitter for splitting the signal light transmitted by said coherent optical transmitter into first and second signal light portions;

a second optical splitter for splitting light from said local light source into first and second portions of said local light;

a first optical mixer for mixing a transmitted signal light transmitted by said opposite station and said first portion of said local light and supplying a first mixed signal to said coherent optical receiver;

a second optical mixer for mixing said second portion of said local light and a first portion of said transmitted signal light and supplying a second mixed signal; and

a control circuit for controlling the coherent optical transmitter to stabilize the wavelength of the signal light by detecting an intermediate frequency signal from said second mixed signal from said second optical mixer by adjusting the wavelength of the signal from said coherent optical transmitter in accordance with the fluctuation of said intermediate frequency signal.

5,367,398

OPTICAL ATMOSPHERIC LINK SYSTEM

Yujiro Ito; Kohji Suzuki, and Takashi Otobe, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1993, Ser. No. 43,734
Claims priority, application Japan, Apr. 11, 1992, 4-117945
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—154 8 Claims

1. In an optical atmospheric link system for transmitting and receiving light beams carrying information signals between transmitter means and receiver means, the receiver means being located apart from the transmitter means, said transmitter means comprising:

light source means for generating a light beam modulated by an information signal;

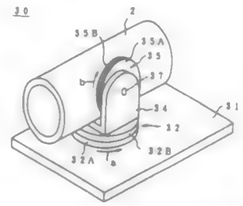
optical system means for transmitting said light beam along a light path directed from said light source means towards said receiver means;

housing means for holding at least said light source means and said optical system means;

a support member for supporting said rigid housing means;

a base member for supporting said support member; and

rotating means attached to said base member for rotating said housing means about two axes, at least one of the axes being perpendicular to said light path, said rotating means including linear motor means comprised of first and second motor means, said first motor means having first rotor means and having first stator means for magnetically



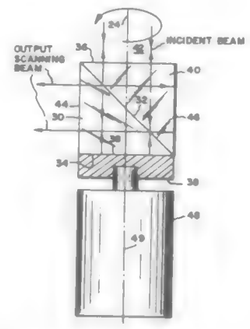
driving said first rotor means, at least one of said first rotor and stator means being directly coupled to said housing means and the other of said first rotor and stator means being directly coupled to said support member, said second motor means having second rotor means and having second stator means for magnetically driving said second rotor means, at least one of said second rotor and stator means being directly coupled to said support means and the other of said second rotor and stator means being directly coupled to said base member.

5,367,399

ROTATIONALLY SYMMETRIC DUAL REFLECTION OPTICAL BEAM SCANNER AND SYSTEM USING SAME

Charles J. Kramer, Rochester, N.Y., assignor to Holotek Ltd., Rochester, N.Y.

Filed Feb. 13, 1992, Ser. No. 835,160
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—206 45 Claims



1. A scanner which scans a light beam which is incident thereon up to 360° about an axis of rotation across a flat field or a cylindrical imaging surface within which the scanner is disposed, said scanner comprising a body rotatable about said axis and having a partially reflecting surface on which said beam is incident and is split into dual beams reflected and transmitted in different directions, a first of which directions is toward said imaging surface and is also transverse to said axis and a second of which directions is away from said imaging surface, a mirror transverse to the path of one of said dual beams, said mirror retroreflects said one of said dual beams, and said retroreflected beam being incident on said partially reflecting surface and projecting therefrom in a direction transverse to said axis

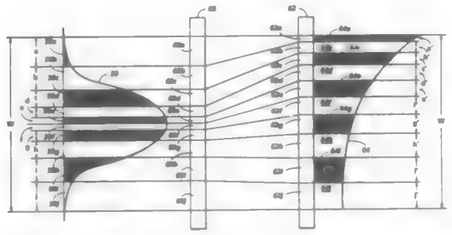
to provide an output scanning beam which scans said imaging surface.

5,367,400

OPTIMAL FILLING OF A POLYGON FACET BY BEAM REPROFILING

Ellis D. Harris, Claremont, and Vinod Mirchandani, Agoura, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1992, Ser. No. 990,492
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—216 **5 Claims**



1. A raster scanning system comprising:
a light source emitting a light beam having an intensity distribution;
beam intensity reprofiling means being so constructed and arranged to receive the light beam from said light source and reprofile the intensity distribution of the light beam to a given intensity distribution profile;
a photosensitive medium;
a rotating scanning means having a plurality of reflecting surfaces arranged to receive the light beam with the given intensity distribution profile from said beam intensity reprofiling means and scan the light beam with the given intensity distribution profile across said photosensitive medium;
the given intensity distribution profile having a width greater than each of said reflecting surfaces of said rotating scanning means;
the width of the given intensity distribution profile having a first end and a second end; and
the given intensity distribution profile intensity increasing from the first end to the second end of the width in such a manner to provide a uniform flux for the light beam reflected by said reflecting surfaces of said rotating scanning means onto said photosensitive medium over one scan line.

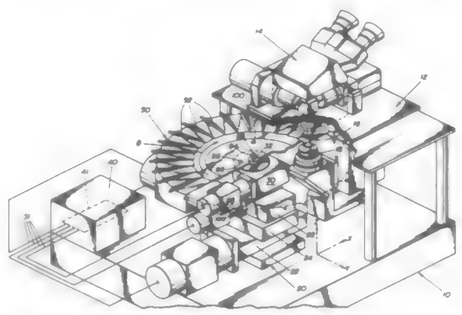
5,367,401

MICROSCOPE SLIDE ROTARY STAGE

Indulis Saulietis, Santa Fe, Tex., assignor to Perceptive Scientific Instruments, Inc., League City, Tex.

Filed Nov. 23, 1990, Ser. No. 980,530
Int. Cl.[5] G023 *21/34; G01N 1/10*
U.S. Cl. 359—398 **22 Claims**

1. A slide stage for securing a plurality of slides on a single slide viewing platform comprising:
a base defining at least two slide slots for supporting at least one slide having a first slide edge and a second slide edge, and further defining a wedge slot between the slide slots wherein each slide slot includes a first locating edge and a second locating edge wherein the first locating edge includes at least two locating points for contacting a point on the first slide edge, and wherein the second locating edge includes at least one additional locating point for contacting a point on the second slide edge, and wherein each wedge slot includes a first guiding edge and a second guiding edge for guiding a wedge means therebetween into a wedging position against the slide for securing the



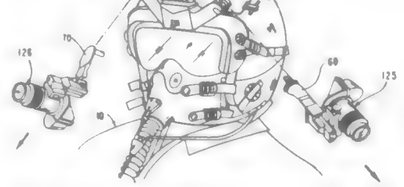
slide within one of the slide slots, whereby the slide is in engagement with the slot locating points.

5,367,402

HELMET MOUNTED NIGHT VISION APPARATUS AND METHOD OF SEPARATION

Roy H. Holmes, Salem, and Albert M. Baril, Roanoke, both of Va., assignors to ITT Corporation, New York, N.Y.

Filed Dec. 14, 1992, Ser. No. 990,061
Int. Cl.[5] G02B *23/00, 23/12*
U.S. Cl. 359—400 **22 Claims**



1. A night vision device for a pilot of an aircraft, comprising:
a first optical arrangement and a second optical arrangement;
positioning means for selectively positioning said first optical arrangement and said second optical arrangement in front of the eyes of said pilot;
propelling means for selectively propelling said first optical arrangement away from said pilot in a first direction, and propelling said second optical arrangement away from said pilot in a different second direction.

5,367,403

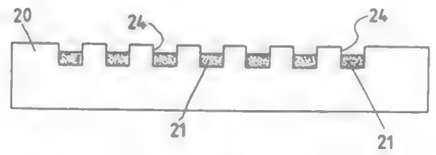
OPTICAL ELEMENT AND METHOD OF FABRICATING THE SAME

Hiroaki Yamamoto; Seiji Nishino, and Kazuhisa Yamamoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1993, Ser. No. 43,228
Claims priority, application Japan, Apr. 8, 1992, 4-086853
Int. Cl.[5] G02B *5/18, 5/30, 27/28*
U.S. Cl. 359—494 **4 Claims**

1. An optical element comprising:
a crystal of $LiTa_XNb_{1-X}O_3$ which has one of an x-surface and a y-surface, where X denotes an atomic fraction and $0 \leqq X \leqq 1$;
proton-exchanged layers periodically extending on one of the x-surface and the y-surface of the crystal; and

grooves extending in said one of the x-surface, and the y-surface of the crystal and having bottoms which are defined by surfaces of the proton-exchanged layers;
wherein ordinary light which has passed through the proton-exchanged layers and the grooves is out of phase with respect to ordinary light which has passed through a region of the crystal outside the proton-exchanged layers



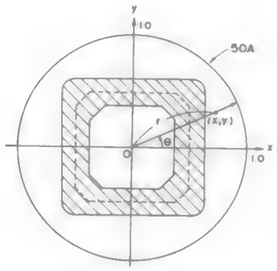
and the grooves by a quantity of $(2n+1)\pi$, and n denotes an arbitrary integer; and
wherein extraordinary light which has passed through the proton-exchanged layers and the grooves is out of phase with respect to extraordinary light which has passed through a region of the crystal outside the proton-exchanged layers and the grooves by a quantity of $2m\pi$, and m denotes an arbitrary integer.

5,367,404

IMAGE PROJECTION METHOD AND SEMICONDUCTOR DEVICE MANUFACTURING METHOD USING THE SAME

Shigeru Hayata, Kodaira, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 918,039, Jul. 24, 1992, abandoned. This application Jan. 3, 1994, Ser. No. 177,186
Claims priority, application Japan, Aug. 2, 1991, 3-194113
Int. Cl.[5] G02B *27/00, 27/42;* **G03B** *27/72;* **C03F** *7/20*
U.S. Cl. 359—558 **10 Claims**



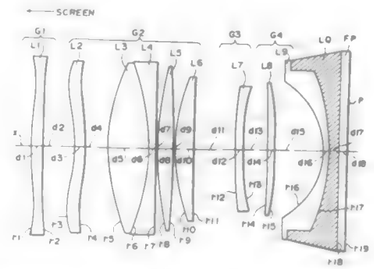
1. In an image projection method wherein a fine pattern having longitudinal and transverse patterns is illuminated and wherein diffraction light caused by the fine pattern is projected on a pupil of a projection optical system, for projection of an image of the fine pattern, the improvements residing in:
that the fine pattern is illuminated with light which defines on the pupil an effective light source of ring-like shape having sides extending in directions of elongation of the longitudinal and transverse patterns, respectively, and having a substantially uniform intensity therewithin;
that an inside peripheral configuration of the effective light source is mainly composed of sides extending in said directions, respectively;
that the sides of the inside peripheral configuration of the effective light source comprise a first pair of sides which are symmetrical with each other with respect to an axis extending through the center of the pupil and in parallel to the transverse pattern, and a second pair of sides which are symmetrical with each other with respect to an axis extending through the center of the pupil and in parallel to the longitudinal pattern:
that an outside peripheral configuration of the effective light source is mainly composed of sides extending in said directions, respectively; and
that the sides of the outside peripheral configuration comprise a third pair of sides which are symmetrical with each other with respect to an axis extending through the center of the pupil and in parallel to the transverse pattern, and a fourth pair of sides which are symmetrical with each other with respect to an axis extending through the center of the pupil and in parallel to the longitudinal pattern.

5,367,405

PROJECTING LENS

Kenzo Sado, Saitama, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Mar. 15, 1993, Ser. No. 31,527
Claims priority, application Japan, Feb. 16, 1993, 5-26797
Int. Cl.[5] G02B *13/18*
U.S. Cl. 359—649 **6 Claims**



1. A projection lens for projecting an image which has been formed on a projection cathode-ray tube onto a screen comprising:
(i) a first lens group comprising a positive plastic lens having a weak refracting power, at least one surface of which lens is aspherical,
(ii) a second lens group comprising:
(a) a plastic lens having a weak refracting power with at least one aspherical surface, and
(b) an achromatic lens system having a substantial effect on the refracting power of the whole projection lens, the achromatic lens system comprising at least three glass lenses and a plastic lens having a positive refracting power, at least one surface of the positive refracting power plastic lens being aspherical,
said weak refracting power plastic lens and said achromatic lens system being located in this order from the direction of the screen,
(iii) a third lens group comprising a further plastic lens having a weak refracting power with at least one aspherical surface, and
(vi) a fourth lens group comprising an additional plastic lens with at least one aspherical surface and a field flattener lens having a concave surface facing the screen, said additional plastic lens and said field flattener lens of said fourth lens group being located in this order from the direction of the screen,
said first lens group, said second lens group, said third lens group and said fourth lens group being located in this order from the direction of the screen,
said field flattener lens constituting a liquid optical coupler which contains a liquid sealed between said field flattener lens and the projection cathode-ray tube,
the position of the plastic lens of the third lens group satisfying the condition:

$$LC/FO > 0.47$$

wherein LC represents the distance between the surface of said plastic lens of said third lens group facing the projection cathode-ray tube and a fluorescent surface of the projection cathode-ray tube and FO represents the focal length of the whole projection lens,

when the magnification of the projection lens is varied, said first lens group, said second lens group and said third lens group being moved different distances so as to adjust a focusing position,

the refracting power of the positive plastic lens in the second lens group satisfying the condition:

$$0.1<\phi T/\phi O<0.5$$

wherein ϕT represents the refracting power of said plastic lens having the positive refracting power in said second lens group and ϕO represents the refracting power of the whole projection lens.

5,367,406

OPTICAL DEVICE WITH INHERENT FOCUSING ERROR CORRECTION

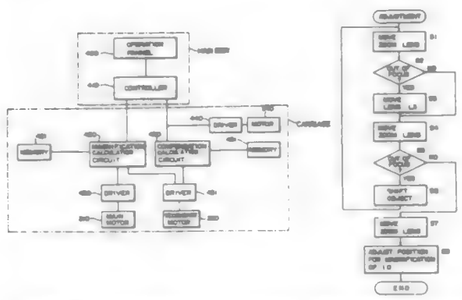
Minoru Suzuki, Saitama, and Hiroyuki Hirano, Kanagawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 777,576, Oct. 16, 1991, Pat. No. 5,291,241. This application Jul. 15, 1992, Ser. No. 913,344

Claims priority, application Japan, Oct. 16, 1990, 2-278547; May 28, 1991, 3-226639; Jul. 16, 1991, 3-268108

Int. Cl.[5] G03B *13/36, 27/34*

U.S. Cl. 359—698 **19 Claims**



1. An optical device employed in an imaging apparatus, said optical device comprising:

a zoom lens system capable of varying the magnification power thereof, said zoom lens system including at least one correction lens group movable relative to a zoom lens assembly of said zoom lens system to correct the focusing error which is inherent in said zoom lens system;

first driving means for driving said zoom lens system;

second driving means for driving said correction lens group independently of said first driving means;

storing means for storing at least one data pair for correcting said inherent focusing error and a magnification error with respect to the position of said zoom lens system, said data pair being unique for a carriage member supporting said zoom lens system and remaining the same for all magnification powers of said zoom lens system; and

control means for controlling said first and second driving means in such a fashion that said first driving means drives said zoom lens system in accordance with the magnifying power and said at least one data pair for correcting said magnification error, and wherein said second driving means drives said correction lens group in accordance with said at least one data pair for correcting said inherent focusing error.

5,367,407

APPARATUS FOR SUPPORTING AN AIMING AND ORIENTING APPLIANCE USEFUL IN REFLECTOR SYSTEMS

Hermann Hügenell, Lambsheim, Germany, assignor to Karl Friedrich Angstenberger and Hermann Hugenell, Germany, a part interest

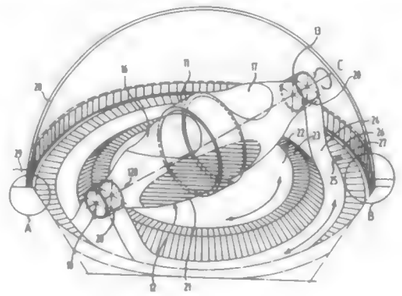
PCT No. PCT/CH91/00259, § 371 Date Sep. 24, 1992, § 102(e) Date Sep. 24, 1992, PCT Pub. No. WO92/10775, PCT Pub. Date Jun. 25, 1992

PCT Filed Dec. 10, 1991, Ser. No. 916,980

Claims priority, application Germany, Dec. 13, 1990, 4039880

Int. Cl.[5] G02B *7/00, 23/00*

U.S. Cl. 359—876 **11 Claims**



1. A supporting apparatus for an astronomical instrument and comprising

an elongate casing (12) adapted for supporting the reflectors (5,7) of the astronomical instrument, said casing having opposite ends and a pair of coaxial support cylinders (10,13) positioned at respective ones of said ends and so as to define an axis of elevation (120),

a circular tray (22) supporting said casing hydrostatically thereupon for rotation about said axis of elevation,

means mounting said tray hydrostatically upon a stationary bed and such that said tray is rotatable in a horizontal plane,

a support ring (24) disposed concentrically about said tray, said support ring having a pair of bushings (20) rotatably supporting respective ones of said pair of support cylinders of said casing,

means supporting said support ring hydrostatically for rotation in said horizontal plane, and

drive means for rotating said tray and said support ring in said horizontal plane.

5,367,408

FASTENING AND CONNECTING DEVICE, MORE PARTICULARLY FOR A LIGHT INTENSIFIER ASSEMBLY ON AN IMAGE GENERATOR OF A PILOT'S HELMET VIEWFINDER

Philippe Corsan, Andernos-Les-Bains; Patrick Jolly, Le Pian Medoc, and Olivier Farvacque, Bruges, all of France, assignors to Sextant Avionique, Meudon la Foret, France

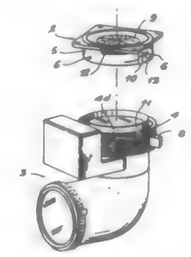
Filed Jan. 22, 1993, Ser. No. 8,363

Claims priority, application France, Jan. 24, 1992, 92 00784

Int. Cl.[5] G02B *07/02*

U.S. Cl. 359—894 **7 Claims**

1. A fastening device for a detachable light intensifier assembly on a stationary imager of a viewfinder system for an aircraft pilot's helmet, said fastening device comprising: removable indexing and locking means for the light intensifier assembly on the stationary imager operatively coupled with opening and closing control means for a light shutter of said stationary



imager, wherein locking or unlocking of the intensifier assembly causes simultaneous opening or closing of the shutter.

5,367,409

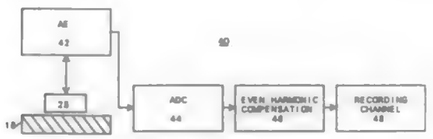
EVEN HARMONIC DISTORTION COMPENSATION FOR DIGITAL DATA DETECTION

Hal H. Ottesen, and Gordon J. Smith, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1993, Ser. No. 54,719

Int. Cl.[5] G11B *5/00, 5/09*

U.S. Cl. 360—32 **8 Claims**



1. A method of even harmonic distortion compensation for digital data detection in a disk file having at least one disk surface mounted for rotation and a corresponding transducer head movable across the disk surface for reading and writing data information to said disk surface and including an analog-to-digital converter (ADC) coupled to the transducer head for providing a sampled readback signal, said method comprising the steps of:

applying the sampled readback signal to an even harmonic filter for providing a filtered readback signal having only even harmonic components;

subtracting said filtered readback signal from said sampled readback signal for providing a compensated output signal; and

applying said compensated output signal to a digital channel of the disk file, whereby even harmonic distortion associated with thermal asperities and baseline shift from other transducer head non-linearities are compensated to prevent data errors.

5,367,410

STORAGE OF DATA ON TAPE IN MULTI-TRACK FRAMES OF INTERLEAVED DATA, WITH DATA TRANSFER ON INDIVIDUAL TRACK BASIS

Dominic McCarthy, Rangeworthy, England, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 1, 1993, Ser. No. 24,527

Claims priority, application European Pat. Off., Mar. 10, 1992, 92302015.0

Int. Cl.[5] G11B *5/09, 5/02*

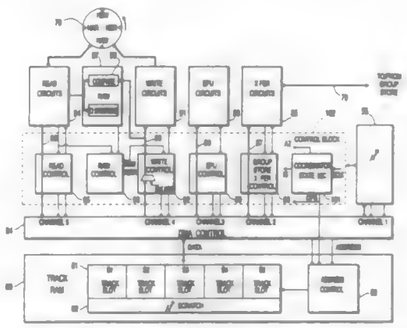
U.S. Cl. 360—48 **20 Claims**

1. Data storage apparatus for storing and retrieving data on tape using a helical scanning write/read technique with data being stored in tracks of predetermined format written across the tape, said apparatus comprising:

a tape deck with a rotary head drum mounting heads for writing/reading data to/from the tape in tracks,

data organising means operative during data storage, to receive data to be stored and to organise it, at least notionally, on the basis of frame units each corresponding to a quantity of data which can be accommodated in two of said tracks and during data retrieval, to disassemble the data out of frame units for output from said apparatus, said data organising means including a buffer memory for holding said frame units,

formatting means operative during data storage, to receive data transferred in from said buffer memory and to process it into said track format prior to being written in tracks to tape by said heads, constituent data elements from each frame unit being interleaved with each other across two tracks, and during data retrieval to receive



data read from tape by said heads and to process it out of said track format ready for transfer out to said buffer memory, the data in said buffer memory being held therein in non-interleaved form,

transfer means for transferring data from said buffer memory to said formatting means during data storage and from said formatting means to said buffer memory during data retrieval, and

a system controller for controlling and coordinating the operation of said apparatus;

the transfer means including means for selecting transfer all constituent data elements relevant to one track as recorded on tape and then selecting for transfer all constituent data elements relevant to a next track whereby data is transferred between said buffer memory and said formatting means on a track by track basis with the transfer of data in respect of one said track being completed before the transfer of data in respect of the next said track is commenced.

5,367,411

MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH REPRODUCING HEAD OF MAGNETORESISTIVE TYPE HAVING CONTROL OF MAGNETIC BIAS LEVEL

Nobumasa Nishiyama, Hachiouji; Yasuhiro Kato, Nishitama, and Toshiaki Tsuyoshi, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 3, 1992, Ser. No. 923,833

Claims priority, application Japan, Aug. 2, 1991, 3-194244; May 29, 1992, 4-139196

Int. Cl.[5] G11B *5/03, 5/127, 5/33*

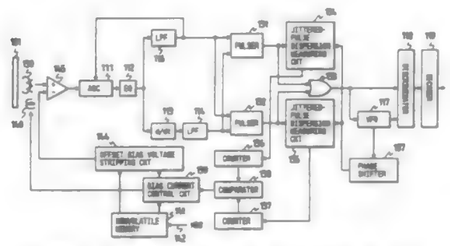
U.S. Cl. 360—66 **10 Claims**

1. A magnetic recording and reproducing apparatus comprising:

an inductive recording head for recording data on a magnetic recording medium;

a magnetoresistive reproducing head for reproducing data from the magnetic recording medium;

a phase discriminating circuit including a differential circuit for differentiating a waveform of a signal reproduced by said magnetoresistive reproducing head, a pulse circuit for producing a zero cross pulse from a zero-level crossing point of the differentiated waveform, and a discriminator circuit for discriminating "1" and "0" of the data in accordance with pulses output from said pulse circuit including a discriminating window enabling judgment of the "1" and "0 of the data;



a decoding circuit for decoding the output of said phase discriminating circuit and for providing an output of decoded data; and

means for controlling a magnetic bias level for said magnetoresistive reproducing head so that a dispersion of jittered zero cross pulses of a positive polarity waveform of the signal reproduced by said magnetoresistive reproducing head is made substantially equal to a dispersion of jittered zero cross pulses of a negative polarity waveform of the signal reproduced by said magnetoresitive reproducing head.

5,367,412

RECORDING/REPRODUCING CIRCUIT AND RECORDING/REPRODUCING APPARATUS HAVING THE SAME CIRCUIT

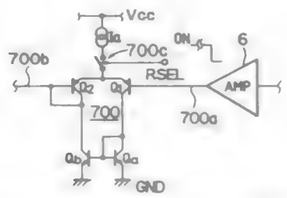
Kei Nishioka, and Chung Chien San, both of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Sep. 8, 1993, Ser. No. 117,689

Claims priority, application Japan, Sep. 10, 1992, 4-266825

Int. Cl.[5] G11B *15/12, 05/02*

U.S. Cl. 360—67 **7 Claims**



1. A recording/reproducing circuit comprising: a recording amplifier for outputting a recording signal; a differential amplifier including a pair of transistors, a base of one of said transistors being a (+) side input, a base of the other transistor being a (−) side input, emitters of said transistors being connected commonly to a current source, said (+) side input being supplied with said recording signal, an output signal being fedback to said (−) side input, said output signal being sent to a recording head;

means for cutting a current of said current source to thereby stop an outputting of said recording signal from said differential amplifier circuit;

wherein said recording amplifier and said differential amplifier circuit are formed as a single IC and said means is adapted to cut a current flowing between said commonly connected emitters and said current source during a reproducing period; and

wherein said recording head is a recording/reproducing head and further comprising a reproducing amplifier, a reproducing head and a second switch circuit for selecting one of reproducing signals from said recording/reproducing head and said reproducing head and outputting the selected reproducing signal to said reproducing amplifier; said second switch circuit, said recording amplifier and said differential amplifier being formed as a single IC; said output of said differential amplifier and said recording/reproducing head being connected externally of said IC without a switch; and said reproducing head and said second switch circuit being connected externally of said IC without a switch.

5,367,413

DEVICE FOR REPRODUCING A PIECE OF MUSIC FROM A MAGNETIC RECORD CARRIER (FAVORITE TAPE POSITION)

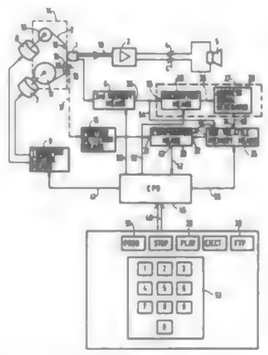
Jan Dewolf, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 849,562, Mar. 11, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 212,331

Claims priority, application Netherlands, Mar. 18, 1991, 9100475

Int. Cl.[5] G11B *15/22*

U.S. Cl. 360—72.2 **21 Claims**



1. A device for reproducing a piece of music from a track on a magnetic record carrier incorporated in a cassette, comprising:

reading means for reading the piece of music from the track at a reproduction speed, said reading means including a reproducing head;

position detection means for detecting a position of the reproducing head with respect to the record carrier, viewed in the longitudinal direction of said record carrier, and for supplying a position signal which is related to said position;

comparator means, having a first input, a second input and an output, for comparing the position signal from said position detection means, applied to the first input, with a start position signal which is related to a start position of a piece of music on the record carrier and which is applied to the second input, and for supplying a control signal at the output in dependence upon the position signal and the start position signal;

transport control means for transporting the record carrier along the reproducing head, in a reproduction mode, at the reproduction speed, and for transporting the record carrier, in a second mode, at a raised transport speed in response to the control signal of the comparator means to such a position that the reproducing head is situated substantially at the start position of the piece of music, characterized in that the device further comprises:

non-volatile memory means for storing, for two or more record carriers, the start position signal for one piece of music on each one of said record carriers;

operating means for generating an activation signal upon operation of the operating means;

address signal generator means adapted to generate an address signal in accordance with the record carrier inserted into the device for supplying the address signal to the memory means, in that the memory means are adapted to supply the start position signal at an output in response to the address signal, said start position signal being stored in the memory means for said one piece of music on the record carrier inserted into the device, in that the output of the memory means is coupled to the second input of the comparator means for supplying the start position signal to the comparator means, and in that the transport control means are adapted to transport the record carrier at the raised transport speed to the start position of the piece of music in response to the control signal of the comparator means and in response to the activation signal, and to switch off the transport after the start position of the piece of music has been reached, and to switch the device over to a stop mode.

5,367,414

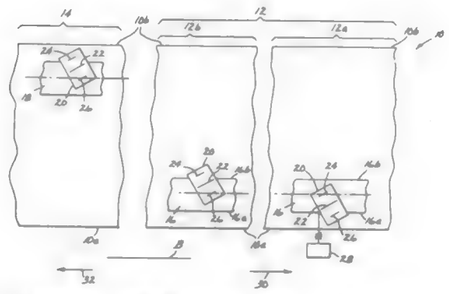
TRANSDUCER/TRACK ALIGNMENT METHOD FOR MAGNETIC RECORDING MEDIA

Michael J. Kelly, Erin Prairie Township, St. Croix County; William A. Fanning, North Hudson, both of Wis., and Stacy A. Henneberger, Eagan, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 753,927, Sep. 3, 1991, abandoned. This application Mar. 9, 1994, Ser. No. 208,797

Int. Cl.[5] G11B *5/56*

U.S. Cl. 360—77.12 **8 Claims**



1. A method of aligning, with respect to a magnetic recording tape having a beginning, an end, a line of travel between the beginning and the end, and first and second tracks substantially parallel to the line of travel recorded with a recognizable signal, a magnetic head comprising a forward read transducer, a write transducer, and a reverse read transducer, each transducer having a longitudinal spacing distance from each other transducer; the method comprising the steps of:

(a) at the beginning of the magnetic recording tape, locating a reference location and the location of the first track with respect to that reference location,

(b)

(1) while the tape is moving in a forward direction, transversely centering the forward read transducer with respect to the first track,

(2) determining the amount of transverse movement required to perform step (b)(1),

(3) establishing a first, forward read transducer offset value from the result of step (b)(2),

(c)

(1) while the tape is still at the beginning of the tape and moving in the forward direction, transversely moving the head until the reverse read transducer is centered with respect to the first track,

(2) determining the amount of transverse movement required to perform step (c)(1),

(3) establishing a second, write transducer offset value from the result of step (c)(2) and the longitudinal spacing distances between transducers,

(d) upon reaching the end of the tape, reversing direction of tape travel to a reverse direction,

(e) while the tape is moving in the reverse direction, transversely centering the reverse read transducer in the second track, thus establishing a third, reverse read transducer offset value, and

(f) compensating movement of the head, if any, required for any particular transducer to access any track, by applying one of the first, second, and third offset values specific to the particular transducer.

5,367,415

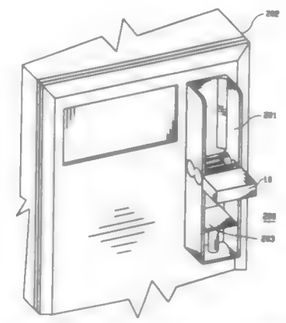
AUTOMATIC MAGNETIC TAPE CARTRIDGE SEPARATOR FOR TAPE DRIVE SYSTEMS

Christian A. Todd, Thornton, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 10, 1993, Ser. No. 15,754

Int. Cl.[5] G11B *15/68*

U.S. Cl. 360—92 **19 Claims**



1. An apparatus for automatically loading magnetic tape cartridges onto an associated tape drive comprising:

means for loading one or more magnetic tape cartridges into the associated tape drive;

means displaced from the loading means for receiving a plurality of magnetic tape cartridges forming a stack oriented along an axis, adjacent magnetic tape cartridges in the stack abutting at an interface;

a first and second rotatable body, each having two or more separating rods circumferentially and evenly disposed about and projecting along the axis of rotation of their respective rotatable body, the axis of rotation of the first rotatable body and the axis of rotation of the second rotatable body aligned in a plane perpendicular to the axis of the stack;

means for biasing the stack against the first and second rotatable bodies; and

means for rotating the first and second bodies simultaneously in opposite directions wherein one separating rod of the

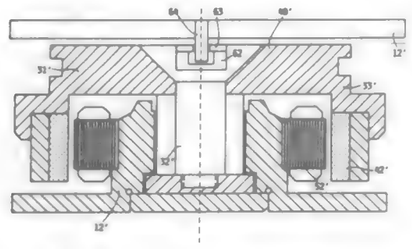
first rotatable body and one separating rod of the second rotatable body engage from opposite directions the interface between the next magnetic tape cartridge in the stack and the remainder of the stack.

5,367,416

SPINDLE GROUNDING DEVICE USING MAGNETIC FLUID

Lake A. Cossette, and Zine-Eddine Boutaghou, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,504
Int. Cl.[5] G11B *33/14, 17/02*
U.S. Cl. 360—97.02 20 Claims



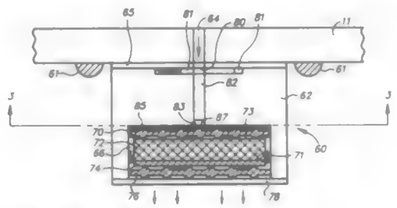
1. A disk drive comprising:
a housing;
a spindle shaft mounted for rotation to said housing, said spindle shaft having an opening therein located at the axis of rotation, said opening having a closed end and an open end;
a hub mounted to said spindle shaft so that the hub can rotate with said spindle shaft;
a magnetized pin fixedly attached to said housing and extending into the opening in the spindle shaft;
a selected amount of magnetic and conductive fluid located within said opening;
a disk mounted on said hub;
one or more transducers; and
actuator means for moving the transducer over the surface of the disk.

5,367,417

DISK DRIVE WITH FLOW-BY CHEMICAL BREATHER FILTER

Charles A. Brown, Los Gatos, and Herman R. Wendt, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1993, Ser. No. 168,541
Int. Cl.[5] G11B *17/02*
U.S. Cl. 360—97.02 6 Claims



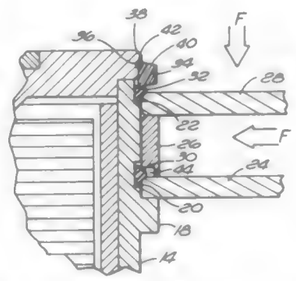
1. A data recording disk drive comprising:
a data disk;
a motor connected to the disk for rotating the disk;
a transducer for reading data from or writing data to the disk;
a carrier for supporting the transducer near the surface of the disk;
an actuator connected to the carrier for moving the carrier and supported transducer across the surface of the disk;
an enclosure surrounding the motor and actuator and having a breather opening;
a filter housing located within the enclosure and having passage, the passage having an inlet near the breather opening and an outlet;
a chemical filter supported by the housing and located near the passage outlet for removing chemical contaminants from air entering the enclosure through the breather opening, the filter having a surface oriented generally perpendicular to the direction of air flow from the passage outlet; and
a barrier supported by the housing and located adjacent the chemical filter for preventing the air from the passage outlet from flowing through the chemical filter and for reorienting the air across the surface of the chemical filter.

5,367,418

SPIN MOTOR ASSEMBLY THAT CONTAINS AN O-RING WHICH SUPPORTS A DISK IN BOTH THE RADIAL AND AXIAL DIRECTIONS

H. Ross Chessman, Erie, and F. Eugene Dion, Longmont, both of Colo., assignors to Maxtor Corporation, San Jose, Calif.

Filed Nov. 13, 1992, Ser. No. 975,825
Int. Cl.[5] G11B *17/022, 17/02*
U.S. Cl. 360—99.12 10 Claims



1. A hub assembly for a hard disk drive, comprising:
a hub that has a first groove;
an elastomeric O-ring located within said first groove;
a first magnetic disk coupled to said hub and said O-ring; and;
retainer means for pressing said first magnetic disk into contact with said hub and said O-ring, said O-ring being located relative to said retainer means and said first magnetic disk, such that said O-ring exerts a counteractive force on said retainer means and said first magnetic disk in both a radial direction and an axial direction of said first magnetic disk.

5,367,419

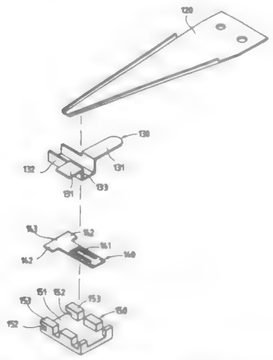
FLOATING MAGNETIC HEAD SLIDER WITH FLEXURE WINGS LOCATED WITHIN SLIDER L-SHAPED MEMBERS AND UPPER SURFACE OF SLIDER

Toshio Kazama, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1992, Ser. No. 955,612
Claims priority, application Japan, Oct. 2, 1991, 3-255587; Oct. 4, 1991, 3-89665; Aug. 7, 1992, 4-61538
Int. Cl.[5] G11B *21/21*
U.S. Cl. 360—103 5 Claims

1. A floating head assembly for supporting a read/write head over an information-bearing disk in a disk drive device, the floating head assembly comprising:

a head supporting member having a free end;
a flexure connected to the free end of the head supporting member, the flexure including a body and a pair of wings extending from the body; and
a slider having an upper surface movably connected to the flexure and a pair of L-shaped members extending from



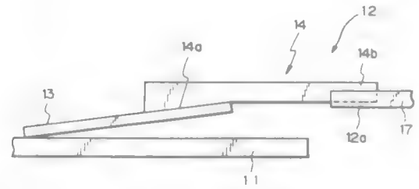
the upper surface such that the L-shaped members and the upper surface define a pair of notches for receiving the wings;
wherein when the slider is floating in a normal position over the information-bearing disk, the wings are located within the notches and separated from the L-shaped members and the upper surface.

5,367,420

MAGNETIC DISK DRIVE

Norio Yagi, Kawasaki; Yoshihiro Arikawa, Higashine, and Ryuzi Satou, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 10, 1992, Ser. No. 896,711
Claims priority, application Japan, Jun. 10, 1991, 3-137883; Jun. 13, 1991, 3-141829
Int. Cl.[5] G11B *21/24*
U.S. Cl. 360—109 13 Claims



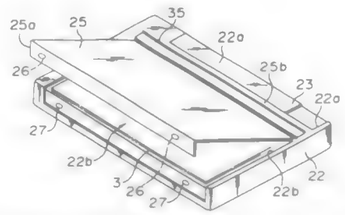
1. A magnetic disk drive comprising: one or more disks having a laminated arrangement with equally fixed spaces, wherein the disks are mounted to allow rotation;
disk driving means for causing said disks to rotate;
one or more positioners each mounted to allow movement across the tracks of a selected disk said positioners having arcuate surfaces formed on an end portion of said positioners;
positioner driving means for driving said positioners so that their respective ends can traverse said tracks;
head supporting members attached to said positioners; each of said head supporting members having an arcuate surface at a tip end portion;
one or more reproducing/recording elements fixed on said respective end portions of said head supporting members at said arcuate surfaces for performing read/write operations on the surfaces of recording media of said disks whereby each of said reproducing/recording elements is rotatably adjustable during assembly of said magnetic disk drive.

5,367,421

CARTRIDGE FOR A RECORDING/REPRODUCING MEDIUM HAVING A TRANSPARENT OR SEMI-TRANSPARENT COVER MEMBER

Haruo Shiba, Komoro; Takateru Satoh, and Takashi Namioka, both of Saku, all of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 23, 1992, Ser. No. 995,827
Claims priority, application Japan, Dec. 27, 1991, 3-112785[U]; Dec. 27, 1991, 3-358213
Int. Cl.[5] G11B *23/02*
U.S. Cl. 242—347.1 3 Claims



1. A cartridge having therein a recording/reproducing medium and comprising a casing having the medium therein, said casing having means for permitting passage of a recording/reproducing medium drive element into the casing to drive the recording/reproducing medium in said casing, said casing further comprising a label area or an index area in which a label or an index is disposed, and a transparent or semitransparent cover member for covering said label or said index, wherein the cover member is attached to the casing by engaging means engaging between said transparent or semi-transparent cover member and said casing so as to open and close said cover member,
wherein said casing has a shutter and an area for sliding the shutter, wherein said cover member comprises a movable cover portion and an end portion formed as one piece with the movable cover portion and separated therefrom by a hinge portion, wherein the end portion of said cover member is attached to the casing, wherein a gap for inserting the label or index is formed in the label area, and wherein the end portion of the cover member extends above an end portion of the shutter so as to cover the shutter and guide the movement thereof.

5,367,422

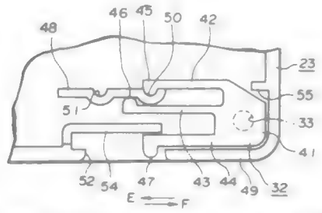
DISC CARTRIDGE HAVING MISTAKEN RECORDING INHIBITING MECHANISM

Hirotoshi Fujisawa, Tokyo, and Kenji Takahashi, Miyagi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 9, 1992, Ser. No. 943,790
Claims priority, application Japan, Sep. 17, 1991, 3-265178; Sep. 30, 1991, 3-278630
Int. Cl.[5] G11B *15/16, 19/04, 23/03*
U.S. Cl. 360—133 8 Claims

1. A disc cartridge comprising
a cartridge main body accommodating a disc for rotation therein and having a recording/reproducing aperture for exposing the disc to outside,
a shutter member movably mounted on one lateral side of said cartridge main body for opening or closing said recording/reproducing aperture, and
a mistaken recording inhibiting men%her having a closure part of a size large enough to close a detection hole provided in said cartridge main body, first, second and third arms formed as one with said closure part and a movement actuating part for enabling a user of the disc cartridge to

move said mistaken recording inhibiting member between a position of opening said detection hole by said closure part and a position of closing said detection hole by said closure part, the movement actuating part being formed on the third arm,



said cartridge main body having a slide guide for guiding said mistaken recording inhibiting member in the direction of extension of said resilient arms, said movement actuating part being provided at a position actuatable from outside of said cartridge main body via a notch formed in a lateral side of said cartridge main body, said slide guide being held between said first and second arms.

5,367,423

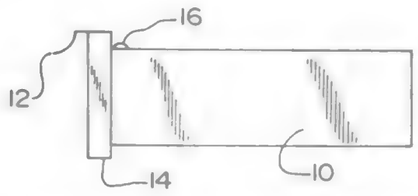
INSERTABLE PROTECTIVE DEVICE FOR VCRS

Bryant L. Phillips, 69-618 Stafford Pl., Cathedral City, Calif. 92234

Continuation-in-part of Ser. No. 766,519, Sep. 27, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,692

Int. Cl.[5] G11B *23/02*

U.S. Cl. 360—137 **8 Claims**



1. A protective device for insertion into the openings of cassette receiving chambers of VCRs and audio cassette machines so as to prevent the intrusion of foreign objects into said chambers, said receiving chambers being of rectangular construction and having top, bottom and left and right side walls, said protective device comprising: a door seal flange having front and rear surfaces, an insertion member attached to said rear surface, said insertion member having an upper wall and side walls, said insertion member of size for fitting within said cassette receiving chamber so that said side walls of said insertion member will abut said side walls of said receiving chamber when said insertion member is inserted, frictional locking means in connection with said insertion member for frictionally engaging with at least one of said walls of said cassette opening, a releasing means in connection with said door seal flange for disengaging said friction locking means upon being actuated.

5,367,424

CIRCUIT FOR PROTECTING AN ELECTRONIC SWITCH AGAINST SHORT CIRCUITS

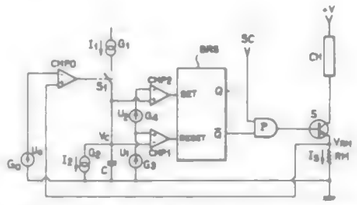
Stéphane Even, Angouleme, France, assignor to Telemecanique, France

Filed Dec. 20, 1991, Ser. No. 812,903

Claims priority, application France, Dec. 21, 1990, 90 16139

Int. Cl.[5] H02H *9/02*

U.S. Cl. 361—18 **5 Claims**



1. A circuit for protecting an electronic switch against damage by an overcurrent caused by a short circuit in a load connected in series with said electronic switch, the circuit comprising:

(a) an electronic switch;

(b) means for obtaining an electrical parameter representative of the current flowing through said switch;

(c) means for generating a variable voltage that varies in a direction which depends on the value of said parameter relative to a predetermined reference;

(d) first and second threshold detectors defining a range between a first threshold and a second threshold, each having a pair of input terminals, one said input terminal receiving said variable voltage and the other input terminal receiving a signal indicative of a respective first or second threshold; and

(e) memory means connected to and controlled by said first and second threshold detectors to switch said switch OFF and ON when said variable voltage crosses said second or said first threshold respectively, on leaving the range defined by said thresholds;

(f) said second threshold being reached only after said parameter has crossed said predetermined reference for a predetermined length of time to provide a degree of immunity against interference;

(g) wherein said means for generating a variable voltage comprising a threshold detector comparing said parameter with said reference, a capacitor, and means for charging and discharging said capacitor, said variable voltage being taken from a terminal of said capacitor.

5,367,425

METHOD AND DEVICE FOR PREVENTING UNDERSTABILIZATION OF LONGITUDINAL DIFFERENTIAL PROTECTION IN CASE OF EXTERNAL FAULT AND CURRENT TRANSFORMER SATURATION

Murari M. Saha, and Per Wennerlund, both of Västerås, Sweden, assignors to Asea Brown Boveri AB, Västerås, Sweden

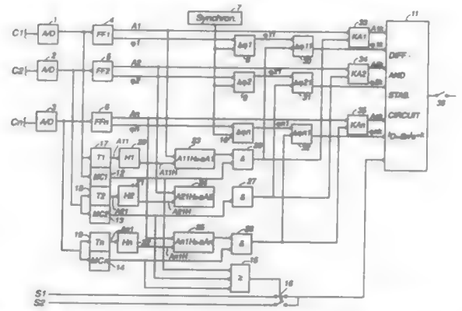
Filed May 11, 1993, Ser. No. 59,854

Claims priority, application Sweden, May 22, 1992, 9201618

Int. Cl.[5] H02H *3/32*

U.S. Cl. 361—63 **4 Claims**

1. A method for preventing understabilization of longitudinal differential protections in case of external faults and current transformer saturation, comprising the steps of filtering the measured, sampled currents of the longitudinal differential protection, obtained via current transformers and A/D converters by means of Fourier filters, and producing the Fourier amplitudes (A1, A2, . . . An) and phase angles (ϕ1, ϕ2, . . . ϕn) of the respective current vectors, synchronizing the phase angles together with the Fourier amplitudes, determining the function characteristic of the longitudinal differential protection, and using the sampled currents for detecting whether any current transformer has become saturated, increasing the stabilizing degree (S) included in the function characteristic with any current transformer being saturated, selecting the peak values of the sampled currents with the aid of two consecutive sample values for each cycle and selecting the holding amplitudes (A11H, A21H, . . . An1H) of the currents as the last selected peak values and consecutively stored in holding circuits, and detecting if one or more of the holding amplitudes is/are greater than the respective Fourier amplitude multiplied by a first constant (a), and if at the same time detecting saturation, multiplying the Fourier amplitude by a second constant (KA) into a higher value (A1k, A2k, . . . Ank) and reducing the phase angle by a phase change ($\Delta\phi$) into a lower value (ϕ1k, ϕ2k, . . . ϕnk), and obtaining a corrected function characteristic from the values of Fourier amplitude and phase angle.



5,367,426

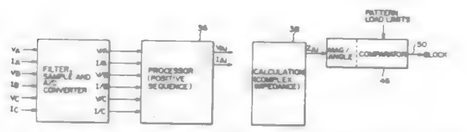
DISTANCE RELAY WITH LOAD ENCROACHMENT PROTECTION, FOR USE WITH POWER TRANSMISSION LINES

Edmund O. Schweitzer, III, Pullman, Wash., assignor to Schweitzer Engineering Laboratories, Inc., Pullman, Wash.

Filed Oct. 14, 1992, Ser. No. 960,763

Int. Cl.[5] H02H *3/26*

U.S. Cl. 361—80 **18 Claims**



1. A system for preventing a protective relay useful in protecting power transmission lines from indicating a fault on the transmission line in response to load, comprising:

means for measuring voltage and current on the transmission line;

means for determining positive sequence components of said measured voltage and current;

means for calculating positive sequence impedance at the relay location on the transmission line from said positive sequence voltage and current;

means for determining a pattern of load impedance on the transmission line relative to the relay, the pattern of load impedance defining a selected area in the impedance plane;

means for comparing the calculated impedance at the relay location against a test impedance pattern which is at least substantially similar to the lead impedance pattern; and

means for blocking an output indication from the relay indicative of the presence of a fault on the transmission line if the calculated impedance is within the test impedance pattern.

5,367,427

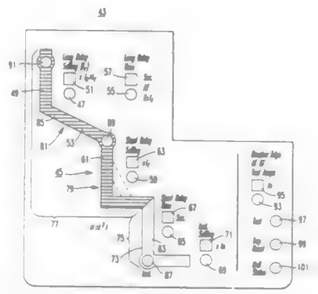
OVERCURRENT TRIP UNIT WITH INDICATION OF DEPENDENCY OF TRIP FUNCTIONS

Joseph J. Matsko, Beaver, and Gary F. Saletta, Penn Township, Westmoreland County, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 15, 1993, Ser. No. 92,294

Int. Cl.[5] H02H *3/04*

U.S. Cl. 361—94 **5 Claims**



1. An overcurrent trip unit for an electric current interrupting device comprising:

means establishing a current rating for said current interrupting device;

current sensing means sensing current in said electric current interrupting device;

means responsive to said current sensing means generating a trip signal in accordance with a current/time characteristic having a first portion and a second portion, said first portion being a function of said current rating which is independent of said current/time characteristic, and said second portion having a plurality of sections at least some of which are functions of said current rating which are dependent upon one another;

an operator panel; and

a graphic representation on said operator panel of said current/time characteristic with a first indicia indicating said first portion of said current/time characteristic, and a second indicia indicating said second portion of said current/time characteristic.

5,367,428

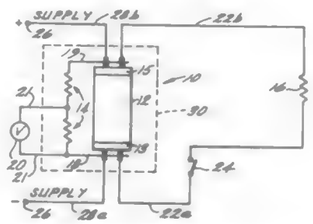
INTEGRATED SAFETY DISCHARGE MODULE

Carmelo A. Aresco, Middletown, and Andrew J. Turano, Wallingford, both of Conn., assignors to Raymond Engineering Inc., Middletown, Conn.

Filed Dec. 18, 1992, Ser. No. 992,694

Int. Cl.[5] F23Q *3/00*

U.S. Cl. 361—251 **14 Claims**



1. An integrated safety discharge module comprising:

a capacitor;

bleed means for bleeding off a charge on said capacitor;

a pair of leaf spring conductors integrally connecting said capacitor with said bleed means;

load means connected in circuit to receive discharge from said capacitor; and

normally open switch means for connecting said capacitor with said load.

5,367,429

ELECTROSTATIC TYPE MICRO TRANSDUCER AND CONTROL SYSTEM USING THE SAME

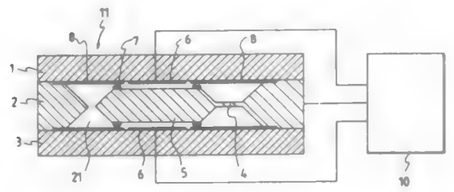
Shigeki Tsuchitani, Mito; Seiko Suzuki, Hitachioota; Satoshi Shimada, Hitachi; Masayuki Miki, Katsuta; Masahiro Matsumoto, Hitachi; Susumu Murakami, Katsuta; Akira Koide, Chiyoda; Masahiro Kurita, Katsuta, and Hiromichi Ebine, Oomiya, all of Japan, assignors to Hitachi, Ltd, Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Oct. 16, 1992, Ser. No. 962,508

Claims priority, application Japan, Oct. 18, 1991, 3-270716; Mar. 19, 1992, 4-63154

Int. Cl.[5] H01G *7/00, 13/00;* **G01P** *15/08*

U.S. Cl. 361—280 **38 Claims**



1. An electrostatic type micro transducer comprising,

a plate shaped movable electrode made of monocrystalline silicon;

a first substrate of the same material as said plate shaped movable electrode surrounding the plate shaped movable electrode;

means for connecting said plate shaped movable electrode with said first substrate, said connecting means elastically supporting said plate shaped movable electrode;

a first stationary electrode facing one major surface of said plate shaped movable electrode with a predetermined gap; and

first members provided on possible contacting portions of said plate shaped movable electrode;

means for preventing sticking of said plate shaped movable electrode to said first stationary electrode through said first members due to at least one of residual dielectric polarization, residual electric charges and water located around possible contacting portions between said plate shaped movable electrode and said first stationary electrode, when said plate shaped movable electrode excessively displaces, further comprising,

a first insulator substrate carrying said first stationary electrode thereon; and

wherein said sticking preventing means includes means for reducing electric fields induced around the possible contacting portions to prevent sticking caused by said first members.

5,367,430

MONOLITHIC MULTIPLE CAPACITOR

Alan D. DeVoe, Cambridge, Mass., and Daniel F. DeVoe, Coronado, Calif., assignors to Presidio Components, Inc., San Diego, Calif.

Filed Oct. 21, 1992, Ser. No. 964,150

Int. Cl.[5] H01G *4/38*

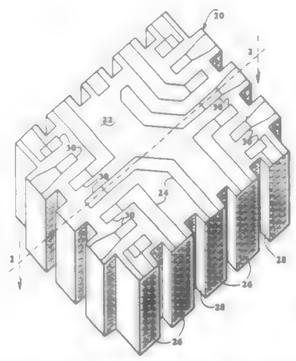
U.S. Cl. 361—328 **29 Claims**

18. A monolithic multiple capacitor comprising:

a. a ceramic body having a length;

b. a plurality of electrically conductive parallel layers disposed in said body and layered along said length, each conductive layer having an edge connection extending to an edge of said ceramic body;

c. a plurality of metallized bus strips extending along the length of said ceramic body and selectively interconnecting said edge connections to form a plurality of capacitors, said bus strips and said edge connections forming a plurality of external connections; and



d. a plurality of rectangular, saw cut slots disposed between adjacent metallized bus strips, said rectangular, saw cut slots having a depth and a width, the depth of at least one of the rectangular, saw cut slots being greater than the width thereof thereby to allow selective reduction of parasitic capacitance between adjacent external connections.

5,367,431

THIN POWER SUPPLY UNIT

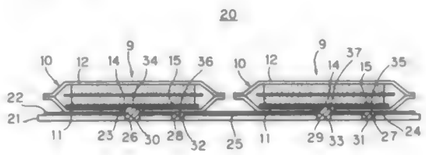
Tatsuo Kunishi; Kouichi Watanabe; Masanori Endo, and Masato Higuchi, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 22, 1992, Ser. No. 964,785

Claims priority, application Japan, Oct. 23, 1991, 3-275424

Int. Cl.[5] H01G *9/00, 1/035*

U.S. Cl. 361—502 **20 Claims**



1. A thin power supply unit having a height substantially equal to a height of flat power supply elements comprised therein, said thin power supply unit comprising:

a) a first plurality of flat power supply elements arranged side by side, each power supply element comprising a flat case, said flat case having an interior and serving as a first element terminal for said power supply element;

1) each power supply element having an electrode plate inside said case, a surface of said electrode plate closely spaced from an inner surface of said case, said electrode plate serving as a second element terminal for said power supply element;

2) an electrically insulating layer disposed between said respective surfaces of said case and said electrode plate for electrically insulating said respective surfaces from each other; and

3) an opening into said interior of said case exposing a portion of said surface of said electrode plate;

b) plate type circuit means having external connection terminals;

c) a conductive member for electrically connecting said circuit means with each of said flat power supply elements, respectively, so that said first element terminals and said second element terminals of said plurality of flat power supply elements are electrically connected with each other and with said external connection terminals; and

d) an electrically insulating bonding layer for bonding said plurality of flat power supply elements to said circuit means,

wherein each flat power supply element is arranged on said circuit means with an outer surface, opposed to said inner surface, substantially parallel to a major surface to said plate type circuit means; said flat case having a relatively wide surface defining the flat shape of said case, and said opening being formed in said relatively wide surface to face toward said circuit means, and

said circuit means and said bonding layer have through holes in respective portions provided with said conductive member.

5,367,432

INSTRUMENT CURRENT TRANSFORMER FOR POWER CABLES

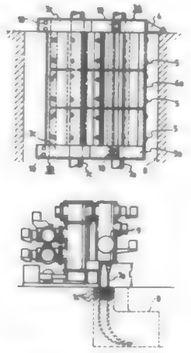
Kyuji Yaginuma, Katsuta; Takehiro Kikuchi, Hitachi; Hiroshi Suzuyama, and Shigeru Fujiya, both of Hitachioota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1993, Ser. No. 32,326

Claims priority, application Japan, Mar. 17, 1992, 4-060545

Int. Cl.[5] H02B *7/00*

U.S. Cl. 361—620 **7 Claims**



1. An instrument current transformer having three current transformer coils for three phases and being connectable to a main power cable which is composed of three power cables for three phases disposed in a power cable laying hole, each of said three current transformer coils being for surrounding a corresponding one of said three power cables, said instrument current transformer comprising:

a plurality of upper circumferential installation unit members disposable near an end portion of said power cable laying hole along circumference sides of an opening portion of said power cable laying hole, each of said upper circumferential installation unit members being provided with at least one securing portion extending in a radial direction and said upper circumferential installation unit members being securable to said end portion of said power cable laying hole via respective said at least one securing portions;

three axial installation members for said three phases, each for extension along corresponding ones of said three power cables, first ends of said axial installation members being connected to said upper circumferential installation unit members and said three current transformer coils for said three phases being supported by corresponding ones of said three axial installation members; and

a plurality of lower circumferential installation unit members having substantially a same configuration as corresponding ones of said upper circumferential installation unit members, said lower circumferential installation unit members being connected to second ends of said axial installation members opposite from said first ends.

5,367,433

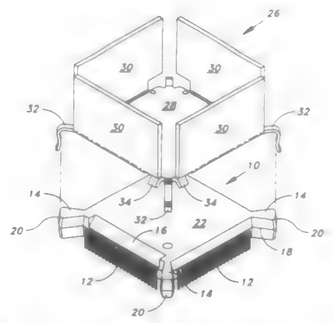
PACKAGE CLIP ON HEAT SINK

Michael L. Blomquist, 3474 Carl Ct., Newbury Park, Calif. 91320

Filed Sep. 27, 1993, Ser. No. 127,332

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—704 **12 Claims**



1. A clip on heat sink for an electronic package of the type having a generally rectangular planform, a generally planar normally upper surface, four sides, electrically conductive leads projecting from said sides at locations spaced from said upper surface, and ears projecting generally diametrically outwardly from four corners of said electronic package, said clip on heat sink comprising:

a heat conductive body having a generally rectangular planform adapted to correspond approximately to the generally rectangular planform of said electronic package and adapted to being positioned in heat receiving contact with said generally planar normally upper surface; and

a first clip unit at a first corner of said body including a leaf spring leg adapted to being biased into resilient engagement with the outer end of a first of said ears, a pair of tabs on either side of said leaf spring leg adapted to engage the sides of said electronic package adjacent said first ear.

5,367,434

ELECTRICAL MODULE ASSEMBLY

Curtis M. Griffin, Boca Raton; James V. Lauder, Ft. Lauderdale, and Leng H. Ooi, Sunrise, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1993, Ser. No. 57,376

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—719 **4 Claims**

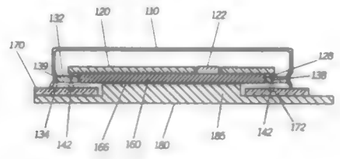
1. A power amplifier module assembly, comprising:

a mounting frame having a contoured cavity extending there through, said mounting frame is essentially planar, having first and second opposing sides, said mounting frame having electrical conductors integrally formed therein for electrically connecting portions of the first surface to portions of the second surface, said mounting frame having ground connectors peripherally located thereon;

a thermal conductive member formed to fit within the cavity

and being positioned within said cavity of said mounting frame;

a module substrate having electrical components and electrical circuitry constituting a power amplifier, said module substrate mounted onto said thermal conductive member, said module substrate mounted to said first surface of said mounting frame, said module substrate electrically connected to said electrical conductors on said mounting frame;



a heat-generating semiconductor device mounted onto said module substrate such that said heat-generating semiconductor device is thermally connected to said thermal conductive member; and

a shield mounted over said module substrate onto said mounting frame, said shield electrically connected to said ground connectors on said mounting frame;

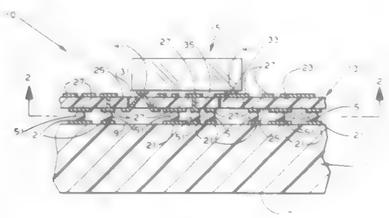
wherein the mounting frame provides leadless external electrical interconnections to the module substrate.

5,367,435

ELECTRONIC PACKAGE STRUCTURE AND METHOD OF MAKING SAME

Frank E. Andros, Binghamton; Christopher G. Angulas, Owego, and Joseph M. Milewski, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1993, Ser. No. 153,734
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—749 **10 Claims**



1. An electronic package comprising:

a first circuitized substrate including a surface having a plurality of electrical conductors thereon;

a second circuitized substrate electrically coupled to said first circuitized substrate and including a surface having a first plurality of electrical conductive elements thereon, said second circuitized substrate being flexible and including at least one aperture therein; and

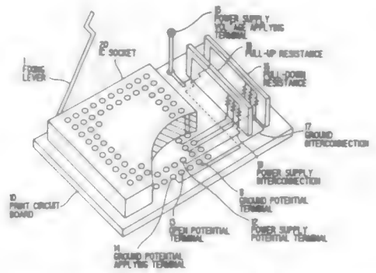
a semiconductor device having a plurality of contact sites thereon and electrically coupled to said second flexible circuitized substrate along one side of said second substrate, selected ones of said first plurality of electrical conductive elements of said second flexible circuitized substrate bridging said aperture and being electrically coupled to respective, selected ones of said contact sites of said semiconductor device through said aperture, selected ones of said electrical conductive elements being soldered to respective ones of said electrical conductors on said first circuitized substrate, including along a second side of said second substrate, immediately opposite said semiconductor device.

5,367,436

PROBE TERMINATING APPARATUS FOR AN IN-CIRCUIT EMULATOR

Satoshi Ikei, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 8, 1993, Ser. No. 27,352
Claims priority, application Japan, Mar. 11, 1992, 4-052108
Int. Cl.[5] H05K *1/16*
U.S. Cl. 361—766 **3 Claims**



1. A probe terminating apparatus for an in-circuit emulator, said probe comprising:

ground terminals, power supply terminals, and open terminals provided on a print circuit board;

a terminal for applying ground potential and a terminal for applying power supply voltage provided on said print circuit board;

a pull-down resistance apparatus connected between each of said ground terminals and said terminal for applying said ground potential;

a pull-up resistance apparatus connected between each of said power supply terminals and said terminal for applying said power supply voltage; and

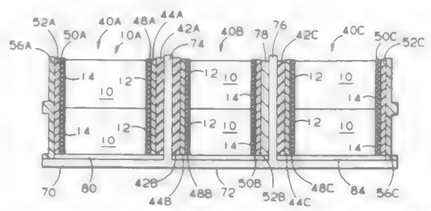
means for connecting terminals which are pulled down and pulled up, and the terminals which are unnecessary pulled down and up in an evaluation microcomputer to corresponding ones of said ground terminals, said power supply terminals and said open terminals.

5,367,437

MULTIPLE LAYER CAPACITOR MOUNTING ARRANGEMENT

W. Kyle Anderson, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 6, 1993, Ser. No. 43,336
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—807 **28 Claims**



1. An apparatus for packaging capacitors together, each of the capacitors having first and second electrodes and a dielectric separating the first and second electrodes, the apparatus comprising:

a first conducting layer;

a second conducting layer; and,

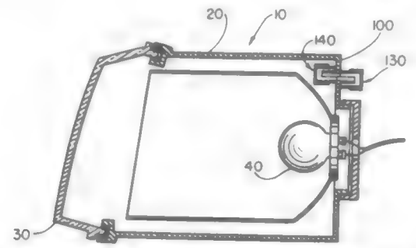
clamping means for clamping the capacitors between the first and second conducting layers and to a mounting surface so that the first conducting layer is electrically coupled to the first electrodes of at least some of the capacitors, so that the second conducting layer is electrically coupled to the second electrodes of at least some of the capacitors, and so that all of the capacitors are electrically connected between the first and second conducting layers and are clamped to the mounting surface.

5,367,438

HEADLAMP WITH IMPROVED VENTILATING MEANS, ESPECIALLY FOR A MOTOR VEHICLE

Antoine Deslandres, Boissy-St.-Leger, France, assignor to Valeo Vision, Bobigny Cedex, France

Filed Feb. 17, 1993, Ser. No. 18,107
Claims priority, application France, Feb. 17, 1992, 92 01776
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 **8 Claims**



1. A vehicle headlamp comprising a housing defining a front of the housing, a cover glass covering the front of the housing and defining, with the housing, an internal space which is essentially closed, and a light source disposed in the said space, the headlamp further comprising ventilating means, for ventilating the said internal space, and comprising: a first portion of the housing projecting outside the housing and having a free end; a first cap mounted on the free end of the said first projecting portion and defining with the latter a first duct, a second duct, and a bend, which is disposed in the region of the said free end and which brings the said first and second ducts into communication with each other; a second portion of the housing projecting into the housing and having a free end; and a second cap mounted on the said free end of the second projecting portion and defining with the latter a third duct, a fourth duct, and a second bend which is located close to the said free end of the second projecting portion, and which brings the third and fourth duct into communication with each other, the said first and third ducts being in communication with each other, and the second duct being open essentially downwards to atmosphere, with the fourth duct being open essentially upwards into the said internal space.

5,367,439

SYSTEM FOR FRONTAL ILLUMINATION

Ralph D. Mayer, Ambler, Pa.; Len L. Picard, Wilmington, and Clifford T. Fitzgerald, Medfield, both of Mass., assignors to Cognex Corporation, Needham, Mass.

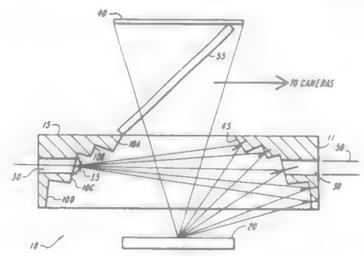
Filed Dec. 24, 1992, Ser. No. 997,767
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—32 **17 Claims**

1. An optical-mechanical apparatus for reflecting illuminating radiation onto an object, said apparatus comprising

A. a finite plurality of reflecting surfaces arranged for reflecting at least a portion of said radiation onto said object,

B. each said reflecting surface being characterized as an inner surface of a conical frustum, or portion thereof, opening toward said object, the cross-sectional centers of which are substantially aligned along an axis perpendicular to a viewing plane of said object, and

C. light source means, disposed substantially adjacent to a cross-sectional plane of at least one of said reflecting surfaces, for generating illuminating radiation for reflection off at least a portion of at least one of said reflecting surfaces.

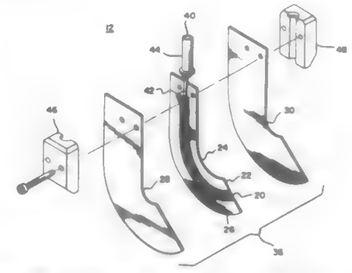


5,367,440

FLEXIBLE FIBER OPTIC ILLUMINATOR AND METHOD

David W. Gruszczynski; Russell J. Palum; Sarah R. Welch, all of Rochester; Andrew D. Thompson, Pittsford, and Richard A. Bierma, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1992, Ser. No. 930,569
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **15 Claims**



1. A thin fiber optic element for use in an illuminator capable of inspecting a narrow interior space, comprising:

(i) a plurality of optic fibers, said optic fibers having at least partially exposed transverse end portions, said optic fibers being arranged in at least one substantially planar layer, said planar layer having front and back sides and an edge portion formed by the partially exposed transverse end portions of the optic fibers, said edge portion defining an active area of said optic fibers;

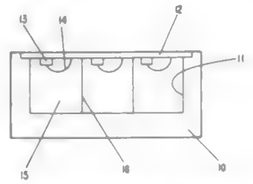
(ii) at least one thin stiffner member adjacent to said optic fibers and substantially coplanar therewith for reinforcing said optic fibers;

(iii) a first layer of adhesive material having adhering means on one side only, said adhering means fixedly adhered to said back side of said planar layer; and,

(iv) a second layer of adhesive material having adhering means on one side only, said adhering means fixedly adhered to said front side of said planar layer, said fixedly adhered first and second layers of adhesive material defining a protective jacket surrounding said active area, said surrounded active area being configured so that light emitted therefrom is directed outwardly and substantially perpendicular to said edge portion;

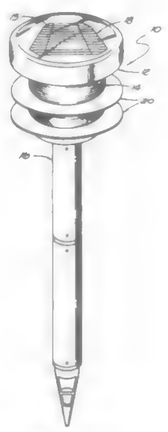
said thin stiffner member and said flexible protective jacket providing means for imparting pliancy to said fiber optic element so that said element is easily maneuverable in said interior space.

5,367,441
ILLUMINATING DEVICE FOR ILLUMINATING BACKGROUND SURFACES
Hans-Dieter Wustlich, Rheinberg, Germany, assignor to Wustlich Holding GmbH, Rheinberg, Germany
Filed Feb. 16, 1993, Ser. No. 17,865
Claims priority, application Germany, Mar. 19, 1992, 4208922
Int. Cl.[5] G09F *13/04*
U.S. Cl. 362—97 6 Claims



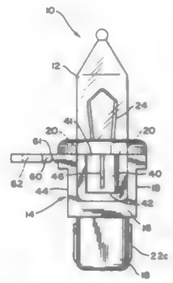
1. An illuminating device for illuminating a background surface of a surface display, said illuminating device comprising:
a frame having inner reflecting surfaces;
a circuit board with leads, said circuit board made of a light-transmissive material and connected to said frame so as to form the background surface to be illuminated and close off the interior of said frame, said circuit board comprising leads and light-emitting diode chips connected to said leads so as to be controllable; and
a scattering body in the form of a light-transmissive potting compound containing scattering centers and filled into said interior of said frame.

5,367,442
SELF-CONTAINED SOLAR POWERED LAMP
John S. Frost; David P. Tanner, both of Thousand Oaks, and Kimberly E. Seegan, Agoura, all of Calif., assignors to Siemens Solar Industries L.P., Camarillo, Calif.
Continuation of Ser. No. 622,455, Dec. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 392,694, Aug. 11, 1989, Pat. No. 5,062,028. This application Oct. 19, 1992, Ser. No. 963,930
Int. Cl.[5] F21S *9/02*; F21V *29/00*
U.S. Cl. 362—183 34 Claims



1. A solar powered lamp, comprising:
a solar cell array receiving sunlight and generating charge;
an electrical storage device disposed in heat transfer proximity to said solar cell array, said electrical storage device being electrically connected to said solar cell array to accept charge from said solar cell array and apply said charge to illuminate an electrical light source connected to said electrical storage device, said electrical storage device accepting substantially all the charge generated by said solar cell array at a temperature of at least 35° C. without a decreasing cycle life of said electrical storage device, wherein when in use said solar powered lamp is designed to be charged and discharged on a daily basis.

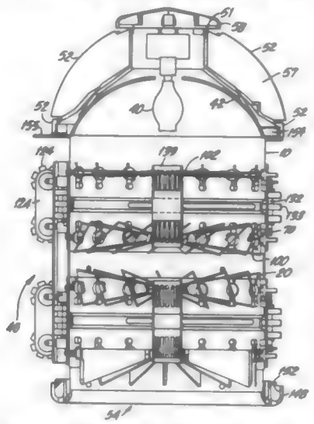
5,367,443
MINIATURE LAMP
Kanichi Hara, Tokyo, Japan, assignor to Minami International Corporation, Yonkers, N.Y.
Filed Oct. 27, 1993, Ser. No. 143,486
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—227 18 Claims



1. A miniature lamp for use in a holder, comprising an assembly of:
(A) a miniature bulb;
(B) a longitudinally-extending base including:
(i) a body defining an outer surface and an open-top cavity receiving a portion of said bulb therein, and
(ii) a cantilever projecting generally longitudinally from said body and terminating in a free end disposed adjacent said bulb, said cantilever being movable between a releasing orientation and a locking orientation, said cantilever in said releasing orientation enabling at least limited relative rotation of said bulb and said base and in said locking orientation precluding such relative rotation, said cantilever being biased to said releasing orientation and automatically assuming said locking orientation when said base is inserted into a holder; and
(C) dumet leads extending from said bulb portion in said cavity, through said body, and onto said body outer surface.

5,367,444
THERMAL MANAGEMENT TECHNIQUES FOR LIGHTING INSTRUMENTS
James M. Bornhorst, DeSoto; Richard W. Hutton, Irving, and Timothy D. Stacy, Plano, all of Tex., assignors to Vari-Lite Inc., Dallas, Tex.
Continuation of Ser. No. 940,664, Sep. 4, 1992, abandoned, which is a continuation-in-part of Ser. No. 809,698, Dec. 16, 1991, Pat. No. 5,186,536, which is a continuation-in-part of Ser. No. 578,594, Sep. 6, 1990, Pat. No. 5,073,847. This application Jun. 1, 1993, Ser. No. 70,489
Int. Cl.[5] F21V *21/00, 9/02*
U.S. Cl. 362—264 25 Claims

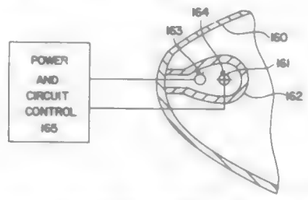
1. A lighting instrument having variable parameters, comprising:
a light source for producing radiant energy having a visible portion and an infrared portion;
a housing having a frame and first and second ends for enclosing said light source near said first end, said housing and said frame having ventilation holes for enhancing air flow through said frame and said housing;
a reflector disposed proximally to said light source for reflecting a portion of said energy and forming a light beam projected toward said second end, said reflector including a cold mirror film capable of reflecting said visible portion and transmitting said infrared portion of said energy;



a heat sink disposed proximally to said reflector for dissipating heat from said infrared portion which is transmitted to said reflector, said heat sink having heat conductive fins disposed externally to said frame;
a moveable color filter mechanism mounted to said frame in the path of said beam for varying the color of said beam;
at least one motor for driving said color filter mechanism; and
a thermally isolating motor mount for mounting said motor to said frame.

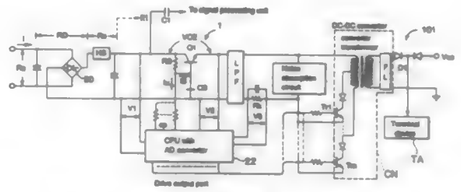
5,367,445
Patent Not Issued For This Number

5,367,446
HAND HELD FLASHLIGHT WITH SELECTIVE BEAM AND ENHANCED APPARENT BRIGHTNESS
M. Edmund Ellion, 742 Hillside, Solvang, Calif. 93463
Continuation-in-part of Ser. No. 583,189, Sep. 14, 1990, abandoned, which is a division of Ser. No. 382,426, Jul. 19, 1989, Pat. No. 4,984,140. This application Jun. 28, 1991, Ser. No. 723,492
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—184 4 Claims



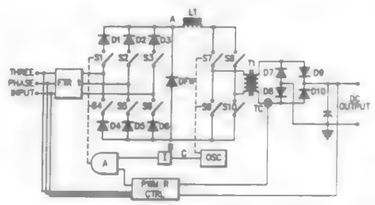
1. A flashlight comprising a reflector, said reflector being substantially a paraboloid having an apex, a central axis, and a focus, a first light source at said focus to produce a spot beam, and a second light source on said axis displaced from said focus relative to said apex to produce a ring-shaped beam, and circuit means for selectively actuating said light sources, whereby said light sources can selectively be simultaneously or alternately actuated, said circuit means being adapted to actuate said light sources at a frequency above about 10 Hz, and with an intensity which results in a perceived intensity greater than either would be if continuously illuminated.

5,367,447
SIGNAL SEPARATION CIRCUIT
Satoshi Sakuragi, and Takashi Kuroda, both of Kanagawa, Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan
Filed Jun. 1, 1993, Ser. No. 70,593
Claims priority, application Japan, Jun. 8, 1992, 4-146082
Int. Cl.[5] H02M *1/14, 3/335*
U.S. Cl. 363—39 5 Claims



1. A signal separation circuit for separating a direct-current power from a signal having a direct current component and an alternate-current component by passing said signal through the collector-emitter path of a transistor, comprising:
a voltage detecting means for detecting the emitter-collector voltage of said transistor; and a base current control means for controlling the base current of said transistor to hold said emitter-collector voltage of said transistor at a predetermined value.

5,367,448
THREE PHASE AC TO DC POWER CONVERTER
Lawrence B. Carroll, 629 Sunset Dr., Endwell, N.Y. 13760
Filed Aug. 7, 1992, Ser. No. 926,988
Int. Cl.[5] H02M *5/453, 7/537*; G05F *1/70*
U.S. Cl. 363—89 10 Claims



1. A three phase AC-DC power converter for drawing sinusoidal input currents from a three phase power source comprising:
an input filter;
a three phase AC driven regulated current source coupled to said three phase power source through said input filter for drawing sinusoidal input currents, said regulated current source modulated according to the three phase line voltage of said three phase source to draw sinusoidal current;
an unregulated current controlled inverter having an "H" bridge configuration of two pairs of switches coupled to the output of said three phase AC driven regulated current source, said inverter having during operation one or the other of two pairs of switches or both pairs of switches conducting at any one time;
a transformer and output rectifier coupled to the output of the unregulated current controlled inverter for providing isolation and providing a DC output, conduction of one pair of said inverter switches providing current flow

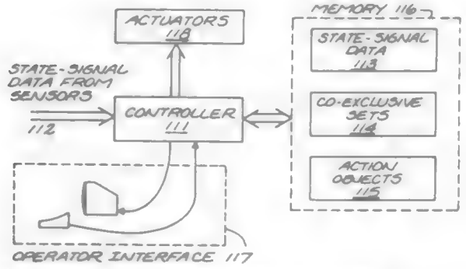
through said transformer in a first direction and conduction of the other pair of inverter switches providing current flow through said transformer in the opposite direction, said output rectifier comprising a plurality of output diodes, said unregulated inverter operated with overlap of conducting pairs of switches with the overlap time adjusted so that the opening pair of switches opens when the output diodes reverse recovery current reaches a peak.

5,367,449

ARTIFICIAL INTELLIGENCE SYSTEM

Michael Manthey, Myrdalstraede 273, 9220 Aalborg 0, Denmark

Filed May 27, 1992, Ser. No. 889,833
Int. Cl.[5] G05B *11/01, 13/02*
U.S. Cl. 364—152 **25 Claims**



14. An automated analysis apparatus comprising:

a) at least two sensor means, each of said sensor means having at least two states, each of said sensor means generating a state-signal indicative of the state of said sensor means;

b) memory means for storage of the state-signals from said sensor means in a first location in said memory means; and,

c) control means having means for,

1) identifying sets of sensor means wherein the state of each sensor means in said set is in a co-exclusive relationship to each other, said means for identifying sets including,

A) means for creating a table in said memory means identifying a relationship of states of selected combinations of said at least two sensors over a time domain, and,

B) means for associating sensor means in which the relationship of states is consistent over the time domain, and,

2) storing, in a second location of said memory means, data indicative of said sets of sensor means.

5,367,450

SYSTEM AND METHOD FOR SELECTING OPTIONAL INSERTS WITH OPTIMAL VALUE IN AN INSERTING MACHINE

Leon A. Pintsov, West Hartford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 21, 1992, Ser. No. 993,753
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 **5 Claims**

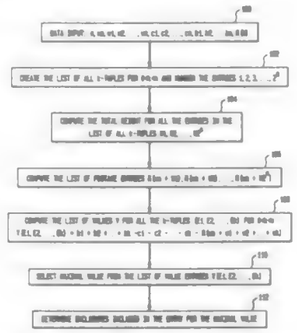
1. A method of making a selection of optional enclosures for a mailpiece including required enclosures, comprising the steps of:

assigning to each of the optional enclosures a weight, a cost and a benefit;

creating a list of potential compositions of the mailpiece, the potential compositions including a total of 2^n combinations of the optional enclosures, where n equals the number of optional enclosures;

computing a total weight of the mailpiece for each of the potential compositions;

computing an incremental cost of the mailpiece for each of the potential compositions, said incremental cost including the cost of each optional enclosure included in each of the potential compositions and a postage amount based on the total weight of the mailpiece for each of the potential compositions;



computing a value of the mailpiece for each of the potential compositions, the value being a computable function of the benefit and the incremental cost of each of the potential compositions;

selecting from the potential compositions the one providing an optimal value to determine which of the optional enclosures are to be included in the mailpiece; and

using an inserting machine to assemble the mailpiece with the selected optional enclosures.

5,367,451

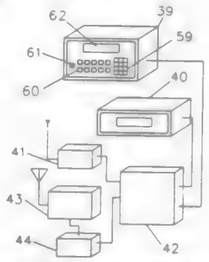
Patent Not Issued For This Number

5,367,452

MOBILE MERCHANDISING BUSINESS MANAGEMENT SYSTEM WHICH PROVIDES COMPREHENSIVE SUPPORT SERVICES FOR TRANSPORTABLE BUSINESS OPERATIONS

Stanley A. Gallery, Golden, and Timothy R. Schultz, Colorado Springs, both of Colo., assignors to Carts of Colorado, Inc., Commerce City, Colo.

Filed Oct. 5, 1990, Ser. No. 593,236
Int. Cl.[5] G06F *15/22, 15/00*
U.S. Cl. 364—401 **11 Claims**



1. A system for managing a plurality of spaced apart merchandising units having limited storage facilities from a control base of operations including the management of personnel, cash resources, equipment status via operator requests for service and fully automatic functions, inventory control and enhanced personnel and equipment security comprising:

identifying means for generating a signal to identify each of said plurality of merchandising units;

a first plurality of system components at each of said merchandising units;

said first plurality of system components comprising:

an inventory control component for automatically generating signals indicative of the remaining quantity of each of a variety of merchandise for sale at such merchandising unit;

a plurality of operational components each of which automatically generates a signal indicative of its operational status;

an operator control panel for generating signals indicative of needs at each of said plurality of merchandising units;

a microprocessor located at each of said merchandising units for receiving said signals from said identifying means, said inventory control component, said plurality of operational components and said operator control panel;

first radio telemetry apparatus connected to said microprocessor located at each of said merchandising units for transmitting said signals from said identifying means, said inventory control component, said plurality of operational components and said operator control panel;

a second radio telemetry apparatus at a control base of operations located at a remote distance from each of said plurality of merchandising units for receiving signals from said first radio telemetry apparatus;

computer apparatus at said control base of operations connected to said second radio telemetry apparatus for interpreting said signals received by said second radio telemetry apparatus so that critical needs at any of said plurality of merchandising units are identified;

a series of thermometers at each merchandising unit for measuring ambient temperature, refrigeration temperature and heating element temperature and automatically sending signals to said microprocessor which transmits said signals to said control base of operations; and

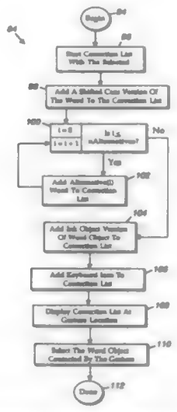
a series of sensors at each merchandising unit for measuring the quantity of available fresh water, waste water, ice, gaseous fuel and carbon dioxide and sending signals to said microprocessor which transmits said signals to said control base of operations.

5,367,453

METHOD AND APPARATUS FOR CORRECTING WORDS

Stephen P. Capps; Ernest H. Beernink, both of San Carlos; John R. Meier, Cupertino, and David Temkin, San Francisco, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 2, 1993, Ser. No. 101,507
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—419.13 **20 Claims**



1. A method for correcting recognized words in a computer system comprising the steps of:

entering an ink object into a computer system with a stylus and an input tablet overlaying a display of said computer system;

recognizing the ink object as a word object, wherein said word object is a selected one of a number of alternative recognized word objects for said ink object;

displaying said word object on said display;

detecting an alternative word list gesture made by said user on said tablet over said displayed word object with said stylus;

displaying a list of said alternative word objects for said displayed word object on said display in response to detecting said alternative word list gesture; and

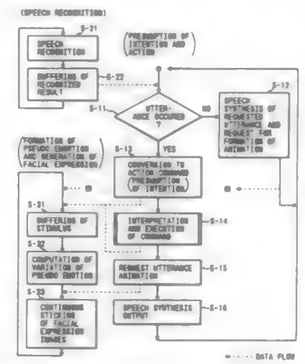
detecting a selection of one of said alternative word objects by said user by engaging said stylus with said tablet over said alternative word object and replacing said displayed word object with said selection.

5,367,454

INTERACTIVE MAN-MACHINE INTERFACE FOR SIMULATING HUMAN EMOTIONS

Koushi Kawamoto, and Kengo Omura, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 81,703
Claims priority, application Japan, Jun. 26, 1992, 4-169574
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—419.20 **3 Claims**



2. A man-machine interface comprising:

means for detecting predetermined stimuli from a working environment;

means for storing at least one set of data with a magnitude representing the intensity level of at least one artificial emotion;

means for revising the magnitude of each said set of data in response to said predetermined stimuli;

means for displaying an interface agent resembling a person; and

means for choosing, based on the magnitude of each set of data, an expression of said interface agent from a plurality of different expressions.

5,367,455

RUNNING PERFORMANCE CONTROL APPARATUS AND METHOD FOR AN ELECTRIC VEHICLE

Masashi Kitagawa; Kenichiro Kimura, and Takahiro Iwata, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1992, Ser. No. 922,825
Claims priority, application Japan, Aug. 2, 1991, 3-194406
Int. Cl.[5] B60K *6/00*
U.S. Cl. 364—424.01 **21 Claims**

1. A running performance control apparatus for use in an electric vehicle, wherein said running performance control

apparatus restricts the running performance of the vehicle when a capacity of a battery employed in the vehicle is reduced to a preset residual capacity, said running performance control apparatus comprising:

battery capacity detecting means for detecting that said battery capacity is reduced to said preset residual capacity;

speed detecting means for detecting a speed of the vehicle while being driven;

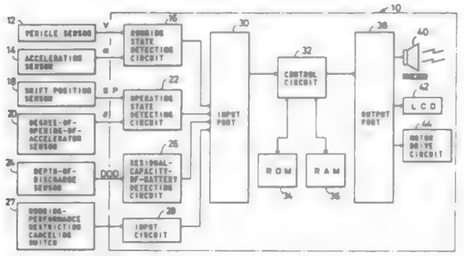
acceleration detecting means for detecting an acceleration of the vehicle;

running state determining means for determining a vehicle running state based on detected values from said speed detecting means and said acceleration detecting means;

shift position detecting means for detecting a shift position of a transmission of the vehicle;

accelerator opening detecting means for detecting a degree of opening of an accelerator of the vehicle;

operating state determining means for determining an operating state based on detected values from said shift posi-



tion detecting means and said accelerator opening detecting means;

storing means for storing therein a plurality of restriction data each used to restrict the running performance of the vehicle;

restriction determining means for selectively determining whether the running state of the vehicle should be restricted when said battery capacity is reduced to said preset residual capacity; and

running performance controlling means for reading information indicative of at least one restriction datum for restricting the running performance from said storing means based on information indicative of the running state determined by said running state determining means and on information indicative of the operating state determined by said operating state determining means when said restriction determining means determines that the running state of the vehicle should be restricted, and for restricting the running performance of the vehicle in response to said read information.

5,367,456

HIERARCHICAL CONTROL SYSTEM FOR AUTOMATICALLY GUIDED VEHICLES

David F. Summerville, Garland; John P. Williston; Martin A. Wand, both of Plano, and Thomas J. Doty, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 265,068, Oct. 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 129,914, Dec. 4, 1987, Pat. No. 4,887,013, which is a division of Ser. No. 771,379, Aug. 30, 1985, abandoned. This application Jan. 24, 1991, Ser. No. 647,671

Int. Cl.[5] G06F *15/50, 9/38*

U.S. Cl. 364—424.02 **10 Claims**

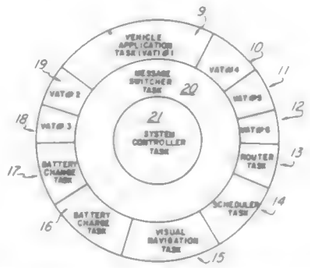
1. A hierarchical control method for communicating with and controlling a plurality of AGVs, comprising:

(a) providing a system controller (2) to communicate with a plurality of AGVs;

(b) running a plurality of vehicle-application-task computer programs independently and concurrently by said system controller, each of said vehicle-application-task computer program is associated with each AGV;

(c) generating commands, using said vehicle-application-task computer programs, for each associated AGV;

(d) running, by said system controller, a system-controller-task computer program independently and concurrently



with said vehicle-application-task computer programs to generate communicating commands for a selected AGV to the vehicle-application-task program associated with said selected AGV; and

(e) communicating and controlling a plurality of AGVs using the generated commands.

5,367,457

APPARATUS AND METHOD FOR IMPROVING ACCURACY OF AN AUTOMATIC TRAVELLING APPARATUS

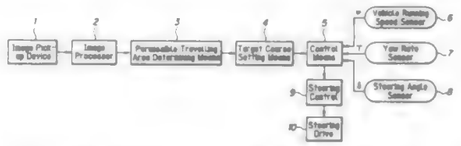
Shinnosuke Ishida, Saitama, Japan, assignor to Honda Giken Kogyo Kaubishiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,332, Mar. 15, 1991, abandoned. This application Jun. 1, 1993, Ser. No. 71,222

Claims priority, application Japan, Mar. 15, 1990, 2-64586

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.02 **3 Claims**



1. A machine implemented process for controlling a vehicle, said process comprising the steps of:

generating image data representative of an area ahead of a vehicle in a direction of travel of said vehicle;

sampling and processing said generated image data at repeated intervals to extract therefrom continuous line segments indicative of a permissible travel path in said area ahead of said vehicle;

detecting an instantaneous running condition of said vehicle;

repeatedly calculating a present position of said vehicle and repeatedly setting a target course in said permissible travel path between each of said sampling and processing intervals;

determining, based on said instantaneous running condition of said vehicle, a steering correction necessary to permit said vehicle to follow each of said target course settings; and

steering said vehicle in response to each determined steering correction.

5,367,458

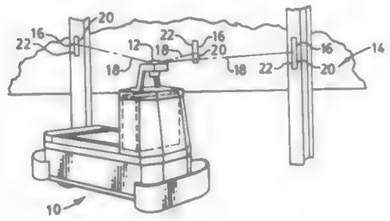
APPARATUS AND METHOD FOR IDENTIFYING SCANNED REFLECTIVE ANONYMOUS TARGETS

Malcolm T. Roberts, Oadby, and Russell W. Miles, Rugby, both of England, assignors to Caterpillar Industrial Inc., Mentor, Ohio

Filed Aug. 10, 1993, Ser. No. 104,867

Int. Cl.[5] G06F *15/50;* **B62D** *6/00*

U.S. Cl. 364—424.02 **24 Claims**



1. A method for determining the identity of an observed anonymous target from a plurality of anonymous targets positioned at predetermined spaced apart locations within an area of operation of an automatic guided vehicle, said vehicle having a scanner and said scanner being adapted to deliver electromagnetic radiation, said targets having a substantially planar reflective upright surface and a predetermined width defined by spaced first and second upright edges, said targets each being oriented at a preselected angle relative to predetermined coordinates, said targets being adapted to reflect the delivered electromagnetic radiation and said scanner being adapted to receive said reflected electromagnetic radiation and deliver a signal in response to receiving said reflected electromagnetic radiation, said automatic guided vehicle having an onboard computer, said computer having memory, and said computer being adapted to process signals delivered from said scanner according to preprogrammed instructions, said predetermined location, orientation, and width of each anonymous target being stored in memory, said vehicle having dead reckoning means for sensing the position of the vehicle and delivering a responsive dead reckoning signal, said computer being adapted to receive said dead reckoning signal and process said dead reckoning signal according to preprogrammed instructions, said method comprising:

estimating the position and heading of the vehicle based on dead reckoning signals;

estimating a bearing angle of the anonymous targets relative to the vehicle based on the estimated position and heading of the vehicle and predetermined anonymous target locations and storing in memory the estimated bearing angles;

delivering electromagnetic radiation and receiving a reflection of the delivered electromagnetic radiation from a first of the plurality of anonymous targets;

measuring the bearing angle of the first anonymous target as a function of reflected electromagnetic radiation received from the first anonymous target;

comparing the measured bearing angle of the first anonymous target with the estimated bearing angle of an associated one of the plurality of anonymous targets and verifying that the measured bearing angle of the first anonymous target is within a preselected bearing angle limit of the estimated bearing angle of the one associated anonymous target;

measuring one of a subtended angle and width of the first anonymous target reflecting said electromagnetic radiation;

calculating one of a subtended angle and width of the related anonymous target selected from memory as a function of the estimated vehicle position and the predetermined target position;

comparing one of the measured width and subtended angle of the first anonymous target with a respective one of the calculated width and subtended angle of the related anonymous target and verifying that the compared one of the width and subtended angle of the first anonymous target and related anonymous target being within a predetermined relative tolerance range of each other; and

storing an identity of the first target in a plausible target list in said computer.

5,367,459

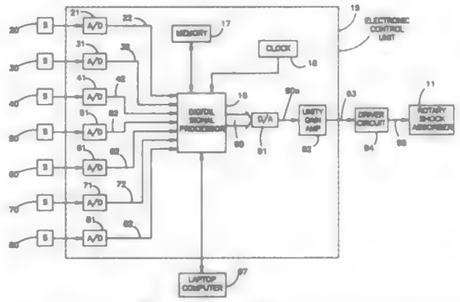
APPARATUS FOR CONTROLLING DAMPERS IN A VEHICLE SUSPENSION SYSTEM

Emil M. Shtarkman, Southfield, and Andrew F. Pinkos, Clarkston, both of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Feb. 10, 1992, Ser. No. 833,539

Int. Cl.[5] B60G *11/26*

U.S. Cl. 364—424.05 **13 Claims**



1. An apparatus for controlling the amount of electric current flow through a coil of an electromagnet of a damper connectable between a vehicle body and a vehicle wheel, said apparatus comprising:

a position sensor for sensing displacement between the vehicle body and the vehicle wheel and for providing a position signal indicative thereof;

a first acceleration sensor for sensing vertical acceleration of the vehicle body relative to ground and for providing a vertical acceleration signal indicative thereof;

a processor for processing said position and vertical acceleration signals to provide a continuous analog control signal which varies as a function of a summation of said position and vertical acceleration signals; and

a drive circuit for applying said continuous analog control signal from said processor to the electromagnet of the damper to control the amount of electric current flow through the coil of the electromagnet and thereby to control operation of the damper.

5,367,460

METHOD OF SIGNALLING INSUFFICIENT MANEUVERABILITY OF AN AIRCRAFT AND DEVICE IMPLEMENTING SUCH A METHOD

Pierre Fabre, Toulouse, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Jun. 12, 1992. Ser. No. 898,084

Claims priority, application France, Jun. 14, 1991, 91 07355

Int. Cl.[5] G08B *23/00*

U.S. Cl. 364—424.06 **15 Claims**

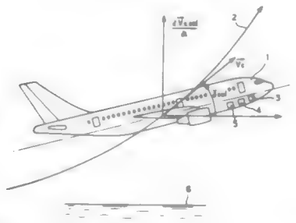
1. A method for signalling insufficient maneuverability of an aircraft, wherein:

in a preparatory phase, with the aid of a plurality of N simulated, calculated or real flight configurations of the aircraft,

a) linear relationships between a first, a second and a third quantity (G1, G2 and G3) are determined, relative respectively to the vertical acceleration of said aircraft, to the slope angle of the trajectory of said aircraft with

respect to the horizontal, and to the risk of stalling said aircraft, by weighting, relatively to each other, the respective instantaneous values G1*i*, G2*i* and G3*i*, with (i=1,2, . . . j,k, . . . , N) of these three quantities by respective coefficients A, B and C which are such that, when the maneuverability margin is estimated no be insufficient for the G1*j*, G2*j* and G3*j* values in question of said three quantities, the weighted sum Dj=A.G1*j*+B.G2*j*+C.G3*j* is less than every other weighted sum Dk=A.G1*k*+B.G2*k*+C.G3*k* for which the maneuverability margin is estimated to be sufficient for values G1*k*, G2*k* and G3*k* of said quantities G1, G2 and G3;

b) a value DO of insufficient maneuverability threshold



(SIM) is chosen, greater than every value Dj of a weighted sum for which the maneuverability margin is insufficient, and less than every value Dk for which the maneuverability margin is sufficient;

then, in an in-flight utilization phase:

c) the instantaneous values of said first, second and third quantities (G1, G2, G3) are simultaneously measured and the sum of said first, second and third quantities (G1, G2, G3) are calculated, weighted respectively by the weighting coefficients A, B and C; and

d) said sum is compared to said value DO of insufficient maneuverability threshold (SIM) and an insufficient maneuverability signal (IM) is generated if said sum is less than said value DO of insufficient maneuverability threshold (SIM).

5,367,461

VARIABLY SENSITIVE TRACTION CONTROL METHOD FOR VEHICLE

Shohei Matsuda, and Toshio Yahagi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 592,732, Oct. 4, 1990, abandoned. This application Mar. 17, 1993, Ser. No. 32,544

Claims priority, application Japan, Oct. 5, 1989, 1-260862

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 **12 Claims**

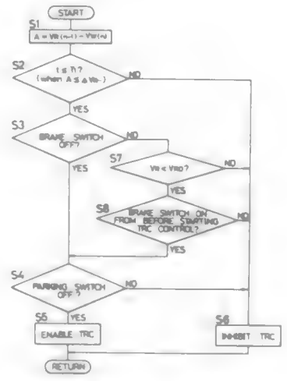
1. A method for traction control of a vehicle, comprising the steps of:

detecting a slipping tendency of a driving wheel in a driving state;

suppressing driving torque of the driving wheel;

determining that the vehicle is being reduced in speed; and

controlling a suppression of driving torque of the driving wheel in accordance with the slipping tendency of the driving wheel, such that, when the vehicle is being reduced in speed, the control of the suppression of driving torque is inhibited to prevent subsequent reduction of driving wheel speed increases,



wherein the inhibition of the suppression control of the driving torque is removed when the travel speed of the vehicle is less than a predetermined speed.

5,367,462

PROCESS FOR DETERMINING FUEL QUANTITY

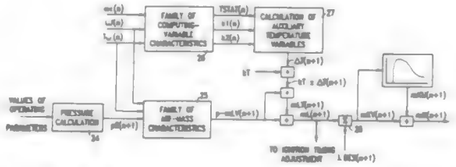
Martin Klenk, Backnang; Winfried Moser, Ludwigsburg; Kurt Ingrisch, Reutlingen, and Christian Klinke, Pleidelsheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Continuation of Ser. No. 688,622, Jun. 13, 1991, abandoned. This application Dec. 14, 1993, Ser. No. 167,582

Claims priority, application Germany, Dec. 14, 1988, 3842075

Int. Cl.[5] F02M *51/00*

U.S. Cl. 364—431.05 **12 Claims**



1. A process for determining a fuel quantity to be fed into an internal combustion engine during each intake stroke, comprising the steps of:

(a) determining an air intake cross-section and an angular velocity of a crank shaft for a current stroke;

(b) determining a current intake-pipe pressure associated with predetermined operating conditions based on the air intake cross-section and angular velocity;

(c) determining a time constant for a change in the intake-pipe pressure based on the air intake cross-section and the angular velocity of the crank shaft;

(d) determining a projected intake-pipe pressure for a next stroke based on the current intake-pipe pressure associated with predetermined operating conditions, and the time constant for the change in intake-pipe pressure;

(e) determining an air mass sucked into the air intake for an intake stroke based upon the projected intake pipe pressure for the next stroke; and

(f) determining the fuel quantity to be fed to each cylinder for the next stroke based on the air mass determinations made in step (e) and a wall film model.

5,367,463

VEHICLE POSITION AND AZIMUTH COMPUTING SYSTEM

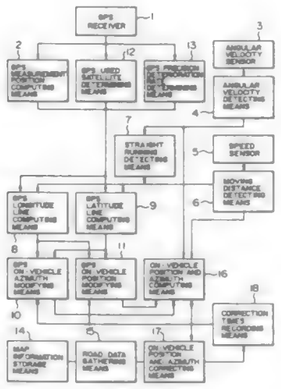
Hiroaki Tsuji, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 19, 1992, Ser. No. 901,211

Claims priority, application Japan, Jul. 15, 1991, 3-173623

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 **16 Claims**



1. A vehicle position and azimuth computing apparatus comprising:

measurement position computing means for obtaining measurement positions of a vehicle by performing a measurement in accordance with a GPS (global positioning system);

a gyro for detecting an angular velocity of the vehicle;

a speed sensor for detecting a travel distance of the vehicle;

on-vehicle position and azimuth computing means for computing both an on-vehicle position and an on-vehicle azimuth of the vehicle based on the angular velocity and the travel distance of the vehicle;

straight running detecting means for detecting a straight running condition of the vehicle based on the angular velocity;

longitude line computing means for obtaining a longitude line as a first regression line obtained by regressing longitudes of the measurement positions during the straight running of the vehicle to the moving distance from a starting position of the straight running of the vehicle;

latitude line computing means for obtaining a latitude line as a second regression line obtained by regressing latitudes of the measurement positions during the straight running of the vehicle to the moving distance from the starting position of the straight running of the vehicle;

on-vehicle azimuth modifying means for computing an azimuth of the vehicle during the straight running condition of the vehicle based on an inclination of a longitude line versus latitude line during the straight running condition of the vehicle, which is obtained from an inclination of the longitude line and an inclination of the latitude line, and modifying the on-vehicle azimuth computed by said on-vehicle position and azimuth computing means in response thereto; and

on-vehicle position modifying means for modifying the on-vehicle position computed by said on-vehicle position and azimuth computing means on the basis of a vehicle position computed by using a longitude and a latitude which are obtained by applying a travel distance, which extends from the straight running starting position to a vehicle position, to both the longitude line and the latitude line.

5,367,464

FRANKING METER SYSTEM

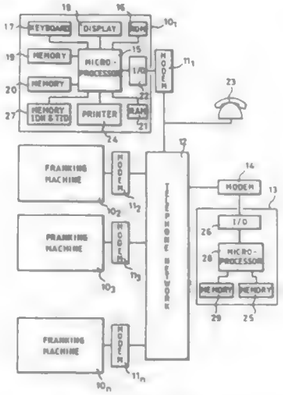
Cyrus Abumehdi, Harlow, and William J. Herring, Brentwood, both of United Kingdom, assignors to Neopost Limited, Essex, United Kingdom

Filed Dec. 21, 1992, Ser. No. 993,849

Claims priority, application United Kingdom, Dec. 30, 1991, 9127477.9

Int. Cl.[5] G07B *17/00*

U.S. Cl. 364—464.02 **10 Claims**



1. A method of remotely resetting credit available for use in the franking transactions of franking meter apparatus, said franking meter apparatus including a descending credit register storing a value of credit available for use in franking transactions; including the steps of:

generating a first indicator signal at the meter;

generating a second indicator signal at a remote resetting terminal apparatus;

establishing communication between the franking meter apparatus and the remote resetting terminal apparatus;

transmitting the first indicator signal from the meter to the terminal;

at the terminal apparatus comparing the first and second indicator signals;

in response to detection of a first relationship between said first and second indicator signals transmitting a first credit reset signal from said terminal apparatus to said meter apparatus to enable the meter apparatus to reset the value of credit available for franking stored in the credit register of said meter apparatus by adding a first credit update amount to said value of credit and in response to detection of a second relationship between said first and second indicator signals transmitting a second credit reset signal from the terminal apparatus to the meter apparatus to enable the meter apparatus to reset the value of credit available for franking stored in the credit register of the meter apparatus by adding a second update credit amount to said value of credit.

5,367,465

SOLIDS SURFACE GRID GENERATION FOR THREE-DIMENSIONAL TOPOGRAPHY SIMULATION

Satoshi Tazawa, Atsugi; Kazuyuki Saito, Naka, both of Japan, and Francisco A. Leon, Mountain View, Calif., assignors to Intel Corporation, Santa Clara, Calif. and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 904,005

Int. Cl.[5] G06F *15/72*

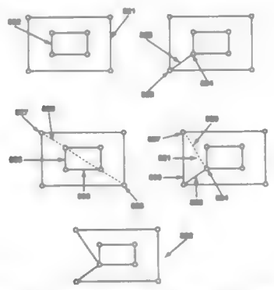
U.S. Cl. 364—468 **6 Claims**

1. A method for generating a triangular grid representation of a surface, said surface comprised of polygon faces, said

method comprising the steps of:

a) providing a polygon face to a triangulation means, said polygon face including an outer loop, said polygon face having holes, a hole including an inner loop;

b) removing holes in said polygon face, said removing holes in said polygon face including inserting a new edge between an outer loop vertex point and an inner loop vertex point;



c) positioning a potential edge between a first and second vertex of said polygon face;

d) testing said potential edge for invalid conditions, said invalid conditions including a first condition where said new edge lies outside a polygon face boundary and a second condition where said new edge intersects said polygon face boundary;

e) discarding said potential edge if an invalid condition exists;

f) adding said potential edge to said polygon face if an invalid condition does not exist;

g) extracting a triangular face from said polygon face, said triangular face having said potential edge as a first edge;

h) adding said triangular face to said triangular grid;

i) re-defining said polygon face exclusive of said triangular face, and

j) adjusting said triangular grid to create triangles within a specified size, including the steps of,

identifying a long edge whose length exceeds a predetermined length X,

inserting a new vertex at the midpoint of said long edge,

adding a first new edge between said new vertex and a first vertex corresponding to a first triangle associated with said long edge, and

adding a second new edge between said new vertex and a second vertex corresponding to a second triangle associated with said long edge.

5,367,466

SORTING APPARATUS AND METHOD OF CONTROL FOR THE SAME

Francesco Canziani, Via Contardo Ferrini 21, 21010 San Macario (Varese), Italy

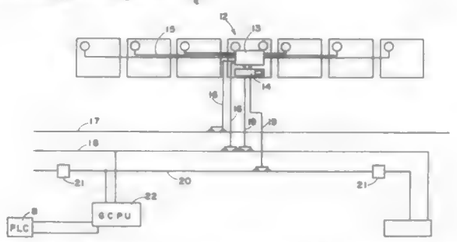
Filed Oct. 11, 1991, Ser. No. 775,799

Claims priority, application Italy, Oct. 17, 1990, 21771 A/90

Int. Cl.[5] G08C *25/02*

U.S. Cl. 364—478 **6 Claims**

1. A method for controlling a sorting apparatus of the type including a plurality of groups of mobile carriages moving along a fixed route, each carriage equipped with a rotating belt driven by an unloading motor which receives electrical power from power supply bars arranged along the route, and which carries out an unloading of transported objects from the belt, each group containing a plurality of carriages with one carriage in each group having a hauling motor for moving the group along the fixed route, the one carriage also including a multi-servo box operatively connected to the unloading motor of each carriage in the group and including signal processing means, signal supply bars lying along the route and operatively engaged with the signal processing means for supplying and receiving command signals and confirm signals, to and from the signal processing means, a servo-amplifier at a fixed location with respect to the fixed route, connected to one of the signal supply bars for supplying and receiving command and confirm signals to and from the signal supply bar, the method comprising the steps of:



sending an initial command signal which is a baseband signal, from the servo-amplifier to the signal processing means for a carriage of the group, for activating the unloading motor of the carriage according to a set acceleration scale and for a prefixed interval of time, the initial command signal including a set advance time "t" before which the initial command signal will function to activate the unloading motor;

generating and returning a confirm signal which is a high frequency signal, from the signal processing means and the carriage, to the servo-amplifier; and

in the absence of the confirm signal sent to the servo-amplifier, sending from the servo-amplifier to the signal processing means for the carriage of the group, a new command signal which is a baseband signal that is analogous to the initial command signal, the confirm signal containing a reduced advance interval, which is equal to the set advance time less a time which has passed between the initial and the new command signals.

5,367,467

METHOD OF AND APPARATUS FOR INSPECTING WIDTH OF WIRING LINE ON PRINTED BOARD

Yoshinori Sezaki; Takao Kanai; Hitoshi Atsuta, all of Tenjinkitamachi, and Ichirou Mandai, Kyoto, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Nov. 20, 1991, Ser. No. 795,925

Claims priority, application Japan, Nov. 27, 1990, 2-327162; Feb. 8, 1991, 3-039297

Int. Cl.[5] G01N *23/04*

U.S. Cl. 364—489 **28 Claims**

9. A method of inspecting the width of a wiring line included in a wiring pattern provided on a printed board, comprising the steps of:

(a) obtaining an image of said wiring pattern;

(b) selecting a part of said image of said wiring pattern to obtain an objective image part to be inspected;

(c) measuring first and second sizes of said objective image in first and second directions, respectively;

(d) deciding that said objective image part is a part of said wiring line when one of:

a first condition that said first size is larger than a first threshold size proportional to said second size; and

a second condition that said second size is larger than a second threshold size proportional to said first size;

is satisfied;

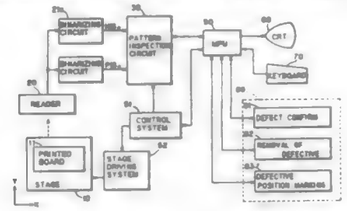
(e) defining an elongated direction and a traverse direction of said part of said wiring line by:

said first and second directions, respectively, when said first condition is satisfied; and

said second and first directions, respectively, when said second condition is satisfied;

(f) obtaining a width of said part of said wiring line in said traverse direction;

(g) comparing said width of said part of said wiring line with a predetermined allowable range of said width; and



(h) repeating the steps (b) through (g) while serially selecting respective parts of said image of said wiring pattern, to thereby inspect the width of respective parts of said wiring line.

5,367,468

DESIGN AID METHOD AND DESIGN AID APPARATUS FOR INTEGRATED CIRCUITS

Takayuki Fukasawa, Tiba; Kunihiko Yamagishi, and Masatoshi Sekine, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 21, 1991, Ser. No. 657,775

Claims priority, application Japan, Feb. 21, 1990, 2-38352; Nov. 29, 1990, 2-325730

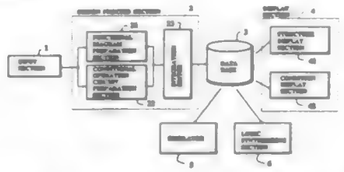
Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—490 **5 Claims**

1. A method of designing integrated circuits in a design aid apparatus, the method comprising the steps of:

(a) setting and inputting to an input means of said apparatus control conditions and design data for a circuit to be designed;

(b) in a first design means, functionally designing a conditional operation circuit based on the design data inputted from the input means for each control condition inputted from the input means, so as to prepare first design circuit data;



(c) in a second design means, functionally designing an unconditional operation circuit over an area which is not designed by the first design means, based on the design data inputted from the input means, so as to prepare second design circuit data; and

(d) in an integration means, integrating the first design circuit data of the conditional operation circuit designed by the first design means and the second design circuit data of the unconditional operation circuit designed by the second design means.

5,367,469

PREDICTIVE CAPACITANCE LAYOUT METHOD FOR INTEGRATED CIRCUITS

Mark R. Hartoog, Los Gatos, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

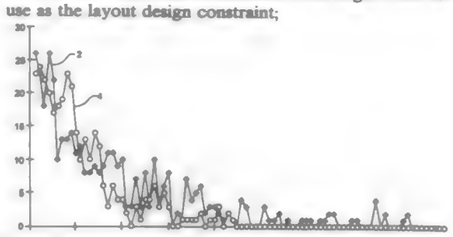
Filed Dec. 13, 1990, Ser. No. 627,085

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **15 Claims**

1. A method for designing circuit layouts, including simulating a circuit on a computer, comprising the steps of:

supplying a predictive capacitance value to the computer for at least one net of a circuit layout by calculating an average capacitance per unit wire length for the circuit layout and converting, via the average capacitance per unit wire length, the predictive capacitance for the at least one net of the circuit layout into a maximum wire length value for use as the layout design constraint;



using the estimated wire length value in the computer for predicting the performance of the circuit prior to the layout;

placing and routing all nets of the circuit layout on the simulated circuit using the at least one predictive capacitance value as a layout design constraint during the placing and routing.

5,367,470

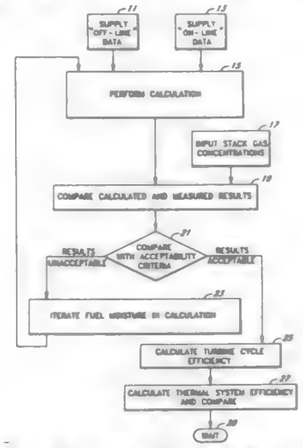
METHOD FOR FUEL FLOW DETERMINATION AND IMPROVING THERMAL EFFICIENCY IN A FOSSIL-FIRED POWER PLANT

Fred D. Lang, Livermore, Calif., assignor to Exergetics Systems, Inc., Richmond, Calif.

Continuation-in-part of Ser. No. 450,686, Dec. 14, 1989, abandoned, which is a continuation of Ser. No. 905,157, Jun. 25, 1992, abandoned, which is a continuation of Ser. No. 112,862, Aug. 25, 1993. This application Feb. 12, 1992, Ser. No. 835,719

Int. Cl.[5] F23N *5/00, 5/18;* **G06F** *15/46*

U.S. Cl. 364—498 **20 Claims**



1. A method for improving thermal efficiency of a fossil-fired power plant system comprising a boiler cycle in which a fossil fuel is supplied at a flow rate to be combusted to heat a working fluid, the combustion of the fuel producing effluents in an exhaust, and a turbine cycle in which the working fluid does work, the method comprising the following steps:

analyzing the fuel for its dry base chemical composition,

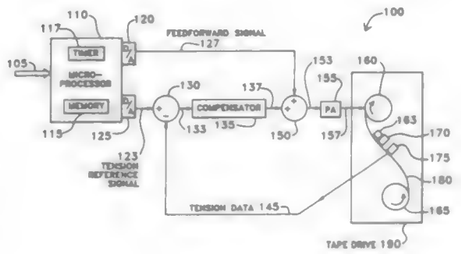
measuring at a gas exit boundary of the power plant system, in the exhaust of the combustion process, the temperature, concentrations of CO_2 and H_2O effluents to an accuracy of at least $\pm 0.5\%$ molar, and concentrations of O_2 with an accuracy at least comparable to zirconium oxide detection,

measuring the net energy deposition to the working fluid being heated by the combustion process,
determining, independently of the fuel flow rate, a combustion efficiency based on a stoichiometric balance of a combustion equation and a boiler absorption efficiency based on determination of non-stack losses,
combining the combustion efficiency and the boiler absorption efficiency to obtain a boiler efficiency,
determining an efficiency of the turbine cycle,
combining the boiler efficiency and the turbine cycle efficiency to obtain the power plant system efficiency,
determining in response to obtaining the boiler efficiency and the power plant system efficiency if either is degraded from predetermined parameters, and
adjusting operation of the system to improve its boiler efficiency and/or its system efficiency.

5,367,471
METHOD AND APPARATUS FOR REDUCING TAPE STICTION

Thai Nguyen, Thornton, and George Reichenberg, Lafayette, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 23, 1992, Ser. No. 919,151
Int. Cl.[5] G11B *15/43*; B65H *59/38*
U.S. Cl. 364—505 **15 Claims**



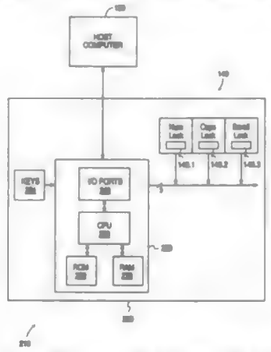
1. A method for reducing adhesion between a tape drive read/write head and the surface of a tape passing across said tape drive read/write head during tape start and stop operations, said method comprising the steps of:
(a) reducing the tension on said tape to a first predetermined amount while said tape is decelerated from a predetermined velocity to zero velocity;
(b) increasing said tension on said tape to a second predetermined amount while said tape is accelerated from zero velocity to said predetermined velocity and;
wherein the tension of said tape is controlled by a microprocessor and the tension on said tape is dynamically determined by the steps of:
(1) storing a tape velocity/current profile in a memory wherein said tape velocity/current profile includes a range of tape drive motor current computed as a function of time with respect to an acceleration and a deceleration of said tape:
(2) storing a tension reference profile in said memory connected to said microprocessor wherein said tension reference profile includes a range of said tape tension computed as a function of time with respect to said acceleration and said deceleration of said tape; and
(3) using said tape velocity/current profile and said tension reference profile to control said tension of said tape via said microprocessor during said acceleration and said deceleration of said tape.

5,367,472
KEYBOARD TESTING METHODS AND APPARATUS

Abbas Khashayar, Anaheim, Calif., assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1991, Ser. No. 778,435
Int. Cl.[5] G06F *11/22, 15/20*
U.S. Cl. 364—550 **10 Claims**

1. A method for testing a computer input device, said input device including one or more devices each of which has visible indicia for visually indicating whether the respective device is on or off, said method comprising the steps of:
(1) testing said input device by a controller in said input device when said input device is powered up;
(2) issuing a predetermined command by a computer to said input device, and in response to said command:
(3) testing said input device by said controller;
(4) turning on said devices having visible indicia; then
(5) turning off said devices having visible indicia; and then
(6) turning on said devices having visible indicia,

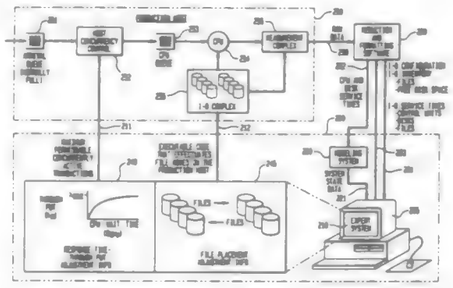


wherein said controller does not access said devices having visible indicia before receiving said command from said computer.

5,367,473
EXPERT SYSTEM FOR COMPUTER SYSTEM RESOURCE MANAGEMENT

Lynn H. Chu, Piscataway; Anthony H. Dragoni, Jr., Warren; Fredric R. Eichelman, II, Princeton; Thomas O. Hulcatt, Neshanic Station; Adam E. Irgon, East Brunswick, and Martha S. Langton, Middlesex, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 539,730, Jun. 18, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 798,496
Int. Cl.[5] G06F *15/16, 15/18*
U.S. Cl. 364—551.01 **14 Claims**

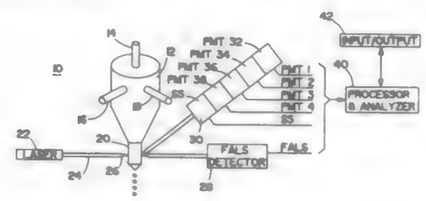


8. A data processing system for improving the responsiveness of a dedicated, application-specific host computer being sized to insure concurrent transaction backlog during peak hour, the host computer including disks, disk control units, and having measurable central processing unit (CPU) and input-/output (I/O) service times, the processing system comprising
an expert system support process having a memory, said support process being connected to the host computer,
means for capturing operational and descriptive information in said expert system process supplied by a host system expert who acts as a mentor so as to define a set of operating principles relating to the operation of the host system,
means for transforming said set of operating principles into an executable knowledge base and storing said knowledge base in said memory of said expert system support process,
means for measuring the CPU and I/O service times of the host computer under control of said expert system support process and storing the service times in said expert system support process,
means for processing the service times to convert the service times to system state data organized into a state space of processing rates and queueing times and
means for applying said executable knowledge base to said system state data to obtain host throughput-response time trade-off adjustment information so as to modify the transaction concurrency of the host computer as determined by said trade-off adjustment information.

5,367,474
FLOW CYTOMETER

Robert E. Auer, Miami; Bruce M. Weber, Cooper City; John D. Starling, Coral Gables, and James C. S. Wood, Coral Springs, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Filed Feb. 8, 1993, Ser. No. 14,701
Int. Cl.[5] G01N *15/00*
U.S. Cl. 364—555 **46 Claims**

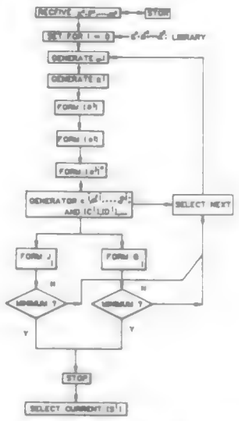


1. A flow cytometer for detecting and identifying particles in a fluid, said flow cytometer having means for moving said particles to a detection station, means for directing energy at said detection station so that said particles intersect said energy when at said detection station, and a plurality of detectors for providing analog electric signals manifesting different results of each particle intersecting said energy, said flow cytometer comprising:
a plurality of analog signal processors, each responsive to only one detector signal for processing, delaying and storing analog data manifesting the signal provided thereto;
first controller means responsive to a trigger signal from a selected one of said analog signal processors for determining that a particle is intersecting said energy, said trigger signal being time related to the signals from said detectors, said first controller means providing signals to each of said analog signal processors for causing the storage of a delayed version of the signal applied thereto;
second controller means for polling each of said plurality of analog signal processors to receive and digitize said delayed signal stored thereby and to further process said received and digitized signals in order to identify said detected particle and each analog signal processor stores a signal related to the signal provided thereto, and provides a data signal to said second controller means in response to a poll signal therefrom, each analog processor including amplifying means for amplifying each stored signal to provide said data signal, said amplifying means amplifying said stored signal with one of a first gain or a second gain, said second gain being greater than said first gain, said amplifying means amplifying said stored signal with said second gain unless the signal value amplified with said second gain exceeds a certain value.

5,367,475
MOVING VEHICLE CLASSIFIER WITH ITERATIVE DECONVOLVER ESTIMATOR

Stanley A. White, San Clemente, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 763,710, Sep. 23, 1991, abandoned. This application Jun. 11, 1993, Ser. No. 76,077
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.01 **6 Claims**



1. A method for classifying a moving vehicle which produces a source signal propagating along at least two signal paths, each path having an impulse response duration, the method comprising the steps of:
(a) sensing, at a minimum of one locations remote from the vehicle, a set of at least two received input signals propagated from the source signal along a minimum of two signal paths, and preprocessing such signals into input signal vectors xO, yO, . . . , zO, one vector from each sensor;
(b) collecting samples from each received input signal;
(c) for the set of received input signals:
(1) forming each of the received input signals into blocks of M+N−1 contiguous samples, where M is the duration of the source signal and N is the longest impulse response duration of any path, M and N both being measured in sampling intervals;
(2) measuring the energy of each block;
(3) selecting a block which has the most energy; and
(4) storing the input signal vectors, xO, yO, . . . , zO, received during said most energy block;
(d) combining a plurality of components of the input signal vectors, xO, yO, . . . , zO, by a root-sum-square technique, thereby producing a zeroth M+N−1 sample unconstrained reference signal vector, rO; and setting an index i to have a value equal to one;
(e) selecting an (i−1)st unconstrained reference signal vector, r(i−1), for use in an ith iteration;
(f) forcing to zero all values of the (i−1)st unconstrained reference signal vector, r(i−1), except those which exceed a computed threshold, thereby producing an ith zeroed signal vector;
(g) discarding N−1 end samples of the ith zeroed signal vector such that the remaining M contiguous samples have more energy than any other grouping of M contiguous samples, thereby forming an ith constrained source signal vector, si;
(h) forming an tth constrained source signal matrix, [Si], from the ith constrained source signal vector, si, by setting

each element of the ith constrained source signal matrix, [Si], at row p and column n to zero if n is greater than p or p is greater than M−1+n, otherwise setting that element equal to the (p−n)th element of the corresponding ith constrained source signal vector, si;

(i) premultiplying the ith constrained source signal matrix, [Si], by its transpose to form an ith product matrix, then postmultiplying the inverse of the ith product matrix by the transpose of the ith constrained source signal matrix, [Si], to form a pseudoinverse of the ith constrained source signal matrix, [Si];

(j) postmultiplying the pseudoinverse by each of the received input signal vectors, xO, yO . . . zO, to form an ith set of signal path impulse response estimation vectors, ci, di, . . . , ei;

(k) forming an tth set of signal path estimation matrices, [Ci], [Di], . . . , Ei, from the corresponding signal path impulse response estimation vectors, ci, di, . . . , ei, by setting each element of the ith signal path estimation matrices, [Ci], [Di9 . . . , Ei, at row p and column m to zero if m is greater than p or p is greater than N−1+m, otherwise setting that element equal to the (p-m)th entry of the corresponding signal path impulse response estimation vector, ci, di, . . . , ei;

(l) generating an tth set of input signal estimate vectors, xi, yi, . . . , zi, of the corresponding values of the input signal vectors, xO, yO, . . . , zO, by a step selected from the group consisting of the steps of:

(1) postmultiplying the ith constrained source signal matrix, [Si], by the corresponding signal path impulse response estimation vectors, ci, di, . . . , ei; and

(2) postmultiplying the corresponding ith set of signal path estimation matrices, [Ci], [Di], . . . , Ei, by the ith constrained source signal vector, si;

(m) obtaining an ith unconstrained reference signa' vector, ri, by postmultiplying the inverse of an ith matri: [Mi] by a vector vi; the ith matrix [[]Mi] consisting of the sum of all ith signal path estimation matrices, [Ci], [Di]. . . , Ei, premultiplied by their respective transposes; and the vector vi consisting of the sum of all ith signal path estimation matrix transposes postmultiplied by their respective input signal vectors, xO, yO, . . . , zO;

(n) generating a first group of ith iteration estimation errors by subtracting from the input signal vectors, xO, yO . . . , zO, the corresponding input signal estimate vectors, xi, yi, . . . , zi;

(o) computing a first evaluation of estimator ith iteration performance by summing the squares of all scalar components of the first group of ith iteration estimation errors;

(p) generating a second group of ith iteration estimation errors by subtracting from the input signal vectors, xO, yO . . . , zO, the corresponding ith signal path estimation matrices, [Ci], [Di]. . . , Ei, each postmultiplied by the ith unconstrained reference signal vector, ri;

(q) computing a second evaluation of estimator ith iteration performance by summing the squares of all scalar components of said second group of ith iteration estimation errors;

(r) terminating the procedure if at least one of the first and second evaluations of the ith iteration performance indicate no further reduction in estimation errors, otherwise incrementing the value of i by one and repeating steps (e) through (r);

(s) selecting the ith constrained source signal vector, si, as the deconvolved source signal; and

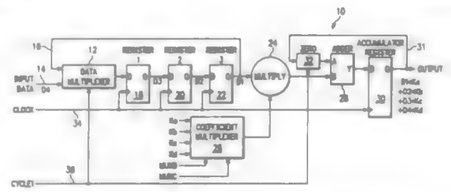
(t) transferring the deconvolved source signal to an analysis apparatus.

5,367,476

FINITE IMPULSE RESPONSE DIGITAL FILTER

Paul M. Elliott, Jenner, Calif., assignor to DSC Communications Corporation, Plano, Tex.

Filed Mar. 16, 1993, Ser. No. 32,931
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.01 **12 Claims**



6. A finite impulse response digital filter, comprising:

a data multiplexer for routing a sample signal selected from an input sample signal and a feedback sample signal;

a plurality of delay registers connected in series for latching sequential sample signals, said plurality of delay registers including a first register for generating said feedback sample signal and a second register for receiving said selected sample signal from said data multiplexer;

a coefficient multiplexer for selecting one of a plurality of coefficients;

a multiplier for generating a product of said selected sample signal and a selected coefficient;

an adder for combining said product with previous products to obtain a sum of products;

an accumulator register for latching said sum of products, wherein said adder receives said latched sum of products, said adder combining successive products with said latched sum of products to obtain successive sums of products; and

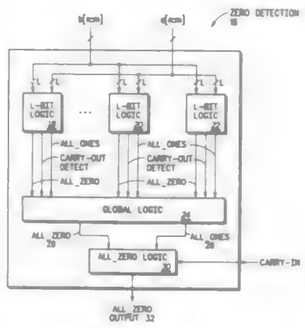
a zero adjust generator for resetting said adder by generating a zero value signal, said zero adjust generator determining whether said adder receives said latched sum of products or said zero value signal.

5,367,477

METHOD AND APPARATUS FOR PERFORMING PARALLEL ZERO DETECTION IN A DATA PROCESSING SYSTEM

Christopher N. Hinds; Daniel T. Marquette, and Jack Wu, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 29, 1993, Ser. No. 158,326
Int. Cl.[5] G06F *7/00, 7/50*
U.S. Cl. 364—736.5 **20 Claims**



1. An adder circuit for use in a data processing system, the adder circuit comprising:

circuitry for adding a first binary value having a first predetermined number of bits and a second binary value having a second predetermined number of bits, the circuitry for adding having a first input for receiving the first binary value, a second input for receiving the second binary value, a third input for receiving a carry-in bit, and a first output for providing a sum of the first and second binary values; and

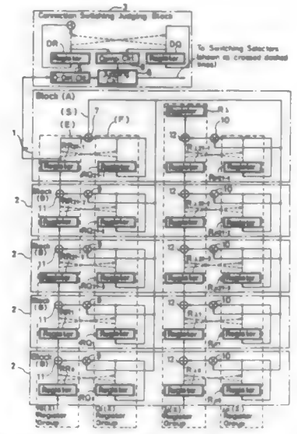
zero detection logic having a first input for receiving the first binary value, a second input for receiving the second binary value, and a third input for receiving the carry-in bit, the zero detection logic having both a first output which indicates whether the sum of a portion of the first binary value, a portion of the second binary value, and the carry-in bit produces a zero result and a second output which indicates whether the sum of the portion of the first binary value, the portion of the second binary value, and the carry-in bit produces a result which contains all ones, the sum of the portion of the first binary value, the portion of the second binary value, and the carry-in bit having a third predetermined number of bits, the zero detection logic being able to receive the carry-in bit at a time after receipt of the first and second binary value and still properly generate output signals at the first and second outputs.

5,367,478

MUTUAL DIVISION CIRCUIT

Masayuki Hattori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 2, 1992, Ser. No. 939,593
Claims priority, application Japan, Sep. 6, 1991, 3-254183
Int. Cl.[5] G06F *7/00*
U.S. Cl. 364—746.1 **5 Claims**



1. A mutual division circuit comprising:

first calculating means including a plurality of cascaded registers the number of which corresponds to that of corrections and which store therein coefficient data of respective polynomials Ri(X), Qi(X), λi(X) and μi(X), said first calculating means storing therein divided results and a value output from a preceding stage and for effecting one of a normal connection calculation and a cross connection calculation in response to a switching instruction;

second calculating means forming said preceding stage including a plurality of registers for storing therein the coefficient data of said polynomials Ri(X), Qi(X), λi(X) and μi(X) and dividers for dividing outputs of said registers which store therein the coefficient data of said polynomials Ri(X), Qi(X), λi(X) and μi(X), said second calculating means storing therein a value output from the final stage of said first calculating means and carrying out one of a normal connection division calculation and a cross connection division calculation in response to a switching instruction to thereby supply the calculated result to said first calculating means; and

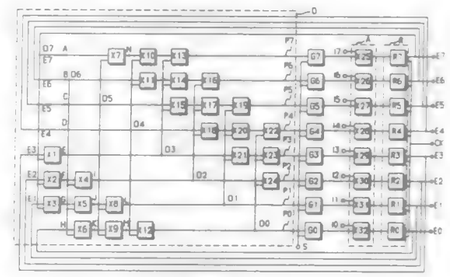
switching judging means for generating said switching instruction for designating one of the normal connection and the cross connection on the basis of a predetermined initial value and a value stored in said second calculating means and supplying the switching instruction to said first and second calculating means.

5,367,479

DIVIDER DEVICE TO DIVIDE A FIRST POLYNOMIAL BY A SECOND ONE

Frank O. Van Der Putten, Oude Wichelsesteenweg, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 13, 1993, Ser. No. 91,304
Claims priority, application European Pat. Off., Jul. 14, 1992, 92202147.2
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—761 **12 Claims**



1. Divider device to divide a first polynomial constituted by a first sequence of bits and having a degree equal to a value of a highest exponent of the first polynomial, by a second polynomial constituted by a second sequence of bits and of degree d equal to a value of a highest exponent of the second polynomial, d not exceeding the degree of said first polynomial, comprising:

a bit addition means (A) with n first inputs (I7/I0), n second inputs and n outputs, and able to add n successive bits of said first sequence applied to respective ones of said first inputs to n bits applied to respective ones of said second inputs, d being less than or equal to n;

a divider circuit (D) having n inputs (E7/E0) and n outputs (P7/P0) coupled to respective ones of said second inputs of said addition means (A); and

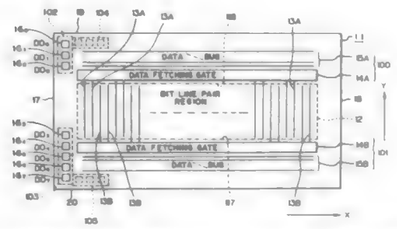
clock controlled register means (R) having n inputs to which respective ones of said outputs of said addition means (A) are connected and having n outputs (E7/E0) coupled back to respective ones of said inputs of said divider circuit (D); said divider device performing said division during successive corresponding steps of an iterative process involving successive sets of n bits of said first sequence, each of said steps comprising the steps of functionally dividing in said divider circuit n bits provided at said n input thereof as a result of a preceding iterative step, by said second sequence of bits until a remainder of a degree equal to that of a following subset of n bits of said first sequence is obtained, said remainder being provided at said n outputs (P7/P0) of said divider circuit (D) and the remainder of said iterative process being provided at said n outputs of said register means (R).

5,367,480

SEMICONDUCTOR MEMORY

Masato Matsumiya, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 17, 1992, Ser. No. 945,925
Claims priority, application Japan, Sep. 20, 1991, 3-241054
Int. Cl.[5] G11C *5/06*
U.S. Cl. 365—63 **15 Claims**



1. A semiconductor memory device having a semiconductor chip with an element forming plane, said semiconductor chip mounted on a package having a first side and a second side opposite the first side, said semiconductor memory device comprising:

a rectangular bit line pair region having first and second sides, said first side being opposite said second side, and having third and fourth sides orthogonal to said first and second sides, said third side being opposite said fourth side, said bit line pair region comprising:

a plurality of bit line pairs extending in parallel with one another in a first direction on the element forming plane of the semiconductor chip, and

a memory cell array formed on the element forming plane;

first and second wiring groups, each comprising a data fetching gate and a data bus, said first and second wiring groups being arranged on said first and second sides of said bit line pair region, respectively, and oriented in a second direction that is orthogonal to the first direction, a number of said plurality of bit line pairs being connected to said first wiring group, and the remaining bit line pairs being connected to said second wiring group; and

a first port group comprising at least one port and a second port group comprising at least one port, each port of said first and second port groups being one of an output port, an input port and an input/output port and a same type as each other port, said first and second port groups disposed in vicinities of said first and second wiring groups, respectively;

a first group of lead pins, each lead pin of said first group respectively corresponding to one port of said first port group and arranged on the first side of the package; and

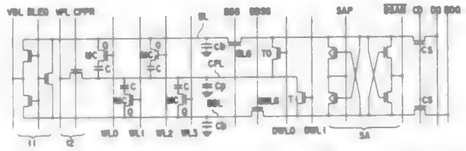
a second group of lead pins, each lead pin of said second group respectively corresponding to one port of said second port group and arranged on the second side of the package.

5,367,481

DYNAMIC RANDOM ACCESS MEMORY WITH COMPLEMENTARY BIT LINES AND CAPACITOR COMMON LINE

Satoru Takase, Yokohama, and Tohru Furuyama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 3, 1992, Ser. No. 985,114
Claims priority, application Japan, Dec. 26, 1991, 3-344700
Int. Cl.[5] G11C *11/24*
U.S. Cl. 365—149 **22 Claims**



1. A semiconductor memory device comprising:

memory cells each including a transfer transistor and a data storage capacitor having a first electrode connected to a first terminal of said transfer transistor;

word lines each connected to a control terminal of one of said transfer transistors;

a bit line pair comprising first and second bit lines, wherein second terminals of said transfer transistors are connected to one of said first and second bit lines;

a capacitor common line connected to second electrodes of said data storage capacitors;

a sense amplifier having first and second input nodes;

capacitor common line transfer gates, a first of said capacitor common line transfer gates connected between said capacitor common line and said first input node of said sense amplifier and a second of said capacitor common line transfer gates connected between said capacitor common line and said second input node of said sense amplifier;

bit line transfer gates, a first of said bit line transfer gates connected between said first bit line and said first input node of said sense amplifier and connected to said first of said capacitor common line transfer gates, and a second of said bit line transfer gates connected between said second bit line and said second input node of said sense amplifier and connected to said second of said capacitor common line transfer gates; and

read/write control circuitry for controlling reading and writing of data to said memory cells, said control circuitry including first means for supplying selection signals to said word lines, second means for supplying selection signals to switch said capacitor common line transfer gates, third means for supplying selection signals to switch said bit line transfer gates, and fourth means for supplying signals that activate/deactivate said sense amplifier;

wherein, when reading data from one of said memory cells, said fourth means supplies signals to deactivate said sense amplifier,

subsequently said second means switches said capacitor common line transfer gates OFF,

subsequently said first means supplies a selection signal to one of said word lines,

subsequently, or before said first means supplies the selection signal, said third means switches one of said first and second bit line transfer gates OFF,

subsequently said second means switches one of said first and second capacitor common line transfer gates connected to said one of said first and second bit line transfer gates ON,

subsequently said second means switches said one of said first and second capacitor common line transfer gates OFF,

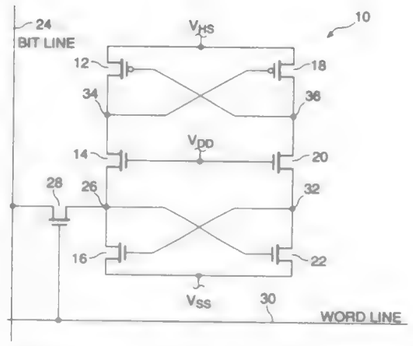
subsequently said fourth means supplies signals to activate said sense amplifier.

5,367,482

HIGH VOLTAGE RANDOM-ACCESS MEMORY CELL INCORPORATION LEVEL SHIFTER

Ta-Pen Guo, Cupertino, and Adi Srinivasan, Fremont, both of Calif., assignors to Aptix Corporation, San Jose, Calif.

Continuation of Ser. No. 900,241, Jun. 17, 1992, Pat. No. 5,239,503. This application Aug. 23, 1993, Ser. No. 110,682
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—156 **3 Claims**



1. A level-shifting static random access memory cell which may be coupled to a bit line and a word line operating at a first set of high and low logic-state voltages substantially equal to a first power-supply rail potential and a second power-supply rail potential, respectively, said level-shifting static random access memory cell having at least one output node operating at a second set of high and low logic state voltages substantially equal to a third high-voltage power-supply rail potential and said second power-supply rail potential, respectively, said cell comprising:

a first P-Channel MOS transistor having a source connected to said third high-voltage power-supply rail potential, and further having a drain and a gate;

a first N-Channel MOS transistor having a drain connected to the drain of said first P-Channel MOS transistor, a gate connected to said first power-supply rail potential, and a source;

a second N-Channel MOS transistor having a drain connected to the source of said first N-Channel MOS transistor, a source connected to said second power-supply rail potential, and a gate;

a second P-Channel MOS transistor having a source connected to said third high-voltage power-supply rail potential, and further having a drain connected to the gate of said first P-Channel MOS transistor and a gate connected to to the drain of said first P-Channel MOS transistor;

a third N-Channel MOS transistor having a drain connected to the drain of said second P-Channel MOS transistor, a gate connected to said first power-supply rail potential, and a source connected to the gate of said second N-Channel MOS transistor;

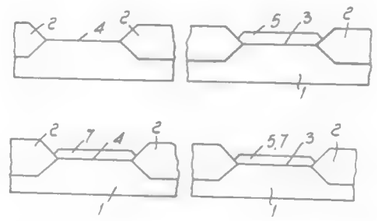
a fourth N-Channel MOS transistor having a drain connected to the source of said third N-Channel MOS transistor, a source connected to said second power-supply rail potential, and a gate connected to the source of said first N-Channel MOS transistor.

5,367,483

ELECTRICALLY ERASABLE AND PROGRAMMABLE READ-ONLY MEMORY CELLS WITH A SINGLE POLYSILICON LEVEL AND METHOD FOR PRODUCING THE SAME

Paolo Ghezzi, Rivolta D'Adda; Federico Pio, Milan, and Carlo Riva, Monza, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Nov. 24, 1992, Ser. No. 983,799
Claims priority, application Italy, Nov. 29, 1991, MI91 A 003196
Int. Cl.[5] G11C *7/00*; H01L *21/70*
U.S. Cl. 365—185 **19 Claims**



1. A method for producing an EEPROM cell comprising the steps of:

defining an active area on both a transistor portion and an EEPROM cell portion of a doped silicon substrate;

growing a first layer of silicon oxide on the active area of the transistor and EEPROM cell portions;

depositing a layer of radiation-sensitive material on the layer of silicon oxide;

masking portions of the radiation-sensitive material;

removing unmasked portions of the radiation-sensitive material, leaving a protective portion of the radiation-sensitive material over the active area of the EEPROM cell portion;

etching the first silicon oxide layer on the active area of the transistor portion;

removing the protective portion of the radiation-sensitive material;

growing a second layer of silicon oxide on the active areas of the transistor and EEPROM cell portions to create a combined layer of silicon oxide on the EEPROM cell portion; and

doping, using light implantation, the active area of the EEPROM cell portion.

5,367,484

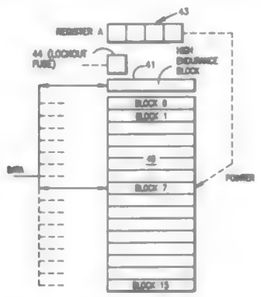
PROGRAMMABLE HIGH ENDURANCE BLOCK FOR EEPROM DEVICE

Samuel E. Alexander, Gilbert; Stephen V. Drehobl; Richard J. Fisher, both of Phoenix; Leonard F. French, Chandler, and Kent D. Hewitt, Tempe, all of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed Apr. 1, 1993, Ser. No. 41,642
Int. Cl.[5] G11C *11/34*
U.S. Cl. 365—185 **12 Claims**

1. An erasable programmable memory device, comprising a plurality of first means for data storage, each of said first means having identical storage capacity to each of the others of said first means and having a first endurance characteristic at least roughly defining the number of times that data may be erased from and written to the respective first means before the latter experiences wearout in which data cannot further be erased from and written to the respective first means, a second means for data storage having said identical storage capacity and having the same or similar said first endurance characteristic, and programming means for selectively placing one of the first means in parallel with the second means when an endurance

characteristic greater than said first endurance characteristic is required in the selected one of the first means, so that data may



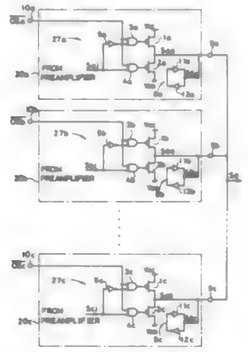
be erased from and written to the latter first means many more times before wearout than with any of the other first means.

5,367,485

SEMICONDUCTOR MEMORY DEVICE INCLUDING OUTPUT LATCHES FOR IMPROVED MERGING OF OUTPUT DATA

Takayuki Miyamoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 545,668, Jun. 20, 1990, abandoned, which is a continuation of Ser. No. 249,903, Sep. 27, 1988, abandoned. This application Jun. 3, 1991, Ser. No. 711,571
Claims priority, application Japan, Sep. 29, 1987, 62-247611
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **10 Claims**



1. A semiconductor integrated circuit including a plurality of semiconductor integrated circuit devices and an output terminal,

each of said plurality of semiconductor integrated circuit devices comprising:

a) generating means for generating a data signal,

b) receiving means for receiving an external output control signal,

c) buffer means responsive to said generating means and to said receiving means for coupling said data signal to a buffer output terminal,

d) latch means directly connected to said buffer output terminal for supplying to said buffer output terminal a data signal and for continuously holding a data signal applied to said buffer output terminal;

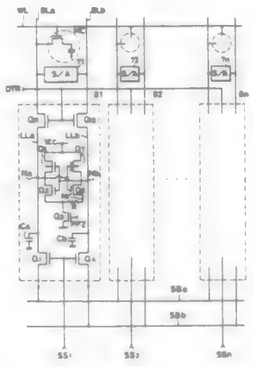
and means for directly connecting together each buffer output terminal and the output terminal of the circuit, wherein the respective external output control signals are applied to their corresponding receiving means at a different timing sequence,each buffer means has a current drive ability larger than the current drive ability of the respective latch means and each latch means is responsive to a data signal coupled by the buffer means of each semiconductor integrated circuit device.

5,367,486

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF CORRECTLY AND SERIALLY READING STORED DATA SIGNALS

Junji Mori, and Takayuki Miyamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,764
Claims priority, application Japan, Jan. 7, 1991, 3-000237
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.05 **10 Claims**



second output voltage level when the semiconductor memory device is in active operational mode;

detecting means coupled to said voltage pump means for detecting when the second voltage output voltage level has been reached to control the pumping operation of the voltage pump means so as to maintain the second output voltage level at the voltage pumping node;

pumping means for generating at the voltage pumping node the second output voltage level in response to an output from said input means; and

bias means coupled to said pumping means and responsive to the source operating voltage for forcing the first output voltage level at the voltage pumping node at the initial power-up state.

5,367,490

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH TWO VARIABLE DELAY LINES IN WRITING CIRCUIT CONTROL

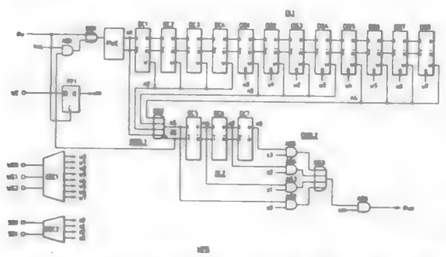
Kazuhiro Akimoto, Tokorozawa; Masami Usami, Ohme; Katsumi Ogiue, Tokyo; Hiroshi Murayama, Hadano; Hitoshi Abe, Hadano; Masamori Kashiyama, Hadano; Yoshikuni Kobayashi, Ohme; Satoru Isomura, and Kinya Mitsumoto, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer Engineering Ltd, Kodaira, both of Japan

Division of Ser. No. 618,933, Nov. 28, 1990, abandoned, which is a division of Ser. No. 281,399, Dec. 8, 1988, Pat. No. 5,014,242. This application Oct. 27, 1992, Ser. No. 967,133

Claims priority, application Japan, Dec. 10, 1987, 62-313010; Dec. 29, 1987, 62-335998; Mar. 17, 1988, 63-64086

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—194 **16 Claims**



1. A semiconductor integrated circuit device comprising:

a write pulse generation circuit for generating a write pulse signal on the basis of a clock signal; and

a memory circuit which has a writing operation designated in accordance with said write pulse signal;

wherein said write pulse generation circuit includes:

pulse width setting means including a plurality of first delay circuits connected in series for setting a pulse width of said write pulse signal;

a first decoder circuit for selecting a predetermined delay circuit from said plurality of first delay circuits in accordance with a first control signal supplied from outside of said semiconductor integrated circuit device so that said pulse width setting means sets said pulse width of said write pulse signal;

set-up time setting means including a plurality of second delay circuits connected in series for setting a set-up time of said write pulse signal; and

a second decoder circuit for selecting a predetermined delay circuit from said plurality of second delay circuits in accordance with a second control signal supplied from outside of said semiconductor integrated circuit device so that said set-up time setting means sets said set-up time of said write pulse signal.

5,367,491

APPARATUS FOR AUTOMATICALLY INITIATING A STRESS MODE OF A SEMICONDUCTOR MEMORY DEVICE

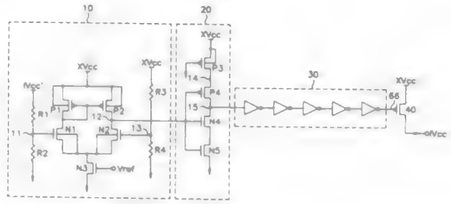
Jin-Man Han, Chuncheon, and Jong-Hoon Lee, Suwon, both of Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Kyungki, Rep. of Korea

Filed Jan. 27, 1992, Ser. No. 825,947

Claims priority, application Rep. of Korea, Aug. 23, 1991, 1991-14663

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—201 **8 Claims**



1. A circuit for initiating a stress mode of a semiconductor memory device using an external supply voltage and an internal supply voltage, comprising:

a differential amplifier connected to receive said external supply voltage and said internal supply voltage;

a level trigger circuit connected to receive an output of said differential amplifier;

a bias circuit connected to receive an output of said level trigger circuit; and

a driving insulation gate field effect transistor receiving an output of said bias circuit through a gate thereof, said driving insulation gate field effect transistor having a channel connected between said external supply voltage and said internal supply voltage.

5,367,492

SEMICONDUCTOR MEMORY DEVICE PROVIDING REDUCED TEST TIME

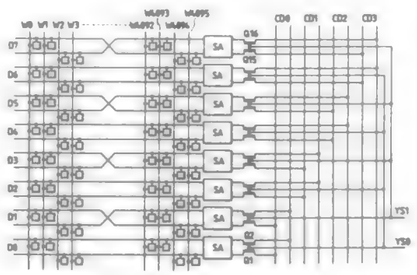
Mitsuo Kawamoto, Nishikanbara, Japan, and Yasushi Takahashi, Woburn, Mass., assignors to Hitachi, Ltd, Tokyo and Hitachi device Engineering Co., Ltd., Chiba, both of Japan

Filed Mar. 2, 1993, Ser. No. 25,236

Claims priority, application Japan, Mar. 2, 1992, 4-80362

Int. Cl.[5] G11C *7/00, 29/00*

U.S. Cl. 365—201 **48 Claims**



1. A semiconductor memory device comprising a first memory block, a second memory block, a first pair of common data lines and a second pair of common data lines, wherein each of said first and second memory blocks comprises:

a first sense amplifying means having first and second terminals;

a second sense amplifying means having third and fourth terminals;

first and second data lines each of which is coupled to said first sense amplifying means;

third and fourth data lines each of which is coupled to said second sense amplifying means;

first and second word lines;

a first memory cell coupled to said first data line and said first word line;

a second memory cell coupled to said first data line and said second word line;

a third memory cell coupled to said third data line and said first word line;

a fourth memory cell coupled to said fourth data line and said second word line;

wherein said first and second memory cells store data of a first level when said first terminal is at a first level, wherein said third memory cell stores data of said first level when said third terminal is at said first level, wherein said fourth memory cell stores data of a second level when said third terminal is at said first level, wherein said first pair of common data lines are coupled to said first to fourth terminals of said first and second sense amplifying means in said first memory block, and wherein said second pair of common data lines are coupled to said first to fourth terminals of said first and second sense amplifying means in said second memory block; and

switching means coupled between said first to fourth terminals of said first and second sense amplifying means in said first and second memory blocks and said first and second pair of common data lines, and for coupling said first and second terminals of said first sense amplifying means in said first and second memory blocks to said first and second pair of common data lines at the same time, respectively, and for coupling said third and fourth terminals of said second sense amplifying means in said first and second memory blocks to said first and second pair of common data lines at the same time, respectively.

5,367,493

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE HAVING REDUCED PEAK CURRENT DURING REFRESH MODE AND METHOD OF OPERATING THE SAME

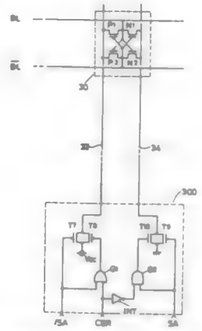
Tadato Yamagata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 892,897

Claims priority, application Japan, Jun. 6, 1991, 3-134705

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—222 **13 Claims**



1. A dynamic type semiconductor memory device including a plurality of dynamic type memory cells each having storage data restored in a refresh mode of operation, comprising:

sense amplifier means for sensing, amplifying and latching data of selected dynamic type memory cells; and

control means, responsive to a refresh mode instructing signal instructing said refresh mode of operation, for slowing down a speed of the sensing and amplifying operation of said sense amplifier means to a speed slower than in a normal mode of operation in which external access is made to a selected dynamic memory cell among said selected memory cells, said refresh mode of operation and said normal mode of operation being independent of each other for said selected memory cells.

5,367,494

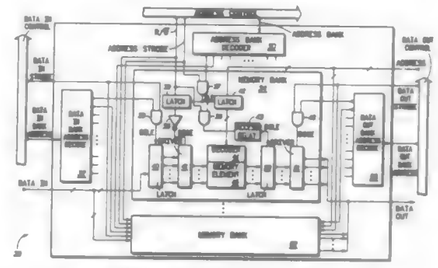
RANDOMLY ACCESSIBLE MEMORY HAVING TIME OVERLAPPING MEMORY ACCESSES

Michael C. Shebanow, Austin; Mitchell K. Alsup, Dripping Springs; Hunter L. Scales, and George P. Hoekstra, both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 702,880, May 20, 1991, abandoned. This application Aug. 31, 1993, Ser. No. 113,632

Int. Cl.[5] G11C *8/00, 7/00*

U.S. Cl. 365—230.03 **11 Claims**



1. An integrated circuit, comprising:

an address bank decoder for decoding an address bank signal to provide a first one of a plurality of bank enable signals, the address bank decoder having an input for receiving the address bank signal and a plurality of outputs wherein each of the plurality of outputs provides a respective one of the plurality of bank enable signals;

an input data decoder for decoding an input data bank signal to provide a first one of a plurality of input enable signals, the input data decoder having an input for receiving the input data bank signal and a plurality of outputs wherein each of the plurality of outputs provides a respective one of the input enable signals;

an output data decoder for decoding an output data bank signal to provide a first one of a plurality of output enable signals, the output data decoder having an input for receiving the output data bank signal and a plurality of outputs wherein each of the plurality of outputs provides a respective one of the output enable signals; and

a plurality of memory banks wherein each of the plurality of memory banks is concurrently accessible, each of the plurality of memory banks, comprising:

a first latch for selectively storing a first address value in response to a first enable signal;

a second latch for selectively storing a first data value in response to a second enable signal;

a third latch for selectively storing a second data value in response to a third enable signal;

a fourth latch for selectively storing a first control value in response to a fourth enable signal;

logic means for selectively asserting the first enable signal, the second enable signal, the third enable signal, and the fourth enable signal when a corresponding one of the plurality of bank enable signals is in a predetermined logic state, the logic means being coupled to each of the

first latch, the second latch, the third latch, and the fourth latch; and

an array of memory storage elements for selectively communicating a digital information value, the array of memory storage elements being coupled to each of the first latch, the second latch, the third latch, and the fourth latch;

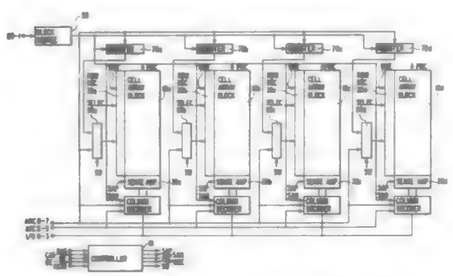
wherein a first one of the plurality of memory banks executes a first data communication operation subsequent to latching the first address value, the first control value, and one of the first and second data values and a second one of the plurality of memory banks executes a second data communication operation subsequent to latching a second address value, a second control value, and a third data value, the second one of the plurality of memory banks executing the second data communication operation concurrently with the first one of the plurality of memory banks executing the first data communication operation.

5,367,495

RANDOM ACCESS MEMORY HAVING CONTROL CIRCUIT FOR MAINTAINING ACTIVATION OF SENSE AMPLIFIER EVEN AFTER NON-SELECTION OF WORD LINE

Toru Ishikawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1992, Ser. No. 997,186
Claims priority, application Japan, Dec. 27, 1991, 3-360289
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—239 **5 Claims**



1. A semiconductor memory, comprising: a plurality of memory cell array blocks each having a plurality of word and digit lines, a plurality of row decoders each provided for an associated one of said memory cell block, a plurality of column decoders each provided for an associated one of said memory cell array blocks, a plurality of amplifiers provided for an associated one of said memory cell array blocks, and for holding data on at least one of said digit lines in a selected one of said memory cell array blocks, and a block decoder for selecting said memory cell array blocks in sequence.

5,367,496

APPARATUS FOR PRODUCING IMAGES ACOUSTICALLY

Michael J. Sullivan, Oakdale; Douglas G. Dussault, East Lyme; Rick H. Charette, Colchester, and Ray E. D'Addio, Branford, all of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1993, Ser. No. 38,364
Int. Cl.[5] G03B *42/06*
U.S. Cl. 367—7 **15 Claims**

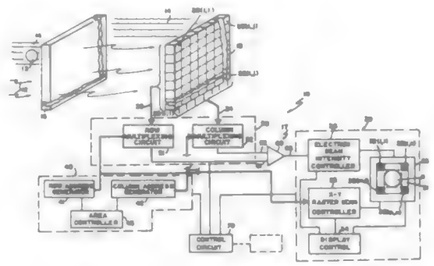
1. Apparatus for producing a visual image in response to acoustic energy received from an object through a medium comprising:

a detector array including a plurality of operationally independent, discrete transducer means deployed in the medium for connverging impinging acoustic energy into an electrical output signal across first and second electrodes thereof wherein said discrete transducer means are arrayed in rows and columns, focusing means for focusing received acoustic energy onto said detector array:

display means for producing a visual display over an array of discrete pixel positions by energizing each pixel position in response to an input display control signal;

identification means for sequentially establishing correspondences between each said transducer means and each said pixel position;

multiplexing means connected to said identification means and said transducer means for coupling sequentially to outputs thereof the electrical output signal from a selected one of said transducer means, said multiplexing means including row multiplexing means and column multiplexing means wherein each input of said row multiplexing means connects to the first electrodes in a row of said transducer means and each input of said column multiplexing means connects to the second electrodes in a column of said transducer means, display control means connected to said identification means and said display means for selecting in sequence a said pixel position for energization in response to the input display control signal; and



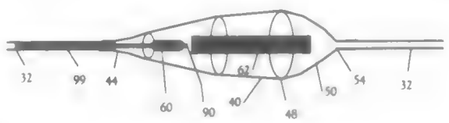
amplifier means connected to said multiplexing means and to said display means for producing the input display control signal in response to the electrical output signals from said multiplexing means whereby said sequential operation of said identification means produces an image on said display means corresponding to the image said focussing means forms on said detector array.

5,367,497

EXTENDED FREQUENCY RANGE HYDROPHONE

Richard A. Marschall, 5115 Echo Pines Cir. E., Ft. Pierce, Fla. 34951

Filed Aug. 12, 1993, Ser. No. 106,202
Int. Cl.[5] G01V *1/38*
U.S. Cl. 367—20 **4 Claims**



1. A hydrophone having an extended frequency range comprising:

a hydrodynamically smooth shape hydrophone body, adapted for interconnection between sections of a towing cable;

a primary hydrophone sensor within said body having a acoustic sensitivity having a low frequency cutoff;

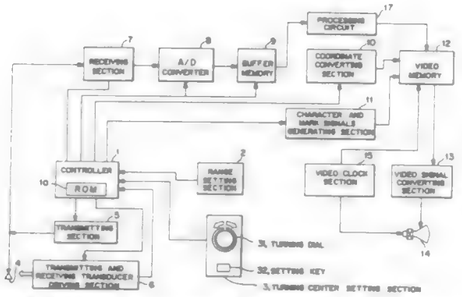
a hydrophone sensor comprising an elongated acoustically sensitive sensor within a tube extending from said hydrophone body into said towing cable section.

5,367,498

LATERAL DIRECTION DETECTION SONAR

Yoshida Takashi, 14-6-301, Kamokogahara 2-chome, Higashinada-ku, Kobe-shi Hyogo 658; Watanabe Syoichi, 19-11, Komezaki-cho, Shijyonawate-shi, Osaka 575; Yamada Katsuo, 6-16, Jyonan-cho 3-chome, Takatsuki-shi, Osaka 569; Hamada Tokihiko, 2-7-303, Kashinodai 3-chome, Nishi-ku, Kobe-shi, Hyogo 651-22, and Hiraoka Yuzuru, 9, Takase-cho, 2-chome, Moriguchi-shi, Osaka 570, all of Japan

PCT No. PCT/JP91/00929, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO92/01237, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 11, 1991, Ser. No. 829,002
Claims priority, application Japan, Jul. 11, 1990, 2-184970; Jul. 11, 1990, 2-184971; Jul. 12, 1990, 2-186709
Int. Cl.[5] G01S *15/42*
U.S. Cl. 367—107 **25 Claims**



1. A PPI sonar for horizontally turning a transmitting and receiving ultrasonic transducer within an azimuthal range in one angular direction and in the reverse angular direction, to search underwater conditions in a sector form and to display the searched underwater conditions in a sector form with the position of own ship at the origin of the sector on an indicator comprising:

turning reference point setting means for setting a reference point in correspondence to turning the transmitting and receiving transducer;

display means for displaying the reference point in correspondence to turning the transmitting and receiving transducer on the indicator; and

own ship's position setting means for determining the position of own ship for indication based on output signals of said turning reference point setting means.

5,367,499

VIBRATION ISOLATION MODULE FOR TOWED HYDROPHONE STREAMER

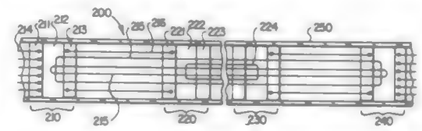
Charles L. Morningstar, Lewisville, and Tracy G. Gill, The Colony, both of Tex., assignors to Whitehall Corporation, Dallas, Tex.

Filed Sep. 23, 1993, Ser. No. 126,305
Int. Cl.[5] G01V *1/38;* **B63B** *21/00*
U.S. Cl. 367—154 **39 Claims**

1. A vibration isolation module for a towed hydrophone streamer, comprising:

a first outboard transition unit having an outboard end and an inboard end, said outboard end of said first outboard unit capable of receiving a first tension member, said first tension member terminating within said first outboard unit, said inboard end of said first outboard unit capable of receiving second and third tension members, said second tension member entering, looping back and exiting said inboard end of said first outboard unit, said third tension member terminating within said first outboard unit; and

a first inboard transition unit having an outboard end and an inboard end, said outboard end of said first inboard unit capable of receiving said second and third tension members, said second tension member passing through said first inboard unit, said third tension member terminating within said first inboard unit, said inboard end of said first inboard unit capable of receiving a fourth tension member, said fourth tension member entering, looping back and exiting said inboard end of said first inboard unit.

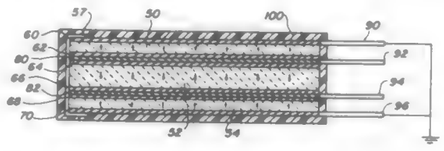


5,367,500

TRANSDUCER STRUCTURE

Kin W. Ng, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1992, Ser. No. 953,621
Int. Cl.[5] H04R *17/00;* **H01L** *41/04*
U.S. Cl. 367—157 **17 Claims**



16. An electrical device comprising a stack of piezoelectric layers containing a middle layer and two outer layers on either side of said middle layer and an electrically conductive surface disposed between each of said layers for providing electrical contact between adjoining layers, said middle layer having the same dimensions as said outer layers except its thickness is twice that of one of said outer layers, said middle and outer layers being in the form of sheets, said two outer layers having about the same thickness and having dimensions of about 1–20 inches by about 0.1–5 inches by about 0.1–10 mils in thickness, said outer layers being polarized in the same direction, and said middle layer being polarized in a direction opposite from the direction in which said outer layers are polarized.

5,367,501

DUAL-FREQUENCY SONAR SYSTEM

James G. Kelly, Newport, and Charles R. Walsh, Tiverton, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

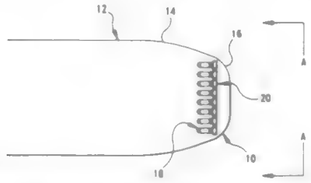
Filed Jan. 8, 1993, Ser. No. 1,978
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—157 **15 Claims**

1. A dual frequency sonar apparatus for marine vessels operating in an aqueous environment, comprising:

a lower-frequency transducer array; and

a higher-frequency hydrophone array, disposed in front of said lower-frequency transducer array, each of said arrays

confronting the aqueous environment, said higher-frequency array being fabricated of a piezoelectric polymer



material that is substantially transparent to the lower-frequency transducer array.

5,367,502

TIMEPIECE INCLUDING A BROADCASTING ANTENNA FOR AN ELECTROMAGNETIC SIGNAL

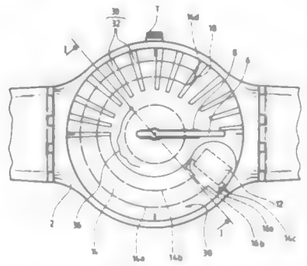
Lucas Barroso; Pierre-André Farine, both of Neuchâtel, and Minh-Tam Diep, Hauterive, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Dec. 22, 1993, Ser. No. 171,638

Claims priority, application Switzerland, Dec. 23, 1992, 03 934/92-1

Int. Cl.[5] G04B *47/00, 37/00*

U.S. Cl. 368—10 **20 Claims**



1. A timepiece comprising a case, a horometric movement housed in the interior of said case and means for broadcasting an electromagnetic signal including electronic means for furnishing the signal and at least one broadcasting antenna coupled to said electronic means, said antenna being arranged on a first face of a support plate which acts as a dial of the timepiece, has a basically planar form and is arranged in the interior of said case, and said antenna comprising a thin metallic layer deposited on said first face of the support plate.

5,367,503

TURNSTILE GAME

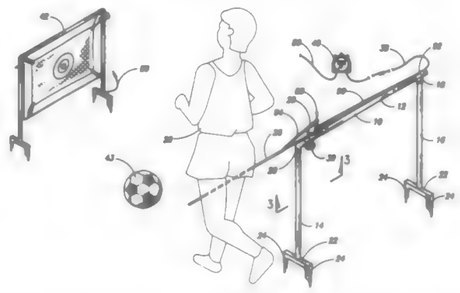
Arlen J. Lowrance, Tulsa, Okla., assignor to Carl J. Lowrance, Tulsa, Okla.

Continuation-in-part of Ser. No. 131,004, Oct. 4, 1993. This application Feb. 24, 1994, Ser. No. 201,124

Int. Cl.[5] G04B *47/00;* **G04F** *8/00;* **F41J** *5/02*

U.S. Cl. 368—10 **10 Claims**

1. A turnstile operated game for determining the elapsed time between a starting event and an ending event comprising a turnstile composed of a horizontal member supported above the ground, a vertical shaft rotatably mounted on the horizontal member, an arcuate cam mounted on the turnstile and being responsive to the rotation of the shaft, a microswitch mounted on the turnstile adjacent the cam, the microswitch having a toggle arm adapted to be contacted by the cam to actuate the microswitch upon a predetermined rotary movement of the shaft, a horizontal lever connected to the upper end of the vertical shaft and having a first portion extending away from and beyond the horizontal member, the lever having a second portion extending on the opposite side of the shaft from the first portion thereof, resilient means connected from the second portion of the lever to the horizontal member for returning the lever to its initial position after the lever has been deflected by a person walking through and past the lever whereby, when a person walks through and past the first portion of the lever, the cam will turn to actuate the microswitch, a timer con-



nected to the microswitch such that the timer is turned on when a person walks through and past the first portion of the lever, the walking of a person through and past the first portion of the lever constituting a starting event for the game, means responsive to the completion of an ending event to send a signal to the timer and stop the same, thereby indicating the time elapsed between the starting event and the ending event.

5,367,504

TIMEPIECE WITH IMPROVED DISPLAY ADVANCING AND RESETTING MECHANISMS

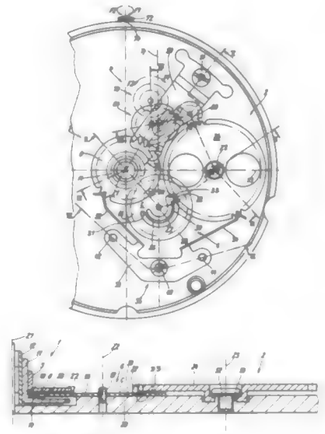
Laszlo Ferenczy, Basel, Switzerland, assignor to Eta SA Fabriques d' Ebauches, Granges, Switzerland

Filed Sep. 27, 1991, Ser. No. 766,563

Claims priority, application Switzerland, Oct. 2, 1990, 03171/90-5

Int. Cl.[5] G04B *19/26*

U.S. Cl. 368—15 **12 Claims**



1. A timepiece of the mechanical or electromechanical type comprising:

first and second display mechanisms spaced from one another along geometrical axis, each for displaying time varying information;

rapid correction means operable for correcting both display mechanisms, including control means accessible from the exterior of the timepiece, and means for alternatively engaging said first and second display mechanisms under the action of the control means; and

a driving device including second means for engaging said first and second display mechanisms for periodically advancing said first and second display mechanisms by predetermined increments, the time periods between such advances being the same for said first and second display mechanisms, said driving device further including resilient means for absorbing the displacement of one of said display mechanisms when said rapid correction means operates on said one display mechanism while said driving device is engaged therewith, said alternative engaging means being positioned substantially opposite the driving device relative to said geometrical axis.

5,367,505

WATCH WITH DUMB ALARM

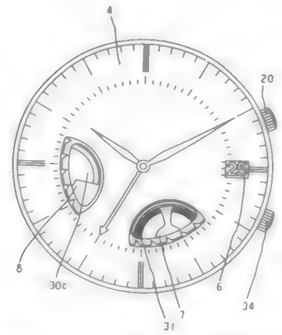
Hidetaka Tsuchiya; Nobuyuki Uehara; Masami Fukuda, and Masao Mafune, all of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1994, Ser. No. 25,254

Claims priority, application Japan, Jul. 5, 1991, 3-060213

Int. Cl.[5] G04B *19/06, 23/02*

U.S. Cl. 368—72 **12 Claims**



1. A watch with a dumb alarm for indicating a time to be announced with vibration, comprising:

a casing,

a time drive region situated in the casing, said time drive region being driven electrically and including an hour wheel with an hour hand for indicating an hour, a center wheel with a minute hand for indicating a minute, a second wheel with a second hand for indicating a second, a motor engaging said hour wheel, said minute wheel and said second wheel to drive the same, and a battery electrically connected to said motor for energizing the motor, and

an alarm drive region situated in the casing, said alarm drive region being driven by a mechanical drive source and including an alarm wheel with an alarm hand for setting and indicating an alarm time, said alarm wheel being arranged coaxially with said hour wheel driven by said motor and to be engageable therewith, an eccentric weight eccentrically rotatably situated in the casing and having an engaging portion, an alarm lever situated near said alarm wheel for urging said hour wheel toward the alarm wheel and having a distal end engageable with said engaging portion of the eccentric weight, an alarm stem attached to the casing to be engageable with said alarm wheel for controlling stopping and starting operations of the eccentric weight, a spiral spring situated in said casing for operating the eccentric weight, a weight drive wheel train situated between the spiral spring and the eccentric weight for transmitting drive force from said spiral spring to said eccentric weight, and a winding transmission wheel train situated between the alarm stem and the spiral spring for winding said spiral spring by said alarm stem, said alarm stem, spiral spring and eccentric weight being arranged at substantially same horizontal level in the casing so that when a preset time to be announced comes, said hour wheel engages said alarm wheel to allow said eccentric weight to start operating, and the drive force of said spiral spring is transmitted through said weight drive wheel train to said eccentric weight to rotate said eccentric weight to produce vibration.

5,367,506

SOUND COLLECTING SYSTEM AND SOUND REPRODUCING SYSTEM

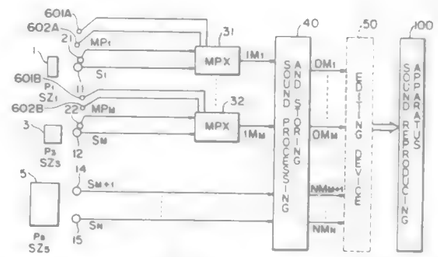
Kiyofumi Inanaga, Kanagawa, and Yuji Yamada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 24, 1992, Ser. No. 980,836

Claims priority, application Japan, Nov. 25, 1991, 3-335623

Int. Cl.[5] H04B *1/20*

U.S. Cl. 369—4 **10 Claims**



1. A sound collecting system, comprising: a plurality of sound detecting means for detecting sounds from a plurality of respective sound sources and generating audio signals representing said sounds;

position information providing means for detecting the location of a said sound source within a predetermined performance area and for generating position signals representing the location of said sound source within said predetermined performance area;

multiplexing means for multiplexing said audio signals and said position signals and generating multiplexed audio and position output signals; and

recording means for recording each of said multiplexed audio and position output signal into separate and independent recording channel.

5,367,507

OVER WRITE CAPABLE MAGNETOOPTICAL RECORDING METHOD, AND MAGNETOOPTICAL RECORDING APPARATUS AND MEDIUM USED THEREFOR

Masatoshi Sato; Jun Saito, both of Tokyo, and Hideki Akasaka, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 453,255, Dec. 20, 1989, Pat. No. 5,239,524, which is a continuation of Ser. No. 90,973, Aug. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 870,350, Jun. 4, 1986, abandoned. This application Jul. 16, 1993, Ser. No. 91,913

Claims priority, application Japan, Jun. 11, 1985, 60-126775; Sep. 11, 1985, 60-201423; Sep. 30, 1985, 60-217313; Sep. 4, 1986, 61-208608

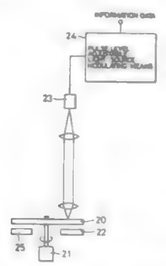
Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 **1 Claim**

1. A method of thermomagnetically recording on a mag-

netooptical recording medium having a magnetic layer having a compensation temperature between a room temperature and a Curie temperature, said layer being initialized to a predetermined direction, said method comprising the steps of:

(a) moving said medium;



(b) radiating a laser beam onto said medium;

(c) pulse modulating an intensity of said laser beam in accordance with binary data to be recorded;

(d) applying a bias field in the same direction as said predetermined direction to a radiated portion of said medium.

5,367,508

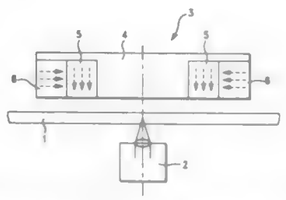
MAGNETIC FIELD GENERATION MECHANISM FOR MAGNETO-OPTICAL RECORDING

Shinji Haba, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,824

Int. Cl.[5] G11B *11/00, 5/127*

U.S. Cl. 369—13 **28 Claims**



12. A magneto-optical recording device that performs erasure and recording on a magneto-optical disc, the device comprising:

an optical head including means for producing magnetic fields parallel to the disc; and

a magnetic head including:

a support member,

first means, mounted on said support member, for generating initialization magnetic fields perpendicular to a surface of the disc on each side of the optical head, and

second means, mounted on said support member, for generating amplification magnetic fields parallel to the disc surface for amplifying the initialization magnetic fields such that a synthesized magnetic field is produced and is impressed on the disc as a recording magnetic field at the position of the optical head.

5,367,509

METHOD FOR REPRODUCING INFORMATION RECORDED ON A MAGNETO-OPTICAL RECORDING MEDIUM INCLUDING SERVO CONTROLLING THE DIMENSION OF THE REPRODUCTION REGION OF THE RECORDING MEDIUM BY MEANS OF A RECORDED SIGNAL

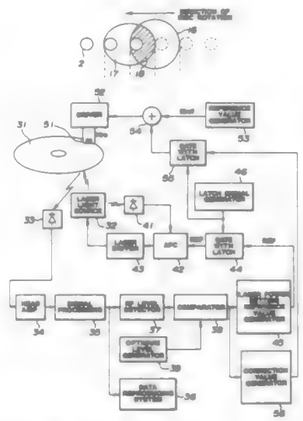
Atsushi Fukumoto, Kanagawa; Toshiki Udagawa, and Shunji Yoshimura, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 52,221, Apr. 22, 1993, which is a continuation of Ser. No. 832,979, Feb. 10, 1992, abandoned. This application Apr. 26, 1994, Ser. No. 233,555

Claims priority, application Japan, Feb. 12, 1991, 3-040987

Int. Cl.[5] G11B *13/04, 11/12, 11/10*

U.S. Cl. 369—13 **6 Claims**



1. A method of reproducing information recorded on a magneto-optical recording medium, the medium including a recording layer, a reproduction layer and an intermediate layer having a Curie temperature which is less than the Curie temperatures of the recording layer and the reproduction layer and positioned between the recording layer and the reproduction layer, the recording layer and the reproduction layer being magnetically coupled through the intermediate layer in a steady state, wherein the method includes the steps of:

(a) rotating the recording medium with a predetermined speed of rotation;

(b) while the recording medium is rotated with the predetermined speed, irradiating a reading light beam onto a region of the medium for heating a portion of the region irradiated by the light beam to a temperature which is less than the Curie temperatures of the recording layer and the reproduction layer but exceeding the Curie temperature of the intermediate layer to cause extinction of the magnetic coupling between the recording layer and the reproduction layer within the heated portion and thereby create a mask region which is shifted away from the region irradiated by the light beam in the direction of rotation of the medium, the mask region overlapping the region irradiated by the light beam;

(c) detecting a Kerr rotational angle of a light reflected from the medium to derive the recorded information, including detecting the Kerr rotational angle of the light reflected by the region irradiated by the light beam except for the overlapped mask region;

(d) prior to steps (a) and (b), reading out a signal recorded on the medium which signal is representative of an optimum size of the mask region, comparing the read out signal with a predetermined reference signal to produce a difference signal, and controlling the size of the mask region by controlling the intensity of the reading light beam using the difference signal as a control signal to minimize the difference signal.

3. A method of reproducing information recorded on a magneto-optical recording medium, the medium including a recording layer, a reproduction layer and an intermediate layer having a Curie temperature which is less than the Curie temperatures of the recording layer and the reproduction layer and positioned between the recording layer and the reproduction layer, the recording layer and the reproduction layer being magnetically coupled through the intermediate layer in a steady state, wherein the method includes the steps of:

(a) rotating the recording medium with a predetermined speed of rotation;

(b) while the recording medium is rotated with the predetermined speed, irradiating a reading light beam onto a region of the medium for heating a portion of the region irradiated by the light beam to a temperature exceeding the Curie temperature of the intermediate layer to cause extinction of the magnetic coupling between the recording and reproduction layers within the portion and thereby create a mask region which is shifted away from the region irradiated by the light beam in the direction of rotation of the medium, the mask region overlapping the region irradiated by the light beam;

(c) detecting a Kerr rotational angle of a light reflected from the medium to derive the recorded information, including detecting the Kerr rotational angle of the light reflected by the region irradiated by the light beam except for the overlapped mask region;

(d) prior to steps (a) and (b), reading out a signal recorded on the medium which signal is representative of an optimum size of the mask region, comparing the read out signal with a predetermined reference signal to produce a difference signal, and controlling the size of the mask region by applying a reproducing magnetic field to the medium and controlling the intensity of the reproducing magnetic field using the difference signal as a control signal to minimize the difference signal.

5,367,510

DISK RECORDING/REPRODUCING APPARATUS HAVING THE CAPABILITY OF RECORDING AN OPERATOR DESIGNATED PROGRAM SEQUENCE

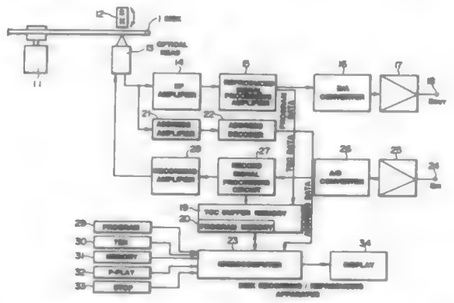
Ryo Ando, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 290,047, Dec. 5, 1988, abandoned. This application Dec. 30, 1991, Ser. No. 815,838

Claims priority, application Japan, Apr. 15, 1987, 62-57319

Int. Cl.[5] G11B *7/085*

U.S. Cl. 369—32 **1 Claim**



1. An optical disc recording apparatus for using an optical disc which has a recording region and a lead-in region, said lead-in region containing optically recorded play program information comprised of separate programs, said apparatus comprising:

(a) a digital memory for storing program information designating the order in which programs are to be reproduced according to information signals recorded in the recording region of the optical disc;

(b) means for optically recording program information stored in said digital memory in the lead-in region of the optical disc;

(c) operator controllable information select means for selecting a plurality of the information signals recorded in the recording region of the optical disc and storing information representative of information signals selected as the play program information in said digital memory;

(d) display means for displaying data relating to the information signal selected with said operator controllable information select means; and

(e) control means for controlling said means for optically recording program information to record the play program information stored in said digital memory in the lead-in region of the optical disc.

5,367,511

SCANNING LENS MOUNT USING DEFLECTION AND TWISTING FOR SEPARATE MOVEMENTS

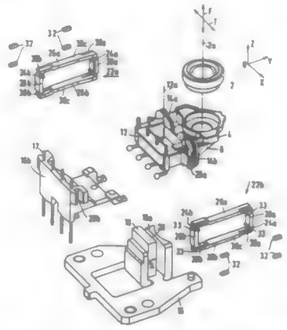
Ghislanus M. A. M. Aldenboven, Hasselt, , assignors to U. S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1993, Ser. No. 84,835

Claims priority, application European Pat. Off., Jul. 1, 1992, 92201962.5

Int. Cl.[5] G11B *7/12*

U.S. Cl. 369—44.14 **20 Claims**



1. An electro-optical scanning device comprising:

a mounting section,

a movable section comprising a lens having an optical axis,

supporting means interconnecting said mounting section and said movable section, for supporting said movable section for movement relative to said mounting section in a first direction at least substantially along a first axis parallel to said optical axis to form at least one radiation spot on a surface to be scanned, and in a second direction at least substantially along a second axis transverse to said first axis to follow a recording track in said surface, and

an actuator comprising first actuator means provided on said mounting section and second actuator means provided on said movable section for driving said movable section in said first and second directions,

characterized in that supporting means comprises two supports which extend parallel to each other,

each support respectively comprises two elongate first elements which extend at least substantially parallel to said first axis and are spaced apart in a direction transverse to said first axis, each first element having two ends and a central portion; and two elongate stiff second elements for coupling said first elements to each other, each second element being rigidly connected to a respective end of each first element of the respective support,

the central portion of one of the first elements of each support is secured to the mounting section, and the central portion of the other of the first elements of each support is secured to the movable section, and

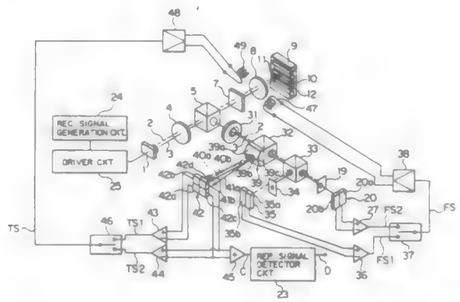
each of said first elements is elastically deflectable about at least one transverse axis parallel to said second axis for movement of said movable section in said first direction, and elastically twistable about a respective longitudinal axis for movement of said movable section in said second direction.

5,367,512

MULTI-BEAM OPTICAL RECORDING-REPRODUCTION DEVICE WITH INDEPENDENT ERROR DETECTION FOR EACH BEAM

Yasuyuki Satou; Morihiro Karaki, and Masahisa Shinoda, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 679,098, Apr. 2, 1991, abandoned. This application Jun. 8, 1993, Ser. No. 73,629
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.23 17 Claims



1. An optical recording-reproducing device for recording information on, and reproducing information from, tracks formed on an information storage medium, comprising:

beam generator means for simultaneously generating independently-driven first and second light beams;

an optical system for simultaneously converging the first and second light beams on a track on the information storage medium;

tracking error detector means for detecting independently respective tracking errors of the first and second light beams on a track on the information storage medium, the tracking error detector means generating independent tracking error signals corresponding to the respective tracking errors of the first and the second beams;

tracking error change-over switching means for selecting one of the tracking error signals generated by the tracking error detector means;

tracking error control means for controlling the optical system in response to the selected tracking error signal to minimize the tracking error indicated by the selected tracking error signal;

focusing error detector means for detecting independently respective focusing errors of the first and second light beams on a track on the information storage medium, the focusing error detector means generating independent focusing error signals corresponding to the respective focusing errors of the first and the second beams;

focusing error change-over switching means for selecting one from the focusing error signals generated by the focusing error detector means; and

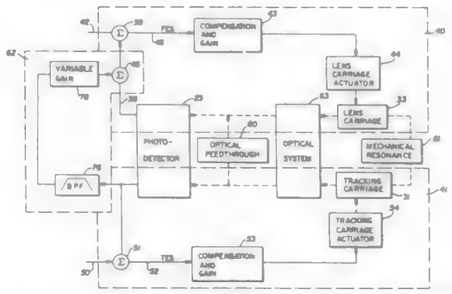
focusing error control means for controlling the optical system in response to the selected focusing error signal to minimize the focusing error indicated by the selected focusing error signal.

5,367,513

FOCUS AND TRACKING SERVO DECOUPLING SYSTEM

Keith A. Bates; Nhan X. Bui, and Delbert A. Hansen, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1993, Ser. No. 148,695
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.29 14 Claims



1. An optical disk apparatus including a light source, an optical system for directing a light beam produced by said light source to the surface of an optical disk mounted in said apparatus, said disk having tracks for recording data, said optical system including movable elements for directing said beam onto said surface at a desired track position and an objective lens for focusing said beam onto said surface, photodetector means for receiving light reflected from said surface and for producing a focus error signal (FES) proportional to an out-of-focus condition, and a track error signal (TES) proportional to distance from said desired track position comprising:

focus control means for moving said objective lens in response to said FES to maintain an in-focus condition;

tracking control means for moving said movable elements in response to said TES to direct said beam onto said surface at said desired track position;

said focus control means including circuit means electronically establishing a compensation signal for compensating an FES component induced into said focus control means by the presence of a tracking error signal, said circuit means including a band pass filter for establishing the selected frequency of said FES component to be compensated, said selected frequency within the range of frequencies at which mechanical resonance conditions occur between said focus control means and said tracking control means, and an amplifier for setting the magnitude of said compensation signal.

5,367,514

PHASE CHANGE OPTICAL RECORDING DEVICE AND METHOD EMPLOYING A LASER BEAM WITH DIFFERENTLY ENERGIZED PULSE PORTIONS

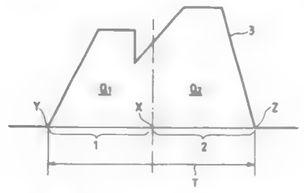
Hideo Kobayashi; Osamu Ueno, and Daisuke Iguchi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1992, Ser. No. 981,339
Claims priority, application Japan, Nov. 26, 1991, 3-336254; Aug. 5, 1992, 4-227823; Oct. 26, 1992, 4-287465
Int. Cl.[5] G11B *7/24*
U.S. Cl. 369—47 9 Claims

1. An optical recording device of a phase change type, comprising:

an optical recording medium of a phase change type in which a laser beam is radiated during a radiation time period onto a recording layer formed of a recording material of a phase change type to thereby change reversibly a phase of the radiated portion of the recording layer so as to record or erase information; and

control means for controlling a unit laser beam, which is to be radiated for writing the information into said optical recording medium to form a recording mark, in such a



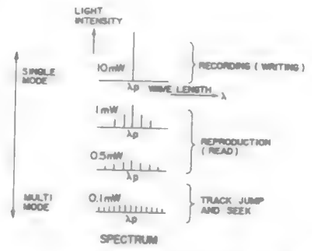
manner that, when said unit laser beam is time divided into front and rear pulse energy portions with a middle point of the radiation time period thereof providing a boundary between the front and rear energy portions, a quantity of energy of said rear pulse energy portion is greater than another quantity of energy of said front pulse energy portion.

5,367,515

OPTICAL RECORDING/REPRODUCING BY REDUCING LASER POWER WHEN THERE IS A TRACK JUMP

Koichi Yamazaki, Sakado, and Eiichi Nakamura, Sagamihara, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1992, Ser. No. 874,089
Claims priority, application Japan, May 1, 1991, 3-100218
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 3 Claims



1. A method of driving a laser provided in an optical information reproduction apparatus to perform reproduction of information, the method comprising the steps of:

outputting a light spot at a first reproduction level from said laser;

focusing said light spot onto an optical information recording medium having a tracking track;

positioning said light spot relative to said tracking track as a reference to perform the reproduction of information; and

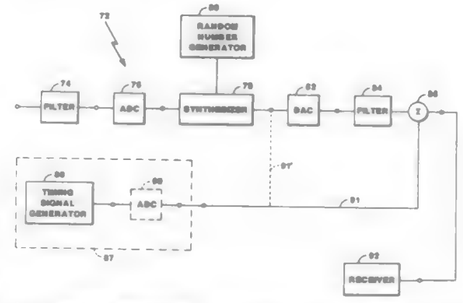
reducing the output of said laser to a track level by cycling said laser on and off intermittently to cause said laser to operate in a multi-mode when a track jump and seek operation is performed, such that said track level output is smaller than said first reproduction level and said multi-mode operation produces an energy spectrum that includes a plurality of wavelengths each having similar intensity peaks to substantially eliminate the affects of interference.

5,367,516

METHOD AND APPARATUS FOR SIGNAL TRANSMISSION AND RECEPTION

William J. Miller, 100 Waltham Rd. #18, Watertown, Mass. 02272

Filed Mar. 17, 1993, Ser. No. 33,518
Int. Cl.[5] H04J *11/00*
U.S. Cl. 370—19 24 Claims



1. A modem comprising:

a modulator, having a first plurality of channels, said modulator for receiving on each of said channels an input sample, wherein said modulator groups said first plurality of input samples to form an input data frame and wherein said modulator multiplies said input data frame by a first rotation matrix having a row dimension and a column dimension corresponding to the number of channels in said modulator to provide an output data frame corresponding to a modulated output signal; and

a demodulator having a first plurality of channels, said demodulator for receiving a data frame corresponding to a modulated output signal provided from a first plurality of input samples, wherein said demodulator multiplies each of said received data frames by a second rotation matrix having a row dimension and a column dimension corresponding to the number of channels in said demodulator to provide a de-modulated signal corresponding to an output data frame having a first plurality of output samples, and wherein said demodulator provides on each of said channels a corresponding one of said first plurality of output samples wherein each of said output samples correspond to one of said first plurality of input samples.

5,367,517

METHOD AND SYSTEM OF REQUESTING RESOURCES IN A PACKET-SWITCHED NETWORK WITH MINIMAL LATENCY

Israel Cidon, Haifa, Israel; Inder S. Gopal, New York, and Roch A. Guerin, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

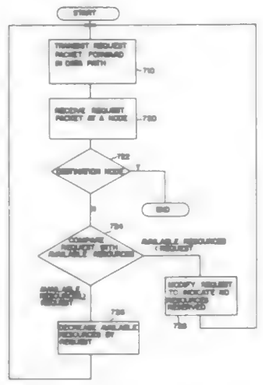
Filed Dec. 16, 1992, Ser. No. 992,277
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—54 11 Claims

1. A method of requesting resources in a communications network with minimal latency, said method comprising the steps of:

(a) transmitting a request packet in a path from a source node through at least one intermediate node towards a destination node, said nodes coupled by respective links and said request packet containing a request for resources to complete a requested transmission along the path to the destination node; and

(b) comparing the request for resources in the request packet to the available resources of a selected link in the path and (1) decreasing the available resources of the selected link by the request for resources in the request packet and sending the request packet forward in the path when the available resources of the selected link is at least equal to

the request for resources and (2) modifying the request packet to form a modified request packet indicating that no resources are to be reserved for the request packet



when the available resources of the selected link is less than the request for resources and sending the modified request packet forward in the path.

5,367,518

SELF-ROUTING SWITCHING ELEMENT AND FAST PACKET SWITCH

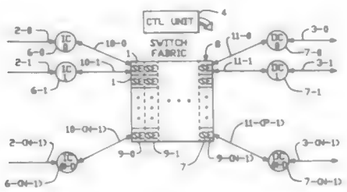
Peter Newman, Mountain View, Calif., assignor to Network Equipment Technologies, Inc., Redwood City, Calif.

Division of Ser. No. 602,409, Oct. 22, 1990, Pat. No. 5,222,085, which is a continuation-in-part of Ser. No. 258,291, Oct. 14, 1988, Pat. No. 4,965,788, and a continuation-in-part of Ser. No. 582,254, Sep. 14, 1990, abandoned. This application Aug. 14, 1992, Ser. No. 930,769

Claims priority, application United Kingdom, Oct. 15, 1987, 8724208

Int. Cl.[5] H04Q *11/00;* **H04L** *12/56*

U.S. Cl. 370—54 **74 Claims**



53. A packet switch comprising:

a plurality of input controllers, each having an input controller forward output and each having an input controller reverse input;

a plurality of output controllers, each having an output controller forward input and each having an output controller reverse output;

a plurality of switching elements cascaded together from switching elements in a first stage to switching elements in a last stage for interconnecting said plurality of input controllers and said plurality of output controllers,

each said switching element including,

a plurality of input modules, each having an input module forward input for receiving forward packet signals having tags, each having input module forward outputs for transmitting the forward packet signals having tags, each having input module reverse inputs for receiving reverse input module signals, each having an input module reverse output for transmitting reverse input module signals,

a plurality of output modules, each having output module forward inputs for receiving forward packet signals, each having an output module forward output for transmitting forward packet signals, each having an output module reverse input for receiving reverse output module signals, each having output module reverse outputs for transmitting reverse output module signals,

signal path means establishing a forward signal path between the forward outputs of each of said plurality of input modules and the forward inputs of each of said plurality of output modules, and for establishing a reverse signal path between the reverse outputs of each of said plurality of output modules and the reverse inputs of each of said plurality of input modules,

each said switching element operable to transmit said forward packet signals to one of said plurality of output modules,

detector means for detecting that a particular one of said input modules has a particular one of said packet signals for transmission to a particular one of said output modules,

determining means for determining if said particular one of said output modules will accept said particular one of said incoming packet signals,

enable means responsive to said determining means for enabling transmission of said particular one of said incoming packet signals for acceptance by said particular one of said output modules,

said switching elements cascaded in stages from a first stage including first stage switching elements to a last stage including last stage switching elements with the output module forward outputs of the switching elements of one stage connected to the input module forward inputs of the switching elements of the next stage, and with the input module reverse outputs of the switching elements of one stage connected to the output module reverse inputs of the switching elements of the previous stage,

said input module forward inputs for said first stage switching elements connected to receive incoming packet signals from said input controller forward outputs, and said input module reverse outputs for said first stage switching elements connected to provide reverse signals to said input controller reverse inputs,

said output module forward outputs for said last stage switching elements connected to transmit packet signals to said output controller forward inputs, and said output module reverse inputs for said last stage switching elements connected to receive reverse signals from said output controller reverse outputs.

5,367,519

MULTIPLE ACCESS COMMUNICATION SYSTEM CAPABLE OF DECIDING A CONNECTION ROUTE AMONG A CENTRAL STATION, REPEATER STATIONS, AND TERMINAL STATIONS

Koju Arai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

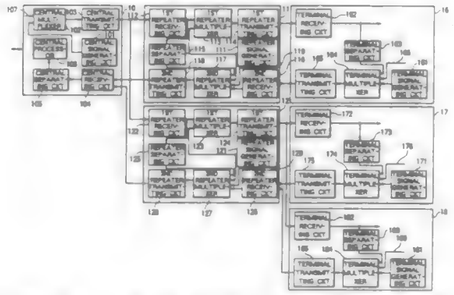
Continuation of Ser. No. 842,648, Feb. 27, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,266

Claims priority, application Japan, Feb. 27, 1991, 3-032563

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **3 Claims**

1. A multiple access communication system comprising a central station having a central station number, at least one repeater station having a repeater station number, and a plurality of terminal stations which have terminal station numbers, each of said central station, said at least one repeater station, and said plurality of terminal stations having a different respective station number, said central station transmitting a central downward signal to said at least one repeater station that immediately succeeds said central station and receiving a central upward signal from said at least one repeater station, said at least one repeater station being for repeating said central downward signal from said central station to said plurality of terminal stations and for transmitting a repeater upward signal as said central upward signal to said central station, said central downward signal comprising a central number signal representative of said central station number that is assigned to said central station, said central upward signal comprising said central number signal and a repeater number signal representative of said repeater station number that is assigned to said at least one repeater station, each of said plurality of terminal stations receiving a repeater downward signal comprising said repeater number signal representative of said repeater station number that is assigned to said at least one repeater station which immediately precedes said each of the plurality of terminal stations, each of said plurality of terminal stations respectively transmitting a terminal upward signal comprising said repeater number signal and a terminal number signal representative of said terminal station number that is respectively assigned to each of said plurality of terminal stations, said at least one repeater station repeating said terminal upward signal



specified by each of said plurality of terminal stations from each of said plurality of terminal stations to said central station, said central station comprising:

a central number signal generating circuit for generating said central number signal;

a central multiplexer supplied with a central transmission data signal representative of central transmission data and connected to said central number signal generating circuit for multiplexing said central transmission data signal and said central number signal into a central multiplexed signal to transmit said central multiplexed signal to said at least one repeater station as said central downward signal;

a central separating circuit for separating a first pair of said central number signal and said repeater number signal from said central upward signal and separating a second pair of said repeater number signal and said terminal number signal from said terminal upward signal received through said at least one repeater station; and

processing means connected to said central separating circuit for carrying out a predetermined process operation by the use of said first and said second pairs to decide a connection route among said central station, said at least one repeater station, and said plurality of terminal stations.

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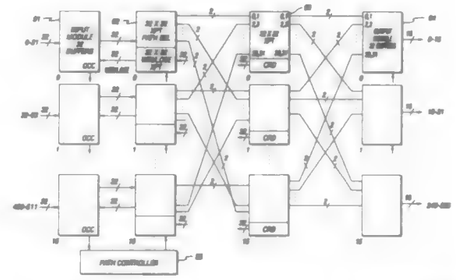
METHOD AND SYSTEM FOR ROUTING CELLS IN AN ATM SWITCH

Robert R. Cordell, Middletown, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Nov. 25, 1992, Ser. No. 981,715

Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **25 Claims**



1. A switch for routing information cells having destination addresses from input ports of the switch to output ports of the switch on a cell-by-cell basis, the switch comprising:

a plurality of input buffers having outputs for storing the information cells, the input buffers being arranged in one or more groups;

a central switch fabric including a plurality of crosspoint switch switching planes having inputs and outputs, each of said switching planes having a constant signal delay that is the same for all of the switching planes,

a path switch associated with each group of input buffers for selectively connecting the signals appearing on the outputs of the buffers of that group to the inputs of the plurality of switching planes;

a plurality of contention resolution devices (CRD), one CRD being associated with each of said switching planes for resolving contention among the information cells for access to the outputs of said switching plane on the cell-by-cell basis, each CRD providing indication signals for winning and losing information cells;

a feedback path means for communicating win/lose signals from the CRDs back to the plurality of input buffers from which the winning and losing information cells originated, said feedback path means maintaining routing correspondence between input buffers and switching planes for both the signals traveling in a forward direction and the associated win/lose contention signals traveling in a reverse direction; and

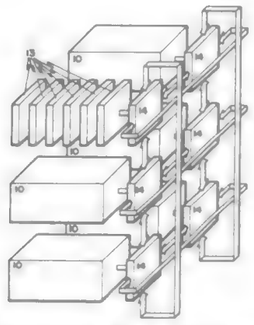
an output buffered switch including a plurality of output buffers arranged in one or more groups for receiving the information cells from the outputs of the plurality of switching planes for routing the information cells to the proper output port of the switch in accordance with destination addresses of the information cells.

5,367,521

TELECOMMUNICATIONS PACKET SWITCHING SYSTEM

Francisco G. Sanchez; Pedro L. Martin; Juan D. Solis; Bernardo E. Allen, and Juan J. Blanco, all of Madrid, Spain, assignors to Telefonica de Espana, S.A., Madrid, Spain

Continuation of Ser. No. 788,147, Nov. 5, 1991, abandoned. This application Nov. 16, 1993, Ser. No. 152,878
Claims priority, application Spain, Nov. 5, 1990, 9002803
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—60 **5 Claims**



1. A telecommunications packet switching system for use with a network, the system comprising:

a) network station means for carrying out packet switching and for connecting to the network, the network station including:

l) a plurality of network station elements connected to each other in a flat array configuration, each of the network station elements including connections to at least one processing unit through a local interconnecting route, each of the processing units including a plurality of line interface elements, the local interconnecting route including:

i) means for providing communication among a set of the line interface elements included within each of the processing units; and

ii) means for providing communication to line interface elements of other processing units;

b) control station means, connected to the network station means, for operating and administering the telecommunications packet switching system;

c) a plurality of management terminal means, connected to the control station means, for operating the telecommunications packet switching system; and

d) software being distributed throughout the telecommunications packet switching system.

5,367,522

MULTIMEDIA COMMUNICATING APPARATUS

Masatoshi Otani, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

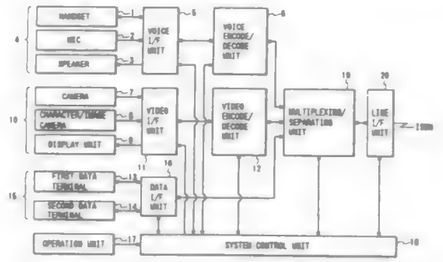
Filed Feb. 19, 1992, Ser. No. 836,913
Claims priority, application Japan, Feb. 21, 1991, 3-048887; May 20, 1991, 3-143827
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **11 Claims**

4. A multimedia communicating apparatus comprising:

communication means for performing communication by transmitting and receiving plural types of media information in multiplexed form including voice, data and video information; and

control means for allocating a predetermined transfer speed to each of said plural types of media information and transmitting said plural types of media information using said communication means during the data information communication in one communication,

said control means being operative for detecting variations in quantity of information included in said media information transmitted, and for automatically changing said transfer speed which was set before data communication, during the data communication in the one communication,



depending on the variations in quantity of information detected,

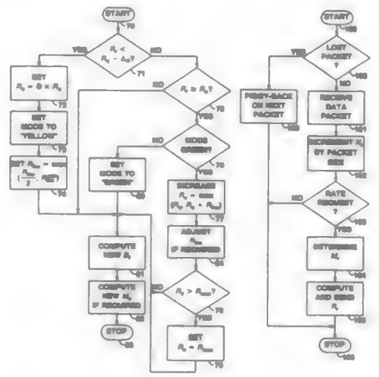
wherein said variations in quantity of information included in the data information are detected in said control means, and the transfer speed of data is automatically changed depending on said variations detected in said control means.

5,367,523

ADAPTIVE RATE-BASED CONGESTION AND FLOW CONTROL IN PACKET COMMUNICATIONS NETWORKS

Rong-Feng Chang, Chai-yi, Taiwan, Prov. of China; John E. Drake, Jr., Pittsboro, N.C.; Levent Gün, Durham, N.C., and Lap T. Huynh, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 26, 1993, Ser. No. 112,737
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **22 Claims**



12. A closed loop rate-based method for controlling data packet flow and congestion in a packet communications network providing a connection for the transmission of packets between a sending endnode and a receiving endnode of said network, said method comprising the steps of

determining at said receiving endnode the lower of either the rate at which said packets are delivered from said network to said receiving endnode or the rate at which said packets are delivered from said receiving endnode to a connected user,

transmitting said lower rate from said receiving endnode to said sending endnode of said network, and

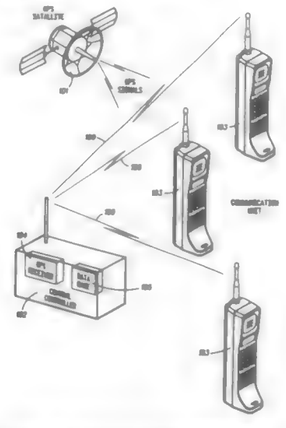
adjusting the rate at which packets are launched from said sending endnode on said connection in response to said lower rate.

5,367,524

METHOD FOR SEQUENTIAL DATA TRANSMISSION

Kenneth E. Rideout, Jr., Vernon Hills, and Donald C. Mills, Glenview, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 739,953, Aug. 5, 1991, abandoned. This application May 17, 1993, Ser. No. 62,032
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—104.1 **9 Claims**



5. In a wireless communication system that comprises a plurality of communication units, wherein each of the plurality of communication units includes a global positioning system receiver, wherein a global positioning system provides a clock signal, and wherein the plurality of communication units sequentially transmits data to a target during its allocated predetermined time slot of a selected cycle time, a method for a communication unit of the plurality of communication units to transmits its data, the method comprises the steps of:

a) monitoring the clock signal when the clock signal is available;

b) determining when its allocated predetermined time slot is active based on the clock signal;

c) transmitting data to the target when the communication units allocated predetermined time slot is active.

5,367,525

Patent Not Issued For This Number

5,367,526

MEMORY MODULE, PARITY BIT EMULATOR, AND ASSOCIATED METHOD FOR PARITY BIT EMULATION

Edmund Y. Kong, 3590 Finch Pl., Fremont, Calif. 94555

Filed Jun. 22, 1993, Ser. No. 80,699
Int. Cl.[5] G06F *11/10;* **H03M** *13/00*
U.S. Cl. 371—51.1 **21 Claims**

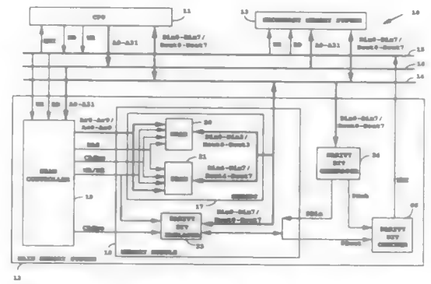
1. A memory module comprising:

an input/output port for receiving during a first write cycle a first data word and for receiving during a second write cycle a second data word and an input parity bit for said second data word having an undetermined parity format:

a memory coupled to said input/output port in which said received first data word is stored during said first write cycle and from which said stored first data word is retrieved during a read cycle;

parity format determining circuitry coupled to said input-/output port and responsive to said received second data word and to said received input parity bit for determining said parity format of said received input parity bit and generating a corresponding parity format flag identifying said determined parity format; and

a parity bit generator coupled to said memory and responsive to said retrieved first data word and said parity format flag for generating during said read cycle an output parity



bit for said retrieved first data word having said determined parity format;

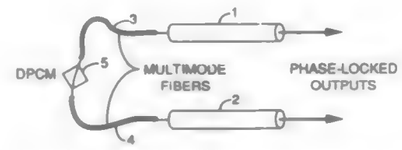
wherein said input/output port is also coupled to said parity bit generator for providing during said read cycle said retrieved first data word and said generated output parity bit.

5,367,527

PHASE-CONJUGATE-COUPLED MULTIMODE OPTICAL FIBER GEOMETRY FOR OPTICAL COUPLING OF LASERS

Mark T. Gruneisen, Tijeras, N. Mex., assignor to United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 13, 1993, Ser. No. 106,025
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—9 **12 Claims**



1. A method for phase locking first and second lasers in which coupling beams propagate in first and second waveguides comprising the steps of:

(a) injecting at least a portion of the output of said first laser into the first of said waveguides;

(b) injecting at least a portion of the output of said second laser into the second of said waveguides;

(c) after propagation through said waveguides, double phase conjugating each of said outputs from said first and second lasers;

(d) injecting the double phase conjugated output of said first laser into said second laser; and

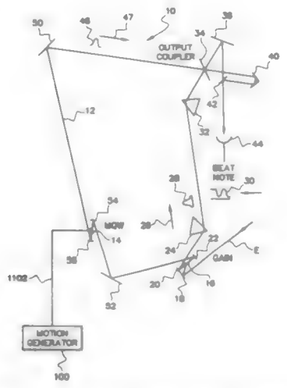
(e) injecting the double phase conjugated output of said second laser into said first laser.

5,367,528

MOTION INDUCED ELIMINATION OF DEAD BAND IN A SHORT PULSE LASER GYRO

Jean-Claude M. Diels, Albuquerque, N. Mex., and Ming Lai, Escinitas, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1992, Ser. No. 880,802
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—18 16 Claims



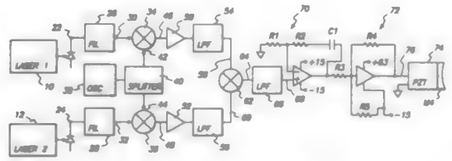
1. A passively mode-locked laser gyro having a laser path, comprising:
(a) an optical gain medium located in the laser path;
(b) a multiple quantum well (MQW) device located in the laser path optically connected to the optical gain medium; and
(c) means for moving the MQW device continuously relative to the optical gain medium.

5,367,529

APPARATUS AND METHOD FOR IMPROVED TIME SYNCHRONIZATION OF PULSED LASER SYSTEMS

Kevin K. Holsinger, Menlo Park, and David L. Wright, Redwood City, both of Calif., assignors to Spectra-Physics Lasers, Inc., Mountain View, Calif.

Filed Jun. 15, 1993, Ser. No. 77,301
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—30 4 Claims



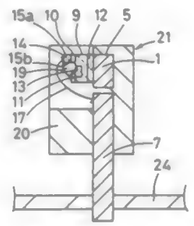
4. A system for reducing pulse timing jitter in a first and second mode-locked laser each having the same fundamental repetition frequency comprising:
a first device capable of measuring rise times of less than 60 pS exposed to the output beam of the first laser and adapted to generate a first signal corresponding to the time varying intensity of the output beam;
a second device capable of measuring rise times of less than 60 pS exposed to the output beam of the second laser and adapted to generate a second signal corresponding to the time varying intensity of the output beam;
a first bandpass filter electrically connected to said first device capable of selectively filtering said first signal to provide a first filtered band of signals having a base frequency substantially greater than the fundamental repetition frequency;
a second bandpass filter electrically connected to said second device capable of selectively filtering said second signal to provide a second filtered band of signals having said base frequency;
a local oscillator capable of generating an LO signal consisting of a sine wave of frequency equal to said base frequency offset by an intermediate frequency;
a first mixer having as a first input said first filtered band of signals and as a second input said LO signal and as an output a first mixed signal;
a second mixer having as a first input said second filtered band of signals and as a second input said LO signal and as an output a second mixed signal:
a first low-pass filter connected to said output of said first mixer and having an output carrying a first IF signal:
a second low-pass filter connected to said output of said second mixer and having an output carrying a second IF signal;
a phase detector having a first input connected to said output of said first low-pass filter and a second input connected to said output of said second low-pass filter and an output on which is carried an error signal;
means for converting said error signal into a PZT signal;
means for applying said PZT signal to a PZT attached to a mirror in a resonant cavity of the second mode-locked laser to vary the cavity length of said resonant cavity.

5,367,530

SEMICONDUCTOR LASER APPARATUS

Yoshio Noishiki, Kurayoshi; Hirofumi Yoneyama, and Yoshimasa Kishimoto, both of Tottori, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of Japan

Continuation of Ser. No. 68,066, May 27, 1993, abandoned. This application Mar. 22, 1994, Ser. No. 216,508
Claims priority, application Japan, May 29, 1992, 4-138696; Jul. 29, 1992, 4-202377; Jul. 31, 1992, 4-205327
Int. Cl.[5] H01S *3/18*
U.S. Cl. 372—43 12 Claims



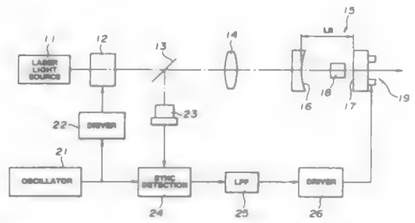
1. A semiconductor laser apparatus comprising:
a lead having a mount surface and a positioning means, said positioning means being provided at a periphery of the mount surface;
a beam receiving device mounted on the mount surface of the lead;
a semiconductor laser device mounted on the lead so that a beam optical axis thereof is situated at a position higher than a position at which a beam receiving surface of the beam receiving device is situated, said semiconductor laser device having a beam irradiating surface at each of its front and rear, a laser beam irradiated from the rear irradiating surface being led to the beam receiving surface of the beam receiving device; and
an insulating frame formed to partly cover the lead and to nip an obverse surface and a reverse surface of the lead so that at least the front irradiating surface of the semiconductor laser device is exposed.

5,367,531

LASER LIGHT BEAM GENERATING APPARATUS

Naoya Eguchi, Tokyo, and Michio Oka, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 1, 1993, Ser. No. 24,627
Claims priority, application Japan, Mar. 2, 1992, 4-078753
Int. Cl.[5] H01S *3/086, 3/139*
U.S. Cl. 372—98 3 Claims



1. A laser light beam generating apparatus comprising:
at least one light beam source for emitting a light beam;
a first reflector;
a second reflector;
a non-linear optical crystal element provided between said first and second reflectors, a light beam from said light beam source being incident on said non-linear optical crystal element through said first reflector;
actuating means for actuating at least one of said first and second reflectors along an optical axis of the light beam emitted from said light beam source;
a phase modulator between said light beam source and said first reflector;
controlling means for driving said phase modulator and controlling said actuating means responsive to a driving signal of said phase modulator, said controlling means including,
an oscillator generating the driving signal of said phase modulator;
a photodetector for receiving the light beam through said first reflector; and
a synchronous detecting circuit for detecting an output signal from said photodetector and the driving signal from said oscillator, and wherein said synchronous detecting circuit includes;
a band-pass filter supplied with an output signal from said photodector;
a phase delay circuit for delaying the phase of said driving signal from said oscillator;
a sample-and-hold circuit for sampling and holding an output signal from said band-pass filter responsive to an output signal from said phase delay circuit; and
a low-pass filter supplied with an output from said sample-and-hold circuit.

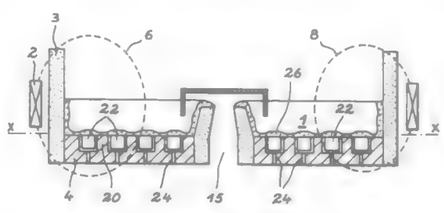
5,367,532

FURNACE FOR THE CONTINUOUS MELTING OF OXIDE MIXTURES BY DIRECT INDUCTION WITH HIGH FREQUENCY, A VERY SHORT REFINING TIME AND A LOW ENERGY CONSUMPTION

Roger Boen, St. Alexandre; Christian Ladirat, Saint Laurent des Arbes; Jean-Pierre Gailka, Venejan, and Henri Pilliol, Avignon, all of France, assignors to Commissariat a l'Energie Atomique, France

PCT No. PCT/FR92/00199, § 371 Date Nov. 2, 1992, § 102(e) Date Nov. 2, 1992, PCT Pub. No. WO92/15531, PCT Pub. Date Sep. 17, 1992
PCT Filed Mar. 4, 1992, Ser. No. 946,298
Claims priority, application France, Mar. 5, 1991, 91 02596
Int. Cl.[5] H05B *6/22*
U.S. Cl. 373—156 6 Claims

1. A furnace for the continuous melting of an oxide mixture, comprising:
means for directly inducing high frequency heating currents in the oxide mixture;
an intake for continuously supplying the oxide mixture to be melted;
a nozzle for continuously discharging the melted mixture;
a circular metal crucible having cold walls; and
a hearth formed from a refractory material having a plurality



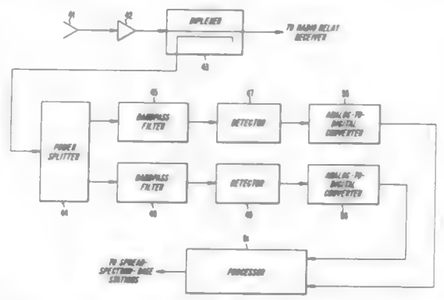
of independent metal inserts embedded in said refractory material, each of said metal inserts being constituted by a tube portion having an inlet and an outlet for a flow of cooling liquid, said hearth being transparent to the means for inducing high frequency heating currents in the oxide mixture and sufficiently cooled by said flow of cooling liquid to ensure the formation and maintenance of a protective solid crust of said oxide mixture at said hearth.

5,367,533

DYNAMIC CAPACITY ALLOCATION CDMA SPREAD SPECTRUM COMMUNICATIONS

Donald L. Schilling, Sands Point, N.Y., assignor to InterDigital Technology Corporation, Wilmington, Del.

Continuation of Ser. No. 891,135, Jun. 1, 1992, Pat. No. 5,224,120, which is a continuation-in-part of Ser. No. 622,235, Dec. 5, 1990, Ser. No. 700,788, May 15, 1991, Pat. No. 5,185,762, Ser. No. 700,789, May 15, 1991, Pat. No. 5,161,168, and Ser. No. 626,109, Dec. 14, 1990, Pat. No. 5,228,056. This application Jun. 7, 1993, Ser. No. 72,783
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 14 Claims



1. A system for dynamically allocating power and capacity of a spread spectrum system having at least one spread-spectrum-base station, with said spread spectrum system overlaying, at least in part, in frequency and in a same geographical area as a radio-relay system, said radio relay system having at least one relay station with the geographical area, said radio-relay system having a signal with a radio-relay bandwidth, comprising:
a first receiver, located near a relay receiver of said radio-relay system, for measuring with a bandwidth approximately equal to the radio-relay bandwidth for transmitting

the signal to said radio-relay system, a first power level within the radio-relay bandwidth of said radio-relay system;

a second receiver, located near said relay receiver of said radio-relay system, for measuring with a bandwidth approximately equal the radio-relay bandwidth for transmitting the signal to said radio-relay system, a second power level outside the radio-relay bandwidth of said radio-relay system;

means, located at each relay station, for coupling the signal received at said relay station to at said first receiver and to said second receiver;

means for comparing the first power level to a predetermined threshold;

means for generating a ratio signal from the first power level and the second power level; and

first means for regulating, when the first power level exceeds the predetermined threshold, a power level transmitted from the spread-spectrum-base station located within the geographical region in response to the ratio signal; and

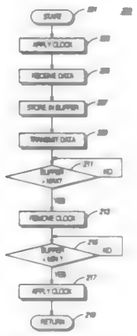
second means for regulating, when the first power level exceeds the predetermined threshold, a number of user units accessing the spread-spectrum-base station.

5,367,534

SYNCHRONOUS FLOW CONTROL METHOD

Wei-Tai Chou, Hazel Green, and Fred C. Killmeyer, Huntsville, both of Ala., assignors to Universal Data Systems, Inc., Huntsville, Ala.

Filed Jun. 16, 1993, Ser. No. 78,943
Int. Cl.[5] H04B *1/38*; H04L *25/36*
U.S. Cl. 375—8 **10 Claims**



1. In a modem arranged for coupling to a channel and further arranged for coupling to a data terminal, the modem arranged for transmitting a clock signal to the terminal at a clock rate, the modem including a buffer and arranged for receiving data signals from the terminal based on the clock signal and for storing the data signals in the buffer and for transmitting the data signals from the buffer to the channel at a channel rate, a method for the modem to control the flow of data signals from the terminal, the method comprising the steps of: at the modem:

(a) applying the clock signal to the terminal;

(b) receiving data signals from the terminal;

(c) storing the data signals n the buffer;

(d) transmitting the data signals from the buffer to the channel;

(e) determining when the quantity of data signals stored in the buffer exceeds a maximum threshold; and,

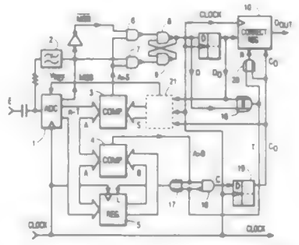
(f) when the quantity of data signals stored in the buffer exceeds the maximum threshold, removing the clock signal from the terminal, thereby interrupting the flow of data signals from the terminal.

5,367,535

METHOD AND CIRCUIT FOR REGENERATING A BINARY BIT STREAM FROM A TERNARY SIGNAL

Werner Scholz, Gehrden, Germany, assignor to Deutsche Thomson-Brandt GmbH, Germany

Filed Feb. 21, 1992, Ser. No. 840,053
Int. Cl.[5] H04L *25/34*
U.S. Cl. 375—17 **10 Claims**



1. Apparatus for processing a binary bitstream derived from an analog ternary signal having positive and negative polarity amplitude excursions with respect to an intermediate reference level, said apparatus comprising:

an analog-to-digital converter for converting said analog signal into a bit coded binary digital signal comprising a sampled data bitstream, said converter operating at a bit rate and providing output binary digital data samples of said analog signal, each sample containing designated bits representing the polarity of an analog signal sample and representing the amplitude of said analog signal sample;

a sensing circuit responsive to a signal from said analog-to-digital converter for providing an output signal indicating bitstream level transitions;

a bitstream processing circuit;

a source providing a reference threshold value;

a comparator network for providing output signals in response to said threshold value, to said transition indicating signal, and to digital samples from said converter for (a) in a first comparison, comparing a current amplitude representative sample to said threshold value and (b) in a second comparison, comparing a current amplitude representative sample exceeding said threshold with a preceding sample exceeding said threshold to determine a maximum sample value which is reached before said threshold is exceeded by a different polarity sample associated with a level transition; and

means for coupling said comparator network output signals to said bitstream processing circuit.

5,367,536

PARALLEL TRANSMISSION OF TDMA SYNC AND DATA BURSTS BY ARTIFICIAL FREQUENCY SELECTIVE FADE AND DECISION FEEDBACK EQUALIZATION

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 20, 1993, Ser. No. 109,681
Claims priority, application Japan, Aug. 21, 1992, 4-222712
Int. Cl.[5] H03C *5/00*; H03D *5/00*
U.S. Cl. 375—42 **4 Claims**

1. A time division multiplex communication system having a transmitting station and a receiving station, comprising:

first modulator means at said transmitting station for modulating a baseband data burst upon an intermediate frequency carrier and producing an intermediate frequency data burst having a substantially flat spectrum;

frequency fade means for causing said intermediate frequency data burst to produce a spectral null in a center frequency region of the spectrum thereof;

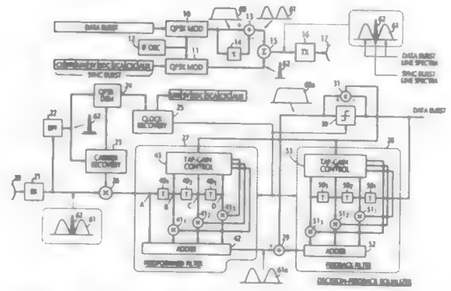
second modulator means for modulating a baseband synchronization burst upon said carrier and producing an intermediate frequency synchronization burst having a spectral energy distribution in a frequency region corresponding to the center frequency region of said intermediate frequency data burst;

multiplexer means for combining the intermediate frequency data burst having said spectral null and said intermediate frequency synchronization burst and producing an intermediate frequency combined burst signal;

radio transmitter means for transmitting said intermediate frequency combined burst signal from said transmitting station;

radio receiver means at said receiving station for receiving the intermediate frequency combined burst signal from said transmitting station;

a bandpass filter having a passband corresponding to the spectral null of said intermediate frequency data burst, said bandpass filter being connected to said radio receiver means for recovering said intermediate frequency synchronization burst from the intermediate frequency combined burst signal;



carrier recovery means connected to said bandpass filter for recovering said intermediate frequency carrier from the intermediate frequency synchronization burst;

demodulator means connected to said bandpass filter and said carrier recovery means for demodulating said intermediate frequency synchronization burst with the recovered intermediate frequency carrier and recovering said baseband synchronization burst;

a synchronous detector connected to said radio receiver means and said carrier recovery means for operating on the intermediate frequency combined burst signal with said recovered intermediate frequency carrier and producing a baseband combined burst signal; and

a decision feedback equalizer connected to the synchronous detector for extracting said baseband data burst having a spectral null from the baseband combined burst signal and eliminating an intersymbol interference from the extracted baseband data burst to recover said baseband data burst having a substantially flat spectrum.

5,367,537

SAW-BASED FSK MODULATING CIRCUIT

Fred J. Anderson, Lakeville, Ohio, assignor to Delco Electronics Corp.

Filed May 24, 1993, Ser. No. 65,336
Int. Cl.[5] H04L *27/12*
U.S. Cl. 375—65 **1 Claim**

1. A low-power Frequency Shift Keying (FSK) modulating circuit comprising:

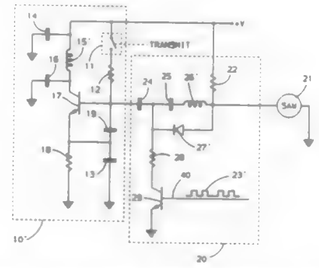
a voltage source having power and ground terminals;

a Radio Frequency (RF) oscillator amplifier having an input port;

a Surface Acoustic Wave (SAW) transducer having an output port;

an inductor having first and second terminals, said first terminal coupled to said input port of the RF oscillator amplifier and said second terminal coupled to said output port of the SAW transducer and to said power terminal of the voltage source;

a Positive Intrinsic Negative (PIN) switching diode having an anode and a cathode, said anode coupled to said second terminal of the inductor, to said output port of the SAW transducer and to said power terminal of the voltage source, said cathode coupled to said first terminal of the inductor and to said input port of the RF oscillator amplifier; and



a transistor switch having a base, an emitter and a collector, said collector being coupled to said input port of the RF oscillator amplifier, to said first terminal of the inductor and to said cathode of the PIN switching diode, and said emitter being coupled to said ground terminal of the voltage source;

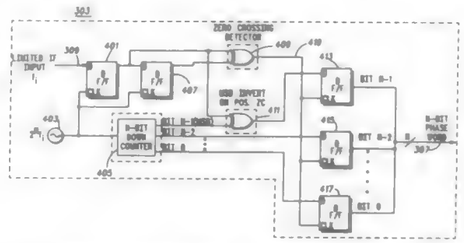
whereby a high logic signal applied to the base causes oscillation at a first frequency determined by the SAW transducer independent of the inductor and a low logic signal applied to the base causes oscillation at a second frequency determined by the combination of the SAW transducer and the inductor.

5,367,538

APPARATUS AND METHOD FOR DIRECT PHASE DIGITIZING

Christopher P. LaRosa, Lake Zurich, and Michael J. Carney, Palatine, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 806,515, Dec. 13, 1991, abandoned. This application Sep. 21, 1993, Ser. No. 124,995
Int. Cl.[5] H03D *3/18*
U.S. Cl. 375—82 **13 Claims**



13. A direct phase digitizing apparatus for use in a radio receiver and accepting a first analog signal having a phase and a first predetermined frequency, the direct phase digitizing apparatus comprising:

first means for generating a reference oscillator signal having a second predetermined frequency;

second means for generating an estimated phase map having a predetermined resolution and dependent upon said second predetermined frequency;

means for detecting positive and negative predetermined-voltage level crossings of the first analog signal;

means, responsive to said means for detecting, for storing said estimated phase map and for generating a digital phase signal therefrom.

5,367,539

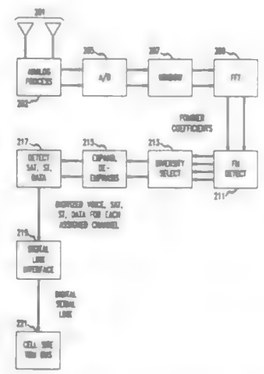
DIGITAL BLOCK PROCESSOR FOR PROCESSING A PLURALITY OF TRANSMISSION CHANNELS IN A WIRELESS RADIOTELEPHONY SYSTEM

Terry W. Copley, Township of Harding, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 31, 1991, Ser. No. 815,683

Int. Cl.[5] H04B *7/10;* **G06F** *15/332*

U.S. Cl. 375—100 **23 Claims**



14. In a wireless radio telephone system, apparatus connected for receiving voice and data signals in block form from a group of individual radio signals each incorporating a single FM carrier that is distinct in frequency; comprising

a receiver assembly connected for processing the group of individual radio signals in the block form and converting the radio signals to an IF frequency;

an analog-to-digital converter connected for converting the radio signal in the block form into a digital time series format;

a window function processor connected for applying a window function to the digital time series;

a fast Fourier transform processor operative and connected for isolating in frequency multiple spectra associated with each individual FM carrier in the block form;

an FM detector connected for estimating an instantaneous frequency of individual FM carrier based on the first moment of power spectra associated with the individual FM carrier and recovering voice and signal information of each FM carrier;

a detection circuit connected for recovering voice and data signals, SAT (supervisory audio tones) and manchester encoded data;

a data link interface connected for formatting the voice and data signals for digital transmission to a control and processing location.

5,367,540

TRANSVERSAL FILTER FOR USE IN A DIGITAL SUBSCRIBER LINE TRANSMISSION INTERFACE

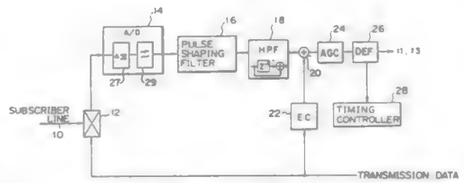
Mitsuo Kakuishi; Seiji Mikyoshi; Hiroaki Itokawa; Nobukazu Koizumi; Yutaka Awata, and Yuko Kurosaki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 19, 1993, Ser. No. 4,895

Claims priority, application Japan, Jan. 16, 1992, 4-006005; Jul. 21, 1992, 4-193969

Int. Cl.[5] H04B *1/10*

U.S. Cl. 375—103 **17 Claims**



1. A transversal filter for use in a receiving part of a digital subscriber line interface device comprising:

a decimation filter means for eliminating noise from a received signal by converting a frequency of the received signal, a pulse shaping filter means having tap coefficients corresponding to a transfer function in which at least one 0 point is provided outside a unit circle in the z plane and having an impulse response having a ringing characteristic in which the inverted polarity of the main response is added to the main response;

a high-pass filter means for receiving the output of said pulse shaping filter means and for passing a high frequency signal; and

means for providing said decimation filter means with properties of said pulse shaping filter means and said high-pass filter means.

5,367,541

METHOD AND APPARATUS FOR SETTING ASYNCHRONOUS TRANSMISSION CHARACTERISTICS IN A TELECOMMUNICATION EQUIPMENT INCLUDING A SCC

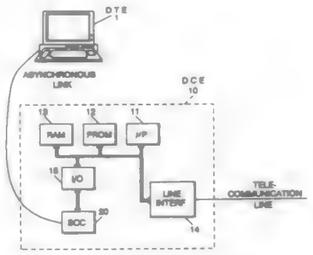
Christian Barbero, Saint Laurent du Var, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1992, Ser. No. 877,513

Claims priority, application European Pat. Off., Nov. 29, 1991, 91480176.6

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—106 **9 Claims**



1. In telecommunication equipment having a Serial Communication Controller (SCC), a method for setting asynchronous transmission characteristics of transmission rate, parity mode, and the number of bits per character of the Serial Communication Controller (SCC) to match an actual transmission rate, parity mode and number of bits per character of a signal asynchronously received by the equipment, comprising the steps of:

setting the SCC at the highest communication rate that is supported by the SCC, and setting the SCC in a no parity mode with 8 bits per character;

receiving a predetermined sequence of characters comprising a succession of "Carriage-Return" (CR) and "." characters;

processing at least three received characters ("CR", ".", "CR") by comparing said received characters with predetermined character values corresponding to specific transmission rates, parity modes, and number of bits per character;

detecting parity errors if said received characters have a parity mode different than the no parity mode;

setting, in response to said processing step and said detecting step, said SCC with the number of bits per character and the parity mode of said received characters.

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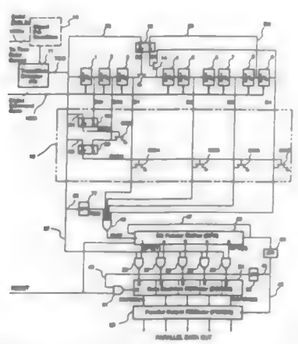
DIGITAL DATA RECOVERY USING DELAY TIME RULERS

Bin Guo, Cupertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 19, 1992, Ser. No. 901,335

Int. Cl.[5] H04L *7/02*

U.S. Cl. 375—110 **15 Claims**



1. Apparatus for recovering data having a bit clock period from a serial train of incoming binary data without the use of a phase locked loop oscillator comprising,

(a) a delay circuit having an input and output;

(b) transition detector means for electrically analyzing said serial train of incoming data and providing a first signal output marking the time of the occurrence of a change from one binary state to the other in said train of incoming data;

(c) means for simultaneously and immediately launching a pulse into said delay circuit responsive to said occurrence of said first signal output;

(d) said delay circuit being a series connected plurality of delay unit elements, each said delay unit causing delay to said pulses passing there through;

(e) all digital circuit means for sequentially determining the binary state of each bit in said serial train of incoming binary data by assigning a one state to each period initiated by the occurrence of said first signal and assigning a zero state for each period established by the passage of said launched pulse through delay unit elements having a total delay time of said bit clock period during which time no said first signal is issued by said transition detection means, and

(f) means for storing said sequentially determined ones and zeros as the deserialized binary sequence.

5,367,543

CIRCUIT FOR DETECTING SYNCHRONIZING SIGNAL IN FRAME SYNCHRONIZATION DATA TRANSMISSION

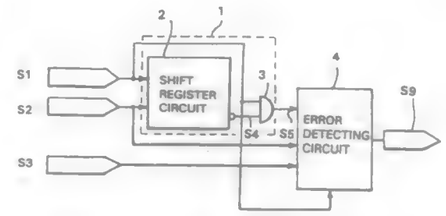
Yasutomo Uomoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 31, 1992, Ser. No. 938,411

Claims priority, application Japan, Aug. 30, 1991, 3-220495; Jun. 3, 1992, 4-142552

Int. Cl.[5] H04L *7/06, 7/00;* **H04J** *3/06*

U.S. Cl. 375—116 **11 Claims**



1. A circuit for detecting a frame synchronizing signal in frame synchronization data transmission, all bits of said frame synchronizing signal being designated with codes of an identical logic level, the circuit comprising

first means for providing a first signal which takes the logic 1 exclusively during the period that said frame synchronizing signal is received, said first means including delaying means, inverting means and first gate means, said delaying means delaying an enable signal received through said frame synchronization data transmission by a transmission period of the frame synchronizing signal and delivering a delayed enable signal, said inverting means inverting the delayed enable signal and said first gate means providing the logical product of said enable signal and the inverted signal of said delayed enable signal and delivering the logical product as said first signal, and

second means for extracting any error bit present in said frame synchronizing signal, said second means being provided with second gate means which receives both said first signal and the data signal transmitted through said frame synchronization data transmission and produces a second signal corresponding to the logic product of the two signals, the second signal being the error bit.

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DATA STREAM FRAME SYNCHRONISATION

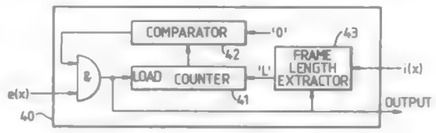
Simon D. Brueckheimer, London, Great Britain, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 116,949, Sep. 7, 1993, abandoned, which is a continuation of Ser. No. 29,986, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 517,254, May 1, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 147,691

Claims priority, application United Kingdom, May 4, 1989, 8910255

Int. Cl.[5] H04L *7/00*

U.S. Cl. 375—116 **16 Claims**



8. An apparatus for detecting frame synchronisation of a data stream, which frames are of a fixed length or of a variable

but determinable length indicated by a pattern or by information in the data stream, which said frames include a fixed length header at a predetermined position in each frame, which said header has a linear systematic code structure including information symbols and check symbols, which said check symbols were derived from a polynomial representative of the information symbols of the header, which said polynomial has coefficients valid over a Galois field, by their polynomial division by a code generator polynomial whose coefficients are defined over a Galois field, the apparatus including means which divide an incoming data stream by the code generator polynomial, means which simultaneously divide a preceding but delayed incoming data stream by the code generator polynomial, means which compare any remainder of the first mentioned division with any remainder of the second mentioned division, the presence of a predetermined relationship between the remainders corresponding to the said incoming data stream being a valid code word, and means which correlate valid code word positions and indicate frame synchronisation in response to receipt of a succession of said valid code word once every frame length for a predetermined number of frames, and also including means in response to said valid code word, which determine the frame length from the data stream if the frames are of said variable but determinable length.

5,367,545

ASYNCHRONOUS SIGNAL EXTRACTING CIRCUIT

Haruo Yamashita, Yokohama, and Yuji Takizawa, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

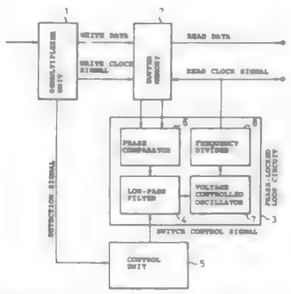
PCT No. PCT/JP91/00900, § 371 Date Mar. 4, 1992, § 102(e) Date Mar. 4, 1992, PCT Pub. No. WO92/01342, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 4, 1991, Ser. No. 838,230

Claims priority, application Japan, Jul. 4, 1990, 2-175168

Int. Cl.[5] H04L *7/027*

U.S. Cl. 375—118 **6 Claims**



1. An asynchronous signal extracting circuit comprising:

a demultiplexer which demultiplexes asynchronous signals including valid data, detects a pointer adjustment, generates a pointer adjustment detection signal upon detection of the pointer adjustment, and extracts clock signals in synchronism with the demultiplexing of said valid data;

a buffer memory that writes said demultiplexed valid data using said clock signals extracted from the asynchronous signals and transmitted from said demultiplexer to said buffer memory as write clock signals;

a phase-locked loop circuit which forms read clock signals for said buffer memory; and

a control unit which switches a frequency band of a low-pass filter in the phase-locked loop circuit periodically or in response to said pointer adjustment detection signal.

5,367,546

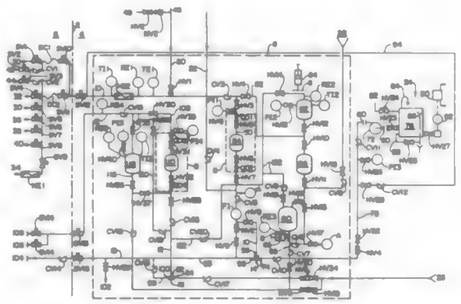
FLUID SAMPLING SYSTEM FOR A NUCLEAR REACTOR

Louis K. Lau, and Nazm I. Alper, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 23, 1993, Ser. No. 81,753

Int. Cl.[5] G21C *3/56*

U.S. Cl. 376—392 **7 Claims**



1. A method of extracting a sample gas from the interior of a nuclear reactor containment, the sample gas being in solution in a sample liquid located inside the containment, comprising the steps of:

providing an eductor pump outside the containment;

providing an ejector pump outside the containment;

providing a sample liquid conduit from the containment to a suction port of the eductor pump, the sample liquid conduit being characterized by a liquid sampling section comprising a sampling chamber, first liquid valve means for isolating the sampling chamber from the containment and second liquid valve means for isolating the sampling chamber from the eductor pump, the liquid sampling section being located outside the containment;

providing a return liquid conduit from a discharge port of the eductor pump to the interior of the containment;

providing a sample gas conduit from the sampling chamber to a suction port of the ejector pump, the sample gas conduit being characterized by a gas sampling section comprising an expansion cylinder located at an elevation above the sampling chamber and having a sample gas extraction port, first gas valve means for isolating the expansion cylinder from the sampling chamber and second gas valve means for isolating the expansion cylinder from the ejector pump, the gas sampling section being located outside the containment;

providing a return gas conduit connecting a discharge port of the ejector pump to the interior of the containment;

generating a flow of a non-radioactive motive liquid into an inlet port of the eductor pump and out the discharge port of the eductor pump;

creating a first suction in the sample liquid conduit with the flow of motive liquid;

opening the first and second liquid valve means;

drawing the sample liquid into the sampling chamber with the first suction;

closing the second liquid valve means to isolate the sampling chamber from the eductor pump;

closing the first liquid valve means to isolate the sampling chamber from containment;

closing the first gas valve means;

generating a flow of a non-radioactive motive gas into an inlet port of the ejector pump and out the discharge port of the ejector pump;

creating a second suction in the sample gas conduit with the flow of motive gas;

evacuating the expansion cylinder by opening the second gas valve means;

closing the second gas valve means; and

opening the first gas valve means.

5,367,547

FUEL ASSEMBLY FOR BOILING WATER REACTOR AND CORE

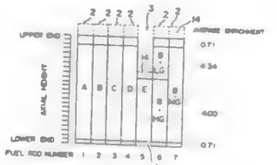
Kazuki Hida; Yasushi Hirano, both of Kawasaki; Koji Hirukawa, and Tsuyoshi Nakajima, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 22, 1993, Ser. No. 79,527

Claims priority, application Japan, Jun. 22, 1992, 4-162856; Oct. 7, 1992, 4-268769

Int. Cl.[5] G21C *3/32*

U.S. Cl. 376—435 **17 Claims**



1. A fuel assembly for a boiling water reactor, which comprises

an upper tie plate;

a lower tie plate;

a plurality of fuel rods which are filled therein with a plurality of fuel pellets, said plurality of fuel rods comprising long fuel rods and short fuel rods which are each shorter in the active portion than each of said long fuel rods, the length of said short fuel rods being longer than half of the length of said long fuel rods, said short fuel rods dispersed between said long fuel rods;

a plurality of spacers for retaining said fuel rods in a spaced relation from each other;

a fuel bundle comprising said plurality of fuel rods with said plurality of spacers and disposed between said upper and lower tie plates;

the concentration of fissile material in each of said short fuel rods being lower than the mean concentration of fissile material in the cross section of said fuel bundle, and in the case where said fuel bundle is vertically subdivided into two regions, an upper and lower one, at the upper end of the active portion of each of said short fuel rods, the means concentration of fissile material in the cross section of said fuel bundle in a lower region being lower than that in the cross section of said fuel bundle in an upper region; and

a polygonal tube-like channel box which encloses said fuel bundle and constitutes flow paths for coolant.

5,367,548

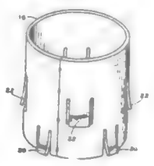
GUIDE TUBE RETAINER

Douglas J. Attix, Lynchburg, Va., assignor to B&W Fuel Company, Lynchburg, Va.

Filed Mar. 15, 1994, Ser. No. 213,321

Int. Cl.[5] G21C *3/30*

U.S. Cl. 376—446 **2 Claims**



1. In a reconstitutable fuel assembly having an upper end fitting with a plurality of bores therethrough each sized to receive a guide tube and at least one control rod guide tube with the guide tube including an upper end sleeve having a radially extending first shoulder at the lower end for engagement with the lower surface of said upper end fitting, an integral reusable locking arrangement between the guide tube and upper end fitting comprising:

a. said upper end fitting having a counterbore in each of said bores sized to receive a guide tube, the diameter of said counterbore being larger than the diameter of said bore so as to provide a second shoulder therebetween; and

b. a cylindrical tube concentric with said guide tube and fixedly attached to said upper end sleeve said cylindrical tube having a plurality of flexible tabs extending outwardly and circumferentially spaced apart around the lower end and substantially at the mid section of said tube such that the tabs at the mid section of said tube are received in the counterbore in the upper end fitting for engagement with said second shoulder, the lower end surface of said tube being engaged with said first shoulder.

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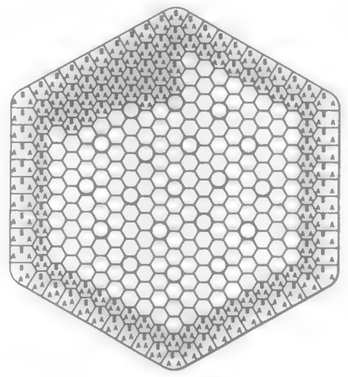
HEXAGONAL GRID

Stephen C. Hatfield, Granby, Conn., assignor to Combustion Engineering, Inc., Conn.

Filed May 6, 1993, Ser. No. 57,788

Int. Cl.[5] G21C *3/352*

U.S. Cl. 376—462 **2 Claims**



1. A hexagonal grid comprising:

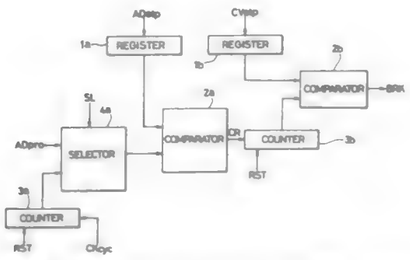
a plurality of first castled strips, said first strips having castling along only a first edge and an essentially smooth opposite second edge, said first strips being bent into a zigzag shape and arranged parallel to one another with the castling projections extending in a first direction; and

a plurality of second castled strips, said second strips having castling along only one edge and an essentially smooth opposite second edge, said second strips being bent into a zigzag shape and arranged parallel to one another with the castling projections extending in a second direction opposite said first direction, said second strips being interleaved with said first strips and arranged such that first edge portions which extend between adjacent castle segments of said first strip are located in an abutting face-to-face relationship with second edge portions which extend between adjacent castle segments of said second strip and so that overlap between said first and second strips which forms a double thickness portion, is totally absent,

said first strip including a plurality of relatively rigid arch features, and said second strip including a plurality of relatively rigid arch features and a plurality of relatively resilient spring features, said relatively resilient spring features each being elongate and about twice as long as said relatively rigid arch features and each arranged to extend along a castled portion of each of said second strips, said relatively resilient spring features each having first and second ends which are rigidly connected to the strip in which the spring feature is formed, said first and

second strips being arranged with respect to one another to form a plurality of hexagonal cells.

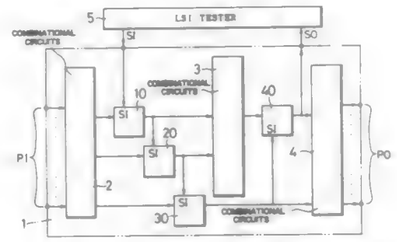
5,367,550
BREAK ADDRESS DETECTING CIRCUIT
Ryuji Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Oct. 19, 1993, Ser. No. 138,772
Claims priority, application Japan, Oct. 30, 1992, 4-292838
Int. Cl.[5] H03K *21/00*
U.S. Cl. 377—39 **9 Claims**



1. A break address detecting circuit comprising:
first data holding means for holding and outputting first data of a predetermined value;
first counter means initializable by a reset signal for counting up clock pulses in synchronism with a clock signal and outputting counted data;
selector means for selecting and outputting in response to a selection signal either a program address or output data from said first counter means;
first comparator means for comparing output data from said selector means and output data from said first data holding means and outputting a comparison result signal which is of an active level when the compared data agree with each other;
second counter means initializable by said reset signal for counting up the comparison result signal each time the comparison result signal is of an active level and outputting counted data;
second data holding means for holding and outputting second data of a predetermined value; and
second comparator means for comparing output data from said second data holding means and output data from said second counter means and outputting a break signal which is of an active level when the compared data agree with each other.

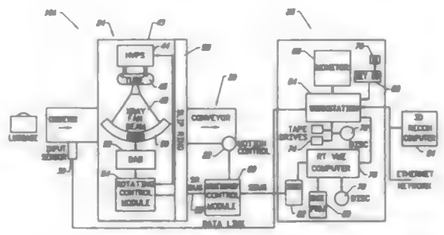
5,367,551
INTEGRATED CIRCUIT CONTAINING SCAN CIRCUIT
Kenzo Okumura, Nara, and Satoru Matumoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 2, 1992, Ser. No. 908,175
Claims priority, application Japan, Jul. 4, 1991, 3-164481
Int. Cl.[5] G11C *7/00*
U.S. Cl. 377—80 **23 Claims**

1. An integrated circuit comprising:
a plurality of combinational circuits;
a plurality of sequential circuits, each connected to at least one combinational circuit, and selectively operable in a shift register state or in a normal non shift register state,
interconnecting at least two of the plurality of sequential circuits for operating in the form of a shift register upon receipt of an external signal of a first state applied thereto and the plurality of sequential circuits operating normally in non shift register state upon receipt of an external signal of a second state applied thereto; and
a single clock switch circuit, connected to each of the sequential circuits, for applying a system clock signal to each of the plurality of sequential circuits upon receipt of the external signal of the second state and for applying a



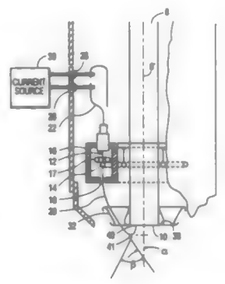
scan clock signal to each of the plurality of sequential circuitry connected in the form of a shift register upon receipt of the external signal of the first state.

5,367,552
AUTOMATIC CONCEALED OBJECT DETECTION SYSTEM HAVING A PRE-SCAN STAGE
Kristian R. Peschmann, San Francisco, Calif., assignor to In Vision Technologies, Inc., Foster City, Calif.
Continuation-in-part of Ser. No. 770,552, Oct. 3, 1991, Pat. No. 5,182,764. This application Jan. 21, 1993, Ser. No. 6,828
The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.
Int. Cl.[5] G01N *23/04*
U.S. Cl. 378—57 **22 Claims**



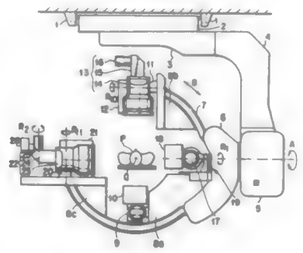
1. An apparatus for automatically detecting a target object within a container, said apparatus comprising:
means for prescanning said container to form prescan data;
means for determining a first selected location and a second selected location for CT scanning of said container, said determining means utilizing said prescan data;
means for simultaneously CT scanning said container at said first selected location and said second selected location to form CT data, said CT scanning means being responsive to said determining means; and
means for analyzing said CT data to identify target object data within said CT data having an associated mass corresponding to an associated mass of said target object in said container, said analyzing means receiving said CT data from said scanning means.

5,367,553
X-RAY TUBE COMPRISING AN EXIT WINDOW
Johannes F. M. d'Achard Van Enschut; Theodorus J. J. M. Jenneskens, and Antonius H. M. Swemmers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 25, 1991, Ser. No. 646,954
Claims priority, application Netherlands, Jan. 29, 1990, 9000203
Int. Cl.[5] H01J *35/00*
U.S. Cl. 378—137 **12 Claims**



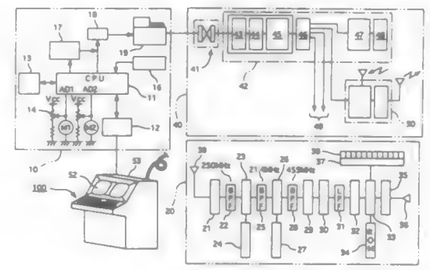
1. An x-ray tube comprising:
an envelope having a radiation exit window and accommodating therein a cathode,
an anode, and
electron-optical means in the envelope having an electron beam exit window for generating a field which collimates an electron beam emanating from the cathode and for directing the beam onto the anode at an angle of at least approximately 45°, via a field induced trajectory having an inversion point.

5,367,554
X-RAY DIAGNOSTIC APPARATUS OF A CIRCULATORY ORGAN SYSTEM
Tohru Kobayashi, Kuroiso; Shuzo Yamamoto, Tochigi; Hiroshi Sakaniwa, Otawara, and Satoshi Ohta, Imaichi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 28, 1992, Ser. No. 936,632
Claims priority, application Japan, Aug. 29, 1991, 3-218473
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—196 **5 Claims**



1. An X-ray diagnostic apparatus comprising:
a C-shaped ring member;
a first X-ray source unit supported by a first rotation mechanism such that it can rotate about a horizontal axis, said first rotation mechanism being held by said C-shaped ring member along the horizontal axis passing a central point of said C-shaped ring member;
first X-ray image detecting means supported by a second rotation mechanism such that it can rotate about said horizontal axis, said second rotation mechanism being held by said C-shaped ring member along the horizontal axis at a location opposed to said first X-ray source unit with respect to the central point;
a second X-ray source unit held by said C-shaped ring member along a vertical axis passing the central point;
second X-ray image detecting means held by said C-shaped ring member along the vertical axis at a location opposed to said second X-ray source with respect to the central point;
a base portion holding said C-shaped ring member such that said C-shaped ring member can incline about the horizontal axis; and
control means for rotating said first X-ray source unit about the horizontal axis together with said first X-ray image detecting means in a direction opposite to a direction of inclination of said C-shaped ring member through an angle identical to the angle of the inclination, thereby controlling said first and second rotation mechanisms so as to keep horizontal said first X-ray source unit and said first X-ray image detecting means.

5,367,555
MEDICAL DATA REPORTER
Takashi Isoyama, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha and Kabushiki Kaisha Shinsangyokaihatsu, Japan
Filed Mar. 28, 1991, Ser. No. 676,379
Claims priority, application Japan, Mar. 29, 1990, 2-82156
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—38 **11 Claims**



1. A medical data reporter for reporting medical data to a remote location comprising:
a medical data transmitter for receiving medical data from a medical monitoring device which measures at least one biological function of an organism associated therewith, and for transmitting the medical data to a telephone network, said medical data transmitter including transmitting means for transmitting the medical data to one of a plurality of phone numbers associated with said telephone network and selecting means for selecting one of said plurality of phone numbers for the transmission of said medical data, wherein said selecting means selects a first telephone number for the transmission of data when it detects no irregularities in the biological functions monitored by said monitoring device and selects a second telephone number for the transmission of data when it detects an irregularity in one or more of the biological functions monitored by said monitoring device; and
a medical data receiver located remotely from said medical data transmitter for receiving said medical data from said telephone network and providing said data to a user of said medical data receiver, said medical data receiver displaying said medical data in response to the transmission of data to said first telephone number by said medical data transmitter and said medical data receiver displaying said medical data and emitting an audible sound in response to the transmission of data to said second telephone number.

5,367,556

PORTABLE RADIO TELEPHONE USED WITH AN ADAPTOR UNIT HAVING A HAND-FREE CIRCUIT

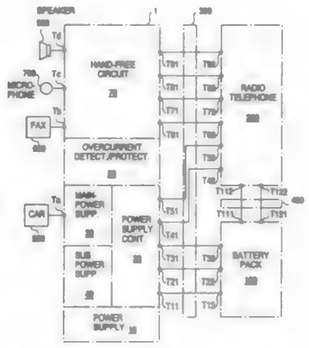
Kuniyoshi Marui, Saitama; Goichi Sato, Tokyo; Buntaro Sawa, Kanagawa, and Hiroshi Sato, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 9, 1992, Ser. No. 818,557

Claims priority, application Japan, Jan. 11, 1991, 3-002299

Int. Cl.[5] H04M *11/00;* **H04B** *1/38, 1/16*

U.S. Cl. 379—58 **10 Claims**



5. A radio telephone apparatus capable of operating in at least a communication mode where a speech radio link is established, said radio telephone apparatus comprising an adapter unit and a portable radio unit attachable to said adapter unit, said portable radio unit comprising:

a receiver for receiving incoming radio frequency signals and for converting the received incoming radio frequency signals into received audio signals;

a transmitter for converting input audio signals applied thereto into transmission radio frequency signals and for transmitting the transmission radio frequency signals;

an earpiece for outputting received audio signals applied thereto;

a mouthpiece for receiving sound and for generating input audio signals in response thereto;

a first contact-type connector for receiving input audio signals applied thereto and for outputting received audio signals and control signals applied thereto; and

a controller for selectively supplying the received audio signals from said receiver to said earpiece and the input signals from said mouthpiece to said transmitter, for supplying the received audio signals from said receiver to said first contact-type connector and input signals from said first contact-type connector to said transmitter, and for supplying at least one control signal to said first contact-type connector; and the adapter unit comprising:

a second contact-type connector, attachable to and detachable from said first contact-type connector, for receiving the received audio signals and the at least one control signal from said first contact-type connector and for outputting input audio signals applied thereto to said first contact-type connector when said first contact-type connector is attached to said second contact-type connector;

a speaker for outputting received audio signals applied thereto;

a microphone for receiving sound and for generating input audio signals in response thereto; and

a hand-free circuit coupled to said second contact-type connector, said speaker, and said microphone for supplying the received audio signals to said speaker and for supplying the input audio signals to said second contact-type connector responsive to the at least one control signal when said radio telephone apparatus is in a communication mode and said first contact-type connector, detached from said second contact-type connector, is attached to said second contact-type connector.

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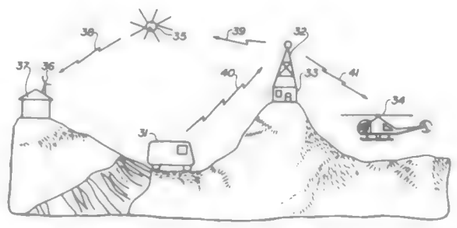
MOBILE RADIO DATA ANALYSIS SYSTEM

Richard L. Ozenbaugh, II, Glendale, Ariz., assignor to Private Line Communications, Glendale, Ariz.

Filed Mar. 23, 1993, Ser. No. 36,195

Int. Cl.[5] H04M *11/00;* **H04J** *3/24, 3/12;* **H04B** *15/00*

U.S. Cl. 379—58 **1 Claim**



1. In combination with a mobile radio system including an antenna for receiving and transmitting

dispatch calls between radio dispatch units, the radio dispatch units comprising half duplex units which can only transmit when not receiving and vice versa, and

a telephone call between a telephone of a customer of the mobile radio system and a telephone line,

a controller operatively associated with said antenna for

directing said antenna to receive and transmit each of the dispatch calls between the dispatch units by frequency hopping over a limited number of selected airborne transmission channels,

directing said antenna to receive and transmit the telephone call over one of a selected group of airborne transmission channels between the transmitter and the telephone, the one of the selected group of airborne channels used for the telephone call being fixed during the duration of the call,

means operatively associated with the controller for generating a real time continuous synchronous data stream indicating

when one of the selected group of airborne transmission channels is being used for the telephone wall, and

the identity of the customer telephone receiving the telephone call,

the improvements for monitoring the length of time a customer utilizes the system during the telephone call, said improvements including

(a) means for receiving said synchronous data stream and producing a real time asynchronous data stream containing primary information packets of information replicating the data in said synchronous data stream;

(b) means for producing a supplemented asynchronous data stream by integrating in said asynchronous data stream in real time information secondary information packets identifying digits dialed during the telephone call;

(c) a computer for receiving said supplemented asynchronous data stream and comparing the primary information packets and secondary information packets to generate a record of the telephone use information indicating the total time required to complete the telephone call and the telephone number dialed during the call;

(d) means for storing said telephone use information; and,

(e) means for recalling and displaying said telephone use information.

5,367,558

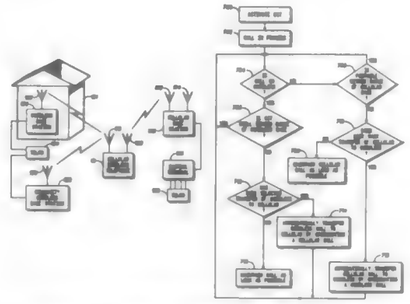
CELLULAR CORDLESS TELEPHONE

Steven F. Gillig, Roselle, and Glen E. Pederson, St. Charles, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 103,169, Aug. 6, 1993, abandoned, which is a continuation of Ser. No. 826,322, Jan. 22, 1992, abandoned, which is a division of Ser. No. 660,180, Feb. 19, 1991, Pat. No. 5,127,042, which is a continuation of Ser. No. 516,375, Apr. 30, 1990, abandoned, which is a division of Ser. No. 249,041, Sep. 23, 1988, Pat. No. 4,989,230. This application Feb. 28, 1994, Ser. No. 203,711

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—59 **8 Claims**



1. A method of re-establishing telephone communications between a called telephone number and a cellular cordless telephone on one of a cellular telephone system and a cordless telephone system when call transfer has been selected by the user thereof during a telephone call, said cellular cordless telephone having a cellular transceiver and a cordless transceiver and originating and receiving cellular telephone calls on cellular radio channels of a cellular telephone system and cordless telephone calls on at least one cordless radio channel of a cordless base station coupled to a telephone landline having a landline telephone number, said method comprising the steps of:

monitoring the signal quality of said telephone call on said one of said cellular telephone system and said cordless telephone system;

determining if at least one radio channel is available for a call on the other one of said cellular telephone system and said cordless telephone system;

determining if call transfer has been selected; and

automatically originating another telephone call to said called telephone number on said other one of said cellular telephone system and said cordless telephone system determined to have at least one available radio channel, in response to a predetermined change in the signal quality of said telephone call and a determination that call transfer has been selected.

5,367,559

SEQUENTIAL POWER ESTIMATION FOR CELLULAR SYSTEM HANDOFF

Stanley Kay, Rockville; Youngky Kim, N. Potomac; Lou King, Mt. Airy; Ashok D. Mehta, Gaithersburg, all of Md., and Charles Barnett, Sterling, Va., assignors to Hughes Aircraft Company, Los Angeles, Calif.

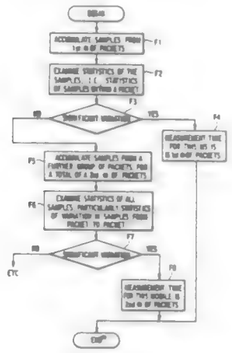
Filed May 11, 1992, Ser. No. 881,271

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—60 **13 Claims**

1. In a method of handing off a mobile station from a serving cell to a target cell in a cellular telephone system, based on a determination of signal intensity from said mobile station, a method for measuring said signal intensity comprising the steps of:

a) sampling a received signal intensity from the mobile station for a predetermined duration, and



b) determining from samples collected in step a) whether further sampling is or is not required to determine said received signal intensity to within a predetermined degree of accuracy.

5,367,560

TELEPHONE ANSWERING DEVICE WITH A PLURALITY OF PASSWORDS

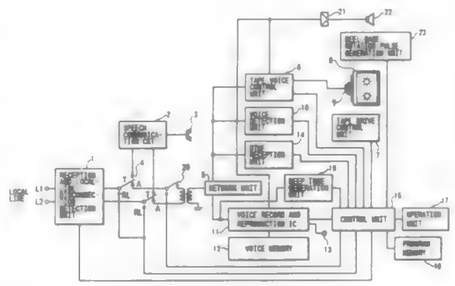
Yoshiyuki Watanabe, Kokubunji, and Kozo Toda, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 601,436, Oct. 23, 1990, abandoned. This application May 21, 1992, Ser. No. 888,465

Claims priority, application Japan, Oct. 24, 1989, 1-276477; Mar. 6, 1990, 2-54395

Int. Cl.[5] H04M *11/10*

U.S. Cl. 379—72 **41 Claims**



1. A recording and reproduction apparatus comprising:

recording and reproduction means for recording information on a medium, and reproducing the information recorded on the medium wherein said recording and reproduction means records predetermined information after first information is recorded;

generating means for generating a signal depending upon an operation of said recording and reproduction means and independently of the information on the medium: and

control means for controlling said recording and reproduction means to reproduce the information recorded on the medium, wherein said control means detects a record termination position by using the predetermined information recorded at the record termination position on the medium in accordance with a reproduction interruption, the detection being performed during a period of time

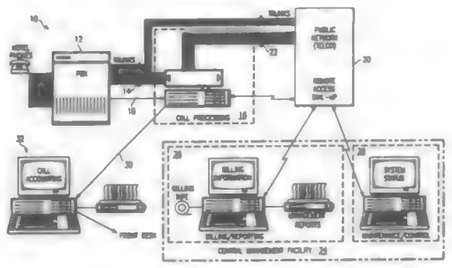
determined by the signal generated by said generating means.

5,367,561

CASH ACCESS SYSTEM AND METHOD OF OPERATION

B. Michael Adler; John A. Hird, both of Dallas, and Lindsey D. Owen, Carrollton, all of Tex., assignors to First City Texas-Dallas, Dallas, Tex.

Filed Feb. 10, 1992, Ser. No. 832,978
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 4 Claims



1. A telecommunications system used to instruct a cashier to disburse requested funds to a patron of the system, the system comprising:

a selected input terminal, remotely located from the cashier, for relaying a fund-disbursement request from the patron;

input circuitry for receiving said request, prompting the patron via said input terminal for information needed to process said request, receiving said information from the patron via said input terminal, and processing said request;

authorizing circuitry coupled to said input circuitry and responsive to said information for validating said request;

relaying circuitry coupled to said authorizing circuitry and responsive to said validation for instructing the cashier to disburse the requested funds; and

accounting circuitry responsive to said input circuitry and said authorizing circuitry for creating a record of said fund-disbursement request, determining a charge for said disbursement, and billing the patron for said charge,said accounting circuitry comprising converting circuitry for converting the amount of requested funds from a first currency into a corresponding amount of a second currency, wherein said accounting circuitry determines said charge for said disbursement in said second currency.

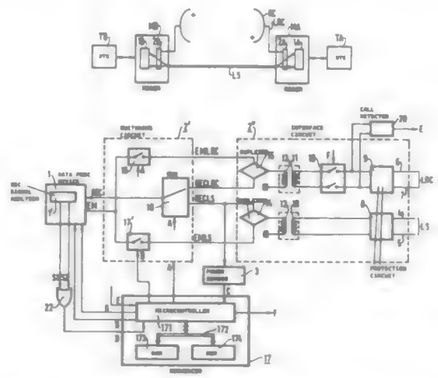
5,367,562

METHOD AND DEVICE FOR RETURNING TO A NORMAL COMMUNICATION LINK AFTER USING A STANDBY LINK

Abdallah Tourbah, Chilly Mazarin, and PAtrick Ruminy, Villiers sur Orge, both of France, assignors to Alcatel Cit, Paris, France

Continuation of Ser. No. 684,741, Apr. 15, 1991, abandoned.
This application Mar. 1, 1994, Ser. No. 203,766
Claims priority, application France, Apr. 23, 1990, 90 05130
Int. Cl.[5] H04M *1/24, 11/00, 7/00*
U.S. Cl. 379—93 16 Claims

1. A method of returning to a normal link after using a standby link in a data communication system comprising said normal link and standby link between two terminal equipments, said normal link comprising at least one transmission medium and the standby link being used in the event of malfunctioning of the normal link, said method comprising, in case of malfunctioning of the normal link, and once the standby link is used for transmitting data signals to be transmitted between said two terminal equipments, simultaneously transmitting a data signal by one of said two terminal equipments, referred to hereinafter as the terminal equipment initiating the continuity verification procedure, on the normal link and on the standby



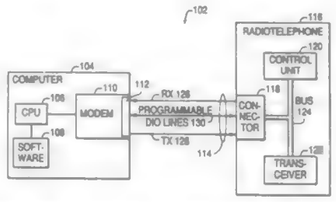
link, and detecting by the other terminal equipment the presence or absence of power on the normal link to preliminarily verify the continuity of the normal link.

5,367,563

PROGRAMMABLE UNIVERSAL MODEM SYSTEM AND METHOD FOR USING THE SAME

Joseph B. Sainton, Allen, Tex., assignor to Spectrum Information Technologies, Inc., Manhasset, N.Y.

Division of Ser. No. 863,568, Apr. 6, 1992, Pat. No. 5,249,218.
This application Jul. 26, 1993, Ser. No. 96,895
The portion of the term of this patent subsequent to Sep. 28, 2010, has been disclaimed.
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—98 66 Claims



26. A method of connecting a computing device to one of a plurality of types of telephone systems for transfer of data, comprising the steps of:

installing a modem in the computing device, the modem having a plurality of digital telephone control lines with functions that vary under control of different software drivers corresponding to different types of digitally controlled telephone systems, including a jack facilitating connection of the modem to either a landline telephone system or a radiotelephone system, including selective connection of said digital telephone control lines;

providing a telephone terminal for the telephone system to be used;

connecting between the modem jack structure and the telephone terminal a cable establishing sufficient connections of said digital telephone control lines to the telephone terminal such that said computing device can control data transfer connections made in said communications network;

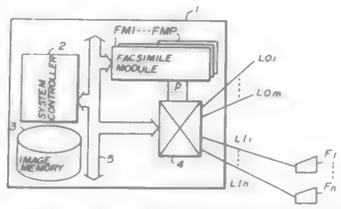
activating software in said computer to select an appropriate one of said software drivers for the telephone system and cable being used, the software operating to cause transmissions on said digital telephone control lines to perform a data transfer connection control function using the connected telephone terminal.

5,367,564

STORAGE-AND-FORWARD APPARATUS

Yasuo Sutoh, Ebina, and Toshiaki Tanigawa, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 11, 1991, Ser. No. 653,289
Claims priority, application Japan, Feb. 13, 1990, 2-32994; May 16, 1990, 2-127910
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 9 Claims



1. A storage-and-forward apparatus which accommodates a plurality of first lines and a plurality of second lines, each of the first lines being coupled to a communication terminal and each of the second lines being coupled to a communication terminal, said storage-and-forward apparatus comprising:

exchange means for carrying out a connection and a disconnection between each of the first lines and each of the second lines;

memory means for storing information transmitted via each of the first lines from said communication terminal;

first mode communication means, coupled to said exchange means, for directly relaying information transmitted via each of the first lines from said communication terminal to a destination coupled to a corresponding one of the second lines;

second mode communication means, coupled to said exchange means and said memory means, for storing the information via each of the first lines from said communication terminal in said memory means and for transmitting the information stored in said memory means to said destination via a corresponding one of the second lines; and

mode changing means, coupled to said first and second mode communication means, for activating said second communication means in a case where the communication terminal transmits a command requesting a communication by said first mode communication means to said storage-and-forward apparatus when the destination is communicating with another communication terminal, said storage-and-forward apparatus further comprising means for, when said second mode communication means is activated by said mode changing means, informing the communication terminal, which has requested communication to be performed by said first mode communication means, of activation of the second mode communication means.

5,367,565

MIXED MODE COMMUNICATION APPARATUS

Tsunehiro Matsui, and Toshiaki Koue, both of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

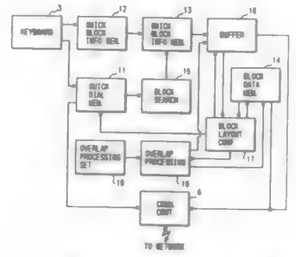
Filed Oct. 15, 1992, Ser. No. 959,924
Claims priority, application Japan, Oct. 16, 1991, 3-294906
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 8 Claims

1. A mixed mode communication apparatus comprising:

quick dial storing means for storing dial numbers of called stations in association with quick dial numbers;

quick block data storing means for storing stereotyped data corresponding to each dial number that is stored in said quick dial storing means;

adding means operating such that when a quick dial is received, said adding means reads the stereotyped data associated with the received quick dial from said quick block data storing means, said adding means adding the readout stereotyped data to document body data to be transmitted;



block layout confirming means for confirming a layout of data blocks depending on whether or not the stereotyped data laps over document body data, when said stereotyped data is added to the document body data; and

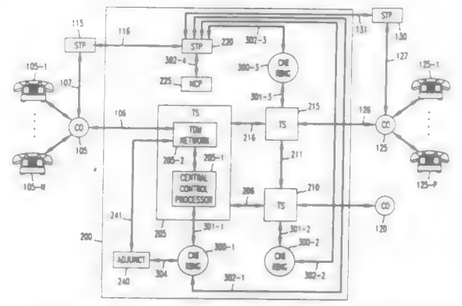
overlap processing means for performing an editorial processing so as to prevent the stereotyped data from lapping over the document body data when said block layout confirming means confirms that the stereotyped data laps ever the document body data.

5,367,566

COMMON CHANNEL SIGNALING MESSAGE INTERCEPT SYSTEM

Warren R. Moe; Larry A. Russell; Teresa L. Russell, all of Atlantic Highlands; Catherine A. Schevon, Madison, all of N.J., and Roger E. Stone, Naperville, Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 27, 1991, Ser. No. 813,708
Int. Cl.[5] H04M *3/00, 1/64, 15/00, 3/42*
U.S. Cl. 379—243 20 Claims



7. A network comprising a plurality of interconnected switches for establishing connections between individual ones of said switches to forward respective incoming calls to their intended destinations, said switches exchanging messages with one another via a communications path in order to establish said connections, said incoming calls being associated with respective services, said network comprising

means for interfacing associated ones of said switches with said communications path, and wherein said means for interfacing includes,

means for receiving messages via said communications path

and then supplying said messages to an associated one of said switches, and further includes

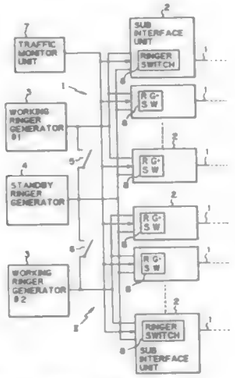
means, operative whenever one of said received messages is associated with an incoming call that is received at the associated one of said switches, for identifying, as a function of calling information contained in said message, a service logic that will be used to process said incoming call, for appending the identity of said service logic to said one message and supplying said one message to the associated on of said switches.

5,367,567

SUBSCRIBER APPARATUS WITH RINGER GENERATOR FOR SENDING RINGER SIGNAL TO SUBSCRIBER LINE

Eiji Sagawara, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 6, 1992, Ser. No. 879,853
Claims priority, application Japan, May 7, 1991, 3-101313
Int. Cl.[5] H04M *3/02, 3/36;* H04J *3/12*
U.S. Cl. 379—252 8 Claims



1. A subscriber apparatus comprising:

a plurality of subscriber interface units (2) accommodating subscriber lines (1) and divided into a plurality of groups;

a plurality of working ringer generators (3) each provided for a respective group of said subscriber interface units to transfer a first ringer signal thereto;

at least one standby ringer generator (4) which is switched to a predetermined group of the subscriber interface units when a fault occurs in a working ringer generator provided for said predetermined group;

at least one traffic monitoring unit (7) coupled to at least one of said groups of the subscriber interface units to monitor traffic of communication for said at least one of said groups of the subscriber interface units; and

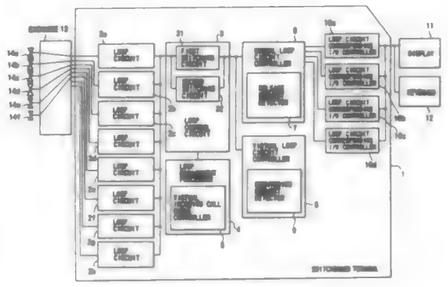
at least one ringer switching unit (8) which is connected to said at least one traffic monitoring unit and which routes a second ringer signal from the standby ringer generator to a subscriber line instead of said first ringer signal from said working ringer generator upon receiving a control signal indicating detection of an increase in traffic from said at least one traffic monitoring unit.

5,367,568

SWITCHBOARD TERMINAL APPARATUS HAVING A PLURALITY OF LOOP CIRCUITS

Nobuyuki Sakai, and Hiroaki Kikuchi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 15, 1992, Ser. No. 883,374
Claims priority, application Japan, May 17, 1991, 3-140675
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—309 7 Claims



1. A switchboard terminal apparatus connected to an exchange, comprising:

a plurality of loop circuits connecting said switchboard terminal to said exchange to handle incoming and outgoing calls, the number of said loop circuits exceeding a capacity of an interface of said switchboard terminal with a switchboard operator, said interface including means for information to said switchboard operator and for receiving operator inputs from said switchboard operator for a predetermined number of said incoming and outgoing calls, said predetermined number corresponding to said capacity of said interface;

real loop circuit control means for controlling one or more of said loop circuits each corresponding to one of said incoming and outgoing calls as real loop circuits, a number of calls being handled by said real loop circuits not exceeding said capacity of said interface;

virtual loop circuit control means for controlling loop circuits corresponding to calls which exceed said capacity of said interface as virtual loop circuits;

first switching means for switching control of one of said loop circuits handling a call from said real loop circuit control means to said virtual loop circuit control means in accordance with a call release request initiated by said switchboard operator;

second switching means for detecting an event requiring re-entry of a call being handled by one of said loop circuits controlled by said virtual loop circuit control means and displaying said call as a virtual incoming call and for switching control of said loop circuit handling said virtual incoming call from said virtual loop circuit control means to said real loop circuit control means by a reentering request operation of said switchboard operator; and

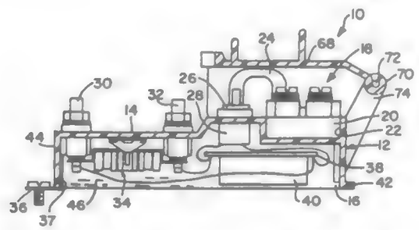
virtual queue control means for controlling the call in a virtual incoming call queue state during switching by said second switching means.

5,367,569

NETWORK INTERFACE MODULES

James A. Roach, Altamonte Springs, Fla.; James D. Chermak, Commack, N.Y.; Emanuel J. Pagliuca, Patchogue, N.Y., and Thomas J. Smith, Bay Shore, N.Y., assignors to Tll Industries, Inc., Copiague, N.Y.

Filed Apr. 15, 1991, Ser. No. 684,974
The portion of the term of this patent subsequent to Feb. 22, 2011, has been disclaimed.
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—412 11 Claims



1. An independently removably and replaceable network interface module contained within an elongated hollow housing for providing connections between a customer's equipment and the telephone company owned portion of a customer loop comprising:

A. said elongated hollow housing having;

a) a closed top surface having a socket means disposed thereon and an open bottom, and

b) first terminal means removably received at one end of said top surface adapted to be connected to said customer's equipment, and having;

c) cable means having a plug means disposed on one end thereof, the other end of said cable means being connected to said first terminal means, said cable plug means being adapted to be received into and cooperate with said housing socket means;

B. second terminal means having at least two terminals disposed at the opposite end of said top surface adapted to be connected to said telephone company owned portion of said customer loop;

C. overvoltage protection means disposed within said housing, said protection means having one terminal connected to a ground means and one terminal connected to each of said two terminals of said telephone company owned portion of said customer loop; and

D. circuit board means disposed within said housing, said circuit board means being adapted to be connected to said housing socket means and said second terminal means.

5,367,570

DUAL TELEPHONE

Hector D. Figueroa, 14-10 New Haven Ave., Far Rockaway, N.Y. 11691

Filed Jun. 25, 1993, Ser. No. 81,227
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—434 3 Claims

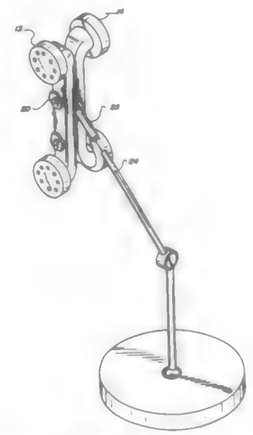
1. A dual telephone which allows two persons to simultaneously listen and talk without an incoming conversation being overheard by a third party, said telephone comprising:

a first telephone instrument having a center portion, a forward surface, a rearward surface, and a plurality of apertures extending through said center portion thereof, with a ear piece receiver and a voice transmitter positioned upon said forward surface of said first instrument thereof;

a second telephone instrument having a center portion, a forward surface, a rearward surface, and a plurality of apertures extending through said center portion thereof, with a ear piece receiver and a voice transmitter positioned upon said forward surface of said second instrument thereof;

a plurality of threaded fasteners, with each of said fasteners passing through a respective one of said apertures of both said first and second instruments to relasably couple said rearward surface of said first telephone instrument to said rearward surface of said second telephone instrument such that said forward surfaces of said instruments are facing in opposed directions;

a telephone wire providing electrical communication between said telephone instruments; and



a switch mounted within said second instrument center portion and projecting through a further aperture in said second instrument center portion, said switch being in electrical communication with said telephone wire for selectively permitting and precluding electrical communication between said first and said second instruments, whereby said switch is positioned along said second instrument center portion so as to be operable by either of said persons to effect selective operation of said second instrument.

5,367,571

SUBSCRIBER TERMINAL WITH PLUG IN EXPANSION CARD

Donald H. Bowen, Lilburn; Michael P. Harney, Atlanta, and David B. Lett, Duluth; all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Dec. 2, 1992, Ser. No. 983,910
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—20 34 Claims

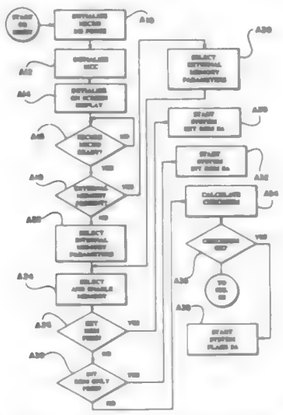
1. A subscriber terminal for a subscription television system, comprising;

control processor means operative for executing a control program for controlling the features of the subscriber terminal;

memory means for storing data and at least a portion of said control program for said control processor means;

a memory bus including data, address, and control lines for coupling said control processor means to said memory means; and

expansion means coupled to said memory bus for coupling to an optional second memory means for storing other por-

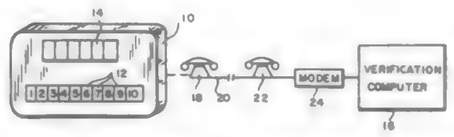


tions of said control program when said optional second memory means is present.

5,367,572
METHOD AND APPARATUS FOR PERSONAL IDENTIFICATION

Kenneth P. Weiss, 7 Park Ave., Newton, Mass. 02158

Continuation of Ser. No. 670,705, Mar. 18, 1991, Pat. No. 5,168,520, which is a continuation-in-part of Ser. No. 341,932, Apr. 21, 1989, Pat. No. 5,023,908, which is a continuation-in-part of Ser. No. 802,579, Nov. 27, 1985, Pat. No. 4,885,778, which is a continuation-in-part of Ser. No. 676,626, Nov. 30, 1984, Pat. No. 4,720,860. This application Jul. 31, 1992, Ser. No. 923,085
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—23 **5 Claims**



1. A system for verifying an individual, the system being of the type wherein a user is provided with a nonsecret identification, with a secret PIN and with a user device generating a unique, time-varying, nonpredictable code, the nonpredictable code at a given time being provided to a central verification computer to effect verification, the system characterized by:

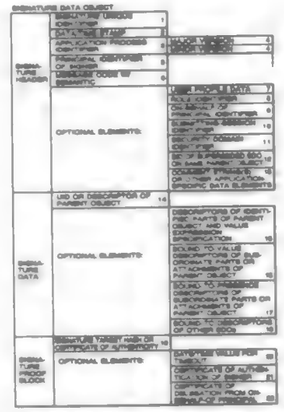
the user device having means for inputting the PIN, and means for utilizing the PIN in an algorithm to produce the nonpredictable code for a given time interval; and

the central verification computer having means for receiving the nonsecret identification and the nonpredictable code produced at the user device, means for utilizing the nonsecret identification to obtain the time-varying nonpredictable code for the user for the given time interval, and means for utilizing the communicated nonpredictable code and the obtained nonpredictable code to verify the user.

5,367,573
SIGNATURE DATA OBJECT

John Quimby, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 2, 1993, Ser. No. 86,946
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—25 **17 Claims**



1. A machine-readable data structure being a signature data object created by a machine-executed process encoding data representing a signal generated by a signer, said signature data object comprising:

(a) a signature header structure describing said signal and its meaning comprising (1) a signature unique identifier code, (2) a code representing a date and time, (3) an application process identification code identifying a process which created said signature data object, (4)a signer identification code, and (5) a message code imparting a semantic value to the signal generated by the signer;

(b) a parent object identification code identifying a parent object associated with said signature data object; and

(c) a signature proof structure describing security and validation methods used in constructing said signature data object and data associated with proving the authenticity and validity of said signal.

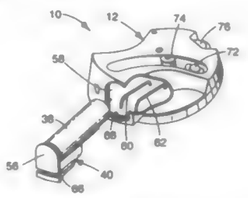
5,367,574

Patent Not Issued For This Number

5,367,575
ELECTRONIC STETHOSCOPE HAVING BATTERY CARRIAGE

Alan P. Dieken, and Gerald E. Drake, both of Oakdale, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 16, 1992, Ser. No. 992,850
Int. Cl.[5] A61B *7/04*
U.S. Cl. 381—67 **9 Claims**



1. An electronic stethoscope adapted to receive auscultatory sounds from a body, adapted to transmit, said auscultatory sounds to a user, and adapted to be powered by a battery having a positive terminal and a negative terminal, comprising:

a chestpiece adapted to be utilized in cooperation with said body;

an acoustical transducer cooperating with said chestpiece for receiving said auscultatory sounds and transforming said auscultatory sounds into an electrical input signal;

signal processing means being operatively coupled to said acoustical transducer for processing said electrical input signal to produce an electrical output signal;

speaker means operatively coupled to said signal processing means for converting said electrical output signal into an acoustical output signal;

an earpiece receiving said acoustical output signal and providing said acoustical output signal to, said user;

said chestpiece having a cavity adapted to contain said battery;

power supply means for supplying electrical power from said battery to said signal processing means, said power supply means having a positive electrical connection and a negative electrical electrical connection; and

a battery carriage being slidably insertable into said cavity of said chestpiece and adapted to receive said battery before said battery carriage is inserted into said cavity of said chestpiece, said battery carriage providing electrical continuity from said battery to said power supply means when said battery carriage is inserted into said cavity of said chestpiece, said battery carriage receiving said battery in only one orientation with said positive terminal of said battery being electrically coupled to said positive electrical connection;

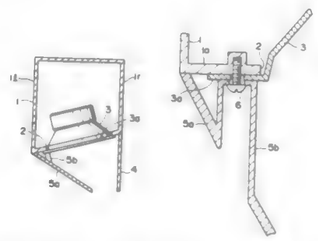
said battery carriage receiving said battery so that said positive terminal of said battery can only be electrically coupled to said positive electrical connection of said power supply means;

wherein said battery carriage provides a wiping action for said positive electrical connection upon said insertion of said battery carriage into said chestpiece.

5,367,576
HORN SPEAKER

Hiroshi Matsumoto, and Shin Yamaguchi, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1992, Ser. No. 942,823
Claims priority, application Japan, Sep. 10, 1991, 3-258435
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—156 **11 Claims**



1. A horn speaker comprising:

a box-like cabinet having at least side walls and a front plate having an open portion;

a speaker body having a flange and being mounted in the cabinet through the open portion with the flange abutting an exterior surface of the front plate;

a single horn being formed so that a rear portion of the horn has a larger opening than a front portion thereof; and

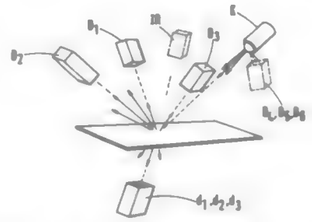
attachment means;

wherein the attachment means detachably attaches the cabinet, the flange of the speaker body and the horn together in such a manner that the horn piece overhangs at least a portion of the speaker body and the front plate of the cabinet.

5,367,577
OPTICAL TESTING FOR GENUINENESS OF BANK NOTES AND SIMILAR PAPER BILLS

Einar Gotaas, Oslo, Norway, assignor to Datalab Oy, Esbo, Finland

PCT No. PCT/NO90/00132, § 371 Date Mar. 3, 1992, § 102(e) Date Mar. 3, 1992, PCT Pub. No. WO91/03031, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 17, 1990, Ser. No. 838,222
Claims priority, application Norway, Aug. 18, 1989, 893323
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—7 **19 Claims**



1. A method for optical demonstration of different print qualities in bank notes or securities, including distinguishing between colour photocopy print and genuine multi-layer print, and in which method white light is emitted towards a note from a light source and reflected and scattered light is detected by a number of photodetectors and analyzed, each respective photodetector having a narrow band pass filter located in one of at least three separate spectral ranges, said narrow band pass filter having a band width of 20–40 nm, and measurements are made in at least one particularly selected area in the surface of the bank note, comprising the steps of:

simultaneously sensing with said photodetectors:

(a) directly reflected light in the plane of incidence of the light and in a reflection angle; and

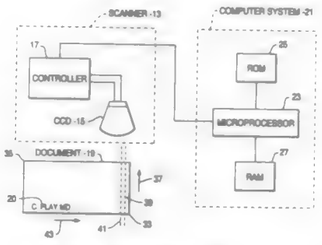
(b) diffusely scattered light in at least one direction far to at least one side of the plane of incidence; and

adapting each said narrow band pass filter to the particular type of bank note to be investigated, from a knowledge of the optical characteristics of a genuine bank note.

5,367,578
SYSTEM AND METHOD FOR OPTICAL RECOGNITION OF BAR-CODED CHARACTERS USING TEMPLATE MATCHING

Dennis W. Golem; Meera Kulkarni, both of Waterloo, and Raymond L. Higgins, Kitchener, all of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 18, 1991, Ser. No. 761,661
Int. Cl.[5] G06K *9/18, 9/62*
U.S. Cl. 382—12 **26 Claims**



1. Optical character recognition system comprising:

means for optically scanning a bar-coded character having a

predetermined pattern of bars and intervals of different opacities on a document, and producing a plurality of grey-scale values corresponding to said opacities, said grey-scale values representing a pattern of light and dark pixels;

memory means disposed for storing the grey-scale values, said memory means including a stored program, and predetermined template data including a plurality of predetermined binary patterns, one of said predetermined binary patterns representing the character; and

processing means including a processor in which processing is performed using a designated word size, and in which said processor is coupled to the scanning means and to the memory means, and operating under control of the stored program, for locating the character on the document by selecting from said grey-scale values a matrix, in rows and columns, of values representative of the character, for converting the matrix values to binary data, for compressing the binary data by eliminating predetermined said columns depending upon a font of the character to be recognized, and for selecting from the plurality of predetermined template binary patterns a pattern that matches the compressed binary data, said matching pattern serving to identify the character; and

said predetermined template binary patterns including first, second, and third bit configurations;

said processing means including:

means for rotating 90 degrees the compressed binary data to facilitate processing using said designated word size in preparation for selecting a pattern that matches the compressed binary data; and

logic means for:

Exclusive Oring the compressed binary data with said first bit configuration to produce a first mismatch word;

Anding said first mismatch word and said second bit configuration to produce a second mismatch word; and

Anding said second mismatch word and said third bit configuration to produce a third mismatch word, with said third mismatch word being used to identify a character.

5,367,579

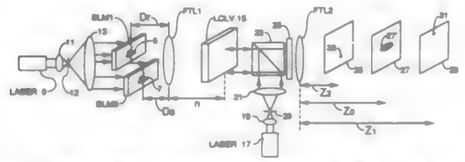
METHOD OF REMOVING SPURIOUS RESPONSES FROM OPTICAL JOINT TRANSFORM CORRELATORS

Bahram Javidi, and Qing Tang, both of Storrs, Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 25, 1993, Ser. No. 83,152

Int. Cl.[5] G06K *9/76*

U.S. Cl. 382—31 **22 Claims**



1. A joint transform correlator for producing a plurality of joint transform image cross-correlation signals comprising:

(a) joint image production means for producing a joint image of a reference image at a reference image plane and an input image at an input image plane;

(b) first Fourier transform means for producing an interference pattern between Fourier transforms of said reference image and said input image;

(c) detector means for detecting said interference pattern and for outputting a Fourier transform interference intensity distribution signal;

(d) a second Fourier transform means for inverse Fourier transforming said interference intensity distribution signal;

(e) and further including optical path length adjustment means for causing a first optical path length between said reference image plane and said first Fourier transform means to differ from a second optical path length between said input image plane and said first Fourier transform means by an amount whereby said second Fourier transform means produces a first off-axis cross-correlation function signal in a first plane and a second off-axis cross-correlation function signal in a second plane separated from said first plane.

5,367,580

METHOD AND SYSTEM FOR ESTABLISHING A COINCIDENCE BETWEEN TWO IMAGES

Ryohei Kumagai, Tokyo, Japan, assignor to Ezel, Inc., Tokyo, Japan

The portion of the term of this Patent subsequent to Nov. 17, 2009 has been disclaimed.

Continuation of Ser. No. 903,472, Jun. 24, 1992, abandoned, which is a division of Ser. No. 646,375, Jan. 28, 1991, Pat. No. 5,159,646. This application Sep. 27, 1993, Ser. No. 126,742

Claims priority, application Japan, Jan. 29, 1990, 2-18663

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—46 **5 Claims**



1. A method of establishing a coincidence between two images, comprising the steps of:

processing a registered image and a sample image so as to establish at least one circle within each of the respective images, and to determine values of individual pixels which intersect with said at least one circle;

rotating one of said sample and registered image and determining values of individual pixels on said at least one circle again in the rotated image;

determining a rotated position of the rotated image which gives a maximum correspondence between values of corresponding individual pixels intersecting said at least one circle of each of said registered and sample images; and

establishing said rotated position of said maximum correspondence as a proper coincidence position between the two images.

5,367,581

MAGNETIC READER WITH READ HEAD BIASED AGAINST DOCUMENT BY RESILIENT DEFLECTION OF CIRCUIT BOARD

Jay A. Abel; David B. VanHorn, both of Hartland, and Jalem M. Getz, Waukesha, all of Wis., assignors to Direct Data Systems, Hartland, Wis.

Filed Mar. 31, 1993, Ser. No. 40,626

Int. Cl.[5] G06K *7/08;* **H03M** *1/22;* **G11B** *15/60*

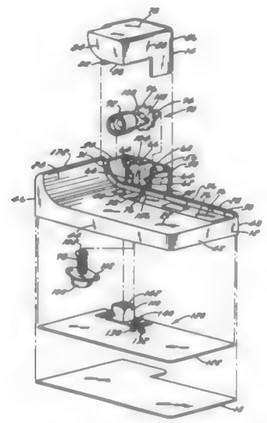
U.S. Cl. 382—64 **38 Claims**

15. A device for reading magnetically encoded information from a document, comprising:

a housing including a document support surface having a first port at which magnetically encoded information may be read;

a circuit board including a head support portion and at least one support member, where the head support portion and support member are fabricated from the material of the circuit board such that the head support portion is suspended relative to the circuit board by the at least one support member to permit elastic deflection of the head support portion relative to the circuit board;

a read head configured to read the magnetically encoded information from the document, where the read head is mounted to the head support portion; and



a circuit electrically coupled to the read head to produce signals representative of the magnetically encoded information, where the circuit is located upon the circuit board and the circuit board is supported by the housing such that the read head is located at the first port.

5,367,582

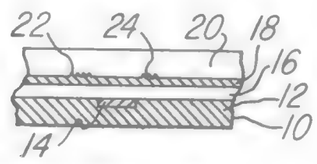
VERTICALLY-COUPLED ARROW MODULATORS OR SWITCHES ON SILICON

Gregory A. Magel, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 797,520, Nov. 22, 1991, Pat. No. 5,276,748. This application Jul. 30, 1993, Ser. No. 100,837

Int. Cl.[5] G02B *6/10, 6/34*

U.S. Cl. 385—1 **20 Claims**



1. An optical modulator comprising:

a. a substrate;

b. a lower cladding layer upon said substrate;

c. an interference layer upon said lower cladding layer;

d. a core layer upon said interference layer;

e. at least one grating in said modulator operable to couple light between said core layer and said interference layer; and

f. an element to control the free-carrier concentration of said interference layer, and subsequently to control the modulation of light in said layer.

5,367,583

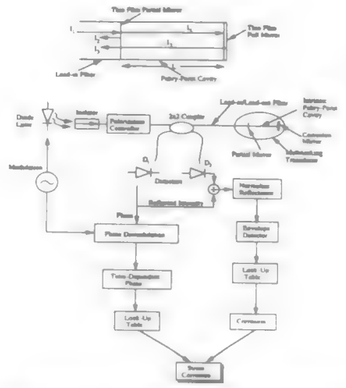
FIBER OPTIC STRESS-CORROSION SENSOR AND SYSTEM

James S. Sirkis, Burtonsville, Md., assignor to University of Maryland, College Park, Md.

Filed Feb. 9, 1994, Ser. No. 194,294

Int. Cl.[5] G01B *9/02*

U.S. Cl. 385—12 **8 Claims**



1. A fiber optical based stress-corrosion, strain and corrosion sensor and associated system for monitoring stress-corrosion, strain and corrosion of a structural specimen comprising:

a modulated laser light source;

light transmitting means for communicating the laser light source with an intrinsic Fabry-Perot interferometer that is attached to the structural specimen;

a dual photodetection and signal processing means for determining phase angle shift and reflected intensity of the modulated laser light source, the dual photodetection means provides a signal for: i) phase angle shift which corresponds to strain induced in the structural specimen and ii) a normalized reflectance which corresponds to corrosion of the structural specimen; and

an outputting means for outputting a signal that corresponds with stress-corrosion, strain and corrosion of the structural specimen.

5,367,584

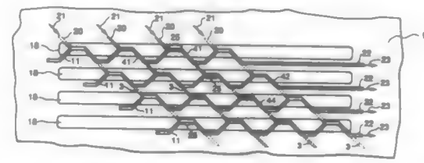
INTEGRATED MICROELECTROMECHANICAL POLYMERIC PHOTONIC SWITCHING ARRAYS

Mario Ghezzo, Ballston Lake, N.Y.; Christopher P. Yakymyshyn, Raleigh, N.C., and Anil R. Duggal, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1993, Ser. No. 144,119

Int. Cl.[5] G02B *6/30*

U.S. Cl. 385—17 **21 Claims**



1. A microelectromechanical photonic switching array, comprising:

a plurality of first optical waveguides;

a plurality of second optical waveguides;

insulative cladding between the first and second pluralities of waveguides, said insulative cladding having at least one

patterned opening therein and having a lower refractive index than the refractive indices of the waveguides of said first and second pluralities, wherein each one of said first waveguides is positioned with predetermined first waveguide portions on one side of said at least one opening and each one of said second waveguides is positioned with predetermined second waveguide portions substantially parallel to respective ones of said predetermined first waveguide portions on an opposing side of said at least one opening; and

means for moving a selected one of said predetermined second waveguide portions closer to a respective one of said predetermined first waveguide portions in response to an actuation force.

5,367,585

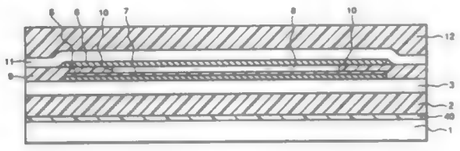
INTEGRATED MICROELECTROMECHANICAL POLYMERIC PHOTONIC SWITCH

Mario Ghezzo, Ballston Lake, N.Y.; Christopher P. Yakymyshyn, Raleigh, N.C.; Richard J. Sais, Schenectady, N.Y., and Dennis L. Polla, Raleigh, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 27, 1993, Ser. No. 144,165

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—23 **19 Claims**



1. A microelectromechanical photonic switch, comprising:

a first optical waveguide having a first refractive index;

a second optical waveguide having a second refractive index;

insulative cladding between said first and second waveguides, said insulative cladding having a gap therein and having a lower refractive index than each of the first and second refractive indices, wherein said first waveguide is positioned with a predetermined first waveguide portion on one side of said gap and said second waveguide is positioned with a predetermined second waveguide portion substantially parallel to said predetermined first waveguide portion and situated on an opposing side of said gap;

a first cladding layer facing said first waveguide and said insulative cladding, said first cladding layer having a lower refractive index than said first refractive index;

a second cladding layer facing said second waveguide and said insulative cladding, said second cladding layer having a lower refractive index than said second refractive index; and

means for moving at least one of said predetermined first and second waveguide portions closer to the other of said predetermined first and second waveguide portions in response to an actuation force, said moving means comprising

a first electrode situated between a portion of said first cladding layer and said gap;

a second electrode situated between a portion of said second cladding layer and said gap; and

means for advancing at least one of said first and second electrodes towards the other of said first and second electrodes so as to advance one of said first and second waveguides towards the other of said first and second waveguides.

5,367,586

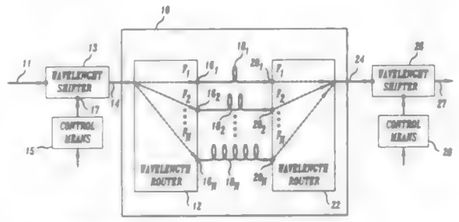
OPTICAL DELAY LINE

Bernard Glance, Colts Neck, and Robert W. Wilson, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 26, 1993, Ser. No. 38,589

Int. Cl.[5] G02B *6/28*

U.S. Cl. 385—24 **7 Claims**



1. A variable optical delay line comprising

a wavelength shifter for changing the wavelength of a received optical signal,

an input wavelength routing device for receiving the signal from the wavelength shifter, said input wavelength routing device having a plurality of output ports,

an output wavelength routing device having a plurality of input ports and at least one output port, and

optical waveguides interposed between the output ports of the input wavelength routing device and the input ports of the output wavelength routing device.

5,367,587

OPTICAL AMPLIFIER

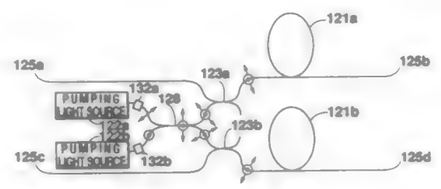
Takashi Mizuochi; Tadayoshi Kitayama; Katsuhiro Shimizu; Kiwami Matsushita; Nobuyuki Takemura, and Eiichi Nakagawa, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 971,512, Nov. 3, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 193,721

Claims priority, application Japan, Nov. 8, 1991, 3-292865; Feb. 19, 1992, 4-031846; Apr. 7, 1992, 4-085518; Jun. 22, 1992, 4-162786

Int. Cl.[5] G02B *6/26; H01S 3/00*

U.S. Cl. 385—27 **26 Claims**



1. An optical amplifier comprising:

(a) first and second sources for emitting first pumping light and second pumping light, respectively;

(b) means for polarizing said first pumping light and said second pumping light in such a state that they are perpendicular to each other;

(c) combining means for combining said first pumping light and second pumping light, which are emitted from said polarizing means, to form combined light;

(d) distributing means, having first and second output terminals, for distributing said combined light from said combining means to said first and second output terminals; and

(e) first and second amplifying media connected to said first and second output terminals, respectively.

5,367,588

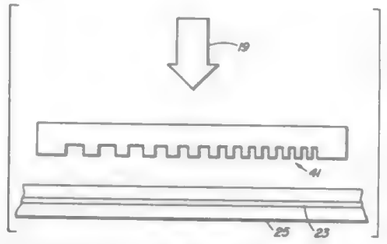
METHOD OF FABRICATING BRAGG GRATINGS USING A SILICA GLASS PHASE GRATING MASK AND MASK USED BY SAME

Kenneth O. Hill, Kanata; Bernard Y. Malo, Gatineau; Francois C. Bilodeau, and Derwyn C. Johnson, both of Nepean, all of Canada, assignors to Her Majesty in Right of Canada as represented by the Minister of Communications, Ottawa, Canada

Filed Oct. 29, 1992, Ser. No. 969,774

Int. Cl.[5] G02B *6/34, 6/12; H01L 31/18*

U.S. Cl. 385—37 **29 Claims**



1. A method of fabricating Bragg gratings in the interior of an optical waveguide comprising disposing a silica glass phase grating mask adjacent and parallel to a photosensitive optical waveguide and applying a single collimating light beam through the mask to said medium.

26. A grating means comprising a slab of silica glass having parallel corrugations on a surface thereof forming a surface relief pattern, including a spacial amplitude light filter coated on a surface of the slab opposite to the surface carrying said pattern.

5,367,589

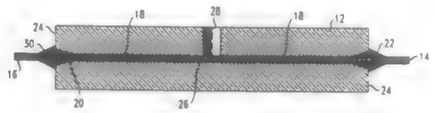
OPTICAL FIBER PACKAGE

William M. MacDonald, Flemington; Victor Mizrahi, Bedminster, both of N.J., and Kenneth T. Short, Miranda, Australia, assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 22, 1993, Ser. No. 141,889

Int. Cl.[5] G02B *6/34*

U.S. Cl. 385—37 **15 Claims**



1. A package for an optical fiber comprising:

an optical fiber with at least one grating therein, the optical fiber being made of a material with a particular coefficient of thermal expansion;

a sleeve having an interior passage that is adapted to receive a portion of the optical fiber, the sleeve having a proximate end and a distal end, the sleeve being made of a material with a coefficient of thermal expansion that is about the same as the fiber material; and

an adhesive means that affixes the optical fiber to the sleeve, wherein the optical fiber is positioned within the interior passage of the sleeve such that the grating written in the fiber is positioned between the proximate end and the distal end of the sleeve and wherein the optical fiber is affixed to the interior passage of the sleeve by the adhesive means at least at one point between the proximate end and the distal end of the sleeve.

5,367,590

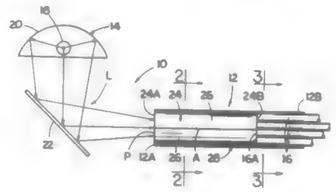
OPTICAL COUPLING ASSEMBLY FOR USE WITH A HIGH BRIGHTNESS LIGHT SOURCE

John M. Davenport, Lyndhurst, and Richard L. Hansler, Pepper Pike, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 859,180, Mar. 27, 1992, abandoned. This application Feb. 8, 1994, Ser. No. 193,626

Int. Cl.[5] G02B *6/26*

U.S. Cl. 385—39 **5 Claims**



1. An optical lighting system comprising a lamp for generating a non-coherent light output, a reflector element having an ellipsoidal shape, a mirror element having a planar shape; said lamp, reflector element, and mirror element are arranged to direct an image of said non-coherent light output to an input end of an optical coupling assembly, said optical coupling assembly comprising:

(a) a light transmissive elongated rod-shaped coupling member having a central longitudinal axis and being disposed between said lamp and leading ends of a plurality of optical light conductors, said coupling member includes a plurality of longitudinal rod sections each having a plurality of longitudinal surfaces assembled together in a nested relationship to one another for internally reflecting travelling light within said sections, some of said longitudinal surfaces including means having straight edges for providing uniform light intensity distribution and mixing of light color of non-coherent light;

(b) a retaining sleeve member surrounding at least a portion of said rod sections so that said rod sections are assembled together with one another in the nested relationship so as to form said coupling member such that said longitudinal surfaces of said sections together define an external circumferential surface of said coupling member and a plurality of internal surfaces within said coupling member extend across said circumferential surface; and

(c) wherein said respective longitudinal rod sections each have first and second longitudinal surfaces disposed in contacting relation to one another along a joined edge, said longitudinal rod sections further having a substantially uniform cross-sectional area along the respective lengths thereof so that, when nested together within said retaining sleeve member, said rod-shaped coupling member has a substantially uniform cross-sectional diameter along the length thereof.

5,367,591

REINFORCED OPTICAL FIBER AND METHOD OF MANUFACTURE

Takeo Seike, and Satoshi Endo, both of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1992, Ser. No. 995,898

Claims priority, application Japan, Feb. 7, 1992, 4-056050

Int. Cl.[5] G02B *6/44; B65H 69/02*

U.S. Cl. 385—51 **34 Claims**

1. A method of reinforcing at least one optical fiber which has a portion of its cladding removed to expose at least a portion of a core of the fiber, the method comprising the steps of:

placing the optical fiber with the exposed fiber core portion

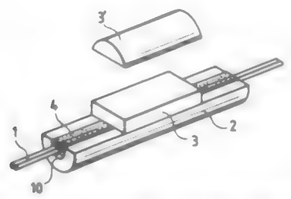
in a longitudinal groove of a reinforcing member, the longitudinal groove having a first and a second end;

fixing portions of said cladding of the optical fiber substantially at the first and the second end of the longitudinal groove with an adhesive; and

placing a cover over a portion of the longitudinal groove thereby defining an air gap surrounding said exposed fiber core so as to seal hermetically the exposed fiber core within the longitudinal groove, said cover and said reinforcing member being formed of opaque material.

17. A reinforced optical fiber structure, comprising:

at least one optical fiber having a cladding covering at least one fiber core, a portion of the cladding being removed to expose at least a portion of the fiber core;



a reinforcing member having a longitudinal groove, the longitudinal groove having a first and a second end, the optical fiber with the exposed fiber core portion being disposed within the longitudinal groove;

adhesive means for securing portions of said cladding of the optical fiber to the first and the second end of the longitudinal groove; and

cover means for covering a portion of the longitudinal groove thereby defining an air gap surrounding said exposed fiber core so as to seal hermetically the exposed fiber core in the longitudinal groove, said cover means and said reinforcing member being formed from opaque material.

5,367,592

CONNECTOR FOR OPTICAL FIBRES

Rudolf P. Koppe, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

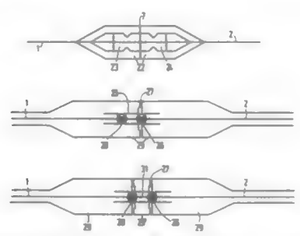
PCT No. PCT/NL92/00106, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/22841, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 18, 1992, Ser. No. 971,962

Claims priority, application Germany, Jun. 18, 1991, 4120038

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—53 **4 Claims**



1. A connector for connecting first and second optical fibers comprising:

first and second housings for engaging said first and second optical fibers, respectively, each of said first and second housings disposing its respective optical fiber at a first predetermined position;

first and second releasable portions for engagement with said first and second housings respectively, a length of optical fiber being disposed in each of said first and second releasable portions such that the end portions of said optical fibers in said first and second releasable portions are exposed and located in a second predetermined position, means for engaging said first and second releasable portions with said first and said second housings respectively, when said first and second releasable portions are in engagement with their respective first and second housings, said optical fiber of said first and second releasable portions being disposed in face-to-face relationship with the respective first and second fiber disposed in said first and second housings and when said first and second housings are engaged with their respective first and second releasable portions and said first and second housings are disposed in face-to-face relation the optical fiber in said first releasable portion being positioned in alignment with the fiber disposed in said second releasable portion.

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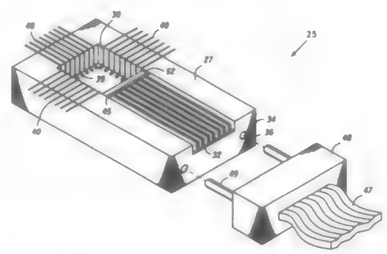
OPTICAL/ELECTRICAL CONNECTOR AND METHOD OF FABRICATION

Michael S. Lebby, Apache Junction; Christopher K. Y. Chun, Mesa; Shun-Meen Kuo, Chandler, and Davis H. Hartman, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 3, 1993, Ser. No. 115,834

Int. Cl.[5] G02B *6/12, 6/26;* **B29D** *11/00*

U.S. Cl. 385—53 **18 Claims**



1. A method of fabricating an optical/electrical connector comprising the steps of:

molding a base with a well and a plurality of grooves extending from the well to a first outer edge of the base, the base further being molded with alignment guides associated with the grooves at the first outer edge;

providing an array of photonic components, each having an optical port, and positioning the array in the well of the base with the optical ports each aligned with a separate groove, the array further having electrical terminals associated therewith;

molding external electrical connections into the base with exposed ends extending outwardly beyond the base;

coupling the electrical terminals of the array to the external electrical connections of the base;

filling at least the plurality of grooves in the base with curable plastic material; and

curing the plastic material in the grooves to form optical waveguides from the optical ports of the array to the first outer edge of the base.

10. An optical/electrical connector comprising:

a molded base having a well and a plurality of grooves extending from the well to a first outer edge of the base, the base further having alignment guides associated with the grooves at the first outer edge;

the base further having external electrical connections extending outwardly beyond the base;

an array of photonic components, each having an optical port, positioned in the well of the base with the optical ports each aligned with a separate groove, the array further having electrical terminals associated therewith and

coupled to the external electrical connections of the base; and

the plurality of grooves in the base being filled with a plastic material to form optical waveguides from the optical ports of the array to the first outer edge of the base.

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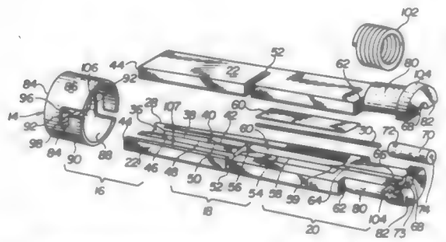
FIBER OPTIC SPLICER-CONNECTOR

Robert Essert, Glen Ellyn, and Brent W. Thomas, Chicago, both of Ill., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 938,613, Sep. 1, 1992, abandoned. This application May 24, 1993, Ser. No. 65,937

Int. Cl.[5] G02B *6/38, 6/26*

U.S. Cl. 385—70 **25 Claims**



1. A splicer-connector for connecting optical fibers comprising: a splice section configured for achieving an optical splice connection between ends of two optical fibers, and a connecting section configured for engaging an adapter for accepting a connector for achieving a repeatably engagable and disengagable optical connection between an optical fiber carried by the connector and an optical fiber carried by said connecting section; the splice section being disposed adjacent the connecting section; means for splicing optical fibers disposed on the splice section; a fiber channel disposed on the connecting section for accepting a pigtail optical fiber to be connected between the first and second fibers and for guiding the pigtail optical fiber to the splice section; a coupling element mounted to the connecting section and configured for releasable attachment to an adapter; the connecting section being joined in close proximity to the splice section; wherein the connecting section comprises a body portion projecting integrally from the splice section and having a lip portion at a free end thereof, configured for receiving and mounting the coupling element; and wherein the coupling element comprises a substantially cylindrical body having a base, and a compression spring located for compression between said base and said lip portion of said connecting section, and said cylindrical body being configured for releasable attachment to an adapter.

5,367,595

FIBER OPTIC CONNECTOR FOR CONNECTING A FIBER OPTIC HARNESS TO AN OPTICAL DEVICE

Kurt L. Jeaninga, Warren; Robert E. Steele, Cortland, both of Ohio, and Gregory D. Miller, Stanford, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 15, 1993, Ser. No. 91,940

Int. Cl.[5] G02B *6/36*

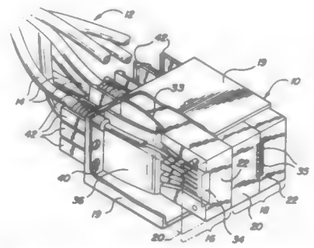
U.S. Cl. 385—71 **18 Claims**

1. A fiber optic connector for connecting a fiber optic harness having a plurality of jacketed optic fibers to an optical device that has a contact surface for engaging a linear array of optic fiber ends comprising:

an outer member having a plural number of non-linearly arrayed grooves at one end to receive individual jacketed optic fibers of a fiber optic harness,

the outer member having a slot at the other end to receive a linear array of a corresponding number of unjacketed optic fiber end portions of said jacketed optic fibers abutting one another,

each groove converging toward and communicating with the slot, and



an inner wedge member disposed in the one end of the outer member for guiding and holding said individual jacketed optic fibers in the respective grooves.

5,367,596

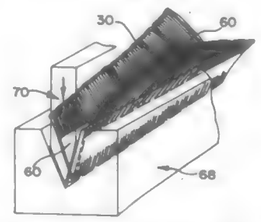
METHOD OF MAKING A MODULATED FIBER OPTIC IMAGE SCANNER

Vincent Chow, 7980 Kingsbury Dr., Hanover Park, Ill. 60103

Division of Ser. No. 517,109, Apr. 30, 1990, Pat. No. 5,258,858. This application Jul. 14, 1993, Ser. No. 92,391

Int. Cl.[5] G02B *6/06;* **B65H** *55/04, 69/02;* **B29D** *11/00*

U.S. Cl. 385—116 **6 Claims**



1. A method of making an optical scanning element, comprising:

winding at least one optical fiber onto a cylindrical drum such that a plurality of coils of said optical fiber are formed on the drum;

adhering the coils of said fiber together;

removing the coils of said fiber from said drum and making at least one cut in the coils of said fiber;

positioning the coils of said fiber between V-shaped male and female dies to form them into a V shape;

molding a polymeric support around the coils of said fiber; and

removing a portion of said polymeric support so as to cut the bottoms of said V-shaped coils of said fiber to separate those coils of said fiber into plural transmitting and receiving fibers.

5,367,597

OPTICAL WAVEGUIDE ENCAPSULATION

Göran Palmskog, Järfälla, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 16, 1993, Ser. No. 47,564

Claims priority, application Sweden, Apr. 16, 1992, 9201228

Int. Cl.[5] G02B *6/10*

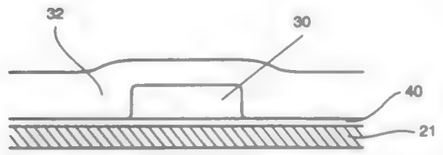
U.S. Cl. 385—129 **14 Claims**

13. An encapsulation device of optical waveguides, said device comprising:

an underlayer; and

at least one optical waveguide, supported by said under-

layer, said at least one optical waveguide including a light conducting core, a coating which has a refractive index which is lower than the refractive index of the light conducting core and a layer including a material with a refractive index which is lower than the refractive index of said light conducting core of said waveguide, said layer extending over at least a part of said surface of the underlayer,



wherein the light conducting core extends over said layer and is adjacent to a surface of said layer, and

said coating covers the light conducting core and is adjacent to said surface of the layer next to said light conducting core, and

said coating is made of an elastic material.

5,367,598

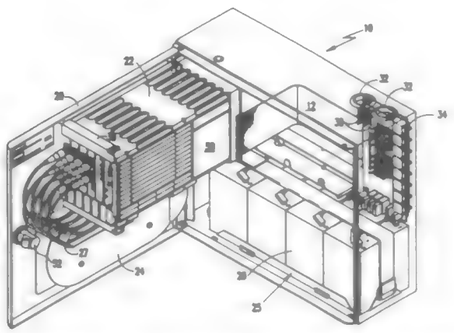
INTERFACE CHASSIS FOR FIBER OPTIC TRANSPORT SYSTEM

William R. Devenish, III, Beaverton; Gustav J. Vercruyssen, Portland, and Antonius B. Dirriwachter, Beaverton, all of Oreg., assignors to NEC America, Inc., Melville, N.Y.

Filed Oct. 21, 1993, Ser. No. 140,784

Int. Cl.[5] G02B *6/36*

U.S. Cl. 385—135 **8 Claims**



6. A chassis for interfacing fiber optic trunks to wire communication lines, comprising in combination:

an enclosure with first and second side walls, a top wall, a bottom wall, a rear wall, and a front opening;

a door;

means for pivotally attaching said door to said enclosure adjacent said first side wall of said enclosure, said door movable between a closed position covering said front opening and an open position at approximately a right angle to the plane of said front opening;

a card cage for fiber optic to wire interface cards mounted on an upper portion of said door;

a spool for forming slack loops in said fiber optic trunks, said spool mounted on said door beneath said card cage and orientated so that said slack loops lie in a plane approximately parallel to said door;

a back plane connected to said card cage adjacent said means for pivotally attaching said door;

a terminal board secured to said rear wall adjacent said second side wall and adjacent said top wall;

flexible cable means connecting said back plane and said terminal board; and

a back-up battery tray secured to said bottom wall for supporting a back-up battery assembly with said back-up battery assembly set back from said front opening and that extends in length a majority of the distance from said first side wall to said second side wall and in height to a point below said card cage whereby with said door in said open position said card cage and said spool are clear of said enclosure and with said door in said closed position said card cage fits in said enclosure above said back-up battery assembly and said spool fits in front of said back-up battery assembly.

5,367,599

ELECTRIC SHAVER IN WHICH MOTOR ROTATIONAL SPEED IS CONTROLLED ACCORDING TO BEARD THICKNESS

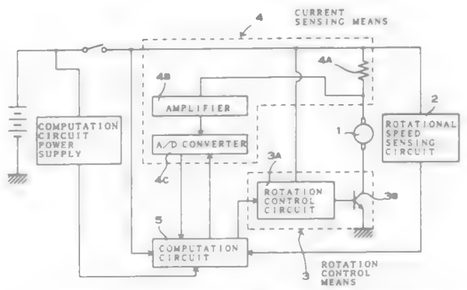
Tetsuya Okada, Sumoto, Japan, assignor to Sanyo Electrical Co., Ltd., Osaka, Japan

Filed May 26, 1993, Ser. No. 67,074

Claims priority, application Japan, May 27, 1992, 4-134952; Sep. 9, 1992, 4-240641

Int. Cl.[5] H02P *5/17*

U.S. Cl. 388—809 **9 Claims**



1. An electric shaver in which a motor rotational speed is controlled according to a beard thickness and in which the motor rotational speed is varied within a set range, comprising:

(a) a motor;

(b) a current sensing means for sensing a motor load current;

(c) a rotation control means for controlling the motor rotational speed according to a motor rotational speed command; and

(d) a computation circuit for processing an output signal from the current sensing means, for computing a motor load and beard thickness, for selectively establishing the set range of the motor rotational speed in accordance with the computed beard thickness such that the established set range of the motor rotational speed is lower for a computed beard thickness that is relatively thin than for a computed beard thickness that is relatively thick, and for generating the motor rotational speed command according to the computed motor load so as to control the motor rotational speed within the set range.

5,367,600

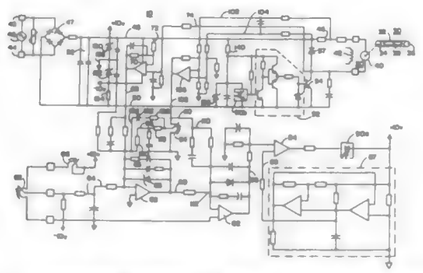
MOTOR CONTROL FOR A TREADMILL HAVING IMPROVED POWER SUPPLY AND IMPROVED SPEED REGULATION UNDER INTERMITTENT LOADING

Alan W. Wilkerson, c/o The Gemini Company, W61 N14280 Taunton Ave., P.O. Box 191, Cedarburg, Wis. 53012

Filed Jul. 21, 1992, Ser. No. 917,886

Int. Cl.[5] H02P *5/17*

U.S. Cl. 388—811 **15 Claims**



1. A drive for energizing a DC motor driving a treadmill, said drive comprising:

a DC power supply having a positive polarity voltage bus and a negative polarity voltage bus, said buses being connectable to the treadmill drive motor;

switching means in one of said buses for being connected in series with said DC motor for energizing the DC motor from said DC power supply to provide variable voltage to the DC motor;

regulating means for controlling the operation of the DC motor, said regulating means including driving means for driving said switching means and amplifier means for controlling said driving means, said amplifier means being connected to one of said positive and negative polarity voltage buses, and said driving means connected to the other said positive and negative voltage buses;

a dual polarity power supply for powering said amplifier means, said dual polarity power supply comprising first and second zener diodes connected in series, said series connected zener diodes being further connected in series with a first resistor, each of said zener diodes having a preselected voltage drop thereacross, said first zener diode having a first terminal connected directly to said one of said voltage buses, said first zener diode having a second terminal connected to a first terminal of said second zener diode, the connection of said second terminal of said first zener diode and said first terminal of said second zener diode comprising a common connection between said zener diodes, said second zener diode having a second terminal connected to a first terminal of said first resistor, a second terminal of said first resistor being connected to said other voltage bus, the zener voltage drops across said first and second zener diodes providing positive and negative constant magnitude voltages with respect to the common connection between said first and second zener diodes, the magnitude of said positive and negative constant magnitude voltages being that of the preselected zener voltage drops, the common connection and both said positive and negative constant magnitude voltages being provided to said amplifier means as operating voltages for powering said amplifier means; and

a power supply for powering said driving means, said power supply comprising a third zener diode, said third zener diode having a first terminal connected directly to said other voltage bus, and a second terminal connected to a first terminal of a second resistor, a second terminal of said second resistor being connected to said one of said voltage buses, said third zener diode having a preselected voltage drop thereacross providing a constant magnitude voltage which is provided to said driving means as an operating voltage for said driving means.

5,367,601

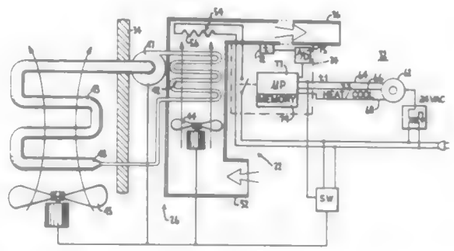
SUPPLEMENTAL HEAT CONTROL SYSTEM WITH DUCT TEMPERATURE SENSOR AND VARIABLE SETPOINT

Robert T. Hannabery, Center Valley, Pa., assignor to World Technology Group, Inc., Baltimore, Md.

Filed Feb. 16, 1994, Ser. No. 197,296

Int. Cl.[5] F25B *29/00*; F24H *1/00*

U.S. Cl. 392—307 **18 Claims**



1. In a heater system having a primary heating means operable to heat and circulate a medium via a duct, and a supplemental heating means for further heating the medium when necessary to supplement the primary heating means for maintaining a desired temperature in a heated space, the primary and supplemental heating means being activatable in part by a thermostat responsive to the heated space, having at least two outputs respectively indicating a heated space temperature falling below one of two space temperature setpoints, of which one is the desired temperature of the heated space, a controller comprising:

a temperature sensor coupleable to determine a temperature of the medium at the duct;

a control circuit having inputs coupled to the temperature sensor and to said outputs of the thermostat, the control circuit being coupled to determine the duct temperature from the temperature sensor;

memory means coupled to the control circuit, the control circuit being operable to store in the memory means a variable duct temperature setpoint, to compare the duct temperature to the duct temperature setpoint, and to activate an output to enable the supplemental heating means when the duct temperature falls below the duct temperature setpoint;

wherein the control circuit includes means for incrementally adjusting the duct temperature setpoint stored in the memory means, upwardly upon occurrence of the temperature in the heated space dropping below a lower one of the space temperature setpoints, and downwardly upon the temperature in the heated space exceeding a higher one of the two space temperature setpoints.

5,367,602

CONTROL APPARATUS AND METHOD FOR ELECTRIC HEATER WITH EXTERNAL HEAT SOURCE

Jeffrey L. Stewart, Carrollton, Tex., assignor to Lennox Industries Inc., Richardson, Tex.

Filed Oct. 21, 1993, Ser. No. 140,214

Int. Cl.[5] F24H *1/00*

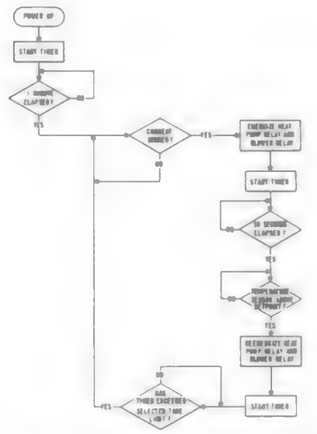
U.S. Cl. 392—308 **19 Claims**

1. In a water heating system having a water storage tank, an electrically resistive heating element located in the tank, an external heat source operatively connected with the tank and means for circulating water between the tank and the external

heat source, apparatus for controlling the water heating system, said apparatus comprising:

an electric current sensor adapted to sense electric current flow to the heating element in response to a demand for heating and to provide a first electrical signal indicative thereof;

a temperature sensor adapted to be positioned external to the tank, to sense temperature of the water at a selected location external to the tank and to provide a second electrical signal indicative thereof; and



control means for coordinately controlling the heating element and the external heat source, said control means being adapted to interrupt the electric current flow to the heating element to deactivate the heating element and to activate the external heat source to heat water circulated between the tank and the external heat source in response to said first electrical signal, said control means being further adapted to deactivate the external heat source in response to said second electrical signal indicating that the water temperature at said selected location has exceeded a predetermined temperature.

5,367,603

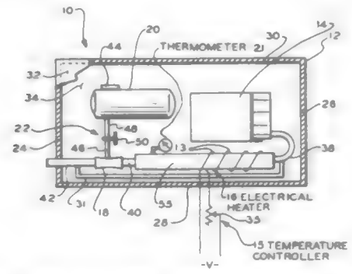
SMOKE GENERATOR FOR FIREFIGHTING TRAINERS UTILIZING A METERING VENTURI

William R. Wenrich, Morris Plains, and James J. Ernst, Livingston, both of N.J., assignors to Symtron Systems, Inc., Fair Lawn, N.J.

Continuation-in-part of Ser. No. 661,828, Feb. 27, 1991, abandoned. This application Apr. 13, 1993, Ser. No. 46,978

Int. Cl.[5] F22B *1/28*

U.S. Cl. 392—394 **9 Claims**



1. In a smoke generator apparatus for use in firefighting training having an air blower, an air heater for heating the air blown from the blower and a source of smoke producing liquid for admixing with the air, the improvement comprising:

an inline metering venturi having a restricted area of passage of air for creating a turbulence of the air passing through the metering venturi, the metering venturi having an inlet for the passage of air from the blower and an outlet for the passage of air admixed with the smoke producing liquid, a supply tank for the smoke producing liquid located above the metering venturi to allow gravitational flow of the smoke producing liquid from the tank to the restricted portion of the meeting venturi, an inlet into the restricted portion of the metering renturi for passage of the smoke producing liquid to the restricted portion of the metering veturi to allow mixing of the smoke producing liquid with the air as it passes through the restricted area.

5,367,604

HUMIDIFIER APPARATUS AND/OR GASES DISTRIBUTION CHAMBERS AND/OR TEMPERATURE PROBE

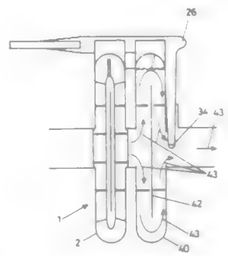
Charles G. Murray, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand

Filed Apr. 23, 1993, Ser. No. 52,372

Claims priority, application New Zealand, Apr. 24, 1992, 242484

Int. Cl.[5] F24F *6/10*

U.S. Cl. 392—394 **53 Claims**



1. A combination of a heater connection means and a temperature sensor for apparatus for humidifying gases, said apparatus comprising a liquid compartment, a liquid supply inlet through which liquid is in use supplied to said liquid compartment, a gases passageway through which gases are supplied to pass over a microporous wall common to both said liquid compartment and said gases compartment to a point of use, said microporous wall being permeable to vapour but substantially impermeable to liquid, heating means energisable to heat said liquid to generate vapour pressure within said liquid compartment sufficient to cause passage of vapour but not liquid through said microporous wall, said heating means having energy supply connection means, said combination having a first said temperature sensor for sensing the temperature of gases in said gases passageway and having heater connection means for interconnection with said energy supply connection means for supplying energy to said heating means, the construction and arrangement being such that only when said first temperature sensor is disposed within said gases passageway is said energy supply connection means interconnected with said heater connection means and energy supplied to said heating means.

5,367,605

BOILER WITH DEFORMABLE WALL FOR REMOVING SCALE

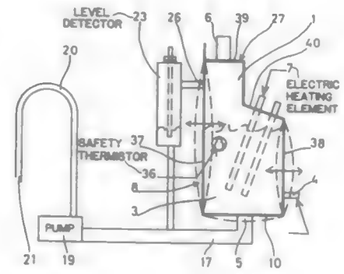
Raymond Violi, Marlens, France, assignor to Societe Cooperative de Production Bourgeois, Faverges, France

Filed Jun. 8, 1992, Ser. No. 895,274

Claims priority, application France, Jun. 10, 1991, 91 07264

Int. Cl.[5] F24H *1/20;* **F28G** *5/00;* **F22B** *1/28*

U.S. Cl. 392—401 **6 Claims**



1. Boiler for the production of hot water or steam, comprising:

a principal enclosure limited by a watertight wall for containing water, said principal enclosure having a bottom,

water supply piping means to introduce water into the principal enclosure through at least one water inlet,

water extraction piping means to extract water from the principal enclosure through at least one outlet, said outlet disposed in the bottom of said principal enclosure,

an upper steam outlet,

a level detector for controlling the water level in the principal enclosure,

electric resistor means, connectable to an external source of electric energy, and disposed to heat the water contained in the principal enclosure, wherein:

the wall of the principal enclosure comprises at least one section which is deformable by flexion, said deformable section being that section of the enclosure wall adjacent said water level on which scale deposit is likely to form most quickly,

said deformable section being stressed by thrust means producing time-varying deformations by flexion, so that the successive deformations of the wall cause the film of scale deposited on the inside of the deformable section of the wall to break up, and cause the particles of scale thus obtained to become detached so that they fall to the bottom of the enclosure from where they may be easily eliminated by draining the water contained in the enclosure through the bottom outlet.

5,367,606

MULTI-ZONE ILLUMINATOR WITH EMBEDDED PROCESS CONTROL SENSORS

Mehrdad M. Moslehi, Dallas; Robert Matthews, Plano, and Cecil J. Davis, Greenville, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 870,446, Apr. 16, 1992, Pat. No. 5,268,989. This application Aug. 10, 1993, Ser. No. 56,599

Int. Cl.[5] H05B *3/62;* **H01L** *21/00*

U.S. Cl. 392—418 **1 Claim**

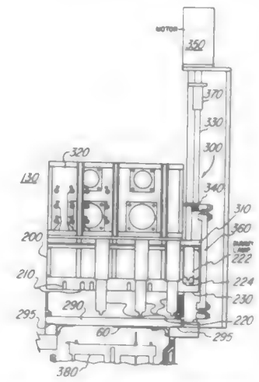
1. A multi-zone illuminator for processing semiconductor wafers comprising:

a. a lamp housing having a bottom side;

b. a plurality of point source lamps embedded in said bottom side, said lamps arranged in a plurality of concentric circular zones for generating and directing optical energy;

c. a reflector plate attached to said bottom side for reflecting and directing optical energy; and

d. a means for adjusting the spacing between a wafer and said reflector plate and the spacing between said wafer and said point source lamps wherein the spacing between said wafer and said point source lamps may be adjusted



independently of the spacing between the wafer and the reflector by vertically raising and lowering said point source lamps.

5,367,607

BREWED BEVERAGE MAKER WITH UNPRESSURIZED BOILER VESSEL STEAM GENERATOR TUBE AND COMMON HEATING ELEMENT

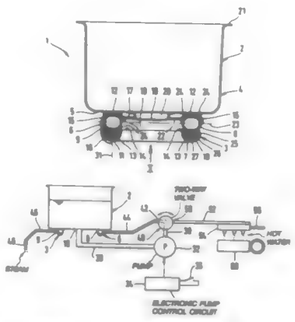
Walter Hufnagl, Sulzbach/Ts; Stefan Schamberg, Usingen; Gerhard Schäfer, Frankfurt am Main; Roland Müller, Dreieich-Offental, and Manfred Klawuhn, Frankfurt am Main, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Sep. 11, 1992, Ser. No. 944,063

Claims priority, application Germany, Sep. 13, 1991, 4130447

Int. Cl.[5] A47J *31/00;* **F24H** *1/10;* **H05B** *3/00*

U.S. Cl. 392—465 **19 Claims**



1. A brewed beverage maker comprising,

unpressurized vessel structure for storing water for use in making a brewed beverage,

tube structure having an inlet and an outlet, said tube structure being disposed in thermal contact with a surface of said vessel structure,

said vessel structure having an outlet port, conduit structure connecting said outlet port with said inlet of said tube structure,

control structure for flowing liquid from said vessel structure through said outlet port and said conduit structure to said inlet of said tube structure, and

an electric heating element outside said vessel structure and in thermal contact with said tube structure so that said heating element is in direct thermal contact with said tube structure and in indirect thermal contact with said vessel structure, to enable steam to be generated in said tube structure from water flowed from said vessel structure through said conduit structure into said tube structure.

5,367,608

TRANSMITTER, ENCODING SYSTEM AND METHOD EMPLOYING USE OF A BIT ALLOCATION UNIT FOR SUBBAND CODING A DIGITAL SIGNAL

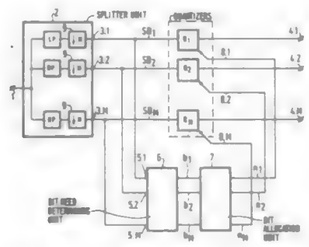
Raymond N. J. Veldhuis, and Gerrit J. Keesman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 20,188, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 695,037, May 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 620,971, Nov. 30, 1990, abandoned. This application Oct. 27, 1993, Ser. No. 144,092

Claims priority, application Netherlands, May 14, 1990, 9001127

Int. Cl.[5] G10L *7/06, 5/00*

U.S. Cl. 395—2.38 58 Claims



1. An encoding system for encoding a digital signal having a specific sampling frequency and bandwidth, comprising:

splitter means for dividing the bandwidth of the digital signal into M successive subbands, and generating, in response to the digital signal, P subband signals having reduced sampling frequencies, each of the subband signals being associated with one of the subbands;

quantizing means for quantizing time-equivalent signal blocks of the subband signals, a subband signal SB_m of the subband signals having successive signal blocks which each contain q samples of that subband signal, each sample in a signal block of subband signal SB_m being quantized by n_m bits, where n_m may vary for different signal blocks of subband signal SB_m;

bit need determining means for determining bit needs for the time-equivalent signal blocks a bit need b_m for a signal block of subband signal SB_m corresponding to the number of bits by which the q samples in that signal block should be represented, where b_m may vary for different signal blocks of subband signal SB_m; and

bit allocation means for allocating bits to the time-equivalent signal blocks from an available number of bits B, n_m bits being allocated to each of the q samples of a signal block of subband signal SB_m in accordance with at least the bit need b_m for that signal block;

wherein m and P are integers such that $1 \leqq m \leqq p$ and said bit allocation means is adapted for allocating bits to the time-equivalent signal blocks by performing a routine S_1, which includes the following operations, at least twice:

(a) determining which signal block of the time-equivalent signal blocks has a highest bit need b_j, where b_j denotes the bit need b_m for that signal block and j is an integer, such that $1 \leqq j \leqq P$, which denotes the same subband signal which m denotes for that signal block; and

(b1) if bits have not already been allocated to the signal block having the highest bit need b_j, then

(i) allocating a_1 bits to n_j, where n_j denotes the n_m bits allocated to each of the q samples of the signal block having the highest bit need b_j, to arrive at a value for n_j,

(ii) subtracting a_2 from b_j to arrive at a reduced value for b_j, and

(iii) subtracting $a_1 \cdot q + x$ from B to arrive at a reduced value for B; or

(b2) if bits have already been allocated to the signal block having the highest bit need b_j, then

(i) allocating c_1 additional bits to n_j to arrive at an increased value for n_j,

(ii) subtracting c_2 from b_j to arrive at a reduced value for b_j, and

(iii) subtracting $c_1 \cdot q$ from B to arrive at a reduced value for B;

wherein q and x are positive integers greater than unity, x being a number of bits necessary to represent a scale factor for the signal block having the highest bit need b_j; n_m, n_j, b_m and b_j are variables where n_m and n_j are greater than or equal to zero; a_1, a_2, c_1 and c_2 are numbers greater than zero, a_1 is greater than c_1 and a_2 is greater than or equal to c_2; and B and M are positive integers.

5,367,609

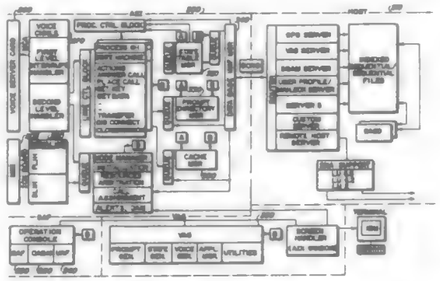
EDITING COMPRESSED AND DECOMPRESSED VOICE INFORMATION SIMULTANEOUSLY

Andrew B. Hopper, Palo Alto, Calif., and Dario Pessia, La Gande, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 606,798, Oct. 30, 1990, abandoned. This application Feb. 23, 1993, Ser. No. 22,785

Int. Cl.[5] G10L *9/00*

U.S. Cl. 395—2.87 14 Claims



1. Apparatus for editing compressed voice information, comprising:

memory means for storing segments of compressed voice information;

means for decompressing said compressed voice information and displaying said decompressed voice information on a display, both said compressed information and said decompressed information stored in said memory means; and

editing means for simultaneously editing corresponding selected portions of said displayed decompressed voice information and of said compressed voice information.

5,367,610

FUZZY CONTROLLER FOR SELECTING AN INPUT SIGNAL

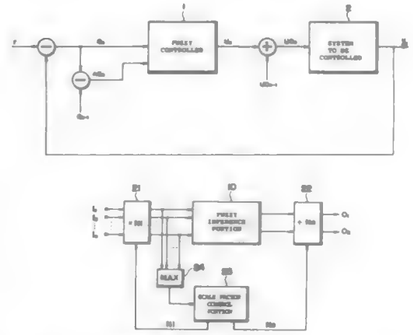
Yutaka Ohtsubo, Takatsuki; Kazuaki Urasaki, Mukou; Yoshiro Tanaka, Kyoto, and Atushi Hisano, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 26, 1989, Ser. No. 412,936

Claims priority, application Japan, Sep. 28, 1988, 63-244978; Sep. 30, 1988, 63-247108; Feb. 28, 1989, 1-45507; Jun. 20, 1989, 1-155784

Int. Cl.[5] G06F *9/44*

U.S. Cl. 395—3 12 Claims



1. A fuzzy controller comprising:

fuzzy inference means for subjecting one or a plurality of input signals to fuzzy inference operations using membership functions in accordance with a predetermined rule and outputting a non-fuzzy value determined on the basis of the results of the inference;

scale factor control means for selecting an input signal whose absolute value is a maximum value of said input signals and for respectively outputting a multiplier value and a divider value which correspond to said maximum absolute value;

input-side multiplication means for multiplying the value of said input signals by said multiplier value obtained from said scale factor control means; and

output-side division means for dividing the value of said output signal outputted from said fuzzy inference means by said divider value obtained from said scale factor control means.

5,367,611

FUZZY INFERENCE SYSTEM

Kouichi Iwashita, and Masanari Oh, both of Fukuoka, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 17, 1992, Ser. No. 992,536

Claims priority, application Japan, Dec. 27, 1991, 3-347544; Nov. 20, 1992, 4-311528

Int. Cl.[5] G06F *7/70*

U.S. Cl. 395—3 5 Claims

1. A fuzzy inference system comprising:

(a) a plurality of fuzzy inference means, each for performing a fuzzy reasoning based on a respective rule of said each fuzzy inference means, and

(b) centroid determining means for receiving an output of each of said fuzzy inference means and for forming a controlled output,

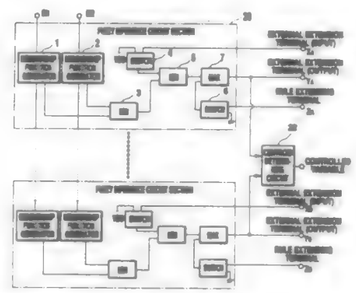
wherein each of said fuzzy inference means comprises:

a plurality of membership function generating units;

external extension input means for receiving a variable-extending signal from another one of said fuzzy inference means;

first minimum value calculating means for calculating a first minimum value from an output of each of said membership function generating units;

second minimum value calculating means for calculating a second minimum value from the variable-extending signal of said external extension input means and said first minimum value; and



external extension output means for externally outputting said second minimum value to at least one of said centroid determining means and another one of said fuzzy inference means.

5,367,612

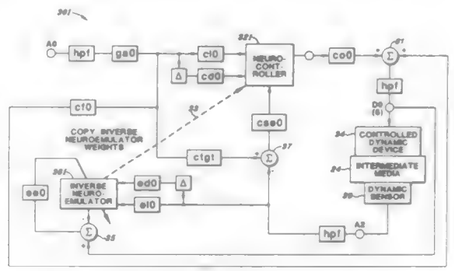
NEUROCONTROLLED ADAPTIVE PROCESS CONTROL SYSTEM

Daniel J. Bozich; H. Bruce MacKay; Jay A. Eggert, all of San Diego, and Ernest E. Muenchau, Vista, all of Calif., assignors to Science Applications International Corporation, San Diego, Calif.

Filed Oct. 30, 1990, Ser. No. 605,585

Int. Cl.[5] G21C *7/36*

U.S. Cl. 395—22 17 Claims



1. A vibration control system comprising:

a medium through which vibrations may be transmitted;

sensing means for sensing vibrations at a plurality of monitoring locations within said medium;

transducer means for applying a plurality of forced vibrations to said medium in response to a respective plurality of control signals;

controller means for controlling said transducer means, said controller means including

a first pair of neural networks that emulate said sensed vibrations by generating an emulated vibration signal for each vibration sensed by said sensing means,

error signal generating means for generating error signals representative of the difference between said emulated vibration signal generated by said first pair of neural networks and a specified reference signal, and

a second pair of neural networks that control said transducer means by generating said plurality of control signals in response to said error signals so as to force

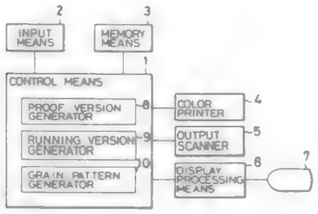
vibrations sensed by said sensing means at least one of said plurality of monitoring locations to a specified level by controlling said transducer means such that all vibrations present at said at least one monitoring location, including vibrations generated by said transducer means and any input vibrations that may be present in said medium, cooperate to produce a vibration of said specified level at said at least one monitoring location within said medium.

5,367,613

ABSTRACT PATTERN PLATE MAKING SYSTEM AND PRINTED MATTER PRINTED THEREBY

Michio Kurata; Toshio Modegi, both of Tokyo, and Eisuke Arai, Urawa, all of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 950,320, Sep. 24, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,101
Claims priority, application Japan, Sep. 26, 1991, 3-247584
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—109 **4 Claims**



1. An abstract pattern plate making system comprising:
pattern generating means for assigning a predetermined number of points in a predetermined memory space in such a manner that said points occur at equal and uniform intervals and that the number of points per unit area remains constant;
displacing means for randomly displacing the address of each of said points within a predetermined maximum range of displacement, a displaced address of each point being determined by generating a random number for each point and multiplying the random number by the predetermined maximum range of displacement;
means for allocating a predetermined grain pattern to the displaced address of each of said points to generate an abstract pattern by replacing each of said points with a predetermined grain pattern having at least one pixel, and by determining an address of each pixel of the predetermined grain pattern based on the predetermined grain pattern and the displaced address of each point;
means for shifting an address of a pixel protruding outside of a side of the predetermined memory space to a location that is within the predetermined memory space and opposite to the protruding side; and
duplicating means for duplicating the generated abstract pattern in longitudinal and traverse directions a predetermined number of times to generate a final pattern.

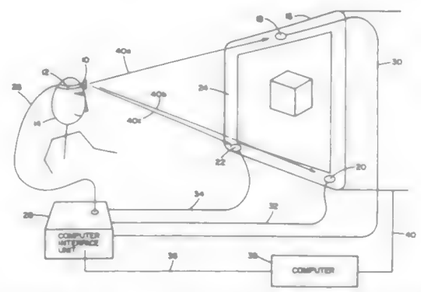
5,367,614

THREE-DIMENSIONAL COMPUTER IMAGE VARIABLE PERSPECTIVE DISPLAY SYSTEM

Robert P. Bisey, Seaford, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 1, 1992, Ser. No. 861,479
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—119 **30 Claims**

1. Apparatus for controlling the perspective view of computer generated graphical images in proportion to the head movements of a computer operator viewing the images on a computer monitor, comprising:
only a single transmitter, mounted relative to the computer operator's head for movement therewith for transmitting ultrasonic signals of a given frequency and at predetermined intervals;
a plurality of individual ultrasonic receivers, mounted relative to said computer monitor and being arranged in a geometrical pattern surrounding said computer monitor, for receiving the ultrasonic signals from said transmitting means; and



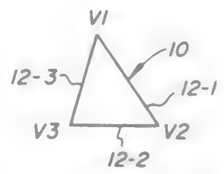
measuring means, connected to each of said plurality of individual ultrasonic receivers, for converting said signals received by each of said plurality of individual ultrasonic receivers into a plurality of data signals representative of the instantaneous distance between the computer operator's head and said computer monitor.

5,367,615

SPATIAL AUGMENTATION OF VERTICES AND CONTINUOUS LEVEL OF DETAIL TRANSITION FOR SMOOTHLY VARYING TERRAIN POLYGON DENSITY

Richard Economy, Ormond Beach; William A. Kelly, Port Orange; Anthony J. Pelham, Port Orange; Thomas A. Piazza, Port Orange, and Lee T. Quick, Ormond Beach, all of Fla., assignors to General Electric Company, King of Prussia, Pa.

Continuation of Ser. No. 695,439, May 3, 1991, which is a continuation-in-part of Ser. No. 377,687, Jul. 10, 1989, abandoned. This application Sep. 2, 1993, Ser. No. 115,727
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—129 **20 Claims**



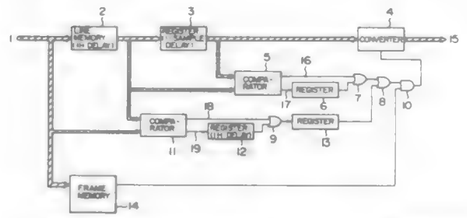
18. In a computer image generation system wherein object features of an image to be displayed are represented by planar basis polygons having vertices designating end points of each of a plurality of sides of the basis polygons, a method for augmenting a total number of vertices to cause an increased number of total polygons, each with finer detail for the object features, to be displayed with substantially continuous smooth level of detail transition in viewable scenes created by the system, comprising the steps of:
(a) retrieving from storage vertex data defining each of a plurality of the basis polygons;
(b) selecting a point lying within each of at least one selected one of the basis polygons and different from any vertex of the associated basis polygon;
(c) locating a derived vertex lying at a deviation distance outside the plane of the associated basis polygon at the selected point and different from any of the stored basis polygon vertices;
(d) forming at least one derived polygon determined by the derived vertex and at least two adjacent vertices of the associated basis polygon, responsive to the location of the associated basis polygon nearing an observer viewpoint in the image; and
(e) displaying the derived polygon as part of the viewable image of a scene having finer feature detail along with substantially continuous smooth level of detail transition as the polygon location distance to the viewpoint decreases.

5,367,616

ISOPLETH GENERATOR FOR APPLYING ISOPLETHS TO DIGITAL PICTURE DATA AND METHOD THEREFOR

Naozane Yoshida, Yokohama; Tsutomu Takagi; Nobuhiro Washiya, both of Fujisawa; Hitoshi Abe, Hadano, and Katsutoshi Tajima, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,467
Claims priority, application Japan, Jul. 16, 1990, 2-187441
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 **7 Claims**



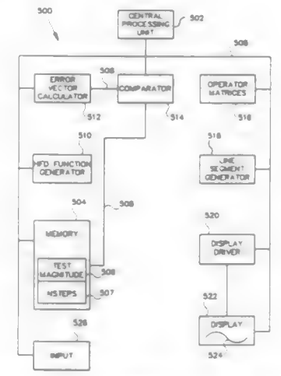
1. An isopleth generator for providing isopleths in response to a plurality of numerical data represented by a gradation having a plurality of stages arrayed on rows and columns of two-dimensional directions, comprising:
input means for receiving numerical data represented by a gradation;
row comparator means for comparing the magnitude of first gradation numerical data to be displayed with the magnitude of second gradation numerical data located at coordinates adjacent to a row train of the first gradation numerical data, and generating information in response to an instruction for converting said first gradation numerical data into isopleth digital data based on a result of the row comparison;
column comparator means for comparing the magnitude of third gradation numerical data to be displayed with the magnitude of fourth gradation numerical data located at coordinates adjacent to a column train of the third gradation numerical data, and generating information in response to an instruction for converting the third gradation numerical data into isopleth digital data based on a result of the column comparison; and
isopleth data generator means for converting one of the first and third gradation numerical data into isopieth digital data and outputting the isopleth digital data in response to the information representing an instruction from one of the row and column comparator means.

5,367,617

SYSTEM AND METHOD OF HYBRID FORWARD DIFFERENCING TO RENDER BEZIER SPLINES

James A. Goossen, Bellevue, and Kirk O. Olynyk, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jul. 2, 1992, Ser. No. 909,055
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 **55 Claims**



1. A computer system for approximating a Bézier curve with at least a line segment, comprising:
(a) input means for inputting first, second, third, and fourth sequential Bézier control points defining a cubic Bézier curve;
(b) means for selecting a test magnitude indicative of a desired degree of accuracy with which the line segment should approximate said Bézier curve;
(c) means for determining a hybrid forward differencing function based on said first, second, third, and fourth sequential inputted Bézier control points;
(d) size means for selecting a step size, where said hybrid forward differencing function defines a portion of said Bézier curve from a present position of said hybrid forward differencing function to an end point defined by said step size, said size means selecting an initial value for said selected step size so that said hybrid forward differencing function initially defines the entire Bézier curve from said first inputted Bézier control point to said fourth inputted Bézier control point;
(e) error means for determining a first error vector and a second error vector from said hybrid forward differencing function based on said selected step size;
(f) means for comparing the magnitude of said first error vector and said second error vector with said test magnitude, and indicating if the magnitude of either said first error vector or said second error vector exceeds said test magnitude or if the magnitudes of both said first and said second error vector are less than said test magnitude; and
(g) line means for generating a straight line segment between said present position and said end point to approximate said Bézier curve in response to an indicator signal.

5,367,618

DOCUMENT PROCESSING APPARATUS

Koki Ishida, Hadano, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

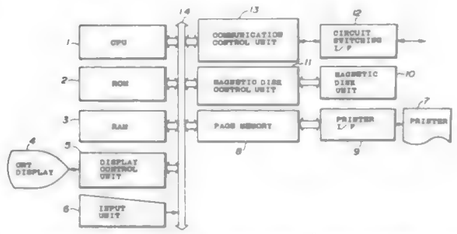
Filed Jul. 3, 1991, Ser. No. 725,604
Claims priority, application Japan, Jul. 4, 1990, 2-175277
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—145 **8 Claims**

1. A document processing apparatus comprising:
a transmitting unit and a receiving unit, the transmitting unit

being capable of making document data by using at least one of a plurality of font data sets, the receiving unit being capable of outputting document data received from the transmitting unit;

transmission means for transmitting the document data, being made by the transmitting unit, to the receiving unit via a public communication line;

first control means provided in said transmitting unit, said first control means performing a preparatory procedure prior to transmission of the document data, and wherein during said preparatory procedure a response protocol message is received by said transmitting unit via said public communication line, and based on the received protocol message said first control means determines whether the font data required by the receiving unit can be supplied locally from within the receiving unit, and wherein said first control means selects font data corresponding to character codes contained in the document



data from a font data set, included in the plurality of font data sets and used by the transmitting unit in making the document data in response to a determination that said font data set is not installed in the receiving unit after said preparatory procedure and thereafter said transmitting unit transmits said font data to the receiving unit via the public communication line prior to said document data transmission performed by said transmission means; and

second control means provided in said receiving unit for temporarily storing said font data which is received by the receiving unit from the first control means in a storage device, and said second control means allowing the receiving unit to output said document data by using said font data stored in said storage device, after said document data is received by the receiving unit, so that graphic characters corresponding to said character codes contained in the outputted document data are defined by the received font data.

5,367,619

ELECTRONIC DATA ENTRY SYSTEM EMPLOYING AN EXPERT SYSTEM TO FACILITATE GENERATION OF ELECTRONIC DATA FORMS WITH COMPLEX INTERRELATIONSHIPS BETWEEN FIELDS AND SUBFORMS

William J. Dipaolo, Pittsburgh; David M. Tinley, Pitcairn; Timothy F. Thompson, Monroeville, and Carol A. Parsons, Forest Hills, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 515,817, Apr. 27, 1990, abandoned. This application Jan. 10, 1994, Ser. No. 179,994

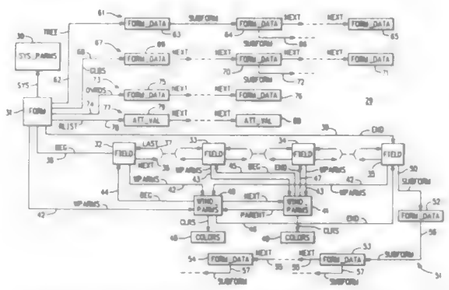
Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—149 **14 Claims**

1. A data entry system for a digital computer having a display screen and a user input device, said system comprising:

means for generating on said display screen, forms having background text and a plurality of fields for the insertion of data, wherein each field has a data entry, said fields being successively selectable through said user input device; and

menu generating means for generating on said display screen dynamically varying menus, each comprising a list of valid potential data entries for certain selected menu fields, with said list of valid potential data entries for a given selected menu field varying dynamically, in a manner wherein the potential data entries on said list are dependent upon combinations of data entries made for designated other fields, a valid potential data entry in each dynamically varying menu being selectable as the data entry in the given selected menu field through said user input device, said menu generating means incorporating



an expert system having a rulebase which includes rules establishing said list of valid potential data entries for the dynamically varying menus for each of said certain selected menu fields for each combination of data entries of said designated other fields upon which each said certain selected menu field depends, and means for firing the rules to select said list of valid potential data entries in a manner wherein said list is dependent upon current combinations of data entries made for the designated other fields.

5,367,620

CHARACTER OUTPUT DEVICE

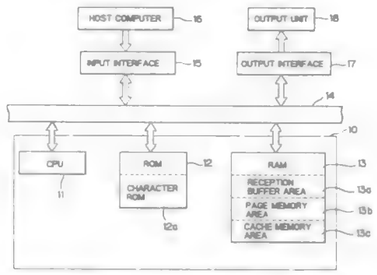
Yosuke Ito, Nagoya; Hiroshi Hattori, Inazawa, and Fumihito Hayano, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 25, 1991, Ser. No. 765,245

Claims priority, application Japan, Sep. 25, 1990, 2-254923; Mar. 22, 1991, 3-059101

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—150 **25 Claims**



15. A character output device for use in combination with an external device connected to the character output device for inputting a character code to the character output device, wherein the character output device outputs character data upon converting outline data corresponding to the character code into bit-map data, the bit-map data having an amount of data, the character output device comprising:

first storage means;

data compressing means for compressing the bit-map data to produce compressed data corresponding to the bit map data, the compressed data having an amount of data;

predicting means for predicting that the amount of the bit-map data is reduced if the bit-map data is compressed by said data compressing means; and

selecting means for selecting one of the bit-map data and the corresponding compressed data whichever has lesser in amount of data, and for storing the selected data in said first storage means together with the corresponding character code.

5,367,621

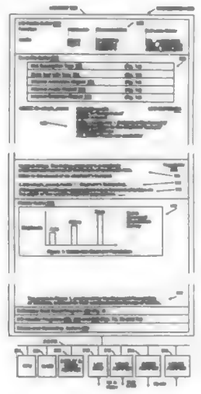
DATA PROCESSING METHOD TO PROVIDE A GENERALIZED LINK FROM A REFERENCE POINT IN AN ON-LINE BOOK TO AN ARBITRARY MULTIMEDIA OBJECT WHICH CAN BE DYNAMICALLY UPDATED

Amy S. C. Cohen, Silver Spring; Christopher F. Gleason, Gaithersburg; Donald R. Hyatt, Silver Spring, all of Md.; Michael E. Moran, Woodstock, N.Y.; Jeffrey N. Stevens, Gaithersburg, Md., and Alan J. Wecker, Haifa, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1991, Ser. No. 755,709

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—154 **8 Claims**



1. A method in a data processing system including a processor, for providing a link from a reference point within a hierarchy of a formatted text stream in an on-line book, to a multimedia object, comprising the steps of:

storing a formatted text stream in said data processing system, said formatted text stream including a link description which includes multimedia device-type information, object location information and multimedia control information for a target multimedia object, said formatted text stream further including a link tag associated with said link description said tag identifying a source location in said formatted text stream from which a link is established to said target multimedia object;

storing said multimedia object in said data processing system at a location identified by said location information, said object including multimedia data representing a multimedia presentation;

storing a multimedia handler program in said data processing system, said processor controlling operations of a multimedia output device characterized by said multimedia device-type information, when said processor executes said handler program;

displaying said formatted text stream in said data processing system;

activating said link tag in said data processing system and in response thereto, transferring from said link description to said processor, said multimedia control information;

executing said multimedia handler program in said processor using said control information and in response thereto, transferring from said location identified by said location information to said multimedia output device, said multimedia data from said multimedia object;

producing said multimedia presentation with said multimedia output device in using said multimedia data from said multimedia object;

said link description includes a first object name, a first object location and first device control information for a first multimedia object and said link description further includes a second object name, a second object location and second device control information for a second device control information for a second multimedia object;

(a) determining with said processor executing said multimedia handler program whether said multimedia output device is capable of producing said multimedia presentation with said first multimedia object;

(b) producing said multimedia presentation with said multimedia output device using said multimedia data from said first multimedia object, upon determining that said multimedia output device is capable of producing said presentation;

(c) determining with said processor executing said multimedia handler program whether said multimedia output device is capable of producing said multimedia presentation with said second multimedia object upon determining that said multimedia output device is not capable of producing said presentation with said first object;

(d) producing said multimedia presentation with said multimedia output device using multimedia data from said second multimedia object upon determining that said multimedia output device is not capable of producing said presentation with said first object.

5,367,622

ELECTRONIC TEMPLATE SYSTEM AND METHOD

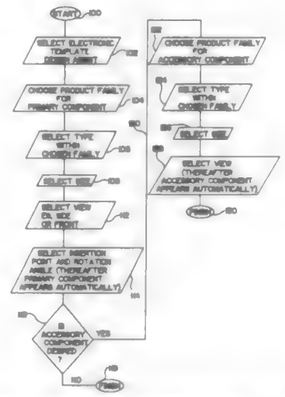
Edward W. Coggins, Greenville, S.C., assignor to Reliance Electric, Greenville, S.C.

Continuation of Ser. No. 412,137, Sep. 25, 1989, Pat. No. 5,165,015. This application Nov. 16, 1992, Ser. No. 977,132

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—155 **37 Claims**



1. A process for operating a computer-aided design system, such as having microprocessor, a memory device, and a monitor for producing designs in a given design field, said process comprising:

electronically reading from an electronic catalog including a multiplicity of respective graphics form representations of

a plurality of respective product components for possible use in a given design produced within said given design field, including assigning a predesignated CAD insertion point on each respective representation;

storing in said memory device a selected plurality of said respective graphics form representations read from said electronic catalog;

specifying to said microprocessor a particular respective product component graphics form representation to be extracted from said memory device;

indicating a field point within said design field where said CAD insertion point of said specified graphics form representation of said particular product component is to be inserted into the design being produced;

determining a rotation angle for said specified graphics form representation of said particular product component about its CAD insertion point; and

thereafter automatically entering said specified graphics form representation of said particular product component into said design field, with said CAD insertion point thereof positioned in said given design field at said field point indicated therein, and with said specified graphics form representation rotated at said determined rotation angle about its CAD insertion point;

whereby a graphics form representation of a desired product component may be selected and automatically positioned within the design being produced in the given design field with minimized user manipulations.

5,367,623

INFORMATION PROCESSING APPARATUS CAPABLE OF OPENING TWO OR MORE WINDOWS ON SCREEN, ONE WINDOW CONTAINING A PAGE AND OTHER WINDOWS CONTAINING SUPPLEMENTAL INFORMATION

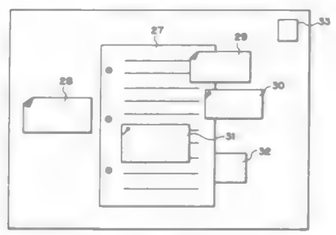
Toshiyuki Iwai, Tenri, Japan; Kunihiko Iizuka, Brighton, Mass.; Yumi Yamauchi, Yokohama, Japan; Atsushi Aoki, Katsuragi, Japan, and Noboru Kubo, Koriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1991, Ser. No. 766,484

Claims priority, application Japan, Sep. 25, 1990, 2-254703

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—157 **7 Claims**



5. An information processing apparatus which opens two or more windows on a screen, at least one window displaying a page of information from a book and processes one or more objects on each page, comprising:

means for pasting one or more tag windows at any location of each page;

means for registering one or more items of supplemental information, supplemental to information contained on a page, in said tag window pasted by said pasting means;

means for linking said page to said one or more tag windows pasted by said pasting means; and

means for displaying only a non-overlapped portion of said tag window linked to said page if said linked page is partially hidden under another page of the book.

5,367,624

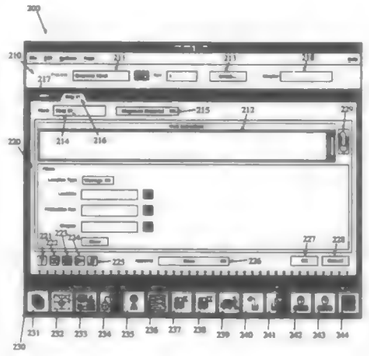
INTERFACE FOR CONTROLLING TRANSACTIONS IN A MANUFACTURING EXECUTION SYSTEM

Dwight H. Cooper, Sunnyvale, Calif., assignor to Consilium, Inc., Mountain View, Calif.

Filed Jun. 11, 1993, Ser. No. 76,465

Int. Cl.[5] G06F *15/00, 15/40*

U.S. Cl. 395—157 **43 Claims**



1. In a computer system comprising a database for modeling manufacturing in a factory, a display, and a user input device, wherein manufacturing operations in said factory are modeled as transactions in said database, an improved interface for controlling transactions in said database comprising a common display interface displayed on said display, said common display interface representing a series of transactions for a single manufacturing process, said common display interface comprising:

a. a plurality of subdisplays each separately accessible through said common display

i. work instructions for operator actions to be performed related to said subprocess associated with said subdisplay;

ii. a field comprising a plurality of factory objects for performing said discrete sets of transactions related to said subdisplay;

iii. a label identifying said subprocess associated with said subdisplay;

iv. time value fields indicating when said transactions associated with said subdisplay commenced and terminated;

b. means for accessing a first group of said plurality of subdisplays in a sequential order, a first subdisplay in said first group being displayed first, and said transactions associated with said first subdisplay being performed prior to displaying subsequent subdisplays in said first group, and performance of transactions for said subsequent subdisplays; and

c. means for accessing a second group of said plurality of subdisplays at arbitrary time intervals, and the performance of transactions associated with said second group of said plurality of subdisplays at said arbitrary time intervals.

5,367,625

METHOD FOR DESIGNATING OBJECT ON SCREEN

Takashi Ishitani, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

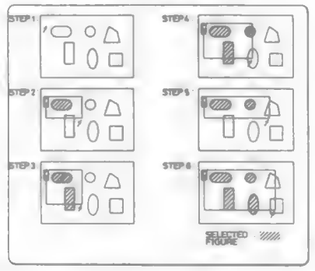
Filed Mar. 29, 1993, Ser. No. 38,962

Claims priority, application Japan, Mar. 31, 1992, 4-074920

Int. Cl.[5] G06F *15/46*

U.S. Cl. 395—159 **13 Claims**

1. In an information processing apparatus including display means for displaying a plurality of objects on a prescribed display region of said display means, position designation means manually operable for designating an arbitrary point on said prescribed display region, means for outputting information for specifying the position of said designated arbitrary point, and storage means, a method of designating one or more of the plurality of objects displayed on said prescribed display region utilizing said position designation means, comprising the steps of:



designating an arbitrary point on said display region utilizing said position designation means and obtaining information for specifying the position of said designated arbitrary point, and

selecting one of said objects depending upon a distance decided between said designated arbitrary point and each said object based on the information for specifying said position, an attribute provided to each of said objects, and an attribute provided to said designated arbitrary point.

5,367,626

AUTOMATIC ICON GENERATION SYSTEM

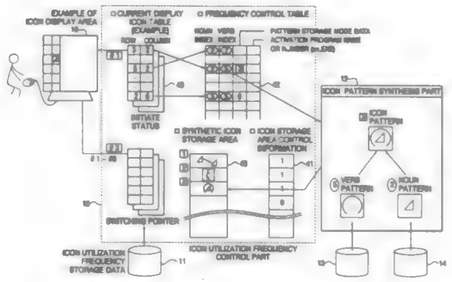
Makoto Morioka; Masato Ikemori, both of Kawasaki; Kazuo Hattori, Yokohama, and Hiroshi Suzuki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 610,586, Nov. 8, 1990, abandoned. This application Jan. 13, 1994, Ser. No. 181,874

Claims priority, application Japan, Nov. 8, 1989, 1-288758

Int. Cl.[5] C06F *15/62*

U.S. Cl. 395—159 **10 Claims**



10. An automatic icon generation method for a computer having a display screen, comprising the steps of:

(a) storing graphic elements representing icon patterns;

(b) receiving a user input indicating a new icon;

(c) synthesizing at least two of the icon patterns stored in step (a) to generate the new icon according to the user input;

(d) monitoring utilization frequency of a plurality of icons by a user than can be synthesized; and

(e) displaying a portion of the plurality of icons on the display screen of the computer, according to said monitoring in step (d).

5,367,627

COMPUTER-ASSISTED PARTS SALES METHOD

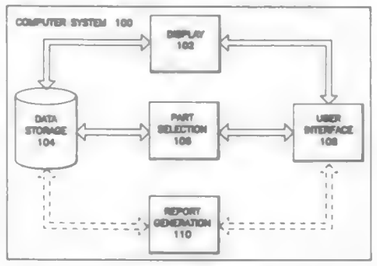
Jerome D. Johnson, Mankato, Minn., assignor to Clear with Computers, Inc., Mankato, Minn.

Continuation of Ser. No. 959,525, Oct. 13, 1992, Pat. No. 5,283,865, which is a continuation of Ser. No. 435,809, Nov. 13, 1989, abandoned. This application Oct. 12, 1993, Ser. No. 133,986

The portion of the term of this patent subsequent to Feb. 1, 2011, has been disclaimed.

Int. Cl.[5] G06F *3/14, 15/24*

U.S. Cl. 395—161 **15 Claims**



1. A computerized method of selling parts for particular equipment specified by a customer, comprising the steps of:

a) receiving information identifying a customer's parts requirements for the equipment, comprising the step of receiving equipment application information, comprising an identification of the equipment with which one or more parts are to be used;

b) electronically specifying information identifying a plurality of parts and specifications for the parts;

c) gathering parts-related information for one or more parts within the plurality of parts which meets the customer's requirements, comprising the step of electronically associating at least one of the parts within the plurality of parts with the received equipment application information; and

d) receiving the gathered parts-related information and compiling the parts-related information into a proposal meeting the customer's requirements.

5,367,628

MULTI-WINDOW SYSTEM AND DISPLAY METHOD FOR CONTROLLING EXECUTION OF AN APPLICATION FOR A WINDOW SYSTEM AND AN APPLICATION FOR A NON-WINDOW SYSTEM

Ichiro Ote, Yokohama; Masataka Okayama, Kawasaki; Makoto Sano, Yokohama; Masanori Hashio, Isehara; Katsuya Takanashi, Hadano; Jun Kitahara, Yokohama, and Sunao Hirata, Seto, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1992, Ser. No. 961,393

Claims priority, application Japan, Oct. 15, 1991, 3-266367

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **12 Claims**

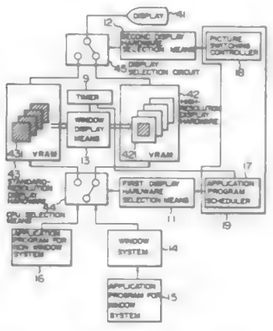
1. A multi-window system comprising:

a display;

an operating system for controlling execution of an application program of a first type for displaying data on an entire display screen of said display and an application program of a second type forming a multi-window display to display data in a format defined for the multi-window display;

a CPU connected to said display and said operating system for performing processes to display data required to be

displayed by said application programs of the first and second types in said display;
said operating system including:
a scheduler for scheduling an application program to be executed by said CPU, and
picture switching control means for producing a picture switching signal in accordance with whether the data required to be displayed by a user is designated by the format defined for the multi-window display;
first display hardware including a first VRAM in which data is stored for converting the data into an image signal having a first resolution;
second display hardware including a second VRAM in which data is stored for converting the data into an image signal having a second resolution higher than the first resolution;
first selection means connected to said scheduler for selecting one of said first and second display hardwares in



accordance with an application program to be executed next;
data designated to be displayed by an application program started to be executed by said scheduler being input in either of said VRAMs of either one of said selected first display hardware and second display hardware;
second selection means connected to said picture switching control means for connecting one of said first and second display hardwares to said display in accordance with the application program required to display by a user; and
window display means, being operated repeatedly at intervals of a predetermined time when a predetermined application program runs in said CPU, for transferring data in said first VRAM into said second VRAM to display the data in multi-window manner;
said picture switching control means controlling so that said second selection means connects said second display hardware to said display when said predetermined application program runs.

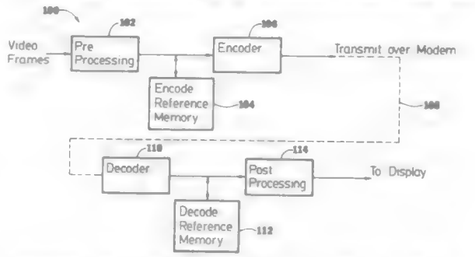
5,367,629

DIGITAL VIDEO COMPRESSION SYSTEM UTILIZING VECTOR ADAPTIVE TRANSFORM

Frank J. Chu, San Jose, and C. Lung Yeh, Saratoga, both of Calif., assignors to ShareVision Technology, Inc., San Jose, Calif.

Filed Dec. 18, 1992, Ser. No. 993,039
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—162 **11 Claims**

1. A method for encoding frames of digitized video information, wherein the frames are divided into blocks, and wherein numbers of bits available for encoding video information change over time so that the number of bits available for encoding a frame may differ from the number of bits available for encoding a subsequent frame, said method comprising:
performing a spatial domain to transform domain transformation of video information related to each block of a frame to obtain a corresponding block of transform coefficients;
ascertaining the number of bits available for encoding said frame;
allocating a number of bits to the encoding of each block of transform coefficients for all the blocks in said frame; and



quantizing and coding each block of transform coefficients to generate variable length coding bits for each block, wherein the number of bits generated for each block is a function of the number of bits allocated to the encoding of a different block.

5,367,630

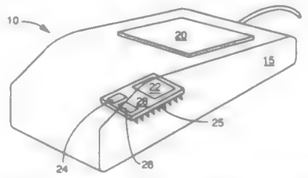
Patent Not Issued For This Number

5,367,631

CURSOR CONTROL DEVICE WITH PROGRAMMABLE PRESET CURSOR POSITIONS

David H. Levy, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 14, 1992, Ser. No. 868,909
Int. Cl.[5] G09G *1/100*
U.S. Cl. 395—162 **9 Claims**



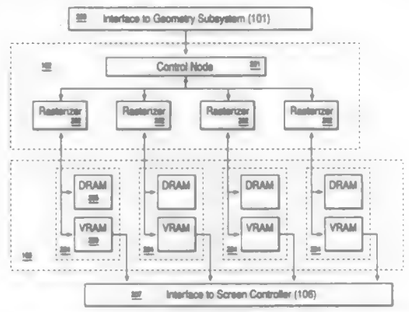
1. In a computer system having a central processing unit, a display coupled to the central processing unit, a cursor which is displayed on the display and indicates the location where next display data will be located, and a cursor control device for moving the cursor across the display, an apparatus for moving the cursor to selected positions on the display automatically, the apparatus comprising:
X- and Y-axis sensing means mounted within the cursor control device;
X- and Y-axis position correlating means coupled to the X- and Y-axis sensing means for receiving the X- and Y-axis position signals generated by the X and Y-axis sensing means and generating an X- and Y-axis position signal;
memory means for storing a given X- and Y-axis position signal in relation with a user selected cursor display position, the memory means being coupled to the X- and Y-axis position correlating means, the cursor moving to the user selected display position automatically when the cursor control device is subsequently moved into the X- and Y-axis position associated with that display position stored in the memory means.

5,367,632

FLEXIBLE MEMORY CONTROLLER FOR GRAPHICS APPLICATIONS

Andrew D. Bowen, Saugerties, and David C. Tannenbaum, Hurley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1992, Ser. No. 969,634
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **15 Claims**



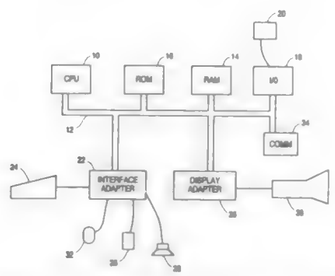
1. A memory controller for a computer graphics system for converting graphic primitives into a two dimensional array of pixel data for display on a display device, said pixel data having a plurality of bits for each pixel, said graphics system including means for generating a first plurality of pixel attributes each having one or more bits, said means for generating accepting as input a second plurality of pixel attributes, the controller comprising:
means for storing said two dimensional pixel array, said storage means having one or more data access ports;
means for connecting said means for generating to one of said data access ports of said means for storing, said means for connecting having a plurality of segments each corresponding to a subset of said plurality of bits stored for a pixel in said means for storing; and
means responsive to a control signal for coupling selected ones of said first or second plurality of pixel attributes to selected segments of said means for connecting.

5,367,633

OBJECTED ORIENTED NOTIFICATION FRAMEWORK SYSTEM

John R. Matheny; Christopher White, both of Mountain View, and David R. Anderson, Cupertino, all of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Continuation of Ser. No. 996,782, Dec. 23, 1991, Pat. No. 5,315,703. This application Jan. 11, 1994, Ser. No. 179,782
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—164 **9 Claims**



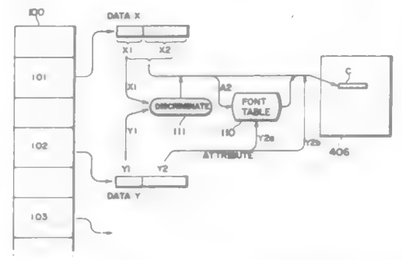
1. A method for managing an object-oriented notification system in a computer with a memory, comprising the steps of:
(a) storing connection information including notification routing information and connection registration information in the memory of the computer;
(b) registering the connection information, including registration information indicative of notification status, in a connection object of the object-oriented notification system;
(c) detecting a notification event utilizing the notification routing information in the connection object of the object-oriented notification system; and
(d) after detecting the notification event, selectively notifying objects in the object-oriented notification system based on the connection registration information stored in the connection object in the memory of the computer system.

5,367,634

DISPLAY METHOD, CONTROL CIRCUIT FOR THE SAME AND DISPLAY DEVICE

Katsutoshi Nakamura, Suwa, Japan, assignor to Seiko Epson Corporation, Nagano, Japan

Filed Jun. 24, 1992, Ser. No. 903,526
Claims priority, application Japan, Jun. 27, 1991, 3-156421; May 15, 1992, 4-123777
Int. Cl.[5] G09G *1/16*
U.S. Cl. 345—194 **19 Claims**



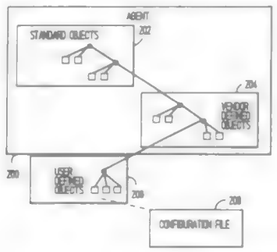
1. A display method for displaying a bit-mapped image data including an identification data and line pattern composing a font of a character, a symbol, or a graphic having the predetermined code assigned thereto on a raster scan type display, said identification data for discriminating between said image data and said code, said display method comprising the steps of:
a. defining a storing region of a bit-mapped memory by said identification data, said storing region having a predetermined bit-length;
b. storing said bit-mapped image data into said bit-mapped memory, and said code joined with said identification data into said storing region of said bit-mapped memory., said identification data including a value for addressing a line pattern of said font corresponding to said code;
c. sequentially reading out one of said bit-mapped image data and said code with said identification data from said bit-mapped memory; and
d. displaying said line pattern addressed by said identification data on said raster scan type display, said line pattern composing said font corresponding to said code with said identification data read out from said bit-mapped memory.

5,367,635

NETWORK MANAGEMENT AGENT WITH USER CREATED OBJECTS PROVIDING ADDITIONAL FUNCTIONALITY

Neal Bauer, Loveland, and Mark A. Kepke, Ft. Collins, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 29, 1991, Ser. No. 752,152
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **1 Claim**



1. In a computer system comprising a managing computer and at least one managed computer, the managing computer and the managed computer connected by a network, the managed computer having an executable program and an agent, capable of receiving information from the managing compute, running as background software, the agent, while running, having a set of executable functions defined by a collection of management objects forming a management information base, a method for extending the set of executable functions of the running agent, the method comprising the following steps:

a. defining a new management object in a text file in the managing computer, the new management object associated with the executable program, the text file including at least one object identification and a directory path for the executable program;

b. sending the text file, over the network, from the managing computer to the managed computer;

c. sending a reconfigure command, over the network, from the managing computer to the agent;

d. receiving the reconfigure command by the agent;

e. appending the text file, by the running agent, to the collection of management objects in the running agent, in response to the reconfigure command; and

f. interpreting the new management object defined by the text file as an executable function, thereby extending the set of executable functions of the running agent;

whereby, if the managing computer sends an object identification which was included in the text file over the network to the agent;

i) the agent receives the object identification;

ii) the managed computer executes the executable program indicated by the object identification.

5,367,636

HYPERCUBE PROCESSOR NETWORK IN WHICH THE PROCESSOR INDENTIFICATION NUMBERS OF TWO PROCESSORS CONNECTED TO EACH OTHER THROUGH PORT NUMBER N, VARY ONLY IN THE NTH BIT

Stephen R. Colley, Reno, Nev.; Stanley P. Kenoyer, Forest Grove, and Doran K. Wilde, Beaverton, both of Oreg., assignors to nCUBE Corporation, Foster City, Calif.

Continuation of Ser. No. 587,237, Sep. 24, 1990, abandoned. This application Nov. 1, 1993, Ser. No. 144,544
Int. Cl.[5] G06F *13/00, 13/374*
U.S. Cl. 395—200 **7 Claims**

1. In a network of interconnected nodes;

each node including a processor (**10, 12, 14, 16, 18**);

each processor including means for internode communication,

said internode communication means connecting said nodes to form an array of said processors having a hypercube topology;

each of said processors in said network being assigned a unique processor identification (ID), said ID being comprised of bit 1, bit 2 . . . bit n, bit n+1, bit n+2, . . . ;

the processor IDs of two processors connected to each other through port number n, varying only in said bit n;

a first node of said nodes having an output port n;

an apparatus in a second node of said nodes for establishing a communication path through said second node comprising:

a plurality of input ports, one of said input ports being input port n;

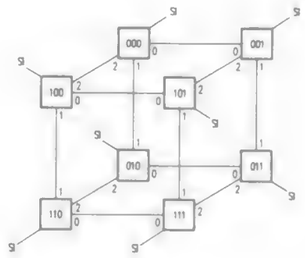
a plurality of output ports;

receiving means (**200**) at said input port n for receiving a first address packet related to a first message from said output port n of said first node;

said first address packet including a forward bit set to one of either a first state or a second state, said first address packet being immediately followed by a second address packet;

a data bus (**210**);

said data bus connecting said input and output ports of said second node together such that messages received on any one input pod can be routed to any other output port of said second node;



registering means (**202**) for registering a processor ID unique to said second node;

comparing means (**204**) connected to said data bus, to said receiving means (**200**) and to said registering means (**202**) for comparing a first node address in said first address packet with each corresponding bit position, successively, beginning with said bit n+1 of said processor ID of said second node stored in said registering means to determine a first one bit position of said first node address in said first address packet that is not the same as a corresponding bit position of said processor ID of said second node;

said comparing means (**204**) including means for activating for transmission of said first address packet placed on said data bus (**210**) by said input port n, the one of said plurality of output ports whose port number corresponds to said first one bit position, where n is the number of said input port n;

forward bit detection means for detecting that said forward bit is set to said first state;

means connected to said forward bit detection means for discarding said first node address in said first address packet;

said compare logic (**204**) including means for comparing a second node address in said second address packet following said first address packet with each corresponding bit position, successively beginning with a bit n+1, of the processor ID of said second node to determine a second bit position of said second node address in said second

address packet that is not the same as a corresponding bit position of said processor ID of said second node; and,

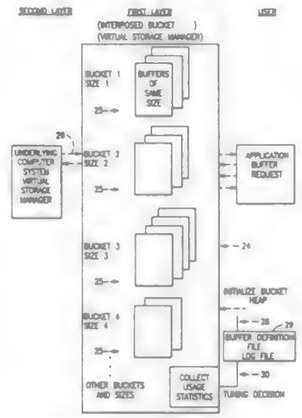
means for sending said second address packet out of the port number of said second node corresponding to said second one bit position where n is the number of a port on which said first address packet is received.

5,367,637

SELF-TUNING VIRTUAL STORAGE MANAGEMENT FOR DEDICATED REAL-TIME COMPUTER SYSTEM

Shuang N. Wei, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1992, Ser. No. 860,745
Int. Cl.[5] G06F *1/00*
U.S. Cl. 395—250 **5 Claims**



1. A method of providing a self-tuned virtual storage manager on a dedicated real-time computer system comprising the steps of:

interposing a virtual storage allocation/deallocation layer between a data processing application and the real-time computer system;

reading from the interposed layer a HEAP definition file to select a number of memory buffer pools and a number of buffers in each pool;

allocating the selected number of buffer pools and the selected number of buffers in each pool; collecting statistics regarding the usage of the buffers and the buffer pools; and

tuning the interposed layer based on the collected statistics, the tuning comprising the steps of:

incrementing a counter for each buffer allocation/deallocation within the interposed layer;

computing a ratio of the interposed layer allocation count to the underlying real-time system usage for every 1000 allocation requests;

monitoring the collected statistics collection when the ratio computed is less than nine or greater than 99;

computing buffer pool size and quantity and number of buffers in each pool;

determining the need to create or reduce buffer pool size and quantity and number of buffers in each pool; and

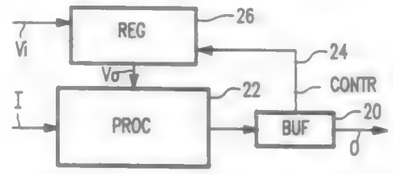
updating the HEAP definition file.

5,367,638

DIGITAL DATA PROCESSING CIRCUIT WITH CONTROL OF DATA FLOW BY CONTROL OF THE SUPPLY VOLTAGE

Cornelis Niessen, and Cornelis H. van Berkel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 25, 1992, Ser. No. 951,520
Claims priority, application European Pat. Off., Dec. 23, 1991, 91203381.8
Int. Cl.[5] G06F *1/32, 13/00*
U.S. Cl. 395—250 **22 Claims**



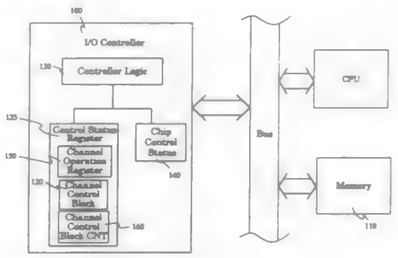
1. A digital apparatus comprising: buffer means for receiving and intermediate storage of data and subsequent outputting thereof to a data processing means, said data processing means comprising electronic integrated circuitry based on self-timed elements wherein the operating speed of said electronic circuitry is directly determined by its supply voltage, a source of power supply voltage for said electronic circuitry, and feedback means for, under control of a filling degree signal of said buffer means, controlling, via said supply voltage source, the actual power supply voltage of said electronic circuitry for dynamically controlling the data handling rate of said data processing means.

5,367,639

METHOD AND APPARATUS FOR DYNAMIC CHAINING OF DMA OPERATIONS WITHOUT INCURRING RACE CONDITIONS

Martin Sodos, San Jose, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 30, 1991, Ser. No. 815,802
The portion of the term of this patent subsequent to Oct. 5, 2010, has been disclaimed.
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—275 **10 Claims**



1. In a computer system comprising a central processing unit (CPU), memory, and input/output (I/O) storage devices, an apparatus for performing direct memory access (DMA) to the I/O devices comprising:

an I/O controller for performing DMA operations, said I/O controller comprising controller logic and a first channel control block (CCB) register, said first CCB register storing a channel control block (CCB) identifying DMA transfer parameters which specify an operation to be performed by the I/O controller, said controller logic performing operations in accordance with the CCB, said

CCB comprising a chain status bit, which, when set, indicates to the controller logic that a subsequent operation is to be performed as specified by another channel control block, said first CCB register initially storing a first CCB;

an I/O storage device external to the I/O controller comprising and storing at least one subsequent CCB to be processed subsequent to the first CCB; and

a chip control status block coupled to the controller logic, said chip control status block comprising an external memory address pointer which specifies an address, in the I/O storage device external to the I/O controller, of a next CCB to be processed, said external memory address pointer being incremented after each access to a CCB in the I/O storage device external to the I/O controller to point to a next CCB to be processed;

said I/O controller reading a CCB from the I/O storage device external to the I/O controller at the address specified by the external memory address pointer, storing that CCB in said first CCB register and performing operations in accordance with the CCB stored in the first CCB register;

whereby the I/O controller performs a chain of operations specified by a chain of CCBs without increasing an amount of memory required in the I/O controller.

5,367,640

SYSTEM FOR CONFIGURING AN INPUT/OUTPUT BOARD IN A COMPUTER

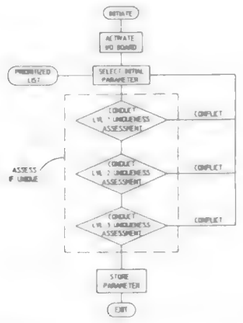
Bradley W. Hamilton; John W. Slattery, and Kerry J. Monroe, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 932,919, Aug. 20, 1992, abandoned, which is a continuation of Ser. No. 693,358, Apr. 30, 1991, abandoned. This application Jul. 22, 1993, Ser. No. 96,196

The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.

Int. Cl.[5] G06F *15/08, 9/00, 13/00*

U.S. Cl. 395—275 **6 Claims**



1. An apparatus for configuring an input/output board in a computer comprising:

a. a computer having a programmable processor through which commands may be issued;

b. an input/output board connected to said computer and which responds to said commands so as to create a command-response sequence wherein said command is likely to cause a change to said I/O board;

c. a means for communicating said commands to said I/O board;

d. a means for assigning an address to said I/O board; and

e. a means for assessing if said address is unique to said I/O board through operation of said computer to check if said initial address is in use elsewhere wherein said means for assessing utilizes said command-response sequence and wherein said means for assigning is responsive to said means for assessing.

5,367,641

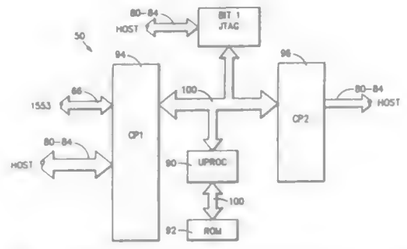
MIL-STD-1553 INTERFACE DEVICE HAVING A BUS CONTROLLER MINOR FRAME TIMER

John W. Pressprich, Woodland Park; Anthony F. Jordan; Timothy D. Hornback, both of Colorado Springs, and Gregory S. Carr, Boulder, all of Colo., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 4, 1992, Ser. No. 971,434

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—275 **4 Claims**



1. An apparatus for interfacing with a serial multiplexed data bus, comprising:

memory means having a plurality of storage locations for storing data therein;

means for partitioning said plurality of storage locations in said memory means into storage areas, each of said storage areas containing at least two of said storage locations arranged contiguously, one of said storage locations within each of said storage areas containing an arrangement of individual bits indicative of an operational code, a plurality of said storage areas being arranged contiguously in a frame, a plurality of said frames being arranged contiguously;

signal processing means, operable in response to each of said operational codes of said storage areas of said memory means, for sequentially executing said plurality of said frames so as to control the transmission and reception of messages on the data bus in accordance with said operational codes stored within corresponding ones of said plurality of frames executed; and

timer means for controlling said sequential execution of said signal processing means such that said signal processing means sequentially executes said plurality of said frames enabling at least two of said plurality of said frames to be executed at frequencies that differ from one another.

5,367,642

SYSTEM OF EXPRESS CHANNELS IN AN INTERCONNECTION NETWORK THAT AUTOMATICALLY BYPASSES LOCAL CHANNEL ADDRESSABLE NODES

William J. Dally, Framingham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 28, 1990, Ser. No. 590,367

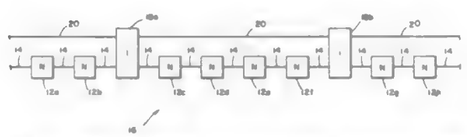
Int. Cl.[5] G06F *13/00, 15/16*

U.S. Cl. 395—325 **31 Claims**

1. An interconnection network comprising:

a) an array of addressable data processing nodes interconnected by local channels, each node having an address within the array, such that any node may communicate with another node by routing messages to a designation address of the other node through local channels between nodes and through nodes of the array interconnected by the local channels, all messages being routed by a node toward another node through a local channel;

b) an express channel running in parallel with the local channels to provide an alternative path for messages travelling between a first node and a second node, the alternative path bypassing nodes interconnected by local channels between the first node and the second node; and



c) interchanges which are not addressable data processing nodes coupled at each end of the express channel to a local channel between nodes for interfacing the local channels with the express channel, the interchanges making node-independent routing decisions based on destination address information carried in messages to direct the messages over local channels or to redirect the messages to the express channel.

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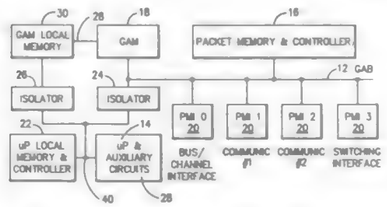
GENERIC HIGH BANDWIDTH ADAPTER HAVING DATA PACKET MEMORY CONFIGURED IN THREE LEVEL HIERARCHY FOR TEMPORARY STORAGE OF VARIABLE LENGTH DATA PACKETS

Paul Chang, Peekskill; Gary S. Delp, Yorktown Heights; Hanafy E. Meleis, Yorktown Heights; Rafael M. Montalvo, Yorktown Heights; David L Seidman, New York; Ahmed N. Tantawy, Yorktown Heights, and Dominick A. Zumbo, White Plains, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1991, Ser. No. 651,894

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **24 Claims**



1. A generic high bandwidth adapter providing a unified architecture for data communications between buses, channels, processors, switch fabrics and/or communication networks in which data is carried by data packets of variable lengths, with each data packet including a header control information portion required by communication protocols used to mediate the information exchange, and a data portion for the data which is to be communicated, comprising:

a. a processor subsystem including a processor for processing the header control information portions of data packets, with the processor having access to data packets stored in a packet memory means;

b. said packet memory means is organized as a three level hierarchy comprising a first level of queue sets, each of which is comprised of a second level of linked lists of data packets, with each data packet being comprised of a third level list of buffers, said packet memory means storing data packets arriving at at least one generic adapter input-/output port, with each data packet being stored in one or more of said buffers as required by the length of the data packet, with an order of use of the buffers being interchangeable;

c. a generic adapter manager means for performing and synchronizing generic adapter management functions, including implementing data structures in said packet memory means by organizing data packets in said buffers, and organizing data packets into queues for processing by said processor subsystem or transfer to or from said at least one generic adapter input/output port and processing multiple interleaved receive data streams and multiple interleaved transmit data streams; and

d. said at least one generic adapter input/output port having associated therewith a packet memory interface providing for transfer of data packets into and out of said packet memory means, such that when a data packet is received at one said generic adapter input/output port, the data packet is transferred into said packet memory means and queued for processing.

5,367,644

COMMUNICATION SYSTEM

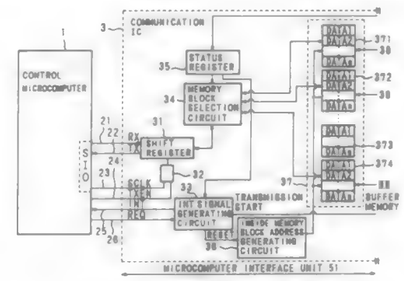
Etsuya Yokoyama, Himeji, and Yasusi Okamoto, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,339

Claims priority, application Japan, Apr. 30, 1991, 3-098422

Int. Cl.[5] G06F *13/00*

U.S. Cl. 395—325 **12 Claims**



1. A communication system providing control information to an exterior device based upon information received from said exterior device, said communication system comprising:

data processing means for receiving information data from said external device and for transmitting control data to said external device; and

control means, coupled to said data processing means, for receiving said information data supplied from said external device via said data processing means and for transmitting said control data to said external device via said data processing means;

said control means comprising:

means for generating a first signal which operates as one of a first transfer request signal for transferring said control data to said data processing means for controlling said external device and a first response signal upon receipt of a second transfer request signal from said data processing means, and for generating a transfer signal for synchronizing the transfer of said information data and said control data to and from said control means, respectively; and

said data processing means comprising:

storage means for storing said information data and said control data; and

means for generating a third signal which operates as one of said second transfer request signal for transferring said information data received from said external device to said control means and a second response signal upon receipt of said first transfer request signal from said control means;

wherein transfer of said control data is based upon receipt of

said second response signal from said data processing means in response to said first transfer request signal, and wherein transfer of said information data is based upon receipt of said first response signal from said control means in response to said second transfer request signal;

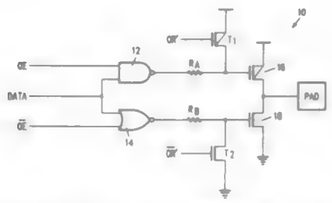
said transfer signal being generated by said control means once one of said first and second transfer request signals is acknowledged.

5,367,645

MODIFIED INTERFACE FOR PARALLEL ACCESS EPROM

Paul R. Lubeck, San Jose, Calif., and Wallace L. Breinholt, South Jordan, Utah, assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 12, 1992, Ser. No. 897,913
Int. Cl.[5] G11C *7/00*; G06F *13/00*
U.S. Cl. 395—325 **4 Claims**



1. Output interface circuitry utilizable for controlling the data output of an electrically programmable read only memory (EPROM) device, the data output of the EPROM device being responsive to transitions in the logic state of an externally-provided output enable signal, the output interface circuitry comprising:

(a) a first data transfer circuit for transferring a data input signal to the data output of the EPROM device when the output enable signal is in an active logic state and the data input signal is logic high;

(b) a second data transfer circuit for transferring the data input signal to the data output of the EPROM device when the output enable signal is in an active logic state and the data input signal is logic low;

(c) data float switching means connected to the first and second data transfer circuits and responsive to a switching signal for forcing the data output of the EPROM device to a high impedance state within a specified data float time t_{DF} after the output enable signal transitions from the active logic state to an inactive logic state; and

(d) data hold means responsive to the transition of the output enable signal from the active logic state to the inactive logic state for providing the switching signal to the data float switching means a specified data hold time t_{DH} after the transition of the output enable signal.

5,367,646

UNIVERSAL DEVICE FOR COUPLING A COMPUTER BUS TO A CONTROLLER OF A GROUP OF PERIPHERALS

Jacky Pardillos, Plaisir, and Paul Ravaux, Les Clayes Sous Bois, both of France, assignors to Bull S.A., Paris, France

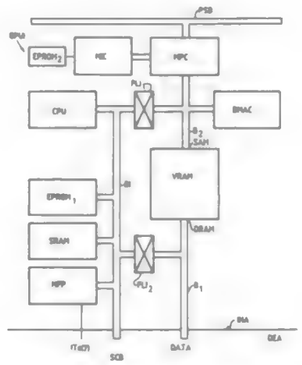
Filed Jul. 15, 1992, Ser. No. 913,477
Claims priority, application France, Jul. 15, 1991, 91 08908
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **54 Claims**

1. A universal device for coupling a computer bus of a computer to a controller of a group of peripherals connected to one another by a specific link to which the controller is physically connected, said universal device including:

a microprocessor connected with at least one memory said microprocessor having an operating system,

a controller interface for linkage with the controller enabling transfer of data defining frames and control blocks wherein said control blocks include command characters relating to the frames transferred to either the link or the bus,

a double-port random-access buffer memory connected by way of a first bus to said controller interface and by way of a second bus to the computer bus via a specific interface of the computer, means for organizing transfer of data by the microprocessor between said controller interface and the double-port memory, and between the double-port



memory and the computer bus, a direct memory access controller operatively connected between said double-port memory and the computer, said transfer of data being effected under control of said direct memory access controller, wherein conversion of control blocks of protocols used on the computer bus into those used on the link and vice versa is performed by the microprocessor, which enables a transfer of control blocks used on the link over an internal bus of the microprocessor to or from said controller interface.

5,367,647

APPARATUS AND METHOD FOR ACHIEVING IMPROVED SCSI BUS CONTROL CAPACITY

Richard L. Coulson, Beaverton; Vincent G. O'Malley, Aloha, and Robert J. Safranek, Portland, all of Oreg., assignors to Sequent Computer Systems, Inc., Beaverton, Oreg.

Continuation of Ser. No. 747,659, Aug. 19, 1991, abandoned.
This application Jul. 19, 1993, Ser. No. 93,452
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—325 **4 Claims**

1. A method for transferring data across a SCSI bus to which first, second, and third devices are attached and are addressed logically by associating a SCSI but data bit with a predetermined physical device address assigned to each of the devices, comprising the steps of:

setting the first and second devices to a common first logical device address;

setting the third device to a second logical device address;

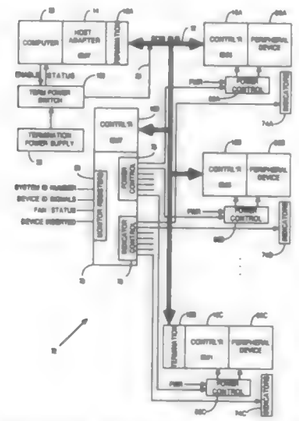
addressing the second device by asserting from the first device the first logical device address on the SCSI bus;

establishing a connection between the first and second devices;

transferring data across the SCSI bus between the first and second devices, the data comprising a command issued by the first device and a response from the second device to the command, the command and the response being completed prior to establishing a connection between the first device and the third device;

detecting in the second device one of a reselection signal asserted by the third device and a simultaneous presence

of more than one logical device address asserted on the SCSI bus; and



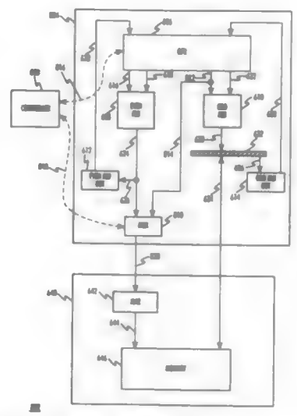
inhibiting the second device from responding to subsequent data transferred from the third device to the first device.

5,367,648

GENERAL PURPOSE MEMORY ACCESS SCHEME USING REGISTER-INDIRECT MODE

Chiao-Mei Chuang, Briarcliff Manor, and Kemal Ebcioglu, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1991, Ser. No. 659,717
Int. Cl.[5] G06F *9/34, 12/00, 15/76*
U.S. Cl. 395—375 **35 Claims**



1. A computer system comprising:

(1) first registers for storing data;

(2) a second register for storing memory addresses, said second register being architecturally visible such that said second register must be explicitly specified in user-associated instructions to cause memory addresses to be stored in said second register during memory address generation operations;

(3) arithmetic-logic means coupled to said first registers for generating said memory addresses from said data during said memory address generation operations; and

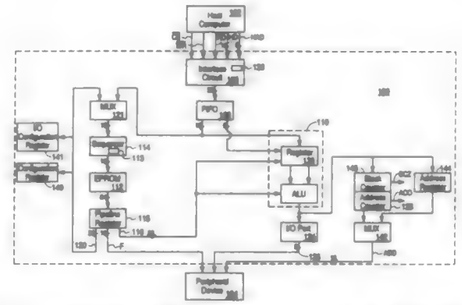
(4) means coupled to said arithmetic-logic means for writing back said memory addresses to said first registers during said memory address generation operations, and for storing said memory addresses in said second register during said memory address generation operations when said second register is explicitly specified in said user-associated instructions.

5,367,649

PROGRAMMABLE CONTROLLER

Yoram Cedar, Sunnyvale, Calif., assignor to WaferScale Integration, Inc., Fremont, Calif.

Continuation of Ser. No. 197,004, May 20, 1988, abandoned.
This application Oct. 31, 1990, Ser. No. 609,123
Int. Cl.[5] G06F *9/24, 9/40*
U.S. Cl. 395—375 **5 Claims**



1. An integrated circuit peripheral controller for controlling a peripheral device, comprising:

a memory for storing instruction, at least one of said instructions comprising a first field, a second field and a third field;

a sequencer for providing in an instruction cycle an address to said memory means and for receiving said first field of an instruction corresponding to said address, said sequencer using said first field to form a branch address to be used in a subsequent instruction cycles;

a CPU receiving said second field of said instruction for executing a command encoded in said second field;

a data memory address counter coupled to said CPU for providing sequential date memory addresses for performing a direct memory access operation;

an input/output port, coupled to said peripheral device;

an in/put port, coupled to said CPu, configurable for (i) inputting a data word from said peripheral device, (ii) outputting a data word to said peripheral device, and (iii) providing in a data word predetermined control signals to said peripheral device;

an output control port for communicating, under said CPU's control, said third field of said instruction as output signals to control said peripheral devide,

a FIFO memory for receiving data words from a host processor;

means for receiving said data words from said FIFO memory, and for providing said data words as operand data to said CPU, each of said data words received into said FIFO memory contains first and second fields, at least one bit of said first field determining whether said second field contains an address to an instruction word or contains a data word,

means for providing said second field to said sequencer when said second field contains as address to an instruction word;

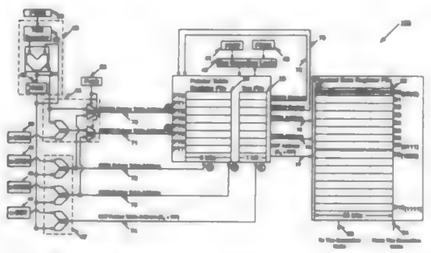
a plurality of registers; and

means for selecting one of said registers according to a predetermined bit pattern in said first field, and for storing said second field in said selected register when said second field contains data.

5,367,650
METHOD AND APPARAUTS FOR PARALLEL EXCHANGE OPERATION IN A PIPELINED PROCESSOR

Harshvardhan P. Sharangpani, Santa Clara, and Jonathan B. Sweedler, Sunnyvale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jul. 31, 1992, Ser. No. 923,148
Int. Cl.[5] G06F *9/24, 9/38, 12/00, 15/00*
U.S. Cl. 395—375 **22 Claims**



1. A data register file system in microprocessor having a pipelined execution unit that employs the data register file to store operands and results of its instruction executions, comprising:

a plurality of data registers, wherein each of the data registers can store one of the operands and results;

pointer table register having a plurality of pointer registers, each for storing an address of one of the data registers;

first address generation circuitry coupled to the pointer table register and the pipelined execution unit for generating a first set of pointer table addresses to access a first group of the pointer registers for the addresses of a first group of the data registers whose contents are required by the execution of a first instruction in the pipelined execution unit, wherein the first address generation circuitry receives a first instruction address of the first instruction from the pipelined execution unit to generate the first set of pointer table addresses;

second address generation circuitry coupled to the pointer table register and the pipelined execution unit for generating a second set of pointer table addresses to access a second group of the pointer registers for the addresses of a second group of the data registers whose contents are required by the execution of a second instruction in the pipelined execution unit, wherein the second address generation circuitry receives a second instruction address of the second instruction from the pipelined execution unit to generate the second set of pointer table addresses, wherein the second instruction is an exchange instruction that requires an exchange of the contents stored within the second group of the data registers;

circuitry coupled to the pointer table register and the data registers for coupling the addresses of the first group of the data registers stored in the first group of the pointer registers to the data registers for accessing the first group of the data registers;

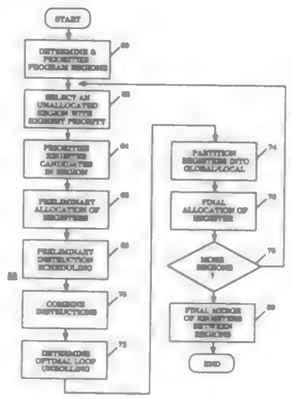
read circuitry coupled to the pointer table register for reading the addresses of the second group of the data registers stored in the second group of the pointer registers; and

exchange circuitry coupled to the read circuitry for exchanging the addresses read from the second group of the pointer registers and writing the addresses exchanged back to the second group of the pointer registers while the contents stored within the second group of the data registers remain not exchanged, wherein the second group of the pointer registers include a first pointer register and a second pointer register, wherein the exchange circuitry stores (1) the address read from the first pointer register into the second pointer register and (2) the address read from the second pointer register into the first pointer register, wherein the second instruction is executed in parallel with the first instruction.

5,367,651
INTEGRATED REGISTER ALLOCATION, INSTRUCTION SCHEDULING, INSTRUCTION REDUCTION AND LOOP UNROLLING

Kevin J. Smith, Boulder Creek; Hugh R. Kenner, Cupertino; William A. Savage, Milpitas, and Alice Kwong, Los Altos, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 30, 1992, Ser. No. 982,962
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—700 **18 Claims**



1. In a computer system comprising a plurality of registers and a plurality of pipelines for parallel and overlapping execution of instructions, a method for allocating said registers to instructions being generated for a program being compiled, unrolling loops of said program, and scheduling said instructions being generated for execution, said method comprising the steps of:

a) allocating global registers to said instructions being generated for a first time using all registers of said computer system;

b) scheduling said instructions being generated for a first time, allocating local registers using a copy of all registers of said computer system;

c) determining optimal number of times to unroll loops of said program;

d) determining optimal partitioning of said registers of said computer system into global and local registers, said partitioning determination being made based on the relative utilities of each of said registers to global register allocation and instruction scheduling;

e) allocating global registers to said instructions being generated for a second time using said registers of said computer system partitioned to be global registers;

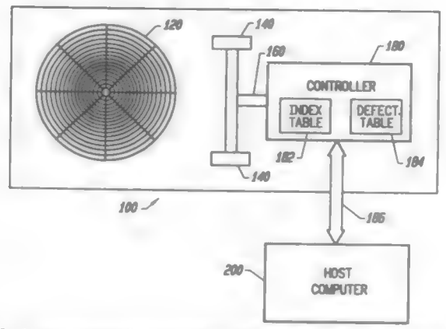
f) unrolling said loops; and

g) scheduling said instructions being generated for a second time, allocating local registers using said registers of said computer system partitioned to be local registers.

5,367,652
DISC DRIVE TRANSLATION AND DEFECT MANAGEMENT APPARATUS AND METHOD

Jeffrey A. Golden, 1125 Blue Ridge Rd., Boulder Creek, Calif. 95006, and Karl D. Schuh, 111 Dean Creek Rd. #34, Scotts Valley, Calif. 95066-4136

Filed Feb. 2, 1990, Ser. No. 474,474
Int. Cl.[5] G11B *15/18;* **G06F** *3/06*
U.S. Cl. 395—499 **16 Claims**



9. An apparatus for accessing a physical memory location in a disc drive system, the system having at least one magnetic storage disc having a plurality of physical memory locations with each of said physical memory locations being accessed by physical cylinder, head and sector numbers , and at least one magnetic head for accessing the physical memory locations, said apparatus comprising:

A. means for receiving logic requests from a host processor, wherein each of said logic requests includes a logic cylinder, a logic head and a logic sector, and wherein said logic cylinder, logic head and logic sector corresponding to a physical cylinder, physical head and physical sector in said disc drive system respectively; and

B. control unit for seeking said physical memory locations, said control unit including:

(a) means for storing an index table containing a set of logical cylinder memory location entries, wherein each of said logical cylinder memory location entries corresponds to a respective logic cylinder, and wherein each of said logical cylinder memory location entries contains a first parameter for indicating a respective physical cylinder arbitrarily located in said disc drive system;

(b) means for identifying said respective physical cylinder by directly pointing to said respective physical cylinder in reference to said first parameter;

(c) means for computing respective physical head and physical sector within said identified physical cylinder; and

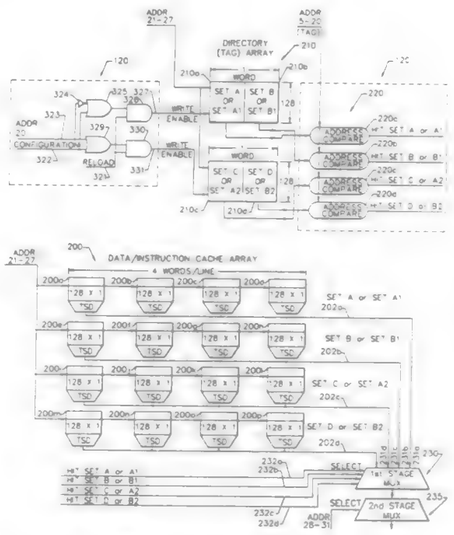
(d) wherein said host processor operates under a fixed number of sectors per track system and said control unit operates under variable numbers of sectors per track system, said each of said logical cylinder memory location entries further comprising:

a second parameter for indicating a number of sectors in said identified physical cylinder, wherein said means for computing computes said respective physical head and physical sector in reference to said second parameter and said logic head and logic sector.

5,367,653
RECONFIGURABLE MULTI-WAY ASSOCIATIVE CACHE MEMORY

William E. Coyle, Cary; David W. Nuechterlein, Durham; Kim E. O'Donnell; Thomas A. Sartorius, both of Raleigh; Kenneth D. Schultz, Cary, and Emmy M. Wolters, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1991, Ser. No. 813,971
Int. Cl.[5] G11C *13/00*
U.S. Cl. 395—400 **10 Claims**



1. A reconfigurable cache memory system, which is responsive to a main memory address including a multibit tag field and a multibit line field, comprising:

a tag array which provides, in response to the multibit line field, a plurality of tag elements which are equal to a predetermined maximum set size into which the cache memory system is configured;

a tag element select logic circuit which selectively enables and disables writing of cache update data into selected portions of said tag array, by providing a write enable/disable signal to said tag array in response to a cache reconfiguration designation and at least one tag bit of said multibit tag field;

a plurality of tag comparators, each of which receives a corresponding one of the plurality of tag elements and the multibit tag field, each tag comparator asserting a corresponding tag hit signal when its received tag element matches the multibit tag field;

a data array which provides, in response to the multibit line field, a plurality of data elements, the plurality of data elements being equal to said predetermined maximum set size; and

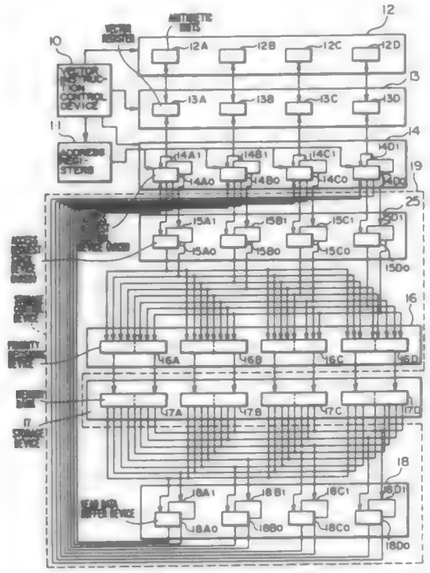
multiplexing means, which receives the plurality of data elements and the plurality of corresponding tag hit signals, for enabling access to a selected one of the plurality of data elements.

5,367,654

METHOD AND APPARATUS FOR CONTROLLING STORAGE IN COMPUTER SYSTEM UTILIZING FORECASTED ACCESS REQUESTS AND PRIORITY DECISION CIRCUITRY

Masao Furukawa; Tadaaki Isobe, and Shigeko Yazawa, all of Hadano, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Apr. 12, 1989, Ser. No. 337,070
Claims priority, application Japan, Apr. 13, 1988, 63-89011; Sep. 21, 1988, 63-235087
Int. Cl.[5] G06F *13/14, 12/00*
U.S. Cl. 395—425 18 Claims



1. A storage control apparatus for a computer system having a plurality of transfer pipelines issuing access requests in a synchronized fashion to a plurality of memory banks of a storage device, each memory bank being independently accessible in response to an access instruction from a vector processing device of said computer system, each of said transfer pipelines including a plurality of access request control means, to which an access instruction from said vector processing device is allocated corresponding to elements of a vector such that a plurality of access requests are simultaneously issued in response to the allocated access instruction, said storage control apparatus comprising:

forecast means for forecasting access requests to be issued from a plurality of access request control means of one of said transfer pipelines;

access request contention judge means for determining whether the access requests forecasted by said forecast means contend with access requests issued from a plurality of access request control means of another one of said transfer pipelines; and

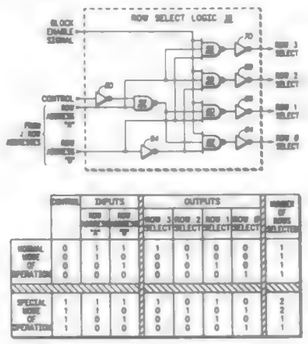
priority decision means, operative when said access request contention judge means determines that a contention occurs, for setting the access requests from said another one of said transfer pipelines to a wait state for a predetermined period of time such that the access requests of said one of said transfer pipelines are preferentially processed, thereby accessing the storage device in a synchronized fashion.

5,367,655

MEMORY AND ASSOCIATED METHOD INCLUDING AN OPERATING MODE FOR SIMULTANEOUSLY SELECTING MULTIPLE ROWS OF CELLS

Anita S. Grossman, and Paul A. Reed, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 23, 1991, Ser. No. 812,492
Int. Cl.[5] G06F *12/00;* G11C *11/413*
U.S. Cl. 395—425 19 Claims



1. A memory circuit, comprising:

a control conductor for transferring a control signal;

a plurality of memory cells, including a first memory cell located in a first row and a first column, and including a second memory cell located in a second row and the first column;

a bit line; and

select logic means for receiving the control signal, and in response to the control signal having a first logic state, said select logic means coupling the first memory cell to said bit line so that the memory circuit is accessed in a first access time, and in response to the control signal having a second logic state, said select logic means coupling both the first memory cell and the second memory cell to said bit line so that the memory circuit is accessed in a second access time, the second access time being of shorter duration than the first access time, said select logic means being coupled to said control conductor and to said plurality of memory cells

wherein said plurality of memory cells is a plurality of static random access memory (SRAM) cells.

5,367,656

CONTROLLING CACHE PREDICTIVE PREFETCHING BASED ON CACHE HIT RATIO TREND

Charles P. Ryan, Phoenix, Ariz., assignor to Bull HN Information Systems Inc., Billerica, Mass.

Filed Mar. 13, 1992, Ser. No. 850,713
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 19 Claims

7. An operand address prediction procedure for selectively predicting operand request addresses from historic operand cache misses practiced in a data processing system incorporating a processor for running successive processes, a cache memory, a main memory and a data stack, said procedure comprising the computer-implemented steps of:

A) waiting for an operand cache miss resulting from the absence in the cache of a called operand requested of said cache memory;

B) when an operand cache miss occurs, entering the address of the called operand on the top of said stack;

C) examining said stack for an address pattern among the operand miss addresses resident therein following step B);

D) if a pattern is not matched, returning to step A; and

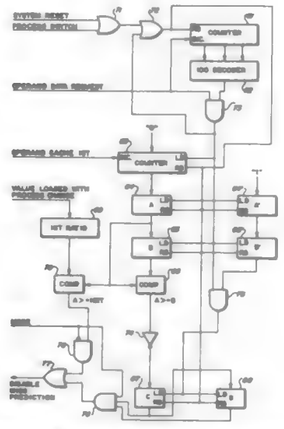
E) if a pattern is matched:

1) using the matched pattern and at least one of the addresses in said stack to calculate a predictive address pointing to a signal group stored in said main memory;

2) prefetching into said cache memory from said main memory the signal group pointed to by said predictive address; and

3) returning to step A);

wherein, concurrently with the performing of said steps A–E, the following steps are performed:



F) determining successive short term operand hit ratios of said cache memory;

G) comparing pairs of successive ratios determined in step F; and

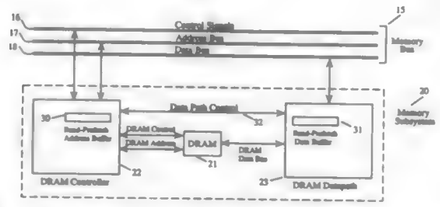
H) generating a control signal when the ratios of said compared pairs represent a downward trend in said successively determined short term operand hit ratios, the performing of said steps A–E being halted upon the occurrence of said control signal.

5,367,657

METHOD AND APPARATUS FOR EFFICIENT READ PREFETCHING OF INSTRUCTION CODE DATA IN COMPUTER MEMORY SUBSYSTEMS

Manoj Khare, Fremont, Calif., and Sudarshan B. Cadambi, Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 1, 1992, Ser. No. 955,042
Int. Cl.[5] G06F *9/26, 9/34, 13/00*
U.S. Cl. 395—425 10 Claims



9. An apparatus for read-prefetching is computer system having a central processing unit (CPU), a memory subsystem and a memory bus coupled to said CPU and to said memory subsystem, said memory subsystem comprising a semiconductor memory array, a memory controller coupled to said memory bus, and a memory datapath coupled to said memory bus for buffering data between said memory array and said memory bus, said memory controller for addressing said memory array, the apparatus comprising:

a read-prefetch address buffer for storing a prefetched instruction code address;

a read-prefetch data buffer for storing prefetched instruction code data; and

a datapath control line for signaling said read-prefetch data buffer when said prefetched instruction code data is to be supplied to said memory bus in response to an instruction code read operation,

said memory controller comparing an incoming instruction code read address from said memory bus to the prefetched code address stored in the read-prefetch address buffer,

said memory controller signaling said memory datapath to supply the stored prefetched code data from said read-prefetch data buffer if said incoming instruction code read address matches said stored prefetched code address,

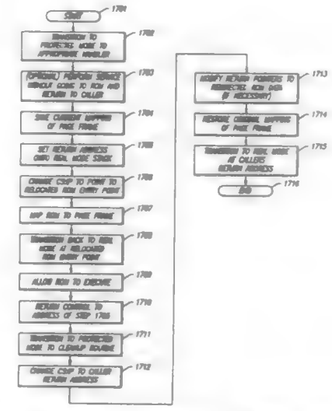
said memory controller addressing said memory array if the compared addresses do not match and supplying requested data from said memory array and, if a current request is an instruction code read request, then prefetching the next addressed code data into said read-prefetch data buffer and storing its address in said read-prefetch address buffer.

5,367,658

INTERRUPT MANAGEMENT METHOD

Dan Spear, West Hollywood, and Larry Mayer, Los Angeles, both of Calif., assignors to Quarterdeck Office Systems, Inc., Santa Monica, Calif.

Division of Ser. No. 730,244, Jul. 15, 1991, Pat. No. 5,237,669.
This application Oct. 7, 1992, Ser. No. 957,981
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 7 Claims



1. A method for detecting execution of a first interrupt flag related instruction in a computer system having a processing means, a communication means coupled to said processing means, and a memory means coupled to said processing means through said communication means, said method comprising the steps of:

detecting, using said processing means, an execution of a second interrupt flag related instruction that results in a general protection exception;

adjusting, using said processing means, a stack limit of a stack in said computer system in response to said detecting step;

causing a violation of said stack limit by executing in said computer system said first interrupt flag related instruction to attempt an access to said stack beyond said stack limit; and

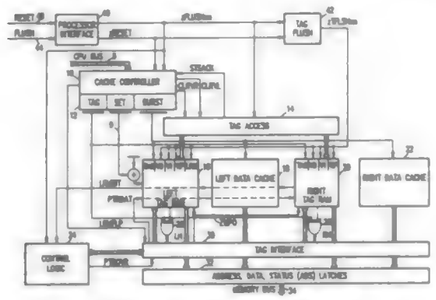
detecting, in said computer system, said violation of said stack limit caused by said access.

5,367,659

TAG INITIALIZATION IN A CONTROLLER FOR TWO-WAY SET ASSOCIATIVE CACHE

Sundaravarathan R. Iyengar, and James Nadir, both of San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 767,700, Sep. 30, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 216,082
Int. Cl.[5] G06F *13/00, 12/04, 12/06*
U.S. Cl. 395—425 **3 Claims**



1. In a cache controller tag RAM directory configured into two ways, a right way and a left way, each way including stored tag addresses, valid bits, and a write protect bit, there being least recently used (LRU) pointers that can be set to point to either said left way or said right way to indicate, as between said left way and said right way, a least recently used data entry, a combination comprising:

first means for asserting a first signal upon a first condition that a warm start reset state is recognized and a second condition that a power up state is recognized;

second means connected to said first means for withdrawing all pending write requests in response to said first signal;

third means connected to said first means for, in response to said first signal, only setting said valid bits, and said write protect bit to zero in each of said ways and said LRU pointers to zero to thereby point to said left way;

said third means including means for unasserting said first signal;

fourth means connected to said third means for starting a write cycle upon a third condition that said first signal is unasserted;

fifth means connected to said fourth means for comparing a search tag address presented to said directory with said stored tag addresses;

sixth means connected to said fifth means for generating a right hit signal upon a fourth condition that a match exists between said search tag address and one of said stored tag addresses stored in said right way;

seventh means connected to said fifth means for generating a left hit signal upon a fifth condition that a match exists between said search tag address and one of said stored tag addresses stored in said left way;

eighth means connected to said seventh means for selecting said right way for a right line fill in response to said right hit signal;

ninth means connected to said eighth means for flipping a corresponding least recently used pointer to point to said left way upon the filling of said right line of said right way;

tenth means connected to said seventh means for selecting said left way for a left line fill in response to said left hit signal; and,

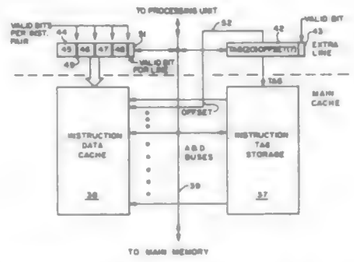
eleventh means connected to said tenth means for flipping said corresponding least recently used pointer to point to said right way upon the filling of said left line of said left way.

5,367,660

LINE BUFFER FOR CACHE MEMORY

Tal Gat; Simcha Gochman, and Michael Kagan, all of Haifa, Israel, assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 775,265, Oct. 11, 1991, abandoned. This application May 11, 1994, Ser. No. 241,328
Int. Cl.[5] G06F *12/12, 13/00*
U.S. Cl. 395—425 **12 Claims**



1. In a processor having a processing unit and a cache memory where said processing unit addresses said cache memory with an address which includes a tag field and an offset field, said cache memory storing a plurality of tag fields, said offset field being used as an entry number into said cache memory, an improvement comprising:

first storage means for storing a tag field and an offset field, said first storage means coupled to said processing unit and said cache memory;

second storage means for storing n fields of data associated with said tag and offset fields stored in said first storage means, said second storage means coupled to said first storage means, said cache memory, and said processing unit;

said first storage means selecting valid data in said second storage means when tag and offset fields coupled to said first storage means from said processing unit match said tag and offset fields stored in said first storage means;

said offset field in said first storage means providing an entry number into said cache memory for transfer of data from said second storage means to said cache memory;

said second storage means stores n first bits, each one of said n first bits being associated with a different one of said n fields of data, said n first bits indicating if its associated data is valid;

said second storage means transferring one or more of said n fields of data that are valid to said processing unit, said transfer occurring while others of said fields of data are invalid, said second storage means not transferring said n fields of data that are invalid to said processing unit; and,

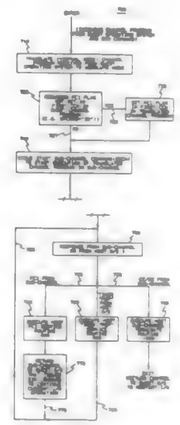
said second storage means transferring one or more of said n fields of data that are valid to said cache memory, said transfer occurring while others of said fields of data are invalid, said second storage means not transferring said n fields of data that are invalid to said cache memory.

5,367,661

TECHNIQUE FOR CONTROLLING CHANNEL OPERATIONS IN A HOST COMPUTER BY UPDATING SIGNALS DEFINING A DYNAMICALLY ALTERABLE CHANNEL PROGRAM

Roger E. Hough, Highland, N.Y.; Kazuo Iimura, Yamato, Japan; Kenya Ishimoto, Machida, Japan; Masao Nishimoto; Akio Saitoh, both of Tokyo, Japan; Kozo Sawada; Fumiaki Abe, both of Ichikawa, Japan; Goroh Sasaki, Yokohama, Japan, and Stephen J. Schmandt, Tokyo, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1992, Ser. No. 978,856
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—500 **29 Claims**



13. A method of controlling an input/output (I/O) operation in a first computer system having a main storage, an I/O device and a channel sub-system means connected between said main storage and said I/O device, wherein said channel sub-system means controls said I/O operation for transferring information signals between said device and said main storage, wherein said sub-system means executes said I/O operation in accordance with a channel program defined by first program signals located in said first computer system in absolute address form, wherein said first computer system executes a guest operating system of a second computer system that employs dynamic address translation (DAT) in a channel sub-system used therein, wherein said guest operating system generates an initial program portion of said channel program defined by second program signals in virtual address form for executing an initial operation portion of said I/O operation and extends said channel program by dynamically generating, in virtual address form, successive program portion of said channel program while said channel sub-system means is executing said I/O operation, wherein execution of each of said successive channel program portions by said channel sub-system means causes execution of a corresponding successive operation portion of said I/o operation by transferring information signals between said I/O device and said main storage, and wherein said first computer system includes a host operating system performing a method for updating said channel program comprising the steps of:

setting, in response to a programmed controlled interrupt (PCI) signal received from said channel sub-system means, a timer to generate a trigger signal after a predetermined time period has elapsed, wherein said predetermined time period defines, during an execution time period while a corresponding operation portion of said I/O operation is occurring, a first time at which alterations, are to begin, said alterations being to said channel program, then executing in said channel sub-system means, such that said alterations can be completed prior to a second time at which said operation would complete and said executing channel program would terminate;

modifying, in response to said trigger signal generated from the time at the conclusion of said time period, said first program signals representing said channel program being executed by said channel sub-system means, said modifying step comprising the steps of:

determining if said guest operating system has generated a next one of said successive channel program portions;

translating said next successive one of said channel program portions from said virtual to said absolute form to form a new translated channel program portion wherein said new translated channel program portion causes said channel sub-system means to transmit said PCI signal to said host operating system when said channel sub-system means begins performing a corresponding one of said operation portions specified by said new translated channel program portion;

appending said new translated channel program portion onto said channel program then executing in said channel sub-system means; and

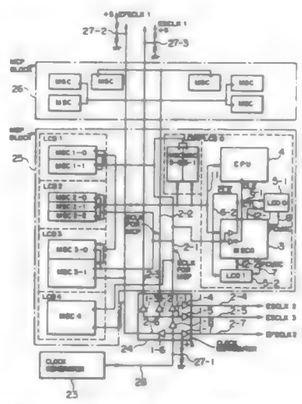
repeating said setting and modifying steps for each subsequent one of said successive channel program portions generated by said guest operating system wherein said channel program being executed by said channel sub-system means performs each successive one of said operation portions prior to terminating said I/O operation.

5,367,662

DISTRIBUTED MACHINE STATE CONTROLLED PROCESSOR SYSTEM WITH A CPU CLOCKED WITH A REFERENCE SIGNAL DELAYED FROM A SYSTEM CLOCK

Masatsugu Kametani, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 406,562, Sep. 13, 1989, abandoned. This application May 11, 1993, Ser. No. 59,731
Claims priority, application Japan, Sep. 16, 1988, 63-230007
Int. Cl.[5] G06F *1/04, 1/10*
U.S. Cl. 395—550 **18 Claims**



1. A distributed machine state controlled processor system, comprising:

a CPU including means for supplying a first access control signal representing an internal state regarding access from said CPU;

a subsystem connected to said CPU so as to be accessed by said CPU;

a machine state controller connected to said CPU, responsive to receipt of a system clock signal for supplying a

reference clock signal, delayed relative to said system clock signal, to said CPU for controlling an operational state of said CPU, and responsive to said first access control signal, initiated during a first state of operation of said reference clock signal, and to said system clock signal for supplying a second access control signal, initiated during a second state of operation of said reference clock signal;

a signal controller connected to said subsystem and further connected to said machine state controller to receive said second access control signal, said signal controller responsive to said second access control signal for generating a third access control signal, initiated during a third state of operation of said reference clock signal to enable access to said subsystem so that said subsystem is enabled when accessed by said CPU.

5,367,663

Patent Not Issued For This Number

5,367,664

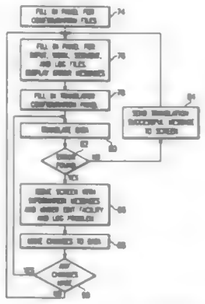
ELECTRONIC DOCUMENT INTERCHANGE TEST FACILITY

James W. Magill, 104 Lily Ct., Allen, Tex. 75002; Kathleen M. Adams, 6823 Winding Rose Trail, Dallas, Tex. 75252, and Fred A. Sammet, 2801 Rigsbee Dr., Plano, Tex. 75074-4707

Filed Aug. 30, 1991, Ser. No. 753,265

Int. Cl.[5] G06F *1/00*

U.S. Cl. 395—575 **7 Claims**



1. A method for interactively translating electronic data interchange files, comprising the steps of:

(a) generating a plurality of displays for interactively controlling the translation of an electronic data interchange file;

(b) translating said electronic data interchange file until a translation error exists;

(c) displaying said translation error on at least one of said plurality of displays so that said translation error may be corrected interactively;

(d) correcting said displayed translation error in response to data entered on said at least one of said plurality of displays; and

(e) repeating steps (a) through (d) until no translation error exists.

5,367,665

MULTI-PROCESSOR SYSTEM IN A MOTOR VEHICLE

Stefan Koch, Ottersweier, and Harald Bühren, Bühl, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 16, 1992, Ser. No. 869,801

Claims priority, application Germany, Apr. 16, 1991, 4112334

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **10 Claims**

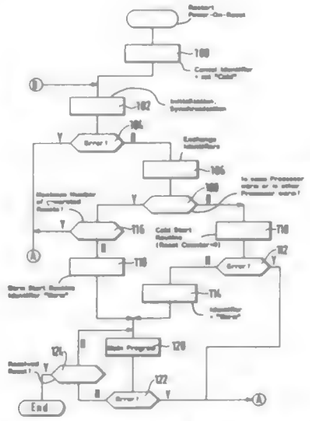
1. A multi-processor system for a motor vehicle for carrying out control functions, the system comprising:

at least two processors;

said processors each including means for detecting a fault of the other one of said processors during the operation of said system and means for generating a reset signal to trigger a restart of said system during the operation thereof;

means for supplying said reset signal to each of said processors at the beginning of an operating cycle when power is switched on to start said system;

said reset signal being supplied to said processors to carry out a first step sequence to define a cold start routine when power is switched on and to carry out a second step sequence to define a warm start routine when restarting said system;



each of said processors including means for distinguishing between when power is switched on and a restart based on changeable identifiers;

each of said processors having a changeable identifier which is set to a first pregiven value by said reset signal and which is set to a second pregiven value by said reset signal after said system is started;

means for permitting said processors to exchange their identifiers; and,

each of said processors including means for comparing its own identifier to the identifier of the other processor to distinguish between when said power is switched on and a restart and for selecting the corresponding one of said step sequences.

5,367,666

INCONSISTENCY-PROTECTED MULTIPROCESSOR SYSTEM WITH BROADCASTING OF SYMBOL-ERROR PROTECTED CODE WORDS

Thijs Krol, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 23, 1992, Ser. No. 918,985

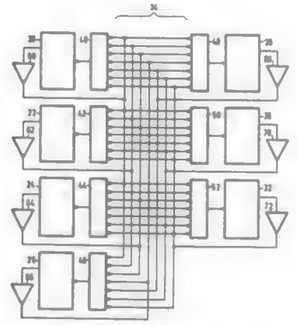
Claims priority, application European Pat. Off., Aug. 8, 1991, 91202040.1

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **8 Claims**

1. A multimodule data processing system having N fully interconnected data processing modules for executing a Dispersed Joined Communication method according to a K-level nested and level-wise compartimentalized encoding, broadcasting and decoding operation, for protecting against at most T maliciously operating modules, wherein $K=T+1$, wherein at level K all said N modules are situated in a single compartment, and wherein at level $k=1$ said operation for any extant message in any actual module comprises broadcasting such extant message to all modules present in that message's compartment, and wherein for any level $K+1>k>1$ said operation previously comprises for any extant message generating

therefrom $n>2T$ symbols according to a T-symbol error correcting encoding and within that message's actual compartment transmitting each of such n symbols as messages each to a respective different module, those different modules together constituting a next lower-level compartment for therein executing said operation according to next lower level k-1, and



wherein at least one level $k>1$ comprises a data reducing encoding, and wherein after such K rounds of information transmission said method comprises exclusively single-module-based and in each such single module compartment-wise decoding according to successive levels (1 . . . K) of any message or symbol.

5,367,667

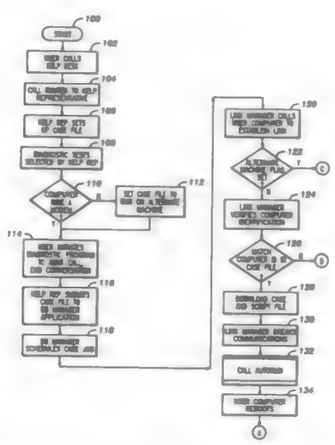
SYSTEM FOR PERFORMING REMOTE COMPUTER SYSTEM DIAGNOSTIC TESTS

Donnie G. Wahlquist; John S. Harsany, and Mark S. Matson, all of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Sep. 25, 1992, Ser. No. 951,724

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **14 Claims**



1. An interactive computerized method for performing remote computer diagnostics tests on a user's computer, the steps comprising:

creating a computerized diagnostic case script file on a service computer, said script file including a file identifier, user computer identification information, information to permit remote data access to the user computer, information to permit the user computer remote data access to said service computer and test instructions;

initiating a diagnostic program on the user computer, said diagnostic program placing the user computer in an auto-answer communications mode;

said service computer establishing remote data communications between said service computer and the user computer;

said service computer downloading said script file from said service computer to the user computer, said service computer terminating remote data communications upon completion of download;

the user computer executing said test instructions on the user computer in an unattended mode and creating log files of the execution of said test instructions; and

the user computer establishing remote data communications with said service computer and transferring said log files to said service computer, the user computer terminating communications upon completion of said transfer.

8. An interactive computerized method for performing remote computer diagnostics tests, the steps comprising:

creating a computerized diagnostic script file on a service computer, said script file including a file identifier, user computer identification information, information to permit remote data access to the user's computer site, information to permit the user's computer site remote data access to said service computer and test instructions;

initiating a diagnostic program on a first user computer, said diagnostic program placing said first user computer in an auto-answer communications mode;

said service computer establishing remote data communications between said service computer and said first user computer;

said service computer downloading said script file from said service computer to said first user computers, said service computer terminating remote data communications upon completion of download;

transferring said script file from said first user computer to a second user computer on which said tests are to be performed;

initiating a diagnostic test program on said second user computer, after said script file is transferred;

said second user computer executing said test instructions in an unattended mode and creating log files of the execution of the test instructions;

transferring said log files from said second user computer back to said first user computer; and

said first user computer establishing remote data communications with said service computer and transferring said log files to said service computer, said first user computer terminating communications upon completion of transfer.

5,367,668

METHOD AND APPARATUS FOR FAULT-DETECTION

Michael A. Pandolfo, Worcester, Mass., assignor to Stratus Computer, Inc., Mass.

Filed Feb. 26, 1993, Ser. No. 23,346

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **13 Claims**

1. A method for operating a digital data processing apparatus the improvement for fault-tolerant actuation of a functional unit in response to an actuation request, comprising the steps of

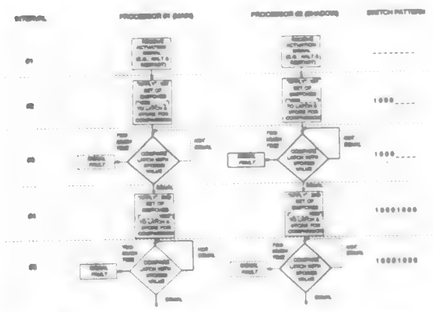
A. providing the functional unit with a switching section that responds to application of plural switching signals for activating the functional unit,

B. providing first and second processing elements, each normally responding to an actuation request for generating a first set of switching signals, said first set of switching signals including at least one, but not all, of said plural switching signals,

C. outputting the first set of switching signals generated by the first processing element for application to said switching section,

D). synchronizing said first and second processing elements by comparing, with said second processing element, the first set of switching signals generated thereby with those output by said first processing element,

E. generating, after synchronization, with each of said first and second processing elements, a second set of switching



signals, said second set of switching signals including at least one, but not all, of said plural switching signals, said first and second subsets of switching signals together making up said plural switching signals, and

F. outputting the second set of switching signals generated by the second processing element for application to said switching section.

5,367,669

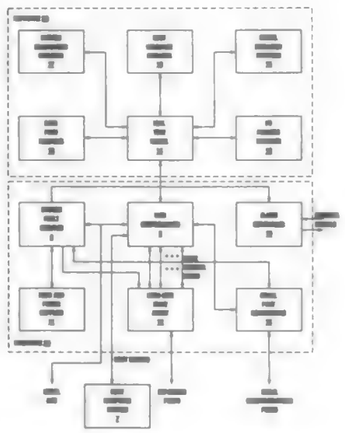
FAULT TOLERANT HARD DISK ARRAY CONTROLLER

Alexander Holland, and Peter G. Vavaroutsos, both of San Jose, Calif., assignors to Eclipse Technologies, Inc., San Jose, Calif.

Filed Mar. 23, 1993, Ser. No. 35,410

Int. Cl.[5] G06F *11/00*

U.S. Cl. 395—575 **32 Claims**



1. A fault tolerant memory array control system for controlling data accesses to and from a host system bus and a memory array of discrete bulk memory units, organized by channel index and rank index, wherein bulk memory units with the same rank index are of a similar type and capacity, and bulk memory units with the same channel index share a common channel data bus, the memory array control system comprising:

(a) a controller system bus for control and data communication between elements of the memory array control system;

(b) a microprocessor controller coupled to the controller system bus for performing logical control of the memory array control system elements, the microprocessor controller comprising:

(i) a microprocessor for executing operating control programs and configuration control programs comprising:

(aa) a translation program for optimally translating address data of a host logical data access request to the memory array into a minimal set of memory array physical address and length data for accessing appropriate bulk memory units;

(bb) a scheduling program for determining and executing an optimal sequence of steps by which to execute a queued set of memory array access requests by optimizing a prescribed performance function criterion;

(cc) a crippled operation program for using module redundancy and parity data encoding methods for sustaining system operation after a bulk memory failure; and

(dd) a computer kernel control means for coordinating all system functions and resources; and

(ii) an interrupt controller connected to the microprocessor for accepting and prioritizing externally generated interrupt requests from the host system bus interface and from a drive channel controller;

(c) a host computer system bus interface coupled to the controller bus;

(d) a set of more than one drive channel controller, each controller of the set for coupling to a unique common channel data bus for selecting a bulk memory unit, and for control of and data transfers to and from the selected bulk memory unit sharing the common channel data bus;

(e) a data path unit comprising;

(i) a data path selector, having an output and more than one input, each input connected to one of the set of drive channel controllers for selecting a drive channel; and

(ii) a data path coupled to the host system bus interface and connected to the data path selector output for coupling the selected drive channel to the host computer system bus.

5,367,670

COMPUTER SYSTEM MANAGER FOR MONITORING EVENTS AND OPERATING PARAMETERS AND GENERATING ALERTS

Ronald G. Ward, Houston; Scott C. Farrand, Tomball; Thomas J. Hernandez, Houston; Ronald A. Neyland, Spring; Richard A. Stupek, Houston; James E. Barron, Spring; Cheryl X. Chen, Tomball; Lih-Juan L. Danielson, Tomball; Richard P. Mangold, Tomball; Mitchell R. Wiley, Spring; Andrew J. Miller, Houston; Said S. Saadeh; Paul R. Fulton, both of Plano; Richard A. Kunz, Garland; Arthur D. Heald, and Dinesh K. Sharma, both of Plano, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 720,259, Jun. 24, 1991, abandoned.

This application Feb. 4, 1994, Ser. No. 192,072

Int. Cl.[5] G06F *11/30, 11/00, 13/10*

U.S. Cl. 395—575 **22 Claims**

1. A computer network comprising:

a file server having a computer system board with a system bus installed therein;

at least one computer station having a console;

a network connecting said at least one computer station to said file server;

a network operating system for controlling information transfers between said file server and said at least one computer station via said network; and

a system manager for managing said computer system board, said system manager comprised of:

external operating condition monitoring means for collecting information related to at least one external operating condition;

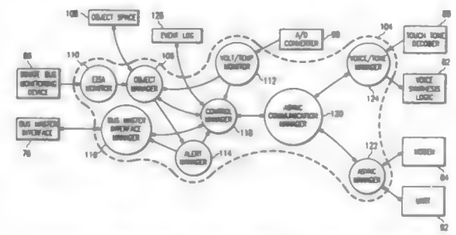
a monitoring device connected to said system bus, said monitoring device receiving a plurality of signals transferred along said system bus;

a control processor connected to said monitoring device;

said external operating condition monitoring means and said monitoring device connected to said control processor; and

a memory connected to said control processor, said memory storing a plurality of objects and a threshold value for each of said objects;

each of said plurality of signals received by said monitor-



ing device and said at least one external operating condition monitored by said external operating condition monitoring means corresponding to one of said plurality of objects stored in said memory;

said system manager managing said computer system board by transferring said object related signals received by said monitoring device and said object related information monitored by said external monitoring means to said control processor, said control processor updating said corresponding ones of said objects stored in said memory with said received object related signals and information, determining a first alert condition when one of said updated objects exceeds said threshold value for said object and generating a first alert upon determination of said first alert condition.

5,367,671

SYSTEM FOR ACCESSING EXTENDED OBJECT ATTRIBUTE (EA) DATA THROUGH FILE NAME OR EA HANDLE LINKAGES IN PATH TABLES

Barry A. Feigenbaum, Boca Raton, and Felix Miro, Cooper City, both of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 25, 1990, Ser. No. 587,813

Int. Cl.[5] G06F *12/02*

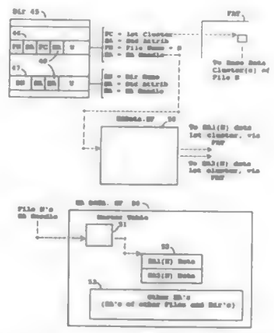
U.S. Cl. 395—600 **10 Claims**

1. For a computer system containing an operating system and a memory subsystem, and having one or more direct access storage devices attached thereto, an arrangement for adapting said operating system to store, modify and read extended attribute (EA) data associated with named objects contained in said storage devices; said arrangement comprising:

one or more path tables under exclusive control of said operating system tables being stored in said storage devices, and in said memory subsystem when said computer system is communicating with the respective storage device; each said path table containing locations therein reserved for storing names of objects associated with the respective storage device and EA handle information for locating EA data stored in association with respective said objects;

first means under exclusive control of said operating system, said first means being responsive to first function calls, each designating a storage device and an EA handle, for causing EA data to be transferred to or from storage locations in respectively designated storage devices; each said storage location being found only by means of the EA handle designated in the respective first function call, and

second means under exclusive control of said operating system, said second means being responsive to second function calls, each designating a device and an object name, for causing EA data associated with respectively designated object names to be transferred to or from storage locations in designated devices; wherein each said storage location is determined by referring to a said path table containing the respective object name and using an



associated EA handle stored in said path table for locating a storage position in the respectively designated device relative to which said EA data is to be transferred wherein said named objects include directory and subdirectory paths in said devices, and said file data stored in said paths, and wherein each said path table is associated with a single path in a single device and contains spaces for storing entries representing the respective path and any data files stored in that path; each said entry space containing a position therein reserved for optionally storing said EA handle when EA data is stored in the respective device in association with the respective object name represented by the entry.

5,367,672

APPARATUS FOR RETRIEVING DATA USING THE REMAINDER OF A HASHED SEARCH KEY TO IDENTIFY A GROUP OF KEYS AND COMPARING THE KEY TO THE GROUP OF KEYS

Shiro Takagi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 2, 1991, Ser. No. 739,513

Claims priority, application Japan, Aug. 3, 1990, 2-206378

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **1 Claim**

1. An image storage/retrieval apparatus comprising:

first storing means for storing a plurality of images;

second storing means for storing a plurality of retrieval data which are assigned image numbers corresponding to said plurality of images, respectively, where each retrieval data comprises a plurality of keywords;

third storing means for storing a plurality of keyword numbers corresponding to each of said plurality of keywords, respectively;

fourth storing means for storing a plurality of group keywords, where each group keyword corresponds to an image number stored in said second storing means, and where each group keyword is used for specifying groups of keywords obtained by grouping said keywords;

primary retrieval means for extracting candidate images

from said first storing means using said group keywords, said primary retrieval means comprising:

input means for entering at least one retrieval keyword;

processing means for reading out from said third storing means a keyword number corresponding to each of said at least one retrieval keywords entered by said input means;

means for generating a retrieval group keyword based on said keyword numbers read by said processing means, wherein said generating means classifies said keywords into one of said group keywords using units which correspond to remainder values obtained when said keyword numbers are divided by a predetermined bit count, said group keywords having numbers which are each represented by a byte count;

first image number extracting means for sequentially comparing said plurality of group keywords stored in said fourth storing means with said retrieval group keyword generated by said generating means, and for extracting an

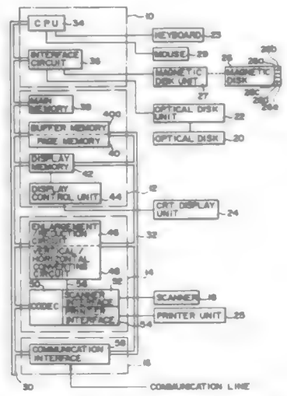


image number having a group keyword which is the same as the retrieval group keyword generated by said generating means; and

second image number extracting means for sequentially comparing said keyword numbers stored in said third storing means and corresponding to said image number extracted by said first image number extracting means with said at least one retrieval keyword entered by said input means, and for extracting an image number having a keyword coinciding with each of said at least one input retrieval keywords as a candidate image; and

secondary retrieval means for retrieving a predetermined image, said secondary retrieval means comprising selecting means for selecting a desired image from said candidate images extracted by said second image number extracting means, and means for retrieving said image selected by said selecting means from said first storing means.

5,367,673

SYSTEM FOR QUEUEING REQUEST FROM REMOTE STATIONS FOR PROOF PROCESSING OF FILES THAT ARE TRANSMITTED ONLY WHEN PROCESSING RESOURCES BECOME AVAILABLE

Chris W. Goldsmith, East Rochester; Scott L. Auer, Webster; William F. Guy, and Louis S. Horvath, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,024
Int. Cl.[5] G06F *15/40, 13/00*
U.S. Cl. 395—600 **49 Claims**

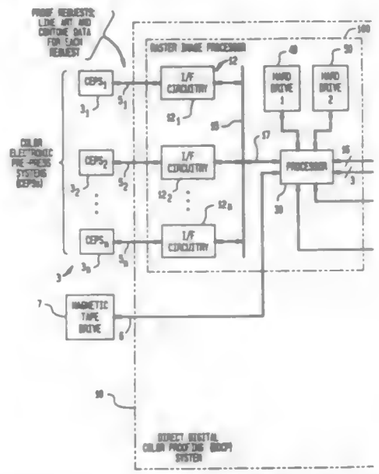
1. A digital color proofing system comprising:

a plurality of proof requesting devices; and

proof request processing means, connected to said proof requesting devices, for receiving a plurality of incoming proof requests from said proof requesting devices at a rate which may be greater than a maximum rate at which said proof request processing means can process proof requests, at least some of said proof requests being received for later processing, wherein each one of said proof requests specifies a desired proofing operation, contains a file name identifying a file stored only at a proof requesting device until said proof request processing means is ready to process said one proof request, said identified file containing image data to be proofed, and contains a device name identifying said proof requesting device at which said identified file is stored, wherein said proof request processing means comprises:

means, responsive to the file name and the device name contained in said one proof request, for sending, whenever said one proof request is ready to be processed, an instruction to the device specified by said device name contained in said one proof request to supply to said proof request processing means the file specified by said file name contained in said one proof request;

a first-in, first-out queue for storing said proof requests pending processing thereof; and



a digital processor for processing the image data contained in said specified file supplied by said specified device so as to perform the proofing operation specified by said one proof request; wherein said digital processor comprises:

means for manipulating said queue and processing each proof request stored therein comprising:

means for successively storing incoming proof requests in said queue at successive available locations;

means for reading a proof request situated at a top of said the queue; and

means, responsive to said proof request read from said queue and operative only in the event that sufficient system resources are then available to process said proof request so read, for processing said read proof request;

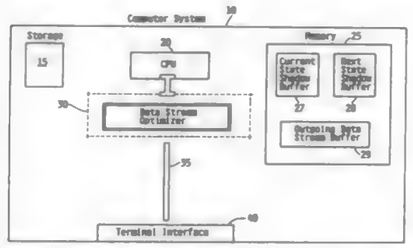
whereby through inclusion of a file name and a device name in each one of said proof requests in place of needed image data, proof requests may be stored at said proof request processing means for later processing in less memory space than would be required otherwise.

5,367,674

DATA STREAM OPTIMIZER UTILIZING DIFFERENCE CODING BETWEEN A CURRENT STATE BUFFER AND A NEXT STATE BUFFER

Jody E. Berk; James R. Coon; Paul R. Day; Peter J. Heyrman, all of Rochester, and David L. Johnson, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1991, Ser. No. 806,687
Int. Cl.[5] G06F *3/14, 13/00*
U.S. Cl. 395—600 **11 Claims**



1. A computer implemented method for optimizing a data stream, said method comprising the steps of:

receiving said data stream into a next state buffer;

comparing said next state buffer to a current state buffer to detect a first difference and a second difference between said next state buffer and said current state buffer;

placing characters from said current state buffer into said outgoing data stream buffer when said first difference is less than N bytes away from said second difference, where N is a non-negative positive integer of value greater than one;

using a Repeat-To-Address order in place of repeated characters within said outgoing data stream buffer whenever there are more than M of said repeated characters, where M is a non-negative positive integer of value greater than one;

placing a Set-Buffer-Address order into said outgoing data stream buffer when said first difference is not a new field and said first difference is greater than P bytes away from a second difference, where P is a non-negative positive integer of value greater than one;

outputting data in said outgoing data stream buffer to a terminal device.

5,367,675

COMPUTER AUTOMATED SYSTEM AND METHOD FOR OPTIMIZING THE PROCESSING OF A QUERY IN A RELATIONAL DATABASE SYSTEM BY MERGING SUBQUERIES WITH THE QUERY

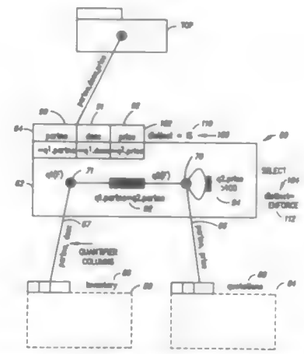
Josephine M.-K. Cheng, San Jose; Sheldon J. Finkelstein, Saratoga; Donald J. Haderle, Los Gatos; Mir H. Pirahesh, San Jose, and Yun Wang, Sunnyvale, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1991, Ser. No. 807,281
Int. Cl.[5] G06F *15/403*
U.S. Cl. 395—600 **18 Claims**

1. In a relational database management system using a data processor for storing data in the form of a plurality of tables comprised of a plurality of tuples having one or more columns of predicates, and having key columns for unique identification of the tuples and wherein the data is retrievable by means of SQL queries which include at least one subquery, a query output table of at least one tuple being produced by the processing of the query, a data processor implemented method for optimizing the processing of a query, comprising the steps of:

(a) determining whether the existence of duplicate tuples in the output of the subquery affect the integrity of the tuples output by the query with respect to requested distinct tuples or an accurate number of duplicated tuples in the query output table; and

(b) merging the subquery with the query during the processing of the query while the integrity of the tuples output by the query is maintained with respect to requested distinct tuples or an accurate number of duplicated tuples in the query output table.

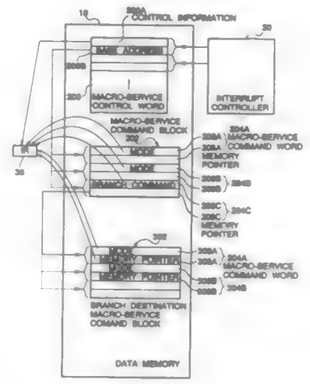


5,367,676

DATA PROCESSOR FOR MULTIPLE MACRO-SERVICE PROCESSINGS BASED ON A SINGLE MACRO-SERVICE REQUEST

Shigetatsu Katori, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 373,496, Jun. 30, 1989, abandoned.
This application Sep. 11, 1992, Ser. No. 944,712
Claims priority, application Japan, Jun. 30, 1988, 63-162970
Int. Cl.[5] G06F *13/12*
U.S. Cl. 395—600 **9 Claims**



5. A data processor, comprising:

a central processing unit coupled to an address bus and a data bus, said central processing unit including a program counter, a program status word, a temporary register coupled to said data bus, an instruction register, and a timing controller coupled to said instruction register, said timing controller generating control signals;

an interrupt controller, coupled to said address bus and said data bus, said interrupt controller receiving an interrupt processing request from at least one interrupt request source, said interrupt controller accessing a data memory, said interrupt controller including,

(1) an interrupt flag, set by said at least one interrupt request source, said interrupt controller outputting an active interrupt request signal to said timing controller whenever said interrupt flag is in a set condition, and

(2) a mode flag set whenever said interrupt processing request is processed by a macro-service processing, said macro-service processing being executed by said central processing unit without saving the contents of said program counter and said program status word, said interrupt controller outputting an active mode designation signal to said timing controller whenever said mode flag is in a set condition;

a plurality of macro-service control words stored in a data memory, each of said macro-service control words used for starting a series of macro-service processings, each of said macro-service control words including control information and a base address;

a plurality of macro-service command blocks formed in said data memory, each of said command blocks executing a corresponding one of said series of macro-service processings, said base address in each of said macro-service control words pointing to a corresponding command block, each of said macro-service command blocks including a plurality of macro-service command words for each one of said macro-service processings, each of said macro-service command words including,

(1) a macro-service mode information to be registered in said instruction register so that a corresponding macro-service processing is executed by said central processing unit,

(2) a memory pointer information which designates an address of a buffer area within said data memory used for execution of said corresponding macro-service processing,

wherein in response to both of said interrupt request signal and said mode designation signal being active, said timing controller controls said central processing unit to execute a macro-service processing, one macro-service control word stored in said data memory being designated by said interrupt controller and the control information included in said designated macro-service control word being read out and stored in said instruction register, and said base address included in said designated macro-service control word being read out and stored in said temporary register and a first macro-service mode information stored at said base address in said data memory is read out and stored in said instruction register, whereby a first macro-service processing is executed by said central processing unit, and when execution of said first macro-service processing is completed, said temporary register is updated so as to update said base address, and a second macro-service mode information stored at said updated base address in said data memory is read out and stored in said instruction register, and whereby a second macro-service processing is executed by said central processing unit without requiring a macro-service request for said second macro-service processing.

5,367,677

SYSTEM FOR ITERATED GENERATION FROM AN ARRAY OF RECORDS OF A POSTING FILE WITH ROW SEGMENTS BASED ON COLUMN ENTRY VALUE RANGES

Craig W. Stanfill, Waltham, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Continuation of Ser. No. 522,608, May 11, 1990, abandoned. This application Jul. 21, 1993, Ser. No. 96,192

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **46 Claims**

1. A segmented posting file generating system for generating a segmented posting file in response to a record base comprising a plurality of the record base entries represented by an array comprising a plurality of columns and rows, the entries within each column having an order according to their respective word identifiers, the segmented posting file generating system generating said segmented posting file in a series of segment generation iteration, the segmented posting file generating system comprising:

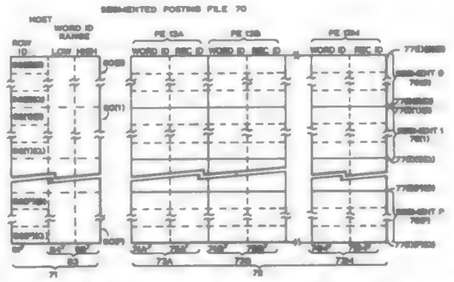
A. a computer for performing processing operations in response to commands;

B. a segmented posting file generation control including:

i. a segment word value identifier determination portion for providing commands to enable said computer to

(a) select, for each segment generation iteration, an entry in each column of said record base as a segment word value determiner entry, and

(b) identify as a segment word value identifier range value a value having a selected value relation to the word identifier values in the segment word value determiner entries; and



ii. a segment establishment portion for, during each segment generation iteration, providing commands to enable said computer to generate a series of rows of the segmented posting file in each of a series of segment row generation iterations, the commands enabling the computer to, for each column of the record base

(a) determined whether, a record base entry of the column of the record base contains a word identifier having a value having a selected relation to the segment word identifier determination value and

(b) in response to a positive determination, copy the entry in the record base to the entry in a corresponding column of the segmented posting file and select the next entry of the record base for the next segment row generation iteration.

5,367,678

MULTIPROCESSOR SYSTEM HAVING STATICALLY DETERMINING RESOURCE ALLOCATION SCHEDULE AT COMPILE TIME AND THE USING OF STATIC SCHEDULE WITH PROCESSOR SIGNALS TO CONTROL THE EXECUTION TIME DYNAMICALLY

Edward A. Lee, Oakland, and Jeffrey Bier, Burlingame, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 6, 1990, Ser. No. 624,376

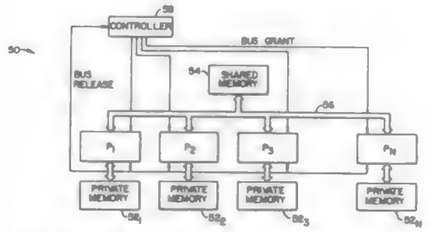
Int. Cl.[5] G06F *9/40, 13/00, 13/36, 13/42*

U.S. Cl. 395—650 **8 Claims**

1. A multiprocessor system, comprising:

a plurality of parallel processors each simultaneously executing a particular one of a plurality of software components to execute a single task allocated among said plurality of processors, with each of said plurality of parallel processors coupled by a shared bus, wherein each of said plurality of processors is responsive to an assertion of a first signal to access said shared bus and each of said plurality of parallel processors asserts a second signal upon release of said shared bus; and

a controller, coupled to each of said plurality of parallel processors and having a stored schedule of prespecified transactions, for asserting said first signal, according to said stored schedule, to only a first particular one of said plurality of parallel processors until said first particular one of said plurality of parallel processors asserts said second signal whereupon said controller asserts said first



signal, according to said stored schedule, to only a second particular one of said plurality of parallel processors, said stored schedule being an ordered list of all transactions of said plurality of parallel processors associated with said single task and said stored schedule being defined at a compile time for said plurality of software components.

5,367,679

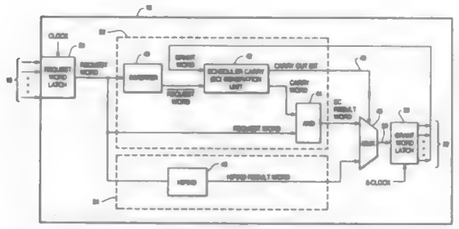
ROUND ROBIN SCHEDULER USING A SCHEDULER CARRY OPERATION FOR ARBITRATION

Manpreet S. Khaira, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 30, 1992, Ser. No. 998,555

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—650 **16 Claims**



1. A scheduler carry (SC) unit in a scheduler that performs a scheduling cycle to schedule use of a shared resource to one of a pinrail of clients in a predetermined order, each client supplying a request bit that is asserted to request use of the shared resource, each client also having an input for receiving a grant bit and circuitry responsive to an asserted grant bit for using the shared resource during a subsequent communication cycle, said SC unit comprising:

an inverter coupled to receive said request bits from said clients with said predetermined order and to output request bits having said predetermined order;

a scheduler carry (SC) generation unit coupled to receive said request bits and the grant bits previously selected for the current scheduling cycle, said SC generation unit for generating and outputting a plurality of carry bits having said predetermined order, said carry bits including an asserted bit at the position in said predetermined order corresponding to a client who will be granted use of said shared resource; and

a plurality of AND gates arranged in said predetermined order, said AND gates having inputs for receiving said carry bits and said request bits, each AND gate having an input for receiving a carry bit paired with a request bit at the same bit position in said predetermined order, each of said AND gates having an output coupled to provide the corresponding grant bit for each predetermined client.

5,367,680

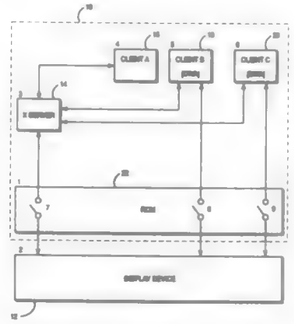
RENDERING CONTEXT MANAGER FOR DISPLAY ADAPTERS SUPPORTING MULTIPLE DOMAINS

Gregory A. Flurry, and Larry W. Henson, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 837,538, Feb. 14, 1992, abandoned, which is a continuation of Ser. No. 480,183, Feb. 13, 1990, abandoned. This application Feb. 25, 1993, Ser. No. 23,464

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—650 **24 Claims**



1. A peripheral device manager in a multitasking data processing system for executing a plurality of application programs and including at least one peripheral device having a first and a second data input port, comprising:

means, in communication with said plurality of application programs and said at least one peripheral device, for providing access to the peripheral device exclusively to a single one of said application programs allowing only said single application program to control operation of the peripheral device by transferring data direct therebetween;

means, in communication with said plurality of application programs and said at least one peripheral device, for providing access to said first data input port of the peripheral device to said single application program while providing independent and concurrent access to said second data input port of the peripheral device to a second one of said plurality of application programs such that said single application program and said second application program alternately control operations of the peripheral device by transferring application data directly therebetween; and

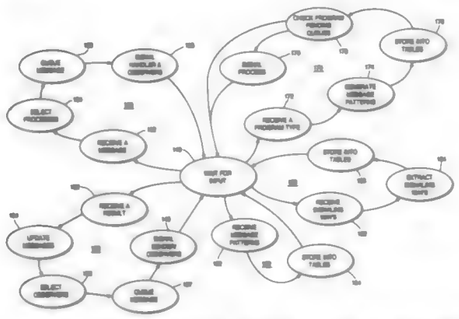
means, in communication with said plurality of application programs and said at least one peripheral device, for alternately providing separate rendering context information, different from said application data and corresponding to the display attributes of one of said single application program and said second application program, to said peripheral device such that the application data can be directly transferred thereto by a respective one of said single or second application program.

5,367,681

METHOD AND APPARATUS FOR ROUTING MESSAGES TO PROCESSES IN A COMPUTER SYSTEM

Carolyn L. Foss, Palo Alto; Dwight F. Hare, Menlo Park; Richard F. McAllister, Palo Alto; Tin A. Nguyen, Danville; Amy Pearl, Mountain View, and Sami Shaio, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 627,735, Dec. 14, 1990, abandoned. This application Nov. 2, 1993, Ser. No. 147,019
Int. Cl.[5] G06F 9/44
U.S. Cl. 395—650 55 Claims



1. A method for interprocess message routing in a computer system, said computer system comprising a sender process and a plurality of receiver processes, said plurality of receiver processes comprising handler processes and observer processes, said method comprising the steps of:

registering each of said receiver processes with a routing apparatus in said computer system that performs interprocess message routing such that said receiver processes become registered receiver processes, said step of registering comprising

registering a signaling way for each receiver process, said signaling way describing how said receiver process is to be signaled,

registering at least one message pattern for each of said receiver processes, said message patterns describing at least one message which said registering receiver process is to receive;

sending at least one message from said sender process to said routing apparatus, said message sent by said sender process comprises at least one message attribute, one of said message attributes comprising a message class of "Request" or a message class of "Notice", message having a message class of "Request" requiring a reply, a message having a message class of "Notice" not requiring a reply;

selecting a set of said registered receiver processes to receive said message from said routing apparatus by matching said message against said message patterns registered by said receiver processes, said step of selecting a set of said registered receiver processes comprises said routing apparatus selecting at most one handler process to handle said received message and any number of observer processes;

queuing, in said routing apparatus, copies of said message with said set of receiver processes;

signaling said set of registered receiver processes from said routing apparatus regarding the availability of said queued copies of said message, said step of signaling performed by said routing apparatus using said signaling way given by said selected registered receiver process; and

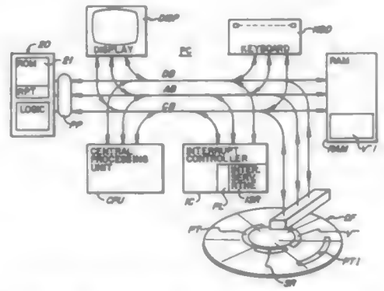
sending said queued copies of said message from said routing apparatus to each of said set of registered receiver processes upon request of each of said set of registered receiver processes.

5,367,682

DATA PROCESSING VIRUS PROTECTION CIRCUITRY INCLUDING A PERMANENT MEMORY FOR STORING A REDUNDANT PARTITION TABLE

Steven Chang, 2421 W. 205th St., Ste. D-100, Torrance, Calif. 90501

Filed Apr. 29, 1991, Ser. No. 692,619
Int. Cl.[5] G06F 9/445, 11/16, 12/16
U.S. Cl. 395—700 3 Claims



1. A virus protection system for a data processing system characterized by a central processing unit, a system memory, a permanent data storage including a disk and control means for reading and writing data from and to said disk, respectively, bus system interconnecting said central processing unit, said system memory, and said permanent data storage, said bus system connected to a communication port, wherein instructions are recorded on said disk of said permanent data storage in sector locations thereon determined by a partition table stored on said disk, said data processing system including interrupt logic for controlling a transfer of said instructions to said system memory, the virus protection system comprising:

a permanent memory connected to said port and said bus system and having stored thereon a redundant hard disk partition table including means for detecting the transfer of said instructions into a selected portion of said system memory; and

a logic circuit, connected to said permanent memory and rendered operational upon detecting said transfer of said instructions into said selected portion of said system memory, for selecting a command to write the redundant hard disk partition table stored on the permanent memory to said disk.

5,367,683

SMART RECOMPILATION OF PERFORMING MATCHUP/DIFFERENCE AFTER CODE GENERATION

Bevin R. Brett, Merrimack, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 26, 1992, Ser. No. 904,816
Int. Cl.[5] G06F 9/45
U.S. Cl. 395—700 12 Claims

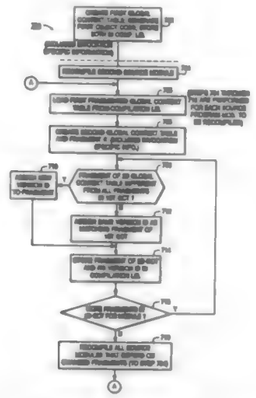
1. In a computer system, including a memory, a method of translating a source program comprising the steps of:

translating a first source program and producing a first global context table, said first global context table containing global information describing definitions from said first source program which can be referenced by source programs other than said first source program, said translating of said first source program including a first code generation step;

dividing, after said first code generation step, the information contained in said first global context table into a first group of fragments;

translating a second source program and producing a second global context table containing global information describing definitions from said second source program which can be referenced by source programs other than said second source program, said translating of said second program including a second code generation step;

dividing, after said second code generation step, the information contained in said second global context table into a second group of fragments;



determining whether a fragment in said second group has an equivalent fragment in said first group; and

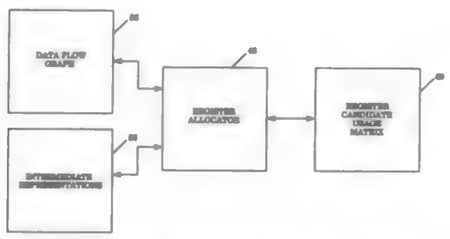
translating source programs which are dependent on fragments from said second group determined not to have an equivalent fragment in said first group.

5,367,684

REGISTER ALLOCATION USING AN IMPROVED REGISTER CANDIDATE USAGE MATRIX

Kevin J. Smith, Boulder Creek, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 30, 1992, Ser. No. 983,403
Int. Cl.[5] G06F 9/45
U.S. Cl. 395—700 18 Claims



1. In a computer system comprising a plurality of instructions and registers, a computer implemented method for a register allocator of a code generator of a compiler of said computer system to allocate said registers to instructions being generated for a program being compiled by said compiler, said method comprising the steps of:

a) said register allocator building a collection of register candidate usage indication vectors for register candidates of said instructions being generated for said program being compiled, said instructions being divided in a plurality of basic blocks, each of said basic blocks comprising an entry, a body, and an exit, said register candidate usage indication vectors comprising indicators denoting at least whether said register candidates are live at said entries, in said bodies, and at sale exits of said basic blocks, and denoting live ranges of said register candidates;

b) said register allocator allocating said registers to said instructions of each of said basic block, on a block by block basis, using said indicators of said collection of register candidate usage indication vectors to determine whether any two register candidates interfere with each other within a basic block; and

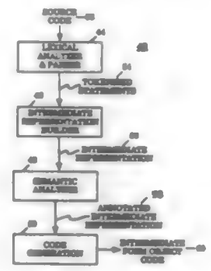
c) said register allocator merging said register allocation for each of said basic block, inserting spill code for each live range split of a register candidate, said split code insertions being made at corresponding points in said instructions being generated where said register candidate live ranges are split.

5,367,685

METHOD AND APPARATUS FOR RESOLVING DATA REFERENCES IN GENERATED CODE

James Gosling, Woodside, Calif., assignor to FirstPerson, Inc., Mountain View, Calif.

Filed Dec. 22, 1992, Ser. No. 994,655
Int. Cl.[5] G06F 9/45
U.S. Cl. 395—700 10 Claims



1. In a computer system comprising a program in source code form, a method for generating executable code for said program and resolving data references in said generated code, said method comprising the steps of:

a) generating executable code in intermediate form for said program in source code form with data references being made in said generated code on a symbolic basis, said generated code comprising a plurality of instructions of said computer system;

b) interpreting said instructions, one at a time, in accordance to a program execution control;

c) resolving said symbolic references to corresponding numeric references, replacing said symbolic references with their corresponding numeric references, and continuing interpretation without advancing program execution, as said symbolic references are encountered while said instructions are being interpreted; and

d) obtaining data in accordance to said numeric references, and continuing interpretation after advancing program execution, as said numeric references are encountered while said instruction are being interpreted;

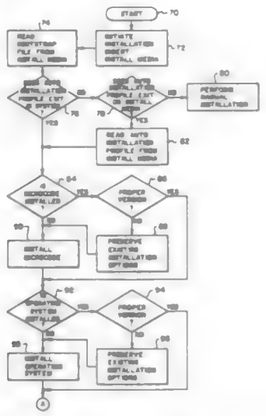
said steps b) through d) being performed iteratively and interleavingly.

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METHOD FOR AUTOMATED COMPLEX MULTILEVEL SOFTWARD INSTALLATION IN A DATA PROCESSING SYSTEM

Arvin J. Fisher, Rochester, Minn.; Alan Hlava, Longmont, Colo.; Paul D. Koeller, Rochester, Minn.; Mary C. Manges, Rochester, Minn.; Michael K. Russell, Rochester, Minn.; Robert H. Satin, Rochester, Minn.; Gordon G. Stewart, Byron, Minn., and Patricia A. Timms, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 569,891, Aug. 29, 1990, abandoned.
This application Apr. 12, 1993, Ser. No. 46,510
Int. Cl.[5] G06F 9/44
U.S. Cl. 395—700 13 Claims



1. A method for the efficient installation of a complex multilevel software application within a data processing system having selected software applications currently installed therein, said complex multilevel software application including microcode, an operating system and at least one high level application, said method comprising the steps of:

creating within a data processing system an automatic installation profile containing a plurality of preselected installation options for a selected data processing system;

storing said automatic installation profile on a portable storage media with said complex multilevel software application;

in response to an initiation of installation by a user, automatically determining a level of microcode within said selected data processing system;

thereafter utilizing said automatic installation profile to automatically install said microcode within said selected data processing system in response to an insertion of said portable storage media within said selected data processing system by said user to the extent said microcode is not currently installed within said selected data processing system, without the necessity of user intervention during said installation;

automatically determining a level of operating system present within said selected data processing system and thereafter utilizing said automatic installation profile to automatically install said operating system within said selected data processing system to the extent said operating system is not currently installed within said data processing system, without the necessity of user intervention during said installation; and

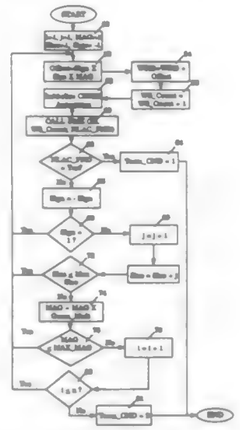
automatically determining a level of high level application present within said selected data processing system and thereafter utilizing said automated installation profile to automatically install said high level application within said selected data processing system to the extent said high level application is not currently installed within said data processing system, without the necessity of user intervention during said installation.

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METHOD AND APPARATUS FOR OPTIMIZING COST-BASED HEURISTIC INSTRUCTION SCHEDULING

Gregory Tarsy, Scotts Valley, and Michael J. Woodard, Fremont, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 667,548, Mar. 11, 1991, abandoned.
This application Jul. 7, 1993, Ser. No. 88,418
Int. Cl.[5] G06F 9/38
U.S. Cl. 395—700 20 Claims



1. In a computer system comprising a pipelined processor for executing instructions of programs in a parallel and overlapping manner, and a compiler for compiling and generating said instructions, wherein said compiler has a scheduler for scheduling said instructions for execution on said pipelined processor, and said scheduler schedules said instructions using N weighted cost based heuristics, a method for empirically selecting a set of N weights for said scheduler to weigh said N cost based heuristics, said method comprising the steps of:

a) generating arbitrarily an initial trial set of N weights, initializing said scheduler with said arbitrarily generated initial trial set of N weights, generating a plurality of benchmark programs, compiling said benchmark programs using said compiler, accumulating scheduling costs determined by said scheduler for said benchmark programs, initializing a lowest accumulated scheduling cost of said benchmark programs to said accumulated scheduling cost, and selecting said initial trial set of N weights as the selected set of N weights for said scheduler;

b) generating sequentially a first plurality of additional trial sets of N weights in a first manner, one trial set of N weights at a time, each of said first plurality of additional trial sets of N weights being generated by systematically varying the immediately preceding trial set of N weights along an orthogonal dimension of a weight space formed by the N weights, one orthogonal dimension at a time, reinitializing said scheduler with each of said additional trial sets of N weights after each of their generations, regenerating said plurality of benchmark programs after each of said reinitializations, recompiling said regenerated benchmark programs using said compiler after each of said regenerations, reaccumulating scheduling costs determined by said scheduler for said benchmark programs during each of said recompilations, comparing each of said reaccumulated scheduling cost with said lowest accumulated scheduling cost to determine whether a new lowest accumulated scheduling cost is found after each of said reaccumulations, terminating said generation of additional trial sets of N weights in said first manner as soon as a new lowest accumulated scheduling cost is found, updating said lowest accumulated scheduling cost to equal the newly found lowest accumulated scheduling cost if a new lowest accumulated scheduling cost is found, and selecting the trial set of N weights that yields the new lowest accumulated scheduling cost over the previously selected set of N weights as the selected set of N weights for said scheduler if a new lowest accumulated scheduling cost is found; and

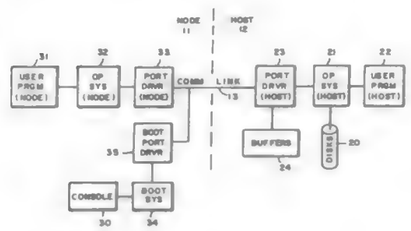
c) generating sequentially a second plurality of additional trial sets of N weights in a second manner, one additional trial set of N weights at a time, each of said additional trial sets of N weights being generated under said second manner by systematically varying the immediately preceding trial set of N weights along the last orthogonal dimension with the last systematic variation made under said first manner, reinitializing said scheduler with each of said additional trial sets of N weights after each of their generations, regenerating said plurality of benchmark programs after each of said reinitializations, recompiling said regenerated benchmark programs using said compiler after each of said regenerations, reaccumulating scheduling costs determined by said scheduler for said benchmark programs during each of said recompilations, comparing each of said reaccumulated scheduling cost with said lowest accumulated scheduling cost to determine whether a new lowest accumulated scheduling cost is found after each of said reaccumulations, terminating said generation of additional trial sets in said second manner as soon as no new lowest accumulated scheduling cost is found, updating said lowest accumulated scheduling cost to equal the last newly determined lowest accumulated scheduling cost if at least one newly determined lowest accumulated scheduling cost is found, and selecting the last trial set of N weights that yields the last new lowest accumulated scheduling cost over the previously selected set of N weights as the selected set of N weights for said scheduler if at least one newly determined lowest accumulated scheduling cost is found.

5,367,688

BOOT SYSTEM FOR DISTRIBUTED DIGITAL DATA PROCESSING SYSTEM

John Croll, Acton, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 33,053, Mar. 10, 1993, abandoned, which is a continuation of Ser. No. 827,473, Jan. 29, 1992, abandoned, which is a continuation of Ser. No. 555,776, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 384,832, Jul. 25, 1989, abandoned, which is a division of Ser. No. 93,811, Sep. 4, 1987, Pat. No. 4,885,770. This application Apr. 15, 1994, Ser. No. 229,845
Int. Cl.[5] G06F 13/00, 15/16
U.S. Cl. 395—700 6 Claims



1. In a distributed digital processing system comprising a host and associated storage disposed at a first location, and at least one computer node and associated memory disposed at a second location remote from the first location, said host and said at least one computer node being coupled together by at least one communications link of a network that is disposed between said first location and said second location a method of booting said node, comprising the steps of:

A. said host sending a boot command over said communications link to said node when said node is in a preoperational state in which said node is not prepared to respond to instructions from a user to perform data processing operations;

B. said node sending an initiate boot image transfer request over said communications link to said host in response to said boot command;

C. performing a boot retrieval operation in response to receipt by said host of said initiate boot image transfer request, said boot retrieval operation being initiated by said host and including the steps of:

i. said host identifying portions of an executable boot image in said storage and generating boot image pointer information to said boot image and a response to said node, said boot image pointer information comprising a plurality of pointers to said portions; and

ii. said node, upon receipt of said response from said host, transferring the generated boot image pointer information from said first location to said second location via said communications link, said node using said pointers to iteratively initiate retrieval of said boot image portions from said storage of said host and for controlling the rate of said iterative retrieval, and said node storing the transferred boot image portions in the memory of said node;

D. said host performing other operations while said node iteratively retrieves said boot image portions from said storage of said host; and

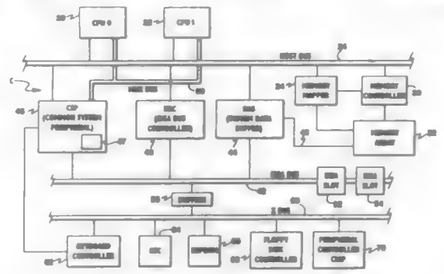
E. said node executing the retrieved entire boot image to place itself in an operational condition in which said node is prepared to respond to instructions from the user to perform data processing operations.

5,367,689

APPARATUS FOR STRICTLY ORDERED INPUT/OUTPUT OPERATIONS FOR INTERRUPT SYSTEM INTEGRITY

Dale J. Mayer, Houston; John A. Landry, Tomball, and Paul R. Culley, Cypress, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Oct. 2, 1992, Ser. No. 955,508
Int. Cl.[5] G06F 9/00
U.S. Cl. 395—725 8 Claims



1. An apparatus for maintaining interrupt system integrity in a computer system comprising a host bus, a CPU board coupled to the host bus and including a processor and interrupt controller logic, an expansion bus coupled to the host bus, and interrupt receive logic coupled to the expansion bus, the interrupt receive logic receiving interrupt requests from devices coupled to the expansion bus and providing the interrupt requests to the interrupt controller logic, the apparatus comprising:

monitoring means for coupling to the interrupt controller logic and the host bus for monitoring cycles on the host bus and the expansion bus and for determining if an expansion bus cycle is requested by the processor or if an expansion bus cycle requested by the processor is being performed;

determining means for coupling to the interrupt controller logic and coupled to said monitoring means for determining if the processor is accessing the interrupt controller; and

extending means coupled to said monitoring means and said determining means and for coupling to the host bus for extending said interrupt controller access by the processor if said expansion bus cycle is requested by the processor or said expansion bus cycle requested by the processor is being performed and the processor is concurrently accessing the interrupt controller.

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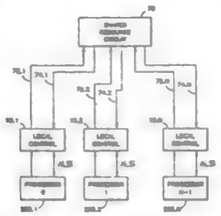
MULTIPROCESSING SYSTEM USING INDIRECT ADDRESSING TO ACCESS RESPECTIVE LOCAL SEMAPHORE REGISTERS BITS FOR SETTING THE BIT OR BRANCHING IF THE BIT IS SET

Alan J. Schiffleger, Chippewa Falls, Wis., assignor to Cray Research, Inc., Eagan, Minn.

Division of Ser. No. 655,296, Feb. 14, 1991. This application Sep. 30, 1993, Ser. No. 129,437

Int. Cl.[5] G06F *9/46, 11/30*

U.S. Cl. 395—725 **1 Claim**



1. A method of accessing data in an information register in a tightly coupled interprocessor communication system for a multiprocessor data processing system; wherein said communication system comprises a plurality of separate communication paths, a common shared resource circuit connected to said plurality of separate communications paths, a plurality of local control means each connected to a processor and a respective one of said separate communications paths for communicating and coordinating data transfer between said shared resource circuit and the connected processor, wherein said shared resource circuit includes shared semaphore registers and shared information registers and wherein each said local control means includes a local semaphore register whose contents mirror the contents of an associated shared semaphore register, the method comprising the steps of:

associating a bit in the local semaphore register with a desired shared information register, said associating step comprises the steps of:

providing a register in said local control means having said local semaphore register;

loading a bit number into the register by said processor connected to said local control means; and

addressing the bit stored in the local semaphore register via the bit number stored in the register;

testing the bit;

if the bit is set, executing an instruction starting at a branch address; and

if the bit is not set, accessing the desired shared information register, wherein the accessing step comprises the steps of:

setting a bit in the associated shared semaphore register;

addressing said desired shared information register; and

clearing the bit set in the shared semaphore register.

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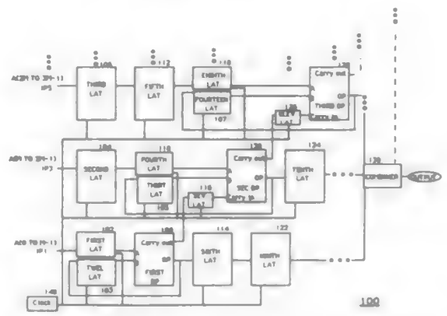
PIPE-STAGGERED APPARATUS AND METHOD UTILIZING CARRY LOOK-AHEAD SIGNAL PROCESSING

Mark J. Johnson, Algonquin, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 15, 1991, Ser. No. 685,366

Int. Cl.[5] G06F *7/02, 7/38, 7/42, 9/38*

U.S. Cl. 395—800 **9 Claims**



1. A data processing apparatus for processing input data, comprising at least:

a predetermined integral number Q of row groupings of elements, each row grouping of elements containing a data processor and a predetermined number of latches L, and wherein input data and outputs of each of the data processors and latches are transferred to a next-coupled element in a strobe manner upon operation of a predetermined clock signal from a clock that is operably coupled to every element,

wherein, the row groupings of elements include:

for the first row: a first special grouping operably coupled to receive input data and serially coupled to a first latch, of a remaining serially coupled L−2 latches of the first row,

for each of a remaining Q−1 rows: Q−1 serially coupled latches operably coupled to a second special grouping that is operably coupled to the first latch of a remaining serially coupled L−(Q−2) latches of each row,

wherein the first special grouping comprises:

a first latch, operably coupled to receive a first M bits of the input data, M an integer, and another latch, operably coupled to receive a first output from a first data processor, and

the first data processor, operably coupled to receive an output from each of the latches of the first special grouping, for determining a first sum and a first carry, for providing the first carry to a latch of a second row wherein said second row latch is coupled to a second data processor of a second special grouping of a second row of elements and for providing the first sum to a first latch, of the remaining L−2 latches in the first row,

wherein the second special grouping comprises:

Q−1 serially coupled latches, further including a first latch, of the Q−1 latches, that is operably coupled to receive a subsequent M bits of the input data, M an integer, and another latch, operably coupled to receive an output from a second data processor, and

the second data processor, operably coupled to receive an output from the first latch of the Q−1 latches and another latch that is operably coupled to receive an output from the second data processor, for determining a second sum and a second carry, and providing the second carry to a next row latch wherein said next row latch is coupled to a next row data processor of the second special grouping of the next row of elements and providing the second sum to a first latch, of the remaining serially coupled L(Q−1) latches of a row,

combining means operably coupled to each of a last latch of each row for determining an output for a cumulative data processing operation,

and wherein:

latches coupled prior to data processors are termed pre-stage latching means and latches coupled after data processors are termed post-stage latching means.

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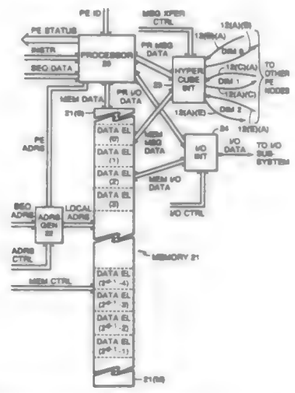
PARALLEL COMPUTER SYSTEM INCLUDING EFFICIENT ARRANGEMENT FOR PERFORMING COMMUNICATIONS AMONG PROCESSING NODE TO EFFECT AN ARRAY TRANSPOSITION OPERATION

Alan S. Edelman, El Cerrito, Calif., assignor to Thinking Machines Corporation, Cambridge, Mass.

Filed May 30, 1991, Ser. No. 707,366

Int. Cl.[5] G06F *12/06, 12/02, 13/14*

U.S. Cl. 395—800 **18 Claims**



1. A computer system comprising:

A. a processing element array comprising a plurality of processing element nodes interconnected by a hypercube network having a plurality of dimensions, each processing element node having a memory including a plurality of storage locations for storing data, each processing element node further having a network address, and

B. control means for controlling said processing element nodes in parallel to enable data items to be transferred in a selected manner among the storage locations of the processing element nodes in a series of communications steps, said control means comprising:

i. base communications table generating means for generating a base communications table including a plurality of entries organized in rows and columns, entries in respective columns of the base communications table being associated with respective ones of the dimensions of the hypercube network, and entries in successive rows being associated with successive ones of said communications steps;

ii. processing element node communications schedule table enabling means for enabling the processing element nodes of the processing element array to generate respective processing element node communications schedule tables each having a plurality of schedule table entries organized in rows and columns, respective columns of the processing element node communications schedule table for each processing element node being associated with respective ones of the dimensions of the hypercube network and entries in successive rows being associated with successive ones of the communications steps, processing element node communications schedule table enabling means enabling the processing element nodes to generate the schedule table entries a selected function of the base table entries of the base communications table and the processing element nodes' respective network addresses, schedule table entries of each processing element node communications schedule table associating, for each of the series of communications steps, storage locations of the processing element node's memory with respective dimensions of the hypercube, and

iii. communications enabling means for enabling the processing element nodes to, in parallel in each of the series of communications steps, transfer data in storage locations identified by the schedule table entries in the row of the processing element nodes' respective processing element node communications schedule tables associated with the communication step over the dimensions associated with the schedule table entries' respective columns.

5,367,693

SYSTEM FOR DIALOG AMONG PROCESSORS AND DISPATCHING PROCESSES TO PROCESSORS WHICH MONITORS THE NUMBER OF ACKNOWLEDGEMENTS TO PROCESSING REQUESTS

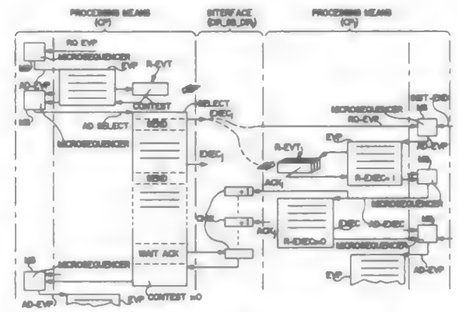
Jean-Claude Cassonnet, Saint-Honorine; Jean-Louis Fressineau, Millemont, and Georges Lecourtier, Versailles, all of France, assignors to Bull, S.A., Paris, France

Filed Jun. 5, 1991, Ser. No. 710,340

Claims priority, application France, Jun. 5, 1990, 90 06948

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—800 **26 Claims**



10. An information processing system including a plurality of processors (CPU, CPU_i) capable of dialog by way of interface circuits (DIR) associated respectively with said processors and bus links (SB) connecting said interface circuits to one another, at least one of said processors (CPU) including means for executing operations (SELECT) triggering the sending of a request ($EXEC_i$) addressed to at least one other processor (CPU_i) wherein said requests ($EXEC_i$) represent an instruction to said at least one other processor (CPU_i) to execute a particular function, each addressee processor (CPU_i) including means for sending an acknowledgement (ACK_i) to the originating processor (CPU) to signal that said at least one processor has accepted a request addressed thereto and has executed said particular function, said system being characterized in that said request originating processor includes:

first counting means (BDP) enabling the determination of the total number (CFW) of requests that are to be sent or must be sent in the course of said operations;

second counting means (7B, 7C), activated each time an acknowledgement is received; and

comparison means for detecting the equality between said number (CFW) of requests and the number (CHW) of acknowledgements received; such that for each operation

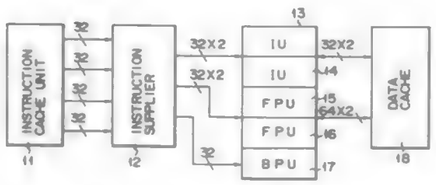
that requires a dialog without constraint as to the order of acceptance of requests by the addressee processors, said detection of equality authorizes the originating processor (CPU) to complete the execution of said operation.

5,367,694

RISC PROCESSOR HAVING A CROSS-BAR SWITCH

Kiyoji Ueno, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1991, Ser. No. 750,940
Claims priority, application Japan, Aug. 31, 1990, 2-230106
Int. Cl.[5] G06F *9/30*
U.S. Cl. 395—800 4 Claims



1. A RISC processor comprising:

instruction output means for outputting an N-number, the N-number being a positive integer, of instructions in parallel;

at least (N+1)-number of instruction executing means for receiving and executing the instructions; and

instruction distributing means, including a crossbar switch section, for selectively distributing the N-number of instructions output from said instruction output means to selected ones of said at least (N+1) instruction executing means, wherein

said instruction distributing means includes:

a control section for controlling said cross bar switch section, wherein each of the N-number of instructions is constituted by an M-number, the M-number being a positive integer, of bits, and said cross bar switch section includes an M-number of switch circuits, and

each of said switch circuits comprises:

an N-number of input lines;

an N+1 of output lines; and

an (N×(N+1))-number of switch elements connected between said N-number of input lines and said (N+1)-number of output lines.

5,367,695

BUS-TO-BUS INTERFACE FOR PREVENTING DATA INCOHERENCE IN A MULTIPLE PROCESSOR COMPUTER SYSTEM

Charles E. Narad, Santa Clara, and Sun-Den Chen, San Jose, both of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

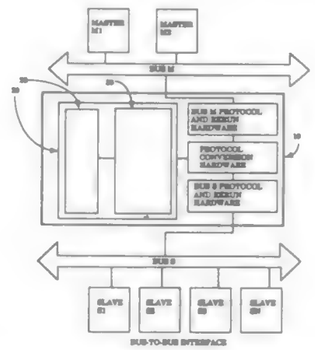
Filed Sep. 27, 1991, Ser. No. 766,784
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 35 Claims

15. In a multiple processor computer system having a first bus means and a second bus means, a bus-to-bus interface for coupling said first bus means to said second bus means such that data coherence is preserved, wherein said first bus means is coupled to at least one first bus master and operates according to a first protocol where each first bus master is self-identifying, and wherein said second bus means is coupled to at least one second bus master and a plurality of slaves and operates according to a second protocol where devices coupled to said second bus means are not self-identifying, said bus-to-bus interface comprising:

protocol means including protocol conversion means coupled to said first and second bus means for permitting transfer of data between said first and second bus means and said slaves;

busy indicator means, coupled to said first and second bus means, for maintaining a status for each of said plurality of slaves, for setting a busy flag when a first slave issues a first rerun command in response to said first slave accepting a command to perform a task from a first master, said first master being coupled to a one of said first bus means and said second bus means, said first rerun command causing said first master to relinquish said first and second bus means and to attempt to access said first slave later, said busy indicator means permitting only said first master to access said first master while said busy flag is set;

master identification means coupled to said first and second bus means for identifying each of said first and second bus masters that engages one of said plurality of slaves, and for storing each master identification tag identifying each of said first and second bus masters that engages a one of said



plurality of slaves, and for storing each master identification tag; and

rerun means coupled to said first and second bus means for issuing a second rerun command when a one of said first and second bus masters other than said first master attempts to access said first slave, said second rerun command causing said one of said first and second bus masters to relinquish said first and second bus means and to attempt to access said first slave later;

said first master continuing to attempt to access said first slave and relinquishing said first and second bus means after receiving said first rerun command issued by said first slave until said first slave is no longer performing said task,

said bus-to-bus interface permitting said first master to access said first slave and retrieve data after said first slave is no longer performing said task, whereby to prevent transfer of data to an unintended master.

5,367,696

REGISTER ALLOCATION TECHNIQUE IN A PROGRAM TRANSLATING APPARATUS

Hitoshi Abe, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

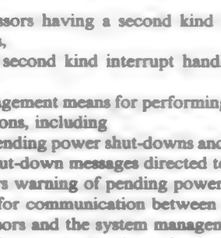
Filed Oct. 1, 1991, Ser. No. 769,446
Claims priority, application Japan, Dec. 7, 1990, 2-407393
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—800 5 Claims

1. A program translating apparatus comprising:

detection means for detecting variable starting points and variable ending points in ranges of existence of variables in a same period of time, said detection means examining said ranges of existence of said variables one by one;

separation means for separating said ranges of existence of said variables at said variable starting points and variable ending points detected by said detection means;

register allocation means for selecting candidatures for split regions permanently allocated to registers by determining profits when the split regions obtained by separating said



ranges of existence of said variables, being different and existing in the same period of time, are respectively allocated to the registers; and

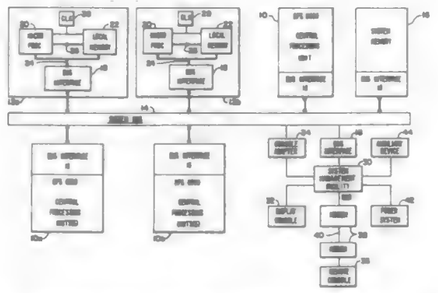
register assignment means for permanently assigning registers for said candidatures for the split regions selected by said register allocation means.

5,367,697

MEANS FOR PROVIDING A GRACEFUL POWER SHUT-DOWN CAPABILITY IN A MULTIPROCESSOR SYSTEM HAVING CERTAIN PROCESSORS NOT INHERENTLY HAVING A POWER SHUT-DOWN CAPABILITY

George J. Barlow, Tewksbury, Mass., and James W. Keeley, Nashua, N.H., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Oct. 22, 1991, Ser. No. 781,513
Int. Cl.[5] G06F *1/30*
U.S. Cl. 395—800 3 Claims



1. A multiprocessor computer system, comprising:

first processors having a first kind of interrupt handling means,

second processors having a second kind of interrupt handling means,

said first and second kind interrupt handling means being different,

a system management means for performing system management functions, including

detecting pending power shut-downs and sending pending power shut-down messages directed to each of the first processors warning of pending power shut-downs,

a system bus for communication between the first and second processors and the system management means,

including the communication of pending power shut-down messages,

the first processors first kind interrupt handling means responsive to pending power shut-down messages for executing power shut-down routines for placing the first processors in a known state before power termination,

said second processors second kind interrupt handling means not recognizing and responding to said pending power shut-down messages; and

a power shut-down means in each of said second processors for responding to said pending power shut-down messages to control said second kind interrupt handling means to place the second processors in a known state before a power termination, including

a bus monitor connected to the system bus and responsive to any pending power shut-down message directed to a first processor for generating an output signal indicating the occurrence of a pending power shut-down message directed to a first processor,

non-maskable interrupt logic coupled to the bus monitor and responsive to the generation of said output signal for generating a non-maskable interrupt output signal,

the second processor being responsive to the generation of a non-maskable interrupt output signal for querying the non-maskable interrupt logic to determine the nature of the interrupt, and

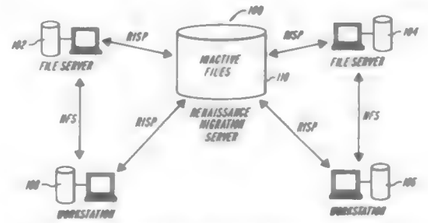
responsive to the detection of a pending power shut-down message directed to any first processor for executing a power shut-down routine for placing the second processor in a known state before the termination of power.

5,367,698

NETWORK FILE MIGRATION SYSTEM

Neil F. Webber, Hudson; Robert K. Israel, Westford; Gregory Keeley, Northborough; Tracy M. Taylor, Upton, and Antony W. Foster, Framingham, all of Mass., assignors to Epoch Systems, Inc., Westborough, Mass.

Filed Oct. 31, 1991, Ser. No. 786,248
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 26 Claims



1. A networked digital data processing system comprising

A. two or more client devices,

B. a network comprising a set of interconnections coupled to said client devices for transferring information therebetween,

C. at least a selected one of the client devices having a local data file storage element for locally storing and providing access to digital data files arranged in one or more client filesystems,

said local data file storage clement including, for each such filesystem, at least one file directory containing an entry for each data file stored in that filesystem,

D. a migration file server, coupled to client devices through said network, including

(i) migration storage means, coupled to said network, for storing at least data portions of data files from said selected client device,

(ii) storage level detection means, coupled to said local data file storage element, for detecting a storage utilization level therein,

(iii) level-responsive transfer means, coupled to the storage

level detection means and with said migration storage means and with said local data file storage element, for responding to storage utilization level exceeding a selected high watermark level for transferring data portions of one or more data files from such local data file storage element to the migration storage means, and

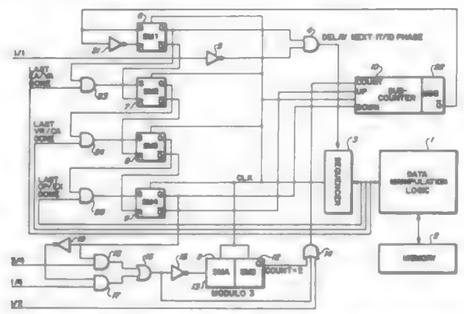
(iv) said level-responsive transfer means further including means for effecting release, by said local data file storage element, of storage space previously occupied in that local data file storage element by those one or more data files.

5,367,699

CENTRAL PROCESSING UNIT INCORPORATION SELECTABLE, PRECISA RATIO, SPEED OF EXECUTION DERATING

Ronald E. Lange; Russell W. Guenthner, both of Glendale, and Leonard Rabins, Scottsdale, all of Ariz., assignors to Bull HN Information Systems Inc., Technology Park, Mass.

Filed Nov. 26, 1991, Ser. No. 800,343
Int. Cl.[5] G06F *7/62*
U.S. Cl. 395—800 6 Claims



1. In a central processing unit including data manipulation logic, apparatus for effecting submodel control which includes:

A) sequence control means adapted to direct sequential phases of instruction execution within the data manipulation logic and for sensing when each phase during instruction execution has been completed and issuing signals reflective thereof;

B) an up/down subcounter including count direction and control inputs and a sign bit stage having an output reflecting the state thereof; and

C) up/down subcounter control means including:

1) a plurality of cascaded submodel flipflops including at least a first and a last submodel flipflop, each said submodel flipflop having at least one input to establish the state thereof and at least one output to indicate the current state thereof, each said at least one output of said submodel flipflops, except said at least one output of said last submodel flipflop, being coupled to an input of a succeeding submodel flipflop in said cascade;

2) means coupling said at least one output of said last submodel flipflop to said up/down subcounter direction input to selectively initiate counting thereof in a first direction determined by the current state of said last submodel flipflop;

3) means coupling a signal from said sequence control means indicative of the completion of a predetermined phase of instruction execution to said at least one input of said last submodel flipflop if said submodel flipflop immediately prior in said cascade to said last flipflop is currently in a first predetermined state to change the state of said last submodel flipflop to thereby cause said up/down subcounter to count in a second direction;

4) means coupling said output of said sign bit stage of said up/down subcounter to said at least one input of said first submodel flipflop such that said first submodel flipflop reflects the state of said sign bit stage of said up/down subcounter;

5) means coupled to said at least one output of said first submodel flipflop for:

a) issuing a signal to said sequence control means to delay instituting processing of the next instruction to be processed dining normal program execution when said up/down subcounter is counting in said first direction; and

b) issuing a signal to said sequence control means to permit instituting processing of the first phase of the next instruction to be processed during normal program execution when the state of said first submodel flipflop changes sign;

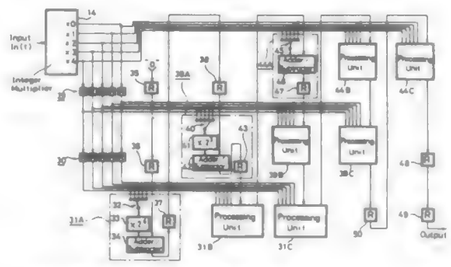
whereby, said up/down subcounter is controlled to count in a first direction from a beginning count as an instruction is executed and then reverse when the instruction completes and count in a second direction until said up/down subcounter changes sign to obtain an effective delay before processing of the succeeding instruction is permitted to proceed.

5,367,700

SYSTEM FOR MULTIPLYING DIGITAL INPUT DATA IN A MULTIPLIER CIRCUIT

Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jan. 27, 1992, Ser. No. 826,523
Claims priority, application Japan, Jan. 31, 1991, 3-031760
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—800 11 Claims



1. A data processing circuit comprising:

a first data selector having a first input terminal, a second input terminal, a third input terminal, and a single output terminal, said first input terminal for receiving a low-level signal;

a second data selector having a first input terminal, a second input terminal, a third input terminal, and a single output terminal;

a third data selector having a first input terminal, a second input terminal, a third input terminal, and a single output terminal, said third input terminal for receiving said low-level signal;

a first input line connected in common to said second input terminal of said first data selector and said first input terminal of said second data selector;

a second input line connected in common to said third input terminal of said first data selector and said second input terminal of said second data selector; and

a third input line connected in common to said third input terminal of said second data selector and said second input terminal of said third data selector;

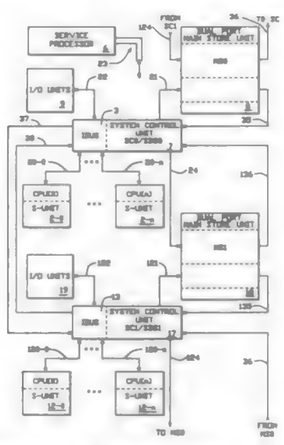
wherein said first, second, and third input lines are supplied input data in a time-division multiplexed manner, and each of said first, second, and third data selectors selects one of the input data supplied to said first, second, and third input terminals and outputs the selected data through said output terminal.

5,367,701

PARTITIONABLE DATA PROCESSING SYSTEM MAINTAINING ACCESS TO ALL MAINSTORAGE UNITS AFTER BEING PARTITIONED

Mark von Gnechten, Fremont; Brian T. Chase, San Jose; Richard J. Tobias, Santa Rosa, and David Dooley, San Jose, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Filed Dec. 21, 1992, Ser. No. 994,122
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 7 Claims



1. A data processing system comprising:

a first mainstore having a first local port serving requests for access to the first mainstore and a first remote port serving requests for access to the first mainstore;

a second mainstore having a local second port serving requests for access to the second mainstore and a remote port serving requests for access to the second mainstore;

a first set of computing resources which generate requests for access to data in the first and second mainstores, said first set of computing resources includes a first cache memory system;

a second set of computing resources which generate requests for access to data in the first and second mainstores, said second set of computing resources includes a second cache memory system;

a first system controller including

a first input means, coupled to the first set of computing resources and to a second system controller, for receiving requests for access to data in the first and second mainstores from the first set of computing resources and for receiving requests for access to data in the first and second mainstores received from said second set of computing resources by said second system controller,

a first server means, coupled to the first input means, to the first local port serving request on the first mainstore and to the second remote port serving request on the second mainstore, for serving requests issued by said first set of computing resources to access the first and second mainstores from the first input means and to monitor the requests issued by said second set of computing resources for insuring that the data to be accessed by the request from the first set of data resources is not presently being accessed by a second server means; and

a first data integrity means for maintaining information about request for access issued by said first set of computing resources in the first cache memory system in the first set computing resources which is used for insuring system data integrity and for retrieving the information from the first cache memory system in response to request for access from the first set of computing resources and from the second system controller;

the second system controller including

second input means, coupled to the second set of computing resources and the first system controller, for receiving requests for access to data in the first and second mainstores from the second set of computing resources and for receiving requests for access to data in the first and second mainstores received from said first set of computing resources by said first system controller,

second server means, coupled to the second input means, to the second local port request on the second mainstore and to the first remote port serving requests on the first mainstore, for serving requests issued by said second set of computing resources to access the first and second mainstores from the second input means and to monitor the requests issued by said first set of computing resources for insuring that data to be accessed by the request from the second set of data resources is not presently being accessed by the first server means; and

a second data integrity means for maintaining information about request for access issued by second set of computing resources in the second cache memory system in the second set computing resources which is used for insuring system data integrity and for retrieving the information from the second cache memory system in response to requests for access from the second set of computing resources and from the first system controller;

said first and second controllers cooperating with each other to preserve data integrity; and

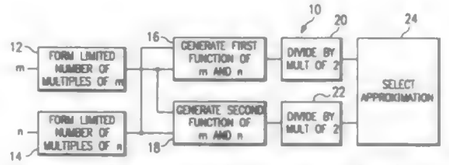
partitioning means, coupled to the first and second system controllers, for partitioning the data processing system so as to isolate the first system controller and first set of computing resources from the second system controller and the second set of computing resources.

5,367,702

SYSTEM AND METHOD FOR APPROXIMATING NONLINEAR FUNCTIONS

Shivaling S. Mahant-Shetti, Richardson; Thomas J. Aton, and Jerold A. Seitchik, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 4, 1993, Ser. No. 71
Int. Cl.[5] G06F *15/353*
U.S. Cl. 395—800 28 Claims



1. A system for approximating a nonlinear function, said system comprising:

circuitry for shifting a first quantity so as to multiply said first quantity by up to three integer powers of two;

circuitry for shifting a second quantity so as to multiply said second quantity by up to three integer powers of two;

circuitry in communication with said circuitry for shifting said first and said second quantities for generating a first function of said first and said second quantities;

circuitry in communication with said circuitry for shifting

said first and said second quantities for generating a second function of said first and said second quantities;

circuitry in communication with said circuitry for generating a first function for generating a first approximation by dividing said first function by an integer multiple of two in a shifter;

circuitry in communication with said circuitry for generating a second function for generating a second approximation by dividing said second function by an integer multiple of two in a shifter; and

circuitry in communication with said circuitry for generating said first and said second approximations for selecting between said first and said second approximations.

5,367,703

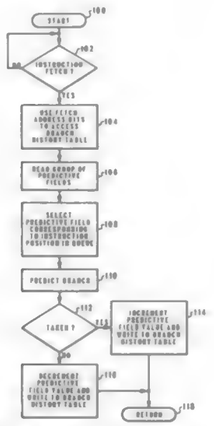
METHOD AND SYSTEM FOR ENHANCED BRANCH HISTORY PREDICTION ACCURACY IN A SUPERSCALAR PROCESSOR SYSTEM

David S. Levitan, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1993, Ser. No. 2,289

Int. Cl.[5] G06F *9/32, 13/00*

U.S. Cl. 395—800 **10 Claims**



1. A method for enhanced branch history prediction accuracy in a superscalar processor system which is capable of fetching and dispatching up to N instructions simultaneously, said method comprising the steps of:

establishing a branch history table containing multiple predictive fields, each of said multiple predictive fields containing data indicative of a likelihood that execution of a particular associated instruction will result in a branch within an executing set of instructions;

accessing a selected point within said branch history table utilizing at least a portion of a fetch address which is utilized to access an ordered sequence of M instructions within said superscalar processor system;

reading out an ordered sequence of M predictive fields from said selected point within said branch history table, each one of said ordered sequence of M predictive fields being associated with a particular instruction at a corresponding position within said ordered sequence of M instructions; and

utilizing an associated one of said M predictive fields to determine a likelihood that execution of a corresponding instruction within said ordered sequence of M instructions will result in a branch within said executing set of instructions, wherein variations in relative position of an instruction within said ordered sequence of M instructions will result in utilization of an alternate predictive field, thereby enhancing predicative accuracy.

5,367,704

METHOD AND SYSTEM FOR LIMITING PROGRAM UTILIZATION PERIOD IN COMPUTER

Keisuke Hasuo, and Takeshi Sakuma, both of Oome, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

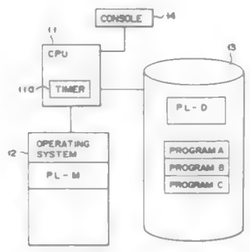
Continuation of Ser. No. 510,219, Apr. 18, 1990, abandoned.

This application Jan. 29, 1993, Ser. No. 13,193

Claims priority, application Japan, Apr. 18, 1989, 1-98313

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—800 **6 Claims**



4. A computer-based apparatus having structural elements for limiting a date range during which a program can be used on a computer comprising:

a storage element which stores at least a plurality of programs and a program list, the program list including a limit value including a year, month and date beyond which each program can no longer be used;

means for reading the program list into a current memory area;

a timer obtaining a present value indicative of year, month and date;

means for comparing said present value with each limit value for each program on the program list, and determining whether the present value is earlier than the limit value;

means for preparing a PL-M program list listing all the programs where the present value is earlier in time than the limit value, and not listing any programs whose present value is later than the limit value;

means for determining a request to start one particular program from the programs stored in the computer;

means for determining if said one particular program is listed on the PL-M program list, and starting said program if so, and inhibiting the start of said one particular program if it is not listed on said PL-M program list.

5,367,705

IN-REGISTER DATA MANIPULATION USING DATA SHIFT IN REDUCED INSTRUCTION SET PROCESSOR

Richard L. Sites, Boylston, and Richard T. Witek, Littleton, both of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Continuation of Ser. No. 547,619, Jun. 29, 1990, abandoned.

This application Sep. 7, 1993, Ser. No. 117,482

Int. Cl.[5] G06F *9/00, 12/00*

U.S. Cl. 395—800 **11 Claims**

5. A method of operating a processor to store a multiple-byte data item at first unaligned byte address in a memory, comprising the steps of:

loading from said memory to a first register in said processor a first aligned quadword using said first unaligned byte address, said unaligned byte address addressing a lowest-order first byte of said multiple-byte data item of N bytes to be stored in said memory, said first unaligned byte address being modified by said processor to replace a lowest-order three address bits with zeros before applying to said memory to address said first aligned quadword in said memory;

inserting to a second register in said processor a low-order part of said multiple-byte data item in a field of zeros, said low-order part corresponding to lowest-order bytes of said multiple-byte data item;

masking said first register in said processor to zero a field corresponding to a position of said low-order part of said multiple byte data item;

combining in said processor the contents of said first and second registers to produce a second aligned quadword containing said low-order part of said multiple-byte data item and an original content of said first aligned quadword in a remainder of said second aligned quadword;

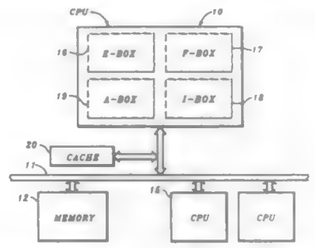
storing said second aligned quadword in said memory using said first unaligned byte address, said first unaligned byte address being modified to zero a lowest-order three bits before applying to said memory;

loading from said memory to a third register in said processor a third aligned quadword using a second unaligned byte address which is said first unaligned byte address to which a value M is added where M is an integer, said second unaligned byte address being modified to replace a lowest-order three bits with zeros before applying to said memory to address said third aligned quadword for loading to said third register;

inserting to a fourth register in said processor a high-order part of said multiple-byte data item in a field of zeros, said high-order part corresponding to a highest-order bytes of said multiple-byte data item;

masking said third register in said processor to zero a field corresponding to a position of said high-order part of said multiple byte data item;

combining in said processor the contents of said third and fourth registers to produce a fourth aligned quadword



containing said high-order part of said multiple-byte data item and an original content of said third aligned quadword in a remainder of said fourth aligned quadword;

storing said fourth aligned quadword in said memory using said second unaligned byte address, said second unaligned byte address being modified to replace a lowest-order three bits with zeros before applying to said memory.

OL
168
SS
4
10
22
994
MI

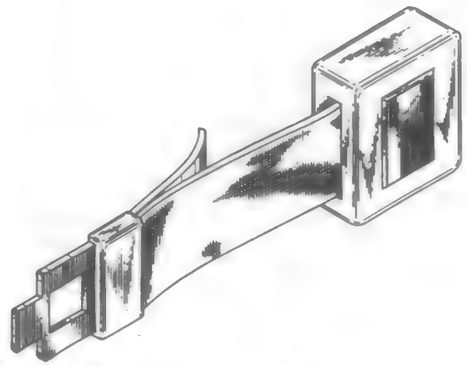
DESIGN PATENTS

GRANTED NOV. 22, 1994

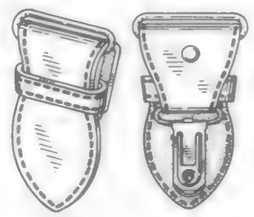
ERRATA

For CLASS	See PATENT NO.
D13-146	D 352,685

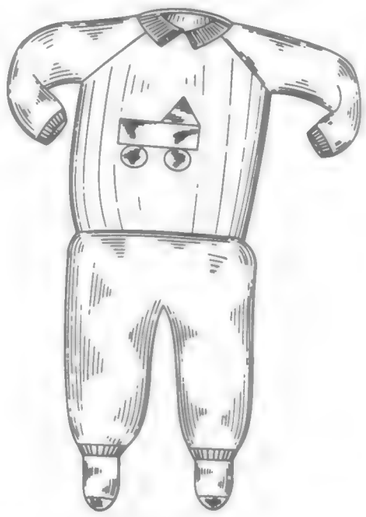
352,591
EXTENDABLE AUTO SAFETY BELT ACCESSORY
Edgar Laney, 515 Claraday St. #3, Glendora, Calif. 91740
Filed Feb. 5, 1993, Ser. No. 4,485
Term of patent 14 years
U.S. Cl. D2—631



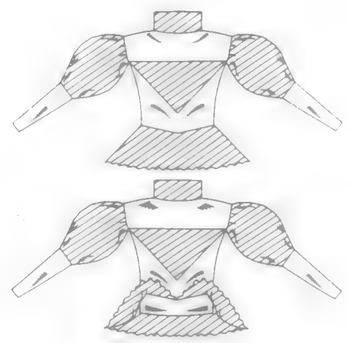
352,592
LEATHER CLIP END FOR SUSPENDERS
Malka Susswein, Yonkers, and Yehuda J. Fischer, Monsey, both of N.Y., assignors to Washington Garter Corp., Brooklyn, N.Y.
Filed Mar. 31, 1993, Ser. No. 6,576
Term of patent 14 years
U.S. Cl. D2—639



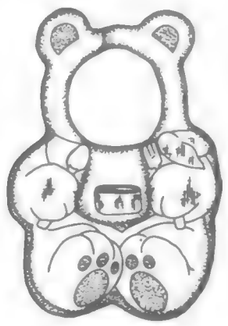
352,593
PANT AND TOP ENSEMBLE
Kimberly Kline, 7423 Courtland Cir., Manassas, Va. 22111
Filed Jun. 3, 1992, Ser. No. 892,010
Term of patent 14 years
U.S. Cl. D2—746



352,594
TURTLENECK TOP FOR A SKATING OUTFIT
Lori Ann G. Evans, 19917-89th Place West, Edmonds, Wash. 98026
Filed Apr. 8, 1991, Ser. No. 682,717
Term of patent 14 years
U.S. Cl. D2—841



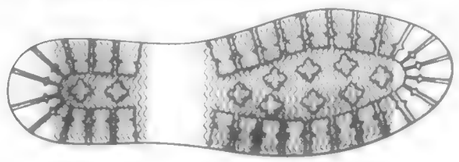
352,595
COMBINED BIB AND BOTTLE SUPPORT
Elizabeth R. Cameron, 13145 Bromont Ave., Sylmar, Calif. 91342
Filed Jul. 6, 1992, Ser. No. 909,469
Term of patent 14 years
U.S. Cl. D2—863



352,596
COLLAPSIBLE HAT
Frank V. Williams, Jr., Kingston, Tenn., assignor to Odds & Ends Wholesale & Mfg. Co. Inc., Harriman, Tenn.
Filed Sep. 21, 1992, Ser. No. 948,900
Term of patent 14 years
U.S. Cl. D2—887



352,597
SOLE FOR A SHOE
Richard M. Cohen, 76 Trotwood Down, Brentwood, Tenn. 37027
Filed Feb. 26, 1993, Ser. No. 5,210
Term of patent 14 years
U.S. Cl. D2—953

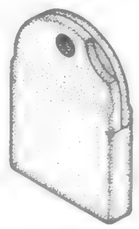


D. 352,598
Patent Not Issued For This Number

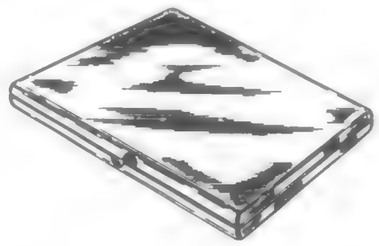
352,599
NON-CHAFFING PANTY HOSE
Penny Mackie, 1785 College Ave. Apt #8, Windsor Ontario, Canada N9B 1M4
Filed Jan. 16, 1992, Ser. No. 821,612
Term of patent 14 years
U.S. Cl. D2—980



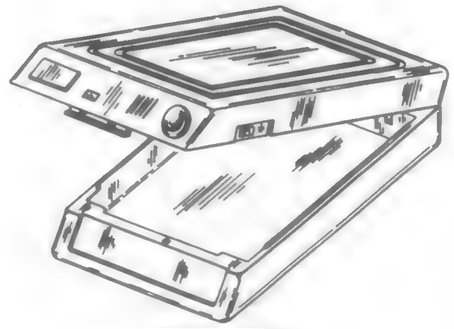
352,600
KEY HOLDER
Larry J. Steeley, 6004 Brookhill Cir., Birmingham, Ala. 35242
Filed Mar. 22, 1993, Ser. No. 6,161
Term of patent 14 years
U.S. Cl. D3—208



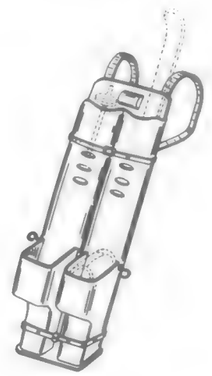
352,601
CASE
Michel Dallaire, 3575, boulevard Saint-Laurent, Bureau 902, Montreal, Quebec, Canada H2X 2T7
Filed Mar. 15, 1993, Ser. No. 5,976
Claims priority, application Canada, Sep. 15, 1992, 150992
Term of patent 14 years
U.S. Cl. D3—212



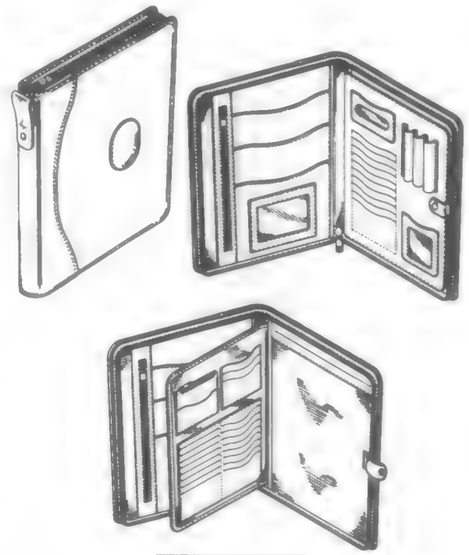
352,602
COMPACT CARRYING CASE
Leslie A. Wendell, Manchester, Mo., assignor to Wainwright Industries, Inc., St. Peters, Mo.
Filed Apr. 27, 1993, Ser. No. 7,618
Term of patent 14 years
U.S. Cl. D3—230



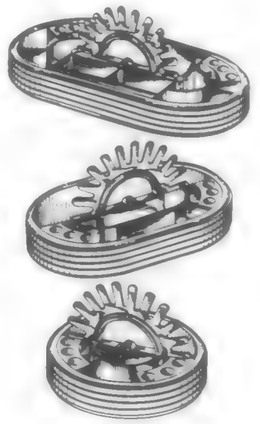
352,603
COMBINED SKI AND BOOT CARRIER
Karen Maller, 27 Ridge Dr. E., Great Neck Estates, N.Y. 11021
Filed Nov. 22, 1993, Ser. No. 15,574
Term of patent 14 years
U.S. Cl. D3—259



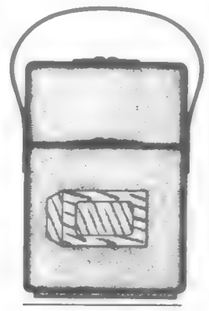
352,604
LEATHER BRIEFCASE
Wayne Johnson, Viewpoint Ter. RD-3, Lebanon, N.J. 08833
Filed May 12, 1993, Ser. No. 8,265
Term of patent 14 years
U.S. Cl. D3—303



352,605
COMBINED RING HOLDER AND ORGANIZER FOR COSMETICS
Paolo Tiramani, 461 Taconic Rd., Greenwich, Conn. 06831
Filed Oct. 10, 1991, Ser. No. 774,263
Term of patent 14 years
U.S. Cl. D3—308



352,606
HEATED CARRYING CASE FOR MEDICAL IV BAGS
Frank B. Cyivick, 50 Locust La., Eaton's Neck, Northport, N.Y. 11768, and Charles R. Ketteridge, 292 Magnolia Dr., Selden, N.Y. 11784
Filed Jul. 31, 1991, Ser. No. 738,298
Term of patent 14 years
U.S. Cl. D3—203



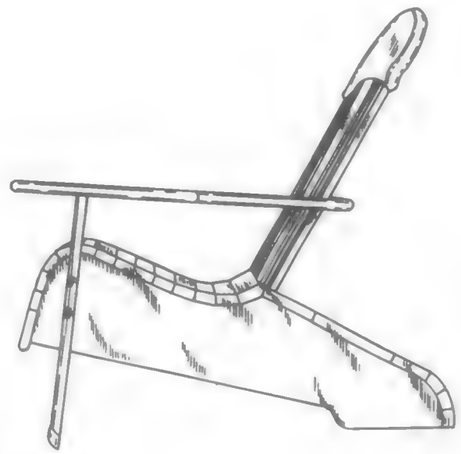
352,607
DRESSER
Hilco Woudstra, 315 E. Green Dr., High Point, N.C. 27260
Filed Jun. 2, 1992, Ser. No. 892,368
Term of patent 14 years
U.S. Cl. D6—446



352,608
CHAIR
Pasquale Natuzzi, Santeramo In Colle, and Domenico Abbruzzese, Gioia del Colle, both of Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 14, 1993, Ser. No. 12,935
Term of patent 14 years
U.S. Cl. D6—334



352,609
CHAIR
Kenneth L. Bruce, 6512 - 110th St., Kenosha, Wis. 53142
Filed Aug. 17, 1992, Ser. No. 930,227
Term of patent 14 years
U.S. Cl. D6—334



352,610
CHAIR
Pasquale Natuzzi, Santeramo In Colle, and Arcangelo Scarati, Taisano, both of Italy, assignors to Industrie Natuzzi, SpA, Bari, Italy
Filed Sep. 10, 1993, Ser. No. 12,799
Term of patent 14 years
U.S. Cl. D6—334



352,611
TWIG CHAIR
James C. Deardorff, Reedsport, Oreg., assignor to Out of the Woods Furniture Co., Reedsport, Oreg.
Filed Sep. 24, 1991, Ser. No. 766,671
Term of patent 14 years
U.S. Cl. D6—348



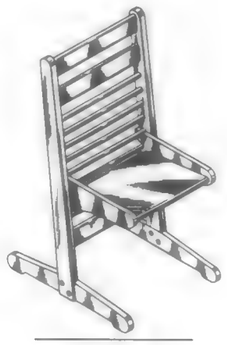
352,612
SEAT FOR SELF-CONTAINED BREATHING APPARATUS
George Pond, Wisconsin Dells, and Richard Reine, Reedsburg, both of Wis., assignors to Seats Inc., Reedsburg, Wis.
Filed Jan. 26, 1993, Ser. No. 4,080
Term of patent 14 years
U.S. Cl. D6—356



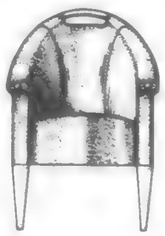
352,613
SEAT
Gordon D. Kelly, Elm Grove, Wis., assignor to Bemis Manufacturing Company, Sheboygan Falls, Wis.
Filed Jan. 26, 1993, Ser. No. 7,595
Term of patent 14 years
U.S. Cl. D6—370



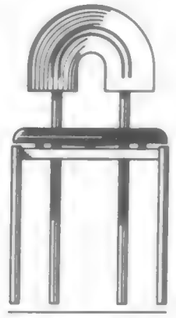
352,614
YOUTH CHAIR
Douglas W. Adams, 2588 S. Dahlia, Denver, Colo. 80222
Filed Jul. 30, 1993, Ser. No. 11,229
Term of patent 14 years
U.S. Cl. D6—370



352,615
CHAIR
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed May 28, 1993, Ser. No. 8,873
Term of patent 14 years
U.S. Cl. D6—334



352,616
CHAIR
Just B. Meyer, Rhenen, Netherlands, assignor to Indecom N.V., Netherlands
Filed Aug. 2, 1993, Ser. No. 11,338
Claims priority, application Hague Agreement, Feb. 2, 1993, DM/025110
Term of patent 14 years
U.S. Cl. D6—380



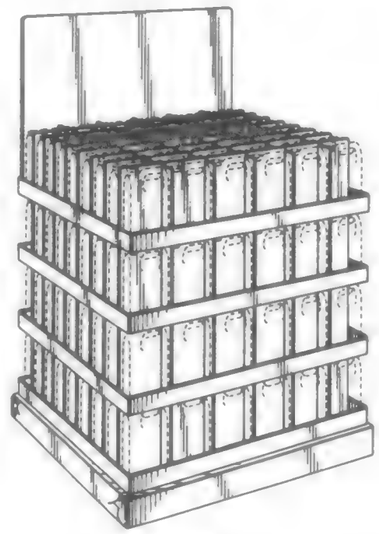
352,617
CHAIR
Richard A. Schroeder, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Mar. 11, 1993, Ser. No. 5,770
Term of patent 14 years
U.S. Cl. D6—370



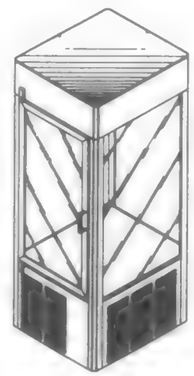
352,618
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture of Alabama, Birmingham, Ala.
Filed May 3, 1993, Ser. No. 7,873
Term of patent 14 years
U.S. Cl. D6—373



352,619
PRODUCT DISPLAY PALLET
Daniel Pigott, 40 Sleepyhollow Rd., Andover, N.J. 07821, and John Davis, 179 Voorhis Ave., River Edge, N.J. 07661
Filed Oct. 23, 1992, Ser. No. 2,204
Term of patent 14 years
U.S. Cl. D6—467



352,620
COUNTER TOP DISPLAY REFRIGERATOR
Robert J. Geisen, Stillwater, Minn.; Robert L. McMullen, Hudson, Wis., and Lora M. Ulrich, Burnsville, Minn., assignors to Nor-Lake, Incorporated, Hudson, Wis.
Filed Mar. 31, 1993, Ser. No. 6,508
Term of patent 14 years
U.S. Cl. D6—470



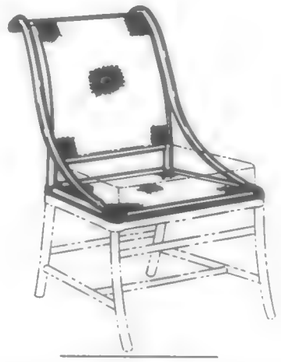
352,621
LEG FOR A DISPLAY RACK
Harold B. Goldring, Woodcliff Lake, N.J.; Mark A. Nivea, Yonkers; Ronald Namaroff, Hartsdale, both of N.Y., and Leslie G. Davis, North Caldwell, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 11,640, Aug. 11, 1993. This application Jan. 26, 1994, Ser. No. 17,551
Term of patent 14 years
U.S. Cl. D6—495



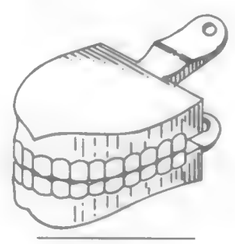
352,622
TABLE FRAME
Roy N. Alchin, Wetherill Park, Australia, assignor to Alchin & Long Group Pty Limited T/AS Colonial Castings, Smithfield, Australia
Filed Aug. 9, 1993, Ser. No. 11,615
Claims priority, application Australia, Jun. 25, 1993, 1913/93
Term of patent 14 years
U.S. Cl. D6—499



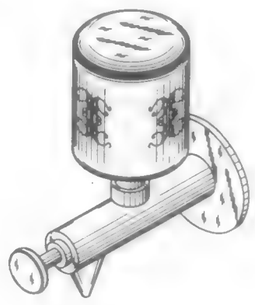
352,623
SEATING PORTION OF A CHAIR
Elinor S. McGuire, San Francisco, Calif., assignor to The McGuire Furniture Company, San Francisco, Calif.
Filed Jun. 1, 1990, Ser. No. 533,055
Term of patent 14 years
U.S. Cl. D6—502



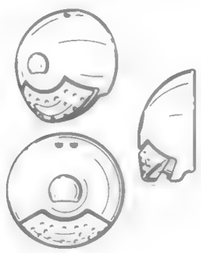
352,624
CLAMP FOR A TOOTHPASTE TUBE
Robert Voiss, 2828 Cochran St.-Suite 254, Simi Valley, Calif. 93065
Filed Jun. 11, 1993, Ser. No. 9,326
Term of patent 14 years
U.S. Cl. D6—541



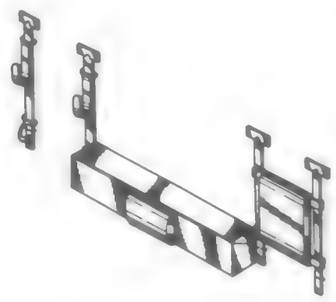
352,625
FLUID DISPENSER
Edward C. Henning, 1914 Morgan Dr., West Bend, Wis. 53095, and Charles E. Henning, 417 N. Dries St. Apt. #3, Saukville, Wis. 53080
Filed Jun. 4, 1993, Ser. No. 9,082
Term of patent 14 years
U.S. Cl. D6—545



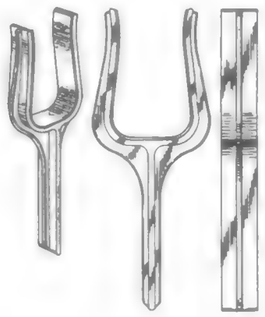
352,626
LIQUID SOAP DISPENSER
Eric Vignot, Bussy Saint Georges, France, assignor to Alpha Systemes, Mitry-Mory, France
Filed Sep. 21, 1993, Ser. No. 13,227
Claims priority, application Hague Agreement, Mar. 31, 1993, DM/025675
Term of patent 14 years
U.S. Cl. D6—545



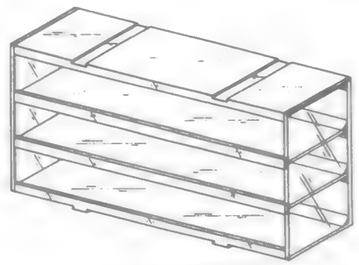
352,627
SAFETY GUN RACK
Wesley L. Pire, 41 Bank, Bradford, Pa. 16701
Filed Apr. 9, 1993, Ser. No. 6,924
Term of patent 14 years
U.S. Cl. D6—552



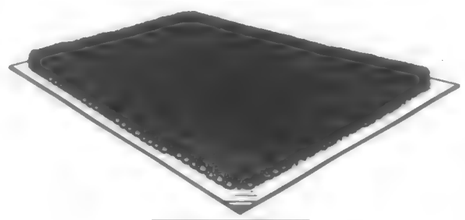
352,628
GROUND INSERTED SURFBOARD SUPPORT
Michael W. James, 21871 Newland St., #10, Huntington Beach, Calif. 02646
Filed Feb. 25, 1992, Ser. No. 841,031
Term of patent 14 years
U.S. Cl. D6—552



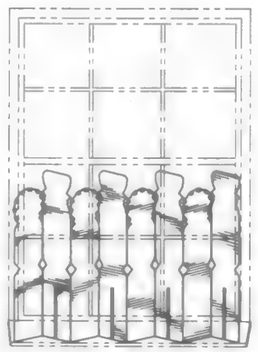
352,629
TIE STORAGE BOX
Paul C. Zeigler, 1334 W. Bell, Houston, Tex. 77019
Filed Dec. 7, 1992, Ser. No. 2,261
Term of patent 14 years
U.S. Cl. D6—559



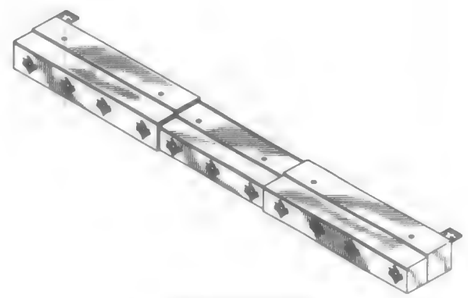
352,630
DOOR MAT
Minoru Yamanaka, Tokyo, Japan, assignor to Kabushiki Kaisha Risuron, Tokyo, Japan
Filed Sep. 23, 1992, Ser. No. 948,808
Term of patent 14 years
U.S. Cl. D6—583



352,631
DECORATOR BLIND
Brenda D. Dillon, P.O. Box 673, Blue Ridge, Va. 24064
Filed Oct. 14, 1992, Ser. No. 485
Term of patent 14 years
U.S. Cl. D6—575



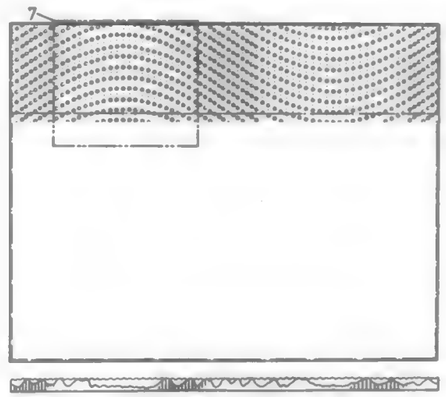
352,632
VALANCE
Marshall F. Wallace, 4071 W. U.S. Rte. 20, LaPorte, Ind. 46350
Filed Aug. 19, 1991, Ser. No. 746,572
Term of patent 14 years
U.S. Cl. D6—579

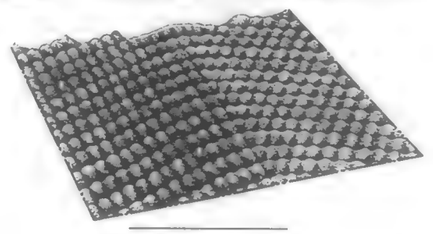


352,633
CUSHION
Sheri Berggren, 714 Sumac Dr., Streamwood, Ill. 60103
Filed Oct. 22, 1993, Ser. No. 14,503
Term of patent 14 years
U.S. Cl. D6—598

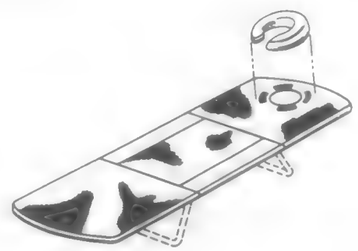


352,634
MATTRESS PAD
Steven D. Canning, Brampton, Canada, assignor to Woodbridge Foam Corporation, Mississauga, Canada
Filed Jul. 26, 1990, Ser. No. 559,553
Term of patent 14 years
U.S. Cl. D6—596

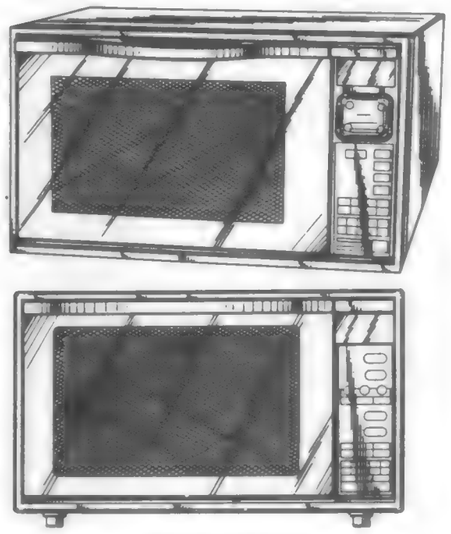




352,635
COMBINED CUSHION AND COVER FOR A LOUNGE CHAIR
Stephanie L. Yoder, 5 Hardwood St., Cumberland, Md. 21502
Filed Jun. 21, 1993, Ser. No. 9,650
Term of patent 14 years
U.S. Cl. D6—611



352,636
MICROWAVE OVEN
Masahiro Nakamura, Habikino, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 12, 1992, Ser. No. 928,327
Claims priority, application Japan, Mar. 5, 1992, 4-6331; Mar. 5, 1992, 4-6332
Term of patent 14 years
U.S. Cl. D7—351



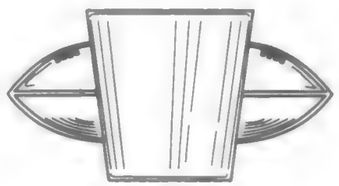
352,637
DRINKS DISPENSER TAP
Roberto Ugolini, Rimini, Italy, assignor to Celli S.p.A., Cerasolo Anna-Fo, Italy
Filed Mar. 10, 1993, Ser. No. 5,696
Claims priority, application Italy, Sep. 15, 1992, BO9-2O000053
Term of patent 14 years
U.S. Cl. D7—398



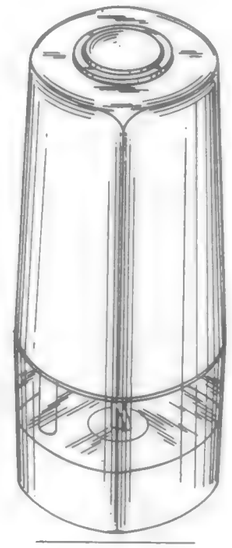
352,638
ELECTRONIC FIREPLACE IGNITER
Kun-Chung Hsu, Shin Chuang, , assignor to Chien Sheng Machine Industrial Co., Ltd., Taipei,
Filed Aug. 5, 1992, Ser. No. 924,663
Term of patent 14 years
U.S. Cl. D7—416



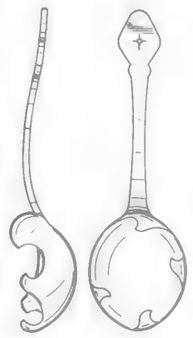
352,639
DRINKING GLASS
Kenneth D. Rigsby, 7911 Dunbarton, Los Angeles, Calif. 90045
Filed Oct. 9, 1992, Ser. No. 243
Term of patent 14 years
U.S. Cl. D7—515



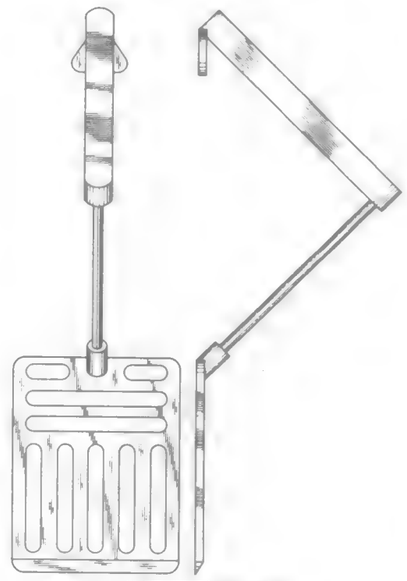
352,640
ILLUMINATED BATTERY OPERATED PEPPERMILL
Marcus W. Kibbe, San Marcos, Calif., assignor to Dudley Kebow, Inc., Ocean Side, Calif.
Filed Nov. 29, 1993, Ser. No. 15,803
Term of patent 14 years
U.S. Cl. D7—679



352,641
SERVING SPOON
Raoul J. Coquereau, and Libi Coquereau, both of 615 S. Manhattan Pl. #704, Los Angeles, Calif. 90005
Filed Jul. 23, 1992, Ser. No. 919,776
Term of patent 14 years
U.S. Cl. D7—688



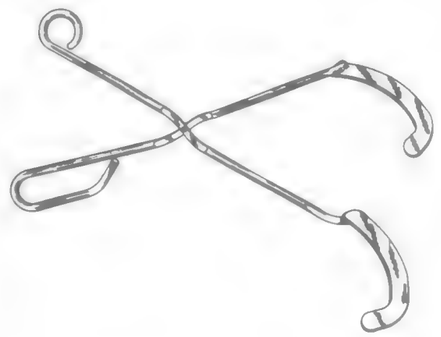
352,642
SPATULA
Lisa A. Cole, and Gary A. Cole, both of 508 W. Reynolds St., Plant City, Fla. 33566
Filed May 3, 1993, Ser. No. 7,807
Term of patent 14 years
U.S. Cl. D7—692



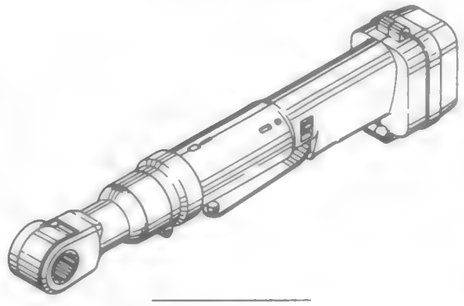
352,643
GRASS GROWTH CONTROLLING GUARD
William F. Hoculik, 63 McDonagh Crescent, Thorold, Ontario, Canada L2V 4S4
Filed Oct. 4, 1993, Ser. No. 13,820
Term of patent 14 years
U.S. Cl. D8—1



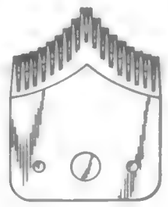
352,644
TONGS FOR CLEANING TOILETS AND URINALS
Glenn C. Fields, 446 Monroe St., Maynardville, Tenn. 37807
Filed Jun. 17, 1992, Ser. No. 900,700
Term of patent 14 years
U.S. Cl. D8—52



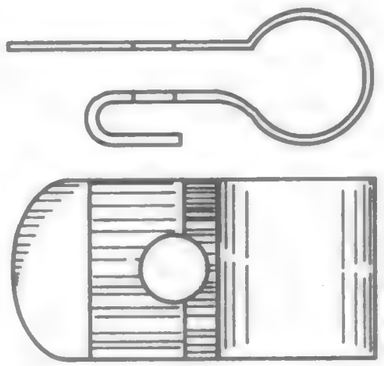
352,645
ELECTRIC RATCHET WRENCH
Kiyotaka Ichikawa, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Nov. 23, 1993, Ser. No. 15,644
Claims priority, application Japan, Jun. 1, 1993, 5-16207
Term of patent 14 years
U.S. Cl. D8—61



352,646
SHEARING BLADE ASSEMBLY FOR SCULPTING RUGS AND CARPETS
Jimmy M. Scarborough, Jacksonville, Fla., assignor to Sunbeam Corporation, Ft. Lauderdale, Fla.
Filed Jul. 15, 1991, Ser. No. 729,830
Term of patent 14 years
U.S. Cl. D8—70



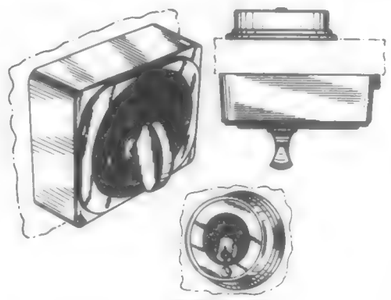
352,647
CLAMP
Gary D. Stevens, 3310 Harrison Ave. #1, Centralia, Wash. 98531
Filed Nov. 30, 1993, Ser. No. 15,815
Term of patent 14 years
U.S. Cl. D8—72



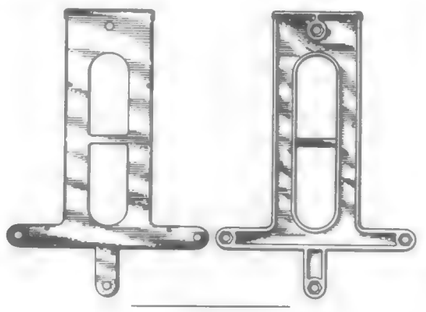
352,648
COMBINED SCREWDRIVER AND RULER
Charles B. Brewer, III, 8010 Mid Haven Rd., Baltimore, Md. 21222
Filed Aug. 24, 1992, Ser. No. 933,940
Term of patent 14 years
U.S. Cl. D8—87



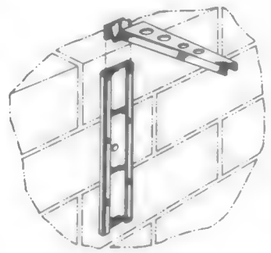
352,649
DOOR BOLT HOUSING ASSEMBLY WITH INTEGRAL AUDIBLE ALARM
William Kling, Florence, Ky., assignor to Pease Industries, Inc., Fairfield, Ohio
Filed Nov. 5, 1993, Ser. No. 15,018
Term of patent 14 years
U.S. Cl. D8—332



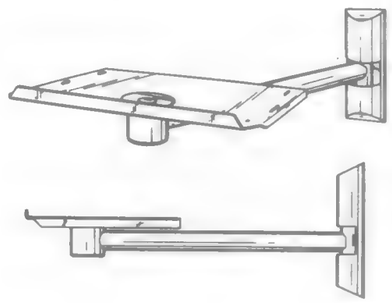
352,650
ELECTRICAL HOUSING MOUNTING BRACKET
Kenneth W. Polarek, 1104 Marlborough Ave., Absecon, N.J. 08201
Filed Apr. 5, 1993, Ser. No. 6,706
Term of patent 14 years
U.S. Cl. D8—354



352,651
BRICK TIE
Geoffrey Anderson, North Fitzroy, and Roland Maeder, Keilor East, both of Australia, assignors to Abey Australia Pty. Ltd., Victoria, Australia
Filed Feb. 14, 1992, Ser. No. 835,673
Term of patent 14 years
U.S. Cl. D8—384



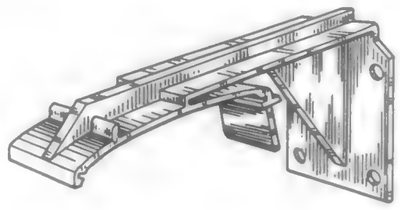
352,652
TV WALL SUPPORT
Henricus H. Vogels, Eindhoven, Netherlands, assignor to Vogel's Holding B.V., Eindhoven, Netherlands
Filed Nov. 22, 1993, Ser. No. 15,604
Claims priority, application Hague Agreement, Jul. 7, 1993, DMA/002209
Term of patent 14 years
U.S. Cl. D8—363



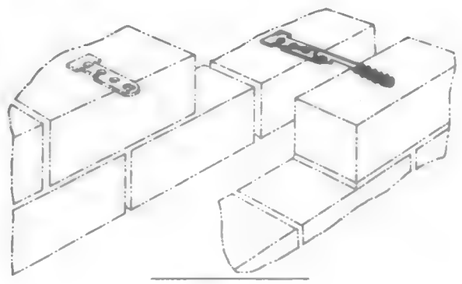
352,653
PEGBOARD HOOK
David P. Keddie, Brookfield, Wis., assignor to Hempe Manufacturing Co., Inc., New Berlin, Wis.
Filed Mar. 22, 1993, Ser. No. 6,129
Term of patent 14 years
U.S. Cl. D8—367



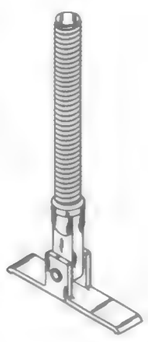
352,654
TRACK HOLDER FOR VERTICAL BLINDS
Don Hansen, 1703 E. Heritage Cir., Anaheim, Calif. 92804
Filed Oct. 26, 1993, Ser. No. 14,584
Term of patent 14 years
U.S. Cl. D8—380



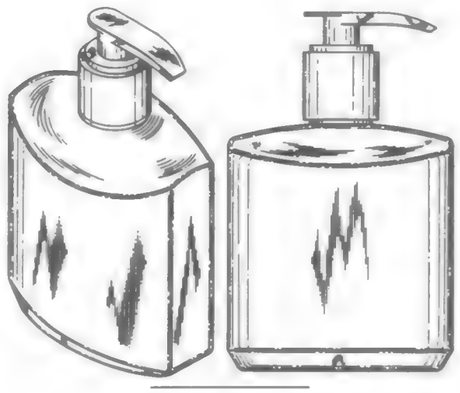
352,655
TIE FOR MASONRY AND BRICK
Geoffrey Anderson, North Fitzroy, and Roland Maeder, Keilor East, both of Australia, assignors to Abey Australia Pty. Ltd., Victoria, Australia
Filed Feb. 14, 1992, Ser. No. 835,674
Term of patent 14 years
U.S. Cl. D8—384



352,656
FLIP-DOWN T-SHAPED WALL ANCHOR
Wayne Rodman, 24331 Muirlands Blvd., #4-142, Lake Forest, Calif. 92630
Filed Nov. 21, 1991, Ser. No. 795,635
Term of patent 14 years
U.S. Cl. D8—385



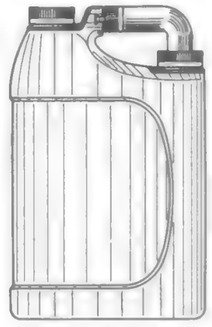
352,657
BOTTLE
Frank E. Gouda, Fairfield, Conn., and Harry H. Haubert, Freehold Township, Monmouth County, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Nov. 5, 1992, Ser. No. 1,263
Term of patent 14 years
U.S. Cl. D9—300



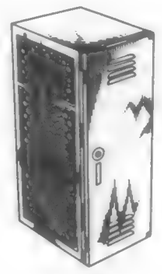
352,658
BOTTLE OF CYANOACRYLATE ADHESIVE
Yi-Tsung Yan, P.O. Box 96-405, Taipei 10098,
Filed Apr. 14, 1993, Ser. No. 7,022
Term of patent 14 years
U.S. Cl. D9—337



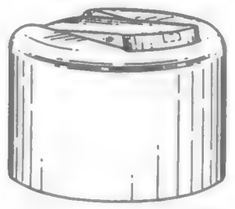
352,659
CONTAINER
Hugo Nilsson, Gunstorp, Tutaryd, S-341 96 Ljungby, Sweden, and Karl-Eric Johansson, Åby,, S-340 14 Lagan, both of Sweden
Filed Aug. 20, 1993, Ser. No. 12,019
Claims priority, application Denmark, Feb. 22, 1993, MA01891993
Term of patent 14 years
U.S. Cl. D9—337



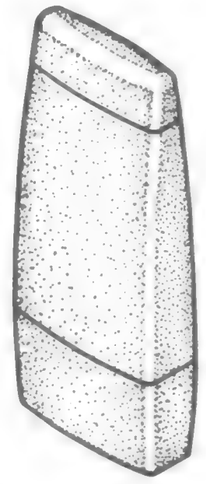
352,660
STORAGE CONTAINER FOR SPORTS MEMORABILIA AND COLLECTIBLE CARDS
John J. Stribiak, Homewood, Ill., assignor to Woods & Brooks Ltd., Palos Hills, Ill.
Filed Aug. 11, 1992, Ser. No. 929,139
Term of patent 14 years
U.S. Cl. D9—420



352,661
DISPENSER CAP
Ronald J. Powers, 4010 Inchia Dr., Oxnard, Calif. 93035
Filed May 26, 1992, Ser. No. 887,931
Term of patent 14 years
U.S. Cl. D9—449



352,662
BOTTLE AND CAP
Howard H. McIlvain, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 22, 1993, Ser. No. 15,578
Term of patent 14 years
U.S. Cl. D9—520



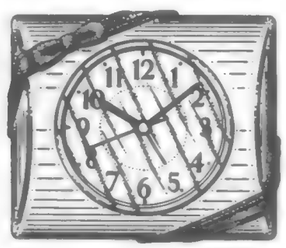
352,663
BOTTLE WITH CAP
Michael Suxdorf, Hamburg, Germany, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Mar. 31, 1993, Ser. No. 6,506
Claims priority, application United Kingdom, Oct. 2, 1992, 2026181
Term of patent 14 years
U.S. Cl. D9—573



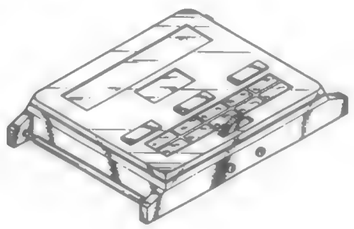
352,664
WORLD TIME TRAVEL CLOCK
Richard F. M. Peersmann, Et Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 31, 1992, Ser. No. 3,240
Term of patent 14 years
U.S. Cl. D10—2



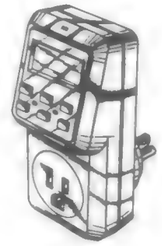
352,665
CLOCK
Hisako Sugano, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Oct. 14, 1992, Ser. No. 451
Term of patent 14 years
U.S. Cl. D10—6



352,666
COMBINED WRISTWATCH AND PAGER
Alvin M. Williams, P.O. Box 357, Hudson, Colo. 80642
Filed May 21, 1992, Ser. No. 886,175
Term of patent 14 years
U.S. Cl. D10—31



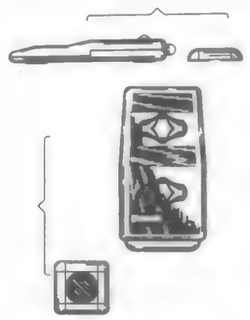
352,667
ELECTRONIC TIMER
Chao-Fu Chen, No. 22-1, Lane 14, Ho Ping Rd., Pan Chiao City, Taipei Hsien, Taiwan, Prov. of China
Filed Mar. 3, 1992, Ser. No. 844,700
Term of patent 14 years
U.S. Cl. D10—40



352,668
DIGITAL TIMER
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Dec. 27, 1991, Ser. No. 813,850
Term of patent 14 years
U.S. Cl. D10—40



352,669
COMBINED TRANSMITTER AND RECEIVER FOR LOCATING A LOST REMOTE CONTROL SWITCH
Shawn E. Blair, 10151 Arrow Rte. #9, Rancho Cucamonga, Calif. 91730
Filed Dec. 9, 1992, Ser. No. 2,359
Term of patent 14 years
U.S. Cl. D10—106



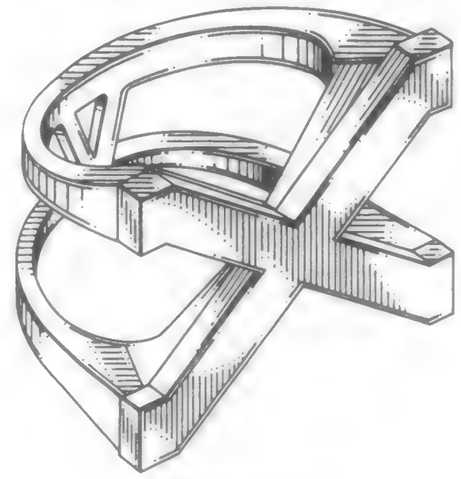
352,670
WATCH BAND
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 23, 1993, Ser. No. 9,846
Term of patent 14 years
U.S. Cl. D11—3



352,671
WATCH BAND
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 23, 1993, Ser. No. 9,854
Term of patent 14 years
U.S. Cl. D11—3



352,672
RING
Malcolm C. Dumas, 4714 N. Habana Suite 1203, Tampa, Fla. 33614
Filed Feb. 19, 1993, Ser. No. 5,114
Term of patent 14 years
U.S. Cl. D11—30



352,673
DIAMOND
H. Bradley Harris, P.O. Box 6363, Clearwater, Fla. 34618, and Harvey J. Harris, 7068 Southshore Dr., St. Petersburg, Fla. 33707
Filed Nov. 6, 1992, Ser. No. 1,271
Term of patent 14 years
U.S. Cl. D11—90



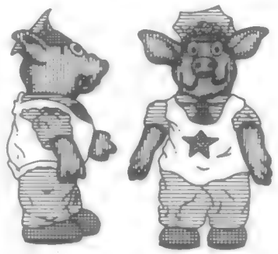
352,674
PLANT HOLDER
Roger H. Richards; William C. Richards, and Arie N. Sharon, all of 2001 Reliance Pkwy., Ste. E, Bedford, Tex. 76021
Filed Jul. 19, 1993, Ser. No. 10,849
Term of patent 14 years
U.S. Cl. D11—148



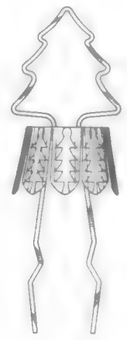
352,675
BELL-SHAPED DECORATIVE ORNAMENT
Jerrold W. Ross, Philadelphia, Pa., and Richard D. Bankert, Wilmington, Del., assignors to Franklin Mint Company, Franklin Center, Pa.
Continuation-in-part of Ser. No. 582,028, Sep. 12, 1990, Pat. No. Des. 335,830. This application May 29, 1992, Ser. No. 891,460
Term of patent 14 years
U.S. Cl. D11—157



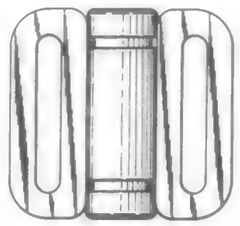
352,676
PIG FIGURE
Lisa A. Schmidli, Huntsville, Ala., assignor to Metro Private Investigations, Inc., Huntsville, Ala.
Filed Aug. 23, 1993, Ser. No. 12,083
Term of patent 14 years
U.S. Cl. D11—158



352,677
COMBINED CHRISTMAS TREE ORNAMENT HANGER AND CAP
Ralf Rempel, Eisfelder Strasse 54, W-8632 Neustadt B. Coburg, Germany, assignor to Oberfraenkische Glas- and Spielzeug KG Fritz Rempel Company and Inh R. Rempel, Neustadt b. Coburg, Germany
Filed Apr. 13, 1993, Ser. No. 7,004
Claims priority, application Germany, Oct. 13, 1992, 9207515
Term of patent 14 years
U.S. Cl. D11—164



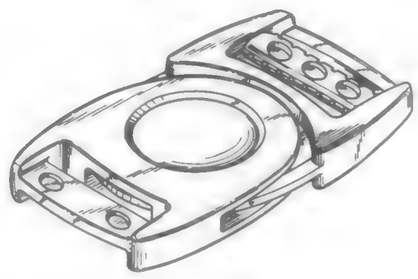
352,678
GARMENT CLOSURE
Gerhard Fildan, Wohnpark Alt Erlaa, Anton Baumgartner Str. 44, C 4 17 01, A-1232, Vienna, Austria
Filed Mar. 23, 1993, Ser. No. 6,103
Term of patent 14 years
U.S. Cl. D11—212



352,679
HAT PIN
Harold D. Butler, 1304 Etheridge La., and Bret T. Haynes, 5809 Old Martin Hwy., both of Union City, Tenn. 38261
Filed Sep. 21, 1992, Ser. No. 949,007
Term of patent 14 years
U.S. Cl. D11—207



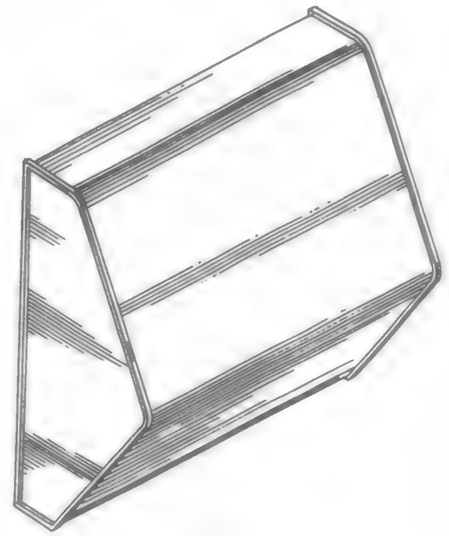
352,680
BUCKLE
Hiroshi Matoba, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan
Filed Oct. 19, 1993, Ser. No. 14,343
Claims priority, application Japan, Apr. 19, 1993, 5-11448
Term of patent 14 years
U.S. Cl. D11—216



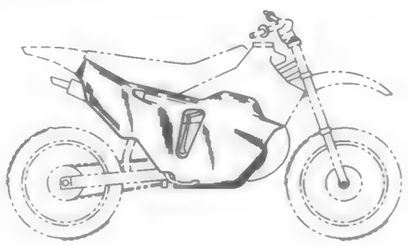
352,681
FRONT LINK FOR A BRASSIERE
Gerhard Fildan, Wohnpark Alte Erlaa, Anton Baumgartner Str. 44, C 4 17 01, A-1232 Vienna, Austria
Filed May 27, 1993, Ser. No. 8,853
Term of patent 14 years
U.S. Cl. D11—218



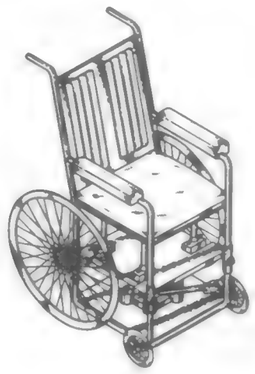
352,682
EXTERIOR SHELL FOR A RECREATIONAL VEHICLE FOLD OUT EXTENSION
Harold E. Gerring, Bristol, Ind., assignor to Amerigo, Inc., Bristol, Ind.
Division of Des. Ser. No. 701, Oct. 21, 1992. This application Nov. 30, 1993, Ser. No. 15,835
Term of patent 14 years
U.S. Cl. D12—106



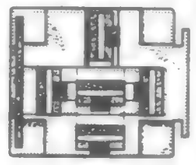
352,683
PAIR OF MOTORCYCLE SIDE COVERS
David T. Miller, 17615 Monette Cir., Yorba Linda, Calif. 92686
Filed Jun. 4, 1993, Ser. No. 9,139
Term of patent 14 years
U.S. Cl. D12—126



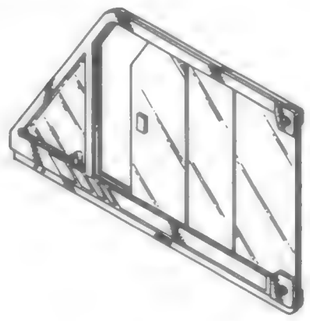
352,684
PATIENT ELEVATING WHEEL CHAIR
Harry W. Smith, and E. Thelma Smith, both of R.D. 4 Box 111, Johnstown, Pa. 15905
Filed Apr. 26, 1993, Ser. No. 7,540
Term of patent 14 years
U.S. Cl. D12—131



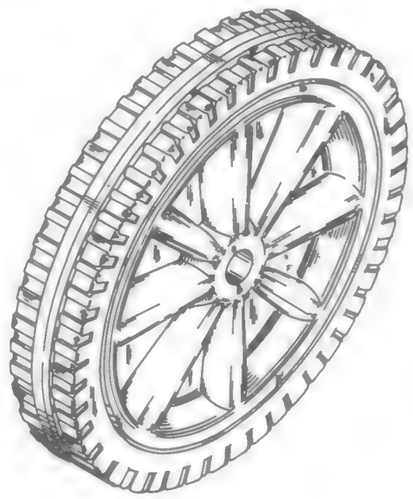
352,685
SLIDE-TOGETHER RELAY SOCKET
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Sep. 28, 1992, Ser. No. 951,440
Term of patent 14 years
U.S. Cl. D13—146



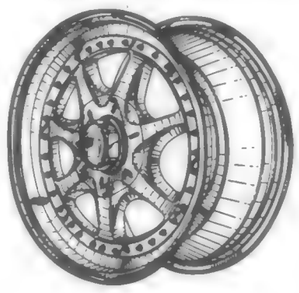
352,686
REPLACEMENT VEHICLE WINDOW WITH VENT
James Truman, 514 W. 5th St., Mishawaka, Ind. 46544
Filed Apr. 26, 1993, Ser. No. 7,543
Term of patent 14 years
U.S. Cl. D12—183



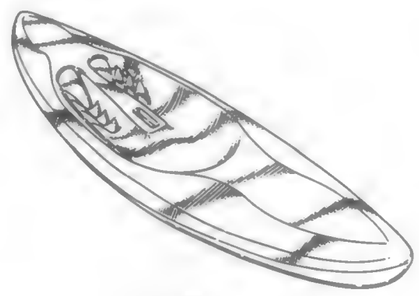
352,687
BLOW MOLDED WHEEL
Tracy Markling, Delavan, Wis., assignor to Poly-Flex, Inc., Walworth, Wis.
Continuation-in-part of Ser. No. 80,366, Jun. 21, 1993. This application Aug. 23, 1993, Ser. No. 12,057
Term of patent 14 years
U.S. Cl. D12—204



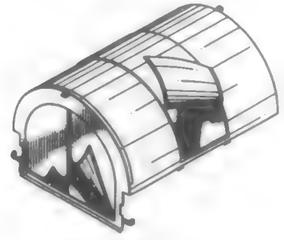
352,688
LIGHT ALLOY WHEEL
Alberto Boselli, Milan, Italy, assignor to Nardi Italia SPA, Abbiate Guazzone, Italy
Filed Aug. 24, 1992, Ser. No. 934,806
The portion of the term of this patent subsequent to Jul. 20, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—211



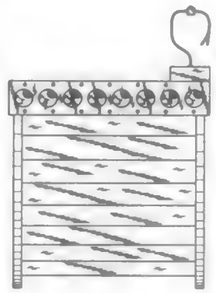
352,689
WATER CRAFT
Timothy A. Niemier, 1731 Old Samish Rd., Bellingham, Wash. 98226
Filed Aug. 16, 1993, Ser. No. 11,911
Term of patent 14 years
U.S. Cl. D12—302



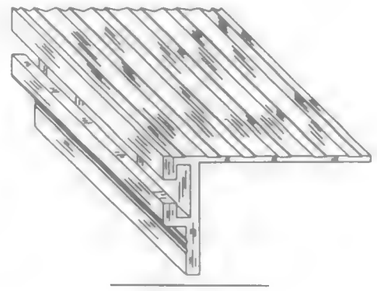
352,690
TENT FOR PICK-UP TRUCK
Ronald A. Schorr, Scottsdale, Ariz., assignor to Dan B. Poole, Phoenix, Ariz.
Filed Sep. 20, 1993, Ser. No. 13,185
Term of patent 14 years
U.S. Cl. D12—403



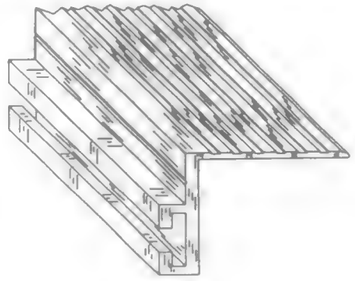
352,691
BUILT-IN WEATHER SHIELD FOR A VEHICLE WINDSHIELD OR REAR WINDOW
Miriam J. Farr, 127 W. University Dr., Mesa, Ariz. 85201
Filed Jul. 14, 1993, Ser. No. 10,684
Term of patent 14 years
U.S. Cl. D12—401



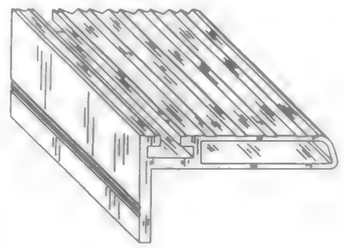
352,692
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,340
Term of patent 14 years
U.S. Cl. D12—412



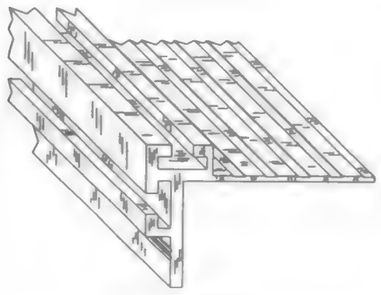
352,693
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,336
Term of patent 14 years
U.S. Cl. D12—412



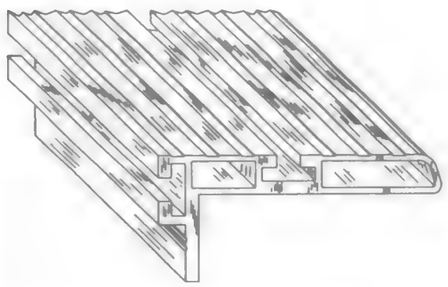
352,694
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,341
Term of patent 14 years
U.S. Cl. D12—412



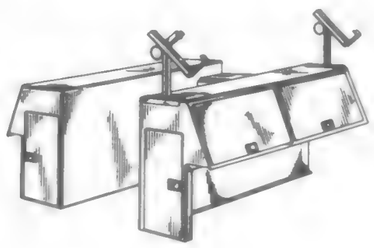
352,695
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,334
Term of patent 14 years
U.S. Cl. D12—412



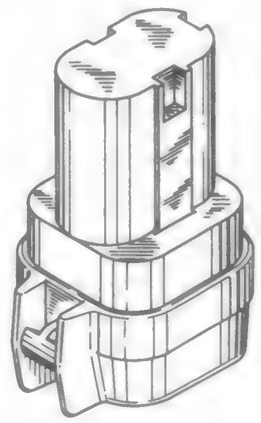
352,696
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,333
Term of patent 14 years
U.S. Cl. D12—412



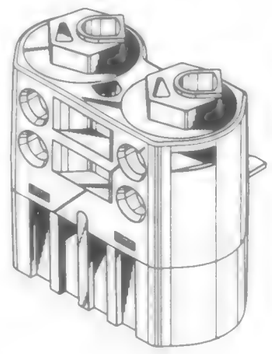
352,697
UTILITY BODY INSERT
Lynn M. Johnson, 2921 Schabacker #4, Menomonie, Wis.
Filed Mar. 18, 1993, Ser. No. 6,202
Term of patent 14 years
U.S. Cl. D12—406



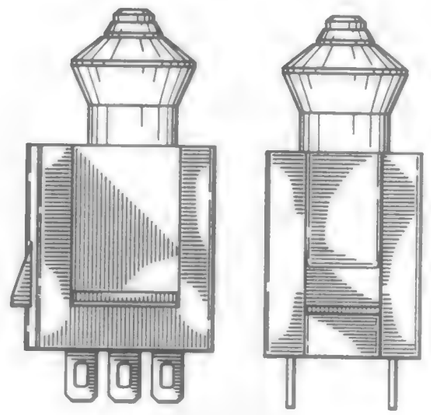
352,698
DESIGN FOR BATTERY PACK
Michio Okumura, Anjo, Japan, assignor to Makita Corporation, Anjo, Japan
Filed Sep. 29, 1993, Ser. No. 13,643
Claims priority, application Japan, Apr. 12, 1993, 5-10781
The portion of the term of this patent subsequent to Nov. 28, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—103



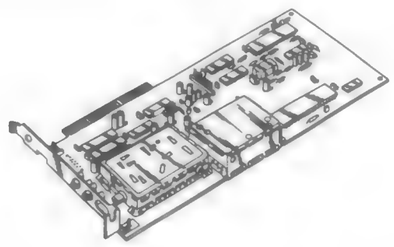
352,699
ELECTRICAL CONNECTOR MODULE FOR TELEPHONE CABLE CONDUCTORS
Harry M. Capper, Harrisburg, and James W. Robertson, Oberlin, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.
Filed May 7, 1993, Ser. No. 8,167
Term of patent 14 years
U.S. Cl. D13—133



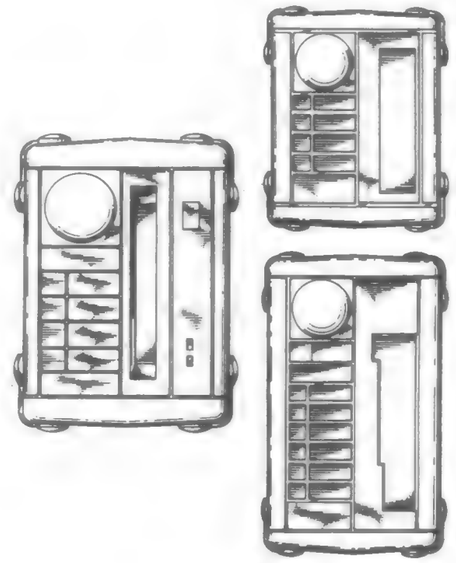
352,700
MINIATURE PUSHBUTTON SWITCH OF MODULAR CONSTRUCTION
William J. Agnatovech, Franklin, Mass., assignor to Augat Inc., Mansfield, Mass.
Filed Dec. 22, 1993, Ser. No. 16,726
Term of patent 14 years
U.S. Cl. D13—171



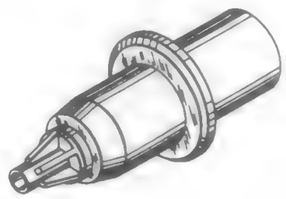
352,701
VIDEO DATA RECEIVER
Robert L. Evans, Palo Alto, Calif., assignor to International Teletext Communications, Inc., Sunnyvale, Calif.
Filed Oct. 16, 1992, Ser. No. 521
Term of patent 14 years
U.S. Cl. D13—182



352,702
TAPE DRIVE HOUSING
Andrew Austin, Aptos, Calif., assignor to Rexon/Tecmar, Inc., Solon, Ohio
Filed Nov. 12, 1992, Ser. No. 1,379
Term of patent 14 years
U.S. Cl. D14—108



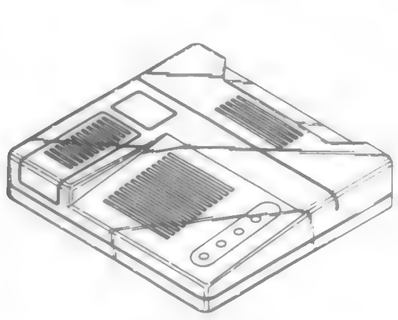
352,703
PLOTTER PEN HOUSING
Larry D. Mitcham, Temple; Kelsey R. Walker, and Robert E. Pitts, both of Hockley, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Apr. 18, 1990, Ser. No. 510,489
Term of patent 14 years
U.S. Cl. D14—114



352,704
OPTICAL SCANNER
Taro Etoh, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 25, 1993, Ser. No. 10,837
Claims priority, application Japan, Dec. 25, 1992, 4-038391
Term of patent 14 years
U.S. Cl. D14—116



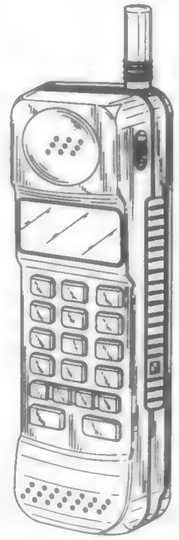
352,705
OPTICAL SCANNER
Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Ltd., Hong Kong, Hong Kong
Filed Jan. 14, 1993, Ser. No. 3,774
Claims priority, application Germany, Jul. 14, 1992, 9205165
Term of patent 14 years
U.S. Cl. D14—116



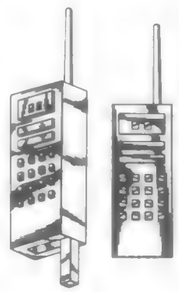
352,706
HELMET MOUNTED TRANSCEIVER
Scott S. Hong, Cerritos, Calif., assignor to Hong Jin Crown America, Inc., Santa Fe Springs, Calif.
Filed Dec. 22, 1992, Ser. No. 2,876
Term of patent 14 years
U.S. Cl. D14—137



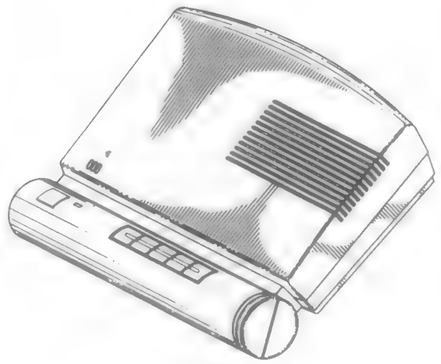
352,707
PORTABLE RADIOTELPHONE
Eriko Ino, and Katsuhito Watanabe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Mar. 18, 1992, Ser. No. 853,422
Term of patent 14 years
U.S. Cl. D14—138



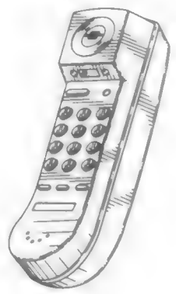
352,708
HAND TELEPHONE
Markku Roesi, Muurla, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland
Filed Jan. 31, 1991, Ser. No. 648,787
Claims priority, application Finland, Aug. 2, 1990, 625/90
Term of patent 14 years
U.S. Cl. D14—138



352,709
TELEPHONE ANSWERING DEVICE
Anthony Solomita, Norwalk; Barry M. Haber, Westport, and Nancy Baron, Stamford, all of Conn., assignors to Conair Corporation, Stamford, Conn.
Filed Sep. 23, 1993, Ser. No. 13,345
Term of patent 14 years
U.S. Cl. D14—141



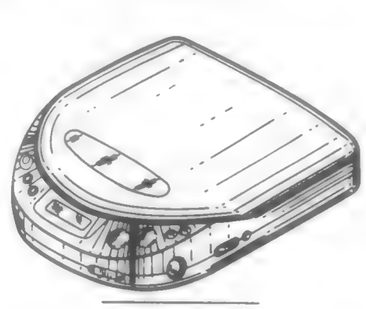
352,710
CORDLESS TELEPHONE
Anthony Solomita, Norwalk; Barry M. Haber, Westport, both of Conn., and Robert Taylor, Clarksburg, N.J., assignors to Conair Corporation, Stamford, Conn.
Filed Sep. 14, 1993, Ser. No. 12,928
Term of patent 14 years
U.S. Cl. D14—148



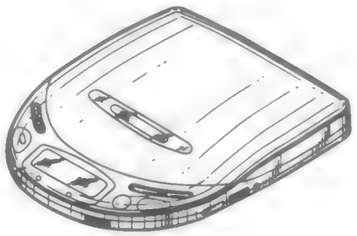
352,711
CORDLESS TELEPHONE BASE
Anthony Solomita, Norwalk; Barry M. Haber, Westport, both of Conn., and Robert Taylor, Clarksburg, N.J., assignors to Conair Corporation, Stamford, Conn.
Filed Sep. 14, 1993, Ser. No. 12,917
Term of patent 14 years
U.S. Cl. D14—149



352,712
DIGITAL AUDIO DISC PLAYER
Isao Wada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 20, 1992, Ser. No. 915,374
Claims priority, application Japan, Jan. 21, 1992, 4-1204
Term of patent 14 years
U.S. Cl. D14—156



352,713
AUDIO DISC PLAYER
Toshiaki Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,541
Claims priority, application Japan, Dec. 12, 1991, 3-37533
Term of patent 14 years
U.S. Cl. D14—156



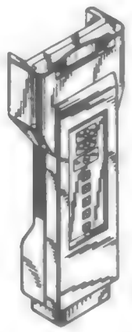
352,714
RADIO RECEIVER
Kazuo Ichikawa, and Kouichi Maeyama, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Sep. 3, 1992, Ser. No. 938,655
Claims priority, application Japan, Apr. 7, 1992, 4-10228
Term of patent 14 years
U.S. Cl. D14—188



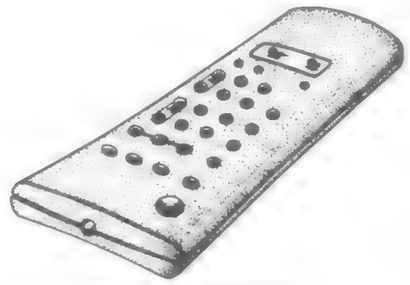
352,715
LOUDSPEAKER ENCLOSURE
Tun S. Tsing, 3270 S. Pineridge, Kissimmee, Fla. 34746
Filed Nov. 18, 1992, Ser. No. 1,584
Term of patent 14 years
U.S. Cl. D14—212



352,716
DISPLAY SIGNAL GENERATOR
Kohji Shindo, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 15, 1992, Ser. No. 2,634
Term of patent 14 years
U.S. Cl. D14—217



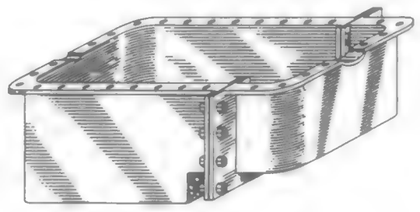
352,717
REMOTE CONTROLLER FOR TELEVISION SET
Seiji Usami; Tomitaro Saito; Yoshito Fujii, and Masaki Hinuma, all of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 18, 1993, Ser. No. 8,447
Claims priority, application Japan, Nov. 18, 1992, 4-34035
Term of patent 14 years
U.S. Cl. D14—218



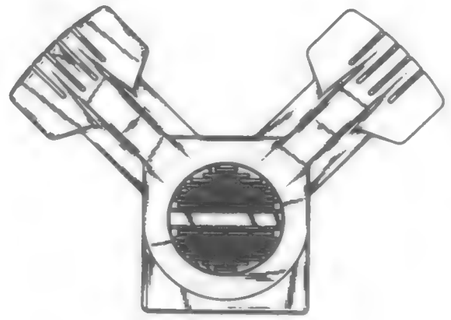
352,718
MICROPHONE FOR USE WITH A COMMUNICATIONS DEVICE
Phillip E. Lindeman, Roselle, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 27, 1992, Ser. No. 935,940
Term of patent 14 years
U.S. Cl. D14—225



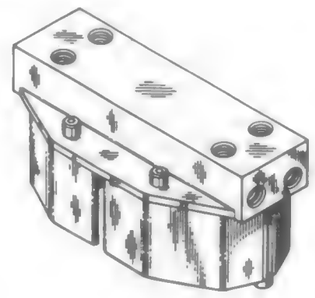
352,719
SPLIT CRANK CASE COVER
Billy C. Claybrook, 1302 Sherman St., Vernon, Tex. 76384
Filed Dec. 3, 1993, Ser. No. 15,952
Term of patent 14 years
U.S. Cl. D15—5



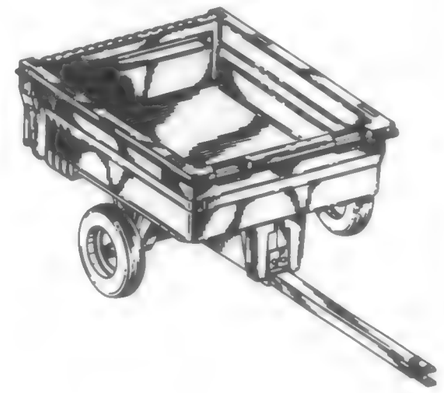
352,720
COMPRESSOR SHROUD
Mark D. Gildersleeve, Charlotte, and Russell D. Richardson, Mooresville, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Aug. 25, 1993, Ser. No. 12,158
Term of patent 14 years
U.S. Cl. D15—7



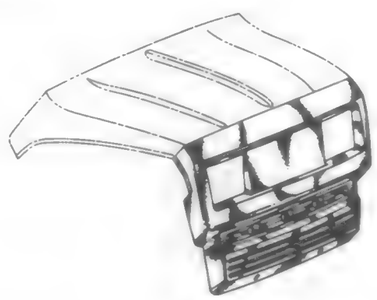
352,721
PUMP FOR LIQUIDS
James E. Cook, 418 Rice St., Anoka, Minn. 55303, and O. Harold S. Eriksen, 6219 Zealand Ave. North, Brooklyn Park, Minn. 55428
Filed Jul. 16, 1993, Ser. No. 10,737
Term of patent 14 years
U.S. Cl. D15—7



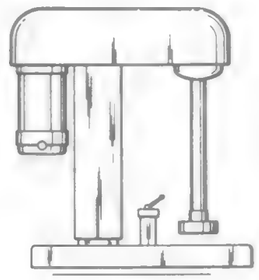
352,722
TRACTOR CART
Jonathan N. Mandell, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Feb. 12, 1993, Ser. No. 4,760
Term of patent 14 years
U.S. Cl. D15—27



352,723
VEHICLE FRONT
Stanley J. DeBraal, West Bend, Wis.; Daniel R. Nickles, Hewitt; William E. Crookes, Waldwick, both of N.J.; Alberto J. Mantilla, Brooklyn; Tor G. Bonnier, New York, both of N.Y., and David R. Holm, Oconomowoc, Wis., assignors to Deere & Company, Moline, Ill.
Filed Nov. 16, 1992, Ser. No. 2,316
Term of patent 14 years
U.S. Cl. D15—31



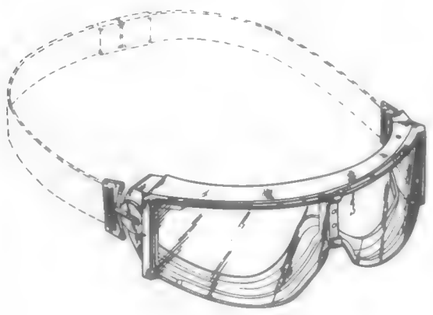
352,724
HIGH SHEAR MIXER
John J. Corrigan, Garden Grove, and Robert M. Culbert, Manhattan Beach, both of Calif., assignors to Morehouse-Cowles, Inc., a CA corp., Fullerton, Calif.
Filed Aug. 5, 1993, Ser. No. 11,522
Term of patent 14 years
U.S. Cl. D15—147



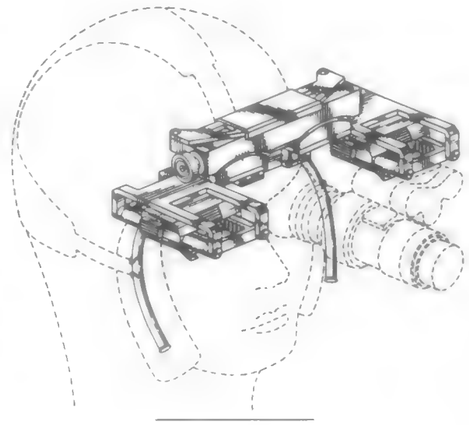
352,725
GLASSES
Philippe Charriol, 66, Black's Link, Hong Kong, Hong Kong
Filed Mar. 22, 1993, Ser. No. 6,050
Term of patent 14 years
U.S. Cl. D16—320



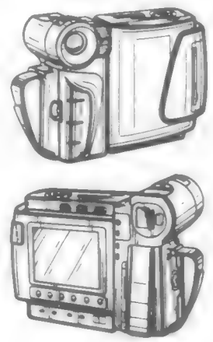
352,726
GOGGLES
Maurice, Oyonnax, France, assignor to Establissments Bollé, Oyonnax, France
Filed Feb. 11, 1993, Ser. No. 4,739
Term of patent 14 years
U.S. Cl. D16—312



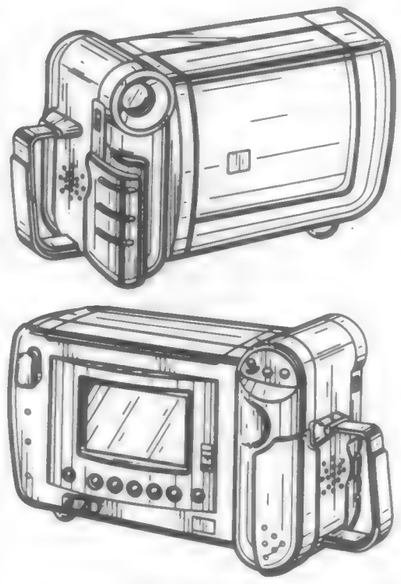
352,727
FACE MASK MOUNT FOR A NIGHT VISION SYSTEM
Amotz Dor, Scottsdale, Ariz., assignor to Litton Systems, Inc., Woodland Hills, Calif.
Filed Jun. 10, 1992, Ser. No. 896,549
Term of patent 14 years
U.S. Cl. D16—136



352,728
COMBINED MONITOR, VIDEO TAPE RECORDER AND CAMERA
Seiji Kurokawa, and Hiroshi Ooi, both of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 10, 1993, Ser. No. 12,778
Claims priority, application Japan, Apr. 13, 1993, 5-10975
Term of patent 14 years
U.S. Cl. D16—202



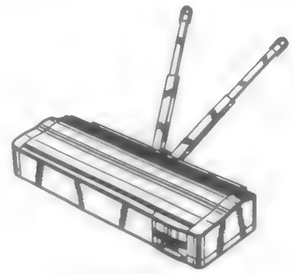
352,729
COMBINED MONITOR, VIDEO TAPE RECORDER AND CAMERA
Tetsuya Tsujimura, and Hiroshi Ooi, both of Tochigi, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Sep. 10, 1993, Ser. No. 12,779
Claims priority, application Japan, Apr. 14, 1993, 5-11153
Term of patent 14 years
U.S. Cl. D16—202



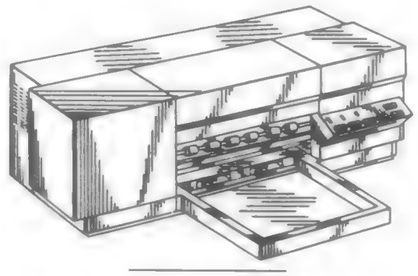
352,730
ELECTRONIC CALCULATOR
Osamu Tsuchida, Tokyo, and Yuichi Onumata, Ome, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jun. 25, 1992, Ser. No. 903,872
Term of patent 14 years
U.S. Cl. D18—7



352,731
PRINTER FOR ELECTRONIC COMPUTER
Isao Sugimoto, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1993, Ser. No. 9,370
Claims priority, application Japan, Mar. 9, 1993, 5-6524
Term of patent 14 years
U.S. Cl. D18—50



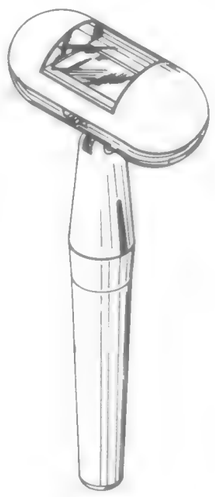
352,732
PRINTER
Paul T. Dubson, Escondido; Nicholas Nicoloff, Jr., La Mesa; Susan R. Brassil, Mountain View, and Jay Wilson, Portola Valley, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 1, 1992, Ser. No. 880,311
Term of patent 14 years
U.S. Cl. D18—55



352,733
CARRIER FOR RING BINDER
Diana J. French, and Charlotte M. Odau, both of 2009 Linden Lake Rd., Fort Collins, Colo. 80524
Filed Feb. 11, 1993, Ser. No. 4,734
Term of patent 14 years
U.S. Cl. D19—32



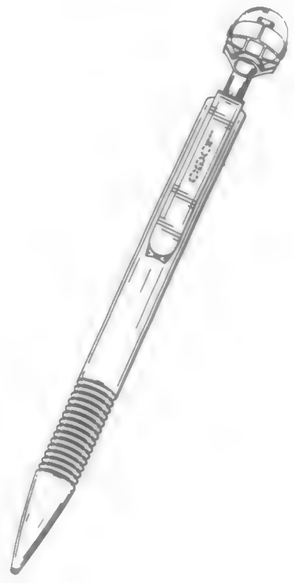
352,734
COMBINED PEN AND TIMER
Christopher J. Davis, Overland Park, Kans.; Peter Wong, Kowloon, Hong Kong; Chi T. Tam, Kowloon, Hong Kong; Kwok F. Lin, Kowloon, Hong Kong; Michael Tse, Kowloon, Hong Kong; Loi W. Yuen, Kowloon, Hong Kong; Frankie Au, Kwai Chung, Hong Kong, and Johnny Tam, Kowloon, Hong Kong, assignors to ACI International, Inc., Olathe, Kans.
Filed Jun. 24, 1993, Ser. No. 9,915
Term of patent 14 years
U.S. Cl. D19—36



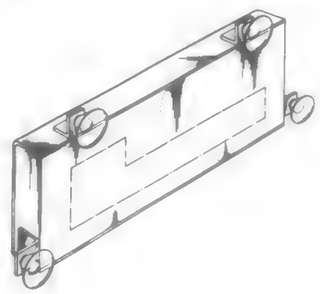
352,735
WRITING INSTRUMENT
Jay C. Covington, and Gary N. Matthews, both of 2726 Sheridan Rd., Evanston, Ill. 60610
Filed Mar. 5, 1993, Ser. No. 5,454
Term of patent 14 years
U.S. Cl. D19—42



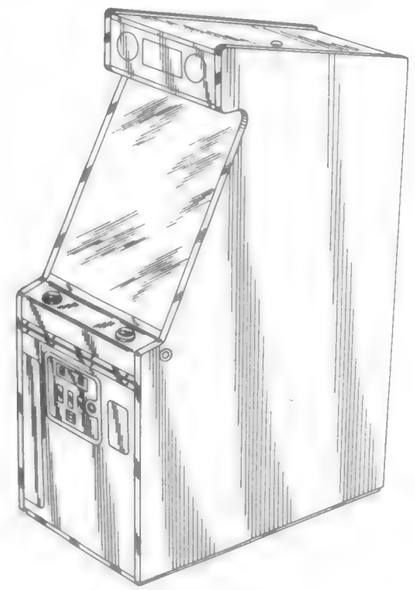
352,736
WRITING INSTRUMENT
Jay C. Covington, and Gary N. Matthews, both of 2726 Sheridan Rd., Evanston, Ill. 60201
Filed May 19, 1993, Ser. No. 8,598
Term of patent 14 years
U.S. Cl. D19—42



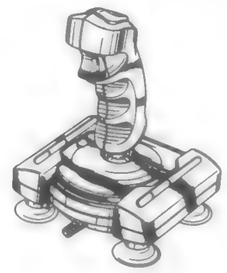
352,737
WINDOW MOUNTED LIGHTED SIGN FOR VEHICLES
Harold B. Roberts, 4133 Bent Willow Dr., Lilburn, Ga. 30247
Filed Jan. 24, 1994, Ser. No. 17,782
Term of patent 14 years
U.S. Cl. D20—61



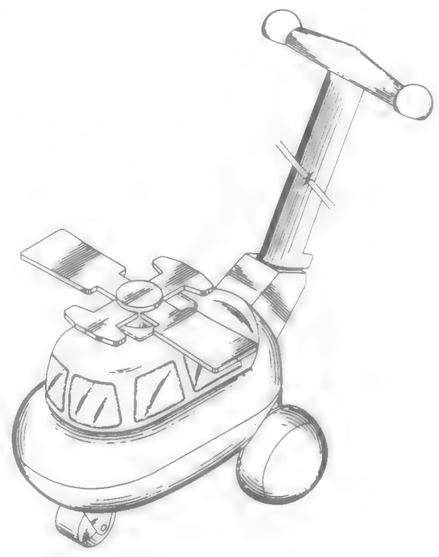
352,738
PINBALL GAME CABINET
Python V. Anghelo, Chicago, and Raymond J. Czajka, Hometown, both of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.
Filed Jul. 23, 1993, Ser. No. 11,037
Term of patent 14 years
U.S. Cl. D21—13



352,739
JOYSTICK
Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong, Hong Kong
Filed Sep. 16, 1993, Ser. No. 13,056
Term of patent 14 years
U.S. Cl. D21—48



352,740
TOY
Chuan T. Chiang, Hong Kong, Hong Kong, assignor to Zei Hong Manufacturing Co., Kowloon, Hong Kong
Filed Jun. 7, 1993, Ser. No. 9,156
Term of patent 14 years
U.S. Cl. D21—59



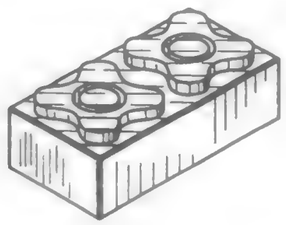
352,741
RIDING TOY
Keiichi Nakai, Tokyo, Japan, assignor to Plus One Co., Ltd., Tokyo, Japan
Filed Aug. 31, 1993, Ser. No. 12,353
Claims priority, application Rep. of Korea, May 1, 1993, 8239/93
Term of patent 14 years
U.S. Cl. D21—76



352,742
BULLET COORDINATION TOY
Jerome E. Koch, 3403 Garth Rd., Apt. 516, Baytown, Tex. 77521
Filed Jul. 19, 1993, Ser. No. 10,778
Term of patent 14 years
U.S. Cl. D21—104



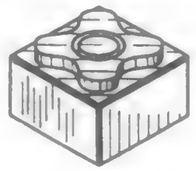
352,743
BUILDING ELEMENT FOR A TOY BUILDING SET
Philip M. Kushner, Greve Strand; Kenn Rasmussen, Valby, and Niels Øhrwald, Espergaerde, all of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,271
Term of patent 14 years
U.S. Cl. D21—108



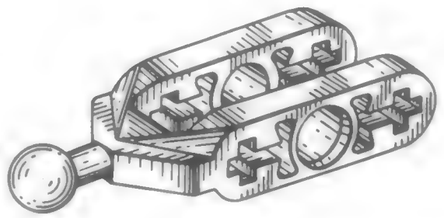
352,744
ELEMENT FOR A TOY BUILDING SET
Jan Ryaa, Kaervej, and Birthe G. Vorre, Ny Grejsdalsvej, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,272
Term of patent 14 years
U.S. Cl. D21—108



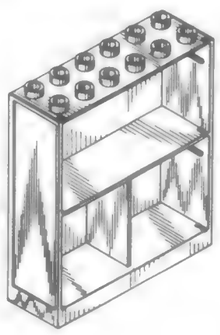
352,745
BUILDING ELEMENT FOR A TOY BUILDING SET
Philip M. Kushner, Greve Strand; Kenn Rasmussen, Valby, and Niels Ohrwald, Espergaerde, all of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,276
Term of patent 14 years
U.S. Cl. D21—108



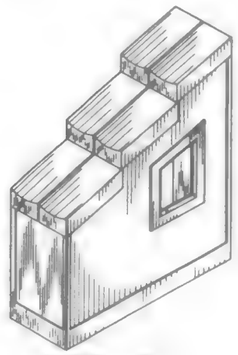
352,746
ELEMENT FOR A TOY BUILDING SET
Jan Hatting, Vejle, Denmark, assignor to Interlego, A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,283
Term of patent 14 years
U.S. Cl. D21—108



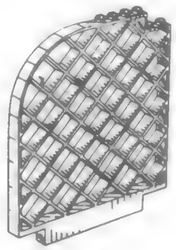
352,747
ELEMENT FOR A TOY BUILDING SET
Charlotte K. H. Højlund, Virum, and Beritt Holmstrøm, Gadstrup, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,303
Term of patent 14 years
U.S. Cl. D21—108



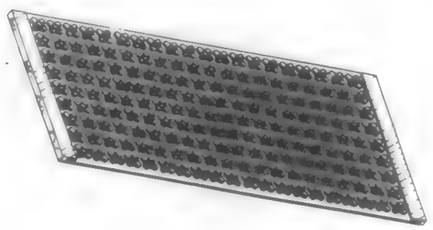
352,748
ROOF ELEMENT FOR A TOY BUILDING SET
Lotte M. Nielsen, Copenhagen, and Berit Holmstrøm, Gadstrup, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,309
Term of patent 14 years
U.S. Cl. D21—108



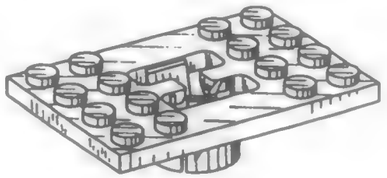
352,749
ELEMENT FOR A TOY BUILDING SET
Jan Ryaa, Billund, and Birthe G. Vorre, Vejle, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,316
Term of patent 14 years
U.S. Cl. D21—108



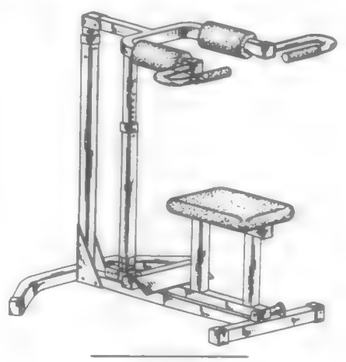
352,750
BUILDING PLATE FOR A TOY BUILDING SET
Philip M. Kushner, Greve Strand; Kenn Rasmussen, Valby, and Niels Øhrwald, Espergarde, all of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,319
Term of patent 14 years
U.S. Cl. D21—108



352,751
ELEMENT FOR A TOY BUILDING SET
Jan Hatting, Vejle, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Sep. 22, 1993, Ser. No. 13,382
Term of patent 14 years
U.S. Cl. D21—108



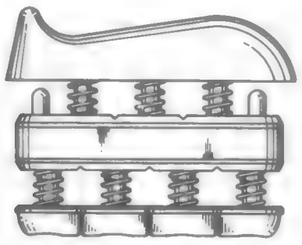
352,752
PHYSICAL EXERCISER
Huo S. Yang, 58, Ma Yuan West St., Taichung, Taiwan, Prov. of China
Filed Jun. 9, 1993, Ser. No. 9,278
Term of patent 14 years
U.S. Cl. D21—191



352,753
HAND HELD THERAPEUTIC EXERCISER
Silvano A. Giannini, and Richard Shammas, both of 42 McKinley Pl., Grosse Point, Mich. 48236
Filed Apr. 9, 1993, Ser. No. 6,922
Term of patent 14 years
U.S. Cl. D21—198



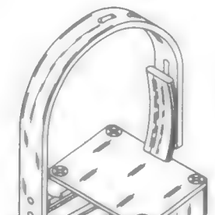
352,754
FINGER EXERCISER
Howard Silagy, 100A Tec St., Hicksville, N.Y. 11801
Filed Oct. 1, 1993, Ser. No. 13,770
Term of patent 14 years
U.S. Cl. D21—198



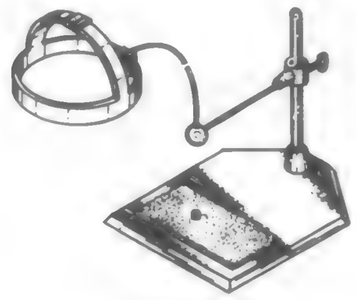
352,755
GOLF CLUB
Joseph J. Cornish, III, Marietta, Ga., assignor to Bradley K. Stone, Roswell, Ga.
Filed Mar. 18, 1993, Ser. No. 5,943
Term of patent 14 years
U.S. Cl. D21—214



352,756
GOLF TRAINING AID
Joseph Giantonio, 6249 Garwood Ave., Las Vegas, Nev. 89107
Filed Mar. 11, 1993, Ser. No. 5,769
Term of patent 14 years
U.S. Cl. D21—234



352,757
GOLF TRAINING AID
David M. Gerhardt, 2452 Allen Rd., Ortonville, Mich. 48462
Filed Jun. 18, 1993, Ser. No. 9,593
Term of patent 14 years
U.S. Cl. D21—234



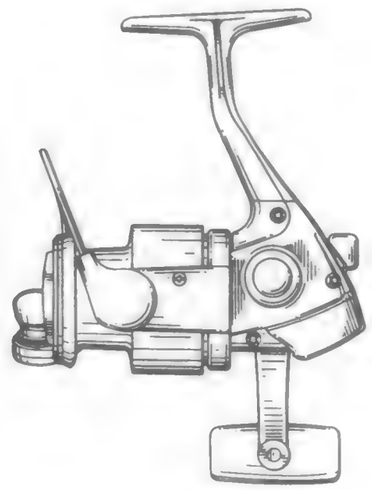
352,758
DIVOT TOOL
John Tate, 14535 Firestone Blvd., La Mirada, Calif. 90638-5920
Filed Jun. 28, 1993, Ser. No. 9,964
Term of patent 14 years
U.S. Cl. D21—234



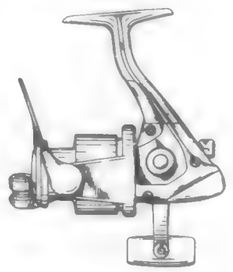
352,759
SCREEN HOUSE TENT
Robert R. Cantwell, New Haven, Mo., assignor to American Recreation Products, Inc., New Haven, Mo.
Filed Sep. 4, 1992, Ser. No. 940,718
Term of patent 14 years
U.S. Cl. D21—253



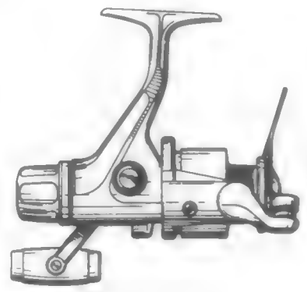
352,760
FISHING REEL
Koji Terada, Yokohama; Seiji Myojo, Sakai; Ryoichi Kishi, Komae; Fumiaki Kono, Yokohama, and Akitoshi Oikawa, Mitaka, all of Japan, assignors to Shimano Inc., Osaka, Japan
Filed Aug. 10, 1992, Ser. No. 927,367
Term of patent 14 years
U.S. Cl. D22—141



352,761
FISHING REEL
Tomoharu Sakurai, Wakayama, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Jul. 27, 1992, Ser. No. 918,400
Claims priority, application Japan, Feb. 6, 1992, 4-2600
Term of patent 14 years
U.S. Cl. D22—141

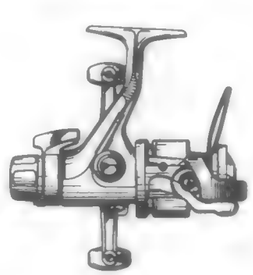


352,762
SPINNING REEL
Tomoharu Sakurai, Wakayama, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Sep. 15, 1992, Ser. No. 948,861
Term of patent 14 years
U.S. Cl. D22—141

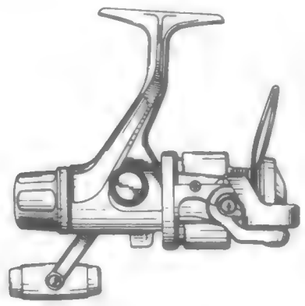


352,763
SPINNING REEL
Seiji Myojo, Sakai; Koji Terada, Yokohama; Ryoichi Kishi, Komae; Fumiaki Kohno, Yokohama, and Akitoshi Oikawa, Mitaka, all of Japan, assignors to Shimano Inc., Osaka, Japan
Filed Sep. 21, 1992, Ser. No. 948,877
Term of patent 14 years
U.S. Cl. D22—141

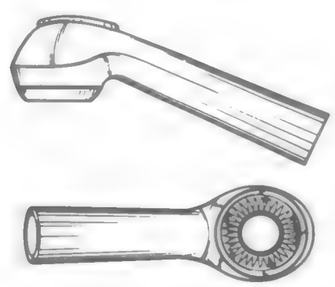
352,764
SPINNING REEL
Kenji Onishi, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Sep. 21, 1992, Ser. No. 948,892
Term of patent 14 years
U.S. Cl. D22—141



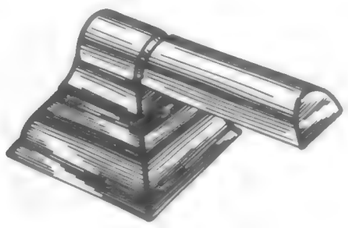
352,765
SPINNING REEL
Kenji Onishi, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Sep. 15, 1992, Ser. No. 948,939
Term of patent 14 years
U.S. Cl. D22—141



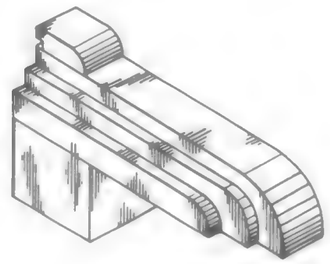
352,766
HAND HELD SPRAY
Loran R. Hill, Indianapolis, and Anthony G. Spangler, Sheridan, both of Ind., assignors to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Oct. 6, 1993, Ser. No. 13,928
Term of patent 14 years
U.S. Cl. D23—213



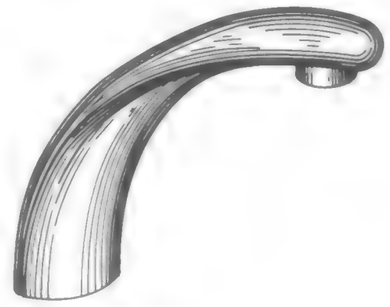
352,767
HANDLE FOR PLUMBING FITTING
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Continuation-in-part of Ser. No. 824,500, Jan. 22, 1992, abandoned. This application Jan. 21, 1993, Ser. No. 7,386
Term of patent 14 years
U.S. Cl. D23—252



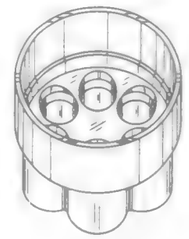
352,768
SPOUT
Stanley M. Paul, 214 Bedford Rd., Greenwich, Conn. 06931
Filed Feb. 17, 1993, Ser. No. 4,949
Term of patent 14 years
U.S. Cl. D23—257



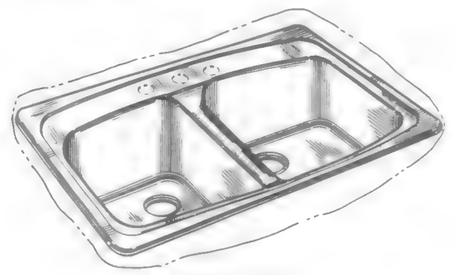
352,769
SPOUT
Anna-Pia K. Formgren, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 5, 1993, Ser. No. 14,965
Term of patent 14 years
U.S. Cl. D23—257



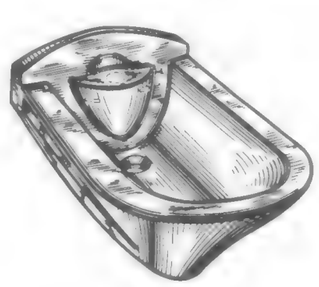
352,770
WATER FLOW MANIFOLD
Robert Lopez, 1219 S. Bonview Ave., Ontario, Calif. 91761
Filed Dec. 31, 1990, Ser. No. 635,934
Term of patent 14 years
U.S. Cl. D23—259



352,771
SINK
Patrick M. Walsh, and Finis H. Burns, both of Ruston, La., assignors to UNR Industries, Inc., Chicago, Ill.
Filed Aug. 7, 1992, Ser. No. 926,806
Term of patent 14 years
U.S. Cl. D23—290



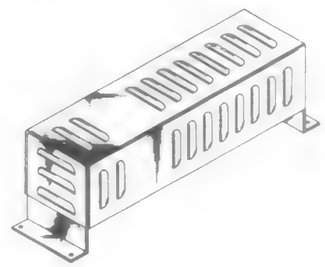
352,772
BIDET
Herbert V. Kohler, Jr., Kohler, Wis.; Pierre H. Paulin; Francois Kergoet, both of Paris, France, and Michel Chalard, Villemomble, France, assignors to Jacob Delafon, Paris, France
Division of Ser. No. 880,475, May 6, 1992, Pat. No. Des. 349,156, which is a continuation-in-part of Ser. No. 792,045, Nov. 8, 1991. This application Jan. 31, 1994, Ser. No. 18,214
Term of patent 14 years
U.S. Cl. D23—300



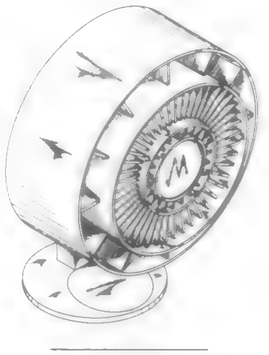
352,773
COMBINED TOILET SEAT AND COVER
Donald Haleschuk, 4331 Gordon Drive, Kelowna, British Columbia, Canada V1W 1S6
Filed Oct. 25, 1993, Ser. No. 14,516
Term of patent 14 years
U.S. Cl. D23—311



352,774
MARINE ENGINE COMPARTMENT HEATER
Jerry A. Godfrey, and Steve Bell, both of 4371-A Hwy. 78, Liburn, Ga. 30247, assignors to Jerry A. Godfrey and Steve Bell, Lilburn, Ga.
Filed Dec. 10, 1992, Ser. No. 4,471
Term of patent 14 years
U.S. Cl. D23—335



352,775
ELECTRIC FAN
Leroy F. Radtke, Jr., Lake Zurich, Ill., assignor to Circulair, Inc., Niles, Ill.
Filed Nov. 12, 1992, Ser. No. 64
Term of patent 14 years
U.S. Cl. D23—382



352,776
FIREPLACE GRILL INSERT FOR COOKING
James R. Hill, 1510 S. 10th St., Kingfisher, Okla. 73750, and Robert J. Bomhoff, P.O. Box 442, Okarche, Okla. 73762
Filed Mar. 5, 1993, Ser. No. 5,542
Term of patent 14 years
U.S. Cl. D23—400



D. 352,777

Patent Not Issued For This Number

352,778

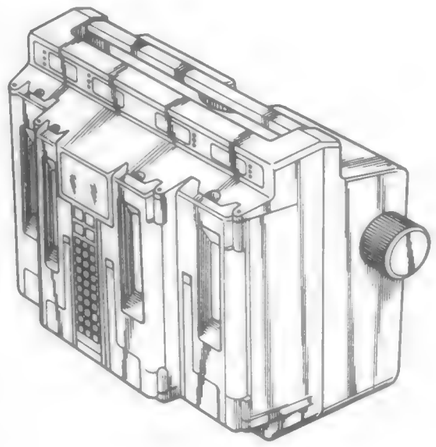
MULTICHANNEL INFUSION PUMP FOR SEQUENCING IV FLUIDS TO A PATIENT

Ronald D. Irvin, Agoura, Calif., and Richard A. Sorich, Eden Prairie, Minn., assignors to IMED Corporation, San Diego, Calif.

Filed May 5, 1993, Ser. No. 8,104

Term of patent 14 years

U.S. Cl. D24—111



352,779

DIAPER

Deanna E. Imbro, and Massimo Imbro, both of 95 Howard Ave., Ansonia, Conn. 06401

Filed Jul. 22, 1993, Ser. No. 10,915

Term of patent 14 years

U.S. Cl. D24—126



352,780

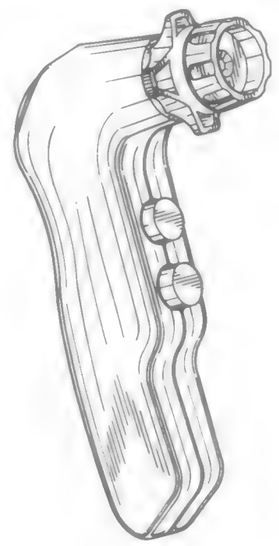
COMBINED SUCTION, IRRIGATION AND ELECTROSURGICAL HANDLE

Christopher T. Glaeser, Louisville; James S. Cunningham; Glenn A. Horner, both of Boulder, all of Colo.; Jose T. V. De Castro, Newton, Mass.; Elizabeth Goodrich, Roslindale, Mass., and Stephen K. Guerrera, Milford, Mass., assignors to Valleylab Inc., Boulder, Colo.

Filed Apr. 19, 1993, Ser. No. 7,162

Term of patent 14 years

U.S. Cl. D24—133



352,781

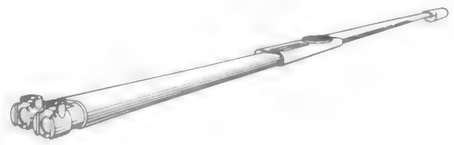
THERAPEUTIC FLUID FLOW LINE

Jeffrey T. Mason, Escondido, and Bradley R. Mason, Olivenhain, both of Calif., assignors to Breg, Inc., Vista, Calif.

Continuation-in-part of Ser. No. 767,494, Sep. 30, 1991, Pat. No. 5,241,951, which is a continuation-in-part of Ser. No. 578,508, Sep. 5, 1990, Pat. No. 5,080,089. This application Mar. 12, 1992, Ser. No. 850,071

Term of patent 14 years

U.S. Cl. D24—188



352,782

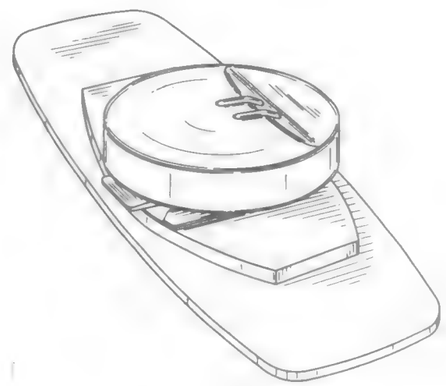
IONTOPHORETIC DRUG DELIVERY SYSTEM

Karl D. Kirk, III, New York, N.Y., and James R. Toleman, Palo Alto, Calif., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 30, 1993, Ser. No. 12,328

Term of patent 14 years

U.S. Cl. D24—189



352,783

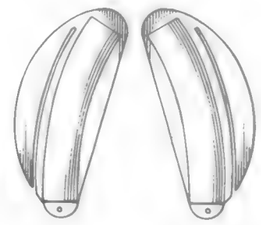
NOSE SPLINT

Donald E. Doyle, 4105 Hospital Rd., Ste. 102A, Pascagoula, Miss. 39581

Filed May 10, 1993, Ser. No. 8,038

Term of patent 14 years

U.S. Cl. D24—190



352,784

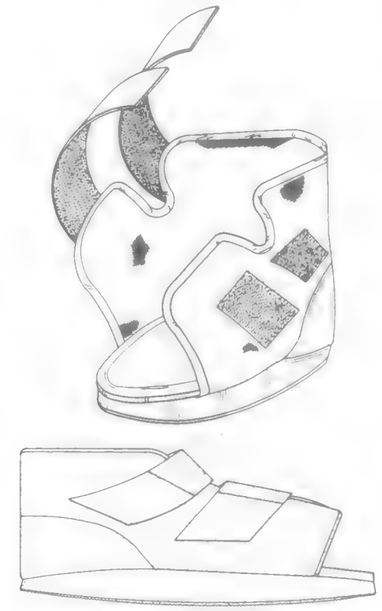
SURGICAL BOOT

Jack Cohen, Brooklyn, and Moses Antar, New York, both of N.Y., assignors to Comed Inc., New York, N.Y.

Filed Jun. 18, 1993, Ser. No. 10,019

Term of patent 14 years

U.S. Cl. D24—192



352,785

AIR EXTRACTOR FOR A BABY'S BOTTLE

Stuart M. Fitzgerald, 53 Iroquois Rd., Hartford, Conn. 06117-2112

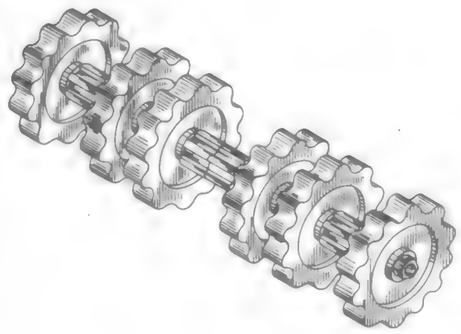
Filed Jun. 14, 1993, Ser. No. 9,438

Term of patent 14 years

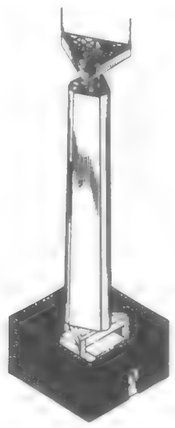
U.S. Cl. D24—193



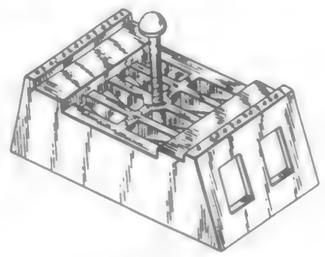
352,786
MASSAGER
Shih M. Hwang, No. 11, Alley 12, Lane 7, Ching Tyan Street, Taipei, Taiwan, Prov. of China
Filed Apr. 20, 1993, Ser. No. 7,363
Term of patent 14 years
U.S. Cl. D24—211



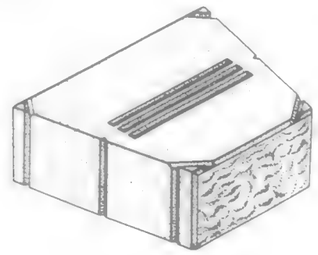
352,787
COMBINED BARRIER WALL AND SIGN TOWER
James M. Hulse, 15905 W. 4B Rd., Plymouth, Ind. 46563
Filed Aug. 10, 1992, Ser. No. 927,365
Term of patent 14 years
U.S. Cl. D25—6



352,788
SAWHORSE BRACKET
Steven J. Sheftel, Marstons Mills, Mass., assignor to United States of America, as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.
Filed Aug. 18, 1992, Ser. No. 932,035
Term of patent 14 years
U.S. Cl. D25—68



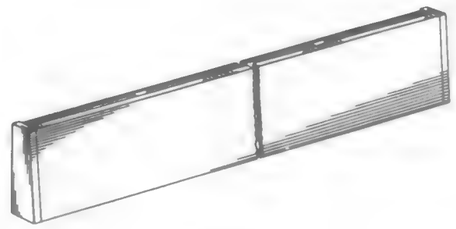
352,789
RETAINING WALL BLOCK
Paul W. Adam, 831 Shawn Dr., Jefferson City, Mo. 65109
Filed Jan. 11, 1993, Ser. No. 3,592
Term of patent 14 years
U.S. Cl. D25—113



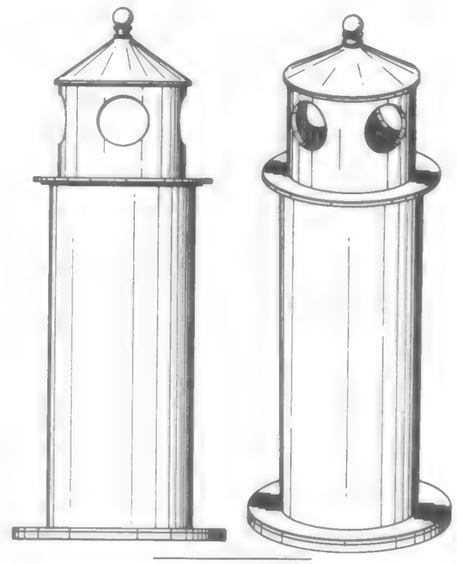
352,790
LOWER CARRIER TRACK
Leif Gullblom, Kungsgatan 10, S-736 00, Kungsör, Sweden
Division of Ser. No. 873,271, Apr. 22, 1992. This application Oct. 6, 1993, Ser. No. 13,924
Claims priority, application Sweden, Oct. 28, 1991, 91-2135
Term of patent 14 years
U.S. Cl. D25—121



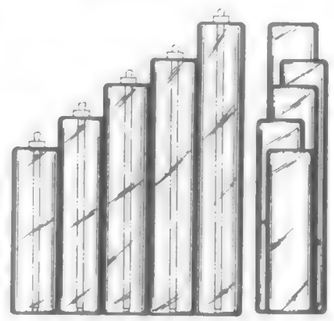
352,791
BASEBOARD MOLDING
George Manaras, 1194 Tecumseh, Dollard-des-Ormeaux, Quebec, Canada H9B 2Y9
Filed Sep. 8, 1992, Ser. No. 939,887
Claims priority, application Canada, Mar. 5, 1992, 05-03-92-9
Term of patent 14 years
U.S. Cl. D25—136



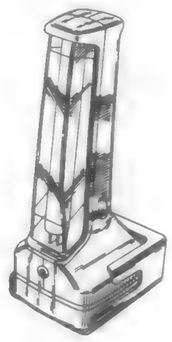
352,793
CANDLEHOLDER LAMP
Fred W. Lishman, 79 R Granite St., Rockport, Mass. 01966
Filed Aug. 3, 1993, Ser. No. 11,359
Term of patent 14 years
U.S. Cl. D26—14



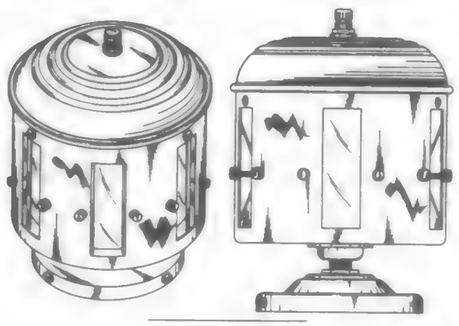
352,792
GLASS OIL LAMP
Geoffrey K. Caplette, Altadena, Calif., assignor to Aurora Art, Inc., Altadena, Calif.
Filed Jan. 21, 1994, Ser. No. 17,829
Term of patent 14 years
U.S. Cl. D26—11



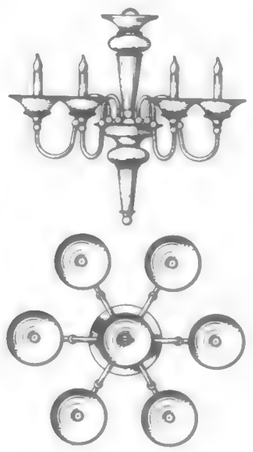
352,794
COMBINED RECHARGEABLE FLASHLIGHT AND FLUORESCENT LAMP AND BASE THEREFOR
David Bamber, and Robert Deines, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Dec. 21, 1992, Ser. No. 2,491
Term of patent 14 years
U.S. Cl. D26—37



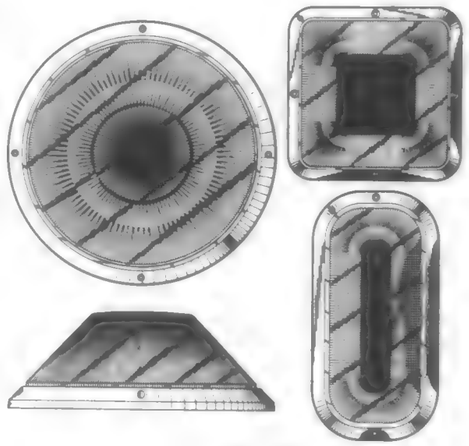
352,795
REVOLVING STAGE LIGHT
Wen-Chong Wu, 4 Fl., No. 37, Lane 111, Kang Leh St., Nei Hu Dist. Taipei, Taiwan, Prov. of China
Filed Jan. 4, 1993, Ser. No. 3,336
Term of patent 14 years
U.S. Cl. D26—61



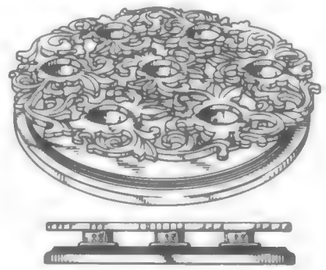
352,796
CHANDELIER
William Segill, Newton; Mark E. Segill, Framingham; Michael Dangelo, Seekonk, and Jeffrey H. Pocock, Medfield, all of Mass., assignors to American Lighting Fixture, Tuanton, Mass.
Filed Apr. 5, 1993, Ser. No. 6,656
Term of patent 14 years
U.S. Cl. D26—81



352,797
WALL MOUNTED LIGHTING FIXTURE
David E. Mehaffey, Vicksburg, Miss., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 15, 1993, Ser. No. 9,503
Term of patent 14 years
U.S. Cl. D26—85



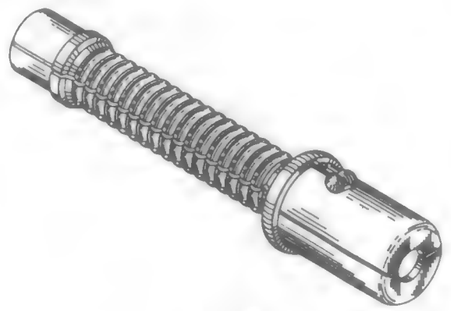
352,798
CEILING LIGHTING FIXTURE
Guey B. Her, Hsin Kang Hsiang, Taiwan, Prov. of China, assignor to Song Boeing Company Ltd., Taipei, Taiwan, Prov. of China
Filed Oct. 27, 1993, Ser. No. 14,676
Term of patent 14 years
U.S. Cl. D26—82



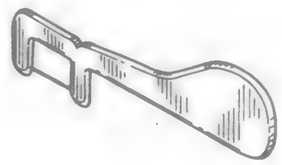
352,799
DISSOLVABLE GEL CAPSULE
Keith A. Bennell, Swindon, United Kingdom, assignor to R. P. Scherer Corporation, Troy, Mich.
Filed Sep. 1, 1992, Ser. No. 939,361
Claims priority, application United Kingdom, Mar. 11, 1992, 2021554
Term of patent 14 years
U.S. Cl. D28—4



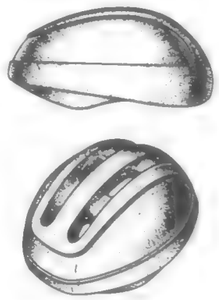
352,800
HANDLE FOR A CURLING IRON
Kit L. T. Leung, Northpoint, Hong Kong, assignor to Conair Corporation, Stamford, Conn.
Filed Sep. 6, 1993, Ser. No. 6,903
Term of patent 14 years
U.S. Cl. D28—35



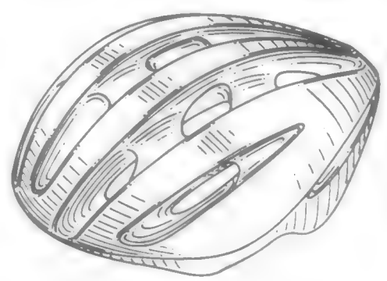
352,801
DISPOSABLE DENTAL FLOSSER
Wu-Chang Chung, No. 185, Alley 3, Lane 219, Sec. 7, Chung Shan N. Rd., Taipei, Taiwan, Prov. of China
Filed Jun. 17, 1993, Ser. No. 9,534
Term of patent 14 years
U.S. Cl. D28—64



352,802
RIDER'S SAFETY HELMET
Yen-Ming Jeng, 48, Feng-Lien Street, Hsin-Feng Hsian, Hsin-chu Hsien, Taiwan, Prov. of China
Filed Dec. 15, 1992, Ser. No. 2,562
Term of patent 14 years
U.S. Cl. D29—102



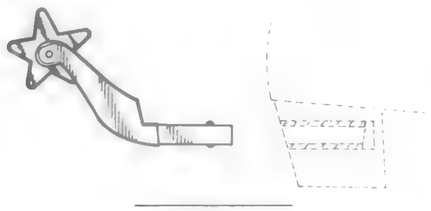
352,803
VENTILATED BICYCLE HELMET
Steven K. Sasaki, Campbell, and Gregory J. Marting, Aptos, both of Calif., assignors to Giro Sport Design, Inc., Soquel, Calif.
Filed May 19, 1992, Ser. No. 886,665
Term of patent 14 years
U.S. Cl. D29—102



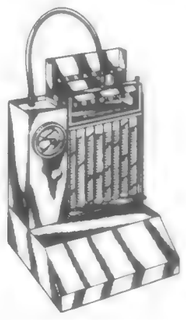
352,804
PET COLLAR
Charles Bland, Jr., 1041 Carson Dr., Huntingtown, Md. 20639
Filed Sep. 8, 1993, Ser. No. 12,707
Term of patent 14 years
U.S. Cl. D30—152



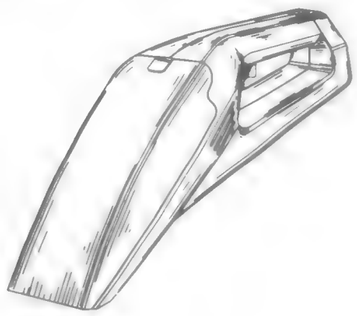
352,805
SPUR ATTACHED BY INSERTION INTO THE HEEL OF A RIDING BOOT
James W. Martin, 40856 Canyon Heights Dr., Fremont, Calif. 94539
Filed May 10, 1993, Ser. No. 8,002
Term of patent 14 years
U.S. Cl. D30—157



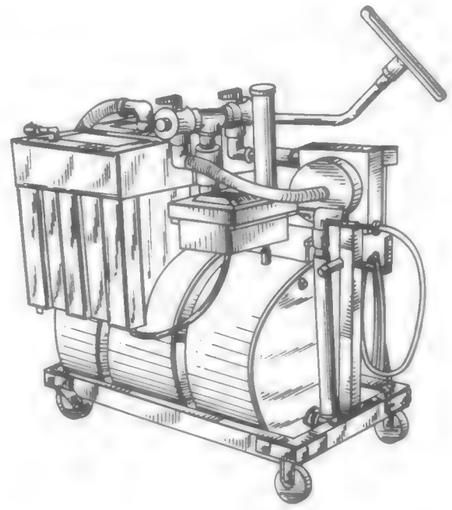
352,806
FUEL INJECTOR TESTER
Alan Skovron; Camperdown, Australia, assignor to High Tech Auto Tools Pty Ltd., Camperdown, Australia
Filed Mar. 9, 1993, Ser. No. 5,654
Claims priority, application Australia, Dec. 7, 1992, 3585/92
Term of patent 14 years
U.S. Cl. D32—1



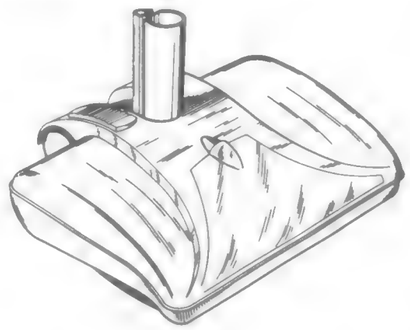
352,807
VACUUM CLEANER
Bror R. L. Sanderud, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Sweden
Filed Dec. 21, 1992, Ser. No. 2,839
Claims priority, application Sweden, Jun. 24, 1992, 9201360
Term of patent 14 years
U.S. Cl. D32—18



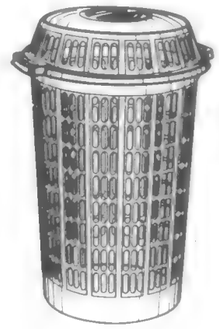
352,808
PORTABLE FLOOD CONTROL VACUUM CLEANING MACHINE
Roy McNeil, 359 E. 39th St., Paterson, N.J. 07504
Filed Aug. 17, 1992, Ser. No. 930,916
Term of patent 14 years
U.S. Cl. D32—21



352,809
COMBINATION VACUUM CLEANER AND WATER EXTRACTOR FOOT
Brenda L. Reath, East Grand Rapids, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
Filed Dec. 23, 1992, Ser. No. 3,068
Term of patent 14 years
U.S. Cl. D32—31



352,810
COMBINED HAMPER AND COVER
Timothy Cassel, Boxborough, Mass., assignor to Tucker Housewares, Inc., Leominster, Mass.
Filed Mar. 11, 1992, Ser. No. 849,678
Term of patent 14 years
U.S. Cl. D32—37



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Mattelmaki, Esko, 5,366,716, Cl. 423-539.000.

Aaton: *See—*
Beauviala, Jean-Pierre, 5,366,172, Cl. 242-342.000.

AB Tetra Pak: *See—*
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Abarca, John R.: *See—*
Berzin, Vel; and Abarca, John R., 5,366,020, Cl. 166-387.000.

ABB Vetco Gray Inc.: *See—*
Voss, Robert K., Jr., 5,366,017, Cl. 166-368.000.

Abbott, Franklin P.: *See—*
Salomon, Mary F.; Marn, Donald J.; Abbott, Franklin P.; and Pialet, Joseph W., 5,366,648, Cl. 252-42.700.

Abe, Fumiaki: *See—*
Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., 5,367,661, Cl. 395-500.000.

Abe, Hitoshi, to Fuji Xerox Co., Ltd. Register allocation technique in a program translating apparatus. 5,367,696, Cl. 395-800.000.

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Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.
Yoshida, Naozane; Takagi, Tsutomu; Washiya, Nobuhiro; Abe, Hitoshi; and Tajima, Katsutoshi, 5,367,616, Cl. 395-142.000.

Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, to Seiko Epson Corporation. Ink jet recording apparatus for ejecting droplets of ink through promotion of capillary action. 5,367,324, Cl. 347-43.000.

Abe, Sumito: *See—*
Takii, Osamu; Baba, Motoshi; Mori, Takao; and Abe, Sumito, 5,365,908, Cl. 123-564.000.

Abel, Jay A.; VanHorn, David B.; and Getz, Jalem M., to Direct Data Systems. Magnetic reader with read head biased against document by resilient deflection of circuit board. 5,367,581, Cl. 382-64.000.

Abele, Karl-Heinz; van den Boom, Heinz; Ender, Alfred; Hees, Eckart; and Meichsner, Walter, to Thyssen Stahl AG. Process for the desulphurization treatment of pig iron melts. 5,366,539, Cl. 75-532.000.

Abernathy, Alexia; and Patterson, Keith D., to Little Kids, Inc., a part interest. Spill-resistant bowl. 5,366,103, Cl. 220-23.830.

Abramov, Gregory J.: *See—*
Pool, F. W., II; Hawley, MacDonald; and Abramov, Gregory J., 5,366,030, Cl. 175-215.000.

Absil, Robert P. L.; and Kowalski, Jocelyn A., to Mobil Oil Corp. Catalyst and catalytic conversion therewith. 5,366,948, Cl. 502-68.000.

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Aco Severin Ahlmann GmbH & Co. KG: *See—*
Baxter, Seaton, 5,365,885, Cl. 119-27.000.

Acrodyne Industries, Inc.: *See—*
Hulick, Timothy P., 5,367,272, Cl. 332-149.000.

Actel Corporation: *See—*
El Gamal, Abbas; and Chiang, Steve S. S., 5,367,208, Cl. 326-44.000.

Active Ankle Systems, Inc.: *See—*
Peters, Rick E., 5,366,439, Cl. 602-27.000.

Actron Entwicklungs AG: *See—*
Kind, Burckart C.; and Muller, Philipp, 5,367,290, Cl. 340-572.000.

Acutherm Limited: *See—*
Kline, James R., 5,366,149, Cl. 236-49.500.

Adam, Roland: *See—*
Wissmann, Michael; Nickel, Hans; Schierling, Roland; Adam, Roland; and Geyer, Werner, 5,365,893, Cl. 123-73.00C.

Adams, David E.: *See—*
Zipes, Doulgas P.; and Adams, David E., 5,366,486, Cl. 607-5.000.

Adams, Joseph B.; Rotramel, William D.; and Witalec, James M., to Chrysler Corporation. Hot soak for a flexible fuel compensation system. 5,365,917, Cl. 123-491.000.

Adams, Julian: *See—*
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,366,972, Cl. 514-220.000.

Adams, Kathleen M.: *See—*
Magill, James W.; Adams, Kathleen M.; and Sammet, Fred A., 5,367,664, Cl. 395-575.000.

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Lane, Christopher C.; Lenz, Ruben P.; and Athanassoulias, Costa, 5,367,068, Cl. 536-124.000.

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Adrian, Willy: *See—*
Johnson, Gerald E.; Laliberte, Ronald; Sansevero, Frank M.; Adrian, Willy; Wente, Gerald; and Zimmerman, R., 5,366,060, Cl. 198-323.000.

Advanced Interconnection Technology: *See—*
Brown, Jerald L.; and Berzins, Vaironis, 5,365,657, Cl. 29-850.000.

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Advanced Micro Devices, Inc.: *See—*
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Aelter, Johan: *See—*
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Bazile, Jean-Luc; Billon, Paul; and Mallea, Patrick, 5,367,174, Cl. 250-572.000.
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Aervoe-Pacific Company, Inc.: *See—*
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Leblans, Paul; Schipper, Willem; and Blasse, George, 5,367,176, Cl. 250-585.000.
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Verburgh, Yves; and Leenders, Luc, 5,366,844, Cl. 430-258.000.

Agrawal, Sudhir: *See—*
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Ahlers, Juergen: *See—*
Manzke, Klaus; and Ahlers, Juergen, 5,366,788, Cl. 428-174.000.

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Aida Engineering, Ltd.: *See—*
Imanishi, Shozo; and Arai, Toshihiko, 5,365,829, Cl. 91-361.000.

Aidun, Cyrus K., to Institute of Paper Science and Technology, Inc. Coating device for traveling webs. 5,366,551, Cl. 118-411.000.

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Aitken, Bruce G.; Bookbinder, Dana C.; Dickinson, James E., Jr.; and Wedding, Brent M., to Corning Incorporated. Stabilizer for glass-/polymer alloys. 5,367,012, Cl. 523-451.000.

Ajimura, Shoji: *See—*
Kurosaka, Akihito; Tomomatu, Kazuhiko; Nakao, Osamu; Ajimura, Shoji; and Tominaga, Haruo, 5,366,583, Cl. 117-3.000.

Ajinomoto Co., Inc.: *See—*
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Akase, Tetsui: *See—*
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Akashi, Akira: *See—*
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Akechi, Kiyoaki: *See—*
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Akihiko, Kawata: *See—*
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Aktiebolaget Astra: *See—*
Trofast, Jan W.; Jakupovic, Edib; and Mansson, Katarina L., 5,367,114, Cl. 564-220.000.
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Doragrip, Gustaf F. A., 5,365,899, Cl. 123-192.200.
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Albemarle Corporation: *See—*
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Alberta Oil Sands Technology and Research Authority: *See—*
Taciuk, William; Caple, Roderick; Goodwin, Sean; and Taciuk, Gordon, 5,366,596, Cl. 202-100.000.
Albrigo, Julian; Ricker, Edward D.; and Colarusso, Louis J., to Erico International Corporation. Method of forming concrete structures with a grout splice sleeve which has a threaded connection to a reinforcing bar. 5,366,672, Cl. 264-35.000.
Alcatel Cit: *See—*
Tourbah, Abdallah; and Ruminy, PAtrick, 5,367,562, Cl. 379-93.000.
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Aldenhoven, Ghislanus M. A. M.; and Wertelaers, Piet, to U. S. Philips Corporation. Scanning lens mount using deflection and twisting for separate movements. 5,367,511, Cl. 369-44.140.
Aldred, Jeffrey K.: *See—*
Platter, Sanford; Aldred, Jeffrey K.; and Kraemer, Richard J., 5,366,642, Cl. 210-767.000.
Alesi, Daniel E.: *See—*
Green, David T.; Bolanos, Henry; Alesi, Daniel E.; and Toso, Kenneth E., 5,366,134, Cl. 227-176.000.
Alexander, Donald J.: *See—*
Leon, Tomas; Hong, Teng Y. E.; Golen, Emil S.; and Alexander, Donald J., 5,365,934, Cl. 128-707.000.
Alexander, Samuel E.; Drehobl, Stephen V.; Fisher, Richard J.; French, Leonard F.; and Hewitt, Kent D., to Microchip Technology Incorporated. Programmable high endurance block for EEPROM device. 5,367,484, Cl. 365-185.000.
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Sanchez, Francisco G.; Martin, Pedro L.; Solis, Juan D.; Allen, Bernardo E.; and Blanco, Juan J., 5,367,521, Cl. 370-60.000.
Allen, Mark E., to AlliedSignal Inc. Drum brake shoe hold-down bracket and cable guide. 5,366,049, Cl. 188-340.000.
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Vela, Timothy M.; and Atkinson, David H., 5,366,138, Cl 228-176.000.
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Alper, Naum I.: *See—*
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Alpine Engineered Products, Inc.: *See—*
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Tokiwa, Toru, 5,366,335, Cl. 414-282.000.
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von Gnechten, Mark; Chase, Brian T.; Tobias, Richard J.; and Dooley, David, 5,367,701, Cl. 395-800.000.
Amei Technologies Inc.: *See—*
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Brizzolara, Nancy S.; Lanzilotti, Michael G.; and Lawter, James R., 5,366,733, Cl. 424-426.000.
Corriveau, Paul G.; and Riley, John A., 5,366,480, Cl. 606-233.000.
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Schiehser, Guy A.; Caufield, Craig E.; Senko, Nancie A.; and VonBurg, Gregory F., 5,366,993, Cl. 514-445.000.
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Ferguson, Alan; and Lassiter, Perry B., 5,366,942, Cl. 501-95.000.
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Bidell, Christopher R.; Lanyl, Colin K.; Mann, Anthony F.; and Stafford, Phillip, 5,366,621, Cl. 210-198.200.
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Fry, Richard C.; and Parr, Ronald A., 5,366,888, Cl. 435-240.210.
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Cooper, Garth J. S.; and Willis, Antony C., 5,367,052, Cl. 530-307.000.
An, Jin H., to Goldstar Electron Co., Ltd. Dram having bidirectional global bit lines. 5,367,488, Cl. 365-189.010.
Anderegg, Kurt, to Inventio AG. Method for manufacturing an internal structure for integral railway coach bodies. 5,365,662, Cl. 29-897.200.
Andersen, Erik; and Strecker, Ernst P., to Boston Scientific Corporation. Tubular medical prosthesis. 5,366,504, Cl. 623-11.000.
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Anderson, Douglas G.: *See—*
Nelson, Thomas D.; and Anderson, Douglas G., 5,365,690, Cl. 43-113.000.
Anderson, Fred J., to Delco Electronics Corp. Saw-based FSK modulating circuit. 5,367,537, Cl. 375-65.000.
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Terpstra, Robert L.; Lograsso, Barbara K.; Anderson, Iver E.; and Moore, Jeffrey A., 5,366,688, Cl. 419-36.000.
Anderson, Jeffrey H.: *See—*
Borja, Javier, 5,365,683, Cl. 40-152.100.
Anderson, Stephen P.; Higgins, Deborah L.; Hotchkiss, Adair J.; and Marks, Cara B., to Genentech, Inc. Human tissue plasminogen activator variant. 5,366,886, Cl. 435-226.000.
Anderson, W. Kyle, to Sundstrand Corporation. Multiple layer capacitor mounting arrangement. 5,367,437, Cl. 361-807.000.
Andersson, Roland, to Saab Automobile Aktiebolag. Distribution unit for a ventilation installation for a vehicle. 5,366,408, Cl. 454-121.000.
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Suda, Masayuki; Sakuhara, Toshihiko; Shinogi, Masataka; Iwasaki, Fumiharu; and Ando, Akito, 5,366,613, Cl. 205-221.000.

Ando, Masao: *See—*
Hanabusa, Hisao; Ichimaru, Kazumi; Kuriyama, Yuji; and Ando, Masao, 5,366,240, Cl. 280-728.00A.
Ando, Ryo, to Sony Corporation. Disk recording/reproducing apparatus having the capability of recording an operator designated program sequence. 5,367,510, Cl. 369-32.000.
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Liechti, Pierre A.; Gaia, Franco; and Andre, Marc, 5,366,703, Cl. 422-186.110.
Andritz Sprout-Bauer, Inc.: *See—*
Foresman, James D., 5,366,680, Cl. 264-141.000.
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Angeion Corporation: *See—*
Adams, Theodore P.; and Kroll, Mark W., 5,366,487, Cl. 607-5.000.
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Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,366,652, Cl. 252-89.100.
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Hugenell, Hermann, 5,367,407, Cl. 359-876.000.
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Tsukasa, Fumihiro; Fujimoto, Hideya; Horikoshi, Kazuhiko; Tanaka, Osamu; and Kikuchi, Kunio, 5,367,128, Cl. 177-212.000.
Antenna Research Associates, Inc.: *See—*
Masters, R. Wayne, 5,367,312, Cl. 343-807.000.
Anzai, Syunju: *See—*
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.
Aoki, Atsushi: *See—*
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Aoki, Nobuyuki, to Tomoegawa Paper Co., Ltd. Toner for electrostatic charge image. 5,366,839, Cl. 430-109.000.
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Ogino, Takao; Suda, Arata; Aoki, Takayuki; and Koga, Mitsuyuki, 5,366,567, Cl. 148-258.000.
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Apollo Environmental Systems Inc.: *See—*
Smith, James W.; Ellenor, David T. R.; and Harbinson, John N., 5,366,698, Cl. 422-168.000.
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Calamera, Pablo M., 5,367,299, Cl. 341-95.000.
Capps, Stephen P.; Beernink, Ernest H.; Meier, John R.; and Temkin, David, 5,367,453, Cl. 364-419.130.
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Kerns, Charles; Zarakov, Eric; and Gilley, Thomas S., 5,367,332, Cl. 348-61.000.
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Bergot, B. John; Chakerian, Vergine; Connell, Charles R.; Eadie, J. Scott; Fung, Steven; Hershey, N. Davis; Lee, Linda G.; Menchen, Steven M.; and Woo, Sam L., 5,366,860, Cl. 435-6.000.
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Robertson, Robert; Law, Kam S.; and White, John M., 5,366,585, Cl. 156-643.000.
Tepman, Avi, 5,366,002, Cl. 165-1.000.
Aptix Corporation: *See—*
Guo, Ta-Pen; and Srinivasan, Adi, 5,367,482, Cl. 365-156.000.
Aquaheat Technology, Inc.: *See—*
Thompson, James E., 5,366,154, Cl. 239-13.000.
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Coleman, Lynn, 5,366,021, Cl. 169-16.000.
Arai, Atsushi: *See—*
Yano, Kentaro; Koitabashi, Noribumi; Otsuka, Naoji; Matsubara, Miyuki; Sugimoto, Hitoshi; Arai, Atsushi; Tajika, Hiroshi; and Hirabayashi, Hiromitsu, 5,367,325, Cl. 347-17.000.
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Imanishi, Shozo; and Arai, Toshihiko, 5,365,829, Cl. 91-361.000.
Arakawa Chemical Industries Ltd.: *See—*
Inoue, Tetsuya; Sasaki, Yoshihiro; and Yoshimura, Hirofumi, 5,367,009, Cl. 524-272.000.
Araki, Satoru; Yasui, Kiyomi; and Narumiya, Yoshikazu, to TDK Corporation. Magnetic multilayer and magnetoresistance effect element. 5,366,815, Cl. 428-611.000.
Aresco, Carmelo A.; and Turano, Andrew J., to Raymond Engineering Inc. Integrated safety discharge module. 5,367,428, Cl. 361-251.000.
Arikawa, Yoshihiro: *See—*
Yagi, Norio; Arikawa, Yoshihiro; and Satou, Ryuzi, 5,367,420, Cl. 360-109.000.
Aristech Chemical Corporation: *See—*
Sivak, Andrew J.; and Cullo, Leonard A., 5,367,090, Cl. 556-443.000.
Arlt, Edward J.; and Moses, Charles J., to LTV Energy Products Co. Riser tensioner system for use on offshore platforms using elastomeric pads or helical metal compression springs. 5,366,324, Cl. 405-195.100.
Armelles Flors, Luisa. Toothbrush with slide in supply. 5,366,310, Cl. 401-132.000.
Armstrong, Albert L., Jr.: *See—*
Lefkowitz, Leonard R.; and Armstrong, Albert L., Jr., 5,367,199, Cl. 307-116.000.
Armstrong, David R., to Fabri-Kal Corporation. Container with hinged lid. 5,366,104, Cl. 220-339.000.
Armstrong, Jay; and Becker, James R. Blast cleaning system. 5,365,699, Cl. 451-7.000.
Aronkasei Co., Ltd.: *See—*
Hattori, Kazuhide; Yamaji, Hiroyuki; Hatakeyama, Yoshikazu; Shida, Yoshiyuki; Tamura, Atushi; Kitaoka, Takumi; and Kohama, Takashi, 5,366,674, Cl. 264-45.400.
Aronov, Michael A., to Gas Research Institute. Fluid heater and method. 5,365,888, Cl. 122-19.000.
Arora, Sudershan K.; and Schied, Peter J., to Medicarb Inc. Disubstituted and deoxydisubstituted derivatives of alpha-d-lyxofuranosides having anti-inflammatory and anti-proliferative activity. 5,367,062, Cl. 514-25.000.
Arta Plast AB: *See—*
Steg, Hans-Henning; and Seidl, Helmut, 5,366,469, Cl. 606-182.000.
Arterbery, Cynthia W.; Callaham, W. Timothy; Keritsis, Gus D.; Laslie, Donald E.; Newman, Kenneth A.; Slagle, Roger S.; and White, Morris F., Jr., to Philip Morris Incorporated. Concentric smoking filter having cellulose acetate tow periphery and carbon-particle-loaded web filter core. 5,365,951, Cl. 131-339.000.
Arvidsson, Jan-Ivar, to Industri AB Thule. Arrangement in a load carrier. 5,366,195, Cl. 248-231.300.
Asada, Kiyozo; Uemori, Takashi; Mukai, Hiroyuki; Kato, Ikunoshin; Laderman, Kenneth; and Anfinsen, Christian B., to Takara Shuzo Co., Ltd.; and Johns Hopkins University, The. α-amylase gene. 5,366,883, Cl. 435-202.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kawasaki, Masahiro; Takahashi, Hiroyuki; and Tanimura, Yoshinari, 5,367,354, Cl. 354-400.000.
Suzuka, Shinya, 5,367,351, Cl. 854-159.000.
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Asai, Ichiro; Tomono, Takao; and Nakamura, Takeshi, to Fuji Xerox Co., Ltd. Thin-film semiconductor device with field plate. 5,367,180, Cl. 257-66.000.
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Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,367,359, Cl. 355-71.000.
Asanai, Yoshimichi: *See—*
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Asaoka, Junichi: *See—*
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Asea Brown Boveri AB: *See—*
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Sainer, Bengt O., 5,366,689, Cl. 419-49.000.
Asea Brown Boveri Ltd.: *See—*
Gerdes, Claus; and Maggi, Carlo, 5,366,345, Cl. 416-241.00R.
Ash Grove Cement Company: *See—*
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Asou, Akiyoshi: *See—*
Kunugihara, Hiromu; Yamaguchi, Tooru; Mieno, Gousuke; Kawamura, Junkichi; Asou, Akiyoshi; Sakashita, Tsutomu; Hata, Toshiyuki; and Nakamura, Tetsuya, 5,366,515, Cl. 29-25.030.
Associated Universities, Inc.: *See—*
Premuzic, Eugene T.; and Lin, Mow S., 5,366,891, Cl. 435-262.000.
Asten Group, Inc.: *See—*
Johnson, C. Barry, 5,366,778, Cl. 428-58.000.
Asulab S.A.: *See—*
Barroso, Lucas; Farine, Pierre-Andre ; and Diep, Minh-Tam, 5,367,502, Cl. 368-10.000.
AT&T Bell Laboratories: *See—*
Copley, Terry W., 5,367,539, Cl. 375-100.000.
Easter, William G.; and Shanaman, Richard H., III, 5,366,924, Cl. 437-63.000.
Glance, Bernard; and Wilson, Robert W., 5,367,586, Cl. 385-24.000.

Jouaneh, Musa K.; and Rangwala, Sabbir S., 5,367,140, Cl. 219-121.640.
Kustka, George J.; and Mailhot, John N., 5,367,336, Cl. 348-416.000.
MacDonald, William M.; Mizrahi, Victor; and Short, Kenneth T., 5,367,589, Cl. 385-37.000.
Novembre, Anthony E., 5,366,851, Cl. 430-322.000.
Yu, Chen-Hua D., 5,366,557, Cl. 118-725.000.

AT&T Corp.: *See—*
Dahringer, Donald W.; and Lyons, Alan M., 5,365,656, Cl. 29-840.000.
Georger, William H.; and Rutkowski, John A., 5,367,273, Cl. 333-1.000.
Moe, Warren R.; Russell, Larry A.; Russell, Teresa L.; Schevon, Catherine A.; and Stone, Roger E., 5,367,566, Cl. 379-243.000.

Atari Games Corporation: *See—*
Copperman, Norman S.; Gray, Alan S.; and Winblad, Wade O., 5,366,376, Cl. 434-69.000.

Athanassoulias, Costa: *See—*
Lane, Christopher C.; Lenz, Ruben P.; and Athanassoulias, Costa, 5,367,068, Cl. 536-124.000.

Atkinson, David H.: *See—*
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Atomic Skifabrik Alois Rohrmoser: *See—*
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Aton, Thomas J.: *See—*
Mahant-Shetti, Shivaling S.; Aton, Thomas J.; and Seitchik, Jerold A., 5,367,702, Cl. 395-800.000.

ATR Auditory and Visual Perception Research Laboratories: *See—*
Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

Atsuta, Hitoshi: *See—*
Sezaki, Yoshinori; Kanai, Takao; Atsuta, Hitoshi; and Mandai, Ichirou, 5,367,467, Cl. 364-489.000.

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Auburn International, Inc.: *See—*
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Audouin, Olivier: *See—*
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Aupperle, Walter: *See—*
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Aust, Eberhard: *See—*
Bergfeld, Manfred J.; Gutlein, Norbert; Wohlfahrt, Klaus; and Aust, Eberhard, 5,367,082, Cl. 548-175.000.

Austin Sports-gear, Inc.: *See—*
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Australian Longwall Pty. Limited: *See—*
Hall, Kevin R.; and Wilkinson, Gordon, 5,366,068, Cl. 198-812.000.

Autoliv Development AB: *See—*
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Automation International Incorporated: *See—*
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Automotive Products, plc: *See—*
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Avischious, Raymond: *See—*
Johannsen, Kenneth L.; and Avischious, Raymond, 5,366,378, Cl. 434-187.000.

Avitel Electronics Ltd.: *See—*
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Awata, Yutaka: *See—*
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Axthelm, John K. Data input terminal. 5,367,298, Cl. 341-22.000.

Aymerich, Jose ; and Prat, Jesus, to FICO I.I.M.,S.A. Spring hinge for automobile sunvisors. 5,366,265, Cl. 296-97.120.

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Papa, Patrick A., Jr., 5,365,652, Cl. 29-605.000.

B&W Fuel Company: *See—*
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Baba, Motoshi: *See—*
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Baba, Shigeki: *See—*
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Baba, Yoshihiko, to Uniden Corporation. Transmission signal output control circuit. 5,367,268, Cl. 330-129.000.

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Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; and Collet, Eric C., 5,365,890, Cl. 122-379.000.

Badesha, Santokh S.; Ferguson, Robert M.; Fratangelo, Louis D.; Heeks, George J.; Henry, Arnold W.; and Pan, David H., to Xerox Corporation. Fuser member. 5,366,772, Cl. 428-35.800.

Badger Air Brush Co.: *See—*
Robisch, Herman; and Schlotfeldt, Walter, 5,366,158, Cl. 239-289.000.

Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, to Eastman Kodak Company. Oxygen barrier coated photographic coupler dispersion particles for enhanced dye-stability. 5,366,842, Cl. 430-138.000.

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Bunch, Joseph, 5,365,720, Cl. 53-411.000.

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Bagley, Lindsey: *See—*
Timonen, Maritta; Rha, ChoKyun; Vaara, Timo; Bagley, Lindsey; Bosdet, Sarah; Lindley, Michael; Lahtinen, Tarja; Turunen, Marja; and Vaara, Martti, 5,366,755, Cl. 426-658.000.

Bahr, Norman H.: *See—*
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Bahrmann, Helmut; and Lappe, Peter, to Hoechst Aktiengesellschaft. Process for the preparation of aldehydes. 5,367,107, Cl. 568-454.000.

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Berzin, Vel; and Abarca, John R., 5,366,020, Cl. 166-387.000.
Woods, John B., 5,365,978, Cl. 137-614.110.

Baker, Phillip D.; Ulmer, John T.; and Blake, Claude L., to General Electric Company. Refrigerator storage compartment with slide bearing system. 5,366,284, Cl. 312-404.000.

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Copenhaver, Gary; Bakker, Johan; and Vala, John, 5,367,386, Cl. 358-474.000.

Balderrama, Mark A., to Calmar Inc. Foamer nozzle with looped rib flow disrupters. 5,366,160, Cl. 239-333.000.

Ball Corporation: *See—*
Strizki, Thomas C., 5,366,162, Cl. 239-548.000.

Ballard Power Systems Inc.: *See—*
Merritt, Robert D.; and Blair, James D., 5,366,821, Cl. 429-21.000.
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Balogh, John J., Jr.: *See—*
Freeman, Gerald C.; and Balogh, John J., Jr., 5,366,582, Cl. 156-584.000.

Balshaw, Martha: *See—*
Haan, Henk; Casper, Mark S.; Balshaw, Martha; and Schindler, Kevin A., 5,366,146, Cl. 229-304.000.

Balsimo, William V.; and St. Mary, Steven J., to Minnesota Mining and Manufacturing Company. Glass microbead filter and method of filtering. 5,366,632, Cl. 210-777.000.

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Bane, John C., to Moore Business Forms, Inc. Resealable pressure sensitive closure label. 5,366,087, Cl. 206-459.500.

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Bang, Joon W., to Gold Star Co., Ltd. Adaptive Y/C seperation with artifacts removal via switchable trap. 5,367,342, Cl. 348-667.000.

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Mesenbring, John M.; Patriquin, Lawrence J.; Ramirez, Rory F.; and Smith, Dell W., 5,366,117, Cl. 222-132.000.

Barber, William D.: *See—*
Roemer, Peter B.; Blumenfeld, Samuel M.; Vosburgh, Kirby G.; Cline, Harvey E.; Barber, William D.; Lorensen, William E.; St. Peters, Richard L.; Schenck, John F.; Dumoulin, Charles L.; Darrow, Robert D.; and Hardy, Christopher J., 5,365,927, Cl. 128-653.200.

Barbero, Christian, to International Business Machines Corporation. Method and apparatus for setting asynchronous transmission characteristics in a telecommunication equipment including a SCC. 5,367,541, Cl. 375-106.000.

Barbour, James K.: *See—*
Wiesenfeld, Arnold; and Barbour, James K., 5,366,650, Cl. 252-70.000.

Barcelon, Shirley A.: *See—*
Shaw, James J.; Wong, Lucy L.; Graff, Allan H.; Olaya, Hector; Barcelon, Shirley A.; Degady, Marc; and Brine, Charles J., 5,366,740, Cl. 426-3.000.

Barco N. V.: *See—*
Santy, Patrick; and Verstraete, Gerrit, 5,367,221, Cl. 315-8.000.

Bare, Rex O.: *See—*
Noble, Edward J.; Payne, Timothy; and Bare, Rex O., 5,365,952, Cl. 132-144.000.

Barenschee, Ernst-Robert: *See—*
von Wedel, Wegido; Barenschee, Ernst-Robert; and Eickhoff, Hubertus, 5,366,711, Cl. 423-239.100.

Barger, Paul T.: *See—*
Lawson, Randy J.; Richmond, Dorothy M.; Gajda, Gregory J.; and Barger, Paul T., 5,367,101, Cl. 585-667.000.

Baril, Albert M.: *See—*
Holmes, Roy H.; and Baril, Albert M., 5,367,402, Cl. 359-400.000.

Barlow, George J.; and Keeley, James W., to Bull HN Information Systems Inc. Means for providing a graceful power shut-down capability in a multiprocessor system having certain processors not inherently having a power shut-down capability. 5,367,697, Cl. 395-800.000.

Barnett, Charles: *See—*
Kay, Stanley; Kim, Youngky; King, Lou; Mehta, Ashok D.; and Barnett, Charles, 5,367,559, Cl. 379-60.000.

Baro, Anthony; Willard, Alan E.; and Narlow, Doug, to Sensormatic Electronics Corporation. Alarm tag for an electronic article surveillance system. 5,367,289, Cl. 340-566.000.

Barranco, Sam C., III. Method and kit for testing tumors for drug sensitivity. 5,366,885, Cl. 435-6.000.

Barron, James E.: *See—*
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.

Barroso, Lucas; Farine, Pierre-Andre ; and Diep, Minh-Tam, to Asulab S.A. Timepiece including a broadcasting antenna for an electromagnetic signal. 5,367,502, Cl. 368-10.000.

Barrus, Gordon B.; Choy, Ricky T. K.; and Takakawa, Ryan, to Printronix, Inc. Printer ribbon motor controller. 5,366,303, Cl. 400-234.000.

Barsotti, Robert J.; Harper, Lee R.; and Lock, Michele R., to Du Pont de Nemours, E. I., and Company. Ambient curing water-borne compositions comprising half esters of anhydride polymers cross-linked by epoxies. 5,367,004, Cl. 523-414.000.

Barthelemy, Pierre; and Leroy, Annie, to Solvay (Societe Anonyme). Stabilized compositions comprising hydrofluoroalkanes, premixtures intended for the preparation of polymeric foams and polymeric foams obtained by the use thereof. 5,366,662, Cl. 252-393.000.

Barthelemy, Pierre; Paulus, Mireille; and Leroy, Annie, to Solvay (Societe Anonyme). Stabilized 1,1-dichloro-1-fluoroethane, premixtures intended for the preparation of polymeric foams and polymeric foams obtained by the use thereof. 5,366,946, Cl. 502-167.000.

Bartnicki, Frederick J.; and Beggs, Robert, to R. D. Werner Co., Inc. Hollow plastic ladder. 5,366,051, Cl. 182-46.000.

Barton, Patrick M.: *See—*
Lammers, Gerald B.; Barton, Patrick M.; Jacobs, Lynn C.; and Konshak, Michael V., 5,366,173, Cl. 242-338.100.

BASF Aktiengesellschaft: *See—*
Fischer, Wolfgang; Guentherberg, Norbert; and Niessner, Norbert, 5,367,029, Cl. 525-301.000.
Schmitt, Michael; and Niedenbrueck, Matthias, 5,367,074, Cl. 544-339.000.
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, 5,366,984, Cl. 514-361.000.

BASF Corporation: *See—*
Dugan, Jeffrey S., 5,366,804, Cl. 428-373.000.

BASF Magnetics GmbH: *See—*
Manzke, Klaus; and Ahlers, Juergen, 5,366,788, Cl. 428-174.000.

Basilice, Joseph P.: *See—*
Basilice, Vincent P.; and Basilice, Joseph P., 5,366,448, Cl. 604-290.000.

Basilice, Vincent P.; and Basilice, Joseph P. Dispensing eye drops. 5,366,448, Cl. 604-290.000.

Bast, Robert C., Jr.: *See—*
Xu, Fengi J.; Yu, Yinhua; and Bast, Robert C., Jr., 5,366,866, Cl. 435-7.230.

Bates, Keith A.; Bui, Nhan X.; and Hansen, Delbert A., to International Business Machines Corporation. Focus and tracking servo decoupling system. 5,367,513, Cl. 369-44.290.

Bathelet, Pierre, to TECHSEP. Sealing ring for a bundle of inorganic membranes in a filtering module. 5,366,624, Cl. 210-232.000.

Batko, Thomas J.: *See—*
Howard, Carol Z.; and Batko, Thomas J., 5,367,293, Cl. 340-687.000.

Bauer, Neal; and Kepke, Mark A., to Hewlett-Packard Company. Network management agent with user created objects providing additional functionality. 5,367,635, Cl. 395-200.000.

Bauer, Tibor L.; Cavaliere, William A.; Linnell, David C.; and Wu, Jin J., to International Business Machines Corporation. Nozzle apparatus for producing aerosol. 5,366,156, Cl. 239-135.000.

Baumann, Dieter: *See—*
Muller, Beat; and Baumann, Dieter, 5,366,947, Cl. 502-172.000.

Bausch & Lomb Incorporated: *See—*
Bolton James R.; and Hensler, J. Raymond, 5,366,940, Cl. 501-69.000.
Braun, Alan J., 5,366,078, Cl. 206-5.100.

Baxter, Marcia: *See—*
Drummond, Rashmi; Westerman-Courtright, Karen; Little, John C.; Baxter, Marcia; and Wengerhoff, David L., 5,366,744, Cl. 426-128.000.

Baxter, Seaton, to Aco Severin Ahlmann GmbH & Co. KG. Drop stall. 5,365,885, Cl. 119-27.000.

Bayer AG: *See—*
Bulan, Andreas; and Weber, Rainer, 5,366,597, Cl. 204-59.00F.

Bayer Aktiengesellschaft: *See—*
Beck, Gunther; and Kaletta, Bernd, 5,367,069, Cl. 540-122.000.
Blank, Heinz-Ulrich; and Konig, Bernd-Michael, 5,367,108, Cl. 568-932.000.
Giez, Edmund; Pascik, Imre; and Priemer, Joachim, 5,366,999, Cl. 521-54.000.
Scherkenbeck, Jurgen; Nentwig, Gunter; Lenz, Jurgen; Boeckh, Jurgen; Wendler, Gernot; Dambach, Martin; and Kruger, Bernd-Wieland, 5,365,691, Cl. 43-114.000.
Wiedermann, Rolf; Wendel, Stephan; and Weber, Ulrich, 5,367,000, Cl. 521-131.000.

Bayer, Heiner; Lehner, Barbara; Wirbser, Oskar; and Unger, Gregor, to Siemens Nixdorf Informationssysteme AG. UV-curable adhesive semiconductor chip mounting process. 5,366,573, Cl. 156-64.000.

Bayer, Jurgen: *See—*
Humpolik, Bohumil; and Bayer, Jurgen, 5,366,700, Cl. 422-180.000.

Bayley, Denise R.: *See—*
Larson, James R.; Bonsignore, Frank J.; Ciccarelli, Roger N.; Pickering, Thomas R.; Bayley, Denise R.; and Bertrand, Jacques C., 5,366,840, Cl. 430-115.000.

Bazile, Jean-Luc; Billon, Paul; and Mallea, Patrick, to Aerospatiale Societe Nationale Industrielle. Defect detecting device for two-layer parts, in particular for solar cells. 5,367,174, Cl. 250-572.000.

Beal, Karen C.: *See—*
Alim, Mohammad A.; and Beal, Karen C., 5,366,935, Cl. 501-20.000.

Beatty, Christopher C., to Hewlett-Packard Company. Microchip assembly with electrical element in sealed cavity. 5,367,194, Cl. 257-727.000.

Beaty, Keith D.; and Rogers, Dan P., to Implant Innovations, Inc. Torque limiting clutch and its uses. 5,366,412, Cl. 464-38.000.

Beaty, Terry A.: *See—*
White, Bradley E.; Parks, Robert A.; Ritchie, Paul G.; and Beaty, Terry A., 5,366,609, Cl. 204-403.000.

Beaudin, Raymond A.; Fallon, Joseph R.; and Halberg, Leslie I., to Hewlett-Packard Company. Method and apparatus for the simultaneous display of one or more selected images. 5,367,318, Cl. 345-201.000.

Beauvais, Randall R., to Life Force Associates, L.P. Apparatus for restraining a passenger in a vehicle. 5,366,269, Cl. 297-216.190.

Beauviala, Jean-Pierre, to Aaton. Cine camera employing interchangeable film magazines with displacement of the spindles of the film take-off and take-up reels. 5,366,172, Cl. 242-342.000.

Beck, August H., III. Large shaft over-reamer apparatus and method. 5,366,029, Cl. 175-53.000.

Beck, Charles E. J.: *See—*
Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., 5,367,092, Cl. 558-374.000.

Beck, Erich; Minning, Manfred; Naumann, Emil; and Wese, Joseph, to Mercedes-Benz AG. Disc brake with ring-shaped pressing element. 5,366,047, Cl. 188-73.370.

Beck, Gunther; and Kaletta, Bernd, to Bayer Aktiengesellschaft. Metal-free, substituted phthalocyanines in the χ-modification. 5,367,069, Cl. 540-122.000.

Beck, Jeffrey S.; Olson, David H.; and McCullen, Sharon B., to Mobil Oil Corp. Selective toluene disproportionation process (STDP) with ex situ selectivated zeolite catalyst. 5,367,099, Cl. 585-475.000.

Becker, James R.: *See—*
Armstrong, Jay; and Becker, James R., 5,365,699, Cl. 451-7.000.

Becker, Reinhard; Henning, Rainer; Teetz, Volker; and Urbach, Hansjorg, to Hoechst Aktiengesellschaft. Use of a combination of angiotensin-converting enzyme inhibitor and calcium antagonist for the treatment of proteinuria. 5,366,994, Cl. 514-523.000.

Becker, Willi, to Heidelberger Druckmaschinen AG. Method and device for starting and stopping a sheet-turning operation and for format adjusting. 5,365,845, Cl. 101-230.000.

Becker, Willi, to Heidelberger Druckmaschinen AG. Format-adjustable sheet-turning device with change-over gears on a sheet-fed rotary printing press. 5,365,846, Cl. 101-230.000.

Beckerle, Heinz; and Reidinger, Rolf, to Nokia (Deutschland) GmbH. Method of lacquering the luminophore layer of a colour picture tube. 5,366,759, Cl. 427-64.000.

Beckmann, Georg: *See—*
Wosnitza, Franz; Beckmann, Georg; and Zimmermann, Georg, 5,366,673, Cl. 264-37.000.

Beckrich, Mary B. Apparatus for cleaning contact lenses. 5,365,630, Cl. 15-104.920.

Becnel, Lawrence F., Jr.; Currey, John E.; and Ver Hoeve, Raymond W., to Texas Brine Corporation. Salt plant evaporation. 5,366,514, Cl. 23-303.000.

Becton, Dickinson and Company: *See—*
Crawford, Mark A., 5,366,441, Cl. 604-53.000.
Pitner, J. Bruce; Linn, Jr. C. Preston; and Mize, Patrick D., 5,367,058, Cl. 530-391.900.
Rutner, Herman; Butt, Abdul M.; Readio, Josephine D.; and Pollack, Lewis, 5,366,895, Cl. 436-17.000.

Stevens, Timothy A.; Mussi, Edward F.; Henderson, Douglas P.; and Tyndorf, Tadeusz A., 5,366,893, Cl. 435-284.000.

Beddome, Robert A.: *See—*
Roberts, Mark J.; Beddome, Robert A.; and Bonaquist, Dante P., 5,365,741, Cl. 62-38.000.

Beernink, Ernest H.: *See—*
Capps, Stephen P.; Beernink, Ernest H.; Meier, John R.; and Temkin, David, 5,367,453, Cl. 364-419.130.

Beersel, Jozef V.; Overbergh, Noel K. M.; and Ross, Firmin, to NV Raychem SA. Recoverable fabric sleeve. 5,366,771, Cl. 428-34.900.

Beggs, Robert: *See—*
Bartnicki, Frederick J.; and Beggs, Robert, 5,366,051, Cl. 182-46.000.

Behel, Allan D., Jr., to Tennessee Valley Authority. Micronutrient delivery system using citrus by-product. 5,366,533, Cl. 71-23.000.

Behr GmbH & Co.: *See—*
Lu, James W. B.; Costello, Norman F.; Stay, Kevin E.; and Damsohn, Herbert, 5,366,006, Cl. 165-173.000.

Behringwerke Aktiengesellschaft: *See—*
Kressirer, Rudolf, 5,365,798, Cl. 73-864.110.

Bein, Daniel J., to Oven Systems, Inc. Two-stage sludge drying apparatus and method. 5,365,676, Cl. 34-424.000.

Bekanich, Joseph. Support apparatus for a patient infusion device. 5,366,191, Cl. 248-125.000.

Belanger, Daniel L.; and Daly, James A., to Digital Equipment Corporation. Modular housing for batteries and battery charger. 5,366,827, Cl. 429-99.000.

Belknap, John C. Atherectomy catheter device. 5,366,464, Cl. 606-159.000.

Bell Communcations Research, Inc.: *See—*
Cordell, Robert R., 5,367,520, Cl. 370-60.000.

Bell Communications Research, Inc.: *See—*
Chu, Lynn H.; Dragoni, Anthony H., Jr.; Eichelman, Fredric R., II; Huleatt, Thomas O.; Irgon, Adam E.; and Langion, Martha S., 5,367,473, Cl. 364-551.010.

Bellinger, Christopher M.: *See—*
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Bookbinder, Mark J.; Greene, Michael E.; Johnson, Dwayne L.; Bellinger, Christopher M.; and Vasko, Susan C., 5,366,360, Cl. 418-55.500.

Bemel, Milton M. Apparatus for treating hydrocarbon and carbon monoxide gases. 5,367,131, Cl. 181-232.000.

Bender, David E.; and Carleone, Joseph, to Aerojet-General Corporation. Method and apparatus for providing an explosively formed penetrator having fins. 5,365,852, Cl. 102-476.000.

Benedini, Francesca: *See—*
Sala, Alberto; Banfi, Aldo; Benedini, Francesca; and Cereda, Roberta, 5,366,992, Cl. 514-409.000.

Benevento, Barbara M.: *See—*
Benevento, Vincenzo P., Jr.; and Benevento, Barbara M., 5,365,607, Cl. 2-181.400.

Benevento, Vincenzo P., Jr.; and Benevento, Barbara M. Cap having evaporative cooling interior apparatus. 5,365,607, Cl. 2-181.400.

Benjamin, Christopher D.: *See—*
Hession, Catherine A.; Lobb, Roy R.; Goelz, Susan E.; Osborn, Laurelee; Benjamin, Christopher D.; and Rosa, Margaret D., 5,367,056, Cl. 530-380.000.

Benjamin, William. Cutting board receptacle tray. 5,366,208, Cl. 269-13.000.

Bennett, Reid S.; Ellingboe, Albert R.; Gifford, George G.; Haller, Kurt L.; McKillop, John S.; Selwyn, Gary S.; and Singh, Jyothi, to International Business Machines Corporation. Methods and apparatus for contamination control in plasma processing. 5,367,139, Cl. 219-121.590.

Benz, Mark G.: *See—*
Sawyer, Thomas F.; Carter, William T., Jr.; and Benz, Mark G., 5,366,206, Cl. 266-202.000.

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Freedman, Lev P.; Khafizov, Yermek B.; Buch, Elmar; Siebel, Kurt; and Berendes, Herbert, 5,366,001, Cl. 164-475.000.

Berg, Todd A.: *See—*
Rowenhorst, Donley D.; and Berg, Todd A., 5,366,523, Cl. 51-293.000.

Bergamini, Giorgio, to Nuovopignone-Industrie Meccaniche E Fonderia S.P.A. Seal system, particularly suitable for process valves. 5,365,971, Cl. 137-556.000.

Berger, Harald; Steins, Johannes; and Klintworth, Klaus, to Voest-Alpine Industrieanlagenbau GmbH; and KCT Technologies GmbH. Process for the production of a metal melt. 5,366,538, Cl. 75-528.000.

Bergeron, Raymond J., Jr., to University of Florida Research Foundation, Inc. Method for synthesis of desferrioxamine B, analogs and homologs thereof. 5,367,113, Cl. 562-623.000.

Bergfeld, Manfred J.; Gutlein, Norbert; Wohlfahrt, Klaus; and Aust, Eberhard, to Akzo N.V. Process for the preparation of 2-mercaptobenzothiazole. 5,367,082, Cl. 548-175.000.

Bergli, Knut; Foosnaes, Trygve; and Naterstad, Tormod, to Norsk Hydro a.s. Apparatus for analyzing carbon products. 5,366,901, Cl. 436-133.000.

Bergner, Rainer; Droessler, Hubert; Konkel, Siegfried; Weiss, Volker; and Weltgen, Paul-Otto, to Henkel Kommanditgesellschaft auf Aktien. Plastic container pack with a paperboard Jacket. 5,366,102, Cl. 215-100.00R.

Bergot, B. John; Chakerian, Vergine; Connell, Charles R.; Eadie, J. Scott; Fung, Steven; Hershey, N. Davis; Lee, Linda G.; Menchen, Steven M.; and Woo, Sam L., to Applied Biosystems, Inc. Spectrally resolvable rhodamine dyes for nucleic acid sequence determination. 5,366,860, Cl. 435-6.000.

Berk, Jody E.; Coon, James R.; Day, Paul R.; Heyrman, Peter J.; and Johnson, David L., to International Business Machines Corporation. Data stream optimizer utilizing difference coding between a current state buffer and a next state buffer. 5,367,674, Cl. 395-600.000.

Berlin, Carl W., to Delco Electronics Corp. Temperature coefficient of resistance controlling films. 5,366,813, Cl. 428-546.000.

Bernard Welding Company: *See—*
Raloff, Valgene E.; and Haczynski, Christopher, 5,366,392, Cl. 439-889.000.

Berne, Oliver L. E.: *See—*
Munier, Regis J. R.; Berne, Oliver L. E.; and Serpillon, Serge D., 5,365,821, Cl. 83-500.000.

Berns, Michael S. Apparatus for automatic and simultaneous caring for teeth and gums. 5,365,624, Cl. 15-22.100.

Bernstein, Linda A.; and Gordon, Robert L., to International Paper Company. Pour spout with piercing insert. 5,366,114, Cl. 222-83.000.

Berthold, Fritz; and Pfleger, Manfred, to Laboratorium Prof. Dr. Rudolph Berthold GmbH & Co. KG. Method for discrimination and simultaneous or separate measurement of single or multiple electronic events in an opto-electronic detector. 5,367,168, Cl. 250-362.000.

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Bertrand, Jacques C.: *See—*
Larson, James R.; Bonsignore, Frank J.; Ciccarelli, Roger N.; Pickering, Thomas R.; Bayley, Denise R.; and Bertrand, Jacques C., 5,366,840, Cl. 430-115.000.

Berzin, Vel; and Abarca, John R., to Baker Hughes Incorporated. Reinflatable external casting packer and method of casing. 5,366,020, Cl. 166-387.000.

Berzins, Vaironis: *See—*
Brown, Jerald L.; and Berzins, Vaironis, 5,365,657, Cl. 29-850.000.

Best, Bernd: *See—*
Frische, Rainer; Gross-Lannert, Renate; Wollmann, Klaus; Best, Bernd; Schmid, Eduard; and Buehler, Fritz, 5,367,067, Cl. 536-45.000.

Bestwick, Richard K.; Mokkapati, Vijaya K.; and Ferro, Adolph J., to Epitope, Inc. Floral preservative comprising 5-deoxy-5-ethylthio-D-ribose and method of use. 5,366,954, Cl. 504-114.000.

Beth Israel Hospital Association, The: *See—*
Fossel, Eric T., 5,366,440, Cl. 604-4.000.

Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; Reggiori, Franca; and Meazza, Giovanni, to Eni Chem Synthesis S.p.A. Pyrazolecarboxamides exhibiting insecticide and acaricide activity. 5,366,991, Cl. 514-406.000.

Bettencourt, Paul D.: *See—*
Sullivan, Henry W., Henry W.; Killian, Charles R.; and Bettencourt, Paul D., 5,366,365, Cl. 425-144.000.

Bettinali, Livio: *See—*
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Betts, E. Douglas: *See—*
Keith, Jon T.; Betts, E. Douglas; Dancy, Michael J.; and Pershinske, James E., 5,366,405, Cl. 452-5.000.

Betz Laboratories, Inc.: *See—*
Turunc, Umit, 5,366,637, Cl. 210-728.000.

Beutel, Jacob; Issler, Sandra L.; and Mickewich, Daniel J., to Du Pont de Nemours, E. I., and Company. Radiological system employing phosphors of different densities. 5,367,172, Cl. 250-483.100.

Beyer, Klaus D.; Hsieh, Chang-Ming; Hsu, Louis L.; and Yuan, Tsorng-Dih, to International Business Machines Corporation. Bonded wafer structure having a buried insulation layer. 5,366,923, Cl. 437-62.000.

Bezman, Richard D., to Chevron Research and Technology Company. Process for producing a hydrocarbon product having selectivity for jet fuel. 5,366,615, Cl. 208-111.000.

Bhardwaj, Tilak R.: *See—*
Narang, Subhash C.; Ventura, Susanna C.; Ganapathiappan, Sivapackia; Bhardwaj, Tilak R.; and Nigam, Asutosh, 5,367,051, Cl. 528-424.000.

Bhatt, Nikhil A.; and Black, David. On-line microfilm storage and retrieval system. 5,367,382, Cl. 358-403.000.

Bianco, Sebastiano, to Hoechst Aktiengesellschaft. Potentiation of the anti-reactive-antiasthmatic effect of inhaled loop diuretics by inhaled non-steroidal anti-inflammatory drugs. 5,366,967, Cl. 514-59.000.

Bidell, Christopher R.; Lanyl, Colin K.; Mann, Anthony F.; and Stafford, Phillip, to Amicon Limited. Chromatography column. 5,366,621, Cl. 210-198.200.

Bier, Jeffrey: *See—*
Lee, Edward A.; and Bier, Jeffrey, 5,367,678, Cl. 395-650.000.

Bierma, Richard A.: *See—*
Gruszczynski, David W.; Palum, Russell J.; Welch, Sarah R.; Thompson, Andrew D.; and Bierma, Richard A., 5,367,440, Cl. 362-32.000.

Bigauskas, Tomas D., to Sterling Canada Inc. Hydrogen peroxide-based chlorine dioxide process. 5,366,714, Cl. 423-478.000.

Biggel, Franz: *See—*
Roericht, Hans; Fleischmann, Horst; Biggel, Franz; and Schmitz, Burkhard, 5,366,274, Cl. 297-321.000.

Billington, Charles J., III, to Billington Welding & Manufacturing, Inc. Manually-adjustable cantilevered work station platform. 5,365,860, Cl. 108-108.000.

Billington Welding & Manufacturing, Inc.: *See—*
Billington, Charles J., III, 5,365,860, Cl. 108-108.000.

Billon, Paul: *See—*
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Bilodeau, Francois C.: *See—*
Hill, Kenneth O.; Malo, Bernard Y.; Bilodeau, Francois C.; and Johnson, Derwyn C., 5,367,588, Cl. 385-37.000.

Bimbi, Luigi: *See—*
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Binkley, David M., to CTI Pet Systems, Inc. Remote gain control circuit for photomultiplier tubes. 5,367,222, Cl. 315-12.100.

Biofoam Industries, Inc.: *See—*
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Biogen, Inc.: *See—*
Hession, Catherine A.; Lobb, Roy R.; Goelz, Susan E.; Osborn, Laurelee; Benjamin, Christopher D.; and Rosa, Margaret D., 5,367,056, Cl. 530-380.000.

Biomagnetic Technologies, Inc.: *See—*
DiIorio, Mark S.; Yoshizumi, Shozo; and Yang, Kai-Yueh, 5,367,178, Cl. 505-190.000.

Bisceglia, Bruno T., Jr.: *See—*
Ilvento, Joseph P.; Bisceglia, Bruno T., Jr.; and Way, Tim J., 5,366,497, Cl. 607-142.000.

Bisey, Robert P., to Grumman Aerospace Corporation. Three-dimensional computer image variable perspective display system. 5,367,614, Cl. 395-119.000.

Biton, Jacques; Gellf, Gerard; Michel, Jean-Marc; Paul, Francois B.; and Monsan, Pierre F., to Roussel Uclaf. Low calorie sweetener. 5,366,962, Cl. 514-54.000.

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Zehner, Georgia L.; Rosch, Paulette M.; Odorzynski, Thomas W.; Siebers, Bruce M.; and Blenke, Timothy J., 5,366,453, Cl. 604-385.200.

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Bonutti, Peter M. Adjustable orthosis. 5,365,947, Cl. 128-898.000.

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Aitken, Bruce G.; Bookbinder, Dana C.; Dickinson, James E., Jr.; and Wedding, Brent M., 5,367,012, Cl. 523-451.000.

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Born, Maurice: *See—*
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Bowen, Donald H.; Harney, Michael P.; and Lett, David B., to Scientific-Atlanta, Inc. Subscriber terminal with plug in expansion card. 5,367,571, Cl. 380-20.000.
Bown, Thomas E.; and Pauling, Dennis L., to Recot, Inc. Display strip for packages of consumer product. 5,366,777, Cl. 428-43.000.
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Bradley, Steven A.; and Galperin, Leonid B., to UOP. Selective catalytic reforming with high-stability catalyst. 5,366,617, Cl. 208-137.000.
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Brandes, Anita G.: *See—*
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Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., to Collagen Corporation. Device for treating fine superficial facial lines. 5,366,498, Cl. 623-11.000.
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Bresch, Gotthard. Chair or the like. 5,366,273, Cl. 297-316.000.
Brett, Bevin R., to Digital Equipment Corporation. Smart recompilation of performing matchup/difference after code generation. 5,367,683, Cl. 395-700.000.
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Brink, David L. Method of treating biomass material. 5,366,558, Cl. 127-43.000.
Brinkerhoff, Ronald J.; Candadai, Ramesh S.; Cartmill, John A.; and Stubbs, Jack B., to Ethicon, Inc. Endoscopic surgical sealing device. 5,366,478, Cl. 660-213.000.
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Brooktree Corporation: *See—*
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Brower, William B., Jr. Improved method for determining flow rates in venturis, orifices and flow nozzles involving total pressure and static pressure measurements. 5,365,795, Cl. 73-861.650.
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Brown, Edwin B. Inflatable security mannequin. 5,367,294, Cl. 340-692.000.
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Brumfield, John H. Snap-on retention device and system for wheel cover. 5,366,278, Cl. 301-37.340.
Bruneau, Pierre A. R.; and Lambert-van der Brempt, Christine M. P., to Zeneca Limited; and Zeneca-Pharma, S.A. Cycloalkane derivatives. 5,367,079, Cl. 546-157.000.
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Buckholz, Lawrence L., Jr.; and Scharpf, Lewis G., to International Flavors & Fragrances Inc. Aconitic acid, gluconic acid and/or succinic acid taken alone or further together with sclareolide in enhancing the organoleptic properties of foodstuffs. 5,366,747, Cl. 426-536.000.
Buckley, Leo P.: *See—*
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Buckman, Alvin B.: *See—*
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Buhren, Heinz: *See—*
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Buisman, Cees J., to Paques B.V. Process for the treatment of water containing sulphur compounds. 5,366,633, Cl. 210-614.000.
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Kelley, Craig B.; Nelson, David E.; and Nelson, Peter M., 5,365,803, Cl. 74-484.00R.
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Cates. Joseph A.: *See—*
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Culotta, Kenneth W. Underwater propulsion system having reduced weight penalty and variable angle of thrust. 5,365,868, Cl. 114-315.000.
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Voss, Theodore N.; Curran, Barbara; Kirk, Karl D., III; and Cohen, Ellen R., 5,366,475, Cl. 606-204.000.
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Currie, John F.; Ivanov, Dentcho V.; and Lecours, Andre, to La Corporation de l'Ecole Polytechnique. Implantable medication dispensing device. 5,366,454, Cl. 604-890.100.
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Meyer, Richard S.; and Campbell, Michael L., 5,366,753, Cl. 426-611.000.
Cuthbertson, Matthew J.; and Squires, Philip H., to Pilkington Visioncare Inc. Polymeric bifocal lens production process. 5,366,668, Cl. 264-1.800.
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Cymbal, William D., to General Motors Corporation. Intermediate steering shaft assembly and method. 5,366,316, Cl. 403-378.000.
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Cleeves, James M.; Park, Changhae; and Gettle, Rosemary, 5,366,929, Cl. 437-195.000.
Czaban, John D.: *See—*
Qureshi, Humayun; Liffmann, Stanley M.; and Czaban, John D., 5,366,904, Cl. 436-180.000.
Czach, Richard W., to Cosmos Electronic Machine Corp. High frequency welding machine. 5,366,580, Cl. 156-359.000.
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Pierson, Henri G. W., 5,366,626, Cl. 210-216.000.
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Daden, William G. Low pressure beverage carbonator using a chemical source of carbon. 5,366,745, Cl. 426-477.000.
Dahl, Roger W.; Fangel, Jayne G.; and Swanson, David K., to Cardiac Pacemakers, Inc. Subcutaneous shunted coil electrode. 5,366,496, Cl. 607-132.000.
Dahllof, Hakan; Ekholm, Rolf; and Jansson, Ulf, to Kamyr Aktiebolag. Apparatus for mixing a suspension of cellulosic fibrous material and fluid. 5,366,288, Cl. 366-176.000.
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Dahyl Gary A.: *See—*
Borja, Javier, 5,365,683, Cl. 40-152.100.
Dai-Ichi Cement Co., Ltd.: *See—*
Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.
Dai Nippon Printing Co., Ltd.: *See—*
Kurata, Michio; Modegi, Toshio; and Arai, Eisuke, 5,367,613, Cl. 395-109.000.
Daicel Chemical Industries, Ltd.: *See—*
Fujiwa, Takaaki; and Isobe, Tomohisa, 5,367,088, Cl. 549-539.000.
Dainippon Pharmaceutical Co., Ltd.: *See—*
Ohno, Kazunori; Odai, Osamu; Tominaga, Yukio; Furukawa, Kiyoshi; and Oka, Makoto, 5,367,078, Cl. 546-122.000.
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Sakamoto, Takashi, 5,367,384, Cl. 358-456.000.
Sezaki, Yoshinori; Kanai, Takao; Atsuta, Hitoshi; and Mandai, Ichirou, 5,367,467, Cl. 364-489.000.
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Gongwei, Wang; Muliang, Ying; Xingchun, Wang; and Guoquan, Chen, 5,367,100, Cl. 585-640.000.
Dally, William J., to Massachusetts Institute of Technology. System of express channels in an interconnection network that automatically bypasses local channel addressable nodes. 5,367,642, Cl. 395-325.000.
Daly, James A.: *See—*
Belanger, Daniel L.; and Daly, James A., 5,366,827, Cl. 429-99.000.
Daly, Paul D.; and McArthur, Robert A., to Siemens Automotive L.P. fuel injector valve having a sphere for the valve element. 5,366,163, Cl. 239-585.200.
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Scherkenbeck, Jurgen; Nentwig, Gunter; Lenz, Jurgen; Boeckh, Jurgen; Wendler, Gernot; Dambach, Martin; and Kruger, Bernd-Wieland, 5,365,691, Cl. 43-114.000.
Damsohn, Herbert: *See—*
Lu, James W. B.; Costello, Norman F.; Stay, Kevin E.; and Damsohn, Herbert, 5,366,006, Cl. 165-173.000.
Dana Corporation: *See—*
Yant, Kenneth B., 5,366,053, Cl. 192-4.00A.
Danby, Hal C., to Danby Medical Limited. Electronically controlled intravenous fluid infusion device. 5,366,346, Cl. 417-18.000.
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Dancy, Michael J.: *See—*
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Daniels, Michael E.: *See—*
Bookbinder, Mark J.; Bellinger, Christopher M.; and Daniels, Michael E., 5,366,359, Cl. 418-55.500.
Danielson, Lih-Juan L.: *See—*
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Saito, Hitoshi; Kitamura, Tetsuji; Matsuda, Hideyuki; Danjo, Masamichi; and Nishi, Eiji, 5,367,036, Cl. 525-458.000.
Danno, Yoshiaki: *See—*
Hirako, Osamu; Danno, Yoshiaki; and Shimada, Makoto, 5,366,610, Cl. 204-406.000.
Darling, Michael. Toy water gun system. 5,366,108, Cl. 222-1.000.
Darrah, Scott A.; and Lee, Vincent. Through-hole socket. 5,365,807, Cl. 81-60.000.
Darrow, Robert D.: *See—*
Roemer, Peter B.; Blumenfeld, Samuel M.; Vosburgh, Kirby G.; Cline, Harvey E.; Barber, William D.; Lorensen, William E.; St. Peters, Richard L.; Schenck, John F.; Dumoulin, Charles L.; Darrow, Robert D.; and Hardy, Christopher J., 5,365,927, Cl. 128-653.200.
da Silva, Jean-Pierre M. Audio-adapted eyeglass retainer. 5,367,345, Cl. 351-123.000.
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Wojnarowski, Robert J.; Neugebauer, Constantine A.; Daum, Wolfgang; Gorowitz, Bernard; Wildi, Eric J.; Gdula, Michael; Weaver, Stanton E., Jr.; and Immorlica, Anthony A., Jr., 5,366,906, Cl. 437-8.000.
Dausien, Ulrich. Knapsack with reinforcing element. 5,366,126, Cl. 224-211.000.
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Daussan, Gerard; Daussan, Andre ; and Daussan, Jean-Charles, 5,366,209, Cl. 266-227.000.
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Daussan, Gerard; Daussan, Andre ; and Daussan, Jean-Charles, 5,366,209, Cl. 266-227.000.
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Davenport, Donald K.: *See—*
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Davenport, John M.; and Hansler, Richard L., to General Electric Company. Optical coupling assembly for use with a high brightness light source. 5,367,590, Cl. 385-39.000.
Davis, Cecil J.: *See—*
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Turteltaub, Kenneth W.; Vogel, John S.; Felton, James S.; Gledhill, Barton L.; and Davis, Jay C., 5,366,721, Cl. 424-1.110.
Davis, Phillip J. Proximity intraurethral valve using permanent magnet check. 5,366,506, Cl. 623-12.000.
Davison, Mark R.: *See—*
Outlaw, Ronald A.; and Davison, Mark R., 5,367,161, Cl. 250-251.000.
Dawes, Nancy C.: *See—*
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,366,748, Cl. 426-549.000.
Day International, Inc.: *See—*
Pinkston, Melvin D.; and Edwards, Stephen B., 5,366,799, Cl. 428-250.000.
Day, Paul R.: *See—*
Berk, Jody E.; Coon, James R.; Day, Paul R.; Heyrman, Peter J.; and Johnson, David L., 5,367,674, Cl. 395-600.000.
DCD, Ltd.: *See—*
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Deane, Alastair R.; Kulczycki, Stanley J.; and Mastrangelo, Vincent, to Budd Company, The. Live spindle hub with inboard bearing retention. 5,366,300, Cl. 384-585.000.
Dearborn, Arthur G., IV. Vehicle bed load container and stabilizer. 5,366,124, Cl. 224-42.46R.
Dearman, Kenneth W. J., to Smiths Industries Public Limited Company. Connector assemblies. 5,366,383, Cl. 439-321.000.
deBerardinis, Nicholas W., to Instant Terminalling and Ship Conversion, Inc. Transportable liquid products container. 5,365,980, Cl. 141-1.000.
Debilly, Marc: *See—*
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Deblois, Raymond L.; Cutts, David G.; and Marchese, Anthony J. Thermostatic compressor suction inlet duct valve. 5,366,352, Cl. 417-292.000.
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Dechene, Ronald L.; Smith, Thomas B.; Marino, Scott A.; Tache, Ronald J.; and Roy, Ajoy K., to Auburn International, Inc. Apparatus to obtain flow rates (melt index) in plastics via fixed frequency, pulsed NMR. 5,367,260, Cl. 324-307.000.
DeCoux, Steven P., to Rockwell International Corporation. Laminar flow control apparatus for aerodynamic surfaces. 5,366,177, Cl. 244-201.000.
Deere & Company: *See—*
Friesen, Henry; and Friesen, Karl H., 5,366,336, Cl. 414-476.000.
Payne, David A., 5,366,024, Cl. 172-318.000.
Sanderson, Leon F.; McConnell, Kenneth C.; Hintzsche, John L.; and Davenport, Donald K., 5,365,726, Cl. 56-41.000.
Deffenbaugh, Lynn B.: *See—*
Rudan, Brenda J.; Yang, Marguerite L.; Miller, Anthony M.; Lombardo, Stephen P.; Moroz, Russell K.; Deffenbaugh, Lynn B.; Mehnert, David W.; Peluso, John; and Krishnamurthy, R. G., 5,366,754, Cl. 426-633.000.
Degady, Marc: *See—*
Shaw, James J.; Wong, Lucy L.; Graff, Allan H.; Olaya, Hector; Barcelon, Shirley A.; Degady, Marc; and Brine, Charles J., 5,366,740, Cl. 426-3.000.
Deggendorfer Werft und Eisenbau GmbH: *See—*
Kramer, Rudolf; Gutlhuber, Friedrich; and Brandl, Ludwig, 5,366,188, Cl. 248-68.100.
DeGroot, Hans F., to SanPoint AB. An enveloped coiled tampon. 5,366,450, Cl. 604-366.000.
Degussa AG: *See—*
Deller, Klaus; Despeyroux, Bertrand; and Krause, Helmfried, 5,366,938, Cl. 501-134.000.
Degussa Aktiengesellschaft: *See—*
von Wedel, Wegido; Barenschee, Ernst-Robert; and Eickhoff, Hubertus, 5,366,711, Cl. 423-239.100.
Deiss, Werner, to ITT Corporation. Connector using standard housing and modified socket contact. 5,366,391, Cl. 439-740.000.
Dekeyser, Mark A.; and McDonald, Paul T., to Uniroyal Chemical Company, Inc.; and Uniroyal Chemical LTD/LTEE. Insecticidal phenylhydrazine derivatives. 5,367,093, Cl. 560-27.000.
Dekker, Don L.; and Hasbrouck, Robert R., to Koch Materials Company. Compacting apparatus. 5,366,367, Cl. 425-194.000.
Delagebeaudeuf, Daniel: *See—*
Perer, Ernesto; and Delagebeaudeuf, Daniel, 5,367,183, Cl. 257-194.000.
Delco Electronics Corp.: *See—*
Anderson, Fred J., 5,367,537, Cl. 375-65.000.
Berlin, Carl W., 5,366,813, Cl. 428-546.000.
Honnigford, Edward H., 5,367,249, Cl. 323-313.000.
Murphy, Morgan D., 5,366,332, Cl. 411-509.000.
Summe, Richard A.; Rusch, Randy A.; Schnabel, Douglas R.; and Parrish, Jack D., 5,366,916, Cl. 437-44.000.
de Leon, Luis: *See—*
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Deller, Klaus; Despeyroux, Bertrand; and Krause, Helmfried, to Degussa AG. Shaped articles based on pyrogenically produced titanium dioxide. 5,366,938, Cl. 501-134.000.
Delp, Gary S.: *See—*
Chang, Paul; Delp, Gary S.; Meleis, Hanafy E.; Montalvo, Rafael M.; Seidman, David I.; Tantawy, Ahmed N.; and Zumbo, Dominick A., 5,367,643, Cl. 395-325.000.
DeLuca, Hector F.; and Smith, Connie M., to Wisconsin Alumni Research Foundation. Cosmetic compositions containing secosterol compounds. 5,366,731, Cl. 424-401.000.
Delustro, Frank A.: *See—*
Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,366,498, Cl. 623-11.000.
Demartini, John F., to Westinghouse Electric Corporation. Method of attaching a monitor target to a shrouded blade. 5,365,663, Cl. 29-889.210.
Demong, Maurice, to Prairie Machine & Parts Mfg. Ltd. Steering system for plurality of vehicles. 5,366,059, Cl. 198-303.000.
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Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,366,728, Cl. 424-191.100.
Deng, Ming-Cheng: *See—*
Chin, Tsung-Shune; Hsu, Sung-Lin; and Deng, Ming-Cheng, 5,366,761, Cl. 427-127.000.
Dennen, Michael W.: *See—*
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Denton, Smaragda: *See—*
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Dentsply Research & Development Corp.: *See—*
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DEO Corporation: *See—*
MacKeen, Donald L., 5,366,739, Cl. 424-602.000.
de Olano, Luis A. R. Ornamental electrical molding. 5,367,122, Cl. 174-48.000.
de Peuter, Frans L. J.: *See—*
Westhof, Luc B. J.; Turhan, Ibrahim; Tessier, George G.; and de Peuter, Frans L. J., 5,366,600, Cl. 204-147.000.
Deppe, David W.: *See—*
Church, Kynan L.; Deppe, David W.; Madden, Richard L.; and Srinivasan, Nandakumar, 5,366,415, Cl. 474-110.000.
Derby, William M., Jr.: *See—*
Moss, Larry E.; Formanek, Randolph P.; Hogg, Johnny B., deceased; and Derby, William M., Jr., 5,367,138, Cl. 219-109.000.
Dereu, Norbert; Hendel, Wolfram; and Labaudiniere, Richard, to Rhone-Poulenc Rorer S.A. Substituted bicyclic bis-aryl compounds exhibiting selective leukotriene B_4 antagonist activity, their prepara-

tion and use in pharmaceutical compositions. 5,366,982, Cl. 514-340.000.
DeRosa, Thomas F.; Russo, Joseph M.; Sung, Rodney L.; and Kaufman, Benjamin J., to Texaco Inc. Motor fuel additive and fuel composition. 5,366,518, Cl. 44-331.000.
Desai, Jawahar M. Catheter for mapping and ablation and method therefor. 5,365,926, Cl. 128-642.000.
DeSaulniers, David E.: *See*—
Milaniak, Michael S.; Orzel, Dennis J.; Lamm, Foster P.; and DeSaulniers, David E., 5,366,765, Cl. 427-229.000.
Desgroux, Michel; Pignon, Guy; and Weber, Denis, to Etablissements DELSOL. Hair clip mount. 5,365,955, Cl. 132-279.000.
Design Systems, Inc.: *See*—
Rudy, Norman A., 5,365,816, Cl. 83-177.000.
Deslandres, Antoine, to Valeo Vision. Headlamp with improved ventilating means, especially for a motor vehicle. 5,367,438, Cl. 362-61.000.
Despeyroux, Bertrand: *See*—
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Despres, Dominique; and Grabis, Thomas, to Valeo. Clutch friction wheel for an industrial vehicle. 5,366,057, Cl. 192-106.200.
Dettmeier, Udo: *See*—
Leupold, Ernst I.; Dettmeier, Udo; Gimpel, Gustav; and Reimann, Walter, 5,367,104, Cl. 570-211.000.
Deutsche Aerospace AG: *See*—
Manhalter, Anton, 5,366,179, Cl. 244-3.190.
Sperber, Franz; Voit, Arno; and Stich, Walter, 5,365,828, Cl. 91-41.000.
Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V.: *See*—
Peschka, Walter; and Schneider, Gottfried, 5,365,981, Cl. 141-7.000.
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Schilz, Jurgen; and Kurten, Marius, 5,366,166, Cl. 241-30.000.
Deutsche Thomson-Brandt GmbH: *See*—
Rothermel, Albrecht; Schweer, Rainer; Stolte, John; and Gillies, David, 5,367,338, Cl. 348-538.000.
Scholz, Werner, 5,367,535, Cl. 375-17.000.
Devenish, William R., III; Vercruyssen, Gustav J.; and Dirriwachter, Antonius B., to NEC America, Inc. Interface chassis for fiber optic transport system. 5,367,598, Cl. 385-135.000.
DeVoe, Alan D.; and DeVoe, Daniel F., to Presidio Components, Inc. Monolithic multiple capacitor. 5,367,430, Cl. 361-328.000.
DeVoe, Daniel F.: *See*—
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Deweerdt, Kevin R., to Chrysler Corporation. Fluid flow check valve for fuel system. 5,365,906, Cl. 123-467.000.
Dewolf, Jan, to U.S. Philips Corporation. Device for reproducing a piece of music from a magnetic record carrier (favorite tape position). 5,367,413, Cl. 360-72.200.
Dexsil Corporation: *See*—
Hagstrom, Richard A.; Finch, Stephen R.; and Lynn, Timothy D., 5,366,898, Cl. 436-60.000.
d'Herripon, Bastiaan A.: *See*—
Roovers, Wilhelmus C. W. M.; Choi, Chi C.; and d'Herripon, Bastiaan A., 5,366,416, Cl. 474-18.000.
Diafoil Hoechst Company, Limited: *See*—
Utsumi, Shigeo; Inagaki, Masashi; and Watanuki, Yuko, 5,366,783, Cl. 428-141.000.
Diaz, Jacqueline H. Indented, invertable food mold with raised center. 5,366,201, Cl. 249-119.000.
DiCarlo, Paul: *See*—
LeMarie, Norman J., III; DiFrancesco, Francis J.; DiCarlo, Paul; Naugler, Peter D.; and Sikora, George J., 5,366,477, Cl. 606-208.000.
Dickinson, James E., Jr.: *See*—
Aitken, Bruce G.; Bookbinder, Dana C.; Dickinson, James E., Jr.; and Wedding, Brent M., 5,367,012, Cl. 523-451.000.
Dickinson, Stuart C., to United States of America, Navy. Vibration isolation mount with locking means. 5,366,198, Cl. 248-550.000.
Diebels, Henricus F. C.: *See*—
Colditz, Johannes K. E.; Diebels, Henricus F. C.; Poorter, Tiemen; Simons, August L. H.; and Van Der Velden, Johnny W., 5,367,155, Cl. 250-214.0VT.
Dieken, Alan P.; and Drake, Gerald E., to Minnesota Mining and Manufacturing Company. Electronic stethoscope having battery carriage. 5,367,575, Cl. 381-67.000.
Diels, Jean-Claude M.; and Lai, Ming, to Honeywell Inc. Motion induced elimination of dead band in a short pulse laser gyro. 5,367,528, Cl. 372-18.000.
Diemert, Kurt, to Fix GmbH. Strip baggage tag. 5,366,249, Cl. 283-80.000.
Diep, Minh-Tam: *See*—
Barroso, Lucas; Farine, Pierre-Andre ; and Diep, Minh-Tam, 5,367,502, Cl. 368-10.000.
Dieter, William M.: *See*—
Johnston, G. Gilbert; McAusland, Robert R.; and Dieter, William M., 5,366,271, Cl. 297-250.100.
Dietrich, Markus; and Aupperle, Walter, to Mercedes-Benz AG. Cylinder head for an internal combustion engine with fuel injection. 5,365,907, Cl. 123-470.000.
DiFrancesco, Francis J.: *See*—
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Brett, Bevin R., 5,367,683, Cl. 395-700.000.
Croll, John, 5,367,688, Cl. 395-700.000.
Freeman, Mike; Morgan, Stuart K.; and Romm, Mike, 5,365,658, Cl. 29-861.000.
Freeman, Mike; Morgan, Stuart K.; and Romm, Mike, 5,366,388, Cl. 439-540.000.
Pavelchek, Edward K.; Freeman, Peter W.; Bohland, John F.; Jones, Susan K.; and Dudley, Bruce W., 5,366,852, Cl. 430-326.000.
Quimby, John, 5,367,573, Cl. 380-25.000.
Sites, Richard L.; and Witek, Richard T., 5,367,705, Cl. 395-800.000.
DiIorio, Mark S.; Yoshizumi, Shozo; and Yang, Kai-Yueh, to Biomagnetic Technologies, Inc. High-TC microbridge superconductor device utilizing stepped edge-to-edge SNS junction. 5,367,178, Cl. 505-190.000.
Dilling, Scott; Keeler, Michael J.; Ramsey, John; and Ross, Joseph M., to Boler Company, The. Axle suspension systems. 5,366,237, Cl. 280-711.000.
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Chessman, H. Ross; and Dion, F. Eugene, 5,367,418, Cl. 360-99.120.
Dipaolo, William J.; Tinley, David M.; Thompson, Timothy F.; and Parsons, Carol A., to Eaton Corporation. Electronic data entry system employing an expert system to facilitate generation of electronic data forms with complex interrelationships between fields and subforms. 5,367,619, Cl. 395-149.000.
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Abel, Jay A.; VanHorn, David B.; and Getz, Jalem M., 5,367,581, Cl. 382-64.000.
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Devenish, William R., III; Vercruyssen, Gustav J.; and Dirriwachter, Antonius B., 5,367,598, Cl. 385-135.000.
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Gutgsell, David R., 5,365,861, Cl. 108-132.000.
DiTucci, Joseph. Control system for sensorless brushless DC motor. 5,367,234, Cl. 318-254.000.
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Dr. Alexander Landolt: *See*—
Muller, Peter, 5,366,343, Cl. 416-133.000.
Dr. Ing. h.c.F. Porsche AG: *See*—
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Dieken, Alan P.; and Drake, Gerald E., 5,367,575, Cl. 381-67.000.
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Keefer, Larry K.; Dunams, Tambra M.; and Saavedra, Joseph E., 5,366,997, Cl. 514-611.000.
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Hill, Charles C.; and Hill, Theodore B., 5,366,541, Cl. 96-124.000.
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Cote, Anthony, 5,365,975, Cl. 137-875.000.
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McMillan, Norm J. V., 5,365,946, Cl. 128-861.000.
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Bergot, B. John; Chakerian, Vergine; Connell, Charles R.; Eadie, J. Scott; Fung, Steven; Hershey, N. Davis; Lee, Linda G.; Menchen, Steven M.; and Woo, Sam L., 5,366,860, Cl. 435-6.000.
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Forest, Paul H., 5,367,362, Cl. 355-208.000.
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Polachak, Nicholas G.; and Brasch, Robert J., 5,366,213, Cl. 271-3.000.
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Church, Kynan L.; Deppe, David W.; Madden, Richard L.; and Srinivasan, Nandakumar, 5,366,415, Cl. 474-110.000.
Crooks, William R., 5,367,281, Cl. 337-417.000.
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Eccher, Joseph A., to Hewlett-Packard Company. Fluoresent lamp current level controller. 5,367,223, Cl. 315-97.000.

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Holland, Alexander; and Vavaroutsos, Peter G., 5,367,669, Cl. 395-575.000.

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Nelson, Thomas D.; and Anderson, Douglas G., 5,365,690, Cl. 43-113.000.

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Smith, James W.; Ellenor, David T. R.; and Harbinson, John N., 5,366,698, Cl. 422-168.000.

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Emerick, Matthew W. Eraser carrier. 5,365,631, Cl. 15-105.000.

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Humpolik, Bohumil; and Bayer, Jurgen, 5,366,700, Cl. 422-180.000.

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Abele, Karl-Heinz; van den Boom, Heinz; Ender, Alfred; Hees, Eckart; and Meichsner, Walter, 5,366,539, Cl. 75-532.000.

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Matsushita, Tsuyoshi; Furuya, Eiichi; Kikuchi, Narumi; Endo, Katsuya; and Wada, Yutaka, 5,367,239, Cl. 318-685.000.

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Yamada, Masato; Takenaka, Takao; and Endo, Masahisa, 5,366,552, Cl. 118-416.000.

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Kunishi, Tatsuo; Watanabe, Kouichi; Endo, Masanori; and Higuchi, Masato, 5,367,431, Cl. 361-502.000.

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Seike, Takeo; and Endo, Satoshi, 5,367,591, Cl. 385-51.000.

Endo, Takeshi: *See*—
Kanazawa, Akihiko; Endo, Takeshi; and Ikeda, Tomiki, 5,366,727, Cl. 424-78.350.

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Reimann, Peter; Breitenstein, Heinz; and Messmer, Stephan, 5,366,000, Cl. 164-463.000.

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Violante, Vittorio; Bettinali, Livio; Bimbi, Luigi; and Drioli, Enrico, 5,366,712, Cl. 423-248.000.

Engel, Wolfhard: *See*—
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,366,972, Cl. 514-220.000.

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Lattin, Danny L.; Breen, Philip J.; Compadre, Cesar M.; Fifer, E. Kim; Slavik, Michael F.; Salari, Hamid; and Engler, Phillip V., 5,366,983, Cl. 514-358.000.

Eni Chem Synthesis S.p.A.: *See*—
Bettarini, Franco; Capuzzi, Luigi; La Porta, Piero; Massimini, Sergio; Reggiori, Franca; and Meazza, Giovanni, 5,366,991, Cl. 514-406.000.

Enichem Agricoltura S.p.A.: *See*—
Gazzoni, Adamo, 5,366,155, Cl. 239-66.000.

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Holland, John F.; and Enke, Christie G., 5,367,162, Cl. 250-287.000.

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Nagano, Eiki; Takemura, Susumu; Enomoto, Masayuki; Sakaki, Masaharu; and Kizawa, Satoru, 5,366,955, Cl. 504-225.000.

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Shaw, Lester W., 5,365,851, Cl. 102-275.600.

Ensuiko Sugar Refining Co., Ltd.: *See*—
Kitahata, Sumio; Hara, Koji; Fujita, Koki; Kuwahara, Nobuhiro; and Nakano, Hirofumi, 5,366,879, Cl. 435-101.000.

Envirocon International Corporation: *See*—
Hird, Robert F.; and Cosgrove, Edward F., 5,366,872, Cl. 435-31.000.

Environ Products, Inc.: *See*—
Brancher, Rodney E., 5,366,318, Cl. 405-36.000.

Environmental Plasma Arc Technology, Inc.: *See*—
Taylor, Edward O.; and Taylor, Carole A., 5,366,701, Cl. 422-186.040.

Enviropaver Inc.: *See*—
Richards, Denis C., 5,367,007, Cl. 524-59.000.

Enzymol International, Inc.: *See*—
Butler, John M.; and Brandon, Richard L., 5,367,043, Cl. 528-193.000.

Epitope, Inc.: *See*—
Bestwick, Richard K.; Mokkapati, Vijaya K.; and Ferro, Adolph J., 5,366,954, Cl. 504-114.000.

Epoch Systems, Inc.: *See*—
Webber, Neil F.; Israel, Robert K.; Kenley, Gregory; Taylor, Tracy M.; and Foster, Antony W., 5,367,698, Cl. 395-800.000.

Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., to Syntex (U.S.A.) Inc. N-[ω,(ω−1)-dialkyloxy]- and N-[ω,(ω−1)-dialkenyloxy]-alk-1-yl-N,N,N,-tetrasubstituted ammonium lipids and uses therefor. 5,366,737, Cl. 424-450.000.

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Erdman, Frank H., to Frederick Erdman Association. Method and apparatus for non-invasive cardiovascular diagnosis. 5,365,924, Cl. 128-633.000.

Erickson, Gary L., to Cannon-Muskegon Corporation. Single crystal nickel-based superalloy. 5,366,695, Cl. 420-448.000.

Erickson, Paul R., to LaserMaster Corporation. Automatic ink refill system for disposable ink jet cartridges. 5,367,328, Cl. 347-7.000.

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Albrigo, Julian; Ricker, Edward D.; and Colarusso, Louis J., 5,366,672, Cl. 264-35.000.

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Hulman, Fredericus W. M., 5,367,242, Cl. 320-2.000.

Eriksson, Peter. Articulated load carrier for vehicles. 5,366,337, Cl. 414-550.000.

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Ernst, James J.: *See*—
Wenrich, William R.; and Ernst, James J., 5,367,603, Cl. 392-394.000.

Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Laminate LC filter having combined condenser and coil functions. 5,367,275, Cl. 333-184.000.

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Blumenkanz, Mark S.; and Wang, Carl, 5,366,474, Cl. 606-202.000.

Escofier Technologie SA: *See*—
Cretin, Michel; and Marcon, Charles, 5,365,763, Cl. 72-98.000.

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McPherson, Terry R.; Spirkowyc, Paul A.; and Womeldorff, Daniel W., 5,366,257, Cl. 285-174.000.

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Desgroux, Michel; Pignon, Guy; and Weber, Denis, 5,365,955, Cl. 132-279.000.

Etchegoyhen, Didier; and Henneuse, Henry, to Elf Aquitaine Production. Device for measuring the displacement of a swivel of a drilling mast. 5,365,674, Cl. 33-719.000.

Etheridge, Colin J., to Solar Turbines Incorporated. Low emission combustion nozzle for use with a gas turbine engine. 5,365,738, Cl. 60-742.000.

Ethicon, Inc.: *See*—
Brinkerhoff, Ronald J.; Candadai, Ramesh S.; Cartmill, John A.; and Stubbs, Jack B., 5,366,478, Cl. 660-213.000.

Eubank Frame, Inc.: *See*—
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Eubank, Joseph P., Jr. deceased, to Eubank Frame, Inc. Picture frame and picture hanger. 5,365,682, Cl. 40-152.100.

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Hoffa, Jack L.; and Talley, Lloyd A., 5,366,131, Cl. 226-118.000.

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European Transonic Windtunnel GmbH: *See*—
Bouis, Xavier; Tizard, John; Price, Ian A.; Wigley, David; and Schimanski, Dieter, 5,365,782, Cl. 73-147.000.

Evans, Steven L.: *See*—
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Even, Stephane, to Telemecanique. Circuit for protecting an electronic switch against short circuits. 5,367,424, Cl. 361-18.000.

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Pacholok, David, 5,367,224, Cl. 315-219.000.
Pacholok, David; and Doss, David, deceased, 5,367,225, Cl. 315-219.000.

Eversloh, Theo L.: *See*—
Schmidt, Hans-Jurgen; Lindner, Klaus; and Eversloh, Theo L., 5,367,133, Cl. 200-5.00A.

Exergetics Systems, Inc.: *See*—
Lang, Fred D., 5,367,470, Cl. 364-498.000.

Exxon Chemical Patents Inc.: *See*—
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Eyal, Jacob: *See*—
Tuszynski, George P.; Eyal, Jacob; and Hamilton, Bruce K., 5,367,059, Cl. 530-395.000.

Eyetech Corporation: *See*—
Pan, Shaugan, 5,367,315, Cl. 345-156.000.

Ezel, Inc.: *See*—
Kumagai, Ryohei, 5,367,580, Cl. 382-46.000.

Fabre, Pierre, to Societe Nationale Industrielle et Aerospatiale. Method of signalling insufficient maneuverability of an aircraft and device implementing such a method. 5,367,460, Cl. 364-424.060.
Fabri-Kal Corporation: *See—*
Armstrong, David R., 5,366,104, Cl. 220-339.000.
Fagan, John E.: *See—*
Lair, James H.; and Fagan, John E., 5,366,553, Cl. 118-682.000.
Fages, Jacques; Rigal, Jacques; and Mulard, Daniel, to Lipha, Lyonnaise Industrielle. Fertilizers containing microorganisms and their production processes. 5,366,532, Cl. 71-6.000.
Faigle, Ernst M.; Semchena, John H.; Thompson, Richard J.; and Steffens, Charles E., Jr., to TRW Vehicle Safety Systems Inc. Apparatus for controlling inflation of an air bag. 5,366,242, Cl. 280-736.000.
Fairhurst, John R.: *See—*
Crowley, H. W.; Clifford, John W.; Connolly, Thomas; Fairhurst, John R.; and Taylor, Bruce, 5,366,212, Cl. 270-95.000.
Fallon, Joseph R.: *See—*
Beaudin, Raymond A.; Fallon, Joseph R.; and Halberg, Leslie I., 5,367,318, Cl. 345-201.000.
Fangel, Jayne G.: *See—*
Dahl, Roger W.; Fangel, Jayne G.; and Swanson, David K., 5,366,496, Cl. 607-132.000.
Fanning, William A.: *See—*
Kelly, Michael J.; Fanning, William A.; and Henneberger, Stacy A., 5,367,414, Cl. 360-77.120.
Fanuc Ltd.: *See—*
Sakamoto, Keiji; and Iwashita, Yasusuke, 5,367,238, Cl. 318-630.000.
Farb, David H., to Boston University, Trustees of. Modulation of receptor-mediated ion transport. 5,366,968, Cl. 514-178.000.
Farber, Bruce, to North Shore University Hospital Research Corporation. Method of reducing medical device related infections. 5,366,505, Cl. 623-11.000.
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Barroso, Lucas; Farine, Pierre-Andre ; and Diep, Minh-Tam, 5,367,502, Cl. 368-10.000.
Farnlund, Jonny; and Sperle, Peter, to Saab-Scania AB. Cylinder head for an internal combustion engine. 5,365,900, Cl. 123-193.500.
Farnworth, Warren M.: *See—*
Wood, Alan G.; Hembree, David R.; and Farnworth, Warren M., 5,367,253, Cl. 324-158.100.
Farrand, Scott C.: *See—*
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.
Farvacque, Olivier: *See—*
Corsan, Philippe; Jolly, Patrick; and Farvacque, Olivier, 5,367,408, Cl. 359-894.000.
Faure, Louis H.; and Spoor, Terence W., to International Business Machines Corporation. Test probe assembly using buckling wire probes within tubes having opposed overlapping slots. 5,367,254, Cl. 324-761.000.
Favaro, Daniele, to Zanussi Elettrodomestici S.P.A. Built-in dishwasher with hidden control panel. 5,365,959, Cl. 134-113.000.
Fawn Engineering Co.: *See—*
Borgen, Arden L.; and Rockwell, Damon E., 5,366,285, Cl. 312-404.000.
Feathers, Charles H., III: *See—*
Burgos, Mel-Angeli M.; Feathers, Charles H., III; and Schmoegner, John C., 5,366,693, Cl. 422-26.000.
Federal-Mogul Corporation: *See—*
Stone, James L., 5,366,141, Cl. 229-120.030.
Whitney, Warren J., Jr., 5,365,664, Cl. 29-898.120.
Fehn, Manfred: *See—*
Muller, Volker; Fehn, Manfred; Sommer, Hans; Grunwald, Hans-Jurgen; and Holtge, Ulf, 5,366,569, Cl. 148-525.000.
Feigenbaum, Barry A.; and Miro, Felix, to International Business Machines Corp. System for accessing extended object attribute (EA) data through file name or EA handle linkages in path tables. 5,367,671, Cl. 395-600.000.
Felder, Robin A.: *See—*
Margrey, Keith S.; Felder, Robin A.; Boyd, James C.; Holman, J. William; Roberts, Jonathan H.; Savory, John; and Martinez, Antonia, 5,366,896, Cl. 436-48.000.
Feldkamp, Timothy M., to Ford Motor Company. Misfire detection in internal combustion engine with overlapping power strokes. 5,365,780, Cl. 73-117.300.
Felgner, Philip L.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,366,737, Cl 424-450.000.
Felton, James S.: *See—*
Turteltaub, Kenneth W.; Vogel, John S.; Felton, James S.; Gledhill, Barton L.; and Davis, Jay C., 5,366,721, Cl. 424-1.110.
Fenn, Gordon W., to Frontier, Inc. Ultra-high efficiency on-demand water heater and heat exchanger. 5,365,887, Cl. 122-16.000.
Ferenczy, Laszlo, to Eta SA Fabriques d' Ebauches. Timepiece with improved display advancing and resetting mechanisms. 5,367,504, Cl. 368-15.000.
Ferguson, Alan; and Lassiter, Perry B., to American Premier, Inc. Ceramic fiber product and structure for high temperature severe application environments and method of making same. 5,366,942, Cl. 501-95.000.
Ferguson, Robert M.: *See—*
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Fernandes, Alcan V.: *See—*
Gabzdyl, Jacek T.; and Fernandes, Alcan V., 5,367,142, Cl. 219-121.670.
Ferrario, Bruno: *See—*
Boffito, Claudio; and Ferrario, Bruno, 5,365,742, Cl. 62-46.200.
Ferro, Adolph J.: *See—*
Bestwick, Richard K.; Mokkapati, Vijaya K.; and Ferro, Adolph J., 5,366,954, Cl. 504-114.000.
Ferro Corporation: *See—*
Quadir, Tariq; Jones, James D.; and Chakraverty, Jyoti P., 5,366,669, Cl. 264-6.000.
Ferry, Jean-Claude, to Elf Aquitaine Production. Method for verifying the correct operation of a safety valve of an oil well. 5,365,769, Cl. 73-4.00R.
Fetterly, Daniel R. Compactable thermoelectric cooler. 5,365,739, Cl. 62-3.620.
Feughelman, Max, to Fibrous Keratin Pty Limited. Hair setting apparatus. 5,365,953, Cl. 132-231.000.
Fey, Kenneth C., to Dow Corning Corporation. Primer composition, coating method and coated silicone substrates. 5,366,807, Cl. 428-425.500.
Fibrous Keratin Pty Limited: *See—*
Feughelman, Max, 5,365,953, Cl. 132-231.000.
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Aymerich, Jose ; and Prat, Jesus, 5,366,265, Cl. 296-97.120.
Fideler, Brian L.: *See—*
Holleman, Timothy W.; Ulrich, Clare P.; and Fideler, Brian L., 5,366,494, Cl. 607-119.000.
Field Container Co. L.P.: *See—*
Hough, Graham, 5,366,142, Cl. 229-133.000.
Fieler, Eleanor R.; Jennings, Alfred R., Jr.; and Paul, James M., to Mobil Oil Corporation. Use of variable density carrier fluids to improve the efficiency of scale dissolution. 5,366,016, Cl. 166-312.000.
Fifer, E. Kim: *See—*
Lattin, Danny L.; Breen, Philip J.; Compadre, Cesar M.; Fifer, E. Kim; Slavik, Michael F.; Salari, Hamid; and Engler, Phillip V., 5,366,983, Cl. 514-358.000.
Figueroa, Hector D. Dual telephone. 5,367,570, Cl. 379-434.000.
Finch, Stephen R.: *See—*
Hagstrom, Richard A.; Finch, Stephen R.; and Lynn, Timothy D., 5,366,898, Cl. 436-60.000.
Findling, Karen L.: *See—*
McClune, Gregory J.; and Findling, Karen L., 5,366,864, Cl. 435-7.500.
Fink, Arthur C., Jr.; and Mitchell, Thomas O., to Husky Corporation. Break-away concentric hose coupling. 5,365,973, Cl. 137-614.040.
Finkelstein, Sheldon J.: *See—*
Cheng, Josephine M.-K.; Finkelstein, Sheldon J.; Haderle, Donald J.; Pirahesh, Mir H.; and Wang, Yun, 5,367,675, Cl. 395-600.000.
Finn, Charles A.: *See—*
Rustick, Joseph M.; and Finn, Charles A., 5,365,669, Cl. 33-234.000.
Finney, William. Universal mounting bracket for engineering surveying instruments. 5,366,194, Cl. 248-218.400.
First City Texas-Dallas: *See—*
Adler, B. Michael; Hird, John A.; and Owen, Lindsey D., 5,367,561, Cl. 379-93.000.
Firstov, Sergey A.: *See—*
Mazur, Vladislav I.; Taran, Yuri N.; Kapustnikova, Svetlana V.; Trefilov, Viktor I.; Firstov, Sergey A.; and Kulak, Leonid D., 5,366,570, Cl. 148-669.000.
FirstPerson, Inc.: *See—*
Gosling, James, 5,367,685, Cl. 395-700.000.
Fischbein, Milton; and Shirley, Arthur R., Jr., to Sherritt Inc. Granular potassium sulfate preparation and process for production thereof. 5,366,534, Cl. 71-63.000.
Fischer, Kenneth J. Vehicle splashguard. 5,366,247, Cl. 280-851.000.
Fischer, Wolfgang; Guentherberg, Norbert; and Niessner, Norbert, to BASF Aktiengesellschaft. Thermoplastic molding material. 5,367,029, Cl. 525-301.000.
Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., to International Business Machines Corporation. Method for automated complex multilevel softward installation in a data processing system. 5,367,686, Cl. 395-700.000.
Fisher, Gary B.: *See—*
Singaram, Bakthan; Fisher, Gary B.; Goralski, Christian T.; and Nicholson, Lawrence W., 5,367,073, Cl. 544-170.000.
Fisher & Paykel Limited: *See—*
Murray, Charles G., 5,367,604, Cl. 392-394.000.
Fisher, Richard J.: *See—*
Alexander, Samuel E.; Drehobl, Stephen V.; Fisher, Richard J.; French, Leonard F.; and Hewitt, Kent D., 5,367,484, Cl. 365-185.000
Fitts, James R., Jr.; Musselwhite, William D.; Varona, Eugenio G.; and Wright, Robert D. Anisotropic nonwoven fibrous web. 5,366,793, Cl. 428-198.000.
Fitzgerald, Clifford T.: *See—*
Mayer, Ralph D.; Picard, Len L.; and Fitzgerald, Clifford T., 5,367,439, Cl. 362-32.000.
Fix GmbH: *See—*
Diemert, Kurt, 5,366,249, Cl. 283-80.000.

Flam, Eric: *See—*
Ingram, Aaron N.; Bruder, Mark H.; and Flam, Eric, 5,366,491, Cl. 607-108.000.
Flanigen, Edith M.: *See—*
Skeels, Gary W.; Chapman, Diane M.; and Flanigen, Edith M., 5,366,616, Cl. 208-111.000.
Flashes Publishers, Inc.: *See—*
Morgan, John P.; Hendricks, Jack E.; and Post, Kurt, 5,366,147, Cl. 232-1.00C.
Fleischmann, Horst: *See—*
Roericht, Hans; Fleischmann, Horst; Biggel, Franz; and Schmitz, Burkhard, 5,366,274, Cl. 297-321.000.
Fleming, Pamela H.: *See—*
Lauf, Robert J.; Hoffheins, Barbara S.; and Fleming, Pamela H., 5,367,283, Cl. 338-34.000.
Flick, Conrad. Disposable, elastomeric glove. 5,365,608, Cl. 2-168.000.
Florida Scientific Laboratories Inc.: *See—*
Tarancon, Gregorio, 5,366,606, Cl. 204-257.000.
Floyd, F. Louis; and Craun, Gary P., to Glidden Company, The. Odor free, air dry, decorative latex paints. 5,367,018, Cl. 524-773.000.
FLS MILJO A/S: *See—*
Bojsen, Erik M., 5,366,540, Cl. 96-33.000.
Flurry, Gregory A.; and Henson, Larry W., to International Business Machines Corporation. Rendering context manager for display adapters supporting multiple domains. 5,367,680, Cl. 395-650.000.
Flynn, Gary A.; and Shum, Patrick W., to Merrell Dow Pharmaceuticals Inc. Mercaptoacetylamido pyridazo [1,2]pyridazine, pyrazolo[1,2]pyridazine pyrazolo[1,2]pyridazine, pyridazol[1,2-a][1,2]diazepine and pyrazolol[1,2-a][1,2]diazepine. 5,366,973, Cl. 514-221.000.
FMC Corporation: *See—*
Tuason, Domingo C., Jr.; and McGinley, Emanuel J., 5,366,742, Cl. 426-96.000.
Focke & Co (GmbH & Co.): *See—*
Focke, Heinz, 5,365,721, Cl. 53-463.000.
Focke, Heinz, to Focke & Co (GmbH & Co.). Process for the packaging of articles of differing size. 5,365,721, Cl. 53-463.000.
Fockens, Tallienco W., to N.V. Nederlandsche Apparatenfabriek Nedap. Shoplifting detection system with partly screened antennas. 5,367,291, Cl. 340-572.000.
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Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; and Kawashima, Shigeo, 5,366,933, Cl. 437-215.000.
Foncerrada, Luis; Sick, August J.; and Payne, Jewel M., to Mycogen Corporation. Gene encoding a coleopteran-active toxin. 5,366,892, Cl. 435-252.330.
Fong, Edison; Denton, Smaragda; and Nguyen, Nghiem, to National Semiconductor Corporation. Serial data communication interface architecture. 5,367,300, Cl. 341-101.000.
Foosnaes, Trygve: *See—*
Bergli, Knut; Foosnaes, Trygve; and Naterstad, Tormod, 5,366,901, Cl. 436-133.000.
Ford, Donald R.: *See—*
O'Brien, Patrick J.; Friedman, Herbert; Ford, Donald R.; and Durham, Larry, 5,366,074, Cl. 206-312.000.
Ford, Jerry C., to ITT Rayonier Inc. Digester sampling device. 5,366,592, Cl. 162-49.000.
Ford, Michael E., to Air Products and Chemicals, Inc. Poly(vinylammonium formate) and process for making the same. 5,367,035, Cl. 525-378.000.
Ford Motor Company: *See—*
Feldkamp, Timothy M., 5,365,780, Cl. 73-117.300.
Helgesen, Gary D.; Rentschler, Robert G.; and Heater, Thomas J., 5,365,997, Cl. 164-103.000.
King, Edward T.; and Brandenburg, Larry R., 5,366,151, Cl. 237-2.00A.
Meitzler, Allen H.; and Sickafus, Edward N., 5,365,770, Cl. 73-24.060.
Warner, Thomas E., 5,365,995, Cl. 164-12.000.
Weber, David C.; and Kotwicki, Allan J., 5,365,735, Cl. 60-323.000.
Ford Motor Compnay: *See—*
Weyeneth, Gregory A., 5,366,186, Cl. 248-27.300.
Ford New Holland, Inc.: *See—*
Campbell, Willis R., 5,365,836, Cl. 100-5.000.
Foresman, James D., to Andritz Sprout-Bauer, Inc. Annular gap extruder. 5,366,680, Cl. 264-141.000.
Forest, Paul H., to Eastman Kodak Company. Electronic reproduction apparatus and method with check for improper document feed. 5,367,362, Cl. 355-208.000.
Formanek, Randolph P.: *See—*
Moss, Larry E.; Formanek, Randolph P.; Hogg, Johnny B., deceased; and Derby, William M., Jr., 5,367,138, Cl. 219-109.000.
Forster, James A.: *See—*
Jha, Sunil C.; and Forster, James A., 5,366,139, Cl. 228-193.000.
Forston, Christina W.: *See—*
Christian, Jeffrey J.; and Forston, Christina W., 5,366,466, Cl. 606-174.000.
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shajo, Sami, to Sun Microsystems, Inc. Method and apparatus for routing messages to processes in a computer system. 5,367,681, Cl. 395-650.000.
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Tang, John T., 5,365,889, Cl. 122-4.00D.
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Weiner, Alan L.; Lenk, Robert P.; Carpenter-Green, Sharon S.; and Fountain, Michael W., 5,366,958, Cl. 514-2.000.
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Kao, Cheng-Kang, 5,366,775, Cl. 428-40.000.
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Franczyk, Thaddeus S., to Monsanto Company. Process to prepare amino carboxylic acid salts. 5,367,112, Cl. 562-526.000.
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Theurer, Josef, 5,365,854, Cl. 104-2.000.
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Secher, Fernand; Thiberville, Jean; Douhet, Gerard; Freund, Christian; and Rasse, Yves, 5,367,331, Cl. 348-14.000.
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Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,366,498, Cl. 623-11.000.

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Fujiyama, Masaaki, 5,366,525, Cl. 51-295.000.
Inoue, Nobuaki; Yamamoto, Seiichi; and Goto, Takahiro, 5,366,845, Cl. 430-264.000.
Kuramoto, Takashi; Utsuda, Tetsuji; Onga, Takeo; Kominato, Takashi; Kaneda, Hidenori; and Taga, Mitsuo, 5,366,581, Cl. 156-364.000.
Maeda, Hiroshi; and Takahashi, Nobumitsu, 5,365,817, Cl. 83-256.000.
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Sado, Kenzo, 5,367,405, Cl. 359-649.000.

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Abe, Hitoshi, 5,367,696, Cl. 395-800.000.
Asai, Ichiro; Tomono, Takao; and Nakamura, Takeshi, 5,367,180, Cl. 257-66.000.
Asai, Ichirou; Kato, Noriji; and Fuse, Mario, 5,365,875, Cl. 117-7.000.
Kawamoto, Koushi; and Omura, Kengo, 5,367,454, Cl. 364-419.200.
Kobayashi, Hideo; Ueno, Osamu; and Iguchi, Daisuke, 5,367,514, Cl. 369-47.000.
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Matsui, Tsunehiro; and Koue, Toshiaki, 5,367,565, Cl. 379-100.000.

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Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

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Itoh, Kunio; Inoue, Yoshio; Fujiki, Hironao; and Yoshino, Masachika, 5,367,001, Cl. 523-109.000.

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Ohmi, Tadahiro; Shinohara, Tsutomu; Yamaji, Michio; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,366,261, Cl. 285-328.000.

Fujikura Ltd.: *See*—
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Yamada, Tsutomu; Okajima, Taizo; Ootani, Kouichi; and Morinaga, Hitoshi, 5,366,542, Cl. 106-3.000.

Fujimoto, Hideya: *See*—
Tsukasa, Fumihiro; Fujimoto, Hideya; Horikoshi, Kazuhiko; Tanaka, Osamu; and Kikuchi, Kunio, 5,367,128, Cl. 177-212.000.

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Matsumoto, Kazutake; Wakusawa, Atsushi; and Fujioka, Koji, 5,367,259, Cl. 324-248.000.

Fujirebio Inc.: *See*—
Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, 5,367,081, Cl. 546-316.000.

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Fujisawa Pharmaceutical Co., Ltd.: *See*—
Sakane, Kazuo; Kawabata, Kohji; and Inamoto, Yoshiko, 5,366,970, Cl. 514-202.000.

Fujita, Katsutoyo: *See*—
Miyama, Osamu; Fujita, Katsutoyo; Nishimura, Hayato; Matsumoto, Shigemi; and Tonoki, Satoshi, 5,367,016, Cl. 524-537.000.

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Fujita, Masanori: *See*—
Sudo, Hiroshi; Fujita, Masanori; Yamaoka, Tadahiko; Oda, Hajime; and Ishida, Hiroaki, 5,367,357, Cl. 355-27.000.

Fujita, Yuji: *See*—
Kobayashi, Akira; Kawamura, Tetsuya; Teraya, Tatsuo; Kuchiki, Eiji; and Fujita, Yuji, 5,367,020, Cl. 525-64.000.

Fujitani, Shin: *See*—
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.

Fujitsu Limited: *See*—
Ebihara, Kazumi, 5,367,191, Cl. 257-666.000.
Ikeda, Masae; Kamaji, Hideki; and Hirose, Kazunori, 5,367,367, Cl. 355-245.000.
Kakuishi, Mitsuo; Mikyoshi, Seiji; Itokawa, Hiroaki; Koizumi, Nobukazu; Awata, Yutaka; and Kurosaki, Yuko, 5,367,540, Cl. 375-103.000.
Matsumiya, Masato, 5,367,480, Cl. 365-63.000.
Morioka, Makoto; Ikemori, Masato; Hattori, Kazuo; and Suzuki, Hiroshi, 5,367,626, Cl. 395-159.000.
Mukai, Ryoichi, 5,366,905, Cl. 437-7.000.
Nakagaki, Tatsuru; and Fukui, Toshimasa, 5,367,329, Cl. 348-1.000.
Nakamura, Shunji, 5,367,189, Cl. 257-508.000.
Sawada, Shigetomo; Asanai, Yoshimichi; Tanaka, Yoshio; and Yashiro, Kikuo, 5,365,700, Cl. 451-28.000.
Sugawara, Eiji, 5,367,567, Cl. 379-252.000.
Yagi, Norio; Arikawa, Yoshihiro; and Satou, Ryuzi, 5,367,420, Cl. 360-109.000.
Yajima, Noboru; Yoshida, Hiroshi; and Komuro, Yasuko, 5,367,395, Cl. 359-110.000.
Yamashita, Haruo; and Takizawa, Yuji, 5,367,545, Cl. 375-118.000.
Yoshino, Satoshi; and Nojiri, Keiko, 5,365,839, Cl. 101-93.040.

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Matsui, Nobuya; Morimura, Yasuhiro; Kunisaki, Shinichi; Fujiwara, Goro; Masuda, Mitsunobu; and Kanazawa, Masaru, 5,366,619, Cl. 210-139.000.

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Yaginuma, Kyuji; Kikuchi, Takehiro; Suzuyama, Hiroshi; and Fujiya, Shigeru, 5,367,432, Cl. 361-620.000.

Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Manufacture of abrasive tape. 5,366,525, Cl. 51-295.000.

Fukanuma, Tetsuhiko; Yamamoto, Shinya; Iguchi, Masao; Yamada, Kiyohiro; Goto, Kunifumi; Yoshida, Tetsuo; Yamaguchi, Tetsuya; Mori, Tatsushi; and Kuroki, Kazuhiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Scroll type compressor having a counterweight mounted with a clearance on a driveshaft. 5,366,357, Cl. 418-55.100.

Fukasawa, Takayuki; Yamagishi, Kunihiko; and Sekine, Masatoshi, to Kabushiki Kaisha Toshiba. Design aid method and design aid apparatus for integrated circuits. 5,367,468, Cl. 364-490.000.

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Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

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Fukuda, Etsuo: *See*—
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Fukuda, Masami: *See*—
Tsuchiya, Hidetaka; Uehara, Nobuyuki; Fukuda, Masami; and Mafune, Masao, 5,367,505, Cl. 368-72.000.

Fukuda, Masao, to Ishida Co., Ltd. Dancer roller having multi-rack and pinion tension control. 5,366,130, Cl. 226-44.000.

Fukudome, Fukuo, to Koyo Seiko Co., Ltd. Power steering device having electrically driven pump. 5,367,235, Cl. 318-286.000.

Fukui, Toshimasa: *See*—
Nakagaki, Tatsuru; and Fukui, Toshimasa, 5,367,329, Cl. 348-1.000.

Fukumoto, Atsushi; Udagawa, Toshiki; and Yoshimura, Shunji, to Sony Corporation. Method for reproducing information recorded on a magneto-optical recording medium including servo controlling the dimension of the reproduction region of the recording medium by means of a recorded signal. 5,367,509, Cl. 369-13.000.

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Fukumura, Teruo: *See*—
Maruyama, Junichi; Fukumura, Teruo; and Takeuchi, Toru, 5,366,026, Cl. 173-180.000.

Fukunaga, Keizo: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Fukuoka, Morinao: *See*—
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,366,939, Cl. 501-55.000.

Fukushima, Yuji; and Kumakura, Atsushi, to Tsubakimoto Chain Co. Chain guide device in engine. 5,366,418, Cl. 474-111.000.

Fulton, Paul R.: *See*—
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.

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Bergot, B. John; Chakerian, Vergine; Connell, Charles R.; Eadie, J. Scott; Fung, Steven; Hershey, N. Davis; Lee, Linda G.; Menchen, Steven M.; and Woo, Sam L., 5,366,860, Cl. 435-6.000.

Furnas Electric Co.: *See*—
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Furuhashi, Hiroyuki: *See*—
Mikawa, Naohiro; Ueki, Satoshi; Koyama, Naomi; Furuhashi, Hiroyuki; Morioka, Tetsuya; and Toki, Shigeyuki, 5,367,033, Cl. 525-343.000.

Furukawa, Akio: *See*—
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.

Furukawa, Kiyoshi: *See*—
Ohno, Kazunori; Odai, Osamu; Tominaga, Yukio; Furukawa, Kiyoshi; and Oka, Makoto, 5,367,078, Cl. 546-122.000.

Furukawa, Masao; Isobe, Tadaaki; and Yazawa, Shigeko, to Hitachi Ltd. Method and apparatus for controlling storage in computer system utilizing forecasted access requests and priority decision circuitry. 5,367,654, Cl. 395-425.000.

Furukawa, Susumu; and Matsubara, Tomoyo, to MK Medical Ltd. Treatment for kawasaki disease. 5,366,978, Cl. 514-263.000.

Furuya, Eiichi: *See*—
Matsushita, Tsuyoshi; Furuya, Eiichi; Kikuchi, Narumi; Endo, Katsuya; and Wada, Yutaka, 5,367,239, Cl. 318-685.000.

Furuya, Masato: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,367,359, Cl. 355-71.000.

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Takase, Satoru; and Furuyama, Tohru, 5,367,481, Cl. 365-149.000.

Fuse, Hiroko: *See*—
Toshimitsu, Manabu; and Fuse, Hiroko, 5,366,298, Cl. 384-107.000.

Fuse, Mario: *See*—
Asai, Ichirou; Kato, Noriji; and Fuse, Mario, 5,365,875, Cl. 117-7.000.

Fushimi, Akira; Hisai, Tsuneyoshi; Takeoka, Kazuhiko; and Okude, Yoshitaka, to Nippon Paint Co., Ltd. Curable resin composition, a coating composition and a process for forming a coating film. 5,367,027, Cl. 525-208.000.

Fushimi, Akira: *See*—
Okude, Yoshitaka; Hisai, Tsuneyoshi; Fushimi, Akira; Takeoka, Kazuhiko; and Miyazoe, Seigo, 5,367,026, Cl. 525-199.000.

Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, to Mitsubishi Gas Chemical Company, Inc. Process for producing monoalkenyl armomatic hydrocarbon compound. 5,367,098, Cl. 585-452.000.

G. D. Societa'Per Azioni: *See*—
Gamberini, Antonio; Sassi, Fabio; and Gigante, Antonio, 5,366,064, Cl. 198-426.000.

G. Fordyce Company, Inc.: *See*—
Green, Robert L., Jr., 5,366,434, Cl. 493-414.000.

Gabriagues, Jean-Michel: *See*—
Sotom, Michel; Audouin, Olivier; and Gabriagues, Jean-Michel, 5,367,396, Cl. 359-124.000.

Gabzdyl, Jacek T.; and Fernandes, Alcan V., to BOC Group plc. Apparatus for the themic cutting of materials. 5,367,142, Cl. 219-121.670.

Gadek, Thomas R.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,366,737, Cl. 424-450.000.

Gademann, Lothar; Drews, Ulrich; Jakob, Wolfgang; and Mindl, Anton, to Robert Bosch GmbH. Circuit arrangement for operating a gas-discharge lamp. 5,367,227, Cl. 315-290.000.

Gaia, Franco: *See*—
Liechti, Pierre A.; Gaia, Franco; and Andre, Marc, 5,366,703, Cl. 422-186.110.

Gail, Josef: *See*—
Haimer, Franz; and Gail, Josef, 5,365,673, Cl. 33-559.000.

Gajda, Gregory J.: *See*—
Lawson, Randy J.; Richmond, Dorothy M.; Gajda, Gregory J.; and Barger, Paul T., 5,367,101, Cl. 585-667.000.

Galili, Gad; Shaul, Orit; and Perl, Avihai, to Yeda Research and Development Co. Ltd. Transgenic plants overproducing threonine and lysine. 5,367,110, Cl. 800-205.000.

Gallagher, Kim, to Warner-Lambert Company. Method of treating cerebral and cardiovascular disorders employing [R]3-(2-deoxy-β-D-erythro-pentofuranosyl)-3,6,7,8-tetrahydroimidaz 0-[4,5-d][1,3]diazepin-8-ol. 5,366,960, Cl. 514-43.000.

Gallery, Stanley A.; and Schultz, Timothy R., to Carts of Colorado, Inc. Mobile merchandising business management system which provides comprehensive support services for transportable business operations. 5,367,452, Cl. 364-401.000.

Galperin, Leonid B.: *See*—
Bradley, Steven A.; and Galperin, Leonid B., 5,366,617, Cl 208-137.000.

Galvin, Robert: *See*—
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Gambale, Richard A., to C. R. Bard, Inc. Guidewire extension with self-latching detachable connector. 5,365,944, Cl. 128-772.000.

Gambaretto, Giampaolo: *See*—
Guglielmo, Giorgio; and Gambaretto, Giampaolo, 5,367,103, Cl. 570-177.000.

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Greene, Thomas F., to Production Plus, Inc. System for making picture frames. 5,365,813, Cl. 83-35.000.
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Keith, Jon T.; Betts, E. Douglas; Dancy, Michael J.; and Pershinske, James E., 5,366,405, Cl. 452-5.000.
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Corneau, Louis P., Jr., 5,366,684, Cl. 264-510.000.
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Gruneisen, Mark T., to United States of America, Air Force. Phase-conjugate-coupled multimode optical fiber geometry for optical coupling of lasers. 5,367,527, Cl. 372-9.000.
Grunig, Kurt, to Zehnder Electronic AG. Method and circuit arrangement for monitoring and limiting the operating temperature of electrically heated equipment, as well as the use of the method. 5,367,146, Cl. 219-497.000.
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Fischer, Wolfgang; Guentherberg, Norbert; and Niessner, Norbert, 5,367,029, Cl. 525-301.000.
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Gustafson, Keith W., to KGK Ecosystems, Inc. Method and apparatus for exterminating pests. 5,365,692, Cl. 43-124.000.
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Haave, Luther; and Proskin, Carle T. Pay-per-view television delivery system. 5,367,330, Cl. 348-7.000.
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Raloff, Valgene E.; and Haczynski, Christopher, 5,366,392, Cl. 439-889.000.
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Beaudin, Raymond A.; Fallon, Joseph R.; and Halberg, Leslie I., 5,367,318, Cl. 345-201.000.
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Chuter, Jeremy B.; Hale, Michael A.; and Clarke, Donald E. A., 5,367,394, Cl. 359-110.000.
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Hall, Kevin R.; and Wilkinson, Gordon, to Australian Longwall Pty. Limited. Conveyor belt/cutting head advance mechanism. 5,366,068, Cl. 198-812.000.
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Schwartz, Robert E.; Masurekar, Prakash S.; Sesin, David F.; Liesch, Jerrold M.; Hallada, Thomas C.; and Hensens, Otto D., 5,366,880, Cl. 435-119.000.
Haller, Kurt L.: *See—*
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George, Flint R., 5,366,014, Cl. 166-297.000.
Layton, Ken S., 5,365,777, Cl. 73-54.280.
Surjaatmadja, Jim B.; Bradley, Gary W.; and Tisch, Brett L., 5,366,015, Cl. 166-298.000.
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Tuszynski, George P.; Eyal, Jacob; and Hamilton, Bruce K., 5,367,059, Cl. 530-395.000.
Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., to Thiokol Corporation. Oxazoline bonding agents in composite propellants. 5,366,572, Cl. 149-19.900.
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Hammond, William A.: *See—*
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Han, Jin-Man; and Lee, Jong-Hoon, to Samsung Electronics, Co., Ltd. Apparatus for automatically initiating a stress mode of a semiconductor memory device. 5,367,491, Cl. 365-201.000.
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Han Medical Designs, Inc.: *See—*
Han, Sang I., 5,365,625, Cl. 7-158.000.
Han, Sang I., to Han Medical Designs, Inc. Ring cutting and removing device. 5,365,625, Cl. 7-158.000.
Hanabusa, Hisao; Ichimaru, Kazumi; Kuriyama, Yuji; and Ando, Masao, to Toyoda Cosei Co., Ltd. Air bag device including a two piece casing. 5,366,240, Cl. 280-728.00A.
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Hancock, David A.; Moreton, David J.; and Morton, Lee J., to BP Chemicals Limited. Process for the production of carbonyl-containing compounds from epoxides. 5,367,032, Cl. 525-333.800.
Hand, Kent P. Air valve with bleed feature to inhibit icing. 5,366,353, Cl. 417-375.000.
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Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,367,324, Cl 347-43.000.
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Hanning, David M., to Rheem Manufacturing Company. Inlet water turbulator for a water heater. 5,365,891, Cl. 122-382.000.
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Hansen, Christopher P., to United States of America, National Aeronautics and Space Administration. Landing gear energy absorption system. 5,366,181, Cl. 244-104.00R.
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Hara, Kanichi, to Minami International Corporation. Miniature lamp. 5,367,443, Cl. 362-227.000.
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Roemer, Peter B.; Blumenfeld, Samuel M.; Vosburgh, Kirby G.; Cline, Harvey E.; Barber, William D.; Lorensen, William E.; St. Peters, Richard L.; Schenck, John F.; Dumoulin, Charles L.; Darrow, Robert D.; and Hardy, Christopher J., 5,365,927, Cl. 128-653.200.
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Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased (by Schmidt, Margaret, legal representative); Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, to Boehringer Ingelheim Pharmaceuticals, Inc. 5,11-dihydro-6H-dipyrido(3,2-B:2',3'-E)(1,4)diazepines and their use in the prevention or treatment of HIV infection. 5,366,972, Cl. 514-220.000.
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Dorchak, Thomas P.; Gangwal, Santosh K.; and Harkins, Scott M., 5,366,717, Cl. 423-570.000.
Harnden, Charles W., to Alpine Engineered Products, Inc. Automatic saw machine and method. 5,365,812, Cl. 83-34.000.
Harney, Michael P.: *See—*
Bowen, Donald H.; Harney, Michael P.; and Lett, David B., 5,367,571, Cl. 380-20.000.
Harper, Lee R.: *See—*
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Harper, M. Deane. Ball and mallet game device. 5,366,220, Cl. 273-138.00R.
Harpin, Graham E., to Holset Engineering Company, Ltd. Flexible coupling incorporating elastomeric elements with embedded bushes. 5,366,411, Cl. 464-17.000.
Harriman, Walter L., to United States of America, Navy. Passive range measurement system. 5,367,333, Cl. 348-117.000.
Harrington, Kevin J., to Commonwealth Scientific and Industrial Research Organisation. Pesticidal products. 5,366,961, Cl. 514-53.000.
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Giordano, Raymond L.; Isham, Robert H.; and Leidich, Arthur J., 5,367,211, Cl. 327-73.000.
Temple, Victor A. K., 5,366,932, Cl. 437-209.000.
Harris, Ellis D., to Xerox Corporation. Single pass full color printing system using a quad-level xerographic unit and a tri-level xerographic unit with improved exposure of the photoreceptor. 5,367,327, Cl. 346-157.000.
Harris, Ellis D.; and Mirchandani, Vinod, to Xerox Corporation. Optimal filling of a polygon facet by beam reprofiling. 5,367,400, Cl. 359-216.000.
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., to Pitman-Moore New Zealand Limited; University of Melbourne, The; and Her Majestry the Queen in right of New Zealand through the Ministry of Agriculture & Fisheries. Stable forms of antigenic *taenia ovis* polypeptides. 5,366,728, Cl. 424-191.100.
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Wahlquist, Donnie G.; Harsany, John S.; and Matson, Mark S., 5,367,667, Cl. 395-575.000.
Hart, Robert N.; and Trebes, David M., to Nordam. Method of manufacturing a lens for use as a part of an aircraft. 5,366,577, Cl. 156-222.000.
Hartig, R. George: *See—*
Palm, Gordon W.; Palm, Marcella W., Legal Representative; and Hartig, R. George, 5,366,640, Cl. 210-724.000.
Hartley, James T., to Hughes Aircraft Company. Retention and release mechanism for fiber optic alignment sleeve retainer. 5,366,315, Cl. 403-326.000.
Hartman, Davis H.: *See—*
Lebby, Michael S.; Chun, Christopher K. Y.; Kuo, Shun-Meen; and Hartman, Davis H., 5,367,593, Cl. 385-53.000.
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Dekker, Don L.; and Hasbrouck, Robert R., 5,366,367, Cl. 425-194.000.
Hasegawa, Koji: *See—*
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Hashimoto, Takashi: *See—*
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Henry, Charles A. Hanger for archery bows. 5,366,098, Cl. 211-4.000.
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Herbison, Paul R. Corrosion inhibiting offset printing blanket. 5,366,784, Cl. 428-141.000.
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Hitachi Automotive Engineering Co., Ltd.: *See—*
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Hitachi, Ltd.: *See—*
Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.
Aoyama, Takashi; Hosoi, Kishu; Misawa, Yutaka; Kimoto, Koji; Isakozawa, Shigeto; and Ueda, Kazuhiro, 5,367,171, Cl. 250-443.100.
Furukawa, Masao; Isobe, Tadaaki; and Yazawa, Shigeko, 5,367,654, Cl. 395-425.000.
Kajiwara, Toshiyuki; Ochiai, Tsuneo; and Nishi, Hidetoshi, 5,365,764, Cl. 72-229.000.
Kambara, Hideki, 5,366,608, Cl. 204-299.00R.
Kametani, Masatsugu, 5,367,662, Cl. 395-550.000.
Nishiyama, Nobumasa; Kato, Yasuhiro; and Tsuyoshi, Toshiaki, 5,367,411, Cl. 360-66.000.
Ote, Ichiro; Okayama, Masataka; Sano, Makoto; Hashio, Masanori; Takanashi, Katsuya; Kitahara, Jun; and Hirata, Sunao, 5,367,628, Cl. 395-162.000.
Sunagawa, Masao; Iwase, Yukiji; and Sato, Shigenori, 5,365,633, Cl. 15-326.000.
Suzuki, Seiko; Kato, Kazuo; Matsumoto, Masahiro; Tsuchitani, Shigeki; Miki, Masayuki; and Yokota, Yoshihiro, 5,365,768, Cl. 73-1.00R.
Yaginuma, Kyuji; Kikuchi, Takehiro; Suzuyama, Hiroshi; and Fujiya, Shigeru, 5,367,432, Cl. 361-620.000.
Yoshida, Naozane; Takagi, Tsutomu; Washiya, Nobuhiro; Abe, Hitoshi; and Tajima, Katsutoshi, 5,367,616, Cl. 395-142.000.

Hitachi, Ltd: *See—*
Kawamoto, Mitsuo; and Takahashi, Yasushi, 5,367,492, Cl. 365-201.000.
Tsuchitani, Shigeki; Suzuki, Seiko; Shimada, Satoshi; Miki, Masayuki; Matsumoto, Masahiro; Murakami, Susumu; Koide, Akira; Kurita, Masahiro; and Ebine, Hiromichi, 5,367,429, Cl. 361-280.000.

Hitachi Maxell, Ltd.: *See—*
Kitta, Kenichi; Okada, Kunihiro; Mimura, Mitsuo; Ochiai, Makoto; and Nakamura, Naotake, 5,367,150, Cl. 235-380.000.
Nishida, Masato; Oshima, Toshio; Ohiwa, Tsunemi; and Karashima, Takato, 5,366,252, Cl. 283-94.000.

Hitachi Microcomputer Engineering Ltd: *See—*
Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.

Hitchcock, Malcolm F.: *See—*
Kitchen, William A.; and Hitchcock, Malcolm F., 5,365,767, Cl. 72-481.000.

Hively, Brad A.: *See—*
Chen, David E.; Hively, Brad A.; and Gerardot, Patrick G., 5,366,246, Cl. 280-834.000.

Hix, Veldon M.: *See—*
Frazee, Bradley C.; Stubbs, Clifford A.; Hix, Veldon M.; and Willard, Miles J., 5,366,749, Cl. 426-549.000.

Hlava, Alan: *See—*
Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.

Hlava, Joseph L.: *See—*
Warner, H. Burt; Skertic, Matthew M.; Hasselquist, Roy B.; and Hlava, Joseph L., 5,365,746, Cl. 62-51.200.

HMT Technology Corporation: *See—*
Lal, Brij B.; and Shinohara, Tadashi, 5,366,607, Cl. 204-298.190.

Hobbel, Arend; and Verrijp, Bastiaan, to Systemate Holland B.V. Apparatus and method for conveying a bird along a poultry processing line. 5,366,406, Cl. 452-179.000.

Hobbs, Gregg K., to Qualmark Corporation. Random vibration generating apparatus. 5,365,788, Cl. 73-665.000.

Hobson, Blaine M.; Broadhead, Douglas G.; and Hovis, Donald B. Adjustable arm rest. 5,366,276, Cl. 297-411.350.

Hoch, Artur: *See—*
Sos, Siegmund; and Hoch, Artur, 5,366,083, Cl. 206-380.000.

Hoechst AG: *See—*
Romer, Michael; and Schleicher, Andreas, 5,366,663, Cl. 525-425.000.

Hoechst Aktiengesellschaft: *See—*
Bahrmann, Helmut; and Lappe, Peter, 5,367,107, Cl. 568-454.000.
Becker, Reinhard; Henning, Rainer; Teetz, Volker; and Urbach, Hansjorg, 5,366,994, Cl. 514-523.000.
Bianco, Sebastiano, 5,366,967, Cl. 514-59.000.
Illian, Gerhard; Muller, Ingrid; and Harada, Takamasa, 5,366,657, Cl. 252-299.600.
Leupold, Ernst I.; Dettmeier, Udo; Gimpel, Gustav; and Reimann, Walter, 5,367,104, Cl. 570-211.000.
Mischke, Peter; Opitz, Konrad; and Rebsamen, Karl, 5,366,512, Cl. 8-524.000.
Murschall, Ursula; Speith, Angela; and Schloegl, Gunter, 5,366,796, Cl. 428-216.000.
Ritter, Eberhard; Schafer, Hans; Vollheim, Thomas; and Schottler, Martin, 5,367,096, Cl. 560-48.000.
Rotgers, Andre ; and Gessner, Wolfgang, 5,366,797, Cl. 428-229.000.

Hoechst Aktinegesellschaft: *See—*
Gutweiler, Matthias; and Kroggel, Matthias, 5,367,015, Cl. 524-557.000.

Hoechst Celanese Corporation: *See—*
Unruh, Jerry D.; Pieper, Wendell L.; and Pass, Milo C., 5,367,106, Cl. 568-453.000.

Hoekstra, George P.: *See—*
Shebanow, Michael C.; Alsup, Mitchell K.; Scales, Hunter L.; and Hoekstra, George P., 5,367,494, Cl. 365-230.030.

Hoffa, Jack L.; and Talley, Lloyd A., to Eubanks Engineering Company. Cable and wire pre-feed apparatus, using endless belt wire drive. 5,366,131, Cl. 226-118.000.

Hoffheins, Barbara S.: *See—*
Lauf, Robert J.; Hoffheins, Barbara S.; and Fleming, Pamela H., 5,367,283, Cl. 338-34.000.

Hoffman, Herman S.; and Noth, Richard W., to International Business Machines Corporation. Compliant lead for surface mounting a chip package to a substrate. 5,367,124, Cl. 174-52.400.

Hoffmann, Heinfried, to Samson Aktiengesellschaft. Actuating drive having a safety device. 5,365,963, Cl. 137-67.000.

Hofmann, Lutz: *See—*
Knauschner, Alfred; Richter, Bernd; Poppe, Gerhard; and Hofmann, Lutz, 5,365,761, Cl. 72-12.000.

Hofmeister, Peter: *See—*
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, 5,366,984, Cl. 514-361.000.

Hogg, Carol, executrix: *See—*
Moss, Larry E.; Formanek, Randolph P.; Hogg, Johnny B., deceased, and Derby, William M., Jr., 5,367,138, Cl. 219-109.000.

Hogg, Johnny B., deceased: *See—*
Moss, Larry E.; Formanek, Randolph P.; Hogg, Johnny B., deceased, and Derby, William M., Jr., 5,367,138, Cl. 219-109.000.

Hogikyan, Robert M.: *See—*
Lee, Chung-Li; Murray, Robert W.; Hunt, Kenneth; Wearing, James T.; Hogikyan, Robert M.; Oloman, Colin W.; and Chen, Jianxin, 5,366,593, Cl. 162-72.000.

Hoglund, Ronny, to Kamyr Aktiebolag. Suspension pump with built-in variably eccentric liquid ring pump. 5,366,347, Cl. 417-53.000.

Hohmann, Ralf; and Spors, Ralf, to Rasmussen GmbH. Quick connect-/disconnect fluid coupling. 5,366,259, Cl. 285-305.000.

Holan Manufacturing, Inc.: *See—*
Kononov, Leon, 5,366,171, Cl. 242-422.200.

Holcombe, Cressie E., Jr.; Gorin, Andrew H.; and Seals, Roland D., to Martin Marietta Energy Systems, Inc. Ceramic-bonded abrasive grinding tools. 5,366,524, Cl. 51-293.000.

Holfeld, Winfried T.; and Mancuso, Dale E., to Du Pont de Nemours, E. I., and Company. Wool dyeing utilizing controlled dye addition. 5,366,511, Cl. 8-400.000.

Holland, Alexander; and Vavaroutsos, Peter G., to Eclipse Technologies, Inc. Fault tolerant hard disk array controller. 5,367,669, Cl. 395-575.000.

Holland, John F.; and Enke, Christie G., to Meridian Instruments, Inc., and Michigan State University, Board of Trustees Operating Michigan State University. Integrating transient recorder apparatus for time array detection in time-of-flight mass spectrometry. 5,367,162, Cl. 250-287.000.

Holleman, Timothy W.; Ulrich, Clare P.; and Fideler, Brian L., to Medtronic, Inc. Method and apparatus for implantation of defibrillation electrodes system. 5,366,494, Cl. 607-119.000.

Holliman, Donald E. Fishing rod holder. 5,365,689, Cl. 43-21.200.

Hollon, Blake D.; and Hollon, Edmund D. GPS integrated ELT system. 5,367,306, Cl. 342-386.000.

Hollon, Edmund D.: *See—*
Hollon, Blake D.; and Hollon, Edmund D., 5,367,306, Cl. 342-386.000.

Hollstein, Axel: *See—*
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Holman, J. William: *See—*
Margrey, Keith S.; Felder, Robin A.; Boyd, James C.; Holman, J. William; Roberts, Jonathan H.; Savory, John; and Martinez, Antonia, 5,366,896, Cl. 436-48.000.

Holmes, D. Scott: *See—*
Swinehart, Philip R.; Courts, S. Scott; and Holmes, D. Scott, 5,367,285, Cl. 338-308.000.

Holmes, Roy H.; and Baril, Albert M., to ITT Corporation. Helmet mounted night vision apparatus and method of separation. 5,367,402, Cl. 359-400.000.

Holmes, William E.: *See—*
Vandlen, Richard L.; and Holmes, William E., 5,367,060, Cl. 530-399.000.

Holotek Ltd.: *See—*
Kramer, Charles J., 5,367,399, Cl. 359-206.000.

Holset Engineering Company, Ltd.: *See—*
Harpin, Graham E., 5,366,411, Cl. 464-17.000.

Holsinger, Kevin K.; and Wright, David L., to Spectra-Physics Lasers, Inc. Apparatus and method for improved time synchronization of pulsed laser systems. 5,367,529, Cl. 372-30.000.

Holt, Jack J.: *See—*
Jones, Raymond T.; and Holt, Jack J., 5,366,544, Cl. 106-187.000.

Holtge, Ulf: *See—*
Muller, Volker; Fehn, Manfred; Sommer, Hans; Grunwald, Hans-Jurgen; and Holtge, Ulf, 5,366,569, Cl. 148-525.000.

Holzmann, Michael: *See—*
Jagiella, Manfred; Holzmann, Michael; Sporl, Georg; and Topkaya, Ahmet, 5,366,164, Cl. 239-600.000.

Holzwarth, Henry A.: *See—*
Kaplan, Donald S.; Hermes, Matthew E.; Muth, Ross R.; Brown, David L.; and Holzwarth, Henry A., 5,366,081, Cl. 206-339.000.

Hon Industries Inc.: *See—*
Crose, Jeffrey J., 5,366,283, Cl. 312-183.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Maruyama, Shigeru; Baba, Shigeki; Hisaki, Takashi; Maeda, Kenichi; Sawamura, Kazutomo; Takagi, Jiro; and Terata, Shukoh, 5,365,905, Cl. 123-406.000.
Kitagawa, Masashi; Kimura, Kenichiro; and Iwata, Takahiro, 5,367,455, Cl. 364-424.010.
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiaki, 5,366,236, Cl. 280-707.000.
Matsuda, Shohei; and Yahagi, Toshio, 5,367,461, Cl. 364-426.020.

Honda Giken Kogyo Kaubishiki Kaisha: *See—*
Ishida, Shinnosuke, 5,367,457, Cl. 364-424.020.

Honda, Hitomi: *See—*
Hosoda, Kenji; Kubota, Takaharu; Honda, Hitomi; and Suzuki, Hideaki, 5,366,861, Cl. 435-7.100.

Honeywell Inc.: *See—*
Diels, Jean-Claude M.; and Lai, Ming, 5,367,528, Cl. 372-18.000.
Ring, Jeffrey R.; and Matulenko, Reinhold, 5,367,237, Cl. 318-616.000.

Hong, Teng Y. E.: *See—*
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Hongo, Hitoshi: *See—*
Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

Hongo, Takayasu: *See—*
Masumura, Yoshinobu; Matsubara, Motoki; Hongo, Takayasu; and Uemura, Hisashi, 5,366,302, Cl. 400-120.160.

Honlinger, Herwig: *See*—
Grunau, Rudi; Honlinger, Herwig; and Morr, Jurgen, 5,366,210, Cl. 267-140.400.
Honnigford, Edward H., to Delco Electronics Corporation. Circuit including bandgap reference 5,367,249, Cl. 323-313.000.
Hooser, Steven M. Cutter grinder. 5,365,986, Cl. 144-231.000.
Hopfinger, Anton J.: *See*—
Venton, Duane L.; Hopfinger, Anton J.; and Le Breton, Guy, 5,366,862, Cl. 435-7.100.
Hopital Marie-Enfant: *See*—
Tremblay, Camille, 5,366,277, Cl. 297-464.000.
Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., to Huls Aktiengesellschaft. Use of polymethylalkanes as biodegradable base oils in lubricants and functional fluids. 5,366,658, Cl. 252-56.00S.
Hopper, Andrew B.; and Pessia, Dario, to International Business Machines Corporation. Editing compressed and decompressed voice information simultaneously. 5,367,609, Cl. 395-2.870.
Hopper, Michael A.: *See*—
Patel, Raj D.; Kmiecik-Lawrynowicz, Grazyna E.; Hopper, Michael A.; and Croucher, Melvin D., 5,366,841, Cl. 430-137.000.
Hori, Nagao: *See*—
Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.
Horikoshi, Kazuhiko: *See*—
Tsukasa, Fumihiro; Fujimoto, Hideya; Horikoshi, Kazuhiko; Tanaka, Osamu; and Kikuchi, Kunio, 5,367,128, Cl. 177-212.000.
Horiuchi, Kuniyasu: *See*—
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Horlacher, Willy, to Gasti Verpackungsmaschinen GmbH. Method of and apparatus for testing the seal of filled containers. 5,365,774, Cl. 73-49.300.
Horn, Thomas: *See*—
Urdea, Michael S.; and Horn, Thomas, 5,367,066, Cl. 536-24.300.
Hornback, Timothy D.: *See*—
Pressprich, John W.; Jordan, Anthony F.; Hornback, Timothy D.; and Carr, Gregory S., 5,367,641, Cl. 395-275.000.
Horvath, Louis S.: *See*—
Goldsmith, Chris W.; Auer, Scott L.; Guy, William F.; and Horvath, Louis S., 5,367,673, Cl. 395-600.000.
Horvath, Raynmond F.: *See*—
Blum, Charles A.; Hutchison, Alan J.; and Horvath, Raynmond F., 5,367,077, Cl. 546-82.000.
Hoshiai, Atsushi, to Roland Corporation. Musical tone signal forming device for a stringed musical instrument. 5,367,120, Cl. 84-654.000.
Hoshino Gakki Co., Ltd.: *See*—
Hoshino, Yoshiki, 5,365,824, Cl. 84-422.100
Hoshino, Yoshiki, to Hoshino Gakki Co., Ltd. Spring adjustment mechanism for drum pedal beater. 5,365,824, Cl. 84-422.100.
Hoskinson, Stephen J.: *See*—
Markin, Rodney S.; Tackett, Eldon L.; and Hoskinson, Stephen J., 5,366,062, Cl. 198-345.300.
Hosoda, Kenji; Kubota, Takaharu; Honda, Hitomi; and Suzuki, Hideaki, to Teijin Limited. Immunoassay and reagent kit used therefor. 5,366,861, Cl. 435-7.100.
Hosoi, Kishu: *See*—
Aoyama, Takashi; Hosoi, Kishu; Misawa, Yutaka; Kimoto, Koji; Isakozawa, Shigeto; and Ueda, Kazuhiro, 5,367,171, Cl. 250-443.100.
Hosokawa, Chishio: *See*—
Higashi, Hisahiro; Hosokawa, Chishio; and Tokailin, Hiroshi, 5,366,811, Cl. 428-457.000.
Hosokoezawa, Sachie: *See*—
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,367,365, Cl. 355-219.000.
Hosotani, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Screen display device. 5,367,317, Cl. 345-193.000.
Hospal Industrie: *See*—
Chevallet, Jacques, 5,366,630, Cl. 210-645.000.
Hossain, Mustaque: *See*—
Hu, Kuo-Kuang; Kirmser, Philip G.; Swartz, Stuart E.; and Hossain, Mustaque, 5,366,319, Cl. 404-52.000.
Hossain, Timothy Z.: *See*—
Toner, John L.; Hilborn, David A.; Murray, Bruce J.; and Hossain, Timothy Z., 5,367,080, Cl. 546-257.000.
Hostert GmbH: *See*—
Schulz-Lekies, Detlef, 5,367,352, Cl. 354-321.000.
Hotchkiss, Adair J.: *See*—
Anderson, Stephen P.; Higgins, Deborah L.; Hotchkiss, Adair J.; and Marks, Cara B., 5,366,886, Cl. 435-226.000.
Hotchkiss, Joseph H.: *See*—
Conboy, James J.; and Hotchkiss, Joseph H., 5,366,900, Cl. 436-107.000.
Hough, Graham, to Field Container Co. L.P. Cardboard box having corner seals. 5,366,142, Cl. 229-133.000.
Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., to International Business Machines Corporation. Technique for controlling channel operations in a host computer by updating signals defining a dynamically alterable channel program. 5,367,661, Cl. 395-500.000.
Houghten Pharmaceuticals, Inc.: *See*—
Dooley, Colette T.; and Houghten, Richard A., 5,367,053, Cl 530-329.000.
Houghten, Richard A.: *See*—
Dooley, Colette T.; and Houghten, Richard A., 5,367,053, Cl. 530-329.000.
House, Harold B.; Watson, Hubert J.; and Upchurch, Jeffrey S., to Heidelberg Druckmaschinen AG. Printing press with web breaking assembly. 5,365,843, Cl. 101-228.000.
Hovis, Donald B.: *See*—
Hobson, Blaine M.; Broadhead, Douglas G.; and Hovis, Donald B., 5,366,276, Cl. 297-411.350.
Howard, Carol Z.; and Batko, Thomas J., to Hubbell Incorporated. Mechanically actuatable alarm disable assembly. 5,367,293, Cl 340-687.000.
Howard, Richard. Composition and method for preventing moss growth on roofs. 5,366,767, Cl. 427-294.000.
Hoxan Corporation: *See*—
Matsumoto, Kazutake; Wakusawa, Atsushi; and Fujioka, Koji, 5,367,259, Cl. 324-248.000.
Hoya Corporation: *See*—
Yajima, Eiichi; Watanabe, Yoshitane; Suzuki, Keitaro; and Matsukura, Tetsunori, 5,366,545, Cl. 106-286.400.
Hromas, Joe C.: *See*—
Edwards, A. Glen; Hromas, Joe C.; Huber, Klaus B.; and Smith, Edward G., Jr., 5,366,013, Cl. 166-297.000.
Hsia, Shaw-Tzeng: *See*—
Chen, Kuang-Chao; and Hsia, Shaw-Tzeng, 5,366,850, Cl 430-314.000.
Hsiao, Chia-Yuan. Adjustable spanner. 5,365,809, Cl. 81-176.300.
Hsieh, Chang-Ming: *See*—
Beyer, Klaus D.; Hsieh, Chang-Ming; Hsu, Louis L.; and Yuan, Tsorng-Dih, 5,366,923, Cl. 437-62.000.
Hsiong, William; and Marshall, Thomas P., to Hughes Aircraft Company. Sensor window compliant mounting assembly. 5,366,178, Cl 244-3.160.
Hsu, Bertrand D., to General Electric Company. Method and apparatus for introducing fuel into a duel fuel system using the H-combustion process. 5,365,902, Cl. 123-299.000.
Hsu, Louis L.: *See*—
Beyer, Klaus D.; Hsieh, Chang-Ming; Hsu, Louis L.; and Yuan, Tsorng-Dih, 5,366,923, Cl. 437-62.000.
Hsu, Sung-Lin: *See*—
Chin, Tsung-Shune; Hsu, Sung-Lin; and Deng, Ming-Cheng, 5,366,761, Cl. 427-127.000.
Hu, Kuo-Kuang; Kirmser, Philip G.; Swartz, Stuart E.; and Hossain, Mustaque, to Kansas State University Research Foundation. Expansion joint assembly having load transfer capacity. 5,366,319, Cl 404-52.000.
Huang, Chin-Teh; Hammesfahr, Paul D.; and Jefferies, Steven R., to Dentsply Research & Development Corp. Dental composition and method. 5,367,002, Cl. 523-116.000.
Huang, Jane-Hong: *See*—
Lin, Chih-Ching; Tai, Jiin C.; Huang, Jane-Hong; and Peng, Ying-Kuang, 5,366,079, Cl. 206-328.000.
Hubbell Incorporated: *See*—
Alim, Mohammad A.; and Beal, Karen C., 5,366,935, Cl. 501-20.000.
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Huber, Klaus B.: *See*—
Edwards, A. Glen; Hromas, Joe C.; Huber, Klaus B.; and Smith, Edward G., Jr., 5,366,013, Cl. 166-297.000.
Huber, Ronald W., to Reynolds Metals Company. Apparatus for separating particulate materials. 5,366,093, Cl. 209-135.000.
Huesser, Theo: *See*—
Gysi, Peter; Huesser, Theo; and Zumbach, Melchior, 5,365,771, Cl. 73-31.030.
Huffman, Charles E., to Safety Lock and Lift, Ltd. Projector ceiling lift. 5,366,203, Cl. 254-362.000
Hufnagl, Walter; Schamberg, Stefan; Schafer, Gerhard; Muller, Roland; and Klawuhn, Manfred, to Braun Aktiengesellschaft. Brewed beverage maker with unpressurized boiler vessel steam generator tube and common heating element. 5,367,607, Cl. 392-465.000.
Hugenell, Hermann, to Angstenberger, Karl Friedrich; and Hugenell, Hermann, a part interest. Apparatus for supporting an aiming and orienting appliance useful in reflector systems. 5,367,407, Cl. 359-876.000.
Hughes, Adrian D.: *See*—
Cain, Frederick W.; Hughes, Adrian D.; Paska, Josipa; and Zwikstra, Nico, 5,366,752, Cl. 426-607.000.
Hughes Aircraft Company: *See*—
Hartley, James T., 5,366,315, Cl. 403-326.000.
Hermansen, Ralph D.; and Lau, Steven E., 5,367,006, Cl. 523-428.000.
Hsiong, William; and Marshall, Thomas P., 5,366,178, Cl. 244-3.160.
Kay, Stanley; Kim, Youngky; King, Lou; Mehta, Ashok D.; and Barnett, Charles, 5,367,559, Cl. 379-60.000.
Pfeiffer, Carl G., 5,367,154, Cl. 250-208.100.
Siebert, Edward T., 5,367,375, Cl. 356-345.000.
Warner, H. Burt; Skertic, Matthew M.; Hasselquist, Roy B.; and Hlava, Joseph L., 5,365,746, Cl. 62-51.200.
Hughes, Daniel L., to Wagner Mining and Construction Equipment Co. Articulated vehicle and hinge assembly. 5,366,299, Cl. 384-571.000.

Hughes, Joel, to Container Products Corporation. Surface treating tool. 5,365,634, Cl. 15-366.000.
Hughes Missile Systems Company: *See*—
Wedertz, Larry D., 5,365,826, Cl. 89-46.000.
Huleatt, Thomas O.: *See*—
Chu, Lynn H.; Dragoni, Anthony H., Jr.; Eichelman, Fredric R., II; Huleatt, Thomas O.; Irgon, Adam E.; and Langion, Martha S., 5,367,473, Cl. 364-551.010.
Hulick, Timothy P., to Acrodyne Industries, Inc. Digital amplitude modulators involving (1) modification of amplitude during synchronization pulse, (2) automatic gain control of signal components, and/or (3) analog representation of less significant signal components. 5,367,272, Cl. 332-149.000.
Hulman, Fredericus W. M., to Ericsson Radio Systems B.V. System for charging a rechargeable battery of a portable unit in a rack. 5,367,242, Cl. 320-2.000.
Huls Aktiengesellschaft: *See*—
Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., 5,366,658, Cl. 252-56.00S.
Humpolik, Bohumil; and Bayer, Jurgen, to Emitec Gesellschaft fuer Emissionstechnologie mbH. Apparatus for catayltically decontaminating exhaust gases and method for producing the apparatus. 5,366,700, Cl. 422-180.000.
Hung, Chin-Pin. Movable base for a baby walker. 5,366,231, Cl. 280-87.051.
Hunsaker, Marilyn: *See*—
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Hunt, Kenneth: *See*—
Lee, Chung-Li; Murray, Robert W.; Hunt, Kenneth; Wearing, James T.; Hogikyan, Robert M.; Oloman, Colin W.; and Chen, Jianxin, 5,366,593, Cl. 162-72.000.
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Hurwitt, Steven, to Fresh Creek Technologies, Inc. Apparatus for containment of overflow and runoff water. 5,366,322, Cl. 405-52.000.
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Fink, Arthur C., Jr.; and Mitchell, Thomas O., 5,365,973, Cl. 137-614.040.
Hussain, Yousif A.; and Rolph, Chris N., to Krohne, AG. Mass flow meter. 5,365,794, Cl. 73-861.370.
Hutchinson, Francis G., to Zeneca Limited. Continuous release pharmaceutical compositions. 5,366,734, Cl. 424-426.000.
Hutchison, Alan J.: *See*—
Blum, Charles A.; Hutchison, Alan J.; and Horvath, Raynmond F., 5,367,077, Cl. 546-82.000.
Hutchison, Roger S.: *See*—
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Hutsch, Bruno: *See*—
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Hutto, Scott L.; and McCrady, John M., to Wynn's Climate Systems, Inc. Two-piece header. 5,366,007, Cl. 165-173.000.
Hutton, Richard W.: *See*—
Bornhorst, James M.; Hutton, Richard W.; and Stacy, Timothy D., 5,367,444, Cl. 362-264.000.
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Chang, Rong-Feng; Drake, John E., Jr.; Gun, Levent; and Huynh, Lap T., 5,367,523, Cl. 370-84.000.
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Cohen, Amy S. C.; Gleason, Christopher F.; Hyatt, Donald R.; Moran, Michael E.; Stevens, Jeffrey N.; and Wecker, Alan J., 5,367,621, Cl. 395-154.000.
Hygeia Sciences, Inc.: *See*—
Clough, Kathleen M.; and Cole, Francis X., 5,366,863, Cl. 435-7.100.
Hypoguard (UK) Limited: *See*—
Cox, Stephen J.; and Lydford, Thomas, 5,366,902, Cl. 436-165.000.
Hyundai Electronics Industries Co., Ltd.: *See*—
Ha, Hyoung C.; and Choi, Dong K., 5,366,910, Cl. 437-40.000.
Kim, Hong S., 5,366,931, Cl. 437-209.000.
Kim, Jae K., 5,366,930, Cl. 437-195.000.
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Hanabusa, Hisao; Ichimaru, Kazumi; Kuriyama, Yuji; and Ando, Masao, 5,366,240, Cl. 280-728.00A.
ICI Americas, Inc.: *See*—
Westhof, Luc B. J.; Turhan, Ibrahim; Tessier, George G.; and de Peuter, Frans L. J., 5,366,600, Cl. 204-147.000.
Idemitsu Kosan Co., Ltd.: *See*—
Higashi, Hisahiro; Hosokawa, Chishio; and Tokailin, Hiroshi, 5,366,811, Cl. 428-457.000.
Idemitsu Petrochemical Co., Ltd.: *See*—
Fujii, Atsushi; and Matsuzawa, Kouzaburo, 5,366,685, Cl. 264-547.000.
Igawa, Sachio: *See*—
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.
Iguchi, Daisuke: *See*—
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Iguchi, Masao: *See*—
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Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,366,988, Cl. 514-383.000.
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Iizuka, Kunihiko: *See*—
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Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, to Fujirebio Inc. 1,4-dihydropyridine derivatives. 5,367,081, Cl. 546-316.000.
Ikeda, Kouji: *See*—
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Ikeda, Masae; Kamaji, Hideki; and Hirose, Kazunori, to Fujitsu Limited. Toner supplying member in a developing device used in an image forming apparatus. 5,367,367, Cl. 355-245.000.
Ikeda, Nobukazu: *See*—
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Ikeda, Tomiki: *See*—
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Ikei, Satoshi, to NEC Corporation. Probe terminating apparatus for an in-circuit emulator. 5,367,436, Cl. 361-766.000.
Ikemori, Masato: *See*—
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Ikezaki, Masao, to Matsushita Electric Industrial Co., Ltd. Remote-control apparatus for electronics apparatus. 5,367,316, Cl. 345-158.000.
Ilg, Edmond, to Gestra, Inc. Automatic liquid pump with vapor flow prevention flow outlet valve. 5,366,349, Cl. 417-132.000.
Illian, Gerhard; Muller, Ingrid; and Harada, Takamasa, to Hoechst Aktiengesellschaft. Geminal dimethylalkyl compounds, process for their preparation and their use in liquid-crystalline mixtures. 5,366,657, Cl. 252-299.600.
Illinois Tool Works, Inc.: *See*—
Swain, Henry L.; and Gray, Glenn J., 5,365,992, Cl. 160-84.10E
Ilvento, Joseph P.; Bisceglia, Bruno T., Jr.; and Way, Tim J., to Cardiotronics, Inc. Non-invasive, radiolucent cardiac electrode. 5,366,497, Cl. 607-142.000.
Imagawa, Shinji: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.
Image Data Corporation: *See*—
Pyle, Harry S.; Bahr, Norman H.; and Nietfeld, Paul G., 5,367,337, Cl. 348-521.000.
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, to Toyama Chemical Co., Ltd. Triazole derivatives and salts thereof and antifungal agent containing the same. 5,366,989, Cl. 514-383.000.
Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, to Kyowa Giken Co., Ltd.; Takeda Chemical Industries, Ltd.; Dai-Ichi Cement Co., Ltd.; Naigai Technos Corporation; and Obayashi Corporation. Method for fabricating fiber-reinforced slag gypsum cement-based, lightweight set articles. 5,366,549, Cl. 106-715.000.
Imanishi, Shozo; and Arai, Toshihiko, to Aida Engineering, Ltd. Transfer driver for pressing machine. 5,365,829, Cl. 91-361.000.
Immorlica, Anthony A., Jr.: *See*—
Wojnarowski, Robert J.; Neugebauer, Constantine A.; Daum, Wolfgang; Gorowitz, Bernard; Wildi, Eric J.; Gdula, Michael; Weaver, Stanton E., Jr.; and Immorlica, Anthony A., Jr., 5,366,906, Cl. 437-8.000.
Implant Innovations, Inc.: *See*—
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In Focus Systems, Inc.: *See*—
Scheffer, Terry J.; Munson, Kurt R.; and Conner, Arlie R., 5,367,390, Cl. 359-54.000.
In Vision Technologies, Inc.: *See*—
Peschmann, Kristian R., 5,367,552, Cl. 378-57.000.
Ina Walzlager Schaeffler KG: *See*—
Speil, Walter; Schmidt, Dieter; and Zipprath, Michael, 5,365,897, Cl. 123-90.520.
Inada, Katsuhiro: *See*—
Nakayama, Hisayuki; Ushio, Kazumichi; and Inada, Katsuhiro, 5,366,985, Cl. 514-369.000.

Inagaki, Masashi: *See—*
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Inaguchi, Takashi: *See—*
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Inamoto, Yoshiko: *See—*
Sakane, Kazuo; Kawabata, Kohji; and Inamoto, Yoshiko, 5,366,970, Cl. 514-202.000.
Inanaga, Kiyofumi; and Yamada, Yuji, to Sony Corporation. Sound collecting system and sound reproducing system. 5,367,506, Cl. 369-4.000.
Inaniwa, Masahiro; and Sato, Yoshiaki, to Hitachi Koki Co., Ltd. Screw supply control apparatus for screw tightening robot. 5,365,810, Cl. 81-430.000.
Indiana University Foundation: *See—*
Zipes, Doulgas P.; and Adams, David E., 5,366,486, Cl. 607-5.000.
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Industrial Technology Institute: *See—*
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Industrial Technology Research Institute: *See—*
Chen, Kuang-Chao; and Hsia, Shaw-Tzeng, 5,366,850, Cl. 430-314.000.
Tsai, Wen-Liang; and Yang, Shu-Hui, 5,366,656, Cl. 252-299.010.
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Guentert, Bernhard; Wolter, Michael; Ritsche, Stefan; Jaeger-Waldau, Reinhold; and Fuchs, Karl-Heinz, 5,366,122, Cl. 222-401.000.
Ingersoll-Dresser Pump Company: *See—*
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Ingersoll-Rand Company: *See—*
Bodell, Steven W.; and Kimberlin, Robert R., 5,365,637, Cl. 16-116.00R.
Wolverton, Steven R.; Kietzman, Terry L.; and Meyers, Keith E., 5,366,297, Cl. 384-9.000.
Ingram, Aaron N.; Bruder, Mark H.; and Flam, Eric, to Bruder Healthcare Company. Moist heat apparatus. 5,366,491, Cl. 607-108.000.
Ingrisch, Kurt: *See—*
Klenk, Martin; Moser, Winfried; Ingrisch, Kurt; and Klinke, Christian, 5,367,462, Cl. 364-431.050.
Inoue, Akihisa: *See—*
Yamagata, Hiroshi; Inoue, Akihisa; and Masumoto, Tsuyoshi, 5,366,564, Cl. 148-403.000.
Inoue, Nobuaki; Yamamoto, Seiichi; and Goto, Takahiro, to Fuji Photo Film Co., Ltd. Silver halide photographic photosensitive material and a method of processing same. 5,366,845, Cl. 430-264.000.
Inoue, Tetsuya; Sasaki, Yoshihiro; and Yoshimura, Hirofumi, to Arakawa Chemical Industries Ltd. Aqueous rosin emulsion and dispersant composition useful therein. 5,367,009, Cl. 524-272.000.
Inoue, Tokuta: *See—*
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Inoue, Yasuo: *See—*
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Inoue, Yoshio: *See—*
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Instant Terminalling and Ship Conversion, Inc.: *See—*
deBerardinis, Nicholas W., 5,365,980, Cl. 141-1.000.
Institut Francais du Petrole: *See—*
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Institute of Paper Science and Technology, Inc.: *See—*
Aidun, Cyrus K., 5,366,551, Cl. 118-411.000.
Instrumentarium Corporation: *See—*
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Intel Corporation: *See—*
Gat, Tal; Gochman, Simcha; and Kagan, Michael, 5,367,660, Cl. 395-425.000.
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; and Kawashima, Shigeo, 5,366,933, Cl. 437-215.000.
Khaira, Manpreet S., 5,367,679, Cl. 395-650.000.
Khare, Manoj; and Cadambi, Sudarshan B., 5,367,657, Cl. 395-425.000.
Lippincott, Louis A., 5,367,339, Cl. 348-592.000.
Rajagopalan Iyengar, Sundaravarathan; and Nadir, James, 5,367,659, Cl. 395-425.000.
Sharangpani, Harshvardhan P.; and Sweedler, Jonathan B., 5,367,650, Cl. 395-375.000.
Smith, Kevin J.; Kenner, Hugh R.; Savage, William A.; and Kwong, Alice, 5,367,651, Cl. 395-700.000.
Smith, Kevin J., 5,367,684, Cl. 395-700.000.
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InterDigital Technology Corporation: *See—*
Schilling, Donald L., 5,367,533, Cl. 375-1.000.
Interface, Inc.: *See—*
Thompson, Andrew, 5,366,779, Cl. 428-96.000.
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Yaniger, Stuart I., 5,365,671, Cl. 33-366.000.
International Business Machines Corporation: *See—*
Andros, Frank E.; Angulas, Christopher G.; and Milewski, Joseph M., 5,367,435, Cl. 361-749.000.
Barbero, Christian, 5,367,541, Cl. 375-106.000.
Bates, Keith A.; Bui, Nhan X.; and Hansen, Delbert A., 5,367,513, Cl. 369-44.290.
Bauer, Tibor L.; Cavaliere, William A.; Linnell, David C.; and Wu, Jin J., 5,366,156, Cl. 239-135.000.
Bennett, Reid S.; Ellingboe, Albert R.; Gifford, George G.; Haller, Kurt L.; McKillop, John S.; Selwyn, Gary S.; and Singh, Jyothi, 5,367,139, Cl. 219-121.590.
Berk, Jody E.; Coon, James R.; Day, Paul R.; Heyrman, Peter J.; and Johnson, David L., 5,367,674, Cl. 395-600.000.
Beyer, Klaus D.; Hsieh, Chang-Ming; Hsu, Louis L.; and Yuan, Tsorng-Dih, 5,366,923, Cl. 437-62.000.
Blocher, William S.; Cassidy, Bruce M.; Groves, James O., Jr.; Malik, Randhir S.; and Newton, Stephen F., 5,367,247, Cl. 323-222.000.
Bowen, Andrew D.; and Tannenbaum, David C., 5,367,632, Cl. 395-164.000.
Brown, Charles A.; and Wendt, Herman R., 5,367,417, Cl. 360-97.020.
Chang, Paul; Delp, Gary S.; Meleis, Hanafy E.; Montalvo, Rafael M.; Seidman, David I.; Tantawy, Ahmed N.; and Zumbo, Dominick A., 5,367,643, Cl. 395-325.000.
Chang, Rong-Feng; Drake, John E., Jr.; Gun, Levent; and Huynh, Lap T., 5,367,523, Cl. 370-84.000.
Cheng, Josephine M.-K.; Finkelstein, Sheldon J.; Haderle, Donald J.; Pirahesh, Mir H.; and Wang, Yun, 5,367,675, Cl. 395-600.000.
Chuang, Chiao-Mei; and Ebciogulu, Kemal, 5,367,648, Cl. 395-375.000.
Cidon, Israel; Gopal, Inder S.; and Guerin, Roch A., 5,367,517, Cl. 370-54.000.
Cohen, Amy S. C.; Gleason, Christopher F.; Hyatt, Donald R.; Moran, Michael E.; Stevens, Jeffrey N.; and Wecker, Alan J., 5,367,621, Cl. 395-154.000.
Cossette, Luke A.; and Boutaghou, Zine-Eddine, 5,367,416, Cl. 360-97.020.
Coyle, William E.; Nuechterlein, David W.; O'Donnell, Kim E.; Sartorius, Thomas A.; Schultz, Kenneth D.; and Wolters, Emmy M., 5,367,653, Cl. 395-400.000.
DiGiacomo, Giulio; Kim, Jung-Ihl; Narayan, Chandrasekhar; and Purushothaman, Sampath, 5,367,195, Cl. 257-767.000.
Faure, Louis H.; and Spoor, Terence W., 5,367,254, Cl. 324-761.000.
Feigenbaum, Barry A.; and Miro, Felix, 5,367,671, Cl. 395-600.000.
Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.
Flurry, Gregory A.; and Henson, Larry W., 5,367,680, Cl. 395-650.000.
Hoffman, Herman S.; and Noth, Richard W., 5,367,124, Cl. 174-52.400.
Hopper, Andrew B.; and Pessia, Dario, 5,367,609, Cl. 395-2.870.
Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., 5,367,661, Cl. 395-500.000.
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Levitan, David S., 5,367,703, Cl. 395-800.000.
Lin, Burn J., 5,366,757, Cl. 427-9.000.
Ottesen, Hal H.; and Smith, Gordon J., 5,367,409, Cl. 360-32.000.
Pelella, Mario M. A., 5,366,908, Cl. 437-34.000.
Wei, Shuang N., 5,367,637, Cl. 395-250.000.
White, Russell T., Jr., 5,367,143, Cl. 219-121.680.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Schreiber, William L.; McGhie, Joseph A.; and Geiger, Karen A., 5,366,959, Cl. 512-19.000.
Buckholz, Lawrence L., Jr.; and Scharpf, Lewis G., 5,366,747, Cl. 426-536.000.
Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., 5,367,092, Cl. 558-374.000.
International Fuel Cells Corporation: *See—*
Breault, Richard D.; and Gorman, Michael E., 5,366,825, Cl. 429-34.000.
International Paper Company: *See—*
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Inukai, Hitoshi: *See—*
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Invacare Corporation: *See—*
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Inventio AG: *See—*
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Ioannou, Andreas; and Maskell, William C., to British Gas plc. Oxygen sensor. 5,366,611, Cl. 204-412.000.
Iowa State University Research Foundation, Inc.: *See—*
Terpstra, Robert L.; Lograsso, Barbara K.; Anderson, Iver E.; and Moore, Jeffrey A., 5,366,688, Cl. 419-36.000.

Verkade, John; and Tang, Jiansheng, 5,367,084, Cl. 548-518.000.
Weber, Robert J., 5,367,308, Cl. 343-700.0MS.
Ip, Stephen H.: *See—*
Sindelar, Robert D.; Bradbury, Barton J.; Kaufman, Teodoro S.; Ip, Stephen H.; Marsh, Henry C., Jr.; and Lee, Chew, 5,366,986, Cl. 514-374.000.
Irgon, Adam E.: *See—*
Chu, Lynn H.; Dragoni, Anthony H., Jr.; Eichelman, Fredric R., II; Huleatt, Thomas O.; Irgon, Adam E.; and Langion, Martha S., 5,367,473, Cl. 364-551.010.
Irikura, Koji; and Yoshina, Atsuo, to Kanzaki Kokyukoki Mfg. Co., Ltd. Braking device for a working vehicle. 5,366,040, Cl. 180-244.000.
Irikura, Takayuki, to Japan Tobacco Inc. Shredding device for paper web used in the manufacture of cigarettes with filters. 5,365,814, Cl. 83-74.000.
Iron Carbide Holdings, Ltd.: *See—*
Hager, John P.; Stephens, Frank A.; and Stephens, Frank M., Jr., 5,366,897, Cl. 436-55.000.
Irurre Perez, Jose : *See—*
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Isakozawa, Shigeto: *See—*
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Ishibashi, Hideo: *See—*
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Ishida Co., Ltd.: *See—*
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Ishida, Hiroaki: *See—*
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Ishida, Koki, to Ricoh Company, Ltd. Document processing apparatus. 5,367,618, Cl. 395-145.000.
Ishida, Ryuji, to NEC Corporation. Break address detecting circuit. 5,367,550, Cl. 377-39.000.
Ishida, Shinnosuke, to Honda Giken Kogyo Kaubishiki Kaisha. Apparatus and method for improving accuracy of an automatic travelling apparatus. 5,367,457, Cl. 364-424.020.
Ishihara, Naoki. Multi-position power cord holding device. 5,366,187, Cl. 248-52.000.
Ishii, Fumito; Sugitani, Kenichiro; and Kakigi, Kunihiko, to Yokohama Rubber Co., Ltd., The. Pneumatic tire with varying angle lug grooves. 5,365,987, Cl. 152-209.00R.
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Mori, Hisatoshi; Sato, Syunichi; Konya, Naohiro; Ohno, Ichiro; Ishii, Hiromitsu; Matsuda, Kunihiro; and Shiota, Junji, 5,367,179, Cl. 257-59.000.
Ishijima, Hisashi: *See—*
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Ishikawa, Masanori: *See—*
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Ishikawa, Masazumi; Misawa, Hiroaki; and Kitamura, Noboru, to Research Development Corporation of Japan. Method for forming and denaturing particles. 5,367,160, Cl. 250-251.000.
Ishikawa, Toru, to NEC Corporation. Random access memory having control circuit for maintaining activation of sense amplifier even after non-selection of word line. 5,367,495, Cl. 365-239.000.
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Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.
Ishimoto, Kenya: *See—*
Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., 5,367,661, Cl. 395-500.000.
Ishioka, Takuji: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Maruyama, Shigeru; Baba, Shigeki; Hisaki, Takashi; Maeda, Kenichi; Sawamura, Kazutomo; Takagi, Jiro; and Terata, Shukoh, 5,365,905, Cl. 123-406.000.
Ishitani, Takashi, to Sharp Kabushiki Kaisha. Method for designating object on screen. 5,367,625, Cl. 395-159.000.
Ishizuki, Takayuki: *See—*
Sato, Teiji; Nakata, Hitoshi; Ishizuki, Takayuki; Iwaya, Shoichi; Takahashi, Koji; Sannohe, Yuuiti; and Tanaka, Hitoshi, 5,366,718, Cl. 423-594.000.
Isobe, Tadaaki: *See—*
Furukawa, Masao; Isobe, Tadaaki; and Yazawa, Shigeko, 5,367,654, Cl. 395-425.000.
Isobe, Tomohisa: *See—*
Fujiwa, Takaaki; and Isobe, Tomohisa, 5,367,088, Cl. 549-539.000.
Isogawa, Atsushi: *See—*
Nanami, Masayoshi; Isogawa, Atsushi; and Masahiro, Honda, 5,366,401, Cl. 440-89.000.
Isomura, Manabu: *See—*
Takahashi, Tomonori; and Isomura, Manabu, 5,366,941, Cl. 501-92.000.
Isomura, Satoru: *See—*
Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.
Isono, Ko, to Apple Computer, Inc. Graphics tablet scanning and error reduction. 5,367,130, Cl. 178-18.000.
Isoyama, Mitsunori, to Kubota Corporation. Gate valve. 5,366,199, Cl. 251-368.000.
Isoyama, Takashi, to Aisin Seiki Kabushiki Kaisha; and Kabushiki Kaisha Shinsangyokaihatsu. Medical data reporter. 5,367,555, Cl. 379-38.000.
Israel, Robert K.: *See—*
Webber, Neil F.; Israel, Robert K.; Kenley, Gregory; Taylor, Tracy M.; and Foster, Antony W., 5,367,698, Cl. 395-800.000.
Issler, Sandra L.: *See—*
Beutel, Jacob; Issler, Sandra L.; and Mickewich, Daniel J., 5,367,172, Cl. 250-483.100.
Italfarmaco S.p.A.: *See—*
Sala, Alberto; Banfi, Aldo; Benedini, Francesca; and Cereda, Roberta, 5,366,992, Cl. 514-409.000.
Ito, Koichi: *See—*
Fujii, Toshiro; Inukai, Hitoshi; Ito, Koichi; and Kato, Yuichi, 5,366,350, Cl. 417-242.000.
Ito, Satoru: *See—*
Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, 5,366,768, Cl. 427-407.100.
Ito, Yasuo: *See—*
Miyata, Shigeru; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,365,910, Cl. 123-627.000.
Ito, Yosuke; Hattori, Hiroshi; and Hayano, Fumihito, to Brother Kogyo Kabushiki Kaisha. Character output device. 5,367,620, Cl. 395-150.000.
Ito, Yujiro; Suzuki, Kohji; and Otobe, Takashi, to Sony Corporation. Optical atmospheric link system. 5,367,398, Cl. 359-154.000.
Itoh, Kunio; Inoue, Yoshio; Fujiki, Hironao; and Yoshino, Masachika, to Shin-Etsu Chemical Co., Ltd. Impression composition. 5,367,001, Cl. 523-109.000.
Itoh, Tomokazu: *See—*
Ueda, Koichi; Nishide, Yutaka; Gotoh, Akira; Takenami, Yoshio; Ogawa, Fujio; Sakuma, Teiji; Kobayashi, Takashi; and Itoh, Tomokazu, 5,365,659, Cl. 29-863.000.
Itoh, Tsukasa: *See—*
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.
Itokawa, Hiroaki: *See—*
Kakuishi, Mitsuo; Mikyoshi, Seiji; Itokawa, Hiroaki; Koizumi, Nobukazu; Awata, Yutaka; and Kurosaki, Yuko, 5,367,540, Cl. 375-103.000.
ITT Corporation: *See—*
Deiss, Werner, 5,366,391, Cl. 439-740.000.
Holmes, Roy H.; and Baril, Albert M., 5,367,402, Cl. 359-409.000.
ITT Industries, Inc.: *See—*
Kreutter, Erich, 5,366,389, Cl. 439-571.000.
ITT Rayonier Inc.: *See—*
Ford, Jerry C., 5,366,592, Cl. 162-49.000.
ITW Fastex Italia S.p.A.: *See—*
Cibin, Silvano, 5,366,683, Cl. 264-238.000.
Ivanov, Dentcho V.: *See—*
Currie, John F.; Ivanov, Dentcho V.; and Lecours, Andre, 5,366,454, Cl. 604-890.100.
Ivy Hill Corporation: *See—*
O'Brien, Patrick J.; Friedman, Herbert; Ford, Donald R.; and Durham, Larry, 5,366,074, Cl. 206-312.000.
Iwai, Toshiyuki; Iizuka, Kunihiko; Yamauchi, Yumi; Aoki, Atsushi; and Kubo, Noboru, to Sharp Kabushiki Kaisha. Information processing apparatus capable of opening two or more windows on screen, one window containing a page and other windows containing supplemental information. 5,367,623, Cl. 395-157.000.
Iwanaga, Mitsuyasu: *See—*
Otsuka, Kiichiro; and Iwanaga, Mitsuyasu, 5,367,163, Cl. 250-288.000.
Iwaooji, Makoto, to Casio Computer Co., Ltd. Digital pitch shifter for reading out pitch-shifted waveform data from a memory. 5,367,118, Cl. 84-604.000.
Iwasaki, Fumiharu: *See—*
Suda, Masayuki; Sakuhara, Toshihiko; Shinogi, Masataka; Iwasaki, Fumiharu; and Ando, Akito, 5,366,613, Cl. 205-221.000.
Iwase, Yukiji: *See—*
Sunagawa, Masao; Iwase, Yukiji; and Sato, Shigenori, 5,365,633, Cl. 15-326.000.
Iwashita, Kouichi; and Oh, Masanari, to Rohm Co., Ltd. Fuzzy inference system. 5,367,611, Cl. 395-3.000.
Iwashita, Yasusuke: *See—*
Sakamoto, Keiji; and Iwashita, Yasusuke, 5,367,238, Cl. 318-630.000.
Iwata, Takahiro: *See—*
Kitagawa, Masashi; Kimura, Kenichiro; and Iwata, Takahiro, 5,367,455, Cl. 364-424.010.
Iwaya, Shoichi: *See—*
Sato, Teiji; Nakata, Hitoshi; Ishizuki, Takayuki; Iwaya, Shoichi; Takahashi, Koji; Sannohe, Yuuiti; and Tanaka, Hitoshi, 5,366,718, Cl. 423-594.000.
Izumo, Takaharu: *See—*
Ohshima, Toshiyuki; Ishibashi, Hideo; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,367,095, Cl. 560-44.000.

J M C (S.A.): *See*—
Courtois, Jean-Marie; and Suratteau, Albert, 5,366,067, Cl. 198-518.000.

J& W McMichael Software Inc.: *See*—
McMichael, John P., 5,365,948, Cl. 128-898.000.

J. Willibald GmbH Maschinenfabrik: *See*—
Willibald, Josef, 5,366,169, Cl. 241-101.700.

Jackman, Raymond P., to United Recyclers, Inc. System and method for recycling of automotive oil filters. 5,366,165, Cl. 241-24.000.

Jackson, Melvin R., to General Electric Company. NbTiAlCrHf alloy and structures. 5,366,565, Cl. 148-426.000.

Jacobs Brake Technology Corporation: *See*—
Freiburg, Kurt E.; and Liebel, James D., 5,365,916, Cl. 123-320.000.

Jacobs, Johannes W. M.: *See*—
Scholten, Monica; Van Den Meerakker, Johannes E. A. M.; and Jacobs, Johannes W. M., 5,366,588, Cl. 156-656.000.

Jacobs, Lynn C.: *See*—
Lammers, Gerald B.; Barton, Patrick M.; Jacobs, Lynn C.; and Konshak, Michael V., 5,366,173, Cl. 242-338.100.

Jacobson, Jerry I. Therapeutic treatment of mammals. 5,366,435, Cl. 600-13.000.

Jacobson, Kenneth A.: *See*—
Pollard, Harvey B.; van Galen, Philip J. M.; and Jacobson, Kenneth A., 5,366,977, Cl. 514-263.000.

Jaeger-Waldau, Reinhold: *See*—
Guentert, Bernhard; Wolter, Michael; Ritsche, Stefan; Jaeger-Waldau, Reinhold; and Fuchs, Karl-Heinz, 5,366,122, Cl. 222-401.000.

Jagiella, Manfred; Holzmann, Michael; Sporl, Georg; and Topkaya, Ahmet, to Precitec GmbH. Nozzle comprising break-off region. 5,366,164, Cl. 239-600.000.

JaJa, Inc.: *See*—
Turrentine, Daniel D.; and Tibshraeny, Michael W., 5,366,073, Cl. 206-309.000.

Jakob, Wolfgang: *See*—
Gademann, Lothar; Drews, Ulrich; Jakob, Wolfgang; and Mindl, Anton, 5,367,227, Cl. 315-290.000.

Jakubowicz, Raymond F.: *See*—
Tomasso, David A.; Porte, Johannes J.; Vanarsdale, William D.; Jakubowicz, Raymond F.; and Riall, James D., 5,366,697, Cl. 422-64.000.

Jakupovic, Edib: *See*—
Trofast, Jan W.; Jakupovic, Edib; and Mansson, Katarina L., 5,367,114, Cl. 564-220.000.

James River Paper Company, Inc.: *See*—
Schutz, Rudolph W., 5,366,175, Cl. 242-597.600.

Jamieson, Eric K.; Yoo, Young S.; and Baggot, Breffni X., to Otis Elevator Company. Bidirectional eddy current overspeed protection for elevators. 5,366,044, Cl. 187-359.000.

Jan, Yih G.; and Peterson, Kenneth M., to Motorola, Inc. Communication system employing spectrum reuse on a spherical surface. 5,367,304, Cl. 342-352.000.

Janai, Meir I., to Quick Technologies Ltd. Active matrix display panel having connectable secondary switches. 5,367,392, Cl. 359-59.000.

Jandik, Petr: *See*—
Jones, William R.; and Jandik, Petr, 5,366,601, Cl. 204-180.100.

Jang, Hyung I. Method of coating an inner surface of a cathode ray tube with lining graphite. 5,366,758, Cl. 427-64.000.

Jang, Keun Y., to Goldstar Electron Co., Ltd. Multi-plunger manual transfer mold die. 5,366,368, Cl. 425-544.000.

Jang, Shis-Wen. Retractable caster assembly. 5,365,635, Cl. 16-34.000.

Jansen, Lex P., to C. R. Bard, Inc. Anatomically matched steerable PTCA guidewire. 5,365,943, Cl. 128-772.000.

Janssens, Francine; and Franklin, James, to Solvay (Societe Anonyme). Process for the preparation of 1,1-dichloro-1-fluoroethane. 5,367,102, Cl. 570-164.000.

Jansson, Ulf: *See*—
Dahllof, Hakan; Ekholm, Rolf; and Jansson, Ulf, 5,366,288, Cl. 366-176.000.

Japan Tobacco Inc.: *See*—
Irikura, Takayuki, 5,365,814, Cl. 83-74.000.
Matsumura, Takeshi; and Komori, Mikio, 5,367,144, Cl. 219-121.840.
Nishizaka, Toshiaki; Takamori, Hirokazu; and Hashimoto, Tuyoshi, 5,365,949, Cl. 131-280.000.
Yoshimoto, Kazuo; Ogawa, Takashi; Uematsu, Hiromi; Takeuchi, Manabu; and Uchiyama, Kensuke, 5,365,950, Cl. 131-291.000.

Jatco Corporation: *See*—
Yamamoto, Tomokazu, 5,365,736, Cl. 60-413.000.
Yuge, Kazuyoshi, 5,366,354, Cl. 418-26.000.

Javidi, Bahram; and Tang, Qing, to United States of America, Air Force. Method of removing spurious responses from optical joint transform correlators. 5,367,579, Cl. 382-31.000.

Jean-Pierre, Daniel: *See*—
Dupuis, Philippe; Motta Cruz, Eduardo; and Jean-Pierre, Daniel, 5,367,307, Cl. 343-700.0MS.

Jefferies, Steven R.: *See*—
Huang, Chin-Teh; Hammesfahr, Paul D.; and Jefferies, Steven R., 5,367,002, Cl. 523-116.000.

Jeffries, Alfred T., III, to OCG Microelectronic Materials, Inc. Coated substrate utilizing composition including selected phenolic derivatives of 4-(4-hydroxyphenyl)-cyclohexanone as sensitivity enhancers. 5,366,843, Cl. 430-165.000.

Jella, John F. Sectional door. 5,365,993, Cl. 160-201.000.

Jenkins Manufacturing Co., Inc.: *See*—
Winston, Felix J., 5,365,708, Cl. 52-212.000.

Jenner, Michael D.: *See*—
Matthews, Brian E.; and Jenner, Michael D., 5,367,166, Cl. 250-338.100.

Jenneskens, Theodorus J. J. M.: *See*—
d'Achard Van Enschut, Johannes F. M.; Jenneskens, Theodorus J. J. M.; and Swemmers, Antonius H. M., 5,367,553, Cl. 378-137.000.

Jennings, Alfred R., Jr., to Mobil Oil Corporation. Method for producing high water-cut gas with in situ water-disposal. 5,366,011, Cl. 166-265.000.

Jennings, Alfred R., Jr.: *See*—
Fieler, Eleanor R.; Jennings, Alfred R., Jr.; and Paul, James M., 5,366,016, Cl. 166-312.000.

Jennings, Kurt L.; Steele, Robert E.; and Miller, Gregory D., to General Motors Corporation. Fiber optic connector for connecting a fiber optic harness to an optical device. 5,367,595, Cl. 385-71.000.

Jensen, James N. Apparatus for closing sliding doors. 5,365,636, Cl. 16-67.000.

Jensen, Niels-Henrik: *See*—
Lundsgaard, Finn C.; Jensen, Niels-Henrik; and Andersen, Willy, 5,366,903, Cl. 436-165.000.

Jeol Ltd.: *See*—
Otsuka, Kiichiro; and Iwanaga, Mitsuyasu, 5,367,163, Cl. 250-288.000.

Jet Sew Technologies, Inc.: *See*—
Hatch, Nathaniel E.; Olewicz, Tadeusz; and Schramayr, Ernst, 5,365,867, Cl. 112-121.120.

Jetmarine AG: *See*—
Schulze, Manfred, 5,366,396, Cl. 440-38.000.

Jewell, Richard A. Method and apparatus for crosslinking individualized cellulose fibers. 5,366,591, Cl. 162-9.000.

Jha, Sunil C.; and Forster, James A., to Texas Instruments Incorporated. Catalytic converters - metal foil material for use therein, and a method of making the material. 5,366,139, Cl. 228-193.000.

Jinushi, Shinji: *See*—
Takimoto, Masahiro; Mizuno, Hisashi; and Jinushi, Shinji, 5,367,045, Cl. 528-53.000.

Joerns Healthcare Inc.: *See*—
Peterson, Warren J., 5,365,862, Cl. 108-144.000.

Johannsen, Kenneth L.; and Avischious, Raymond, to NEK Enterprises, Inc. Visual teaching aid. 5,366,378, Cl. 434-187.000.

Johno, Masahiro; and Yui, Tomoyuki, to Mitsubishi Gas Chemical Co., Inc. Method for driving an antiferroelectric liquid crystal cell. 5,367,391, Cl. 359-56.000.

Johns Hopkins University, The: *See*—
Asada, Kiyozo; Uemori, Takashi; Mukai, Hiroyuki; Kato, Ikunoshin; Laderman, Kenneth; and Anfinsen, Christian B., 5,366,883, Cl. 435-202.000.

Johnson, C. Barry, to Asten Group, Inc. Woven papermakers fabric having a unibody seam and method for making the same. 5,366,778, Cl. 428-58.000.

Johnson, Dale T.: *See*—
Viegas, Herman H.; Roehrich, Roland L.; and Johnson, Dale T., 5,365,744, Cl. 62-50.300.

Johnson, David L.: *See*—
Berk, Jody E.; Coon, James R.; Day, Paul R.; Heyrman, Peter J.; and Johnson, David L., 5,367,674, Cl. 395-600.000.

Johnson, Derwyn C.: *See*—
Hill, Kenneth O.; Malo, Bernard Y.; Bilodeau, Francois C.; and Johnson, Derwyn C., 5,367,588, Cl. 385-37.000.

Johnson, Duane R.: *See*—
Padula, Santo A.; and Johnson, Duane R., 5,365,791, Cl. 73-745.000.

Johnson, Dwayne L.: *See*—
Bookbinder, Mark J.; Greene, Michael E.; Johnson, Dwayne L.; Bellinger, Christopher M.; and Vasko, Susan C., 5,366,360, Cl. 418-55.500.

Johnson, Gerald E.; Laliberte, Ronald; Sansevero, Frank M.; Adrian, Willy; Wente, Gerald; and Zimmerman, R. Balustrade handrail entry housing. 5,366,060, Cl. 198-323.000.

Johnson, Jeffrey S., to Northeast Abrasives Diamond and Tools Corporation. Abrasive article. 5,366,800, Cl. 428-281.000.

Johnson, Jerome D., to Clear with Computers, Inc. Computer-assisted parts sales method. 5,367,627, Cl. 395-161.000.

Johnson & Johnson Inc.: *See*—
Levesque, Yvon, 5,366,451, Cl. 604-378.000.

Johnson, Mark J., to Motorola, Inc. Pipe-staggered apparatus and method utilizing carry look-ahead signal processing. 5,367,691, Cl. 395-800.000.

Johnson, Michael H.: *See*—
Cornette, Holley M.; and Johnson, Michael H., 5,366,009, Cl. 166-51.000.

Johnson, Richard I.: *See*—
Mei, Ping; Boyce, James B.; Johnson, Richard I.; Hack, Michael G.; and Lujan, Rene A., 5,366,926, Cl. 437-173.000.

Johnston, G. Gilbert; McAusland, Robert R.; and Dieter, William M., to Shanli Corporation. Folding infant restraint seat. 5,366,271, Cl. 297-250.100.

Johnston, Jesse C., Jr.; Kulig, James S.; Lewis, Steven F.; and Collet, Eric C., to Babcock & Wilcox Company, The. Open beam soot-blower. 5,365,890, Cl. 122-379.000.

Jolly, Patrick: *See*—
Corsan, Philippe; Jolly, Patrick; and Farvacque, Olivier, 5,367,408, Cl. 359-894.000.

Jones, Arthur A. Apparatus for exercising muscles of the upper legs and lower torso. 5,366,429, Cl. 482-136.000.

Jones, Dale C.; and Lacy, Michael A., to Vantage Products Corporation. Architectural element for attaching to a structure. 5,365,707, Cl. 52-211.000.

Jones, Gordon H.: *See*—
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,366,737, Cl. 424-450.000.

Jones, James D.: *See*—
Quadir, Tariq; Jones, James D.; and Chakraverty, Jyoti P., 5,366,669, Cl. 264-6.000.

Jones, John B., Jr.; and Zimmerman, Robert V., to Jones, John B., Jr. Vertical shaft processor including an improved removal grate. 5,366,170, Cl. 241-275.000.

Jones, Michael F., to Telequip Corporation. Auxillary coin dispenser with transaction data recording and transfer mechanisms. 5,366,404, Cl. 453-2.000.

Jones, Raymond T.; and Holt, Jack J., to Eastman Kodak Company. Antistatic layers for photographic elements and coating compositions for preparing the same. 5,366,544, Cl. 106-187.000.

Jones, Richard G.; and Miner, Jeffrey A., to Pilling Co. Esophageal dilation bougie. 5,366,471, Cl. 606-191.000.

Jones, Richard L. Ornamental assembly for use in non-aquatic viewing cages or the like. 5,365,884, Cl. 119-256.000.

Jones, Susan K.: *See*—
Pavelchek, Edward K.; Freeman, Peter W.; Bohland, John F.; Jones, Susan K.; and Dudley, Bruce W., 5,366,852, Cl. 430-326.000.

Jones, Thomas R.; and Phillips, Reginald L., to ECC International Ltd. Process of separating using a rotating screen. 5,366,639, Cl. 210-787.000.

Jones, William R.; and Jandik, Petr, to Millipore Corporation. Method for separating ionic species using capillary electrophoresis. 5,366,601, Cl. 204-180.100.

Jonkers, Alexander G. M.: *See*—
Wolters, Robertus A. M.; and Jonkers, Alexander G. M., 5,366,928, Cl. 437-192.000.

Jordan, Anthony F.: *See*—
Presprich, John W.; Jordan, Anthony F.; Hornback, Timothy D.; and Carr, Gregory S., 5,367,641, Cl. 395-275.000.

Jordan, Thomas L.: *See*—
Clouser, Sidney J.; Eamon, Michael A.; Jordan, Thomas L.; and Kohut, Stephen I., 5,366,612, Cl. 205-73.000.

Jouaneh, Musa K.; and Rangwala, Sabbir S., to AT&T Bell Laboratories. Method for laser welding of optical packages. 5,367,140, Cl. 219-121.640.

Jousson, Jean-Pierre; and Moret, Michel, to Les Produits Associes. LPA-Broxo S.A. Stem brush with automatic insertion system. 5,365,627, Cl. 15-22.100.

Juki Corporation: *See*—
Sato, Koki, 5,366,214, Cl. 271-100.000.

Jun, Dong-Soo: *See*—
Park, Chan-Sok; Choi, Young-Gwon; Lee, Dong-Jae; Choi, Do-Chan; Jun, Dong-Soo; and Seok, Yong-Sik, 5,367,489, Cl. 365-189.110

Juri, Tatsuro: *See*—
Nishino, Masakazu;; Yamamitsu, Chojuro; Juri, Tatsuro; Matsuta, Toyohiko; and Awamoto, Shigeru, 5,367,334, Cl. 348-389.000.

Kabushi Kaisha Toshiba: *See*—
Takagi, Minoru, 5,367,145, Cl. 219-494.000.

Kabushiki Kaisha Ace Denken: *See*—
Takemoto, Takatoshi; Kurihara, Yoshihide; Nakai, Koshiro; Yaegashi, Sakuji; Obara, Hiroyasu; and Tada, Mitsuhiro, 5,366,110, Cl. 221-2.000.

Kabushiki Kaisha HIMIKO: *See*—
Shibata, Osamu, 5,365,678, Cl. 36-29.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Matsuda, Toshinori; and Nishitani, Yoshito, 5,367,119, Cl. 84-617.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Shirouchi, Shoji; Sugiyama, Takeshi; and Morioka, Kouichi, 5,366,950, Cl. 502-328.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kusaka, Kohei; and Ohkura, Yasunori, 5,366,425, Cl. 477-118.000.

Kabushiki Kaisha Kyowa Kogyosho: *See*—
Naramura, Michiyuki, 5,365,835, Cl. 99-450.500.

Kabushiki Kaisha Shinsangyokaihatsu: *See*—
Isoyama, Takashi, 5,367,555, Cl. 379-38.000.

Kabushiki Kaisha Toshiba: *See*—
Fukasawa, Takayuki; Yamagishi, Kunihiko; and Sekine, Masatoshi, 5,367,468, Cl. 364-490.000.
Hasuo, Keisuke; and Sakuma, Takeshi, 5,367,704, Cl. 395-800.000.
Hida, Kazuki; Hirano, Yasushi; Hirukawa, Koji; and Nakajima, Tsuyoshi, 5,367,547, Cl. 376-435.000.
Kobayashi, Tohru; Yamamoto, Shuzo; Sakaniwa, Hiroshi; and Ohta, Satoshi, 5,367,554, Cl. 378-196.000.
Kubota, Hiroyasu, 5,365,877, Cl. 117-93.000.
Marui, Kuniyoshi; Sato, Goichi; Sawa, Buntaro; and Sato, Hiroshi, 5,367,556, Cl. 379-58.000.
Takagi, Shiro, 5,367,672, Cl. 395-600.000.
Takase, Satoru; and Furuyama, Tohru, 5,367,481, Cl. 365-149.000.
Ueno, Kiyoji, 5,367,694, Cl. 395-800.000.
Yoshida, Munehiro, 5,367,487, Cl. 365-189.090.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Fujii, Toshiro; Inukai, Hitoshi; Ito, Koichi; and Kato, Yuichi, 5,366,350, Cl. 417-242.000.
Fukanuma, Tetsuhiko; Yamamoto, Shinya; Iguchi, Masao; Yamada, Kiyohiro; Goto, Kunifumi; Yoshida, Tetsuo; Yamaguchi, Tetsuya; Mori, Tatsushi; and Kuroki, Kazuhiro, 5,366,357, Cl. 418-55.100.

Kabushiki Kaisha Universal: *See*—
Kurosu, Makoto, 5,366,058, Cl. 194-202.000.

Kabushiki Kaisha Yamada Dobby: *See*—
Yoshida, Fumio, 5,365,979, Cl. 139-66.00R.

Kabushiki Kaisha Yoshikawakun Kogyosho: *See*—
Yoshikawa, Toshimichi, 5,367,278, Cl. 335-285.000.

Kachmarik, David J.; Nerone, Louis R.; and Rutan, Douglas M., to General Electric Company. High-pressure sodium lamp control circuit providing constant peak current and color. 5,367,228, Cl 315-307.000.

Kackley, Nancy D.: *See*—
Giner, Jose D.; and Kackley, Nancy D., 5,366,670, Cl. 264-22.000.

Kadle, Prasad S., to General Motors Corporation. Heat exchanger assembly incorporating a helical coil oil cooler. 5,366,005, Cl 165-140.000.

Kadle, Prasad S.; and O'Keefe, Larry A., to General Motors Corporation. Method of manufacturing headered condensers. 5,366,008, Cl 165-173.000.

Kadoiri, Akiyoshi: *See*—
Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, 5,367,081, Cl. 546-316.000.

Kadomura, Shingo, to Sony Corporation. Dry etching method 5,366,590, Cl. 156-662.000.

Kadono, Masaya: *See*—
Yamazaki, Shunpei; and Kadono, Masaya, 5,366,579, Cl 156-247.000.

Kagan, Michael: *See*—
Gat, Tal; Gochman, Simcha; and Kagan, Michael, 5,367,660, Cl 395-425.000.

Kahl, W. Henry, to Rubbermaid Inc. Lunchbox. 5,366,106, Cl 220-555.000.

Kai, Tsukuru; Ohtani, Masayuki; Yanagisawa, Takaaki; Ishijima, Hisashi; and Nagano, Masaaki, to Ricoh Company, Ltd. Image forming apparatus having rotatable electrophotographic process unit 5,367,363, Cl. 355-210.000.

Kaidou, Chikara, to Nippon Steel Corporation. Electromagnetic energy converter. 5,367,277, Cl. 335-229.000.

Kaimoto, Shinshi; Sato, Takahiro; Hamamoto, Hiroshi; and Ishikawa, Masanori, to Mazda Motor Corporation. Automotive heating system 5,366,150, Cl. 237-2.00A.

Kaiser, Hans J. Electronic energy saving device. 5,367,246, Cl 323-212.000.

Kaji, Toshihiko: *See*—
Takeda, Yoshinobu; Hayashi, Tetsuya; Kaji, Toshihiko; Odani, Yusuke; Akechi, Kiyoaki; Kusui, Jun; Yokote, Takamasa; Tanaka, Akie; and Watsuji, Takashi, 5,366,691, Cl. 420-548.000.

Kajimoto, Yoshihiko: *See*—
Miyazaki, Hidetaka; Hasegawa, Toshiaki; Kajimoto, Yoshihiko; and Mochida, Susumu, 5,367,105, Cl. 570-234.000.

Kajita, Tetsuya: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Kajiwara, Edward M.: *See*—
Kiang, Webster W.; Kajiwara, Edward M.; and Mattson, Diana C., 5,367,022, Cl. 525-74.000.

Kajiwara, Toshiyuki; Ochiai, Tsuneo; and Nishi, Hidetoshi, to Hitachi, Ltd. Cross rolling mill, cross rolling method and cross rolling mill system. 5,365,764, Cl. 72-229.000.

Kakigi, Kunihiko: *See*—
Ishii, Fumito; Sugitani, Kenichiro; and Kakigi, Kunihiko, 5,365,987, Cl. 152-209.00R.

Kakuishi, Mitsuo; Mikyoshi, Seiji; Itokawa, Hiroaki; Koizumi, Nobukazu; Awata, Yutaka; and Kurosaki, Yuko, to Fujitsu Limited. Transversal filter for use in a digital subscriber line transmission interface. 5,367,540, Cl. 375-103.000.

Kakuta, Masayuki: *See*—
Yoshida, Takeshi; Matsuo, Takeshi; Kida, Yasuhiko; Kakuta, Masayuki; and Nagao, Tsuyoshi, 5,367,370, Cl. 355-321.000.

Kaletta, Bernd: *See*—
Beck, Gunther; and Kaletta, Bernd, 5,367,069, Cl. 540-122.000.

Kali und Salz Aktiengesellschaft: *See*—
Stahl, Ingo; Hollstein, Axel; Kleine-Kleffmann, Ulrich; Geisler, Iring; and Neitzel, Ulrich, 5,366,091, Cl. 209-11.000.

Kalthoff, Timothy V.; and Waterfall, Gregory S., to Burr-Brown Corporation. Isolating a CDAC array in a current integrating ADC 5,367,302, Cl. 341-166.000.

Kamada, Shinya: *See*—
Kuriyama, Minoru; Kamada, Shinya; Nagayama, Shigeru; and Sumimoto, Takayuki, 5,366,420, Cl. 475-129.000.

Kamaji, Hideki: *See*—
Ikeda, Masae; Kamaji, Hideki; and Hirose, Kazunori, 5,367,367, Cl 355-245.000.

Kambara, Hideki, to Hitachi, Ltd. Electrophoresis gel migration apparatus 5,366,608, Cl. 204-299.00R.

Kamentsky, Howard: *See*—
Schwartz, Stephen; Kamentsky, Howard; and Gorker, Michael, 5,366,221, Cl. 273-142.00A.

Kametani, Masatsugu, to Hitachi, Ltd. Distributed machine state controlled processor system with a CPU clocked with a reference signal delayed from a system clock. 5,367,662, Cl. 395-550.000.

Kamiyama, Takashi: *See*—
Ota, Masanori; Nakamura, Masashi; and Kamiyama, Takashi, 5,366,509, Cl. 8-108.100.

Kamon, Kazuya, to Mitsubishi Denki Kabushiki Kaisha. Projection exposing apparatus and projection exposing method. 5,367,358, Cl. 355-71.000.

Kamyr Aktiebolag: *See*—
Dahllof, Hakan; Ekholm, Rolf; and Jansson, Ulf, 5,366,288, Cl. 366-176.000.
Hoglund, Ronny, 5,366,347, Cl. 417-53.000.

Kanada, Yasuyuki: *See*—
Nakamura, Tsutomu; Kanada, Yasuyuki; and Nakai, Tetsuo, 5,366,522, Cl. 51-293.000.

Kanai, Masahiro; Hirooka, Masaaki; Hanna, Jun-Ichi; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Device for forming a deposited film. 5,366,554, Cl. 118-719.000.

Kanai, Takao: *See*—
Sezaki, Yoshinori; Kanai, Takao; Atsuta, Hitoshi; and Mandai, Ichirou, 5,367,467, Cl. 364-489.000.

Kanazawa, Akihiko; Endo, Takeshi; and Ikeda, Tomiki, to Nippon Chemical Industrial Co., Ltd. Antibacterial agent. 5,366,727, Cl. 424-78.350.

Kanazawa, Masaru: *See*—
Matsui, Nobuya; Morimura, Yasuhiro; Kunisaki, Shinichi; Fujiwara, Goro; Masuda, Mitsunobu; and Kanazawa, Masaru, 5,366,619, Cl. 210-139.000

Kanbara, Takaki: *See*—
Yamamoto, Takakazu; and Kanbara, Takaki, 5,367,038, Cl. 526-259.000.

Kanda, Mitsuhiko: *See*—
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.

Kaneda, Hidenori: *See*—
Kuramoto, Takashi; Utsuda, Tetsuji; Onga, Takeo; Kominato, Takashi; Kaneda, Hidenori; and Taga, Mitsuo, 5,366,581, Cl. 156-364.000.

Kanegafuchi Chemical Industry Co., Ltd.: *See*—
Miyama, Osamu; Fujita, Katsutoyo; Nishimura, Hayato; Matsumoto, Shigemi; and Tonoki, Satoshi, 5,367,016, Cl. 524-537.000.

Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Maruyama, Shigeru; Baba, Shigeki; Hisaki, Takashi; Maeda, Kenichi; Sawamura, Kazutomo; Takagi, Jiro; and Terata, Shukoh, to Honda Giken Kogyo Kabushiki Kaisha. Misfire-detecting system for internal combustion engines. 5,365,905, Cl. 123-406.000.

Kang, Keehyun, to Samsung Electron Devices Co., Ltd. Frequency discriminator of horizontal synchronizing signal for multi-mode monitor. 5,367,266, Cl. 327-47.000.

Kangsanaraks, Adisorn. Card game. 5,366,228, Cl. 273-292.000.

Kanno, Isao, to Sanshin Kogyo Kabushiki Kaisha. Speed detecting system for marine propulsion unit. 5,366,394, Cl. 440-2.000.

Kansai Paint Company, Limited: *See*—
Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, 5,366,768, Cl. 427-407.100.

Kansas State University Research Foundation: *See*—
Hu, Kuo-Kuang; Kirmser, Philip G.; Swartz, Stuart E.; and Hossain, Mustaque, 5,366,319, Cl. 404-52.000.
Marchin, George L.; and Lambert, Jack L., 5,366,636, Cl. 210-665.000.
Marchin, George L.; and Lambert, Jack L., 5,367,031, Cl. 525-328.300.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Irikura, Koji; and Yoshina, Atsuo, 5,366,040, Cl. 180-244.000.

Kanzaki Seishi Co., Ltd.: *See*—
Masumura, Yoshinobu; Matsubara, Motoki; Hongo, Takayasu; and Uemura, Hisashi, 5,366,302, Cl. 400-120.160.

Kanzaki Specialty Papers: *See*—
Granquist, Russell E., 5,366,952, Cl. 503-204.000.

Kao, Cheng-Kang, to Four Pillars Enterprise (M) SDN. BHD. Easepeeling and safe-dispensing tape roll for packing or sealing. 5,366,775, Cl. 428-40.000.

Kao Corporation: *See*—
Yamashita, Hiroyuki; Hatano, Kouichi; and Kuroda, Mutsumi, 5,366,655, Cl. 252-186.270.

Kaplan, Donald S.; Hermes, Matthew E.; Muth, Ross R.; Brown, David L.; and Holzwarth, Henry A., to United States Surgical Corporation. Packaged synthetic absorbable surgical elements. 5,366,081, Cl. 206-339.000.

Kapustnikova, Svetlana V.: *See*—
Mazur, Vladislav I.; Taran, Yuri N.; Kapustnikova, Svetlana V.; Trefilov, Viktor I.; Firstov, Sergey A.; and Kulak, Leonid D., 5,366,570, Cl. 148-669.000.

Karaki, Morihiro: *See*—
Satou, Yasuyuki; Karaki, Morihiro; and Shinoda, Masahisa, 5,367,512, Cl. 369-44.230.

Karashima, Takato: *See*—
Nishida, Masato; Oshima, Toshio; Ohiwa, Tsunemi; and Karashima, Takato, 5,366,252, Cl. 283-94.000.

Kardorff, Uwe: *See*—
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, 5,366,984, Cl. 514-361.000.

Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, to Kansai Paint Company, Limited. Method of forming coating films. 5,366,768, Cl. 427-407.100.

Kase, Noriko: *See*—
Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, 5,367,081, Cl. 546-316.000.

Kase, Takahisa: *See*—
Sichanugrist, Porponth; Nii, Tetsuro; and Kase, Takahisa, 5,366,713, Cl. 423-346.000.

Kashihara, Akio: *See*—
Yabuuchi, Naoya; Otsuka, Chikayuki; and Kashihara, Akio, 5,367,039, Cl. 526-284.000.

Kashiyama, Masamori: *See*—
Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.

Kaster, Robert L.; and Domaas, Perry M., to Kaster, Robert L. Method of side-to-end vascular anastomotic stapling. 5,366,462, Cl. 606-153.000.

Katakabe, Noboru: *See*—
Sogami, Atsushi; Katakabe, Noboru; Masanori, Yoshikawa; and Ikeda, Kouji, 5,367,322, Cl. 346-76.0PH.

Kataoka, Rieko: *See*—
Kobayashi, Masaki; and Kataoka, Rieko, 5,367,231, Cl. 315-383.000.

Katayama, Akira: *See*—
Amanuma, Tatsuo; Ohtsubo, Yoshiaki; Katayama, Akira; and Nagai, Jun, 5,367,353, Cl. 354-409.000.

Katayama Chemical, Inc.: *See*—
Katayama, Sakae, deceased; Tsuda, Atsushi; and Hanno, Kenzi, 5,366,661, Cl. 252-314.000.

Katayama, Hirohiko, executor: *See*—
Katayama, Sakae, deceased; Tsuda, Atsushi; and Hanno, Kenzi, 5,366,661, Cl. 252-314.000.

Katayama, Sakae, deceased (by Katayama, Hirohiko, executor); Tsuda, Atsushi; and Hanno, Kenzi, to Katayama Chemical, Inc. Method for forming a stabilized aqueous dispersion of inorganic particles or organic particles for food stuffs. 5,366,661, Cl. 252-314.000.

Kato, Akira: *See*—
Hamada, Akihiko; Horiuchi, Kuniyasu; and Kato, Akira, 5,367,028, Cl. 525-221.000.

Kato, Ikunoshin: *See*—
Asada, Kiyozo; Uemori, Takashi; Mukai, Hiroyuki; Kato, Ikunoshin, Laderman, Kenneth; and Anfinsen, Christian B., 5,366,883, Cl. 435-202.000.

Kato, Katsuhiko, to MECS Corporation. Positioning apparatus for a semiconductor wafer. 5,365,672, Cl. 33-520.000.

Kato, Kazuo: *See*—
Suzuki, Seiko; Kato, Kazuo; Matsumoto, Masahiro; Tsuchitani, Shigeki; Miki, Masayuki; and Yokota, Yoshihiro, 5,365,768, Cl. 73-1.00R.

Kato, Noriji: *See*—
Asai, Ichirou; Kato, Noriji; and Fuse, Mario, 5,365,875, Cl. 117-7.000.

Kato, Yasuhiro: *See*—
Nishiyama, Nobumasa; Kato, Yasuhiro; and Tsuyoshi, Toshiaki, 5,367,411, Cl. 360-66.000.

Kato, Yuichi: *See*—
Fujii, Toshiro; Inukai, Hitoshi; Ito, Koichi; and Kato, Yuichi, 5,366,350, Cl. 417-242.000.

Katori, Shigetatsu, to NEC Corporation. Data processor for multiple macro-service processings based on a single macro-service request. 5,367,676, Cl. 395-600.000.

Katsumata, Shigeo: *See*—
Nakano, Hirofumi; Fujii, Noboru; Yamashita, Yoshinori; Uosaki, Youichi; Chiba, Shigeru; Katsumata, Shigeo; and Tsuji, Yukari, 5,366,966, Cl. 514-152.000.

Katsuo, Yamada: *See*—
Takashi, Yoshida; Syoichi, Watanabe; Katsuo, Yamada; Tokihiko, Hamada; and Yuzuru, Hiraoka, 5,367,498, Cl. 367-107.000.

Kaufman, Benjamin J.: *See*—
DeRosa, Thomas F.; Russo, Joseph M.; Sung, Rodney L.; and Kaufman, Benjamin J., 5,366,518, Cl. 44-331.000.

Kaufman, Teodoro S.: *See*—
Sindelar, Robert D.; Bradbury, Barton J.; Kaufman, Teodoro S.; Ip, Stephen H.; Marsh, Henry C., Jr.; and Lee, Chew, 5,366,986, Cl. 514-374.000.

Kawabata, Itaru: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Kawabata, Kohji: *See*—
Sakane, Kazuo; Kawabata, Kohji; and Inamoto, Yoshiko, 5,366,970, Cl. 514-202.000.

Kawai, Hiroyuki: *See*—
Hayashi, Hideo; Kawai, Hiroyuki; Sonetaka, Tomoyasu; Nakanishi, Shingo; Asaoka, Junichi; and Mototani, Yuji, 5,366,832, Cl. 429-249.000.

Kawakami, Masaya; Seto, Susumu; and Tei, Seiken, to Nihon Millipore Kogyo. Method of determining viable microbial cell count. 5,366,867, Cl. 435-8.000.

Kawamoto, Koushi; and Omura, Kengo, to Fuji Xerox Co., Ltd. Interactive man-machine interface for simulating human emotions. 5,367,454, Cl. 364-419.200.

Kawamoto, Mitsuo; and Takahashi, Yasushi, to Hitachi, Ltd; and Hitachi device Engineering Co., Ltd. Semiconductor memory device providing reduced test time. 5,367,492, Cl. 365-201.000.

Kawamura, Junkichi: *See*—
Kunugihara, Hiromu; Yamaguchi, Tooru; Mieno, Gousuke; Kawamura, Junkichi; Asou, Akiyoshi; Sakashita, Tsutomu; Hata, Toshiyuki; and Nakamura, Tetsuya, 5,366,515, Cl. 29-25.030.

Kawamura, Tetsuya: *See*—
Kobayashi, Akira; Kawamura, Tetsuya; Teraya, Tatsuo; Kuchiki, Eiji; and Fujita, Yuji, 5,367,020, Cl. 525-64.000.

Kawasaki, Masahiro: Takahashi, Hiroyuki; and Tanimura, Yoshinari, to Asahi Kogaku Kogyo Kabushiki Kaisha. Motor driven lens and camera system. 5,367,354, Cl. 354-400.000.

Kawasaki, Yoshikazu: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Kawasawa, Shozo: *See*—
Hayashida, Tatsuaki; Kawasawa, Shozo; and Matsuda, Katsushi, 5,366,035, Cl. 180-24.010.

Kawase, Hiroyuki: *See*—
Mizuno, Takeyuki; and Kawase, Hiroyuki, 5,365,661, Cl. 29-889.210.

Kawashima, Shigeo: *See*—
Golwalkar, Suresh V.; Foehringer, Richard; Wentling, Michael; Takatsuki, Ryo; and Kawashima, Shigeo, 5,366,933, Cl. 437-215.000.

Kay, Mark A. Rock bit. 5,366,032, Cl. 175-393.000.

Kay, Stanley; Kim, Youngky; King, Lou; Mehta, Ashok D.; and Barnett, Charles, to Hughes Aircraft Company. Sequential power estimation for cellular system handoff. 5,367,559, Cl. 379-60.000.

Kazama, Seiji: *See*—
Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.

Kazama, Toshio, to Alps Electric Co., Ltd. Floating magnetic head slider with flexure wings located within slider L-shaped members and upper surface of slider. 5,367,419, Cl. 360-103.000.

KBL Apparel Manufacturing Inc.: *See*—
Lubahn, Kathleen A.; and Lehman, Rick A., 5,365,610, Cl. 2-23.000.

KCT Technologies GmbH: *See*—
Berger, Harald; Steins, Johannes; and Klintworth, Klaus, 5,366,538, Cl. 75-528.000.

Kearney, William P.; and Quigley, George T., to Stavo Industries, Inc. Enclosed thorough wash filter press. 5,366,627, Cl. 210-224.000.

Keates, Richard H.: *See*—
Schneider, Richard T.; and Keates, Richard H., 5,366,500, Cl. 623-6.000.

Kedo, Ko: *See*—
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,367,098, Cl. 585-452.000.

Keefer, Larry K.; Dunams, Tambra M.; and Saavedra, Joseph E., to United States of America, Health and Human Services. Oxygen substituted derivatives of nucleophile-nitric oxide adducts as nitric oxide donor prodrugs. 5,366,997, Cl. 514-611.000.

Keeler, Michael J.: *See*—
Dilling, Scott; Keeler, Michael J.; Ramsey, John; and Ross, Joseph M., 5,366,237, Cl. 280-711.000.

Keeley, James W.: *See*—
Barlow, George J.; and Keeley, James W., 5,367,697, Cl. 395-800.000.

Keenan, William F., to Texas Instruments Incorporated. Uncooled infrared detector and method for forming the same. 5,367,167, Cl. 250-338.400.

Keesman, Gerrit J.: *See*—
Veldhuis, Raymond N. J.; and Keesman, Gerrit J., 5,367,608, Cl. 395-2.380.

Keh-Lin, Jeng. Reversible folding ladder. 5,366,052, Cl. 182-88.000.

Keirs, Anne M.: *See*—
McCrae, James M.; Keirs, Anne M.; and Nimmo, John A., 5,366,546, Cl. 106-410.000.

Keith, Douglas H., to Applied Biosystems, Inc. Restriction/ligation labeling for primer initiated multiple copying of DNA ssequences. 5,366,877, Cl. 435-91.200.

Keith, Jon T.; Betts, E. Douglas; Dancy, Michael J.; and Pershinske, James E., to Gregor Jonsson, Inc. Semi-automatic shrimp peeling machine. 5,366,405, Cl. 452-5.000.

Kelley, Craig B.; Nelson, David E.; and Nelson, Peter M., to Caterpillar Inc. Steering and transmission shifting control device. 5,365,803, Cl. 74-484.00R.

Kelly, James G.; and Walsh, Charles R., to United States of America, Navy. Dual-frequency sonar system. 5,367,501, Cl. 367-157.000.

Kelly, Michael A. Chemical vapor deposition under a single reactor vessel divided into seperate reaction regions with its own depositing and exhausting means. 5,366,555, Cl. 118-719.000.

Kelly, Michael J.; Fanning, William A.; and Henneberger, Stacy A., to Minnesota Mining and Manufacturing Company. Transducer/track alignment method for magnetic recording media. 5,367,414, Cl. 360-77.120.

Kelly, Theodore C.: *See*—
Pudelski, Karen L.; Lowry, Joseph W.; Thompson, Thomas W.; Pearl, Robert A.; Elphingstone, Paul H.; Patterson, Mars; and Kelly, Theodore C., 5,366,055, Cl. 192-88.00B.

Kelly, William A.: *See*—
Economy, Richard; Kelly, William A.; Pelham, Anthony J.; Piazza, Thomas A.; and Quick, Lee T., 5,367,615, Cl. 395-129.000

Kenji, Nishiguchi: *See*—
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Kenley, Gregory: *See*—
Webber, Neil F.; Israel, Robert K.; Kenley, Gregory; Taylor, Tracy M.; and Foster, Antony W., 5,367,698, Cl. 395-800.000

Kennedy, Harold L.: *See*—
Righter, William H.; Nicoll, Andrew J.; and Kennedy, Harold L., 5,365,935, Cl. 128-710.000.

Kenner, Hugh R.: *See*—
Smith, Kevin J.; Kenner, Hugh R.; Savage, William A.; and Kwong, Alice, 5,367,651, Cl. 395-700.000.

Kenoyer, Stanley P.: *See*—
Colley, Stephen R.; Kenoyer, Stanley P.; and Wilde, Doran K., 5,367,636, Cl. 395-200.000.

Keogh, Michael J.: *See*—
Gau, Yimsan; Keogh, Michael J.; Leech, James R.; and McGee, Hugh E., 5,367,030, Cl. 525-326.500.

Kepke, Mark A.: *See*—
Bauer, Neal; and Kepke, Mark A., 5,367,635, Cl. 395-200.000.

Keratos, Inc.: *See*—
Py, Daniel, 5,366,499, Cl. 623-4.000.

Keritsis, Gus D.: *See*—
Arterbery, Cynthia W.; Callaham, W. Timothy; Keritsis, Gus D.; Laslie, Donald E.; Newman, Kenneth A.; Slagle, Roger S.; and White, Morris F., Jr., 5,365,951, Cl. 131-339.000.

Kerman, Edward H.; and Crovatto, Robert R. Containment device for safely inspecting, loading and unloading firearms. 5,366,105, Cl. 220-453.000.

Kerns, Charles; Zarakov, Eric; and Gilley, Thomas S., to Apple Computer, Inc. Digital camera with time bracketing feature. 5,367,332, Cl. 348-61.000.

Keromest, Catherine: *See*—
Durand, Jean-Pierre; Keromest, Catherine; and Born, Maurice, 5,366,649, Cl. 252-46.600.

Kersten, Jens-Heinrich; and Schmitz, Detlef, to Perfect-Valois Ventil GmbH. Deformable container for delivering liquid. 5,366,115, Cl. 222-105.000.

Keskin, Yucel K.: *See*—
Gokcebay, Asil T.; and Keskin, Yucel K., 5,367,295, Cl. 340-825.310.

Kewin, Daniel D. Header assembly for paper roll packaging. 5,366,085, Cl. 206-407.000.

Keyence Corporation: *See*—
Makino, Kazuhiro, 5,367,379, Cl. 356-446.000.

KGK Ecosystems, Inc.: *See*—
Gustafson, Keith W., 5,365,692, Cl. 43-124.000.

Khafizov, Yermek B.: *See*—
Freedman, Lev P.; Khafizov, Yermek B.; Buch, Elmar; Siebel, Kurt; and Berendes, Herbert, 5,366,001, Cl. 164-475.000.

Khaira, Manpreet S., to Intel Corporation. Round robin scheduler using a scheduler carry operation for arbitration. 5,367,679, Cl. 395-650.000.

Khandkar, Ashok C.: *See*—
Hartvigsen, Joseph J.; and Khandkar, Ashok C., 5,366,819, Cl. 429-17.000.

Khare, Manoj; and Cadambi, Sudarshan B., to Intel Corporation. Method and apparatus for efficient read prefetching of instruction code data in computer memory subsystems. 5,367,657, Cl. 395-425.000.

Khashayar, Abbas, to Alps Electric Co., Ltd. Keyboard testing methods and apparatus. 5,367,472, Cl. 364-550.000.

Kiang, Webster W.; Kajiwara, Edward M.; and Mattson, Diana C., to Quantum Chemical Corporation. Grafted polymeric products, and adhesive blends. 5,367,022, Cl. 525-74.000.

Kicher, Thomas P.: *See*—
Scheiner, Avram; Marsolais, E. Byron; Mortimer, J. Thomas; and Kicher, Thomas P., 5,366,493, Cl. 607-116.000.

Kiczek, Casimir R., to Freudenberg-NOK General Partnership. Low creep flange and engine cover assembly. 5,365,901, Cl. 123-195.00C.

Kida, Yasuhiko: *See*—
Yoshida, Takeshi; Matsuo, Takeshi; Kida, Yasuhiko; Kakuta, Masayuki; and Nagao, Tsuyoshi, 5,367,370, Cl. 355-321.000

Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, to Sharp Kabushiki Kaisha. Corona charger for image forming apparatus providing uniform surface charge of a recording medium. 5,367,366, Cl. 355-225.000.

Kieber, Joseph J.: *See*—
Ecker, Joseph R.; and Kieber, Joseph J., 5,367,065, Cl. 536-23.600.

Kienle, Gerhard K. Rotary internal combustion engine. 5,365,892, Cl. 123-44.00D.

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Wolverton, Steven R.; Kietzman, Terry L.; and Meyers, Keith E., 5,366,297, Cl. 384-9.000.

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Voss, Theodore N.; Curran, Barbara; Kirk, Karl D., III; and Cohen, Ellen R., 5,366,475, Cl. 606-204.000.

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Suwa, Toshio; and Kobayashi, Nobuaki, 5,366,536, Cl. 75-414.000.

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Kobayashi, Shigeru. Method and apparatus for manufacturing concrete panels by continous pressing. 5,366,676, Cl. 264-70.000.

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Moriya, Yukio; Kobayashi, Takeshi; Onoda, Takumi; Takamura, Fujitoshi; and Yokoyama, Toshio, 5,365,737, Cl. 60-469.000.

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Dekker, Don L.; and Hasbrouck, Robert R., 5,366,367, Cl. 425-194.000.

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Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.

Koga, Mitsuyuki: *See*—
Ogino, Takao; Suda, Arata; Aoki, Takayuki; and Koga, Mitsuyuki, 5,366,567, Cl. 148-258.000.

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Koibuchi, Kiyoshi: *See*—
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Kuramoto, Takashi; Utsuda, Tetsuji; Onga, Takeo; Kominato, Takashi; Kaneda, Hidenori; and Taga, Mitsuo, 5,366,581, Cl. 156-364.000.

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Yajima, Noboru; Yoshida, Hiroshi; and Komuro, Yasuko, 5,367,395, Cl. 359-110.000.

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Ikawa, Hiroshi; Kadoiri, Akiyoshi; Konagai, Yasuko; Yamaura, Tetsuaki; and Kase, Noriko, 5,367,081, Cl. 546-316.000.

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Goto, Narito, 5,366,795, Cl. 428-212.000.
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Bergner, Rainer; Droessler, Hubert; Konkel, Siegfried; Weiss, Volker; and Weltgen, Paul-Otto, 5,366,102, Cl. 215-100.00R.

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Lammers, Gerald B.; Barton, Patrick M.; Jacobs, Lynn C.; and Konshak, Michael V., 5,366,173, Cl. 242-338.100.

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Mori, Hisatoshi; Sato, Syunichi; Konya, Naohiro; Ohno, Ichiro; Ishii, Hiromitsu; Matsuda, Kunihiro; and Shiota, Junji, 5,367,179, Cl. 257-59.000.

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Schwarze, Heinz J.; and Kopp, Robert, 5,366,562, Cl. 134-22.120.

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Kotani, Miki: *See*—
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Koue, Toshiaki: *See*—
Matsui, Tsunehiro; and Koue, Toshiaki, 5,367,565, Cl. 379-100.000.

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MacLennan, Ian M.; Hewson, Clifford B.; Gnatowski, Marek; and Koutsandreas, Andrew, 5,365,830, Cl. 99-276.000.

Koves, William J.; Throndson, Roger L.; and Peters, Kenneth D., to UOP. Radial flow reactor with double perforated scallops. 5,366,704, Cl. 422-218.000.

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Absil, Robert P. L.; and Kowalski, Jocelyn A., 5,366,948, Cl. 502-68.000.

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Koyama, Yoshihisa: *See*—
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Koyo Seiko Co., Ltd.: *See*—
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Kozyra, William L.; Revyn, Ronald M.; and Utykanski, Victor A., to Budd Company, The. Wire form steering arm link. 5,366,233, Cl. 280-96.100.

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Platter, Sanford; Aldred, Jeffrey K.; and Kraemer, Richard J., 5,366,642, Cl. 210-767.000.

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Drummond, Rashmi; Westerman-Courtright, Karen; Little, John C.; Baxter, Marcia; and Wengerhoff, David L., 5,366,744, Cl. 426-128.000.

Rudan, Brenda J.; Yang, Marguerite L.; Miller, Anthony M.; Lombardo, Stephen P.; Moroz, Russell K.; Deffenbaugh, Lynn B.; Mehnert, David W.; Peluso, John; and Krishnamurthy, R. G., 5,366,754, Cl. 426-633.000.

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Krause, Helmfried: *See*—
Deller, Klaus; Despeyroux, Bertrand; and Krause, Helmfried, 5,366,938, Cl. 501-134.000.

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Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., 5,366,658, Cl. 252-56.00S.

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Szoke, Istvan; Einhorn, Robert K.; and Krespi, Yosef P., 5,367,292, Cl. 340-608.000.

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Henegan, Kym, 5,365,613, Cl. 2-174.000.

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Sakamoto, Hisashi, 5,366,868, Cl. 435-10.000.

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Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.

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Sulzer, James H., 5,366,275, Cl. 297-347.190.

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Pinto, Henry M.; Bombace, John; and La Barre, Paul, 5,366,774, Cl. 428-36.920.

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Dereu, Norbert; Hendel, Wolfram; and Labaudiniere, Richard, 5,366,982, Cl. 514-340.000.

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Boen, Roger; Ladirat, Christian; Gnilka, Jean-Pierre; and Pilliol, Henri, 5,367,532, Cl. 373-156.000.

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Diels, Jean-Claude M.; and Lai, Ming, 5,367,528, Cl. 372-18.000.

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Swinehart, Philip R.; Courts, S. Scott; and Holmes, D. Scott, 5,367,285, Cl. 338-308.000.

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Johnson, Gerald E.; Laliberte, Ronald; Sansevero, Frank M.; Adrian, Willy; Wente, Gerald; and Zimmerman, R., 5,366,060, Cl. 198-323.000.

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Von Seebach, H. Michael; Lamb, Charles W.; and Miller, F. MacGregor, 5,365,866, Cl. 110-345.000.

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Cain, Paul A.; Cramp, Susan M.; and Lambert, Claude, 5,366,957, Cl. 504-271.000.

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Marchin, George L.; and Lambert, Jack L., 5,366,636, Cl. 210-665.000.
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Bruneau, Pierre A. R.; and Lambert-van der Brempt, Christine M. P., 5,367,079, Cl. 546-157.000.

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Milaniak, Michael S.; Orzel, Dennis J.; Lamm, Foster P.; and DeSaulniers, David E., 5,366,765, Cl. 427-229.000.

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Lang, Fred D., to Exergetics Systems, Inc. Method for fuel flow determination and improving thermal efficiency in a fossil-fired power plant. 5,367,470, Cl. 364-498.000.

Lange, Ronald E.; Guenthner, Russell W.; and Rabins, Leonard, to Bull HN Information Systems Inc. Central processing unit incorporation selectable, precisa ratio, speed of execution derating. 5,367,699, Cl. 395-800.000.

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Kretschmer, Horst; and Langen, Hans-Jurgen, 5,366,043, Cl. 184-5.000.

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Chu, Lynn H.; Dragoni, Anthony H., Jr.; Eichelman, Fredric R., II; Huleatt, Thomas O.; Irgon, Adam E.; and Langion, Martha S., 5,367,473, Cl. 364-551.010.

Lanner, David A.: *See*—
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,366,748, Cl. 426-549.000.

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Bidell, Christopher R.; Lanyl, Colin K.; Mann, Anthony F.; and Stafford, Phillip, 5,366,621, Cl. 210-198.200.

Lanzilotti, Michael G.: *See*—
Brizzolara, Nancy S.; Lanzilotti, Michael G.; and Lawter, James R., 5,366,733, Cl. 424-426.000.

Laparomed Corporation: *See—*
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Lapp, Micheal C., Sr.: *See—*
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Lappe, Peter: *See—*
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Erickson, Paul R., 5,367,328, Cl. 347-7.000.

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Arterbery, Cynthia W.; Callaham, W. Timothy; Keritsis, Gus D.; Laslie, Donald E.; Newman, Kenneth A.; Slagle, Roger S.; and White, Morris F., Jr., 5,365,951, Cl. 131-339.000.

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Lassiter, Perry B.: *See—*
Ferguson, Alan; and Lassiter, Perry B., 5,366,942, Cl. 501-95.000.

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Clark, Anthony J.; and Lathe, Richard, 5,366,894, Cl. 435-320.100.

Lattin, Danny L.; Breen, Philip J.; Compadre, Cesar M.; Fifer, E. Kim; Slavik, Michael F.; Salari, Hamid; and Engler, Phillip V., to University of Arkansas, The Board of Trustees of The. Use of quaternary ammonium compounds to remove salmonella contamination from meat products. 5,366,983, Cl. 514-358.000.

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Lau, Steven E.: *See—*
Hermansen, Ralph D.; and Lau, Steven E., 5,367,006, Cl. 523-428.000.

Lauder, James V.: *See—*
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Sentoku, Hideshi, 5,366,407, Cl. 453-3.000.

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Law, Kam S.: *See—*
Robertson, Robert; Law, Kam S.; and White, John M., 5,366,585, Cl. 156-643.000.

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Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; and Sharkey, Hugh R., 5,366,490, Cl. 607-99.000.

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Heussner, Edward R.; and Goins, Jeffrey L., Sr., 5,366,270, Cl. 297-238.000.

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Lauf, Robert J.; Hoffheins, Barbara S.; and Fleming, Pamela H., 5,367,283, Cl. 338-34.000.

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Matsumiya, Masato, to Fujitsu Limited. Semiconductor memory. 5,367,480, Cl. 365-63.000.

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Matsushita Electric Industrial Co., Ltd.: *See—*
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Hayashi, Hideo; Kawai, Hiroyuki; Sonetaka, Tomoyasu; Nakanishi, Shingo; Asaoka, Junichi; and Mototani, Yuji, 5,366,832, Cl. 429-249.000.

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Matsushita Electric Works, Ltd.: *See—*
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Matsushita, Kiwami: *See—*
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Matsuzaki, Shiro: *See—*
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Suzuki, Kazuhiro; Harada, Eriya; and Minoura, Akira, 5,365,802, Cl. 74-482.000.
Minteq International Inc.: *See—*
Rumpeltin, Charles R.; and Dody, Julie A., 5,366,944, Cl. 501-99.000.
Miranda, Frederick . Vehicle for removing snow accumulated on roads. 5,365,681, Cl. 37-227.000.
Mir handani, Vinod: *See—*
Harris, Ellis D.; and Mirchandani, Vinod, 5,367,400, Cl. 359-216.000.
Mirhakimi, Siamak: *See—*
Nofsinger, Stephen C.; and Mirhakimi, Siamak, 5,365,904, Cl. 123-359.000.
Miro, Felix: *See—*
Feigenbaum, Barry A.; and Miro, Felix, 5,367,671, Cl. 395-600.000.
Mirza, M. Ather, to Mirza, M. Ather; Esser, Theodor; and King, Eugene T. Endoscopic surgical procedure and instrument for implementation thereof. 5,366,465, Cl. 606-170.000.
Misawa, Hiroaki: *See—*
Ishikawa, Masazumi; Misawa, Hiroaki; and Kitamura, Noboru, 5,367,160, Cl. 250-251.000.
Misawa, Yutaka: *See—*
Aoyama, Takashi; Hosoi, Kishu; Misawa, Yutaka; Kimoto, Koji; Isakozawa, Shigeto; and Ueda, Kazuhiro, 5,367,171, Cl. 250-443.100.
Mischke, Peter; Opitz, Konrad; and Rebsamen, Karl, to Hoechst Aktiengesellschaft. Low-dust or dust-free dye preparations. 5,366,512, Cl. 8-524.000.
Mishkin, Martin A.: *See—*
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,366,748, Cl. 426-549.000.
Mita Industrial Co., Ltd.: *See—*
Yoshida, Takeshi; Matsuo, Takeshi; Kida, Yasuhiko; Kakuta, Masayuki; and Nagao, Tsuyoshi, 5,367,370, Cl. 355-321.000.
Mitchell, Thomas O.: *See—*
Fink, Arthur C., Jr.; and Mitchell, Thomas O., 5,365,973, Cl. 137-614.040.
Mito, Kazunori: *See—*
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.
Mitroshnikov, Andrei N.: *See—*
Shabalin, Vladimir N.; Shatokhina, Svetlana N.; Dutov, Valery V.; Trapeznikova, Margarita F.; Morozov, Andrei P.; Mitroshnikov, Andrei N.; Makushin, Leonid G.; and Yakovlev, Sergei A., 5,366,899, Cl. 436-88.000.
Mitschelen, Rolf; and Siegel, Gunter, to Mercedes-Benz AG. Device for adjusting vehicle seats. 5,366,196, Cl. 248-424.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.
Hosotani, Osamu, 5,367,317, Cl. 345-193.000.
Kamon, Kazuya, 5,367,358, Cl. 355-71.000.
Miyamoto, Takayuki, 5,367,485, Cl. 365-189.050.
Mizuochi, Takashi; Kitayama, Tadayoshi; Shimizu, Katsuhiro; Matsushita, Kiwami; Takemura, Nobuyuki; and Nakagawa, Eiichi, 5,367,587, Cl. 385-27.000.
Mori, Junji; and Miyamoto, Takayuki, 5,367,486, Cl. 365-189.050.
Murakami, Tokumichi; and Shimada, Toshiaki, 5,367,335, Cl. 348-405.000.
Nagao, Masashi; Yoshimura, Hideto; and Inaguchi, Takashi, 5,365,743, Cl. 62-47.100.
Nakao, Shin, 5,366,794, Cl. 428-209.000.
Orime, Nobutake; Higa, Morio; and Chatani, Yoshiyuki, 5,367,313, Cl. 343-853.000.
Satou, Yasuyuki; Karaki, Morihiro; and Shinoda, Masahisa, 5,367,512, Cl. 369-44.230.

Sawazaki, Nobuyuki; Taruya, Masaaki; and Koiwa, Mitsuru, 5,365,909, Cl. 123-617.000.
Takahira, Kenichi, 5,367,149, Cl. 235-380.000.
Tanaka, Sueyoshi; Sakakibara, Zyunzi; and Tsutsumi, Yasutsugu, 5,366,364, Cl. 425-116.000.
Ueda, Kiyotoshi; and Nishimura, Kazuhiro, 5,367,263, Cl. 324-537.000.
Wataya, Seiji, 5,366,424, Cl. 477-107.000.
Yamagata, Tadato, 5,367,493, Cl. 365-222.000.
Yamamoto, Kazuya; and Maemura, Kousei, 5,367,271, Cl. 332-105.000.
Yokoyama, Etsuya; and Okamoto, Yasusi, 5,367,644, Cl. 395-325.000.
Yoshida, Masahiro, 5,367,181, Cl. 257-91.000.
Yoshizumi, Toshiaki; Hidaka, Mikio; and Hirano, Yoshiki, 5,367,134, Cl. 200-148.00F.

Mitsubishi Electric Corporation: *See—*
Ueda, Yasuhiro; and Takahashi, Hironari, 5,365,772, Cl. 73-40.700.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Fushimi, Norio; Kedo, Ko; Inamasa, Kenji; and Takagawa, Makoto, 5,367,098, Cl. 585-452.000.
Johno, Masahiro; and Yui, Tomoyuki, 5,367,391, Cl. 359-56.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Hayashida, Tatsuaki; Kawasawa, Shozo; and Matsuda, Katsushi, 5,366,035, Cl. 180-24.010.
Hirako, Osamu; Danno, Yoshiaki; and Shimada, Makoto, 5,366,610, Cl. 204-406.000.

Mitsubishi Kasei America, Inc.: *See—*
Nakazawa, Tokuaki; Rudisi, Joseph J.; and Suzuki, Osamu, 5,366,803, Cl. 428-335.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Miyoshi, Kinya; Okada, Masato; Takada, Makoto; and Goto, Mayumi, 5,366,859, Cl. 435-5.000.

Mitsubishi Yuka Badische Co., Ltd.: *See—*
Hattori, Kazuhide; Yamaji, Hiroyuki; Hatakeyama, Yoshikazu; Shida, Yoshiyuki; Tamura, Atushi; Kitaoka, Takumi; and Kohama, Takashi, 5,366,674, Cl. 264-45.400.

Mitsui Petrochemical Industries, Ltd.: *See—*
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.
Shirayanagi, Ryutaro; Shimizu, Masaki; and Shimokawa, Masami, 5,366,792, Cl. 428-196.000.

Mitsumoto, Kinya: *See—*
Akimoto, Kazuhiro; Usami, Masami; Ogiue, Katsumi; Murayama, Hiroshi; Abe, Hitoshi; Kashiyama, Masamori; Kobayashi, Yoshikuni; Isomura, Satoru; and Mitsumoto, Kinya, 5,367,490, Cl. 365-194.000.

Mitsuyama, Junichi: *See—*
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Mixon, Charles M.: *See—*
Meisenburg, Gary L.; Eick, Edward C.; Magee, Phillip D.; Mixon, Charles M.; Weronke, Robert B.; Shields, Waylon D.; Smith, Woody R.; and Pavey, Steven J., 5,366,398, Cl. 440-81.000.

Miyagawa, Tatsuyuki: *See—*
Tokuno, Masateru; and Miyagawa, Tatsuyuki, 5,366,217, Cl. 271-176.000.

Miyama, Osamu; Fujita, Katsutoyo; Nishimura, Hayato; Matsumoto, Shigemi; and Tonoki, Satoshi, to Kanegafuchi Chemical Industry Co., Ltd. Reinforced resin composition. 5,367,016, Cl. 524-537.000.

Miyamoto, Takayuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device including output latches for improved merging of output data. 5,367,485, Cl. 365-189.050.

Miyamoto, Takayuki: *See—*
Mori, Junji; and Miyamoto, Takayuki, 5,367,486, Cl. 365-189.050.

Miyasaka, Yoshihiko: *See—*
Tsukamoto, Hideharu; Matsuzaki, Shiro; and Miyasaka, Yoshihiko, 5,366,174, Cl. 242-532.100.

Miyashige, Yoshiki, to Rockwell International Corporation. Device for controlling a web in a printing press. 5,365,844, Cl. 101-228.000.

Miyashita, Kazunori: *See—*
Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, 5,366,423, Cl. 475-346.000.

Miyata, Shigeru; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, to NGK Spark Plug Co., Ltd. Misfire detector for use in internal combustion engine. 5,365,910, Cl. 123-627.000.

Miyazaki, Chiharu: *See—*
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.

Miyazaki, Hidetaka; Hasegawa, Toshiaki; Kajimoto, Yoshihiko; and Mochida, Susumu, to Tokuyama Corporation; and Nippon Furnace Kogyo Kaisha, Ltd. Process and device for production of allyl chloride. 5,367,105, Cl. 570-234.000.

Miyazawa, Jiro: *See—*
Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

Miyazoe, Seigo: *See—*
Okude, Yoshitaka; Hisai, Tsuneyoshi; Fushimi, Akira; Takeoka, Kazuhiko; and Miyazoe, Seigo, 5,367,026, Cl. 525-199.000.

Miyoshi, Kinya; Okada, Masato; Takada, Makoto; and Goto, Mayumi, to Mitsubishi Petrochemical Co., Ltd. Radioimmunoassay method. 5,366,859, Cl. 435-5.000.

Miyoshi, Takahito; Nishikawa, Yasuo; Sato, Takanori; and Tada, Sugihiko, to Fuji Photo Film Co., Ltd. Photographic printing paper support. 5,366,854, Cl. 430-538.000.

Mize, Patrick D.: *See—*
Pitner, J. Bruce; Linn, Jr. C. Preston; and Mize, Patrick D., 5,367,058, Cl. 530-391.900.

Mizrahi, Victor: *See—*
MacDonald, William M.; Mizrahi, Victor; and Short, Kenneth T., 5,367,589, Cl. 385-37.000.

Mizuno, Hisashi: *See—*
Takimoto, Masahiro; Mizuno, Hisashi; and Jinushi, Shinji, 5,367,045, Cl. 528-53.000.

Mizuno, Takeyuki; and Kawase, Hiroyuki, to NGK Insulators, Ltd. Ceramic-metal composite joint body. 5,365,661, Cl. 29-889.210.

Mizuochi, Takashi; Kitayama, Tadayoshi; Shimizu, Katsuhiro; Matsushita, Kiwami; Takemura, Nobuyuki; and Nakagawa, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Optical amplifier. 5,367,587, Cl. 385-27.000.

Mizusawa Industrial Chemicals Ltd.: *See—*
Sato, Teiji; Nakata, Hitoshi; Ishizuki, Takayuki; Iwaya, Shoichi; Takahashi, Koji; Sannohe, Yuuiti; and Tanaka, Hitoshi, 5,366,718, Cl. 423-594.000.

Mizutani, Minoru; and Watanabe, Shyoichi, to Oki Electric Industry Co., Ltd. Printer including integral one-piece main frame. 5,366,306, Cl. 400-694.000.

MK Medical Ltd.: *See—*
Furukawa, Susumu; and Matsubara, Tomoyo, 5,366,978, Cl. 514-263.000.

Mobil Oil Corp.: *See—*
Absil, Robert P. L.; and Kowalski, Jocelyn A., 5,366,948, Cl. 502-68.000.
Beck, Jeffrey S.; Olson, David H.; and McCullen, Sharon B., 5,367,099, Cl. 585-475.000.
Fieler, Eleanor R.; Jennings, Alfred R., Jr.; and Paul, James M., 5,366,016, Cl. 166-312.000.
Jennings, Alfred R., Jr., 5,366,011, Cl. 166-265.000.
Kresge, Charles T.; Marler, David O.; Rav, Gayatri S.; and Rose, Brenda H., 5,366,945, Cl. 502-60.000.
Shen, Dong-Ming; and Wu, Margaret M., 5,367,097, Cl. 585-22.000.

Mochida, Susumu: *See—*
Miyazaki, Hidetaka; Hasegawa, Toshiaki; Kajimoto, Yoshihiko; and Mochida, Susumu, 5,367,105, Cl. 570-234.000.

Mochizuki, Norihiro: *See—*
Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, 5,367,216, Cl. 310-313.00R.

Mochizuki, Satoshi: *See—*
Nakamura, Shinsuke; Mochizuki, Satoshi; and Hariu, Naoki, 5,366,129, Cl. 225-42.000.

Modegi, Toshio: *See—*
Kurata, Michio; Modegi, Toshio; and Arai, Eisuke, 5,367,613, Cl. 395-109.000.

Moe, Warren R.; Russell, Larry A.; Russell, Teresa L.; Schevon, Catherine A.; and Stone, Roger E., to AT&T Corp. Common channel signaling message intercept system. 5,367,566, Cl. 379-243.000.

Mokkapati, Vijaya K.: *See—*
Bestwick, Richard K.; Mokkapati, Vijaya K.; and Ferro, Adolph J., 5,366,954, Cl. 504-114.000.

Molnlycke AB: *See—*
Widlund, Leif U. R.; and Hansson, Roy, 5,366,452, Cl. 604-385.200.

Moloney, Keith C.: *See—*
Gillbanks, Peter J.; and Moloney, Keith C., 5,366,344, Cl. 416-213.00R.

Momose, Kiyoharu: *See—*
Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,367,324, Cl. 347-43.000.

Monitoring Technology Corp.: *See—*
Hernandez, Walter; and Page, Edward, 5,365,787, Cl. 73-660.000.

Monkiewicz, Jaroslaw: *See—*
Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., 5,366,658, Cl. 252-56.00S.

Monro, Richard J. Flame stabilizer for solid fuel burner. 5,365,865, Cl. 110-264.000.

Monroe, Kerry J.: *See—*
Hamilton, Bradley W.; Slattery, John W.; and Monroe, Kerry J., 5,367,640, Cl. 395-275.000.

Monsan, Pierre F.: *See—*
Biton, Jacques; Gellf, Gerard; Michel, Jean-Marc; Paul, Francois B.; and Monsan, Pierre F., 5,366,962, Cl. 514-54.000.

Monsanto Company: *See—*
Franczyk, Thaddeus S., 5,367,112, Cl. 562-526.000.

Monsanto Enviro-Chem Systems, Inc.: *See—*
Matros, Yurii S.; Yeo, Robert A.; and McCombs, David E., 5,366,708, Cl. 423-210.000.

Montalvo, Rafael M.: *See—*
Chang, Paul; Delp, Gary S.; Meleis, Hanafy E.; Montalvo, Rafael M.; Seidman, David I.; Tantawy, Ahmed N.; and Zumbo, Dominick A., 5,367,643, Cl. 395-325.000.

Montessissa, Giancarlo; and Prella, Giovanni, to Nestec S.A. Flexible easy-opening pack. 5,366,295, Cl. 383-201.000.

Montgomery, Alan B.: *See—*
Debs, Robert J.; Montgomery, Alan B.; Conte, John E.; and Golden, Jeffrey A., 5,366,726, Cl. 424-45.000.

Montres Rado S.A.: *See—*
Carrola, Rui, 5,365,753, Cl. 63-4.000.

Moore Business Forms, Inc.: *See—*
Bane, John C., 5,366,087, Cl. 206-459.500.
Haan, Henk; Casper, Mark S.; Balshaw, Martha; and Schindler, Kevin A., 5,366,146, Cl. 229-304.000.
Lombardo, Leo, 5,366,410, Cl. 462-6.000.
Sauerwine, Dean N., 5,366,145, Cl. 229-304.000.

Moore, Jeffrey A.: *See—*
Terpstra, Robert L.; Lograsso, Barbara K.; Anderson, Iver E.; and Moore, Jeffrey A., 5,366,688, Cl. 419-36.000.

Moore, John C., to Capital Data. Safety tire valve. 5,365,967, Cl. 137-226.000.

Moore, Richard E.: *See—*
Bonjouklian, Roseanne; Moore, Richard E.; Patterson, Gregory [redacted] L.; and Smitka, Tim A., 5,366,890, Cl. 435-252.100.

Moore, Richard P. Specific gravity separating unit. 5,366,638, Cl. 210-802.000.

Morad, Fred I., to Worldwide Integrated Resources. Non-splashing urinal deodorant block holder. 5,365,616, Cl. 4-309.000.

Moran, Michael E.: *See—*
Cohen, Amy S. C.; Gleason, Christopher F.; Hyatt, Donald R.; Moran, Michael E.; Stevens, Jeffrey N.; and Wecker, Alan J., 5,367,621, Cl. 395-154.000.

Morano, James R., to Crompton & Knowles Corporation. Thermostable edible composition having ultra-low water activity. 5,366,750, Cl. 426-572.000.

Morehart, Christine L., to Bridgestone/Firestone, Inc. High modulus low hysteresis rubber compound for pneumatic tires. 5,367,014, Cl. 524-526.000.

Moret, Michel: *See—*
Jousson, Jean-Pierre; and Moret, Michel, 5,365,627, Cl. 15-22.100.

Moreton, David J.: *See—*
Hancock, David A.; Moreton, David J.; and Morton, Lee J., 5,367,032, Cl. 525-333.800.

Morgan, John P.; Hendricks, Jack E.; and Post, Kurt, to Flashes Publishers, Inc. Delivery receptacle. 5,366,147, Cl. 232-1.00C.

Morgan, Stuart K.: *See—*
Freeman, Mike; Morgan, Stuart K.; and Romm, Mike, 5,365,658, Cl. 29-861.000.
Freeman, Mike; Morgan, Stuart K.; and Romm, Mike, 5,366,388, Cl. 439-540.000.

Mori, Chuzo, to Carl Manufacturing Co., Ltd. Device for moving a horizontal long article vertically. 5,365,820, Cl. 83-455.000.

Mori, Hiromitsu; and Kobayashi, Chikara, to Osaka Gas Co., Ltd. Vane pump. 5,366,361, Cl. 418-261.000.

Mori, Hisatoshi; Sato, Syunichi; Konya, Naohiro; Ohno, Ichiro; Ishii, Hiromitsu; Matsuda, Kunihiro; and Shiota, Junji, to Casio Computer Co., Ltd. Thin-film transistor having electrodes made of aluminum, and an active matrix panel using same. 5,367,179, Cl. 257-59.000.

Mori, Junji; and Miyamoto, Takayuki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device capable of correctly and serially reading stored data signals. 5,367,486, Cl. 365-189.050.

Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, to Seiko Epson Corporation. Small-sized reduction gear with radial beam between axially extending columns of a carrier. 5,366,423, Cl. 475-346.000.

Mori, Takao: *See—*
Takii, Osamu; Baba, Motoshi; Mori, Takao; and Abe, Sumito, 5,365,908, Cl. 123-564.000.

Mori, Tatsushi: *See—*
Fukanuma, Tetsuhiko; Yamamoto, Shinya; Iguchi, Masao; Yamada, Kiyohiro; Goto, Kunifumi; Yoshida, Tetsuo; Yamaguchi, Tetsuya; Mori, Tatsushi; and Kuroki, Kazuhiro, 5,366,357, Cl. 418-55.100.

Mori, Toyokazu: *See—*
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Mori, Yozi; Suzuki, Motonori; Kikuchi, Hiroshi; and Motoda, Kenrou, to Motoda Electronic Industry Co., Ltd.; and World Chemical Co., Ltd. Liquid recovering apparatus. 5,366,629, Cl. 210-242.300.

Morikawa, Michitaka; Higashi, Koji; and Shindo, Tadashi, to Sumitomo Chemical Company, Limited. Process for producing phase retarder. 5,366,682, Cl. 264-230.000.

Morimura, Yasuhiro: *See—*
Matsui, Nobuya; Morimura, Yasuhiro; Kunisaki, Shinichi; Fujiwara, Goro; Masuda, Mitsunobu; and Kanazawa, Masaru, 5,366,619, Cl. 210-139.000.

Morinaga, Hitoshi: *See—*
Yamada, Tsutomu; Okajima, Taizo; Ootani, Kouichi; and Morinaga, Hitoshi, 5,366,542, Cl. 106-3.000.

Morioka, Kouichi: *See—*
Shirouchi, Shoji; Sugiyama, Takeshi; and Morioka, Kouichi, 5,366,950, Cl. 502-328.000.

Morioka, Makoto; Ikemori, Masato; Hattori, Kazuo; and Suzuki, Hiroshi, to Fujitsu Limited. Automatic icon generation system. 5,367,626, Cl. 395-159.000.

Morioka, Tetsuya: *See—*
Mikawa, Naohiro; Ueki, Satoshi; Koyama, Naomi; Furuhashi, Hiroyuki; Morioka, Tetsuya; and Toki, Shigeyuki, 5,367,033, Cl. 525-343.000.

Morita, Masatoshi, to Canon Kabushiki Kaisha. Cylinder apparatus and method of controlling same. 5,365,827, Cl. 91-1.000.

Morita, Shizuo: *See—*
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,367,365, Cl. 355-219.000.

Morita, Shoji: *See—*
Hara, Seinosuke; Yamada, Yoshihiko; Morita, Shoji; Yamakawa, Yukio; and Hidaka, Akira, 5,365,896, Cl. 123-90.170.

Moriya, Koichi: *See—*
Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,366,976, Cl. 514-258.000.

Moriya, Yuichi, to Tomoegaw Paper Co., Ltd. Toner for electrostatic development. 5,366,838, Cl. 430-106.600.

Moriya, Yukio; Kobayashi, Takeshi; Onoda, Takumi; Takamura, Fujitoshi; and Yokoyama, Toshio, to Komatsu Ltd. Hydraulically-operated equipment for construction machinery. 5,365,737, Cl. 60-469.000.

Morlotti, Romano, to Minnesota Mining & Manufacturing Company. Method for recording and reproducing a radiation image, apparatus using said method, panel for storing the radiation image and photostimulable phosphor. 5,367,173, Cl. 250-484.400.

Morningstar, Charles L.; and Gill, Tracy G., to Whitehall Corporation. Vibration isolation module for towed hydrophone streamer. 5,367,499, Cl. 367-154.000.

Moroz, Russell K.: *See—*
Rudan, Brenda J.; Yang, Marguerite L.; Miller, Anthony [redacted]; Lombardo, Stephen P.; Moroz, Russell K.; Deffenbaugh, Lynn B.; Mehnert, David W.; Peluso, John; and Krishnamurthy, R. G., 5,366,754, Cl. 426-633.000.

Morozov, Andrei P.: *See—*
Shabalin, Vladimir N.; Shatokhina, Svetlana N.; Dutov, Valery V., Trapeznikova, Margarita F.; Morozov, Andrei P.; Mitroshnikov, Andrei N.; Makushin, Leonid G.; and Yakovlev, Sergei A., 5,366,899, Cl. 436-88.000.

Morr, Jurgen: *See—*
Grunau, Rudi; Honlinger, Herwig; and Morr, Jurgen, 5,366,210, Cl. 267-140.400.

Morra, Pierangelo: *See—*
DiVita, Pietro; and Morra, Pierangelo, 5,367,372, Cl. 356-73.100.

Morris, Frank J., to Texas Instruments Incorporated. Thin film resistor and method for manufacturing the same. 5,367,284, Cl. 338-306.000.

Morrissey, James F., to United States of America, Air Force. Humidity sensing apparatus and method. 5,365,784, Cl. 73-335.020.

Mortensen, Andreas; and Dunand, David C., to Massachusetts Institute of Technology, a Massachusetts Corporation. Method for producing articles by reactive infiltration. 5,366,686, Cl. 419-5.000.

Mortensen, Ernest P. Lift and tow motorcycle transporter. 5,366,338, Cl. 414-563.000.

Mortimer, J. Thomas: *See—*
Scheiner, Avram; Marsolais, E. Byron; Mortimer, J. Thomas; and Kicher, Thomas P., 5,366,493, Cl. 607-116.000.

Morton International, Inc.: *See—*
Rogers, Mark; Orme, Bradley L.; and Rose, Larry D., 5,365,651, Cl. 29-468.000.

Morton, Lee J.: *See—*
Hancock, David A.; Moreton, David J.; and Morton, Lee J., 5,367,032, Cl. 525-333.800.

Moser, Winfried: *See—*
Klenk, Martin; Moser, Winfried; Ingrisch, Kurt; and Klinke, Christian, 5,367,462, Cl. 364-431.050.

Moses, Charles J.: *See—*
Arlt, Edward J.; and Moses, Charles J., 5,366,324, Cl. 405-195.100.

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Moss, Larry E.; Formanek, Randolph P.; Hogg, Johnny B., deceased (by Hogg, Carol, executrix); and Derby, William M., Jr., to Automation International Incorporated. Welding assurance control techniques. 5,367,138, Cl. 219-109.000.

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Kunishi, Tatsuo; Watanabe, Kouichi; Endo, Masanori; and Higuchi, Masato, 5,367,431, Cl. 361-502.000.
Sakuragi, Satosi; and Kuroda, Takashi, 5,367,447, Cl. 363-39.000.

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Cooke, Richard D. M.; and Murphy, Robert J., 5,366,054, Cl. 192-70.170.

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Toner, John L.; Hilborn, David A.; Murray, Bruce J.; and Hossain, Timothy Z., 5,367,080, Cl. 546-257.000.

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Lee, Chung-Li; Murray, Robert W.; Hunt, Kenneth; Wearing, James T.; Hogikyan, Robert M.; Oloman, Colin W.; and Chen, Jianxin, 5,366,593, Cl. 162-72.000.

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Fitts, James R., Jr.; Musselwhite, William D.; Varona, Eugenio G.; and Wright, Robert D., 5,366,793, Cl. 428-198.000.

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Stevens, Timothy A.; Mussi, Edward F.; Henderson, Douglas P.; and Tyndorf, Tadeusz A., 5,366,893, Cl. 435-284.000.

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Kaplan, Donald S.; Hermes, Matthew E.; Muth, Ross R.; Brown, David L.; and Holzwarth, Henry A., 5,366,081, Cl. 206-339.000.
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Foncerrada, Luis; Sick, August J.; and Payne, Jewel M., 5,366,892, Cl. 435-252.330.
Savage, Steven D.; Evans, Steven L.; Haygood, Robert A.; and Zorner, Paul S., 5,366,995, Cl. 514-558.000.

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Slightom, Jerry L.; and Tepfer, David A., 5,366,887, Cl. 435-240.400.

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Krall, Thomas J.; and Myers, Robert A., 5,366,101, Cl. 215-1.00C.

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Nadir, James: *See*—
Rajagopalan Iyengar, Sundaravarathan; and Nadir, James, 5,367,659, Cl. 395-425.000.

Nagai, Jun: *See*—
Amanuma, Tatsuo; Ohtsubo, Yoshiaki; Katayama, Akira; and Nagai, Jun, 5,367,353, Cl. 354-409.000.

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Nagao, Masashi; Yoshimura, Hideto; and Inaguchi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Multi-stage cold accumulation type refrigerator and cooling device including the same. 5,365,743, Cl. 62-47.100.

Nagao, Tsuyoshi: *See*—
Yoshida, Takeshi; Matsuo, Takeshi; Kida, Yasuhiko; Kakuta, Masayuki; and Nagao, Tsuyoshi, 5,367,370, Cl. 355-321.000.

Nagase, Takashi: *See*—
Nomizo, Fumio; and Nagase, Takashi, 5,366,678, Cl. 264-122.000.

Nagatani, Fumio: *See*—
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.

Nagayama, Shigeru: *See*—
Kuriyama, Minoru; Kamada, Shinya; Nagayama, Shigeru; and Sumimoto, Takayuki, 5,366,420, Cl. 475-129.000.

Naglich, Joseph G.: *See*—
Eidels, Leon; Naglich, Joseph G.; and Metherall, James E., 5,366,874, Cl. 435-69.100.

Naigai Technos Corporation: *See*—
Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.

Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Asakura, Tsutou; Furuya, Masato; Koyama, Yoshihisa; and Uchiyama, Yuji, 5,367,359, Cl. 355-71.000.

Nakagaki, Tatsuru; and Fukui, Toshimasa, to Fujitsu Limited. Accounting system in network for offering video programs. 5,367,329, Cl. 348-1.000.

Nakagama, Kiyohari; and Hanada, Kouichi, to Konica Corporation. Temperature sensing device for a rotating fixing roller. 5,366,291, Cl. 374-153.000.

Nakagawa, Eiichi: *See*—
Mizuochi, Takashi; Kitayama, Tadayoshi; Shimizu, Katsuhiro; Matsushita, Kiwami; Takemura, Nobuyuki; and Nakagawa, Eiichi, 5,367,587, Cl. 385-27.000.

Nakagawa, Yoshikazu; and Sonobe, Masayuki, to Rohm Co., Ltd. Photoresist pattern formation through etching where the imaging exposure changes in a given direction in the desired pattern and inclined vapor deposition is utilized to deposit a film. 5,366,849, Cl. 430-314.000.

Nakai, Hironobu; and Koh, Shokyo, to Canon Kabushiki Kaisha. Image heating apparatus capable of controlling number of waves in AC power supply. 5,367,369, Cl. 355-285.000.

Nakai, Koshiro: *See*—
Takemoto, Takatoshi; Kurihara, Yoshihide; Nakai, Koshiro; Yagashi, Sakuji; Obara, Hiroyasu; and Tada, Mitsuhiro, 5,366,110, Cl. 221-2.000.

Nakai, Tetsuo: *See*—
Nakamura, Tsutomu; Kanada, Yasuyuki; and Nakai, Tetsuo, 5,366,522, Cl. 51-293.000.

Nakajima, Shokichi: *See*—
Koizumi, Naohisa; Nakajima, Shokichi; Yuguchi, Naoki; and Tanaka, Kazumi, 5,366,858, Cl. 435-5.000.

Nakajima, Tsuyoshi: *See*—
Hida, Kazuki; Hirano, Yasushi; Hirukawa, Koji; and Nakajima, Tsuyoshi, 5,367,547, Cl. 376-435.000.

Nakamatsu, Toshio; Egashira, Yoshitugu; and Suzuki, Yasuyuki, to Sumitomo Chemical Company, Limited; and Sumika Fine Chemical Company, Ltd. Anthrapyridone compounds, their production process and their use. 5,367,075, Cl. 546-76.000.

Nakamori, Toshinori; and Hirai, Ikuhito, to Shima Seiki Mfg., Ltd. Flat knitting machine having separately movable upper and lower beds. 5,365,756, Cl. 66-64.000.

Nakamura, Eiichi: *See*—
Yamazaki, Koichi; and Nakamura, Eiichi, 5,367,515, Cl. 369-116.000.

Nakamura, Katsutoshi, to Seiko Epson Corporation. Display method, control circuit for the same and display device. 5,367,634, Cl. 345-194.000.

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Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, 5,367,216, Cl. 310-313.00R.

Nakamura, Kyoji, to Nikon Corporation. Coarse/fine adjustment of a rotary body. 5,365,801, Cl. 74-425.000.

Nakamura, Masashi: *See*—
Ota, Masanori; Nakamura, Masashi; and Kamiyama, Takashi, 5,366,509, Cl. 8-108.100.

Nakamura, Naotake: *See*—
Kitta, Kenichi; Okada, Kunihiro; Mimura, Mitsuo; Ochiai, Makoto; and Nakamura, Naotake, 5,367,150, Cl. 235-380.000.

Nakamura, Shigeru: *See*—
Kasari, Akira; Ito, Satoru; and Nakamura, Shigeru, 5,366,768, Cl. 427-407.100.

Nakamura, Shinsuke; Mochizuki, Satoshi; and Hariu, Naoki, to Midori Co., Ltd. Tape cutter. 5,366,129, Cl. 225-42.000.

Nakamura, Shunji, to Fujitsu Limited. Vertical semiconductor device. 5,367,189, Cl. 257-508.000.

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Asai, Ichiro; Tomono, Takao; and Nakamura, Takeshi, 5,367,180, Cl. 257-66.000.

Nakamura, Tetsuya: *See*—
Kunugihara, Hiromu; Yamaguchi, Tooru; Mieno, Gousuke; Kawamura, Junkichi; Asou, Akiyoshi; Sakashita, Tsutomu; Hata, Toshiyuki; and Nakamura, Tetsuya, 5,366,515, Cl. 29-25.030.

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Nakamura, Yuichi: *See*—
Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,367,324, Cl. 347-43.000.

Nakanishi, Shingo: *See*—
Hayashi, Hideo; Kawai, Hiroyuki; Sonetaka, Tomoyasu; Nakanishi, Shingo; Asaoka, Junichi; and Mototani, Yuji, 5,366,832, Cl. 429-249.000.

Nakano, Hirofumi; Fujii, Noboru; Yamashita, Yoshinori; Uosaki, Youichi; Chiba, Shigeru; Katsumata, Shigeo; and Tsuji, Yukari, to Kyowa Hakko Kogyo Co., Ltd. Compound UCE6. 5,366,966, Cl. 514-152.000.

Nakano, Hirofumi: *See*—
Kitahata, Sumio; Hara, Koji; Fujita, Koki; Kuwahara, Nobuhiro; and Nakano, Hirofumi, 5,366,879, Cl. 435-101.000.

Nakano, Norihito: *See*—
Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, 5,365,941, Cl. 128-745.000.

Nakano, Yuki: *See*—
Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,366,988, Cl. 514-383.000.

Nakao, Hironobu, to Rohm Co., Ltd. Method of manufacturing semiconductor device employing oxide sidewalls. 5,366,913, Cl. 437-41.000.

Nakao, Makoto: *See*—
Watanabe, Isao; Nakao, Makoto; Ohno, Kiyoshi; and Ohishi, Masatoshi, 5,366,048, Cl. 188-267.000.

Nakao, Osamu: *See*—
Kurosaka, Akihito; Tomomatu, Kazuhiko; Nakao, Osamu; Ajimura, Shoji; and Tominaga, Haruo, 5,366,583, Cl. 117-3.000.

Nakao, Shin, to Mitsubishi Denki Kabushiki Kaisha. Tape carrier for semiconductor apparatus. 5,366,794, Cl. 428-209.000.

Nakaoka, Mikio: *See*—
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.

Nakase, Ryoichi: *See*—
Suganuma, Noboru; Ozawa, Shigeyuki; and Nakase, Ryoichi, 5,366,397, Cl. 440-39.000.

Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, to Osaka Gas Co., Ltd.; Mitsui Petrochemical Industries, Ltd.; and Shinwa Sangyo Co., Ltd. Electrofusion joint and hot water supply header using the same. 5,366,253, Cl. 285-21.000.

Nakata, Hitoshi: *See*—
Sato, Teiji; Nakata, Hitoshi; Ishizuki, Takayuki; Iwaya, Shoichi; Takahashi, Koji; Sannohe, Yuuiti; and Tanaka, Hitoshi, 5,366,718, Cl. 423-594.000.

Nakayama, Hisayuki; Ushio, Kazumichi; and Inada, Katsuhiro, to Senju Pharmaceutical Co., Ltd. Method for preparation of an aqueous suspension. 5,366,985, Cl. 514-369.000.

Nakazawa, Tokuaki; Rudisi, Joseph J.; and Suzuki, Osamu, to Mitsubishi Kasei America, Inc. Coated metal plate with easily controlled gloss and reduced heat blocking during lamination. 5,366,803, Cl. 428-335.000.

Nalbandian, Gevork, to Pan American Diamond Corp. Magnifying gem holder. 5,365,754, Cl. 63-26.000.

Namco Ltd.: *See*—
Suzuki, Kenzi, 5,366,229, Cl. 273-310.000.

Namiki, Kazunori; and Yamamura, Takashi, to Victor Company of Japan, Ltd. Graduation reproduction in optical recording. 5,366,835, Cl. 430-30.000.

Namioka, Takashi: *See*—
Shiba, Haruo; Satoh, Takateru; and Namioka, Takashi, 5,367,421, Cl. 242-347.100.

Nanami, Masayoshi; Isogawa, Atsushi; and Masahiro, Honda, to Sanshin Kogyo Kabushiki Kaisha. Exhaust cleaning system for marine propulsion engine. 5,366,401, Cl. 440-89.000.

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Naramura, Michiyuki, to Kabushiki Kaisha Kyowa Kogyosho. Hamburger fixing apparatus. 5,365,835, Cl. 99-450.500.

Narang, Subhash C.; Ventura, Susanna C.; Ganapathiappan, Sivapackia; Bhardwaj, Tilak R.; and Nigam, Asutosh, to SRI International. Amine-containing polymerizable monomers and polymers functionalized with fullerenes to provide polymers with high temperature stability. 5,367,051, Cl. 528-424.000.

Narayan, Chandrasekhar: *See*—
DiGiacomo, Giulio; Kim, Jung-Ihl; Narayan, Chandrasekhar; and Purushothaman, Sampath, 5,367,195, Cl. 257-767.000.

Narita, Hirokazu: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Narlow, Doug: *See*—
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Nartron Corporation: *See*—
Cooper, Stephen R. W.; and Wheeler, Mark R., 5,367,256, Cl. 324-207.170.

Narula, Anubhav P. S.; McGinnis, Matthew J.; Beck, Charles E. J.; Hanna, Marie R.; and Schiet, Franc T., to International Flavors & Fragrances Inc. Substituted 2,6-dimethylbicyclo[3,3,1]non-6-enes, processes for preparing same and organoleptic uses thereof. 5,367,092, Cl. 558-374.000.

Narumiya, Yoshikazu: *See*—
Araki, Satoru; Yasui, Kiyomi; and Narumiya, Yoshikazu, 5,366,815, Cl. 428-611.000.

Nasako, Kenji: *See*—
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.

Nason, Donald O.; and Burger, Arnold, to United States of America, Energy. Crystal face temperature determination means. 5,365,876, Cl. 117-85.000.

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Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.

Naterstad, Tormod: *See*—
Bergli, Knut; Foosnaes, Trygve; and Naterstad, Tormod, 5,366,901, Cl. 436-133.000.

Nath, Amar; Kopeley, Nikolai; and Tyagi, Som D., to Drexel University. Method for making ferromagnetic porphin compounds. 5,367,070, Cl. 540-145.000.

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National Coupling Co., Inc.: *See—*
Smith, Robert E., III, 5,365,972, Cl. 137-614.040.

National Science Council: *See—*
Chin, Tsung-Shune; Hsu, Sung-Lin; and Deng, Ming-Cheng, 5,366,761, Cl. 427-127.000.

National Semiconductor Corporation: *See—*
Fong, Edison; Denton, Smaragda; and Nguyen, Nghiem, 5,367,300, Cl. 341-101.000.
Lorenz, Perry, 5,367,270, Cl. 331-113.00R.
Lubeck, Paul R.; and Breinholt, Wallace L., 5,367,645, Cl. 395-325.000.
Yee, Philip W., 5,367,202, Cl. 327-540.000.

Natsuume, Tadao: *See—*
Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, 5,366,812, Cl. 428-523.000.

Natterer, Johann: *See—*
Wirth, Lawrence W.; Wegner, Wayne M.; Tomic, Mladomir; Buchko, Raymond; and Natterer, Johann, 5,366,294, Cl. 383-61.000.

Naugler, Peter D.: *See—*
LeMarie, Norman J., III; DiFrancesco, Francis J.; DiCarlo, Paul; Naugler, Peter D.; and Sikora, George J., 5,366,477, Cl. 606-208.000.

Naumann, Emil: *See—*
Beck, Erich; Minning, Manfred; Naumann, Emil; and Wese, Joseph, 5,366,047, Cl. 188-73.370.

Navistar International Transportation Corp.: *See—*
Chen, David E.; Hively, Brad A.; and Gerardot, Patrick G., 5,366,246, Cl. 280-834.000.

NCR Corporation: *See—*
Golem, Dennis W.; Kulkarni, Meera; and Higgins, Raymond L., 5,367,578, Cl. 382-12.000.
Porter, Warren W., 5,365,749, Cl. 62-259.200.
Sheehan, Bernard P.; and Seybold, James M., 5,366,304, Cl. 400-248.000.

nCUBE Corporation: *See—*
Colley, Stephen R.; Kenoyer, Stanley P.; and Wilde, Doran K., 5,367,636, Cl. 395-200.000.

NEC America, Inc.: *See—*
Devenish, William R., III; Vercruyssen, Gustav J.; and Dirriwachter, Antonius B., 5,367,598, Cl. 385-135.000.

NEC Corporation: *See—*
Arai, Koju, 5,367,519, Cl. 370-60.000.
Domon, Wataru; and Shibutani, Makoto, 5,367,156, Cl. 250-214.0RC.
Ikei, Satoshi, 5,367,436, Cl. 361-766.000.
Ishida, Ryuji, 5,367,550, Cl. 377-39.000.
Ishikawa, Toru, 5,367,495, Cl. 365-239.000.
Katori, Shigetatsu, 5,367,676, Cl. 395-600.000.
Kodama, Noriaki, 5,366,915, Cl. 437-43.000.
Sakai, Nobuyuki; and Kikuchi, Hiroaki, 5,367,568, Cl. 379-309.000.
Samukawa, Seiji, 5,366,586, Cl. 156-643.000.
Sasaki, Masakazu, 5,366,907, Cl. 437-34.000.
Tajima, Tsutomu, 5,367,397, Cl. 359-152.000.
Takahashi, Nobumitsu; Takahashi, Mitsuasa; and Kubota, Hitoshi, 5,366,914, Cl. 437-41.000.
Tsujimoto, Ichiro, 5,367,536, Cl. 375-42.000.
Uomoto, Yasutomo, 5,367,543, Cl. 375-116.000.
Watanabe, Hirohito; and Tatsumi, Toru, 5,366,917, Cl. 437-47.000.
Yamamichi, Shintaro; Watanabe, Hirohito; Hashimoto, Toshiki; and Sakuma, Toshiyuki, 5,366,920, Cl. 437-52.000.

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Needham, Donald G. Foamable polyethylene-based composition for rotational molding. 5,366,675, Cl. 264-45.500.

Needham, Donald G., to Wedtech, (USA) Inc. Crosslinkable polyethylene-based composition for rotational molding. 5,367,025, Cl. 525-166.000.

Neet, John M.: *See—*
Winston, Thomas R.; and Neet, John M., 5,366,473, Cl. 606-198.000.

Neitzel, Ulrich: *See—*
Stahl, Ingo; Hollstein, Axel; Kleine-Kleffmann, Ulrich; Geisler, Iring; and Neitzel, Ulrich, 5,366,091, Cl. 209-11.000.

NEK Enterprises, Inc.: *See—*
Johannsen, Kenneth L.; and Avischious, Raymond, 5,366,378, Cl. 434-187.000.

Nelson, Bergen. Tiedown hitch. 5,366,327, Cl. 410-96.000.

Nelson, David E.: *See—*
Kelley, Craig B.; Nelson, David E.; and Nelson, Peter M., 5,365,803, Cl. 74-484.00R.

Nelson, Elizabeth H., to United States of America, Army. Thin pyroelectric IR detector composed of sintered metal oxides. 5,366,802, Cl. 428-336.000.

Nelson, Peter M.: *See—*
Kelley, Craig B.; Nelson, David E.; and Nelson, Peter M., 5,365,803, Cl. 74-484.00R.

Nelson, Thomas D.; and Anderson, Douglas G., to Ecolab, Inc. Flying insect trap using reflected and radiated light. 5,365,690, Cl. 43-113.000.

Nentwig, Gunter: *See—*
Scherkenbeck, Jurgen; Nentwig, Gunter; Lenz, Jurgen; Boeckh, Jurgen; Wendler, Gernot; Dambach, Martin; and Kruger, Bernd-Wieland, 5,365,691, Cl. 43-114.000.

Neopost Limited: *See—*
Abumehdi, Cyrus; and Herring, William J., 5,367,464, Cl. 364-464.020.

Nerone, Louis R.: *See—*
Kachmarik, David J.; Nerone, Louis R.; and Rutan, Douglas M., 5,367,228, Cl. 315-307.000.

Nestec S.A.: *See—*
Montesissa, Giancarlo; and Prella, Giovanni, 5,366,295, Cl. 383-201.000.

Nestle S.A.: *See—*
Patel, Anilbhai, 5,366,502, Cl. 623-6.000.

Nesvadba, Peter, to Ciba-Geigy Corporation. 3-(alkoxyphenyl)benzofuran-2-ones as stabilisers. 5,367,008, Cl. 524-111.000.

Netherton, Ronald R.; and Majka, James E. Suspended moving target system. 5,367,232, Cl. 318-3.000.

Network Equipment Technologies, Inc.: *See—*
Newman, Peter, 5,367,518, Cl. 370-54.000.

Neubauer, Hans-Juergen: *See—*
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, 5,366,984, Cl. 514-361.000.

Neugebauer, Constantine A.: *See—*
Wojnarowski, Robert J.; Neugebauer, Constantine A.; Daum, Wolfgang; Gorowitz, Bernard; Wildi, Eric J.; Gdula, Michael; Weaver, Stanton E., Jr.; and Immorlica, Anthony A., Jr., 5,366,906, Cl. 437-8.000.

Neurogen Corporation: *See—*
Blum, Charles A.; Hutchison, Alan J.; and Horvath, Raynmond F., 5,367,077, Cl. 546-82.000.

Neurotrain, L.C.: *See—*
Ochs, Len, 5,365,939, Cl. 128-732.000.

New England Biolabs: *See—*
Lunnen, Keith D.; and Wilson, Geoffrey G., 5,366,882, Cl. 435-199.000.

Newman, Donald E. Screen material for and method of screen printing. 5,365,840, Cl. 101-127.100.

Newman, Kenneth A.: *See—*
Arterbery, Cynthia W.; Callaham, W. Timothy; Keritsis, Gus D.; Laslie, Donald E.; Newman, Kenneth A.; Slagle, Roger S.; and White, Morris F., Jr., 5,365,951, Cl. 131-339.000.

Newman, Kenneth B.: *See—*
Mikesell, Donald E.; and Newman, Kenneth B., 5,365,751, Cl. 62-298.000.

Newman, Nathan: *See—*
Char, Kookrin; Garrison, Stephen M.; Newman, Nathan; and Zaharchuk, Gregory G., 5,366,953, Cl. 505-329.000.

Newman, Peter, to Network Equipment Technologies, Inc. Self-routing switching element and fast packet switch. 5,367,518, Cl. 370-54.000.

Newton, Stephen F.: *See—*
Blocher, William S.; Cassidy, Bruce M.; Groves, James O., Jr.; Malik, Randhir S.; and Newton, Stephen F., 5,367,247, Cl. 323-222.000.

Neyland, Ronald A.: *See—*
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.

Nezu, Yukio: *See—*
Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,366,988, Cl. 514-383.000.

Ng, Kin W., to United States of America, Navy. Transducer structure. 5,367,500, Cl. 367-157.000.

Ngai, Kwok H.: *See—*
Rink, John L.; Ngai, Kwok H.; Yu, King J. J.; and Tam, Herrick, 5,366,456, Cl. 606-16.000.

NGK Insulators, Ltd.: *See—*
Mizuno, Takeyuki; and Kawase, Hiroyuki, 5,365,661, Cl. 29-889.210.
Takahashi, Tomonori; and Isomura, Manabu, 5,366,941, Cl. 501-92.000.

NGK Spark Plug Co., Ltd.: *See—*
Miyata, Shigeru; Yoshida, Hideji; Matsubara, Yoshihiro; and Ito, Yasuo, 5,365,910, Cl. 123-627.000.

Nguyen, Nghiem: *See—*
Fong, Edison; Denton, Smaragda; and Nguyen, Nghiem, 5,367,300, Cl. 341-101.000.

Nguyen, Thai; and Reichenberg, George, to Storage Technology Corporation. Method and apparatus for reducing tape stiction. 5,367,471, Cl. 364-505.000.

Nguyen, Tin A.: *See—*
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shajo, Sami, 5,367,681, Cl. 395-650.000.

Nichia Kagaku Kogyo K.K.: *See—*
Yoneda, Masahiro; Bando, Shoichi; and Takeoka, Ichiro, 5,366,834, Cl. 430-23.000.

Nicholas, John D.; and Rice, David W., to Pawling Corporation. Elastomeric seismic seal system. 5,365,713, Cl. 52-573.100.

Nicholson, Ian C., to Whitehaed, Graham Lee. Drainage and erosion reduction means. 5,366,323, Cl. 405-119.000.

Nicholson, Lawrence W.: *See—*
Singaram, Bakthan; Fisher, Gary B.; Goralski, Christian T.; and Nicholson, Lawrence W., 5,367,073, Cl. 544-170.000.

Nickel, Hans: *See—*
Wissmann, Michael; Nickel, Hans; Schierling, Roland; Adam, Roland; and Geyer, Werner, 5,365,893, Cl. 123-73.00C.

Nicoll, Andrew J.: *See—*
Righter, William H.; Nicoll, Andrew J.; and Kennedy, Harold L., 5,365,935, Cl. 128-710.000.

Niedenbrueck, Matthias: *See—*
Schmitt, Michael; and Niedenbrueck, Matthias, 5,367,074, Cl. 544-339.000.

Niessen, Cornelis; and van Berkel, Cornelis H., to U.S. Philips Corporation. Digital data processing circuit with control of data flow by control of the supply voltage. 5,367,638, Cl. 395-250.000.

Niessner, Norbert: *See—*
Fischer, Wolfgang; Guentherberg, Norbert; and Niessner, Norbert, 5,367,029, Cl. 525-301.000.

Nietfeld, Paul G.: *See—*
Pyle, Harry S.; Bahr, Norman H.; and Nietfeld, Paul G., 5,367,337, Cl. 348-521.000.

Nieves, Rafael A.: *See—*
Adney, William S.; Thomas, Steven R.; Nieves, Rafael A.; and Himmel, Michael E., 5,366,884, Cl. 435-209.000.

Nigam, Asutosh: *See—*
Narang, Subhash C.; Ventura, Susanna C.; Ganapathiappan, Sivapackia; Bhardwaj, Tilak R.; and Nigam, Asutosh, 5,367,051, Cl. 528-424.000.

Nigo, Satoru: *See—*
Majima, Hiroshi; and Nigo, Satoru, 5,366,599, Cl. 204-106.000.

Nihon Bayer Agrochem K.K.: *See—*
Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,366,976, Cl. 514-258.000.

Nihon Konden Corporation: *See—*
Kyu, Kanki, 5,365,936, Cl. 128-710.000.

Nihon Millipore Kogyo: *See—*
Kawakami, Masaya; Seto, Susumu; and Tei, Seiken, 5,366,867, Cl. 435-8.000.

Nii, Tetsuro: *See—*
Sichanugrist, Porponth; Nii, Tetsuro; and Kase, Takahisa, 5,366,713, Cl. 423-346.000.

Nikkanen, John P.; Bubello, Robert; and Maier, Grant P., to United Technologies Corporation. Efficient anti-ice exhaust method. 5,365,731, Cl. 60-39.020.

Nikko Gould Foil Co., Ltd.: *See—*
Yamanishi, Keisuke; Oshima, Hideo; and Sakaguchi, Kazuhiko, 5,366,814, Cl. 428-607.000.

Nikolaides, Nick: *See—*
Lindstrom, Kyle J.; and Nikolaides, Nick, 5,366,974, Cl. 514-235.800.

Nikon Corporation: *See—*
Amanuma, Tatsuo; Ohtsubo, Yoshiaki; Katayama, Akira; and Nagai, Jun, 5,367,353, Cl. 354-409.000.
Nakamura, Kyoji, 5,365,801, Cl. 74-425.000.
Sato, Masatoshi; Saito, Jun; and Akasaka, Hideki, 5,367,507, Cl. 369-13.000.

Nilsson, Sven-Erik; and Lilja, Jan E., to Hemocue AB. Device for rapidly performing a sedimentation-rate test. 5,367,157, Cl. 250-231.130.

Nimmo, John A.: *See—*
McCrae, James M.; Keirs, Anne M.; and Nimmo, John A., 5,366,546, Cl. 106-410.000.

Nippon Arc Co., Ltd.: *See—*
Sawaragi, Fujio, 5,367,019, Cl. 524-780.000.

Nippon Cable System Inc.: *See—*
Suzuki, Kazuhiro; Harada, Eriya; and Minoura, Akira, 5,365,802, Cl. 74-482.000.

Nippon Chemical Industrial Co., Ltd.: *See—*
Kanazawa, Akihiko; Endo, Takeshi; and Ikeda, Tomiki, 5,366,727, Cl. 424-78.350.

Nippon Conlux Co., Ltd.: *See—*
Yamazaki, Koichi; and Nakamura, Eiichi, 5,367,515, Cl. 369-116.000.

Nippon Furnace Kogyo Kaisha, Ltd.: *See—*
Miyazaki, Hidetaka; Hasegawa, Toshiaki; Kajimoto, Yoshihiko; and Mochida, Susumu, 5,367,105, Cl. 570-234.000.

Nippon Paint Co., Ltd.: *See—*
Fushimi, Akira; Hisai, Tsuneyoshi; Takeoka, Kazuhiko; and Okude, Yoshitaka, 5,367,027, Cl. 525-208.000.
Ohshima, Toshiyuki; Ishibashi, Hideo; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,367,095, Cl. 560-44.000.
Okude, Yoshitaka; Hisai, Tsuneyoshi; Fushimi, Akira; Takeoka, Kazuhiko; and Miyazoe, Seigo, 5,367,026, Cl. 525-199.000.
Yabuuchi, Naoya; Otsuka, Chikayuki; and Kashihara, Akio, 5,367,039, Cl. 526-284.000.

Nippon Sanso Corporation: *See—*
Suwa, Toshio; and Kobayashi, Nobuaki, 5,366,536, Cl. 75-414.000.

Nippon Steel Corporation: *See—*
Kaidou, Chikara, 5,367,277, Cl. 335-229.000.
Tanaka, Kimiaki; and Takeuchi, Hideki, 5,366,919, Cl. 437-52.000.

Nippon Telegraph and Telephone Corporation: *See—*
Tazawa, Satoshi; Saito, Kazuyuki; and Leon, Francisco A., 5,367,465, Cl. 364-468.000.

Nippon Zeon Co., Ltd.: *See—*
Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, 5,366,812, Cl. 428-523.000.

Nippondenso Co., Ltd.: *See—*
Matsugatani, Kazuoki; Taguchi, Takashi; and Ueno, Yoshiki, 5,367,182, Cl. 257-190.000.
Sawada, Mamoru, 5,366,039, Cl. 180-197.000.

Nishi, Eiji: *See—*
Saito, Hitoshi; Kitamura, Tetsuji; Matsuda, Hideyuki; Danjo, Masamichi; and Nishi, Eiji, 5,367,036, Cl. 525-458.000.

Nishi, Hidetoshi: *See—*
Kajiwara, Toshiyuki; Ochiai, Tsuneo; and Nishi, Hidetoshi, 5,365,764, Cl. 72-229.000.

Nishida, Masato; Oshima, Toshio; Ohiwa, Tsunemi; and Karashima, Takato, to Hitachi Maxell, Ltd. Infrared-absorbing mark printed matter. 5,366,252, Cl. 283-94.000.

Nishide, Yutaka: *See—*
Ueda, Koichi; Nishide, Yutaka; Gotoh, Akira; Takenami, Yoshio; Ogawa, Fujio; Sakuma, Teiji; Kobayashi, Takashi; and Itoh, Tomokazu, 5,365,659, Cl. 29-863.000.

Nishikawa, Mitsutaka: *See—*
Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,367,324, Cl. 347-43.000.

Nishikawa, Yasuo: *See—*
Miyoshi, Takahito; Nishikawa, Yasuo; Sato, Takanori; and Tada, Sugihiko, 5,366,854, Cl. 430-538.000.

Nishimoto, Masao: *See—*
Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., 5,367,661, Cl. 395-500.000.

Nishimura, Hayato: *See—*
Miyama, Osamu; Fujita, Katsutoyo; Nishimura, Hayato; Matsumoto, Shigemi; and Tonoki, Satoshi, 5,367,016, Cl. 524-537.000.

Nishimura, Hiroyuki: *See—*
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.

Nishimura, Kazuhiro: *See—*
Ueda, Kiyotoshi; and Nishimura, Kazuhiro, 5,367,263, Cl. 324-537.000.

Nishimura, Mitsuhiro: *See—*
Tairaka, Yoshihiko; Nishimura, Mitsuhiro; and Kodama, Katsuhisa, 5,367,050, Cl. 528-423.000.

Nishino, Masakazu;; Yamamitsu, Chojuro; Juri, Tatsuro; Matsuta, Toyohiko; and Awamoto, Shigeru, to Matsushita Electric Industrial Co., Ltd. Video signal encoding and decoding apparatus. 5,367,334, Cl. 348-389.000.

Nishino, Seiji: *See—*
Yamamoto, Hiroaki; Nishino, Seiji; and Yamamoto, Kazuhisa, 5,367,403, Cl. 359-494.000.

Nishioka, Kei; and San, Chung Chien, to Rohm Co., Ltd. Recording-/reproducing circuit and recording/reproducing apparatus having the same circuit. 5,367,412, Cl. 360-67.000.

Nishitani, Yoshito: *See—*
Matsuda, Toshinori; and Nishitani, Yoshito, 5,367,119, Cl. 84-617.000.

Nishiyama, Nobumasa; Kato, Yasuhiro; and Tsuyoshi, Toshiaki, to Hitachi, Ltd. Magnetic recording and reproducing apparatus with reproducing head of magnetoresistive type having control of magnetic bias level. 5,367,411, Cl. 360-66.000.

Nishizaka, Toshiaki; Takamori, Hirokazu; and Hashimoto, Tuyoshi, to Japan Tobacco Inc. Method of detecting deviation in position and misshape of transported objects. 5,365,949, Cl. 131-280.000.

Nishizawa, Nobuyoshi: *See—*
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.

Nissan Chemical Industries, Ltd.: *See—*
Ota, Masanori; Nakamura, Masashi; and Kamiyama, Takashi, 5,366,509, Cl. 8-108.100.
Yajima, Eiichi; Watanabe, Yoshitane; Suzuki, Keitaro; and Matsukura, Tetsunori, 5,366,545, Cl. 106-286.400.

Nissan Motor Company, Ltd.: *See—*
Maruyama, Junichi; Fukumura, Teruo; and Takeuchi, Toru, 5,366,026, Cl. 173-180.000.

Noble, Edward J.; Payne, Timothy; and Bare, Rex O., to Edward J. Noble. Haircutting device. 5,365,952, Cl. 132-144.000.

Noda, Satoshi: *See—*
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,366,939, Cl. 501-55.000.

Noda, Wayne A., to Laparomed Corporation. Handle for laparoscopic instrument. 5,366,476, Cl. 606-206.000.

Nofsinger, Stephen C.; and Mirhakimi, Siamak, to Caterpillar Inc. Redundant speed sensor for engine control. 5,365,904, Cl. 123-359.000.

Noshiki, Yoshio; Yoneyama, Hirofumi; and Kishimoto, Yoshimasa, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Semiconductor laser apparatus. 5,367,530, Cl. 372-43.000.

Nojiri, Keiko: *See—*
Yoshino, Satoshi; and Nojiri, Keiko, 5,365,839, Cl. 101-93.040.
Nokia (Deutschland) GmbH: *See—*
Beckerle, Heinz; and Reidinger, Rolf, 5,366,759, Cl. 427-64.000.
Nolte, Paul A., to Ingersoll-Dresser Pump Company. Pump with failure responsive discharge valve. 5,366,351, Cl. 417-271.000.
Nomizo, Fumio; and Nagase, Takashi, to Toyota Jidosha Kabushiki Kaisha. Method of manufacturing cushion material. 5,366,678, Cl. 264-122.000.
Nomori, Hiroyuki: *See—*
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,367,365, Cl. 355-219.000.
Norco, Inc.: *See—*
LaBarre, Berger A., 5,366,313, Cl. 403-108.000.
Nordam: *See—*
Hart, Robert N.; and Trebes, David M., 5,366,577, Cl. 156-222.000.
Nordica S.p.A: *See—*
Pozzobon, Alessandro; and Sartor, Mariano, 5,366,232, Cl. 280-11.220.
Norling, Brian L., to AlliedSignal Inc. Four bar resonating force transducer. 5,367,217, Cl. 310-370.000.
Noro, Yoshiaki: *See—*
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiaki, 5,366,236, Cl. 280-707.000.
Norsk Hydro a.s.: *See—*
Bergli, Knut; Foosnaes, Trygve; and Naterstad, Tormod, 5,366,901, Cl. 436-133.000.
North Carolina State University: *See—*
Schetzina, Jan F., 5,366,927, Cl. 437-185.000.
North Shore University Hospital Research Corporation: *See—*
Farber, Bruce, 5,366,505, Cl. 623-11.000.
Northeast Abrasives Diamond and Tools Corporation: *See—*
Johnson, Jeffrey S., 5,366,800, Cl. 428-281.000.
Northern Illinois Gas Company: *See—*
Goad, Robert L.; and Marotta, Ronald G., 5,365,977, Cl. 138-99.000.
Northern Telecom Limited: *See—*
Bruekheimer, Simon D., 5,367,544, Cl. 375-116.000.
Leonida, Dan, 5,367,200, Cl. 327-33.000.
Northrop Corporation: *See—*
Wainfan, Barnaby S.; and Mrdeza, Matthew N., 5,366,180, Cl. 244-45.00A.
Norton Company: *See—*
Ellison-Hayashi, Cristan; Emond, George T.; and Kuo, Shih Y., 5,366,526, Cl. 51-307.000.
Noth, Richard W.: *See—*
Hoffman, Herman S.; and Noth, Richard W., 5,367,124, Cl. 174-52.400.
Novembre, Anthony E., to AT&T Bell Laboratories. Device fabrication process. 5,366,851, Cl. 430-322.000.
Nozaki, Ken; Kurokawa, Kosuke; Tsuda, Izumi; Hamamoto, Osamu; and Watanabe, Keiiti, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Flow battery. 5,366,824, Cl. 429-34.000.
Nozaki, Masahioro, to Toyoda Gosei Co., Ltd. Door glass fun for automobile. 5,365,698, Cl. 49-441.000.
Nozaki, Masahiro, to Toyoda Gosei Co., Ltd. Weather strip for motor vehicle. 5,366,267, Cl. 296-216.000.
Nozawa, Noriyoshi: *See—*
Kikkawa, Yoshitsugi; Yamamoto, Osamu; Ohmori, Kenrou; Ohmori, Motohiro; and Nozawa, Noriyoshi, 5,365,740, Cl. 62-23.000.
NSK Ltd.: *See—*
Yamaguchi, Mikio; and Sekine, Hiroshi, 5,366,413, Cl. 464-89.000.
Nuechterlein, David W.: *See—*
Coyle, William E.; Nuechterlein, David W.; O'Donnell, Kim E.; Sartorius, Thomas A.; Schultz, Kenneth D.; and Wolters, Emmy M., 5,367,653, Cl. 395-400.000.
Numbers, Jody L.: *See—*
Ciammitti, Sam; and Numbers, Jody L., 5,366,118, Cl. 222-153.000.
Nuovopignone-Industrie Meccaniche E Fonderia S.P.A.: *See—*
Bergamini, Giorgio, 5,365,971, Cl. 137-556.000.
N.V. Nederlandsche Apparatenfabriek Nedap: *See—*
Fockens, Tallienco W., 5,367,291, Cl. 340-572.000.
NV Raychem SA: *See—*
Beersel, Jozef V.; Overbergh, Noel K. M.; and Ross, Firmin, 5,366,771, Cl. 428-34.900
Nyce, David S.; Peterson, Wade D.; and Lerebours, Theophile R. Magnetostrictive position transducer with band passed mode converter output for rejecting mechanical noise. 5,367,255, Cl. 324-207.130.
Nycomed Imaging AS: *See—*
Almen, Torsten; BÅÅth, Laars; and Oksendal, Audun, 5,366,722, Cl. 424-4.000
Obara, Hiroyasu: *See—*
Takemoto, Takatoshi; Kurihara, Yoshihide; Nakai, Koshiro; Yagegashi, Sakuji; Obara, Hiroyasu; and Tada, Mitsuhiro, 5,366,110, Cl. 221-2.000.
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Imaizumi, Shokichi; Aoyama, Tsuyoshi; Hori, Nagao; Takenami, Katsumi; Koibuchi, Kiyoshi; Ishikawa, Youich; Kazama, Seiji; and Nasu, Koji, 5,366,549, Cl. 106-715.000.
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Caldwell, Bruce D., 5,365,745, Cl. 62-50.400.
OCG Microelectronic Materials, Inc.: *See—*
Jeffries, Alfred T., III, 5,366,843, Cl. 430-165.000.
Ochiai, Makoto: *See—*
Kitta, Kenichi; Okada, Kunihiro; Mimura, Mitsuo; Ochiai, Makoto; and Nakamura, Naotake, 5,367,150, Cl. 235-380.000.
Ochiai, Tsuneo: *See—*
Kajiwara, Toshiyuki; Ochiai, Tsuneo; and Nishi, Hidetoshi, 5,365,764, Cl. 72-229.000.
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Oda, Yoshiaki: *See—*
Murahashi, Shun-Ichi; and Oda, Yoshiaki, 5,367,087, Cl. 549-533.000.
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Suda, Yasuo; Yamada, Akira; Odaka, Yukio; and Akashi, Akira, 5,367,153, Cl. 250-201.800.
Odani, Yusuke: *See—*
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Zehner, Georgia L.; Rosch, Paulette M.; Odorzynski, Thomas W.; Siebers, Bruce M.; and Blenke, Timothy J., 5,366,453, Cl. 604-385.200.
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Soga, Mamoru; and Ogawa, Kazufumi, 5,366,762, Cl. 427-130.000.
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Oh, Masanari: *See—*
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Ohiwa, Tsunemi: *See—*
Nishida, Masato; Oshima, Toshio; Ohiwa, Tsunemi; and Karashima, Takato, 5,366,252, Cl. 283-94.000
Ohki, Mitsuharu, to Sony Corporation. System for multiplying digital input data in a multiplier circuit. 5,367,700, Cl. 395-800.000.
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Kusaka, Kohei; and Ohkura, Yasunori, 5,366,425, Cl. 477-118.000.

Ohmae, Tadayuki; Toyoshima, Yoshiki; Tanaka, Hisao; Yamaguchi, Noboru; and Chikanari, Kenzo, to Sumitomo Chemical Company, Limited. Process for producing reinforced crystalline engineering plastic composition. 5,367,013, Cl. 524-494.000.
Ohmeda Inc.: *See—*
Lee, Wylie I., 5,365,925, Cl. 128-634.000.
Ohmi, Tadahiro; Shinohara, Tsutomu; Yamaji, Michio; Ikeda, Nobukazu; and Yamamoto, Kenji, to Fujikin Incorporated. Pipe joint with a gasket retainer. 5,366,261, Cl. 285-328.000.
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Kikkawa, Yoshitsugi; Yamamoto, Osamu; Ohmori, Kenrou; Ohmori, Motohiro; and Nozawa, Noriyoshi, 5,365,740, Cl. 62-23.000.
Ohmori, Motohiro: *See—*
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Ohno, Ichiro: *See—*
Mori, Hisatoshi; Sato, Syunichi; Konya, Naohiro; Ohno, Ichiro; Ishii, Hiromitsu; Matsuda, Kunihiro; and Shiota, Junji, 5,367,179, Cl. 257-59.000.
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Watanabe, Isao; Nakao, Makoto; Ohno, Kiyoshi; and Ohishi, Masatoshi, 5,366,048, Cl. 188-267.000.
O'Hoy, Kim L.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,366,728, Cl. 424-191.100.
Ohsaki, Seiji: *See—*
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiaki, 5,366,236, Cl. 280-707.000.
Ohshima, Toshiyuki; Ishibashi, Hideo; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, to Nippon Paint Company, Ltd. Polyamine compounds containing secondary amino substituents and compositions containing such compounds. 5,367,095, Cl. 560-44.000.
Ohsumi, Chieko; and Hayashi, Takahisa, to Ajinomoto Co., Inc. Hybrid plants of onion and garlic or chinese chive and method for breeding and propagating the same. 5,367,111, Cl. 800-200.000.
Ohta, Satoshi: *See—*
Kobayashi, Tohru; Yamamoto, Shuzo; Sakaniwa, Hiroshi; and Ohta, Satoshi, 5,367,554, Cl. 378-196.000.
Ohtani, Masayuki: *See—*
Kai, Tsukuru; Ohtani, Masayuki; Yanagisawa, Takaaki; Ishijima, Hisashi; and Nagano, Masaaki, 5,367,363, Cl. 355-210.000.
Ohtsubo, Yoshiaki: *See—*
Amanuma, Tatsuo; Ohtsubo, Yoshiaki; Katayama, Akira; and Nagai, Jun, 5,367,353, Cl. 354-409.000.
Ohtsubo, Yutaka; Urasaki, Kazuaki; Tasaka, Yoshiro; and Hisano, Atushi, to Omron Tateisi Electronics Co. Fuzzy controller for selecting an input signal. 5,367,610, Cl. 395-3.000.
Oian, Dahong: *See—*
Busch-Vishniac, Ilene J.; Buckman, Alvin B.; Wang, Wanjun; Oian, Dahong; and Mancevski, Vladimir, 5,367,373, Cl. 356-139.030.
Oikari, Timo: *See—*
Webb, Stuart; Yrjonen, Tapio; Stark, Tuula; and Oikari, Timo, 5,367,170, Cl. 250-364.000.
Oka, Makoto: *See—*
Ohno, Kazunori; Odai, Osamu; Tominaga, Yukio; Furukawa, Kiyoshi; and Oka, Makoto, 5,367,078, Cl. 546-122.000.
Oka, Michio: *See—*
Eguchi, Naoya; and Oka, Michio, 5,367,531, Cl. 372-98.000.
Oka, Naoto: *See—*
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.
Okada, Atsunori: *See—*
Ukegawa, Shin; Wada, Shigeaki; Okada, Atsunori; Higashisaka, Shingo; and Kotani, Miki, 5,367,226, Cl. 315-248.000.
Okada, Hisao; and Tanaka, Kuniaki, to Sharp Kabushiki Kaisha. Drive circuit for a display apparatus. 5,367,314, Cl. 345-100.000.
Okada, Kazuhiro. Sensor for force/acceleration/magnetism using piezoelectric element. 5,365,799, Cl. 73-862.041.
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Kitta, Kenichi; Okada, Kunihiro; Mimura, Mitsuo; Ochiai, Makoto; and Nakamura, Naotake, 5,367,150, Cl. 235-380.000.
Okada, Masato: *See—*
Miyoshi, Kinya; Okada, Masato; Takada, Makoto; and Goto, Mayumi, 5,366,859, Cl. 435-5.000.
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Okajima, Taizo: *See—*
Yamada, Tsutomu; Okajima, Taizo; Ootani, Kouichi; and Morinaga, Hitoshi, 5,366,542, Cl. 106-3.000.
Okamoto, Yasusi: *See—*
Yokoyama, Etsuya; and Okamoto, Yasusi, 5,367,644, Cl. 395-325.000.
Okayama, Masataka: *See—*
Ote, Ichiro; Okayama, Masataka; Sano, Makoto; Hashio, Masanori; Takanashi, Katsuya; Kitahara, Jun; and Hirata, Sunao, 5,367,628, Cl. 395-162.000.
O'Keefe, Larry A.: *See—*
Kadle, Prasad S.; and O'Keefe, Larry A., 5,366,008, Cl. 165-173.000.
Oki Electric Industry Co., Ltd.: *See—*
Mizutani, Minoru; and Watanabe, Shyoichi, 5,366,306, Cl. 400-694.000.
Oksendal, Audun: *See—*
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Okude, Yoshitaka; Hisai, Tsuneyoshi; Fushimi, Akira; Takeoka, Kazuhiko; and Miyazoe, Seigo, to Nippon Paint Co., Ltd. Resin composition and coating composition containing the same. 5,367,026, Cl. 525-199.000.
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Fushimi, Akira; Hisai, Tsuneyoshi; Takeoka, Kazuhiko; and Okude, Yoshitaka, 5,367,027, Cl. 525-208.000.
Okumura, Kenzo; and Matumoto, Satoru, to Sharp Kabushiki Kaisha. Integrated circuit containing scan circuit. 5,367,551, Cl. 377-80.000.
Olaya, Hector: *See—*
Shaw, James J.; Wong, Lucy L.; Graff, Allan H.; Olaya, Hector, Barcelon, Shirley A.; Degady, Marc; and Brine, Charles J., 5,366,740, Cl. 426-3.000.
Olewicz, Tadeusz: *See—*
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Olin Corporation: *See—*
Mahulikar, Deepak; Braden, Jeffrey S.; and Chen, Szuchain F., 5,367,196, Cl. 257-787.000.
Oliveau, Olivier: *See—*
Peytavy, Jean-Louis; Le Coz, Philippe; and Oliveau, Olivier, 5,366,709, Cl. 423-228.000.
Oloman, Colin W.: *See—*
Lee, Chung-Li; Murray, Robert W.; Hunt, Kenneth; Wearing, James T.; Hogikyan, Robert M.; Oloman, Colin W.; and Chen, Jianxin, 5,366,593, Cl. 162-72.000.
Olson, David H.: *See—*
Beck, Jeffrey S.; Olson, David H.; and McCullen, Sharon B., 5,367,099, Cl. 585-475.000.
Olympus Optical Company Limited: *See—*
Kurasawa, Yuko; Noda, Satoshi; and Fukuoka, Morinao, 5,366,939, Cl. 501-55.000.
Toda, Akitoshi; and Matsuyama, Katsuhiro, 5,367,165, Cl. 250-306.000.
Olynyk, Kirk O.: *See—*
Goossen, James A.; and Olynyk, Kirk O., 5,367,617, Cl. 395-142.000.
O'Malley, Vincent G.: *See—*
Coulson, Richard L.; O'Malley, Vincent G.; and Safranek, Robert J., 5,367,647, Cl. 395-325.000.
Omron Tateisi Electronics Co.: *See—*
Ohtsubo, Yutaka; Urasaki, Kazuaki; Tasaka, Yoshiro; and Hisano, Atushi, 5,367,610, Cl. 395-3.000.
Omura, Kengo: *See—*
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O'Neill, Paul J., to Aervoe-Pacific Company, Inc. Aerosol can compaction and evacuation apparatus. 5,365,982, Cl. 141-51.000.
Onga, Takeo: *See—*
Kuramoto, Takashi; Utsuda, Tetsuji; Onga, Takeo; Kominato, Takashi; Kaneda, Hidenori; and Taga, Mitsuo, 5,366,581, Cl. 156-364.000.
Onishi, Hiroaki: *See—*
Taniguchi, Hideo; and Onishi, Hiroaki, 5,367,320, Cl. 346-76.0PH.
Onishi, Masuhiro: *See—*
Watada, Masaharu; Oshitani, Masahiko; and Onishi, Masuhiro, 5,366,831, Cl. 429-223.000.
Ono, Takashi; Yagyu, Tatsuya; and Akase, Tetsui, to Orient Chemical Industries, Ltd. Alcohol-soluble dye and ink composition containing the same. 5,366,543, Cl. 106-22.00K.
Onoda, Takumi: *See—*
Moriya, Yukio; Kobayashi, Takeshi; Onoda, Takumi; Takamura, Fujitoshi; and Yokoyama, Toshio, 5,365,737, Cl. 60-469.000
Onrubia Miguel, Maria del Carmen: *See—*
Stampa Diez Del Corral, Alberto; Onrubia Miguel, Maria del Carmen; and Irurre Perez, Jose , 5,367,091, Cl. 558-255.000.
Ooi, Leng H.: *See—*
Griffin, Curtis M.; Lauder, James V.; and Ooi, Leng H., 5,367,434, Cl. 361-719.000.
Ootake, Toshio: *See—*
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.
Ootani, Kouichi: *See—*
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Opitz, Konrad: *See—*
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Orient Chemical Industries, Ltd.: *See—*
Ono, Takashi; Yagyu, Tatsuya; and Akase, Tetsui, 5,366,543, Cl. 106-22.00K.
Orime, Nobutake; Higa, Morio; and Chatani, Yoshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Array antenna for receiving radio communication. 5,367,313, Cl. 343-853.000.

Orland, Rees M.: *See—*
Brannan, Ann; Burhenne, Roseann; Delustro, Frank A.; Smestad, Thomas L.; Fries, Louis; and Orland, Rees M., 5,366,498, Cl. 623-11.000.

Orme, Bradley L.: *See—*
Rogers, Mark; Orme, Bradley L.; and Rose, Larry D., 5,365,651, Cl. 29-468.000.

Orth, Michael J.: *See—*
Tal, Elisha A.; and Orth, Michael J., 5,366,446, Cl. 604-110.000.

Orvis Company, Inc., The: *See—*
Perkins, David D., 5,365,614, Cl. 2-247.000.

Orzel, Dennis J.: *See—*
Milaniak, Michael S.; Orzel, Dennis J.; Lamm, Foster P.; and DeSaulniers, David E., 5,366,765, Cl. 427-229.000.

Osaka Gas Co., Ltd.: *See—*
Mori, Hiromitsu; and Kobayashi, Chikara, 5,366,361, Cl. 418-261.000.
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.

Osborn, James W.: *See—*
Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,366,652, Cl. 252-89.100.

Osborn, Laurelee: *See—*
Hession, Catherine A.; Lobb, Roy R.; Goelz, Susan E.; Osborn, Laurelee; Benjamin, Christopher D.; and Rosa, Margaret D., 5,367,056, Cl. 530-380.000.

O'Shea, James: *See—*
Rekuc, Richard J.; and O'Shea, James, 5,365,642, Cl. 24-600.900.

Oshima, Hideo: *See—*
Yamanishi, Keisuke; Oshima, Hideo; and Sakaguchi, Kazuhiko, 5,366,814, Cl. 428-607.000.

Oshima, Toshio: *See—*
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Oshitani, Masahiko: *See—*
Watada, Masaharu; Oshitani, Masahiko; and Onishi, Masuhiro, 5,366,831, Cl. 429-223.000.

Ossia, Yoav, to Scitex Corporation Ltd. Electronic separation scanner. 5,367,388, Cl. 358-518.000.

Ostermayer, Volker, to Wangner Systems Corporation. Multi-layered papermaking fabric having stabilized stacked weft yarn. 5,366,798, Cl. 428-229.000.

Ota, Masanori; Nakamura, Masashi; and Kamiyama, Takashi, to Nissan Chemical Industries, Ltd. Method for bleaching cloths. 5,366,509, Cl. 8-108.100.

Otani, Masatoshi, to Canon Kabushiki Kaisha. Multimedia communicating apparatus. 5,367,522, Cl. 370-84.000.

Ote, Ichiro; Okayama, Masataka; Sano, Makoto; Hashio, Masanori; Takanashi, Katsuya; Kitahara, Jun; and Hirata, Sunao, to Hitachi, Ltd. Multi-window system and display method for controlling execution of an application for a window system and an application for a non-window system. 5,367,628, Cl. 395-162.000.

Otis Elevator Company: *See—*
Jamieson, Eric K.; Yoo, Young S.; and Baggot, Breffni X., 5,366,044, Cl. 187-359.000.
Kruse, Michael; and Riedel, Hans-Dietrich, 5,366,061, Cl. 198-335.000.
Schroder-Brumloop, Helmut L.; and Lob, Rudiger, 5,367,240, Cl. 318-727.000.
Skalski, Clement A.; and Traktovenko, Boris, 5,367,132, Cl. 187-393.000.

Otobe, Takashi: *See—*
Ito, Yujiro; Suzuki, Kohji; and Otobe, Takashi, 5,367,398, Cl. 359-154.000.

Otsuka, Chikayuki: *See—*
Yabuuchi, Naoya; Otsuka, Chikayuki; and Kashihara, Akio, 5,367,039, Cl. 526-284.000.

Otsuka, Kiichiro; and Iwanaga, Mitsuyasu, to Jeol Ltd. Sample analyzing instrument using first and second plasma torches. 5,367,163, Cl. 250-288.000.

Otsuka, Naoji: *See—*
Yano, Kentaro; Koitabashi, Noribumi; Otsuka, Naoji; Matsubara, Miyuki; Sugimoto, Hitoshi; Arai, Atsushi; Tajika, Hiroshi; and Hirabayashi, Hiromitsu, 5,367,325, Cl. 347-17.000.

Ottaviani, Robert A.: *See—*
Garner, David P.; Ottaviani, Robert A.; Snyder, Dexter D.; Lindsay, James H.; Siak, June-Sang; and Schreck, Richard M., 5,366,004, Cl. 165-133.000.

Ottesen, Hal H.; and Smith, Gordon J., to International Business Machines Corporation. Even harmonic distortion compensation for digital data detection. 5,367,409, Cl. 360-32.000.

Outlaw, Ronald A.; and Davison, Mark R., to United States of America, National Aeronautics and Space Administration. Small UHV compatible hyperthermal oxygen atom generator. 5,367,161, Cl. 250-251.000.

Oven Systems, Inc.: *See—*
Bein, Daniel J., 5,365,676, Cl. 34-424.000.

Overbergh, Noel K. M.: *See—*
Beersel, Jozef V.; Overbergh, Noel K. M.; and Ross, Firmin, 5,366,771, Cl. 428-34.900.

Owen-Illinois Plastic Products, Inc.: *See—*
Krall, Thomas J.; and Myers, Robert A., 5,366,101, Cl. 215-1.00C.

Owen, Lindsey D.: *See—*
Adler, B. Michael; Hird, John A.; and Owen, Lindsey D., 5,367,561, Cl. 379-93.000.

Ozawa, Hitoshi, to Terumo Kabushiki Kaisha. Electronic sphygmomanometer having blood pressure measurement modes and a display mode. 5,365,931, Cl. 128-680.000.

Ozawa, Shigeyuki: *See—*
Suganuma, Noboru; Ozawa, Shigeyuki; and Nakase, Ryoichi, 5,366,397, Cl. 440-39.000.

Ozenbaugh, Richard L., II, to Private Line Communications. Mobile radio data analysis system. 5,367,557, Cl. 379-58.000.

Ozonia International S.A.: *See—*
Liechti, Pierre A.; Gaia, Franco; and Andre, Marc, 5,366,703, Cl. 422-186.110.

Paccar Inc.: *See—*
Stephens, Donald L., 5,365,646, Cl. 29-173.000.
Stephens, Donald L., 5,366,238, Cl. 280-712.000.

Pacholok, David, to Everbrite, Inc. High frequency luminous tube power supply having neon-bubble and mercury-migration suppression. 5,367,224, Cl. 315-219.000.

Pacholok, David; and Doss, David, deceased, to Everbrite, Inc. High frequency luminous tube power supply having neon-bubble and mercury-migration suppression. 5,367,225, Cl. 315-219.000.

Pacific Fitness Corporation: *See—*
Habing, Theodore G.; and Gibson, Ron, 5,366,432, Cl. 482-138.000.

Packard Instrument Company, Inc.: *See—*
Zweifel, Ronald A., 5,365,783, Cl. 73-304.00C.

Padday, John F.: *See—*
Pitt, Alan R.; Clark, Bernard A.; and Padday, John F., 5,366,857, Cl. 430-631.000.

Padgett, Michael A.; Kuiper, Douglas B.; and Rehnborg, Steven R. Mobile apparatus for pyrolyzing carbonaceous material and related method. 5,366,595, Cl. 201-19.000.

Padrun, John. Tool for inserting/removing integrated circuit chips. 5,365,653, Cl. 29-741.000.

Padula, Santo A.; and Johnson, Duane R., to Allied-Signal Inc. Signal generator. 5,365,791, Cl. 73-745.000.

Page, Edward: *See—*
Hernandez, Walter; and Page, Edward, 5,365,787, Cl. 73-660.000.

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Post, George. Containers positionable over oil filters of motors for precluding the spillage of oil. 5,366,084, Cl. 206-319.000.
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Potter, Jerry F.; and Brown, W. Lamar, to Du Pont de Nemours, E. I., and Company. Apparatus for foam treating pile fabrics. 5,366,161, Cl. 239-455.000.
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Powers, Robert, to TRW Inc. Method and apparatus for optimizing semiconductor exposure process. 5,366,847, Cl. 430-296.000.
Powers, Ronald J. Cosmetic pencil with descending sheath. 5,366,311, Cl. 401-194.000.
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Roberts, Mark J.; Beddome, Robert A.; and Bonaquist, Dante P., 5,365,741, Cl. 62-38.000.
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Smith, Allan F.; and Shepley, Paul E., Jr., 5,365,650, Cl. 29-417.000.
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Rose, Stephen D.; Cates, Joseph A.; and Rose, Jeffrey A., 5,367,244, Cl. 320-23.000.
Premier Services Corporation: *See—*
Heaslip, Lawrence J.; and Dorricott, James D., 5,366,535, Cl. 75-305.000.
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Pressprich, John W.; Jordan, Anthony F.; Hornback, Timothy D.; and Carr, Gregory S., to United Technologies Corporation. MIL-STD-1553 interface device having a bus controller minor frame timer. 5,367,641, Cl. 395-275.000.
Pressutti, Joseph E.; Conley, George E.; and Rawlinson, Alvis ■ Low-cost highly aesthetic and durable shingle. 5,365,711, Cl. 52-518.000.
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Price, Ian A.: *See—*
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Giez, Edmund; Pascik, Imre; and Priemer, Joachim, 5,366,999, Cl. 521-54.000.
Primeau, Mario. Safety lock. 5,365,757, Cl. 70-14.000
Prince, Robert; and Bourdon, Elisa. Process and apparatus for production of diamond-like films. 5,366,556, Cl. 118-722.000.
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Lemischka, Ihor R., 5,367,057, Cl. 530-350.000.
Printronix, Inc.: *See—*
Barrus, Gordon B.; Choy, Ricky T. K.; and Takakawa, Ryan, 5,366,303, Cl. 400-234.000.
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Ozenbaugh, Richard L., II, 5,367,557, Cl. 379-58.000.
Procido, Frieda. Soap container and support. 5,366,125, Cl. 224-202.000.
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Capeci, Scott W.; Osborn, James W.; Angell, Adrian J. W.; and van Dijk, Paul, 5,366,652, Cl. 252-89.100.
Curro, John J.; and Maden, Michele A., 5,366,782, Cl. 428-137.000.
Sawdai, Albert H., 5,366,785, Cl. 428-156.000.
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,366,748, Cl. 426-549.000.
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Greene, Thomas F., 5,365,813, Cl. 83-35.000.
Prompac Industries, Inc.: *See—*
Maida, Richard C.; and Sferlazza, Joseph, 5,365,819, Cl. 83-332.000.
Proshan, Mary-Elizabeth. Removable cap for disposable containers of liquid. 5,366,109, Cl. 220-717.000.
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Haave, Luther; and Proskin, Carle T., 5,367,330, Cl. 348-7.000.
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Lee, Chung-Li; Murray, Robert W.; Hunt, Kenneth; Wearing, James T.; Hogikyan, Robert M.; Oloman, Colin W.; and Chen, Jianxin, 5,366,593, Cl. 162-72.000.
Purchase, Claude F., Jr.: *See—*
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Py, Daniel, to Keratos, Inc. Intraocular prosthesis. 5,366,499, Cl. 623-4.000.
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Simpson, W. Dwain; Pyle, James H.; and Wilcox, Geoffrey P., 5,365,984, Cl. 141-387.000.
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Yuen, Alex, 5,367,187, Cl. 257-401.000.
Qualmark Corporation: *See—*
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Quantum Chemical Corporation: *See—*
Kiang, Webster W.; Kajiwara, Edward M.; and Mattson, Diana C., 5,367,022, Cl. 525-74.000.
Quarterdeck Office Systems, Inc.: *See—*
Spear, Dan; and Mayer, Larry, 5,367,658, Cl. 395-425.000.
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Economy, Richard; Kelly, William A.; Pelham, Anthony J.; Piazza, Thomas A.; and Quick, Lee T., 5,367,615, Cl. 395-129.000.
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Kearney, William P.; and Quigley, George T., 5,366,627, Cl. 210-224.000.
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Quimby, John, to Digital Equipment Corporation. Signature data object. 5,367,573, Cl. 380-25.000.
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Bartnicki, Frederick J.; and Beggs, Robert, 5,366,051, Cl. 182-46.000.
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Lundsgaard, Finn C.; Jensen, Niels-Henrik; and Andersen, Willy, 5,366,903, Cl. 436-165.000.
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Raffault, Gerard: *See—*
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Rahn, John P., to Litton Systems, Inc. Solid state split-gain multioscillator ring laser gyroscope. 5,367,377, Cl. 356-350.000.
Raines, Aaron T., to Surgiquip, Inc. Surgical saw blade attachment assembly. 5,366,312, Cl. 403-3.000.
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Righter, William H.; Nicoll, Andrew J.; and Kennedy, Harold L., 5,365,935, Cl. 128-710.000.
Raloff, Valgene E.; and Haczynski, Christopher, to Bernard Welding Company. Quick connect electrical cable connector. 5,366,392, Cl. 439-889.000.
Ramel, Urs A. Lancet device. 5,366,470, Cl. 606-183.000.
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Mesenbring, John M.; Patriquin, Lawrence J.; Ramirez, Rory F.; and Smith, Dell W., 5,366,117, Cl. 222-132.000.
Ramos, Enrique A. Portable baggage wrapping apparatus. 5,365,723, Cl. 53-556.000.
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Oden, Laurance L.; White, Jack C.; and Ramsey, James A., 5,366,817, Cl. 428-653.000.
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Randjelovic, Erlin A., to Connor/AGA Sports Flooring Corporation. Resilient subfloor pad. 5,365,710, Cl. 52-480.000.
Range, Clyde M. Detachable carrier for shopping carts. 5,366,123, Cl. 224-42.430.
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Rao, Koppaka V., to University of Florida. Process for the preparation of taxol and 10-deacetyltaxol. 5,367,086, Cl. 549-510.000.
Rao, Pilaka P.: *See—*
Ruhe, Thomas C.; and Rao, Pilaka P., 5,366,571, Cl. 149-2.000.
Rapisarda, Carmen. Article decorated with light emitting diodes using stranded conductive wire. 5,366,780, Cl. 428-102.000.
Raptis, Apostolos C.: *See—*
Sheen, Shuh-Haw; Lawrence, William P.; Chien, Hual-Te; and Raptis, Apostolos C., 5,365,778, Cl. 73-54.410.
Rasmussen GmbH: *See—*
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Rasse, Yves: *See—*
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Rath, Jack. Prevailing torque fastener. 5,366,414, Cl. 470-25.000.
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Rav, Gayatri S.: *See—*
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Ravaux, Paul: *See—*
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Rawlinson, Alvis M.: *See—*
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Ray, Gary M.; Stawara, Kathleen K.; and Petersen, Carl M., III, to TRW Vehicle Safety Systems Inc. Height adjuster for seat belt shoulder strap. 5,366,243, Cl. 280-801.200.
Ray, William W. Activity floor changing system for multi-activity complex. 5,365,704, Cl. 52-64.000.
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Aresco, Carmelo A.; and Turano, Andrew J., 5,367,428, Cl. 361-251.000.
Raynes, Coco. Braille insert in a continuous cartridge for handrails. 5,366,050, Cl. 182-18.000.
Rayzist Photomask, Inc.: *See—*
Zukowski, Raymond L.; and Willis, Randy S., 5,366,584, Cl. 156-642.000.
Readio, Josephine D.: *See—*
Rutner, Herman; Butt, Abdul M.; Readio, Josephine D.; and Pollack, Lewis, 5,366,895, Cl. 436-17.000.
Rebsamen, Karl: *See—*
Mischke, Peter; Opitz, Konrad; and Rebsamen, Karl, 5,366,512, Cl. 8-524.000.
Receptor Laboratories, Inc.: *See—*
Venton, Duane L.; Hopfinger, Anton J.; and Le Breton, Guy, 5,366,862, Cl. 435-7.100.
Rechsteiner, Martin C.; and Yoo, Yung J., to University of Utah, The. Ubiquitin-peptide extensions as enzyme substrates. 5,366,871, Cl. 435-24.000.
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Bown, Thomas E.; and Pauling, Dennis L., 5,366,777, Cl. 428-43.000.
Reed, Paul A.: *See—*
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Reeves, William; Hilmer, Christian; and Miller, Douglas R., to MCG International, Inc. Disposable sensing device with contaneous conformance. 5,365,937, Cl. 128-715.000.
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Rehnborg, Steven R.: *See—*
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Reid, Larry D. Method for treating alcohol abuse and alcoholism. 5,366,990, Cl. 514-397.000.
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Reimann, Walter: *See—*
Leupold, Ernst I.; Dettmeier, Udo; Gimpel, Gustav; and Reimann, Walter, 5,367,104, Cl. 570-211.000.
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Rekuc, Richard J.; and O'Shea, James, to Royalox International, Inc. Snap hook assembly. 5,365,642, Cl. 24-600.900.
Reliance Electric: *See—*
Coggins, Edward W., 5,367,622, Cl. 395-155.000.
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Tokuno, Masateru; and Miyagawa, Tatsuyuki, 5,366,217, Cl. 271-176.000.
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Research Development Corporation of Japan: *See—*
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Research Triangle Institute: *See—*
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Reynolds Consumer Products, Inc.: *See—*
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Reynolds Metals Company: *See—*
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Reznikov, Leon: *See—*
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Timonen, Maritta; Rha, ChoKyun; Vaara, Timo; Bagley, Lindsey; Bosdet, Sarah; Lindley, Michael; Lahtinen, Tarja; Turunen, Marja; and Vaara, Martti, 5,366,755, Cl. 426-658.000.
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Rhinehart, Edward J.; and Spohn, Michael A., to Medrad, Inc. Endorectal probe with planar moveable MRI coil. 5,365,928, Cl. 128-653.500.
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Riall, James D.: *See—*
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Richards, Denis C., to Enviropaver Inc. Multi-layer composite block & process for manufacturing. 5,367,007, Cl. 524-59.000.
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Richey, Joseph B., to Invacare Corporation. Powered wheelchair having drive motors integrated into driven wheels. 5,366,037, Cl. 180-65.500.
Richmond, Dorothy M.: *See—*
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Richter, Bernd: *See—*
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Rickards, Brian, to Pengo Corporation. Auger head assembly and method of drilling hard earth formations. 5,366,031, Cl. 175-354.000.
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Albrigo, Julian; Ricker, Edward D.; and Colarusso, Louis J., 5,366,672, Cl. 264-35.000.
Ricoh Company, Ltd.: *See—*
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Kai, Tsukuru; Ohtani, Masayuki; Yanagisawa, Takaaki; Ishijima, Hisashi; and Nagano, Masaaki, 5,367,363, Cl. 355-210.000.
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Riley, Michael F., to Praxair Technology, Inc. Controlling pouring stream and receiver environment. 5,366,409, Cl. 454-188.000.
Riley, Michael T.: *See—*
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Rimpler, Manfred. Apparatus for generating ozone utilizing an oscillating plate electrode. 5,366,702, Cl. 422-186.070.
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Rink, John L.; Ngai, Kwok H.; Yu, King J. J.; and Tam, Herrick, to Xintec Corporation. Angle firing fiber optic laser scalpel and method of use. 5,366,456, Cl. 606-16.000.
Ritchie, Paul G.: *See—*
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Boffito, Claudio; and Ferrario, Bruno, 5,365,742, Cl. 62-46.200.

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Huffman, Charles E., 5,366,203, Cl. 254-362.000.

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Balsimo, William V.; and St. Mary, Steven J., 5,366,632, Cl. 210-777.000.

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Lee, Jin W.; and Kim, Dong I., 5,367,241, Cl. 318-799.000.
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Grassberger, Maximilian; Meingassner, Josef G.; Stutz, Anton; and Stutz, Peter, 5,366,971, Cl. 514-291.000.

Sandvik AB: *See—*
Pantzar, Goran; and Carlsson, Sven-Erik, 5,365,805, Cl. 76-101.100.

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Hattori, Kazuhide; Yamaji, Hiroyuki; Hatakeyama, Yoshikazu; Shida, Yoshiyuki; Tamura, Atushi; Kitaoka, Takumi; and Kohama, Takashi, 5,366,674, Cl. 264-45.400.

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DeGroot, Hans F., 5,366,450, Cl. 604-366.000.
Sanquinetti-Trigo, Jorge J. Dart game with dart hit versus non-dart hit impact discrimination. 5,366,230, Cl. 273-371.000.
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Johnson, Gerald E.; Laliberte, Ronald; Sansevero, Frank M.; Adrian, Willy; Wente, Gerald; and Zimmerman, R., 5,366,060, Cl. 198-323.000.
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Kanno, Isao, 5,366,394, Cl. 440-2.000.
Nanami, Masayoshi; Isogawa, Atsushi; and Masahiro, Honda, 5,366,401, Cl. 440-89.000.
Suganuma, Noboru; Ozawa, Shigeyuki; and Nakase, Ryoichi, 5,366,397, Cl. 440-39.000.
Yokoyama, Kazuhiko, 5,367,297, Cl. 340-984.000.
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Uenage, Toshihiko; and Hirano, Yoshihide, 5,366,393, Cl. 440-1.000.
Santi, Raymond M. Swimming pool tile brushing device. 5,365,626, Cl. 15-49.100.
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Noishiki, Yoshio; Yoneyama, Hirofumi; and Kishimoto, Yoshimasa, 5,367,530, Cl. 372-43.000.
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.
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Sardano, Peter A.: *See—*
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Taylor, Geoffrey W.; and Sargood, Steve, 5,367,177, Cl. 257-20.000.
Sarkisian, Edward C.: *See—*
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Sarnicola, John F. Motion simulator. 5,366,375, Cl. 434-37.000.
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Pozzobon, Alessandro; and Sartor, Mariano, 5,366,232, Cl. 280-11.220.
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Coyle, William E.; Nuechterlein, David W.; O'Donnell, Kim E.; Sartorius, Thomas A.; Schultz, Kenneth D.; and Wolters, Emmy M., 5,367,653, Cl. 395-400.000.
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Hough, Roger E.; Iimura, Kazuo; Ishimoto, Kenya; Nishimoto, Masao; Saitoh, Akio; Sawada, Kozo; Abe, Fumiaki; Sasaki, Goroh; and Schmandt, Stephen J., 5,367,661, Cl. 395-500.000.
Sasaki, Masakazu, to NEC Corporation. Method of fabricating a BI-CMOS integrated circuit device. 5,366,907, Cl. 437-34.000.
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Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,366,976, Cl. 514-258.000.
Sasaki, Yoshihiro: *See—*
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Satin, Robert H.: *See—*
Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.
Sato, Goichi: *See—*
Marui, Kuniyoshi; Sato, Goichi; Sawa, Buntaro; and Sato, Hiroshi, 5,367,556, Cl. 379-58.000.
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Sato, Koki, to Juki Corporation. Enclosure feed device for enclosing and sealing apparatus and method of enclosing and sealing enclosures. 5,366,214, Cl. 271-100.000.
Sato, Masatoshi; Saito, Jun; and Akasaka, Hideki, to Nikon Corporation. Over write capable magnetooptical recording method, and magnetooptical recording apparatus and medium used therefor. 5,367,507, Cl. 369-13.000.
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Okubo, Shinya; Sato, Mitsunobu; and Himeno, Kunisuke, 5,366,725, Cl. 424-85.400.
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Sunagawa, Masao; Iwase, Yukiji; and Sato, Shigenori, 5,365,633, Cl. 15-326.000.
Sato, Syunichi: *See—*
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Kaimoto, Shinshi; Sato, Takahiro; Hamamoto, Hiroshi; and Ishikawa, Masanori, 5,366,150, Cl. 237-2.00A.
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Sato, Takehisa; Kuribayashi, Toshiaki; and Ueda, Hironari, to Tonen Corporation. Lubricating oil composition. 5,366,646, Cl. 252-49.800.
Sato, Teiji; Nakata, Hitoshi; Ishizuki, Takayuki; Iwaya, Shoichi; Takahashi, Koji; Sannohe, Yuuiti; and Tanaka, Hitoshi, to Mizusawa Industrial Chemicals Ltd.; and TDK Corporation. Process for producing columbite-type niobate and process for producing perovskite-type compound therefrom. 5,366,718, Cl. 423-594.000.
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Inaniwa, Masahiro; and Sato, Yoshiaki, 5,365,810, Cl. 81-430.000.
Satoh, Koichi: *See—*
Tsutsumi, Masaru; Nishizawa, Nobuyoshi; Itoh, Tsukasa; Matsubayashi, Takaaki; Yonesaki, Takehiro; Satoh, Koichi; Furukawa, Akio; Yonezu, Ikuo; Fujitani, Shin; Nasako, Kenji; and Saito, Toshihiko, 5,366,820, Cl. 429-19.000.
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Satoh, Yoshiki: *See—*
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Satou, Ryuzi: *See—*
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Saturn Corporation: *See—*
Downs, Robert C.; and Kinsey, Kyle K., 5,365,804, Cl. 74-535.000.
Sauerwine, Dean N., to Moore Business Forms, Inc. Single ply eccentric C-fold. 5,366,145, Cl. 229-304.000.
Saulietis, Indulis, to Perceptive Scientific Instruments, Inc. Microscope slide rotary stage. 5,367,401, Cl. 359-398.000.
Savage, Steven D.; Evans, Steven L.; Haygood, Robert A.; and Zorner, Paul S., to Mycogen Corporation. Fatty acid based compositions for the control of established plant infections. 5,366,995, Cl. 514-558.000.
Savage, William A.: *See—*
Smith, Kevin J.; Kenner, Hugh R.; Savage, William A.; and Kwong, Alice, 5,367,651, Cl. 395-700.000.
Savgal Compressors Ltd.: *See—*
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Savory, John: *See—*
Margrey, Keith S.; Felder, Robin A.; Boyd, James C.; Holman, J. William; Roberts, Jonathan H.; Savory, John; and Martinez, Antonia, 5,366,896, Cl. 436-48.000.
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Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Maruyama, Shigeru; Baba, Shigeki; Hisaki, Takashi; Maeda, Kenichi; Sawamura, Kazutomo; Takagi, Jiro; and Terata, Shukoh, 5,365,905, Cl. 123-406.000.
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Sawazaki, Nobuyuki; Taruya, Masaaki; and Koiwa, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Ignitor for an internal combustion engine. 5,365,909, Cl. 123-617.000.
Sawdai, Albert H., to Procter & Gamble Company, The. Cellulosic fibrous structures having pressure differential induced protuberances and a process of making such cellulosic fibrous structures. 5,366,785, Cl. 428-156.000.
Sawyer, Thomas F.; Carter, William T., Jr.; and Benz, Mark G., to General Electric Company. Molten metal spray forming atomizer. 5,366,206, Cl. 266-202.000.
Scales, Hunter L.: *See—*
Shebanow, Michael C.; Alsup, Mitchell K.; Scales, Hunter L.; and Hoekstra, George P., 5,367,494, Cl. 365-230.030.
Scalf, Carol C.: *See—*
Walker, Kelsey R.; Scalf, Carol C.; and Granzow, Daniel B., 5,365,645, Cl. 29-25.350.
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Schad, Gregory W., to TEC Incorporated. Latex modified cement-based thin set adhesive. 5,366,550, Cl. 106-730.000.
Schaefer, Charles C.; Christiansen, Donald; and Machledt, Charles G. Repeater housing mounting unit. 5,366,190, Cl. 248-122.000.

Schafer, Gerhard: *See—*
Hufnagl, Walter; Schamberg, Stefan; Schafer, Gerhard; Muller, Roland; and Klawuhn, Manfred, 5,367,607, Cl. 392-465.000.
Schafer, Hans: *See—*
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Schamberg, Stefan: *See—*
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Scharpf, Lewis G.: *See—*
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Schechter, Norman: *See—*
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Scheffer, Terry J.; Munson, Kurt R.; and Conner, Arlie R., to In Focus Systems, Inc. Contrast improvement for display panels with masks between electrodes and covering split between electrode portions. 5,367,390, Cl. 359-54.000.
Scheiner, Avram; Marsolais, E. Byron; Mortimer, J. Thomas; and Kicher, Thomas P., to Case Western Reserve University. Double helix functional stimulation electrode. 5,366,493, Cl. 607-116.000.
Schell, William F. Communication signal device. 5,367,296, Cl. 340-984.000.
Schenck, John F.: *See—*
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Scherkenbeck, Jurgen; Nentwig, Gunter; Lenz, Jurgen; Boeckh, Jurgen; Wendler, Gernot; Dambach, Martin; and Kruger, Bernd-Wieland, to Bayer Aktiengesellschaft. Methods and agents for combating cockroaches. 5,365,691, Cl. 43-114.000.
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Moe, Warren R.; Russell, Larry A.; Russell, Teresa L.; Schevon, Catherine A.; and Stone, Roger E., 5,367,566, Cl. 379-243.000.
Schick, Hans G., to Upchurch Scientific, Inc. Inlet filter. 5,366,620, Cl. 210-198.200.
Schied, Peter J.: *See—*
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Schiehser, Guy A.; Caufield, Craig E.; Senko, Nancie A.; and VonBurg, Gregory F., to American Home Products Corporation. Tetronic, thiotetronic and tetramic acid derivatives as phospholipase A_2 inhibitors. 5,366,993, Cl. 514-445.000.
Schierling, Roland: *See—*
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Schiet, Franc T.: *See—*
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Schiff, Andreas: *See—*
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Schiffleger, Alan J., to Cray Research, Inc. Multiprocessing system using indirect addressing to access respective local semaphore registers bits for setting the bit or branching if the bit is set. 5,367,690, Cl. 395-725.000.
Schilling, Donald L., to InterDigital Technology Corporation. Dynamic capacity allocation CDMA spread spectrum communications. 5,367,533, Cl. 375-1.000.
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Bouis, Xavier; Tizard, John; Price, Ian A.; Wigley, David; and Schimanski, Dieter, 5,365,782, Cl. 73-147.000.
Schindler, Kevin A.: *See—*
Haan, Henk; Casper, Mark S.; Balshaw, Martha; and Schindler, Kevin A., 5,366,146, Cl. 229-304.000.
Schindler, Werner: *See—*
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Schipper, Willem: *See—*
Leblans, Paul; Schipper, Willem; and Blasse, George, 5,367,176, Cl. 250-585.000.
Schirmer, Michael H. Hydraulically operated retractable ambulance cot. 5,365,622, Cl. 5-611.000.
Schirmer, Ulrich: *See—*
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, 5,366,984, Cl. 514-361.000.
Schleicher, Andreas: *See—*
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Schlichting, Mark R., to Steel Technology Corporation. Fuel and oxygen addition for metal smelting or refining process. 5,366,537, Cl. 75-528.000.
Schloegl, Gunter: *See—*
Murschall, Ursula; Speith, Angela; and Schloegl, Gunter, 5,366,796, Cl. 428-216.000.
Schlotfeldt, Walter: *See—*
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Schlumberger Industries: *See—*
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Schlumberger Technology Corporation: *See—*
Edwards, A. Glen; Hromas, Joe C.; Huber, Klaus B.; and Smith, Edward G., Jr., 5,366,013, Cl. 166-297.000.
Schmandt, Stephen J.: *See—*
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Schmid, Eduard: *See—*
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Schmid, Erich: *See—*
Bruckner, Hermann; and Schmid, Erich, 5,365,730, Cl. 60-39.182.
Schmid, Michael, to Consumer Promotions, Inc. Adjustable display unit. 5,366,099, Cl. 211-59.300.
Schmidt, Dieter: *See—*
Speil, Walter; Schmidt, Dieter; and Zipprath, Michael, 5,365,897, Cl. 123-90.520.
Schmidt, Gunther, deceased: *See—*
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,366,972, Cl. 514-220.000.
Schmidt, Hans-Jurgen; Lindner, Klaus; and Eversloh, Theo L., to Motorola, Inc. Keypad including membrane with replaceable key elements. 5,367,133, Cl. 200-5.00A.
Schmidt, Howard M., Sr. Separation of valuable minerals from material found in the beds of bodies of water. 5,366,092, Cl. 209-17.000.
Schmidt, Margaret, legal representative: *See—*
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,366,972, Cl. 514-220.000.
Schmidt, Randall G.; and Vincent, Gary A., to Dow Corning Corporation. Silicone pressure-sensitive adhesives. 5,366,809, Cl. 428-447.000.
Schmitt, Johannes; and Rupp, Peter, to Robert Bosch GmbH. Drive slip regulating system. 5,366,282, Cl. 303-110.000.
Schmitt, Michael; and Niedenbrueck, Matthias, to BASF Aktiengesellschaft. Preparation of 7,16-dichlorodianthraquinone-N,N'-dihydroazine. 5,367,074, Cl. 544-339.000.
Schmitz, Burkhard: *See—*
Roericht, Hans; Fleischmann, Horst; Biggel, Franz; and Schmitz, Burkhard, 5,366,274, Cl. 297-321.000.
Schmitz, Detlef: *See—*
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Schmoegner, John C.: *See—*
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Schnabel, Douglas R.: *See—*
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Schneider, Hartmut; Gerndt, Christian; and Staudt, Armin, to Siemens Aktiengesellschaft. Optical fiber composed of glass doped with laser-active ions of an element from the rare earths. 5,366,937, Cl. 501-40.000.
Schneider, Richard T.; and Keates, Richard H., to Schneider, Richard T.; and Keates, Richard H. One-piece bifocal intraocular lens construction. 5,366,500, Cl. 623-6.000.
Schnorf, Peter, to Canon Information Systems, Inc. Digital video editor having lost video frame protection. 5,367,341, Cl. 348-616.000.
Schnur, Joel M.: *See—*
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Schofield, Philip W.; Stonikas, Paul R.; and McGinley, James W., to Methode Electronics, Inc. Optical loopback tester with air gap attenuator. 5,367,159, Cl. 250-227.110.
Scholten, Monica; Van Den Meerakker, Johannes E. A. M.; and Jacobs, Johannes W. M., to U.S. Philips Corporation. Method of manufacturing an electrically conductive pattern of tin-doped indium oxide (ITO) on a substrate. 5,366,588, Cl. 156-656.000.
Scholz, Todd V.: *See—*
Terrel, Ronald L.; Al-Swailmi, Saleh; and Scholz, Todd V., 5,365,793, Cl. 73-813.000.
Scholz, Werner, to Deutsche Thomson-Brandt GmbH. Method and circuit for regenerating a binary bit stream from a ternary signal. 5,367,535, Cl. 375-17.000.
Schott Gerate GmbH: *See—*
Lehmann, Jochen K.; Glatzer, Roland; Hartmann, Jutta; and Wagner, Dieter, 5,365,776, Cl. 73-54.070.
Schott, Helmut, to Robert Bosch GmbH. Method and apparatus for closing bottle-like containers with a capsule. 5,365,718, Cl. 53-202.000.
Schottler, Martin: *See—*
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Schrage, David A. Recyclable plastic pallet. 5,365,859, Cl. 108-56.100.
Schramayr, Ernst: *See—*
Hatch, Nathaniel E.; Olewicz, Tadeusz; and Schramayr, Ernst. 5,365,867, Cl. 112-121.120.
Schreck, Richard M.: *See—*
Garner, David P.; Ottaviani, Robert A.; Snyder, Dexter D.; Lindsay, James H.; Siak, June-Sang; and Schreck, Richard M., 5,366,004, Cl. 165-133.000.
Schreckengost, Harold C. Mailbox and signal. 5,366,148, Cl. 232-35.000.
Schreiber, William L.: *See—*
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Schubert, Paul F., to Catalytica, Inc. $CeBr_3$ catalyst. 5,366,949, Cl. 502-227.000.
Schuetz, Franz; Neubauer, Hans-Juergen; Kuekenhoehner, Thomas; Schirmer, Ulrich; Hofmeister, Peter; Kuenast, Christoph; Ammermann, Eberhard; Lorenz, Gisela; and Kardorff, Uwe, to BASF Aktiengesellschaft. Methyl α-arylacrylates substituted by a heterocyclic radical and their use. 5,366,984, Cl. 514-361.000.
Schuh, Karl D.: *See—*
Golden, Jeffrey A.; and Schuh, Karl D., 5,367,652, Cl. 395-499.000.
Schultz, Gary A., to Rohm and Haas Company. Automated pyrolyzer method and apparatus. 5,367,164, Cl. 250-288.000.
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Schultz, Timothy R.: *See—*
Gallery, Stanley A.; and Schultz, Timothy R., 5,367,452, Cl. 364-401.000.
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Schutz, Udo. Pallet container. 5,366,090, Cl. 206-599.000.
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Szoke, Istvan; Einhorn, Robert K.; and Krespi, Yosef P., 5,367,292, Cl. 340-608.000.
Schwartz, John A., Jr., to Partek, Inc. Composition for removing adhesives from polymeric film and process for using same. 5,366,998, Cl. 521-40.000.
Schwartz, Robert E.; Masurekar, Prakash S.; Sesin, David F.; Liesch, Jerrold M.; Hallada, Thomas C.; and Hensens, Otto D., to Merck & Co., Inc. Antibiotic agent. 5,366,880, Cl. 435-119.000.
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Schwarze, Heinz J.; and Kopp, Robert, to Continental Aktiengesellschaft. Method for removing viscoelastic contaminants from holes. 5,366,562, Cl. 134-22.120.
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Rothermel, Albrecht; Schweer, Rainer; Stolte, John; and Gillies, David, 5,367,338, Cl. 348-538.000.
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Schweitzer, Edmund O., III, 5,367,426, Cl. 361-80.000.
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Bozich, Daniel J.; MacKay, H. Bruce; Eggert, Jay A.; and Muenchau, Ernest E., 5,367,612, Cl. 395-22.000.
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Bowen, Donald H.; Harney, Michael P.; and Lett, David B., 5,367,571, Cl. 380-20.000.
Scientific Drilling International: *See—*
Van Steenwyk, Donald H.; and Teys, Raymond W., 5,366,018, Cl. 166-385.000.
Scitex Corporation Ltd.: *See—*
Ossia, Yoav, 5,367,388, Cl. 358-518.000.
Sclater, William C., to United States Tobacco Company. Motor vehicle roof-top display frame assembly. 5,365,687, Cl. 40-610.000.
Scot Young Research Limited: *See—*
Young, Ronald A., 5,366,314, Cl. 403-299.000.
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Michael, Daryl A.; and Scott, Herbert E., 5,366,185, Cl. 248-27.100.
Scott, James G. Picture holder with a recorder/playback integrated circuit. 5,365,686, Cl. 40-455.000.
Scott, James M.: *See—*
Staff, Karen E.; and Scott, James M., 5,366,575, Cl. 156-185.000.
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McGowan, Bernard W.; and Scully, Stephen P., 5,366,226, Cl. 273-258.000.
Scura, John E. Shock mount assembly. 5,366,200, Cl. 248-632.000.
Seagate Technology, Inc.: *See—*
Carstersen, Ronald T.; and Phillips, William R., 5,366,080, Cl. 206-334.000.
Seals, Roland D.: *See—*
Holcombe, Cressie E., Jr.; Gorin, Andrew H.; and Seals, Roland D., 5,366,524, Cl. 51-293.000.
Secher, Fernand; Thiberville, Jean; Douhet, Gerard; Freund, Christian; and Rasse, Yves, to Alcatel N.V. Video codec, for a videophone terminal of an integrated services digital network. 5,367,331, Cl. 348-14.000.
Security People, Inc.: *See—*
Gokcebay, Asil T.; and Keskin, Yucel K., 5,367,295, Cl. 340-825.310.
Seegan, Kimberly E.: *See—*
Frost, John S.; Tanner, David P.; and Seegan, Kimberly E., 5,367,442, Cl. 362-183.000.
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Steg, Hans-Henning; and Seidl, Helmut, 5,366,469, Cl. 606-182.000.
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Chang, Paul; Delp, Gary S.; Meleis, Hanafy E.; Montalvo, Rafael M.; Seidman, David I.; Tantawy, Ahmed N.; and Zumbo, Dominick A., 5,367,643, Cl. 395-325.000.
Seidner, Mark W. Modular coin storage assembly. 5,366,069, Cl. 206-0.840.
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Seiko Epson Corporation: *See—*
Abe, Nobumasa; Momose, Kiyoharu; Watanabe, Ko J.; Nakamura, Yuichi; Handa, Tsuneo; and Nishikawa, Mitsutaka, 5,367,324, Cl. 347-43.000.
Haba, Shinji, 5,367,508, Cl. 369-13.000.
Mori, Ryosuke; Miyashita, Kazunori; and Tanaka, Minoru, 5,366,423, Cl. 475-346.000.
Nakamura, Katsutoshi, 5,367,634, Cl. 345-194.000.
Ohara, Hiroshi; Watanabe, Hiroshi; and Wanikawa, Kunio, 5,367,393, Cl. 359-67.000.
Seiko Instruments Inc.: *See—*
Aoki, Kenji; and Saito, Naoto, 5,366,922, Cl. 437-57.000.
Suda, Masayuki; Sakuhara, Toshihiko; Shinogi, Masataka; Iwasaki, Fumiharu; and Ando, Akito, 5,366,613, Cl. 205-221.000.
Seikosha Co., Ltd.: *See—*
Sudo, Hiroshi; Fujita, Masanori; Yamaoka, Tadahiko; Oda, Hajime; and Ishida, Hiroaki, 5,367,357, Cl. 355-27.000.
Seitchik, Jerold A.: *See—*
Mahant-Shetti, Shivaling S.; Aton, Thomas J.; and Seitchik, Jerold A., 5,367,702, Cl. 395-800.000.
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Hamada, Masaaki; and Sekiguchi, Yumi, 5,366,211, Cl. 267-140.140.
Sekine, Hiroshi: *See—*
Yamaguchi, Mikio; and Sekine, Hiroshi, 5,366,413, Cl. 464-89.000.
Sekine, Masatoshi: *See—*
Fukasawa, Takayuki; Yamagishi, Kunihiko; and Sekine, Masatoshi, 5,367,468, Cl. 364-490.000.
Selby, Steven F.; Green, Dewayne E.; Sarkisian, Edward C.; and Klueger, Sigmund, to Chrysler Corporation. Push button construction for player control. 5,367,135, Cl. 200-345.000.
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Dove, John; Rahmatalla, Abdul A.; and Sell, Philip J., 5,366,455, Cl. 606-61.000.
Selwyn, Gary S.: *See—*
Bennett, Reid S.; Ellingboe, Albert R.; Gifford, George G.; Haller, Kurt L.; McKillop, John S.; Selwyn, Gary S.; and Singh, Jyothi, 5,367,139, Cl. 219-121.590.
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Faigle, Ernst M.; Semchena, John H.; Thompson, Richard J.; and Steffens, Charles E., Jr., 5,366,242, Cl. 280-736.000.
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Yamazaki, Shunpei; and Kadono, Masaya, 5,366,579, Cl. 156-247.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Nakayama, Hisayuki; Ushio, Kazumichi; and Inada, Katsuhiro, 5,366,985, Cl. 514-369.000.
Senko, Nancie A.: *See—*
Schiehser, Guy A.; Caufield, Craig E.; Senko, Nancie A.; and VonBurg, Gregory F., 5,366,993, Cl. 514-445.000.
Senkow, Anthony W., to Chrysler Corporation. Engine valve service apparatus. 5,365,647, Cl. 29-220.000.
Sensormatic Electronics Corporation: *See—*
Baro, Anthony; Willard, Alan E.; and Narlow, Doug, 5,367,289, Cl. 340-566.000.
Sentoku, Hideshi, to Laurel Bank Machines Co., Ltd. Coin receiving and dispensing machine. 5,366,407, Cl. 453-3.000.
Seok, Yong-Sik: *See—*
Park, Chan-Sok; Choi, Young-Gwon; Lee, Dong-Jae; Choi, Do-Chan; Jun, Dong-Soo; and Seok, Yong-Sik, 5,367,489, Cl. 365-189.110.
Sequent Computer Systems, Inc.: *See—*
Coulson, Richard L.; O'Malley, Vincent G.; and Safranek, Robert J., 5,367,647, Cl. 395-325.000.

Serpillon, Serge D.: *See—*
Munier, Regis J. R.; Berne, Oliver L. E.; and Serpillon, Serge D., 5,365,821, Cl. 83-500.000.
Sesin, David F.: *See—*
Schwartz, Robert E.; Masurekar, Prakash S.; Sesin, David F.; Liesch, Jerrold M.; Hallada, Thomas C.; and Hensens, Otto D., 5,366,880, Cl. 435-119.000.
Seto, Susumu: *See—*
Kawakami, Masaya; Seto, Susumu; and Tei, Seiken, 5,366,867, Cl. 435-8.000.
Sexson, Harold L.: *See—*
Turek, Joseph A.; Dryer, Joel S.; and Sexson, Harold L., 5,366,027, Cl. 174-261.000.
Sextant Avionique: *See—*
Corsan, Philippe; Jolly, Patrick; and Farvacque, Olivier, 5,367,408, Cl. 359-894.000.
Seybold, James M.: *See—*
Sheehan, Bernard P.; and Seybold, James M., 5,366,304, Cl. 400-248.000.
Sezaki, Yoshinori; Kanai, Takao; Atsuta, Hitoshi; and Mandai, Ichirou, to Dainippon Screen Mfg. Co., Ltd. Method of and apparatus for inspecting width of wiring line on printed board. 5,367,467, Cl. 364-489.000.
Sferlazza, Joseph: *See—*
Maida, Richard C.; and Sferlazza, Joseph, 5,365,819, Cl. 83-332.000.
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Thane, Nathan; and Hata, William; Y., 5,366,848, Cl. 430-313.000.
SGS-Thomson Microelectronics S.r.l.: *See—*
Ghezzi, Paolo; Pio, Federico; and Riva, Carlo, 5,367,483, Cl. 365-185.000.
Massironi, Angelo, 5,367,192, Cl. 257-678.000.
Shabalin, Vladimir N.; Shatokhina, Svetlana N.; Dutov, Valery V.; Trapeznikova, Margarita F.; Morozov, Andrei P.; Mitroshnikov, Andrei N.; Makushin, Leonid G.; and Yakovlev, Sergei A., to Shabalin, Vladimir N.; and Shatokhina, Svetlana N. Methods of diagnosing complicated urolithiasis and predicting urolithiasis. 5,366,899, Cl. 436-88.000.
Shabram, Lyle F., Jr., to Palumbo, Paul Anthony. Expandable strut for holding tennis shoes in a dryer. 5,365,675, Cl. 34-109.000.
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Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shajo, Sami, 5,367,681, Cl. 395-650.000.
Shanaman, Richard H., III: *See—*
Easter, William G.; and Shanaman, Richard H., III, 5,366,924, Cl. 437-63.000.
Shank, James D., Jr., to Church & Dwight Co., Inc. Fan nozzle. 5,365,702, Cl. 451-38.000.
Shank, Lynn D. Aerial advertising wind tube. 5,365,685, Cl. 40-212.000.
Shank, Peter J., to C. R. Bard Inc. Guidewire tip construction. 5,365,942, Cl. 128-772.000.
Shanli Corporation: *See—*
Johnston, G. Gilbert; McAusland, Robert R.; and Dieter, William M., 5,366,271, Cl. 297-250.100.
Sharangpani, Harshvardhan P.; and Sweedler, Jonathan B., to Intel Corporation. Method and apparauts for parallel exchange operation in a pipelined processor. 5,367,650, Cl. 395-375.000.
ShareVision Technology, Inc.: *See—*
Chu, Frank J.; and Yeh, C. Lung, 5,367,629, Cl. 395-162.000.
Sharkey, Hugh R.: *See—*
Edwards, Stuart D.; Lax, Ronald G.; Lundquist, Ingemar H.; and Sharkey, Hugh R., 5,366,490, Cl. 607-99.000.
Sharma, Dinesh K.: *See—*
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.
Sharp Kabushiki Kaisha: *See—*
Fukumoto, Takahiro, 5,367,185, Cl. 257-320.000.
Ishitani, Takashi, 5,367,625, Cl. 395-159.000.
Iwai, Toshiyuki; Iizuka, Kunihiko; Yamauchi, Yumi; Aoki, Atsushi; and Kubo, Noboru, 5,367,623, Cl. 395-157.000.
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.
Okada, Hisao; and Tanaka, Kuniaki, 5,367,314, Cl. 345-100.000.
Okumura, Kenzo; and Matumoto, Satoru, 5,367,551, Cl. 377-80.000.
Shasta Industries, Inc.: *See—*
Tarr, William C., 5,365,617, Cl. 4-508.000.
Shatokhina, Svetlana N.: *See—*
Shabalin, Vladimir N.; Shatokhina, Svetlana N.; Dutov, Valery V.; Trapeznikova, Margarita F.; Morozov, Andrei P.; Mitroshnikov, Andrei N.; Makushin, Leonid G.; and Yakovlev, Sergei A., 5,366,899, Cl. 436-88.000.
Shatzu Health Products, Inc.: *See—*
Voss, Theodore N.; Curran, Barbara; Kirk, Karl D., III; and Cohen, Ellen R., 5,366,475, Cl. 606-204.000.
Shaul, Orit: *See—*
Galili, Gad; Shaul, Orit; and Perl, Avihai, 5,367,110, Cl. 800-205.000.
Shaw, James J.; Wong, Lucy L.; Graff, Allan H.; Olaya, Hector; Barcelon, Shirley A.; Degady, Marc; and Brine, Charles J., to Warner-Lambert Company. Chewing gum containing wheat gluten. 5,366,740, Cl. 426-3.000.
Shaw, Joel F.; and Van Beek, Gary A. Security documents. 5,366,833, Cl. 430-10.000.
Shaw, Lester W., to Ensign-Bickford Company, The. Initiator device. 5,365,851, Cl. 102-275.600.
Shaw, William J. D., to University Technologies International Inc. Polymer alloy material and process for production thereof. 5,367,048, Cl. 528-367.000.
Shebanow, Michael C.; Alsup, Mitchell K.; Scales, Hunter L.; and Hoekstra, George P., to Motorola, Inc. Randomly accessible memory having time overlapping memory accesses. 5,367,494, Cl. 365-230.030.
Sheehan, Bernard P.; and Seybold, James M., to NCR Corporation. Printing ribbon cassette and method of assembly thereof. 5,366,304, Cl. 400-248.000.
Sheen, Shuh-Haw; Lawrence, William P.; Chien, Hual-Te; and Raptis, Apostolos C., to University of Chicago, The. Method for measuring liquid viscosity and ultrasonic viscometer. 5,365,778, Cl. 73-54.410.
Shell Oil Company: *See—*
Chou, Charles C.; and Yao, Chaoliang, 5,366,710, Cl. 423-235.000.
Lohbeck, Wilhelmus C. M., 5,366,012, Cl. 166-277.000.
Zuzich, Anne H.; and Blytas, George C., 5,367,089, Cl. 549-378.000.
Shell Research Limited: *See—*
Foster, Christopher J.; Gilkerson, Terence; and Stocker, Richard, 5,366,956, Cl. 504-255.000.
Shen, Dong-Ming; and Wu, Margaret M., to Mobil Oil Corporation. Lubricant composition and method for increasing diamondoid incorporation in polyalphaolefin-containing lubricant. 5,367,097, Cl. 585-22.000.
Shepard, Howard: *See—*
Dvorkis, Paul; and Shepard, Howard, 5,367,151, Cl. 235-472.000.
Shepley, Paul E., Jr.: *See—*
Smith, Allan F.; and Shepley, Paul E., Jr., 5,365,650, Cl. 29-417.000.
Sheppard, Clyde H.; and Lubowitz, Hyman R., to Boeing Company, The. Extended acid halide capping monomers. 5,367,083, Cl. 548-431.000.
Sherritt Inc.: *See—*
Fischbein, Milton; and Shirley, Arthur R., Jr., 5,366,534, Cl. 71-63.000.
Sheu, Shih-Yiing: *See—*
Tsai, Wen-Liang; Kuo, Hwei-Long; and Sheu, Shih-Yiing, 5,366,659, Cl. 252-299.610.
Shiba, Haruo; Satoh, Takateru; and Namioka, Takashi, to TDK Corporation. Cartridge for a recording/reproducing medium having a transparent or semi-transparent cover member. 5,367,421, Cl. 242-347.100.
Shibabuchi, Toshio: *See—*
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.
Shibata, Osamu, to Kabushiki Kaisha HIMIKO. Mid-sole or sole of shoes. 5,365,678, Cl. 36-29.000.
Shibue, Hideaki: *See—*
Kuriki, Nobuharu; Ohsaki, Seiji; Shibue, Hideaki; and Noro, Yoshiaki, 5,366,236, Cl. 280-707.000.
Shibutani, Makoto: *See—*
Domon, Wataru; and Shibutani, Makoto, 5,367,156, Cl. 250-214.0RC.
Shibuya, Katsuhiko: *See—*
Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,366,976, Cl. 514-258.000.
Shichman, Daniel: *See—*
Korthoff, Herbert W.; Shichman, Daniel; Muth, Ross R.; and Gorman, Charles E., Jr., 5,366,458, Cl. 606-151.000.
Shida, Yoshiyuki: *See—*
Hattori, Kazuhide; Yamaji, Hiroyuki; Hatakeyama, Yoshikazu; Shida, Yoshiyuki; Tamura, Atushi; Kitaoka, Takumi; and Kohama, Takashi, 5,366,674, Cl. 264-45.400.
Shieh, Jin-Ren. Lock for incapacitating motorcycle disk brake. 5,365,758, Cl. 70-33.000.
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Meisenburg, Gary L.; Eick, Edward C.; Magee, Phillip D.; Mixon, Charles M.; Weronke, Robert B.; Shields, Waylon D.; Smith, Woody R.; and Pavey, Steven J., 5,366,398, Cl. 440-81.000.
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Shigeta, Kunio: *See—*
Haneda, Satoshi; Shigeta, Kunio; Hosokoezawa, Sachie; Fukuchi, Masakazu; Morita, Shizuo; and Nomori, Hiroyuki, 5,367,365, Cl. 355-219.000.
Shima Seiki Mfg., Ltd.: *See—*
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Shimada, Makoto: *See—*
Hirako, Osamu; Danno, Yoshiaki; and Shimada, Makoto, 5,366,610, Cl. 204-406.000.
Shimada, Satoshi: *See—*
Tsuchitani, Shigeki; Suzuki, Seiko; Shimada, Satoshi; Miki, Masayuki; Matsumoto, Masahiro; Murakami, Susumu; Koide, Akira; Kurita, Masahiro; and Ebine, Hiromichi, 5,367,429, Cl. 361-280.000.

Shimada, Toshiaki: *See—*
Murakami, Tokumichi; and Shimada, Toshiaki, 5,367,335, Cl. 348-405.000.

Shimada, Yasuhiro; and Yoneyama, Hiroyuki, to Fuji Photo Film Co., Ltd. Silver halide color photosensitive materials. 5,366,856, Cl. 430-558.000.

Shimasaki, Yuichi: *See—*
Kanehiro, Masaki; Shimasaki, Yuichi; Ishioka, Takuji; Maruyama, Shigeru; Baba, Shigeki; Hisaki, Takashi; Maeda, Kenichi; Sawamura, Kazutomo; Takagi, Jiro; and Terata, Shukoh, 5,365,905, Cl. 123-406.000.

Shimaya, Kazuhiko, to Tsubakimoto Chain Co. Rotating ring shoe for tensioning chains and belts. 5,366,417, Cl. 474-112.000.

Shimazu, Tomonori: *See—*
Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, 5,366,988, Cl. 514-383.000.

Shimizu Chemical Corporation: *See—*
Kimura, Kumiko, 5,366,671, Cl. 264-28.000.

Shimizu, Isamu: *See—*
Kanai, Masahiro; Hirooka, Masaaki; Hanna, Jun-Ichi; and Shimizu, Isamu, 5,366,554, Cl. 118-719.000.

Shimizu, Katsuhiro: *See—*
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Shimizu, Katsumi: *See—*
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Shimizu, Masaki: *See—*
Shirayanagi, Ryutaro; Shimizu, Masaki; and Shimokawa, Masami, 5,366,792, Cl. 428-196.000.

Shimo, Nobuo: *See—*
Sekiguchi, Atsushi; and Shimo, Nobuo, 5,366,766, Cl. 427-255.400.

Shimokawa, Masami: *See—*
Shirayanagi, Ryutaro; Shimizu, Masaki; and Shimokawa, Masami, 5,366,792, Cl. 428-196.000.

Shin-Etsu Chemical Company, Ltd.: *See—*
Fujiki, Hironao; Shudo, Shigeki; Matsuda, Akira; Ogawa, Noriyoshi; and Takata, Toshiaki, 5,366,805, Cl. 428-412.000.
Fujiki, Hironao; and Shudo, Shigeki, 5,366,806, Cl. 428-412.000.
Itoh, Kunio; Inoue, Yoshio; Fujiki, Hironao; and Yoshino, Masachika, 5,367,001, Cl. 523-109.000.
Koide, Hiroyuki; Iinuma, Hitoshi; and Hirasawa, Hideo, 5,366,531, Cl. 65-415.000.

Shin-Etsu Handotai Co., Ltd.: *See—*
Yamada, Masato; Takenaka, Takao; and Endo, Masahisa, 5,366,552, Cl. 118-416.000.

Shindo, Tadashi: *See—*
Morikawa, Michitaka; Higashi, Koji; and Shindo, Tadashi, 5,366,682, Cl. 264-230.000.

Shinoda, Masahisa: *See—*
Satou, Yasuyuki; Karaki, Morihiro; and Shinoda, Masahisa, 5,367,512, Cl. 369-44.230.

Shinogi, Masataka: *See—*
Suda, Masayuki; Sakuhara, Toshihiko; Shinogi, Masataka; Iwasaki, Fumiharu; and Ando, Akito, 5,366,613, Cl. 205-221.000.

Shinohara, Tadashi: *See—*
Lal, Brij B.; and Shinohara, Tadashi, 5,366,607, Cl. 204-298.190.

Shinohara, Tsutomu: *See—*
Ohmi, Tadahiro; Shinohara, Tsutomu; Yamaji, Michio; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,366,261, Cl. 285-328.000.

Shinwa Sangyo Co., Ltd.: *See—*
Nakashiba, Akio; Nishimura, Hiroyuki; Nagatani, Fumio; Mito, Kazunori; Shibabuchi, Toshio; and Nakaoka, Mikio, 5,366,253, Cl. 285-21.000.

Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, to Nihon Bayer Agrochem K.K. Nitro-substituted heterocyclic compounds. 5,366,976, Cl. 514-258.000.

Shiota, Junji: *See—*
Mori, Hisatoshi; Sato, Syunichi; Konya, Naohiro; Ohno, Ichiro; Ishii, Hiromitsu; Matsuda, Kunihiro; and Shiota, Junji, 5,367,179, Cl. 257-59.000.

Shipley, Charles R.: *See—*
Knudsen, Philip D.; Shipley, Charles R.; and Pai, Daniel Y., 5,366,846, Cl. 430-280.000.

Shipley Company Inc.: *See—*
Knudsen, Philip D.; Shipley, Charles R.; and Pai, Daniel Y., 5,366,846, Cl. 430-280.000.
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D'Souza, Melanius, 5,365,863, Cl. 110-211.000.

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Ottesen, Hal H.; and Smith, Gordon J., 5,367,409, Cl. 360-32.000.

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Dearman, Kenneth W. J., 5,366,383, Cl. 439-321.000.
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Violi, Raymond, 5,367,605, Cl. 392-401.000

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Pagnon, Claude A. C., 5,366,136, Cl. 228-119.000.

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Van Hoyweghen, Danny; and Coisne, Jean-Marc, 5,367,049, Cl. 528-388.000.

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Ando, Ryo, 5,367,510, Cl. 369-32.000.
Eguchi, Naoya; and Oka, Michio, 5,367,531, Cl. 372-98.000.
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Inanaga, Kiyofumi; and Yamada, Yuji, 5,367,506, Cl. 369-4.000.
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Pinto, Henry M.; Bombace, John; and La Barre, Paul, 5,366,774, Cl. 428-36.920.

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Murschall, Ursula; Speith, Angela; and Schloegl, Gunter, 5,366,796, Cl. 428-216.000.

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Farnlund, Jonny; and Sperle, Peter, 5,365,900, Cl. 123-193.500.

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McPherson, Terry R.; Spirkowyc, Paul A.; and Womeldorff, Daniel W., 5,366,257, Cl. 285-174.000.

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Rhinehart, Edward J.; and Spohn, Michael A., 5,365,928, Cl. 128-653.500.

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Faure, Louis H.; and Spoor, Terence W., 5,367,254, Cl. 324-761.000.

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Srchem Incorporated: *See—*
Wood, Louis L., 5,367,047, Cl. 528-363.000.

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Stahl, Ingo; Hollstein, Axel; Kleine-Kleffmann, Ulrich; Geisler, Iring; and Neitzel, Ulrich, to Kali und Salz Aktiengesellschaft. Method of separating poly(ethylene terephthalate) (PET) and poly(vinyl chloride) (PVC). 5,366,091, Cl. 209-11.000.

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Simonelli, David J., 5,366,132, Cl. 227-8.000.

Stanwyck, Jon J.; and Haas, Richard T., to Cost of Wisconsin. Modular holes for a miniature golf course and a method therefor. 5,366,224, Cl. 273-176.00R.

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Stapleton, Michael F.; and Stapleton, John, 5,365,822, Cl. 83-745.000.

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Mason, Elmer B.; and Stark, Robert E., 5,367,215, Cl. 310-114.000.

Stark, Roland: *See—*
Stadler, Karl; Stark, Roland; and Klam, Ruediger, 5,367,220, Cl. 313-578.000.

Stark, Tuula: *See—*
Webb, Stuart; Yrjonen, Tapio; Stark, Tuula; and Oikari, Timo, 5,367,170, Cl. 250-364.000.

Starling, John D.: *See—*
Auer, Robert E.; Weber, Bruce M.; Starling, John D.; and Wood, James C. S., 5,367,474, Cl. 364-555.000.

Stashko, Daniel R., to Valenite Inc. End mill with positive rake indexable insert. 5,366,325, Cl. 407-42.000.

State of Oregon Acting By and Through Oregon State University: *See—*
Terrel, Ronald L.; Al-Swailmi, Saleh; and Scholz, Todd V., 5,365,793, Cl. 73-813.000.

Staudt, Armin: *See—*
Schneider, Hartmut; Gerndt, Christian; and Staudt, Armin, 5,366,937, Cl. 501-40.000.

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Kearney, William P.; and Quigley, George T., 5,366,627, Cl. 210-224.000.

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Stay, Kevin E.: *See—*
Lu, James W. B.; Costello, Norman F.; Stay, Kevin E.; and Damsohn, Herbert, 5,366,006, Cl. 165-173.000.

Steel Technology Corporation: *See—*
Schlichting, Mark R., 5,366,537, Cl. 75-528.000.

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Kitchen, William A.; and Hitchcock, Malcolm F., 5,365,767, Cl. 72-481.000.

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Jennings, Kurt L.; Steele, Robert E.; and Miller, Gregory D., 5,367,595, Cl. 385-71.000.

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Roovers, Wilhelmus M. M.; and Steendam, Wilhelmus J. D., 5,367,021, Cl. 525-67.000.

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Faigle, Ernst M.; Semchena, John H.; Thompson, Richard J.; and Steffens, Charles E., Jr., 5,366,242, Cl. 280-736.000.

Steg, Hans-Henning; and Seidl, Helmut, to Arta Plast AB. Lancet device for puncturing the skin. 5,366,469, Cl. 606-182.000.

Stehr, Michael: *See—*
Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., 5,366,658, Cl. 252-56.00S.

Stein, Peter, to Grana, Inc. Wind tunnel for cleaning and classifying solid particle form material. 5,366,094, Cl. 209-138.000.

Steinmetz, James W.; and Meller, Roy C., III. Rod tying apparatus. 5,365,715, Cl. 52-726.100.

Steins, Johannes: *See—*
Berger, Harald; Steins, Johannes; and Klintworth, Klaus, 5,366,538, Cl. 75-528.000.

Stenstrom, Lennart A.; Wahlstrom, Lennart S.; and Wikholm, Bert S., to AB Tetra Pak. Discharging device for a packaging container. 5,366,296, Cl. 383-210.000.

Stephens, Donald L., to Paccar Inc. Method of manufacturing an elongated spring member. 5,365,646, Cl. 29-173.000.

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Stephens, Frank A.: *See—*
Hager, John P.; Stephens, Frank A.; and Stephens, Frank M., Jr., 5,366,897, Cl. 436-55.000.

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Sterin, Shlomo. Apparatus for sorting fibers. 5,365,640, Cl. 19-200.000.

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Bigauskas, Tomas D., 5,366,714, Cl. 423-478.000.

Sterling Winthrop Inc.: *See—*
Toner, John L.; Hilborn, David A.; Murray, Bruce J.; and Hossain, Timothy Z., 5,367,080, Cl. 546-257.000.

Stevens, Jeffrey N.: *See—*
Cohen, Amy S. C.; Gleason, Christopher F.; Hyatt, Donald R.; Moran, Michael E.; Stevens, Jeffrey N.; and Wecker, Alan J., 5,367,621, Cl. 395-154.000.

Stevens, Timothy A.; Mussi, Edward F.; Henderson, Douglas P.; and Tyndorf, Tadeusz A., to Becton, Dickinson and Company. Culture vessel. 5,366,893, Cl. 435-284.000.

Steward, Douglas A.: *See—*
Wheatley, Donald G.; and Steward, Douglas A., 5,365,994, Cl. 160-354.000.

Stewart, Gordon G.: *See—*
Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.

Stewart, Jeffrey L., to Lennox Industries Inc. Control apparatus and method for electric heater with external heat source. 5,367,602, Cl. 392-308.000.

Stich, Walter: *See—*
Sperber, Franz; Voit, Arno; and Stich, Walter, 5,365,828, Cl. 91-41.000.

Stihl, Andreas: *See—*
Wissmann, Michael; Nickel, Hans; Schierling, Roland; Adam, Roland; and Geyer, Werner, 5,365,893, Cl. 123-73.00C.

Stilley, Troy R. Solar powered cathodic corrosion protection system. 5,366,604, Cl. 204-196.000.

Stiltner, Nelson H.; Martinez, Jesse M.; and Hutchison, Roger S., to CD ROM, Inc. Method and system for decoding digital audio files. 5,367,301, Cl. 341-144.000.

Stockel, Richard F. One-step contact lens sterilization process. 5,366,694, Cl. 422-37.000.

Stocker, Richard: *See—*
Foster, Christopher J.; Gilkerson, Terence; and Stocker, Richard, 5,366,956, Cl. 504-255.000.

Stolle Research & Development Corp.: *See—*
Lee, Young-Zoon, 5,367,054, Cl. 530-359.000.

Stolte, John: *See—*
Rothermel, Albrecht; Schweer, Rainer; Stolte, John; and Gillies, David, 5,367,338, Cl. 348-538.000.

Stone, James L., to Federal-Mogul Corporation. Recloseable paperboard container with optional closure means. 5,366,141, Cl. 229-120.030.

Stone, Roger E.: *See—*
Moe, Warren R.; Russell, Larry A.; Russell, Teresa L.; Schevon, Catherine A.; and Stone, Roger E., 5,367,566, Cl. 379-243.000.

Stonikas, Paul R.: *See—*
Schofield, Philip W.; Stonikas, Paul R.; and McGinley, James W., 5,367,159, Cl. 250-227.110.

Stoodt, Robert A.: *See—*
Tucchio, Michael A.; Stoodt, Robert A.; and Livsey, Robert A., 5,366,254, Cl. 285-23.000.

Storage Technology Corporation: *See—*
Lammers, Gerald B.; Barton, Patrick M.; Jacobs, Lynn C.; and Konshak, Michael V., 5,366,173, Cl. 242-338.100.
Nguyen, Thai; and Reichenberg, George, 5,367,471, Cl. 364-505.000.
Todd, Christian A., 5,367,415, Cl. 360-92.000.

Storch, Leonard; and Van Haagen, Ernst, to Cias, Inc. Counterfeit detection using ID numbers with at least one random portion. 5,367,148, Cl. 235-375.000.

Stratus Computer, Inc.: *See—*
Pandolfo, Michael A., 5,367,668, Cl. 395-575.000.

Streck, Roland: *See—*
Hoppe, Dirk; Pennewiss, Horst; Kraushaar, Frank; Stehr, Michael; Streck, Roland; Monkiewicz, Jaroslaw; and Wey, Hans G., 5,366,658, Cl. 252-56.00S.

Strecker, Ernst P.: *See—*
Andersen, Erik; and Strecker, Ernst P., 5,366,504, Cl. 623-11.000.

Streicher, Eric, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for thermal debinding and sintering of a workpiece. 5,366,679, Cl. 264-125.000.

Strein, Klaus, to Boehringer Mannheim GmbH. Regimen for treatment or prophylaxis of osteoporosis. 5,366,965, Cl. 514-102.000.

Strickler, Jamie R., to Albemarle Corporation. Preparation of $TiCl_3$ coordination complexes. 5,367,085, Cl. 549-206.000.

Strizki, Thomas C., to Ball Corporation. Dual orifice nozzle and method for internally coating containers. 5,366,162, Cl. 239-548.000.

Struthers, Ralph C. Metal alloy laded carbon aerogel hydrogen hydride battery. 5,366,828, Cl. 429-101.000.

Stubbs, Clifford A.: *See—*
Frazee, Bradley C.; Stubbs, Clifford A.; Hix, Veldon M.; and Willard, Miles J., 5,366,749, Cl. 426-549.000.

Stubbs, Jack B.: *See—*
Brinkerhoff, Ronald J.; Candadai, Ramesh S.; Cartmill, John A.; and Stubbs, Jack B., 5,366,478, Cl. 660-213.000.

Stuhlmacher, Glen, II. Razor cleaning device. 5,365,958, Cl. 134-44.000.

Stummer, Friedrich, to Maschinenfabrik Mueller-Weingarten AG. Measuring, monitoring and regulation system for determining the locking pressure or column force and/or the casting force in pressure die casting machines. 5,365,998, Cl. 164-154.100.

Stummer, Friedrich; Frey, Rolf; Reinhardt, Albert; and Lutz, Wolfgang, to Maschinenfabrik Mueller-Weingarten AG. Method for the process control of a pressure diecasting machine and an apparatus for carrying out the method. 5,365,999, Cl. 164-457.000.

Stupek, Richard A.: *See—*
Ward, Ronald G.; Farrand, Scott C.; Hernandez, Thomas J.; Neyland, Ronald A.; Stupek, Richard A.; Barron, James E.; Chen, Cheryl X.; Danielson, Lih-Juan L.; Mangold, Richard P.; Wiley, Mitchell R.; Miller, Andrew J.; Saadeh, Said S.; Fulton, Paul R.; Kunz, Richard A.; Heald, Arthur D.; and Sharma, Dinesh K., 5,367,670, Cl. 395-575.000.

Stutz, Anton: *See—*
Grassberger, Maximilian; Meingassner, Josef G.; Stutz, Anton; and Stutz, Peter, 5,366,971, Cl. 514-291.000.

Stutz, Peter: *See—*
Grassberger, Maximilian; Meingassner, Josef G.; Stutz, Anton; and Stutz, Peter, 5,366,971, Cl. 514-291.000.

Suda, Arata: *See—*
Ogino, Takao; Suda, Arata; Aoki, Takayuki; and Koga, Mitsuyuki, 5,366,567, Cl. 148-258.000.

Suda, Masayuki; Sakuhara, Toshihiko; Shinogi, Masataka; Iwasaki, Fumiharu; and Ando, Akito, to Seiko Instruments Inc. Method of electrochemical fine processing. 5,366,613, Cl. 205-221.000.

Suda, Yasuo; Yamada, Akira; Odaka, Yukio; and Akashi, Akira, to Canon Kabushiki Kaisha. Apparatus for detecting the focus adjusting state of an objective lens by performing filter processing. 5,367,153, Cl. 250-201.800.

Sudo, Hiroshi; Fujita, Masanori; Yamaoka, Tadahiko; Oda, Hajime; and Ishida, Hiroaki, to Seikosha Co., Ltd. Instant photocopying apparatus. 5,367,357, Cl. 355-27.000.

Suganuma, Noboru; Ozawa, Shigeyuki; and Nakase, Ryoichi, to Sanshin Kogyo Kabushiki Kaisha. Water jet propulsion unit. 5,366,397, Cl. 440-39.000.

Sugawara, Eiji, to Fujitsu Limited. Subscriber apparatus with ringer generator for sending ringer signal to subscriber line. 5,367,567, Cl. 379-252.000.

Sugimoto, Hitoshi: *See—*
Yano, Kentaro; Koitabashi, Noribumi; Otsuka, Naoji; Matsubara, Miyuki; Sugimoto, Hitoshi; Arai, Atsushi; Tajika, Hiroshi; and Hirabayashi, Hiromitsu, 5,367,325, Cl. 347-17.000.

Sugitani, Kenichiro: *See—*
Ishii, Fumito; Sugitani, Kenichiro; and Kakigi, Kunihiko, 5,365,987, Cl. 152-209.00R.

Sugiyama, Takeshi: *See—*
Shirouchi, Shoji; Sugiyama, Takeshi; and Morioka, Kouichi, 5,366,950, Cl. 502-328.000.

Sullivan, Henry W., Henry W.; Killian, Charles R.; and Bettencourt, Paul D. Means for controlling feedstock compaction in forming flexible porous pipes of controlled pore size. 5,366,365, Cl. 425-144.000.

Sullivan, Michael J.; Dussault, Douglas G.; Charette, Rick H.; and D'Addio, Ray E., to United States of America, Navy. Apparatus for producing images acoustically. 5,367,496, Cl. 367-7.000.

Sulzer, James H., to L & P Property Management Company. Gas operated foot stool. 5,366,275, Cl. 297-347.190.

Sulzer Rueti AG: *See—*
Oertli, Gustav, 5,365,983, Cl. 139-57.000.

Sumika Fine Chemical Company, Ltd.: *See—*
Nakamatsu, Toshio; Egashira, Yoshitugu; and Suzuki, Yasuyuki, 5,367,075, Cl. 546-76.000.

Sumimoto, Takayuki: *See—*
Kuriyama, Minoru; Kamada, Shinya; Nagayama, Shigeru; and Sumimoto, Takayuki, 5,366,420, Cl. 475-129.000.

Sumitomo Chemical Company, Limited: *See—*
Morikawa, Michitaka; Higashi, Koji; and Shindo, Tadashi, 5,366,682, Cl. 264-230.000.
Murahashi, Shun-Ichi; and Oda, Yoshiaki, 5,367,087, Cl. 549-533.000.
Nagano, Eiki; Takemura, Susumu; Enomoto, Masayuki; Sakaki, Masaharu; and Kizawa, Satoru, 5,366,955, Cl. 504-225.000.
Nakamatsu, Toshio; Egashira, Yoshitugu; and Suzuki, Yasuyuki, 5,367,075, Cl. 546-76.000.
Ohmae, Tadayuki; Toyoshima, Yoshiki; Tanaka, Hisao; Yamaguchi, Noboru; and Chikanari, Kenzo, 5,367,013, Cl. 524-494.000.

Sumitomo Electric Industries, Ltd.: *See—*
Nakamura, Tsutomu; Kanada, Yasuyuki; and Nakai, Tetsuo, 5,366,522, Cl. 51-293.000.
Seike, Takeo; and Endo, Satoshi, 5,367,591, Cl. 385-51.000.
Takeda, Yoshinobu; Hayashi, Tetsuya; Kaji, Toshihiko; Odani, Yusuke; Akechi, Kiyoaki; Kusui, Jun; Yokote, Takamasa; Tanaka, Akiei; and Watsuji, Takashi, 5,366,691, Cl. 420-548.000.
Ueda, Koichi; Nishide, Yutaka; Gotoh, Akira; Takenami, Yoshio; Ogawa, Fujio; Sakuma, Teiji; Kobayashi, Takashi; and Itoh, Tomokazu, 5,365,659, Cl. 29-863.000.
Ueda, Minoru; and Iiyama, Michitomo, 5,366,587, Cl. 156-651.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Hamada, Akihiko; Horiuchi, Kuniyasu; and Kato, Akira, 5,367,028, Cl. 525-221.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Ueda, Koichi; Nishide, Yutaka; Gotoh, Akira; Takenami, Yoshio; Ogawa, Fujio; Sakuma, Teiji; Kobayashi, Takashi; and Itoh, Tomokazu, 5,365,659, Cl. 29-863.000.

Summe, Richard A.; Rusch, Randy A.; Schnabel, Douglas R.; and Parrish, Jack D., to Delco Electronics Corporation. Method of making a high voltage implanted channel device for VLSI and ULSI processes. 5,366,916, Cl. 437-44.000.

Summerville, David F.; Williston, John P.; Wand, Martin A.; and Doty, Thomas J., to Texas Instruments Incorporated. Hierarchical control system for automatically guided vehicles. 5,367,456, Cl. 364-424.020.

Sun Chemical Corporation: *See—*
Nachfolger, Solomon J., 5,367,005, Cl. 523-403.000.

Sun Microsystems, Inc.: *See—*
Foss, Carolyn L.; Hare, Dwight F.; McAllister, Richard F.; Nguyen, Tin A.; Pearl, Amy; and Shajo, Sami, 5,367,681, Cl. 395-650.000.
Malladi, Deviprasad, 5,367,193, Cl. 257-707.000.
Narad, Charles E.; and Chen, Sun-Den, 5,367,695, Cl. 395-800.000.
Sodos, Martin, 5,367,639, Cl. 395-275.000.
Tarsy, Gregory; and Woodard, Michael J., 5,367,687, Cl. 395-700.000.

Sunabe, Thomas S. Wire and outlet box markers. 5,366,250, Cl. 283-81.000.

Sunagawa, Masao; Iwase, Yukiji; and Sato, Shigenori, to Hitachi, Ltd. Vacuum cleaner. 5,365,633, Cl. 15-326.000.

Sundstrand Corporation: *See—*
Anderson, W. Kyle, 5,367,437, Cl. 361-807.000.

Sung, Rodney L.: *See—*
DeRosa, Thomas F.; Russo, Joseph M.; Sung, Rodney L.; and Kaufman, Benjamin J., 5,366,518, Cl. 44-331.000.

Sunthankar, Mandar B. Environmentally safe methods and apparatus for depositing and/or reclaiming a metal or semi-conductor material using sublimation. 5,366,764, Cl. 427-248.100.

Suntory Limited: *See—*
Matsui, Nobuya; Morimura, Yasuhiro; Kunisaki, Shinichi; Fujiwara, Goro; Masuda, Mitsunobu; and Kanazawa, Masaru, 5,366,619, Cl. 210-139.000.

Supak, Wayne A.: *See—*
Graze, Russell ■, Jr.; and Supak, Wayne A., 5,365,773, Cl. 73-47.000.

Supelak, Ralph A., to Cadence Environmental Energy, Inc.; and Ash Grove Cement Company. Portable agitator for fluidizing bottom solids in tanks. 5,366,289, Cl. 366-308.000.

Suratteau, Albert: *See—*
Courtois, Jean-Marie; and Suratteau, Albert, 5,366,067, Cl. 198-518.000.

Surgicraft Limited: *See—*
Dove, John; Rahmatalla, Abdul A.; and Sell, Philip J., 5,366,455, Cl. 606-61.000.

Surgiquip, Inc.: *See—*
Raines, Aaron T., 5,366,312, Cl. 403-3.000.

Surjaatmadja, Jim B.; Bradley, Gary W.; and Tisch, Brett L., to Halliburton Company. Method of cutting high strength materials with water soluble abrasives. 5,366,015, Cl. 166-298.000.

Suratteau, Albert: *See—*
Courtois, Jean-Marie; and Suratteau, Albert, 5,366,067, Cl. 198-518.000.

Sutoh, Yasuo; and Tanigawa, Toshiaki, to Ricoh Company, Ltd. Storage-and-forward apparatus. 5,367,564, Cl. 379-100.000.

Sutz, Richard K., to Softwind Limited Partnership. Water pumping push-pull windmill. 5,366,342, Cl. 416-12.000.

Suwa, Toshio; and Kobayashi, Nobuaki, to Nippon Sanso Corporation. Method of melting metals. 5,366,536, Cl. 75-414.000.

Suzuka, Shinya, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera having a variable photographing aperture. 5,367,351, Cl. 854-159.000.

Suzuki, Hideaki: *See—*
Hosoda, Kenji; Kubota, Takaharu; Honda, Hitomi; and Suzuki, Hideaki, 5,366,861, Cl. 435-7.100.

Suzuki, Hiroshi: *See—*
Morioka, Makoto; Ikemori, Masato; Hattori, Kazuo; and Suzuki, Hiroshi, 5,367,626, Cl. 395-159.000.

Suzuki, Kazuhiro; Harada, Eriya; and Minoura, Akira, to Nippon Cable System Inc.; and Kubota Ltd. Operating device for accelerator. 5,365,802, Cl. 74-482.000.

Suzuki, Keitaro: *See—*
Yajima, Eiichi; Watanabe, Yoshitane; Suzuki, Keitaro; and Matsukura, Tetsunori, 5,366,545, Cl. 106-286.400.

Suzuki, Kenzi, to Namco Ltd. Shooting game machine. 5,366,229, Cl. 273-310.000.

Suzuki, Kohji: *See—*
Ito, Yujiro; Suzuki, Kohji; and Otobe, Takashi, 5,367,398, Cl. 359-154.000.

Suzuki, Minoru; and Hirano, Hiroyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical device with inherent focusing error correction. 5,367,406, Cl. 359-698.000.

Suzuki, Motonori: *See—*
Mori, Yozi; Suzuki, Motonori; Kikuchi, Hiroshi; and Motoda, Kenrou, 5,366,629, Cl. 210-242.300.

Suzuki, Osamu: *See—*
Nakazawa, Tokuaki; Rudisi, Joseph J.; and Suzuki, Osamu, 5,366,803, Cl. 428-335.000.

Suzuki, Seiko; Kato, Kazuo; Matsumoto, Masahiro; Tsuchitani, Shigeki; Miki, Masayuki; and Yokota, Yoshihiro, to Hitachi, Ltd. Sensor. 5,365,768, Cl. 73-1.00R.

Suzuki, Seiko: *See—*
Tsuchitani, Shigeki; Suzuki, Seiko; Shimada, Satoshi; Miki, Masayuki; Matsumoto, Masahiro; Murakami, Susumu; Koide, Akira; Kurita, Masahiro; and Ebine, Hiromichi, 5,367,429, Cl. 361-280.000.

Suzuki, Yasuyuki: *See—*
Nakamatsu, Toshio; Egashira, Yoshitugu; and Suzuki, Yasuyuki, 5,367,075, Cl. 546-76.000.

Suzuyama, Hiroshi: *See—*
Yaginuma, Kyuji; Kikuchi, Takehiro; Suzuyama, Hiroshi; and Fujiya, Shigeru, 5,367,432, Cl. 361-620.000.

Swain, Henry L.; and Gray, Glenn J., to Illinois Tool Works, Inc. Self-locking room air conditioning panels. 5,365,992, Cl. 160-84.10E.

Swanson, David K.: *See—*
Dahl, Roger W.; Fangel, Jayne G.; and Swanson, David K., 5,366,496, Cl. 607-132.000.

Swartz, Stuart E.: *See—*
Hu, Kuo-Kuang; Kirmser, Philip G.; Swartz, Stuart E.; and Hossain, Mustaque, 5,366,319, Cl. 404-52.000.

Sweedler, Jonathan B.: *See—*
Sharangpani, Harshvardhan P.; and Sweedler, Jonathan B., 5,367,650, Cl. 395-375.000.

Swemmers, Antonius H. M.: *See—*
d'Achard Van Enschut, Johannes F. M.; Jenneskens, Theodorus J. J. M.; and Swemmers, Antonius H. M., 5,367,553, Cl. 378-137.000.

Swenson, Paul F., to Consolidated Natural Gas Service Company, Inc. Heat pump system with refrigerant isolation and heat storage. 5,366,153, Cl. 237-19.000.

Swift, Joseph A.: *See—*
Schroll, Ross E.; Swift, Joseph A.; and Sardano, Peter A., 5,366,773, Cl. 428-36.900.

Swinehart, Philip R.; Courts, S. Scott; and Holmes, D. Scott, to Lake Shore Cryotronics, Inc. Metal oxy-nitride resistance films and methods of making the same. 5,367,285, Cl. 338-308.000.

Swiss Timing Ltd.: *See—*
Voillat, Jean-Pierre, 5,367,286, Cl. 340-323.00R.

Switzer, Walter G., to Southwest Research Institute. Laboratory scale incinerator simulation system. 5,365,864, Cl. 110-235.000.

Symbicom Aktiebolag: *See—*
Marklund, Stefan; and Edlund, Thomas, 5,366,729, Cl. 424-94.400.

Symbol Technologies, Inc.: *See—*
Dvorkis, Paul; and Shepard, Howard, 5,367,151, Cl. 235-472.000.
Krichever, Mark J.; and Metlitsky, Boris, 5,367,152, Cl. 235-472.000.

Symtron Systems, Inc.: *See—*
Wenrich, William R.; and Ernst, James J., 5,367,603, Cl. 392-394.000.

Syntex (U.S.A.) Inc.: *See—*
Eppstein, Deborah A.; Felgner, Philip L.; Gadek, Thomas R.; Jones, Gordon H.; and Roman, Richard B., 5,366,737, Cl. 424-450.000.

Syoichi, Watanabe: *See—*
Takashi, Yoshida; Syoichi, Watanabe; Katsuo, Yamada; Tokihiko, Hamada; and Yuzuru, Hiraoka, 5,367,498, Cl. 367-107.000.

Systemate Holland B.V.: *See—*
Hobbel, Arend; and Verrijp, Bastiaan, 5,366,406, Cl. 452-179.000.

Syvret, Robert G., to Air Products and Chemicals, Inc. Process for preparing difluorinated diazoniabicycloalkane derivatives. 5,367,071, Cl. 540-472.000.

Szoke, Istvan; Einhorn, Robert K.; and Krespi, Yosef P., to Szoke, Istvan; Einhorn, Robert K.; Krespi, Yosef P.; and Schwartz, Ansel M. Warning apparatus for a tracheotomy tube. 5,367,292, Cl. 340-608.000.

T Cell Sciences, Inc.: *See—*
Sindelar, Robert D.; Bradbury, Barton J.; Kaufman, Teodoro S.; Ip, Stephen H.; Marsh, Henry C., Jr.; and Lee, Chew, 5,366,986, Cl. 514-374.000.

Tabei, Shigeru: *See—*
Tanaka, Seiichi; and Tabei, Shigeru, 5,366,135, Cl. 228-116.000.

Tache, Ronald J.: *See—*
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Ozawa, Hitoshi, 5,365,931, Cl. 128-680.000.

Tessier, George G.: *See*—
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Testart, Gerard; and Hege, Frederic, to Cogifer-Compagnie Generale d'Installations Ferroviaires. Seat for the movable point in a cradle of a crossing frog incorporated in long welded rails and process for the production of such a seat. 5,366,184, Cl. 246-385.000.

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DeRosa, Thomas F.; Russo, Joseph M.; Sung, Rodney L.; and Kaufman, Benjamin J., 5,366,518, Cl. 44-331.000.

Texaco Services (Europe) Ltd.: *See*—
Maes, Jean-Pierre; and van Neste, Walter A., 5,366,651, Cl. 252-76.000.

Texas Brine Corporation: *See*—
Becnel, Lawrence F., Jr.; Currey, John E.; and Ver Hoeve, Raymond W., 5,366,514, Cl. 23-303.000.

Texas Instruments Incorporated: *See*—
Clem, Thomas A., 5,367,282, Cl. 338-22.00R.
Jha, Sunil C.; and Forster, James A., 5,366,139, Cl. 228-193.000.
Keenan, William F., 5,367,167, Cl. 250-338.400.
Magel, Gregory A., 5,367,582, Cl. 385-1.000.
Mahant-Shetti, Shivaling S.; Aton, Thomas J.; and Seitchik, Jerold A., 5,367,702, Cl. 395-800.000.
Morris, Frank J., 5,367,284, Cl. 338-306.000.
Moslehi, Mehrdad M.; Matthews, Robert; and Davis, Cecil J., 5,367,606, Cl. 392-418.000.
Sakai, Akira, 5,367,279, Cl. 337-104.000.
Summerville, David F.; Williston, John P.; Wand, Martin A.; and Doty, Thomas J., 5,367,456, Cl. 364-424.020.

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Van Steenwyk, Donald H.; and Teys, Raymond W., 5,366,018, Cl. 166-385.000.

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Eggers, Philip E.; and Thapliyal, Hira V., 5,366,443, Cl. 604-114.000.

Thapliyal, Hira V.: *See*—
Eggers, Philip E.; and Thapliyal, Hira V., 5,366,443, Cl. 604-114.000.

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Sos, Siegmund; and Hoch, Artur, 5,366,083, Cl. 206-380.000.

Thermalloy, Inc.: *See*—
Moulton, Keith R., 5,365,654, Cl. 29-761.000.

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Viegas, Herman H.; Roehrich, Roland L.; and Johnson, Dale T., 5,365,744, Cl. 62-50.300.

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Secher, Fernand; Thiberville, Jean; Douhet, Gerard; Freund, Christian; and Rasse, Yves, 5,367,331, Cl. 348-14.000.

Thiel, Egon; Grieb, Theo; and Walch, Konrad, to Roederstein Spezialfabriken fuer Bauelemente der Elektronik und Kondensatoren der Starkstromtechnik GmbH. Thick film fuse and method for its manufacture. 5,367,280, Cl. 337-297.000.

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Edelman, Alan S., 5,367,692, Cl. 395-800.000.
Stanfill, Craig W., 5,367,677, Cl. 395-600.000.

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Hamilton, R. Scott; Wardle, Robert B.; and Hinshaw, Jerald C., 5,366,572, Cl. 149-19.900.

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Brekke, John H., 5,366,508, Cl. 623-16.000.

Thomas, Brent W.: *See*—
Essert, Robert; and Thomas, Brent W., 5,367,594, Cl. 385-70.000.

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Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, 5,366,842, Cl. 430-138.000.

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Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.; and Thomas, David E., 5,366,598, Cl. 204-92.000.

Thomas J. Lipton Co., Division of Conopco, Inc.: *See*—
Van Der Zon, Petrus W., 5,366,741, Cl. 426-79.000.

Thomas, Steven R.: *See*—
Adney, William S.; Thomas, Steven R.; Nieves, Rafael A.; and Himmel, Michael E., 5,366,884, Cl. 435-209.000.

Thompson, Andrew, to Interface, Inc. Floor covering with bitumen backing layer. 5,366,779, Cl. 428-96.000.

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Gruszczynski, David W.; Palum, Russell J.; Welch, Sarah R.; Thompson, Andrew D.; and Bierma, Richard A., 5,367,440, Cl. 362-32.000.

Thompson, James E., to Aquaheat Technology, Inc. Apparatus and method for controlling vegetation using high pressure liquid spray. 5,366,154, Cl. 239-13.000.

Thompson, Richard J.: *See*—
Faigle, Ernst M.; Semchena, John H.; Thompson, Richard J.; and Steffens, Charles E., Jr., 5,366,242, Cl. 280-736.000.

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Pudelski, Karen L.; Lowry, Joseph W.; Thompson, Thomas W.; Pearl, Robert A.; Elphingstone, Paul H.; Patterson, Mars; and Kelly, Theodore C., 5,366,055, Cl. 192-88.00B.

Thompson, Timothy F.: *See*—
Dipaolo, William J.; Tinley, David M.; Thompson, Timothy F.; and Parsons, Carol A., 5,367,619, Cl. 395-149.000.

Thomson-CSF Semiconducteurs Specifiques: *See*—
Perer, Ernesto; and Delagebeaudeuf, Daniel, 5,367,183, Cl. 257-194.000.

Throndson, Roger L.: *See*—
Koves, William J.; Throndson, Roger L.; and Peters, Kenneth D., 5,366,704, Cl. 422-218.000.

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Kinross, Timothy J.; and Thrush, Roger L., 5,366,390, Cl. 439-636.000.

Thumma, Mark R., to Whitaker Corporation, The. Electrical connector with shorting contacts. 5,366,382, Cl. 439-188.000.

Thunderbird Technologies, Inc.: *See*—
Vinal, Albert W.; and Dennen, Michael W., 5,367,186, Cl. 257-327.000.

Thylen, Lars H., to Telefonaktiebolaget L M Ericsson. Quantum wave guiding electronic switch. 5,367,274, Cl. 333-103.000.

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Wagner, Peter, 5,365,855, Cl. 104-124.000.

Thyssen Stahl AG: *See—*
Abele, Karl-Heinz; van den Boom, Heinz; Ender, Alfred; Hees, Eckart; and Meichsner, Walter, 5,366,539, Cl. 75-532.000.

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Turrentine, Daniel D.; and Tibshraeny, Michael W., 5,366,073, Cl. 206-309.000.

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Fisher, Arvin J.; Hlava, Alan; Koeller, Paul D.; Manges, Mary C.; Russell, Michael K.; Satin, Robert H.; Stewart, Gordon G.; and Timms, Patricia A., 5,367,686, Cl. 395-700.000.

Timonen, Maritta; Rha, ChoKyun; Vaara, Timo; Bagley, Lindsey; Bosdet, Sarah; Lindley, Michael; Lahtinen, Tarja; Turunen, Marja; and Vaara, Martti. Foodstuffs containing novel degraded cellulose derivatives. 5,366,755, Cl. 426-658.000.

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Dipaolo, William J.; Tinley, David M.; Thompson, Timothy F.; and Parsons, Carol A., 5,367,619, Cl. 395-149.000.

Tioxide Specialties Limited: *See—*
Tapley, Carole A. M., 5,366,660, Cl. 252-309.000.

Tirpak, Robin E.: *See—*
Rosthauser, James W.; and Tirpak, Robin E., 5,367,017, Cl. 524-589.000.

Tisch, Brett L.: *See—*
Surjaatmadja, Jim B.; Bradley, Gary W.; and Tisch, Brett L., 5,366,015, Cl. 166-298.000.

Tishken Products Co.: *See—*
Levy, Roger, 5,365,818, Cl. 83-308.000.

Titan Kogyo Kabushiki Kaisha: *See—*
Harada, Hidefumi; Inoue, Yasuo; and Sadanaga, Eiji, 5,366,816, Cl. 428-614.000.

Titra Europe Holding BV: *See—*
Nachmanson, Savely; and Bovelander, Everardus J., 5,367,348, Cl. 352-90.000.

Titra Film: *See—*
Nachmanson, Savely; and Bovelander, Everardus J., 5,367,348, Cl. 352-90.000.

Tizard, John: *See—*
Bouis, Xavier; Tizard, John; Price, Ian A.; Wigley, David; and Schimanski, Dieter, 5,365,782, Cl. 73-147.000.

Tll Industries, Inc.: *See—*
Roach, James A.; Chermak, James D.; Pagliuca, Emanuel J.; and Smith, Thomas J., 5,367,569, Cl. 379-412.000.

Tobias, Richard J.: *See—*
von Gnechten, Mark; Chase, Brian T.; Tobias, Richard J.; and Dooley, David, 5,367,701, Cl. 395-800.000.

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Hirota, Isao, 5,366,421, Cl. 475-231.000.
Oda, Atsushi, 5,366,419, Cl. 475-160.000.

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Toda, Kozo: *See—*
Watanabe, Yoshiyuki; and Toda, Kozo, 5,367,560, Cl. 379-72.000.

Todd, Christian A., to Storage Technology Corporation. Automatic magnetic tape cartridge separator for tape drive systems. 5,367,415, Cl. 360-92.000.

Todd, Gary J. Trigger-operated bow string release device having an adjustable pre-travel. 5,365,911, Cl. 124-35.200.

Todd, John A.; and Constantine, William H., to Dresser Industries, Inc. Vapor guard for vapor recovery system. 5,365,985, Cl. 141-392.000.

Tokai Rubber Industries, Ltd.: *See—*
Hamada, Masaaki; and Sekiguchi, Yumi, 5,366,211, Cl. 267-140.140.

Tokailin, Hiroshi: *See—*
Higashi, Hisahiro; Hosokawa, Chishio; and Tokailin, Hiroshi, 5,366,811, Cl. 428-457.000.

Toki, Shigeyuki: *See—*
Mikawa, Naohiro; Ueki, Satoshi; Koyama, Naomi; Furuhashi, Hiroyuki; Morioka, Tetsuya; and Toki, Shigeyuki, 5,367,033, Cl. 525-343.000.

Tokihiko, Hamada: *See—*
Takashi, Yoshida; Syoichi, Watanabe; Katsuo, Yamada; Tokihiko, Hamada; and Yuzuru, Hiraoka, 5,367,498, Cl. 367-107.000.

Tokiwa, Toru, to Amada Company, Limited. Device and method for transferring bars in spatial storing system. 5,366,335, Cl. 414-282.000.

Tokuno, Masateru; and Miyagawa, Tatsuyuki, to SK Engineering, Ltd.; and Reliance Electric Ltd. Sheet stacker. 5,366,217, Cl. 271-176.000.

Tokuyama Corporation: *See—*
Miyazaki, Hidetaka; Hasegawa, Toshiaki; Kajimoto, Yoshihiko; and Mochida, Susumu, 5,367,105, Cl. 570-234.000.

Tokyo Electric Co., Ltd.: *See—*
Matsushita, Tsuyoshi; Furuya, Eiichi; Kikuchi, Narumi; Endo, Katsuya; and Wada, Yutaka, 5,367,239, Cl. 318-685.000.

Tokyo Electron Limited: *See—*
Ueda, Yasuhiro; and Takahashi, Hironari, 5,365,772, Cl. 73-40.700.

Tokyo Institute of Technology: *See—*
Yamamoto, Takakazu; and Kanbara, Takaki, 5,367,038, Cl. 526-259.000.

Tollasepp, Tonis. Paint pump. 5,366,120, Cl. 222-377.000.

Tom, Joe G.: *See—*
Brabston, William N.; Malone, Philip G.; Poole, Toy S.; and Tom, Joe G., 5,366,547, Cl. 106-690.000.

Toman, Lori J.: *See—*
Villagran, Maria D.; Lanner, David A.; Toman, Lori J.; Mishkin, Martin A.; and Dawes, Nancy C., 5,366,748, Cl. 426-549.000.

Tomasello, Roseann M.: *See—*
Chen, Shiuh-Hui; Ross, Carl; Tomasello, Roseann M.; and Brandes, Anita G., 5,365,790, Cl. 73-724.000.

Tomasso, David A.; Porte, Johannes J.; Vanarsdale, William D.; Jakubowicz, Raymond F.; and Riall, James D., to Eastman Kodak Company. Tray and magnetic conveyor. 5,366,697, Cl. 422-64.000.

Tomic, Mladomir: *See—*
Wirth, Lawrence W.; Wegner, Wayne M.; Tomic, Mladomir; Buchko, Raymond; and Natterer, Johann, 5,366,294, Cl. 383-61.000.

Tominaga, Haruo: *See—*
Kurosaka, Akihito; Tomomatu, Kazuhiko; Nakao, Osamu; Ajimura, Shoji; and Tominaga, Haruo, 5,366,583, Cl. 117-3.000.

Tominaga, Yukio: *See—*
Ohno, Kazunori; Odai, Osamu; Tominaga, Yukio; Furukawa, Kiyoshi; and Oka, Makoto, 5,367,078, Cl. 546-122.000.

Tomiyama, Katsumi: *See—*
Esaki, Mitsunobu; Kimura, Shigefumi; Miyazaki, Chiharu; Hiraki, Sunao; Tomiyama, Katsumi; Oka, Naoto; Tsutsumi, Hironobu; Igawa, Sachio; Ootake, Toshio; and Kanda, Mitsuhiko, 5,367,275, Cl. 333-184.000.

Tomoegaw Paper Co., Ltd.: *See—*
Moriya, Yuichi, 5,366,838, Cl. 430-106.600.

Tomoegawa Paper Co., Ltd.: *See—*
Aoki, Nobuyuki, 5,366,839, Cl. 430-109.000.

Tomomatu, Kazuhiko: *See—*
Kurosaka, Akihito; Tomomatu, Kazuhiko; Nakao, Osamu; Ajimura, Shoji; and Tominaga, Haruo, 5,366,583, Cl. 117-3.000.

Tomono, Takao: *See—*
Asai, Ichiro; Tomono, Takao; and Nakamura, Takeshi, 5,367,180, Cl. 257-66.000.

Tonen Corporation: *See—*
Kobayashi, Akira; Kawamura, Tetsuya; Teraya, Tatsuo; Kuchiki, Eiji; and Fujita, Yuji, 5,367,020, Cl. 525-64.000.
Mikawa, Naohiro; Ueki, Satoshi; Koyama, Naomi; Furuhashi, Hiroyuki; Morioka, Tetsuya; and Toki, Shigeyuki, 5,367,033, Cl. 525-343.000.
Sato, Takehisa; Kuribayashi, Toshiaki; and Ueda, Hironari, 5,366,646, Cl. 252-49.800.

Toner, John L.; Hilborn, David A.; Murray, Bruce J.; and Hossain, Timothy Z., to Sterling Winthrop Inc. Complexing agents and targeting radioactive immunoreagents useful in therapeutic and diagnostic imaging compositions and methods. 5,367,080, Cl. 546-257.000.

Tonoki, Satoshi: *See—*
Miyama, Osamu; Fujita, Katsutoyo; Nishimura, Hayato; Matsumoto, Shigemi; and Tonoki, Satoshi, 5,367,016, Cl. 524-537.000.

Topkaya, Ahmet: *See—*
Jagiella, Manfred; Holzmann, Michael; Sporl, Georg; and Topkaya, Ahmet, 5,366,164, Cl. 239-600.000.

Toppan Printing Co., Ltd.: *See—*
Kuramoto, Takashi; Utsuda, Tetsuji; Onga, Takeo; Kominato, Takashi; Kaneda, Hidenori; and Taga, Mitsuo, 5,366,581, Cl. 156-364.000.

Torgerson, Robert D.: *See—*
Chesterfield, Michael P.; and Torgerson, Robert D., 5,366,756, Cl. 427-2.260.

Toriyabe, Keiji; Takehi, Takayoshi; Nezu, Yukio; Nakano, Yuki; and Shimazu, Tomonori, to Kumiai Chemical Industry Co., Ltd.; and Ihara Chemical Industry Co., Ltd. Benzohydroximoylazole derivatives and insecticide including the same. 5,366,988, Cl. 514-383.000.

Toshimitsu, Manabu; and Fuse, Hiroko, to Ebara Corporation. Hydrodynamic bearing. 5,366,298, Cl. 384-107.000.

Toso, Kenneth E.: *See—*
Green, David T.; Bolanos, Henry; Alesi, Daniel E.; and Toso, Kenneth E., 5,366,134, Cl. 227-176.000.

Totterdell, David H. J.; and Chalker, Paul R., to United Kingdom Atomic Energy Authority. Pressure transducers with diamond diaphragms and optical deflection detection means. 5,365,789, Cl. 73-721.000.

Tottori Sanyo Electric Co., Ltd.: *See—*
Noishiki, Yoshio; Yoneyama, Hirofumi; and Kishimoto, Yoshimasa, 5,367,530, Cl. 372-43.000.

Tourbah, Abdallah; and Ruminy, PAtrick, to Alcatel Cit. Method and device for returning to a normal communication link after using a standby link. 5,367,562, Cl. 379-93.000.

Tournier, Robert, to Centre National de la Recherche Scientifique. Method for preparing a very high quality magnetic material. 5,366,566, Cl. 148-103.000.

Toyama Chemical Co., Ltd.: *See—*
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Toyo Aluminum K.K.: *See—*
Takeda, Yoshinobu; Hayashi, Tetsuya; Kaji, Toshihiko; Odani, Yusuke; Akechi, Kiyoaki; Kusui, Jun; Yokote, Takamasa; Tanaka, Akiei; and Watsuji, Takashi, 5,366,691, Cl. 420-548.000.

Toyoda Cosei Co., Ltd.: *See—*
Hanabusa, Hisao; Ichimaru, Kazumi; Kuriyama, Yuji; and Ando, Masao, 5,366,240, Cl. 280-728.00A.

Toyoda Gosei Co., Ltd.: *See—*
Nozaki, Masahioro, 5,365,698, Cl. 49-441.000.
Nozaki, Masahiro, 5,366,267, Cl. 296-216.000.
Takimoto, Masahiro; Mizuno, Hisashi; and Jinushi, Shinji, 5,367,045, Cl. 528-53.000.

Toyoshima, Yoshiki: *See—*
Ohmae, Tadayuki; Toyoshima, Yoshiki; Tanaka, Hisao; Yamaguchi, Noboru; and Chikanari, Kenzo, 5,367,013, Cl. 524-494.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Nomizo, Fumio; and Nagase, Takashi, 5,366,678, Cl. 264-122.000.
Takeshima, Shinichi; Tanaka, Toshiaki; and Inoue, Tokuta, 5,365,733, Cl. 60-278.000.
Takeshima, Shinichi, 5,365,734, Cl. 60-288.000.

Tozer, Peter. Apparatus for stopping the flow of natural gas. 5,365,976, Cl. 138-89.000.

Traktovenko, Boris: *See—*
Skalski, Clement A.; and Traktovenko, Boris, 5,367,132, Cl. 187-393.000.

Trapeznikova, Margarita F.: *See—*
Shabalin, Vladimir N.; Shatokhina, Svetlana N.; Dutov, Valery V.; Trapeznikova, Margarita F.; Morozov, Andrei P.; Mitroshnikov, Andrei N.; Makushin, Leonid G.; and Yakovlev, Sergei A., 5,366,899, Cl. 436-88.000.

Trebes, David M.: *See—*
Hart, Robert N.; and Trebes, David M., 5,366,577, Cl. 156-222.000.

Trefilov, Viktor I.: *See—*
Mazur, Vladislav I.; Taran, Yuri N.; Kapustnikova, Svetlana V.; Trefilov, Viktor I.; Firstov, Sergey A.; and Kulak, Leonid D., 5,366,570, Cl. 148-669.000.

Treleaven, Paul J., to Avitel Electronics Ltd. Electronic circuit module and equipment rack for the module. 5,366,385, Cl. 439-377.000.

Tremblay, Camille, to Hopital Marie-Enfant. Modular pediatric seating system. 5,366,277, Cl. 297-464.000.

Triangle Research and Development Corporation: *See—*
Bryant, Yvonne G.; and Colvin, David P., 5,366,801, Cl. 428-283.000.

Triax Technologies: *See—*
Lefkowitz, Leonard R.; and Armstrong, Albert L., Jr., 5,367,199, Cl. 307-116.000.

Trofast, Jan W.; Jakupovic, Edib; and Mansson, Katarina L., to Aktiebolaget Astra. New process for preparing formoterol and related compounds. 5,367,114, Cl. 564-220.000.

Trummlitz, Gunther: *See—*
Hargrave, Karl D.; Proudfoot, John R.; Adams, Julian; Grozinger, Karl G.; Schmidt, Gunther, deceased; Engel, Wolfhard; Trummlitz, Gunther; and Eberlein, Wolfgang, 5,366,972, Cl. 514-220.000.

TRW Inc.: *See—*
Headley, Paul S., 5,366,239, Cl. 280-728.00A.
Powers, Robert, 5,366,847, Cl. 430-296.000.
Shtarkman, Emil M.; and Pinkos, Andrew F., 5,367,459, Cl. 364-424.050.

TRW Vehicle Safety System Inc.: *See—*
Lane, Wendell C., Jr., 5,366,244, Cl. 280-801.200.

TRW Vehicle Safety Systems Inc.: *See—*
Faigle, Ernst M.; Semchena, John H.; Thompson, Richard J.; and Steffens, Charles E., Jr., 5,366,242, Cl. 280-736.000.
Lane, Wendell C., Jr., 5,366,245, Cl. 280-806.000.
Ray, Gary M.; Stawara, Kathleen K.; and Petersen, Carl M., III, 5,366,243, Cl. 280-801.200.

Tsai, Wen-Liang; and Yang, Shu-Hui, to Industrial Technology Research Institute. Optically active alcohol and derivatives thereof, liquid crystal composition containing same and liquid crystal device. 5,366,656, Cl. 252-299.010.

Tsai, Wen-Liang; Kuo, Hwei-Long; and Sheu, Shih-Yiing, to Industrial Technology Research Institute. Ferroelectric liquid crystals containing pyrimidine and chiral compounds and liquid crystal compositions containing the same. 5,366,659, Cl. 252-299.610.

Tseng, Gordon B.: *See—*
Dye, James S.; and Tseng, Gordon B., 5,366,422, Cl. 475-249.000.

Tsubakimoto Chain Co.: *See—*
Fukushima, Yuji; and Kumakura, Atsushi, 5,366,418, Cl. 474-111.000.
Shimaya, Kazuhiko, 5,366,417, Cl. 474-112.000.

Tsuboi, Shinichi: *See—*
Shiokawa, Kozo; Tsuboi, Shinichi; Sasaki, Shoko; Moriya, Koichi; Hattori, Yumi; and Shibuya, Katsuhiko, 5,366,976, Cl. 514-258.000.

Tsuchitani, Shigeki; Suzuki, Seiko; Shimada, Satoshi; Miki, Masayuki; Matsumoto, Masahiro; Murakami, Susumu; Koide, Akira; Kurita, Masahiro; and Ebine, Hiromichi, to Hitachi, Ltd; and Hitachi Automotive Engineering Co., Ltd. Electrostatic type micro transducer and control system using the same. 5,367,429, Cl. 361-280.000.

Tsuchitani, Shigeki: *See—*
Suzuki, Seiko; Kato, Kazuo; Matsumoto, Masahiro; Tsuchitani, Shigeki; Miki, Masayuki; and Yokota, Yoshihiro, 5,365,768, Cl. 73-1.00R.

Tsuchiya, Hidetaka; Uehara, Nobuyuki; Fukuda, Masami; and Mafune, Masao, to Citizen Watch Co., Ltd. Watch with dumb alarm. 5,367,505, Cl. 368-72.000.

Tsuda, Atsushi: *See—*
Katayama, Sakae, deceased; Tsuda, Atsushi; and Hanno, Kenzi, 5,366,661, Cl. 252-314.000.

Tsuda, Izumi: *See—*
Nozaki, Ken; Kurokawa, Kosuke; Tsuda, Izumi; Hamamoto, Osamu; and Watanabe, Keiiti, 5,366,824, Cl. 429-34.000.

Tsuji, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Vehicle position and azimuth computing system. 5,367,463, Cl. 364-449.000.

Tsuji, Masaru: *See—*
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Tsuji, Yukari: *See—*
Nakano, Hirofumi; Fujii, Noboru; Yamashita, Yoshinori; Uosaki, Youichi; Chiba, Shigeru; Katsumata, Shigeo; and Tsuji, Yukari, 5,366,966, Cl. 514-152.000.

Tsujimoto, Ichiro, to NEC Corporation. Parallel transmission of TDMA sync and data bursts by artificial frequency selective fade and decision feedback equalization. 5,367,536, Cl. 375-42.000.

Tsukamoto, Hideharu; Matsuzaki, Shiro; and Miyasaka, Yoshihiko, to Sony Magnescale, Inc. Tape winding apparatus. 5,366,174, Cl. 242-532.100.

Tsukasa, Fumihiro; Fujimoto, Hideya; Horikoshi, Kazuhiko; Tanaka, Osamu; and Kikuchi, Kunio, to Anritsu Corporation. Fast-responsive electromagnetic balance-type weighing apparatus. 5,367,128, Cl. 177-212.000.

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Lee, Helen T.; O'Brien, Patrick M.; Picard, Joseph A.; Purchase, Claude F., Jr.; Roth, Bruce D.; Sliskovic, Drago R.; and White, Andrew D., 5,366,987, Cl. 514-378.000.
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Yoshida, Toshiyoshi. Disposable rain shield. 5,365,612, Cl. 2-171.000.

Yoshikawa, Toshimichi, to Kabushiki Kaisha Yoshikawakun Kogyosho. Magnet holding structure. 5,367,278, Cl. 335-285.000.

Yoshimatsu, Hiroshi; Murakami, Shinji; Yamada, Mitsuho; Uomori, Kenya; Hongo, Hitoshi; Ueno, Keiichi; Fujii, Mitsuru; Nakano, Norihito; Miyazawa, Jiro; Fukatsu, Ryo; and Takahata, Naohiko, to ATR Auditory and Visual Perception Research Laboratories. Apparatus for detecting small involuntary movement. 5,365,941, Cl. 128-745.000.

Yoshimoto, Hiroshi, to Konica Corporation. Tablet-shaped processing agent and method for processing silver halide photographic light sensitive materials. 5,366,853, Cl. 430-400.000.

Yoshimoto, Kazuo; Ogawa, Takashi; Uematsu, Hiromi; Takeuchi, Manabu; and Uchiyama, Kensuke, to Japan Tobacco Inc. Expanding apparatus for agricultural product or the like. 5,365,950, Cl. 131-291.000.

Yoshimura, Hideto: *See*—
Nagao, Masashi; Yoshimura, Hideto; and Inaguchi, Takashi, 5,365,743, Cl. 62-47.100.

Yoshimura, Hirofumi: *See*—
Inoue, Tetsuya; Sasaki, Yoshihiro; and Yoshimura, Hirofumi, 5,367,009, Cl. 524-272.000.

Yoshimura, Shunji: *See*—
Fukumoto, Atsushi; Udagawa, Toshiki; and Yoshimura, Shunji, 5,367,509, Cl. 369-13.000.

Yoshina, Atsuo: *See*—
Irikura, Koji; and Yoshina, Atsuo, 5,366,040, Cl. 180-244.000.

Yoshino, Masachika: *See*—
Itoh, Kunio; Inoue, Yoshio; Fujiki, Hironao; and Yoshino, Masachika, 5,367,001, Cl. 523-109.000.

Yoshino, Satoshi; and Nojiri, Keiko, to Fujitsu Limited. Shuttle printer. 5,365,839, Cl. 101-93.040.

Yoshiura, Syoichiro: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Yoshizumi, Shozo: *See*—
DiIorio, Mark S.; Yoshizumi, Shozo; and Yang, Kai-Yueh, 5,367,178, Cl. 505-190.000.

Yoshizumi, Toshiaki; Hidaka, Mikio; and Hirano, Yoshiki, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 5,367,134, Cl. 200-148.00F.

Yotsuji, Akira: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Yotsuji, Minako: *See*—
Imaizumi, Hiroyuki; Kajita, Tetsuya; Takashima, Kenichi; Yotsuji, Minako; Takakura, Keiko; Yotsuji, Akira; Mitsuyama, Junichi; Shimizu, Katsumi; Sakai, Hiroshi; and Narita, Hirokazu, 5,366,989, Cl. 514-383.000.

Young, Donald G.: *See*—
Kilpatrick, Ted D.; Wagner, Arthur M.; and Young, Donald G., 5,365,857, Cl. 108-51.300.

Young, Ronald A., to Scot Young Research Limited. Connector for detachably connecting a shaft to an implement. 5,366,314, Cl. 403-299.000.

Young, Wayne P.: *See*—
McGarry, Richard A.; Green, David T.; Bolanos, Henry; and Young, Wayne P., 5,366,479, Cl. 606-219.000.

Yrjonen, Tapio: *See*—
Webb, Stuart; Yrjonen, Tapio; Stark, Tuula; and Oikari, Timo, 5,367,170, Cl. 250-364.000.

Yu, Chen-Hua D., to AT&T Bell Laboratories. Method and apparatus for forming integrated circuit layers. 5,366,557, Cl. 118-725.000.

Yu, Chin-Yung. Tile cutting tool. 5,365,915, Cl. 125-23.020.

Yu, James; and Kuo, Tiao-Huo, to Advanced Micro Devices, Inc. Output buffer circuit for a low voltage EPROM. 5,367,206, Cl. 326-26.000.

Yu, King J. J.: *See*—
Rink, John L.; Ngai, Kwok H.; Yu, King J. J.; and Tam, Herrick, 5,366,456, Cl. 606-16.000.

Yu, Yinhua: *See*—
Xu, Fengi J.; Yu, Yinhua; and Bast, Robert C., Jr., 5,366,866, Cl. 435-7.230.

Yuan, Tsorng-Dih: *See*—
Beyer, Klaus D.; Hsieh, Chang-Ming; Hsu, Louis L.; and Yuan, Tsorng-Dih, 5,366,923, Cl. 437-62.000.

Yuan, Xiancheng, to PictureTel Corporation. Method and apparatus for processing block coded image data to reduce boundary artifacts between adjacent image blocks. 5,367,385, Cl. 358-465.000.

Yuasa Corporation: *See*—
Watada, Masaharu; Oshitani, Masahiko; and Onishi, Masuhiro, 5,366,831, Cl. 429-223.000.

Yuen, Alex, to Quality Semiconductor, Inc. Master slice gate array integrated circuits with basic cells adaptable for both input/output and logic functions. 5,367,187, Cl. 257-401.000.

Yuge, Kazuyoshi, to Jatco Corporation. Variable fluid volume vane pump arrangement. 5,366,354, Cl. 418-26.000.

Yuguchi, Naoki: *See*—
Koizumi, Naohisa; Nakajima, Shokichi; Yuguchi, Naoki; and Tanaka, Kazumi, 5,366,858, Cl. 435-5.000.

Yui, Tomoyuki: *See*—
Johno, Masahiro; and Yui, Tomoyuki, 5,367,391, Cl. 359-56.000.

Yui, Yuhi: *See*—
Kido, Eiichi; Yui, Yuhi; Anzai, Syunju; Yoshiura, Syoichiro; Imagawa, Shinji; Yoshida, Hiroaki; Kawasaki, Yoshikazu; Kawabata, Itaru; Fukunaga, Keizo; Mori, Toyokazu; and Tsuji, Masaru, 5,367,366, Cl. 355-225.000.

Yukong, Ltd.: *See*—
Chung, Dae-won, 5,367,094, Cl. 560-29.000.

Yuzuru, Hiraoka: *See*—
Takashi, Yoshida; Syoichi, Watanabe; Katsuo, Yamada; Tokihiko, Hamada; and Yuzuru, Hiraoka, 5,367,498, Cl. 367-107.000.

Zade, Ismail Y. Sanitary retractable baby pacifier. 5,366,481, Cl. 606-236.000.

Zaharchuk, Gregory G.: *See*—
Char, Kookrin; Garrison, Stephen M.; Newman, Nathan; and Zaharchuk, Gregory G., 5,366,953, Cl. 505-329.000.

Zahn, Rudolf: *See*—
Volker, Michael; Weiss, Stefan; and Zahn, Rudolf, 5,367,305, Cl. 342-368.000.

Zamecnik, Paul C.: *See*—
Pederson, Thoru; Agrawal, Sudhir; Mayrand, Sandra; and Zamecnik, Paul C., 5,366,878, Cl. 435-91.300.

Zanussi Elettrodomestici S.P.A.: *See*—
Favaro, Daniele, 5,365,959, Cl. 134-113.000.

Zarakov, Eric: *See*—
Kerns, Charles; Zarakov, Eric; and Gilley, Thomas S., 5,367,332, Cl. 348-61.000.

Zehnder Electronic AG: *See*—
Grunig, Kurt, 5,367,146, Cl. 219-497.000.

Zehner, Georgia L.; Rosch, Paulette M.; Odorzynski, Thomas W.; Siebers, Bruce M.; and Blenke, Timothy J., to Kimberly-Clark Corporation. Newborn's growth adjustable absorbent diaper having variable overlapping and non-overlapping ears. 5,366,453, Cl. 604-385.200.

Zeidler, Bernard. Tar holder and associated roofing materials. 5,365,703, Cl. 52-62.000.

Zeiler, Robert. Amusement projector. 5,367,349, Cl. 353-43.000.

Zeneca Limited: *See*—
Bruneau, Pierre A. R.; and Lambert-van der Brempt, Christine M. P., 5,367,079, Cl. 546-157.000.
Hutchinson, Francis G., 5,366,734, Cl. 424-426.000.

Zeneca-Pharma, S.A.: *See*—
Bruneau, Pierre A. R.; and Lambert-van der Brempt, Christine M. P., 5,367,079, Cl. 546-157.000.

Zenith Electronics Corp.: *See*—
Rabii, Khosro M., 5,367,212, Cl. 327-105.000.

Zexel-Gleason USA, Inc.: *See*—
Dye, James S.; and Tseng, Gordon B., 5,366,422, Cl. 475-249.000.

ZF Friedrichshafen AG: *See*—
Wilks, Eberhard; Sigl, Peter; and Ritzer, Manfred, 5,366,042, Cl. 180-253.000.

Zighelboim R, Jaime. Method of milking cows. 5,366,732, Cl. 424-411.000.

Zilch, Harald: *See*—
Bosies, Elmar; and Zilch, Harald, 5,366,969, Cl. 514-81.000.

Zimmerman, R.: *See*—
Johnson, Gerald E.; Laliberte, Ronald; Sansevero, Frank M.; Adrian, Willy; Wente, Gerald; and Zimmerman, R., 5,366,060, Cl. 198-323.000.

Zimmerman, Robert V.: *See*—
Jones, John B., Jr.; and Zimmerman, Robert V., 5,366,170, Cl. 241-275.000.

Zimmermann, Georg: *See*—
Wosnitza, Franz; Beckmann, Georg; and Zimmermann, Georg, 5,366,673, Cl. 264-37.000.

Zinser Textilmaschinen GmbH: *See*—
Mack, Karl-Heinz, 5,365,728, Cl. 57-281.000.

Zipes, Doulgas P.; and Adams, David E., to Indiana University Foundation. Automatic fibrillation detector and defibrillator apparatus and method. 5,366,486, Cl. 607-5.000.

Zippertubing Co., The: *See*—
Plummer, Walter A., III; Shrader, Vernon L.; and Alpuche, Ray W., 5,367,123, Cl. 174-36.000.

Zipprath, Michael: *See*—
Speil, Walter; Schmidt, Dieter; and Zipprath, Michael, 5,365,897, Cl. 123-90.520.

Zmich, Joseph: *See*—
Russ, Michael B.; Whitsura, Frank R.; Peer, Roger L.; Zmich, Joseph; and Low, Chi-Chu D., 5,366,614, Cl. 208-65.000.

Zorner, Paul S.: *See*—
Savage, Steven D.; Evans, Steven L.; Haygood, Robert A.; and Zorner, Paul S., 5,366,995, Cl. 514-558.000.

Zukowski, Raymond L.; and Willis, Randy S., to Rayzist Photomask, Inc. Removing uncured emulsion from stencils during photomask production. 5,366,584, Cl. 156-642.000.

Zumbach, Melchior: *See*—
Gysi, Peter; Huesser, Theo; and Zumbach, Melchior, 5,365,771, Cl. 73-31.030.

Zumbo, Dominick A.: *See*—
Chang, Paul; Delp, Gary S.; Meleis, Hanafy E.; Montalvo, Rafael M.; Seidman, David I.; Tantawy, Ahmed N.; and Zumbo, Dominick A., 5,367,643, Cl. 395-325.000.

Zuzich, Anne H.; and Blytas, George C., to Shell Oil Company. Polythercyclicpolyols from epihalohydrins, polyhydric alcohols and metal hydroxides or epoxy alcohol and optionally polyhydric alcohols with addition of epoxy resins. 5,367,089, Cl. 549-378.000.

Zwart, Klaas J. Retrievable bridge plug and a running tool therefor. 5,366,010, Cl. 166-120.000.

Zweifel, Ronald A., to Packard Instrument Company, Inc. Capacitive sensing system and technique. 5,365,783, Cl. 73-304.00C.

Zwikstra, Nico: *See*—
Cain, Frederick W.; Hughes, Adrian D.; Paska, Josipa; and Zwikstra, Nico, 5,366,752, Cl. 426-607.000.

1077075 Ontario Inc.: *See*—
Williams, Michael R., 5,366,696, Cl. 422-45.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Arriazu, Jose C. L., to Navarra De Componentes Electronicos, S.A. (NACESA). Potentiometer. Re. 34,795, Cl. 338-174.000.

Baker, Timothy J.; Woods, John H.; and Zerr, Jeffrey R., decreased, to Petrolite Corporation. Additive composition for water-based inks. Re. 34,792, Cl. 106-271.000.

Campbell, John R., to General Electric Company. Reactive graft polymers. Re. 34,799, Cl. 525-278.000.

Elson, Todd A.: *See*—
Peck, Ralph E.; Elson, Todd A.; and Toofan, Masoud, Re. 34,793, Cl. 114-45.000.

Farnworth, Warren M., to Micron Technology, Inc. Gull-wing zig-zag inline lead package having end-of-package anchoring pins. Re. 34,794, Cl. 257-678.000.

General Electric Company: *See*—
Campbell, John R., Re. 34,799, Cl. 525-278.000.

Hitachi, Ltd.: *See*—
Sato, Katsuyuki; and Yanagisawa, Kazumasa, Re. 34,797, Cl. 365-189.090.

Hydrohoist International, Inc.: *See*—
Peck, Ralph E.; Elson, Todd A.; and Toofan, Masoud, Re. 34,793, Cl. 114-45.000.

Micron Technology, Inc.: *See*—
Farnworth, Warren M., Re. 34,794, Cl. 257-678.000.

Motorola, Inc.: *See*—
Smith, John M.; and Schuler, Joseph J., Re. 34,796, Cl. 343-876.000.

Navarra De Componentes Electronicos, S.A. (NACESA): *See*—
Arriazu, Jose C. L., Re. 34,795, Cl. 338-174.000.

Peck, Ralph E.; Elson, Todd A.; and Toofan, Masoud, to Hydrohoist International, Inc. Lift for water vehicles. Re. 34,793, Cl. 114-45.000.

Petrolite Corporation: *See*—
Baker, Timothy J.; Woods, John H.; and Zerr, Jeffrey R., decreased, Re. 34,792, Cl. 106-271.000.

Sato, Katsuyuki; and Yanagisawa, Kazumasa, to Hitachi, Ltd. Semiconductor memory device having a back-bias voltage generator. Re. 34,797, Cl. 365-189.090.

Schuler, Joseph J.: *See*—
Smith, John M.; and Schuler, Joseph J., Re. 34,796, Cl. 343-876.000.

Smith, John M.; and Schuler, Joseph J., to Motorola, Inc. Antenna switching system. Re. 34,796, Cl. 343-876.000.

Toofan, Masoud: *See*—
Peck, Ralph E.; Elson, Todd A.; and Toofan, Masoud, Re. 34,793, Cl. 114-45.000.

Woods, John H.: *See*—
Baker, Timothy J.; Woods, John H.; and Zerr, Jeffrey R., decreased, Re. 34,792, Cl. 106-271.000.

Yanagisawa, Kazumasa: *See*—
Sato, Katsuyuki; and Yanagisawa, Kazumasa, Re. 34,797, Cl. 365-189.090.

Zerr, Jeffrey R., decreased: *See*—
Baker, Timothy J.; Woods, John H.; and Zerr, Jeffrey R., decreased, Re. 34,792, Cl. 106-271.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Lemelson, Jerome H. Molding apparatus. B1 3,616,495, 11-22-94, Cl. 425-155.000.

LIST OF DESIGN PATENTEES

Abbruzzese, Domenico: *See*—
Natuzzi, Pasquale; and Abbruzzese, Domenico, 352,608, Cl. D6-334.000.

Abey Australia Pty. Ltd.: *See*—
Anderson, Geoffrey; and Maeder, Roland, 352,651, Cl. D8-384.000.
Anderson, Geoffrey; and Maeder, Roland, 352,655, Cl. D8-384.000.

ACI International, Inc.: *See*—
Davis, Christopher J.; Wong, Peter; Tam, Chi T.; Lin, Kwok F.; Tse, Michael; Yuen, Loi W.; Au, Frankie; and Tam, Johnny, 352,734, Cl. D19-36.000.

Adam, Paul W. Retaining wall block. 352,789, 11-22-94, Cl. D25-113.000.

Adams, Douglas W. Youth chair. 352,614, 11-22-94, Cl. D6-370.000.

Agnatovech, William J., to Augat Inc. Miniature pushbutton switch of modular construction. 352,700, 11-22-94, Cl. D13-171.000.

Aktiebolaget Electrolux: *See*—
Sanderud, Bror R. L., 352,807, Cl. D32-18.000.

Alchin & Long Group Pty Limited T/AS Colonial Castings: *See*—
Alchin, Roy N., 352,622, Cl. D6-499.000.

Alchin, Roy N., to Alchin & Long Group Pty Limited T/AS Colonial Castings. Table frame. 352,622, 11-22-94, Cl. D6-499.000.

Alpha Systemes: *See*—
Vignot, Eric, 352,626, Cl. D6-545.000.

American Lighting Fixture: *See*—
Segill, William; Segill, Mark E.; Dangelo, Michael; and Pocock, Jeffrey H., 352,796, Cl. D26-81.000.

American Recreation Products, Inc.: *See*—
Cantwell, Robert R., 352,759, Cl. D21-253.000.

Amerigo, Inc.: *See*—
Gerring, Harold E., 352,682, Cl. D12-106.000.

Anderson, Geoffrey; and Maeder, Roland, to Abey Australia Pty. Ltd. Brick tie. 352,651, 11-22-94, Cl. D8-384.000.

Anderson, Geoffrey; and Maeder, Roland, to Abey Australia Pty. Ltd. Tie for masonry and brick. 352,655, 11-22-94, Cl. D8-384.000.

Anghelo, Python V.; and Czajka, Raymond J., to Williams Electronics Games, Inc. Pinball game cabinet. 352,738, 11-22-94, Cl. D21-13.000.

Antar, Moses: *See*—
Cohen, Jack; and Antar, Moses, 352,784, Cl. D24-192.000.

Au, Frankie: *See*—
Davis, Christopher J.; Wong, Peter; Tam, Chi T.; Lin, Kwok F.; Tse, Michael; Yuen, Loi W.; Au, Frankie; and Tam, Johnny, 352,734, Cl. D19-36.000.

Augat Inc.: *See*—
Agnatovech, William J., 352,700, Cl. D13-171.000.

Aurora Art, Inc.: *See*—
Caplette, Geoffrey K., 352,792, Cl. D26-11.000.

Austin, Andrew, to Rexon/Tecmar, Inc. Tape drive housing. 352,702, 11-22-94, Cl. D14-108.000.

Bamber, David; and Deines, Robert, to Coleman Company, Inc., The. Combined rechargeable flashlight and fluorescent lamp and base therefor. 352,794, 11-22-94, Cl. D26-37.000.

Bankert, Richard D.: *See*—
Ross, Jerrold W.; and Bankert, Richard D., 352,675, Cl. D11-157.000.

Baron, Nancy: *See*—
Solomita, Anthony; Haber, Barry M.; and Baron, Nancy, 352,709, Cl. D14-141.000.

Becton Dickinson and Company: *See*—
Kirk, Karl D., III; and Toleman, James R., 352,782, Cl. D24-189.000.

Bell, Steve: *See*—
Godfrey, Jerry A.; and Bell, Steve, 352,774, Cl. D23-335.000.

Bemis Manufacturing Company: *See*—
Kelly, Gordon D., 352,613, Cl. D6-370.000.

Bennell, Keith A., to R. P. Scherer Corporation. Dissolvable gel capsule. 352,799, 11-22-94, Cl. D28-4.000.

Berggren, Sheri. Cushion. 352,633, 11-22-94, Cl. D6-598.000.

Bissell Inc.: *See*—
Reath, Brenda L., 352,809, Cl. D32-31.000.

Blair, Shawn E. Combined transmitter and receiver for locating a lost remote control switch. 352,669, 11-22-94, Cl. D10-106.000.

Bland, Charles, Jr. Pet collar. 352,804, 11-22-94, Cl. D30-152.000.

Bolle, Maurice, to Etablissments Boll'. Gogglescu352,723,a, 11-22-94, Cl. D16-312.000.

Bomhoff, Robert J.: *See*—
Hill, James R.; and Bomhoff, Robert J., 352,776, Cl. D23-400.000.

Bonnier, Tor G.: *See*—
DeBraal, Stanley J.; Nickles, Daniel R.; Crookes, William E.; Mantilla, Alberto J.; Bonnier, Tor G.; and Holm, David R., 352,723, Cl. D15-31.000.

Boselli, Alberto, to Nardi Italia SPA. Light alloy wheelcu352,688, 11-22-94, Cl. D12-211.000.

Brassil, Susan R.: *See*—
Dubson, Paul T.; Nicoloff, Nicholas, Jr.; Brassil, Susan R.; and Wilson, Jay, 352,732, Cl. D18-55.000.

Breg, Inc.: *See*—
Mason, Jeffrey T.; and Mason, Bradley R., 352,781, Cl. D24-188.000.

Brewer, Charles B., III. Combined screwdriver and rulercu352,648, 11-22-94, Cl. D8-87.000.

Bruce, Kenneth L. Chaircu352,609, 11-22-94, Cl. D6-334.000.

Burns, Finis H.: *See*—
Walsh, Patrick M.; and Burns, Finis H., 352,771, Cl. D23-290.000.

Butler, Harold D.; and Haynes, Bret T. Hat pincu352,679, 11-22-94, Cl. D11-207.000.

Cameron, Elizabeth R. Combined bib and bottle supportcu352,595, 11-22-94, Cl. D2-863.000.

Canning, Steven D., to Woodbridge Foam Corporation. Mattress padcu352,634, 11-22-94, Cl. D6-596.000.

Cantwell, Robert R., to American Recreation Products, Inc. Screen house tentcu352,759, 11-22-94, Cl. D21-253.000.

Caplette, Geoffrey K., to Aurora Art, Inc. Glass oil lampcu352,792, 11-22-94, Cl. D26-11.000.

Capper, Harry M.; and Robertson, James W., to Whitaker Corporation, The. Electrical connector module for telephone cable conductorscu352,699, 11-22-94, Cl. D13-133.000.

Casio Computer Co., Ltd.: *See*—
Tsuchida, Osamu; and Onumata, Yuichi, 352,730, Cl. D18-7.000.

Cassel, Timothy, to Tucker Housewares, Inc. Combined hamper and covercu352,810, 11-22-94, Cl. D32-37.000.

Celli S.p.A.: *See*—
Ugolini, Roberto, 352,637, Cl. D7-398.000.

Chalard, Michel: *See*—
Kohler, Herbert V., Jr.; Paulin, Pierre H.; Kergoet, Francois; and Chalard, Michel, 352,772, Cl. D23-300.000.

Charriol, Philippe. Glassescu352,725, 11-22-94, Cl. D16-320.000.

Chen, Chan-Fu. Electronic timercu352,667, 11-22-94, Cl. D10-40.000.

Chiang, Chuan T., to Zei Hong Manufacturing Co. Toycu352,740, 11-22-94, Cl. D21-59.000.

Chien Sheng Machine Industrial Co., Ltd.: *See*—
Hsu, Kun-Chung, 352,638, Cl. D7-416.000.

Christensen, David. Extruded rail for a utility rackcu352,692, 11-22-94, Cl. D12-412.000.

Christensen, David. Extruded rail for a utility rackcu352,693, 11-22-94, Cl. D12-412.000.

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Christensen, David. Extruded rail for a utility rackcu352,696, 11-22-94, Cl. D12-412.000.

Chung, Wu-Chang. Disposable dental flossercu352,801, 11-22-94, Cl. D28-64.000.

Circulair, Inc.: *See*—
Radtke, Leroy F., Jr., 352,775, Cl. D23-382.000.

Citizen Watch Co., Ltd.: *See*—
Sugimoto, Isao, 352,731, Cl. D18-50.000.

Claybrook, Billy C. Split crank case covercu352,719, 11-22-94, Cl. D15-5.000.

Cohen, Jack; and Antar, Moses, to Comed Inc. Surgical bootcu352,784, 11-22-94, Cl. D24-192.000.

Cohen, Richard M. Sole for a shoecu352,597, 11-22-94, Cl. D2-953.000.

Cole, Gary A.: *See*—
Cole, Lisa A.; and Cole, Gary A., 352,642, Cl. D7-692.000.

Cole, Lisa A.; and Cole, Gary A. Spatulacu352,642, 11-22-94, Cl. D7-692.000.

Coleman Company, Inc., The: *See*—
Bamber, David; and Deines, Robert, 352,794, Cl. D26-37.000.

Colgate-Palmolive Company: *See*—
Goldring, Harold B.; Niven, Mark A.; Namaroff, Ronald; and Davis, Leslie G., 352,621, Cl. D6-495.000.

Comed Inc.: *See*—
Cohen, Jack; and Antar, Moses, 352,784, Cl. D24-192.000.

Conair Corporation: *See*—
Leung, Kit L. T., 352,800, Cl. D28-35.000.
Solomita, Anthony; Haber, Barry M.; and Baron, Nancy, 352,709, Cl. D14-141.000.
Solomita, Anthony; Haber, Barry M.; and Taylor, Robert, 352,710, Cl. D14-148.000.
Solomita, Anthony; Haber, Barry M.; and Taylor, Robert, 352,711, Cl. D14-149.000.

Cook, James E.; and Eriksen, O. Harold S. Pump for liquidscu352,721, 11-22-94, Cl. D15-7.000.

Cooper Industries, Inc.: *See*—
Mehaffey, David E., 352,797, Cl. D26-85.000.

Coquereau, Libi: *See*—
Coquereau, Raoul J.; and Coquereau, Libi, 352,641, Cl. D7-688.000.

Coquereau, Raoul J.; and Coquereau, Libi. Serving spooncu352,641, 11-22-94, Cl. D7-688.000.

Cornish, Joseph J., III, to Stone, Bradley K. Golf clubcu352,755, 11-22-94, Cl. D21-214.000.

Corrigan, John J.; and Culbert, Robert M., to Morehouse-Cowles, Inc., a CA corp. High shear mixercu352,724, 11-22-94, Cl. D15-147.000.

Covington, Jay C.; and Matthews, Gary N. Writing instrumentcu352,735, 11-22-94, Cl. D19-42.000.

Covington, Jay C.; and Matthews, Gary N. Writing instrumentcu352,736, 11-22-94, Cl. D19-42.000.

Crookes, William E.: *See*—
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468 5,365,651
605 5,365,652
627 5,365,655
741 5,365,653
761 5,365,654
840 5,365,656
850 5,365,657
861 5,365,658
863 5,365,659
884 5,365,660
889.21 5,365,661
5,365,663
897.2 5,365,662
898.12 5,365,664

CLASS 30

50 5,365,665
340 5,365,666

CLASS 33

201 5,365,667
203.11 5,365,668
234 5,365,669
245 5,365,670
366 5,365,671
520 5,365,672
559 5,365,673
719 5,365,674

CLASS 34

109 5,365,675
424 5,365,676

CLASS 36

3 A 5,365,677
29 5,365,678
117 5,365,679

CLASS 37

227 5,365,681

CLASS 40

152.1 5,365,682
5,365,683
155 5,365,684
212 5,365,685
455 5,365,686
610 5,365,687

CLASS 43

5 5,365,688
21.2 5,365,689
113 5,365,690
114 5,365,691
124 5,365,692

CLASS 44

331 5,366,518
333 5,366,516
387 5,366,517
400 5,366,519
629 5,366,520

CLASS 47

1.01 5,365,693
5,366,521

CLASS 49

49 5,365,694
5,365,695
67 5,365,696
380 5,365,697
441 5,365,698

CLASS 51

293 5,366,522
5,366,523
5,366,524
295 5,366,525
307 5,366,526

CLASS 52

62 5,365,703
64 5,365,704
90.1 5,365,705
204.1 5,365,706
211 5,365,707
212 5,365,708
408 5,365,709
480 5,365,710
518 5,365,711
573.1 5,365,712
5,365,713
590.2 5,365,714
726.1 5,365,715
743 5,365,716

CLASS 53

111 R 5,365,717
202 5,365,718
370 5,365,719
411 5,365,720
463 5,365,721
502 5,365,722
556 5,365,723

CLASS 56

12.1 5,365,724
16.9 5,365,725
41 5,365,726
194 5,365,727

CLASS 57

281 5,365,728
310 5,365,729

CLASS 60

39.02 5,365,731
39.182 5,365,730
39.281 5,365,732
278 5,365,733
288 5,365,734
323 5,365,735
413 5,365,736
469 5,365,737
742 5,365,738

CLASS 62

3.62 5,365,739
23 5,365,740
38 5,365,741
46.2 5,365,742
47.1 5,365,743
50.3 5,365,744
50.4 5,365,745
51.2 5,365,746
126 5,365,747
235 5,365,748
259.2 5,365,749
293 5,365,750
298 5,365,751
374 5,365,752

CLASS 63

4 5,365,753
26 5,365,754

CLASS 65

25.1 5,366,528
106 5,366,529
382 5,366,527
403 5,366,530
415 5,366,531

CLASS 66

9 B 5,365,755
64 5,365,756

CLASS 70

14 5,365,757
33 5,365,758
177 5,365,759
460 5,365,760

CLASS 71

6 5,366,532
23 5,366,533
63 5,366,534

CLASS 72

12 5,365,761
53 5,365,762
98 5,365,763
229 5,365,764
355.6 5,365,765
387 5,365,766
481 5,365,767

CLASS 73

1 R 5,365,768
4 R 5,365,769
24.06 5,365,770
31.03 5,365,771
40.7 5,365,772
47 5,365,773
49.3 5,365,774
53.04 5,365,775
54.07 5,365,776
54.28 5,365,777
54.41 5,365,778
86 5,365,779
117.3 5,365,780
146 5,365,781
147 5,365,782
304 C 5,365,783
335.02 5,365,784
431 5,365,785
462 5,365,786
660 5,365,787
665 5,365,788
721 5,365,789
724 5,365,790
745 5,365,791
788 5,365,792
813 5,365,793
861.37 5,365,794
861.65 5,365,795
862.041 5,365,799
862.391 5,365,796
862.44 5,365,797
864.11 5,365,798

CLASS 74

333 5,365,800
425 5,365,801
482 5,365,802
484 R 5,365,803
535 5,365,804

CLASS 75

305 5,366,535
414 5,366,536
528 5,366,537
5,366,538
532 5,366,539

CLASS 76

101.1 5,365,805

CLASS 81

3.09 5,365,806
60 5,365,807
176.1 5,365,808
176.3 5,365,809
430 5,365,810
439 5,365,811

CLASS 83

34 5,365,812
35 5,365,813
74 5,365,814
154 5,365,815
177 5,365,816
256 5,365,817
308 5,365,818
332 5,365,819
455 5,365,820
500 5,365,821
745 5,365,822

CLASS 84

395 5,365,823
422.1 5,365,824
489 5,365,825
603 5,367,117
604 5,367,118
617 5,367,119
654 5,367,120
666 5,367,121

CLASS 89

46 5,365,826

CLASS 91

1 5,365,827
41 5,365,828
361 5,365,829

CLASS 96

33 5,366,540
124 5,366,541

CLASS 99

276 5,365,830
355 5,365,831
422 5,365,832
447 5,365,833
450 5,365,834
450.5 5,365,835

CLASS 100

5 5,365,836
100 5,365,837
112 5,365,838

CLASS 101

93.04 5,365,839
127.1 5,365,840
212 5,365,841
216 5,365,842
228 5,365,843
5,365,844
230 5,365,845
5,365,846
248 5,365,847
415.1 5,365,848
423 5,365,849

CLASS 102

272 5,365,850
275.6 5,365,851
476 5,365,852
507 5,365,853

CLASS 104

2 5,365,854
124 5,365,855
243 5,365,856

CLASS 106

3 5,366,542
22 K 5,366,543
187 5,366,544
271 Re.34,792
286.4 5,366,545
410 5,366,546
690 5,366,547
705 5,366,548
715 5,366,549
730 5,366,550

CLASS 108

51.3 5,365,857
55.3 5,365,858
56.1 5,365,859
108 5,365,860
132 5,365,861
144 5,365,862

CLASS 110

211 5,365,863
235 5,365,864
264 5,365,865
345 5,365,866

CLASS 112

121.12 5,365,867

CLASS 114

45 Re.34,793
61 5,365,869
126 5,365,870
218 5,365,871
230 5,365,872
315 5,365,868
362 5,366,028
367 5,365,873

CLASS 116

200 5,365,874

CLASS 117

3 5,366,583
7 5,365,875
85 5,365,876
93 5,365,877

CLASS 118

411 5,366,551
416 5,366,552
682 5,366,553
719 5,366,554
5,366,555
722 5,366,556
725 5,366,557

CLASS 119

27 5,365,885
50.5 5,365,878
54 5,365,879
[redacted] 5,365,880
94 5,365,881
170 5,365,883
256 5,365,884
267 5,365,886

CLASS 122

4 D 5,365,889
16 5,365,887
19 5,365,888
379 5,365,890
382 5,365,891

CLASS 123

44 D 5,365,892
73 C 5,365,893
90.11 5,365,895
90.17 5,365,896
5,365,898
90.22 5,365,894
90.52 5,365,897
192.2 5,365,899
193.5 5,365,900
195 C 5,365,901
299 5,365,902
320 5,365,916
339 5,365,903
359 5,365,904
406 5,365,905
467 5,365,906
470 5,365,907
491 5,365,917
564 5,365,908
617 5,365,909
627 5,365,910

CLASS 124

35.2 5,365,911
44.5 5,365,912
75 5,365,913

CLASS 125

21 5,365,914
23.02 5,365,915

CLASS 126

21 A 5,365,918
629 5,365,919
696 5,365,920

CLASS 127

43 5,366,558

CLASS 128

20 5,365,921
204.23 5,365,922
205.23 5,365,923
633 5,365,924
634 5,365,925
642 5,365,926
653.2 5,365,927
653.5 5,365,928
661.10 5,365,929
672 5,365,930
680 5,365,931
696 5,365,932
697 5,365,933
707 5,365,934
710 5,365,935
5,365,936
715 5,365,937
719 5,365,938
732 5,365,939
736 5,365,940
745 5,365,941
772 5,365,942
5,365,943
5,365,944
848 5,365,945
861 5,365,946
898 5,365,947
5,365,948

CLASS 131

280 5,365,949
291 5,365,950
339 5,365,951

CLASS 132

144 5,365,952
231 5,365,953
275 5,365,954
279 5,365,955
309 5,365,956

CLASS 134

1 5,366,559
7 5,366,560
18 5,366,561
22.12 5,366,562
44 5,365,958
113 5,365,959
184 5,365,960

CLASS 135

16 5,365,966
91 5,365,961

CLASS 137

14 5,365,962
67 5,365,963
68.1 5,365,964
115 5,365,965
192 5,365,970
226 5,365,967
312 5,365,968
387 5,365,969
493 5,365,974
556 5,365,971
614.04 5,365,972
5,365,973
614.11 5,365,978

875 5,365,975

CLASS 138

89 5,365,976
99 5,365,977

CLASS 139

57 5,365,983
66 R 5,365,979

CLASS 141

1 5,365,980
7 5,365,981
51 5,365,982
387 5,365,984
392 5,365,985

CLASS 144

231 5,365,986

CLASS 148

103 5,366,566
216 5,366,563
258 5,366,567
403 5,366,564
426 5,366,565
525 5,366,569
651 5,366,568
669 5,366,570

CLASS 149

2 5,366,571
19.9 5,366,572

CLASS 152

209 R 5,365,987
527 5,365,988

CLASS 156

64 5,366,573
102 5,366,574
173 5,366,576
185 5,366,575
222 5,366,577
245 5,366,578
247 5,366,579
359 5,366,580
364 5,366,581
584 5,366,582
642 5,366,584
643 5,366,585
5,366,586
651 5,366,587
656 5,366,588
657 5,366,589
662 5,366,590

CLASS 160

22 5,365,989
23.1 5,365,990
84.1 C 5,365,991
84.1 E 5,365,992
201 5,365,993
354 5,365,994

CLASS 162

9 5,366,591
49 5,366,592
72 5,366,593
84 5,366,594

CLASS 164

▩ 5,365,995
45 5,365,996
103 5,365,997
154.1 5,365,998
457 5,365,999
463 5,366,000
475 5,366,001

CLASS 165

1 5,366,002
2 5,366,003
133 5,366,004
140 5,366,005
173 5,366,006
5,366,007
5,366,008

CLASS 166

51 5,366,009
120 5,366,010
265 5,366,011
277 5,366,012
297 5,366,013
5,366,014
298 5,366,015
312 5,366,016
368 5,366,017
385 5,366,018
387 5,366,019
5,366,020

CLASS 169

16 5,366,021
37 5,366,022

CLASS 171

10 5,366,023

CLASS 172

318 5,366,024

CLASS 173

109 5,366,025
180 5,366,026

CLASS 174

36 5,367,123
48 5,367,122
52.4 5,367,124
5,367,125
71 R 5,367,126
146 5,367,127
261 5,366,027

CLASS 175

53 5,366,029
215 5,366,030
354 5,366,031
393 5,366,032

CLASS 177

136 5,366,033
212 5,367,128
229 5,367,129

CLASS 178

18 5,367,130

CLASS 180

21 5,366,034
24.01 5,366,035
65.1 5,366,036
65.5 5,366,037
164 5,366,038
197 5,366,039
244 5,366,040
248 5,366,041
253 5,366,042

CLASS 181

232 5,367,131

CLASS 182

18 5,366,050
46 5,366,051
88 5,366,052

CLASS 184

5 5,366,043

CLASS 187

359 5,366,044
376 5,366,045
393 5,367,132

CLASS 188

71.6 5,366,046
73.37 5,366,047
267 5,366,048
340 5,366,049

CLASS 192

4 A 5,366,053
70.17 5,366,054
88 B 5,366,055
106.1 5,366,056
106.2 5,366,057

CLASS 194

202 5,366,058

CLASS 198

303 5,366,059
323 5,366,060
335 5,366,061
345.3 5,366,062
347.3 5,366,063
426 5,366,064
457 5,366,065
458 5,366,066
518 5,366,067
812 5,366,068

CLASS 200

5 A 5,367,133
148 F 5,367,134
345 5,367,135
600 5,367,136

CLASS 201

19 5,366,595

CLASS 202

100 5,366,596

CLASS 204

59 F 5,366,597
92 5,366,598
106 5,366,599
147 5,366,600
180.1 5,366,601
5,366,602
182.8 5,366,603
196 5,366,604
228 5,366,605
257 5,366,606
298.19 5,366,607
299 R 5,366,608
403 5,366,609
406 5,366,610
412 5,366,611

CLASS 205

73 5,366,612
221 5,366,613

CLASS 206

0.84 5,366,069
5 5,366,072
5.1 5,366,078
5,366,070
5,366,071
5,366,077
5,366,073
5,366,074
315.11 5,366,076
315.6 5,366,075
319 5,366,084
328 5,366,079
334 5,366,080
339 5,366,081
343 5,366,082
380 5,366,083
407 5,366,085
443 5,366,086
459.5 5,366,087
499 5,366,088
546 5,366,089
599 5,366,090

CLASS 208

65 5,366,614
111 5,366,615
5,366,616
137 5,366,617

CLASS 209

11 5,366,091
17 5,366,092
135 5,366,093
138 5,366,094
139.2 5,366,095
535 5,366,096
704 5,366,097

CLASS 210

138 5,366,618
139 5,366,619
198.2 5,366,620
5,366,621
199 5,366,622
216 5,366,626
222 5,366,623
224 5,366,627
232 5,366,624
5,366,628
242.3 5,366,629
321.78 5,366,625
614 5,366,633
638 5,366,634
645 5,366,630
651 5,366,631
5,366,635
665 5,366,636
724 5,366,640
728 5,366,637
739 5,366,641
767 5,366,642
777 5,366,632
787 5,366,639
802 5,366,638

CLASS 211

4 5,366,098
59.3 5,366,099
153 5,366,100

CLASS 215

1 C 5,366,101
100 R 5,366,102

CLASS 219

74 5,367,137
109 5,367,138
121.59 5,367,139
121.64 5,367,140
121.67 5,367,141
5,367,142
121.68 5,367,143
121.84 5,367,144
494 5,367,145
497 5,367,146
698 5,367,147

CLASS 220

23.83 5,366,103
339 5,366,104
453 5,366,105
555 5,366,106
676 5,366,107
717 5,366,109

CLASS 221

2 5,366,110
75 5,366,111
198 5,366,112
232 5,366,113

CLASS 222

1 5,366,108
83 5,366,114
105 5,366,115
107 5,366,116
132 5,366,117
153 5,366,118
180 5,366,119
377 5,366,120
383 5,366,121
401 5,366,122

CLASS 224

42.43 5,366,123
42.46 R 5,366,124
202 5,366,125
211 5,366,126
313 5,366,127
330 5,366,128

CLASS 225

42 5,366,129

CLASS 226

44 5,366,130
118 5,366,131

CLASS 227

8 5,366,132
175 5,366,133
176 5,366,134

CLASS 228

116 5,366,135
119 5,366,136
147 5,366,137
176 5,366,138
193 5,366,139
246 5,366,140

CLASS 229

120.03 5,366,141
133 5,366,142
199 5,366,143
5,366,144
304 5,366,145
5,366,146

CLASS 232

1 C 5,366,147
35 5,366,148

CLASS 235

375 5,367,148
380 5,367,149
5,367,150
472 5,367,151
5,367,152

CLASS 236

49.5 5,366,149

CLASS 237

2 A 5,366,150
5,366,151
2 B 5,366,152
19 5,366,153

CLASS 239

13 5,366,154
66 5,366,155
135 5,366,156
239 5,366,157
289 5,366,158
310 5,366,159
333 5,366,160
455 5,366,161
548 5,366,162
585.2 5,366,163
600 5,366,164

CLASS 241

24 5,366,165
30 5,366,166
81 5,366,167
101.7 5,366,168
5,366,169
275 5,366,170

CLASS 242

338.1 5,366,173
342 5,366,172
347.1 5,367,421
422.2 5,366,171
532.1 5,366,174
597.6 5,366,175

CLASS 244

3.16 5,366,178
3.19 5,366,179
45 A 5,366,180
75 R 5,366,176
104 R 5,366,181
155 R 5,366,182
201 5,366,177

CLASS 246

28 R 5,366,183
385 5,366,184

CLASS 248

27.1 5,366,185
27.3 5,366,186
52 5,366,187
68.1 5,366,188
97 5,366,189
122 5,366,190
125 5,366,191
152 5,366,192
183 5,366,193
218.4 5,366,194
231.3 5,366,195
424 5,366,196
456 5,366,197
550 5,366,198
632 5,366,200

CLASS 249

119 5,366,201

CLASS 250

201.8 5,367,153
208.1 5,367,154
214 RC 5,367,156
214 VT 5,367,155
221 5,367,158
227.11 5,367,159
231.13 5,367,157
251 5,367,160
5,367,161
287 5,367,162
288 5,367,163
5,367,164
306 5,367,165
338.1 5,367,166
338.4 5,367,167
362 5,367,168
363.05 5,367,169
364 5,367,170
443.1 5,367,171
483.1 5,367,172
484.4 5,367,173
572 5,367,174
577 5,367,175
585 5,367,176

CLASS 251

30.05 5,366,202
368 5,366,199

CLASS 252

8.555 5,366,643
12 5,366,644
▩ 5,366,645
42.7 5,366,648
46.6 5,366,649
49.8 5,366,646
51.5 A 5,366,647
56 S 5,366,658
70 5,366,650
76 5,366,651
89.1 5,366,652
135 5,366,653
174.17 5,366,654
186.27 5,366,655
299.01 5,366,656
299.6 5,366,657
299.61 5,366,659
309 5,366,660
314 5,366,661
393 5,366,662
512 5,366,664
549 5,366,665

CLASS 254

362 5,366,203

CLASS 257

20 5,367,177
59 5,367,179
66 5,367,180
91 5,367,181
190 5,367,182
192 5,367,184
194 5,367,183
320 5,367,185
327 5,367,186
401 5,367,187
461 5,367,188
508 5,367,189
607 5,367,190
666 5,367,191
678 Re.34,794
5,367,192
707 5,367,193
727 5,367,194
767 5,367,195
787 5,367,196

CLASS 261

97 5,366,666
153 5,366,667

CLASS 264

1.8 5,366,668
6 5,366,669
22 5,366,670
28 5,366,671
35 5,366,672
37 5,366,673
45.4 5,366,674
45.5 5,366,675
70 5,366,676
113 5,366,677
122 5,366,678
125 5,366,679
141 5,366,680
171 5,366,681
230 5,366,682
238 5,366,683
510 5,366,684
547 5,366,685

CLASS 266

79 5,366,205
202 5,366,204
5,366,206
216 5,366,207
227 5,366,209

CLASS 267

140.14 5,366,211
140.4 5,366,210

CLASS 269

13 5,366,208

CLASS 270

95 5,366,212

CLASS 271

3 5,366,213
100 5,366,214
107 5,366,215
171 5,366,216
176 5,366,217

CLASS 273

73 J 5,366,218
128 R 5,366,219
138 R 5,366,220
142 A 5,366,221
170 5,366,222
175 5,366,223
176 R 5,366,224
185 C 5,366,225
258 5,366,226
287 5,366,227
292 5,366,228
310 5,366,229
371 5,366,230

CLASS 280

11.22 5,366,232
87.051 5,366,231
96.1 5,366,233
610 5,366,234
622 5,366,235
707 5,366,236
711 5,366,237
712 5,366,238
728 A 5,366,239
5,366,240
735 5,366,241
736 5,366,242
801.2 5,366,243
5,366,244
806 5,366,245
834 5,366,246
851 5,366,247

CLASS 281

46 5,366,248

CLASS 283

80 5,366,249
81 5,366,250
5,366,251
94 5,366,252

CLASS 285

21 5,366,253
23 5,366,254
41 5,366,255
62 5,366,256
174 5,366,257
260 5,366,258
305 5,366,259
323 5,366,260
328 5,366,261
340 5,366,262
364 5,366,263

CLASS 293

125 5,366,264

CLASS 296

97.12 5,366,265
100 5,366,266
216 5,366,267

CLASS 297

216.1 5,366,268
216.19 5,366,269
238 5,366,270
250.1 5,366,271
284.11 5,366,272
316 5,366,273
321 5,366,274
347.19 5,366,275
411.35 5,366,276
464 5,366,277

CLASS 301

37.34 5,366,278
108.1 5,366,279

CLASS 303

3 5,366,280
5,366,281
110 5,366,282

CLASS 307

105 5,367,197
116 5,367,198
5,367,199
465 5,367,207

CLASS 310

87 5,367,214
114 5,367,215
313 R 5,367,216
370 5,367,217

CLASS 312

183 5,366,283
404 5,366,284
5,366,285

CLASS 313

105 CM 5,367,218
113 5,367,219
578 5,367,220

CLASS 315

8 5,367,221
12.1 5,367,222
97 5,367,223
219 5,367,224
5,367,225
248 5,367,226
290 5,367,227
307 5,367,228
324 5,367,229
368.15 5,367,230
383 5,367,231

CLASS 318

3 5,367,232
254 5,367,233
5,367,234
286 5,367,235
567 5,367,236
616 5,367,237
630 5,367,238
685 5,367,239
727 5,367,240
799 5,367,241

CLASS 320

2 5,367,242
5,367,243
23 5,367,244

CLASS 322

212 5,367,245

CLASS 323

5,367,246
222 5,367,247
312 5,367,248
313 5,367,249

CLASS 324

133 5,367,250
5,367,251
158.1 5,367,252
5,367,253
207.13 5,367,255
207.17 5,367,256
207.22 5,367,257
220 5,367,258
248 5,367,259
307 5,367,260
318 5,367,261
341 5,367,262
537 5,367,263
674 5,367,264
761 5,367,254

CLASS 326

26 5,367,206
5,367,210
27 5,367,205
44 5,367,208
45 5,367,209

CLASS 327

33 5,367,200
47 5,367,266
56 5,367,213
73 5,367,211
75 5,367,204
78 5,367,203
105 5,367,212
540 5,367,202
543 5,367,201

CLASS 328

1 5,367,265

CLASS 330

54 5,367,267
129 5,367,268

CLASS 331

14 5,367,269
113 R 5,367,270

CLASS 332

105 5,367,271
149 5,367,272

CLASS 333

1 5,367,273
103 5,367,274
184 5,367,275

CLASS 335

16 5,367,276
229 5,367,277
285 5,367,278

CLASS 337

104 5,367,279
297 5,367,280
417 5,367,281

CLASS 338

22 R 5,367,282
34 5,367,283
174 Re.34,795
306 5,367,284
308 5,367,285

CLASS 340

323 R 5,367,286
429 5,367,287
553 5,367,288
566 5,367,289
572 5,367,290
5,367,291
608 5,367,292
687 5,367,293
692 5,367,294
825.31 5,367,295
984 5,367,296
5,367,297

CLASS 341

22 5,367,298
95 5,367,299
101 5,367,300
144 5,367,301
166 5,367,302

CLASS 342

37 5,367,303
352 5,367,304
368 5,367,305
386 5,367,306

CLASS 343

700 MS 5,367,307
5,367,308
702 5,367,309
745 5,367,310
749 5,367,311
807 5,367,312
853 5,367,313
876 Re.34,796

CLASS 345

100 5,367,314
156 5,367,315
158 5,367,316
193 5,367,317
194 5,367,634
201 5,367,318

CLASS 346

76 PH 5,367,320
5,367,321
5,367,322
139 R 5,367,323
157 5,367,327

CLASS 347

2 5,367,319
7 5,367,328
17 5,367,325
22 5,367,326
43 5,367,324

CLASS 348

1 5,367,329
7 5,367,330
14 5,367,331
61 5,367,332
117 5,367,333
389 5,367,334
405 5,367,335
416 5,367,336
521 5,367,337
538 5,367,338
592 5,367,339
607 5,367,340
616 5,367,341
626 5,367,380
667 5,367,342
700 5,367,343

CLASS 351

41 5,367,344
123 5,367,345
153 5,367,346
156 5,367,347

CLASS 352

90 5,367,348

CLASS 353

43 5,367,349
120 5,367,350

CLASS 354

321 5,367,352
400 5,367,354
409 5,367,353
418 5,367,355
471 5,367,356

CLASS 355

27 5,367,357
71 5,367,358
5,367,360
208 5,367,361
5,367,362
210 5,367,363
219 5,367,364
5,367,365
225 5,367,366
245 5,367,367
285 5,367,369
321 5,367,370

CLASS 356

28.5 5,367,371
73.1 5,367,372
139.03 5,367,373
312 5,367,374
345 5,367,375
5,367,376
350 5,367,377
371 5,367,378
446 5,367,379

CLASS 358

298 5,367,381
403 5,367,382
455 5,367,383
456 5,367,384
465 5,367,385
474 5,367,386
518 5,367,387
5,367,388

CLASS 359

54 5,367,390
56 5,367,391
59 5,367,392
67 5,367,393
110 5,367,394
5,367,395
124 5,367,396
152 5,367,397
154 5,367,398
206 5,367,399
216 5,367,400
398 5,367,401
400 5,367,402
494 5,367,403
558 5,367,404
649 5,367,405
698 5,367,406
876 5,367,407
894 5,367,408

CLASS 360

32 5,367,409
48 5,367,410
66 5,367,411
67 5,367,412
72.2 5,367,413
77.12 5,367,414
92 5,367,415
97.02 5,367,416
5,367,417
99.12 5,367,418
103 5,367,419
109 5,367,420
133 5,367,422
137 5,367,423

CLASS 361

18 5,367,424
63 5,367,425
80 5,367,426
94 5,367,427
251 5,367,428
280 5,367,429
328 5,367,430
502 5,367,431
620 5,367,432
704 5,367,433
719 5,367,434
749 5,367,435
766 5,367,436
807 5,367,437

CLASS 362

32 5,367,439
5,367,440
61 5,367,438
97 5,367,441
183 5,367,442
184 5,367,446
227 5,367,443
264 5,367,444

CLASS 363

39 5,367,447
89 5,367,448

CLASS 364

152 5,367,449
401 5,367,450
5,367,452
419.13 5,367,453
419.20 5,367,454
424.01 5,367,455
424.02 5,367,456
5,367,457
5,367,458
424.05 5,367,459
424.06 5,367,460
426.02 5,367,461
431.05 5,367,462
449 5,367,463
464.02 5,367,464
468 5,367,465
478 5,367,466
489 5,367,467
490 5,367,468
491 5,367,469
498 5,367,470
505 5,367,471
550 5,367,472
551.01 5,367,473
555 5,367,474
724.01 5,367,475
5,367,476
736.5 5,367,477
746.1 5,367,478
761 5,367,479

CLASS 365

63 5,367,480
149 5,367,481
156 5,367,482
185 5,367,483
5,367,484
189.01 5,367,488
189.05 5,367,485
5,367,486
189.09 Re.34,797
5,367,487
189.11 5,367,489
194 5,367,490
201 5,367,491
5,367,492
222 5,367,493
230.03 5,367,494
239 5,367,495

CLASS 366

129 5,366,286
173 5,366,287
176 5,366,288
308 5,366,289

CLASS 367

7 5,367,496
20 5,367,497
107 5,367,498
154 5,367,499
157 5,367,500
5,367,501

CLASS 368

10 5,367,502
5,367,503
15 5,367,504
72 5,367,505

CLASS 369

4 5,367,506
13 5,367,507
5,367,508
5,367,509
32 5,367,510
44.14 5,367,511
44.23 5,367,512
44.29 5,367,513
47 5,367,514
116 5,367,515

CLASS 370

19 5,367,516
54 5,367,517
5,367,518
60 5,367,519
5,367,520
5,367,521
84 5,367,522
5,367,523
104.1 5,367,524

CLASS 371

51.1 5,367,526

CLASS 372

9 5,367,527
18 5,367,528
30 5,367,529
43 5,367,530
98 5,367,531

CLASS 373

156 5,367,532

CLASS 374

130 5,366,290
153 5,366,291
188 5,366,292

CLASS 375

1 5,367,533
8 5,367,534
17 5,367,535
42 5,367,536
65 5,367,537
82 5,367,538
100 5,367,539
103 5,367,540
106 5,367,541
110 5,367,542
116 5,367,543
5,367,544
118 5,367,545

CLASS 376

57 5,367,552
137 5,367,553
196 5,367,554

CLASS 379

▩ 5,367,555
58 5,367,556
5,367,557
59 5,367,558
60 5,367,559
72 5,367,560
93 5,367,561
5,367,562
98 5,367,563
100 5,367,564
5,367,565
243 5,367,566
252 5,367,567
309 5,367,568
412 5,367,569
434 5,367,570

CLASS 380

20 5,367,571
23 5,367,572
25 5,367,573

CLASS 381

67 5,367,575
156 5,367,576

CLASS 382

7 5,367,577
12 5,367,578
31 5,367,579
46 5,367,580
64 5,367,581
210 5,366,296

CLASS 384

9 5,366,297
107 5,366,298
571 5,366,299
585 5,366,300

CLASS 385

1 5,367,582
12 5,367,583
17 5,367,584
23 5,367,585
24 5,367,586
27 5,367,587
37 5,367,588
5,367,589
39 5,367,590
51 5,367,591
53 5,367,592
5,367,593
70 5,367,594
71 5,367,595
116 5,367,596
129 5,367,597
135 5,367,598

CLASS 388

809 5,367,599
811 5,367,600

CLASS 392

307 5,367,601
308 5,367,602
394 5,367,603
5,367,604
401 5,367,605
418 5,367,606
465 5,367,607

CLASS 395

2.38 5,367,608
2.87 5,367,609
3 5,367,610
5,367,611
22 5,367,612
109 5,367,613
119 5,367,614
129 5,367,615
142 5,367,616
5,367,617
145 5,367,618
149 5,367,619
150 5,367,620
154 5,367,621
155 5,367,622
157 5,367,623
5,367,624
159 5,367,625
5,367,626
161 5,367,627
162 5,367,628
5,367,629
5,367,631
164 5,367,632
200 5,367,635
5,367,636
250 5,367,637
5,367,638
275 5,367,639
5,367,640
5,367,641
325 5,367,642
5,367,643
5,367,644
5,367,645
5,367,646
5,367,647
375 5,367,648
5,367,649
5,367,650
400 5,367,653
425 5,367,654
5,367,655
5,367,656
5,367,657
5,367,658
5,367,659
5,367,660
499 5,367,652
500 5,367,661
550 5,367,662
575 5,367,664
5,367,665
5,367,666
5,367,667
5,367,668
5,367,669
5,367,670
600 5,367,671
5,367,672
5,367,673
5,367,674
5,367,675
5,367,676

650 5,367,677
5,367,678
5,367,679
5,367,680
700 5,367,681
5,367,682
5,367,683
5,367,684
5,367,685
5,367,686
5,367,687
5,367,688
725 5,367,689
800 5,367,690
5,367,691
5,367,692
5,367,693
5,367,694
5,367,695
5,367,696
5,367,697
5,367,698
5,367,699
5,367,700
5,367,701
5,367,702
5,367,703
5,367,704
5,367,705

CLASS 400

56 5,366,301
120.16 5,366,302
234 5,366,303
248 5,366,304
354 5,366,305
694 5,366,306
708 5,366,307

CLASS 401

1 5,366,308
48 5,366,309
132 5,366,310
194 5,366,311

CLASS 403

3 5,366,312
108 5,366,313
299 5,366,314
326 5,366,315
378 5,366,316

CLASS 404

25 5,366,317
52 5,366,319
118 5,366,320

CLASS 405

36 5,366,318
52 5,366,322
119 5,366,323
195.1 5,366,324

CLASS 407

42 5,366,325

CLASS 408

72 B 5,366,326

CLASS 410

96 5,366,327

CLASS 411

17 5,366,328
368 5,366,329
405 5,366,330
433 5,366,331
509 5,366,332

CLASS 412

16 5,366,333

CLASS 414

15 5,366,334
282 5,366,335
476 5,366,336
550 5,366,337
563 5,366,338
607 5,366,339
732 5,366,340

CLASS 415

6 5,366,341

CLASS 416

12 5,366,342
133 5,366,343
213 R 5,366,344
241 R 5,366,345

CLASS 417

18 5,366,346
53 5,366,347
68 5,366,348
132 5,366,349
242 5,366,350
271 5,366,351
292 5,366,352
375 5,366,353

CLASS 418

26 5,366,354
32 5,366,355
38 5,366,356
55.1 5,366,357
55.4 5,366,358
55.5 5,366,359
5,366,360
261 5,366,361

CLASS 419

5 5,366,686
35 5,366,687
36 5,366,688
49 5,366,689

CLASS 420

422 5,366,690
448 5,366,695
548 5,366,691
565 5,366,692

CLASS 422

26 5,366,693
37 5,366,694
45 5,366,696
64 5,366,697
168 5,366,698
169 5,366,699
180 5,366,700
186.04 5,366,701
186.07 5,366,702
186.11 5,366,703
218 5,366,704
243 5,366,705
266 5,366,706

CLASS 423

210 5,366,708
228 5,366,709
235 5,366,710
239.1 5,366,711
248 5,366,712
346 5,366,713
478 5,366,714
531 5,366,715
539 5,366,716
570 5,366,717
594 5,366,718
659 5,366,719
713 5,366.720

CLASS 424

1.11 5,366,721
4 5,366,722
10 5,366,723
45 5,366,726
78.12 5,366,724
78.35 5,366,727
85.4 5,366,725
94.4 5,366,729
94.64 5,366,730
191.1 5,366,728
401 5,366,731
411 5,366,732
426 5,366,733
5,366,734
5,366,735
442 5,366,736
450 5,366,737
473 5,366,738
602 5,366,739

CLASS 425

66 5,366,362
78 5,366,363
116 5,366,364
144 5,366,365
145 5,366,366
155 B1 3,616,495
194 5,366,367
544 5,366,368
549 5,366,369
5,366,370

CLASS 426

3 5,366,740
79 5,366,741
96 5,366,742
128 5,366,744
477 5,366,745
521 5,366,746
536 5,366,747
549 5,366,748
. 5,366,749
572 5,366,750
580 5,366,751
607 5,366,752
611 5,366,753
633 5,366,754
658 5,366,755

CLASS 427

2.26 5,366,756
9 5,366,757
64 5,366,758
5,366,759
96 5,366,760
127 5,366,761
130 5,366,762
193 5,366,763
229 5,366,765
248.1 5,366,764
255.4 5,366,766
294 5,366,767
407.1 5,366,768

CLASS 428

34.9 5,366,771
35.8 5,366,772
36.9 5,366,773
36.92 5,366,774
40 5,366,775
5,366,776
43 5,366,777
58 5,366,778
96 5,366,779
102 5,366,780
113 5,366,781
137 5,366,782
141 5,366,783
5,366,784
156 5,366,785
171 5,366,786
174 5,366,787
5,366,788
178 5,366,789
184 5,366,790
195 5,366,791
196 5,366,792
198 5,366,793
209 5,366,794
212 5,366,795
216 5,366,796
229 5,366,797
5,366,798
250 5,366,799
281 5,366,800
283 5,366,801
335 5,366,803
336 5,366,802
373 5,366,804
412 5,366,805
5,366,806
425.5 5,366,807
447 5,366,808
5,366,809
448 5,366,810
457 5,366,811
523 5,366,812
546 5,366,813
607 5,366,814
611 5,366,815
614 5,366,816
653 5,366,817

CLASS 429

13 5,366,818
17 5,366,819
19 5,366,820
21 5,366,821
27 5,366,822
34 5,366,823
5,366,824
5,366,825
96 5,366,826
99 5,366,827
101 5,366,828
216 5,366,829
218 5,366,830
223 5,366,831
249 5,366,832

CLASS 430

10 5,366,833
23 5,366,834
30 5,366,835
45 5,366,836
97 5,366,837
106.6 5,366,838
109 5,366,839
115 5,366,840
137 5,366,841
138 5,366,842
165 5,366,843
258 5,366,844
264 5,366,845
280 5,366,846
296 5,366,847
313 5,366,848
314 5,366,849
5,366,850
322 5,366,851
326 5,366,852
400 5,366,853
530 5,366,855
538 5,366,854
558 5,366,856
631 5,366,857

CLASS 431

1 5,366,371

CLASS 433

4 5,366,372
58 5,366,373
165 5,366,374

CLASS 434

37 5,366,375
69 5,366,376
178 5,366,377
187 5,366,378
365 5,366,379

CLASS 435

5 5,366,858
5,366,859
6 5,366,860
5,366,885
7.1 5,366,861
5,366,862
5,366,863
7.23 5,366,865
5,366,866
7.5 5,366,864
8 5,366,867
10 5,366,868
13 5,366,869
16 5,366,870
24 5,366,871
31 5,366,872
34 5,366,873
69.1 5,366,874
5,366,875
69.4 5,366,876
91.2 5,366,877
91.3 5,366,878
101 5,366,879
119 5,366,880
177 5,366,881
199 5,366,882
202 5,366,883
209 5,366,884
226 5,366,886
240.21 5,366,888
240.4 5,366,887
252.1 5,366,890
252.3 5,366,889
252.33 5,366,892
262 5,366,891
284 5,366,893
320.1 5,366,894

CLASS 436

17 5,366,895
48 5,366,896
55 5,366,897
60 5,366,898
88 5,366,899
107 5,366,900
133 5,366,901
165 5,366,902
5,366,903
180 5,366,904

CLASS 437

7 5,366,905
8 5,366,906
34 5,366,907
5,366,908
40 5,366,909
5,366,910
5,366,911
5,366,912
41 5,366,913
5,366,914
43 5,366,915
44 5,366,916
47 5,366,917
52 5,366,918
5,366,919
5,366,920
56 5,366,921
57 5,366,922
62 5,366,923
63 5,366,924
70 5,366,925
173 5,366,926
185 5,366,927
192 5,366,928
195 5,366,929
5,366,930
209 5,366,931
5,366,932
215 5,366,933
225 5,366,934

CLASS 439

66 5,366,380
79 5,366,381
188 5,366,382
321 5,366,383
372 5,366,384
377 5,366,385
419 5,366,386
468 5,366,387
540 5,366,388
571 5,366,389
636 5,366,390
740 5,366,391
889 5,366,392

CLASS 440

1 5,366,393
2 5,366,394
17 5,366,395
38 5,366,396
39 5,366,397
81 5,366,398
83 5,366,399
88 5,366,400
89 5,366,401

CLASS 446

16 5,366,402
46 5,366,403

CLASS 451

7 5,365,699
28 5,365,700
5,365,701
38 5,365,702

CLASS 452

5 5,366,405
179 5,366,406

CLASS 453

2 5,366,404
3 5,366,407

CLASS 454

121 5,366,408
188 5,366,409

CLASS 462

6 5,366,410

CLASS 464

17 5,366,411
38 5,366,412
89 5,366,413

CLASS 470

25 5,366,414

CLASS 474

18 5,366,416
110 5,366,415
111 5,366,418
112 5,366,417

CLASS 475

129 5,366,420
160 5,366,419
231 5,366,421
249 5,366,422
346 5,366,423

CLASS 477

107 5,366,424
118 5,366,425

CLASS 482

56 5,366,426
92 5,366,427
96 5,366,428
136 5,366,429
138 5,366,432
147 5,366,430

CLASS 483

1 5,366,431

CLASS 493

38 5,366,433
414 5,366,434

CLASS 501

20 5,366,935
40 5,366,936
5,366,937
55 5,366,939
69 5,366,940
92 5,366,941
95 5,366,942
5,366,943
99 5,366,944
134 5,366,938

CLASS 502

60 5,366,945
68 5,366,948
167 5,366,946
172 5,366,947
227 5,366,949
328 5,366,950

CLASS 503

204 5,366,952
227 5,366,951

CLASS 504

114 5,366,954
225 5,366,955
255 5,366,956
271 5,366,957

CLASS 505

190 5,367,178
329 5,366,953
477 5,366,770

CLASS 512

19 5,366,959

CLASS 514

2 5,366,958
25 5,367,062
43 5,366,960
53 5,366,961
54 5,366,962
5,366,963
57 5,366,964
59 5,366,967
81 5,366,969
102 5,366,965
152 5,366,966
178 5,366,968
202 5,366,970
220 5,366,972
221 5,366,973
235.8 5,366,974
255 5,366,975
258 5,366,976
263 5,366,977
5,366,978
282 5,366,979
289 5,366,980
291 5,366,971
301 5,366,981
340 5,366,982
358 5,366,983
361 5,366,984
369 5,366,985
374 5,366,986
378 5,366,987
383 5,366,988
5,366,989
397 5,366,990
406 5,366,991
409 5,366,992
445 5,366,993
523 5,366,994
558 5,366,995
575 5,366,996
611 5,366,997

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40 5,366,998
54 5,366,999
131 5,367,000

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59 5,367,007
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260 5,367,010
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145 5,367,070
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82 5,367,076
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122 5,367,078
157 5,367,079
257 5,367,080
316 5,367,081

CLASS 548

175 5,367,082
431 5,367,083
518 5,367,084

CLASS 549

206 5,367,085
378 5,367,089
510 5,367,086
533 5,367,087
539 5,367,088

CLASS 556

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CLASS 558

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374 5,367,092

CLASS 560

27 5,367,093
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220 5,367,114

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667 5,367,101
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		5,365,708	5,365,738	5,366,330	5,366,953	5,367,526	5,367,415
		5,365,878	5,365,739	5,366,331	5,366,979	5,367,529	5,367,418
		5,365,891	5,365,746	5,366,372	5,366,980	5,367,542	5,367,452
		5,366,095	5,365,749	5,366,376	5,366,995	5,367,552	5,367,471
		5,366,266	5,365,750	5,366,402	5,367,003	5,367,609	5,367,635
		5,366,533	5,365,754	5,366,414	5,367,006	5,367,612	5,367,640
		5,367,135	5,365,766	5,366,432	5,367,041	5,367,624	5,367,641
		5,367,534	5,365,808	5,366,436	5,367,042	5,367,629	09	:	5,365,687
02	:	5,366,457	5,365,811	5,366,445	5,367,051	5,367,631			5,365,731
04	:	5,365,617	5,365,826	5,366,446	5,367,052	5,367,633			5,365,851
		5,365,618	5,365,842	5,366,456	5,367,053	5,367,639			5,365,865
		5,365,636	5,365,852	5,366,466	5,367,060	5,367,645			5,365,916
		5,365,650	5,365,860	5,366,470	5,367,066	5,367,649			5,365,937
		5,365,669	5,365,863	5,366,476	5,367,072	5,367,650			5,365,984
		5,365,993	5,365,876	5,366,490	5,367,073	5,367,651			5,366,044
		5,366,021	5,365,925	5,366,497	5,367,123	5,367,652			5,366,060
		5,366,036	5,365,926	5,366,498	5,367,130	5,367,657			5,366,081
		5,366,069	5,365,939	5,366,507	5,367,154	5,367,658			5,366,099
		5,366,073	5,365,952	5,366,517	5,367,178	5,367,659			5,366,133
		5,366,084	5,365,958	5,366,519	5,367,187	5,367,669			5,366,134
		5,366,118	5,365,960	5,366,521	5,367,193	5,367,675			5,366,254
		5,366,239	5,365,982	5,366,541	5,367,202	5,367,678			5,366,313
		5,366,338	5,366,002	5,366,555	5,367,203	5,367,681			5,366,352
		5,366,342	5,366,018	5,366,558	5,367,206	5,367,682			5,366,380
		5,366,589	5,366,023	5,366,584	5,367,207	5,367,684			5,366,409
		5,367,131	5,366,031	5,366,585	5,367,208	5,367,685			5,366,458
		5,367,204	5,366,076	5,366,602	5,367,210	5,367,687			5,366,479
		5,367,247	5,366,080	5,366,607	5,367,248	5,367,692			5,366,582
		5,367,302	5,366,088	5,366,615	5,367,270	5,367,695			5,366,631
		5,367,304	5,366,113	5,366,635	5,367,294	5,367,701			5,366,690
		5,367,484	5,366,116	5,366,693	5,367,295	08	:	5,365,683	5,366,756
		5,367,513	5,366,117	5,366,699	5,367,299			5,365,715	5,366,765
		5,367,557	5,366,128	5,366,721	5,367,300			5,365,788	5,366,800
		5,367,593	5,366,131	5,366,726	5,367,327			5,365,895	5,366,823
		5,367,656	5,366,143	5,366,737	5,367,332			5,365,919	5,366,825
		5,367,699	5,366,149	5,366,745	5,367,341			5,365,932	5,366,898
05	:	5,365,689	5,366,159	5,366,780	5,367,343			5,366,003	5,366,972
		5,366,594	5,366,160	5,366,787	5,367,377			5,366,030	5,367,077
		5,366,983	5,366,175	5,366,828	5,367,381			5,366,157	5,367,132
06	:	5,365,607	5,366,177	5,366,829	5,367,400			5,366,162	5,367,196
		5,365,615	5,366,178	5,366,830	5,367,417			5,366,170	5,367,234
		5,365,616	5,366,180	5,366,847	5,367,423			5,366,171	5,367,236
		5,365,632	5,366,189	5,366,860	5,367,433			5,366,173	5,367,276
		5,365,653	5,366,197	5,366,870	5,367,442			5,366,203	5,367,293
		5,365,671	5,366,200	5,366,872	5,367,446			5,366,278	5,367,375
		5,365,675	5,366,208	5,366,877	5,367,453			5,366,358	5,367,428
		5,365,677	5,366,230	5,366,886	5,367,469			5,366,604	5,367,450
		5,365,682	5,366,250	5,366,892	5,367,470			5,366,642	5,367,496
		5,365,697	5,366,303	5,366,926	5,367,472			5,366,764	5,367,549
		5,365,706	5,366,307	5,366,929	5,367,475			5,366,884	5,367,579
		5,365,711	5,366,311	5,366,933	5,367,476			5,366,897	10	:	5,366,161
		5,365,716	5,366,315	5,366,934	5,367,482			5,367,194			5,366,511

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1166 O.G. 94, on Sept. 27, 1994.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed, effective Oct. 1, 1994, due to a change in the exchange rate of the U.S. dollar with regard to the German mark, and was announced in the *Official Gazette* at 1165 O.G. 81, on Aug. 23, 1994.

International fees were changed, effective on May 1, 1993, due to a change in the exchange rate of the U. S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1148 O.G. 20, on Mar. 9, 1993.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective Oct. 1, 1994, and were announced in the *Official Gazette* at 1165 O.G. 132, on Aug. 30, 1994.

The schedule of PCT fees (in U.S. dollars), effective Oct. 1, 1994, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	210.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	640.00
—Corresponding prior U.S. national application filed	420.00
—Supplemental search fee, per additional invention (payable only upon invitation	180.00
European Patent Office as ISA	1537.00
International fees	
Basic fee	530.00
Basic Supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
—For the first 10 national or regional offices designated	128.00
—For each designation in excess of 10 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
—Designation fee	128.00
—Confirmation fee	64.00
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—USPTO was ISA in PCT Chapter I	460.00
—Additional examination fee, per additional invention (payable only upon invitation)	140.00
—USPTO was not ISA in PCT Chapter I	690.00
—Additional examination fee, per additional invention (payable only upon invitation)	240.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
—All claims presented satisfied provisions of PCT Article 33(2) to (4)	46.00	92.00
—All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	330.00	660.00
USPTO was ISA but not IPEA	365.00	730.00
USPTO was neither ISA nor IPEA		
—Filed without a search report from the European Patent Office or the Japanese Patent Office	490.00	980.00
—Filed with a search report from the European Patent Office or the Japanese Patent Office	425.00	850.00
Other National fees		
—For each independent claim in excess of 3	38.00	76.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	120.00	240.00
—Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Sept. 9, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, the dollar amount of the international fees for international applications filed in the United States Receiving Office will increase, effective January 1, 1995.

Effective January 1, 1995, the amount of the international fees for international applications filed in the United States Receiving Office will be:

Basic fee (first 30 pages)	$604.00
Basic supplemental fee (for each page over 30)	$12.00

Designation fee (per country or region up to 10)	$147.00	Nov. 2, 1994
Handling fee	$185.00	

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Cooperation Treaty Update
Accession by Mexico

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Mexico deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on October 1, 1994. Mexico will become the 74th Contracting State of the PCT on January 1, 1995. Consequently, nationals and residents of Mexico are entitled to file international applications under the PCT on and after January 1, 1995, and from the same date it is possible to file international applications designated and electing Mexico (country code: MX).

Listing of PCT Member Countries

Country	Instrument	Date of Deposit of Instrument	Entry into Force[1]
(1) Central African Republic[2]	Accession	15 September 1971	24 January 1978
(2) Senegal[2]	Ratification	08 March 1972	24 January 1978
(3) Madagascar	Ratification	27 March 1972	24 January 1978
(4) Malawi	Accession	16 May 1972	24 January 1978
(5) Cameroon[2]	Accession	15 March 1973	24 January 1978
(6) Chad[2]	Accession	12 February 1974	24 January 1978
(7) Togo[2]	Ratification	28 January 1975	24 January 1978
(8) Gabon[2]	Accession	06 March 1975	24 January 1978
(9) United States of America	Ratification	26 November 1975	24 January 1978
(10) Germany[3]	Ratification	19 July 1976	24 January 1978
(11) Congo[2]	Accession	08 August 1977	24 January 1978
(12) Switzerland[3]	Ratification	14 September 1977	24 January 1978
(13) United Kingdom[3]	Ratification	24 October 1977	24 January 1978
(14) France[3]	Ratification	25 November 1977	25 February 1978
(15) Russian Federation	Ratification	29 December 1977	29 March 1978
(16) Brazil	Ratification	09 January 1978	09 April 1978
(17) Luxembourg[3]	Ratification	31 January 1978	30 April 1978
(18) Sweden[3]	Ratification	17 February 1978	17 May 1978
(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark[3]	Ratification	01 September 1978	01 December 1978
(21) Austria[3]	Ratification	23 January 1979	23 April 1979
(22) Monaco[3]	Ratification	22 March 1979	22 June 1979
(23) Netherlands[3]	Ratification	10 April 1979	10 July 1979
(24) Romania	Ratification	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein[3]	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980
(31) Belgium[3]	Ratification	14 September 1981	14 December 1981
(32) Sri Lanka	Accession	26 November 1981	26 February 1982
(33) Mauritania[2]	Accession	13 January 1983	13 April 1983
(34) Sudan	Accession	16 January 1984	16 April 1984
(35) Bulgaria	Accession	21 February 1984	21 May 1984
(36) Republic of Korea (South Korea)	Accession	10 May 1984	10 August 1984
(37) Mali[2]	Accession	19 July 1984	19 October 1984
(38) Barbados	Accession	12 December 1984	12 March 1985
(39) Italy[3]	Ratification	28 December 1984	28 March 1985
(40) Benin[2]	Accession	26 November 1986	26 February 1987
(41) Burkina Faso[2]	Accession	21 December 1988	21 March 1989
(42) Spain[3]	Accession	16 August 1989	16 November 1989
(43) Canada	Ratification	02 October 1989	02 January 1990
(44) Greece[3]	Accession	09 July 1990	09 October 1990
(45) Poland	Accession	25 September 1990	25 December 1990
(46) Côte d'Ivoire[2]	Ratification	31 January 1991	30 April 1991
(47) Guinea[2]	Accession	27 February 1991	27 May 1991
(48) Mongolia	Accession	27 February 1991	27 May 1991
(49) Czech Republic	Declaration[4]	18 December 1992	01 January 1993
(50) Ireland[3]	Ratification	01 May 1992	01 August 1992
(51) Portugal[3]	Accession	24 August 1992	24 November 1992
(52) New Zealand	Accession	01 September 1992	01 December 1992
(53) Ukraine	Declaration[4]	21 September 1992	25 December 1991
(54) Viet Nam	Accession	10 December 1992	10 March 1993
(55) Slovakia	Declaration[4]	30 December 1992	01 January 1993
(56) Niger[2]	Accession	21 December 1992	21 March 1993

(57) Kazakhstan	Declaration[4]	16 February 1993	25 December 1991
(58) Belarus	Declaration[4]	14 April 1993	25 December 1991
(59) Latvia	Accession	07 June 1993	07 September 1993
(60) Uzbekistan	Declaration[4]	18 August 1993	25 December 1991
(61) China	Accession	01 October 1993	01 January 1994
(62) Slovenia	Accession	01 December 1993	01 March 1994
(63) Trinidad and Tobago	Accession	10 December 1993	10 March 1994
(64) Georgia	Declaration[4]	18 January 1994	25 December 1991
(65) Kyrgyzstan	Declaration[4]	14 February 1994	25 December 1991
(66) Republic of Moldova	Declaration[4]	14 February 1994	25 December 1991
(67) Tajikistan	Declaration[4]	14 February 1994	25 December 1991
(68) Kenya	Accession	08 March 1994	08 June 1994
(69) Lithuania	Accession	05 April 1994	05 July 1994
(70) Armenia	Declaration[4]	17 May 1994	25 December 1991
(71) Estonia	Accession	24 May 1994	24 August 1994
(72) Liberia	Accession	27 May 1994	27 August 1994
(73) Swaziland	Accession	20 June 1994	20 September 1994
(74) Mexico	Accession	01 October 1994	01 January 1995

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.
[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.
[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Monaco, Belgium, Italy, Greece and Ireland for which only European patents are available if PCT is used. Note: Only one designation fee is due if European regional patent protection is sought for one, several or all EPC member countries under the PCT.
[4]Declaration of continued application.

November 2, 1994

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on November 26, 1991 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,067,174 through 5,068,918
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 24, 1987 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,707,860 through 4,709,418
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on November 22, 1983 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,416,025 through 4,417,358
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1994, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$480.00
By other than a small entity	$960.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$965.00
By other than a small entity	$1,930.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,450.00
By other than a small entity	$2,900.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and

six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $640.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED September 21, 1994 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 33,196	07/238,537	04/10/90
(4,611,708)	(06/680,070)	(09/16/86)
4,349,958	06/251,468	09/21/82
4,349,971	06/226,010	09/21/82
4,350,018	06/245,934	09/21/82
4,350,019	06/218,760	09/21/82
4,350,071	06/250,851	09/21/82
4,350,095	06/277,954	09/21/82
4,350,106	06/269,793	09/21/82
4,350,120	06/257,733	09/21/82
4,350,122	06/252,378	09/21/82
4,350,127	06/247,566	09/21/82
4,350,136	06/240,856	09/21/82
4,350,143	06/290,006	09/21/82
4,350,145	06/229,987	09/21/82
4,350,194	06/243,632	09/21/82
4,350,198	06/232,311	09/21/82
4,350,257	06/224,841	09/21/82
4,350,282	06/219,502	09/21/82
4,350,318	06/225,202	09/21/82
4,350,325	06/245,087	09/21/82
4,350,345	06/249,781	09/21/82
4,350,349	06/233,938	09/21/82
4,350,352	06/286,555	09/21/82
4,350,400	06/283,334	09/21/82
4,350,405	06/232,044	09/21/82
4,350,406	06/224,404	09/21/82
4,350,421	06/234,217	09/21/82
4,350,426	06/240,423	09/21/82
4,350,447	06/304,781	09/21/82
4,350,496	06/273,850	09/21/82
4,350,499	06/236,494	09/21/82
4,350,508	06/332,556	09/21/82
4,350,512	06/249,310	09/21/82
4,350,515	06/229,710	09/21/82
4,350,518	06/236,812	09/21/82
4,350,524	06/264,009	09/21/82
4,350,527	06/310,475	09/21/82
4,350,534	06/279,778	09/21/82
4,350,546	06/289,697	09/21/82
4,350,550	06/259,991	09/21/82
4,350,554	06/277,420	09/21/82
4,350,560	06/298,242	09/21/82
4,350,570	06/261,200	09/21/82
4,350,589	06/281,644	09/21/82
4,350,595	06/270,717	09/21/82
4,350,599	06/220,443	09/21/82
4,350,604	06/297,278	09/21/82
4,350,611	06/252,751	09/21/82
4,350,619	06/256,157	09/21/82
4,350,632	06/280,814	09/21/82
4,350,633	06/284,433	09/21/82
4,350,636	06/296,893	09/21/82
4,350,642	06/244,372	09/21/82
4,350,647	06/275,220	09/21/82
4,350,667	06/236,562	09/21/82
4,350,676	06/265,934	09/21/82
4,350,680	06/304,438	09/21/82
4,350,685	06/232,073	09/21/82
4,350,697	06/240,392	09/21/82
4,350,698	06/305,433	09/21/82
4,350,704	06/233,940	09/21/82
4,350,718	06/304,518	09/21/82
4,350,720	06/326,151	09/21/82
4,350,723	06/228,367	09/21/82
4,350,725	06/279,990	09/21/82
4,350,744	06/215,283	09/21/82
4,350,745	06/220,615	09/21/82
4,350,748	06/278,665	09/21/82
4,350,759	06/249,065	09/21/82
4,350,767	06/264,022	09/21/82
4,350,773	06/280,522	09/21/82
4,350,776	06/238,467	09/21/82
4,350,778	06/268,460	09/21/82
4,350,779	06/268,459	09/21/82
4,350,783	06/254,786	09/21/82
4,350,784	06/260,561	09/21/82
4,350,786	06/300,860	09/21/82
4,350,787	06/233,291	09/21/82
4,350,790	06/299,751	09/21/82
4,350,793	06/226,126	09/21/82
4,350,798	06/228,538	09/21/82
4,350,799	06/302,890	09/21/82
4,350,801	06/239,158	09/21/82
4,350,807	06/232,768	09/21/82
4,350,808	06/232,769	09/21/82
4,350,812	06/290,558	09/21/82
4,350,817	06/308,306	09/21/82
4,350,820	06/235,182	09/21/82
4,350,821	06/235,183	09/21/82
4,350,823	06/284,107	09/21/82
4,350,827	06/300,196	09/21/82
4,350,828	06/264,776	09/21/82
4,350,832	06/258,207	09/21/82
4,350,851	06/216,210	09/21/82
4,350,855	06/218,853	09/21/82
4,350,878	06/264,683	09/21/82
4,350,936	06/247,965	09/21/82
4,350,938	06/253,852	09/21/82
4,350,967	06/216,708	09/21/82
4,350,978	06/257,000	09/21/82
4,351,002	06/227,040	09/21/82
4,351,015	06/303,835	09/21/82
4,351,022	06/280,154	09/21/82
4,611,358	06/721,441	09/16/86
4,611,362	06/718,503	09/16/86
4,611,368	06/716,813	09/16/86
4,611,370	06/744,468	09/16/86
4,611,371	06/411,103	09/16/86
4,611,382	06/602,685	09/16/86
4,611,391	06/552,984	09/16/86
4,611,392	06/698,301	09/16/86
4,611,393	06/775,395	09/16/86
4,611,398	06/659,212	09/16/86
4,611,400	06/696,810	09/16/86
4,611,407	06/648,157	09/16/86
4,611,408	06/783,579	09/16/86
4,611,410	06/593,918	09/16/86
4,611,414	06/506,095	09/16/86
4,611,417	06/586,439	09/16/86
4,611,422	06/642,515	09/16/86
4,611,430	06/675,816	09/16/86
4,611,431	06/786,409	09/16/86

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4,611,439	06/642,857	09/16/86
4,611,440	06/580,240	09/16/86
4,611,441	06/715,713	09/16/86
4,611,443	06/570,323	09/16/86
4,611,450	06/533,429	09/16/86
4,611,455	06/530,165	09/16/86
4,611,460	06/791,601	09/16/86
4,611,463	06/743,441	09/16/86
4,611,465	06/660,885	09/16/86
4,611,466	06/698,173	09/16/86
4,611,468	06/699,559	09/16/86
4,611,470	06/662,031	09/16/86
4,611,471	06/691,269	09/16/86
4,611,474	06/610,322	09/16/86
4,611,476	06/675,952	09/16/86
4,611,477	06/627,077	09/16/86
4,611,478	06/646,233	09/16/86
4,611,479	06/675,075	09/16/86
4,611,481	06/803,154	09/16/86
4,611,482	06/640,271	09/16/86
4,611,486	06/708,357	09/16/86
4,611,488	06/728,388	09/16/86
4,611,491	06/724,923	09/16/86
4,611,495	06/647,435	09/16/86
4,611,498	06/789,375	09/16/86
4,611,500	06/682,313	09/16/86
4,611,502	06/786,590	09/16/86
4,611,503	06/685,496	09/16/86
4,611,504	06/628,204	09/16/86
4,611,513	06/799,591	09/16/86
4,611,514	06/812,749	09/16/86
4,611,520	06/602,375	09/16/86
4,611,525	06/748,556	09/16/86
4,611,533	06/749,561	09/16/86
4,611,534	06/720,691	09/16/86
4,611,535	06/695,318	09/16/86
4,611,541	06/674,003	09/16/86
4,611,543	06/331,697	09/16/86
4,611,554	06/694,639	09/16/86
4,611,556	06/734,601	09/16/86
4,611,557	06/781,436	09/16/86
4,611,558	06/778,304	09/16/86
4,611,562	06/666,470	09/16/86
4,611,567	06/640,352	09/16/86
4,611,570	06/728,919	09/16/86
4,611,578	06/604,994	09/16/86
4,611,580	06/555,363	09/16/86
4,611,582	06/565,283	09/16/86
4,611,585	06/632,035	09/16/86
4,611,587	06/653,096	09/16/86
4,611,589	06/681,926	09/16/86
4,611,590	06/675,734	09/16/86
4,611,594	06/599,020	09/16/86
4,611,602	06/752,132	09/16/86
4,611,605	06/646,346	09/16/86
4,611,610	06/719,514	09/16/86
4,611,611	06/249,077	09/16/86
4,611,613	06/695,904	09/16/86
4,611,614	06/590,732	09/16/86
4,611,616	06/569,605	09/16/86
4,611,620	06/250,398	09/16/86
4,611,621	06/725,112	09/16/86
4,611,622	06/670,261	09/16/86
4,611,624	06/775,342	09/16/86
4,611,628	06/739,292	09/16/86
4,611,634	06/655,034	09/16/86
4,611,638	06/753,572	09/16/86
4,611,644	06/672,195	09/16/86
4,611,648	06/681,089	09/16/86
4,611,652	06/658,058	09/16/86
4,611,653	06/753,590	09/16/86
4,611,654	06/693,805	09/16/86
4,611,655	06/788,827	09/16/86
4,611,657	06/674,110	09/16/86
4,611,662	06/736,595	09/16/86
4,611,665	06/652,826	09/16/86
4,611,666	06/748,625	09/16/86
4,611,667	06/315,755	09/16/86
4,611,671	06/731,528	09/16/86
4,611,672	06/621,867	09/16/86
4,611,678	06/718,933	09/16/86
4,611,681	06/586,086	09/16/86
4,611,682	06/638,669	09/16/86
4,611,685	06/618,029	09/16/86
4,611,686	06/747,151	09/16/86
4,611,690	06/593,898	09/16/86
4,611,696	06/726,838	09/16/86
4,611,703	06/414,798	09/16/86
4,611,706	06/639,820	09/16/86
4,611,707	06/701,541	09/16/86
4,611,711	06/775,157	09/16/86
4,611,716	06/728,239	09/16/86
4,611,719	06/641,232	09/16/86
4,611,720	06/600,097	09/16/86
4,611,722	06/695,677	09/16/86
4,611,727	06/703,370	09/16/86
4,611,732	06/684,112	09/16/86
4,611,733	06/744,688	09/16/86
4,611,739	06/762,680	09/16/86
4,611,748	06/655,811	09/16/86
4,611,752	06/604,749	09/16/86
4,611,753	06/756,513	09/16/86
4,611,755	06/798,027	09/16/86
4,611,756	06/686,703	09/16/86
4,611,757	06/629,593	09/16/86
4,611,759	06/488,675	09/16/86
4,611,762	06/665,028	09/16/86
4,611,763	06/639,350	09/16/86
4,611,764	06/569,736	09/16/86
4,611,766	06/748,923	09/16/86
4,611,767	06/778,413	09/16/86
4,611,769	06/735,167	09/16/86
4,611,773	06/685,970	09/16/86
4,611,775	06/566,855	09/16/86
4,611,777	06/662,607	09/16/86
4,611,778	06/737,042	09/16/86
4,611,780	06/744,032	09/16/86
4,611,782	06/720,729	09/16/86
4,611,783	06/688,917	09/16/86
4,611,786	06/651,920	09/16/86
4,611,793	06/623,198	09/16/86
4,611,804	06/477,211	09/16/86
4,611,809	06/688,991	09/16/86
4,611,810	06/738,543	09/16/86
4,611,814	06/695,442	09/16/86
4,611,816	06/659,484	09/16/86
4,611,818	06/720,199	09/16/86
4,611,820	06/661,567	09/16/86
4,611,826	06/700,139	09/16/86
4,611,828	06/655,464	09/16/86
4,611,829	06/659,604	09/16/86
4,611,835	06/581,033	09/16/86
4,611,841	06/617,754	09/16/86
4,611,842	06/651,100	09/16/86
4,611,843	06/632,472	09/16/86
4,611,844	06/742,250	09/16/86
4,611,845	06/626,088	09/16/86
4,611,847	06/789,050	09/16/86
4,611,849	06/587,626	09/16/86
4,611,852	06/713,321	09/16/86
4,611,853	06/562,203	09/16/86
4,611,855	06/609,473	09/16/86
4,611,857	06/635,445	09/16/86
4,611,858	06/744,738	09/16/86
4,611,860	06/753,492	09/16/86
4,611,865	06/574,846	09/16/86
4,611,870	06/639,831	09/16/86
4,611,874	06/715,582	09/16/86
4,611,880	06/600,236	09/16/86
4,611,884	06/444,494	09/16/86
4,611,887	06/820,926	09/16/86
4,611,892	06/743,539	09/16/86
4,611,893	06/641,036	09/16/86
4,611,897	06/739,068	09/16/86
4,611,905	06/664,421	09/16/86
4,611,917	06/629,020	09/16/86

Patent Number	Serial Number	Issue Date
4,611,921	06/686,164	09/16/86
4,611,924	06/618,202	09/16/86
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4,957,573	07/387,675	09/18/90
4,957,587	07/295,250	09/18/90
4,957,610	07/303,115	09/18/90
4,957,611	07/305,990	09/18/90
4,957,613	07/248,196	09/18/90
4,957,621	07/383,002	09/18/90
4,957,624	07/054,571	09/18/90
4,957,627	07/334,558	09/18/90
4,957,628	07/354,440	09/18/90
4,957,639	07/055,840	09/18/90
4,957,641	06/919,098	09/18/90
4,957,654	07/229,522	09/18/90
4,957,655	07/296,259	09/18/90
4,957,660	07/188,781	09/18/90
4,957,665	07/427,274	09/18/90
4,957,666	07/243,671	09/18/90
4,957,669	07/334,313	09/18/90
4,957,672	07/322,459	09/18/90
4,951,679	07/384,202	09/18/90
4,957,683	07/011,442	09/18/90
4,957,686	07/473,888	09/18/90
4,957,687	06/668,947	09/18/90
4,957,688	07/326,577	09/18/90
4,957,690	07/280,800	09/18/90
4,957,691	07/359,000	09/18/90
4,957,692	07/438,025	09/18/90
4,957,694	07/414,160	09/18/90
4,957,695	07/449,365	09/18/90
4,957,704	07/230,344	09/18/90
4,957,706	07/052,409	09/18/90
4,957,708	07/427,459	09/18/90
4,957,713	07/241,978	09/18/90
4,957,722	07/332,029	09/18/90
4,957,731	07/340,194	09/18/90
4,957,734	07/070,592	09/18/90
4,957,741	07/227,533	09/18/90
4,957,753	07/282,036	09/18/90
4,957,757	07/186,321	09/18/90
4,957,778	07/380,036	09/18/90
4,957,784	07/359,990	09/18/90
4,957,785	07/173,272	09/18/90
4,957,787	07/250,015	09/18/90
4,957,788	07/373,240	09/18/90
4,957,799	07/238,817	09/18/90
4,957,827	07/234,926	09/18/90
4,957,833	07/446,424	09/18/90
4,957,839	07/274,352	09/18/90

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4,957,859	07/156,133	09/18/90
4,957,893	07/365,213	09/18/90
4,957,894	07/387,001	09/18/90
4,967,903	06/936,347	09/18/90
4,957,905	07/241,902	09/18/90
4,957,911	07/395,380	09/18/90
4,957,914	07/231,818	09/18/90
4,957,919	07/464,463	09/18/90
4,957,920	07/168,273	09/18/90
4,957,932	07/125,049	09/18/90
4,957,934	07/218,255	09/18/90
4,957,944	07/367,266	09/18/90
4,957,958	07/355,559	09/18/90
4,957,962	07/271,238	09/18/90
4,957,965	07/228,720	09/18/90
4,957,973	07/099,745	09/18/90
4,957,980	07/229,463	09/18/90
4,957,981	07/473,488	09/18/90
4,957,983	07/362,627	09/18/90
4,957,986	07/451,002	09/18/90
4,957,988	07/178,810	09/18/90
4,957,998	07/234,806	09/18/90
4,958,006	07/213,095	09/18/90
4,958,010	07/302,010	09/18/90
4,958,015	07/249,131	09/18/90
4,958,016	07/202,788	09/18/90
4,958,019	07/357,172	09/18/90
4,958,021	07/221,268	09/18/90
4,958,022	07/314,146	09/18/90
4,958,026	06/867,365	09/18/90
4,958,027	07/280,555	09/18/90
4,958,028	07/461,945	09/18/90
4,958,034	07/436,072	09/18/90
4,958,037	07/185,621	09/18/90
4,958,045	07/331,339	09/18/90
4,958,048	07/295,399	09/18/90
4,958,050	07/351,646	09/18/90
4,958,052	07/454,705	09/18/90
4,958,054	06/924,551	09/18/90
4,958,056	07/465,708	09/18/90
4,958,064	07/302,012	09/18/90
4,958,065	07/227,468	09/18/90
4,958,068	07/387,151	09/18/90
4,958,079	07/313,022	09/18/90
4,958,084	06/564,702	09/18/90
4,958,109	07/247,727	09/18/90
4,958,113	07/328,169	09/18/90
4,958,128	07/439,705	09/18/90
4,958,132	07/349,116	09/18/90
4,958,138	07/187,447	09/18/90
4,958,144	07/178,018	09/18/90
4,958,147	07/222,848	09/18/90
4,958,149	06/799,822	09/18/90
4,958,155	07/304,507	09/18/90
4,958,165	07/204,562	09/18/90
4,958,169	07/248,944	09/18/90
4,958,189	07/418,912	09/18/90
4,958,192	07/202,494	09/18/90
4,958,200	07/221,599	09/18/90
4,958,214	07/184,780	09/18/90
4,958,235	07/293,923	09/18/90
4,958,247	06/910,822	09/18/90
4,958,256	07/412,675	09/18/90
4,958,263	07/266,129	09/18/90
4,958,265	07/393,979	09/18/90
4,958,279	07/154,948	09/18/90
4,958,282	07/215,812	09/18/90
4,958,286	07/212,345	09/18/90
4,958,289	07/284,261	09/18/90
4,958,319	07/409,578	09/18/90
4,958,321	07/247,887	09/18/90
4,958,333	07/297,453	09/18/90
4,958,342	07/435,276	09/18/90
4,958,344	07/355,890	09/18/90
4,958,355	07/330,033	09/18/90
4,958,364	07/288,562	09/18/90
4,958,380	07/349,609	09/18/90

Erratum

In the list of patents which expired on October 29, 1993, due to failure to maintenance fees, in the O.G. of December 29, 1993, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,541,684	06/466,915	09/17/85	02/16/83

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(C); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 33,447	07/207,291	11/20/90	06/15/88	10/11/94
(4,749,097)	(07/082,791)	(06/07/88)	(08/06/87)	
4,337,374	06/228,242	06/29/82	01/26/81	09/23/94
4,533,284	06/564,353	08/06/85	12/22/83	10/06/94
4,766,675	07/034,033	08/30/88	04/01/87	09/20/94
4,768,784	07/021,204	09/06/88	03/03/87	10/11/94
4,786,829	07/017,751	11/22/88	02/24/87	10/11/94
4,835,883	07/135,593	06/06/89	12/21/87	09/26/94
4,838,148	07/141,044	06/13/89	01/05/88	10/11/94
4,846,379	07/171,771	07/11/89	03/22/88	10/11/94
4,875,320	07/199,017	10/24/89	05/26/88	09/23/94
4,896,886	07/304,219	01/30/90	01/31/89	10/11/94
4,918,723	07/254,925	04/17/90	10/07/86	09/23/94
4,919,286	07/199,672	04/24/90	05/27/88	09/23/94
4,922,622	07/345,091	05/08/90	04/28/89	10/06/94
4,930,478	07/193,918	06/05/90	05/13/88	10/11/94
4,933,143	07/237,786	06/12/90	08/29/88	10/11/94
4,948,245	07/219,039	08/14/90	04/14/88	10/11/94

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,810,540, Re. S.N. 08/317,758, Oct. 4, 1994, Cl. 428/31, DECORATIVE SHEET MATERIAL SIMULATING THE APPEARANCE OF A BASE COAT/CLEAR COAT PAINT FINISH, Thomas M. Ellison, et. al., Owner of Record: *Rexham Industries Corp., New York, N.Y.,* Attorney or Agent: Raymond O. Linker, Jr., Ex. Gp.: 1508

4,881,137, Re. S.N. 08/218,696, Mar. 28, 1994, Cl. 360/96.500, MAGNETIC TAPE CASSETTE WITH TAPE PROTECTIVE CLOSURE AND LOCK MECHANISM, Hiroshi Meguro, et. al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Ronald P. Kananen, Ex. Gp.: 2512

4,900,748, Re. S.N. 08/319,245, Oct. 6, 1994, Cl. 514/411, CARBAMATES RELATED TO (-)-PHYSOSTIGMINE AS CHOLINERGIC AGENTS, Arnold Brossi, et. al., Owner of Record: *The United States of America The Department of Health and Human Services, Washington, D.C.,* Attorney or Agent: Charles W. Shifley, Ex. Gp.: 1205

4,903,580, Re. S.N. 08/290,095, Aug. 15, 1994, Cl. 92/234, PISTON FOR ALTERNATIVE ENDOTHERMIC ENGINES CREATING OIL CUSHION LUBRICATION, Ludovico Bruni, Owner of Record: *A.E. Borgo S.P.A., Turin, Italy,* Attorney or Agent: Michael J. Keenan, Ex. Gp.: 3407

4,997,492, Re. S.N. 08/325,505, Feb. 20, 1992, Cl. 148/011.50R, METHOD OF PRODUCING ANODE MATERIALS FOR ELECTROLYTIC USES, Kazuhiro Takii, Owner of Record: *Nippon Mining & Metals Co., Ltd., Tokyo, Japan,* Attorney or Agent: Paul S. Chirgott, Ex. Gp.: 1101

5,014,810, Re. S.N. 08/300,094, Sept. 1, 1994, Cl. 180, METHOD FOR CONTROLLING THE RELEASE OF PASSENGER RESTRAINT SYSTEMS, Bernard Mattes, et. al., Owner of Record: *Robert Bosch GmbH, Robert-Bosch-Platz, Stuttgart, Federal Republic of Germany,* Attorney or Agent: Richard L. Mayer, Ex. Gp.: 3106

5,105,260, Re. S.N. 08/227,424, Apr. 14, 1994, Cl. 257/34, RF TRANSISTOR PACKAGE WITH NICKEL OXIDE BARRIER, Gasper A. Butera, Owner of Record: *SGS-Thomson Microelectronics, Inc., Carrollton, Tex.,* Attorney or Agent: Robert Groover, Ex. Gp.: 2508

5,105,731, Re. S.N. 08/230,083, Apr. 20, 1994, Cl. 454/143, BLOCKING OF RETURN AIR, Willibald Kraus, Owner of Record: *TRW United Carr GmbH & Co., KG, Enkenbach-Alsenborn, Germany,* Attorney or Agent: Daniel G. Blackhurst, Ex. Gp.: 3404

5,134,863, Re. S.N. 08/278,933, July 22, 1994, Cl. 66/9B, CIRCULAR SILVER KNITTING MACHINE HAVING INCREASED CARDING CAPACITY, Joseph C. Hanna, Owner of Record: *Mayer Industries, Inc., Orangeburg, S.C.,* Attorney or Agent: J. Rick Tache, Ex. Gp.: 2407

5,146,707, Re. S.N. 08/303,708, Sept. 9, 1994, Cl. 43/42.53, FISHING LURE AND METHOD OF MANUFACTURE, David Nichols, Owner of Record: *Inventor,* Attorney or Agent: Ted D. Lee, Ex. Gp.: 3205

5,148,410, Re. S.N. 08/317,221, Oct. 3, 1994, Cl. 413/66, BELT AND DRIVE FOR CONVERSION PRESS, George D. Hunt, Owner of Record: *Dayton Ohio Reliable Tool & Mfg., Co.,* Attorney or Agent: Joseph G. Nauman, Ex. Gp.: 3203

5,150,454, Re. S.N. 08/310,249, Sept. 21, 1994, Cl. 395/114, PRINTING SYSTEM AND METHOD, Patrick Wood, et. al., Owner of Record: *Pipeline Associates, Inc., Morris Plains, N.J.,* Attorney or Agent: Lewis V. Popovski, Ex. Gp.: 2317

5,158,672, Re. S.N. 08/318,268, Oct. 5, 1994, Cl. 210/86, BAG FILTERING UNIT FOR DEHYDRATION OF SLUDGES WITH A SUPPORTED VIBRATING DEVICE, Graziano Lagreca, Owner of Record: *Inventor,* Attorney or Agent: Sheridan Neimark, Ex. Gp.: 1306

5,158,845, Re. S.N. 08/200,829, Feb. 23, 1994, Cl. 430/100, MULTI-COLORED MATERIAL USING RAINBOW GRATING, Robert Waitts, et. al., Owner of Record: *Crown Roll Leaf, Inc., Patterson, N.J.,* Attorney or Agent: None, Ex. Gp.: 1507

5,161,625, Re. S.N. 08/319,080, Oct. 6, 1994, Cl. 173/53, PILE DRIVING APPARATUS, Kong Sin Seng, Owner of Record: *V-Pile Technology Luxembourg, Kroll, Luxembourg,* Attorney or Agent: Linda J. Shapiro, Ex. Gp.: 3204

5,200,771, Re. S.N. 08/315,140, Sept. 19, 1994, Cl. 351/132, EYEGLASSES HAVING A DETACHABLE NOSE REST, Ingeborg Schmolz, et. al., Owner of Record: *Frey & Winkler GmbH & Co., KG, Koenigsbach, Federal Republic of Germany,* Attorney or Agent: Jay M. Finkelstein, Ex. Gp.: 2515

5,237,968, Re. S.N. 08/317,042, Oct. 3, 1994, Cl. 123/90.11, APPARATUS FOR ADJUSTABLY CONTROLLING VALVE MOVEMENT AND FUEL INJECTION, Charles R. Miller, et. al., Owner of Record: *Caterpillar Inc., Peoria, Ill.,* Attorney or Agent: Joseph W. Keen, Ex. Gp.: 3402

5,244,178, Re. S.N. 08/302,623, Sept. 8, 1994, Cl. 248/429, UNI-BRACE, David A. Stewart, Owner of Record: *Atwood Industries, Inc., Rockford, Ill.,* Attorney or Agent: Paul B. Hunt, Ex. Gp.: 3505

5,253,923, Re. S.N. 08/318,451, Sept. 30, 1994, Cl. 297/444, SEAT ASSEMBLY HAVING WEDGED LOCKING MECHANISM, Leroy Gootee, Owner of Record: *Inventor,* Attorney or Agent: Todd L. Moore, Ex. Gp.: 3507

5,283,889, Re. S.N. 08/317,757, Oct. 4, 1994, Cl. 395/500, HARDWARE BASED INTERFACE FOR MODE SWITCHING TO ACCESS MEMORY ABOVE ONE MEGABYTE, David J. Delisle, et. al., Owner of Record: *Zenith Data Systems Corp., Buffalo Grove, Ill.,* Attorney or Agent: John S. Paniaguas, Ex. Gp.: 2315

5,307,643, Re. S.N. 08/317,222, Oct. 3, 1994, Cl. 62/77, METHOD AND APPARATUS FOR CONTROLLING REFRIGERANT GAS IN A LOW PRESSURE REFRIGERATION SYSTEM, Howard L. Beckerman, Owner of Record: *Mechanical Ingenuity Corp., Shrewsbury, N.J.,* Attorney or Agent: David L. Davis, Ex. Gp.: 3404

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Re. 34,069, Reexam. No. 90/003,459, June 10, 1994, Cl. 536/025.3, PROCESS FOR THE PREPARATION OF OLIGONUCLEOTIDES, Hubert Koster, et. al., Owner of Record: *Millipore Investment Holdings, Ltd., Wilmington, Del.,* Attorney or Agent: David E. Brook, Hamilton, Brook, Smith & Reynolds, Lexington, Mass., Ex. Gp.: 1803, Requester: Suresh C. Srivastava, Waltham, Mass.

4,475,787, Reexam. No. 90/003,456, June 6, 1994, Cl. 359/211, SINGLE FACET WOBBLE FREE SCANNER, Gary K. Starkweather, Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, Rochester, N.Y., Ex. Gp.: 2507, Requester: Linotype Hell Co., Hauppauge, N.Y.

4,516,155, Reexam. No. 90/003,479, June 7, 1994, Cl. 358/331, METHOD FOR PARTIALLY SMOOTHING RETOUCH IN ELECTRONIC COLOR REPRODUCTION, Eberhard Hennig, et. al., Owner of Record: *Linotype-Hell AG, Eschborn, Germany,* Attorney or Agent: Hill, Steadman & Simpson, Chicago, Ill., Ex. Gp.: 2615, Requester: Owner

4,592,087, Reexam. No. 90/003,462, June 2, 1994, Cl. 381/068.4, CLASS D HEARING AID AMPLIFYER, Mead C. Killon, Owner of Record: *Knowles Electronics Corp., Itasca, Ill.,* Attorney or Agent: Thomas K. Stine, Wallenstein, Wagner & Hattis, Chicago, Ill., Ex. Gp.: 2608, Requester: Owner

4,621,041, Reexam. No. 90/003,473, June 24, 1994, Cl. 430/204, LITHOGRAPHIC PRINTING PLATE, Masahiko Saikawa, et. al., Owner of Record: *Mitsubishi Paper Mills, Ltd., Tokyo, Japan,* Attorney or Agent: Paul E. White, Jr., Cushman, Darby & Cushman, Washington, D.C., Ex. Gp.: 1506, Requester: Owner

4,687,663, Reexam. No. 90/003,461, May 4, 1994, Cl. 424/052, DENTAL PREPARATION, ARTICLE AND METHOD FOR STORAGE AND DELIVERY THEREOF, Hans A. Schaeffer, Owner of Record: *Chesebrough Ponds Co., USA, Greenwich, Conn.,* Attorney or Agent: Dr. Milton L. Honig, Unilever U.S., Inc., Edgewater, N.J., Ex. Gp.: 1205, Requester: Owner

4,692,781, Reexam. No. 90/003,474, June 24, 1994, Cl. 257/360, SEMICONDUCTOR DEVICE WITH ELECTROSTATIC DISCHARGE PROTECTION, Robert N. Rountree, et. al., Owner of Record: *Texas Instruments, Inc., Dallas, Tex.,* Attorney or Agent: None, Ex. Gp.: 2503, Requester: Ronald O. Neerings

4,913,396, Reexam. No. 90/003,475, June 27, 1994, Cl. 248/649, ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT, William T. Dalebout, et. al., Owner of Record: *Weslo, Inc., Logan, Utah,* Attorney or Agent: Thomas J. Rossa, Trask, Britt & Rossa, Salt Lake City, Utah, Ex. Gp.: 3505, Requester: Roadmaster Corp., Olney, Ill.

4,926,570, Reexam. No. 90/003,457, June 6, 1994, Cl. 036/043, SHOE INNER SOLE, PARTICULARLY INSOLE OR WELT, Manfred Frost, Owner of Record: *Lohmann Gmbh & Co., KG, Neuweid, Fed'l Rep. of Germany,* Attorney or Agent: Kalish & Gilster, St. Louis, Mo., Ex. Gp.: 2404, Requester: Mc Glew and Tuttle, Scarborough, N.Y.

5,007,218, Reexam. No. 90/003,478, June 29, 1994, Cl. 052/204.1, MASONRY BLOCK WITH SYSTEM AND METHOD, Fred G. Bengston, et. al., Owner of Record: *Superlite Block, Phoenix, Ariz.,* Attorney or Agent: William C. Cahill, Cahill, Sutton & Thomas, Phoenix Ariz., Ex. Gp.: 3504, Requester: Tod R. Nissle, Scottsdale, Ariz.

5,011,403, Reexam. No. 90/003,469, June 20, 1994, Cl. 433/008, ORTHODONTIC BRACKET MADE FROM ZIRCONIUM OXIDE, Michael Sadoun, et. al., Owner of Record: *Michael Sadoun, Courbevois, France; Alain Decker, Ste. Genevieve Des Bois, France,* Attorney or Agent: Donald B. Deaver, Cushman, Darby & Cushman, Washington, D.C., Ex. Gp.: 3303, Requester: Joseph A. Walkowski, Salt Lake City, Utah

5,042,220, Reexam. No. 90/003,464, June 13, 1994, Cl. 052/718.01, FASTENER AND STRIP MOUNTING SYSTEM, Peter Jackson, Owner of Record: *Richard Burbidge, Ltd., Oswestry, England,* Attorney or Agent: Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd., Philadelphia, Pa., Ex. Gp.: 3504, Requester: Owner

5,074,585, Reexam. No. 90/003,465, June 13, 1994, Cl. 280/728A, AIR BAG IN AIR BAG EQUIPMENT, Takeshi Satoh, Owner of Record: *Takata Corp., Tokyo, Japan,* Attorney or Agent: Armstrong, Nikaido, Marmelstein, Kubovcik & Murray, Washington, D.C., Ex. Gp.: 3104, Requester: Thomas L. Tarolli, Cleveland, Ohio

5,115,493, Reexam. No. 90/003,476, June 27, 1994, Cl. 395/117, CONTINUOUS LASER PRINTER FOR PRINTING OVER PAGE BOUNDARIES, Ivan M. Jeanblanc, et. al., Owner of Record: *DH Technology, Inc., San Diego, Calif.,* Attorney or Agent: Wilson, Sonsini, Goodrich & Rosati, Palo Alto, Calif., Ex. Gp.: 2317, Requester: Owner

5,116,353, Reexam. No. 90/003,466, June 13, 1994, Cl. 606/184, SAFETY TROCAR, David T. Green, Owner of Record: *United States Surgical Corp., Norwalk, Conn.,* Attorney or Agent: Basam E. Nabulsi, U.S. Surgical Corp., Norwalk, Conn., Ex. Gp.: 3309, Requester: Origin Medsystems, Inc., Menlo Park, Calif.

5,192,555, Reexam. No. 90/003,477, June 27, 1994, Cl. 482/054, ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT, William T. Dalebout, et. al., Owner of Record: *Weslo Inc., Logan, Utah,* Attorney or Agent: Thomas J. Rossa, Trask, Britt & Rossa, Salt Lake City, Utah, Ex. Gp.: 3302, Requester: Roadmaster Corp., Olney, Ill.

5,238,469, Reexam. No. 90/003,458, June 9, 1994, Cl. 095/115, METHOD AND APPARATUS FOR REMOVING RESIDUAL HYDROGEN FROM A PURIFIED GAS, Jeffrey L. Briesacher, Owner of Record: *Saes Pure Gas, San Luis Obispo, Calif.,* Attorney or Agent: Paul L. Hickman, Hickman & Beyer, Palo Alto, Calif., Ex. Gp.: 1305, Requester: Owner

5,273,465, Reexam. No. 90/003,460, June 10, 1994, Cl. 434/267, TUMOR LOCALIZATION PHANTOM, Donald R. Jacobson, Owner of Record: *Medical College of Wisconsin, Inc., Milwaukee, Wis.,* Attorney or Agent: Office of Counsel:Naval Undersea Warefare Center, Newport, R.I., Ex. Gp.: 3303, Requester: Cirs, Inc., Attn: W.R. Drury, Norfolk, Va.

5,299,956, Reexam. No. 90/003,480, June 29, 1994, Cl. 439/638, LOW CROSS TALK ELECTRICAL CONNECTOR SYSTEM, Kenneth W. Brownell, et. al., Owner of Record: *Superior Modular Products, Inc., Swannanoa, N.C.,* Attorney or Agent: David M. Carter, Carter & Schnedler, Asheville, N.C., Ex. Gp.: 3202, Requester: Christopher E. Kondracki, Arlington, Va.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED OCTOBER 10, 1994
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
94,806	71/066,760	01/06/1914
94,825	71/072,418	01/06/1914
94,845	71/073,120	01/06/1914
309,066	71/340,393	01/02/1934
309,067	71/340,394	01/02/1934
309,081	71/341,294	01/02/1934
309,088	71/341,327	01/02/1934
309,094	71/341,415	01/02/1934
309,103	71/341,554	01/02/1934
309,109	71/340,679	01/02/1934

Reg. Number	Serial Number	Reg. Date
309,114	71/340,765	01/02/1934
309,141	71/341,095	01/02/1934
309,151	71/339,221	01/02/1934
309,161	71/338,143	01/02/1934
309,162	71/338,155	01/02/1934
309,164	71/338,445	01/02/1934
309,176	71/339,757	01/02/1934
584,250	71/591,920	01/05/1954
584,251	71/598,128	01/05/1954
584,256	71/607,370	01/05/1954
584,265	71/620,572	01/05/1954
584,269	71/623,735	01/05/1954
584,272	71/625,165	01/05/1954
584,275	71/625,774	01/05/1954
584,277	71/627,947	01/05/1954
584,278	71/627,949	01/05/1954
584,280	71/629,547	01/05/1954
584,283	71/630,684	01/05/1954
584,287	71/632,153	01/05/1954
584,290	71/633,348	01/05/1954
584,303	71/635,573	01/05/1954
584,308	71/636,385	01/05/1954
584,311	71/636,756	01/05/1954
584,312	71/636,881	01/05/1954
584,314	71/637,002	01/05/1954
584,315	71/637,003	01/05/1954
584,316	71/637,004	01/05/1954
584,318	71/637,171	01/05/1954
584,320	71/637,438	01/05/1954
584,322	71/638,985	01/05/1954
584,331	71/640,288	01/05/1954
584,334	71/640,605	01/05/1954
584,336	71/641,477	01/05/1954
584,340	71/641,974	01/05/1954
584,351	71/642,898	01/05/1954
584,356	71/643,451	01/05/1954
584,359	71/643,490	01/05/1954
584,366	71/643,886	01/05/1954
584,367	71/643,929	01/05/1954
584,385	71/645,472	01/05/1954
584,387	71/645,687	01/05/1954
584,392	71/646,216	01/05/1954
584,394	71/646,456	01/05/1954
584,404	71/649,306	01/05/1954
584,406	71/627,042	01/05/1954
584,411	71/639,794	01/05/1954
584,420	71/612,683	01/05/1954
584,429	71/626,278	01/05/1954
584,445	71/636,474	01/05/1954
584,449	71/638,869	01/05/1954
584,454	71/641,114	01/05/1954
584,455	71/641,935	01/05/1954
925,991	72/383,472	12/21/1971
975,709	72/411,528	01/01/1974
975,713	72/446,324	01/01/1974
975,714	72/447,935	01/01/1974
975,716	72/457,993	01/01/1974
975,720	72/441,629	01/01/1974
975,724	72/385,366	01/01/1974
975,726	72/417,994	01/01/1974
975,727	72/420,294	01/01/1974
975,732	72/429,890	01/01/1974
975,734	72/432,114	01/01/1974
975,738	72/442,495	01/01/1974
975,743	72/448,685	01/01/1974
975,745	72/451,305	01/01/1974
975,750	72/381,983	01/01/1974
975,751	72/405,158	01/01/1974
975,760	72/419,172	01/01/1974
975,761	72/419,603	01/01/1974
975,767	72/460,196	01/01/1974
975,768	72/356,055	01/01/1974
975,770	72/421,405	01/01/1974
975,771	72/427,638	01/01/1974
975,778	72/440,881	01/01/1974
975,779	72/441,016	01/01/1974
975,782	72/442,660	01/01/1974
975,783	72/442,838	01/01/1974
975,784	72/405,164	01/01/1974
975,792	72/405,773	01/01/1974
975,794	72/442,704	01/01/1974
975,796	72/432,543	01/01/1974
975,798	72/402,480	01/01/1974
975,802	72/422,055	01/01/1974
975,811	72/446,398	01/01/1974
975,825	72/456,143	01/01/1974
975,832	72/356,316	01/01/1974
975,838	72/399,271	01/01/1974
975,839	72/405,496	01/01/1974
975,842	72/417,836	01/01/1974
975,843	72/422,541	01/01/1974
975,844	72/424,401	01/01/1974
975,850	72/437,084	01/01/1974
975,855	72/427,090	01/01/1974
975,857	72/433,385	01/01/1974
975,858	72/433,893	01/01/1974
975,862	72/441,071	01/01/1974
975,868	72/447,788	01/01/1974
975,870	72/448,432	01/01/1974
975,871	72/448,536	01/01/1974
975,872	72/448,812	01/01/1974
975,876	72/389,987	01/01/1974
975,878	72/394,231	01/01/1974
975,882	72/410,250	01/01/1974
975,883	72/410,251	01/01/1974
975,884	72/413,325	01/01/1974
975,886	72/417,509	01/01/1974
975,888	72/419,659	01/01/1974
975,889	72/420,349	01/01/1974
975,892	72/423,613	01/01/1974
975,894	72/429,735	01/01/1974
975,896	72/438,962	01/01/1974
975,898	72/441,170	01/01/1974
975,903	72/398,587	01/01/1974
975,906	72/410,095	01/01/1974
975,907	72/420,772	01/01/1974
975,909	72/427,490	01/01/1974
975,912	72/433,595	01/01/1974
975,913	72/434,756	01/01/1974
975,915	72/436,762	01/01/1974
975,917	72/432,947	01/01/1974
975,918	72/435,180	01/01/1974
975,923	72/429,388	01/01/1974
975,924	72/432,694	01/01/1974
975,928	72/427,964	01/01/1974
975,933	72/416,805	01/01/1974
975,934	72/423,467	01/01/1974
975,935	72/426,998	01/01/1974
975,936	72/429,059	01/01/1974
975,938	72/432,040	01/01/1974
975,942	72/432,976	01/01/1974
975,945	72/436,803	01/01/1974
975,946	72/436,804	01/01/1974
975,952	72/439,924	01/01/1974
975,956	72/348,905	01/01/1974
975,958	72/403,790	01/01/1974
975,960	72/420,857	01/01/1974
975,961	72/420,863	01/01/1974
975,963	72/437,455	01/01/1974
975,964	72/438,819	01/01/1974
975,969	72/423,872	01/01/1974
975,974	72/436,859	01/01/1974
975,989	72/444,737	01/01/1974
975,996	72/444,309	01/01/1974
975,997	72/363,324	01/01/1974
976,005	72/448,879	01/01/1974
976,006	72/458,454	01/01/1974
976,012	72/415,212	01/01/1974
976,013	72/415,211	01/01/1974
976,014	72/418,197	01/01/1974
976,017	72/419,757	01/01/1974
976,020	72/421,784	01/01/1974
976,021	72/423,604	01/01/1974
976,022	72/424,692	01/01/1974
976,024	72/426,058	01/01/1974
976,027	72/428,890	01/01/1974

Reg. Number	Serial Number	Reg. Date
976,028	72/431,341	01/01/1974
976,032	72/436,958	01/01/1974
976,033	72/437,980	01/01/1974
976,036	72/442,566	01/01/1974
976,040	72/445,246	01/01/1974
976,041	72/445,282	01/01/1974
976,042	72/445,438	01/01/1974
976,046	72/447,074	01/01/1974
976,047	72/447,358	01/01/1974
976,065	72/404,399	01/01/1974
976,066	72/420,542	01/01/1974
976,067	72/421,788	01/01/1974
976,070	72/452,263	01/01/1974
976,086	72/419,846	01/01/1974
976,093	72/441,721	01/01/1974
976,100	72/438,423	01/01/1974
976,101	72/439,592	01/01/1974
976,102	72/440,917	01/01/1974
976,103	72/441,674	01/01/1974
976,105	72/444,024	01/01/1974
976,110	72/450,816	01/01/1974
976,112	72/451,257	01/01/1974
976,113	72/451,258	01/01/1974
976,114	72/451,412	01/01/1974
976,115	72/451,820	01/01/1974
976,118	72/361,869	01/01/1974
976,119	72/361,870	01/01/1974
976,124	72/411,235	01/01/1974
976,128	72/428,730	01/01/1974
976,129	72/429,423	01/01/1974
976,138	72/395,938	01/01/1974
976,139	72/402,897	01/01/1974
976,140	72/405,939	01/01/1974
976,142	72/413,990	01/01/1974
976,144	72/431,154	01/01/1974
976,150	72/364,841	01/01/1974
976,153	72/426,285	01/01/1974
976,155	72/428,743	01/01/1974
976,158	72/420,133	01/01/1974
976,159	72/420,134	01/01/1974
976,160	72/434,259	01/01/1974
976,163	72/406,692	01/01/1974
976,166	72/441,935	01/01/1974
976,169	72/432,748	01/01/1974
976,170	72/414,809	01/01/1974
976,173	72/435,510	01/01/1974
976,176	72/436,912	01/01/1974
976,178	72/400,601	01/01/1974
976,179	72/401,627	01/01/1974

Erratum

"All reference to Reexamination Certificate No. B1 (2410TH) 4,923,461 appearing in the *Official Gazette* of October 18, 1994 should be deleted since no reexamination certificate has been granted."

Erratum

"All reference to Patent No. 5,351,994 to Robert E. Pollin of Maryland for 'AUTOMATED PAYMENT SYSTEM AND METHOD' appearing in the *Official Gazette* of October 4, 1994 should be deleted since no patent was granted."

Erratum

"All reference to Patent No. 5,352,644 to Hye K.C. Timken of N.J. for 'METHOD FOR PREPARING TITANIA-BOUND ZEOLITE CATALYSTS' appearing in the *Official Gazette* of October 4, 1994 should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

RXSYS International, Inc., Golden, Colo., Reg. No. 1,536,236 for the mark "CAMPUSCARD AND DESIGN", Canc. No. 21,723.

242 E. 14 St. Corp., New York, N.Y., Reg. No. 1,436,872 for the mark "BLOWOUT BLITZ", Canc. No. 21,958.

Freedom Savings and Loan Association, Tampa, Fla., Reg. Nos. 1,191,346; 1,191,347; 1,235,816 and 1,152,635 for the mark "FREEDOM SAVINGS", Canc. No. 22,073.

Chimney Rock Hospitality, Inc., Reg. No. 1,737,373 for the mark "DENIM & DIAMONDS", Canc. No. 21,722.

Viking Boat Company, Inc., Goshen, Ind., Reg. No. 1,023,717 for the mark "SPORT-DECK", Canc. No. 21,960.

Twenty-First Century Manufacturing Company, Libertyville, Ill., Reg. Nos. 412,547; 630,850 and 630,851 for the mark "TCMCO", Canc. No. 21,994.

Foremost Dairies, Inc., La Jolla, Calif., Reg. No. 663,227 for the mark "TANGERINE TANGO", Canc. No. 21,434.

Tip Top Corporation, Omaha, Nebr., Reg. No. 696,830 for the mark "HI-STYLE", Canc. No. 21,859.

Automation Industries, Inc., dba Vitro Laboratories, Los Angeles, Calif., Reg. No. 1,043,731 for the mark "FOTO-DRAFT", Canc. No. 21,948.

Smith's Transfer Corporation, Staunton, Va., Reg. No. 1,054,493 for the mark "ST DESIGN", Canc. No. 22,263.

Information Engineering, Inc. d/b/a Information Engineering Institute, Falls Church, Va., Reg. No. 1,595,733 for the mark "MACINSTITUTE (STYLIZED)", Canc. No. 22,288.

JEAN BROWN
Administrator of the
Trademark Trial and
Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

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West Riding Investments Limited, New York, N.Y., Reg. No. 578,825, for the mark "YUKERY", Canc. No. 21,661.

Royal Art Manufacturing Corp., Kearney, N.J., Reg. No. 651,184, for the mark "RAMCO", Canc. No. 21,724.

Century Film Studios, Inc., New York, N.Y., Reg. No. 1,628,058, for the mark "CENTURY FILM", Canc. No. 22,025.

Richard R. Rush, Tulsa, Okla., Reg. No. 1,433,053, for the mark "SUPERHOOP", Canc. No. 22,077.

Le Chocolatier Ltd., Chicago, Ill., Reg. No. 1,196,375 for the mark "LE CHOCOLATIER LTD. AND DESIGN", Canc. No. 22,083.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

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Marrowstone Ventures, Inc., Seattle, Wash., Reg. No. 1,513,563, for the mark "EDITOR'S CHOICE SOFTWARE", Canc. No. 21,443.

Ascot Imports, Inc., College Point, N.Y., Reg. No. 1,102,804, for the mark "ASCOT", Canc. No. 22,023.

The Brave New World, Inc., Los Angeles, Calif., Reg. No. 1,506,005, for the mark "PLANET" and design, Canc. No. 22,038.

Personally Yours, Inc., San Rafeal, Calif., Reg. No. 1,618,899, for the mark "PERSONAL PUZZLE", Canc. No. 22,067.

Continental Enterprises, Inc., Duarte, Calif., Reg. No. 1,507,055, for the mark "SILVER BULLET", Canc. No. 22,109.

Spyworld, Inc., Santa Monica, Calif., Reg. No. 1,760,479, for the mark "SPYWORLD", Canc. No. 22,112.

Active Life, New York, N.Y., Reg. No. 1,585,827, for the mark "MY BEST FRIEND", Canc. No. 22,148.

$5 to $10 Store, Inc., Los Angeles, Calif., Reg. No. 1,509,696, for the mark "$5 TO $10 STORE", Canc. No. 22,154.

Hot Shots Burgers & Fries, Inc., Little Rock, Ak., Reg. No. 1,596,928, for the mark "HOT SHOTS BURGERS & FRIES" and design. Canc. No. 22,187.

Stellar Computer Inc., Newton, Mass., Reg. Nos. 1,505,650 & 1,623,333, for the mark "STELLAR", Canc. No. 22,191.

Pure Golf, Inc., Anaheim, Calif., Reg. No. 1,504,120, for the mark "PURE" (stylized), Canc. No. 22,253.

Smith's Transfer Corporation, Staunton, Mass., Reg. No. 1,056,741, for the mark "HAULMARK OF SERVICE" and design, Canc. No. 22,262.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

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L'Ermitage, Inc., Los Angeles, Calif., Reg. No. 1,085,154 for the mark "L'ERMITAGE", Canc. No. 21,628.

Tratech International, Inc., Birmington, Ala., Reg. No. 1,642,233 for the mark "TRATECH", Canc. No. 21,691.

Celltrek Enterprises, Incorporated, Reno, Nev., Reg. No. 1,757,173 for the mark "BEYOND IMAGINATION (STYLIZED)", Canc. No. 21,978.

Sakowitz, Inc. dba Sakowitz Trading Company, Houston, Tex., Reg. No. 1,560,393 for the mark "RAMPAGE", Canc. No. 21,983.

Skyline, Inc., Fort Lauderdale, Fla., Reg. No. 708,207 for the mark "MICROVITES", Canc. No. 21,986.

Metalogic, Inc., Chicago, Ill., Reg. No. 1,547,768 for the mark "METALOGIC", Canc. No. 22,028.

Karl Lee Remmler dba Eigenware Technologies, Saratoga, Calif., Reg. No. 1,647,329 for the mark "CSL (STYLIZED)", Canc. No. 22,037.

Puffin' Muffin, Ltd., Atlanta, Ga., Reg. No. 1,553,095 for the mark "PUFFIN' MUFFIN LTD 'HOME OF THE ORIGINAL SOUL MUFFIN' AND DESIGN", Canc. No. 22,114.

Jane Pettijohn DBA Key Placement Service, Indianapolis, Ind., Reg. No. 1,074,210 for the mark "KEY", Canc. No. 22,117.

Zentec Corporation, Santa Clara, Calif., Reg. No. 1,030,654 for the mark "ZENTEC AND DESIGN", Canc. No. 22,119.

Fun-Pak, Inc., Portland, Oreg., Reg. No. 1,165,517 for the mark "FUN-PACK", Canc. No. 22,131.

USA Chicken Express Inc., Jackson Heights, N.Y., Reg. No. 1,655,084 for the mark "CHICKEN EXPRESS AND DESIGN", Canc. No. 22,334.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Traverse City Canning Company, Traverse City, Mich., Reg. No. 610,043 for the mark "MICHIGAN QUEEN", Canc. No. 22,746.

C. Leo Fender, Fullerton, Calif., Reg. No. 1,284,232 for the mark "NIGHTHAWK", Canc. No. 22,637.

The Systems Group, Inc., Reston, Va., Reg. No. 1,524,884 for the mark "ONE BYTE AT A TIME AND DESIGN", Canc. No. 22,588.

Joseph H. Arel, dba L/A Distributing Company, Brooklyn Park, Minn., Reg. No. 1,639,932 for the mark "DPS-30 DISASTER PLANNING SYSTEM", Canc. No. 22,765.

Vortex Technologies, Inc., San Antonio, Tex., Reg. No. 1,581,215 for the mark "VORTEX", Canc. No. 22,405.

New Medical Techniques, Inc., Stamford, Conn., Reg. No. 1,048,933 for the mark "AQUASPRING", Canc. No. 22,869.

AR. Winarick, Inc., Fort Lee, N.J., Reg. No. 633,300 for the mark "FORMULA NO. 9 and design", Canc. No. 22,417.

Don L. Hamburger, Los Angeles, Calif., Reg. No. 1,486,379 for the mark "AQUASHERE", Canc. No. 22,586.

Pen Mo Productions, Haywood, Calif., Reg. No. 1,498,078 for the mark "COLD BLOOD", Canc. No. 22,841.

Paragon Classics, Inc., Roseville, Minn., Reg. No. 1,613,713 for the mark "PARAGON CLASSICS (stylized)", Canc. No. 21,855.

Cafe Salsa, Saratoga, Calif., Reg. No. 1,640,051 for the mark "CAFE SALSA (stylized)", Canc. No 22,656.

JEAN BROWN
Administrator of the Trademark Trial and Appeal Board
For Robert M. Anderson
Deputy Assistant
Commissioner for Trademarks

Registration To Practice

The following list contains the names of persons who successfully passed the registration examination that was held April 13, 1994.Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before January 13, 1995.

Auerbach, Andrew B., 23 Orchard Ln., Livingston, N.J. 07039
Barondes, Royce de Rohan, 182 Post Rd., North Hampton, N.H. 03862
Birch, Linda D., P.O. Box 78, 5912 Summit Bridge Rd. Townsend, Del. 19734
Brachmann, Paul Ira, 5 Pershing Rd., Windsor Locks, Conn. 06096
Calia, Kurt Geoffrey, 2A Crestwood Ct., Lansdale, Pa. 19446
Catan, Mark Allen, 21 Bloomingdale Rd., White Plains, N.Y. 10605
Chasan, Bruce J., 42 Conshohocken St. Rd. - Unit 1B, Bala Cynwyd, Pa. 19004
Corbe, Bernard M., 2545 Manoa Rd., Honolulu, Hi. 96822
Del Monte, Michael G., 721 1/2 Jasmine Ave., Corona Del Mar, Calif. 92625
Dewan, Raman Nath, 4016 Sierra Dr., Austin, Tex. 78731
Edwards, Roxanne Joelle, 2109 Pine Heights Dr., N.E., Atlanta, Ga. 30324
Epp, Timothy Lee, 1748 Port Manleigh Cir., Newport Beach, Calif. 92660
Erickson, Kevin D., 32 S. Sixth Ave., #H-3, Lagrange, Ill.60525
Ersler, Donald Jon, 725 Garvens Ave., Brookfield, Wis. 53005
Forslund, Donald Charles, 57 Forest View, Wappinger Falls, N.Y. 12590
Gebauer, Linda, 4438 S. Valley Dr., Fairview Park, Ohio 44126
Gruner, Richard S., 3163 Colby Ave., Los Angeles, Calif. 90066
Harrington, James John, 719 Seventh Ave., River Edge, N.J. 07661
Hirshaut, Tzvi, 99 Harbor View West, Lawrence, N.Y. 11559
Kirincich, Joseph C., 155-07 Locke Ave., Whitestone, N.Y. 11357
Klug, Kevin Lynn, 11237 Concord Village Ave., St Louis, Mo. 62123-6903
Lester, James Lee, 1704 Westminster Dr., Greensboro, N.C. 27410
Luna, Susan M., 4744 Rexwood Dr., Dayton, Ohio 45402
Malinoski, Lynn A., 611 S. Clifton St., Philadelphia, Pa. 19147
McCarthy, Mitchell Kent, 10428 Leicester Dr., Yukon, Okla. 73099
McCutcheon, Robert Darren, 3100 Cole Ave., #103, Dallas, Tex. 75204
Mendlein, John Daniel, 408 Grant St., #205, Palo Alto, Calif. 94306
Mock, John E., 1326 Round Oak Ct., McLean, Va. 22101
Naugle, Erik Thomas, 8919 Summerhill Point, Alpine, Calif. 91901
Remaklus, Theodore Ray, 320 Ardon Ln., Cincinnati, Ohio 45215
Shevlin, Michael Robert, 9330 Fletcher Dr., San Diego, Calif. 91941
Siegel, Daniel R., 380 Cervantes Rd., Portola Valley, Calif. 94028
Stader, John William, 16 Cottonwood Glen Dr., Edwardsville, Ill. 62025
Stevenson, James Richard, 8611 Dennison, #2, Detroit, Mich. 48210
Tuo, Ying, 798-D Treasury Dr., Kettering, Ohio 45429
Wooldridge, John Palmer, 1092 Marigold Rd., Livermore, Calif. 94550

Certificate of Correction
For Week of November 29, 1994

B1 4,996,766	5,052,873	5,192,652	5,249,024
P. 8,631	5,057,856	5,194,981	5,250,083
P. 8,632	5,059,480	5,203,707	5,250,374
P. 8,664	5,061,950	5,205,289	5,252,820
P. 8,718	5,064,767	5,205,635	5,254,894
P. 8,721	5,073,167	5,206,672	5,255,047
P. 8,852	5,078,625	5,208,105	5,255,339
Des. 328,001	5,079,598	5,210,121	5,255,348
Des. 343,682	5,090,993	5,212,091	5,258,250
Des. 347,953	5,103,250	5,212,388	5,259,555
Des. 349,175	5,108,597	5,213,903	5,264,356
Des. 349,846	5,112,989	5,214,039	5,264,423
Des. 349,853	5,124,839	5,216,452	5,264,902
Des. 349,980	5,125,987	5,216,596	5,266,788
Des. 351,197	5,129,517	5,217,168	5,267,212
Des. 351,415	5,134,995	5,217,222	5,267,968
4,489,133	5,136,718	5,218,455	5,269,747
4,608,934	5,143,394	5,218,969	5,270,328
4,630,204	5,147,237	5,220,856	5,270,921
4,799,506	5,148,203	5,221,705	5,271,609
4,809,838	5,154,927	5,222,855	5,272,008
4,815,104	5,157,108	5,224,779	5,272,236
4,916,512	5,164,055	5,225,858	5,272,368
4,939,357	5,165,884	5,229,189	5,273,392
4,954,220	5,165,945	5,230,948	5,275,700
4,957,830	5,173,786	5,233,527	5,275,934
4,979,415	5,175,314	5,233,559	5,276,678
4,983,091	5,176,483	5,234,947	5,277,701
4,985,241	5,179,006	5,238,351	5,278,629
5,004,809	5,183,891	5,240,711	5,280,557
5,013,744	5,184,497	5,240,780	5,284,966
5,013,850	5,185,741	5,240,894	5,286,641
5,038,046	5,188,293	5,241,069	5,286,812
5,041,373	5,190,887	5,244,621	5,287,707
5,043,445	5,190,951	5,246,810	5,288,174
5,043,454	5,192,434	5,247,077	5,288,855
5,049,247	5,192,568	5,248,807	5,290,126

5,290,277	5,303,994	5,314,098	5,322,603	5,330,107	5,338,616	5,341,078	5,346,511
5,290,377	5,304,008	5,315,138	5,322,847	5,330,721	5,338,733	5,341,079	5,346,553
5,290,474	5,305,024	5,315,403	5,323,046	5,330,852	5,338,912	5,341,292	5,346,636
5,290,663	5,305,088	5,315,453	5,324,464	5,330,902	5,339,110	5,341,391	5,346,695
5,290,802	5,305,097	5,315,746	5,324,915	5,331,007	5,339,200	5,341,452	5,346,762
5,291,224	5,305,397	5,316,621	5,325,132	5,331,346	5,339,241	5,341,497	5,346,945
5,291,489	5,305,923	5,316,913	5,325,177	5,331,383	5,339,267	5,342,218	5,347,423
5,291,549	5,306,202	5,316,972	5,325,188	5,331,898	5,339,310	5,342,299	5,347,735
5,292,577	5,307,694	5,317,399	5,325,245	5,331,918	5,339,580	5,342,584	5,347,746
5,293,515	5,307,879	5,318,142	5,325,663	5,332,885	5,339,600	5,342,897	5,347,771
5,293,526	5,308,141	5,318,254	5,325,751	5,333,063	5,339,638	5,342,948	5,347,816
5,293,830	5,308,390	5,318,451	5,325,866	5,333,490	5,339,654	5,342,984	5,347,916
5,295,000	5,308,788	5,318,511	5,326,099	5,333,642	5,339,686	5,343,441	5,348,231
5,296,244	5,309,212	5,318,594	5,326,393	5,333,820	5,339,690	5,343,883	5,348,772
5,296,634	5,309,479	5,318,619	5,326,422	5,333,864	5,339,814	5,343,964	5,349,063
5,297,085	5,309,604	5,318,680	5,326,477	5,335,115	5,339,891	5,344,274	5,349,151
5,298,043	5,309,691	5,319,011	5,326,907	5,335,860	5,339,991	5,344,301	5,350,390
5,298,561	5,310,258	5,319,423	5,327,003	5,336,235	5,339,997	5,344,303	5,350,544
5,299,050	5,311,370	5,319,750	5,327,063	5,336,901	5,340,050	5,344,546	5,350,863
5,299,318	5,311,426	5,320,309	5,327,331	5,336,913	5,340,251	5,344,674	5,351,461
5,299,812	5,312,714	5,320,837	5,327,344	5,337,102	5,340,342	5,344,765	5,351,774
5,300,969	5,312,451	5,321,084	5,327,366	5,337,247	5,340,389	5,344,794	5,351,805
5,301,049	5,312,866	5,321,091	5,327,543	5,337,557	5,340,439	5,344,825	5,351,901
5,301,512	5,313,049	5,321,452	5,327,549	5,337,777	5,340,458	5,344,915	5,352,497
5,302,516	5,313,157	5,321,531	5,327,829	5,338,052	5,340,614	5,345,339	5,353,573
5,302,878	5,313,233	5,321,537	5,328,418	5,338,153	5,340,881	5,345,379	5,353,678
5,303,528	5,313,498	5,322,253	5,328,703	5,338,266	5,340,911	5,345,831	5,353,902
5,303,702	5,314,001	5,322,377	5,328,898	5,338,557	5,340,932	5,346,139	5,354,694

Summary of Final Decisions
Issued by the
Trademark Trial and Appeal Board
October 17-21, 1994

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/ Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Recommended for Publication
10-20	EX	74/078,711	Grief Recovery Institute	2(e)(1); whether the matter asserted for registration is registrable under Section 2(f)	Refusal Affirmed		"GRIEF RECOVERY" [conducting classes and seminars in the field of dealing with bereavement]		No
10-21	EX	74/300,112	Visibilia S.r.l.	2(d)	Refusal Reversed		"CHAGALL" [eyeglasses, eyeglass frames, and screws, hinges and supports for eyeglasses]	"CHAGALL" [grocer's clothing]	No
10-21	EX	74/147,194	Ramon Alvarez	2(d)	Refusal Affirmed		"VIVA MARGARITA" [margarita mix with tequila]	"VIVA SANGRIA" [wine coolers]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; C=CANCELLATION; CU=CONCURRENT USE; (R)=REQ FOR RECONSIDERATION

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Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or material related to the Disclosure Document Program.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box M Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOU's), and extension requests.
Box TTAB FEE	Oppositions, Cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections, and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation*; papers relating to pending litigation shall be mailed only to the Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs have both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that preliminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	Not Yet Operational
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maine	Orono: Raymond H. Fogler Library, University of Maine	Not Yet Operational
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101

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	New York Public Library (The Research Libraries)	(212) 930-0917
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	(803) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3247
Wyoming	Casper: Natrona County Public Library	Not Yet Operational

PATENT EXAMINING CORPS

BRUCE LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100—JOHN E. KITTLE, Director	308-0661	11/29/93
ORGANIC CHEMISTRY, GROUP 1200—JOHN F. TERAPANE, JR., Director	308-1235	09/23/93
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	02/08/94
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—THEODORE MORRIS, Director	308-2351	12/09/93
BIOTECHNOLOGY, GROUP 1800—BARRY S. RICHMOND, Director	308-0196	08/11/93
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—JOSEPH J. ROLLA, JR., Director	308-1782	10/12/92
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/19/93
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—GERALD GOLDBERG, Director	305-9600	10/26/92
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400—CARLTON CROYLE, Director	308-0771	11/01/93
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	09/09/93
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600—BOBBY R. GRAY, Director	305-4700	04/08/93
DESIGN, GROUP 2900—ROBERT E. GARRETT, Director	308-0511	02/02/93
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—F.R. SCHMIDT, Director	308-1113	11/08/93
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—N. GODICI, Director	308-1148	10/19/93
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300—J.J. LOVE, Director	308-0858	11/25/93
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	06/04/93
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-1021	09/09/93

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during October 1994 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.
Patents.....Numbers 4,051,552 to 4,055,851 inclusive
Plant Patents.....4,117 to 4,137

TRADEMARK OPERATION

Bruce Lehman, Commissioner
Philip G. Hampton II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Operation
Condition of Trademark Applications as of Oct. 1, 1994

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 3—Kathryn A. Dobbs, Managing Attorney, (703) 308–9103 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/19/94	08/30/94
Law Office 4—Sharon Marsh, Managing Attorney, (703) 308–9104 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	07/27/94
Law Office 5—Mary Sparrow, Managing Attorney, (703) 308–9105 Cosmetics, Cleaning Preparations, Paper Products and Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/20/94	07/04/94
Law Office 6—Myra Kurzbard, Managing Attorney, (703) 308–9106 Scientific Equipment, Furniture, Houseware and Glass—Int. Classes 9, 20, 21, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	06/03/94	07/05/94
Law Office 7—David Shallant, Managing Attorney, (703) 308–9107 Lubricants, Fuels, Industrial Equipment & Materials—Int. Classes 4, 6, 11, 14, 19 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 8—Thomas Lamone, Managing Attorney, (703) 308–9108 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/23/94	07/21/94
Law Office 9—Sidney Moskowitz, Managing Attorney, (703) 308–9109 Lubricants, Industrial Equipment, Materials & Musical Instruments—Int. Classes 4, 6, 7, 8, 12, 13, 15, 16, 17, 18, 19, Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/20/94	07/05/94
Law Office 10, Jean Logan, Managing Attorney, (703) 308–9110 Cordage, Fibers, Yarns, Threads, Fabrics, Clothing & Floor Coverings–Int. Classes 22, 23, 24, 25, 26, 27 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/09/94	07/20/94
Law Office 11—Thomas Howell, Managing Attorney, (703) 308–9111 Paints, Pharmaceuticals & Medical Apparatus—Int. Classes 2, 5, 10 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/31/94	06/27/94
Law Office 12—Deborah Cohn, Managing Attorney, (703) 308–9112 Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/15/94	07/13/94
Law Office 13, Craig Morris, Managing Attorney, (703) 308–9113 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/17/94	06/04/94
Law Office 14, Ron Williams, Managing Attorney, (703) 308–9114 Chemicals, Food, Beverages, Wines & Spirits—Int. Classes 1, 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/25/94	08/01/94
Law Office 15—Paul Fahrenkopf, Managing Attorney, (703) 308–9115 Rubber, Leather Goods & Clothing—17, 18, 25 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/16/94	09/08/94
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Jodi Rush, Director (703) 308–9000		
Post Registration Section—Jacqueline Cole, Managing Attorney, (703) 308–9500		
Affidavits Under Sections 8 & 15 (All Classes)	04/26/94	—0—
Renewals (All Classes)	07/07/94	—0—
Section 12(C) Publications (All Classes)	—0—	—0—

1. ** Assigned to each law office
2. Applicants with inquires concerning the status of their applications and a touch tone phone should call (703) 308–8747 from 6:30 a.m. to Midnight Est, Monday thru Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquires concerning the status of their applications. See Section 411 of the *Trademark Manual of Examining Procedure.*
3. * These dates identify the oldest unassigned new case in each law office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examiner.

REEXAMINATIONS

NOVEMBER 29, 1994

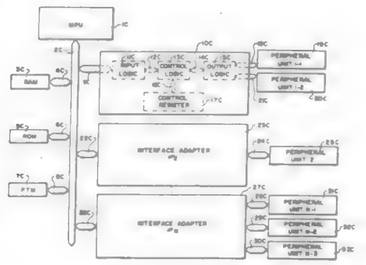
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,263,650 (2432nd)

DIGITAL DATA PROCESSING SYSTEM WITH INTERFACE ADAPTOR HAVING PROGRAMMABLE MONITORABLE CONTROL REGISTER THEREIN

Thomas H. Bennett; Earl F. Carlow, both of Scottsdale; Edward C. Hepworth, Apache Junction, all of Ariz.; Wilbur L. Mathys, Norristown, Pa.; William D. Mensch, Jr., Norristown, Pa.; Rodney H. Orgill, Norristown, Pa.; Charles I. Peddle, Norristown, Pa., and Michael F. Wiles, Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.

Reexamination Request No. 90/002,364, Jun. 17, 1991.
Reexamination Certificate for Patent No. 4,263,650, issued Apr. 21, 1981, Ser. No. 7,752, Jan. 30, 1979.
Int. Cl.[5] G06F *9/00, 13/10*
U.S. Cl. 395—275



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–6 is confirmed.

New claims 7 and 8 are added and determined to be patentable.

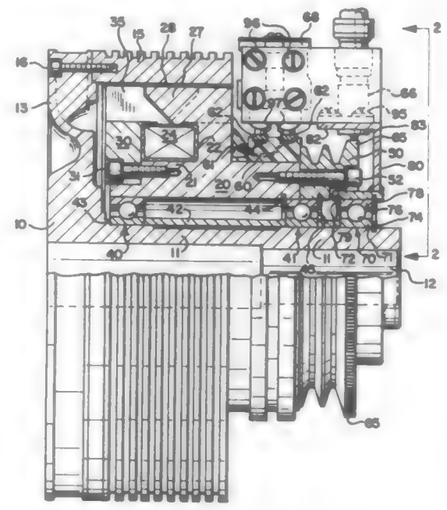
1. A digital data processing system comprising:
processor means for executing a plurality of instructions, said processor means generating control information in response to execution of a first one of said instructions, generating a write signal in response to execution of a second one of said instructions, and generating a read signal in response to execution of a third one of said instructions;
a bidirectional data bus coupled to said processor means;
memory means coupled to said processor means via said bidirectional data bus for storing said instructions and for storing data;
a peripheral data bus for coupling a peripheral device controlled by said digital data processing system to said digital data processing system; and
adaptor means coupled between said peripheral data bus and said bidirectional data bus for effecting transmittal of information between said peripheral device and said digital data processing system, said adaptor means comprising:
(1) control register means for storing said control information in response to said write signal and for sending a representation of said stored control information to said processor means in response to said read signal; and
(2) interface means coupled to said peripheral data bus and responsive to said control information stored in said control register means for sending data to and receiving data from said peripheral device.

B1 4,400,638 (2433rd)

SHAFT MOUNTED EDDY CURRENT DRIVE

James W. Albrecht, Centerville, Ohio, and Harold G. Spriggs, Farmers Branch, Tex., assignors to Stromag, Inc., Dayton, Ohio

Reexamination Request Nos. 90/003,311, Jan. 12, 1994 and 90/003,317, Jan. 27, 1994.
Reexamination Certificate for Patent No. 4,400,638, issued Aug. 23, 1983, Ser. No. 294,586, Aug. 20, 1981.
Int. Cl.[5] H02K *49/00*
U.S. Cl. 310—95



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–7 is confirmed.

1. An electrical variable speed drive including a hub member adapted for mounting to the drive shaft of a prime mover, a driven body member rotatably supported on said hub member and having a mechanical power output drive portion such as a pulley, an electric coil associated with one of said members, magnetic pole means on said last named member positioned in closely spaced relation to a magnetic armature portion of the other member whereby the extent of coupling between the members is affected by the application of electic current to said coil, and slip ring means for applying current to said coil, the improvement comprising:
bearing means mounted on said hub member,
a brush holder support mounted on said bearing means,
torque means supporting said bruch holder support in non-rotating relationship, and
a brush holder mounted on said brush holder support having brushes in engagement with said slip ring means so that displacements in the position of said hub member when rotated by the drive shaft uniformly affect the slip ring means and the brush holder.

B1 4,714,706 (2434th)

PYRIDYLOXY DERIVATIVES AND THEIR USE AS INSECTICIDES

Hiroshi Kisida, Tokyo; Sumio Nishida, Takarazuka, both of Japan, and Makoto Hatakoshi, Seattle, Wash., assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

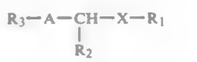
Reexamination Request No. 90/002,166, Oct. 15, 1990.
Reexamination Certificate for Patent No. 4,714,706, issued Dec. 22, 1998, Ser. No. 868,716, May 30, 1986.
Claims priority, application Japan, May 30, 1985, 60-117189
Int. Cl.[5] A61K *31/44*; C07D *213/63, 213/64*
U.S. Cl. 514—345

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1-3, 5-7 are cancelled.

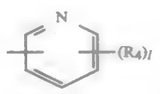
Claim 4 is determined to be patentable as amended.

1. A nitrogen-containing heterocyclic compound of the formula:



wherein

R_1 is either one of the following groups:

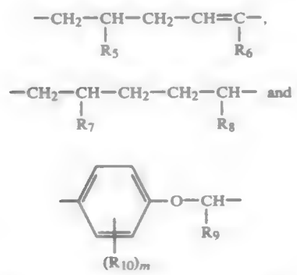


and wherein R_4 is a hydrogen atom, a halogen atom or a methyl group and l is an integer of 1 or 2;

R_2 is a hydrogen atom or a methyl group;

R_3 is an alkyl group, an alkoxy group, an alkenyl group or an alkenyloxy group, each having not more than 8 carbon atoms and optionally being substituted with an alkoxy group having not more than 5 carbon atoms, a haloalkoxy group having not more than 5 carbon atoms, a halogen atom, a nitro group or an amino group;

A is one of the following groups:



wherein R_5, R_6, R_7, R_8 and R_9 are, the same or different, each a hydrogen atom or a methyl group, R_{10} is a hydrogen atom, a halogen atom or a lower alkyl group and m is an integer of 1 to 4; and

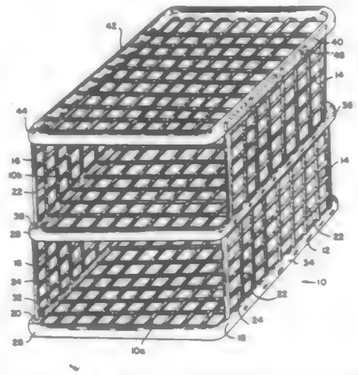
X is an oxygen atom.

B2 5,191,985 (2435th)

MODULAR SUPPORT AND DISPLAY UNIT

Yaffa Licari, Elberon, N.J., assignor to Basic Line Industries, Inc., Cliffwood Beach, N.J.

Reexamination Request No. 90/003,470, Jun. 21, 1994.
Reexamination Certificate for Patent No. 5,191,985, issued Mar. 9, 1993, Ser. No. 816,281, Jan. 6, 1986.
Continuation of Ser. No. 567,394, Dec. 30, 1983
Int. Cl.[5] A47B *47/00*
U.S. Cl. 211—188



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1-11, 14 and 16-20 is confirmed.

Claims 12, 13 and 15 were previously cancelled.

1. Stackable one-piece integral plastic modular support and display unit comprising

side walls of selective thickness, each having a top edge and a bottom edge, the bottom edge having a bottom edge lateral boundary surface portion,

a generally horizontal base of selective thickness and having a top side and an underside, the top side having opposed corresponding top side lateral boundary surface portions to the bottom edge lateral boundary surface portions of the side walls,

a corresponding integral plastic flexible hinge of reduced thickness relative to the thickness of the side walls and relative to the base integrally permanently connecting each corresponding said side wall to the base, each said hinge being disposed between the bottom edge of the corresponding side wall and the top side of the base and arranged in laterally offset relation thereto at a corresponding lateral boundary surface portion of the bottom edge of the side wall thereat and at a corresponding opposed lateral boundary surface portion of the top side of the base thereat, for movement of the side walls relative to the base from an outward generally flat horizontal position in generally horizontal alignment with the base to an upward generally vertical position generally normal to the base, and

two cooperating joining means comprising modular extensions having an outer surface as first joined means and corresponding modular recesses having an inner surface as second joining means, one of said first and second joining means being provided on the top edges of said side walls and the other of said first and second joining means being provided in the underside of the base and corresponding adjacent the hinges,

the outer surface of said extensions being of similar dimensions as the dimensions of the inner surface of said recesses to accomplish a snap fit or friction fit therebetween upon stacking one such unit upon the next.

REISSUES

NOVEMBER 29, 1994

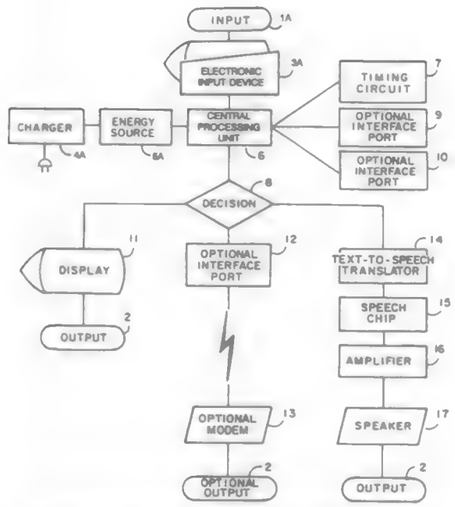
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,800

CARDIOPULMONARY RESUSCITATION PROMPTING

Donald C. Hutchins, 60 Brookdale Dr., Springfield, Mass. 01104

Original No. 4,583,524, dated Apr. 22, 1986, Ser. No. 673,838, Nov. 21, 1984. Application for reissue Dec. 5, 1986, Ser. No. 938,409
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—898 **16 Claims**



9. Cardiopulmonary resuscitation prompting apparatus for providing audible verbal guidance to rescue personnel trained in CPR under emergency conditions for aiding a victim requiring CPR techniques comprising,

keying means for entering information signals representative at least of characteristics of said victim relevant to proper performance of cardiopulmonary resuscitation techniques,

means responsive to the keyed information signals for providing output signals representative of proper steps to be taken in resuscitating said victim,

and electroacoustical transducing means responsive to said output signals for providing audible intelligible sound signals representative of the proper resuscitation steps to be taken by said rescue personnel in resuscitating said victim. 70

* * * * *

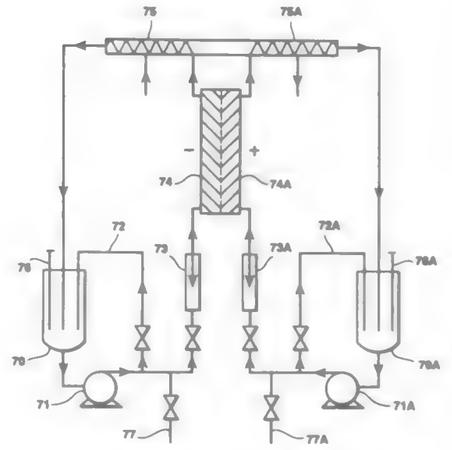
The questions raised in reexamination request No. 90/001,169, filed Feb. 17, 1987, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e).

Re. 34,801

ELECTROCHEMICAL GENERATION OF N_2O_5

Rodney J. Marshall; David J. Schiffrin, both of Southampton; Francis C. Walsh, Fareham, and Greville E. G. Bagg, Waltham Abbey, all of England, assignors to The Secretary of State for Ministry of Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Original No. 5,120,408, dated Jun. 9, 1992, Ser. No. 460,153, Jun. 15, 1988. Application for reissue Aug. 6, 1993, Ser. No. 102,727
Claims priority, application United Kingdom, Jun. 17, 1987, 8714156; Jun. 17, 1987, 8714157
Int. Cl.[5] C25B *1/00*
U.S. Cl. 204—101 **14 Claims**



1. A method for the electrochemical generation of dinitrogen pentoxide comprising:

providing an electrochemical cell having an anode situated in an anode compartment and a cathode situated in a cathode compartment, the anode and cathode comprising plates configured in a substantially parallel relationship;

continuously passing anolyte comprising a first solution of dinitrogen tetroxide in nitric acid through the anode compartment;

continuously passing catholyte comprising a second solution of dinitrogen tetroxide in nitric acid through the cathode compartment; [and]

between the anolyte and catholyte providing a membrane between the anode and cathode compartments for allowing the transfer of ions; and

while the anolyte and catholyte are passing through the anode and the cathode compartments respectively, applying a potential difference between the anode and cathode so that an electrical current passes through the cell and dinitrogen pentoxide forms in the anode compartment;

repeatedly passing the anolyte through the anode compartment and maintaining at a constant level either the potential difference between the anode and the cathode or the electrical current passing through the cell.

Re. 34,802

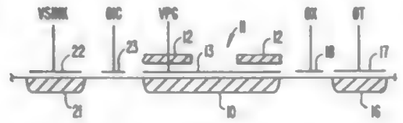
NON-LINEAR PHOTOSITE RESPONSE IN CCD IMAGERS

Michel Sayag, Mountain View, Calif., assignor to Loral Fairchild Corporation, Syosset, N.Y.

Original No. 5,055,667, dated Oct. 8, 1991, Ser. No. 541,579, Jun. 21, 1990. Application for reissue Oct. 8, 1993, Ser. No. 134,162

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 24 Claims



1. A method of controlling the response of a charge-coupled device to incident electromagnetic radiation, said device having a first gated region for accumulating charge in response to incident electromagnetic radiation wherein said first gated region is structured and arranged to accumulate charge during a predetermined exposure period, a sink region disposed for receiving excess charge from said first gated region, a control gate for permitting passage of charge form said first gated region so said sink region, and a second gated region receiving charge from said first gated region for transporting charge therefrom, said method comprising the steps of:

applying a potential to said control gate having a magnitude causing all charge above a charge clipping level in said first gated region to pass to said sink;

causing the magnitude of said potential to vary during said exposure period according to a predetermined function whereby said clipping level varies correspondingly during said exposure period; and

causing the total charge accumulated in said first gated region to be transferred to said second gated region at the end of said predetermined exposure period.

PLANT PATENTS

GRANTED NOVEMBER 29, 1994

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,989

FILTER CLING PEACH

Timothy A. Filter; Phillip W. Filter; Jerry P. Filter, and James R. Filter, all of 1010 Morse Rd., Live Oak, Calif. 95953

Filed Oct. 28, 1993, Ser. No. 144,697

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—43.1 1 Claim

1. A new and distinct extra-early season variety of a clingstone peach tree having flesh of the yellow variety and substantially as herein shown and described, having firm, fine non-melting flesh texture, the fruit having a sweet, well balanced, rich flavor, being of medium to larger size, light orange-red to a darker lacquer red in color with a light red blush present from 10 percent to 60 percent of the fruit surface, and by having a desirable symmetrical shape, where the bloom density is greater, the fruit size is larger and the peach ripens substantially before other existing commercial varieties, typically in late June to early July and has an excellent appearance and quality when canned.

8,990

SHERRILL DELIGHT PEACH TREE

Lewis B. Sherrill, 3265 Valpredo Rd., Arvin, Calif. 93203

Filed Mar. 17, 1994, Ser. No. 210,602

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—43.1 1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described which is somewhat remotely similar to the "Goldcrest" peach tree (Unpatented) and the "Queencrest" peach tree (U.S. Plant Pat. No. 6,025), but from which it is distinguished by producing a more highly colored fruit which are mature for commercial harvesting and shipment approximately May 1 through May 5 in the San Joaquin Valley of central California, or about three or four days after the "Goldcrest" peach tree and approximately two to three days ahead of the "Queencrest" peach tree.

8,991

STRAWBERRY SENECA

John Sanford, Geneva, N.Y.; Donald Ourecky, Fort Lauderdale, Fla.; Jack Reich, II, Geneva, and Kevin Maloney, Clifton Springs, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 757,051, Sep. 9, 1991, abandoned. This application Feb. 26, 1993, Ser. No. 22,948

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—48 1 Claim

1. The new and distinct variety of strawberry herein described and illustrated and identified by the characters enumerated above.

8,992

CHRYSANTHEMUM PLANT NAMED LISA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 20, 1993, Ser. No. 169,191

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—78 1 Claim

1. A new and distinct Chrysanthemum plant named Lisa, as described and illustrated.

8,993

CHRYSANTHEMUM PLANT NAMED PINK ARENA

Barrie J. Machin, Hants, England, assignor to Goldstock Breeding Limited, Hants, England

Filed Oct. 19, 1993, Ser. No. 138,238

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—80 1 Claim

1. A new and distinct Chrysanthemum plant named Pink Arena, as described and illustrated.

8,994

CHRYSANTHEMUM PLANT NAMED MAJESTY

Barrie J. Machin, Hants, England, assignor to Goldstock Breeding Limited, Hants, England

Filed Oct. 21, 1993, Ser. No. 139,009

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.4 1 Claim

1. A new and distinct Chrysanthemum plant named Majesty, as described and illustrated.

8,995

VERBENA PLANT — 'SUNMAREF TP-R'

Ryuichi Tachibana, Yamato; Yuji Tamura, Kofu, and Ushio Sakazaki, Hikone, all of Japan, assignors to Suntory Limited, Osaka, Japan

Continuation of Ser. No. 100,148, Aug. 2, 1993, abandoned. This application Apr. 8, 1994, Ser. No. 225,079

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87 1 Claim

1. A new distinct variety of verbena plant, substantially as herein illustrated and described, characterized particularly as to novelty by (A) a spreading growth habit with long stems, (B) the formation of abundant branching with each node of said spreading branches that contacts the ground commonly forming deep-spreading roots, (C) the formation of many flowers borne on ascending spikes to create a great profusion of blooms, (D) the formation of flowers that have petals having a reddish purple coloration, with a small pale purplish pink eye coloration, and (E) a high resistance to heat, cold, rain, diseases, and pests.

8,996

GUZMANIA PLANT NAMED PAX

Gerardus J. Bak, Assendelft; Nicolaas D. Steur, Oude Niedorp, and Elly Bak, Rijsenhout, all of Netherlands, assignors to Corn, Bak B.V., Assendelft, Netherlands

Filed Jan. 18, 1994, Ser. No. 183,041

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—88.8 1 Claim

1. A plant of a new and distinct cultivar of Guzmania plant named Pax, as illustrated and described.

8,997

KALANCHOE PLANT NAMED TICO ORANGE

Claude Hope, Cartago, Costa Rica, assignor to Ball Seed Company, West Chicago, Ill.

Filed Jan. 18, 1994, Ser. No. 181,892

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.15 1 Claim

1. A new and distinct Kalancho plant named Tico Orange, as described and illustrated.

8,998

KALANCHOE PLANT NAMED TICO DARK ORANGE

Claude Hope, Cartago, Costa Rica, assignor to Ball Seed Company, West Chicago, Ill.

Filed Jan. 18, 1994, Ser. No. 183,384
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—87.15 1 Claim

1. A new and distinct Kalancho plant named Tico Dark Orange, as described and illustrated.

8,999

***DISTICHLIS SPICATA* VAR. YENSEN 4A**

Nicholas P. Yensen, Tucson, Ariz., assignor to Salt Weeds, (Partnership), Tucson, Ariz.

Continuation-in-part of Ser. No. 398,262, Aug. 24, 1989. This application Nov. 26, 1991, Ser. No. 797,988
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—100 1 Claim

1. A new and distinct variety of *Distichlis spicata* as shown and described, which is principally characterized by high hay yield and soft palatable leaves.

PATENTS

GRANTED NOV. 29, 1994

ERRATA

For CLASS	See PATENT NO.
073-049	5,367,797
451-104	5,367,833
451-285	5,367,834
451-005	5,367,835
451-331	5,367,836
451-389	5,367,837
451-039	5,367,838
451-526	5,367,839
451-078	5,367,840
451-089	5,367,841
451-307	5,367,866
062-003	5,367,879
062-006	5,367,880
062-011	5,367,881
062-048	5,367,882
062-085	5,367,883
062-101	5,367,884
062-125	5,367,885
062-195	5,367,886
062-266	5,367,887
062-292	5,367,888
073-001	5,367,898
073-023	5,367,899
073-052	5,367,900
073-064	5,367,901
175-057	5,368,083
134-147	5,368,171
128-633	5,368,224
427-585	5,368,681
203-029	5,368,691
505-510	5,368,768
433-226	5,368,831
534-013	5,369,101
174-250	5,369,219
174-257	5,369,220

ERRATA—CONTINUED

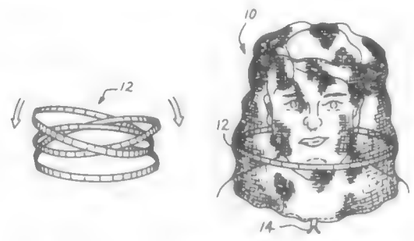
177-025	5,369,221
177-136	5,369,222
177-208	5,369,223
327-427	5,369,308
327-094	5,369,309
327-143	5,369,310
327-292	5,369,311
327-545	5,369,312
320-068	5,369,313
326-013	5,369,314
326-082	5,369,315
326-083	5,369,316
326-087	5,369,317
326-066	5,369,318
327-073	5,369,319
327-108	5,369,320
369-275	5,369,321
359-189	5,369,350
347-061	5,369,419
347-019	5,369,420

PATENTS

GRANTED NOVEMBER 29, 1994

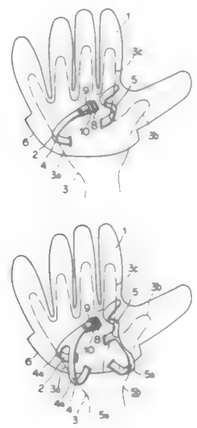
GENERAL AND MECHANICAL

5,367,706
COLLAPSIBLE HEADNET
Norma J. Davidson, 8145 29th Ave. SW., Seattle, Wash. 98126
Filed Jul. 19, 1993, Ser. No. 92,881
Int. Cl.[5] A42B *1/20*
U.S. Cl. 2—4 **2 Claims**



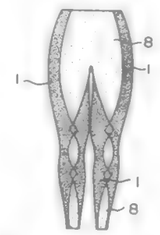
1. A headnet for protecting a wearer's head against flying insects, comprising a fabric mesh tube having first and second ends, a fabric mesh top closing said first end, a single loop secured to said mesh tube between said ends parallel to said top and positioned and dimensioned to hold the mesh tube away from a wearer's face, and a closure at the second end of the tube positioned to draw the second end of the tube up around the wearer's neck to prevent entry of insects through the second end; said hoop being made of a material that is sufficiently stiff to hold the tube away from a wearer's face and sufficiently flexible to permit it to be collapsed and formed into a substantially flat configuration of three concentric loops to reduce the size of the headnet when the headnet is not in use.

5,367,707
BASEBALL GLOVE OR MITT
Hideaki Murai, Osaka, Japan, assignor to KSK Co., Ltd., Kagoshima, Japan
Filed Nov. 17, 1993, Ser. No. 153,912
Claims priority, application Japan, Jan. 26, 1993, 5-005761[U]
Int. Cl.[5] A41D *13/10*
U.S. Cl. 2—19 **7 Claims**



1. A catching tool, comprising:
a glove body;
said glove body having a front side and a rear side, and having an opening for inserting one's hand into a chamber between said front side and said rear side, and having a portion for receiving one's thumb and a portion for receiving one's fingers;
a first belt portion extending from one of said front and rear sides into said chamber;
a second belt portion extending from said one of said front and rear sides into said chamber;
a fixing device for fixing said first and second belt portions together;
said second belt portion being at a first location within said glove a sufficient distance from said opening and at a location proximate to said thumb portion such that a portion of said second belt portion extends upwardly in-between one's thumb and forefinger;
said first belt portion being at a second location within said glove a sufficient distance from said opening and at a location at a side of one's hand opposite to said thumb portion such that a portion of said first belt portion extends upwardly proximate said side of one's hand opposite to said thumb portion;
whereby when said fixing device fixes said first and second belt portions together, said first and second belt portions effect a holding force around the palm of one's hand.

5,367,708
WEARING ARTICLE FOR WEARING IN PRESSED RELATION TO HUMAN BODY SURFACE
Masami Fujimoto, Kyoto, Japan, assignor to Wacoal Corp., Kyoto, Japan
Division of Ser. No. 762,980, Sep. 20, 1991, Pat. No. 5,263,923.
This application Aug. 23, 1993, Ser. No. 110,517
Claims priority, application Japan, May 22, 1991, 3-147873
Int. Cl.[5] A41D *13/00;* **A61F** *13/00*
U.S. Cl. 2—22 **12 Claims**



1. A wearing article for wearing on a human body, said article including a wearing portion for wearing on a leg of the human body in pressed relation to a surface of the leg, the wearing portion comprising a tubular upper leg covering portion, the upper leg covering portion including a first stretchable portion of cloth forming a part of the upper leg covering portion and a second stretchable portion of cloth which is more easily stretchable than the first stretchable portion and forms the remainder of the upper leg covering portion, the first stretchable portion being arranged to extend substantially longitudinally of the upper leg covering portion along lateral portions of the upper leg covering portion which are to be contacted with a front surface of an upper leg of the human body, in such a manner that when the wearing article is worn on the human body, the first stretchable portion extends from an upper portion of the upper leg to a lower portion of the latter through lateral portions of a thigh, a part of the first stretchable portion which extends along one of said lateral portions and a part of the first stretchable portion which ex-

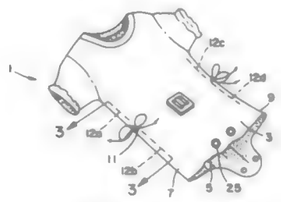
tends along the other lateral portion joined together at a lower part of the upper leg covering portion so as to cover that portion of the upper leg which is located above and adjacent to a knee.

5,367,709

ADJUSTABLE CLOTHING FOR INFANTS

Nancy A. Teasley, 1124 Devenger Rd., Greer, S.C. 29650

Filed Jul. 8, 1993, Ser. No. 88,893
Int. Cl.[5] A41D *11/00*
U.S. Cl. 2—69 **4 Claims**



1. An adjustable garment comprising:

a front panel and a back panel, said front panel attached to said back panel along a first side seam and a second side seam;

a first adjusting means having a first drawstring and a second drawstring, said first drawstring attached at a first end to said side seam, said second drawstring attached at a first end to said side seam at a spaced distance from said first drawstring end; an aperture in proximity to said first side seam, said aperture positioned at an approximate midpoint between said first drawstring ends, a portion of said first and said second drawstring further positioned along said first side seam, a free end of said first drawstring and a free end of said second drawstring in communication with said aperture, said first drawstring and said second drawstring permitting the reversible gathering of said first panel and said second panel in a lengthwise fashion in proximity to said first aperture;

a second adjusting means having a first drawstring and a second drawstring, said first drawstring attached at a first end to said second side seam, said second drawstring attached at a first end to said second side seam at a spaced distance from said first drawstring, an aperture in proximity to said second side seam, said aperture positioned at an approximate midpoint between said first drawstring and said second drawstring end, a portion of said first and said second drawstring each further positioned along said first side seam, a free end of said first drawstring and a free end of said second drawstring in communication with said aperture, said first drawstring and said second drawstring permit the reversible gathering of said front panel and said back panel in a lengthwise fashion in proximity to said second aperture;

wherein said first adjustment means and said second adjustment means are used to vary the length of said garment.

5,367,710

MEDICAL GOWN FOR PRESERVING PRIVACY

James L. Karmin, 1714 N. Burling, Chicago, Ill. 60614

Filed Jan. 12, 1993, Ser. No. 3,328
Int. Cl.[5] A41D *1/06, 10/00, 13/00*
U.S. Cl. 2—114 **16 Claims**

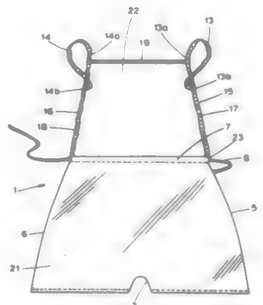
1. An examination gown for a human patient comprising:

a pants member capable of being pulled up to a patient's waist, said pants member having a front side and a back side, the front side of said pants member having a bib integrally attached thereto, said bib having a top edge, a right edge and a left edge, the top edge of the bib having a right side and a left side;

a right side strap member having a first end and a second end, the first end of the right side strap member being affixed to the right side of the top edge of said bib, the second end of the right side strap member being affixed to the right edge of said bib, the right side strap member and the bib edge(s) between the first and second ends of the right side strap member forming a loop that is capable of receiving the right arm and shoulder of a patient; and

a left side strap member having a first end and a second end, the first end of the left side strap member being affixed to the left side of the top edge of said bib, the second end of the left side strap member being affixed to the left edge of said bib, the left side strap member and the bib edge(s) between the first and second ends of the left side strap member forming a second loop that is capable of receiving the left arm and shoulder of a patient;

said right side and left side strap members, when pulled over a patient's right and left shoulders respectively, are capable of raising said bib to substantially cover the patient's chest;



said pants member also having a means for gathering and securing the examination gown about the patient's waist, such that even if the right side and left side strap members are not over the patient's shoulders, the pants member is capable of being secured about the patient's waist;

said means for securing comprises a drawstring having opposite ends that are threaded through a casing running along the upper edge of the back panel of said pants member, said drawstring having opposite ends that exit said casing at a right and a left side of the pants member, the opposite ends of said drawstring hanging down on a left and right side respectively of the examination gown when the drawstring is untied;

said examination gown being x-ray compatible, and when worn by a patient, is capable of maintaining the patient's privacy while allowing unobstructed access to the patient's back, neck, and spine.

5,367,711

PROTECTIVE WORK GLOVE WITH RIGID PORTIONS

Juanito B. Calagui, P.O. Box 325, Passaic, N.J. 07055

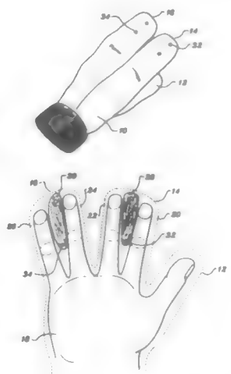
Filed Jun. 8, 1992, Ser. No. 895,365
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161.6 **3 Claims**

1. A protective work glove system comprising:

(a) a thumb enclosure integrally extending outwardly from a palm portion of a work glove;

(b) a first enclosure integrally extending from said palm portion, said enclosure defining a volume therewithin for accommodation of middle and index fingers of a user, said enclosure having proximal and distal portions relative to said palm portion and having, secured within said first enclosure, a rigid body having an elongated structure, said body having a lateral cross-section substantially defining an isosceles triangle having its apex directed to the web space between said middle and index fingers, and body thereby tapered to approximate the natural rest position of the interdigital opening between said fingers, said rigid body further proportioned to about the height of said first enclosure and extending proximally from about a knuckle position of said enclosure and extending distally to the distalmost extent of said first enclosure; and

(c) a second enclosure integrally extending from said palm portion, said enclosure defining a volume therewithin for accomodation of the ring and pinkie fingers of the user, said enclosure having proximal and distal portions relative



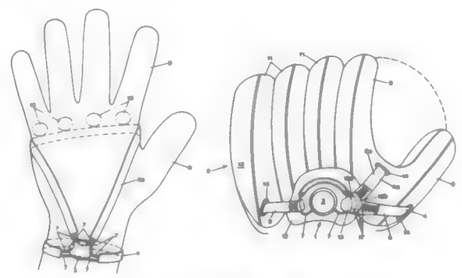
to said palm portion and having, secured within said first enclosure, a rigid body having an elongated structure, said body having a lateral cross-section substantially defining an isosceles triangle having its apex directed to the web space between said ring and pinkie fingers, said body thereby tapered to approximate the natural rest position of the interdigital opening between said fingers, said rigid body further proportioned to about the height of said first enclosure and extending proximally from about said knuckle position of said enclosure and extending distally to the distal-most extent of said first enclosure.

5,367,712

SYSTEM FOR CHANGING THE SHAPE OR FIT OF GLOVE

Christopher H. Smith, Ponte Verda Beach, Fla., and Claudia Kieserling, Munich, Germany, assignors to Alexander, Smith & Co., Fairfield, Conn.

Filed Sep. 30, 1992, Ser. No. 953,994
Int. Cl.[5] A41D *19/00, 13/08*
U.S. Cl. 2—162 **44 Claims**



1. A system for improving the fit around a hand inserted in a glove comprising:

a glove having a palm portion, backhand portion and at least one sleeve portion into which one or more finger digits may be inserted;

an adjusting mechanism for controlling the tightening and releasing of the glove around the hand;

at least one adjusting strip extending substantially around a portion of the glove and having a first and a second end; and

an adjusting cable element connecting the first and second ends of the adjusting strip to the adjusting mechanism and having an effective length variable by operation of the adjusting mechanism;

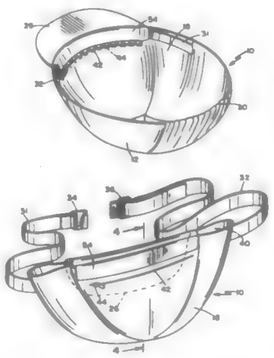
wherein the adjusting mechanism, adjusting strip and adjusting cable element substantially form a closed loop around the glove and substantially encircle the hand when inserted therein, having an effective length such that operation of the adjusting mechanism improves the fit of the glove around the hand when operated to shorten the adjusting cable element so as to shorten the effective length of the closed loop and loosens the fit of the glove around the hand when operated to release the adjusting cable element so as to increase the effective length of the closed loop.

5,367,713

CONVERTIBLE HAT AND BAG ASSEMBLY

Timothy P. McCallum, 6717 Neptune Pl., San Diego, Calif. 92037-5921

Continuation-in-part of Ser. No. 774,800, Oct. 10, 1991, Pat. No. 5,214,802. This application May 24, 1993, Ser. No. 66,772
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] A42B *1/04*
U.S. Cl. 2—209.12 **15 Claims**



1. A convertible hat and bag assembly, comprising:

a hat layer shaped for forming a hat for placing on the head of a wearer, the hat layer having a peripheral edge forming a head-receiving opening;

a bag-shaped enclosure separate from the hat layer and secured around part of its area along at least part of the peripheral edge of the hat layer;

the bag-shaped enclosure comprising a second layer secured around its periphery to at least part of the periphery of said hat layer;

the bag-shaped enclosure being storable within said hat layer when the assembly is used as a hat;

the hat layer being storable within the bag-shaped enclosure when the assembly is used as a bag; and

the periphery of the bag comprising an opening for access to the interior of the bag, the hat layer having a brim projecting from at least part of its periphery, the brim being foldable over the outside of the bag to form a closure flap when the assembly is used as a bag.

5,367,714
BELT WITH CONCEALED WHIP

Edmund L. Hines, 32 Crestwood, Sugar Land, Tex. 77478, and John A. Onofrey, 8306 Highway 90A, P.O. Box 650, Sugar Land, Tex. 77487-0650

Filed Jun. 1, 1993, Ser. No. 69,442
Int. Cl.[5] A41F *9/00*; B68B *11/00*
U.S. Cl. 2—311 17 Claims

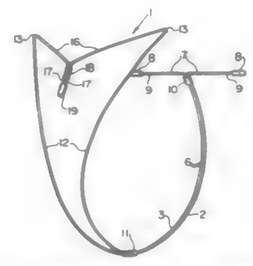


1. A combination belt and whip having a belt which conceals a whip that is adapted to be used to ward off an attacker and said combination comprising: a belt having buckle means for securing said belt around the waist of a user; sheath means formed within said belt, said sheath means having an opening to the outside of said belt adjacent said buckle means; a whip inserted through said opening and concealed in said sheath means and having a handle located externally of said opening; said belt having an end portion extending from said buckle means which conceals said handle; said handle is shaped in a manner to enable it to be readily grasped so that the whip can be quickly pulled from said sheath.

5,367,715
BIKINI BOTTOM OR BRIEFS

Cynthia D. Leonard, and Lawrence Gayne, both of North York, Canada, assignors to L.C.C. Consulting Inc., North York, Canada

Filed Oct. 25, 1993, Ser. No. 140,509
Int. Cl.[5] A41B *9/00*; A41D *27/00*
U.S. Cl. 2—401 6 Claims

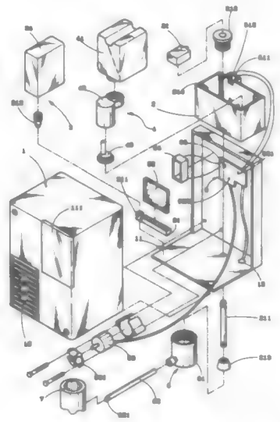


1. A frame for a bikini bottom or briefs comprising a pair of resilient wire members, one said wire member being a mirror image of the other said wire member, each said wire member defining a major portion of an oval of sufficient length to extend around the crotch of a wearer between an approximately V-shaped line on the rectus abdominous muscle in the front and the sacrum in the rear of the wearer, each said member including a rectilinear rear portion for extending downwardly from a top rear of the frame to approximately a bottom center of a crotch area of the frame, an outwardly extending rear arm at a top end of the rear portion, and a front portion including a side flaring outwardly from a vertical plane through said rectilinear rear portion and said bottom center of the crotch area of the frame to a top end of said front portion and a front arm extending downwardly and inwardly from said top end of said front portion to said vertical plane; and connector means for interconnecting said frame members to define a T-shaped rear and a generally triangular front, said front having a generally V-shaped depression in the top end thereof.

5,367,716
AUTOMATIC FLUSH TOILET DETERGENT AND PERFUME DISPENSER

Chi-King Huang, 7 Fl., No. 11, Ming Chuan W. Rd., Taipei, Taiwan, Prov. of China

Filed Feb. 7, 1994, Ser. No. 192,616
Int. Cl.[5] E03D *9/03*
U.S. Cl. 4—222 2 Claims

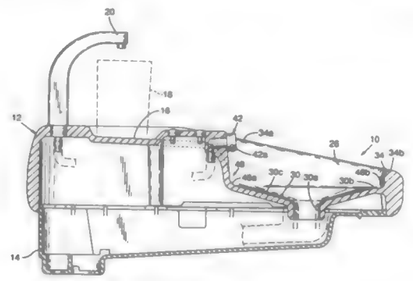


1. In an automatic flush toilet detergent and per fume dispenser comprising:
a housing having a view window and an exhaust port with a shutter on a front panel thereof:
a water container mounted inside said housing at a bottom thereof, said water container comprising a valve seat at a bottom thereof, a float floatable in water in said water container, an to upright rod having a top end connected to said float and a bottom end extending out of said valve seat and coupled with a valve cone said valve cone being moved by said float via said rod to control opening of said valve, seat;
a water guide to guide water from a flush pipe associated with toilet flushing system into said water container through said valve seat;
a detergent dispensing device disposed inside said housing above said water container, said detergent dispensing device comprising a transparent detergent container having a bottom opening, a dispensing cap fastened to the bottom opening on said detergent container and adopted to dispense a fixed amount of a detergent from said transparent detergent container into said water container when water in said water container reaches full water level;
a perfume dispensing device mounted inside said housing behind said shutter, said perfume dispensing device comprising a sponge holder having a guide hole, a perfume bottle having a bottom hole connected to the guide hole on said sponge holder, a sponge mounted on said sponge holder to suck in a liquid perfume being guided from said perfume bottle into the guide hole of said sponge holder, and a DC motor fan driven to send a current of air through said sponge toward said shutter;
the improvement comprising:
two full water level detector probes fastened to said water container to detect water level and to give a signal when water in said water container reaches full water level;
a buzzer;
light emitting means;
a control circuit controlled by the signal from said full water level detector probes to turn on said DC motor fan, said buzzer, and said light emitting means; and
a manual control switch mounted on said housing and controlled to trigger said control circuit manually.

5,367,717
CUSPIDOR

William F. Fisher, Beavercreek, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.

Filed Jan. 29, 1993, Ser. No. 11,321
Int. Cl.[5] A61C *17/14*
U.S. Cl. 4—263 19 Claims

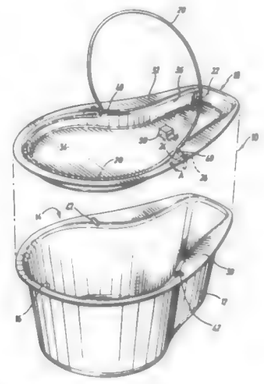


1. A cuspidor comprising a rounded basin including a bottom and a substantially upright surrounding sidewall having a top, a fluid inlet spaced above the bottom adjacent one end of the basin for directing flushing fluid into the basin, and a juncture section interconnecting the bottom and sidewall of the basin, said juncture section being formed in a concave curve extending from the bottom to the sidewall which has a first radius adjacent said one end of the basin and at the opposite end of the basin has a second radius which is less than said first radius, and the top of the sidewall adjacent said opposite end of the basin is lower than said fluid inlet.

5,367,718
CONTAINERS

William E. G. Ellis, Allestree, England, assignor to Gordon Ellis and Company, Derby, England

Filed Nov. 1, 1993, Ser. No. 146,594
Claims priority, application United Kingdom, Nov. 5, 1992, 9223222
Int. Cl.[5] A47K *11/00*
U.S. Cl. 4—449 7 Claims

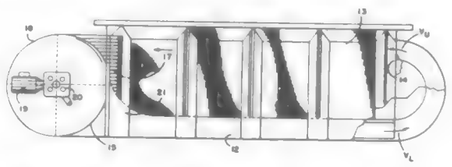


1. A portable container comprising:
(a) a receptacle defining an open top, and including a rim extending around the open top;
(b) a lid for engaging the rim to cover the open top of said receptacle, said lid being movable between a closed position in a covering relation to the open top and an open position in an uncovered relation to the open top;
(c) said lid and receptacle each defining first and second opposing apertures located at respective peripheral edge regions thereof, whereby the opposing apertures of said lid overlie and are aligned with the opposing apertures of said receptacle when the lid is in the closed position;
(d) a handle pivotally mounted on said lid for carrying the container, said handle having opposing ends with respective first and second elongate portions located thereon for extending through the aligned pairs of apertures formed in the lid and receptacle; and
(e) first and second shoulders located on the receptacle for engaging the first and second elongate portions of the handle during transport of the container to hold the lid against the rim in said closed position, the handle being movable between a carrying position in which the handle extends upwardly from the container and secures the lid to the receptacle in the closed position, and a non-carrying position in which the handle rests against a portion of the lid and permits movement of the lid from the rim of the receptacle to the open position.

5,367,719
TANK HAVING FLUID FLOW CONTROLLING APPARATUS

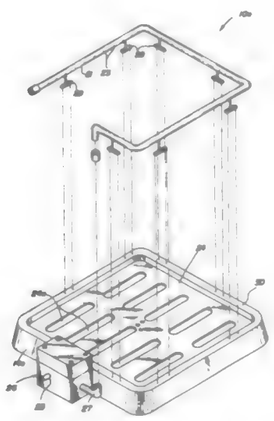
Seymour Mermelstein, Newton, Mass., assignor to SwimEx Systems Inc., Warren, R.I.

Continuation of Ser. No. 774,541, Sep. 10, 1985, abandoned. This application Jan. 7, 1987, Ser. No. 4,232
The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.
Int. Cl.[5] E04H *4/12*
U.S. Cl. 4—488 16 Claims



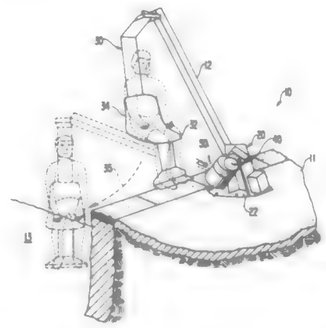
2. Flow controlling apparatus comprising,
tank means having width, length and height dimensions for supporting fluid,
channel defining means in said tank means for defining upper and lower channels therein for allowing fluid flow in upper and lower opposed directions along said length dimension,
and drive means extending across substantially the entire width of said tank means for propelling said fluid through said upper and lower channels with substantially uniform velocity of said fluid along said length dimension across substantially the entire width of said tank means at the top of said tank means,
wherein said drive means comprises a vaned rotor with vanes angularly spaced about the rotor axis rotatably supported in said tank means at one end thereof,
said rotor axis being substantially parallel to the width dimension of said tank means and the length of each of said vanes corresponding substantially to the width of said tank means.

5,367,720
FOOT WASHER APPARATUS
Beery W. Stephens, and Carey S. Stephens, both of 3917 Rive Gauche, Las Vegas, Nev. 89115
Filed Dec. 30, 1991, Ser. No. 814,589
Int. Cl.[5] A47K *3/022*
U.S. Cl. 4—494 2 Claims



1. A foot washer apparatus, comprising,
a container housing, the container housing including a housing floor, with the housing floor including a first side wall, a second side wall, a third side wall, and a fourth side wall extending about the housing floor extending upwardly thereof to define a continuous perimeter about the housing floor, with the first side wall, second side wall, third side wall, and fourth side wall terminating in a planar top wall surface, with a drain plate directed through the housing floor, the drain plate in fluid communication with a drain conduit, the drain conduit directed through the first side wall, and
a fluid conduit mounted to the housing, wherein the fluid conduit defines a fluid manifold, with the fluid conduit including a row of aligned fluid apertures directed through the fluid conduit, wherein the apertures are oriented above the planar top wall surface to project fluid interiorly of a housing interior cavity, wherein the housing interior cavity is oriented within the housing side walls and above the housing floor, and
a valve assembly mounted to the housing second side wall, the valve assembly including a fluid delivery hose directed into the valve assembly, with the valve assembly including a cylindrical valve chamber within the valve assembly, with the fluid delivery hose directed into the valve chamber, and a valve conduit in fluid communication with the valve chamber directed from the valve chamber to the fluid manifold, and an actuator plate mounted movably above the housing floor, and an actuator lever pivotally mounted to the housing second side wall adjacent the valve assembly, with a forward distal end of the actuator lever positioned below the actuator plate and a rear distal end of the actuator lever positioned within the valve chamber, and a piston slidably mounted within the valve chamber, the piston including at least one flange mounted to a top surface of the piston, the at least one flange pivotally mounted to the rear distal end of the actuator lever, and a pivot axle positioned between the forward distal end of the actuator lever and the rear distal end of the actuator lever mounted to the second side wall, whereupon depressing of the actuator plate towards the housing floor effects displacement of the piston relative to the fluid delivery hose and the valve assembly conduit permitting fluid flow from the valve assembly conduit to the fluid delivery hose and to the fluid manifold.

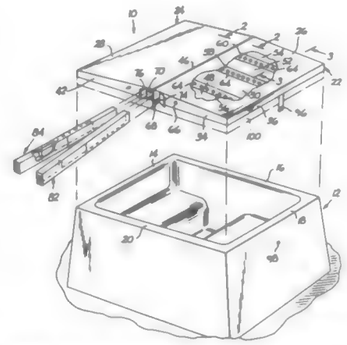
5,367,721
LIFT APPARATUS AND METHOD FOR TRANSPORTING A PASSENGER INTO AND OUT OF A SWIMMING POOL
Mark J. Boyles, Daphne, Ala., assignor to BioCare Laboratories, Inc., Daphne, Ala.
Filed Oct. 12, 1993, Ser. No. 133,926
Int. Cl.[5] E04H *4/14*
U.S. Cl. 4—496 20 Claims



1. A lift apparatus for transporting a passenger between positions, the lift apparatus comprising:
a boom;
means for mounting said boom for pivoting movement in a plane oblique to a horizontal plane between a raised position and a lower position, said mounting means having a base;
a carrier suspended from said boom at a point spaced from said mounting means and having a seat for supporting the passenger, said seat being at a first position above the base when said boom is in the raised position and at a second position below the base when said boom is in the lower position; and
drive means for reversibly moving said boom in the oblique plane between the raised and lower positions to move said seat in an arc between the first and second positions.

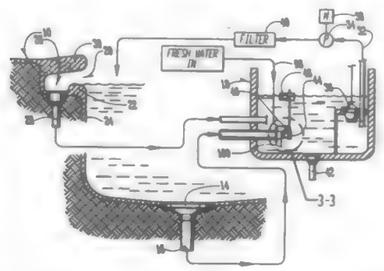
5,367,722
SPA AND TUB COVER
John B. Pesterfield, Cleveland, Tenn., assignor to St. John Manufacturing Co., Inc., Cleveland, Tenn.
Filed Mar. 11, 1994, Ser. No. 212,557
Int. Cl.[5] E04H *4/10*
U.S. Cl. 4—499 9 Claims

1. A cover for providing a closure for the top of a water tub, comprising a pair of cover portions having upper and lower external surfaces, hinge means pivotably connecting one of said upper and lower surfaces of said cover portions together for pivoting one cover portion relative to the other cover portion about a pivot axis, each cover portion having an inflatable bladder intermediate the respective upper and lower surfaces, a plurality of brace members disposed within each bladder separating each bladder into a plurality of bladder chambers for strengthening and providing rigidity to each cover portion transverse to said brace members, each of said brace members being disposed in a plane transverse to said pivot axis, each of said brace members including a plurality of apertures for communicating adjacent bladder chambers together, and valve means communicating at least one bladder chamber of each cover portion with the exterior of the respective cover portion for inflating the bladders of each cover



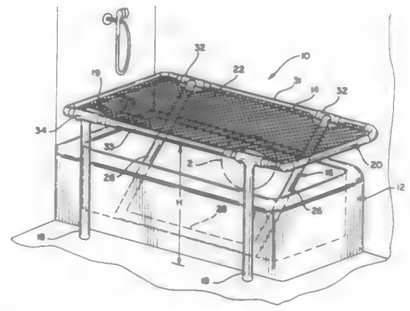
portion with air and for deflating each cover portion selectively.

5,367,723
VALVE FOR REGULATING WATER LEVEL IN A SWIMMING POOL
John Pleva, and Mark G. Pleva, both of Woodward, Iowa, assignors to Pleva Plumbing & Heating, Inc., Woodward, Iowa
Filed Feb. 25, 1993, Ser. No. 22,975
Int. Cl.[5] E04H *4/12*
U.S. Cl. 4—508 11 Claims



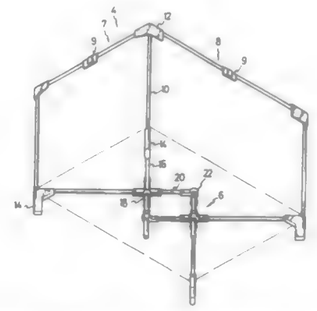
1. An apparatus for regulating water level in a swimming pool, the pool including a main drain for draining water from the pool into a remote water pit, a gutter extending around the perimeter of the pool and draining to the water pit, and a fresh water supply line for providing fresh water to the pit, the apparatus comprising:
a first valve operatively connected to the main drain and being movable between open and closed positions to control the flow of water from the main drain into the pit;
a second valve operatively connected to the fresh water supply line and being movable between open and closed positions to control the flow of water from the fresh water supply line into the pit; and
a float operatively connected to the first and second valves to simultaneously move the valves in unison between the open positions and closed positions in response to changes in water level in the pit.

5,367,724
BATHING PLATFORM FOR THE DISABLED
Albert J. Coccagna, 2451 Greensward N., Warrington, Pa. 18976
Filed Jan. 21, 1994, Ser. No. 183,865
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—571.1 19 Claims



1. A bathing support apparatus for supporting a person a predetermined height above a bathtub, wherein said bathtub, has a rear wall which abuts against a supporting wall and a front wall parallel to said rear wall, comprising:
a water pervious platform capable of supporting an adult in a supine position wherein a rearward portion of said platform abuts against said supporting wall;
at least one forward leg assembly coupled to said platform, wherein said at least one forward leg assembly engages the floor proximate the bathtub; and
a rearward leg assembly coupled to said platform, wherein said a rearward leg assembly includes a generally U-shaped member having two vertical elements and a connecting cross-member, wherein said cross-member is adapted to engage a bottom of the bathtub proximate said front wall, said a rearward leg assembly and said at least one forward leg assembly supporting said platform at said predetermined height above said platform.

5,367,725
PLAYPEN STRUCTURE
Tsai-Lin Tsai, No. 179, San Kuan Rd., 17 Lin, Hsin Hsing Li, Tainan City, Taiwan, Prov. of China
Filed Mar. 7, 1994, Ser. No. 207,270
Int. Cl.[5] A47D *7/00*
U.S. Cl. 5—99.1 8 Claims



1. A playpen structure comprising a base, a rail unit and a column unit connected between the base and the rail unit, wherein the base comprises:
first and second X-shaped joint/foot elements each compris-

ing a foot and first, second, third and fourth arms radially projecting from the foot;

first and second V-shaped joint/foot elements each comprising a foot and first and second arms radially projecting from the foot;

a first long bar being pivotally linked to the first arm of the first X-shaped joint/foot element;

a second long bars being pivotally linked to the second arm of the first X-shaped joint/foot element;

a third long bar being pivotally linked to the third arm of the second X-shaped joint/foot element;

a fourth long bar being pivotally linked to the fourth arm of the second X-shaped joint/foot element;

a first short bar for pivotally connecting the fourth arm of the first x-shaped joint/foot element with the first arm of the first V-shaped joint/foot element;

a second short bar for pivotally connecting the third arm of the first x-shaped joint/foot element with the first arm of the second V-shaped joint/foot element;

a third short bar for pivotally connecting the second arm of the second x-shaped joint/foot element with the second arm of the second V-shaped joint/foot element;

a fourth short bar for pivotally connecting the first arm of the second x-shaped joint/foot element with the second arm of the first V-shaped joint/foot element.

5,367,726

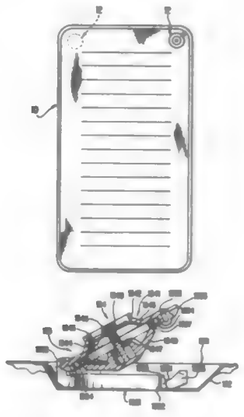
PNEUMATIC SUPPORT SYSTEM

Robert B. Chaffee, 78 Montgomery St., Boston, Mass. 02116

Continuation-in-part of Ser. No. 764,337, Sep. 23, 1991, which is a continuation-in-part of Ser. No. 557,943, Jul. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 384,786, Jul. 25, 1989, Pat. No. 4,977,633. This application Dec. 16, 1992, Ser. No. 992,814

Int. Cl.[5] A47C *27/08*

U.S. Cl. 5—449 20 Claims



1. An inflatable system, comprising: an inflatable body having an interior, an exterior, a port for transfer of air between the interior and exterior and a wall separating the interior and exterior;

a flange attached to the wall proximate to the port and having a throat, defined by a deformable rim around the perimeter thereof, the rim having interior and exterior sides and a top, the throat disposed within the port, and the flange configured in the port to required all air being transferred between the interior and exterior of the body to pass through the throat; and

an assembly for removably covering the throat, the assembly including: (i) a substantially rigid ring-shaped base disposed around the exterior of the rim and configured to limit the radially outward expansion of the rim, (ii) a cap removably attached to the base, and (iii) shape means for restricting radially inward movement of the rim at least when the cap is in a closed position, so that when the cap is in an open position, the throat is uncovered, and when the cap is in a closed position, the throat is covered by the cap.

5,367,727

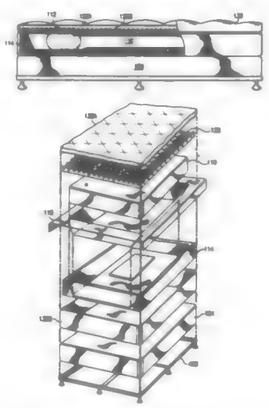
FLOTATION BED WITH ENHANCED POSTURAL SUPPORT

Charles D. Dyer, Jr., Dallas, Tex., assignor to Valwhat Enterprises, Inc., Dallas, Tex.

Filed Oct. 7, 1992, Ser. No. 957,713

Int. Cl.[5] A47C *27/08, 27/18*

U.S. Cl. 5—451 22 Claims



1. A flotation bed, comprising:

a waterproof bag, having a substantially rectangular top surface of substantially predetermined width and length when substantially full;

a first foam pad, having at least one convoluted surface, and having one horizontal dimension at least equal to 80% of said predetermined width, and having another horizontal dimension at least equal to 80% of said predetermined length;

a second foam pad, having at least one convoluted surface, and having one horizontal dimension at least equal to 80% of said predetermined width, and having another horizontal dimension less than 79% of said predetermined length;

said first and second foam pads being mated together with respective convoluted surfaces thereof facing together, and positioned atop said bag;

a cover, removably fastened atop said bag, and holding said pads in place atop said bag.

5,367,728

ADJUSTABLE VENTILATION MATTRESS

Ching-Lung Chang, No. 248, Dalin Rd., Daya Shiang, Taichung Hsien,

Filed Apr. 23, 1993, Ser. No. 51,352

Int. Cl.[5] A47C *27/08*

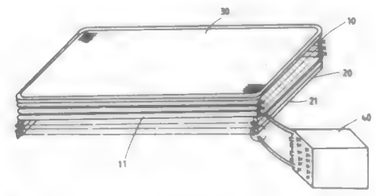
U.S. Cl. 5—453 1 Claim

1. An adjustable ventilation mattress comprising:

(a) an inflatable upper layer defining a plurality of inflatable upper plastic tubes in horizontal and vertical spaced relation extending in a longitudinal direction, each of said inflatable upper plastic tubes having a respective air intake terminal and a respective air outlet terminal;

(b) a plurality of ventilation tubes extending in said longitudinal direction positionally located between adjacently positioned upper plastic tubes, each of said ventilation tubes having vent holes passing through a sidewall thereof:

(c) an inflatable lower layer defining a plurality of inflatable lower plastic tubes in horizontal and vertical spaced relation extending in a transverse direction, under the entire upper layer each of said inflatable plastic tubes having a respective air intake terminal and a respective air outlet terminal;



(d) an enclosed cover layer for enclosing said inflatable upper layer, said ventilation tubes and said inflatable lower layer; and,

(e) air control let means for selectively and individually inflating and deflating said upper and lower plastic tubes, said air controller means being fluidly coupled to each of said air intake and outlet terminals of each of said inflatable upper and lower plastic tubes, said air controller means being fluidly coupled to each of said ventilation tubes for passage of air therethrough.

5,367,729

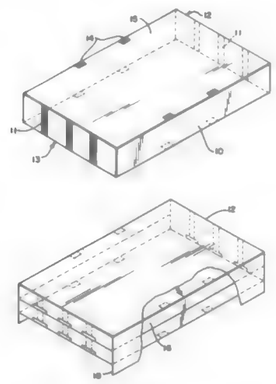
HOSPITAL BEDDING SYSTEM

Norma Lazar, and Albert G. Lazar, both of 1838 Camberley La., Hacienda Heights, Calif. 91745

Filed Oct. 27, 1993, Ser. No. 143,865

Int. Cl.[5] A47G *9/02*

U.S. Cl. 5—494 20 Claims



1. A bedding system comprising (a) a mattress, (b) a bottom sheet releasibly connectable to the mattress via the agency of cooperating hook fasteners on the mattress and loop fasteners on the bottom sheet:

the mattress having opposite top and bottom major surfaces with opposite side edges and end edges and being bounded by head and foot end mattress surfaces and side mattress surfaces normal to the major surfaces, the mattress having a plurality of hook fasteners completely secured only to the mattress head and foot end surfaces for connecting the bottom sheet, the fasteners being disposed in essentially identical predetermined patterns symmetrical about the midlength of each end surface and extending substantially between the mattress major surfaces, whereby the patterns on the end surfaces are essentially the same relative to an actual mattress top surface and a mattress foot end surface regardless of which major surface is the top surface and which end surface is the foot end surface;

the bottom sheet having obverse and reverse surfaces and opposite side edges and head and foot end edges, the distance between the side edges being a selected amount greater than the distance across the mattress major surface between its side surfaces, the distance between the end edges being the distance across the mattress major surface between its end surfaces plus one and one half times the distance between the mattress major surfaces and having a plurality of loop fasteners secured to each end of the bottom sheet on the reverse surface proximate the end edges and disposed in a predetermined pattern related to the predetermined pattern of hook fasteners on the mattress end surfaces so that the loop fasteners overlap at least a portion of the hook fasteners on the mattress end surfaces.

5,367,730

INFANT CUSHION

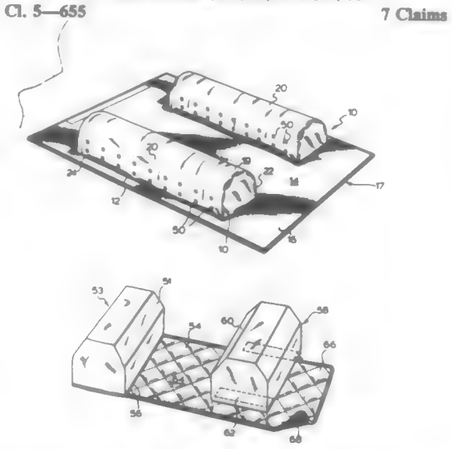
Stephen Sher, 1399 Kennedy Road, Unit 22, Toronto, Ontario, M1P 2L6, Canada

Continuation of Ser. No. 2,596, Dec. 17, 1992, Pat. No. Des. 343,756. This application Oct. 4, 1993, Ser. No. 131,186

Claims priority, application Canada, Oct. 15, 1992, 1510926

Int. Cl.[5] A47D *13/08, 15/00;* A47G *9/00*

U.S. Cl. 5—655 7 Claims



1. A restrainer for limiting an infant's movement comprising, in combination: a planar surface formed of a pair of co-extensive quilted sheets of nylon fabric, one sheet being brushed to form loop fasteners, two elongated support cushions each having a planar base for arrangement in a spaced-apart relationship to each other on said planar surface, and at least one hook fastener strip secured to at least one of said planar bases for releasable attachment of the support cushion to the planar surface.

5,367,731

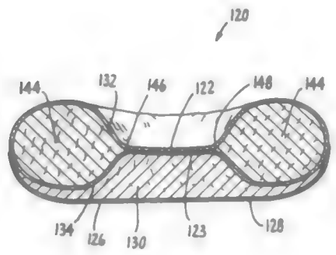
THERAPEUTIC PILLOW HAVING AN EXTERIOR DEPRESSION ON ONE SIDE FOR PROVIDING DIFFERENT DEGREES OF SUPPORT TO A USER'S NECK

Dennis C. O'Sullivan, 123 Juanita, Unit 1-4, Incline Village, Nev. 89451

Continuation-in-part of Ser. No. 590,659, Sep. 28, 1990, Pat. No. 5,168,590. This application Dec. 7, 1992, Ser. No. 986,360

Int. Cl.[5] A47C *20/02*

U.S. Cl. 5—645 6 Claims



1. A two-sided pillow, comprising:

a pillow having first and second opposed rectangular panels that are substantially identical and that each have two long sides and two short sides, each of the first and second panels having a central region, two side regions, and two neck support regions, the two side regions each having a greater area than each of the two neck support regions, the first and second panels being joined together along the two long sides and the two short sides and enclosing pillow fill therebetween, the first and second panels being further Joined together at the central region of each panel to form an exterior depression substantially at the center of each panel;

a third panel attached to the second panel for covering the exterior depression formed in the second panel; and

pillow fill enclosed between the third panel and the second panel;

wherein, each of the side regions of the first panel are separated from a corresponding and opposed one of the side regions of the second panel by a first thickness and each of the side regions of the second panel are separated from the third panel by a second thickness, the first thickness being greater than the second thickness.

5,367,732

TIRE HANDLING TOOL

Donald R. Sugga, Sr., Boyd, Tex., assignor to Tire Shuttle, Inc., Elm Mott, Tex.

Filed Dec. 7, 1992, Ser. No. 986,287

Int. Cl.[5] B25F *1/00*

U.S. Cl. 7—100 7 Claims

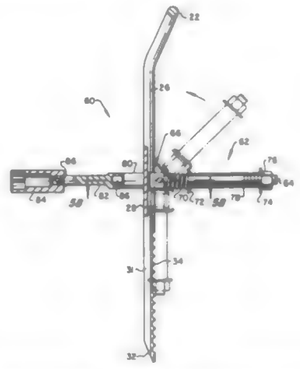
1. A tire handling tool having a longitudinal axis and comprising

two arms parallel the axis and defining a planar, elongated body section;

a transverse handle connecting the arms at one end of the body section, the handle being non-coplanar with the body;

a transverse plate separating and connecting the arms opposite the handle;

a fork section adjacent the plate and having two divergent legs extending opposite the body section; and



a driver stud affixed to the plate and extending perpendicular to the plane of the body.

5,367,733

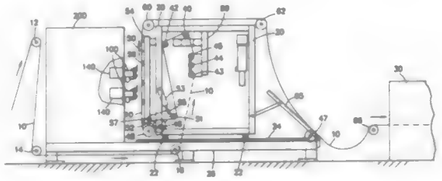
METHOD AND APPARATUS FOR LIQUID DEFLECTION

Bernhard Zeller, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 876,493, Apr. 30, 1992, Pat. No. 5,331,829. This application Mar. 4, 1994, Ser. No. 206,874

Int. Cl.[5] D06B *1/02*

U.S. Cl. 8—149.1 13 Claims



12. A method of dyeing a substrate positioned in front of a spray of liquid marking material, said spray being formed by a means that interacts a stream of liquid marking material and a stream of pressurized control fluid; said method comprising the steps of projecting a plurality of discrete, substantially continuous liquid streams of a marking material along a path which precludes contact with said substrate, forming at least one pressurized dispersing stream of a pressurized control fluid, said dispersing stream being projected in an expanding trajectory directed at said substrate and being oriented to provide for the intersection of said dispersing stream with at least one respective liquid marking stream, said dispersing stream having sufficient lateral width at the location of intersection with at least one liquid marking stream to envelope laterally respective stream of marking material a shower of diverging droplets of said marking material and to project at least a portion of said diverging droplets onto said substrate, said pressure associated with said dispersing stream being rapidly modulated so as to form from said continuous stream of a series of spaced discrete bursts of droplets directed at said substrate, each burst containing a controlled quantity of marking material, and thereby meter a controllable quantity of marking material onto said substrate at a rate determined by the frequency and duration of said bursts, and moving said substrate to a position which brings a portion of said substrate in contact with a portion of said shower of droplets and diverting said shower of droplets which do not initially strike said substrate away from at least one of said substrate and said interaction means by a first liquid marking material shield having a first trough means for diverting said liquid marking material away from said substrate mounted above said interaction means, a second liquid marking material shield mounted transverse to said first liquid marking material shield and having a second trough means and a third trough means for diverting said liquid marking material away from said substrate and a third liquid marking material shield mounted transverse to said second liquid marking material shield for diverting liquid marking material away from said substrate.

5,367,734

PLIABLE ABRASIVE PELLET FOR ABRADING FABRICS

Raymond Terry, Post Office Box 2, Pickwick Dam, Tenn. 38365

Continuation of Ser. No. 787,554, Nov. 4, 1991, abandoned. This application Aug. 27, 1993, Ser. No. 113,612

Int. Cl.[5] B24B *1/00*

U.S. Cl. 8—159 8 Claims

1. A method for the abrasive treatment of fabrics comprising the steps of:

providing pliable plastic pellets, said pellets constructed of a plastic that is pliable in water that is sufficiently hot for washing fabrics and having an abrasive filler substantially uniformly distributed throughout said pellets, said abrasive filler being of sufficient quantity, and being adapted, to abrade fabrics when pellets are washed with fabrics; and

washing fabric in hot water in the presence of said pellets.

5,367,735

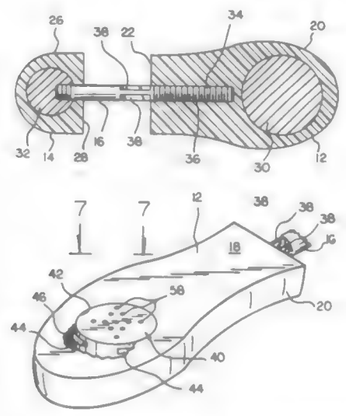
WEIGHTED INSERT FOR FOOTWEAR

Sandra N. Mosier, and Dan L. Mosier, both of 6401 S. 66th St., both of Lincoln, Nebr. 68516

Filed Nov. 23, 1992, Ser. No. 979,907

Int. Cl.[5] A43D *3/00*

U.S. Cl. 12—128 B 9 Claims



1. A new and improved weighted insert for footwear comprising:

a first portion generally in the shape of the sole of a human foot,

a second portion generally in the shape of the heel of a human foot,

means for connecting said first and second portions in a juxtaposed longitudinal manner, and

means for weighting at least one of said first or second portions such that said insert is adapted to be placed into an article of footwear to cause said article of footwear to have negative buoyancy in water,

wherein said means for weighting comprises a metal disk embedded in said first portion, wherein said metal disk includes means for removably retaining said disk in said first portion,

wherein said removable disk is cylindrically shaped and said retaining means comprises a cylindrically shaped recess in said first portion for receiving said disk therein and a plurality of resilient detents on said disk adapted to engage a plurality of retaining grooves in the wall surface of said recess when said disk is inserted into said recess.

5,367,736

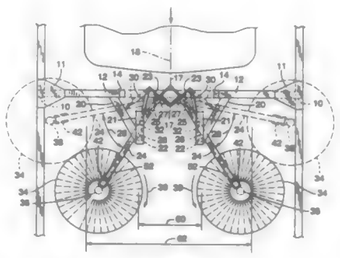
ROTATING BRUSH FOR WASHING THE SIDES OF VEHICLES

Charles M. Kaady, Portland, and Robert E. Bowman, Beaverton, both of Oreg., assignors to Kaady Chemical Corp., San Leandro, Calif.

Filed Jan. 21, 1994, Ser. No. 184,213

Int. Cl.[5] B60S *3/06*

U.S. Cl. 15—53.3 3 Claims



1. A rotatable brushing apparatus for washing the generally vertical surfaces of a moving vehicle in an automatic wash, comprising:

a generally symmetrical frame for supporting a brushing assembly, the frame having a longitudinal centerplane extending in the direction of motion of the moving vehicle;

a generally horizontally disposed support arm, one end of the support arm being pivotally mounted on the frame at a point located above the top of the vehicle and substantially in the centerplane of the frame;

a generally vertically disposed shaft;

a bracket attached to the shaft at its upper end, the bracket extending parallel to the direction of the support arm and toward the centerplane of the frame;

pivot means attached to the support arm adjacent its other end, the pivot means having a horizontal axis, the axis being perpendicular to the longitudinal centerline of the support arm, the pivot means being attached to the bracket at a point interiorly offset from the centerline of the shaft, whereby the lower end of the shaft is normally urged by gravity toward the one end of the support arm;

first spring means attached at one end to the horizontally disposed support arm and at the other end to the frame and adapted to urge the other end of the support arm to pivot toward the center plane of the frame;

a brush mounted on the shaft; and

motor means mounted on the shaft for rotating the brush such that the motion of the brush at the surface of the vehicle is in the same direction as the motion of the vehicle.

5,367,737

LOCKING HINGED DUST PAN

Peter S. Vosbikian, Morristown, N.J., and Haig Vartanian, Cheltenham, Pa., assignors to Quickie Manufacturing Corporation, Cinnaminson, N.J.

Filed Feb. 23, 1993, Ser. No. 21,201
Int. Cl.[5] A47L 13/52
U.S. Cl. 15—257.2 10 Claims



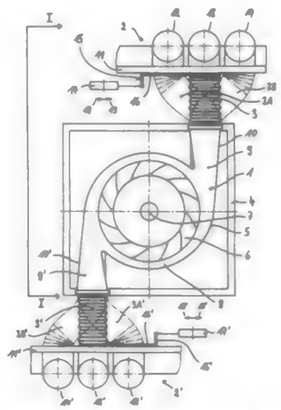
1. A dust pan assembly, comprising:
a base member generally defining a pan with an open front, the base member having a bottom, an open front scoop portion, and two side walls and a rear wall extending upwardly around the bottom and terminating at said open front scoop portion;
a bracket on the rear wall remote from the open front scoop portion, said bracket having a pair of spaced opposed surfaces defining a handle-receiving cavity therebetween;
pivot means coupled to the bracket defining a pivot axis parallel to the rear one of the walls;
an elongated dust pan handle coupled to the bracket and having a bottom end arranged in the handle-receiving cavity to pivot on the pivot means;
a detent arrangement coupled between the bracket and the dust pan handle, the detent arrangement defining at least two locking positions around the pivot axis, at which the dust pan handle is fixable by the detent arrangement relative to the base member;
the detent arrangement comprising locking means protruding from the dust pan handle toward one of the spaced surfaces of the bracket, and wherein the bracket has two locking receptacles for receiving said means protruding from the dust pan handle, the dust pan assembly being selectively lockable at said at least tow locking positions by rotating the dust pan handle around the pivot axis to align with a corresponding one of the locking receptacles;
the dust pan handle defines a longitudinal axis and has an elongated side wall extending in the direction of the longitudinal axis;
the dust pan handle includes a bore in the side wall;
said locking means comprises a pin movably received in the bore in the side wall of the dust pan handle;
the pin having extended and retracted positions;
the locking means further comprising a spring normally biasing the pin in the extended position; wherein the locking receptacles include locking holes recessed in at least one of the opposed surfaces of the bracket complementary to the pin, the pin being manually depressible against the bias of the spring from the locking holes for releasing said detent arrangement, and extendable by the normal bias of the spring into the locking holes for locking the dust pan handle in one of the locking positions; and,
means for removable attachment of a broom, including a first broom receptacle means on the dust pan handle, dimensioned to engage a broom handle, and, a second broom receptacle means formed at least partly by the two spaced surfaces of said bracket, said two spaced surfaces forming an opening between them for receiving the broom handle when the dust pan assembly is in a parallel position wherein the base member occupies a plane parallel to the longitudinal axis of the handle.

5,367,738

DEVICE FOR CLEANING ROWS OF MACHINES

Reiner Junger, Friedberg, Germany, assignor to Ernst Jacobi GmbH, Germany

Filed Feb. 17, 1993, Ser. No. 18,512
Claims priority, application Germany, Apr. 21, 1992, 4213120
Int. Cl.[5] A47L 5/14
U.S. Cl. 15—312.2 12 Claims



1. A device for cleaning rows of textile machines while travelling along the row of machines, comprised of a blower guided above the machines and having a ventilator housing with an air duct connected to a pressure side of the blower, a flexible hose being attached to the air duct, a distributor station comprising a slider containing a through hole, the flexible hose being attached to the slider to communicate with the through hole, at least two cleaning hoses each being attached to the distributor station via a respective one of a row of air conducting connectors, the two hoses having separate openings directed toward the machines, the slider being movable along the row of connectors; whereby when the slider is moved, its through-hole successively coincides with each of the connectors and air from the air duct is distributed via the flexible hose to one of the two cleaning hoses via a connector with which the through-hole coincides.

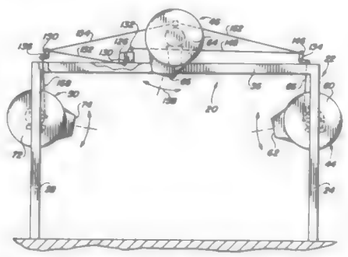
5,367,739

OSCILLATING AIR BLOWERS FOR DRYING VEHICLES

Archie L. Johnson, 7601 N. Central Ave., #28, Phoenix, Ariz. 85020

Filed Jul. 13, 1993, Ser. No. 90,772
Int. Cl.[5] F26B 5/00
U.S. Cl. 15—316.1 8 Claims

1. A blowing device for blowing a stream of air in an oscillating flow pattern, said blowing device comprising in combination:
a. a frame member:
b. a first motor for rotating a first driveshaft, said first motor being mounted to said frame member;
c. a first circular fan coupled to said first driveshaft for being rotated thereby about a first axis of rotation, said first circular fan having a centrally-located inlet for admitting air, said first circular fan having an outer periphery and causing air to be discharged from the outer periphery thereof when said first circular fan is rotated by said first motor;
d. a first housing encircling said first circular fan, said first housing receiving the air discharged from the outer periphery of said first circular fan, said first housing including an outlet nozzle for directing the discharged air through said nozzle in a predetermined direction;
e. first support means for rotatably supporting said first housing about a second axis of rotation coincident with said first axis of rotation to pivotally support said first housing about said first circular fan, said first support means including a rocker arm coupled to said first housing and rotatably supported by a bearing assembly; and
f. oscillating means coupled to said frame member and further coupled to said first housing for causing said first housing to oscillate about said first circular fan in order to blow the stream of air discharged by said first circular fan in an oscillating flow pattern.

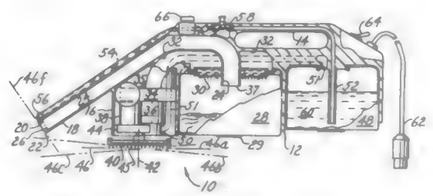


5,367,740

HAND-HELD SURFACE CLEANING APPARATUS

Kimothy R. McCray, 1925 College Ave., Apt 188, San Bernardino, Calif. 92407

Filed Jul. 21, 1993, Ser. No. 96,012
Int. Cl.[5] A47L 5/26
U.S. Cl. 15—320 10 Claims



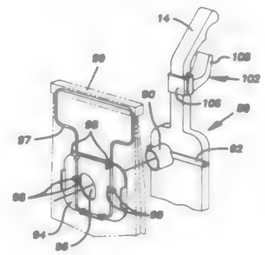
1. A portable cleaner apparatus for cleaning a workpiece surface, the apparatus comprising:
(a) a housing having a nozzle extremity, a suction opening being formed at the nozzle extremity and a suction passage extending within the housing and terminating at the suction opening;
(b) a motor drive supported by the housing;
(c) a brush member rotatably supported relative to the housing on a brush axis and operatively coupled to the motor drive, the brush member extending on the brush axis in a direction away from the housing beyond the nozzle extremity for selective engagement of desired circumferential portions of the brush member with the workpiece surface;
(d) a vacuum pump fluid connected to the suction passage for drawing unwanted material into the suction passage through the suction opening;
(e) supply means for holding a cleaning fluid;
(f) at least one fluid delivery passage for the cleaning fluid, the delivery passage being supported by the housing and having a fluid outlet proximate the suction opening;
(g) a pressure pump fluid connected to the supply means for selectively feeding the cleaning fluid through the delivery passage and from the fluid outlet; and
(h) collector means for receiving the unwanted material from the suction passage.

5,367,741

VACUUM CLEANER WITH IMPROVED ASSEMBLY

Leonard D. Hampton; Vincent L. Bobrosky, and Paul J. Burress, all of Normal, Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 962,412, Oct. 16, 1992, Pat. No. 5,309,601.
This application Jan. 18, 1994, Ser. No. 182,344
Int. Cl.[5] A47L 9/00
U.S. Cl. 15—323 2 Claims



1. An upright vacuum cleaner, comprising:
a floor engaging unit, said floor engaging unit being supported above the floor by a plurality of ground engaging wheels and having a rotary brush mounted thereto, a height adjustment means being associated with at least some of said wheels to adjust the position to said brush relative to said floor;
an electric motor, said motor being mounted to said floor engaging unit and rotatably driving said rotary brush, said motor providing suction which is communicated to an area adjacent said brush to remove material from the floor;
a handle, said handle being pivotally mounted to said floor engaging unit and providing a conduit for communicating said material removed from the floor to a disposable vacuum bag, wherein said handle is provided with a hose hook adapted to support a hose during storage thereof, said hose hook comprising a cylindrical base member and an upstanding hook, said base member providing an aperture which fits around the handle to enable the hose hook to slidably mount over the handle, said handle providing a stop means to limit the movement of the hose hook along the length of the handle.

5,367,742

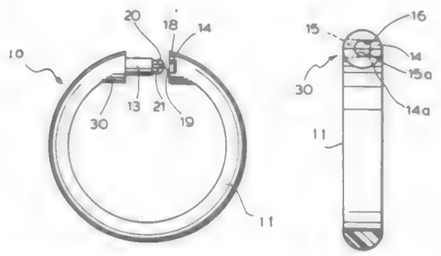
CLICK-LOCK RING FOR HANGING SHOWER CURTAINS

Stanley Bindman, Roslyn Heights, N.Y., assignor to Creative Bath Products, Inc., Central Islip, N.Y.

Filed Jun. 29, 1993, Ser. No. 85,016
Int. Cl.[5] E05D 15/00
U.S. Cl. 16—87.2 2 Claims

1. A one-piece flexible molded shower curtain hanger having:
(a) a split ring body portion having opposed free ends adapted to be selectively opened and closed by mating male and female portions formed integrally with said free ends;
(b) said male portion comprises a pin element, perpendicular

to the radius of the ring at the free ends, having a bulbous head portion of predetermined first outer diameter;
(c) said head portion being slotted to permit said outer diameter to be compressed;
(d) said female portion being in the form of an axially extending recess aligned with said pin including combined offset lateral first and second openings intersecting the sides of said ring as well as the free end facing said pin;



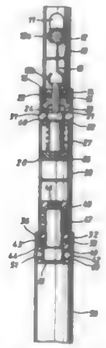
(e) the equatorial portions of said ring are free of openings; said recess having a small diameter throat opening approximately equal in diameter to that of the bulbous head ahead of a larger diameter head-receiving chamber; whereby said bulbous head is adapted to be inserted into and removed from said recess with a click locking action by flexing of said ring.

5,367,743

TELESCOPIC HANDLE FOR LUGGAGE CARTS

Fu-Jung Chang, 8-5 Fl., No. 191, Fu Hsing N. Rd., Taipei, Taiwan, Prov. of China

Filed Mar. 29, 1993, Ser. No. 38,790
Int. Cl.[5] B62B *1/00*
U.S. Cl. 16—115 **6 Claims**



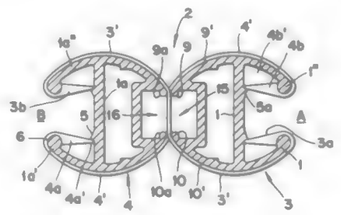
1. A telescopic handle for carts, comprising:
a first tube comprising two opposing slots longitudinally formed therethrough near one end thereof;
a second tube comprising two holes formed therethrough near one end thereof;
a locking element comprising a first section attached in said first tube and a relatively large second section attached in said second tube, said second section of said locking element comprising two holes transversely formed therethrough, said holes formed through said locking element comprising a diameter greater than that of said holes formed through said second tube;
a passage being axially formed through said locking element and comprising a first section and a relatively large second section;
a plunger comprising a first section being insertable through said first section of said passage, a second section comprising a cross-sectional profile being marginally smaller than that of said second section of said passage and a third section comprising a cross-sectional profile being smaller than that of said second section of said passage;
a nut attached to said third section of said plunger;
a spring mounted on said third section of said plunger so that said spring is compressed between said locking element and said nut;
a bolt being insertable through said slots;
a pulling element linking said bolt to said first section of said plunger;
two balls being respectively sited in said holes formed through said locking element and comprising a diameter greater than the wall thickness of said second section of said locking element;
said plunger being biasable, by means of said spring, to a first position relative to said locking element so that said second section of said plunger is aligned with said holes formed through said locking element for pushing said balls partially into said holes formed in said second tube, thereby retaining said first tube relative to said second tube;
said plunger being moveable, by pulling said bolt upwards, to a second position with respect to said locking element so that said third section of said plunger is aligned with said holes formed through said locking element for allowing said balls to be pushed partially into said holes formed through said locking element, thereby allowing said first tube to be further inserted into said second tube.

5,367,744

HINGE CONNECTION

Erik Ahlberg, S:t Eriksgatan 109, 113 31 Stockholm, and Kurt Ohlson, Harvägen 3B, 178 00 Ekerö, both of Sweden

PCT No. PCT/SE91/00090, § 371 Date Sep. 17, 1992, § 102(e) Date Sep. 17, 1992, PCT Pub. No. WO91/12402, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 14, 1990, Ser. No. 927,521
Claims priority, application Sweden, Feb. 14, 1990, 90 00536
Int. Cl.[5] E05D *1/00, 3/06*
U.S. Cl. 16—227 **16 Claims**



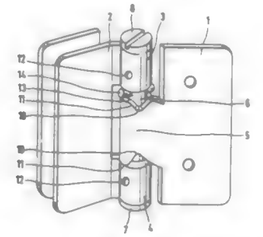
1. A hinge for pivotally connecting at least two panels, comprising:
a first hinge element and a second hinge element, each of said hinge elements being attachable to one of the two panels;
a flexible band extending between the first and second hinge elements;
means arranged on one end of said band for tensioning said band, said first hinge element having a curved edge surface for engaging the tensioning means;
said tensioning means including means for allowing a user to pivot the tensioning means about the curved edge surface so as to increase the tension in said band; and
said tensioning means also includes an abutment surface extending away from one side of the band for engaging said curved surface on said first hinge element, wherein said abutment surface is formed by a surface of a wedge-shaped member on the end of said one side of said band;
means, projecting from the first hinge element, for abutting a tip of the tensioning means and maintaining a level of tension in said band.

5,367,745

HINGE FOR SHOWER STALL DOORS

Heinz-Rudolf Roloff, Hüttenallee 101, D-4150 Krefeld, Germany

Filed Apr. 15, 1993, Ser. No. 47,745
Claims priority, application Germany, Apr. 18, 1992, 9205399[U]
Int. Cl.[5] E05F *1/02*
U.S. Cl. 16—312 **9 Claims**



1. A hinge for a shower stall door, comprising:
a first hinge member having a pair of axially spaced apart aligned sleeves;
a second hinge member having a sleeve aligned with said sleeves of said first hinge member and received therebetween, said sleeves of said first member being axially spaced by a distance greater than an axial length of said sleeve of said first member, one of said members being provided with means for mounting a shower stall door thereon, the other of said members being provided with means for mounting said hinge upon a support;
a pintle extending through said sleeves for relative angular displacement of said members about an axis of said pintle;
a radial throughbore formed in at least one sleeve of one of said members enabling anchoring of said pintle angularly thereto;
a notch formed in an end of one of said sleeves opening into a space between said sleeves of said members along said pintle;
a radial bore formed in said pintle in said space; and
a stop pin removably received in said radial bore in said pintle and projecting radially therefrom to engage by gravity in said notch and position said hinge members angularly at a predetermined rest position of said door upon swinging of said door from said rest position.

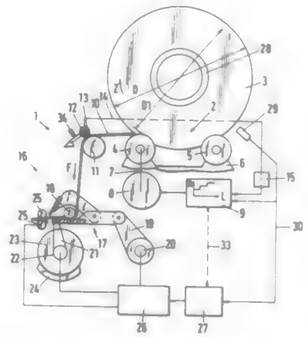
5,367,746

DRIVE FOR A COMBER

Heinz Clement; Hansulrich Eichengerger, both of Winterthur, and Oliver Wuest, Seuzach, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

PCT No. PCT/CH92/00190, § 371 Date Jun. 18, 1993, § 102(e) Date Jun. 18, 1993, PCT Pub. No. WO93/06275, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 18, 1992, Ser. No. 64,152
Claims priority, application Switzerland, Sep. 20, 1991, 2801/91-3
Int. Cl.[5] D01G *19/08*
U.S. Cl. 19—115 R **10 Claims**

1. A method of feeding a layer of lap from a lap roll comprising the steps of
mounting a roll of lap on a pair of lap rollers;
driving at least one of said lap rollers in a direction to unwind a layer of lap from said lap roll during a winding-off interval; and



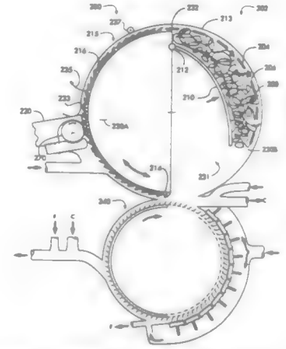
increasing the speed of said one lap roller during said winding-off interval to maintain a constant thickness in the lap layer unwound from the lap roll.

5,367,747

NEEDLE-BASED APPARATUS FOR INDIVIDUALIZING FIBERS AND OTHER TEXTILE ENTITIES FOR TESTING PURPOSES

Frederick M. Shofner; Mark G. Townes, both of Knoxville, and Gordon F. Williams, Norris, all of Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

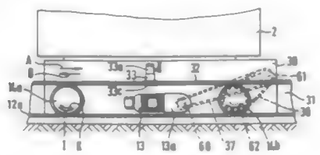
Filed Dec. 31, 1992, Ser. No. 999,305
Int. Cl.[5] D01B *3/04*; G01L *5/04*
U.S. Cl. 19—65 R **13 Claims**

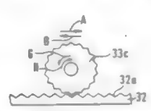


1. Needle-based apparatus for sampling entities included in a mass of fibrous material, said apparatus comprising:
a drum in the form of an at least partially hollow cylinder rotatable about an axis, said drum in turn comprising:
a sample holder portion including a circumferential cylindrical wall segment having perforations and an interior side against which a mass of fibrous material is pressed such that portions of the fibrous material project radially outwardly through said perforations, and
a combing portion including a circumferential segment having card doffer wire on a surface of said circumferential segment projecting radially outwardly;
a needle sampler having a plurality of needle elements positioned adjacent said drum such that entities from the projecting portions are loaded onto said needle sampler as said cylindrical wall segment of said sample holder portion rotates in a first direction past said needle sampler;

an element arranged to selectively engage said needle elements along at least a portion of their lengths for clamping loaded entities on said needle sampler and for permitting subsequent gradual release of individual entities from said needle sampler onto said card doffer wire as said circumferential segment of said card doffer wire portion rotates in the first direction past said needle sampler.

5,367,748
LOCATION DETERMINING DEVICE FOR A TRAVELLING BALE OPENER
Ferdinand Leifeld, Kempen, and Josef Temburg, Jüchen, both of Germany, assignors to Trützschler GmbH & Co. KG, Monchengladbach, Germany
Division of Ser. No. 899,844, Jun. 17, 1992, Pat. No. 5,285,552.
This application Nov. 4, 1993, Ser. No. 145,618
Claims priority, application Germany, Jun. 17, 1991, 4119888
Int. Cl.[5] D01G *7/04*
U.S. Cl. 19—80 R **5 Claims**





1. A bale opener for removing fiber tufts from top surfaces of fiber bales assembled in a series, comprising

(a) a carriage for travelling back-and-forth along a generally horizontal, first path of travel along the fiber bale series;

(b) a tower mounted on the carriage for travel therewith;

(c) a detaching device extending from the tower; the detaching device having a detaching element for penetrating into the bale surfaces to remove fiber tufts therefrom during travel of the tower; said carriage, said tower and said detaching device forming components of a travelling assembly;

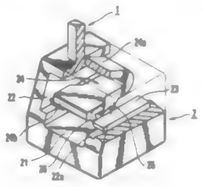
(d) holding means for vertically displaceably mounting said detaching device in said tower, whereby said detaching device is movable relative to the tower along a generally vertical, second path of travel; and

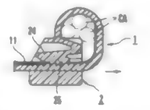
(e) a position determining device for determining the location of said detaching device along at least one of said first and second paths of travel; said position determining device including

(1) a first element forming a position transmitter and being mounted on a component of said travelling assembly; and

(2) a second element forming an absolute position indicator and being stationarily mounted along one of said first and second paths of travel for generating signals in said second component as a function of displacement of said detaching device along at least one of said first and second paths of travel; said first and second paths of travel; said first and second elements cooperating without contacting one another.

5,367,749
CABLE TIE
Yasuichi Takeuchi, Tokyo, Japan, assignor to Takeuchi Industrial Co., Ltd., Japan
Filed Sep. 8, 1993, Ser. No. 118,136
Claims priority, application Japan, Sep. 18, 1992, 4-71035
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—16 PB **6 Claims**





1. A cable tie comprising:

an elongated belt-like band portion which has a sawtooth belt portion formed on one surface thereof and is wound on cables to be tied;

a lock portion, integrally formed on a proximal end of said band portion, for engaging with said sawtooth belt portion, thereby locking said band portion, wherein

said lock portion has an internal space formed therein, the internal space including a slot in which said band portion is inserted from a distal end side thereof,

the internal space being provided with:

an elastically deformable sawtooth lock piece, having a proximal end coupled to said lock portion, and a distal end portion having sawteeth for engaging with said sawtooth belt portion, thereby locking said band portion,

stopper means for suppressing excessive deformation of said sawtooth lock piece when a force in a pull-out direction is applied to said band portion;

said stopper means comprising:

hook portions integrally formed with said sawtooth lock piece, and

stopper portions integrally formed with said lock portion to oppose said hook portions, and

when a force in a pull-out direction is applied to said band portion to deform said sawtooth lock piece, said hook portions engaging with said stopper portions.

5,367,750
WIRING HARNESS CLIP
Mark C. Ward, 1061 Troon, St. Clair, Mich. 48079
Filed Nov. 26, 1993, Ser. No. 158,641
Int. Cl.[5] B65D *63/00;* **F16L** *3/00*
U.S. Cl. 24—16 PB **10 Claims**

1. A clip for holding wiring at a predetermined location with respect to a base structure, said clip comprising:

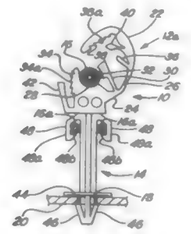
a head, said head comprising:

a lower portion having a wiring seat of predetermined shape for restably receiving thereupon the wiring, said lower portion having a flexible retention arm located on a first side of said wiring seat, said flexible retention arm terminating in a wiring contact surface, said lower portion further having a first toothed surface member located opposite said first side of said wiring seat;

an upper portion having a flexible biasing arm, said upper portion further having a second toothed surface member; and

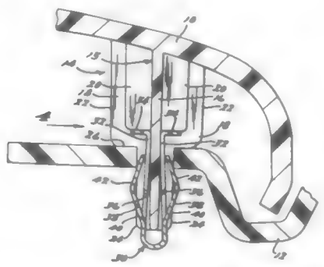
hinge means connected with said upper and lower portions for providing pivoting of said upper portion with respect to said lower portion; and

means for connecting said head to the base structure to thereby locate said head at the predetermined location with respect to the base structure;



wherein as said upper portion is pivoted toward said lower portion, said wiring contact surface of said flexible retention arm is flexed toward said wiring seat by said biasing arm abutting thereagainst due to pivoting of said upper portion with respect to said lower portion, said first and second toothed surface members mutually gearably engaging to thereby hold said upper portion at a selected pivotal location with respect to said lower portion.

5,367,751
PANEL LOCATOR AND ATTACHMENT APPARATUS
William L. DeWitt, Lake Orion, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 30, 1993, Ser. No. 56,155
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—295 **18 Claims**

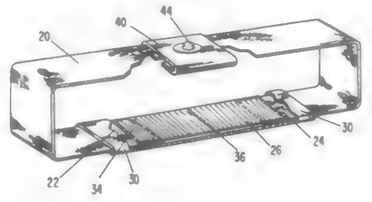


1. A locator and attachment apparatus for use in attaching a cover panel to a trim bezel comprising:

a projecting member extending outward from said cover panel, said projecting member including a wall portion and side portions connected to said wall portion and positioned transversely thereto; and

a U-shaped clip having a locking projection disposed over said wall portion wherein said locking projection extends outwardly, away from said wall portion, said clip mounted to said projecting member such that said projecting member engages the trim bezel prior to said locking projections engaging the trim bezel such that said projecting member first locates the proper position of the cover panel on the trim bezel prior to attaching the cover panel to the trim bezel through use of said clip.

5,367,752
EXPANDABLE WRAPPING RIBBON
Roy L. Petty, 148 Rio Vista Pl., Santa Fe, N. Mex. 87501
Filed Dec. 10, 1993, Ser. No. 164,904
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—301 **18 Claims**



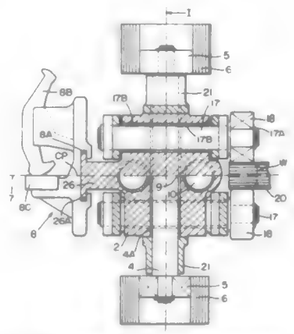
1. An apparatus for wrapping packages comprising:

a ribbon comprising a first end and a second end;

elastic means for connecting said first ribbon end to said second ribbon end; and

a generally tubular flexible sheath, completely enveloping said elastic connecting means, wherein said sheath comprises an opaque material stiffer than a material of said ribbon.

5,367,753
TENTERING CLAMP AND TENTERING CHAIN COMPRISING SUCH CLAMPS
Adolf Mueller, Weissensberg, Germany, assignor to Lindauer Dornier GmbH, Lindau, Germany
Filed Oct. 21, 1993, Ser. No. 140,244
Claims priority, application Germany, Oct. 24, 1992, 4235994
Int. Cl.[5] D06C *3/04*
U.S. Cl. 26—73 **19 Claims**



16. An endless tentering chain, comprising a plurality of tentering clamps and articulating links linking said tentering clamps to each other to form said endless tentering chain, each of said tentering clamps comprising two clamp bodies forming a pair of clamp bodies, a clamping section secured to each of said clamp bodies for clamping a material edge in a clamping plane, at least one guide bar for each pair of clamp bodies, said at least one guide bar passing through both of said clamp bodies slideably mounted on said at least one guide bar for moving toward each other so that a pitch between said clamp bodies of said pair is reduced and for moving away from each other so that said pitch is increased, said at least one guide bar comprising limit stop elements limiting a movement of said clamp bodies forming a pair away from each other to a maximum pitch, pitch control lever links and journals journalling said lever links to said clamp bodies of a pair for controlling said moving of said clamp bodies toward and away from each other, and at least one pitch control roller rotatably mounted

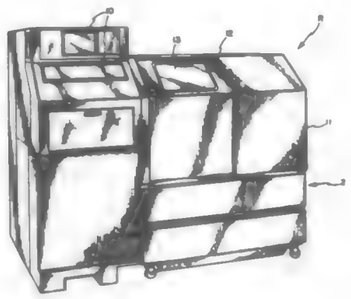
for engaging a control rail for adjusting said pitch by controlling said moving of said clamp body.

5,367,754

GANG TOOLING FOR A COMPUTERIZED NUMERICALLY CONTROLLED LATHE

Terrence M. Sheehan, Elmire; Ramesh M. Kamath, Elmire Heights; Harold E. Walburn, and Jack F. Sheehan, both of Elmira, all of N.Y., assignors to Hardinge Brothers, Inc., New York, N.Y.

Filed Mar. 29, 1991, Ser. No. 677,580
Int. Cl.[5] B23B *29/24;* B23D *39/02*
U.S. Cl. 29—27 C 59 Claims



1. A gang tooling for a machine tool having a main spindle with an axis of rotation, a longitudinal carriage movable along a z-axis parallel to the main spindle axis and cross-slide carried by the longitudinal carriage and movable along a x-axis transverse to the main spindle axis, said gang tooling comprising:

longitudinal plate;

first means for removably securing said plate to the cross-slide such that said plate is transversely disposed relative to the main spindle axis when secured to the cross-slide;

a plurality of tool holders removably secured to said plate along a row,

second means for removably securing said plurality of tool holders to said plate along the row such that each of the tool holders is individually removably secured to any one of a plurality of adjustable longitudinal positions along said plate;

said first means cooperating with the cross-slide such that said plate can be removed from the cross-slide without disturbing and removing the tool holders installed on said plate, thereby permitting the tool holders to remain secured to said plate at their original relative positions.

5,367,755

EXPANSION TOOL

Robert D. Wood, 624 N. Owen, Pasco, Wash. 99301

Filed Mar. 15, 1993, Ser. No. 31,545
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—227 9 Claims

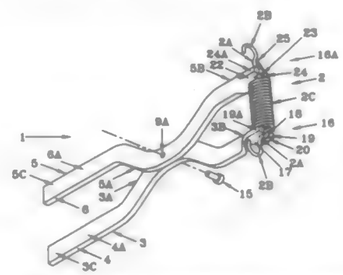
1. An expansion Tool comprising:

A. a pair of elongated side members having a 1st and a 2nd surface and terminating at one end in handles and at the opposing end in furcated jaws;

B. an elongated side member aperture intermediate between the handle and the furcated jaw penetrating from the 1st through the 2nd surface of each elongated side member; said elongated side member apertures of each of the pair of elongated side members aligned to receive a pin pivotally attaching the pair of elongated side members;

C. the furcated jaws each presenting at least two tines; the tines of said furcated jaws defining slots to receive brake spring shanks or hooks; said slots each sharing a common axis such that a plane passing through the tines of one of the furcated jaws and perpendicular to the common axis shared by the slots is parallel to a plane passing through the tines of the second furcated jaw;

D. an upstanding arm rigidly affixed to one tine of each



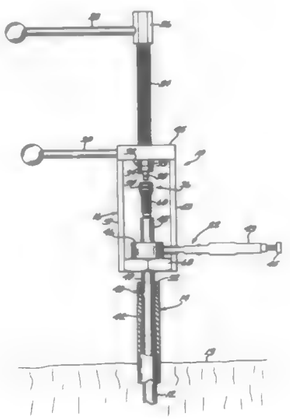
furcated jaw; each upstanding arm projecting away from the opposing furcated jaw at an acute angle relative to the plane passing through the furcated jaws and projecting toward the opposing tine of the respective furcated jaw.

5,367,756

GAS METER RISER TRANSITION FIELD COMPLETION TOOL

Mark E. Huetinck, Brea, Calif., assignor to R. W. Lyall & Company, Inc., Corona, Calif.

Filed Dec. 7, 1993, Ser. No. 163,292
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—237 16 Claims



1. A gas meter riser field assembly tool for drawing a gas riser pipe with an internal finishing sleeve of a predetermined diameter over a flared out enlargement of a selected diameter less than said predetermined diameter and formed in the exposed extremity of a deformable plastic pipe by a completion spigot having a bore therethrough, said tool comprising:

an upstanding open frame formed with a central axis, a ring formed at the bottom end with a clearance bore aligned on said axis for passage therethrough of said plastic pipe;

a yoke at the top end of said frame formed with a threaded drive bore disposed on said axis;

a coupler for anchoring said ring to said top end of said riser pipe;

a hand grip on said tool frame; and

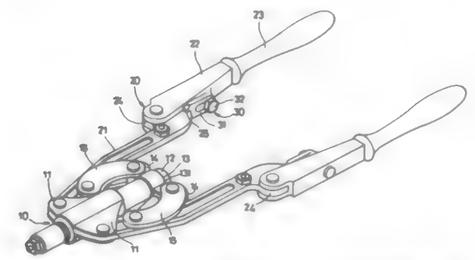
a threaded drive rod screwed into said drive bore and including at its top end a driver and at its bottom end a thrust fitting for, upon advancement of said drive rod with said coupler attached to said top end of said riser pipe, engaging said spigot inserted in said top end of said plastic pipe to define said enlargement and, upon continued advancement of said drive rod, draw said riser pipe longitudinally relative to said plastic pipe, to draw said finishing sleeve over said enlargement to press the wall of said plastic pipe defining said enlargement radially inwardly on said spigot whereby said frame may be positioned on said riser pipe, said coupler actuated to couple it thereto and said drive rod advanced in said drive bore to engage said thrust fitting with said spigot to, upon further rotation, draw said riser pipe relative to said plastic pipe to draw said finishing sleeve over said flared out enlargement to press the wall of said plastic pipe defining said enlargement radially inwardly to form a gas tight seal between said spigot and said plastic pipe.

5,367,757

FOLDABLE RIVETER FRAME

Yang-Ting Liu, No. 76-1, 4 Lin, Shang-Guan Li, Yuan Li, Miao-Li Hsien, Taiwan, Prov. of China

Filed Dec. 15, 1993, Ser. No. 167,075
Int. Cl.[5] B21J *15/38*
U.S. Cl. 29—243.527 4 Claims



1. A foldable riveter frame, said riveter frame having a nose piece and collet arrangement for receiving and pulling a rivet therein, said frame comprising:

(a) a longitudinally extended base frame assembly having a pair of lug members extending from opposing sides thereof;

(b) a pull shaft secured in a rear end of said base frame assembly and reversibly displaceable in said longitudinal direction relative to said base frame assembly and adapted to be connected to to said collet arrangement for pulling said rivet;

(c) a pair of clamping plates clamped to said pull shaft, said clamping plates having a pair of rollers located on respective roller shafts and mounted between said clamping plates on opposing sides of said pull shaft and in contact therewith;

(d) foldable handle means for folding said riveter frame, said foldable handle means including a pair of frontal handle frames, a pair of intermediate handle frames and a pair of grip members, each of said frontal handle frames having a front end section mounted pivotally to a respective one of said lug members, and a rear end section having a pivot through opening and a notch formed within an end surface thereof, each of said frontal handle frames further having an extension push block member for contacting a respective roller and displacing said shaft, each of said intermediate handle frames having a respective front end pivotally connected, by way of a pivot pin passing through said pivot through opening, to said frontal handle frame and a rear end connected to a respective one of said grip members;

(e) a pair of link members pivotally coupled on a first end to a respective frontal handle frame and on a second opposing end to a respective roller shaft; and,

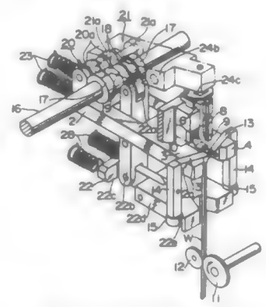
(f) locking means mounted to each of said intermediate handle members for fixedly coupling each of said intermediate handle members to each of said frontal handle members, said locking means including a latch member having a longitudinally directed oblong opening passing therethrough a bolt member for passing through said oblong opening into a securement hole formed in said intermediate handle frame member, and a rubber cushion member between said latch member and said intermediate handle member, said latch member having a frontal end for releasable engagement within said notch formed within said end surface of said frontal handle member.

5,367,758

METHOD FOR MANUFACTURING SLIDE FASTENER COUPLING ELEMENTS

Koitsu Morioka, and Yasuhiko Matsuda, both of Toyama, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 25, 1993, Ser. No. 81,103
Claims priority, application Japan, Jul. 6, 1992, 4-178287
Int. Cl.[5] B21D *53/52*
U.S. Cl. 29—410 1 Claim



1. A method of successively forming slide fastener coupling elements, the method comprising the steps of:

supplying a blank wire of a generally Y-shape cross section intermittently at a predetermined pitch;

successively cutting the blank wire transversely into slices of a predetermined thickness;

forming a bulge for a head portion of each of the successive coupling elements preclenching opposite leg portions of the coupling element to prevent any crack from occurring in a possible surface-treated section of the coupling element when the opposite leg portions are clenched; and

collecting the resulting individual coupling elements for attaching the coupling element to a slide fastener tape.

5,367,759

METHOD OF ASSEMBLING A TUBULAR PROBE

Kathryn D. Loew, Bensonville, and Anthony M. Oliver, Northlake, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 13, 1993, Ser. No. 136,639
Int. Cl.[5] B21D *39/00*
U.S. Cl. 29—512 3 Claims

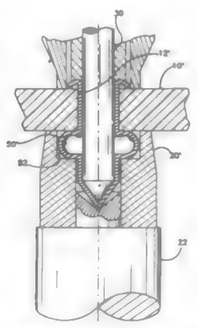
3. A method of assembling a relatively thin walled metal tube having an open end and a closed end to a non-metallic plate comprising:

(a) forming an aperture in the plate and inserting the closed end of the tube therethrough;

(b) positioning and axially supporting with an annular tool the open end of the tube relative to the plate;

(c) inserting a mandrel in the tube and supporting the closed end of the tube therewith;

(d) surrounding and registering another tool against the closed end of the tube;
(e) moving said another tool toward the plate and bulging a portion of said tube annularly against one side of the plate;

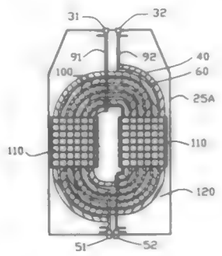


(f) moving said annular tool toward the opposite side of the plate and flaring the end of the tube outwardly against the plate, thereby clamping said plate between the flared and bulged portion of the tube; and,
(g) removing said tools and mandrel.

5,367,760
METHOD OF MAKING A NARROW PROFILE TRANSFORMER

William E. Terlop, 25269 Bunting Cir., Land O Lake, Fla. 34639, and Serge Casagrande, 1318 Norwick Dr., Lutz, Fla. 33549

Filed Apr. 26, 1993, Ser. No. 52,499
Int. Cl.[5] H01F *4/06*
U.S. Cl. 29—605 **5 Claims**

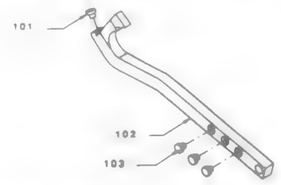


1. The method of forming an improved narrow profile transformer, comprising the steps of:
positioning an elongated spacer between a primary winding material and a secondary winding material;
spirally winding the primary winding material, the elongated spacer and the secondary winding material within a geometric plane to form a primary winding means from said primary winding material and to form a secondary winding means from the secondary winding material with the secondary winding means being interleaved with the primary winding means;
removing the elongated spacer;
removing the secondary winding means;
severing the secondary winding means to form a plurality of secondary turn means;
connecting the plurality of secondary turn means to form said secondary turn means;
connecting input connection means to the primary winding means;
connecting output connection means to the secondary winding means;
providing an insulation between the primary winding means and the secondary winding means;
inserting the secondary winding means into the primary winding means with the secondary winding means being interleaved within the primary winding means; and
securing the secondary winding means relative to the primary winding means.

5,367,761
PRINTED CIRCUIT BOARD ASSEMBLY EXTRACTOR TOOL

Zbigniew Kabat, Chicago, and Richard A. Walton, Carol Stream, both of Ill., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Sep. 28, 1992, Ser. No. 952,230
Int. Cl.[5] H01R *43/00*; **H05K** *13/00*
U.S. Cl. 29—764 **8 Claims**



1. An extraction tool for removing a circuit card from a subsystem, a handle being rigidly attached to said circuit card, said subsystem including a card retainer of flat flexible material having two side members parallel to said circuit card which is positioned therebetween, and an end member connecting said side members and positioned across the edge of said circuit card, thereby retaining said circuit card in said subsystem, said extraction tool comprising:
a first member having a center line, a first end and a second end;
a second member having a center line, a first end rigidly attached to said first end of said first member in such a manner as to cause the center line of said second member to be displaced a first angle from said center line of said first member; and
a third member having a first end rigidly attached to said second end of said second member and a second end being perpendicularly displaced a fixed distance from said center line of said first member, a card retainer slot positioned in said third member to engage said card retainer, and effective to bend said card retainer away from said circuit card when a force is applied to said extraction tool to extract said circuit card from said subsystem, whereby said second end of said third member mates to said handle and said first end of said third member mates with said subsystem, allowing a force applied to said second end of said first member to bend said card retainer away from said circuit card and force said handle in a direction perpendicular to said handle thereby extracting said circuit card from said subsystem.

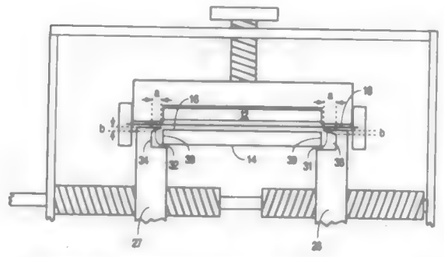
5,367,762
DECAPPING MACHINE FOR PACKAGED INTEGRATED CIRCUITS

David R. Disko, Austin, and Joe G. Durand, Round Rock, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 23, 1992, Ser. No. 996,237
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—764 **26 Claims**

1. An apparatus for decapping a packaged integrated circuit,

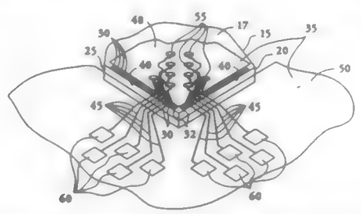
said packaged integrated circuit including a main body comprising a first body portion attached to a second body portion through an interface layer, comprising:
a first blade including a chisel tip disposed along a first side of said first blade to engage said interface layer;
a second blade including a blocking member disposed along a first side of said second blade to engage the second body portion of the integrated circuit;
a support structure, said first and second blades being coupled to the support structure with the first side of said first blade being opposed to the first side of said second blade;
a device holder having a blocking member to engage the first body portion of the integrated circuit, the device holder being coupled to said support structure; and
a motion actuator coupled to the support structure for decreasing a distance between said first and second blades while decreasing lateral distance between the blocking member of said second blade and the blocking member of said device holder.



5,367,763
TAB TESTING OF AREA ARRAY INTERCONNECTED CHIPS

Ken Lam, Colorado Springs, Colo., assignor to Atmel Corporation, San Jose, Calif.

Filed Sep. 30, 1993, Ser. No. 129,753
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—827 **18 Claims**

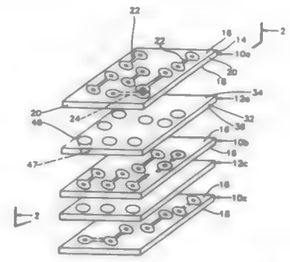


1. A method of making a device for connecting an integrated circuit chip to external circuitry comprising:
providing an integrated circuit chip having bond pads disposed near a perimeter of a chip face;
positioning a flexible tape having an electrically insulative substrate and a plurality of electrically conductive leads having inner portions and outer portions, said inner portions extending from said bond pads to interconnect pads disposed within a central region of said chip face, said outer portions extending from between said bond pads to peripherally disposed test terminals such that said tape is adjacent to said chip face and said leads are aligned with said bond pads;
bonding said bond pads to said leads at areas of said leads between said interconnect pads and said test terminals, thereby positioning said interconnect pads within said perimeter;
testing said integrated circuit chip, including channeling electrical signals via said test terminals; and
severing said leads proximate to said perimeter of said chip, thereby disconnecting both said outer portions and said test terminals from said chip.

5,367,764
METHOD OF MAKING A MULTI-LAYER CIRCUIT ASSEMBLY

Thomas H. DiStefano, Bronxville; Scott G. Ehrenberg, Fishkill, and Igor Y. Khandros, Peekskill, all of N.Y., assignors to Tessera, Inc., Elmsford, N.Y.

Filed Dec. 31, 1991, Ser. No. 815,401
Int. Cl.[5] H05K *3/36*
U.S. Cl. 29—830 **16 Claims**



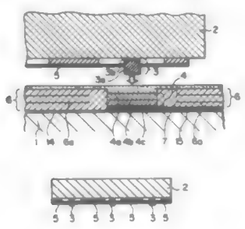
1. A method of making a multi-layer circuit assembly comprising the steps of:
(a) stacking elements including a plurality of circuit panels having electrical conductors thereon and at least one generally lamellar interposer so that one said interposer is disposed between each pair of adjacent circuit panels and so that major surfaces of said interposers confront major surfaces of said circuit panels, so that preselected interconnect locations on the major surfaces of each said interposer are aligned with interconnect locations on the confronting major surfaces of adjacent circuit panels, and so that electrically conductive material carried on said circuit panels abuts electrically conductive material on said interposer at each set of aligned interconnect locations, at least some of the conductive material at each set of aligned interconnect locations being flowable;
(b) causing said flowable conductive material to flow and join said conductive material on said circuit panels and said interposer into continuous electrical conductors extending between adjacent circuit panels at said aligned interconnect locations; and
(c) capturing flowable electrically conductive material at each set of aligned interconnect locations in at least one reservoir within at least one of said elements, at least one said element including a flowable dielectric material extending over at least one major surface, the method further comprising the step of causing said flowable dielectric material to flow into intimate contact with an immediately adjacent major surface of one of said elements concomitantly with the step of causing said conductive material to flow, so that said flowable dielectric materials fills irregularities on such surface of said element, at least some of said flowable dielectric material being captured in said reservoirs along with said flowable conductive material.

5,367,765

METHOD OF FABRICATING INTEGRATED CIRCUIT CHIP PACKAGE

Teruo Kusaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 753,580, Sep. 3, 1991, abandoned. This application Dec. 23, 1992, Ser. No. 995,525
Claims priority, application Japan, Aug. 31, 1990, 2-230418
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 9 Claims



1. A method of fabricating an integrated circuit chip package forming a multi-chip module including a plurality of IC chips each having a plurality of metal bumps formed on one surface thereof and connected to a single, flat silicon circuit board having in at least a portion of its surface a predetermined wiring pattern through said metal bumps by means of flip-chip interconnection, said method comprising the steps of:

forming a first flat film of an organic insulating material on said one surfaces of said IC chips up to a first thickness;

forming a plurality of first through-holes in said first flat film at predetermined positions, and forming said metal bumps within said first through-holes;

forming a second flat film of an organic insulating material on a surface of said silicon circuit board up to a second thickness;

forming in said second flat film a plurality of second through-holes, said second through-holes being located at positions corresponding respectively to said metal bumps of said IC chips;

filling said second through-holes with solder metal, respectively;

coating at least one of said first flat film and said second flat film with adhesive of thermosetting organic insulating material;

placing said IC chips on said silicon circuit board such that each of said metal bumps of said IC chips mates with a corresponding solder metal, said adhesive of thermosetting organic insulating material thereby adhering said first flat film on said IC chips and said second flat film on said silicon circuit board to each other and surrounding each of said metal bumps of said IC chips in contact therewith; and

performing a heat treatment to connect each of said metal bumps and said solder metal by melting said solder metal and to bond said first and second flat films to each other by thermosetting said adhesive.

5,367,766

ULTRA HIGH DENSITY INTEGRATED CIRCUIT PACKAGES METHOD

Carmen D. Burns; Jerry Roane, and James W. Cady, all of Austin, Tex., assignors to Staktek Corporation, Austin, Tex.

Division of Ser. No. 884,066, May 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 561,417, Aug. 1, 1990. This application Apr. 5, 1993, Ser. No. 43,196
Int. Cl.[5] H05K *13/00*
U.S. Cl. 29—848 15 Claims

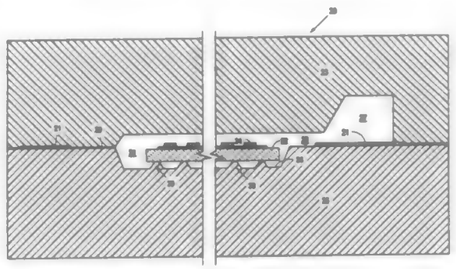
1. A method of forming a thin and durable integrated circuit element comprising the steps of:

(a) providing an integrated circuit element formed in a semiconductor substrate, said integrated circuit element having an upper surface, a lower surface and a perimeter wall; and

(b) reducing the height of said perimeter wall of said integrated circuit die element by lapping said lower surface.

3. A method of forming a thin and durable integrated circuit package comprising the steps of:

(a) placing a substantially planar integrated circuit element formed in a semiconductor substrate in a mold cavity having a ceiling, a floor, and a perimeter wall;



(b) supporting said integrated circuit element at its upper or lower surfaces with a plurality of support pins extending from the floor or ceiling surfaces of the cavity to contact and support said integrated circuit die element in a position substantially parallel to the floor or ceiling of the mold cavity;

(c) transferring molding compound into said mold cavity;

(d) allowing said molding compound to set and become hardened casing; and

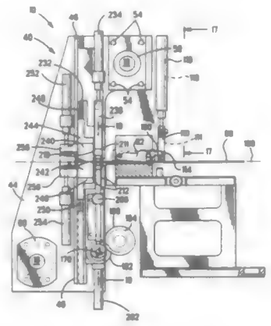
(e) removing said integrated circuit package from said mold cavity.

5,367,767

APPARATUS AND METHOD FOR POSITIONING AND FORMING A DRAIN WIRE OF A CABLE

Gregory F. Deuel, Manheim, and Kenneth F. Folk, Harrisburg, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Mar. 22, 1993, Ser. No. 34,051
Int. Cl.[5] H01R *43/00*; B23P *23/00*
U.S. Cl. 29—868 22 Claims



1. A method of positioning and forming a drain wire of a cable by means of an automated machine having:

a holder for receiving and holding at least one of said cables so that it can freely rotate about its axis;

clamping apparatus selectively operable to engage said cable thereby inhibiting said free rotation or to disengage said cable thereby permitting said free rotation thereof;

sensing means for sensing the presence of said wire when in a first predetermined position;

apparatus for rotating said cable about its axis, when said cable is free to rotate, until said drain wire is in said first predetermined position; and

apparatus for forming said drain wire into a desired shape and position with respect to said cable,

said method comprising the steps:

(1) placing at least one cable in said holder;

(2) rotating said cable only until said sensing means senses the presence of said drain wire and said drain wire is in said first predetermined position; then

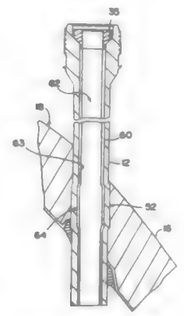
(3) forming a portion of said drain wire to a desired shape and position with respect to said cable.

5,367,768

METHODS OF REPAIRING INCONEL 600 NOZZLES OF PRESSURIZED WATER REACTOR VESSELS

Sterling J. Weems, Chevy Chase, Md., assignor to MPR Associates, Inc., Alexandria, Va.

Filed Dec. 17, 1992, Ser. No. 992,224
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—890.031 20 Claims



1. A method of repairing a cracked tubular nozzle of a pressure vessel having an external wall forming an interface between the interior of the vessel and externally thereof comprising the steps of:

inserting a roll tool within the lumen of said cracked tubular nozzle made of Inconel 600 material and extending through the external wall to provide communication between the interior of the vessel and externally thereof;

mechanically rolling the inside diameter of a portion of the nozzle disposed within the external wall with the roll tool;

applying a roll pressure in the range of 50,000 to 150,000 psi along the inside diameter of the nozzle with the roll tool to form a circumferential rolled section in the nozzle to prevent leakage from the interior of the vessel to externally thereof; and

withdrawing the roll tool from the nozzle.

5,367,769

METHOD OF MANUFACTURING A ROTARY SCANNING DRUM

Ronald L. Searcy, Londonderry, N.H.; Calvin M. Winey, Carlisle, Mass., and Mark W. Magee, Derry, N.H., assignors to Howtek, Inc., Hudson, N.H.

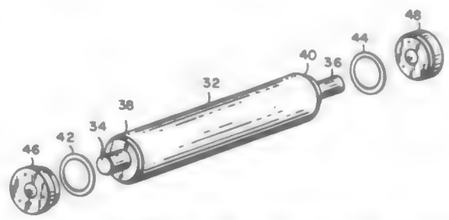
Filed Sep. 25, 1992, Ser. No. 951,133
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—895.22 6 Claims

6. A method for manufacturing a rotary scanner drum for use in both transmissive and reflective scanners, wherein an inner wall surface and the outer wall surface of the drum are concentric, comprising the steps of:

. mounting transparent shell stock in a cylindrical fixture such as a mandrel, the cylindrical shell formed thereby initially having an internal and external radius of curvature which varies both azimuthally and longitudinally by an amount that would normally preclude its use as a scanner drum, the mandrel being of a length comparable to that of the shell to be formed into the scanner drum, and the mandrel being of a diameter slightly less than the smallest inside diameter of the shell,

fixing the mandrel to the shell by attaching a pair of end plates to the mandrel after the latter is inserted into the shell, together with a corresponding pair of gaskets which are positioned intermediate the respective end plates and mandrel, the ends of the mandrel and the inner ends of the end plates being beveled in order to cradle the gaskets between the end plates and the mandrel;

securing the end plates to the mandrel with fasteners in a manner such that as the fasteners are tightened, the gaskets are increasingly forced against the shell, thereby locking it against the mandrel,



mounting the mandrel in a machining tool such as a lathe, and turning the outer surface of the shell against a tool to progressively remove outer material from the shell to bring it to a desired outer diameter, so that the outer surface of the shell is thus formed concentric with the longitudinal axis of the mandrel, to effectively define the rotational axis of the shell, and

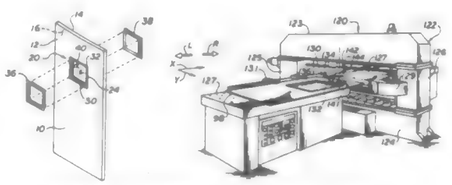
fitting a pair of end caps to the shell to form the drum, the end caps formed to have an accurately defined axis of rotation so that, together, they define the axis of rotation of the resultant drum, and so that the rotational axis effectively defined by the mandrel during processing of the shell is preserved by means of the end caps.

5,367,770

METHOD FOR EMBOSSING INDENTED DOOR LIGHT OPENING EDGE

John F. McCaughey, Hamilton, Ohio, assignor to Masco Industries, Inc., Taylor, Mich.

Filed May 3, 1993, Ser. No. 55,389
Int. Cl.[5] B21D *31/00, 22/00*; B26D *3/08*
U.S. Cl. 29—897.32 14 Claims



1. A method for producing a panel having a light assembly aperture with embossed indented edges around a periphery of the aperture, said method comprising the following steps:

scoring out an outline of a light assembly aperture in a panel blank, thereby forming an aperture blank interior of the scored outline and aperture edges surrounding the aperture blank and the outline,

forming an indented embossment along the aperture edges of

the aperture along and exterior to the scored outline by mounting the panel blank having said aperture therein in an automated numerically controlled punch press machine having at least one cooperating die and punch set operatively mounted therein, and

operating the machine using the one cooperating die and punch set in an automated nibbling function along the aperture edges to form the embossment with embossed indented aperture edges of the light assembly aperture.

5,367,771

ELECTRIC SHAVER WITH TWO ROWS OF OUTER BLADES

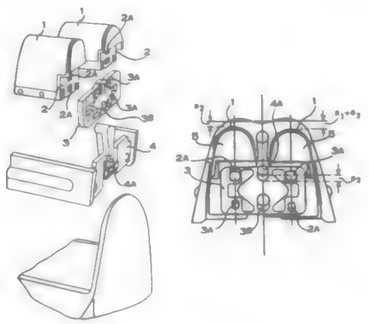
Kiyotaka Mukai, Sumoto, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 11, 1993, Ser. No. 59,270

Claims priority, application Japan, May 13, 1992, 4-120697; Jul. 28, 1992, 4-201165

Int. Cl.[5] B26B *19/02*

U.S. Cl. 30—43.92 **19 Claims**



5. An electric shaver, comprising:

two rows of outer blade holders having outer arch shaped blades disposed thereon;

a frame; and

linking means for connecting said two rows of outer blade holders to each other and to said frame such that said two rows are moveable in one direction relative to said frame and parallel to each other, said two rows are moveable in the one direction over a predetermined distance independently of each other, and said two rows are moved together when one of said two rows is caused to move beyond the predetermined distance.

5,367,772

HAIR CLIPPER

Hitoshi Ogawa, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 20, 1993, Ser. No. 64,684

Claims priority, application Japan, May 26, 1992, 4-133021; Jun. 25, 1992, 4-166581

Int. Cl.[5] B26B *19/20*

U.S. Cl. 30—201 **6 Claims**

1. In a hair clipper comprising:

a housing having a rearward end and an opposed forward end with a cutter head including a stationary blade with a toothed leading edge and a movable blade with a toothed leading edge mounted for reciprocation in a reciprocation direction with said toothed edges overlapping in a hair shearing relation;

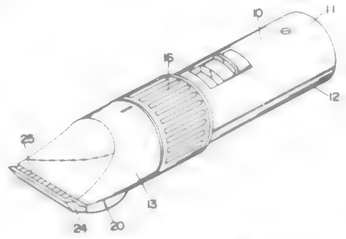
said stationary blade having an outer scalp engaging surface and an inner surface facing toward said movable blade;

the outer surface of said stationary blade along its leading edge being included relative to said inner surface so as to produce a shorter length of hairs which is cut when there is a lesser amount of overlap in said hair shearing relationship;

at least one of said stationary blade and said movable blade being a longitudinally movable blade mounted for movement along a longitudinal axis extending in a direction generally perpendicular to said reciprocation direction so as to adjust a cut length of hairs sheared between said blades;

characterized in that an adjustor handle is mounted on said housing for rotational movement about said longitudinal axis, and that linkage means is disposed between said longitudinally movable blade and said adjustor handle for moving said longitudinally movable blade to increase and decrease said length of hairs which is cut when said adjustor handle is rotated about said longitudinal axis;

said linkage means comprising a linkage element extending along said longitudinal axis to have a first end and a second end;



said linkage element coupled at said first end to said longitudinally movable blade to be movable together therewith along said longitudinal axis, said linkage element formed at said second end with a protection for engagement into a corresponding groove formed in said adjustor handle;

said groove extending in an interior surface of said adjustor handle in an inclined manner with respect to a circumferential direction to have front and rear ends spaced circumferentially and longitudinally, said groove formed along its length with a plurality of Slope edges alternated by level edges for sliding contact with said projection,

said level edges running in a direction perpendicular to said longitudinal axis such that said longitudinally movable blade is moved longitudinally in a stepwise manner upon rotation of said adjustor handle and such that said longitudinally movable blade is kept at predetermined longitudinal positions while said projection is in contact with said level edges.

5,367,773

RECHARGEABLE BATTERY-POWERED TREE PRUNING DEVICE

Everette P. Robbins, Rte. 1, Box 142-C, Hudson, N.C. 28638

Filed Jun. 24, 1993, Ser. No. 80,722

Int. Cl.[5] B26B *15/00*

U.S. Cl. 30—228 **7 Claims**

1. A pruning device comprising:

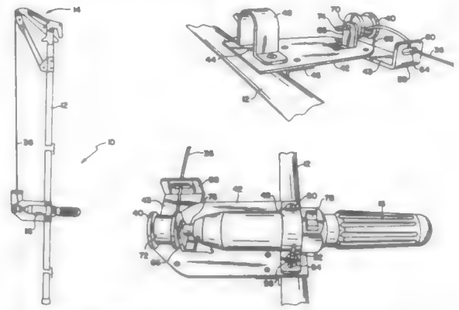
an elongate support member having distal and proximal ends;

a cutting mechanism mounted on the distal end of the support member, said cutting mechanism including a pivotally mounted cutting member and a fixed portion, said fixed portion being constructed and arranged to at least partially surround a limb to be pruned;

actuating means having a motor and a drive element rotated by said motor for selectively actuating said cutting member;

means for mounting said actuating means to said support member adjacent the proximal end of said support member; and

means for operatively coupling said actuating means to said cutting member, said coupling means including a cable having first and second ends, said first end of said cable being coupled to said cutting member, said second end of said cable being operatively coupled to said actuating means, said actuating means further including an axle and a spool member mounted an the axle for rotational movement therewith, said second end of said cable being coupled to said spool member, said spool member including a



circumferential surface extending about a rotational axis of said spool member, said drive element being coupled to said axle wherein the rotation of said drive element rotates said axle and thus said spool member causing a portion of said cable to wrap around said circumferential surface of said spool member thereby rectilinearly moving said cable which in turn causes said cutting member to pivot towards said fixed portion to cut the limb.

5,367,774

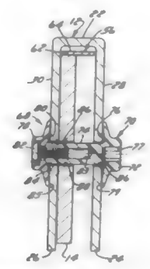
RESILIENT LOCK FOR A HAND TOOL

Ernest D. Labarre, Waunakee, and Jerrold N. Austin, Baraboo, both of Wis., assignors to Fiskars Inc., Wausau, Wis.

Filed Jun. 29, 1993, Ser. No. 84,791

Int. Cl.[5] B26B *13/28, 13/00*

U.S. Cl. 30—262 **14 Claims**



1. A hand tool comprising:

first and second working pieces disposed for cooperative engagement about a pivot point;

first and second members secured to a respective one of said working pieces and resiliently biased to an open position, said members having respective first and second slots formed therethrough and being substantially in registration when said working pieces are in closed position; and

a resilient lock slidable within said slots for securing said working pieces in said closed position, said lock including a button having a head merging into a shank extending through said slots, said button being made of a yieldable material, said lock further including a cap joined to said button by said shank,

wherein said head and said cap each have an engageable surface and a face, said face being concavely shaped so that said head and said cap are effectively in contact with said tool in a respective annular region of each of said faces, and further wherein the area of said regions is proportional to the degree of compressive force applied to said lock, thereby determining the degree of frictional, locking, engagement of said faces with said tool.

5,367,775

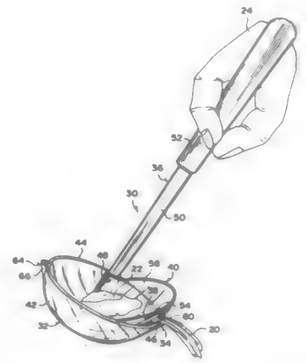
SKIMMING LADLE

Sidney Tong, 5 Anderson Ave., North Babylon, N.Y. 11703, and Shu W. Lee, 90 Knob Hill Rd., Morganville, N.J. 07751

Filed Dec. 1, 1993, Ser. No. 158,785

Int. Cl.[5] A47J *43/28*

U.S. Cl. 30—324 **2 Claims**



1. A skimming ladle comprising:

a) a bowl that is capable of holding a liquid with a fatty oil therein, said bowl including a substantially hemispherical concave wall configuration with a circular upper edge thereabout, said bowl further including a socket portion located at said circular upper ledge of said bowl at a ninety degree location from a spout;

b) said spout formed on one side of said bowl, said spout including a substantially V-shaped wall configuration located at said circular upper edge of said bowl;

c) a handle that is fixed to said bowl, extends therefrom for manipulation of said bowl, said handle including a shank portion having a bottom end in engagement with said socket portion of said bowl and a hand grip portion located on a top end of said shank portion to be gripped by a hand of a person using said skimming ladle;

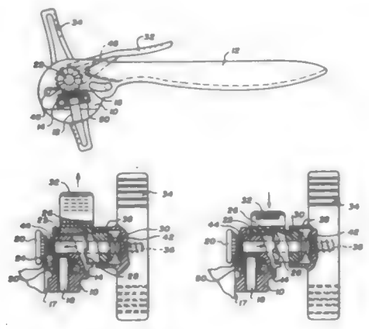
d) means in said bowl for guiding the liquid away from the fatty oil when the liquid is poured out of said spout, so that the liquid will be free of the fatty oil when exiting said spout, said liquid guiding means including a V-shaped separator gate built into said bowl behind said spout, said separator gate having a bottom aperture so as to define a passageway for the liquid in said bowl to exit from said spout below the fatty oil floating on top of the liquid;

e) means for preventing spillage of the fatty oil out of said bowl when the liquid is poured out of said spout, said spillage preventing means including a half dome shaped guard member extending upwardly from said circular upper edge of said bowl above said spout, said guard member having an opening therethrough at said spout and in front of said separator gate, so as to allow the liquid to exit from said spout; and

f) said bowl, said spout, said separator gate and said guard member being integral and fabricated out of a durable material said durable material being made out of a one piece clear plastic construction, so as to make it easy to see

when to stop pouring the liquid out of said spout and keep all of the fatty oil within said bowl.

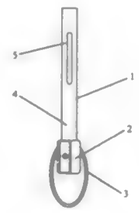
5,367,776
CAN OPENER
Wun C. Chong, 69 Wallace Place, Delta, British Columbia, V4M 3S2, Canada
Filed Nov. 1, 1993, Ser. No. 144,465
Int. Cl.[5] B67B *7/46, 7/72*
U.S. Cl. 30—417 17 Claims



1. A can opener comprising:
a housing having a handle;
a cutting wheel having a cutting edge for severing a can wall, said cutting wheel defining a cutting wheel axis;
a traction wheel having a gripping surface to engage a can, said traction wheel defining a traction wheel axis;
means rotatably mounting said traction wheel and said cutting wheel in said housing such that their axes are substantially perpendicular and said wheels are positioned adjacent and spaced apart from each other to define a gap to accept a can to be opened, one of said wheels being movable towards the other to engage and lock said can between said cutting wheel and said traction wheel so that said cutting wheel acts to sever said can wall and said traction wheel acts to move said can past said cutting wheel;
a first thrust surface associated with said housing and a spaced, adjacent, second thrust surface associated with said movable wheel;
said first and second thrust surfaces comprising cooperable cam surfaces rotatable relative to each and being formed with projections and recesses, the projections on one surface being able to abut the projections on the other surface to define a first position for the first and second thrust surfaces where said can is engaged and locked between said cutting wheel and said traction wheel and the projections on one surface being received within the recesses on the other surface to define a second position where said gap is relatively wide; and
means associated with one of said wheels to permit rotation thereof.

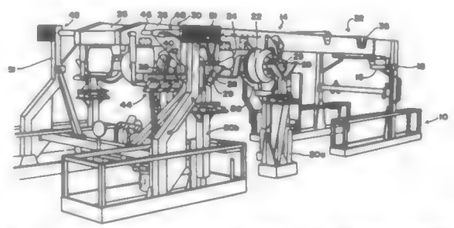
5,367,777
WOOD PENCIL SHARPENER AND POCKET HOLDER
Caroline P. Nguyen, 980 Kiely Blvd. #119, and James M. Harrell, Jr., 990 Kiely Blvd. #E, both of Santa Clara, Calif. 95051
Filed Oct. 25, 1993, Ser. No. 140,570
Int. Cl.[5] B43L *23/00*
U.S. Cl. 30—459 1 Claim

1. A wood pencil sharpener and pocket holder comprising:
a hollow tubular member for holding a pencil;
a pocket clip attached to said tubular member near one end thereof;
a pencil sharpener attached to the opposite end of said tubular member;
a cover member for collecting pencil shavings covering said sharpener and detachable from said sharpener for emptying said shavings from said cover member, said pocket clip



being so attached to said tubular member that, when said clip is attached to the edge of a shirt pocket, said sharpener is located beneath said clip allowing a pencil to be removed by lifting the same from the hollow tubular member without having to detach the clip from the edge of the shirt pocket.

5,367,778
TANDEM AXLE ALIGNMENT DEVICE
Douglas J. O'Hara, Chatham, Canada, assignor to Navistar International Transportation Corp., Chicago, Ill.
Filed Feb. 22, 1993, Ser. No. 20,495
Int. Cl.[5] G01B *5/25, 11/27*
U.S. Cl. 33—193 21 Claims

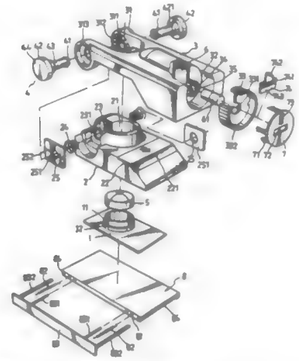


17. A device for engaging a vehicle chassis, the chassis having mounted thereon a pair of tandem axles to be aligned perpendicular to frame rails of the chassis and parallel to one another, said device creating the alignment and comprising:
first and second spaced apart pairs of spaced apart towers for engaging the tandem axles in a manner to maintain them parallel to one another;
means for fixing the position of a rear end of said chassis; and
means for moving the front end of said chassis to a predetermined position relative to the towers to position the chassis perpendicular to the axles.

5,367,779
LASER MARKER
Roger Lee, Taipei, Taiwan, Prov. of China, assignor to Cheng Long Plastic Co., Ltd., Taipei, Taiwan, Prov. of China
Filed Aug. 18, 1993, Ser. No. 107,604
Int. Cl.[5] G01C *5/00*
U.S. Cl. 33—290 6 Claims

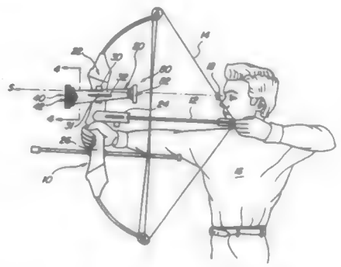
1. A laser marker comprising a casing, a level bearing plate fastened to said casing at the bottom of said casing, a level mounted on said level bearing plate, and an adjustment rack pivotably fastened to said casing, said level bearing plate comprising a hollow bearing block inserted into a vertical through hole on said casing to hold said level about said casing, said

casing comprising a front battery chamber covered by a battery lid, two horizontal through holes bilaterally aligned on a rear end of said casing, said adjustment rack comprising two axle bearings pivotably fastened to the two horizontal through holes of said casing by two axle caps, an internal space in said



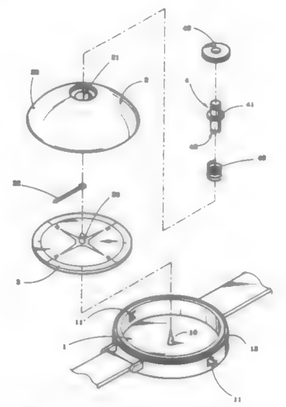
adjustment rack, a light concentrator located in said internal space, a tubular flange located in a recessed portion of said adjustment rack in front of said internal space and a rotary socket revolvably mounted on said tubular flange, said rotary socket comprising a center through hole aligned with said light concentrator.

5,367,780
ARCHERY BOW TORQUE SIGHT
Huey P. Savage, 21902 Erie La., Lake Forest, Calif. 92630
Filed Jul. 30, 1993, Ser. No. 99,519
Int. Cl.[5] F41G *1/467*
U.S. Cl. 33—265 27 Claims



1. An archery torque bow sight for attachment to the riser of an archery bow having a bowstring and a peep sight mounted on the bowstring, said torque bow sight comprising:
an elongated support bracket for adjustable attachment to the riser of an archery bow and having front and rear mounting ends;
front sight means defined by a front housing having a first side wall, a second side wall having a pair of spaced-apart vertical parallel slots formed therein, and a top and bottom wall;
front mounting means for adjustably mounting said front housing to said front mounting end of said bracket both vertically and horizontally with respect to said support bracket;
rear sight means defined by a rear housing having a first and a second side wall, and a top and bottom wall;
rear mounting means for adjustably mounting said rear housing to said rear mounting end of said bracket both vertically and horizontally with respect to said support bracket;
a front vertical sight line member centrally mounted within said front housing;
a rear vertical sight line member centrally mounted within said rear housing and having a diameter equal to or less than said front vertical sight line member.

5,367,781
DIRECTIONAL INDICATOR
Simon Hsu, 10 Fl., No. 413, Lin San N. Rd., Taipei, Taiwan, Prov. of China
Filed Aug. 18, 1993, Ser. No. 107,993
Int. Cl.[5] G01C *17/04, 17/14*
U.S. Cl. 33—349 3 Claims



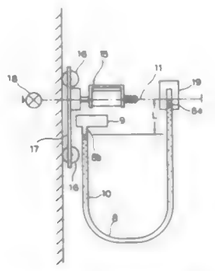
1. A directional indicator comprising:
a casing for fastening around a wrist of a user, said casing comprising a bottom, side walls and a top opening, a pointed upright pin attached in the center of the bottom, two flexible friction members projecting into the casing from two opposite holes located in the side walls;
a rotating dial having a magnetized needle attached thereto and balanced on said pointed upright pin in alignment with the two flexible friction members, said rotating dial including a center shaft projecting therefrom with a needle pointer rotatably fastened thereto and adjustable for pointing in a predetermined direction; and
a convex lens attached to said casing over said rotating dial, said convex lens including a fluorescent mark near its border and a stepped hole in its center, an adjustment rod supported on a spring and retained by a thrust ring in said stepped center hole;
whereby said needle pointer is maintained in alignment with said fluorescent mark to guide the user toward the predetermined direction; said adjustment rod can be pressed down to contact said needle pointer and turned to rotate said needle pointer on said rotating dial as said friction members are respectively pressed inward to hold tight said rotating dial.

5,367,782

LEVEL MARKING METHOD AND LEVEL MARKING APPARATUS

Takeshi Izumitani, 1-3-3-1410, Seishin-cho, Edogawa-ku, Tokyo, Japan

Filed Sep. 30, 1992, Ser. No. 953,220
Claims priority, application Japan, Jan. 29, 1992, 4-038752
Int. Cl.[5] G01C *5/04*
U.S. Cl. 33—367 4 Claims



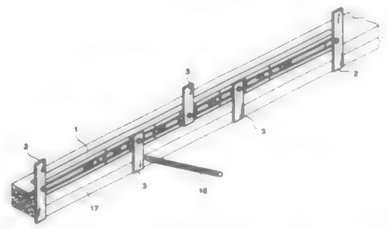
1. A level marking method comprising:
providing a hose having a first end and a second end;
filling the hose, at least partially, with a liquid so as to form a water head;
leaving the first end of the hose open to atmospheric pressure;
closing the second end of the hose by airtightly fixing a pressure sensor to the second end of the hose near the water head;
connecting a solenoid inker having an inking level to the pressure sensor, said solenoid inker being operated by ON and OFF signals dispatched from the pressure sensor and automatically drawing a mark at the inking level when it operates;
configuring the hose so as to define a reference level by obtaining a reference level pressure value from the pressure sensor;
arranging said pressure sensor such that is dispatches an ON signal at the reference level, and dispatches an OFF signal otherwise; and
marking the level by vertically displacing the second end of the hose so as to cause the pressure sensor to dispatch an ON signal.

5,367,783

LAYOUT TEMPLATE TOOL FOR POSITIONING BUILDING MATERIALS

Eric G. Nygren, P.O. Box 1082, 198 Alpine Dr., Nederland, Colo. 80466

Filed Apr. 29, 1993, Ser. No. 55,263
Int. Cl.[5] G01D *21/00*
U.S. Cl. 33—613 6 Claims



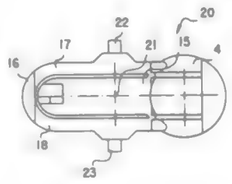
1. A layout template tool for marking first structural building members to position other structural building members such as floor joists, studs, rafters and rough door opening trimmer studs, in relation to said first structural building member comprising:
a guide member manufactured of an extruded material, having a length and a width and having a plurality of apertures formed therein, spaced apart along said length at sites representative of engineered building centers for said other structural building members;
a plurality of templates, each of which includes an aperture formed therein and having features that interlock with features on said extruded material of said guide member, said features comprising an interlocking track and groove combination, to maintain said template perpendicular to said length of said guide member and extending beyond said width of said guide member when fastened to said guide member with a fastener, each said template having a width that corresponds to a building member width to function as a guide for a marking device, to draw an outline of that building member on said structural first building member when said guide member is placed lengthwise against said first structural building member, and wherein said template, when rotated 180 degrees with respect to said guide member, still interlocks with and is maintained perpendicular to said guide member.

5,367,784

ROLL TAPE MEASURE

Klaus Krebs, Auf der Schlicht, Germany, assignor to Hoechstmass Balzer GmbH, Sulzbach/Taunus, Germany

Filed Aug. 9, 1993, Ser. No. 103,991
Claims priority, application Germany, Aug. 8, 1992, 4226273
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—767 9 Claims



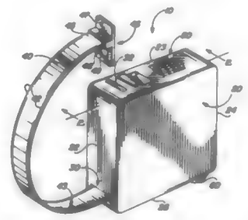
1. A roll tape measure comprising:
a housing upper part having an eccentrically placed perforation adapted to receive a release button;
a housing lower part adapted to mate with said housing upper part;
a spring drum connected to said housing lower part;
a flexible tape measure rolled up on said spring drum;
and a release element adapted to be placed between said housing upper part and said housing lower part, said release element comprising:
a release button,
a U-shaped element connected to said release button and having a first leg and a second leg,
a tongue-shaped element extending between said first and second legs of said U-shaped element and attached at a first end to said first and second legs and to said release button,
and a release catch attached to a second end of said tongue-shaped element adapted to be in contact with said spring drum.

5,367,785

LOCKING AND MEASURING DEVICE

Isaac Benarroch, 1800 NE. 114 St., Suite #2004, Miami, Fla. 33181

Filed Feb. 22, 1994, Ser. No. 199,844
Int. Cl.[5] G01B *3/10*; E05B *73/00*
U.S. Cl. 33—767 8 Claims



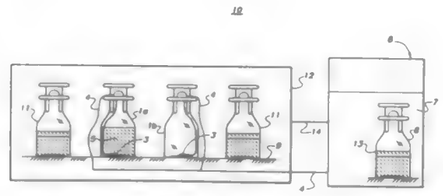
1. A locking and measuring device comprising:
a housing having a top wall and a bottom wall separated by a first spaced end wall and a second spaced end wall,
a first opening disposed in said first spaced end wall,
a second opening in said top wall,
an extendable length of substantially strong and durable, yet bendable material retractably disposed within said housing, said length of material including an attachment end and a terminal end,
said length being normally, retractably stored in said housing with said attachment end fixedly secured within said housing and said terminal end protruding through said first opening and being at all times exteriorly accessible of said first opening,
said terminal end being of a T-shaped configuration and including a measuring flap and a locking end zone, said locking end zone being structured and disposed to be lockingly inserted into said second opening,
a lock means disposed within said housing, said lock means being structured and disposed for matingly receiving and releasably captivating said locking end zone of said terminal end within said second opening,
lock release means structured and disposed to selectively disengage said lock means from said locking end zone, and
said length of material including graduated indicia therealong comprising a measuring scale.

5,367,786

METHOD AND APPARATUS FOR MONITORING THE PROCESSING OF A MATERIAL

Thomas A. Jennings, 303 Llandrillo Rd., Bala Cynwyd, Pa. 19004

Filed Nov. 6, 1990, Ser. No. 610,242
Int. Cl.[5] F26B *3/34*
U.S. Cl. 34—245 51 Claims



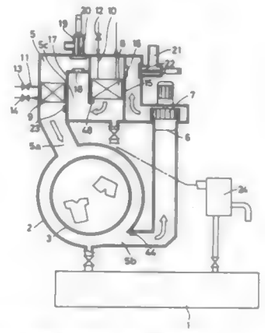
1. A system for determining a process parameter of a material in a processing system having a plurality of process parameters and first and second heat flux detection containers, comprising:
a sample of said material disposed within said first heat flux detection container;
single thermal energy control means for controlling the level of thermal energy both of said first heat flux detection container and of said second heat flux detection container;
means for determining the heat flux to said first heat flux detection container and to said second heat flux detection container while said single thermal energy control means controls the level of thermal energy of said first and second heat flux detection containers including means for determining a temperature difference between said first and second heat flux detection containers; and,
means for determining said process parameter in accordance with said determined heat flux.

5,367,787

DRYING MACHINE

Tomohiko Ikeda, Kusatsu, and Toshiaki Sakamoto, Shiga, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 5, 1993, Ser. No. 102,307
Claims priority, application Japan, Aug. 5, 1992, 4-209143
Int. Cl.[5] F26B *19/00*
U.S. Cl. 34—549 14 Claims



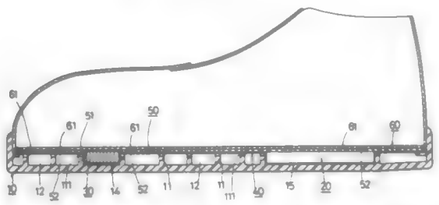
1. A drying machine which comprises:
a drying chamber for drying an article cleaned with an inflammable solvent as a detergent;
a hot air supply channel communicating with the drying chamber;
a heater mounted in the hot air supply channel;
a hot air evacuation channel communicating with the drying chamber;
hot air transfer means mounted at a voluntary portion of the hot air supply channel and the hot air evacuation channel;
a first temperature sensor mounted on the downstream side of the heater in the hot air supply channel;
a second temperature sensor mounted at a position shifted to the drying chamber in the hot air evacuation channel; and
control means for controlling the heater so that a difference between a temperature detected by the first temperature sensor and a temperature detected by the second temperature sensor is kept within a safe temperature range avoiding detrimental excessive heating of the inflammable solvent.

5,367,788

SHOE WITH A BUILT-IN COOLING APPARATUS

Shi-Hiu Chen, 5F, No. 564, Sec. 1, Chung-Te Rd., Taichung, Taiwan, Prov. of China

Filed Dec. 16, 1993, Ser. No. 167,014
Int. Cl.[5] A43B *7/04, 7/08*
U.S. Cl. 36—3 B **2 Claims**



1. A shoe, comprising:
a shoe sole having an accommodating portion with a bottom wall, a plurality of ventilation holes formed through a side wall of said accommodating portion, and a plurality of upright partitions secured on said bottom wall of said accommodating portion so as to divide said accommodating portion into several compartments, each of said upright partitions having a notch formed in an upper end portion thereof so that any adjacent pair of said compartments are communicated with each other via one of said notches;
a pressure-operated electric generator provided inside one of said compartments which is adjacent to a heel portion of said shoe sole, said electric generator producing a voltage signal when pressure is repeatedly applied on said shoe sole during use;
a cooling apparatus provided inside one of said compartments which is adjacent to a tip portion of said shoe sole and connected electrically to said electric generator, said cooling apparatus producing a cold air so as to cool a foot of a user when said electric generator supplies said voltage signal to said cooling apparatus;
an air permeable and waterproof cloth covering completely a top surface of said shoe sole and surrounding said electric generator and said cooling apparatus except for a top surface of said cooling apparatus and a top surface of said electric generator so as to prevent said cooling apparatus and said electric generator from being accessed by water from exterior of said shoe via said ventilation holes;
a middle sole covering completely an upper portion of assembly of said accommodating portion of said shoe sole and having several ventilation holes formed therethrough and communicated with said compartments respectively, and an accommodating hole formed through said middle sole near said tip portion of said shoe sole so as to allow said top surface of said cooling apparatus to extend through said accommodating hole of said middle sole; and
a shoe pad being disposed on a top surface of said middle sole and having several holes formed therethrough, each of said holes of said shoe pad being communicated with a respective one of said ventilation holes of said middle sole.

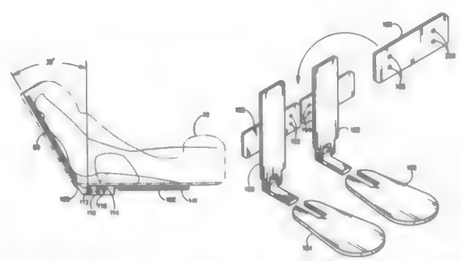
5,367,789

PROTECTIVE MEDICAL BOOT AND ORTHOTIC SPLINT

William D. Lamont, Shelby Township, Maccomb County, Mich., assignor to LaMED, Inc., Shelby Township, Maccomb County, Mich.

Continuation-in-part of Ser. No. 763,335, Sep. 20, 1991, Pat. No. 5,226,245. This application Jul. 12, 1993, Ser. No. 90,895
Int. Cl.[5] A43B *7/14, 1/02;* **A61F** *3/00*
U.S. Cl. 36—9 R **3 Claims**

1. A medical boot, comprising:
a substantially boot-shaped main body portion formed primarily of a substantially soft, flexible, compressible, shape-retaining material having a foot portion, an ankle portion; and a heel opening;
splint means for supporting the limb of a user with his foot disposed in the boot-shaped main body portion comprising:
a substantially rigid insole connected to the foot portion of the main body portion of the boot so as to moveable therewith;
the insole being disposed in the foot portion of the boot;
a substantially rigid splint bar, and means for connecting the splint bar to the ankle portion of the boot;
hinge means for connecting the insole to the splint bar such that the insole is moveable to a selected angular position with respect to the splint bar;



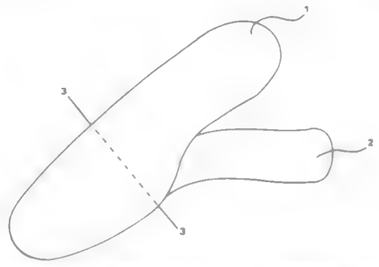
the hinge means comprising an elongated hinge member having one end received in the heel opening and connected to the insole;
pin means connecting the opposite end of the hinge member to the splint bar; and
means for locking the hinge means in said selected angular position, comprising the splint bar having a pair of spaced lugs, said hinge member being received between the lugs, the lugs having pairs of aligned openings, the hinge member having a toe swingeable between the pairs of aligned openings, and locking pin means being received in a selected aligned pair of said openings in the lugs to engage the toe of the hinge in a selected angular position.

5,367,790

SHOE AND FOOT PROSTHESIS WITH A COUPLED SPRING SYSTEM

Rustem I. Gamow, 9 Canon Park, Boulder, Colo. 80302, and Hugh M. Herr, 93 Magnolia Dr., Holtwood, Pa. 17532

Continuation of Ser. No. 726,891, Jul. 8, 1991, abandoned. This application Apr. 15, 1993, Ser. No. 47,872
Int. Cl.[5] A43B *13/28;* **A61F** *2/66*
U.S. Cl. 36—27 **7 Claims**



1. A sole system which is part of a shoe which comprises: a sole spring having a heel end and a toe end compressible about a transverse axis positioned at a point approximately ⅓ of the length of the sole spring from the heel end thereof; and a heel spring having a curved portion coupled to said sole spring, and

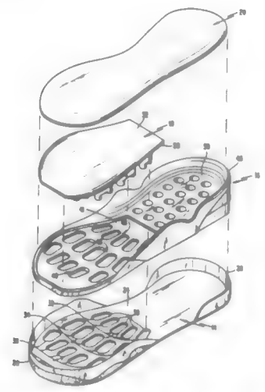
in combination with said sole spring forming a collapsible longitudinal arch, said heel spring having an axis of rotation at the apex of said longitudinal arch, and wherein the stiffness of the sole spring is relatively less than that of the heel spring.

5,367,791

SHOE SOLE

Alexander L. Gross, Aspen, Colo., and Kiyotaka L. Nakano, Lawrenceville, Ga., assignors to Asahi, Inc., Lawrenceville, Ga.

Filed Feb. 4, 1993, Ser. No. 13,598
Int. Cl.[5] A43B *13/18, 21/26*
U.S. Cl. 36—31 **26 Claims**



1. A shoe comprising an upper and a sole attached to the upper, the sole including an outsole, an insole, a midsole between the insole and outsole and an insert, the midsole having (a) a bottom surface mating with and attached to an upper surface of the outsole, and (b) a cavity where the insert is located, the insert including at least one region extending through openings in the midsole and outsole without being attached to the midsole or outsole, the region including a bottom tip extending beyond a bottom face of the outsole, the region including the bottom tip and the openings being arranged and dimensioned so the region compresses vertically and expands horizontally against the midsole in response to the tip striking a surface to be traversed so the midsole absorbs forces applied to the tip.

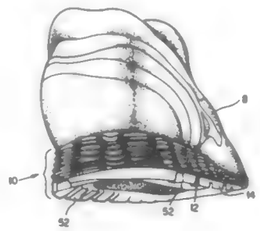
5,367,792

SHOE SOLE CONSTRUCTION

Daniel Richard, Westlinn; Kenneth Kolman; Charles Case, both of Beaverton; Ronald Becker, Stayton, all of Oreg., and Alex Gross, Aspen, Colo., assignors to Avia Group International, Inc., Beaverton, Oreg.

Continuation of Ser. No. 693,647, May 1, 1991, abandoned, which is a continuation of Ser. No. 411,044, Sep. 22, 1989, Pat. No. 5,014,449. This application Aug. 27, 1992, Ser. No. 935,333
The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.
Int. Cl.[5] A43B *5/00, 13/18*
U.S. Cl. 36—114 **14 Claims**

1. An athletic shoe including a forefoot region, a midfoot region and a heel region, comprising:
an upper;
an outer sole;
a midsole disposed between said upper and said outer sole, said midsole comprising a top surface, a bottom surface, and a peripheral wall having an interior surface and an exterior surface exposed to the exterior of said shoe, said peripheral wall extending between said top surface and said bottom surface and being recessed at various locations to form a plurality of connected, substantially adjacent vertical columns along the exposed exterior surface and interior surface of said peripheral wall; and
a hollow chamber defined by said top surface, said bottom



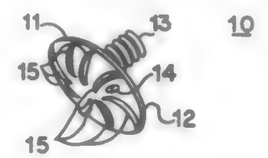
surfaces and said peripheral wall of said midsole, wherein said columns of said midsole are positioned beneath the wearer's foot to provide stability and support to the foot of the wearer when the wearer applies a force to the midsole.

5,367,793

WINTER GOLF SHOE SPIKES

Ernie L. Deacon, Nampa, and Faris W. McMullin, Boise, both of Id., assignors to Warm Springs Golf Club, Inc., Boise, Id.

Continuation-in-part of Ser. No. 872,819, Apr. 24, 1992, Pat. No. 5,259,129. This application Aug. 13, 1993, Ser. No. 106,205
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] A43B *5/00, 15/00*
U.S. Cl. 36—127 **13 Claims**



1. A cleat for a shoe sole comprising:
a disk-like flange, having an upper surface for placement underneath and in contact with the shoe sole along at least the periphery of said flange, and having an opposing bottom surface;
a plurality of traction ribs formed on said bottom surface, said ribs being vertical ridges curved in a plane of projection parallel to the shoe sole, emanating out in radial fashion from the center of the disk-like flange, and being integrally formed with and extending down from said bottom surface for supplying traction against the ground.

5,367,794

CLEATED SHOE PROTECTOR

Stephen Adelstein, and Terence D. Kindle, both of 425 Martin Rd., Bonny Doon, Calif. 95060

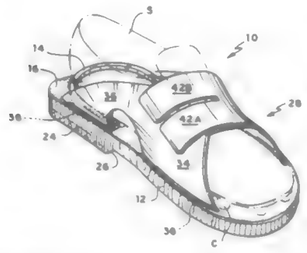
Continuation of Ser. No. 41,657, Apr. 1, 1993, abandoned. This application May 11, 1994, Ser. No. 240,812
Int. Cl.[5] A43B *1/10, 5/00*
U.S. Cl. 36—135 **7 Claims**

1. A cleated shoe protector comprising:
a sole having
an upper stratum made from deformable material, said upper stratum having an upper surface, a rear end, a metatarsal region, and a front end,
a lower stratum made from non-deformable material,

a heel having vertical front wall depending from said lower stratum, and

a low wall having a left wall, a right wall and a rear wall, said low wall being located on said upper surface at said rear end, wherein said right wall and said left wall are spaced substantially inwardly from said rear end, whereby said low wall partially surrounds a cleated shoe heel; and

an upper shoe protector portion for substantially covering an upper metatarsal portion of the cleated shoe, said upper shoe protector portion including right and left sides made from flat material, one of said right and left sides having an attachment base including attachment means and the other of said right and left sides having at least one attachment strip maneuverable to overlie said attachment base,



said attachment strip having a corresponding attachment means,

wherein each of said upper right and left sides further includes a metatarsal strip and a heel strip connecting to said sole,

wherein each said metatarsal strip is attached along an edge of said metatarsal region of said sole, and each said heel strip is attached along an edge of said sole proximate to the region defined from said heel to said rear end, whereby said metatarsal strip and said heel strip define a lateral archway opening therebetween with said sole, and

wherein said upper right and left sides are capable of being secured together by said attachment base and said attachment strip to define a heel opening and a toe opening therebetween.

5,367,795

SHOE HAVING INDIVIDUALIZED DISPLAY AREAS

Donald D. Iverson, McLean, and Thomas A. Strobel, Sterling, both of Va., assignors to Gamer Corporation, McLean, Va.

Continuation-in-part of Ser. No. 102,831, Aug. 6, 1993, which is a continuation-in-part of Ser. No. 936,204, Aug. 27, 1992, abandoned. This application Sep. 27, 1993, Ser. No. 126,659

Int. Cl.[5] A43B *23/00*

U.S. Cl. 36—136 **36 Claims**

1. A shoe having an upper portion including a quarter portion, heel and tongue comprising:

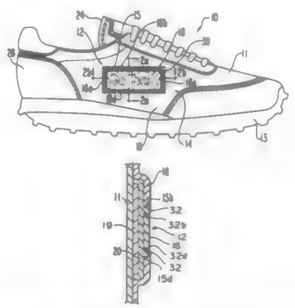
(a) outer covering material permanently affixed to said upper portion of the shoe;

(b) an indicia display opening formed in a portion of the outer covering material and located in at least one of said quarter portion, heel and tongue of said upper portion;

(c) an indicia attachment panel underlying said outer covering material and both visible and accessible through said opening;

(d) a frame member having a plurality of legs defining a closed perimeter shape projecting from said indicia attachment panel through said opening, said legs having outer perimetric edges facing the perimetric edges of said opening and inner perimetric edges; and

(e) an indicia display panel which is visible through said opening, said indicia display panel being positioned on and secured to said indicia attachment panel within said display opening so that the peripheral edges of said display panel are in abutting contact with the inner perimetric



edges of said frame member legs for protecting said display panel edges from abrasion.

5,367,796

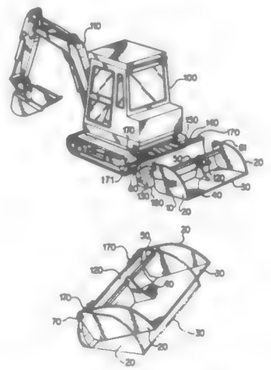
MULTITOTE CARRIER FOR EXCAVATOR

John L. Bowers, 28513 158th Ave. East, Graham, Wash. 98338, and Francis E. Jennings, 7402 86th St. East, Puyallup, Wash. 98371

Filed Oct. 1, 1991, Ser. No. 769,369

Int. Cl.[5] E02F *3/76*

U.S. Cl. 37—410 **5 Claims**



1. A multitote carrier for use in combination with an excavator having a conventional excavator blade, the combination providing a scooping bucket with self-alignment capability and with dumping capability in that when the mounted carrier is lifted, the carrier separates from the excavator blade at the blade bottom for dumping of materials in the carrier, the carrier comprising

a horizontal bottom plate,

two upward-extending side plates spaced apart by the horizontal bottom plate, the horizontal bottom plate and the side plates together forming a scoop, the front of the horizontal plate forming a leading edge for scooping a load through the carrier front and the back of the horizontal plate resting against the excavator blade to form a closed bucket during loading,

means for pivotably mounting the carrier on the excavator blade front surface with a carrier pivot axis located behind the blade back surface and near the blade top with the carrier side plates extending behind the blade and upward to the pivot axis of the mounting means where the side plates are pivotably connected to the blade so that the blade serves as the back side of the bucket,

an upward-extending bracing rib affixed to the bottom plate between the side plates for adding strength to the multitote carrier, and

a bracing bar attached to the bracing rib.

5,367,797

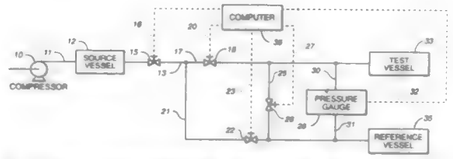
PROCESS FOR TESTING A VESSEL

Adil Z. Zaim, San Francisco, Calif., assignor to Omega Environmental, Inc., San Francisco, Calif.

Filed Oct. 25, 1993, Ser. No. 140,957

Int. Cl.[5] G01M *3/26, 3/00*

U.S. Cl. 73—49.2 **2 Claims**



1. A process for establishing the stability of factors influencing pressure in a process for testing the integrity of a vessel employing a system including said vessel, a reference vessel, a fluid passageway including a valve between said vessel and said reference vessel, means to supply gas at a test pressure to both said vessel and said reference vessel from a common source, and means to measure the difference between the gas pressure in said vessel and said reference vessel said process comprising:

introducing gas into said vessel and said reference vessel at the same pressure from said common gas source with said valve open until the difference in pressure between said vessel and said reference vessel is zero,

isolating said vessel and said reference vessel from said gas source,

closing said valve,

recording the value of the difference in pressure between said pressure vessel and said reference vessel after passage of a preselected time interval,

opening said valve at the end of said preselected time interval for a time sufficient to equalize the pressures in said vessel and said reference vessel and then closing said valve,

recording the value of the difference in pressure between said vessel and said reference vessel after the passage of another preselected time interval,

repeating the steps of opening said valve to equalize pressures and closing said valve for further preselected time intervals and recording the value of the pressure difference until the pressure difference between said vessels, at the end of two consecutive time intervals is substantially zero, whereby pressure changing factors other than leakage are established as stabilized, and closing said valve for a time period sufficient to establish the integrity of said vessel as indicated by changing pressure difference indicated by said means to measure pressure difference.

5,367,798

CONNECTOR PIN ASSEMBLY FOR BUCKET RIGGING

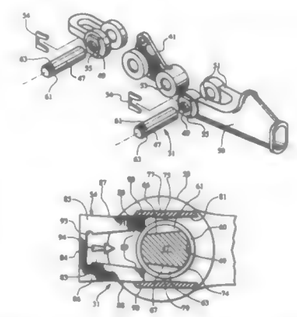
James T. Hughes, Mt. Vernon, Ohio, assignor to Indresco Inc., Dallas, Tex.

Filed Feb. 4, 1993, Ser. No. 13,525

Int. Cl.[5] A01B *3/58*

U.S. Cl. 37—399 **7 Claims**

1. A retainer pin assembly for use in connecting together at least one pair of components of a dragline bucket rigging, said assembly including a pin with an inner end portion telescoped into a hole opening from a side of one of the components in the pair, an open-ended channel in said side and communicating with said hole, said channel having a narrowed mid-section and enlarged opposite ends, a pair of slots on opposite sides of said pin aligned with said channel, a removable spring clip



retainer means sized to snap fit within said channel and said slots and inserted therein to lock said pin within said hole against rotation and axial removal.

5,367,799

IRON WITH FLUID DISTRIBUTING FINS AND THERMOSTAT ARRANGEMENT

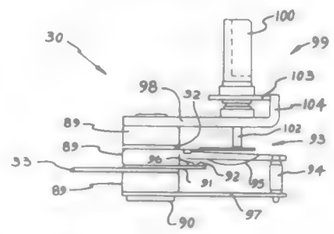
Ian G. Wilson, Cheltenham; Richard L. Hoare, Neutral Bay, and Leo Krusina, Campsie, all of Australia, assignors to Sunbeam Corporation Limited, Campsie, Australia

Filed Dec. 23, 1992, Ser. No. 996,031

Claims priority, application Australia, Dec. 24, 1991, PL0183

Int. Cl.[5] D06F *75/20, 75/24*

U.S. Cl. 38—77.7 **20 Claims**



1. An iron comprising:

a sole plate having an upper surface, the plate also having through apertures from which steam is discharged;

an iron body mounted on said sole plate and covering said upper surface;

a heating element in conductive heat contact with said sole plate;

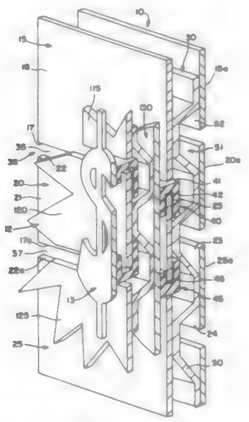
a water tank in said body;

a steam chest bounded by a channel which overlays the heating element;

water delivery means for delivering water to a predetermined flat location continuous with the upper surface of the sole plate and within the steam chest; and

at least one fin located inwardly of said channel within the steam chest and generally radiating from said flat location to assist in distributing the water over said sole plate and cool portions of the sole plate spaced from said location.

5,367,800
INTERCHANGEABLE DISPLAY SYSTEM
Allan R. Nelson, Mordialloc, Australia, assignor to Chain Reaction Sales Promotion Pty. Ltd., Victoria, Australia
Filed Apr. 15, 1992, Ser. No. 869,432
Claims priority, application Australia, Mar. 6, 1992, PL1246
Int. Cl.[5] G09F *7/02*
U.S. Cl. 40—18 **6 Claims**



1. An interchangeable display system including a mounting and a display element, the mounting comprising an upper face panel having a front face and an elongated lower edge, a lower face panel having a front face and an elongated upper edge, the mounting further comprising a support backing, the upper and lower face panels being mounted to the support backing so that the upper edge of the lower face panel is spaced forwardly of the support backing so as to define an undercut formation and so that the lower edge of the upper face panel and the upper edge of the lower face panel are spaced apart to define an elongated mounting slot which extends lengthwise along the face panels to an end of the face panels where there is an open end of the mounting slot, the display element comprising a back and a mounting hook which is mounted on the back of the display element, the mounting hook having a rearwardly extending leg to pass through the mounting slot and also having a downwardly turned foot to locate behind the undercut formation and thereby retain the display element against removal by pulling the display element outwardly away from the mounting or by lifting of the display element, the mounting hook being assembled to the mounting by passing through the open end of the mounting slot and by sliding of the hook along the mounting slot to locate the display element at its final desired position in front of the mounting, the display element additionally comprising an upper face panel and a lower face panel which are spaced apart to define an elongated display element slot extending lengthwise along the face panels of the display element to an edge of the face panels of the display element where there is an open end of the display element slot, the display element slot being defined between an upper edge of the lower face panel of the display element, the display element additionally comprising a support backing, both the lower face panel of the display element and the upper face panel of the display element being mounted to the support backing of the display element with a lower edge of the upper face panel of the display element and the upper edge of the lower face panel of the display element being spaced forwardly of the support backing of the display element so as to define an undercut formation, whereby the display element provides a mounting for a superimposed display element provided with a back and a mounting hook on the back of the superimposed display element, the mounting hook of the superimposed display element having a rearwardly extending leg to pass through the display element slot and also having a downwardly turned foot to locate behind the undercut formation of the display element.

5,367,801
MULTI-LAYER THREE-DIMENSIONAL DISPLAY
Young Ahn, 2627 N. Beachwood Dr., Los Angeles, Calif. 90068
Filed Jan. 25, 1993, Ser. No. 8,143
Int. Cl.[5] G09F *13/02*
U.S. Cl. 40—152 **4 Claims**

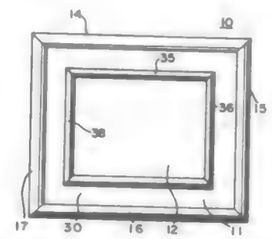


1. A multi-layered display comprising:
(a) a frame;
(b) a rear panel, an intermediate semi-transparent panel, and a frontal semi-transparent panel, said panels being mounted in said frame in mutually spaced and substantially parallel relation;
(c) each of said panels having a frontally visible visual presentation such that when said display is viewed from the front of the visual presentation of all three panels are superimposed together;
(d) at least one of said semi-transparent panels defining an opaque grid of spaced parallel lines substantially spanning the respective panel to provide an enhanced sense of depth in said display;
(e) said grid being comprised of two sets of spaced parallel lines with one set being perpendicular to and overlying the other set, and said at least one of said semi-transparent panels defining said opaque grid and another of said panels defining an array of spaced parallel stripes parallel with the lines of one of said sets of parallel grid lines;
(f) said stripes being spaced apart twice as far as said grid lines;
(g) said frontal semi-transparent panel defining said grid of lines and said grid lines being a dark light-absorbent color and said stripes are of a bright, light-reflective color and said grid lines are flat-finished to avoid reflective glare;
(h) said frontal semi-transparent panel substantially comprising an open screen and said lines are defined by two spaced parallel filament sets, with the filaments of the set being mutually perpendicular; and including a sealing layer defined on said screen behind the visual presentation on said frontal panel with said presentation being applied onto said sealing layer.

5,367,802
PICTURE FRAME
Harry Rosenberg, 8941 Roosevelt Blvd., Philadephia, Pa. 19152
Filed Mar. 16, 1993, Ser. No. 33,252
Int. Cl.[5] G09F *1/12*
U.S. Cl. 40—152 **4 Claims**

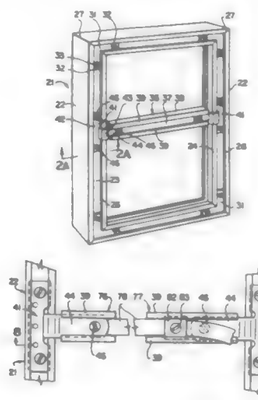
1. A picture frame which comprises
an outer frame having a plurality of corners;
said outer frame including a plurality of moldings retained together at the corners,
a background sheet carried by said moldings and having a plurality of spaced openings therein,
an inner frame having a plurality of corners and detachably secured to said background sheet,

said inner frame including a plurality of moldings retained together at the corners by detachable interlocking corner brackets,
image carrying means carried by said inner frame,



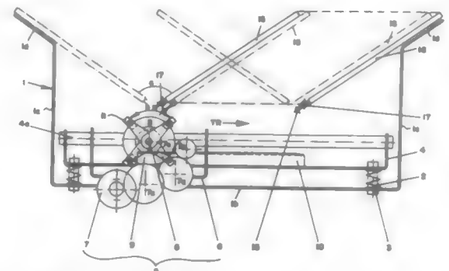
stud means carried by and extending through said corner brackets and engageable in said openings in said sheet and retaining means engaged with said stud means such that said sheet is held between the corner brackets and the retaining means.

5,367,803
PICTURE FRAME CONSTRUCTION AND BRACE THEREFOR
Stephen D. Albin, 797 Manor Way, Los Altos, Calif. 94022
Filed Sep. 3, 1992, Ser. No. 940,079
Int. Cl.[5] B44C *5/02*
U.S. Cl. 40—152.1 **15 Claims**



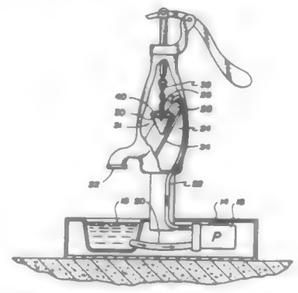
1. In combination, a pair of opposed picture frame sides,
a brace extending transversely between said frame sides, said brace comprising a channel having in cross section a web, opposed flanges along either side of said web, said flanges being separated by a first space, and inturned edges along the flange sides of said flanges remote from said web, said inturned edges being separated by a second space,
a fitting on each end of said brace, said fitting having first means for attachment of said fitting to a frame side, a leg extending from said first means into said brace, said leg having a width less than said first space between said flanges and greater than said second space between said inturned edges, whereby said leg fits inside said channel, and
second means for locking said leg against movement within said channel, said second means being adjustable in a plurality of positions without deformation of said inturned edges.

5,367,804
INDICATING REGISTER
Hans Domberg, Hullhorst; Georg Seidel, Minden, and Rolf Renner, Labecke, all of Germany, assignors to Deutsche Wurlitzer GmbH, Hullhorst, Germany
Filed Jan. 21, 1992, Ser. No. 823,248
Claims priority, application Germany, Jan. 22, 1991, 4101738
Int. Cl.[5] B42F *17/20*
U.S. Cl. 40—389 **11 Claims**



1. Indicating register for indicating contents of magazines, storage units, in particular for automatic music, video machines, the indicating register comprising:
a plurality of pivotally-journaled pages;
a plurality of page appendages projecting radially from pivot axes of the pivotally-journaled pages, the page appendages having a predetermined offset between each other in an axial direction; and
a carrier unit being moved transversely to the pivot axes of the pages, the carrier unit including drive means for moving the carrier unit transversely and a plurality of followers disposed on the carrier unit, two adjacent followers having an axial offset between each other which corresponds to the predetermined offset of the page appendages, two adjacent followers having a constant offset between each other, the followers corresponding with the page appendages one by one and turning over the pivotally-journaled pages one by one with transverse movement of the carrier unit.

5,367,805
APPARATUS FOR HYDRAULICALLY POWERING A MOVING DISPLAY
Gary Bates, 24765 Bell Rd., New Boston, Mich. 48164
Filed Feb. 3, 1993, Ser. No. 12,899
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—406 **8 Claims**



1. An apparatus for hydraulically powering a moving display, comprising:
a housing having an actuating member affixed thereto;

reservoir means in fluid communication with said housing for storing a liquid;

pump means in fluid communication with said reservoir means and said housing for pumping said liquid into said housing at a selected orientation and rate of flow:

a liquid receiving cup disposed within said housing, said cup affixed to said actuating member, the weight of said cup providing a means for counterbalancing the weight of said actuating member, said cup adapted to be lowered within said housing by the weight of said liquid; and

distance limitation means affixed to said housing and proximate to said liquid receiving cup for restricting a vertical distance said cup may travel within said housing and facilitating the release of said liquid, wherein said actuating member is actuated in timed relation to the movement of said cup within said housing to power said display.

5,367,806

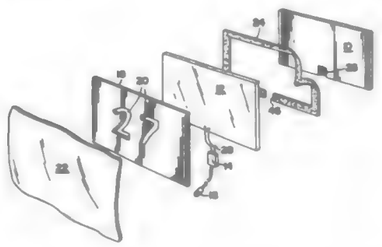
ILLUMINATED SIGN

Peter Hoffman, 452 S. Congress Ave., W. Palm Beach, Fla. 33406

Division of Ser. No. 868,931, Apr. 16, 1992. This application Dec. 23, 1992, Ser. No. 996,425

Int. Cl.[5] G09F *13/22*

U.S. Cl. 40—544 **2 Claims**



1. An illuminated sign for being mounted to one surface of a generally planar pane of transparent material so that indicia on said sign are visible through the pane of transparent material, the sign comprising:

a substantially planar, essentially flat backing panel having a periphery;

a planar electroluminescent lamp assembled over said backing panel and having a thickness and a periphery conforming generally in shape to the shape of said backing panel periphery, said backing panel and said lamp together forming an assembly;

a planar indicia-bearing member disposed over said lamp and having a periphery and a thickness, said indicia-bearing member being at least partially translucent to define indicia, said assembly being larger in planar extent than said indicia-bearing member, whereby a border of said assembly is exposed around said periphery of said indicia-bearing member;

a power supply for powering said lamp; and

a number of strips of two-faced adhesive tape having adhesive on opposite faces thereof extending at least partially along said border of said assembly, said tape being applied along said periphery of said backing panel, one face of each strip of said tape being bonded by said adhesive to said border of said assembly, whereby said assembly and said indicia-bearing member may be affixed to one side of the pane of transparent material by adhesively bonding a second face of each strip of said tape to the pane of transparent material, such that said indicia-bearing member is maintained within said border by confinement by said strips of tape between said backing panel and the pane of transparent material, said tape including a thickness at least as great as said thickness of said lamp and said thickness of said indicia-bearing member combined, such that said lamp and said indicia-bearing member are received within an upstanding border formed by said strips of tape.

5,367,807

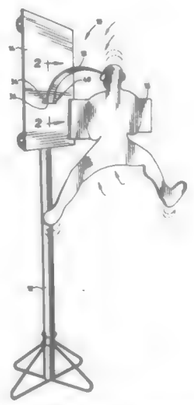
FLEXIBLE ADJUSTABLE SIGN SUPPORT AND METHOD OF USING SAME

Robert Van Beek, Paw Paw, Ill., assignor to Academy Display, Inc., Westmont, Ill.

Continuation of Ser. No. 937,471, Aug. 28, 1992, abandoned. This application Dec. 23, 1993, Ser. No. 173,912

Int. Cl.[5] G09F *15/00*

U.S. Cl. 40—606 **21 Claims**



1. A support apparatus having a base from which a sign member is suspended, comprising:

a flexible member;

means for securing the sign member to the flexible member; and

means for continuously adjustably engaging the flexible member at any position along the length of the flexible member secured to the base and spaced apart from the securing means in which the adjustable engaging means includes a wall member spaced apart from the base and in which the wall member is secured to the base to maintain at least a portion of the flexible member between the wall member and the base, to position the sign member to any distance from the base.

5,367,808

LOW POWER-CONSUMPTION SIGN-TURNER

Theodore E. Liebman, Philadelphia, and Robert H. Levitt, Huntingdon Valley, both of Pa., assignors to Decora Industry, Inc., Philadelphia, Pa.

Filed Mar. 25, 1993, Ser. No. 36,843

Int. Cl.[5] G09F *7/22*

U.S. Cl. 40—617 **6 Claims**

1. A display sign-turner, comprising:

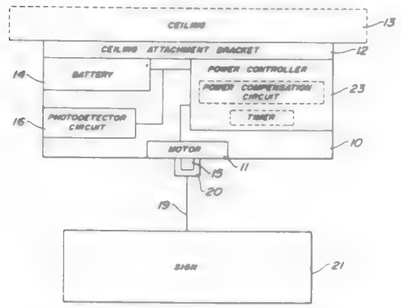
a housing;

a motor powered by a battery, said battery and motor mounted to said housing, said motor having an output shaft for turning a sign;

a power controller connected between said battery and said motor, said controller including an electrical timer circuit which provides intermittent power to said motor in alternating "on" and "off" periods producing successive unidirectional operating cycles;

resilient means which transmit power from the motor to the sign, said means having opposite ends connected between the output shaft of the motor at one end and to the sign at a second end; and

a continuously rotating sign connected to the second end of said resilient means, said resilient means storing energy during the "on" period of the operating cycle, and said



resilient means releasing energy during the "off" period, such that intermittent turning of the one end of the resilient means is translated into the continuous rotation of the sign.

5,367,809

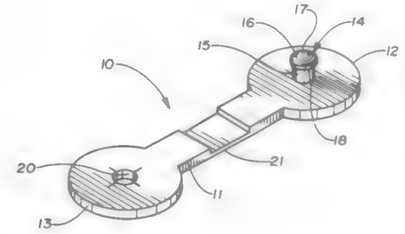
EASY IDENTIFICATION OF SOCKS

Eugene B. Ross, Laurens, S.C., assignor to Walk-Winn Plastics Co., Inc., Little Rock, Ak.

Filed Jun. 16, 1993, Ser. No. 78,455

Int. Cl.[5] G09F *3/12*

U.S. Cl. 40—668 **2 Claims**



1. An identifying device for a pair of socks to permit proper pairing of the socks and to further identify an owner of the socks, the device comprising:

a pair of male members, each having a central post formed thereon, the central post having an enlarged tapered head, each male member being disposed inside the respective sock of the pair of socks such that the central post extends through the respective sock,

a pair of female members, each having a central opening therein, each female member being disposed outside the respective sock of the pair of socks such that the central post on the male member attached to the respective sock is received with a friction fit in the central opening in the female member disposed outside each respective sock, and the respective male member is connected to the respective female member with the respective sock therebetween, and

each female member having a periphery, a first surface and a second opposite surface, the first surface being disposed adjacent to the respective sock, indicia means formed on the second surface of each female member to permit identification of the owner of the pair of socks and to permit matching pairs of socks, said indicia means being formed between the central opening and the periphery of each female member and visible when the respective male member is connected to the respective female member.

5,367,810

MAGAZINE

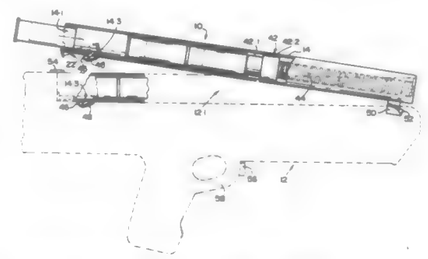
Heyns W. Stead, Pretoria, and Anthony S. Neophytou, Verwoerdburg, both of South Africa, assignors to Ikon Ltd., Amsterdam, Netherlands

Filed Mar. 1, 1993, Ser. No. 24,504

Claims priority, application South Africa, Mar. 3, 1992, 92/1580

Int. Cl.[5] F41A *9/72*

U.S. Cl. 42—17 **8 Claims**



1. A magazine for a firearm which includes

a plurality of tubular members arranged in side by side relationship each capable of receiving a plurality of cartridges, the tubular members being displaceably mountable on the firearm to permit displacement between an inoperative position for receiving fresh cartridges and an operative position for dispensing cartridges from the tubular members into a barrel of the firearm;

a gate member pivotally mounted at an open end of the tubular members and having a protuberance in the path of an end cartridge to inhibit ejection of the cartridge from each tubular member, the gate member co-operating with a loading mechanism of the firearm and being operable to displace the gate member out of such path; and

at least one catch member at an end region of the tubular members for preventing ejection of an end cartridge from one tubular member while a cartridge is being ejected from another tubular member, the catch member being pivotally mounted in a pivot block and being in the form of a plate having a nose on opposite sides of its end remote from its pivotal mounting, the plate being pivotable to cause each nose to project into the open end of one tubular member to prevent ejection of an end cartridge from that tubular member while an end cartridge from another tubular member is being ejected.

5,367,811

TRIGGER LOCK DEVICE

Kenneth C. Sansom, 232 Wilson Cir., Thorsby, Ala. 35171

Filed Sep. 20, 1993, Ser. No. 123,801

Int. Cl.[5] F41A *17/54*

U.S. Cl. 42—70.07 **4 Claims**

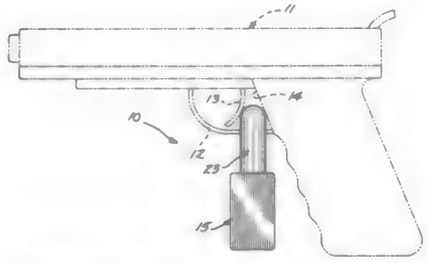
1. A trigger lock device arranged for securement to a firearm, the firearm having a trigger guard, with a firearm frame mounting said trigger guard, and a trigger pivotally mounted to the firearm frame within the trigger guard, wherein the device comprises,

a lock housing, the lock housing including a lock housing top wall spaced from a lock housing bottom wall, a lock housing first side wall spaced from a locking housing second side wall,

and

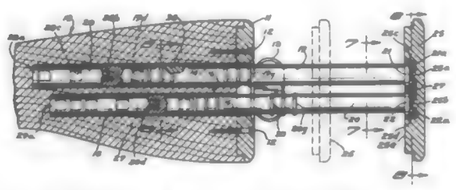
a keyhole slot directed through the lock housing bottom wall,

and
a locking loop, the locking loop including a first leg spaced from and parallel a second leg, the first leg having a first length, the second leg having a second length, with the first length greater than the second length,
and
a U-shaped web connecting the first leg and the second leg, with the lock housing top wall including a first opening spaced from a second opening, with the first leg slidably received through the first opening, and the second leg slidably received through the second opening, with the lock housing first side wall including a latch plate, and a hinge mounted to the latch plate and to the bottom wall to pivotally mount the latch plate to the bottom wall,



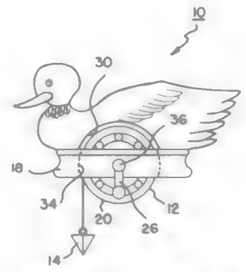
wherein the latch plate is displaced from a first position coplanar with the first side wall to a second position, wherein the latch plate is displaced relative to the first side wall, with an internal housing positioned within the lock housing, the internal housing including an internal housing top wall spaced from the lock housing top wall, an internal housing bottom wall spaced from the lock housing bottom wall, and an internal housing side wall positioned between the lock housing first side wall and the lock housing second side wall,
and
a latch plate spring mounted to the internal housing side wall and to the latch plate to bias the latch plate to the first position.

5,367,812
GUN STOCK EXTENDER FOR A RIFLE
Peter Lautrec, Box 174, Baldwin, Wis. 54002
Filed Jun. 28, 1993, Ser. No. 82,886
Int. Cl.[5] F41C *23/08, 23/14*
U.S. Cl. 42—74 **3 Claims**



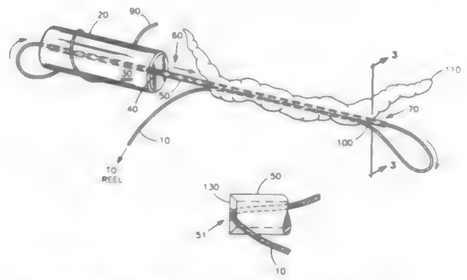
1. A butt extension of a gun stock comprising,
the gun stock having a butt end having a pair of bores extending inwardly thereof,
a butt plate having a gate therein overlaying said butt end of said gun stock,
a pair of cylindrical dowels disposed into said bores and having outer end portions extending outwardly of said butt end and said butt plate,
said dowels having diametrically enlarged outward extending end portions,
said end portions each having an annular groove thereabout,
a second butt plate,
a pair of bores on one side of said second butt plate,
a web between said second mentioned bores,
a boss extending outwardly axillary of each of said second mentioned bores,
said enlarged outwardly extending end portions of said dowels each having a bore therein, the bores of each of said dowels being respectively seated upon said bosses,
a pin disposed laterally through said second mentioned butt plate and through said web extending outwardly at each side of said web to engage said grooves at each side thereof in said enlarged dowel end portions securing said last mentioned end portions in said bores of said second mentioned butt place, and
said end portions are rotatable in said bores of said second mentioned butt plate.

5,367,813
DECOY ANCHOR AND WINDING MECHANISM
Edward K. Cherry, 70 Wellington Dr., Jackson, Tenn. 38305
Filed Sep. 15, 1993, Ser. No. 120,952
Int. Cl.[5] A01M *31/06*
U.S. Cl. 43—2 **1 Claim**



1. A decoy assembly having a winding mechanism and an anchor, the decoy assembly comprising:
a decoy element having a forward portion, a rearward portion, an upper portion and a lower portion with a recess formed within the lower portion of the decoy element;
a keel element having a forward portion, a rearward portion, an upper portion, and a lower portion with an opening formed between the lower and upper portions of the keel element, a nonrotatable axle positioned across the opening intermediate the forward and rearward portions of the keel, the upper portion of the keel element operatively coupled with the lower portion of the decoy element with the opening and recess in alignment;
a spool assembly having an inner radial portion fixed against rotation with respect to the nonrotatable axle, and a outer radial portion rotatable with respect to the inner radial portion, the spool assembly having an outer radial surface with external flanges bounding the outer radial surface, the central extent of the spool assembly being located within the opening of the keel, the lower extent of the spool assembly being located beneath the keel, and the upper extent of the spool assembly being located above the keel within the recess of the decoy element;
a spring of stainless steel having a fixed end secured to the inner radial portion of the spool assembly and a movable end secured to the outer radial portion of the spool assembly;
a line having a fixed end secured between the external flanges of the outer radial portion of the spool assembly and a free end adapted to be pulled to rotate the outer radial portion of the spool assembly with respect to the inner radial portion of the spool assembly, and thereby coil the spring; and
a locking assembly having a plurality of holes formed through the outer radial portion of the spool assembly, a spool lock having a fixed end secured to the keel by the nonrotatable axle and having a free end with a stopper, the stopper adapted to be selectively positionable in a locking orientation in one of the holes, and in an unlocking orientation out of the holes wherein the spring will rotate the outer radial portion to wind up the line.

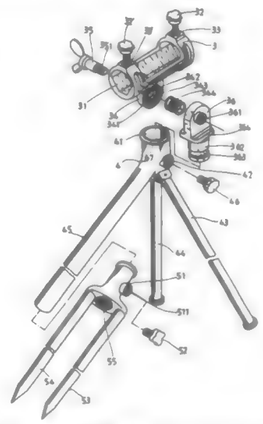
5,367,814
APPARATUS FOR BAITING A FISHING LINE
Steven H. Petersen, 16092 Nelson St., Westminster, Calif. 92683
Filed Mar. 17, 1993, Ser. No. 32,802
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—4 **5 Claims**



1. Apparatus for baiting a fishing line comprising:
handle means having a surface for gripping the handle means and a hole therethrough; and
elongated tube means with a proximal end and a distal end, the proximal end being engaged by the hole in the handle means such that the handle means and the tube means are fixed together in operant mutual support, the distal end having a sharp terminal edge, the terminal edge providing a notch therein, the notch being adapted for accepting the fishing line;
such that a free end of the fishing line may be threaded through the tube means and the handle means, a looped portion of the fishing line extending from the distal end of the tube means, within the notch, and therefrom, alongside the tube, so that the tube may be forced through a bait, without the terminal edge cutting the fishing line, until the distal end of the tube is extended clear of the bait, allowing the free end of the fishing line to be drawn out of both the tube means and the handle means, the tube then being withdrawn from the bait, leaving the fishing line within the bait with the free end of the fishing line available for affixing a fishing device thereto.

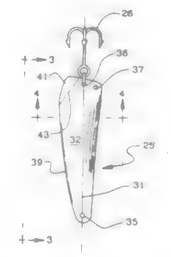
5,367,815
ROD REST SUPPORTING DEVICE
Shing-Fu Liou, No. 19, Lane 30, Min-Hsiang St., Chung Ho City, Taipei, Taiwan, Prov. of China
Filed Dec. 1, 1993, Ser. No. 159,532
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 **6 Claims**

1. A pole rest supporting device comprising:
locating means including a tripod having three tripod leg members, an anchoring fork fastened to one of said tripod leg members and a socket formed within a top section thereof;
a rotary member mounted in said socket of said locating means, said rotary member comprising an outward flange in the middle supported above said socket of said locating means, a horizontal screw hole above said outward flange, a bottom rod of said rotary member inserted into said socket of said locating means;
a lock screw threaded into a screw hole formed within said socket of said locating means to lock said bottom rod of said rotary member in said socket of said locating means; and,
a cylindrical cradle fastened to said rotary member to hold a rod rest on which a fishing rod rests, said cradle comprising a longitudinal through hole, which receives said rod rest, two tightening up screws respectively threaded into two screw holes thereof to hold down said rod rest in the longitudinal through hole of said cradle, a mounting block



at the bottom having a horizontal through hole fastened to the horizontal screw hole on said rotary member by a fastening screw;
whereby said rotary member can be turned on said socket of said locating means horizontally when said lock screw of said locating means is loosened; said cradle can be turned on said rotary member vertically when said fastening screw is loosened.

5,367,816
FISHING TACKLE LURE
John J. Gabos, R.R. #1, Box 57G, Weatherly, Pa. 18255, and Michael V. Olenek, 442 E. Carleton Ave., Hazleton, Pa. 18201
Filed Sep. 30, 1993, Ser. No. 129,469
Int. Cl.[5] A01K *85/14*
U.S. Cl. 43—42.5 **7 Claims**



1. A fishing lure comprising a body of generally wedge-shaped outline having a wide end and a narrow end with a longitudinal axis extending therebetween, the width of said wedge-shaped body tapering gradually from the wide end to the narrow end, said body having a transverse cross section of arcuate form providing a convex surface on one side and a concave surface on the opposite side, said convex surface defining a longitudinally-extending bowl-shaped convex sur-

face on said one side and said concave surface defining a longitudinally-extending bowl-shaped hollow surface on said opposite side, at the opposite ends of the longitudinal axis said lure having eyelets for attachment of said lure to a fishing line at the narrow end and for attachment of said lure to a fishing hook at the wide end, whereby when said fishing hook is drawn through the water by the fishing line, the lure causes the hook to follow a path simulating the travel of a bait fish, the improvement wherein

said lure has a rudder component at the wide end thereof, said component comprising a tab bent out from said bowl-shaped convex surface along a bending line at the wide end, said bending line being disposed at an acute angle to the longitudinal axis of the lure and offset laterally therefrom, and

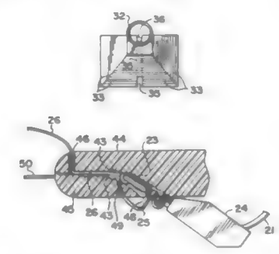
said wide end has a second eyelet for alternative attachment to a fishing hook, said wide-end eyelets being spaced laterally from said bent-out tab, and being aligned with said tab transversely of said longitudinal axis.

5,367,817

FISHING LURE COMBINATION

Thomas C. Clark, Rte. One, Box 137, Hampton, Fla. 32044

Filed Aug. 27, 1993, Ser. No. 112,353
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.36 **20 Claims**



1. A fishing lure comprising the combination of a fishing hook, a weight, and an artificial flexible bait body; said weight having a pyramidal body with a forward end apex, a rearward end wall, and a longitudinal axis passing through said apex and said wall with a wire loop eye at said apex surrounding said axis, and a slotted passageway along said axis adapted to guide said hook therethrough; said bait body being an elongated member having a forward head end and a rearward tail end, said head end being bifurcated to provide the illusion of a mouth with upper and lower jaw portions, a first passageway through the forward portion of said upper jaw to said mouth and a second passageway from the rearward portion of said mouth to outside of said body adjacent said lower jaw portion, said first passageway being adapted to receive a fishing line therethrough to cause movement of said upper jaw portion when tension is applied to said fishing line from above the lure.

5,367,818

RETRACTABLE SNAGPROOF FISH HOOK SYSTEM

Efren M. Aduana, 3609 S. Francisco Ave., Chicago, Ill. 60632

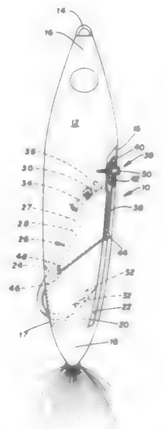
Filed Sep. 3, 1993, Ser. No. 116,503
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.44 **8 Claims**

1. A retractable snag-proof fish hook system comprising:

a single lure having a front end with attachment means for accepting a fishing line and a distal, rear end opposite said front end, said lure having a longitudinally disposed chamber therein with means defining an opening at a top surface of said lure as well as means defining an opening at a bottom surface of the lure;

a hook assembly comprising a substantially J-shaped fish hook having an eye at one end, a main shaft, and at least one barb at the other end as well as fastening means to laterally engage said eye of said hook and first and second cylindrical bores, said first and second cylindrical bores positioned normal to, and on opposing sides of, said chamber within said lure, thus positioning said hook within said chamber normal to said fastening means, and between said first cylindrical bore, and said second cylindrical bore;

a biasing assembly comprising a planar leaf spring of flexible material, said leaf spring shaped at a first end into a flat plate having a longitudinal slot, said leaf spring having an angular bend in the approximate longitudinal center thereof, said leaf spring bent at a second end to engage said main shaft of said hook, biasing said hook towards said bottom opening of said chamber within said lure, said



planar leaf spring secured to said top surface of said lure adjacent said top opening by securing means for engaging said longitudinal slot of said flat plate of said first end of said planar leaf spring, said securing means further engaging means for defining an aperture within said top surface of said lure, adjacent said top opening; and

a stop wire laterally crossing said chamber of said lure adjacent said rear end, said wire secured through third and fourth cylindrical bores that pass through said lure and communicate with said chamber in such a manner that both said stop wire and said third and fourth cylindrical bores are positioned normal to said hook, said stop wire supporting said barb end of said hook while said biasing assembly is acting thereupon.

5,367,819

LINE RELEASING FISHING FLOAT

James T. Ledford, 1339 Old Columbia Rd., Columbia, Tenn. 37024

Filed Mar. 12, 1993, Ser. No. 30,587
Int. Cl.[5] A01K *93/00*
U.S. Cl. 43—43.11 **18 Claims**

1. A fishing float for engagement with a fishing line comprising:

a substantially hemispherical body;

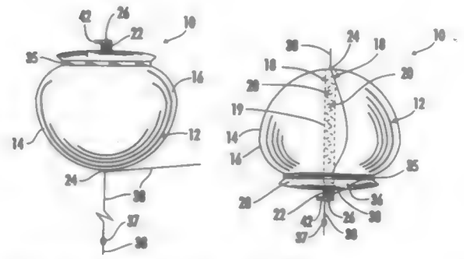
a line ring attached to said body;

eye means for engagement with a fishing line;

notch means on said line ring for engagement with a fishing line;

groove means defined by said line ring and said body for wrapping a fishing line therein and about a portion of said body; and

disk means for engagement with the fishing line to prevent the line from unwrapping from said groove; and



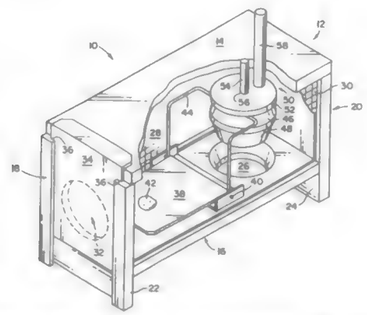
wherein the fishing float has a push-button assembly and said disk means is attached to said push-button assembly.

5,367,820

ANIMAL TRAP

David Lafforthun, 1383 W. Galway Rd., Galway, N.Y. 12074

Filed Aug. 12, 1993, Ser. No. 106,046
Int. Cl.[5] A01M *23/02*
U.S. Cl. 43—61 **11 Claims**



1. A trap for the humane capture of animals, the trap comprising:

a housing having a sealable entrance way;

a valve having an aperture therein movably mounted on a first shaft within said housing for sealing said entrance way, said first shaft being mounted to said housing, wherein said shaft moves freely through said aperture;

a second shaft mounted to said valve for guiding said valve, said second shaft moving freely through an aperture in said housing;

a plate movably mounted within said housing; and

a latch mounted to said plate and extendable to said valve:

wherein when said plate is in a first set position, said latch holds said valve in a position away from said entrance way and wherein when said plate moves to a second sprung position, said latch releases said valve to seal said entrance way.

5,367,821

SUCTION INSECT TRAP APPARATUS

Gary D. Ott, Rte. 1 Box 803, Twisp, Wash. 98856

Filed Oct. 18, 1993, Ser. No. 136,899
Int. Cl.[5] A01M *3/00*
U.S. Cl. 43—139 **3 Claims**

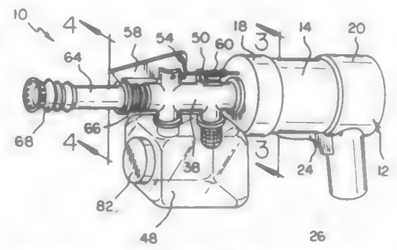
1. A new suction insect trap apparatus comprising:

a manifold having at least one port aperture therethrough;

a barrel coupled to said manifold in fluid communication with said at least one port aperture;

a container mounted to said manifold in fluid communication with said at least one port aperture;

a vacuum means in fluid communication with said container for creating a vacuum within said container, said vacuum means comprising a cylinder coupled to said manifold, said cylinder and said manifold both being in fluid communication with said container, a piston slidably disposed within said cylinder, a trigger pivotally coupled to a portion of said cylinder for releasably securing said piston in a predetermined position within said cylinder, and a spring mechanically engaged to both said cylinder and



said piston to cause an axial translation of said piston with respect to said cylinder upon an actuation of said trigger; and,

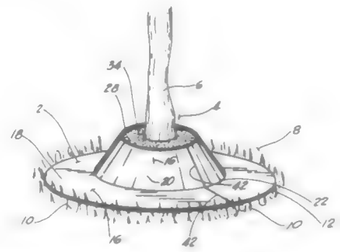
an extension tube concentrically, slidably disposed upon said barrel, a ridge fixedly secured to said extension tube, a release member pivotally mounted to said manifold, said release member being engagable to said ridge for securing said extension tube in a predetermined position, a further spring coupled to said barrel to cause an axial translation of said extension tube relative to said barrel upon an actuation of said release member, and an arm mechanically coupled to both said trigger and said release member.

5,367,822

TREE EDGING BORDER

James Beckham, Rte. 3, Box 240-AA, Florence, Miss. 39073

Filed Feb. 11, 1993, Ser. No. 16,743
Int. Cl.[5] A01G *17/00, 7/00*
U.S. Cl. 47—25 **1 Claim**



1. A border for decorative plants in a lawn comprising:

a closed growth impermeable circular structure surrounding the trunk of a plant, in contact with a lawn, having, in cross section, an outer skirt, sloping slightly up from the lawn from an outer rim to an inner vertically arising mower wheel deflecting ridge section.

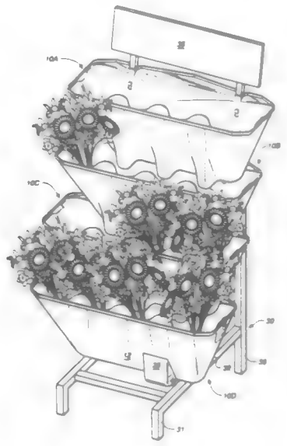
said ridge section being a circular ring about said trunk spaced a distance from said trunk forming an inverted cup about said trunk;

a porous inner water passing material said cup extending from said ridge section to said trunk;

said distance being sufficient for free passage of water and fertilizer to a root ball of said plant;

said porous inner material comprising a plant root impermeable disk of plastic foam filling said spaced distance.

5,367,823
APPARATUS FOR CUT FLOWER STORAGE AND DISPLAY
John Ferris, 20654 Pacific Coast Hwy., Malibu, Calif. 90265
Filed Aug. 31, 1993, Ser. No. 114,879
Int. Cl.[5] A47G *7/00*
U.S. Cl. 47—39 9 Claims

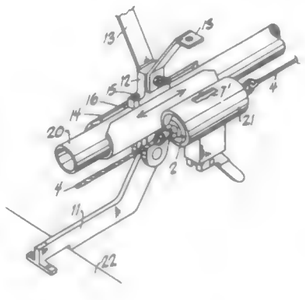


1. An improved cut flower storage and display assembly having a plurality of generally trough-shaped containers defining a plurality of liquid reservoirs and arranged in a vertically spaced relationship, each of said cut flower storage and display containers having liquid circulation means for circulating liquids within said liquid reservoirs for facilitating liquid circulation among said plurality of containers, each of said cut flower storage and display containers having a generally planar rectangular bottom surface, a continuous side wall having a lower peripheral edge joined to a peripheral edge of said bottom surface and an upper peripheral edge having a greater circumference than said lower peripheral edge, said bottom surface and said side wall defining said liquid reservoir and said upper peripheral edge serving as a cut flower supporting surface, wherein the improvement comprises:

at least one of said plurality of containers having container dividing means integrally disposed in a front portion of said side wall and comprising a first plurality of spaced-apart inwardly projecting upper protuberances in said side wall proximal said upper peripheral edge and a second plurality of spaced-apart outwardly projecting lower protuberances in said side wall proximal said lower peripheral edge, said first and second plurality of inwardly and outwardly projecting protuberances forming pairs of vertically arranged, juxtaposed, apertured partitions defining a plurality of chambers in said plurality of liquid reservoirs when said containers are arranged in a vertically-spaced congruent relationship.

5,367,824
Patent Not Issued For This Number

5,367,825
DOOR DRIVE OF AN UP AND OVER DOOR, SECTIONAL DOOR OR SLIDING DOOR, ESPECIALLY OF A GARAGE DOOR
Erich Döring, Im Hölzeli, CH-9442 Berneck, Switzerland
Filed Jan. 12, 1993, Ser. No. 3,354
Claims priority, application Germany, Jan. 17, 1992, 4201174
Int. Cl.[5] E05F *11/00*
U.S. Cl. 49—199 6 Claims



1. A drive for a door, comprising:

one or more guide tubes;

a plurality of support struts for supporting each of the one or more guide tubes;

a plurality of brackets coupled to each of the one or more guide tubes, for fastening the guide tubes to the support struts;

a slide carriage disposed for movement along the one or more guide tubes, the slide carriage having in its top side a longitudinal slit of a width sufficient to bypass the brackets;

a traction element having two ends, for moving the slide carriages;

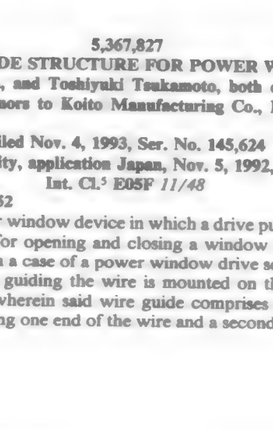
a turnbuckle for connecting the two ends of the traction element and for adjusting the tension of the traction element, the turnbuckle having two ends and a longitudinal hole with two screw threads, each screw thread for receiving an anchor screw, one anchor screw having a left-handed thread and the other having a right handed thread, each anchor screw being coupled to an end of the traction element;

a lateral coupling element disposed to the slide carriage, for coupling and uncoupling the turnbuckle to the carriage.

5,367,826
MECHANICAL HATCH LIFTING MECHANISM
John N. Wu, 139 Putnam Dr., Erie, Pa. 16511
Filed Oct. 20, 1992, Ser. No. 963,619
Int. Cl.[5] E05F *11/24*
U.S. Cl. 49—343 9 Claims

1. A hatch lifting mechanism for enhancing the capabilities of pushing and pulling a hatch during hatch opening and closing operations, the hatch lifting mechanism being operatively connected to the hatch and comprising;

hollow guide means;



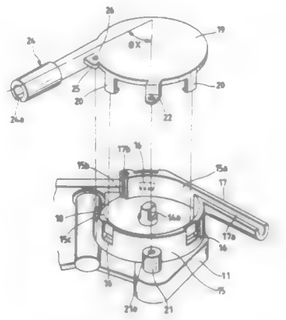
a rod having a threaded and at least one unthreaded portion;

a lock tight prevention means, operatively connected to the rod and operatively positioned in the hollow guide means, for causing the rod to discontinue upward movement; and

rotational means, operatively associated with the hollow guide means, for selectively opening and closing the hatch.

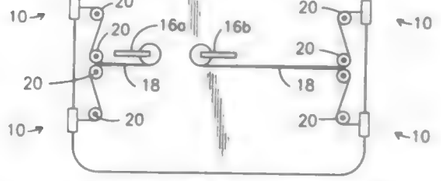
5,367,827
WIRE GUIDE STRUCTURE FOR POWER WINDOW
Keiichi Tajima, and Toshiyuki Tsukamoto, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Nov. 4, 1993, Ser. No. 145,624
Claims priority, application Japan, Nov. 5, 1992, 4-082259
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 9 Claims

1. In a power window device in which a drive pulley around which a wire for opening and closing a window is wound is disposed within a case of a power window drive section and a wire guide for guiding the wire is mounted on the case, the improvement wherein said wire guide comprises a first wire guide for guiding one end of the wire and a second wire guide for guiding the other end of the wire removably coupled to the first wire guide, and means for removably and irrotationally



fixing said first wire guide and said second wire guide to one another.

5,367,828
TWO-WAY VEHICLE DOOR
Ali N. Hashemnia, No. 882, 3rd Floor, Air France Building Enghelab Avenue, Tehran, Islamic Rep. of Iran
Filed Aug. 17, 1993, Ser. No. 107,922
Int. Cl.[5] E05D *7/02*
U.S. Cl. 49—382 6 Claims



1. A door assembly adapted to being pivotably about two different axis, said door assembly comprising

a door shell adapted to fit over an opening,

a first set of retractable hinge pins disposed on said door shell with pin axis and retraction axis along a first axis and adapted to releasably engage a first set of hinge pin receptacles associated with said opening,

a second set of retractable hinge pins disposed on said door shell with pin axis and retraction axis along a second axis different from said first axis, said second set of retractable hinge pins adapted to releasably engage a second set of hinge pin receptacles associated with said opening,

spring means for urging said retractable hinge pins into said hinge pin receptacles

means for selectively retracting said first set of retractable hinge pins, and

means for selectively retracting said second set of retractable hinge pins,

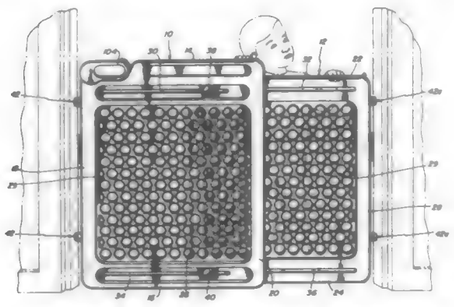
whereby said door assembly is capable of being mounted on said opening by the engagement of said first and second set of retractable hinge pins with said first and second set of hinge pin receptacles, respectively, and whereby the retraction of one set of hinge pins from said hinge pin receptacles along one of said first or second axis causes the door to be pivotable about the other of said first or second axis by means of the other of said set of hinge pins.

5,367,829

SECURITY GATE

David W. Crossley, Woonsocket, R.I.; Keith R. Wruck, Assonet, and Randy L. Abrams, Leominster, both of Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.

Filed Jun. 23, 1993, Ser. No. 81,613
Int. Cl.[5] E05C *21/02*; E06B *3/68*
U.S. Cl. 49—465 17 Claims



1. An adjustable width safety gate for children for closing a doorway or railing opening comprising

a pair of gate sections each having top and bottom rails and slidably attached together at their top and bottom rails so that their effective combined width can be varied to fill the width of doorways or railing openings of different widths,

each of said pair of gate sections also having inner and outer generally vertical side rails,

a movable bumper mounted on one of the outer side rails and movable between extended and retracted positions,

a second bumper mounted on the other of the outer side rails,

said bumpers on the outer side rails being adapted to bear against and frictionally engage the opposite sides of a doorway or rail opening when the movable bumper is moved to its extended position,

a drive assembly movable vertically on the outer side rail carrying the movable bumper for moving it between extended and retracted positions,

and a handle mounted on the top rail of the gate section having the movable bumper and connected to the drive assembly for raising and lowering said assembly enabling a user to operate the drive assembly to move the movable bumper between extended and retracted positions.

5,367,830

ROOF-SIDE WEATHER STRIP FOR A MOTOR VEHICLE

Masayuki Omura, and Seiji Ito, both of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

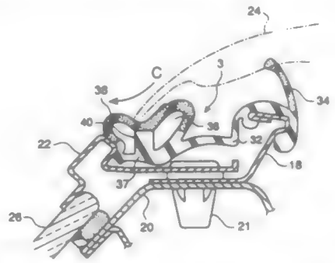
Filed Jul. 16, 1993, Ser. No. 92,500
Claims priority, application Japan, Aug. 24, 1992, 4-247251; Apr. 19, 1993, 5-115360
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—475.1 4 Claims

1. A weather strip adapted to be attached along a front pillar of a motor vehicle to provide a seal between the front pillar and a front portion of a door frame of the motor vehicle, the weather strip comprising:

a base portion adapted to be engaged with the front pillar; and

a tubular sealing portion which projects from a front end part of said base portion for closing a gap between the front pillar and a front end edge of the front portion of the door frame;

said base portion and said tubular sealing portion being extrusions, said tubular sealing portion having a rib-shaped projection which projects from a bottom thereof, and extends in a longitudinal direction of the weather strip so that a top end of said rib-shaped projection is spaced from a seal wall of said tubular sealing portion, and in a lower end portion of said weather strip, said seal wall being pressed on and bonded to said top end of said rib-shaped projection, whereby in said lower end portion of



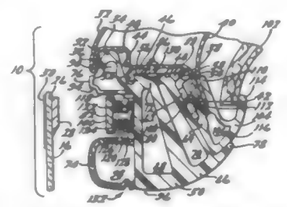
said weather strip, said seal wall has a reduced height relative to that of the remaining portions thereof, and has a configuration which substantially conforms to an approaching track of the front end edge of the front portion the door frame so as to minimize contact with the front end edge of the door frame upon closing a door of the motor vehicle.

5,367,831

FLUSH MOUNT MAGNETIC HEADER SEAL

Michael D. Gunkel, Toledo, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Sep. 13, 1993, Ser. No. 120,594
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—478.1 9 Claims



1. A window seal for a vehicle door including a frame and a closeable window panel, said window panel including an inner surface having a magnet disposed thereon along at least one edge, said window seal comprising:

a first sealing element mounted to the vehicle door frame, said first sealing element including a body having a compressible sealing bulb and a sealing lip disposed along the base portion of the body, a magnet integrally attached to said body and stop means for limiting the closure of said window panel; and

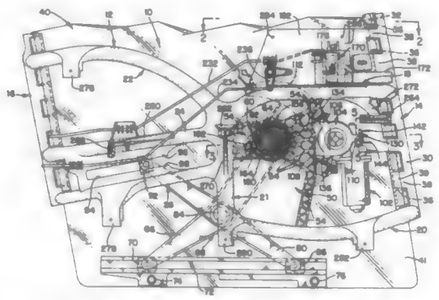
a second sealing element mounted to the vehicle door frame, said second sealing element including a body having extending means for attachment to said vehicle door frame and a sealing lip for engaging a header line of said vehicle door frame.

5,367,832

TUBULAR PLASTIC MOUNTING PANEL FOR DOOR HARDWARE

David E. Compeau, Oxford; Jayprakash U. Raisoni, Troy, and Suresh D. Shah, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 852,055, Mar. 16, 1992, Pat. No. 5,251,403. This application Jul. 2, 1993, Ser. No. 84,904
The portion of the term of this patent subsequent to Oct. 12, 2010, has been disclaimed.
Int. Cl.[5] B60J *5/04*
U.S. Cl. 49—502 8 Claims



1. A mounting panel for mounting a window and a window regulator in a vehicle door, comprising:

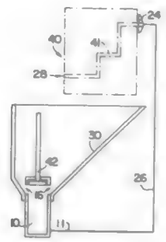
a one piece plastic molded member having a central planar mounting plate for mounting the window regulator and a plurality of spaced apart hollow tubular spokes molded integrally with the central plate and radiating generally forward and rearward therefrom to mount guide channels receiving the edges of the window.

5,367,833

UNIDIRECTIONAL ABRASIVE FLOW MACHINING

Lawrence J. Rhoades, Pittsburgh; Thomas A. Kohut, North Versailles; Nicholas P. Nokovich, Greensburg, and Danny W. Yanda, Irwin, all of Pa., assignors to Extrude Hone Corporation, Irwin, Pa.

Filed Oct. 22, 1993, Ser. No. 139,744
Int. Cl.[5] B24B *19/00*
U.S. Cl. 451—104 5 Claims



1. In an abrasive flow machining and polishing apparatus having a hydraulic actuated reciprocating piston and a extrusion medium chamber adapted to receive and extrude a viscoelastic dispersion of an abrasive unidirectionally across the internal surfaces of a workpiece having an internal passage formed therein, to perform abrasive work on said surfaces,

the improvement comprising:

A. fixture means to direct flow of said viscoelastic abrasive dispersion from said hydraulic extrusion medium chamber into at least one inlet of said internal passage;

B. collector means to gravimetrically collect flow of said viscoelastic abrasive dispersion from at least one outlet of said internal passage;

C. a extrusion medium chamber access port adapted to controllably and intermittently open for gravimetric return flow of said viscoelastic abrasive dispersion from said collector means into said hydraulic extrusion medium chamber;

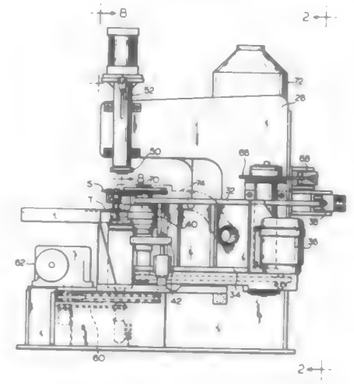
D. said hydraulically actuated piston adapted to extrude said viscoelastic abrasive dispersion from said extrusion medium chamber through said internal passage and into said collector and to intermittently withdraw from extruding position within said extrusion medium chamber to a retracted position to open said extrusion medium chamber access port and to actuate said gravimetric return flow of said viscoelastic abrasive dispersion into said extrusion medium chamber and thereafter advance to close said extrusion medium chamber access port and seal said viscoelastic abrasive dispersion within said extrusion medium chamber.

5,367,834

EDGE GRINDING APPARATUS

Kent A. Delventhal, Genoa, Ohio, assignor to Progress Design and Machine, Inc., Clyde, Ohio

Filed Oct. 20, 1992, Ser. No. 963,376
Int. Cl.[5] B24B *9/00*
U.S. Cl. 451—285 14 Claims



1. An apparatus for performing an edge grinding operation on a generally flat, sheetlike article, said apparatus comprising:

a frame;

a table for supporting an article, said table being rotatably secured to said frame for rotation about an axis extending generally perpendicularly to an article on said table;

means for rotating said table;

means for releasably securing an article on said table for rotation therewith;

arm means having an inner end and an outer end, said inner end being pivotally secured to the frame;

a spindle carried by said arm means near the outer end thereof;

rotatable grinding wheel means carried by said spindle;

means for rotating said grinding wheel means about a central axis of rotation;

means for biasing said arm means to urge said grinding wheel means into engagement with the edge of an article on said table;

a template carried by said table, said template having an outline corresponding to the outline of an article on said table;

a cam follower mounted on said spindle, said cam follower being positioned and sized to engage the template when

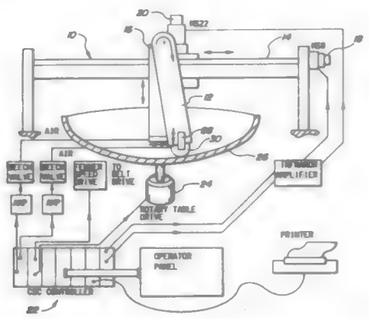
said grinding wheel means is in engagement with an edge of the article; and

second arm means having an inner end pivotally secured to said frame, and brake means releasably coupling said arm means and said second arm means for pivotal movement in unison with respect to said frame.

5,367,835
POLISHER

Richard W. Turnbull, Halifax, Great Britain, assignor to Crawford-Swift Limited, Claremont - Halifax, England

PCT No. PCT/GB91/01568, § 371 Date Jun. 21, 1993, § 102(e) Date Jun. 21, 1993, PCT Pub. No. WO92/05013, PCT Pub. Date Apr. 2, 1992
PCT Filed Sep. 13, 1991, Ser. No. 30,050
Claims priority, application United Kingdom, Sep. 21, 1990, 9020651.7
Int. Cl.[5] B24B *21/02*
U.S. Cl. 451—5 **8 Claims**



1. A polishing apparatus which comprises a main arm movably mounted to a housing for movement in horizontal and vertical directions, the arm being provided with a contact wheel having abrasive material for polishing purposes, a drive mechanism for rotating said wheel for moving said abrasive material there along with said wheel and against an article to be polished, and means for mounting and rotating the article to be polished, said polishing apparatus characterized in that the arm carries a mechanism including the contact wheel, said mechanism including said wheel being slideably mounted to said arm for relative motion along two orthogonal axes, and an associated pneumatic cylinder providing biasing force along a respective orthogonal axis for biasing said wheel and abrasive material against the article.

5,367,836
AUTOMATIC DRILL LOADER

Kenneth H. Allen, Hendersonville, N.C., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed May 14, 1992, Ser. No. 882,947
Int. Cl.[5] B24B *3/26, 47/00*
U.S. Cl. 451—331 **53 Claims**

1. An automatic drill loader comprising:

a. frame;

b. a magazine mounted to the frame comprising:

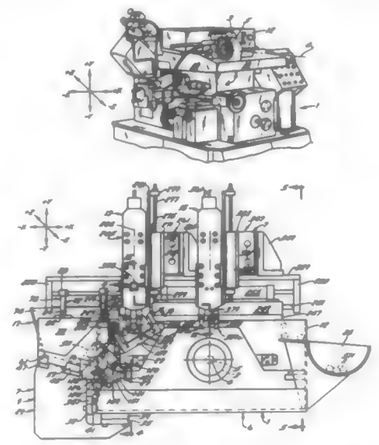
i. hopper means for storing a quantity of drills having respective longitudinal axes, cutting ends, and shank ends;

ii. pickup means for receiving a selected drill from the hopper means to support the drill at a predetermined pickup station; and

iii. stage means for transferring a drill from the pickup station to a predetermined staging station;

c. timing means mounted to the frame for timing a drill in axial and angular orientations; and

d. gripper means mounted to the frame for conveying a drill from the staging station to the timing means and from the timing means to a work station and from the work station to a storage receptacle, the gripper means including a pair

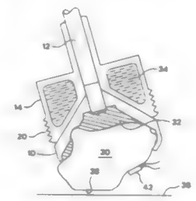


of drill gripper assemblies, each drill gripper assembly having a pair of interchangeable jaws.

5,367,837
GEMSTONE HOLDING APPARATUS

Gabriel S. Tolkowsky, 30 Maria Lei, Antwerpen, Belgium

Continuation of Ser. No. 904,693, Jun. 26, 1992, abandoned. This application Jul. 15, 1993, Ser. No. 91,476
Claims priority, application South Africa, Jul. 3, 1991, 91/5148
Int. Cl.[5] B24B *19/00*
U.S. Cl. 451—389 **5 Claims**

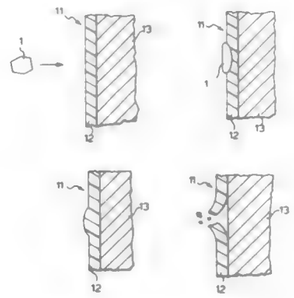


1. A gemstone holding apparatus for holding a gemstone during polishing thereof, the apparatus comprising a gemstone pot in which a gemstone to be polished can be held, a thermally conductive putty located in the gemstone pot between the gemstone pot and the gemstone itself, thereby to improve thermal conduction between the gemstone and the gemstone pot means adjacent the pot defining a coolant chamber which is operatively in heat exchange relationship with a gemstone located in the gemstone pot, an inlet to and an outlet from the coolant chamber, and means for passing a liquid coolant from the inlet to the outlet through the chamber, so that the liquid coolant withdraws heat indirectly from a gemstone held in the gemstone pot.

5,367,838
PARTICLE BLASTING USING CRYSTALLINE ICE

Somyong Visaisouk, Sidney, and Somnuk Vixaysouk, Victoria, both of Canada, assignors to Ice Blast International, Inc., Macomb County, Mich.

Continuation of Ser. No. 115,672, Sep. 2, 1993, abandoned, which is a continuation of Ser. No. 891,051, Jun. 1, 1992, abandoned. This application Mar. 21, 1994, Ser. No. 210,724
Int. Cl.[5] B24C *1/00*
U.S. Cl. 451—39 **3 Claims**



1. A blasting process for cleaning or decoating a surface comprising:

fluidizing frozen ice particles with compressed fluidizing air;

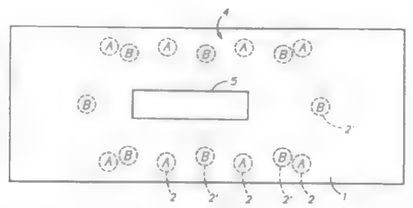
transporting the fluidized ice particles to a blast nozzle; and

propelling the fluidized ice particles from the blast nozzle toward the surface by compressed blasting air that is sufficiently warm such that the blasted ice particles have a temperature sufficiently near the melting point so as to melt immediately upon impacting the surface.

5,367,839
ABRASIVE SHEETS

Phillip W. Pearce, Washington, England, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Duesseldorf, Germany

Filed Jan. 22, 1992, Ser. No. 823,941
Int. Cl.[5] B24D *11/00*
U.S. Cl. 451—526 **19 Claims**



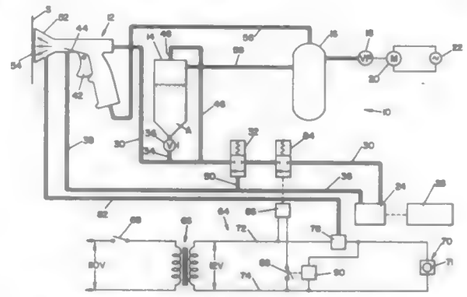
1. A sheet of abrasive material for use on a variety of different abrading machines comprising:

a plurality of separable areas formed in said sheet delineated by perforations enabling selected ones of said areas to be separated from said sheet to form holes in said sheet according to one pattern of an array of desired patterns suitable for a particular sanding machine to which said sheet is to be fittted wherein each said area is bounded by the remainder of the sheet.

5,367,840
METHOD AND SYSTEM FOR THE ABRASIVE CLEANING OF SURFACES

Richard A. West, 31303 Nantucket Row, Bay Village, Ohio 44140

Filed Mar. 26, 1993, Ser. No. 37,274
Int. Cl.[5] B24C *5/02, 7/00*
U.S. Cl. 451—78 **17 Claims**

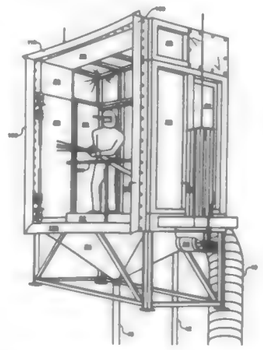


1. In a system for abrasively cleaning a surface including a source of abrasive material, shroud means for directing abrasive material against said surface, means including a source of air under pressure for delivering abrasive material from said source to said shroud means, and means for generating a vacuum at said shroud means for recovering abrasive material delivered to said shroud means and material removed from said surface, the improvement comprising: electrical control circuit means including vacuum sensing vacuum responsive electrical switch means for sensing an unacceptable vacuum level at said shroud means, and means responsive to said vacuum sensing switch means for indicating said unacceptable vacuum level.

5,367,841
CONTAINING STRUCTURE FOR ABRASIVE BLAST HEAD RIGGING AND TANK SIDE CLEANING APPARATUS

Michael D. Smith, 5632 Zion Church Rd., Concord, N.C. 28025, and George F. Wells, 7209 English Ivy La., Charlotte, N.C. 28227

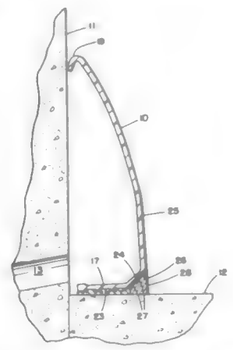
Filed Feb. 16, 1993, Ser. No. 17,814
Int. Cl.[5] B24C *9/00*
U.S. Cl. 451—89 **5 Claims**



1. A portable containment unit for an abrasive blasting system and process, for preventing escape of grit and contaminated particulate material into the atmosphere; said containment unit including:

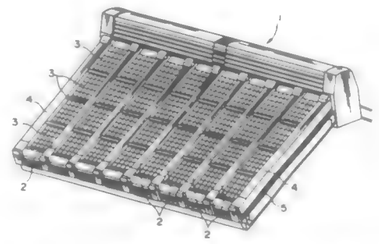
A) A portable, substantially rectangular room enclosure having a supporting frame and a skin overlying said frame, with at least a portion of said skin being formed of a selected air permeable material;
B) a collection pan mounted underneath said supporting frame for receiving the fallout of grit and particulate matter resulting from the abrasive blasting process;
C) air circulating means for supplying air to the interior of said room enclosure; and vacuum means for removal of material from said collection pan;
D) support means for movably retaining said room enclosure on the side of a structural surface which is to be treated by blasting; said support means further including:
i) cable means for enabling vertical movement upwardly and downwardly along the surface being treated;
ii) rigging means including a plurality of rollers for removable attachment to the structure being treated and enabling horizontal movement in either sideways direction along the work surface;
whereby said room enclosed may be moved horizontally and vertically as desired to progress from one work area to another without dismantling any part of the unit.

5,367,842
FLOOR-WALL JOINT ENCLOSURE FOR BASEMENT WATER-CONTROL SYSTEMS
Lawrence Janesky, 1 Clayton St., Milford, Conn. 06460
Filed Jun. 8, 1993, Ser. No. 73,177
Int. Cl.[5] E02D *27/00*
U.S. Cl. 52—169.5 **2 Claims**



1. An elongate, plastic water-conveying enclosure designed to be adhered to the floor of a subterranean room having a vertical wall, a floor and floor-wall joint around the inner periphery of the room, adjacent said floor-wall joint, to receive, confine and channel groundwater to a predetermined drain location, said enclosure comprising a narrow elongate horizontal base wall having an undersurface designed to be adhered along said floor, adjacent said vertical wall, and an elongate side wall which extends upwardly and inwardly from the base wall to contact said vertical wall and enclose said floor-wall joint, characterized by the undersurface of said elongate base wall comprising a plurality of closely-spaced, continuous longitudinal dovetailed ribs extending outwardly therefrom and forming therebetween a plurality of continuous longitudinal grooves for receiving and distributing flowable, curable, bonding adhesive, said outwardly-extending longitudinal dovetailed ribs comprising opposed, continuous, laterally-extending, outer surface flanges which overlie and narrow the entrance areas of said longitudinal grooves and integrate with the bonding adhesive within said grooves to prevent the separation of said enclosure from the bonding adhesive, said elongate side wall having a substantially vertical wall portion and a lower, narrow, substantially flat wall portion which tapers downwardly and inwardly from the vertical wall portion to the horizontal base wall to form an external recess adjacent the floor, the outer surface of the enclosure in the area of said flat wall portion being roughened to improve its adhesion to caulking compositions.

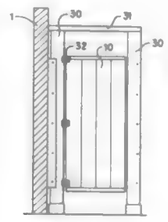
5,367,843
ROOF APPARATUS
Takashi Hirai, and Keisuke Hirai, both of Tokyo, Japan, assignors to Hirai Engineering Corporation, Tokyo, Japan
Filed Aug. 24, 1993, Ser. No. 111,333
Claims priority, application Japan, Sep. 7, 1992, 4-262739; Mar. 11, 1993, 5-076437
Int. Cl.[5] E04B *7/18*
U.S. Cl. 52—200 **13 Claims**



1. A roof apparatus, comprising:
a plurality of light collecting members, each of said light collecting members comprising left and right vertical members each having a ridge side end and an eaves side end, an upper horizontal member, a lower horizontal member, and a transparent plate, said upper horizontal member being disposed at said ridge side ends of said vertical members, said lower horizontal member being disposed at said eaves side ends of said vertical members, said transparent plate being disposed an inner periphery of said vertical members, said upper horizontal member, and said lower horizontal member, said light collecting members being connected in a slope direction of a roof,
wherein said lower horizontal member has a transparent plate holding piece, a transparent plate contact wall, and a cover piece, said transparent plate holding piece being adapted to hold an eaves side end of said transparent plate, said transparent plate contact wall having thickness which is smaller than a thickness of said transparent plate, said cover piece being adapted to cover an upper portion of said upper horizontal member of an adjacent eaves side light collecting member and extending from an upper end of said transparent plate contact wall.

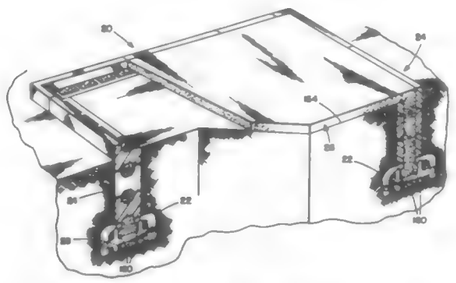
5,367,844
PANEL CONSTRUCTION WHICH INCLUDES SLATS OF RECYCLED PLASTIC
Lyle Diedrich, Kaukauna, Wis., assignor to La Force Hardware & Manufacturing Co., Green Bay, Wis.
Filed May 10, 1993, Ser. No. 58,886
Int. Cl.[5] E04C *2/20;* **E06B** *5/00*
U.S. Cl. 52—239 **17 Claims**

1. A panel construction for use in bathroom facilities that is formed primarily from recycled plastic, the panel construction comprising:
a lower support member having a bottom support wall with two opposed sides, two side edges extending between the sides and a positioning extension located between the side edges and extending transversely upward from one side of the lower support member;
a plurality of substantially identical slats each having a length, width and thickness supported on the lower support member, each slat being constructed of a material containing at least 80 percent recycled plastic materials, each slat having opposed slat side edges, a front and back slat surface and top and bottom slat walls; wherein a groove is formed along the length of one of the opposed slat side edges of the slats and a complementary protrusion is formed along the opposed slat side edge of the slats so as to be received in the groove of an adjacent slat in the assembled state and wherein a slot is formed in the bottom slat wall of each of the slats so that each slat can receive the positioning extension of the lower support member;
a top bracket including a bracket top wall and two bracket side walls extending transversely downward from the



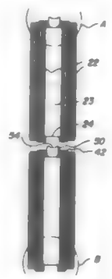
bracket top wall along the front and back slat surfaces of the slats;
whereby the panel construction includes a top edge defined by the top bracket, a bottom edge defined by the lower support member and walls defined by the slats constructed of at least 80 percent recycled plastic material such that the panel is constructed primarily from recycled plastic materials; and
wherein the lower support member and top bracket support the slats such that the slats can be slid along the lower support member and the top bracket to permit removal and replacement of the slats.

5,367,845
SYSTEM FOR BUILDING A STRUCTURE
Robert H. Hartling, 63B Niles Hill Rd., Apt. B3, New London, Conn. 06320
Filed Feb. 9, 1993, Ser. No. 15,647
Int. Cl.[5] F02D *27/00*
U.S. Cl. 52—293.1 **32 Claims**



1. A footing block system for the foundation of a structure comprising:
first and second elongated longitudinally extending opposed shells defining a cavity therebetween for the reception of concrete in slurry form, each of said shells including an upright portion having a base adapted to engage the subsurface and an integral transverse portion extending to a rim, said rims of said first and second shells being spaced apart and facing one another;
bridge means engageable with said first and second shells for joining said first and second shells a fixed distance apart; and
mutually interlocking means on said first and second shells and on said bridge means for slidable reception of said bridge means with said first and second shells in a longitudinal direction while preventing substantial movement therebetween in a transverse direction;
wherein said upright portion of said first shell has a longitudinally extending groove therein generally parallel with and spaced from said base thereof;
wherein said upright portion of said second shell has a longitudinally extending groove therein generally parallel with and spaced from said base thereof; and
wherein said bridge means includes first and second tongues shaped for interlocking slidable engagement with the longitudinally extending grooves in said upright portions of said first and second shells, respectively, while substantially preventing relative transverse movement between said bridge means and said first and second shells.

5,367,846
INTERLOCKING GLASS BLOCK SYSTEM
Kenneth F. vonRoenn, Jr., 156 Crescent Ave., Louisville, Ky. 40206
Filed Jun. 14, 1993, Ser. No. 75,726
Int. Cl.[5] E04C *1/42*
U.S. Cl. 52—308 **23 Claims**

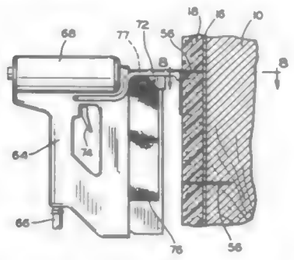


1. A glass construction block comprising a plurality of glass members, each glass member comprising a front wall, a rear wall and a plurality of side walls, a frame means surrounding the side walls of said glass members and secured to said glass members spacing said glass members apart from each other, said frame means defining a channel member with side walls and flange portions which extend outward from said channel member side walls over said glass member side walls, said flange portions being secured to said glass member side walls, said frame means including a rib locking member which fits into said channel member, extends outward past said flange portions, and is secured to said channel member, said rib locking member being substantially "C" shaped and defining a channel on one of its sides which can receive and hold adhesive.

5,367,847
COMPOSITE BUILDING STRUCTURE AND METHOD FOR CONSTRUCTING SAME
Eric J. Hepler, Pottstown, Pa., assignor to Anthony Industries, Inc., Adrian, Mich.
Filed Sep. 2, 1992, Ser. No. 939,169
Int. Cl.[5] E04C *1/00*
U.S. Cl. 52—309.4 **11 Claims**

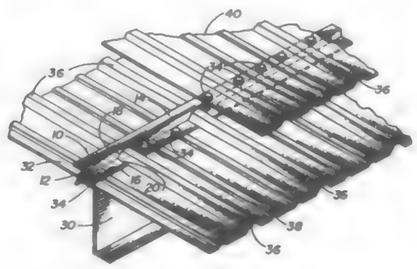
1. A wall surfacing system adapted to cover a wall substructure, said wall surfacing system comprising:
a) a support backing provided with an outer surface, and with an inner surface for engaging an outer edge of a wall substructure;

b) an elastic foam panel adhesively secured to the outer surface of said support backing;
c) staple means for securing said support backing and said elastic foam panel to the wall substructure, said staple means including a staple gun and a plurality of thin staples such that the staple gun drives a staple through said elastic foam panel to create a slit in said elastic foam panel, each staple having a crown engaging the outer surface of said support backing and a pair of legs extending through said



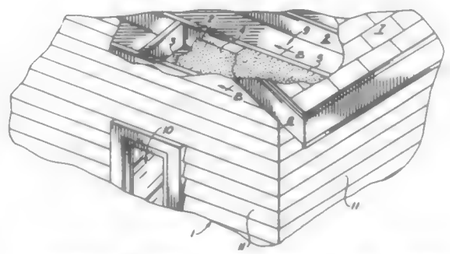
support backing into the wall structure, whereby the slit in said elastic foam panel is substantially closed after the staple is driven through said elastic foam panel;
d) a layer of mesh material positioned on an outer surface of said elastic foam panel; and
e) a layer of mortar applied over said layer of mesh material to form an outer surface, said layer of mortar securably engaging said layer of mesh material to said elastic foam panel.

5,367,848
BRACKET
Duane V. McConnohie, Tampa, Fla., assignor to Roof Hugger Inc., Oldsmar, Fla.
Continuation of Ser. No. 524,277, May 16, 1990, abandoned. This application Mar. 10, 1994, Ser. No. 171,830
Int. Cl.[5] E04B *1/20*
U.S. Cl. 52—336 **4 Claims**



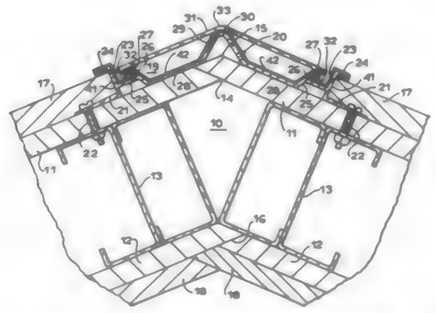
1. A system for supporting and attaching new roof or wall panels over existing roof or wall panels, containing alternating upper and lower ribs profile, comprising:
said existing panels having a base surface connected by raised ribs to a top surface, said top surface being the uppermost or outermost surface away from said base surface, said base surface attaches to a building's roof or wall substructural support members;
a bracket spanning generally co-level with and perpendicular to the ribs of said existing panels, said brackets having a top flange, a web, a base flange, a width, and a height, said base and said web configured to generally nest over said base surface, said raised ribs and said top surface of said existing panels, said top flange generally flat to receive said new roof or wall panels, said width sufficient to receive fastening means, said height a distance sufficient and variable to allow said new panels to be located a correct distance above said top surface to allow desired utilities or thickness of insulation to be placed between said existing panels and said new panels;
upon nesting said bracket over said existing panels said bracket is attached to said existing panels with fastening means, and said new panels are attached to said top flange of said bracket with fastening means.

5,367,849
INSULATION CONFIGURATIONS AND METHOD OF INSTALLATION
Thomas W. Bullock, 3321 Pines Rd., Shreveport, La. 71119
Filed Sep. 8, 1992, Ser. No. 941,904
Int. Cl.[5] E04B *2/00*
U.S. Cl. 52—404 **17 Claims**



1. A fiberglass insulation configuration for attic and floor structures, comprising at least one layer of low density of 0.4 to 0.8 pcf fiberglass insulation positioned adjacent to said attic and floor structure and at least one layer of high density of 0.8 to 6.0 pcf fiberglass insulation positioned horizontally on the exterior of said low density fiberglass insulation and exposed to the air, whereby air circulation into said high density fiberglass insulation and said low density fiberglass insulation is reduced.

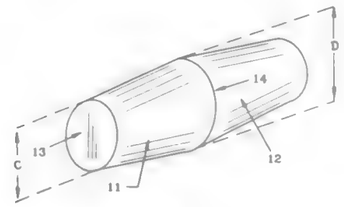
5,367,850
FIRE-RATED CORNER GUARD STRUCTURE
John D. Nicholas, Lawrenceville, Ga., assignor to Pawling Corporation, Pawling, N.Y.
Continuation of Ser. No. 905,044, Jun. 26, 1992. This application Mar. 17, 1994, Ser. No. 210,725
Int. Cl.[5] E04F *13/06*
U.S. Cl. 52—516 **4 Claims**



1. A fire and impact resistant corner structure for a fire resistant wall structure comprised of layers of fire resistant material and including an external corner and having a recess in said layers at said external corner where the fire resistant character of said corner structure is reduced, and having an impact resistant structure mounted in said recess, where said

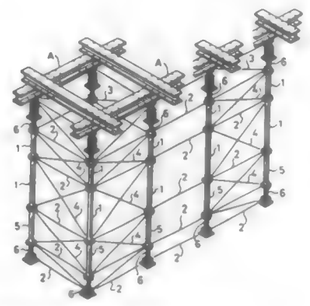
impact resistant structure includes a metal retainer strip mounted in said recess and a plastic cover member installed in said recess and secured by said retainer strip, characterized by,
(a) said metal retainer strip being a section of extruded aluminum having an inwardly facing surface and an outwardly facing surface,
(b) the fire resistance of said external corner being enhanced by at least one of said inwardly or outwardly facing surfaces of said extruded aluminum retainer strip being provided with a surface coating of intumescent paint capable of expanding and forming an insulating layer in said recess in response to the presence of fire, and
(c) said surface coating of intumescent paint having a thickness of about two mils.

5,367,851
PANEL SPACER AND JOINT
Jerry B. Larson, 670 N. Apache Dr., Chandler, Ariz. 85224
Filed Dec. 2, 1993, Ser. No. 160,220
Int. Cl.[5] E04C *3/00*
U.S. Cl. 52—585.1 **10 Claims**



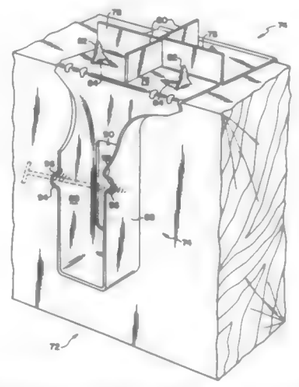
1. A panel spacer comprising:
(a) a frustum having one end with a minor diameter and another, larger end with a major diameter;
(b) a second frustum having one end with a minor diameter and another, larger end with a major diameter the same as the major diameter of said first frustum, said frustums axially aligned and directly joined one to the other at the larger ends, said pair of frustums formed from a resilient material.

5,367,852
SUPPORT SYSTEM
Akira Masuda, 815 Shinmatsudo Haitsu, 743 Ooyaguchi, Matsudo-shi, Chiba, and Kikuzo Kuramoto, 3-1-31-1305, Yazu, Narshino-shi, Chiba, both of Japan
Filed Dec. 22, 1992, Ser. No. 995,027
Claims priority, application Japan, Dec. 27, 1991, 3-358923
Int. Cl.[5] E04G *1/00;* **F16B** *7/00*
U.S. Cl. 52—651.06 **19 Claims**



1. A support system comprising:
a plurality of columns grouped into a plurality of sets, each of said plurality of columns having a first end and a second end, a plurality of said columns in each set having said first end connected to a second end of an adjacent column in said set, said sets of columns extending in an axial direction of said plurality of columns;
a plurality of flanges respectively connected to said first end of each of said plurality of said columns in each set, each of said plurality of flanges defining a plurality of flange holes positioned circumferentially around said each flange;
a plurality of joint members connected to said plurality of flanges, each of said plurality of joint members including a joint portion and a mounting portion integrally connected to each other, said joint portion defining a joint hole positionable substantially in line with one of said plurality of flange holes, said mounting portion defining a plurality of brace holes;
a plurality of beam members having a first end connected to one of said plurality of joint members and a second end connected to another of said plurality of joint members, said first and second end of said plurality of beam members each defining a beam hole positionable substantially in line with one of said plurality of brace holes;
a plurality of diagonal members having a first end connected to one of said plurality of joint members and a second end connected to another of said plurality of joint members, said first and second end of said plurality of diagonal members each defining a diagonal member hole positionable substantially in line with another one of said plurality of brace holes.

5,367,853
PREFABRICATED DECK SYSTEM
Robert Bryan, 2269 Lakeshore Blvd. West, Unit #2206, Etobicoke, Ontario, Canada M8V 3X6
Continuation-in-part of Ser. No. 972,929, Nov. 6, 1992. This application Mar. 5, 1993, Ser. No. 26,598
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—702 **12 Claims**



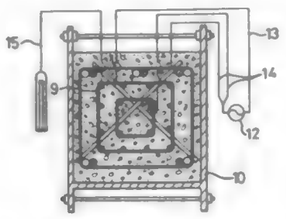
1. A cross brace support bracket for use in attaching a cross brace of predetermined cross sectional form to a supporting joist, said support bracket having a top flange, for mounting said bracket in suspended relation from a top surface portion of a joist; a bracket cup portion suspended from said top flange, having a back portion extending substantially normally from said top flange and having a pair of side flanges and a bottom portion each extending substantially normally from said back portion, said bottom portion interconnecting said side flanges and extending normally thereto, to form a receptacle for the support of one end of a cross brace therein;

5,367,854

METHODS FOR CONNECTION OF PRECAST CONCRETE UNITS

Sun-Ja Kim, Limchang Apt 3-508, 187-26 Cheungnan-Dong, Eungoung-Ku, Seoul, Rep. of Korea

Filed Nov. 20, 1992, Ser. No. 979,545
Claims priority, application Rep. of Korea, Nov. 23, 1991, 1991-21003
Int. Cl.[5] E04G *21/00*
U.S. Cl. 52—745.13 22 Claims



1. A method for connecting precast concrete units to each other comprising the steps of:

a) facing ends of said concrete units to be connected toward each other, providing a conductive wire or net means in the space defined by a plurality of reinforcing bars projecting from the ends of said units and connecting said reinforcing bars mechanically;

b) winding at least one conductive linear member around said connected reinforcing bars;

c) supporting said conductive wire or net means to said reinforcing bars by using at least one embedded and non-conductive support means so that said conductive wire or net means is positioned in said space, and forming an electric loop by connecting a first terminal of an electric power source to said conductive wire or net means, and a second terminal of said electric power source to said conductive linear member and/or said reinforcing bars; and

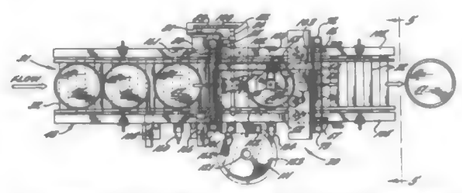
d) installing a form around said conductive linear member in order to surround said conductive linear member with a uniform space between said form and said conductive linear member, placing concrete into said form in order to fill the space defined by said form and said mechanically connected reinforcing bars with said concrete, and applying electric power to said conductive members in order to cause said concrete to be heated.

5,367,855

METHOD AND APPARATUS FOR SEALING A LID AND CONTAINER WITH SEALING TAPE

William J. DeWaters, 99 Harvest Rd., Levittown, Pa. 19056

Filed Oct. 26, 1992, Ser. No. 967,252
Int. Cl.[5] B65B *51/06*
U.S. Cl. 53—137.2 14 Claims



1. A container sealer for successively applying a sealing tape to a container and its lid comprising:

a conveyor for advancing a plurality of containers in successive fashion along a substantially linear, substantially horizontal predetermined path of travel, said conveyor defining a downstream direction in which said conveyor travels and an upstream direction opposite to said conveyor's direction of travel;

sensing means along said conveyor for determining whether one or more containers are adjacent one or more predetermined positions along said conveyor;

a tape head along said conveyor and cooperating with said sensing means, said tape head being movable between a taping position adjacent the predetermined path of travel of said conveyor and a retracted position removed somewhat from the predetermined path of travel of said conveyor, for applying a length of tape to a container when a container is adjacent said tape head;

a pair of idler rollers positioned above said conveyor and adjacent to and downstream from said tape head, and that are responsive to said sensing means, said idler rollers being moveable between a closed position wherein said idler rollers are less than one container diameter apart to thereby prevent a container from passing therebetween, and an open position in which said idler rollers are greater than one container diameter apart to thereby allow a container to pass therebetween, for holding an advancing container along said conveyor when the container is adjacent said tape head, for permitting a container to rotate while being held and taped, and for releasing the container downstream thereafter;

a drive roller positioned above said conveyor and adjacent to and upstream of said tape head, and that is responsive to said sensing means, said drive roller being moveable between a drive position that is above said conveyor and in said predetermined path of travel, and a passage position that is alongside said conveyor, said drive roller being further positioned to engage and rotate a container when said idler rollers are in their closed position and said drive roller is in its drive position; and

indexing means adjacent said conveyor and operatively associated with said sensor, said tape head, said idler rollers and said drive roller for ordering successive containers along said conveyor and advancing individual containers to said tape head for taping.

5,367,856

METHOD FOR PROCESSING AN EXPANDABLE FOOD PRODUCT

David Kirk, Brooklyn Park; Raymond Tucker, Bloomington; Michael Perry, Plymouth; Steve Reil, Brooklyn Park, all of Minn.; Larry M. Dugan, Boulder, Colo.; Michael Dreher, Boulder, Colo., and Paul H. LeFevre, Golden, Colo., assignors to The Pillsbury Company, Minneapolis, Minn.

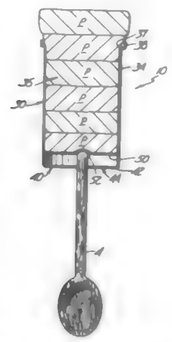
Filed Sep. 3, 1992, Ser. No. 940,109
Int. Cl.[5] B65B *3/10, 69/00*
U.S. Cl. 53—420 12 Claims

1. A method for processing an expandable food product comprising the steps of:

a. providing a container comprising a shell having a bottom having an access port formed therethrough, a sidewall and an upper rim; a removable cap attachable to the shell adjacent its upper rim; and a piston means slidably received within the shell, the shell, cap and piston means together defining a cavity of the container;

b. placing the expandable food product within the cavity prior to attaching the cap to the shell and then attaching the cap, the expandable food product being placed at a location disposed between the cap and the piston means;

c. increasing the pressure within the container to sealingly urge the piston means against an inner face of the bottom of the shell to substantially seal the cavity; and



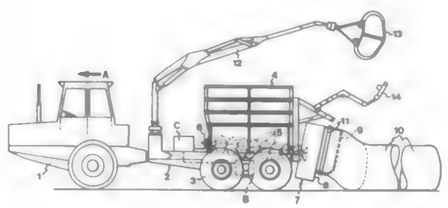
d. storing the product in a pressurized state within the cavity.

5,367,857

METHOD AND DEVICE FOR COMPACTING FEEDSTUFF OR THE LIKE IN A TUBE TO BE PLACED ON THE GROUND

Stig Carlson, Malmö , Sweden, assignor to Sockerbolaget AB, Malmo, Sweden

PCT No. PCT/SE91/00648, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/05688, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 26, 1991, Ser. No. 30,347
Claims priority, application Sweden, Sep. 27, 1990, 9003084-2
Int. Cl.[5] B65B *1/24*
U.S. Cl. 53—436 5 Claims



4. Method for compacting feedstuff in a tube (10) which is placed on the ground, said method being performed with a mobile device which includes a traction vehicle (1), a trailer unit (2) mounted on wheels and connected to the traction vehicle, a container (4) for the feedstuff, and a rotatable feeding screw (5) for feeding said feedstuff from the container (4) into said tube (10) as the mobile device is propelled,

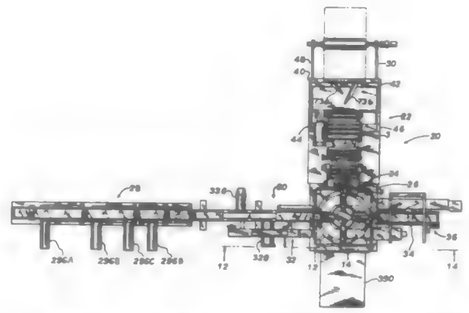
said method being performed by driving the feeding screw (5) with a hydraulic motor (6) which is supplied with hydraulic fluid under pressure, sensing the pressure of the hydraulic fluid at the hydraulic motor, said pressure being proportional to loading of the feeding screw due to compaction of the feedstuff, generating a signal corresponding to the hydraulic pressure, controlling the braking of the wheels in response to said signal to exert a braking force, reducing the braking force when the hydraulic pressure rises to a predetermined maximum value, and increasing the braking force when the hydraulic pressure decreases to a predetermined minimum value.

5,367,858

SLEEVING SYSTEM

Andrew L. Haasl, Green Bay, Wis., assignor to Development Industries of Green Bay, Inc., Green Bay, Wis.

Filed Jan. 14, 1993, Ser. No. 4,449
Int. Cl.[5] B65B *25/14, 35/50, 63/02*
U.S. Cl. 53—439 20 Claims



8. A system for packaging a compressible stack of articles, comprising:

an article feeding mechanism for supplying a stack of articles in a compressed state;

a sleeve feeding mechanism for supplying a collapsible tubular sleeve in a collapsed condition, the sleeve defining at least a first open end;

a sleeve opening mechanism for moving the sleeve from its collapsed condition to an open condition, comprising a pair of prongs movable between a first collapsed position in which the prongs are close together, and a second opened position in which the prongs are moved apart, wherein the pair of prongs include a first stationary prong and a second movable prong movable toward and away from the first stationary prong, wherein the movable prong is mounted for sliding movement to one or more guide posts, and wherein the sleeve feeding mechanism functions to place the sleeve onto the prongs when the prongs are in their first collapsed position, and wherein movement of the prongs to their second opened position functions to open the sleeve;

an inserting mechanism for inserting the compressed stack of articles into the opened end of the sleeve between the prongs when the sleeve is moved to its open condition by the sleeve opening mechanism; and

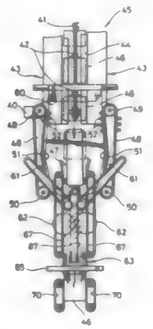
a removing mechanism for removing the sleeve and the stack of articles from the sleeve opening mechanism, wherein removing the stack of articles from the sleeve opening mechanism, by operation of the removing mechanism, functions to allow the stack of articles to move away from its compressed state and into engagement with the sleeve;

wherein the prongs are mounted to a pivoting turret mechanism which functions to move the prongs between a sleeving station at which the prongs are in their first collapsed position and the sleeve feeding mechanism functions to place the sleeve onto the prongs; an inserting station at which the prongs are in their second opened position, wherein the sleeve opening mechanism functions to move the prongs from their first collapsed position to their second opened position during movement of the prongs between the sleeving station and the inserting station; and a removal station at which the removing mechanism functions to remove the sleeve and the stack of articles from the prongs.

5,367,859
PACKAGING APPARATUS

Yasutaka Saga, Ibaraki, Japan, assignor to Ibaraki Seiki Machinery Company, Ltd., Osaka, Japan

Filed Jul. 6, 1993, Ser. No. 88,042
Int. Cl.[5] B65B *9/08, 51/30*
U.S. Cl. 53—550 2 Claims



1. A packaging apparatus for nipping and sealing a length of tubular-film (63) between packageable individual contents (46), comprising;

a frame body (14) mounted for reciprocation lengthwise of said tubular film (63) along a conveying track for conveying said tubular film (63) in the direction of its length to cover packageable individual contents (46) which are aligned in file at equal intervals;

a pair of sealing bars (65) and (66) which are respectively secured to said frame body (14) and seal said tubular film (63) between said packageable individual contents (46);

a pair of belts (70) which are respectively secured to a frame unit (72) by a pair of pulleys (73) and (74) secured to said frame body (14) downstream of said tubular film (63) on said frame body (14), wherein said belts (70) and (70) jointly nip said tubular film (63) and said packageable contents from both sides;

an idle shaft (79) which is secured to said frame unit (72) and rotated in the direction of conveying said tubular film (63) in order that drive force can be transmitted to said pulleys (73) and (74) by a group of gears; and

a means for transmitting drive force to said idle shaft (79) in order that the speed of rotation of said belts (70) and (70) can be reduced to zero relative to the movement of said frame body (14) while said frame body (14) proceeds in the direction of conveying said tubular film (63) and conversely said belts (70) and (70) can respectively maintain a speed of rotation identical to the proceeding speed of said frame body (14) while said frame body (14) retreats.

5,367,860
AGRICULTURAL FEED BAGGING MACHINE HAVING AN IMPROVED AUGER CONVEYOR MOUNTED THEREON

Steven R. Cullen, Astoria, Oreg., assignor to Versa Corporation, Astoria, Oreg.

Filed Feb. 23, 1994, Ser. No. 200,762
Int. Cl.[5] B65B *9/10, 9/15, 25/02*
U.S. Cl. 53—576 7 Claims

1. An agricultural bagging machine for bagging agricultural material into agricultural bags having a closed end and an open mouth comprising,

a frame means having rearward and forward ends;

a tunnel on said frame means and having an intake end for receiving the material to be bagged and an output end adapted to receive the open mouth of the agricultural bag;

a hopper on said frame means forwardly of said tunnel for receiving the material to be bagged;

said hopper having an open upper end;

a horizontally disposed rotor rotatably mounted on said frame means at the intake end of said tunnel for forcing the material to be bagged from said hopper into said tunnel and into said bag;

said hopper being defined by an upstanding front hopper panel, an upstanding rear face panel, and upstanding side walls;

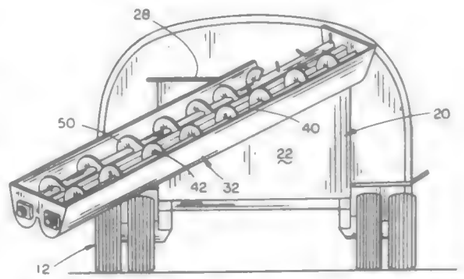
and a material conveyor means mounted at the forward end of said frame means and including a portion extending upwardly over said hopper;

said material conveyor means comprising an auger trough assembly having upper and lower ends, said auger trough assembly extending upwardly and rearwardly from its lower end to its upper end, said auger trough having first and second elongated augers mounted therein;

said auger trough assembly including a first trough portion associated with said first auger and a second trough portion associated with said second auger, said first and second trough portions each having upper and lower ends;

said first auger being positioned forwardly of said second auger;

the upper end of said first auger being positioned over the



upper end of said front hopper panel adjacent one side of said hopper;

the upper end of said second auger being positioned above and rearwardly of the upper end of said first hopper panel so that a portion of the length of said second auger is positioned above said hopper;

said first and second augers having helical flighting thereon whereby rotation of said first and second augers will cause material thereon to be conveyed upwardly towards said upper end of said hopper, said helical flighting on said first and second augers each having upper and lower ends;

said upper end of said helical flighting on said second auger being positioned approximately at the location where said second auger intersects the upper end of said front hopper panel;

said upper end of said first trough portion being positioned approximately at the location where said first trough portion intersects the upper end of said front hopper panel;

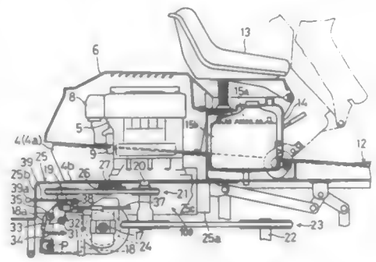
said upper end of said second trough portion being positioned approximately at the location where said second trough portion intersects the upper end said front hopper panel;

said second auger having a plurality of spaced apart projections extending therefrom above the upper end of said helical flighting thereon.

5,367,861
RIDING LAWN MOWER

Masatake Murakawa, Sakai; Mikio Yuki, Kawachinagano; Ryozo Imanishi, Kishiwada; Masatsugu Tone, Hashimoto, and Akira Minoura, Sakai, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Nov. 19, 1992, Ser. No. 978,761
Claims priority, application Japan, Dec. 17, 1991, 3-333099; Dec. 17, 1991, 3-333100; Mar. 6, 1992, 4-049443; Mar. 6, 1992, 4-049447
Int. Cl.[5] A01D *34/64*
U.S. Cl. 56—11.8 6 Claims



1. A riding lawn mower comprising:

a set of front wheels and a set of rear wheels;

a front axle connected to said front wheels and a rear axle connected to said rear wheels;

a body frame supported by said front and rear axles;

a grass cutting unit suspended from said body frame and including a rotary blade;

an engine having a vertical output shaft extending downwardly, said engine being supported by said body frame in a position forwardly of said rear axle with respect to a longitudinal direction of said body frame;

a hydrostatic transmission disposed rearwardly of said rear axle with respect to the longitudinal direction of said body frame, said hydrostatic transmission outputting drive in varied speeds to said rear axle;

transmission means for connecting said output shaft of said engine to said hydrostatic transmission; and

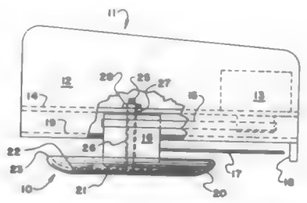
a driver's seat disposed forwardly of said engine; and

said body frame defining a chamber, a muffler of said engine being disposed within said chamber, said chamber having peripheral walls shaped to guide cooling air from said engine to said muffler, and means for exhausting air from said chamber.

5,367,862
ATTACHMENT FOR EASING THE MANIPULATION OF A HERBAGE TRIMMER

Frank M. Spear, 625 Todd Ave., and Mark J. Latess, 621 Todd Ave., both of Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 784,038, Oct. 28, 1991, Pat. No. D. 338,141. This application May 25, 1993, Ser. No. 66,250
Int. Cl.[5] A01D *34/00*
U.S. Cl. 56—12.7 2 Claims

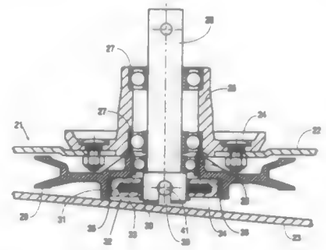


1. A device for removable attachment to a herbage trimmer having a head member held by an upwardly disposed elongated handle and a cutting cord extending from a rotatable spool disposed within said head member, said device comprising a disc having a downwardly directed bottom surface having a flat central portion, a top surface and upwardly directed circular lip, and a straight mounting post upwardly emergent from the center of said top surface and terminating in a threaded distal extremity configured to engage said head member to maintain said disc stationary while the cutting cord rotates, said disc having a radius between 40% and 70% of the radius of said cutting cord and a thickness, measured between said lip and bottom surface of between ¼" and 1¼" said disc configured to rest continuously upon the ground surface so as to support said trimmer.

5,367,863
MOWING MACHINE

Maria P. Quataert, Nuenen, Netherlands, assignor to P. J. Zweegers en Zonen Landbouwmachinefabriek B.V., Geldrop, Netherlands

Filed Jun. 26, 1992, Ser. No. 905,058
Claims priority, application Netherlands, Jun. 26, 1991, 9101107; Jan. 29, 1992, 9200156
Int. Cl.[5] A01D *34/66*
U.S. Cl. 56—13.5 42 Claims



1. A mowing machine, comprising:

a frame;

a plurality of mowing means arranged side by side in a row and supported by the frame, each of which mowing means is rotatable about an upwardly extending axis of rotation;

a plurality of pulleys, each of which is connected to one of the mowing means;

a drivable pulley arranged near one end of the row of mowing means, which drivable pulley can be driven from a driving source driving the mowing machine; and

a driving belt passed over the drivable pulley and over each of the pulleys connected to the mowing means so that the drivable pulley drives each of the other pulleys;

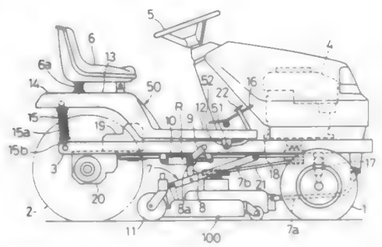
said mowing machine being characterized in that the contact between the driving belt and the pulleys connected to the mowing means and being driven by the drivable pulley is arranged in such a manner that, with regard to the tensile force in the part of the driving belt that is in contact with each of the pulleys being driven, the amount of power that is transmitted to a pulley in proportion to a given amount of tensile force is greater for a pulley located nearer to the drivable pulley measured from the drivable pulley to the nearer pulley in the direction of belt movement than for a pulley located farther away from the drivable pulley measured from the drivable pulley to the farther pulley in the direction of belt movement.

5,367,864

RIDING LAWN MOWER

Hiroyuki Ogasawara; Nobuyuki Yamashita, and Akira Misoura, all of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Oct. 13, 1993, Ser. No. 134,892
Claims priority, application Japan, Feb. 23, 1993, 5-032343
Int. Cl.[5] A01D *34/00, 67/00;* B60G *9/00*
U.S. Cl. 56—15.8 6 Claims



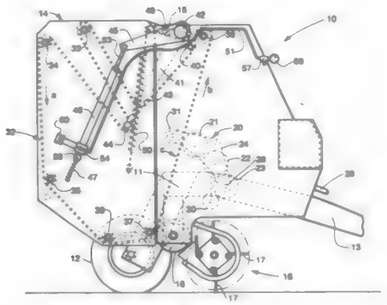
1. A riding lawn mower comprising:
a chassis frame supported by front wheels and mar wheels;
a mower unit suspended from said chassis frame through a vertically movable link mechanism;
an auxiliary frame including a foot rest in a forward region thereof, and rear wheel fenders in a rearward region thereof, said auxiliary frame having a forward end portion thereof supported by said chassis frame through pivot means, and a mar end portion supported by said chassis frame through suspension means; and
a driver's seat mounted on said auxiliary frame.

5,367,865

ROUND BALER APRON TENSIONING APPARATUS

Richard E. Jennings, Manheim, and James T. Clevenger, Jr., Lancaster, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Aug. 13, 1993, Ser. No. 105,570
Int. Cl.[5] A01D *39/00*
U.S. Cl. 56—341 10 Claims



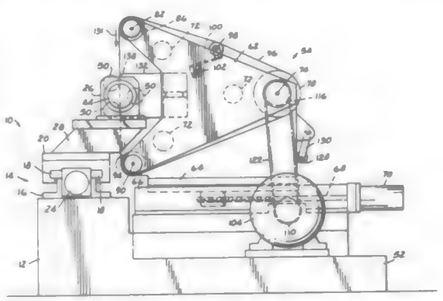
1. In a round baler having
a main frame,
a tailgate pivotally connected to said main frame,
a bale forming chamber defined by inwardly facing surfaces of crop conveying means which includes an apron comprising a plurality of side by side belts trained around a series of transverse guide rolls mounted in said main frame and said tailgate,
means for feeding crop material into said chamber,
said bale forming chamber expanding from a bale starting position to a completed bale position as crop material is fed into said chamber and conveyed by said conveying means in a generally spiral path to form a bale of increasing girth,
a pair of apron take up arms rotatably mounted on said main frame,
at least one additional transverse guide roll extending between said take up arms and about which additional guide roll said belts are also trained,
a lever connected to rotate with said take up arms, and
tension means attached to said lever for maintaining tension on said apron as said bale forming chamber expands, the improvement comprising
said tension means having first and second resilient elements mounted in tandem to apply force to said lever opposite to the force on said take up arms as said bale girth increases.

5,367,866

CRANKPIN GRINDER

James D. Phillips, Posen, Mich., assignor to J. D. Phillips Corporation, Alpena, Mich.

Continuation of Ser. No. 929,420, Aug. 14, 1992, abandoned, which is a continuation-in-part of Ser. No. 593,694, Oct. 5, 1990, Pat. No. 5,142,827. This application Dec. 2, 1993, Ser. No. 161,687
Int. Cl.[5] B24B *5/00*
U.S. Cl. 451—307 14 Claims



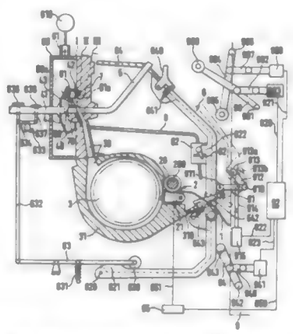
1. Apparatus for grinding the peripheries of a plurality of cylindrical crankpin journals provided in longitudinally spaced apart relation along the length of an elongated crankshaft wherein said crankpin journals are each mounted on a pair of longitudinally spaced apart arms extending radially outwardly from said crankshaft in positions such that the centers of said crankpin journals are disposed radially outwardly from the central longitudinal axis of said crankshaft at different angles around said central, longitudinal axis and a full 360° of the peripheries of said crankpin journals is laterally accessable for grinding, said apparatus comprising a plurality of grinding units, means mounting said grinding units laterally of said crankshaft for movement toward and away from said crankshaft, each of said grinding units having a frame and an endless, flexible abrasive belt, each of said belts having an abrasive surface on one side and a backing surface on the opposite side, means mounting said belts wholly on their respective frames in opposed relation to the respective crankpin journals and with their abrasive surfaces facing said respective crankpin journals so that each belt moves with its own frame independently of the other belts and frames, means for linearly driving said belts along paths substantially perpendicular to said crankshaft, means for moving said grinding units independently of one another toward and away from said crankshaft as said crankshaft rotates to cause said abrasive surfaces of said belts to maintain grinding contact with said crankpin journals throughout a full 360° of crankshaft rotation, and a back-up member mounted on each frame engaging the backing surface of the abrasive belt mounted thereon at its point of contact with the crankpin journal throughout the full 360° of crankshaft rotation, the spacing between the arms of said pairs of said arms being sufficient to permit said belts and back-up members to be projected therebetween to enable grinding a full 360° of the peripheries of said crankpin journals as the crankshaft rotates 360°.

5,367,867

PROCESS AND APPARATUS FOR CLEANING AN OPEN-END SPINNING ROTOR

Kurt Lovas, Bohmfeld, and Ulrich Rodiger, Ingolstadt, both of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Sep. 22, 1992, Ser. No. 949,170
Claims priority, application Germany, Sep. 23, 1991, 4131666
Int. Cl.[5] D01H *4/24*
U.S. Cl. 57—302 17 Claims



1. A process for cleaning an open-end spinning rotor which has a fiber collection channel and an open edge which is covered by a rotor cover and which is subject to a suction air flow, comprising the following steps:
a) directing a stream of compressed air into said rotor and into said fiber collection channel in a first cleaning phase to loosen fibers and dirt from the surface of said fiber collection channel;
b) separating said rotor cover from said rotor for a predetermined space which is greater than the space between said rotor and said cover during normal spinning operations of said rotor during a second cleaning phase; and
directing said compressed air stream from said fiber collection channel to the open edge of said rotor.

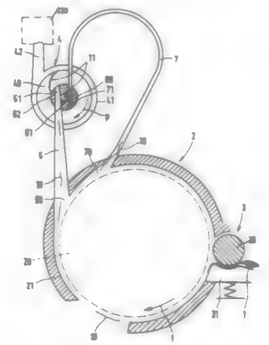
5,367,868

PROCESS AND DEVICE FOR OPEN-END SPINNING

Werner Billner, Ingolstadt, Germany, assignor to Rieter Ingolstadt, Ingolstadt, Germany

Filed Aug. 6, 1993, Ser. No. 102,900
Claims priority, application Germany, Aug. 17, 1992, 4227099
Int. Cl.[5] D01H *4/30, 4/32*
U.S. Cl. 57—409 18 Claims

4. An open-end spinning device, comprising:
a spinning element for spinning individual fibers into yarn,
an opener roller operably carried in an opener roller housing for opening a fiber sliver into individual fibers, said opener roller housing generally surrounding said opener roller;
a feeding device for feeding a fiber sliver to said opener roller;
a fiber feeding channel with an inlet opening in a peripheral wall of said opener roller housing and an outlet directed toward said spinning element, said fiber feeding channel extending from said opener roller housing to said spinning element and connected to a negative pressure source for conveying fibers from said opener roller to said spinning element; and
an auxiliary fiber channel having an inlet opening located in said peripheral wall of said opener roller housing between said fiber feeding channel inlet opening and the location where said feeding device feeds a fiber sliver to said opener roller, said auxiliary fiber channel configured in communication with a negative pressure source independently from said fiber feeding channel such that said auxiliary fiber channel is not in communication with its respective negative pressure source through said fiber feeding channel, said auxiliary fiber channel disposed so as to remove fibers and fiber fragments from said opener roller that were not drawn off by said fiber feeding channel so that said fibers and fiber fragments will not adversely interfere with the spinning process.

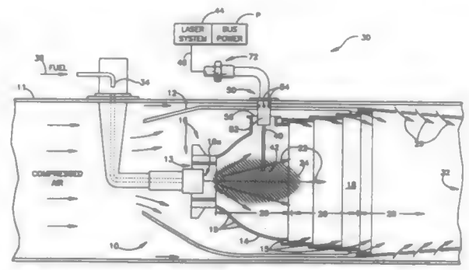


5,367,869

LASER IGNITION METHODS AND APPARATUS FOR COMBUSTORS

Dennis M. DeFreitas, Oxford, N.Y., assignor to Simmonds Precision Engine Systems, Akron, Ohio

Filed Jun. 23, 1993, Ser. No. 81,732
Int. Cl.[5] F02C *7/264;* F23Q *13/00*
U.S. Cl. 60—39.06 28 Claims



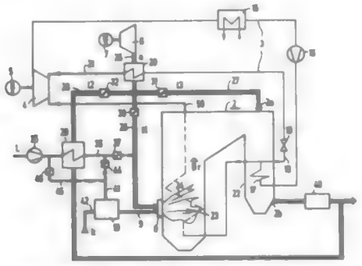
1. A method of igniting fuel in a flow through combustor comprising the steps of:
a. producing an atomized fuel spray in an ignition zone of the combustor;
b. directing infrared laser energy into the ignition zone at a wavelength substantially unabsorbed by the fuel spray; and
c. focussing the laser energy to initiate combustion of the fuel spray and an unthrottled air flow.

5,367,870

GAS AND STEAM TURBINE SYSTEM

Wolfgang Vollmer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 16, 1993, Ser. No. 153,181
Claims priority, application Germany, May 16, 1991, 4116065
Int. Cl.[5] F02C 3/26, 6/18
U.S. Cl. 60—39.182 4 Claims



1. A gas and steam turbine system, comprising:
a coal mill;
a steam turbine having a water-steam loop;
a gas turbine having an exhaust gas side supplying exhaust gas;
a first heat exchanger connected to the exhaust gas side of said gas turbine; a steam generator connected downstream of the exhaust gas side of said gas turbine and upstream of said steam turbine in said water-steam loop for generating steam for said steam turbine, said steam generator having a furnace system connected downstream of said coal mill for supplying flue gas flowing through said steam generator, and said steam generator having an inlet;
a second heat exchanger connected to said coal mill;
means for delivering a first adjustable fractional quantity of the exhaust gas from said gas turbine after being cooled in said first heat exchanger, to said furnace system as combustion air;
means for delivering a second adjustable fractional quantity of the cooled exhaust gas to said second heat exchanger for heating air for said coal mill; and means for delivering a third adjustable fractional quantity of the cooled exhaust gas to said inlet of said steam generator for admixing said third fractional quantity with the flue gas from said furnace system.

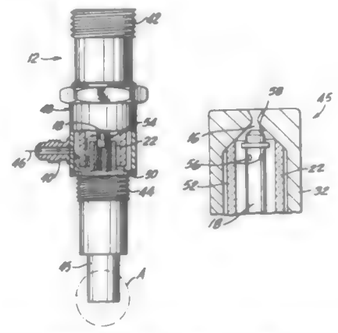
5,367,871

AIRCRAFT ENGINE IGNITION SYSTEM

Kattalaicheri S. Venkataramani, West Chester, and John C. Scott, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 919,795, Jul. 27, 1992, Pat. No. 5,257,500.
This application Apr. 16, 1993, Ser. No. 46,707
Int. Cl.[5] F02C 7/264
U.S. Cl. 60—39.821 5 Claims

1. A plasma igniter for a jet engine, comprising:
a hollow casing generally cylindrical about an axis having an electrical connector portion at a first axial end thereof, a firing tip portion at a second axial end thereof, a mounting portion located intermediate said first and second axial ends, and a hollow fitting located between said electrical connector portion and said mounting portion for admitting a charge into said casing; and
a hollow electrode mounted within said [illegible]ing and extending axially from said fitting to said tip portion, said hollow electrode having an intake port formed therein adjacent



said tip portion for supplying said charge to said tip portion.

5,367,872

METHOD AND APPARATUS FOR ENHANCING COMBUSTION EFFICIENCY OF SOLID FUEL HYBRID ROCKET MOTORS

Gary K. Lund, Ogden, and Kent W. Richman, Layton, both of Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Apr. 27, 1993, Ser. No. 54,752
Int. Cl.[5] F02K 9/28
U.S. Cl. 60—251 20 Claims



1. A hybrid rocket motor comprising:
a combustion chamber having aft and forward sections; and
a plurality of solid fuel grains, each grain containing more than one perforation and said fuel grains being cartridge loaded into the combustion chamber along a rocket motor axis such that the perforations of at least two solid fuel grains are misaligned with the perforations of an adjacent solid fuel grain and such that the fuel grains are arranged within the combustion chamber to allow gas flow through the perforations in a direction substantially parallel to the rocket motor axis.

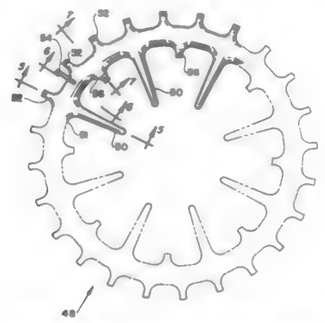
5,367,873

ONE-PIECE FLAMEHOLDER

W. Kevin Barcza, Stuart, and Raymond J. Bruchez, Jr., North Palm Beach, both of Fla., assignors to United Technologies Corporation, West Palm Beach, Fla.

Continuation of Ser. No. 719,402, Jun. 24, 1991, abandoned.
This application Jan. 26, 1993, Ser. No. 9,357
Int. Cl.[5] F02K 3/10
U.S. Cl. 60—261 12 Claims

1. In a gas turbine including a longitudinal axis an improved flameholder for a thrust augmentation combustor comprising a toroidal pilot gutter having a U-shaped cross-section and a plurality of inner and outer radial gutters having U-shaped cross-sections projecting from said pilot gutter, said pilot gutter and said radial gutters being formed integrally in a single piece of metal which is shaped to form said gutters and to form rounded corners at the intersections of said pilot gutter and



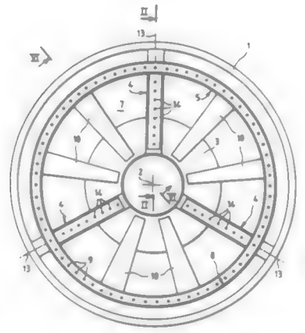
said radial gutters, the axes of the radii of curvature of said rounded corners being parallel to said longitudinal axis of said gas turbine.

5,367,874

INTEGRAL COMPOSITE GAS TURBINE AFTERBURNER STRUCTURE

Didier L. C. Auffret, Combs La Ville; Gérard C. L. Berger, Quincy S/Senart; Eric Conete, Le Mee S/Seine; Frédéric Delage, Paris; Gérard E. A. Jourdain, Saintry Sur Seine, and Christophe J. F. Thorel, Paris, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.), Paris, France

Filed Dec. 8, 1993, Ser. No. 162,879
Claims priority, application France, Dec. 16, 1992, 9215120
Int. Cl.[5] F02K 3/10
U.S. Cl. 60—261 8 Claims



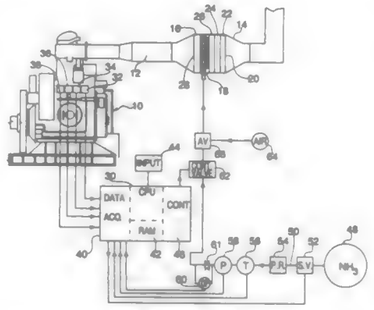
1. An integral, one-piece afterburner structure for a turbojet engine comprising:
a) an outer casing portion formed of composite material and formed as a first body of revolution about a central axis;
b) an inner casing portion formed of composite material and formed as a second body of revolution about the central axis;
c) plurality of connecting arms formed of composite material integral with and extending between the inner and outer casing portions so as to connect the inner and outer casing portions together as an integral unit, at least one of the connecting arms defining a main fuel conduit;
d) a plurality of secondary support arms formed of composite material integral with one of the outer and inner casing portion and extending therefrom; and,
e) at least one annular flameholder ring formed of composite material so as to be integral with the plurality of secondary support arms and defining a secondary fuel conduit in communication with the main fuel conduit.

5,367,875

AUTOMATED CATALYTIC REDUCTION SYSTEM

Francois W. Aboujaoude, and Eugene A. Kasel, both of Roscoe, Ill., assignors to Coltec Industries Inc, New York, N.Y.

Filed Dec. 7, 1992, Ser. No. 987,044
Int. Cl.[5] F01N 3/18
U.S. Cl. 60—303 16 Claims



1. An automated catalytic reduction system for controlling the exhaust gas emissions in the exhaust system of an engine operable in both diesel and dual fuel modes comprising:
a catalyst housing mounted in the exhaust system for said engine whereby the exhaust gas from said engine passes through said catalyst housing,
catalyst means mounted in said housing and operative to remove components from said exhaust gas.
means to introduce a reducing agent into said housing including a source of said reducing agent and flow rate control means between said source and said catalyst housing to control the volume of reducing agent introduced into said catalyst housing in response to a volume control signal,
a fuel mode sensing means operative to generate a signal indicative of whether the engine is operating in one of a diesel mode and a dual fuel mode, said fuel mode sensing means providing a first mode signal when the engine is operating in the diesel mode and a second mode signal when the engine is operating in the dual fuel mode;
condition sensing means connected to said engine and operative to provide condition output signals indicative of real time engine operating parameters, and
processor means connected to receive said output signals from said fuel mode sensing means and said condition sensing means and operative in response to said output signals to provide said volume control signal to said flow rate control means for selecting an instantaneous nitrogen oxide value.

5,367,876

APPARATUS FOR CONTROLLING OF AUTOMOTIVE EXHAUST EMISSIONS BY TREATMENT OF EXHAUSTING GASES TRAVELING THROUGH AN AUTOMOTIVE EXHAUST CONDUIT

Raymond F. Harper, III, 137-B Garden Ave., Browns Mills, N.J. 08015

Filed Apr. 2, 1992, Ser. No. 862,118
Int. Cl.[5] F01N 3/04
U.S. Cl. 60—310 19 Claims

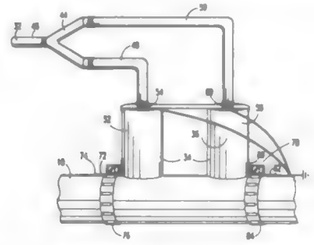
1. An apparatus for controlling of automotive exhaust emissions by treatment of exhausting gases traveling through an automotive exhaust conduit comprising:
A. a plurality of treatment chemicals for controlling automo-

tive exhaust emissions, said treatment chemicals being in fluid form;

B. a fluid reservoir means secured with respect to an automobile and defining an interior chamber means therein adapted to hold said treatment chemicals therein to facilitate treatment of automotive exhaust emissions as desired, said fluid reservoir means including a fluid reservoir outlet means adapted to facilitate exiting of said treatment chemicals from said interior chamber means for treatment of automotive exhaust emissions, said fluid reservoir means further defining a fluid reservoir inlet means to facilitate filling of said interior chamber means with said treatment chemicals;

C. a reservoir conduit means attached with respect to said fluid reservoir outlet means to be in fluid flow communication with respect to said interior chamber means and adapted to receive said treatment chemicals exiting therefrom;

D. a fluid pump means including a fluid pump inlet and a fluid pump outlet, said fluid pump inlet being attached with respect to said reservoir conduit means to facilitate



pumping of said treatment chemicals therefrom and from said interior chamber means of said fluid reservoir means;

E. a pump conduit means attached with respect to said fluid pump outlet and adapted to receive said treatment chemicals passing therethrough;

F. an injector housing means defining therein an interior plenum chamber adapted to receive said treatment chemicals therein to facilitate dispensing thereof, said injector housing means defining an injector inlet means and an injector outlet means to facilitate passing of said treatment chemicals therethrough, said injector inlet means being attached with respect to said pump conduit means to establish fluid flow communication between said injector plenum chamber and said fluid pump means for receiving of said treatment chemicals under pressure therefrom through said pump conduit means; and

G. an injector means attached to said injector housing means at said injector outlet means thereon, said injector means adapted to extend outwardly from said injector outlet means and into an automotive exhaust conduit to dispense said treatment chemicals directly into automotive exhaust gases traveling therethrough therein.

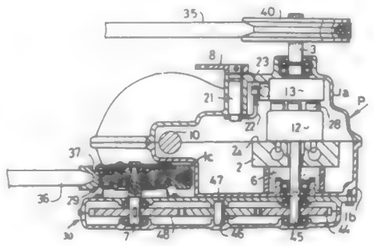
5,367,877

AXLE DRIVING APPARATUS FOR A WORKING CAR

Koji Irikura, Amagasaki, Japan, assignor to Kanzaki Kokyukoki Mfg. Co. Ltd., Hyogo, Japan

Filed Sep. 25, 1992, Ser. No. 950,718
Claims priority, application Japan, Sep. 27, 1991, 3-248967
Int. Cl.[5] F16D *31/02, 39/00*
U.S. Cl. 60—435 **7 Claims**

1. An axle driving apparatus for a vehicle, comprising:
an axle casing;
an axle disposed within said axle casing;
a hydraulic transmission for driving said axle disposed within said axle casing comprising a hydraulic pump hydraulically connected to a hydraulic motor;
a power take-off shaft connected to a pump shaft of said hydraulic pump, wherein a motor shaft of said hydraulic motor is disposed substantially perpendicular to said pump shaft and said motor shaft is disposed substantially perpendicular to said power take-off shaft;
a power take-off pulley attached to one end of said power take-off shaft; and



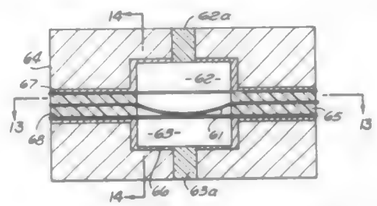
first power transmitting means for operatively connecting said pump shaft and said power take-off shaft whereby power is transmitted from said pump shaft to said power take-off shaft.

5,367,878

TRANSIENT ENERGY RELEASE MICRODEVICES AND METHODS

Eric P. Muntz, Pasadena; Richard N. Nottenburg, Santa Monica, and Geoffrey R. Shiflett, Los Angeles, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 790,595, Nov. 8, 1991, Pat. No. 5,186,001. This application Dec. 10, 1992, Ser. No. 989,054
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] F01B *29/00*
U.S. Cl. 60—512 **20 Claims**



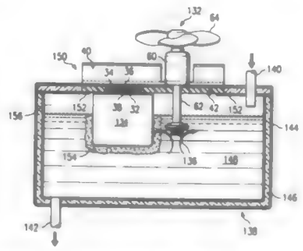
1. A microdevice for providing motion at a high repetition rate, including in combination:
a cell having a membrane separating the interior of said cell into two chambers, with at least a portion of said membrane movable;
a charge of gas in said cell; and
means for directly heating said gas selectively to increase the gas pressure in one of said chambers and move said membrane portion,
said means for heating including pulse means for generating transient gas pressure increases in a chamber;
said cell including means for cooling said gas for reducing the gas pressure;
with said movable membrane portion being bistable and having first and second stable positions and movable from one of said positions to the other of said positions by change in gas pressure in said chambers of said cell.

5,367,879

MODULAR THERMOELECTRIC ASSEMBLY

Michael J. Doke, Dallas; Richard A. Howarth, Allen, and Leonard J. Recine, Sr., Plano, all of Tex., assignors to Marlow Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 47,695, Apr. 14, 1993, Pat. No. 5,315,830. This application Nov. 1, 1993, Ser. No. 146,712
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.6 **28 Claims**



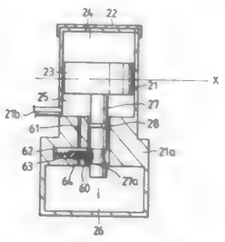
1. Apparatus for controlling the temperature of a liquid within an enclosed structure comprising:
a thermoelectric device with a first heat sink disposed on one side of the device and a second heat sink disposed on the other side of the device;
a layer of insulating material disposed between the first heat sink an the second heat sink with the thermoelectric device contained within the insulating material;
a portion of the second heat sink disposed within the liquid;
an electrical motor carried by the first heat sink;
a rotating shaft extending longitudinally through the first heat sink and the electrical motor; and
a propeller attached to a first end of the rotating shaft adjacent to the first heat sink.

5,367,880

DISPLACER APPARATUS OF A SPLIT STIRLING COOLER

Woo H. Lee, Jokong Apt. 323-802, Chang-dong, Dobong-ku, Rep. of Korea

Filed Aug. 2, 1993, Ser. No. 100,216
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 **4 Claims**



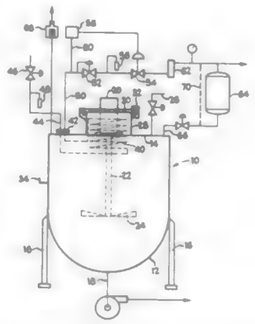
1. A displacer apparatus of a split Stirling cooler comprising:
a displacer body including a cylinder, a step portion defining a central bore and provided at a lower end of said cylinder, and a buffer space provided below said step portion;
a displacer reciprocating within said cylinder in response to variations in pressure of incoming fluid in said cylinder, to thereby cause changes in volume of expansion and work spaces in said cylinder;
a displacer rod having a recess formed in an outer periphery of a lower portion thereof, and connected to and extending downwardly from a lower surface of said displacer to be slidably disposed in said bore of said step portion;
a through hole formed in said step portion to permit said work and buffer spaces to be in communication with each other;
an actuating hole formed in said step portion to intersect said through hole;
a centering rod having a through hole formed in its middle portion and capable of coming into registry with said through hole of said step portion, and placed in said actuating hole of said step portion with its forward tip being in contact with said recess of said displacer rod to effect forward and backward movements depending upon upward and downward movements of said displacer rod; and
biasing means disposed rearwardly of said centering rod to apply a biasing force to said centering rod, thereby allowing said forward tip of said rod to be urged into contact with said displacer rod.

5,367,881

CRYOGENIC CONTROL OF EMISSION OF SOLVENT VAPORS FROM MIXERS

Gregory W. Henzler, Northville, Mich., assignor to Liquid Carbonic Corporation, Oak Brook, Ill.

Filed Sep. 28, 1993, Ser. No. 127,872
Int. Cl.[5] F17C *5/02*
U.S. Cl. 62—11 **5 Claims**



1. The method of reducing the escape of volatile solvent vapors from batch mixing vessels having top-loading hatches, comprising:
lining the loading hatch of the vessel with a heat exchanger connected to a source of liquid cryogen;
admitting the cryogen to said heat exchanger, during the mixing of solids with a volatile liquid solvent in said vessel, at a rate sufficient to condense vaporized solvent at a rate approximating its rate of evaporation from the mix within the vessel; and
returning liquid solvent condensed upon said heat exchanger to the contents of the vessel.

5,367,882

GASOLINE VAPOR RECOVERY

Geert Lievens, Atlanta, Ga., and Tedmund P. Tiberi, Chicago, Ill., assignors to Arid Technologies, Chicago, Ill.

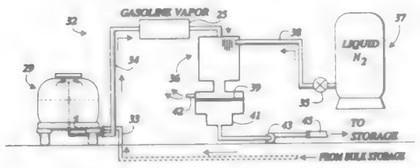
Continuation-in-part of Ser. No. 803,590, Dec. 9, 1991, Pat. No. 5,220,799. This application Jun. 21, 1993, Ser. No. 80,577
Int. Cl.[5] F17C *3/10*
U.S. Cl. 62—48.2 **9 Claims**

1. A gasoline delivery and distribution system comprising:
at least one storage vessel at a gasoline outlet for containing liquid gasoline to be delivered to consumer vehicles, said vessel being configured to define a head space in the vessel above the surface of liquid gasoline contained therein;
at least one pump coupled to said storage vessel for drawing gasoline from said vessel and delivering the gasoline to

consumer vehicles, the head space in said vessel growing and becoming saturated with gasoline vapor as liquid gasoline is drawn from the vessel;

a gasoline tanker truck for refilling said storage vessel with liquid gasoline and simultaneously collecting gasoline vapor from the head space within the vessel as the vessel progressively fills with liquid gasoline from said tanker truck;

a gasoline terminal for refilling said tanker truck with liquid gasoline from bulk storage facilities while collecting gasoline vapor that has accumulated in the tanker truck during its filling of said storage vessel;



gasoline vapor recovery means at said gasoline terminal for recovering liquid gasoline from the gasoline vapor collected from said tanker truck and delivering the recovered liquid gasoline to a remote location for subsequent use; and

means in said gasoline delivery and distribution system for insuring that the gasoline vapor collected for use in the recovery process contains at most a predetermined minimum quantity of water vapor at the time liquid gasoline is recovered from the vapor by said gasoline vapor recovery means.

5,367,883

REFRIGERATION SYSTEM

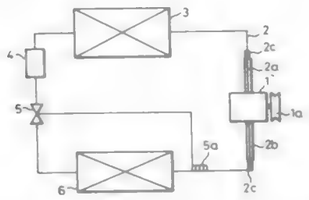
Hisayoshi Sakakibara, Nishio; Keiichi Kitamura, Handa, and Shin Houda, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 1, 1993, Ser. No. 25,414

Claims priority, application Japan, Mar. 2, 1992, 4-044596; Feb. 8, 1993, 5-019936

Int. Cl.[5] B60H *1/00*; F25B *47/00*

U.S. Cl. 62—85 **12 Claims**



1. A refrigeration system provided with a compressor which compresses and discharges a refrigerant,

a condenser which condenses the refrigerant discharged from said compressor,

an expansion means which reduces the pressure and expands the liquid refrigerant condensed by said condenser,

an evaporator which causes the refrigerant reduced in pressure by said expansion means to evaporate, and

refrigerant lines connected to these equipment and constituting a closed circuit, wherein

a moisture permeable material is used for part of said refrigerant lines,

the refrigerant used has a saturated moisture concentration in the low temperature and low pressure state at the downstream side of said expansion means during operation of said compressor which is higher than 350 ppm in the state where the amounts of moisture entering and leaving said refrigeration system are balanced,

lubricating oil for said compressor is mixed in with said refrigerant, and

said refrigerant and lubricating oil are made to circulate in said closed circuit of said refrigerant lines and prevent condensation of moisture from said refrigerant passing through said expansion means in the absence of a drier for absorbing the moisture, whereby a refrigeration system of relatively small size can be provided.

5,367,884

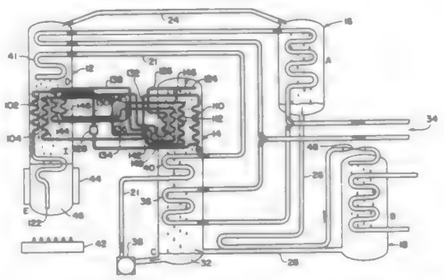
GENERATOR-ABSORBER-HEAT EXCHANGE HEAT TRANSFER APPARATUS AND METHOD AND USE THEREOF IN A HEAT PUMP

Benjamin A. Phillips, Benton Harbor; Thomas S. Zawacki, St. Joseph, both of Mich., and Joseph Marsala, Glen Ellyn, Ill., assignors to Phillips Engineering Co., St. Joseph, Mich.

Continuation-in-part of Ser. No. 793,644, Nov. 18, 1991, Pat. No. 5,271,235, which is a continuation-in-part of Ser. No. 668,198, Mar. 12, 1991, abandoned. This application Jun. 15, 1993, Ser. No. 76,759

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—101 **89 Claims**



56. A method for transferring heat between an absorber and a generator in a generator-absorber heat exchange apparatus including a generator and an absorber, the absorber having an interior pressure lower than the pressure of the generator interior and each having high and low temperature regions at opposite ends establishing respective temperature ranges and a heat transfer region, the temperature ranges defining the respective heat transfer regions overlapping, and a fluid flow pathway for circulation of a weak liquor from the high temperature region of the generator and a rich liquor from the low temperature region of the absorber to and through the high temperature, heat transfer and low temperature regions of the generator and the absorber, said method comprising:

circulating a portion of at least one of the weak liquor and rich liquor between the heat transfer region of the absorber and the heat transfer region of the generator.

5,367,885

CHILLER PRESSURIZATION SYSTEM

Christopher L. Sagar, 9236 93rd St. North, Largo, Fla. 34647

Filed Jan. 18, 1994, Ser. No. 182,880

Int. Cl.[5] F25B *49/00*

U.S. Cl. 62—125 **12 Claims**

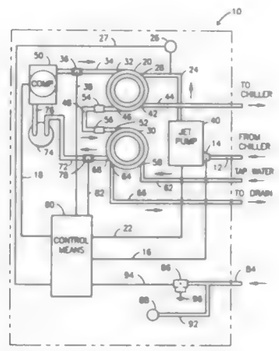
1. A system for pressurizing a chiller, comprising:

a refrigeration circuit including a compressor;

a first heat exchanger having a first inlet disposed in fluid communication with an evaporator circuit of a water loop of said chiller;

said first heat exchanger having a second inlet disposed in fluid communication with a discharge side of said compressor so that hot refrigerant enters said first heat exchanger; and

said first heat exchanger having a first outlet providing means for returning heated water from said first heat exchanger to said evaporator circuit;



whereby said first heat exchanger defines means for heating cold water from said evaporator circuit to quickly pressurize said chiller.

5,367,886

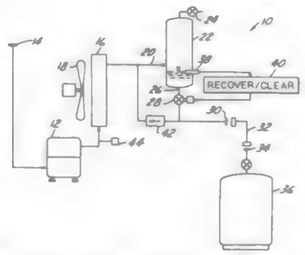
REFRIGERANT HANDLING SYSTEM WITH AIR PURGE AND SYSTEM CLEARING CAPABILITIES

Kenneth W. Manz, Paulding, and Christopher M. Powers, Bryan, both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Filed Aug. 2, 1993, Ser. No. 100,424

Int. Cl.[5] F25B *43/04*

U.S. Cl. 62—195 **15 Claims**



1. In a refrigerant handling system that includes means for transferring refrigerant to a storage vessel, means for purging non-condensibles from such refrigerant prior to flow into said vessel comprising:

a purge chamber including means for maintaining a minimum level of liquid phase refrigerant in said chamber and a vapor space in such vessel over said refrigerant,

an inlet to said purge chamber for introducing refrigerant to said chamber above said level,

an outlet from said purge chamber for removing refrigerant from said chamber at or below said level and isolated from said vapor space,

means for purging non-condensibles from said vapor space,

means including a check valve connected at one end at the bottom of said chamber and at an other end to said inlet, and

means for clearing refrigerant from said chamber through said check valve independent of liquid refrigerant level.

5,367,887

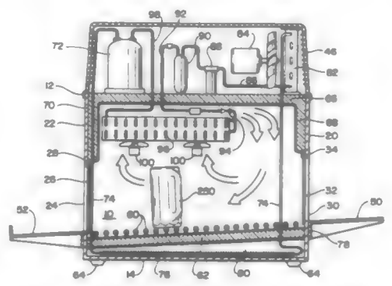
APPARATUS FOR FROSTING DRINKING GLASSES

Jerry Byrd, 471 Ashwood Pl., Boca Raton, Fla. 33431, and Michael O'Donnell, 124 E. Central Blvd., Lantana, Fla. 33461

Filed Sep. 22, 1993, Ser. No. 125,324

Int. Cl.[5] F25D *23/10*

U.S. Cl. 62—266 **15 Claims**



1. A countertop apparatus for frosting drinking glasses comprising:

a freezing chamber defined by an upper wall adjoined to a bottom wall by two side walls and a first and second end wall, said first end wall including a means for allowing insertion of drinking glasses into said chamber, said second end wall including a means for accessing said drinking glasses placed in said freezing chamber;

means for transferring drinking glasses between said first end wall and said second end wall;

means for lowering the temperature in said freezing chamber to a suitable temperature below the freezing temperature of water; and

means for preventing frosting along the bottom wall by use of tubing fluidly coupled to said compressor for the transfer of heated liquid refrigerant beneath said transferring means,

whereby said apparatus is positioned on a countertop for receipt of drinking glasses through said first wall and into said freezing chamber wherein said drinking glasses are frosted and made available for receipt through said second end wall.

5,367,888

APPARATUS FOR SERVICING REFRIGERATION SYSTEMS

Robert L. Muston, Kialla, and Mario Matkowitch, Williamstown, both of Australia, assignors to Environmental Products Amalgamated Pty. Ltd., Australia

Continuation of Ser. No. 856,016, Mar. 23, 1992. This application Dec. 29, 1992, Ser. No. 998,125

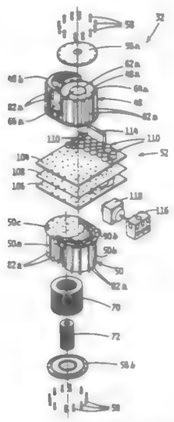
Claims priority, application Australia, Mar. 22, 1991, PK 5224

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—292 **44 Claims**

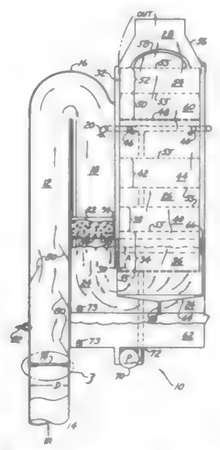
20. Apparatus for use in servicing refrigerant from a refrigeration system, said apparatus including a compact modular

housing defining an internal accumulator chamber and an internal condenser chamber, said housing having internal flow



passage means enabling selective flow communication between said internal chambers.

5,367,889
EXHAUST TREATMENT APPARATUS
Joseph G. Lanyon, 15607 Hwy. 47, Yamhill, Oreg. 97148
Filed Aug. 25, 1993, Ser. No. 112,752
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—297 **18 Claims**



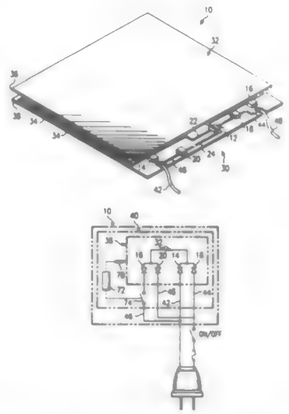
1. Apparatus for scrubbing combustion gas, the gas being produced by combustion in a Diesel cycle, comprising:

(a) means for directing the gas downwardly through a first scrubber passage, the first scrubber passage having means for holding a first filter material therein for contacting the gas, and first nozzle means for feeding a scrubbing liquid, the liquid contacting the gas and at least a portion of the first filter material;

(b) means for directing the gas upwardly through a second scrubber passage, and cartridge means for holding at least one second filter material within the second scrubber passage for contacting the gas, the second filter material comprising borax; and

(c) a reservoir chamber connecting bottom extremities of the scrubber passages, the reservoir chamber being capable of sealingly retaining a supply of the scrubbing liquid to a sufficient level that gas flowing into the second scrubber passage from the first scrubber passage is required to pass through the scrubbing liquid.

5,367,890
INTEGRATED THERMOELECTRIC SYSTEM WITH FULL/HALF WAVE RECTIFIER CONTROL
Michael J. Doke, Dallas, Tex., assignor to Marlow Industries, Inc., Dallas, Tex.
Filed Jul. 13, 1993, Ser. No. 91,833
Int. Cl.[5] F25B *21/02*
U.S. Cl. 62—3.7 **25 Claims**



21. A method for controlling a rate of heat-transfer by a thermoelectric device having a thermocouple array disposed between a hot plate and a cold plate, the method comprising the steps of:

providing AC input power to the thermoelectric device;

interconnecting an integrating a rectifier circuit, comprising a plurality of unidirectional current devices, into the thermoelectric device by mounting said rectifier circuit on one of said cold plate or said hot plate;

converting the AC power input into DC power with the rectifier circuit; and

applying the DC power to the thermocouple array so as to control the heat-transfer rate of the thermoelectric device.

5,367,891
FITTING DEVICE FOR ACCESSORY
Kazuo Furuyama, Tokyo, Japan, assignor to Yugen Kaisha Furuyama Shouji, Tokyo, Japan
Filed Jun. 8, 1993, Ser. No. 73,440
Claims priority, application Japan, Jun. 15, 1992, 4-040814[U]
Int. Cl.[5] A44C *17/02;* **A44B** *1/04*
U.S. Cl. 63—29.2 **7 Claims**

1. A fitting device for an ornamental accessory comprising:

a pair of connecting members each having a cylindrical portion on an end to be fitted together in a rotatable manner relative to each other;

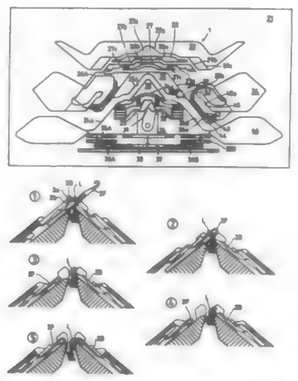
one of said connecting members having at its fitting end at least one piece of guide groove, said guide groove comprising a thrust groove which is open into an outside and extends in an axial direction of said connecting member, a rotation groove which bends from an inner end of said thrust groove and extends in a circumferential direction, and a fixing groove which bends from that end of said rotation groove which is away from said thrust groove towards said fitting end;

the other of said connecting members having at its fitting end a projection which is thrusted into said thrust groove and moves along said rotation groove, said projection being positioned to correspond to said guide groove;



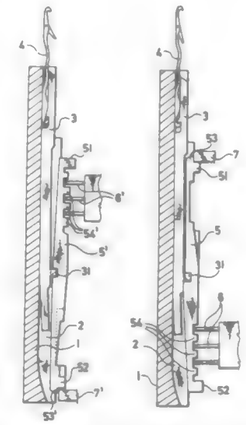
each of said connecting members having inside its fitting end portion magnet pieces disposed on a plane, said magnet pieces having N pole and S pole arranged to lie alternately in a circumferential direction, thereby forming a magnetized surface facing outwards.

5,367,892
STITCH INCREASING FOR FLAT KNITTING MACHINES
Masahiro Shima, and Masaki Miyamoto, both of Wakayama, Japan, assignors to Shima Seiki Mfg. Ltd., Wakayama, Japan
Division of Ser. No. 672,860, Mar. 20, 1991, Pat. No. 5,305,619.
This application Jun. 28, 1993, Ser. No. 82,713
Claims priority, application Japan, Mar. 26, 1990, 2-76147; May 16, 1990, 2-127845
Int. Cl.[5] D04B *7/00*
U.S. Cl. 66—71 **4 Claims**



1. A needle operated cam for a flat knitting machine which comprises a pair of opposed front and back needle beds, a plurality of compound needles disposed equally spaced in each said front and back needle beds wherein each of said plurality of needles comprises a needle body with a needle butt having a hook portion and a slider with a slider butt having a latch portion movable relative to said needle body over a given stroke, and cam means disposed on each said front and back needle beds for operably engaging said needle butt and said slide butt over the given stroke such that the latch portion of the slider is brought into and out of engagement with the hook portion of the needle body to close and open the hook portion and for moving each of said plurality of needles on each said front and back needle beds along an axis in a first direction and a second direction to carry loops between compound needles on one of said front and back needle beds and the needles of the other of said front and back needle beds, said cam means being constructed and arranged to move said plurality of needles to perform both a knitting and a stitch transfer operation, said cam means comprising a slider lowering cam face (29c) that engages said slider butt to move said slider in the second direction relative to said needle body at a point prior to movement of said needle body in said second direction to open said hook portion allowing the loop to be carried by and extend between the compound needles on both said front and back needle beds.

5,367,893
SELECTING DEVICE WITH SWINGABLE SELECTING JACK
Milan Fucík, Kojetice na Morave, Czech Rep., assignor to Uniplet a.s., Trebic, Czech Rep.
Filed Feb. 18, 1993, Ser. No. 19,081
Int. Cl.[5] D04B *9/10*
U.S. Cl. 66—222 **1 Claim**



1. A selecting device for a circular knitting machine having a plurality of upper and lower cam paths and an upper fixed push button and a lower fixed push button, the device comprising:

a plurality of swinging jacks movably mounted to the machine about a swinging point and movable in a direction, the swinging jacks having an upper guiding butt located above the swinging point at one end of the jack and a lower guiding butt located below the swinging point at an opposite end of the jack;

the swinging jacks being arranged such that one swinging jack is positioned adjacent to another swinging jack, the upper guiding butt of the one swinging jack engaging the upper fixed push button and the lower guiding butt of the other swinging jack engaging the lower fixed push button, the lower guiding butt of the one swinging jack engaging the lower cam path when the upper guiding butt of the one swinging jack engages the upper fixed push button and the upper guiding butt of the other swinging jack engaging the upper cam path when the lower guiding butt of the other swinging jack engages the lower fixed push button;

means for moving the swinging jacks in the direction for causing the engagement with the upper and lower fixed push buttons and the upper and lower cam paths; and

a plurality of lower patterning butts near the lower guiding butt of the one swinging jack and a plurality of upper

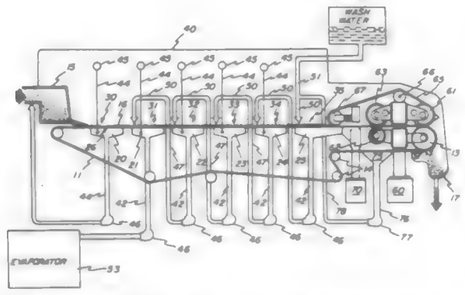
patterning butts near the upper guiding butt of the other swinging jack, the lower and upper patterning butts for engaging the lower and upper cam paths respectively.

5,367,894

APPARATUS AND METHOD FOR WASHING CELLULOSIC PULP

Clinton R. Parks, Hamilton; Michael A. Sieron, Centerville; Peter Seifert, and David E. Chupka, both of Middletown, all of Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 787,578, Nov. 4, 1991, abandoned. This application Apr. 27, 1993, Ser. No. 53,729
Int. Cl.[5] D21C *9/02*
U.S. Cl. 68—22.00 R 8 Claims



1. Apparatus for washing a suspension of cellulosic pulp in digesting liquor, comprising:

(a) a frame including means for supporting an endless foraminous belt in a loop including a substantially horizontal upper run with an upstream end and a downstream end,

(b) means for driving said belt run in a single direction moving from said upstream end to said downstream end,

(c) means for depositing the suspension on said upstream end of said belt run for drainage therethrough to form a mat of said particles on said run,

(d) means including a plurality of drainage receptacles below and in sealed relation with said belt run which define a corresponding plurality of zones along said run including a formation zone at said upstream end thereof and a plurality of successive washing zones between said formation zone and said downstream end,

(e) means for alternately flooding and dewatering said mat during passage thereof through each of said zones including means for maintaining a lower pressure in the interior of each of said receptacles than in the space directly above said belt to cause liquid to drain from said mat through said belt run into said receptacles,

(f) said flooding and dewatering means also including means for delivering liquid to each of said washing zones from above said upper run for displacement washing of the portion of said mat passing therethrough and drainage into said receptacles,

(g) means for supplying fresh washing liquid to said delivering means for the final one of said washing zones closest to said downstream end of said belt run,

(h) means for conveying drained liquid from each of said receptacles countercurrently with respect to the direction of movement of said belt to said delivering means for the adjacent said washing zone upstream from said receptacle,

(i) adjacent said washing zones being contiguous whereby said mat is maintained free of mechanical pressure during passage thereof from said upstream end of said belt run through said final washing zone,

(j) roll means downstream from said final washing zone including two rolls within said belt loop,

(k) said roll means including a couch roll at said downstream end of said belt run,

(l) the other of said rolls being spaced between said couch roll and said final washing zone,

(m) first and second upper rolls above said belt run and in pressure nip forming engagement with said couch roll and said other roll respectively for subjecting said mat to a plurality of pressing operations for compacting said mat while expressing liquid therefrom through said belt,

(n) means for causing the resulting compacted mat to travel upwardly around said first upper roll from said belt and the nip formed by said first upper roll and said couch roll, comprising a second belt loop enclosing said first and second upper rolls, said second belt loop having a finer mesh than said foraminous belt to cause said pulp mat to adhere thereto and travel upwardly thereon as said pulp mat travels from said nip, and

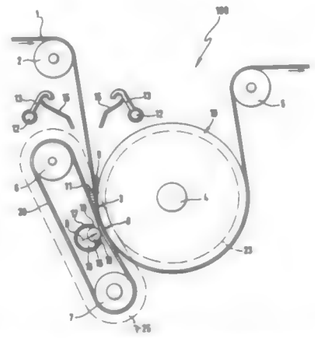
(o) means for removing said upwardly moving pulp mat from said said belt loop.

5,367,895

DEVICE FOR APPLYING A TREATMENT LIQUID TO A MOVING WEB OF MATERIAL, IN PARTICULAR A TEXTILE WEB

Klaus Kadagies, Krefeld, and Walter Keller, Willich, both of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co. KG, Krefeld, Germany

PCT No. PCT/DE91/00822, § 371 Date Jun. 7, 1993, § 102(e) Date Jun. 7, 1993, PCT Pub. No. WO92/10603, PCT Pub. Date Jun. 25, 1992
PCT Filed Oct. 22, 1991, Ser. No. 70,444
Claims priority, application Germany, Dec. 6, 1990, 4038874
Int. Cl.[5] D06B *3/18*
U.S. Cl. 68—22 20 Claims



1. A device for applying a treatment liquid to a moving web of material, said device comprising:

a drum having a rim, said rim having an outwardly directed contact surface, said drum being rotatable around a horizontal axis;

at least one guide roller for guiding a fabric web such that the web wraps at least partially around said drum beginning at a side of said drum at which the web is disposed tangentially thereto and continuing around a bottom portion of said drum;

a trailing, continuous band closed in a liquid-tight manner and circulating in a plane that is perpendicular to the axis of said drum, said band having an outer circumferential surface that fits closely on the fabric web at a location in which the web contacts said drum, said circumferential surface of the band and drum defining a nip therebetween, said band sealing off the nip at its bottom;

said band having a web segments forming lateral sealing elements which extend from edges of the band to project outwardly, said segments having a side abutting the outwardly directed contact surface formed at the rim of the drum, said segments extending in a direction perpendicular to the axis of the drum, said segment axially sealing off said nip; and

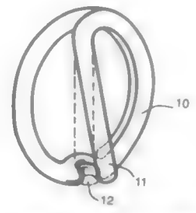
a feed device for supplying treatment liquid to maintain a predetermined filling level of treatment liquid in said nip.

5,367,896

KEY HOLDER

Carl B. Sundberg, P.O. Box 519, Wilbraham, Mass. 01095-0519

Filed Jun. 21, 1993, Ser. No. 78,894
Int. Cl.[5] A44B *15/00*
U.S. Cl. 70—457 2 Claims



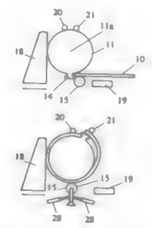
1. A key holder comprising a ring shaped element formed from a resilient coil of material having a notched portion in the coil for receiving the terminal portion of one end of the coil wherein one end of the coil used to form the key holder extends diametrically across the area defined by the ring shaped element and wherein the terminal portion of the said end fits into the notched portion.

5,367,897

APPARATUS FOR FORMING A PIPE FROM A SHEET METAL PLATE

Kenneth M. Hume, 33 Trawalla Avenue, Thomastown. Victoria 3074, Australia

Continuation of Ser. No. 768,398, Sep. 13, 1991, Pat. No. 5,245,849. This application May 21, 1993, Ser. No. 65,941
Claims priority, application Australia, Mar. 15, 1989, PJ3227; Jul. 12, 1989, PJ5218
The portion of the term of this patent subsequent to Sep. 21, 2010, has been disclaimed.
Int. Cl.[5] B21D *5/00, 51/10*
U.S. Cl. 72—155 12 Claims



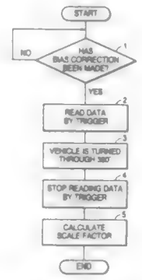
12. A plate rolling apparatus comprising a rotatable mandrel mounted in a frame, a gripper rib on the mandrel extending axially therealong adapted to grip the edge of a plate to be curved around the mandrel when the mandrel is rotated, a single pressure roller mounted beneath the mandrel and adapted to contact the surface of the plate and apply an upward force against the plate, the pressure roll being laterally movable sideways relative to the center line of the mandrel, so as not to foul the gripper during plate engagement yet apply substantial squeezing force to said plate during final stage of rolling, wherein the single roller applies pressure normal to said plate thereby avoiding undesirable lateral forces on the mandrel and is adjustable to be in direct alignment with the mandrel center when the gripper is not in the vicinity.

5,367,898

METHOD OF CALCULATING SCALE FACTOR OF GYRO

Shin-ichi Matsuzaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 10, 1992, Ser. No. 818,919
Claims priority, application Japan, Jan. 23, 1991, 3-006601
Int. Cl.[5] G01C *25/00, 21/20*
U.S. Cl. 73—1 E 3 Claims



1. A method of calculating a scale factor of a gyro included in an apparatus which is mounted in a vehicle and calculates the heading of said vehicle on the basis of output data of said gyro, said method comprising the steps of:

turning said vehicle through a predetermined angle;

deriving the output data of said gyro at regular intervals during the turning step;

integrating all of the output data of said gyro derived in the data deriving step; and

calculating the scale factor of said gyro by dividing the integrated data by the predetermined angle.

5,367,899

SYSTEM FOR PERFUME CREATION USING AROMA EMISSION ANALYSIS FROM A LIVING FRUIT AND FLOWER IN CLOSE PROXIMITY

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Brielle, and Richard A. Wilson, Westfield, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 92,463, Jul. 16, 1993, which is a continuation-in-part of Ser. No. 988,337, Dec. 9, 1992, Pat. No. 5,269,169. This application Apr. 15, 1994, Ser. No. 228,262
Int. Cl.[5] G01N *30/86, 33/48;* A61K *7/46*
U.S. Cl. 73—23.340 23 Claims

2. A process for quantitatively and qualitatively substantially continuously analyzing the aroma emitted and rate of emission of the aroma components thereof:

(i) from within a living fruit;

(ii) from a portion of the outer surface of a living fruit; and

(iii) from a living flower located proximate to and juxtaposed to said outer surface portion of said living fruit

simultaneously consisting essentially of the steps of:

(a) providing a living fruit having a living fruit outer skin surface and a living fruit inner surface, said outer surface having a surface area S and having a living fruit outer surface portion having a surface area

$$KS$$

wherein

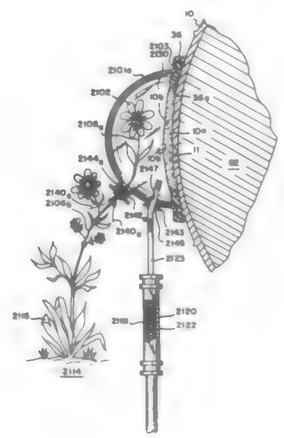
$$0.25 \leqq K \leqq 0.03$$

said living fruit being located on a given central axis, said outer surface portion of said living fruit being located at a given

distance, "h" from said central axis and an inner volume surrounding said central axis and encompassed by said outer surface;

(b) removing a depth core section from said inner volume of said living fruit running from said outer surface of said living fruit to a depth of from about

"$\frac{1}{3}$h"



up to "h" into said inner volume along a directional vector "v" extending substantially radially from said central axis of said living fruit to said outer surface of said living fruit within said inner volume, said depth core section having an effective diameter, D_1 equal to 2×(effective radius, R_1) and a core section volume ranging from about

$$\frac{\pi R_1^2 h}{2}$$

up to about

$$\pi R_1^2 h$$

thereby forming a core section void within said living fruit; then

(c)-1 providing first analytical apparatus means comprising first trapping tube means attached to first negative pressure pump means associated with first chemical analysis means;

(c)-2 providing second analytical apparatus means comprising a second trapping tube means attached to second negative pressure pump means associated with second chemical analysis means;

(d) providing a living flower located within an enclosed 3-dimensional space proximate and juxtaposed with said living fruit outer surface portion, said living, flower being connected to a living flower stem, which, in turn, is connected to a living flower plant or living flower tree;

(e) providing hollow flexible or rigid enclosure means surrounding said living flower having an inner enclosure means void and an outer enclosure means shell having an outer enclosure means surface and an inner enclosure means surface, said outer enclosure means shell encompassing said void and terminating at an enclosure rim means, said void (i) containing said living flower and (ii) being defined by said outer enclosure means shell and said enclosure rim means, said outer enclosure means shell having first and second insertion orifices, each extending from said outer enclosure means surface to said inner enclosure means void, said enclosure means being capable of sealably gripping said outer surface portion of said living fruit at said enclosure rim means;

(f) causing said enclosure means to (i) sealably grip said outer surface portion of said living fruit at said enclosure rim means and (ii) surround said living flower whereby said living flower stem is fixedly held in place using said first insertion orifice;

(g) inserting said first trapping tube means through said second insertion orifice, causing it to be extended into said enclosure means void;

(h) inserting said second trapping tube means into said core section void of said living fruit along said directional vector "v";

(j) simultaneously engaging said first negative pressure pump means and said second negative pressure pump means, whereby components of the aroma evolving from said outer surface portion of said living fruit and components of the aroma evolving from said living flower are entrapped in said first trapping tube means and components of the aroma evolving from within said living fruit are entrapped in said second trapping tube means, simultaneously; and

(k) analyzing the contents of said first trapping tube means using said first chemical analysis means and said second trapping tube means using said second chemical analysis means substantially continuously and substantially simultaneously.

5,367,900

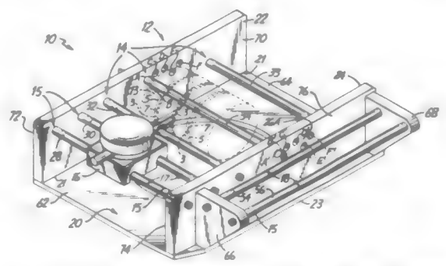
CAN TESTER

Dale W. Frederickson, Lindstrom; Robert F. Meyer, Minneapolis, and Joseph G. Anton, Brooklyn Park, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 10, 1993, Ser. No. 59,999

Int. Cl.[5] G01B *5/16*

U.S. Cl. 73—52 **11 Claims**



1. A device for testing cans having an axial center comprising:

a main body having a base, a first side panel attached to the base and a second side panel opposing the first side panel attached to the base;

a movable measuring instrument portion, moving in the main body;

a means for moving the measuring instrument portion in the main body comprising a first runner and a second runner parallel to the first runner, the runners attached to a first bracket and a second bracket, the brackets attached to the second side panel; and

a means for positioning and confining the can between the first and second side panels so that the measuring instrument portion contacts a can in a plane running through the axial center of the can.

5,367,901

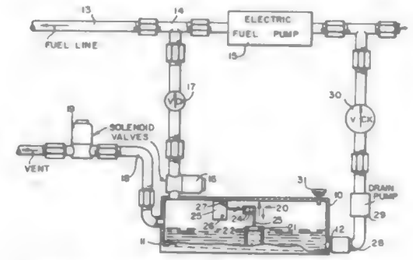
AIRCRAFT ANALYZER TO DETERMINE MAXIMUM SAFE ALTITUDE FOR A GIVEN BATCH OF FUEL

Todd L. Petersen, 984 K Rd., Minden, Nebr. 68959

Filed Dec. 22, 1993, Ser. No. 171,397

Int. Cl.[5] G01N *7/14;* **F02M** *13/04*

U.S. Cl. 73—64.45 **15 Claims**



11. A method for determining the maximum safe operating altitude of an airplane with a given batch of fuel comprising the steps of: providing a pressure vessel in fluid communication with the fuel supply of the airplane, supplying said pressure vessel with a predetermined fuel sample from said fuel supply, measuring the vapor pressure of the fuel sample in the pressure vessel, measuring the outside air temperature, the carburetor temperature and the fuel temperature, feeding the vapor pressure, outside air temperature, carburetor temperature and fuel temperature measurements to a computer controlled processor, comparing the measurements with a predetermined set of criteria stored in the computer to yield a readout indicating the maximum safe altitude.

5,367,902

METAL SHEET BENDING MACHINE

Hiroyuki Kitabayashi, Hirakata; Yoshiaki Kuroda, and Ikuo Kamada, both of Komatsu, all of Japan, assignors to Komatsu Ltd., Tokyo, Japan

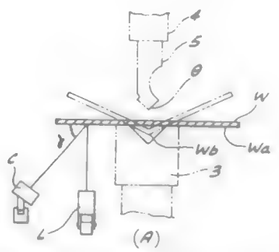
PCT No. PCT/JP91/01349, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/05892, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 30,467

Claims priority, application Japan, Oct. 5, 1990, 2-268707; Jun. 11, 1991, 3-167755

Int. Cl.[5] B21D *5/02;* **B21C** *51/00*

U.S. Cl. 72—37 **9 Claims**



1. A metal sheet bending machine for bending a metal sheet, said machine having an upper bender and lower bender between which the metal sheet is positioned for bending the metal sheet to a desired angle along a bending line, said machine comprising:

(a) a measuring light source for projecting a linear image onto an outer face of the metal sheet while the metal sheet is being bent to the desired angle, said light source positioned relative to the metal sheet so that the linear image of projected measuring light rotates as the bending angle of the metal sheet changes as a result of bending of the metal sheet by changing the relative position of the upper and lower benders;

(b) photographing means for sequentially photographing the outer face of the bent metal sheet on which the linear image of the projected measuring light is formed by the measuring light source, while the metal sheet is being bent to the desired angle, said photographing means forming sequential images representative of the position of the linear image on the outer face as the metal sheet is bent;

(c) memory means for storing the sequential images which have been photographed by the photographing means, each sequential image including the linear image of projected measuring light;

(d) calculating means for calculating, based on changes in the rotated angular position o the linear image of successive sequential image stored in the memory means, a bending angle of the metal sheet while the metal sheet is being bent and the resulting sequential images are being photographed; and

(e) control means for controlling the positions of the upper bender and/or lower bender according to a calculation result obtained from the calculating means.

5,367,903

PROCESS FOR IMPROVING THE DRAWABILITY OF A METAL SHEET OR SHEET BLANK

Jacques Keller, Florange Cedex, France, assignor to Sollac, Puteaux, France

PCT No. PCT/FR90/00643, § 371 Date Mar. 11, 1992, § 102(e) Date Mar. 11, 1992, PCT Pub. No. WO91/03334, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 4, 1990, Ser. No. 838,252

Claims priority, application France, Sep. 11, 1989, 89 11948

Int. Cl.[5] B21B *45/02*

U.S. Cl. 72—42 **17 Claims**

1. A process for improving the cold drawability of metal consisting essentially of, before cold drawing, depositing on a drawing tool a salt consisting essentially of an alkali metal chosen from the group consisting of Li, Na, and K and an anion which is chemically inert towards the metal of which the sheet consists, chosen from phosphates, wherein said deposition step of said salt is carried out by application, to said tool, of a solution of said salt, wherein said solution does not comprise oil.

5,367,904

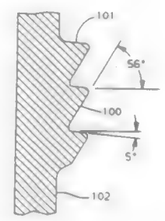
NON-INTRUSIVE CYLINDER PRESSURE SENSOR HAVING IMPROVED RESPONSE CHARACTERISTICS

Mark C. Selinau, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1993, Ser. No. 35,139

Int. Cl.[5] G01L *23/22;* **G01M** *15/00*

U.S. Cl. 73—115 **8 Claims**



1. In an internal combustion engine, a cylinder pressure sensor of the type being responsive to force along a response axis thereof and disposed between a first wall and a second wall of an engine component housing, the first wall substan-

tially defining at least one side of a cylinder and flexing in response to varying pressure therein and the second wall being relatively rigid, the improvement comprising:

a sensor assembly including a first end and a second end substantially aligned with the response axis;

the first end of the sensor assembly engaged with one of the walls;

means for engaging the second end of the sensor assembly with the other of the walls to pre-stress the sensor along the response axis; and

means for preventing loads generated along the response axis from being transmuted to radial loads upon the sensor assembly.

5,367,905

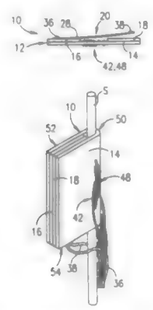
SAP FLOW GAUGE

Randall S. Senock, Riley, and Jay M. Ham, Manhattan, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Jun. 30, 1993, Ser. No. 85,614

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.22 **9 Claims**



9. A sap flow gauge comprising:

a generally U-shaped body having a central bight portion and a pair of spaced, opposed legs,

said bight portion presenting a passageway for receiving a plant part, with said legs extending generally laterally from the plant part;

the lateral length of said legs being greater than the maximum transverse dimension of said passageway;

heating means adjacent said bight and oriented for heating said plant part within said passageway;

means for sensing radial heat flux and temperature differential values exhibited by said plant part in response to heating thereof by the heating means; and filler means disposed between said legs and located proximal to said plant part for insuring engagement between the plant part and heating means when the gauge is applied to said plant part.

5,367,906

HOT WIRE AIR FLOW METER

Shigeo Tsuruoka; Ken Takahashi; Tadahiko Miyoshi, and Hiroatsu Tokuda, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

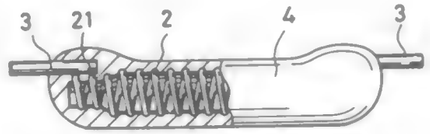
Continuation of Ser. No. 643,482, Jan. 22, 1991, abandoned, which is a division of Ser. No. 250,212, Sep. 28, 1988, Pat. No. 5,020,214. This application Nov. 15, 1993, Ser. No. 152,093

Claims priority, application Japan, Sep. 30, 1987, 62-243791; Jan. 26, 1988, 63-15421; Jun. 23, 1988, 63-155196

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.27 **31 Claims**

1. A hot wire air flow meter comprising: an exothermic resistor disposed in an air flow passage, said exothermic resistor being used to measure the rate at which air flows through said air flow passage; and a driving circuit for controlling the current flowing through said exothermic resistor and taking out a voltage output from said exothermic resistor as a signal corresponding to said air flow rate, said exothermic resistor having a coiled wire serving as an exothermic resistance wire,



a pair of lead wires connected to said coiled wire, and a support member covering and supporting said coiled wire, wherein said support member is formed of a layer of a composite material composed of ceramic and glass materials.

5,367,907

LIQUID LEVEL INDICATOR

Sven Elfverson, Mullsjö , Sweden, assignor to Scandmec AB, Sweden

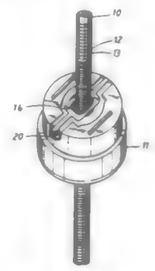
PCT No. PCT/SE91/00790, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO92/11514, PCT Pub. Date Jul. 9, 1992

PCT Filed Nov. 21, 1991, Ser. No. 74,836

Claims priority, application Sweden, Dec. 21, 1990, 9004087

Int. Cl.[5] G01F *23/68*

U.S. Cl. 73—319 **10 Claims**



1. A liquid level indicator for monitoring the level of a volume of liquid, comprising:

elongated guide element means having a vertical axis for providing a vertical guide path along the volume of liquid to be monitored; electrically conductive wire means helically arranged on said elongated guide element means with respect to said vertical axis and extending along said vertical guide path of said elongated guide element means; float means arranged for vertical movement along said vertical axis of said elongated guide element means in accordance with varying levels of said volume of liquid to be monitored; a contact element pivotally mounted on said float means about a horizontal axis extending generally transverse to said vertical axis of said elongated guide element means so that said contact element can pivot about said horizontal axis upon exertion of a predetermined force thereon, said contact element being electrically conductive and including at least one contact plate arranged in correspondence with said conductive wire means so that a circuit is formed permitting current to flow therebetween wherein the resistance of said circuit varies with the relative position of said float means as said float means is vertically displaced along said elongated guide element means.

5,367,908

GAUGE PROTECTION APPARATUS

Valance W. McKenzie, 7/140 Braun Street, Deagon, Queensland, 4017, Australia

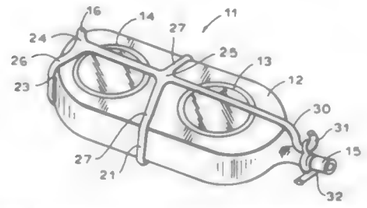
PCT No. PCT/AU91/00265, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO91/20085, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 21, 1991, Ser. No. 971,902

Claims priority, application Australia, Jun. 21, 1990, PK 0757

Int. Cl.[5] G01D *11/24*

U.S. Cl. 73—431 **10 Claims**



1. Gauge protection apparatus for protecting a gauge assembly of the type including at least one gauge module retained in a resilient housing and having a frangible gauge face, said gauge protection apparatus comprising:

(A) a gauge face protecting member for placement in spaced relation to the gauge face; and

(B) supporting means mountable on the resilient housing and located apart from the gauge module for mounting said gauge face protecting member in spaced relationship overlying the gauge face;

said gauge face protecting member and said supporting means in assembly comprising a cage formed to accept the resilient housing within.

5,367,909

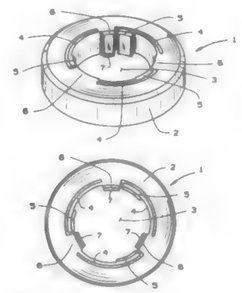
TEST WEIGHT

Raymond D. Heilman, St. Louis, Mo., and Butch LaRue, Madison, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 7, 1993, Ser. No. 1,587

Int. Cl.[5] G01M *1/16*

U.S. Cl. 73—468 **12 Claims**



1. A test weight for use with a counterbalanced motor having a rotor, a stator and an eccentric ball bearing having an outer diameter, said test weight for determining whether the weight of said counterbalanced motor offsets an application component before attaching said motor to said application component, the test weight comprising: a body having an opening sized to engage the outer diameter of said eccentric ball bearing of the counterbalanced motor, a plurality of cantilevered spring fingers integral with the body and adjacent to the opening of said test weight for spring gripping said eccentric ball bearing and securing the test weight thereto, a plurality of centering pads for holding the center of mass of said test weight in proximity with the center of mass of said eccentric ball bearing, and a plurality of stop tabs projecting from said centering pads for providing a positive stop against an outer race of said eccentric ball bearing for accurate axial location of said test weight.

5,367,910

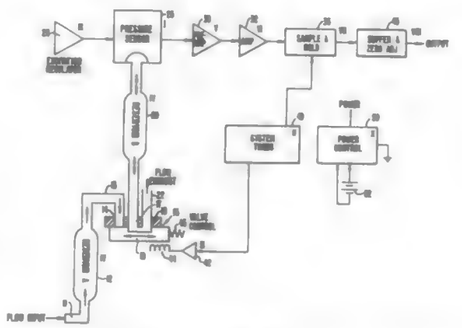
METHOD AND APPARATUS FOR MEASURING GAS FLOW USING BOYLE'S LAW

W. Stephen Woodward, Chapel Hill, N.C., assignor to Curtin Matheson Scientific, Inc., Houston, Tex.

Filed Mar. 12, 1992, Ser. No. 849,859

Int. Cl.[5] G01F *1/34*

U.S. Cl. 73—861 **19 Claims**



1. A method of determining the flow rate of a gas along a path having an inlet and an outlet, said method comprising the steps of:

(a) directing the gas from the inlet through an accumulator volume into an enclosed volume until the gas pressure in the enclosed volume reaches a first value;

(b) blocking the flow of gas from the inlet to the enclosed volume and relieving the gas pressure from the enclosed volume through the outlet until the gas pressure in the enclosed volume reaches a second value;

(c) generating a signal representative of the change in gas pressure in the enclosed volume between the first and the second values; and

(d) determining the gas flow rate from the signal generated in step (c).

5,367,911

DEVICE FOR SENSING FLUID BEHAVIOR

Andrew D. Jewell, Bracknell, and Michael A. Yuratich, Hamble, both of United Kingdom, assignors to Halliburton Logging Services, Inc., Houston, Tex.

Filed Jun. 11, 1991, Ser. No. 713,226

Claims priority, application United Kingdom, Mar. 21, 1991, 9105985.7

Int. Cl.[5] G01F *1/56*

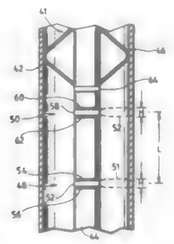
U.S. Cl. 73—861.08 **19 Claims**

1. Apparatus for sensing fluid behavior within a conduit, comprising:

(a) a tool positionable within said conduit for establishing a generally annular flow passage surrounding the tool within the conduit;

(b) at least two sensors in an array for detecting characteristics of material in the annular flow passage with each sensor being coupled to said tool, which sensors generate output signals indicative of the material characteristics detected, and wherein at least one of said sensors is a conductivity sensor having an electrode circumscribed by and insulated from a surrounding conductive ring,

wherein said fluid does not pass through the interior of said tool proximate said sensors; and



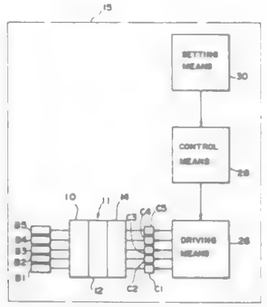
(c) a data reception system operably coupled to receive the output signals of the sensors.

5,367,912

APPARATUS FOR ANALYZING LIQUID SPECIMEN

Takashi Demachi, Kobe, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Oct. 30, 1992, Ser. No. 969,573
Claims priority, application Japan, Nov. 20, 1991, 3-331284
Int. Cl.[5] B01L *11/00*
U.S. Cl. 73—863.73 **6 Claims**



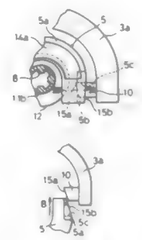
1. An apparatus for analyzing liquid specimens, comprising:
a sampling valve having two fixed elements in a stationary state, and a movable element held and movable between the fixed elements, said movable element having a plurality of sample metering passages (Pi; i=1, 2, . . .) corresponding to a plurality of measuring items disposed therein, and said fixed elements each having a plurality of passages to be connected with the passages (Pi) of said movable element, with the movable element moving while contacting the surface of the fixed elements, thereby defining a first state of the sampling valve during which the passages (Pi) of the movable element are filled with sample, and a second state of the sampling valve during which sample is pushed out of the passages (Pi) in a cylindrical shape and transferred to other parts;
aspiration means (CO) for feeding sample into the sampling valve;
a plurality of dispensing means (Ci; i=1, 2, . . .) for supplying the liquid for dilution to the passages (Pi) of the movable element;
a plurality of chambers (Bi; i=1, 2, . . .) for receiving the samples pushed out by the liquid for dilution;
setting means for setting items to be measured;
control means for generating a control signal for selectively actuating the dispensing means (Ci) according to the information from the setting means; and
driving means for receiving the control signal and driving the dispensing means (Ci), wherein
the dispensing means (Ci) corresponding to an item of a specimen to be measured is actuated when the specimen to be measured is set to measure that item, and is not actuated when a specimen is not set to measure that item, and wherein when nonmeasurement of a certain item occurs continuously for a specified number of times, the dispensing means (Ci) corresponding to that item to be measured is controlled to be actuated in the first state.

5,367,913

PINION SHIFT DEVICE FOR STARTER AND ASSEMBLY METHOD OF THE SAME

Shigeru Yumiyama, Katsuta, and Hideo Mori, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1992, Ser. No. 932,946
Claims priority, application Japan, Aug. 21, 1991, 3-209469
Int. Cl.[5] F02N *15/06*
U.S. Cl. 74—7 A **15 Claims**



1. A pinion shift device for a starter comprising a unidirectional clutch having a clutch body and a clutch sleeve being integral with said clutch body and slidably fitted over an output shaft of an electric motor, and a shift lever swingably supported at its intermediate portion and having a two-forked portion, said shift lever pushing said clutch sleeve to move in the axial direction so that said pinion is brought into mesh with a ring gear of an engine, wherein said pinion shift device further comprises:
(a) a shift flange provided on said clutch sleeve to define an axial gap between said clutch body and said shift flange;
(b) a semicircular ring-shaped shift plate loosely fitted in said axial gap;
(c) fitting means including a projection and a hole provided on said two-forked portion of said shift lever and said shift plate and pivotably connecting said shift plate to ends of said two-forked portion; and
(d) at least one sloped surface formed as an assembling guide in said fitting means to function as a guide when said shift plate is fitted to the ends of said two-forked portion.

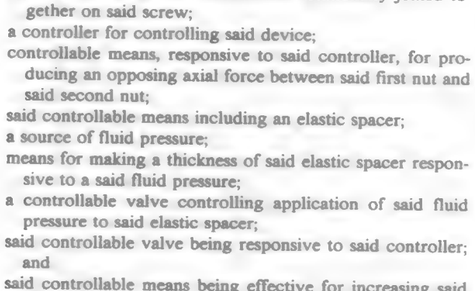
5,367,914

POWER TRANSMISSION HAVING CREEPING SPEED BY CONCURRENT SUPPINE ENGAGEMENT OF THE DUAL INPUT PLATE CLUTCHES OF THE COUNTERSHAFTS

Richard A. Ordo, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 9, 1993, Ser. No. 15,712
Int. Cl.[5] F16H *3/38*
U.S. Cl. 74—331 **2 Claims**

1. A power transmission comprising:
input shaft means;
output shaft means;
first and second countershaft means;
gear means and selectively operable synchronizer means for establishing power transmission at selective ratios between the input and output shaft means via the countershaft means including a first ratio and a second ratio;
first selectively operable clutch means for cooperating with said synchronizer means for establishing a first torque path between said input shaft means and said first countershaft means and being engaged establish said first ratio;
second selectively operable clutch means for establishing a second torque path between said input shaft means and



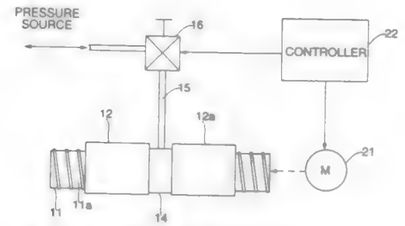
said second countershaft means and being engaged to establish said second ratio; and,
said first and second clutch means being slippingly engaged to provide torque transmission in both torque paths simultaneously.

5,367,915

AUTOMATIC PRESSURE CONTROL DEVICE FOR A BALL SCREW

Kouji Nishii, Nara, Japan, assignor to Asuka Trading Co., Ltd., Yamato Takada, Japan

Filed Jan. 23, 1991, Ser. No. 644,504
Claims priority, application Japan, Sep. 20, 1990, 2-253593
Int. Cl.[5] F16H *55/18*
U.S. Cl. 74—441 **12 Claims**



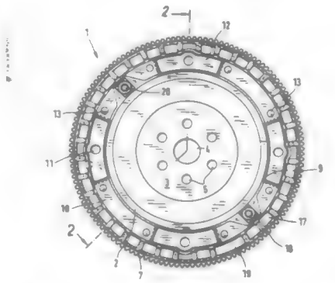
1. A device for controlling friction in a positioning screw apparatus comprising:
a rotatable screw;
at least a first nut and a second nut rotationally joined together on said screw;
a controller for controlling said device;
controllable means, responsive to said controller, for producing an opposing axial force between said first nut and said second nut;
said controllable means including an elastic spacer;
a source of fluid pressure;
means for making a thickness of said elastic spacer responsive to a said fluid pressure;
a controllable valve controlling application of said fluid pressure to said elastic spacer;
said controllable valve being responsive to said controller; and
said controllable means being effective for increasing said force during a first portion of operation of said rotatable screw, and for decreasing said force during a second portion of operation of said rotatable screw.

5,367,916

DRIVE GEAR FOR A MOTOR VEHICLE

Jürgen Bevc, Beckum, and Heinrich Winkelmann, Jr., Ahlen, both of Germany, assignors to Winkelmann & Pannhoff GmbH, Westfalen, Germany

Filed Mar. 30, 1993, Ser. No. 40,240
Claims priority, application Germany, Apr. 6, 1992, 4211472
Int. Cl.[5] F16H *55/12;* **F16F** *15/22*
U.S. Cl. 74—449 **6 Claims**



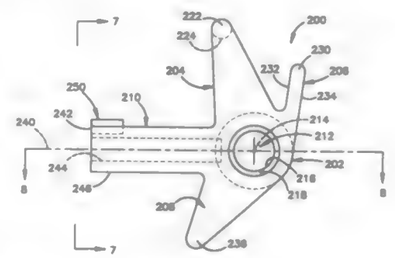
1. A drive gear for a motor vehicle, comprising:
a starter disc having a hub for attachment to a shaft of a vehicle motor for joint rotation therewith; and
a drive ring supported on said starter disc and having a plurality of holes for receiving means for connecting said drive ring to a converter of an automatic transmission of the vehicle, said drive ring having, in the region of said holes, protrusions which engage in corresponding recessed openings formed in said starter disc.

5,367,917

RETRACTOR

Michael K. Hishon, New Baltimore, and Steven Stoll, Mt. Clemens, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Oct. 20, 1992, Ser. No. 963,727
Int. Cl.[5] G05G *5/06;* **B60G** *11/34;* **B65H** *75/48*
U.S. Cl. 74—531 **21 Claims**



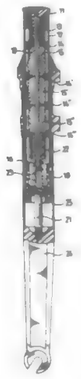
3. Apparatus comprising:
a torsion spring having a longitudinal central axis, said torsion spring being resiliently deflectable in torsion about said longitudinal central axis;
a leaf spring having opposite longitudinal end portions, said leaf spring being resiliently bendable between said opposite longitudinal end portions;
means for connecting said leaf spring to said torsion spring for said leaf spring to act in series with said torsion spring; and
means for supporting said torsion spring and said leaf spring to rotate together about a hub axis which is perpendicular to said longitudinal central axis of said torsion spring.

5,367,918

BICYCLE FRONT FORK SHOCK ABSORBING DEVICE

Wu-Sung Chang, and Huan-Yang Huang, both of No. 5-15, Lan Ya Lane, Lan Ya Lee, Yuanlin Chen, Changhwa Hsien, Taiwan, Prov. of China

Filed Dec. 28, 1993, Ser. No. 174,406
Int. Cl.[5] B62K *1/00, 21/14*
U.S. Cl. 74—551.2 **1 Claim**



1. A bicycle front fork shock absorbing device fastened within upper and lower cylindrical casings of either fork blade of a bicycle front fork comprising a guide rod having a top end fastened to a fork blade mounting frame of said bicycle front fork by a locknut and a bottom end, a headed locating screw rod having a head connected to said bottom end of said guide rod and a bottom end connected to a bottom end of said upper cylindrical casing of a respective said fork blade by a lock screw, a shock absorbing spring mounted around said guide rod and arranged below said locknut, a plurality of tubular elastomers mounted around said guide rod and vertically retained between said shock absorbing spring and said head of said headed locating screw rod, a plurality of protective caps mounted around said guide rod and separated by said tubular elastomers, a rubber sleeve mounted around said headed locating screw rod, and a coiled buffer spring mounted around said headed locating screw rod within said rubber sleeve and between said head of said headed locating screw rod and said lock screw, said protective caps including a top protective cap arranged between said shock absorbing spring and said tubular elastomers and a bottom protective cap arranged between said tubular elastomers and said head of said headed locating screw rod, each said protective cap comprising two opposing recesses, one recess of said top protective cap receiving said shock absorbing spring, and one recess of said bottom protective cap receiving said head of said headed locating screw rod.

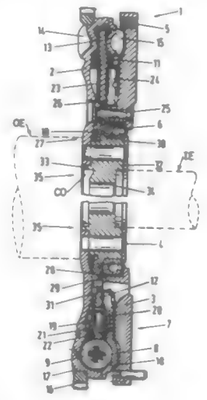
5,367,919

CARRIER FOR USE IN TORQUE TRANSMITTING APPARATUS

Louis F. Schulte, Bühl, Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Buhl, Germany

Filed Feb. 24, 1993, Ser. No. 22,735
Claims priority, application Germany, Mar. 3, 1992, 4206635
Int. Cl.[5] G05G *1/00;* **F16D** *13/18*
U.S. Cl. 74—572 **15 Claims**

1. A dynamically balanced rotary carrier comprising a metallic material and having an axis of rotation and a ring-shaped axial extension, said extension having an external surface which is a press fit in a substantially radially outwardly extending first element and said carrier further having a second surface disposed radially inwardly of said external surface and being a press fit on a further element, one of said elements being more sensitive to deformation than the other of said elements and said carrier further having a recess in a portion at least of a region of propagation of lines of force, developing as a result of the establishment of press fit between said other



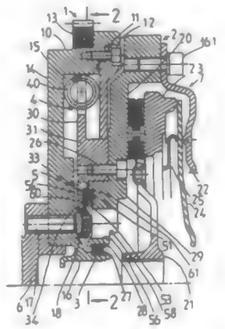
element and the respective surface, toward the one element, one of said surfaces at least partially overlaps the other of said surfaces in the direction of said axis.

5,367,920

DAMPED DOUBLE FLYWHEEL FOR A MOTOR VEHICLE

Ciriaco Bonfilio, Clichy, Italy, assignor to Valeo, Paris Cedex, France

Filed Apr. 30, 1993, Ser. No. 55,737
Claims priority, application France, Apr. 30, 1993, 92 05368
Int. Cl.[5] F16F *15/10;* **F16D** *13/50*
U.S. Cl. 74—574 **9 Claims**



1. A damped double flywheel for a motor vehicle having an engine, a driving element coupled to the engine to be driven thereby, and a clutch having a reaction plate and arranged to be driven by said driving element, said double flywheel comprising: a first rotatable mass comprising a central hub and securing screws for securing said first mass to said driving element, each such securing screw having a head; a second rotatable mass comprising the reaction plate of the clutch and a second hub carried internally by the reaction plate; and a circumferentially acting torsion damper coupling said first mass to the second mass through said reaction plate, the torsion damper comprising a fastening portion and securing means securing the fastening portion to the reaction plate, the flywheel further including anti-friction bearing means interposed radially between the central hub and the second hub whereby the second mass is mounted for rotation on the first

mass, said securing screws being fitted radially outwardly of said bearing means, the second hub defining transverse openings for passage of the heads of the securing screws and a screwdriving tool therethrough, and wherein the flywheel further includes a plurality of removable retaining means carried by the second hub and fitted at the level of said openings of the second hub for retaining the heads of the securing screws, at least in the axial direction going from the first mass to the reaction plate, whereby the double flywheel and the clutch together form a single module.

5,367,921

FLYWHEEL ASSEMBLY

Hirotaka Fukushima, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Continuation of Ser. No. 964,506, Oct. 21, 1992, abandoned.
This application Mar. 15, 1993, Ser. No. 213,373
Claims priority, application Japan, Oct. 21, 1991, 3-085624[U]
Int. Cl.[5] F16F *15/30;* **F16D** *3/12, 3/80*
U.S. Cl. 74—574 **15 Claims**

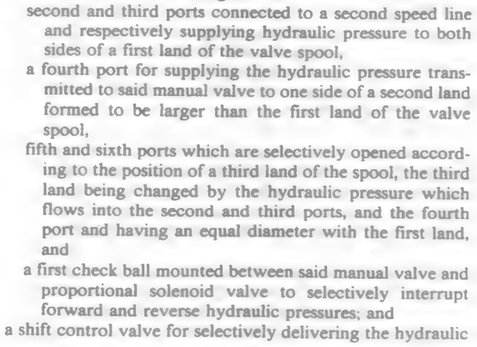
1. A flywheel assembly comprising:
a first flywheel connectable to an input member;
a second flywheel connectable to an output member, supported rotatably on said first flywheel;
a unitary, removable damping unit located between said first and second flywheels; and
a connection member for solely and detachably connecting said damping unit to said first flywheel, said connection member being capable of repeated use for said detachable connection,
said damping unit comprising:
a pair of ring-shaped drive plates, one of which being detachably connected to said first flywheel through said connection member;
a ring-shaped driven plate interposed between said pair of drive plates, and being detachably connected to said second flywheel;
a viscous damping fluid interjoining said drive plates and said driven plate; and
a plurality of pins for connecting said pair of drive plates at a given spacing therebetween, whereby said drive plates, said driven plate and said viscous damping fluid are assembled as an integral unit;
whereby said damping unit may be easily selectively removed and integrally replaced with another damping unit having the same or modified damping characteristics.

5,367,922

HYDRAULIC CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION HAVING AN R-N-D CONTROL VALVE

Jaedeog Jan, Seoul, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Dec. 11, 1992, Ser. No. 989,574
Claims priority, application Rep. of Korea, Feb. 24, 1992, 92-2826
Int. Cl.[5] F16H *47/00*
U.S. Cl. 74—732.1 **7 Claims**



1. A hydraulic control system for an automatic transmission comprising:
a fluid pump for generating hydraulic pressure;
a torque converter for generating rotating power;
a plurality of shift valves;
a plurality of clutches and brake means controlled by said plurality of shift valves in proportion to forward and reverse speeds with the hydraulic pressure generated from said fluid pump and which selectively transmit the rotating power of said torque converter to each of a plurality of gear elements;
a manual valve which is shifted by a shift lever and delivers the hydraulic pressure to each of plurality of shift valves;
valves;
a proportional solenoid valve connected to the manual valve and controlled by a transmission control unit so as to proportionally control the hydraulic pressure;
a reverse-neutral-drive control valve for reducing a shift impact which occurs when said manual valve is shifted from a neutral range to a drive/reverse range and a speed is up-shifted in the drive range as the hydraulic pressure is applied to said reverse-neutral-drive control valve via said manual valve and proportional solenoid valve, having a housing and a valve spool, said reverse-neutral-drive control valve including
a first port for receiving hydraulic pressure generated from the fluid pump via the proportional solenoid valve when said manual valve is shifted from a neutral range to a drive/reverse range,
second and third ports connected to a second speed line and respectively supplying hydraulic pressure to both sides of a first land of the valve spool,
a fourth port for supplying the hydraulic pressure transmitted to said manual valve to one side of a second land formed to be larger than the first land of the valve spool,
fifth and sixth ports which are selectively opened according to the position of a third land of the spool, the third land being changed by the hydraulic pressure which flows into the second and third ports, and the fourth port and having an equal diameter with the first land, and
a first check ball mounted between said manual valve and proportional solenoid valve to selectively interrupt forward and reverse hydraulic pressures; and
a shift control valve for selectively delivering the hydraulic

pressure to the shift valve applied from said manual valve by the operation of two shift control solenoid valves controlled by the transmission control unit according to a vehicle speed;

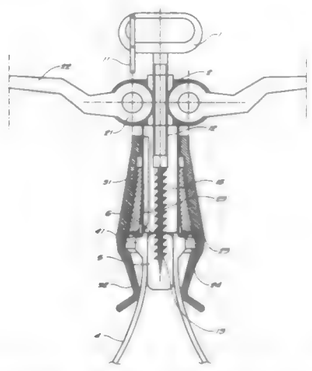
said valve spool of said reverse-neutral-drive control valve further including a fourth land having an equal diameter with the first land, and an elastic element resisting the hydraulic pressure transmitted through the fourth port at one side of said valve spool.

5,367,923

CORKSCREW THAT EXTRACTS SIMULTANEOUSLY WITH THE CORK A PREVENTIVELY CUT PORTION OF THE CAPSULE ON THE NECK OF THE BOTTLE

Alberto Fabbro, Via Udine, 38, I-33010 Cassacco, Italy

PCT No. PCT/IT91/00074, § 371 Date Mar. 9, 1993, § 102(e) Date Mar. 9, 1993, PCT Pub. No. WO92/04273, PCT Pub. Date Mar. 19, 1992
PCT Filed Sep. 10, 1991, Ser. No. 30,106
Claims priority, application Italy, Sep. 11, 1990, 83472 A/90
Int. Cl.[5] B67B *7/44*
U.S. Cl. 81—3.09 **6 Claims**



1. A corkscrew for simultaneously cutting a capsule on a neck of a bottle and removing a cork from the bottle comprising:

a screw handle means having a screw at one end for engaging the cork, said screw handle means having gear teeth positioned in generally coaxial alignment with the screw;

a pair of force lever means for the extraction of the cork after the screw engages to cork, said pair of force levers means engaging the gear teeth of said screw handle means;

a covering means for sliding on the neck of the bottle such that said screw handle means is in alignment with the cork, said screw handle means being rotatable relative to said covering means, said covering means having a portion having a generally conical configuration;

a cutting means positioned within said covering means, said cutting means engaging the neck of the bottle when said covering means slides downwardly along the neck of the bottle; and

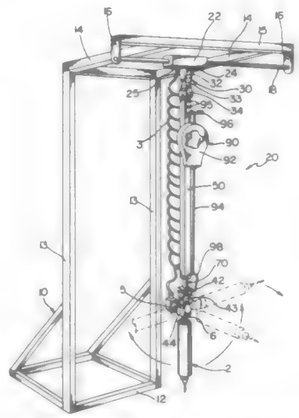
an engagement means affixed to said screw handle means, said engagement means being interactive with said cutting means so as to cause said cutting means to rotate during a rotation of said screw handle means, said cutting means for cutting through a portion of the capsule, said pair of force lever means for pulling the cork through the cut portion of the capsule.

5,367,924

SUPPORT ARM FOR A POWER SCREWDRIVER

John D. Henson, and Timothy J. Offutt, both of Logansport, Ind., assignors to EDLO Sales & Engineering Inc., Logansport, Ind.

Filed Jul. 26, 1993, Ser. No. 97,652
Int. Cl.[5] B25B *23/00*; B25H *1/00*
U.S. Cl. 81—57.4 **7 Claims**



1. In combination an extensible mechanical arm and power driver means for turning fasteners in place,

said mechanical arm comprising:

an elongated housing having first and second ends and defining an elongated interior compartment having inner side walls,

first pivot means interconnected between said housing first end and a connecting means for pivotally mounting said housing to a support structure,

an extensible rod having a first end disposed within said housing interior compartment, and a second end extending outwardly from said housing second end,

second pivot means interconnected between said rod second end and said power driver means for pivotally mounting said driver means to said extensible rod,

locking means carried by said rod and disposed in said interior compartment for preventing rotational movement of said rod relative to said housing.

5,367,925

ANTI-CRIMP WRENCH FOR A GARDEN HOSE

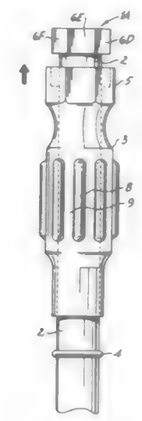
Pasquale Gasparre, East Patchogue, N.Y., assignor to Pasquale Gasparre DBA Creative Designs in Wood and Metal, E. Patchogue, N.Y.

Filed Jun. 1, 1993, Ser. No. 69,537
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—121.1 **7 Claims**

1. A hose extension and wrench combination for a garden hose, comprising:

a. a hose extension having a threaded male end and a threaded female end, said threaded female end having a polygonal coupling portion for tightening and loosening said threaded female end about a remote complimentary threaded male end; and

b. a body sleeve wrench portion slidably receivable about said hose extension between said threaded male end and said threaded female end; said body sleeve wrench portion having a complimentary polygonal coupling portion at one end sized to slidably engage and rotatably turn said polygonal coupling portion of said threaded female end of said hose extension, to selectively tighten and loosen said threaded female end of said hose extension from the remote complimentary threaded male end.

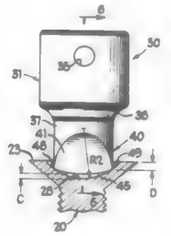


5,367,926

ARCUATE TIP DRIVER

Frank Mikic, and Jeffrey H. Hoff, both of Kenosha, Wis., assignors to Snap-on Incorporated, Kenosha, Wis.

Division of Ser. No. 23,553, Feb. 26, 1993. This application Feb. 3, 1994, Ser. No. 190,849
Int. Cl.[5] B25B *15/00*
U.S. Cl. 81—436 **1 Claim**



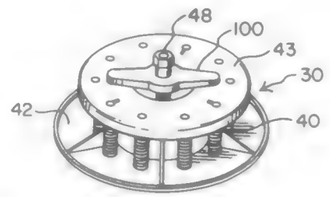
1. A method of driving a fastener having a head at one end of a threaded shank, said head having a driving face in which is recessed a driving slot of generally bow tie configuration defined by at least slightly undercut side walls and an arcuately concave bottom wall having a radius of curvature centered on the longitudinal axis of the shank, the slot having a length which is the distance between the intersections of the bottom wall with the driving face as measured along the driving face, said method comprising the steps of: providing a tool shaft having a longitudinal axis, a driving blade at one end of said shaft defined by front and rear surfaces and a pair of side surfaces and an arcuately convex distal end surface intersecting said front and rear surfaces and said side surfaces, said blade having a width which is the distance between said side surfaces at their intersections with said end surface, said end surface having a radius of curvature centered on said longitudinal axis of said shaft, said width of said blade being substantially less than the length of the slot, said radius of curvature of said blade end surface being greater than the radius of curvature of the bottom wall of the slot; inserting the driving blade into the slot substantially coaxially therewith so that the side surfaces of the blade are disposed inboard of the head; and rotating the tool about its axis while maintaining the blade in engagement with the bottom wall of the slot.

5,367,927

MOTORCYCLE CLUTCH ASSEMBLY REMOVAL TOOL AND METHOD THEREFOR

Vincent T. Frettered, 171 W. Fera, Woodland Park, Colo. 80863

Filed Sep. 25, 1992, Ser. No. 951,667
Int. Cl.[5] B25B *27/00*
U.S. Cl. 81—488 **21 Claims**



1. A clutch removal tool for removing clutch assemblies from motorcycles, said clutch removal tool comprising:

an elongated member having a central portion;

a hole formed in said central portion of said elongated member for engagement over a pushrod adjusting screw of a motorcycle clutch assembly;

a first end portion on said elongated member having a cross-sectional width of about one-quarter inch to one-half inch for engaging the spring collar of the motorcycle clutch assembly without interfering with the spring tension adjusting nuts of the motorcycle clutch assembly; and

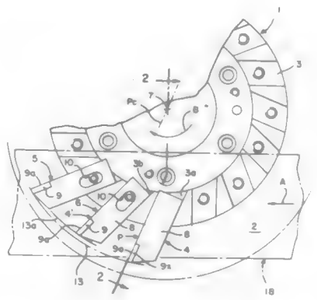
a second end portion on said elongated member having a cross-sectional width of about one-quarter inch to one-half inch for engaging the spring collar of the motorcycle clutch assembly without interfering with the spring tension adjusting nuts of the motorcycle clutch assembly.

5,367,928

METHOD OF AND IMPLEMENT FOR CUTTING BOOKS AT THE BACKBONES

Peter Geiser, Matzingen, and Rolf Zängerle, Herdern, both of Switzerland, assignors to Grapha-Holding AG, Hergiswil, Switzerland

Filed Oct. 14, 1992, Ser. No. 961,084
Claims priority, application Switzerland, Oct. 18, 1991, 3058/91
Int. Cl.[5] B26D *1/143*; B41F *13/56*
U.S. Cl. 83—49 **14 Claims**



1. A method of removing material from the spine of book blocks of stacked sheet-like printed products with a first set of a plurality of cutters, each having a cutting edge, which rotate about a predetermined axis at a first rotational speed and a

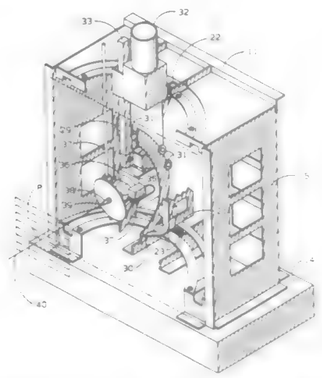
second set of a plurality of cutters, each having a cutting edge, which rotate about the predetermined axis at said first rotational speed, comprising the steps of rotating the cutting edges of the first set at a first radial distance spaced from said axis and rotating said cutting edges of the second set at a second radial distance spaced from said axis with said first radial distance being greater than the second radial distance and said cutting edges of the first set being axially spaced with respect to said cutting edges of the second set; effecting a movement of the spine of the book block and the cutters relative to each other along a path wherein the cutters penetrate into the spine of the book block of the stacked sheet-like printed products; removing material from the spine of the book blocks with the first set of the cutters removes a first layer of material from said stack and the second set of cutters successively removes a second layer of material from said stack.

5,367,929

FLUID JET CUTTING KNIFE APPARATUS

Ronald H. Burch, Harahan; Mark E. Sutton, Kenner; Frank B. Henry, and Warren E. Cancienne, both of River Ridge, all of La., assignors to The Laitram Corporation, Harahan, La.

Filed Jul. 13, 1993, Ser. No. 90,790
Int. Cl.[5] B26F *3/00*
U.S. Cl. 83—177 **23 Claims**



1. A fish cutting apparatus for processing multiple transversely cut fish section workpieces, each having generally flat opposing surfaces connected with a peripheral curved surface comprising:

a) a fluid jet frame with a fluid jetting knife movably supported with respect to the frame, and the knife having a nozzle that can emit a high velocity jet of fluid for cutting the fish section workpieces to be processed, the nozzle having a fluid discharge orifice;

b) means for simultaneously rotating the fluid jetting nozzle about a pair of selected pivots that rotate the knife about a pair of intersecting axes;

c) a workpiece support frame spaced from the fluid jet frame so that the fluid jet knife is positioned to cut a workpiece supported upon the workpiece frame; and

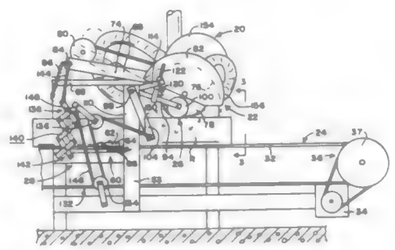
d) means for translating a single one of the workpieces in two different directions with respect to the fluid jet frame and during simultaneous jetting of the workpiece by the jet of fluid, so that the workpiece is cut by a coordinated effort of the simultaneous pivotal movement of the knife and translating movement of the workpiece.

5,367,930

CUTTING APPARATUS FOR PAPER BUTT ROLL RECYCLING

John H. Lemley, 2511 Mt. Carmel Rd., Covington, Tenn. 38019

Filed Jul. 20, 1993, Ser. No. 93,666
Int. Cl.[5] B26D *5/00*
U.S. Cl. 83—368 **8 Claims**



1. A cutting apparatus for cutting remnant paper from a paper butt roll, said butt roll comprising a core and a thickness of said remnant paper wound about said core, said cutting apparatus comprising:

(a) saw means for cutting said remnant paper from said core;

(b) conveyor means for moving said butt roll past said saw means;

(c) sensing means for measuring said thickness of said remnant paper; and

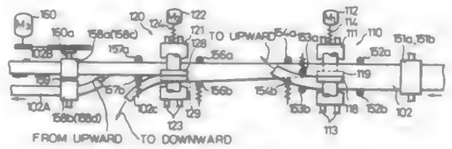
(d) positioning means, responsive to said sensing means, for positioning said saw means to cut said thickness into said butt roll.

5,367,931

CUTTING APPARATUS FOR CUTTING STRIP MATERIAL BY A PLURALITY OF SLITTER UNITS TO OBTAIN A PLURALITY OF RIBBON CORE MATERIALS IN ONE OPERATION WITH HIGH PRECISION

Fumio Kitamura, Chino, Japan, assignor to Kitamura Kiden Co., Ltd., Chino, Japan

Filed May 7, 1992, Ser. No. 880,042
Claims priority, application Japan, Apr. 22, 1992, 4-103020
Int. Cl.[5] B26D *7/06*
U.S. Cl. 83—407 **13 Claims**



1. A cutting apparatus for a strip of a ribbon core to which a cylindrical coil ribbon for winding is applied, for obtaining a predetermined configuration of ribbon core materials, comprising:

a plurality of slitter units for cutting travelling strip material, wherein said slitter units are arranged in off-set positions in the traveling direction of said strip material,

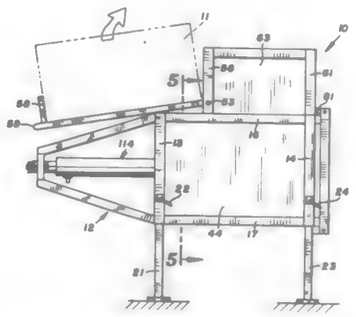
and means for directing one of the strip material cut by each of said slitter units to travel upwardly or downwardly at an angle to a traveling line through which the other of the cut strip material travels.

5,367,932

BALE CUTTING MACHINE

Ronald H. Bergman, Rte. 1 Box 108, McIntosh, Minn. 56556

Continuation of Ser. No. 909,670, Jul. 7, 1992, abandoned. This application Dec. 13, 1993, Ser. No. 165,572
Int. Cl.[5] B26D *1/03*
U.S. Cl. 83—425.2 **16 Claims**



1. An apparatus for cutting a bale of material into a plurality of sections comprising:

a frame having a top portion including a top inlet opening to accommodate a portion of a bale of material, an outlet opening spaced from the inlet opening, and a chamber between the inlet and outlet openings for accommodating a portion of the bale of material, platform means for holding the bale of material extended laterally from the inlet opening, pivot means movably mounting the platform means for holding the bale of material on the frame for movement from a first down position for holding the bale of material to a second upright position whereby a portion of the bale of material moves through the inlet opening into the chamber, a U-shaped guide means mounted on the top portion of the frame having a passage open to the opening and an opening facing the platform means whereby when the platform means is moved to the second upright position, the bale of material moves into the passage and said portion of the bale of material drops into said chamber, said pivot means connecting the platform means to the guide means, blade means having cutting edges facing the chamber, means mounting the blade means on the frame across the outlet opening, ram means movably mounted on the frame for movement into the chamber toward said blade means to force the portion of the bale of material in the chamber into the blade means whereby the portion for the bale of material is cut into sections, and means connected to the frame and ram means operable to selectively move the ram means toward and away from the blade means.

5,367,933

POWER TOOL SHIELD AND GUIDING APPARATUS

Jerome F. Jaksha, 804 Tulip Rd., SE., Rio Rancho, N. Mex. 87124

Continuation-in-part of Ser. No. 725,399, Jul. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 494,753, Mar. 14, 1990, abandoned. This application Jun. 25, 1992, Ser. No. 904,462
Int. Cl.[5] B26D *7/06*
U.S. Cl. 83—440.2 **19 Claims**

1. A power tool shield guiding apparatus for use with a magnetically attractable surface, the apparatus comprising:

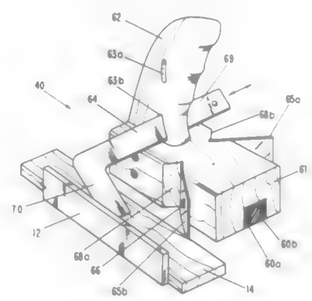
housing means;

a handle attached to said housing means having an opening extending therethrough;

magnetic holding means attached to said housing means for securing said housing means to a magnetically attractable surface;

a first compressing engagement means on said housing means for exerting a first compressing force and for guiding a work piece against a first work supporting member; and

a second compressing engagement means on said housing means for exerting a second compressing force and for guiding the workpiece against a second work supporting member, the second compressing engagement means comprising a slidably insertable means received in the opening in the handle for adjusting the second compressing force, wherein said first compressing engagement means exerts said first compressing force substantially perpendicular to the second compressing force of said second compressing engagement means wherein the first compressing force is adjustable and the second compressing force is adjustable independently of the first compressing force.

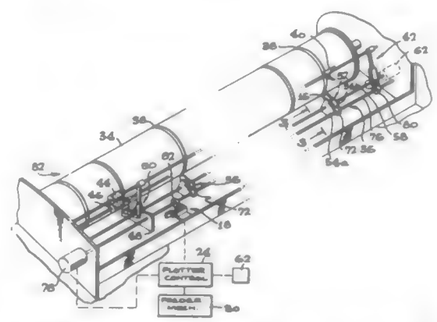


5,367,934

MEDIA CUTTER MECHANISM

Douglas K. MacNiel, Costa Mesa, Calif., assignor to CalComp Inc., Anaheim, Calif.

Filed Apr. 29, 1993, Ser. No. 53,536
Int. Cl.[5] B26D *1/22*
U.S. Cl. 83—425.2 **9 Claims**



1. A media cutter mechanism for a plotter comprising:

support means for supporting media, said support means having a plurality of recesses therein positioned to be at least partially covered by said media;

a plurality of individual cutter means positioned external of said support means, said cutter means being individually movable a preselected distance into said recesses and supported by a common shaft and pivotable therearound individually toward and away from said support means, each of said cutter means including a rotatable cutter blade and said common shaft being coupled to and driving

each of said rotatable cutter blades, whereby said media can be selectively cut; and

mover means for individually moving said cutter means into said recesses to cut said media covering said recesses.

5,367,935

TURRET PUNCH PRESS

Morikatsu Matsuda, Isehara, Japan, assignor to Amada Company, Limited, Kanagawa, Japan

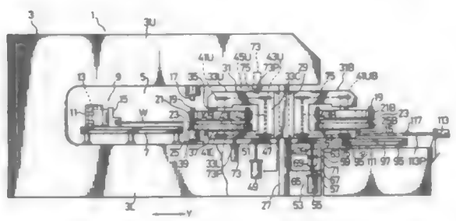
PCT No. PCT/JP91/00748, § 371 Date Nov. 27, 1992, § 102(e) Date Nov. 27, 1992, PCT Pub. No. WO91/18690, PCT Pub. Date Dec. 12, 1991

PCT Filed Jun. 4, 1991, Ser. No. 949,884

Claims priority, application Japan, Jun. 4, 1990, 2-144509

Int. Cl.[5] B21D *28/26*; B21J *13/04*

U.S. Cl. 83—552 **9 Claims**



1. A turret punch press comprising:

a C-shaped frame having an upper frame and a lower frame;

a workpiece transfer and positioning device for supporting a plate-shaped workpiece in a freely transferable manner in the X-axis and Y-axis directions on the frame;

a plurality of freely rotatable upper turrets, each of which supports a plurality of punches for punching the workpiece, and a plurality of lower turrets, each of which support a plurality of dies to cooperate with the punches, and

a striker with free vertical motion provided on the frame for striking the punches;

wherein a freely swinging holder frame, on which a plurality of upper arms and a plurality of lower arms are integrally mounted, is provided on a vertical shaft in the opening in the C-shaped frame, and the freely rotatable upper turrets and freely rotatable lower turrets are respectively provided on each of the upper arms and the lower arms, the vertical shaft having upper and lower ends, each respectively secured to the upper and lower frames of the C-shaped frame.

5,367,936

ADJUSTABLE CUTTING KNIFE CYLINDER

Michael Held, Heuchelheim, and Holger Ratz, Frankenthal, both of Germany, assignors to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Germany

Filed Mar. 5, 1993, Ser. No. 26,693

Claims priority, application Germany, Mar. 6, 1992, 4207209

Int. Cl.[5] B26D *1/62*

U.S. Cl. 83—698.61 **5 Claims**

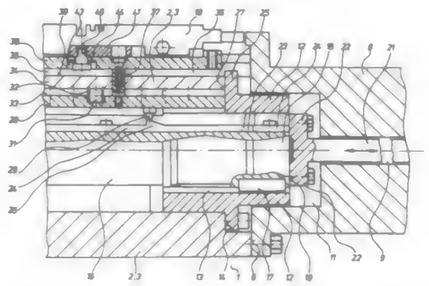
1. An adjustable cutting knife cylinder which is usable with a cooperating counter cutting bar cylinder of a folder of a rotary printing press, said adjustable cutting knife cylinder comprising:

a cylinder body supported for rotation about a longitudinal axis of rotation;

at least a first cutting knife supported in a radially and circumferentially shiftable cutting knife holder at an outer peripheral portion of said cylinder body and extending generally parallel to said longitudinal axis of rotation;

a radially shiftable support bar supported in said cylinder body, said support bar supporting said cutting knife holder;

radial shifting means for radially shifting said support bar and said cutting knife holder supported by said support bar with respect to said outer peripheral portion of said cylinder body to shift said at least first cutting knife radially in said cylinder body; and



circumferential shifting means for circumferentially shifting said cutting knife holder on said radially shiftable support bar in a direction generally 90° to said longitudinal axis of rotation to shift said at least first cutting knife circumferentially on said outer peripheral portion of said cylinder body.

5,367,937

HARMONICA

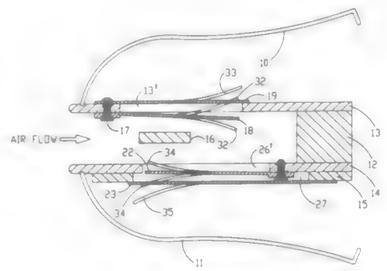
William R. Epping, 108 N. James St., Ashland, Va. 23005

Continuation-in-part of Ser. No. 750,874, Aug. 26, 1991, Pat. No. 5,182,413. This application Jan. 21, 1993, Ser. No. 7,263

The portion of the term of this patent subsequent to Jan. 26, 2010, has been disclaimed.

Int. Cl.[5] G10D *7/12*

U.S. Cl. 84—377 **8 Claims**



1. A harmonica comprising:

a multiplicity of adjacent mouthpiece openings;

a draw reed of a first predetermined pitch associated with each of said mouthpiece openings;

a blow reed of a second predetermined pitch associated with each of said adjacent mouthpiece openings which is of a different frequency than said first predetermined pitch of said draw reed;

a draw enabler reed of a predetermined pitch associated with each of said adjacent mouthpiece openings;

a draw reed/draw enabler reed valve associated with each of said mouthpiece openings for said draw enabler reed;

a blow enabler reed of predetermined pitch associated with each of said mouthpiece openings; and

a blow reed/blow enabler reed valve associated with each of said adjacent mouthpiece openings for said blow enabler reed and for said blow reed.

5,367,938

HORN WITH INTERMEDIATE TUBE NETWORK ENLARGED IN INNER DIAMETER

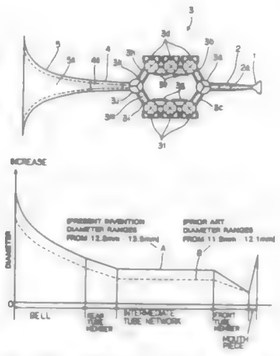
Shinji Hamanaga, Shizuoka, Japan, assignor to Yamaha Corporation, Japan

Filed Jul. 22, 1993, Ser. No. 96,021

Claims priority, application Japan, Jul. 24, 1992, 4-218398

Int. Cl.[5] G10D *7/10*

U.S. Cl. 84—387 R **4 Claims**



1. A horn for producing a sound through vibrations of a column of air, comprising:

a) a mouth piece where a player buzzes;

b) a front tube means connected at one end thereof with said mouth piece, and defining a first wind passage increased in diameter from said one end toward the other end thereof;

c) an intermediate tube means connected at one end thereof with the other end of said front tube means, and defining a second wind passage having a constant diameter ranging from 12.8 millimeters to 13.5 millimeters;

d) a rear tube means coupled at one end thereof with the other end of said intermediate tube means, and defining a third wind passage increased in diameter from said one end toward the other end thereof; and

e) a bell means coupled with the other end of said rear tube means, and defining a fourth wind passage for diffusing said sound, said first, second, third and fourth wind passages defining said column of air.

5,367,939

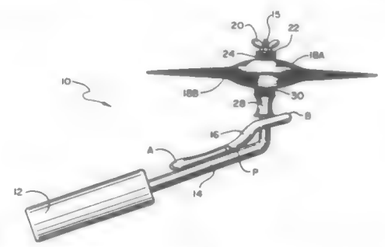
HAND HELD CYMBAL DEVICE

Daniel F. Barker, Woodstock, Canada, assignor to Sabian Ltd., Meductic, Canada

Filed Jan. 13, 1993, Ser. No. 2,439

Int. Cl.[5] G10D *13/08*

U.S. Cl. 84—402 **10 Claims**



1. A cymbal device for holding and playing with one hand, comprising:

a shaft extending along an axis,

a first cymbal secured to the shaft,

a second cymbal mounted slidably on the shaft and coaxially with the first cymbal,

a handle coupled to the shaft for grasping and carrying the cymbal device by a single hand of a user of the cymbal device, and

a trigger mechanism pivotably mounted to the shaft at a pivot point, the trigger mechanism including:

a first end extending from the pivot point in a direction away from the handle, the first end coupled to the second cymbal such that movement of the first end causes sliding movement of the second cymbal along the shaft in a direction substantially parallel to the axis; and

a second end extending from the pivot point to an area near the handle, the second end for manipulation by the single hand of the user, whereby the second cymbal slides along the shaft and contacts the first cymbal upon manipulation of the second end of the trigger mechanism by the single hand of the user.

5,367,940

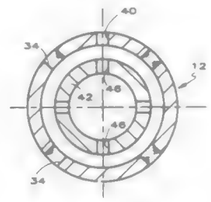
COMBINED MUZZLE BRAKE, MUZZLE CLIMB CONTROLLER AND NOISE REDIRECTOR FOR FIREARMS

Henry A. Taylor, P.O. Box 1744, Beeville, Tex. 78102

Filed Jun. 3, 1993, Ser. No. 70,896

Int. Cl.[5] F41A *21/36*

U.S. Cl. 89—14.3 **17 Claims**



1. A combined muzzle brake and sound redirector for a firearm having a barrel having an axis, a breech end and a muzzle end, comprising

an outer shell having an upper half and a lower half divided by a plane extending horizontally through the outer shell and including a series of first openings, distributed on both the upper and lower halves, providing axes inclined to the barrel axis and defining a series of obtuse angles having one leg on the barrel axis beginning at the muzzle end and a second leg on the opening axis;

an inner shell, inside the outer shell, having an upper half and a lower half divided by the plane, providing an annular gap between the inner and outer shells, providing an axial passage concentric with the barrel axis for passing a bullet therethrough and providing a series of transverse second openings, distributed on both the upper and lower halves, opening into the axial passage; and

means for attaching the inner and outer shells to the muzzle of a firearm;

the first and second openings residing in common planes perpendicular to the barrel and being out of registry.

5,367,941

PNEUMATIC BOOSTER WITH VALVE

Jean Pierre Gautier, and Ulysse Verbo, both of Aulnay-Sous-Bois, France, assignors to AlliedSignal Europe Services Techniques, Drancy, France

Filed May 4, 1993, Ser. No. 50,204

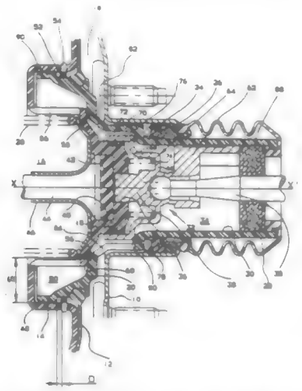
Claims priority, application France, Nov. 27, 1991, 91 14667

Int. Cl.[5] B60T *13/57*

U.S. Cl. 91—369.2 **6 Claims**

1. Pneumatic brake-booster comprising a casing (10) inside

which is a piston formed by a hub (20) and by a skirt (14) and which, with the aid of an unrolling membrane (12), defines a front chamber (16) permanently connected to a partial vacuum source and a back chamber (18) connected selectively to the front chamber (16) when a first valve passage (56, 58) is opened or to the atmosphere when a second valve passage (76, 78) is opened, the first and second valve passages (56, 58; 76, 78) being formed by valve seats (58, 78) co-operating with annular valve surfaces (56, 76), and being actuated by a control rod (35) capable of bearing, through the intermediary of a plunger (32), against one of the faces of a reaction disk (42) securely attached



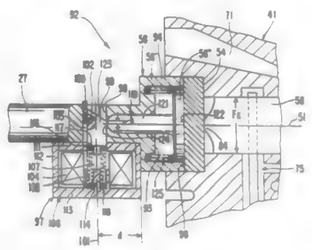
to a push rod (44), the skirt (14) of the piston being movable in axial translation with respect to the hub (20) over a predetermined distance (D), a spring (74) being disposed between the skirt (14) and the plunger (32) for returning the control rod (35) and acting as a shutter valve spring, characterized in that the plunger (32) includes a cylindrical part (70) sliding in leaktight manner around a cylindrical part (15) of the skirt (14) of the piston, the valve seat (78) of the second valve passage (76, 78) being formed on the hub (20) following a circle of diameter substantially equal to that of the cylindrical part (15) of the skirt (14).

5,367,942

BRAKE PRESSURE CONTROL DEVICE FOR A ROAD VEHICLE

Joachim Nell, Ostfildern; Manfred Steiner, Winnenden, and Georg Coermann, Stuttgart, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Oct. 12, 1993, Ser. No. 134,839
Claims priority, application Germany, Oct. 9, 1992, 4234041
Int. Cl.[5] F15B *9/10*
U.S. Cl. 91—369.2 **18 Claims**



1. A brake pressure control device for a road vehicle with a hydraulic multi-circuit brake system comprising a main cylinder for generating the brake pressures to be coupled into wheel brakes, a pedal-controlled pneumatic braking force amplifier operatively arranged to actuate the main cylinder, and operatively associated with the braking force amplifier for a switch-over device responding to actuation behavior of a road vehicle driver and configured to cause the braking force amplifier to be automatically switched over from a value of an amplification factor meeting a judicious braking requirement to a higher value of the amplification factor meeting a full braking requirement at least where a speed with which a driver actuates a brake pedal in an introductory phase of a braking action exceeds a threshold value, the braking force amplifier having a vacuum chamber connected to an induction connection of the road vehicle and, opposite the vacuum chamber, an actuation chamber movably bounded by an actuating piston and configured to be acted on by a pressure higher than a pressure prevailing in the vacuum chamber in proportion to a control force exerted on the brake pedal via a control part configured to act as a proportional valve and actuable by the brake pedal, the control part having a valve casing permanently connected to the actuating piston and axially displaceable therewith and a reaction piston forming a valve body and axially displaceable in the valve casing so as to be displaceable relative to the valve casing by actuation of the brake pedal in the direction of a force path marked by the control force and a resulting reaction force on actuation of the main cylinder, the reaction piston being supported by a reaction element, configured to be flexible at least in an axial direction, on a pressure rod for transmitting to the main cylinder an actuation force developed by action of pressure on the actuating piston, which reaction element exerts a reaction force directed in a direction opposite to the control force on the reaction piston and corresponding to a defined fraction of the actuation force acting on the main cylinder given by the reciprocal of the amplification factor of the braking force amplifier effective during the judicious braking operation, wherein in an axial force transmission train, leading from the brake pedal via the reaction piston of the control part, via the reaction element and via the actuating piston of the braking force amplifier to the main cylinder, for the control and actuation forces and for the reaction force resulting from the actuation of the main cylinder, which provides the driver with feedback on the functional condition of the brake system, a rigid force transmission element is provided in mechanical parallel connection to a flexible transmission element, with which force transmission element is associated a position engaged in the force transmission train as a basic position for the judicious braking operation, in which basic position the rigid force transmission element constitutes a distance piece between two force transmission train elements following sequentially in the force path direction, and a switch-over device is provided for the distance piece so as to respond when the threshold value of the pedal actuation speed is exceeded and then disengages the distance piece from a supporting position thereof and thereby frees a displacement path within which the reaction piston of the control part can be displaced against a reduced return force in the sense of a pressure buildup control of the control part.

5,367,943

ROTARY-LINEAR UNIT

Kurt Stoll, Esslingen, and Albrecht Wagner, Winterbach, both of Germany, assignors to Festo KG, Esslingen, Germany

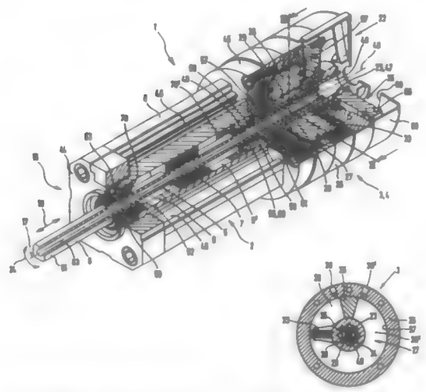
Filed Sep. 1, 1993, Ser. No. 115,229
Claims priority, application Germany, Sep. 8, 1992, 4229989
Int. Cl.[5] F01B *21/00*
U.S. Cl. 92—2 **17 Claims**

13. The rotary-linear unit having a first and second end, and an output drive shaft extending axially through said second end, the rotary-linear unit comprising:

a rotary drive section positioned on said first end of said rotary-linear unit, said rotary drive section including a fluid power operated motor to provide rotary motion to said output drive shaft about a longitudinal axis of said rotary-linear unit;

a linear drive section positioned in a housing on said second end of said rotary-linear unit, said linear drive section including a drive piston operable by fluid power operation to provide a linear motion in the direction of the longitudinal axis to said output drive shaft;

first and second bearing means axially spaced apart and positioned at opposite ends of the linear drive section housing so that inner sides of said first and second bearing



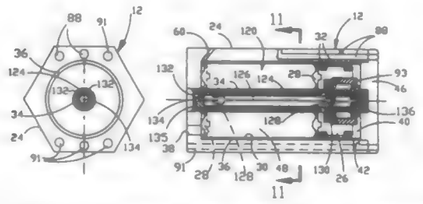
means face said drive piston, said first and second bearing means being rotatably arranged in said linear drive section housing to minimized friction braking forces when said drive piston abuts one of said first and second bearing means and the output drive shaft is being drive by said rotary drive section, and wherein said first and second bearing means axially guides and laterally supports said output drive shaft.

5,367,944

SENSOR FOR USE IN A FLUID TRANSFER SYSTEM

Hadi A. Akeel, Rochester Hills, and John A. Reinicke, Bloomfield Township, Oakland County, both of Mich., assignors to FANUC Robotics North America, Inc., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 771,436, Oct. 4, 1991, Pat. No. 5,238,029. This application Jul. 1, 1993, Ser. No. 86,539
Int. Cl.[5] F01B *25/26*
U.S. Cl. 92—5 R **25 Claims**



1. A sensor for sensing the position of a body which moves linearly in an environment, the sensor comprising an assembly including a cavity electrostatically and fluidly insulated from the environment and coupling means having a coupling force for coupling the motion of the body to the outside of the environment, the coupling means being adapted to be connected to the body to move linearly therewith, the assembly further including a conductive guide means disposed within the cavity and a non-magnetized conductive sensor part supported for linear movement on and relative to the guide means, the sensor part being coupled by the coupling means so as to move on the guide means in response to the movement of the body and the coupling force maintains electrical contact between the sensor part and the guide means during movement of the sensor part relative to the guide means wherein the sensor is adapted to provide an electrical signal representative of the position of the body.

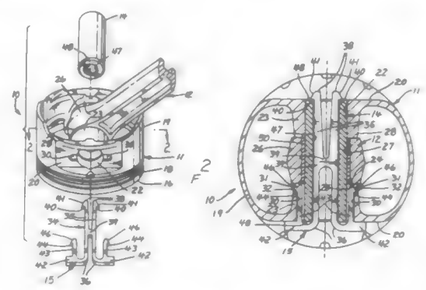
22. A non-contact sensor for sensing the linear position of a body which moves linearly in an environment, the sensor comprising an assembly including a cavity insulated from the environment and generating means for generating a magnetic field within the cavity, the generating means being adapted to be coupled to the body to move linearly therewith, the assembly including a sensor element disposed within the cavity and a ferromagnetic device supported for linear movement within the cavity to move in response to movement of the generating means and its magnetic field along the sensor element wherein the sensor is adapted to provide a signal representative of the position of the body and wherein the assembly further includes a conductive guide wire and wherein the ferromagnetic device is conductive and is mounted for linear movement within the cavity on the conductive guide wire, the ferromagnetic device being electrically coupled to both the guide wire and the sensor element in the magnetic field.

5,367,945

FLOATING PISTON PIN RETAINER

Thomas G. Halka, Birch Run, and Terry L. Clark, Byron, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1993, Ser. No. 106,685
Int. Cl.[5] F16J *1/14*
U.S. Cl. 92—187 **6 Claims**



1. A piston and pin assembly comprising

a piston defining a transverse wrist pin bore, and a pair of grooves extending axially in the piston alongside the bore from an outer end thereof to an interrupted portion spaced inward from the end,

a connecting rod having a pin end receivable in the piston inwardly adjacent the interrupted portion and a pin opening connecting with and forming an extension of the bore,

a retaining clip comprising a body including a pair of axially extending spaced parallel stringers having base and head ends and connected intermediate the ends by a bridge, the stringers having at their head ends outwardly projecting hooks having backward angled end ramps, the stringers having at their base ends radial arms engagable with the piston adjacent the bore outer end, and a pair of fingers one extending from each radial arm spaced from and parallel to one another and the adjacent stringers, each finger having an inner end with an outwardly projecting hook having a backward angled end ramp,

the clip being received in the piston with the radial arms engaging the outer end, the stringers extending through the extended bore including the connecting rod, and the fingers lying within the grooves with the finger hooks engaging the interrupted portions to retain the clip in the piston bore, and

a cylindrical wrist pin having an axial bore and annular ends, the wrist pin being received in the extended piston bore including the connecting rod to retain the piston and rod

together, the pin being retained by the clip between the Radial arms and the projecting hooks of the stringers engaging the annular ends of the wrist pin, the head ends of the stringers extending from the bridge being resiliently urged outward to retain the pin and movable inward by engagement of the ramps by an annular end of the pin to allow inward flexing of the stringers and installation of the wrist pin thereon, and the fingers being resiliently urged outward to retain the clip in the piston bore during handling, the fingers being locked in the installed position by the pin after assembly, the fingers being capable of flexing inward during installation of the clip to allow the finger hooks to enter the grooves and engage the interrupted portions.

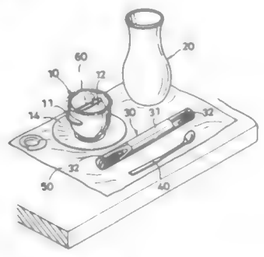
5. A retaining clip comprising a body including at least one axially extending spaced parallel stringer having base and head ends, the stringer having at its head end an outwardly projecting hook having a backward angled end ramp, the stringer having at its base end a radial arm engagable with a piston adjacent a bore outer end in the piston, and a finger extending from each radial arm spaced from and parallel to the adjacent stringer, each finger having an inner end with an outwardly projecting hook having a backward angled end ramp.

5,367,946

METHOD OF MAKING COFFEE AND TEA

Kazuo Yasunaga, 13-24, Morikawachinishi 1-chome, Higashi Osakashi, Osakafu, 577, Japan

Filed Nov. 10, 1992, Ser. No. 974,023
Claims priority, application Japan, Feb. 25, 1992, 4-037607
Int. Cl.[5] A47J *31/42*
U.S. Cl. 99—286 **3 Claims**



1. A kit comprising a mortar, a pestle, a scoop, and a cup, the cup comprising a brewing section and a sipping section separated by a partition projecting inward from the inside wall of the cup, the partition having an aperture through which the finished beverage is passed and sipped, the cup having handles on diametrically opposite sides of the outside wall thereof with respect to the drinker side of the cup, the handles being formed in a tilted position so as to be in parallel with the partition.

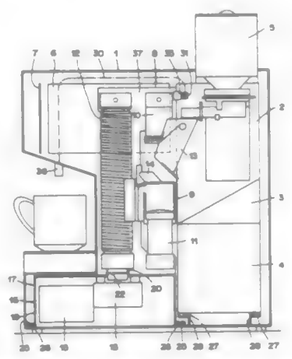
5,367,947

COFFEE MACHINE

André Lüssi; Hans Zarbuchen, both of Wabern, and Jürg von Gunten, Grooshöchstetten, all of Switzerland, assignors to Sintra Holding AG, Switzerland

PCT No. PCT/CH92/00206, § 371 Date Jun. 10, 1993, § 102(e) Date Jun. 10, 1993, PCT Pub. No. WO93/07792, PCT Pub. Date Apr. 29, 1993
PCT Filed Oct. 8, 1992, Ser. No. 74,872
Claims priority, application Switzerland, Oct. 17, 1991, 030406/91
Int. Cl.[5] A47J *31/24, 31/36*
U.S. Cl. 99—287 **10 Claims**

1. Coffee machine comprising a housing (1), a brewing device having a brewing cylinder (9), two pistons (10, 11) closing said brewing cylinder to form a brewing chamber, and a driving spindle (12) upon which said brewing cylinder is operably connected and movable relative to the pistons, said coffee machine further comprising a motor to drive said driving spindle, gears coupling said motor to said driving spindle, a first module (16) having first and second submodules (8, 17) and means for removably connecting said first and second submodules, wherein said brewing device is disposed in said



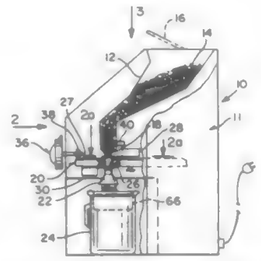
first submodule and said motor (15) and said gears (18) are disposed in said second submodule, and means for removably retaining said first module in said housing, wherein said brewing device (8) continues to be operable when said first module is removed from said housing.

5,367,948

QUANTITY MEASURING COFFEE MACHINE

Judith Di Fusco, 32 Beach Ave., Port Jefferson Station, N.Y. 11776, and Richard L. Miller, Dix Hills, N.Y., assignors to Judith Di Fusco, Port Jefferson Station, N.Y.

Filed Mar. 14, 1994, Ser. No. 209,465
Int. Cl.[5] A47J *31/40*
U.S. Cl. 99—289 R **6 Claims**



1. A coffee machine, for measuring and dispensing a quantity of coffee selected by a user, comprising:

a) a bin, for holding coffee material, the bin having a bin nozzle;

b) a dispensing disk, having a plurality of dispensing measuring cavities, the dispensing cavities varying in size from each other and extending through the dispensing disk;

c) a selector knob, mechanically connected to the dispensing disk, the selector knob moving the measuring disk to align one of the measuring cavities with the bin nozzle that corresponds to the desired quantity of coffee material to be dispensed;

d) an upper solenoid, having an upper solenoid plate mounted beneath the bin nozzle, the upper solenoid plate is slidable to selectively:

i) retract to a position where it allows coffee material to flow from the bin nozzle into the measuring cavity directly below the bin nozzle, and

ii) extend to a position where it covers one of the measuring cavities directly below the bin nozzle to prevent the flow of coffee material from the bin nozzle; and

e) a lower solenoid, having a lower solenoid plate mounted beneath the bin nozzle, the lower solenoid plate is slidable to selectively:

i) retract to a position where it allows coffee material to flow from the measuring cavity directly below the bin nozzle, and

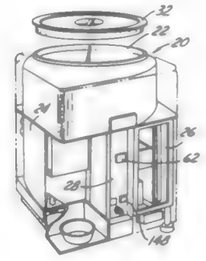
ii) extend to a position where it prevents the flow of coffee material from the measuring cavity directly below the bin nozzle, to allow that measuring cavity to fill with coffee material.

5,367,949

AUTOMATED VENTLESS DEEP FRYER

John S. Nitschke, Perrysburg, and Daniel B. Kuhary, Whitehouse, both of Ohio, assignors to Vend-It Corporation, Perrysburg, Ohio

Filed Feb. 1, 1994, Ser. No. 190,866
Int. Cl.[5] A47J *37/00, 37/12*
U.S. Cl. 99—334 **1 Claim**



1. An automated deep fryer comprising:

a refrigerated food storage compartment including a portion controller and food dispenser;

a cooking chamber isolated from the storage compartment, the cooking chamber including a frying vessel and a food basket mounted for movement to a variety of preselected positions;

a control for programmed dispensing, preparation and serving of a preselected portion of food in response to an operator's input;

a conduit connected to the cooking chamber from which the gases and airborne by-products of the deep fry process can be extracted; and

an air purification chamber connected with the cooking chamber, said air purification chamber including

a fan for extracting the gases from the cooking chamber through the conduit,

a cold plate having a generally flat surface over which the fumes from the cooking chamber travel, the cold plate being interposed between the fan and the cooking chamber, and

a filter positioned between the cold plate and the fan.

5,367,950

VERTICAL HEAT SOURCE ROTISSERIE

Richard T. Sarich, West Allis, Wis., assignor to RTS Enterprises, Inc., West Allis, Wis.

Filed Jan. 18, 1994, Ser. No. 182,238
Int. Cl.[5] A47J *37/04*
U.S. Cl. 99—421 H **4 Claims**

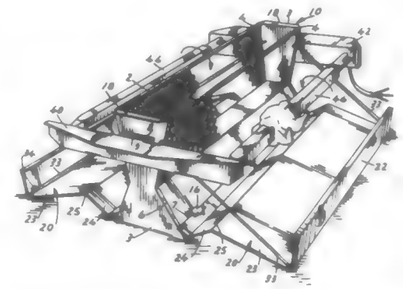
1. A rotisserie cooking unit comprising

a longitudinally extending heat source,

means for supporting said heat source, said heat source support means including a longitudinally extending base member having a first end and a second end,

a spit drive assembly, said spit drive assembly being removably mountable upon either the first end or the second end of the heat source support base member,

a spit carrier assembly, said spit carrier assembly being removably mountable upon either the first end or the second end of the heat source support base member and being opposable to said spit drive assembly, and



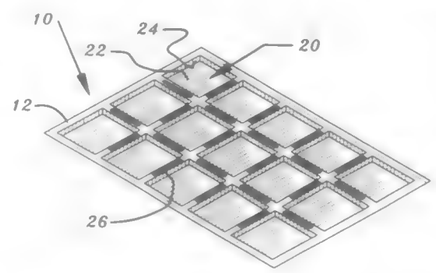
a pair of longitudinally extending cover members, said cover members being identically configured and used to either enclose the heat source and the heat source support base member or be opened up to extend outwardly from the heat source support base, each of said cover members including an ash catch portion and a drip pan portion integral thereto, said ash catch portion and said drip pan portion being separated by a ridge.

5,367,951

GRILL STEAMER TRAY

William L. Purvis, 555 Golden Pond Ct., Jacksonville, Fla. 32259

Filed Jul. 1, 1993, Ser. No. 84,923
Int. Cl.[5] A47J *37/07*
U.S. Cl. 99—450 **2 Claims**



1. A grill steamer tray comprising:

a substantially rectangular main body positionable within a grill between a grate of said grill and charcoal of said grill, said main body having a plurality of substantially square depressions integrally formed in a juxtaposed, spaced relationship to one another, each of said depressions including a planar bottom plate and a side wall which circumscribes said bottom plate and integrally connects said bottom plate to said main body, said main body further having a plurality of apertures extending therethrough, with each of said apertures being positioned between said depressions so as to allow heat and smoke from said charcoal to pass around said depressions and through said apertures to food being cooked on said grill, said depressions being operable to retain a fluid therein to generate steam upon heating of said tray by said charcoal of said grill, with said depressions further being operable to capture and retain grease droppings from said food, with fluid

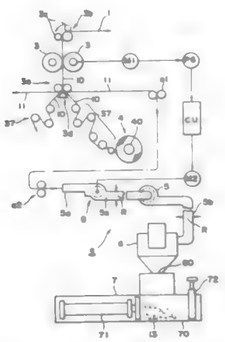
communication between said depressions being precluded by said side walls such that said grease droppings are contained within individual depressions, thereby precluding contamination of said fluid within adjacent depressions by said grease droppings.

5,367,952

APPARATUS FOR HANDLING LUG SCRAP STRIPS FROM METALLIC STRIP SLITTERS

Junichi Aiba, and Yoshiharu Sasaki, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Japan

Filed Jun. 14, 1993, Ser. No. 75,902
Int. Cl.[5] B30B *15/30, 9/00*
U.S. Cl. 100—45 **4 Claims**



1. Apparatus for cutting and recovering lug scrap strips from a metallic strip slitter comprising:
- a sensor for detecting the line speed of the metallic strip slitter;
- a scrap cutter for continuously cutting the lug scrap strips to a predetermined length;
- control means for driving said scrap cutter responsive to the line speed of the metallic strip slitter sensed by said line speed sensor;
- air duct means for pneumatically conveying the lug scrap strips from the metallic strip slitter to said scrap cutter and for conveying the cut lug scrap strips of predetermined length from said scrap cutter;
- a blower connected to said air duct means downstream of said scrap cutter;
- a scrap collector provided at the end of said air duct means, for collecting the cut scrap strips of predetermined length; and
- a scrap press for receiving the collected cut scrap strips from said scrap collector and for pressing same into a unitary mass.

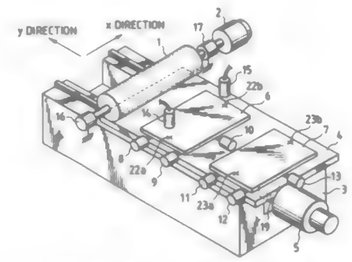
5,367,953

ROLLER OFFSET PRINTING APPARATUS

Kenkichi Yamashita, and Hideaki Oyanagi, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Jul. 1, 1993, Ser. No. 84,581
Claims priority, application Japan, Jul. 1, 1992, 4-197796
Int. Cl.[5] B41F *3/36*
U.S. Cl. 101—158 **8 Claims**

1. A roller offset printing apparatus including:
- a base (3);
- a linear stage (4) movable forwards and backwards on said base (1);
- a stage driving means (5) for driving said linear stage (4);
- a roller transfer drum (1) for transferring a pattern image to be transferred while being rotated;
- a roller transfer drum supporting means (16, 17) for rotatably supporting said roller transfer drum (1);
- a master plate (6) and a work plate (7) disposed at a predetermined interval on said linear stage, said master plate (6) having ink pits formed in a surface of said master plate (6) for reserving ink; and
- a roller transfer drum driving means (2) for driving said roller transfer drum (1) so that said roller transfer drum (1) rotates on the surface of said master plate (6) to transfer the ink in said ink pits of said master plate (6) onto the outer circumferential surface of said roller transfer drum (1) and said roller transfer drum (1) further rotates on a surface of said work plate (7) to thereby transfer the ink from the outer circumferential surface of said roller transfer drum (1) onto the surface of said work plate (7), wherein said roller offset printing apparatus further comprising:



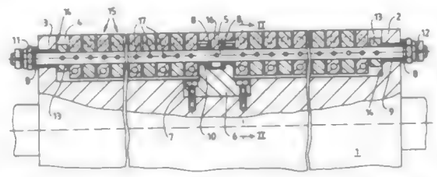
- a synchronizing means (24) for driving said stage driving means (5) and said roller transfer drum driving means (2) under synchronization therebetween;
- a position detection means (14, 15) for detecting positions of said master and work plates (6, 7) respectively; and
- a correction means (8, 9, 10, 11, 12, 13) for correcting the respective positions of said master and work plates (6, 7) in accordance with quantities of displacement of said master and work plates (6, 7) from reference positions respectively when the detected positions of said master and work plates (6, 7) displace from said reference positions respectively.

5,367,954

PRINTING-FORM CORRECTION DEVICE COMPENSATING FOR THE STRETCHING OF PRINT CARRIERS

Willi Becker, Bammental, Germany, assignor to Heidelberger Druckmaschinin AG, Heidelberg, Germany

Filed Dec. 28, 1993, Ser. No. 174,385
Claims priority, application Germany, Dec. 28, 1992, 4244279
Int. Cl.[5] B41F *1/28*
U.S. Cl. 101—415.1 **12 Claims**



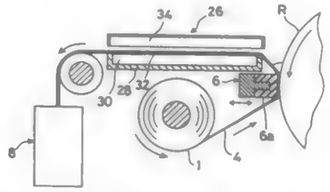
1. Device for receiving printing forms at one end thereof in a printing-unit cylinder of a rotary printing machine, wherein the printing-unit cylinder is a printing-form cylinder formed with a cylinder gap and having a shaft extending through the cylinder gap, comprising a plurality of receptacle components respectively formed with pairs of mutually opposing clamping surfaces disposed on the shaft for gripping a printing form, at least one adjusting element for swiveling one of the surfaces of the respective pairs thereof formed on the receptacle components against a force of a tension spring acting in a tensioning direction, and the other of the surfaces of the respective pairs thereof formed on the receptacle components having a retaining element actuatable by the one adjusting element for swiveling the other of the surfaces against a force of another tension spring, the shaft being an expansion shaft, the receptacle components being individual gripper elements supported side by side on said expansion shaft in a manner fixed against relative rotation therewith, and including adjustment devices for expanding said expansion shaft linearly in axial direction, and preloading devices actuatable independently of one another upon individual ones of said gripper elements for twisting said expansion shaft in the circumferential direction.

5,367,955

METHOD AND DEVICE FOR CLEANING AN INK ROLLER TRAIN FOR USE IN PRINTING MACHINES

Akira Hara, Tokyo, and Toshisaburou Takagi, Urawa, both of Japan, assignors to B-J Trading Ltd., Tokyo, Japan

PCT No. PCT/JP90/00191, § 371 Date Sep. 28, 1990, § 102(e) Date Sep. 28, 1990, PCT Pub. No. WO90/09283, PCT Pub. Date Aug. 23, 1990
Continuation of Ser. No. 582,219, Sep. 28, 1990, abandoned. This PCT application Feb. 16, 1990, Ser. No. 71,034
Claims priority, application Japan, Feb. 17, 1989, 1-36016
Int. Cl.[5] B41F *35/00*
U.S. Cl. 101—424 **4 Claims**



1. A device for cleaning ink from an ink roller train for use in printing machines comprising, in combination, means for applying solvent to the ink roller train to soften the ink; a roll supply of cleaning cloth; means for intermittently or continuously moving the cleaning cloth in press-contact with the ink roller train to remove the ink softened by the solvent, wherein the cleaning cloth has a three-layer structure of a non-backflow oil permeable layer, and oil absorptive layer, formed with an oil coagulant material, and an oil impermeable layer, for absorbing the ink softened by the solvent to hold the same; a heating means for melting the oil coagulant and mixing the melted oil coagulant with the absorbed ink; and a cleaning cloth disposing section for disposing of the cleaning cloth.

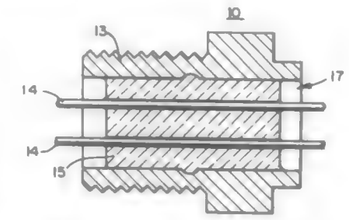
5,367,956

HERMETICALLY-SEALED ELECTRICALLY-ABSORPTIVE LOW-PASS RADIO FREQUENCY FILTERS AND ELECTRO-MAGNETICALLY LOSSY CERAMIC MATERIALS FOR SAID FILTERS

Homer W. Fogle, Jr., 15 Green Valley Rd., Wallingford, Pa. 19086-6050

Filed Feb. 7, 1992, Ser. No. 832,473
Int. Cl.[5] F42B *3/188*
U.S. Cl. 102—202.2 **12 Claims**

1. A method of making a monolithic combination electrical low pass radio frequency absorbent filter and mechanical gas-tight seal apparatus comprising the steps of
- providing an electrically conductive metallic casing having a passageway therethrough;
- providing an electromagnetically lossy glass-like ceramic material having a filler material dispersed in a binder,
- positioning said ceramic material within the passageway of said casing,
- positioning at least one electrode so as to extend through said ceramic material and through the passageway of said casing,
- holding said casing and said electrode in a fixed relation relative to each other by providing a non-metallic heat-resistant fixture,



- raising the temperature of said casing and said electrode until the binder of said ceramic material completely melts and reflows about said electrode and throughout interior walls of the casing passageway,
- lowering the temperature of said casing and said electrode so that said ceramic material resolidifies forming a monolithic combination electrical low-pass radio frequency absorbent filter and mechanical gas-tight seal apparatus by a gas-tight ceramic-to-metal fused seal completely spanning the passageway of the casing and supporting the electrode situated therein, and

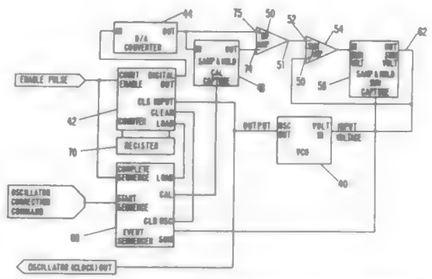
removing the apparatus from the heat-resistant fixture.

5,367,957

TUNABLE TIMING CIRCUIT AND METHOD FOR OPERATING SAME AND BLASTING DETONATOR USING SAME

Clarence E. Hennessey, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1993, Ser. No. 40,787
Int. Cl.[5] F23Q *7/02*
U.S. Cl. 102—217 **9 Claims**



1. A method for activating a blasting detonator circuit of the type having a voltage controlled oscillator (VCO) to control a time delay before detonation, comprising:
- (a) calibrating the frequency of the VCO by:
  - (i) counting clock pulses from the VCO during a period defined externally from the blasting detonator circuit;
  - (ii) comparing the clock pulse count with a predetermined value stored within the blasting detonator circuit indicating a desired clock pulse count;
  - (iii) determining a difference between the clock pulse

count and the predetermined value to provide a difference signal; and

(iv) modifying an oscillator control voltage in accordance with the difference signal;

(b) measuring the time delay with the VCO; and

(c) providing a signal to ignite a combustible element after measuring the time delay.

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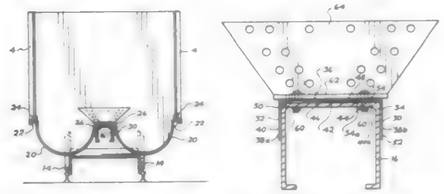
TWO PIECE CENTER SILL SHROUD FOR RAILWAY CARS

John C. Weiss, Johnstown, and Cloyd F. Wirick, Mineral Point, both of Pa., assignors to Johnstown America Corporation, Chicago, Ill.

Filed Feb. 28, 1994, Ser. No. 202,805

Int. Cl.[5] B61D *17/00*

U.S. Cl. 105—406.1 **10 Claims**



1. A rail car for carrying bulk material comprising a car body being carried by a pair of truck assemblies at two ends of the car body and forming a compartment for receiving bulk material,

said car body having a center sill extending along the longitudinal center line of said car body through said compartment,

shroud means being affixed to said center sill for covering the top portion of said center sill and protecting said center sill from contact with the bulk material being carried in said compartment,

said shroud means includes separate first and second pieces being longitudinally interconnected along said center sill, said first pieces having a first portion confronting said center sill, and said second pieces having a second portion overlapping said first portion, above said first piece.

5,367,959

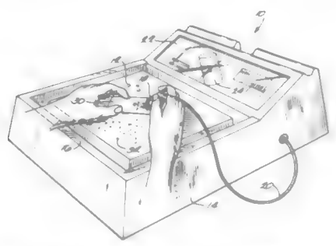
LOTTERY TICKET SCRAPINGS CATCHER

Reed Allen, 513 Western Ave., Cedarburg, Wis. 53012, and Paul J. Juhasz, 2016 N. Cedar Rd., Adell, Wis. 53001

Filed Oct. 26, 1992, Ser. No. 966,297

Int. Cl.[5] A47B *85/00;* **G09F** *13/00*

U.S. Cl. 108—23 **11 Claims**



1. A lottery ticket scratch device comprising:

a smooth base surface for supporting lottery tickets for scratching off of a coating therefrom, said surface being supported in a housing by biasing means in a normally elevated position,

an indentation in the base surface adjacent at least one side of said base surface for receiving residue from spent lottery tickets,

an advertising display mounted on said device,

means for illuminating said advertising display,

a switch activated by depression of said base surface for activating said illuminating means.

5,367,960

FOUR-WAY SHEET METAL PALLET

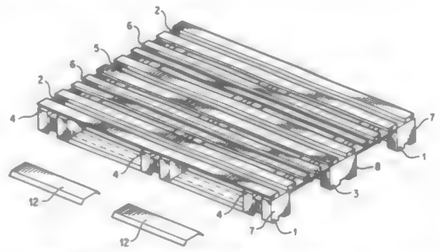
Hermann Schleicher, Rathsberg, Germany, assignor to Sigrid Schleicher; Bernd Schleicher; Stefan Schleicher and Gudrun Schleicher, Spardorf, Germany

Filed Nov. 2, 1993, Ser. No. 146,760

Claims priority, application European Pat. Off., Nov. 2, 1992, 92118731.6

Int. Cl.[5] B65D *19/00*

U.S. Cl. 108—51.1 **12 Claims**



1. A four-way sheet metal pallet, comprising:

a plurality of undulated rails, said rails having a cross sectional shape whose terminal lateral portions enclose conically shaped regions;

a plurality of supporting hollow bodies for supporting said rails, said hollow bodies comprising oppositely disposed side walls having upper and lower edges each of said hollow bodies being of equal cross-sectional shape and providing generally block-shaped supports for the rails, wherein the hollow bodies have recesses on two upper opposite edges of the side walls and at a right angle thereto on two lower opposite edges of the side walls, wherein the recesses correspond in shape to the cross-sections of the rails so that the rails can be fitted into the supporting hollow bodies in a form-locked and centering manner.

5,367,961

PALLET SUPPORT LEG INCLUDING SEMI-CIRCULAR FLANGE BLADES

Hiroshi Arai; Clifford B. Hewson, and John W. Hartloff, all of 4740 Princeton Avenue, Richmond, British Columbia, Canada V7E 4P2

Filed Oct. 28, 1992, Ser. No. 968,085

Int. Cl.[5] B65D *19/32*

U.S. Cl. 108—56.3 **12 Claims**

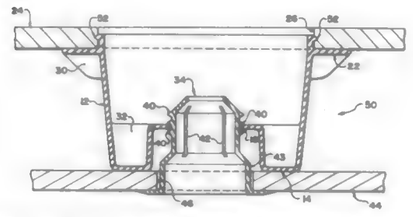
1. A pallet support leg, comprising:

(a) a first short, hollow columnar member having a lower base portion indented to form a second hollow columnar member protruding upwardly within said first columnar member by no more than about one-third the height of said first columnar member;

(b) a circular flange protruding outwardly from and encircling an upper portion of said first columnar member;

(c) at least one semi-circular flange protruding outwardly from said first columnar member, above said circular flange and extending around a radial segment of said first columnar member; and,

(d) a first plurality of support ribs fixed between an underside of said circular flange and said first columnar member, said ribs disposed radially around said first columnar member;



wherein said semi-circular flanges are blades displaced above said circular flange by an amount less than the thickness of a sheet of pallet material to enable penetration of said blades within said sheet of pallet material upon application of a rotational force to said pallet support leg after engagement thereof with said sheet of pallet material.

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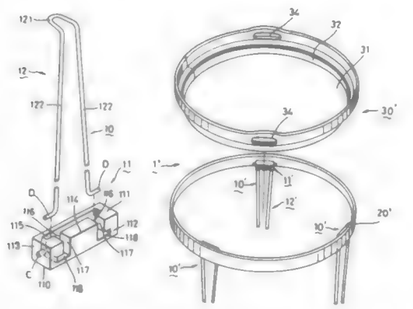
TABLE WITH A FOLDABLE LEG ASSEMBLY

Chun-Chu Tseng, No. 3, Ting-Hsi-Hsin, Lu-Man Tsun, Chu-Chi Hsiang, Chiayi Hsien, Taiwan, Prov. of China

Filed Jun. 14, 1993, Ser. No. 76,532

Int. Cl.[5] A47B *3/00*

U.S. Cl. 108—127 **5 Claims**



1. A table including a table top unit, an annular table frame mounted securely on a periphery of said table top unit, and a leg assembly including several elongated blocks and several metal legs, each of said blocks interconnecting said annular table frame and one of said legs, wherein the improvement comprises:

each of said legs including a generally U-shaped foot portion disposed at a bottom end of said leg, two generally vertical leg bodies having bottom ends connected respectively and securely to two ends of said foot portion, and two aligned horizontal pivot portions connected respectively and securely to upper ends of said leg bodies;

each of said elongated blocks being in a horizontal position and including:

a first vertical side surface mounted securely on an inner surface of said annular table frame;

a second vertical side surface having a bottom side, a horizontal slot and two vertical slots, each of said vertical slots being communicated with an intermediate portion of said horizontal slot and having a bottom end ending at said bottom side of said second vertical side surface;

an elongated horizontal bottom surface interconnecting said first and second vertical side surfaces at two opposite sides thereof and having two L-shaped slots each of which has a lengthwise section having an inner end and an outer end, and a transverse section having a first end communicated with said inner end of said lengthwise section and a second end ending at said bottom side of said second vertical side surface, said second ends of said transverse sections being respectively communicated with said bottom ends of said vertical slots; and

two end walls each of which has a pivot hole formed in an inner surface thereof so that said horizontal pivot portions of said leg are engaged within said pivot holes in such a manner that said leg bodies respectively extend into two ends of said horizontal slot of said second vertical side surface; and

each of said horizontal pivot portions of said leg having a length so as to remain in corresponding said pivot hole when said leg bodies are pushed toward each other to align with said vertical slots respectively;

whereby, when said leg bodies of each of said legs are pushed toward each other to align with said vertical slots of said block, said leg can be rotated about said pivot portions so as to move said leg bodies into said vertical slots of said block until said leg bodies are aligned with said lengthwise sections of said L-shaped slots, thereby allowing for automatic movement of said leg bodies into said lengthwise sections of said L-shaped slots by restoration force.

5,367,963

OFFICE TABLE

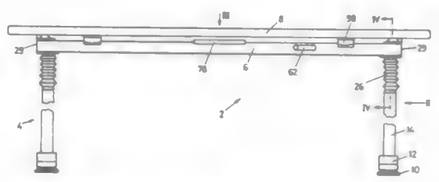
Heinz Jäggi, and Bruno Marty, both of Rüti, Switzerland, assignors to Embru-Werke, Mantel & Cie., Switzerland

Filed Oct. 1, 1992, Ser. No. 955,284

Claims priority, application Switzerland, Oct. 1, 1991, 2896/91

Int. Cl.[5] A47B *9/00*

U.S. Cl. 108—147 **20 Claims**



11. An office table comprising

(a) two vertical supports, each having a hollow core, an upper end and a lower end, the lower end of each support having two feet and the upper end of each support having at least one fastening flange;

(b) a tub disposed adjacent the upper ends of said supports, said tub having two lateral sides, a forward zone and a rear zone, the rear zone being separated by a longitudinally running partition, the tub rear zone defining a cable channel having at least one downwardly facing cable passage opening;

(c) two linear guide elements fastened one each to the two lateral sides of said tub; and

(d) a table plate being slidably connected to said linear guide elements, and resting over said tub to provide a cover thereover thereby defining a table plate basic position,

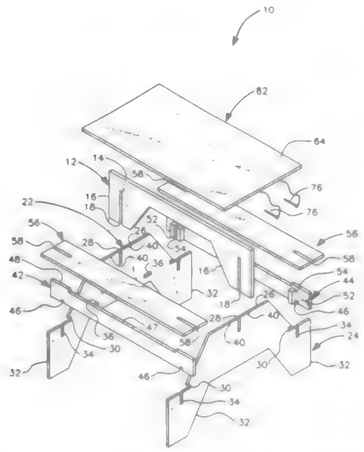
whereby said guide elements permit slidable motion of the table plate in a direction transverse to the partition, so that the table plate may be slidably moved from the basic position to an extended position.

5,367,964

KNOCKDOWN PICNIC TABLE

William L. Hockensmith, HC 81 Box 76, Romney, W. Va. 26757

Filed Nov. 22, 1993, Ser. No. 155,300
Int. Cl.[5] A47B *3/00*
U.S. Cl. 108—180 8 Claims



1. A prefabricated picnic table which can be securely assembled, and dismantled into compactly secured sections comprising:

eight prefabricated sections comprising,

a table top section comprising an upper and lower surface, two side edges, and a front and a rear edge the lower surface having securing blocks forming first and second sets of intersecting end and front to rear extending channels each set including an end and a front to rear extending channel with securing means releasably attached thereto, and the lower surface having longitudinal storage blocks releasably mounted thereon,

a cross support section having an elongated upper table top support and opposing descending securing arms, the upper table top support adapted to be aligned and secured within said end extending channels of the table top section,

left and right table end support sections, each having opposing seat supports, each table end support section having an elongated upper surface adapted to be aligned and secured within said front to rear extending channels of the table top section and with said descending securing arms of the cross support section, the left table end support having spaced apart storage blocks,

front and rear seat cross support sections adapted to be aligned and secured within said seat supports, each bench seat cross support section having opposing raised shoulders, the rear seat cross support section having two spaced apart pairs of mounting and securing blocks adapted for aligned mounting engagement with said seat supports,

a pair of bench seat sections adapted to be aligned and secured with said seat cross support sections and said seat supports, each bench seat section having spaced apart storage blocks,

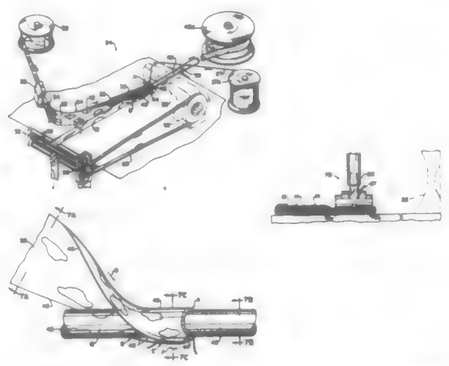
whereby said picnic table sections are dismantled and stacked into compactly secured sections by first releasing said longitudinal storage blocks and then aligning and releasably mounting the longitudinal blocks within the stacked sections and securely coupling the stacked sections together with the longitudinal blocks.

5,367,965

FORMING A RUG FROM A SEWN TUBULAR BRAID

Kenneth M. Earnhardt, Seneca, S.C., assignor to Homemaker Industries, Inc., New York, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,312
Int. Cl.[5] D05B *03/24, 29/00*
U.S. Cl. 112—9 12 Claims



1. A method for forming a tubular braid for a rug, comprising the steps of:

feeding a strip of fabric to a sewing area of a sewing machine from a first direction, said fabric having two surfaces and two lateral edges;

folding said fabric as said fabric is fed to said sewing area such that said lateral edges are brought together and one of said surfaces is on an exterior of the folded fabric;

connecting said lateral edges to each other with said sewing machine;

inverting said fabric;

feeding a filler material to an interior of the inverted fabric such that said fabric surrounds said filler material;

braking said filler material prior to being fed into the interior of the inverted fabric; and

pulling the inverted fabric with the filler material through the interior of the folded, unbonded fabric toward the first direction whereby the filler material is maintained under tensile pressure by the braking and the pulling to cause a radial compression of the filler material.

5,367,966

AUTOMATIC EDGE SEWING SYSTEM AND METHOD

Stephen L. Bellio, West Roxbury, and James F. Mueller, North Reading, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 8, 1994, Ser. No. 255,406
Int. Cl.[5] D05B *21/00*
U.S. Cl. 112—121.12 14 Claims

1. An automatic edge sewing system for sewing together the edge of a plurality of parts, comprising:

a clamp assembly for securing together the parts to be sewn;

a rotation assembly for enabling said clamp assembly and parts to passively rotate about a first rotational axis through said clamp assembly and parts; a sewing machine having a needle reciprocably driven along a needle axis transverse to said clamp assembly and parts;

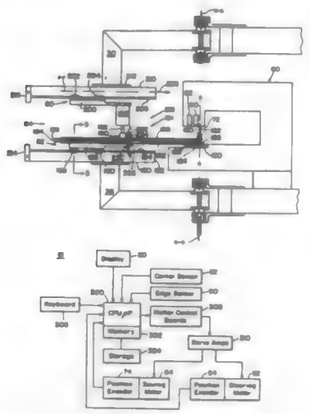
a linear bearing assembly for enabling said clamp assembly and parts to passively translate along a linear axis between said first rotational axis and said needle axis;

a steering assembly rotatable about a second rotational axis parallel to said needle axis for adjusting the angle of said first rotational axis about said needle axis;

a feed mechanism for feeding said parts through the needle axis;

an edge sensor for sensing the position of the edge of the parts proximate said needle axis; and

control means, responsive to said edge sensor for rotating said steering assembly and for driving said feed mechanism to feed the parts through the needle axis while the clamp assembly and parts passively float about said first rotational axis and along said linear axis to enable the parts to be sewn accurately, automatically proximate their edges.

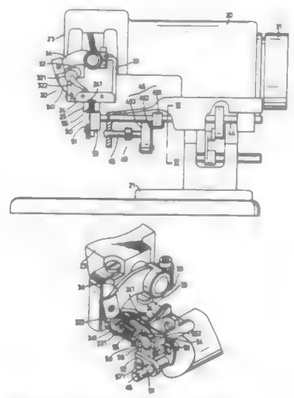


5,367,967

BLIND STITCH SEWING MACHINE

Teng-Chin Lin, No.211, Sec.2, Chung-Te Rd., Taichung City, Taiwan, Prov. of China

Filed Feb. 1, 1993, Ser. No. 11,520
Int. Cl.[5] D05B *1/24*
U.S. Cl. 112—176 2 Claims



1. A blind stitch sewing machine including a stationary plate having a stitching hole formed therein, a presser member being movable to press against said stationary plate and cooperating with said stationary plate to define a fabric passage therebetween, a needle unit having a needle which is driven pivotally in order to put stitches on a fabric unit advanced through said fabric passage, a fabric pushing member drivable to push a portion of said fabric unit upward and through said stitching hole of said stationary plate so as to permit said needle to put one of said stitches on said portion of said fabric unit, and a driving unit including a main shaft which is drivable to effect unidirectional rotation, an auxiliary shaft, a first transmission assembly which interconnects said main shaft and said auxiliary shaft so as to convert the unidirectional rotation of said main shaft into reciprocal rotation of said auxiliary shaft, and a second transmission assembly which interconnects said auxiliary shaft and said fabric pushing member so as to convert the reciprocal rotation of said auxiliary shaft into reciprocal vertical movement of said fabric pushing member, wherein said second transmission assembly comprises:

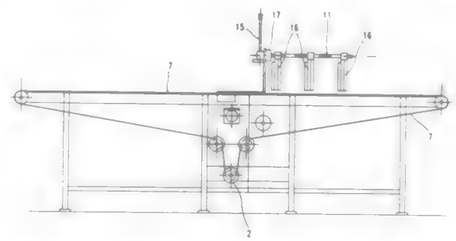
an elongated connecting member which is connected securely to said auxiliary shaft at one end and which has a longitudinal slide slot formed in the other end, a connecting rod which is connected securely to said fabric pushing member and which engages movably within said slide slot of said connecting member at an end thereof, and a seat member which is fixed on said machine table and which has a vertical slide groove in which said fabric pushing member slidably engages.

5,367,968

METHOD AND APPARATUS FOR SEWING UPHOLSTERED FURNITURE

Enrique Sachristan D. Diaz, Madrid, Spain, assignor to Fabricas Lucia Antonio Betere, S.A., Madrid, Spain

PCT No. PCT/ES92/00001, § 371 Date Oct. 28, 1992, § 102(e) Date Oct. 28, 1992, PCT Pub. No. WO92/12282, PCT Pub. Date Jul. 23, 1992
PCT Filed Jan. 2, 1992, Ser. No. 934,456
Claims priority, application Spain, Jan. 10, 1991, 9100056
Int. Cl.[5] D05B *11/00, 27/00*
U.S. Cl. 112—262.3 7 Claims



5. A method for sewing a seam in upholstered furniture, where said seam contains a rectilinear portion and a curved portion, said method comprising the steps of:

sewing said rectilinar portion of said seam in said upholstered furniture at a first pre-defined sewing speed while moving said upholstered furniture in a rectilinear direction at a pre-defined speed;

sensing a position of a corner of said upholstered furniture;

changing, upon sensing said corner, said sewing speed from said first pre-defined sewing speed to a second pre-defined sewing speed;

halting said motion of said upholstered furniture, and

activating a fastening cylinder to temporarily attach a presser arm to said upholstered furniture, wherein the presser arm comprises:

an actuator;

an elongated rod having a first end and a second end, said elongated rod being connected to said actuator by said first end such that activation of said actuator rotates said elongated rod;

a plurality of presser blades, connected to said elongated rod between said first and second ends thereof, that rotate, in response to activation of said actuator, from a first blade position to a second blade position, wherein said first blade position places said blades adjacent said furniture and perpendicular to a plane formed by a conveyor belt that moves said upholstered furniture in

said rectilinear direction and said second blade position is parallel to said plane; and

a pivot, connected to said actuator, for rotating said actuator, elongated rod and presser blades from a first presser position that is parallel to a direction of motion of said conveyor belt to a second presser position that is transverse said direction of motion of said conveyor belt, whereby such rotation turns said upholstered furniture while said sewing means sews said curved portion of the seam; and said method further comprises the steps of:

turning said upholstered furniture by rotating said presser arm to turn said upholstered furniture while said corner is sewn at said second pre-defined sewing speed to produce said curved portion of said seam, wherein said turning step comprises the steps of:

rotating, about said pivot, said actuator, elongated rod and presser blades from said first presser position to said second presser position to turn said upholstered furniture;

activating, once said upholstered furniture is turned, said actuator to rotate said presser blades from said first blade position to said second blade position such that said upholstered furniture may pass beneath said presser arm;

rotating, after said conveyor belt begins moving said upholstered furniture, said actuator, elongated rod and presser blades from said second presser position to said first presser position; and

activating said actuator to rotate said presser blades from said second blade position to said first blade position;

changing, upon completing said curved portion of said seam, said sewing speed from said second pre-defined sewing speed to said first pre-defined sewing speed; and

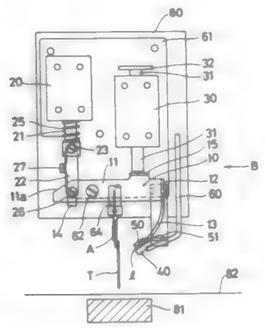
moving said upholstered furniture in a rectilinear direction while said rectilinear portion of said seam is sewn.

5,367,969

UPPER THREAD HOLDING DEVICE OF SEWING MACHINE

Shiro Nosaka, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 888,625, May 27, 1992, abandoned. This application Sep. 2, 1993, Ser. No. 115,355
Claims priority, application Japan, May 27, 1991, 3-121414
Int. Cl.[5] D05B *65/00*
U.S. Cl. 112—295 **7 Claims**



1. An upper thread holding device for use in a sewing machine having a body and a needle from which an upper thread depends, said device comprising:

an elongate holding member pivotally mounted to said body about a fixed fulcrum axis for movement between a waiting position and an upper thread holding position in such a manner that said holding member passes an upper thread taken-off position located between said needle and said waiting position;

driving means for moving said holding member;

a stationary blade connected to said body so as to be in sliding engagement with a lower surface of aid holding member, for cutting said upper thread in cooperation with said holding member during return movement of the holding member to said waiting position; and

a press plate fixed to said stationary blade and defining a space therebetween in which a portion of said holding member is accommodated when the holding member is in the waiting position for holding the upper thread between said press plate and said holding member,

wherein said driving means comprises a first solenoid and a second solenoid, said solenoids acting on longitudinally opposite ends of said holding member to pivot said holding member about said axis, both of said solenoids acting on said holding member so as to pivot said holding member with the same rotational sense,

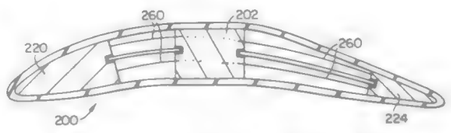
wherein said first solenoid is pivotally connected to said holding member at a first distance from said fulcrum axis, and wherein said second solenoid is positioned to press on said holding member at a second distance from said fulcrum axis, said second distance being greater than said first distance, said second solenoid being separable from said holding member in response to pivoting of said holding member by said first solenoid.

5,367,970

CONTROLLABLE CAMBER FIN

Charles H. Beauchamp, Jamestown; Laurence M. Dean, and Anthony V. Raffa, both of Newport, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 27, 1993, Ser. No. 127,181
Int. Cl.[5] B63B *3/38*
U.S. Cl. 114—140 **8 Claims**



1. A variable camber fin for use in a moving fluid to influence that fluid's flow over the fin, said fin comprising:

a closed foil cross section designed to minimize the drag forces on the fin at certain design equilibrium conditions;

said foil fin having a cross section that includes at least one fixed foil portion adapted to be secured to other structure;

said foil fin cross section also including at least another foil portion that is connected to said one fixed foil portion such that the said one and another portions cooperate to define a chordwise segment of said closed foil cross section;

said another foil portion having the structure of a cantilevered beam with a neutral axis generally oriented in said chordwise direction, and a resilient structural element oriented at said neutral axis;

said resilient structural element having a root end secured to said one fixed foil portion and said resilient structural element having a free end spaced in said chordwise direction from said root end thereof;

said cantilevered beam foil portion having internally mounted control wires some of which are provided on one side of said resilient structural element and other control wires provided on the opposite side of said resilient structural element, said control wires having free ends, said free ends secured to said free end of said resilient structural element, said control wires having root ends secured to said fixed foil portion in spaced relation to said resilient structural element root end; and

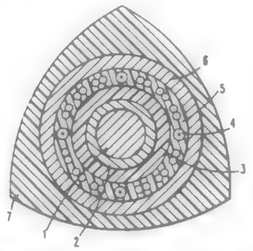
means for differentially stressing some of said control wires relative said other control wires to bend said resilient structural element and thereby to change the camber of the fin.

5,367,971

TOWED ACOUSTIC ARRAY

Allan L. Carpenter, Surrey Downs, and Raymond F. Farmer, Eden Hills, both of Australia, assignors to Australian Sonar Systems Pty Ltd., Technology Park, Australia

Filed Mar. 8, 1993, Ser. No. 27,945
Claims priority, application Australia, Mar. 12, 1992, PL1309
Int. Cl.[5] F15D *1/10*
U.S. Cl. 114—243 **15 Claims**



1. A tow cable for acoustic arrays, the two cable comprising:

an inner core of relatively high density, high damping material,

a covering of high tensile strength surrounding the core, and

at least one layer of resiliently deformable material of high internal damping surrounding the high tensile covering,

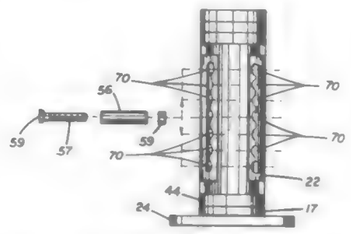
wherein the exterior surface of the tow cable is provided with at least one longitudinally extending inflection which extends along one of a helical path and a twisted path along the cable.

5,367,972

PARA-SAIL ROPE GUIDE SYSTEM

Mark McCulloh, Orlando, Fla., assignor to Controlled Para-Sailing Corp. of America, Ltd., Grand Cayman Island, Cayman Islands

Filed Apr. 27, 1993, Ser. No. 53,155
Int. Cl.[5] B63B *21/56*
U.S. Cl. 114—253 **12 Claims**



1. In a launching assembly designed to be used in combination with a rider support connected to a parachute and a tow line movably securing said rider support to a towing boat and adapted to launch and retrieve a rider and rider support from and to the towing boat during a para-sailing activity, and improvement comprising:

a) a line guide assembly including a winch mounted on the towing boat and movably connected to the tow line and adapted to extend and retract the tow line relative to the towing boat,

b) said line guide assembly including a guide means mounted in spaced, communicating relation to said winch and adapted for movably engaging and guiding the tow line along a path of travel of the tow line extending between said winch and said rider support,

c) said line guide assembly comprising a housing rotatably mounted on said towing boat relative to said winch, said guide means mounted on said housing and being rotatable therewith relative to said winch,

d) said housing having an elongated configuration and a substantially vertically upright orientation on the towing boat and an elongated opening formed along the length of said housing, said opening adapted to facilitate said tow line passing therethrough,

e) said guide means disposed at any one of a plurality of vertical fixed, spaced apart positions dependent on a disposition of said rider support connected to said tow line prior to launching, and

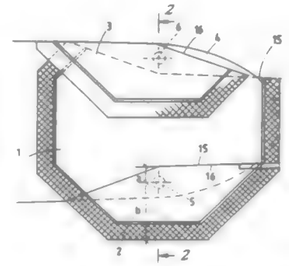
f) said guide means comprising at least one guide member selectively movable along a length of said housing and removably and fixedly secured thereto at any one of a plurality of vertically fixed, spaced apart locations.

5,367,973

HELICOPTER DECK

Fredrik Heggertveit, Oscar Hansens vei 7, N-6400 Molde, Norway

PCT No. PCT/NO92/00011, § 371 Date Jul. 26, 1993, § 102(e) Date Jul. 26, 1993, PCT Pub. No. WO92/12894, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 20, 1992, Ser. No. 94,020
Claims priority, application Norway, Jan. 25, 1991, 910308
Int. Cl.[5] B63B *35/50*
U.S. Cl. 114—261 **7 Claims**



1. A helicopter deck for a ship, having a greater transverse extension than the breadth of the ship,

comprising a level, horizontal deck section (1) attached to the ship (4), longitudinal edges (15) of said deck section being substantially within the outer confines of the ship, in that there is disposed along at least one of the longitudinal edges of said deck section (1) at least one movable, sheet-like deck section which at one longitudinal edge thereof is tightly jointed to the longitudinal edge (15) of the deck section (1), that the outer, free edge of the movable sheet-like deck section (2, 3) projects substantially beyond the side of the ship, that the movable sheet-like deck section (2, 3) is rotatable in this position, the center of rotation for the movable deck section (2, 3) being located such that the movable sheet-like deck section (2, 3) in a rotated position is situated substantially within the sides of the ship,

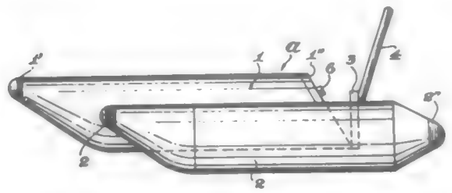
wherein the movable deck section (2,3) is supported by a verticals, extendable pillar (5, 6) and that said movable deck section (2, 3) is rotatably mounted on the upper end of said pillar.

5,367,974

MULTIPLE USE WATER VEHICLE

Claudio E. Moraga, and Leopoldo Villabla, both of Echeverria 3599, Capital Federal, Argentina

Filed Mar. 7, 1990, Ser. No. 560,064
Claims priority, application Argentina, Dec. 13, 1989, 315.654
Int. Cl.[5] B63B *7/00*
U.S. Cl. 114—345 4 Claims



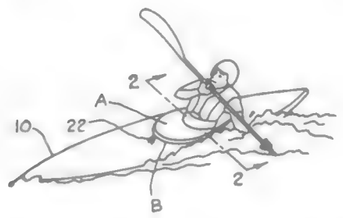
1. A water vehicle including an inflated floating set in structural connection with a propelling and steering means, said floating set comprising:
- a closed tubular float having at its stern end a closeable lid, said float mounted on two lateral pontoons that project longitudinally backwards in relation with said stern end of said float;
- a means for connection of said pontoons with each other, said means including a rigid wall constituting a transom extending between the stern ends of said pontoons, said transom wall being projected onto said pontoons, said pontoons being interconnected to each other and to said tubular float by means of tighteners and welding seams extending between the inner sides of said pontoons and the outer sides of said tubular float;
- a compartment eccentrically lodged in the inner chamber cavity of said tubular float, said compartment forming a ballast container, said compartment based and fixed on the lower part of the inner chamber surface wall of said tubular float, said tubular float being connected to each one of said pontoons by means of said tighteners, and welding seams, fixed at one end on the sides of said tubular float and at the other end on adjacent portions of each of said pontoons.

5,367,975

KAYAK COCKPIT COVER WITH RETENTION EDGE

Don A. Hamilton, 108 Buena Vista Dr., Easley, S.C. 29640, and William E. Masters, 100 Bentcreek Ct., Easley, S.C. 29642

Filed Dec. 14, 1992, Ser. No. 990,090
Int. Cl.[5] B63B *19/00*
U.S. Cl. 114—347 16 Claims



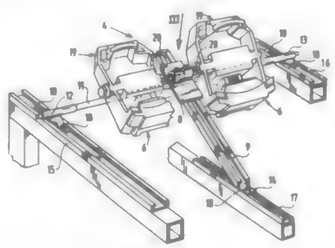
1. A spray skirt for covering a cockpit opening of a kayak having a raised rim around the perimeter of the opening with an outwardly extending rim lip overhanging the hull of said kayak, said spray skirt comprising:
- a spray skirt cover for spanning the cockpit opening and preventing the entry of water into said opening, said cover having an exterior cover surface and an interior cover surface;
- a fitted opening formed in said cover for fitting around the waist of a boater;
- an elastic retaining band carried around at least a portion of a perimeter of said cover, said elastic retaining band including:
  - a bulbous retention element which fits against an underneath surface of said rim lip for retaining said elastic retaining band in place;
  - an outer elastic band integral with said bulbous retention element, said outer elastic band carried by said exterior surface of said cover having a first band portion for underlying said rim lip, a second band portion for overlying and extending past a top surface of said rim, and said outer band terminating at a free end extending substantially past said top surface of said rim to provide abrasion resistance for said cover against said top surface of said rim; and
- an inner elastic band integral with said bulbous retention element carried about an interior surface of said cover for contacting said underneath surface of said lip of said cockpit rim; and
- said elastic retaining band being stretchable to facilitate placement over said rim of said cockpit and fitting of said bulbous retention element underneath said rim lip; and
- wherein the bulbous wall of said bulbous retention element has a cross-sectional thickness greater then a cross-sectional thickness of said outer elastic band.

5,367,976

ROWING BOAT AND FOOTREST FOR USE THEREIN

Bob Van Schaik, No. 246, Obrechtstraat, NL-2517 VD The Hague, Netherlands

Continuation-in-part of Ser. No. 965,912, Oct. 23, 1992, abandoned. This application Mar. 9, 1994, Ser. No. 208,489
Claims priority, application Netherlands, Oct. 25, 1991, 9101798
Int. Cl.[5] B63B *35/71*
U.S. Cl. 114—347 14 Claims



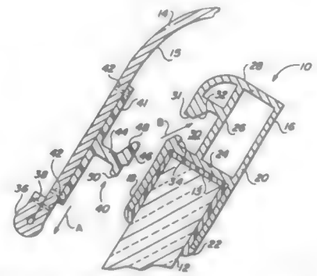
6. A rowing boat provided with at least one bench seat displaceable in a lengthwise direction of said boat and a footrest placed opposite said bench seat, which said footrest is pivotable about a pivot shaft arranged in transverse direction with respect to said lengthwise direction of said boat and has means for fastening footwear thereto and means to adjust the height of said pivot shaft to position said footrest in one of a plurality of operative positions, wherein said footrest includes a pair of footrest parts mounted on shaft parts of said pivot shaft and said footrest parts are pivotable about said shaft parts of said pivot shaft independently of each other.

5,367,977

SYSTEM, APPARATUS AND METHOD FOR RAPIDLY ATTACHING A BOAT COVER OR CANOPY TO A WINDSHIELD AND FRAME

Jeffrey W. Ellis, Cocoa; John W. Hamilton, Mims; John M. Owens, Merritt Island, all of Fla., and Steven A. Callahan, Knoxville, Tenn., assignors to Ray Industries, Inc., Knoxville, Tenn.

Continuation-in-part of Ser. No. 794,148, Nov. 19, 1991, Pat. No. 5,215,032. This application May 27, 1993, Ser. No. 68,441
The portion of the term of this patent subsequent to Jun. 1, 2010, has been disclaimed.
Int. Cl.[5] B63B *17/00*
U.S. Cl. 114—361 8 Claims



1. A system for rapidly attaching a boat canopy comprising:
- a boat canopy having a forward, peripheral edge and an inside surface;
- a flexible member having a flat plate portion extending parallel with and joined to the inside surface of the peripheral edge of the boat canopy, the flexible member including riser means extending laterally from the flat plate portion and first and second locking segments extending laterally from the riser means;
- a boat windshield having an upper extremity;
- a gripping member fixed to the upper extremity of the boat windshield, the gripping member having a continuous, upwardly and outwardly facing slot means extending generally parallel with the upper extremity of the boat windshield and dimensioned to receive the first and second segments of the flexible member; and wherein
- the boat canopy is attachable to the windshield by continuously pushing the first and second segments of the flexible member into the slot means of the gripping member, and is detachable from the windshield by pulling the peripheral edge of the boat canopy upward and away from the gripping member.

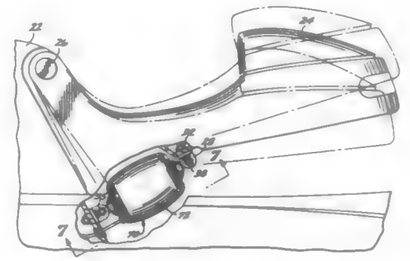
5,367,978

SHOCK-ABSORBER MOUNTED SEAT FOR PERSONAL WATERCRAFT AND BOATS

Albert Mardikian, Corona Del Mar, Calif., assignor to Mardikian 1991 Irrevocable Trust, Corona Del Mar, Calif.

Continuation-in-part of Ser. No. 926,476, Aug. 5, 1992, Pat. No. 5,309,861. This application Sep. 10, 1993, Ser. No. 120,252
The portion of the term of this patent subsequent to May 10, 2011, has been disclaimed.
Int. Cl.[5] B63B *29/00*
U.S. Cl. 114—363 10 Claims

1. A personal watercraft of the type which accommodates its driver in a seated position, comprising a hull section, and a seat mounted to the hull in a cantilevered position by mounting means which permit movement of the seat relative to the hull, the seat being configured for accommodating a driver of the watercraft in said seated position, and
- shock absorber means comprising an elastic envelope filled with pressurized air, the shock absorber means being mounted to the hull and to the seat for being positioned between the hull and the seat with a substantially inclined longitudinal axis and for absorbing forces generated by movement of the seat relative to the hull when the personal watercraft travels on the water, the shock absorber



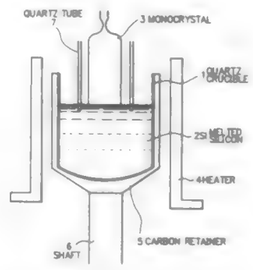
means being the only force absorbing means which supports the seat in a vertical direction.

5,367,979

MONOCRYSTAL GROWING METHOD

Masahito Watanabe, and Minoru Eguchi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jan. 14, 1993, Ser. No. 4,439
Claims priority, application Japan, Jan. 24, 1992, 4-011301
Int. Cl.[5] C30B *15/30*
U.S. Cl. 117—13 4 Claims



1. A monocrystal growing method of growing a monocrystal of silicon based on a Czochraliski method comprising the steps of:

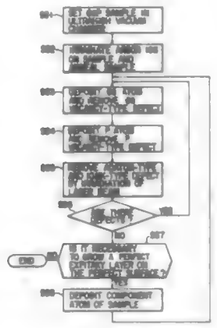
setting the Thermal Rossby number to 30 or more according to the following relationship:

$$Rot = gd\beta\Delta T/\omega^2 r^2$$

Rot = the Thermal Rossby number
g = the acceleration of gravity
β = the Coefficient of thermal expansion
ΔT = the temperature difference
d = the height of the liquid
r = the radius of the liquid
ω = the rotary speed of the crucible; and

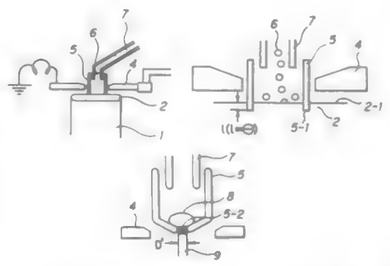
inserting a tube made of quartz in a melted silicon liquid and supplying oxygen from the quartz tube to the liquid for controlling a density of oxygen in the monocrystal thus grown.

5,367,980
METHOD OF PRODUCING DEFECT-FREE PERFECT SURFACES
Noriaki Itoh, Nagoya; Yasuo Nakai, Kani; Ken Hattori, Tokyo; Junichi Kanasaki, Aichi, and Akiko Okano, Toyota, all of Japan, assignors to President of Nagoya University, Nagoya, Japan
Filed Jun. 28, 1993, Ser. No. 82,370
Claims priority, application Japan, Oct. 6, 1992, 4-267470
Int. Cl.[5] H01L *21/20*
U.S. Cl. 117—108 14 Claims



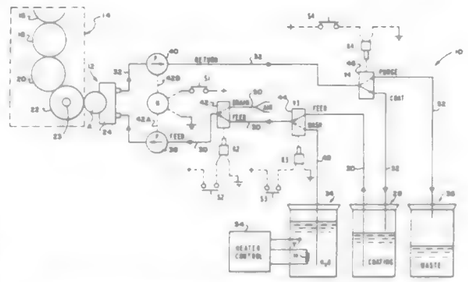
1. A method of removing defects on a surface and producing a defect-free surface, wherein no atom on the surface that is irrelevant to the defects is removed, comprising the steps of:
(a) setting a basic sample having a surface in an ultrahigh vacuum chamber; and
(b) making the surface defect-free by removing a vacancy-type defect, by depositing atoms of an element forming the basic sample on the surface of the basic sample, and by removing adatom-type and kink-type defects without removing atoms irrelevant to the defects, by irradiating the surface of the basic sample with a laser beam, said laser beam irradiation having a determined wavelength and fluence.

5,367,981
APPARATUS FOR MANUFACTURING CRYSTALS THROUGH FLOATING ZONE METHOD
Mitsuhiro Maruyama, 44-29, Wada 1-chome, Suginami-ku, Tokyo, Japan
Filed Apr. 7, 1993, Ser. No. 43,833
Claims priority, application Japan, Apr. 10, 1992, 4-091043
Int. Cl.[5] C30B *29/06*
U.S. Cl. 117—200 10 Claims



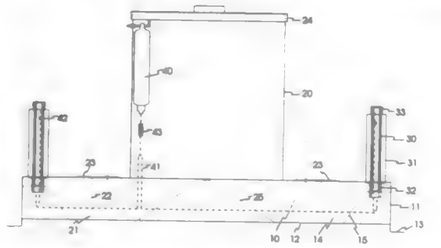
1. An apparatus for manufacturing crystals through a floating zone method, which comprises: means for forming a heat-melt zone so as to be held at an upper portion of a solid crystal; a barrier enclosure having an opening at a lower end portion thereof and provided in the vicinity of an upper surface of said heat-melt zone; means for supplying a raw material granular crystal into said barrier enclosure; and means for moving said solid crystal and said heat-melt zone forming means relative to each other to thereby bring about crystal growth, wherein said barrier enclosure has a bottom surface being flat or inclined toward the center of said barrier enclosure, and wherein said opening is constituted by at least one hole formed in said bottom surface of said barrier enclosure.

5,367,982
AUTOMATIC COATING CIRCULATION AND WASH-UP SYSTEM FOR PRINTING PRESSES
Howard W. DeMoore, 10954 Shady Trail, Dallas, Tex. 75220; David D. Douglas, Garland, and Steven M. Person, Seagoville, both of Tex., assignors to Howard W. DeMoore, Dallas, Tex.
Filed Feb. 25, 1993, Ser. No. 22,515
Int. Cl.[5] B05C *11/02*
U.S. Cl. 118—46 2 Claims



1. Apparatus for selectively circulating liquid material from a coating liquid supply reservoir or from a cleaning liquid supply reservoir to a coater reservoir and for selectively returning liquid material from the coater reservoir to the coating liquid supply reservoir or to waste handling apparatus, comprising in combination:
a coater adapted for use in combination with a printing press, a coating liquid supply reservoir, a cleaning liquid supply reservoir and waste handling apparatus, said coater having a reservoir for receiving liquid material from a selected one of said supply reservoirs;
a supply conduit coupled in flow communication with the coater reservoir;
a return conduit coupled in flow communication with said coater reservoir;
pump apparatus coupled to at least one of said conduits for feeding liquid material from a selected one of said supply reservoirs to said coater reservoir and for returning liquid material from said coater reservoir through said return conduit;
first valve means coupled in flow communication in the supply conduit for selectively feeding liquid material from said coating supply reservoir to said coater reservoir in a first operating mode and for selectively feeding cleaning liquid material from the cleaning liquid supply reservoir to said coater reservoir in a second operating mode;
second valve means coupled in flow communication in the return conduit for selectively returning liquid material from said coater reservoir to said coating supply reservoir in the first operating mode and for discharging liquid material from said coater reservoir to said waste handling apparatus in the second operating mode;
said first valve means including first and second two-position, three port control valves, said first and second control valves each having switched and unswitched inlet ports and an outlet port, the outlet port of the first control valve being coupled to the inlet port of said pump apparatus, the unswitched inlet port of the first flow control valve being coupled in series with the supply conduit and the switched inlet port of the first flow control valve being coupled to admit ambient air; and,
the outlet port of the second flow control valve being coupled in series flow relation with the unswitched inlet port of the first flow control valve, the unswitched inlet port of the second flow control valve being connected in series flow relation with the coating liquid supply reservoir, and the switched inlet port of the second flow control valve being coupled in flow communication with the cleaning liquid supply reservoir.

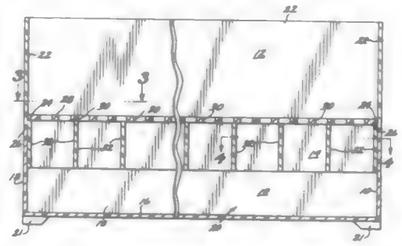
5,367,983
DEVICE AND METHOD FOR ITS USE AS AN AID IN CONTROL OF TICKS AND OTHER ECTOPARASITES ON WILDLIFE
J. Mathews Pound; J. Allen Miller, and Craig A. LeMeilleur, all of Kerrville, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Aug. 11, 1993, Ser. No. 105,225
Int. Cl.[5] A01K *5/00, 13/00*
U.S. Cl. 119—53 14 Claims



1. An apparatus for feeding and applying pesticide to animals comprising:
(a) an open top receptacle having a bottom and side walls;
(b) a feed supply bin positioned within said receptacle, said bin having an opening at the lower end thereof communicating with said bottom of said receptacle for dispensing feed from said bin to said bottom of said receptacle, said lower end together with said side walls and said bottom of said receptacle defining a feeding area;
(c) an outwardly extending surface positioned over said opening of said bin;
(d) at least one pair of spaced apart vertical support members adjacent said side walls and extending upwardly from said receptacle above the upper edge of said side walls, said support members being positioned approximately opposite said opening of said bin; and
(e) a pesticide applicator positioned on each of said support members and adapted to apply pesticide onto a subject animal upon contact therewith;
wherein said pair of support members are spaced sufficiently apart to allow an animal to pass its head therethrough and access feed in said feeding area, but close enough such that the back of the head, neck or ears of the animal will contact one of said applicators when its head is turned sideways, and further wherein said outwardly extending surface is effective to force said animal to turn its head sideways to access said feeding area.

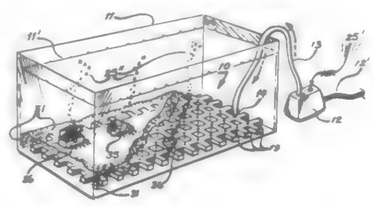
5,367,984
PET LITTER BOX
Peter F. Purnell, 7 Deer La., Ledyard, Conn. 06339
Filed Nov. 23, 1993, Ser. No. 157,631
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—166 6 Claims

1. A pet litter box comprising:
a bottom pan defining a collection chamber for liquid waste, the bottom pan being otherwise sealed off from the outside;
an upper box defining a pet use area for admitting a pet, and characterized by generally vertically oriented, peripherally continuous box walls having lower extremities complementally configured to closely and removably engage the upper extremities of the pan walls in close fitting relation for supporting the upper box on the bottom pan while substantially preventing escape of odors from the collection chamber pas the engaged extremities of the pan walls and the box walls; and
a litter tray including a support sheet having a flat upper surface, the litter tray being fitted within the pet use area,



supported at its periphery by the box walls in overlying relation to the upper opening in the bottom pan, and adapted to support litter, the support sheet having apertures in the flat upper surface dimensioned to allow downward passage of liquid waste, to prevent downward passage of litter, and to enable the litter to act as an odor barrier to prevent upward passage of odors, the litter tray further including a plurality of generally vertically oriented cell walls secured at their upper extremities to the support sheet and defining a plurality of relatively thin wall cells opening downwardly into the collection chamber, the cell walls being interconnected to rigidify the support sheet against bowing under the weight of the litter and a pet located in the pet use area.

5,367,985
AQUARIUM AIR-MANIFOLD MODULE
Bruce F. Wilkins, 100(#2-1) Hemlock, Branford, Conn. 06405
Filed Feb. 22, 1993, Ser. No. 20,996
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—263 7 Claims



1. For a conventional aquarium employing a pressurized source of air heretofore involving an ungainly multitude of air feed inlet lines, an air distribution device serving to negate the multiple clutter of such lines, while facilitating greater convenience in routing air to select regions within the aquarium; said air distribution device comprising:
a single air feed inlet line supplying fresh air from said source of air external of said aquarium to a selected device fitting, said device fitting thereby becoming the inlet fitting;
a horizontally arranged body having at least one air-passageway in discrete fluid communication with said external inlet line;

a plurality of air outlet receptacle means arranged at an upwardly facing side of said air-passageway body;

a special fitting means adaptable to each said receptacle plurality, whereby said receptacle would serve as a provisional air outlet, or otherwise be provisionally plugged;

at least one horizontal air runner arranged continuously with said air-passageway, which may be frictionally plugged into via male/female manner as a modular air-passageway extension thereto, or otherwise whereby a runner plug is applied there to terminate said body air-passageway in an air-tight manner.

5,367,986

CHEW TOY FOR DOGS

Anthony O'Rourke, Malibu; M. William Perel, Beverly Hills, both of Calif., and Kimberley Ammons, Ben Wheeler, Tex., assignors to Booda Products, Inc., Gardena, Calif.

Filed Aug. 20, 1993, Ser. No. 110,152

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—709 **1 Claim**



1. A chew toy for dogs comprising a plurality of threads of a soft pliable material having a knot tightly formed therein and a skirt of a soft durable material disposed about a portion of said threads, a portion of said skirt being secured within said knot, said portion of said threads being disposed throughout said skirt and projecting therefrom, means for closing said skirt about said threads so as to secure said portions of said threads in place within said skirt, and wherein a second portion of said threads projects from said knot on a side thereof opposite from said skirt.

5,367,987

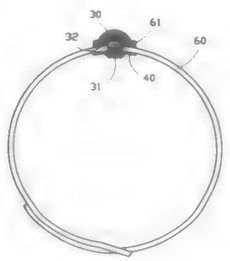
DECORATIVE BUTTON FOR A PET COLLAR

Ray T. Lin, No. 34, Alley 4, Lane 37, Sec. 2, Chang Hsin Road, Hsin Chuan Li, Ho Mei Chen, Changhua Hsien, Taiwan, Prov. of China

Filed Dec. 17, 1993, Ser. No. 168,212

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—858 **1 Claim**



1. A decorative button of a pet collar, comprising a decorative cap, a resilient pad member and a decorative attaching paper, said decorative cap having a projecting rectangular rivet stem and a lower surface around said rivet stem, said resilient pad member being formed with a central rectangular hole corresponding to said rivet stem of said decorative cap, said decorative button being characterized in that said lower surface of said decorative cap is arch-shaped corresponding to a curve of the pet collar and said rectangular hole of said resilient pad member has four slightly upward bent side edges, each of four corners of said rectangular hole being formed with a linear fissure and a middle portion of each long side edge of said rectangular hole being also formed with a linear fissure, whereby when assembled, said rivet stem is first extended through an engaging hole of the pet collar to fit into said rectangular hole of said resilient pad member, with slightly upwardly bent side edges of said rectangular hole exerting an anti-reversion force on said rivet stem is punched and expanded, forming a rivet to more firmly closely associate said decorative cap with said resilient pad member and said pet collar, said decorative attaching paper being further attached on top of am expanded rivet surface of said rivet stem to cover said surface and thereby to make said surface more smooth, said resilient pad member being resiliently deformed in accordance with the curve of said decorative cap and said pet collar so as to closely associate therewith without producing any clearance or unplane projecting portion.

5,367,988

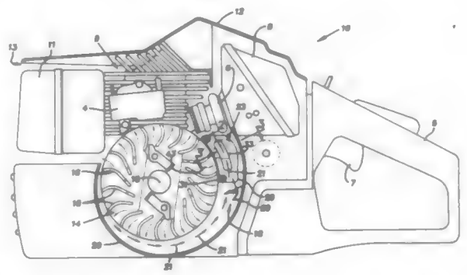
DYNAMIC AIR CLEANER AND CARBURETOR PRESSURIZATION SYSTEM FOR AIR COOLED INTERNAL COMBUSTION ENGINES

Imack L. Collins, Shreveport, La., assignor to WCI-Outdoor Products, Inc., Cleveland, Ohio

Filed Sep. 1, 1993, Ser. No. 114,757

Int. Cl.[5] F01P *1/02*

U.S. Cl. 123—41.65 **18 Claims**



1. A portable work producing apparatus comprising:

an air-cooled internal combustion engine for producing power to be delivered to a work producing implement;

a centrifugal fan impeller coupled to the engine for rotation within a centrifugal fan housing, the fan housing directing air blown radially outwardly from the centrifugal impeller into an air stream flowing substantially in one direction around the impeller toward the engine for cooling;

an orifice defined within a bottom wall of the fan housing over which the air stream passes, the bottom wall being oriented substantially perpendicular to an axis of rotation of the impeller;

a ramp positioned in front of the orifice and projecting upwardly into the air stream prior to the orifice without substantially interfering with the air stream in order to deflect particles entrained in the air stream near the bottom wall in a direction away from the orifice while permitting a portion of a lower layer of the air stream to flow over the ramp and to divert downwardly into the orifice, the diverted portion of the air stream being relatively free of particles; and

a passageway for coupling the orifice to the engine in order to supply the diverted portion of the air stream to the engine for combustion with fuel.

5,367,989

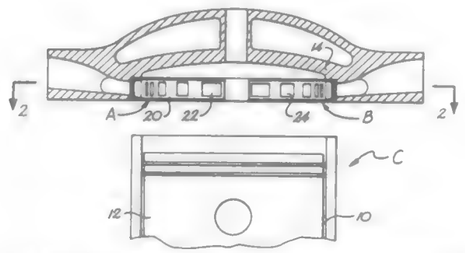
VALVE SHUTTER CONTROL

Peter Peyer, 1908 Ree Ford Rd., Greenville, S.C. 29609

Filed Dec. 6, 1993, Ser. No. 161,352

Int. Cl.[5] F01L *5/10, 5/12*

U.S. Cl. 123—81 C **20 Claims**



1. A valve system for controlling the intake port and exhaust port of an internal combustion engine having a cylinder in which a reciprocating piston moves in an intake, compression, power, and exhaust cycle, a cylinder head in which said intake port and exhaust port are found, wherein said valve system comprises:

a shutter valve assembly having a plurality of intake shutter openings by which an intake flow passes through said intake port during said intake cycle, and said shutter valve assembly having a plurality of exhaust shutter openings by which an exhaust flow passes through said exhaust port during said exhaust cycle;

said shutter valve assembly having a first moveable shutter element which selectively opens and closes said shutter openings of said intake port and a second moveable shutter element which selectively opens and closes said shutter openings of said exhaust port;

said first and second moveable shutter elements being independent of each other;

a valve actuating system for reciprocating said first moveable shutter element to open and close said intake port during said intake cycle and for reciprocating said second moveable shutter element to open and close said exhaust port during said exhaust cycle;

a plurality of sensors for sensing engine operating conditions and generating sensor signals for regulating the operation of said valve actuating system; and

a controller responsive to said sensor signals for controlling said valve actuating system.

5,367,990

PART LOAD GAS EXCHANGE STRATEGY FOR AN ENGINE WITH VARIABLE LIFT CAMLESS VALVETRAIN

Michael M. Schechter, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,009

Int. Cl.[5] F01L *9/02;* **F02M** *31/02*

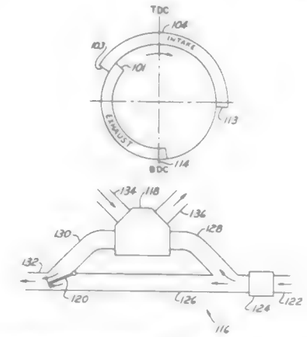
U.S. Cl. 123—90.12 **2 Claims**

1. An electrohydraulically operated valve control system cooperating with a piston and cylinder in an internal combustion engine comprising:

an intake port, coupled to the cylinder, having an intake valve therein, with the intake valve selectively closable before and after piston bottom dead center;

an exhaust port having an exhaust valve therein coupled to the cylinder; and

a heat exchanger having a heat exchange mechanism, an exhaust gas inlet and an exhaust gas outlet, and an intake air inlet and an intake air outlet, with the exhaust inlet being coupled to the exhaust port and coupled through the heat exchange mechanism to the exhaust outlet; and the intake outlet being coupled to the intake port and being selectively coupled to an intake inlet though the heat



exchange mechanism and around the heat exchange mechanism; with the heat exchanger further having means for selectively routing intake air through the heat exchange mechanism wherein the amount of intake inlet air that passes through the heat exchange mechanism is a function of the closing of the intake valve relative to the piston's bottom dead center position.

5,367,991

VALVE OPERATING SYSTEM OF ENGINE

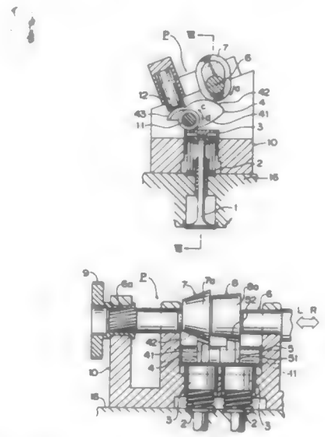
Akira Asai; Masami Nishida, and Masaki Fukuma, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 21, 1994, Ser. No. 210,484

Claims priority, application Japan, Mar. 23, 1993, 5-064176; Mar. 23, 1993, 5-064177

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **9 Claims**



1. A valve operating system of an engine for opening and closing a valve, said system comprising:

an operating cam having a cam surface, said operating cam being rotated by the engine; and

a swing cam having a cam surface in sliding contact with the

valve and a cam follower in sliding contact with the cam surface of the operating cam;

said valve being opened and closed by the swing cam being swung by rotation of the operating cam,

said cam surface of the operating cam and said cam surface of the swing cam being formed so that an acceleration component of the swing cam is larger than that of the operating cam in a positive region of a valve lift acceleration defined as a sum of the acceleration component of the operating cam and the acceleration component of the swing cam.

7. A valve operating system of an engine for opening and closing a valve, said system comprising:

an operating cam having a cam surface, said operating cam being rotated by the engine;

a swing cam having a cam surface in sliding contact with the valve and a cam follower in sliding contact with the cam surface of the operating cam;

said valve being opened and closed by the swing cam being swung by rotation of the operating cam, and

means for controlling valve timing by changing a positional relationship between the operating cam and the swing cam in an axial direction;

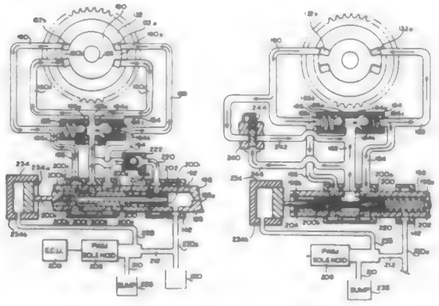
said cam surface of the operating cam and said cam surface of the swing cam being formed so that a valve lift acceleration defined as a sum of an acceleration component of the operating cam and an acceleration component of the swing cam is not substantially changed between before and after a change in valve timing.

5,367,992

VARIABLE CAMSHAFT TIMING SYSTEM FOR IMPROVED OPERATION DURING LOW HYDRAULIC FLUID PRESSURE

Roger P. Butterfield, Trumansburg; Franklin R. Smith, Slaterville Springs, and Curt A. Wykstra, Moravia, all of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Jul. 26, 1993, Ser. No. 97,355
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **23 Claims**



1. A variable camshaft timing (VCT) system for an internal combustion engine having a rotatable crankshaft and a rotatable camshaft, the camshaft being position variable relative to the crankshaft, the VCT system comprising;

at least one pair of oppositely acting hydraulic operators secured to the camshaft for rotation therewith and having a housing mounted on the camshaft for rotation and oscillation with the camshaft, said housing having a recess for receiving said at least one pair of oppositely acting hydraulic operators and permitting oscillation of said at least one pair oppositely acting hydraulic operators within said recess as said housing oscillates with respect to said camshaft;

means for controlling a position of said at least one pair of oppositely acting hydraulic operators with respect to said housing by selective movement of hydraulic fluid; and

means for removing air from said VCT system in response to the camshaft as the camshaft rotates.

19. A variable camshaft timing (VCT) system for an internal combustion engine having a rotatable crankshaft and a rotatable camshaft, the camshaft being position variable relative to the crankshaft, the VCT system comprising:

at least one pair of oppositely acting hydraulic operators secured to said camshaft for rotation therewith and having a housing mounted on said camshaft for rotation and oscillation with said camshaft, said housing having a recess for receiving said at least one pair of oppositely acting hydraulic operators and permitting oscillation of said at least one pair of oppositely acting hydraulic operators within said recess as said housing oscillates with respect to said camshaft, said housing recess enclosed around said hydraulic operators by an opposing circular end plate and outboard spacer and a sprocket and inboard spacer, said end plate and said sprocket fixed relative to said camshaft;

a source of hydraulic fluid under pressure in communication with the camshaft;

a first and second conduit means for delivering hydraulic fluid from said source to each of said at least one pair of oppositely acting hydraulic operators to operate said hydraulic operators, respectively; second and third conduit means for exhausting hydraulic fluid from each of said at least one pair of oppositely acting hydraulic operators;

a spool valve for selectively controlling movement of hydraulic fluid for actuating the oscillation of said hydraulic operators within said housing recess as said housing oscillates with respect to said camshaft; said spool valve having a cylindrical member and a spool slidable within said cylindrical member, said spool including a secondary passage in communication with an outer circumference of the camshaft such that during rotation of the camshaft hydraulic fluid within the camshaft is centrifugally driven to a radially outer portion of an interior of the camshaft through said secondary passage to said housing recess for supplying hydraulic fluid from the camshaft to said housing recess, said spool reciprocal within said cylindrical member and having first and second spaced apart lands;

means for positioning said spool at an advanced or retarded position when the VCT system is at zero hydraulic fluid pressure;

means for removing air from said VCT system in response to the rotation of the camshaft; and

means for sealing said end plate with respect to said outboard spacer and said sprocket with respect to said inboard spacer to prevent hydraulic fluid from draining out of the VCT system when the engine is shut down and prevent hydraulic fluid from leaking out of the VCT system during engine cranking when hydraulic fluid pressure is zero and make-up hydraulic fluid is not available.

5,367,993

VALVE COVER JOINT SEAL ASSEMBLY

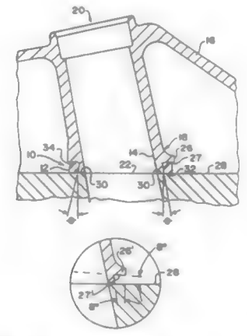
John R. Tulach, Westchester, John A. Serio, Addison, both of Ill., assignors to Navistar International Transportation Corp., Chicago, Ill.

Int. Cl.[5] F01M *9/10*
U.S. Cl. 123—90.38 **20 Claims**

1. A joint seal assembly for a blind compression joint formed between an end of a cylindrical structure associated with an engine valve cover and an abutment surface disposed within said valve cover on an engine cylinder head, said joint seal assembly comprising:

a planar flange surface formed adjacent to and intersecting an outer periphery of the cylindrical structure, an outer peripheral edge of said flange surface being disposed parallel to said abutment surface a predetermined distance from said end of said structure;

said cylindrical structure having a reversely tapered end portion disposed between said flange surface and said structure end to provide a larger periphery at said end than the periphery thereof adjacent said flange surface; and



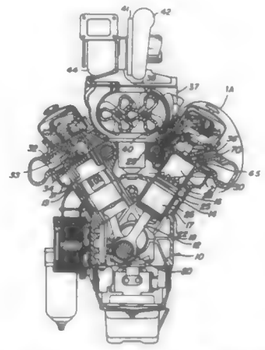
an annular seal ring disposed on said reversely tapered end portion, said seal ring having an uncompressed height greater than said predetermined distance, an outer perimeter less than an outer perimeter of said flange surface, and an inner perimeter less than said larger perimeter of said structure end.

5,367,994

METHOD OF OPERATING A DIESEL ENGINE UTILIZING A CONTINUOUSLY POWERED GLOW PLUG

Stanley J. Hinkle, West Bloomfield, Mich., assignor to Detroit Diesel Corporation, Detroit, Mich.

Filed Oct. 15, 1993, Ser. No. 138,290
Int. Cl.[5] F02B *33/38*
U.S. Cl. 123—145 A **6 Claims**



1. A method of operating a compression ignition internal combustion engine wherein said engine includes a reciprocating piston operable within a cylinder for placing a combustible fuel/air charge under compression within a combustion chamber established by said piston and cylinder in conjunction with a cylinder head member sufficient to cause self-ignition when operating at a predetermined elevated engine temperature;

said engine further including a glow plug secured to said cylinder head and having a heating element projecting within said combustion chamber to provide sufficient heat to the compressed fuel/air charge to ignite it when starting or operating said engine below said predetermined elevated-engine temperature; said method comprising:

(a) providing power to said glow plug and initially establishing the temperature of said heating element at a temperature exceeding 1600° F.;

(b) starting the engine;

(c) concurrently continuing to operate the engine and maintaining said heating element temperature at least at 1600° F. until said engine temperature is sufficient to cause self ignition of the compressed fuel/air charge without the additional heat energy provided by said heating element; and

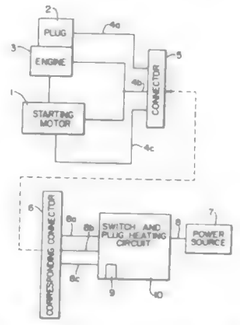
(d) maintaining said heating element at a temperature exceeding 1600° F. throughout at least a portion of the entire remaining period of operation of said engine.

5,367,995

STARTING MECHANISM OF AN ENGINE FOR A MODEL

Hirotoshi Kondo, Tokyo, Japan, assignor to Yoshio Kondo, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,763
Claims priority, application Japan, Oct. 7, 1992, 4-075418[U]
Int. Cl.[5] F02N *11/14;* **F02P** *19/02*
U.S. Cl. 123—179.6 **4 Claims**



1. A starting mechanism for starting an engine for a model comprising

electric wires as power source connecting parts for starting a motor and heating a plug being gathered at one connector,

a corresponding connector capable of connecting to said connector being separately mounted,

electric wires led from one power source being gathered at said corresponding connector,

a hand switch and a plug heating circuit being provided at a suitable position of said electric wires, and

the plug heating circuit for heating the plug a little later than the starting time of the starting motor or almost at the same time as the motor starting time.

5,367,996

MICROPROCESSOR-BASED DIESEL ENGINE COLD START CONTROLLER

William J. Homik, Ephrata, and David G. Sokol, New Holland, both of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

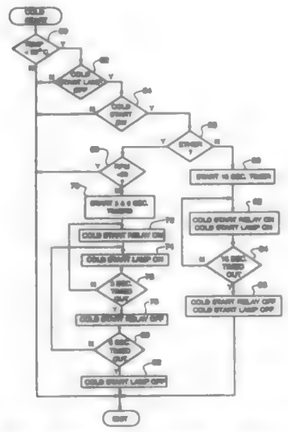
Filed Sep. 17, 1993, Ser. No. 122,659
Int. Cl.[5] F02N *17/047, 17/08*
U.S. Cl. 123—179.8 **12 Claims**

1. A reconfigurable diesel engine cold start control apparatus comprising:

a programmable controller having stored therein configuration data defining first and second types of cold start assist apparatus;

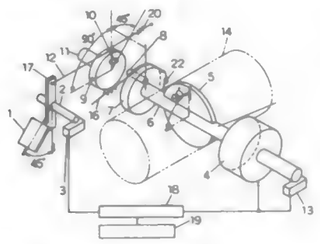
a cold start assist apparatus for the engine, said cold start assist apparatus being one of said first and second types;

an ignition switch;
a cold start switch;
said controller being responsive to actuation of said cold start switch for generating a signal having a first duration when said configuration data defines said first type of cold



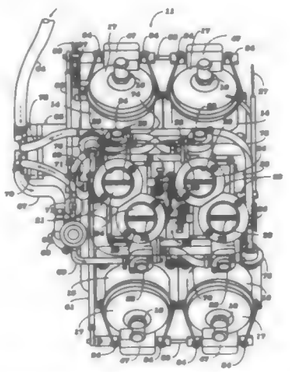
start assist apparatus and a second duration when said configuration data defines said second type of cold start assist apparatus; and,
means responsive to said signal and said ignition switch for energizing said cold start assist apparatus.

5,367,997
THROTTLE ACTUATOR
Masahiro Kawamura, Takatsuki; Masuo Takigawa, Ikoma; Yasuhiro Kondou, Hirakata; Tutomu Hamada, Hirakata; Teruo Maruyama, Hirakata, and Akio Masuo, Ohtsu, all of Japan, assignors to Matsushita Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 13,384, Feb. 4, 1993, abandoned. This application Aug. 18, 1993, Ser. No. 123,384
Claims priority, application Japan, Feb. 10, 1992, 4-023505; Mar. 10, 1992, 4-051110
Int. Cl.[5] F02D *9/10, 11/10*
U.S. Cl. 123—399 20 Claims



1. A throttle actuator comprising:
an intake pipe of feeding vaporized fuel to an engine,
a throttle valve arranged in said intake pipe and adapted to rotatably be driven to open and closed positions,
a throttle valve shaft supporting said throttle valve and rotatably mounted on a portion of a vehicle,
a motor for supplying a torque to said throttle valve shaft,
a first link member secured to and transmitting a torque to said throttle valve shaft,
a second link member having two stopper parts engageable with said first link member and movable in response to an accelerator depression amount,
a motor control means for controlling said motor,
an accelerator returning means of always supplying a torque to said throttle valve shaft so as to close the throttle valve, and
said first link member being coupled to said second link member in a manner that said first link member is allowed to rotate between said two stopper parts, and said motor control means driving said motor to control said throttle valve shaft so as to make said first link member rotate between said two stopper parts.

5,367,998
FUEL INJECTION SYSTEM FOR AN ENGINE
Masakazu Shiohara, and Tsugunori Konakawa, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 8, 1993, Ser. No. 27,682
Claims priority, application Japan, Mar. 6, 1992, 4-084941
Int. Cl.[5] F02M *41/00*
U.S. Cl. 123—457 23 Claims

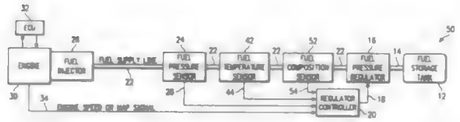


1. A fuel injection system for an internal combustion engine comprising a fuel tank, a fuel filter remote from said fuel tank, supply conduit means for connecting said fuel tank to said fuel filter, a fuel pump for pumping fuel from said fuel tank to said fuel filter, a fuel injector for receiving fuel from said fuel pump and for supplying fuel to said internal combustion engine, a fuel pressure regulator for regulating the pressure of the fuel supplied by said fuel pump to said fuel injector, said fuel pressure regulator regulating pressure by bypassing fuel from said fuel pump from said fuel injector, and bypass conduit means for returning the fuel bypassed by said fuel pressure regulator directly to said fuel filter.

5,367,999
METHOD AND SYSTEM FOR IMPROVED FUEL SYSTEM PERFORMANCE OF A GASEOUS FUEL ENGINE
Steven R. King, and Michael W. Walser, both of Ft. Worth, Tex., assignors to Mesa Environmental Ventures Limited Partnership, Fort Worth, Tex.
Filed Apr. 15, 1993, Ser. No. 48,839
Int. Cl.[5] F02M *55/00, 21/04*
U.S. Cl. 123—458 58 Claims

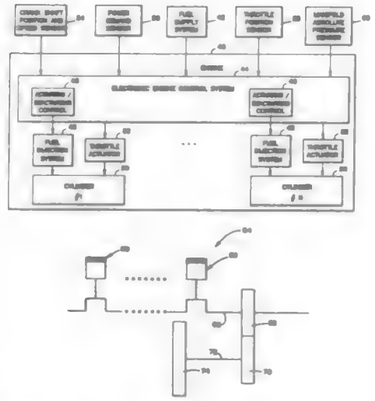
1. An improved gaseous fuel engine system, comprising:
a gaseous fuel engine for receiving and using a gaseous fuel at a controlled supply pressure; and
a fuel metering system, comprising:
a fuel storage device for storing said gaseous fuel at a storage pressure;

a fuel pressure regulator for receiving said gaseous fuel from said fuel storage device and dynamically reducing the pressure of said gaseous fuel from said storage pressure to said controlled supply pressure;
at least one sensing means for generating a signal input in response to at least one sensed parameter associated with the flow rate of said gaseous fuel; and



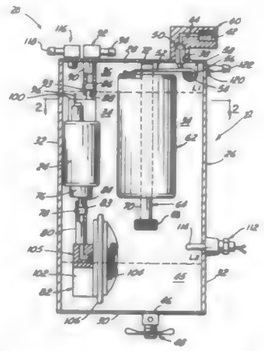
controlling means for controlling said fuel pressure regulator in response to said signal input for dynamically determining and controlling the value of said controlled supply pressure and thereby controlling the flow rate of said gaseous fuel.

5,368,000
ENGINE EFFICIENCY IMPROVEMENT SYSTEM
Robert P. Koziara, Lake Elmo, Minn., assignor to Onan Corporation, Minneapolis, Minn.
Filed Jul. 15, 1993, Ser. No. 92,136
Int. Cl.[5] F02D *41/04, 17/02*
U.S. Cl. 123—481 9 Claims



1. A combustion engine having a plurality of cylinders and a throttle system, comprising:
a crankshaft being driven by the cylinders of the combustion engine;
electronic engine control means for activating and deactivating any one of the cylinders, the electronic engine control means being electrically connected to the individual fuel system for each cylinder;
a balance shaft being positioned on one side of the crankshaft; and
gear means, engaging with the balance shaft and the crankshaft, for counter-rotating the balance shaft and the crankshaft in an opposite direction, a net angular momentum of all rotating parts in the combustion engine is zero.

5,368,001
FUEL HANDLING SYSTEM
Ronald H. Roche, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.
Filed Jan. 21, 1994, Ser. No. 184,272
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—510 19 Claims



15. A fuel handling system for receiving fuel under low pressure from a remote fuel tank and delivering the fuel under high pressure to an internal combustion engine having at least one fuel injector, said fuel handling system comprising: a closed reservoir for receiving liquid fuel therein and maintaining a gas dome above fuel in said reservoir, said reservoir having a first inlet for receiving fuel under low pressure from the remote fuel tank, an outlet in fluid flow communication with the engine for enabling fuel to be removed from said reservoir and delivered to the engine, a second inlet for receiving fuel returned from the engine and a vent for permitting the removal of fuel vapor from said gas dome; an inlet valve in operable communication with a float in said reservoir for selectively admitting fuel through said first inlet into said reservoir when fluid within said reservoir has dropped below a predetermined level to maintain said predetermined level of fluid within said reservoir; a fuel pump in said reservoir and having an inlet in communication with said reservoir for delivering fuel through said outlet of said reservoir under high pressure to the fuel injector; and a pickup in said reservoir in fluid flow communication with said inlet of said fuel pump and having a diaphragm in communication with an inlet valve for filtering liquid fuel entering said pump inlet and allowing liquid fuel to enter said pump inlet while preventing fuel vapor, aerated fuel, foam, water or air from entering said pump inlet.

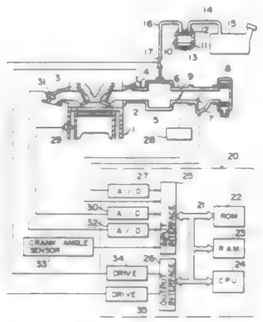
5,368,002
APPARATUS FOR CONTROLLING A FLOW OF EVAPORATED FUEL FROM A CANISTER TO AN INTAKE PASSAGE OF AN ENGINE
Shinichi Hoshino; Koji Okawa, both of Toyota; Akinori Osanai, Susono; Takaaki Itou, Mishima; Yoshihiko Hyodo, Susono, and Toru Kidokoro, Hadano, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Jun. 25, 1993, Ser. No. 84,704
Claims priority, application Japan, Jul. 1, 1992, 4-174523
Int. Cl.[5] F02M *37/04*
U.S. Cl. 123—520 9 Claims

1. An apparatus for controlling a flow of evaporated fuel fed from a canister into an intake passage of an engine through a purge control valve, said apparatus comprising:
a purge control valve arranged in a purge passage between the canister and the intake passage, said purge control valve switchable between on and off positions in accordance with a duty ratio control factor, said duty ratio control factor indicating a duty ratio of an on-time of said

purge control valve within a duty cycle to a total duty-cycle time;

detecting means for detecting an operating condition under which the engine is operating; and

flow rate control means for setting a purge flow rate control factor for said purge control valve in accordance with the engine operating condition detected by said detecting means, said purge flow rate control factor set by said flow rate control means allowing a flow rate of evaporated fuel



from the canister into the intake passage through the purge control valve to be maintained at a constant level when the engine operating condition changes;

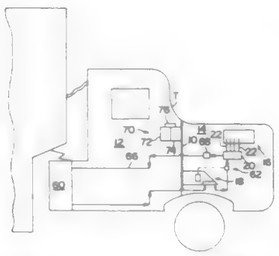
wherein said flow rate control means sets a purge flow rate correction control factor for the purge control valve when said detecting means detects that a fuel vapor concentration factor is smaller than a given value and that a fuel vapor concentration setting count is greater than a given number.

5,368,003

FUEL HEAT TRANSFER ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE

Roger Clemente, 11 Dorchester Way, Shrewsbury, N.J. 07702

Filed Jun. 16, 1992, Ser. No. 897,999
Int. Cl.[5] F02M *15/00*
U.S. Cl. 123—541 **12 Claims**



1. A fuel heat transfer assembly for a vehicle including an engine, a fuel tank and a cab compartment having a heating-/cooling assembly therefor, which comprises:

a housing member for a heat exchanger conduit;

gaseous conduit means for placing said cab compartment in gaseous flow relationship with said heat exchanger conduit of said housing member;

means for effecting gaseous flow through said gaseous conduit means;

conduit means for passing fuel from said fuel tank to said engine via said heat exchanger conduit of said housing member; and

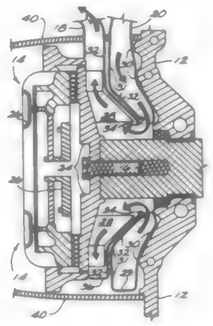
means for sensing temperature of said fuel during passage to said engine and for activating said conduit means for effecting gaseous flow past said heat exchange conduit.

5,368,004

AUTOMOBILE SUPERCHARGER UTILIZING FLYWHEEL

Leslie Mann, 8111 E. Broadway, Apt. 468, Tucson, Ariz. 85710

Filed Feb. 15, 1994, Ser. No. 196,562
Int. Cl.[5] F02B *33/40*
U.S. Cl. 123—559.1 **7 Claims**



1. A supercharger for internal combustion engines of the type having a carburetor, intake manifold, crankshaft, and a flywheel attached to the engine crankshaft, said supercharger operably utilizing the automobile flywheel for supplying compressed air to the carburetor and intake manifold, said supercharger comprising:

air compression vanes operably attached to said flywheel;

an annularly shaped output plenum housing encompassing in part said vanes attached to said flywheel, said output plenum housing having a circularly shaped outer periphery wall, said output plenum housing including an inlet opening located centrally in said annularly shaped output plenum housing to allow air to enter said output plenum housing for compression by said vanes and an output opening situated in said outer peripheral wall to allow air to exit said output plenum housing after compression; and

an annularly shaped intake plenum housing proximate said output plenum housing, said intake plenum housing having a circularly shaped outer peripheral wall, said intake plenum including an inlet opening situated in said outer peripheral wall to allow air to enter said plenum and an outlet opening located centrally in said annularly shaped output plenum housing to allow air to exit said plenum; and

means to deliver the air so compressed to the carburetor and intake manifold for use by the engine.

5,368,005

APPARATUS FOR DETECTING FAULT IN EXHAUST GAS RECIRCULATION CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

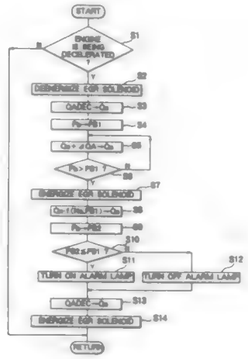
Hajime Kako, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1993, Ser. No. 153,167
Claims priority, application Japan, Nov. 19, 1992, 4-310351
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—571 **5 Claims**

1. An apparatus for detecting a fault of an exhaust gas recirculation control system for an internal combustion engine, said apparatus comprising:

an exhaust gas recirculation control valve disposed in an exhaust gas recirculation passage interconnecting an exhaust pipe and an intake pipe of said engine for opening or closing said exhaust gas recirculation passage;

intake air amount control means for changing an amount of intake air supplied to said engine by a predetermined quantity, which is determined in dependence on an operation state of said engine, when said exhaust gas recirculation control valve is temporarily opened or closed; and



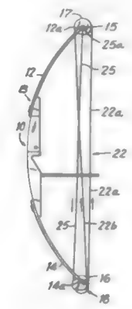
fault determination means for determining whether a pressure within said intake pipe has changed after the opening or closing of said exhaust gas recirculation control valve, to thereby determine, on the basis of the result of said determination, whether said exhaust gas recirculation control system suffers from a fault.

5,368,006

DUAL-FEED SINGLE-CAM COMPOUND BOW

Mathew A. McPherson, Austin, Minn., assignor to Bear Archery, Inc., Gainesville, Fla.

Filed Apr. 28, 1992, Ser. No. 875,748
Int. Cl.[5] F41B *5/10*
U.S. Cl. 124—25.6 **5 Claims**



1. A dual-feed single-cam compound bow comprising

a pair of flexible resilient bow limbs forming first and second outer bow limb ends with a handle connecting inner ends thereof,

a single drop-off cam journaled at the first outer bow limb end and having eccentric peripheral groove portions,

a pulley concentrically journaled at the second outer bow limb end and having peripheral concentric groove portions,

an elongated cable, having an intermediate portion trained around the concentric pulley to form two cable sections extending between the pulley and the cam, one section forming a bowstring having feed-out end portions at both ends thereof and the other section forming a take-up portion at the pulley end thereof and a feed-out portion at the cam end thereof, both received in eccentric peripheral groove portions of the cam in a manner to provide a pair of feed-out sections extending from the cam toward the pulley,

the ends of the two cable sections being positively anchored to the cam to produce the desired drop-off rotation of the cam when the bowstring is drawn, and

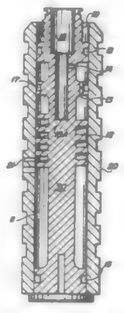
an anchor cable extending between the two limbs with one end thereof fixed to the second bow limb end and the other anchor cable end fixed to the cam and trained in a take-up groove portion of the cam to produce controlled flexing of the bow limbs during the drawing of the bowstring.

5,368,007

AIRGUN EXPANSION CHAMBER

Kent L. Carroll, Darien, Ill., assignor to Air America, Glenview, Ill.

Filed Aug. 13, 1993, Ser. No. 105,427
Int. Cl.[5] F41B *11/00*
U.S. Cl. 124—56 **9 Claims**



1. An expansion chamber for use between a source of liquified gas and an airgun, utilizing said gas as a propellant, said expansion chamber comprising:

a sleeve portion including an inner surface and an outer surface;

an orifice extending from said outer surface to said inner surface;

a strut portion positioned within said sleeve portion;

a first sump for said liquified gas formed by a combination of said sleeve portion and a lower section of said strut portion;

said strut portion further including a helical baffle section located above said first sump;

a partition extending from said strut portion to said sleeve portion inner surface;

an opening extending through said partition;

said strut portion further including an outlet section including a connection to said opening and means for connecting said expansion chamber to said airgun;

whereby said liquified gas introduced into said expansion chamber is converted to a gaseous state and passes through said expansion chamber to said connected airgun.

5,368,008

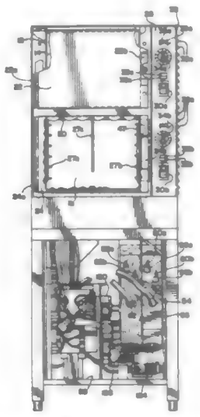
STEAMER APPARATUS

G. Robert Oslin, Chicago, Ill., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Oct. 9, 1992, Ser. No. 958,880
Int. Cl.[5] A21B *1/08*
U.S. Cl. 126—20.2 **41 Claims**

1. A double oven steamer for cooking foodstuffs and the like, comprising, in combination, a cabinet having a pair of discrete oven chambers each of which has an access opening and door means enabling selective opening and closing of the access

opening, a pair of atmospheric steam generators supported within said cabinet, first conduit means interconnecting one of said steam generators to a selected one of said oven chambers for supplying steam exclusively thereto, second conduit means interconnecting the other of said steam generators to the other oven chamber for supplying steam exclusively thereto, first sensor means for sensing the creation of steam in said one of said steam generators, second sensor means for sensing the creation of steam in the other of said steam generators, and control means for applying a first power level to each of said steam generators to initially create steam flow to the corresponding oven chamber during a non-cooking operating mode, said control means being operative to reduce the power level to each of said steam generators in response to sensing of steam flow to the corresponding oven chamber so that a continuous reduced quiescent power level is applied to each steam generator during the non-cooking mode sufficient to maintain the corresponding oven chamber essentially at the temperature of boiling water, whereby return of the power level applied to either of said steam generators to said first power level during a cooking mode of operation effects substantially immediate increased steam flow to the corresponding oven chamber.



5,368,009

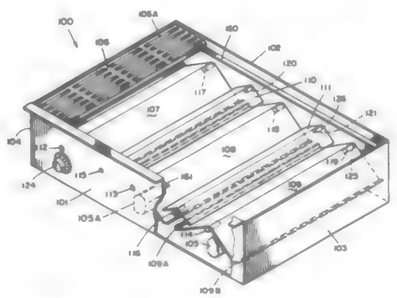
TURBO BROILER

Richard R. Jones, 4095 Tarragona Dr., St. Louis, Mo. 63129

Filed Dec. 11, 1992, Ser. No. 989,528

Int. Cl.[5] A47J *37/00*; F24C *3/00*

U.S. Cl. 126—41 R **14 Claims**



1. A broiler apparatus comprising,

a plurality of heating elements;

a plurality of heat radiants;

each of said heat radiants has a generally inverted V-shape,

said heat radiants mounted in spaced apart relationship above said heating elements,

a plurality of baffles;

each of said baffles has a generally inverted V-shape,

said baffles mounted in spaced apart relationship above said heat radiants, vertically aligned with the spaces between adjacent pairs of said heat radiants and in overlapping relationship with a portion of each of said heat radiants in said adjacent pairs of heat radiants, whereby said baffles redirect heated flue air passing from said heating elements through said spaces onto said heat radiants thereby to produce superheated air and to increase the heat at said heat radiants; and

a housing surrounding and supporting said heating elements, said heat radiants and said baffles.

5,368,010

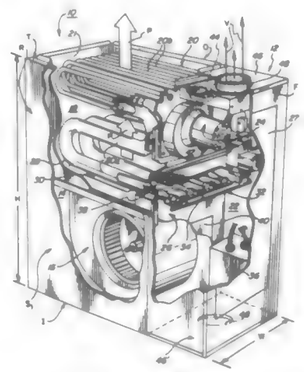
MULTI-POSITION FORCED AIR FURNACE

Richard H. Weber, III, Lafayette; Paul T. Richardson, Indianapolis, and Gerald K. Gable, Carmel, all of Ind., assignors to Consolidated Industries Corp., Lafayette, Ind.

Filed Jul. 29, 1992, Ser. No. 921,917

Int. Cl.[5] F24H *3/02*

U.S. Cl. 126—110 R **13 Claims**



1. In a forced air furnace comprising (a) a housing defining an outlet side, an inlet side disposed opposite to the outlet side and a pair of oppositely disposed lateral sides, within which housing is disposed (b) a burner assembly, (c) a heat exchange chamber, (d) a heat exchanger disposed within the heat exchange chamber and having an exchanger inlet positioned to receive therein hot combustion product gases generated by the burner assembly and an exchanger outlet for discharge of the combustion product gases therefrom, (e) a blower chamber, (f) a primary air blower disposed within the blower chamber for forcing air in a primary airflow path through the heat exchange chamber in indirect heat exchange relationship with the heat exchanger, (g) a vestibule chamber extending adjacent to the heat exchange and blower chambers, (h) an inducer assembly disposed within the vestibule chamber and comprising an inducer blower and an inducer outlet, the inducer assembly being coupled in gas flow communication with the exchanger outlet for drawing cooled combustion products as flue gas from the heat exchanger, the improvement comprising that:

the inducer assembly is dimensioned and configured to be coupled to the heat exchanger outlet with the inducer outlet disposed in a selected one of a plurality of directions relative to the vestibule chamber, the vestibule chamber is dimensioned and configured to accommodate an internal flue duct coupled to the inducer outlet and extending through the vestibule chamber from the inducer outlet to and through a side of the housing, and the housing is dimensioned and configured so that the furnace may be supported on any one of the outlet side, the inlet side and each of the lateral sides.

5,368,011

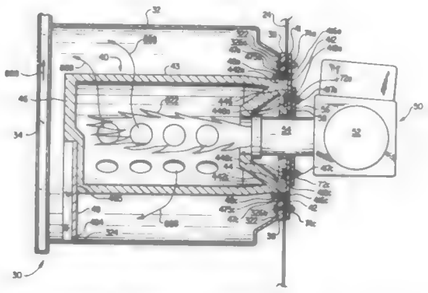
APPLIANCE COMBUSTION CHAMBER

Timothy J. Bodner, Ft. Wayne, Ind., assignor to Rheem Manufacturing Company, a Delaware Corp., New York, N.Y.

Filed Jun. 9, 1993, Ser. No. 75,122

Int. Cl.[5] F24H *3/00*

U.S. Cl. 126—116 R **43 Claims**



1. An improved fuel-air combustion furnace of the type wherein a combustion chamber that is disposed in flow communication with a fuel-air nozzle is secured to a burner mounting plate and assembled to a heat exchanger for transfer of the heat generated in the combustion chamber to circulation air flowing over said heat exchanger within said furnace, wherein the improvement comprises:

said combustion chamber comprising an outer wall and an annular flange, the flange having a first side adapted for flush mounting against said burner mounting plate and a second side extending non-perpendicularly from the outer wall;

mounting means adapted for engaging said flange of said combustion chamber in a mating relationship therewith for structural securement thereof; and

attachment means in association with said mounting means for securing said combustion chamber flange to said burner mounting plate with said combustion chamber flushly mounted thereagainst in flow communication with said fuel-air nozzle.

5,368,012

WALL FURNACE WITH SIDE VENTED DRAFT HOOD

Albert B. Chamberlain, Colton, Calif., assignor to Williams Furnace Company, Colton, Calif.

Continuation of Ser. No. 917,826, Jul. 21, 1992, abandoned. This application Feb. 7, 1994, Ser. No. 192,955

Int. Cl.[5] F24H *3/00, 3/02, 3/12*

U.S. Cl. 126—116 B **17 Claims**

1. A gravity flow wall furnace comprising:

a front wall substantially parallel to, and facing, a room to be heated, the front wall having an inlet for the entrance of cool room air and an outlet for the exit of heated room air;

a back wall substantially parallel to the front wall;

two lateral walls extending from the front wall to the back wall and substantially perpendicular to the front wall, at least one of the lateral walls having an opening for the passage of air;

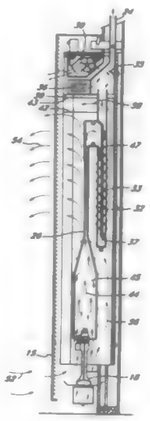
a combustion chamber located within the wall furnace comprising an elongated channel to contain the flow of combustion products and having an open lower end;

a burner located within the open lower end of the combustion chamber to feed the combustion products into said combustion chamber;

a primary heat exchanger comprising an elongated channel connected to, and extending upwardly from, the upper end of the combustion chamber, the primary heat exchanger containing the upward flow of combustion products;

a second heat exchanger comprising an elongated channel having a front side and a back side and located between the primary heat exchanger and the back wall of the furnace, the second heat exchanger connected to the upper end of the primary heat exchanger to contain the flow of combustion products from the primary heat exchanger, the second heat exchanger having a baffle extending within the second heat exchanger so as to receive combustion products from the primary heat exchanger and direct their flow downwardly toward the burner along a first flow path within the second exchanger, and upwardly away from the burner along a second flow path in the second heat exchanger;

the combustion chamber and the primary heat exchanger each having a front face that is substantially parallel to the front wall of the furnace, the front faces defining a first circuit between the front faces and the front wall of the furnace for the flow of room air to be heated by the front faces of the combustion chamber and primary heat exchanger as the air flows upward due to the effect of warm air rising;



a first deflector located above the primary heat from the cool room air inlet and exchanger and below a draft hood to direct air from the first circuit through the outlet and into the room;

the second heat exchanger being configured such that its front side is substantially parallel to the primary heat exchanger and its back side is substantially parallel to the back wall of the furnace to define a second circuit for room air to be heated by the second heat exchanger as it flows from the cool room air inlet and upward due to the effect of warm air rising;

a second deflector located above the first deflector and below the draft hood to direct air from the second circuit into the room and to insulate the draft hood from the second circuit air;

said first and second circuits of heated room air exiting the furnace through said outlet for the exit of heated room air and in two parallel substantially non-communicative segments, the first circuit exiting the furnace below the first deflector, and the second circuit exiting the furnace between the first and second deflectors; and

said draft hood having a chamber to receive the combustion products from the second heat exchanger and to allow for expansion of the combustion products prior to their discharge to a flue, the draft hood located above the second

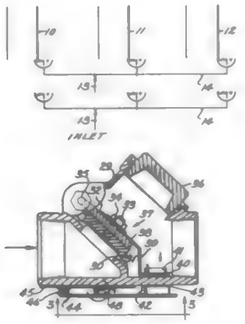
deflector and having an inlet for the communication of combustion products from the second heat exchanger and an outlet for the exit of combustion products to the flue, the draft hood having a front face directed towards the front wall of the furnace and two lateral faces directed towards the lateral walls of the furnace, at least one of the lateral faces of the draft hood having an opening communicating with said opening of one of the lateral walls of the furnace for the intake of cool room air.

5,368,013

PARALLEL PIPED FLUID HEATERS WITH STAGED FLOW CONTROLLED BY MAGNETIC PRIORITY VALVES

Elliot E. Herweyer, 3055 River Rd. W., P.O. Box 257, Goochland, Va. 23063

Filed Oct. 19, 1992, Ser. No. 962,715
Int. Cl.[5] F24H *1/00*; F16K *31/08*
U.S. Cl. 126—362 **7 Claims**



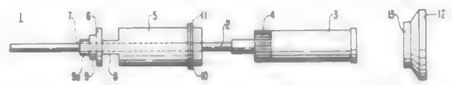
1. A hot water heating system comprising a bank of two or more hot water heaters, a cold water inlet distribution line, cold water branch lines connecting said hot water heaters to said cold water inlet distribution line, a check valve in each said cold water branch lines to prevent backflow from said heaters, a hot water distribution line, hot water branch lines connecting said heaters to said hot water distribution line, a balancing valve in each of said hot water branch lines; and wherein said check valve includes means for presetting the opening flow pressure, said check valve comprises a non-magnetic body, a valve seat in said body, a valve disc, a pivoted valve lever for supporting said disc for pivotal closing and opening movement with respect to said seat, a support arm having first and second ends, said first end of said support arm being secured to said valve lever and valve disc for swinging movement therewith, the second end of said support arm supporting a magnet, said means for presetting mounted externally of said body and opposite to said support arm supported magnet.

5,368,014

MODULAR ENDOSCOPE HAVING EASILY REPLACEABLE PARTS

Emmanuel Anapliotis, Berlin, and Gisbert Schich, Ansbach, both of Germany, assignors to Effner Biomet GmbH, Berlin, Germany

Continuation-in-part of Ser. No. 602,298, Nov. 21, 1990, Pat. No. 5,184,602. This application Aug. 6, 1992, Ser. No. 925,069
Claims priority, application Germany, Aug. 8, 1991, 9109924[U]
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **14 Claims**



1. In an endoscope composed of an illumination module and a viewing module which are adapted to be connected with one another, the viewing module including an optical system carrying shaft insertable into an interior cannula of the illumination module, the improvement wherein said viewing module further comprises:

(a) a rotary optical system including said optical system carrying shaft;

(b) an optical system guide sleeve surrounding said rotary optical system such that said rotary optical system is rotatably and displaceably mounted within said optical system guide sleeve;

(c) an optical funnel removably attachable to said optical system guide sleeve; and

(d) a guide sleeve coupling device provided on said optical system guide sleeve for removably attaching said optical funnel thereto.

5,368,015

AUTOMATED SURGICAL SYSTEM AND APPARATUS

Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 670,720, Mar. 18, 1991, Pat. No. 5,217,003, and a continuation-in-part of Ser. No. 682,002, Apr. 8, 1991, Pat. No. 5,217,453. This application Jun. 7, 1993, Ser. No. 73,355
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61B *1/00, 1/06*
U.S. Cl. 128—4 **20 Claims**

15. A surgical system comprising:

an endoscopic instrument;

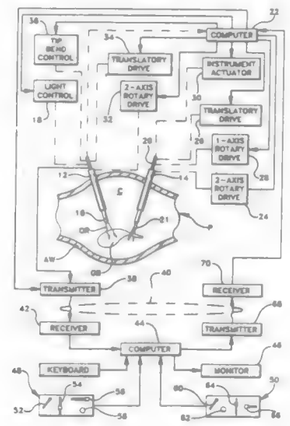
camera means connected to said endoscopic instrument for obtaining stereoscopic video images of internal body tissues inside a patient's body via said endoscopic instrument;

transmission means operatively connected to said camera means for transmitting, over an electromagnetic signaling link to a remote location beyond a range of direct manual contact with said patient's body and said endoscopic instrument, a video signal encoding said video images;

receiver means for receiving actuator control signals from said remote location via said electromagnetic signaling link;

a surgical instrument insertable into the patient's body and movable relative to the patient's body and said endoscopic instrument; and

robot actuator means operatively connected to said surgical instrument and said receiver means for actuating said surgical instrument in response to the actuator control



signals received by said receiver means from said remote location.

5,368,016

AIRWAY ANAESTHESIA

Richard A. Henry, 7 Toronto Street, Kingston, Ontario, Canada

Filed Sep. 22, 1992, Ser. No. 949,445
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.23 **9 Claims**



1. A method for passively providing topical airway anaesthesia to a patient through an oropharyngeal airway, said method comprising:

providing an anaesthetic suitable for optical airway anaesthesia and a suitable propellant in a canister disposed within a housing, said housing comprising a transparent lid member and means for preventing an incompatible canister from being used with said housing, said means including a valve stem seat of a non-circular, cross-sectional shape, wherein said canister comprises a valve stem of complementary non-circular, cross-sectional shape and indicia for denoting the dosage strength of said anaesthetic;

viewing said indicia through said transparent lid member for identification of said canister;

inserting an oropharyngeal airway into the oropharyngeal cavity of a patient; and

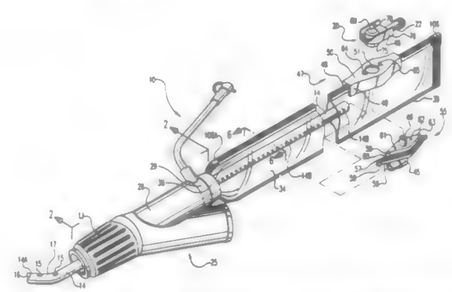
thereafter releasing said anaesthetic from said canister into said oropharyngeal airway, thereby providing anaesthesia to the patient's airway.

5,368,017

APPARATUS FOR VENTILATING AND ASPIRATING

James L. Sorenson, Salt Lake City; Valdon G. Reynolds, Bountiful; Stephen C. Mackert; Joseph H. Jeffs, both of Sandy, and David W. Kaufman, Salt Lake City, all of Utah, assignors to Sorenson Laboratories, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 678,663, Apr. 1, 1991, Pat. No. 5,325,851. This application Mar. 9, 1992, Ser. No. 848,030
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—200.26 **70 Claims**



1. A protective shield apparatus for allowing communication between a user located on a first side of a barrier and an implement for use with said protective shield, said implement located on a second side of said barrier across at least one channel dynamically locatable anywhere along a defined course of potential channel location through said barrier, said protective shield apparatus comprising:

anchoring means for allowing insertion of a portion of said implement therethrough;

a pliant barrier means defining a substantially discrete space;

at least one releasably sealable slit formed through said barrier means, said slit defining a course of travel along said barrier means, said slit having one portion thereof releasably connected to another portion thereof thereby providing physical sealing of said slit to prevent substantial airflow through said slit; and

connector means for allowing communication across said at least one channel between a user and said implement for use with said protective shield apparatus, said connector means including structure disposed through said at least one slit and being otherwise structured and arranged for slidable movement along said course, whereby to open a portion of said slit adjacent said connector means progressively in the direction of movement of said connector means while concurrently closing said slit following said connector means in the direction of movement.

5,368,018

BREATHING APPARATUS MOUTHPIECE

William C. Stone, Derwood, Md., assignor to Cis-Lunar Development Laboratories, Inc., Chadds Ford, Pa.

Continuation of Ser. No. 340,250, Apr. 19, 1989, Pat. No. 5,127,398. This application Mar. 23, 1992, Ser. No. 855,675
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] A62B *18/10*
U.S. Cl. 128—201.28 **1 Claim**

1. A mouthpiece assembly for a breathing apparatus, said mouthpiece assembly comprising:

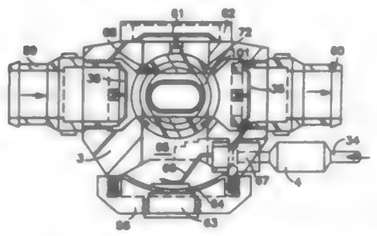
a mouth bit adapted to be inserted into a user's mouth;

means for minimizing the breathing resistance of said mouthpiece assembly comprising a unitary housing communicating directly with said mouth bit by means of a mouthpiece port to thereby minimize the pressure drop between the user and said housing;

an inhalation port for admitting pressurized breathable gas directly into said housing;

a first exit port for exhausting gas from said housing into an ambient environment;

a second exit port for exhausting gas from said housing into a flow channel; and



a valve means located in said housing operable to selectively direct the exhaust gas to said first exit port or said second exit port.

5,368,019

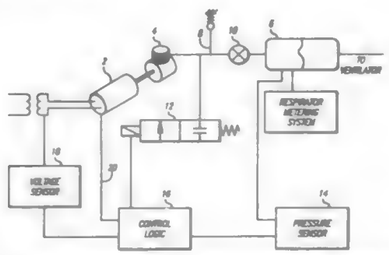
SYSTEM AND METHOD FOR OPERATING A RESPIRATOR COMPRESSOR SYSTEM UNDER LOW VOLTAGE CONDITIONS

Gary Latorraca, San Diego, Calif., assignor to Puritan-Bennett Corporation, Carlsbad, Calif.

Filed Dec. 16, 1992, Ser. No. 991,442

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.18 **6 Claims**



1. A method for operating a respirator compressor system at low voltage, said respirator compressor system including a rigid accumulator for temporarily storing gas within a desired pressure range for supplying the gas to a ventilator system, a gas compressor driven by an electric motor, said gas compressor having an inlet for gas to be compressed and an outlet for compressed gas in fluid communication with said accumulator, a solenoid unload valve connected in fluid communication with said outlet of said gas compressor for reducing the pressure at the outlet of the compressor, a pressure sensor for measuring gas pressure within said accumulator operative to generate an electrical signal indicating accumulator pressure, an AC voltage sensor for measuring voltage supplied to said electric drive motor of said gas compressor, and control logic means for controlling operation of said solenoid unload valve, comprising the steps of:

operating said gas compressor to charge said accumulator with pressurized gas;

measuring the gas pressure in the accumulator and generating an electrical gas pressure signal representing accumulator gas pressure;

measuring line voltage to the drive motor of the gas compressor, and generating an electrical line voltage signal representing said voltage;

providing a command signal to modulate the operation of the solenoid unload valve to lower the output pressure of the compressor responsive to said gas pressure signal and said line voltage signal, thus preventing compressor stall over a broader input voltage range than would otherwise be possible.

5,368,020

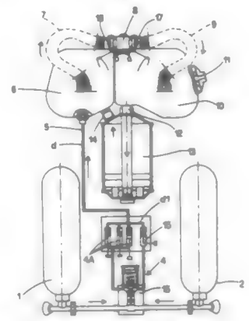
AUTOMATIC BREATHING APPARATUS FOR UNDERWATER IMMERSION AT MEDIUM AND GREAT DEPTH

Claudio Beux, c/o Gilberto Alessandrini 374/C Via della Magiana, I-00148 Roma RM, Italy

Filed Aug. 31, 1992, Ser. No. 937,033

Int. Cl.[5] A62B *9/02*

U.S. Cl. 128—204.29 **2 Claims**



1. An automatic breathing apparatus for underwater use by a diver over a series of depths, said apparatus comprising:

a plurality of different pressurized breathing gas sources,

regulator group means for supplying a final mixture of breathing gas having a percentage of breathing gas from each of said plurality of different pressurized breathing gas sources to form a volume of said final mixture of breathing gas in response to ambient pressure at every depth of a series of depths wherein said volume of said final mixture is increased with ambient pressure,

each of said plurality of different pressurized breathing gas sources being upstream in pressurized communication with said regulator group means,

a mouthpiece downstream of said regulator group means in pressurized communication with said regulator group to allow a diver to inhale a final mixture of breathing gas from said regulator group means and receive exhaled breathing gas from the diver,

wherein said regulator group comprises

first regulator means located in pressurized communication with a first pressurized breathing gas source of said plurality of different breathing gas sources for decreasing a flow of gas to said final mixture of breathing gas from said first pressurized breathing gas source as the depth of said series of depths increases,

second regulator means located in pressurized communication with a second pressurized breathing gas source of said plurality of different breathing gas sources for increasing a flow of gas to said final mixture of breathing gas from said second pressurized breathing gas source as the depth of said series of depths increases,

wherein said first pressurized breathing gas source contains compressed oxygen, and

said second pressurized breathing source contains compressed air.

5,368,021

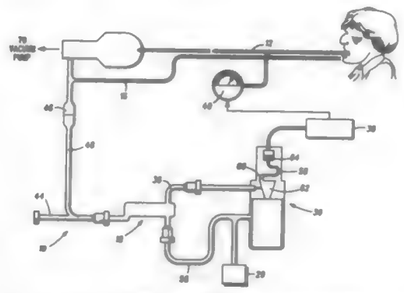
SYSTEM FOR HANDLING AND MONITORING RESPIRATORY WASTE STREAMS

Lane F. Beard, Waukesha; Daniel I. Disch, Beaver Dam, and John G. Storch, Wauwatosa, all of Wis., assignors to Criticare Systems, Inc., Waukesha, Wis.

Filed Apr. 9, 1992, Ser. No. 865,978

Int. Cl.[5] A62B *7/10, 19/00, 83/02;* **B01D** *53/22*

U.S. Cl. 128—205.12 **21 Claims**



21. A system for handling and disposing of respiratory waste expired by a patient from a patient's respiratory circuit, comprising:

means for providing an input and an output path for fluid flow to and from the patient's respiratory circuit;

means for filtering and handling the fluid flow;

means coupled to said means for filtering and handling for trapping at least one of liquids, solids and viscous fluids received from said filtering and handling means, said means for trapping including a separation chamber for holding the liquids, solids and viscous fluids and a water sensitive seal means for sealing said separation chamber when filled, and a baffle comprised of a non-straight line, angled pathway disposed between said separation chamber and said water sensitive seal means, said baffle preventing water agitation from said separation chamber from contacting said seal means and causing premature sealing by said seal means.

5,368,022

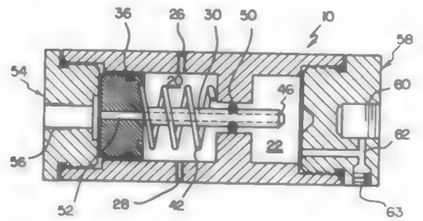
IN-LINE FIRST STAGE AIR PRESSURE REGULATOR FOR USE IN SCUBA DIVING

Paul M. Wagner, 6900 Curry Dr., The Colony, Tex. 75056

Filed Mar. 5, 1993, Ser. No. 26,837

Int. Cl.[5] A62B *9/02;* **F16K** *31/122*

U.S. Cl. 128—205.24 **1 Claim**



1. A new and improved air pressure regulator for use in scuba diving apparatus consisting of:

a hollow housing having a first end and a second opposed end;

said hollow housing having a through bore extending axially between said first end and said second end and having a transverse partition therein to divide the interior of said hollow housing into first and second chambers, respectively, adjacent said first and second ends, respectively, said through bore defining an axial opening through said partition, with at least one pressure balancing through said housing into communication with said first chamber;

said housing further including a slidably movable piston sealably positioned in said first chamber inovable in response to high pressure air supplied to said first chamber, a spring positioned in said first chamber between said piston and said partition to resiliently bias said piston toward said first end of said housing;

said piston further including a hollow metering tube having one end attached to said piston and having an opposed other free end sealably extending through said partition axial opening into said second chamber, said piston having an opening therein in communication with said one end of said hollow metering tube attached to said piston, and said other free end of said hollow metering tube being beveled to define a valve surface;

further including a first end cap sealingly attached to said first end of said housing proximal to said piston, said first end cap having an air supply feed port therein in communication with said opening in said piston and said first chamber, and

a second end cap sealingly attached to said second end of said housing, said second end cap having a high pressure air-supply feed port therein in communication with said second chamber and said beveled free end of said hollow metering tube,

said second end cap having an integrally formed inside surface confronting said beveled free end of said hollow metering tube and further having a recess therein axially aligned with said hollow metering tube, said recess being beveled so as to serve as a valve seat when said piston is caused to move against the resilient bias of said spring thereby bringing said beveled end of said hollow metering tube into contacting engagement with the surface of said beveled recess such that flow of air through said hollow metering tube from said second chamber to said first chamber is shut off.

5,368,023

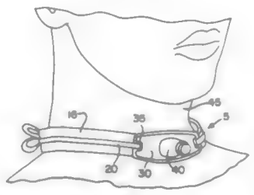
REUSABLE TRACHEOSTOMY COLLARS

Gloriann C. Wolf, 1300 McDowell Rd. Apt. 104, Naperville, Ill. 60563

Filed Apr. 2, 1993, Ser. No. 42,499

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.17 **9 Claims**



1. A tracheostomy collar for securely stabilizing a tracheostomy tube on a patient's neck to provide protection from undue discomfort, the tracheostomy tube having at least one flange with a corresponding aperture to which the collar is securable, the collar comprising:

a main body having a first end and a second end;

a first tying tape having a connecting end operably connected to said first end of said main body, and a flange end opposite said connecting end, said flange end being insertable through a corresponding one of the apertures in the at least one flange for operably connecting said first end of said main body to the tracheostomy tube, with said first end of said main body adjacent to the flange so that in use said main body is interposed between said first tying tape and a patient's neck; and

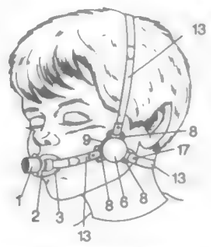
a second tying tape having a connecting end operably connected to said second end of said main body, and a flange end opposite said connecting end of said second tape, said flange end of said second tape being insertable through a corresponding one of the apertures in the at least one flange for operably connecting said second end of said main body to the tracheostomy tube, with said second end of said main body adjacent to the flange, so that said main body is interposed between said second tying tape and the patient's neck with said main body drawn around the patient's neck, said first and second tying tapes, after being brought across said main body, being securable to one another for holding the tracheostomy tube in place.

5,368,024

ENDO-TRACHEAL TUBE SECURING SYSTEM

Hedi E. Jones, 2243 Westwood Ct., Pittsburg, Calif. 94565

Filed Jul. 20, 1993, Ser. No. 93,878
Int. Cl.[5] A62B *9/06;* **A61M** *16/00*
U.S. Cl. 128—207.17 **5 Claims**



1. An endo-tracheal tube securing system comprising:
(a) an endo-tracheal tube holder in the shape of an open ring having on both sides slightly curved flanges defining an open space and forming attaching means, said holder being made of a rigid material in one integral piece;
(b) a disc assembly made of a rigid material comprising two discs and a central stem joining said discs, a wheel bearing three equidistant catches extending beyond the rim of the discs to provide attachment means, said wheel revolving around said stem, an adhesive layer on the outer surface of one of said discs the whole disc assembly being capable of attachment to a patient's face by means of said adhesive layer and a protective peel-off cover for said adhesive layer when not in use;
(c) four holding bands of varying length, two of which connect the holder flanges to the catches, the remaining two bands securing the remaining catches to each other over and around the patient's head.

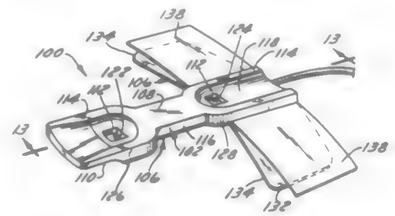
5,368,025

NON-INVASIVE OXIMETER PROBE

Robert L. Young, Waukesha, Wis.; Bert D. Heinzelman, Tenafly, N.J., and David A. Lovejoy, Jupiter, Fla., assignors to Sensor Devices, Inc., Waukesha, Wis.

Continuation-in-part of Ser. No. 748,700, Aug. 22, 1991, Pat. No. 5,217,012. This application Mar. 25, 1993, Ser. No. 36,825
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **14 Claims**

1. A noninvasive, electrooptical sensor probe for removable attachment to the skin of a patient to measure light extinction during transillumination of the blood-perfused tissue beneath the skin, comprising:
a unitary elastomeric polymeric chassis having a topside and an underside and having a first end connected to a second end by a flexible bridge, whereby the topside of said first and second ends are spaced and opposed when the bridge is folded in a U-shape, and wherein the topside of at least one of said first or second ends forms a concave finger location saddle;
a light source mounted on the first end of said chassis;
a photosensor mounted on the second end of said chassis positioned to detect light emitted by said light source when the bridge is folded in a U-shape;



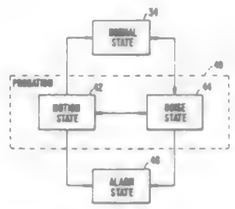
means for electrically connecting said light source and said photosensor to an external device; and
means for removably securing said chassis to the skin, wherein said means for removably securing said chassis comprises first and second wings extending from opposing lateral sides of one of first or second ends of said chassis.

5,368,026

OXIMETER WITH MOTION DETECTION FOR ALARM MODIFICATION

David B. Swedlow, Foster City, Calif., and Robert S. Potratz, Lenexa, Kans., assignors to Nellcor Incorporated, Pleasanton, Calif.

Filed Mar. 26, 1993, Ser. No. 37,953
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **19 Claims**



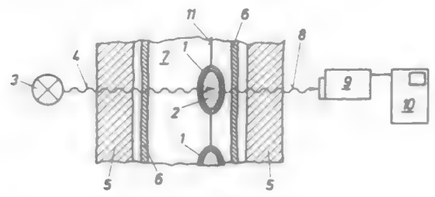
1. A pulse oximeter comprising:
means for emitting light;
sensor means for producing a detector signal corresponding to absorption of said light emitted by blood constituents;
means for determining oxygen saturation based on the detector signal;
control means, coupled to said sensor means, for qualifying pulses in the detector signal corresponding to arterial pulses;
alarm generating means for generating an alarm when no qualified pulses are detected in a predetermined time-out period;
motion artifact means for determining whether motion artifact is present during said time-out period; and
means, responsive to said motion artifact means, for modifying the timing of the generation of said alarm.

5,368,027

SENSOR ARRANGEMENT FOR DIRECT OR INDIRECT OPTICAL DETERMINATION OF PHYSICAL OR CHEMICAL PROPERTIES

Dietrich W. Lübbers, Dortmund, Germany, and Hellfried Karpf, Graz, Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

Filed Apr. 7, 1993, Ser. No. 43,802
Claims priority, application Austria, Apr. 23, 1992, 838/92
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 **15 Claims**



1. A sensor arrangement for direct or indirect optical determination of physical or chemical parameters, comprising
a radiation source supplying an excitation radiation for at least one indicator,
a detector means for detection of a response radiation emitted by said indicator, in which contact between said radiation source and said indicator, and between said indicator and said detector, is exclusively established via said excitation radiation and said response radiation, and
an indicator cell which comprises a capsule which is introduceable into body cavities, such as mouth, nose, stomach, intestine, blood vessels, bronchial tubes, urinary bladder, or which is implantable in the tissue, said capsule being permeable to a chemical substance or physical quantity to be measured, and at least one indicator in said capsule, wherein material used for said capsule is transparent to said excitation radiation and to said response radiation in the range of wavelengths between 600 and 1,300 nm, and wherein at least an outer layer of said capsule material is biocompatible.

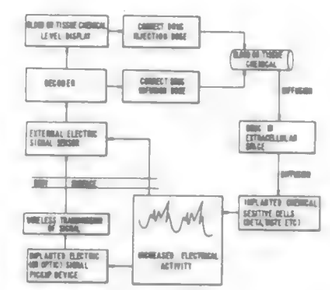
5,368,028

SYSTEM FOR MONITORING AND CONTROLLING BLOOD AND TISSUE CONSTITUENT LEVELS

Yoram Palti, Haifa, Israel, assignor to CB-Carmel Biotechnology Ltd., Haifa, Israel

Continuation of Ser. No. 832,248, Feb. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 816,303, Dec. 27, 1991, Pat. No. 5,190,041, which is a division of Ser. No. 392,828, Aug. 11, 1989, Pat. No. 5,101,814. This application Jun. 16, 1993, Ser. No. 77,893
The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.
Int. Cl.[5] A61B *5/00;* **A61M** *5/00*
U.S. Cl. 128—635 **26 Claims**

1. A system for monitoring the concentration of a chemical in a patient's blood, body or tissues, said system comprising:
implantable living animal cells that are sensitive to said chemical, said animal cells being capable of producing an electrical, optical, or chemical signal in response to the chemical concentration in the medium surrounding said cells in the patient; and



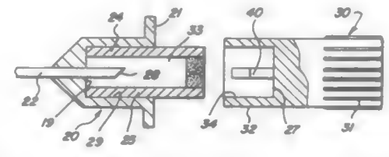
means for detecting said electrical, optical, or chemical signal.

5,368,029

INTEGRAL CATHETER AND BLOOD TESTER

David A. Holcombe, 6 Colorido, Rancho Santa Magarita, Calif. 92688, and Brent W. Poole, 861 Hedges Dr., Corona, Calif. 91720

Filed Apr. 16, 1992, Ser. No. 869,452
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—636 **17 Claims**



1. For use in testing a blood sample, an integral catheter and blood tester comprising:
a catheter having a hollow tube;
a needle unit having a needle unit housing partially removably received within said catheter, said needle unit housing defining an interior chamber and having a needle extending from said chamber terminating in a piercing end and removably received within said hollow tube;
a blood tester having a blood tester housing removably couple to said needle unit, and said blood tester further comprising a test strip supported by said blood tester housing and supporting a test patch having a test surface, said test patch extending into said interior chamber when said blood tester housing is coupled to said needle unit;
valve means supported by said needle unit for receiving said test strip and for wiping blood from said test surface when said blood tester housing and said needle unit are separated; and
shield means, supported by said blood tester housing, for shielding and partially surrounding said test strip and test patch.

5,368,030

NON-INVASIVE MULTI-MODALITY RADIOGRAPHIC SURFACE MARKERS

Simion J. Zinreich; Eva S. Zinreich, both of Owings Mills, Md., and David C. Howson, Denver, Colo., assignors to Izi Corporation, Owings Mills, Md.

Filed Sep. 9, 1992, Ser. No. 942,715
Int. Cl.[5] A61B *6/00, 5/055*
U.S. Cl. 128—653.1 **3 Claims**

2. A radiographic surface marker comprising
a gel material visible to multiple radiographic imaging meth-

ods, said gel material comprising multiple layers of said gel material laminated together forming a first surface and a second surface,

said layers of said gel material having an aperture therethrough,

a first membrane on said first surface of said gel material,



a second membrane on said second surface of said gel material and,

a plate on said second membrane, said plate having a perforation for alignment with said aperture and having slots for attaching said marker to a tape for removably attaching said marker to a patient.

5,368,031

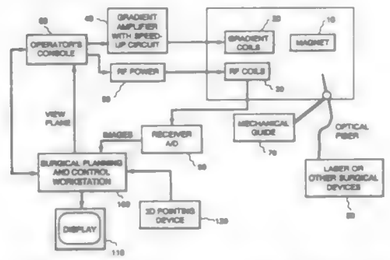
MAGNETIC RESONANCE SURGERY USING HEAT WAVES PRODUCED WITH A LASER FIBER

Harvey E. Cline, and Thomas R. Anthony, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 751,259, Aug. 29, 1993, Pat. No. 5,291,890. This application Sep. 24, 1993, Ser. No. 125,520

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **3 Claims**



1. A magnetic resonance (MR) surgery system that comprises:

a) an invasive device having a tip adapted for being inserted into a patient, the invasive device capable of transmitting optical energy at an application point proximate to the tip;

b) an optical source for applying heat waves by pulsing optical energy through the tip of the invasive device at a frequency f and amplitude Q at the application point to create a heated region having a temperature distribution T(r,t) around the application point described by:

$$T(r,t)=Q/\rho c\ Exp[-kr]cos(2\pi ft-kr)/r \qquad [4]$$

where Q is the amplitude of heat provided;

r is the radius from the center of the heated region;

t is time;

ρ is density of the heated region;

c is specific heat of the heated region; and

k = Sqrt (ω/2D), where D is the thermal diffusity of the tissue in the heated region;

c) MR compatible positioning means, connected to the invasive device, for positioning the tip of the invasive device such that the application point is positioned to cause a selected tissue within the patient to have the desired temperature distribution T(r,t);

d) an MR imaging means adapted for creating fast scan MR images of the temperature distribution T(r,t) around the application point during surgery using a temperature sensitive pulse sequence; and

e) display means, coupled to the MR imaging means, for interactively displaying the temperature sensitive images to an operator to allow the operator to control the temperature distribution T(r,t).

5,368,032

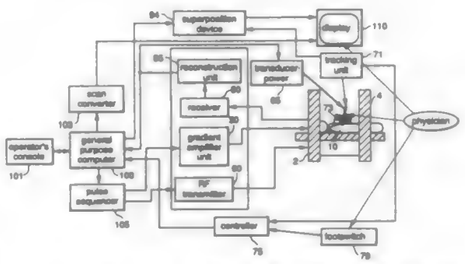
MANUALLY POSITIONED FOCUSSED ENERGY SYSTEM GUIDED BY MEDICAL IMAGING

Harvey E. Cline, Schenectady, and Ronald D. Watkins, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 9, 1993, Ser. No. 149,485

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.2 **4 Claims**



1. A manually positioned focussed energy system for selectively heating a region of a patient, comprising:

a) an open magnet magnetic resonance (MR) imaging system for providing an image signal from internal structures of said patient;

b) an energy transducer for focussing energy at a focal point;

c) tracking means for determining the position and orientation of the energy transducer;

d) display means for displaying an image;

e) general purpose computer coupled to the tracking means, the MR imaging system, and the display means, receiving position and orientation information of the energy transducer from the tracking means, directing the MR imaging system to acquire image signals of internal structures of the patient near the energy transducer, and providing the image signals to the display means to produce an image of the internal structures of the patient;

f) a superposition device coupled to the tracking means and display means for receiving the position and orientation of the energy transducer and superimposing a symbol indicating the position and orientation of the focal point of the energy transducer on the image of the display means.

5,368,033

MAGNETIC RESONANCE ANGIOGRAPHY METHOD AND APPARATUS EMPLOYING AN INTEGRATION PROJECTION

Mehran Moshfeghi, White Plains, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 20, 1993, Ser. No. 49,907

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653.4 **20 Claims**

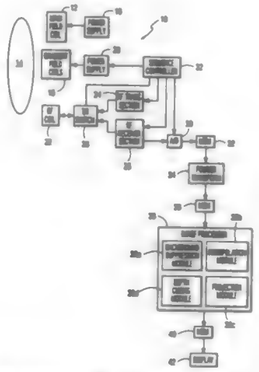
1. An angiography method for determining a two-dimensional array of pixel intensities, said method comprising:

inducing radiation to exit from voxels of a region of a body under examination, said radiation having a characteristic influenced by any flowing blood within said voxels, said flowing blood being in cardiovascular structure including blood vessels, said voxels having center to center spacings in respective three mutually orthogonal directions;

receiving and sampling the radiation exiting from the voxels of said region to form a collection of signal samples;

converting said collection of signal samples into an initial three-dimensional array of voxel intensities, each dimension of said array corresponding to a different one of said three mutually orthogonal directions;

modifying the voxel intensities of a pre-depth-cued three-dimensional array of voxel intensities derived from said initial array in accordance with a depth cueing function applied in a given direction to form a three-dimensional depth-cued array of voxel intensities;



summing the intensities of voxels intercepted by or interpolated along respective parallel rays projected in said given direction through said depth-cued array of computed voxel intensities to form respective intensity sums for the respective rays, each of said rays being associated with a different one of the pixel intensities of the two-dimensional array to be determined; and

determining the values of the respective pixel intensities of said two-dimensional array as a function of the respective sums for the rays associated with the respective pixel intensities.

5,368,034

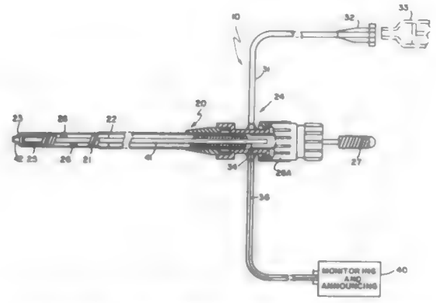
METHOD AND APPARATUS FOR THROMBOLYTIC THERAPY

Jeffrey M. Isner, Weston, Mass., assignor to Boston Scientific Corporation, Watertown, Mass.

Filed Sep. 4, 1992, Ser. No. 939,896

Int. Cl.[5] A61B *5/0215*

U.S. Cl. 128—660.03 **25 Claims**



1. A system for reperfusing an occluded vessel comprising:

A. perfusion tube means having a proximal end and having a distal end for location in the vessel for enabling the introduction of a reperfusion agent to the occluded vessel,

B. flow monitoring means including sensor means mounted to said perfusion tube means at said distal end thereof for generating a flow rate signal in response to blood flow through the vessel parallel to and past said perfusion tube means,

C. comparing means for comparing the value of the flow rate signal with a set point signal representing a predetermined flow rate, and

D. announcing means connected to said comparing means for announcing a flow rate signal that exceeds the predetermined flow rate thereby to announce the onset of blood flow through the vessel.

5,368,035

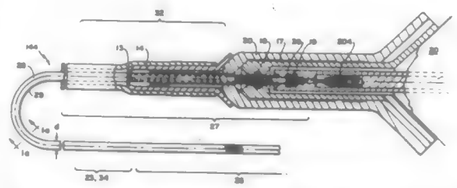
ULTRASOUND IMAGING GUIDEWIRE

Mark A. Hamm, Malden, and Robert J. Crowley, Wayland, both of Mass., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation of Ser. No. 839,178, Feb. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 570,319, Aug. 21, 1990, abandoned, which is a continuation-in-part of Ser. No. 171,039, Mar. 21, 1988, Pat. No. 4,951,677. This application Sep. 17, 1992, Ser. No. 946,809

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **20 Claims**



1. A medical guidewire having a substantially uniform small diameter throughout its length and incorporating means for lateral acoustic scanning,

said guidewire comprising a proximal connector, an extended main guidewire body portion, an axially elongated transition section, and a floppy tip portion,

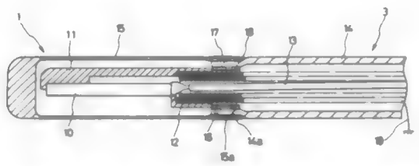
said main body portion comprising a stationary outer wall including means capable of transmitting torque and, within said outer wall, an elongated rotatable shaft with a distally positioned acoustic imaging transducer mounted thereon,

said proximal connector being constructed to be attached to and detached from a drive device to enable a therapeutic device to be introduced over the guidewire, said connector having a stationary portion secured to said outer wall and an inner drive portion secured to said shaft,

said floppy tip portion comprising an outer wire coil and a core rod which tapers from a relatively large diameter, at a proximal joint with said outer wire coil, to a smaller diameter at a floppy distal tip,

said transition section joining said main body portion to said floppy tip section in a manner retaining substantially the same lateral stiffness as said main body portion and sufficient torquability to enable torquing of said floppy tip by torque applied to he proximal end of said guidewire.

5,368,036
ULTRASOUND PROBE
Toshizumi Tanaka, and Hiromu Itoi, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan
Filed Oct. 19, 1993, Ser. No. 137,756
Claims priority, application Japan, Oct. 20, 1992, 4-306235
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—662.06 **12 Claims**



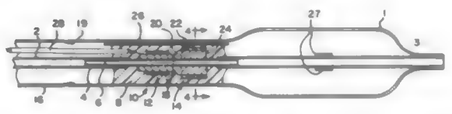
1. An ultrasound probe of the type including a rigid tip member supporting thereon an ultrasound transducer element, a flexible rotation transmission shaft connected to said tip member to permit remote-control rotational drive of said ultrasound transducer element on said tip member, a pliable sheathing tube formed of a slippery soft material and fitted around said flexible shaft, an end cap formed of a material with suitable acoustic characteristics for transmission and reception of ultrasound signals therethrough and housing therein said ultrasound transducer element together with said tip member, said end cap having a base end portion thereof adhesively connected to said pliable sheathing tube in directly overlapped relation with a fore end portion of the pliable sheathing tube through a joint structure comprising:

a metal ring fixedly fitted on an inner side of overlapped end portions of said pliable sheathing tube and end cap;

a spooled thread portion wrapped on and around said overlapped end portions of said pliable sheathing tube and end cap to fasten said overlapped end portions to each other and to said metal ring; and

an adhesive applied on an outer side of said overlapped end portion to anchor said spooled thread portion in position on a circumference of said overlapped end portions.

5,368,037
ULTRASOUND CATHETER
Michael J. Eberle, Fair Oaks; Gary P. Rizzuti, Shingle Springs, and Horst F. Kiepen, Georgetown, all of Calif., assignors to Endosonics Corporation, Rancho Cordova, Calif.
Filed Feb. 1, 1993, Ser. No. 12,251
Int. Cl.[5] A61B *8/12;* **H04R** *17/00*
U.S. Cl. 128—662.06 **17 Claims**



1. An ultrasound catheter probe for insertion into a vasculature and emitting ultrasonic acoustic waves and providing transduced electrical signals arising from ultrasonic echoes of the ultrasonic acoustic waves, said ultrasound catheter probe comprising:

a multi-sectioned body having distinct sections for independently supporting a transducer array and integrated electronic circuitry, the multi-sectioned body comprising:

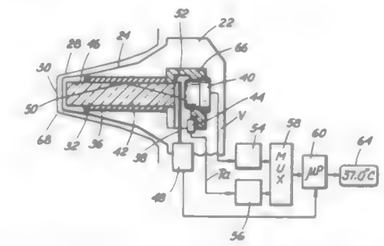
a first section, comprising a first material, serving as a transducer backing and having a relatively high acoustic energy absorption in comparison to a second section, comprising a second material, for supporting integrated electronic circuitry;

a transducer assembly, mounted upon the first section of the multi-sectioned body, including the transducer array for transmitting the ultrasonic acoustic waves into the vasculature and generating first electrical signals in accordance with the ultrasonic echoes of the ultrasonic acoustic waves;

integrated electronic signal conversion circuitry, mounted upon the second section of the multi-sectioned body, for receiving the first electrical signals from the transducer assembly, converting the first electrical signals to second electrical signals, and transmitting the second electrical signals to an environment external of the vasculature via a cable including at least one signal channel for transmitting the second electrical signals; and

a plurality of electrical transmission paths between the transducer array and the integrated electronic signal conversion circuitry for communicating the first electrical signals from the transducer array to the integrated electronic signal conversion circuitry.

5,368,038
OPTICAL SYSTEM FOR AN INFRARED THERMOMETER
Jacob Fraden, San Diego, Calif., assignor to Thermoscan Inc., San Diego, Calif.
Filed Mar. 8, 1993, Ser. No. 27,979
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—664 **18 Claims**



1. In an optical infrared ear insertion thermometer for collection of infrared radiation from a tympanic membrane and surrounding tissue within an ear, comprising a housing, an infrared sensor mounted on said housing, and waveguide means carried by said housing, in optical alignment with said sensor, for directing infrared radiation received by said thermometer from an object, the temperature of which is to be measured, in a path toward said sensor for reception by said sensor, the improvement comprising:

said waveguide means comprising a refractive waveguide having a core medium of which the refractive index is consistently higher than the refractive index of the immediate surrounding of the waveguide, whereby said waveguide is capable of transmitting infrared radiation along the length of the waveguide by total internal reflection within said medium,

said refractive waveguide being a rod with a single core.

5,368,039
METHOD AND APPARATUS FOR DETERMINING BLOOD PRESSURE
John A. Moses, 80 Laslo Ter., Fairfield, Conn. 06430
Filed Jul. 26, 1993, Ser. No. 97,283
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—681 **7 Claims**

1. A method of measuring blood pressure, comprising the steps of:

(a) providing at least one transducer in contact with a subject and a pressurizable cuff for urging the transducer means against the subject;

(b) pressurizing the cuff to a pressure that exceeds a typical

systolic blood pressure, thereby substantially completely occluding an artery of the subject;

while depressurizing the cuff, performing the steps of,

(c) monitoring an output of the transducer to detect a first oscillation, the first oscillation indicating a presence of arterial blood flow in response to a heart beat;

(d) recording an amplitude of the first oscillation;

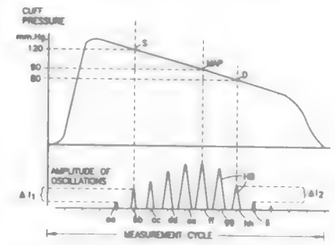
(e) monitoring the output of the transducer to detect a further oscillation;

(f) recording an amplitude of the further oscillation;

(g) determining if the amplitude of the further oscillation is greater than the amplitude of a preceding oscillation by a predetermined first increment of amplitude;

if the determined amplitude of the further oscillation is not greater than the amplitude of the preceding oscillation by the predetermined first increment of amplitude, then repeating steps (e), (f) and (g), else

(h) recording a current pressure within the cuff as a systolic blood pressure;



(i) continuing to monitor the output of the transducer means to detect an oscillation having a maximum amplitude;

(j) recording as a mean arterial blood pressure a pressure within the cuff at the time of the detection of the oscillation having the maximum amplitude;

(k) monitoring the output of the transducer to detect another oscillation;

(l) recording an amplitude of said another oscillation;

(m) determining if the amplitude of said another oscillation is less than the amplitude of a preceding oscillation by a predetermined second increment of amplitude;

if the determined amplitude of said another oscillation is not less than the amplitude of the preceding oscillation by the predetermined second increment of amplitude, then repeating steps (k), (l) and (m), else

(o) recording a pressure within the cuff at the time of the preceding oscillation as a diastolic blood pressure.

5,368,040
APPARATUS AND METHOD FOR DETERMINING A PLURALITY OF HEMODYNAMIC VARIABLES FROM A SINGLE, CHRONICLALY IMPLANTED ABSOLUTE PRESSURE SENSOR
James K. Carney, Eden Prairie, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Aug. 2, 1993, Ser. No. 100,881
Int. Cl.[5] A61B *5/0205*
U.S. Cl. 128—700 **6 Claims**

1. A method of pressure monitoring employing an absolute pressure sensor, which provides an output signal having an amplitude which varies according to pressure, comprising:

implanting said absolute pressure sensor in said right ventricle of said patient;

deriving a first derivative of said output signal;

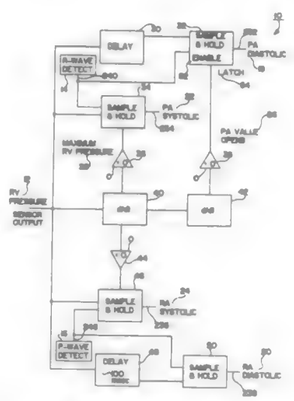
deriving a second derivative of said output signal;

providing said output signal to first, second and third holding means for storing signal amplitudes;

enabling said first holding means and said second holding means in response to occurrence of an R-wave;

thereafter storing a first output signal amplitude in said first holding means in response to said first derivative being less than zero, wherein said first stored output signal amplitude is equal to said patient's pulmonary artery systolic pressure and, storing a second output signal amplitude in said second holding means in response to said second derivative being less than zero, wherein said second stored output value is equal to said patient's pulmonary artery diastolic pressure;

enabling said third holding means in response to occurrence of a P-wave:

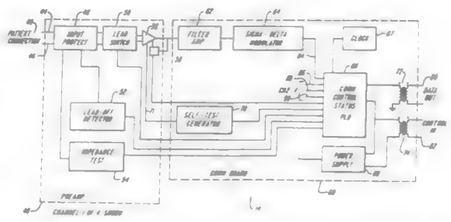


thereafter storing a third output signal amplitude in said third holding means in response to said first derivative being less than zero, wherein said third stored output signal amplitude is equal to said patient's right atrial systolic pressure;

delaying said output signal; and

storing an amplitude of said delayed output signal in a fourth holding means for storing signal amplitudes in response to occurrence of said P-wave, wherein said stored amplitude of said delayed output signal is equal to said patient's right atrial diastolic pressure.

5,368,041
MONITOR AND METHOD FOR ACQUIRING AND PROCESSING ELECTRICAL SIGNALS RELATING TO BODILY FUNCTIONS
John R. Shambroom, Arlington, Mass., assignor to Aspect Medical Systems, Inc., Framington, Mass.
Filed Oct. 15, 1992, Ser. No. 961,525
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—731 **6 Claims**



1. A monitor for receiving electrical signals from a living body and processing such signals to obtain information relating to a bodily function or organ, said monitor comprising:

means for acquiring the electrical signals through one or more electrodes connected to the body, first filtering means for filtering said electrical signals to provide selec-

tively unfiltered signals, said selectively unfiltered signals being unfiltered in a preselected bandwidth greater than the bandwidth into which the electrical signals are expected to fall, said means for acquiring being located within a first housing and including a means for receiving the selectively unfiltered electrical signals in analog form and converting the selectively unfiltered signals into an unfiltered stream of digital signals;

second filtering means for filtering said stream of digital signals to isolate signals of interest from said stream of digital signals, said second filtering means being located in a second housing separate from a housing in which said means for acquiring is located;

means for transmitting said unfiltered stream from said means for acquiring to said second filtering means.

5,368,042

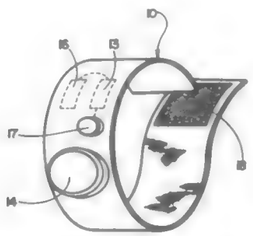
BIOFEEDBACK DEVICE FOR MONITORING MUSCULAR MOVEMENT

John L. O'Neal, 1002 Nightingale Blvd., Stillwater, Minn. 55082, and Peter J. Vogelgesang, 3033 N. Albert St., Roseville, Minn. 55113

Continuation-in-part of Ser. No. 364,621, Jun. 9, 1989, abandoned. This application Sep. 19, 1991, Ser. No. 762,918

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—733 **18 Claims**



1. A biofeedback device for monitoring muscular activity during a player's swing in an impact sport, said device including

a band adapted for adjustment and securement around a muscle of a said player, said band carrying a pair of spaced electrodes adapted to contact the muscle for receipt of electrical voltage from the muscle surface, said electrodes being in continuity with differential amplifier means and means for measuring amplified differential voltage, and means for reporting the amplified differential voltage to indicate amounts of muscle tension over a continuum of a player's swing.

5,368,043

MEASURING SYSTEM FOR VITAL MUSCLE ACTIVITY

Yujiro Sunouchi, 217, Fukuma-machi, Munakata-gun, Fukuoka-ken, and Hiroshi Sakamoto, 388-3, Tsuboi 6-chome, Kumamoto-shi, Kumamoto-ken, both of Japan

Continuation-in-part of Ser. No. 55,921, Apr. 29, 1993, which is a continuation of Ser. No. 795,428, Nov. 20, 1991, abandoned. This application Jun. 2, 1993, Ser. No. 71,172

Claims priority, application Japan, Jun. 3, 1992, 4-166721; Aug. 7, 1992, 4-231481; Apr. 2, 1993, 4-098364

Int. Cl.[5] A61B *5/0488*

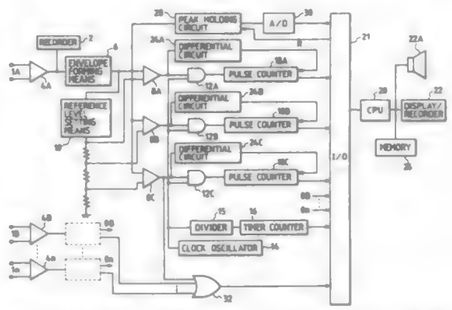
U.S. Cl. 128—733 **25 Claims**

1. A system for measuring muscle activity of a living organism comprising:

a muscle current detection means suitable for being brought into electrical contact with a subject living organism adjacent a selected muscle thereof for detecting muscle current to provide a corresponding output signal waveform having therein at least one oscillatory episode with oscillation peaks therein of various amplitudes;

an envelope waveform forming means for forming envelope waveforms representing muscle activity with each being formed for a corresponding one of those oscillatory episodes occurring in the output waveform of the muscle current detection means and based on said peak amplitudes therein;

a timer means for measuring the duration of time for which the values of each envelope waveform formed by the



envelope waveforming means are beyond a selected reference level to indicate those durations that said muscle activity was beyond a corresponding muscle activity level;

a memory means for storing the time durations measured by the timer means and user instructions; and

a display means for providing an indication of durations of the measured for said envelope waveforms and selected user instructions based on such durations of time measured.

5,368,044

VIBRATIONAL ANALYSIS OF BONES

Christopher M. J. Cain, Dulwich, and Anthony P. Pohl, Marino, both of Australia, assignors to The Adelaide Bone and Joint Research Foundation, Inc., Adelaide, Australia

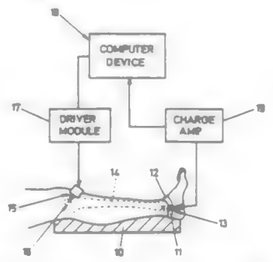
PCT No. PCT/AU90/00506, § 371 Date Apr. 24, 1992, § 102(e) Date Apr. 24, 1992, PCT Pub. No. WO91/06245, PCT Pub. Date May 16, 1991

PCT Filed Oct. 24, 1990, Ser. No. 849,417

Claims priority, application Australia, Oct. 24, 1989, PJ7036

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—739 **21 Claims**



1. A method for applying in-vivo a non-invasive vibrational motion to a selected fractured or diseased body element for determining the stiffness state of the selected body element, said method comprising the steps of:

a) placing a vibration transducer means in firm mechanical contact with the selected element at an end region thereof for detecting vibratory energy,

b) contacting a vibratory device against the selected element at a first location remote from said end region,

c) driving the said vibratory device to vibrate over a frequency range between 20 to 2,000 Hertz at a predetermined rate of frequency change,

d) using a computer device to store a first mode of vibratory response from the vibration transducer means,

e) contacting the vibratory device against the selected element at a second location also remote from said end region,

f) repeating steps c) and d) so as to store a second mode of vibratory response from said vibration transducer means, and

g) producing a visual display for determining the difference between the peak frequency of each response mode and that of a corresponding reference mode representative of the stiffness of a normal body element to provide an indication of the stiffness state of the selected body element.

5,368,045

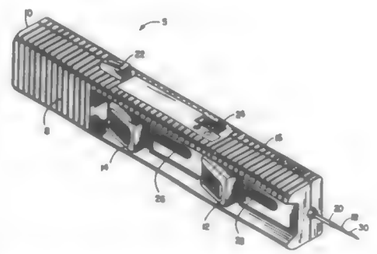
BIOPSY NEEDLE INSTRUMENT

Thomas P. Clement; James S. Bates, both of Bloomington, and Darrell W. White, Spencer, all of Ind., assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 381,780, Jul. 18, 1989, Pat. No. 4,958,625. This application Sep. 14, 1990, Ser. No. 583,080

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—754 **23 Claims**



1. A biopsy needle instrument comprising:

a housing,

extending from said housing, an axially elongated stylet having a distal end and a proximal end and defining a specimen-defining formation adjacent said distal end and a cannula coaxially disposed about said stylet, said cannula having a distal end and a proximal end,

said stylet mounted for axial movement relative to said housing and relative to said cannula between a first, retracted position and a second, extended position,

said cannula mounted for axial movement relative to said housing and relative to said stylet between a first, retracted position and a second, extended position,

means for biasing said stylet distally toward said second, extended position,

means for biasing said cannula distally toward said second, extended position,

first finger-displaceable means for retracting said stylet from said second, extended position to said first, retracted position,

separate and discrete second finger-displaceable means for retracting said cannula from said second extended position to said first retracted position,

said instrument constructed to enable release of said stylet to allow said stylet to move from said first, retracted position to said second, extended position and thereafter release of said cannula to allow said cannula to move from said first, retracted position to said second, extended position,

said first and second finger-displaceable means being located on a side of said housing in position to be directly, selectively engaged and displaced by a finger of a single hand while said hand holds the instrument.

5,368,046

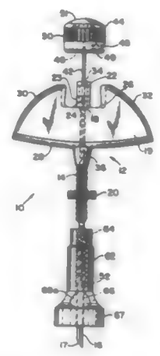
BONE MARROW NEEDLE ASSEMBLY

Frank A. Scarfone, Boca Raton; David Turkel, and Alan L. Weisenborn, both of Miami, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 942,427, Sep. 9, 1992. This application Mar. 24, 1993, Ser. No. 36,474

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—754 **18 Claims**



1. A bone marrow needle assembly, comprising:

a) a cannula housing having a proximal end, a distal end, and forming a central throughbore, said distal end having an outer surface having a threaded portion, said proximal end of said cannula housing being formed as a handle having a proximal outer surface which is curved in a convex manner along an arc having a first radius and a distal outer surface which is bowed in a convex manner along an arc having a second radius, said first radius being smaller than said second radius;

b) a locking fluid coupling means for mating with one of a fluid injection means and a fluid aspiration means, said locking fluid coupling means being in fluid communication with said central throughbore, said locking fluid coupling means located at said proximal end of said cannula housing;

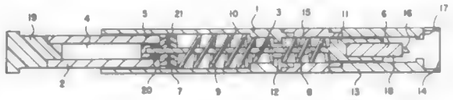
c) a locking nut threadably coupled to said threaded portion;

d) a depth stop means having an interior threaded bore threadably coupled to said threaded portion; and

e) a cannula mounted in said throughbore of said cannula housing, wherein

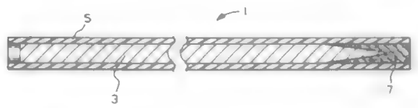
said locking nut is located proximal of said depth stop means on said threaded portion such that rotation of said depth stop about said threaded portion effects a longitudinal movement of said depth stop relative to said housing and rotation of said locking nut effects a longitudinal movement of said locking nut relative to said depth stop means whereby said depth stop means is substantially locked in position by said locking nut when said locking nut is moved against said depth stop means.

5,368,047
SUCTION-TYPE BLOOD SAMPLER
Yoshihiko Suzuki, Honmachi, and Kazunori Murakami, Otsu, both of Japan, assignors to Nissho Corporation, Osaka, Japan
Filed Mar. 22, 1994, Ser. No. 215,706
Claims priority, application Japan, Apr. 28, 1993, 5-125013
Int. Cl.[5] A61B *17/34*
U.S. Cl. 128—765 **15 Claims**



1. A suction-type blood sampler comprising:
a housing;
a lancet unit positioned in a front region of the housing;
a rod connected to and extending in a direction away from the lancet unit;
a plunger provided in a rear region of the housing and having a gasket attached to a forward end of the plunger;
said rod connected to said plunger;
said housing having an open frontal end and an open rearward end;
said lancet unit including a lancet body fixed to a lancet retainer, said lancet body having a needle extending forwardly therefrom;
said lancet retainer being in sliding contact with an inner peripheral surface of said housing;
a first spring and a second spring provided in the housing between the lancet unit and the plunger and a third spring within said plunger, wherein said first spring urges said lancet unit forward to move said needle outwardly of said housing, and said second spring urges said lancet unit to be retracted behind said frontal end, and wherein said third spring controls reduction of air pressure in said housing, in response to movement of said plunger.

5,368,048
METHOD OF MAKING RADIO-OPAQUE TIPPED, SLEEVED GUIDEWIRE AND PRODUCT
George P. Stoy, 78 Princeton Ave., Rocky Hill, N.J. 08553, and Kenneth H. Blashka, 35 Princeton Rd., Elizabeth, N.J. 07208
Filed Apr. 19, 1993, Ser. No. 48,240
The portion of the term of this patent subsequent to Jun. 8, 2010, has been disclaimed.
Int. Cl.[5] A61M *25/00;* **B32B** *31/00*
U.S. Cl. 128—772 **29 Claims**



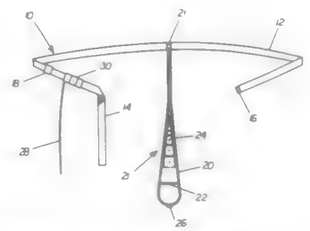
1. A method of making a radio-opaque tipped, sleeved guidewire, which comprises:
(a) providing a bendable solid core piece of a predetermined length, having a control end and a distal end and having a predetermined core diameter, and providing a shrinkable polymeric sleeve formed of a first polymer composition said first polymer composition being a polyacrylonitrile-containing composition and having a first diameter at least as large as said core diameter and capable of having a second, smaller diameter from shrinkage of said sleeve, wherein said second diameter is less than said core diameter;
(b) placing said polymeric sleeve over said core piece while said polymeric sleeve has its first diameter, and placing it so as to leave one end of said polymeric sleeve covering at least a portion of the distal end of said core piece and so as to leave a portion of said polymeric sleeve overhanging said distal end of said core piece;
(c) providing a mixture of a radio-opaque metal powder and a second polymer composition, said second polymer composition being capable of forming a physical bond with said first polymeric composition of said polymeric sleeve;
(d) inserting said mixture into the overhanging polymeric sleeve at the distal end of said core piece to establish a separate area of said mixture of radio-opaque metal powder and said second polymer composition; and,
(e) shrinking said polymeric sleeve to its second, smaller diameter and forming said physical bond between said first polymer composition and said second polymer composition while maintaining said separate area of said mixture of radio-opaque metal powder and said second polymer composition.

5,368,049
SUPERELASTIC FORMABLE GUIDEWIRE WITH MALLEABLE CLADDING
L. Venkata Raman, Framingham, Mass., and Stephen M. Salmon, Sunnyvale, Calif., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Continuation of Ser. No. 703,419, May 15, 1991, abandoned. This application Oct. 15, 1993, Ser. No. 138,554
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **21 Claims**



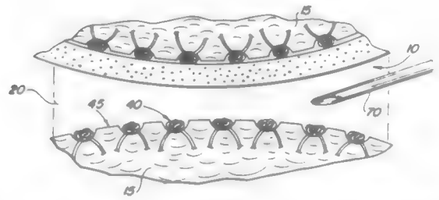
14. A guidewire for a catheter comprising:
a. a shaft of a superelastic alloy, the shaft defining a body portion, a distal tip portion and a proximal end; and
b. a continuous layer of malleable material on the surface of the shaft and extending on the distal tip portion at least about 2.2 centimeters and terminating distal to the proximal end, said malleable material being of a thickness sufficient to impart manual formability to the distal tip in the region of the malleable material.

5,368,050
RAPE PREVENTION DEVICE
John P. Donelan, 40 Highland Dr., Centerville, Mass. 02632
Filed Aug. 31, 1993, Ser. No. 114,484
Int. Cl.[5] A41B *9/00, 9/12;* **A61F** *13/00*
U.S. Cl. 128—884 **11 Claims**



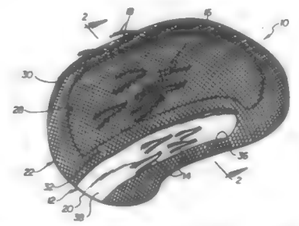
1. A rape prevention device comprising:
a belt adapted to encircle the waist of a wearer, said belt having a front region and a rear region; and
a shield portion extending through the legs and crotch of the wearer from a rear end coupled to said rear region of said belt to a front end coupled to said front region of said belt, said shield portion including a plurality of shield segments which are pivotably coupled to adjacent segments and adapted to cover the genitalia of the wearer,
said shield portion comprises a compliant loop line coupled to the rear portion of said belt; and
said shield segments comprise support members which suspend said segments from opposite sides of said loop line.

5,368,051
METHOD OF REGENERATING ARTICULAR CARTILAGE
Allan R. Dunn, and Susan L. Dunn, both of 1790 Sans Souci Blvd., North Miami, Fla. 33181
Filed Jun. 30, 1993, Ser. No. 85,554
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **17 Claims**



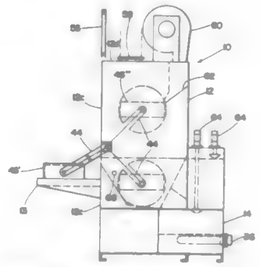
1. A method of regenerating articular cartilage comprising the steps of:
a) surgically exposing a joint having a cartilage defect,
b) exposing a plurality of vascular units at a sinusoidal layer of bone along the joint surface,
c) removing the cartilage layer at the joint so as to restore a smooth contour
d) further surgically contouring the joint surface to restore the natural contour of the joint,
e) surgically lavaging the joint to remove all cartilage and bone particles and debris,
f) surgically closing said joint,
g) dissolving a quantity of purified growth hormone in a buffer solution, and
h) injecting a single dosage of said growth hormone and said buffer solution into said joint so as to initiate regeneration along the joint surface.

5,368,052
HAIRPIECE
Paul V. Finamore, Chicago, Ill., assignor to Hairline Creations, Inc., Chicago, Ill.
Filed Aug. 2, 1993, Ser. No. 101,370
Int. Cl.[5] A41G *5/00*
U.S. Cl. 132—54 **3 Claims**



1. A hairpiece comprising a one-piece, flexible, molded, plastic foundation member conforming to the shape of an area of a head to be covered, said foundation member having a large central opening therethrough bounded by a marginal portion of the member, a sheet of net material having spaced-apart cross-elements defining a multitude of polygonal openings, said sheet being secured to said foundation member and traversing said central opening with many of said polygonal openings registering with said central opening being unobstructed to permit ventilation, said sheet being disposed for leaving an elongated front-to-back extending portion of said foundation member uncovered, a first group of hairs having individual segments extending from said elongated extending portion joined by bight segments extending beneath said foundation member for providing for a natural looking part, a second group of hairs having double knots tied around certain of said cross-elements traversing said central opening and strands extending from said double knots, said double knots having first and second portions tied tightly against each other and loop portions loosely disposed around a single segment of an associated cross-element for enabling the knot and the strands extending therefrom freely to swivel back and forth, and a third group of hairs having single knots tied to said marginal portion of said foundation member.

5,368,053
PARTS CLEANING MACHINE AND METHOD OF CLEANING PARTS
Karle M. Wilson, W. Chester, Ohio, assignor to Ransohoff Company, Hamilton, Ohio
Filed Jul. 29, 1991, Ser. No. 737,423
Int. Cl.[5] B08B *3/04*
U.S. Cl. 134—95.2 **6 Claims**



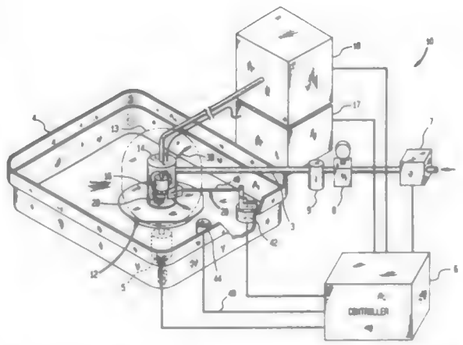
1. A parts cleaning machine comprising:
a reservoir;
a first tank discrete from said reservoir for containing wash solution;
a second tank discrete from said reservoir and said first tank for containing rinse solution;
means for transferring wash solution and rinse solution from said first and second tanks to said reservoir;
a basket for holding parts, said basket being movable between a loading position outside said reservoir, a cleaning position inside said reservoir, and a draining position inside said reservoir;
a first means mounted to said reservoir for moving said basket between said loading, cleaning, and draining positions;
a second means for rotating said basket when it is in said cleaning and draining positions;
and a plurality of spray means mounted within said reservoir and located at a certain level therein for directing wash solution against said basket when it is in said cleaning position and rotating until the reservoir is filled to said level such that the spray means becomes submerged and then for producing severe agitation in said reservoir as said basket continues to rotate to dislodge surface contaminants from the parts and to allow the wash solution to enter and remove debris from internal recesses in said parts.

5,368,054

ULTRASONIC JET SEMICONDUCTOR WAFER CLEANING APPARATUS

Ronald G. Koretsky, Poughkeepsie; Donald R. Vigliotti, deceased, late of Yorktown Heights by Catherine H. Vigliotti, executrix , and Robert J. von Gutfeld, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,872
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—153 **28 Claims**



16. A semiconductor wafer cleaning apparatus for removing debris from a surface of a semiconductor wafer as the wafer is rotated about a prescribed axis in a cleaning plane, said apparatus comprising:

a) a housing having a principal axis, an inlet port for receiving a cleaning liquid from a supply, and a plurality of outlet ports concentric about a corresponding plurality of outlet port axes, each of the outlet port axes being parallel to the principal axis, the plurality of outlet ports for releasing the cleaning liquid therethrough;

b) a plurality of means, located within said housing along respective axes corresponding to the plurality of outlet port axes, for producing ultrasonic waves of acoustic energy focused to a respective focal point wherein acoustic energy density is maximum at the respective focal point, the focused ultrasonic waves of acoustic energy of each focused ultrasonic wave producing means being concentric with and incident a respective outlet port to form a respective jet stream of cleaning liquid released through the respective outlet port, the respective jet stream of cleaning liquid characterized by longitudinal forces and non-cavitation of the cleaning liquid;

c) means for positioning each respective focal point of said plurality of focused ultrasonic wave producing means along the respective outlet port axis, said positioning means adjustably positioning each respective focal point between a first focal point position along the respective outlet port axis proximate the respective outlet port and a second focal point position along the respective outlet port axis beyond the respective outlet port; and

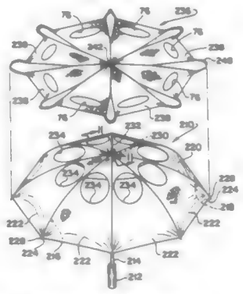
d) means coupled to said housing for sweeping said housing in a reciprocating manner along a prescribed sweep path over the cleaning plane, wherein the plurality of outlet ports are in a direction of the cleaning plane and the principal axis is substantially perpendicular to the cleaning plane.

5,368,055

WINDPROOF UMBRELLA

Gary D. Johnson, New York, and Stanley Hochfeld, Howard Beach, both of N.Y., assignors to Leonard Holtz, Oceanside, N.Y., a part interest

PCT No. PCT/US90/00796, § 371 Date Jul. 24, 1991, § 102(e) Date Jul. 24, 1991, PCT Pub. No. WO90/09118, PCT Pub. Date Aug. 23, 1990
Continuation-in-part of Ser. No. 309,620, Feb. 10, 1989, Pat. No. 4,979,534. This PCT application Feb. 9, 1990, Ser. No. 730,783
The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.
Int. Cl.[5] A45B *25/22*
U.S. Cl. 135—33.7 **32 Claims**



1. A windproof umbrella comprising:

a post having a lower end to be grasped by a user and an opposite upper end;

a plurality of ribs extending outwardly in a radial direction from said upper end of said post, each rib having a free end portion;

a lower canopy secured in covering relation on said ribs, said lower canopy including a plurality of vent holes therethrough, said vent holes being in about a middle portion of said lower canopy between said post and said free end portions of said ribs, and said vent holes being arranged between adjacent ribs;

an upper canopy positioned over said lower canopy in covering relation to all of said vent holes;

said upper canopy extending from said post to an area below said middle portion of said lower canopy and having a lower peripheral edge extending below lower extremities of said vent holes, said upper canopy being held in fixed position in the vicinity of said post;

elastic fastening means including a plurality of elastic strap means for securing said upper canopy to said ribs in the vicinity of said free end portions of said ribs, for thereby securing said upper canopy between said upper end of said post and the vicinity of said free portions of said ribs with an elastic tautness and to permit at least a lower peripheral edge portion of said upper canopy to elastically separate from said lower canopy while also covering all said vent holes to prevent rain water from entering said vent holes from above the umbrella.

5,368,056

VEHICLE SHADING SYSTEM

Jack Riggi, Jr., 8416 Pennsylvania Blvd., Fort Myers, Fla. 33912

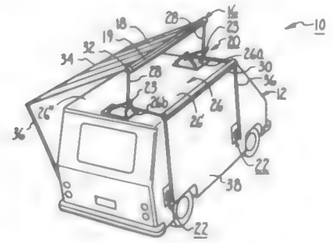
Filed Apr. 5, 1994, Ser. No. 222,894
Int. Cl.[5] E04F *10/00, 10/06*
U.S. Cl. 135—88.07 **27 Claims**

1. A vehicle shading system, comprising:

a control system-responsive to manipulation of at least one of a plurality of user operable devices;

an awning which is normally in a stowed position atop a vehicle;

a top mechanism operably engaged with said awning, responsive to said devices from said control system, wherein said top mechanism automatically deploys said awning into a first position, such that said awning shades a first portion of a roof of said vehicle; and



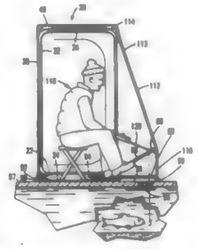
a side mechanism spaced from said top mechanism and operably engaged with said awning, responsive to said devices from said control system, positioned in a side of said vehicle which automatically deploys said awning into a second position such that said awning shades an area adjacent to a first side of said vehicle.

5,368,057

COLLAPSIBLE ICE FISHING SHELTER

Raymond F. Lubkeman, 1432 N. Concord Dr., Janesville, Wis. 53545, and David R. Lubkeman, 3928 BrynMawr Dr., Janesville, Wis. 53546

Filed Aug. 24, 1992, Ser. No. 934,765
Int. Cl.[5] E04H *15/44*
U.S. Cl. 135—133 **4 Claims**



1. A collapsible ice fishing shelter comprising:

a) a base having a floor with an upwardly extending side wall;

b) a collapsible frame connected to the base, the frame extending above the base to define an enclosed space adapted for human occupation wherein the frame has a frontwardly facing upper segment;

c) a flexible covering engaged with the frame to surround the enclosed space;

d) a first brace which is connected to the base and which has a segment which protrudes frontwardly from the base and which engages against a lower edge of the flexible covering, and which defines an area adjacent to the base which is adapted to surround an ice fishing hole positioned above a body of water, wherein the frame upper segment and the first brace engage against the flexible covering to define a frontwardly facing front flap; and

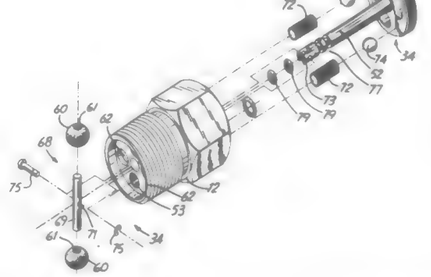
e) a second brace extending upwardly and frontwardly from the base towards the flexible covering, the second brace having a segment which engages against the flexible covering above the first brace protruding segment, wherein the second brace segment divides the front flap into two portions, an upper portion and a lower portion, and the lower portion is smaller than the upper portion, and wherein the first brace segment and the second brace segment restrict the lower portion of the flexible covering from deflection toward the base, and thereby define a volume adjacent to the enclosed space above the ice fishing hole which is protected from interference from the flexible covering, wherein the first brace has two frontwardly extending segments joined by the frontwardly protruding segment, and wherein one frontwardly extending segment has a protrusion attached thereto for engagement against the floor of the ice fishing shelter base, and the other frontwardly extending segment has portions for engagement with the side wall of the base; and wherein the second brace has two frontwardly and upwardly extending segments which adjoin the engaging segment, wherein the second brace frontwardly extending segments have rear hooks which hook beneath the first brace frontwardly extending segments, and the second brace frontwardly extending segments have sidewardly extending pins which are engaged with the first brace frontwardly extending segments in pivotal relation, wherein the hooks limit the pivoting of the second brace with respect to the first brace.

5,368,058

SAMPLE PORT VALVE

Michael K. Gold, Prior Lake, and Mathew J. Gold, Hutchinson, both of Minn., assignors to Goldeneye Solutions, Inc., Prior Lake, Minn.

Filed Dec. 23, 1993, Ser. No. 173,666
Int. Cl.[5] E03B *11/00*
U.S. Cl. 137—1 **11 Claims**



1. A sample port valve for use in a port of a liquid-containing vessel, said valve comprising:

a housing comprising a port attachment end and an opposite sampling end, said housing having an overall length dimension extending between said ends, said housing further comprising;

(a) an attachment end associated with said housing for sealingly connecting said housing to said vessel port;

(b) a passageway disposed within and traversing said overall length of said housing, said passageway being dimensioned to allow a sampling tube to traverse said overall length of said passageway; and

(c) an access control assembly operably associated with said passageway in order to open and close said full length of said passageway to the passage of said tubing, whereby

(i) with said access control assembly in a closed position, said tubing can be inserted into said sampling end of said housing and can traverse and be sealingly retained in said passageway to a first position less than said full length of said passageway,

(ii) with said tubing in said retained position, said access control assembly can be operated in order to open said full length of said passageway, and

(iii) with said access control assembly in said open

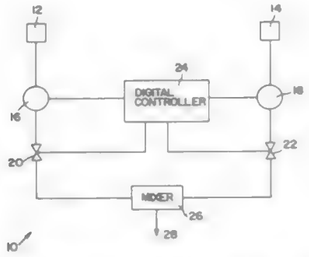
position, said retained tubing can be further inserted in order to traverse said full length of said passageway.

5,368,059

PLURAL COMPONENT CONTROLLER

Gary W. Box, Golden Valley, Minn., and Lawrence S. Kelly, Bolingbrook, Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed Aug. 7, 1992, Ser. No. 926,817
Int. Cl.[5] G05D *11/13*
U.S. Cl. 137—3 **2 Claims**



1. A method for metering a fluid having at least first and second components, each of said components having a meter and valve in the flow path thereof, said flow paths being joined at a mixer, and wherein it is desired to dispense in a predetermined ratio, said method comprising the steps of:

opening said first fluid valve and dispensing a first predetermined number of counts of said first fluid to form a first fluid cycle;

closing said first fluid valve;

opening said second fluid valve to form a second fluid cycle;

measuring the overrun counts of said first fluid;

calculating the number of counts of said second fluid required to maintain said predetermined ratio relative to the sum of said first predetermined number and said first fluid overrun and then subtracting a predetermined tolerance to form a second fluid count; and

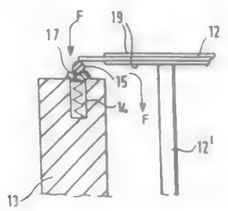
closing said second fluid valve after said second fluid count has been dispensed to complete said second fluid cycle.

5,368,060

VALVES

Peter W. Worrall, Ferryhill, and Adrian M. Woodward, Cambridge, both of England, assignors to AB Electrolux, Stockholm, Sweden

Filed Sep. 13, 1993, Ser. No. 120,402
Claims priority, application United Kingdom, Sep. 15, 1992, 9219474.5
Int. Cl.[5] F16K *25/00, 31/02*
U.S. Cl. 137—15 **20 Claims**



11. A method of forming a valve seat for creating a seal against a movable valve member having an irregular surface, the method comprising the steps of:

(a) assembling the valve seat from two compliant elements disposed in juxtaposition, each element initially possessing a different resiliently deformable characteristic, one having a least and the other a most resiliently deformable characteristic, and together constituting a seal which conforms to the peripheral shape of the valve member;

(b) placing the assembly in a housing with the element possessing the least resiliently deformable characteristic most remote from the movable valve member;

(c) applying pressure to the sealing assembly via the movable valve member so that the least resiliently deformable element absorbs the surface irregularity of the valve member without substantially changing the deformability characteristic of the other element; and

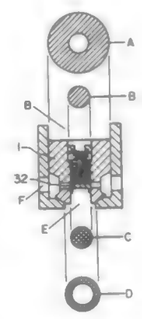
(d) maintaining the element possessing the least resiliently deformable characteristic in that attitude where the surface irregularity of the movable valve member is absorbed.

5,368,061

LOAD SENSED VARIABLE DISCHARGE FIXED DISPLACEMENT PUMP CONTROL WITH LOW UNLOAD FEATURES

James R. Mollo, 209 Julrich Ave., McMurray, Pa. 15317

Continuation-in-part of Ser. No. 784,388, Oct. 29, 1991, Pat. No. 5,244,358, which is a continuation-in-part of Ser. No. 426,750, Oct. 24, 1989, abandoned, which is a continuation-in-part of Ser. No. 211,163, Jun. 22, 1988, abandoned, which is a continuation-in-part of Ser. No. 8,313, Jan. 29, 1987, abandoned.
This application Sep. 13, 1993, Ser. No. 121,275
Int. Cl.[5] F15B *13/02*
U.S. Cl. 137—115 **3 Claims**



3. A load sensed variable output pump system comprising:

a fixed displacement pump; and

a load sensing control comprising a housing having a main inlet-outlet passage pressured by said pump, a bypass outlet passage connected to a reservoir, a control controlling the flow through said bypass outlet passage, said control comprising

(i) a chamber between said main inlet-outlet passage and said bypass outlet passage, said chamber having an inlet coupled to said main inlet-outlet passage, an outlet coupled to said bypass outlet passage and a load sense opening,

(ii) a spring-biased spool positioned within said chamber which has an effective area ratio of 1:1 with reference to said chamber and said main inlet-outlet passage, a spring biasing said spring-biased spool to a closed position and pressure from said main inlet-outlet passage acting on one side of said spool against the force of said spring,

(iii) a poppet positioned within said chamber and surrounding said spool, said poppet having an effective area ratio of 2:1 between said main inlet-outlet passage and said chamber wherein said poppet is movable between an open position allowing fluid communication between said chamber inlet and said chamber outlet and a closed position preventing fluid communication between said chamber inlet and said chamber outlet with said spool movable with said poppet, and

(iv) a load sense passage coupled to said load sense opening and coupled to load pressure, wherein said poppet is moved to said closed position by pressure from said load sense passage and said poppet is moved to said open position by pressure from said main inlet-outlet passage against said pressure from said load sense passage;

wherein said poppet of said control is normally open when pressure is not applied to said load sense passage, whereby said main inlet-outlet passage is connected to said bypass outlet passage at a low pressure drop,

whereby said control is configured for closing and shutting off flow from said bypass outlet passage when positive pressure enters said load sense passage;

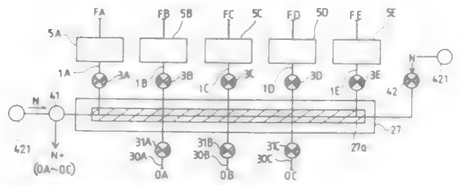
wherein said spool is normally closed, thereby allowing said main inlet-outlet passage to be open to said bypass outlet passage when pressure is not applied to said inlet load sense passage.

5,368,062

GAS SUPPLYING SYSTEM AND GAS SUPPLYING APPARATUS

Katsuya Okumura, Yokohama; Yoshihisa Sudo, Niiza; Kenichi Goshima, Kasugai; Hiroshi Itafuji, Kasugai, and Akihiro Kojima, Kasugai, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa and CKD Corporation, Aichi, both of Japan

Filed Jan. 28, 1993, Ser. No. 10,325
Claims priority, application Japan, Jan. 29, 1992, 4-038589; Jan. 29, 1992, 4-038590
Int. Cl.[5] F16K *11/20*
U.S. Cl. 137—240 **3 Claims**



1. A gas supplying apparatus, comprising:

a chamber including opposite endwalls and having an inlet and an outlet for controlling a mass flow of gas from the inlet to the outlet;

at least one input valve connected to the inlet of the chamber, said at least one input valve operable when open to permit stock gas flow to the chamber and operable when closed to shut off stock gas flow;

at least one output valve connected to the outlet of the chamber, said at least one output valve operable when open to permit supply gas flow and operable when closed to shut off supply gas flow;

an ejector connected to the one of the opposite endwalls and in communication with the chamber and the at least one input valve, said ejector operable when activated by an operating gas to evacuate the chamber of supply gas and substitute gas;

a purge valve connected to the other of the opposite endwalls and in communication with the chamber and the at least one input valve, said purge valve operable when open to introduce substitute gas into the chamber and operable when closed to stop the flow of substitute gas into the chamber;

a central processing unit; and

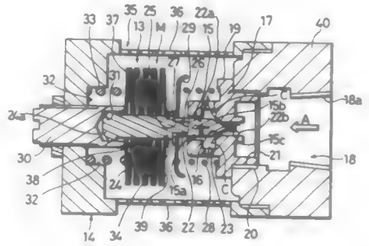
means including an ejector controller and a valve controller responsive to commands from the central processing unit for opening and closing alternately the ejector and purge valve to repetitively evacuate and introduce substitute gas into said chamber a number of times determined by the residual gas in said chamber and the stock gases next to be supplied to said chamber.

5,368,063

HEATING SYSTEM FOR CONVEYOR PIPES

Masahiro Kida; Akio Kashiwagi; Junji Nakanishi; Tominori Sato, all of Hiranomachi; Masahiko Ohmura, Itami; Masahiro Nakamoto, Osaka; Masakazu Maruoka, Osaka, and Masahashi Takata, Osaka, all of Japan, assignors to Osaka Gas Co., Ltd.; Miyawaki Incorporated, both of Osaka and Mitsubishi Cable Industries, Ltd., Amagasaki, all of Japan

Filed Feb. 3, 1994, Ser. No. 191,118
Claims priority, application Japan, Feb. 17, 1993, 5-052898
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—340 **11 Claims**



1. A heating system for conveyor pipes wherein a long heating pipe provided with an outer tube having an operating fluid hermetically contained therein, and a steam tube inserted through said outer tube is arranged along a conveyor pipe to be heated and in contact with the outer surface of said conveyor pipe, comprising a container which is located on the downstream side end portion, and which accumulates condensation formed as a result of the liquefaction of vapor fed through the steam tube of said heating pipe from the upstream side thereof, and has the heating pipe inserted thereinto by predetermined length of the downstream side end portion thereof, and a temperature sensing valve communicatively connected to the downstream side end portion of the steam tube of the heating pipe, which is inserted in said container, the valve being arranged to be closed if the condensation is more increased in the temperature thereof than predetermined, and to be opened if the condensation is more decreased in the temperature thereof than predetermined.

5,368,064

UNITIZED HYDRANT VALVE

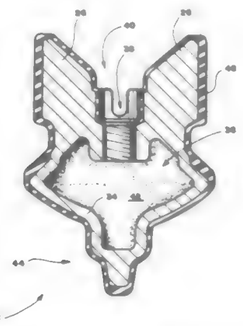
Niels A. Kjaer, Laasby, Denmark, assignor to AVK-Holding, Galten, Denmark

Filed Feb. 15, 1994, Ser. No. 196,502
Int. Cl.[5] F16L *7/00*
U.S. Cl. 137—375 **6 Claims**

1. A valve body for a dry barrel fire hydrant, comprising:

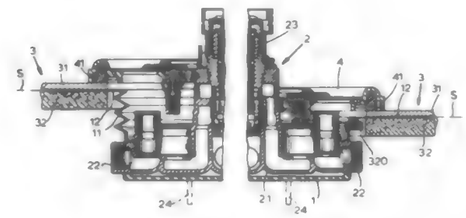
a rigid single piece base member having a coating of resilient surface material, a top, a bottom, an empty cavity therein, and a threaded countersunk central opening in said top of said base member, the countersunk portion of said opening being surrounded by a resilient surface coating, whereby said empty cavity is closed from communication with water flowing therearound

said base member further having a tapered configuration and at least one upwardly orientated ear extending from said



top; and a solid, downwardly facing projection extending from said bottom of said base member.

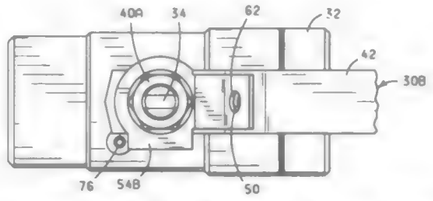
5,368,065
LEAK SHIELD FOR RECESSED VALVE
Jürgen Humpert, Hemer; Bruno Heimann, Fröndenberg, and Harald Dickel, Iserlohn, all of Germany, assignors to Friedrich Grohe Aktiengesellschaft, Haber, Germany
Filed Dec. 10, 1993, Ser. No. 165,077
Claims priority, application Germany, Dec. 12, 1992, 4241989
Int. Cl.[5] F16L *5/00*
U.S. Cl. 137—377 **13 Claims**



1. In combination
a wall having an outer surface and formed with a throughgoing hole having an edge;
a plumbing fixture almost entirely recessed behind the wall surface and having a control part projecting forward through the hole past the surface; and
an elastically deformable waterproof shield formed unitarily with
a cup-shaped body generally surrounding the plumbing fixture, and
an annular bellows-type cuff surrounding the control part and having a rear edge unitarily joined to the body and a front edge fixed to the wall surface at the hole edge.

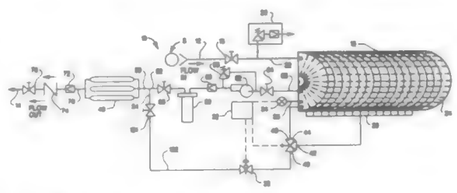
5,368,066
VALVE WITH SAFETY LOCK PLATE
John P. Scaramucci, Oklahoma City, Okla., assignor to Balon Corporation, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 132,588, Oct. 6, 1993, Pat. No. 5,323,805. This application Mar. 17, 1994, Ser. No. 214,924
Int. Cl.[5] F16K *35/06*
U.S. Cl. 137—383 **19 Claims**

1. In a valve of the type having a valve stem which is turned less than 360 degrees between the fully open and fully closed positions of the valve by use of a handle secured to the stem near the outer end of the stem, the improvement comprising:
a fixed stop pin projecting from the valve substantially parallel with and spaced from the valve stem;
first and second shoulders on the handle, the first shoulder being arranged to engage the stop pin when the valve is fully open to prevent further opening movement of the valve, and the second shoulder on the handle being arranged to engage an opposite side of the stop pin when the valve is fully closed to prevent further closing movement of the valve;
a lock plate journaled on the valve stem adjacent the handle having a first shoulder thereon positioned to engage the side of the stop pin opposite to the first shoulder on the



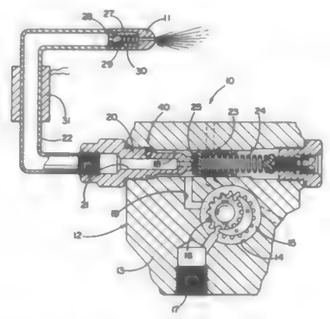
handle when the valve is fully open, and having a second shoulder thereon positioned to engage the opposite side of the stop pin from the second shoulder on the handle when the valve is fully closed; and
means securing the handle and the lock plate on the valve stem against removal of the lock plate and handle off of the end of the valve stem;
wherein the lock plate and handle have adjacent portions substantially parallel with each other and lock receiving apertures therein positioned to mate when the valve is fully open or fully closed, whereby the valve may be locked in either a fully open or a fully closed position.

5,368,067
GAS STORAGE AND RECOVERY SYSTEM
Joseph S. Cook, Jr., Webster, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 23, 1993, Ser. No. 39,602
Int. Cl.[5] F16K *31/12;* **B65B** *3/12;* **B65D** *33/02*
U.S. Cl. 137—485 **18 Claims**



1. A gas storage system comprising
an inflatable variable volume enclosure for holding the gas, the enclosure having an inlet through which gas flows into the enclosure from a gas source,
a pressure maintenance means comprising a venting relief valve between the inlet and the enclosure for maintaining a desired pressure of gas on the inlet from the enclosure, and
the enclosure having an outlet through which gas stored in the enclosure flows from the enclosure.

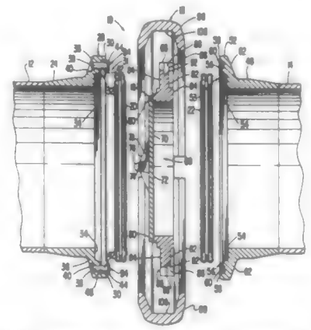
5,368,068
RELIEF VALVE FOR THE FUEL PUMP OF AN OIL BURNER
Dale L. Hunsberger, and Frank L. Harwath, both of Rockford, Ill., assignors to Suntec Industries Incorporated, Rockford, Ill.
Filed Jan. 31, 1994, Ser. No. 188,781
Int. Cl.[5] F16K *17/18*
U.S. Cl. 137—493.7 **6 Claims**



1. Apparatus for controlling the flow of fuel oil between a fuel pump and a fuel burner nozzle, said apparatus comprising a member having a chamber for receiving pressurized fuel oil from said pump, a body located in said chamber, said body having an internal passage establishing communication between said chamber and said burner nozzle interiorly of said body, said internal passage having an end communicating with said chamber, said body having a second passage establishing communication between said internal passage and said chamber downstream of said end, a primary valve member movable within said chamber between open and closed positions with respect to said end of said internal passage but not with respect to said second passage, said primary valve member cutting off communication between said chamber and said internal passage with respect to said end when said primary valve member is in said closed position, and a relief valve normally closing said second passage and operable to open said second passage automatically when said primary valve member is in said closed position and pressure in said internal passage rises to a predetermined magnitude whereby fuel oil in said internal passage may bleed into said chamber by way of said second passage.

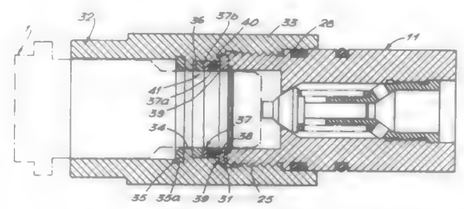
5,368,069
CONDUIT JOINT ASSEMBLY
Kevin R. Felber, Beltsville, Md., assignor to EG&G Pressure Science, Inc., Beltsville, Md.
Filed May 28, 1993, Ser. No. 68,676
Int. Cl.[5] F16K *15/03*
U.S. Cl. 137—515.7 **22 Claims**

1. A conduit joint assembly comprising:
a first tubular flange member adapted to be fixedly coupled to a first conduit;
a second tubular flange member adapted to be fixedly coupled to a second conduit;
a fluid engaging device positioned between said first and second tubular flange members;
non-threaded retaining means, associated with said first tubular flange member and said fluid engaging device, for coupling said fluid engaging device to said first tubular flange member within less than one complete revolution therebetween such that said retaining means allows limited axial movement between said first tubular flange member and said fluid engaging device without rotational movement therebetween when coupled together;
sealing means, positioned between said fluid engaging device and said first and second tubular flange members, for sealing between said fluid engaging device and said first and second tubular flange members, said sealing means including a first resilient seal disposed between said first flange member and said fluid engaging device for biasing



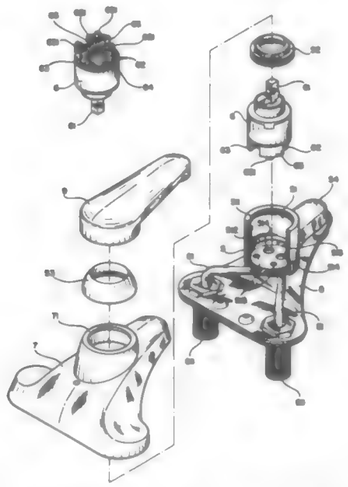
said fluid engaging device away from said first flange member; and
coupling means for coupling said first and second tubular flange members together.

5,368,070
RADIAL SEAL FLUID COUPLERS
Kevin J. Bosley, Aberdeen, Scotland, assignor to FSSL Limited, Ellon, Scotland
PCT No. PCT/GB91/00492, § 371 Date Dec. 4, 1992, § 102(e) Date Dec. 4, 1992, PCT Pub. No. WO91/15704, PCT Pub. Date Oct. 17, 1991
PCT Filed Mar. 28, 1991, Ser. No. 930,599
Claims priority, application United Kingdom, Apr. 4, 1990, 9007590.4
Int. Cl.[5] F16L *37/28*
U.S. Cl. 137—614.04 **12 Claims**



1. A coupling comprising a male coupler (1) and a female coupler (11) including means (7,17) for allowing transmission of fluid pressure between the couplers on the mating of the couplers, a first annular hollow-section seal (31) positioned in a recess in the body of the female coupler and responsive to said fluid pressure to provide a seal between the male and female couplers and extending around the periphery of the male coupler, an outer retainer (33) engageable with the body of the female coupler, and inner retaining means (38,39) supported by the outer retainer to maintain said first annular seal (31) in position on withdrawal of the male coupler from the female coupler, the outer retainer accommodating a second annular hollow-section pressure-responsive seal (37) which is capable of responding to said fluid pressure to sealingly engage against and around the periphery of the male coupler, and the inner retaining means serving to keep said second annular seal in position.

5,368,071
WASH-BASIN FAUCET
Yung-Li Hsieh, No. 29 Pyi-Tou Lane, Treet Ding-Fan, Li.Lu Kang Cheng, Chang Hwa Hsien,
Filed Jan. 24, 1994, Ser. No. 185,007
Int. Cl.[5] F16K *11/06*
U.S. Cl. 137—625.41 1 Claim

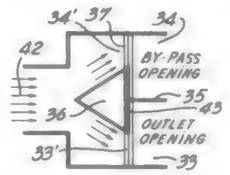


1. A wash-basin faucet comprising a base frame mounted on a wash-basin, two water intake pipes mounted on said base frame, a valve housing defining a cylindrical chamber, a ceramic valve received inside said cylindrical chamber of said valve housing, a locating ring mounted on said valve housing to hold said ceramic valve in said cylindrical chamber, a casing mounted on said base frame and covered over said valve housing, a water outlet pipe extended from said valve housing out of said casing, an operating handle fastened to said casing and said locating ring by a cap nut and operated to control said ceramic valve in regulating the hot/cold water flow rate passing from said water intake pipes to said water outlet pipe; wherein:

said valve housing comprises an inside annular flange projecting into said cylindrical chamber and spaced above a bottom wall thereof, a water outlet communicated between said cylindrical chamber and said water outlet pipe, two water inlets on the bottom wall, to which said water intake pipes are respectively connected, and a plurality of locating recesses on the bottom wall near said water inlets;

said ceramic valve comprises a first water seal ring mounted around a vertical peripheral wall thereof and stopped at the inside annular flange of said valve housing, two water intake tubes vertically disposed at the bottom, each water intake tube of said ceramic valve having a bottom end fastened with a respective second water seal ring and connected to either water inlet on the bottom wall of said valve housing for guiding water from said water intake pipes into said ceramic valve, a plurality of bottom blocks spaced at the bottom and having a respective downward locating rod engaged into either locating recess on the bottom wall of said valve housing, a water output port disposed at the bottom in the middle between said water intake tubes and said bottom blocks, and a water passage way defined at the bottom between said bottom blocks and aligned with said water outlet for guiding water from said water output port to said water outlet and said water outlet pipe.

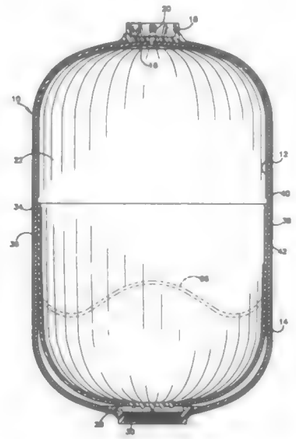
5,368,072
SLIDING GATE TERMINAL UNIT FOR AIR HANDLING SYSTEM
Anthony Côté, Prévost, Canada, assignor to E. H. Price Ltd., Winnipeg, Canada
Filed Dec. 13, 1993, Ser. No. 165,603
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—872 5 Claims



1. A variable air volume terminal unit for an air handling system, said unit comprising a housing having a conditioned air inlet for receiving forced conditioned air in said housing, said housing having a main outlet opening, a by-pass air outlet opening, an air flow path defined between said air inlet and said outlet openings, an air divider gate slidingly displaceable transverse to said air flow path to deflect air entering said inlet to one or both of said outlet openings, said divider gate having an outlet obstructing rear end and an upstream deflecting face, linkage means connected to said divider gate, an actuator device connected to said linkage means to displace said divider gate across said air flow path to simultaneously open one of said outlet openings and close the other in predetermined proportions as desired while maintaining a substantially constant total outlet opening area as well as maintaining substantially constant inlet air flow conditions while the force required to displace said divider gate by said actuator device remains substantially constant, said upstream deflecting face being a triangular wedge shaped face of said divider gate having an apex ridge facing said inlet, said apex ridge extending vertically of said outlets, said outlet openings being substantially equal in cross-section and positioned side by side and equidistantly spaced from a central flow axis of said inlet, said housing being rectangular housing with said inlet being disposed substantially central to a front wall of said housing, said tracks being secured to a respective one of opposed walls, said divider gate having a rectangular rear end guidingly secured at opposed edges by bearing means slidingly engaged between said tracks, said outlet openings being dimensioned to be totally obstructed by said rear wall when said divider gate is disposed in obstructing alignment therewith.

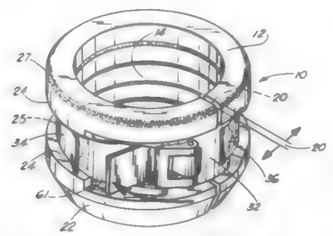
5,368,073
HYDROPNEUMATIC PRESSURE VESSEL HAVING AN IMPROVED DIAPHRAGM ASSEMBLY
James C. Murphy, Chardon, Ohio, assignor to Essef Corporation, Chardon, Ohio
Filed Oct. 7, 1993, Ser. No. 132,845
Int. Cl.[5] F16L *55/04*
U.S. Cl. 138—30 4 Claims

1. A hydropneumatic filament-wound pressure vessel having a split tank closure and diaphragm assembly comprising first and second cup-shaped plastic tank liners, said liners having oblate ellipsoidal end portions and cylindrical sidewall portions terminating in circular open mouth portions having opposed first and second annular end faces, a cylindrical ring having third and fourth annular end faces respectively fused to said first and second end faces to seal said liners into a unitary pressure vessel liner, said cylindrical ring having inside and outside surfaces having diameters corresponding to inside and outside diameters of said cylindrical sidewall portions of said liners, a stiffly flexible elastomeric cup-shaped diaphragm having an oblate ellipsoidal end portion and a cylindrical sidewall portion terminating in an open mouth, said diaphragm being nested within one of said liners and having a segmental area of its sidewall, adjacent said open mouth, fused to the



inside surface of said cylindrical ring, and a resin-impregnated filament winding covering the liners and the outside surface of said ring cylindrical in a predetermined winding pattern.

5,368,074
WELL CASING THREAD PROTECTOR
Terry Hall, Metairie, La., assignor to Connection Technology, Ltd., New Orleans, Calif.
Continuation-in-part of Ser. No. 827,402, Jan. 29, 1992, Pat. No. 5,148,835, which is a continuation of Ser. No. 572,266, Aug. 27, 1990, abandoned. This application May 1, 1992, Ser. No. 877,404
Int. Cl.[5] B65D *59/00*
U.S. Cl. 138—96 T 14 Claims



1. An apparatus for protecting the threads of a section of oil well pipe, comprising:

a) a body member constructed of resilient material having an inner face and an outer face, an outer wall, and a central opening through the body member;

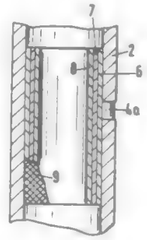
b) a slot formed in the wall of the body member extending from the inner to the outer face and in communication with the central opening, for allowing the body member to be moved to an open position to accommodate the section of pipe to be protected when the section of pipe is positioned in the central opening;

c) a flexible strap member, positioned around the outer wall of the body member to engage and to secure the body member around the section of pipe when the flexible member is engaged in place around the body member;

d) locking means related to the strap member to maintain the body member engaged around the section of pipe when the locking means is in the locked position and to allow the body member to return to the normally open position when the locking means is returned to the unlocked position; and

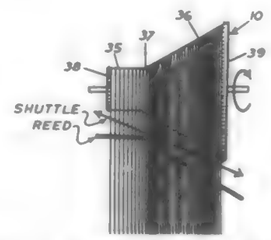
e) a recessed channel around the wall of the body member so that the flexible strap member is positioned in the channel.

5,368,075
METALLIC SLEEVE FOR BRIDGING A LEAKAGE POINT ON A PIPE
Günter Bäro, Weinheim, and Jakob Russ, Römerberg, both of Germany, assignors to ABB Reaktor GmbH, Mannheim, Germany
Filed Jun. 20, 1991, Ser. No. 717,987
Claims priority, application Germany, Jun. 20, 1990, 4019599
Int. Cl.[5] B22D *17/10*
U.S. Cl. 138—98 4 Claims



1. In a pipe having an inner wall surface and a leakage point, the improvement comprising a single metallic sleeve with a predetermined wall thickness to be expanded onto the inner wall surface of the pipe for bridging the leakage point, said metallic sleeve including a first layer to be expanded onto the inner wall surface of the pipe for sealing the leakage point, and a multiplicity of individual further layers to be applied one after the other, said layers having a combined wall thickness corresponding to said predetermined wall thickness of said metallic sleeve.

5,368,076
PROCESS AND APPARATUS FOR MANUFACTURING ROCKET EXIT CONES, AND THE LIKE
Frederick H. Curzio, Garden Grove, Calif., assignor to Textile Products, Inc., Anaheim, Calif.
Filed Aug. 30, 1985, Ser. No. 771,344
Int. Cl.[5] D03D *49/20, 41/00, 3/00;* B63H *11/00*
U.S. Cl. 139—305 20 Claims



1. A process for producing an integrally formed, cured structure having a non linear shape from graphite fibers and the like, comprising the steps of:

a) passing warp fibers through a loom, including a reed;

b) weaving filling fibers into the warp fibers into the warp fibers to form a fabric;

c) applying the fabric to a wind up form, including linear and non linear portions, to produce a fabric build up, the filling fibers providing a converging-diverging pattern corre-

sponding to the non linear portion of the wind up form, and parallel patterns corresponding to the uniform portion of the wind up form, the warp fibers being applied in the fabric build up in a density pattern that varies with the non linear portion, and remains constant with the linear portion of the wind up form the wind up form being maintained stationary to the weaving step and reed means;

d) the warp fibers being fed through the reed having a shape that conforms with the wind up form, and defining spaces between individual reed elements that vary with the non linear portion of the form, and remain constant with the linear portions of the wind up form;

e) impregnating the fabric with a curing resin;

f) curing the impregnated fabric shape to form a cured structure;

g) removing the cured structure from the form; and,

h) machining the structure to shape.

5,368,077

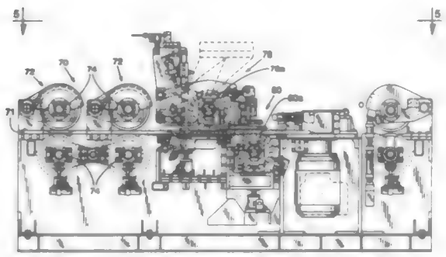
ZERO LEAD PLANER

Charles L. Croghan, Troutdale, and David J. Johnson, Portland, both of Oreg., assignors to U.S. Natural Resources, Inc., Vancouver, Wash.

Filed Sep. 22, 1993, Ser. No. 125,543

Int. Cl.[5] B27C *1/08*

U.S. Cl. 144—117 R **14 Claims**



1. A planer for surfacing a wood article, the planer comprising:

a feed element applying a feed force to said wood article;

a guide element adjacent said feed element and including a face slidably engaging said wood article, said feed force being generally parallel to said face but including a force component directed into said face whereby said wood article is maintained against said face when propelled by said feed element; and

a planer cutter element surfacing a portion of said wood article and applying a cutting force to said wood article, said cutting force being parallel to said guide element face and generally opposite in direction relative to said feed force.

5,368,078

FINGER JOINT CUTTER BLADE

Lawrence A. Rupe, Boise, Id., assignor to Ace Company, Inc., Boise, Id.

Filed Feb. 23, 1994, Ser. No. 200,652

Int. Cl.[5] B27F *1/16*

U.S. Cl. 144—234 **16 Claims**

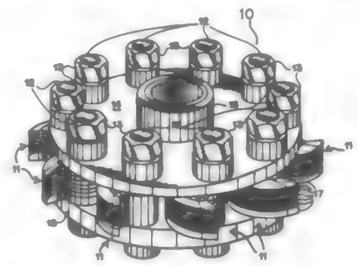
1. A cutter head for finger joint cutting which comprises:

an arbor collar for attachment to a spindle of a shaping apparatus;

a top plate being radially attached to the arbor collar;

a bottom plate being radially attached to the arbor collar in parallel spaced relation to the top plate;

a plurality of cutter blades being annularly attached around the arbor collar between and to the top and bottom plates, where each of the cutter blades includes a backing member having a cutter tip attachment surface thereon, the backing member including a cantilever pocket formed therein which includes a pair of side surfaces, one of which is co-extensive with the attachment surface; and



a plurality of cutter tips, each of which being attached to the attachment surface on one of the cutter blade backing members, each cutter tip having a portion thereof extending into the cantilever pocket in the backing member and being attached to both side surfaces of the pocket.

5,368,079

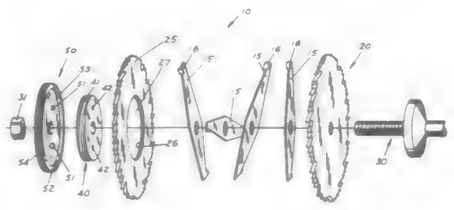
ADJUSTABLE DADO

Randy E. Benway, 810 Rice St., Horicon, Wis. 53032

Continuation-in-part of Ser. No. 90,345, Jul. 9, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 182,533

Int. Cl.[5] B27G *13/00*

U.S. Cl. 144—237 **18 Claims**



1. An adjustable dado comprising:

an inner blade;

a plurality of chippers;

an outer blade with a bore having inner threads;

an adjusting collar having at least one opening and outer threads;

the outer threads engaging the inner threads;

an adjustment washer having a front surface, an outer circumference, at least one adjustment pin extending from the front surface, and a circumferential annular ring extending from the front surface;

the adjustment pin engaging the opening;

the circumferential annular ting contacting the outer blade.

5,368,080

APPARATUS AND METHOD FOR A BOARD INFEED SYSTEM

Gérald Hamel, St-Ephrem, Canada, assignor to Industries P.H.L. Inc., Quebec, Canada

Filed Jul. 9, 1993, Ser. No. 90,431

Claims priority, application Canada, Jun. 30, 1993, 2099435

Int. Cl.[5] B27B *1/00, 31/00;* **B26D** *5/00*

U.S. Cl. 144—357 **18 Claims**

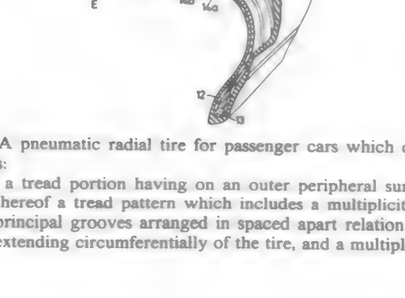
17. A method for positioning an elongate cant for the infeed of the cant into an edging device capable of longitudinally cutting the cant to remove the wane edges thereof, said method comprising:

(a) tranversely conveying the cant on conveying means along a substantially straight path;

(b) optically scanning the morphology of the cant with scanning means located along the path for obtaining morphology data on the cant;

(c) calculating from the morphology data on the cant a longitudinal reference datum line on the cant and a preferred infeed line of the cant into the edging device;

(d) further along the path, positioning the cant at a predetermined distance away from the preferred infeed line;



(e) clamping and moving the cant by the predetermined distance, further along the path, positioning the cant and releasing the cant, whereby the longitudinal reference datum line on the cant is essentially placed colinear with the preferred infeed line of direction, comprising the steps of:

(i) clamping the cant with clamping means mounted on elongate members linked to rotatable eccentric arms

(ii) rotating said eccentric arms so that the elongate members together with the clamping means and the cant are displaced further along the path;

(iii) releasing said cant from the clamping means;

(f) longitudinally feeding the cant along its preferred infeed line of direction into said edging device.

5,368,081

PNEUMATIC RADIAL TIRE FOR PASSENGER CARS WITH DEFINED STEEL BELT CORD

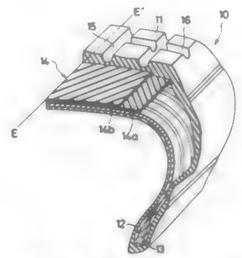
Susumu Imamiya; Eiji Igarashi, and Hisao Kato, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 23, 1993, Ser. No. 21,231

Claims priority, application Japan, Feb. 27, 1992, 4-041293

Int. Cl.[5] B60C *9/18*

U.S. Cl. 152—451 **3 Claims**



1. A pneumatic radial tire for passenger cars which comprises:

(a) a tread portion having on an outer peripheral surface thereof a tread pattern which includes a multiplicity of principal grooves arranged in spaced apart relation and extending circumferentially of the tire, and a multiplicity of subsidiary grooves arranged in spaced apart relation and extending axially of the tire; and

(b) at least one belt layer formed from an array of steel cords and disposed in said tread portion in a circumferential direction, each of said steel cords resulting from twisting of one to five steel filaments and having a tensile strength of 330 to 360 kgf/mm^2, each of said steel filaments having a diameter of 0.20 to 0.38 mm and having a carbon content of 0.80 to 1.00% by weight, a silicon content of 0.50 to 1.00% by weight and a nickel content of 0.10 to 0.50% by weight, wherein the distance of rubber from a bottom end of each of said principal grooves to an outer surface of said array of steel cords is in the range of 1.5 to 3.0 mm as determined cross-sectionally of the tire.

5,368,082

RADIAL PLY PNEUMATIC TIRE

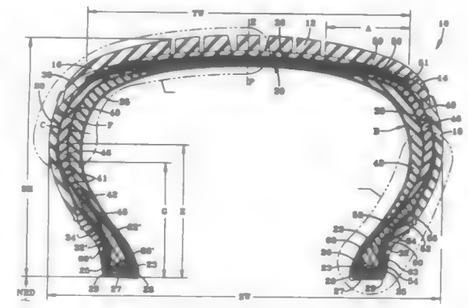
Thomas R. Oare, Suffield; Randall R. Brayer, North Canton; Jeffrey W. Kahrs, Hartville; Beale A. Robinson, North Canton; Keith C. Trares, Akron, and Raymond D. McQuate, Wadsworth, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 30, 1992, Ser. No. 954,209

The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.

Int. Cl.[5] B60C *15/024, 15/04, 17/00*

U.S. Cl. 152—517 **32 Claims**



1. A radial ply pneumatic tire having an axis of rotation, a tread having a pair of lateral edges, a pair of reinforcing belts located radially inward of the tread, a pair of sidewalls, one sidewall extending radially inwardly from each lateral edge, a maximum section width, and a tire carcass structure, the tire carcass structure comprising:

a) a pair of bead portions, one bead portion extending radially inwardly from each sidewall, each portion including a substantially inextensible core, the bead core having a coil of annularly wound round metal wire filaments, which in the toroidially-shaped tire prior to its vulcanization, has a polygonal cross-sectional area defined by imaginary line segments contacting the outer surfaces of the filaments of the coil, the polygonal cross-sectional area having a flat base surface having a pair of edges and a width "W" between the edges and an axially inner first surface, an axially outer second surface and a radially outward point or surface, each first and second surface extending radially outwardly from an opposite edge of the flat base surface toward the radially outward point or side and each first and second surface being tangent to the bead core, the first surface and the flat base surface forming an acute included angle α and the second surface and the flat base surface forming an acute included angle β, where α is greater than or equal to β;

b) a carcass reinforcing structure radially inward of the reinforcing belts extending circumferentially about the

tire from one bead portion to the other bead portion, the carcass reinforcing structure having a first ply and a second ply, each ply having a pair of turnup ends, one turnup end of each ply being wrapped about each bead core and extending axially and radially outwardly, the turnup end of at least one ply terminating radially in proximity to the radial location of the maximum section width of the tire; and

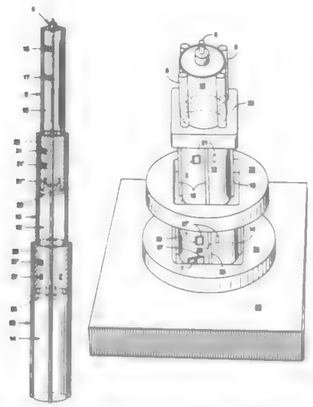
c) a bead filler adjacent each bead core and extending radially outward from the bead core.

5,368,083

TELESCOPIC KELLY BAR APPARATUS AND METHOD

August H. Beck, III, 10 Heathwood, San Antonio, Tex. 78248

Filed Aug. 26, 1992, Ser. No. 936,025
Int. Cl.[5] E21B *3/04, 17/07*
U.S. Cl. 175—57 **5 Claims**



1. A vertically telescoping multi-section kelly bar apparatus comprising:

(a) an upper inner bar section for suspending from a cable means;

(b) at least one lower middle bar section of larger size telescopically and slidably connected over the upper inner bar section;

(c) an outer lower bar section of larger size telescopically and slidably connected over the preceding lower middle bar section;

(d) said upper inner bar section, at least one lower middle bar section and outer lower bar sections each having a bar driver slidably mounted thereon for transmitting rotation from a rotary table to each of the bar sections.

5. A method of drilling using a vertically telescoping multi-section kelly bar apparatus comprising:

(a) suspending an upper inner bar section from a cable means;

(b) suspending at least one lower middle bar seciton of larger size telescopically and slidably connected over the upper inner bar section;

(c) suspending an outer lower bar section of larger size telescopically and slidably connected over the preceding lower middle bar section; and

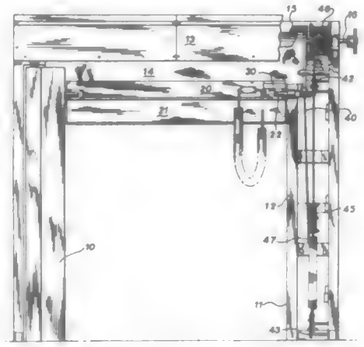
(d) limiting downward extension of said at least one lower middle bar section and outer lower bar section with a slidably mounted ring at the lower end of each preceding bar section, whereby said ring contacts a set of inside drive lugs when said at least one lower middle bar section and outer lower bar section are fully extended.

5,368,084

BREAKAWAY ROLL-UP DOOR

Clement F. Hying, Menomonee Falls; Randy R. Schickert, Kewaskum, and Gregory Hahn, Milwaukee, all of Wis., assignors to ASI Technologies, Inc., Milwaukee, Wis.

Continuation of Ser. No. 934,586, Aug. 24, 1992, Pat. No. 5,299,617, which is a continuation-in-part of Ser. No. 646,532, Jan. 25, 1991, Pat. No. 5,141,044. This application Dec. 17, 1993, Ser. No. 169,837
Int. Cl.[5] E06B *9/17*
U.S. Cl. 160—265 **10 Claims**



1. A roll-up door, comprising:

a frame having spaced jambs joined at the top by a header, the jambs each defining elongated tracks;

a drum rotatably mounted in the header;

a flexible curtain wound about the drum and having its lateral edges disposed in the tracks;

a bottom bar attached to the free end of the curtain and extending between the jambs;

a breakaway means releasably attached to the bottom bar at one end of the bar, said means releasing from the bottom bar when the curtain is struck by a force having a component normal to its surface;

a retaining sheave attached to rotate with the drum; and

a retaining line attached at one end to the sheave to wind in the same direction as the curtain and with its other end attached to the breakaway means so as to maintain the breakaway means in the position it is in when the breakaway means releases from the bottom bar.

5,368,085

RESUABLE INSULATING SHEATH FOR WINDOWS

Shilpa S. Ruparelia, 42 Jellicoe Gardens, Stanmore, Middx., England

Filed Feb. 9, 1993, Ser. No. 15,532
Int. Cl.[5] E06B *3/80*
U.S. Cl. 160—327 **5 Claims**

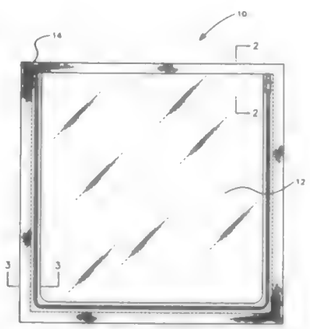
1. A new reusable insulating sheath selectively positionable over a window opening, said sheath comprising:

a flexible, transparent sheet of plastic;

a base member attachable to a perimeter of said window opening, said base member having an upstanding wall portion with at least one downwardly extending base tooth protecting from said upstanding wall portion;

a locking insert having a rear surface with at least one downwardly extending insert tooth projecting from said rear surface, wherein said at least one downwardly extending base tooth comprises a plurality of downwardly extending base teeth and said at least one downwardly extending insert tooth comprises a plurality of downwardly extending insert teeth; and

coupling means for releasably coupling said locking insert to said base member, whereby a portion of said sheet may be captured between said base member and said locking insert to retain said sheet over said window opening; wherein said coupling means comprises an axially aligned slot integrally formed within said base member, said slot having first and second opposed sides with first locking grooves formed in said first side of said slot and second locking grooves formed in said second side of slot; and a



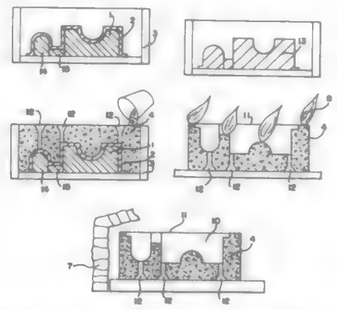
leg portion integrally connected to said locking insert, said leg portion having axially aligned first and second notches on respectively opposed first and second external surfaces of said leg portion, wherein said first and second notches of said locking insert may be engaged to respective said first and second locking grooves formed in said base member.

5,368,086

METHOD FOR MAKING A CERAMIC MOLD

Alan B. Kloskowski, Elmhurst, Ill., assignor to Sarcol, Inc., Chicago, Ill.

Filed Nov. 2, 1992, Ser. No. 970,215
Int. Cl.[5] B22C *9/00, 9/04*
U.S. Cl. 164—33 **40 Claims**



1. A method for making a composite ceramic mold, comprising:

a) forming a backing layer composition comprised of a refractory material, a binder, and a gelling agent;

b) permitting said backing layer composition to gel to form a backing layer comprising a cavity having a cavity surface;

c) firing said backing layer;

d) baking said backing layer;

e) scoring said cavity surface;

f) forming a facing layer composition comprised of a highly refractory material, a binder, and a gelling agent;

g) permitting said facing layer composition to gel to form a facing layer integral with said fired and baked backing layer;

h) firing said integral facing and backing layers; and

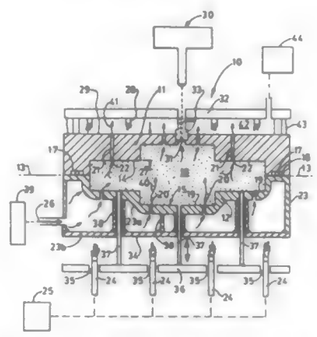
i) baking said integral facing and backing layers.

5,368,087

HOT BOX CORE MAKING APPARATUS

William J. Rinz, Akron, and Tirlochan S. Sandhu, Strongsville, both of Ohio, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 172,995
Int. Cl.[5] B22C *7/06, 9/12*
U.S. Cl. 164—228 **12 Claims**



1. A hot box core box making apparatus comprising:

(a) a core box having a thick walled cope and a thin walled metal drag mating in essentially a horizontal parting plane said cope and drag each having ports therethrough screened to prevent passage of sand, the ports communicating with the interior of the core box;

(b) one or more resilient seals that seal and reseal said cope and drag at said parting plane;

(c) convection heater delivering a heated gas, to said drag ports and out through the ports of said cope, said convection heater having a heat conductive manifold attached to and along said drag for augmenting the heat of said gas as it passes to said ports of the drag; and

(d) conduction heater directly heating both said cope and said manifold and thereby the interior of said core box by conduction.

5,368,088

APPARATUS OF CONTINUOUSLY CASTING A METAL SHEET

Takashi Furuya; Hidemaro Takeuchi; Akio Kasama, all of Hikari; Yasuo Itoh, Kitakyushu; Motoya Fujii, Hikari; Hideki Oka, Hikari; Shogo Matsumura, Hikari; Kunimasa Sasaki, and Keiichi Yamamoto, both of Hiroshima, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Jukogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 828,215, Jan. 30, 1992, abandoned, which is a division of Ser. No. 554,190, Jul. 17, 1990, Pat. No. 5,103,895. This application Apr. 5, 1993, Ser. No. 42,860
Claims priority, application Japan, Jul. 20, 1989, 1-84510[U]; Aug. 1, 1989, 1-201107; Aug. 17, 1989, 1-210653
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—415 **2 Claims**

1. A continuous casting apparatus for continuously casting a metal sheet from molten metal comprising:

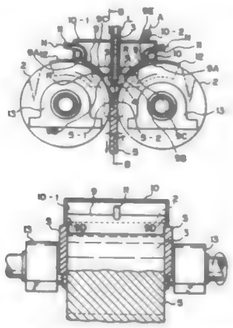
two adjacent cooling members, each having a longitudinal length between a first end and a second end of each cooling member, each cooling member having a cooling surface with dimples disposed on the cooling surface;

a side wall disposed at the first ends and at the second ends of said cooling members, said cooling members and the

side walls defining a pouring basin between said cooling members and inner faces of said side walls for receiving molten metal;

gas blowing guides disposed at said pouring basin along the longitudinal length of each cooling member for providing gas at the surface of each cooling member where the surface of each cooling member starts to come into contact with molten metal received by said pouring basin;

means for providing gas to said gas blowing guides;



wherein said gas blowing guides are disposed in a sealing chamber; and

wherein each of said gas blowing guides has side end faces disposed adjacent to inner faces of said side walls, an inner front end face disposed adjacent to where the surfaces of said cooling members start to come into contact with said molten metal, a lower open face disposed adjacent to the surface of a corresponding one of said cooling members, and an outer rear end fixed to an inner face of said sealing chamber and having a gas supplying pipe.

5,368,089

DEVICE FOR COOLING MOLTEN MATERIAL

Timothy Reynolds, Cockermouth; Robert M. Perry, Whitehaven, and David A. Preshaw, Workington, all of England, assignors to Davy (Distington) Limited, Workington, England

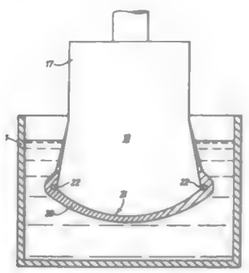
PCT No. PCT/GB91/00385, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/13710, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 12, 1991, Ser. No. 934,612

Claims priority, application United Kingdom, Mar. 12, 1990, 9005539.3

Int. Cl.[5] B22D *11/10, 27/04, 41/005*

U.S. Cl. 164—443 **11 Claims**



1. A non-rotatable device for cooling molten metal comprising a body of thermally conductive material having an upper part and a lower part, a duct in the upper part of the body for the passage of liquid coolant therethrough, said lower part of the body having no provision for the passage of liquid coolant therethrough, said lower part having a dimension in a first horizontal cross-sectional plane which is grater than the corresponding dimension in a second horizontal cross-sectional plane which is above the first cross-sectional plane, and means for supporting the body so that, in use, the upper part is not submerged in the molten metal to be cooled but the lower part is submerged in the molten metal to be cooled and a skull of solidified metal which forms on the submerged part of the body is locked to the body by extending around the dimension in the first horizontal cross-sectional plane.

5,368,090

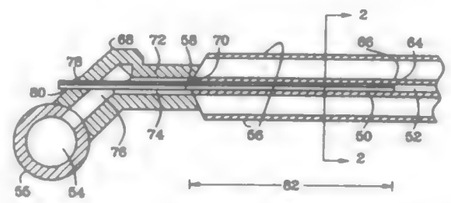
GEOMETRICAL VAPOR BLOCKER FOR PARALLEL CONDENSATION TUBES REQUIRING SUBCOOLING

Eugene K. Ungar, 16460 Hwy. 3, #306, Webster, Tex. 77598; William D. Harwell, 12518 Wrenthorpe Dr., Houston, Tex. 77031, and John D. Cornwell, Rte. 1, Box 730, San Leon, Tex. 77539

Filed Sep. 3, 1993, Ser. No. 115,832

Int. Cl.[5] F28B *11/00*

U.S. Cl. 165—1 **12 Claims**



9. A method for controlling working fluid flow through a plurality of conduits connected between a common input manifold and a common output manifold, comprising the following steps:

introducing vaporized working fluid to said input manifold to direct working fluid flow to said plurality of conduits;

removing heat from said working fluid to condense said working fluid in said conduits;

determining an approximate initial point at which subcooling is to begin along the length of a first conduit of said plurality of conduits; and

disposing a restriction member along said first conduit substantially between said approximate initial point and a first outlet of said first conduit to reduce the cross-sectional flow area of said first conduit adjacent said first outlet.

5,368,091

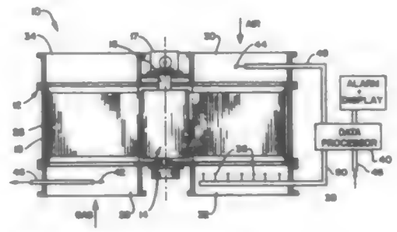
TEMPERATURE MONITORING METHOD AND SYSTEM FOR REGENERATIVE HEAT EXCHANGER

James D. Seebald; Carlton L. Bledsoe, both of Wellsville, and William T. Amundson, Caba, all of N.Y., assignors to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Feb. 10, 1994, Ser. No. 195,913

Int. Cl.[5] F28D *19/04;* **F28G** *15/00*

U.S. Cl. 165—5 **5 Claims**



1. A heat exchanger comprising:

a stationary housing having hot and cold ends and first and second sides;

a matrix of heat exchange material supported to revolve within said housing about an axis of revolution passing through said hot and cold ends whereby said matrix revolves through said first and second sides;

gas duct inlet means and gas duct outlet means fluidly connected to said housing on one of said first and second sides for introducing a flow of hot gas into said matrix at said housing hot end to raise the temperature of said matrix and discharging said gas from said matrix at said housing cold end respectively;

air duct inlet means and air duct outlet means fluidly connected to said housing on the other of said sides for introducing a flow of cold air into said matrix at said housing cold end to raise the temperature of said air and discharging said air from said matrix at said housing hot end respectively;

a plurality of temperature measurement means in said outlet duct means of said first side located at spaced intervals spanning the radial dimension of said matrix for measuring the temperatures at said spaced intervals;

at least one temperature measurement means located in said inlet duct means of said first side for measuring the incoming temperature on said first side;

at least one temperature measurement means located in said inlet duct means on said second side for measuring the incoming temperature on said second side;

means for computing the average effectiveness $E_{(avg)}$ of said heat exchanger wherein $E_{(avg)}$ equals the ratio of the temperature difference between the average of said plurality of temperature measurements and said incoming temperature on said first side to the temperature difference between said incoming temperature on said first side and said incoming temperature on said second side;

means for computing the maximum effectiveness $E_{(max)}$ of said heat exchanger wherein $E_{(max)}$ equals the ratio of the temperature difference between the highest temperature of said plurality of temperature measurements and said incoming temperatures on said first side to the temperature difference between said incoming temperature on said first side and said incoming temperature on said second side;

means for computing a time-averaged value $\bar{E}_{(avg)}$ of $E_{(avg)}$ and

means for initiating an alarm when $E_{(max)}$ deviates from $\bar{E}_{(avg)}$ more than a selected percentage of $\bar{E}_{(avg)}$.

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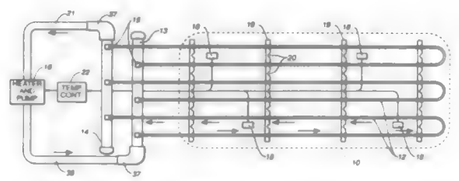
APPARATUS AND METHOD FOR CONTROLLING TEMPERATURE OF A TURF FIELD

Jim K. Rearden, and Michael Muchow, both of Sonoma, Calif., assignors to Biotherm Hydronic, Inc., Cotati, Calif.

Filed Dec. 27, 1993, Ser. No. 172,699

Int. Cl.[5] F28D *17/00*

U.S. Cl. 165—45 **15 Claims**



1. An apparatus for controlling temperature of a turf field overlying sub-surface media comprising:

a supply header and a return header,

an array of heat-exchanging tube means for disposition beneath said turf field,

coupling means for connecting each of said tubes in fluid connection with said supply header and said return header, said coupling means including a resilient conical surface portion engageable with openings in each of said headers in an interference fit,

fluid circulating means for circulating fluid through said tubes,

header connecting means for connecting said supply header and said return header to said fluid circulating means,

means for connecting said supply header and said return header in fluid communication with said heat-exchanging tube means at a location laterally disposed from said turf field,

sensor means for sensing said temperature of said field,

control means for maintaining said temperature within a predetermined range to facilitate growth of said field.

5,368,093

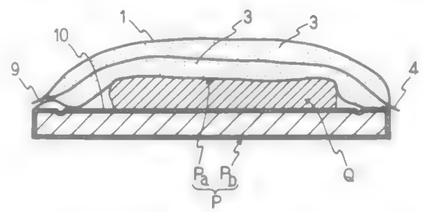
THAWING DEVICE FOR FROZEN FOODS

Takeshige Takehashi, Toyama, Japan, assignor to Sanwa Life Cela Kabushiki Kaisha, Toyama, Japan

Filed Nov. 25, 1992, Ser. No. 981,789

Int. Cl.[5] A23B *7/045*

U.S. Cl. 165—46 **14 Claims**



1. A thawing device for a frozen food item comprising a flexible bag-shaped body having a thermal transfer fluid hermetically sealed in the bag-shaped body wherein said thermal transfer fluid includes a mixture of fine particles of graphitic carbon and water; and a plate-shaped body composed of fine particles of graphitic carbon which is hardened by a binder and is subjected to heat treatment so as to be formed in a given plate-shape, a surface of the plate-shaped body exhibiting a hydrophilic property, whereby the food item rests on the surface of the plate-shaped body and the flexible bag-shaped body covers the food item and conforms to a shape and a size of the food item to facilitate rapid thawing of the food item.

5,368,094

BIPARTITE HEAT SINK POSITIONING DEVICE FOR COMPUTER CHIPS

Chin-Ping Hung, No. 42, Wen-Hwa Rd., Chung-Li, Taiwan, Prov. of China

Filed Nov. 2, 1993, Ser. No. 144,432

Int. Cl.[5] F28F *7/00*

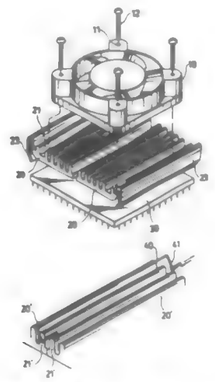
U.S. Cl. 165—80.3 **4 Claims**

1. A bipartite heat sink positioning device for computer chips comprising:

a heat sink including first and second sink bodies formed with a plurality of fins projecting from upper surfaces thereof and generally flat bottom surfaces, each of said sink bodies including inner and outer end portions, the inner end portions of said sink bodies terminating in respective upstanding walls and the outer end portions being formed with respective elastic clamping parts and a pair of spaced fixing holes, said heat sink being adapted to be secured to a computer chip by positioning the first and second sink bodies upon the chip with the elastic clamping parts engaging respective opposing side shoulders of the chip and the inner end portions of said sink bodies being slightly spaced;

a fan including a body provided with four tap holes positioned at spaced intervals about an outer peripheral portion of the body of said fan, said fan being adapted to be mounted upon said heat sink; and

a plurality of fasteners adapted to extend through the tap holes of said fan and to be secured within the fixing holes



of said heat sink once the tap holes and fixing holes are aligned by shifting of said sink bodies such that the upstanding walls of the inner end portions are drawn together while simultaneously forcing said clamping parts into clamping engagement with the side shoulders of the chip.

5,368,095

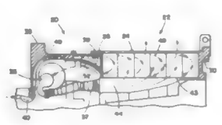
GAS TURBINE RECUPERATOR SUPPORT

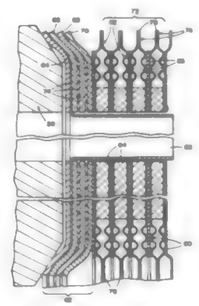
Vedanth Kadambi, Monroe; James J. Morgia, Trumbull, both of Conn., and Jonathan Venditsoli, San Diego, Calif., assignors to Avco Corporation, Providence, R.I.

Filed Mar. 11, 1993, Ser. No. 29,822

Int. Cl.[5] F28F *9/22*

U.S. Cl. 165—83 **18 Claims**





1. A recuperator system for preheating air before it enters the combustion chamber of a gas turbine engine comprising:

an assembly adjacent a power turbine for the engine extending between a forward end and a rear end and having a central passage extending between said forward end and said rear end and a plurality of cross passages communicating with said central passage for containing and guiding flow of exhaust gases from the engine through said asembly, then exhausting it from said assembly;

said assembly exhibiting a first rate of heat conduction and including:

first conduit means extending along the length of said assembly for receiving and guiding the flow of cold air to be heated;

second conduit means extending along the length of said recuperator for receiving and guiding the flow of preheated air toward the combustion chamber of the engine; and

cross conduit means for connecting said first and second conduits at a plurality of locations along the length of said assembly, said cross conduit means being proximate to the cross passages whereby the cold air from said first conduit means becomes pre-heated by the exhaust gases as it flows toward said second conduit means; and

transition means mounting said assembly on said gas turbine engine, said transition means thermally isolating said assembly from the gas turbine engine and accommodating relative movement between said assembly and the gas turbine engine resulting from temperature differentials occurring during operation of said gas turbine engine.

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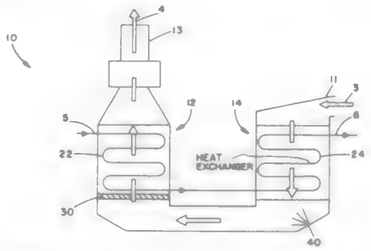
CONDENSING HEAT EXCHANGER SCRUBBING SYSTEM

Paul J. Williams, Akron, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 2, 1993, Ser. No. 161,109

Int. Cl.[5] F28B *1/02, 5/00*

U.S. Cl. 165—113 **2 Claims**



1. A scrubber and heat recovery system for a flue gas, the system comprising:

a housing having a cooling section and a condensing section, the housing also having an inlet near the cooling section and an outlet near the condensing section;

heat exchanger means disposed in the cooling section and the condensing section of the housing;

liquid means for providing a liquid to the heat exchanger means;

a perforated tray disposed in the condensing section at the heat exchanger means, the perforated tray including a plate having a plurality of apertures, and a plurality of baffles on the plate defining a plurality of compartments;

the housing for receiving the flue gas at the inlet, the flue gas being interactively contacted with the heat exchanger means of the cooling section and the heat exchanger means of the condensing section, and the flue gas exiting the housing at the outlet.

5,368,097

HEAT EXCHANGER

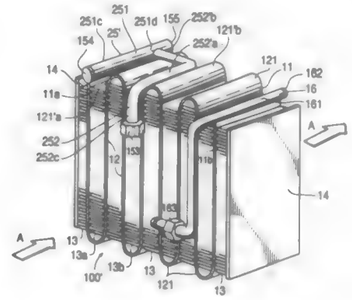
Tomohiro Chiba, and Kenichi Sasaki, both of Isesaki, Japan, assignors to Sanden Corporation, Isesaki, Japan

Filed Oct. 27, 1993, Ser. No. 141,564

Claims priority, application Japan, Oct. 27, 1992, 4-74715[U]; Oct. 29, 1992, 4-75240[U]; Apr. 21, 1993, 4-20655[U]

Int. Cl.[5] F28D *1/047*

U.S. Cl. 165—150 **12 Claims**



1. A heat exchanger for use in a refrigeration circuit, the heat exchanger comprising:

a continuous serpentine flat tube having a length, a depth, and an interior space through which a refrigerant flows when the heat exchanger is in operation, the serpentine tube comprising a plurality of spaced, substantially parallel planar portions and a plurality of curved portions interconnecting the parallel planar portions in a serpentine fashion, such that the plurality of curved portions comprises a plurality of upper curved portions and a plurality of lower curved portions, the serpentine tube having a first terminal end and a second terminal end, and a plurality of substantially parallel partition walls extending along the length of the serpentine tube dividing the interior space of the serpentine tube into a plurality of parallel passages along the depth thereof, so that in operation the refrigerant fluid through the plurality of parallel passages of the serpentine tube from the first terminal end towards the second terminal end and air passes through the heat exchanger between the plurality of planar portions;

inlet means connected to the first terminal end of the serpentine tube, the inlet means comprising a header pipe portion and conducting pipe portion, the header pipe portion being disposed substantially paralled to a flow direction of the air which passes through the heat exchanger when in an installed position, the header pipe being fixedly disposed at the first terminal end of the serpentine tube along the depth of the serpentine tube, the header pipe portion including a first region adjacent to the air immediately upstream from the heat exchanger and a second region adjacent to the air immediately downstream from the heat exchanger, the second region having an inner side section substantially facing the plurality of upper curved portions, the conducting pipe portion having a first end and a second end, the second end being connected to the header pipe portion at the inner side section of the second region of the header pipe portion, the conducting pipe portion including a first straight region which is located towards the first end of the conducting pipe portion, and a second straight region which is located adjacent to the second end of the conducting pipe portion, the second straight region being substantially perpendicular to the first straight region; and

outlet means connected to the second terminal end of the serpentine tube.

5,368,098

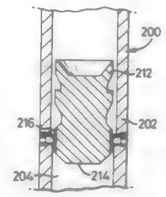
STAGE TOOL

William A. Blizzard, Jr., Houston, and Frederick T. Tilton, Spring, both of Tex., assignors to Weatherford U.S., Inc., Houston, Tex.

Filed Jun. 23, 1993, Ser. No. 82,256

Int. Cl.[5] E21B *33/13*

U.S. Cl. 166—100 **17 Claims**



1. A tool for use in wellbore operations, the tool comprising

a hollow body member,

at least one hollow port through the hollow body member for the passage of fluid from an interior of the body member to a space outside the body member or from the space outside the body member into its interior,

the at least one hollow port having a channel therethrough defined by a port interior surface, and

a metal liner disposed within the at least one hollow port and lining the interior surface of the port, the metal liner having a crushable metal extending liner portion projecting beyond the at least one hollow port into the hollow body member.

5,368,099

INJECTION OF DEXTRINS FOR SUBTERRANEAN MICROBIAL PROCESSES

Mary E. Davey, Leucadia; Diane Gevertz, San Diego, both of Calif.; Gary E. Jenneman, Bartlesville, Okla.; Scott T. Kellogg, Moscow, Id.; Willis A. Wood, Poway, Calif., and J. Bennett Clark, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 4, 1992, Ser. No. 971,489

Int. Cl.[5] E21B *33/138*

U.S. Cl. 166—246 **10 Claims**

1. A process for sustaining microbial activity in subterranean formations which comprises introducing as a microbial nutrient a dextrin.

5,368,100

COILED TUBING ACTUATED SAMPLER

David Lewandowski, Fort Worth, and Roger L. Schultz, Richardson, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Mar. 10, 1993, Ser. No. 28,680

Int. Cl.[5] F21B *49/08*

U.S. Cl. 166—264 **27 Claims**

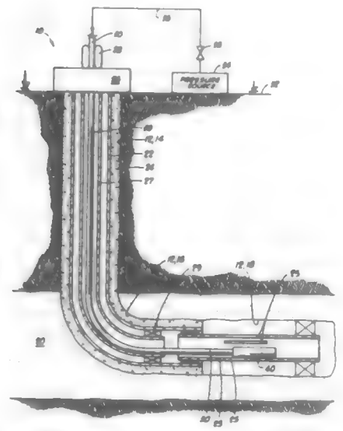
1. A method of collecting a well fluid sample from a well, comprising:

(a) running a sampling tool into a well on a coiled tubing string;

(b) actuating said sampling tool by increasing fluid pressure in said coiled tubing string;

(c) trapping said well fluid sample from said well in said sampling tool in response to said increasing of fluid pressure in said coiled tubing string, said step of trapping including moving a sampling valve to trap said sample by applying to said sampling valve a pressure differential

between well fluid in said well and a lower pressure zone defined in said sampling tool; and



(d) retrieving said coiled tubing string and said sampling tool containing said well fluid sample from said well.

5,368,101

METHOD FOR REDUCING RETENTION OF A DISPLACEMENT AGENT AND APPLICATION TO ASSISTED RECOVERY OF HYDROCARBONS

Guy Chauveteau; Jacqueline Lecourtier, both of Rueil Malmaison; Véronique Plazanet, Gif sur Yvette, and Antide Putz, Pau, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

PCT No. PCT/FR92/00812, § 371 Date Jun. 2, 1993, § 102(e) Date Jun. 2, 1993, PCT Pub. No. WO93/04266, PCT Pub. Date Mar. 4, 1993

PCT Filed Aug. 21, 1992, Ser. No. 39,413

Claims priority, application France, Aug. 22, 1991, 91 10591

Int. Cl.[5] E21B *43/22*

U.S. Cl. 166—273 **14 Claims**

1. A method for reducing the retention of a displacement agent on a rock matrix of an underground reservoir containing a fluid, said rock matrix comprising clays and said agent being capable of displacing said fluid, which comprises stabilizing said rock matrix by injection of a solution comprising cations obtained from KCl or NaCl salts and effecting the reduction of retention of the displacement agent by treating the rock matrix with an adsorbent solution of a phosphate salt selected from the group consisting of Na_2HPO_4, Na_3PO_4, K_2HPO_4 and K_3PO_4; the adsorption of said phosphate salt on the rock matrix being increased by the presence of said cations at a given concentration.

5,368,102

CONSOLIDATABLE PARTICULATE MATERIAL AND WELL TREATMENT METHOD

Brahmadeo Dewprashad, and Jimmie D. Weaver, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 9, 1993, Ser. No. 118,702

Int. Cl.[5] E21B *43/04, 43/267*; C08L *63/00*

U.S. Cl. 166—276 **10 Claims**

1. A method of treating a subterranean zone in a well comprising the steps of:

(a) preparing a treating composition comprising:

a gelled carrier,

a particulate material,

an epoxy resin system including at least one epoxy resin, and

a finely-divided hardening agent which, when dissolved, is operable for hardening said epoxy resin, at least a portion of said finely-divided hardening agent being dispersed in said epoxy resin system;

(b) injecting said treating composition into said well such that said treating composition is placed in said subterranean zone; and

(c) maintaining said finely-divided hardening agent under conditions such that, prior to injecting said treating composition into said well in accordance with step (b), said finely-divided hardening agent does not substantially dissolve.

5,368,103

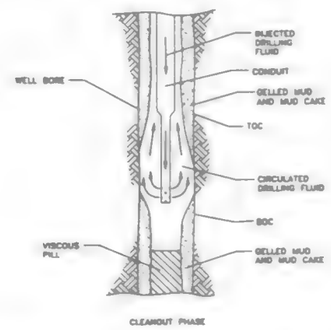
METHOD OF SETTING A BALANCED CEMENT PLUG IN A BOREHOLE

James F. Heathman, Duncan, Okla.; Robert B. Carpenter, Allen, Tex.; Anthony M. Badalamenti, New Orleans, La.; Kenneth P. Marcel; Robert R. Siffert, both of Lafayette, La., and Charles J. Rimer, Plano, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 28, 1993, Ser. No. 127,840

Int. Cl.[5] E21B *33/134, 21/00*

U.S. Cl. 166—289 **20 Claims**



1. A method of conditioning a borehole penetrating a subterranean formation from the earth's surface prior to the cementing thereof, said method comprising the steps of:

identifying the locations in said borehole where the intended top of cement (TOC) and where the intended bottom of cement (BOC) shall be;

introducing a conduit into said borehole and positioning the bottom of said conduit at said TOC;

injecting at least two streams of drilling fluid from said conduit into said borehole at said TOC wherein said streams of said drilling fluid are injected at high velocity from said bottom of said conduit in at least one plane wherein said plane is substantially parallel to the cross section of said borehole, whereby said streams impact the walls of said borehole in said at least one plane;

continuing said injecting of said streams and establishing circulation of said drilling fluid from the bottom of said conduit to the top of said borehole by way of the annular space between said conduit and the walls of said borehole;

moving said conduit, while continuing said circulation, from TOC to a termination location which is at least the location of said BOC;

continuing said circulation from said termination location;

discontinuing said circulation of said drilling fluid when the properties of said drilling fluid are desirable for cementing and when at least one volume of drilling fluid equivalent to the annular volume between the conduit and the borehole wall from the surface to said termination location has been circulated from said termination location to the surface of said borehole whereby said conditioning of said borehole is completed.

5,368,104

HORSESHOE

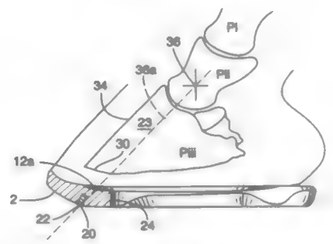
Dave Duckett, 709 Tennis Ave., Ambler, Pa. 19002

Continuation-in-part of Ser. No. 288,796, Dec. 21, 1988, Pat. No. 5,165,481. This application Nov. 24, 1992, Ser. No. 980,659

The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.

Int. Cl.[5] A01L *1/04*

U.S. Cl. 168—4 **12 Claims**



1. A horseshoe, to be affixed to the distal surface of a horse's hoof having a longitudinal axis, said horse having first, second, and third phalanx bones, P_I^I, P_{II}^I, and P_{III}^I, respectively, said P_{III}^I having a dorsal surface thereon and partially rotating, with respect to said P_{II}^I, about an axis of articulation substantially transverse to said longitudinal axis, said horseshoe having an upper surface and a lower surface, and a toe portion having a front surface and an inner surface, comprising:

1. said front surface of said toe portion:

a. making a substantially obtuse angle with said lower surface at a balance point; and

b. being configured so that said balance point is located, when said horseshoe is affixed to said distal surface, at the intersection of:

I. said lower surface, and

II. a plane:

A. containing said axis of articulation; and

B. extending downwardly and forwardly therefrom parallel to said dorsal surface along said longitudinal axis;

2. said upper surface being substantially planar.

5,368,105

CRYOGENIC SLURRY FOR EXTINGUISHING UNDERGROUND FIRES

Robert F. Chaiken; Ann G. Kim, both of Pittsburgh, Pa.; Andrew M. Kociban, Wheeling, W. Va., and Joseph P. Slivon, Jr., Tarentum, Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 11, 1991, Ser. No. 805,223

Int. Cl.[5] A62C *3/02*; F17C *5/00*

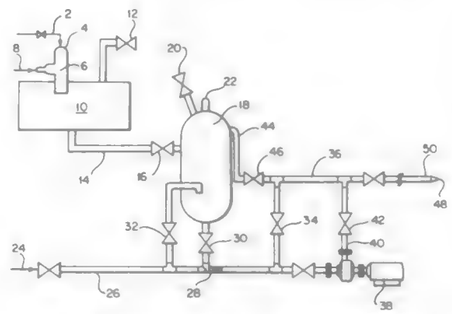
U.S. Cl. 169—44 **11 Claims**

1. A process for extinguishing fires comprising the steps of:

injecting liquid or gaseous carbon dioxide into a funnel shaped port of a nozzle to reduce the pressure on the carbon dioxide and to form solid carbon dioxide particles;

injecting liquid nitrogen into the nozzle at a point downstream from where the liquid or gaseous carbon dioxide is injected;

mixing the solid carbon dioxide articles with the liquid nitrogen to from a slurry of carbon dioxide particles suspended in liquid nitrogen wherein the carbon dioxide particles and liquid nitrogen are present in a ratio of about 1:1 by weight; and



forcing the mixture of solid carbon dioxide particles and liquid nitrogen through a discharge line to extinguish a fire.

5,368,106

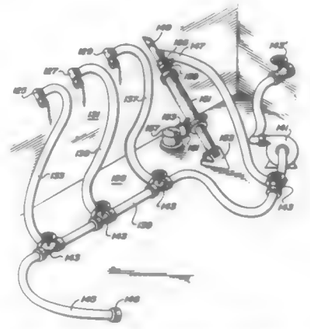
FIRE-FIGHTING TOOL PARTICULARLY FOR SHIPBOARD FIRES AND THE LIKE

Jerome A. Coughlin, 6 Robin Ct., Bethlehem, Pa. 18015

Filed Apr. 6, 1992, Ser. No. 863,952

Int. Cl.[5] A62C *31/22*

U.S. Cl. 169—70 **30 Claims**



1. A fire fighting tool assembly comprising:

(a) an extensible fluid pressure-type ram having first and second tool connection means at opposite ends,

(b) the first tool connection means being arranged and constructed to interconnect with a fire-fighting nozzle assembly, which fire-fighting nozzle assembly comprises:

(i) a mounting section for interconnection with the first tool connection means on the extensible fluid pressure-type ram,

(ii) a spray nozzle section arranged and constructed for admission of a fire quenchant to a hollow interior of said spray nozzle section and spray orifices in the walls of said spray nozzle section through which the quenchant may be expelled into a fire environment, and

(iii) a penetrator section having a sharp profile for penetrating a penetration-resistant panel at an acute angle,

(iv) the spray nozzle section being intermediate and connected to the mounting section and the penetrator section,

(v) the penetrator section being configured for penetrating the penetration-resistant panel at the acute angle with a surface of said panel, and

(c) a base arranged and constructed to be connected via the second tool connection means to said extensible fluid

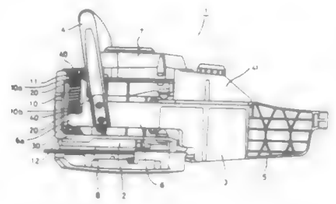
pressure-type ram with the lower surface of said base disposed at an angle with the longitudinal axis of said ram which is a complement to the acute angle of the penetrator section with the panel during penetration of such panel.

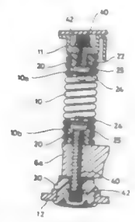
5,368,107

VIBRATION PREVENTIVE COIL SPRING MOUNTING STRUCTURE

Toshio Tsuno, Nishitama, Japan, assignor to Kioritz Corporation, Ohme

Filed Oct. 14, 1993, Ser. No. 135,629
Claims priority, application Japan, Oct. 14, 1992, 4-71694[U]
Int. Cl.[5] B25D *17/24*; F16F *1/38*
U.S. Cl. 173—162.2 **4 Claims**





1. A mounting structure of a vibration preventive coil spring (**10**) for use in a portable work machine (**1**), said vibration preventive coil spring being interposed between a main body (**2**) including a power source and a covering part (**3**) including grip handles (**4, 5**) and arranged to partially surround the outer periphery and support said main body, wherein opposite ends (**10***a*, **10***b*) of said coil spring (**10**) contact spring mount seat (**11**) of said main body (**2**) and spring mount seat (**6***a*) of said covering part (**3**), cylindrical resilient fixing members (**20**,**20**) extending part way into said opposite ends (**10***a*, **10***b*) and press-fitted within said opposite ends to abut against inner peripheries of the coil spring (**20**), nut members (**25**,.**25**) adapted to fit into a recess at the inner end portions of said resilient fixing members (**20, 20**), bolts (**40, 40**) connected to said spring mount seats (**11, 6***a*) and extending into opposite ends of said coil spring (**10**) and threadably engaged with said nut members (**25, 25**) and tightened to compress said resilient fixing members (**20, 20**) in an axial direction and swell said resilient fixing members (**20, 20**) in a radial direction to thereby fix said opposite ends (**10***a*, **10***b*) of said coil spring (**10**) to said spring mount seats (**11, 6***a*).

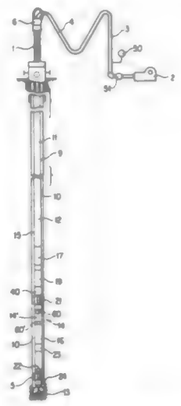
5,368,108

OPTIMIZED DRILLING WITH POSITIVE DISPLACEMENT DRILLING MOTORS

Walter D. Aldred, Port Harcourt, Nigeria; Dominic P. J. McCann, Sugar Land, and John C. Rasmus, Richmond, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Oct. 26, 1993, Ser. No. 142,734
Int. Cl.[5] E21B *44/00*
U.S. Cl. 175—40 **18 Claims**

1. A method of determining the maximum power output of a downhole drilling motor for a given flow rate while drilling, said motor driving a drill bit which penetrates an earth formation, comprising the steps of: measuring the downhole torque and rotary speed of the motor; measuring the pressure drop across the motor; determining the mechanical power output of the motor as a function of torque and rotary speed; determining hydraulic power input to the motor as a function of said pressure drop and flow rate; plotting said mechanical power output versus said hydraulic power input; and determining said maximum power output from a characteristic of said plot.

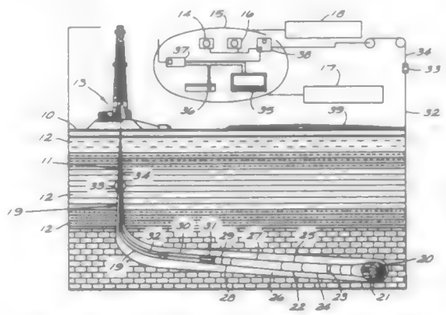


5,368,109

APPARATUS FOR ARCUATE DRILLING

Frederick J. Pittard, Jr., Richmond; Albert E. Roos, Jr., Houston; Roger C. Leaf, Houston, and Steven W. Drews, Houston, all of Tex., assignors to Slim Dril International Inc., Houston, Tex.

Filed Nov. 4, 1993, Ser. No. 145,579
Int. Cl.[5] E21B *7/08, 4/02, 17/16*
U.S. Cl. 175—45 **24 Claims**



1. A system of apparatus for arcuate drilling into the earth comprising:
- a drill string extending into a well bore in the earth,
- a fluid operated drill motor and drill bit operated thereby secured on the bottom end of said drill string,
- said drill motor being connected at its upper end to said drill string and at its lower end to said drill bit for rotating said drill bit independently of rotation of said drill string,
- said drill motor having a tubular drive section housing constructed of non-magnetic material with the longitudinal axis of its upper and lower ends angularly displaced from the longitudinal axis of its central portion end for directing the axis of rotation of said drill bit such that it is angularly displaced from the axis of said drill string for effecting a curved path for said wellbore,

- an orienting/circulating/float sub constructed of non-magnetic material connected above said drill motor,
- a drill collar constructed of non-magnetic material connected to the upper end of said orienting/circulating/float sub,
- a survey tool positioned in and surrounded by said orienting-/circulating/float sub,
- a drilling rig, instruments and controls positioned on the earth surface,
- a first wire line connecting said survey tool a predetermined distance toward the earth surface,
- a second wire line connecting instruments and controls positioned on the earth surface a predetermined distance into said drill string, and
- a wet-connect releasably connecting said first and said second wire lines,

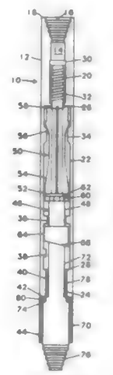
wherein the structure and configuration of the respective components cooperate to facilitate bending through a radius of curvature as short as 20 feet.

5,368,110

DOWNHOLE ROTARY BEARING SUB

Michael R. French, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 28, 1993, Ser. No. 142,562
Int. Cl.[5] E21B *10/36, 17/046*
U.S. Cl. 175—57 **18 Claims**



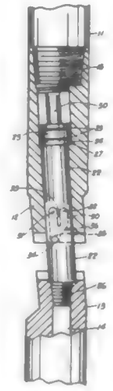
1. A rotary bearing downhole sub comprising:
- a generally cylindrical outer housing member having drill string attachment means on an upper end and defining a profiled axial bore and an array of inwardly directed spline means within said axial bore;
- a generally cylindrical inner mandril member having drill string attachment means on a lower end and an upper end profiled to be received in said axial bore of said outer housing member for both relative rotational and axial movement, said inner mandril member having an axial bore and an array of outwardly directed spline grooves adapted to engage the spline means of said outer housing member;
- bearing means mounted between said outer housing member and said inner mandril member; and
- latching means adapted to lock said outer housing member and said inner mandril in an engaged condition,
- whereby relative axial movement of said outer housing member and said inner mandril member engages and disengages said spline means and said spline grooves for the selective transmission of torque between said members.

5,368,111

DIRECTIONAL DRILLING SUB WITH IMPROVED MULTI-SLOT LOCKING ARRANGEMENT

Lloyd F. Benoit, and Joseph A. Benoit, both of P.O. Box 503, Arnaudville, La. 70512

Filed Jun. 16, 1993, Ser. No. 79,126
Int. Cl.[5] F21B *7/08*
U.S. Cl. 175—74 **13 Claims**



1. A directional drilling apparatus comprising:
- a) a two part tubular body including an upper section and a lower section adapted to rotate with respect to one another;
- b) the upper section including means for attaching the apparatus to a drill string;
- c) the upper section including at its lower end portion a slot including a straight portion which is generally aligned with the axis of the upper section and an offset portion which is spaced laterally from and spaced radially from the vertical section;
- d) connecting means for forming a connection which rigidly affixes each of the upper and lower section with respect to each other so that they are prevented from rotating with respect to one another;
- e) a sleeve carried by the lower section and slidably movable with respect to the upper section, the sleeve including a locking pin which extends into the slot, the pin being adapted to move longitudinally and laterally within at least a portion of the slot and into either the vertical or laterally offset a section thereof.

5,368,112

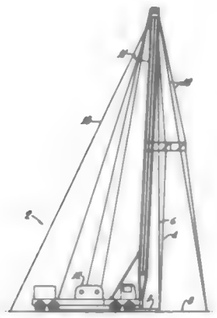
TENSIONING APPARATUS FOR TIE DOWN LINES

Matthew J. Mount, Long Beach, and David G. Hopkins, Riverside, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Jul. 30, 1993, Ser. No. 100,623
Int. Cl.[5] E21B *15/00*
U.S. Cl. 175—122 **16 Claims**

1. A tensioning apparatus for pulling a wire line fixedly attached to a crown of a well drilling rig substantially located above a ground surface, comprising:
- means for pulling said wire line towards said surface and creating a tension in said wire line;

means in contact with said wire line for indicating said tension in said wire line; and



means in physical communication with said wire line for controlling said means for pulling based at least in part upon indications from said means for indicating.

5,368,113

DEVICE FOR POSITIONING EQUIPMENT

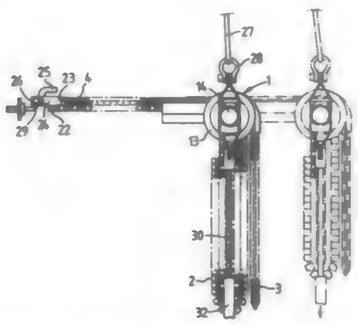
Joerg E. Schulze-Beckinghausen, Garbsen, Germany, assignor to Weatherford/Lamb, Inc., Houston, Tex.

Filed Oct. 19, 1993, Ser. No. 139,410

Claims priority, application European Pat. Off., Oct. 21, 1992, 92117969.3

Int. Cl.[5] E21B *7/00*

U.S. Cl. 175—162 **7 Claims**



1. A device for positioning equipment, which device comprises a first member and a second member each of which is flexible but which can co-operate to form a rigid meanbet, wherein said first member comprises a chain having a plurality of compression members, wherein each compression member comprises a base portion, an inclined portion and a blocking portion, and wherein the inclined portions of adjacent compression member are inclined in opposite directions so that said blocking portions lie in substantially the same plane, wherein each compression member is provided with a recess for accommodating a pin of a locking chain, wherein said recess is shaped to inhibit removal of said pin when said blocking portions are disposed closely adjacent one another, wherein said second member comprises a locking chain, wherein said device includes means to guide said first member and said second member into operative juxtaposition, and a motor to extend and collapse said rigid member.

5,368,114

UNDER-REAMING TOOL FOR BOREHOLES

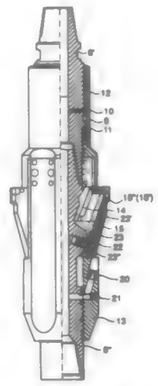
Geir Tandberg, Berberisvn 30A, N-3408 Tranby; Sigbjorn Sangesland, Okstadbrinken 10, N-7039 Trondheim, and Asbjorn Andersen, Jakobslivn. 55, N-7058 Jakobsli, all of Norway

Filed Apr. 30, 1993, Ser. No. 54,198

Claims priority, application Norway, Apr. 30, 1992, 921718

Int. Cl.[5] E21B *10/26*

U.S. Cl. 175—267 **12 Claims**



1. A tubular under-reaming tool for use in a longitudinal direction of movement in a well borehole for radially enlarging the well borehole from a smaller diameter to a larger diameter, while incorporated at an axially intermediate location in a string of drill pipe, said under-reaming tool comprising:

a first stabilizer, an under-reamer and a second stabilizer, respectively, connected to one another in series with said first stabilizer leading and said second stabilizer trailing, in said longitudinal direction of movement;

said under-reamer being radially expansible to an active position and radially contractible to an inactive position;

said second stabilizer being radially expansible, for effectively providing stabilization of said under-reaming tool in said borehole in a radially contracted position for use while located where said borehole has said smaller diameter and in a radially expanded position for use while located where said borehole has said larger diameter.

5,368,115

UNDERCARRIAGE ASSEMBLY FOR A VEHICLE

Elmer R. Crabb, Aurora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 950,547, Sep. 25, 1992, Pat. No. 5,293,948. This application Dec. 6, 1993, Ser. No. 161,842

The portion of the term of this patent subsequent to Mar. 15, 2011, has been disclaimed.

Int. Cl.[5] B62D *55/084, 55/15*

U.S. Cl. 180—9.1 **9 Claims**

1. An undercarriage assembly for a vehicle, said vehicle having a main frame, an engine, and first and second drive axles powered by said engine, said undercarriage assembly comprising:

first and second roller frame assemblies, each having first and second end portions and a middle portion, said second end portions being releasably connected to a respective first and second drive axle;

means for connecting said vehicle to said first and second roller frame assemblies;

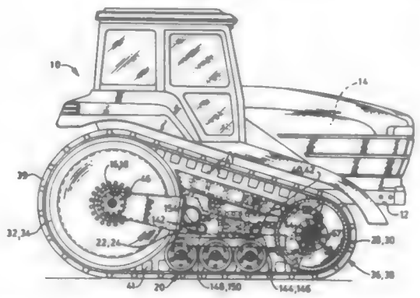
first and second idler wheel assemblies, each having a spindle and first and second spaced wheels rotatably supported on said spindle, said spindle being releasably connected to a first end portion of a respective roller frame assembly, each of said spindles having first and second radially extending ear portions;

first and second endless track assemblies encircling respectively said first and second roller frame assemblies and said first and second idler wheel assemblies;

first and second track tensioning mechanisms, each including a hydraulic ram assembly having a first end portion connected to a respective first spindle ear portion and a second end portion connected to a respective roller frame assembly;

a first self-aligning mechanism connecting the first end portion of each track tensioning mechanism to said first ear portion of each spindle, and a second self-aligning mechanism connecting the first end portion of each roller frame assembly to said second ear portion of each spindle; and

means for supporting said first roller frame assembly by said second roller frame assembly when said first roller frame assembly is disconnected from said first drive axle and from said connecting means, and means for supporting said second roller frame assembly by said first roller frame assembly when said second roller frame assembly is disconnected from said second drive axle and from said connecting means.



5,368,116

METHOD OF CONTROLLING ELECTRIC VEHICLE DRIVEN BY AN INTERNAL COMBUSTION ENGINE

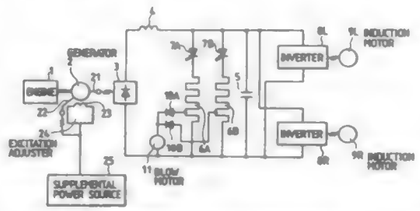
Katsuhiko Iijima, and Shigesori Kinoshita, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa and Mitsubishi Heavy Industries, Ltd., Tokyo, both of Japan

Filed Oct. 7, 1992, Ser. No. 957,179

Claims priority, application Japan, Oct. 8, 1991, 3-289133

Int. Cl.[5] B60L *11/02*

U.S. Cl. 180—65.4 **3 Claims**



1. A method of controlling the power operation of a vehicle having an AC generator driven by an internal combustion engine, a first power convertor for converting the AC generator output to DC voltage, an intermediate DC circuit having an input connected to output of the first power converter, a second power converter for converting the DC output of the intermediate circuit to an AC voltage, AC induction motors connected to the output of the second power convertor for driving the vehicle wheels, and breaking resistors in the intermediate DC circuit for consuming power during vehicle braking said method including the steps of:

controlling the AC voltage output of the generator during a first speed range of the vehicle from zero to a predetermined first vehicle speed to maintain a first substantially constant DC voltage in the intermediate circuit;

controlling the voltage output of the generator during a second speed range of the vehicle from the first predetermined vehicle speed to a second predetermined vehicle speed higher than said first predetermined vehicle speed to increase the DC voltage in the intermediate circuit in proportion to said vehicle speed;

controlling the AC voltage output of the generator during a third speed range of the vehicle from the predetermined second speed to a predetermined third speed higher than the second predetermined speed, maintaining a second substantially constant DC intermediate circuit voltage;

varying the frequency of the AC voltage output of the second power convertor during the first, second and third speed ranges and the amplitude of the AC voltage output of the second power convertor during the first and second speed ranges; and

maintaining the AC voltage output of the second power converter substantially constant during the third speed range.

5,368,117

Patent Not Issued For This Number

5,368,118

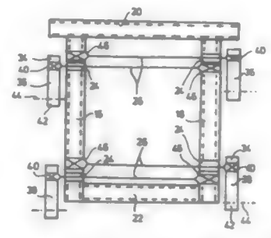
TORSION BAR SUSPENSION FOR OPERATOR'S PLATFORM

Joerg J. Hoefle, Jugenheim, Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 2, 1993, Ser. No. 115,938

Int. Cl.[5] B62D *33/063, 49/00*

U.S. Cl. 180—89.12 **12 Claims**



1. A suspension for an operator's platform of a vehicle, comprising:

an operator's platform;

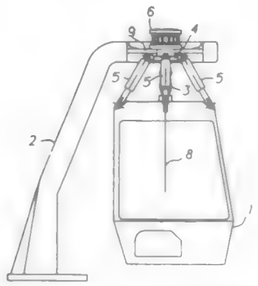
a vehicle chassis;

a pair of links, each link having a first end and a second end;

mount means for pivotally mounting the first end of each link to the vehicle chassis;

a pair of transversely oriented torsion bars; fixed bearing means for non-rotatably fixing an end of each of the torsion bars to the second end of a corresponding one of the links; and support means for supporting said operator's platform on the torsion bars, the support means including clamp means for non-rotatably clamping a portion of each torsion bar to the operator's platform.

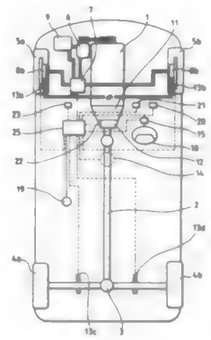
5,368,119
CABIN, ESPECIALLY FOR A CROSS-COUNTRY VEHICLE
Sten Nyström, Mala, Sweden, assignor to Mala Skogstjanst AB, Malå , Sweden
PCT No. PCT/SE91/00556, § 371 Date Apr. 22, 1993, § 102(e) Date Apr. 22, 1993, PCT Pub. No. WO92/04224, PCT Pub. Date Mar. 19, 1992
PCT Filed Aug. 22, 1991, Ser. No. 978,677
Claims priority, application Sweden, Aug. 30, 1990, 9002771
Int. Cl.[5] B62D *33/067*
U.S. Cl. 180—89.14 **5 Claims**



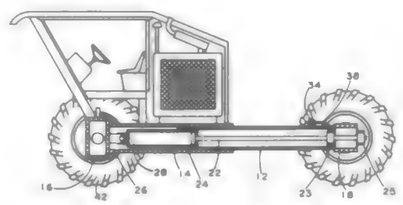
1. A cross-country vehicle for maneuvering over uneven terrain, comprising:
a chassis supported for movement upon uneven terrain and including a cabin carrier frame for hangingly suspending an operator's cabin for the vehicle;
an operator's cabin having a center for gravity;
a universal joint suspending said cabin from above, from said carrier frame for omnidirectionally pendular swinging motion relative to a pivot point provided by said universal joint, so that said center of gravity of said operator's cabin tends to lie on an imaginary straight line connecting said pivot point with the center of the earth; and
a plurality of two ended shock absorbers equiangularly spaced from one another about said line and each having one end effectively connected with said carrier frame and an opposite end effectively connected with said cabin, both with radial spacing from said line, for damping tendency of said cabin to omnidirectionally pendularly oscillate as said vehicle traverses uneven terrain.

5,368,120
FOUR WHEEL DRIVE VEHICLE WITH SLIP CONTROL SYSTEM
Takeshi Sakai, Chiryu; Keiichiro Banzai, Toyota; Yuichi Imani, Hamamatsu, and Katsuo Sakurai, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Nov. 12, 1992, Ser. No. 974,411
Claims priority, application Japan, Nov. 12, 1991, 3-295885
Int. Cl.[5] B60K *28/16*
U.S. Cl. 180—197 **8 Claims**

1. A four wheel drive apparatus for a motor vehicle, with a slip control system, comprising:
a prime mover;
a pair of front wheels;
a pair of rear wheels;
a power transmission mechanism coupled to said prime mover and to one of said front wheels and said rear wheels;
a power source driven by said prime mover to generate an auxiliary power;
a motor, coupled to said power source and responsive to said auxiliary power, and having an output coupled to another of said front wheels and said rear wheels;
means for setting an upper limit on said auxiliary power, said upper limit being set to a value where excessive slip is reduced in said other of said front wheels and said rear wheels on a road surface having a low friction coefficient;
means for detecting an occurrence of a slip condition in said one of said front wheels and said rear wheels based on wheel speeds of said one of said front wheels and said rear wheels and said other of said front wheels and said rear wheels;
means for adjusting said auxiliary power on the basis of said detecting means so as to adjust driving forces applied to said other of said front wheels and said rear wheels, whereby the occurrence of said slip condition in said one of said front wheels and said rear wheels is suppressed;
sensors for detecting a speed differential between a rotational speed of a left side and right side wheel of said other of said front wheels and said rear wheels; and
means for controlling said motor so as to cancel said speed differential between said left side wheel and said right side wheel.

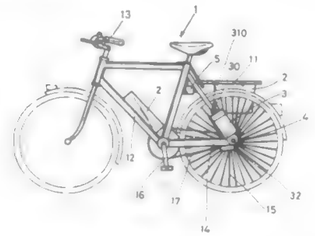


5,368,121
TELESCOPING TRACTOR FRAME
William D. Priefert, Drawer 1540, Mt. Pleasant, Tex. 75455
Filed Jun. 21, 1993, Ser. No. 78,344
Int. Cl.[5] B62D *61/12;* **B62K** *13/00*
U.S. Cl. 180—209 **3 Claims**



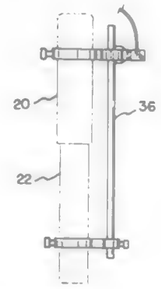
1. An extendable tractor having a frame capable of extending and pivoting in response to various terrains comprising:
a. a forward wheel support;
b. a forward cylinder with an inner circumference, said forward cylinder being perpendicularly attached to said forward wheel support;
c. a rear wheel support;
d. a rear cylinder with an outer circumference, said rear cylinder being perpendicularly attached to said rear wheel support, said rear cylinder also being nested within said forward cylinder for telescopic and pivotal movement in relationship thereto;
e. a first pair of wheels operably connected to said forward wheel support;
f. a second pair of wheels operably connected to said rear wheel support; and
g. a hydraulic linear actuator attached within said forward cylinder and attached within said rear cylinder to extend and contract said forward cylinder in relationship to said rear cylinder while allowing said forward cylinder to pivot in relationship to said rear cylinder.

5,368,122
ELECTRICAL BICYCLE
Wen-Cheng Chou, No. 1-2, Lane 975, Chun-Jih Road, Tao-Yuan City, Taiwan, Prov. of China
Filed Dec. 21, 1993, Ser. No. 170,832
Int. Cl.[5] B62K *11/10;* **B60K** *1/04*
U.S. Cl. 180—220 **1 Claim**



1. An electrical bicycle comprising:
a frame body having a front triangle supporter, a rear triangle supporter and a rear seal;
a battery mounted to said frame body on one side of the front triangle supporter;
a rotation controller mounted to the frame body;
a driving mechanism located on one side of the rear seat and fixed to the rear triangle supporter, said driving mechanism including,
a DC motor having a lug extending from an upper section thereof, said DC motor being fastened to the rear triangle supporter, a first bevel pinion gear being attached to an output shaft of the DC motor;
a connecting housing mounted to a lower section of said driving mechanism having said first bevel pinion gear therein, said connecting housing having a ring slot formed therein;
a second bevel pinion gear having a rotation limiting device engageable with said second bevel pinion gear being mounted in said ring slot and meshed to said first bevel pinion gear;
a positioning housing having a flange member attached to the connecting housing and a bearing located between the flange member and the second bevel pinion gear;
a transmission collar having an inner gear slot and a sleeve disposed at a front section of the transmission collar;
a gear sleeve secured to one side of a spindle, said gear sleeve having a gear sleeve slot which is in meshed engagement with the transmission collar having an internal thread portion;
a transmission mechanism for a rear wheel of said electrical bicycle disposed adjacent the rear triangle supporter, said spindle having threaded sleeves at opposing ends thereof, one of said threaded sleeves being received in said gear sleeve and the other of said threaded sleeves being received within a fly-wheel; and,
a shaft member extending through the spindle, the transmission collar, the second bevel pinion gear, and the connecting housing, said shaft member being fixedly located to the rear triangle supporter.

5,368,123
AUTOMOTIVE IMBALANCE SAFETY CUT-OFF SYSTEM
Gregory Castellana, 259 Springtown Rd., New Paltz, N.Y. 12561
Filed Sep. 24, 1993, Ser. No. 125,777
Int. Cl.[5] B60K *28/00*
U.S. Cl. 180—283 **7 Claims**



1. A system to sense an automotive imbalance and to cut-off the power to the ignition in response thereto for increased safety in the event of an accident comprising, in combination:
automotive imbalance sensors positionable adjacent the front wheels and rear wheels of a vehicle, each sensor comprising an upper attachment member attachable to an upper portion of a shock absorber and a lower attachment member attachable to a lower portion of a shock absorber, a vertically extending rod fixedly secured with respect to the lower attachment member and slidably secured with respect to the upper attachment member, a roller secured to the upper attachment member with the roller adapted to rotate with respect to the rod during normal reciprocation thereof during driving but to shift laterally with respect to its axis during abnormal extended movement of the rod as caused by an emergency situation, a switch secured to the upper attachment member in a closed orientation during normal reciprocation of the rod but adapted to switch to the closed orientation upon the shifting of the roller in response to an abnormal movement of the rod; and
a controller to detect when two adjacent wheels, two front wheels, two rear wheels, two left wheels, two right wheels, experience an abnormal condition resulting in abnormally extended movement of their associated rods with detection signals from their associated switches and, in response thereto, generates an emergency signal to energize a power cut-off member to stop the power to the ignition system and cut-off the flow of fuel within the vehicle.

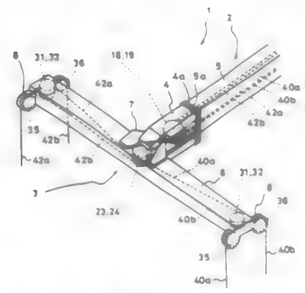
5,368,124
DEVICE SUSPENDING A WORKING CAGE
Osamu Fukutomi, Tokyo, Japan, assignor to Nihon Biso Co., Ltd., Tokyo, Japan
Filed Jun. 7, 1993, Ser. No. 72,768
Claims priority, application Japan, Jun. 16, 1992, 4-181734
Int. Cl.[5] E04G *3/10*
U.S. Cl. 182—142 **3 Claims**

1. A device for suspending a working cage comprising:
an arm;
a swivel arm mounted rotatably horizontally to the end portion of the arm;
a first sheave mounted rotatably horizontally to said arm at a location behind the end portion to which said swivel arm is mounted, said first sheave being formed with at least two vertically arranged grooves in which wire ropes engage;
a second sheave having a diameter equal to that of said first sheave and being mounted rotatably horizontally to said swivel arm at a location in front of the center of rotation

of said swivel arm, said second sheave being formed with at least two vertically arranged grooves in which wire ropes engage;

a wire rope winding device provided on the base side of said arm for winding and unwinding wire ropes; and

at least two wire ropes for suspending the working cage, one end of the respective wire ropes being attached to said wire rope winding device and the other end of the respective wire ropes being attached to said working cage, and



the respective wire ropes being wound and unwound through said first sheave and said second sheave,

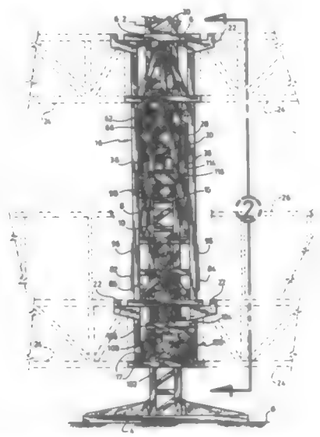
said wire ropes crossing each other in a space between said first sheave and said second sheave, and said swivel arm, said first sheave and said second sheave being positioned in such a manner that distance between the center of rotation of said swivel arm and the center of rotation of said first sheave becomes substantially equal to distance between the center of rotation of said swivel arm and the center of rotation of said second sheave.

5,368,125

PLATFORM RAISING SYSTEM IN SCAFFOLDING

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Filed Apr. 16, 1993, Ser. No. 46,575
Int. Cl.[5] E04G *1/20*
U.S. Cl. 182—146 **17 Claims**



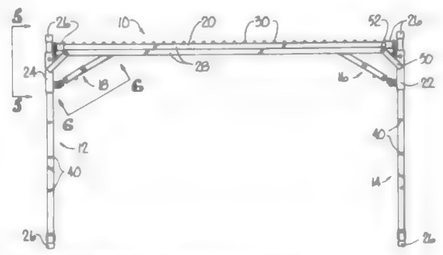
1. A self-raising work platform assembly comprising a tower having vertically equally spaced rungs, anchor means attached to and laterally protruding from said tower at vertically spaced points along said tower for attachment; to an adjacent building structure, an outer sleeve and an inner sleeve a partially surrounding said tower and guided for up and down movement along said tower while clearing said anchor means, support means carried by said outer sleeve to support a work platform, said inner sleeve located between said outer sleeve and said tower, at least two double-acting power rams pivotally connected at their ends to said outer and inner sleeves for effecting reciprocating up and down movement of said inner sleeve relative to said outer sleeve a distance at least equal to the distance between two adjacent rungs, said rams spaced from each other around said inner sleeve, at least two hooks pivotally mounted on and spacedly disposed around said inner sleeve, and means to pivot said hooks between rung hooking and rung unhooking positions.

5,368,126

ADJUSTABLE WORK PLATFORM

Wilbur W. Woodward, Rte. 1, Box 54I, Colwich, Kans. 67034, and James D. Woodward, S. Hwy. D, Crane, Mo. 65633

Filed Mar. 29, 1993, Ser. No. 38,029
Int. Cl.[5] E04G *1/34*
U.S. Cl. 182—152 **17 Claims**



1. A portable work platform comprising:

a platform surface for supporting a user thereon,

a leg assembly for supporting said surface above ground level,

collar means connecting said leg assembly with said surface, said collar means being slideably attached to said leg assembly for adjustment of the distance of said surface above ground level,

hinge means for movement of said leg assembly between an open, use-position, and a closed, storage-position,

lock means for securing said leg assembly in said open position and for stabilizing said surface when in use, and

collar securing means for fixing said collar means in a user selected position on said leg assembly to permit said user to locate said surface at a user selected distance from said ground level,

said lock means comprising first and second arms pivotally interconnected at a first end, a second end of said first arm being pivotally connected to said surface, a second end of said second arm being connected to a flange which is pivotally connected to said collar means, and means for adjustment of the distance between said second arm and said flange such that as said first arm and second arm pivot into parallel relation said arms compressively lock said leg assembly in an upright position.

5,368,127

COMPACT PORTABLE TREE STAND

W. C. Phillips, Rte. 1, Box 91A, Maud, Tex. 75501

Continuation-in-part of Ser. No. 936,673, Aug. 28, 1992, Pat. No. 5,279,390. This application May 12, 1993, Ser. No. 60,752
The portion of the term of this patent subsequent to Jan. 18, 2011, has been disclaimed.
Int. Cl.[5] A01M *31/00*
U.S. Cl. 182—187 **6 Claims**

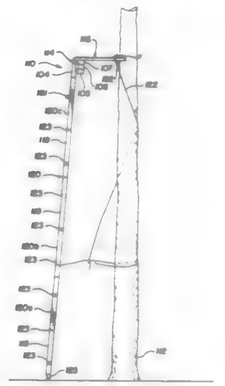
1. A hunting stand for attachment to a tree, post, or the like to support a hunter or wildlife observer in an elevated position, the stand comprising:

a horizontally extending platform for supporting a person;

a plurality of ladder sections having end mating members whereby said ladder sections can be releasably connected to each other in end to end relationship;

at least one support mating member connected to said platform whereby at least one said end mating members of said ladder sections can be releasably connected to said platform for partially supporting said platform in an elevated position against a tree, post or the like;

a plurality of storage mating members connected to said platform for releasably connecting said end mating members of said ladder sections to said storage mating members whereby said ladder sections are retained adjacent said platform for compact transportation and storage;



a V-shaped spiked bar connected to said platform, said V-shaped spike bar having a plurality of teeth for engaging said platform to the tree;

at least one locking arm, said locking arm having at least one spike thereon, one end of said locking arm pivotally coupled to said platform for pivoting said locking arm into releasable engagement with the tree, post or the like;

a roping dowel mounted on said platform on the side opposed said one side; and

a fastening means connected to said locking arm such that when said fastening means is drawn over said roping dowel, said locking arm is pulled toward said roping dowel into engagement with the tree, post, or the like and said spike on said locking arm is opposed to at least one of said teeth on said V-shaped spike bar to provide opposed locking forces on the tree, post, or the like.

5,368,128

ELEVATOR CABLE LUBRICATING APPARATUS

Hartmut Wildchen, Alpenrod, Germany, assignor to Inventio AG, Hergiswil NW

Filed Sep. 9, 1993, Ser. No. 118,874
Claims priority, application Switzerland, Sep. 9, 1992, 02834/92-3
Int. Cl.[5] F16N *7/16, 7/24, 13/22*
U.S. Cl. 184—15.2 **7 Claims**

1. An apparatus for applying a lubricant under pressure to moving machine parts like elevator cables comprising:

a tubular feed pipe having an inlet end for connection to a source of lubricant under pressure and a connector;

a tubular spray pipe having a closed end and an open end being detachably connected to said feed pipe connector, said spray pipe having at least ne nozzle formed therein for applying a lubricant to a moving machine part;

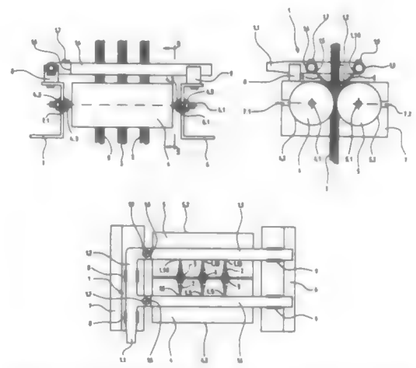
a pair of spaced apart supports for mounting adjacent opposite sides of a path of travel of a moving machine part;

a least a pair of pipe clips mounted on said supports for releasably engaging said feed pipe and said spray pipe and for positioning said spray pipe adjacent the path of travel of the moving machine part; and

a distributing roller rotatably mounted on an axle, said axle having opposite ends mounted in said supports adjacent said spray pipe and the path of travel of the moving machine part, said roller being displaceable toward and away from the moving machine part and having a lubricant distributing surface formed thereon for engaging the moving machine part.

4. An apparatus for applying a lubricant under pressure to elevator cables comprising:

a spray fork having a feed pipe and a pair of spray pipes, each of said spray pipes having a closed end and an open end, said open end of each of said spray pipes being detachably connected to an associated rotary plug connector



formed in said feed pipe, each of said spray pipes having at least one nozzle formed therein for applying a lubricant to an elevator cable;

a pair of spaced apart supports for mounting adjacent opposite sides of a path of travel of an elevator cable;

a plurality of pipe clips mounted on said supports for releasably engaging said feed pipe and said spray pipes and for positioning said spray pipes on opposite sides of the elevator cable; and

a pair of distributing rollers each rotatably mounted on an associated axle, said axles having opposite ends mounted in said supports on opposite sides of the elevator cable adjacent said spray pipes, said rollers being displaceable toward and away from the elevator cable, each of said rollers having a lubricant distributing surface formed thereon for engaging the elevator cable.

5,368,129

RETAIL FACILITY WITH COUPONING

Henry Von Kohorn, 945 Treasure La., Vero Beach, Fla. 32963

Filed Jul. 23, 1992, Ser. No. 919,025
Int. Cl.[5] G06F *15/21*
U.S. Cl. 186—52 **43 Claims**

41. A method for attracting shoppers to retail outlets comprising the steps of:

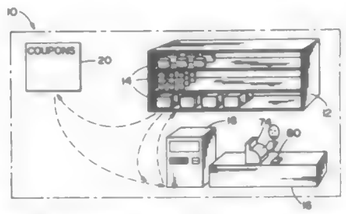
offering a variety of products for sale to shoppers in a retail outlet,

making coupons available to shoppers at the retail outlet, said coupons being numbered or coded and carrying a discount randomly determined in the retail outlet by a coupon generating system,

a shopper bringing a preprinted coupon to said retail outlet, said printed coupon being coded,

a shopper purchasing a product in said retail outlet,

a shopper presenting the generated coupon and the preprinted coupon at a checkout of the retail outlet, and



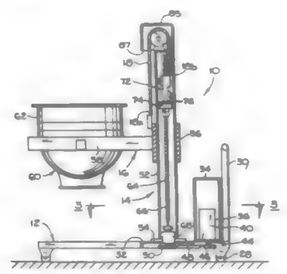
awarding an additional prize to a shopper whose generated coupon and preprinted coupon bear codes having a predetermined relationship.

5,368,130

LIFT TRUCK

Rudeger H. Wilke, Darien, and David Floreani, Park Ridge, both of Ill., assignors to Savage Bros. Co., Elk Grove Village, Ill.

Filed Nov. 15, 1993, Ser. No. 151,740
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—236 **6 Claims**



1. A portable lift truck comprising,
a base having wheels for movement of the lift truck,
a single hollow post on the base at one side of the base, having a top opening adjacent its top,
a fork slidable on the post,
a drive motor on the base, and a casing enclosing the motor,
a vertical screw shaft mounted in the post and enclosed therein and extending the full length of the post rotatable but fixed in position bodily,
a flexible member having an outer end connected with the fork exteriorly of the post, and extending through said opening and having an inner end within the post, and
a drive transmitting member on the shaft and entirely contained in the post and connected with the flexible member and operable in response to rotation of the shaft for moving the flexible member linearly.

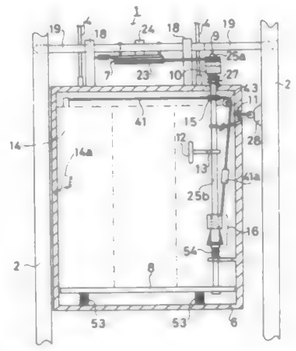
5,368,131

POWERLESS EMERGENCY ELEVATOR

Nishiyama Yoshihiro, 18-3, Kawagishi-cho, Suita-shi, Osaka-fu, Japan

Filed Aug. 27, 1993, Ser. No. 112,452
Claims priority, application Japan, Nov. 17, 1992, 4-332456
Int. Cl.[5] B66B *5/16*
U.S. Cl. 187—301 **2 Claims**

1. A powerless emergency elevator, comprising:
guide rails erected vertically;
an elevator car having an elevator housing supported by a flexible rope so as to be movable along said guide rails;
a lock mechanism provided on a top of said elevator housing and biased in a locking direction for locking said elevator housing to said guide rails;
a power transmission path extending upwardly from a floor plate of said elevator housing to said lock mechanism;
a clutch mechanism provided between said lock mechanism and said power transmission path for connecting or disconnecting said lock mechanism to said power transmission path;
an auxiliary lock mechanism provided on a side wall of said elevator car for releasing said clutch mechanism at evacuation and exit floors to thereby cut off said power transmission path;
a handle provided within said elevator car;



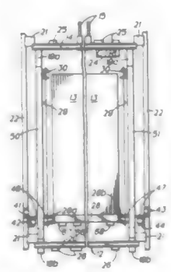
an interlocking mechanism provided in said power transmission path for releasing said lock mechanism via said power transmission path by manipulating said handle;
a lock releasing mechanism interlocked to a door of said elevator housing and responsive to only a closing movement of said door to release said lock mechanism via said power transmission path;
an engaging mechanism responsive to opening and closing movements of said door and a weight of a passenger to connect or disconnect said interlocking mechanism via said power transmission path; and
lifting/speed control means for moving upwardly said elevator car via said flexible rope and controlling a descending speed of said elevator car.

5,368,132

SUSPENDED ELEVATOR CAB MAGNETIC GUIDANCE TO RAILS

Richard L. Hollowell, Amston, and John K. Salmon, South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Nov. 3, 1993, Ser. No. 147,192
Int. Cl.[5] B66B *7/04*
U.S. Cl. 187—393 **5 Claims**



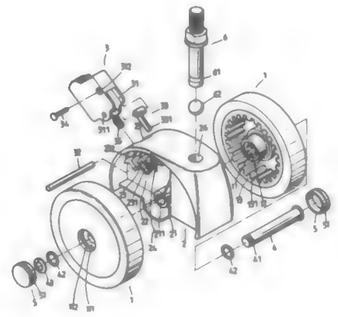
1. An elevator comprising:
a pair of elevator guide rails disposed in an elevator hoistway; and
an elevator car having a frame supported by ropes from a sheave at the head of the hoistway and a pendulum cab disposed on a platform which is movably suspended on said frame, said frame having a plurality of rail guides disposed thereon and contacting said rails for guiding said elevator within the hoistway;
characterized by the improvement comprising:
a set of electromagnetic actuators for each of said rails, each actuator in each set disposed on an end of said cab near said platform to be in proximity with the corresponding rail so as to exert force between said cab and such rail in response to electric current applied to said actuator.

5,368,133

BRAKE SYSTEM FOR ROLLER CASTERS

Sung-Wang Yang, No. 258-15, An-Ting, An Chia Tsun, An Ting Hsiang, Tainan Hsien, Taiwan, Prov. of China

Filed Sep. 17, 1993, Ser. No. 121,873
Int. Cl.[5] B60B *33/00;* **B62C** *7/02*
U.S. Cl. 188—1.12 **2 Claims**



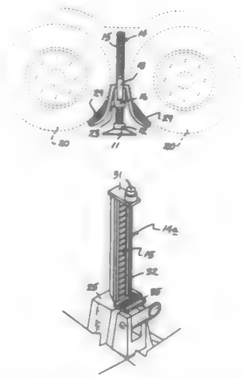
1. A brake system for roller casters comprising:
(a) a main body housing having a central aperture formed therethrough;
(b) a pair of transversely displaced wheel members mounted on opposing sides of said main body housing, said wheel members having respective wheel apertures in aligned relation with said main body central aperture for passage therethrough of a wheel shaft being coupled to said wheel members, each of said wheel members having gear teeth formed on an inner surface thereof;
(c) a shank member extending through a top surface of said main body housing and rotatably coupled thereto; and,
(d) an engaging block mounted to an inner wall of said main body housing having an extended slot passing therethrough;
(e) an arrow trough member having a first arrow shaped block and a second arrow shaped block, said first and second arrow shaped blocks being located in cooperative relation each to the other by a continuous set of inclined surfaces formed on said arrow trough member; and,
(f) a brake assembly displaceably inserted through a through groove formed in a wall of said main body housing, said brake assembly including a driving lever having a protuberance formed on one end thereof for sliding engagement on said inclined surfaces for reversible displacement from said first arrow shaped block to said second arrow shaped block, said brake assembly further including a spring member connected to said protuberance and a brake lever extending through said extended slot of said engaging block for displacement of said brake lever into engagement with said gear teeth of said wheel members when said protuberance is displaced into said first arrow shaped block and out of engagement with said gear teeth when said protuberance is displaced into said second arrow shaped block.

5,368,134

TANDEM WHEEL BLOCK APPARATUS

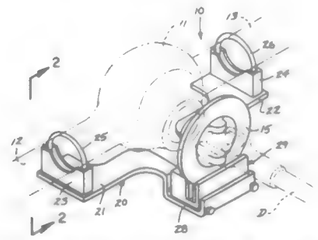
Harold Rickman, and Betty J. Rickman, both of 701 El Capitan Dr., Bolivar, Tenn. 38008

Filed Oct. 20, 1993, Ser. No. 138,870
Int. Cl.[5] B60T *1/00, 3/00*
U.S. Cl. 188—2 R **2 Claims**



1. A tandem wheel block apparatus, comprising,
a base plate, the base plate including a plate periphery, and a base plate socket fixedly mounted to the base plate orthogonally oriented relative to the periphery, with the base plate socket having a base plate socket cavity,
and
a support post, the support post complementary received through the socket cavity, the support-post including a gear rack,
and
a ratchet housing, the ratchet housing including a ratchet housing top wall spaced from a ratchet housing bottom wall, with a ratchet housing bore extending from the ratchet housing top wall to the ratchet housing bottom wall complimentarily receiving the support post therethrough with the ratchet housing arranged for ratcheting engagement with the support post,
and
a support saddle, the support saddle having a saddle top wail, the saddle top wall including a saddle top wall opening arranged for receiving the support post therethrough, and the saddle top wall arranged for abutment with the ratchet housing top wail, the support saddle having spaced arcuate side wall plates extending from the support saddle top wall symmetrically oriented about the support post, with each of the side wall plates including a concave top wall surface, with a spanning plate extending along each concave top wall surface arranged for abutment with an individual wheel member or plurality of spaced tandem wheels,
the support post includes a post uppermost end, the post uppermost end including a mounting plate, and a flexible suspension string secured to said mounting plate extending therefrom along the gear rack, with the support post top wall having a graduated scale plate, and the mounting plate including a flexible suspension string extending from the mounting plate, and the suspension string including a bob weight having a pointed end arranged in facing relationship relative to he graduated scale plate.

5,368,135
TOW VEHICLE EMERGENCY BRAKE APPARATUS
William E. Sallee, P.O. Box 669, Tesuque, N. Mex. 87574
Filed May 24, 1993, Ser. No. 65,395
Int. Cl.[5] B60T *7/20*
U.S. Cl. 188—3 R 5 Claims



1. An emergency brake apparatus for use with a differential housing, having a first axle tube spaced from a second axle tube, and a pinion gear companion flange extending from the differential housing, and wherein the apparatus comprises,
- a disc member having a disc hub, the disc hub including a hub floor, and the hub floor including a plurality of floor apertures, and
- a plurality of fasteners directed through the floor apertures mounting the disc hub to the companion flange, and
- a caliper support bracket having a first bracket leg spaced from a second bracket leg, the first bracket leg having a first arcuate saddle and a first clamp, wherein the first clamp is arranged to receive the first axle tube between the first clamp and the first saddle, and a second saddle fixedly secured to the second bracket leg, wherein the second saddle and the second clamp secure the second axle tube therebetween, with the first saddle and the second saddle arranged in a parallel coextensive relationship, and the first bracket leg and the second bracket leg each of a mirror image configuration relative to one another arranged in a coplanar orientation relative to one another, and
- a U-shaped channel bracket secured intermediate the first bracket leg and the second bracket leg simultaneously secured to the first bracket leg and the second bracket leg mounting a caliper housing, the caliper housing arranged to receive the disc member therebetween, and actuator means within the caliper housing to engage the disc member.

5,368,136
HYDRAULIC BRAKES FOR BICYCLES
Willi Wälte, Schawalderhof 84, CH-9430, St. Margarethen, Germany
Filed Nov. 3, 1993, Ser. No. 147,158
Claims priority, application Germany, Nov. 3, 1992, 4237110
Int. Cl.[5] B62L *1/06*
U.S. Cl. 188—24.22 11 Claims

1. A hydraulic brake for a bicycle having a steering column, and having brake shoes, a master cylinder with a master piston and master cylinder chamber therein, a working cylinder with a main piston movable therein and a working cylinder chamber therein, the working cylinder being operably connected with the brake shoes, the brake including a hydraulic tube connecting the chambers of the cylinders and having hydraulic fluid in the chambers and tube,

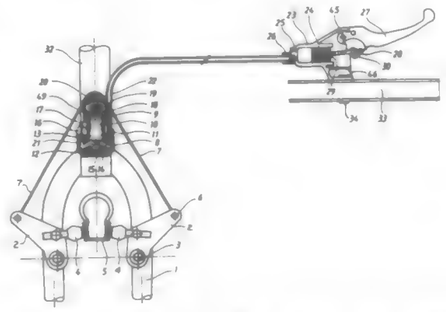
characterized in that,

the brake includes a brake lever mounted on the steering column,

the bicycle includes a fork (1) adjacent the associated wheel to be braked,

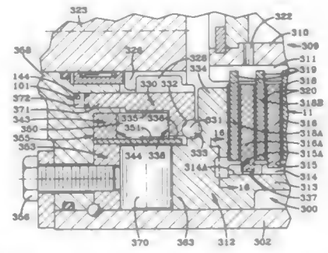
the working cylinder (9) is constituted by a single cylinder and is mounted to the fork, and

the bicycle includes an operating head (20) and traction brake cables (7) operably interconnecting the operating head and the brake shoes, and



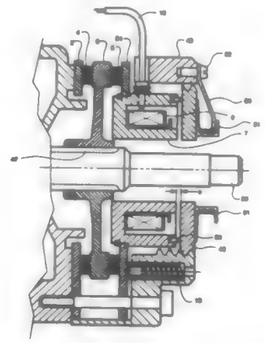
the main piston (10) in the working cylinder being operably connected with the operating head.

5,368,137
BRAKE APPLY RESPONSE CONTROL
Joseph A. Clemens, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 12, 1993, Ser. No. 17,233
Int. Cl.[5] B60T *11/00*
U.S. Cl. 188—71.5 5 Claims



1. An operator-controlled brake apply system having brake apply valve means comprising:
- a brake operating piston means;
- a plurality of drive friction plates;
- at least one reaction plate disposed for angular excursion between at least two adjacent drive friction plates;
- actuation of said brake operating piston means forcing said drive friction plates into engagement with said reaction plate;
- the angular excursion of said reaction plate occurring in response to engagement thereof by said drive friction plate in response to actuation of said brake operating piston means;
- conduit means for directing pressurized fluid to said piston means;
- valve means for selectively opening and closing said conduit means to direct a source of high pressure fluid to said piston means for actuating said brake apply system in response to an operator control; and,
- means responsive to angular excursion of said reaction plate for operating said valve means to close said conduit means and thereby preclude communication between said conduit means and said piston means in order to obviate the continued application of fluid applied operating force to said friction means.

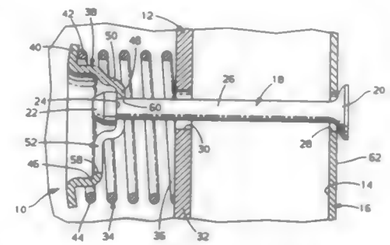
5,368,138
ELECTROMAGNETIC BRAKE WITH ROTATIONAL STRUCTURE FOR WEAR ADJUSTMENT
Ismo Kuivamaki, Vantaa, Finland, assignor to Kone Oy, Helsinki, Finland
Continuation of Ser. No. 668,564, Mar. 13, 1991, abandoned. This application Nov. 13, 1992, Ser. No. 976,007
Claims priority, application Finland, Mar. 13, 1990, 901247
Int. Cl.[5] F16D *59/02*
U.S. Cl. 188—71.8 12 Claims



1. An electromagnetic brake having a brake wheel disposed on a shaft, and friction surfaces fixedly disposed on respective friction plates, said friction plates being forced by urging means into frictional engagement with said brake wheel when said electromagnetic brake is in an engaged condition, said electromagnetic brake comprising:
- anchor means rotatably mounted in a substantially fixed frame of said electromagnetic brake;
- electromagnet means fixedly attached to at least one of said friction plates, said electromagnet means disposed in cooperative spaced relation to said anchor means whereby said electromagnet means moves toward said anchor means so as to disengage said friction surfaces from the brake wheel when a current is supplied to said electromagnet means; and
- compensating means for compensating for wear of said friction surface and thereby maintaining a substantially constant predetermined clearance between said electromagnet means and said anchor means when the electromagnetic brake is in the engaged condition, said compensating means comprising thread means fixedly disposed on said frame and being adapted to permit said anchor means to advance toward said electromagnet means when said anchor means is rotated in a predetermined direction in said thread means, rotating means for urging rotation of said anchor means in said predetermined direction, and stopping means for stopping the rotation of said anchor means in said thread means when the distance between said electromagnet means and said anchor means is substantially equal to said predetermined clearance.

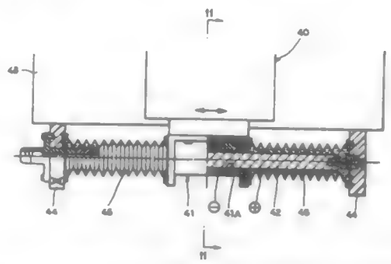
5,368,139
DRUM BRAKE SHOE HOLD DOWN NAIL AND SPRING RETAINER
Frank G. Pirrallo, Spring Valley, and Gregory M. Hickey, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 2, 1993, Ser. No. 86,405
Int. Cl.[5] F16D *51/00*
U.S. Cl. 188—78 2 Claims

1. In a brake shoe hold down mechanism for retaining a brake shoe to an inside surface of a backing plate including a nail having
- a head disposed on an outside surface of a backing plate limiting axial travel of the nail and
- a radially expanded tip forming a shoulder adapted to pass through both an aperture in the backing plate and an aperture in a web of a brake shoe and disposed beyond the web,
- a wire spring disposed on a first end against the brake shoe and having a coil on a second end aligned with the tip of the nail, and
- a cup shaped retainer cap compressively seated against the spring coil and engaged by the shoulder of the tip at a bottom of the cap thereby biasing the brake shoe against the backing plate, the improvement comprising:



an open end and a substantially closed end in the cap, the substantially closed end having a slot with a wide end and a narrow end, the substantially closed end having a first planar level and a second planar level axially offset from each other, the first planar level located between the second planar level and the open end, the second planar level comprising part of a recess in the substantially closed end of the cap, wherein the wide end of the slot is located on the first planar level of the substantially closed end and the narrow end of the slot is located on the second planar level, wherein the nail tip is biased by the compressive spring to seat in the narrow end of the slot on the second planar level of the substantially closed end of the cap, and the tip engaging the second planar level of the cap independent of rotational orientation to the slot.

5,368,140
DAMPER DEVICE AND METHOD OF ITS USE, AND A DEVICE FOR MANUFACTURING SEMICONDUCTORS USING THE DAMPER DEVICE
Kazuya Takano, and Seiji Onai, both of Kanagawa, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation of Ser. No. 803,261, Dec. 5, 1991, abandoned. This application Oct. 5, 1993, Ser. No. 132,126
Claims priority, application Japan, Dec. 10, 1990, 2-407219; Mar. 1, 1991, 3-057625; Aug. 26, 1991, 3-238699
Int. Cl.[5] B60G *11/10*
U.S. Cl. 188—267 2 Claims



1. A device for manufacturing semiconductors comprising a movable member being forcedly moved and stopped at a pre-

determined position by a drive means, an arm provided on the movable member and moving with the movable member in the axial direction of a fixed guide bar, flexible members being provided between ends of the fixed guide bar and corresponding ends of the arm to maintain an internal space of the device liquid-tight, an electroviscous fluid being sealed inside the flexible members and between the arm and the guide bar, a negative and a positive electrode being formed by utilizing two opposing members including the guide bar and the arm and being connected to a power source for applying and suspending a voltage to the electrodes,

said power source operating to begin applying the voltage to the electrodes when the movable member is desired to be stopped and operating to continue said application of the voltage until at least the movable member is completely stopped, whereby the movable member can be quickly and completely stopped at a predetermined position,

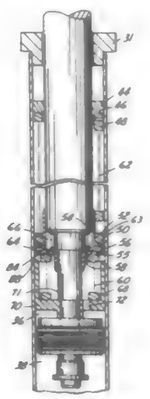
and said power source operating to begin suspending said application of the voltage on or before starting to move the movable member and continuing said suspension of application of the voltage until the movable member is desired to be stopped, whereby the movable member can be moved quickly.

5,368,141

DISPLACEMENT SENSITIVE VALVE MECHANISM

William H. Clarke, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1993, Ser. No. 173,008
Int. Cl.[5] F16F *9/34*
U.S. Cl. 188—284 **18 Claims**



1. A suspension apparatus for a motor vehicle comprising:

a working cylinder;

a rod guide;

a piston rod and a piston mounted thereon sized to be slidably received within said working cylinder and dividing said cylinder into jounce and rebound chambers;

said piston having flow control means constructed to provide a restrictive fluid passage for the controlled flow of hydraulic fluid from one of said chambers to the other of said chambers when said piston is moved in said working cylinder to thereby create a dampening force;

an end closure closing one end of said working cylinder and having an opening to slidably receive said piston rod therethrough;

rebound valve means slidably mounted coaxially on said piston rod within said working cylinder and between first and second rebound chambers, said rebound valve means being adapted to provide unrestricted hydraulic flow from said first rebound chamber to said second rebound chamber during a first range of displacement of said piston rod and progressively restrict hydraulic flow from said first rebound chamber to said second rebound chamber during a second range of displacement of said piston rod, thereby increasing the dampening force to resist motion of said piston rod during said second range of displacement;

a proportioning spring means for urging said rebound valve means into an unrestrictive flow condition; and

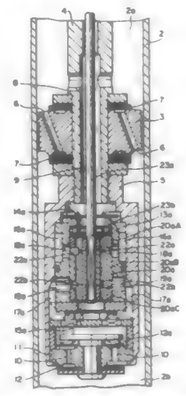
a rebound spring means for urging said rebound valve means into a hydraulic flow restricting position when said piston passes through said second range of displacement, said rebound spring means being disposed coaxially on said piston rod within said working cylinder.

5,368,142

DAMPING FORCE CONTROL TYPE OF HYDRAULIC SHOCK ABSORBER

Masahiro Ashiba, and Takao Nakadate, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Dec. 4, 1992, Ser. No. 986,036
Claims priority, application Japan, Dec. 7, 1991, 3-349668; Dec. 27, 1991, 3-359085; Jan. 31, 1992, 4-042209; Aug. 20, 1992, 4-245861
Int. Cl.[5] F16F *9/44*
U.S. Cl. 188—319 **4 Claims**



1. A damping force control hydraulic shock absorber comprising:

a cylinder having a hydraulic fluid sealed therein;

a piston slidably fitted in said cylinder to define two chambers in said cylinder;

a piston rod having one end thereof connected to said piston and the other end thereof extending outside of said cylinder;

a main hydraulic fluid passage placing said two chambers in communication with each other;

a damping force generating mechanism, which dampens the flow of hydraulic fluid passing thereby, provided in said main hydraulic fluid passage;

a bypass passage placing said two chambers in communication with each other and bypassing said damping force generating mechanism;

a pair of first and second check valves provided in series in said bypass passage to allow hydraulic fluid to flow in respective directions which are different from each other through said bypass passage;

a guide member having a generally cylindrical side wall, opposite ends communicating with said bypass passage, and first and second bores extending through the side wall, said check valves covering said opposite ends of the guide member;

a first hydraulic fluid passage bypassing said first check valve, said first hydraulic fluid passage including said first bore and a space defined at the outer surface of said guide member and open to the first bore so as to be in communication with the interior of said guide member;

a second hydraulic fluid passage bypassing said second check valve, said second hydraulic fluid passage including said second bore and a space defined at the outer surface of said guide member and open to the second bore so as to be in communication with the interior of said guide member; and

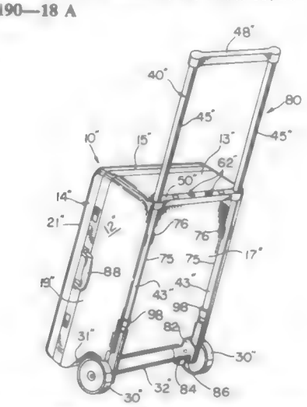
a shutter disposed within said guide member over said first and said second bores and movable relative to said guide member, said shutter having a configuration that changes the degree to which said bores are open to the interior of said guide member when said shutter is moved relative to said guide member to thereby vary the sectional area of said first and said second hydraulic fluid passages at locations therein defined between said shutter and said guide member, respectively.

5,368,143

CARRY-ON CASE HAVING A DETACHABLE WHEEL AND HANDLE ASSEMBLY

Gary E. Pond, South Bend, Ind., and Cecil E. Pond, Palm City, Fla., assignors to Porter Case, Inc., South Bend, Ind.

Continuation-in-part of Ser. No. 858,174, Mar. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 676,716, Mar. 29, 1991, Pat. No. 5,116,289. This application Mar. 24, 1993, Ser. No. 37,620
Int. Cl.[5] A45C *5/14, 9/00, 13/26*
U.S. Cl. 190—18 A **8 Claims**



1. A carrying case comprising housing formed by a base and an upper lid, a hinge member connecting said lid to said base for shiftable movement between an open position exposing the interior of said base and a secured closed position overlying the base, a separate wheel and handle assembly including wheels and a handle, said wheels being rotatively connected to said handle, said assembly having a first position with its said wheels located adjacent an end of the housing and its said handle extending along the housing generally parallelling said lid, securement means releasably connecting said assembly to said housing for enabling said base and said lid when in its said closed position to be towed upon the wheels by pulling upon the handle, said assembly having a second position with its said wheels located adjacent an end of the housing and its said handle extending upwardly above the housing generally perpendicular to said lid, said securement means releasable connecting said assembly to said housing for enabling the lid to be used as an article support with the base tilted by the handle upon said wheels.

5,368,144

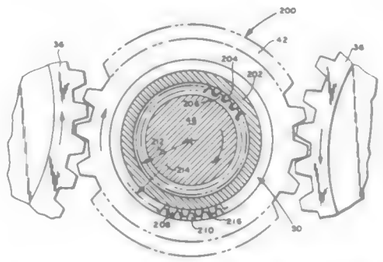
Patent Not Issued For This Number

5,368,145

NONSYNCHRONIZED POSITIVE CLUTCH STRUCTURE

Alan R. Davis, Plainwell, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 16, 1993, Ser. No. 18,124
Int. Cl.[5] F16D *11/14*
U.S. Cl. 192—67 R **18 Claims**



1. A nonsynchronized positive clutch system (**200**) for selectively rotationally coupling and decoupling first (**46**) and second (**42**) independently rotatable members, said clutch system comprising a first clutch member (**50**) rotatable with said first rotatable member (**46**) and a second clutch member (**42A**) rotatable with said second rotatable member (**42**), said first and second clutch members carrying an array of first (**208**) and second (**210**) interengagable clutch teeth, respectively, said clutch teeth defining a pitch diameter (**214**), said clutch system characterized by:

the number of clutch teeth (N) carried by each of said clutch members defined by the expression;

$$N \geq P^{*}PD$$

where:

N = the number of interengagable clutch teeth on each of said clutch members,

P = clutch pitch ≧ 10; and

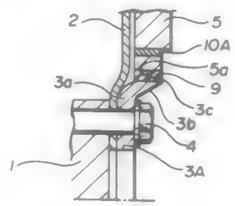
PD = the pitch diameter (**214**) expressed in units of inches.

5,368,146

AUTOMOTIVE POWER TRAIN

Satoshi Kohno, and Shizuaki Hidaka, both of Kanagawa, Japan, assignors to Atsugi Unisia Corp., Atsugi, Japan

Division of Ser. No. 757,239, Sep. 10, 1991, Pat. No. 5,253,740. This application Mar. 30, 1993, Ser. No. 39,900
Claims priority, application Japan, Sep. 10, 1990, 2-94857[U]
Int. Cl.[5] F16F *15/12*; B60K *17/00*
U.S. Cl. 192—70.16 **3 Claims**



2. In an automotive power train:

an engine having a crankshaft, said crankshaft having an axis and being rotatable about said axis;

a flywheel;

a torque transmitting member in the form of an annular resilient disc having an inner peripheral portion connected to said crankshaft and an outer peripheral portion connected to said flywheel;

said flywheel having a central axial bore and an inner periph-

eral wall means defining said central axial bore, said flywheel also having a radially extending wall including a working surface;

a clutch having a clutch disc frictionally engageable with said flywheel at said working surface;

said crankshaft having fixed thereto means defining an axially extending cylindrical wall disposed in said central axial bore in opposed and spaced relationship to said inner peripheral wall means; and

an elastic annular body disposed in a space between said cylindrical wall and said inner peripheral wall means to fill said space wherein said elastic annular body has an inner peripheral wall fixed to said cylindrical wall and an outer peripheral wall fixed said inner peripheral wall means;

said flywheel being formed with a plurality of circumferentially equi-distant windows which are so constructed and arranged as to reduce transmission of heat from said flywheel to said elastic annular body.

5,368,147

TESTING DEVICE FOR BANK NOTES

Wilhelm Menke, Wiesbaden, and Arjen J. Mulder, Bingen, both of Germany, assignors to NSM Aktiengesellschaft, Bingen, Germany

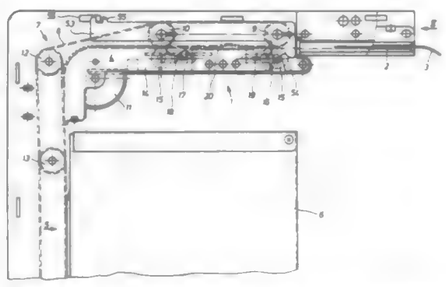
PCT No. PCT/DE91/00055, § 371 Date Jul. 22, 1992, § 102(e) Date Jul. 22, 1992, PCT Pub. No. WO91/10975, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 19, 1991, Ser. No. 910,152

Claims priority, application Germany, Jan. 22, 1990, 4001716

Int. Cl.[5] G07D *7/00*

U.S. Cl. 194—206 **14 Claims**



1. An improved testing device for bank notes or similar legal tender in the form of sheets for automatic vending machines, the device including a transportation device (7) and a testing channel (20) which has a center axis (24) and which is equipped with scanning devices for the detection and authenticity checking of the bank note (3), with the testing channel being preceded by a variable width input channel (2) having a longitudinal center axis (22), wherein the improvement comprises:

the input channel (2) is composed of two channel halves (21) that are separated along the longitudinal center axis (22) of the input channel (2) and that are adjustable in synchronism and in parallel against the force of a spring;

the channel halves (21) have a contacting position which defines a minimum channel width and a separated end position which defines a maximum channel width;

the insertion of each bank note (3) into the input channel (2) occurs with the channel width locked in its maximum position up to a passage detector (19) disposed in a starting region of the testing channel (20); and

the passage detector (19) initiates the release of the lock of the channel halves (21) so that the side walls (23) of the channel halves (21) place themselves, due to the force of the spring, against the bank note (3) and align its center with the center axis (24) of the testing channel (20).

5,368,148

DEVICE FOR CONVEYING PRINTED SHEETS IN AN INSTALLATION FOR CHECKING THE QUALITY OF PAPER MONEY

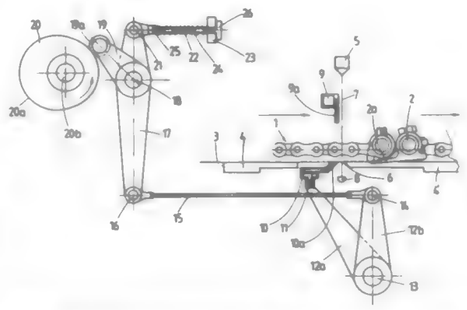
Dante Orlandini, Milan, Italy, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed Feb. 22, 1993, Ser. No. 20,427

Claims priority, application Switzerland, Mar. 3, 1992, 662/92

Int. Cl.[5] G07D *7/00;* **B65H** *29/04*

U.S. Cl. 194—207 **7 Claims**



1. A device for conveying printed sheets in an installation for checking the quality of paper money, particularly bank notes, in a checking zone comprising at least one detector (5), wherein said device is a conveyor chain (1) equipped with bars with clamps (2, 2*a*) for grasping the front edge of the sheet to be checked and sliding it over support bars (4, 4'), extending longitudinally in the direction of conveyance, in a transfer plane, the clamps (2*a*) being partially engaged in the spaces between said support bars (4, 4'), wherein, in the checking zone, the support bars (4, 4') are fitted with holes forming suction nozzles (4*a*) along a line transverse to the direction of conveyance and wherein, in the spaces between the support bars (4), there are mounted movable arms (10) fitted with a suction nozzle (10*a*), these arms being linked to an actuating mechanism for moving them between an adjusted operating position, in which the nozzles (10*a*) of the arms (10) are aligned with the nozzles (4*a*) of the support bars (4) in order to hold the sheet to be checked in the transfer plane when passing through said zone, and a withdrawn position below said plane when the clamps (2*a*) pass above the location of the arms (10) in order to avoid a collision between said clamps (2*a*) and said arms (10).

5,368,149

PROCEDURE FOR PROCESSING ELECTRICAL SIGNALS USED IN VERIFYING COINS

Jesûs E. Ibarrola, Pamplona, Spain, assignor to Azkoyen Industrial, S.A., Peralta, Spain

Filed May 28, 1993, Ser. No. 68,031

Claims priority, application Spain, Jun. 1, 1992, 9201123

Int. Cl.[5] G07D *5/08*

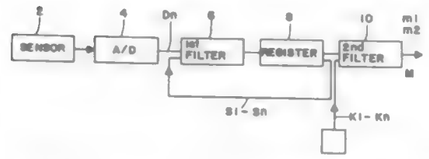
U.S. Cl. 194—317 **5 Claims**

1. A procedure for processing electrical signals used in the verification of coins, the procedure comprising steps of:

passing a coin in front of a sensor which generates an electrical analog signal in response to the coin;

converting the analog signal into a plurality of measured digital values;

filtering the plurality of measured digital values to remove values corresponding to undesired signals, said filtering being performed by comparing each measured digital value to at least one of a plurality of predetermined values stored in a memory to determine whether each measured digital value corresponds to a useful signal value and



should be stored, or to an undesirable signal value and should be eliminated; and

storing the useful measured digital values.

5,368,150

PALLET EXCHANGE APPARATUS

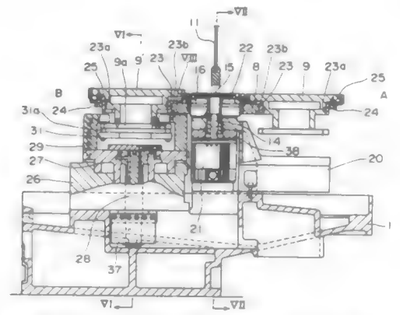
Yasuhiro Okada, Nagoya; Yukio Hoshino, Gamagori; Yasuhiro Hattori, Nagoya, and Hidekazu Hirano, Chiryu, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 11, 1993, Ser. No. 74,582

Claims priority, application Japan, Jun. 12, 1992, 4-177686

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—346.1 **6 Claims**



1. A pallet exchange apparatus for exchanging pallets between a workpiece loading-and-unloading station and a workpiece machining station of a machine tool comprising:

a bed;

an arm assembly supported on said bed to be horizontally rotatable, said arm assembly having two ends extending to the workpiece loading-and-unloading station and workpiece machining station, and a pair of pallet holding members being formed at said ends, respectively for receiving said pallets, said Pallet holding member comprising a cylindrical guide surface and a circular support surface;

a driving unit for rotating said arm assembly so as to move said ends of said arm assembly between the workpiece loading-and-unloading station and workpiece machining station;

a turntable rotatably mounted on said bed at a position corresponding to the workpiece machining station;

first engagement portions formed at said ends of said arm assembly;

second engagement portions formed on said pallets so as to be engaged with said first engagement portions for preventing the rotation of said pallets; and

a moving device which is disposed on said turntable for moving said pallet located at the workpiece machining station in the vertical direction between a first position and a second position, wherein said pallet is separated from said turntable and the second engagement portion of said pallet is engaged with the first engagement portion at one end of said arm assembly, and is stably supported by said guide surface and said support surface, when said pallet is located at the first position, while said pallet is thrust against said turntable and the second engagement portion is disengaged from the first engagement portion when said pallet is located at the second position.

5,368,151

CONVEYOR SYSTEM FOR CONTAINERS

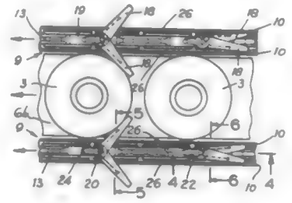
Klaus Kleak, Worms, Germany, assignor to Krones AG Hermann Kroneseder Maschinenfabrik, Neutraubling, Germany

Filed Nov. 2, 1993, Ser. No. 147,729

Claims priority, application Germany, Nov. 7, 1992, 9215186[U]

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—426 **18 Claims**



1. A conveyor system adapted for stable conveyance of rows of containers conveyed thereon, comprising:

a plurality of closed loop conveyor belts having upper and lower runs arranged for translating in parallel with each other with the upper runs in the same horizontal plane and having spaces adjacent their longitudinally extending edges, a predetermined region of said upper runs of the belts constituting a container infeed region,

closed loop flexible members positioned for running in the spaces adjacent the respective longitudinally extending edges of the belts in synchronism with the belts,

a series of mounting elements mounted in uniform spaced apart relationship to said closed loop flexible members to form aligned rows of elements disposed along lines that are perpendicular to the translational direction of the belts and the closed loop flexible members, said closed loop flexible members positioned laterally adjacent said belts and between longitudinally extending edges of the belts having at least one pair of container stabilizing members mounted to said mounting elements for pivoting about an axis that is vertical when translating along said horizontal run of the belts,

biasing means for biasing said container stabilizing members to diverge at an angle relative to each other,

restraining means operative to restrain said container stabilizing members against diverging from each other at least until entering said container infeed region and then relieving the restraint for said container stabilizing members to pivot and diverge in a horizontal plane about said vertical axis to an operative position wherein one of a pair of said members is over one belt and the other of the pair of said members is over an adjacent belt for engaging and stabilizing containers on the belts that have been deposited thereon at the infeed region.

5,368,152

IMPROVEMENT IN CONVEYOR CHAIN ENGAGEMENT PIN IN CONVEYING SYSTEM FOR MOVING LOAD CARRYING UNITS

Arthur B. Rhodes, 3347 Campground Rd., Louisville, Ky. 40211

Filed Oct. 4, 1993, Ser. No. 131,314

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—465.1 **5 Claims**

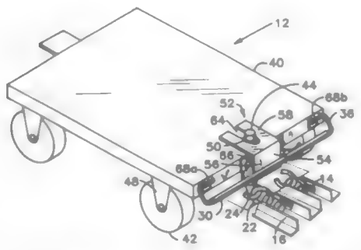
1. A load carrying unit for selected movement along a conveying path defined by an endless conveyor chain, comprising:

a frame structure having a front end and a back end;

floor engaging wheels rotatably attached to the frame structure;

a depending movable conveyor chain engagement pin attached to the frame structure near the front end of the structure movable between a lowered chain engaged position whereat the depending end of the pin engages the conveyor chain and a raised, chain disengaged position whereat the depending end of the pin is spaced above and out of contact with the conveyor chain;

pin moving means structurally associated with the pin and mounted to the front end of the frame structure for pivotal movement about an axis perpendicular to the longitudinal



axis of the pin to move the pin between the lower chain engaged position and raised chain disengaged position;

an elongated bar extending transverse of said front end of said load carrying unit and spaced forward therefrom, said elongated bar being pivotally attached to said frame on opposite sides of said front end, said elongated bar being in contacting relation with said pin moving means; and,

pin stabilizing means comprising compression means actuated in response to movement of said elongated bar and said pin moving means to hold said chain engagement pin in a disengaged position, said means to hold said engagement pin in a disengaged position operable in response to said compression means.

5,368,153

TRANSPORTATION DEVICE HAVING A DRIVEN SHAFTLESS SPIRAL FREELY FITTED IN A CASING AND RESTING THEREON

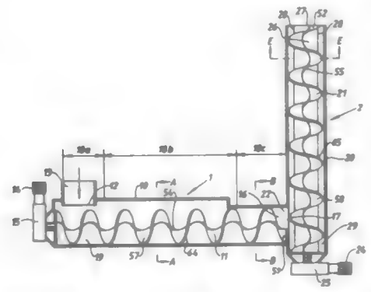
Richard Bruke, Bunkeflostrand, Sweden, assignor to Spirac Engineering AB, Malmo, Sweden

Continuation of Ser. No. 534,159, Jun. 6, 1990, abandoned, which is a continuation of Ser. No. 457,359, Dec. 12, 1989, Pat. No. 5,000,307, which is a continuation of Ser. No. 299,944, Jan. 6, 1989, abandoned. This application Apr. 30, 1992, Ser. No. 879,052

Claims priority, application Sweden, May 19, 1987, 8702071; May 19, 1987, 8702072

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—608 **15 Claims**



1. Apparatus for conveying particulate material from a lower level to a higher level comprising a first conveyor combination including a first casing and a first spiral drive element arranged rotatably in said first casing, a second conveyor combination coupled to said first conveyor combination and including a substantially vertical second casing and a shaftless second spiral drive element comprising a flat, spiral screw blade of rectangular section arranged rotatably in said second casing, said first casing having a discharge opening located axially of the first casing, said second casing having a boundary wall provided with a feed opening communicating with the discharge opening of the first casing, said first spiral drive element having a terminal end closely adjoining a region through which said screw blade of said shaftless second spiral drive element of the second conveyor combination passes when said second spiral drive element rotates, said spiral screw blade of said shaftless second spiral drive element having a lower end and an upper end, and drive means for driving said second spiral drive element in rotation in said second casing, said second spiral drive element having an outer edge facing said second casing for rotating relative thereto, said spiral screw blade of said shaftless second spiral drive element being connected to said drive means to be supported and driven by said drive means freely within said second casing.

5,368,154

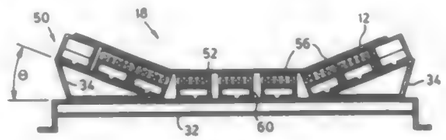
CONVEYOR INSTALLATION AND SHOCK ABSORBING ELEMENTS FOR USE THEREIN

Noel B. Campbell, Edmonton, Canada, assignor to Starcan Corporation, Nisku, Canada

Division of Ser. No. 795,468, Nov. 21, 1991, Pat. No. 5,251,742. This application Sep. 22, 1993, Ser. No. 124,475

Int. Cl.[5] B65G *15/08*

U.S. Cl. 198—823 **17 Claims**



1. A conveyor installation comprising:

transport means extending between an impact station where material is placed thereon and a drop off zone where said material is removed therefrom, to move said material between said impact station and said drop off zone; and

shock absorbing means disposed beneath said transport means at said impact station to dissipate energy imparted on said transport means by said material, said shock absorbing means including a body formed of energy absorbing material having a generally planar, upper load bearing surface supporting substantially the entire undersurface of said transport means at said impact station and a lower surface supported by a frame member, said body having a plurality of spaced, longitudinal passages provided therethrough extending substantially the length of said body to define a plurality of internal body wall members, said body wall members comprising buckling elements and being configured so that said shock absorbing means exhibits the characteristics of a spring under loads having a magnitude less than a first predetermined value and buckling until substantially fully collapsed under loads having a magnitude greater than said first predetermined value.

5,368,155

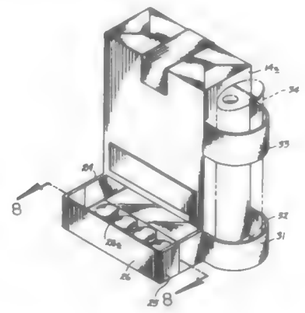
CIGARETTE BUTT RECEIVING PACKAGE

Jerome F. Ewen, 3538 Oak Bend Dr., Arlington, Tex. 76016

Filed Oct. 4, 1993, Ser. No. 130,705

Int. Cl.[5] B65D *85/10*

U.S. Cl. 206—86 **4 Claims**



1. A cigarette butt receiving package, comprising,

a container having a bottom wall spaced from a top wall, a first end wall spaced from a second end wall, and a first side wall spaced from a second side wall, and

the container including a push plate within the cavity extending between the bottom wall and the top wall in spaced adjacency to the first end wall, with the push plate including at least one spring member captured between the push plate and the first end wall within the container,

the first side wall includes a container pocket orientated adjacent the bottom wall, the pocket having spaced first and second foldable side walls, a pocket front wall spaced from the first side wall, and a pocket floor, with a foldable plate mounted within the pocket in adjacency to the pocket floor, with the foldable plate extending from the first side wall and in spaced orientation relative to the second side wall.

5,368,156

PALLET ASSEMBLY WITH CONTAINER THEREON

Mark T. Bruzzi, Coudersport, Pa., and Peter C. Sherer, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1993, Ser. No. 7,642

Int. Cl.[5] B65D *75/00*

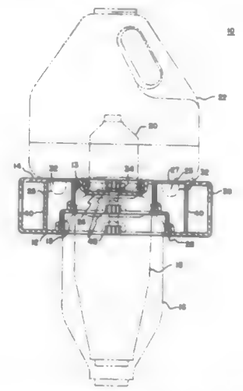
U.S. Cl. 206—203 **17 Claims**

1. A pallet assembly for transporting and storing one of a select sized container, said pallet assembly comprising:

a body member having a first face and a second face;

said first face having at least one first cavity having a plurality of substantially concentric upstanding sidewalls defining a first container receptacle, said first container receptacle having a base common to said sidewalls extending upwardly into said first cavity;

said second face having at least one second cavity and means cooperatively associated with said second cavity on at least one side of said second cavity defining a second container receptacle and wherein said base extending upwardly in said first container receptacle extends inwardly of said second container receptacle;



whereby said first container receptacle or said second container receptacle can be used to transport and store one of a select sized container.

5,368,157

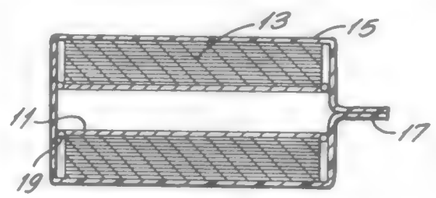
PRE-PACKAGED, PRE-SOAKED CLEANING SYSTEM AND METHOD FOR MAKING THE SAME

Charles R. Gasparrini, Port Chester, N.Y., and Walter H. Cano, Bridgeport, Conn., assignors to Baldwin Graphic Systems, Inc., Stamford, Conn.

Filed Oct. 29, 1993, Ser. No. 145,881

Int. Cl.[5] B65D *85/67*

U.S. Cl. 206—209 **27 Claims**



1. A pre-packaged, pre-soaked cleaning system for use to clean the cylinders of printing machines comprising:

(1) a pre-soaked fabric roll saturated to equilibrium with low volatility organic compound solvent disposed around an elongated cylindrical core having open ends, and

(2) a heat-sealed plastic sleeve disposed around and in intimate contact with said fabric roll, whereby the pre-soaked, saturated fabric roll can be transported and stored vertically and horizontally until use without substantially disturbing the distribution of said solvent in said fabric roll and detrimentally affecting the cleaning ability of the fabric.

5,368,158

INDIVIDUAL DECONTAMINATION APPARATUS

Pierre Miaud, Charenton-le-Pont, France, assignor to Gallet S. A., Chatillon-sur Chalaronne, France

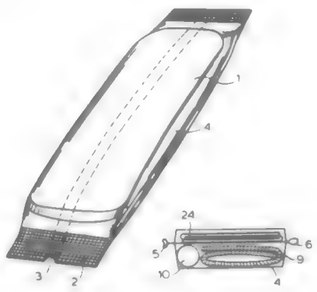
PCT No. PCT/FR92/00010, § 371 Date Jun. 11, 1993, § 102(e) Date Jun. 11, 1993, PCT Pub. No. WO92/11795, PCT Pub. Date Jul. 23, 1992

PCT Filed Jan. 7, 1992, Ser. No. 75,544

Claims priority, application France, Jan. 7, 1991, 91 00107

Int. Cl.[5] B65D *81/32, 85/00*

U.S. Cl. 206—222 **13 Claims**



1. A decontamination kit comprising:

a hermetically sealed package of a material generally impermeable to toxic agents;

an absorbent mitten in the package capable of absorbing toxic agents;

a towel in the package; and

means including a device in the package for making an active decontaminant liquid applicable to the towel.

5,368,159

PROTECTION CASE FOR REMOTE CONTROLS

Alessandro Doria, Milan, Italy, assignor to Daniels s.r.l., Milan, Italy

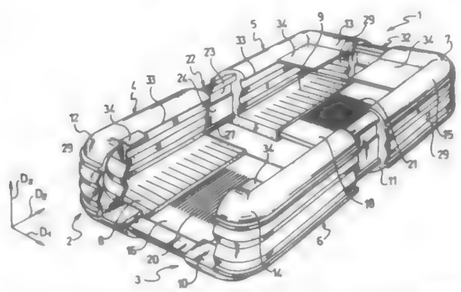
PCT No. PCT/EP92/01350, § 371 Date Jul. 20, 1992, § 102(e) Date Jul. 20, 1992, PCT Pub. No. WO92/22918, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 15, 1992, Ser. No. 910,154

Claims priority, application Italy, Jun. 14, 1991, MI91-1A001640; WIPO, Sep. 23, 1991, PCT/EP91/01813

Int. Cl.[5] B65D *81/16*

U.S. Cl. 206—320 **30 Claims**



1. A protection case (1; 51) for a remote control, comprising:

two opposite shells (2, 3; 52, 53) made of a shockproof material,

a first guide means (16, 17, 18, 19; 61, 62, 63, 64, 65, 66) for so positioning the two shells (2, 3; 52, 53) with respect to each other as to enclose the remote control in a first direction (D1),

a first means (20, 21; 76, 77, 78, 79) of holding the shells (2, 3; 52, 53) in the selected position in the first direction (D1), wherein each shell (2, 3; 52, 53) comprises:

two opposite half-shells (4, 5, 6, 7; 54, 55, 56, 57),

a second guide means (22, 25, 26; 69, 70, 71, 72) for so positioning the half-shells (4, 5, 6, 7; 54, 55, 56, 57) relatively to each other as to enclose the remote control in a second direction (D2) perpendicular to the first direction (D1),

a second means (27; 81, 82) of holding the half-shells (4, 5, 6, 7; 54, 55, 56, 57) in the selected position in the second direction D2),

wherein each half-shell comprises:

a bottom (8, 9, 10, 11; 58) and a cap (12, 13, 14, 15; 59) located opposite to each other,

a third guide means (23, 24; 73) for so positioning the bottom (8, 9, 10, 11; 58) and cap (12, 13, 14, 15; 59) relatively to each other as to enclose the remote control in the third direction (D3) perpendicular to the first (D1) and second (D2) directions.

a third means (23; 83) of holding the bottom (8, 9, 10, 11; 58) and the cap (12, 13, 14, 15; 59) in the selected position in the third direction (D3),

wherein the first guide means comprises at least two plates (16, 18; 61) engaged for sliding movement in respective seats (17, 19; 62) formed in the bottoms (8, 9, 10, 11; 58), below the position intended for the remote control to be protected.

14. A combination of a protection case (1; 51) and a remote control, wherein the protection case comprises two opposite shells (2, 3; 52, 53) made of a shockproof material, a first guide means (16, 17, 18, 19; 61, 62, 63, 64, 65, 66) for so positioning the two shells (2, 3; 52, 53) with respect to each other as to enclose the remote control in a first direction (D1), and a first means (20, 21; 76, 77, 78, 79) of holding the shells (2, 3; 52, 53) in the selected position.

5,368,160

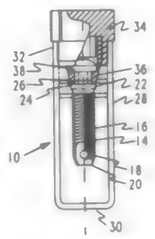
STERILE PACKAGING FOR DENTAL IMPLANT SYSTEM

Jeffrey D. Leuschen, Carlsbad, Calif., and Donald E. Hendricks, Austin, Tex., assignors to Calcitek, Inc., Carlsbad, Calif.

Filed Dec. 21, 1993, Ser. No. 171,003

Int. Cl.[5] A61C *8/00*

U.S. Cl. 206—339 **11 Claims**



1. A package for a root portion of a dental implant, said package comprising

a vial;

a cap for closing said vial;

driver means releasibly connected to said cap for supporting said root portion; and

means for connecting said root portion to said driver means and for providing a healing surface covering a proximal end of said root portion during initial healing associated with implanting said root portion in a patient's jaw.

5,368,161

PRESENTING UNIT FOR DENTAL INSTRUMENTATION

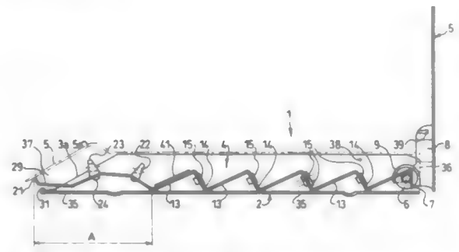
Marie-Helene Plais, Villa "la Canadienne"-Avenue Sanguet-, le Touquet, France

Filed Apr. 1, 1992, Ser. No. 861,454

Claims priority, application France, Feb. 28, 1992, 92 02399

Int. Cl.[5] A61B *19/02;* **A61C** *19/02*

U.S. Cl. 206—369 **12 Claims**



1. Presenting unit for dental instrumentation, said unit comprising a bottom wall, two parallel lateral walls connected to said bottom wall, a tool-carrying tray so dimensioned as to be capable of being placed on said bottom wall between said lateral walls, a cover, and a transverse pivot pin carried by said lateral walls adjacent an end of said lateral walls, said cover being freely articulated to, and said tray being freely hooked on, said pivot pin in a detachable manner, so that, at the end of a pivoting of said cover about said pivot pin, said cover is automatically separated from said tray, said tray comprising a series of transverse corrugations defining a first group of planes and a second group of planes which are in alternating and parallel relation and inclined relative to said bottom wall, means for receiving and retaining tools being provided in said second planes, each second plane corresponding to a given type of tool.

5,368,162

SAFETY DEVICE FOR PARALLELEPIPEDIC BOX

Bertil Holmgren, Vellinge, Sweden, assignor to M W Trading APS, Glyngore, Denmark

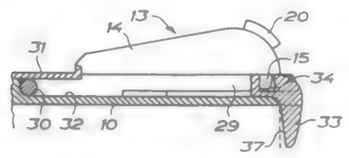
PCT No. PCT/SE91/00722, § 371 Date Mar. 25, 1993, § 102(e) Date Mar. 25, 1993, PCT Pub. No. WO92/08026, PCT Pub. Date May 14, 1992

PCT Filed Oct. 28, 1991, Ser. No. 39,022

Claims priority, application Sweden, Oct. 26, 1990, 9003424-0

Int. Cl.[5] B65D *85/30;* **A45C** *13/18*

U.S. Cl. 206—387 **9 Claims**



1. A theft prevention device for a box comprising:

a) a frame, said frame being adapted to conform to the dimensions of the box, said frame including an insert opening;

b) means for locking the insert opening, the locking means being movable between a first engaged position, where the insert opening is blocked, and a second disengaged position where the insert opening is not blocked;

c) means for slidably and pivotally mounting the locking means to said frame, said mounting means being connected to said frame;

d) restraining means for preventing pivotal movement of the locking means when the locking means is in the first engaged position, the restraining means being connected to the frame; and

e) a latch operatively connected to the locking means for selectively releasing the locking means, the latch being movable between a first position where the locking means can not be displaced and remains engaged, where the insert opening is blocked, and a second position where the locking means may be displaced and disengaged, such that the insert opening may be unblocked.

5,368,163

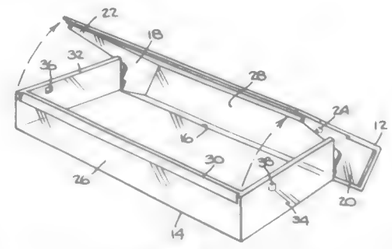
ONE-PIECE BOX CONSTRUCTION FOR MAGNETIC MEDIA DEVICES

John A. Gelardi, Kennebunkport, Me., assignor to DIC Digital Supply Corporation, Fort Lee, N.J.

Continuation of Ser. No. 925,216, Aug. 6, 1992, abandoned. This application Nov. 4, 1993, Ser. No. 145,680

Int. Cl.[5] B65D *85/672, 43/16*

U.S. Cl. 206—387 **8 Claims**



1. A one piece mold-formed box for the storage of articles, comprising:

a cover, a front panel, a back panel and a base integrally molded in an open position;

said base having an integral hinge member, constructed and arranged to permit rotation of an upper portion of said base from an open position to a closed article-storing position, said hinge member being spaced from said back panel at a distance not greater than about one-half the length of said base;

said cover, back panel and base molded in fixed relationship such that a portion of said base, located between said back panel and hinge member, is substantially parallel to said cover, with said back panel extending between a bottom edge of said base and a bottom edge of said cover, and said base and cover being substantially perpendicular to said back panel thereby forming an article-receiving pocket;

said base molded in fixed relationship with said front panel and having a portion of said base, located between said front panel and said hinge member, substantially perpendicular to said front panel;

said cover having opposed sidewalls which have protrusions on the outside thereof;

said base having opposed sidewalls which have recesses on the inside thereof;

said recesses being constructed and arranged to engage said protrusions when said base is in the closed position, thereby maintaining said box in the closed position.

5,368,164

TOOL SET APPARATUS

Jeffrey E. Bennett, Newhall, Calif., and Tseng Y. Chuan, Taichung Hsien, China, assignors to Allied Wholesale, Inc., Sylmar, Calif.

Filed Nov. 30, 1993, Ser. No. 160,071

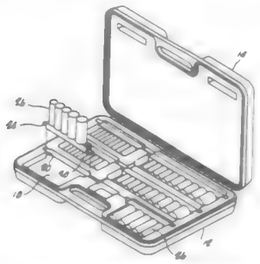
Int. Cl.[5] B65D *85/24*

U.S. Cl. 206—373 **28 Claims**

1. A closeable apparatus for tool storage, comprising:

a tray, one or more flip indexes pivotally secured to said

tray, said flip indexes having a base, said base including a channel extending longitudinally through said base, one or more slide members, said slide members having a rod



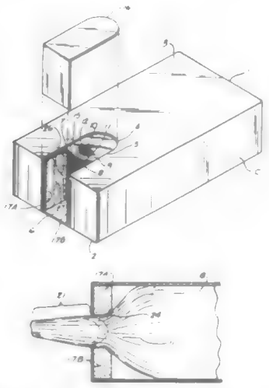
secured to a guide, said slide members adapted to be slidably and selectively positioned onto said base by controlled longitudinal movement of said guide in communication with said channel.

5,368,165

BAG PACK DISPENSER SYSTEM

Tai Ngyuen, Kenner, La., assignor to API, Inc., Metairie, La.

Filed Mar. 16, 1992, Ser. No. 851,813
Int. Cl.[5] B65D *1/34, 6/04*
U.S. Cl. 206—554 **20 Claims**



1. A bag pack dispenser system, comprising:

a container having a first end juxtaposed first and second edge sides and a top side, said container further having a dispenser port formed in a portion of said first end and a portion of said top side, said dispenser port being substantially medially situated relative to said first and second edge sides;

a bag stack formed of a plurality of individual, separable bags, each of said bags having a first, upper and a second, lower wall and a first end; and

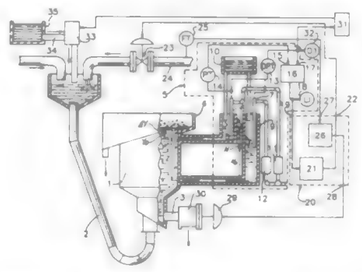
first and second template members situated inside said container, said template members juxtaposed to said first end of said bags and said first end of said container, said first and second template members having a space formed between them, providing a longitudinal dispensing channel formed from said dispenser port to said first end of said bags, said template members having a second side communicating with said first end of said bags, at least a portion of said second side comprising an oblique wall area relative the longitudinal axis of said container, said second side of said template members having a frictionally enhanced surface thereon tending to resist the movement of the lower wall of a bag being dispensed from said stack through said dispenser port, separating it from the upper wall of the bag, tending to cause the dispensed bag to emerge from said container in an open disposition.

5,368,166

DEVICE FOR AUTOMATICALLY CONTROLLING THE PROCESS OF SEPARATING FROTH CONCENTRATE FROM GANGUE IN A FLOATATION MACHINE

Fedor A. Chumak, Novy gorod, 6, kv.50., Udachny-1; Vladimir N. Cherednik, Ulitsa Lenina,20,kv.16., and Mikhail N. Zlobin, ulitsa Pavlova,12,kv.1., both of Mirny, all of U.S.S.R.

Filed Sep. 21, 1990, Ser. No. 586,261
The portion of the term of this patent subsequent to Apr. 29, 2009, has been disclaimed.
Int. Cl.[5] B03D *1/00, 1/02*
U.S. Cl. 209—168 **19 Claims**



1. A flotation control apparatus comprising:

a flotation machine having a pulp filled chamber, said machine being provided with a gangue discharge branch pipe, a source feed pipeline, a frother meter means for feeding a frother and a pipeline means for feeding water-and-frother;

means for measuring the level and density of the pulp in said chamber of the flotation machine, said means for measuring having first and second outputs;

said means for measuring the level and density of the pulp further comprises:

a. first and second hydrostatic tubes installed outside said chamber of the flotation machine and connected to the chamber at different levels relative to the pulp level;

b. means for feeding a liquid at an essentially constant flow rate to each of the hydrostatic tubes, said liquid having a known constant density;

c. first and second bubbling tubes placed in the hydrostatic tubes at different levels relative to the pulp level, which define a predetermined pulp level and density range;

d. first and second air flow governor means connected to the first and second bubbling tubes, respectively, for controlling the flow rate of air to each bubbling tube;

e. a differential pressure transducer means connected with the first and second bubbling tubes and having an output serving as the first output of the pulp and density measuring means, which produces a signal corresponding to a pulp density increment;

f. a pressure transducer detecting means connected with the first bubbling tube and having an output;

g. a pulp level correction means having first and second data inputs and connected via said first and second data inputs to the outputs of said pressure transducer detecting means and said differential pressure transducer means, respectively, said correction means having an output which serves as said second output of said pulp level and density measuring means, said second output produces a signal corresponding to a value of pulp level increment corrected with respect to density;

means for controlling the flow rate of frother supplied to said chamber of the flotation machine comprising an input and an output, said means for controlling the flow of frother being connected via said input to the first output of said pulp level and density measuring means and via said output to said frother metering means;

means for stabilizing the pulp level in said chamber of the flotation machine, comprising first and second inputs and first and second outputs, a first circuit means for controlling the flow rate of water-and-frother supplied into the chamber, said first circuit means having an input serving as the first input of the pulp level stabilizing means, said first input being connected being connected to the second output of the pulp level and density measuring means, said first circuit means having an output serving as the first output of the pulp level stabilizing means; a second circuit means for controlling the rate of gangue discharged from the chamber of the flotation machine, said second circuit means having an input and an output serving, respectively, as the second input and second output of said pulp level stabilization means;

a water-and-frother valve means installed on said pipeline for controlling the flow rate of water-and-frother to the chamber of the flotation machine, having an input connected to the first output of the pulp level and stabilization means, which produces a first control signal in responce to a deviation of pulp level increment from a preset value;

a gangue discharge valve means used to discharge gangue installed on said branch pipe for discharging gangue from the chamber of the flotation machine;

a drive means for actuating said gangue discharge valve means, having an input connected to the second output of the pulp level stabilization means; and

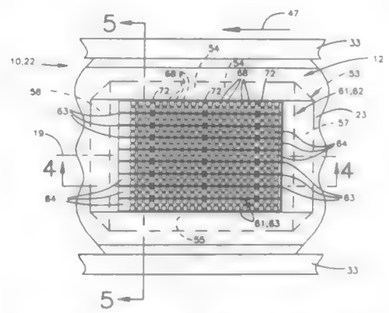
a water-and-frother flow transducer means installed on said pipeline for feeding water-and-frother and having an output connected to the second input of the pulp level stabilization means, said pulp level and stabilization means develops at its second output a second control signal fed to the drive means of the gangue discharge valve means in responce to a deviation of flow rate of water-and-frother from a preset value.

5,368,167

VIBRATING CONVEYOR SCREENING METHOD AND APPARATUS

Glenn E. Howes, Surrey, Canada, assignor to Edem Steel Ltd., Surrey, Canada

Filed Oct. 22, 1991, Ser. No. 780,216
Int. Cl.[5] B07B *1/34, 1/49*
U.S. Cl. 209—395 **23 Claims**



8. A screening apparatus mountable in a vibrating conveyor pan of a dynamically balanced vibrating conveyor apparatus for screening material by size while conveying material along a longitudinal conveyor axis of the conveyor apparatus, the conveyor apparatus having a balancing structure operable 180 degrees out-of-phase with vibrations of the conveyor pan so as to dynamically balance the conveyor apparatus, the screen assembly comprising:

(a) first and second sets of transversely spaced apart, longitudinally extending first and second members respectively, the members being parallel to each outer and alignable with the longitudinal conveyor axis, some members of the second set being locatable between some members of the first set, the first set being mountable on the conveyor pan to vibrate in phase therewith along the longitudinal axis, the second set being mountable to vibrate in phase with the balancing structure so as to vibrate 180 degrees out of phase with the vibrations of the first set, the conveyor pan being subjectable to an essentially linear vibratory motion having a relatively large displacement component disposed parallel to the longitudinal conveyor axis, and a relatively small displacement component disposed perpendicularly to the longitudinal conveyor axis so that material thereon is transported along the conveyor, and the second members being vibratable to have an essentially linear vibrating motion having a relatively large displacement component disposed parallel to the longitudinal conveyor axis and a relatively small displacement component disposed perpendicularly to the longitudinal conveyor axis, and

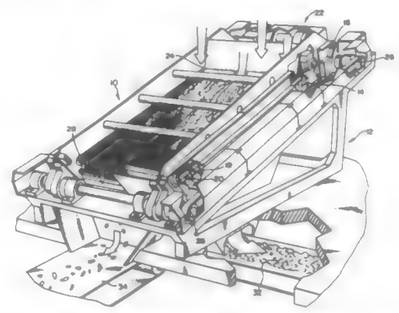
(b) a plurality of longitudinally spaced apart, transversely extending third members located between adjacent first and second members so as to define a plurality of screen openings between the first, second and third members, the third members being connected to either or both of the first or second sets of longitudinally extending members to vibrate in phase therewith.

5,368,168

BAR SCREEN WITH BARS OF STAGGERED HEIGHT

Gevan R. Marrs, Puyallup, and Gail E. Johnson, Auburn, both of Wash., assignors to Weyerhaeuser Co., Tacoma, Wash.

Filed Apr. 26, 1993, Ser. No. 53,906
Int. Cl.[5] B07B *1/49*
U.S. Cl. 209—396 **7 Claims**



1. A wood chip screening system, comprising:

a first screen assembly, which includes a first set of screening bars, wherein the first set of screening bars includes a repetitive pattern of bars in which a same one of every three successive bars in the first set is taller than the other bars in said first set and wherein said other bars in said first set are of equal height;

a second screen assembly which includes a second set of screening bars, wherein the second set of screening bars includes a repetitive pattern of bars in which a same one of every three successive bars in said second set is taller than the other bars in the second set, wherein said other bars in said second set are of equal height and wherein the first and second screen assemblies are arranged such that the bars in the first set are interleaved with the bars in the

second set, such that one bar of every three successive bars is taller than the other bars; and

means for driving the bars in the first and second sets thereof in such a manner that they move both longitudinally and vertically in a predetermined path, resulting in chips being tipped up by the action of the bars so that the thickness dimension thereof tends to be presented to openings between the bars.

5,368,169

SCREEN CONSTRUCTION

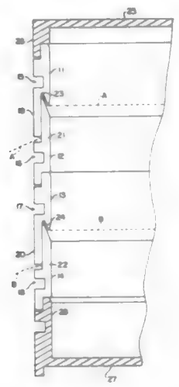
Paul M. Ensor, Albany, Australia, assignor to Flexistack Pty Ltd, Welshpool, Australia

Filed Apr. 3, 1989, Ser. No. 302,592

Claims priority, application Australia, Jul. 24, 1986, PH7113; Dec. 1, 1986, PH9253

Int. Cl.[5] B07B *1/49*

U.S. Cl. 209—403 **10 Claims**



1. A mesh screen for screening particulate material comprising: at least one pair of cylindrical members each open at an end and a piece of mesh material clamped between the members, an inner face of one cylindrical member being provided with a circumferential groove having a pair of side walls, one of the side walls being disposed radially inwardly and being contiguous with said inner face, and another of the side walls being disposed radially outwardly to form a circumferential flange contiguous with an outer face of the other cylindrical member, and an inner face of the other cylindrical member being provided with a circumferential flange adapted to engage in the circumferential groove of the one cylindrical member with the mesh material interposed there between so as to form a lap joint; wherein the circumferential flange of the other cylindrical member has a free end which is wholly accommodated within the circumferential groove, said circumferential groove and said free end being of complementary shape to provide clamping of said mesh material therebetween and to apply tension to said mesh material upon convergent axial movement between said cylindrical members, the engagement of the circumferential flanges permitting exit of extraneous mesh material from within said joint.

5,368,170

POPCORN COLANDER

Alfred C. Leis, 2 Margaret St., Tiverton, R.I. 02878

Filed May 3, 1993, Ser. No. 56,171

Int. Cl.[5] B07B *1/46*

U.S. Cl. 209—680 **3 Claims**

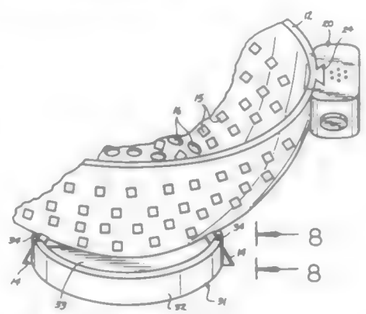
1. A popcorn colander, comprising,

a rigid semi-spherical body, having an annular entrance end wall and a floor, with the floor oriented medially of the body, and

a plurality of support legs projecting radially relative to the body In surrounding relationship about the floor, and

a matrix of first openings directed through the body having a first width, and

a plurality of second openings directed through the body, wherein the second openings are arranged in a surrounding relationship relative to the floor and extend through the body in adjacency to the floor,



wherein the body include a boss mounted to an exterior surface of the body, wherein the boss extends from the entrance end wall, and a housing, the housing having a top wall spaced from a bottom wall, and at least one side wall, with the at least one side wall having a slot receiving said boss, the housing further having a cavity and the top wall including a matrix of apertures directed therethrough for dispensing of granular material within the cavity.

5,368,171

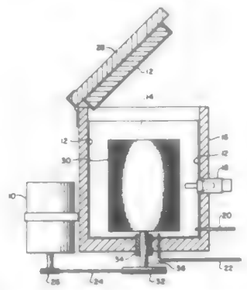
DENSE FLUID MICROWAVE CENTRIFUGE

David P. Jackson, 608 Ruberta, Glendale, Calif. 91201

Filed Jul. 20, 1992, Ser. No. 915,140

Int. Cl.[5] B08B *3/08, 3/10*

U.S. Cl. 134—147 **12 Claims**



1. A device for cleaning a substrate containing at least one contaminant by placing the substrate in a centrifuge basket in a cleaning chamber comprising the combination of:

a) a cleaning chamber for contacting said substrate containing said contaminant with a dense fluid at a pressure equal to or above the critical pressure and below the critical temperature of a said dense fluid;

b) a variable speed centrifuge basket assembly within said chamber holding said substrate;

c) a source of microwave energy operating at a frequency of 2.45 GHz impinging against said substrate;

d) a vacuum pump to remove residual contaminants or excess chemical cleaning or physical agents from said chamber in between processing stages of cleaning.

5,368,172

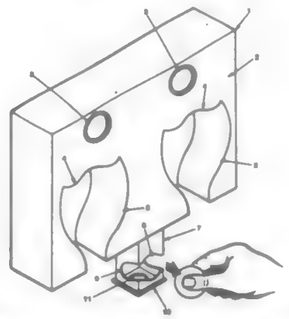
TABLE TENNIS PADDLE AND BALL HOLDER

Ben G. Barringer, 702 S. 34th St., Mesa, Ariz. 85204

Filed Mar. 4, 1993, Ser. No. 26,024

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—13 **8 Claims**



1. A table tennis paddle and ball holder comprising:

a housing comprising a back wall, a front panel, and an upper sidewall, a lower sidewall and end sidewalls intermediate and joining said back wall and said front panel;

said back wall having a means for securing said housing to a vertical surface;

a first curved inner wall extending between and joined to said back wall and said front panel; said first curved inner wall having ends terminating on either side of an opening in said lower sidewall through which a tennis paddle handle can extend; said first curved inner wall having a configuration intermediate said ends of said first inner wall generally complementary to a ball striking surface of a head of a tennis paddle whereby the head of at least one tennis paddle can be supported by said first curved inner wall;

said front panel having a tennis paddle head opening therein in registry with said first curved inner wall; said tennis paddle head opening having a configuration generally conforming to said configuration of said first curved inner wall except at an upper portion which extends downwardly with respect an upper portion of said first curved inner wall to form a paddle containment flange; and

a retractable ball retaining and dispensing means slidably mounted in said lower sidewall; and said front panel having a ball opening means therein in communication with said retractable ball retaining and dispensing means for loading balls into said retractable ball retaining and dispensing means.

5,368,173

Patent Not Issued For This Number

5,368,174

STORAGE RACK BEAM HAVING SURFACE ENABLING INDICIA AT HIGH OR LOW ELEVATION TO BE EASILY READ

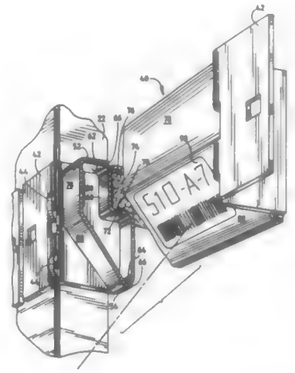
William L. Clark, Pinehurst, N.C., and William T. Guiher, Greenbrier, Tenn., assignors to UNR Industries, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 926,458, Aug. 7, 1992, abandoned. This application Jul. 21, 1993, Ser. No. 95,607

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—183 **7 Claims**

1. A storage rack positioned on a substantially horizontal surface, said storage rack including a front portion facing toward an aisle and a rear portion facing away from the aisle, said storage rack comprising an upright frame and means including a tubular support beam made of steel and connected to the upright frame for supporting a pallet load, said support beam including at least four integral, generally flat walls, said integral, generally flat walls including an upper, substantially horizontal wall defining a generally flat, substantially horizontal, load-supporting surface, said integral, generally flat walls further including an outer, substantially vertical wall and an inner, substantially vertical wall, the substantially vertical walls extending below the upper wall, being substantially parallel, and being spaced horizontally from each other by at least the width of the upper, substantially horizontal wall, the substantially horizontal wall and substantially vertical walls forming an inverted channel opening downwardly, said integral, generally flat walls further including an inclined wall extending below the outer, substantially vertical wall, the inclined wall defining a generally flat, indicia-receiving surface facing outwardly and downwardly from the front portion of said storage rack so as to be readily visible from the aisle when a pallet load is supported on said support beam, said indicia-receiving surface being inclined at a fixed angle in a range from about 10° to about 80° relative to a vertical plane, said support beam having a lowermost edge, said indicia-receiving surface extending to the lowermost edge.



5,368,175

Patent Not Issued For This Number

5,368,176

CLOSURE WITH SNAP HINGE

Klaus Thanisch, Bullay, Germany, assignor to Zeller Plastik GmbH, Zell, Germany

PCT No. PCT/EP90/00327, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO90/09931, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 28, 1990, Ser. No. 761,350

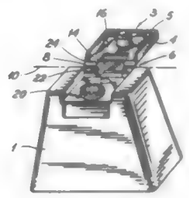
Claims priority, application Germany, Mar. 2, 1989, 3906570

Int. Cl.[5] B65D *47/08*

U.S. Cl. 215—235 **9 Claims**

1. A closure having an open and closed position comprising the following components:

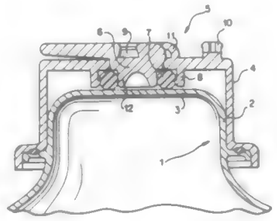
a) a lower part (1) connecting via a snap hinge (6) defining a main axis of rotation to a lid (3) having a floor (4) and provided with a surrounding border (5, 38), the lower part and lid having adjacent portions, outer faces (*2a*, *4a*) and contiguously lying sections and possessing an external profile;
b) the snap hinge and at least the contiguously lying sections



of said lower part and said lid are produced in one piece from synthetic material;
c) the snap hinge has, for the purpose of directly connecting the lower part to the lid in the main axis of rotation (10), at least one film hinge (8);
d) a plurality of linear articulations (16, 18) are oriented parallel to and are separated from the main axis of rotation (10);
e) the snap hinge has at least one elastic element (14) which, in the closed position, lies inside the external profile of the adjacent portions of said lower part (1) and said lid (3) and is connected via linear articulations (16, 18), to said lid (3) and said lower part (1);
whereby
f) a single film hinge (8) lies substantially in said outer faces (*2a*, *4a*) of said lower part and said lid;
g) the sections of the lower part and lid which connect directly to at least one film hinge (8) comprise bevelled edges that run at an angle to the outer faces and which when closed, are adjacent to each other and when open are swung apart from each other;
h) when the lid is open, said floor (4) of the lid is aligned with the film hinge (8) above the main axis of rotation of the lid.

5,368,177
INFUSION BOTTLE
Klaus Derksen, Karlsbad-Ittersbach, Germany, assignor to POHL GmbH & Co. KG, Karlsruhe, Germany
Filed Sep. 23, 1993, Ser. No. 125,985
Claims priority, application Germany, Sep. 23, 1992, 4231750
Int. Cl.[5] B65D *39/00*
U.S. Cl. 215—249 **17 Claims**

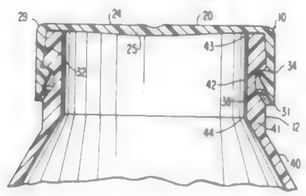
1. An infusion bottle, comprising:
a bottle with a bottom wall, said bottom wall bulging outward, such that said bottom wall can be pierced by an infusion spike;
a cup-shaped cover cap, such that said cover cap can be attached to said bottle in a liquid-tight manner, said cover cap comprising
a cover bottom;



a central region in the center of said cover bottom, said central region being capable of rupture with respect to said cover bottom;
an opening tab connected integrally with said central region, whereby said opening tab is used to tear out said central region from said cover bottom;
a depression located within said central region on the side facing away from said bottle and a projection located within said cover bottom on the side facing away from said bottle, such that when said central region is torn out and bent back, said depression and said projection can be lockingly engaged; and
an elastomeric clamping ring having an inside diameter that is less than that of said central region of said cover bottom and an outside diameter that is greater than that of said central region of said cover bottom;
said clamping ring being located between said cover bottom and said bottom wall of said bottle and contacting each of said cover bottom and said bottom wall of said bottle with initial elastic axial compression, such that said clamping ring can be used to hold and seal an inserted infusion spike.

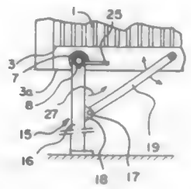
5,368,178
CONTAINER AND CLOSURE THEREFORE HAVING CONICAL SEALING SURFACES
Edward J. Towns, 13401 Hackamore Dr., Matthews, N.C. 28105, and Edward M. Brown, 128 Passaic Ave., Livingston, N.J. 07039
Filed Mar. 9, 1992, Ser. No. 848,228
Int. Cl.[5] B65D *41/16*
U.S. Cl. 215—317 **1 Claim**

1. In combination, a container, and a synthetic resinous closure cap therefor, particularly suited for storing liquid contents under pressure; said container including a neck finish having an upper portion with an inner surface defining an opening, and an outer surface, said outer surface surrounding said opening and being of frusto-conical configuration forming a sealing area, a medially disposed portion of said outer surface



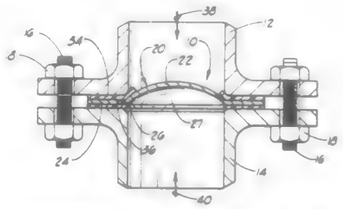
defining a bead receiving recess; said closure including an end wall and a generally cylindrical side wall formed integrally therewith; said side wall defining a frusto-conical sealing surface corresponding to said sealing surface on said container finish adjacent said end wall and an inwardly projecting annular bead engageable with said bead retaining recess to resiliently maintain said closure upon said finish; said cap in engaged condition upon said container finish defining a clearance between an inner surface of said end wall and said outer surface of said finish wherein upon the presence of a load placed upon said end wall of said cap, said cap may radially expand in said sealing area to increase sealing pressure.

5,368,179
CONTAINER HAVING PROPS WHICH CAN BE FOLDED AWAY INTO THE LATERAL STRUCTURAL MEMBERS
Jean-Marie Bulle, La Véze, Besancon, France F-25000
PCT No. PCT/FR92/00543, § 371 Date Apr. 13, 1993, § 102(e) Date Apr. 13, 1993, PCT Pub. No. WO92/22481, PCT Pub. Date Dec. 23, 1992
PCT Filed Jun. 17, 1992, Ser. No. 969,303
Claims priority, application France, Jun. 17, 1991, 91 07626
Int. Cl.[5] B65D *90/66*
U.S. Cl. 220—1.5 **23 Claims**



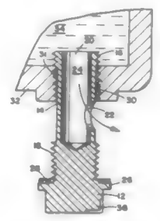
1. An apparatus for supporting a container including a body and a plurality of laterally disposed, longitudinal structural members attached to the body, comprising:
a sheath attached to and extending between the structural members;
a plurality of support arms slidingly received within the sheath and including means for retaining the support arms within the sheath as the support arms are guided along the sheath to a fully opened-out position, wherein the retaining means includes a rod slidably received by a first of the support arms, wherein a first end of the rod includes a stop for engaging the first of the support arms and a second end of the rod is attached to a second of the support arms; and
a plurality of support props associated with the support arms and hingedly associated with the structural members of the container so that in a folded-away position, the support props are folded into the structural members without projecting from beneath the body of the container.

5,368,180
PERFORATED RUPTURE DISK ASSEMBLY
Stephen P. Farwell, Owasso; Edward H. Short, III, Tulsa, and John A. Tomasko, Claremore, all of Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.
Filed Oct. 12, 1993, Ser. No. 135,082
Int. Cl.[5] F16K *13/00*
U.S. Cl. 220—89.2 **16 Claims**



1. A perforated pressure relieving rupture disk assembly adapted to be sealingly clamped across a pressurized fluid-containing passageway comprising:
a rupture disk having a dome-shaped portion connected to an annular flat flange portion and having one or more perforations in said annular flat flange portion which at least partially define a circular blow-out part in said rupture disk, said blow-out part opening and relieving pressure therethrough when said perforations are sealed and a pressure differential of predetermined magnitude is exerted on said rupture disk; and
a first annular gasket member positioned adjacent to said annular flat flange portion of said rupture disk and extending over said perforations therein whereby said gasket member seals said perforations when a pressure differential is exerted thereon and on said rupture disk.

5,368,181
CAPTURED DRAIN PLUG OR VENT
Alan Myers, 658 Summer View Cir., Encinitas, Calif. 92024
Filed Mar. 12, 1993, Ser. No. 31,210
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—303 **20 Claims**



1. A plug for a container, said container having an inside, an outside, and a threaded opening therebetween, comprising:

a substantially cylindrical shank having upper and lower threaded portions for mating with said threaded opening, and a midportion between said threaded portions, said upper threaded portion having an upper orifice in an end thereof, and said upper and lower threaded portions having the same thread pitch and pitch diameter;

grip means adjacent said lower threaded portion of said shank for facilitating rotation of said shank in said threaded opening;

said midportion having a lower orifice and a maximum diameter less than the minimum diameter of said threaded opening, at least a portion of said lower orifice extending outside said container when said upper threaded portion is disposed completely inside said container; and

said shank having an internal conduit between said upper and lower orifices for communicating a fluid between said inside and said outside of said container when at least a portion of said lower orifice is disposed outside said container;

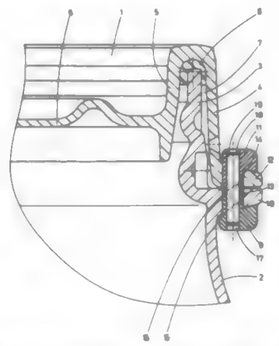
said plug thereby being prevented from unintentional release from its position in said opening once said upper threaded portion only has been threaded through said opening into said interior of said container.

5,368,182

LID SEAL FOR WIDE-MOUNTED BARRELS OF SYNTHETIC RESIN

Udo Schutz, Ruckersteg 4, D-5418 Selters, Germany

Filed Dec. 17, 1992, Ser. No. 992,434
Claims priority, application Germany, Dec. 23, 1991, 4142737
Int. Cl.[5] B65D *45/32*
U.S. Cl. 220—319 **2 Claims**



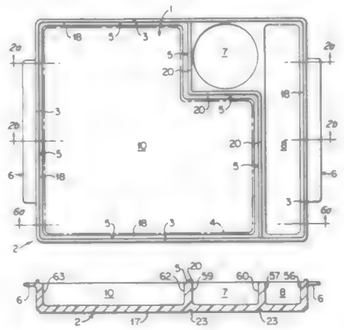
1. A wide-mouthed barrel (2) having a neck (3), and a lid (1) having an inner rim (5) dipping into the barrel neck (3) and an outer rim (4) encompassing the barrel neck and a gasket (8) disposed in an annular space (7) between the outer rim (4) and the inner rim (5), the gasket sealingly bearing on an upper edge of said neck (3), said outer rim terminating downwardly in a radially outwardly extending flange (12) and the barrel (2) having a radially outwardly extending flange (10) immediately below the lid flange (12), clamping rings (9, 11) disposed respectively on a lower side of the barrel flange (10) and an upper side of the lid flange (12), the clamping rings having locking sleeves (13, 14) molded thereon that engage in bores (15, 16) in the barrel flange (10) and the lid flange (12), said sleeves having through-bores (17, 18), and clamping bolts (19) pressed into said bores (17, 18) to hold said gasket (8) pressed against the upper edge of the barrel neck (3).

5,368,183

MEAL TRAY SYSTEM

Stuart H. Singer, Sugartown Mews Apartments, Apt. 0608, 291 Poplar Ave., Devon, Pa. 19333

Filed Apr. 23, 1993, Ser. No. 51,674
Int. Cl.[5] B65D *1/34, 1/36*
U.S. Cl. 220—528 **20 Claims**



1. A tray assembly for carrying a food item comprising:

a base having a generally planar bottom and at least one vertical wall extending upwardly from said bottom which forms at least a horizontally closed first compartment,

said vertical wall surrounding said first compartment and including an uppermost portion that forms at least a portion of a perimeter about said first compartment;

a disposable compartment insert which is received flat in said first compartment to line said first compartment and thus protect said first compartment from food received on said compartment insert, said compartment insert including at least one upright wall which corresponds to and extends adjacent said at least one vertical wall forming said first compartment; and

a snap means for securing said compartment insert to said base in said first compartment and for sealing an underlying portion of said first compartment from the food received on said compartment insert, said snap means including at least one extension which snaps into place and overlies an underlying portion of an adjacent vertical wall such that said compartment insert is securely held in said first compartment and food received on said compartment insert is prevented from spilling over said upright walls and into said food compartment by said snap means,

wherein said extension projects from said upright wall of said compartment insert around a periphery thereof,

and wherein said snap means includes a horizontal groove provided along an interior surface of said uppermost portion of said vertical wall surrounding said first compartment into which said extension projecting from said upright wall of said compartment insert is snap fit.

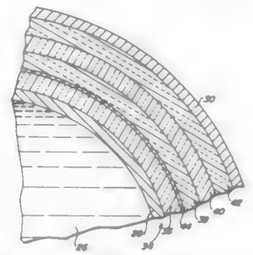
5,368,184

INSULATION FOR VESSELS CARRYING CRYOGENIC LIQUIDS

Ralph M. Fay, Lakewood, and Mark A. Albers, Littleton, both of Colo., assignors to Schuller International, Inc., Denver, Colo.

Filed Dec. 16, 1992, Ser. No. 990,999
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—562 **10 Claims**

1. In a cryogenic vessel for use in the transportation of cryogenic liquids having an inner wall for containing cryogenic liquids, an outer wall exposed to ambient conditions spaced from the inner wall to form a cavity therebetween, the improvement comprising, fiber glass insulation progressively



increasing in density from said inner wall to said outer wall filling said cavity.

5,368,185

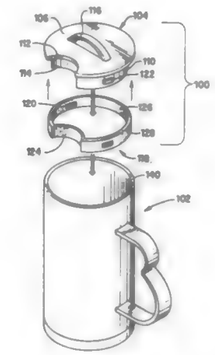
Patent Not Issued For This Number

5,368,186

SAFETY LID FOR DRINKING MUG

Frank Yeh, 1019 N. Mayflower St., Anaheim, Calif. 92801

Filed Nov. 8, 1993, Ser. No. 148,936
Int. Cl.[5] B65D *39/00*
U.S. Cl. 220—713 **9 Claims**



1. A safety lid for use with a mug, the mug including a circumferential mouth having an internal surface, the safety lid comprising:

a disk having an upper surface, a bottom surface, a circumferential edge, and a semi-circular gap provided along the circumferential edge;

a central core attached to the bottom surface of the disk, the central core having a circular side wall and a curved channel having a semi-circular shape; and

a flexible sealing ring having an outer surface and an inner surface, the inner surface of the sealing ring attached to the circular side wall and the outer surface of the sealing ring adapted to frictionally engage the internal surface of the mouth of the mug;

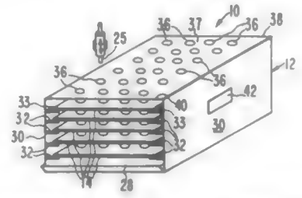
wherein the flexible sealing ring further comprises a curved segment adapted to be fitted to the circular side wall of the central core at the location of the curved channel, and wherein the curved channel is aligned with the semi-circular gap of the disk.

5,368,187

METHOD AND APPARATUS FOR DISPENSING MATERIALS FROM BLISTER PACKAGES

Stanley Poncetta, 21431 Columbus Ave., Cupertino, Calif. 95014; John V. Castaldo, 5848 Burchell Ave., San Jose, Calif. 95120, and Peter G. Spence, 14685 Oka Rd., #25, Los Gatos, Calif. 95030

Filed Jan. 19, 1993, Ser. No. 4,876
Int. Cl.[5] B65D *83/00*
U.S. Cl. 221—30 **35 Claims**



1. A dispenser for materials carried in blisters in a blister card comprising:

a support having a means defining a plurality of spaced guide holes therethrough;

means coupled with the support for mounting a stack of blister cards below the defining means with each blister card having blisters substantially aligned with respective holes of said defining means;

means for applying a downward force to any group of aligned blisters of said blister cards to open the blisters of said group so as to allow the materials therein to be liberated therefrom; and

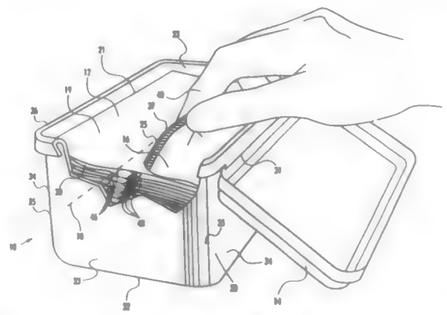
means below the mounting means for the blister cards for receiving and collecting the materials liberated from a blister group.

5,368,188

FOLDED PRODUCT WITH INDICATOR FOR FACILITATING REMOVAL

Harvey J. Twardowski, Wauwatosa, Wis., assignor to Meridian Industries, Inc., Milwaukee, Wis.

Filed Sep. 17, 1993, Ser. No. 122,929
Int. Cl.[5] A47K *10/24*
U.S. Cl. 221—50 **16 Claims**



1. A sheet stacking system for facilitating easy removal of individual sheets, the sheet stacking system comprising:

a container; and

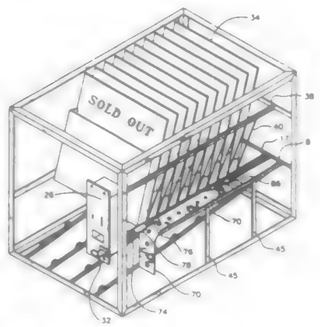
a plurality of folded sheets stacked within the container, each sheet having a top flap, the top flap further including a visible mark having a different color at least partially impregnating a portion of the top flap the visible mark being an integral part of the sheet and easily perceptible to a user to facilitate single sheet removal.

5,368,189

VENDING MACHINE FOR NEWSPAPERS AND LIKE ARTICLES

John Griffith, 320 Cricket Lake Dr., Naples, Fla. 33960

Filed Apr. 20, 1994, Ser. No. 230,256
Int. Cl.[5] G07F *11/06*
U.S. Cl. 221—90 16 Claims



1. A vending machine for dispensing a single newspaper or similar article during each dispensing cycle which dispenses a single newspaper comprising,

a cabinet housing having a coin box capable of activating each dispensing cycle by inserting coins therein and a pull lever means capable of initiating each dispensing cycle when moved outwardly,

support means mounted within the cabinet and arranged to hold a plurality of sequentially aligned fixed slot means extending from the rear to the front of the cabinet,

each slot means having front and rear upstanding opposing panel means and a releasable bottom trip door means, each slot means capable of holding a newspaper in an upright position, each bottom trip door means having a spring means biasing the trip door means upwardly to a closed position and a side arm extension means equally spaced apart from other side arm extensions,

guide track means mounted adjacent to the fixed slot means above the side arm extension means of the trip door means,

a trip lever mechanism slidably mounted on the guide track means capable of moving in a forward and rearward direction thereon, the trip lever arm mechanism having a trip lever arm means descendingly mounted thereon and engagingly aligned with the side arm extension means of the trip door means so as to engage a side arm means and push open the trip door means upon forward movement of the trip lever mechanism during each dispensing cycle,

a pull belt means slidably mounted on the guide track means and capable of moving in a forward or rearward direction thereon, the pull belt means having a front end and a rear end with the rear end fixed to the trip lever mechanism and the front end unattached, the pull belt means having a plurality of equally spaced central holes extending over the length of the pull belt means,

a pull hook means having a horizontal pull arm means internally secured to the pull lever means at the front of the vending machine and a hook end means releasably secured within one of the central holes of the pull belt means,

whereby the pull lever means is capable of initiating the dispensing cycle by being moved outwardly thereby moving the pull hook means forward which in turn moves the pull belt means and trip lever mechanism forward within the track means a cycle distance causing the trip lever arm means to engage the side arm extension means pushing it downwardly and opening the trip door means to allow a newspaper to slide out of the fixed slot means,

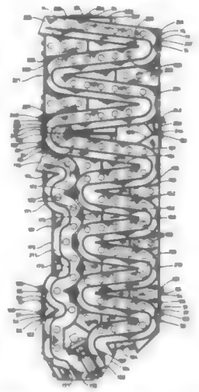
whereby the pull lever means is then released and is capable of retracting back to its original position and moving the pull hook means rearward one cycle distance where the hook end means is capable of being securely inserted within the next succeeding hole.

5,368,190

APPARATUS FOR VENDING WORK OBJECTS

Larry E. Hieb, 501 W. Sierra, Apt. 227, Fresno, Calif. 93704, and Toshiyuki Takamura, 8153 N. Cedar Ave., Apt. 101, Fresno, Calif. 93710

Continuation of Ser. No. 860,671, Mar. 30, 1992, abandoned.
This application Sep. 30, 1993, Ser. No. 129,594
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—131 12 Claims



8. An apparatus for vending work objects, the apparatus comprising a frame defining at least two work object storage areas dimensioned individually to receive a plurality of said work objects for sequential gravitational delivery through individual dispensing passages; and a single vend mechanism mounted in an operational position between said dispensing passages and having a substantially rigid vend frame having an end wall, a cam shaft mounted on the vend frame for rotation about a longitudinal axis, two pairs of control members mounted on the vend frame for engagement by the cam shaft, and a vend motor mounted on said end wall of the vend frame in driving relation to said cam shaft and selectively operable to pivot the cam shaft about said longitudinal axis selectively to move the control members between predetermined stop positions, individually extending into said dispensing passages, and release positions, retracted from the dispensing passages, whereby said vend mechanism is operable selectively to vend work objects from either of said work object storage areas through their respective dispensing passages upon selective movement of the control members between said stop positions and said release positions.

5,368,191

GRAVITY FEED PRODUCT DISPLAY DISPENSER

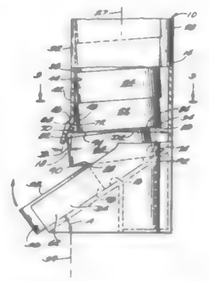
Allen E. Johnson, Hartford, Wis., assignor to DCI Marketing, Milwaukee, Wis.

Filed Apr. 21, 1993, Ser. No. 50,854
Int. Cl.[5] B65H *3/00*
U.S. Cl. 221—194 19 Claims

1. A display dispenser for holding a plurality of vertically stacked horizontally disposed product containers and automatically orientating each container as it reaches a withdrawal position in the dispenser, to present a top surface of the container at an optimum display angle relative to horizontal comprising:

stacking means having a forward side, restraint means for holding a plurality of stacked containers that are horizontally disposed and vertically aligned relative to each other along a vertical axis having a front wall portion having an outer surface, and a bottom opening through which containers held in said stacking means can pass;

a display stage spaced below said bottom opening having a withdrawal position for receiving and holding a container at an angle relative to horizontal that will present a top surface of the container at an optimum display angle below said forward side;



an intermediate holding zone between said display stage and said bottom opening for holding a penultimate container above said display stage; and

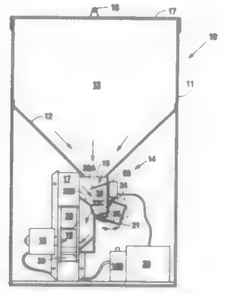
retainer means mounted in said intermediate holding zone positioning the penultimate container that has descended through said bottom opening at a ready position for descending to said display stage when released by removal of the container in said withdrawal position, said retainer means depends downward from said outer surface of said restraint means.

5,368,192

FOOD PELLET DISPENSING APPARATUS

Leland B. Ransom, II, Comfort, Tex., assignor to Sweeney Enterprises, Inc., Boerne, Tex.

Filed Apr. 27, 1993, Ser. No. 53,454
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—277 6 Claims



1. A pellet dispensing apparatus, comprising:

a paddle wheel mounted within an enclosure, said enclosure having an outlet;

a drive means for rotating said paddle wheel within said enclosure;

a chute;

a hopper communicating with said enclosure through said chute;

a gate pivotally connected to said chute; and

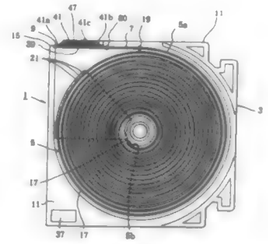
a solenoid connected to said gate, wherein the activation of said solenoid opens said gate to allow pellets to flow from said hopper into said enclosure where the rotation of said paddle wheel propels said pellets through said enclosure outlet, and the deactivation of said solenoid allows said gate to close using gravity.

5,368,193

ELECTRONIC COMPONENT PACKAGING MEANS, AND SUPPLY MECHANISM FOR AND METHOD OF SUPPLYING ELECTRONIC COMPONENTS BY USING THE ELECTRONIC COMPONENT PACKAGING MEANS

Tetsuo Takahashi; Shinichi Araya; Kuniaki Takahashi; Kunio Mogi; Koji Kudo; Takeshi Ito, and Hiroshi Ikeda, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 17, 1992, Ser. No. 993,734
Claims priority, application Japan, Dec. 18, 1991, 3-110793[U]; Apr. 20, 1992, 4-126812[U]
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—278 64 Claims



1. Electronic component packaging means for packing electronic components for storage and transportation as well as for supplying electronic components to a mounting head of an automatic electronic component mounting apparatus, said packaging means comprising:

a substantially plate-like casing body having a substantially spiral passageway formed in its interior, a linear passageway formed therein as a continuation of an outermost circular portion of said spiral passageway, and an outlet formed therein as a continuation of said linear passageway to communicate with the exterior of said body;

a plurality of electronic components received in a row in said spiral passageway of said casing body; and

means for facilitating forwarding of said electronic components along said spiral passageway to said outlet;

said means for facilitating forwarding of said electronic components comprising a plurality of main air-intakes, said air-intakes being formed in said casing body in a manner to communicate between respective circular portions of said spiral passageway and the exterior of said casing body and being adapted to be connected to an air supply source when said packaging means is used as an electronic component supply source;

said packaging means being adapted to be supported on a base of an electronic component supply mechanism with said plate-like casing body standing on said base when said packaging means is used as said electronic component supply source;

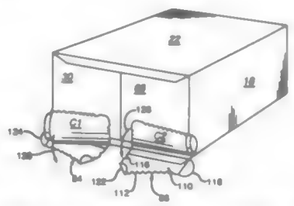
said outlet and said linear passageway being formed at a portion of said plate-like casing body which is located at an upper position when said packaging means is supported on said base, said outlet being faced upward, above which outlet said mounting head is adapted to wait.

5,368,194

ROLL-OUT DISPENSER FOR A BEVERAGE CARTON

James R. Oliff, Austell, and James T. Stout, Ellijay, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 31, 1993, Ser. No. 114,729
Int. Cl.[5] A47F *1/04*
U.S. Cl. 221—305 **15 Claims**



1. In a package for storing beverage containers such as cans of predetermined height and diameter in two or more axially-stacked tiers, the package including a carton having interconnected top, bottom and side walls, and end closure structure connected to at least some of said walls for closing one end of the carton, the containers arranged within the carton with their axes parallel to said side walls, a dispenser for the containers comprising:

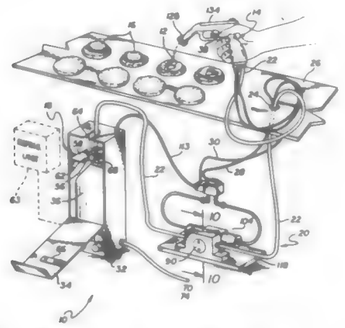
first and second apertures defined in said end closure structure, said first aperture extending from one of said side walls and said bottom wall into said end closure structure, and said second aperture extending from said one side wall and said top wall into said end closure structure, said first and second apertures terminating remote from each other such that a portion of said end closure structure extends between said apertures and is connected to said one side wall.

5,368,195

PRESSURIZED BAG-IN-BOTTLE LIQUID DISPENSING SYSTEM

Lawrence Pleet, 9 Flintlock La., Bell Canyon, Calif. 91307, and Richard J. Heminuk, 3277 Cherie Dr., Simi Valley, Calif. 93063

Filed May 13, 1993, Ser. No. 61,194
Int. Cl.[5] B65D *35/28*; G01F *11/00*
U.S. Cl. 222—52 **42 Claims**



1. A fluid dispenser system, comprising:

a supply bottle including an outer shell having an open mouth and pressure port formed therein at spaced locations, and a deformable inner liner within said outer shell and connected to said outer shell generally at said mouth to permit fluid flow into and from said inner liner through said mouth, said outer shell and inner liner cooperatively defining a pressure chamber therebetween in flow communication with said pressure port;

a supply station for receiving and supporting said supply bottle, and including means for connecting a pressure source via said pressure port to said pressure chamber thereby pressurizing said inner liner and fluid contained therein, said supply station including means for supporting said supply bottle generally at the mouth thereof, and pressure valve means for connecting the pressure source to said pressure chamber;

a delivery conduit connected to said bottle mouth for pressure-caused flow of the fluid from said inner liner; and

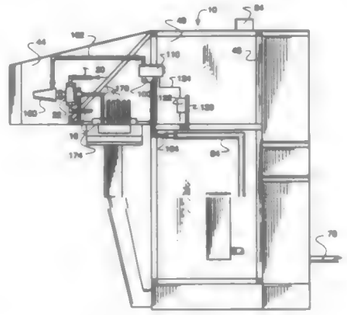
dispenser control means for regulating fluid flow through said delivery conduit.

5,368,196

APPARATUS FOR METERING AND DISPENSING FLOWABLE MATERIALS TO FORM A BLENDED COMPOSITION

Leendert Hellenberg, Warmond, and Johannes H. Mink, Voorhout, both of Netherlands, assignors to Fluid Management Limited Partnership, Wheeling, Ill.

Filed Mar. 25, 1993, Ser. No. 36,415
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—61 **13 Claims**



1. Apparatus for dispensing material into a container, comprising:

a housing defining an interior volume;

a dispense head in said housing for directing a flow of material therethrough in response to control commands;

a plurality of pilot valves;

pneumatic coupling means for coupling a pneumatic pressure source to said pilot valves;

electrical control means coupled to the pilot valves so as to operate the pilot valves in response to user-determined control commands;

a plurality of dispensing valves, each having an input for receiving a flow of material, and a metering output for delivering a controlled amount of material to said dispense head and each dispensing valve having a pneumatic command input;

inter-valve conduit means coupling said pilot valves to the pneumatic command inputs of respective ones of said dispensing valves;

inlet conduit means coupling the inputs of said dispensing valves to an external supply source of material; and

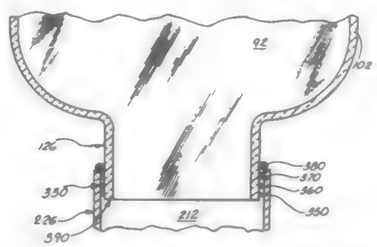
metering output conduit means coupling the metering outputs of said dispensing valves to said dispense head.

5,368,197

SELF-FILLING BOTTLED-WATER COOLER CONVERSION KIT

Carl M. Sutera, 380 Bearhill Rd., North Andover, Mass. 01845

Continuation-in-part of Ser. No. 541,775, Jun. 21, 1990, Pat. No. 5,114,042. This application Oct. 18, 1991, Ser. No. 780,880
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—67 **6 Claims**



5. For use in a bottled-water cooler conversion apparatus, a seal for ensuring a water tight connection between the neck of a self-filling bottle and the tank of a water cooler cabinet, comprising:

a flexible elastomer flat disk having a central opening and a flat annular body around said opening, said flat annular body having a first side including a plurality of spaced rounded ridges concentrically arranged on said flat annular body around said opening, and a generally smooth second side opposite to said first side; and

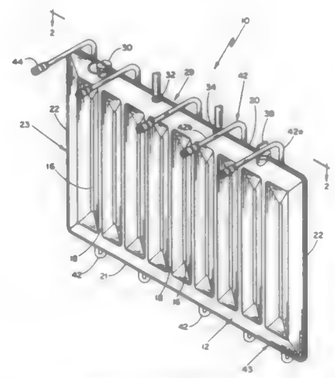
wherein the thickness and width of said ridges successively increase from the ridge surrounding said opening to the outermost ridge surrounding said opening, the opening in the flat disk being smaller than the outside diameter of the neck of the self-filling bottle such that when the flat disk is manually stretched to fit the opening over the neck of the bottle and the flat disk is released, the disk assumes a cylindrical configuration with the smooth second side in engagement with the neck of the bottle.

5,368,198

BEVERAGE DISPENSER

Douglas P. Goulet, Big Lake, Minn., assignor to IMI Cornelius Inc., Anoka, Minn.

Continuation-in-part of Ser. No. 936,153, Aug. 26, 1992. This application Mar. 10, 1993, Ser. No. 29,073
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—129.1 **6 Claims**



1. A beverage dispenser comprising:

a plurality of dispensing valves supported along a front end of the dispenser,

a water bath tank, the water tank having an interior volume defined by a bottom surface and a generally vertical perimeter wall surface extending around and upward from the bottom surface, the tank for holding a volume of water and containing an evaporator coil within the water, the evaporator coil connected to refrigeration means for cooling the evaporator coil for forming an ice bank thereon, and

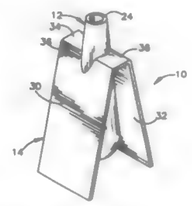
a carbonator retained in the water tank along a front portion of the perimeter wall surface adjacent the dispenser front end, for providing carbonated water to the valves, the carbonator being substantially flat and having a front surface, a back surface and a perimeter edge defining a width thereof, wherein the carbonator front surface faces and lies adjacent the front portion of the perimeter wall surface.

5,368,199

MICROWAVEABLE HOT MELT DISPENSER

Hans E. Haas, Stow, Ohio; Bernard M. Malofsky, Bloomfield; Richard T. Thompson, Haddam, both of Conn.; Cynthia R. Jaros, Kirtland, Ohio; John R. Nottingham, Hunting Valley, Ohio; John Spirk, Moreland Hills, Ohio; Craig M. Saunders, Rocky River, Ohio, and Paul E. Brokaw, Euclid, Ohio, assignors to Loctite Corporation, Hartford, Conn. and Nottingham-Spirk Design Associates, Inc., Cleveland, Ohio

Continuation of Ser. No. 20,511, Feb. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 562,518, Aug. 6, 1990, Pat. No. 5,188,256. This application Feb. 22, 1994, Ser. No. 200,852
Int. Cl.[5] H05B *6/64*; B67D *5/62*
U.S. Cl. 222—146.5 **48 Claims**



1. Apparatus for dispensing heat sensitive materials comprising:

i) a first material which upon heating to a predetermined temperature is either transformed from a solid state or state of high viscosity to a liquid state or state of low viscosity or activated such that polymerisation or cure of the first material is initiated,

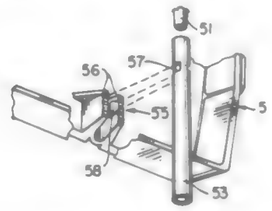
ii) a second material which is designed to heat to at least the predetermined temperature when subjected to microwave energy for at least a predetermined period of time, said second material also being in a heat transfer relationship with, but not dispersed within, said first material,

iii) a container within which the first material is disposed and which may either comprise or contain the second material, and

iv) an outlet through which said first material is to be dispensed following exposure of the apparatus to microwaves;

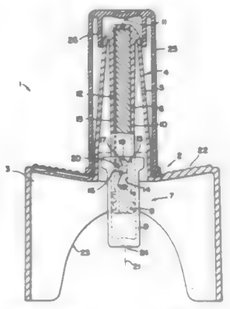
wherein the second material comprises a ferromagnetic material having a minimum Curie temperature at least equal to the predetermined temperature and a maximum Curie temperature which is lower than the temperature at which the first material will boil or be adversely affected by the heat generated by the second material and lower than the ignition temperature of either the first material or the container.

5,368,200
DRIP DISPENSER
Koen De Winter, Beaconfield, Canada, assignor to West Sanitation Services, Inc., Torrance, Calif.
Continuation of Ser. No. 871,900, Apr. 21, 1992, Pat. No. 5,271,560. This application Sep. 21, 1993, Ser. No. 124,951
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—153 **1 Claim**



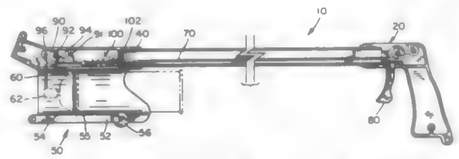
1. A dispensing means comprising:
a) a radially insertable hollow tube having at least one annular or semi-annular groove around at least a portion of the outer circumference of said tube, said groove being adapted to engage radially a locking means; and
b) a locking means attached to a dispenser, said locking means being adapted to engage said groove of said tube so that said tube cannot be moved along its length in any axial direction with respect to said locking means.

5,368,201
PRESSURE-OPERABLE LOCKING VALVE FOR MEDIA DISPENSER
Karl-Heinz Fuchs, Radolfzell, Germany, assignor to Ing. Erich Pfeiffer GmbH & Co. KG, Radolfzell, Germany
PCT No. PCT/EP90/02280, § 371 Date Aug. 24, 1992, § 102(e) Date Aug. 24, 1992, PCT Pub. No. WO91/13281, PCT Pub. Date Sep. 5, 1991
PCT Filed Dec. 21, 1990, Ser. No. 934,617
Claims priority, application Germany, Feb. 22, 1990, 4005528
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—162 **27 Claims**



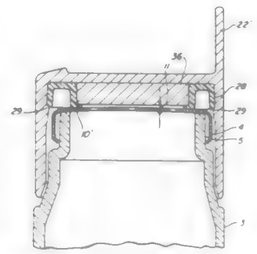
22. A dispenser for discharging media comprising:
a valve body operable in a valve channel between a first operating state and a second operating state, and
wherein snap-action holding and release means are positioned in said valve channel for retentively holding said valve body in at least one of said first operating state and said second operating state against transfer to another of said first operating state and said second operating state, one of said first operating state and said second operating state comprising a positively locked state of said valve,
said snap-action holding and release means including locking means having a locking reception and a locking counter member engaging said locking reception in said locked state, said snap-action holding and release means having a first operating state and a second operating state corresponding with said first operating state and said second operating state for said valve body;
wherein said counter member has a curved surface on an external circumference; and
wherein said curved surface is spherical.

5,368,202
HANDLE FOR HOLDING AND REMOTELY ACTUATING AN AEROSOL CONTAINER
Thomas J. Smrt, 9716 S. Grant Hwy., Marengo, Ill. 60152
Filed Nov. 19, 1993, Ser. No. 156,025
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—174 **8 Claims**



1. A spraying apparatus for discharging the contents of a valve-equipped aerosol can comprising:
an elongated, hollow tube having a front and rear end;
a front housing fixed to the tube at the front end, the front housing including a can holder comprising a hollow cylinder sized to receive an aerosol can;
a bell crank pivotally mounted in the front housing;
a trigger rod fixed to a first arm of the bell crank, and mounted within the front assembly and tube for sliding longitudinal movement, such movement causing rotation of the bell crank;
an actuator rod fixed to a second arm of the bell crank and mounted within the first housing for longitudinal movement between a discharging position, wherein the actuator rod pushes the can valve, and a non-discharging position;
a biasing spring fixed between the trigger rod and a retaining wall in the front housing, which biases the trigger rod to a position where the actuator rod is in the non-discharging position;
a rear housing mounted to the rear end of the tube the rear housing including a grip portion;
a trigger disposed within the rear housing and connected to the trigger rod for reciprocating horizontal movement between a discharging position, wherein the actuator rod is in the discharging position, and a non-discharging position;
a locker rotationally mounted in the rear housing and rotatable between a non-locking position, wherein only horizontal movement of the trigger is allowed, and a locking position wherein horizontal and vertical movement of the trigger in the discharging position is allowed; and
a locking land disposed within the rear housing for frictionally receiving a front surface of the trigger when it is moved vertically from the discharging position, the biasing spring biasing the trigger into engagement with the locking land and thus maintaining the trigger in the discharging position.

5,368,203
SPICE RACK WITH MAGNETICALLY HELD SPICE CONTAINERS
Rainer Friedrich, Nassau/Lahn, and Rolf G. Schülein, Singhofen, both of Germany, assignors to Leifheit AG, Nassau/-Lahn, Germany
Filed Sep. 25, 1992, Ser. No. 951,168
Claims priority, application Germany, Sep. 26, 1991, 4132016; Mar. 27, 1992, 4209949
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—179.5 **20 Claims**



1. A spice container and holder assembly comprising:
at least one holder means for holding at least one spice container, said at least one spice container having an open top portion;
a closure means (**2, 24**) for each of said at least one spice container, said at least one spice container being held by a magnetic force of a magnet means to said closure means (**2, 24**);
each of said closure means including sealing means for sealing said open top portion of said at least one spice container, said sealing means including:
said magnet means, positioned between said at least one spice container and that one of said closure means mounted on said at least one container; and
magnetic means positioned adjacent to, but spaced apart from said magnet means, said magnetic means comprising one of a shaker cap (**4**) and a shaker cap mounting means that are respectively formed of a ferromagnetic material, said one of said shaker cap (**4**) and said shaker cap mounting means cooperating with said magnet means when said magnet means and said magnetic means are magnetically attracted to each other to eliminate the spaced apart positioning of the magnet means and the magnetic means to thereby form a seal therebetween for sealing said open top portion of said spice container;
whereby said sealing means maintains said seal even when said at least one container is not held by said holder means.

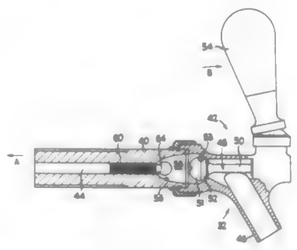
5,368,204
DEVICE FOR ACTUATING A DISPENSING CONTAINER MOUNTED ON A DOOR
Trevor Smith, Bedford, England, assignor to Stag Limited, Kowloon, Hong Kong
Filed Dec. 14, 1992, Ser. No. 990,646
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—181 **10 Claims**

1. Means for actuating a device for dispensing a predetermined dose of material automatically upon closing of a door, said means comprising
a holder for a container forming part of the dispensing device, said holder being structured and arranged to be mounted for co-operation with the door and a frame thereof,
an arm extending laterally outwardly from said holder and being hinged with a bias at a medium point so that an outermost portion of said arm is disposed to contact and activate the dispensing device when said hinged outermost portion of said arm is moved against said bias in a gap between the door and the frame thereof,
said arm being structured and arranged to contact a base of



the container to actuate the dispensing device, whereby relative movement between the container and said holder therefor causes the device to dispense the predetermined dose of material.

5,368,205
APPARATUS FOR CONTROLLING FOAMING AND FLOWRATE IN BEVERAGE DISPENSING SYSTEMS
James K. Groh, Lombard, Ill., assignor to Banner Beverage Systems, Inc.
Filed Jul. 19, 1993, Ser. No. 94,471
Int. Cl.[5] B67D *1/00*
U.S. Cl. 222—189 **17 Claims**



1. A beverage dispensing system for delivering and dispensing beverages having dissolved gases therein, under pressure, which beverages may tend to break up and release said dissolved gases in the form of foam, said beverage dispensing system comprising:
source means for storing said beverage in a substantially controlled environment;
at least one beverage transport member, operably associated with said source means, for transporting said beverage, under pressure, away from said source means;
at least one faucet means, operably associated with said at least one beverage transport member, for enabling delivery of said beverage into containers for consumption,
said at least one faucet means including
a shank portion, operably connected in fluid communication with said at least one beverage transport member, for receiving said beverage from said at least one beverage transport member and having a flow passageway disposed therein,
a valve portion, operably configured to be selectively positionable between open and closed configurations, to start and stop flow of said beverage through said beverage dispensing system, and
a nozzle portion, for directing flow of said beverage into said containers; and

flow regulator means for substantially precluding the break-up of said beverage and release of said dissolved gases, so as to prevent foaming, said flow regulator means being operably arrangeable substantially within said shank portion of said at least one faucet means,

including a flow regulator member, operably insertable into said flow passageway of said shank portion, upstream from a transition position between said shank portion and said valve portion of said at least one faucet means, said flow regulator member being in the form of a substantially cylindrical coil, with flow of said beverage being generally longitudinal through said coil, said coil having an axis extending substantially parallel to said flow passageway in said shank portion, said coil further having means for causing movement of the beverage through the coil in directions at least in part transverse to the flow passageway of said shank portion.

5,368,206

DISPENSING APPARATUS FOR PASTY SUBSTANCES

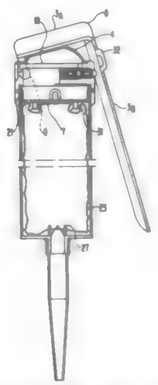
Gianni Sandrin, Pordenone, Italy, assignor to Ro-Sa Plast S.p.A., Pordenone, Italy

Filed May 19, 1993, Ser. No. 63,423

Claims priority, application Italy, May 20, 1992, PN92 U 000019; Sep. 17, 1992, PN92 U 000030

Int. Cl.[5] B65D *88/54;* **B67D** *5/42*

U.S. Cl. 222—326 **17 Claims**



1. A manually operatable dispensing apparatus comprising: a hollow vessel having a rear end and an open front end; a plunger disposed within and slidable relative to said hollow vessel in a direction along a longitudinal axis of the vessel; an elastically deformable member forming an air chamber discrete from the interior of said hollow vessel; a double check valve placing said air chamber in communication with a cavity defined within said hollow vessel between said plunger and the rear end of the vessel and placing the interior of said hollow vessel in communication with the environment outside of the hollow vessel; a manually operatable actuation lever having two segments disposed at an angle relative to each other, one of said segments overlying said elastically deformable member, and said lever being articulatable such that movement of said lever relative to said hollow vessel causes said elastically deformable member to force air from said air chamber into said hollow vessel via said double check valve; a front removable sealing element detachably secured to the front end of said hollow vessel; and a dispensing spout integral with said front sealing element so as to be detachable from the front end of said hollow vessel along with said front sealing element, said dispensing spout defining a passageway which opens through said front sealing element to the interior of said hollow vessel and is open to the environment outside of said vessel.

5,368,207

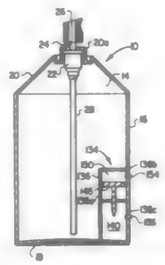
PRESSURE GENERATOR AND DISPENSING APPARATUS UTILIZING SAME

Rudiger J. C. Cruysberghs, Sterstraat 15, 2310 Rijkevorsel, Belgium

Filed Apr. 30, 1992, Ser. No. 876,661

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—396 **4 Claims**



1. Apparatus for maintaining a constant predetermined pressure in a pressurized container for dispensing product contained in the container from the container at said constant pressure, said apparatus comprising:

a vessel having a pressurized chamber disposed in said container;

a member disposed in said vessel and exposed to the pressure in said container;

means for moving said member between first and second positions relative to said vessel in response to fluctuations of the pressure in said container, said member moving to said first position in response to the pressure in said container equaling said predetermined pressure and moving to said second position in response to the pressure in said container decreasing below said predetermined pressure; and

means responsive to said member moving to said second position for connecting said pressurized chamber with said container to permit pressurized gas to pass from said pressurized chamber to said container, said connecting means being responsive to said member moving to said first position for disconnecting said pressurized chamber with said container to prevent said passage of said pressurized gas, said connecting means comprising:

a rod in engagement with said member which extends through an opening in said pressurized chamber;

a sealing member extending between said rod and said opening for preventing said passage of said pressurized gas when said member is in said first position; and

a notch formed in said rod for receiving said sealing member for permitting said passage of said pressurized gas when said member is in said second position.

5,368,208

APPARATUS FOR SHIELDING AIR FROM MOLTEN METAL FLOW FROM LADDLE TO TUNDISH IN CONTINUOUS CASTING FACILITIES

Kouhachi Nishimura, and Takanobu Kishino, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 24, 1984, Ser. No. 613,798

Int. Cl.[5] B22D *37/00*

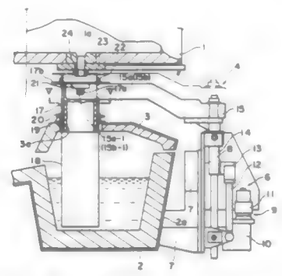
U.S. Cl. 222—603 **5 Claims**

1. A sealing apparatus for shielding air from a path of molten metal in a laddle, having a nozzle mounting surface, to a tundish having a tundish body and a cover in a continuous casting facility to prevent oxidation of the molten metal, said apparatus comprising:

a seal box lift mechanism on said tundish body and which further comprises drive means and a lift rod member to be vertically moved by said drive means;

a seal box having an outer cylinder, said outer cylinder including a base fixedly mounted on said tundish cover, and extending into said tundish, and an inner cylinder telescopically fitted in said outer cylinder;

lever means for connecting said inner cylinder to said lift rod member and for vertical movement of said inner cylinder



with respect to said outer cylinder forward and away from said laddle;

first seal means fixed at an upper end of said inner cylinder and pressed against said nozzle mounting surface of said laddle when said inner cylinder is lifted by said lift rod member;

inert gas inlet port means provided in said inner cylinder for communication of inert gas into said inner cylinder; and

second seal means fixed on said outer cylinder for sealing a gap space between said outer and inner cylinders during feeding of inert gas to said inner cylinder.

5,368,209

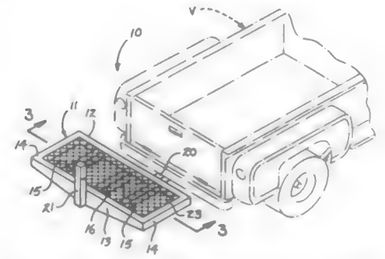
VEHICLE CARGO ATTACHMENT SUPPORT

Norman L. Hill, 10900 Hwy 41 N., Dillon, Mont. 59725

Filed Oct. 20, 1993, Ser. No. 138,721

Int. Cl.[5] B60R *9/00*

U.S. Cl. 224—42.44 **4 Claims**



1. A vehicle cargo attachment support, comprising,

a rigid, rectilinear frame having a front leg spaced from a rear leg and spaced side legs, with a frame floor arranged coextensively within the frame, and

a central leg extending orthogonally and coextensively between the front leg and the rear leg, with the central leg including an extension leg orthogonally oriented relative to the central leg at the front leg, with the central leg extending below the rectilinear frame, and the central leg including a first mounting tube fixedly mounted orthogonally to the central leg, with the first mounting tube spaced from and parallel the central leg, with the first mounting tube extending beyond the rectilinear frame, and the first mounting tube having a first mounting tube pin receiving bore, and

a second mounting tube oriented parallel to the extension leg, with the second mounting tube fixedly and orthogonally mounted to the rear leg of the rectilinear frame, with the second mounting tube extending above the rectilinear frame, and the second mounting tube including a second mounting tube pin receiving bore spaced from the rectilinear frame.

5,368,210

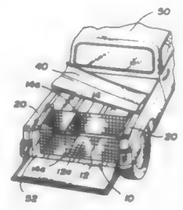
CARGO STORAGE APPARATUS

Randall C. Wotring, 9824 Blackburn, Livonia, Mich. 48150

Filed Aug. 11, 1992, Ser. No. 928,491

Int. Cl.[5] B60P *1/64*

U.S. Cl. 224—42.46 R **9 Claims**



1. An apparatus for containing cargo on a truck having two side walls, comprising:

a flexible and collapsible container having a substantially three-dimensional rectangular shape having two opposing ends;

two hanger rods connected to respective opposing ends of said container;

a plurality of fasteners connected to each of said hanger rods; and

a plurality of clamps removably secured to an overhang portion of each sidewall, each of said clamps including a portion for securing one of said plurality of fasteners.

5,368,211

APPARATUS FOR THE OBLIQUE CUTTING OF ONE OR OF SEVERAL OPTICAL FIBERS

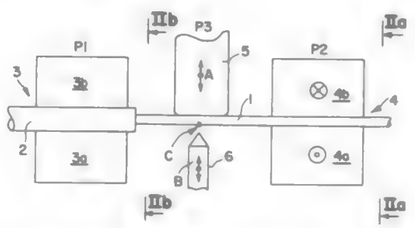
Boitel Michel, Perros-Guirec; Jean-Marc Cailleaux, Lannion, and Mahe Thierry, Rospez, all of France, assignors to France Telecom, France

Filed Apr. 2, 1993, Ser. No. 42,211

Claims priority, application France, Apr. 14, 1992, 92 04891

Int. Cl.[5] B26F *3/00*

U.S. Cl. 225—96.5 **13 Claims**



1. An apparatus for obliquely cutting at least one optical fiber, said apparatus comprising a cutting edge (6) at a cutting point where a break is to be started on a fiber, mechanical means for subjecting said fiber to a torsion and to a tension, said mechanical means comprising first means (3) for tightening the fiber in order to immobilize it upstream from the cutting point, second means (4) for tightening said fiber downstream from the cutting point, means (5) for exerting a tension

force on a part of the fiber between said first and second means (3,4), the second means (4) being formed of two clamping jaws (4a and 4b) at least one of which can move relative to the other one in a direction transverse to a longitudinal axis of the fiber (1), said moving jaw exerting a tightening force on said fiber (1), said movement of said clamping jaws driving said fiber (1) into a rolling motion between said two clamping jaws (4a and 4b) and creating said torsion of fiber (1).

5,368,212

APPARATUS FOR INFEEDING A CABLE TO AN AUTOMATIC CABLE PROCESSING MACHINE

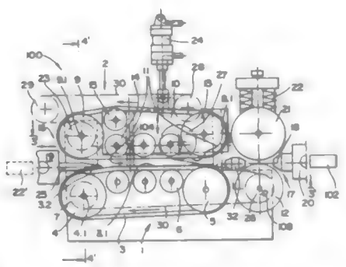
Max Koch, Meggen, Switzerland, assignor to TTC Technology Trading Company, Meggen, Switzerland

Continuation of Ser. No. 820,008, Jan. 13, 1992, abandoned. This application Nov. 8, 1993, Ser. No. 149,135

Claims priority, application Switzerland, Jan. 21, 1991, 00 159/91-7

Int. Cl.[5] B65H *20/00*; H02G *1/12*; H01R *43/28*

U.S. Cl. 226—172 **10 Claims**



1. An apparatus for infeeding a cable in a predetermined infeed direction to an automatic cable processing machine, comprising:

two mutually confronting belt drives;

a cable length measurement device for measuring a predetermined length of a cable section of the cable;

one of said two mutually confronting belt drives comprising a spatially stationary first belt drive;

said spatially stationary first belt drive comprising:

(i) two deflection rollers;

(ii) at least one pressure roller; and

(iii) a drive belt cooperating with the two deflection rollers and the at least one pressure roller;

the other one of said two mutually confronting belt drives comprising a second belt drive;

said second belt drive comprising:

(i) a support plate mounted to be parallely displaceable substantially perpendicular to the predetermined infeed direction of the cable;

(ii) a spatially stationary drivable deflection roller; and

(iii) a pressing device arranged at the support plate;

said pressing device comprising:

(i) deflection roller means;

(ii) pressure rollers;

(iii) a drive belt cooperating with the deflection roller means and the pressure rollers; and

(iv) an equalization roller to maintain the drive belt of said second belt drive under tension;

said pressing device exerting a force for pressing the drive belt of the second belt drive towards the drive belt of the first belt drive and against a cable inserted between both of the belt drives so as to drive the cable in the direction of an automatic cable processing machine;

the driven cable driving said cable length measurement device which is arranged externally downstream of the spatially stationarily arranged first belt drive;

a drive roller which is separate from the first and second belt drives arranged externally downstream of the first and second belt drives;

means for driving the drive roller in synchronism with the first and second belt drives;

the drive roller possessing a peripheral velocity which, in relation to the peripheral velocity of the drive belts of the first and second belt drives, tensions the cable; and

said cable being disposed between said drive roller and said cable length measurement device, said cable length measurement device being a rotary measurement device and being biased toward said drive roller by a spring.

5,368,213

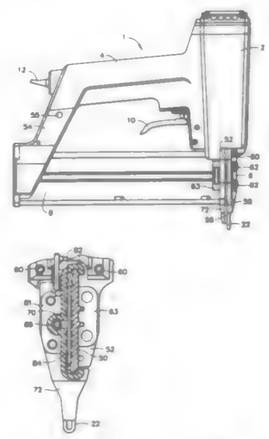
MAGAZINE FOR A PNEUMATIC FASTENER DRIVING TOOL

Donald J. Massari, Jr., Cincinnati, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Apr. 29, 1993, Ser. No. 55,142

Int. Cl.[5] B25C *1/00*

U.S. Cl. 227—123 **7 Claims**



1. An improved magazine for use with a fastener driving tool, said tool having a body, a driver assembly movable within the body through a drive stroke, a front plate rigidly affixed to said body having a recess defining a drive track for the drive stroke of said driver assembly, said magazine comprising:

a first magazine rail, rigidly affixed to said body, having a first fixed back plate section extending outwardly and perpendicular to said first magazine rail and rigidly affixed to said front plate adjacent to said drive track;

and a second magazine rail, slidably supported on said first magazine rail, having a second back plate section extending outwardly and perpendicular to said second magazine rail, movable between a first position wherein said second back plate section contacts said front plate adjacent to said drive track and a second position wherein said second back plate section is distant from said front plate, said second magazine rail having an upper curved portion and a lower curved portion within which said first magazine rail is contained.

5,368,214

APPARATUS FOR STAPLING SPLICE CLIPS TO A BELT END

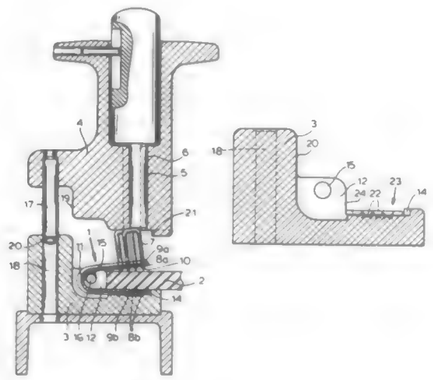
Jean-Francois Schick, Saint Privat des Vieux, France, assignor to Goro S.A., Saint Privat des Vieux, France

Filed Dec. 11, 1992, Ser. No. 989,807

Claims priority, application Germany, Dec. 11, 1991, 4140743

Int. Cl.[5] B27F *7/19*

U.S. Cl. 227—147 **5 Claims**



1. In combination with:

at least one U-shaped clip having

a pair of elongated legs each formed with at least two holes and having a rear edge formed with a rearwardly open notch, and

a bight joining front ends of the legs; and

at least one staple having two prongs, a stapling apparatus comprising:

a die part having a seat shaped to fit one of the legs and having at a forward portion of the seat an upstanding guide web snugly engageable with the bight of the clip whose one leg is fitted in the seat and a forwardly pointing centering wedge in the seat and spaced rearwardly from the web and engageable in the notch of the clip;

a presser part displaceable toward and away from the die part and having a passage extending toward the die part and in which a staple, which is engaged in the holes of the other leg of the clip, fits complementarily, the presser part having a lower surface formed with a shoulder complementarily engageable with the rear edge of the other leg of the clip fitted in the seat; and

a plunger displaceable toward and away from the die part in the passage of the presser part, whereby when the clip is fitted over a belt end and to the die part and the presser part is pressed toward the die part such that the pair of legs of the clip are parallel to each other, depression of the plunger forces the staple through the belt end through both legs of the clip.

5,368,215

SURGICAL APPARATUS AND DETACHABLE ANVIL ROD THEREFOR

David T. Green, Westport; Jonathan Wilson, and Patrick Flanagan, both of Fairfield, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 8, 1992, Ser. No. 941,746

Int. Cl.[5] A61B *17/115*

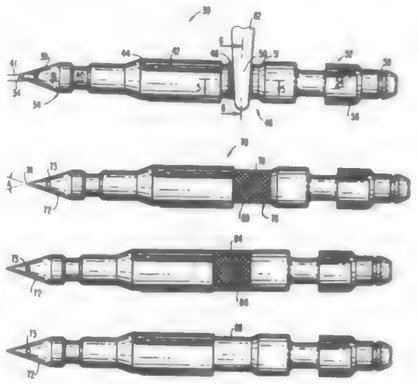
U.S. Cl. 227—179 **19 Claims**

1. A surgical apparatus for performing circular anastomosis of first and second tissue sections, comprising:

an elongated shaft having a proximal and a distal end;

means for firing a plurality of fasteners from said distal end of said elongated shaft; and

anvil means detachably mounted to said distal end of said elongated shaft, said anvil means including an anvil rod having a proximal and a distal end portion and an anvil head mounted to said distal end portion of said anvil rod, said anvil rod including an irregular surface portion intermediate said proximal and distal end portions thereof, said irregular surface portion including a recessed portion defining a reduced cross section relative to portions of said anvil rod adjacent said recessed portion, said recessed portion including a plurality of grooves extending in a general longitudinal direction wherein adjacent grooves define ridges therebetween, said ridges and grooves engageable with gripping surface portions of a grasping tool so as to minimize potential for slippage and to enhance maneuvering of said anvil rod about an operative site.



9. A detachable anvil rod for use with an apparatus for performing circular anastomosis, comprising an elongated rod member having a proximal end portion, a distal end portion and an irregular surface portion intermediate said proximal and distal end portions, said irregular surface portion including a recessed portion having a reduced cross section relative to portions of said rod member adjacent said recessed portion, said recessed portion including a plurality of grooves extending in a generally longitudinal direction wherein adjacent grooves define ridges therebetween, said grooves and ridges to be engaged by grasping surfaces of grasping means so as to facilitate gripping engagement therebetween while avoiding slippage when maneuvering said anvil rod about an operative site, said rod member further including at least one frusto-conical surface adjacent said recessed portion.

5,368,216

CAPILLARY-RETAINING STRUCTURE FOR AN ULTRASONIC HORN

Mitsuaki Sakakura, Saitama; Yuji Tanaka; Junkichi Enomoto, both of Tokyo, and Syoji Ito, Tokyo, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Nov. 22, 1993, Ser. No. 156,109

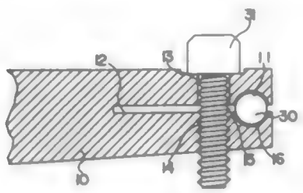
Claims priority, application Japan, Nov. 24, 1992, 4-334938

Int. Cl.[5] B23K *20/10*; H01L *21/607*

U.S. Cl. 228—1.1 **6 Claims**

1. A capillary-retaining structure for an ultrasonic horn used in a wire bonding apparatus comprising: a capillary attachment hole formed in one end portion of an ultrasonic horn and holds a capillary, a slit formed perpendicular to said capillary attachment hole extending from a surface of said one end, a screw hole which is formed in said ultrasonic horn so as to be on one side of said slit and into which an attachment screw is inserted, a threaded hole which is formed concentrically with said

screw hole so as to be on another side of said slit and with which said attachment screw is screw engaged, and a capillary retained in said ultrasonic horn by screw engaging said attachment screw with said threaded hole, wherein a stress relief hole is formed at a part inside of said capillary attachment hole so as to correspond to said attachment screw.

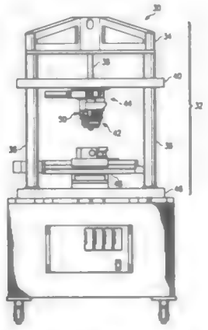


5,368,217

HIGH FORCE COMPRESSION FLIP CHIP BONDING METHOD AND SYSTEM

Richard L. Simmons, Jonestown, and Michael J. Bertram, Dripping Springs, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Aug. 25, 1993, Ser. No. 112,494
Int. Cl.[5] H01L *21/603*
U.S. Cl. 228—6.2 **15 Claims**



1. A high force compression flip chip bonding system for precisely bonding flip chip interconnects of a flip chip device to a corresponding wiring pattern on a substrate comprising:

a bond head for holding the flip chip device;

centroid determining means for determining the centroid of the pattern formed by flip chip interconnects on the flip chip device;

a positioning device for directing the flip chip device toward the substrate for contacting the corresponding wiring pattern with the flip chip interconnects; and

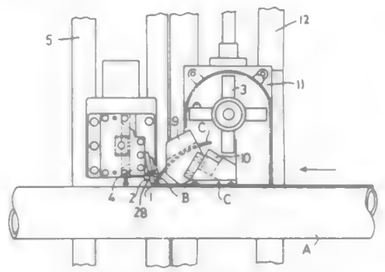
a central force actuator for transmitting a bonding force to compress the flip chip interconnects into the corresponding wiring pattern, said bending force being directed along a neutral axis of deflection of said central force actuator, said neutral axis of deflection being coincident with the centroid, for minimizing lateral shifting of the flip chip device relative to the substrate to precisely bond the flip chip interconnects to the corresponding wiring pattern.

5,368,218

WELD BEAD CUTTER MECHANISM

Kazuo Omura, Kakogawa, Japan, assignor to Kusakabe Electric & Machinery Co. Ltd., Hyogo, Japan

Filed Jul. 1, 1993, Ser. No. 84,478
Claims priority, application Japan, Nov. 27, 1992, 4-317666
Int. Cl.[5] B23K *37/08;* **B23D** *1/08*
U.S. Cl. 228—19 **7 Claims**



1. A weld bead cutter mechanism, comprising:

a planing blade for planing a weld bead from a seam weld zone along a pipe;

a rotary bead chopper which chops said planed weld bead into small pieces; and

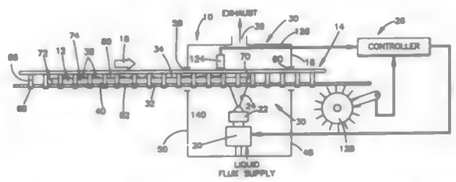
a bead guide located between said planing blade and said rotary bead chopper, said bead guide being provided with a guide groove for guiding said weld bead from said planing blade to said rotary bead chopper.

5,368,219

METHOD AND APPARATUS FOR APPLYING SOLDER FLUX TO A PRINTED CIRCUIT

Patrick T. Hogan, Lorain, and Richard G. Christyson, Lakewood, both of Ohio, assignors to Nordson Corporation, Westlake, Ohio

Filed Nov. 4, 1993, Ser. No. 146,924
Int. Cl.[5] B05B *15/00, 15/02*
U.S. Cl. 228—33 **44 Claims**



1. A system for applying a flux coating to a circuit board, said system comprising:

conveyor means for transporting said circuit board through a coating chamber in a direction of travel;

an airless spray gun having a nozzle disposed within said coating chamber, said gun being connected to a source of flux coating liquid and emitting a liquid spray pattern from said nozzle; and

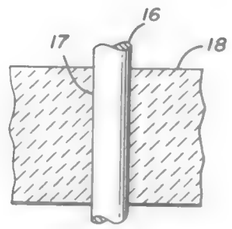
control means operatively connected to said spray gun for intermittently pulsing said gun on and off to coat a section of said circuit board in response to said circuit board moving a predetermined distance through said coating chamber whereby adjacent coated sections partially overlap each other so that each of said sections is sprayed two or more times.

5,368,220

SEALED CONDUCTIVE ACTIVE ALLOY FEEDTHROUGHS

Howard Mizuhara, Hillsborough, and P. C. Smith, Burlingame, both of Calif., assignors to Morgan Crucible Company plc, Windsor, England

Filed Aug. 4, 1992, Ser. No. 925,086
Int. Cl.[5] H01B *17/26;* **B23K** *35/30, 101/38*
U.S. Cl. 228—124.5 **17 Claims**



1. A method of manufacturing a hermetically sealed conductive feedthrough in an article comprising the steps of:

inserting an active alloy wire into a predetermined insertion hole in an article comprising a material selected from the group consisting of ceramics, metals and mixtures thereof, said wire conforming with the inner surface of said insertion hole and having sufficient active element to chemically react with the inner surface of the insertion hole of said article, said wire being disposed in said insertion hole whereby said wire is disposed in contact with said inner surface of said insertion hole; and

simultaneously heating said article and said wire for a predetermined time and at a predetermined temperature to achieve a brazing reaction at the interface between said inner surface of said insertion hole of said article and said wire to produce a hermetically sealed feedthrough,

said heating time and said heating temperature being sufficient to achieve said brazing reaction while avoiding substantial migration of the active alloy of said wire from regions of said interface under the influence of gravity.

10. A method of manufacturing a hermetically sealed conductive feedthrough in an article comprising the steps of:

inserting an active alloy wire preform into a predetermined insertion hole in an article comprising a material selected from the group consisting of ceramics, metals and mixtures thereof, said wire preform having an outer surface conforming with the inner surface of said insertion hole and having sufficient active element to chemically react with the inner surface of the insertion hole of said article, said wire preform being disposed in said insertion hole whereby said active alloy wire outer surface is disposed in contact with said inner surface of said insertion hole;

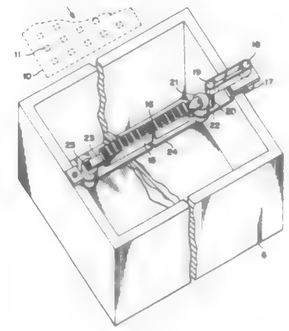
placing an electrically conductive pigtail on at least one end of said wire preform;

simultaneously heating said article, said wire preform and said pigtail for a predetermined time and at a predetermined temperature to achieve a brazing reaction at the interface between said inner surface of said insertion hole of said article and said outer surface of said wire preform to produce a hermetically sealed feedthrough,

said heating time and said heating temperature being sufficient to achieve said brazing reaction while avoiding substantial migration of the active alloy of said wire preform from regions of said interface under the influence of gravity,

whereby said pigtail is effectively fixed to said wire preform upon cooling.

that the orbital motion forms a horizontal plane substantially parallel to the printed circuit board; and



(d) bathing the printed circuit board with the flat soldering wave having the plurality of elementary jets of molten solder therein.

5,368,221

Patent Not Issued For This Number

5,368,222

WAVESOLDERING DEVICE AND PROCEDURE

Roberto Scorta, Milan, Italy, assignor to Italtel Societa Italiana Telecommunicazioni s.p.a., Milan, Italy

PCT No. PCT/EP88/00989, § 371 Date Oct. 5, 1990, § 102(e) Date Oct. 5, 1990, PCT Pub. No. WO89/10230, PCT Pub. Date Nov. 2, 1989
PCT Filed Oct. 28, 1988, Ser. No. 585,139
Claims priority, application Italy, Apr. 19, 1988, 20244 A/88
Int. Cl.[5] B23K *1/08, 31/02*
U.S. Cl. 228—180.1 **18 Claims**

1. A method for wavesoldering units, such as printed circuit boards by bathing the printed circuit board with a molten soldering wave, comprising the steps of:

(a) forming a single flat soldering wave;

(b) forming a plurality of elementary jets of molten solder within the flat soldering wave, the jets substantially not protruding from a flat surface of the flat soldering wave;

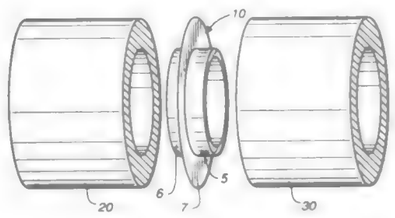
(c) revolving the elementary jets in an orbital motion such

5,368,223

PIPE WELDING PROCESS USING A METALLIC INSERT FOR IMPROVED CORROSION RESISTANCE OF THE WELDED ZONE

Henri Chevrel, Tsukuba, and Alain Boireau, Minato, both of Japan, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed May 6, 1993, Ser. No. 57,579
Int. Cl.[5] B23K *9/02*
U.S. Cl. 228—214 11 Claims



1. A process to improve corrosion resistance of a welded bead area created by the welding of two tubings by providing an improved corrosion resistance of the welded zone against corrosive fluids, said tubings being made of stainless steel comprising manganese, wherein said process comprises the steps of providing an insert body made of manganese poor corrosion resistant metal, introducing said insert body partially into the end of each tubing to be welded and welding said tubings in order to provide an internal layer of corrosion resistant material between the two tubings and reduce the manganese fumes emission from the stainless steel tubes to be welded.

5,368,224

METHOD FOR REDUCING AMBIENT NOISE EFFECTS IN ELECTRONIC MONITORING INSTRUMENTS

Charles A. Richardson, San Francisco; Michael Bernstein, San Ramon; Jerry K. Okikawa, Oakland, and Terrence R. Bennett, Richmond, all of Calif., assignors to Nellcor Incorporated, Pleasanton, Calif.

Filed Oct. 23, 1992, Ser. No. 965,684
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—633 7 Claims

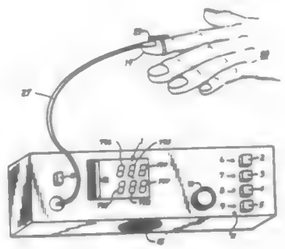
1. A method for adapting to noise in a signal obtained with an active signal sensing monitor having a demultiplexer, said demultiplexer selecting between two signals at a demultiplexer frequency, the method comprising:

(a) determining a noise level at a first selected demultiplexer frequency;

(b) determining noise levels at one or more other selected demultiplexer frequencies;

(c) comparing the noise levels of the first and other demultiplexer frequencies;

(d) selecting an optimum demultiplexer frequency having a comparatively low noise level from among the first and one or more other demultiplexer frequencies; and



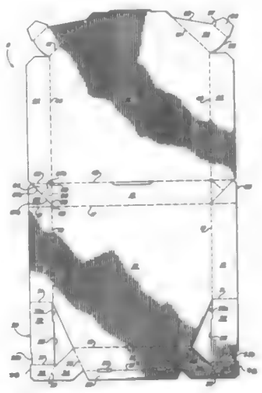
(e) operating the active signal sensing monitor at said optimum demultiplexer frequency.

5,368,225

CONTAINER WITH TRUNCATED CORNERS

Karl M. Ritter, Wheaton, Ill., assignor to Jefferson Smurfit Corp., Clayton, Mo.

Filed Dec. 16, 1993, Ser. No. 167,214
Int. Cl.[5] B65D *5/24*
U.S. Cl. 229—110 20 Claims



1. A container tray with at least one truncated corner, said tray being formed from a unitary blank of foldable sheet material, comprising:

(a) a bottom wall panel having a pair of side edges (first and second), extending normal to each other, and a corner edge extending diagonally between adjacent ends of said first and second side edges;

(b) a first side wall panel and a second side wall panel foldably joined to said bottom wall panel first and second side edges, respectively, and extending upwardly therefrom;

(c) a second side wall retaining flap foldably joined to an upper edge of said second side wall panel and folded inwardly therefrom to form therewith an L-shaped front wall;

(d) said first side wall panel being connected to said second side wall panel by a gusset, which includes:

(i) a first section having a first end edge, foldably joined to an adjacent end edge of said first side wall panel, and said first section also having a second end edge;

(ii) a second section having a first end edge, foldably joined to an adjacent end edge of said second side wall panel, and said second section also having a second end edge;

(iii) a corner section having adjacent side edges foldably joined to adjacent second end edges of respective first and second gusset sections;

(e) said gusset first section being folded inwardly to extend generally parallel to said bottom wall panel corner edge;

(f) said gusset second section and corner section being folded to lie in face-to-face relation with each other against an inner side of said second side wall panel;

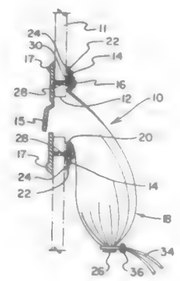
(g) said gusset corner section including a portion projecting upwardly therefrom for engagement with an opening in said second side wall retaining flap to provide interlocking engagement between said first side wall panel and said second side wall.

5,368,226

MAIL SLOT POUCH APPARATUS

Luisa M. Franceschino, 3942 Kitten Cir., Huntington Beach, Calif. 92649

Filed Nov. 1, 1993, Ser. No. 144,311
Int. Cl.[5] A46G *29/12*
U.S. Cl. 232—19 7 Claims



1. A new and improved mail slot pouch apparatus for use with a door having a mail slot therein, said apparatus comprising:

a planar frame element for framing an interior opening of the mail slot, said planar frame element including a plurality of frame apertures, said planar frame element including an upper side and a lower side,

fastening assemblies for attaching said planar frame element through said frame apertures onto the door, and

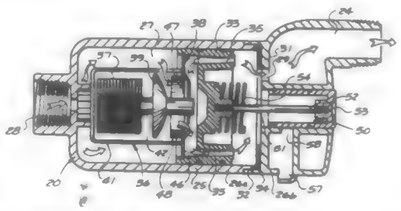
a pouch assembly for attachment to the door by said planar frame element, wherein said pouch assembly includes a first opening which includes a pair of tubular edges which include a pair of independent rigid rods inserted into said tubular edges, wherein one of said rigid rods is located adjacent to said upper side of said frame member, wherein another of said rigid rods is located adjacent to said lower side of said frame member, and wherein said pouch assembly includes a second opening which permits mail to be removed from said pouch assembly.

5,368,227

TEMPERATURE LIMITING CONTROL VALVE FOR A SHOWER HEAD

Merrill F. McGinnis, 13412 N. 5th Ave., Glendale, Ariz. 85304

Filed Nov. 16, 1993, Ser. No. 153,809
Int. Cl.[5] G05D *27/00*
U.S. Cl. 236—92 R 34 Claims



30. A temperature limiting control valve for a shower head comprising:

a housing having a cylindrically- shaped internal water chamber with a water inlet and outlet, and having a plate defining the water outlet for engagement of the water diversion piston, when the water diversion piston is in the closed position;

a disc-shaped water diversion piston axially slidably mounted in the internal water chamber of the housing for movement between an open and a closed position, the piston having a water inlet side and a water outlet side and having eight holes to allow water to flow through, which are sealable against a gasket on the plate of the housing when the water diversion piston is in the closed position;

a bellows-type thermostat mounted in the water inlet of the water diversion piston and having a valve and valve seat with the valve being unseated when the thermostat is open and seated against the valve seat when the thermostat is closed by a predetermined water temperature in the water chamber, the valve and valve seat being positioned to allow water to flow into the water inlet of the water diversion piston when the valve is in the unseated position and to substantially prevent water from flowing into the water diversion piston when the valve is in the seated position;

a cylinder-like button mechanically connected to the water diversion piston having a first, retracted, position when the water diversion piston is in the open position and a second, extended, position when the water diversion piston is in the closed position, and the button being externally accessible through an opening in the housing when in the extended position where the water diversion piston having a spring attached helps reset the water diversion piston when the button is repositioned into the retracted position; and

an overflow passage extending through the housing and having an inlet in the internal water chamber and an outlet external to the housing, and the cylinder-like button being positioned to close the inlet of the overflow passage in the first position and open the inlet of the water overflow passage in the second position.

5,368,228

METHOD AND APPARATUS FOR FORMING A FLUID PROJECTION SCREEN

William G. Adamson, Pacoima; Lance D. Updyke, Simi Valley, both of Calif., and John W. Sogge, Orlando, Fla., assignors to The Walt Disney Company, Burbank, Calif.

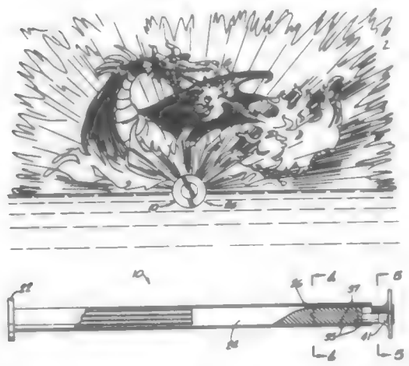
Filed Apr. 20, 1993, Ser. No. 50,533
Int. Cl.[5] G03B *21/60;* B05B *1/04*
U.S. Cl. 239—18 25 Claims

9. A method for using flowing fluid for creating a fluid projection screen, the method comprising the steps of:

(a) directing the fluid flow axially;

(b) providing a restriction int he fluid path to accelerate the fluid;

(c) changing the direction of the fluid flow from axial to radial by directing the fluid onto a curved surface providing a transition from an axial direction to a radial direction; and



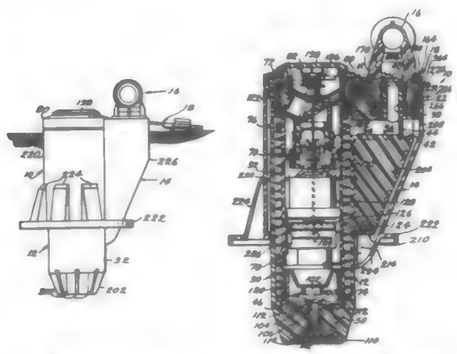
(d) directing the fluid from the curved surface onto a radial stabilizer to further guide the fluid radially to form the fluid screen.

5,368,229

IN GROUND POP-UP SPRINKLER WITH ABOVE GROUND HOSE CONNECTION

Jerry R. Hayes, and Lawrence P. Heren, both of East Peoria, Ill., assignors to L. R. Nelson Corporation, Peoria, Ill.

Filed Jun. 17, 1993, Ser. No. 77,630
Int. Cl.[5] B05B *3/04*
U.S. Cl. 239—69 **22 Claims**



1. A pop-up sprinkler assembly for installation within the ground and for manual connection from a position above ground with an above ground hose as a source of water under pressure, said assembly comprising

a housing structure having an interior defining an annular space terminating at an upper end thereof with an annular opening and an exterior suitable to enable said housing structure to be installed in the ground in a fixed operative position wherein said annular opening is disposed generally at ground level with the annular space extending therebelow,

said housing structure providing an inlet passageway communicating with said annular space below the annular opening thereof and extending therefrom into an access position spaced laterally from said annular opening,

a hose connector in said passageway in a position allowing manual access thereto from above ground for enabling an above ground hose to be manually connected therewith from a position above ground so as to communicate a source of water under pressure within the hose with said passageway and said annular space,

a sprinkler head mounted in said annular space for movement with respect thereto into a lower storage position and for water pressure-biased movement from said lower storage position into a raised operative position,

said sprinkler head having an upper end portion disposed within said annular opening generally at ground level when said sprinkler head is in said lower storage position, and

an annular seal between the interior of said housing structure and an exterior of said sprinkler head providing a seal for said annular space at a position above the communication of said passageway therewith so that the communication of water under pressure with said annular space results in the water pressure-biased movement of said sprinkler head from its lower storage position into its raised operative position,

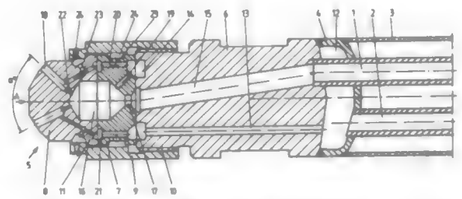
said sprinkler head having an inlet communicating with the water under pressure within said annular space and an outlet communicating with said inlet, said outlet being disposed in the upper end portion of said sprinkler head so as to be positioned above ground level when said sprinkler head is in said raised operative position for directing water under pressure outwardly thereof onto the ground in a predetermined pattern.

5,368,230

ATOMIZER FOR AN OIL BURNER

Rolf Oppenberg, Wesel, Germany, assignor to Babcock Feuerungssysteme GmbH, Oberhausen, Germany

Filed Oct. 6, 1993, Ser. No. 132,641
Claims priority, application Germany, Nov. 17, 1992, 4238736
Int. Cl.[5] F23D *11/12, 11/10, 11/18*
U.S. Cl. 239—132.5 **5 Claims**



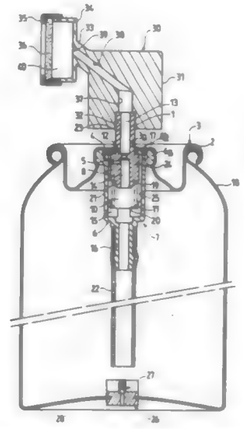
1. An atomizer for an oil burner, comprising: a first supply line for supplying oil; a second supply line for supplying an atomizing medium; a nozzle head; a mixing chamber communicating with said first supply line and said second supply line and formed in said nozzle head; said mixing chamber having exit bores; said nozzle head having bores connected with said second supply line, each of said bores of said nozzle head terminating at an angle with one of said exit bores of said mixing chamber; said mixing chamber being connected to said second supply line through entrance bores inclined to said mixing chamber, said oil being atomized in said exit bores, said oil being pre-atomized by said atomizing medium and mixed with said atonizing medium in said mixing chamber.

5,368,231

DISPENSER FOR FOAM UNDER PRESSURE

Patrice Brunerie, Tremblay-en-France, and Vincent De Laforcade, Rambouillet, both of France, assignors to L'Oreal, Paris, France

Filed Mar. 3, 1994, Ser. No. 205,306
Claims priority, application France, Mar. 5, 1993, 93 02575
Int. Cl.[5] B05B *7/26*
U.S. Cl. 239—145 **9 Claims**



1. Dispenser for foam under pressure, containing a foaming liquid pressurized by a non-liquefied compressed gas, equipped with a dispensing valve (7) having an additional gas take-off (8), said additional gas take-off being sized such that the gas/-liquid ratio of the mixture dispensed lies between 95/5 and 99/1 (vol/vol), the said dispenser being fitted with a pushbutton (30) which includes a spraying member and an endpiece, the said end-piece comprising a case (34) defining an accumulation chamber (40) into which the spraying member sprays the product to be dispensed through a spray nozzle (39) emerging into the said accumulation chamber (40), the said nozzle (39) having a diameter lying between 0.7 and 2 mm, the said chamber (40) being closed by a porous frit (36) constituting, at least in part, a wall of the said accumulation chamber (40) opposite that in which the spray nozzle (39) is arranged and located at a distance from the latter lying between 0.5 and 5 mm.

5,368,232

STRIPING APPARATUS FOR VEHICLE TRAVEL SURFACES

James C. Schroeder, Golden Valley, Minn., assignor to Graco, Inc., Golden Valley, Minn.

Filed Jul. 13, 1992, Ser. No. 912,892
Int. Cl.[5] B05B *13/02*
U.S. Cl. 239—165 **25 Claims**

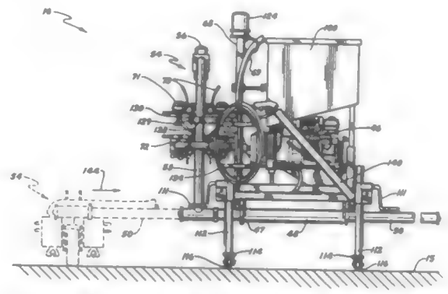
1. A striping apparatus for attachment to a vehicle for applying a stripe to a surface, comprising:

a framework for supporting striping means, said framework including at least one framework member removably attachable to one end of a vehicle;

an elongate support member fixedly mounted to said framework along a transverse axis thereof;

an outrigger boom having an axis, said boom selectively moveable on said support member between a laterally extending operating position and a retracted storage and transport position; and

an outrigger carriage attached to said outrigger boom and movable therewith, said carriage pivotable from said outrigger boom in a plane normal to said boom and having a rotatable wheel for riding on said surface, and means for



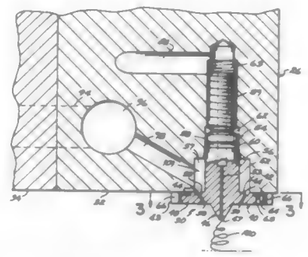
forming a painted stripe on said surface during forward movement of the vehicle.

5,368,233

SPRAY DISK FOR CLOSE CENTERLINE SPACING

Paul Brusko, Flowery Branch, Ga., assignor to Nordson Corporation, Westlake, Ohio

Filed Sep. 1, 1993, Ser. No. 115,885
Int. Cl.[5] B05B *1/34*
U.S. Cl. 239—290 **17 Claims**



14. An adhesive dispensing nozzle adapted for use on a spray head connected to a supply of hot melt adhesive and a source of pressurized air for dispensing a hot melt adhesive in a predetermined pattern of elongated strands, the spray head having a nozzle mounting surface, the adhesive dispensing nozzle comprising:

a spray plate having a front side and an opposite rear side;

a nozzle tip disposed on the front side of the spray plate;

a plurality of air bores surrounding the nozzle tip and extending through the spray plate to intersect the front and rear sides of the spray plate;

a shaft extending outwardly from the rear side of the spray plate, the shaft having

one end joined with the spray plate,

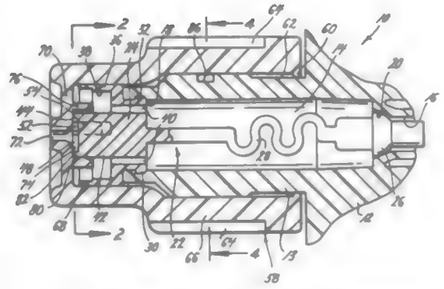
threads on an opposite end adapted to couple the spray plate to the nozzle mounting surface, and

a first annular sealing area disposed on the shaft between the threads and the rear side of the spray plate and adapted to be in sealing contact with the spray head;

an adhesive passage extending through the nozzle tip, through the spray plate and through the shaft; and

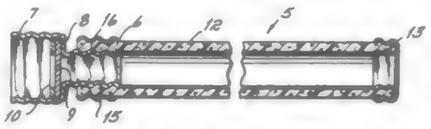
the rear side of the spray plate having a second annular sealing area encompassing the plurality of air bores and adapted To be in sealing contact the nozzle mounting surface.

5,368,234
NOZZLE ASSEMBLY FOR TRIGGER SPRAYER
Donald D. Foster, St. Charles, and Philip I. Nelson, St. Peters, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.
Filed Dec. 13, 1991, Ser. No. 808,168
Int. Cl.[5] B05B 1/12, 9/043
U.S. Cl. 239—333 14 Claims



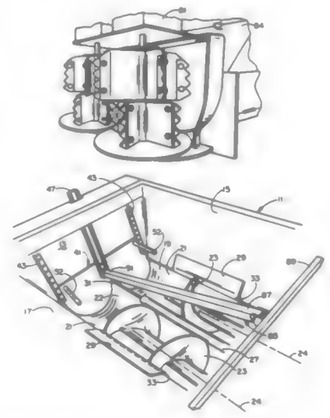
1. A nozzle assembly for a trigger sprayer comprising:
a housing defining a fluid chamber,
an inlet to the fluid chamber for introducing pressurized fluid into the chamber upon actuation of the trigger sprayer,
a spinner defining a wall of the chamber,
a cap mounted on the housing and having a nozzle orifice through it,
passage means through the spinner for establishing fluid communication between the chamber and the nozzle orifice;
a wall configuration on the spinner in communication with the nozzle orifice for imparting a spray pattern to fluid constrained to flow past the wall configuration and through the nozzle orifice,
blocking walls on the cap and spinner moveable respectively into and out of contact upon rotation of the cap relative to the housing for alternately blocking and unblocking fluid flow from the passage means to the wall configuration and for establishing and progressively enlarging a fluid path that bypasses the wall configuration upon progressive axial separation of the cap from the spinner,
a cam slot and cam follower, one on the housing and the other on the cap with the cam follower extending into the cam slot,
the cam slot having a configuration followed by the cam follower upon movement of the cap relative to the housing,
said slot configuration having a first portion that causes the cam follower to initially locate the blocking walls in mutual contact for blocking fluid flow, a first section that causes the cam follower to maintain the moveable walls in axial contact for closing the bypass path while unblocking and progressively increasing the volume of fluid flow to the wall configuration for imparting and expanding a spray pattern of the fluid, and a second section that causes the cam follower to open and progressively enlarge the bypass path for progressively changing the fluid discharge pattern from spray to stream; and,
the blocking walls include a projection on the spinner and a sleeve on the cap surrounding the projection.

5,368,235
SOAKER HOSE ASSEMBLY
Matthew L. Drozdoff, Montvale, and Steven R. Hopps, Budd Lake, both of N.J., assignors to Plastic Specialties and Technologies, Inc., Ridgefield, N.J.
Filed Aug. 9, 1990, Ser. No. 565,037
Int. Cl.[5] B05B 15/00
U.S. Cl. 239—542 12 Claims



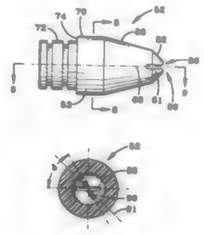
1. A flexible soaker hose for the delivery of pressurized water therethrough comprising
a flexible porous hose having a water inlet end for coupling to a pressurized water source and a closed end, said hose having a flexible porous wall for slow seepage of water uniformly therethrough along the length of said porous wall when water is delivered under pressure through said inlet end, said flexible porous hose having a propensity to balloon under said water pressure by inflation of the porous wall, and
a rigid wall near the inlet end having a fixed aperture restricting the flow of water therethrough from the pressurized source through said porous wall for said uniform seepage of water along the length of said porous wall, said rigid wall and fixed aperture for preventing ballooning of said hose,
the size of said aperture being related to the thickness and porosity of the porous wall so that the hose has enough water flow to uniformly seep therethrough along the length of said porous wall without hose ballooning.

5,368,236
MANURE SPREADER
Donald A. Meyer, and Larry Meyer, both of Dorchester, Wis., assignors to Meyer Manufacturing Corporation, Dorchester, Wis.
Filed May 26, 1992, Ser. No. 888,191
Int. Cl.[5] A01C 23/00
U.S. Cl. 239—675 19 Claims



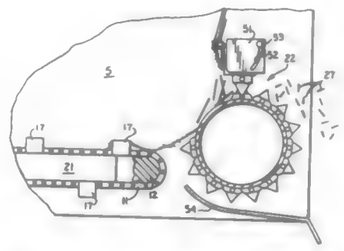
1. An improved manure spreader comprising:
a. a box having front and back ends with side walls, a back wall, and a floor, the back wall having a discharge opening therethrough, the floor being formed with a pair of generally semi-circular channels partially defined by a generally vertical central web, wherein the discharge opening in the box back wall has a contour that includes a pair of semi-circular concave surfaces that are aligned with the channels in the box floor and an upper surface located above the semi-circular surfaces;
b. frame means for supporting the box to be rolled along the ground;
c. a pair of augers lying horizontally within the respective channels in the box floor and terminating adjacent the back wall discharge opening;
d. gate means for selectively opening closing the discharge opening wherein the gate means comprises:
i. a gate having a pair of semi-circular lobes that are nestable within respective channels in the box floor and an upper section joined to the lobes;
ii. track means for guiding the gate for reciprocation along the box back wall; and
iii. actuator means for reciprocating the gate within the track between a lowered position whereat the gate lobes nest within the associated channels in the box floor to close the discharge opening, and a raised position whereat the gate lobes are spaced above the associated channels in the box floor to open the discharge opening; and
e. a pair of expellers mounted to the box back wall for rotating outside of the box about respective vertical axes, the expellers being located proximate and in general horizontal alignment with the back wall discharge opening,
so that the augers can propel materials stored in the box through the discharge opening to the expellers and the expellers can fling the material over the ground.

5,368,237
POWER COATING GUNS WITH IMPROVED SPRAY NOZZLES AND IMPROVED METHOD OF POWER COATING
Terrence M. Fulkerson, Parma, Ohio, assignor to Nordson Corporation, Westlake, Ohio
Filed Nov. 23, 1992, Ser. No. 964,547
Int. Cl.[5] B05B 5/025
U.S. Cl. 239—706 19 Claims



1. A powder spray nozzle for spraying powder coating material, comprising:
a nozzle body of electrically non-conductive material having an axial throughbore extending between an enclosed forward end and a rearward end, said throughbore adapted to receive said powder coating material in said rearward end;
discharge slot means extending through said enclosed forward end of said nozzle body for spraying a relatively even coating of said powder coating material into a recess formed in a substrate, the width of said coating being controlled by rotating said slot means about a longitudinal axis extending through said nozzle body, said discharge slot means being formed by two intersecting slots disposed at an angle of about fifty five to about sixty degrees to each other.

5,368,238
ADJUSTABLE ROTARY DRUM BALE CUTTER APPARATUS AND METHOD
Alan R. Bergkamp, Murdock; Richard E. Jacobs, and Richard J. Pulliam, both of Harper, all of Kans., assignors to DewEze Manufacturing, Inc., Harper, Kans.
Filed Oct. 25, 1993, Ser. No. 140,873
Int. Cl.[5] B02C 23/02
U.S. Cl. 241—30 17 Claims

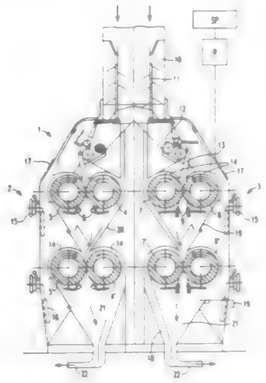


1. A method of adjusting the length of strands of hay cut from a round bale by a round bale rotary drum cutter, said cutter including a frame for holding said round hay bale, said frame including a bottom portion and a frame side wall spaced from said bottom portion to leave a slot therebetween, a conveyor means for rotating said round hay bale about a longitudinal axis thereof while simultaneously urging a portion of the perimeter of said round hay bale against a rotary drum with a plurality of cutting knives extending radially outward therefrom, said drum being positioned so that said knives extend at least partially through said slot to contact said round bale, and a spacer means pivotably attached to said side wall of said frame above said slot, said spacer means being arrayed longitudinally along and spaced from said drum, said method comprising the step of:
(a) selectively adjusting the spacing of said spacer means relative to said rotary drum by pivoting said spacer means relative to said side wall.

5,368,239
ROLLER MILL FOR MILLING GRAIN PRODUCTS
Werner Baltensperger, Oberuzwil, and Robert Linzberger, Abtwil, both of Switzerland, assignors to Buehler AG, Switzerland
Division of Ser. No. 794,296, Nov. 14, 1991, Pat. No. 5,201,470, which is a continuation of Ser. No. 350,702, Mar. 22, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 938,454
Claims priority, application Switzerland, Oct. 6, 1987, 03893/87
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] B02C 4/06, 9/04
U.S. Cl. 241—37 8 Claims

1. Roller mill for the grinding of grain and the production of flour, semolina and middlings, comprising:
two side-by-side sub-units forming a double-unit, each sub-unit comprising two roll pairs so as to form an eight-roll mill, each roll pair of said two roll pairs in each sub-unit being arranged one above the other at a distance from one another; grinding gap adjusting means and grinding gap monitoring means being provided for each grinding roll pair, and wherein said grinding gap adjusting means includes a driven grinding gap adjusting device and said grinding gap adjusting means further includes remote control means, including assigned computer and storage

means for automatically adjusting the grinding gap, and engaging and disengaging means provided for each roll pair which are independently controlled by a means for sensing a product flow into said sub-units.

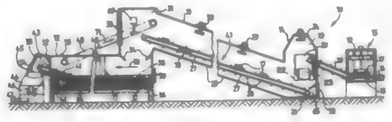


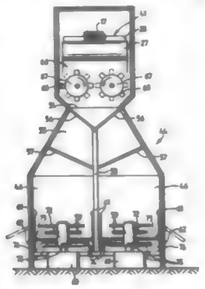
5,368,240

APPARATUS FOR REDUCING RUBBER TO PARTICLES

Olivier Bonnet, Berlin, Germany, assignor to UBD Patent - und Lizenzverwaltungsgesellschaft, Berlin, Germany

Continuation of Ser. No. 780,471, Oct. 22, 1991, abandoned. This application Jul. 15, 1993, Ser. No. 91,726
Claims priority, application Germany, Oct. 23, 1990, 4033599
Int. Cl.[5] B02C *23/18, 13/18, 23/10*
U.S. Cl. 241—41 **12 Claims**





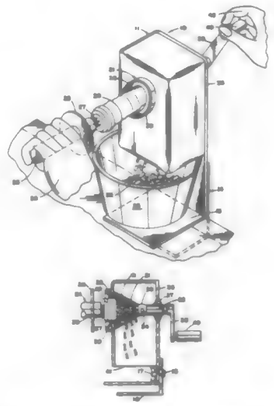
1. An apparatus for reducing rubber to particles comprising an inclined pre-cooling tunnel including a conveying means for conveying material through the pre-cooling tunnel to a connection shaft; said pre-cooling tunnel charged at an Upstream end via an enclosed feed shaft connected to said pre-cooling tunnel, a main cooling tunnel downstream of said pre-cooling tunnel and filled, at least in part, with a cooling medium and provided with a conveyor means for conveying said material through the main cooling tunnel and to; a crusher means for crushing said material, said crusher means being disposed; downstream of the main cooling tunnel, wherein said main cooling tunnel and said pre-cooling tunnel are connected by said connection shaft and are further interlinked via at least one gasification pipe means for conveying a cold air emanating from said main cooling tunnel to said pre-cooling tunnel.

5,368,241

ROTARY VEGETABLE GRATER

Henry C. Baldwin, Jr., 431 E. Central Blvd., Apt. 606, Orlando, Fla. 32801

Filed Jun. 28, 1993, Ser. No. 82,297
Int. Cl.[5] B02C *18/06*
U.S. Cl. 241—91 **8 Claims**



1. A vegetable grating apparatus comprising:
a housing having a plurality of sides and a top;
a support stand attached to and supporting said housing;
a shaft having end portions and being rotatably supported through said housing;
a vegetable grating blade having a generally truncated cone shape with an open end and being attached to one end portion of said shaft for rotation therewith;
a vegetable guide mounted through one side of said housing and positioned in front of said open end of said vegetable grating blade whereby a vegetable can be fed into the open end of a cone shaped grating blade for grating said vegetable by the rotation of said shaft;
a vegetable supporting member having prongs thereon for attaching to a vegetable for feeding the vegetable into said vegetable guide and into said grating blade and having a stop member thereon for stopping the insertion of a vegetable at a predetermined point in front of the vegetable grating blade to thereby prevent the vegetable holding prongs from contacting the vegetable grating blade; and
said vegetable guide having a guide stop member coacting with said vegetable supporting member stop member to block said vegetable guide stop member insertion into said vegetable guide at a predetermined point.

5,368,242

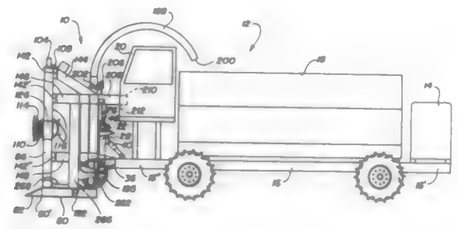
BUNK SILO UNLOADER

David Fish, 2831 Stout Rd., Ovid, N.Y. 14521

Filed Nov. 12, 1993, Ser. No. 151,144
Int. Cl.[5] B02C *9/04, 18/06*
U.S. Cl. 241—101.7 **13 Claims**

1. A silo unloader for comminuting and collecting silage from a silage stack, said silo unloader being detachably connectable to and operable through a driven vehicle having an operator's cab, said silo unloader comprising:
a) first and second, vertically oriented screw jacks including means selectively and simultaneously rotating both of said first and second screw jacks in synchronous and alternate clockwise and counter-clockwise directions;

b) a cylindrical drum having a plurality of spiked teeth extending therefrom including means selectively rotating said drum about its longitudinal axis, said drum being rotatably carried and extending perpendicularly between said first and second screw jacks;
c) first and second nut elements threadedly engaged to said first and second screw jacks, respectively, with either end of said drum being connected to said first and second nut elements, respectively, whereby rotation of said first and second screw jacks in said clockwise and counter-clockwise directions causes said first and second nut elements to travel thereon in traversing, upward and downward directions, respectively, with said drum thereby also traveling in upward and downward directions with said first and second nut elements and between said first and second screw jacks;
d) first and second cutting wheels each having a plurality of spiked teeth extending from first surfaces of each, said first and second cutting wheels being rotatably connected to and movable with said first and second nut elements adjacent either end of said drum, respectively, and rotatable about parallel axes which lie transversely to said drum longitudinal axis; and
e) means automatically rotating said first and second cutting wheels about said parallel axes in response to said rotation of said drum about said longitudinal axis.

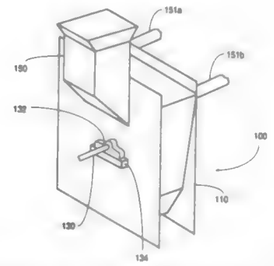


5,368,243

ROTARY COLLIDER MILL

James J. Gold, 1503 Front St., Needles, Calif. 92363

Filed Oct. 16, 1992, Ser. No. 962,362
Int. Cl.[5] B02C *13/286*
U.S. Cl. 241—186.2 **19 Claims**



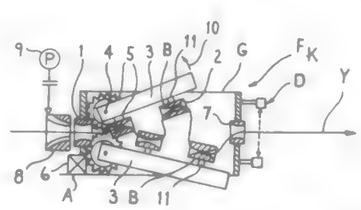
1. An apparatus for breaking an object into a plurality of smaller objects, comprising:
a canister having formed therein at least one inlet port for feeding the object into the canister and at least one outlet port for discharging the plurality of smaller objects out of the canister;
an impeller, the impeller having at least one blade and being disposed within the canister so as to be rotatable about an axis of rotation; and
means for rotating the impeller about the axis of rotation, wherein:
the at least one outlet port is formed in a side plate of the canister that is perpendicular to the axis of rotation of the impeller and wherein during rotation of the impeller, the point on the at least one blade of the impeller that is the greatest distance from the axis of rotation describes a path that, viewed in a direction parallel to the axis of rotation, defines a projected circle on an interior surface of the side plate; and
the at least one outlet port is formed in the side plate such that the at least one outlet port lies entirely outside of the area of the projected circle.

5,368,244

THREAD BRAKE

Michele Melillo, Galbiate, Italy, and Kurt A. G. Jacobsson, Ulricehamn, Sweden, assignors to Iro AB, Ulricehamn, Sweden

PCT No. PCT/EP90/01749, § 371 Date Jun. 5, 1992, § 102(e) Date Jun. 5, 1992, PCT Pub. No. WO91/05728, PCT Pub. Date May 2, 1991
PCT Filed Oct. 16, 1990, Ser. No. 859,699
Claims priority, application Sweden, Oct. 16, 1989, 8903414; Mar. 28, 1990, 9001136
Int. Cl.[5] B65H *59/24, 59/34*
U.S. Cl. 242—149 **26 Claims**



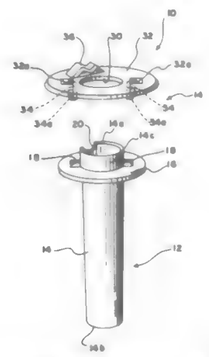
1. In a thread brake having first and second brake members positioned transversely relative to the traveling direction of a thread, the first and second brake members being relatively moveable transversely with respect to the traveling direction between a braking position in brake members act on the thread and a threading position in which the thread can be moved freely through the brake in the thread traveling direction, the improvement comprising:
drive means for relatively transversely displacing the first and second brake members into said threading position;
automatic threading means for automatically and pneumatically threading a thread through the brake by a stream of air, said threading means including
(a) guide surface means defining an elongate air guide passage extending through the thread brake in the thread traveling direction when the brake members are in said threading position, and
(b) selectively actuatable pressure source means for supplying a stream of air to said passage to cause threading of the thread along the passage; and
said drive means being coupled to a thread breakage detector and including means for automatically relatively displacing the first and second brake members into the threading position in the case of thread breakage, and means for activating the pressure source means.

5,368,245

TWO-PIECE PAY-OUT TUBE

James R. Fore, Siler City, N.C., assignor to Communication Cable, Inc., Sanford, N.C.

Filed Jul. 20, 1993, Ser. No. 93,654
Int. Cl.[5] B65H *57/12, 57/18*
U.S. Cl. 242—157 R **17 Claims**



1. A two-piece pay-out tube adapted to fit through a key-like opening formed within a wall of a cable container through which cable from a winding disposed within the container is fed, comprising:

a) an elongated tube having an inlet end and an outlet end;

b) the outlet end of the elongated tube including an outer extension that in an assembled mode projects through the opening within the container wall;

c) an inner flange formed on the outlet end of the tube and extending radially outwardly therefrom and adapted to abut against the inside of the container wall adjacent the key-like opening therein;

d) a pair of spaced apart locking openings formed in the inner flange radially outwardly of the tube;

e) a locking plate adapted to be secured to the inner flange;

f) the locking plate having an opening formed therein for fitting around and resting on the outer extension of the tube and wherein the locking plate itself abuts against the outside of the container wall having the key-like opening therein; and

g) a pair of spaced apart locking tabs integral with and projecting from the locking plate and in a secured mode extending through the key-like opening within the container wall and past the locking openings of the inner flange wherein the locking tabs latch against the locking openings formed in the inner flange and effectively sandwich the wail of the container between the inner flange and the locking plate and secure the locking plate to the inner flange and the elongated tube.

5,368,246

OPEN-FACE SPIN CASTING FISHING REEL

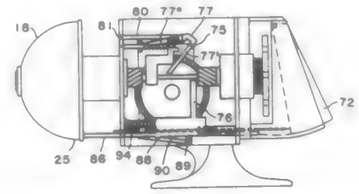
Frank E. Epperson, 11397 E. Arkansas Ave., Aurora, Colo. 80012

Filed Jun. 13, 1991, Ser. No. 714,689
The portion of the term of this patent subsequent to Jan. 29, 2011, has been disclaimed.
Int. Cl.[5] A01K *89/015*
U.S. Cl. 242—228 **20 Claims**

1. In a spinning reel having an outer housing, a shaft extending through and beyond one end of said housing, a spool mounted on said shaft having a fishing line wound upon said spool for extension along a radial path of movement between s aid spool and said housing, and a drag control member to control the resistance to rotation of the spool, the improvement comprising:

a nose portion disposed on said shaft externally of said housing and in axially spaced relation to said one end of said housing, reciprocating means mounting said nose portion for reciprocal movement toward and away from said spook and said one end of said housing, said nose portion including guide means for guiding said line in an outward radial direction between said one end of said housing and said nose portion and in an axial direction over an external surface of said nose portion;

a crank including drive means engageable with said reciprocating means for reciprocating said nose portion in response to rotation of said crank; and



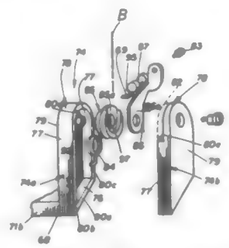
an axially extending line pick-up member disposed for axially directed movement in radially spaced parallel relation to said spool between said one end of said housing and said nose portion, and slide means for imparting reciprocal, axially directed movement to said line pick-up member which follows the reciprocal movement of said nose portion in guiding said line over said external surface and onto said spool.

5,368,247

SPINNING REEL WITH EXCELLENT HEAT TRANSFER AND NON-TANGLE CHARACTERISTICS

John N. Young, 35 Berry Trail, Fairfax, Calif. 94930

Continuation-in-part of Ser. No. 706,252, May 28, 1991, abandoned, which is a division of Ser. No. 165,769, Mar. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 886,884, Jul. 18, 1986, Pat. No. 4,730,782. This application Jun. 5, 1992, Ser. No. 893,763
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—231 **19 Claims**



1. In a spinning reel having non-snagging bail characteristics, the combination comprising

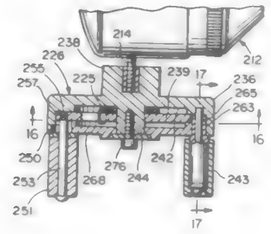
a reel body; a handle rotatably supported on said reel body, a main shaft supported on said reel body having a longitudinal axis of symmetry; a spool member rotatable and slidable on said shaft to define an axis of drag rotation coincident with said longitudinal axis of symmetry, a fishing line carried on said spool member, said spool member including a bushing face at a remote end and stop means positioned on said shaft to limit sliding movement of said spool member relative to said shaft; a pressure ring slidably carried on said shaft so as to be centered thereon and being rotatably fixed to said shaft; friction washer means interposed between said pressure ring and said bushing face of said spool member; a drag adjustment nut threaded on said shaft to push said pressure ring, said friction washer means and said spool member axially into sandwich engagement with each other against said stop means to define a drag stack, rotor means connected about said drag stack wherein there is relative axial and rotatory movement therebetween, said rotor means including a rotor rotationally connected to said handle about said longitudinal axis, and a pair of diametrically positioned ear assemblies cantilevered from but support by said rotor to rotate therewith, each of said ear assemblies including a pair of members having common longitudinal and lateral dimensions, mating edges that clamp together, and walls forming a central cavity open at one end of said members remote from said rotor, and bail wire means connected to said members within said central cavity and extending from said members through said open end of said cavity, said walls of said pair of members being arcuately formed at said open end of said cavity to form aligned crown segments of common arcuate shape, said mating edges and said crown segments providing non-snagging surfaces to said fishing line.

5,368,248

FISHING REEL WITH VARIABLY YIELDABLE WIND LAG

Adolph C. Walacavage, 5155 Co. Rd. 6, Gulf Shores, Ala. 36542

Filed Nov. 20, 1992, Ser. No. 979,317
Int. Cl.[5] A01K *89/00*
U.S. Cl. 242—283 **11 Claims**



1. A winding assembly, said assembly including a frame, a winding member rotatably mounted on said frame, a rotary torque input member for rotary driving of said winding member rotatably mounted on said frame, drive train means drivingly connecting said rotary torque input member to said winding member for rotating said winding member in at least one direction in response to rotation of said rotary torque input member in a first direction, said drive train means including a limited relative rotation drive connection connecting said rotary torque input member to said winding member and means defining first and second angularly displaced limit positions of rotational movement of said rotary torque input member in said first direction and a second direction opposite said first direction, respectively, relative to said winding member, said drive train means also including biasing means yieldingly biasing said rotary torque input member toward said second limit position relative to said winding member, said biasing means including adjusting means operative to variably adjust the biasing action thereof acting upon said rotary torque input member to rotate said rotary torque input member toward said second limit position.

5,368,249

HANDLE COLLAPSING MECHANISM FOR FISHING REEL

Shinji Takeuchi, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Jul. 9, 1993, Ser. No. 88,366
Claims priority, application Japan, Jul. 10, 1992, 4-054220[U]
Int. Cl.[5] A01K *89/01*
U.S. Cl. 242—284 **4 Claims**



1. A mechanism for selectively collapsing a handle of a fishing reel in which a deep-grooved part formed in a shaft portion of the handle is fitted on and swingably supported on a jut of a handle shaft so that the handle is permitted to be collapsed from a fishline winding position to a collapsed position, said mechanism comprising:

a recess portion formed in said shaft portion of said handle;

an engagement hole portion formed in said shaft portion and communicating said recess portion with said deep-grooved part;

an engagement member provided in a hole in said jut and provided with a means for urging said engagement member to project from a distal end of said jut and into engagement with said engagement hole portion when said handle is in said fishline winding position;

a manipulation member movably provided in said recess portion and insertable into said engagement hole portion so as to disengage said engagement member from said engagement hole portion.

5,368,250

Patent Not Issued For This Number

5,368,251

INERTIAL REEL ASSEMBLY FOR A SAFETY BELT

Thomas Haberzeth, Munich, Germany, assignor to Autoliv-Kolb GmbH & Co., Dachau, Germany

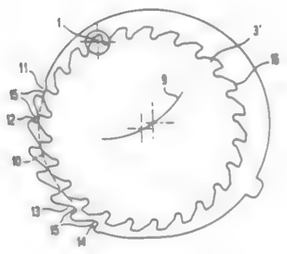
PCT No. PCT/EP90/00303, § 371 Date Aug. 20, 1991, § 102(e) Date Aug. 20, 1991, PCT Pub. No. WO90/09910, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 22, 1990, Ser. No. 752,473

Claims priority, application Germany, Feb. 24, 1989, 3905804

Int. Cl.[5] B60R *22/40*

U.S. Cl. 242—382.6 **16 Claims**



1. An inertial reel assembly for a safety belt with a spindle disk rotatably mounted within a housing for taking up and paying out a belt which is to be drawn out against the force of a spring, said spindle disk having a center point, and said inertial reel assembly comprising at least one sensor device which responds to a rate of vehicle deceleration above a certain value, the spindle disk bearing teeth and performing a translatory movement along an arc passing through the center point thereof to a locking position so that the spindle teeth engage a plurality of teeth formed in said housing, characterized in that one or more of said plurality of said housing teeth include a flat section at the tip of said housing teeth for preventing engagement of said spindle teeth with said housing teeth when said spindle disk has pivoted along said center point to translate said spindle disk along said arc so that said spindle teeth are angularly misaligned with respect to said housing teeth, wherein said spindle teeth are formed as blunt teeth, and flat sections are formed on the tip circle of the blunt teeth.

5,368,252

APPARATUS AND METHOD FOR WINDING ROLLS OF WEB MATERIAL WITH SEVERING OF WEB BY ROLL ACCELERATION

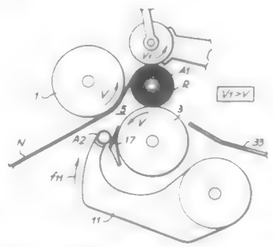
Guglielmo Biagiotti, Capannari, Italy, assignor to Fabio Perini S.p.A., Lucca, Italy

Filed Jul. 9, 1992, Ser. No. 911,005

Claims priority, application Italy, Jul. 16, 1991, FI/91/A-178

Int. Cl.[5] B65H *19/30*

U.S. Cl. 242—521 **10 Claims**



1. Method for the formation of logs or rolls of web material, comprising the steps of:

providing a first winding roller;

providing a second winding roller, said first and said second winding rollers defining a nip therebetween;

providing a third winding roller, having a movable axis, said first, second and third winding rollers defining a winding space;

feeding a web material through said nip, said web material being in contact with said first winding roller;

winding said web material on a core to form a log within said winding space;

at the end of the winding of a log, before inserting a new core into said nip, temporarily accelerating said third roller (7) to increase the tensioning of the web material in the region of contact of said web material with said first roller and to locally increase the linear speed of said web material with respect to the peripheral speed of said first roller;

after the tensioning and the linear speed of the web material have been increased, bringing a new core in contact with the web material, said web material being pinched between said core and the first winding roller, and the pinched web material being torn between the formed log and the pinch point.

5,368,253

CONTINUOUS REWIND WITH NO-FOLD-BACK SPLICER

John J. Hartley, Jr., Pewaukee, Wis., assignor to Faustel Incorporated, Germantown, Wis.

Filed Apr. 23, 1993, Ser. No. 54,052

Int. Cl.[5] B65H *19/28, 21/00*

U.S. Cl. 242—527.4 **6 Claims**

1. A method of splicing a moving web to a new core to rewind the web comprising:

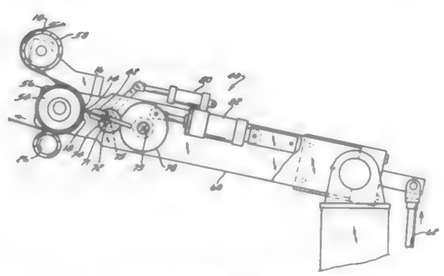
winding the moving web onto an old core of a rewinder, the new core being positioned upstream of the old core; and

splicing the moving web onto the new core, the splicing step including

partially severing the moving web across its width at a location upstream of the new core, thereby producing a tail portion and a new leading edge joined to one another at a seam; then

passing the moving web in contact with and across the new core to a position in which the seam of the moving web is positioned on the new core; then

pulling apart the moving web at the seam as the moving web is passing across the new core and when the seam is positioned on the new core, thereby leaving the new leading edge of the moving web on the new core; and



bonding the new leading edge of the moving web to the new core when the moving web is pulled apart.

5,368,254

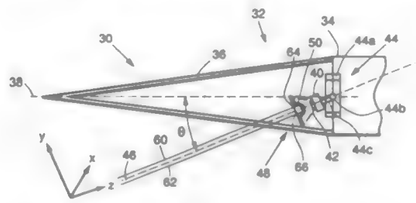
OPTICAL IMAGING SYSTEM INCLUDING GENERALLY CONICAL, TRANSPARENT PROTECTIVE DOME AND OPTICALLY REFRACTIVE FIXED CORRECTOR FOR REVERSING CONICAL DEFORMATION CREATED BY VIEWING THROUGH THE DOME

David R. Wickholm, Fort Wayne, Ind., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 16, 1993, Ser. No. 32,040

Int. Cl.[5] F41G *7/26*

U.S. Cl. 244—3.16 **26 Claims**



26. A missile, comprising:

a transparent, generally conical front dome which creates optical conical deformation when viewed therethrough;

a camera mounted inside the dome for viewing therethrough; and

a corrector including a single fixed, transparent, passive optically refractive body which is disposed between the camera and the dome and has at least one substantially conical surface for creating reverse conical deformation which is substantially the inverse of said conical deformation created by the camera viewing through the dome.

5,368,255

AEROTUMBLING MISSILE

Henry August, Chatsworth, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 4, 1992, Ser. No. 894,146

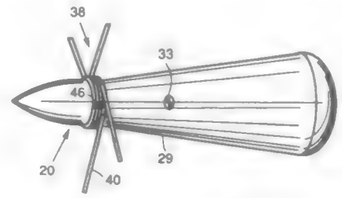
Int. Cl.[5] F42B *10/00, 15/00*

U.S. Cl. 244—3.28 **15 Claims**

1. A missile, comprising:

a missile body having a nose, a tail, and a center of gravity therebetween, the missile body having a first stable orientation with the nose pointed into a flowing fluid stream;

controllable means for forcing the missile to tumble from the first stable orientation to a second stable orientation with the tail facing toward the flowing fluid stream, the controllable means for forcing includes a lifting surface that is



extendible into a flowing fluid stream at a location between the nose and the center of gravity; and

means for operating the controllable means for forcing.

5,368,256

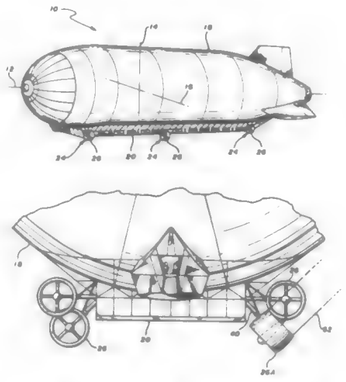
PROPULSION SYSTEM FOR A LIGHTER-THAN-AIR VEHICLE

John B. Kalisz, Newhall, and David E. Carlile, Lancaster, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Aug. 19, 1993, Ser. No. 108,280

Int. Cl.[5] B65B *1/30, 1/34*

U.S. Cl. 244—26 **11 Claims**



1. A propulsion system for a lighter-than-air vehicle, the vehicle having a longitudinal, horizontal and vertical axis, said propulsion system comprising:

a pylon having a longitudinal axis and first and second ends, said first end of said pylon rotatably mounted to the vehicle and said second end extending outward from the vehicle, said pylon rotatable about said first end in a vertical plane perpendicular to the longitudinal axis of the vehicle in an upward and downward direction;

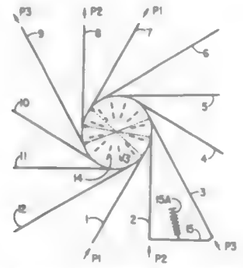
a thrust producing assembly mounted on the second end of said pylon; said thrust producing assembly rotatable about an axis of rotation in a plane perpendicular to the longitudinal axis of said pylon, said trust producing assembly rotatable at least plus or minus ninety degrees in a plane perpendicular to the longitudinal axis of the pylon;

a powerplant assembly coupled to said thrust producing assembly to provide power thereto;

first means to rotate said thrust producing assembly about said axis of rotation; and

second means to rotate said pylon about said first end.

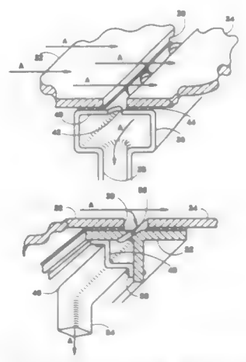
5,368,257
VARIABLE ONE WAY AIRPORT
Harry E. Novinger, 13890 E. Marina Dr. #609, Aurora, Colo. 80014
Continuation of Ser. No. 859,068, Mar. 27, 1992, abandoned. This application Jan. 13, 1993, Ser. No. 5,859
Int. Cl.[5] B64F *1/36*
U.S. Cl. 244—114 R **5 Claims**



1. An airport facility providing for at least one stream of aircraft to obtain safe, efficient and short transit distances throughout aircraft approach,taxi and departure operations, comprising:
- a taxiing surface on which the aircraft moves during the taxi operation and including an apron surface around the perimeter of said taxing surface;
- plural runways with one end of each said runways connected to the perimeter of said apron, the runways arranged around the apron in a radiating configuration;
- said runways grouped in pairs of one landing and one takeoff runway, with their centerlines oriented substantially parallel and laterally spaced on substantially opposite sides of said taxiing surface;
- said taxing surface further comprising aviation support buildings radially oriented thereon in an arrangement that forms a straight access taxi passageway between the ends of said runways in each of said pairs of runways, the passageways communicating with the buildings for docking the at least one stream of aircraft while taxiing from the landing to the take-off runway in a one way path;
- said runways are clear of intersections with other said runways and their centerlines angularly displaced from the radial orientation of said support buildings.

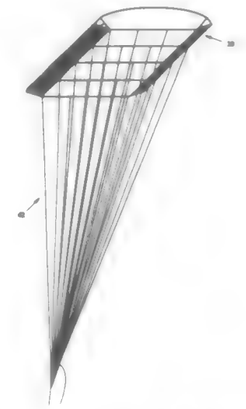
5,368,258
ARRANGEMENT FOR MAINTAINING LAMINAR AIR FLOW OVER GAPS IN AIRCRAFT ENGINE NACELLE SURFACES
Warren A. Johnson, San Diego, and Geoffrey A. Harding, Chula Vista, both of Calif., assignors to Rohr, Inc., Chula Vista, Calif.
Filed Aug. 5, 1993, Ser. No. 102,321
Int. Cl.[5] B64C *21/06*
U.S. Cl. 244—130 **10 Claims**

1. A system for maintaining laminar flow over gaps in an aerodynamic aircraft engine nacelle surface which comprises:
- a nacelle skin surface having at least one elongated gap in said surface skin between the ends of a first skin portion and a second skin portion;
- elongated unitary plenum chamber means having a top portion which abuts the inner margins of said first and second skin portions to close the bottom of said gap within said skin;
- a plurality of spaced apertures provided in said top portion of said plenum chamber means and arranged longitudinally along such gap and providing fluid flow communication between said gap and said plenum chamber means;
- outlet duct means having a first end communicating with said chamber means and a second end adapted to be connected to a suction pump means,



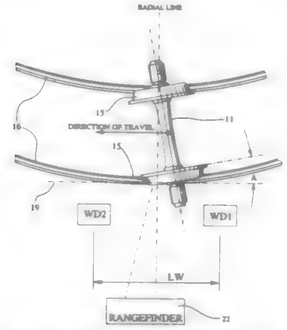
whereby air can be drawn through said duct means, plenum chamber, apertures, and gap so that laminar air flow over said gap is prevented from transitioning to turbulent flow.

5,368,259
DUAL LEADING EDGE RAM AIR AIR FOIL
Dorald C. Tabor, 4540 Cape May Ave., San Diego, Calif. 92107
Filed Oct. 29, 1993, Ser. No. 146,449
Int. Cl.[5] B64D *17/02, 17/18, 17/34*
U.S. Cl. 244—145 **10 Claims**



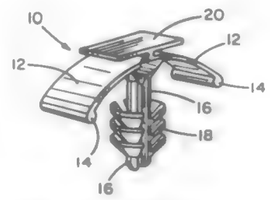
1. A ram air type wind power device comprising:
- A) a sail comprised of flexible material fabricated into a plurality of chamber means aligned generally parallel to each other and side-by-side for providing structure to the sail when filled with air under under pressure:
  - 1) each of said chamber means defining two ends, defining a first end and a second end, and having an opening at each end and a passageway for air between the two openings
  - 2) said first end of each of said plurality of chambers being aligned to define a first leading-trailing edge of said sail and said second end of said plurality of chambers being aligned to define a second leading-trailing edge of said sail,
  - 3) each of said chamber means comprising a first valve means located within a few inches of said first leading-trailing edge for allowing air into said chamber means when said first leading-trailing edge is functioning as a leading edge and for trapping air in said chamber when said first leading trailing edge is functioning as a trailing edge and a second valve means located within a few inches of said second leading-trailing edge for allowing air into said chamber means when said second leading-trailing edge is functioning as a leading edge and for trapping air in said chamber when said second leading trailing edge is functioning as a trailing edge,
- B) a plurality of shroud lines attached to said sail,
- C) a harness attached to said shroud lines, and
- D) a sail control means for controlling the position of said sail.

5,368,260
WAYSIDE MONITORING OF THE ANGLE-OF-ATTACK OF RAILWAY VEHICLE WHEELSETS
Grigory Izbinsky, Westmount, and Denis D'Aoust, Hudson Heights, both of Canada, assignors to Canadian Pacific Limited, Montreal, Canada
Filed Nov. 2, 1993, Ser. No. 146,787
Int. Cl.[5] B61L *1/20*
U.S. Cl. 246—169 R **8 Claims**



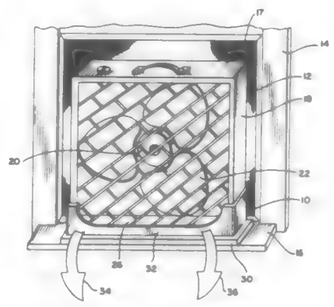
1. A system for installation along a rail of a railroad track for measuring an angle defined between a monitored wheel and an imaginary line tangent to the rail on which the monitored wheel travels, said system comprising:
- a rangefinder mounted to a fixed location beside the railroad track for successively measuring at predetermined instants in time along a measurement axis a distance from the fixed location to the monitored wheel travelling on the rail, said rangefinder generating an output signal correlated to a distance between the fixed location and sites on the monitored wheel intercepting said measurement axis at respective ones of said instants in time; and
- a sensor responsive to movement of the monitored wheel on the rail for generating an output signal correlated to a change of position of the monitored wheel on the rail relative to time, whereby said signals allow computation of a value for the angle defined between the monitored wheel and the imaginary line tangent to the rail by establishing a correspondence between a variation of the distance measured along the measurement axis from the fixed location to the moving monitored wheel and the change of position of the monitored wheel on the rail.

5,368,261
CABLE MOUNT AND FIXTURE
Jack E. Caveney, Hinsdale; Larry A. Hillegonds, New Lenox, and James D. Duncan, Tinley Park, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Continuation-in-part of Ser. No. 991,820, Dec. 17, 1992, abandoned. This application Nov. 1, 1993, Ser. No. 148,172
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—73 **19 Claims**



1. A cable mount for mounting a bundle of wires to a mounting surface comprising:
- a one-piece resilient arcuate body member having a top side and an underside resiliently deformable from a first to a second position;
- first and second mounting legs formed on and projecting from the underside of the body member such that deformation of the body member to the second position spaces the first and second legs further apart and;
- strap accepting means situated between the first and second mounting legs and the underside of the body member for accepting and seating a cable tie strap to secure the bundle of wires to the top side of the body member.

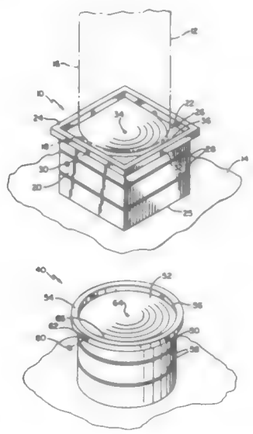
5,368,262
ADJUSTABLE MOUNTING SUPPORT FOR A BOX FAN
Frank J. Garrity, 864 Wyndom Ter., Secane, Pa. 19018
Filed Aug. 27, 1992, Ser. No. 935,241
Int. Cl.[5] A47F *5/02*
U.S. Cl. 248—131 **15 Claims**



1. A device for mounting a free-standing box fan on a window sill which generally extends at a normal to the vertical plane of a window, comprising:
- a base member removably mountable to the window sill, said base member having at least one slot disposed therein that is curved and follows a predetermined radius of curvature;
- a receptacle means for receiving and retaining a portion of said box fan therein;
- at least one track member coupled to said receptacle means, wherein said at least one track member is curved and engages said at least one slot in said base member and is slidably movable within said at least one slot across a path that follows said radius of curvature, wherein the move-

ment of said at least one track member in said at least one slot varies the orientation of said receptacle means in relation to said base member, thereby enabling a box fan being retained within the receptacle means to be directed into a desired position relative the plane of said window without extending beyond the plane of said window.

5,368,263
WATER HEATER STAND
Guy W. Harrison, 1709 Parklane, Edmond, Okla. 73034
Filed Jun. 11, 1993, Ser. No. 75,652
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—146 **26 Claims**



1. A height adjustable water heater stand for raising water of various sizes above a support floor a distance which is above and beyond a region of air lying adjacent the floor which is susceptable to containing flammable fumes emanating from flammable liquids on the floor, comprising:

a base of a predetermined height extending from the floor to a sufficient distance above the region of air;

a support surface panel connected to said base in a manner to support the water heater above the region of air; and

a retention lip member extending generally upwardly from said support surface to retain leakage from the water heater and having at least one punch-out portion formed therein which when removed provides an open surface in said retention lip member to which a drain pipe can be readily connected thereto, and wherein a surface of said base is formed with at least one grooved surface portion laterally spaced from an edge of said base to permit said base to be uniformly cut and down sized.

5,368,264
WORKTABLE DEVICE WITH AUTOMATIC STABILIZING MECHANISM
William H. Dewey, Phoenix, and Martin H. Hill, Syracuse, both of N.Y., assignors to Built for Speed, Inc., Syracuse, N.Y.
Filed Apr. 21, 1993, Ser. No. 49,322
Int. Cl.[5] F16M *11/24*
U.S. Cl. 248—188.2 **4 Claims**

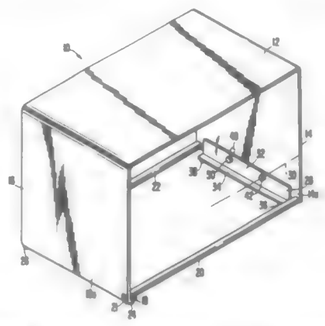
1. A portable worktable device comprising:

a generally C-shaped table comprising an elongated, generally horizontal upper work platform having a pair of spaced ends and a pair of generally parallel, vertically extending, horizontally spaced end panels, said end panels each extending downwardly from a respective end of said platform;

an elongated beam member having a respective support foot at each end thereof;

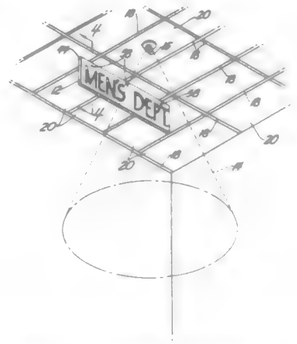
a pivot structure mounting a first end of said beam member at a lower portion of one of said panels with said support feet facing downwardly, said pivot structure permitting swinging of the beam member about a generally horizontal axis relative to said one of said panels,

said one of said end panels having an arcuate slot therein disposed adjacent a second end of said beam member; and



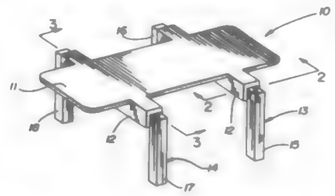
a locking mechanism comprising (1) a threaded shank mounted on said beam member at said second end thereof and extending through said slot to present a free end disposed on the opposite side of said one of said panels from said beam member and (2) a nut threaded onto said free end of the shank to lock said beam member against said one of said panels when tightened.

5,368,265
FUSIBLE SUPPORT FOR SIGNS
Carmen Gueli, Saginaw, Mich., assignor to Globe Technologies Corporation, Standish, Mich.
Filed Jan. 31, 1992, Ser. No. 828,733
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—214 **20 Claims**



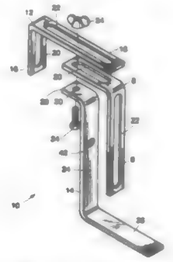
1. Apparatus for releasably suspending an object from an overhead support, said apparatus comprising hanger means; means for mounting said hanger means on said support; bracket means; thermally sensitive bonding means securing said bracket means to said hanger means, said bonding means being solid at temperatures below a predetermined temperature level and liquid at said predetermined temperature level; and means for coupling said bracket means to said object, said bracket means being separable from said hanger means in response to liquefication of said bonding means, thereby enabling said bracket means and any object coupled thereto to fall, said bracket means comprising a substantially U-shaped member having a pair of substantially parallel legs joined at corresponding ends by a web.

5,368,266
FLOWER SUPPORT FOR TOMBSTONES
Nolda R. Allen, 3876 Newton Falls-Bailey Rd., Newton Falls, Ohio 44444
Continuation of Ser. No. 993,433, Dec. 21, 1992, abandoned. This application Mar. 31, 1994, Ser. No. 221,200
Int. Cl.[5] A47G *7/00*
U.S. Cl. 248—231.4 **4 Claims**



1. An adjustable flower saddle for use on grave markers and the like comprising a rectangular body member having integral leg supports thereon, pairs of multiple L-shaped right angular leg elements extending from the leg supports, each leg element including an inner end located on a leg support, a resilient element interconnecting said pairs of leg elements to one another within said leg supports, an access port in said leg support inwardly of said leg support's free end and means for securing each of said leg elements to said resilient element including a notch extending from said inner end axially along said leg element, an aperture extending from a side of said leg element transversely of said leg element and intersecting said notch and dead ending at said notch, an end of said resilient element being located in said notch, and a retaining pin in said aperture with one end of said retaining pin slideably engaging said leg support and the end of said resilient element engaging said retaining pin adjacent to another end of said retaining pin whereby said resilient element is attached to said leg element by said retaining pin and said retaining pin is held in said aperture against said leg element by said resilient element.

5,368,267
NO-SAG FLOWERBOX BRACKETS
Check Howard, 201 Ocean Ave. 902B, Santa Monica, Calif. 90402
Filed May 10, 1993, Ser. No. 59,224
Int. Cl.[5] E04G *5/06*
U.S. Cl. 248—231.4 **8 Claims**



1. A support bracketing for supporting flowerboxes and the like to a vertical support structure comprising:

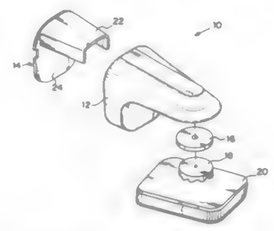
first and second L-shaped members each having a first arm and a second arm, said first and second arms each having an elongated longitudinal slot therein;

a Z-shaped member having a vertical arm and top and bottom horizontal arms, said top horizontal arm extending in a direction opposite to said bottom horizontal arm, said top horizontal arm having an aperture therein;

wherein said first and second arms of said L-shaped members overlap with said top horizontal arm of said Z-shaped member along a horizontal portion of the vertical support structure, a bolt extending through said aperture of said Z-shaped member and said slots of said first and second arms of said L-shaped members, a wing nut threadedly engaged on said bolt;

whereby the flowerbox is clamped to the vertical support structure by the descending of said first L-shaped member arm into the flowerbox's interior and said second L-shaped member arm descending over the back of the vertical support structure for engagement of the rearside of the flowerbox to the vertical portion of the vertical support structure, the bottom of the flowerbox lying along said horizontal bottom arm.

5,368,268
SOAP HOLDING DEVICE
Gerhard D. Jodwischat, Simi Valley, Calif., assignor to Coger Industries, Inc., Palmdale, Calif.
Filed Nov. 13, 1992, Ser. No. 975,714
Int. Cl.[5] A47G *1/17*
U.S. Cl. 248—309.4 **9 Claims**



1. A soap holding device, comprising:

a body portion, said body portion is cantilever supported from said mounting portion, said body portion is provided with a connection portion positioned substantially perpendicular relative to a lengthwise direction of said body portion, said body portion is provided with a slot and a hole, said hole extending from an outside surface of said body portion to said slot;

a magnet connected to said body portion, said magnet is positioned underneath an end of said body portion;

a mounting portion connected to said body portion in the assembled device, said mounting portion is provided with a bracket having a protrusion that extends into said hole for locking said body portion to said mounting portion when said bracket is fully received within said slot; and

a fastener arrangement for securing said mounting portion to a support.

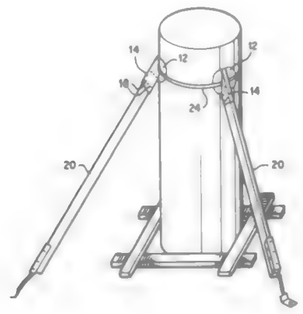
5,368,269
ADJUSTABLE BRACING SYSTEM FOR COLUMN FORMS
Leon H. Boisseau, Prince George County, Va., assignor to Alpha Forming Systems, Division of Elco Concrete Co, Inc, Richmond, Va.
Filed Jul. 14, 1992, Ser. No. 912,980
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—351 **4 Claims**

1. A system for bracing a column form, said system comprising:

a plurality of brace plates, each said brace plate including a base formed of a flexible material and an extension extend-

ing from said base, said extension having brace fastening means for mounting a brace thereto;

a strap accommodated within a plurality of slots, each of said slots being formed between a respective one of said extensions and its corresponding base; and



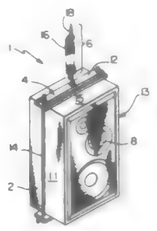
a plurality of braces corresponding in number to said plurality of brace plates so that each one of said braces is affixed to ne of said brace plates via said brace fastening means.

5,368,270

SPEAKER SUSPENSION DEVICE

Timothy V. Wiwczar, P.O. Box 373, Wading River, N.Y. 11792

Filed Dec. 12, 1991, Ser. No. 805,968
Int. Cl.[5] A47F *5/00*
U.S. Cl. 248—610 1 Claim



1. A sound speaker suspending device for suspending and supporting a speaker; which speaker has a sound emitting surface, a back surface substantially parallel to said sound emitting surface, two opposite side surfaces and a top and a bottom surface; from a support structure in an elevated, stable and directable orientation comprising:

a clamping portion disposed around the sides, top and bottom of the speaker which firmly holds said speaker, the location of said clamping portion around said speaker determining the direction in which the sound emitting surface is disposed comprising (a) an elongated lower member disposed along the bottom surface of said speaker; (b) an elongated upper member positioned in an overlapping vertically spaced relation to said base member, with said speaker positioned intermediate to said bottom and upper members; and (c) a plurality of rods joining said upper and lower members together such that they clamp around and firmly hold said speaker; wherein said clamping portion may be positioned around the speaker adjacent to said sound emiting surface; adjacent to the back surface; and at any intermediate position therebetween such that the directional angle of the speaker may be changed as a result of the position selected for the location of the clamp, which clamp may furthermore be so clamped without marring or damaging the speaker surface and without the need to affix the clamp to the speaker; and

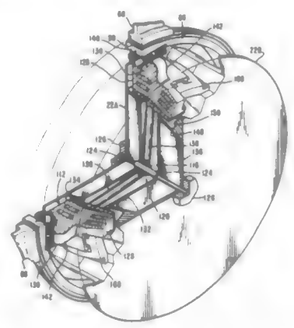
a support portion having a first end joined to said clamping portion and a second end thereof removably joined to said support structure, comprising (a) means for dampening any externally or internally produced vibrations having a first end joined to said clamp portion; and (b) means for attaching a second end of said dampening means to said support structure.

5,368,271

GIMBAL VIBRATION ISOLATION SYSTEM

Paul C. Kiunke, Long Beach, and Robert D. Schaefer, Huntington Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 2, 1992, Ser. No. 844,033
Int. Cl.[5] F16F *15/04;* G03B *17/56*
U.S. Cl. 248—638 11 Claims



1. A gimbal vibration isolation system comprising;

a gimbal housing including a drive ring rotatable about a central axis perpendicular to a plane of the ring;

a platform comprising a first plate assembly and a second plate assembly opposing, and spaced apart from, said first plate assembly;

a plurality of actuators and a plurality of vibration isolators positioned symmetrically about said central axis, each of said actuators extending along a radius of said drive ring and having a first part and a second part movable relative to said first part;

a frame assembly encircled by said drive ring and located between said first plate assembly and said second plate assembly, said frame assembly including a central frame, said first parts of said actuators and corresponding ones of said isolators being serially connected between said frame and said drive ring, said second pads of respective ones of said actuators being connected with said platform; and

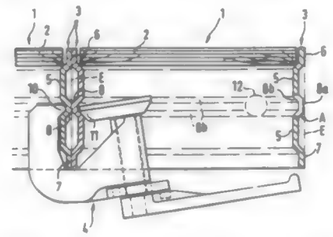
a pivot assembly having at least one pivot and a shaft extending through said pivot, said shaft connecting with said first and second plate assemblies, said at least one pivot being located on said frame and coaxial to said drive ring to enable a pivoting of said platform in response to an activation of said actuators.

5,368,272

FORMWORK PANEL HAVING AT THE EDGES THEREOF PROJECTING EDGE WEBS OF FLAT MATERIAL

Johann Badstieber, Rutesheim, Germany, assignor to Paschall-Werk G. Maier GmbH, Steinach, Germany

PCT No. PCT/DE92/00079, § 371 Date Aug. 6, 1993, § 102(e) Date Aug. 6, 1993, PCT Pub. No. WO92/14013, PCT Pub. Date Aug. 20, 1992
PCT Filed Feb. 6, 1992, Ser. No. 98,322
Claims priority, application Germany, Feb. 8, 1991, 4103775
Int. Cl.[5] E04G *17/04*
U.S. Cl. 249—192 16 Claims



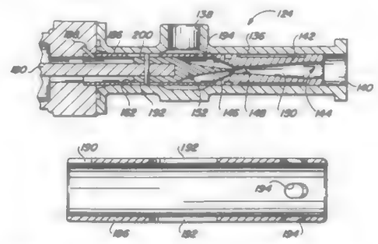
1. A formwork panel, comprising a forming element having a forming surface and a pair of opposed edges; and a rim projecting from one of said edges transverse to said surface, said rim having a substantially flat first marginal portion disposed adjacent said element in a predetermined plane, a substantially flat second marginal portion in said predetermined plane at a spacing from said element, a protrusion between said marginal portions extending from said predetermined plane towards the other of said edges and defining a recess which opens away from said other edge, and a protuberance extending from said protrusion away from said other edge and defining a depression which opens towards said other edge, said rim being free of folds wherein said rim has a second protrusion between said marginal portions extending from said predetermined plane towards said other edge and defining a second recess which opens away from the other edge, said protuberance extending from said second protrusion.

5,368,273

VENTURI METERING SYSTEM

Lucian J. Dante, Phoenix, Ariz., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Oct. 21, 1992, Ser. No. 964,165
Int. Cl.[5] F16K *47/00;* F02C *1/00*
U.S. Cl. 251—122 14 Claims



1. A metering valve for metering fuel flow to a gas turbine engine, comprising:

a valve housing having a fuel inlet, a fuel outlet and a venturi passage including a converging section, a throat section and a diverging section disposed sequentially between the inlet and outlet;

a conically tapered needle valve movably mounted in the housing and extending into said throat section of the venturi passage, said needle valve, venturi passage and outlet axially aligned on a common axis extending generally perpendicular to said inlet;

means for adjustably positioning said needle valve within said throat section to variably meter the fuel flow; and

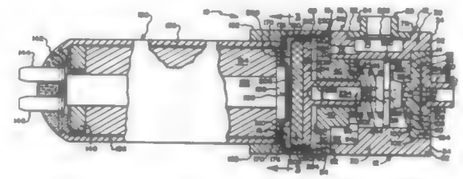
a sleeve between said inlet and said converging section of the venturi passage, said sleeve having angled openings therein for directing fuel flow axially toward said converging section.

5,368,274

LOW POWER ELECTROMAGNETIC VALVE

Theodore J. Falk, Clarence; W. Richard Brown, Clarence Center; Lawrence E. Morris, Bowmansville, and Norbert W. Franz, Jr., Clarence, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Sep. 17, 1992, Ser. No. 946,392
Int. Cl.[5] F16K *31/04*
U.S. Cl. 251—129.16 28 Claims



1. A low power electromagnetic valve for use with implantable fluid delivery systems, said valve comprising:

a) a housing including a fluid containing region having first and second chambers and first and second ports in fluid communication with said first and second chambers, respectively;

b) electromagnet means carried by said housing and located externally of said fluid containing region;

c) barrier means of fluid-impervious material for isolating said electromagnet means from said fluid containing region of said housing;

d) an armature movably positioned in said fluid containing region of said housing and having a pole portion located in one of said first and second chambers for magnetic attraction by said electromagnet means and having a plunger portion provided with valve means located in the other of said first and second chambers for opening and closing one of said ports to place said ports in fluid communication through said fluid containing region of said housing in one control state of said valve and to block fluid communication between said ports through said fluid containing region of said housing in another control state of said valve;

e) said armature pole portion comprising a solid body exclusively of corrosion resistent magnetic material occupying a major portion of the one of said chambers in which it is located and having a lateral dimensions several times greater than the longitudinal dimensions thereof, said magnetic material consisting essentially of a heat treated alloy of chrome, molybdenum and iron; and

f) means for defining a magnetic circuit including said electromagnet, said armature pole portion, a portion of said barrier means and a gap between said pole portion and said electromagnet means located in said fluid containing region of said housing and external to said electromagnet means for closing said gap in response to electrical energization of said electromagnet to move said armature and change the control state of said valve.

5,368,275

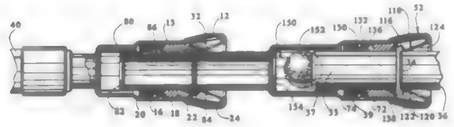
FLUID LINE ADAPTER

Mark G. Ketcham, East China; James McNaughton, Rochester, and Robert J. Zielinski, Sterling Heights, all of Mich., assignors to Bundy Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 834,030, Feb. 11, 1992. This application Jul. 15, 1993, Ser. No. 91,863

Int. Cl.[5] F16L *37/00*

U.S. Cl. 251—149.6 **27 Claims**



1. An adapter for insertion into an existing fluid line system at a quick connector coupling joint, said quick connector coupling joint including a female connector body defining a retainer housing portion and a seal housing portion, a retainer being disposed in said retainer housing portion and at least one seal being disposed in said seal housing portion, and a male member defining an upset portion and a seal surface, said adapter comprising:

an integral body defining a through bore;

a female section at one end of said adapter body defining said retainer housing portion and said seal housing portion of said female connector body of said quick connector coupling joint; and

a male section at an end of said adapter body remote from said female section defining said upset portion and said seal surface of said male member of said quick connector coupling joint, said male section upset portion being spaced from said end of said adapter body remote from said female section a distance such that upon insertion of said adapter into said quick connector coupling joint, said retainer of said quick connector coupling joint engages said upset portion of said adapter body, and said at least one seal of said quick connector coupling joint contacts said seal surface of said adapter body.

5,368,276

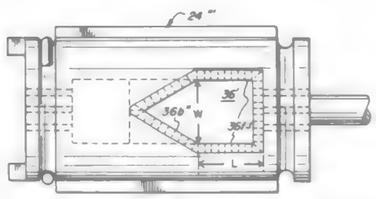
VALVE WITH TRUNCATED APERTURE PROVIDING ENHANCED RANGEABILITY AND LOGARITHMIC FLOW CHARACTERISTIC

Robert W. Pfeiffer, 3 Hidden Spring La., Rye, N.Y. 10580

Continuation-in-part of Ser. No. 736,702, Jul. 26, 1991, Pat. No. 5,205,537, which is a continuation-in-part of Ser. No. 639,414, Jan. 10, 1991, abandoned, which is a continuation of Ser. No. 563,932, Aug. 6, 1990, which is a continuation of Ser. No. 84,635, Aug. 12, 1987, which is a continuation-in-part of Ser. No. 48,078, May 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 570,171, Jan. 12, 1984, Pat. No. 4,664,139. This application Apr. 26, 1993, Ser. No. 53,077

Int. Cl.[5] F16K *3/26, 3/32*

U.S. Cl. 251—205 **39 Claims**



1. A control valve comprising (a) a valve body having a slide chamber therein and an inlet passage and an outlet passage cooperating to partially define a flow passageway intersecting the slide chamber; (b) a plug member mounted for movement within the slide chamber and having an elongated flow orifice extending transversely therethrough, the plug member and its flow orifice being each dimensioned and configured to seal the flow passageway when the flow orifice is out of register with the inlet passage and to complete the flow passageway by connecting the inlet and outlet passages in flow communication when the flow orifice is registered therewith; and (c) positioning means operatively connected to the plug member to position the plug member at selected locations within the slide chamber to selectively adjust registration of the flow orifice with the inlet and outlet passages, the flow orifice and inlet passage being respectively dimensioned and configured to provide a flow area characteristic such that a plot of percentage lift on the ordinate versus percentage flow area as the abscissa on log-log coordinates defines a substantially straight line of positive slope;

wherein one of the inlet passage and the flow orifice is defined by a first peripheral shape comprising (i) a substantially straight leading edge disposed substantially perpendicular to the direction of travel of the plug member and (if) a closure periphery, and the other is defined by a second peripheral shape comprising a tapered slot portion defined by substantially straight legs, the tapered slot portion being not greater in width than the length of said leading edge over at least a majority of the length of the tapered slot portion, the tapered slot portion being positioned so that as the plug member moves from a fully closed position to intermediate throttling positions, the legs of the tapered slot portion first transect the first peripheral shape at the leading edge thereof, whereby to define, for at least a portion of the travel of the plug member, a flow passageway having a triangular cross-sectional flow area; and

wherein said first peripheral shape defines an area greater than the area defined by the legs of the tapered slot portion, and wherein said second peripheral shape comprises a base portion associated with the tapered slot portion and is dimensioned and configured so that when the flow orifice is fully registered with the inlet passage, the valve is substantially fully open to flow therethrough.

5,368,277

DEVICE FOR REMOVING METAL FENCE POSTS

Floyd Moss, 4339 Old Hillsboro Rd., Franklin, Tenn. 37064

Filed Sep. 30, 1993, Ser. No. 128,882

Int. Cl.[5] E21B *19/00*

U.S. Cl. 254—30 **3 Claims**

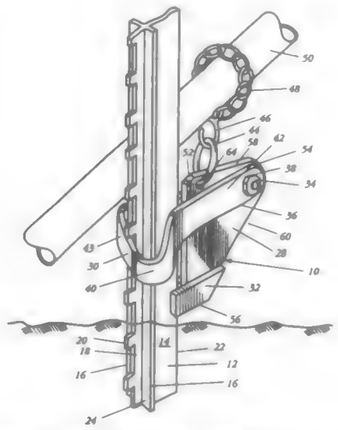
1. A device for removing from an embedded position in the ground a "T"-shaped post having a web including an edge, said web being joined to two flanges distal from said edge and said flanges having a seam having teeth on a side of said flanges distal from said web, said device comprising:

a. a bracket having a first corner, a second corner, a third corner, a first side, a second side, and a third side;

b. a brace, "U"-shaped in cross-section, attached proximate said third corner and aligned and positioned to receive said web when said device is placed over said post;

c. connector means at said first corner to receive force applying means for applying a pulling force to said device and wherein said connector means functions to limit the extent to which said bracket can pivot in relation to said clevice;

d. a clevice having a loop section, a proximal section and a distal section, said loop section having a shape that compliments the cross sectional shape of said post such that when said clevice is placed over said post, said proximal section can engage said teeth; and



e. means pivotally connecting said bracket at its second corner to the distal end of said clevice.

5,368,278

APPLIANCE AND PROCESS FOR TYING AN ARTICLE, ESPECIALLY A CABLE HARNESS

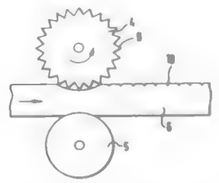
Viktor Kurmis, Pinneberg, Germany, assignor to Paul Hellermann GmbH, Pinneburg, Germany

Continuation of Ser. No. 978,160, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 613,246, Nov. 14, 1990, abandoned. This application Mar. 15, 1994, Ser. No. 214,028

Claims priority, application Germany, Nov. 15, 1989, 8913515[U]

Int. Cl.[5] B21F *9/02*

U.S. Cl. 254—216 **8 Claims**



1. An apparatus for tying an article with a flexible plastic strap having a predetermined strength and a predetermined untensioned thickness, the apparatus comprising:

a tensioning member for tensioning the strap to a predetermined tension, the tensioning member including a rotatable toothed roller, and

an abutment spaced from the toothed roller of the tensioning member by a set, predetermined distance for receiving the strap therebetween, which set distance is smaller than the predetermined untensioned thickness of the strap, the abutment maintaining the set distance during passage of the strap between the toothed roller and the abutment, whereby the teeth of the roller penetrate the surface of the strap when the strap is between the abutment and rotatable toothed roller of the tensioning member,

the predetermined tension of the strap being substantially equal to the resistance of the strap to a milling action by the toothed roller against the strap during rotation of the roller when the strap is maintained in a tensioned but stationary position relative to the abutment.

5,368,279

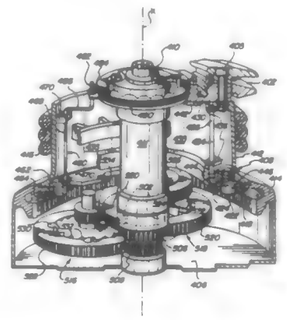
AUTOMATIC LOAD RESPONSIVE WINCH

William Ottemann, Fallbrook, Calif.; Bruno Resch, Greystanes, Australia, and Guillermo Ferramola, Ventura, Calif., assignors to IMI Barient, Inc., Guilford, Conn.

Filed Aug. 10, 1992, Ser. No. 927,802

Int. Cl.[5] B66D *1/24*

U.S. Cl. 254—342 **19 Claims**



1. A load-responsive automatic-shifting winch comprising:

a base;

a winch drum rotatably mounted on said base;

a rotatable drive shaft for driving said winch drum;

at least two gear trains, each including at least one gear and mounted between said drive shaft and said winch drum for rotating said winch drum in response to rotation of said drive shaft, one of said two gear trains producing a different winch drum speed than the other of said gear trains for the same rotational speed of said drive shaft; and

a mechanism displaceable between first and second positions in response to changes in load on said winch drum, said mechanism including means for engaging one of said gear trains at the first position and for disengaging said one gear train at the second position to isolate said one gear train and provide for rotation of said winch drum by the other of said gear trains,

said winch drum having a load receiving portion, a second portion, and means for mounting said load receiving and second winch drum portions together, said mounting means permitting said load receiving and second winch drum portions to rotate with respect to each other from a first rotational position to a second rotational position and including means responsive to rotation from the first to the second rotational positions for displacing said mechanism between the first and second positions.

5,368,280

TIRE LIFTING DEVICE

Bill Ng, Toronto, Canada, assignor to Multimatic Inc., Markham, Canada

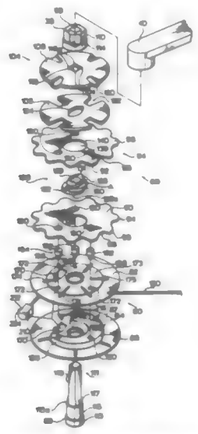
Continuation of Ser. No. 577,115, Sep. 4, 1990, abandoned. This application Dec. 23, 1992, Ser. No. 995,933

Int. Cl.[5] B66D *5/32, 1/00;* **B62D** *43/00*

U.S. Cl. 254—376 **14 Claims**

1. A take-up reel suitable for use in a carrier-lifting device, the take-up reel for taking up cable as a coil and consisting essentially of a pair of plates, one of the pair of plates having an integrally stamped central hub formed from said one of the pair of plates and providing an outer peripheral surface raised laterally away from the plate, about which a cable may be wound when the pair of plates are assembled to provide the take-up reel, the integrally stamped central hub also carrying a recess in the hub, the take-up reel having means securing one end of the cable between the plates adjacent the recess, abutment means located adjacent the recess in the integrally

stamped central hub and disposed on the means securing one end of the cable between the plates, a cable follower pivotally biased to engage the outer surface of the coil of cable being



taken-up and let out from the take-up reel, the cable follower further being adapted to abut the abutment means when the cable has been substantially let out to preclude further rotation of the take-up reel.

5,368,281

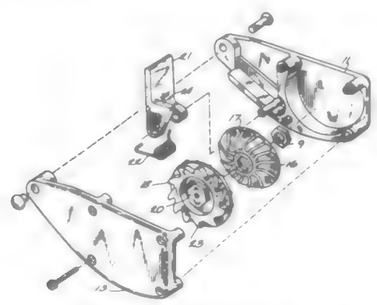
RATCHET PULLEY FOR TIGHTENING CORDS OR ROPES

Helmut K. Skyba, Rte. 2, Box 330, Wild Rose, Wis. 54984

Continuation-in-part of Ser. No. 743,192, Aug. 9, 1991, abandoned. This application Jan. 4, 1993, Ser. No. 382

Int. Cl.[5] B66D *3/08*; **B25B** *25/00*

U.S. Cl. 254—391 **9 Claims**



1. A ratchet-type tensioning mechanism for a rope or cord comprising

a rotatable sheave having a base and two opposed faces with a plurality of generally radially extending serrations having alternating ridges and valleys circumscribing each of said two opposed faces of said sheave, each of said ridges extending outwardly from the base of said sheave, said ridges being positioned at regular intervals around the circumference of said sheave,

a housing within which said sheave is rotatably mounted, said housing having an opening for ingress of a rope or cord into said housing and around said sheave, and an opening for egress thereof from said housing, a curved guiding surface in said housing closely fitting around the exterior of said sheave from said ingress opening and extending approximately one-half of the circumference of said sheave in the direction of rotation thereof, an opening manual access to said sheave located between the end of said curved surface and said opening for egress, said curved surface causing said rope or cord to be forced into engagement with said sheave upon rotation thereof, and,

a releasable ratchet mechanism which, when engaged, permits rotation of said sheave in one direction but not the other, and which, when released, permits free rotation of said sheave.

5,368,282

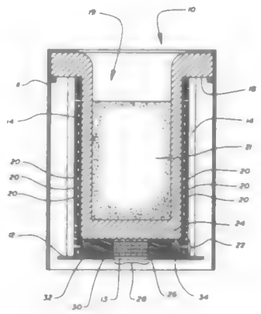
INDUCTION FURNACE PROVIDING CONTROLLED ESCAPE OF SUPERHEATED METAL

John H. Mortimer, Mt. Laurel, and Robert C. Turner, Edgewater Park, both of N.J., assignors to Inductotherm Corp., Rancocas, N.J.

Filed Jul. 6, 1993, Ser. No. 88,064

Int. Cl.[5] C21B *13/00, 15/00*

U.S. Cl. 266—44 **9 Claims**



1. An induction furnace comprising

a vessel having a bottom surface and a side wall,

a base layer of refractory material arranged on the vessel bottom adjacent to and supporting a crucible lining of packed granular refractory material,

said base layer being composed of a first refractory material having a maximum operational temperature and a second refractory having a maximum operational temperature lower that that of the first refractory, a portion of said base layer comprising the second refractory material and the remainder of said base layer comprising the first refractory material, said base layer having a preselected thickness,

at least a portion of the second refractory material in the base layer being arranged in a contiguous zone substantially through the thickness of the base layer, and

an induction heating coil arranged around the side wall of the vessel.

5,368,283

TORSION SPRING ASSEMBLY WITH INTERLOCKING BUSHINGS

Robert J. Pavlin, Grand Haven, Mich., assignor to Precision Products Group, Inc., Muskegon, Mich.

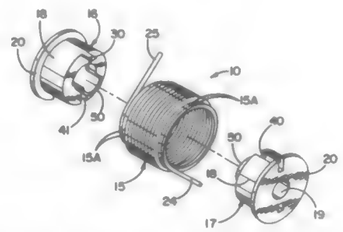
Filed Aug. 5, 1993, Ser. No. 102,243

Int. Cl.[5] F16F *1/06*

U.S. Cl. 267—155 **9 Claims**

1. A torsion spring assembly comprising a coiled helical torsion spring having a plurality of coils including two end coils, first and second bushings having first and second generally cylindrical sleeves, respectively, telescoped into the end coils of said spring, first and second annular flanges formed integrally with and projecting radially outwardly from the outboard ends of the sleeves of said first and second bushings,

respectively, and located adjacent said end coils, first means formed integrally with said first sleeve, and second means formed integrally with said second sleeve and directly engag-



ing said means on said first sleeve interiorly of said plurality of coils to restrict rotational and axial movement of said first bushing relative to said second bushing.

5,368,284

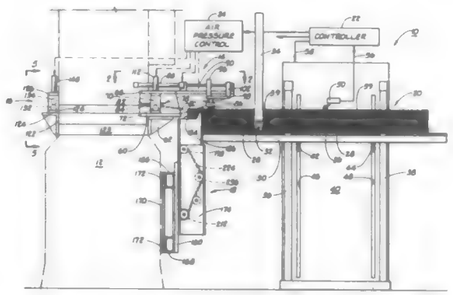
ROLL FEED APPARATUS

Lawrence B. Renth, Yukon, Okla., assignor to I G Incorporated, Oklahoma City, Okla.

Filed Aug. 30, 1993, Ser. No. 113,183

Int. Cl.[5] B65H *3/08*

U.S. Cl. 271—5 **13 Claims**



1. A feed system for moving strip stock through the work position of a machine, comprising:

first means for presenting the strip stock at a predetermined level;

centralizing guide means secured to the machine and operative to receive and maintain alignment of the strip stock relative to said machine, said centralizing guide means having first side and second side guide rails disposed in parallel and in vertical alignment and being adjustable to receive the strip stock closely therethrough;

adjustment means including a hand wheel for simultaneously moving the first and second guide rails in opposite directions relative to a center position therebetween;

a stop rail disposed vertically at said center position and terminating on the upper end at the predetermined level of said first means;

means directing the strip stock from the centralizing guide means to the machine;

entry guide means including a pair of rollers for seizing the strip stock from said means directing and pushing the stock through said work position; and

exit guide means including a pair of rollers for seizing the strip stock after passage through said work position and pulling the strip stock therefrom.

5,368,285

AUTOMATIC SHEET FEEDING APPARATUS

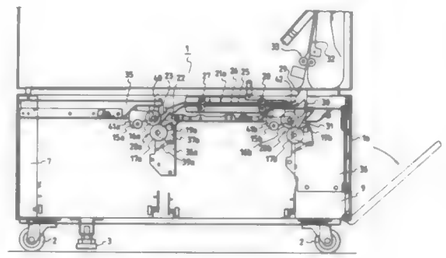
Toshihiko Kusumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1992, Ser. No. 840,557

Claims priority, application Japan, Feb. 28, 1991, 3-059610

Int. Cl.[5] B65H *1/28*

U.S. Cl. 271—9 **22 Claims**



1. An automatic sheet feeding apparatus disposed below an image forming apparatus forming an image on a sheet, comprising:

sheet supporting means with a first sheet supporting member and a second sheet supporting member arranged laterally side by side below said image forming apparatus for supporting sheets therein;

first sheet feeding means for feeding out the sheets from said first sheet supporting member to the image forming apparatus;

second sheet feeding means for feeding out the sheets from said second sheet supporting member to said image forming apparatus; and

guide means for guiding said first and second sheet supporting members so that said sheet supporting members can be drawn out independently from a sheet feeding position in a direction substantially orthogonal to the lateral arrangement of said first and second sheet support members;

wherein said first and second feeding means are disposed so that they feed out the sheets from said first or second sheet supporting member in the same direction.

5,368,286

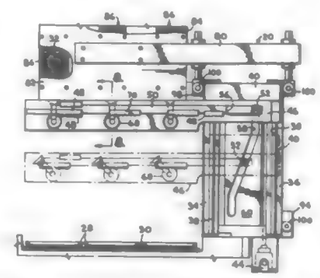
LABEL INSERTER FOR PACKAGING MACHINE

Dennis P. Horsman, Overland Park, Kans., and J. Scott Nixon, Independence, Mo., assignors to Multivac, Inc., Kansas City, Mo.

Filed Oct. 5, 1993, Ser. No. 131,662

Int. Cl.[5] B65H *5/08*

U.S. Cl. 271—11 **11 Claims**



1. For use with a packaging machine which moves a series of at least partially formed packages arranged in at least one now along a path of movement through a loading zone, apparatus

for removing sheets of material from a supply thereof and depositing the sheets at a desired location relative to said series of packages, said apparatus comprising:

a plurality of suction cup assemblies, each having at least one suction cup carried by its respective rotatable shaft, said shafts extending generally parallel to said path of movement and each including a corresponding pinion secured to its shaft for rotation therewith, said assemblies overlying said zone and including means for applying suction to said cups for picking up and holding said sheets, and means for interrupting the suction to the cups for causing the sheets to be dropped by the cups;

means operably coupled with the suction cup assemblies for moving the latter on reciprocating paths of travel extending substantially vertically between an uppermost position proximal said sheet supply with each cup in disposition for picking up a sheet therefrom, and a lowermost position proximal a package when said package is in the zone with each cup in disposition for depositing the sheet at said desired location, said path of reciprocating travel being substantial normal to said path of movement; and

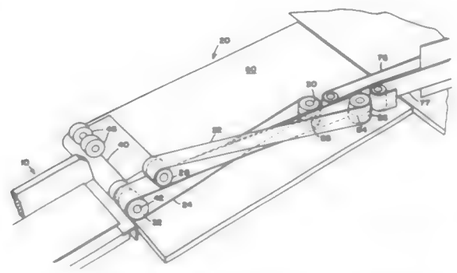
shifting means operably coupled to said moving means and to said assembly for rotating said cup from upwardly facing at said uppermost position to downwardly facing at said lowermost position responsive to said moving means, said shifting means including a rack cantilevered across said row of said packages at said zone and operably engaged with each of said pinions, a cam and follower mechanism operably coupled to said rack and being further operably coupled to said moving means, whereby as said moving means reciprocates said assembly between said uppermost position and said lowermost position, the cam and follower longitudinally shifts the rack thereby rotating the pinions which moves the cups from upwardly facing at the uppermost position to downwardly facing at the lowermost position.

5,368,287

NINETY DEGREE TURN-UP APPARATUS

Eric A. Belec, Southbury, and William D. Toth, Milford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 15, 1993, Ser. No. 152,802
Int. Cl.[5] B65H *29/00*
U.S. Cl. 271—185 **6 Claims**



1. A device for turning flat articles, such as envelopes, from a horizontal orientation to a vertical orientation as the articles are transported along a path from an entrance location to an exit location, comprising:

a pair of entrance pulleys, each of said entrance pulleys having an offset crown and rotating on a stationary horizontal axis, said entrance pulleys located longitudinally and vertically apart from one another such that one of said entrance pulleys functions as lower entrance pulley and the other entrance pulley functions as an upper entrance pulley, said upper entrance pulley being located downstream from said lower entrance pulley

a pair of exit pulleys, each of said exit pulleys having a centerline crown, said exit pulleys rotating on a stationary vertical axis, one of said exit pulleys located downstream from an upstream one of said exit pulleys

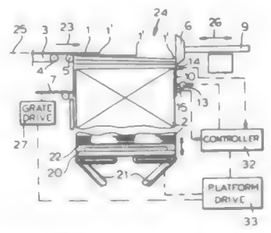
first and second flexible, endless belts, said first belt being wrapped around said lower entrance pulley and said upstream exit pulley, and said second belt being wrapped around said upper entrance pulley and said downstream exit pulley, wherein said first and second belts complete a 90 degree twist from the respective entrance pulley to the respective exit pulley such that said first and second belts each have a contiguous span for approximately the entire 90 degree twist against which a corresponding span of the other belt applies a normal force.

5,368,288

METHOD OF AND APPARATUS FOR THE STACKING OF SHEETS

Helmut Philipp, Düsseldorf, and Wilfried Kurth, Hilden, both of Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

Filed Jul. 2, 1993, Ser. No. 87,613
Claims priority, application Germany, Jul. 2, 1992, 4221660
Int. Cl.[5] B65H *31/12*
U.S. Cl. 271—215 **6 Claims**



1. A method of stacking ragged sheets, especially of cardboard, displaced in a feed direction along a transport path, said method comprising the steps of:

(a) successively depositing said sheets fed in said direction upon a raisable and lowerable sheet-collection platform disposed along said path to form an original stack while progressively lowering said platform;

(b) while continuing to feed said sheets toward said platform and upon attainment of a certain stack height, rapidly lowering said platform with said stack;

(c) upon rapid lowering of said platform, inserting horizontally in said direction between oncoming sheets to be stacked and a top of said stack a vertically fixed grate upon which a collection of the continuously fed oncoming sheets is formed;

(d) during insertion of said grate horizontally between said oncoming sheets and said top of said stack, vibrating said collection of sheets in said direction and counter to said direction by vibrating a stop board against which leading edges of said sheets engage upon stacking on said platform and said grate, whereby a new stack is formed on said grate, said grate being advanced in a stepwise manner with cyclical partial retraction in each step at least during a terminal part of the insertion of said grate in step (d), and raising said original stack during said terminal part of the insertion of the grate in step (d) to lift sagging leading edges of said collection of oncoming sheets; and

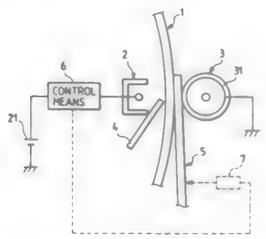
(e) removing said original stack from said platform, transferring said new stack to said platform and withdrawing said grate from between said platform and said new stack.

5,368,289

RECORDING SHEET CONVEYING DEVICE

Yoshinari Iwaki; Nobuo Hyakutake; Jun Takagi; Noriyoshi Kono; Kunimasa Aoshima; Hiroyuki Otsuka; Akira Ogita, and Kouji Hamabe, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 879,279, May 7, 1992, abandoned. This application Apr. 5, 1994, Ser. No. 223,135
Claims priority, application Japan, May 14, 1991, 3-137068
Int. Cl.[5] B65H *5/06*
U.S. Cl. 271—265 **2 Claims**



1. A recording sheet conveying device comprising:

a dielectric sheet which moves at a predetermined speed while electrostatically retaining a recording sheet on the outer surface thereof;

a charger positioned on a side of the inner surface of said dielectric sheet, said charger adapted to induce electrostatic attraction forces between said dielectric sheet and said recording sheet;

a deflector roll having an electrically conductive layer as an outer surface thereof, said deflector roll being confronted with said charger and adapted to push said recording sheet against said dielectric sheet; and

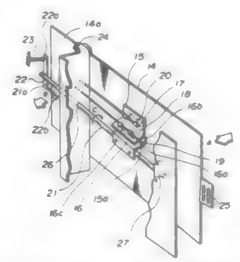
control means, operating said charger to adjust the number of electric charges, in spite of differences in dielectric constant between successive ones of said recording sheet during recording, to weaken electrostatic attraction forces acting on the rear end portion of said recording sheet and to strengthen electrostatic attraction forces acting on the front end portion of said recording sheet.

5,368,290

PAPER TRANSPORT MECHANISM

Hideyuki Nanba, Kawasaki; Koji Hirata, Hyogo, and Shigenori Sasaki, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 13, 1993, Ser. No. 3,801
Claims priority, application Japan, Jan. 16, 1992, 4-005369; May 8, 1992, 4-116063
Int. Cl.[5] B65H *5/02*
U.S. Cl. 271—273 **16 Claims**



1. A paper transport mechanism comprising:

a first guide plate rotatable about a first axis parallel to the paper transport direction having an end part, a rotation fulcrum located in a vicinity of the end part, and first rollers, said first guide plate having an open position and a closed position and being normally closed;

a second guide plate having a first surface part which confronts the first guide plate with a gap formed therebetween in the closed position of the first guide plate, a second surface part which is curved, second rollers, and fourth rollers which make pressing contact with the first rollers in the closed position of the first guide plate so as to transport a paper between the first and second guide plates;

a third guide plate rotatable about a second axis transverse to the transport direction having a third surface part which confronts the second surface part of the second guide plate with a gap formed therebetween, and third rollers which make pressing contact with the second rollers in the closed position of the first guide plate so as to transport a paper between the second and third guide plates; and

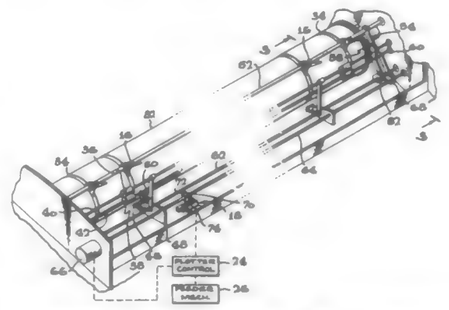
rotating means, coupled to the first and third guide plates, for rotating the third guide plate about the second axis, and thereby urging the third rollers against the second rollers in the closed position of the first guide plate and for separating the third rollers from the second rollers in the open position of the first guide plate.

5,368,291

MEDIA STRIPPER MECHANISM

Douglas K. MacNiel, Costa Mesa, Calif., assignor to CalComp, Inc., Anaheim, Calif.

Filed Apr. 30, 1993, Ser. No. 54,339
Int. Cl.[5] B65H *29/54*
U.S. Cl. 271—308 **2 Claims**



1. A media stripper mechanism for a plotter comprising:

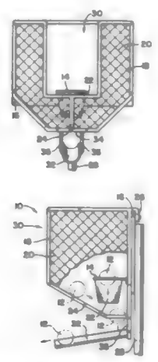
support means for supporting a media, said support means having a recess therein positioned to be at least partially covered by said media;

stripper means positioned external of said support means and movable a preselected distance into said recess;

mover means for moving said stripper means into said recess prior to the covering thereof by said media, whereby said media is stripped from said support means by said stripper means, said mover means including cam means for moving said stripper means into said recess; and

sensor means for sensing the position of said cam means and for generating a sensor signal indicative of said position, whereby the position of said stripper means relative to said recess is determined and said cam means moves said stripper means into said recess prior to said recess being covered by said media to strip said media from said support means.

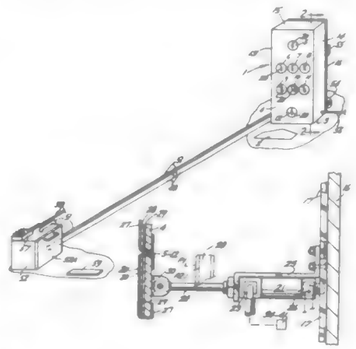
5,368,292
BASKETBALL REBOUNDING SYSTEM
Douglas Metz, 155 A Lakehill Rd., Burnt Hills, N.Y. 12027
Filed Dec. 16, 1993, Ser. No. 168,679
Int. Cl.[5] A63B *63/08*
U.S. Cl. 273—1.5 A **16 Claims**



1. A basketball rebounding system for attachment to a basketball arrangement including a basketball hoop and backboard, comprising:
a basketball capture apparatus for anteriorly enclosing said backboard and said basketball hoop, said capture apparatus extending outwardly around and beneath said basketball hoop from said backboard, said capture apparatus further including a ball entry slot, disposed in front of said basketball hoop, for receiving a basketball therethrough, wherein said ball entry slot includes opposed, substantially vertically extending side members, and a substantially horizontally extending base member which extends between a bottom portion of each said side member, and wherein said base member is disposed in front of and slightly below said basketball hoop; and
a ball return mechanism for returning a basketball captured by said capture apparatus toward a shooter thereof;
said basketball capture apparatus further including an apertured bottom portion for directing said captured basketball onto said ball return mechanism, and a support member, extending between a center section of said base member and a front section of said apertured bottom portion, for stabilizing said ball entry slot.

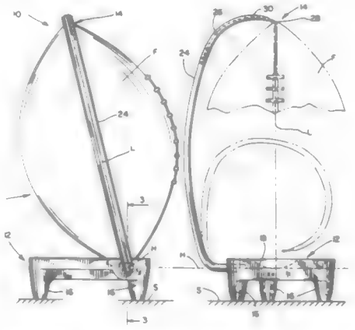
5,368,293
PITCHER TRAINING APPARATUS
E. Leon Waugh, 1410 Tyler St., Eugene, Oreg. 97402
Filed Aug. 6, 1992, Ser. No. 925,099
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**

1. An apparatus for training a pitcher by providing multiple sequentially presented targets at which a ball is to be thrown, said apparatus comprising,
a housing having a front wall defining openings through which a thrown ball may pass,
target assemblies mounted interiorly of said housing adjacent each of said openings and each of said assemblies including a closure which normally closes one of said openings, each of said target assemblies further including a pneumatic cylinder, means of coupling said cylinder to said closure and enabling displacement of said closure to an open position away from one of said openings to open the latter, and
control means including a programmable controller having a series of terminals, a solenoid operated valve in circuit with each of said terminals and in communication with the pneumatic cylinder of each of the target assemblies to



activate said cylinder to displace the closure thereof to provide a target and to subsequently relocate the closure.

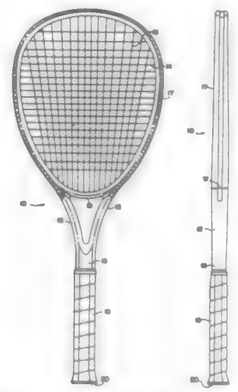
5,368,294
FOOTBALL TEE
Maurice Mathey, 1917 Bark River Rd., Hartland, Wis. 53029
Filed Jul. 19, 1993, Ser. No. 93,404
Int. Cl.[5] A63B *67/00*
U.S. Cl. 273—55 B **5 Claims**



1. A tee adapted to maintain a football in a place kicking position, said tee comprising:
a base adapted to rest on a playing surface;
a flexible, one piece sleeve having a distal end pivotally connected to said base about a horizontal axis disposed substantially perpendicular to the longitudinal axis of the football and a proximal end disposable adjacent an upper end of the football; and
a flexible tongue telescopically mounted in said sleeve and engageable with an upper end of the football for creating a variable tension on and maintaining a teed-up attitude for the football.

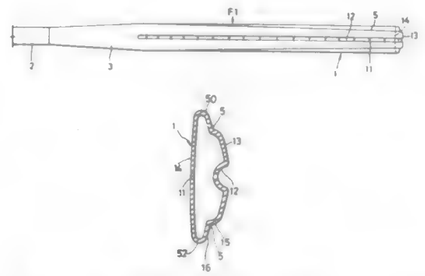
5,368,295
TENNIS RACKET
William D. Severa, Addison; Frank Garrett, Barrington, and Po-Jen Cheng, Oak Brook, all of Ill., assignors to Wilson Sporting Goods Co., Chicago, Ill.
Filed Jun. 2, 1993, Ser. No. 71,171
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 C **13 Claims**

1. A tennis racket comprising a frame having an elongated shaft portion and a head portion and strings supported by the head portion, the frame being formed from composite material comprising fibers and resin, the shaft terminating in a butt end and the head having top and bottom portions, the racket having a length of at least 26.5 inches, a strung weight of less than



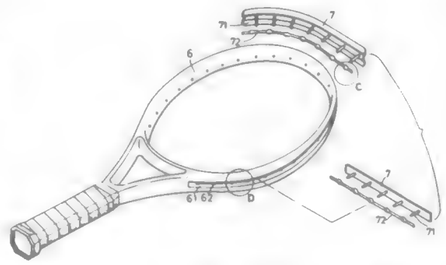
9.5 ounces, a balance point of greater than 15.5 inches from the butt end, a center of percussion of greater than 19.5 inches from the butt end, and a frequency of vibration of the first mode of bending under free-free constraint of at least 190 Hz.

5,368,296
GAME RACKET FRAME
Leueis Liu, No. 8, Alley 23, Lane 684, Yuan Huan East Rd., Feng Yuan, Taichung Hsien, Taiwan, Prov. of China
Filed Nov. 5, 1992, Ser. No. 971,560
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 C **5 Claims**



1. A game racket frame having an oval head frame having a front end section and a read end section, said game racket frame having a connecting section for joining said oval head frame to a handle of said game racket frame, said oval head frame defining cross-sectional top and bottom sections, comprising:
an oval head frame inner wall and an oval head frame outer wall each defining a plurality of string holes formed therethrough, said oval frame inner wall forming an arcuate contour in cross-section, said oval head frame inner and outer walls being spaced apart each from the other;
a portion of one of the inner and outer walls located between the front end section and the rear end section having a rib plate direction in an inclined manner with respect to an opposing one of said inner and outer walls;
a connecting plate connecting said rib plate with one of said top and bottom sections of said oval head frame to form a folding line at the juncture of the connecting plate and the rib plate;
a line groove having a predetermined depth defined by and located in said outer wall, said line groove having said string holes located therein through said outer wall in substantial alignment with respective string holes formed through said inner wall; and,
a first pair of folding lines formed in said outer wall and disposed on opposing sides of said line groove, said first pair of folding lines extending from said connecting section to said oval head frame front end section in a manner that the displaced distance between said first pair of folding lines decreases from said connecting section to said frame front end section.

5,368,297
RACKET FRAME AND PROTECTIVE PACKING DEVICE ARRANGEMENT
Leueis Liu, 9F-3, No. 218, Kuo Kuang Rd., Taichung, Taiwan, Prov. of China
Filed Nov. 29, 1993, Ser. No. 158,515
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—73 D **5 Claims**

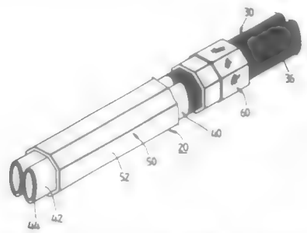


1. A structurally reinforced racket frame having cross-directed string members to provide a ball striking force, comprising:
(a) an open racket frame having a plurality of spaced apart string holes passing therethrough and defining an extended trough formed within an external wall thereof, said extended trough having an extended frame groove formed in a lower surface thereof in open communication with said consecutively spaced apart string holes; and,
(b) protective packing means for protecting said string members, said protective packing means being mounted within said extended trough including an extended packing strip member contoured for mating engagement with said extended trough and a plurality of tubular members extending substantially perpendicular to said extended packing strip member being spaced apart each from the other for alignment with and insert into said string holes, each of said tubular members having a through opening for passage therethrough of said string members, said packing strip member having extended rib members on a lower surface thereof for mating engagement with said frame groove extending throughout an extension length between consecutively spaced apart string holes.

5,368,298
GAME RACKET OF COMPOSITE MATERIAL
Chin-San You, No. 6, Lane 477, Sec. 2, Heng-Shyn Rd., Feng Yuan City, Taichung Hsien, Taiwan, Prov. of China
Filed Jan. 7, 1994, Ser. No. 178,815
Int. Cl.[5] A63B *49/10*
U.S. Cl. 273—73 R **8 Claims**

1. A game racket of composite material comprising a head, a shaft and a handle; wherein said head and said shaft are made of a first tubular body; wherein said handle is made of a second

tubular body and a third tubular body, said second tubular body extending posteriorly from one end of said first tubular body, said second tubular body being covered with said third tubular body; wherein said first tubular body comprises a predetermined layers of a first outer shell of a plastic composite material containing a thermosetting resin reinforced by long fibers; wherein said second tubular body comprises a predetermined layers of a second outer shell of a plastic composite material containing a thermosetting resin reinforced by long fibers, said layers of said second outer shell being less than said layers of said first outer shell; and wherein said third tubular body comprises a third outer shell of a plastic composite material containing a thermosetting resin reinforced by fibers, said third outer shell covering said second outer shell.

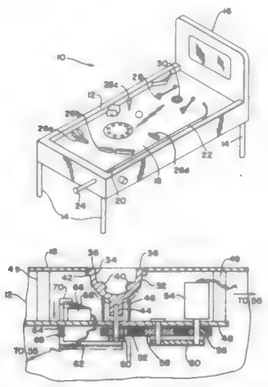


5,368,299

PINBALL MACHINE BALL SPINNER

John Driska, Princeton Junction, N.J., assignor to Azrak-Hamway International, Inc., New York, N.Y.

Filed Feb. 5, 1993, Ser. No. 14,457
Int. Cl.[5] A63F *7/30*
U.S. Cl. 273—119 R **13 Claims**



1. In a pinball machine having a playing field on which a ball travels, a ball spinner comprising:

a cup adapted for rotation about an axis relative to said playing field, said cup having an inner surface which terminates in a peripheral rim and at least one raised area on said inner surface; and

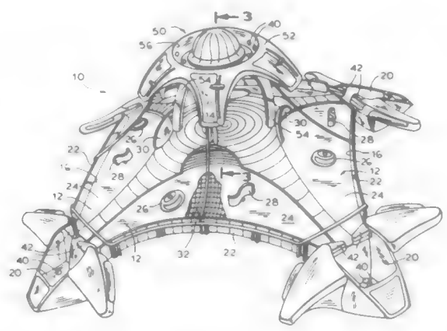
means for rotating said cup operably associated with said pinball machine.

5,368,300

GOAL-SCORING GAME

James R. Becker, New York, N.Y., assignor to Anjar Co., New York, N.Y.

Filed Nov. 15, 1993, Ser. No. 152,728
Int. Cl.[5] A63F *7/02*
U.S. Cl. 273—121 R **23 Claims**



1. A goal-scoring game comprising:

(A) a convex playing field having an apex, a periphery lower than said apex, and a spaced apart plurality of goals adjacent said periphery for receipt of game pieces;

(B) a plurality of movable game pieces for movement about said field and into said goals;

(C) player-operated impacting means, disposed adjacent to and associated with each of said goals, for impacting one of said game pieces to drive said impacted game piece away from said associated goal; and

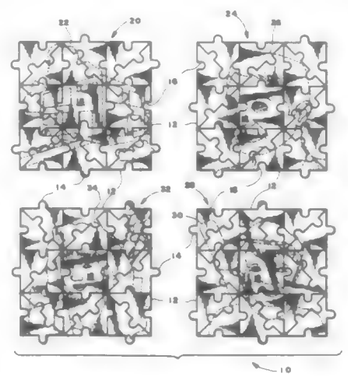
(D) dispenser means disposed over said field for storing a plurality of at least 4 of said game pieces and dropping them one at a time in rapid succession precisely onto the apex of said field.

5,368,301

DOUBLE SIDED PUZZLE

Dennis E. Mitchell, 200 Packer Rd., Mystic, Conn. 06355

Continuation-in-part of Ser. No. 7,366, Apr. 20, 1993. This application Jan. 26, 1994, Ser. No. 186,532
Int. Cl.[5] A63F *9/10*
U.S. Cl. 273—157 R **20 Claims**



1. A double sided puzzle comprising:

a sheet having a first side and an opposite second side formed of puzzle pieces each having a substantially triangular shape, with said puzzle pieces including at least one group wherein said puzzle pieces are congruent, and with each of said puzzle pieces including cooperating means providing for the mutual interlocking of said puzzle pieces to form said sheet, and;

each of said puzzle pieces having a first side and an opposite second side, with said first side and said second side of each of said puzzle pieces each having markings thereon which form at least one first pattern and at least one second pattern respectively upon said first side and said second side of said sheet when said puzzle pieces are respectively assembled to form a state of said sheet wherein said at least one first pattern and said at least one second pattern are completed, whereby;

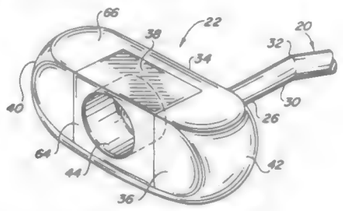
each said first side of said puzzle pieces is oriented to face upwards and said puzzle pieces are interlockingly and properly assembled to form at least one said state of said sheet with at least one said pattern being completed thereby.

5,368,302

GOLF PUTTER INCLUDING BALL RETRIEVING DEVICE

Felix L. Thomas, Lady Lake, Fla., assignor to N.S.K. Golf Club, Inc., Navarre, Fla.

Filed Nov. 20, 1992, Ser. No. 980,186
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—162 E **4 Claims**



1. A putter useful to a golfer retrieving a golf ball from within a golf green putting cup, said putter comprising:

a club shaft having a proximal gripping end and a distal end, the distal end having a shaft vertical portion, the shaft gripping end extending away from the vertical portion at an angle thereto;

a club head having a front surface, the head dimensioned to fit within the cup, the head having an upper surface and a bottom surface, the upper surface affixed to the shaft distal end with the vertical portion set substantially perpendicular to the head upper surface; and

a cylindrical insert within an opening in the bottom surface, the insert having a lower edge generally coextensive with the bottom surface of the club head, the insert having a bore with a uniform diameter dimensioned to be slightly smaller than the diameter of a golf ball to be retrieved thereby by forcibly receiving and holding the golf ball.

5,368,303

Patent Not Issued For This Number

5,368,304

LOW SPIN GOLF BALL

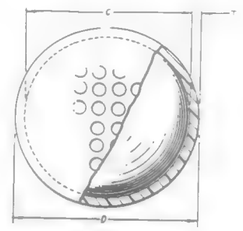
Michael J. Sullivan, Chicopee, and R. Dennis Nesbitt, Westfield, both of Mass., assignors to Lisco, Inc., Tampa, Fla.

Filed Apr. 28, 1993, Ser. No. 54,406
Int. Cl.[5] A63B *37/06, 37/12*
U.S. Cl. 273—220 **12 Claims**

1. A golf ball, comprising:

a core comprising a diene polymer having a Riehle compression of at least 0.075; and

a cover comprising an ionomer resin and having a Shore D hardness of at least 65, and the spin rate of said golf ball being not greater than 7,643 revolutions per minute when struck with a No. 9 iron at a head speed of 105 feet per second and a launch angle of 26 to 34 degrees.

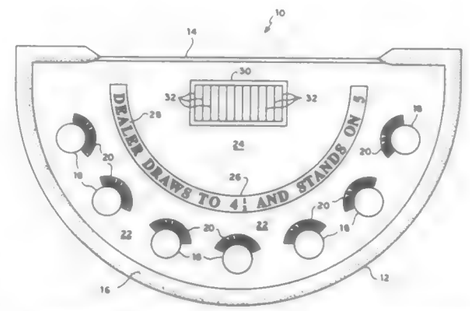


5,368,305

BLACK-JACK TYPE WAGERING GAME METHOD

Joseph Rodda, and Misty Rodda, both of 3342 S. Sandhill Rd. #9-522, Las Vegas, Nev. 89121

Filed Jul. 22, 1993, Ser. No. 95,703
Int. Cl.[5] A63F *1/00*
U.S. Cl. 273—292 **9 Claims**



1. A method of playing a card game for at least two players, said method comprising the steps of:

providing at least one deck of cards having four suits, wherein each suit includes seven spot cards with point values from one through seven and three court cards with a point value of one half point each;

designating one player as a dealer to deal cards to each of the players;

allowing each player to place a wager;

beginning play of a hand of the game with the dealer providing each of the players and the dealer with a first card with the face of each first card exposed to each of the players, whereby each of the players and the dealer may determine the point value of each first card;

allowing each player a surrender option of surrendering one half of their wager and terminating the play after receiving the first card;

allowing each player a doubling down option of doubling their wager after receipt of the first card, and requiring the player to accept a second card upon selection of the doubling down option by the player, wherein the player cannot receive additional cards;

continuing play of the hand by providing each of the players and the dealer with a second card according to the wishes of each of the players and the dealer, with the face of the second card for each of the players being played face down so that the value of each second card is known only to each of the respective players receiving each respective card;

allowing each player a splitting option of forming an additional playing hand based upon the receipt of subsequent cards having point values equal to the first card received for the game; wherein the point values for the first card and the subsequent card are each less than four; and

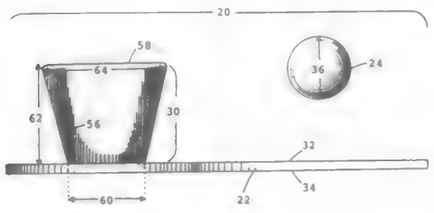
continuing in the above manner with each of the players attempting to approach a total point value of seven and one half points for each player's respective hand by each player's respective provided cards without exceeding seven and one half points, with any player exceeding seven and one half points being eliminated from play, and declaring a player most closely approaching a total of seven and one half points the winner of the hand of the game.

5,368,306

GAME FOR IMPROVING EYE-HAND COORDINATION

Harry Madsen, 2203 Mole Ave., Janesville, Wis. 53546

Filed Apr. 2, 1993, Ser. No. 42,153
Int. Cl.[5] A63B *59/00, 67/00*
U.S. Cl. 273—318 **19 Claims**



1. A game, comprising:

a paddle including a blade, a handle coextensive with said blade and a cup-shaped member, said blade having a pair of opposed planar faces, said cup-shaped member affixed to one of said pair of faces, and having a closed flat circular bottom and a linearly upstanding sidewall, extending from said bottom and terminating in a circular open top, said circular open top and said bottom each having a diameter, with said diameter of said top greater than said diameter of said bottom, said cup-shaped member having an inside ball striking surface defining a frustoconical interior space, said blade and said handle having a uniform thickness; and

a untethered ball, said ball being a lightweight sphere having a diameter of about 35 mm to about 50 mm, a weight of about 2 g to about 5 g, and a bounce of about 150 mm to about 350 mm, wherein said diameter of said top and said diameter of said bottom each exceed said diameter of said ball.

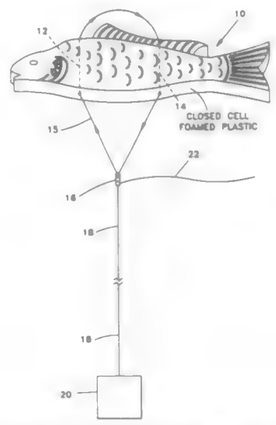
5,368,307

PRACTICE TARGET FOR BOWFISHING

Kenneth J. Hotchkiss, 20 Clifton St., Phelps, N.Y. 14532

Filed May 24, 1993, Ser. No. 66,305
Int. Cl.[5] F41J *3/00*
U.S. Cl. 273—350 **2 Claims**

1. An artificial practice target for bowfishing comprising a body shaped to resemble the shape of a fish, said body being formed of a rigid, closed cell, expanded plastic foam, and an arrangement for securing the body to an anchor to hold it submerged thereby to give the archer practice judging the



effects of refraction on the apparent position of an under-water fish,

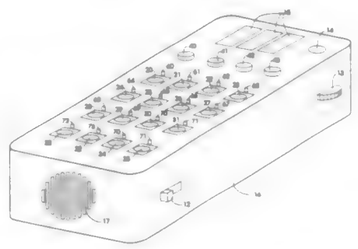
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5,368,308

SOUND RECORDING AND PLAY BACK SYSTEM

Donald L. Darnell, 1515 Ellen Ct., Auburn, Calif. 95602

Filed Jun. 23, 1993, Ser. No. 80,182
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—429 **20 Claims**



1. Apparatus for recording and playing back sound, said apparatus comprising, in combination:

recording means for recording sound for a period of time;

segmenting means in operative association with said recording means for segmenting said recorded sound into a plurality of discrete sound segments soley according to a time based algorithm and irrespective of the contents of the recorded sound, said sound segments each being of a set duration shorter than said period of time;

reordering means in operative association with said segmenting means for reordering the sequence of said plurality of discrete sound segments, each reordered discrete sound segment continuing of set duration;

sound segment storage means in operative association with said reordering means for storing said reordered discrete sound segments;

sound segment retrieval means in operative association with said sound segment storage means for selectively separately retrieving at least some of said reordered discrete sound segments from said sound segment storage means; and

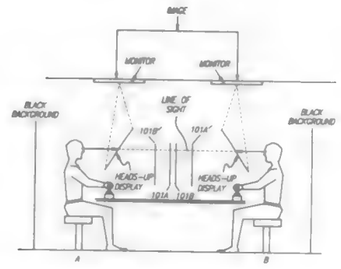
play back means operatively associated with said sound segment retrieval means for playing back the retrieved reordered discrete sound segments of set duration in the order of retrieval of said reordered discrete sound segments from said sound segment storage means by said sound segment retrieval means.

5,368,309

METHOD AND APPARATUS FOR A VIRTUAL VIDEO GAME

Marshall Monroe, and David Fink, both of Glendale, Calif., assignors to The Walt Disney Company, Burbank, Calif.

Filed May 14, 1993, Ser. No. 62,304
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—437 **16 Claims**



1. A display comprising:

control means for controlling input and effecting visual output;

a first display means for displaying a first image of said visual output;

a second display means for displaying a second image of said visual output such that said second image is inverted;

a first reflecting means for reflecting said image from said first display means toward a first viewer; and

a second reflecting means for reflecting said image toward a second display means toward a second viewer, said first and second viewers positioned opposed to one another.

5,368,310

SHOVEL TYPE GAME MACHINE

Mitsuru Ogata, Kawasaki; Hiroyuki Kobayashi, Tokyo; Toshitake Inagaki, Sagamihara; Takashi Masuko, Kawaguchi, and Hiroshi Takeuchi, Tokyo, all of Japan, assignors to Namco Ltd., Tokyo, Japan

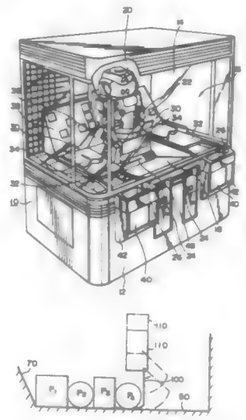
Filed Apr. 14, 1993, Ser. No. 46,175
Claims priority, application Japan, Apr. 16, 1992, 4-124346
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—448 **34 Claims**

1. A shovel type game machine comprising a display platform and shovel arm means for picking up articles on the display platform, said shovel arm means comprising:

a resiliently deformable bucket for picking up the articles and

bucket drive means for pivotally supporting said bucket and for tilting said bucket forwardly with a given force, thereby causing said bucket to perform a shoveling operation for picking up said articles,

said bucket drive means being adapted to make said shoveling operation by moving the pivot center of said bucket



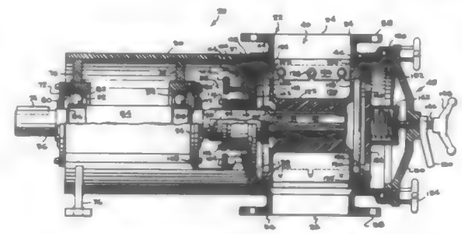
downwardly, whereby said bucket can be resiliently deformed to move its tip below said articles.

5,368,311

SHAFT SEAL ASSEMBLY FOR A ROTARY VALVE

Robert D. Heyl, 30 Bayside Ct., Frisco, N.C. 27920

Continuation of Ser. No. 730,522, Jul. 12, 1991, abandoned, which is a continuation of Ser. No. 501,876, Jun. 7, 1983, abandoned, which is a continuation of Ser. No. 11,932, Feb. 13, 1979, abandoned, which is a division of Ser. No. 677,862, Apr. 16, 1977, Pat. No. 4,059,205, which is a continuation of Ser. No. 785,572, Apr. 7, 1977, abandoned. This application Apr. 28, 1992, Ser. No. 877,267
Int. Cl.[5] F16J *15/18;* **G01F** *11/00*
U.S. Cl. 277—9 **6 Claims**

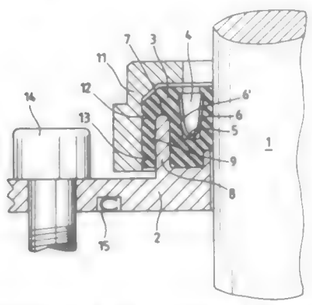


1. An assembly comprising a shaft rotatably journaled in a housing, the housing including an inlet, an outlet diametrically opposed from the inlet, and an access open end, the shaft having a first free end disposed between the inlet and outlet for supporting a rotor assembly and a second fixed end, the second fixed end being supported by at least one bearing assembly and the first free end being free from bearing support, a shaft seal assembly being disposed between the first free end and the second fixed end, the first free end being permitted to move free of interference from the at least one bearing assembly, the rotor assembly being axially removable from the free end of the shaft, and a means for permitting the rotor assembly to slide axially on the shaft while preventing any relative rotational movement between the rotor assembly and the shaft, the seal assembly comprising:

an elongated, generally cylindrical sleeve having an outer cylindrical wear surface and an inner diameter sized for receiving the shaft therein;

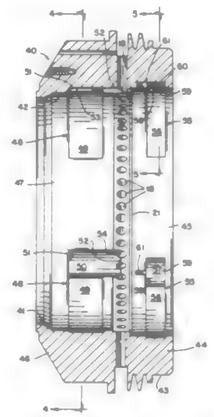
means for releasably securing the sleeve to the shaft such that the sleeve and shaft will rotate as a unit;
annular packing retention means disposed in surrounding relationship to the sleeve having an inner cylindrical surface;
an annular packing disposed between the inner cylindrical surface of the retention means and the outer cylindrical wear surface of the sleeve;
means for compressing the annular packing against the sleeve and the retention means so as to form a seal; and
means for releasably securing the retention means to the housing;
shaft seal assembly being slidably mounted on the shaft and removable from the housing as a unit by sliding the shaft seal assembly longitudinally over the free end of the shaft, whereupon the housing can be inspected and cleaned without disturbing the compression of the annular packing.

5,368,312
ARRANGEMENT FOR THE SEALING-OFF OF METALLIC CYLINDRICAL BODIES
Arno Voit, Hausham, and Walter Stich, Miesbach, both of Germany, assignors to Deutsche Aerospace AG, Munich, Germany
Filed Jul. 30, 1993, Ser. No. 99,347
Claims priority, application Germany, Jul. 30, 1992, 4225142
Int. Cl.[5] F16J *15/00*
U.S. Cl. 277—26 **3 Claims**



1. An arrangement for the sealing-off of metallic cylindrical bodies, particularly shafts in cryogenic valves, the shaft being arranged such that it can be skid coaxially in the axial direction in a cylindrical housing and being surrounded by an essentially ring-shaped sealing device made of a material that cannot be glued to metal, wherein the sealing device is surrounded by a ring which is arranged concentrically with respect to the shaft and is made of a metal alloy with shape memory characteristics, the interior shape of the ring being adapted to the exterior shape of the sealing device and the crystal structure of the ring being arranged such that, when a transition temperature is exceeded, the ring contracts radially and, as a result, connects the sealing device with the cylindrical housing in a force-locking and form-locking manner,
wherein the ring which surrounds the sealing device has an essentially L-shaped cross-section, and wherein an interior wall of the ring which rests against an exterior wall of the sealing device in parallel to an exterior wall of the shaft is provided with several sealing cutting edges,
wherein the cylindrical housing has a flange which surrounds the shaft concentrically and which has a collar which projects upward concentrically with respect to the shaft and engages in an adapted recess in the sealing device, and
wherein an exterior wall of the collar is provided with at least one sealing cutting edge which, in an axial sectional view, is arranged between two adjacent sealing cutting edges on an interior wall of the ring.

5,368,313
BUSHING FOR TRAPPED BUSHING SEAL
James H. Hudson, Appleton, Wis., assignor to A-C Compressor Corporation, Appleton, Wis.
Filed Mar. 3, 1993, Ser. No. 25,936
Int. Cl.[5] F16J *15/44*
U.S. Cl. 277—27 **10 Claims**



1. In a trapped bushing seal having a stationary housing surrounding a rotating shaft and sealing means disposed between said housing and shaft for sealing a high pressure fluid area from a low pressure fluid area, an improved stepped bushing comprising:
an annular bushing member defining a central shaft-receiving opening, a radial interior circumference and a radial exterior circumference;
said radial interior circumference including an annular ridge dividing said bushing member interior circumference into an axially extending inner bushing segment having a first diameter defining an annular inner wall and an axially extending outer bushing segment having a second diameter defining an annular outer wall;
at least one pressure dam formed in said annular inner wall; and
at least one pressure dam formed in said annular outer wall.

5,368,314
CONTACTLESS PRESSURIZING-GAS SHAFT SEAL
Karl-Heinz Victor, Castrop-Rauxel; Hans-Wilhelm Laarmann, Hamm; Ralf Dedeken, Witten-Heven, and Gustav Maser, Dortmund, all of Germany, assignors to Pacific Wietz GmbH & Co. KG, Dortmund, Germany
Continuation-in-part of Ser. No. 869,218, Apr. 13, 1992, abandoned, which is a continuation of Ser. No. 622,866, Dec. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 491,664, Mar. 9, 1990, Pat. No. 5,092,612, which is a continuation-in-part of Ser. No. 115,063, Oct. 28, 1987, abandoned. This application Nov. 3, 1992, Ser. No. 971,150
Claims priority, application Germany, Oct. 28, 1986, 3636708; Dec. 6, 1989, 3940258
The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—96.1 **10 Claims**

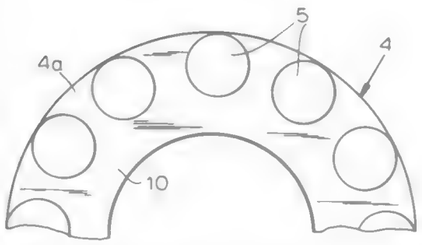
1. A gas-pressure contactless shaft-sealing assembly, comprising:
a sealing housing surrounding an axis;
a shaft extending along said axis and surrounded by said housing, said shaft being rotatable relative to said housing, said sealing housing being formed with a cylindrical portion at a shaft side of said housing coaxially surrounding said shaft
a stator sealing ring extending around and axially overlapping said cylindrical portion, mounted on said housing and having an end face defining one of a pair of sealing-gap-defining faces and composed of a hard sealing material of high thermal conductivity, high hardness and high modulus of elasticity, said stator sealing ring defining with said cylindrical portion and around said cylindrical portion a functional annular gap and said stator sealing ring being movable axially on said cylindrical portion;
an O-ring composed of a material selected from the group which consists of rubber and plastic bridging between said stator sealing ring and said cylindrical portion and axially sealing said functional annular gap;
a rotor sealing ring mounted on said shaft, rotatably entrained by said shaft and formed with an end face juxtaposed with said end face of said stator sealing ring defining another of said pair of sealing-gap-defining faces and composed of a hard sealing material of high thermal conductivity, high hardness and high modulus of elasticity, said end faces defining an annular sealing gap between them generating upon relative rotation of said end faces a gas pressure in said sealing gap blocking passage of fluid past said assembly, at least one of said end faces being formed with an array of equispaced circular recesses

5,368,315
NON-STICK AUTOMOTIVE GASKETS
George J. Viksne, Circuito Fuentes del Pedregal, Mexico, assignor to Wacker Silicones Corporation, Adrian, Mich.
Filed Dec. 28, 1992, Ser. No. 997,375
Int. Cl.[5] F16J *15/10*
U.S. Cl. 277—235 A **6 Claims**

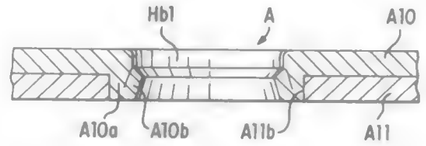


1. A non-stick automotive gasket, which comprises;
A. a resilient material and
B. a polymeric fluorocarbon coating formed by a dispersion, consisting of:
i. a saturant, wherein the saturant is a silicone composition in which polymeric fluorocarbon particles can be dispersed,
ii. from 0.5 to 50% by weight:, based on the weight of the dispersion of said polymeric fluorocarbon particles having an average diameter of from 0.1 to 800 μm and
iii. from 0 to 60% by weight based on the weight of the dispersion coating of a filler.

5,368,316
METAL LAMINATE GASKET WITH A PLATE CONNECTING DEVICE
Yoshio Miyaoh, Tokyo, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan
Filed Jun. 23, 1993, Ser. No. 80,010
Claims priority, application Japan, Jun. 26, 1992, 4-050943[U]
Int. Cl.[5] F16J *15/08*
U.S. Cl. 277—235 B **4 Claims**



having circumferences osculating an outer periphery of said one of said end faces and symmetrical with reference to respective radii from said axis; and
spring means including at least one spring braced between said housing and said stator sealing ring and applying to said stator sealing ring a predetermined axial force acting in a direction opposite the action of said gas pressure in said sealing gap on said stator sealing ring,
said stator sealing ring and said rotor sealing ring being composed of materials having a thermal conductivity in excess of 70 W/mK (=kJ/mhK), a modulus of elasticity in excess of 250,000 N/mm^2, a pore volume of less than 1% and a surface roughness less than 0.3 μm Ra,
said stator sealing ring having a geometric moment of inertia sufficient to maintain a gap width of said functional annular gap substantially equal to a gap width established upon assembly of said stator sealing ring on said cylindrical portion in all operating conditions of said assembly and less than 0.4 mm, and
said O-ring forming a position-compensating centering ring for said stator sealing ring on said cylindrical portion and having a material hardness less than 90 Shore A and greater than an extrusion limit of material hardness for extrusion of said O-ring into said functional annular gap at said gap width and 70 Shore A and under an operating pressure differential of substantially 300 to 500 bar.



1. A metal laminate gasket for an internal combustion engine, comprising:
first and second metal plates extending substantially throughout an entire area of the engine to be sealed, said metal plates being piled together for constituting the metal laminate gasket,
a cylindrical portion integrally formed with the first metal plate and extending substantially perpendicularly to the first metal plate, said cylindrical portion having an inner periphery to form a first hole therein, a forward end located away from the first plate and an axial length along the inner periphery substantially equal to the thickness of the gasket,
a second hole formed in the second metal plate, said second hole having an inner periphery and a diameter greater than an outer diameter of the cylindrical portion, and
a thickened portion formed inside the cylindrical portion at an area away from the first metal plate, said thickness portion extending from the forward end of the cylindrical portion and closely located on a part of the inner periphery of the cylinder portion said cylindrical portion, after being inserted into the second hole, being enlarged to press fit against the inner periphery of the second hole by bending and pushing a flange radially inwardly extending from the forward end of the cylindrical portion to thereby form the thickened portion so that the first and second

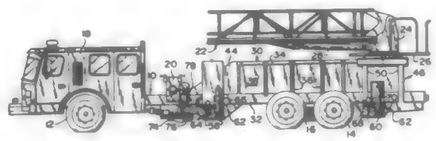
metal plates are firmly connected together without portions of said cylindrical portion extending beyond outer surfaces of the gasket.

5,368,317

FIRE TRUCK TORQUE BOX CHASSIS FRAME

William F. McCombs, and Jeffrey D. Aiken, both of Ocala, Fla., assignors to Emergency One, Inc., Ocala, Fla.

Filed Jan. 15, 1993, Ser. No. 5,374
Int. Cl.[5] A62C 27/00
U.S. Cl. 280—4 5 Claims



1. A fire truck torque box for supporting an extendible ladder comprising, in combination, an elongated box having a pair of elongated spaced lower members, a pair of elongated spaced upper members spaced directly above said lower members wherein said members together transversely define a rectangular box having a front end, a rear end, vertical lateral sides, a bottom, and a top, said lower members each extending the length of said box and located adjacent said bottom and one of said lateral sides, said upper members each being located adjacent said top and one of said lateral sides, said box defining a rigid structure, a first pair of elongated outrigger support tubes rigidly affixed to said lower members adjacent said box front end and below said box bottom, a second pair of elongated outrigger support tubes rigidly affixed to said lower members adjacent said box rear end and below said box bottom, the length of said pairs of outrigger support tubes being substantially perpendicular to the length of said box and the length of said lower members, said box lateral sides being formed of rigid first bracing comprising steel plates extending between said lower and upper members located on a common box lateral side and welded thereto and enclosing the associated side, said box bottom being formed by rigid second bracing comprising a steel plate extending between said lower members and welded thereto, said box top being formed by rigid third bracing extending between said upper members, an extendible hydraulic outrigger jack located within each of said outrigger support tubes said box rear end being integrally defined by a ladder support turntable including vertical columns rigidly affixed to and extending upwardly from said lower members and affixed to said lateral side plates and an upper plate rigidly affixed to said upper members and said columns defining a ladder support ring.

5,368,318

COLLAPSIBLE CHILD SEAT ASSEMBLY FOR CART

Houston Rehrig, 6345 Ridgeway Rd., Richmond, Va. 23226, and Matthew Valla, Richmond, Va., assignors to Houston Rehrig, Potomac, Md.

Filed Dec. 11, 1992, Ser. No. 989,581
Int. Cl.[5] B62B 11/00
U.S. Cl. 280—33.993 20 Claims

1. In a cart having a basket for carrying items, a collapsible child seat assembly comprising:

an upstanding sidewall of said basket having at least one child seat leg opening therein;

a movable seat back frame pivotally attached to said sidewall for movement between an open position wherein the seat back frame extends obliquely away from said sidewall into said basket, and a closed position wherein the seat back frame is collapsed against said sidewall;

a plastic seat panel pivotally attached at a rearward edge thereof to said sidewall and slideably attached at a front edge thereof to said seat back frame in such a manner that said seat panel assumes a usage position providing a generally horizontal seating surface when said seat back frame is in said open position, and a non-usage position collapsed between said sidewall and seat back frame when said seat back frame is in said closed position; and

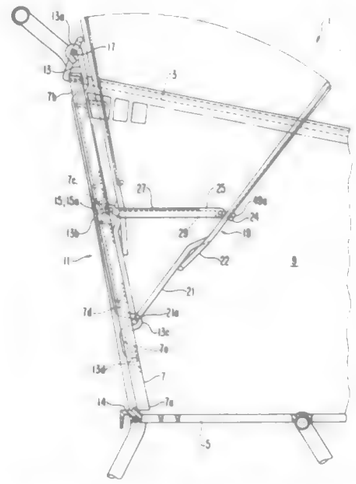
a plastic leg opening cover pivotally attached at a rearward edge thereof to said sidewall coaxially with said rearward edge of said seat panel;

wherein:

when said seat back frame is in said open position, said leg opening cover is movable between a non-covering position wherein said leg opening cover lies against said seat panel, and a covering position wherein said leg opening cover extends along said sidewall and covers said at least one leg opening therein;

said leg opening cover can remain stationary in said covering position when said seat back frame is moved between its open and closed positions;

said seat assembly further comprises a holding mechanism for positively automatically holding said leg opening cover stationary in said covering position once it is placed therein and until it is manually relieved to return to said



non-covering position, said holding mechanism permitting the leg opening cover to pivot relatively freely through most of a pivot arc between said covering and non-covering positions;

said seat panel and leg opening cover each comprise a molded hinge slot provided along a respective one of said rearward edges thereof, said sidewall comprises a horizontal hinge wire received within said molded hinge slots, and said holding mechanism comprises cooperative elements provided on said horizontal hinge wire and within said molded hinge slot of the leg opening cover, respectively;

said cooperative elements comprise a cantilevered leaf spring secured to the leg opening cover, and extending into the molded hinge slot thereof and about a segment of said hinge wire positioned within said molded hinge slot, and a protuberance provided on said segment of hinge wire; and

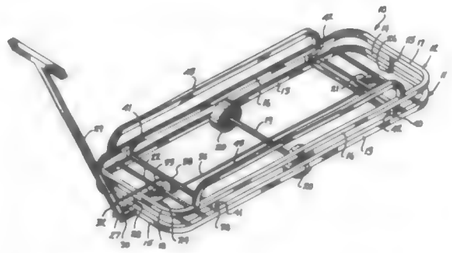
said spring is displaced outwardly by said protuberance in a cam-like manner as said leg opening cover is moved into said covering position, and said spring thereby frictionally engages said protuberance to hold the leg opening cover in said covering position.

5,368,319

ELEVATOR CART APPARATUS

Robert E. Hummer, 509 Speedway Ave., Missoula, Mont. 59802

Filed May 24, 1993, Ser. No. 65,398
Int. Cl.[5] B62B 3/02
U.S. Cl. 280—46 5 Claims



1. An elevator cart apparatus, comprising,

a first tubular frame, having first frame side rails and a first frame first end rail spaced from a first frame second end rail, and a second tubular frame mounted in a facing relationship relative to the first tubular frame, with the second tubular frame having second frame side rails and a second frame first end rail spaced from a second frame second end rail, and

elevator means for lifting the second tubular frame relative to the first tubular frame in a reciprocating relationship, said elevator means including a handle having a handle support member mounted to the first frame second end rail, and a first axle mounted to the handle and to the handle support member pivotally mounting the handle to the support member, and

a second axle directed through the handle spaced from the first axle, the second axle including said elevator means, mounted to the second axle for lifting and lowering the second tubular frame relative to the first tubular frame, and

the elevator means includes an actuator link, the actuator link having an actuator link first end mounted pivotally to the second axle, and an actuator link second end having a third axle, and a control link having a control link first end mounted to the third axle, with the control link oriented between and parallel the first frame side rails, and

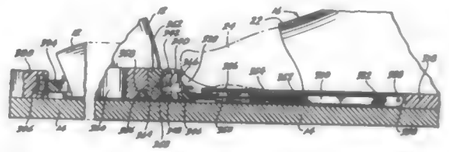
the elevator means further includes a first cam rod rotatably mounted to the first tubular frame and to the first frame side rails, and a second cam rod arranged in a spaced parallel relationship relative to the first cam rod, wherein the second cam rod is rotatably mounted between the first frame side rails, the first cam rod including first cam members, and the second cam rod having second cam members, each of the first cam members and each of the second cam members are arranged for contiguous and sliding communication with one of the second frame side rails, with the control link having a control link fourth axle spaced from the control link third axle, with the control link fourth axle pivotally mounting the control link to the first cam rod, and a fifth axle pivotally mounted between the second cam rod and the control link, whereupon linear displacement of the control link effects rotation of the first cam rod and the second cam rod.

5,368,320

AUTOMATICALLY RELEASING SKI BINDING

Roger C. Teeter, and Lawrence C. Smith, both of Sumner, Wash., assignors to STL International, Incorporated, Tacoma, Wash.

Continuation-in-part of Ser. No. 394,701, Aug. 16, 1989, Pat. No. 5,056,803, which is a continuation-in-part of Ser. No. 169,789, Mar. 18, 1988, Pat. No. 5,058,910. This application Nov. 26, 1990, Ser. No. 617,837
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] A63C 9/08
U.S. Cl. 280—14.2 17 Claims



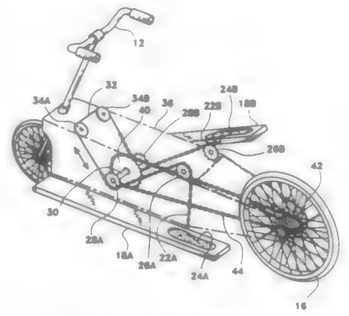
7. A releasable ski binding for holding a front foot and a rear foot in tandem arrangement on a single ski, comprising a boot having a heel member, a cooperating member mounted on the ski, one of said members having a projection and the other of said members having a recess engageable by said projection, and pivot means supporting said member mounted on the ski for swinging to engage or to disengage said projection and said recess.

5,368,321

DUAL-FOOTBOARD LOW-PROFILE EXERCISE CYCLE

Paul A. Berman, Los Angeles; Kenneth A. Tarlow, Santa Monica; Jack Holmes, Studio City, all of Calif., and Allan Douglas, P.O. Box 1662, El Prado, N. Mex. 87529, assignors to Allan Douglas, Van Nuys, Calif.

Filed Aug. 11, 1993, Ser. No. 104,664
Int. Cl.[5] B62M 1/04
U.S. Cl. 280—221 9 Claims



1. A vehicle to be propelled by predominantly vertical foot movement of a human rider, comprising:

an elongated chassis;

a front wheel steerably attached to a front end of said chassis;

a rear wheel mounted to a rear portion of said chassis;

a pair of elongated footboards, disposed longitudinally along opposite sides of said chassis, extending rearwardly beyond a leading edge of said rear wheel;

pivot means, disposed at a front end of each of said footboards, for attaching each footboard hingedly to a lower front region of said chassis in a manner allowing rotation of said footboards in a vertical plane;

a driving mechanism having cross-coupling means con-

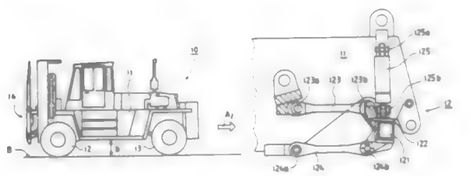
nected to said footboards for causing complementary opposed pivoting movement of said footboards such that pivotal displacement of either of said footboards by downward depression causes an equal upward pivotal displacement of the other footboard, said driving mechansim being adapted to transmit energy, generated by the rider alternatively pressing said footboards downward with body weight via legs and feet, to said rear wheel as driving torque to propel the vehicle, said driving mechanism having a major portion thereof located substantially forward of said rear wheel at a height not exceeding that of said rear wheel.

5,368,322

TRUCK HAVING A SPRING SUSPENSION

Heikki Korpimaa, Tampere, Finland, assignor to Valmet Transmec Ltd. Oy, Finland

Filed Nov. 13, 1992, Ser. No. 976,270
Claims priority, application Finland, Nov. 15, 1991, 915396
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—709 **17 Claims**



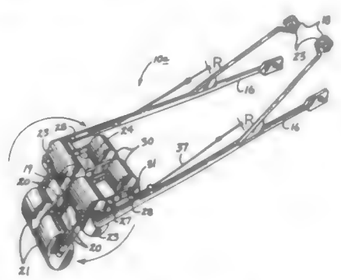
1. A truck including lifting and loading equipment, comprising:
a frame,
at least one driving axle unit having an axle beam,
a steering axle unit having an axle beam,
a vertically adjustable spring suspension, said driving and said steering axle units being suspended on said frame by means of said spring suspension, and
lifting and load handling equipment coupled to said frame,
said spring suspension comprising
vertically adjustable spring units adjustable between a suspended upper position and an unsuspended lower position, said frame resting on said axle beams of said driving axle unit and said steering axle unit when said spring units are in said lower position, and
suspension arms structured and arranged to permit vertical movements of said axle units and to substantially prevent lateral movements of said axle units.

5,368,323

BICYCLE SAFETY BAR APPARATUS

Stephen W. Young, 411 McClure St., Ashland, Ky. 41102

Filed Jun. 1, 1993, Ser. No. 69,758
Int. Cl.[5] B62H *1/12*
U.S. Cl. 280—293 **4 Claims**



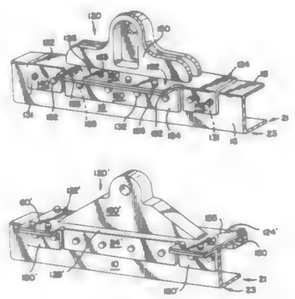
1. A bicycle support bar apparatus in combination with a bicycle wheel, wherein the bicycle includes a wheel axle and a plurality of first frame rails mounted to the bicycle wheel axle and a plurality of second frame rails mounted to the bicycle axle, wherein the safety bar apparatus comprises,
a U-shaped yoke, the U-shaped yoke having a plurality of first support links, with each of the first support links including a forward end, and with each forward end receiving the bicycle wheel axle therethrough orthogonally oriented relative to the first support links, the support links arranged in a parallel coextensive relationship, with the first support links mounting a connecting link spaced from and parallel the bicycle wheel axle and integrally and orthogonally mounted between the first support links, and
second support links fixedly mounted to the first support links extending from the first support links, with each of the second support links having a second link connecting loop, and each second link connecting loop mounted to an individual one of said second rails, and
the connecting link including plural pairs of wheel flanges, with each pair of said wheel flanges mounting a support wheel rotatably therebetween, each of the wheel flanges extends radially beyond the bicycle wheel,
the connecting link includes a plurality of locking rollers mounted for selective rotation about the connecting link, each pair of said wheel flanges fixedly mounted thereto, each of the locking rollers further includes a further wheel flange pair fixedly mounted thereto, wherein the further wheel flange pair and said wheel pair are oriented at an obtuse included relative to one another, each further wheel flange pair includes a further support wheel rotatably mounted therebetween.

5,368,324

MOUNTING SYSTEM FOR FIFTH WHEELS

John W. Kaim, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 10, 1994, Ser. No. 179,270
Int. Cl.[5] B62D *53/08*
U.S. Cl. 280—438.1 **12 Claims**



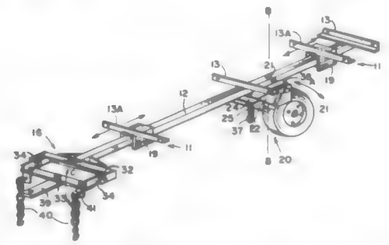
1. A combination drop-over and flat plate fifth wheel mounting bracket arrangement mounted on a tractor frame having a pair of transversely spaced and longitudinally extending C-shaped channel members, each of said channel members having inboard facing top and bottom horizontal flanges extending from a vertical web, said web having an inboard face and an outboard face, each of said top and bottom horizontal flanges having outside surfaces which are defined by inboard and outboard terminal edges, said combination fifth wheel mounting bracket arrangement comprising:
a respective mounting member attached to each of said channel members, each of said mounting members having a forward end section, a rearward end section, and a midsection therebetween integral with each of said end sections, each of said end sections and said midsection defining a co-planar top surface therebetween, said top surface including an inboard and an outboard terminal edge and an arcuate mounting bracket attached therebetween for pinned securement of said arcuate mounting bracket to said fifth wheel, each of said forward and rearward end sections constructed as a drop-over bracket and said midsection constructed as a planar plate, each of said drop-over brackets defined by an L-shaped section of angle, said forward and rearward end sections having structural and operational equivalency;
at least one angle member having a longitudinal extent and comprised of a horizontal leg and a vertical leg connected to said horizontal leg, said vertical leg coextensive with at least part of said vertical web outboard face and attached thereto, said horizontal leg coextensive with said midsection of said mounting member and attached thereto:
wherein one of said midsection and said end sections prevents fatigue cracking of said fifth wheel mounting bracket arrangement caused by lateral and lateral overturn loads while the other of said midsection and said end sections prevents uplifting of said fitch wheel mounting bracket arrangement caused by longitudinal and coupling loads.

5,368,325

UNIVERSAL SINGLE-WHEEL SINGLE BEAM TRAILER HAVING ADJUSTABLE BED

Donald B. Hazen, P.O. Box 880, Highlands City, Fla. 33846

Filed May 17, 1993, Ser. No. 61,234
Int. Cl.[5] B62D *23/00*
U.S. Cl. 280—656 **7 Claims**



1. A single-wheel trailer for towing by automotive type vehicles comprising:
an elongate longitudinal beam;
a vertical kingpin attached to said longitudinal beam;
a wheel support assembly attached to a lower end of said kingpin;
a wheel having a horizontal axle, said axle supported in said wheel support assembly and displaced from said kingpin to permit said wheel assembly to caster during towing of said trailer;
a plurality of movable transverse support members disposed along said beam for accepting various types of load supports; and
hitch means for coupling said trailer to a towing vehicle.

5,368,326

APPARATUS FOR INSURING NEUTRAL STABILIZER BAR INSTALLATION

William B. Turck, Taylor, and Manfred C. Rumpel, Bloomfield Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 1, 1993, Ser. No. 84,114
Int. Cl.[5] B60G *21/00*
U.S. Cl. 280—689 **12 Claims**

1. A suspension attachment apparatus for use in a motor vehicle having a longitudinal axis, a vertical axis and a transverse axis, each being mutually orthogonal, a chassis, a suspension member depending pivotally from the chassis, a stabilizer bar interposed and connecting the chassis and the suspension member, the stabilizer including a torsional reaction segment running generally transversely across the vehicle and left and right crank arms, each having a first end attached to the torsional segment of the stabilizer bar and a second end adapted for attachment to the vehicle, said suspension attachment apparatus comprising:



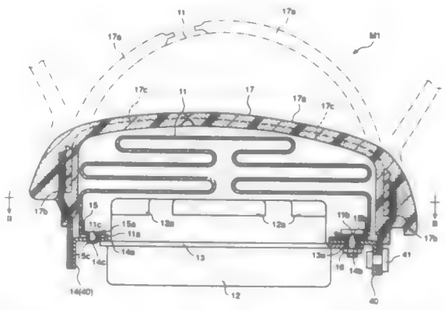
attachment means for attaching the stabilizer bar to the vehicle; and
slidable positioning means for self-adjusting the stabilizer bar to a neutral load position at a predetermined vehicle load condition, said positioning means further adapted to be secured in said neutral position.

5,368,327

AIR BAG DEVICE

Kouji Shiraki, Gifu, and Masanari Sakamoto, Nagoya, both of Japan, assignors to Toyoda Gosei, Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 844,888, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 550,996, Jul. 11, 1990, abandoned. This application Mar. 25, 1993, Ser. No. 37,675
Claims priority, application Japan, Jul. 12, 1989, 1-081913[U]; Oct. 11, 1989, 1-118881[U]
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 A **19 Claims**



1. An air bag device comprising:
an inflater member provided with a peripheral flange containing a plurality of spaced apart fastener holes;
a mounting plate extending about said inflater and having a first set of holes aligned with said plurality of fastener holes in said flange;
an air bag having an opening with a periphery surrounding said inflater with the periphery including a plurality of holes corresponding to each hole of the first set of holes;
a retaining plate extending about said inflater, said retaining plate including a plurality of spaced apart fasteners secured thereto and respectively aligned with said first set of holes and extending through said flange, said mounting plate and said air bag periphery and being secured so as to hold the flange, mounting plate, air bag periphery and retaining plate together;

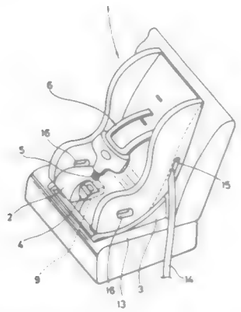
said device further having a plurality of spaced apart protrusions secured to one of said mounting plate and said retaining plate and aligned with and protruding through a second set of holes provided in the other of said mounting plate and said retaining plate and through said air bag periphery so that the protrusions locate and only horizontally restrain said air bag periphery, said protrusions having a shaft surface extending respectively from a surface of said one of said mounting and said retaining plates to an opposite end of said protrusions, a largest diameter of said shaft surface being respectively smaller than said one of said first holding holes of said retaining and said mounting plates and said second holding holes of said air bag, and said shaft surface protruding through said one of said mounting and retaining plates substantially perpendicular to a surface of said one of said mounting and retaining plates.

5,368,328

INFANT-RESTRAINING PROTECTIVE SEAT HAVING INFLATABLE SEAT BELT

Misao Kamiyama, Hikone; Yoshinori Ohishi, Ohtsu, and Kazuo Zeze, Hikone, all of Japan, assignors to Takata Corporation, Tokyo, Japan

Filed Oct. 19, 1992, Ser. No. 963,484
Claims priority, application Japan, Oct. 21, 1991, 3-272603
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **6 Claims**



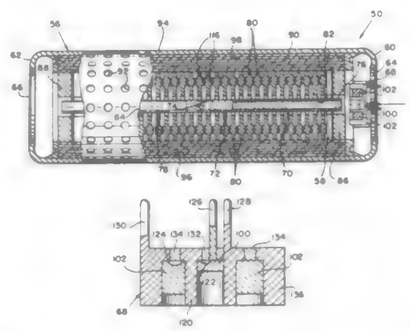
1. An infant-restraining protective seat, comprising:
a seat main body;
an infant seat belt provided on said seat main body;
a tongue attached to a distal end of said infant seat belt;
a buckle device provided on said seat main body into which said tongue is insertable and lockable;
gas generating means attached to said buckle device;
said infant seat belt including shoulder belts which come into contact with shoulders of an infant and a chest belt which comes into contact with the chest of the infant, said shoulder belts and said chest belt being formed into a bag-shape;
said chest belt being folded inwardly from opposite outer sides of the chest belt and being maintained folded in a belt-shape under ordinary non-emergency conditions so as to open outwardly when inflated, and said shoulder belts being folded only inwardly from the outside at opposite outer sides of the shoulder belts and being maintained folded in a belt-shape under the ordinary non-emergency conditions so as to open outwardly when inflated;
said shoulder belts and said chest belt each being maintained in the belt-shape under the ordinary non-emergency conditions and being inflated by gas from said gas generating means at the time of an emergency;
said chest belt being provided with a chest-contact pad which holds said chest belt in a detachable manner; and
said buckle device having a first gas flow hole communicating with said gas generating means, and said tongue having a second gas flow hole communicating with the interior of said chest belt, wherein when said tongue is inserted into and locked with said buckle device, said first gas flow hole and said second gas flow hole communicate to form a gas flow passageway communicating said gas generating means and said chest belt.

5,368,329

DUAL STAGE INFLATOR

Christoph Hock, Uintah, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Mar. 3, 1993, Ser. No. 25,505
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—741 **8 Claims**



1. A gas generator for inflating a vehicle inflatable restraint cushion, the generator comprising:
an elongated housing including a tubular chamber having a pair of end portions;
a means for closing said end portions thereby defining at least one combustion chamber;
a gas generating material formed into a plurality of gas generating wafers, arranged along the length of said tubular combustion chamber and spaced from each other in a side-by-side array;
at least one igniter means in spaced relationship from said gas generating wafers, for igniting said gas generating wafers;
at least one squib in spaced relationship to said igniter means which said at least one squib upon activation ignites said igniter means;
and an aperture means in said tubular combustion chamber for directing generated gas from said tubular combustion chamber to said vehicle inflatable restraint cushion;
wherein said at least one squib has a high brisant output which upon activation shatters said gas generating wafers thereby increasing the surface area of said gas generating material.

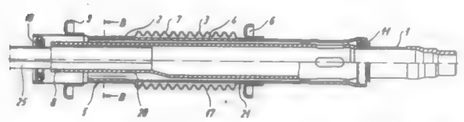
5,368,330

MOTOR VEHICLE STEERING COLUMN

Hans Arnold, Lage, and Manfred Breuer, Halle/Westfallen, both of Germany, assignors to Reiche & Co., Lage, Germany

Filed May 26, 1993, Ser. No. 67,865
Claims priority, application Germany, Jun. 3, 1992, 9207473[U]; Apr. 20, 1993, 9305830[U]
Int. Cl.[5] B62D *1/19*
U.S. Cl. 280—777 **13 Claims**

1. A motor vehicle steering column comprising:
a fixedly mounted steering column housing having a section which compresses upon axially applied force,
a turnable steering shaft disposed within said housing,
said steering column housing having an outer tube and an inner reinforcing sleeve, said inner sleeve has one end fixedly mounted to said outer tube and the other end slidably mounted in an axial direction within the outer tube and in contact with said outer tube to prevent relative radial movement of said inner sleeve and said outer tube.

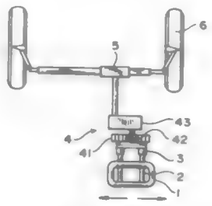


5,368,331

SAFETY STEERING WHEEL DEVICE FOR A MOTOR CAR

Kazunaga Morimoto, 30-9, Bessho-cho, Omiya-shi, Saitama-ken, Japan

Filed Jun. 22, 1993, Ser. No. 90,696
Claims priority, application Japan, Jul. 14, 1992, 4-227712
Int. Cl.[5] B62D *1/11*
U.S. Cl. 280—777 **3 Claims**



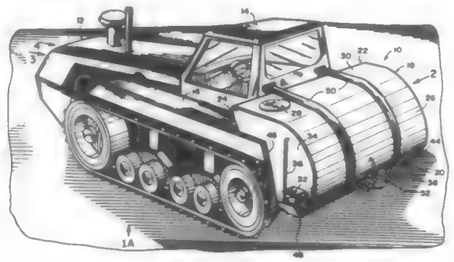
1. A safety steering wheel device for an automobile, comprising:
a steering wheel;
support means for said steering wheel comprising laterally opposed flexible tubes attached to and supporting said steering wheel, said flexible tubes permitting movement of said steering wheel in a lateral direction as well as both in a rearwardly and in a forwardly direction;
means for detecting the amount of lateral displacement of said steering wheel; and
means to turn wheels of said automobile in response to the detected lateral displacement of said steering wheel.

5,368,332

APPLICATOR TANK ASSEMBLY FOR A TRACTOR

Keith J. Dittrich, R.R. 1, Box 75; Dennis G. Petersen, R.R. 2, Box B2, both of Tilden, Nebr. 68781, and John M. Dittrich, R.R. 2, Box 156, Meadow Grove, Nebr. 68752

Filed Sep. 24, 1992, Ser. No. 949,999
Int. Cl.[5] B60P *3/22*
U.S. Cl. 280—838 **10 Claims**



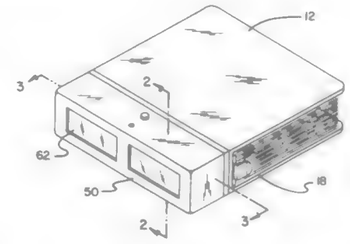
1. An applicator tank assembly for an endless track agricultural tractor having a cab and side fenders, said applicator tank assembly comprising:
a) a tank for holding chemicals therein, said tank is fabricated out of fiberglass and has a curved back wall and an overhang portion sized and shaped to fit compactly, behind the cab and over the side fenders of the tractor, a removable filler cap is located on the top of the tank, so that chemicals can be applied into the tank, and a fill valve is located on one side of the tank, so that water can be applied into the tank; and
b) means for securing said tank to a back portion of the tractor behind the cab and over the side fenders, so that it will not hinder the weight balance of the tractor and will not interfere with the vision of the operator when the tractor is pulling an agricultural implement, said tank has a front portion, said back portion of said tractor and the front portion of said tank both have contours, where they meet, which are identical to each other so as to eliminate any gaps and provide good balance.

5,368,333

LOOSE LEAF BINDER

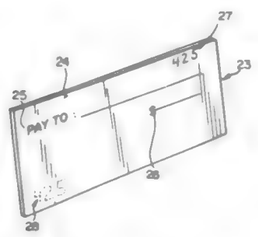
Ralph Arroyo, 14354 Jennings Vista Way, Lakeside, Calif. 92040-5829

Filed Jan. 31, 1994, Ser. No. 194,304
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—31 **2 Claims**



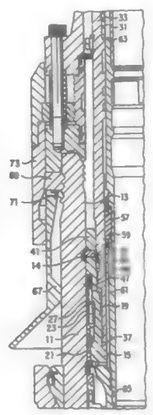
1. A loose leaf binder for holding loose leaf papers and writing supplies comprising, in combination:
a generally rectangular and planar top cover having an exterior surface and an interior surface;
a generally rectangular and planar bottom cover having an exterior surface and an interior surface;
a generally rectangular and planar spine having an exterior surface and an interior surface;
hinge means connecting the spine at one edge to the top cover and the spine at an opposed edge to the bottom cover;
a ring assembly having a base with a plurality of spaced rings formed thereon and coupled to the interior surface of the spine for holding loose leaf papers;
a storage compartment for holding writing supplies further comprising a container having a central opening and a space therein, the container further having a plurality of apertures disposed thereon with transparent film disposed therein thus creating windows for allowing the space to be viewed;
a lid coupled to the exterior surface of the spine for sealing the central opening of the container;
a hinge rotatably coupling the container with the lid; and
a latch coupled to the container and extending therefrom for enabling the lid to be secured over the central opening, the latch having a button formed thereon extending through the container, thus allowing the latch to be released for opening the storage compartment when the button is pushed inwards.

5,368,334
VARIABLE DATA CLEAR MARK IMAGING
Orrin D. Christy, North Tonawanda; John E. Pickett, East Amherst; Leo Swanson, Niagara Falls; Mark A. Matheis, North Tonawanda, all of N.Y., and Marc Consoulis, Fairfield, N.J., assignors to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jun. 10, 1993, Ser. No. 74,670
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—67 19 Claims



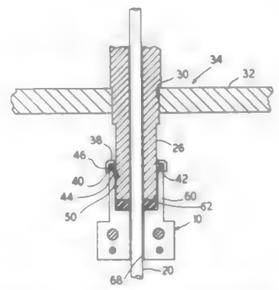
1. A method of providing and using security indicia on a paper substrate using a substantially clear hydrophobic toner, comprising the steps of:
(a) charging and applying the toner in the form of security indicia to the paper substrate;
(b) heat fusing the toner so that it blends into the paper and becomes substantially invisible to the naked eye and color copiers regardless of the wavelength of light directed onto it; and
(c) when it is desired to view the indicia, applying an aqueous based solvent system having a distinctly different color than the paper substrate to the paper substrate over the toner, the paper surrounding the toner indicia absorbing the solvent while the toner indicia does not, making the toner indicia visible.

5,368,335
CONTINGENCY TIEBACK ADAPTER
Calum J. B. Dinnes, Danestone, Scotland, assignor to ABB Vetco Gray Inc., Houston, Tex.
Filed Nov. 2, 1992, Ser. No. 970,664
Int. Cl.[5] F16L *37/08*
U.S. Cl. 285—18 16 Claims



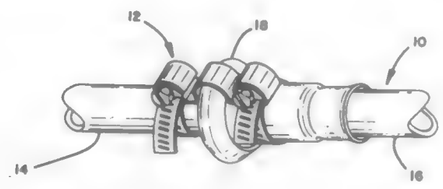
1. In a subsea well having a wellhead housing, a string of casing supported in a bore of the wellhead housing by a casing hanger having an internal sealing surface, an improved tieback assembly for securing a tieback conduit between the casing hanger and a platform at the surface, comprising in combination:
an annular groove formed in the bore of the wellhead housing above the casing hanger;
a tieback member having connection means for connection to the tieback conduit and a lower end;
seal means on the lower end of the tieback member for sealing the lower end of the tieback member in the internal sealing surface of the casing hanger; and
locking means carried by the tieback member for locking the tieback member to the groove in the wellhead housing; and wherein the locking means comprises:
a retainer carried by the tieback member for landing on the casing hanger;
a radially expansible locking member mounted in engagement with the retainer and movable between an inner position and an outer position relative to the tieback member; and
means for moving the locking member from the inner position to the outer position in response to downward movement of the tieback member relative to the casing hanger after the retainer has landed on the casing hanger.

5,368,336
SPLIT FITTING/SEAL
Frank R. Van Vleet, Andover, and Michael P. Grimanis, Wayland, both of Mass., assignors to A. W. Chesterton Company, Stoneham, Mass.
Filed Jul. 22, 1993, Ser. No. 95,864
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—24 16 Claims



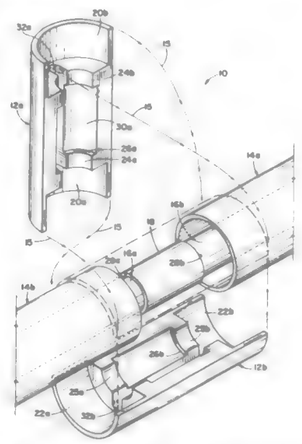
1. A split fitting for coupling a first tube and a second tube, comprising:
a nut surrounding the first tube;
a first fitting body half and a second fitting body half matable together to surround said first tube and said second tube and when mated together providing a threaded neck portion for engagement with the nut surrounding the first tube, and forming an axial bore therethrough receiving the first and second tubes therein; and
a compression fitting means arranged within the axial bore to effect a seal between the axial bore and the first tube when the neck portion is threaded onto said nut and drawn tight; and
a split O-ring seal inserted within said axial bore and surrounding said second tube, said O-ring sized to seal said second tube to said axial bore upon mating of said first body with said second body.

5,368,337
ADJUSTABLE STABILIZER CLAMP
Santos Torres, 25490 Coral Tree Ct., Murrieta, Calif. 92562
Filed Dec. 28, 1993, Ser. No. 174,226
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—114 7 Claims



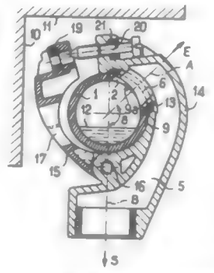
1. An adjustable stabilizer clamp for fluid line couplings utilizing push-on fittings, wherein each of the couplings has a semi-circular cage extending transversely from the longitudinal axis of the hose, comprising:
a stabilizer bar having a arcuate section centered between two arms and fitted to a contour of the semi-circular cage of the coupling, wherein the arms are equidistantly spaced apart from each other; and
two adjustable circle clamps, each being located at a respective arm of the stabilizer bar, for laterally and radially securing the stabilizer bar to the coupling, wherein the circle clamps uniformly and radially urge the arcuate section of the stabilizer bar into pressing engagement with the semi-circular cage of the coupling when tightened in order to secure the stabilizer bar to the coupling.

5,368,338
INTERLOCKING UNION SYSTEM FOR DOUBLE CONTAINMENT PIPE
Karen C. Greene, Tulsa, and James A. Cheek, Broken Arrow, both of Okla., assignors to Conley Corporation, Tulsa, Okla.
Filed Oct. 22, 1993, Ser. No. 139,829
Int. Cl.[5] F16L *47/02*
U.S. Cl. 285—133.1 10 Claims



1. A containment interlocking union system for use with a carrier pipe having a carrier pipe coupling positioned within a containment pipe, wherein said interlocking union system comprises:
a first closure joint member having a series of concentric coupling portions adapted to coupled said first closure joint member to the containment pipe and to the carrier pipe coupling, said first closure joint member having a first coupling portion of a major inner radius sealably and adhesively engaging an outer circumferential surface of an end of each double containment pipe, a pair of second coupling portions of a minor inner radius adjacent the first coupling portion providing a pair of flanges abutting an end wall of the carrier pipe coupling, providing longitudinal support of the carrier pipe coupling, and a third coupling portion of an intermediate inner radius adjacent the second coupling portion; and
a second closure joint member positioned circumferentially adjacent the first closure joint member and adapted to couple said second closure joint member to the containment pipe.

5,368,339
NETWORK FOR DISTRIBUTION FLUID UNDER PRESSURE, A BRANCH CLAMP FOR USE IN THE NETWORK, AND A KIT FOR MAKING A BRANCH CONNECTION
Pierre Serot, Fontenay-aux-Roses, France, assignor to Legris S.A., Rennes, France
Filed Jun. 11, 1993, Ser. No. 74,489
Claims priority, application France, Jun. 15, 1992, 92 07189; Jun. 15, 1992, 92 07188
Int. Cl.[5] F16L *41/06*
U.S. Cl. 285—150 14 Claims

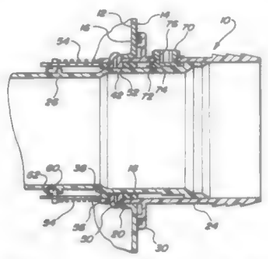


1. A network for distributing a fluid under pressure comprising a substantially horizontal main pipe, secondary pipes branching therefrom, a junction between the main pipe and a secondary pipe provided by a branch clamp having a zone for covering at least one orifice formed in a top half-cylinder of the wall of the main pipe, into which zone there opens out a first end of a branch duct internal to the clamp, the other end of said branch duct being fitted with coupling means for coupling the clamp to the secondary pipe, the axis of the first end of the branch duct and the axis of said coupling means forming an angle a which is obtuse when measured between said axes in the flow direction of fluid flowing along the branch duct.

5,368,340
QUICK CONNECT COUPLING
Wendell L. Jacobson, Harper Woods; Thomas R. McCulloch, Bloomfield Hills, and Dudley L. McCully, Rochester Hills, all of Mich., assignors to Automotive Systems Technology, Inc., Bloomfield Hills, Mich.
Filed Mar. 18, 1993, Ser. No. 33,353
Int. Cl.[5] F16L *3/04*
U.S. Cl. 285—158 16 Claims

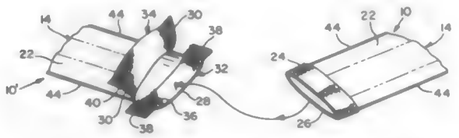
1. A quick connect fluid coupling for use with a thin walled tank having an outer surface, an inner surface and an opening extending between said inner and outer surfaces, said fluid coupling comprising:
a coupling body, said body having a tubular retainer housing and a fill tube, said retainer housing having an outwardly

extending flange dimensioned to abut against the outer surface of the tank around said tank opening,
said fill tube being dimensioned so that said fill tube is telescopically received within said retainer housing and movable between a locked and an unlocked position with respect to said retainer housing,
said retainer housing being axially slidably positioned through the tank opening until said flange abuts against the outer tank surface when in said unlocked position, and
means for mechanically engaging the inner surface of the



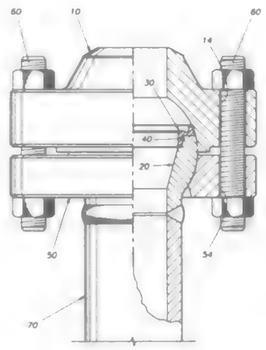
tank as said fill tube is moved from said unlocked position to said locked position thereby securing said retainer housing to the tank by entrapping said tank between said flange and said engaging means,
means for selectively moving said fill tube from said locked position to said unlocked position,
wherein said means for selectively moving said fill tube from said locked position to said unlocked position comprises a cam pivotally mounted to said retainer housing, said cam having a cam surface which engages a cam abutment surface on said fill tube.

5,368,341
PRE-CONDITIONED AIR HOSE ASSEMBLY FOR AIRCRAFT
L. Robert Larson, 312 Herricks Rd., Mineola, N.Y. 11501
Filed Oct. 29, 1992, Ser. No. 968,362
Int. Cl.[5] F16L *31/00*
U.S. Cl. 285—260 **5 Claims**



1. A pre-conditioned air hose for interconnecting a ground-based heating-ventilating unit with the internal ventilation system of an aircraft, comprising:
a) a plurality of pre-conditioned air hoses having ends interconnectable with the ends of adjacent hoses in an overlapping manner; and
b) a plurality of hook and loop tape fasteners coupled to said ends of said hoses for interconnecting the ends of adjacent hoses, said hook and loop tape fasteners including two portions, a hook tape portion joined to one end of each hose, and a loop tape portion joined to an opposite end of said hose;
c) wherein each hose has a first end and a second end, the latter of which has a pair of opposed slits so as to define a second hose end having a first flap and a second flap, and wherein said first end of said hose has an externally-disposed tape band of one of said portions of said hook and loop fasteners fixed thereon, and wherein said first and second flaps of said second end each has an internally-disposed tape of the other portion of said hook and loop fasteners fixed thereon.

5,368,342
MISALIGNMENT FLANGE AND METHOD FOR USE
Raymond E. Latham, and Charles R. Mynheir, both of Houston, Tex., assignors to Reflange, Inc., Houston, Tex.
Filed Aug. 7, 1992, Ser. No. 927,614
Int. Cl.[5] F16L *27/053, 27/06*
U.S. Cl. 285—261 **22 Claims**

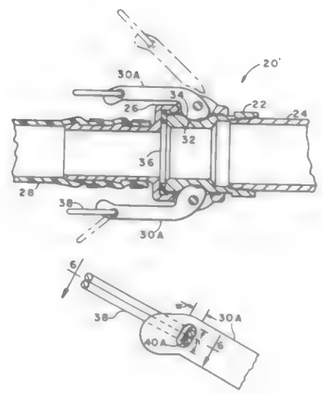


1. A misalignment flange comprising:
a socket member having a substantially spherical inside surface with a spherical seal seat;
a ball member having a substantially spherical outside surface for engaging the substantially spherical inside surface of said socket member, one end of said ball member having an inwardly facing seal seat;
a seal having a first sealing surface for sealing engagement with said ball member seal seat, a second sealing surface for sealing engagement with said socket member seal seat;
a seal positioner disposed between said inwardly facing seal seat and the seal for locating the seal on said ball member; and
a retainer member for holding said socket member, said ball member and said seal in fluid-tight engagement.

5,368,343
PULL RINGS FOR THE OPERATING LEVERS OF QUICK CONNECT/DISCONNECT COUPLINGS
Daniel M. Allen, Middletown, Ohio, assignor to Dover Corporation, New York, N.Y.
Filed Mar. 25, 1993, Ser. No. 36,716
Int. Cl.[5] F16L *37/00*
U.S. Cl. 285—312 **10 Claims**

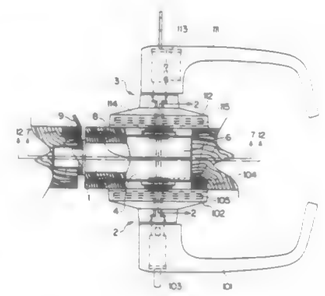
1. A coupling of the type comprising
first and second members and
means for locking said members in assembled relation,
wherein the locking means comprise
a locking lever which is swingable, about a first axis, from an unlocked position in which the lever projects laterally of the coupling, to
a locked position in which the locking lever is generally aligned with the coupling, with an inner surface facing the coupler,
further comprising a bail, pivotally mounted, about a second axis, on a distal end portion of the locking lever,
said lever providing an effective leverage arm between the first and second axes,
said bail being engageable by an operator's fingers to exert a force on the lever generally normal to the effective leverage arm in releasing the lever from its locked position, and
means for limiting pivotal movement of the bail, in an inward direction toward the coupling members, to a relatively low angle with respect to the effective leverage arm and thus preventing the bail from swinging to a position in

which the bail would interfere with freely swinging the lever to its locking position, and
characterized by
the bail being freely pivotal in an outward directions, relative to the effective leverage arm, to a substantiality



greater extent than it is pivotal in an inward direction so that the bail is pivotal to a position in which it approximates a right angle with respect to the effective leverage arm and facilitates releasing the lever from its locked position.

5,368,345
DOOR LOCK
John R. Watts, 42 Export Drive, City-Link Estate, Francis Street, Brooklyn, Victoria 3025, Australia
Continuation-in-part of Ser. No. 582,875, Oct. 12, 1990, abandoned. This application Dec. 10, 1992, Ser. No. 986,051
Int. Cl.[5] E05C *1/12*
U.S. Cl. 292—1.5 **19 Claims**



1. A lock for a hinged door comprising a deadlocking latch bolt assembly including a casing, a latch bolt supported within the casing and displaceable between an extended and a retracted position and biasing means for urging the bolt towards said extended position;
bolt actuating means for displacing the bolt towards said retracted position, said bolt actuating means including displaceable slide means, a connecting arm engageable with said bolt, and crank means engageable with said slide means and said connecting arm for displacing said bolt towards said retracted position;

5,368,344
COUPLING STUD ASSEMBLY
Gus F. Plangetis, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 24, 1993, Ser. No. 125,712
Int. Cl.[5] F16L *23/02*
U.S. Cl. 285—412 **15 Claims**

1. A coupling stud assembly for coupling a pair of flanges, the flanges having a pair of respective overlapping generally cylindrical holes formed therein for receiving the stud assembly, the stud assembly comprising:
a stud;
first retaining means for retaining the stud in the holes so as to couple the flanges;
the stud being shaped and sized for defining a space between the stud and inner walls of the holes;
at least one wedging member shaped and sized for fitting into the space between the stud and the inner walls of the holes so as to tighten contact between the stud and the inner wails of the respective overlapping holes of the flanges; and
second retaining means for retaining and forcing the wedging member into the space between the stud and the inner walls of the holes thereby forming a tight, force-fit between the stud, the wedging member and the inner walls of the holes.

a pair of independently operable lever assemblies positioned one on each side of the deadlocking latch bolt assembly, each lever assembly including a rotatable lever and a rotatable drive shaft engageable with said lever and

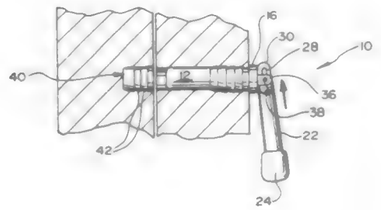
independent drive means positioned on each side of said slide means and engageable with the drive shaft on the same side, each drive means independently engageable with said slide means to cause said slide means to be displaced to cause said bolt to displace towards said retracted position.

5,368,346

SASH LOCK SYSTEM

Michael J. Foster, Brigown, St. Philomena's Rd., Crosshaven, Co. Cork, Ireland

Filed Jan. 14, 1993, Ser. No. 4,282
Int. Cl.[5] E05C *1/14*
U.S. Cl. 292—175 **6 Claims**



1. A locking system for selectively locking first and second frame members of a window or door to prevent sliding movement of one said frame member relative to the other; wherein said first frame member includes an aperture therein; said locking system comprising:

(a) a sleeve member carried by said second frame member; wherein said sleeve member is axially aligned with said aperture in said first frame member;

(b) a first bolt member slidably received in said sleeve member and being axially movable between extended and retracted positions; wherein said first bolt member includes first and second end portions; wherein said second end portion extends into said aperture when said first bolt member is in said extended position;

(c) a second bolt member including a connecting end portion and a head portion; wherein said connecting end portion is pivotably connected to said first end portion of said first bolt member, and said connecting end portion of said second bolt member is received within said sleeve member when said first bolt member is in its extended position;

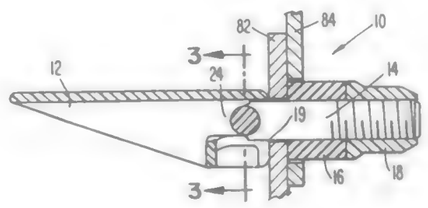
(d) bias means for biasing said first bolt member to its said extended portion; wherein when said second bolt member is urged outwardly from said first frame member said first bolt member is moved axially relative to said sleeve member to said retracted position; wherein when said first bolt member is in said retracted position said second bolt member may be pivoted relative to said first bolt member to a position generally perpendicular to the longitudinal axis of said first bolt member, whereby said first bolt member is retained in said retracted position.

5,368,347

SWELL LATCH ASSEMBLY

Eli J. Holtman, King of Prussia; Edward A. McCormack, Media, and Jarl Mork, West Chester, all of Pa., assignors to Southco, Inc., Concordville, Pa.

Filed Jul. 7, 1993, Ser. No. 88,263
Int. Cl.[5] B65D *45/30*
U.S. Cl. 292—257 **39 Claims**



1. A swell latch assembly for mounting in an aperture formed in a first member adapted for releasably retaining the first member against a corresponding second member and in a latched position, the second member including an outer and an inner surface and an aperture therethrough adapted for receiving the swell latch assembly as the first member and the second member are being latched together, the first member including an outer and an inner surface, with the inner surface of the first member engaging the outer surface of the second member as the first and the second members are being latched together, the swell latch assembly engaging the inner surface of the second member proximate the aperture thereof for releasably retaining the first member against the second member and in the latched position, the swell latch assembly comprising:

a handle member adapted for pivotal rotation;

a shaft comprising a unitary member pivotally engaging the handle member, wherein the pivotal engagement of the shaft and handle member is independent of a pivot pin member adapted for providing an integrated connection therebetween the shaft being adapted to extend through the aperture in the first member when the swell latch assembly is mounted therein, with the handle member being adapted to facilitate axial movement of the shaft relative to the first member as the handle member is pivotally rotated by the pivotal engagement with the shaft between opened and closed positions, wherein the shaft when the swell latch assembly is in the latched position is under a tensile load adapted for retaining the first and second members together;

a retaining member associated in connection with the shaft adapted for movement axially corresponding with the axial movements of the shaft;

a bushing member associated with the shaft and provided between the retaining member nd the first member when the swell latch assembly is mounted therein, wherein as the first and second members are being latched together, the bushing member is adapted for being temporarily deformed by the axial movement of the retaining member when the handle member is pivoted to its closed position, whereby the bushing member engages the inner surface of the second member for releasably retaining the first and second members when in the latched position; and

wherein the handle member includes a front end, a back end and a pair of side walls adapted for connection thereof and the shaft comprises a generally elongated first portion substantially perpendicular to a second portion, with the second portion providing the pivotal engagement with the handle member, wherein the second portion of the shaft includes a first end and a second end, with the first end being positioned proximate the first side wall and the second end being positioned proximate the second side wall when received therein, whereby the pivotal engagement of the handle member and the second portion of the shaft is independent of the first and second ends thereof.

5,368,348

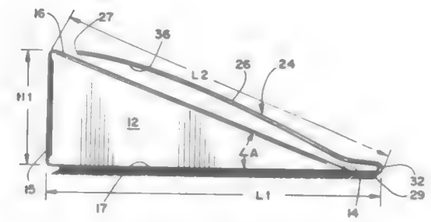
Patent Not Issued For This Number

5,368,349

DOOR STOP ASSEMBLY

Robert Hebert, 936 Ashton Ct., Vista, Calif. 92083, and Paul G. Hebert, 2858 Mary St., Ridgeway, Colo. 81432

Filed Aug. 31, 1993, Ser. No. 114,065
Int. Cl.[5] E05C *17/54;* **E05F** *5/02, 5/06*
U.S. Cl. 292—343 **8 Claims**



1. A door stop assembly adapted for introduction into the space between the lower edge of a door and the adjacent floor surface comprising:

a wedge-shaped member having a top surface, a front edge, a rear edge, a bottom surface, and a rear surface;

said wedge-shaped member having a predetermined height H1, its bottom surface having a predetermined length L1, and a predetermined width W1, and its top surface having a predetermined length L2;

a spring having a top leg member with a front end and a rear edge, said spring having a bottom leg member with a front end and the front ends of said leg members are oriented toward each other at an acute angle;

the bottom leg member of said spring being secured to the bottom surface of said wedge shaped-member and the top leg member of said spring being positioned above the top surface of said wedge-shaped member in a spaced relationship thereto;

the top leg member of said spring has a bottom surface having a nonplanar surface along its longitudinal axis so any pressure applied to the top surface of said top leg member adjacent its front end will transfer all of that pressure directly to the rear edge of said top leg member and force said rear edge downwardly against the top surface of said wedge-shaped member; and

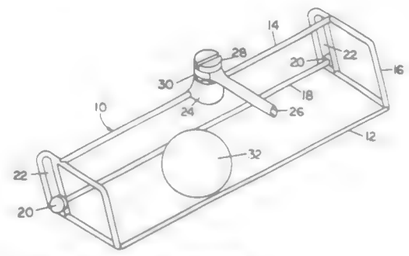
means on the bottom surface of said door stop assembly for preventing it from sliding with respect to a support surface upon which it would be placed adjacent the bottom edge of a door.

5,368,350

GOLF BALL RETRIEVER

Vern Ader, 2988 Gruenwald Rd., Mosinee, Wis. 54455, and Myron Dohm, 2496 Short Rd., Auburndale, Wis. 54412

Filed Jul. 9, 1993, Ser. No. 89,746
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **1 Claim**



1. A golf ball retriever comprising:

a) an elongate head for retrieving golf balls from a body of water, said head having a forward frame with a parallel rear sliding rod spaced therefrom to provide support for a retrieved golf ball;

b) the forward frame having a forward portion and an upper portion with the distance therebetween being wider than the diameter of a golf ball while the distance between the forward portion and the rear sliding rod and the distance between the rear sliding rod and the upper frame portion are less than the diameter of a golf ball;

c) a pair of side frame means for connecting the forward portion and the upper portion, a pair of sliding rod guides having angled guide openings and a recessed bottom to provide a means for the sliding rod to widen in relationship to the forward portion to accept and retrieve a golf ball and then locking the sliding rod in the recessed bottom when the golf ball is resting on the forward portion and the sliding rod;

d) a means for adjustably fixing a head swivel to a handle for providing selective movement about a single point and within a single plane;

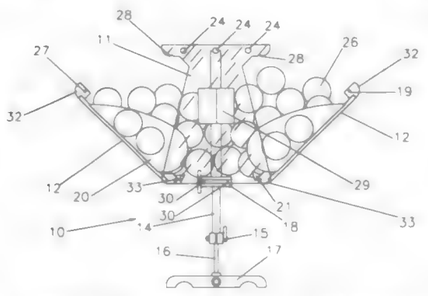
e) whereby a golf ball is caused to enter the forward frame when the head is pulled against the golf ball, or, alternatively, when the head is lowered over a golf ball, the golf ball causes the sliding rod to slide within the sliding rod guides increasing the opening between the forward portion and the sliding rod until the sliding rod passes over the diameter of the golf ball and then drops to the recessed bottom thereby trapping the golf ball.

5,368,351

TENNIS BUTLER

Philip M. Cuti, 6874 Sedgewick Ct., Ft. Myers, Fla. 33919

Filed Aug. 19, 1993, Ser. No. 108,429
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **4 Claims**



1. A tennis ball retrieving, storing, and serving apparatus for collecting tennis balls from a playing surface, storing said balls for subsequent use, and conveniently providing said tennis balls for use, said apparatus comprising:

a tennis ball hopper comprising side and end walls, a first portion of said end walls having three ball retriever rods in parallel, spaced apart relationship affixed to and separating said end walls, a second portion of said end walls having a pair of horizontal supports in parallel, spaced apart relationship, affixed to and separating said end walls, said horizontal supports having a clamp affixed thereto at a point midpoint between said end walls, a first end of said side walls hingedly mounted at said second portion between said end walls, and a second end of said side walls engaging said first portion of said end walls, and a top vertical post having a first end mounted within said clamp and having a second end affixed to a ball retriever rod, and

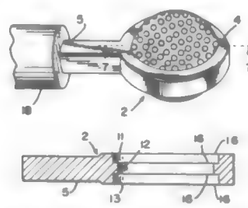
a base, handle, support means, slidably adjustable within said top vertical post for selectively extending or shortening the length of said support means, said support means extended for supporting said tennis ball hopper for access to said tennis balls, and for supporting said hopper for tennis ball retrieval, and shortened for use as a carrying handle.

5,368,352

GOLF BALL RETRIEVER

Joseph A. Juhas, Litchfield, Conn., assignor to Charles B. Pasternak, Milwaukee, Wis.

Filed Jan. 11, 1994, Ser. No. 180,054
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **3 Claims**



1. A golf ball retriever having in combination:

(a) a handle;

(b) a loop, the inner peripheral surface of which is divided into three adjacent cylindrical surfaces, the centermost of said cylindrical surfaces having a diameter slightly less than 1.680 inches, the two outermost of said cylindrical surfaces having equal diameters of slightly less than 1.720 inches and equal heights of about 0.150 inches; and

(c) a stem fixedly secured at one end thereof to an end of said handle and at an other end thereof to said loop.

5,368,353

PLANT CARRYING DEVICE

Bobby F. Flanders, McMinnville, and John H. Fults, Rock Island, both of Tenn., assignors to Botanico, Inc., McMinnville, Tenn.

Filed Jun. 28, 1993, Ser. No. 82,578
Int. Cl.[5] A01G *23/04*
U.S. Cl. 294—152 **19 Claims**



1. A plant carrying device comprising:

a first carrying strap including a free end and a first fastening device secured at the other end thereof;

a second carrying strap including a free end and a second fastening device secured at the other end thereof; said first and second carrying straps crossing over one another at an intersection point; two carrying handles extending between said first and second carrying straps and being spaced from a balled plant for easy gripping, one said handle being disposed on each side of said intersection point;

wherein said first and second carrying straps are fastenable around the balled plant having a plant trunk such that said first fastening device is directly fastened to said free end of said second strap and said second fastening device is directly fastened to said free end of said first strap, one said carrying strap being fastened on each side of the trunk of the balled plant and an uppermost central region between said carrying straps remaining clear in order to accommodate the trunk; and

wherein said intersection point is positionable beneath the balled plant such that one said carrying handle is thereby positioned on each side of the balled plant for lifting and carrying the balled plant without significant damage to the balled plant.

5,368,354

PICKUP BED CAP HAVING PASSENGER SEAT

Blake C. Martin, HC 84, Box 57, Keyser, W. Va. 26726

Filed Jun. 7, 1993, Ser. No. 71,825
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—64 **11 Claims**

1. A cargo bed cover for attachment to the cargo bed of a pickup truck to provide the pickup truck with additional passenger seating and at least one sheltered storage compartment, the cargo bed of the pickup truck comprising a cargo bed floor and upstanding cargo bed side walls, said cargo bed cover comprising:

a cover shell for attachment to the cargo bed;

means for attaching said cover shell to the cargo bed;

said cover shell extending over a substantial portion of the cargo bed when attached to the cargo bed;

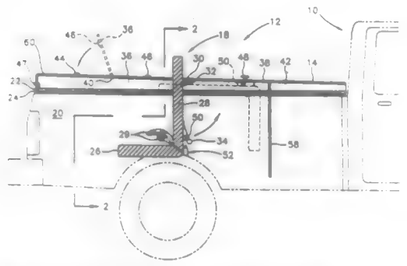
at least one opening provided in said cover shell;

a passenger seat comprising a seat bench and a seat back, said seat back being disposed transversely with respect to said seat bench;

said passenger seat being disposed at least partially within said at least one opening in said cover shell;

means for shifting said passenger seat between a seating position, wherein said seat bench is in a substantially horizontal orientation and said seat back is in a substantially vertical orientation, and a storage position, wherein said seat bench is in a substantially vertical orientation and said seat back is in a substantially horizontal orientation;

said means for shifting said passenger seat comprises a pivot mounting between said passenger seat and said cover shell, said pivot mounting providing a pivoting movement of said seat back with respect to said cover shell about an



axis of rotation that is substantially transverse to the longitudinal axis of the pickup truck when said cover shell is attached to the cargo bed;

at least two wheel wells extending into the cargo bed, and wherein said pivot mounting is located substantially over the wheel wells when said cover shell is attached to the cargo bed;

said cargo bed cover additionally comprising a first lid, said first lid covering a portion of said at least one opening provided in said cover shell, and wherein said first lid is removable from said at least one opening to thereby expose said portion of said at least one opening;

said first lid being located aft of said passenger seat when said cargo bed cover is mounted on the pickup truck;

said cargo bed cover additionally comprising a hinged connection between said cover shell and said first lid; and

said cargo bed cover additionally comprising a magnetic latch mechanism, said magnetic latch mechanism comprising a magnet located on said cover shell and another magnet located on said first lid.

5,368,355

VEHICLE SEAT HAVING NORMAL USAGE AND STORAGE POSITIONS

Richard A. Hayden, Troy; James A. Melchert, Auburn Hills, both of Mich., and Charles A. Phaneuf, Windsor, Canada, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 4, 1993, Ser. No. 130,812
Int. Cl.[5] B60N *2/02*
U.S. Cl. 296—65.1 **6 Claims**

1. An arrangement for a vehicle seat connected to the floor of a vehicle comprising:

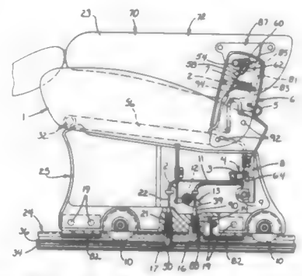
a rail means extending within the vehicle being connected to the vehicle floor, the rail means having a locking plate means;

a seat bun frame means mounted for relative travel with respect to the rail means;

a seatback means pivotally mounted with respect to the seat bun frame means, having upright and folded down positions;

first locking pin means operatively associated with the locking plate means for selectively setting the position of the seat bun frame means with respect to the rail means;

second locking pin means operatively associated with the locking plate means for selectively setting the position of the seat bun frame means with respect to the rail means;



first release means for releasing the first and second locking pin means from the locking plate means;

means preventing the activation of the first release means unless the seatback means is in a folded down position; and

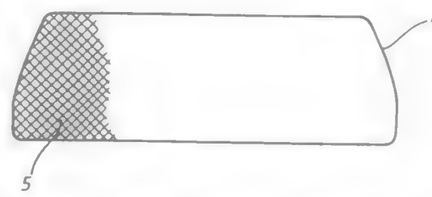
means preventing the movement of the seatback means from the folded down position to the upright position unless the first locking pin means is engaged with the lock plate means, affixing the position of the seat bun frame means with respect to the rail means.

5,368,356

WIND GUARD FOR A CONVERTIBLE INTERIOR SPACE

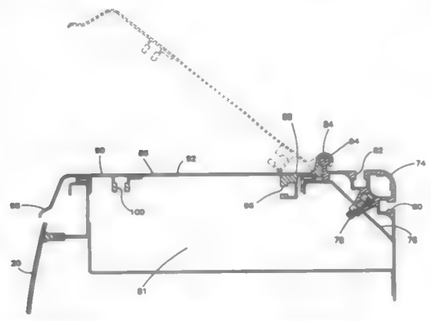
Hans Götz, Boeblingen, and Karl-Heinz Baumann, Bondorf, both of Germany, assignors to Daimler-Benz AG, Germany

Continuation of Ser. No. 43,583, Apr. 5, 1993, abandoned, which is a continuation of Ser. No. 876,909, Apr. 30, 1992, abandoned, which is a continuation of Ser. No. 746,189, Aug. 15, 1991, abandoned, which is a continuation of Ser. No. 523,879, May 16, 1990, abandoned. This application Dec. 16, 1993, Ser. No. 167,126
Claims priority, application Germany, May 16, 1989, 3915866
Int. Cl.[5] B60J *9/04*
U.S. Cl. 296—180.1 **4 Claims**



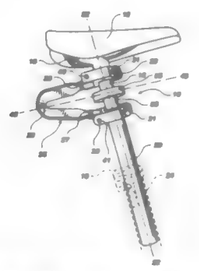
1. A wind guard arranged behind a rearwardmost row of seats of convertible vehicle to extend upwardly therebeyond and over the entire width of the interior space and constituted by a stretched, elastically deformable net which effects a retardation of the air flow impinging from the rear, wherein clear passage openings in the net constitute between about 30 to 35% of total net area, individual passage openings of the net are bounded on all sides by webs extending approximately at right angles to one another, and wall thickness of the webs extending in one direction is about 0.15 mm and wall thickness of the webs extending approximately at right angles with respect to the first-mentioned webs is about 0.3 mm.

5,368,357
UTILITY TRUCK BODY WITH OPTION ATTACHMENT COMPONENTS
George Kalis, Jr., and Robert M. Lapsley, both of Wooster, Ohio, assignors to Stahl/Scott Fetzer Company, Wooster, Ohio
Continuation-in-part of Ser. No. 889,948, Jun. 2, 1992, Pat. No. 5,267,773. This application May 13, 1993, Ser. No. 61,165
Int. Cl.[5] B60R *9/00*
U.S. Cl. 296—183 11 Claims



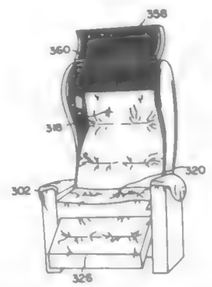
1. An extrusion for a truck body comprising:
a longitudinal axis;
an outer surface adapted to conform to the shape of an outer surface of the truck body;
an inner surface adapted to engage a portion of said truck body, said inner surface including means for attaching said extrusion to said truck body; and
an integral hinge pin having a longitudinal axis which is parallel to the longitudinal axis of said extrusion.

5,368,358
COMPOSITE SPRING SUPPORT FOR BICYCLE SEATS
Roland J. Christensen, 192 E. 1st, North, Fayette, Utah 84630
Filed May 21, 1993, Ser. No. 65,879
Int. Cl.[5] B62J *1/02*
U.S. Cl. 297—215 22 Claims



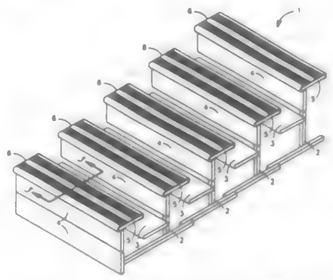
1. A bicycle seat support comprising:
a bicycle seat providing a seat surface to support a rider during use;
a telescoping shaft for insertion within a larger, hollow shaft forming a part of a bicycle frame, said telescoping shaft being coupled to the bicycle seat;
a nonlinear spring member composed of a composite material and including two ends and an intermediate section;
attachment means coupled at each of the ends of the nonlinear spring member for enabling attachment of the nonlinear spring member between the bicycle seat and the larger, hollow shaft;
said nonlinear spring member having nonisotropic strength orientation means for maximizing strength along the length of the spring while minimizing rotation of the spring along a horizontal axis of the spring.

5,368,359
ACOUSTICAL CHAIR WITH SOUND ENHANCING HOOD
Byron C. Eakin, 3405 Ellenwood La., Tampa, Fla. 33618
Continuation-in-part of Ser. No. 771,388, Oct. 3, 1991, Pat. No. 5,143,055, and a continuation-in-part of Ser. No. 238,424, Aug. 31, 1988, Pat. No. 5,097,821, and a continuation-in-part of Ser. No. 417,690, Oct. 5, 1989, abandoned. This application Aug. 31, 1992, Ser. No. 938,395
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—217 4 Claims



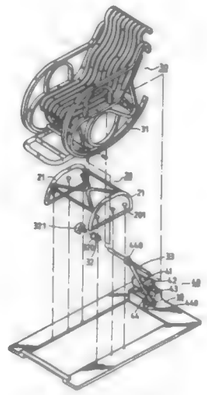
1. A chair having fixed arm portions internally spaced from each other and a pivotable central portion with a head end and a foot end therebetween, hinges coupling the arm portions and the central portion, and sound creating means within the central portion under the control of an operator whereby, when seated in the chair, an operator may audially and tactically enjoy the created sound, the sound creating means including speakers facing each other in the head end of the central portion and a hood pivotally secured to the head end between the speakers.

5,368,360
COVER PIECE FOR SEAT MEMBER OF BLEACHER SEAT UNIT
A. Anthony Groh, Columbus, Ohio, assignor to Crane Plastics Company, Columbus, Ohio
Filed Nov. 1, 1991, Ser. No. 786,853
Int. Cl.[5] A47C *27/00*
U.S. Cl. 297—219.1 20 Claims



1. A cover piece for a seat member of a bleacher seat unit, said cover piece comprising:
a resilient member comprising a polymeric material, said member having an original shape which, in cross-section defines a figure comprising:
(a) a substantially straight first line segment having two first end points;
(b) a second line segment extending from each of said first two end points to one side of said first line segment and at a first angle of less than 90 degrees to said first line segment, said second line segments each having a second endpoint; and
(c) a third line segment extending from each of said second end points of said second line segments to a third end point and at a second angle less than 90 degrees to said second line segment and toward said first line segment.

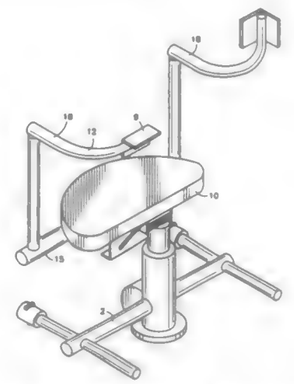
5,368,361
MECHANISM FOR ROCKING CHAIR
Chou Wen-Ming, Tainan, Taiwan, Prov. of China, assignor to Kung Ta Enterprise Co., Ltd., Tainan, Taiwan, Prov. of China
Filed Jul. 13, 1993, Ser. No. 91,791
Int. Cl.[5] A47C *3/02*
U.S. Cl. 297—260 2 Claims



1. A mechanism for rocking a chair comprising a base, a frame disposed on said base and including a pair of racks, four wheels secured to said chair and engaged with said racks of said frame, and means for driving said chair to move in a rocking manner.

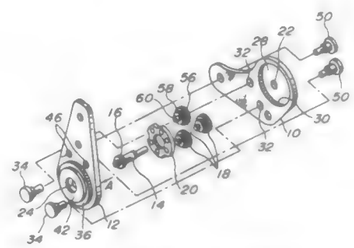
5,368,362
SEATING APPARATUS FOR SUPPORTING A PERSON IN A MANNER WHICH REDUCES SEDENTARY AILMENTS BY ALLOWING FOR A TILTING MOVEMENT OF THE SEATING MEANS
Arie Ramon, Mishol Hahadas 11, Ramot 2, and Elath Almagor, Ramot 37, both of Jerusalem, Israel
Filed Feb. 20, 1992, Ser. No. 839,421
Claims priority, application Israel, Feb. 26, 1991, 97364
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—310 6 Claims

1. Seating apparatus for supporting a person, comprising:
a seat for a person to be seated in;
a single leg for supporting said seat, said single leg having a convex-shaped underface and a central wheel along-side said convex-shaped underface; and



a support for preventing said seat from overturning, yet allowing freedom of movement of said single leg on said convex-shaped underface and on said central wheel.

5,368,363
SEAT RECLINING MECHANISM
Daishiro Sakamoto, Ayase, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Aug. 3, 1993, Ser. No. 101,303
Claims priority, application Japan, Aug. 4, 1992, 4-208113; Aug. 4, 1992, 4-208114
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—362 10 Claims



1. A seat reclining mechanism comprising:
a rotatable shaft;
a base plate which has a first through hole for receiving said rotatable shaft therein, said base plate having at a major surface thereof a first cylindrical recess which is coaxial with said rotatable shaft, said base plate having a first ring gear at a cylindrical surface defined by said first cylindrical recess;
a pivotable arm which is rotatably connected to said ,base plate through said rotatable shaft, said pivotable arm having a second through hole for receiving said rotatable shaft therein, said second through hole being in alignment with said first through hole, said pivotable arm having at a major surface thereof a second cylindrical recess which is merged with said first cylindrical recess so as to define a space between said base plate and said pivotable arm, said second cylindrical recess being coaxial with said rotatable shaft, said pivotable arm having at a cylindrical surface defined by said second cylindrical recess a second ring gear;
a third cylindrical recess which is formed on one of said base plate and said pivotable arm, said third cylindrical recess

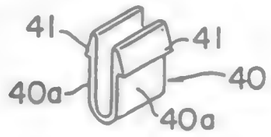
being merged with one of said first and second cylindrical recesses and being coaxial with said rotatable shaft;
a control gear securely and coaxially mounted on said rotatable shaft, said control gear being received in said space;
a planetary gear which has a toothed portion received in said space and a first boss portion formed on a rotational center thereof, said toothed portion being meshed with said first and second ring gears and said control gear, said first boss portion being received in said third cylindrical recess; and
a supporting member received in said third cylindrical recess, said supporting member being coaxial with said rotatable shaft, said supporting member having first and second circular holes for rotatably receiving therein said first boss portion, said first and second circular holes being disposed on said supporting member such that a first distance between a rotational center of said supporting member and a rotational center of said first circular hole is shorter than a second distance between said rotational center of said supporting member and a rotational center of said second circular hole.

5,368,364

CHAIR WITH ARMRESTS

Hiroshi Kanai, Kawasaki, Japan, assignor to Uchida Yoko Co., Ltd., Tokyo, Japan

Filed Jan. 22, 1993, Ser. No. 7,799
Claims priority, application Japan, Sep. 28, 1992, 4-230493
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.27 **6 Claims**



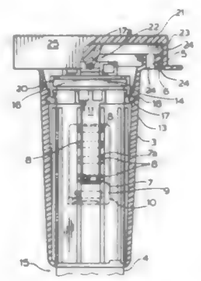
1. A chair with freely attachable and removable armrests, comprising,
a basic chair unit including a seat portion, a frame on a lower surface of said seat portion, a leg and a back rest portion attached to said frame;
two armrest attachment portions located on said lower surface of said seat portion, each of said armrest attachment portions having an insertion opening, a guide portion, and inner end portion, said insertion opening facing in a direction which is lateral relative to the seat portion, said guide portion having guide surfaces which extend from said insertion opening in an insertion direction, said inner end portion being transverse to said insertion direction and defining a positioning hole which is smaller than said insertion opening;
an armrest with a lower end provided with an attachment end portion, said attachment end portion including a positioning protrusion which is insertable into said positioning hole, said attachment end portion also including an attachment base portion which is positioned and held in close contact with said guide surfaces of said armrest attachment portion; and,
a removal-prevention means provided in said armrest attachment portion for preventing the removal of said attachment end portion.

5,368,365

ADJUSTABLE ARM REST ASSEMBLY

Saul Feldberg, Don Mills, Canada, assignor to Global Upholstery Company, Downsview, Canada

Filed Apr. 22, 1993, Ser. No. 50,799
Claims priority, application Canada, Apr. 23, 1992, 2066928
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411.36 **9 Claims**



1. An adjustable arm rest assembly comprising:
an arm rest;
a horizontal plane attitude adjustment means for supporting said arm rest;
a vertical elevation adjustment means pivotally interconnected through a pivot to said horizontal plane attitude adjustment means to co-operably facilitate hinged adjustment of the horizontal attitude of said arm rest, wherein said horizontal plane attitude adjustment means has a first detent/block means and said vertical elevation adjustment means has a second detent/block means that is co-operable with said first detent/block means, wherein said horizontal plane attitude adjustment means comprises an elongated forward and rearward pitch adjustment body with said pivot arranged on a centrally located pivot attachment and engaged with said vertical elevation adjustment means, in mutually hinged relation therewith, and said pitch adjustment body further comprises and end mounted resiliently deflectable arm supporting said first detent/-block means at a free end of said arm, where it is operable to interferingly engage with said second detent/block means borne on a corresponding end of said vertical elevation adjustment means to thereby releasably fix said horizontal plane adjustment means relative to said vertical elevation adjustment means;
an arm rest frame bracket, adapted to receive said vertical elevation adjustment means in vertically slidably positionable relation thereon, to co-operably facilitate adjustment of the vertical positioning of said arm rest, wherein respective co-operable locking members on said bracket and said vertical elevation adjustment means are adapted to be selectively engaged in resiliently biased mutually interfitting registration to thereby releasably secure said bracket and said vertical elevation adjustment means in a predetermined vertically fixed position.

5,368,366

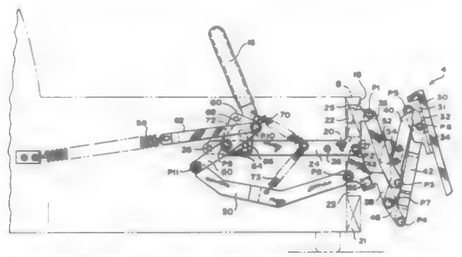
SHALLOW PROFILE LEGREST AND FURNITURE

Ned W. Mizelle, P.O. Box 5985, High Point, N.C. 27262

Filed Mar. 5, 1993, Ser. No. 26,049
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423.3 **43 Claims**

1. A mechanism for supporting an extendible legrest in combination with a front rail of a frame of an article of furniture, said front rail having a front surface, said mechanism being movable between a retracted position and an extended position, said mechanism comprising:
a fixed bracket which is mountable on said frame near said front surface,

a movable member on which a legrest is mountable, said movable member being in a substantially vertical stored position near the fixed bracket when the mechanism is in its retracted position, said movable member being in a generally horizontal leg-supporting position spaced from the fixed bracket when the mechanism is in its extended position;
an upper rear link pivotally connected to said fixed bracket at a first pivot, said first pivot being positioned in front of the front rail;
a lower rear link pivotally connected to said fixed bracket at a second pivot which is lower than said first pivot, said second pivot being positioned under the front rail;



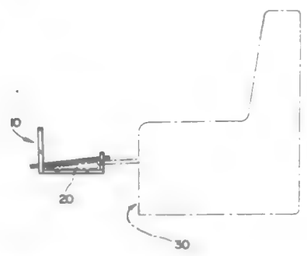
an upper front link pivotally connected to said upper rear link at a third pivot;
a lower front link pivotally connected to said lower rear link at a fourth pivot which is lower than said third pivot;
said movable member being connected to the upper front link at a fifth pivot and being connected to the lower front link at a sixth pivot, said sixth pivot being lower than said fifth pivot when the movable member is at its stored position;
said links having profiles which overlap lengthwise and are generally vertical when the mechanism is in its retracted position;
said first pivot being positioned more forwardly than said second pivot.

5,368,367

FOOT SUPPORT FOR RECLINING CHAIR

Cal L. Titchener, and Dora Titchener, both of 3820 Washakie, Casper, Wyo. 82609

Filed Sep. 16, 1993, Ser. No. 122,130
Int. Cl.[5] A47C *7/52*
U.S. Cl. 297—423.4 **6 Claims**



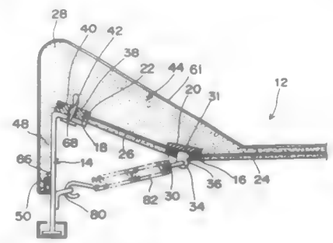
1. In combination, a chair having a leg rest which includes a lower edge, and a foot support for detachable connection to said leg rest, said foot support comprising:
(a) a plate member; and
(b) attachment means for detachably connecting said plate member to said leg rest adjacent said lower edge of said leg rest; wherein said attachment means comprises (a) leg members having first and second ends; wherein said first ends are secured to said plate member and are generally perpendicular thereto; (b) spaced-apart arm members secured to said second ends of said leg members and being generally parallel to said plate member; and (c) rod members extending between said arm members and said plate member; wherein said leg rest is disposed between said rod members and said leg members;
wherein said plate member projects outwardly from said leg rest at an angle generally perpendicular to said leg rest.

5,368,368

VEHICLE SEAT AND METHOD OF PRODUCTION THEREOF

Akio Fukui, Toyota, and Yasuji Shibata, Aichi, both of Japan, assignors to Toyoda Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 6, 1992, Ser. No. 879,205
Claims priority, application Japan, May 13, 1991, 3-107233
Int. Cl.[5] A47C *7/02*
U.S. Cl. 297—452.18 **16 Claims**



1. A vehicle seat comprising:
a holder assembly including at least two holder segments and defining a seat surface for an occupant;
an elastic material secured to said holder assembly so as to span at least between said holder segments;
a suspending assembly that suspends at least one of said holder assembly and said elastic material from above and outside said holder assembly relative to said seat surface;
a tensioning assembly that strains said holder assembly with a predetermined tensile force from a central portion of at least one of said holder segments in a direction downwardly and outwardly relative to said seat surface.

5,368,369

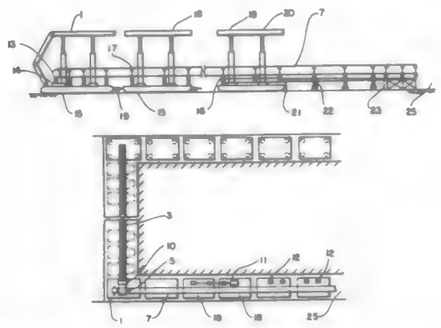
EQUIPMENT USEFUL FOR WINNING ORES PARTICULARLY COAL IN LONGWALL MINING

Sibnath Maity, and Bharat B. Dhar, both of Dhanbad Bihar, India, assignors to Council Of Scientific & Industrial Research, New Delhi, India

Filed May 27, 1993, Ser. No. 68,689
Int. Cl.[5] E21C *35/20;* **E21D** *23/00*
U.S. Cl. 299—11 **3 Claims**

1. A system useful for winning of ones which comprises a hydraulic master chock shield having a base plate and having at least two legs that support a canopy, the master chock shield having a cylindrical conveyor belt intake end roller rotatably mounted on a stand fixed to the base plate of the master chock, the base plate of said chock shield also ;being provided with a plurality of stands having free moving conveyor belt guide rollers, a plurality of hydraulic chocks, each having a base plate and a canopy and having at least four legs at the edges of the base plate to support the canopy, said chock being placed in front of the master chock shield in a horizontal line along a gate road, said master chock shield and the chocks being interlinked by means of at least one hydraulic ram, the base plates of each of the chocks being provided with plurality of stands having free conveyor belt guide rollers, the end chock also being provided with two horizontally fixed multi-telescopic booms supported on free moving wheels, the extreme end of

the said booms being fixed to a fixed belt conveyor structure, the fixed belt conveyor structure having free moving conveyor



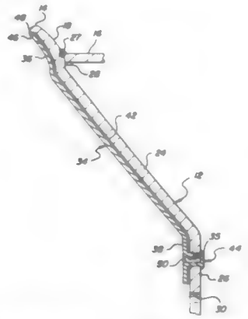
belt guide rollers, a drive head conveyor belt roller being provided at the extreme end of the fixed structure.

5,368,370

VEHICLE WHEEL CONSTRUCTION

Jeffrey Beam, Plymouth, Mich., assignor to Thompson International, Troy, Mich.

Filed Sep. 3, 1993, Ser. No. 116,712
Int. Cl.[5] B60B *7/06*
U.S. Cl. 301—37.36 **17 Claims**



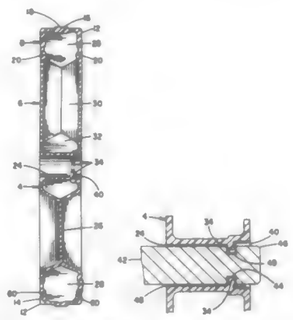
1. A composite vehicle wheel assembly (**10**) having a permanent, ornamental surface treatment, said assembly (**10**) comprising: an annular rim (**12**) defining a central axis (A) and having a pair of spaced rim flanges (**14**); a spider (**20**) concentrically fixed within said rim (**12**) for connecting to a rotating hub (**22**), said spider (**20**) including a plurality of spokes (**24**); an ornamental applique (**34**) of a uniform material thickness overlapping said rim (**12**) and said spider (**20**); said applique (**34**) having an annular outer connecting portion (**36**) disposed adjacent one of said rim flanges (**14**), an annular inner connecting portion (**38**) and a plurality of vent openings (**40**) aligned between said spokes (**24**) of said spider (**20**) and positioned between said inner (**38**) and outer (**36**) connecting portions; a curable adhesive (**42**) of substantially uniform thickness disposed between said applique (**34**) and said rim (**12**) and said spider (**20**) along overlapping surface areas; and locking means coacting between said applique (**34**) and said rim (**12**) for compressing said curable adhesive (**42**) between said applique (**34**) and said rim (**12**) and said spider (**20**) to hold said applique (**34**) in place while said adhesive (**42**) cures and for continued retention thereafter.

5,368,371

MOLDED WHEEL WITH INTEGRAL AXLE RETAINER

Tracy A. Markling, Delavan, Wis., assignor to Poly-Flex, Inc., Walworth, Wis.

Filed Jun. 21, 1993, Ser. No. 80,366
Int. Cl.[5] B60B *5/02*
U.S. Cl. 301—64.7 **12 Claims**



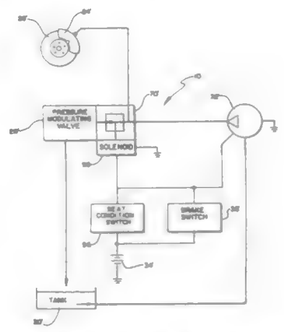
1. A molded plastic wheel comprising, an annular hub having a bore, a plurality of spokes, and a rim having a wheel support surface, wherein said spokes radially extend between said rim and hub, wherein said bore includes first and second regions or differing diameters, and wherein said bore includes a plurality of integral tabs which protect from the walls of said bore intermediate the first and second regions and which tabs are formed to flex along a longitudinal axis of the bore, whereby said tabs are capable of restraining an axle to said wheel.

5,368,372

HYDRAULIC BRAKE SYSTEM FOR AN OFF-ROAD VEHICLE

Frederick W. Cords, Good Thunder, and David Frye, North Mankato, both of Minn., assignors to Total Quality Enterprises, Inc., Mankato, Minn.

Continuation-in-part of Ser. No. 969,877, Oct. 20, 1992. This application Mar. 10, 1993, Ser. No. 29,142
Int. Cl.[5] B60T *7/14, 13/18, 13/20*
U.S. Cl. 303—11 **34 Claims**



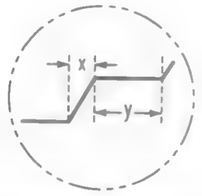
1. A hydraulic brake system for a vehicle of the type including an operator seat, a brake pedal and a hydraulic brake responsive to operator actuation of the brake pedal, including:
a tank for hydraulic fluid;
an electric pump hydraulically connected between the tank and brake for providing pressurized hydraulic fluid to the brake; and
a seat condition switch responsive to the presence of an operator in the operator seat, for actuating the pump when an unoccupied seat condition is sensed, and thereby causing pressurized hydraulic fluid to be applied to the brake.

5,368,373

METHOD FOR CONTROLLING THE BRAKE PRESSURE IN AN ANTI-LOCK BRAKE SYSTEM OF A DUAL-TRACK VEHICLE

Volker Braschel, and Dieter Seitz, both of Neuwied, Germany, assignors to Lucas Industries public limited company, Birmingham, England

Continuation of Ser. No. 689,273, Jun. 13, 1993, abandoned. This application Jul. 16, 1993, Ser. No. 92,579
Claims priority, application Germany, Oct. 13, 1989, 3934308
Int. Cl.[5] F16F *3/00*
U.S. Cl. 303—111 **2 Claims**



1. A method of controlling braking pressure of brakes in an anti-lock brake system for wheels of a dual-track vehicle wherein the rotational speeds and accelerations of said wheels are measured and compared with threshold values so as to select from among wheels mounted in different tracks of a rear axle of said vehicle one wheel which is first to show instability relative to another stable wheel on said axle and derive from the rotational speed of said one wheel slip control signals for controlling in respective cycles, first, a period of decrease and then a period of increase of the brake pressure in the brakes of both wheels on said rear axle, each period of pressure increase during any one anti-lock cycle in said brakes of the wheels on said rear axle being by the application of pressure raising pulse trains thereto in response to said slip control signals, said pressure raising pulse trains being defined by the mark-to-space ratio of the pressure raising pulses, characterized in that the brake of said one wheel which first is instable on said rear axle, having reached a stable state in response to release of pressure, is fed during each period of pressure increase with a pressure raising pulse train which has a smaller mark-to-space ratio than the pressure raising pulse train applied to the brake of the other, stable wheel and thereby causes a smaller pressure rise in the brake of said one wheel than the pressure raising pulse train applied to the brake of the other, stable wheel of the rear axle, said mark-to-space ratio of the pressure raising pulse trains being dependent on the measure by which the rotational retardation or slip of the one wheel exceeds a given threshold value and wherein a maximum value is predetermined for said mark-to-space ratio.

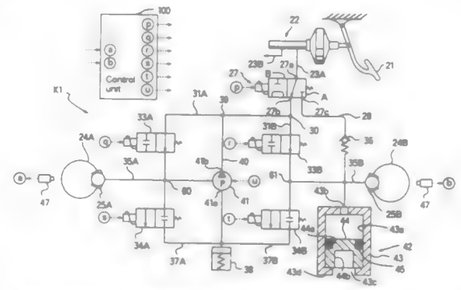
5,368,374

BRAKE FLUID PRESSURE CONTROL DEVICE

Tsuyoshi Fujimoto, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 1, 1993, Ser. No. 130,171
Claims priority, application Japan, Oct. 29, 1992, 4-291180
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—113.2 **4 Claims**

1. A brake fluid pressure control device comprising:
a main flow path for connecting, as one system, a first wheel brake of a driving wheel and a second wheel brake of a driven wheel with a master cylinder;
a first reservoir which is provided on the main flow path;
fluid pressure adjusting means for selectively communicating the first and second wheel brakes with the master cylinder and the first reservoir, which is provided on the main flow path;
a pump which sucks and pressurizes brake fluid in the first reservoir so as to discharge the brake fluid to a junction of the main flow path and the pump;
the junction being disposed closer to the master cylinder than the fluid pressure adjusting means;
a second reservoir for storing the brake fluid, which is communicated with the fluid pressure adjusting means and the second wheel brake;
a directional control valve which is provided on the main flow path at one side of the function adjacent to the master cylinder;



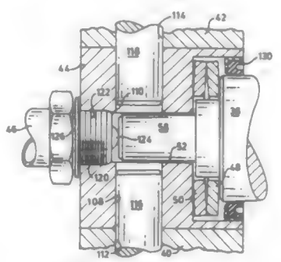
the directional control valve being adapted, in a first state, to enable communication between the master cylinder and the fluid pressure adjusting means and, in a second state, to interrupt communication between the master cylinder and the fluid pressure adjusting means; and
control means, operative at the time of traction control of the brake fluid pressure control device, for setting the directional control valve to the second state and driving the pump so as to supply the brake fluid in the second reservoir to the first wheel brake through the fluid pressure adjusting means.

5,368,375

BELT TENSION INDICATING SYSTEM

Alan D. Gustafson, Leland, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Aug. 24, 1993, Ser. No. 111,355
Int. Cl.[5] B62D *55/30*
U.S. Cl. 305—10 **20 Claims**



1. A belt tension indicating system for a work machine which is supported and driven by first and second endless elastomeric inextensible belts, said work machine including on each side thereof a drive wheel, an idler wheel, and a supporting frame between said drive and idler wheels, one of said belts encircling said drive and idler wheel and said supporting frame, said indicating system comprising:
an indicating assembly, including first and second slide blocks, a reaction plate, a plunger block adapted to be in

contact with said reaction plate, first and second guide plates, a reaction block, an indicating switch connected to said reaction block, and a spring positioned between said plunger block and said reaction block; and

means for tensioning said elastomeric drive belt between said drive wheel and said idler wheel, said tensioning means having a first end portion connected to said idler wheel and a second end portion connected to said indicating assembly.

5,368,376

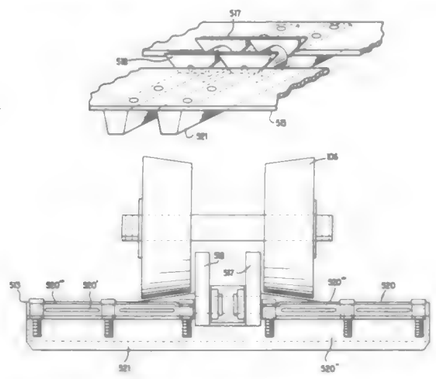
REPLACEMENT ENDLESS VEHICLE TRACKS

John W. Edwards, Arcadia; Daniel R. Harper, and Quinton B. McNew, both of Ft. Myers, all of Fla., assignors to Edwards, Harper, McNew & Company, Fort Myers, Fla.

Continuation-in-part of Ser. No. 749,896, Aug. 26, 1991, abandoned. This application Aug. 10, 1992, Ser. No. 926,521

Int. Cl.[5] B62D *55/24, 55/28*

U.S. Cl. 305—35 EB **34 Claims**



1. An endless vehicle track comprising:

a polymeric drive belt having a central longitudinal axis and first and second surfaces;

a plurality of spaced first rail blocks adjacent said first surface of said drive belt along a line parallel to said central longitudinal axis, and a plurality of spaced second rail blocks adjacent said first surface of said drive belt along a line parallel to but across said central longitudinal axis from said plurality of first rail blocks, each of said rail blocks including a forwardmost portion and a rearwardmost portion, the forwardmost portion of one rail block being offset from and overlapping the rearwardmost of a directly adjacent rail block, thereby forming a continuous roller surface, and a longitudinal axis of said one rail block being substantially aligned with a longitudinal axis of said directly adjacent rail block;

a plurality of drive pins respectively extending between opposing ones of said first and second rail blocks; and

a plurality of drive treads adjacent said second surface of said drive belt.

5,368,377

FLIP-TOP COMPUTER WORKSTATION

Edward A. Baines, Covina, Calif., assignor to Continental Engineering Group, Inc., Irwindale, Calif.

Filed Nov. 16, 1992, Ser. No. 976,910

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—27 **9 Claims**

1. A computer workstation comprising:

a desk having a top with an opening defined therein;

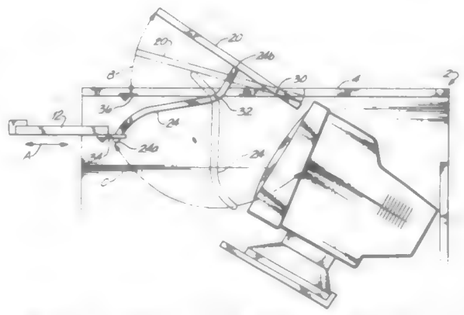
a keyboard shelf mounted in the desk below the top for movement between a retracted position, where the keyboard shelf is under the top, and an extended position, where the keyboard shelf is extended from the desk;

a monitor shelf mounted to the desk under the top;

a door disposed in the opening of the top for cooperating with the top to form a substantially flat work surface;

means for movably mounting the door with respect to the top;

linkage means connected to the keyboard shelf and the door for moving between a closed position where the door and top cooperate to form the work surface, and an open position where the opening in the top is revealed, in response to movement of the keyboard shelf between the retracted and extended positions, respectively, wherein the linkage means comprises linkage arms, each having a first end connected to the keyboard shelf and a second end for pushing open the door when the keyboard shelf is moved to the extended position, whereby the user of the workstation can work on the work surface when the keyboard shelf is in the retracted position and can view a computer monitor mounted on the monitor shelf through the opening when the keyboard shelf is in the extended position.



5,368,378

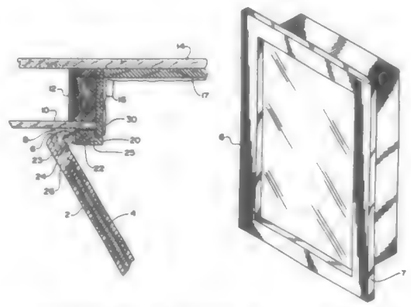
CONCEALED STORAGE CABINET

Donald G. Curtis, P.O. 235, Lewisbenny, Pa. 17339

Filed Aug. 11, 1993, Ser. No. 104,556

Int. Cl.[5] A47B *97/00*

U.S. Cl. 312—204 **2 Claims**



1. A concealed cabinet structure for mounting along a main wall of a building structure comprising: a compartment having side walls and a rear wall in connection with said main wall so as to define a partially enclosed space having an entrance passage in said main wall, an outer frame member in connection with said main wall and bordering said entrance passage, said outer frame member having a front face, a side face, and a rear face, said rear face in connection with said main wall, a cabinet door having an outer surface, an inner surface, and two side edges, at least one of said edges being of a rounded shape, said inner surface having a long wall and at least one short wall, said long wall is generally parallel to said outer surface and said short wall is generally perpendicular to said long wall, said short wall in connection with said rounded side edge along a narrow edge, a hinge means comprising a pivoting pin and first and second plates, said first plate in connection with said side face of said frame member and said second plate in connection with said short wall so that said narrow edge of said door overlaps said side face of said frame member.

5,368,379

DISHWASHER CHASSIS

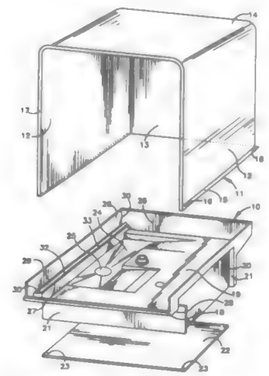
Jan S. Wrangberth, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Continuation of Ser. No. 666,629, Mar. 8, 1991, abandoned. This application Feb. 11, 1992, Ser. No. 835,054

Claims priority, application Sweden, Apr. 12, 1990, 9001336

Int. Cl.[5] A47B *77/06*

U.S. Cl. 312—228 **20 Claims**



1. A tub for a dishwasher, said tub having an upper part (11) which is shaped as an open-ended box and a lower part (10) which comprises a torsion stiff shell and a lower part (10) which comprises a torsion stiff shell structure, wherein the upper part is open at a front end and at a bottom end, said bottom end being placed on said torsion stiff shell structure (10, 22), wherein the shell structure itself is a closed box structure, said closed box structure being defined by upper and lower generally horizontal plates (19 and 22, respectively) and generally vertical sidewall elements (20,21), said sidewall elements (20,21) interconnecting the upper and lower plates (19,22) to form said closed box structure, an upper surface of said upper plate (19) closing the open bottom of said upper part, said upper and lower parts being attached to each other to prevent relative movement therebetween and thereby forming said tub.

5,368,380

CABINET ASSEMBLY

Russell P. Mottmiller, and Erik J. Skov, both of Wooster, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio

Filed Jan. 8, 1993, Ser. No. 2,438

Int. Cl.[5] A47B *47/00;* **F16B** *12/00*

U.S. Cl. 312—263 **15 Claims**

1. A cabinet assembly comprising:

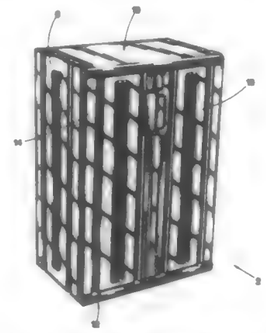
a rearward panel having a top edge, a bottom edge and first and second opposite side edges;

first and second opposed side panels, each said side panel having means for attachment to the opposite side edges of the rearward panel;

a top panel and a bottom panel each having means for attachment to the top edge and the bottom edge of the rearward panel, respectively;

the top and bottom panels having means for attachment to a top edge and a bottom edge of the side panels and having a T-shape at a forward end comprising outwardly extending first and second edge protrusions positioned to overlap upper and lower frontal edge portions, respectively, of each of the side panels, and at least one of the edge protrusions of the top and the bottom panels having a sized aperture extending therein; and

at least one door having a top and a bottom corner pivotally attached to a forward side of the assembly and comprising an upper and a lower pivot post projecting from the top and the bottom door corners, respectively, and residing in the top and the bottom sized apertures in the top and bottom panel edge protrusions.



5,368,381

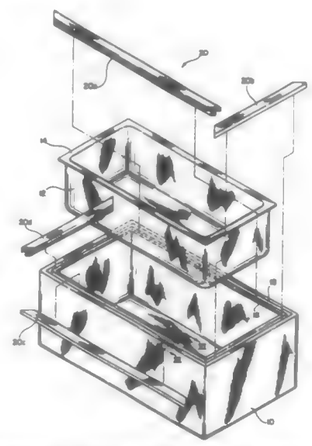
REFRIGERATOR CABINET CONSTRUCTION

Sheldon Mandel, Galesburg, Ill., assignor to Maytag Corporation, Newton, Iowa

Filed Feb. 9, 1993, Ser. No. 15,383

Int. Cl.[5] F25D *23/00*

U.S. Cl. 312—406.2 **6 Claims**



1. A refrigerator cabinet construction comprising:

a) an exterior cabinet shell having an open side and a first flange extending around the open side, the first flange defining a first channel therein;

b) an interior liner adapted to fit within the exterior cabinet and having a second flange;

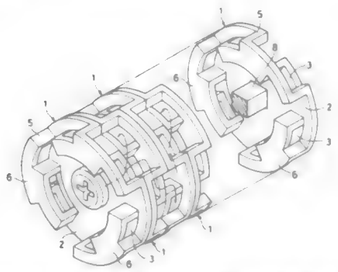
c) a breaker strip interconnecting the interior liner with the exterior cabinet shell, the breaker strip comprising:
i) wall means defining a second channel having a closed periphery, the second channel extending substantially along the entire length of the breaker strip;
ii) a first pair of spaced apart legs extending from the wall means defining the second channel, the first pair of spaced apart leas defining a slot therebetween, wherein the second flange is inserted in the slot:
iii) a second pair of spaced apart legs of resilient material extending from the wall means defining the second channel, the second pair of spaced apart legs snapped into the first channel so as to be frictionally engaged therein; and,
d) a magnetic door closing strip disposed in the second channel.

5,368,382

CEMENT PASTE MIXER AND METHOD FOR PRODUCING MORTAR AND CONCRETE

Kenji Kawasaki, Suita; Masashi Kawakami, Nishinomiya; Kenji Suzukawa, Neyagawa, and Setsu Wada, Higashiosaka, all of Japan, assignors to Konoike Construction Co., Ltd., Osaka, Japan

Division of Ser. No. 923,585, Aug. 3, 1992. This application Apr. 16, 1993, Ser. No. 46,870
Claims priority, application Japan, Aug. 2, 1991, 3-194305
Int. Cl.[5] B01F *5/00*
U.S. Cl. 366—2 **4 Claims**



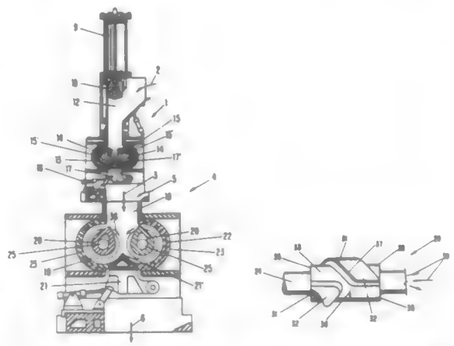
1. A method of producing high-strength mortar, comprising the steps of kneading a designed amount of cement together with a predetermined amount of water to form cement paste; forcing said cement paste through a pressure feed pipe having mounted therein a mixer for cement paste to homogenize the cement paste, the mixer comprising a wall panel assembly having a plurality of discrete wall panels disposed in the axial direction of the portion of the pressure feed pipe in which the wall panel assembly is provided, said wall panels each having a collision surface extending perpendicular to the axial direction and through-holes, the through-holes of each of said wall panels being out of alignment with the through-holes of each said wall panel adjacent thereto in said assembly, and the at least one collision surface of each of said wall panels being aligned in said axial direction with the through-holes of each said wall panel adjacent thereto in said assembly, such that the cement paste forced through the through-holes of each of said wall panels collides with the at least one collision surface of the wall panel adjacent thereto in the assembly to break up any balls of cement in the cement paste; and kneading said cement paste together with a designed amount of fine aggregate.

5,368,383

APPARATUS FOR PRODUCING RUBBER MIXTURES

Julius Peter, Dommayergasse 7/13, A-1130 Wien, Austria, and Günter Weckerle, Northeim, Germany, assignors to Julius Peter, Wien, Austria and Continental Aktiengesellschaft, Hanover, Germany

Continuation of Ser. No. 919,217, Jul. 24, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 198,080
Claims priority, application Germany, Sep. 2, 1991, 4129108
Int. Cl.[5] B29B *7/06*
U.S. Cl. 366—97 **14 Claims**



1. An apparatus for producing rubber mixtures, including:
for producing a master batch, a ram kneader that operates in a batch process;
a ram-less kneader that is disposed below said ram kneader, also operates in a batch process, is designed for admixing reactive additives, and serves for receiving said master batch from said ram kneader without intermediate storage of said master batch, and also serves for producing a final mixture and for cooling same, with said ram-less kneader including casing parts and cooling means therefor; and wherein the improvement comprises:
rotors disposed in said casing parts of said ram-less kneader, with said rotors having active surfaces that come into contact with rubber mixture, with the greatest portion of said active surfaces being free of an integral surface wear protection coating while the remainder of said active surfaces is provided with such an integral coating.

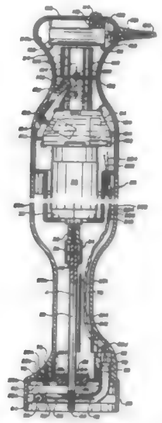
5,368,384

HAND-HELD MIXING DEVICE WITH HEATING ELEMENT

J. Kenneth Duncan, 34855 Lakeview Dr., Solon, Ohio 44139; Mark Cartellone, 3566 Spencer Rd., Rocky River, Ohio 44116, and Dov Glucksman, 137 Larch Row, Wenham, Mass. 01984

Filed Aug. 20, 1993, Ser. No. 109,641
Int. Cl.[5] B01F *15/06*
U.S. Cl. 366—129 **26 Claims**

1. A hand-held mixing device comprising:
an electric motor;
an elongated shaft extending from said motor;
a housing enclosing said motor and a major portion of said shaft;
a blade at the free end of said shaft;
a heating element extending from said housing, having at least one coil surrounding said blade; and
circuit means for connecting said motor and said heating element to an electrical power source, said circuit means including heating element switch means having multiple switch settings for establishing multiple operating conditions for said heating element, motor switch means having multiple motor switch settings for establishing multiple operating conditions for said motor and master switch means enabling said motor and heating element.

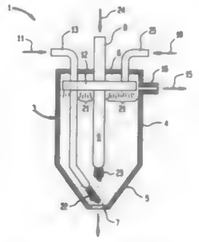


5,368,385

CONTINUOUS SOLUTION METHOD AND APPARATUS

Joseph R. Adamo, Lansdale; Gloria M. Lipovsky, Langhorne; Robert Hecker, Jr., Levittown, all of Pa., and Leon D. Ranalli, Murrells Inlet, S.C., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 20, 1993, Ser. No. 109,784
Int. Cl.[5] B01F *13/06, 15/02*
U.S. Cl. 366—139 **1 Claim**



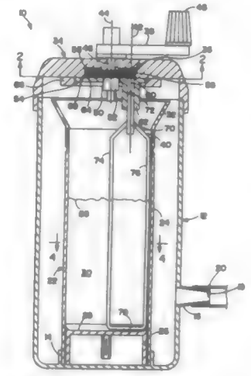
1. A powder/liquid delivery apparatus, comprising:
(1) a column having an upper section and a lower section, said lower section having an interior diameter less the interior diameter of said upper section, said section having an inlet at the top and cylindrically-shaped and said lower section having an outlet at the bottom and conically-shaped;
(2) a means for feeding a powder stream into said lower section and through said outlet, said powder stream having a diameter less than the diameter of the inner surface of said outlet and said powder stream having a center aligned with the center of said outlet;
a means for evenly feeding liquid downwardly along the inside surface of said lower section and into said outlet, comprising:
(a) a narrow diameter hollow cylinder discharging a first stream of liquid into said lower section along the inside surface of said column, below the discharge of said powder feeding means and above said outlet; and
(b) a sparge ring having a plurality of holes and encircling the inside surface of said inlet, discharging a second stream of liquid along the inside surface of said column and into said outlet; and
(4) a means for pulling vacuum on the inside of said column.

5,368,386

MANUAL BONE CEMENT MIXING DEVICE

William M. Murray, 2650 Spring Hill La., Enola, Pa. 17025

Filed Nov. 16, 1993, Ser. No. 153,218
Int. Cl.[5] B01F *13/06*
U.S. Cl. 366—139 **27 Claims**



1. A device for mixing bone cement and removing gas from the cement comprising:
a) a hollow housing having a wall, an open top and a vacuum tube attachment fitting defining a passage extending through the housing wall;
b) a bone cement mixing chamber in the housing;
c) a cap adapted to be fitted on the top of the housing over the mixing chamber to close the housing;
d) a rotary mixer having a central shaft and a first mixing arm located a distance to one side of the central shaft, said mixing arm extending along the length of the mixing chamber to the bottom of the chamber; and
e) a mixer drive on the cap, the drive including,
i) an input drive shaft rotatably mounted on the cap and having an end extending above the cap;
ii) a rotary drive member attached to the input drive shaft extending above the cap for rotating the input drive shaft;
iii) an output drive member mounted on the interior of the cap a distance away from the input drive shaft, the output drive member being connected to the rotary mixer central shaft so that rotation of the drive member rotates the central shaft to move the mixer arm in the mixing chamber; and
iv) drive means joining the input drive shaft and the output drive member for simultaneously moving the output drive member along a closed path extending around the input drive shaft, rotating the output drive member about an axis located away from the input drive shaft, and moving the mixing arm along a first path in the chamber having a number of loops located adjacent to and spaced around the interior sidewall of the chamber and portions extending across the interior of the chamber between successive adjacent loops on the first path.

5,368,387

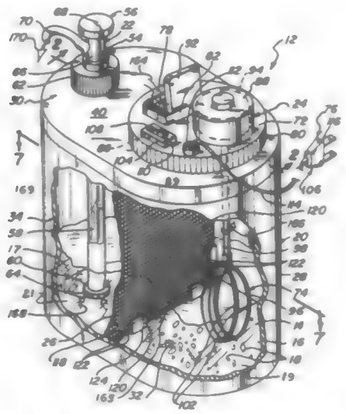
SOAP CHIP PROCESSOR AND DISPENSER APPARATUS

Stefan D. Creighton, and Dora B. Creighton, both of 23 Rutgers, Pueblo, Colo. 81005

Continuation-in-part of Ser. No. 852,391, Mar. 16, 1992, abandoned. This application Aug. 3, 1993, Ser. No. 101,289

Int. Cl.[5] B01F *7/16*

U.S. Cl. 366—194 **1 Claim**



1. A soap chip processor and dispenser apparatus having a mixture of water and soap chips for processing into a soap solution, comprising:

a) a main housing means having a fluid mixing area and a fluid dispensing area;

b) a fluid mixer means mounted within said fluid mixing area to agitate a combination of the water and soap chips;

c) a compartment separator means vertically mounted in said main housing means to divide into adjacent ones of said fluid mixing area and said fluid dispensing area having equal fluid levels;

d) said compartment separator means operable to retain the soap chips within said fluid mixing area until dissolved with the water to form the soap solution which will flow through said compartment separator means for removal from said fluid dispensing area;

e) said main housing means includes a basic container assembly having a support lid assembly removably mounted on said basic container assembly;

f) said support lid assembly includes a main lid body integral with an outer connector flange engagable with said basic container assembly;

g) a fluid dispenser means mounted in said fluid dispensing area and selectively operable to receive and dispense the soap solution through a fluid dispenser spout mounted in a fluid dispenser opening in said support lid assembly for reclaiming of the normally discharged soap chips;

h) said support lid assembly having a container access opening therein for access to said fluid mixing area;

i) said support lid assembly encloses and permits separate access to said fluid mixing area and said fluid dispensing area; and

j) said container access opening is operable to receive the water and soap chips therethrough for placement within said fluid mixing area;

whereby said soap chip processor and dispenser apparatus is operable to receive a mixture of water and soap chips which are obtained from worn out soap bars which are normally discarded and, therefore, this invention provides a recycling process for conservation purposes.

5,368,388

STIRRER LID DEVICE FOR A PAINT POT

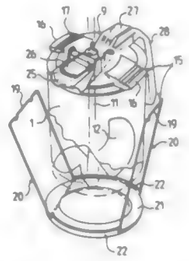
Sylvain Fillon, Laboissiere Ecole, France, assignor to Fillon Pichon S.A., Yvelines, France

Filed Mar. 31, 1992, Ser. No. 860,917

Claims priority, application France, Apr. 26, 1991, 91 05168

Int. Cl.[5] B01F *7/00*

U.S. Cl. 366—245 **6 Claims**



1. A stirrer lid device for a paint pot having a side wall, comprising:

a rigidly conformed lid, said lid having an underneath portion which defines a groove for receiving a flat annular sealing gasket, said lid further having a sleeve extending therethrough, and said lid further having lugs and striations;

a flexible sealing gasket disposed within said groove in said underneath portion of said lid, said sealing gasket having a width sufficient to compensate for manufacturing sizes between paint pots of various origins;

a stirring device carried by a drive shaft extending through said sleeve;

a stand for receiving said paint pot; and

uniform pressure imparting means for imparting a uniform pressure on said sealing gasket and on said side wall of said paint pot, said uniform pressure imparting means comprising a set of bows articulated onto said stand and including a cross-piece bearing on said striations of said lugs formed by said lid.

5,368,389

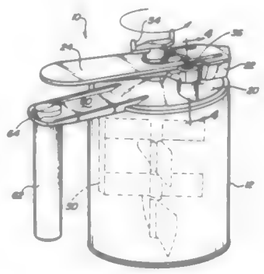
PAINT CAN COVER ASSEMBLY

John T. Dedoes, Brighton, Mich., assignor to Dedoes Industries, Inc., Walled Lake, Mich.

Filed Jun. 22, 1992, Ser. No. 901,786

Int. Cl.[5] B01F *7/16*

U.S. Cl. 366—247 **11 Claims**



1. A cover assembly for a paint can having an open top comprising:

a lid dimensioned to overlie the open top of the paint can,

a spout attached to said lid to provide access to the contents of the paint can,

a closure movable between a closed position in which said closure overlies and covers said spout and an open position in which said closure is spaced from said spout to thereby enable any contents of the paint can to be dispensed through said spout,

means for selectively moving said closure between said open and said closed position,

means for detachably locking said lid of the can,

paint stirring means connected to said lid and extending downwardly into the paint can when said lid is secured to the can, a handle support extending outwardly from and generally coplanar with said lid, a handle, and means for securing said handle to said handle support.

wherein said handle is elongated and extends perpendicularly downwardly from said handle support,

wherein said lid, said closure and said spout are constructed of a material which is not oxidizable by a water based paint.

5,368,390

MIXER SYSTEMS

Jeffrey S. Gambrill, Hilton; William F. Hutchings, Fairport; Stephen L. Markle; Marlin Schutte, both of Rochester, and John M. Palmer, Groveland, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Mar. 1, 1993, Ser. No. 24,715

Int. Cl.[5] B01F *13/08*

U.S. Cl. 366—273 **22 Claims**

1. A seal-less mixer system operable upon aggressive material in a vessel having an opening, which system comprises:

(a) an impeller;

(b) a containment region extending from said opening in which said aggressive material is contained;

(c) a drive shaft having a rotating drive disposed entirely in said containment region, said drive shaft rotatably supporting said impeller;

(d) an assembly including bearings rotatably supporting said drive shaft in said containment region and exposed to said opening, said assembly closing said opening to confine said aggressive material in said vessel and in said containment region; and

(e) said containment region including a passageway open to and in communication with said vessel, said passageway connecting said vessel and said bearings in communicating relationship with said aggressive material in said vessel, said bearings having surfaces exposed to said aggressive material which surfaces are of material resistant to said aggressive material.

5,368,391

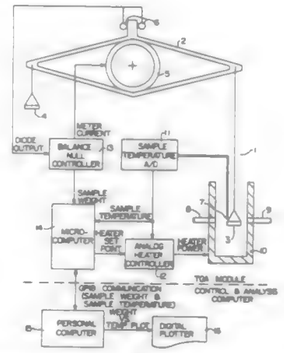
METHOD AND APPARATUS FOR HIGH RESOLUTION ANALYSIS

Benjamin S. Crowe, Centerville, and Steven R. Sauerbrunn, Wilmington, both of Del., assignors to TA Instruments, Inc., New Castle, Del.

Division of Ser. No. 663,106, Mar. 1, 1991, Pat. No. 5,165,792, which is a continuation-in-part of Ser. No. 638,847, Jan. 8, 1991, abandoned. This application Nov. 18, 1992, Ser. No. 979,168

Int. Cl.[5] G01N *25/00, 25/18*

U.S. Cl. 374—10 **23 Claims**



1. An analytical method for determining a property of a material that undergoes at least one transition as a function of a driving variable comprising the steps of:

(a) placing a sample of the material in an apparatus for detecting changes in a characterizing physical parameter as a function of said driving variable;

(b) monitoring a signal representative of the characterizing physical parameter, as the driving variable is varied at a predetermined maximum rate of change;

(c) monitoring a signal baseline for the characterizing physical parameter in the signal representative of the characterizing physical parameter;

(d) detecting deviations of the signal representative of the characterizing physical parameter from the monitored signal baseline;

(e) decreasing the rate of change of the driving variable whenever said deviations from the signal baseline are detected;

(f) constraining the absolute value of the rate of change of the driving variable to always exceed or equal a minimum rate of change;

(g) monitoring the rate of change in the signal representative of the characterizing physical parameter;

(h) adjusting the rate of change of the driving variable according to the rate of change of the characterizing physical parameter to track a predetermined rate of change of the characterizing physical parameter;

(i) forcing the rate of change of the driving variable back to the predetermined maximum rate of change whenever the rate of change of the signal representative of the characterizing physical parameter falls below a predetermined minimum value; and

(j) determining the property of the material from the detected changes in the characterizing physical parameter.

9. An apparatus for determining a property of a material that undergoes at least one transition as a function of a driving variable comprising;

(a) means for detecting changes in a characterizing physical parameter of the material as a function of said driving variable;

(b) means for monitoring a signal representative of the characterizing physical parameter, as the driving variable is varied at a predetermined maximum rate of change;

(c) means for monitoring a signal baseline for the characterizing physical parameter in the signal representative of the characterizing physical parameter;
(d) means for detecting deviations of the signal representative of the characterizing physical parameter from the monitored signal baseline;
(e) means for decreasing the rate of change of the driving variable whenever said deviations from the signal baseline are detected;
(f) means for constraining the absolute value of the rate of change of the driving variable to always exceed or equal a predetermined minimum rate of change;
(g) means for monitoring the rate of change in the signal representative of the characterizing physical parameter;
(h) means for adjusting the rate of change of the driving variable according to the rate of change of the characterizing physical parameter to track a predetermined rate of change of the characterizing physical parameter; and
(i) means for forcing the rate of chance of the driving variable back to the predetermined maximum rate of change whenever the derivative of the characterizing physical parameter with respect to the driving variable falls below a predetermined minimum value.

5,368,392

METHOD AND APPARATUS FOR MEASURING TEMPERATURE USING INFRARED TECHNIQUES

Milton B. Hollander, and W. Earl McKinley, both of Stamford, Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Filed Sep. 17, 1993, Ser. No. 121,916
Int. Cl.[5] G01K *1/00*; G01J *5/02*; G01B *11/00*; F21V *21/30, 8/00*
U.S. Cl. 374—121 **14 Claims**

1. A method for visibly outlining an energy zone on a surface whose temperature is to be measured using a radiometer, said method comprising the steps of providing a laser sighting device on said radiometer and causing said sighting device to emit a laser beam toward said surface to visibly outline only the periphery of said energy zone.

9. Apparatus for use in conjunction with a radiometer for visibly outlining an energy zone on a surface whose temperature is to be measured using said radiometer, said apparatus comprising a laser sighting device cooperating with said radiometer for emitting at least one laser beam against said surface and means for positioning said laser beam about the energy zone to visibly outline only the periphery of said energy zone.

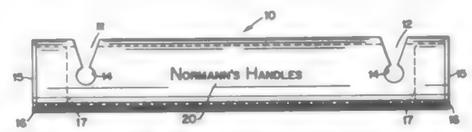
5,368,393

HANDLE FOR PLASTIC BAGS

J. Brian Normann, 1900 S. Eads St., Apt. 725, Arlington, Va. 22202

Filed Jun. 22, 1993, Ser. No. 79,732
Int. Cl.[5] B65D *33/06*; A45F *5/10*
U.S. Cl. 383—13 **9 Claims**

1. A handle for lifting a bag having at least one loop, the handle comprising an elongated body which is at least about four inches in length between its ends, and a pair of transverse grooves, a said transverse groove proximate each said end of said body, each said transverse groove defined by a relatively broad mouth and converging sides extending therefrom to form a relatively narrow channel, each said transverse groove including an enlarged opening connected to said narrow channel opposite said mouth, said openings adapted to receive at least one loop of said bag, said sides of each said transverse groove converging inwardly towards the longitudinal axis of



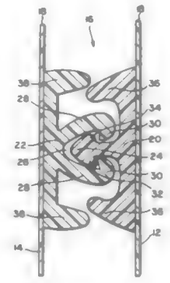
the handle as seen in side elevation so that said sides form said relatively narrow channel after extending at least about one-third of the height of the handle towards said longitudinal axis of the handle as seen in side elevation and said enlarged open of each said groove extending, at least in part, below said longitudinal axis of the handle as seen in side elevation, said body's surface between said ends being cylindrical throughout except as interrupted by said pair of transverse grooves.

5,368,394

STABILIZER WEDGE ZIPPER

Richmond M. Scott, Pleasantville, and Zdenek Machacek, Nanuet, both of N.Y., assignors to Minigrip, Inc., Orangeburg, N.Y.

Filed Dec. 28, 1993, Ser. No. 174,273
Int. Cl.[5] B65D *33/24*
U.S. Cl. 383—63 **8 Claims**



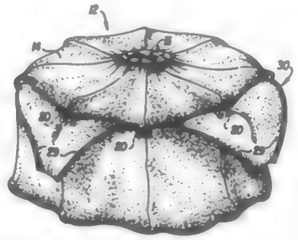
1. A reclosable bag comprising:
a first wall and a second wall joined to form an enclosure with a mouth defined by wall edges; and
a closure for selectively opening and sealing said mouth, said closure comprising an asymmetric arrowhead male profile extending along an internal surface of said first wall and a female profile having stubs adapted to interengage with said male profile and extending along an internal surface of said second wall,
wherein said male profile includes a first stabilizer wedge on one side thereof and parallel thereto, and a second stabilizer wedge on the other side thereof and parallel thereto across said bag, and
wherein said female profile includes a first stabilizer wedge on one side thereof and parallel thereto, an a second stabilizer wedge on the other side thereof and parallel thereto across said bag,
said first and second stabilizer wedges on said male and female profiles cooperating with one another to ensure that said male and female profiles remain parallel to one another when said reclosable bag is being manufactured and sealed, and increasing the rigidity of said closure to improve the alignment of said closure to said wall edges wherein said first and second stabilizer wedges of said male profile are inward of said first and second stabilizer wedges of said female profile with respect to said male and female profiles, when said male and female profiles are aligned to be interengaged.

5,368,395

FLEXIBLE STORAGE TANK WITH REMOVABLE INNER LINER

Robert A. Crimmins, Felton, Del., assignor to ILC Dover, Inc., Frederica, Del.

Filed Apr. 13, 1993, Ser. No. 45,177
Int. Cl.[5] A65D *33/08*
U.S. Cl. 383—107 **25 Claims**



1. A collapsible flexible tank for storage of flowable material comprising
an outer tank body made of a plurality of panels of flexible dimensionally stable fabric secured together at a plurality of seams to form a flexible tank of generally conical shape with a maximum diameter at its lower end and of progressively decreasing diameter toward its upper end with an opening at said upper end;
a liner for positioning within said outer tank body of a similar size and shape and made of a pliant sheet impervious to said flowable material, said liner having an opening at its top which aligns with the opening at the top of said outer tank body;
said outer tank body having at least one openable seam adjacent said upper end and quick connect and disconnect means for opening and closing said seam for insertion and removal of said liner;
said outer tank body having an inner surface and said liner having a outer surface which confronts said inner surface when said liner is in position inside said outer tank body and a plurality of connecting means extending between said outer tank body and said liner for detachably securing at a plurality of discrete securing points within said outer tank body;
a fill and drain means attached to the top opening of said liner.

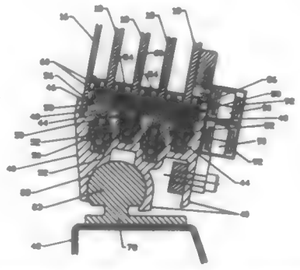
5,368,396

ROLLER AND TRACK ARRANGEMENT FOR SLIDING MEMBERS, AND STRUCTURES EMBODYING SUCH ARANGEMENTS

Dan R. Cantrell, 2006 Brentwood Ter., Nashville, Tenn. 37211

Continuation-in-part of Ser. No. 834,768, Feb. 12, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,459
Int. Cl.[5] F16C *29/04, 29/08*
U.S. Cl. 384—58 **19 Claims**

1. A roller and track apparatus for sliding members, comprising:
an elongate track, having an outer surface;
at least one slot extending into said track from said outer surface and extending along said track, said slot including a first portion extending from said outer surface and an enlarged portion adjacent an inner end of said slot;
at least one support member extending into said slot;
a plurality of rollers on said support member positioned in said enlarged portion, said rollers spaced apart along the track, said rollers mounted on said support member to



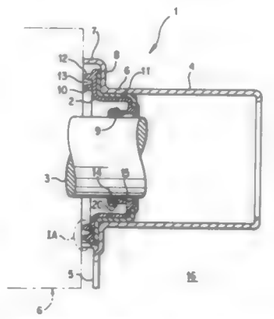
alternately contact diametrically opposed bearing surfaces in said enlarged portion.

5,368,397

GUIDE BUSHING WITH AN INTEGRATED SEAL FOR THE CLUTCH-RELEASE BEARING OF A GEAR UNIT

Gerhard Freiwald, Hemsbach, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Jul. 22, 1993, Ser. No. 96,079
Claims priority, application Germany, Jul. 22, 1992, 4224179
Int. Cl.[5] F16C *33/76*; F16D *23/14*
U.S. Cl. 384—130 **9 Claims**



1. A guide bushing for guiding a shaft comprising:
(i) a connecting sleeve circumferentially surrounding said shaft with radial clearance, said connecting sleeve comprising:
(i) a mounting flange,
(ii) a first axial side piece situated radially inwardly,
(iii) a second axial side piece situated radially outwardly, and
(iv) a radial side piece connecting said first and second axial side pieces;
(b) a seal with a profile that conforms to the connecting sleeve, said seal comprising:
(i) at least one first sealing lip on a portion of the seal facing the input shaft, and
(ii) at least one axially extending second sealing lip;
(c) a reinforcement ring, said seal being affixed to said reinforcement ring, said reinforcement ring being retained with radial prestress in the first axial side piece.

5,368,398

DIAMOND BEARING ASSEMBLY

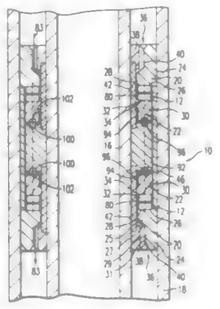
Oliver F. R. A. Damm, and Klaus Tank, both of Transvaal, South Africa, assignors to CSIR, Transvaal, South Africa

Filed Oct. 28, 1993, Ser. No. 142,042

Claims priority, application South Africa, Oct. 28, 1992, 92/8328; Oct. 28, 1992, 92/8329; Oct. 28, 1992, 92/8330

Int. Cl.[5] F16C *17/04*

U.S. Cl. 384—304 **16 Claims**



1. A diamond bearing assembly for a downhole motor, the assembly comprising:

at least one set of opposing, relatively rotating thrust bearing rings each of which includes an annular support element and a plurality of PCD compacts carried by the support element, the PCD compacts of the bearing rings opposing one another at a thrust bearing interface; and

a backing ring located axially adjacent one of the bearing rings of the set; and

resilient alignment means interposed between the backing ring and the adjacent bearing ring, the alignment means having axial projections on opposite faces thereof which engage with the backing and bearing rings, thereby to hold those rings resiliently in axial alignment with one another.

5,368,399

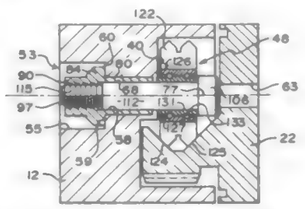
ADJUSTABLE BEARING ASSEMBLY

Clement Tremblay, Citrus Heights, Calif., assignor to Tri Tool Inc., Rancho Cordova, Calif.

Filed Oct. 20, 1993, Ser. No. 142,070

Int. Cl.[5] F16C *19/26*

U.S. Cl. 384—583 **11 Claims**



1. In an adjustable bearing assembly including a roller bearing, a support bolt, and a bushing for receiving the support bolt and for engaging a bore in a support member for the bearing assembly, the improvement comprising: said bushing having a central longitudinal axis and including an axially extending central through hole defining a cylindrical inner surface concentric with said longitudinal axis for receiving a support bolt, and an outer cylindrical surface that is eccentric with respect to said longitudinal axis; said bushing including an integral flange portion that extends radially beyond said outer cylindrical surface of said bushing and an integral connector portion including a longitudinally extending internally threaded opening located concentrically with said longitudinal axis, said bushing including a portion adapted to be engaged by a device for rotating said bushing about said longitudinal axis, whereby rotation of the bushing in a bore in a support member causes the longitudinal axis of the bushing to be radially moved relative to the support member.

5,368,400

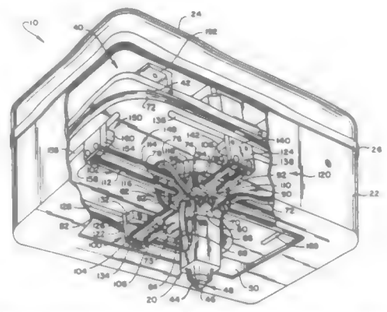
MARKING APPARATUS WITH CABLE DRIVE

David L. Cyphert, Canal Winchester, and Roger L. Sieling, Columbus, both of Ohio, assignors to Telesis Marking Systems, Inc., Circleville, Ohio

Filed Oct. 15, 1993, Ser. No. 137,302

Int. Cl.[5] B41J *3/02*

U.S. Cl. 400—124.01 **33 Claims**



1. Apparatus for marking a surface of an object with a marking device in response to control inputs, comprising:

a support member positionable in spaced adjacency with said object surface and having a flat platen surface extending between field support defining peripheries;

a first cross bar assembly located a first predetermined distance outwardly from said platen surface, and extending between first and second said peripheries;

a first bearing assembly coupled with and supporting said first cross bar assembly at said first predetermined distance and adjacent first and second ones of said peripheries and drivable to move said first cross bar assembly in a first coordinate sense:

a second cross bar assembly located a second predetermined distance outwardly from said platen surface and extending between third and fourth ones of said peripheries:

a second bearing assembly coupled with and supporting said second cross bar assembly at said second predetermined distance and adjacent said third and fourth peripheries, and drivable to move said second cross bar assembly in a second coordinate sense;

a motor assembly coupled in driving relationship with said first and second bearing assemblies for effecting the movement thereof in response to said control inputs;

a marker base having a first channel defining portion extending therethrough and slidably engaging said first cross bar assembly, having a second channel defining portion extending therethrough and slidably engaging said second cross bar assembly, said marker base having an inwardly disposed portion in spaced adjacency with said platen surface and an oppositely disposed marker support portion for supporting a said marking device, and drivably movable by said first and second cross bar assemblies in said first and second coordinate senses; and

an air bearing, having a center, located intermediate said marker base inwardly disposed portion and said platen surface, having an air expressing bearing surface air supportable over said platen surface, movable with and coupled in force transfer relationship with said marker base.

5,368,401

WIRE DOT PRINT HEAD WITH ROTATING LEVER

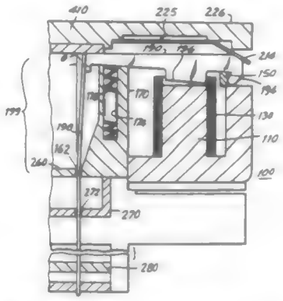
Takashi Asada; Osamu Koshiishi; Yasuhiko Nakazawa, and Masaki Shimomura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 886,698, May 20, 1992, Pat. No. 5,281,037, which is a continuation of Ser. No. 449,691, Dec. 11, 1989, Pat. No. 5,174,663. This application Jul. 20, 1993, Ser. No. 93,913

Claims priority, application Japan, Dec. 9, 1988, 63-311271; Jan. 17, 1989, 1-8259; Jan. 20, 1989, 1-11602; Jan. 30, 1989, 1-20101; Apr. 24, 1989, 1-103718; May 8, 1989, 1-114622

Int. Cl.[5] B41J *2/27*

U.S. Cl. 400—124.21 **2 Claims**



1. A wire dot printer having a printing wire driving device, comprising:

(a) a frame formed of a magnetic material having a circumference, an inner peripheral wall and an outer peripheral wall, a plurality of cores disposed between said inner peripheral wall and said outer peripheral wall at regular intervals about said circumference, said inner peripheral wall, outer peripheral wall and cores each having respective end surfaces, the end surfaces being coplanar;

(b) a plurality of driving coils, a respective driving coil being mounted about a respective core of said plurality of cores, said coils having upper ends projecting above said end surfaces of said cores, said end surfaces of said cores being coplanar with said outer peripheral wall;

(c) a first yoke consisting of a magnetic material, at least two salients formed on said first yoke forming a recess therebetween being positioned to correspond to a position of said cores, said first yoke being disposed on said outer peripheral wall of said frame;

(d) lever means for supporting a printing wire having a first hooked end forming a rotation support member, a central projecting portion forming an armature member, a second end, a printing wire being fixed on said second end, said rotation support member being freely disposed within said recess of said first yoke;

(e) said lever means coming into contact with a respective one of said cores at said central projecting portion, said lever means rotating about said central projecting portion and, said hooked end acting as a fulcrum in turn if the gap between the tip of said printing wire and platen is greater than a present value and only said hooked end acting as a fulcrum if the gap between the tip of said printing wire and platen is less than or equal to a preset value;

(f) supporting retainer spring means having a plurality of radial springs, said radial springs coming in contact with said rotation support member of said lever means for resiliently biasing said rotation support member;

(g) a nose for guiding said printing wire to a front end; and

(h) lever holder means for biasing said supporting retainer spring means, said lever holder means being fixed on the nose.

5,368,402

SERIAL PRINTER CAPABLE OF PROMPTLY DETECTING ABNORMALITY IN HEAD CARRIAGE MOVEMENT

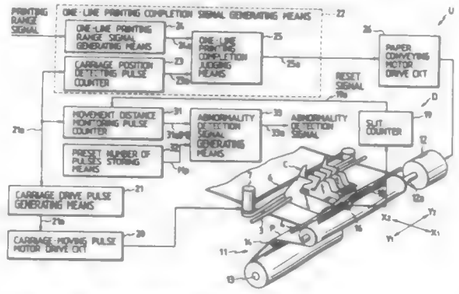
Toyohiro Takahashi; Masami Furuya; Toshio Koyama, and Kenichi Owa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1993, Ser. No. 74,751

Claims priority, application Japan, Jun. 11, 1992, 4-151999

Int. Cl.[5] B41J *29/42*

U.S. Cl. 400—279 **6 Claims**



1. A serial printer comprising:

ahead carriage;

a pulse motor for reciprocating said head carriage in a main scanning direction;

means for generating drive pulses for the pulse motor;

means for counting the drive pulses to produce a drive pulse count;

means for storing a preset number of the drive pulses, the stored preset number corresponding to a preset monitoring distance, said preset monitoring distance being less than a distances said pulse motor would move the head carriage in the main scanning direction if driven the preset number of drive pulses;

encoder means for generating monitoring pulses;

means for detecting a movement distance of the head carriage in the main scanning direction as a function of the encoder means generating said monitoring pulses, each monitoring pulse corresponding to a physical displacement of the head carriage in response to a multiple of the drive pulses;

means for resetting the drive pulse count when the drive pulse count produced by the means for counting the drive pulses equals the stored preset number and the head carriage has moved at least said monitoring distance; and

means for judging that movement of the head carriage is abnormal when the drive pulse count exceeds the stored preset number and the head carriage has not moved at least said preset monitor distance.

5,368,403

CARRIAGE SUPPORT SYSTEM FOR COMPUTER DRIVEN PRINTER

Damon Broder; Abdolreza Movaghar, both of San Diego, and W. Wistar Rhoads, Escondido, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1993, Ser. No. 56,639

Int. Cl.[5] B41J *11/42*

U.S. Cl. 400—352 **16 Claims**

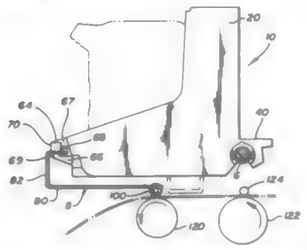
1. A carriage support system for a computer driven printer having a moveable print head carriage said support system comprising:

a chassis having a printhead receptacle;

a horizontally extending slider rod; and

a horizontally extending slider bar parallel to and spaced from said slider rod, said slider rod and said slider being affixed to said chassis, said slider bar having a carriage

support surface, said slider rod being engageable with a distal side of said carriage and said slider bar being engageable with a proximal side of said carriage, with the



printhead receptacle being positioned between said slider rod and said slider bar; and

wherein said slider bar has a plurality of spring biased print media pinch wheels supported thereon.

5,368,404

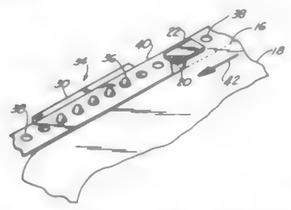
PRINTER ADAPTABLE APPARATUS FOR CUTTING PERFORATED PAPER

Ronald L. Hacker, 5123 Collins St., Panaama City, Fla. 32404

Continuation-in-part of Ser. No. 11,427, Aug. 5, 1993, Ser. No. 11,656, Aug. 12, 1993, and Ser. No. 12,295, Aug. 30, 1993. This application Nov. 15, 1993, Ser. No. 151,912

Int. Cl.[5] B41J *11/68*

U.S. Cl. 400—621.1 **17 Claims**



1. An apparatus mountable on a printer for trimming paper moving through said printer, comprising:

a) a guide portion mountable on said printer, said guide portion further comprising a guide member downwardly extending from and secured to a bottom surface of said portion, said guide member having an adhesive surface attachment to said printer;

b) a blade retaining portion having a base accepted by said guide portion;

c) means for permitting the movement of said retaining portion with respect to said guide portion;

d) blade means mounted to the base of said blade retaining portion for trimming paper as said paper moves through said printer and is biased against said blade means: and,

e) means secured to an upper portion of said means for maintaining said paper against said blade means.

5,368,405

NON-MINGLING MULTICOLOR MARKER AND ITS PROCESS

Xie Sixiong, 258 Shi Mong Yi Road, Shanghai, China

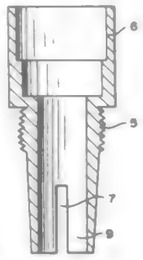
Continuation of Ser. No. 842,940, Feb. 27, 1992, abandoned, which is a continuation-in-part of Ser. No. 596,449, Oct. 12, 1990, abandoned. This application May 4, 1993, Ser. No. 56,595

Claims priority, application China, Oct. 30, 1989, 89218857.X

Int. Cl.[5] B43K *8/08, 27/08, 17/00*

U.S. Cl. 401—35 **12 Claims**

1. A non-mingling multicolor ink pen comprising a barrel, two or more ink reservoirs fixed or held in stationary position in said barrel, a combined tip including two or more elastic nibs each with ink tight surface, a nib guard tube having a rear end thereof fixedly connected to a front end of said barrel, nib position fixing means for securing or holding each of said nibs separated from each other in said nib guard tube with front ends thereof sticking out of the front end of said nib guard tube,



and the rear ends of the nibs extending in the front end of said ink reservoirs, a nib holder movably mounted axially of said pen and having a conical bore with a front end opening at the front end of said nib guard tube and sheathing the front ends of the nibs for adjusting the spacing between the front ends of the nibs.

5,368,406

PEN-TYPE DEVICE WITH COMBINATION LOCK

Paul C. Hanshaw, Woodpeckers, Ford Lane, East Hendred, Wantage, Oxfordshire OX12 8LS, Great Britain

PCT No. PCT/GB91/01316, § 371 Date Feb. 1, 1993, § 102(e) Date Feb. 1, 1993, PCT Pub. No. WO92/02375, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 1, 1991, Ser. No. 972,455

Claims priority, application United Kingdom, Aug. 1, 1990, 9016878.2

Int. Cl.[5] B43K *29/00*

U.S. Cl. 401—195 **8 Claims**



1. A device having a hollow elongate body (10), actuating means (14, 114, 44), and a contained element (12) contained within the body which can be moved by the actuating means to a released position in which at least a portion of the said contained element (12) protrudes from an aperture in the body (10), the elongate body (10) including thereon a combination-type lock (50) comprising a retaining member (52, 152), movable with the actuating means, (14, 114, 44), and ring means comprising at least one coded finger ring (60) mounted for rotation around the body (10), the retaining member and ring means having cooperative first and second locking means (56, 67, 66) respectively for locking the retaining member in a retracted position, and for unlocking the retainer member to permit operation of the actuating means (14, 114, 44) for movement of the contained element (12) to the released position when the ring means are set to a predetermined rotational configuration.

5,368,407

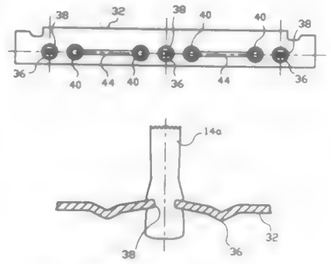
RING BINDER CARRIER RAILS

Chun C. Law, Hong Kong, Hong Kong, assignor to World Wide Stationery Manufacturing Co., Ltd., New Territories, Hong Kong

Filed Apr. 30, 1993, Ser. No. 55,968

Int. Cl.[5] B42F *13/16*

U.S. Cl. 402—36 **7 Claims**



1. A preformed carrier rail for a ring binder comprising at least one insertion hole into which a ring member is secured, and a deformation around the insertion hole.

5,368,408

BALL-AND-SOCKET JOINT

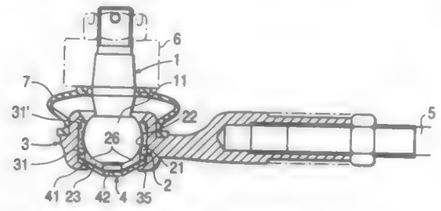
Yoshiaki Shimizu, and Hiroshi Iizuka, both of Hamamatsu, Japan, assignors to Rhythm Corporation, Hamamatsu, Japan

Filed Feb. 17, 1993, Ser. No. 18,562

Claims priority, application Japan, Feb. 28, 1992, 4-018872[U]

Int. Cl.[5] F16C *11/00*

U.S. Cl. 403—140 **16 Claims**



1. A ball-and-socket joint comprising:

a ball stud having a ball end;

a bearing having an upper portion and a lower portion extending from said upper portion, the bearing being formed with an inner wall portion into which said ball end is inserted;

a cylindrical socket having a cylindrical inner surface through which said bearing is inserted and an inclined surface extending downward from said cylindrical inner surface to a bottom surface and narrowing toward said bottom surface;

said lower portion of said bearing being formed with a central surface portion and a plurality of slits extending radially to receive lubrication oil therein, a first inclined outer surface narrowing downward at an angle substantially corresponding to the angle of said inclined surface of said socket, and a second inclined outer surface extending from said first inclined surface and narrowing downward;

said first and second inclined outer surfaces of said bearing being provided with a plurality of projections each radially extending from the central surface portion of said bearing and elastically engaged with said inclined surface of said socket and said bottom surface of said socket; and

said plurality of projections of said bearing being pressed against the inclined surface of said socket and said bottom surface of said socket and being deformed elastically and compressedly by radial inward deformation of an upper portion of said socket, whereupon said ball stud, said bearing, and said socket are fixedly connected together.

5,368,409

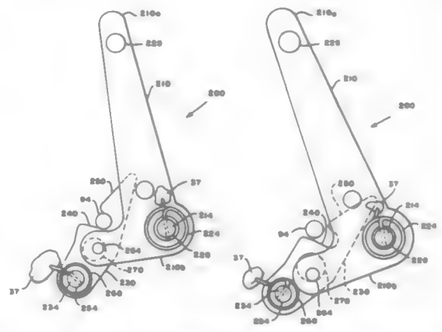
LATCHING MECHANISM WITH INDEPENDENT BIASED LATCHING MEMBERS

Joseph H. Marzullo, Brookfield, and Curtis Mrozinski, Newtown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 24, 1992, Ser. No. 950,360

Int. Cl.[5] F16B *1/00*

U.S. Cl. 403—324 **5 Claims**



1. A mechanism for releasably latching an assembly which is pivotable between first and second side frame members in a machine, comprising:

a pivot rod mounted transversely between the first and second side members and pivotally biased away from the assembly;

first and second levers rigidly secured to said pivot rod at opposite ends of said pivot rod;

first and second latching members independently and pivotally mounted to said first and second side frame members adjacent to said first and second levers respectively, said first and second latching members being biased towards the assembly, each of said first and second latching members including a notch for receiving a connecting rod in the assembly; and

each of said first and second levers including a guide pin for urging said first and second latching members away from the assembly when said first and second levers pivot towards the assembly.

5,368,410

PROCESS FOR MAKING A MATTRESS-TYPE GABION FOR SOIL STABILIZATION

Francesco Ferraiolo, Ca'de Fabbri, Italy, assignor to Officine Maccaferri SpA, Bologna, Italy

Filed Feb. 2, 1993, Ser. No. 12,538

Int. Cl.[5] E02B *3/12*

U.S. Cl. 405—16 **8 Claims**

1. A process for making a mattress gabion for stabilizing an earthwork, comprising the steps of:

(a) forming a wire mesh structure having a bottom and a

plurality of upwardly open cells defined between partitions constituted by upstanding folds of wire mesh unitary with the bottom and subdividing said structure into said cells and longitudinal and transverse walls and wire stitching said partitions to said longitudinal walls;

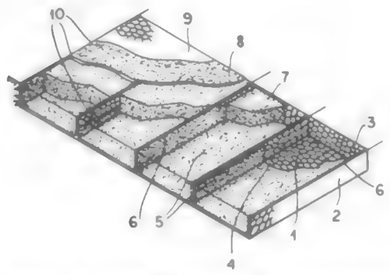
(b) lining said partitions, said bottom and said walls internally of said cells with a geotextile material capable of retaining soil in said cells;

(c) filling said cells with a vegetation-growth supporting medium;

(d) applying a geotextile to said structure over said cells and said medium after said cells are filled with said medium;

(e) affixing said geotextile to said structure by wire stitching it to said partitions and said walls at upper edges thereof; and

(f) affixing a cover of wire mesh over said structure after filling it with said medium.



6. A mattress gabion for stabilizing an earthwork, comprising:

a wire mesh structure having a bottom and a plurality of upwardly open cells defined between partitions constituted by upstanding folds of wire mesh unitary with the bottom and subdividing said structure into said cells, and longitudinal and transverse walls and wire stitching securing said partitions to said longitudinal walls;

a lining of a geotextile material interiorly of said cells along said partitions and said longitudinal and transverse walls for preventing escape of soil from said cells;

a filling of a vegetation-growth supporting medium in said cells;

a cover of wire mesh stitched with metal wire to said structure and covering said cells and;

a geocompound between said cover and said medium in said cells, said wire mesh structure and said cover being composed of hexagonal wire mesh.

5,368,411

METHOD AND APPARATUS FOR ON THE SITE CLEANING OF CONTAMINATED SOIL

Billy J. Losack, Hondo, Tex., assignor to Tuboscope Vetco International, Inc., Houston, Tex.

Filed Aug. 20, 1992, Ser. No. 934,358
Int. Cl.[5] B08B *3/08, 7/00*
U.S. Cl. 405—128 **16 Claims**

1. An in situ method of cleaning contaminated soil comprising

(a) breaking up contaminated soil;

(b) admixing soil with water and a biodegradable detergent in a proportion effective to obtain an aqueous slurry where the soil and any contaminant and the detergent interact;

(c) allowing the slurry to stand under conditions effective to permit any contaminant-detergent formations to rise in the aqueous slurry;

(d) separating the contaminant-detergent formations from the aqueous slurry which now comprises partially decontaminated soil and water;

(e) separating the partially decontaminated soil from the water phase;

(f) repeating steps (b) through (e) until the soil has a content of contaminant lower than a predetermined value;

(g) admixing the low contaminant soil with water and an activating agent for contaminant-degrading soil-indigenous microorganisms, the agent being capable of generating H_2O_2in solution;

(h) allowing the microorganisms to interact with the aqueous mixture comprising the microorganism activating agent under conditions effective to substantially degrade contaminant remaining therein;

(i) separating the activating agent-treated soil from the aqueous mixture comprising the activating agent;

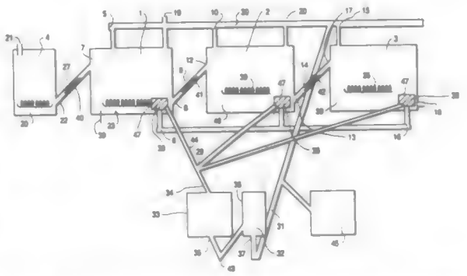
(j) washing the separated soil and returning it to the environment;

(k) filtering the contaminated water separated in step (3); and

(l) recycling the filtered water into step (b) or (g) or returning it to the environment.

13. An apparatus for in situ cleaning contaminated soil and water comprising

first container provided with first means for inputting soil, first means for outputting soil, first means for inputting water, first means for outputting water, first means for outputting contaminant-detergent formations, first means of mixing and moving the soil from the first soil input means to the first soil output means, first heating means, first skimming means, and first means for separating water from soil;



second container provided with second means for inputting soil, second means for outputting soil, second means for inputting water, second means for outputting water, second means for outputting contaminant-detergent formations, second means of mixing and moving the soil from the second soil inputting means to the second soil outputting means, second heating means, second skimming means, and second means for separating water from soil;

third container provided with third means for inputting soil, third means for inputting water, and means for inputting a microorganism activating agent, third means for outputting soil, third means for outputting water, third means of mixing and moving soil from the third soil input means to the third soil output means, third heating means and third means for separating water from soil;

means for connecting the first soil output means with the second soil input means, the connecting means being provided with a fifth means of mixing and moving the soil from the first soil output means to the second soil input means;

means for connecting the second soil output means with the third soil input means, the connecting means provided with a sixth means of mixing and moving soil from the second soil output means to the third soil input means;

means for connecting the third water output means with the site of the contaminated water;

means for returning substantially contaminant free soil to the situs, the soil returning means being connected to the third soil output means;

at least one means for separating water from contaminants provided with water input and output means;

at least one means for filtering water provided with water input and output means;

means for connecting the output means of the at least one water/contaminant separation means with the input means of the at least one filtering means;

means for connecting the water output means of the first, second and third containers with the input means of the water/contaminant separation means;

means for connecting the output means of the at least one water filtering means with the water input means of the first, second and third containers for recirculating water; and

means for circulating the water through the water connecting means, the at least one water/contaminant separation means, the at least one water filtering means and first, second and third containers.

5,368,412

USE OF A GELLING COMPOSITION IN WASTE TREATMENT DISPOSAL OR SOLAR PONDS

Everett L. Johnston, and Ahmad Moradi-Araghi, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartleville, Okla.

Division of Ser. No. 904,283, Jun. 25, 1992, Pat. No. 5,259,453.
This application Jun. 25, 1993, Ser. No. 81,877
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—128 **8 Claims**

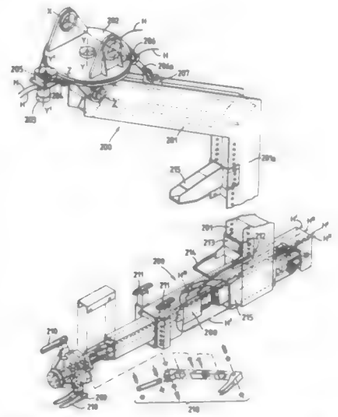
1. A process for preventing the seepage of hazardous waste materials in a waste treatment pond containing residence brine comprising applying a gelling composition in said pond wherein said gelling composition has a density higher than the density of the residence brine of said pond and gels in-situ in said pond.

5,368,413

RELATING TO HANDLING OR LAYING PIPES

David Moore, 1 Laburnum House, High Street, Coleshill, Warks B46 1AZ, United Kingdom

Filed Jul. 29, 1992, Ser. No. 921,247
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—154 **18 Claims**



1. Pipe handling and laying apparatus comprising:

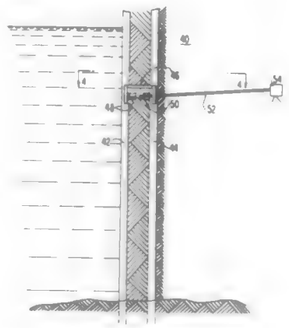
pipe holding and supporting means for holding and supporting a first length of piping as said first length of piping is lifted from a location remote from a previously laid length of piping and introduced toward said second length of piping and joined thereto, and axial extendible and retractable grip means connected to said pipe holding and supporting means for gripping an interior of the second length of piping as the first length of piping is moved into alignment therewith and joined thereto.

5,368,414

METHOD AND SYSTEM FOR REHABILITATING A BULKHEAD

Vincent G. Miller, 235 Benson Pl., Westfield, N.J. 07090

Filed Jul. 19, 1991, Ser. No. 732,787
Int. Cl.[5] E02D *29/02*
U.S. Cl. 405—262 **25 Claims**



1. A method for rehabilitating a bulkhead including a pre-existing wall member supported by a pre-existing tie rod connected to means for anchoring that pre-existing wall member, which method comprises the steps of:

locating a new wall member outboard of the pre-existing wall member; and

connecting the new wall member to said pre-existing wall member via a connecting member such that at least a substantial part of the lateral load developed in said new wall member is transferred to the anchoring means through the tie rod and such that the new wall member is supported without installation of a new tie rod between the pre-existing wall members and the anchoring means.

5,368,415

SPIRAL FLIGHTS FOR IMPROVED SOIL MIXING AND EFFICIENT BORING FOR USE ON MULTI-SHAFT AUGER SOIL MIXING APPARATUS

Ikuo Kono, Tokyo, Japan, and David S. Yang, Fremont, Calif., assignors to S. M. W. Seiko, Hayward, Calif.

Filed Feb. 18, 1993, Ser. No. 19,022
Int. Cl.[5] E02D *3/12, 5/18*
U.S. Cl. 405—267 **16 Claims**

1. A multi-shaft auger apparatus for mixing soil with a chemical hardener in situ to form a hardened soil-cement column set, the apparatus comprising:

(a) at least two substantially parallel shafts;

(b) means for rotating the shafts;

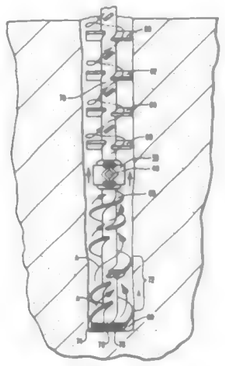
(c) means securely affixed to each of the shafts for boring downwardly through the soil;

(d) means for injecting the chemical hardener into the soil in the borehole;

(e) a support structure located about each respective shaft such that the support structure does not rotate as each respective shaft rotates in the soil; and

(f) soil movement assisting means for aiding in the movement of soil around the support structure as the shaft moves

downwardly through the soil so as to homogeneously mix the soil with the chemical hardener, the soil movement



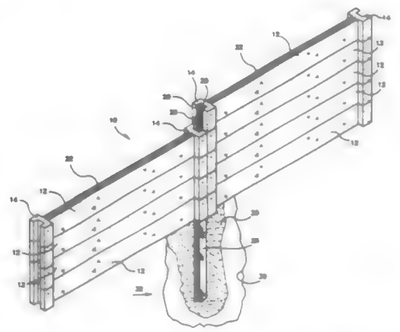
assisting means being affixed to at least one of the shafts and separate from the means for boring downwardly.

5,368,416

BUILDING COMPONENT FOR A NOISE BARRIER RETAINING WALL

Cataldo, 54545 Foss, Mt. Clement, Mich. 48042

Filed Sep. 23, 1993, Ser. No. 125,924
Int. Cl.[5] E02D *3/02*
U.S. Cl. 405—285 **20 Claims**



1. A building component for a retaining wall which is anchored to a substratum with reinforcing members that serve to interconnect said building component with at least second and third building components, said second and third building components being substantially identical to said building component, said building component comprising:

an intermediate portion having a first surface, an oppositely disposed second surface, and an oppositely disposed pair of ends;

an interconnecting feature formed at each of said pair of ends for receiving at least a portion of one of said reinforcing members;

means disposed at each of said interconnecting features for securing said one of said reinforcing members to said building component during the construction of said retaining wall so as to substantially align said one of said reinforcing members with respect to said building component;

means formed on said first surface of said intermediate portion for receiving a first portion of said second building component when said first surface is abutted by said second building component; and

means formed on said second surface of said intermediate portion for engaging a second portion of said third building component when said second surface is abutted by said third building component;

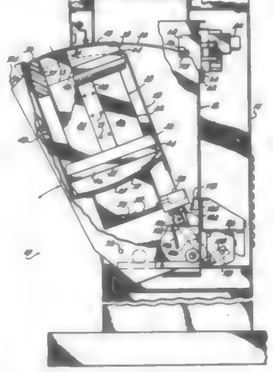
whereby said securing means serves to position and align said one of said reinforcing members relative to said building component and relative to said retaining wall substantially throughout the construction of said retaining wall, so as to substantially eliminate a requirement to independently and permanently align and set said reinforcing members in said substratum prior to the construction of said retaining wall.

5,368,417

CAPTIVE CARRIER FOR A TRANSPORT TUBE SYSTEM

Fred W. Benjamin, Mahwah; Edward R. Gralinski, Columbia; Robert D. Smith, Jr., Wantage, and Victor J. Vogel, Oak Ridge, all of N.J., assignors to Mosler Inc., Wayne, N.J.

Filed May 28, 1993, Ser. No. 69,875
Int. Cl.[5] B65G *51/26*
U.S. Cl. 406—111 **10 Claims**



1. A carrier slidably contained within a transport tube connected to a terminal, said terminal including a bin for receiving the carrier, the bin and the carrier pivoting about an axis to present the carrier to a user, the carrier comprising:

a body having two opposed open ends;

two end caps, each of said end caps having four sides and a first open end rigidly connected to one of said open ends of said body and a second end, each of said end caps including

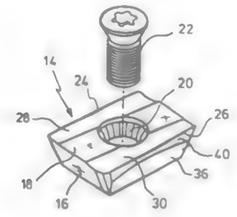
a cover having four side edges and slidably mounted within and proximate to said second end of its respective end cap to move in a direction extending outward from one of said four sides of its respective end cap, said cover including an engagement element adapted to be selectively engaged by a restricting mechanism mounted adjacent the bin, whereby motion of said cover is restricted as said carrier moves relative to said cover in response to the bin with the carrier pivoting about the axis thereby opening and closing the carrier.

5,368,418

INDEXABLE CUTTING INSERT

Bernd Bentjens, Schwarzenbek, and Klaus Oppelt, Lauenburg, both of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Germany

Filed Apr. 21, 1993, Ser. No. 50,967
Claims priority, application Germany, Apr. 23, 1992, 4213284
Int. Cl.[5] B23C *5/20, 5/04*
U.S. Cl. 407—114 **6 Claims**



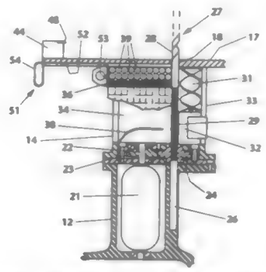
1. A peripheral indexable cutting insert for mounting to a tool holder under axial mounting angle (a) different from zero, said insert comprising a body having a longitudinal central axis and a generally trapezoid cross-section, the body comprising a substantially planar mounting face, a substantially planar front face opposite said mounting face and opposing side faces formed therebetween, at least a pair of opposite cutting edges having diagonally opposed leading and trailing ends, each cutting edge formed at the intersection of a chip surface with an adjacent clearance surface, each chip surface formed on the front face adjacent a side face, and each clearance surface formed on a side face adjacent said front face, the chip surfaces being formed by respective linear grooves shaped in the front face, each said groove extending under an acute angle (b) opening from the leading towards the training end of its associated cutting edge with respect to the longitudinal central axis of the body, each groove having a depth continuously increasing from the trailing towards the leading end of its associated cutting edge and provided with a substantially constant cross-sectional radius of curvature throughout its length, the angle of each said chip surface continuously changing from the trailing towards the leading end, whereby, when mounted to a holder under a predetermined said axial mounting angle (a), the effective chip angle with respect to a workpiece from the leading towards the trailing end is substantially constant.

5,368,419

APPARATUS FOR IMPLANTING LATENT INSECTICIDE

Robert E. Imus, 3535 Via Flores, Soquel, Calif. 95073

Filed Jan. 12, 1993, Ser. No. 3,503
Int. Cl.[5] B23B *41/00*
U.S. Cl. 408—67 **20 Claims**



1. An assembly for implanting latent insecticide within a structural object, comprising;

means for storing a plurality of insecticide loads;

feed means for advancing said insecticide loads individually to a dispensing station within said assembly;

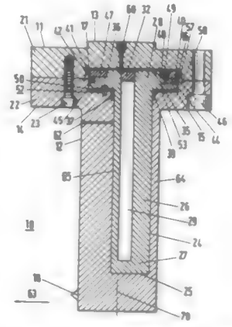
means for drilling a hole in the structural object and advancing the insecticide load at said dispensing station into said hole and sealing said hole.

5,368,420

ROTATING DRILL HEAD WITH A BORING BAR WHICH IS PIVOTABLE BY A SLIGHT DISTANCE VERTICALLY TO THE AXIS OF ROTATION BY FLUIDIC MEANS

Wilfried Gerk, Roedermark, and Hartmut Hirt, Gelnhausen, both of Germany, assignors to Samson AG, Frankfurt, Germany

Filed May 14, 1993, Ser. No. 61,863
Claims priority, application Germany, Jun. 4, 1992, 4218467
Int. Cl.[5] B23B *51/00*
U.S. Cl. 408—156 **5 Claims**



1. In a cutting chisel holder for holding a cutting chisel and which functions as a rotary drill head, said chisel holder being precisely adjustable by hydraulic means and including a base, a resilient driven member which is sealed relative to the base, a fluid pressure-medium chamber having a fluid inlet, the chamber being arranged between the base and the driven member, stiffening means, and a boring bar having an eccentrically bored recess for receiving the stiffening means, the stiffening means being movable by the driven member in such a way that the cutting chisel moves around a curved path running vertically relative to the plane of rotation, the improvement comprising the stiffening means being connected to the driven member and the boring bar being connected to the driven member.

5,368,421

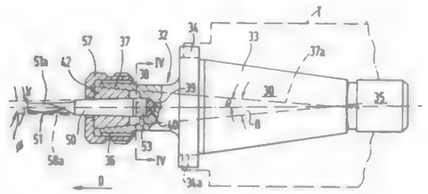
TOOL HOLDER AND A TOOL THEREFOR

Kenneth A. J. Head, 14 Westlecot Road, Swindon-Wiltshire SN1 4HB, England

PCT No. PCT/GB87/00419, § 371 Date Dec. 19, 1988, § 102(e) Date Dec. 19, 1988, PCT Pub. No. WO87/07548, PCT Pub. Date Dec. 17, 1987
PCT Filed Jun. 16, 1987, Ser. No. 288,040
Claims priority, application United Kingdom, Jun. 16, 1986, 8614579
Int. Cl.[5] B23B *31/165, 31/173, 51/00*
U.S. Cl. 408—240 **1 Claim**

1. A combination of a Tool Holder and Cutting Tool, the Tool Holder comprising a body having a frustum conical bore with its wide end opening at a forward end of said body and its narrow end closed in the body, a rearward end of the body having a tapered shank, the body having at its said forward end an external threaded portion coaxial with said frustum conical bore and located radially outward of said frustum conical bore, said body rotationally receiving an ejector pin in a bore extending transversely to a longitudinal axis defined by said frustum conical bore and being adjacent to said closed end of said

frustum conical bore, said ejector pin having a cut-out slot therein extending transversely to a longitudinal axis defined by said ejector pin, a nosecap having internal threads threadable on said external threaded portion of said body and having a shoulder extending in a direction radially inward from said internal threads, a flexible collet having a plurality of circumferentially spaced wedge shaped gripping segments having rubber interposed between adjacent segments, when said collet is unstressed said segments having radially outward surfaces coincident with a notional cone of an angle greater than the angle of said frustum conical bore and radially inward surfaces equally spaced from and parallel to a longitudinal axis defined by said collet; the cutting tool having a cutting portion to an axially forward end thereof and a tang at an axially rearward end thereof receivable in said cut-out slot in said ejector pin



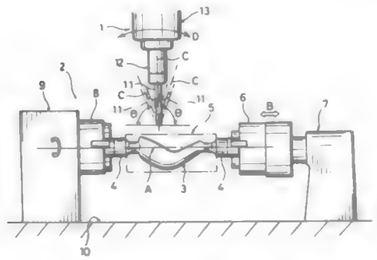
and a frustum conical shank portion intermediate between said cutting portion and said tang, the large diameter of said frustum conical shank portion being axially rearward to the small diameter of that portion; whereby when said collet is fitted in said frustum conical bore with the small diameter portion of the outer surfaces defined by said notional cone being adjacent to the closed end of said frustum conical bore and said nose cap threaded on said external threaded portion of said body and said cutting tool inserted into the internal bore defined by said collet said nose cap can be tightened to axially displace said collet by way of engagement of said collet and said nose cap shoulder to cause said internal bore defined by said collet to contract and conform to the frustum conical tool shank portion and urge said tang to bottom out in said cut-out slot in said ejector pin thereby preventing relative rotation between said tool holder and said cutting tool.

5,368,422

METHOD FOR MANUFACTURING GOLF CLUB HEADS OR THEIR PROTOTYPES

Masatoshi Banji, Kobe, Japan, assignor to Sumitomo Rubber Industries, Inc., Kobe, Japan

Filed Jun. 3, 1993, Ser. No. 70,761
Claims priority, application Japan, Jun. 8, 1992, 4-174693
Int. Cl.[5] B23B *1/00*; B23C *3/04*
U.S. Cl. 409—84 **13 Claims**



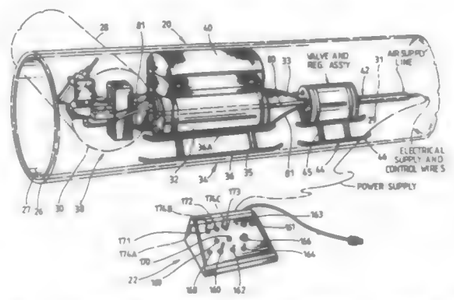
1. A method for manufacturing golf club heads or their prototypes, characterized by the steps of holding a material of which a golf club head or a prototype thereof is made such that the material can be pivoted and indexed about a single axis of a holding installation, pivoting said material about said axis to a predetermined first machining position, cutting said material by a cutting tool in an intended outer surface configuration of a golf club head as said material and said cutting tool undergo relative movement with respect to each other in said first machining position along said holding installation axis by using a numerically controlled computerized machine tool provided with a cutter means rotated about a cutting axis that intersects the axis of said holding installation at right angles thereto, and movable along said cutting axis toward and away from said holding installation axis, and varying the angle of said machine tool with respect to said axis of the holding installation, wherein said numerically computerized machine tool is arranged to be variable in a predetermined angle of the cutter means, repeating the pivoting of said material about said holding installation axis in an indexed manner to succeeding machining positions and the cutting step in each machining position until the intended outer surface configuration is completed.

5,368,423

ROBOTIC CUTTER

Robert N. Hanna, Houston, Tex., assignor to Inliner U.S.A., Inc., Houston, Tex.

Filed Feb. 3, 1994, Ser. No. 191,424
Int. Cl.[5] B23C *3/00*; E03F *3/06*
U.S. Cl. 409—132 **10 Claims**



10. A method of opening a closed lateral conduit from within a previously lined main conduit, said lateral conduit having a longitudinal axis, comprising the steps of:

positioning a cutting apparatus within said main conduit adjacent said closed lateral conduit, said cutting apparatus having a cutting motor disposed therein with a cutting tool disposed therein, said cutting motor and tool being rotatable in a generally circular path about the longitudinal axis of said lateral conduit;

positioning said cutting tool adjacent said closed lateral conduit such that said cutting motor and tool rotates generally about the longitudinal axis of said lateral conduit;

actuating said cutting motor so as to cause rotation of said cutting tool; and

advancing said cutting motor and tool in a direction generally parallel to the longitudinal axis of said lateral conduit while rotating said cutting motor and tool in said generally circular path, thereby opening said lateral connection.

5,368,424

SURFACING TOOL

Jerome H. Bettenhausen, 902 49 Ave Pla., Greeley, Colo. 80634

Filed Apr. 5, 1993, Ser. No. 43,209
Int. Cl.[5] B27C *1/02*
U.S. Cl. 409—182 **1 Claim**

1. A surfacing tool for removing imperfections from a painted surface without marring such surface which comprises:

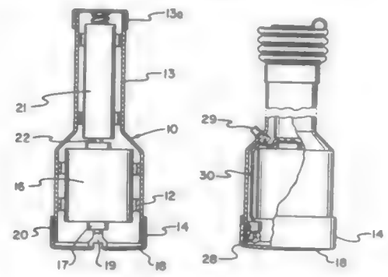
a tool housing having an upper hand-grip portion and a work-surface contacting base portion including a first portion and an annular collar member;

a cutter blade;

a drive motor connected to said cutter blade for rotating said cutter blade about a central axis passing through said tool housing upper portion and said base portion;

said base portion further including adjustment means to advance and retract said cutter blade relative to a work-contacting surface of said base portion;

wherein said adjustment means comprises threads on an end of said first portion remote from said hand grip portion and threads on said annular collar member such that said annular collar member is threadably engaged with and extends around said first portion, said collar member having said work-contacting surface at a bottom thereof and a cutter blade exposing opening in the center thereof through which said cutter blade extends;



wherein said housing upper hand-grip portion is hollow and defines a first enclosed space, with said housing upper hand-grip portion having an exterior diameter of a first transverse extent;

a battery disposed in said first enclosed space;

wherein said housing base portion is hollow and defines a second enclosed space, with said first portion of said housing base portion having an exterior diameter of a second transverse extent;

said drive motor and said cutter blade being disposed in said second enclosed space; and

wherein said first transverse extent is less than said second transverse extent such that said first transverse extent defines a gripping means for gripping the tool during operation;

and further comprising a light source means for illuminating a work surface, said light source means being provided adjacent said annular collar member and internal of said second enclosed space.

5,368,425

MULTI-AXIS LINEAR MOTOR POSITIONER WITH Y-AXIS SUPPORTED AT SINGLE END

Daniel M. Mills, Riverview; Richard Ogletree, Southfield, both of Mich., and Thomas J. Lindem, Rockford, Ill., assignors to Ford Motor Company, Dearborn, Mich.

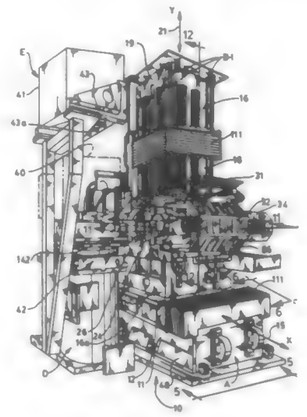
Filed Jul. 31, 1992, Ser. No. 924,692
Int. Cl.[5] B23Q *1/02*
U.S. Cl. 409—235 **23 Claims**

1. A multiple-axis positioning machine for accurately placing and feeding a cutting tool, comprising;

(a) support means for defining multiple axes of movement for the tool by use of stacked movable elements having a predetermined mass;

(b) preloaded bearing means interposed with and between said movable elements to provide an interference movement fit; and

(c) linear motor means associated with said movable elements sufficient in force to apply a selectively variable acceleration or deceleration thrust to each movable element that overcomes said bearing preload and is effective to move said tool at a maximum rate of at least 0.5 G, said linear motor means having a motor drive circuit with an



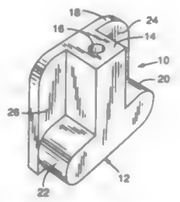
operating frequency range close to but below the natural structural frequency of said support means.

5,368,426

CONNECTOR AND METHOD FOR EDGE-TO-EDGE ASSEMBLY OF PRESSBOARD TO FORM FURNITURE STRUCTURES

David W. Reeves, Aloha, Oreg., assignor to Thrustmaster, Inc., Tigard, Oreg.

Continuation-in-part of Ser. No. 3,926, Jan. 21, 1993, Pat. No. Des. 345,580. This application Jun. 4, 1993, Ser. No. 72,172
Int. Cl.[5] F16B *37/00, 7/08*; B25G *3/00*
U.S. Cl. 411—104 **9 Claims**



1. A connector for abutting and interconnecting two sheets of wood or pressboard comprising:

a horizontal channel member having a front side and a back side;

a vertical channel member connected at a first end to the horizontal channel member and having a front side and a back side and having a lengthwise hole formed in a second end for receiving a screw; and

a backplate connected to the back side of the vertical channel member and the backside of the horizontal channel member.

5,368,427

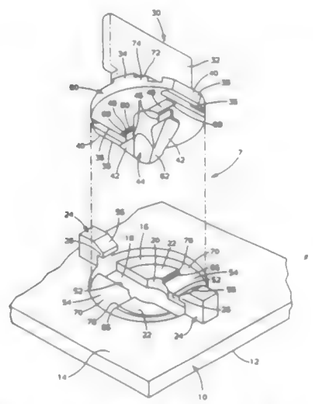
QUARTER TURN FASTENER

David A. Pfaffinger, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1993, Ser. No. 14,603
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—553 **28 Claims**

1. A fastening arrangement of a first member connected with a second member comprising:

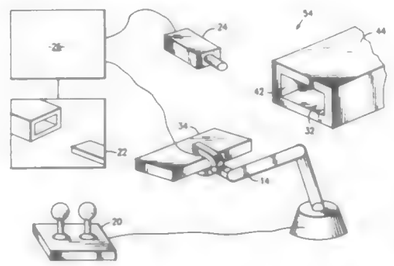
a first member having first and second surfaces and an elongated aperture intersecting the first and second surfaces;
a second member having a first surface for contact with the first member second surface, the second member having an aperture intersecting with the first surface for registration with the aperture of the first member, the second member also having a second surface generally opposite the first surface with a ramp; and the second member second surface having at least two arms;
a pin having a midportion with a first surface with a ramp for engagement with the ramp of the second member second .surface, the pin also having on the end of the pin adjacent the first member projecting from the midportion a lock



wing, and the pin having on a side of the midportion opposite the lock wing a torsional force receptive surface to facilitate the importation of torsional force to the pin to achieve angular positional relocation of the pin, wherein to secure the first and second members together the pin lock wing is projected through the apertures of the first and second members and a torsional relocation of the pin causes the pin midportion to be displaced with respect to the second surface of the second member and for the midportion to be captured by the arm of the second member and the lock wing to be rotated to secure the pin from removal by its angular orientation with respect to the first member aperture.

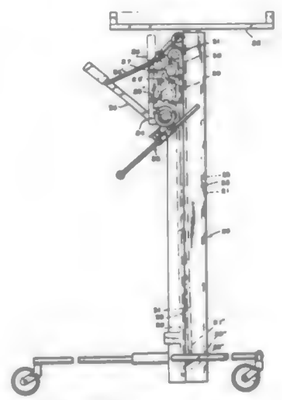
5,368,428
APPARATUS AND METHOD FOR PRODUCING A VIDEO DISPLAY
John P. Hussey, Setauket; Richard M. Green, Bronx, and Saul L. Keslowitz, Bayside, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.
Division of Ser. No. 428,234, Oct. 27, 1989, Pat. No. 5,181,823. This application Jan. 5, 1993, Ser. No. 642
Int. Cl.[5] B25J *3/00*
U.S. Cl. 414—1 **7 Claims**

6. Apparatus for moving an article into a selected position, comprising:
a moveable mechanical arm;
arm control means connected to the mechanical arm to operate the arm to grip the article and to carry the article into the selected position;
video display means;
a video camera located adjacent the article and connected to the video display means to produce a picture thereon showing both the article and the selected position;
sensing means to sense a force on the article and to generate a signal indicating the magnitude of the sensed force; and
graphical display means connected to the sensing means to receive said signal therefrom, and connected to the video



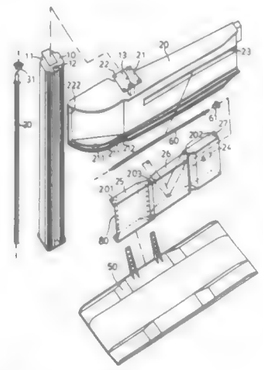
display means to generate thereon a graphical display of the sensed force.

5,368,429
PANEL LIFTING APPARATUS
Roland O. Young, Rte. 1, Box 138, Grand Forks, N. Dak. 58201
Continuation of Ser. No. 692,602, Apr. 29, 1991, abandoned. This application Feb. 17, 1993, Ser. No. 18,120
Int. Cl.[5] B66F *9/12*
U.S. Cl. 414—11 **2 Claims**



1. A panel lifting device comprising:
first, second, and third elongated telescoping support sections, each having an upper and a lower end;
first, second, and third, separate, disconnected chains, one for each of the telescoping sections, each having an upper and a lower end;
an elongated non-telescoping section receiving said first telescoping section in a telescoping fashion; and
a panel support mounted to the upper end of the third telescoping section for supporting a panel thereon; wherein
said first chain has its upper and lower ends, respectively, connected to the upper and lower ends of the first telescoping sections;
said second chain has its upper end connected to the upper end of the non-telescoping section and its lower end connected to the lower end of the second telescoping section;
said third chain has its upper end connected to the upper end of the first telescoping section and its lower end connected to the lower end of the third telescoping section;
a first idler gear is rotatably mounted to the first telescoping section adjacent its upper end, said second chain has it upper end encircling over the top of said first idler gear whereby raising of said first telescoping section raises said first idler gear which raises the lower end of the second chain thereby raising the second telescoping section;
a second idler gear is rotatably mounted to the second telescoping section adjacent its upper end, said third chain has its upper end encircling over the top of said second idler gear whereby raising said second telescoping section raises said second idler gear which raises the lower end of the third chain thereby raising the third telescoping section; and
drive means for engaging and driving said first chain to raise said first telescoping section and thus correspondingly raising said second and third telescoping sections.

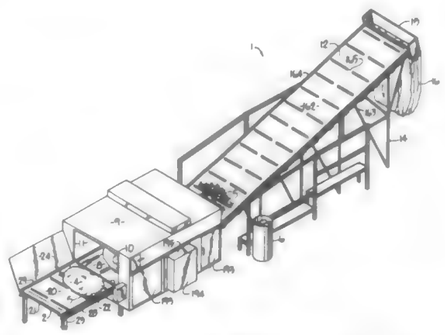
5,368,430
PARKING DEVICE
Pei-Chang Lin, P.O. Box 82-144, Taipei, Taiwan, Prov. of China
Filed Jul. 21, 1993, Ser. No. 95,174
Int. Cl.[5] B66F *7/14*
U.S. Cl. 414—228 **1 Claim**



1. A parking device comprising:
a vertical support formed with four grooves;
a vertical frame provided with a tubular member and movably engaged with the grooves of said vertical support;
a dog slidably mounted in said vertical frame and including a first leaf, a second leaf and a third leaf pivotally connected between said first leaf and said second leaf; and
a base frame fixedly connected with the first leaf of said dog;
whereby said vertical frame together with said base frame may be elevated and said base frame may be rotated as required.

5,368,431
TRASH BAG OPENER AND REMOVER
Edward B. Willey, 9248 Craig, Overland Park, Kans. 66212; J. Wayne Willey, deceased, late of 1510 Cedar, Belton, Mo. 64012, and by Jack H. Willey, executor
Filed Mar. 26, 1993, Ser. No. 38,718
Int. Cl.[5] B65G *65/04*
U.S. Cl. 414—412 **11 Claims**

9. An apparatus for removing bags, which comprises:
a) a substantially enclosed housing comprising:
i) a receiving end and a discharge end;
ii) a slicing zone adjacent to said enclosed housing receiving end having means for slicing bags filled with material;
iii) a slitting zone proximate to said slicing zone having means for slitting said bags;
iv) a bag stripping zone between said slitting zone and said enclosed housing discharge end having means for stripping said bags from said material and placing said bags on top of said material for removal thereof;
v) an input conveyor means for moving said bags and said material in a plane generally horizontal between said enclosed housing receiving end and said slicing zone; and
vi) first and second rotational control means for propelling and containing said bags and said material within said enclosed housing, said first rotational control means including a first shaft mounted rotating wheel for moving said bags and said material from said input conveyor means to said slicing zone, said second rotational control means including a second shaft mounted rotating wheel for moving said bags and said material from said slitting zone to a discharge conveyor and said bag stripping zone;

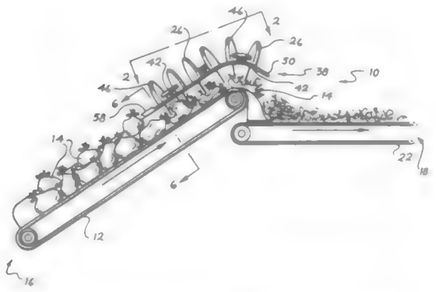


b) a feed conveyor means for feeding said enclosed housing receiving end with said bags filled with said material, said feed conveyor means having connection means with said input conveyor for driving said feed conveyor;
c) said discharge conveyor having means for removing said bags and said material from said enclosed housing and having first and second ends, and means for driving said discharge conveyor means, said first discharge conveyor end being disposed in said enclosed housing, said discharge conveyor extending out of and away from said enclosed housing discharge end with said second discharge conveyor end being remote from said enclosed housing; and
d) a frame affixed to said enclosed housing for supporting said feed and discharge conveyors.

5,368,432
APPARATUS AND METHOD FOR OPENING PLASTIC BAGS CONTAINING RECYCLABLE MATERIALS
James D. Schoenhard, P.O. Box 325/59 Country Lake Estates, Athens, Ill. 62613
Filed May 6, 1993, Ser. No. 58,636
Int. Cl.[5] B65B *69/00*
U.S. Cl. 414—412 **16 Claims**

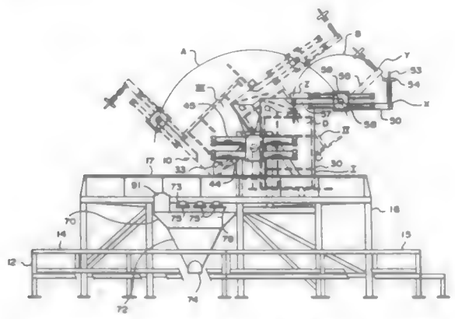
1. An apparatus for opening plastic bags containing recyclable materials, the apparatus comprising:
a) a feed conveyor for transporting the plastic bags from a receiving area to a sorting area; and
b) a plurality of bag opener units positioned along said feed conveyor, each of said bag opener units comprising a flexible line with one portion connected to a rotating head and another portion having a free end, and a cover opposite said feed conveyor to partially enclose the rotating

head and the flexible line, whereby the free end of each line strikes and opens the plastic bags as the line is rotated



by its rotating head and as the plastic bags are transported along said feed conveyor.

5,368,433
DRUM DUMPER
Kenneth W. Seyffert, Houston, Tex., assignor to Environmental Procedures, Inc., Houston, Tex.
Filed Jul. 14, 1993, Ser. No. 91,554
Int. Cl.[5] B65G *65/23*
U.S. Cl. 414—412 **12 Claims**



1. Apparatus for emptying at least one sealed container of material, the at least one sealed container having a top and a height and a body within which is held the material, the apparatus comprising

a base,

a support means movably mounted on the base, the support means for holding the at least one container, the support means having a bottom shelf upon which the at least one container rests,

movable puncturing means connected to the support means and movable to puncture the top of the container,

stop means secured to the support means for stopping movement of the at least one container as the support means tilts the at least one container, the stop means secured at a point a distance from the bottom shelf of the support which exceeds the height of the at least one container so that the at least one container moves that distance upon tilting to jarringly contact the stop means thereby facilitating removal of the material from the at least one container, and

reception means for receiving material flowing from a tilted opened container or containers,

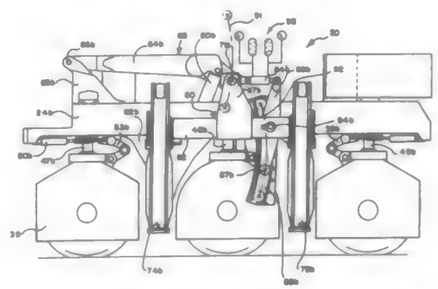
the reception means comprising

hopper discharge means for receiving the material and for discharging it from the apparatus,

vibratable basket means removably disposed within an upper portion of the hopper discharge means, and

vibrating means on the vibratable basket means for vibrating the vibratable basket means.

5,368,434
SELF-PROPELLED STRADDLE CARRIER
Edward S. Kress, Brimfield; Dennis R. Thomas, Peoria, and Michael A. Rabes, Bishop Hill, all of Ill., assignors to Kress Corporation, Brimfield, Ill.
Filed Apr. 30, 1993, Ser. No. 55,815
Int. Cl.[5] B60P *3/00*
U.S. Cl. 414—460 **44 Claims**



1. A self-propelled straddle carrier comprising, in combination,

a main frame including a pair of spaced-apart, longitudinally extending side beams and at least one arch-shaped cross beam having a generally horizontally extending central portion and downwardly depending legs rigidly connected to said side beams,

a plurality of wheels supporting said main frame with at least two wheels on each side disposed substantially directly under each of said side beams, said wheels being connected to said side beams by substantially vertically extending strut assemblies,

said wheels, strut assemblies, side beams and cross beam having interior sides forming a substantially tunnel-shaped load carrying space therebetween defining an inner envelope of said carrier, said wheels, strut assemblies and side beams having exterior sides defining a maximum lateral clearance profile of said carrier, said cross beam having an upper side defining substantially a maximum vertical clearance profile of said carrier, and said maximum lateral and vertical clearance profiles forming an outer envelope of said carrier,

a load supporting assembly suspended from said main frame for vertical movement up and down between said side beams for supporting and carrying a load in said tunnel-shaped load carrying space,

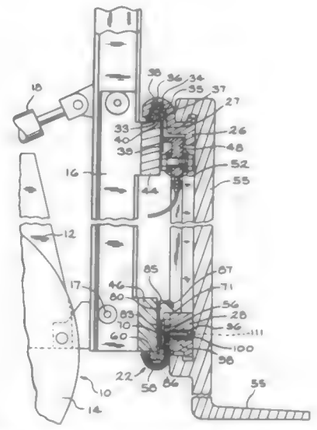
lift means interconnecting said main frame and said load supporting assembly for raising and lowering said load, said lift means being disposed within said vertical clearance profile when said load supporting assembly is lowered,

said lift means including a lift frame having a pair of legs with each leg disposed substantially directly above each of said side beams and pivotally connected thereto, means for connecting said lift frame and said load supporting assembly, and a pair of lift actuators connected between said side beams and said lift frame legs for raising and lowering said lift frame and load supporting assembly,

each of said lift actuators being connected to one of said side beams by a support depending downwardly substantially directly below said side beam and said side beam being formed with a vertical opening therein through which said lift actuator extends upwardly for connection to said lift frame,

and propulsion means including at least one engine and drive train connected to one of said wheels for reversibly driving said carrier, said propulsion means being mounted on said main frame and disposed substantially between said inner and outer envelopes of said carrier.

5,368,435
SIDE SHIFTER ATTACHMENT AND RETAINER FOR LIFT TRUCK ATTACHMENTS
Wayne W. Bostad, Vancouver, Wash.; Donald C. Morrison, Gresham, Oreg., and Dean J. Mao, Vancouver, Wash., assignors to Brudi, Inc., Ridgefield, Wash.
Filed Jan. 28, 1993, Ser. No. 10,424
Int. Cl.[5] B66F *9/14*
U.S. Cl. 414—667 **22 Claims**



1. A side shifter (20) attachment for a lift truck (10), said lift truck having an upper crossbar (44) and a lower crossbar (46), said side shifter comprising:

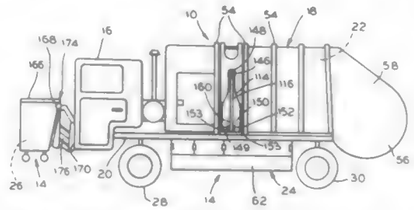
a rigid frame (24) slideably positioned with respect to said upper and lower crossbars (44, 46) of said lift truck, said frame (24) having an upper horizontal cross member (26) and a lower horizontal cross member (28);

a low-friction slide block (80) positioned on said lower horizontal cross member (28), said slide block improving the slideability between said lower horizontal cross member (28) and said lower crossbar (46);

a lower intermediate plate (81) having a first (75) and a second surface (77) is positioned between said slide block (80) and said lower crossbar (46), said first surface (75) being in contact with said slide block (80) and said second surface being in contact with said lower crossbar (46), at least said first surface (75) of said lower intermediate plate (81) having a smooth, low-friction surface to facilitate sliding of said lower horizontal cross member (28) with respect to said lower crossbar (46); and

a drive means (52) having a first end connected to said rigid frame (24) and a second end operatively connected to said upper cross bar (44), said drive means being capable of shifting said rigid frame (24) with respect to said upper and lower cross bars (44,46) of said lift truck, polished surface of said lower intermediate plate (81) reducing the force necessary by said drive means (52) to move said frame (24) of said side shifter (20).

5,368,436
METHOD FOR TRANSPORTING WASTE MATERIAL
Gene Freiburger, R.R. 1, Lisbon, Iowa 52253
Filed Aug. 17, 1992, Ser. No. 931,207
Int. Cl.[5] B65F *3/04*; B65D *88/12*
U.S. Cl. 414—786 **9 Claims**



1. A method for transforming a conventional refuse disposal vehicle into a single combination refuse disposal and recycling vehicle, the method comprising the steps of:

providing a conventional refuse disposal vehicle having a cab portion and a single refuse compartment rearwardly disposed container mounted on a chassis, said single refuse compartment extending substantially the length of said rearwardly disposed container for holding refuse material;

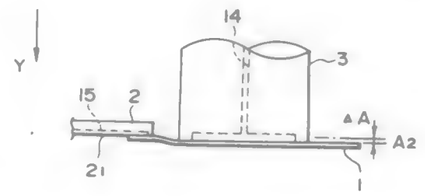
movably attaching a side bin for recyclable material to each side of said rearwardly disposed container, each said side bin extending beneath and substantially the length of said rearwardly disposed container;

providing each of said side bins with a plurality of separate compartments for receiving different recyclable materials; and

providing each separate compartment with a hinged bottom for releasing the recyclable material within said separate compartments;

whereby said single refuse compartment may be loaded with refuse material, said separate compartments may be loaded with recyclable materials, and said recyclable materials may be emptied into a separate container located at a collection site by opening the hinged bottoms of the separate compartments to allow the recyclable materials contained in said separate compartments to fall into said separate container.

5,368,437
SUBSTRATE TRANSFER METHOD
Mitsutoshi Kuno, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 748,816, Aug. 22, 1991, abandoned. This application Jun. 7, 1993, Ser. No. 73,290
Claims priority, application Japan, Aug. 27, 1990, 2-222494
Int. Cl.[5] B65G *49/00*
U.S. Cl. 414—786 **13 Claims**



1. In a substrate transfer method for transferring a substrate from a substrate conveying hand, for holding the substrate with its back attracted to the conveying hand, to a stage having an attraction surface on which the substrate is to be placed, the method comprising the steps of:

moving the conveying hand at a predetermined speed to a

stage attraction starting position which is preset between the attraction surface of the stage and an uninterferred position where the substrate is opposed to the attraction surface of the stage without contact thereto;

starting the attraction of the substrate through the stage;

moving the conveying hand at a speed lower than the predetermined speed to a transfer position which is preset on an opposite side of the attraction surface than the uninterferred position at a predetermined pressing distance from the attraction surface of the stage;

checking the attraction of the substrate through the stage;

releasing the attraction of the substrate through the conveying hand; and

moving the conveying hand to a retracted position which is preset on the opposite side of the attraction surface, away from the transfer position.

5,368,438

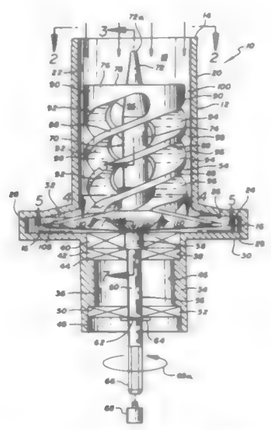
BLOOD PUMP

Donald A. Raible, Santa Ana, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Filed Jun. 28, 1993, Ser. No. 83,405

Int. Cl.[5] F04D *1/08*

U.S. Cl. 415—74 **32 Claims**



1. A dynamic rotary blood pump comprising:

a rotor member having an axially extending core including an end portion rotationally extending into blood flowing to said rotor member, said end portion leading said blood into a circumferentially continuous ring portion defining an inlet end for said rotor member leading to an axially extending entrance recess in said rotor member;

plural helical flute members extending axially and circumferentially from said ring portion and cooperatively defining therebetween a like plurality of pumping channels, said pumping channels opening radially outwardly from said entrance recess to receive blood flow therefrom.

5,368,439

MAGNETIC DRIVE PUMP WITH AXIALLY ADJUSTABLE IMPELLER

Robert W. Piazza, Petaluma, Calif., assignor to Price Pump Manufacturing Company, Sonoma, Calif.

Filed Oct. 12, 1993, Ser. No. 134,712

Int. Cl.[5] F01D *7/00*

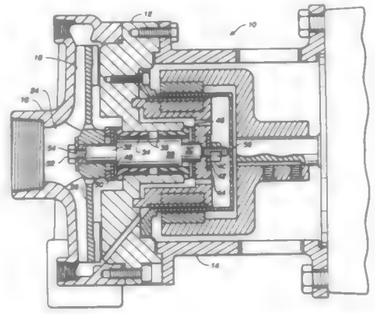
U.S. Cl. 415—131 **8 Claims**

1. Magnetic drive pump apparatus, said apparatus comprising, in combination:

a pump housing including a volute and having a pump housing interior at least partially defined by said volute;

a support shaft mounted in a bushing in said pump housing interior and defining a through bore accommodating said support shaft with said support shaft being both axially and rotatably movable relative to said bushing;

an impeller supported on said support shaft and rotatably mounted in said pump housing interior; and



adjustment means including an element threadedly engaged with said support shaft and biasing means positioned with said bushing between said biasing means and said threaded element, whereby rotational movement of said threaded element relative to said support shaft effects axial movement of said support shaft relative to said bushing and movement of said impeller relative to said volute.

5,368,440

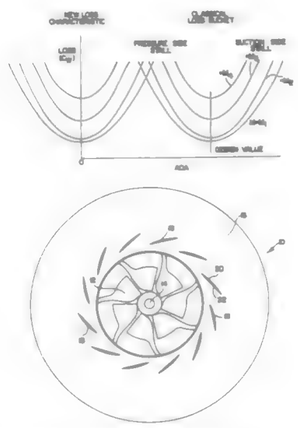
RADIAL TURBO MACHINE

David Japikse, Norwich, and David M. Karon, South Royalton, both of Vt., assignors to Concepts ETI, Inc., Norwich, Vt.

Filed Mar. 11, 1993, Ser. No. 31,162

Int. Cl.[5] F04D *29/44*

U.S. Cl. 415—208.3 **18 Claims**



1. A radial turbo machine comprising:

an impeller means having a rotational axis;

a diffuser means having a plurality of airfoil vanes, said airfoil vanes each having a pressure side facing away from and a suction side facing towards the rotational axis of said impeller means with at least some of said airfoil vanes having a design point angle of attack substantially equal to or less than an angle of attack corresponding to the classic onset of pressure side stall of the airfoil vane.

5,368,441

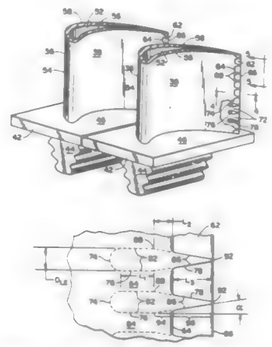
TURBINE AIRFOIL INCLUDING DIFFUSING TRAILING EDGE PEDESTALS

Joseph A. Sylvestro, New Britain; Indrik Linask, Tolland, and Brian K. Beabout, Coventry, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1992, Ser. No. 980,817

Int. Cl.[5] F01D *5/18*

U.S. Cl. 416—97 R **17 Claims**



1. An airfoil for a turbine engine, the turbine engine disposed about a longitudinal axis and including a source of cooling fluid and an axially extending flow path for working fluid, the airfoil extending through the flow path and including:

a pressure wall extending axially and radially about one side of the airfoil, the pressure wall including a pressure wall lip;

a suction wall extending axially and radially about the opposite side of the airfoil, the suction wall spaced from the pressure wall and including a suction wall lip, wherein the suction wall lip is axially downstream of the pressure wall lip, and wherein the suction wall lip and pressure wall lip define a trailing edge;

an internal passage in fluid communication with the source of cooling fluid, the internal passage defining a cooling fluid flowpath with cooling fluid exiting the airfoil the trailing edge; and

a plurality of radially spaced flow dividers extending laterally between the pressure wall and the suction wall and streamwise through the cooling fluid flowpath, and wherein each divider includes:

a flow divider leading edge;

a pair of converging sidewalls, each of the pair of converging sidewalls extending to a point downstream of the pressure wall lip such that a portion of each of the dividers is exposed to the flow path, the pair of converging sidewalls converging in the downstream direction such that adjacent side walls of adjacent dividers diverge to define a covered diffusing region and an uncovered diffusing region between adjacent dividers, wherein the covered diffusing region extends from upstream of the pressure wall lip to the pressure wall lip, and the uncovered diffusing region extends from the pressure wall lip to downstream of the pressure wall lip; and

a pair of parallel sidewalls extending downstream from the flow divider leading edge to the converging sidewalls, each of the pair of parallel sidewalls being parallel with one of a pair of parallel side walls of an adjacent divider to define a constant area channel between adjacent dividers, each of the constant area channels being immediately upstream of one of the covered diffusing regions.

5,368,442

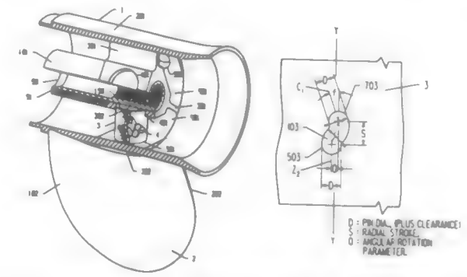
AUTOMATIC VARIABLE DISCRETE PITCH MARINE PROPELLER

Stephen R. Speer, Spokane, Wash., assignor to Nautical Development, Inc., Spokane, Wash.

Continuation of Ser. No. 912,153, Jul. 10, 1992, abandoned, which is a division of Ser. No. 645,096, Jan. 24, 1991, Pat. No. 5,129,785, and a continuation-in-part of Ser. No. 376,112, Jul. 6, 1989, Pat. No. 5,032,057, which is a division of Ser. No. 216,014, Jul. 17, 1988, Pat. No. 4,929,153. This application Nov. 15, 1993, Ser. No. 152,966

Int. Cl.[5] B63H *1/06*

U.S. Cl. 416—167 **15 Claims**



1. A self-actuating variable pitch marine propeller comprising a hub case, drive securing means designed to secure the propeller to a rotating drive shaft on a boat propulsion system such that the propeller rotates with the drive shaft; a plurality of blades extending radially outward from the hub case, each blade comprising a hydrodynamic surface, and a blade shaft extending from the hydrodynamic surface and having a blade shaft axis extending transverse to the drive shaft axis, the center of pressure of the hydrodynamic surface being located forward of the blade shaft axis so as to generate a hydrodynamic torque on the blade tending to turn the blade, towards a higher pitch, about the blade axis when the propeller is rotated, said blade shaft being pivotally connected to the hub case, about the blade shaft axis, such that rotation of the propeller by the drive shaft generates a centrifugal reaction force tending to cause each blade to pivot about the blade axis; mechanical blade holding means mounted to the hub case, and which tends to hold the blade in one extreme pitch position until the rotational movement of the propeller generates sufficient centrifugal force effect to overcome such mechanical hold; whereby the blades are automatically movable between a first lower angle of pitch operational position, and a second higher angle of pitch operational position, as the rotational speed of the propeller increases.

5,368,443

BLADE WHEEL FOR A CENTRIFUGAL PUMP

Erkki Turkia, Inkeroinen, and Matti Relander, Anjala, both of Finland, assignors to Tampella Forest Oy, Anjalankoski, Finland

PCT No. PCT/FI91/00053, § 371 Date Aug. 17, 1992, § 102(e) Date Aug. 17, 1992, PCT Pub. No. WO91/13259, PCT Pub. Date Sep. 5, 1991

PCT Filed Feb. 20, 1991, Ser. No. 920,424

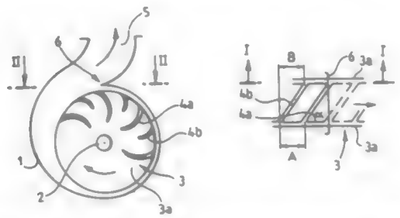
Claims priority, application Finland, Feb. 21, 1990, 900866

Int. Cl.[5] E04D *29/22*

U.S. Cl. 416—184 **3 Claims**

1. A blade wheel for a centrifugal pump, the blade wheel comprising at least two blade discs spaced along an axis of rotation of the discs, at least one row of generally radial blades

extending between the blade discs and spaced successively in a circumferential direction of the blade discs with blade ends radially outermost at peripheries of the blade discs, the blade ends being at an angle to the axis of rotation of the discs, whereby each blade end has a leading edge and a trailing edge in the circumferential direction, wherein in order to reduce



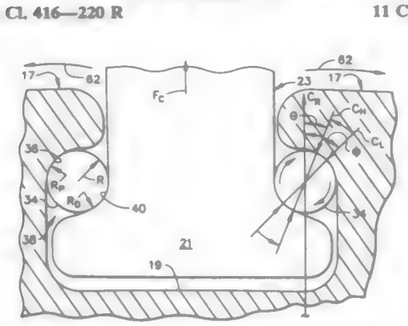
pressure variations caused by the blades in a discharge conduit of the pump, the leading edge of the blade end of a trailing blade in the circumferential direction is one of in axial alignment with the trailing edge of the blade end of a successively leading blade in the circumferential direction and ahead of the trailing edge in the circumferential direction.

5,368,444

ANTI-FRETTING BLADE RETENTION MEANS

Bernard J. Anderson, Danvers, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Aug. 30, 1993, Ser. No. 113,133
Int. Cl.[5] F01D *5/32*
U.S. Cl. 416—220 R **11 Claims**



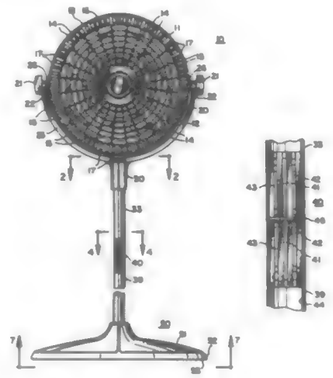
1. A rotor blade retention apparatus comprising:
a rotatable disk having a plurality of disk posts in a rim portion thereof forming a common number of dovetail slots therebetween;
a plurality of blades having generally complementarily shaped dovetails disposed in said dovetail slots; and
rolling contact means disposed in said slots between said dovetails and said disk posts for providing rolling contact therebetween, said rolling contact means comprising:
at least one generally cylindrical pin having a constant pin radius R along an axial length thereof, disposed in a nest complementarily geometrically configured to retain said pin, wherein said nest comprises:
a first curved seating surface of said post having an arcuate contour comprising a first radius of curvature R_P and a first predetermined axial length, arcuate length and angular orientation; and
a second curved seating surface of said dovetail having an arcuate contour comprising a second radius of curvature R_D and a second predetermined axial length, arcuate length and angular orientation such that said radii of curvature R_P, R_D, of said first and second respective seating surfaces have values greater than said pin radius R.

5,368,445

PEDESTAL FAN

Charles Litvin, West Chester, Pa., and Kurt F. Haffken, Newark, Del., assignors to Lasko Metal Products, Inc., West Chester, Pa.

Filed Nov. 3, 1993, Ser. No. 145,174
Int. Cl.[5] F04D *29/64*
U.S. Cl. 416;246 **8 Claims**



1. A pedestal fan which comprises
base means,
yoke means,
a fan housing mounted to said yoke means which has a fan motor and blade therein,
tubing means in detachable connecting relation with said base means and said yoke means;
wherein said tubing means is two pieces of hollow tubing and a connector detachably joining said pieces, and
said connector is of cylindrical configuration with a plurality of longitudinal ribs of decreasing width which are in frictional engagement with said tubing pieces.

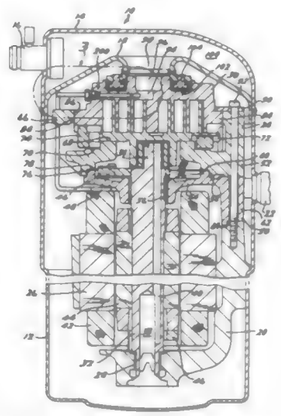
5,368,446

SCROLL COMPRESSOR HAVING HIGH TEMPERATURE CONTROL

Donald W. Rode, St. Paris, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Jan. 22, 1993, Ser. No. 7,770
Int. Cl.[5] F04B *49/02;* **H02K** *11/00;* **H02H** *7/08*
U.S. Cl. 417—18 **13 Claims**

1. A scroll compressor comprising:
(a) a hermetic shell having a motor cavity;
(b) a first scroll member in said shell and having a first spiral wrap on one face thereof;
(c) a second scroll member disposed in said shell and having a second spiral wrap on one face thereof, said wraps being intermeshed with one another;
(d) a motor disposed in said motor cavity of said shell for causing said wraps of said first scroll member to move with respect to said wraps of said second scroll member whereby said wraps will create pockets of progressively decreasing volume from a suction zone at suction pressure to a discharge zone at discharge pressure, said second scroll member defining a discharge passage;
(e) means for introducing suction gas into said shell;
(f) first means for de-energizing said motor when said motor reaches a predetermined temperature, said first means de-energizing said motor disposed within said hermetic shell; and
(g) second means for de-energizing said motor, said second means for de-energizing said motor disposed within said discharge passage and operable to de-energize said motor upon sensing an undesirable operating condition of said compressor, said second means for de-energizing said motor being disposed within said hermetic shell connected in series with said first means for de-energizing said



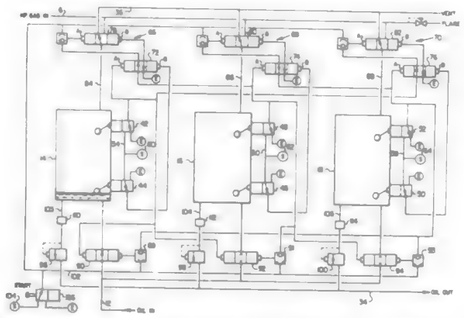
motor, said second scroll member defining a passageway beginning in said discharge passage and extending to the outer periphery of said second scroll member, said second means for de-energizing said motor extending through said passageway.

5,368,447

WELL TESTING OR PRODUCTION FACILITY TRANSFER SYSTEM

Kenneth L. Schwendemann, Lewisville, and Timothy M. Young, Coppell, both of Tex., assignors to Halliburton Company, Houston, Tex.

Filed Dec. 18, 1991, Ser. No. 809,821
Int. Cl.[5] F04F *1/06*
U.S. Cl. 417—54 **20 Claims**



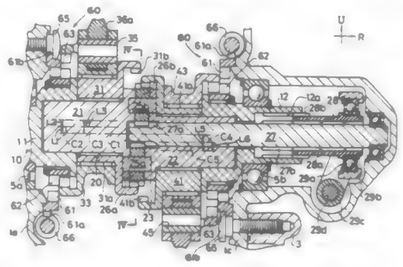
10. An apparatus for pumping crude oil from a stock tank to an oil pipeline, the apparatus comprising:
a first, second and third pump chamber connected in parallel;
gas supply means for supplying pressurized gas to said first, second and third pump chambers;
control system means for controlling the supply of the gas to said first, second and third pump chambers;
sensing means, attached to said first, second and third pump chambers, for sensing a quantity of the crude oil contained in said first, second and third pump chambers;
first oil valve means, connected to the stock tank, for allowing the flow of the crude oil into the first, second and third pump chambers, said first oil valve means having an open and a closed position and being operably associated with said sensing means so that said first oil valve means allows oil to flow into each respective pump chamber when a predetermined volume of oil is sensed in the preceding pump chamber;
second oil valve means, connected to the oil pipeline, for allowing the flow of the crude oil from the first, second and third pump chambers, said second oil valve means having an open and a closed position;
actuating means, operably associated with said sensing means, for actuating said first oil valve means from the closed position to the open position so that crude oil can flow from the stock tank to said first pump cylinder chamber.

5,368,448

VARIABLE-STROKE CRANK MECHANISM

Fujiya Maruno, Tokyo; Shoji Ohta, Fujimi, and Shyuji Ichijoh, Asaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 24,002
Claims priority, application Japan, Feb. 27, 1992, 4-076288; Dec. 15, 1992, 4-354096
Int. Cl.[5] F04B *1/06*
U.S. Cl. 417—221 **22 Claims**



1. A variable-stroke crank mechanism comprising:
a casing;
a crankshaft rotatably supported in said casing for relative rotation about an axis with respect to said casing, said crankshaft having a crankpin displaced out of alignment with said axis;
an eccentric collar rotatably mounted on said crankpin for revolving around said axis in response to the relative rotation of said crankshaft with respect to said casing to reciprocally move an actuator relative to said casing; and
a stroke adjusting mechanism for adjusting angular displacement of said eccentric collar on said crankpin;
said stroke adjusting mechanism comprising:
an internal ring gear integral with said eccentric collar concentrically with said crankpin;
a planetary pinion rotatably mounted on said crankshaft and meshing with said internal ring gear;
a sun gear meshing with said planetary pinion; and
a stroke adjusting shaft rotatably disposed axially in a portion of said crankshaft and coupled to said sun gear, whereby said stroke adjusting shaft is adjustable in angular displacement to adjust a stroke of reciprocating movement of said actuator.

5,368,449

REFRIGERANT GAS GUIDING MECHANISM FOR PISTON TYPE COMPRESSOR

Kazuya Kimura; Hiroaki Kayukawa; Masafumi Ito; Chuichi Kawamura; Shigeyuki Hidaka, and Yoshihiro Fujisawa, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

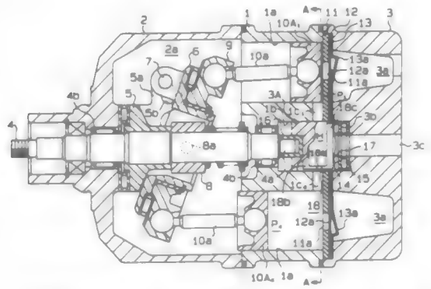
PCT No. PCT/JP92/01679, § 371 Date Aug. 2, 1993, § 102(e) Date Aug. 2, 1993, PCT Pub. No. WO93/13313, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 22, 1992, Ser. No. 98,332

Claims priority, application Japan, Dec. 24, 1991, 3-341217; Feb. 20, 1992, 4-033645

Int. Cl.[5] F04F *27/08*

U.S. Cl. 417—269 9 Claims



1. A piston type compressor including a plurality of pistons provided in associated cylinder bores arranged around a rotary shaft, each piston reciprocating in response to rotation of the rotary shaft to execute suction, compression and discharge of a refrigerant gas, the compressor having a refrigerant gas guiding mechanism comprising:

a valve chamber disposed in the vicinity of the cylinder bores;

a plurality of ports arranged to interconnect the valve chamber with each of the cylinder bores;

a rotary valve accommodated in the valve chamber and rotatable in relation to reciprocation of the pistons;

a suction passage provided in the rotary valve to be sequentially brought into communication with each of the ports in synchronism with the rotation of the rotary valve in order to introduce the refrigerant gas into each of the cylinder bores;

a seal zone provided in the rotary valve for blocking each of the ports in synchronism with the rotation of the rotary valve; and

a groove formed in the outer peripheral surface of the rotary valve capable of catching any fluid entering between the valve chamber and the rotary valve.

5,368,450

SWASH PLATE TYPE COMPRESSOR

Toshiro Fujii; Kazuaki Iwama, and Hitoshi Inukai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 101,178, Aug. 3, 1993. This application Aug. 4, 1993, Ser. No. 101,927

Claims priority, application Japan, Aug. 7, 1992, 4-211163

Int. Cl.[5] F04B *1/12*

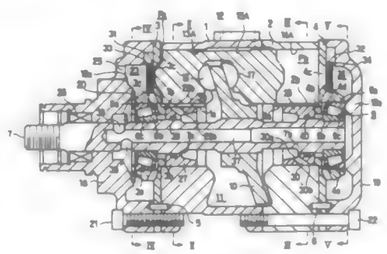
U.S. Cl. 417—269 19 Claims

1. A swash plate type refrigerant compressor comprising:

a cylinder block having formed therein a swash plate compartment and a plurality of cylinder bores each receiving therein a reciprocally movable double-headed piston,

front and rear housings clamped to axial ends of said cylinder block and having formed therein front and rear discharge chambers, respectively, communicable with said cylinder bores,

a drive shaft rotatably supported by a pair of front and rear bearings and having a swash plate accommodated in said swash plate compartment and fixedly mounted on said drive shaft at an angle of inclination so as to make a wobbling movement when driven to rotate by said drive shaft, each of said pistons being held by said swash plate by shoe means, whereby the wobbling movement of said swash plate is converted into reciprocal axial movement of each said piston in its associated cylinder bore,



said drive shaft having formed therein a discharge passage in communication with said front and rear discharge chambers so that refrigerant gas discharged into one of said discharge chambers flows into the other discharge chamber through said discharge passage, and passage means for causing at least part of the refrigerant gas discharged into said one of said discharge chambers to flow through at least one of said bearings.

5,368,451

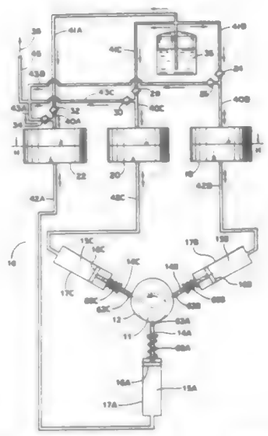
METERING PUMP

John M. Hammond, 6172 Knickerbocker Rd., Ontario, N.Y. 14519

Continuation-in-part of Ser. No. 710,323, Jun. 4, 1991, Pat. No. 5,205,722. This application Nov. 6, 1992, Ser. No. 973,064

Int. Cl.[5] F04B *45/06, 1/06*

U.S. Cl. 417—395 19 Claims



1. An apparatus for pumping fluid at a substantially constant flow rate, wherein said apparatus is comprised of:

(a) a first fluid transducer means for hydraulically coupling a hydraulic fluid to another fluid while preventing said hydraulic fluid from contacting said other fluid;

(b) a second fluid transducer means for hydraulically coupling a hydraulic fluid to another fluid while preventing said hydraulic fluid from contacting said other fluid;

(c) a third fluid transducer means for hydraulically coupling a hydraulic fluid to another fluid while preventing said hydraulic fluid from contacting said other fluid;

(d) timing means for continuously and sequentially withdrawing hydraulic fluid from said first fluid transducer means while simultaneously pumping hydraulic fluid to said second fluid transducer means, and thereafter withdrawing hydraulic fluid from said second fluid transducer means while simultaneously pumping hydraulic fluid to said third fluid transducer means, and thereafter withdrawing hydraulic fluid from said third fluid transducer means, wherein said timing means is comprised of:

1. a first hydraulic cylinder assembly comprised of a first hydraulic cylinder and a first piston reciprocably movable within said first cylinder;

2. a second hydraulic cylinder assembly comprised of a second hydraulic cylinder and a second piston reciprocably movable within said second cylinder;

3. a third hydraulic cylinder assembly comprised of a third hydraulic cylinder and a third piston reciprocably movable within said third cylinder;

4. cam follower means for reciprocably moving said first piston within said first cylinder, said second piston within said second cylinder, and said third piston within said third cylinder;

5. cam lobe means for moving said cam follower means,

6. means for maintaining continuous contact between said cam follower means and said cam lobe means;

(e) means for hydraulically connecting said first hydraulic cylinder with said first fluid transducer;

(f) means for hydraulically connecting said second hydraulic cylinder with said second fluid transducer; and

(g) means for hydraulically connecting said third hydraulic cylinder with said third fluid transducer.

5,368,452

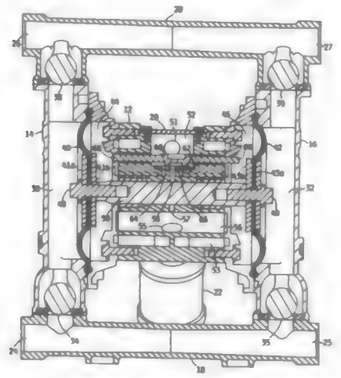
DOUBLE DIAPHRAGM PUMP HAVING TWO-STAGE AIR VALVE ACTUATOR

Harold Johnson, Buffalo; Daniel J. Kvinge, Shoreview; Steven P. Plager, Burnsville, and Richard D. Zarnecke, Moundsview, all of Minn., assignors to Graco Inc., Golden Valley, Minn.

Filed Jul. 20, 1993, Ser. No. 95,092

Int. Cl.[5] F04B *43/06*

U.S. Cl. 417—395 10 Claims



1. A double-diaphragm pumping apparatus having a pair of axially aligned interconnected diaphragms respectively reciprocable within a diaphragm chamber, the chamber having a liquid pumping section and an air section, comprising:

a) an actuator chamber located intermediate the respective diaphragm chambers, and a pair of slidable pins, each pin extending between the actuator chamber and one of the air sections of a diaphragm chamber and being slidable by contact from the diaphragm;

b) a pilot valve connected to said pair of slidable pins in said actuator chamber;

c) an actuator valve in said actuator chamber, said actuator valve having a pair of slidable piston actuating members, and having heat exchanger vanes affixed thereto;

d) a pair of first air passages coupled between said pilot valve and respective ones of said pair of slidable piston actuating members;

e) a pair of second air passages coupled between said actuator valve and respective ones of said diaphragm chamber air sections;

f) means for introducing pressurized air into said actuator chamber, each of said second air passages being selectively and alternately openable to said actuator chamber by movement of said actuator valve;

g) an air exhaust chamber in said pumping apparatus, and a third passage connected between said pilot valve and said air exhaust chamber, and a fourth passage connected between said actuator valve and said air exhaust chamber;

whereby predetermined positions of said diaphragms causes actuation of said pilot valve, which causes actuation of said actuator valve to direct pressurized air to a corresponding one of said diaphragm chamber air sections, and to exhaust air from the other one of said diaphragm chamber air sections.

5,368,453

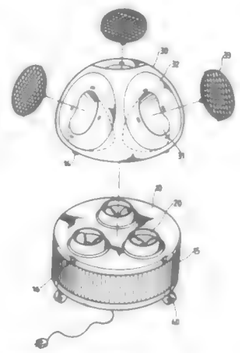
ELECTRIC FAN

Jung C. Peng, P.O. Box 82-144, Taipei, Taiwan, Prov. of China

Filed Nov. 30, 1993, Ser. No. 159,465

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—423.5 2 Claims

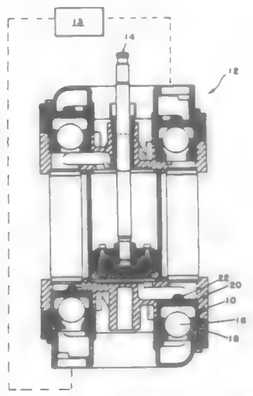


1. An electric fan comprising:

a hood having a plurality of tubular members in each of which there is a cylindrical member, a plurality of bell-shaped members each mounted on each of said tubular members, and a plurality of protecting covers each mounted on an outlet of each of said tubular members; and

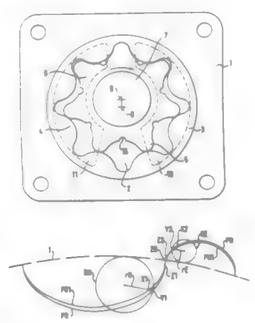
a base portion mounted under said hood and having a motor provided with an output gear engaged with a plurality of fan gears each fixedly mounted on an axle extending from said base portion upwardly into said cylindrical member, and a plurality of impellers each mounted on the top end of said axle.

5,368,454
QUIET CHECK VALVE
Frederick A. Powers, Maple Grove, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Jul. 31, 1992, Ser. No. 923,342
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—536 **3 Claims**



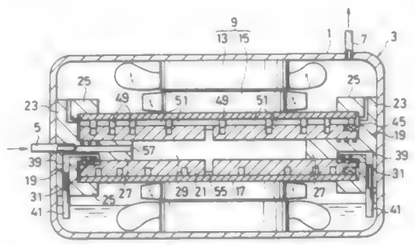
1. In a pump connected to a source of coating material and having inlet and outlet passages and at least one ball check located in one of said passages, said ball check comprising a ball having a circumference and a seat having a width, the improvement wherein said seat width is at least about 6% of said ball circumference and further comprising a ball retainer located above said seat wherein said seat has an axis and said ball retainer confines the center of said ball within about 0.25 mm of said axis.

5,368,455
GEAR-TYPE MACHINE WITH FLATTENED CYCLOIDAL TOOTH SHAPES
Siegfried A. Eisenmann, Conchestrasse 25, 7960 Aulendorf, Germany
Filed Dec. 14, 1992, Ser. No. 990,195
Claims priority, application Germany, Jan. 15, 1992, 4200883
Int. Cl.[5] F01C *1/10*
U.S. Cl. 418—171 **11 Claims**



1. A gear-type machine comprising a housing containing a gear chamber having inlet and outlet openings;
an internally toothed ring gear arranged in said gear chamber and an externally toothed pinion which is rotatably arranged within said ring gear in the housing and which has one tooth less than said ring gear, meshes with said ring gear and on rotation of said pinion and said ring gear forms, between said teeth of said pinion and said teeth of the ring gear, expanding and diminishing fluid cells which conduct fluid from said inlet to said outlet;
said teeth of said pinion having heads and said teeth of said ring gear having gaps between said pinion teeth and said ring gear teeth; said teeth heads of said pinion and said teeth gaps of said ring gear having the form of epicycloids formed by rolling of a first generating circle on a pitch circle of said pinion and said ring gears;
said teeth gaps of said pinion and said teeth heads of said ring gear having the form of hypocycloids formed by rolling a second generating circle on said pitch circle of said pinion and said ring gear;
the radius of said first generating circle being different to the radius of said second generating circle, wherein
a peripheral extent of said pinion teeth gaps defined by said hypocycloids and said ring gear teeth, measured on said pitch circle is 1.5 time to 3 times larger than a peripheral extent of said pinion teeth defined by said epicycloids, measured on said respective pitch circle; and
at least one of said epicycloids and said hypocycloids are flattened towards a center of a respective pitch circle of said epicycloid and said hypocycloid, respectively, to such an extent that said flattenings corresponds to a radial clearance between the teeth heads in the region opposite the point of deepest teeth engagement and said gears mesh with each other with a less clearance at the point of deepest teeth engagement, said cycloids of one of said hypocycloids and said epicycloids is flattened whilst the flattening of the cycloids of the other group is equal to zero,
said flattening of said cycloids is effected by a slight radial displacement of said cycloids from a periphery of said generating circle of said cycloids in the direction towards the centre of said generated circle.

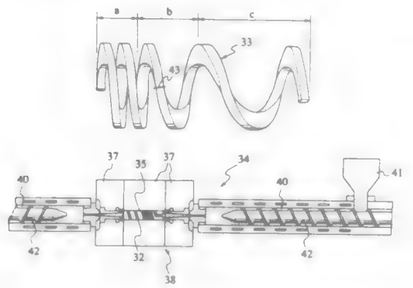
5,368,456
FLUID COMPRESSOR WITH BEARING MEANS DISPOSED INSIDE A ROTARY ROD
Takuya Hirayama, and Toshiya Yajima, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 25, 1993, Ser. No. 36,730
Claims priority, application Japan, Mar. 26, 1992, 4-068442
Int. Cl.[5] F04C *2/00*
U.S. Cl. 418—220 **3 Claims**



1. A fluid compressor housed in a casing, comprising:
a cylinder having an inner circumferential surface therein:
supporting means for rotatably supporting both ends of the cylinder;
a rotary member arranged in the cylinder so as to extend in the axial direction of the cylinder and be eccentric thereto, the rotary member having a spiral groove formed on an outer circumferential surface thereof, the spiral groove having pitches gradually narrowing with a distance from a suction-side end to a discharge-side end of the cylinder;
a spiral blade fitted in the spiral groove so as to be slidable in the radial direction of the rotary member: and
drive means for rotating the cylinder and the rotary member,

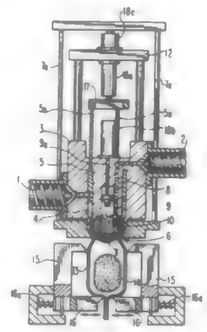
wherein the supporting means extends into the rotary member from a base portion fixed to the casing, and wherein there is provided a ring-shaped projected member for supporting the cylinder, serving as part of the supporting means, disposed around the cylinder, and projected toward the rotary member so that the eccentricity of the rotary member against the cylinder is maintained.

5,368,457
FLUID COMPRESSOR HAVING A MOLDED HELICAL BLADE
Noriko Watanabe, and Satoshi Oyama, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 18, 1993, Ser. No. 77,743
Claims priority, application Japan, Jun. 18, 1992, 4-159245
Int. Cl.[5] F01C *21/08*
U.S. Cl. 418—220 **7 Claims**



1. A fluid compressor comprising:
(a) a cylinder driven by a drive unit and having a suction port and a discharge port;
(b) a cylindrical rotary rod eccentrically disposed in and along said cylinder so that a periphery thereof is partly in contact with an inner face of said cylinder, said cylinder and rod being turnable relative to each other;
(c) an oldham ring supported by said rod and sliding toward and away from an axis of said cylinder according to the rotation of said cylinder, to rotate said rod relative to said cylinder;
(d) a helical grove formed around said rod at pitches that gradually become shorter from a suction port side toward a discharge port side;
(e) a helical blade fitted to said helical groove and movable inwardly and outwardly in said groove, a periphery of said blade being in contact with the inner face of said cylinder and subjected to torsion, to define a plurality of work chambers between the inner face of said cylinder and a peripheral face of said rod, so that a fluid fed through the suction port is compressed and conveyed toward the discharge port through the work chambers according to the rotation of said rod; and
(f) said helical blade being molded by injecting materials into a mold through two gates disposed at each end of the mold, so that a weld line is formed in an intermediate pressure region between a suction pressure region and a discharge pressure region of said blade.

5,368,458
APPARATUS FOR MANUFACTURING BODIES OF POLYMERIC MATERIAL HAVING A CORE OF FOAMED MATERIAL ENCLOSED BY AN OUTER SHELL
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Continuation of Ser. No. 974,941, Nov. 12, 1992, abandoned. This application Mar. 8, 1994, Ser. No. 208,093
Claims priority, application Italy, Nov. 13, 1991, MI91A003014
Int. Cl.[5] B29C *47/20*
U.S. Cl. 425—4 R **2 Claims**



1. An apparatus for manufacturing an article of polymeric material having a core of foamed material comprising a physical blowing agent and enclosed by an outer shell, the apparatus comprising:
I) a first extruder, for extruding a molten polymeric material for forming the outer shell;
II) a second extruder for extruding a polymeric material admixed with the physical blowing agent for forming the core of foamed polymeric material;
III) a main body having an ejectment end, the main body comprising:
a) an annular accumulation chamber in fluid communication with the first extruder, the annular chamber terminating at an annular opening toward the ejectment end of the main body, the annular accumulation chamber having a longitudinal axis; and
b) a second accumulation chamber arranged along the longitudinal axis in fluid communication with the second extruder, the annular accumulation chamber extending coaxially about the second accumulation chamber;
IV) a ring-shaped extrusion die suitable for cyclically extruding a tubular parison for extruding the molten polymeric material for forming the outer shell, the ring-shaped extrusion die being mounted at the ejectment end of the main body in fluid communication with the annular opening of the annular accumulation chamber;
V) an injection nozzle adjacent to and in fluid communication with the second accumulation chamber, the injection nozzle being located at the ejectment end of the main body centrally located within the ring-shaped extrusion die;
VI) a non-pressurized mold comprising a pair of separable half-molds, the non-pressurized mold having a top located adjacent to the ejectment end of the main body below the ring-shaped extrusion die and the injection nozzle, and a bottom;
VII) means for injecting a predetermined amount of the molten polymeric material from the annular accumulation chamber through the ring-shaped die and into the non-pressurized mold as a tubular parison, the non-pressurized

mold further comprising movable means toward the bottom of the mold for closing a bottom of the tubular parison;

VIII) means for injecting a predetermined amount of the polymeric material admixed with the physical blowing agent from the second accumulation chamber through the injection nozzle into the tubular parison in the non-pressurized mold after the bottom of the parison has bene closed; and

X) means for closing the top of the parison and for sealing the mold after the polymeric material admixed with the physical blowing agent has been injected into the tubular parison;

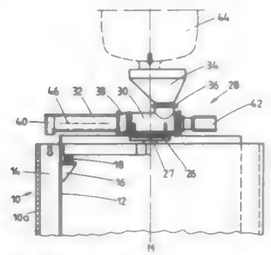
wherein the ring-shaped extrusion die extrudes the tubular parison in the mold, the bottom of the parison is closed, and the injection nozzle injects the foaming agent into the tubular parison, the foaming agent expanding the tubular parison to conform to the shape of the mold.

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DEVICE FOR PREPARING AND FEEDING A MONOLITHIC CERAMIC MASS INTO A METALLURGICAL MELTING VESSEL

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Filed Mar. 1, 1993, Ser. No. 22,672
Claims priority, application Austria, Mar. 5, 1992, A 415/92
Int. Cl.[5] B28B *1/08;* **B05B** *3/12*
U.S. Cl. 425—60 **17 Claims**



17. Device for preparing and feeding a monolithic ceramic mass into an annular space formed between an inner wall of a metallurgical melting vessel and a template, extending at a spaced location from said wall, comprising a mixer and a feeding device,

wherein the mixer and the feeding device are arranged movably and one next to the other as a compact unit, said compact unit being arranged on a support frame for positioning the compact unit above the metallurgical vessel, such that the mass prepared in the mixer is directly introduced at any desired point of the metallurgical vessel via the feeding device into said annular space,

wherein the mixer has a mounting device for attachment to a support frame,

wherein the mounting device consists of a rotary table,

wherein the mounting device is motor driven,

wherein the compact unit is rotatable around a shaft extending coaxially to the central longitudinal axis (M) of the metallurgical vessel,

wherein the support frame is connected to the compact unit,

wherein the support frame is hinged to the template that is introduced at a spaced location from the wall of the metallurgical vessel,

wherein the feeding device consists of a telescopic vibrating chute,

wherein at the discharge-side, free end, the feeding device has a filling head directed downward in the direction of the bottom of the metallurgical vessel,

wherein the mixer is provided with a connection line for supplying a liquid,

wherein the mixer has a funnel-shaped filling device,

wherein the filling device is asymmetrical,

wherein the axis of rotation of the rotary table is asymmetrical to the central longitudinal axis (M) of the metallurgical vessel, and

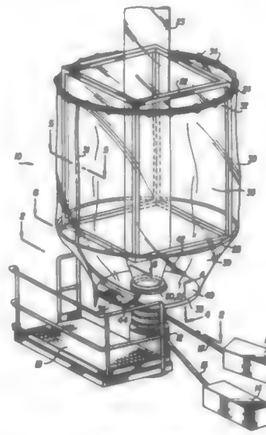
wherein the mixer is a positive mixer.

5,368,460

BLOWN FILM DIE ENCLOSURE

Randy K. Weavil, Winston-Salem, and Brian C. Adderton, Advance, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 17, 1993, Ser. No. 79,023
Int. Cl.[5] B29C *47/86*
U.S. Cl. 425—72.1 **23 Claims**



1. Apparatus for enclosing a blown film bubble emerging along a vertical axis from a die of an extruder head surrounded by a cooling ring along a vertical axis comprising a shroud surrounding at least a portion of the bubble such that said bubble portion is substantially isolated from air currents, said shroud extending vertically upwardly from the extruder head, said shroud having upper and lower edges and being in spaced, non-contacting relation to said bubble, and a thermal insulator positioned about said extruder head and having an outer edge connected to the lower edge of the shroud, said thermal insulator comprising a sheet of insulating material extending outwardly from said cooling ring and being substantially concentric thereto.

5,368,461

OUTSIDE CORNER FINISHING TOOL

Robert J. Murphy, Stockton, Calif., assignor to Premier Drywall Tool Co., Stockton, Calif.

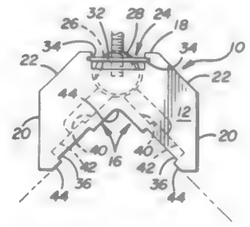
Filed Aug. 5, 1993, Ser. No. 102,409
Int. Cl.[5] B05C *17/00*
U.S. Cl. 425—87 **8 Claims**

5. An outside corner finishing tool for use in combination with an applicator which includes means for supplying a controlled flow of mastic material to said tool for applying mastic material simultaneously to both a first and second wall adjacent an edge of an outside corner, said outside corner finishing tool being constructed to be used unidirectionally or bidirectionally in a vertical direction on said outside corner and comprising:

a) a generally polygonal, integral, one piece body having a top wall, a bottom wall, a pair of concave inward front walls defining a 90 degree inside corner and adapted to engage with and to slide on the first and second walls adjacent the outside corner, a back wall spaced from said front walls by a pair of spaced apart side walls, and wherein:

i) each of said front walls includes a vertically oriented channel member extending between said bottom and top walls, said channel member having a uniform width so that said outside corner tool can be moved in either vertical direction on said outside corner;

ii) said back wall includes a generally spherical cavity disposed therein, said spherical cavity being sized for receiving a provided ball socket connector for connection with a provided applicator;



iii) said tool including a manifold disposed within said body for connecting said spherical cavity to each of said channel members;

b) means for retaining said provided ball socket connect,or in pivotal relation within said spherical cavity; and whereby

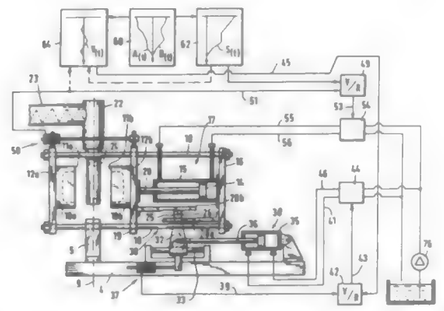
c) mastic material supplied to said spherical cavity flows through said manifold to said channels member and is deposited in a lengthwise strip along each of said first and second walls adjacent said outside corner as said tool is moved along a length thereof with said concave inward front walls of said tool contacting said outside corner.

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BLOW MOLDING APPARATUS FOR THE PRODUCTION OF A HOLLOW BODY OF THERMOPLASTIC MATERIAL

Erich Kiefer; Peter Klüsener, both of Bonn, and Karsten Friedrichs, Bad Honnef, all of Germany, assignors to Krupp Kautex Maschinenbau GmbH, Bonn, Germany

Division of Ser. No. 776,522, Oct. 11, 1991, Pat. No. 5,250,238.
This application Sep. 30, 1993, Ser. No. 129,612
Claims priority, application Germany, Oct. 15, 1990, 4032659
Int. Cl.[5] B29C *49/56*
U.S. Cl. 425—150 **26 Claims**



1. Apparatus for the production of a hollow body from thermoplastic material by blow molding comprising:

a blow molding mold including at least first and second mold portions movable with respect to each other;

a drive system coupled with at least the first and second mold portions so as to reciprocate the first and second mold portions in a linear direction in opening and closing movements between an open condition in which the first and second mold portions are spaced from each other and a closed condition in which the first and second mold portions bear against each other and define at least a portion of a mold cavity; and

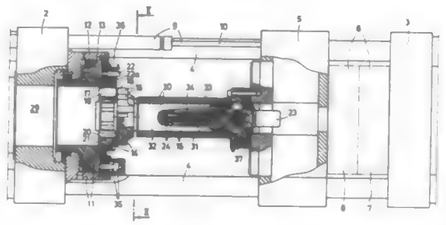
a displacement system coupled with the blow molding mold so as to move at least part of the blow molding mold in the linear direction in a movement additional and asymmetric to any opening or closing movement being performed upon the blow molding mold in the linear direction by the drive system, the additional and asymmetric movement of the displacement system combining with any simultaneously occurring opening and closing movement of the drive system to move the first and second mold portions asymmetrically with respect to a stationary reference plane located between the first and second mold portions and oriented perpendicularly to the linear direction.

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CLOSING UNIT FOR AN INJECTION MOLDING MACHINE

Ralf Kassner, Meinerzhagen; Stanislaus Kandula, Bochum, and Johann Holzschuh, Meinerzhagen, all of Germany, assignors to Battenfeld GmbH, Meinerzhagen, Germany

Filed May 14, 1992, Ser. No. 883,287
Claims priority, application Germany, May 14, 1991, 4115592
Int. Cl.[5] B29C *45/67*
U.S. Cl. 425—171 **5 Claims**



1. A closing unit for an injection molding machine including a form tool having two mold sections, the closing unit comprising:

two spaced end plates;

a plurality of guide crosspieces for connecting said end plates;

an intermediate plate extending parallel to the end plates and movable along the crosspieces, the intermediate plate and one of the end plates defining gripping means for the two mold sections of the form tool;

means for moving the intermediate plate along the crosspieces in closing and opening directions of the form tool for changing a distance between the intermediate and said one end plate to thereby effect closing and opening, respectively, of the form tool, said moving means comprising pressure cylinders supported against the other end plate and each having a rod engaging the intermediate plate;

means for applying an increased closing force to the intermediate plate in a closed position of the form tool, the applying means comprising:

a central die having a first part fixedly connected to the intermediate plate for joint longitudinal displacement therewith, and a second part connected to the first part for joint longitudinal displacement therewith, and for

rotational and longitudinal movement relative thereto, a pressure cushion arranged between the intermediate plate and said other end plate for applying a force to the central die,

means for connecting the pressure cushion to the central die, the connecting means comprising a first member fixedly connected to the second part of the central die for joint rotational and longitudinal movements therewith and formed as a head piece having a multiple-section profile projecting beyond a circumference of the central die, and a second member forming a part of the pressure cushion and formed as a ring piston having an inner profile complementary to the multiple-section profile of the head piece, and

drive motor means for rotating and longitudinally displacing the second part of the central die in response to closing of the form tool, to effect coupling of the first member of the connecting means with the second member of the connecting means to connect the pressure cushion to the central die to apply the force to the central die, whereby an increased closing force is applied to the intermediate plate;

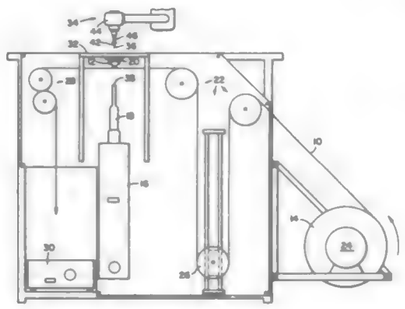
wherein the first part of the central die is a sleeve having an inner thread, and the second part is a spindle having an outer thread engaging the inner thread of the sleeve, the drive means comprising means for effecting longitudinal displacement of the second part at different speeds, in accordance with a longitudinal and angular position of the first member of said connecting means relative to the second member of said connecting means, and means for determining the longitudinal and angular position of the first member relative to the second member.

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ULTRASONIC APPARATUS FOR CUTTING AND PLACING INDIVIDUAL CHIPS OF LIGHT LOCK MATERIAL

Wallace S. Stewart, and Danny L. Greisch, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 31, 1992, Ser. No. 999,646
Int. Cl.[5] B29C *65/08*
U.S. Cl. 425—174.2 **14 Claims**



1. An ultrasonic apparatus for cutting and placing individual chips of light lock material in a cartridge, said ultrasonic apparatus comprising:

a machine frame;

cutting means mounted to said frame for cutting individual chips of light lock material;

positioning means mounted to said frame for positioning light lock material at said cutting means;

cartridge holding means mounted to said frame;

pivotable picking means mounted to said frame for picking one of said individual chips of light lock material from said cutting means and pivoting to position said one of said individual chips of light lock material over said cartridge holding means;

removal means mounted to said pivotable picking means for removing said one of said individual chips of light lock material to a cartridge held by said cartridge holding means; and

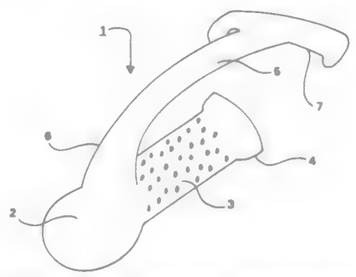
a retractable ultrasonic horn mounted to said pivotable picking means for tacking said one of said individual chips of light lock material to said cartridge.

5,368,465

ICE-CREAM SCOOP WITH FOREARM APPENDAGE

Matthew J. Wanderer, 712 Pleasant St., Boulder, Colo. 80302

Filed Mar. 10, 1993, Ser. No. 29,140
Int. Cl.[5] A23G *9/28*
U.S. Cl. 425—187 **18 Claims**



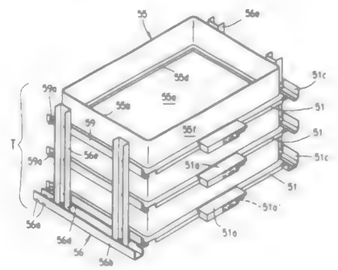
1. An ice-cream scoop comprising a generally hemispherical hollow bowl, a handle having one end portion connected to said bowl, and a forearm appendage having a proximal end portion connected to said bowl, wherein said forearm appendage further comprises an elongated arm positioned above the handle and a distal end portion, said distal end portion generally conforming to the shape of an operator's forearm.

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APPARATUS AND TRANSPORTING UNIT FOR CONVEYING INJECTION-MOLDED ARTICLES AWAY FROM AN INJECTION MOLDING MACHINE

Karl Hehl, Arthur-Hehl-Strasse 32, W-7298 Lossburg 1, Germany

Filed Jun. 19, 1992, Ser. No. 901,610
Claims priority, application Germany, Jun. 19, 1991, 4120129; Jun. 19, 1991, 4120131
Int. Cl.[5] B29C *45/40*
U.S. Cl. 425—556 **16 Claims**



1. A transporting apparatus for moving items to or from an injection molding machine, comprising

(a) a plurality of transporting units each including a transporting pallet and a selected number of pallets removably accommodated on said transporting pallet; each said transporting pallet including pallet guides for individually supporting the selected number of pallets and carrier elements including means for coupling thereto a selected number of superposed pallet guides dependent upon height dimensions of the selected number of pallets;

(b) a charging station;

(c) charging means for loading the pallets in the charging station with the articles produced by the injection molding machine; the articles being comprised in the items;

(d) a pallet tower spaced from the charging station for storing a plurality of pallets; said pallet tower including frame elements forming a frame;

(e) an elevator for receiving pallets from said pallet tower and pallets from said charging station; said elevator being vertically freely movable during loading of the pallets in the charging station; said elevator including means for accommodating at least two of said transport units above one another;

(f) means transferring pallets from said pallet tower and said charging station to said elevator; and

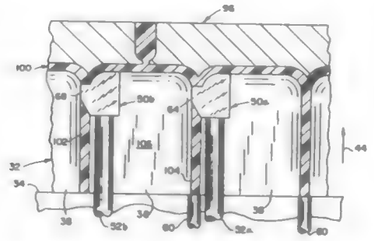
(g) conveying means for moving the transporting pallets between the elevator and the charging station for transferring pallets from said elevator to said charging station and for transferring pallets from the charging station to said elevator.

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MOLDING APPARATUS FOR ARTICLES HAVING INTERNAL UNDERCUTS

Hendrik Kleyn, Grandville, Mich., assignor to Kleyn Die Engravers, Inc., Jenison, Mich.

Filed Oct. 6, 1992, Ser. No. 957,526
Int. Cl.[5] B29C *45/33, 45/36, 45/44*
U.S. Cl. 425—556 **13 Claims**



12. An injection molding apparatus for forming a molded article, the molded article having a plurality of internal walls disposed in intersecting relationship and forming corners therebetween, at least some of said internal walls being formed with undercuts, said injection molding apparatus comprising:

a mold base;

a plurality of spaced projections extending outwardly from said mold base, said projections defining voids therebetween in which the internal walls of the molded article are formed, said projections and internal walls cooperatively defining an outward direction in which the molded article is removed from said male mold, a plurality of said projections each formed with an outwardly and transversely opening lifter head recess;

ejector means for moving the molded article outwardly from said male mold;

a plurality of lifter heads each disposed in correspondence with a said lifter head recess, each of said lifter heads being movable between a retracted position in which said lifter head is received in a said lifter head recess and an extended position in which said lifter head is disposed outwardly of the projection in which the lifter head is received, at least some of said lifter heads comprising corner lifter heads disposed adjacent corners formed between intersecting pairs of internal walls, each of said lifter heads having a first protrusion extending transversely to said outward direction beyond the projection in which the lifter head is received and into a void, said corner lifter heads further having a second protrusion extending transversely into a void and in angularly offset relation to the first protrusion of the corner lifter head, each of said first and second protrusions having an inwardly directed ramping surface;

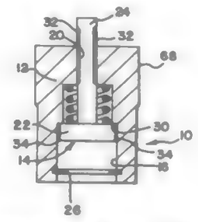
whereby the molded article is molded on said projections with said lifter heads in said retracted position and said protrusions forming undercuts in the internal walls of the molded article, the protrusions of a corner lifter head forming undercuts in each of intersecting pairs of internal walls, whereby the molded article is moved outwardly from said projections by said lifter heads moving to said extended position, and whereby the molded article is removed from said lifter heads by said ejector means, the removal being facilitated by sliding contact between said undercuts and said ramping surfaces.

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AIR KNOCKOUT FOR PLASTIC MOLDS

Borislav Boskovic, 2102 Bannockburn, Inverness, Ill. 60067

Filed Jun. 9, 1993, Ser. No. 74,310
Int. Cl.[5] B29C *45/42*
U.S. Cl. 425—556 **17 Claims**



1. A knockout device for a plastic mold, comprising

a. a cylindrical body shaped to be located in an aperture in a mold part,

b. a cylindrical central cavity in said body, said cavity having a cylindrical outlet at one end of said body, said outlet being smaller in diameter than said central cavity,

c. a knockout pin, said knockout pin having a cylindrical head portion located in said cavity and a cylindrical stem portion extending from said head portion into said outlet, said head portion being larger in diameter than said stem portion,

d. means resiliently retaining said knockout pin in a seated position in said cavity with said stem retracted into said outlet,

e. means for shifting said knockout pin to an extended position with said stem portion projecting from said outlet, and

f. air bypass means for producing an airflow from said body proximate said outlet when said knockout is in said extended position,

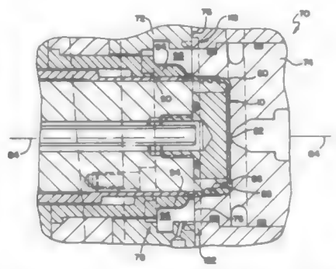
g. said outlet extending axially from said cavity, said head portion comprising a piston located within said central cavity, and said air bypass means comprising at least one longitudinal groove in said stem portion and at least one longitudinal groove in said head portion.

5,368,469

APPARATUS FOR MOLDING CLOSURES HAVING TAMPER EVIDENT BANDS

Len Ekkert, Lemont, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed Aug. 26, 1993, Ser. No. 112,683
Int. Cl.[5] B29C *45/44*
U.S. Cl. 425—556 **10 Claims**



1. An apparatus for molding a tamper evident closure having a top, an annular skirt depending from the top, and a breakaway band secured to an underside of the skirt by a plurality of bridges, said apparatus comprising:

a mold frame;

a cavity portion releasably secured to said frame, said cavity portion configured for forming an outer surface of the closure;

a core portion nestable into said cavity portion and mounted on said frame for reciprocal axial movement relative to said cavity portion, said core portion configured for forming an inner surface and an underside of the top of the closure;

a slide portion mounted to said frame for reciprocal movement transverse to said axial movement of said core portion between a closed position and an open position, said slide portion configured for forming a flange of the closure;

said cavity portion, said core portion and said slide portion forming a molding cavity for forming the closure;

said core portion, said cavity portion and said slide portion being oriented when said slide is in said closed position to form the closure as a molding substance is introduced thereto;

said slide portion moves into said open position to allow the closure to disengage from said cavity portion and said core portion; and

at least one stripper bar mounted to said frame in operational relationship to said slide portion and being substantially parallel with the direction of reciprocal travel of said slide portion, said stripper bar disengages molded closures retained on said slide portion as said slide portion moves from said closed position to said open position.

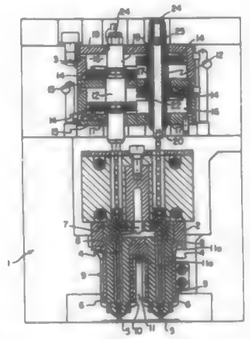
5,368,470

MULTIPLE PIN CLOSURE NOZZLE ASSEMBLY FOR INJECTION MOLDS

Otto Männer, Unter Gereuth 9, 79353 Bahlingen, Germany

Filed Aug. 27, 1993, Ser. No. 113,400
Int. Cl.[5] B29C *45/23*
U.S. Cl. 425—564 **13 Claims**

1. A multiple pin closure nozzle assembly for use in an injection mold, said assembly having at least two closure pins arranged in a common housing and having a common piston drive connected to said at least two closure pins, each closure pin closing a respective nozzle opening in said common housing, heating means in the region of each nozzle opening for heating each nozzle opening, a feed channel arranged in the common housing with branches to the individual closure pins, each branch located in a housing portion connected to the common housing, each housing portion spaced from one another so as to form an interspace between outer walls of said housing portions and each having portion containing a corresponding one of said closure pins, each housing portion having at a tip thereof one of said nozzle openings.

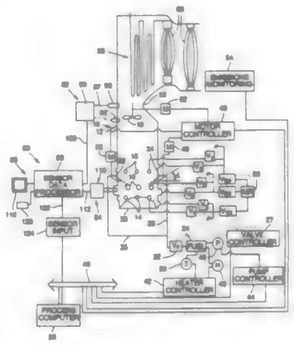


5,368,471

METHOD AND APPARATUS FOR USE IN MONITORING AND CONTROLLING A BLACK LIQUOR RECOVERY FURNACE

George Kychakoff, Maple Valley; Stephen N. Anderson; George E. Seymore, both of Tacoma, all of Wash., and Earl B. Manchester, Boulder, Colo., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 20, 1991, Ser. No. 796,548
Int. Cl.[5] H04N *7/18*
U.S. Cl. 431—12 **24 Claims**



1. An apparatus for use in monitoring a kraft chemical recovery furnace of the type in which black liquor fuel is injected into a combustion chamber and burned therein to form a bed of chemicals to be recovered, the apparatus comprising:

means for determining the profile of the bed viewed from at least one direction and for producing a first output signal representing the bed profile;

means for determining the temperature of the bed over at least a major portion of the bed profile and for producing a second output signal representing the temperature of the bed;

means for detecting particles in an upper region of the furnace and for producing a third output signal representing the detected particles; and

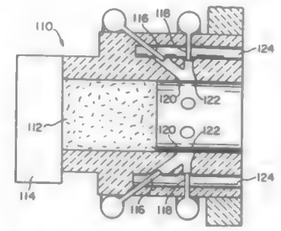
means for displaying from the first, second and third output signals a visual representation of the determined profile of the bed, the determined temperature of the bed and the detected particles.

5,368,472

LOW NOX BURNER

James E. Hovis, and Harry P. Finke, both of Allegheny County, Pa., assignors to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 681,441, Apr. 3, 1991, Pat. No. 5,180,300, which is a continuation of Ser. No. 469,075, Jan. 19, 1990, abandoned, which is a division of Ser. No. 168,892, May 16, 1988, Pat. No. 4,983,118. This application Jan. 6, 1993, Ser. No. 1,584
Int. Cl.[5] F87D *17/00*
U.S. Cl. 431—115 **6 Claims**



1. A burner for heating a furnace chamber, comprising:

a burner body having a central chamber in fluid communication with said furnace chamber;

means for directing combustion air through said burner body and said central chamber, said combustion air directing means comprising a blower and a duct in fluid communication with said blower;

said burner body having means for vitiating combustion air with products of combustion from said furnace chamber, said combustion air vitiating means including at least four fuel nozzles in said burner body, each of two of said fuel nozzles being disposed within a first venturi leading from said fuel nozzle to said central chamber of said burner, with each of the remaining two of said fuel nozzles being disposed within a second venturi leading from said fuel nozzle to said central chamber, each of said first venturis converging with each of said second venturis and each of said first and second venturis being in fluid communication with said furnace chamber via a vitiation duct therebetween.

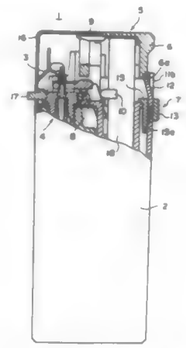
5,368,473

GAS LIGHTER WITH SAFETY DEVICE

Uematsu Kenjiro; Kaga Yosimitu, and Saito Masaki, all of Shizuoka, Japan, assignors to Tokai Corporation, Kanagawa, Japan

Continuation of Ser. No. 988,808, Dec. 10, 1992, Pat. No. 5,240,408. This application Aug. 26, 1993, Ser. No. 112,665
Claims priority, application Japan, Jan. 13, 1992, 4-040078; Oct. 7, 1992, 4-268779
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **25 Claims**

1. A gas lighter with a safety device comprising a lighter body containing fuel gas, fuel supply means for supplying the fuel gas contained in the lighter body to a nozzle at a regulated flow rate, ignition means for igniting the fuel gas flowing from the nozzle, depressible actuating means for opening and closing a fuel flow channel of the fuel supply means connected to the nozzle, resilient leaf means formed by longitudinal slits integrally formed in the upper end of the lighter body, the upper part of the resilient leaf means being movable between a locking position in which it is situated below a part of the depressible actuating means and an unlocking position in which it is spaced from the path of the depressible actuating means, and lock means including a manually-engageable portion slidable along an outer surface of the lighter body, the lock means being slidably engaged with the resilient leaf means in such a manner as to travel along a path extending longitudinally along the resilient leaf means so that, at one end of its path of motion, the lock means causes the upper part of the resilient leaf means to be disposed in the locking position so that the depression of the actuating means is prevented and, at the other end of its path of motion, the lock means causes the upper part of the resilient leaf means to be disposed in the unlocking position spaced from the path of the actuating means to allow the depression thereof.

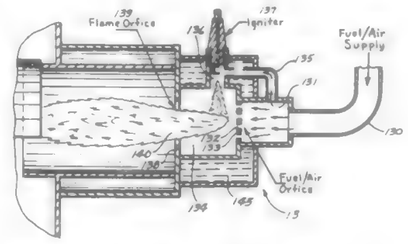


5,368,474

DIRECT FIRED HOT WATER GENERATOR WITH MORE THAN ONE HEAT EXCHANGE ZONE

David P. Welden, N. Indiana Ave., Iowa Falls, Iowa 50126

Division of Ser. No. 38,846, Mar. 29, 1993, Pat. No. 5,305,735.
This application Oct. 15, 1993, Ser. No. 138,499
Int. Cl.[5] F23D *7/06*
U.S. Cl. 431—263 **4 Claims**



1. A burner for a heat generator comprising:

a burner chamber having an upstream end and a downstream end;

a first passageway for delivering a fuel/air mixture under pressure to said upstream end of said burner chamber;

an inlet orifice plate disposed between said burner chamber and said passageway for restricting the flow of the fuel/air mixture to said burner chamber and thereby creating a pressure drop across said orifice plate;

an igniter for igniting the fuel/air mixture flowing through said burner chamber at a predetermined place spaced from said burner chamber;

a second passageway in fluid communication with the burner chamber and the predetermined place of said igniter; and

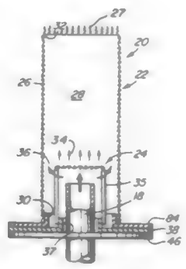
a third passageway in fluid communication with said first

passageway upstream from said orifice plate and with said second passageway adjacent said predetermined place of said igniter whereby some of the air/fuel mixture will always be passing past the igniter during the ignition process.

5,368,475
CATALYST STRUCTURES AND BURNERS FOR HEAT PRODUCING DEVICES

Sellathurai Suppiah, Deep River; Deborah L. Burns, Chalk River; Karen G. Irving, and Christopher R. Aelick, both of Pembrooke, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 403,290, Sep. 7, 1989, Pat. No. 5,094,611. This application Mar. 9, 1992, Ser. No. 848,670
Int. Cl.[5] F23Q *11/00*
U.S. Cl. 431—268 **12 Claims**



1. A catalyst module for use in a catalytic combustion device, said module comprising:

a self-supporting tubular body for carrying a catalyst coating, said coating including a porous catalyst support material having a high surface area applied to said body and a catalyst applied to said catalyst support material, said body being formed of a fine mesh metallic screen having a passage extending therethrough and defining a catalytic combustion chamber and having an axial inlet opening at one end of said chamber for receiving a gaseous fuel and an axial outlet opening at an opposite end of said chamber for discharging products of combustion from said chamber, said outer opening having cut ends of wires exposed from said catalyst coating; and

a fine mesh, metallic fuel distributing screen element disposed within and extending across said chamber.

5,368,476
LOW-NO_x GAS BURNER

Tatsuya Sugahara, Tokyo; Takao Takagi, Fuji; Kimio Mochizuki, Fujinomiya, and Shigetoshi Akiyama, Fuji, all of Japan, assignors to Tokyo Gas Company Ltd., Tokyo and Takagi Ind. Co., Ltd., Fuji, both of Japan

Filed Jul. 15, 1992, Ser. No. 914,446
Int. Cl.[5] F23M *3/06;* **F23D** *14/12*
U.S. Cl. 431—285 **14 Claims**

8. A burner comprising;

a plurality, of first burner portions;

each of said plurality of first burner portions having at least one row of flame ports;

said plurality of first burner portions for receiving a rich mixture of fuel gas;

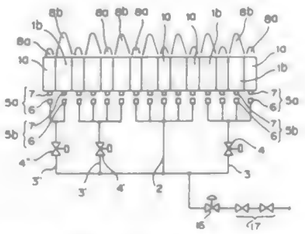
a plurality of second burner portions,

each of said plurality of second burner portions having at least one row of flame ports;

said plurality of second burner portions for receiving a lean mixture of fuel gas;

said plurality of first burner portions and said plurality of second burner portions being arranged alternately with each other;

each of said plurality of second burner portions being located between a pair of said plurality of second burner portions; and

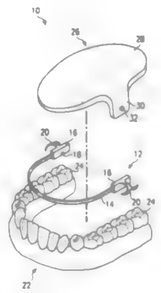


said plurality of first and second burner portions being flanked on both ends with said first burner portions.

5,368,477
COMPOSITE NEUROMUSCULAR ORAL DEVICE

Michael J. Neeley, 2039 Rose Hill, Carrollton, Tex. 75007

Filed Aug. 6, 1993, Ser. No. 103,422
Int. Cl.[5] A61D *3/00*
U.S. Cl. 433—6 **18 Claims**



1. An oral device, comprising:

a base structure having a curved portion with a first end and a second end, a first head portion connected to the first end of the curved portion and a second head portion connected to the second end of the curved portion, wherein the first head portion and the second head portion have a first clasp and a second clasp, respectively, for securing the base structure to either the mandibular or the maxillary teeth;

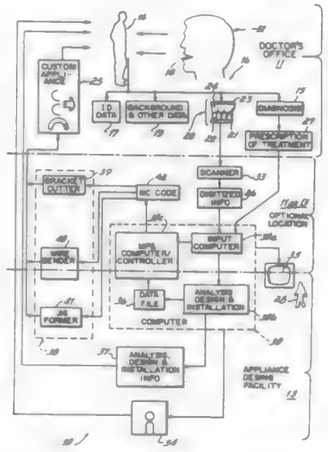
a cushion structure having a first cushion with a first tab and a second cushion with a second tab; and

a male/female friction retention structure for securing the cushion structure to the base structure.

5,368,478
METHOD FOR FORMING JIGS FOR CUSTOM PLACEMENT OF ORTHODONTIC APPLIANCES ON TEETH

Craig A. Andreiko, Alta Loma, and Mark A. Payne, Whittier, both of Calif., assignors to Ormco Corporation, Glendora, Calif.

Continuation-in-part of Ser. No. 875,663, Apr. 29, 1992, and a continuation-in-part of Ser. No. 775,589, Oct. 15, 1991, abandoned, and a continuation-in-part of Ser. No. 467,162, Jan. 19, 1990, Pat. No. 5,139,419, said Ser. No. 875,663, is a continuation of Ser. No. 467,162, Jan. 19, 1990, Pat. No. 5,139,419, said Ser. No. 775,589, is a continuation-in-part of Ser. No. 467,162, Jan. 19, 1990, Pat. No. 5,139,419. This application Nov. 9, 1992, Ser. No. 973,844
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—24 **8 Claims**



1. A method of forming jigs to place a custom orthodontic appliance for connection to teeth of a patient, the method comprising the steps of:

forming a custom orthodontic appliance by:

digitizing tooth shape data of external surfaces of crowns of teeth of a patient,

defining appliance connection points on surfaces of the teeth in relation the digitized tooth shape data,

establishing appliance geometry based on the tooth shape data to move the teeth to desired finish positions when connected to the teeth at the connection points, and

fabricating a custom appliance in accordance with the established appliance geometry; and

forming jigs for locating the appliance at the connection points by:

calculating, from the digitized tooth shape data and defined connection points, jig geometry defining a jig locating surface that conforms to a unique portion of the external surface of the crown of a tooth, and defining an appliance engaging surface having the same location relative to the jig locating surface as the unique portion of the external surface has to the connection point on the tooth,

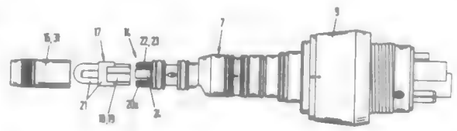
generating a machine control signal carrying machine control instructions for producing a jig in accordance with the calculated jig geometry, and

operating the machine in response to the control signal to form a jig that, when fit on the tooth, will position and orient an appliance engaged thereby at the connection point of the tooth for connection thereto.

5,368,479
DENTAL INSTRUMENT WITH AN ILLUMINATION DEVICE

Bernhard Lingenhöle, Mittelbiberach, Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach/Riss, Germany

Filed May 19, 1993, Ser. No. 63,299
Claims priority, application Germany, May 21, 1992, 4216873
Int. Cl.[5] A61C *1/00, 3/00, 1/08*
U.S. Cl. 433—29 **11 Claims**

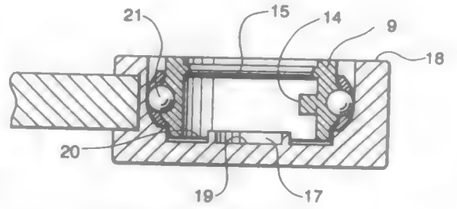


1. In a medical or dental instrument comprising a base and driven treatment tool and a lamp mounted on the base, said lamp being arranged to supply illumination to the region surrounding the treatment tool, and a lamp holding arrangement comprising a pair of spring elements also mounted on the base and biased toward one another to press against a plug-in foot of the lamp and to allow the lamp to swing freely and a dampening arrangement comprising a dampening element mounted between said lamp and said base.

5,368,480
DENTAL IMPLANT WRENCH

Alan R. Balfour, Camarillo, and Daniel R. Patrick, El Segundo, both of Calif., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Dec. 8, 1993, Ser. No. 163,615
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—141 **13 Claims**



1. A dental tightening torque limit tool holder comprising a tool fixture, a hub and a plurality of torque limit controls, each of said torque limit controls is a tooth, said teeth project concentrically from said hub in the same plane with each tooth having a face disposed perpendicular to said plane, said tool fixture, hub and plurality of torque limit controls being integral.

5,368,481
DENTAL MOLD APPARATUS

Steven J. Hill, 3906 Sunnycrest Drive, North Vancouver, British Columbia, Canada V7R 3C9

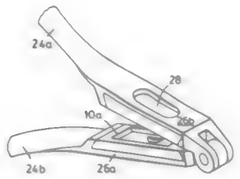
Filed Jul. 13, 1993, Ser. No. 90,259
Int. Cl.[5] A61C *3/14*
U.S. Cl. 433—159 **6 Claims**

1. A manually operable pressure molding device for preparing a composite dental matrix having a desired contour, comprising:

a pressure mold fabricated of an actinic light-transparent material, comprising a female mold section for receiving a quantity of flowable, uncurred light-curable composite resin and a male mold section, said mold sections being so configured that pressing them matingly together into a

limiting closed relationship retains a portion of said uncured resin within a perimetrically closed space defines the desired contour of dental matrix; and

gripping means for holding the pressure mold and for applying pressure to urge said mold sections matingly together, comprising a pair of mold section holding portions pivotably interconnected at one end thereof and each having at the other end thereof an integral elongate handle, so configured that said mold sections held in respective holding portions are brought into mating juxtaposition when said handle members are pivoted together, said mold section holding portions including apertures to permit light from an external source of actinic light to irradiate said perimetrically closed cavity of said pressure mold held by the gripping means to cure said portion of resin into a dental matrix.

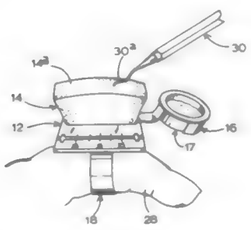


5,368,482

DENTAL INSTRUMENT SERVICING SYSTEM

James B. Johnsen, and Hal J. Olen, both of Beaverton, Oreg., assignors to Jordco, Inc., Beaverton, Oreg.

Filed Feb. 1, 1994, Ser. No. 189,919
Int. Cl.[5] A61C *3/00;* **A61B** *19/02;* **B65D** *1/00*
U.S. Cl. 433—163 **3 Claims**



1. A dental instrument servicing system for use in cleaning a dental instrument and applying a medicament thereto, the system comprising:

a socket-forming member;

a resiliently deformable cushion adapted for deformed seating within said socket-forming member with a first end of said cushion extending upwardly therefrom, said first end providing a wiping surface for cleaning a dental instrument;

a medicament holder secured to said socket-forming member, said medicament holder including a gripper configured to capture a medicament cup for maintaining a charge of medicament adjacent said cushion; and

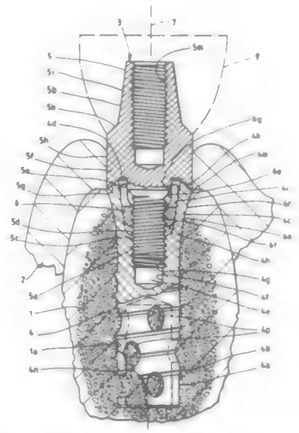
a finger mount joined with said socket-forming member to provide for attachment of said system to a user's hand.

5,368,483

DEVICE-FOR FIXING A DENTAL PROSTHESIS TO A JAW BONE

Franz Sutter, Niederdorf, and Ulrich Mundwiler, Tenniken, both of Switzerland, assignors to Institut Straumann AG, Waldenburg, Switzerland

Filed Aug. 20, 1993, Ser. No. 95,119
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **31 Claims**



1. A device for fixing a dental prosthesis to a jaw bone, having a base intended for insertion into a hole in the jaw bone and an abutment which can be connected to the base and is intended for holding the dental prosthesis outside the jaw bone, the base having an end face, a hole with a mouth located at the end face, with an internal thread and with an extension widening from the internal thread to the end face and bordered at least partly by a conical inner surface, and having an annular surface enclosing the mouth of the hole, and the abutment possessing an inner part which is intended for being received in the hole of the base and has an external thread intended for screwing to the internal thread of the base, and an outer part nondetachably connected to the inner part and intended for extending outside the base, wherein a shell with an axial through-hole and with a conical outer surface intended to rest against the conical inner surface of the base is present, wherein the inner part of the abutment can be screwed through the hole with the internal thread of the base, and wherein the outer part of the abutment has a stop surface tapering inward away from the inner part and intended to rest against the annular surface of the base.

5,368,484

VEHICLE SIMULATOR WITH REALISTIC OPERATING FEEDBACK

Norman S. Copperman, Palo Alto, and Wade O. Winblad, Hayward, both of Calif., assignors to Atari Games Corp., Milpitas, Calif.

Continuation-in-part of Ser. No. 888,375, May 22, 1992. This application Feb. 17, 1993, Ser. No. 18,950
Int. Cl.[5] G09B *9/04*
U.S. Cl. 434—69 **27 Claims**

1. A driver training system for a user of a simulated vehicle, comprising:

a plurality of simulated input devices for controlling the operation of the simulated vehicle;

modeling means responsive to the input devices for determining position information of the simulated vehicle in a simulated environment;

a video display for presenting the user with a view of the simulated environment;

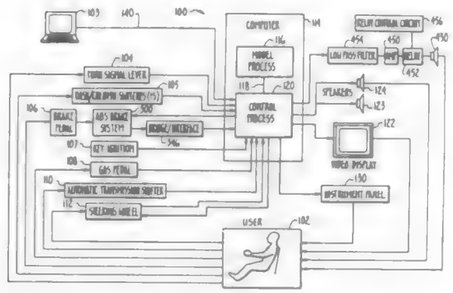
means for providing feedback to the user through a selected one of the simulated input devices; and

means, responsive to the position information, for providing a selected low frequency sound signal to the user, wherein the signal is selected from a plurality of signals to produce physical sensations representative of sensations produced during operation of a corresponding actual vehicle in a corresponding actual position and in a corresponding actual universe.

21. A drive training system including a simulated vehicle, the system comprising:

a plurality of simulated input devices, for controlling the operation of the simulated vehicle, including a brake pedal equipped with a sensor which produces force signals indicative of the force with which a user depresses the brake pedal;

a computer, responsive to the plurality of simulated input devices, for determining position information of the simulated vehicle in the simulated universe and for providing a plurality of control signals in response to the determined position information;



a video display, responsive to the plurality of control signals, which provides the user with a view of the simulated universe as the simulated vehicle moves through the simulated universe;

an input device feedback system providing feedback signals indicative of the operation of the simulated vehicle in the simulated universe, wherein the input device feedback system includes a solenoid attached to the brake pedal and the input device feedback system causes the solenoid to vibrate the brake pedal when the sensor produces a force signal indicative of the user depressing the brake pedal; and

a low frequency sound feedback system, having a low frequency speaker positioned adjacent to the user, for providing the user with signals producing a physical sensation representative of a sensation produced during operation of an actual vehicle in conditions corresponding to those influencing operation of the simulated vehicle, wherein the low frequency sound feedback system selects one of a plurality of signals stored in the computer in response to the determined position information and provides the selected signal to the low frequency speaker thereby producing the physical sensation.

5,368,485

OVERLAY SYSTEM FOR DESIGN SELECTION

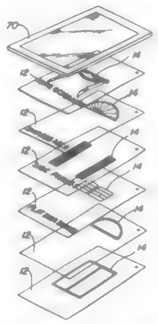
Elizabeth L. Phillips, 22912 Via Genoa, Monarch Beach, Calif. 92629

Filed Aug. 21, 1992, Ser. No. 934,109
Int. Cl.[5] G09B *25/00*
U.S. Cl. 434—75 **12 Claims**

5. An overlay system having a plurality of categories of design elements which enable the formation of a representation of a composite design, said system comprising:

a plurality of base sheets, each of said sheets having a pictorial representation of a specific style of a basic interior design element;

a first plurality of transparent overlay sheets, each of said sheets having a pictorial representation of a specific style of a first interior design element; and



a second plurality of transparent overlay sheets, each of said sheets having a pictorial representation of a specific style of a second interior design element;

each of said first and second plurality of transparent sheets and said plurality of base sheets having registration indicia whereby the position of the first and second transparent sheets and said base sheets when overlaid with respect to one another can be established by matching the registration indicia on the sheets, wherein the registration indicia is a single dot.

5,368,486

SYSTEM OF FURNITURE MERCHANDISING AND SELECTION

Alan M. Kurzman, Dallas, Tex., assignor to Triangle Pacific Corp., Dallas, Tex.

Continuation of Ser. No. 510,103, Apr. 17, 1990, Pat. No. 5,152,689. This application Aug. 21, 1992, Ser. No. 934,126
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] G09B *25/00*
U.S. Cl. 434—79 **4 Claims**

1. A merchandise display of kit components for the assembly of furniture items, comprising in combination:

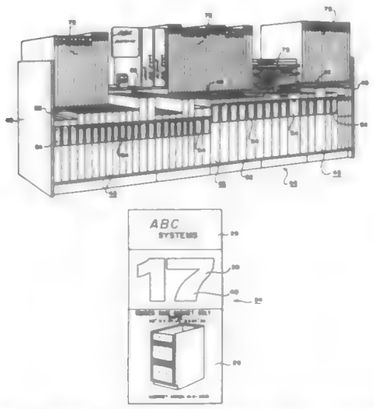
(a) a plurality of sets of prepackaged unassembled components within carton means arranged as a display grouping, the components within each carton to be assembled into a finished furniture item;

(b) label means associated with said carton means having first visual coding in which different first visual coding represents finished furniture items of different categories and identical first visual coding represents finished furniture items of the identical category;

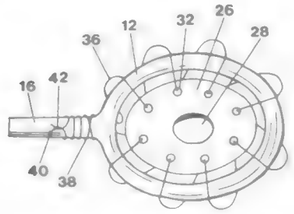
(c) said label means furthermore having second visual coding in which different second visual coding represents finished furniture items of different dimensions; and

(d) a graphic display associated with said display grouping

depicting the finished furniture items and having, as a part thereof, visual coding for said depicted items corresponding to the said first and second visual coding associated with said carton means.



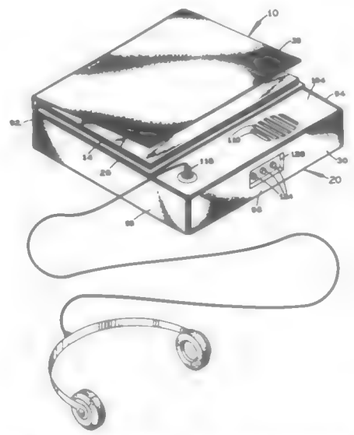
5,368,487
LAPAROSCOPIC TRAINING DEVICE AND METHOD OF USE
Marelyn Medina, 81 Browning Ave., Nashua, N.H. 03062
Filed Jul. 31, 1992, Ser. No. 923,221
Int. Cl.[5] G09B *23/28*
U.S. Cl. 434—262 **6 Claims**



1. A laparoscopic training device comprising:
at least one aperture defining means;
a means for allowing the aperture defining means to be positioned above a surgical specimen in a manner which simulates a surgical opening in a laparoscopic surgical procedure, the means for allowing the aperture defining means to be positioned including a means for repositioning the aperture defining means relative to the specimen; and
a moveable surface defining a surgical aperture mounted within an aperture defined by the aperture defining means, wherein the moveable surface is mounted to the aperture defining means by means of an elongated thread or wire.

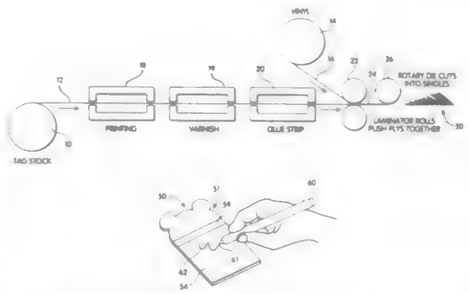
5,368,488
TALKING BOOK
Lawrence F. Gentile, 30 SE. 13th St., Boca Raton, Fla. 34432
Filed May 11, 1993, Ser. No. 59,361
Int. Cl.[5] G09B *5/06*
U.S. Cl. 434—317 **7 Claims**

6. A talking book and audio player apparatus comprising:
a book having a back face,
a mounting platform attached to said back face,
a cassette tape mounted within said mounting platform, said book, mounting platform and tape together forming a cartridge,
hooks located on a lower surface of the cartridge,
a player base assembly having slots on an upper surface for removably receiving said hooks on the mounting platform, and for playing said tape,



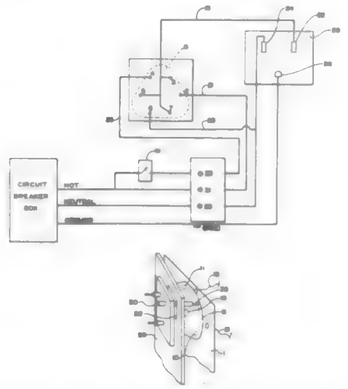
so that the user can operate and control the playing of said tape while following printed contents of said book, and such that any of several said book and tape cartridges can be inserted into said base assembly to provide variety and selection of reading material.

5,368,489
LUMINESCENT DISPLAY DEVICE
Peter A. Confalone, Jr., Franklin, and Ronald W. Dart, Wayland, both of Mass., assignors to Procorp. Inc., Framingham, Mass.
Continuation of Ser. No. 703,905, May 22, 1991, Pat. No. 5,249,969. This application Jun. 29, 1993, Ser. No. 85,194
Int. Cl.[5] B43L *1/12*
U.S. Cl. 434—410 **6 Claims**



1. An improved display device for producing a semi-permanent luminescent image consisting essentially of:
a paperboard sheet having a sealed surface for improved ink and varnish adherence on at least a portion of the sheet;
one or more inks applied to at least a portion of the sealed surface;
a varnish coating on at least a portion of the sealed surface of the paperboard sheet, which forms a first contact surface; and
a pliable vinyl type plastic sheet containing a luminescent dye, which forms a second contact surface and is disposed adjacent to the first contact surface;
wherein upon the application of pressure the first and second contact surfaces are urged into intimate contact at the points of applied pressure to form a luminescent image along said points and wherein said sheets are readily separable for effecting the erasure of any luminescent image formed thereon.

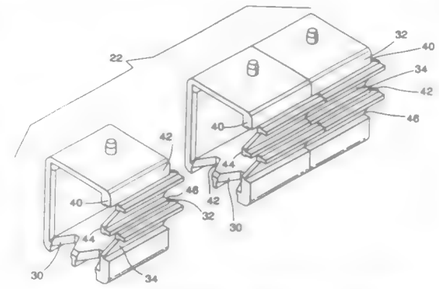
5,368,490
SWITCHABLE POWER OUTLET
Todd A. McKissick, 6283 S. Miller St., Littleton, Colo. 80127
Filed Feb. 1, 1993, Ser. No. 11,717
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—52 **2 Claims**



1. An electrical power outlet having three modes of operation comprising: outlet box having a neutral prong recess and a hot prong recess being, said neutral prong recess in connection with a neutral electrical power source, a hot power source having a hot terminal point near the back of said power outlet, a neutral power source having a neutral terminal point near the back of said outlet and a switched power source having a switched terminal point near the back of said power outlet, said hot prong recess having a hot prong contact point near the back of said recess, a means for contacting said hot prong contact point with one of each of said: hot terminal point, neutral terminal point and said switched terminal point, said switched power source in connection with an external switching means for supplying either no power or hot power depending on the condition of said external switch.

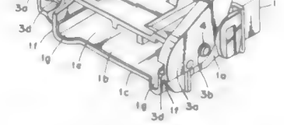
5,368,491
HIGH DENSITY ELECTRICAL CONNECTOR
Ronald P. Locati, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Dec. 17, 1993, Ser. No. 169,453
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—62 **8 Claims**

1. In a high density electrical connector for electrically interconnecting conductive paths between a pair of planar electronic devices, where the connector includes a pair of opposed housing members, each said housing member comprising a plurality of aligned housing segments, where said segments are characterized by a pair of end walls and at least a pair of planar sides containing plural, parallel grooves for receiving coiled springs therein, the improvement comprising in combination therewith the provision that said housing segments are arranged in end-to-end relationship such that said respective grooves are aligned to define a continuous groove between adjacent, aligned segments, and that said end walls are profiled to present a sawtoothed configuration which when arranged together interfit to form an essentially continuous planar side, whereby the end wall junction within a groove



between adjacent said segments is angularly disposed relative to the axis of said grooves.

5,368,492
LEVER TYPE CONNECTOR
Hiroyuki Hayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed May 26, 1993, Ser. No. 67,137
Claims priority, application Japan, Jul. 14, 1992, 4-49279[U]
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—157 **2 Claims**



1. A lever type connector comprising:
a first connector and a second connector adapted to be connected with each other, a pair of supporting shafts being formed on respective side surfaces of the first connector, said pair of supporting shafts being rotatably inserted into a pair of openings formed on respective sides of a lever; and a pair of guide pins engaging each of a pair of guide grooves formed on the lever, said pair of guide pins projecting from the second connector, whereby, from an opening portion of the first connector, the lever is rotated to move the second connector into the first connector so as to connect the first and second connectors with each other, or move the second connector away from the first connector so as to disconnect the first and second connectors from each other due to the engagement between the guide pins and the guide grooves; the opening portion being on said respective opposed side surfaces of the first connector, each respective side surface having an upper portion above the opening portion and a lower portion below the opening portion, and a pair of protecting walls, said pair of protecting walls being integral with the lower portion of the first connector and projecting in a predetermined length from an end of the opening portion of the first connector in such a manner that each of the protecting walls is opposed to each of a pair of portions of the lever projecting from each side thereof beyond the end of the opening portion of the first connector, wherein the respective protecting walls project beyond the respective upper portions, and whereby the protecting walls protect the portions of the lever projecting from each side of the lever beyond the end of the opening portion of the first

connector and thus prevent an external force from being applied to both sides of the lever.

5,368,493

EJECTOR SYSTEM FOR AN IC PACK CONNECTOR APPARATUS

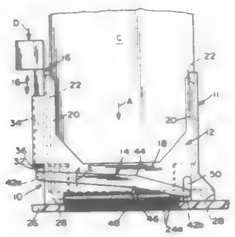
Paul O'Brien, Kilrush, Ireland, and Mario Previato, Padova, Italy, assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 25, 1993, Ser. No. 82,652

Claims priority, application European Pat. Off., Jun. 26, 1992, 92110895.7

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—160 **10 Claims**



1. A connector apparatus for providing an interconnection between an IC pack and a printed circuit board, including

a plurality of terminals (174) adapted for inter-connection of the IC pack to electrical traces on the printed circuit board,

housing means including a housing (12, 112, 212) having an IC pack receiving opening and an integrally formed channel (34, 138, 234) therein,

said IC pack being inwardly and outwardly movable within the housing between an inserted position wherein it electrically mates with the terminals and an ejected position wherein a portion of the IC pack extends outside the opening,

an ejector mechanism (10, 110, 210) for selectively moving an inserted IC pack from the inserted position to the ejected position, said ejector mechanism having

an ejector arm pivotally mounted relative to the housing adapted to effect movement of the IC pack to the ejected position, and

a manually manipulatable actuator (16, 116, 216) slidably mounted in said channel for movement in the same general direction as the insertion and ejection of the IC pack and adapted to cooperate with said ejector arm in moving the IC pack outwardly to the ejection position,

the improvement comprising:

said ejector arm defines an elongated lever (14, 114, 214) pivotally mounted on the housing means intermediate opposite ends thereof and extending substantially entirely across the integrally formed channel of the housing means, said elongated lever having a first end pivotally connected to said actuator and a second end for directly engaging the IC pack when said pack is in the inserted position;

whereby when the actuator is moved inwardly, the second end of the lever moves the IC pack outwardly to the ejected position.

5,368,494

BNC T-TYPE ADAPTER

Yang-Chuan Lai, No. 44, Lane 627, Sec. 5, Chung-Hsin Rd., San-Chung City,

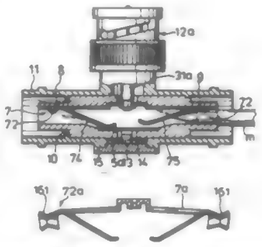
Filed May 13, 1993, Ser. No. 60,528

Int. Cl.[5] H01R *13/703*

U.S. Cl. 439—188 **3 Claims**

1. A BNC T-type adapter comprising a lower female conducting portion which is used to engage a male conductor, an upper male conducting portion which is connected electrically and perpendicularly to said female conducting portion, a grounding unit which is provided below said female conducting portion and which is to be connected thereto, and an insulating housing which is sleeved around said female conducting portion and which confines said ground unit therein, the improvement comprising:

said female conducting portion including an elongated conducting plate with two outer ends, each of said two outer ends being formed with a clamping means for clamping stationarily said male conductor, said elongated conducting plate further having two oppositely slanted resilient conducting strips, each of which is formed by punching



said elongated conducting plate at a location inwardly of said clamping means so that each of said slanted resilient conducting strips has an outer joint end that is connected to said elongated conducting plate and an inner free end that extends inwardly and downwardly, said free end of each of said slanted resilient conducting strips normally contacting said grounding unit, whereby when one of said two outer ends of said elongated conducting plate engages said male conductor, said male conductor is clamped stationarily by said clamping means and contacts a respective one of said slanted resilient conducting strips to cause said free end of said one of said slanted resilient conducting strips to detach from said grounding unit.

5,368,495

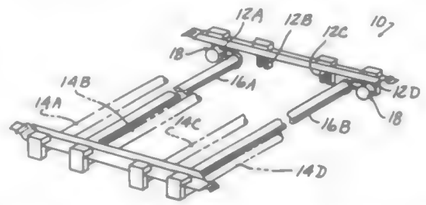
METHOD AND ADAPTER FOR RELOCATING A FLUORESCENT TUBE IN A FIXTURE

Frederick R. Raby, Sr., and Bruce R. Raby, both of 3030 N. Middle Side Road, Amherstburg, Ontario, Canada N9V 2Y9

Filed Jul. 19, 1993, Ser. No. 93,807

Int. Cl.[5] H01R *33/02*

U.S. Cl. 439—226 **10 Claims**



1. An adapter for offsetting a light tube in a fluorescent light fixture having fixture sockets at either end thereof having socket contacts therein configured and spaced to receive a pair of pin contacts at each end of said fluorescent tubes, said adapter comprising:

an adapter body having a pair of conductive pins projecting herefrom configured and spaced to be received into a fixture socket and make an electrical connection with said socket contacts;

a pair of insulated electrical leads each electrically connected to a respective conductive pin, said leads extending from said adapter body;

a plug having a pair of female socket contacts configured and spaced to receive a pair of pin contacts of a fluorescent tube, each of said contacts connected to a respective lead, whereby a fluorescent tube can be relocated in said fixture while being electrically powered by a connection with an existing socket by being connected thereto with said adapter and,

an extension rod having one end mounted to said adapter body, said extension rod extending transversely to said conductive pins and having a tube holding clip mounted at another end thereof, said clip adapted to grasp a fluorescent tube, whereby said extension rod is able to provide support for one end of a fluorescent tube.

5,368,496

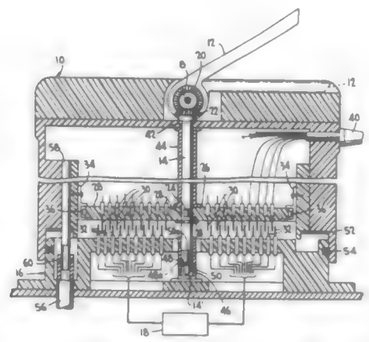
CONNECTOR ASSEMBLY HAVING CONTROL LEVER ACTUATION

Joseph V. Ranalletta, Englewood, Colo., and Michael de Angeli, North Potomac, Md., assignors to Tetrad Corporation, Englewood, Colo.

Filed Dec. 10, 1993, Ser. No. 164,578

Int. Cl.[5] H01R *13/15*

U.S. Cl. 439—261 **27 Claims**



1. In a mechanism for locking together first and second mating multi-pin connector elements, wherein a first of said elements comprises a member defining a generally tubular recess for receiving a distal tip of a control rod retained in a bore formed in the second of said elements and rotatable therein, and wherein said member and said rod cooperate such that said tip of said rod may be inserted into said recess and rotated through a predetermined angle in order to secure said tip of said rod within said recess, locking said first and second elements to one another, the improvement comprising:

a control lever mounted to said second element for pivoting about a pivot axis not coincident with the axis of rotation of said rod in said bore, and means operably connected to said control lever and said rod, such that upon pivoting of said lever said rod is rotated through a predetermined angle, whereby said rod may be secured within said recess, locking said first and second elements to one another.

5,368,497

IC SOCKET

Takayuki Nagumo, Sagamihara, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

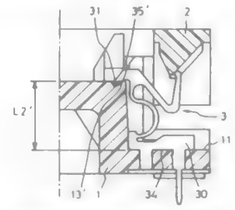
Filed Jun. 9, 1993, Ser. No. 74,207

Claims priority, application Japan, Jun. 10, 1992, 4-150293

Int. Cl.[5] H01R *11/22*

U.S. Cl. 439—266 **4 Claims**

1. An IC socket which comprises a socket body having a mounting surface and an IC package mounting portion, a plurality of contacts which are arranged on said socket body to be electrically engaged with a plurality of leads of an IC package having gull wing-type leads, and a cover which is provided to be vertically movable in relationship to said socket body to engage said contacts to displace them outwardly against their resilience to allow the contacts to move out of said electrical engagement when said cover is moved down toward said socket body, said plurality of contacts respectively having a fixing portion which is fixed to said socket body at said mounting surface, a contact portion for electrical engagement with a



lead of said IC package when mounted on said IC package mounting portion, a cantilever portion which enables the release of the lead and contact from said electrical engagement by rotating said contact portion, and an engaging cam portion which comes into sliding engagement with said cover for rotating said contact portion, wherein a distance from said contact portion to a bottom side of said contact fixing portion of a single contact before it is inserted into the socket body is smaller than the same distance after mounting the contact in the socket body to provide a preloaded engaging force.

5,368,498

SOCKET FOR RECEIVING ELECTRIC PART

Noriyuki Matsuoka, Yokohama, and Masanori Egawa, Sendai, both of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan

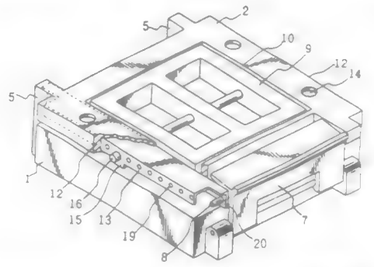
Continuation of Ser. No. 876,461, Apr. 30, 1992, Pat. No. 5,312,267. This application Sep. 3, 1993, Ser. No. 115,565

Claims priority, application Japan, Apr. 30, 1991, 3-126697

The portion of the term of this patent subsequent to May 17, 2011, has been disclaimed.

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—331 **2 Claims**



1. A socket for receiving an electric part, comprising:

a socket body of synthetic resin material;

a presser cover of a synthetic resin material;

hinge means hingedly connecting one end of said presser cover to one end of said socket body;

said presser cover having a synthetic resin frame defining an opening therethrough at a position corresponding to a portion where an electric part is to be placed on said socket body;

metal frames embedded only in parts of said synthetic resin frame and molded into the synthetic resin of each frame so as to be surrounded on all surfaces by synthetic resin, and

extending from said one end having said hinge means thereon towards a free end of said synthetic resin frame, said metal frames extending past ends of said opening which are respectively toward said one end and said free end of said presser cover and into corner portions of said synthetic resin frame for reinforcing the corner portions of said synthetic resin frame; and

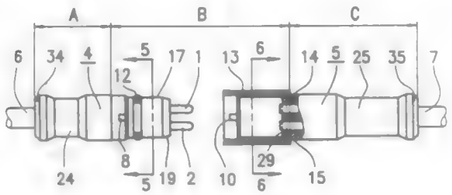
wherein said hinge means comprises a pair of spaced hinge supports on said one end of said presser cover, and a shaft extending between said hinge supports and supported on said socket body, one end portion of each of said metal frames at said one end of said presser cover extending into a corresponding hinge support and supporting said shaft in said hinge supports.

5,368,499

MULTI-LEAD ELECTRIC PLUG CONNECTOR

Ingo Hirt, Hanover, Germany, assignor to Wabco Westinghouse Fahrzeugbremsen GmbH, Hanover, Germany

Filed Mar. 28, 1991, Ser. No. 676,893
Claims priority, application Germany, Apr. 4, 1990, 4010836
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—350 **29 Claims**



1. An electrical plug connector comprising

a plug end section having a first end, an oppositely disposed second end and substantially forming a cylindrical outer surface, said plug end section to be attached at the first end to a first cable;

a support body having a first end and having a second end, wherein the first end of the support body is attached to the second end of the plug end section, and wherein the support body has a cross-section of elongated shape;

at least two pins mounted to the second end of the support body, wherein said pins are connectable to wires of the first cable;

contact shells formed to engage with the pins;

a casing part having a first end and having a second end and forming a cup shape, with the second end defining the bottom of the cup and supporting the contact shells and having a cross-section of elongated shape such that the support body with the pins can be inserted into the casing part, wherein the two pins inserted into a socket for providing an electrical connection between the pins and the contact shells;

a socket end section having a first end and having a second end with the first end connected to the second end of the casing part and with the second end to be attached to a second cable and with wires of the second cable connected to the contact shells,

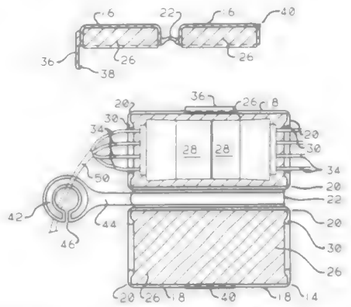
wherein the support body and the casing part substantially form an oval outer section.

5,368,500

CLOSURE FOR ELECTRIC PLUG

Charles E. Dedering, 851 Osborn Ave., Oshkosh, Wis. 54901

Filed Jan. 4, 1993, Ser. No. 460
Int. Cl.[5] H01R *13/44, 13/639*
U.S. Cl. 439—367 **12 Claims**



1. A closure adaptable for enclosing and protecting an electric plug extending from a vehicle, comprising:

(a) a box-like enclosure having first and second complementary members, each of said members having side walls with marginal edges interfacing with each other in abutting relationship when said closure is in a closed condition;

(b) a hinge interconnecting said members along the marginal edge of one side wall of each of said members;

(c) a recess in a marginal edge of at least one side wall of said member thereby forming an opening along the interface of said first and second members when in closed condition to permit electric wires to extend from said plug outwardly from said closure; and

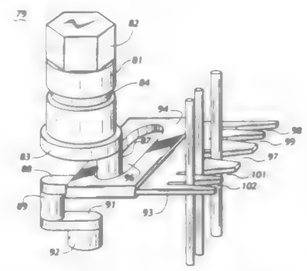
(d) a closed cell, cellular polymer encased in each of said first and second members, (i) said polymer being substantially moisture resistant and compressible, (ii) and said polymer having a combined volume greater than the combined, interior volume of said closure when said closure is in an open condition permitting said first and second members to close when brought into abutting relationship and causing compression of said polymer to substantially envelop said plug thereby forming a water-tight seal.

5,368,501

ROTARY ACTUATED, ENVIROMENTAL, INSULATION DISPLACEMENT CONNECTOR

Oscar D. Asbell, Atlanta, Ga., assignor to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Dec. 6, 1993, Ser. No. 162,848
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—418 **22 Claims**



1. A connection device for electrically connecting two or more conductors comprising:

a case member having an axial bore extending therethrough;

at least one opening extending into said case having an axis substantially parallel to the axis of said bore, said opening being adapted to receive two or more conductors to be electrically connected;

a conductor engaging member for electrically connecting in an engaging region the conductors received in said opening; and

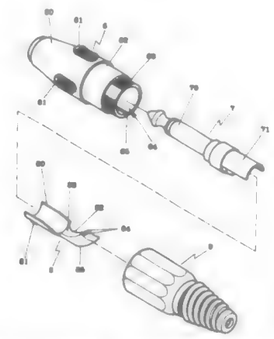
actuating means rotatably mounted in said bore and having an axis of rotation for moving said conductor engaging [means]member linearly and laterally in a plane at an angle relative to the axis of said bore for physically and electrically engaging the conductors extending through said opening.

5,368,502

PLUG - IN MICROPHONE CONNECTOR

Jia S. Lin, Tainan, Taiwan, Prov. of China, assignor to New Tide Enterprise Co., Ltd., Tainan, Taiwan, Prov. of China

Continuation-in-part of Ser. No. 47,953, Apr. 19, 1993. This application Nov. 12, 1993, Ser. No. 151,232
The portion of the term of this patent subsequent to Aug. 9, 2011, has been disclaimed.
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—462 **6 Claims**



1. A plug-in microphone connector comprising;

a connector member shaped cylindrically, having at least a proximal hand holding portion, an intermediate smooth portion, a distal male-threaded portion to engage a female-threaded portion of a connector housing, and an axially extending through hole for depositing a plug and a cable pincher therein;

a plug having an inserting portion and an inner semi-round end forming a cylindrical wall together with a semi-round wall of the cable pincher for pinching a cable therein;

a connector housing having a female-threaded portion to engage the male-threaded portion of the connector member and a discrete compact ring on an inner surface of the connector housing;

a cable pincher having an annular wall with a slot for depositing cable of various sizes through the annular wall, a pinching block extending lengthwise from the wall and having a recessed and curved surface and two pinching points on an outer end thereof, and upper and bottom surfaces gradually curving up to the outer end; and

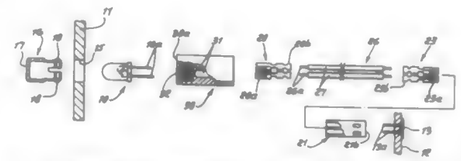
said compact ring in said connector housing compressing the upper surface of said cable pincher after the connector housing is combined with the connector member, said pinching points of the cable pincher then sticking in the surface of said cable and said cable being forced to bend inward slightly according to the curvature of said pinching block of the cable pincher so that the cable pincher may sufficiently pinch the cable so as to render it immobilized and inseparable.

5,368,503

APPARATUS TO CONNECT LEDS AT DISPLAY PANEL TO CIRCUIT BOARD

John M. Savage, Jr., 538-B Via De La Valle, Solana Beach, Calif. 92075

Filed Jun. 29, 1993, Ser. No. 82,963
Int. Cl.[5] H01R *33/06*
U.S. Cl. 439—502 **21 Claims**



1. In apparatus to connect an LED to posts of a printed circuit board, the LED having terminals, the combination comprising

a) first terminal connectors having first ends connectible to the LED terminals, and second ends,

b) second terminal connectors having first ends connectible to the board posts, and second ends,

c) a printed circuit board connector unit to telescopically receive the second terminal connectors,

d) said first and second terminal connectors being alike,

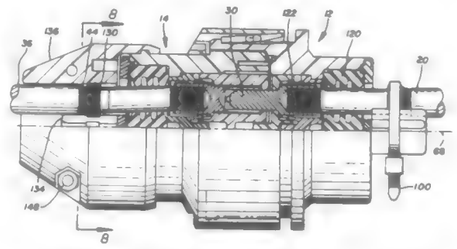
e) and cable having opposite ends to which said second ends of the first and second terminal connectors are connectible.

5,368,504

SHIELDED CABLE CONNECTOR

Steven Z. Muzslay, Huntington Beach, and Michael S. Finona, Fountain Valley, both of Calif., assignors to ITT Corporation, Secaucus, N.J.

PCT No. PCT/US91/09209, § 371 Date Jan. 28, 1992, § 102(e) Date Mar. 27, 1992
PCT Filed Dec. 9, 1991, Ser. No. 807,880
Int. Cl.[5] H01R *9/03*
U.S. Cl. 439—610 **12 Claims**



1. An electrical connector which includes a housing with a forward mating end portion and a rear end portion, a plurality of contacts with portions at said forward end portion, and at least a first shielded cable extending from a first of said contacts and extending rearwardly of said housing, wherein said cable includes a conductor, an insulation around said conductor, and a flexible shield around said insulation, characterized by:

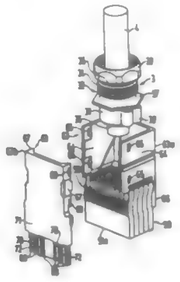
a ring lying closely around and in contact with said first cable with a portion of said flexible shield lying about said ring to form a bulge in said shield;

said housing having a conductive cable-receiving surface and said shield lies against said cable-receiving surface;

said connector including a part which presses only one side

of said shield bulge, but not an opposite thereof, against said conductive cable-receiving surface.

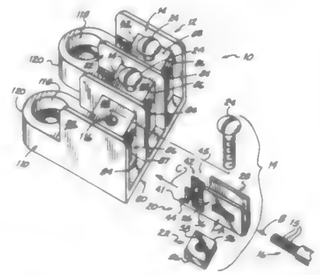
5,368,505
CABLE PLUG FOR MULTI-LEAD CABLES
Albert Hoolhorst, Aardenburg, and Jacques Longueville, Oostkamp, both of , assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 29, 1993, Ser. No. 145,464
Claims priority, application Germany, Oct. 29, 1992, 9214719; Aug. 6, 1993, 9311781
Int. Cl.[5] H01R *13/502*
U.S. Cl. 439—701 13 Claims



1. A cable plug for multi-lead cables, comprising:
a) a plug housing;
b) a device for connecting a cable with individual cable leads to said plug housing; and
c) a multi-part modular plug inserted into said plug housing, said modular plug having individual plate-like contact carriers made of insulating material including a first and a last contact carrier, said contact carriers having front and rear outer sides,
said contact carriers each having a respective single contact row for connecting the individual cable leads, said contact rows being formed by insulation displacement connection contacts and each being disposed on said front side of a respective one of said contact carriers,
said contact carriers being fitted in succession onto the cable leads, being stacked with said contact carriers resting on one another, and being mutually locked in a plugging direction and crosswise thereto to form a contact block with said front side of said last contact carrier being exposed, except for said first contact carrier, said rear sides of said contact carriers without said contact rows each being disposed between said contact row on said front side of a respective one of said contact carriers and said contact row on said front side of an adjacent one of said contact carriers, and
said contact block being insulated from said plug housing at least at said exposed front side of said last contact carrier and being held and locked in said plug housing.

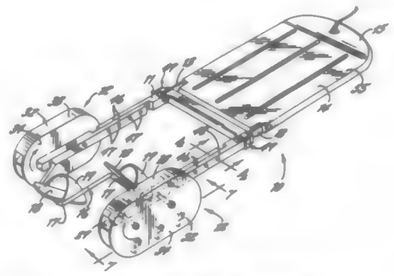
5,368,506
ELECTRIC STREET LIGHT TERMINAL BLOCK ASSEMBLY
H. Howard Heimbrock, Lawrenceburg, Ind., assignor to Standex International Corporation, Salem, N.H.
Filed Nov. 12, 1993, Ser. No. 150,714
Int. Cl.[5] H01R *9/24, 4/36*
U.S. Cl. 439—813 46 Claims

1. A method of forming an electrical connector for a main power terminal block of a street light assembly from a piece of generally uniformly thick metal comprising:
adapting a first portion of the metal piece to receive a power conductor;
shaping a second portion of the metal piece into a wing having a thickness of the metal piece, that thickness being greater than a desired thickness to receive a terminal thereover; and



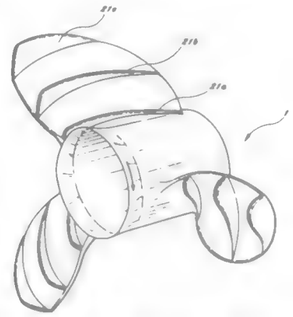
coining at least a portion of the wing to define generally flat parallel surfaces and to reduce the thickness thereof to about the desired thickness whereby to receive said terminal thereover.

5,368,507
PADDLE BOARD
Herman R. Harris, 305 Idlewood Dr., Kannapolis, N.C. 28083
Filed Oct. 19, 1993, Ser. No. 139,534
Int. Cl.[5] B63H *16/20*
U.S. Cl. 440—29 23 Claims



1. A recreational paddle board, comprising:
floating board means having a substantially flat portion for receiving the body of a user;
a drive shaft rotatably mounted on said board means, said drive shaft having offset portions on which pedals are mounted for receiving the feet of the user so that the user may rotate said drive shaft; and
at least one paddle drive affixed to said board means, said paddle drive including:
a plurality of cranks, at least one of said cranks being driven by said drive shaft;
an endless flexible member trained around said cranks and having upper and lower substantially horizontal runs extending between said cranks;
a plurality of paddles hingedly affixed to said flexible member such that said paddles may move between an extended position directed away from said flexible member and a retracted position adjacent said flexible member; and
fixed paddle guide means extending from said board means beneath said cranks and said lower run of said flexible member for engaging said paddles along said lower run to retain said paddles in said extended position, and for disengaging said paddles along said upper run so that said paddles may hingedly move to said retracted position;
whereby pedalled rotation of said drive shaft causes said extended paddles moving along said lower run to generate a reactive thrust in a desired direction for propelling the paddle board, and further whereby the reactive thrust and extension of said retracted paddles moving along said upper run is minimized.

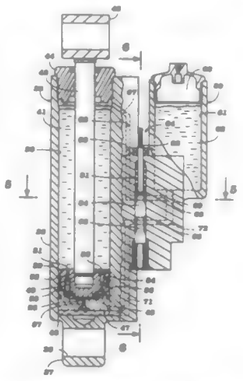
5,368,508
MARINE PROPELLER WITH TRANSVERSAL CONVERGING RIBS
Burl D. Whittington, 5960 Southwest 40th Ave., Apt. C5, Fort Lauderdale, Fla. 33314
Filed Jun. 8, 1993, Ser. No. 73,754
Int. Cl.[5] B63H *1/14*
U.S. Cl. 440—49 4 Claims



1. A propeller including a plurality of blades attached at a center hub, comprising:
a plurality of arcuate ribs protruding substantially perpendicular from a blade surface at a non-uniform height and extending transversely from the leading edge to the trailing edge of at least one of said plurality of blades, wherein said plurality of arcuate ribs substantially converge at the trailing edge of said at least one blade, wherein the innermost rib in relation to said hub has the lowest mean height of said plurality of ribs and each subsequent rib extending outwardly therefrom has a greater mean height than its inwardly adjacent rib.

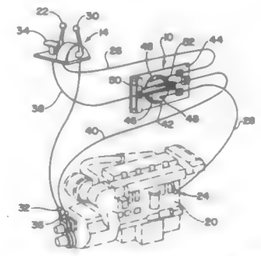
5,368,509
TILT LOCK SYSTEM FOR OUTBOARD MOTOR
Eiichiro Tsujii, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Feb. 16, 1993, Ser. No. 18,022
Claims priority, application Japan, Feb. 26, 1992, 4-075439
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—56 9 Claims

1. A hydraulic tilt lock system for a marine outboard drive adapted to be mounted on the transom of a watercraft for controlling the movement of said outboard drive relative to the watercraft, said tilt lock being comprised of a cylinder housing assembly adapted to be affixed to one of said outboard and said transom, a cylinder bore formed in said cylinder housing assembly, a piston supported for reciprocation in said cylinder bore and with said cylinder bore defining a pair of fluid chambers, a piston rod affixed at one end to said piston and at the other end to the other of said outboard drive and said transom for varying the volume of said fluid chambers in response to the relative movement between said piston and said cylinder assembly upon movement of said outboard drive relative to said transom, said piston rod passing through one of said fluid chambers for displacing fluid therein, an accumulator chamber formed in said cylinder housing assembly at one side of said cylinder bore, a passage communicating said fluid chambers with each other and with said accumulator chamber, valve means supported in said cylinder housing assembly at a position longitudinally relative the axis of said cylinder bore between the ends of said cylinder bore and transversely between said cylinder bore and said accumulator chamber for controlling the flow through said passage, and an operator having a



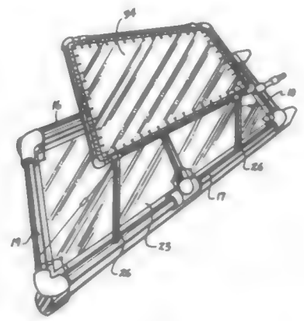
portion exposed from said cylinder housing assembly at an upper end thereof for direct operation by a user for controlling said valve means and moveable along an axis disposed parallel to the axis of said cylinder bore.

5,368,510
TROLLING VALVE SAFETY DEVICE
Andre L. Richard, 741 Kanuga Dr., West Palm Beach, Fla. 33401
Filed Jun. 11, 1993, Ser. No. 75,296
Int. Cl.[5] B63H *21/21*
U.S. Cl. 440—84 11 Claims



1. A boat engine trolling valve safety device for limiting changes in the boat engine throttle position during use of a trolling valve on the boat marine gear, said device comprising:
means for releasably limiting boat throttle actuation to a level no higher than a predetermined burnout threshold for the marine gear; and
means for locking said limiting means when the trolling valve is engaged and releasing the limiting means when the trolling valve is disengaged, wherein the limiting means rotates about a central pivot axis when released and provides diametrically opposed mounts for throttle control cables for actuating the engine throttle through rotation of the limiting means, said locking means preventing the limiting means from rotating when the trolling valve is engaged.

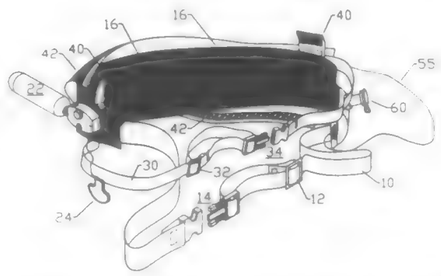
5,368,511
WATER SLED
Paul L. James, 1675 C Greencastle, Rowland Heights, Calif. 91748
Filed Jul. 30, 1993, Ser. No. 99,473
Int. Cl.[5] B63B *1/00*
U.S. Cl. 441—65 **2 Claims**



1. A water sled, comprising,
a first buoyancy tube and a second buoyancy tube arranged in a spaced parallel and coextensive relationship relative to one another, the first buoyancy tube having a first removable cap removably mounted relative to the first buoyancy tube, the second buoyancy tube including a second removable cap removably mounted relative to the second buoyancy tube to permit reception of ballast within the first buoyancy tube and the second buoyancy tube, and
a tubular support frame mounted to the first buoyancy tube and the second buoyancy tube, wherein the tubular support frame includes a first frame tube fixedly secured to the first buoyancy tube, a second tube frame fixedly secured to the second buoyancy tube, a third frame tube extending orthogonally between the first frame tube and the second frame tube, and a fourth frame tube orthogonally and fixedly mounted between the first frame tube ,and the second frame tube and arranged in a parallel spaced relationship relative to the third frame tube, and
a connecting rod fixedly and orthogonally mounted to the third frame tube projecting from the first frame tube medially of the first buoyancy tube and the second buoyancy tube, with a tow loop mounted to the connecting rod spaced from the third frame tube, and
a support web positioned coextensively within the support frame, and including a plurality of tether lines securing the support web to the support frame, and
a fifth frame tube extending orthogonally between the first frame tube and the second frame tube and medially of the third frame tube and the fourth frame tube, wherein the fifth frame tube extends above and beyond the support frame to provide for ease of manual manipulation of the support frame and for dividing cargo positioned upon the support web.

5,368,512
INFLATABLE SWIMMER'S SAFETY BELT
Dennis Brown, 22 Bayonne Ave., Monmouth Beach, N.J. 07750
Filed Jun. 21, 1993, Ser. No. 78,813
Int. Cl.[5] B63C *9/16*
U.S. Cl. 441—108 **15 Claims**

1. An inflatable swimmer's safety belt comprising:
a first, substantially hollow belt, closable to fit the waist of a wearer;
a compressed gas cartridge coupled with said first belt;
a pin, movable to puncture said cartridge so as to allow said cartridge to fill said first belt with compressed gas;
means, movable between first and second positions, and connected to said pin for moving said pin to puncture said cartridge when moved to said second position;
wherein a portion of said first belt fitting 'the waist of a wearer is temporarily secured in folded, overlapping relationship so as to unfold and expand outwardly under action of the compressed gas which fills it when said means is moved to said second position to puncture said cartridge, thereby increasing the length of said first belt in



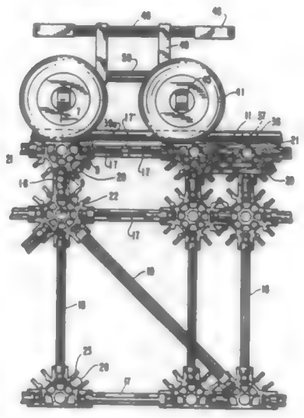
forming a tube to ride upwardly towards the arm level of the wearer;
a second belt, underlying said first belt, and also closable to fit about the waist of a wearer;
wherein each of said first and said second belts are closable by clasps to fit the waist of a wearer; and
a tether, connected between said first and said second belts, of a length to restrict the upward riding of said tube to a predetermined amount.

5,368,513
METHOD FOR MANUFACTURING A CORRECTION MASK FOR AN IMAGE INTENSIFIER TUBE OF THE PROXIMITY-FOCUS TYPE HAVING AN OBLONG CATHODE AND ANODE, AND ALSO A METHOD FOR CORRECTING AN IMAGE INTENSIFIER TUBE
Netty E. Vlasbloem-van den Boezem, Maasland, Netherlands, assignor to BV Optische Industrie "de Oude Delft", Delft, Netherlands
PCT No. PCT/EP90/01642, § 371 Date Apr. 15, 1993, § 102(e) Date Apr. 15, 1993, PCT Pub. No. WO91/05364, PCT Pub. Date Apr. 18, 1991
PCT Filed Sep. 26, 1990, Ser. No. 844,639
Claims priority, application Netherlands, Oct. 2, 1989, 8902442
Int. Cl.[5] H01J *31/50, 9/44*
U.S. Cl. 44—3 **14 Claims**



14. A method for correcting an image intensifier tube of the proximity-focus type having an oblong cathode and an anode window matching to said oblong cathode, which comprises positioning a strip-type transparent carrier having a oblong region of varying blackening density against said anode window.

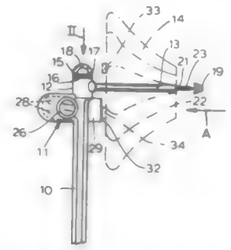
5,368,514
VEHICLE TRACK SUPPORT FOR CONSTRUCTION TOY SYSTEM
Joel I. Glickman, Huntingdon Valley, and Robert E. Simon, Jr., Southampton, both of Pa., assignors to Connector Set Limited Partnership, Hatfield, Pa.
Continuation-in-part of Ser. No. 101,422, Aug. 3, 1993, and a continuation-in-part of Ser. No. 19,066, Feb. 18, 1993, and a continuation-in-part of Ser. No. 759,400, Sep. 13, 1991, Pat. No. 5,238,438. This application Feb. 14, 1994, Ser. No. 195,734
Int. Cl.[5] A63H *18/00*
U.S. Cl. 446—122 **6 Claims**



1. A track construction for a toy construction system which comprises
(a) at least one section of tubing forming an individual rail element,
(b) said section of tubing having a diameter and a length which is a large multiple of such diameter,
(c) said section of tubing having outer walls and a hollow interior and having at least longitudinally spaced portions of its outer walls formed with radial opening means to provide access opening means to said hollow interior at least at longitudinally spaced points along the length of said section,
(c) a plurality of rail-mounting elements,
(d) longitudinally disposed spacing elements for securing a plurality of said rail mounting elements in longitudinally spaced relation,
(e) said rail mounting elements each including one or more projecting lugs, each said lug including a projecting portion insertable into said access opening means and thereby into the hollow interior of a section of tubing for securing said section of tubing along a predetermined path formed by said rail mounting elements, and
(f) one or more clip-like rail supports removably attachable to said spacing elements and provided with projecting lugs insertable into said access opening means for supporting said tubing at one or more locations intermediate said rail mounting elements.

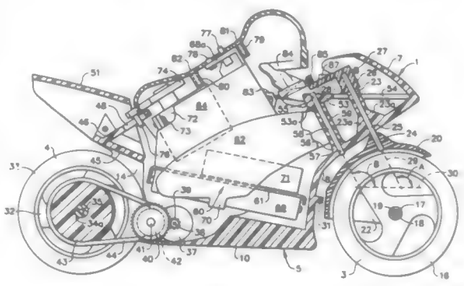
5,368,515
WIND OPERATED SOUND PRODUCING PINWHEEL
Richard Mast, Chesterfield, Va., assignor to Amuse Me, Inc., Petersburg, Va.
Filed Jan. 7, 1994, Ser. No. 178,677
Int. Cl.[5] A63H *33/40, 5/00*
U.S. Cl. 446—217 **17 Claims**

1. A sound-producing wind-propelled device, comprising:
a rod;
a head mounted on an end of the rod and formed with a plate and defining a journal with a journal axis generally transverse to the rod;
a pinwheel mounted on the journal for rotation about the journal axis, the pinwheel having a front and a back, the back of the pinwheel being formed with at least one projection;
a resilient vibratile elongated blade mounted on the head and having a free end engageable by the at least one projection as the pinwheel rotates about the axis for producing a vibrating sound at a frequency determined by a speed of the pinwheel, the blade lying in a plane generally parallel to the rod, and extending generally parallel to the journal axis; and



a cylindrical tubular formation on the plate forming an acoustic column adjacent the head and having an opening in the plate and the cylindrical tubular formation across which the vibratile blade extends, the column extending perpendicularly to the plate at one side thereof, an opposite side of the plate being formed with a pair of studs unitary with the plate and snap-fitted into the blade to secure the blade against the plate over the opening, the column having a column axis perpendicular to the journal axis and to a rod axis of the rod and being laterally offset from the journal axis and the rod.

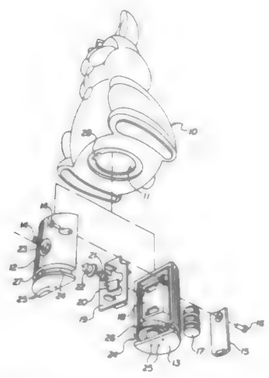
5,368,516
RADIO CONTROLLED TWO-WHEELED TOY MOTORCYCLE
Michael G. Hoeting, and Sean T. Mullaney, both of Cincinnati, Ohio, assignors to Bang Zoom Design Inc., Cincinnati, Ohio
Filed Oct. 21, 1993, Ser. No. 141,122
Int. Cl.[5] A63H *17/25, 17/16, 30/04*
U.S. Cl. 446—288 **19 Claims**



1. A toy two-wheeled motorcycle comprising a chassis having a front fairing portion and a rearward portion, a rear wheel being supported by said rearward chassis portion, a radio controlled motor mounted in said chassis and drivingly connected to said rear wheel, a front wheel caster mounted to said chassis front fairing portion, a first shaft non-horizontally mounted in said chassis front fairing portion, a swing support having forward and rearward ends, said swing support forward end being pivoted about said first shaft with the remain-

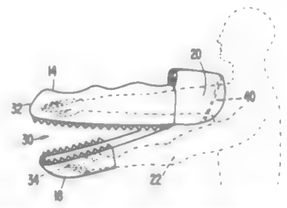
der of said swing support extending rearwardly thereof, said toy motorcycle further comprising a battery pack, a radio and electronics package and a radio controlled servo, said servo being operatively connected to said chassis and said swing support, said swing support being shiftable by said servo about said first shaft from a normal position centered with respect to said chassis to extended left and right positions, whereby to cause said chassis to lean to the left or right respectively and to cause said caster mounted front wheel to turn said toy motorcycle in the direction of the lean to the left or right respectively.

5,368,517
SPEAKING TOYS
David A. Pagani, Montpelier, Vt., assignor to New Ventures, Inc., Montpelier, Vt.
Filed May 21, 1993, Ser. No. 65,630
Claims priority, application United Kingdom, Nov. 19, 1992, 9224297.3
Int. Cl.[5] A63H *3/28, 5/00*
U.S. Cl. 446—297 **5 Claims**



1. A toy comprising:
a flexible, hollow toy body having an access aperture;
a speaking unit including
a rigid housing positioned within said body,
said housing including a base located at one end of said housing and having an annular groove thereon shaped to engage said body and retain said housing fixed therein,
sound producing means including a loudspeaker and voice message chip means mounted inside said housing,
a switch connected to said sound producing means, protruding from said housing and shaped to abut an interior surface of said toy body, said switch being operable from outside said toy body by deformation thereof to initiate generation of a sound by said sound producing means; and
wherein said housing is removably inserted through said aperture in said toy body, and said annular groove engages side portions of said aperture to hold said housing such that said base lies generally flush with an outer surface of said toy surrounding said aperture.

5,368,518
PUPPET HEAD
Elise G. Hitchcock, 2809 NW. 35th Pl., Gainesville, Fla. 32605
Continuation of Ser. No. 835,329, Feb. 14, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,434
Int. Cl.[5] A63H *3/14, 3/02*
U.S. Cl. 446—329 **20 Claims**

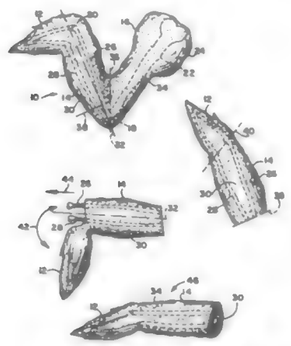


1. A puppet head to be manipulated by the arms of the user, the puppet head comprising:
a head element including a mouth, said head element including an aperture extending therethrough;
a first member forming an upper jaw of the mouth, said first member including a first elongated sleeve coextensive with said head aperture into which the first arm of the user is inserted during use, said first member extending along a first longitudinal axis;
a second member forming the lower jaw of the mouth, said second member being attached to said first member in a manner which permits relative motion between the first and second members, said second member including a second elongated sleeve into which the second arm of the user is inserted during use, said second elongated sleeve being opposite to and independent from said first member and said head;
said first and second members being hinged together so as to allow said second and first members to provide relative movement that simulate movement of the mouth of the puppet head;
wherein a user through arm movement can impart animation to the puppet head by one arm operating the upper jaw and the other arm operating the lower jaw of the mouth of the puppet head.

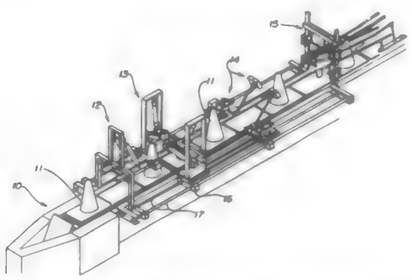
5,368,519
METHOD OF MAKING A FOOD PRODUCT FROM A BIRD WING AND FOOD PRODUCT MADE IN ACCORDANCE WITH THE METHOD
Michael J. Curtis, 3475 Coronet Ave., Lancaster, Pa. 17601, and Eugene G. Martin, 840 S. Cocalico Rd., Denver, Pa. 17517
Filed Dec. 20, 1993, Ser. No. 170,463
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—135 **15 Claims**

1. A method of making a food product from a wing of a bird, the wing comprising a middle section having a first joint, a second joint spaced from the first joint, two bones generally parallel to each other and extending between the first and second joints, and meat surrounding the two bones, the middle wing section also having an axis extending generally parallel to the bones, the wing further comprising a drumette section attached to the middle section at the first joint and a tip section attached to the middle section of the second joint, the method comprising the steps of:
(a) cutting the wing to separate the middle section from the drumette section;
(b) cutting the middle section along a cut line extending generally perpendicular to the axis and spaced from the first joint by a predetermined distance to remove the first joint from the middle section;
(c) bending the tip section with respect to the middle section to expose at least a portion of both of the two middle section bones proximate to the second joint; and

(d) pulling the exposed portions of both of the middle section bones in a direction generally parallel to the axis to remove the two bones from the middle section to thereby provide a food product comprising a boneless middle section attached to the tip section.

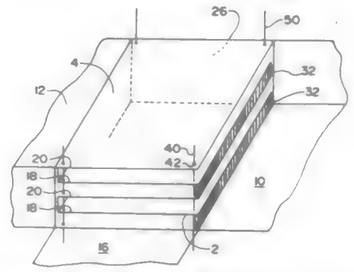


5,368,520
APPARATUS AND METHOD FOR SEPARATING WINGS AND ATTACHED BREASTS FROM POULTRY CARCASSES
Jay Koch, 177 Ocean Shore Dr., Key Largo, Fla. 33037, and Andrew C. Estes, 211 Widgeon Rd., Russellville, Ark. 72801
Filed Jan. 18, 1994, Ser. No. 182,461
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—165 **15 Claims**



1. An apparatus for partially separating a wing and attached breast from a poultry carcass having at least a shoulder joint and a scapula bone and being disposed upright on a mandrel carried on a moving conveyor, comprising one or more shoulder joint separator assemblies, comprising:
(a) a rotating cylindrical cup knife;
(b) means for rotatably driving said cup knife;
(c) means for positioning said cup knife in a shoulder joint and for moving said cup knife through the joint so as to separate the wing from the poultry carcass at the joint and further to sever tendons and flesh in the vicinity of the joint without completely severing all fleshy connections between the poultry carcass and the breast;
(d) means for advancing said shoulder joint separator assemblies from a start point in synchronization with the mandrel on the moving conveyor while the shoulder joint is being separated; and
(e) means for returning said shoulder joint separator assemblies to said starting point upon completion of separation of the shoulder joint.

5,368,521
FLUID DISTRIBUTOR FOR STRATIFIED MIXING OF AIR STREAMS
Robert P. Koenig, 1720W-115 Cir., Westminster, Colo. 80234
Continuation-in-part of Ser. No. 881,706, May 12, 1992, abandoned. This application Feb. 24, 1993, Ser. No. 22,763
Int. Cl.[5] F24F *13/04*
U.S. Cl. 454—261 **4 Claims**

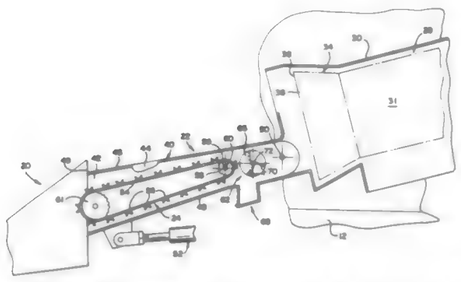


1. A mixing plenum for the distribution of fluid streams having two different inlet sources and for subsequent distribution of said streams comprising: plenum chamber having top and bottom walls and side walls in connection with said top and bottom walls, a set of fixed partitions in connection with said side walls so as to divide said plenum chamber into a plurality of passages that are parallel to one another and extend across said plenum chamber, a first fluid intake means in connection with a portion of said passages and a second fluid intake means in connection with another portion of said passages, said first fluid intake means in connection with a first fluid stream and said second fluid intake means in connection with a second fluid stream, a set of substantially parallel louver panels disposed across said plurality of passages so as to divide each of said passages into an upper and lower passage with one of said fixed partitions above, and one of said fixed partitions below each said parallel louver panel, a set of first curtains each of said first set of curtains in connection with one of said louver panels and said fixed partition above said louver panel so as to block said upper passage from said air streams, a set of second curtains, each of said second set of curtains in connection with one of said louver panels and said fixed partition below said louver panel so as to block said lower passage from said air streams, a connecting means in connection with each of said louver panels so as to move said louver panels simultaneously in order to vary the proportions of said first and second air streams, an outlet duct in connection with said upper and lower chambers so as to disperse said first and second air streams as one air stream.

5,368,522
FEEDER-ROTOR ASSEMBLY FOR COMBINES
Jonathon E. Ricketts, Viola; Herb M. Farley, Plainfield, and William L. Cooksey, Romeoville, all of Ill., assignors to Case Corporation, Racine, Wis.
Filed Apr. 14, 1993, Ser. No. 47,705
Int. Cl.[5] A01F *12/10*
U.S. Cl. 460—16 **8 Claims**

1. A feeder-rotor assembly for a rotary combine comprising a fore-and-aft extending mobile frame assembly, a header assembly connected to said frame assembly for reaping crop materials as the combine is driven across a crop field, a rotor assembly mounted on the frame assembly for receiving and processing crop materials and including a rotor mounted for rotation about an elongated axis and having an impeller blade assembly comprised of a plurality of substantially identical impeller blades secured to a forward end of said rotor for inducing rotary outward and rearward movements to the crop materials received by the rotor assembly, a feeder assembly for receiving crop materials from said header assembly and dis-

charging said crop materials into said rotor assembly, said feeder assembly including a feeder housing having said header assembly attached to a forward end thereof and which is pivotally attached at a rear end to the frame assembly for vertical movement about a transverse axis spaced forward of a leading edge of said impeller assembly, said feeder mechanism further including a conveyor assembly for receiving and rearwardly advancing the crop materials in a linear fashion between said header assembly and said rotor assembly, said conveyor assembly including a pair of longitudinally spaced rotary members about which material engaging driving chains are entrained,



and wherein the rearmost rotary member of said conveyor assembly is mounted for rotation about an axis spaced forwardly of the impeller blade assembly so that a longitudinal distance ranging between about 5 inches and 16 inches separates a rearmost edge of the conveyor assembly and a foremost edge of the impeller blade assembly to allow the direction of the crop materials movements discharged from the feeder assembly to transmute from the linear movements imparted thereto by the conveyor assembly to rotary movements imparted thereto by the impeller assembly of the rotor assembly thereby increasing efficiency and effectiveness of the combine.

5,368,523

FIXED CV UNIVERSAL JOINT WITH SERVICEABLE INSERTS

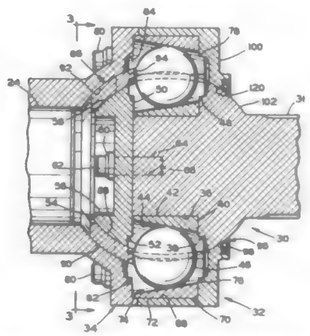
Philip J. Mazziotti, Toledo, Ohio, assignor to The Zeller Corporation, Defiance, Ohio

Continuation-in-part of Ser. No. 772,339, Oct. 7, 1991, Pat. No. 5,222,914, which is a continuation of Ser. No. 573,397, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 321,861, Mar. 10, 1989, abandoned. This application Dec. 10, 1992, Ser. No. 988,683

The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.

Int. Cl.[5] F16D *3/223*

U.S. Cl. 464—144 **18 Claims**



1. A fixed constant velocity universal joint having spherical contact and support directly between inner and outer race members to prevent axial movement comprising the inner race member having a plurality of uniformly circumferentially-disposed first recesses of substantially semicircular shape in transverse cross section, the outer race member having a plurality of second recesses of substantially semicircular shape in transverse cross section and positioned opposite said first recesses, a first insert for each of said first recesses, said first inserts, when worn, being replaceable with new inserts, each of said first inserts having a substantially semi-cylindrical outer surface fitting complementary with the corresponding first recess and a groove of substantially semicircular cross-sectional shape forming an inner surface, a second insert for each of said second recesses, said second inserts, when worn, being replaceable with new inserts, each of said second inserts having a substantially semi-cylindrical outer surface fitting complementary with the corresponding second recess and a groove of substantially semicircular cross-sectional shape forming an inner surface, roller elements in corresponding grooves of said inserts, each of said first inserts having at least one axially-extending projection extending beyond an end thereof and forming a shoulder, each of said second inserts having at least one axially-extending projection extending beyond an end thereof and forming a shoulder, first means carried by said inner race member and forming an annular shoulder engagable with the shoulders of the axially-extending projections of said first inserts in said first recesses to prevent rotational movement of said first inserts in said first recesses, second means carried by said outer race member and forming a second annular shoulder engagable with the shoulders of the axially-extending projections of said second inserts in said second recesses to prevent rotational movement of said second inserts in said second recesses, a retainer fully enclosed in said universal joint and abutting said roller elements, and a seal engaging said inner and outer race members on the side of said roller elements opposite said retainer.

5,368,524

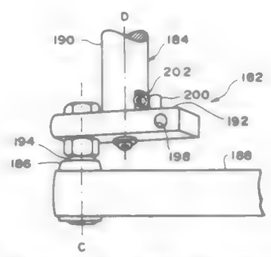
ADJUSTABLE PULLEYS FOR MAIL SORTING SYSTEM

Diane L. Deemer, Columbia, and Daryl S. Mileaf, Jessup, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 766,739, Sep. 27, 1991, Pat. No. 5,261,859. This application Aug. 6, 1993, Ser. No. 103,003

Int. Cl.[5] F16H *7/12*

U.S. Cl. 474—133 **3 Claims**



1. A tension release mechanism for changing belts in a dancer pulley assembly of a mail sorting system comprising:

a stub shaft fixedly connected to a support member;

a lever arm having first and second sides and first and second ends, the lever arm being pivotally connected to the stub shaft between the first and second ends of the lever arm and being pivotal about a vertical pivot axis D;

a pulley shaft connected to the first end of the lever arm and extending in a direction opposite the stub shaft;

a first belt pulley rotatably mounted on the pulley shaft and being rotatable about a rotation axis;

means for preventing pivotal movement of the lever arm in one direction beyond a predetermined point E, the lever being held at the predetermined point E by belt tension imparted by a belt running from the first belt pulley to an adjacent second belt pulley having a rotation axis F, wherein the rotation axis C lies between a line connecting axes D and F and a line connecting point E and axis F.

5,368,525

RESIN FORMED PULLEY

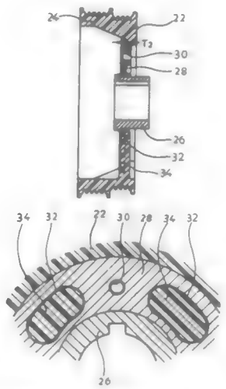
Nobuaki Funahashi, Nakashima, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Nov. 17, 1993, Ser. No. 153,911

Claims priority, application Japan, Dec. 15, 1992, 4-354241

Int. Cl.[5] F16H *55/00*

U.S. Cl. 474—190 **4 Claims**



1. A resin formed pulley comprising:

a main body composed of a circular plate formed from a synthetic resin material, said main body being provided with a belt retaining portion in an outer periphery thereof;

a boss composed of a metallic cylindrical body embedded in an axial center of said main body, said boss adapted to be secured to a rotary shaft; and

a plate-shaped metallic insert which extends from an outer periphery of said boss to the inside of said main body

said metallic insert including a plurality of services holes, said service holes penetrating said main body, and at least one engaging hole, said engaging hole being filled with said synthetic resin material.

5,368,526

ENDLESS BELT AND A LINK CONSTRUCTION THEREFOR

Robert Hynes, 635 Springer Rd., Fairfield, Conn. 06430

Continuation-in-part of Ser. No. 959,668, Oct. 13, 1992, Pat. No. 5,320,584. This application Mar. 28, 1994, Ser. No. 219,030

Int. Cl.[5] F16G *13/02*

U.S. Cl. 474—207 **12 Claims**

1. An improved link construction for use in a continuous belt formed by a plurality of similarly constructed links comprising:

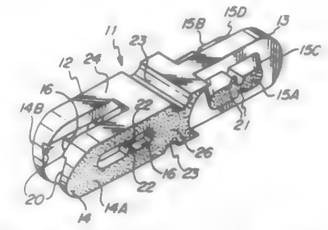
a body having opposed ends;

one of said opposed ends defining a male portion and the other end of said opposed ends defining a female portion;

said female portion being bifurcated to form clevis having opposed clevis arms for receiving a male portion of a similar link;

said male portion having connected thereto a plurality of opposed laterally extending projections that extend transversely of said male portion, and longitudinally along the length of said male portion;

said clevis arms having a plurality of opposing openings therein, the plurality of opposing openings conforming in shape to the shape of said plurality of opposed laterally extending projections, the plurality of projections being adapted to be received in the plurality of openings of said female portion of a similar link, the plurality of projections having leading ends and trailing ends, at least one of the



leading ends and at least one of the trailing ends being inclined toward said female portion to facilitate inserting the male portion of one link into the female portion of a similar next adjacent link.

5,368,527

HYDROMECHANICAL DRIVE UNIT

Franz Forster, Karlstadt-Muhlbach, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Feb. 26, 1993, Ser. No. 23,339

Claims priority, application Germany, Feb. 27, 1992, 4206085

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—83 **16 Claims**

1. A hydromechanical drive unit for driving two driven axles of a vehicle, said hydromechanical drive unit having a swash-plate type hydrostatic axial piston engine having an external housing and a cylindrical drum located in said housing and a mechanical transmission having an external housing and an input element, means for connecting said mechanical transmission to said hydrostatic axial piston engine, an output shaft extending completely through said hydromechanical drive unit and having opposite ends adapted to be connected with vehicle axles, wherein the rotational axes of said cylindrical drum and said output shaft coincide, said cylindrical drum of said axial piston engine non-rotatably connected to said input element of said mechanical transmission and attachment means on each end of said output shaft for connection with an axle of a vehicle.

5,368,528

BEARING THRUST ASSEMBLY FOR PLANET GEARS IN PLANETARY GEAR CARRIER ASSEMBLIES

Michael J. Farrell, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1993, Ser. No. 41,114

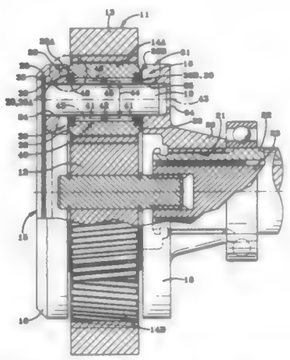
Int. Cl.[5] F16H *3/44*

U.S. Cl. 475—348 **10 Claims**

1. A thrust bearing assembly in combination with a planet

gear mounted on a spindle supported between spaced walls of a carrier assembly in a planetary gear set, with a needle bearing assembly disposed between the spindle and the planetary gear, said thrust bearing assembly comprising:

first thrust washer bearing means interposed between and directly engaging a planet gear and at least one wall of the carrier;



second needle thrust washer bearing means interposed between the needle bearing assembly and the first thrust washer bearing means said needle thrust bearing means being adapted to abut the axial ends of needles forming said needle bearing assembly.

5,368,529

TOROIDAL TYPE CONTINUOUSLY VARIABLE TRANSMISSION

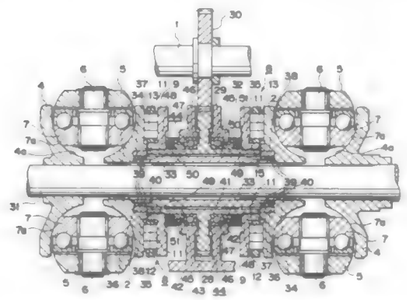
Hisashi Machida, Fujisawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Jun. 4, 1993, Ser. No. 70,939

Claims priority, application Japan, Jun. 29, 1992, 4-050823[U]; Jun. 29, 1992, 4-050824[U]

Int. Cl.[5] F16H *15/38*

U.S. Cl. 476—42 **2 Claims**



1. A toroidal type continuously variable transmission comprising:

a casing;

a fixed partition wall provided inwardly of said casing;

a through-hole formed in a part of said partition wall;

an input shaft rotatably supported within said casing;

a driving gear fixed to said input shaft;

an output shaft disposed in parallel with said input shaft within said casing in such a state that said output shaft is inserted through a central part of said through-hole and independently rotatable with respect to said input shaft;

a pair of output disks having their inner surfaces concaved in a circular arc in section and fixed at a spacing onto the periphery of said output shaft;

an internal rotary cylinder rotatably supported on the periphery of said output shaft inwardly of said through-hole between said pair of output disks;

a pair of input disks so supported on both ends of said internal rotary cylinder as to be only shiftable in the axial directions with respect to said internal rotary cylinder;

an external rotary cylinder rotatably supported on the periphery of said internal rotary cylinder inwardly of said through-hole between said pair of input disks;

a rolling bearing, provided between said external rotary cylinder and said partition wall, for retaining a thrust load and a radial load applied on said external rotary cylinder;

a driven gear fixed to the outer peripheral surface of a midportion of said external rotary cylinder and meshing with said driving gear;

a pair of cam plates so supported on both ends of said external rotary cylinder as to be only shiftable in the axial directions of said external rotary cylinder and having their one surfaces set in face-to-face relationship with the outer surfaces of said pair of input disks;

cam surfaces concaved/convexed in the peripheral direction and formed on at least one side surfaces of one surfaces of said cam plates and the outer surfaces of said pair of input disks;

rollers interposed by plural numbers in the radial directions between said one surfaces of said cam plates and said outer surfaces of said pair of input disks;

a pair of elastic members provided between a portion fixed to said external rotary cylinder and the other surfaces of said cam plates and thrusting said cam plates toward said input disks;

a plurality of trunnions swinging pivots existing in twist positions with respect to said input shaft and said output shaft; and

a plurality of power rollers having spherically convexed peripheral surfaces, rotatably supported on displacement shafts retained by said trunnions and interposed between said input and output disks.

5,368,530

APPARATUS FOR CONTROLLING CHANGE RATIO OF STEPLESS TRANSMISSION

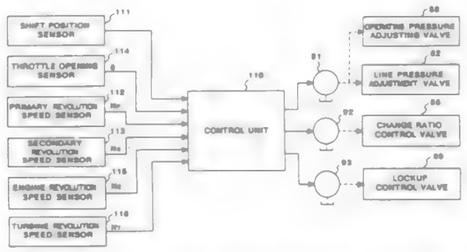
Hiroaki Sanematsu, Hiroshima, and Tatsumi Hagihara, Higashi-Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 627,812, Dec. 14, 1990, abandoned. This application Dec. 29, 1993, Ser. No. 174,176

Claims priority, application Japan, Dec. 18, 1989, 1-329345

Int. Cl.[5] F16H *61/02*

U.S. Cl. 477—43 **5 Claims**



1. An apparatus for controlling the change ratio for stepless transmission including a transmission mechanism having drive and follower pulleys the effective radii of which can be changed and a belt arranged between said drive and follower pulleys, the apparatus comprising:

change ratio adjustment means for adjusting a change ratio between said drive pulley and said follow pulley between a fixed upper limit and a correctable lower limit;

speed detection means for detecting revolution speed of said follower pulley or vehicle speed;

estimation means for estimating the transmission efficiency of said transmission mechanism in accordance with the change ratio of the transmission mechanism;

calculation means for calculating a minimum point of fuel consumption rate from a predetermined fuel consumption function which is of the revolution speed or the vehicle speed, the change ratio, the estimated transmission efficiency, and fuel consumption rate; and

limit determining means for determining the value of the correctable lower limit to a value corresponding to the minimum point of fuel consumption rate on the basis of the predetermined fuel consumption function.

5,368,531

CONTROL METHOD OF AND SYSTEM THEREOF FOR INVERSELY PROPORTIONALLY RAISING AND LOWERING SERVO HYDRAULIC PRESSURE, BASED ON INPUT TORQUE, FOR ENGAGING AND DISENGAGING FRICTIONAL ELEMENTS IN AUTOMATIC TRANSMISSION

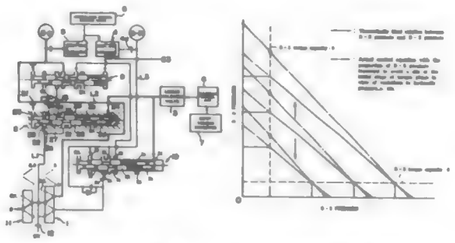
Masahiko Ando, Okazaki; Koji Noda, Anjo; Yoshihisa Yamamoto, Nishio; Masahiro Hayabuchi, Anjo; Kazumasa Tsukamoto, Toyota; Yasuo Hojo, Nagoya; Seitoku Kubo, Toyota; Yutaka Taga, and Hidehiro Oba, both of Aichi, all of Japan, assignors to Aisin Aw Co., Ltd. and Jidosha Kabushiki Kaisha Toyota, both of Japan

Filed Nov. 27, 1992, Ser. No. 982,677

Claims priority, application Japan, Dec. 3, 1991, 3-344124

Int. Cl.[5] F16H *5/40*

U.S. Cl. 477—155 **6 Claims**



1. A control system for an automatic transmission having a planetary gear mechanism disposed between an input shaft and an output shaft and first and second frictional engagement elements for braking, respectively, first and second components of said planetary gear mechanism, said first frictional engagement element being released while said second frictional engagement element is engaged upon upshifting from a given speed stage to another speed stage, said control system comprising:

a detector for detecting input torque at the input shaft;

a first hydraulic servo for engaging the first frictional engagement element;

a second hydraulic servo for engaging the second frictional engagement element;

a first hydraulic line connecting said first hydraulic servo with a drain port;

a second hydraulic line for feeding hydraulic pressure to said second hydraulic servo;

solenoid valve means for outputting a signal pressure responsive to the detected input torque; and

timing valve means, in fluid communication with said first hydraulic line, for lowering servo hydraulic pressure of said first hydraulic servo in conformity with an inversely proportional relationship between servo hydraulic pressure to said first hydraulic servo and servo hydraulic pressure to said second hydraulic servo, said inversely proportional relationship being predetermined for said signal pressure.

5,368,532

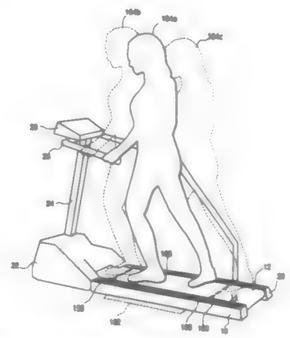
TREADMILL HAVING AN AUTOMATIC SPEED CONTROL SYSTEM

Michael G. Farnet, Auburn, Ala., assignor to Diversified Products Corporation, Opelika, Ala.

Filed Feb. 3, 1993, Ser. No. 13,020

Int. Cl.[5] A63B *23/00*

U.S. Cl. 482—5 **31 Claims**



1. An exercise apparatus comprising:

a movable endless belt having an upper run for a user to stride upon;

a motor for moving the belt;

at least one sensor located below the upper run of the belt for sensing the position of the user on the belt; and

a controller for controlling the speed of the endless belt in accordance with the position of the user relative to said at least one sensor.

5,368,533

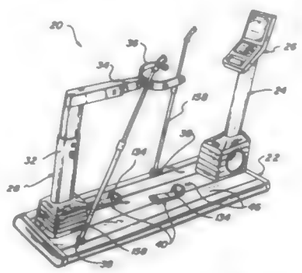
QUADRILATERAL EXERCISE APPARATUS

Mark S. Feuer; Fred W. Kreiner; Howard J. Solow, and Michael H. Harding, all of Boulder, Colo., assignors to Fittraxx, Boulder, Colo.

Filed May 13, 1993, Ser. No. 61,493

Int. Cl.[5] A63B *23/00, 21/00*

U.S. Cl. 482—70 **10 Claims**



1. A quadrilateral exercise apparatus comprising, in combination, a frame having a front and rear end, a pair of foot-supporting members slidably mounted in said frame for linear reciprocating movement between said ends, a pair of hand-engaging members slidably mounted on said frame for linear reciprocating movement in parallel relationship with the movement of said foot-supporting members, each of said hand-engaging members being associated with and adjacent to a foot-supporting member, an elongated flexible synchronizing

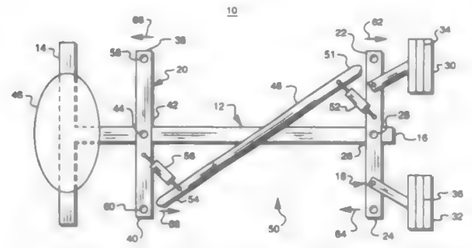
element affixed to and interconnecting each of said foot-supporting members and hand-engaging members such that said foot-supporting members move in opposite directions relative to each other and said hand-engaging members move in a direction opposite to that of the associated foot-supporting member, an elongated flexible safety element having opposite ends affixed to said foot-supporting members, said elongated safety element interconnecting said foot-supporting members whereby rearward movement of one foot-supporting member requires forward movement of the other foot-supporting member, a brake, a pair of one-way clutches operatively connected to said brake, each said clutch unidirectionally activating said brake, and a pair of elongated, flexible drive elements each operatively connecting one of said foot-supporting members to one of said clutches to unidirectionally actuate said brake to alternately unidirectionally resist movement of said foot-supporting members.

5,368,534

EXERCISER SYSTEM AND METHOD FOR PROVIDING COORDINATED BODY WORKOUT

Peter Gerenz, 30 Angle St., #1, Lowell, Mass. 01851

Filed Mar. 31, 1994, Ser. No. 221,094
Int. Cl.[5] A63B *69/06*
U.S. Cl. 482—72 **5 Claims**



1. An exercise apparatus for providing coordinated resistive exercise to a user, comprising:

a base section having first and second end regions;

a seat coupled to said base section proximate said first end region;

a first pivotable cross-member having first and second ends, said first pivotable cross-member also including a central region approximately mid-way between said first and second ends, said first pivotable cross-member pivotably coupled proximate its' central region to said base section proximate said second end region of said base section, said first pivotable cross-member including first and second foot engaging devices;

a second pivotable cross-member having first and second ends, said second pivotable cross-member also including a central region approximately mid-way between said first and second ends, said second pivotable cross-member pivotably coupled proximate its' central region to said base section proximate said seat and parallel to said first pivotable cross-member, such that said first end of said first pivotable cross-member is disposed opposite said first end of said second pivotable cross-member, and said second end of said first pivotable cross-member is disposed opposite said second end of said second pivotable cross-member, said second pivotable cross-member including first and second hand engaging devices;

a connecting member having first and second ends, and coupled to said first and second pivotable cross-members, said first end of said connecting member pivotably coupled proximate one of said first and second ends of said first pivotable cross-member, and said second end of said connecting member pivotably coupled proximate one of said first and second ends of said second pivotable cross-member, said one of said first and second ends of said first pivotable cross-member diagonally opposed from said one of said first and second ends of said second pivotable cross-member, such that said first pivotable cross-member, said connecting member, and said second pivotable cross-member combine to form a coordinated movement exercise section of said exercise apparatus, said coordinated movement exercise section having a generally "Z" shaped form, said connecting member operative for coordinating and controlling the movement of said first pivotable cross-member relative to said second pivotable cross-member such that when said first end of one of said first and second pivotable cross-members is moved and displaced in a first direction, said first end of the other of said first and second pivotable cross-member is moved and displaced in a second direction, opposite to said first direction; and

at least one motion resistive element, coupled between one of said first and second pivotable cross-members and said connecting member, for providing resistance to movement and displacement of said first and second pivotable members relative to said connecting member by said user.

5,368,535

ROTARY WEIGHTED EXERCISING DEVICE

George Twardokens, Reno, Nev., assignor to Magna Tech Orthopedic, Inc., Cedar Flat, Calif.

Filed Nov. 18, 1992, Ser. No. 978,349
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—79 **12 Claims**

1. An exercising device comprising:

only one base plate having an upper surface;

a rotary plate having an upper surface rotatably mounted on said upper surface of said base plate;

a pair of spaced guide members mounted on the upper surface of said rotary plate and having vertically extending laterally and angularly adjustable spaced upright portions;

only one elongated member having one end connected to said only one rotary plate generally at the periphery thereof;

a pair of spaced vertical upright members mounted on the upper surface of said base plate spaced from said only one rotary plate;

only one weighted base member freely mounted on said upright members and slidable therealong from a first position abutting against said base plate to a second position disposed away from said base plate; and

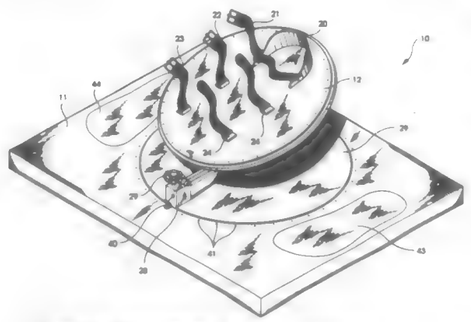
said only one elongated member extending between a first single guide means mounted on said base plate between said weighted base member and said only one rotary plate and guiding said only one elongated member in a first direction generally parallel to said upper surface of said base plate through a single second guide means disposed between said first single guide means and said only one weighted base member guiding said only one elongated member in a second direction generally parallel to said upright members to a third single guide means mounted at the top of said upright members guiding said only one elongated member in a third direction also generally parallel to said upright members but spaced therefrom, said only one elongated member extending from said single third guide means to said only one weighted base member and coupled thereto.

5,368,536

ANKLE REHABILITATION DEVICE

Mark E. Stodgell, 4237 E. 50 N., Lafayette, Ind. 47905

Filed Oct. 1, 1993, Ser. No. 130,373
Int. Cl.[5] A63B *23/04*
U.S. Cl. 482—79 **7 Claims**



1. An ankle rehabilitation device, comprising:

a base;

a foot receiving platform including a plurality of attachment points extending around the perimeter of said platform;

a support post rigidly mounted to said base and universally coupled to said platform, said base including a base plate rotatably mounted to said support post;

a fastening means for fastening a foot to said platform;

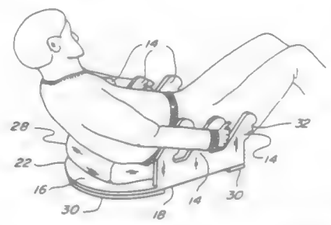
a resistance means for resisting pivotal movement of said platform, said resistance means including an articulating linkage mounted at one end to said base plate and releasably connectable at the other end to one of said plurality of attachment points, said resistance means further including an adjustment means for varying the resistance force generated by said resistance means.

5,368,537

EXERCISE APPARATUS

Louis Felice, Chicago, Ill., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Apr. 25, 1991, Ser. No. 691,226
Int. Cl.[5] A63B *23/02*
U.S. Cl. 482—140 **2 Claims**



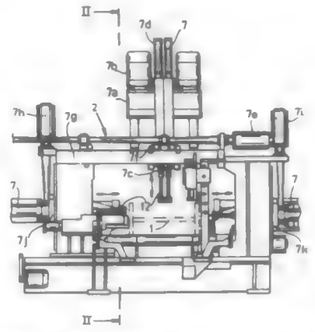
1. An exercise apparatus comprising a substantially planar base member having opposite end portions and opposite sides extending between said opposite end portions, a top surface adapted to receive and support portions of the pelvic and lower back regions of a person positioned thereon and an underside located opposite said top surface for positioning on a relatively flat surface such as a floor, and a plurality of three or more spaced pairs of handgrips attached to said base member adjacent to said opposite sides of the base member, said pairs of handgrips being progressively farther apart toward one end of said base member, said handgrips being adapted to be grasped by a person positioned on said top surface as an aid in raising and lowering the upper body portion during sit-up exercises.

5,368,538

METHOD OF AND APPARATUS FOR MACHINING STRUCTURAL SHAPES

Carl U. Peddinghaus, Obere Lichtenplatzer Strasse 276, 42287 Wuppertal, Germany, and Reiner Pöting, Sprockhövel, Germany, assignors to Carl Ullrich Peddinghaus, Wuppertal, Germany

Filed Sep. 7, 1993, Ser. No. 116,884
Claims priority, application Germany, Sep. 22, 1992, 4231684
Int. Cl.[5] B23P *23/02;* **B23B** *39/02;* **B23C** *1/10*
U.S. Cl. 483—1 **14 Claims**



12. A method of operating an apparatus for machining a structural shape, especially a heavy steel structural shape, said method comprising:

(a) feeding a structural shape to a machine frame on a feed roller conveyor;

(b) in response to drilling software programmed into a computer controlling displacement of said structural shape on said conveyor, and displacement of at least one raisable and lowerable vertical boring unit shiftable on said machine frame and provided with a boring tool adapted to be rotated and displaced to form a pattern of vertical holes, and at least one horizontal boring unit movable back and forth on said machine frame and provided with a boring tool adapted to be rotated and displaced to form a pattern of horizontal holes in said structural shape;

(c) programming said computer with milling software;

(d) replacing at least one of said boring tools at one of said units with a milling cutter, thereby transforming said one of said units into a milling unit;

(e) milling said structural shape in response to said milling software under control of said computer while controlling displacement of said structural shape on said roller conveyor without clamping of said structural shape; and

(f) displacing a machined structural shape away from said machine frame on a discharge roller conveyor.

5,368,539

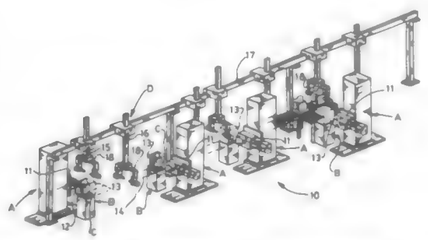
MULTI-POSITIONER MACHINING SYSTEM

Daniel M. Mills, Riverview; Richard Ogletree, Southfield, both of Mich., and Thomas J. Lindem, Rockford, Ill., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 923,717, Jul. 31, 1992, Pat. No. 5,321,874.
This application Oct. 28, 1993, Ser. No. 142,032
Int. Cl.[5] B23Q *3/157;* **B23C** *1/10;* **B23B** *35/00*
U.S. Cl. 483—1 **7 Claims**

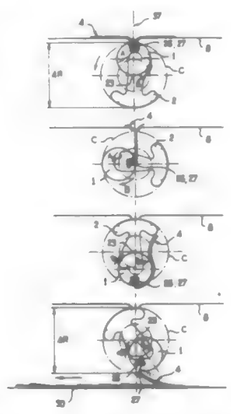
1. A method of machining a plurality of varied surfaces on a workpiece, comprising:

(a) locking such workpiece on a fixture having dimensional keys and releasably securing such fixture on an adjustable worktable in a predetermined first position facilitated by said keys;
(b) adjacent each worktable, rapidly positioning a rotary single-point-tool for linear feed into a first of said workpiece surfaces while in said first position, said positioning being carried out at accelerations/decelerations of at least about one G;
(c) feeding said rotating tool into said workpiece to carry out machining at speeds of 90–290 inches per minute for drilling, at least about 300 inches per minute for boring, and at least about 5000 sfm for milling;



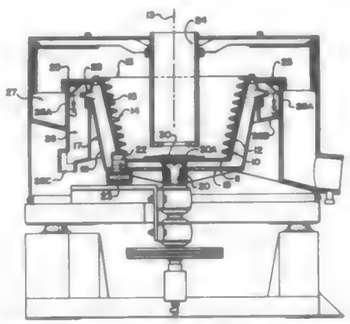
(d) after withdrawing said tool from said workpiece, repositioning the same or a substituted single-point-tool for another linear feed into other workpiece surfaces, said repositioning being carried out at accelerations or decelerations of at least about one G; and
(e) after withdrawing said tool from said workpiece, transferring said fixtured workpiece to another of a plurality of worktables while a substituted workpiece is undergoing machining at said worktable.

5,368,540
HYPOCYCLOIDAL FOLDING DEVICE
Saeed Saab, Oise, France, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany
Filed Mar. 18, 1993, Ser. No. 32,906
Claims priority, application France, Mar. 18, 1992, 92 03222
Int. Cl.[5] B65H *45/16*
U.S. Cl. 493—424 **10 Claims**



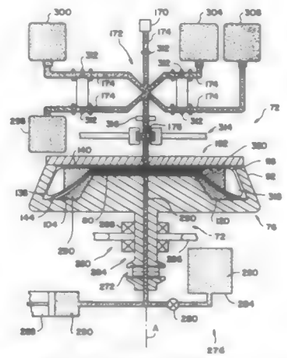
1. A folding device for folding a copy along a line parallel to a direction of forward travel of the copy, the copy being delivered to a folding table having a longitudinal central slit, comprising:
a crankshaft, disposed below the folding table in line with the central slit, rotatably driven about a central axis of rotation parallel to the direction of forward travel of the copy; and
a folding cylinder having a radius R and an external surface S, rotatably mounted about a central geometric axis on the crankshaft, the central geometric axis being parallel to the central axis of rotation of the crankshaft and offset with respect to the central axis of rotation by a distance equal to the radius R, so that each time a copy is folded, the crankshaft makes a complete revolution about the central axis of rotation simultaneously driving the folding cylinder through its own rotational movement about the central geometric axis, so that any point on the external surface S of the folding cylinder moves along a straight line of length equal to four times the radius R.

5,368,541
METHOD OF EXTRACTION OF MERCURY AND GOLD FROM MINE TAILINGS
Benjamin V. Knelson, 20321-86th Avenue, R.R. #11, Langley, British Columbia, Canada V3A 6Y3
Filed Jun. 3, 1993, Ser. No. 70,527
Int. Cl.[5] B01D *43/00;* **B04B** *11/00*
U.S. Cl. 494—37 **8 Claims**



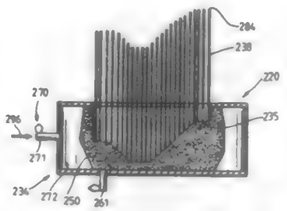
1. A method of separating from mixed feed materials containing water, gold, mercury and mineral tailings a first heavier solid component including gold and a second heavier liquid component including mercury comprising feeding the mixed feed materials into a centrifuge bowl having a peripheral wall surrounding a rotation axis of the bowl and an open mouth at one axial end of the bowl, rotating the bowl about the axis, causing the mixed feed materials to flow over the peripheral wall toward the open mouth, defining a shape of the peripheral wall such that said first and second components including mercury and gold collect on the peripheral wall while lighter materials including the mineral tailings and water escape through the open mouth, providing a plurality of holes through the peripheral wall, causing said second liquid component including mercury to pass through the holes and to be released from the peripheral wall so as to be discharged from the bowl while said first solid component including gold is retained inwardly of the holes on the peripheral wall, collecting separately from the lighter materials said second liquid component including mercury which passes through the holes and is discharged from the bowl and intermittently extracting said first solid component including gold from the peripheral wall separately from said second liquid component including mercury and separately from said lighter materials including the mineral tailings and water.

5,368,542
APPARATUS AND METHOD FOR SEPARATING MICROSCOPIC UNITS IN A SUBSTANTIALLY CONTINUOUS DENSITY GRADIENT SOLUTION
John D. McMannis, Evergreen, Colo., and Nicholas London, Evington, United Kingdom, assignors to Cobe Laboratories, Inc., Lakewood, Colo.
Continuation of Ser. No. 3,559, Jan. 13, 1993, Pat. No. 5,316,540. This application Jan. 12, 1994, Ser. No. 180,433
Int. Cl.[5] B04B *11/00*
U.S. Cl. 494—45 **25 Claims**



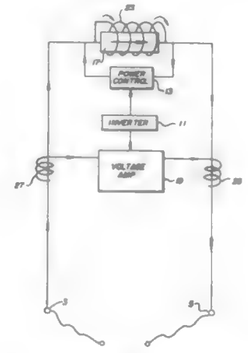
1. An apparatus for separating a plurality of at least one type of a microscopic unit from a microscopic unit-containing fluid, comprising:
a rotatable centrifuge;
a processing container positionable within and rotatable with said centrifuge, wherein said processing container receives said microscopic unit-containing fluid; and
gradient means, fluidly interconnected with said processing container, for providing a substantially continuous density gradient solution to said processing container when positioned within said centrifuge and during a rotation of said centrifuge, wherein during said rotation of said centrifuge each of said plurality of microscopic units assumes a position within a portion of said gradient solution having a density substantially equal to a density of said microscopic unit to thereby separate said units from a remaining portion of said microscopic unit containing fluid having a different density.

5,368,543
TISSUE COMPENSATION APPARATUS
Mark P. Carol, Milford, N.Y., assignor to Nomos Corporation, Sewickley, Pa.
Division of Ser. No. 791,041, Nov. 12, 1991, Pat. No. 5,242,372. This application Jun. 17, 1993, Ser. No. 77,660
Int. Cl.[5] A61N *5/00*
U.S. Cl. 600—1 **12 Claims**



1. A compensator housing for use with a linear accelerator and a rod framework to provide radiation therapy to a portion of a patient, comprising:
a first membrane, which is flexible and deformable and has an inner and an outer surface;
a quantity of material substantially equivalent to tissue of the patient disposed within the first membrane; and
means for retaining the shape of the first membrane after the first membrane has been deformed by at least some elongate rods associated with the rod framework, whereby the tissue equivalent material is disposed in a spatial relationship within the first membrane to absorb some of the radiation from the radiation therapy upon a radiation beam passing through the first membrane.

5,368,544
TREATMENT OF LIVING BODIES
Tony N. T. Tran, and Van N. Pham, both of Abbotsford, Australia, assignors to TN Bio-Electronics Pty. Ltd., Australia
PCT No. PCT/AU90/00476, § 371 Date Apr. 1, 1992, § 102(e) Date Apr. 1, 1992, PCT Pub. No. WO91/04764, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 16, 1991, Ser. No. 856,160
Claims priority, application Australia, Oct. 5, 1990, PJ6726
Int. Cl.[5] A61B *17/52*
U.S. Cl. 600—9 **22 Claims**

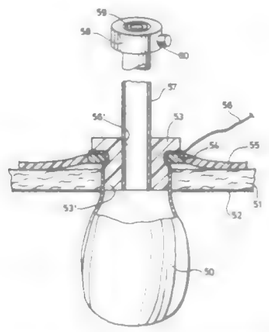


1. A method of treating a living body for the purpose of simulating the treatment which can be produced by magnetotherapy comprising:
(a) providing a permanent magnet within an electrical coil of a D-block transition metal;
(b) applying conductors of a D-block transition metal to said coil and said permanent magnet and across an area to be treated on the living body;
(c) passing currents through said coil and said permanent magnet in a direction which will enhance the magnetic flux of said permanent magnet; and
(d) allowing current to flow through said conductors through the living body to allow a magnetic flux from said permanent magnet to pass through the living body.

5,368,545
ACCESSORY DEVICE FOR LAPAROSCOPIC OPERATIONS
Günter Schaller, Freiburg, and Dietmar Klietsch, Waiblingen, both of Germany, assignors to Willy Rusch AG, Kernen i.R., Germany
Filed Nov. 30, 1992, Ser. No. 983,506
Claims priority, application Germany, Dec. 5, 1991, 4140156
Int. Cl.[5] A61F *13/00*
U.S. Cl. 600—37 **11 Claims**

1. An accessory device for laparoscopic operations comprising: a cover sheet with an integrated ring having an opening; a first flexible and folded plastic receptacle having a shaft and an

end, the shaft being located within the ring opening; a closure element adapted to couple together the shaft and the ring in



sealing relationship; and a plurality of additional plastic receptacles nested within another and within the first plastic receptacle.

5,368,546

INSTRUMENTED ORTHOPEDIC RESTRAINING DEVICE AND METHOD OF USE

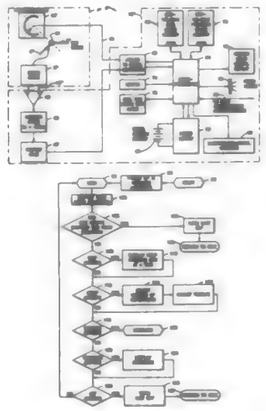
John G. Stark, 19390 Walden Trail, Deephaven, Minn. 55391; Richard G. Lund, Crystal, Minn.; Cecil H. Nelson, Chanhassen, Minn., and Bryan D. Rogers, Minneapolis, Minn., assignors to John G. Stark, Deephaven, Minn.

Continuation of Ser. No. 483,139, Feb. 21, 1990, Pat. No. 5,052,375. This application Jul. 19, 1991, Ser. No. 733,207

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] A61H *1/02*

U.S. Cl. 601—34 **20 Claims**



1. A personal orthopedic restraining device for use to restrain flexibly connected body portions of an individual, said personal orthopedic restraining device comprising:

(a) a housing including first and second distal end portions, said first and second distal end portions each including means for receiving one of the flexibly connected body portions of the individual, said housing further including restraining means for restraining movement of said first and second distal end portions relative to one another;

(b) a strain gauge operably fastened to at least one of said first and second distal end portions, said strain gauge for sensing stress on said restraining means; and

(c) control means for receiving and processing outputs from the strain gauge, said control means including programmed processing means for processing outputs from said strain gauge and memory means for retaining processed data respecting outputs from said strain gauge, said programmed processing means having a first idle state and a second operational state, wherein said control means requires less power in the idle state as compared to the operational state.

13. A method of using a personal orthopedic restraining device, said personal orthopedic restraining device restraining first and second body parts joined by a flexible joint of an individual so as to permit limited exercise while restricting movement which could cause injury to the joint, the method comprising the steps of:

providing an orthopedic restraining device, said device including restraining means for restraining the respective body parts at a desired flexion angle, and control means, connected to the restraining means, for monitoring forces exerted against said restraining means, wherein said restraining means include a strain gauge, connected to said control means, for sensing forces generated against said restraining means and for transmitting a signal representative of the sensed forces to said control means;

immobilizing the respective body parts within the orthopedic restraining device at the desired flexion angle;

indicating with the control means, at predetermined intervals, an exercise period during which at least one exercise should be executed;

exercising said body parts joined by said flexible joint by applying measurable isometric force against said restraining means;

measuring with the strain gauge the force exerted against said restraining means during each of the at least one exercise;

after said measuring step, comparing with the control means the force measured against a predefined set of forces associated with the particular exercise; and

after said measuring step, displaying the results of the comparison.

5,368,547

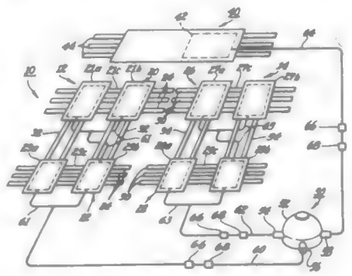
MEDICAL ANTI-SHOCK APPLIANCE

Gordon Polando, 3419 Maryland Rd., Apt. 212, Woodmere, Ohio 44122

Filed Aug. 26, 1992, Ser. No. 935,555

Int. Cl.[5] A61H *9/00*

U.S. Cl. 601—151 **10 Claims**



1. A medical anti-shock appliance of the type employed under emergency conditions by rescue personnel to counteract the effects of internal bleeding and shock when attached to lower body portions of a person comprising a pair of physically separate inflatable leg components for attachment to both legs of the person, each of said leg components having physically separate upper and lower leg inflatable chamber means joined together by first strap means and with each inflatable chamber means adapted to extend when attached only partially about the length and circumference of the applied leg portion, said inflatable chamber means each having physically separate bladder elements joined together by separate strap means with said inflatable chamber means also being simultaneously inflated together with interconnecting conduit means from a common gas supply source, and with said interconnecting conduit means comprising a first conduit means operably connected to the common gap supply source at a first end and operably connected to the lower leg inflatable chamber means on each leg of the person at a second end and a second conduit means operably connected to the lower leg inflatable chamber means at a first end and operably connected to the respective upper leg inflatable chamber means at a second end for allowing simultaneous inflation of the lower leg and upper leg inflatable chamber means.

5,368,548

HYDRAULIC APPARATUS FOR BODILY CARE, IN PARTICULAR ORAL CARE

Jean-Pierre Jousson, Geneva, Switzerland, assignor to Les Produits Associes LPA-Broxo S.A., Geneva, Switzerland

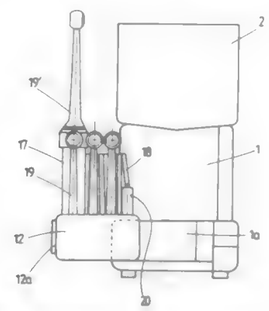
Division of Ser. No. 963,609, Oct. 20, 1992, Pat. No. 5,257,933. This application Jul. 19, 1993, Ser. No. 93,327

Claims priority, application European Pat. Off., Nov. 7, 1991, 91810861.4

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] A61H *9/00*

U.S. Cl. 601—162 **3 Claims**



1. An apparatus for dental hygiene including:

a nozzle means;

a liquid driving means within a housing, said liquid driving means providing liquid to said nozzle means;

a liquid reservoir for providing liquid to said liquid driving means when said liquid reservoir is in an upright position, said liquid reservoir comprising a bottom surface and upwardly extending sidewalls;

a lid for said reservoir wherein when said lid engages said reservoir, a portion of said lid extending from said sidewall thereby providing a gripping surface;

a pedestal upon which said liquid driving means is attached, said pedestal including a post through which fluid communication between said liquid driving means and said nozzle means coaxially extends, said post providing a pivot for a platform, said platform including aperture means for engaging said nozzle means;

whereby when said liquid reservoir is emptied and turned upside down, said liquid reservoir encases said liquid driving means and said nozzle means.

5,368,549

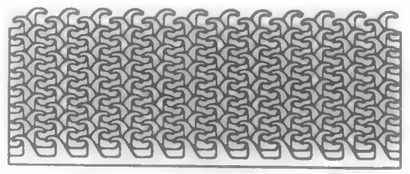
METHOD FOR INJECTION-MOLDING AN ORTHOPEDIC DEVICE AND PRODUCT OF THE METHOD

Henry J. McVicker, Chatham, N.J., assignor to Aircast, Inc., Summit, N.J.

Continuation of Ser. No. 59,010, May 6, 1993, abandoned, which is a continuation of Ser. No. 665,343, Mar. 6, 1991, abandoned. This application Oct. 22, 1993, Ser. No. 141,897

Int. Cl.[5] A44B *18/00*; **A61F** *5/00*

U.S. Cl. 602—6 **21 Claims**



1. A unitary one-piece injection-molded relatively rigid thermoplastic device having flexible hooks adapted to be releasably attachable to at least one associated cooperative loop-bearing member, the device comprising:

at least one relatively rigid wall member intended to provide a function, said wall member being injection-molded; and

a field of flexible injection-molded hooks formed in their hook shape substantially simultaneously and integrally with said functional wall member during the injection-molding of the wall member on at least one predetermined area thereof, said field of hooks being structured and dimensioned for releasable attachment to the at least one associated cooperative member, said field of hooks comprising spaced rows each of one-way facing hooks, such that in each row all hooks face in the same direction and such that in at least some adjacent rows the hooks face in different directions, and said predetermined area of said field of hooks comprising substantially less than the total area of said injection-molded wall member.

5,368,550

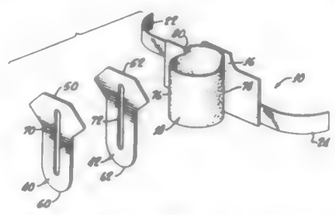
JOINT SUPPORT

Garrett Sisley, 1295 Stonefiled St., Costa Mesa, Calif. 92626

Filed Jun. 7, 1993, Ser. No. 72,084

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—21 **14 Claims**



1. A joint support comprising:

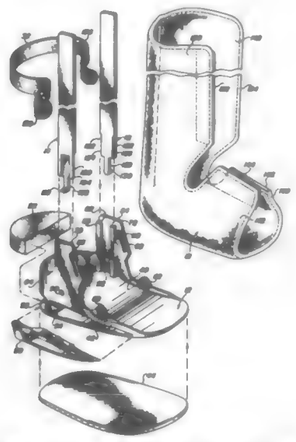
an outer shell sized for extending across a human joint;

inner liner means, fixed to said outer shell, for surrounding the human joint;

strap means for securing said outer shell around said human joint over said inner liner means; and

insert means, removably disposed between said outer shell and said inner liner means, for limiting an amount of flexion of the human joint when the strap means secures the outer shell around the human joint, said insert means comprising at least one flat flexible member having slot means for enabling removable positioning thereof between said outer shell and said inner liner means.

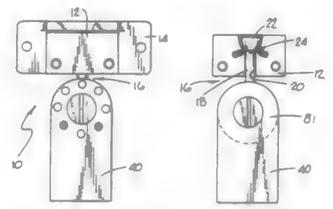
5,368,551
ANKLE BRACE WALKER
Raymond S. Zackerman, Scottsdale, Ariz., assignor to Saranda Corporation, Phoenix, Ariz.
Filed Nov. 19, 1992, Ser. No. 978,919
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—23 **18 Claims**



1. An ankle brace walker for supporting an injured foot and lower leg, said ankle brace comprising in combination:
a) a unitary base having a longitudinal axis and a lateral axis and incorporating a foot bed for supporting the foot and a sole for supporting said walker upon a surface to be traversed, said base including:
i) a plurality of laterally oriented flanges interconnecting said foot bed and said sole, and
ii) a plurality of longitudinally oriented flanges interconnecting said foot bed and said sole with each single one of said plurality of longitudinally oriented flanges interconnecting adjacent ones of said laterally oriented flanges to define an egg crate like structure having open lateral sides;
b) a pair of opposed side walls interconnecting opposed sides of said foot bed and said sole to close the open lateral sides of said base;
c) a pair of uprights, one upright of said pair of uprights extending from each opposed side of said base, each upright of said pair of uprights including a pair of opposed slots and an opening;
d) a first strut extending from one upright of said pair of uprights and a second strut extending upwardly from the other upright of said pair of uprights, each of said first and second struts including a pair of opposed lips for frictionally engaging said opposed slots in one upright of said uprights and a button for engaging said opening in the respective one of said pair of uprights to mechanically inhibit disengagement between said pair of opposed lips of said strut and said pair of opposed slots of said upright.

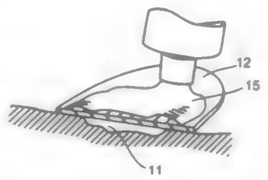
5,368,552
ORTHOTIC HIP BRACE
Craig D. Williamson, and Frederic C. Feiler, both of Colorado Springs, Colo., assignors to Rocky Mountain Prosthetics Orthotics, Colorado Springs, Colo.
Filed Jul. 13, 1993, Ser. No. 90,879
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—23 **9 Claims**

1. An orthotic hip brace, comprising: a hip attachment means for attachment to a patient's hip; leg attachment means for attachment to a patient's leg; a first housing attached to one of the hip attachment means and leg attachment means; a second housing attached to the other of the hip attachment means and leg attachment means; a shaft connecting the first housing and second housing, the shaft having a knob at one end and a shaft wheel at the other end, the first housing having a sleeve to receive the shaft and a recess larger than the knob to receive the knob so that the shaft and knob can pivot laterally in the sleeve and recess to allow abduction and adduction of



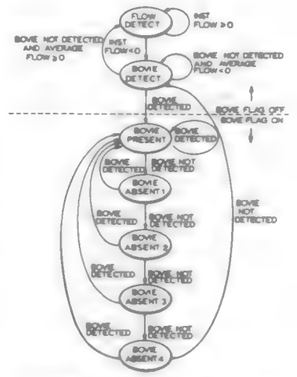
the patient's leg whereby the second housing can pivot in relation to the first housing to allow the patient's leg to be moved forward and backward, the second housing can rotate in relation to the first housing to allow the patient's leg to rotate, and the second housing can pivot laterally in relation to the first housing to allow the abduction and adduction of the patient's leg.

5,368,553
INVISIBLE BANDAGE ASSEMBLY
Nancy M. Newman, 819 Spring Dr., Mill Valley, Calif. 94941
Continuation-in-part of Ser. No. 729,463, Jul. 12, 1991, abandoned. This application Oct. 21, 1992, Ser. No. 964,339
Int. Cl.[5] A61F *13/00, 15/00*; A61L *13/00*
U.S. Cl. 602—58 **19 Claims**



1. A bandage assembly for concealing a section of skin on a person comprising:
(a) a segment of adhesive tape for attachment to (i) said section of skin and (ii) skin outwardly adjacent said section, said skin having a predetermined coloration, and said segment of tape having a top surface and a periphery; and
(b) a layer of make-up having a coloration that matches the coloration of said skin, said layer covering said top surface and periphery of the tape and the skin outwardly adjacent said section of skin and said periphery, thereby concealing said section of skin and the segment of adhesive tape, said tape having a texture that retains the layer of make-up and a thinness that permits the assembly to blend with the skin at said periphery.

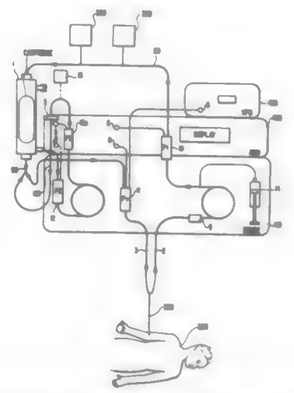
5,368,554
BLOOD PUMPING SYSTEM WITH SELECTIVE BACKFLOW WARNING
Richard A. Nazarian, Golden Valley, Minn.; Marc H. Agnew, Encinitas; Daniel E. Schneider, Carlsbad, both of Calif., and Wilfred A. Mead, Williamston, Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn. and ViaSat Incorporated, Carlsbad, Calif.
Filed Nov. 20, 1992, Ser. No. 979,181
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **22 Claims**



1. A blood pumping system having a backflow warning system that selectively generates a warning of blood backflow through a non-occlusive blood pump, said blood pumping system comprising:
a non-occlusive blood pump;
a conduit connected to said non-occlusive blood pump, said conduit being connectable to a patient so as to enable venous blood flow from the patient to said blood pump and to enable arterial blood flow from said blood pump back to the patient;
an electrical interference detector that determines the presence of electrical interference that could cause a false backflow warning; and
a backflow warning generator coupled to said electrical interference detector that selectively generates a backflow warning, said backflow warning generator generating a backflow warning upon the detection of a backflow condition in the absence of said electrical interference as determined by said electrical interference detector.

5,368,555
ORGAN SUPPORT SYSTEM
Norman L. Sussman; James H. Kelly, both of Houston, Tex., and Dona D. Lobdell, Corona Del Mar, Calif., assignors to Hepatix, Inc., Houston, Tex.
Filed Dec. 29, 1992, Ser. No. 998,146
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **29 Claims**

1. An organ support system adapted for use with a patient, comprising:
an organ assist device for receiving fluid from the patient and designed to pass said fluid therethrough to modify said fluid;
a first line having first and second ends, said first end being connected to an outlet of the patient for drawing fluid therefrom, and said second end being connected to an input of said organ assist device;
a second line having first and second ends, said first end being connected to an output of said organ assist device, and said second end being connected to an input of said patient to return said fluid having been drawn from said patient and having been modified by said organ assist device;
a third line having first and second ends, said first end being coupled to said organ assist device for drawing a predetermined volume of fluid therefrom, and said second end being coupled to said second line; and



a control system for automatically controlling said fluid flow of said patient and measuring a characteristic of said fluid, said system having a closed loop configuration formed by said first line, said second line, and said third line, said control system comprising means for continuously maintaining a pressure differential between said third line and said second line.

5,368,556
IMPLANTABLE DRAINAGE VALVE FOR THE TREATMENT OF HYDROCEPHALUS
Alain Lecuyer, Grasse, France, assignor to Cordis Corporation, Miami Lakes, Fla.
Continuation of Ser. No. 7,066, Jan. 21, 1993, abandoned. This application Mar. 7, 1994, Ser. No. 207,890
Claims priority, application France, Jan. 22, 1992, 92 00671
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—8 **17 Claims**



1. A surgically implantable drainage valve for the treatment of hydrocephalus, comprising:
a valve body;
a valve seat within said valve body;
a closure member dimensioned to be seated within said valve seat;
a spring member within the valve body having a first end and a second end, said first end of said spring member securing said closure member in said valve seat; and
a weight bearing against said second end of said spring member that provides additional force to compress the spring member against the closure member whenever the valve body is in a substantially vertical orientation.

5,368,557

ULTRASONIC ABLATION CATHETER DEVICE HAVING MULTIPLE ULTRASOUND TRANSMISSION MEMBERS

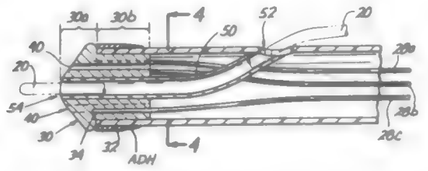
Henry Nita, Mission Viejo, and Timothy C. Mills, Newport Beach, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,304,115. This application May 5, 1993, Ser. No. 61,872

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/70*

U.S. Cl. 604—22 24 Claims



1. An ultrasound catheter device for transmitting ultrasound into a mammalian body, said device comprising:

a) an elongate flexible catheter body having a proximal end, a distal end, and at least one lumen extending longitudinally therethrough;

b) at least two ultrasound transmission members extending longitudinally through said at least one lumen, each of said ultrasound transmission members having a proximal end coupled to an external ultrasound source and a distal end which terminates near the distal end of said catheter;

c) said at least two ultrasound transmission members being configured and constructed to simultaneously transmit ultrasound energy to the distal end of said catheter body; and

d) a distal head member attached to the distal end of said catheter body and coupled to the distal ends of said at least two ultrasound transmission members such that said distal head member will vibrate in accordance with ultrasound being simultaneously transmitted through said at least two ultrasound transmission members.

5,368,558

ULTRASONIC ABLATION CATHETER DEVICE HAVING ENDOSCOPIC COMPONENT AND METHOD OF USING SAME

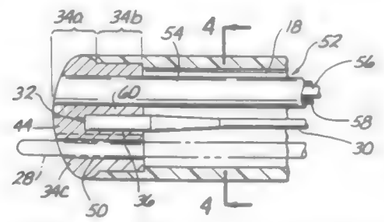
Henry Nita, Mission Viejo, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 911,546, Jul. 9, 1992, Pat. No. 5,312,328, which is a continuation-in-part of Ser. No. 878,795, May 5, 1992, Pat. No. 5,267,954, which is a continuation-in-part of Ser. No. 787,292, Nov. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 640,190, Jan. 11, 1991, Pat. No. 5,304,115. This application Jun. 3, 1993, Ser. No. 72,203

The portion of the term of this patent subsequent to Dec. 7, 2010, has been disclaimed.

Int. Cl.[5] A61B *17/20*

U.S. Cl. 604—22 15 Claims



1. A catheter device insertable into a body lumen and incorporating combined ultrasound ablation and endoscopic visualization apparatus, said device comprising:

an elongate catheter body having a proximal end and a distal end;

an ultrasound transmission member extending longitudinally through said catheter body, said ultrasound transmission member having a proximal end and a distal end, the proximal end of said ultrasound transmission member being connectable to an ultrasound transducer such that ultrasonic energy will pass through said ultrasound transmission member to said distal end thereof;

a distal head member affixed to said distal end of said catheter body, said distal end of said ultrasound transmission member being coupled to said distal head member such that said distal head member will vibrate when ultrasonic energy is transmitted through said ultrasound transmission member;

a light transmission member extending longitudinally through said catheter body, said light transmission member having a proximal end and a distal end, said proximal end of said light transmission member being connectable to a light source such that light will pass through said light transmission member to said distal end thereof; and

an optical image transmission member extending longitudinally through said catheter body, said optical image transmission member having a proximal end and a distal end, said proximal end of said optical image transmission member being connectable to an external image viewing apparatus such that an optical image will pass through said optical image transmission member from said distal end thereof to said external image viewing apparatus.

5,368,559

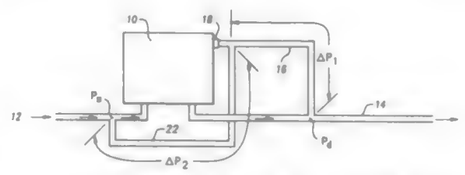
METHOD AND APPARATUS FOR INCREASING THE PRESSURE IN A MEDICAL PUMPING SYSTEM

Robert C. Kusmierczyk, Pinellas Park; Brian D. Droes, Gulfport, and Fred B. Dinger, III, Belleair, all of Fla., assignors to Linvatec Corporation, Largo, Fla.

Filed Oct. 9, 1992, Ser. No. 959,239

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—28 9 Claims



1. A control system modification for modifying the controlled pressure range of an existing control device used in performing medical procedures comprising a pumping system with a pump, discharge and suction lines connected to said pump, and a first pressure sensing line connected between a pressure sensing means and said discharge line, said pressure sensing means connected to a control device to regulate discharge line pressure, said control device capable of pressure regulation to a predetermined value or values within a predetermined range, said modification comprising:

a second pressure sensing line in pressure communication on one end with said first pressure sensing line;

a pressure source at a different pressure than said discharge line;

said second pressure sensing line having one end connected to said different pressure source, said controller sensing said different pressure than the actual discharge line pressure and in response altering the output of the pump and modifying the pressure range within which said control system can operate.

5,368,560

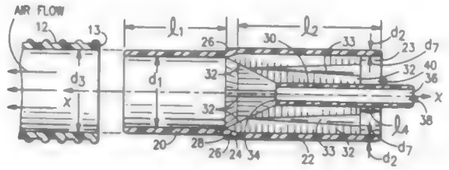
SUCTION NOZZLE

Robert D. Rambo, Sellersville, Pa., and John Yorke, Canastota, N.Y., assignors to Medical Development Systems, Inc., Colmar, Pa.

Filed Mar. 29, 1993, Ser. No. 38,860

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—35 8 Claims



1. A nozzle for attachment to a partial vacuum source to draw gaseous and liquid matter through said nozzle from a surgical area, said nozzle comprising:

a) a first elongated, cylindrical, outer tube having open distal and proximal ends with at least one discreet passageway leading from said distal to said proximal end with said proximal end attached to and in fluid communication with said partial vacuum source, said outer tube having a proximal length and a distal length with said proximal length having a diameter slightly smaller than the diameter of said distal length, said proximal and distal lengths being interconnected by an integral segment which tapers outwardly from said proximal to said distal length, said inner tube proximal length being positioned between said outer tube distal end and said integral segment said distal end directed at said surgical area with said gaseous and liquid matter being drawn through said at least one discreet passageway;

b) a second elongated, inner tube having respective open distal and proximal ends with a second discreet passageway leading from said inner tube distal end to said inner tube proximal end, said inner tube distal end being positioned forwardly and exteriorly of said outer tube distal end, said inner tube proximal end being positioned between said outer tube proximal and distal ends; and

c) means fixedly attaching said inner tube concentrically within said outer tube with said second discreet passageway in fluid communication with said at least one discreet passageway, said means comprising a plurality of annularly spaced connecting webs having respective proximal and distal edges and radially extending from said outer tube to said inner tube thereby defining a respective plurality of discreet passageways therebetween, said plurality of discreet passageways being in fluid communication with said at least one discreet passageway.

5,368,561

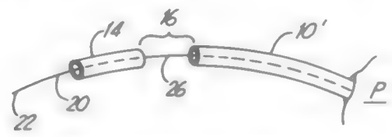
METHOD OF EFFECTING CATHETER EXCHANGE AND DEVICE FOR USE IN SAME

Andrew Feiring, Milwaukee, Wis., assignor to Microvena Corporation, White Bear Lake, Minn.

Filed Sep. 10, 1993, Ser. No. 119,606

Int. Cl.[5] A61M *31/00*

U.S. Cl. 604—53 8 Claims



1. A method of removing a catheter from about a guidewire without necessitating movement of the guidewire comprising the steps of:

a. manually grasping a portion of the guidewire which extends proximally of a proximal end of the catheter;

b. cutting through the wall of the catheter to sever a proximal length of the catheter from the rest of the catheter; and

c. removing said severed proximal length from about the guidewire.

5,368,562

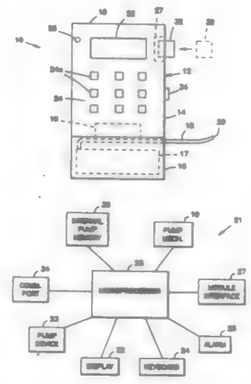
SYSTEMS AND METHODS FOR OPERATING AMBULATORY MEDICAL DEVICES SUCH AS DRUG DELIVERY DEVICES

Michael L. Blomquist, Coon Rapids, and Thomas L. Peterson, Shoreview, both of Minn., assignors to Pharmacia Deltec, Inc., St. Paul, Minn.

Filed Jul. 30, 1993, Ser. No. 100,082

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—65 17 Claims



1. An infusion pump system for dispensing a drug to a patient comprising:

a. reservoir means for holding a drug;

b. delivery means for delivering said drug to said patient;

c. delivery control means for activating said delivery means, said delivery control means including:

(i) microprocessor means for operating said delivery means;

(ii) a set of memory modules, each module containing information defining a specific user interface, wherein each memory module includes a plurality of sections of memory, a first section of memory comprising a non-volatile memory, and a second section comprising an electrically reprogrammable memory; and

(iii) coupling means for accepting one of said memory modules, and coupling said one memory module to said microprocessor means, wherein said microprocessor means reads said information and operates said delivery means in conformance with said specific user interface.

5,368,563

SPRAYER ASSEMBLY FOR PHYSIOLOGIC GLUE

Alan Lonneman, Plymouth, and Curtis H. Miller, Burnsville, both of Minn., assignors to Micromedics, Inc., Eagan, Minn.

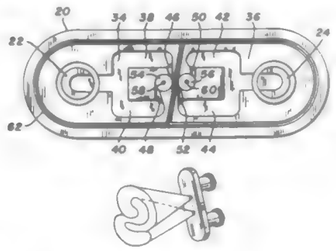
Continuation of Ser. No. 809,885, Dec. 18, 1991, abandoned. This application Nov. 8, 1993, Ser. No. 149,151

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—82 21 Claims

19. A sprayer attachment which is attachable to at least two containers for applying to a treatment site first and second

fluids, which when mixed, revert to a solid state, the first and second fluids being stored in the first and second containers respectively, and kept separate from each other until dispensed onto the treatment site, the first and second containers having outlets through which the first and second fluids respectively are dispensed under pressure, tile sprayer attachment formed by a plurality of plates sealed together to define first and second fluid passages, including a frontmost plate and a rearmost plate, the frontmost plate having a first receptacle and a second receptacle in a side-by-side arrangement on a front surface of the frontmost plate, the first and second receptacles being configured for attachment to the outlets of the first and second



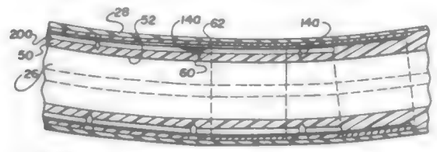
containers, the rearmost plate having a first exit port and a second exit port side-by-side at a back surface of the rearmost plate, wherein the first fluid passage extends from the first receptacle to the first exit port and the second fluid passage extends from the second receptacle to the second exit port, the first fluid passage including a first fluid channel connected to the first receptacle and a first well connected to the first exit port and the second fluid passage including a second fluid channel connected to the second receptacle and a second well connected to the second exit, wherein the first fluid channel tangentially connects to the first well and the second fluid channel tangentially connects to the second well.

5,368,564

STEERABLE CATHETER

Steven D. Savage, Brooklyn Center, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Dec. 23, 1992, Ser. No. 996,090
Int. Cl.[5] A61M *37/00*; A61N *1/00*
U.S. Cl. 604—95 **25 Claims**



1. A steerable wire guiding catheter comprising:

a) an elongate catheter body having a generally circular catheter wall, a distal end, and a proximal end, the circular catheter wall being comprised of a generally tubular body presenting an interior surface and an outer surface;

b) a plurality of wire means, each wire means having a proximal end and a distal end and extending through the tubular body of the catheter wall for pulling on a steerable portion of the catheter wall proximate the distal end of the catheter body to effect steering of the catheter;

c) a plurality of anchor means, each anchor means corresponding to a distal end of one of the wire means and axially located along the steerable portion of the catheter wall of the catheter body for connection with a distal end of the respective one of the wire means, at least two of the anchor means being located at axially different positions along the steerable portion of the catheter wall; and

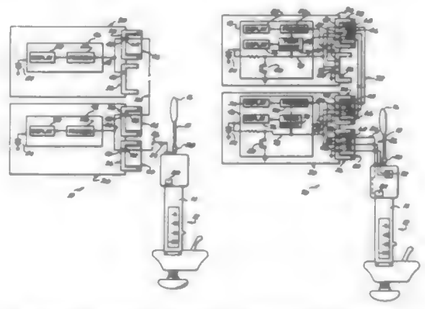
d) control means located at a proximal portion of the catheter for controlling the pulling on the proximal end of the wire means.

5,368,565

BALLOON CATHETER PRESSURE MONITOR FOR LOCAL AND REMOTE DISPLAY

Russell I. DeLong, Columbus, Ohio, assignor to Medex, Inc., Hilliard, Ohio

Filed Sep. 28, 1992, Ser. No. 952,915
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—100 **25 Claims**



1. A balloon catheter pressure monitoring module adapted for remote and local display of pressure in a balloon catheter comprising:

circuit means for processing a transducer signal communicated from a pressure transducer in fluid communication with the balloon catheter, the circuit means including display means for displaying pressure corresponding to the communicated transducer signals; and

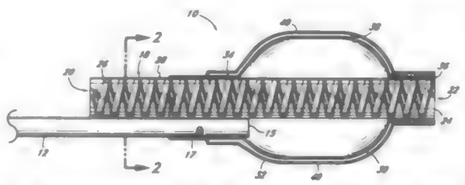
first and second connector means each for connecting to respective cables, each connector means having first contact means for communicating transducer signals, respective first contact means of each connector means being coupled to one another and to the circuit means such that a first cable coupled to a pressure transducer generating a transducer signal may be plugged into the first connector means to communicate the transducer signal to the circuit means for local display of pressure, and such that a second cable may be plugged into the second connector means to communicate the transducer signal to a remote pressure monitoring module for remote display of pressure corresponding to the transducer signal.

5,368,566

DELIVERY AND TEMPORARY STENT CATHETER HAVING A REINFORCED PERFUSION LUMEN

Michael Crocker, Mission Viejo, Calif., assignor to Cardiovascular Dynamics, Inc., Irvine, Calif.

Filed Apr. 29, 1992, Ser. No. 875,966
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **12 Claims**



1. A temporary stent for maintaining patency of a body

lumen while permitting perfusion of fluid through the lumen, comprising:

an elongate catheter body;

an inflatable balloon on the distal end of the catheter body; and

at least one perfusion conduit extending through the inflatable balloon, the wall of said perfusion conduit further comprising a spring coil;

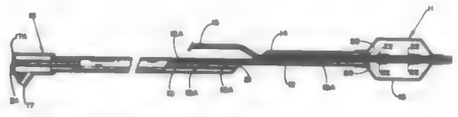
wherein the longitudinal axis of the perfusion conduit is laterally offset from the longitudinal axis of the adjacent catheter body by a distance which exceeds the radius of the adjacent portion of the elongate catheter body.

5,368,567

DILATATION BALLOON CATHETER WITH INFUSION LUMEN

Jeffrey A. Lee, Plymouth, Minn., assignor to Schneider (USA) Inc., Plymouth, Minn.

Continuation of Ser. No. 919,800, Jul. 27, 1992, abandoned. This application Aug. 9, 1993, Ser. No. 104,422
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—102 **4 Claims**



1. A dilation catheter comprising

(a) a shaft having a proximal end and a distal end, the shaft defining an inflation lumen for allowing an inflation fluid to pass therethrough, a guidewire lumen for allowing a guidewire to pass therethrough and an infusion lumen for allowing a contrast enhancing medium fluid to pass therethrough;

(b) a balloon having a proximal end and a distal end, the balloon defining a balloon interior and being mounted adjacent the distal end of the shaft;

(c) a first inflation port at the proximal end of the shaft, the first inflation port being in communication with the inflation lumen;

(d) a second inflation port in communication with the inflation lumen and the balloon interior;

(e) a first guidewire port spaced proximally from the proximal end of the balloon in communication with the guidewire lumen;

(f) a second guidewire port at the distal end of the shaft in communication with the guidewire lumen;

(g) a first infusion port at the proximal end of the shaft for receiving the contrast enhancing medium fluid, the first infusion port being in communication with the infusion lumen; and

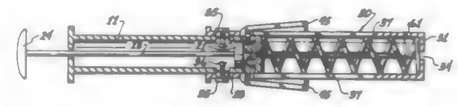
(h) a second infusion port spaced distally from the proximal end of the shaft and spaced proximally from the first guidewire port for allowing the contrast enhancing medium fluid to exit the dilation catheter while the guidewire is disposed in the guidewire lumen, the second infusion port being in communication with the infusion lumen and wherein the first guidewire port is located on the side of the shaft opposite the second infusion port so that the guidewire does not interfere with the infusion of the contrast enhancing medium fluid.

5,368,568

DISABLING HYPODERMIC SYRINGE

Raymond H. Pitts, 6020 4th St., S., St. Petersburg, Fla. 33705; Susan J. Schneider, and Meri L. Huckins, both of 1399 S. Belcher Rd., Lot #112, Largo, Fla. 34641

Filed Oct. 12, 1993, Ser. No. 134,625
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **20 Claims**



1. In a hypodermic syringe comprising a hollow needle in fluid communication with a medicament storage chamber and having a plunger assembly arranged for expelling medicament through an opening at a distal end of said needle by axial movement of a plunger within said medicament chamber, the improvement comprising:

a safety tip, comprising a protective end having an opening therein, said safety tip being mounted to said needle through said opening in said protective end and being arranged to enable axial movement of said safety tip from a first position wherein said distal end of said needle extends through said opening of said safety end, to a second position wherein said distal end of said needle is shielded by said protective end of said safety tip;

a spring, arranged to propel said safety tip from said first position to said second position;

means for releasably retaining said safety tip in said first position, said means being arranged to engage said plunger assembly, within said chamber, at a point in axial movement of said plunger and release said safety tip from said first position to said second position wherein said distal end of said needle is shielded by said protective end of said safety tip.

5,368,569

IRRIGATION SYSTEM FOR PREVENTING CONTAMINATION AND REDUCING THE RISK OF PATIENT HYPOTHERMIA

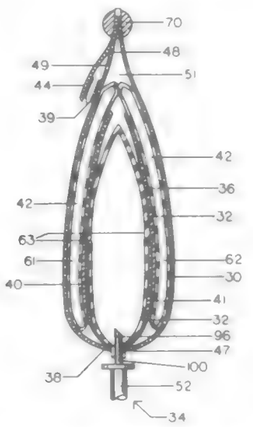
Christopher N. Sanese, Columbus, Ohio, assignor to Sanese Medical Corporation, Columbus, Ohio

Filed Aug. 18, 1993, Ser. No. 111,149
Int. Cl.[5] A61F *7/12*; A61M *37/00*
U.S. Cl. 604—113 **21 Claims**

1. A surgical apparatus, comprising:

a flexible pouch having a substantially enclosed inside cavity defined by at least one flexible wall for containing and substantially fully enclosing at least bottom and side surfaces of a disposable flexible fluid reservoir;

said pouch further comprising a second inflatable cavity exterior to said inside cavity for receiving a pressurized fluid and



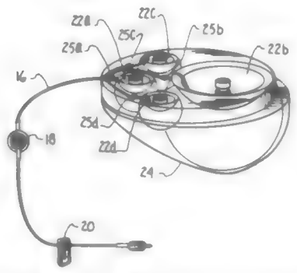
applying a compressive force against said at least one flexible wall of said inside cavity.

5,368,570

APPARATUS FOR INFUSING MEDICAL SOLUTIONS

John Thompson, Rancho Santa Margarita, and Charles R. Botts, San Diego, both of Calif., assignors to Imed Corporation, San Diego, Calif.

Filed Nov. 12, 1991, Ser. No. 790,367
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—131 **13 Claims**



1. An infusion apparatus for infusing at least two or more different medical fluids comprising:

a first reservoir, a second reservoir, a third reservoir and a forth reservoir wherein each said reservoir has an interior for containing one of said medical fluids;

means for pressurizing said first reservoir to a first pressure, said second reservoir to a second pressure, said third reservoir to a third pressure and said forth reservoir to a forth pressure such that the first pressure is greater than the second pressure, said second pressure being greater than the third pressure, said third pressure being greater than the forth pressure;

said means for pressurizing comprising an elastomeric membrane;

means for connecting said interior of each said reservoir to a single IV conduit; and

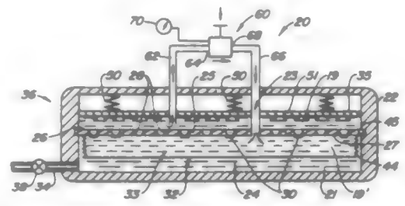
means for connecting said IV conduit to a patient.

5,368,571

ELECTROCHEMICAL CONTROLLED DISPENSING ASSEMBLY AND METHOD

Charles R. Horres, Jr., Del Mar, Calif., assignor to Pharmetrix Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 12,876, Feb. 3, 1993, Pat. No. 5,290,240. This application Feb. 1, 1994, Ser. No. 190,639
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—131 **4 Claims**



1. A pump assembly for controlled delivery of a dispensing fluid comprising:

a partition having a front surface and an opposite facing back surface, and defining an aperture extending from said front surface to said back surface;

a driving reservoir formed for storing a driving fluid therein and in communication with said aperture for flow of said driving fluid through said partition;

plug means disposed in said aperture in a manner preventing flow of said driving fluid through said partition;

electric control means operably coupled to said plug means for controlling passage of said driving fluid through said aperture;

barrier means defining a receiving reservoir and positioned relative to said aperture for receipt and containment of said driving fluid in said receiving reservoir as said driving fluid flows from said driving reservoir through said aperture, said barrier means separating said dispensing fluid and said driving fluid, and further formed to expand from a first volume toward an increased second volume in response to receipt of said driving fluid in said receiving reservoir;

a dispensing reservoir for holding said dispensing fluid therein, said dispensing reservoir defining an orifice for release of said dispensing fluid therethrough, said barrier means being mounted for movement in said dispensing reservoir in a manner communicating with said dispensing fluid to urge said dispensing fluid through said orifice as said barrier means moves toward said increased second volume; and

means for temporarily increasing the flow of the driving fluid to the receiving reservoir so as to deliver a temporarily increased flow of the dispensing fluid through the orifice.

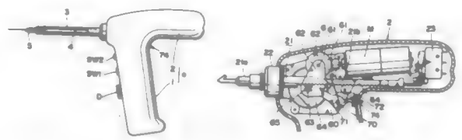
5,368,572

INJECTION DEVICE FOR DENTAL ANESTHETIC OR LIKE

Kazunari Shirota, Tokyo, Japan, assignor to Shirota Denki Rozai Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1993, Ser. No. 113,672
Claims priority, application Japan, Jan. 6, 1993, 5-2567
Int. Cl.[5] A61M *5/24*
U.S. Cl. 604—154 **1 Claim**

1. In an injection device for a dental anesthetic or the like, having a rear end side of an operating rod accommodated in a main body including a handle portion in an axially cylindrical form and an operating portion case connected to the upper portion of the handle portion to allow a front end side of said operating rod to go in and out toward a cavity of a cartridge holder detachably connected to a front end of said operating portion case, a drive mechanism operated by a motor contained in the main body linked to the operating rod, a drive switch for controlling the motor to allow said motor to normally rotate and a reverse rotation switch for controlling said motor so as to allow said motor to reversely rotate, said drive switch and said reverse rotation switch provided on the outside face said main body, an injection needle having a communicating needle provided at a base end side, said injection needle detachably connected to a front end of said cartridge holder, said communicating needle extending through a membrane at a front end of a cartridge when housed in said cartridge holder, and a hook portion on the front end of said operating rod abutting a piston in a rear end side of said cartridge,



an improvement of said injection device comprising,

manipulation means located between the drive mechanism and the operating rod for selectively engaging or disengaging the drive mechanism to and from the operating rod,

said manipulation means including actuating means on an outside face of the main body for permitting an operator to selectively engage or disengage the drive mechanism to and from the operating rod,

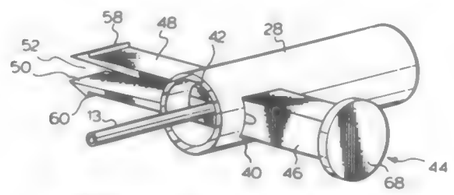
wherein when the drive mechanism and the operating rod are disengaged the operating rod can be manually moved to quickly accommodate replacement of a used cartridge.

5,368,573

EPIDURAL NEEDLE HAVING CANNULA CLAMP

Daniel E. Andrew, 524 Beechwood Drive, Unit 34, Waterloo, Ontario, Canada N2T 2G9

Continuation of Ser. No. 829,633, Feb. 3, 1992, abandoned. This application Oct. 7, 1993, Ser. No. 133,261
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **8 Claims**



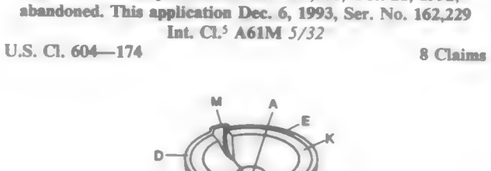
1. A clamping device for frictionally securing a smooth surface cannula along its length without occluding said cannula for axial adjustment and for retaining the cannula in the hub of an epidural needle comprising: an epidural needle, an elongated open-ended, hollow cylindrical housing connected to the hub of the epidural needle for receiving said cannula axially therein, said housing having a housing wall with a pair of diametrically opposed openings fumed transversely therein, a clip having a pair of opposed flexible arms joined at one end by a shank defining a tapered slot therebetween inserted in snug-fitting relation through the openings formed in the housing wall perpendicular to the cannula within the housing whereby the cannula is loosely received for sliding engagement between the opposed arms or the clip upon retraction of the clip within the housing and whereby the cannula is frictionally gripped by the opposed arms upon extension of the clip within the housing, said clip shank having a head at one end with a diameter greater than the diameter of the holes and the opposed flexible arms having barbed tips at the distal cads thereof cooperating with the housing wall whereby the clip can move freely transversely within the housing between the said head and said barbed tips while being restrained from removal from the housing.

5,368,574

PERCUTANEOUS CATHETER INTRODUCER

Anthony C. Antonacci, Pelham Manor, N.Y.; Robert C. Uschold, Cincinnati, Ohio; Crystal C. Sorenson, Blue Ash, Ohio; Kevin J. Bailey, Loveland, Ohio, and Kevin D. Duffy, Cincinnati, Ohio, assignors to Ethicon, Inc., Cincinnati, Ohio

Filed Oct. 1, 1992, Ser. No. 955,102
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **17 Claims**



1. A percutaneous catheter introducer, comprising:

a tube defining a lumen for guiding a catheter therethrough and having a proximal end, said tube being percutaneously insertable into an anatomical body cavity for guiding a catheter thereinto;

a needle extendable through said lumen, said needle having a proximal end;

a seal housing connected to said proximal end of said tube; and

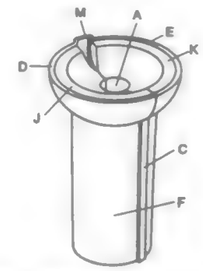
a seal positioned within said seal housing, said seal substantially sealing said tube against leakage out of said proximal end of said tube as said needle is extended through said seal and after said needle is removed from said seal, said seal housing being detachable from said tube so as to selectively permit fluid communication through said tube.

5,368,575

URETHRAL CATHETER HOLDER

Hau H. Chang, 7704 Calle Espada, Bakersfield, Calif. 93309

Continuation-in-part of Ser. No. 964,301, Oct. 21, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 162,229
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—174 **8 Claims**



1. A urethral Foley catheter holder for gripping an indwelling urethral Foley catheter and impregnating an antimicrobial agent at the urethral meatus comprising:

a) a first short semicylindrical segment with a semicylindrical rim extension at one end that extends to a diameter larger than said short semicylindrical segment, said short segment comprising a foam pad lining the inner surface thereof and said rim extension comprising a foam pad impregnated with an antimicrobial agent lining the inner surface thereof;

b) a second short semicylindrical segment with a semicylin-

drical rim extension at one end that extends to a diameter larger than said short semicylindrical segment, said short segment comprising a foam pad lining the inner surface thereof and said rim extension comprising a foam pad impregnated with an antimicrobial agent lining the inner surface thereof;

c) a living hinge or web at one edge of each short semicylindrical segment to allow connection of said short semicylindrical segments together to form a tubular structure with a central lumen inner of the foam pads to accommodate the Foley catheter; and

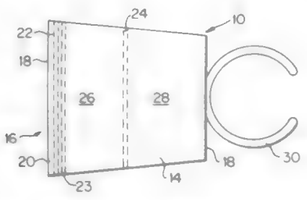
d) a locking mechanism comprising a male locking tooth on said first short semicylindrical segment on the edge opposite said hinge or web and a female locking notch on said second short semicylindrical segment on the edge opposite said hinge or web to facilitate locking the device in an operative position.

5,368,576

NEEDLE SAFETY DEVICE

Melissa Brown; Mike Brown, both of 2111 Michie Dr., Apt. 111, Charlottesville, Va. 22901, and Ajay Jagtiani, 6126 Rocky Way Ct., Centreville, Va. 22020

Filed May 26, 1992, Ser. No. 891,971
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **18 Claims**



10. A needle safety device for allowing a health care professional to quickly dispose of a needle with the use of only one hand, said device comprising:

a housing having an orifice therethrough;

a puncture detection means secured to said orifice for detecting the presence of a needle, said puncture detection means comprising a first membrane secured over said orifice, a pH sensitive dye, and a gas for raising the pH above normal atmospheric conditions; and

a securing means for maintaining said needle in said housing, said securing means comprising an adhesive.

5,368,577

NEEDLE STICK PREVENTION DEVICE

Phillip Teoh, and Clifford Teoh, both of Daly City, Calif., assignors to Biocon International Corporation, Daly City, Calif.

Filed May 24, 1993, Ser. No. 66,791
Int. Cl.[5] A61M *5/32, 5/50*
U.S. Cl. 604—198 **10 Claims**

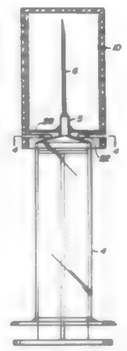
1. A needle stick prevention device comprising:

a syringe including a barrel having an interior wall, a hub having a needle attached thereto, a shoulder extending between the barrel and the hub, a plunger slidably coupled to an interior of the barrel, and a stem attached to the plunger, the interior wall having a shape adjacent the shoulder which generally conforms to a shape of the shoulder, wherein the barrel comprises a cylindrical shape and the shoulder comprises a frustoconical shape;

an upper stop extending outwardly from the hub;

a sleeve including a sidewall and a top having an aperture therethrough; and

means for slidably coupling the sleeve to the syringe between a retracted position, in which the needle extends through the aperture in the top, and an extended position, in which the needle is housed within the sleeve, the slidable coupling means including means for holding the sleeve in the retracted and extended positions, at least a portion of the holding means being biased towards the hub and being at least partially positioned between the upper



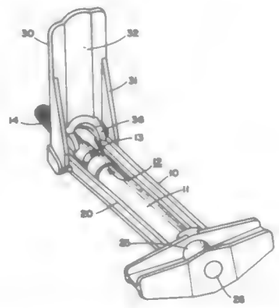
stop and the shoulder when the sleeve is in the extended position, and the at least portion of the holding means engaging the barrel of the syringe with a compressive force when the sleeve is in the retracted position.

5,368,578

HYPODERMIC SYRINGE HOLDER

Roger G. Covington; Karen A. Malburne, both of Rochester, N.Y.; Douglas C. Mehl, Columbus, Ohio, and John Niedospial, Princeton Junction, N.J., assignors to Sterling Winthrop Inc., New York, N.Y.

Filed Mar. 10, 1994, Ser. No. 209,583
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—232 **7 Claims**



1. An improvement in an hypodermic holder adapted to receive a disposable ampoule, said holder comprising:

(a) a plunger element,

(b) a hollow body for receiving the disposable ampoule, and

(c) optionally, a cammimg element, the improvement being wherein the body comprises

(a) a semi-cylindrical hollow frame comprising

a distal end portion having lugs on its outside surface radially positioned to pivotably engage a forwardly pivotable element, and

a projecting means on its inside surface to position the disposable ampoule; and

a proximal end portion having a short cylindrical section having a bore therethrough for receiving the plunger and optional camming elements,

a finger gripping means and

a projecting lug on its inside surface to position the the

disposable ampoule and optionally engage the camming means; and

(b) the forwardly pivotable element comprising two side walls joined by an extended connecting wall;

each side wall having a slot for inserting a lug of the distal end portion of the frame upon which the element can pivot;

the connecting wall having a radial portion curved to continue the cylindrical shape of the frame when the forwardly pivotable element is in a closed position and

a curved opening at the distal end to continue the cylindrical shape of the frame when the pivotable element is in an open position, wherethrough the disposable ampoules can be ejected in an axial direction, and

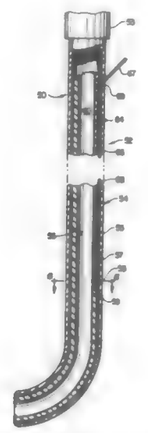
projections on the inside surface at the proximal end of the curved rounded opening, said projections being parallel to the side walls and adapted to engage and position the disposable ampoule when the pivotable element is in a closed position.

5,368,579

PERFUSION CONTROLLED GUIDING CATHETER APPARATUS AND METHOD

James B. Sandridge, 2044 Eagle Nest, Lewisville, Tex. 75067

Filed Jul. 23, 1992, Ser. No. 919,049
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—249 **14 Claims**



1. A perfusion-controlled guiding catheter for use in angioplasty procedures in an artery to enable the flow of blood between the catheter and the artery while limiting perfusion of contrast medium injected into the catheter, comprising:

(a) a hollow tubular member forming a guide lumen therein through which contrast medium may be injected into the artery, said tubular member having a proximal end, and a distal end adapted for insertion in a patient, and wherein said guide lumen has an aperature at the distal end of the tubular member,

(b) an opening in the wall of said tubular member to enable the flow of blood between the guide lumen and the artery, and

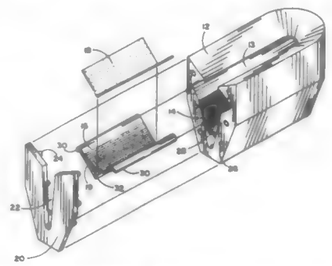
(c) an elongated member extending substantially the length of the lumen of the tubular member including means for selectively closing the opening, while the lumen remains open, to restrict flow between the lumen and the artery during injection of the contrast medium and for opening the opening to enable flow between the lumen and the catheter.

5,368,580

DISPOSABLE SAFETY GUARD FOR SYRINGE NEEDLES AND THE LIKE

George R. Suzuki, 12861 Wheeler, Santa Ana, Calif. 92705

Filed Dec. 22, 1992, Ser. No. 994,978
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—263 **6 Claims**



1. A device for enclosing the end of a syringe needle; the device comprising:

a body member having an elongated slot leading into a V-shaped interior chamber terminating in an apex;

a gripping member positioned with said chamber for receiving said needle, said gripping member having a pair of planar portions joined by a hinge, said planar portions resting against respective opposing interior walls within said chamber;

said planar portions having respective lips, one such lip on each of said planar portions;

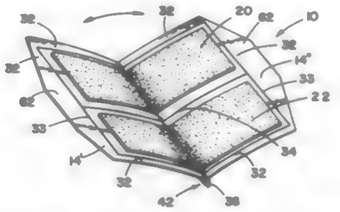
said interior walls having a plurality of elongated grooves for receiving said lips whereby said gripping member can translate in only one direction toward said apex thereby drawing said planar members toward one another for compressively gripping said needle therebetween.

5,368,581

METHOD OF USING A PACKAGING SYSTEM WITH FOLDED APPLICATOR PADS FOR TOPICAL DRUG DELIVERY

James A. Smith, Chatham, Mass., and Betty J. Murphy, Upper Montclair, N.J., assignors to Creative Products Resource Associates, Ltd., North Caldwell, N.J.

Filed Dec. 7, 1992, Ser. No. 986,349
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—290 **33 Claims**



1. A method for applying a plurality of dermatological agents to the skin from one dispensing and applicator system comprising the steps of:

(a) providing a dispensing and applicator system comprising:

(1) a flexible, moisture impermeable support sheet;

(2) a plurality of applicator pads affixed in a separated array to one surface of said support sheet; each of said pads being impregnated with a composition comprising a different dermatological agent; and

(3) said support sheet and pads folded to enclose said pads,

and the opposing peripheral surfaces of the support sheet releasably sealed together so as to form a compartment containing said pads and defined by a continuous peripheral seal, which peripheral seal is positioned inwardly from the edges of the sheets over a portion of the opposed peripheral surfaces, so as to form two opposed flanges, and wherein the opposing surfaces of the support sheet are also releasably sealed together between each of said pads to divide the compartment into a plurality of subcompartments, each containing one of said pads;

(b) manually grasping and separating the flanges to at least partially separate the two opposed surfaces of the support sheet, so that said pads are exposed; and

(c) contacting the pads with the skin to release the compositions essentially simultaneously from the pads, to thereby apply a film of a mixture of the agents onto the skin.

5,368,582

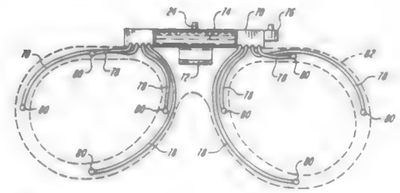
METHOD AND APPARATUS FOR INTRODUCING FLUID MATERIAL INTO AN EYE

James H. Bertera, Boston, Mass., assignor to The Schepens Eye Research Institute, Boston, Mass.

Continuation-in-part of Ser. No. 927,342, Aug. 10, 1992, abandoned. This application Nov. 13, 1992, Ser. No. 976,274

Int. Cl.[5] A61M *35/00*

U.S. Cl. 604—295 **18 Claims**



1. Apparatus for the topical introduction of liquid to the eye of a person wearing a spectacle-like frame, said apparatus comprising

(A) a container for liquid that is to be introduced to the eye of the person,

(B) at least one pump means having a fluid outlet and coupled with said container to receive liquid therefrom and arranged for mounting with said container on a spectacle-like frame with said outlet directed toward and spaced away from the eye,

said pump means being operable in response to a control signal for propelling liquid, received from said container, from said outlet and toward the eye,

(C) control means for generating said control signal and connected for applying said control signal to said pump means, said control means being arranged for mounting on the spectacle-like frame, and

(D) pump positioning means for positioning said pump means and said outlet proximate to the eye and connected in fluid communication between said container and said pump means, said positioning means being elastically displaceable upon inadvertent contact with the eye, for protecting the eye.

5,368,583

BODILY FLUID TEST KIT

Richard Fleury, Orland Park, Ill., assignor to GKR Industries, Inc., Chicago, Ill.

Filed Aug. 3, 1993, Ser. No. 101,209

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—318 **15 Claims**

1. A kit for collecting and testing bodily fluids, the kit comprising:

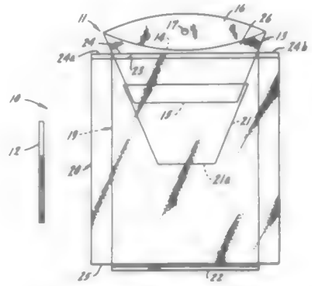
a disposable container including

a tubular member having an upper end portion and a lower end portion, the upper end portion including a closure means and with an access hole disposed therein,

valve means sealably attached to the lower end portion of the tubular member,

a collection bag, the bag including an upper portion that is sealably attached to an outer surface of the tubular member,

a sleeve including a first open end portion and a second open end portion, the first open end porion being sealably attached to the outer surface of the tubular member between an upper end of the tubular member and the upper portion of the collection bag,



the second open end portion of the sleeve folding upward over the upper end of the tubular member and being sealable

the upper portion of the collection bag, which is sealably attached to the tubular member, in combination with the valve means and the second open end portion of the sleeve providing substantial containment of fluid within the disposable container after fluid is disposed therein;

a test strip having dimensions small enough to fit through the access hole of the closure means so the test strip may be deposited into fluid contained in the collection bag after deposit of fluid therein.

5,368,584

ABSORBENT ARTICLE WITH DYNAMIC ELASTIC LEG FEATURE COMPRISING ELASTICIZED THIGH PANELS

Sandra H. Clear, Maineville; Miguel A. Robles, Glendale, and Kimberly A. Dreier, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 25, 1992, Ser. No. 951,608

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—385.2 **22 Claims**

1. A disposable absorbent article having a first waist region, a second waist region, a crotch region between said first waist region and said second waist region, a longitudinal centerline, a longitudinal direction defined as the direction parallel to said longitudinal centerline, a lateral centerline, and a lateral direction defined as the direction parallel to the lateral centerline, longitudinal edges having a curvilinear leg edge, and end edges, the absorbent article comprising:

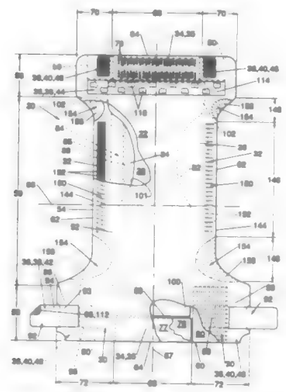
a liquid previous topsheet;

a liquid impervious backsheet joined with said topsheet; an absorbent core having side edges disposed between said topsheet and said backsheet; and

an elastic leg feature extending laterally outwardly from each of said side edges of said absorbent core in said crotch region, each said elastic leg feature having a center leg zone and a pair of corner leg zones, one at each end of said center leg zone, each said elastic leg feature comprising:

(i) an elasticized leg cuff positioned in at least said center leg zone, said elasticized leg cuff comprising one or more elastic leg members operatively joined with the absorbent article in an elastically contractible condition such that said elasticized leg cuff is elastically contractible in generally the longitudinal direction; and

(ii) an elasticized thigh panel positioned in at least one of said corner leg zones, each said elasticized thigh panel



comprising a stretch laminate comprising an elastic panel member and an elongatable component having an original planar state, said stretch laminate being mechanically stretched so that said elasticized thigh panel can expand beyond the original planar state of said elongatable component in at least one direction at an angle from the longitudinal and the lateral direction.

5,368,585

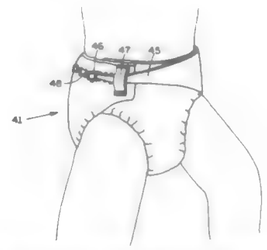
REUSABLE DIAPER AND COVER COMBINATION

Glenda K. Dokken, 6921 Dundee St., Corpus Christi, Tex. 78413

Filed Apr. 7, 1992, Ser. No. 864,536

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—393 **6 Claims**



1. A reusable diaper set designed to conform to the body of a wearer, comprising:

an outer cover and an inner diaper pad;

said outer cover having an inside surface facing the wearer's body and an outside surface facing away from the wearer's body and consisting of an inner layer of moisture impervious material and an outer layer of decorative fabric, said outer cover having spaced apart, separate upper and lower wing portions connected by a central portion;

diaper fastening means mounted on the inside surface of said cover for securing a diaper pad thereto;

said inner diaper pad being contoured substantially to the entire shape of the outer cover and having fastening means for interlocking with the diaper fastening means on said outer cover to connect the diaper pad to the outer cover;

said diaper pad being constructed from layer of soft, water absorbent cotton fabric so that it can be washed when soiled and reused; and

first fastening means for fastening the upper and lower wing portions together around the wearer's waist, and second fastening means including a belt secured to and extending from only one end of the upper wing portions, said belt having hook means attached to its terminal end for engaging any one of a plurality of loop connecting means horizontally disposed on the outside of the belt for adjustable engagement of the belt around the wearer's waist.

5,368,586

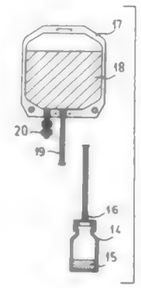
CLOSURE FOR A DRUG-VIAL

Johannes Van Der Heiden, Groningen, and Herbertus E. Hilbrink, Emmen, both of Netherlands, assignors to NPBI Nederlands Produktielaboratorium voor Bloedtransfusieapparatuur en Infusievloeistoffen B.V., Emmer-Compascuum, Netherlands

Continuation-in-part of Ser. No. 719,728, Jun. 21, 1991, Pat. No. 5,224,937. This application Dec. 27, 1991, Ser. No. 816,494

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—403 **20 Claims**



1. A closure assembly for a drug vial comprising a body that on one side can fit hermetically on a mouth of a drug vial, and a flexible elongated radiofrequency and heat weldable tube attached at one end of said tube to an opposite side of said body, an inside of said tube being in communication with an inside of said drug vial after mounting of said closure assembly on said vial an opposite end of said tube remote from said vial being sealed hermetically.

5,368,587

AMPULE SHIELD

Robert J. Lechleiter, West Orange, N.J., assignor to Akzo Nobel N.V., Arnhem, Netherlands

Filed May 14, 1993, Ser. No. 61,032

Int. Cl.[5] A61B *19/00*

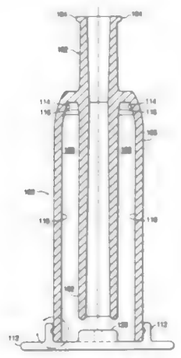
U.S. Cl. 604—416 **10 Claims**

1. An ampule shield comprising:

a center tube having an upper end portion;

an outer tube extending coaxially with and attached to the center tube some distance from the upper end portion of the center tube, and extending some distance beyond a lower end of the center tube, the outer tube being spaced

from the center tube to provide a cylindrical space within the shield for receiving an ampule; and



a removable cap for attachment to a bottom of the outer tube.

5,368,588

PARENTERAL FLUID MEDICATION RESERVOIR PUMP

David S. Bettinger, 8030 Coventry, Grosse Ile, Mich. 48138

Filed Feb. 26, 1993, Ser. No. 23,130
The portion of the term of this patent subsequent to Feb. 23, 2010, has been disclaimed.
Int. Cl.[5] A61K *9/22*
U.S. Cl. 604—891.1 **7 Claims**

1. A disposable parenteral fluid medication pump comprising an elongated reservoir having an enclosing wall;

said reservoir having at least one closable outlet through which a flowable fluid is induced to administer a medication; and

wherein said wall is made of shrink polymer material which when activated results in a reduction in the interior volume of said reservoir forcing said flowable fluid through said outlet; and

wherein said shrink polymer material is activated by heat, aging, light, chemical agent, oxygen, or a combination.

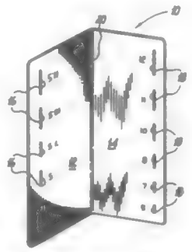
5,368,589

SCALPEL GAUGE

H. Jonathan Tovey, Milford; Robert W. Churinetz, West Haven, and Timothy M. Lohnes, Milford, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 7, 1992, Ser. No. 957,731
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—1 **15 Claims**

1. A surgical template to assist in forming an incision of predetermined size in tissue, comprising a plate member defining a longitudinal axis and having a bend line which defines a first planar plate portion and a second planar plate portion, each said first and second plate portions having a longitudinal edge, at least one of said plate portions including at least two longitudinally extending slotted openings of predetermined lengths disposed adjacent said longitudinal edge thereof, each said at least two slotted openings dimensioned and configured to receive at least a portion of a cutting edge of an incising



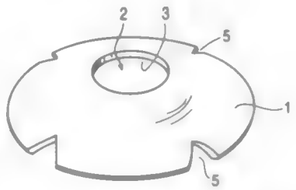
instrument to guide the instrument during an incising of the tissue.

5,368,590

CORNEAL SPONGE AND METHOD OF USE

Seiji Itoh, Mohara, Japan, assignor to Katsuhiko Mukai, Kashiwa, Japan

Filed Apr. 27, 1993, Ser. No. 52,619
Claims priority, application Japan, Sep. 29, 1992, 4-283751
Int. Cl.[5] A61B *9/00*
U.S. Cl. 606—4 **10 Claims**



1. A corneal sponge, comprising:

only material having liquid absorbing properties having an opening providing access to a cornea for laser treatment, and

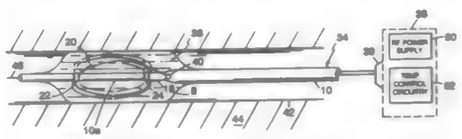
at least one positioning mark for target alignment of a microscopic targeting field of a laser instrument.

5,368,591

HEATED BALLOON CATHETERS

Charles D. Lennox, Nashua, N.H.; Richard A. Noddin, Hollliston, and Ronald Sahatjian, Lexington, both of Mass., assignors to Prutech Research and Development Partnership II, San Jose, Calif.

Continuation of Ser. No. 527,047, May 22, 1990, Pat. No. 5,191,883, which is a division of Ser. No. 263,815, Oct. 28, 1988, Pat. No. 4,955,377. This application Nov. 23, 1992, Ser. No. 981,006
Int. Cl.[5] A61F *7/12*
U.S. Cl. 606—27 **9 Claims**



1. A balloon catheter device for heating tissue, comprising:

a catheter shaft constructed for insertion into a patient's body,

a fluid-inflatable balloon mounted on said shaft, said balloon

defining an interior inflation chamber and an exterior surface for engagement with body tissue to be heated, said interior inflation chamber of said balloon being associated with a lumen extending through said shaft for introduction of inflation fluid from a source outside said body to permit said chamber to be filled with said inflation fluid after placement of said balloon catheter in said body,

an electrically conductive, resistive pathway located in said interior inflation chamber of said balloon, arranged for heating said exterior surface of said balloon from within said balloon by passage of RF electrical current through said conductive, resistive pathway, said balloon catheter device being constructed to prevent said electrical current from reaching said exterior surface of said balloon,

a plurality of electrical conductors for conducting RF electric current at a frequency above about 100 kilohertz, said plurality of conductors extending along the length of said catheter shaft for introducing current from an RF current source to said conductive, resistive pathway, and

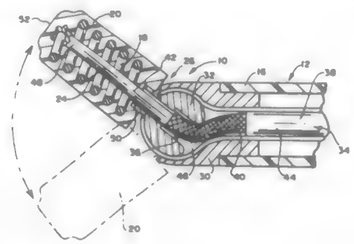
a sensor constructed to provide a feedback signal to permit delivery of RF current to said pathway to be controlled so that the temperature of said exterior surface of said balloon can in turn be controlled.

5,368,592

ARTICULATED SYSTEMS FOR CARDIAC ABLATION

Roger A. Stern, Cupertino; Stuart D. Edwards, Los Altos, and Jerome Jackson, Sunnyvale, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 868,010, Apr. 13, 1992. This application Sep. 23, 1993, Ser. No. 126,126
Int. Cl.[5] A61N *1/40*
U.S. Cl. 606—33 **16 Claims**



1. An end assembly attached to the distal end of a catheter tube comprising

a socket positioned on the distal end of said assembly

a rotatable ball pivotally supported in said socket and extending distally therefrom,

a functional element having a major axis, said functional element being supported on said ball with its major axis aligned with the axis of the catheter tube for steering to a tissue site and for pivoting the functional element in response to an external force to orient the major axis of the functional element generally parallel to the plane of the tissue site without bending the catheter tube,

a cable extending within the catheter tube into said socket and through a passage within said ball, the distal end of said cable being attached to said functional element, and

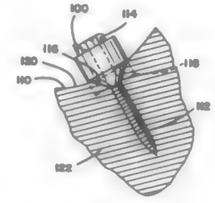
a plurality of steering wires connected to said ball and to a remote actuator mechanism accessible to the user for applying the external force.

5,368,593

DEVICES AND METHODS FOR ATTACHMENT OF SPINE FIXATION DEVICES

John G. Stark, 19390 Walden Trail, Deephaven, Minn. 55391

Filed Jul. 7, 1992, Ser. No. 909,602
Int. Cl.[5] A61B *17/56*
U.S. Cl. 606—61 **13 Claims**



1. A spacer for use with a bone screw apparatus attached to a bone, the bone having an external surface, the bone screw apparatus including a shaft defining a longitudinal axis and having a first threaded end and an opposite second end having a stop interconnected to the second end, said spacer comprising:

a tapered first surface for engaging the external surface of the bone;

a second surface spaced apart from said tapered first surface for engaging the stop; and

a body disposed between said tapered first surface and said second surface, said body having an outer surface extending from said tapered first surface to said second surface, and an inner surface defining an axial bore extending from said tapered first surface to said second surface, said axial bore sized to slidably receive the shaft of the bone screw apparatus in a direction of the longitudinal axis, wherein said spacer is positioned between the stop of the bone screw apparatus and the external surface of the bone, wherein said body spaces the stop at a spaced apart distance from the external surface of the bone in a direction of said longitudinal axis, said axial bore having a bore axis generally the same as the longitudinal axis when the bone screw apparatus is positioned within said axial bore;

said body having a circumferential plane perpendicular to said bore axis, said tapered first surface having an outer portion adjacent to said outer surface, wherein a distance from a point on said outer portion of said tapered first surface to a point on said circumferential plane parallel to said bore axis decreases as said point on said outer portion becomes further removed from said bore axis;

said outer surface of said body spaced from said bore axis at least in an equal to manner wherein a first portion of said outer surface of said body is spaced from said bore axis a distance equal to or greater than a distance of a previous portion of said outer surface in a direction of travel along said outer surface from said tapered first surface to said second surface;

said outer surface of said body including cylindrical portion contiguous with said second surface.

5,368,594

VERTEBRAL OSTEOSYNTHESIS DEVICE

Jean-Jacques Martin; Jean-Philippe Lescuyer, both of Bourg en Bresse; René Cartoux, Gordes; Jean-Jacques Lalain, Fontaines Saint Martin; Frédéric Michel, Lyons, and Jacques Samani, St Cyr Au Mont D'Or, all of France, assignors to Fixano S.A., Bourg en Bresse, France

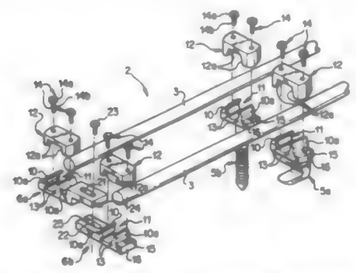
Filed Apr. 2, 1993, Ser. No. 44,378
Int. Cl.[5] A61F *5/01*
U.S. Cl. 606—61 **14 Claims**

1. A vertebral osteosynthesis device for affixation to vertebrae, comprising:

two rigid support rods adapted to be disposed substantially

parallel, one on each side of spineous processes of the vertebrae;

a plurality of bone anchoring elements, each bone anchoring element having one of a hook element adapted to fit around a vertebral process and a screw element adapted to be screwed into a vertebral pedicle and each bone anchoring element having two lateral walls extending in a direction opposite said hook and screw elements, said lateral walls being substantially parallel and flexible and having inside and outside faces, and upper and lower ends, said outside faces being inclined toward each other at the upper ends, said lateral walls delimiting between them a channel matching a transverse dimension of said support rods, the distance separating said lateral walls at the upper ends thereof being slightly less than the transverse dimension of said support rods whereby said bone anchoring elements may be provisionally attached to said support



rods by clipping said bone anchoring elements to said support rods;

a plurality of gripping elements, each gripping element being associated with a bone anchoring element and having two opposed side arms, the side arms having inside faces and outside faces, the inside faces being inclined at a slope matching the outside faces of said lateral walls and adapted to engage the outside faces of said lateral walls and to bring said lateral walls closer together during engagement of said lateral walls; and

a plurality of gripping means for attaching said gripping elements to said bone anchoring elements, each of said gripping means passing through a side arm of a gripping element and threadably engaging a bone anchoring element and displacing said gripping element whereby the inside faces of said gripping elements engage and slide on said outside faces of said lateral walls of said bone anchoring elements to bring said lateral walls closer together.

5,368,595

IMPLANT ASSIST APPARATUS

Royce Lewis, Lubbock, Tex., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Sep. 6, 1990, Ser. No. 578,552
Int. Cl.[5] A61B *17/56*; A61L *17/00*
U.S. Cl. 606—72 **29 Claims**



1. An implant assist apparatus for implanting material in tissue to be approximated or reinforced comprising:

cannula means having a hollow body and an open proximal and distal end;

point means detachably fixed to said open proximal end of the cannula means for penetrating tissue;

guide wire means attached to said point means and extending into said open proximal end of the cannula means; and

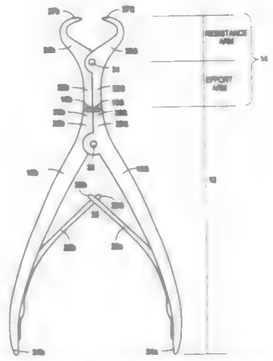
implant material releasably attached to said guide wire means and extending from said open distal end of the cannula means.

5,368,596

AUGMENTED AWL FOR CREATING CHANNELS IN HUMAN BONE TISSUE

Stephen S. Burkhart, 201 Village Cir., San Antonio, Tex. 78232

Continuation of Ser. No. 853,123, Mar. 18, 1992, abandoned. This application May 17, 1993, Ser. No. 64,364
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—79 **9 Claims**



1. A low-profile instrument for use in arthroscopic surgery, the instrument for creating a channel in living bone tissue, the instrument comprising:

a first lever pair, each lever of said first lever pair being similarly dimensioned with resistance arms at one end thereof and effort arms at the other end thereof and the levers of said first lever pair articulated at a first joint, the first joint fixedly located between the resistance arm and effort arm of each of said first lever pair, the effort arms of each of said first pair of levers defining handles;

a second lever pair, the two levers of said second lever pair articulably connected to each other, each one lever of said second lever pair articulably connected with a different single resistance arm lever of said first lever pair;

said first and said second lever pair in coplanar relation; and

a pair of semicircular pincers cylindrically shaped sharp pointed, said pair of semicircular cylindrically shaped sharp pointed pincers defining jaws, said jaws integral with said second lever pair for moving between an open position with the jaws apart and a closed position with the jaws together upon actuating the handles of said first lever pair, wherein the jaws lay entirely within the plane of said first and said second lever pair.

5,368,597

RECLOSABLE POUCH FOR LAPAROSCOPIC USE

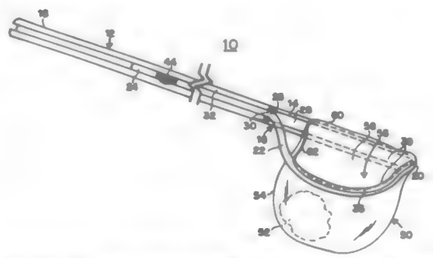
Anthony Pagedas, 8401 W. Edgerton, Greendale, Wis. 53129

Filed May 24, 1993, Ser. No. 66,366
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—114 **13 Claims**

1. A surgical device for attachment to a bag for insertion of the bag through a laparoscopic sleeve into a body cavity and for manipulation of the bag to retrieve a mass, the surgical device comprising:

an elongated wand having a front end for placement in the body cavity and an opposing back end for extending out of the laparoscopic sleeve for access by the surgeon; and

an elongated rod having a pivot end attached to the front end of the wand, a rigid handle opposing the pivot end and lying close and parallel to the back end of the wand for extending out of the laparoscopic sleeve for access by the surgeon, and a flexible portion between the pivot end and the handle of the rod, wherein the flexible portion bows out from the front end of the wand when the handle of the rod is pushed forward toward the front end of the wand and the flexible portion straightens to lie close and parallel to the front end of the wand when the handle of the rod is pulled backward away from the front end of the wand, and wherein the front end of the wand and flexible portion



of the rod are adapted for securely receiving the bag so that when the flexible portion of the rod bows out, the bag opens, and when the flexible portion of the rod straightens, the bag closes,

a connection means slidably connecting and holding close together the handle of the rod and the back end of the wand, and

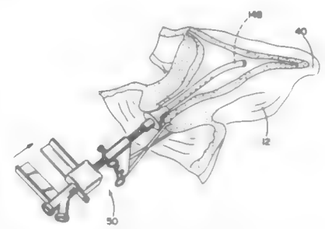
a sealing means wherein the flexible portion of the rod and the front end of the wand cooperate to seal the bag when the flexible portion straightens to lie close and parallel to the front end of the wand.

5,368,598

METHOD OF MANIPULATING AN UTERUS USING A BENDABLE MANIPULATOR

Harrith M. Hasson, 2043 N. Sedgwick, Chicago, Ill. 60614

Continuation-in-part of Ser. No. 688,114, Apr. 19, 1991, Pat. No. 5,217,466, and a continuation-in-part of Ser. No. 62,923, May 13, 1993. This application Jun. 7, 1993, Ser. No. 72,729
Int. Cl.[5] A61B *17/42*
U.S. Cl. 606—119 **9 Claims**



1. A method of repositioning a uterus, said method comprising the steps of:

providing an instrument having a first bendable tube having an elongate section with an exposed surface, a second tube that is slidable within the first tube, means cooperating between the first and second tubes for reconfiguring the elongate section on the first tube from a first substantially straight state to a second bent state as an incident of only part of the first tube being moved lengthwise relative to the second tube, and means for maintaining the elongate section in a desired bent configuration:

directing the exposed surface on the elongate section through a patient's vagina and into the patient's uterus with the elongate section in the first state;

reconfiguring the elongate section to the second state by moving the part of the first tube relative to the second tube to thereby cause the exposed surface of the elongate section to bear against the patient's uterus to thereby reposition the uterus; and

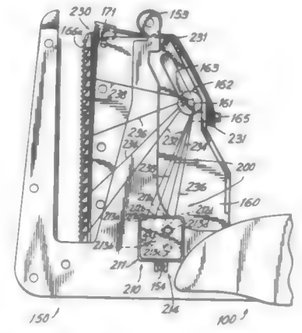
fixing the elongate section in its second state to thereby maintain the uterus in a desired position.

5,368,599

SUGICAL FASTENING APPARATUS WITH SUTURE ARRAY

Leon C. Hirsch; David T. Green, both of Westport; Henry Bolanos, East Norwalk, all of Conn.; Wayne P. Young, Brewster, N.Y.; Dominick L. Mastri, Bridgeport, Conn.; Lisa W. Heaton, Norwalk, Conn., and Mark E. Alari, Derby, Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 8, 1992, Ser. No. 958,392
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—139 **63 Claims**



1. A surgical fastener applying apparatus for applying a plurality of surgical fasteners comprising:

a frame;

a plurality of surgical fasteners, each of the individual fasteners having a backspan and a pair of legs extending therefrom, each backspan having a longitudinal axis extending therethrough;

means mounted to said frame for holding the plurality of surgical fasteners in at least two rows, such that the individual fasteners in each row are oriented in end to end fashion with the longitudinal axes of the backspans in each row in substantial alignment,

at least one suture cooperating with at least one of said surgical fasteners; and

means for applying said surgical fasteners to body tissue, said applying means applying said at least one suture in conjunction with said fasteners, a portion of said at least one suture extending across the rows from a fastener on one of said rows to a fastener on another of said rows.

5,368,600

STEERABLE BULLDOG CLAMP APPLIER

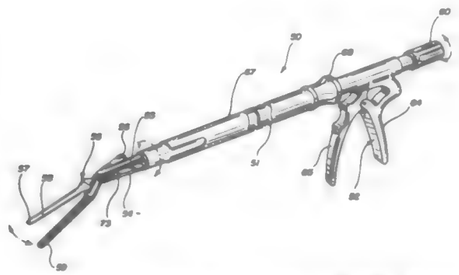
Stephen J. Failla, Cincinnati; Roger L. Hildwein, Loveland, and Peter Lau, Cincinnati, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 23, 1993, Ser. No. 96,587
Int. Cl.[5] A61B *17/04*
U.S. Cl. 606—139 **19 Claims**

1. An endoscopic applier for a surgical clamp, said applier comprising:

a) an elongated rod;

b) first and second arms attached to the distal end of said rod, said arms configured to securely grip said surgical clamp;
c) means for opening and at least partially closing said arms from the proximal end of said rod; and



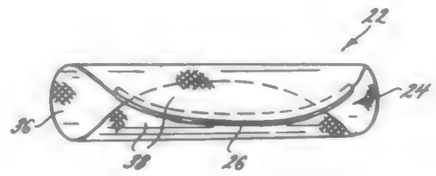
d) means for pivoting said clamp in said arms from the proximal end of said rod, said pivoting means including a biasing member mounted on said first or second arm for biasing said surgical clamp away from the longitudinal axis of said rod.

5,368,601
TROCAR WOUND CLOSURE DEVICE
Jude S. Sauer, Pittsford, and Roger J. Greenwald, Holley, both of N.Y., assignors to LaserSurge, Inc., Rochester, N.Y.
Filed Apr. 30, 1992, Ser. No. 876,511
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—144 **13 Claims**



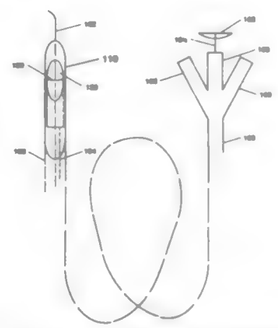
11. A trocar wound closure device comprising:
a. an elongated body having a longitudinal axis and a longitudinally extending surface, said elongated body including at least one opening formed in said longitudinally extending surface extending less than the entire length of said elongated body;
b. a needle having a longitudinal axis which is generally parallel to said longitudinal axis of said elongated body and being holder operatively associated with said elongated body, said needle holder being transversely movable through said at least one opening, between a first position substantially within said opening to a second position substantially outside said opening; and
c. a needle positioned within said needle holder.

5,368,602
SURGICAL MESH WITH SEMI-RIGID BORDER MEMBERS
Roger A. de la Torre, 48 Dauphine Dr., St. Louis, Mo. 63367
Filed Feb. 11, 1993, Ser. No. 16,795
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—151 **25 Claims**



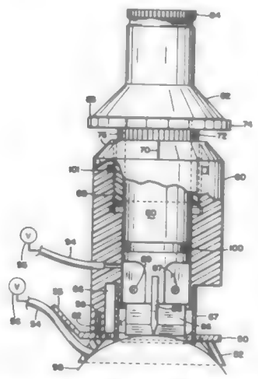
1. In a surgical mesh for overlaying a body tissue opening to cover the opening and allow for tissue ingrowth within the surgical mesh, the improvement comprising:
a thin patch of flexible mesh material, the patch having an area configuration defined by a peripheral edge extending completely around a periphery of the patch, the peripheral edge having substantially the same flexibility as the mesh material of the patch;
at least one semi-rigid member having a length with opposite first and second ends, the member having a narrow, elongated configuration and a cross-sectional width that is larger than a thickness of the patch mesh material, the member being permanently secured along its length to the patch mesh material, and the member having less flexibility than the flexibility of the patch peripheral edge and the mesh material of the patch.

5,368,603
ENDARTERECTOMY CATHETER, AND METHOD OF USE THEREOF
Alexander G. Halliburton, 20 Coachman Terrace, Cloverbar Ranch, Edmonton, Canada T8H 1M2
Filed Jun. 5, 1990, Ser. No. 533,402
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—159 **15 Claims**



1. An endarterectomy catheter for removing obstructions from an artery comprising:
a housing adapted for entry into the artery;
the housing including a forward end and a rearward end, and having an opening in the housing between the forward and rearward ends for receiving an obstruction;
a primary shear disposed within the housing and movable backward and forward across the opening;
a cable connected to the primary shear and operable from outside the artery for moving the primary shear forward and backward in the housing;
a spring for urging the primary shear forward to create a guillotine action upon movement of the primary shear; and
means for locating the housing within the artery.

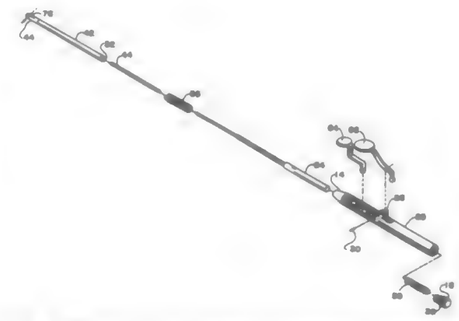
5,368,604
METHOD AND APPARATUS FOR SURGICALLY PROFILING THE CORNEA USING VACUUM
Lauren G. Kilmer, and Alvin E. Reynolds, both of Tulsa, Okla., assignors to Corneal Contouring Inc., Azusa, Calif.
Continuation of Ser. No. 939,856, Sep. 2, 1992, abandoned, which is a continuation of Ser. No. 894,162, Jun. 3, 1992, abandoned, which is a continuation of Ser. No. 592,601, Oct. 4, 1990, abandoned, which is a continuation-in-part of Ser. No. 450,672, Dec. 14, 1989, Pat. No. 5,063,942. This application Dec. 20, 1993, Ser. No. 170,679
The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—166 **44 Claims**



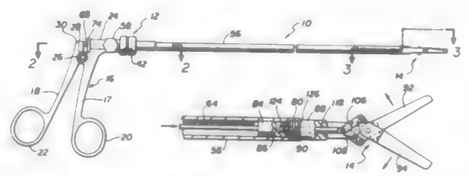
19. Apparatus for reprofiling the corneal portion of an eye of animals (including humans) to change the corneal radius and thus correct refractive errors, comprising
a scraping tool, said tool having at least one planar knife edge blade of shape to scrape said cornea to said desired corneal radius;
means to create a vacuum chamber surrounding and above a central portion of said cornea;
means to position said scraping tool within said vacuum chamber and to rotate or oscillate said scraping tool relative to said cornea until a desired optically corrective curvature has been achieved.

5,368,605
LAPAROSCOPIC SURGICAL INSTRUMENT
Herman A. Miller, Jr., 1284 E. 450 North, Warsaw, Ind. 46580
Filed Mar. 9, 1993, Ser. No. 28,210
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **14 Claims**

1. A tool for laparoscopic surgery comprising an elongated handle having a forward end and a rearward end, said handle having an identical exterior shape for both right handed persons and left handed persons, an actuator connected to said handle between said ends, said handle having a bore extending therethrough, said handle having a grip between said actuator and said forward end, said actuator extending over said grip, a tool rod positioned in said bore for reciprocation therein, an implement connected to said forward handle end for actuation, said tool rod connected to said tool whereby said tool is actuated upon reciprocation of said tool rod in said bore, said actuator being connected to said tool rod, said actuator being movable with said reciprocation of said tool rod, said bore being generally cylindrical and having a larger diameter bore adjacent to said rearward end and a smaller diameter bore adjacent said forward end with a step therebetween, said tool rod having an enlarged portion in said larger diameter bore, a spring positioned in said handle between said step and said enlarged portion, a second spring positioned within said handle between said enlarged portion and said rearward end of said handle, whereby said handle can be held like a writing instrument and the actuator may be manipulated by the forefinger of the hand holding said tool to actuate said tool.



5,368,606
ENDOSCOPIC INSTRUMENT SYSTEM
Scott C. Marlow, Chesterland; Hsano K. Petruschke, Kirtland; Donald B. Coon, Chesterland, and John T. Nelson, Kirtland, all of Ohio, assignors to Marlow Surgical Technologies, Inc., Willoughby, Ohio
Filed Jul. 2, 1992, Ser. No. 907,853
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—170 **32 Claims**



1. An endoscopic instrument system comprising:
an instrument including a handle portion having means for gripping said instrument, means forming a shaft extending from said gripping means and means for actuating said instrument, said actuating means including a rod extending from said gripping means, and said gripping means being connected to actuate said rod of said actuating means;
an instrument end tool, said end tool being connectable to said shaft end by a threaded engagement and including means for engaging said actuating means, said actuating means extending through said shaft from said gripping means to said end tool such that said end tool engages said rod, whereby said end tool is operable by said actuating means; and
said instrument end tool including link means terminating in an enlarged end, said actuating means including means for releasably engaging said enlarged end.

5,368,607

SURGICAL TROCAR AND SPIKE ASSEMBLY

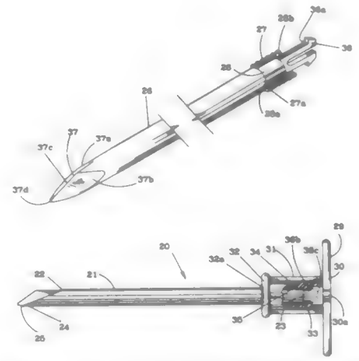
Michael Freitas, Irving, Tex., assignor to Dexide, Inc., Fort Worth, Tex.

Continuation of Ser. No. 675,985, Feb. 19, 1991, Pat. No. 5,224,951. This application Oct. 6, 1992, Ser. No. 957,206
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—172 12 Claims

1. A surgical trocar spike for penetration through a body wall and into a body cavity, the spike comprising:

a cylindrical housing including an inboard end and an outboard open end, said cylindrical housing defining an elliptical configuration terminating in a sharpened needle point at the outboard end of said cylindrical housing; and coring prevention means received within said cylindrical housing and biased for extension outboard-most of said needle point for urging solid materials away from said needle point and said open end of said cylindrical housing while said cylindrical housing is moved through said body wall; and

means for applying a concentric bias between said cylindrical housing and said coring prevention means, wherein said coring prevention means includes a beveled, tissue-



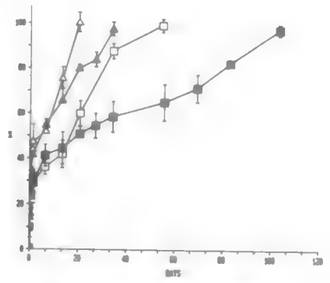
penetrating end extending through said open end of said cylindrical housing.

5,368,608

CALCIFICATION-RESISTANT MATERIALS AND METHODS OF MAKING SAME THROUGH USE OF MULTIVALENT CATIONS

Robert J. Levy, Ann Arbor, Mich., and Amnon Sintov, Jerusalem, Israel, assignors to University of Michigan, The Board of Regents, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 515,484, Apr. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 176,789, Apr. 1, 1988, Pat. No. 5,094,661. This application Apr. 23, 1991, Ser. No. 689,652
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] A61L *17/00;* C14C *3/00;* A61F *2/06*
U.S. Cl. 8—94.11 29 Claims



1. An implant formed of a biocompatible biomaterial which is insoluble in the interior of the body of a host, living being, said biomaterial having incorporated therein an effective amount of trivalent aluminum cations to render said biomaterial resistant to in vivo pathologic calcification.

5,368,609

SOFTENING FILLER FOR LEATHER

Shigeyuki Inoue, Akashi, Japan, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP91/01995, § 371 Date Jun. 30, 1993, § 102(e) Date Jun. 30, 1993, PCT Pub. No. WO92/07962, PCT Pub. Date May 14, 1992
PCT Filed Oct. 21, 1991, Ser. No. 50,174
Claims priority, application Japan, Oct. 30, 1990, 2-294597
Int. Cl.[5] C14C *9/00*
U.S. Cl. 8—94.22 13 Claims

1. A process for softening leather, which comprises: impregnating the leather with thermoexpansible microcapsules at a concentration of said thermoexpansible microcapsules between 1% and 8% by weight based on the weight of the leather; and heating the impregnated leather to a temperature at which the thermoexpansible microcapsules expand.

5,368,610

USE OF METAL SALTS AND CHELATES TOGETHER WITH CHLORITES AS OXIDANTS IN HAIR COLORING

Alexander Chan, Mineola, N.Y.; Gottfried Wenke, Woodbridge, Conn., and Giuseppe Prota, Napoli, Italy, assignors to Clairol Incorporated, Stamford, Conn.

Filed Apr. 20, 1993, Ser. No. 49,708
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—406 25 Claims

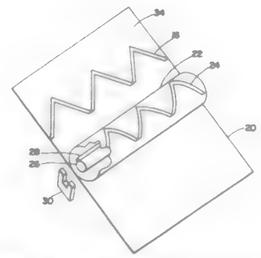
1. An aqueous hair dye composition containing from about 0.05% to 20% by weight of an alkali metal chlorite; from about 0.001% to 5% of a water soluble copper, iron, manganese or cobalt salt, a chelate of said salt, or a mixture thereof together with an amount of an oxidative hair dye precursor which will oxidize to form a tinctorially effective amount of a hair dye.

5,368,611

PRINTED WOVEN BLANKET AND METHOD FOR THE MANUFACTURE THEREOF

Daniel B. Owenby, Swannanoa, and Gene Quesinberry, Black Mountain, both of N.C., assignors to Deacon Manufacturing Company, Swannanoa, N.C.

Division of Ser. No. 768,167, Sep. 30, 1991, Pat. No. 5,180,401. This application Jul. 27, 1992, Ser. No. 920,249
Int. Cl.[5] D06P *5/20, 5/00*
U.S. Cl. 8—444 8 Claims



1. A method for producing a woven blanket which appears to have been printed on both sides comprising the steps of:

printing a pattern on only one side of a woven blanket fabric with a dye; said dye taken from the group consisting of cationic and fiber reactive dyes; said fabric formed by yarns made of fibers; said fibers taken from the group consisting of acrylic and cotton fibers; when ,said fabric is acrylic said dye is cationic, and when said fabric is cotton said dye is fiber reactive;

forcing said dye into said fabric by the application of pressure on said dye and said fabric;

drying said dye in said fabric;

moistening said dye in said fabric with steam, thereby setting said dye;

napping at least one side of said woven blanket fabric.

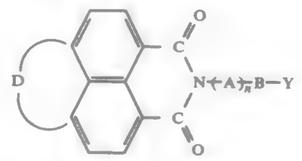
5,368,612

METHOD OF DYEING A FIBER MIXTURE WITH WATER-INSOLUBLE NAPHTHALIC ACID IMIDE DYESTUFFS

Kiyoshi Himeno, Munakata, and Toshio Hihara, Kitakyushu, both of Japan, assignors to Hoechst Mitsubishi Kasei Co., Ltd., Tokyo, Japan

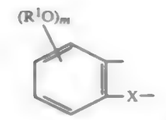
Division of Ser. No. 940,789, Sep. 4, 1992, Pat. No. 5,290,931, which is a continuation of Ser. No. 658,677, Feb. 21, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 100,294
Claims priority, application Japan, Feb. 21, 1990, 2-40302; Mar. 7, 1990, 2-56212
Int. Cl.[5] C09B *62/02;* D06P *1/382*
U.S. Cl. 8—568 21 Claims

1. A method comprising dyeing a fiber mixture comprising (i) polyamide or polyurethane fiber and (ii) polyester or triacetate fiber with a water-insoluble naphthalic acid imide dyestuffs of the following formula:



(I)

wherein D is



wherein R^1 is C_1–C_8 alkyl which may be substituted, X is oxygen or sulfur, and m is 0 or 1; A is phenylene, alkylene, aralkylene or $—C_2H_4OC_2H_4—$; B is oxygen, sulfur or



wherein R^3 is hydrogen or lower alkyl; Y is a 6-membered nitrogen-containing heterocyclic ring having at least one active halogen atom; and n is 0 or 1.

5,368,613

ELECTRON BEAM EXPOSURE APPARATUS

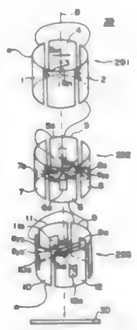
Nobuyuki Yasutake, Tokyo, and Akio Yamada, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 533,861, Jun. 6, 1990, abandoned. This application Sep. 21, 1992, Ser. No. 947,963

Claims priority, application Japan, Jun. 7, 1989, 1-144415

Int. Cl.[5] B21F *41/00*

U.S. Cl. 29—25.01 **13 Claims**



1. An electron beam exposure apparatus for writing a pattern on a substrate with an electron beam, comprising:

electron beam source means for producing an electron beam along a beam path extending to the substrate;

beam patterning means for interrupting the beam path and selectively passing the electron beam therethrough, the electron beam passed through the beam patterning means having a cross-section corresponding to a desired pattern to be written on the substrate;

beam focusing means for focusing the electron beam passed through the beam patterning means onto the substrate;

beam deflection means for deflecting the focused electron beam in response to an energization such that the focused electron beam moves over the substrate, said beam deflection means including—

at least first, second and third coil means connected in series for producing first, second and third magnetic fields, respectively, each having a magnitude, said first coil means being disposed such that the first magnetic field extends generally perpendicularly to the beam path of the electron beam at a first vertical position on the beam path, said second coil means being disposed such that the second magnetic field extends generally perpendicularly to the beam path at a second vertical position different from the first vertical position, said third coil means being disposed such that the third magnetic field extends generally perpendicularly to the beam path at a third vertical position different from the first and second vertical positions, said first, second and third coil means being disposed with first, second and third angular positions respectively such that the first magnetic field and the second magnetic field intersect with each other with a first angle when viewed in a direction of the beam path and such that the second magnetic field and the third magnetic field intersect with each other with a second angle when viewed in the direction of the beam path; and

fourth coil means, including first and second coils opposing each other across the beam path, for producing a fourth magnetic field extending from said first coil to said second coil, said fourth coil means disposed such that the fourth magnetic field extends generally parallel to the second magnetic field for correcting the second magnetic field;

fifth coil means, including third and fourth coils opposing each other across the beam path, for producing a fifth magnetic field extending from said third coil to said fourth coil, said fifth coil means disposed such that the fifth magnetic field extends generally parallel to the third magnetic field for correcting the third magnetic field, said fourth and fifth coil means producing fourth and fifth magnetic fields with a magnitude substantially smaller than the magnitude of the first, second and third magnetic fields; and

driving means for energizing the beam deflection means by driving the first, second and third coil means and by driving the fourth and fifth coil means independently from the first, second and third coil means such that the fourth magnetic field and the fifth magnetic field are formed independently from each other and independently from the first, second and third magnetic fields, the electron beam being thereby deflected by a desired deflection angle and irradiating the substrate substantially vertically at a desired location without aberrations.

5,368,614

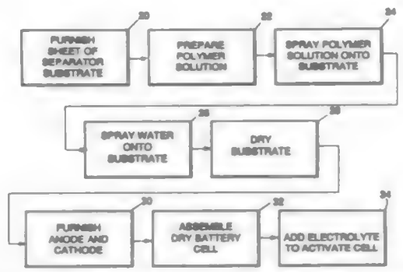
PREPARATION OF POLYMER-IMPREGNATED BATTERY SEPARATOR MATERIAL AND CELL MADE THEREWITH

Hong S. Lim, Agoura Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1994, Ser. No. 215,145

Int. Cl.[5] H01M *2/14*

U.S. Cl. 29—623.5 **17 Claims**



1. A method for preparing a separator for an electrochemical cell, comprising the steps of:

furnishing a sheet of a porous separator substrate having two sides;

preparing a solution of a polymer in an organic solvent;

spraying the solution onto both sides of the separator substrate; and thereafter

spraying a liquid that dissolves the organic solvent but not the polymer onto both sides of the separator substrate.

5,368,615

HIGH MOLECULAR WEIGHT NITROGEN-CONTAINING CONDENSATES AND FUELS AND LUBRICANTS CONTAINING SAME

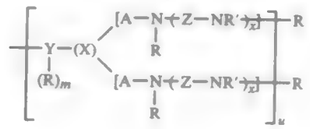
Thomas F. Steckel, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 55,471, Apr. 29, 1993, Pat. No. 5,296,154, which is a division of Ser. No. 936,700, Aug. 27, 1992, Pat. No. 5,230,714, which is a division of Ser. No. 714,579, Jun. 13, 1991, Pat. No. 5,160,648, which is a division of Ser. No. 390,439, Aug. 3, 1988, Pat. No. 5,053,152, which is a continuation of Ser. No. 711,799, Mar. 14, 1985, abandoned. This application Nov. 15, 1993, Ser. No. 153,060

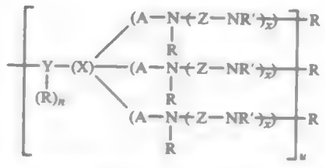
Int. Cl.[5] C10L *1/22*

U.S. Cl. 44—338 **9 Claims**

1. A fuel composition comprising a major proportion of a normally liquid fuel and a minor proportion of a polyamine comprising units of the formula:



or



wherein R is independently hydrogen or C_{1-7} hydrocarbyl; R′ is hydrogen, alkyl or $NH_2R''(NR'')_y$ wherein y is a number in the range from 1 to about 6 and R″ is an alkylene group of 1 to about 10 carbon atoms; Y represents N or O; X is an alkylene group; A is hydrocarbyl; Z is a heterocyclic ring containing at least one nitrogen atom; x is a number in the range from 1 to about 10; u is an integer greater than 1; and n is 0 or 1.

5,368,616

METHOD FOR DECREASING AIR POLLUTION FROM BURNING A COMBUSTIBLE BRIQUETTE

David F. Natschke, Apex; Christopher C. Lutes, and Jeffrey V. Ryan, both of Chapel Hill, all of N.C., assignors to Acurex Environmental Corporation, Durham, N.C.

Filed Jun. 11, 1993, Ser. No. 76,352

Int. Cl.[5] C01L *5/02*

U.S. Cl. 44—559 **13 Claims**

1. A method of decreasing air pollution resultant from burning a combustible carbonaceous material in a natural draft furnace, said method comprising decreasing emissions that cause air pollution by burning a combustible carbonaceous material, wherein the combustible carbonaceous material consists essentially of an admixture of a carbonaceous substance and a non-combustible binder material in the form of bricks, and wherein the bricks have been prepared by treating a carbonaceous substance with a non-combustible binder material, said treating being by mixing from about 70 to about 90 parts by volume of particles of the carbonaceous substance with about 30 to about 10 parts by volume of the non-combustible binder material, the binder material being clay, in a sufficient amount of water to obtain a moldable mixture, molding the aqueous mixture into a brick form, allowing the brick form to dry, and burning the bricks of carbonaceous substance treated with non-combustible clay binder material in a natural draft furnace at a temperature ranging from about 700° F. (about 371° C.) to about 1400° F. (about 760° C.), whereby the emissions are decreased from about 50 to about 90% as compared to the emissions from burning comparably sized carbonaceous substance free of any treatment with non-combustible clay binder material.

5,368,617

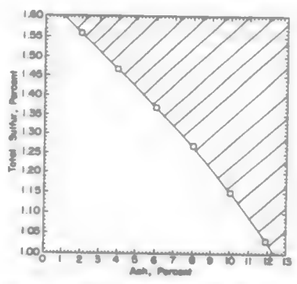
PROCESS FOR REDUCING SULFUR EMISSIONS WITH CALCIUM-CONTAINING SORBENTS

James K. Kindig, Boulder, Colo., assignor to Genesis Research Corp., Carefree, Ariz.

Continuation-in-part of Ser. No. 775,860, Oct. 15, 1991, which is a continuation-in-part of Ser. No. 492,312, Mar. 6, 1990, Pat. No. 5,096,066, which is a continuation of Ser. No. 126,419, Nov. 30, 1987, abandoned. This application Apr. 30, 1992, Ser. No. 876,496

Int. Cl.[5] C10L *9/00, 10/00, 5/00*

U.S. Cl. 44—622 **19 Claims**



1. A process for reducing the emission of sulfur oxides from the combustion of coal, comprising:

(a) combusting a fuel mixture of sulfur-containing coal and calcium-containing sulfur sorbent, said coal comprising coal particles resulting from aggressively beneficiating raw coal, wherein said aggressive beneficiation comprises (i) separating the raw coal into a coarse size fraction and a fine size fraction (ii) density separating the coarse fraction into a clean coal fraction, a refuse fraction and a middling fraction, (iii) comminuting said middling fraction, and (iv) combining said comminuted middling fraction with said fine fraction and further beneficiating the combined fraction, said calcium-containing sulfur sorbent comprising a calcium-containing compound selected from the group consisting of lime, limestone, hydrated lime, calcium oxide, dolomite, burnt dolomite, hydrated dolomite and combinations thereof, at least a portion of calcium in said sulfur sorbent reacts with sulfur oxides emitted during the combustion of coal, said combusting producing a flue gas comprising sulfur and calcium derived from said sulfur sorbent;

(b) following said combusting, allowing a first portion of said calcium in the flue gas to react with a first portion of said sulfur in the flue gas in a first stage of sulfur capture in a high temperature region following combustion;

(c) following said reaction of said first portion of said calcium in the flue gas, cooling said flue gas to a temperature within about 100° F. above the condensation temperature using heat exchange or adding water to the flue gas said condensation temperature is the temperature at which aqueous liquid condenses from said flue gas; and

(d) following said cooling, allowing a second portion of said calcium in the flue gas to react with a second mortion of said sulfur in the flue gas at a temperature within about 100° F. above the condensation temperature of the flue gas stream in a second stage of sulfur capture prior to particulate separation from said flue gas, said second stage of sulfur capture having a residence time of greater than about 0.1 second.

5,368,618

METHOD OF MAKING A COATED ABRASIVE ARTICLE

Craig A. Masmar, Washington; Douglas S. Spencer, Ramsey, and Elizabeth C. Edblom, Hennepin, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 823,861, Jan. 22, 1992, abandoned. This application Nov. 3, 1992, Ser. No. 970,950
The portion of the term of this patent subsequent to Oct. 25, 2010, has been disclaimed.
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 41 Claims



1. A method of preparing a coated abrasive article comprising the steps of:
(a) providing a backing;
(b) applying a make coat precursor to said backing;
(c) partially curing said make coat precursor;
(d) applying a plurality of abrasive grains into said partially cured make coat precursor; and
(e) completely curing said partially cured make coat precursor.

5,368,619

REDUCED VISCOSITY SLURRIES, ABRASIVE ARTICLES MADE THEREFROM AND METHODS OF MAKING SAID ARTICLES

Scott R. Culler, Barnesville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 992,137, Dec. 17, 1992, abandoned. This application Jan. 5, 1994, Ser. No. 177,595
Int. Cl.[5] B24D *3/24*
U.S. Cl. 51—308 8 Claims

1. A coated abrasive of the type having a flexible backing having an abrasive coating thereon, wherein the abrasive coating is derived from a slurry which consists essentially of from about 20 to about 95 dry weight percent polymerizable resin, from about 30 to about 70 dry weight percent abrasive particles, and from about 0.01 to about 30 dry weight percent modifying silica particles by, based on dry weight of said slurry.

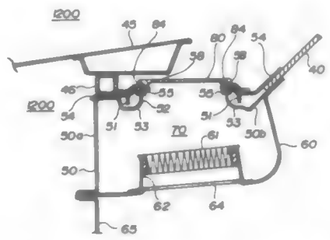
5,368,620

DEVICE FOR CLEANING SURROUNDING AIR FED TO PASSENGER COMPARTMENT OF MOTOR VEHICLE

Takatoshi Chiba, and Shigeru Kobayashi, both of Omiya, Japan, assignors to Kansei Corporation, Omiya, Japan

Filed Aug. 31, 1993, Ser. No. 113,639
Claims priority, application Japan, Sep. 1, 1992, 4-233557; Sep. 1, 1992, 4-233558; Oct. 23, 1992, 4-286339; Oct. 26, 1992, 4-287805; Dec. 28, 1992, 4-347524; Dec. 28, 1992, 4-347631
Int. Cl.[5] B01D *35/143*
U.S. Cl. 55—274 15 Claims

1. An air cleaning device for use in a motor vehicle having an engine room, a cowl top structure, a dash upper panel and a passenger compartment, said air cleaning device comprising:
an air box comprising said cowl top structure and said dash upper panel;
first means providing a fluid communication between the interior of said air box and the surrounding air;
second means providing a fluid communication between the interior of said air box and the passenger compartment;
an air filter holder positioned in said air box;
an air filter element detachably held by said air filter holder, so that the air directed from said air box to the passenger compartment through said second means is filtered by said air filter element;
third means defining in an upper part of said cowl top structure an opening;
a cowl top cover secured to said upper part of said cowl top structure to cover the opening of said cowl top structure;



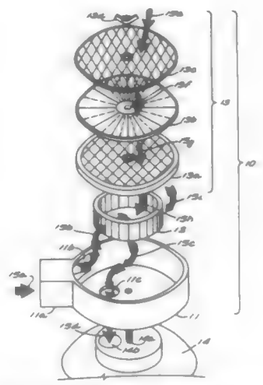
fourth means defining in said cowl top cover an inspection aperture which is positioned above said air filter holder; and
a lid detachably connected to said cowl top cover in a manner to cover said inspection aperture.

5,368,621

FILTERING AIR CLEANER COVER FOR INTERNAL COMBUSTION ENGINE

Stephen R. Pool, 1516 S. Marvin, Tucson, Ariz. 85710

Filed Aug. 31, 1993, Ser. No. 115,212
Int. Cl.[5] B01D *29/07*
U.S. Cl. 55—323 12 Claims



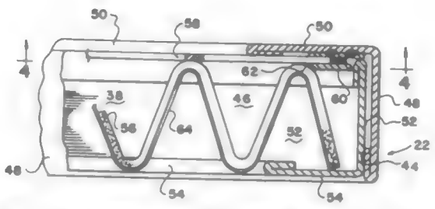
1. An air cleaning apparatus for internal combustion engines comprising:
a) a substantially bowl shaped air cleaner body having,
1) a sidewall portion,
2) a bottom portion,
3) an air inlet aperture formed in said sidewall portion,
4) an air outlet aperture formed in said bottom portion, and,
5) a top opening;
b) a cylindrical air filter positioned inside said air cleaner body; and,
c) a filtering cover, said filtering cover covering said top opening of said air cleaner body and filtering air which passes through said filtering cover and into the cavity formed by said air cleaner body and said filtering cover, said filtering cover having,
1) a filtering element, and,
2) a perforated frame means for supporting said filtering element.

5,368,622

AIR CONDITIONER FILTER FRAME

Donald C. McMillon, P.O. Box 187, Snyder, Tex. 79549

Filed Aug. 27, 1993, Ser. No. 113,847
Int. Cl.[5] B01D *35/00, 46/00*
U.S. Cl. 55—497 1 Claim



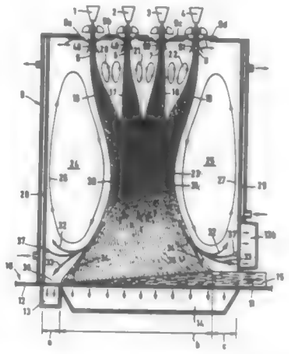
1. A filter unit adapted to be used in a space heating and air-conditioning unit having
a) a heat transfer compartment above
b) a fan compartment having
i) a top structure,
ii) a bottom structure,
iii) two side structures,
iv) a back structure, and
v) a front structure,
c) a fan attached to the top structure,
d) a removable closure over an opening in the front structure, and
e) an air inlet in at least one of the bottom and side structures;
f) said filter unit comprising:
g) a filter holder having a rectangular outer element and a rectangular inner element,
h) said outer element and inner element form a rectangular frame having a perimeter,
j) each element having
i) four sides connected together as a rectangle,
ii) each side having two legs forming an L-shaped cross section with
iii) one of the legs called a band leg having a width of about the thickness of a filter to be held,
iv) the other of said legs called a lip leg having a width of at least as much as the width of the band leg,
v) said band leg forming the perimeter of the rectangle and the lip leg extending inward from the band leg, the lip leg thus forming a lip,
vi) each of the legs each having a thickness which is equal to the thickness of the other leg;
k) the outer element having a length and width equal to a length and a width of the inner element plus more than four times the thickness of the legs, so that the elements may telescope together snugly,
l) a rectangular filter between the inner and outer elements which are removably and snugly telescoped together,
m) lip legs on the elements forming means to hold the filter in place between the elements,
n) a retaining screen on one of the elements to hold the filter in place between the elements,
o) a plurality of U-shaped clips,
p) each clip having a leg attached to one of the lip legs,
q) each clip bent over a portion of the retaining screen thereby holding it in place, and
r) said retaining screen extending over the area of the rectangle.

5,368,623

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF MINERAL WOOL NONWOVENS

Klemens Hirschmann, Ilvesheim, and Joachim Mellem, Schriesheim, both of Germany, assignors to Grunzweig & Hartmann AG, Ludwigshafen, Germany

Continuation of Ser. No. 912,171, Jul. 13, 1992, Pat. No. 5,296,013. This application Jan. 3, 1994, Ser. No. 176,472
Claims priority, application Germany, Dec. 17, 1991, 4141659
Int. Cl.[5] C03B *37/06*
U.S. Cl. 65—454 4 Claims



1. A process for continuous production of mineral wool nonwoven fabrics, comprising the steps of:
discharging a generally vertical stream of mineral wool fibers together with process air into a chute;
accumulating the fibers on a nonwoven formation zone of a conveyor beneath the chute;
applying suction with suction means and through the nonwoven formation zone of the conveyor to extract a portion of the process air through the conveyor and adhere the fibers to the conveyor, wherein another portion of the process air is deflected upward from the conveyor; and
leaving sufficient space between the stream of mineral wool and at least one wall of said chute that the upwardly deflected process air has a velocity no higher than a drop velocity of wool flocks in the upwardly deflected process air.

5,368,624

METHOD AND APPARATUS FOR EQUALIZING THE TEMPERATURE PROFILE OF GLASS SHEETS IN A ROLLER-EQUIPPED FURNACE INCLUDED IN A HORIZONTAL TEMPERING PLANT

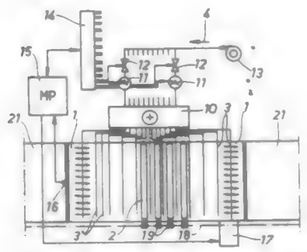
Esko O. Lehto, Kangasala; Jukka H. Vehmas, and Jorma K. J. Vitkala, both of Tampere, all of Finland, assignors to Tamglass Engineering Oy, Tampere, Finland

PCT No. PCT/FI91/00404, § 371 Date Jun. 16, 1993, § 102(e) Date Jun. 16, 1993, PCT Pub. No. WO92/12099, PCT Pub. Date Jul. 23, 1992
PCT Filed Dec. 20, 1991, Ser. No. 75,566
Claims priority, application Finland, Dec. 27, 1990, 906398
Int. Cl.[5] C03B *27/044*
U.S. Cl. 65—29.19 11 Claims

1. A method for equalizing the temperature profile of glass sheets in a roller-equipped furnace included in a horizontal tempering plant, comprising the steps of:
carrying a glass sheet horizontally through a furnace on a conveyor consisting of horizontal rollers;
exposing upper and lower surfaces of said glass sheet to a heat effect by resistance elements fitted in said furnace above and below said glass sheet and said rollers
blasting air into said furnace near said upper surface as narrow jets which, through injector action, create a turbulent

flow of hot air contained in said furnace near said upper surface, wherein said upper surface is exposed at least in an early stage of heating to an intensified convection heat effect to equalize a total heat effect applied to the upper and lower surfaces of the glass sheet,

wherein the blasting of air is directed from a plurality of pipes arranged successively in a longitudinal direction as one of individual pipes and pipe arrays consisting of at least two pipes;



sensing a position of said glass sheet being carried on said rollers; and

controlling said blasting of air from said pipes by selectively opening and closing valves connected to each pipe or pipe array responsive to the sensed position of said glass sheet in the furnace,

wherein the blasting is only applied to a longitudinal section of said furnace in which the glass sheet is located.

5,368,625

CONVEYOR ROLL DEVICE FOR PRELIMINARILY BENDING SHEET GLASS

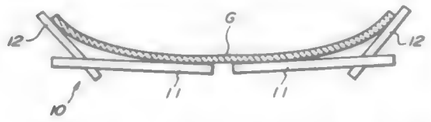
Tetsuya Mizusugi, Tokyo, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Filed Feb. 5, 1993, Ser. No. 14,129

Claims priority, application Japan, Feb. 6, 1992, 4-056168

Int. Cl.[5] C03B *23/02*

U.S. Cl. 65—273 **19 Claims**



1. An apparatus for preliminarily bending a glass sheet heated nearly to a softening point thereof by a heating furnace while the glass sheet is fed relative to a central axis in a feed path direction from the heating furnace to a bending press, said glass sheet having a central portion and a marginal edge portion, the apparatus comprising:

a plurality of spaced-apart first straight rolls for supporting the central region of the glass sheet; and

a plurality of spaced-apart second straight rolls for supporting the marginal edge portion of the glass sheet, said second straight rolls having first ends closer to the central axis and second ends farther from the central axis;

means for moving the second straight rolls including the first and second ends toward and away from the central axis; and

means for vertically tilting the second straight rolls through progressively differing angles, respectively, along the feed path direction with respect to the first straight rolls.

5,368,626

GROWTH MEDIUM AND METHOD

Daniel N. Schauda, Inverness, Ill., assignor to Chicago International Corp., Ltd., Barrington, Ill.

Filed Apr. 18, 1991, Ser. No. 687,374

Int. Cl.[5] C05F *15/00, 5/00, 3/00*

U.S. Cl. 71—23 **16 Claims**

1. A growth medium having an enhanced ability to sustain plants, the growth medium consisting essentially of:

a water retention component comprising rice grain polish, vegetation selected from the group consisting of corn, sugar cane and sunflower stalks and short mineral wool fibers; and

soil.

5,368,627

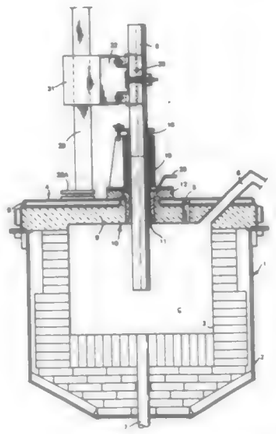
TREATMENT OF OXIDE-CONTAINING DUSTS

Peter M. Cowz, 3 New Cottages, Berrycroft, Ashbury, Wiltshire SN6 8LX, Great Britain

Filed Feb. 19, 1993, Ser. No. 45,342

Int. Cl.[5] H05B *7/12;* **C21C** *5/52;* **F27B** *14/06*

U.S. Cl. 75—10.19 **17 Claims**



1. A furnace for smelting particulate metal oxides, the furnace comprising an outer shell having a refractory lining and a roof, the shell and roof defining a heat treatment chamber, means for supplying gas into the chamber, fixed electrode means mounted in a wall of the chamber and movable electrode means mounted in the roof of the furnace for movement into and out of the chamber to draw an arc between the electrodes thereby to form a plasma of the gas, wherein the movable electrode means comprises carbonaceous material and being surrounded by gaseous shielding means to urge particles of metal oxides away from the lining to prevent condensation of conductive metal therein.

5,368,628

ARTICLES OF ULTRA FINE GRAINED CEMENTED CARBIDE AND PROCESS FOR MAKING SAME

John W. Friedericha, West Branch, Mich., assignor to Valenite Inc., Madison Heights, Mich.

Filed Dec. 21, 1992, Ser. No. 993,791

Int. Cl.[5] C22C *29/08*

U.S. Cl. 75—242 **7 Claims**

1. An ultra fine grained cemented carbide article made by sinter hipping a composition consisting essentially of:

(a) from about 6 to 15% by weight of a ferrous metal selected from the group consisting of cobalt, nickel or mixtures thereof;

(b) up to about 1% by weight of a transition metal carbide selected from the group consisting of TiC, TaC, NbC, HfC, ZrC, MO2C, VC, and mixtures thereof; and



(c) the balance consisting essentially of WC having an ultra fine grain size below about 0.6 microns.

5,368,629

ROTOR FOR OIL PUMP MADE OF ALUMINUM ALLOY AND METHOD OF MANUFACTURING THE SAME

Katsuyoshi Kondo, and Yoshinobu Takeda, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

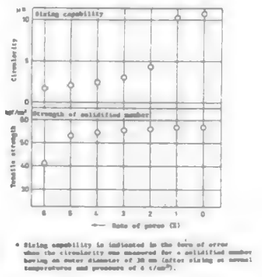
PCT No. PCT/JP92/00414, § 371 Date Dec. 3, 1992, § 102(e) Date Dec. 3, 1992, PCT Pub. No. WO92/17302, PCT Pub. Date Oct. 15, 1992

PCT Filed Apr. 3, 1992, Ser. No. 949,646

Claims priority, application Japan, Apr. 3, 1991, 3-71115; Apr. 15, 1991, 3-82476; May 23, 1991, 3-118658; Aug. 6, 1991, 3-196582

Int. Cl.[5] B22F *3/14;* **C22C** *1/04, 21/02*

U.S. Cl. 75—249 **4 Claims**



* Sizing capability is indicated in the form of error when the circularity was measured for a solidified member having an outer diameter of 30 mm (after sizing at normal temperature and pressure of 4 t/cm²).

4. A rotor for an oil pump comprising an inner rotor and an outer rotor both made of an aluminum powder alloy, the inner or outer peripheral surface of said rotors having the shape of a trochoid curve or an involute curve or any other toothed shape suitable as a pump rotor, one or both of said inner and outer rotors being generated by the powder metallurgical method, wherein said rotor is made of an aluminum powder alloy obtained by rapidly solidifying a material alloy at a cooling rate of 10^2–10^6° C./sec, and containing, in terms of weight, 5–17% of Si as a first alloy element; a total of 15% or less of transition elements as second alloy elements comprising 3–10% of Fe, 3–10% of Ni and 1–8% of Cr; a total of 5% or less of at least one alloy element as third alloy elements selected from the group consisting of Mo, V, Zr each 1–5%; and 1–5% of Cu, 0.2–1.5% of Mg and 0.2–1% of Mn as fourth alloy elements; the remainder being aluminum and unavoidable impurities whereby said rotor reveals excellent mechanical properties at normal and high temperatures.

5,368,630

METAL POWDER COMPOSITIONS CONTAINING BINDING AGENTS FOR ELEVATED TEMPERATURE COMPACTION

Sydney Lak, Lafayette Hill, Pa., assignor to Hoeganaes Corporation, Riverton, N.J.

Filed Apr. 13, 1993, Ser. No. 46,234

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—252 **30 Claims**

1. An improved metallurgical powder composition comprising:

(a) an iron-based metal powder;

(b) a minor amount of at least one alloying powder;

(c) an amount up to about 15% by weight of a high temperature compaction lubricant, said amount sufficient to allow compaction of the powder composition at elevated temperatures in a die, said lubricant comprising a polyamide lubricant that is the reaction product of about 10–30 weight percent of a C_6–C_{12} linear dicarboxylic acid, about 10–30 weight percent of a C_{10}–C_{22} monocarboxylic acid, and about 40–80 weight percent of a diamine having the formula $(CH_2)_x(NH_2)_2$ where x is 2–6; and

(d) a minor amount of an organic binder for the iron-based and alloying powders, the binder comprising a resin selected from the group consisting of:

(1) cellulose ester resins;

(2) hydroxy alkylcellulose resins wherein the alkyl moiety has from 1–4 carbon atoms; and

(3) thermoplastic phenolic resins.

5,368,631

DESULFURIZATION AGENT

W. Neil Roesborough, Bay Village, and Harry E. Trout, Avon, both of Ohio, assignors to Roesborough Manufacturing Company, Avon Lake, Ohio

Continuation of Ser. No. 966,805, Oct. 26, 1992. This application Feb. 14, 1994, Ser. No. 194,889

Int. Cl.[5] C21C *7/02*

U.S. Cl. 75—533 **10 Claims**

1. A method for desulfurizing ferrous materials which comprises adding a gas-evolving desulfurization agent to a molten ferrous material, the evolving gas agitates said desulfurization agent and said molten ferrous material to increase the efficiency of sulfur removal from said molten ferrous material, said desulfurization agent includes a calcium compound and a gas-forming composite material, said gas-forming composite material comprising a gas-producing compound, a silicon compound and at least 50 weight percent of a magnesium component, said magnesium component selected from the group consisting of elemental magnesium and a magnesium alloy.

5,368,632

REDOX POLYMER FILMS FOR METAL RECOVERY APPLICATIONS

Krishnan Rajeshwar; Chang Wei, and Sanjay Basak, all of Arlington, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 6, 1993, Ser. No. 43,517

Int. Cl.[5] C22B *3/24*

U.S. Cl. 75—721 **25 Claims**

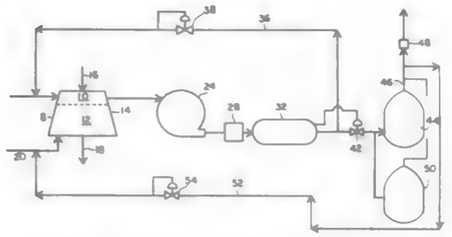
1. A method of metal recovery from an aqueous solution comprising reaction of a metal ion with a reduced form of a redox polymer capable of reducing the metal ion and recovering reduced metal ions.

5,368,633

PRESSURIZED RADIOACTIVE GAS TREATMENT SYSTEM

Joseph T. Foldyna; Donald J. Carpenter, and John M. Cron, all of Boise, Id., assignors to Morrison-Knudsen (an Idaho corporation), Boise, Id.

Filed Aug. 12, 1993, Ser. No. 105,398
Int. Cl.[5] B01D *46/00*
U.S. Cl. 95—19 **12 Claims**



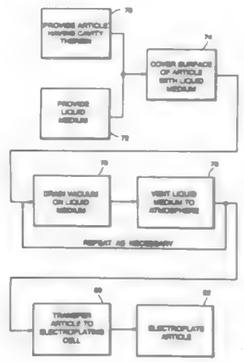
1. A method of collecting and disposing of radioactive gas released from other material which comprises:
(a) containing the other material in a container not vented to atmosphere;
(b) injecting carrier gas into the unvented container;
(c) transferring the carrier gas and radioactive gas from the unvented container to a decay vessel;
(d) controlling the gaseous pressure within the unvented container at a predetermined pressure at, above or below atmospheric pressure by recycling at least a portion of the gases transferred from the unvented container back into the unvented container;
(e) controlling the pressure at which the recycled gas is reintroduced into the unvented container;
(f) holding the radioactive gas and carrier gas in the decay vessel for a period of time to allow the radioactive gas to decay to a predetermined level of radioactivity; and
(g) releasing the carrier gas and radioactive gas from the decay vessel when the radioactivity of the radioactive gas has dropped to the predetermined level of radioactivity.

5,368,634

REMOVING BUBBLES FROM SMALL CAVITIES

Le Roy H. Hackett, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 26, 1993, Ser. No. 98,482
Int. Cl.[5] B06B *1/10*
U.S. Cl. 95—260 **10 Claims**



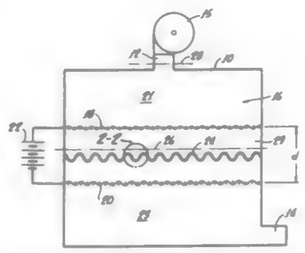
1. A method for removing bubbles formed in small cavities in an article when the article is covered with a liquid medium, comprising the steps of:
providing the article with a cavity in a surface thereof;
covering the surface of the article with the liquid medium, wherein said liquid medium is an aqueous liquid medium;
drawing a vacuum on the liquid medium so that gas in the liquid medium diffuses into the bubbles in the cavity and causes the bubbles to grow and become displaced from the cavity; and
venting the vacuum to atmosphere to make the bubbles disengage from the article and float upwardly.

5,368,635

FILTER FOR PARTICULATE MATERIALS IN GASEOUS FLUIDS

Yujiro Yamamoto, 1201 Via LaJolla, San Clemente, Calif. 92672

Continuation of Ser. No. 17,300, Feb. 12, 1993, abandoned, which is a continuation of Ser. No. 805,006, Dec. 11, 1991, abandoned. This application Apr. 20, 1994, Ser. No. 230,474
Int. Cl.[5] B03C *3/30*
U.S. Cl. 96—17 **21 Claims**



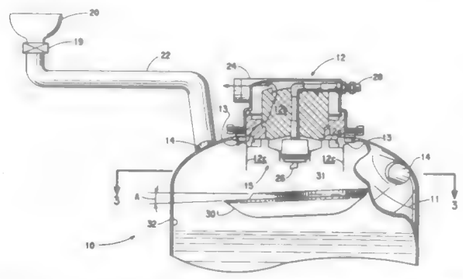
1. Filter apparatus for trapping particles suspended in a gaseous fluid stream, said filter apparatus comprising:
a) filter chamber means for defining an air flow path between an inlet and an outlet;
b) a porous filter positioned in said flow path, said porous filter comprising a dielectric fibrous material having a pore size substantially larger than the average diameter of the particles to be trapped, said filter having a collection surface thereon substantially larger than a cross section of the flow path;
c) impelling means for causing said gaseous fluid stream and particles suspended therein to flow along said flow path and through said porous filter;
d) spaced apart non-ionizing electrode means, positioned in an operative relationship with said porous filter material, for increasing a residence time of the particles in and about said porous filter in order to cause multiple passes of the particles through the filter as the gaseous fluid stream passes through the porous filter for enhancing trapping of said particles by said porous filter, said electrode means being parallel, positioned between said inlet and outlet and having openings therein so as not to significantly affect air flowing therethrough, said electrode means comprising a pair of electrodes positioned in a spaced relationship with the porous filter material therebetween, said air flowing sequentially through one electrode, the porous filter, and then through another of the pair of electrodes; and
e) means for applying a selected DC voltage across the electrode means, the DC voltage being selected to prevent ionization of particles passing through the filter, the operation of the filter for trapping particles being dependent more on the selected DC voltage than on the electrode spacing.

5,368,636

WASTE TANK FOR VACUUM SEWAGE SYSTEM

Larry J. Ashton, Mapleton, Utah, and John F. Sollinger, Newark, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 967,034, Oct. 27, 1992, Pat. No. 5,284,507. This application Oct. 20, 1993, Ser. No. 138,308
The portion of the term of this patent subsequent to Feb. 8, 2011, has been disclaimed.
Int. Cl.[5] B01D *19/00*
U.S. Cl. 96—195 **1 Claim**



1. A waste tank for a vacuum sewage system for serving the sanitation needs of aircraft passengers and crew, said tank having a continuous sidewall about a center, a top, a bottom, an inlet for admitting air and sewage tangentially through the sidewall of the tank, and an outlet for exhausting air from the top of the tank, said inlet and outlet being above the maximum liquid filling level in the tank, and a shelf attached to and extending from said sidewall into the tank and terminating in a lip angled upwardly toward the center of the tank, said shelf extending partially around said sidewall and being directed downwardly from said inlet, said shelf being located above said filling level and below said inlet whereby interaction between air being admitted through said inlet and the liquid in the tank is reduced, said waste tank including a rotary spray nozzle centrally mounted to said top of said tank through which spray liquid is forced and which rotates by the reactive force of the liquid spray ejected from the nozzle, said nozzle being directed toward said sidewalls, said waste tank including a means for separating entrained liquid from air located in the top of the tank, said tank being formed of a filament wound graphite ribbed structure impregnated with epoxy resin, there being an abrasion resistant fluorocarbon resin coating the inside surfaces of said tank.

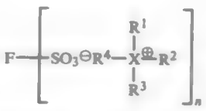
5,368,637

WATER-INSOLUBLE SULPHUR DYES, THEIR PREPARATION AND USE

Wolfgang Bauer, Maintal; Willi Steckelberg, Hofheim/Ts; Josef Ritter, Bad Soden, and Wilhelm Manelshagen, Bad Camberg, all of Germany, assignors to Cassella AG, Frankfurt, Germany

Filed Nov. 1, 1993, Ser. No. 143,619
Claims priority, application Germany, Nov. 11, 1992, 4237985
Int. Cl.[5] C08K *5/46*
U.S. Cl. 106—22 H **17 Claims**

1. Water-insoluble sulphur dyes comprising the general formula I



(I)

in which F is the dye chromophore of C.I. Sulphur Black 1, Sulphur Black 2, Sulphur Black 5, Sulphur Black 6, Sulphur Black 7, Sulphur Black 10, Sulphur Black 11 or Sulphur Black 12;
n is from about 1 to about 6;
X is nitrogen or phosphorus;
R^1, R^2, R^3 and R^4, independently of one another, are hydrogen, with the restriction that not all are simultaneously hydrogen; $(C_1–C_{30})$-alkyl; $(C_1–C_{14})$-alkoxyethyl; $(C_1–C_{14})$-alkoxypropyl; oxyethyl of the general formula $(CH_2—CH_2—O)_{32}R^5$, R^5 being hydrogen $(C_1–C_4)$-alkyl and m being 1 to 5; $(C_5–C_{12})$-cycloalkyl;
phenyl or naphthyl each of which is unsubstituted or mono- or polysubstituted by $(C_1–C_{14})$-alkyl, $(C_1–C_{14})$-alkoxy $(C_1–C_{14})$-alkoxycarbonyl or halogen;
$(C_6–C_{12})$-aryl-$(C_1–C_6)$-alkyl,
it being possible for the radicals mentioned to be additionally substituted by hydroxyl, $(C_1–C_4)$-alkoxy or primary, secondary or tertiary amino groups and for the radicals R^1 and R^2 together with X to form a 5- or 6-membered ring system which is substituted or unsubstituted or contains further heteroatoms.

5,368,638

NATURAL EAR PLUG COMPOSITION

Joseph F. Tokarz, 211 Van Ness Ave., Ashland, Oreg. 97520

Filed Jun. 28, 1993, Ser. No. 82,104
Int. Cl.[5] C08L *3/06*
U.S. Cl. 106—212 **6 Claims**

1. A composition, especially useful for earplugs comprising: about 1 part by volume wax, 4 parts by volume starch based acid ester of a dicarboxylic acid, 1 part by volume lanolin and an amount of cotton fiber effectively able to make said composition structurally integral.

5,368,639

ORGANOSILICON-TREATED PIGMENT, PROCESS FOR PRODUCTION THEREOF, AND COSMETIC MADE THEREWITH

Yukio Hasegawa, Kasukabe; Ryota Miyoshi, Yono, and Isao Imai, Kuki, all of Japan, assignors to Miyoshi Kasei Co., Ltd., Urawa, Japan

Filed Jun. 25, 1992, Ser. No. 903,225
Claims priority, application Japan, Jun. 26, 1991, 3-250164
Int. Cl.[5] C04B *14/04;* **A61K** *7/00*
U.S. Cl. 106—490 **3 Claims**

1. An organosilicon-treated pigment which comprises a pigment or extender pigment treated with a linear reactive alkylpolysiloxane having terminal amino groups, imino groups, halogen atoms, hydroxyl groups, or alkoxyl groups, and having a degree of polymerization of 30–1,000 whereby said alkylpolysiloxane is adhered in an oriented mode to the surface of the pigment or extender pigment.

5,368,640

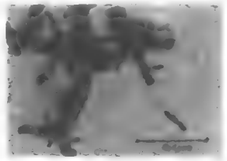
TRANSPARENT IRON OXIDE PIGMENTS, PROCESSES FOR THEIR PRODUCTION AND THEIR USE

Ulrike Pitzer; Klaus Lerch, and Gunter Buxbaum, all of Krefeld, Germany, assignors to Bayer AG, Leverkusen

Filed Oct. 12, 1993, Ser. No. 134,586
Claims priority, application Germany, Oct. 23, 1992, 4235945
Int. Cl.[5] C01G *49/02*
U.S. Cl. 106—456 **16 Claims**

1. Transparent iron oxide pigments consisting essentially of

particles composed of clusters of iron oxide needles, said particles having a predominantly stellar habit, wherein said parti-



cles have an average particle size, based on the longest needle axis, of less than 0.1 μm.

5,368,641

MODIFIED 2,9-DIMETHYLQUINACRIDONE PIGMENTS, PROCESS FOR THEIR MANUFACTURE AND A METHOD FOR PIGMENTING OR LACQUER SYSTEMS WITH THESE PIGMENTS

Erwin Dietz, Kelkheim, and Adolf Kroh, Selters, both of Germany, assignors to Hoechst AG, Frankfurt am, Germany

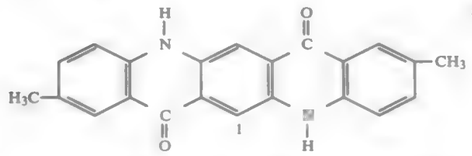
Continuation of Ser. No. 414,754, Sep. 28, 1989, abandoned. This application Dec. 22, 1992, Ser. No. 995,354

Claims priority, application Germany, Oct. 1, 1988, 3833423

Int. Cl.[5] C09B *48/00*

U.S. Cl. 106—495 **10 Claims**

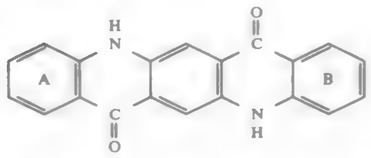
1. A process for the preparation of a 2,9-dimethylquinacridone pigment composition comprising: (a) 2,9-dimethylquinacridone pigment of the formula I



(I)

which has been obtained in a ring closure of 2,5-di(4'-methylphenylamino)terephthalic acid that was carried out in polyphosphoric acid or an ester thereof,

or (b) a mixed crystal of said pigment of formula (I) and a quinacridone which is unsubstituted or substituted in accordance with formula (II)



(II)

wherein the annellated benzene nuclei A and B are unsubstituted or substituted by 1 or 2 substituents selected from halogens, alkyl (C_1–C_6), alkoxy (C_1–C_6), H_2N—CO—, alkyl (C_1–C_8)—NH—CO or [alkyl(C_1–C_3)]$_2$N—CO—, or (c) a mechanical mixture of said 2,9-dimethylquinacridone and said substituted or unsubstituted quinacridone, comprising the step of:

adding a compound, in an amount of about 1% to 20% by weight,

a) to a ring closure solution of a precursor 2,5-diphenylaminoterephthal, in polyphosphoric acid or an ester thereof, or

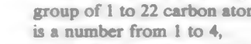
b) during the hydrolysis of the ring closure melt of said step a) or

c) before or during the finishing of the corresponding crude quinacridones in water or solvent mixtures at temperatures ranging from 60° C. to 200 ° C., or

d) to the acidic solution and before or during the finishing process, or

e) to the acidic solution and before and during the finishing process,

said compound having the general formula (III)



(III)

wherein

Q is a quinacridone radical which is unsubstituted or substituted by halogen atoms, alkyl (C_1–C_6), alkoxy (C_1–C_6), H_2N—CO—, alkyl(C_1–C_8)—NH—CO— or [alkyl(C_1–C_3)]$_2$N—CO,

A is a direct bond, —O—CR^2R^3, O—arylene—, —S—CR^2R^3—, —S—arylene—, —CO—NR^1—CR^2R^3—, —SO_2—NR^1—CR^2R^3—, —NR^1—CR^2R^3—, —CO—NR^1—arylene—, —SO_2—NR^1—arylene—, —CR^2R^3, and

Y is an NR^4R^5 group or the radical of a five-, six- or seven-membered heterocycle which contains one to three hetero atoms from the group consisting of nitrogen, oxygen, or sulfur, or mixtures thereof and can be substituted by alkyl (C_1–C_4), alkoxy (C_1–C_6), hydroxyphenyl, halogen, —CN, carboxyl, —CO—NRR', —SO_2—NRR', saturated or unsaturated hydroxyalkyl or alkylaminoalkyl, in which R and R' together with the nitrogen atom can be an aliphatic or aromatic heterocycle, R and R' are hydrogen atoms or alkyl (C_1–C_6), groups and R^1 to R^5, independently of one another, are each a hydrogen atom, an alkyl or alkylene group of 1 to 22 carbon atoms, or mixtures thereof, and n is a number from 1 to 4,

wherein the resulting said 2,9-dimethylquinacridone pigment, or said mixed crystal pigment of said 2,9-dimethylquinacridone and said substituted or unsubstituted guinacridone, or a mechanical mixture thereof have crystalline particles with an average ratio of length to width of <2:1, and an average particle size of <0.4 μm.

5,368,642

FUNCTIONALIZED POLYMERS CONTAINING AMINE GROUPINGS AND THEIR USE AS RETARDERS IN CEMENT SLURRIES

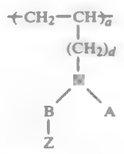
Klein A. Rodrigues, and Larry S. Eoff, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 20, 1993, Ser. No. 109,744

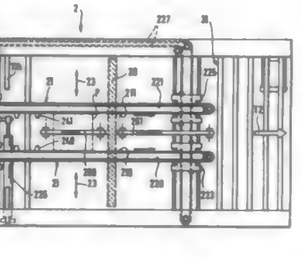
Int. Cl.[5] C04B *24/12*

U.S. Cl. 106—727 **20 Claims**

1. A cement composition comprising hydraulic cement, water present in an amount sufficient to form a pumpable slurry and a set retarder present in an amount in the range of from about 0.1 to about 2 pounds of set retarder per pound of dry cement in said slurry, said set retarder consisting of a functionalized polyethylene amine having attached thereto moieties selected from the group consisting of carboxylic acid groups and phosphonic acid groups, wherein the repeating unit of said functionalized polyamine is defined by the structural formula

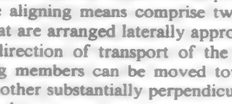


wherein B represents the structure



A is hydrogen or -(-B—Z),

Z is selected from the group consisting of



d is the number 0 or 1,

y is a number in the range of from 1 to 4,

a is a number in the range of from about 200 to 20,000 when d is 0 and 90 to 1800 when d is 1, and

b is a number from 0 to 3.

5,368,643

COATING APPARATUS FOR BOARDS

Kaspar Kuster, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1992, Ser. No. 973,479

Claims priority, application Germany, Nov. 13, 1991, 91810879

Int. Cl.[5] B05B *13/02*

U.S. Cl. 118—324 **11 Claims**

1. A coating apparatus for boards or rectangular workpieces that are to be coated with a coating composition, the apparatus comprising:

first transport means for transporting the boards to be coated;

aligning means that so align the boards to be coated that, after alignment, their side edges are arranged approximately parallel to the direction of transport of the board, wherein the aligning means comprise two straightening members that are arranged laterally approximately parallel to the direction of transport of the boards, which straightening members can be moved towards or away from one another substantially perpendicular direction of transport; and

a curtain coating device in which are provided second transport means that transport the boards coming from the first transport means under a curtain pouring head provided in the curtain coating device, which curtain pouring head is so arranged that the falling pouring curtain strikes the board along a line of impact extending transversely to the direction of transport of the board and thus coats that board,

wherein the speed with which the first transport means transports the boards is significantly different from the speed with which the second transport means transports the boards under the curtain pouring head, and

wherein the aligning means are designed such and are so arranged that, as they align the boards, they transfer them from the first transport means to the second transport means, and

wherein the straightening members are connected to transfer means, each of which defines an inclined plane that extends between a first transport plane that is defined by the first transport means and a second transport plane that is defined by the second transport means and extends substantially parallel to and above the first transport plane, and the transfer means lift the boards from the first transport means and transfer them via the inclined plane to the second transport means.

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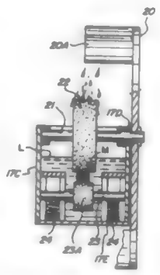
MECHANICAL SOLUTION APPLICATING DEVICE AND METHOD FOR CLEANING AND/OR LUBRICATING RAW STOCK MATERIAL

Cruz Delgado, 3205 Madison Ave., Unit 22, Bridgeport, Conn. 06606

Filed May 26, 1993, Ser. No. 67,222

Int. Cl.[5] B05C *3/02*

U.S. Cl. 118—405 **8 Claims**



1. A mechanical solution applicating device for applying a treating solution to elongate raw stock, said device comprising

a holding tank containing a supply of treating solution to be applied to the raw stock,

a bathing tank supported within said holding tank,

guide means formed in at least one opposed wall of each of said holding tank and bathing tank,

said guide means being disposed in axial alignment for receiving the raw stock being fed through said holding tank and bathing tank,

transfer means for effecting the transfer of treating solution from said holding tank to said bathing tank whereby the raw stock is coated with treating solution in said bathing tank as the raw stock is fed therethrough,

and drive means responsive to the feeding of said raw stock and being operatively connected to said transfer means for driving said transfer means that effecting the transfer of treating solution from the holding tank to the bathing tank in accordance with the feeding speed of the raw stock material.

5,368,645

VACUUM CHUCK FOR COATING APPARATUS

Hendrik F. Bok, Fairhaven, Mass., assignor to Specialty Coating Systems Inc., Indianapolis, Ind.

Filed Sep. 24, 1993, Ser. No. 126,324

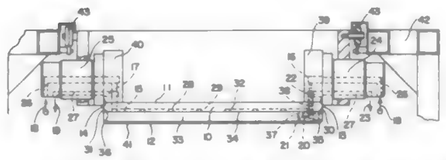
Int. Cl.[5] B05C *13/00;* **B23B** *5/22;* **B25B** *11/00*

U.S. Cl. 118—500 **10 Claims**

1. In an apparatus for coating the surface of an object with a coating material comprising:

a) a vacuum chuck assembly pivotably mounted in the apparatus between an upward position wherein the object can be placed onto the vacuum chuck assembly such that the surface of the object faces generally upward and a downward position wherein the surface of the object faces downward in a generally horizontal plane;

b) an applicator movably positioned beneath the vacuum chuck assembly to traverse the surface of the object in a generally parallel direction to the surface;
c) a means for introducing the coating material through the applicator onto the surface of the object; and
d) a means for heating the surface of the object;
the improvement wherein the vacuum chuck assembly comprises:
i) a plate assembly having an outer top side, an outer bottom side, a first end and a second end;
ii) a first conduit means connected to a source of heating and cooling fluid disposed in between the outer top side and the outer bottom side having an entrance port in



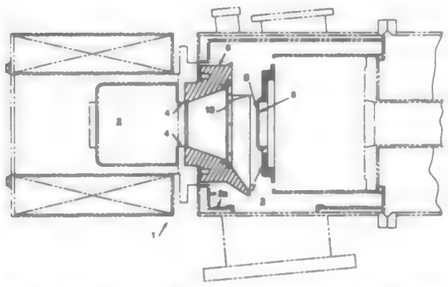
communication with at least one of the first end or the second end and an exit port in communication with at least one of the first end or the second end, said first conduit means for heating and cooling the object by passing a heat exchange fluid therethrough; and
iii) a second conduit means connected to a source of vacuum in the plate assembly which does not intersect with the first conduit means, said second conduit means having a suction port in communication with the outer bottom side and a discharge port in communication with at least one of the first end or the second end, said second conduit means for discharging a vacuum gas therethrough.

5,368,646

REACTION CHAMBER DESIGN TO MINIMIZE PARTICLE GENERATION IN CHEMICAL VAPOR DEPOSITION REACTORS

Arthur K. Yasuda, San Francisco; Dean R. Denison, San Jose; Randall S. Mundt, Pleasanton, and James E. Tappan, Milpitas, all of Calif., assignors to LAM Research Corporation, Fremont, Calif.

Continuation of Ser. No. 19,432, Feb. 18, 1993, which is a division of Ser. No. 623,090, Dec. 11, 1990, Pat. No. 5,200,232. This application Jan. 12, 1994, Ser. No. 180,495
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 R **28 Claims**



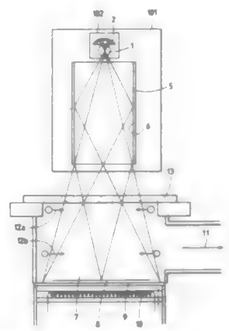
23. A plasma-enhanced chemical vapor deposition apparatus comprising:
a plasma shield comprising a first member having a line-of-sight surface thereon, a first control means for controlling deposition quality of the line-of-sight surface to improve adhesion and integrity of a film formed thereon when a film is deposited on a specimen in a reaction chamber of the apparatus as a result of a reaction with plasma gas, and first mounting means for mounting the first member in the reaction chamber so that a plasma reaction region is located between the line-of-sight surface and a specimen mounted for treatment in the reaction chamber; and
a plasma target comprising a second member having a target surface which comes into contact with a plasma gas in the reaction chamber, second control means for controlling deposition quality of the target surface to improve adhesion and integrity of a film formed thereon when a film is deposited on a specimen mounted on a specimen-supporting surface in the reaction chamber as a result of a reaction with plasma gas, and second mounting means for mounting the second member in the reaction chamber so that the target surface surrounds the specimen-supporting surface and so that the second member does not thermally affect a temperature of the specimen-supporting surface when the plasma gas contacts the target surface and the specimen-supporting surface.

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PHOTO-EXCITED PROCESSING APPARATUS FOR MANUFACTURING A SEMICONDUCTOR DEVICE THAT USES A CYLINDRICAL REFLECTING SURFACE

Nobumasa Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 901,161, Jun. 19, 1992, abandoned. This application Mar. 11, 1994, Ser. No. 208,903
Claims priority, application Japan, Jun. 26, 1991, 3-181722
Int. Cl.[5] C23C *16/00, 14/00;* **B05B** *5/00*
U.S. Cl. 118—723 I **3 Claims**



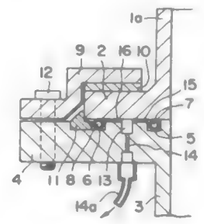
1. A photo-excited processing apparatus comprising:
a radiation source;
a reaction chamber provided with a light-transmissive window being filled therein with reacting gas photo-excited by a radiation beam transmitting through said transmissive window; and
an illumination member arranged between said irradiation source and said reaction chamber, said illumination member having a concave - cylindrical-shaped reflecting surface for reflecting a part of the irradiation beam coming from said irradiation source and making the irradiation beam coming from said radiation source incident onto said light-transmissive window provided in said reaction chamber.

5,368,648

SEALING APPARATUS

Hiroshi Sekizuka, Shiroyama, Japan, assignor to Tokyo Electron Sagami Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 832,317, Feb. 7, 1992, abandoned. This application Jan. 21, 1994, Ser. No. 183,893
Claims priority, application Japan, Feb. 26, 1991, 3-053099
Int. Cl.[5] C23C *16/00;* **F16J** *15/08*
U.S. Cl. 118—733 **22 Claims**



1. A heat-treatment apparatus comprising:
a first contacting portion formed on a flange of a process tube for containing objects to be processed, and a second contacting portion formed on a flange of a manifold, whereby said first and said second contacting portions define an inner-side mounting portion and an outer-side mounting portion which are separate from one another in a radial direction of said first and said second contacting portions;
a first retainer and a second retainer inserted between said first contacting portion formed on the flange of the process tube and said second contacting portion formed on the flange of the manifold, said first and said second retainers limiting tightening between the flange portions of the process tube and the manifold;
a first metal seal means and a second metal seal means mounted in said inner-side mounting portion and said outer-side mounting portion respectively, wherein said surface of said first metal seal means in said inner-side mounting portion includes processed nickel plating to improve the sealing characteristics and corrosion resistance, and said surface of said second metal seal means in said outer-side mounting portion includes a metal seal coated with a thin elastomer film thereon; and
an exhaust seal means for vacuum exhausting a middle portion between said first and said second metal seal means, whereby exhausting is carried out to bring said middle portion to a predetermined vacuum state.

5,368,649

WASHING AND DRYING METHOD

Hideo Tsukazaki, Toride, Japan, assignor to T.H.I. System Corporation, Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 931,377
Claims priority, application Japan, Jun. 19, 1992, 4-184647
Int. Cl.[5] B08B *3/12*
U.S. Cl. 134—1 **8 Claims**

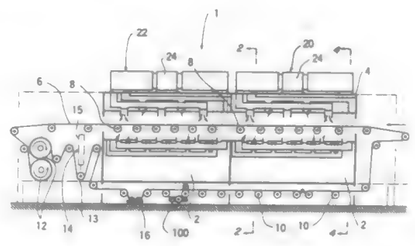
1. A washing and drying method, comprising the steps of:
closing a washing liquid tank, in which washing liquid is accommodated, airtight;
pressurizing the inside of said washing liquid tank to a pressure higher than the atmospheric pressure with gas while heating the washing liquid to a temperature higher than the boiling point the washing liquid has under the atmospheric pressure;
immersing a workpiece to be washed into the pressurized heated washing liquid to wash the workpiece with the washing liquid;
moving the workpiece from within said washing liquid tank into an evaporating drying chamber;
isolating said evaporating drying chamber airtight from said washing liquid tank by isolating means; and
immediately decompressing the inside of said evaporating drying chamber to a pressure equal to or lower than the atmospheric pressure to evaporate the washing liquid sticking to the workpiece;
wherein said evaporating drying chamber and said washing liquid tank are provided contiguously to each other so that a workpiece to be washed can be moved directly between them, and the closing step includes the step of isolating said washing liquid tank from said evaporating drying chamber by said isolating means.

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METHOD AND APPARATUS FOR WASHING CONVEYER BELT IN HEAT TREATMENT APPARATUS

Masaaki Tanaka, and Tomio Sugimoto, both of Sano, Japan, assignors to House Food Industrial Co., Ltd., Higashi-Osaka, Japan

Filed Mar. 30, 1993, Ser. No. 40,283
Claims priority, application Japan, Oct. 15, 1992, 4-276873
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—15 **11 Claims**



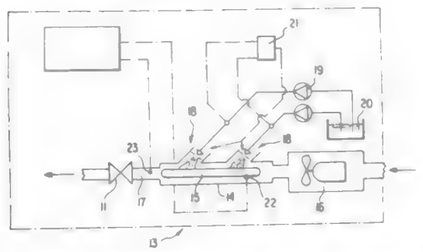
1. A method for washing a conveyer belt in a heat treatment apparatus having operational modes including a conveyor belt washing mode, the conveyor belt having components having configuration and positional relationships, comprising the steps of:
(a) providing a washing fluid bath containing a washing fluid;
(b) placing the washing fluid bath in a portion of a traveling path of the conveyor belt, within which bath at least one of the configuration and positional relationship of the components of the conveyor belt longitudinally varies, to dip the conveyor belt at the portion within the washing fluid bath;
(c) placing the washing fluid bath out of the traveling path of the conveyor belt in an operation mode of the heat treatment apparatus other than the conveyor washing mode; and
(d) driving the conveyor belt along the traveling path at a first speed in the operational modes of the heat treatment apparatus other than the conveyor belt washing mode and at a second speed different from the first speed in the conveyor belt washing mode.

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METHOD OF STEAM-TREATING SANITARY SYSTEMS AND/OR FOR DISINFECTING THE PIPELINES OF SANITARY SYSTEMS AND WHIRLPOOL SYSTEM FOR IMPLEMENTING THE METHOD

Hans-Peter Esser, Bergheim, Germany, assignor to Hoesch Metall+Kunststoffwerke GmbH & Co.

PCT No. PCT/EP92/00549, § 371 Date Jan. 14, 1993, § 102(e) Date Jan. 14, 1993, PCT Pub. No. WO92/16243, PCT Pub. Date Oct. 1, 1992
PCT Filed Mar. 12, 1992, Ser. No. 941,149
Claims priority, application Germany, Mar. 15, 1991, 4108539
Int. Cl.[5] B08B *3/02, 9/00, 9/093*
U.S. Cl. 134—22.1 **19 Claims**



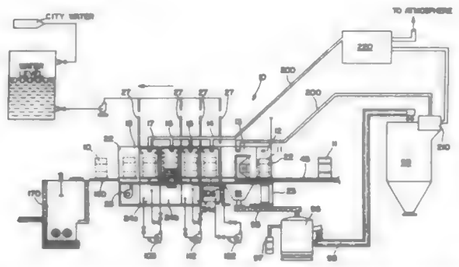
1. A method of disinfecting sanitary systems, comprising the steps of generating a heated fluid mist by vaporizing a liquid under influence of temperature at normal atmospheric pressure and applying the fluid mist to a surface to be disinfected.

5,368,652

METHOD FOR PURGING AND DECONTAMINATING A PRODUCT-CONTAINING STORAGE DRUM

Charles H. Mullinax, Charlotte, N.C., assignor to Industrial Piping, Inc., Pineville, N.C.

Division of Ser. No. 96,670, Jul. 23, 1993. This application Jan. 7, 1994, Ser. No. 178,517
Int. Cl.[5] B08B *3/02, 7/04, 9/12*
U.S. Cl. 134—22.18 **4 Claims**



1. A drum processing method of purging and decontaminating successive product-containing storage drums, said drum processing method comprising:

(a) placing the drum on a conveyer for moving the drum downstream to successive drum processing stations;

(b) removing a lid of the drum in a drum deheading station to provide an opening at one end of the drum;

(c) emptying the contents of the drum through said opening in the drum in a drum emptying station; and

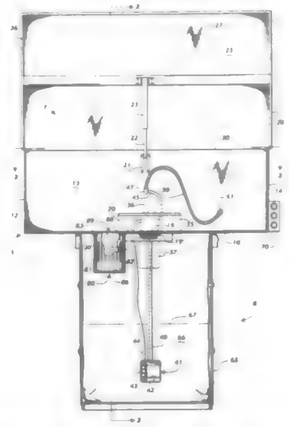
(d) cleaning the drum in at least one drum cleaning station downstream of said drum emptying station to remove contaminants from the interior and exterior surfaces of the drum, said cleaning step further comprising the step of passing the drum through a neutralizing station for rinsing the interior and exterior surfaces of the drum with a neutralizing liquid solution.

5,368,653

PARTS WASHER FOR CLEANING MECHANICAL PARTS

Michael L. Russell, Alpharetta, Ga., assignor to Layfield Company, Inc., Norcross, Ga.

Filed Jan. 10, 1994, Ser. No. 179,442
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—24 **28 Claims**



26. A method for clarifying and reclaiming liquid cleaning solvent in a parts washer for cleaning mechanical parts with liquid cleaning solvent, said parts washer having a sink with bottom wall and side wall means supported upon a reservoir, comprising the steps of:

mounting a filter cartridge downwardly into an opening in the bottom wall of the sink;

passing the liquid cleaning solvent under pressure from the reservoir through flexible hose means to the sink;

connecting said hose means in sealed fluid communication with a filter passage opening defined in the filter cartridge;

passing liquid cleaning solvent at greater than atmospheric pressure from said hose means into and through said filter cartridge and back into the reservoir;

whereby the liquid cleaning solvent used in the parts washer is clarified and reclaimed for continued use in cleaning mechanical parts within the parts washer.

5,368,654

PHOTOVOLTAIC SYSTEM USING REFLECTED SOLAR RAYS OF THE SURROUNDINGS AND METHOD THEREFOR, TO DISPOSE OF SNOW, FROST AND ICE

Benoit Bergevin, 10370 Grande-Allée, Montreal, Qc, Canada H3L 2M3 ; Pierre Hosatte, 22 du Grand Ravin, Sainte-Julie, Qc, Canada J0L 2S0 , and Normand Vallières, 1652 Lauzon, La Plaine, Qc, Canada J0N 1B0

Filed Jul. 14, 1993, Ser. No. 91,047
Int. Cl.[5] H01L *31/048*
U.S. Cl. 136—251 **20 Claims**

1. An outdoor snow removing photovoltaic system comprising a casing having mounted therein a plurality of solar cells, said casing having a front and opposite thereto, a rear, and said solar cells having a light receiving front side and opposite thereto, a back side,

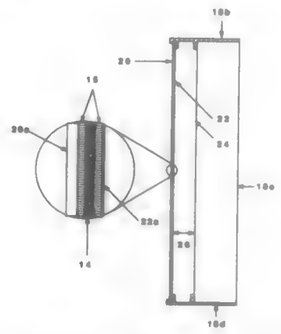
said front of said casing being provided with a light-transmitting panel for transmitting solar light to said solar cells at the light receiving front sides thereof,

said light-transmitting panel having an outer surface,

said light-transmitting surface being susceptible to receiving a member selected from the group consisting of snow, frost and ice, inhibiting solar light transmission to said solar cells,

said rear of said casing being a double wall, said double wall consisting of a first wall and a second wall,

said first wall being in contact with the back side of said solar cells to enable heat transfer, and said first wall on its side facing away from said solar cells being an opaque, dark-colored, solar-light-absorbing light-absorbing surface generating heat,



said second wall being a light-transmitting enclosure of said dark-colored side of said first wall, but spaced therefrom as to produce a greenhouse effect and reduce heat-losses of the solar-light-absorbing surface,

whereby reflected solar rays are received by said rear of said casing on said opaque dark-colored side and said light-transmitting enclosure at said rear produces a greenhouse effect increasing the temperature of the cells and thereby of said light-transmitting panel of said front and thereby easing melting of said member selected from the group consisting of snow, frost and ice when present on said light-transmitting surface.

5,368,655

PROCESS FOR CHROMATING SURFACES OF ZINC, CADMIUM AND ALLOYS THEREOF

Klaus P. Klos, Trebur, Germany, assignor to Alchem Corp., Medina, Ohio and Frederick Gumm Chemical Co., Inc., Kearny, N.J.

Filed Oct. 23, 1992, Ser. No. 965,342
Int. Cl.[5] C23C *22/26*
U.S. Cl. 148—250 **12 Claims**

1. An improved process for chromating a metal which comprises:

immersing an article formed of a metal selected from the group consisting of zinc, cadmium and alloys thereof in a water solution of a soluble chromic oxalate complex at a pH of from 1.2 to 3.0, said soluble chromic oxalate complex being selected from the group consisting of:

$$[Cr(C_2O_4)_x(H_2O)_{6-2x}]_n^{+(3-2x)} \cdot A_{3-2x}^{-n}$$

wherein $0<x=<1.5$, A is an anion selected from the group consisting of Cl^-, Br^-, I^-, NO_3, SO_4^{-2} and PO_4^{-3} and n is the value of the anion of A, and

$$[Cr(C_2O_4)_x(H_2O)_{6-2x}]_m^{+(3-2x)} \cdot K_{3-2x}^{+m}$$

wherein $1.5>x=>3.0$, K is a cation selected from the group consisting of H^+, Li^+, Na^+, K^+ and NH_4^+ and m is the value of the cation K.

5,368,656

STEEL SPRING AND METHOD FOR PRODUCING SAME

William E. Heitmann, Crown Point; Prabhat K. Rastogi, Munster, and Thomas G. Oakwood, Valparaiso, all of Ind., assignors to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 821,974, Jan. 16, 1992, Pat. No. 5,282,906.
This application Oct. 14, 1993, Ser. No. 136,662
Int. Cl.[5] C21D *9/02;* **C22C** *38/24, 38/26*
U.S. Cl. 148—333 **27 Claims**

1. A spring made from a rolled steel bar and having the steel composition, the microstructure and the physical characteristics recited below:

said steel composition consisting essentially of, in wt. %:

carbon	0.40–0.50
manganese	1.10–1.40
phosphorous	0.025 max.
sulfur	0.015 max.
silicon	1.15–1.50
chromium	0.45–0.75
aluminum	0.04 max.
vanadium	0.12–0.17
columbium	0.015–0.030
nitrogen	0.010–0.022
iron	essentially the balance

said microstructure comprising a microstructure consisting essentially of (i) a matrix of tempered martensite and (ii) particles of Fe_3C and of vandadium and columbian carbonitrides within said matrix;

said physical characteristics comprising a Rockwell C hardness no less than 52, and a fracture toughness substantially greater than 27 $MPa.m^{\frac{1}{2}}$.

5,368,657

GAS ATOMIZATION SYNTHESIS OF REFRACTORY OR INTERMETALLIC COMPOUNDS AND SUPERSATURATED SOLID SOLUTIONS

Iver E. Anderson; Barbara K. Lograsso, and Timothy W. Ellis, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 13, 1993, Ser. No. 48,138
Int. Cl.[5] B22F *9/00;* **B22D** *23/00*
U.S. Cl. 148—400 **18 Claims**



1. A method of making particles, comprising:

forming a melt comprising a metal or alloy under an inert gas atmosphere, atomizing said melt with an atomizing gas mixture comprising a carrier gas and a second gas or a liquid so as to form atomized particles, the temperature of said melt and the ratio of said carrier gas to said second gas or liquid being selected to provide a superequilibrium concentration of an atomic specie of said second gas or liquid in solid solution in said atomized particles to a depth below the surface of said atomized particles, and solidifying the atomized particles to retain the superequilibrium concentration of said atomic specie therein.

5,368,658

HIGH STRENGTH, HEAT RESISTANT ALUMINUM-BASED ALLOYS

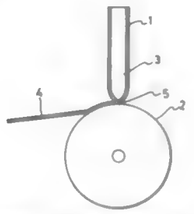
Tsuyoshi Masumoto, 3-8-22 Kamisugi, Sendai; Akihisa Inoue, Sendai; Katsunosa Odera, Toyama, and Masahiro Oguchi, Nagano, all of Japan, assignors to Yoshida Kogyo K.K. and Tsuyoshi Masumoto, both of Tokyo, Japan

Division of Ser. No. 723,332, Jun. 28, 1991, Pat. No. 5,240,517, which is a division of Ser. No. 345,677, Apr. 28, 1989, Pat. No. 5,053,085. This application Feb. 19, 1993, Ser. No. 19,755

Claims priority, application Japan, Apr. 28, 1988, 63-103812

Int. Cl.[5] *C22C 45/08*

U.S. Cl. 148—403 **3 Claims**



3. A rapidly solidified, high strength, heat resistant aluminum-based alloy having a composition represented by the general formula:

$$Al_aM_1'_{b1}M_x''_{b2}X_c$$

wherein:

M_1' is at least one metal element selected from the group consisting of V, Cr, Mn, Zr, Ti, Mo, W, Ca, Li, Mg and Si;

M_1'' is at least one metal element selected from the group consisting of Co, Ni and Cu;

X is at least one metal element selected from the group consisting of Hf, Nb and Ta; and

a, b1, b2 and c are atomic percentages falling within the following ranges:

$50 \leqq a \leqq 95$, $0.5 \leqq b = b1 + b2 \leqq 35$ and $0.5 \leqq c \leqq 25$,

wherein said aluminum-based alloy is composed of a microcrystalline composite structure consistinq of an aluminum matrix solid solution, a microcrystalline aluminum matrix phase and a stable or metastable intermetallic phase.

5,368,659

METHOD OF FORMING BERRYLLIUM BEARING METALLIC GLASS

Atakan Peker, and William L. Johnson, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 44,814, Apr. 7, 1993, Pat. No. 5,288,344. This application Feb. 18, 1994, Ser. No. 198,873

Int. Cl.[5] **C22C** *9/00, 14/00*

U.S. Cl. 148—403 **53 Claims**

1. A method for making a metallic glass having at least 50% amorphous phase comprising the steps of:

forming an alloy having the formula

$$(Zr_{1-x}Ti_x)_{a1}ETM_{a2}(Cu_{1-y}Ni_y)_{b1}LTM_{b2}Be_c$$

where x and y are atomic fractions, and a1, a2, b1, b2, and c are atomic percentages, wherein:

ETM is at least one early transition metal selected from the group consisting of V, Nb, Hf, and Cr, wherein the atomic percentage of Cr is no more than 0.2 a1;

LTM is a late transition metal selected from the group consisting of Fe, Co, Mn, Ru, Ag and Pd;

a2 is in the range of from 0 to 0.4a1;

x is in the range of from 0 to 0.4; and

y is in the range of from 0 to 1; and

(A) when x is in the range of from 0 to 0.15:

(a1+a2) is in the range of from 30 to 75%,

(b1+b2) is in the range of from 5 to 62%,

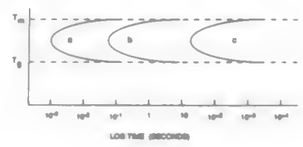
b2 is in the range of from 0 to 25%, and

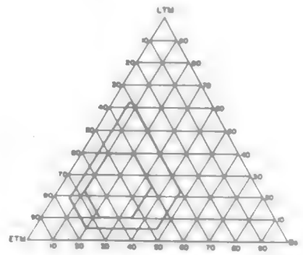
c is in the range of from 6 to 47%;

(B) when x is in the range of from 0.15 to 0.4:

(a1+a2) is in the range of from 30 to 75%,

(b1+b2) is in the range of from 5 to 62%,





b2 is in the range of from 0 to 25%, and

c is in the range of from 2 to 47%; and

cooling the entire alloy from above its melting point to a temperature below its glass transition temperature at a sufficient rate to prevent formation of more than 50% crystalline phase.

5,368,660

HIGH TEMPERATURE $TIAL_2$-BASED TERNARY ALLOYS

Nuri Durlu, Ankara, Turkey, and Osman T. Inal, Socorro, N. Mex., assignors to New Mexico Tech Research Foundation, Socorro, N. Mex.

Filed Oct. 30, 1992, Ser. No. 969,755

Int. Cl.[5] **C22C** *14/00*

U.S. Cl. 148—421 **7 Claims**

1. A titanium aluminide composition having the formula $Ti_aX_bAl_c$ exhibiting a two-phase microstructure of tetragonal $TiAl_2$ and face-centered cubic type ternary titanium aluminide;

wherein X comprises at least one member selected from the group consisting of iron, cobalt, nickel, copper, palladium, silver, and gold; and

wherein a is between approximately 25 and 35 atomic weight percent, inclusive, b is less than 5 atomic weight percent, and c is between approximately 60 and 70 atomic weight percent, inclusive.

5,368,661

METHOD FOR JOINING PARTS OF NI-TI ALLOYS WITH DIFFERENT METALS

Masayuki Nakamura, Yokohama; Kaisuke Shiroyama, Zama; Satoru Masunaga, and Kazuo Murata, both of Fukui, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo and Masunaga Menlo Park Co., Ltd., Fukui, both of Japan

Division of Ser. No. 865,036, Apr. 7, 1992, abandoned. This application Jan. 15, 1993, Ser. No. 76,797

Claims priority, application Japan, Apr. 9, 1991, 3-103452

Int. Cl.[5] **C23C** *30/00;* **B23K** *31/02*

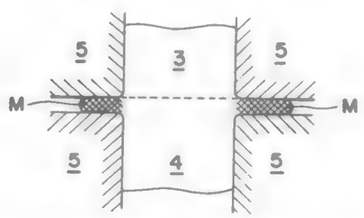
U.S. Cl. 148—512 **4 Claims**

4. A method for forming a joined part by joining a Ni-Ti alloy with a different metal, comprising the steps of

contacting the surfaces of said Ni-Ti alloy and said different metal to be joined;

forming a melt-forged structure interface along said surfaces to be joined, by applying heat sufficient to cause reactive fusion of said Ni-Ti alloy and said different metal along said interface;

applying simultaneously sufficient heat and pressure to the area of said Ni-Ti alloy bordering said interface and to said different metal bordering said interface such that a hot-forged structure of Ni-Ti is formed on the side of the interface whereon said Ni-Ti alloy is located and a hot-forged structure of said different metal is formed on the side of the interface whereon said different metal is located;



wherein during the process of forming said melt-forged structure by reactive fusing, sufficient pressure, not less than 2 Kg/mm^2, is applied across said interface such that a thrust-out portion having a melt-forged structure is formed around the outer circumference of the interface; and wherein said thrust out portion is contacted with a heat-conducting and heat-radiating structure such that said thrust out portion is rapidly solidified.

5,368,662

TPE BINDER CONTAINING CRYSTALLINE MODIFIERS AND SOLID PROPELLANTS BASED THEREON

Rodney L. Willer; Robert S. Day, both of Newark, Del., and Alan P. Marchand, Denton, Tex., assignors to Thiokol Corporation, Ogden, Utah

Filed Sep. 29, 1992, Ser. No. 954,361

Int. Cl.[5] **C06B** *45/10*

U.S. Cl. 149—19.9 **22 Claims**

14. A binder suitable for use in a propellant or explosive composition comprising:

at least one block copolymer thermoplastic elastomer having hard blocks and soft blocks; and

at least one alkyl-substituted caged polycyclo hydrocarbon having a melting point at or below the processing temperature of the thermoplastic elastomer.

5,368,663

PROCESS FOR PRODUCING PLATE-SHAPED BODIES MADE OF A MIXTURE OF PLASTER AND FIBROUS MATERIALS AND INSTALLATION FOR IMPLEMENTING

Jörg Bold, Kaiserslautern, Germany, assignor to Babcock BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG, Krefeld, Germany

PCT No. PCT/EP91/01359, § 371 Date Feb. 8, 1993, § 102(e) Date Feb. 8, 1993, PCT Pub. No. WO92/03268, PCT Pub. Date Mar. 5, 1992

PCT Filed Jul. 19, 1991, Ser. No. 972,493

Claims priority, application Germany, Aug. 15, 1990, 4025797

Int. Cl.[5] **B32B** *31/14*

U.S. Cl. 156—39 **7 Claims**

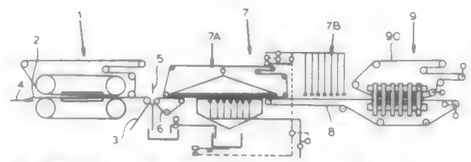
1. A process for producing plasterboard from a mixture of plaster and a fibrous material, comprising the steps of:

(a) forming a moist mixture of plaster, fibrous material and water with the water content amounting 22 to 28% by weight of the dry mixture;

(b) spreading said moist mixture to form a mat;

(c) pressing said mat into a raw board with a pressure at least sufficient to compact said raw board into a coherent structure;

(d) thereafter afterwetting an upper side and an underside of said raw board with 200 to 1000 g/m^2 of water;



(e) afterpressing the afterwetted raw board with a pressure at least as high as a pressure applied in step (c);

(f) thereafter setting and drying the afterpressed raw board; and

(g) in the afterwetting of the upper side and underside of the raw board, initially determining an amount of water applied to said underside and thereafter adjusting the amount of water applied to said upper side in accordance with the amount of water applied to said underside.

5,368,664

PHOTOGRAPHIC FILM CASSETTE AND METHOD OF MANUFACTURING THE SAME

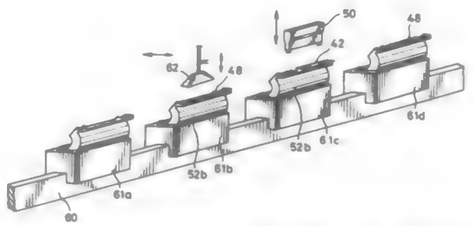
Nobuo Sugiyama, and Naoko Yamashita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 2, 1992, Ser. No. 971,060

Claims priority, application Japan, Nov. 1, 1991, 3-287709; Mar. 31, 1992, 4-077856

Int. Cl.[5] **B25B** *9/00;* **G03B** *17/26*

U.S. Cl. 156—69 **3 Claims**



1. A method of manufacturing a photographic film cassette including a resinous cassette shell provided with a chamber for rotatably containing a spool, photographic film being wound on said spool, said cassette shell being constituted of a pair of resinous cassette halves, a photographic film passageway being defined by opposing passage surfaces formed in said cassette shell so as to allow said photographic film to pass out of and into said chamber and a pair of light-shielding members made of pile fabric for preventing ambient light from entering said cassette shell through said passageway, rotation of said spool causes a leader of said photographic film to advance outward from said passageway; said method comprising steps of:

respectively placing said light-shielding members on said passage surfaces of said respective cassette halves;

holding said light-shielding members immovably on said passage surfaces with a rectangular holding portion of a holding jig, said holding portion having a plurality of cutouts formed therein at positions which respectively correspond to portions of said light-shielding members which are to be attached to said passage surfaces said

cutouts comprising a plurality of rectangular cutouts arranged next to each other; and

simultaneously inserting a plurality of welding horns of an ultrasonic welding device through said cutouts, to contact said light-shielding members, while said light-shielding members are held with said holding jig, so as to weld said light-shielding members to said passage surfaces with ultrasonic waves, said welding horns comprising a plurality of linear horns spaced at a constant interval and aligned along a portion of said welding device which corresponds to a longer side of said light-shielding members and a plurality of spotted horns formed in the shape of pins and arranged in a zig-zag fashion next to said linear horns.

5,368,665

METHOD OF JOINTING POROUS BUILDING PLATES

Akihisa Koyama; Syoji Kitahara, and Tomonori Honda, all of Aichi, Japan, assignors to INAX Corporation, Tokoname, Japan

Filed Dec. 1, 1992, Ser. No. 983,711

Claims priority, application Japan, Dec. 5, 1991, 3-321863

Int. Cl.[5] **B29C** *7/00;* **B32B** *31/12;* **E04B** *1/16;* **E04F** *13/00*

U.S. Cl. 156—71 **4 Claims**

1. A method of applying building plates which are porous at least at a surface thereof to a member comprising:

a first step of packing pores on the surface of each of the porous building plates with an acid soluble material formed of calcium carbonate,

a second step of applying the porous building plates to the member,

a third step of applying a coated joint material in a form of a slurry onto an entire area including the porous building plates having the acid soluble material formed of calcium carbonate packed in the pores and including joint spaces between the porous building plates so that the joint material is filled in the joint spaces and is coated onto the surface of each of the porous building plates,

a fourth step of washing the surface of each of the porous building plates with water, thereby washing out the joint material coated on the surface of each of the porous building plates,

a fifth step of washing the surface of each of the porous building plates with an acid, thereby dissolving the acid soluble material formed of calcium carbonate and packed in the pores of the porous building plate into the acid to remove the acid soluble material formed of calcium carbonate from the packed pores on the surface of each of the porous building plates, and

a sixth step of washing the surface of each of the porous building plates with water again,

wherein the porous building plates are applied to the member without invasion of the joint material into the pores on the surface of each of the porous building plates due to the packing of the pores with the acid soluble material formed of calcium carbonate.

5,368,666

ELASTIC BAND HEAT ACTIVATION SYSTEM

Stanley A. Terada, Seattle, Wash., assignor to Paragon Trade Brands, Inc., Federal Way, Wash.

Division of Ser. No. 896,332, Jun. 10, 1992, abandoned, which is a division of Ser. No. 595,048, Oct. 9, 1990, Pat. No. 5,140,757.

This application Aug. 31, 1993, Ser. No. 114,501

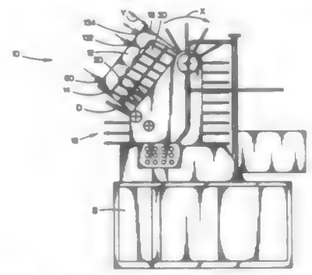
Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—85 **7 Claims**

1. A method of activating a heat-sensitive thermal film attached to a first edge of a body of an article to form an elastic band along the first edge of the article, the method comprising the steps of:

heating the first edge of the article to a first temperature sufficiently elevated to activate the heat-sensitive thermal film to shrink the film to form the elastic band; and

actively cooling the first edge of the article by directing a



cooling gas at a second temperature which is less than ambient temperature toward the first edge of the article after the heating step to arrest the shrinkage of the heat-sensitive film.

5,368,667

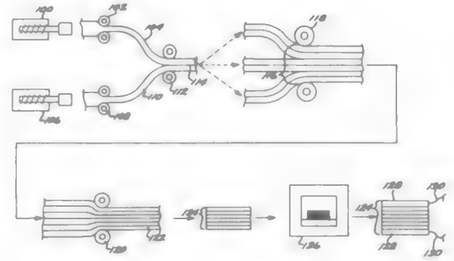
PREPARATION OF DEVICES THAT INCLUDE A THIN CERAMIC LAYER

Nguyen Q. Minh, Fountain Valley; Craig R. Horne, Manhattan Beach, and James V. Guiheen, Hermosa Beach, all of Calif., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Jan. 29, 1993, Ser. No. 11,052

Int. Cl.[5] **B32B** *18/00*

U.S. Cl. 156—89 **7 Claims**



1. A method for preparing a multilayer capacitor, comprising the steps of:

forming a ceramic/metal composite by the steps of

preparing a ceramic mixture of ceramic particles, a first binder, and a first plasticizer,

forming the ceramic mixture into a ceramic dielectric layer,

preparing a metallic mixture of metallic particles, a second binder, and a second plasticizer,

forming the metallic mixture into a metallic layer, and

laminating the ceramic dielectric layer to the metallic layer to form the ceramic/metal composite;

stacking at least two of the ceramic/metal composites together to form a stack;

reducing the thickness of the stack until the thickness of the ceramic dielectric layer is reduced to a preselected value;

further stacking at least two of the stacks together;

reducing the thickness of the stacks prepared in the step of further stacking until the thickness of the ceramic dielectric layer is reduced to a second preselected value; and

assembling the stack produced in the step of reducing the thickness of the stacks prepared in the step of further stacking into a capacitor structure.

5,368,668

STITCHBONDED ABSORBENT ARTICLES AND METHOD OF MAKING SAME

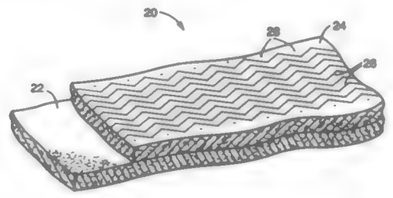
Miroslav Tochacek, Woodbury, and Donald M. Courteau, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 879,876, May 7, 1992, Pat. No. 5,308,673.

This application Mar. 2, 1994, Ser. No. 204,667

Int. Cl.[5] **B32B** *7/08*

U.S. Cl. 156—93 **4 Claims**



1. A method of manufacturing a stitchbonded absorbent article wherein the method comprises forming a stitchbonded fabric comprised of cellulosic pulp fibers and adhesive, said fabric having a stitch density ranging from about 15 to about 35 st/10 cm, and stitch gauge ranging from about 10 to about 40, using a stitching yarn comprising first and second fibers of different heat stability, and thereafter heating the stitchbonded fabric for a time and at a temperature sufficient to at least partially melt the first fiber but insufficient to melt the second fiber, thereby melt-bonding at least a portion of the first and second fibers together along points of mutual contact while melt-bonding at least a portion of the first fiber to the outer surfaces of the article.

5,368,669

METHOD OF LINING A PIPELINE

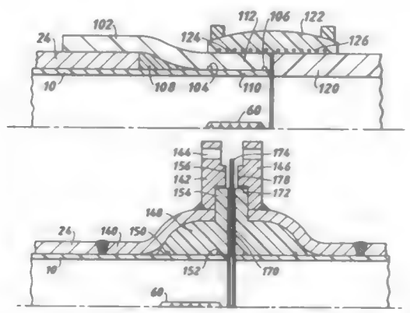
Leslie Maine, Cramlington, and Trevor G. Stafford, Whitley Bay, both of United Kingdom, assignors to British Gas plc, London, England

Filed Jan. 15, 1993, Ser. No. 5,084

Claims priority, application United Kingdom, Feb. 27, 1992, 9204150.8

Int. Cl.[5] **B29C** *63/42, 65/14, 65/18*

U.S. Cl. 156—158 **4 Claims**



1. A method of lining a pipeline having a least inner diameter, comprising the steps of:

(a) inserting into the pipeline a cross-linked polymeric liner pipe such that a portion of said liner pipe protrudes from an end of said pipeline, wherein said liner pipe has been previously reduced from its original diameter to a lesser diameter or to a shape of reduced maximum radial dimension, said liner pipe having a predisposition by virtue of its memory to revert, upon heating, towards said original diameter, said lesser diameter and said reduced maximum radial dimension being less than the least inner diameter of said pipeline,

(b) heating said liner pipe with a source of visible or infrared radiation to cause said liner pipe to revert towards said original diameter by moving said source through said liner pipe,

(c) joining the portion of said liner pipe which protrudes from said pipeline to a tubular annular, non-cross-linked polymeric member having an inner surface and an outer surface and first and second ends, by fusion welding the outer surface of said liner pipe to the inner surface of said first end of said tubular annular member, and positioning said second end of the inner surface of said tubular annular member to surround the outer surface of said pipeline, and

(d) joining said tubular annular member to a further pipe or to a pipe fitting by electrofusion coupling said outer surface of said first end of said tubular annular member to said further pipe or to said pipe fitting.

5,368,670

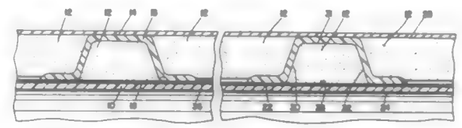
METHOD OF MAKING MULTI-WALLED PIPES AND STORAGE TANKS FOR TOXIC AND CORROSIVE FLUIDS

Donn K. Kauffman, Daphne, Ala., assignor to Theresa M. Kauffman, Stone Mountain, Ga.; Bosbur, Inc., Mobile, Ala. and George L. Williamson, Daphne, Ala.

Continuation-in-part of Ser. No. 56,354, May 3, 1993, Pat. No. 5,308,423, which is a continuation-in-part of Ser. No. 922,572, Jul. 30, 1992, abandoned, which is a continuation-in-part of Ser. No. 775,208, Oct. 11, 1991, abandoned, which is a continuation-in-part of Ser. No. 552,619, Jul. 16, 1990, abandoned. This application Feb. 7, 1994, Ser. No. 192,373

Int. Cl.[5] **B65D** *25/20*

U.S. Cl. 156—171 **19 Claims**



1. A process for making multi-walled vessels of improved circumferential and axial strength for transporting and storing fluids, comprising the steps of:

(a) Assembling on a cylindrical form or mold an overlay comprising a first sheet to receive a first layer of glass fiber reinforced resinous material;

(b) Applying a resinous material with chopped glass fibers over said first sheet to form a highly chemically resistant barrier;

(c) Applying over said highly chemically resistant barrier, a resinous material with chopped glass fibers and continuous strands of glass fibers;

(d) Curing said resinous material containing said chopped glass fibers and continuous strands of glass fibers to form a first containment wall;

(e) Applying at predetermined points on said first containment wall substantially circumferential preformed continuous rib shaped foam, and securing said foam to said first containment wall;

(f) Applying over said rib shaped foam chopped and continuous glass fibers with a resinous material to form a plurality of substantially circumferential ribs integrally bonded to said first containment wall;

(g) Applying and securing bridging foam to said first containment wall between said ribs up to the level of the top of said ribs;

(h) Applying over said bridging foam and said ribs, a resinous material with chopped glass fibers and continuous strands of glass fibers; and

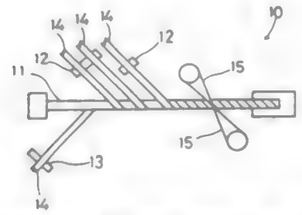
(i) Curing said resinous material containing said chopped glass fibers and continuous strands of glass fibers to form a second containment wall integrally bonded to said ribs.

5,368,671

PAPER TUBE FOR PHOTOSENSITIVE MATERIALS

Kenji Sashihara, and Shigeru Minato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Miami-Ashigara, Japan

Filed May 17, 1993, Ser. No. 61,226
Claims priority, application Japan, May 15, 1992, 4-123591
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—195 8 Claims



1. A spirally wound paper tube formed from at least one paper tape, wherein the paper tape(s) is/are adhered together to form a spirally wound paper tube with a blend adhesive comprising at least two aqueous adhesives, said adhesives differing at least in concentration.

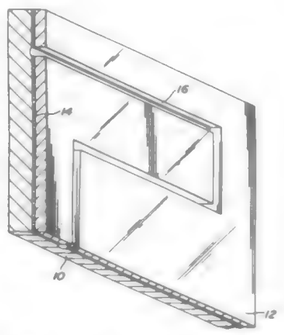
7. A method of forming a paper tube according to claim 1, comprising spirally winding the paper tape(s) and adhering the tapers) with said blend adhesive.

5,368,672

PROCESS FOR MAKING THREE-DIMENSIONAL SIGNAGE

Deborah M. Gunzelman, Greenwich; Wayne C. Hoffman, Bethel, and James L. Bernstein, Westport, all of Conn., assignors to New Hermes Incorporated, Norwalk, Conn.

Continuation of Ser. No. 838,388, Feb. 19, 1992, Pat. No. 5,240,539. This application May 14, 1993, Ser. No. 62,448
The portion of the term of this patent subsequent to Aug. 31, 2010, has been disclaimed.
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—248 21 Claims



1. A process for making three-dimensional graphic signage consisting of the following steps:

(a) obtaining a profile material;

(b) obtaining a substrate material;

(c) adhering the profile material to the substrate material with an adhesive layer, said adhesive layer:

(i) bonds firmly enough to hold the profile material and the substrate material together during a cutting process step wherein an outline of a graphic design is cut at least completely through said profile material, but not completely through said substrate material,

(ii) permits the profile material to be separated from the substrate material after said cutting process step is completed, and

(iii) cures to form a permanent bond after the profile material is separated from the substrate material;

(d) employing a cutting means to cut an outline of at least one graphic design at least completely through the profile material while said profile is adhered to said substrate material, said cutting means does not make a cut which goes completely through said substrate material; and

(e) before the adhesive layer forms a permanent bond, separating from the substrate material at least a portion of the profile material which:

(i) does not constitute the outlined graphic design, or

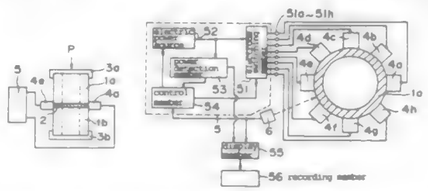
(ii) constitutes the outlined graphic design.

5,368,673

JOINING METHOD FOR JOINING ELECTRICALLY CERAMIC BODIES AND A JOINING APPARATUS AND JOINING AGENT FOR USE IN THE JOINING METHOD

Kouji Okuda, Kobe; Tokumitsu Nishi, Osaka; Hisakiyo Hoshino, Settsu; Hiroshi Takai, Nishinomiya, and Natsumi Miyake, Toyonaka, all of Japan, assignors to Daiben Corporation, Osaka, Japan

PCT No. PCT/JP91/00560, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO92/00257, PCT Pub. Date Jan. 9, 1992
PCT Filed Apr. 25, 1991, Ser. No. 836,305
Claims priority, application Japan, Jun. 28, 1990, 2-170955; Jul. 9, 1990, 2-181276; Oct. 26, 1990, 2-290032
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—273.9 6 Claims



1. A method for electrically joining two bodies to be jointed, one of said bodies being a ceramic body, comprising the steps of: inserting a joining agent, or a combination of a joining agent and an inserting member for heating based on an electrically conductive ceramic material, between butted planes to be jointed of said two bodies, causing said joining agent to melt and react by a Joule heating and joining said two bodies to be jointed, further comprising,

contacting three or more electrodes positioned a given interval apart, for supplying electric current and generating Joule heating, at the surface of a current-flowing member selected from the group consisting of said bodies to be jointed, said joining agent, and said inserting member for heating, and

supplying current to said current-flowing member between at least two electrodes selected sequentially from said three or more electrodes in accordance with a given electrode switching pattern to move a current flowing area along said butted portion to be jointed wherein the current supplying step is carried out with an electrode switching pattern which is selected from a plurality of electrode switching patterns in accordance with a variation in the condition at said butted portion to be jointed.

5,368,674

METHOD OF TREATING GLASS FIBER-BASED PREPREG

Kenji Ishii, and Yasunori Tagami, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 824,563, Jan. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 578,152, Sep. 6, 1990, abandoned. This application Mar. 16, 1994, Ser. No. 213,840
Claims priority, application Japan, Sep. 7, 1989, 1-23064
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—272.2 2 Claims

1. A method of treating a glass fiber-based prepreg, which comprises heating a B-staged, glass fiber-based prepreg which has been cut into a predetermined size, for 3 to 10 seconds with a far infrared ceramic heater of the type which emits far infrared rays having a wavelength of from 1 to 30 μm to a temperature no higher than 5° C. below the softening point of the matrix resin of the prepreg, thereby fixing matrix resin powder particles present on the surfaces and edges of the prepreg to the prepreg, which matrix resin powder particles were formed when the prepreg had been cut into the predetermined size,

wherein said far infrared ceramic heater is such that (i) the percentage of radiation to a black body is at least 90% at a wavelength of 4 to 15 μm, and (ii) the radiation energy at a wavelength of 5 to 15 μm is at least 70% of the total radiation energy of far infrared ray which has a wavelength of 4 μm or more, and wherein the prepreg has a surface temperature which does not exceed at least 5° C. lower than the softening point of the matrix resin.

5,368,675

METHOD FOR THE PREPARATION OF A FRAME-SUPPORTED PELLICLE FOR PHOTOLITHOGRAPHY

Yuichi Hamada; Yoshihiko Nagata; Meguru Kashida, and Yoshihiro Kubota, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1993, Ser. No. 103,928
Claims priority, application Japan, Aug. 21, 1992, 4-245828
Int. Cl.[5] B32B *27/00, 7/00;* G03F *9/00*
U.S. Cl. 156—344 4 Claims

1. A method for the preparation of a frame-supported pellicle consisting of a rigid frame and a thin transparent film of a polymeric resin adhesively bonded to a surface of the frame in a slackfree fashion, which comprises the steps of:

(a) uniformly spreading a solution of the polymeric resin over the surface of a horizontally laid, flat substrate plate to form a layer of the solution;

(b) evaporating the solvent from the layer of the solution on the substrate plate to form a dried film of the polymeric resin;

(c) adhesively bonding the film of the polymeric resin on the substrate surface to a surface of the frame; and

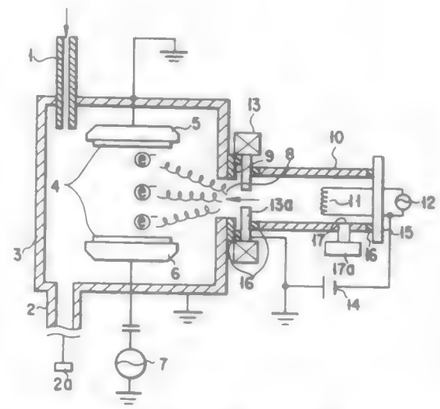
(d) separating and removing the substrate from the film of the polymeric resin adhesively bonded to the frame, the step (d) being conducted in a gaseous atmosphere of which the relative humidity of the atmosphere is at least 80% and the temperature is not lower than the dew point of the gaseous atmosphere.

5,368,676

PLASMA PROCESSING APPARATUS COMPRISING ELECTRON SUPPLY CHAMBER AND HIGH FREQUENCY ELECTRIC FIELD GENERATION MEANS

Kazuya Nagaseki, Yamanashi, and Shuuji Mochizuki, Kofu, both of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 861,386, Mar. 31, 1992, abandoned. This application Dec. 9, 1993, Ser. No. 164,874
Claims priority, application Japan, Apr. 26, 1991, 3-122878
Int. Cl.[5] H01L *21/00;* C23C *16/50*
U.S. Cl. 156—345 19 Claims



1. An apparatus for processing a substrate while using plasma, comprising:

a processing chamber capable of attaining a vacuum state;

means for supporting the substrate in the processing chamber;

means for generating a high frequency electric field in the processing chamber;

means for introducing processing gas, to be formed into plasma, into the processing chamber;

an electron supply chamber connected to the processing chamber through a path extending in a given direction;

electron generator means arranged in the electron supply chamber for generating electrons which pass form said electron supply chamber into said processing chamber along said path;

an attraction electrode for attracting said electrons generated in the electron supply chamber, the attraction electrode being arranged in said path and having an opening through which said electrons pass;

a DC power source for applying a voltage between the electron generator means and the attraction electrode such that the attraction electrode has an electric potential higher than that of the electron generator means; and

means for generating a guiding magnetic field in the path to guide said electrons from the electron supply chamber into the processing chamber, wherein said means for generating said guiding magnetic field includes a coil magnet located around said attraction electrode such that the coil magnet and the attraction electrode have a common central axis which extends in said given direction, and wherein a plane perpendicular to said common central axis bisects said attraction electrode and said means for generating said guiding magnetic field.

5,368,677

LAMINATING APPARATUS

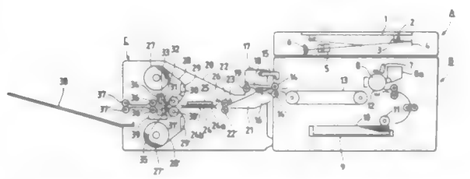
Noriyoshi Ueda, and Kimiaki Hayakawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 585,182, Sep. 20, 1990, abandoned. This application Dec. 21, 1992, Ser. No. 996,841

Claims priority, application Japan, Sep. 25, 1989, 1-246405; Sep. 25, 1989, 1-246406; Sep. 25, 1989, 1-246407; Sep. 25, 1989, 1-246408; Sep. 25, 1989, 1-246409; Sep. 27, 1989, 1-253390

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—362 10 Claims



1. A laminating apparatus removably connected to an image forming apparatus, comprising:

laminating film transporting means for supplying a laminating film;

laminate treating means for pressing a sheet on which the image is formed by the image forming apparatus and the laminating film supplied by said laminating film transporting means in a mutually superposed state;

sheet stacking means for stacking the sheets not to be laminated;

guide means for selectively guiding the sheets on which the image is formed to said laminate treating means or said sheet stacking means; and

an outer cover for containing said laminate treating means and said laminating film transporting means, wherein

said sheet stacking means is formed on an upper surface of said outer cover.

5,368,678

TREAD PICKUP DEVICE

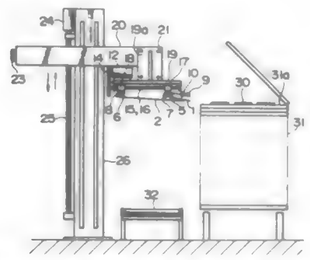
Yoshinori Miyamoto; Hidemasa Sato; Jiro Agawa, all of Nagasaki; Keizo Yamashita, Hiratsuka; Kazuo Mogi, Hiratsuka, and Toru Aihara, Hiratsuka, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and The Yokohama Rubber Co., Ltd., both of Tokyo, Japan, a part interest

Filed Jul. 8, 1993, Ser. No. 87,399

Claims priority, application Japan, Jul. 10, 1992, 4-183845

Int. Cl.[5] B29D *30/30*

U.S. Cl. 156—405.1 7 Claims



1. A tread pickup apparatus for removing a tread slab from a supporting surface, the apparatus comprising:

a plurality of pairs of prong members arranged substantially in a linear array and spaced from each other, each pair comprising a first prong and a second prong laterally adjacent each other, the first and second prong members suitable for insertion beneath a leading edge of a tread slab, a clamping arm member disposed in opposing relation to the first prong for gripping a tread slab between the clamping arm member and the first prong, the second prong being substantially longer than the first prong;

moving means for advancing and withdrawing as a group the first prong members and as a group the second prong members with respect to a leading edge of a tread slab, and for moving the first and second prong members vertically with respect to a tread slab, said moving means operable for advancing the group of first prong members under a leading edge of the tread slab whereby the leading edge of the tread slab is grasped between the clamping arm member and the first prong member of each pair, and said moving means operable for advancing the group of second prong members beneath the tread slab across the entire depth of the tread slab for stripping off the tread slab from the supporting surface.

5,368,679

Patent Not Issued For This Number

5,368,680

APPARATUS FOR APPLYING A STAMPING FOIL IMPRINT TO A WEB OF FLEXIBLE MATERIAL

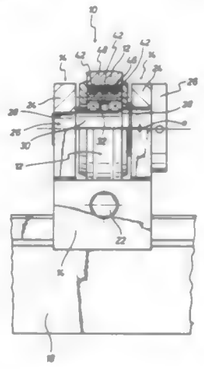
Reinwald Mitsam, Langenzenn, Germany, assignor to Leonard Kurz GmbH & Co., Furth, Germany

Filed Jun. 30, 1993, Ser. No. 85,609

Claims priority, application Germany, Aug. 6, 1992, 4226003

Int. Cl.[5] B31F *5/00*

U.S. Cl. 156—555 9 Claims



1. An apparatus for applying a stamping foil imprint to a web of flexible material, which comprises:

an applicator roller;

a backing roller cooperable with said applicator roller to press together said stamping foil and said web of flexible material, said backing roller comprised of an inner sleeve member having an outer peripheral surface and a concentrically-spaced outer sleeve member defining a gap with said outer peripheral surface of said inner sleeve member, said outer peripheral surface of said inner sleeve member formed with a peripherally-extending recess;

an annularly-shaped member of resilient material positioned between said inner sleeve member and said outer sleeve member and accommodated within said peripherally-extending recess;

adjusting means for said backing roller for defined adjustment of spacing between said applicator roller and said backing roller, said adjusting means including a rotatable shaft having an eccentric portion; and

means for mounting said inner sleeve member of said backing roller to said eccentric portion of said shaft.

5,368,681

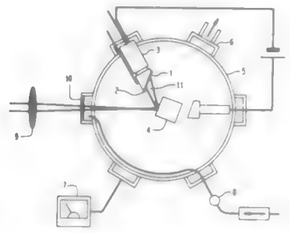
METHOD FOR THE DEPOSITION OF DIAMOND ON A SUBSTRATE

Hiroyuki Hirasoka, Kowloon; Stefan A. Lätsch, Hong Kong, and Rong-Fu Xiao, Laguna City, all of Hong Kong, assignors to Hong Kong University of Science; Hong Kong University of Science and Technology and R and D Corporation Limited, Hong Kong, Hong Kong

Filed Jun. 9, 1993, Ser. No. 73,506

Int. Cl.[5] C30B *29/04*

U.S. Cl. 427—585 10 Claims



1. A method for the deposition of diamond onto a substrate, comprising the steps of firing a laser at a polymer target in the presence of a reactive gas to effect laser ablation of said target, and providing a heated substrate.

5,368,682

METHOD FOR FORMING CONTACT HOLE IN HIGHLY INTEGRATED SEMICONDUCTOR DEVICE

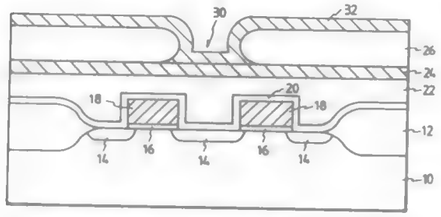
Sung W. Park, Kyoungki, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki, Rep. of Korea

Filed Feb. 28, 1994, Ser. No. 202,556

Claims priority, application Rep. of Korea, Mar. 2, 1993, 93-2955

Int. Cl.[5] B23P *15/00*

U.S. Cl. 156—644 9 Claims



1. A method for forming a contact hole in a semiconductor device, comprising the steps of:

preparing a semiconductor substrate formed at an upper surface thereof with a first wiring pattern;

forming an interlayer insulating film over the entire surface of said semiconductor substrate;

forming an selective etch film over said interlayer insulating film;

forming an assistant selective etch layer over said selective etch film, said assistant selective etch layer having a very high etch selectivity to the selective etch film;

forming a pseudo-contact hole in the assistant selective etch layer, said selective etch film being partially exposed through said pseudo-contact hole;

deforming side walls of the pseudo-contact hole to have a semicircular shape such that each of said side walls has a protruded central portion;

burring a selective etch material in a lower edge portion of the contact hole such that the side walls of the pseudo-contact hole have a linear shape; and

removing the assistant selective etch layer and anisotropically etching the resulting structure so as to form a miniature contact hole, having a bottom surface comprised of said wiring pattern and side walls comprised of both the interlayer insulating film and the selective etch film.

5,368,683

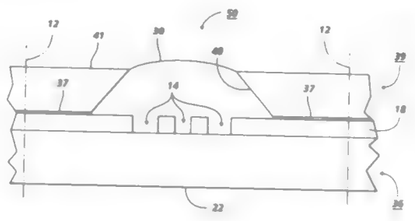
METHOD OF FABRICATING INK JET PRINTHEADS

Robert P. Altavela, Pittsford; Ram S. Narang; David J. Collins, both of Fairport, and Julie A. Sims, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1993, Ser. No. 144,362

Int. Cl.[5] H01L *21/306;* B44C *1/22;* B29C *37/00*

U.S. Cl. 156—633 9 Claims



1. A method of fabricating a plurality of ink jet printheads, comprising the steps of:

patterning a plurality of linear arrays of heating elements and a driver circuitry with associated addressing electrodes for each array of heating elements on a surface of a planar substrate, the addressing electrodes having terminals for electrical connection with a source of electrical signals;

depositing a photopatternable, thick-film, polymeric layer on the substrate surface and over the heating elements, driver circuitry, and associated addressing electrodes;

patterning a plurality of vias in the thick-film, polymeric layer at predetermined locations, the pattern of vias exposing each heating element and the electrode terminals and producing bypass recesses and a predetermined number of groups of relatively small recesses which will subsequently serve as bonding anchor points;

anisotropically etching a plurality of sets of elongated channel recesses having opposing ends, at least one ink reservoir recess for each set of channels, and a predetermined number of alignment recesses in a surface of a first silicon wafer, each of said reservoir recesses being located adjacent one end of each set of channel recesses, the reservoir recesses and alignment recesses being etched through the wafer;

coating the wafer surface having the etched channel, reservoir, and alignment recesses with a thermosetting adhesive layer without coating the recesses;

aligning and mating the substrate surface having the patterned thick-film, polymeric layer with the adhesive coated wafer surface having the etched recesses, so that each etched channel recess has a heating element therein, the bypass recesses provide ink flow communication between the channels and reservoirs, and each of the etched alignment recesses in the wafer are each aligned and in register with a respective one of the groups of relatively small recesses in the thick-film, polymeric layer;

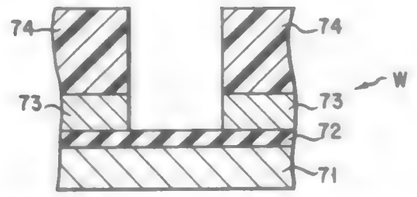
filling each alignment recess and group of thick-film recesses therebelow with a quick curing adhesive;

curing the quick curing adhesive to fasten the substrate and wafer together prior to curing the thermosetting adhesive, the cured quick curing adhesive in each group of thick-film recesses providing anchor points to improve shear strength between the substrate and the wafer, thereby also preventing relative slippage between the substrate and wafer before the thermosetting adhesive layer is cured;

placing the mated substrate and wafer in an oven to cure the

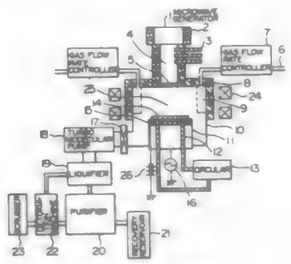
thermosetting adhesive and permanently bond the substrate and wafer together; and
dicing the bonded substrate and wafer into a plurality of individual printheads and scrap portions.

5,368,684
ETCHING METHOD FOR A SILICON-CONTAINING LAYER USING HYDROGEN BROMIDE
Yoshio Ishikawa; Hiroshi Kojima, both of Tokyo, and Masahito Hiratuka, Koufu, all of Japan, assignors to Tokyo Electron Limited, Tokyo and Tokyo Electron Yamanashi Limited, Nirasaki, both of Japan
Filed Dec. 18, 1992, Ser. No. 993,063
Claims priority, application Japan, Dec. 19, 1991, 3-336768; Jul. 8, 1992, 4-180963
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 **2 Claims**



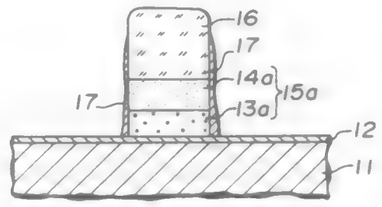
1. A method of etching a silicon-containing layer in an object to be processed having said silicon-containing layer, comprising the steps of:
generating a magnetron discharge by a high-frequency electric field and a magnetic field perpendicular to the high-frequency electric field to generate a plasma of an etching gas; and
exposing said object in the plasma to etch said silicon-containing layer,
wherein the etching gas mainly contains a gas mixture of HBr and Cl_2 gases,
and wherein a ratio of a flow rate of the HBr gas to a flow rate of the Cl_2 gas is not less than 40/60.

5,368,685
DRY ETCHING APPARATUS AND METHOD
Takao Kumihashi, Musashino; Kazunori Tsujimoto, Higashiyamato, and Shinichi Tachi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 859,336, Mar. 27, 1992, Pat. No. 5,242,539. This application Mar. 24, 1993, Ser. No. 36,394
Claims priority, application Japan, Mar. 24, 1992, 4-065742; Mar. 25, 1992, 4-066916
Int. Cl.[5] H01L *21/306;* **B44C** *1/22*
U.S. Cl. 156—643 **21 Claims**



1. A dry etching method in which at least one etching gas is changed into plasma by discharging, and at least one etching reaction and desorption of at least one reaction product are promoted by incident ions from the plasma, wherein the current density of said incident ions is controlled to be 12 mA/cm^2 or more while the etching gas, which is three times as much as the desorption amount of the reaction product, is introduced into a treatment chamber at an effective exhaust speed of at least 1200 liter/s in the chamber.

5,368,686
DRY ETCHING METHOD FOR W POLYCIDE USING SULFUR DEPOSITION
Tetsuya Tatsumi, and Tetsuji Nagayama, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 16, 1992, Ser. No. 899,181
Claims priority, application Japan, Jun. 18, 1991, 3-171882; Jun. 24, 1991, 3-177743; Feb. 21, 1992, 4-072514
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—656 **15 Claims**

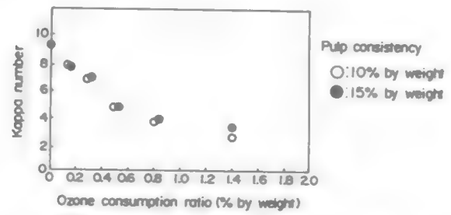


1. A dry etching method for etching a polycide film formed of at least a silicon based material layer and a refractory metal silicide layer which are fabricated in this order on a substrate, said method comprising plasma etching at least said refractory metal silicide layer to form sidewalls by using an etching gas containing at least one sulfur fluoride selected from a group consisting of S_2F_2, SF_2, SF_4, and S_2F_{10}; and inhibiting the formation of refractory metal sulfides on the metal silicide sidewalls while depositing sulfur on the silicon sidewalls.

5,368,687
SEMICONDUCTOR PROCESSING METHOD OF ETCHING INSULATING INORGANIC METAL OXIDE MATERIALS AND METHOD OF CLEANING METALS FROM THE SURFACE OF SEMICONDUCTOR WAFERS
Gurtej S. Sandhu; Donald L. Westmoreland, and Pierre Fazan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Mar. 15, 1993, Ser. No. 31,572
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—664 **32 Claims**

1. A semiconductor processing method comprising the following steps:
providing a layer of an insulating inorganic metal oxide material atop a semiconductor wafer;
subjecting the wafer with exposed insulating inorganic metal oxide material to dry etching conditions using a halogen or pseudohalogen based chemistry to react the insulating inorganic metal oxide material into solid halogenated or pseudohalogenated material; and
reacting the solid halogenated or pseudohalogenated material with a gaseous organic ligand precursor to form a gaseous metal organic coordination complex incorporating the organic ligand precursor and to form a gaseous halogenated or pseudohalogenated species which are expelled from the wafer.

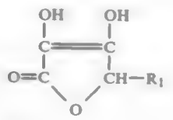
5,368,688
METHOD FOR BLEACHING PULP WITH OZONE WITH SUCCESSIVE STEPS OF LOWER CONSISTENCY
Kouhei Miki; Takuya Yamamoto; Yoshiko Shishido, and Mitsuhiro Mieno, all of Kanagawa, Japan, assignors to Sumitomo Heavy Industries, Ltd., Japan
Filed May 17, 1993, Ser. No. 62,176
Claims priority, application Japan, Jul. 8, 1992, 4-180693
Int. Cl.[5] D21C *9/153, 9/18*
U.S. Cl. 162—56 **1 Claim**



1. A method for bleaching a medium consistency pulp with ozone, said medium consistency pulp containing lignin and initially having a consistency within a range of 10 to 20% by weight solids, said method comprising:
a) contacting ozone with the medium consistency pulp to reduce the lignin content of the medium consistency pulp;
b) subsequent to said contacting with ozone, dewatering said pulp to separate therefrom water containing degradation products formed by action of said ozone on said pulp;
c) subsequent to said dewatering, diluting said pulp to a consistency within said range lower than the consistency of the pulp in the last preceding step a;
d) repeating steps a, b and c with each step a operating on a medium consistency pulp within said range and having a lower consistency than that in the last preceding step a;
whereby in each successive ozone contacting step a the reaction rate for the reaction of ozone with the lignin is less than that in the preceding ozone contacting step, said method avoiding cellulose decomposition by reaction with ozone and using no cellulose protector.

5,368,689
PAPER AND A METHOD OF PAPER MANUFACTURE
Arne R. Agnemo, Domsjö , Sweden, assignor to Mo Och Domsjö Aktiebolag, Örnsköldsvik, Sweden
PCT No. PCT/SE91/00798, § 371 Date Jun. 3, 1993, § 102(e) Date Jun. 3, 1993, PCT Pub. No. WO92/09745, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 25, 1991, Ser. No. 66,109
Claims priority, application Sweden, Dec. 3, 1990, 9003830-8
Int. Cl.[5] D21H *21/38*
U.S. Cl. 162—135 **14 Claims**

1. A paper produced from fibre material which consists at least partially of pulp that contains lignin in a quantity which exceeds 0.5 percent by weight, and of at least one chemical, including retention agent and/or hydrophobizing agent and/or dry strength agent,
wherein the paper includes
a) an acid and/or corresponding salt of the general formula (the acid form)



where

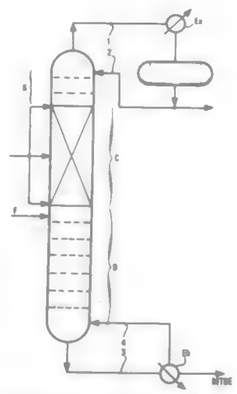
R_1 = —$CHOCH_2OH$ or —CHOHCOOH

in an amount of at least 0.05 percent by weight, calculated on the fibre material; and
b) a reduction agent in an amount of at least 0.05 percent by weight, calculated on the fibre material.

5,368,690
METHOD OF PAPERMAKING USING CROSSLINKED CATIONIC/AMPHOTERIC STARCHES
Daniel B. Solarek, Belle Mead; Leroy R. Peek, Milford; Matthew J. Henley, Somerset; Ralph M. Trksak, Manville, and Michael T. Philbin, Somerville, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Bridgewater, N.J.
Filed Dec. 23, 1992, Ser. No. 997,253
Int. Cl.[5] D21H *17/28*
U.S. Cl. 162—175 **11 Claims**

1. In a method of making paper wherein a crosslinked, cationized or amphoteric starch is added to the wet end system in an amount of from about 0.05 to 5% by weight, based on the dry weight of pulp, the improvement comprising using as the starch a cationized or amphoteric starch which has been crosslinked by adding enough crosslinking agent to provide a starch having a % breakdown viscosity of from about 2 to 85% and wherein the crosslinked, cationized or amphoteric starch has been jet cooked at a temperature of from about 195° to 325° F. under super atmospheric pressure.

5,368,691
REACTIVE DISTILLATION PROCESS AND APPARATUS FOR CARRYING IT OUT
Lionel Asselineau, Paris; Paul Mikitenko, Noisy le Roi; Jean Charles Viltard, Marly le Roi, and Massimo Zaliani, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Dec. 16, 1992, Ser. No. 991,006
Claims priority, application France, Dec. 16, 1991, 91 15690
Int. Cl.[5] B01D *3/26;* **C07C** *41/06*
U.S. Cl. 203—29 **9 Claims**



1. A reactive distillation process comprising:
reacting, in the presence of a catalyst, at least two reagents, each pure or diluted in at least one diluent to produce one product optionally in admixture with at least one diluent and an excess of at least one reagent, and concurrently separating by distillation said reaction product from the reaction mixture,
introducing said reagents separately or in mixed form, in at least one level of a reactive distillation column,

locating at least one reaction cell containing said catalyst as a bed, and
locating at least one adjacent distillation cell containing at least one distillation tray,
separating each reaction cell from the adjacent distillation cell by a side wall or bottom of said reaction cell, or both, thereby preventing a direct transfer of matter between the interior of the reaction cells and the adjacent distillation cells,
maintaining distillation conditions in said column so as to have a liquid phase and a vapor phase therein,
circulating at least part of the liquid phase upwardly through the catalyst in each reaction cell,
circulating at least part of the vapor phase of the distillation upwardly through each distillation cell, so that said vapor phase is in contact with the liquid phase only in the distillation cells, and not in the reaction cells,
collecting at least part of the reaction product at one end of said reactive distillation column and
collecting at least part of diluent(s) and excess of reagent(s) at the other end of said column.

5,368,692

METHOD FOR CONTROLLING PITCH

Arthur P. Derrick, New South Wales, Australia, assignor to Vinings Industries Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 823,826, Jan. 22, 1992, abandoned. This application Jul. 29, 1993, Ser. No. 99,219
Int. Cl.[5] D21H *17/34*
U.S. Cl. 162—181.8 11 Claims

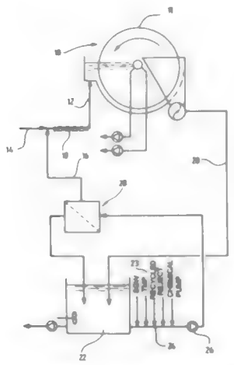
1. A method for the control of pitch in a papermaking pulp, which comprises; sequentially adding to and mixing with the pulp while in a thick stock stage (a) from 1–10 Kg/ton of pulp dry solids, of a low molecular weight, high cationic charge, polymeric water-soluble species; and (b) from 0.5 to less than 10 Kg/ton of pulp dry solids, of montmorillonite clay particles, said clay particles not having a water-soluble cationic polymer absorbed thereon.

5,368,693

APPARATUS FOR TREATING WHITE WATER

Pentti Vikio, Kerimaki, Finland, assignor to A. Ahlstrom Corporation, Noormarkku, Finland

Filed Dec. 10, 1992, Ser. No. 986,050
Claims priority, application Finland, Dec. 16, 1991, 915908
Int. Cl.[5] D21F *1/66*
U.S. Cl. 162—190 19 Claims



1. Apparatus for treating white water from a paper machine, comprising:
fiber recovery apparatus including an inlet;
a mixer connected to said inlet and for receiving white water;
a fractionation apparatus including an inlet for sweetener stock, an outlet for a coarse fraction, and an outlet for a fine fraction;
means for connecting said coarse fraction outlet to said water; and
a pump for pumping sweetener stock to said fractionation apparatus, said pump including an inlet; and further comprising a plurality of conduits for supplying pulp most desirable for sweetener stock closest to said pump inlet, and pulp least desirable for sweetener stock furthest from said pump inlet.

5,368,694

PITCH REDUCTION ON PAPER MACHINE FORMING FABRICS AND PRESS FABRICS

Evan V. Rohlf, West Dundee, Ill.; Fletcher Walley, and Richard J. Wagner, both of Dauphin Island, Ala., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 25, 1992, Ser. No. 981,574
Int. Cl.[5] D21H *21/02*
U.S. Cl. 162—199 17 Claims

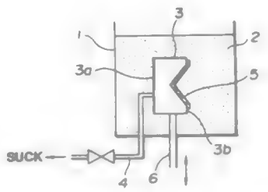
1. A method for controlling or inhibiting the deposition of pitch, derived from an aqueous pulp suspension having a neutral or cationic soluble charge, onto paper machine equipment surfaces which contact the aqueous pulp suspension and wherein the pulp suspension is treated on the paper machine to form paper, comprising the steps of:
a) contacting the aqueous pulp suspension with a water soluble anionic polymer or water soluble anionic surfactant in an amount sufficient to change the neutral or cationic soluble charge to an anionic soluble charge of at least −15 μeq/l in the aqueous pulp suspension without negatively affecting the quality of the paper; and
b) contacting the paper machine equipment surfaces which contact the aqueous pulp suspension with a water soluble cationic polymer, a water soluble cationic surfactant, or mixture thereof in an amount sufficient to inhibit the deposition of pitch deposits thereon, wherein the cationic polymer or surfactant has a charge density of at least 0.1 meq/g.

5,368,695

METHOD FOR PRODUCING AN ACOUSTIC VIBRATION PLATE

Masaru Uryu, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 883,547, May 15, 1992. This application Mar. 11, 1993, Ser. No. 29,572
Int. Cl.[5] D21J *3/12, 5/00*
U.S. Cl. 162—228 6 Claims



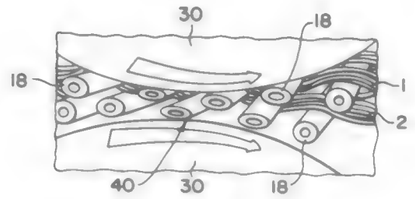
1. A method for producing an acoustic diaphragm comprising the steps of:
providing a paper substrate;
supporting the substrate on a suction case;
immersing the substrate and suction case into a liquid dispersion of microfibrillated pulp; and
applying a suction to draw liquid through the paper substrate and to deposit a layer of the microfibrillated pulp on an exposed surface of the paper substrat.

5,368,696

PAPERMAKERS WET PRESS FELT HAVING HIGH CONTACT, RESILIENT BASE FABRIC WITH HOLLOW MONOFILAMENTS

Francis J. Cunnane, III, Greer, and H. Thomas Sanders, Isle of Palms, both of S.C., assignors to Astex Group, Inc., Charleston, S.C.

Filed Oct. 2, 1992, Ser. No. 955,513
Int. Cl.[5] D21F *7/08*
U.S. Cl. 162—358.2 14 Claims



1. A wet press felt comprising:
a base fabric having a paper carrying side;
said base fabric including a system of machine direction (MD) yarns selectively interwoven with a system of cross machine direction (CMD) yarns such that said CMD yarns predominate on said paper carrying base fabric side;
said CMD yarns being hollow synthetic monofilament yarns having an O-shaped cross-section and an internal core void of at least 16%, being compressible from a substantially round cross-section to a fully flattened cross-section when subjected to nip pressures of at least 200 psi, and being sufficiently resilient to rebound to an uncompressed state after passing through a press nip; and
said base fabric being woven and finished such that in said finished base fabric:
portions of said CMD yarns which contact said MD yarns have at least a partially flattened cross-section, and
said CMD yarns remain substantially unflattened in cross-section thereby defining a cushioning surface on said paper carrying side of said base fabric which is resiliently compressible for enhancing wet press felt performance in dewatering an aqueous paper web through a press nip.

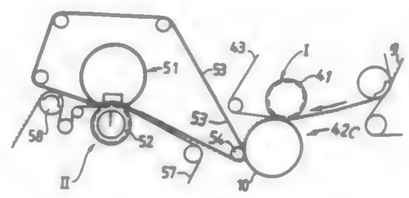
5,368,697

PRESS SECTION OF A PAPER MACHINE WITH STONE ROLL AND ELASTIC PRESS ELEMENT

Karl Steiner, Herbrechtingen; Albrecht Meinecke, and Karl Gaugenmaier, both of Heidenheim, all of Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Continuation of Ser. No. 927,609, Aug. 10, 1992, abandoned, which is a division of Ser. No. 745,485, Aug. 15, 1991, Pat. No. 5,178,732. This application Dec. 9, 1993, Ser. No. 164,683
Claims priority, application Germany, Aug. 17, 1990, 4026021
Int. Cl.[5] D21F *3/04*
U.S. Cl. 162—360.2 8 Claims

1. A press section of a paper machine for the removal of water from a web, which comprises:
a first felt dewatering press nip having a first endless felt belt for absorbing water from the web and arranged to travel through the first felt dewatering press nip;
a second press felt dewatering nip having a second endless felt belt for absorbing water from the web and arranged to travel through the second felt dewatering press nip, the first and second felt dewatering press nips being directly consecutive without any intermediate felt dewatering press nips;
the first felt dewatering press nip including a stone press roll which is arranged to contact one side of the web; and
a water impermeable elastic press element for picking up the



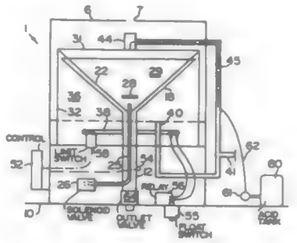
web by contact with the stone roll and for conducting the web into the second felt dewatering press nip, said elastic press element being arranged to contact the other side of the web in the second nip, the web being continuously in contact with at least one of the felt belts, the stone roll and the elastic press element.

5,368,698

WATER DISTILLATION APPARATUS

George R. Field, Edmonton, Canada; Wallace B. Bolte, Bismark, N. Dak., and Norman N. Pepin, Sherwood Park, Canada, assignors to Big Iron Drilling Ltd., Edmonton, Canada

Filed Mar. 11, 1994, Ser. No. 208,588
Claims priority, application Canada, Mar. 12, 1993, 2092612
Int. Cl.[5] B01D *3/42*
U.S. Cl. 202—180 10 Claims



1. A water distillation apparatus comprising housing means; first and second spaced apart, inverted conical-shaped partition means in said housing means; skirt means extending downwardly from an open upper end of said first partition means to a location above the bottom of said housing means, said first and second partition means and said skirt means dividing the interior of the housing means into an inlet reservoir chamber for cold water above said first partition means, a lower boiling chamber beneath said second partition means and an inclined condensation passage between said first and second partition means; inlet means for introducing cold water into the bottom of said reservoir chamber for overflow into said boiling chamber; inlet valve means in said inlet means controlling the flow of water into said reservoir chamber; heater means in said boiling chamber for heating water in said boiling chamber to produce steam; drain means in said boiling chamber for discharging water from the boiling chamber when the water exceeds a predetermined level in said boiling chamber; outlet means in fluid communication with said condensation passage for discharging water condensing therein from said housing means; cover means on the open upper end of said first partition means; a first opening in said cover means permitting the overflow of water to said boiling chamber; and overflow means in said cover means providing fluid communication between said cover means and said drain means, whereby during filling of said reservoir chamber cold water overflows

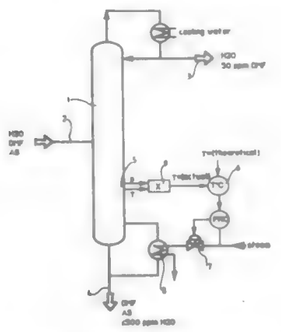
into said boiling chamber, and because of over filling, cold water overflows from said reservoir chamber and from said boiling chamber into said drain means to reduce mineral deposits in said housing means.

5,368,699

METHOD OF CONTROLLING THE CONCENTRATIONS OF A MULTICOMPONENT MIXTURE

Franz F. Rhiel, Dormagen-Delhoven; Günther Weymans, Leverkusen, and Said Makioui, Bergisch-Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 3, 1993, Ser. No. 12,685
Claims priority, application Germany, Feb. 12, 1992, 4203999
Int. Cl.[5] B01D *3/42*
U.S. Cl. 203—2 8 Claims



1. A method of controlling the concentrations of a multicomponent mixture at the discharge of a thermal separation column with a heated sump at the bottom thereof, said method comprising the steps of:

a) measuring the pressure P and the temperature T within the column, and producing signals representative of the measured pressure P and temperature T, respectively;

b) calculating a value f(T,P) in dependence upon said signals according to the equation:

$$f(T, P)=T-A1/(A2-\log(P)),$$

wherein A1 and A2 are constants which are empirically determined before the start of the control method and wherein f (T,P) is used as a substitute controlled variable for at least one concentration;

c) comparing the value f (T,P) with a theoretical value T*(theoretical); and

d) regulating the heating rate at the sump of the column so that the difference between the value f(T,P) and the theoretical value T*(theoretical) is minimized.

5,368,700

SYSTEM AND METHOD FOR REDUCING HYDROCARBONS IN WASTEWATER

David E. Bachmann, Irvine, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1992, Ser. No. 992,307
Int. Cl.[5] B01D *3/38*; C12F *1/04*
U.S. Cl. 203—10 1 Claim

1. A process for reducing benzene in desalter effluent water comprising the steps of:

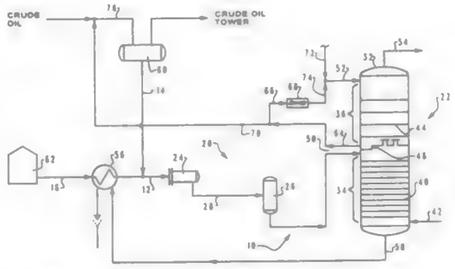
a. removing insoluble oil from the desalter effluent water;

b. contacting the desalter effluent water with steam to remove benzene from the desalter effluent water to produce vapors containing hydrocarbons;

c. contacting said vapors containing hydrocarbons with a cold process fluid stream;

d. condensing vapors containing hydrocarbon into the cold process fluid stream which results in a heated process fluid stream;

e. mixing a portion of the heated process fluid stream with crude oil to deposit hydrocarbons into the crude oil;



f. cooling a remaining portion of the heated process fluid stream to create a chilled fluid stream; and

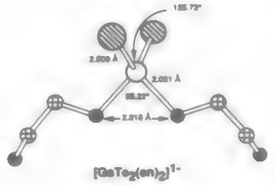
g. mixing the chilled process fluid stream with fresh makeup water to create the cold process fluid stream to condense additional vapors containing hydrocarbons.

5,368,701

PROCESS FOR FORMING ZINTL PHASES AND THE PRODUCTS THEREOF

Christopher J. Warren, Aldea, Pa.; Robert C. Haushalter, Little York, and Andrew B. Bocarsly, Princeton, both of N.J., assignors to NEC Research Institute, Inc. and Princeton University, both of Princeton, N.J.

Filed Jan. 11, 1993, Ser. No. 75,026
Int. Cl.[5] C25B *3/12*
U.S. Cl. 204—59 QM 12 Claims



1. An electrolytic process for preparing a Zintl phase solid comprising the steps of providing in an electrolytic cell a cathode electrode of an alloy composition that includes a component that will provide during electrolysis a Zintl polyanion,

providing in the electrolytic cell an anode electrode,

providing in the electrolytic cell a catholyte that includes a cation that will combine with the Zintl polyanion provided by the cathode electrode composition during electrolysis,

applying between the cathode and anode electrodes a current adequate for causing dissolution of the cathode electrode for a time sufficient to form in the electrolytic cell a Zintl phase solid that includes the polyanion provided by the electrolysis of the cathode alloy compound,

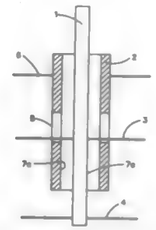
and recovering the Zintl phase solid from the electrolytic cell for utilization.

5,368,702

ELECTRODE ASSEMBLIES AND MUTIMONOPOLAR CELLS FOR ALUMINIUM ELECTROWINNING

Vittorio de Nora, Nassau, Bahamas, assignor to MOLTECH Invent S.A., Luxembourg

PCT No. PCT/EP91/02219, § 371 Date May 25, 1993, § 102(e) Date May 25, 1993, PCT Pub. No. WO92/09724, PCT Pub. Date Jun. 11, 1992
PCT Filed Nov. 20, 1991, Ser. No. 64,031
Claims priority, application European Pat. Off., Nov. 28, 1990, EP90810926.7
Int. Cl.[5] C25C *3/06, 3/12*
U.S. Cl. 204—67 25 Claims



1. A multimonopolar cell for the production of aluminum by the electrolysis of alumina dissolved in a molten salt electrolyte, comprising a plurality of substantially non-consumable anodes made of electronically conductive material resistant to the electrolyte and to anodically produced oxygen and substantially non-consumable cathodes made of electronically conductive material resistant to the electrolyte and to cathodically produced aluminium, said cell having a top and bottom with means for supplying current to the anodes from the top of the cell and the cathodes extending downwardly beyond the anodes and in electrical contact with the cell bottom, the anodes and cathodes are placed substantially upright or at a slope in the cell whereby, in use, cathodically produced aluminum downflows to the cell bottom while anodically produced oxygen escapes towards the top, characterized in that the anodes and cathodes are arranged as electrode assemblies electrically connected in parallel, each electrode assembly comprising one or more cathodes having an active cathode surface facing and surrounded by or in between an inwardly-facing active anode surface of at least one anode, said inwardly-facing active anode surface having an area which is greater than an area of active surface of the facing cathode, said at least one anode surrounding or forming an enclosure around said cathode and having at least one opening in an upper part thereof for the release of anodically evolved oxygen.

19. The process of using the cell according to claim 1 wherein there is carried out electrowinning of aluminum, by electrolysis of alumina dissolved in a molten salt electrolyte, at temperatures below 900° C.

5,368,703

METHOD FOR ARSENIC REMOVAL FROM WASTEWATER

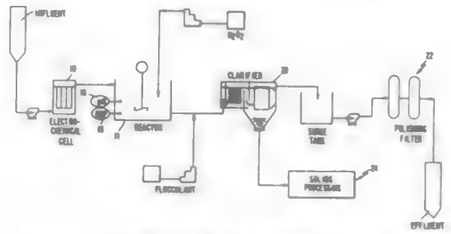
Michael D. Brewster, Tonawanda, N.Y., assignor to Anco Environmental Processes, Inc., Amherst, N.Y.

Filed May 12, 1992, Ser. No. 881,972
Int. Cl.[5] C02F *1/461*
U.S. Cl. 204—86 7 Claims

1. Process for removing arsenic from aqueous media comprising the steps of:

providing a bipolar electrochemical cell comprising a pair of outer electrode elements, respectively, an anode and a cathode, positioned in parallel, spaced apart relationship and a plurality of additional electrode elements disposed between said outer electrode elements in a closely spaced relationship therewith, said additional electrode elements being substantially equidistantly spaced one from another and disposed parallel to said outer electrode elements;

passing said media through said cell while applying an electric potential across said electrodes so that said anode and cathode are oppositely charged, respectively, positive and negative, and said additional electrodes are charged by induction to produce a positively charged portion and a negatively charged portion on each electrode, said anode element and said positively charged portion of each additional electrode having a surface or a portion of a surface



of iron, iron alloy or insoluble iron compounds so as to produce anodically ferrous ion in the form of an insoluble iron compound, specie, or complex in said ionizing media;

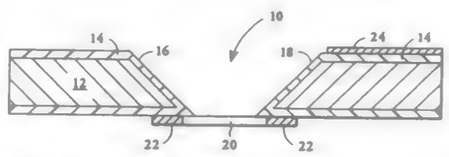
subjecting said media containing said iron compound, specie, or complex to a mild oxidation sufficient to convert the ferrous ion present therein to ferric ion and to oxidize the arsenic therein to the +5 valance specie to form ferric arsenate and an hydroxy ferric oxide-arsenate complex which compound and complex are insoluble in said aqueous media; and removing said insoluble compound and complex from said media.

5,368,704

MICRO-ELECTROCHEMICAL VALVES AND METHOD

Marc J. Madou, Palo Alto, and Michael J. Tierney, San Jose, both of Calif., assignors to Teknekron Corporation, Incline Village, Nev.

Filed Aug. 6, 1993, Ser. No. 103,274
Int. Cl.[5] C25F *3/00, 7/00*
U.S. Cl. 204—129.55 17 Claims



8. A method for producing quantitatively variable flow communication between major surfaces of a monolithic substrate comprising:

forming a series of n passages through said substrate, each of said passages having a different size defined by its minimum cross-sectional area, said series being characterized by the first member in said series having the smallest size with each subsequent member in said series having a size twice as large as the previous member such that the nth member of said series has a size $2^{(n-1)}$ times the size of the first member;

positioning a separate electrochemically removable barrier to block flow through each of said passages, each of said barriers being selectively removable; and

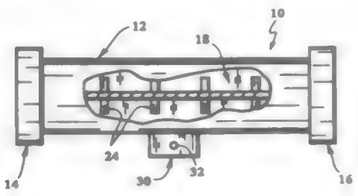
electrochemically removing said barriers from a selected group of said passages to produce quantitative flow communication between said substrate surfaces.

5,368,705

FUEL TREATMENT AND CONDITIONING APPARATUS

Stephen Cassidy, Attleboro Falls, Mass., assignor to Blue Star Technologies, Ltd., Lexington, Mass.

Continuation-in-part of Ser. No. 815,285, Dec. 27, 1991, Pat. No. 5,258,108. This application Nov. 1, 1993, Ser. No. 146,879
The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[5] C02F *1/46*
U.S. Cl. 204—136 14 Claims



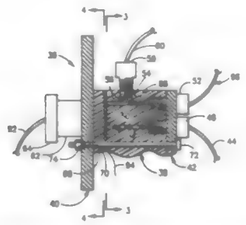
1. A fluid-treatment device comprising:
a. a housing including inlet and outlet means;
b. a metal core disposed within the housing so as to contact fluid entering the housing through the inlet means as it passes through the housing, wherein the core is an alloy comprising zinc, manganese, copper, a precious metal and silicon, but not lead, and wherein the device is not supplied with electricity by an outside electrical source.

5,368,706

AMPEROMETRIC DETECTION CELL

Mark L. Bowers, Arlington; David Buttaro, Woburn, and W. Michael Krebs, Sudbury, all of Mass., assignors to Esa, Inc., Bedford, Mass.

Continuation of Ser. No. 827,534, Jan. 29, 1992, which is a continuation of Ser. No. 487,774, Mar. 2, 1990. This application Jan. 12, 1993, Ser. No. 180,830
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 3 Claims



1. In a method of electrochemically testing a sample solution by passing said solution through a thin layer detection flow path of an electrochemical flow cell, said flow cell comprising an amperometric flow cell having operatively disposed in said thin layer detection flow path a testing electrode, a counter electrode and at least one reference electrode, wherein said at least one reference electrode consists of a solid state palladium electrode, the improvement which comprises enhancing potential control of the testing electrode by sensing electrochemical changes in said sample solution through a voltage follower, and actively driving said reference electrode through a feed back loop in response to electrochemical changes in the sample solution, and said counter electrode comprises a palladium or palladium oxide foil defining one side of the thin layer detection flow path.

5,368,707

CONVENIENT DETERMINATION OF TRACE LEAD IN WHOLE BLOOD AND OTHER FLUIDS

Robert W. Heukeus, Durham; Junguo Zhao, Chapel Hill; Marek Wojciechowski, Cary; John P. O'Daly, Carrboro; Zhi-Wei Liang, Durham, and Susan E. Morris, Chapel Hill, all of N.C., assignors to Andcare, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 821,732, Jan. 15, 1992, Pat. No. 5,217,594. This application Jun. 7, 1993, Ser. No. 73,806
Int. Cl.[5] G01N *27/26, 33/20*
U.S. Cl. 204—153.12 11 Claims

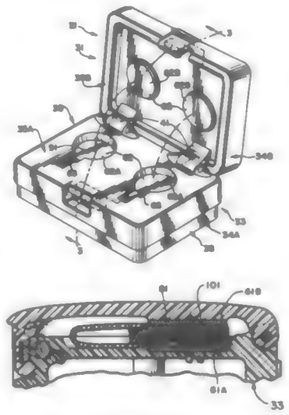
1. A method of determining lead levels in blood, comprising:
admixing a blood sample with an agent specifically binding lead to form a lead complex;
displacing the lead with a metal ion to form an irreversible metal ion complex; and
detecting the displaced lead and determining the lead levels in blood by electrochemical measurement.

5,368,708

LENS DECONTAMINATION SYSTEM

Mark L. Paakow, Chicago, Ill., assignor to Isoclear, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 800,686, Dec. 2, 1991, Pat. No. 5,227,039. This application Jul. 12, 1993, Ser. No. 90,293
Int. Cl.[5] C01N *27/26, 27/447*; B08B *7/00*
U.S. Cl. 204—180.1 9 Claims



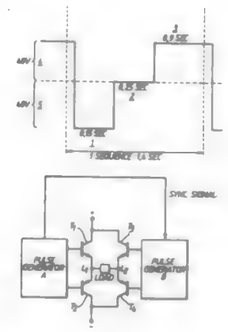
7. A process for removing contaminants from a contact lens, said lens having curved surfaces and edge, said decontamination process comprising the steps of:
(a) completely surrounding the curved surfaces and the edge of the lens with pliant substance through which electrical charges are transmissible, said pliant substance including an outer face;
(b) positioning charge transmitting surfaces in contact with said outer face of said pliant substance; and
(c) applying the electrical charges to said transmitting surfaces, whereby charges are transmitted from said transmitting surfaces through said pliant substance to said lens, whereby contaminants are drawn and from and below the curved surfaces and the edge of said lens into said pliant substance.

5,368,709

METHOD AND APPARATUS FOR CONTROLLING THE RELATIVE HUMIDITY IN CONCRETE AND MASONRY STRUCTURES

Kjell Utklev, Moss, Norway, assignor to Elcraft A/S, Dilling, Norway

PCT No. PCT/NO90/00049, § 371 Date Sep. 26, 1991, § 102(e) Date Sep. 26, 1991, PCT Pub. No. WO90/10767, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 12, 1990, Ser. No. 768,609
Claims priority, application Norway, Mar. 10, 1989, 891034
Int. Cl.[5] B01D *13/02*
U.S. Cl. 204—182.2 12 Claims



2. A method for expulsion or control of humidity in a concrete or masonry structure, having a current source and one or more electrodes comprising at least one anode and cathode being provided in the concrete or masonry structure, the electrodes being a non-corrosive material, and connected in series or parallel with the current source, wherein an earth electrode is provided adjacent to or on the concrete or masonry structure, so that the electrode or electrodes comprise the anode and the earth electrode comprises the cathode in an electric circuit when they are connected with outputs of the current source, wherein the anode and cathode are provided with a pulse voltage supplied by the current source, and wherein the pulse voltage is delivered sequentially as pulse sequences of a given pattern, comprising the steps of feeding the anode with a pulse sequence generated with a first negative pulse of a duration, followed by a neutral interval or a zero voltage interval of a changing duration being from greater than 0 to 2 times that of the duration of said first negative pulse, followed by a positive pulse, having a duration which is about six times that of the duration of the negative pulse, and simultaneously feeding the cathode with a corresponding pulse sequence, but of inverted polarity; whereby the humidity in the structure is controlled.

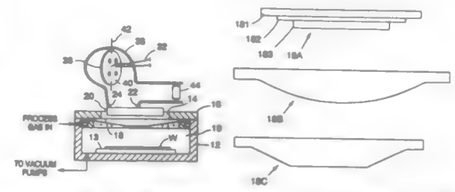
5,368,710

METHOD OF TREATING AN ARTICLE WITH A PLASMA APPARATUS IN WHICH A UNIFORM ELECTRIC FIELD IS INDUCED BY A DIELECTRIC WINDOW

Ching-Hwa Chen, Milpitas; David Liu, San Jose, and Duc Tran, Saratoga, all of Calif., assignors to LAM Research Corporation, Fremont, Calif.

Division of Ser. No. 883,201, May 14, 1992, Pat. No. 5,226,967. This application Mar. 29, 1993, Ser. No. 38,612
Int. Cl.[5] C23C *14/00*
U.S. Cl. 204—192.32 13 Claims

1. A method for treating an article with plasma comprising the steps of:
placing an article within an interior of a chamber;
introducing a process gas into the chamber;
generating a uniform electric field in the chamber by passing radiofrequency energy through a dielectric window in the chamber and inducing an electric field in the interior of the chamber, the dielectric window having a configuration which reduces the induced electric field in the interior of the chamber near a central portion of the dielectric



window, the uniform electric field generating a uniform electron flow in the process gas and thereby generating a plasma of uniform plasma density; and
plasma treating the article by exposing a surface of the article to the plasma generated in the chamber.

5,368,711

SELECTIVE METAL ELECTRODEPOSITION PROCESS AND APPARATUS

Jaime Poris, 21955 Bear Creek Way, Los Gatos, Calif. 95030

Division of Ser. No. 799,734, Nov. 22, 1991, Pat. No. 5,256,274, which is a continuation-in-part of Ser. No. 561,168, Aug. 1, 1990, abandoned. This application Apr. 29, 1993, Ser. No. 57,141
Int. Cl.[5] C25D *5/02*
U.S. Cl. 204—193 5 Claims

1. Apparatus for electrodeposition of a conducting metal onto a semiconductor, said apparatus comprising:
diffusion barrier deposition means to provide a diffusion barrier layer on said semiconductor having contacts and vias, and to prevent metal diffusion into said semiconductor,
an electrically conducting nucleation layer deposition means to provide an electrically conducting nucleation layer on said diffusion barrier layer and a sufficient adhesion surface for electrodeposition of said metal,
inert metal mask means to place a first metal mask layer onto said nucleation layer,
selective electrodeposition means to selectively electrodeposit said metal onto said nucleation layer while simultaneously completely filling a contact or via, and
electrochemical etching means to increase a radius of curvature of edges of said metal, thereby facilitating planarization and decreasing line-to-line capacitance.

5,368,712

BIOLOGICALLY MIMETIC SYNTHETIC ION CHANNEL TRANSDUCERS

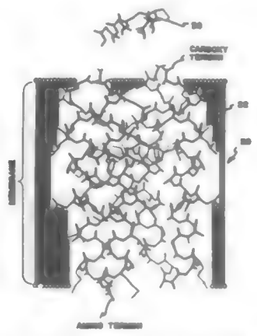
John Tomich, Pasadena, and Mauricio Montal, La Jolla, both of Calif., assignors to Symporin Technologies, Inc., Newport Beach, Calif.

Continuation-in-part of Ser. No. 430,814, Nov. 2, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 576,222
Int. Cl.[5] G01N *27/327*
U.S. Cl. 204—403 24 Claims

1. A synthetic assembly for in vitro active ion transport, mimetic to a native ion channel comprising:
(a) an electrically insulating membrane; and
(b) a plurality of synthesized protein units transmembranely dispersed in the membrane wherein the protein units comprise a template peptide and 4–10 polypeptide subunits tethered to the template peptide, mimetic to an active portion of a native ion channel protein, positioned to

extend from the template peptide substantially through the membrane, defining:

(i) a gated ion channel pore, and



(ii) a detector region operatively associated with the gated pore.

5,368,713

LAMINATED SYSTEM FOR GAS SENSORS AND PROCESS FOR PRODUCING IT

Karl-Hermann Friese, Leonberg; Hans-Martin Wiedenmann, Stuttgart, and Eberhard Goehring, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

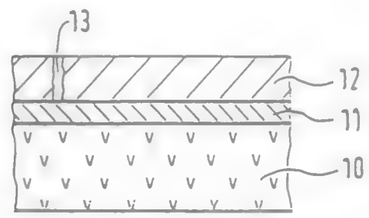
PCT No. PCT/DE91/00749, § 371 Date Apr. 5, 1993, § 102(e) Date Apr. 5, 1993, PCT Pub. No. WO92/07253, PCT Pub. Date Apr. 30, 1992

PCT Filed Sep. 21, 1991, Ser. No. 39,059

Claims priority, application Germany, Oct. 20, 1990, 4033388

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—429 **14 Claims**



1. A layer system for a gas sensor, comprising:

(a) a substrate (10),

(b) an electrode layer (11); and

(c) at least one porous ceramic covering layer (12) comprising at least one mixed oxide of at least one light alkali metal oxide selected from the group consisting of lithium, sodium and potassium together with at least one thermally stable oxide of an element having a valence of at least three, selected from the group consisting of B, Al, Ga, In, Tl, Sc, Y, La, Ti, Zr, Hf, and elements from the Lanthanide Series.

5,368,714

EDGE PROTECTOR FOR ELECTROLYTIC ELECTRODE, SPREADER BAR THEREOF AND METHOD OF ATTACHING SAME TO ELECTROLYTIC ELECTRODE

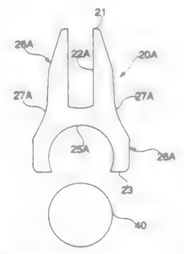
Hiroshi Tanaka, and Yasuo Masuda, both of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Apr. 20, 1993, Ser. No. 49,984

Claims priority, application Japan, Apr. 20, 1992, 4-099939; Apr. 20, 1992, 4-099940; Apr. 20, 1992, 4-099941; Apr. 20, 1992, 4-099942

Int. Cl.[5] C25C *7/06, 7/00*

U.S. Cl. 205—76 **29 Claims**



19. A method of attaching an edge protector with a predetermined shape including an arcuate concave outer surface effectively used for an electrolysis electrode, to an electrode for electrolysis comprising:

attaching an inner jaw of said edge protector to opposed side surfaces of said electrode;

inserting a spreader bar into an outer jaw of said edge protector; and

expanding a portion of said spreader bar contacting an inner surface of said outer jaw, whereby said outer jaw is expanded, and said inner jaw is urged into clamping relationship with said electrode.

21. A method according to claim 19, wherein the step of expanding includes thermally expanding said spreader bar in an electrolytic cell.

5,368,715

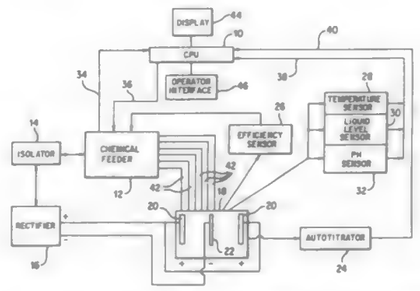
METHOD AND SYSTEM FOR CONTROLLING PLATING BATH PARAMETERS

Michael P. Hurley, Clinton, Conn., and Stephen J. Boezi, Coventry, R.I., assignors to Enthone-Omi, Inc., Warren, Mich.

Filed Feb. 23, 1993, Ser. No. 24,203

Int. Cl.[5] C25D *21/14, 17/00;* **B05C** *11/00*

U.S. Cl. 205—82 **20 Claims**



14. A method of controlling a plating bath, said method comprising the steps of:

calculating a predictive model of the changes in composition of a plating bath as a function of current-time to determine an amount and timing of a predicted replenisher addition for at least one bath constituent;

measuring at least one bath parameter indicative of the changes in composition of the plating bath;

calculating an amount and timing of an actual replenisher addition by modifying said predicted replenisher addition according to the measured at least one bath parameter.

17. A method as in claim 14, wherein said predictive model is calculated based on changes caused by anode and cathode reactions and changes caused by drag-out.

5,368,716

METHOD AND APPARATUS FOR ANALYZING THE COMPOSITION OF AN ELECTRO-DEPOSITION COATING MATERIAL AND METHOD AND APPARATUS FOR CONTROLLING SAID COMPOSITION

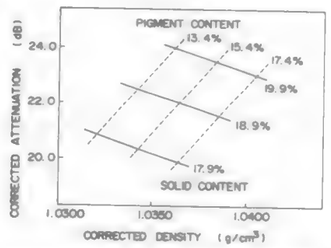
Makoto Kikuta, Yokohama, Japan, assignor to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Oct. 19, 1992, Ser. No. 963,219

Claims priority, application Japan, Oct. 21, 1991, 3-299578

Int. Cl.[5] C25D *21/14*

U.S. Cl. 205—84 **10 Claims**



4. A method for controlling the composition of an electrodeposition coating material in an electrodeposition coating material tank comprising the steps of:

measuring the attenuation L of an ultrasonic wave through the electrodeposition coating material and generating a signal indicative of the attenuation of the ultrasonic wave;

measuring the density ρ of the electrodeposition coating material and generating a signal indicative of the density;

measuring the temperature T of the electrodeposition coating material and generating a signal indicative of the temperature;

calculating the proportion N of solid matter and the proportion W of pigment contained in the electrodeposition coating material, on the basis of the signals indicative of said ultrasonic-wave attenuation, density and temperature;

comparing the calculated proportions N and W of the solid matter and pigment contained in the electrodeposition coating material with reference values and generating corresponding control signals; and

feeding supplementary coating material in accordance with said control signals.

5,368,717

METALLIZATION OF ELECTRONIC INSULATORS

Shimshon Gottesfeld, and Francisco A. Uribe, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Office of Technology Transfer, Alameda, Calif.

Continuation-in-part of Ser. No. 617,757, Nov. 26, 1990. This application Mar. 17, 1993, Ser. No. 32,959

Int. Cl.[5] C25D *5/56*

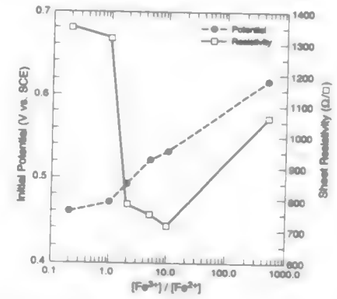
U.S. Cl. 205—98 **10 Claims**

1. A method for plating onto an insulating substrate, comprising the steps of:

forming a solution comprising a monomer, an oxidant for said monomer, and a dopant;

providing in said solution a ratio of $[Fe^{+3}]/[Fe^{+2}]$ effective to maintain a solution oxidation potential within a range of 0.5 to 0.55 (V vs. SCE);

immersing said insulating substrate in said solution for a time effective to form a conducting polymer having a sheet resistivity effective for electrodeposition of a selected metal; and



electrodepositing said selected metal onto each said substrate with said conducting polymer.

5,368,718

ELECTROWINNING OF DIRECT METALLIZATION ACCELERATORS

Jay B. Conrod, Cheshire; Paul Menkin, Branford, and Durand A. Cercone, Cheshire, all of Conn., assignors to Enthone-OMI, Inc., West Haven, Conn.

Filed Sep. 13, 1993, Ser. No. 120,510

Int. Cl.[5] C25D *21/18*

U.S. Cl. 205—101 **5 Claims**

1. A method for regenerating for reuse a post-activator solution used in a process for the direct metallization of non-conductive substrates wherein a noble metal-tin containing solution is contacted with the substrate to activate the substrate and the activated substrate contacted with a post-activator solution to increase its conductivity for plating thereon comprising electrolyzing the used post-activator solution which comprises noble metal, copper and tin, the tin being in an amount less than about 100 ppm to decrease the level of tin in the solution.

5,368,719

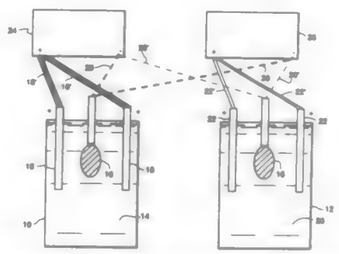
METHOD FOR DIRECT PLATING OF IRON ON ALUMINUM

Sue Troup-Packman, Calabasas, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 12, 1993, Ser. No. 61,353

Int. Cl.[5] C25D *5/30*

U.S. Cl. 205—213 **17 Claims**



1. An iron plating process for plating iron on surfaces of aluminum and aluminum alloy parts, comprising:

(a) cathodically activating said surface of said part in an acid solution to form an activated surface; and

(b) plating on said activated surface a layer of iron from an iron sulfate-containing plating bath.

5,368,720

FIXED BED/MOVING BED REFORMING WITH HIGH ACTIVITY, HIGH YIELD TIN MODIFIED PLATINUM-IRIDIUM CATALYSTS

John F. Dolan, Baton Rouge, La.; Stuart S. Goldstein, Ewell, England, and George A. Swan, III, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 627,527, Dec. 14, 1990, abandoned. This application Apr. 13, 1992, Ser. No. 867,587
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] C10G *35/085*
U.S. Cl. 208—65 8 Claims

1. A two stage process for improving the octane quality of a naphtha feedstock comprised of a mixture of paraffins, aromatics and naphthenes in a reforming first stage of fixed-bed reforming zones and a second stage comprised of one or more moving-bed reforming zones, the process comprising;

(a) reforming said naphtha feedstock in a first reforming stage comprised of one or more fixed-bed reforming zones serially connected to one another, which fixed-bed reforming zones contain a catalyst comprised of about 0.1 percent to about 0.7 percent platinum, from about 0.1 percent to about 0.7 percent iridium, and from about 0.02 percent to about 0.4 percent tin, based on the total weight of the catalyst, wherein each of said metals is composited with and uniformly dispersed through-out an inorganic oxide support, thereby producing an effluent stream; and

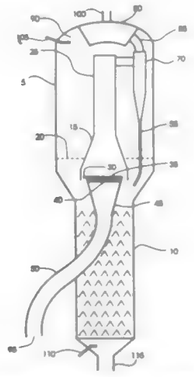
(b) reforming said effluent stream in a second reforming stage comprised of one or more serially connected reforming zones which are operated in a moving-bed continual catalyst regeneration mode, which catalyst is comprised of one or more Group VIII noble metals on substantially spherical refractory support particles, wherein the catalyst continually descends through the reforming zone, exits, and is passed to a regeneration zone where it is regenerated by burning-off at least a portion of any accumulated carbon, and wherein the regenerated catalyst is continually recycled back to the one or more reforming zones.

5,368,721

CATALYTIC CRACKING SYSTEM

Patrick H. Terry, Middletown; Gregory S. Sherowski, Whippany, both of N.J., and Philip Holmes, West Horsley, England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 21, 1993, Ser. No. 80,382
Int. Cl.[5] C10G *11/00*
U.S. Cl. 208—146 8 Claims



1. A catalytic cracking process comprising providing a feed stream of hydrocarbon and catalytic cracking catalyst;

catalytically cracking the hydrocarbon with the catalytic cracking catalyst to form a reaction stream having a relatively constant velocity, wherein the reaction stream comprises a mixture of hydrocarbon, cracked hydrocarbon and catalytic cracking catalyst;

decreasing the velocity of the hydrocarbon and cracked hydrocarbon relative to the catalytic cracking catalyst within the reaction stream to form a reaction stream having a negative slip velocity;

increasing the velocity of the hydrocarbon and cracked hydrocarbon relative to the catalytic cracking catalyst within the negative slip velocity reaction stream to form a reaction stream having a positive slip velocity;

collecting the positive slip velocity reaction stream;

reducing the velocity of the hydrocarbon and cracked hydrocarbon relative to the catalytic cracking catalyst within the positive slip velocity reaction stream, cracking the hydrocarbon with the catalytic cracking catalyst; and

separating and recovering the cracked hydrocarbon.

5,368,722

VOID GRADING

Jesper Bartholdy, Brovshoj, Denmark, assignor to Haldor Topsoe A/S, Denmark

Filed Jun. 14, 1993, Ser. No. 76,577
Claims priority, application Denmark, Jun. 30, 1992, 0861/92
Int. Cl.[5] C10G *35/04, 45/00*
U.S. Cl. 208—149 5 Claims

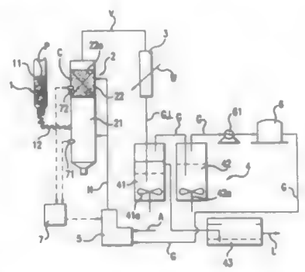
1. Process for the hydrotreating of a hydrocarbon feedstock comprising passing the feedstock through a multilayered fixed bed hydrotreating catalyst system comprising two different shaped catalyst particles, one shape providing a large void volume and the other shape providing a low void volume, said particles being mixed in different ratios of said particle shapes in different layers of the catalyst bed, the proportion of shapes providing a low void volume increasing in the direction of feedstock flow.

5,368,723

METHOD OF AND APPARATUS OF PRODUCING LOW BOILING POINT HYDROCARBON OIL FROM WASTE PLASTICS OR WASTE RUBBERS

Toshiki Takahashi, and Yoshio Tanimoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 10, 1993, Ser. No. 15,982
Claims priority, application Japan, Feb. 10, 1992, 4-023787; Jul. 9, 1992, 4-182558
Int. Cl.[5] C10G *1/00;* C10B *57/04, 21/20*
U.S. Cl. 208—427 11 Claims



1. A method of producing a low boiling point hydrocarbon oil from waste plastic materials, comprising the steps of:

heating waste plastic materials so as to thermally decompose them, thereby producing a vapor product; and

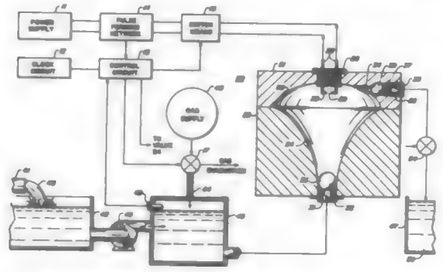
bringing said vapor product into contact with a solid Lewis acid catalyst containing hydrochloric acid as a catalytic decomposing activator so as to crack said vapor product, thereby producing a low boiling point hydrocarbon oil.

5,368,724

APPARATUS FOR TREATING A CONFINED LIQUID BY MEANS OF A PULSE ELECTRICAL DISCHARGE

Richard A. Ayers, El Cajon, Calif., and Richard H. Wesley, Houston, Tex., assignors to Pulsed Power Technologies, Inc., Spring Valley, Calif.

Filed Jan. 29, 1993, Ser. No. 11,224
Int. Cl.[5] B01D *17/06*
U.S. Cl. 210—110 18 Claims



1. Apparatus operable for treating a liquid by the use of a pulsed electrical discharge in a treatment vessel which comprises:

a) a treatment vessel having an input port and an output port, said vessel having an inner surface defining a liquid treatment region including a reflector section and a concentrator section;

b) sealing means located at said input and output ports for respectively controlling passage of liquid therethrough;

c) electrode means contained within said vessel and spaced adjacent to the reflector section for establishing a plasma in said vessel, upon application of a voltage to said electrode means and creating a shock wave therein;

d) pulse forming means for supplying a series of electrical pulses to said electrode means; and

e) control means for regulating supply of liquid to the input port and establishing the liming of pulses supplied to the electrode means, the resultant shock wave treating liquid present within the vessel.

2. The invention in accordance with claim 1 wherein said concentrator section defines a liquid treatment region which decreases in cross-sectional area with increasing distance from said electrode means.

3. The invention in accordance with claim 2 wherein said reflector section has a curved surface.

4. The invention in accordance with claim 3 wherein said electrode means is centrally located in the reflector section.

5. The invention in accordance with claim 4 wherein said control means comprises a normally open valve closed by differential pressure exerted by the liquid in the treatment vessel.

5,368,725

APPARATUS FOR STOP FLOW MEMBRANE PROBE ANALYSIS

Robert A. Bredeweg, and Eagin D. Yalvac, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1992, Ser. No. 998,112
Int. Cl.[5] B01D *65/00*
U.S. Cl. 210—137 2 Claims

1. Apparatus for stop flow membrane probe analysis, the apparatus especially suitable for on-line analysis, the apparatus comprising:

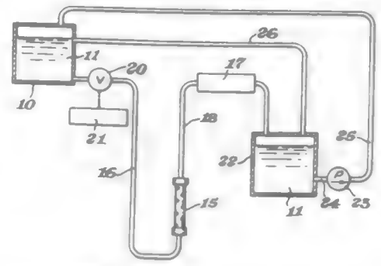
(a) a reservoir for containing a liquid extractant;

(b) a valve, the valve being in liquid communication with the reservoir, the valve being of a type that can be turned on and off;

(c) flow through membrane probe, the flow through membrane probe comprising a semipermeable membrane which partitions a flow channel from an exposed surface of the membrane, the flow channel being in liquid communication with the valve;

(d) a detector, the detector being in liquid communication with the flow channel of the flow through membrane probe;

(e) means for turning the valve on and off so that the apparatus can be used for stop flow analysis;



(f) a container for containing an extractant, the container being in liquid communication with the detector, the container being positioned below the reservoir, the reservoir, valve, membrane, probe, detector and container being constructed and arranged such that an extractant contained in the reservoir flows though the valve, the flow channel of the flow through membrane probe, the detector and into the container in that order by gravity flow;

(g) a pump, the pump being in liquid communication with the container and the reservoir such that an extractant contained in the container can be recycled into the reservoir; and

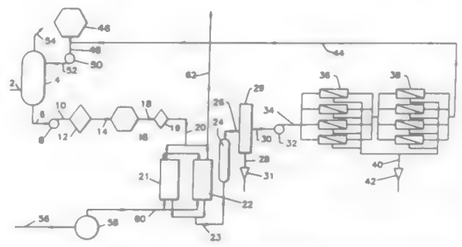
(h) means for controlling the level of an extractant contained in the reservoir.

5,368,726

APPARATUS FOR TREATING AND REGENERATING SPENT CAUSTIC

Stephen Z. Mascomian, Houston, Tex., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Division of Ser. No. 910,214, Jul. 9, 1992, Pat. No. 5,268,104.
This application Aug. 27, 1993, Ser. No. 112,419
Int. Cl.[5] C02F *1/20, 1/78*
U.S. Cl. 210—188 15 Claims



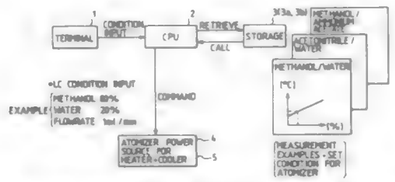
1. A system for regenerating a spent caustic solution which comprises:

(a) a caustic treatment tower;

(b) a gasoline mixing drum, a deoiling drum and a degassing

drum for the removal of residual dispersed oil from the spent caustic solution before the spent caustic solution enters a reactor vessel;
(c) a reactor vessel for oxidizing the spent caustic solution from the caustic treatment tower with an air/ozone gas mixture;
(d) an ultraviolet radiation source for radiating the oxidized spent caustic with a range of radiation of 185 nm to 300 nm;
(e) a nanofiltration means for filtering the radiated spent caustic; and
(f) a means for pumping the spent caustic solution throughout the regenerating system.

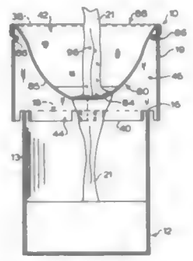
5,368,727
LIQUID CHROMATOGRAPH MASS SPECTROMETER
Toshiaki Takahashi; Kenichi Shizukuishi; Youko Katho; Naoto Senda, all of Katsuta, and Tomomi Bando, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instruments Engineering Co., Ltd., Ibaraki, both of Japan
Filed Sep. 29, 1992, Ser. No. 955,148
Claims priority, application Japan, Oct. 3, 1991, 3-256409
Int. Cl.[5] B01D *15/08, 59/44;* **G06F** *15/46*
U.S. Cl. 210—198.2 **5 Claims**



1. A liquid chromatograph mass spectrometer comprising:
a liquid chromatograph unit for performing liquid chromatography;
an atomizer having a controllable temperature for heating and atomizing a liquid flowing out of the liquid chromatograph unit during liquid chromatography to produce an atomized liquid;
ionizing means for ionizing the atomized liquid to produce an ionized sample;
a mass spectrometer for analyzing the ionized sample;
storage means for successively storing liquid chromatography conditions and respective atomizer temperatures used for the liquid chromatography conditions for past measurements performed with the liquid chromatograph mass spectrometer;
input means for inputting a current liquid chromatography condition for a current measurement;
retrieving means for retrieving from the storage means a liquid chromatography condition nearest to the current liquid chromatography condition among the liquid chromatography conditions stored in the storage means, and the atomizer temperature used for the retrieved liquid chromatography condition; and
atomizer temperature setting means for setting the atomizer temperature to an optimum temperature for the current liquid chromatography condition based on the retrieved atomizer temperature.

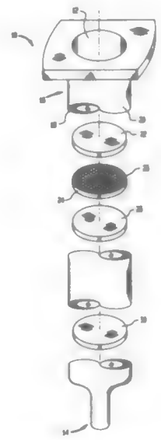
5,368,728
PAINT STRAINER ASSEMBLY
Paul H. Reaves, Durham, N.C., assignor to Reaves & Company, Inc., Durham, N.C.
Filed Jun. 1, 1994, Ser. No. 252,438
Int. Cl.[5] B01D *29/085*
U.S. Cl. 210—232 **4 Claims**

1. A liquid paint strainer assembly for use in straining and depositing liquid paint in an open container having a top edge, comprising:
(a) an upwardly extending closed wall support formed by a plurality of wall panels hingedly interconnected by elongate hinging portions, and having upper and lower edges defining respective upper and lower openings and a passageway interconnecting said openings;
(b) means for removably attaching said wall support to the top edge of said container at said lower edge of said wall support;
(c) a strainer bag formed of a mesh material and defining a tapered cross-section, a closed end and an upper perimeter



edge defining an open end, said perimeter edge having an elasticized periphery portion surrounding and joined thereto enabling said open end to be contracted and expanded;
(d) an open groove formed in said panels at each said hinging portion and uniformly spaced below said wall support upper edge thereby enabling the elasticized periphery portion of said strainer bag to be draped over the upper edge of said wall support and inserted into each said groove thereby to locate said periphery portion externally of said panels and said closed end of said strainer bag extending downwardly within said passage.

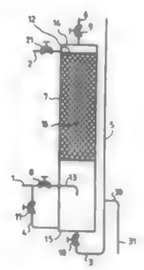
5,368,729
SOLID PHASE EXTRACTION DEVICE
Joseph Stefkovich, Franklin, and Alfonso Liu, Boonton, both of N.J., assignors to Whatman, Inc., Clifton, N.J.
Filed Jul. 23, 1993, Ser. No. 97,396
Int. Cl.[5] B01D *24/00*
U.S. Cl. 210—266 **4 Claims**



1. In a hollow solid phase extraction device having an input

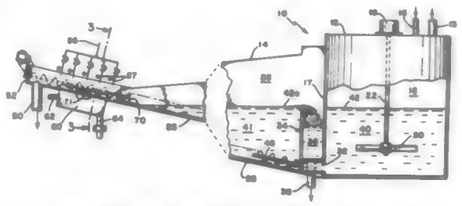
port and an output port, sorbent-retaining means disposed between said input port and said output port, and a sorbent material entrapped within said sorbent retaining means, said device being operable to accept and maintain a pressure differential between said input port and said output port, the improvement comprising:
(i) a solvent-compatible permeable membrane having a bubble point greater than the normal operating pressure differential normally applied between said input port and said output port which allows solvent to pass through said membrane while precluding the passage of air therethrough, thereby preventing said sorbent material from drying out, and,
(ii) membrane support means supporting said membrane, said membrane support means being disposed upstream from said sorbent retaining means in an air-tight relationship with said interior of said extraction device.

5,368,730
FILTERING APPARATUS
Jean-Louis Vital, Boulogne, and Hubert Lemmel, Nanterre, both of France, assignors to Degremont S.A., Rueil Malmaison Cedex, France
Continuation of Ser. No. 159,080, Feb. 23, 1988, abandoned. This application Jun. 22, 1990, Ser. No. 541,444
Claims priority, application France, Feb. 23, 1987, 87 02285
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—269 **9 Claims**



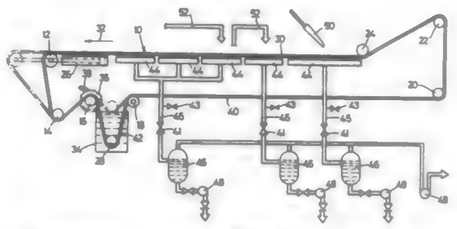
1. A filtering apparatus comprising a prismatic or cylindrical shaped enclosure (7) closed at a lower end (15), the enclosure having adjacent said lower end (15) an untreated fluid inlet pipe (1) and a waste discharge pipe (3) for materials in suspension in an untreated fluid, the enclosure having adjacent an upper end (16) a physical fixing means (12) and a treated fluid discharge pipe (2) for treated fluid, said enclosure containing filtering particles (16) of a density less than that of the fluid to be treated, the particles having a characteristic mass per unit volume between 5 kg/m^3 and 500 kg/m^3 and occupying a first volume of said enclosure (7), a second volume of said enclosure (7) defined as the volume available between the untreated fluid inlet (1) and the physical fixing means (12), said particles being retained by the physical fixing means (12) so as to form a fixed floating bed, the treated fluid discharge pipe (2), placed at the upper end of the filtering apparatus, situated adjacent the physical fixing means (12) for retaining the fixed floating bed, the waste discharge pipe (3) discharging the filtered materials in suspension with the column of fluid contained in the enclosure at a speed higher than a minimum fluidization speed (Vmf), said waste discharge pipe (3) positioned at the lower end of the enclosure and comprising (i) an upward pipe forming a vent (5) and (ii) a horizontal part (30) situated at a level lower than that of the untreated fluid inlet pipe (1), the untreated fluid inlet pipe (1) disposed in a region adjacent the lower end of the enclosure and situated below the lower level of the fixed floating bed and above the level of the horizontal part (30) of said waste discharge pipe (3).

5,368,731
VACUUM ASSISTED SLAKER CLASSIFIER
Jeffrey C. Pesotini, Milford, Conn., assignor to Dorr-Oliver Incorporated, Milford, Conn.
Filed Oct. 4, 1993, Ser. No. 131,322
Int. Cl.[5] B01D *29/92, 35/027;* **C04B** *2/08;* **C01F** *11/02*
U.S. Cl. 210—295 **5 Claims**



1. A slaker apparatus employed in the Kraft or pulp process having a slaking unit and a classifier compartment for producing a caustic solution having a pH over 12.5, the slaker unit comprising a tank and impeller type mixer having means for introducing lime, water and green liquor, the reaction of these constituents establishing a caustic solution of NaOH to a desired liquid level in said tank, the classifier compartment being connected to the slaker by submerged slurry passage ports to achieve a common liquid level with the caustic solution in said tank and having an inclined deck or ramp which extends from a bottom location in said compartment to a beach region above the liquid level in said compartment, a grit conveyor means extending along said ramp to convey settled particulate solids associated with caustic solution having a pH over 12.5 up said ramp to said beach region, a screen provided in the surface of said beach region of said ramp, wash means positioned above said screen to direct a spray of wash liquid upon the particulate solids as they are conveyed across said screen, said spray of wash liquid directed upon said particulate solids to displace caustic solution associated therewith, a vacuum means below said screen for drawing wash liquid through said settled particulate solids and said screen, and conduit means at the upper end of said beach region for receiving washed particulate solids associated with residual liquid having a pH less than 12.5 for disposal.

5,368,732
HORIZONTAL BELT FILTER
Henri G. W. Pierson, Tenerife, Spain, assignor to D & C Limited, Monrovia, Liberia
Filed Apr. 7, 1993, Ser. No. 43,732
Claims priority, application United Kingdom, Apr. 7, 1992, 9207529
Int. Cl.[5] B01D *33/048*
U.S. Cl. 210—386 **9 Claims**



1. In a horizontal belt filter comprising:
an endless filter belt guided to provide a substantially horizontal upper run and a lower return run;
progressing means operative to progress the belt by alternate incremental motion of the upper run and the lower run,

the upper run moving from an upstream end to a downstream end thereof, said progressing means comprising a reciprocable guide element at the downstream end of the upper run and a one-way device and tensioning means, both operative on the lower run of the belt;

feed means for feeding slurry to be filtered onto the upper run; and

a wash liquor vessel and guide means guiding a portion of the lower run of the belt through the wash liquor vessel so as to wash the belt following discharge of filter cake at the downstream end of the upper run;

the improvement wherein said guide means comprises a dead weight roller which is reciprocable up and down within said wash liquor vessel in a bight of the belt disposed between the one-way device and the upstream end of the upper run, and which serves as tensioning means for tensioning the lower run of the belt, and as a cleaning means rubbing against the belt.

5,368,733

WATER-SOLUBLE CELLULOSE DERIVATIVE AND BIOCOMPATIBLE MATERIAL

Nobuo Nakabayashi, Matsudo, and Kazuhiko Ishihara, Kodaira, both of Japan, assignors to NOF Corporation, Tokyo, Japan

PCT No. PCT/JP93/00177, § 371 Date Oct. 13, 1993, § 102(e) Date Oct. 13, 1993, PCT Pub. No. WO93/16117, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 12, 1993, Ser. No. 133,167

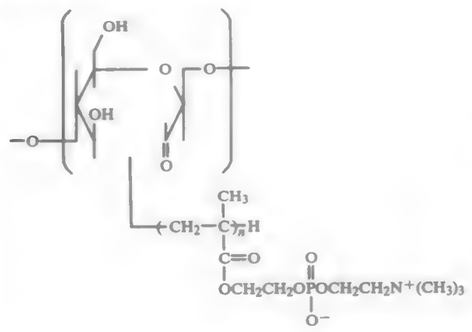
Claims priority, application Japan, Feb. 13, 1992, 4-058763

Int. Cl.[5] B01D *69/08*

U.S. Cl. 210—500.23 **6 Claims**



1. A water-soluble cellulose derivative having a structural unit of the following formula (I):



wherein n stands for an integer of 1–100, obtained by graft polymerization of a soluble cellulose with 2-methacryloyloxyethyl phosphorylcholine.

5. A biocompatible material containing the water-soluble cellulose derivative according to claim 1 as an effective component.

5,368,734

TRIBOELECTRIC FILTRATION MATERIAL

Ray Wnenchak, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 979,946, Nov. 23, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 171,245

Int. Cl.[5] B01D *24/00*

U.S. Cl. 210—505 **5 Claims**

1. A electrically charged filter which comprises a blend of clean expanded pourous polytetrafluoroethylene fibers and clean polyamide fibers.

5,368,735

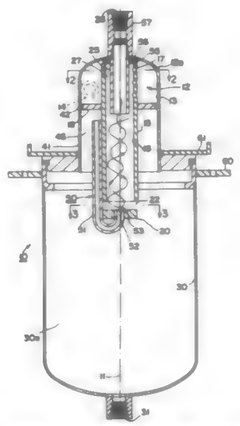
LIQUID/SOLID SEPARATOR WITH A CONDUIT BETWEEN A VORTEX AND A QUIESCENT COLLECTOR ZONE

Steven D. Ford, Clovis, Calif., assignor to Claude Laval Corporation, Fresno, Calif.

Filed Mar. 8, 1993, Ser. No. 27,744

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—512.1 **5 Claims**



1. In a separator for separating solids from liquids in a liquid/solid mixture, said separator being of the type which includes a separation barrel having a central axis a lower end, and an interior wall which is an axially-extending surface of revolution, inlet means extending through said wall of said separation barrel to inject the mixture into said separation barrel in a spinning motion, a spin plate in axial adjacency to said lower end of said separation barrel, an exit port from said separation barrel adjacent to said spin plate, a collection chamber having a collection region below said exit port for receiving material which passes through said exit port, and an outlet barrel centrally aligned with said separation barrel axially above the spin plate to receive fluid reflected by said spin plate, the improvement comprising:

said collection chamber further including a quiescent region in said collection chamber above said exit port, and a conduit connecting said quiescent region and a region immediately above the spin plate on the central axis.

5,368,736

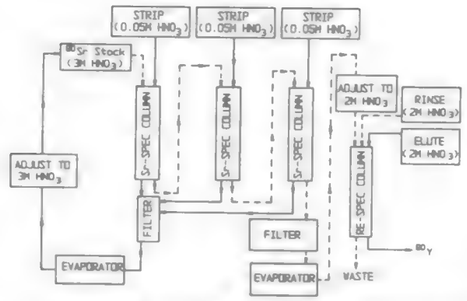
PROCESS FOR THE SEPARATION AND PURIFICATION OF YTTRIUM-90 FOR MEDICAL APPLICATIONS

Philip E. Horwitz, Naperville, and Mark L. Dietz, Evanston, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1993, Ser. No. 95,555

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **8 Claims**



1. A process for the separation and purification of yttrium-90 from strontium-90 comprising:

a) purifying an original ^{90}Sr solution by dissolving the residue remaining after evaporation of the original solution in nitric acid and passing it through a strontium-selective chromatographic column;

b) stripping sorbed ^{90}Sr with dilute nitric acid;

c) removing any traces of organic materials present in the purified ^{90}Sr by passing it through a bed of a polymeric sorbent;

d) storing the ^{90}Sr solution for a sufficient period of time to allow ^{90}Y ingrowth to occur in the solution to provide a $^{90}Sr/^{90}Y$ mixture;

e) acidifying the $^{90}Sr/^{90}Y$ mixture and passing the mixture through a series of strontium-selective extractant columns such that essentially all of the ^{90}Sr is retained on the columns and the effluent from the third column contains essentially only ^{90}Y;

f) passing the ^{90}Y effluent through a rare-earth selective extractant such that ^{90}Y is retained while any residual ^{90}Sr is stripped away;

g) eluting sorbed ^{90}Y from the rare-earth selective column;

h) stripping each of the strontium-selective extractant columns of sorbed ^{90}Sr with dilute nitric acid and returning to storage to allow for new ^{90}Y growth.

5,368,737

SEPARATION AGENT COMPRISING ACYL-OR CARBAMOYL-SUBSTITUTED POLYSACCHARIDE

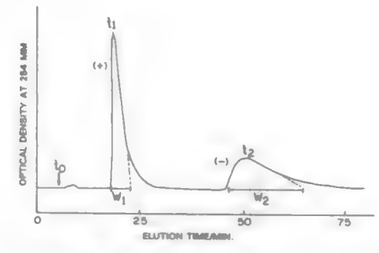
Hajime Namikoshi; Toharu Shibata, and Ichiro Okamoto, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 51,482, Apr. 22, 1993, abandoned, which is a division of Ser. No. 889,042, May 26, 1992, Pat. No. 5,229,002, which is a division of Ser. No. 778,792, Oct. 16, 1991, Pat. No. 5,137,638, which is a division of Ser. No. 643,463, Jan. 18, 1991, Pat. No. 5,075,009, which is a division of Ser. No. 392,764, Aug. 11, 1989, Pat. No. 5,017,290, which is a division of Ser. No. 358,895, May 30, 1989, Pat. No. 4,966,694, which is a division of Ser. No. 246,449, Sep. 19, 1988, Pat. No. 4,879,038, which is a continuation-in-part of Ser. No. 716,791, Mar. 27, 1985, abandoned. This application Nov. 22, 1993, Ser. No. 156,256

Claims priority, application Japan, Mar. 29, 1984, 59365

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **9 Claims**



8. A method effective for separating chemical substances from mixtures thereof and for separating optical isomers from mixtures thereof, which comprises the step of contacting said mixture, under conditions effective for chromatographic separation, with a chromatographic separating agent comprising a derivative of a polysaccharide selected from the group consisting of cellulose tris (4-styrylphenyl) and cellulose tris-3-(2-thienyl) acrylate.

5,368,738

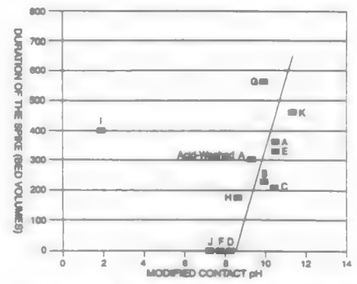
OXIDIZED ACTIVATED CARBON FOR THE CONTROL OF PH AND ALKALINITY IN WATER TREATMENT APPLICATIONS

Bertrand W. Dussert, and Richard A. Hayden, both of Pittsburgh, Pa., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Filed May 11, 1993, Ser. No. 60,590

Int. Cl.[5] C02F *1/28*

U.S. Cl. 210—660 **4 Claims**



1. In a method for treating water with activated carbon, the improvement comprising preventing pH and alkalinity excursions during start-up of said water treatment by contacting said

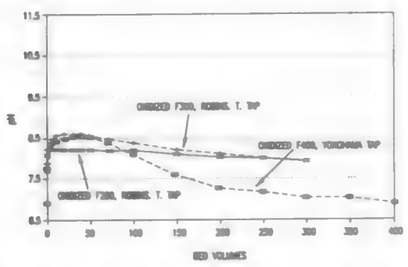
water with an oxidized activated carbon having a contact pH below 8.2.

5,368,739

ACTIVATED CARBON OXIDIZED BY AIR AT NEAR AMBIENT TEMPERATURES FOR THE CONTROL OF PH AND IN WATER TREATMENT APPLICATIONS

Bertrand W. Dussert; Richard A. Hayden; John R. Lutchko, all of Pittsburgh, Pa.; Kishio Yoshino; Satoru Hisaki, both of Tokyo, Japan, and Fujito Ehara, Kanagawa, Japan, assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 60,590, May 11, 1993. This application Sep. 1, 1993, Ser. No. 115,214
Int. Cl.[5] C02F *1/28*
U.S. Cl. 210—660 3 Claims



1. In a method for treating aqueous systems by activated carbon adsorption, the improvement comprising preventing pH excursions during operation of said aqueous systems by contacting said aqueous systems with an activated carbon oxidized by air or oxygen, said activated carbon having a contact pH below 8.5.

5,368,740

METHODS OF CONTROLLING SCALE FORMATION IN THE PRESENCE OF METAL IONS IN AQUEOUS SYSTEMS

Davor F. Zidovec, and Alexander D. Fisher, both of Jacksonville, Fla., assignors to Betz PaperChem, Inc., Jacksonville, Fla.

Filed Apr. 23, 1993, Ser. No. 52,303
Int. Cl.[5] C02F *5/10, 5/14*
U.S. Cl. 210—697 3 Claims

1. A method of increasing barium, calcium and magnesium scale control activity of polyepoxysuccinic acid in an acidic aqueous system containing barium, calcium and magnesium and including metal ions comprising Al^{+3} and $Fe^{30\ 3}$ in concentrations sufficient to adversely effect said scale control activity which comprises adding a sufficient amount for the purpose of a metal ion binding agent selected from the group consisting of sodium tripolyphosphate, polyacrylic acid, citric acid, and tartaric acid to the aqueous system.

5,368,741

TREATMENT OF AQUEOUS PHOSPHORUS WASTES

Theodore F. Munday, Kendall Park, N.J.; Jay R. Brummer, Pocatello, Id., and Paul J. Beck, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 12, 1993, Ser. No. 134,954
Int. Cl.[5] C02F *1/62*
U.S. Cl. 210—724 7 Claims

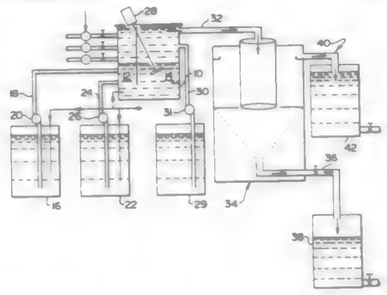
1. An environmentally compatible process for the disposal of phosphorus wastes generated in the electric furnace manufacture of elemental phosphorus, the wastes being an aqueous mixture of phosphorus and heavy metal bearing entrained furnace particles, comprising the steps of: (a) treating the mixture with lime at a pH of about 11.0 to about 12.5 at a temperature above 60° C. whereby the phosphorus is converted in part into salts of phosphorus acids and in part to phosphine while the said heavy metal containing particles are rendered non-leachable, the amount of lime being sufficient to maintain the said pH during and after the treatment; (b) collecting the phosphine from (a); and (c) removing the water from the treated aqueous mixture of (a) to produce clarified water and non-leachable solids having a phosphorus content below burning levels.

5,368,742

METHOD OF REMOVING TOXIC RESIN ACIDS AND FATTY ACIDS FROM PULP AND PAPER EFFLUENT AND OTHER STREAMS

Brian G. Roberts, Tantallon, Canada, assignor to B. G. Roberts Chemicals Inc., Tantallon, Canada

Filed Jun. 1, 1993, Ser. No. 69,548
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—727 11 Claims



1. A process for removing resin acids and fatty acids from pulp and paper effluent comprising first adding to the effluent a sufficient amount of an anionic material selected from the group consisting of gelatin, albumin and alginate to complex said resin acids and fatty acids then adding a sufficient amount of a cationic polymer selected from the group consisting of polyamines, polyacrylamides, acrylamide copolymers, polydiallyl dimethylammonium chloride, and cationic condensate polymers to coagulate the complexed anionic material, fatty acids and resin acids in the effluent; and removing the coagulated resin acids and fatty acids from a clarified effluent.

5,368,743

Patent Not Issued For This Number

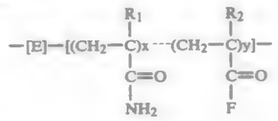
5,368,744

METHODS FOR TREATING WASTEWATER

Michael R. Wood, Philadelphia, and Stephen R. Vasconcellos, Doylestown, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 3, 1993, Ser. No. 100,904
The portion of the term of this patent subsequent to Aug. 10, 2010, has been disclaimed.
Int. Cl.[5] C02F *1/56;* C08F *293/00*
U.S. Cl. 210—734 11 Claims

1. A method for treating oily wastewater by flocculating said wastewater comprising adding to said wastewater an effective flocculating amount of a block copolymer having the formula:



wherein E is a polymeric segment obtained from the polymerization of hydrophobic monomers, x when present is a nonionic monomer, y is a cationic monomer, R_1 and R_2 are the same or different and are H or a lower alkyl group from C_1 to C_3 and F is a salt of an ammonium cation.

5,368,745

METHOD OF FLOCCULATING LOW METAL OXIDE CONTENT SOLIDS IN A LIQUID

Alan S. Rothenberg, Wilton; Roderick G. Ryles, Milford, both of Conn., and Peter So, Calgary, Canada, assignors to Cytec Technology Corp., Wilmington, Del.

Filed Sep. 2, 1993, Ser. No. 127,201
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—734 11 Claims

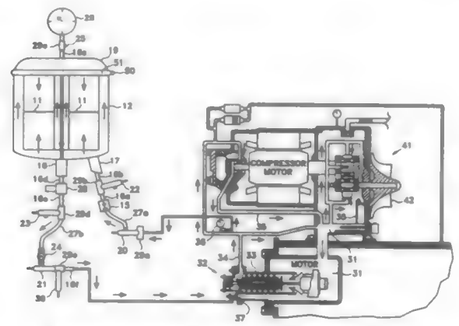
1. A process for flocculating, in a liquid other than Bayer process streams, suspended solids comprised of primarily minerals other than iron oxide and/or tin oxide, which process comprises contacting the solids with a hydroxamated polymer containing about 1 to about 90 mole percent hydroxamic groups wherein the amount of hydroxamated polymer is sufficient to increase the settling rate of the solids or to decrease the turbidity of the liquid as compared to the use of no polymer.

5,368,746

ENVIRONMENTALLY BENEFICIAL BYPASS FILTER SYSTEM FOR USE WITH LOW PRESSURE CENTRIFUGAL REFRIGERATION EQUIPMENT

Edd D. Gryder, 10686 Newcombe St., Broomfield, Colo. 80021, assignor to Edd D. Gryder, Evansville, Wis.; William Kent Oberman, Fort Collins, Colo. and James Patrick Graham, Pierre, S. Dak.

Division of Ser. No. 784,572, Oct. 29, 1991, Pat. No. 5,232,588. This application Jul. 29, 1993, Ser. No. 99,726
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—739 26 Claims



7. A method of refining lubricating oil in a refrigeration system having a full flow oil circulation comprising the steps of:

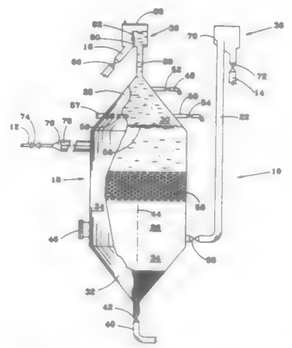
a. routing a proportion of said oil from the full flow by way of an inlet line; while
b. maintaining a positive pressure within said inlet line; then
c. filtering said proportion of oil wherein said step of filtering is accomplished by a filter element; then
d. Returning said proportion of said oil flow by way of an outlet line; while
e. maintaining a negative pressure within said outlet line; all while
f. monitoring the condition of said filter element by means including a moisture eye.

5,368,747

FLUID SEPARATION SYSTEM AND METHOD

Theodore R. Rymal, Jr., S.V. Hash-Ketu, Gallion Marina #42, 617 Front St., Key West, Fla. 33040; Theodore R. Rymal, III, The Woodlands, and Robert J. Burns, La Feria, both of Tex., assignors to Theodore R. Rymal, Jr., Key West, Fla.

Continuation-in-part of Ser. No. 904,212, Jul. 30, 1992, Pat. No. 5,202,031, which is a division of Ser. No. 560,436, Jul. 31, 1990, Pat. No. 5,147,534. This application Feb. 13, 1993, Ser. No. 16,856
Int. Cl.[5] B01D *17/038*
U.S. Cl. 210—744 20 Claims



13. A method of separating a mixture of first and second materials having different densities, comprising:

forming an inlet chamber;

forming a separation chamber spaced vertically from and adjoining the inlet chamber, the separation chamber having a horizontal cross-sectional area which continually decreases with increased spacing from the inlet chamber;

forming a second material leg line extending from and above the separation chamber, the second material leg line having a substantially uniform cross-sectional flow area, a second material inlet adjoining the separation chamber, and a second material outlet above the second material inlet;

forming a first material leg line, the first material leg line having a first material inlet in fluid communication with the inlet chamber, and a first material outlet spaced above the first material inlet;

continually inputting the mixture of first and second materials tangentially into the separation chamber at a laminar flow velocity; and

adjusting the elevation of the second material outlet for the second material leg line relative to the first material outlet for the first material leg line to maintain a first material/-second material interface at a desired elevation.

5,368,748

GROWTH REGULATION OF ZEBRA MUSSELS THROUGH MAGNETIC WATER TREATMENT

Charles H. Sanderson, Fort Wayne, Ind., assignor to Magnatech Corporation, Fort Wayne, Ind.

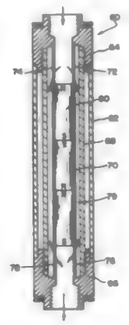
Filed Feb. 17, 1994, Ser. No. 197,928
Int. Cl.[5] C02F *1/48*
U.S. Cl. 210—748 7 Claims

1. A method for treating water to reduce the growth of zebra mussels, said method comprising:

providing a first volume of water containing zebra mussels;

treating at least a portion of said volume of water containing zebra mussels by passing said portion through a water treatment unit disposed in a water conduit, said unit including a magnet for creating a magnetic field through which water in said water conduit is passed, said magnetic

field having a strength sufficient to reduce the growth of said zebra mussels; and



mixing said treated portion back into said first volume thereby reducing growth of said zebra mussels in said first volume.

5,368,749

SYNERGISTIC ACTIVITY OF GLUTARALDEHYDE IN THE PRESENCE OF OXIDANTS

Judy G. La Zonby, Crystal Lake, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed May 16, 1994, Ser. No. 243,026
Int. Cl.[5] C02F *1/50*
U.S. Cl. 210—756 3 Claims

1. A method for controlling the growth of aerobic microorganisms in industrial process water comprising the water of a pulp and paper mill system including the step of adding to the industrial water an amount of glutaraldehyde and an amount of an oxidant selected from the group consisting of hypochlorous acid, potassium monopersulfate, hydrogen peroxide, and peracetic acid, said amount of oxidant being in the range of from about 0.5 to about 250 ppm and said amount of glutaraldehyde being in the range of from about 5 to about 500 ppm, said amounts of oxidant and glutaraldehyde being selected to result in a synergy index of less than 1 wherein said synergy index is calculated by determining a first ratio of said amount of glutaraldehyde required to produce a level of microorganism growth control when added in combination with said amount oxidant to the amount of glutaraldehyde required to produce said level of growth control in the absence of said oxidant, and adding said first ratio to a second ratio of said amount of oxidant required to produce said level of microorganism growth control when added in combination with said amount of glutaraldehyde to the amount of oxidant required to produce said level of growth control in the absence of said glutaraldehyde.

5,368,750

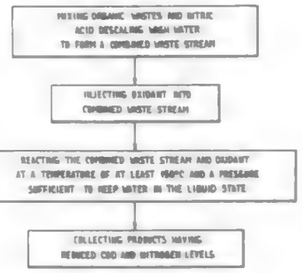
METHOD FOR CO-PROCESSING ORGANIC WASTES AND SPENT NITRIC ACID WASH WATER

Hermaan W. Peterscheck, Odijk, Netherlands; William L. K. Schwoyer, Boulder, and Dean Sillerud, Longmont, both of Colo., assignors to Waste Treatment Patents en Research N.V., Curacao, Netherlands

Filed May 6, 1993, Ser. No. 57,412
Claims priority, application European Pat. Off., May 6, 1992, 92201278.6
Int. Cl.[5] C02F *1/74*
U.S. Cl. 210—761 11 Claims

1. A method for co-processing organic wastes and nitric acid wash water in a wet oxidation reaction apparatus, whereby the chemical oxygen demand and the nitrogen content of the organic waste and the nitric acid wash water are substantially reduced, the method comprising the steps of:

(a) mixing the organic wastes and nitric acid wash water to form a combined water stream;
(b) injecting an oxidant into the combined waste stream;
(c) reacting the combined waste stream and oxidant in a wet oxidation reaction apparatus at a temperature greater than 150° C. and a pressure sufficient to keep the water in the liquid state for a time sufficient to form reaction products with at least a 50 weight percent reduction in the chemical oxygen demand and at least 10 weight percent reduction



in the nitrogen content, as expressed in total kjeldahl nitrogen relative to the original organic waste and nitric acid wash water; and

(d) collecting the reaction products;

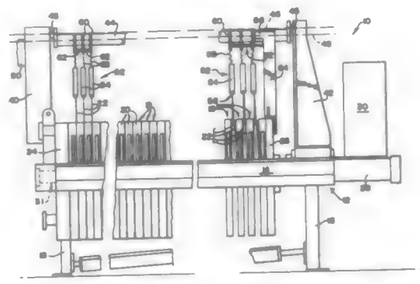
wherein the nitric acid wash water is derived from descaling of a wet oxidation reaction system used for the treatment of organic wastes by circulation of an aqueous nitric acid solution through the wet oxidation reaction system to dissolve accumulated scale therein.

5,368,751

AUTOMATED FILTER PRESS

Peter H. Glendinning, Johannesburg, South Africa, assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 8, 1992, Ser. No. 941,478
Claims priority, application South Africa, Sep. 9, 1991, 91/7147
Int. Cl.[5] B01D *25/34*
U.S. Cl. 210—791 5 Claims



1. A method of operating a filter press, said filter press comprising a plurality of filter units, each said filter unit comprising a filter plate having opposite sides and including a lower edge and a pair of flexible filter elements extending respectively along the opposite sides of the filter plate, each of said filter elements including an upper edge and an upper portion, the filter units being arranged in tandem such that, intermediate adjacent filter plates, pairs of filter elements of the respective filter units extend alongside each other, said method comprising the steps of introducing a feed stream including a liquid component and a solids component which are to be separated into the filter press at positions intermediate adjacent filter units and intermediate said pairs of filter elements extending alongside each other, causing the liquid component to filter through the respective filter elements and exhausting the liquid via the respective filter plates, allowing the solids component to build up in the form of cakes intermediate said pairs of filter elements extending alongside each other, opening the press, and flexing and subsequently straightening substantially each entire filter element thereby dislodging the cakes from the filter elements, wherein each filter element is attached at the lower edge of the filter plate and at least the upper portion of the filter element is left unattached from the filter plate, the method further including suspending each filter element via the upper edge thereof and raising said upper edge to span the filter element over the filter plate when closing the press or prior to closing the press whereby the flexing and straightening of the filter elements is effected respectively by slackening each filter element by lowering its upper edge, and then snapping each filter element by raising its upper edge, all by reciprocating said upper edge of each filter element by suspending the filter elements from an eccentrically supported rotor and rotating said rotor.

5,368,752

METHOD OF WASHING FILTERS, AND FILTERS FOR LIQUID FILTRATION

Zdenek Vor, Sollidenvägen 3, 183 65 Täby, Sweden

PCT No. PCT/SE90/00660, § 371 Date Mar. 30, 1993, § 102(e) Date Mar. 30, 1993, PCT Pub. No. WO92/06759, PCT Pub. Date Apr. 30, 1992
PCT Filed Oct. 16, 1990, Ser. No. 30,438
Int. Cl.[5] B01D *24/14*
U.S. Cl. 210—792 4 Claims

1. A method for washing a filter intended for cleansing a contaminated liquid and comprising a granular bed, a drainage system located beneath the bed, means for introducing first and second liquid flows into the bed, said first liquid flow being operative to fluidize solely upper layers of the bed at least locally, and said second liquid flow being operative to fluidize the bed throughout the whole of the depth thereof, said method further comprising ejecting said flows downwardly into the bed through orifices which are placed in the bed at a location between the highest point and the lowest point therein and which are substantially equidistant from the upper surface of the bed; and introducing said first liquid flow selectively into the upper layers of said bed in a smaller quantity and at a corresponding smaller flow rate than the second liquid flow, such that during the first liquid flow the bed layers beneath said upper layers will be unaffected by washing of said upper layers.

5,368,753

ANTIFREEZE RECLAMATION SYSTEM AND PROCESS

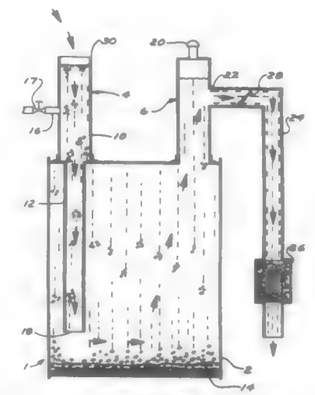
Ransen Gardenier, Jr., 9 Scott Dr., Troy, N.Y. 12180

Filed Jun. 28, 1993, Ser. No. 83,046
Int. Cl.[5] B01D *21/00*
U.S. Cl. 210—800 18 Claims

12. A process for recycling antifreeze, said process comprising:

pouring used antifreeze into a first, hollow standpipe that is mounted to the top of a hollow tank that has an interior area filled with used antifreeze, said antifreeze that is poured into the first standpipe being allowed to flow through said standpipe into the interior area of the tank and wherein while the antifreeze is within the standpipe, any floatable material in the antifreeze is allowed to float to the top of the standpipe and is removed from said standpipe via a drain port;

allowing the used antifreeze to remain within the tank for at least a predetermined amount of time wherein particulate matter can fall out of solution due to gravity and collect on the bottom of the tank and wherein the used antifreeze can separate into horizontally-oriented layers of liquid with each liquid layer having a different density and the lightest density liquid becoming located proximate a top surface of the tank; and



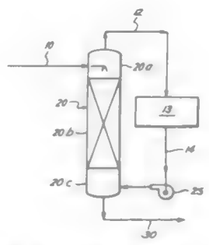
removing the lightest density liquid from the tank via a second standpipe that is located above the tank and is in fluid communication with a top portion of the tank's interior area.

5,368,754

METHOD FOR STRIPPING CONTAMINANTS FROM WASTEWATER

Byron Von Klock, Beaumont, Tex., and Irl L. Zuber, Bakersfield, Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 607,948, Nov. 1, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 85,794
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—806 9 Claims



1. A method for recovering aromatic hydrocarbon compounds from wastewater comprising the steps of:

passing a stripping gas through a stripping zone by means of a gas circulation means,

contacting said contaminated wastewater countercurrent to said stripping gas in said stripping zone,

withdrawing stripping gas mixed with aromatic hydrocarbon compounds from said stripping zone,

flowing said stripping gas and aromatic hydrocarbon compounds to a recovery zone wherein aromatic hydrocarbon compounds are removed by adsorption on activated carbon to produce regenerated stripping gas,

passing said regenerated stripping gas to said gas circulation means thereby recycling said stripping gas to said stripping zone,

wherein said activated carbon:

(a) is derived from bituminous coal,

(b) has a BET surface area of at least 1000 m^2gram, and

(c) has a pore volume of 0.6 to 0.8 cc/gram provided by macro pores having a radius of 200Å to 10,000Å, meso

pores having a radius of 50Å to 200Å, and micro pores having a radius of less than 50Å

wherein 60 to 90% of the pore volume is provided by macro pores and meso pores and the balance provided by micro pores.

5,368,755

FREE-FLOWING POWDER FABRIC SOFTENING COMPOSITION AND PROCESS FOR THE MANUFACTURE OF A FREE-FLOWING FABRIC SOFTENING COMPOSITION

Nabum Chavez, Estado De Mexico, and Israel Oliveros, Azcapotzalco, both of Mexico, assignors to Colgate-Palmolive Co., New York, N.Y.

Continuation-in-part of Ser. No. 809,660, Dec. 18, 1991, abandoned. This application Feb. 19, 1992, Ser. No. 838,626

Int. Cl.[5] D06M *13/402*

U.S. Cl. 252—8.6 **9 Claims**

1. A process of producing a free-flowing spray-dried particulate rinse cycle fabric softening composition which is readily dispersible in water comprising:

(a) forming a crutcher slurry containing:

(i) from about 5 to 40%, by weight, of a cationic quaternary ammonium softening compound;

(ii) from about 0.5 to 15%, by weight, of a member selected from the group consisting of an anionic detergent compound, a non-ionic detergent compound and mixtures thereof;

(iii) from about 45 to 85%, by weight, of urea, the above percentages being based on the solids content of the slurry, in the absence of water;

(b) mixing the crutcher slurry formed in (a) to provide a uniform mixture or dispersion having an average particle size of less than about 1.0 micron and thereafter;

(c) spray drying the aforesaid mixture or dispersion in a spray tower wherein the water content of the mixture is substantially evaporated to provide free-flowing particles of a softening composition capable of being readily dispersed in water.

5,368,756

FABRIC SOFTENING COMPOSITIONS CONTAINING MIXTURES OF SOFTENER MATERIAL AND HIGHLY ETHOXYLATED CURD DISPERSANT

Alice M. Vogel; John C. Severns, both of West Chester, and Errol H. Wahl, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

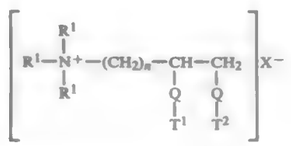
Continuation of Ser. No. 851,606, Mar. 16, 1992, abandoned. This application Aug. 13, 1993, Ser. No. 106,325

Int. Cl.[5] D06M *10/08;* **C11D** *1/62*

U.S. Cl. 252—8.8 **8 Claims**

1. Liquid fabric softening composition in the form of an aqueous dispersion comprising:

(a) from about 1% to about 40% of diester quaternary ammonium fabric softener material of the formula:



wherein, for each molecule:

each Q is



each R^1 is a C_1–C_4 alkyl or hydroxy alkyl group;

each T^1 and T^2 is a C_{12}–C_{22} alkyl or alkenyl group;

n is an integer from 1 to 4; and

X^- is a softener-compatible anion;

(b) from about 0.2% to about 12% of scum dispersant material which is highly ethoxylated hydrophobic material that minimizes the formation of scum by the interaction of (a) and any anionic detergent surfactant or detergency builder in the rinse water; and

(c) from about 55% to about 98% of aqueous liquid carrier;

wherein said scum dispersant material contains at least about 25 ethoxy groups per molecule; wherein said scum dispersant material is selected from the group consisting of:

(1) polyethoxylated fatty alcohols containing from about 12 to about 30 carbon atoms in the alcohol portion;

(2) polyethoxylated fatty acids containing from about 12 to about 30 carbon atoms in the fatty acid portion;

(3) polyethoxylated fatty amines containing from about 12 to about 30 carbon atoms with at least about 12 carbon atoms in one alkyl group; p1 (4) polyethoxylated fatty acid amides wherein said fatty acid contains from about 12 to about 30 carbon atoms;

(5) polyethoxylated quaternary ammonium compounds which contain from about 15 to about 30 carbon atoms with at least about 12 carbon atoms in one alkyl group;

(6) polyethoxylated amine oxides containing from about 14 to about 30 carbon atoms with at least about 12 carbon atoms in one alkyl group; and

(7) mixtures thereof;

and wherein the weight ratio of the diester quaternary ammonium fabric softener material (a) to the scum dispersant (b) is from about 80:1 to about 6:1.

5,368,757

LUBRICATION FOR COLD FORMING OF METALS

Peter F. King, Farmington Hills, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Continuation of Ser. No. 771,089, Oct. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 673,874, Mar. 22, 1991, abandoned. This application Jan. 19, 1993, Ser. No. 5,913

Int. Cl.[5] C10M *107/22, 107/34, 145/02, 145/38*

U.S. Cl. 252—34 **20 Claims**

1. A liquid composition of matter consisting essentially of:

(A) copolymers of styrene with a maleic compound selected from the group consisting of (i) maleic anhydride, (ii) maleic acid, (iii) salts of maleic acid with ammonia, alkali metal hydroxides, and amines, and (iv) mixtures of any two or more of said (i), (ii), and (iii), said copolymers containing a sufficient number of salt groups to be soluble or dispersible in water; and

(B) a component consisting of ethoxylated alcohol molecules having a chemical structure that is produced by condensing ethylene oxide with primary straight chain aliphatic precursor alcohols that have only one hydroxyl group and from 30 to about 65 carbon atoms per molecule, wherein the ratio by weight of component (A) to component (B) is in the range from about 6:1 to about 1:6; and, optionally,

(C) water; and, optionally,

(D) an extreme pressure resistant and corrosion resistant additive component; and, optionally,

(E) a component selected from solid and liquid hydrocarbons.

5,368,758

LUBRICANTS, GREASES AND AQUEOUS FLUIDS CONTAINING ADDITIVES DERIVED FROM DIMERCAPTOTHIADIAZOLES

Richard E. Gapinski, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 13, 1992, Ser. No. 960,077

Int. Cl.[5] C10M *135/36*

U.S. Cl. 252—42.7 **26 Claims**

1. The composition comprising (A) an oil of lubricating viscosity and (B) a salt of a reaction product of (a) at least one dimercaptothiadiazole and (b) at least one aliphatic olefin.

5,368,759

ESTER FLUIDS WITH HIGH TEMPERATURE STABILITY

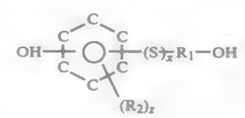
Andrew G. Horodysky, Cherry Hill; Liwen Wei, Belle Mead, and Ross A. Kremer, Ringoes, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 992,671, Dec. 18, 1992. This application Jun. 1, 1993, Ser. No. 69,483

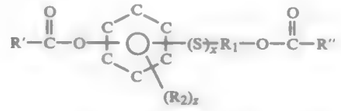
Int. Cl.[5] C10M *135/00*

U.S. Cl. 252—475 **12 Claims**

1. A method of making a lubricative composition having antioxidant properties comprising reacting an acyl halide and a phenol sulfide of the structural formula:



in a mole ratio ranging from about 1 to 2 under esterification conditions to produce a reaction product having the structural formula:



where R′ and R″ are the same or different hydrocarbon groups containing from about 1 to 30 carbon atoms or from about 2 to 30 carbon atoms and optionally containing at least one heteroatom selected from the group consisting of sulfur, nitrogen and oxygen, R_1 is a hydrocarbon group containing from about 1 to about 30 carbon atoms or an aromatic group containing from about to about 30 carbon atoms, R_2 is a hydrocarbon group containing about 1 to about 30 carbon atoms or a halogen group, x is an integer ranging from 1 to 3, and z is an integer ranging from 1 to 4.

5,368,760

METHOD FOR PRODUCTION OF CYSTAMINE AND ALKYLENE OXIDE ADDUCT THEREOF, ADDITIVE FOR AQUEOUS LUBRICANT, AND AQUEOUS LUBRICANT

Jun Okamoto, Yokohama; Yujiro Goto, Kawasaki; Masao Kitano, Kamakura, and Seiichi Suzuki, Yokohama, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

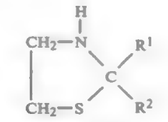
Filed Jun. 25, 1993, Ser. No. 82,619

Claims priority, application Japan, Jun. 29, 1992, 4-170863; Jul. 2, 1992, 4-175541; Jun. 23, 1993, 5-12397; Jun. 23, 1993, 5-152398; Jun. 23, 1993, 5-152399

Int. Cl.[5] C10M *135/00*

U.S. Cl. 252—47.5 **15 Claims**

1. A method for the production of cystamine, which comprises reacting a 2,2-dialkyl thiazolidine represented by the general formula (1):



(1)

wherein R^1 and R^2 independently are alkyl groups of 1 to 5 carbon atoms, with a peroxide in the presence of water.

5,368,761

COPOLYMER USEFUL AS A POUR POINT DEPRESSANT FOR A LUBRICATING OIL

Robert H. Gore, Southampton, and James H. O'Mara, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

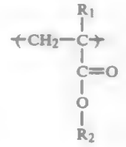
Division of Ser. No. 55,131, Apr. 30, 1993, Pat. No. 5,312,884. This application Feb. 15, 1994, Ser. No. 196,674

Int. Cl.[5] C10M *145/14;* **C08F** *220/10, 220/68*

U.S. Cl. 252—56 R **25 Claims**

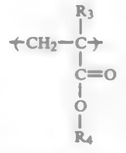
1. A lubricating oil composition, comprising a lubricating oil base stock and from about 0.05 weight percent to about 1.0 weight percent of a random copolymer, said copolymer comprising:

from about 15 mole percent to about 67 mole percent first repeating units, each of said first repeating units having the structural formula:



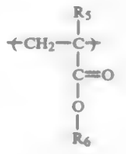
wherein each occurrence of R_1 is independently H or methyl and each occurrence of R_2 is independently selected from the group consisting of (C_8–C_{15})alkyl;

from about 3 mole percent to about 40 mole percent second repeating units, each of said second repeating units having the structural formula:



wherein each occurrence of R_3 is independently H or methyl and each occurrence of R_4 is independently selected from the group consisting of (C_{16}–C_{24}) alkyl; and

from greater than 30 mole percent to about 65 mole percent third repeating units, each of said third repeating units having the structural formula:



wherein each occurrence of R_5 is independently H or

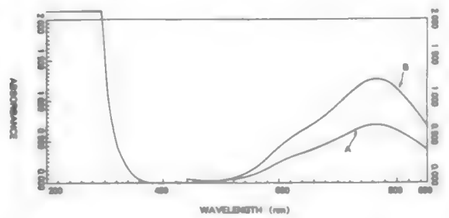
methyl and each occurrence of R_6 is independently selected from the group consisting of (C_1–C_4) alkyl; and said copolymer having a number average molecular weight of about 20,000 to about 80,000 and a weight average molecular weight of about 50,000 to about 200,000.

5,368,762

METHOD FOR PRODUCING VANADIUM ELECTROLYTIC SOLUTION

Kanji Sato, Kashima; Masato Nakajima, Inashiki, and Ko Magome, Inashiki, all of Japan, assignors to Kashima-Kita Electric Power Corporation, Ibaraki, Japan

Filed Apr. 1, 1993, Ser. No. 41,208
Claims priority, application Japan, Apr. 9, 1992, 4-088706
Int. Cl.[5] C01G *31/00*
U.S. Cl. 252—62.2 **9 Claims**



1. A method for producing electrolytic solutions containing vanadium as positive and negative electrode active materials, said electrolytic solutions being suitable for a redox battery, said method comprising:

a first step in which a pentavalent vanadium compound is reduced in the presence of sulfuric acid and a solvent under atmospheric or increased pressure so as to produce a solution containing tetravalent vanadium;

a second step in which at least a portion of said solution containing tetravalent vanadium is heated in the presence of sulfuric acid, a solvent and a reducing agent under atmospheric or increased pressure so as to produce a trivalent vanadium compound; and

a third step, which is performed if said trivalent vanadium compound obtained in said second step is solid, in which said trivalent vanadium compound is isolated from said solution and then solubilized by hydration with water or a mixture of water and sulfuric acid so as to prepare a solution thereof.

5,368,763

LOW POWER LOSS MN-ZN FERRITES

Masakatsu Yamazaki; Tetsu Narutani, and Hideaki Kobiki, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 896,407, Jun. 10, 1992, abandoned, which is a division of Ser. No. 662,425, Feb. 28, 1991, Pat. No. 5,143,638. This application Oct. 20, 1993, Ser. No. 140,362
Claims priority, application Japan, Mar. 30, 1990, 2-50828
Int. Cl.[5] C04B *35/38*
U.S. Cl. 252—62.59 **1 Claim**

1. A Mn-Zn having a low power loss and consisting essentially of 52–54.5 mol % of Fe_2O_3, 33–40 mol % of MnO and 6–14 mol % of ZnO and containing 0.005–0.040 wt % of SiO_2, 0.02–0.20 wt % of $CaO_,$) 0.01–0.08 wt % of Nb_2O_5, 0.005–0.080 wt % of Sb_2O_3 and 0.05–0.40 wt % of TiO_2.

5,368,764

MN-ZN-BASED SINGLE CRYSTAL FERRITE COMPOSITION

Jung S. Yoon; Won H. Rhee; Jae H. Koh, all of Kyungki-Do, and Woo S. Jang, Seoul, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Rep. of Korea

Filed Mar. 31, 1994, Ser. No. 221,405
Claims priority, application Rep. of Korea, Mar. 31, 1993, 1993-5291
Int. Cl.[5] C04B *35/38*
U.S. Cl. 252—62.59 **1 Claim**

1. A Mn-Zn-based single crystal ferrite grown from a sintered mixture of a host material essentially consisting of 51 to 54 mole % Fe_2O_3, 27 to 33 mole % MnO and 16 to 20 mole % ZnO, and an additive material essentially consisting of 0.2 to 2 mole % SnO_2, 0.1 to 1 mole % CoO, 0.2 to 1 mole % $CaCO_3$ and 0.02 to 1 weight % V_2O_5.

5,368,765

LUBRICATING OIL AND COMPOSITIONS FOR THE HYDROGEN-CONTAINING FLON REFRIGERANTS

Masato Kaneko, Ichihara, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 259,590, Oct. 19, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 455,847
Claims priority, application Japan, Oct. 28, 1987, 62-270389; Oct. 28, 1987, 62-270390
Int. Cl.[5] C09K *5/00*
U.S. Cl. 252—68 **8 Claims**

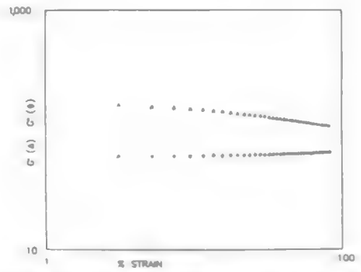
1. A lubricating oil composition for refrigerants comprising 1,1-dichloro-2,2,2-trifluoroethane; 1,1,1,2-tetrafluoroethane; 1-chloro-1,1-difluoroethane; 1,1-difluoroethane; trifluoromethane or monochlorodifluoromethane, comprising as the main components (A) high-viscosity alkylbenzenes with a kinematic viscosity at 40° C. of at least 50 cSt comprising at least 70% by weight of dialkylbenzenes containing at least 20 carbon atoms in the alkyl groups and (C) a polyoxypropylene glycol monobutyl ether having a kinematic viscosity at 40° C. of 50 cSt or higher, and a viscosity index of 50 or higher; a ratio of (A)/(C) being 97 to 3% by weight of (A) and 3 to 97% by weight of (C).

5,368,766

LINEAR VISCOELASTIC AQUEOUS LIQUID AUTOMATIC DISHWASHER DETERGENT COMPOSITION

Nagaraj S. Dixit, Plainsboro, N.J., assignor to Colgate Palmolive Co., Piscataway, N.J.

Continuation of Ser. No. 726,089, Jul. 5, 1991, Pat. No. 5,205,953, which is a continuation-in-part of Ser. No. 353,712, May 18, 1989, Pat. No. 5,064,553. This application Mar. 17, 1993, Ser. No. 32,583
The portion of the term of this patent subsequent to Jul. 5, 2008, has been disclaimed.
Int. Cl.[5] C11D *9/00*
U.S. Cl. 252—94 **11 Claims**



1. A linear viscoelastic aqueous liquid automatic dishwasher

detergent composition having a G''/G' value of less than one comprising approximately by weight:

(a) 10 to 35% of at least one alkali metal detergent builder salt, said alkali metal detergent builder salt being selected from the group consisting of alkali metal tripolyphosphate, alkali metal pyrophosphate, alkali metal metaphosphate, alkali metal carbonate, alkali metal citrate and alkali metal nitrilotriacetate and mixtures thereof;

(b) 5 to 15% alkali metal silicate;

(c) 0 to 6% alkali metal hydroxide;

(d) 0 to 3.0% chlorine bleach stable, water-dispersible, organic detergent active material;

(e) 0 to 1.5% chlorine bleach stable foam depressant;

(f) chlorine bleach compound in an amount to provide 0.2 to 4% of available chlorine;

(g) 0.1 to 2.0% of an alkali metal neutralized cross-linked polyacrylic acid thickening agent having a molecular weight of from about 500,000 to 10,000,000;

(h) 0 to 2% of a long chain fatty acid having about 8 to about 22 carbon atoms or a metal salt of said fatty acid;

(i) 0 to 3% of a dyestuff or pigment;

(j) 0 to 4 volume percent of air bubbles having a diameter of less than 100 microns;

(k) 0 to 10% of a non-cross-linked polymeric chelating agent having a molecular weight of about 1,000 to 20,000; and

(l) balance being water, wherein said polyacrylic acid thickening agent is selected from the group consisting of acrylic acid or methacrylic acid, water-dispersible or water soluble salts, esters, or amides thereof, and water-soluble copolymers of these acids or their salts, ester or amides with each other or with one or more other ethyleneically unsaturated monomers, wherein substantially all of the water in the composition is tightly bound to the alkali metal cross-linked polyacrylic acid thickening agent and said composition does not exhibit phase separation and remains homogenous, when said composition is centrifuged at 1000 rpm for 30 minutes.

5,368,767

STABLE NONAQUEOUS LIQUID DETERGENTS CONTAINING A METAL OXIDE OF BULK DENSITY OF 200-1,000 G/L

Cornelis B. Donker, Caldy, Great Britain; Philippus C. van der Hoeven, Prinsenbeek, Netherlands, and Mansur S. Mohammadi, Spital, Great Britain, assignors to Unilever Patent Holdings, B.V., Vlaardingen, Netherlands

Filed Oct. 16, 1992, Ser. No. 916,841
Claims priority, application Hague Agreement, Feb. 16, 1990, 90200350.8
Int. Cl.[5] C11D *1/72, 3/12, 3/60, 17/08*
U.S. Cl. 252—95 **9 Claims**

1. A non-aqueous liquid cleaning composition comprising from 10 to 65% by weight of a particulate solid phase selected from surfactant builder, bleach, abrasive, fabric softening material and mixtures thereof, suspended in from 10 to 90% by weight of a non-aqueous liquid phase comprising from 20 to 70% by weight of the composition of nonionic surfactants, wherein the solid phase further includes from 0.1 to 7% by weight of a metal oxide having a bulk density of 250–1,000 g/l; wherein said metal oxide has a particle size of 0.1–70 μm, said solid phase has a weight average particle size of less than 300 microns and said composition has a viscosity of less than 2,500 mPa.s at 21 S^{-1}.

5,368,768

COPPER AND BARIUM (DIALKYLAMINOALCOHOLATE) SOLUTIONS

Carl C. Greco, Garnerville, and Johst H. Burk, Mohegan Lake, both of N.Y., assignors to Akzo Nobel Inc., Dobbs Ferry, N.Y.

Continuation of Ser. No. 668,533, Mar. 13, 1991, Pat. No. 5,252,247, which is a continuation of Ser. No. 270,570, Nov. 14, 1988, abandoned. This application May 24, 1993, Ser. No. 66,690
Int. Cl.[5] C09K *3/00*
U.S. Cl. 505—510 **6 Claims**

1. A solution which comprises: (a) an organic solvent; and a mixture of copper and barium (dialkylaminoalcoholates).

5,368,769

MANUFACTURE OF CELLULAR POLYMERS AND COMPOSITIONS THEREFOR

Rik De Vos, Rotselaar, and Jan W. Leemslag, Tremelo, both of Belgium, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 974,352, Nov. 10, 1992, Pat. No. 5,240,965, which is a continuation of Ser. No. 852,070, Mar. 16, 1992, abandoned. This application May 27, 1993, Ser. No. 67,789
Claims priority, application United Kingdom, Apr. 3, 1991, 9106967.4; Jun. 12, 1991, 9112622.7; Aug. 16, 1991, 9117749.3; Nov. 1, 1991, 9123205.8; Dec. 24, 1991, 9127335.9
The portion of the term of this patent subsequent to Oct. 18, 2011, has been disclaimed.
Int. Cl.[5] C09K *3/00*
U.S. Cl. 252—182.2 **12 Claims**

1. An isocyanate-reactive composition comprising:

a) at least one isocyanate-reactive compound of molecular weight of 1000 to 10000 and of functionality of 2 to 4, and

b) an inert, insoluble, organic liquid which has a boiling point of at least 60° C. at 1 bar.

5,368,770

METHOD OF PREPARING THIN LIQUID CRYSTAL FILMS

Alfred Saupe, and Antal Jakli, both of Kent, Ohio, assignors to Kent State University, Kent, Ohio

Filed Jun. 1, 1992, Ser. No. 891,790
Int. Cl.[5] C09K *19/52; G02F 1/13*
U.S. Cl. 252—299.01 **19 Claims**

12. A method of producing a thin electrically addressable light modulating liquid crystalline film comprising the steps of:

a) dissolving a monomeric material in a non-mesogenic solvent;

b) polymerizing said monomeric material;

c) adding a mesogenic solvent having positive dielectric anisotropy to the bulk solution of monomeric material and non-mesogenic solvent;

d) removing said non-mesogenic solvent until the polymerized monomeric material phase separates from said solution to form a spreadable liquid crystalline paste; and thereafter,

e) coating said liquid crystalline paste onto a substrate to form a thin electrically addressable film thereon.

5,368,771

OPTICALLY ACTIVE TETRAHYDROPYRANE DERIVATIVES, LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE CONTAINING THE SAME

Masaaki Namekawa; Shinichi Nayuki; Keizou Itoh; Mitsunori Takeda, and Yoshinobu Murayama, all of Iwaki, Japan, assignors to Kashima Oil Company, Tokyo, Japan

PCT No. PCT/JP92/01628, § 371 Date Aug. 24, 1993, § 102(e) Date Aug. 24, 1993, PCT Pub. No. WO93/13068, PCT Pub. Date Jul. 8, 1993

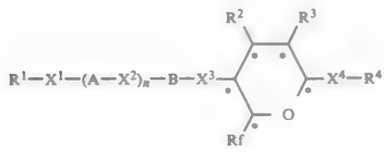
PCT Filed Dec. 15, 1992, Ser. No. 107,717

Claims priority, application Japan, Dec. 26, 1991, 3-344202; May 11, 1992, 4-117488; Jul. 28, 1992, 4-201189

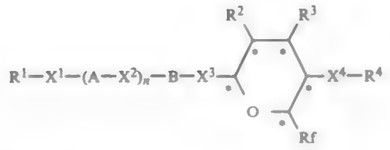
Int. Cl.[5] C09K *19/52;* **C07D** *309/10;* **G02F** *1/13*

U.S. Cl. 252—299.1 **7 Claims**

1. An optically active tetrahydropyrane derivative represented by the formula (I):



or



wherein,

Rf is —CF_3;

R^1 is a straight chain alkyl group having from 4–10 carbon atoms;

R^2 is a hydrogen atom or a methyl group;

R^3 is a hydrogen atom or a methyl group;

R^4 is a straight or branched chain alkyl group having from 1 to 10 carbon atoms;

X^1 is —O—, or a single bond;

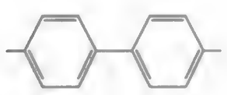
X^2 is —COO—, or a single bond;

X^3 is —COO— or —CHO_2—;

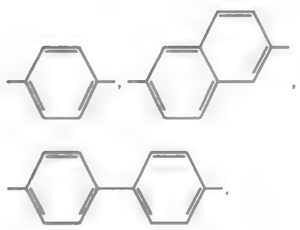
X^4 is —O—or —OCO—;

n is 0 or 1;

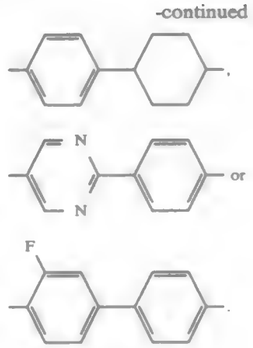
A is



B is



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5,368,772

LIQUID-CRYSTALLINE MEDIUM

Bernhard Rieger, Yokohama, Japan; Reinhard Hittich, Modautal; Elke Poetsch, Mühltal, both of Germany; David Coates, Merley-Wimborne, Great Britain, and Herbert Plach, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

PCT No. PCT/EP91/00698, § 371 Date Jun. 5, 1991, § 102(e) Date Jun. 5, 1991, PCT Pub. No. WO90/13703, PCT Pub. Date Nov. 15, 1990

PCT Filed Apr. 12, 1991, Ser. No. 687,936

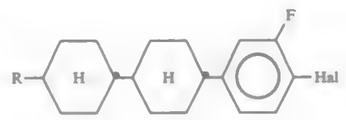
Claims priority, application Germany, Apr. 13, 1990, 4012051

The portion of the term of this patent subsequent to Feb. 15, 2011, has been disclaimed.

Int. Cl.[5] C09K *19/30, 19/12*

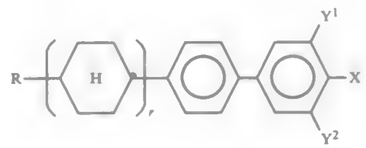
U.S. Cl. 252—299.63 **8 Claims**

1. Liquid-crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, characterized in that it contains one or more compounds of the general formula I

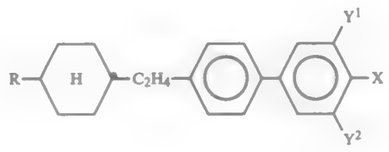


I

and additionally one or more compounds selected from the group consisting of formulae V-VIII

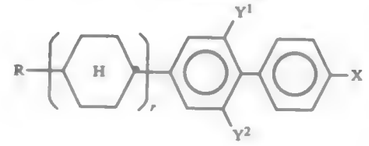


V

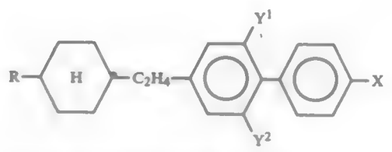


VI

-continued



VII



VIII

in which the individual radicals are as defined below:

R is alkyl, oxaalkyl, fluoroalkyl, or alkenyl, in each case having up to 7 carbon atoms;

X is F, Cl, CF_3, OCF_3, or $OCHF_2$;

Y^1 and Y^2 are, in each case, F;

r is 0 or 1; and

Hal is fluorine or chlorine.

5,368,773

PREPARATION OF SALT SOLUTIONS OF PHOSPHONOCARBOXYLIC ACIDS

John Humphrey, Maple, Canada, assignor to Anco Chemicals Inc., Maple, Canada

Filed Apr. 29, 1993, Ser. No. 53,756

Claims priority, application Canada, Apr. 30, 1992, 2067668

Int. Cl.[5] C23F *11/167*

U.S. Cl. 252—389.23 **26 Claims**

1. A process for preparing a substantially active salt solution of one or more phosphonocarboxylic acids comprising preparing a first aqueous solution of one or more phosphonocarboxylic acids, preparing a second aqueous solution of one or more hydroxides and mixing a sufficient amount of said first solution into said second solution to obtain a mixture of said first and second solutions having a slightly alkaline pH, said first solution being introduced into said second solution at a rate to maintain the pH of said second solution at the point of addition of said first solution less than about 12 during said addition.

16. A process for the production of a dry, free flowing phosphonocarboxylic acid-containing product comprising the steps of preparing a dry mixture of a major proportion of partially hydrated calcium chloride fines and a minor amount of one or more dihydroxy hydroxides, preparing an aqueous solution of one or more phosphonocarboxylic acids and adding a sufficient amount of said solution to said dry mixture, with agitation, at a rate to obtain said dry, free flowing product and to maintain the pH of said dry mixture at the point of addition of said aqueous solution less than about 12 during said addition.

5,368,774

WATER SOLUBLE CORROSION INHIBITOR EFFECTIVE AGAINST CORROSION BY CARBON DIOXIDE

Bradley G. Borgard, Houston; Jack B. Harrell, Jr., Friendswood, and John Link, Humble, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation of Ser. No. 922,149, Jul. 30, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 99,774

Int. Cl.[5] C23F *11/14*

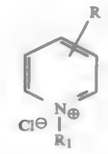
U.S. Cl. 252—391 **15 Claims**

1. A solution in a hydrocarbon refinery unit comprising:

a product stream, at least a portion of which has a highly turbulent velocity, wherein said product stream comprises;

dissolved carbon dioxide; and

a composition for inhibiting corrosion of metal surfaces in said hydrocarbon refinery unit by said product stream, said composition comprising a ratio of about 6:1 of a pyridinium quaternary salt and an organic sulfur containing compound, said pyridinium quaternary salt having the following composition:

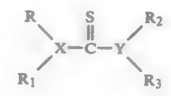


wherein

R is a methyl group substituted at the 2 or 3 position; and

R_1 is selected from the group consisting of a methyl group, an allyl group, or an alkaryl group, and

wherein said organic sulfur containing compound has the following structure:



wherein

X and Y are selected from the group consisting of nitrogen, sulfur, and oxygen;

R, R_1, R_2 and R_3 are selected from the group consisting of a hydrogen, a cyclic or linear alkyl group, an allyl group, an aryl group, an alkaryl group, or an aralkyl group, provided that, when X and/or Y is oxygen or sulfur, each of said oxygen or sulfur has only one of said R groups.

5,368,775

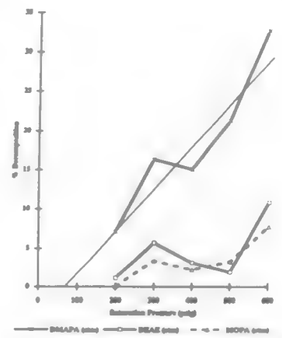
CORROSION CONTROL COMPOSITION AND METHOD FOR BOILER/CONDENSATE STEAM SYSTEM

Anthony M. Rossi, Vincentown, N.J., and Alexander C. Mc Donald, Houston, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 872,202, Apr. 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 217,489, Jul. 11, 1988, abandoned. This application Jun. 8, 1993, Ser. No. 74,082

Int. Cl.[5] C23F *11/14*

U.S. Cl. 252—392 **3 Claims**



1. A method of controlling corrosion in an aqueous boiler/-condensate system by acid neutralization comprising treating said system with an effective amount of the relatively high molecular weight amine dimethylaminopropylamine and relatively low molecular weight amines selected from the group

dimethylamine, trimethylamine, and diethylamine wherein said relatively low molecular weight amines are formed insitu by decomposition at pressures above about 200 psi of said relatively high molecular weight amine.

5,368,776

CORROSION PROTECTION ADDITIVES BASED ON EPOXIDES

Volker Schäfer, Altrip; Robert Kohler, Oberhausen; Alfred Pauli, Sandhausen, and Achim Fessenbecker, Heidelberg, all of Germany, assignors to Rhein Chemie Rheinau GmbH, Mannheim, Germany

Continuation-in-part of Ser. No. 18,432, Feb. 16, 1993, abandoned. This application Oct. 20, 1993, Ser. No. 139,929
Claims priority, application Germany, Feb. 27, 1992, 4206047
Int. Cl.[5] C23F *11/16*
U.S. Cl. 252—395 11 Claims

1. In a method of corrosion inhibition of a lubricating oil wherein the improvement comprises adding to the lubricating oil a corrosion-inhibiting amount of the reaction product of an epoxidized fatty acid ester and an alkylbenzene sulfonic acid.

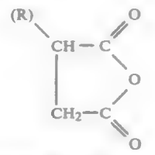
5,368,777

USE OF DISPERSANT ADDITIVES AS PROCESS ANTIFOULANTS

David R. Forester, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 4, 1993, Ser. No. 423
Int. Cl.[5] C10G *9/16*
U.S. Cl. 252—403 8 Claims

1. A method of inhibiting fouling deposit formation in crude oil during heat treatment in a refining process at temperatures from about 200–550° C., wherein, in the absence of such anti-fouling treatment, fouling deposits are normally formed as a separate phase within said crude oil impeding process throughput and thermal transfer, said method comprising adding to said crude oil, an antifouling amount of a reaction product of a hydrocarbylsuccinic anhydride having the formula



wherein R is an aliphatic alkenyl or alkyl moiety having at least about 50 carbon atoms and less than about 200 carbon atoms, with the reaction product of a polyamine and a cyclic carbonate.

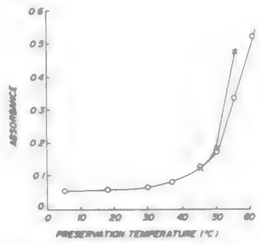
5,368,778

CLEANER FOR THERMOSTATIC WATER BATH

Naomasa Shimotomai, Kawaguchi; Eriko Miyazawa, Ichikawa, and Takahiro Ueyama, Toride, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka and San-Ai Oil Co, Ltd., Tokyo, both of Japan

Continuation of Ser. No. 364,479, Jun. 12, 1989, abandoned.
This application Jan. 7, 1992, Ser. No. 817,553
Int. Cl.[5] C02F *1/76*
U.S. Cl. 252—542 3 Claims

1. A process for preventing generation of algae and growth of microorganisms in a thermostatic water bath, which comprises adding an effective amount of a cleaner to water in the thermostatic water bath, the cleaner comprising a 1,3,5-triazine derivative selected from the group consisting of cyanuric acid; cyanuric chloride; hexahydro-1,3,5-tris (β-hydroxyethyl) triazine; 2-chloro-4,6-dialkyl-amino-1,3,5-triazine; 2-methylthio-



4,6-dialkyl-1,3,5-triazine; and hexahydro-1,3,5-triethyltriazine, and a nonionic surface active agent.

5,368,779

DETERGENT WITH CLEANING AND WASTE WATER TREATING CAPABILITIES CONTAINING POLYACRYLATE AND DIMETHYLTHIOCARBAMATE

Thomas H. Snethen, Oregon City, Oreg., assignor to Little Chemical Company, Portland, Oreg.

Filed Dec. 28, 1992, Ser. No. 997,699
Int. Cl.[5] C02F *5/10*; B01D *21/01*; C11D *3/37, 7/34*
U.S. Cl. 252—545 3 Claims

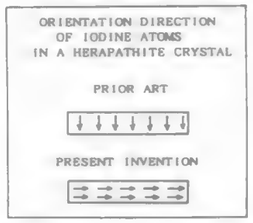
1. A detergent formulation for cleaning surfaces of processing equipment, moving equipment, parts, floors or the like and at the same time treating waste water, comprising a mixture of about 2.5% sodium polyacrylate in deionized water for acting as a water softener and flocculating dirt and sludge and aiding in gravimetric separation of oil from water, about 2.0% monoethanolamine and about 2.0% potassium dimethyldithiocarbamate.

5,368,780

HEAT RESISTANT HERAPATHITE AND PROCESS FOR PRODUCING THE SAME

Kazuo Tojima; Shinobu Okayama; Arimitsu Usuki; Narihito Tatsuda; Kazuhisa Yano, and Hisato Takeuchi, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Nov. 14, 1991, Ser. No. 791,718
Claims priority, application Japan, Nov. 16, 1990, 2-312355; Aug. 26, 1991, 3-213839
Int. Cl.[5] F21V *9/00, 9/14*; G02F *1/00*
U.S. Cl. 252—582 15 Claims



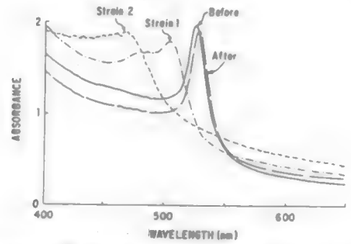
1. A heat resistant herapathite comprising quinine, sulfuric acid and iodide, said herapathite being in a form of a capillary crystal in which atoms of said iodine are oriented in parallel with a major axis of said capillary crystal wherein said herapathite has a chemical formula, $xC_{20}H_{24}N_2O_2.yH_2SO_4.zHI_3$, in which "x" is a number of guinine molecules, y is a number of sulfuric acid molecules and "z" is a number of hydrogen triiodide (HI_3) fragments, and a ratio of said "y" with respect to a number of iodine atoms "3z", i.e., (v/3z), is 0.42 or less.

5,368,781

NARROW BAND RADIATION FILTER FILMS

Gottfried Haacke, Fairfield; Hans P. Panzer, Stamford; Lino G. Magliocco, Shelton, all of Conn., and Sanford A. Asher, Pittsburgh, Pa., assignors to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 632,694, Dec. 24, 1990, Pat. No. 5,266,238.
This application Nov. 10, 1993, Ser. No. 149,866
Int. Cl.[5] F21V *9/00*; G02B *5/24*
U.S. Cl. 252—582 16 Claims



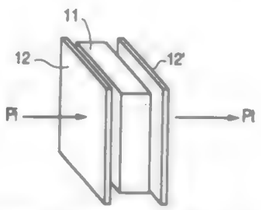
1. A method for filtering incident radiation comprising securing between first and second fixation means first and second portions of a narrow band radiation filter comprising a crystalline colloidal array of charged particles of a copolymer of styrene and a comonomer selected from the group consisting of 1-sodium, 1-alloxy-2-hydroxypropane sulfonate: styrene sulfonate: 2-acrylamido-2-methylpropane sulfonate; 3-sulfopropyl methacrylate potassium salt and vinyl sulfonate which has been formed in a thin film of aqueous medium and fixed in a self-supporting film of a polymeric hydrogel formed by polymerization of a mixture, in said aqueous medium, of acrylamide, an optional water-soluble comonomer of vinyl pyrrolidone or hydroxyethylmethacrylic acid ester and an water-soluble cross-linking agent consisting of N,N-methylenebisacrylamide and imposing a tension on said hydrogel through said first and second fixation means until at least a portion of radiation incident to said hydrogel is filtered thereby.

5,368,782

METHOD OF OPERATING THIRD-ORDER NONLINEAR OPTICAL ELEMENT

Tetsuya Gotoh; Toshiyuki Kondoh; Keiichi Egawa, all of Otsu, and Ken-ichi Kubodera, Isehara, all of Japan, assignors to Toray Industries, Inc. and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Continuation of Ser. No. 641,896, Jan. 16, 1991, abandoned, which is a division of Ser. No. 225,758, Jul. 29, 1988, abandoned.
This application Mar. 31, 1992, Ser. No. 860,124
Claims priority, application Japan, Jul. 29, 1987, 62-189830; Feb. 4, 1988, 63-369294
Int. Cl.[5] F21V *9/04, 9/06, 9/00*
U.S. Cl. 252—587 19 Claims



1. A method of operating a third order nonlinear optical device, said third order nonlinear optical device comprising an optical element having at least two optically smooth surfaces, said optical element comprising a charge-transfer complex consisting essentially of:

at least one electron-accepting component selected from the group consisting of cyano compounds, quinones, nitro compounds, acid anhydrides, halogens, and halogenated carbons; and

at least one electron-donating component selected from the group consisting of unsaturated cyclic hydrocarbon compounds, unsaturated heterocyclic compounds, chalcogen-containing compounds, quaternary unsaturated heterocyclic compounds and metals;

said charge-transfer complex being formed of said electron-accepting component and said electron-donating component in the ground state;

at least one of said components being an organic compound having a π-conjugated system,

said method comprising:

impinging one or more kinds of light on one of the optically smooth surfaces of the third-order nonlinear optical element such that one or more electric-field polarization directions of the incident operating light is substantially not perpendicular to an axis of the third-order nonlinear optical element exhibiting maximum third-order nonlinear optical susceptibility without exhibiting a second-order nonlinear optical effect.

5,368,783

NEGATIVE-WORKING RADIATION-SENSITIVE RESIST COMPOSITION

Masakazu Kobayashi; Hatsuyuki Tanaka, both of Chigasaki, and Toshimasa Nakayama, Hiratsuka, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

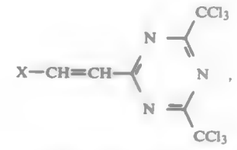
Filed Apr. 23, 1993, Ser. No. 52,484
Claims priority, application Japan, May 1, 1992, 4-137542
Int. Cl.[5] G03C *1/00, 5/00*
U.S. Cl. 252—600 9 Claims

1. A negative-working radiation-sensitive resist composition as a uniform blend which comprises:

(a) a novolac resin or a polyhydroxystyrene resin;

(b) an alkoxymethylated amino resin; and

(c) a triazine compound represented by the general formula



in which X is a 3,5-dialkoxyphenyl group, a 2-furyl group or a 5-alkyl-2-furyl group.

5,368,784

SCOOP HUMIDIFIER

James W. Annestedt, Sr., Memphis, Tenn., assignor to American Metal Products Co., Olive Branch, Miss.

Filed Oct. 8, 1993, Ser. No. 133,706
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—105 10 Claims

1. An air humidification system for a forced air circulation system having an air duct, said humidification system comprising:

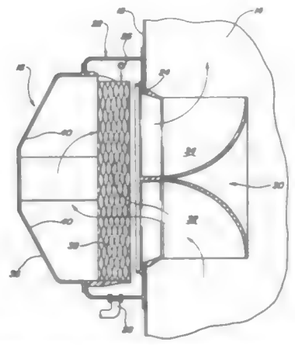
a main housing mountable to the air duct, said main housing including an opening adapted to be aligned with a cut-out in the air duct to provide fluid communication between said main housing and the air circulation system;

a moisture media disposed within said housing across said opening such that air flow through said opening is directed across said moisture media;

means for maintaining a predetermined moisture level in said moisture media; and

a passageway housing having an inlet passageway for direct-

ing air flow from the duct through said opening into said main housing and an outlet passageway for direction air flow from said main housing into the duct, said inlet and outlet passageways having coplanar interior ports, curved semi-circular configurations, and parallel exterior ports, said passageway housing mounted within said opening of



said main housing and extending into the air duct through the duct cut-out such that said exterior ports of said passageway housing are in the stream of fluid flow through the duct for diverting air flow from the duct through said inlet passageway across said moisture media within said main housing and return humidified air through said outlet passageway to the air duct of the circulation system.

5,368,785

ANTI-FREEZING DEVICE FOR CROSS-FLOW TOWER COOLERS

Franz M. F. G. Bouton, Soignies, , assignor to Hamon-Sobelco S.A., Brussels,

Filed May 21, 1993, Ser. No. 64,663
Claims priority, application Belgium, May 27, 1992, 09200495
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—111 **5 Claims**



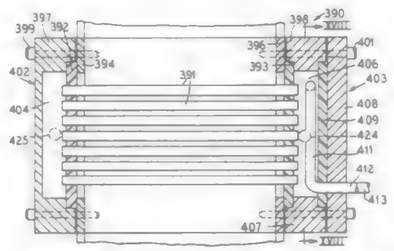
1. Device for reducing variation in the temperature of a liquid in a tower cooler designed to cool, by direct contact with the atmospheric air, a liquid falling under the effects of gravity through at least two vertically extending exchanges through which an atmospheric airflow passes approximately horizontally comprising means, provided beneath a first exchanger, for effecting substantially homogeneous agitation or mixing of the liquid before it passes into the following exchanger, consisting of a tank with a pierced bottom and an intermediate bottom which divides the tank into two compartments arranged one above the other, the compartments being interconnected by an opening, wherein the intermediate bottom separates the lower and upper compartments in leakproof manner, except for one extreme edge which forms a spillway delimiting the opening with the side walls and an end wall of the tank.

5,368,786

APPARATUS AND METHODS FOR HUMIDITY CONTROL

William R. Dinauer, Waunakee; David R. Otis; Mohamed M. El-Wakil, both of Madison; John C. Vignali, Waunakee, and Philip D. Macaulay, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 30, 1992, Ser. No. 954,121
Int. Cl.[5] F02M *15/00*
U.S. Cl. 261—130 **30 Claims**



1. A manifolded porous tube array for humidification and dehumidification of a gas comprising in combination:

(a) a pair of spaced, opposed elastomeric sealing gasket plates, each plate having an inside face and an outside face and perimeter portions;

(b) a plurality of porous tubes arrayed in spaced relationship to one another, each one of said tubes having exterior circumferential surface portions and a pair of opposite ends, said exterior surface portions that are adjacent each said opposite end of each said tube being slidably but sealingly positioned in a different respective one of said gasket plates;

(c) a pair of manifold means, each one being sealingly associated with said perimeter portions and generally enclosing said outside face of a different one of each of said gasket plates with all said tube ends that are so positioned in each gasket plate communicating with a generally fluid tight manifold chamber that is defined by the combination of the adjacent one of said manifold means and the associated said gasket plate, each one of said manifold means further including hole means for conduit association so that a fluid is circulatable from said hole means of one of said manifold means through said tubes to said hole means of the other of said manifold means; and

(d) spanner means which circumscribes said tube plurality and which has longitudinally opposite ends that are each associated with a different one of said manifold means so that a chamber is defined by said spanner means and said gasket plates through which chamber said tube plurality extends, said spanner means including at least two passageway means which are positioned so that a fluid is circulatable through said chamber from one said passageway means about said exterior circumferential surface portions of said tubes to another of said passageways means.

5,368,787

WHITE SMOKE GENERATING APPARATUS

Koh Yonamoto; Hiroyuki Sawada, and Tetsuya Kanno, all of Kawasaki, Japan, assignors to Nippon Sanso Corporation, Tokyo, Japan

Filed Jul. 6, 1993, Ser. No. 88,184
Claims priority, application Japan, Jun. 4, 1993, 5-030081[U]
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—36.1 **20 Claims**

1. A white smoke generating apparatus comprising:

a vessel;

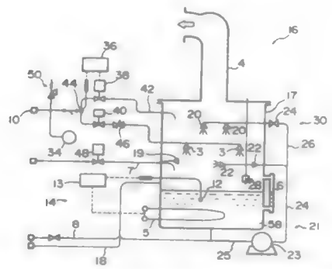
a discharge opening for discharging white smoke generated in said vessel to the exterior of said vessel;

a cryogenic gas spray opening for spraying cryogenic gas;

a water spray opening for spraying heated water; and

a white smoke temperature regulating means for spraying heated water between said cryogenic gas spray opening and said discharge opening,

wherein said cryogenic gas spray opening and said water spray opening are provided inside said vessel, and said



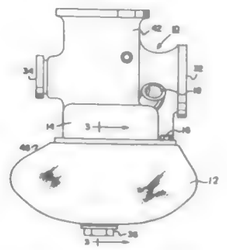
cryogenic gas spray opening and said water spray opening are arranged such that cryogenic gas, discharged from said cryogenic gas spray opening, and heated water, discharged from said water spray opening, cross contact, and said white smoke temperature regulating means spraying heated water on white smoke generated by said cross contact to regulate the temperature of the generated white smoke.

5,368,788

FLOAT BOWL FOR CARBURETORS

Eyvind Boyesen, R.D. #2, Box 246A, Kempton, Pa. 19529

Filed Apr. 16, 1993, Ser. No. 46,817
Int. Cl.[5] F02M *5/02*
U.S. Cl. 261—44.3 **7 Claims**



1. In a carburetor for a vehicle such as a motorcycle, said carburetor comprising a housing having a downwardly facing opening:

a float bowl secured to said housing over said downwardly facing opening;

said carburetor housing containing fuel supply means to supply fuel to said float bowl and float means extending through said downwardly facing opening into said float bowl to control flow of fuel through said fuel supply means;

said float bowl having a forward end and a rearward end relative to the longitudinal axis of the vehicle, said forward and rearward ends of the float bowl being extended beyond the downwardly facing opening of said carburetor housing;

said float bowl further including an upper wall, a bottom wall and opposite side walls, said bottom wall being curved upwardly at the forward and rearward ends of the float bowl and merging smoothly with said upper wall;

wherein said upper wall has an opening therein corresponding in size and shape to the downwardly facing opening of said carburetor housing, said upper wall being extended beyond said opening at the forward and rearward ends of said float bowl and joining with the upwardly curved forward and rearward ends of said bottom wall; and

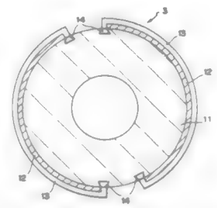
wherein said upper wall is inclined downwardly beyond said opening at the forward and rearward ends of said float bowl.

5,368,789

METHOD FOR FORMING SUBSTRATE SHEET FOR OPTICAL RECORDING MEDIUM

Hirofumi Kamitakahara, Yokohama; Hitoshi Yoshino, Kawasaki; Osamu Kanome, Yokohama; Tetsuya Sato, and Hisanori Hayashi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,972
Claims priority, application Japan, Sep. 28, 1990, 2-260233
Int. Cl.[5] B29C *59/04;* **B29D** *11/00*
U.S. Cl. 264—1.33 **17 Claims**



1. A method for forming a preformatted substrate sheet for an optical recording medium, said sheet having a double refraction of less than a predetermined double refraction amount and a preformat pattern transferred with at least a predetermined minimum transfer accuracy, said method comprising the steps of:

providing a molding roll and an opposed roll disposed opposite to said molding roll, said molding roll comprising a roll base having a peripheral surface, a stamper having a preformat pattern that is fixed around the peripheral surface of said roll base and a resin layer interposed between said roll base and said stammer;

setting the surface temperature of said molding roll to a temperature A;

extruding a molten resin from a die to form a resin sheet having a temperature B that is higher than said surface temperature A; and

pressing said resin sheet in a substantially molten state between said molding roll and said opposed roll to transfer said preformat pattern to a surface of said resin sheet such that said resin sheet is brought into direct contact with the surface of said molding roll while said resin sheet has a temperature higher than the surface temperature A of said molding roll, thereby forming a preformatted substrate sheet,

wherein said resin layer comprises a resin having a lower heat conductivity than that of both said roll base and said stamper, and said resin layer is sufficiently thick to act as an effective heat insulating layer so that it inhibits heat conduction from said resin sheet to said roll base to such an extent that, at said surface temperature A of said molding roll,

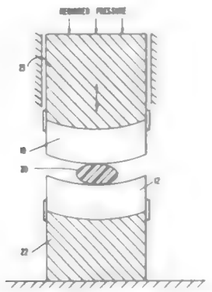
(a) the amount of double refraction in the thus-formed substrate sheet is below said predetermined double refraction amount, and

(b) the transfer accuracy of said preformat pattern in said substrate sheet is at least as great as said predetermined minimum transfer accuracy,

whereas if the molding roll had instead (i) had the stamper attached directly to the roll base, without any resin layer being interposed therebetween, and (ii) had a surface temperature A, then the amount of double refraction in the resultant substrate sheet would have been more than said predetermined double

refraction amount or the transfer accuracy would have been less than said predetermined minimum transfer accuracy, or both.

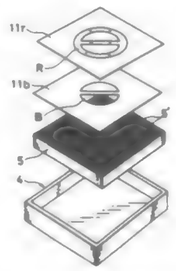
5,368,790
METHOD FOR MAKING LENSES
Martin Greshes, 70 Corey La., East Meadow, N.Y. 11554
Filed Aug. 19, 1992, Ser. No. 932,088
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—2.4 11 Claims



1. A method of making a lens from thermoplastic material comprising the steps of:
a. placing a pair of lens molds in a press;
b. positioning a monolithic preform mass having at least one or more radii between said molds such that the radii make point or line contact with each of said molds;
c. pressing said pair of molds toward each other and against said preform mass to a predetermined pressure;
d. heating up said pair of molds until said preform mass begins to soften and said predetermined pressure varies slightly therefrom;
e. continuing to heat up said pair of molds while holding and maintaining said predetermined pressure on said preform mass;
f. repeating steps d and e until said preform mass is reconfigured and/or transformed by compression molding into a lens defined by said pair of molds; and
g. terminating the heating up of said pair of molds while maintaining said predetermined pressure until a formed lens is removed from said pair of molds.

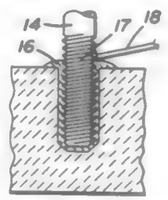
5,368,791
METHOD OF PRODUCING PATTERNED SHAPED ARTICLE
Hiroshi Uchida, Ashikaga; Mituhiro Ouuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 767,815
Claims priority, application Japan, Oct. 1, 1990, 2-260433; Oct. 1, 1990, 2-260434
Int. Cl.[5] B28B *1/08;* B29C *39/12;* C04B *33/32;* E04B *1/16*
U.S. Cl. 264—35 46 Claims

1. A method for producing a patterned concrete shaped article, comprising the steps of:
laying a mat on an inside bottom surface of a main form for molding said shaped article;
disposing on said mat at a prescribed position a cell form comprising a plurality of cylindrical cells which have an equal height and are arranged in a contiguous manner;
charging a prescribed amount of dry concrete material for forming a pattern-course of said shaped article into a prescribed number of cells of said cell form conforming to a shape of a pattern to be formed;
charging a prescribed amount of concrete material for forming a base-course of said shaped article into a remaining space within said main form;
removing said cell form from said main form;
causing said dry pattern-course concrete material and said base-course concrete material to set within said main form into said shaped article with water or with water under a pressure application, wherein said mat laid on said inside bottom surface of said main form permits an absorption



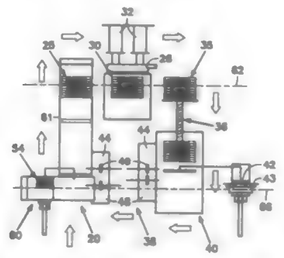
excess water and a supply of said excess water to a portion of said dry pattern-course material and said base-course material which lack moisture, and a degassing of said dry pattern-course material and said base course material under said pressure application; and
removing said shaped article from said main form.

5,368,792
METHOD FOR MOLDING THREADS IN GRAPHITE PANELS
William W. Short, Livermore, Calif., and Cecil Spencer, Silverton, Oreg., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Aug. 16, 1993, Ser. No. 106,679
Int. Cl.[5] B28B *1/48, 7/36;* B29D *1/00;* B32B *35/00*
U.S. Cl. 264—36 4 Claims



1. A method for repairing a damaged threaded hole in a graphite panel, the method comprising:
forming an enlarged hole by drilling or reaming out the damaged threaded hole in the graphite panel, with said enlarged hole having a diameter larger than a predetermined thread diameter;
inserting a bolt into said enlarged hole, said bolt being externally lubricated and having said predetermined thread diameter;
filling a graphite cement into said enlarged hole;
heating said graphite panel and said graphite cement with said bolt in place in said enlarged hole to a first predetermined temperature for curing the graphite cement;
cooling said graphite panel and said graphite cement to a second predetermined temperature; and
removing said bolt from said graphite cement after said graphite cement has cured leaving a thin layer of cured graphite cement firmly bonded to said graphite panel in said enlarged hole in the graphite panel,
whereby the method produces in said thin layer of cured graphite cement a new thread having substantially the same thread strength and thermal characteristics of the damaged threaded hole before being damaged and which does not adversely affect a vacuum environment of use of said graphite panel.

5,368,793
AUTOMATIC MOLDING SYSTEM
Chun P. Lau, Room 1908, Block 19, Heng Fa Chuen, Hong Kong, Hong Kong
Continuation of Ser. No. 901,951, Jun. 22, 1992, abandoned.
This application Nov. 10, 1993, Ser. No. 150,724
Int. Cl.[5] B29C *33/34, 33/72*
U.S. Cl. 264—39 12 Claims



1. A molding process comprising the sequential steps of:
1) assembling mold plates into multiple mold units at an assembly station, each mold unit comprising a plurality of mold sets arranged in a stack with each set comprising upper and lower plates juxtaposed to form predetermined flow channels and a predetermined mold cavity for communication with a moldable material;
2) locating additional mold units at a storage apparatus;
3) moving a first mold unit from either said assembly station or said storage apparatus to a preheating station;
4) preheating said first mold unit for a predetermined time;
5) moving said first mold unit from said preheating station to a molding station;
6) flowing moldable material into said first mold unit;
7) moving said first mold unit to a curing station and curing the molded material for a predetermined time;
8) moving said first mold unit to a disassembly station;
9) dismantling said first mold unit into first mold plates and removing molded products from said first mold plates;
10) moving said first mold plates to said assembly station for reassembly;
10a) during step 10, cleaning said first mold plates while said plates are moving;
11) after step 5, transport a second mold unit from either said assembly station or said storage apparatus to said preheating station; and,
12) preheat said second mold unit for a predetermined time and move said second unit successively through steps 5 through 10a in a manner equivalent to said first mold unit.

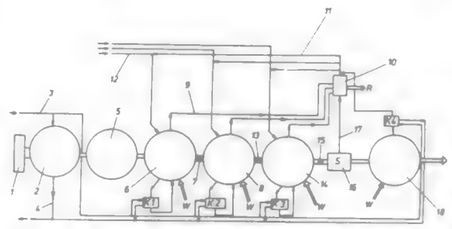
5,368,794
METHOD OF MAKING PLASTIC REINFORCED BY NATURAL FIBERS
Jerry Ou, No. 231, Cheng Kung 3rd Road, Nantou City, Taiwan, Prov. of China
Filed Mar. 26, 1993, Ser. No. 37,404
Int. Cl.[5] B29C *67/22*
U.S. Cl. 264—45.3 6 Claims

1. A method of making a plastic reinforced by natural fibers comprising natural fibers and a mixture prepared by combining per 100 parts by weight of an unsaturated polyester with 30–300 parts by weight of a volatile organic foaming agent, 0.5–3.0 parts by weight of an organic peroxidase, and a predetermined quantity of a filling agent of wood powder, said natural fibers being impregnated in said mixture before being molded into a plastic in accordance with the following steps of:
(a) preparing a filling agent mixture by adding a predetermined quantity of a filling agent to a foaming agent which is absorbed completely by the filling agent;
(b) preparing an unsaturated polyester mixture by adding said filling agent mixture and a catalyst to said unsaturated polyester; and
(c) impregnating said natural fibers in said unsaturated polyester mixture of said step (b) before said natural fibers are arranged in a mold cavity, which is then heated to a temperature ranging between 100 and 160 degrees Celsius under a pressure ranging between 30 and 150 kg/cm^2 for a period lasting between 30 and 45 seconds per millimeter thickness of said natural fiber impregnated with said unsaturated polyester mixture in said mold cavity, so as to cause said foaming agent to evaporate completely to bring about the foaming and the curing of said unsaturated polyester.

5,368,795
USE OF ETHYLENE/VINYL ACETATE POLYMER BINDERS AS DRYING PRESSING AIDS FOR CERAMIC POWDERS
Tariq Quadir, Columbia, Md., assignor to Ferro Corporation, Cleveland, Ohio
Filed Oct. 1, 1993, Ser. No. 130,226
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—63 11 Claims

1. A method of forming a sintered ceramic body, said method comprising:
a) combining ceramic particles, an aqueous polymer emulsion containing an ethylene/vinyl acetate polymer, and water to form a slurry,
b) drying said slurry to form a free flowing powder,
c) dry pressing said powder to form a shape, and
d) firing said shape to remove said polymer and to sinter said ceramic particles thereby forming said sintered ceramic body.

5,368,796
PROCESS AND APPARATUS FOR REGENERATING USED ARTICLES OF POLYOLEFIN TO REUSABLE RAW MATERIAL
Arnulf Lorenz, Dresden, and Hans P. Walser, Steinfeld, both of Germany, assignors to Nordenia Verpackungswerke GmbH, Steinfeld, Germany
PCT No. PCT/DE92/00492, § 371 Date Mar. 4, 1993, § 102(e) Date Mar. 4, 1993, PCT Pub. No. WO93/01036, PCT Pub. Date Jan. 21, 1993
PCT Filed Jun. 26, 1992, Ser. No. 30,324
Claims priority, application Germany, Jul. 5, 1991, 4122277
Int. Cl.[5] B29B *17/02;* C08J *11/06*
U.S. Cl. 214—140 17 Claims



1. Process for regenerating used articles of polyolefin to reusable raw material, comprising
shredding used articles of polyolefin plastic material into shreds;
placing the shreds in a first solvent bath containing boiling solvent and intensively stirring mechanically for about 30

minutes to rub the shreds on one another and remove the printing inks adhering to the shreds by friction;
removing the shreds from the first solvent bath which is loaded with printing inks and placing the shreds in a second solvent bath so that the shreds are acted on by fresh solvent, and boiling and intensively stirring again for 30 minutes;
placing the shreds in a third solvent bath and boiling and intensively stirring for about 30 to 60 minutes;
removing the shreds from the third solvent bath and dripping off the solvent;
drying the dripped-off shreds under evaporation of solvent residues adhering thereto; and
subsequently melting and shaping the shreds into granulate usable as reusable raw material.

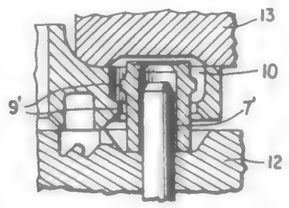
15. Apparatus for regenerating used articles of polyolefin to reusable raw material, comprising
means for shredding used articles of polyolefin plastic material into shreds;
a first solvent bath container containing boiling solvent and having means for intensively stirring the bath mechanically to rub the shreds on one another and to remove the printing inks adhering to the shreds by friction;
means for placing the shreds into the first bath container;
a second solvent bath container containing a boiling solvent and having means for intensively stirring the bath mechanically;
means for removing the shreds from the first solvent bath container containing printing ink loaded solvent and for placing the shreds in the second bath container so that the shreds are acted on by fresh solvent;
a third bath container containing a boiling solvent and having means for intensively stirring the bath mechanically;
means for removing the shreds from the second bath container and for placing the shreds in the third solvent bath container;
a drier for drying the shreds by evaporation of solvent residues adhering thereto;
means for removing the shreds from the third solvent bath container and for transporting the shreds to the drier; and
means for melting the shreds and shaping the melt into granulate usable as reusable raw material.

5,368,797

METHOD FOR MAKING A COVER ASSEMBLY FOR USE ON AN INTERNAL COMBUSTION ENGINE

Werner Quentin, Burscheid, and Bernd Stephan, Remscheid-Lennep, both of Germany, assignors to Goetze AG, Burscheid, Germany

Filed Dec. 15, 1992, Ser. No. 990,507
Claims priority, application Germany, Dec. 17, 1991, 4141576; Jul. 2, 1992, 4221760
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—152 **11 Claims**



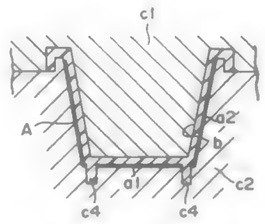
1. A method for making a cover assembly which is insulated against structure-borne sound from an object on which the cover assembly is mounted by screws, comprising the steps of:
(a) placing a cover blank between first and second molding tools of a mold, the cover blank including a cover member portion and a plurality of tubular sleeves that are joined to the cover member portion;
(b) moving the molding tools together to close the mold and detach the sleeves from the cover member portion of the cover blank, the detachment of the sleeves from the cover member portion leaving the cover member portion with openings through which the sleeves extend; and
(c) injecting elastomer material into the closed mold to form elastomer bodies in the openings, the elastomer bodies being attached to the sleeves and being connected in a form-locking manner to the cover member position.

5,368,798

METHOD FOR PRODUCING AN IN-MOLD LABELED VESSEL WITH AN ELONGATED BOTTOM PROJECTION

Koubu Mizukoshi; Ken Katayama; Masanori Hirata, all of Tokyo, and Kohji Maekawa, Saitama, all of Japan, assignors to Nippla Co., Ltd., Tokyo and Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Continuation of Ser. No. 746,726, Aug. 19, 1991, abandoned. This application Mar. 8, 1994, Ser. No. 207,262
Claims priority, application Japan, Dec. 28, 1990, 2-408630
Int. Cl.[5] B29C *45/14*
U.S. Cl. 264—154 **8 Claims**



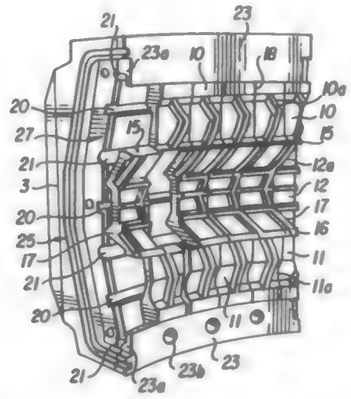
1. A method for producing an in-mold labeled vessel with-an elongated bottom projection, comprising the steps of:
providing a label having a bottom portion with a plurality of foldable side wall portions and a plurality of folded portions connecting said bottom portion with said side wall portions, said label having a thickness substantially between 60 and 100 microns and being formed from material selected from the group consisting of ordinary grade paper, plastic film, laminate film and synthetic paper, said label comprising at least one frangible portion for allowing breakage of said label due to a predetermined resin temperature and an internal mold pressure;
loading said label into a mold formed with an elongated bottom projection forming recess; and
injecting a molding resin into said mold at a resin temperature substantially between 190° and 200° C. and at an internal mold pressure substantially between 300 and 600 kg/cm^2, said resin temperature and said internal mold pressure producing said breakage of said label at said at least one frangible portion, said molding resin flowing through said at least one broken frangible portion of said label and into said recess to form the elongated bottom portion of said vessel.

5,368,799

METHOD FOR PRODUCTION OF TIRES IN A CURING MOLD HAVING SPACE BETWEEN ADJACENT MOLD BLOCKS FOR ESCAPE OF AIR

Giuseppe Galli, Milan, and Renato Caretta, Gallarate, both of Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Division of Ser. No. 683,858, Apr. 11, 1991, Pat. No. 5,234,326. This application Jun. 24, 1993, Ser. No. 80,514
Claims priority, application Italy, Apr. 13, 1990, 20.036A/90
Int. Cl.[5] B29C *39/22*
U.S. Cl. 264—219 **3 Claims**



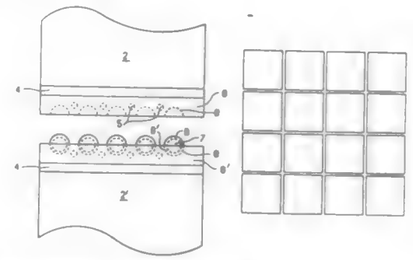
1. A method for production of tires in a curing mold, each tire comprising two axially opposite sidewalls connected to a central annular interposed tread portion on the crown of the tire, in which each mold comprises an annular tread portion having a relief rib matrix for the molding of said tread, said matrix being built separate from a corresponding mold support portion that carries it and successively mounted on said support portion, said method including the following steps:
forming a tire by building a mold of a plurality of shaped blocks, capable of being assembled together to form said matrix, said blocks forming a plurality of protrusions on the surface directed toward said support portion;
forming in the body of said support portion, on the surface directed toward said blocks, circumferential grooves for receiving said protrusions of the blocks;
mounting said blocks on said support portion in predetermined sequence, in at least two circumferential rows by inserting said protrusions into the corresponding grooves;
fixing a block of each row, circumferentially with respect to said support portion;
displacing the blocks of each row, circumferentially with respect to said support portion and accumulating blocks each close to the other against said block already fixed by moving said protrusions in the corresponding grooves wherein a fixed width clearance between adjacent blocks is left in relation to the rheometric characteristics of the tire material and the molding conditions, in order that the clearance is wide enough to permit air trapped within the mold to escape, but to prevent escape of elastomeric material so as to avoid burr generation on the surface of the cured tire;
adjusting the total width of the resulting clearance in each circumferential row, between the two end blocks of the series so as to take into consideration the thermal expansion of said blocks and of said support portion at the operating temperature of the mold.

5,368,800

METHOD OF MOLDING OBJECTS WITHIN A MOLDING MACHINE HAVING A GROOVED INSULATION BOARD

Stephen Scolamiero, Abington; Henry Conaty, Dighton, and Richard Viveiros, Acushnet, all of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Division of Ser. No. 802,906, Dec. 6, 1991, Pat. No. 5,259,752, which is a continuation of Ser. No. 593,123, Oct. 5, 1990, abandoned. This application Aug. 13, 1993, Ser. No. 106,166
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—219 **4 Claims**



1. In a method of molding objects using molds having platens and mold plates comprising
1) selecting at least one insulating board having two spaced-apart planar surfaces with a board depth therebetween;
2) forming in said board a plurality of grooves, said grooves being of a depth dimension of at least one-half the board depth;
3) placing the board with such grooves between the platen and mold plate; and
4) causing platens to exert pressure on a mold plate through said grooved board to close the molds.

5,368,801

METHOD OF MOUNTING A SEPTUM IN A CONNECTOR

Michael Vaillancourt, Livingston, N.J., assignor to VLV Associates, East Hanover, N.J.

Filed Jan. 5, 1993, Ser. No. 650
Int. Cl.[5] B29C *65/18*; A61M *5/00*
U.S. Cl. 264—249 **15 Claims**



1. A method of mounting a septum in a connector, said method comprising the steps of
obtaining a connector having a predetermined heat distortion temperature and a heat deformable hollow tubular end including an inner annular shoulder defining: an annular abutment surface and a first cylindrical wall extending longitudinally from said abutment surface, said end further including a second cylindrical wall extending from said first wall and having a greater inner diameter than said first wall;
mounting a septum of disc shape in said end of said connector against said abutment surface in slide fit relation to said first cylindrical wall;
heating at least said second wall of said connector to a said predetermined heat distortion temperature; and
thereafter deforming said heated second wall under a longitudinally applied force to effect a radially inward curling

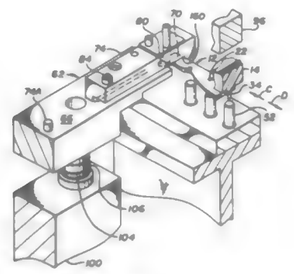
of said second wall sufficient to secure said septum in place.

5,368,802

HEAT STAKE PRESS AND ALIGNER AND METHOD OF USE

Christopher D. Wanha, Costa Mesa, Calif., assignor to ITT Corporation, Secaucus, N.J.

Filed May 13, 1993, Ser. No. 60,665
Int. Cl.[5] B29C 65/18
U.S. Cl. 264—249 11 Claims



1. A method for fixing a connector to a circuit board where the board has a forward edge and a plurality of peg holes spaced along a row line that extends parallel to said forward edge, where the connector has a main housing with a housing bottom for lying on an upper surface of the board and a housing top spaced above the housing bottom, and where the connector housing also includes a plurality of heat deformable pegs for projecting down through holes in the board with each peg having a projecting peg portion projecting below a lower surface of the board, by pressing the projecting peg portions against heated forming tips, including placing said connector on said board with said bottom of said main housing lying on said board upper surface and said pegs projecting through and below said board, the method comprising:

placing said circuit board on support guides of a heat stake press, so that the board lower surface lies on horizontal support surfaces of said support guides and said pegs lie directly over a row of heated forming tips of said press, while upwardly biasing said guides so said pegs initially lie spaced above said forming tips;

applying downward force to said connector top in an amount that is sufficient to overcome said upward biasing, and moving down said guides and board until said projecting peg portions press downward against said heated forming tips and cause said forming tips to deform said peg projecting portions.

5,368,803

METHOD OF MAKING RESIN IMPREGNATED FIBROUS PANELS

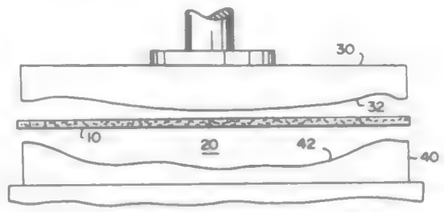
Mark J. Brow, Allen Park, and Ronald P. Pitsch, Farmington Hills, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Feb. 12, 1993, Ser. No. 17,216
Int. Cl.[5] B29C 67/14; C08K 7/14; C08G 14/10
U.S. Cl. 264—257 1 Claim

1. An improved process of manufacturing a fibrous resinated panel comprising:

compressing a fibrous mat impregnated with a selected thermosetting resin system in a mold cavity defined between an upper and a lower inner mold surface, said mold surfaces maintained at a temperature within a selected temperature range, for a selected period of time, whereby said thermosetting resin is substantially cured and said mat is shaped to conform to a desired contour, and thereafter removing said mat from the mold cavity, the improvement comprising:

selecting as said thermosetting resin system an aqueous A-stage form resole-melamine composition containing residues of free melamine(s) to free aldehyde(s) to free phenolic compound(s) in a molar equivalent ratio ranging from about 0.2:1.5:1 to 0.8:3.5:1;



maintaining said mold surfaces temperature within a selected temperature range extending from about 204° C. to about 316° C. for a selected period of time ranging from at least about 45 seconds to less than 90 seconds; and

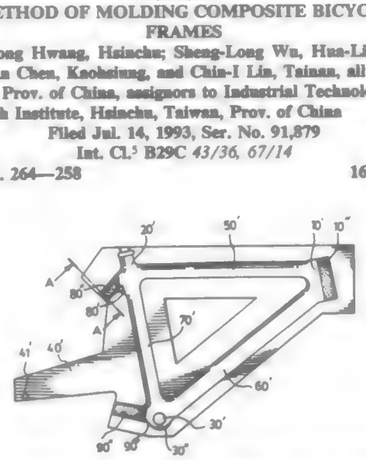
maintaining said aqueous thermosetting resin at a pH in the range of 4.0 to 6.0.

5,368,804

METHOD OF MOLDING COMPOSITE BICYCLE FRAMES

Jen-Loong Hwang, Hsinchu; Sheng-Long Wu, Hua-Lien; Yu-Hsuan Chen, Kaohsiung, and Chin-I Lin, Tainan, all of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan, Prov. of China

Filed Jul. 14, 1993, Ser. No. 91,879
Int. Cl.[5] B29C 43/36, 67/14
U.S. Cl. 264—258 16 Claims



1. A method of molding a composite bicycle frame, said bicycle frame comprising tube portions for connecting at least two of a steering support, a seat support and a pedal support; said method comprising the steps of:

(a) curing a pair of seat stays and chain stays;

(b) placing a front triangle of prepreg layers with a bladder in a front triangle mold, said front triangle mold being provided with a seat stay butting cavity and a chain stay butting cavity, said front triangle mold being provided with non-foaming dilatable materials with greater expansion coefficient than that of a remainder of the mold, said non-foaming dilatable materials being arranged adjacent each of said cavities and exterior of said prepreg layers;

(c) inserting the cured seat stays and chain stays into said front triangle of prepreg layers at the seat stay butting cavity and chain stay butting cavity, respectively; and

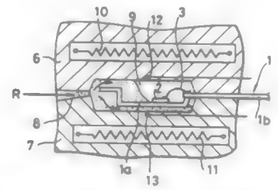
(d) inflating the bladder and heating the front triangle mold to cure the front triangle.

5,368,805

METHOD FOR PRODUCING RESIN SEALED TYPE SEMICONDUCTOR DEVICE

Kenji Motai, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 23, 1993, Ser. No. 35,781
Claims priority, application Japan, Mar. 24, 1992, 4-065408; Dec. 8, 1992, 4-327077
Int. Cl.[5] B29C 45/14, 45/73
U.S. Cl. 264—272.15 4 Claims



1. A method for producing a resin sealed semiconductor device using a transfer molding process in a die, the die having a lower molding die portion and an upper molding die portion relative to the lower molding die portion, the semiconductor device having a lead frame assembly provided with a semiconductor chip mounted on a main surface side of a die pad of a lead frame and connected with a lead of the lead frame through a bonding wire, comprising the steps of:

heating said die to maintain a surface temperature of the lower molding die portion by about 5° C. to about 15° C. higher than a surface temperature of the upper molding die portion;

inserting the lead frame assembly into a cavity formed between the heated upper and lower molding die portions whereby the semiconductor chip is positioned to face an inner wall of the upper molding die portion and whereby the die pad forms an upper and lower path for a sealing resin, said upper path being between the inner wall of the upper molding die portion and the main surface side of the die pad, said lower path being between an inner wall of the lower molding die portion and a rear surface side of the die pad, said lower path being thinner than said upper path; and

injecting said sealing resin into said cavity by transfer molding for resin sealing, the sealing resin flowing on the rear surface side of the die pad being reduced in viscosity and increased in fluidity relative to the sealing resin flowing on the main surface side of the die pad, whereby a substantially defect free resin package is molded having a resin layer formed on the rear surface side of the die pad that is thinner than a resin layer formed on the main surface side.

5,368,806

PRODUCTION OF MOLDINGS BY THE REACTION INJECTION MOLDING PROCESS

Stephen J. Harasin, Morgan, and Jan L. R. Clatty, Monaca, both of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Filed Nov. 5, 1992, Ser. No. 972,197
Int. Cl.[5] B29C 45/00
U.S. Cl. 264—328.6 4 Claims

1. A process for the preparation of a reaction injection molded elastomer comprising injecting a reaction mixture into a closed mold via a RIM machine, with the ratio of components being such that the isocyanate index is from about 70 to 130, wherein said reaction mixture comprises:

a) an organic di- and/or polyisocyanate,

b) an isocyanate reactive mixture comprising:

1) from 30 to 70 parts by weight of a hydroxyl functional organic material which does not contain any nitrogen atoms and which contains from 3 to 4 hydroxyl groups and having a molecular weight below 350,

2) from 0 to 35 pads by weight of a hydroxyl functional material containing from 1 to 4 hydroxyl groups and having a molecular weight of from 284 to 602, and prepared by reacting an amine-group containing material selected from the group consisting of aromatic monoamines, aliphatic monoamines, aromatic diamines, aliphatic diamines, monoalkanol amines, dialkanolamines, or mixtures thereof with one or more alkylene oxides,

3) from 0 to 15 parts by weight of a polyester diol prepared by reacting an aliphatic carboxylic acid with an aliphatic diol, said polyester having an OH number of from about 60 to about 250, and

4) from 15 to 40 parts by weight of a compound of the formula:

wherein

A represents the polyfunctional radical left by the removal of the hydroxyl groups from a polyol of molecular weight of from 62 to 12,000 and functionality n,

R represents a hydrocarbon radical, and

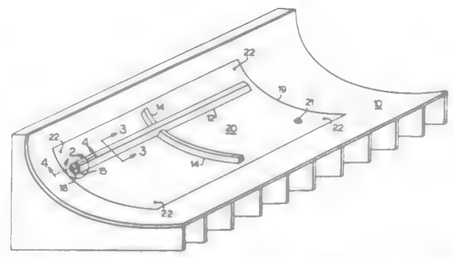
n is an integer of from 2 to 6.

5,368,807

METHOD FOR VACUUM BAG MOLDING FIBER REINFORCED RESIN MATRIX COMPOSITES

William E. Lindsay, Mesa, Ariz., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 456,888, Dec. 26, 1989. This application Dec. 3, 1990, Ser. No. 620,659
Int. Cl.[5] B29C 43/02, 43/20, 43/56
U.S. Cl. 264—510 8 Claims



1. A method of fabricating a fiber reinforced resin matrix composite structure having stiffeners using a hybrid vacuum bag having soft portions and rigid portions, and a primary tool, comprising the steps of:

a) laying fiber cloth stiffener sections into an inside portion of the rigid portions of the hybrid vacuum bag;

b) debulking the laid up stiffener sections;

c) inserting elastomeric tubes, having at least one open end, inside the debulked stiffener sections with the open ends of the tube protruding from an aperture in the rigid portion of the vacuum bag;

d) sealing the outside of the elastomeric tube at the aperture in the rigid portion of the hybrid vacuum bag;

e) venting the inside of the elastomeric tubes;

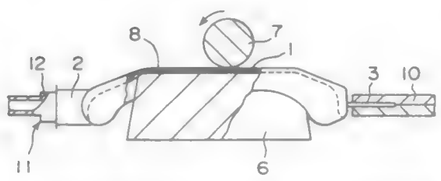
f) laying up a plurality of skin plies on the primary tool;

g) debulking the laid up skin plies;

h) installing the hybrid vacuum bag over the skin plies on the primary tool;

i) drawing a vacuum on the hybrid vacuum bag;
j) curing the matrix composite structure; and
k) removing the elastomeric tubes and the hybrid vacuum bag from the completed composite structure and removing the completed composite structure from the primary tool.

5,368,808
BLOWBAG MANUFACTURING METHOD
Yoshio Koike, Saitama; Kazuya Matsumoto, Ayase, and Hisatoshi Saito, Kawasaki, all of Japan, assignors to Kyoraku Co., Ltd., Kyoto and Kewpie Kabushiku Kaisha, Tokyo, both of Japan
PCT No. PCT/JP91/01401, § 371 Date Jun. 19, 1992, § 102(e) Date Jun. 19, 1992, PCT Pub. No. WO92/07703, PCT Pub. Date May 14, 1992
PCT Filed Oct. 15, 1990, Ser. No. 861,874
Claims priority, application Japan, Oct. 26, 1990, 2-290203; Oct. 26, 1990, 2-290204
Int. Cl.[5] B29C *49/00*
U.S. Cl. 264—512 6 Claims



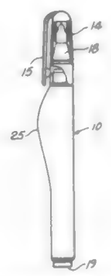
1. A blowbag manufacturing method, comprising the steps of:
blow molding a blowbag of a thermoplastic material having a body portion with opposing walls which are flat and an opening portion connected to said body portion;
supporting said blowbag by at least one fixing portion and by a pressing jig, said flat opposing walls of said body portion being supported by a pressing surface of said pressing jig, said pressing surface having an area smaller than the lower surface of said body portion after said body portion is collapsed so as that said flat opposing walls are in close contact with each other; and
printing indicia on a surface of said closely contacted opposing walls by a transfer member;
wherein said at least one fixing portion comprises a suspension fitting fixing portion and an opening fixing portion which are used to support said blowbag during said printing, and said blowbag includes a suspension fitting fixing portion fixed to said suspension fitting fixing portion, said opening portion of said blowbag being fixed to said opening fixing portion.

5,368,809
METHOD OF INSTALLING A NEW PIPE INSIDE AN EXISTING CONDUIT BY PROGRESSIVE ROUNDING
Campbell H. Steketee, Jr., Salem, Oreg., assignor to NuPipe, Inc., Memphis, Tenn.
Continuation of Ser. No. 734,374, Jul. 22, 1991, Pat. No. 5,244,624, which is a division of Ser. No. 249,452, Sep. 26, 1988, Pat. No. 5,034,180, which is a continuation-in-part of Ser. No. 180,904, Apr. 13, 1988, abandoned, which is a continuation-in-part of Ser. No. 76,973, Jul. 28, 1987, Pat. No. 4,867,921, which is a continuation of Ser. No. 846,322, Mar. 31, 1986, abandoned. This application Jun. 22, 1993, Ser. No. 81,928
The portion of the term of this patent subsequent to Sep. 14, 2010, has been disclaimed.
Int. Cl.[5] B29C *63/34*
U.S. Cl. 264—516 18 Claims



1. A method of installing a new pipe inside a length of existing conduit comprising the steps:
inserting within the length of the conduit a length of normally rigid thermoplastic pipe while in a collapsed condition of reduced diameter,
heating at least one end portion of the collapsed pipe to render it flexible, rounding said end portion, and inserting a traveling plug within the rounded end portion, with such traveling plug enabling the restricted passage of pressurized fluid therepast through the collapsed pipe,
restraining the traveling plug against movement through the thermoplastic pipe from the rounded end portion,
injecting a hot fluid under pressure into said end portion until a length of the collapsed thermoplastic pipe ahead of the plug becomes heated and flexible, and
allowing the traveling plug to advance at a controlled speed through the pipe from the rounded end portion while continuing to inject hot fluid under pressure into the pipe behind the plug to progressively reform the length of pipe to a rounded shape as the plug travels through the pipe.

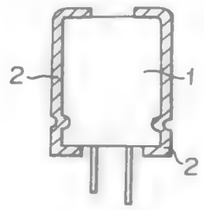
5,368,810
METHOD OF MANUFACTURING A FLUID DISPENSER
Ronald A. Draper, and James L. Sandonato, both of Braintree, Mass., assignors to The Gillette Company, Boston, Mass.
Division of Ser. No. 529,184, May 25, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 662,484
Int. Cl.[5] B29C *49/00*
U.S. Cl. 264—523 3 Claims



1. A method of manufacturing a dispenser having wall structure for containing and depositing a liquid material onto a print medium which includes the steps of:

forming a circular tube of moldable polymeric material having a substantially uniform wall thickness;
placing the tube in a mold having an internal wall structure forming a cavity having a portion for receiving the circular tube in interfitting engagement and an enlarged cavity portion extending outwardly from the centerline of the circular tube to a maximum cross-section diameter adjacent one end of the cavity and tapering towards either end of the cavity portion to form a plurality of cross-sectional areas of lesser dimension than the maximum dimension with one longitudinal wall segment remaining parallel to the centerline of the circular tube over its length;
applying pressure to the internal wall of the circular tube with said tube in the plastic flow condition to expand the tube wall into the enlarged cavity forming a bulbous portion of said dispenser, the tube uniform wall thickness and the maximum cross-sectional dimension being chosen to form a wall thickness at the mold enlarged cavity portion less than that of said tube uniform wall thickness to provide a squeezable enlarged portion on said dispenser of greater flexibility than the remainder of the dispenser body and to main a substantially rigid wall structure throughout the remaining length of the dispenser.

5,368,811
PRODUCING HEAT-SHRINKABLE TUBE
Kazuo Taniguchi, and Tetsuo Murakami, both of Nagahama, Japan, assignors to Mitsubishi Plastics Industries Limited, Tokyo, Japan
Continuation of Ser. No. 766,070, Sep. 27, 1991, abandoned. This application Feb. 12, 1993, Ser. No. 17,432
Claims priority, application Japan, Sep. 27, 1990, 2-255398
Int. Cl.[5] B29C *55/26, 55/28*
U.S. Cl. 264—567 3 Claims

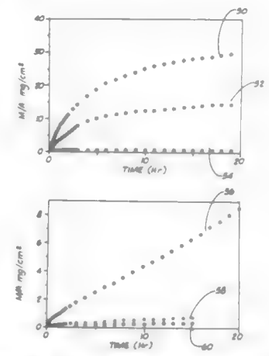


1. A process for producing seamless heat-shrinkable polyester tube, which comprises extruding a thermoplastic polyester resin to form a tube, quenching said tube, stretching the tube at a temperature of from 72° to 98° C. at a stretching ratio of from 1.0 to 1.4 times in the longitudinal direction (MD) and at a stretching ratio of from 1.3 to 2.2 times in the radial direction (TD) simultaneously, and quenching the stretched tube, said polyester resin having a crystallinity of not higher than 20%.

5,368,812
METAL CARBIDES AND DERIVED COMPOSITES MADE BY MILLING TO OBTAIN A PARTICULAR NANOSTRUCTURAL COMPOSITE POWDER
Andrzej Calka, Ainslie, and Barry W. Nisham, Cook, both of Australia, assignors to Australian National University, Acton, Australia
PCT No. PCT/AU91/00248, § 371 Date Dec. 10, 1992, § 102(e) Date Dec. 10, 1992, PCT Pub. No. WO91/19584, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 12, 1991, Ser. No. 952,510
Claims priority, application Australia, Jun. 12, 1990, PK0576/90; Feb. 19, 1991, PK4679/91
Int. Cl.[5] B22F *3/16, 1/00;* C01B *31/30;* C04B *35/64*
U.S. Cl. 419—5 14 Claims

1. A method of forming a metal carbide body, said method comprising the steps of
(a) mixing a powder of the metal with graphite powder in substantially stoichiometric quantities for the metal carbide;
(b) milling the mixed powder in a ball mill or the like until a nanostructural mixture is produced, said nanostructural mixture consisting of regions of carbon and regions of the metal or a metal based solid solution, with single atoms of the metal carbide at the interface between the regions of carbon and metal or metal based solid solution, said regions having an extent of from about 3 nanometers to about 60 nanometers;
(c) moulding the nanostructural mixture to produce a moulded body; and
(d) heating the moulded body to a temperature sufficient to cause (i) a solid state reaction between the carbon and the metal, and (ii) sintering of the moulded mixture, thereby producing a solid body of the metal carbide.

5,368,813
OXIDATION AND SULFIDATION RESISTANT CHROMIUM-NIOBIUM ALLOY
Linn W. Hobbs, Belmont; Chuxin Zhou, Lexington, and Julia C. Duncan, Somerville, all of Mass., assignors to Massachusetts Institute of Technology, a MA Corp., Cambridge, Mass.
Filed May 24, 1993, Ser. No. 65,437
Int. Cl.[5] B32B *15/00*
U.S. Cl. 420—425 10 Claims

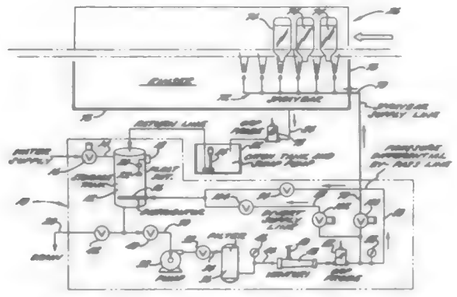


1. A method for preventing oxidation and/or sulfidation of an article, the improvement comprising forming said article from an alloy including at least two phases and consisting essentially of in the range of from about 17 wt. % to about 72 wt. % chromium and in the range of from about 83 wt. % to about 28 wt. % niobium.

5,368,814
LEAD FREE, TIN-BISMUTH SOLDER ALLOYS
Stephen G. Gonya; James K. Lake, both of Endicott, N.Y.; Randy C. Long, Friendsville, Pa., and Roger N. Wild, Owego, N.Y., assignors to International Business Machines, Inc., Armonk, N.Y.
Filed Jun. 16, 1993, Ser. No. 79,064
Int. Cl.[5] C22C *30/02*
U.S. Cl. 420—587 2 Claims

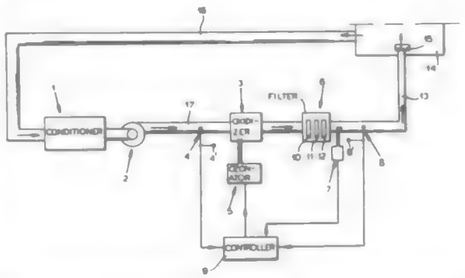
1. A low solidus temperature, multicomponent solder alloy consisting essentially of 56 weight percent Bi, 42 weight percent Sn, and 2 weight percent In.

5,368,815
PROCESS AND APPARATUS FOR SANITIZING ARTICLES
John R. Kasting, Jr., Waxhaw; Ronald G. Potter, Monroe, both of N.C., and Michael P. Phillips, Rock Hill, S.C., assignors to OxiDyn, Incorporated, Monroe, N.C.
Filed Dec. 7, 1992, Ser. No. 986,055
Int. Cl.[5] A61L *2/24*
U.S. Cl. 422—3 23 Claims



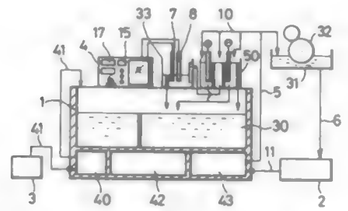
1. Apparatus adapted for supplying ozone-containing water for sanitizing articles, said apparatus being characterized by automatic recirculating operation of a captive water supply, said apparatus comprising:
(a) a storage vessel arranged for supplying water to be ozonated for sanitation of articles;
(b) means for injecting ozone into the supplied water sufficient for sanitizing articles:
(c) a first fluid flow conduit in fluid flow communication at one end thereof with said storage vessel for ozonated water and in fluid flow communication at the other end thereof with said ozone injecting means;
(d) a second fluid flow conduit in fluid flow communication at one end thereof with said ozone injecting means, the other end thereof arranged for providing ozonated water to means for contacting articles with ozonated water;
(e) a third fluid flow conduit in fluid flow communication at one end thereof with said storage vessel, the other end thereof being arranged for receiving water from the means for contacting articles with ozonated water, whereby said first, second, and third conduits form a closed loop recirculating system with said storage vessel when said apparatus is interconnected with and supplies ozonated water to means for contacting articles to be sanitized with ozonated water;
(f) means for providing bypass recirculation of ozonated water from said ozone injecting means directly to said storage vessel and bypassing the means for contacting articles with ozonated water; and
(g) means for controlling said bypass recirculation providing means between predetermined first and second limits in dependence on concentration of ozone in the ozonated water, whereby ozonated water is continually supplied to said storage vessel and the pressure and volume of water are controlled for injecting ozone into the water and maintaining ozone in the water.
2. Apparatus according to claim 1 wherein said means for providing bypass recirculation of ozonated water comprises:
(a) a fourth fluid flow conduit in fluid flow communication at one end thereof with said ozone injecting means and at the other end thereof with said storage vessel for ozonated water for supplying recirculating bypass flow to said vessel at the predetermined first limit;
(b) a fifth fluid flow conduit in fluid flow communication at one end thereof with said ozone injecting means and at the other end thereof with said storage vessel for ozonated water;
(c) a first, normally open valve cooperating with said fifth conduit for supplying ozonated water to said storage vessel in combination with said fourth conduit at the predetermined second limit, whereby when closed said first valve limits bypass recirculation to the predetermined first limit through said fourth conduit; and
(d) a second, normally closed valve cooperating with said second conduit and said first, normally open valve for diverting ozonated water to said storage vessel through said fifth conduit when said first valve is open and said second valve is closed and, when said second valve is open and said first valve is closed, for supplying ozonated water through said second conduit to the means for contacting articles with ozonated water for sanitizing, whereby supply of ozonated water to articles for sanitizing is controlled, the pressure and volume of water are controlled for injecting ozone into the water and maintaining ozone in the water sufficient for sanitizing articles, and bypass recirculation is controlled between the predetermined first and second limits.
3. Apparatus of claim 2 wherein said first, normally open valve and said second, normally closed valve are solenoid valves and said apparatus further comprises means for monitoring the concentration of ozone in the ozonated water and means for electrically controlling said solenoid valves in response to the concentration of ozone in the ozonated water.

5,368,816
CONDITIONING AIR FOR HUMAN USE
Rüdiger Detzer, Buseck, Germany, assignor to KeslerTech GmbH, Giessen, Germany
Filed Apr. 22, 1993, Ser. No. 51,447
Claims priority, application Germany, Apr. 28, 1992, 4213778
Int. Cl.[5] A61L *9/00*
U.S. Cl. 422—28 12 Claims



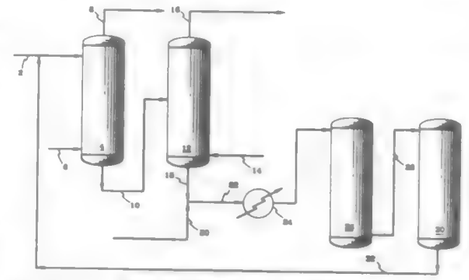
1. In an air-conditioning system operated in accordance with the method comprising the steps of:
passing a stream of air containing oxidizable pollutants along a path through a conditioning station, an ozonating station, a filter station downstream of the ozonating station, and a testing station downstream of the filter station and then introducing the stream into a living space;
conditioning the air stream in the path with respect to its temperature and/or humidity in the conditioning station;
at least periodically adding ozone to the air stream in the ozonating station to oxidize the pollutants in the stream;
decomposing the added ozone in the filter station to stable oxygen; and
detecting the ozone concentration in the stream at the testing station with a sensor and at least partially shutting down the system when the detected ozone concentration exceeds a predetermined safety threshold,
the improvement comprising the steps of:
detecting the concentration of pollutants in the stream upstream of the ozonating station;
adjusting the amount of ozone added to the stream in the ozonating station so that it just corresponds to the amount needed to oxidize the pollutants detected and does not substantially exceed this amount needed to oxidize the pollutants; and
periodically injecting into the stream at an injection location downstream of the filter station and upstream of the testing station a quantity of ozone sufficient to raise the ozone concentration in the gas stream above a predetermined detectable threshold level detectable by the sensor and insufficient to raise the ozone concentration in the gas stream above the predetermined safety threshold, whereby the sensor is periodically tested.

5,368,817
DAMPENING WATER CONTROLLER
Toru Sudo; Takashi Kuramoto; Yasuhiro Seno; Masao Mogi, and Hisato Urase, all of Tokyo, Japan, assignors to Toppan Printing, Co., Ltd., Tokyo, Japan
Filed Jul. 2, 1993, Ser. No. 85,158
Claims priority, application Japan, Jul. 8, 1992, 4-180835; Oct. 7, 1992, 4-268451; Mar. 25, 1993, 5-066803
Int. Cl.[5] G01N *33/00*; B41F *33/00*
U.S. Cl. 422—62 15 Claims



1. A dampening water controller for controlling the concentration of an etching solution in dampening water circulatively used in offset printing, said controller comprising;
an ion concentration measuring means for measuring the concentration of anions or cations contained in the etching solution in said dampening water; said anions being selected from the group consisting of nitrate ions, nitrite ions, phosphate ions, fluoride ions, sulfate ions and sulfide ions and said cations being selected from the group consisting of sodium ions, ammonium ions and potassium ions; and outputting information on the concentration of the ions in the dampening water after the measuring by said ion concentration measuring means;
a dampening water temperature measuring means for measuring a temperature of dampening water and outputting information on the temperature after the measuring by said dampening water temperature measuring means;
an ion concentration information correcting means for correcting said information measured by said ion concentration measuring means, in accordance with the information measured by said dampening water temperature measuring means; and
an etching solution concentration adjusting means for adjusting the concentration of the etching solution in the dampening water, in accordance with the information corrected by the ion concentration information correcting means.

5,368,818
MONITORING AND CONTROL SYSTEM FOR SELECTIVE REGENERATION OF ALKANOLAMINE FROM CATION ION EXCHANGE RESIN WITH SODIUM HYDROXIDE
Arthur L. Cummings, Pompton Lakes, N.J.; Fred C. Veatch, Newkirk, and Alfred E. Keller, Ponca City, both of Okla., assignors to Conoco Inc., Ponca City, Okla.
Continuation of Ser. No. 816,695, Jan. 2, 1992, abandoned. This application Aug. 26, 1993, Ser. No. 112,510
Int. Cl.[5] G01N *27/10*
U.S. Cl. 422—62 19 Claims

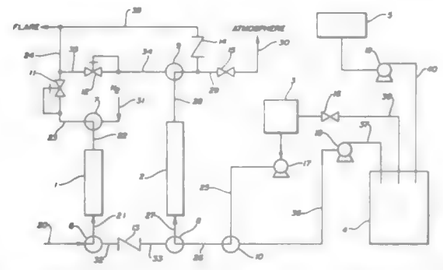


1. A process for regenerating a cation exchange resin containing alkanolamine and alkali metal cations comprising;
(a) continuously monitoring the effluent from said resin during the regeneration process by electronic means;
(b) eluting said resin with an alkali metal hydroxide solution;
(c) determining displacement of alkanolamine from said resin by a signal from said electronic means;
(d) stopping flow of said alkali metal hydroxide upon elimination of alkanolamine from said resin as indicated by a signal from said electronic means;
(e) eluting said resin with a mineral acid to displace the alkali metal cations and any remaining alkanolamine from the resin;
(f) determining displacement of alkanolamine alkali metal cations from said resin by said electronic means;
(g) stopping flow of said mineral acid upon elimination of alkali metal cations and alkanolamine from said resin as indicated by said electronic means.

5,368,819
AUTOMATED PROCESS CHLORIDE ANALYZER
Wm. Richard Dougherty, and Donald J. Skahan, both of Drexel Hill, Pa., assignors to Arco Chemical Technology, L.P., Wilmington, Del.
Division of Ser. No. 794,278, Nov. 19, 1991, Pat. No. 5,260,220. This application Jun. 14, 1993, Ser. No. 76,620
Int. Cl.[5] G01N *33/00*
U.S. Cl. 422—68.1 3 Claims

1. An automated analysis system comprising a hydrocarbon capture vessel, conduit means for passing a predetermined sample amount of liquified hydrocarbon to said capture vessel, a water scrubbing vessel adapted to extract water soluble impurities from the liquified hydrocarbon sample, conduit means for passing a predetermined amount of deionized water to said scrubbing vessel, conduit means located between the capture vessel and the scrubbing vessel for transferring the predetermined sample amount of liquified hydrocarbon to the water containing scrubbing vessel so as to place the liquified hydrocarbon sample into contact with water contained therein

and to produce a deionized water extract containing the water soluble impurities from the liquified hydrocarbon sample, titration means for analyzing the deionized water extract to determine the amount of impurities extracted from said liquified hydrocarbon sample, pressure reducing means for reducing pressure in said water scrubbing vessel to a level at which



liquified hydrocarbon contained thereon vaporizes, conduit means for the removal and discard of hydrocarbon vapor from the scrubbing vessel, and conduit means located between the scrubbing vessel and the titration means for passing the deionized water extract from the scrubbing vessel to the titration means.

5,368,820

SAMPLE HOLDER FOR DECOMPOSITION OF ANALYSIS OF SAMPLE MATERIALS

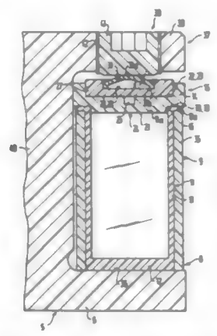
Werner Lautenschläger, Waldstrasse 15, D-7970 Leutkirch, Germany

Division of Ser. No. 713,074, Jun. 11, 1991, Pat. No. 5,270,010. This application Oct. 5, 1993, Ser. No. 131,622

The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.

Int. Cl.[5] B01L *3/00*

U.S. Cl. 422—102 **15 Claims**



1. A sample holder closure arrangement comprising:

a frame having upper and lower elements mounted a predetermined distance from each other;

a sample holder for decomposition or analysis of a sample material in a heating appliance, said sample holder comprising a sample receiving part, a lid for closing said receiving part at one end and an elastically yielding thrust piece positioned to hold the lid on the receiving part, wherein a movable valve member is formed on one side of aid lid, and a valve seat is formed around a filling opening in said receiving part and wherein said thrust piece is positioned to press elastically against said lid on a side thereof opposite said valve seat,

each of said sample receiving part, said lid and said thrust piece being arranged between said upper and lower elements,

an adjustable member on one of said upper and lower elements and movable toward and away from the other element, and

said sample holder, including said receiving part, said lid and said thrust piece, being held between said adjustable member and said other element.

5,368,821

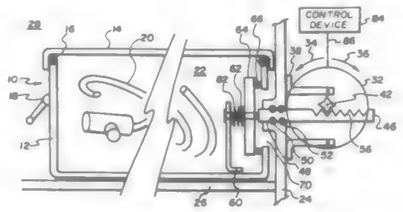
SEALABLE STERILIZER CASSETTE

John C. Schmoegner, Redondo Beach, and Charles B. Swenson, Palo Verdes Pen., both of Calif., assignors to MDT Corporation, Torrance, Calif.

Filed Mar. 28, 1990, Ser. No. 502,163

Int. Cl.[5] A61L *2/00*

U.S. Cl. 422—116 **13 Claims**



1. A sterilization cassette system, comprising:

a container adapted to receive an article to be sterilized and configured for placement in the sterilizing chamber of a sterilizer;

a sealing member movably associated with said container to operate between a first position which seals the interior of said container from the environment external said container and a second position which permits gaseous interchange between said interior and said external environment;

actuation means mechanically associated with said sealing member to operate said sealing member between said first and second positions; and

a control device operatively linked with said actuation means and adapted to provide actuation signals to said actuation means at preselected times during said sterilizing cycle, thereby to cause said actuation means to operate said sealing member between said first and second positions.

5,368,822

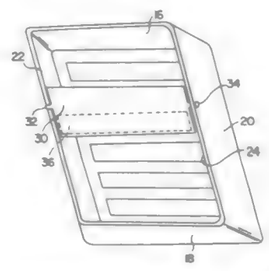
VENT SCENT ADAPTER

William S. McNeil, 7694 Belgrave Cove, Germantown, Tenn. 38138

Filed Aug. 5, 1993, Ser. No. 102,188

Int. Cl.[5] A61L *9/12*

U.S. Cl. 422—124 **13 Claims**



1. A scent device; said scent device includes a housing having a front face, upper and lower end faces, side faces and an open backside, said front face includes open vents, an opening in said housing through which a fragrance block is placed within said housing, and a pivotable plate secured to said side faces near a back edge of each of said side faces, a permanent magnet plate secured to said rotatable plate by which said housing can be secured to a vent opening of a blower system by said permanent magnet plate.

5,368,823

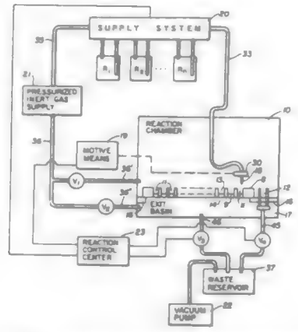
AUTOMATED SYNTHESIS OF OLIGONUCLEOTIDES

Royal A. McGraw, and William M. Grosse, both of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Feb. 11, 1993, Ser. No. 16,739

Int. Cl.[5] G05D *7/00;* **C12M** *1/36*

U.S. Cl. 422—134 **26 Claims**



1. Apparatus for automating processes including the synthesis of oligonucleotides comprising:

a supply system including reservoirs of individual reagent chemicals, valves and an output supply line, said valves connected to said reservoirs and to said output supply line such that said output supply line can be filled with any one or more of said reagent chemicals;

a reaction chamber containing an outlet of said output supply line;

a reaction column located within said reaction chamber with an inlet end of said reaction column open to the atmosphere within said reaction chamber;

a flush/prime column located within said reaction chamber, an inlet end of said flush/prime column open to the atmosphere of said reaction chamber; and

motive means for moving said outlet of said output supply line from a first position adjacent said inlet end of said flush/prime column to a position adjacent said inlet end of said reaction column.

5,368,824

GAS DISTRIBUTION SYSTEM FOR FLUIDIZED BED REACTORS

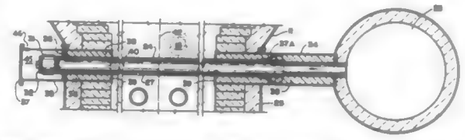
David J. Nell, Oradell, N.J., and Frederick A. Zeaz, Garrison, N.Y., assignors to Marqueee and Nell Inc., New York, N.Y.

Filed Aug. 18, 1993, Ser. No. 108,485

Int. Cl.[5] F27B *15/10;* **B01J** *8/18, 8/44*

U.S. Cl. 422—143 **6 Claims**

1. A fluidized bed reactor comprising a reactor vessel having a floor and a gas distribution system for fluidizing a particulate bed in said reactor vessel and for removing non-fluidizable particles that may be introduced into or formed in the bed through a discharge port provided in the floor of the vessel below the bed, said system comprising a plurality of parallel horizontal gas inlet pipes located a distance above the floor of the reactor vessel and arranged in a side by side spaced-apart relationship across the reactor vessel, each of said gas inlet pipes being provided with a longitudinal series of gas outlet ports for introducing a fluidizing gas into a particulate bed which extends from the floor of the vessel to a level above said gas inlet pipes to fluidize at least that portion of the bed above said gas inlet pipes, said gas outlet ports having a directional orientation such that the gas emanating from each port is directed towards a horizontal center line of the vessel that is transverse to the longitudinal length of said pipes, a pair of spaced-apart parallel horizontal gas inlet pipes located between the floor of the reactor vessel and the aforesaid plurality of gas inlet pipes, said pair of pipes being arranged transverse to said plurality of gas inlet pipes and parallel with the aforesaid center line of the reactor vessel with the discharge port located between said pair of gas inlet pipes, each pipe of said pair of gas



inlet pipes being provided with a longitudinal series of gas outlet ports for introducing a fluidizing gas into the particulate bed to fluidize that part of the bed that lays between said pair of pipes, each of said gas outlet ports in said pair of gas inlet pipes having a directional orientation such that the gas emanating from each port is directed towards the discharge port provided in the vessel floor, the arrangement being such that agglomerates or particles that are not sustainable in a fluidized state by the gas from the plurality of gas inlet pipes settle to the bottom of that part of the bed fluidized by said plurality of gas inlet pipes adjacent the aforesaid centerline of the reactor vessel and then to the bottom of that part of the bed fluidized by the gas from said pair of gas inlet pipes where they are moved towards the discharge port by the directionally oriented fluidizing gas emanating from said pair of pipes.

5,368,825

APPARATUS FOR THE FLAME PREPARATION OF CERAMIC POWDERS

Hartwell F. Calcote, Princeton, and William Felder, Lawrenceville, both of N.J., assignors to Aerochem Research Labs, Inc., Princeton, N.J.

Continuation of Ser. No. 366,629, Jun. 15, 1989, abandoned, which is a division of Ser. No. 113,215, Oct. 23, 1987, Pat. No. 4,891,339. This application Oct. 22, 1993, Ser. No. 142,247

Int. Cl.[5] F23D *1/00;* **F23J** *1/00*

U.S. Cl. 422—198 **10 Claims**

1. An apparatus for forming ultrafine ceramic powders, which comprises:

a reactor vessel including a reactant mixing zone and a product receiving zone;

a storage vessel containing a compound selected from the group consisting of silane and diborane;

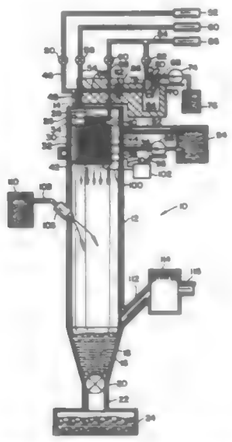
a storage vessel containing a gaseous reactant of a molecular form of carbon or nitrogen for said compound;

a conduit including valve means in fluid communication with said storage vessel of said compound for continuous controlled introduction of said compound into said reactant mixing zone;

a conduit including valve means in fluid communication with said storage vessel of said gaseous reactant for continuous controlled introduction of said gaseous reactant into said reactant mixing zone in an amount to maintain a self-sustaining reaction between said compound and said gaseous reactant;

means for forming and maintaining downstream of said reactant mixing zone of said reactor vessel a stabilized

flame of reactants to form ultrafine ceramic powders of uniform particle size distribution; and



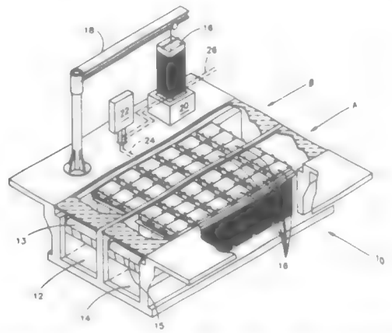
means for withdrawing said ultrafine ceramic powders from said product receiving zone of said reactor vessel.

5,368,826

CONTROL APPARATUS FOR FLUID DISINFECTION MODULES AND SYSTEMS

Richard K. Weltz, Richmond, and Peter Schuerch, Mechanicville, both of Va., assignors to Infilco Degremont, Inc., Richmond, Va.

Filed Dec. 4, 1992, Ser. No. 986,119
Int. Cl.[5] A61L *2/00*; **C02F** *1/32*; **G05B** *13/00*
U.S. Cl. 422—243 **33 Claims**



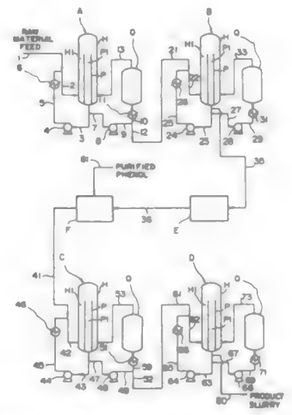
1. An ultraviolet fluid disinfection system comprising:
one or more fluid flow passageways;
one or more immersible modules located in each passageway, each module having one or more ultraviolet producing lamps positioned to irradiate said fluid with ultraviolet;
one or more lamp control assemblies connected to said lamps to monitor data from and control operation of said lamps;
one or more power distributors connected to said lamp control assemblies;
one or more data control assemblies connected to said lamp control assemblies to read data from said lamp control assemblies; and
one or more data interfaces connected to said data control assemblies to communicate with said data control assemblies.

5,368,827

PROCESS FOR THE PRODUCTION OF CRYSTALLINE ADDUCT OF BISPHENOL A AND PHENOL AND APPARATUS THEREFOR

Nobuo Moriya, Yokohama; Keiji Shimoda, Machida; Kouji Sakashita, Tokyo; Hiroaki Nishijima, Ebina; Nobuhiro Onda, Hachioji, and Takeshi Kouzaki, Yokohama, all of Japan, assignors to Chiyoda Corporation, Yokohama, Japan

Division of Ser. No. 890,103, May 29, 1992, abandoned. This application Oct. 28, 1992, Ser. No. 967,373
Claims priority, application Japan, Jul. 10, 1991, 3-169557; Oct. 11, 1991, 3-292211; Oct. 25, 1991, 3-306520; Oct. 25, 1991, 3-306521
Int. Cl.[5] C07C *37/20*
U.S. Cl. 422—245.1 **1 Claim**



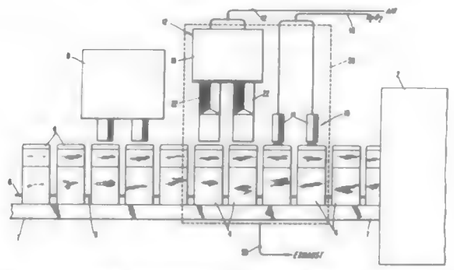
1. A crystallization device, comprising:
a first crystallization tower for containing a slurry of crystals of an adduct of bisphenol A and phenol dispersed in phenol and having a recycling port, a discharge port and a feed port;
a feed conduit connected to said feed port of said first crystallization tower for feeding a liquid mixture of bisphenol A and phenol;
a second crystallization tower containing a slurry of crystals of an adduct of bisphenol A and phenol dispersed in phenol and having a recycling port, a discharge port and a feed port;
a first group of two or more coolers each having inlet and outlet ports;
a second group of two or more coolers each having inlet and outlet ports;
a common cooler having inlet and outlet ports;
feed conduit means extending between said discharge port of said first crystallization tower and the feed port of said second crystallization tower and having feed pump means for feeding a portion of the slurry in said first crystallization tower into said second crystallization tower through said feed conduit means;
first introduction conduit means extending between said discharge port of said first crystallization tower and the inlet port of each of said coolers of said first group;
first recycling conduit means extending between said recycling port of said first crystallization tower and the outlet port of each of said coolers of said first group;
second introduction conduit means extending between said discharge port of said second crystallization tower and the inlet port of each of said coolers of said second group;
second recycling conduit means extending between said recycling port of said second crystallization tower and the outlet port of each of said coolers of said second group;
a recovery conduit in communication with said discharge port of said second crystallization port for discharging part of the slurry from said second crystallization tower therethrough for recovery;
common introduction conduit means for communicating the inlet port of said common cooler with the discharge port of each of said first and second crystallization towers;
common recycling conduit means for communicating the outlet port of said common cooler with the recycling port of each of said first and second crystallization towers;
first pump means operable to continuously discharge part of the slurry from said first crystallization tower, to pass the discharged slurry through said first group of coolers and to return the discharged slurry after the passage of said coolers to said recycling port of said first crystallization tower;
second pump means operable to continuously discharge part of the slurry from said second crystallization tower, to pass the discharged slurry through said second group of coolers and to return the discharged slurry after the passage of said coolers to said recycling port of said second crystallization tower;
third pump means operable to continuously discharge part of the slurry from said first or second crystallization tower, to pass the discharged slurry through said common cooler and to return the discharged slurry after the passage of said common cooler to said recycling port of said first or second crystallization tower; and
controlling means to control the operations of said first, second and third pump means so that selected one of said common cooler and first and second groups of cooler is prevented from being fed with the discharged slurry,
whereby the slurry within each of said first and second crystallization towers is cooled with the recycled slurry which has been passed through the said coolers to cause the crystals in each of said first and second crystallization towers to grow.

5,368,828

METHOD AND APPARATUS FOR CARTON STERILIZATION

Leonard A. Carlson, Bloomington, Minn., assignor to Tetra Laval Holdings & Finance S.A., Pully, Switzerland

Filed Nov. 12, 1992, Ser. No. 974,694
Int. Cl.[5] A61L *2/18*
U.S. Cl. 422—300 **7 Claims**



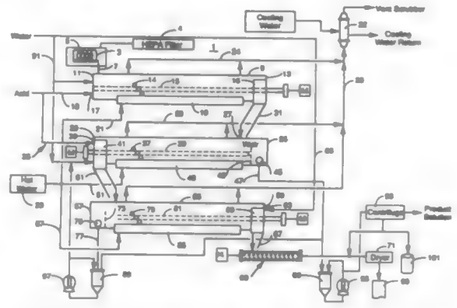
1. Apparatus for sterilizing a carton of the type having a preformed bottom and upright side walls defining an interior, the apparatus comprising:
conveyor means for intermittently advancing a carton through a plurality of stations;
spraying means for spraying a solution of hydrogen peroxide into the interior of a carton;
a hollow mandrel having opposite ends and a nozzle plate extending across one end of the hollow mandrel, said nozzle plate having a plurality of nozzles which communicate with an interior of the hollow mandrel;
means for supplying air to the interior of said hollow mandrel to direct air to the nozzles;
heater means for heating the air;
mounting means for mounting the mandrel for movement toward and away from said conveyor means; and
power means for imparting motion to said mounting means to position said nozzles in the interior of a carton to direct heated air through the nozzles and into the carton.

5,368,829

CONTINUOUS ASH EXTRACTION PROCESS

Ronald O. Noe, Hopkins, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sep. 9, 1993, Ser. No. 118,342
Int. Cl.[5] B01D *11/00*
U.S. Cl. 423—20 **20 Claims**



1. A process for recovering radioactive metal from solid oxides of said metal, the process comprising:
exposing said oxide of said metal to a cocurrent flow of a first acid solution in a first contactor means to form partially reacted oxides and a solution containing said metal;
drawing off said solution containing said metal and passing said partially reacted oxides through a countercurrent flow of a second acid solution in a second contactor means to form reaction residues and a second solution containing said metal;
drawing off said second solution containing said metal and passing said reaction residues through a countercurrent flow of wash water to wash said reaction residues; and
separating said reaction residues from said wash water.

5,368,830

SCALE CONTROL IN GOLD AND SILVER MINING HEAP LEACH AND MILL WATER CIRCUITS USING POLYETHER POLYAMINO METHYLENE PHOSPHONATES

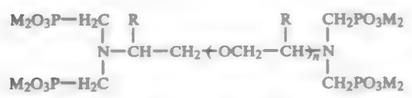
Nicholas J. Alfano, Pittsburgh, and Bennett P. Boffardi, Bethel Park, both of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1992, Ser. No. 961,570
Int. Cl.[5] C02F *5/14*
U.S. Cl. 423—29 **11 Claims**

1. A method of inhibiting the formation, deposition and adherency of occluding and scale imparting calcium carbonate compounds on metallic activated carbon and other surfaces of aqueous systems having a pH of at least 10 involved in heap and vat leaching; carbon-in-pulp, carbon-in-leach, and other activated carbon leaching and adsorption recovery systems; and other mill water circuits used to carry out the cyanidation process for extracting precious metals form crude ores, where the cyanidation process is combined with the use of activated carbon to recover the precious metals from large volumes of

low-grade pregnant solutions containing water soluble cyanide salts of the precious metals created by the leaching step of the cyanidation process;

COMPRISING the step of adding to any one or more of the aqueous systems of said cyanidation process an amount sufficient to establish a concentration of from 1 to 100 mg/L of a polyether polyamino methylene phosphonate of the following formula:



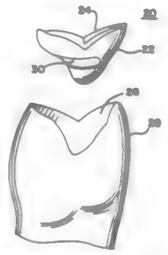
where n is an integer or fractional integer which is, or on average is, from about 2 to about 12, inclusive; M is hydrogen or a cation; and each R may be the same or different and is independently selected from hydrogen and methyl.

5,368,831

CERAMIC INLAY AND PROCESS FOR MAKING SAME

Asami Tanaka, Skokie, Ill., assignor to Asami Tanaka Dental Enterprises Inc., Skokie, Ill.

Filed Jan. 15, 1992, Ser. No. 821,489
Int. Cl.[5] A61C *5/04*
U.S. Cl. 433—226 **13 Claims**



1. A ceramic inlay for filling a cavity in a tooth, comprising:

a baked ceramic layer having an upper portion and a lower portion, said upper portion being a reconstruction of the outer surface of the tooth; and

a layer of a thin metal foil bonded to at least a region of said lower portion of said baked ceramic layer said layer of thin metal foil closely fitting the walls of the cavity in the tooth.

5,368,832

ZERO DISCHARGE PROCESS FOR MANUFACTURING OF PHOSPHOROUS ACID AND HYPOPHOSPHOROUS ACID

Harry E. Buckholtz, Lewiston; Mohan S. Saran, Grand Island, both of N.Y.; Frederick C. Leitert, Madison, and David A. Flautt, Ashtabula, both of Ohio, assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

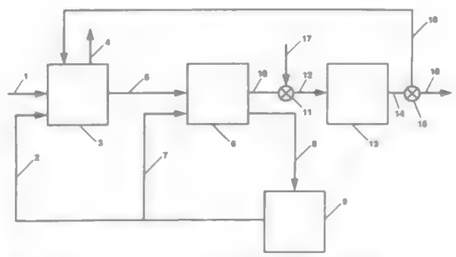
Filed Jun. 7, 1991, Ser. No. 711,841
Int. Cl.[5] C01B *25/165, 25/163*
U.S. Cl. 423—316 **8 Claims**

1. A method of making hypophosphorous acid comprising

(A) reacting hydrogen chloride with an aqueous slurry of sodium hypophosphite containing sufficient sodium hypophosphite crystals to produce sodium chloride crystals, where the amount of hydrogen chloride used is between stoichiometric and about 10 mole % in excess of the stoichiometric amount needed to react with said sodium hypophosphite;

(B) evaporating water under vacuum at a temperature less than 75° C. to produce a solution of about 75 to about 85 wt % of said hypophosphorous acid;

(C) separating said sodium chloride crystals from said hypophosphphorous acid; and



(D) passing said hypophosphorous acid through an anion exchange resin loaded with hypophosphite ion.

5,368,833

SILICA SOLS HAVING HIGH SURFACE AREA

Hans E. Johansson, Kungälv, and Bo V. Larsson, Partille, both of Sweden, assignors to Eka Nobel AB, Bohus, Sweden

PCT No. PCT/SE90/00689, § 371 Date May 8, 1992, § 102(e) Date May 8, 1992, PCT Pub. No. WO91/07350, PCT Pub. Date May 30, 1991
PCT Filed Oct. 24, 1990, Ser. No. 855,647
Claims priority, application Sweden, Nov. 9, 1989, 8903753-5
Int. Cl.[5] C01B *33/12*
U.S. Cl. 423—338 **6 Claims**

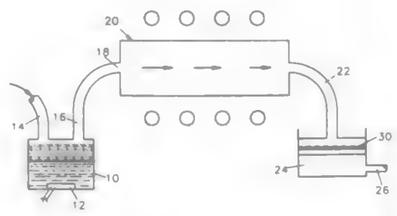
1. Silica sol comprising silica particles having a specific surface area within the range of from 750 to 1000 m^2/g which are surface-modified with aluminum to a degree of from 2 to 25 percent substitution of silicon atoms, and wherein the sol has an S-value within the range of from 8 to 45 percent.

5,368,834

METHOD FOR PRODUCING TITANATE POWDER AND PRODUCT MADE THEREBY

Bernard M. Kulwicki, North Attleboro; David F. Lynch, Attleboro, both of Mass., and Stanley J. Lukasiewicz, Rumford, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1993, Ser. No. 106,259
Int. Cl.[5] C01G *23/00*
U.S. Cl. 423—598 **13 Claims**



1. A method for making barium strontium titanate material comprising the steps of forming a common solution of metal organic precursor materials, placing the solution in a reservoir, subjecting the solution in the reservoir to ultrasonic vibration to form a mist, entraining droplets of the mist in a carrier stream of gas, directing the carrier stream into a furnace, subjecting the droplets to a temperature of at least 700° C. for a selected period of time to pyrolyze the droplets into particles and collecting the pyrolyzed particles.

5,368,835

PROCESS FOR PRODUCTION OF SYNTHESIS GAS BY OXIDATIVE CONVERSION OF METHANE OR NATURAL GAS USING COMPOSITE CATALYSTS

Vasant R. Choudhary; Vilas H. Rane, and Amarjeet M. R. Rajput, all of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Division of Ser. No. 930,007, Aug. 14, 1992. This application Mar. 16, 1993, Ser. No. 33,106
Int. Cl.[5] C01B *3/26*
U.S. Cl. 423—651 **10 Claims**

1. A process for the production of a gas comprising a H_2 and CO by oxidative conversion of a gas comprising methane, said process consists essentially of

a) passing O_2 and a hydrocarbon feed mixture comprising methane over a composite catalyst represented by a formula $T_m{\cdot}N_n{\cdot}R{\cdot}O_p$ wherein T is a transition element selected from Ni, Co, Ru, Rh, or a mixture of two or more thereof; m is T/R mole ratio, wherein m is from 0.01 to about 100; N is selected from Mg, Ca, or a mixture thereof; n is N/R mole ratio, wherein n is from greater than 0 to 100; R is a rare earth element selected from La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Tb and Lu or a mixture of two or more thereof, O is oxygen and p is number of oxygen atoms required to fulfill the valence requirement of the elements in the catalyst, in a fixed bed reactor at a pressure of from 0.5–50 atm, a temperature of from 200°–1000° C., a gas hourly space velocity in the range of 10^3–10^8 $cm^3.g.^{[1.h]}$, and a hydrocarbon/O_2 mole ratio in the feed mixture in the range of 1.6–10 and

b) separating water vapors, unconverted reactants and feed components other than the reactants and carbon dioxide from the product stream.

5,368,836

LOW-TEMPLATE CLATHRASIL

Michael Grebner, Mainz; Axel Reich, Schornsheim; Horst Reichert; Ferdi Schüth, both of Mainz, and Klaus Unger, Seeheim-Jugenheim, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Mar. 2, 1993, Ser. No. 24,967
Claims priority, application Germany, Mar. 2, 1992, 4206579
Int. Cl.[5] C01B *33/26*
U.S. Cl. 423—706 **13 Claims**

1. A process for the preparation of a low-template clathrasil, comprising heat-treating an alkaline aqueous silicate-containing medium containing crystallization seeds and an amount of a template such that the template content of the clathrasil, relative to the SiO_2 content of the alkaline aqueous medium, is less than 2 mol %, and the clathrasil has an adsorption capacity for He of at least 20 cm^3 of He/g of clathrasil at a temperature of 12 K. and an He pressure of 0.5 bar.

5,368,837

X-RAY CONTRAST COMPOSITIONS CONTAINING AN ORGANIC CRYSTALLINE X-RAY CONTRAST AGENT AND A CELLULOSE DERIVATIVE

Edward J. Baker, Northumberland, England; Robert W. Lee, Gilbertsville, Pa.; Eugene R. Cooper, Berwyn, Pa.; John L. Toner, Downingtown, Pa., and Carl R. Illig, Phoenixville, Pa., assignors to Sterling Winthrop Inc., Malvern, Pa.

Filed Apr. 14, 1994, Ser. No. 227,423
Int. Cl.[5] A61K *49/04*
U.S. Cl. 424—5 **7 Claims**

1. An x-ray contrast composition for oral or retrograde examination of the gastrointestinal tract comprising:

(a) from about 40 to 160 mg of iodine per ml of the composition of crystalline contrast agent selected from the group consisting of diatrizoic acid, metrizoic acid, iothalamic acid, trimesic acid, urokonic acid, ioxathalamic acid, tetraiodoterephthalic acid, ioxaglic acid, iodipamide, ethyl-3,5-diacetamido-2,4,6-triiodobenzoate, ethyl-2-(3,5-bis(acetylamino)-2,4,6-triiodobenzoyloxy)butyrate, and ethyl(3,5-bis(acetylamino)-2,4,6-triiodobenzoyloxy)-acetate, said crystalline contrast agent having a surface modifier adsorbed on the surface thereof in an amount sufficient to maintain an effective average particle size of from about 0.5 μ to about 100 μ; and

said surface modifier is selected from the group consisting of

(b) from 0.1 to 4% w/v of a cellulose derivative selected from the group consisting of methylcellulose, carboxymethylcellulose, sodium carboxymethylcellulose, hydroxyethyl methylcellulose, hydroxypropyl methylcellulose and microcrystalline cellulose;

(c) from 0.1 to 25% w/v of an oily vehicle;

(d) from 0.1 to 10% w/v of a surfactant selected from the group consisting of nonionic, anionic, cationic and zwitterionic surfactants;

(e) from 0.001 to 4% w/v of a viscosity modifying excipient; and

(f) water to make 100% by volume.

5,368,838

Patent Not Issued For This Number

5,368,839

INSOLUBLE SALTS OF LANTHANIDES FOR THE VISUAL DISPLAY USING NUCLEAR MAGNETIC RESONANCE, OF THE GASTRO-INTESTINAL TRACT

Silvio Aime, and Mauro Botta, both of Milan, Italy, assignors to Bracco S.p.A., Milan, Italy

PCT No. PCT/EP91/00679, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/16079, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 9, 1991, Ser. No. 941,069
Claims priority, application Italy, Apr. 12, 1990, 20026 A/90
Int. Cl.[5] A61B *5/055*
U.S. Cl. 424—9 **10 Claims**

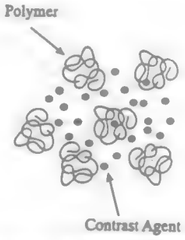
1. A composition for nuclear magnetic resonance imaging of the gastro-intestinal tract which is capable of increasing the value of the r_2/r_1 ratio of the relaxivities of the protons of the water of the region under examination and is capable of serving as a negative contrast agent and consisting of a physiologically acceptable aqueous suspension and administerable by the oral or rectal route, comprising insoluble particles of a paramagnetic material, said paramagnetic material being an insoluble salt of terbium, dysprosium, holmiun or erbium, and the insolubility-promoting anion being a fluoride, an oxalate or a phosphate ion.

5,368,840

NATURAL POLYMERS AS CONTRAST MEDIA FOR MAGNETIC RESONANCE IMAGING

Evan C. Unger, Tucson, Ariz., assignor to IMAR, Pharmaceutical Corp., Tucson, Ariz.

Continuation-in-part of Ser. No. 507,125, Apr. 10, 1990, abandoned. This application Oct. 13, 1992, Ser. No. 960,591
Int. Cl.[5] A61B *5/055*
U.S. Cl. 424—9 **113 Claims**



1. A contrast medium for use in magnetic resonance imaging of a patient comprising an aqueous solution or suspension of a biocompatible natural polymer in admixture with a contrast

agent, wherein the contrast medium is hypoosmotic to bodily fluids of the patient.

5,368,841

PHOTODYNAMIC THERAPY FOR THE DESTRUCTION OF THE SYNOVIUM IN THE TREATMENT OF RHEUMATOID ARTHRITIS AND THE INFLAMMATORY ARTHRITIDES

Kenneth Trauner, Sacramento, Calif., and Tayyaba Hasan, Arlington, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Filed Feb. 11, 1993, Ser. No. 16,609
Int. Cl.[5] A61K *49/00, 31/33*
U.S. Cl. 424—9 **16 Claims**

1. A method of treating a proliferative inflammatory joint disease in a patient, said method comprising

a) administering to said patient a photoactivatable cytotoxic compound or precursor thereof so that said compound or precursor accumulates in synovial tissue of said patient, and then

b) administering light of a photoactivating wavelength to said synovial tissue to activate said compound or precursor to cause destruction of said tissue.

5,368,842

HIGH EFFICACY AEROSOL ANTIPERSPIRANT COMPOSITION

Barry P. Lederman, Hyde Park, and David T. Callaghan, Foxborough, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Oct. 29, 1992, Ser. No. 968,552
Int. Cl.[5] A61K *7/38, 9/12*
U.S. Cl. 424—47 **13 Claims**

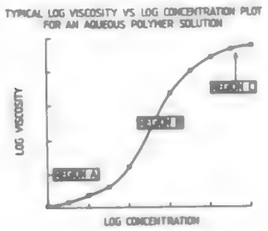
1. An aerosol antiperspirant composition comprising by weight in suspension about 5 to 15% high efficacy aluminum antiperspirant salt in powder form, about 15 to 35% volatile silicone, about 40 to 80% liquefied hydrocarbon propellant with a vapor pressure of at least 17 psig at 21° C., about 0.7 to 1.5% hydrophobic colloidal silica suspending agent, and about 0.15 to 0.35% hydrophilic colloidal silica suspending agent, wherein said composition contains substantially no lower alkanol.

5,368,843

THICKENING SYSTEM

George K. Reanie, Bebington, Great Britain, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Continuation of Ser. No. 713,050, Jun. 10, 1991, abandoned, which is a continuation of Ser. No. 361,514, Jun. 5, 1989, abandoned. This application Jun. 4, 1993, Ser. No. 72,683
Claims priority, application United Kingdom, Jun. 8, 1988, 8813552
Int. Cl.[5] A61K *7/16;* **C11D** *3/37, 3/22, 17/00*
U.S. Cl. 424—49 **11 Claims**



1. A toothpaste composition comprising:

(i) a aqueous liquid medium;

(ii) detergent selected from the group consisting of anionic, nonionic, zwitterionic and cationic detergents and mixtures thereof, in an amount from 0.02 to 20 wt. % based on the liquid medium;

(iii) particulate solid abrasive in an amount from 1 to 70 wt.% based on the liquid medium, stably suspended in the liquid medium;

(iv) a thickening mixture of polymers dispersed in the liquid medium in an amount of 0.025 to 5 wt. % based on the total of the liquid medium and thickening mixture, said mixture consisting of a thickening polymer which is a xanthan gum and a thickening polymer which is a cross-linked acrylic-type polymer selected from the group consisting of synthetic cross-linked acrylate homopolymers and copolymers and mixture thereof,

wherein said gum-type polymer and said acrylic-type polymer are present in a weight ratio of gum-type polymer to acrylic-type polymer of between 20:1 and 1:25,

and wherein each said polymer, when in said liquid medium in the absence of the other said polymer, has a relationship between concentration/and viscosity, measured at a shear rate of 10 sec^{-1} such that a graph of log (viscosity) against log (concentration) is a sigmoid curve with a lower portion in which, over a range of concentrations, the gradient of the graph of log (viscosity) against log (concentration) is constant or increases with log (concentration),

and wherein the amount of each of said polymers is such that the concentration thereof in the liquid medium lies within said range over which the gradient of that polymer's said curve of log (viscosity) against log (concentration) is constant or increasing,

the composition having a viscosity of at least 20 cPs at a shear rate of 10 sec^{-1} greater than that of the liquid medium in the absence of the said thickening mixture, the viscosity of the thickening mixture measured in the liquid medium being greater than the sum of the viscosity of the gum-type polymer measured in the liquid medium and the viscosity of the acrylic-type polymer measured in the liquid medium.

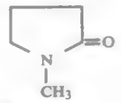
5,368,844

ANTIPLAQUE, ANTIGINGIVITIS, ANTICARIES ORAL COMPOSITION

Abdul Gaffar, Princeton; John J. Afflitto, Brookside, and Malcolm I. Williams, Piscataway, all of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 992,416, Dec. 16, 1992, abandoned. This application Aug. 5, 1993, Ser. No. 103,005
Int. Cl.[5] A61K *7/16; 7/22*
U.S. Cl. 424—49 **14 Claims**

1. An oral composition comprising a liquid vehicle suitable for topically contacting dental surfaces and gums and about 0.5% to about 20% by weight based on the total weight of the composition of N-methylpyrrolidone



as an essential antiplaque agent.

5,368,845

ORAL COMPOSITION

Abdul Gaffar, Princeton; John Afflitto, Brookside, and Malathy Subramanian, Somerset, all of N.J., assignors to Colgate Palmolive Company, Piscataway, N.J.

Filed Jan. 7, 1993, Ser. No. 1,480
Int. Cl.[5] A61K *7/16, 7/22*
U.S. Cl. 424—54 **17 Claims**

1. An oral composition comprising antiplaque amounts of a lanthionine-containing bacteriocin and a polyphosphonate which is an inhibitor of the crystallization of hydroxyapatite.

5,368,846

Patent Not Issued For This Number

5,368,847

STABLE EMULSIONS OF PERFLUOROPOLYETHERS AND FAT SUBSTANCES AND PROCESS FOR PREPARING THEM

Fabio Brunetta, Cornaua, and Giovanni Pantini, Milan, both of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Dec. 18, 1991, Ser. No. 809,761
Claims priority, application Italy, Dec. 18, 1990, 22415 A/90
Int. Cl.[5] A61K *7/02, 7/027*
U.S. Cl. 424—61 **13 Claims**

1. Stable emulsions of a first dispersed phase consisting of a perfluoropolyether or perfluoropolyethers having perfluoroalkyl end groups and of a second dispersed phase consisting of one or more fat substances having a melting temperature not higher than 100° C., said two phases being dispersed in a continuous phase consisting of one or more polyhydroxylated compounds selected from glycerol and polyalcohols other than glycerol and saccharides, containing at least three hydroxyl groups, said emulsions having the following weight composition:

(a) perfluoropolyether or perfluoropolyethers: 1–50% by weight of the emulsion,

(b) polyhydroxylated compound or compounds: 10–95% by weight of the emulsion,

(c) fat substance or substances: 10–80% by weight of the emulsion, and

(d) one or more emulsifiers which are soluble in the polyhydroxylated compound or compounds: 0.1–10% by weight of the emulsion.

5,368,848

COSMETIC GEL STICK COMPOSITIONS

Judy Brazinsky, Kearny; Chung T. Shin; Richard Alonso, both of Livingston, and Anthony Benfatto, North Brunswick, all of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Continuation-in-part of Ser. No. 504,497, Apr. 4, 1990, abandoned. This application Aug. 27, 1992, Ser. No. 937,455
Int. Cl.[5] H61K *7/32, 9/06*
U.S. Cl. 424—65 **17 Claims**

1. In a cosmetic gel stick composition consisting essentially of by weight of the composition from about 60 to about 90% of an aliphatic polyhydric alcohol having from 2 to 6 carbons and from 2 to 6 hydroxyl groups; from about 3 to about 8% soap; from about 1 to about 7% of a water-soluble emollient selected from the group consisting of polyoxyethylene ethers of fatty alcohols; polyoxyethylene, polyoxypropylene ethers of fatty alcohols having less than 20 mol percent polyoxypropylene based on the total mols of polyoxyalkylene, and polyoxyethylene glycols having 20 to 200 mols ethylene oxide, the fatty alcohol moiety having from about 8 to about 22 carbons and the average number of alkylene glycol ether units being at least about 20, and from about 10 to about 20% water, the improvement comprising incorporating into the composition from about 1 to about 5% of a water-dispersible emollient that is a polyoxyethylene ether of a branched chain fatty alcohol, the fatty alcohol moiety having from about 8 to about 22 carbons and the average number of ethylene glycol ether units being from 1 to about 6, said improved gel stick composition being transparent to the transmission of light.

5,368,849

Patent Not Issued For This Number

5,368,850

AQUEOUS COSMETIC OR DERMATOLOGICAL DISPERSION FOR TREATMENT OF HAIR OR SKIN BASED ON SUGAR OR ALKYLSUGAR FATTY ACID ESTERS AND RETICULATED ACRYLAMIDE COPOLYMERS

Daniele Cauwet, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 15, 1993, Ser. No. 151,847
Claims priority, application France, Nov. 13, 1992, 92 13706
Int. Cl.[5] A61K *7/06, 7/42, 7/075*
U.S. Cl. 424—70 **17 Claims**

1. An aqueous dispersion for the cosmetic treatment of hair or the skin and/or in dermatology, which contains in a cosmetically or physiologically acceptable medium:

a) at least one sugar or (C_1–C_4)alkylsugar, C_4–C_{22} fatty acid mono and/or diester which may be oxyethylenated if necessary; and

b) at least one reticulated copolymer of acylamide and a monomer selected from:

(i) ammonium acrylate;

(ii) partially or completely neutralized 2-acrylamido 2-methylpropane sulfonic acid;

(iii) methacryloyl oxyethyl trimethylammonium chloride.

5,368,851

COMPOSITION CONTAINING DIVALENT MANGANESE ION AND METHOD FOR PREPARING THE SAME

Yoshikatsu Ikari, Abiko, Japan, assignor to Chief Resources Limited, Hong Kong, Hong Kong

Continuation of Ser. No. 827,498, Jan. 30, 1992, abandoned, which is a continuation of Ser. No. 352,253, May 16, 1989, abandoned. This application Apr. 20, 1993, Ser. No. 49,592
Claims priority, application Japan, May 16, 1988, 63-116958
Int. Cl.[5] A61L *9/04, 9/015*
U.S. Cl. 424—76.3 **7 Claims**

1. A method for deodorizing using an oxidation resistant divalent manganese ion composition which comprises contacting an odorous gas with a divalent manganese ion composition, said divalent manganese ion composition comprising a divalent manganese ion having an acid component bonded thereto, wherein said acid component is at least one member selected from the group consisting of ascorbic acid, citric acid and salts thereof; and

wherein the molar ratio of said acid component to said divalent manganese ion is in the range of 0.1:1 to 1:1.

5,368,852

PROLONGED-RELEASE LIQUID TYPE OF PHARMACEUTICAL PREPARATION COMPRISING DRUG-RESIN COMPLEX AND BENZOATE PRESERVATIVE

Mitsuo Umemoto, Osaka; Kiyotsugu Higashi, Gojo, and Youko Mitani, Suita, all of Japan, assignors to Rohto Pharmaceutical Co., Ltd., Japan

Filed Mar. 31, 1993, Ser. No. 41,046
Claims priority, application Japan, Apr. 3, 1992, 4-081979
Int. Cl.[5] A61K *31/74, 9/08*
U.S. Cl. 424—78.1 **15 Claims**

1. A prolonged-release liquid type of pharmaceutical preparation comprising:

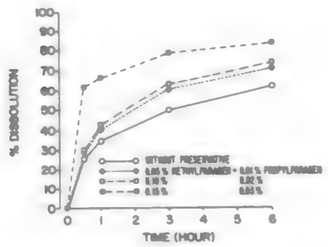
(a) 0.1–45.0 w/v % of diffusion barrier-coated complex particles, which are prepared by adsorbing a pharmacologically active drug onto ion exchange resin particles to form drug-resin complex particles, treating the drug-resin complex particles with an impregnating agent to form treated complex particles, and then coating the treated complex particles with ethylcellulose, wherein said ethylcellulose has an ethoxyl group content of 44.0–47.5%;

(b) a preservative selected from the group consisting,

(i) one of para-hydroxybenzoic acid esters, wherein if

methyl para-hydroxybenzoate is chosen, the preparation contains it at a concentration of 0.05–0.75 w/v %; if ethyl para-hydroxybenzoate is chosen, the preparation contains it at a concentration of 0.05–0.075 w/v %; if propyl para-hydroxybenzoate is chosen, the preparation contains it at a concentration of 0.03–0.05 w/v %; and if butyl para-hydroxybenzoate is chosen, the preparation contains it at a concentration of 0.01–0.015 w/v %;

(ii) a mixture of two or more of para-hydroxybenzoic acid esters, wherein if a mixture of methyl para-hydroxybenzoate and propyl para-hydroxybenzoate is chosen, the preparation contains the former at a concentration of 0.05–0.10 w/v % and the latter at a concentration of 0.01–0.02 w/v %, respectively; and



(iii) sodium benzoate at a concentration of 0.1–0.5 w/v %; and the percent dissolution of the drug from the drug-resin complex changes minimally upon storage at 25° C. for a long period of time,

(c) a solvent, wherein said preparation can be stably stored for a long time without loss of its controlled-release property.

5,368,853

LEUKOREGULIN ANTI-VIRAL THERAPY

John J. Hooks, Olney; Charles H. Evans, Potomac, and Barbara Detrick, Olney, all of Md., assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Filed May 11, 1990, Ser. No. 521,706

Int. Cl.[5] A61K *37/66, 37/02;* **C07K** *15/26*

U.S. Cl. 424—85.1 **8 Claims**

1. A method of treating a viral infection in an animal comprising administering to said animal:

i) an amount of leukoregulin sufficient to increase the permeability of cells of said animal infected with said virus, and

ii) an amount of anti-viral chemotherapeutic agent sufficient to inhibit production of said virus in said permeabilized cells,

under conditions such that said treatment is effected.

5,368,854

USE OF IL-10 TO TREAT INFLAMMATORY BOWEL DISEASE

Donna Rennick, Los Altos, Calif., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 20, 1992, Ser. No. 932,900

Int. Cl.[5] A61K *45/05*

U.S. Cl. 424—85.2 **25 Claims**

1. A method of treating an inflammatory bowel disease in a mammal comprising:

administering to the mammal an effective amount of IL-10.

5,368,855

POX VIRUS VACCINE

David B. Boyle, Leopold, and Sharad Kumar, Herne Hill, both of Australia, assignors to Commonwealth Science and Industrial Research Organisation, Campbell, Australia

Continuation of Ser. No. 582,881, Oct. 9, 1990, Pat. No. 5,258,294. This application Dec. 18, 1992, Ser. No. 993,073

Claims priority, application Australia, Feb. 12, 1988, PI6721

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] A61K *39/275, 39/295*

U.S. Cl. 435—320.1 **4 Claims**

1. A vaccine including a viral vector, said viral vector including:

a portion of the genome of a vector virus;

a bidirectional promoter element including a first promoter which controls expression of an early viral protein in fowlpox virus and a second promoter which controls expression of a late viral protein in fowlpox virus, said second promoter being in an opposite orientation to said first promoter, wherein said bidirectional promoter element has the sequence

5'AGCCATTTAGTATCCTAAAATTGAATT-GTAATTATCGATAATAAATGCAC 3' (SEQ ID NO: 10)

3'TCGGTAAATCATAGGATTTTAACT-TAACATTAATAGCTATTATTTACCTG 5' (SEQ ID NO: 11)

and

a first foreign DNA sequence coding for a first foreign gene of interest and under the control of said first promoter; or

a second foreign DNA sequence coding for a second foreign gene of interest and under the control of said second promoter; or

a first foreign DNA sequence coding for a first foreign gene of interest and under the control of said first promoter together with a second foreign DNA sequence coding for a second foreign gene of interest and under the control of said second promoter.

5,368,856

HYDROPHOBIC EXTRACTED NEEM OIL-A NOVEL FUNGICIDE USE

James C. Locke, Silver Spring; James F. Walter, Ashton, and Hiram G. Larew, III, Hyattsville, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 959,835, Oct. 13, 1992, Pat. No. 5,271,937, which is a continuation of Ser. No. 947,867, Sep. 21, 1992, Pat. No. 5,271,938, which is a continuation-in-part of Ser. No. 456,762, Dec. 26, 1989, abandoned. This application Aug. 2, 1993, Ser. No. 101,112

Int. Cl.[5] A01N *65/00, 43/16*

U.S. Cl. 424—195.1 **5 Claims**

1. A method of protecting a surface from fungi comprising contacting the surface to be protected with a fungicide having a fungicidally effective amount of a non-polar, hydrophobic solvent extracted neem oil which has less than 1 weight percent of azadirachtin, and which has been treated to remove the non-polar solvent, wherein the non-polar, hydrophobic solvent has neem oil solubility and substantially no azadirachtin and water solubility.

5,368,857

CERAMIDE COSMETIC COMPOSITIONS

Cathleen Corcoran, Bridgeport, and Jason Hendry, Cheshire, both of Conn., assignors to Elizabeth Arden Company, Division of Conopco, Inc., New York, N.Y.

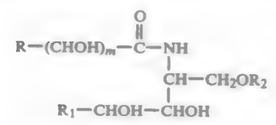
Filed Nov. 15, 1993, Ser. No. 153,013

Int. Cl.[5] A61K *7/48*

U.S. Cl. 424—401 **3 Claims**

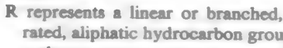
1. A cosmetic composition comprising:

(i) from about 0.00001 to 2% by weight of a phytosphingosine-containing ceramide having structure:



wherein

R represents a linear or branched, saturated or unsaturated, aliphatic hydrocarbon group having from 1 to 49 carbon atoms or a group:



R_1 represents a linear or branched, saturated or unsaturated, aliphatic hydrocarbon group having from 8 to 28 carbon atoms;

R_2 represents H, a phosphate, a sulphate, or a glucosyl:

a is an integer from 7 to 50

b is an integer from 10 to 100

m is 0 or 1

Y represents H or a C_{14}–C_{22} fatty acid group having structure:

where

z is —OH or an epoxy oxygen

x is an integer of from 12 to 20

y is an integer of from 20 to 40

z is 0 or an integer of from 1 to 4; and

(ii) from about 30 to about 95% by weight of a C_6–C_{100} ester base functioning as a pharmaceutically acceptable carrier, said ester base comprising from about 1 to about 90% by weight of a material selected from the group consisting of C_7–C_{60} neoalkanol ester, C_{12}–C_{60} fatty glyceride ester alkoxylated with from 1 to 100 moles C_2–C_3 alkylene oxide per mole of glyceride and mixtures thereof; and

(iii) from about 0.1 to about 20% by weight of glycerol monoisostearate as a coupling agent for solubilizing said ceramide within said base.

5,368,858

METHODS AND COMPOSITIONS FOR THE TREATMENT AND REPAIR OF DEFECTS OR LESIONS IN CARTILAGE

Ernst B. Hunziker, Riedholz, Switzerland, assignor to Robert F. Shaw, San Francisco, Calif.

Division of Ser. No. 648,274, Jan. 31, 1991, Pat. No. 5,206,023. This application Nov. 23, 1992, Ser. No. 979,904

Int. Cl.[5] A61F *2/02;* **A61K** *37/22;* **C07K** *15/06*

U.S. Cl. 424—423 **14 Claims**

1. A composition for the treatment or repair of defects or lesions in cartilage comprising:

a biodegradable matrix or matrix-forming material used to dress the area of the defect or lesion in the cartilage;

a proliferation agent contained within the matrix or matrix-forming material at an appropriate concentration to stimulate the proliferation of repair cells in the matrix and the area of the defect or lesion; and

a transforming factor associated with a delivery system, the delivery system being contained within the matrix or matrix-forming material, and the transforming factor being present at an appropriate concentration such that upon subsequent delivery of the transforming factor to repair cells in the matrix and defect, the repair cells are transformed into chondrocytes that produce cartilage tissue.

5,368,859

BIODEGRADABLE SYSTEM FOR REGENERATING THE PERIODONTIUM

Richard L. Dunn; Arthur J. Tipton; George L. Southard, and Jack A. Rogers, all of Fort Collins, Colo., assignors to Atrix Laboratories, Inc., Fort Collins, Colo.

Continuation of Ser. No. 765,137, Sep. 25, 1991, abandoned, which is a division of Ser. No. 384,416, Jul. 24, 1989, Pat. No. 5,077,049. This application Jun. 29, 1993, Ser. No. 84,777

Int. Cl.[5] A61F *2/00*

U.S. Cl. 424—426 **13 Claims**

1. A method for assisting the restoration of periodontal tissue in a periodontal pocket, comprising:

placing a liquid mixture of a biodegradable, curable, thermosetting prepolymer, curing agent and a water-soluble material into the periodontal pocket;

wherein the water-soluble material dissipates into periodontal fluids, the thermosetting prepolymer cures in situ by formation of covalent bonds to form a water-immiscible thermoset polymer as a solid biodegradable implant, and the dissipation of the water-soluble material creates pores within the solid biodegradable implant having sizes in the range of about 3 to about 500 microns, the solid biodegradable implant having a porosity in the range of about 5 to 95 percent provided by the pores, and the sizes of the pores and porosity being effective to promote cell growth.

5,368,860

PREPARATION FOR TRANSDERMAL DRUG ADMINISTRATION

Masaki Sunami, Yokohama; Koji Maruyama, Ibaraki; Mitsuhiko Hori, Ibaraki; Shoichi Tokuda, Ibaraki; Kenichiro Saito, Osaka, and Ikuo Kishi, Ichikawa, all of Japan, assignors to Nitto Denko Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,149

Claims priority, application Japan, Nov. 30, 1990, 2-338885

Int. Cl.[5] A61F *13/02*

U.S. Cl. 424—448 **3 Claims**

1. A preparation for transdermal drug administration comprising a flexible backing layer and a pressure-sensitive adhesive layer composed of a copolymer of (meth)acrylic acid alkyl ester and (meth)acrylic acid and containing a local anesthetic in a proportion of 40–65% by weight based on the total weight of the pressure-sensitive adhesive layer, wherein the ratio of the amount of the undissolved local anesthetic (Ac) to that of the dissolved local anesthetic (As), Ac/As, is 0.1–1.8.

5,368,861

GASTRIC PREPARATION WITH SUSTAINED RELEASE

Koaichi Ushimaru, Kyoto; Kouichi Nakamichi, Shiga, and Hiroyuki Yasuura, Shige, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

PCT No. PCT/JP90/01365, § 371 Date Apr. 24, 1992, § 102(e) Date Apr. 24, 1992, PCT Pub. No. WO91/06281, PCT Pub. Date May 16, 1991

PCT Filed Oct. 24, 1990, Ser. No. 852,130

Claims priority, application Japan, Oct. 26, 1989, 1-279293

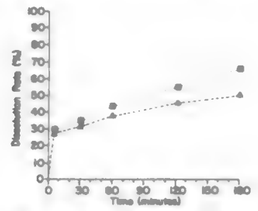
Int. Cl.[5] A61K *9/52, 47/00*

U.S. Cl. 424—451 **10 Claims**

1. A gastric preparation comprising a predetermined effective amount of a drug, said preparation comprising a rapid

release portion from which said drug is rapidly released and a sustained release portion from which said drug is gradually released, the two portions being released simultaneously to form a layer, wherein said sustained release portion comprises:

(a) a substance capable of producing a gel in water,



(b) an oil or fat which is solid under ambient temperature conditions,

(c) a drug, and

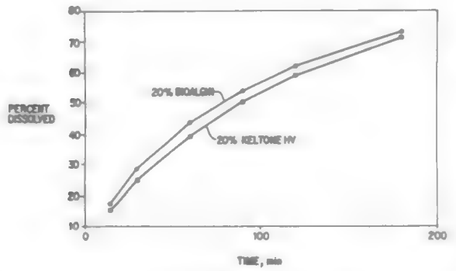
(d) a hydrophilic or swellable substance for controlling release of the drug; and the specific gravity of the preparation being not more than 1.

5,368,862

SUSTAINED RELEASE TABLETS CONTAINING ALGINATE

George Colegrove, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 18, 1991, Ser. No. 792,102
Int. Cl.[5] A61K *9/22, 47/36*
U.S. Cl. 424—464 6 Claims



1. A pharmaceutical composition tablet comprising a therapeutically effective amount of an active ingredient to be released in a stomach or intestine and an alginate, the alginate consisting essentially of a partially acetylated variable block copolymer alginate of D-mannuronic and L-guluronic acid produced by Pseudomonas or Azotobacter strains, in an amount between about 5–50% wt. of the tablet.

5,368,863

LONG-TERM DELIVERY DEVICE WITH EARLY STARTUP

James B. Eckenhoff, Los Altos; Terry L. Burkoth, Palo Alto; John P. Carr, Sunnyvale, and Jeremy C. Wright, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

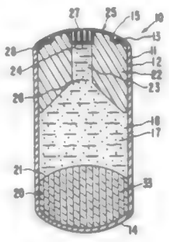
Continuation of Ser. No. 876,734, Apr. 27, 1992, Pat. No. 5,223,266, which is a continuation-in-part of Ser. No. 850,087, Mar. 12, 1992, Pat. No. 5,229,133, which is a division of Ser. No. 469,861, Jan. 24, 1990, abandoned. This application Jan. 21, 1993, Ser. No. 6,448
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—473 31 Claims

1. An improved delivery device for delivering a beneficial agent to an environment of use over a prolonged period of time of 23 days or longer, the delivery device comprising:

i) a wall that surrounds an internal compartment,

ii) a beneficial agent formulation in the compartment,

iii) an expandable fluid-activated driving member in the compartment, and



iv) exit means in the wall;

wherein the improvement comprises a prehydration permeant in the delivery device in contact with the expandable driving member, the prehydration permeant being in an amount greater than 1% of the weight of the expandable driving member.

5,368,864

FORMULATION OF OXYPURINOL AND/OR ITS ALKALI AND ALKALINE EARTH SALTS

Wolfgang Lahr, and Guido Weickgenannt, both of Berlin, Germany, assignors to Henning Berlin GmbH Chemie- und Pharmawerk, Berlin, Germany

Continuation of Ser. No. 688,497, Jul. 19, 1991, abandoned. This application Mar. 25, 1993, Ser. No. 37,684
Claims priority, application Germany, Nov. 25, 1988, 3839825
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—489 10 Claims

1. Formulation of oxypurinol or its alkali or alkaline earth salt in non-crystalline form, wherein the oxypurinol or its salt is contained in the form of a solids dispersion with pharmacologically inert adjuvants in a ratio of from 1:0.2 to 1:10.

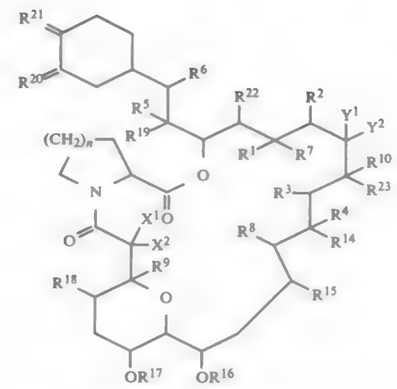
5,368,865

SUSPENDIBLE COMPOSITION AND PROCESS FOR PREPARING THE SAME

Sotoo Asakura, Kyoto; Yasuto Koyama, Itami; Youhei Kiyota, Ikeda; Kiyoko Akashi, Takarazaka; Akira Kagayama, Ikoma; Yoshio Murakami, and Toshiomi Nakate, both of Kobe, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 788,041, Nov. 5, 1991, abandoned. This application Jul. 27, 1993, Ser. No. 97,617
Claims priority, application Japan, Nov. 8, 1990, 2-304839; United Kingdom, Mar. 7, 1991, 9104834; Japan, Oct. 7, 1991, 3-259358
Int. Cl.[5] A61K *9/10, 9/14*
U.S. Cl. 424—489 7 Claims

1. A composition suspendable in an aqueous medium comprising fine particles of a tricyclic compound represented by the following formula (I):



(I)

wherein each of adjacent pairs of R^1 and R^2, R^3 and R^4 or R^5 and R^6 independently

(a) is two adjacent hydrogen atoms, or

(b) may form another bond formed between the carbon atoms to which they are attached,

X^1 is a hydrogen atom or a hydroxy group;

X^2 is a hydrogen atom; or

X^1 and X^2 may together represent an oxo group or —CH_2O—;

Y^1 is a hydrogen atom or a hydroxy group;

Y^2 is a hydrogen atom; or

Y^1 and Y^2 may together represent an oxo group, N—$NR^{11}R^{12}$ or N—OR^{13};

R^{11} and R^{12} each is independently a hydrogen atom, an alkyl group, an aryl group or a tosyl group;

R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{22} and R^{23} each is independently a hydrogen atom or an alkyl group;

R^{20} and R^{21} each is an oxo group or independently (R^{20}a and a hydrogen atom) or (R^{21}a and a hydrogen atom) in which R^{20}a and R^{21}a each is independently a hydroxy group, an alkoxy group or a group represented by the formula '$OCH_2OCH_2CH_2OCH_3$, or R^{21}a is a protected hydroxy group, or R^{20}a and R^{21}a may together represent an oxygen atom in an epoxide ring;

n is an integer of 1, 2 or 3; and

in addition to their above definitions, four of Y^1, Y^2, R^{10} and R^{23}, together with the carbon atoms to which they are attached, may represent a saturated or unsaturated 5- or 6-membered nitrogen, sulfur and/or oxygen containing heterocyclic ring optionally substituted by one or more groups selected from the group consisting of an alkyl, a hydroxy, an alkyl substituted by one or more hydroxy, an alkoxy, benzyl and a group of the formula —$CH_2Se(C_6H_5)$;

or a pharmaceutically acceptable salt thereof, said fine particles of the tricyclic compound or its pharmaceutically acceptable salt having an average size of 5 μm or below; and

a pharmaceutically acceptable nonionic surfactant selected from the group consisting of polyoxyethylene sorbitan fatty acid esters, polyoxyethylene polyoxypropylene alkyl ethers and polyethylene glycol fatty acid esters, the HLB of which is 9 and more; and in which the nonionic surfactant and the tricyclo compound is in the ratio of 0.01:1 to 5:1 by weight.

5,368,866

DEER REPELLENT COMPOSITION, PROCESS FOR MAKING SAME, AND A TREATMENT METHOD FOR APPLYING THE SAME

Athena P. Loucas, 58 High Valley Way, Stamford, Conn. 06903

Filed Oct. 25, 1993, Ser. No. 142,612
Int. Cl.[5] A01N *25/24, 37/18;* A61K *31/16*
U.S. Cl. 424—581 1 Claim

1. A natural, non-toxic deer repellent composition for the protection of vegetation, comprising:

an active ingredient of egg and cayenne pepper sauce;

a non-toxic glue on the carrier; and

a diluent.

5,368,867

PROCESS FOR THE ACCELERATED PRODUCTION OF STABLE SOLUTIONS, IN EQUILIBRIUM, OF PERACETIC ACID IN LOW CONCENTRATIONS

Alcides B. Da Silva; Joao B. Tognetti, and Jal R. Dadabhoy, all of Sao Paulo, Brazil, assignors to Peroxidos Do Brasil, Sao Paolo, Brazil

PCT No. PCT/BR91/00002, § 371 Date Sep. 22, 1992, § 102(e) Date Sep. 22, 1992, PCT Pub. No. WO91/13059, PCT Pub. Date Sep. 5, 1991
PCT Filed Feb. 22, 1991, Ser. No. 923,978
Claims priority, application Brazil, Feb. 23, 1990, PI9000909
Int. Cl.[5] A01N *31/02*
U.S. Cl. 424—616 5 Claims

1. A process for the accelerated production of stable solutions, in equilibrium, of peracetic acid in low concentration in which a concentrated peracetic acid solution is diluted, characterised in that the concentrated peracetic acid solution is in a first step diluted with water and permitted to hydrolyse in the presence of an added acidic equilibration catalyst for a period less than that required to attain an equilibrium solution and in a second step the hydrolysis is quenched by addition of hydrogen peroxide to attain a dilute equilibrium peracetic acid solution.

5,368,868

GERMICIDAL DETERGENT-IODINE COMPOSITIONS HAVING REDUCED DETERGENT CONTACT

Murray W. Winicov, Kansas City, Mo., assignor to West Agro, Inc., Kansas City, Mo.

Continuation of Ser. No. 947,041, Sep. 18, 1992, abandoned. This application Dec. 6, 1993, Ser. No. 163,596
Int. Cl.[5] A01N *59/12*
U.S. Cl. 424—667 43 Claims

1. An aqueous detergent-iodine germicidal use composition comprising from about 0.1%–1.3% by weight average available iodine on a nominal basis, from about 2 to about 4.5 parts of complexing agent per part of available iodine, said complexing agent including a polyethoxylated polyoxypropylene having a polyoxypropylene moiety with an average molecular weight of at least about 2600 and a polyoxyethylene content from about 30%–75% by weight, said composition having a pH of from about 2–7.

5,368,869

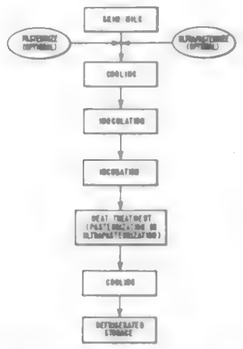
COMPOSITIONS AND METHODS FOR MANUFACTURING A SKIM OR LOWFAT MILK PRODUCT WITH INCREASED CREAMINESS, COLOR, MOUTHFEEL, AND TASTE SENSATIONS SIMILAR TO MILK WITH A HIGHER FAT CONTENT

Paul A. Savello, Hyde Park, Utah, and Hector A. Solorio, Parma, Id., assignors to Utah State University Foundation, Logan, Utah

Filed Mar. 9, 1993, Ser. No. 28,279
Int. Cl.[5] A23C *9/12*
U.S. Cl. 426—42 81 Claims

1. A method for manufacturing a skim milk product, the method comprising the steps of:

(a) inoculating skim milk with a coagulating enzyme to cleave a portion of the casein in the skim milk so as to destabilize the casein;
(b) incubating the inoculated skim milk for a period of time sufficient to allow the destabilized casein in the skim milk



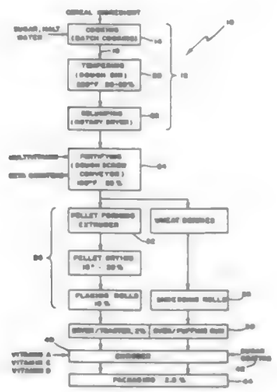
to form aggregates of destabilized casein so as to produce a skim milk product having a mouthfeel similar to milk having milk-fat content; and
(c) heat treating the inoculated skim milk to inactivate substantially all of the coagulating enzyme.

5,368,870

METHOD FOR MAKING VITAMIN ENRICHED CEREAL

John D. Efstathiou, Plymouth, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 937,613, Aug. 28, 1992, Pat. No. 5,258,189. This application Oct. 21, 1993, Ser. No. 140,802 The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.
Int. Cl.[5] A23L *1/303*
U.S. Cl. 426—73 **16 Claims**



1. A method for providing a multivitamin enriching an R-T-E cereal product with beta carotene that exhibits vitamin efficacy stability and improved visual appearance, comprising:
A. providing a cooled cooked cereal mass having a moisture content of about 15% to 45% and having a temperature of about 90° to 110° F., wherein said cereal grain mass has a moisture content of between about 25% and about 55% by weight;
B. thereafter uniformly dispersing beta carotene into said cooked cereal mass with sufficient simultaneous mixing to form an homogeneous beta carotene fortified cooked cereal mass composition, wherein step B further includes dispersing a first multivitamin premix comprising heat tolerant vitamin types and wherein said cereal grain is a member selected from the group consisting of wheat, oats, rice, corn, barley, rye, sorghum, and mixtures of these;
C. forming the beta carotene fortified cooked cereal mass into discrete pieces;
D. finished drying the discrete pieces to form dried R-T-E cereal pieces having a moisture content of less than 5%, including the substeps of
1) forming the cooked cereal mass into cereal pellets,
2) drying the cereal pellets to a moisture content of about 8% to 20%, and
3) puffing the cereal pellets to form puffed R-T-E cereal pieces having a moisture content of about 1% to 4%.

5,368,871

SEAFOOD ANALOGS FROM CASEINATE AND PROCESS OF MAKING SAME

Richard P. Konstance, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 6, 1993, Ser. No. 2,342
Int. Cl.[5] A23L *1/0562*
U.S. Cl. 426—104 **10 Claims**

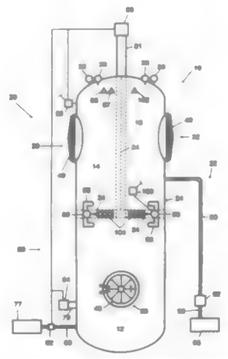
1. A process for the production of a firm, irreversible protein-containing elastic gel suitable for use as a kamaboko analog or a seafood analog, comprising the steps of:
(A) blending an aqueous mixture consisting essentially of an aqueous component, from about 25% to about 40% by weight of a caseinate, from about 1% to about 10% by weight of sodium hexametaphosphate, and either from about 1% to about 4% by weight of a carrageenan or a combination of lactalbumin in an amount ranging from about 5% to about 15% by weight and egg albumin in an amount ranging from about 5% to about 15% by weight, thereby to form a homogeneous blend;
(B) heating said blend to form a uniformly viscous solution; and
(C) cooling to form said gel.

5,368,872

PRESSURE AND VACUUM SMOKER APPARATUS AND METHOD

Don M. Davis, Jr., P.O. Box 180998, Austin, Tex. 78718

Filed Aug. 31, 1993, Ser. No. 114,456
Int. Cl.[5] A23L *1/31;* **A23B** *4/044*
U.S. Cl. 426—281 **12 Claims**



10. A method for smoking food under pressure, the method comprising the steps of:
(a) containing a fire within a fire compartment, the fire compartment having an interior adapted to contain a fire and smoke and a pressure sealable opening adapted to provide access to the interior, the fire compartment capable of being sealed to become airtight;
(b) placing food within a pressure smoking compartment, the pressure smoking compartment having an interior adapted to contain food to be smoked and a pressure sealable opening adapted to provide access to the interior, the pressure smoking compartment capable of being sealed to become airtight;
(c) controllably pressurizing the interior of the fire compartment; and
(d) controllably transferring pressurized smoke filled air from the interior of the fire compartment to the interior of the smoking compartment.

5,368,873

PROCESS FOR PREPARING DEHYDRATED VEGETABLE PRODUCTS

Kurt J. Aebi, Cockeysville; Roman D. Grypa, North East; Thein Aung, Cockeysville, and Mary J. Lee, Baltimore, all of Md., assignors to McCormick & Company, Inc., Sparks, Md.

Continuation of Ser. No. 799,145, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 630,967, Dec. 24, 1990, abandoned. This application Aug. 9, 1993, Ser. No. 110,680
Int. Cl.[5] A23L *1/223*
U.S. Cl. 426—310 **11 Claims**

1. A process for preparing a low moisture vegetable product which comprises:
(a) immersing a vegetable slice, having a thickness not greater than 0.25 inches, in a liquid bath containing 20 to 60% by weight of a food grade osmotic agent capable of infusing into the vegetable tissue and forming an amorphous solid upon drying, wherein said infusion bath is free of added sulfites and buffer, and said vegetable has not been blanched prior to immersion in said liquid bath;
(b) removing excess surface osmotic agent; and
(c) drying the infused vegetable to form a vegetable product containing amorphous, solid osmotic agent and a water content from about 2 to 6 percent by weight,
wherein said osmotic agent is selected from the group consisting of high fructose corn syrup, fructose, glucose, sucrose, maltose, honey, sorbitol, maltitol, and hydrogenated corn syrup,
wherein said liquid bath is maintained at a temperature from about 45° F. to about 220° F., and
wherein said vegetable is selected from the group consisting of green bell peppers and onions.

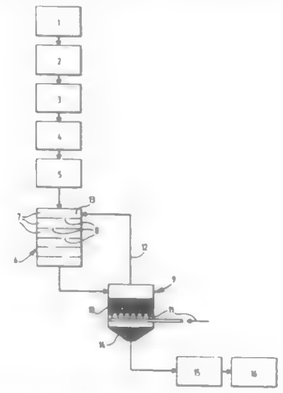
5,368,874

METHOD FOR MANUFACTURING INTERMEDIATE PRODUCTS FOR PREPARATION OF ANIMAL FEEDS

Jakob Van Bruggen, Hendrik Ido Ambacht, Netherlands, assignor to Schouten Group N.V., Giessen, Netherlands

Filed Mar. 23, 1993, Ser. No. 36,062
Int. Cl.[5] A23K *3/00;* **A23L** *1/00*
U.S. Cl. 426—466 **9 Claims**

1. A method for manufacturing intermediate products for preparation of animal feeds comprising the steps of:
a) heating a crude granular raw material in a vessel containing a heating device at a temperature sufficient to toast the raw material;
b) feeding the toasted crude raw material from the vessel to a container;
c) cooling the toasted raw material within the container by contacting the toasted raw material with cold air in counterflow to the feeding of the toasted raw material in order to heat and moisten the cold air and to cool and dry the raw material so as to obtain the intermediate products; and



d) feeding the heated moist air back to the vessel thereby recovering the energy from the heating step a).

5,368,875

METHOD OF MANUFACTURING RICH-FLAVORED ROASTED COFFEE BEANS AND GROUND ROASTED COFFEE BEANS

Haruo Hibi, and Hirotoshi Yamanashi, both of Nagoya, Japan, assignors to Nagoyaseiraku Co., Ltd., Japan

Continuation of Ser. No. 863,191, Apr. 3, 1992, abandoned. This application Sep. 24, 1993, Ser. No. 126,808
Claims priority, application Japan, Sep. 25, 1991, 3-245985
Int. Cl.[5] A23F *5/04*
U.S. Cl. 426—466 **14 Claims**

1. A method of manufacturing roasted coffee beans to maximize flavor and aroma retention of the roasted coffee beans and increase shelf life of the coffee, comprising the steps of:
a) roasting a desired quantity of coffee beans so that the roasted coffee beans have a temperature of approximately 200° C., depending upon a desired degree of roasting of the coffee beans;
b) rapidly cooling, with cooled dry air, the desired quantity of roasted beans from a temperature of approximately 200° C., depending upon a desired degree of roasting, to a temperature between about −17° C. and about −35° C. within 3.5 minutes immediately after termination of roasting so as to maximize flavor and aroma retention of the roasted coffee beans and to increase shelf life of the coffee; and
c) packaging the roasted coffee beans in an air tight container without degasification.

5,368,876

FLAVOURING AND PERFUME COMPOSITIONS AND FLAVOURED AND PERFUMED PRODUCTS WHICH CONTAIN ONE OR MORE SUBSTITUTED THIOPHENES

Henry L. A. Van den Heuvel, Bussum, and Paulus P. J. M. Jaegers, Hilversum, both of Netherlands, assignors to Naarden-International N.V., Naarden-Bussum, Netherlands

Division of Ser. No. 717,994, Jun. 20, 1991, Pat. No. 5,196,224, which is a continuation of Ser. No. 69,119, Jul. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 901,433, Aug. 28, 1986, abandoned. This application Oct. 28, 1992, Ser. No. 967,720

Claims priority, application Netherlands, Sep. 16, 1985, 8592530

Int. Cl.[5] A23L *1/235*

U.S. Cl. 426—535 15 Claims

1. A method of imparting an organoleptic character to a product, said organoleptic character being based upon one or more notes selected from the group consisting of sulfurous, flowery, green, spicy, citrus-like, malty and caramel-like, comprising adding to said product at least 0.05 ppm of one or more thiophene derivatives of the formula



wherein the dotted lines represent single or double bonds, with the provisos that no more than two of the dotted lines represent double bonds, no two double bonds are adjacent, and if only one double bond is present, the double bond is not in the 3-position.

5,368,877

METHOD OF PRODUCING FILM SHELF STABLE FOOD PRODUCTS

Victor T. Huang, Moundsview; Laurie E. Kerschner, Minnetonka, and Lorri D. Cullen, Minneapolis, all of Minn., assignors to Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 943,274, Sep. 10, 1992, which is a continuation-in-part of Ser. No. 821,208, Jan. 16, 1992, Pat. No. 5,204,135. This application Nov. 4, 1992, Ser. No. 971,420

The portion of the term of this patent subsequent to Apr. 20, 2010, has been disclaimed.

Int. Cl.[5] A23L *1/39*

U.S. Cl. 426—589 24 Claims

1. A shelf stable commercial sterile food product having a starch containing and/or vegetable food component of preserved textural qualities and a sauce component such that the time or temperature required to reach commercial sterility in said food product is reduced wherein said sauce component has an increased gelatinization temperature, an increased rate of heat transfer, and comprises:

a) about 0.1 to about 24% by weight polysaccharides of MW_w between about 3,600 and about 250,000; and

b) water such that the sauce has an A_w of greater than 0.92.

5,368,878

REDUCED FAT MEAT PRODUCTS

Cathyene Smick, and Robert V. Schanefelt, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation of Ser. No. 896,096, Jun. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 578,994, Sep. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,208, Feb. 20, 1990, abandoned. This application Jul. 6, 1993, Ser. No. 90,570

Int. Cl.[5] A23L *1/317*

U.S. Cl. 426—646 20 Claims

1. An article of processed meat having reduced levels of fat comprising a ground meat patty having incorporated therein a minor amount of an aqueous dispersion of a fragmented granular starch hydrolysate comprised of a major amount of cold-water insoluble starch hydrolysate and a minor amount of cold-water soluble starch hydrolysate.

5,368,879

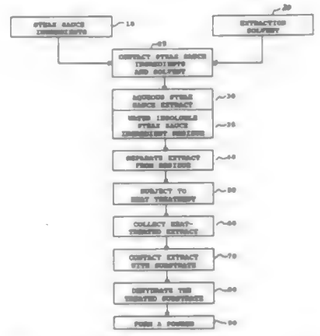
FLAVORFUL DRY FOOD CONDIMENT AND PROCESS OF PROVIDING THE SAME

Jackie L. White, Pfafftown, and Thomas A. Perfetti, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jul. 23, 1993, Ser. No. 97,351

Int. Cl.[5] A23L *1/22*

U.S. Cl. 426—650 18 Claims



1. A process for providing a flavorful composition for use as a food condiment, the process comprising the steps of:

(a) extracting a mixture of steak sauce ingredients with an extraction solvent selected from the group consisting of organic solvents, halocarbons, halogenated hydrocarbons, supercritical fluids, modified supercritical fluids, and liquids having an aqueous character, under conditions sufficient to provide a liquid steak sauce extract;

(b) separating the liquid steak sauce extract from the extracted mixture of steak sauce ingredients;

(c) heating the liquid steak sauce extract in a pressure-controlled environment to above ambient pressure at a temperature above about 100° C.; and

(d) contacting the heat treated liquid steak sauce extract with a substrate to provide a substrate having the heat treated liquid steak sauce extract thereon.

5,368,880

EUTECTIC BOND AND METHOD OF GOLD/TITANIUM EUTECTIC BONDING OF CADMIUM TELLURIDE TO SAPPHIRE

Richard C. McKee, Glenwood; Sandra L. Baumler, Crownsville, both of Md., and Thomas R. Schimert, Grand Prarie, Tex., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1989, Ser. No. 446,760

Int. Cl.[5] B05D *5/12*; C23C *16/00*

U.S. Cl. 427—125 3 Claims

1. A method of forming a eutectic bond, said method comprising the steps of:

(a) polishing a Cadmium Telluride substrate;

(b) evaporating upon said Cadmium Telluride substrate a first layer of Chromium, said first layer of Chromium having a depth of not less than 0.5 microns;

(c) evaporating upon said first layer of Chromium a second Gold diffusion barrier layer, said second layer having a depth of not more than 1500 Angstroms;

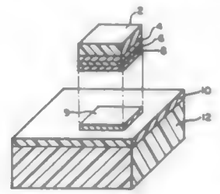
(d) evaporating upon said second layer a third layer of Gold, said third layer of Gold having a depth of approximately 1000 Angstroms;

(e) growing a first layer of Silicon upon a Sapphire wafer, said first layer of Silicon having a depth of not less than 500 Angstroms;

(f) removing native Silicon Dioxide from said first layer of Silicon;

(g) evaporating a second layer of Gold upon said first layer of Silicon, said second layer of Gold having a depth of not less than 5000 Angstroms;

(h) placing said third layer of Gold upon said Cadmium



Telluride substrate proximate and touching said second layer of Gold upon said Sapphire wafer;

(i) placing said Cadmium Telluride substrate and said Silicon on Sapphire wafer upon a heat column, said heat column having a temperature of not less than 390 degrees centigrade;

(j) scrubbing said Cadmium Telluride substrate onto said Silicon on Sapphire wafer for a time period of not less than fifteen seconds;

(k) removing said Cadmium Telluride substrate and said Silicon on Sapphire wafer from said heat column; and,

(l) thinning and polishing said Cadmium Telluride substrate.

5,368,881

PROSTHESIS WITH HIGHLY CONVOLUTED SURFACE

David C. Kelman, Winona Lake, and Todd S. Smith, Warsaw, both of Ind., assignors to DePuy, Inc., Warsaw, Ind.

Filed Jun. 10, 1993, Ser. No. 74,388

Int. Cl.[5] B05D *3/02*; A61F *2/28*

U.S. Cl. 427—2.26 8 Claims



1. A method of preparing a metallic surface comprised of a biocompatible metal or alloy for reception thereon of a ceramic coating comprising the steps of:

depositing on the metallic surface to a thickness of up to 200 microns a layer of aspherical metallic powder of the biocompatible metal or alloy and having a size range of approximately −80 mesh to +635 mesh;

performing a heat treating process on the metallic surface with the layer of metallic powder deposited thereon to thereby yield a substantially non-porous surface which exhibits a surface roughness defined by a peak to valley variation up to approximately 200 microns.

5,368,882

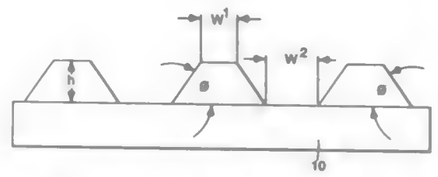
PROCESS FOR FORMING A RADIATION DETECTOR

Nang T. Tran, Lake Elmo, and Kenneth R. Paulson, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 25, 1993, Ser. No. 111,994

Int. Cl.[5] D05D *5/06*

U.S. Cl. 427—65 25 Claims



1. A process for forming an X-ray radiation detector comprising the steps of:

(a) providing a substrate for deposition and growth of an alkali halide phosphor,

(b) forming a patterned surface on said substrate comprising a plurality of mesas, each of said mesas having an angular inclined slope, an angular declined slope, and a horizontal surface, and each mesa being separated from each other mesa by horizontal segments of said substrate and wherein:

(i) the ratio of the height of each of said mesas to the width of said horizontal segments of said substrate separating said mesas is in the range of about 1:20 to 1:4;

(ii) the ratio of the width of the horizontal surface of each of said mesas to the width of said horizontal segments of said substrate separating said mesas is in the ratio of about 1:30 to 1:4;

(iii) the angles of incline and decline of each of said mesas are between about 5° and 85°; and

(c) depositing an alkali halide phosphor on the patterned surface of said substrate of step (b), thereby resulting in formation of cracks, in said deposited phosphor, which originate from the angular inclined and/or declined slopes of each said mesas.

5,368,883

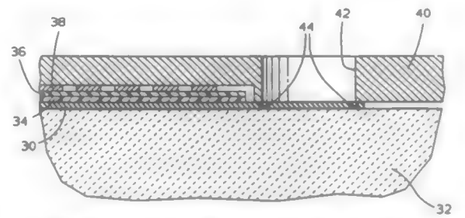
METHOD AND STENCIL DESIGN FOR PRINTING NON-PLANAR HYBRID CIRCUITS

Charles D. Beaver, Forest, Ind., assignor to Delco Electronics Corp., Kokomo, Ind.

Filed May 21, 1993, Ser. No. 64,473

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—96 4 Claims



1. A method of printing on a non-planar surface comprising the steps of:

providing a substrate having a first conductor layer of a portion of an electrical circuit printed thereon, a dielectric layer isolating a portion of said first conductor, and a second conductor printed on said dielectric layer, and wherein said first conductor has a portion extending out-

wardly from that portion of the first conductor covered by the dielectric layer;

placing a stencil over a portion of said circuit so that a hole formed in said stencil aligns with the outwardly extending portion of said first conductor, said stencil having a recessed lower surface resting on said second conductor and an unrecessed lower surface resting on said outwardly extending portion of the first conductor in an area immediately adjacent to the hole formed in the stencil to form a seal between the stencil and the first conductor; and

printing a material through the hole formed in the stencil so that the seal prevents printed material from wicking along the unrecessed lower surface of the stencil.

5,368,884

METHOD OF FORMING SOLDER MASK

Yoshikazu Yamagami, Neyagawa; Akio Kashihara, Hirakata; Mamoru Seio, Takatsuki, and Hisaki Tanabe, Yawata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 973,008, Nov. 5, 1992, abandoned. This application Sep. 9, 1993, Ser. No. 118,231

Claims priority, application Japan, Nov. 6, 1991, 3-289839; Apr. 21, 1992, 4-100956

Int. Cl.[5] B05D *1/00*

U.S. Cl. 427—96 **10 Claims**

1. A method of forming a solder mask on printed circuit boards, using powder paint which is curable by both irradiation of ultraviolet rays and heat, comprising:

(1) a step of coating the powder paint on a printed circuit board, while holding it at a temperature higher than a softening point of the powder paint but lower than its curing temperature,

(2) a step of irradiating ultraviolet rays thereon through a pattern mask,

(3) a step of making development with a medium which dissolves the region not irradiated by ultraviolet rays and,

(4) a step of completely curing the coating part developed on the printed circuit board at a temperature higher than the curing temperature of the powder paint, wherein said powder paint comprises:

(i) 30–90 parts by weight of a resin with its number average molecular weight larger than 1000 and being in solid state at the normal temperature, which has 0.1–3 radically polymerizable unsaturated groups and 0.1–5 functional groups which undergo self-setting reaction or react with other functional groups under heating in molecules having a 1000 number average molecular weight,

(ii) 70–10 parts by weight of compounds with their number average molecular weight smaller than 1000 and being in solid state at the normal temperature, which have a plurality of radically polymerizable unsaturated groups and

(iii) 0.1–10 parts by weight of photopolymerization initiator in proportion to 100 parts by weight of the sum of the components (i) and (ii) mixed therewith, and

wherein a crystalline resin having a phase transition temperature of 60°–120° C. is used as part of the resin of the component (i).

5,368,885

METHOD OF APPLYING COATING POWDER AND GLASS FLAKE TO PRODUCE A GLASS FLAKE-CONTAINING FINISH

James G. Fotiou, Reading, Pa., assignor to Morton International, Inc., Chicago, Ill.

Filed Jun. 16, 1993, Ser. No. 78,882

Int. Cl.[5] B05D *5/06*

U.S. Cl. 427—195 **6 Claims**

1. A method of providing a sparkle finish to a substrate comprising

applying an initial opaque coating to a substrate,

mixing a clear coating powder with between about 0.1 and about 15 wt.% glass flake to produce a glass flake/coating powder mixture,

applying said mixture over said initial opaque coating, and

heating said mixture to fuse and/or cure said clear coating powder to form a finish in which said glass flake provides sparkle.

5,368,886

METHOD FOR PRODUCING SURFACE TREATED PHOSPHOR PARTICLES

Hideo Tono; Masaru Naito, and Tomohiro Miyazaki, all of Odawara, Japan, assignors to Kasei Optonix Ltd., Tokyo, Japan

Division of Ser. No. 701,028, May 16, 1991, Pat. No. 5,304,889. This application Nov. 15, 1993, Ser. No. 151,817

Claims priority, application Japan, May 18, 1990, 2-126816

Int. Cl.[5] C09K *11/02*

U.S. Cl. 427—221 **5 Claims**

1. A method for producing surface-treated phosphor particles, consisting essentially of adding under alkaline conditions an ionic zinc compound and a water-soluble aluminate to an aqueous phosphor suspension of phosphor particles in amounts so as to form a double oxide of the formula $xZnO.yAl_2O_3$, wherein $x+y=1$ and $0.05 \leqq x \leqq 0.95$, and depositing said double oxide on the surface of the phosphor particles to form a coating layer.

5,368,887

PROCESS FOR PRODUCING THIN GLASS FILM BY SOL-GEL METHOD

Sumio Hoshino; Masumi Ito, and Hiroo Kanamori, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 781,848, Oct. 24, 1991, abandoned. This application Apr. 23, 1993, Ser. No. 51,285

Claims priority, application Japan, Oct. 25, 1990, 2-285882; Jun. 20, 1991, 3-148610; Jun. 20, 1991, 3-148611

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—226 **10 Claims**

1. A process for producing a glass film comprising;

applying a hydrolyzable solution containing a metal alkoxide, water, an alcohol and an acid to a substrate;

contacting said hydrolyzable solution with an atmosphere of a mixture of ammonia and an alcohol to polycondensate said metal alkoxide; and

drying and heating said hydrolyzable solution to form a glass film.

5,368,888

APPARATUS AND METHOD FOR GAS PHASE COATING OF HOLLOW ARTICLES

David V. Rigney, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 787,466, Nov. 4, 1991, Pat. No. 5,221,354. This application Sep. 16, 1992, Ser. No. 945,755

Int. Cl.[5] C23C *8/36*

U.S. Cl. 427—237 **15 Claims**

1. A method for applying a metallic coating to a plurality of articles, the coating being deposited on interior surfaces and exterior surfaces of the articles, comprising:

loading the articles into apertures located in a cylindrical wall of an article holder having an interior volume defined by the cylindrical wall;

sealing the articles in the apertures to minimize leakage across the cylindrical wall;

loading a retort bell having a single reaction bed containing a metallic source with the article holder loaded with the articles to be coated; then

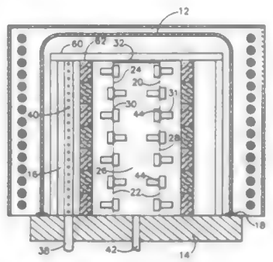
sealing the retort bell;

purging the retort bell of air by introducing an inert gas into the retort bell to establish a substantially inert gas atmosphere within the retort bell;

heating the retort bell to an elevated temperature while maintaining the inert gas atmosphere within the retort;

upon reaching the elevated temperature, introducing a controlled partial pressure of a reactive halide gas mixed with an inert gas into the retort bell and into contact with the single reaction bed to form a metallic halide gas;

first flowing the metallic halide gas over the interior surfaces of the articles to be coated and reducing the metallic halide gas to a metal at the surfaces to be coated, thereby coating the interior surfaces; then



flowing the metallic halide gas over the exterior surfaces of the articles to be coated and reducing the metallic halide gas to a metal at the surfaces to be coated, thereby coating the exterior surfaces

controlling the rate of reduction of metallic halide gas and the thickness of the coating by controlling the rate of formation of metallic halide gas by regulating the partial pressure of reactive halide gas introduced into the retort bell; and

exhausting an exhaust gas from the retort bell.

5,368,889

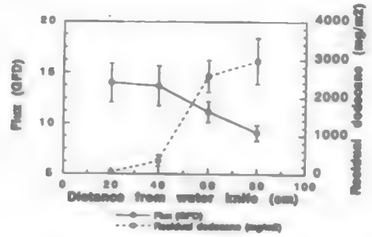
METHOD OF MAKING THIN FILM COMPOSITE MEMBRANES

David R. Johnson; Kenneth J. Stutts; Daniel A. Batzel; Virginia A. Hallfrisch, and James E. Anschutz, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1993, Ser. No. 48,689

Int. Cl.[5] B01D *61/02*

U.S. Cl. 427—244 **11 Claims**



1. A process for preparing a composite membrane comprising:

a) coating a porous support with a first solution comprising a polyfunctional reactant and water;

b) contacting the first solution on the porous support with a second solution, which is immiscible with the first solution, the second solution comprising a second solvent and a polyfunctional compound reactive with the polyfunctional reactant, such that an interfacial reaction occurs between the polyfunctional reactant and the polyfunctional compound forming a film on the porous support; and

c) removing, without a phase change, at least 70 percent of any excess polyfunctional compound and second solvent from the porous support and film by physical means.

5,368,890

"COATING PROCESS FOR DEPOSITING EXTREMELY HARD FILMS ON SUBSTRATES"

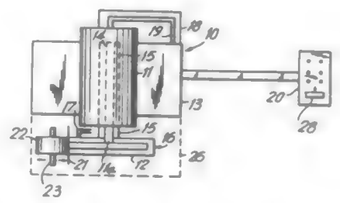
Erno N. de Nagybaczon, 75 East Sheen Avenue, London, England SW14 8AX

Filed Apr. 23, 1993, Ser. No. 52,394

Claims priority, application United Kingdom, Sep. 1, 1992, 18477; Oct. 26, 1992, 22419

Int. Cl.[5] B05D *1/12*

U.S. Cl. 427—249 **6 Claims**



1. In a method for depositing a material on a substrate, the improvement comprising:

introducing onto a rapidly rotating fibrous transfer means dry particles of said material sought to be deposited wherein the rotational velocity for said fibrous transfer mean is from about 6,000 R.P.M. for about a 1 inch diameter fibrous transfer means to about 25,000 R.P.M. for about a 12 inch diameter fibrous transfer means;

transferring said dry particles within said fibrous transfer means onto said substrate;

dragging said particles within said transfer means across a work zone in retro-grade direction vis-a-vis said substrate at a pressure concomitant to said rotational velocity substantially insufficient to affect said fibrous transfer means and a surface of said substrate exposed to said particles but sufficient to deposit at least a portion of said dragged particles on said substrate in a close, tightly packed adherent and coherent deposit onto said substrate wherein an adherence of said deposit is greater, when measured by an ion milling method, for an identical material when said material is deposited by CVD or plasma deposition means.

5,368,891

METHOD AND APPARATUS FOR PRODUCING GLOSSY PRINTED MATTER

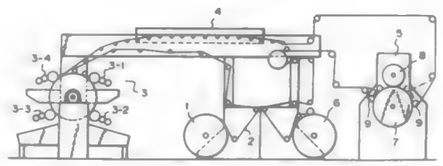
Toshiharu Sagara, Saitama; Toshikatsu Funahara, Chiba; Takakazu Nakatani, Saitama, and Mitsuru Kojima, Chiba, all of Japan, assignors to Sakata Inkusu Kabushikikaisha, Osaka, Japan

Continuation of Ser. No. 707,208, May 23, 1991, abandoned. This application Jul. 7, 1993, Ser. No. 88,086

Claims priority, application Japan, May 26, 1988, 63-129696; Jul. 13, 1988, 63-175353

Int. Cl.[5] B44D *5/00;* **B05D** *3/00;* **B31F** *1/20*

U.S. Cl. 427—258 **5 Claims**



1. A method of producing glossy printed matter having a

mirror surface glossiness as well as improved blocking resistance, rub resistance and folding resistance, comprising the steps of:

printing a web printing paper with a printing ink to provide a web-fed printed matter;

applying a coating agent for roll press working consisting essentially of an aqueous resin dispersion having a glass transition temperature, T_g ranging from 60° to 130° C. to said web-fed printed matter, said aqueous resin dispersion being obtained by emulsion polymerization of vinyl monomers selected from an acrylic vinyl monomer and a styrenic monomer as a main component in an amount weighing 16 times or more than that of an inorganic filler, with the inorganic filler comprising no more than 5.0 wt. % of the total wt. of the coating agent; and

bringing said printed and coated web-fed matter in the web state into intimate contact with hot roll surface of a roll press machine having at least one hot roll machined to a mirror finish at a temperature of from 90° to 150° C. at a linear pressure of from 60 to 150 kg/cm.

5,368,892

NON-WETTABLE GLASS SHEET

Jean-Marc Berquier, Deuil-la-Barre, France, assignor to Saint-Gobain Vitrage International, Courbevoie, France

Filed Apr. 12, 1993, Ser. No. 45,088

Claims priority, application France, Apr. 10, 1992, 92 04463

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—299 **3 Claims**

1. A process for manufacturing a non-wettable glass sheet having a hydrophobic, oleophobic layer resistant to ultraviolet radiation comprising the following steps:

a) cleaning the surface of a glass sheet to be coated,

b) contacting said glass sheet with a solution of a florinated organosilane selected from the group consisting of tridecafluorotetrahydrooctyltrichlorosilane of the formula $CF_3—(CF_2)_5—(CH_2)_2—SiCl_3$ and perfluorodecyltrichlorosilane of the formula $CF_3—(CF_2)_7—(CH_2)_2—SiCl_3$, in a nonpolar solvent or solvent system consisting essentially of 80% by volume of iso-octane, 10% by volume of trichloroethane, and 10% by volume of trichlorotrifluoroethane at a temperature of from −10° C. to 25° C. for at least five minutes, and

c) rinsing said glass sheet.

5,368,893

METHOD AND APPARATUS FOR COATING A MATERIAL WEB, ESPECIALLY A PAPER WEB OR CARDBOARD WEB

Herbert Sommer, and Günter Franz, both of Düsseldorf, Germany, assignors to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

PCT No. PCT/EP91/00596, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO91/17309, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 27, 1991, Ser. No. 793,340

Claims priority, application Germany, May 7, 1990, 4014463

Int. Cl.[5] B05D *1/28, 3/04*

U.S. Cl. 427—348 **4 Claims**

4. A process for coating a web comprising the steps of:

(a) engaging a web to be coated by a guide roller to advance the web along a path at a web speed;

(b) providing a reservoir accumulating a coating substance and spaced from the web along the path;

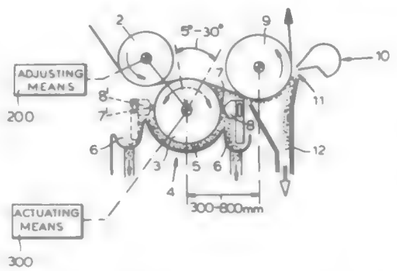
(c) rotating a transfer roller mounted between the reservoir and web about a roller axis at a peripheral speed different from the speed of the web to deliver the coating substance from the reservoir to the web while pressing the web against an arc of a periphery of the transfer roller downstream from the guide roller; and

(d) coating uniformly an entire width of the web defined between opposite longitudinal edges thereof with a predetermined weight of the substance by:

(1) resiliently pressing a rotatable roller squeegee against an entire length of the peripheral surface of the transfer roller to form a contact zone between a periphery of the squeegee formed with rises and recesses and the periphery of the roller, controllably applying thereby an excess amount of said substance flowing across said zone to the web,

(2) selecting a flow cross section A of the zone in mm^2 per meter of bar length, and setting a ratio between said web speed and the peripheral speed of said transfer roller to be between 0.015 A and 0.022 A,

(3) displacing said transfer and guide rollers along said



path within a distance ranging between 0.5 mm and 3 mm between peripheral surfaces of said transfer and guide rollers, thereby adjusting the arc to between 5° and 10° for delivering a film of the substance spread uniformly over the periphery of the transfer roller to said web,

(4) engaging the web by a counter roller rotatable about a respective axis spaced downstream from the roller axis of the transfer roller by a distance less than 1500 mm, and

(5) juxtaposing an air blade provided with a slit nozzle having a slit width between 0.8 and 1.5 mm with the counter roller across the web, thereby removing excess of the substance applied to the web in step (1) to reach the desired coating weight.

5,368,894

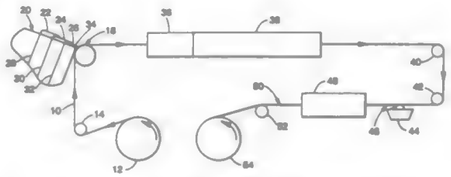
METHOD FOR PRODUCING A MULTILAYERED ELEMENT HAVING A TOP COAT

Ted J. Lammers, Vadnais Heights; Norman Newman, Mendota Heights; Karen M. Romaszewski, Apple Valley; David J. Scanlan, Fairport, all of Minn., and Alfredo Fenoglio, Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 74,067, Jun. 8, 1993. This application May 19, 1994, Ser. No. 242,683

Int. Cl.[5] B05D *1/36*

U.S. Cl. 427—407.1 **25 Claims**



1. A method for producing a multilayered element having a top coat, comprising the steps of:

a. providing a support having an upper surface and a lower surface;

b. applying an undercoating to said upper surface, said undercoating including a binder;

c. applying a top coat composition to the surface of said undercoating to form a continuous top coat, said top coat composition including one or more dispersed materials and one or more solvents, at least one of said one or more solvents being compatible with said binder, the composition and coating weight of said top coat composition and of said undercoating being such that the ratio T/B is less than or equal to 3, wherein

T is the coating weight of said at least one compatible solvent, and

B is the coating weight of said binder; and

d. drying said top coat composition, whereby, at least one third by weight of said dispersed materials remain on the surface of said undercoating to form said top coat.

5,368,895

APPARATUS AND METHOD FOR PRODUCING MONOMOLECULAR FILMS OR MONOMOLECULAR BUILT-UP FILMS

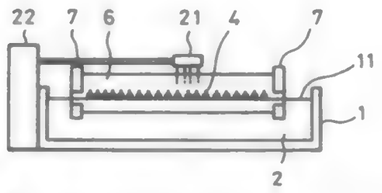
Hiroshi Matsuda; Haruki Kawada; Yuji Kasanuki; Yoshiharo Yanagisawa, and Yuko Morikawa, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1993, Ser. No. 22,942

Claims priority, application Japan, Mar. 5, 1992, 4-048835

Int. Cl.[5] B05D *1/20*

U.S. Cl. 427—430.1 **12 Claims**



1. A method of producing monomolecular films or monomolecular built-up films comprising:

(a) forming a monomolecular film by spreading a monomolecular film-forming material on a surface of a liquid in a defined region of a trough by moving a single endless belt supported by a plurality of supports to vary a configuration of said defined region in order to change a surface pressure of said monomolecular film-forming material, wherein said supports are adapted to move said single endless belt to vary said configuration and are arranged at positions to avoid interference with the surface of the liquid within the trough; and

(b) transferring a portion of the monomolecular film on the surface of said liquid onto a substrate.

5,368,896

ELECTROLESS BISMUTH PLATING BATH

Atsuo Senda; Takuji Nakagawa, and Yoshihiko Takano, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

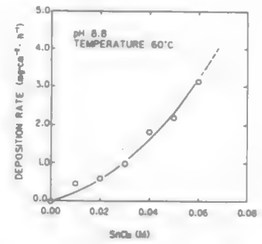
Division of Ser. No. 13,701, Feb. 4, 1993, Pat. No. 5,306,355. This application Feb. 3, 1994, Ser. No. 191,036

Claims priority, application Japan, Feb. 5, 1992, 4-019751

Int. Cl.[5] B05D *1/18*

U.S. Cl. 427—443.1 **13 Claims**

1. A method of forming an electroless bismuth plating film, comprising the step of plating the bismuth film from an electroless bismuth plating bath comprising a trivalent salt of bismuth,



a reducing agent, the reducing agent comprising a bivalent water soluble compound of tin and a complexing agent.

5,368,897

METHOD FOR ARC DISCHARGE PLASMA VAPOR DEPOSITION OF DIAMOND

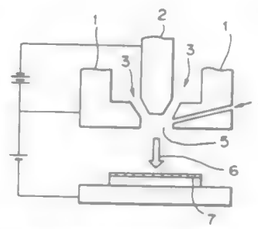
Kazuaki Kurihara; Kenichi Sasaki; Motonobu Kawarada, all of Atsugi, and Nagaaki Koshino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 4, 1988, Ser. No. 177,504

Claims priority, application Japan, Apr. 3, 1987, 62-83318; Sep. 4, 1987, 62-220437; Oct. 1, 1987, 62-245853; Oct. 6, 1987, 62-250598; Oct. 13, 1987, 62-257632; Oct. 13, 1987, 62-257635; Dec. 19, 1987, 62-320142; Dec. 28, 1987, 62-330130; Jan. 12, 1988, 63-3043

Int. Cl.[5] B05D *1/02*

U.S. Cl. 427—450 **37 Claims**



1. A method of vapor deposition of diamond comprising the steps of:

effecting an arc discharge while feeding a discharge gas containing hydrogen between an anode and a cathode of a thermal plasma chemical vapor deposition device to thereby generate a plasma jet containing dissociated hydrogen atoms;

radicalizing a gaseous carbon compound by feeding the gaseous compound into the hydrogen atom containing generated plasma jet; and

permitting said radicalized plasma jet to impinge on a substrate to be treated, to thereby form a film of diamond on said substrate.

5,368,898

METHOD OF GENERATING MICRO-TOPOGRAPHY ON A SURFACE

Jun Akedo, Tsukuba, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Sep. 9, 1993, Ser. No. 118,299

Claims priority, application Japan, Sep. 9, 1992, 4-266553

Int. Cl.[5] B05D *3/14*

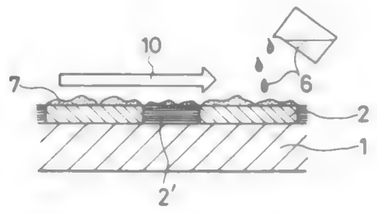
U.S. Cl. 427—510 **8 Claims**

1. A method of generating micro-topography on a surface comprising the steps of

exposing a surface of a magnetic medium to an analog signal corresponding to a surface profile to be formed, thereby forming on the surface of the magnetic medium a leakage magnetic field of an intensity distribution corresponding to the sectional profile to be formed,

applying a DC magnetic field to the magnetic medium,

supplying a magnetic fluid containing super-fine magnetic



particles dispersed in a solvent to the surface of the magnetic medium to enable the super-fine magnetic particles to be attracted to and deposited on the surface of the magnetic medium in accordance with an intensity distribution of the leakage magnetic field, and

removing the solvent contained in the magnetic fluid for fixing the super-fine magnetic particles on the surface of the magnetic medium.

5,368,899

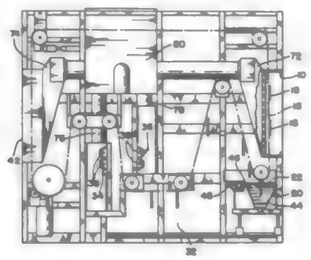
AUTOMATIC VERTICAL DIP COATER WITH SIMULTANEOUS ULTRAVIOLET CURE

Mary O'Connell Litteral, Kokomo, Ind., assignor to Delco Electronics Corp.

Continuation-in-part of Ser. No. 843,385, Feb. 28, 1992, abandoned. This application Aug. 7, 1992, Ser. No. 926,114

Int. Cl.[5] B05D *1/18, 3/06*

U.S. Cl. 427—512 **2 Claims**



1. A method of automatically dip coating and then simultaneously ultraviolet curing a conformal coating on both sides of a circuit board comprising:

positioning a circuit board, to be coated on both sides with a conformal coating, on a tool;

advancing said tool toward a dip tank containing a ultraviolet curable conformal coating so that both sides of said circuit board are at least partially immersed in said conformal coating;

advancing said tool past oppositely positioned ultraviolet lamps so that the conformal coating on both sides of said circuit board is simultaneously cured by ultraviolet light; and

providing a nitrogen blanket on said conformal coating in said dip tank at a rate of about 1600 to about 1800 cubic feet/hour to prevent said conformal coating from curing in said dip tank.

5,368,900

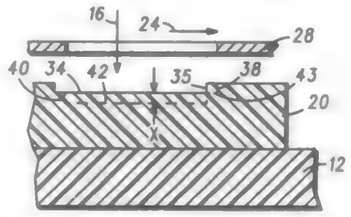
MULTISTEP LASER ABLATION METHOD FOR MAKING OPTICAL WAVEGUIDE REFLECTOR

Kevin W. Jelley, La Grange Park; William F. Hoffman, Wheeling, and Edward G. Myszka, St. Charles, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,446

Int. Cl.[5] B05D *3/06, 5/06;* **B23K** *26/02*

U.S. Cl. 427—555 **12 Claims**



5. A multistep laser ablation method for making a reflector for an optical waveguide applied to a generally planar substrate to reflect a light signal between a first path normal to the substrate and a second path parallel to the substrate extending relative to said reflector in a direction toward said waveguide, said method comprising

applying a polymeric ridge to said substrate, said ridge including an elongated section having a linear axis,

sequentially irradiating a series of overlapping zones of said ridge section with a series of intermittent laser beam flashes directed normal to the substrate such that each zone is irradiated by a flash having an intensity and a duration effective to ablate a surface layer of said ridge having a depth, each said zone having a linear leading edge perpendicular to the ridge axis, each succeeding zone being displaced relative to an immediately preceding zone such that the leading edge of the succeeding zone is displaced from the leading edge of the preceding zone along said axis by a distance substantially equal to the depth and further such that the succeeding zone includes the leading edge of the preceding zone, whereby said flashes cooperates to produce a generally planar, oblique surface,

coating the oblique surface with a reflective metallic coating to form the reflector, and

thereafter irradiating a zone of said ridge section that is axially spaced apart from the reflector in the direction of the second path with a laser beam directed normal to the substrate and having a duration and intensity effective to ablate the ridge to form a substantially planar face normal to said substrate and further to said axis, said face facing said reflector for admitting or emitting light signals along the second path to intersect the reflector.

5,368,901

METHOD FOR THE PRODUCTION OF A BOTTOM RESIST

Rainer Leuschner, Erlangen; Recai Sezi, Roettenbach, and Michael Sebald, Heusdorf-Haunberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 16, 1992, Ser. No. 945,766

Claims priority, application Germany, Sep. 27, 1991, 4132313

Int. Cl.[5] B05D *2/06*

U.S. Cl. 427—558 **2 Claims**

1. A method for the production of a bottom resist for a two-layer O_2/Reactive Ion Etching system, comprising the steps of: applying a varnish layer of a base polymer containing an aromatic group, hexamethylene tetramine as a cross-linking agent and a hydrochloric gas-forming agent to a substrate; flood-exposing the varnish layer with deep UV light so as to release hydrochloric gas from the acid-forming agent in a

surface region of the layer; and thermally curing the layer at a temperature of greater than 100° C. to obtain a bottom resist.

5,368,902

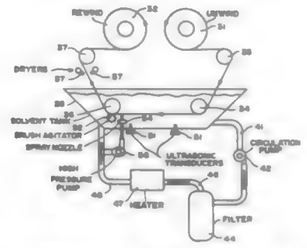
METHOD FOR MAKING PATTERNED THIN FILM

David W. Todd, Sebastopol; Lindsey Brown, Healdsburg; Roger W. Phillips, Santa Rosa, and Elliot E. Overshiner, Kenwood, all of Calif., assignors to Flex Products, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 870,769, Apr. 20, 1992, abandoned, which is a continuation of Ser. No. 692,113, Apr. 26, 1991, abandoned, which is a continuation of Ser. No. 343,904, Apr. 26, 1989, Pat. No. 5,059,454. This application May 5, 1993, Ser. No. 57,427

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—601 **10 Claims**



1. In a method for providing a patterned film on a flexible substrate in the form of a web having a surface by the use of a roll coater in a vacuum chamber having a roll over which the web travels with said surface being accessible in the vacuum chamber, forming directly on said surface of the web a patterned release coat to a thickness ranging from 127,000 to 508,000 Angstroms having openings therein through which said surface of the web is exposed, depositing in said vacuum chamber a film over the patterned release coat and onto the portions of the surface of the web exposed through the openings to a thickness of in excess of 700 Angstroms to provide opacity but insufficient to fill the openings and stripping the film portions carried by the release coat on the web so that there remain portions of the film formed on the web to provide a patterned film on the web.

5,368,903

AN IMPROVED DECORATIVE MOLDED STRIP ELEMENT

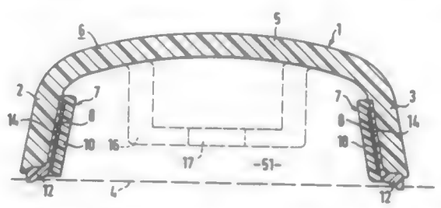
Lothar Trier, Sudetenstrasse 1, D-8626 Michelau, Germany

Continuation of Ser. No. 887,238, May 19, 1992, abandoned, which is a continuation-in-part of Ser. No. 445,723, Nov. 17, 1989, abandoned. This application Feb. 17, 1994, Ser. No. 197,662

Claims priority, application Germany, Mar. 19, 1988, 3809344; Jul. 1, 1988, 3822399

Int. Cl.[5] B60R *13/04*

U.S. Cl. 428—31 **30 Claims**



1. An assembly, comprising a heat expansible carrier having a mounting surface, and a strip element mounted on said mounting surface of said carrier, said strip element comprising:

an elongated body member having a U-shape cross-section formed by a central member and two lateral members, each lateral member comprising a web having a first end, at which it is attached to said central member at a respective one of opposite lateral ends of said central member, and having a second end remote from said central member, at which it is attached to said mounting surface, so that said central member is spaced from said mounting surface of said carrier and defines together with said lateral members and said mounting surface a hollow inner space;

two elongated reinforcing bar members, extending at said inner side of said body member parallel to respective lateral members and mounted to said inner side, with at least one of said two bar members being mounted to only an inner side of a respective one of said two lateral members, said bar members insuring approximately equal thermal expansion of said mounting surface of said carrier and said second ends of said webs; and

an end part, provided at least at one of opposite longitudinal ends of said body member for connecting said two laterals members;

wherein said strip element is an integral structure formed by concurrently injection molding of said body member and said end part onto said two bar members.

5,368,904

BULLET RESISTANT GLASS

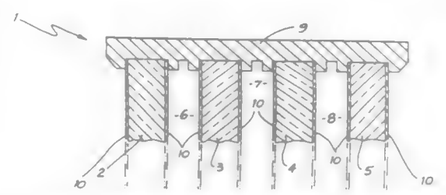
William P. Stephinson, 14 Treatts Road, Lindfield, NSW 2070, Australia

Continuation of Ser. No. 646,759, Jan. 14, 1991, abandoned. This application Jun. 14, 1993, Ser. No. 79,137

Claims priority, application Australia, Jul. 18, 1988, PI 9361

Int. Cl.[5] E06B *3/24*

U.S. Cl. 428—34 **4 Claims**



1. A bullet resistant glass screen consisting essentially of a plurality of sheets of glass, each sheet of glass having a front and rear surface to each of which is applied a shatter resistant film thereby defining a laminate, said shatter resistant film being a means for increasing the resistance of the sheet to shattering, each laminate being separated from a neighboring laminate by a separation in the range 1–100 mm. as measured between opposed surfaces and wherein said separation between each laminate is filled with air.

5,368,905

HEAT-SENSITIVE INDICATOR

Shigemi Ohno, Saitama, Japan, assignor to Nichiyu Giken Kogyo Co., Ltd., Saitama, Japan

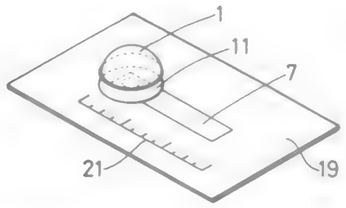
Filed Feb. 5, 1993, Ser. No. 14,239

Int. Cl.[5] B29D *22/00, 23/00*

U.S. Cl. 428—34.1 **11 Claims**

1. A heat-sensitive indicator wherein a colored heat-fusible substance is accommodated in an inner hollow portion of a projection which is formed from a film collapsible by application of an external pressure such as a finger-pressure, an opening of the hollow portion is sealed with a cover collapsible through the application of the foregoing pressure, and an absorber, the absorber extending to an area outside of the

hollow portion, in which the colored heat-fusible substance in the molten state can penetrate through the cover and together



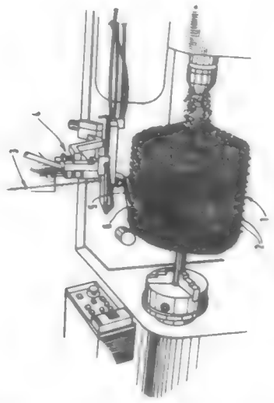
with a carrier permeate into the area outside of the cover of the hollow portion.

5,368,906

DEVICE FOR THE THERMIC PROTECTION OF THE INTERNAL WALL OF A HOLLOW STRUCTURE SUBJECTED TO AN ABLATIVE FLOW AND ITS PRODUCTION METHOD

Christiane Ferrier née Pegot, Igny, and Jean-Marie Vernotte, Vanves, both of France, assignors to Aerospatiale Societe National Industrielle, Paris, France

Filed Aug. 13, 1991, Ser. No. 744,100
Claims priority, application France, Aug. 14, 1990, 90 10322
Int. Cl.[5] B65H *54/64;* B32B *5/12*
U.S. Cl. 428—34.5 6 Claims



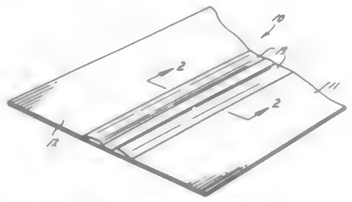
1. A device for thermically protecting the internal wall of a hollow structure subjected to an ablative flow at a high temperature in the presence of vibrations, said device comprising a three-dimensional structure and a binder, said three-dimensional structure comprising a fibrous wound armature of reinforcement picots of refractory fibers and refractory wires having plush loops, the reinforcement picots extending radially in the three-dimensional structure and in a spirally wound form with spaces between adjacent reinforcement picots which define helical chutes, the reinforcement picots having one or more of orientation and pitch determined with respect to the direction of the ablative flow in the hollow structure, and the refractory wires being in the helical chutes to provide said armature.

5,368,907

DRY WALL TAPE

John S. Conboy, 2235 Devonsbrook Dr., Chesterfield, Mo. 63005

Continuation-in-part of Ser. No. 725,284, Jul. 3, 1991, abandoned, which is a continuation-in-part of Ser. No. 385,718, Jul. 27, 1989, Pat. No. 5,037,686. This application Mar. 29, 1993, Ser. No. 38,857
Int. Cl.[5] B32B *3/08*
U.S. Cl. 428—43 9 Claims



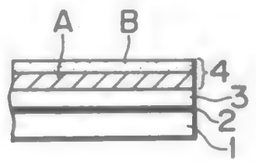
1. A dry wall tape comprising
(a) a thin paper base,
(b) a pair of opposed longitudinal beads positioned on the upper surface of the base and equally spaced from each other on each side of the longitudinal centerline of the base, the area on the base between the beads being open,
(c) the inside edges of the beads being the radii of circles based on the surface of the base, the distance between centers of said circles being about 2 times the radius times the $\sqrt{2}$.

5,368,908

OPTICAL INFORMATION RECORDING MEDIUM

Wasaburo Ohta; Isamu Orima; Masashi Nakazawa, all of Yokohama; Yuzi Onodera, and Kazuhiro Umeki, both of Hanamaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 8, 1991, Ser. No. 727,067
Claims priority, application Japan, Jul. 9, 1990, 2-181052; Jan. 14, 1991, 3-014866; Jun. 14, 1991, 3-143452
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 12 Claims



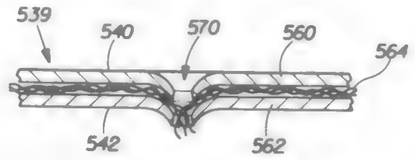
1. An optical information recording medium, for writing in and reading out information by means of a laser beam, comprising a recording layer, an anti-reflection layer structure formed on an outer surface section on which the laser beam is directed to be focused, on said recording layer, said anti-reflection layer structure comprising one or more transparent electroconductive film layers.

5,368,909

FLUID-PERVIOUS PLASTIC WEB HAVING IMPROVED FLUID DRAINAGE

Fred M. Langdon, Cincinnati; John B. Burchnall, West Chester, and Gregory B. Hyde, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 2, 1993, Ser. No. 42,364
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—137 20 Claims



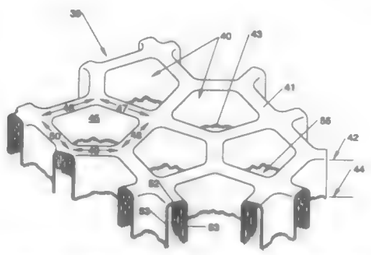
1. A fluid pervious laminate web suitable for use as a topsheet on an absorbent article, said web having a first surface and a second surface, said web comprising:
(a) a first layer or polymeric film material;
(b) a second layer of polymeric film material secured to and underlying said first layer of polymeric film material;
(c) an intermediate layer of fibrous material positioned between said first layer and said second layer forming a laminate structure, said fibrous material extending below said second surface of said web; and
(d) a plurality of capillaries extending from said first surface to said second surface of said web for the transmission of fluids through said web.

5,368,910

MACROSCOPICALLY EXPANDED PLASTIC WEB HAVING IMPROVED FLUID DRAINAGE

Fred M. Langdon, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 2, 1993, Ser. No. 42,365
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—137 10 Claims



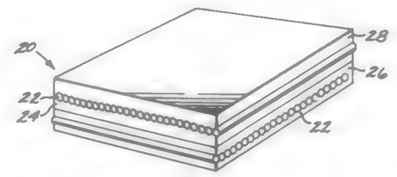
1. A three-dimensional, macroscopically expanded, fluid pervious web suitable for use as a topsheet on an absorbent article, said web having a first surface and a second surface, said web comprising:
(a) a first layer of polymeric film material, said first layer having an inner surface and an outer surface;
(b) a second layer of fibrous material secured to said inner surface of said first layer of polymeric material, said fibrous material extending below said second surface of said web; and
(c) a plurality of capillaries extending from said first surface of said web to said second surface of said web for the transmission of fluids through said web, each of said capillaries originating as an aperture in said first surface of said web and having a continuously interconnected sidewall between said first and said second surfaces, said continuously interconnected sidewall terminating to form an aperture in said second surface.

5,368,911

METHOD FOR FABRICATION OF COMPOSITE MATERIALS AND COMPOSITE

Seetharamaiah Mannava, Cincinnati; Vanon D. Pratt, Hamilton, both of Ohio; Henry MacLaren, Marblehead; Joseph J. Jackson, Topsfield, both of Mass., and Patrick M. Kenney, Akron, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 27, 1992, Ser. No. 858,925
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—167 20 Claims



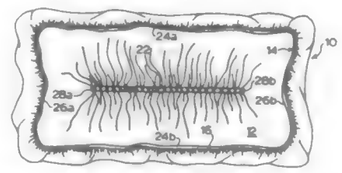
1. A method for manufacturing a composite material, comprising the steps of:
furnishing a layer of a matrix material;
forming a groove in the matrix-material layer using a laser to remove material from the layer of matrix material in the form of a groove; and placing a reinforcement into the groove.

5,368,912

PROTECTIVE COVER

Paul H. Reaves, Durham, N.C., assignor to Reaves & Company, Inc., Durham, N.C.

Filed Jan. 3, 1994, Ser. No. 176,534
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—192 4 Claims



1. An expandable and contractible protective cover comprising:
(a) a single thin, flexible, air permeable, rectangular sheet having a length and width corresponding to the length and width of the largest of a range of large and small size vehicles suited to being protected by said cover and having a continuous perimeter defined by side and end edges of said sheet;
(b) a first continuous elastic strip of uniform width and of a length when relaxed which is substantially less than the length of the perimeter of said sheet, said first elastic strip being permanently attached to said perimeter in a manner permitting said perimeter to expand and contract in correspondence with the said range of large and small size vehicles over which said cover is fitted;
(c) a second continuous elastic strip of uniform width and of a length when relaxed which is substantially less than the length of said sheet and permanently attached to one side of said sheet in a lengthwise extending location in which

the longitudinal axis of said second elastic strip coincides with the central longitudinal axis of said sheet;

(d) said cover when relaxed having width and length dimensions less than the width and length dimensions of the smallest of said range of vehicles to be covered; and

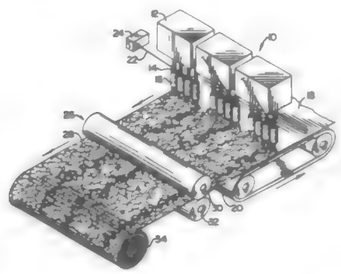
(e) said strips adapting both the perimeter and central longitudinal portions of said sheet to expand and contract thereby enabling said protective cover to fit snugly around any of the said range of large and small size vehicles.

5,368,913

ANTISTATIC SPUNBONDED NONWOVEN FABRICS

Albert E. Ortega, Pensacola, Fla., assignor to Fiberweb North America, Inc., Simpsonville, S.C.

Filed Oct. 12, 1993, Ser. No. 133,892
Int. Cl.[5] B32B *27/14*
U.S. Cl. 428—198 **20 Claims**



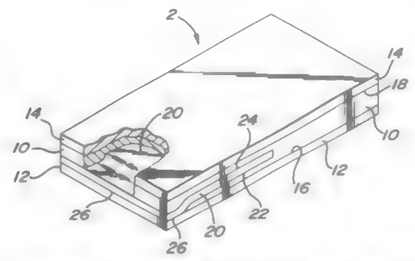
1. An antistatic spunbonded nonwoven fabric comprising a plurality of substantially continuous electrically nonconductive filaments formed of a thermoplastic polymer, a plurality of electrically conductive filaments distributed among said electrically nonconductive filaments throughout said fabric, and a multiplicity of discrete bond sites bonding together said electrically nonconductive and said electrically conductive filaments to form a coherent fabric.

5,368,914

VIBRATION-DAMPING STRUCTURAL COMPONENT

David J. Barrett, Erdenheim, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1993, Ser. No. 25,535
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—201 **9 Claims**



1. A laminated composite capable of damping a given known mode of vibration, comprising:

two outer structural layers of stiffness material positioned essentially parallel to each other;

viscoelastic material sandwiched between said two outer structural layers of stiffness material; and

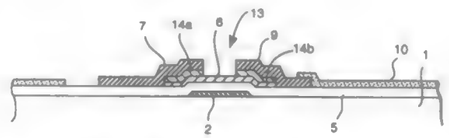
an inner layer of stiffness material having two predominant surfaces, positioned between said two outer structural layers of stiffness material and fixed along an edge of one of the two predominant surfaces thereof to one of said two outer structural layers of stiffness material, and having the remainder of the two predominant surfaces fixed to the viscoelastic material.

5,368,915

ACTIVE MATRIX SUBSTRATE

Tohru Ueda, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 836,404
Claims priority, application Japan, Aug. 30, 1991, 3-220627
Int. Cl.[5] H01B *3/12*
U.S. Cl. 428—209 **7 Claims**



1. An active matrix substrate comprising thin film transistors and storage capacitors arranged in a matrix,

wherein each of the storage capacitors includes a pair of electrodes facing each other and an insulating film interposed therebetween, one of the pair of electrodes being connected to one of said thin film transistors, and

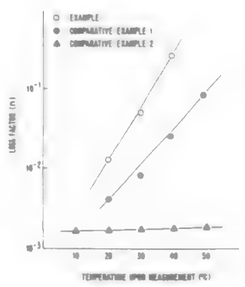
wherein the insulating film is a perovskite oxide expressed by a formula ABO_3 where A is selected from a group of Sr, Ba, Pb, Ca, La and Nd, B is selected from a group of Ti, Zr, V, Bi, Co and Ir, and O is oxygen, and said insulating film is a thin film deposit.

5,368,916

LAMINATED VIBRATION-DAMPING MATERIAL

Jun Fujimoto; Tetsuya Tamura, both of Tokyo; Toshikazu Furihata, Chiba; Youhei Suzuki, Chiba, and Kakutaro Kauchi, Chiba, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 7, 1992, Ser. No. 865,028
Claims priority, application Japan, Apr. 8, 1991, 3-075059
Int. Cl.[5] B32B *27/00;* **F16F** *15/02*
U.S. Cl. 428—215 **21 Claims**



1. A laminated vibration damping material comprising a layer of a thermosetting resin as a core layer, and a first and a second heat resistant film adhesive to the core layer, the core layer being sandwiched between the first and second heat resistant films.

5,368,917

ACOUSTIC PROTECTIVE GLAZING FOR A VEHICLE

Marc Rehfeld, Ezanville, and Michel Canaud, Paris, both of France, assignors to Saint Gobain Vitrage International, Paris, France

Continuation of Ser. No. 491,595, Mar. 12, 1990, abandoned.
This application Nov. 4, 1993, Ser. No. 145,662
Claims priority, application France, Mar. 10, 1989, 8903137
Int. Cl.[5] B32B *7/02;* **B60J** *1/02*
U.S. Cl. 428—215 **6 Claims**

1. An acoustic protective glazing for a vehicle comprising:

a first glass sheet;

a second glass sheet;

said first and second glass sheets positioned so as to form an interlayer region between said first and second glass sheets, wherein the interlayer region. Comprises a plastic interlayer sheet having a flextural damping greater then 0.15;

wherein at least one of the thickness of at least one of said glass sheets and the composition and dimensions of said interlayer region are chosen such that said protective glazing attenuates frequencies higher than 800 Hz and has an acoustic transmission loss which does not differ for any frequency by more than 5 decibels from an increasing reference figure of 9 dB per octave up to 2000 Hz and of 3 dB per octave at higher frequencies, and wherein one of said first and second glass sheets each has a thickness less than 3 mm and another of said first and second glass sheets has a thickness less than 4 mm.

5,368,918

ABSORBENT MATERIAL COMPRISING ABSORBENT POLYMERIC PARTICULATE MATERIAL COATED WITH SYNTHETIC PULP

Nobuyuki Harada, Suita; Kazumasa Kimura, Ikoma, and Tadao Shimomura, Toyonaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Aug. 29, 1991, Ser. No. 752,054
Claims priority, application Japan, Aug. 30, 1990, 2-226679; Aug. 30, 1990, 2-226680; Aug. 30, 1990, 2-226681
Int. Cl.[5] A61F *13/15, 13/20;* **B32B** *5/16*
U.S. Cl. 428—219 **18 Claims**

1. An absorbent material comprising a physical mixture of an absorbent polymer and 1 to 80 parts by weight per 100 parts by weight of said absorbent polymer of synthetic pulp, said synthetic pulp being a fine, branched discontinuous fibrous material made from thermoplastic resin, the absorbent polymer being in the form of particles and the surface of said absorbent polymer being coated with said synthetic pulp.

5,368,919

PROPYLENE POLYMER COMPOSITIONS CONTAINING HIGH MELT STRENGTH PROPYLENE POLYMER MATERIAL

Leroy V. Robeson, New Castle County, Del., assignor to HIMONT Incorporated, Wilmington, Del.

Filed May 20, 1993, Ser. No. 64,616
Int. Cl.[5] C08L *23/10, 23/16;* **D01F** *6/46;* **D02G** *3/00*
U.S. Cl. 428—224 **18 Claims**

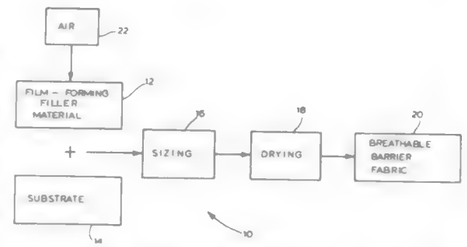
1. A propylene polymer composition consisting essentially of (A) a propylene polymer resin having a melt flow rate of from about 5 to 50 dg/min selected from the group consisting of (i) a propylene homopolymer having an isotactic index greater than 80, and (ii) a random copolymer of propylene and olefin selected from ethylene and C_{4-10} alpha-olefins and (B) from 0.05 to 0.2% of a normally solid, high molecular weight, gel-free, propylene polymer material having a branching index of from 0.2 to 0.9 and significant strain hardening elongational viscosity, and obtained from an irradiated or peroxide treated normally solid, high molecular weight, linear propylene polymer resin.

5,368,920

NONPOROUS BREATHABLE BARRIER FABRICS AND RELATED METHODS OF MANUFACTURE

Walter E. Schortmann, Cumberland, R.I., assignor to International Paper Company, Purchase, N.Y.

Continuation of Ser. No. 777,891, Oct. 16, 1991, abandoned.
This application Jun. 9, 1993, Ser. No. 74,195
Int. Cl.[5] B32B *5/16;* **D04H** *1/58*
U.S. Cl. 428—224 **14 Claims**



1. A breathable barrier fabric comprising:

a substrate, including fibers which define void spaces therein, with a film-forming clay-latex filler material sized throughout said substrate to fill said void spaces and form a continuous solid non-porous film between said fibers;

said clay-latex filler material having a density in the approximate range of 1,000 to 2,000 gm/l;

such that the barrier fabric is permeable to water vapor and impermeable to aqueous liquids and air and has a Moisture Vapor Transmission Rate in the range of 300 to 3,000 $gm/m^2/day$.

5,368,921

METAL FOIL-CLAD LAMINATE HAVING SURFACE SMOOTHNESS

Kenji Ishii; Takamasa Nakai, and Hiroyuki Matsumoto, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

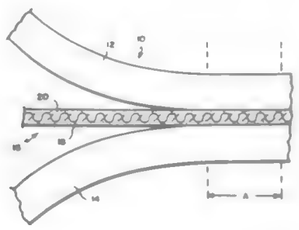
Filed Jul. 26, 1991, Ser. No. 736,341
Claims priority, application Japan, Jul. 27, 1990, 2-197743
Int. Cl.[5] B32B *17/02, 5/16, 5/06*
U.S. Cl. 428—228 **9 Claims**

1. A metal foil-clad laminate obtained by lamination molding a (i) resin-impregnated substrate comprising at least one of woven glass fabric or nonwoven glass fabric, and (ii) a metal foil, wherein said resin-impregnated substrate contains from 5 to 30% by weight of at least one inorganic filler selected from the group consisting of calcined kaolin, spherical fused silica, non-swellable synthetic mica, and a glass fine powder; the filler having an average particle diameter of from 0.1 to 5 μm and at least 90 wt % of the filler having a particle diameter of 0.02 to 5 μm; thereby providing a surface smooth metal foil-clad laminate having a diminished surface undulation attributable to the resin impregnated substrate.

5,368,922
PREPREG OF THERMOPLASTIC POLYMER PARTICLES IN LIQUID THERMOSETTABLE RESIN
Gene B. Portelli, Woodbury; William J. Schultz, Vadnais Heights; John T. Boden, White Bear Lake, and Daniel M. Kaufer, Scandia, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 808,019, Dec. 13, 1991, Pat. No. 5,276,106, which is a continuation-in-part of Ser. No. 596,769, Oct. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 467,729, Jan. 19, 1990, abandoned. This application Nov. 4, 1993, Ser. No. 147,638
Int. Cl.[5] B32B *17/04, 27/02, 27/04*
U.S. Cl. 428—229 8 Claims

1. A prepreg comprising reinforcing filaments and a hot melt coatable thermosettable resin composition comprising:
a) a thermosettable mixture that is liquid at a temperature in the range of 20° to 100° C. comprising one or more thermosettable resins and one or more curatives for the thermosettable resins and
b) resin particles of one or more amorphous thermoplastic polymers, said particles being dispersed in the thermosettable mixture at a temperature below the dissolution temperature of the particles, the particles having an average diameter in the range of 0.5 to 50 micrometers, a surface area of at least 1.0 m^2/g, and a dissolution temperature of 50° C. or higher and being essentially insoluble in the thermosettable resin at temperatures up to 15° C. below the dissolution temperature;
said resin composition being free of solvent for the thermoplastic particles and having a viscosity that decreases with increasing temperature up to a dissolution temperature and that increases with increasing temperatures at temperatures above the dissolution temperature, said amorphous particles being completely dissolved in the thermosettable resin at a temperature at least 20° C. below the cure temperature of the resin, and providing a homogeneous cured resin composition.

5,368,923
LAMINATED COMPOSITE WITH ADHESIVE CARRIER ELEMENT
Stephen W. Tippett, Bedford, N.H., assignor to Textiles Coated International, Amherst, N.H.
Filed Feb. 5, 1993, Ser. No. 14,357
Int. Cl.[5] B32B *7/10, 27/08, 31/08;* C09J *127/18*
U.S. Cl. 428—238 12 Claims



1. A laminated composite comprising:
first and second components and a bonding interlayer interposed between said first and second components, said interlayer including a non-fluoroplastic textile carrier element coated with a fluoroplastic which melts under conditions of elevated temperature and pressure to effect a bond between said first and second components, the tensile strength of said carrier element being less than the combined tensile strengths of said first and second components.

5,368,924
ANTENNA COVER FABRIC FOR MICROWAVE TRANSMISSIVE EMITTERS
Douglas P. Merrill, Jr., Hoosick Falls, and Robert F. Hamilton, Eagle Bridge, both of N.Y., assignors to AlliedSignal Inc., Morris Township, Morris County, N.J.
Filed May 22, 1992, Ser. No. 887,635
Int. Cl.[5] H01Q *1/42;* B32B *7/00, 15/00;* D03D *3/00*
U.S. Cl. 428—241 13 Claims

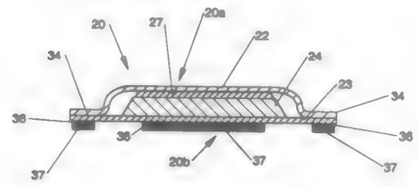
1. A coated glass fabric having improved flexibility, weatherability, ultraviolet light-stability, and moisture-resistance having coated thereon in sequence coating layers comprising:
a first layer of a mixture of a perfluoropolymer and a silicone oil, said silicone oil comprising from about 5 to about 20 wt % based on the weight of the perfluoropolymer;
a second layer of a perfluoropolymer;
a third layer of a glass or mineral filled perfluoropolymer, said glass or mineral filler comprising from about 30 to about 60 wt % based on the weight of the "third layer" perfluoropolymer;
a fourth layer of a titanium dioxide filled perfluoropolymer, said titanium dioxide comprising from about 30 to about 60 wt % based on the weight of the "fourth layer " perfluoropolymer; and
a fifth layer of a titanium dioxide filled perfluoropolymer selected from the group consisting of fluorinated ethylene-propylene, perfluoroalkoxy and mixtures thereof, said titanium dioxide comprising from about 20 to about 40 wt % based on the weight of the fifth layer perfluoropolymer.

5,368,925
BULK RECOVERABLE NONWOVEN FABRIC, PROCESS FOR PRODUCING THE SAME AND METHOD FOR RECOVERING THE BULK THEREOF
Kanji Hosokawa; Hisaya Okamura; Zenji Yoshida, all of Moriyama, and Noboru Matsui, Shiga, all of Japan, assignors to Japan Vilene Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 715,052, Jun. 12, 1991, abandoned, which is a continuation of Ser. No. 540,076, Jun. 19, 1990, abandoned. This application Sep. 18, 1992, Ser. No. 947,374
Claims priority, application Japan, Jun. 20, 1989, 1-159294; Apr. 25, 1990, 2-109184
Int. Cl.[5] D04H *1/08, 1/58;* B32B *5/16*
U.S. Cl. 428—281 11 Claims

1. A bulk-recoverable nonwoven fabric for wear comprising a high-bulk fabric batt of which constituting fibers are bonded to each other in a bulky state by an adhesive means formed of a self-crosslinking acrylic acid ester emulsion or a latex containing a crosslinking agent, and wherein said batt is fixed in a compressed state by a temporary adhesive agent having a melting temperature lower than the melting temperature of the constituting fibers, and having a recovery percentage of at least 70% and an expansion ratio of at least 5 times upon application of heat at the melting temperature of said temporary adhesive agent due to destruction of the adhesive properties of said temporary adhesive agent by the application of said heat, and a Washing resistance of Class 5 to Class 3 and a dry-cleaning resistance of Class 5 to Class 3 after the bulk is recovered; said temporary adhesive agent having a melting temperature lower than that of the constituting fibers and the adhesive means used to bond the fibers, and that the lower melting temperature of the temporary adhesive is at least 10° C. lower than the melting temperatures of the constituting fibers of the nonwoven fabric and the adhesive means for the constituting fibers; and wherein said temporary adhesive agent is a water-soluble powder resin.

3. A bulk-recoverable nonwoven fabric for wear comprising a high-bulk fabric batt of which constituting fibers are conjugated fibers having a thermally adhesive component and are bonded to each other by the thermally adhesive component in a bulky state, wherein said batt is fixed in a compressed state by a temporary adhesive agent having a melting temperature lower than the melting temperature of the conjugated fibers, and having a recovery percentage of at least 70% and an expansion ratio of at least 5 times upon application of heat at the melting temperature of said temporary adhesive agent due to destruction of the adhesive properties of said temporary adhesive agent by the application of said heat, and a washing resistance of Class 5 to Class 3 and a dry-cleaning resistance of Class 5 to Class 3 after the bulk is recovered; said temporary adhesive agent having a melting temperature lower than that of the constituting fibers and the adhesive means used to bond the fibers, and that the lower melting temperature of the temporary adhesive is at least 10° C. lower than the melting temperatures of the constituting fibers of the nonwoven fabric and the adhesive means for the constituting fibers.

5,368,926
FLUID ACCEPTING, TRANSPORTING, AND RETAINING STRUCTURE
Hugh A. Thompson, Fairfield; Tracey A. Martin, Cincinnati, and Thomas A. Inglin, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 10, 1992, Ser. No. 943,261
Int. Cl.[5] B32B *5/06*
U.S. Cl. 428—284 9 Claims



1. An absorbent article comprising:
(a) a fluid pervious topsheet, said topsheet comprising a nonwoven comprised of a plurality of hydrophilic capillary channel fibers capable of intrafiber and interfiber fluid acceptance and transport, said fibers having at least one capillary channel formed from a base and two substantially parallel walls extending from the base said topsheet having a predetermined capillary suction;
(b) a fluid impervious backsheet joined to said topsheet; and
(c) a high-suction absorbent core positioned between said topsheet and said backsheet, said core having an uppermost surface facing said topsheet and a lowermost surface facing said backsheet said absorbent core having a capillary suction greater than that of said topsheet.

5,368,927
BONDED ARTICLES COMPRISING A NONWOVEN FABRIC AND A POLYOLEFIN FILM AND THE PROCESS FOR THEIR PREPARATION
Giuseppe Lesca, and Vincenzo Giannella, both of Milan, Italy, assignors to Himont Incorporated, Wilmington, Del.
Filed Feb. 3, 1993, Ser. No. 12,815
Claims priority, application Italy, Feb. 6, 1992, MI92A000233
Int. Cl.[5] B32B *27/32;* C08F *297/08*
U.S. Cl. 428—288 4 Claims

1. A flexible, soft and noiseless article comprising nonwoven polypropylene fabric directly bonded to a film of a heterophasic polymer composition comprising:
A) 10–60% of polypropylene homopolymer with isotactic index higher than 80, or crystalline copolymer of propylene with ethylene and/or an α-olefin having 4–10 carbon atoms, containing 85% or more of propylene and having isotactic index of ≧80;
B) 3–25% of ethylene-propylene copolymer insoluble in xylene at ambient temperature; and
C) 15–87% of a copolymer of ethylene with propylene and/or an α-olefin having 4–10 carbon atoms, and optionally a diene, containing 20–60% of ethylene, and completely soluble in xylene at ambient temperature.

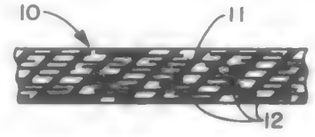
5,368,928
WATER-BASED LIQUID FOR TREATING GLASS FIBER CORD FOR REINFORCEMENT OF RUBBER, GLASS FIBER CORD FOR REINFORCING RUBBER, AND REINFORCED RUBBER PRODUCT
Akinobu Okamura, and Masato Sekiguchi, both of Tsu, Japan, assignors to Nippon Glass Fiber Co., Ltd., Mie, Japan
Filed Jun. 11, 1993, Ser. No. 75,672
Claims priority, application Japan, Jun. 11, 1992, 4-151774
Int. Cl.[5] C03C *25/02;* C08J *5/08*
U.S. Cl. 428—294 18 Claims

9. A rubber-reinforced glass fiber cord containing, as a coating, a composition consisting essentially of:
(a) a rubber latex
(b) an alkylated chlorosulfonated polyethylene latex, and
(c) a water-soluable resorcinol-formaldehyde condensate,
wherein the amount of said component (2) is 10 to 70% by weight, based on the total weight of said components (1) and (2), and the amount of said component (3) is 5 to 20% by weight, based on the total amount of said components (1) and (2).

5,368,929
HIGH TEMPERATURE INSULATION FOR LIQUID-FILLED TRANSFORMERS
Paul E. Parker, R.R. 13, Box 49, Concord, N.H. 03301; Martin H. Fox, R.R. 1, Box 240R; Robert H. Turpin, 42 Thompson Park, both of Franklin, N.H. 03235, and Thomas M. Golner, W227 N2242 Lakeview Dr., Pewaukee, Wis. 53072
Filed Feb. 9, 1993, Ser. No. 15,126
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—305.5 6 Claims

1. A high temperature insulation for liquid filled transformers comprising:
a thermally stable resin saturant that is capable of withstanding being immersed in transformer oil for 2000 hours at 130° Celsius without degrading, that has a maximum moisture content of 0.7%, and that does not generate water when heat aged in transformer oil;
a fiber reinforced substrate, wherein said substrate is a base for said saturant, and said saturant is impregnated into the said substrate and is run through a heated tower to cure said resin saturant to form a micro-porous structure no greater than 0.005 inches thick.

5,368,930
THIN ELASTOMERIC ARTICLE HAVING INCREASING PUNCTURE RESISTANCE
C. Robert Samples, 300 Kenmore Blvd., Akron, Ohio 44301
Continuation of Ser. No. 792,453, Nov. 15, 1991, abandoned. This application Mar. 15, 1993, Ser. No. 32,438
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—323 9 Claims



1. An article of clothing characterized by increased resistance to puncture, wherein the article of clothing comprises an elastomeric sheet, said sheet comprising an elastomeric matrix, at least a portion of said elastomeric matrix further having at least two layers of non-elastomeric platelets embedded in said matrix such that said elastomeric matrix fills the volume be-

tween platelets and is adhered to each said platelets, each said platelet having a thickness aspect that is smaller than either a width or a length aspect of said platelet, whichever is smaller, said layers embedded in said matrix such that the thickness aspect of each platelet is disposed essentially parallel to the thickness of said sheet and wherein the thickness of each said particle is in the range of from about 1/5 times the width or the length to about 1/500 times the width or length.

5,368,931

LITHOGRAPHIC PRINTING PLATE PRECURSOR OF DIRECT IMAGE TYPE

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

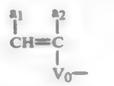
Filed Jul. 9, 1992, Ser. No. 910,968

Claims priority, application Japan, Jul. 10, 1991, 3-169828; Aug. 30, 1991, 3-220275; Sep. 11, 1991, 3-231880

Int. Cl.[5] G03G *7/00*

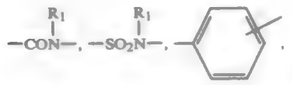
U.S. Cl. 428—327 **19 Claims**

1. A direct image type lithographic printing plate precursor, comprising a support and an image receptive layer on the support, wherein the image receptive layer contains a matrix resin and dispersed grains obtained by subjecting a monomer and a monofunctional polymer to a dispersion polymerization reaction in a non-aqueous solvent, wherein the monomer is soluble in the non-aqueous solvent, but insoluble after polymerization, and the monomer contains one polymerizable double bond and at least one functional group capable of producing at least one polar group, wherein the monofunctional polymer comprises a polymer chain containing a repeating unit containing a silicon atom-containing substituent, a fluorine atom-containing substituent or combinations thereof, wherein only one end of the polymer chain has bonded thereto a group containing a polymerizable double bond, the polymerizable double bond-containing group being represented by formula (I):



(I)

wherein V_o is —O—, —COO—, —OCO—, —CH_2OCO—, —CH_2COO—, —SO_2—,



—CONHCOO— or —CONHCONH—, where R_1 is a atom or a hydrocarbon group containing 1 to 18 carbon atoms, and a_1 and a_2 may be the same or different and each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, —COO—R_2 or —COO—R_2 bonded through a hydrocarbon group, where R_2 is a hydrogen atom or an unsubstituted or substituted hydrocarbon group, and wherein the dispersed grains have a mean grain diameter of 0.05 to 1.0 μm and are present in a proportion of 1 to 80 parts by weight per 100 parts by weight of the matrix resin.

5,368,932

BIAXIALLY ORIENTED POLYESTER FILM FOR MAGNETIC RECORDING MEDIA CONTAINING THETA OR MIXED ALPHA PLUS GAMMA ALUMINUM OXIDE AND INERT ORGANIC PARTICLES

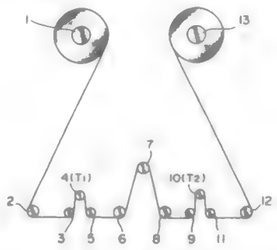
Hirofumi Murooka, Sagamihara; Sumio Kato, Hachioji, and Masami Etchu, Yokohama, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 806,288, Dec. 31, 1991, Pat. No. 5,252,388. This application Jun. 11, 1993, Ser. No. 74,593

Claims priority, application Japan, Dec. 13, 1990, 2-410167

Int. Cl.[5] G11B *5/00*

U.S. Cl. 428—327 **19 Claims**



1. A biaxially oriented polyester film for magnetic recording media, which comprises:

(A) 0.05 to 1.0% by weight of θ-aluminum oxide having an average particle diameter in the range of from 0.02 to 0.3 μm and a specific surface area in the range of from 50 to 120 m^2/g, and

(B) 0.01 to 1.5% by weight of inert organic particles having an average particle diameter which is in the range of from 0.1 to 1.5 μm and greater than the average particle diameter of the θ-aluminum oxide.

5,368,933

SUPERPARAMAGNETIC FINE PARTICLES OF IRON OXIDE AND MAGNETIC RECORDING MEDIA CONTAINING SAID PARTICLES

Koso Aoki, Hiroshima; Masaaki Fukuganchi, Aki; Tomoyuki Imai; Nanao Horiishi, both of Hiroshima, and Kazuyuki Hayashi, Hiroshima, all of Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Division of Ser. No. 657,733, Feb. 20, 1991, Pat. No. 5,236,783. This application Apr. 19, 1993, Ser. No. 47,453

Claims priority, application Japan, Feb. 21, 1990, 2-42177; Sep. 28, 1990, 2-62205

Int. Cl.[5] B32B *5/16*; G11B *5/70*

U.S. Cl. 428—329 **2 Claims**



1. A magnetic recording medium comprising a substrate and a coating layer which is disposed on said substrate and contains magnetic particles, carbon black particles, superparamagnetic particles of iron oxide having a residual magnetization of almost zero, and a binder resin, wherein the total amount of said carbon black particles and said superparamagnetic particles of iron oxide is 0.1 to 10% by weight based on the weight of said magnetic particles, and the weight ratio of said superparamagnetic particles of iron oxide to the total amount of said superparamagnetic particles and said carbon black particles is 10 to 90/90.

5,368,934

COMPOSITE MATERIALS

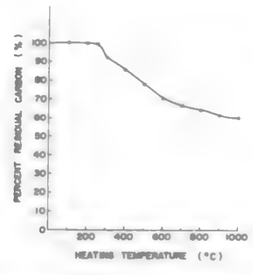
Takayoshi Torii, Ichikawa; Minoru Sugita, Minato, and Toshiyuki Tachikawa, Fujieda, all of Japan, assignors to Shimizu Corporation and Yamato Refractories & Co., Ltd., both of Japan

Continuation of Ser. No. 703,775, May 21, 1991, abandoned. This application Jul. 19, 1993, Ser. No. 92,934

Claims priority, application Japan, May 21, 1990, 2-130570

Int. Cl.[5] C08G *8/04*; D02G *3/00*

U.S. Cl. 428—372 **1 Claim**



1. A composite material for concrete reinforcement comprising a matrix of a mixture of a resol-type phenolic resin produced by reacting a phenol with an aldehyde in the presence of a base catalyst, said resol-type phenolic resin being modified with an aromatic hydrocarbon resin having a degree of aromatic substitution of 5–50% by weight and an inorganic filler, said matrix incorporated in an inorganic fiber or heat-resistant organic fiber in the form of a continuous fiber roving,

wherein said filler is selected from the group consisting of refractory fines, aluminum phosphate powder and mixtures thereof,

wherein the solid content of said resin is present in an amount of from 30 to 70% by weight of the total amount of the resin solid content and the filler, and said filler is present in an amount of from 30 to 70% by weight of the total amount of the resin solid content and the filler and

wherein the weight ratio of fiber to the matrix materials is from 1:0.5 to 1:4.

5,368,935

HEAT RESISTANT INSULATED WIRE AND METHOD OF PREPARING THE SAME

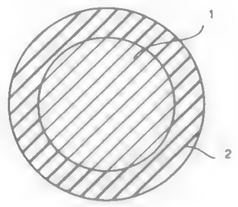
Shinji Inazawa, and Kouichi Yamada, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Feb. 14, 1994, Ser. No. 195,611

Claims priority, application Japan, Feb. 12, 1993, 5-023143

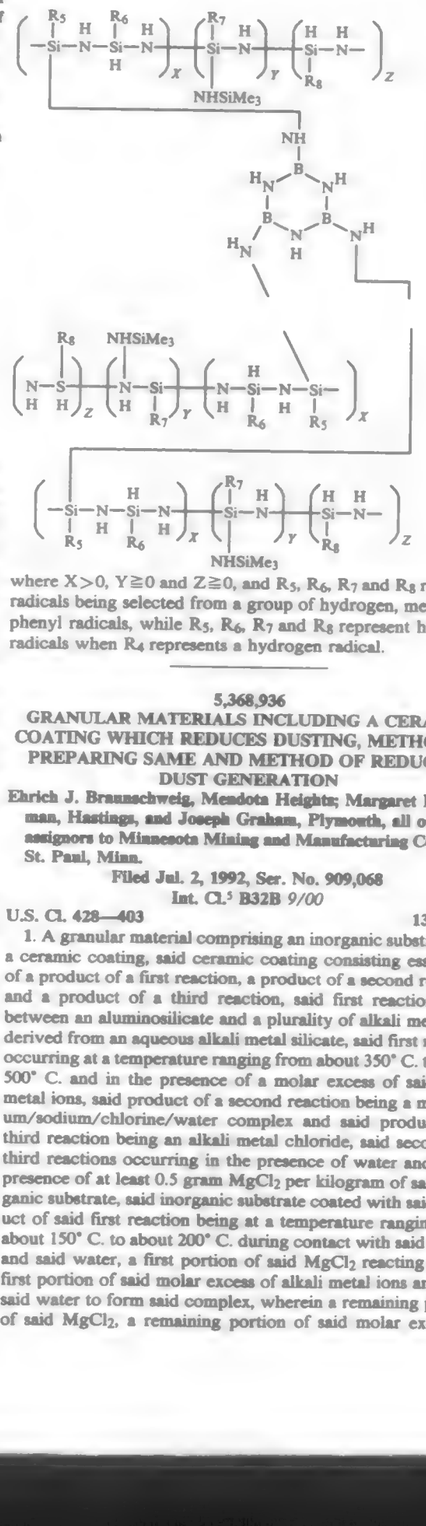
Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—375 **4 Claims**



1. A heat resistant insulated wire including a base material consisting of an electrical conductor, and an insulating layer being formed on a surface of said base material,

said insulating layer containing a third polymer obtained by heating a second polymer being expressed in the following formula at a temperature of at least 300° C. and not more than 500° C.:



where X>0, Y≧0 and Z≧0, and R_5, R_6, R_7 and R_8 represent radicals being selected from a group of hydrogen, methyl and phenyl radicals, while R_5, R_6, R_7 and R_8 represent hydrogen radicals when R_4 represents a hydrogen radical.

5,368,936

GRANULAR MATERIALS INCLUDING A CERAMIC COATING WHICH REDUCES DUSTING, METHOD OF PREPARING SAME AND METHOD OF REDUCING DUST GENERATION

Ehrich J. Braunschweig, Mendota Heights; Margaret M. Nauman, Hastings, and Joseph Graham, Plymouth, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 2, 1992, Ser. No. 909,068

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—403 **13 Claims**

1. A granular material comprising an inorganic substrate and a ceramic coating, said ceramic coating consisting essentially of a product of a first reaction, a product of a second reaction, and a product of a third reaction, said first reaction being between an aluminosilicate and a plurality of alkali metal ions derived from an aqueous alkali metal silicate, said first reaction occurring at a temperature ranging from about 350° C. to about 500° C. and in the presence of a molar excess of said alkali metal ions, said product of a second reaction being a magnesium/sodium/chlorine/water complex and said product of a third reaction being an alkali metal chloride, said second and third reactions occurring in the presence of water and in the presence of at least 0.5 gram $MgCl_2$ per kilogram of said inorganic substrate, said inorganic substrate coated with said product of said first reaction being at a temperature ranging from about 150° C. to about 200° C. during contact with said $MgCl_2$ and said water, a first portion of said $MgCl_2$ reacting with a first portion of said molar excess of alkali metal ions and with said water to form said complex, wherein a remaining portion of said $MgCl_2$, a remaining portion of said molar excess of

alkali metal ions, the complex and the alkali metal chloride are all dispersed within the ceramic coating, and wherein said alkali metal chloride is present in an amount sufficient to give said granular material an alkalinity of not less than about −2.0 but no more than about +2.0, and said alkali metal chloride and said complex are present amounts sufficient to render a dust value of not more than about 500 particles per cubic centimeter.

5,368,937

IMPROVED CARBON CONTAINING THIN FILM FORMED BY INCREASING BIAS VOLTAGE DURING A PLASMA CVD PROCESS

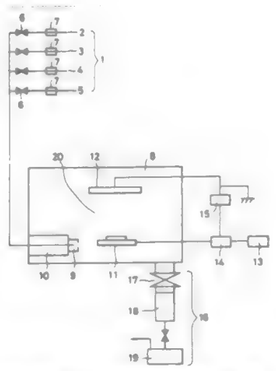
Kenji Itoh, Zama, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 311,845, Feb. 17, 1989, Pat. No. 4,996,079. This application Dec. 12, 1990, Ser. No. 626,435

Claims priority, application Japan, Feb. 26, 1988, 63-43414; Mar. 2, 1988, 63-50397

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—408 **6 Claims**



1. A carbon film on a substrate formed by the process of:

placing an object in a reaction chamber on one of a pair of electrodes where the one electrode constitutes a substrate;

introducing a reaction gas comprising carbon into said reaction chamber;

inputting rf power to the pair of electrodes to decompose the reaction gas;

inputting a bias voltage to at least one of the pair of electrodes and depositing a coating on said object; and

increasing the bias voltage during deposition of said coating thereby increasing the hardness of the coating with respect to the thickness of the coating

wherein the entire coating is amorphous and the hardness of the coating increases away from the substrate in the direction of the thickness of the coating by said increasing the bias during deposition of the coating such that the proportion of carbon bonds based on the Sp^2 orbital is reduced.

5,368,938

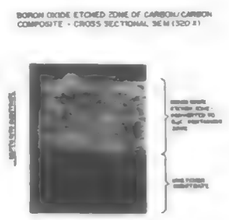
OXIDATION RESISTANT CARBON AND METHOD FOR MAKING SAME

Robert A. Holzl, LaCanada, Calif.; Benjamin H. Tilley, Eugene, Oreg.; Robert E. Benander, Sylmar, Calif.; Vincent L. Magnotta, Coopersburg, and Paul N. Dyer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 654,329, Sep. 24, 1984, abandoned. This application Jun. 11, 1986, Ser. No. 873,004

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—408 **15 Claims**



1. A coated carbon body having improved resistance to high temperature oxidation comprising:

a carbon body,

said body having a converted porous layer formed by etching and reacting said carbon body with boron oxide, said converted layer:

containing interconnecting interstices and boron carbide formed by the reaction of boron oxide and said carbon body, and

having a void volume of up to about 50 percent of the volume originally occupied by the carbon layer,

an intermediate glass forming coating within said converted layer which partially fills the interstices of said converted layer, and

an outer refractory coating on said intermediate coating.

5,368,939

HARD MULTILAYER COATED PRODUCT AND PROCESS FOR PRODUCING SAME

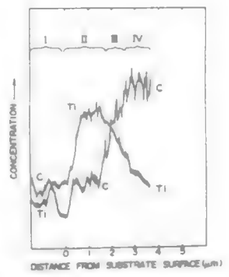
Shingo Kawamura, Shimonitikawa, and Minoru Yamada, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Division of Ser. No. 861,246, Mar. 31, 1992, Pat. No. 5,260,107. This application Jul. 6, 1993, Ser. No. 88,624

Claims priority, application Japan, Apr. 8, 1991, 3-138534

Int. Cl.[5] B32B *9/06*

U.S. Cl. 428—408 **2 Claims**



1. A hard multilayer coated product which comprises a first coating layer of a titanium compound, a second layer containing the titanium compound, the content of the titanium compound in the second layer gradually decreasing away from the first coating layer, and a third coating layer, said third coating layer comprising hard amorphous carbon as a principal component, 5–40 mol % of the titanium compound and up to 3 at. % of chlorine, said first, second and third layers being formed successively on the surface of a substrate and said titanium compound being selected from the group consisting of TiC and TiN.

5,368,940

CARBON COMPOSITE MATERIAL REINFORCED WITH CARBON FIBER AND INORGANIC FIBER

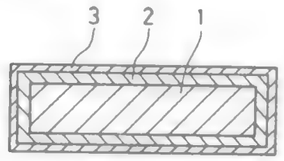
Makoto Takei, Nishinomiya; Isao Kinugawa, Osaka; Mamoru Tamura, Hirakata, and Seiichi Tashiro, Osaka, all of Japan, assignors to Ohwada Carbon Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 837,219, Feb. 18, 1992, abandoned. This application Sep. 20, 1993, Ser. No. 124,358

Claims priority, application Japan, Mar. 6, 1991, 3-038835; Aug. 6, 1991, 3-195603

Int. Cl.[5] B32B *9/00, 31/00*

U.S. Cl. 428—408 **4 Claims**



1. A carbon composite material reinforced with a carbon fiber and an inorganic fiber, comprising a core formed of a carbon fiber-reinforced carbon composite comprising a carbon fiber reinforcement and a carbon matrix which does not contain a boron compound, said core being externally covered with an inorganic fiber-reinforced carbon composite comprising an inorganic fiber reinforcement, other than carbon, and a carbon matrix.

5,368,941

DEFORMABLE, ABRASION-RESISTANT SILICONE COATING AND METHOD OF PRODUCING THE SAME

John D. Blizzard, Bay City, and Levi J. Cottington, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1992, Ser. No. 938,065

Int. Cl.[5] C08F *2/50;* **B32B** *27/36;* **C08K** *3/36;* **C08G** *77/20*

U.S. Cl. 428—412 **12 Claims**

1. A composition for forming a deformable, abrasion-resistant coating on a substrate, said composition comprising:

(A) at least one multifunctional acrylate monomer;

(B) an aminofunctional silane having the following formula:



wherein

R is an alkoxy or alkyl group having 1 to 4 carbon atoms, which R groups may be the same or different;

R′ is an alkoxy group;

Q is a divalent hydrocarbon group; and

Z is hydrogen or a monovalent hydrocarbon group;

said multifuntional acrylate monomer (A) being present in an amount greater than a two-to-one Michael adduct equivalency with respect to said aminofunctional silane (B);

substantially all of said aminofunctional silane (B) being reacted with said multifunctional acrylate monomer (A) to form a Michael adduct therefrom;

(C) colloidal silica; and

(D) one or more acrylate-terminated polyalkylene oxides;

said acrylate-terminated polyalkylene oxides (D) having a predetermined mean number of carbons between said acrylate terminals, C_n;

said composition including a predetermined weight percent of component (D), relative to the aggregate weights of components (A), (B) (C) and (D); and

wherein said C_n and said predetermined weight percent of component (D) yield a cured coating composition that exhibits a Taber 100 number of about 5 or less, a Taber 500 number of about 10 or less and elongation of more than about 5%.

5,368,942

METHOD OF ADHERING SUBSTRATES

Douglas T. Smith, Gaithersburg; Alexis Grabbe, Germantown, both of Md., and Roger G. Horn, Joslin, Australia, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 15, 1993, Ser. No. 5,217

Int. Cl.[5] B32B *7/04*

U.S. Cl. 428—420 **27 Claims**

1. A method of adhering substrates consisting essentially of:

(a) covalently modifying a smooth surface of a first substrate to present groups which are one member of a Bronsted-Lowry acid-base pair; and

(b) contacting the covalently modified surface with a smooth surface of a second substrate, wherein the smooth surface of the second substrate presents groups which are the acid-base complement of said member of a Bronsted-Lowry acid-base pair on the surface of the first substrate, whereby the smooth surface of the second substrate reformably adheres to the covalently modified surface of the first substrate and wherein the adhering of that two surfaces occurs by means of transfer of a charge between one member of a Bronsted-Lowry acid-base pair on the surface of the first substrate and its complement on the surface of the second substrate.

5,368,943

POLYURETHANE BLOCK COPOLYMER

Jamil Baghdachi, Northville, and Cheryl Van Valkenburg, Westland, both of Mich., assignors to Adco Products, Inc., Michigan Center, Mich.

Filed Dec. 20, 1991, Ser. No. 811,389

Int. Cl.[5] B32B *17/10, 27/40*

U.S. Cl. 428—423.1 **23 Claims**

13. An article comprising a glass substrate having at least one layer thereon comprising a polyurethane block copolymer comprising urethane linkages derived from polyisocyanate, at least one polyester block having terminal hydroxyl functional groups, and at least one polyacrylate or polymethacrylate block, said polyurethane block copolymer being end-capped with a silane group by reaction with isocyanate groups on said copolymer, wherein the ratio of said hydroxyl groups to isocyanate groups is approximately 1:1.4.

5,368,944

PROCESS FOR THE PRODUCTION OF A MULTICOAT PROTECTIVE AND/OR DECORATIVE FINISH

Michael Hartung, Geseke; Walter Lassmann, Münster; Ulrich Poth, Münster, and Egon Wegner, Münster, all of Germany, assignors to BASF Lacke + Farben Aktiengesellschaft, Munster, Germany

PCT No. PCT/EP92/00220, § 371 Date Sep. 3, 1993, § 102(e) Date Sep. 3, 1993, PCT Pub. No. WO92/15405, PCT Pub. Date Sep. 17, 1992

PCT Filed Feb. 1, 1992, Ser. No. 108,661

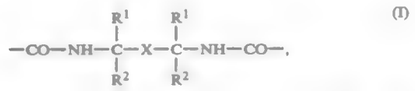
Claims priority, application Germany, Mar. 6, 1991, 4107136

Int. Cl.[5] B32B *27/00, 27/40*

U.S. Cl. 428—423.1 **6 Claims**

4. An article comprising a structure having a coating thereon wherein said coating is a multilayer coating including at least

one basecoat layer, and at least one clearcoat layer applied over the basecoat layer wherein the basecoat is derived from an aqueous pigmented paint comprising a water-thinnable polyurethane resin which contains structural units of the formula.



(I)

X representing a divalent aromatic hydrocarbon radical and R^1 and R^2 representing an alkyl radical having 1 to 4 carbon atoms, as basecoat for the production of a multicoat finish of the basecoat-clearcoat type.

5,368,945

RESIN COMPOSITION BASED ON A POLYESTER RESIN, AN AMINO RESIN AND AN EPOXY RESIN

Gerard Hardeman, Amsterdam; Wilhelmina Westerhof, Zwolle; Anthonie J. Plak, Hattem, and Anneke Beens-Onstenk, Genemuiden, all of Netherlands, assignors to Stamicarbon B.V., Netherlands

Continuation of Ser. No. 629,815, Dec. 21, 1990, abandoned. This application Jan. 12, 1993, Ser. No. 3,471

Claims priority, application Netherlands, Dec. 23, 1989, 8903155

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—458 **9 Claims**

1. A can or coil coating composition which is resistant to lactic acid comprising:

a polyester resin, which is a carboxyl-functional polyester with a number average molecular weight between 12,000 and 25,000;

an amino resin; and

an epoxy resin in a solvent;

wherein the carboxyl-functional polymer has an acid number of between 4 and 75 and a hydroxyl value of substantially zero.

5,368,946

PACKAGING MATERIAL HAVING A WAX COATING CONTAINING A STYRENE COPOLYMER

Reinhard D. Bohme, Riegelsville, and Bobby J. Lerew, Macungie, both of Pa., assignors to James River Paper Company, Inc., Milford, Ohio

Filed Apr. 19, 1993, Ser. No. 49,286

Int. Cl.[5] B32B *9/04, 9/06*

U.S. Cl. 428—484 **16 Claims**

1. Packaging material comprising a substrate having a coating comprising a blend of from about 85 to 95 percent of a hydrocarbon wax and 5 to 15 percent of a styrene/ethylene-butylene/styrene block copolymer.

5,368,947

METHOD OF PRODUCING A SLIP-RESISTANT SUBSTRATE BY DEPOSITING RAISED, BEAD-LIKE CONFIGURATIONS OF A COMPATIBLE MATERIAL AT SELECT LOCATIONS THEREON, AND A SUBSTRATE INCLUDING SAME

Paul E. Denney, State College, Pa., assignor to The Penn State Research Foundation, University Park, Pa.

Filed Aug. 12, 1991, Ser. No. 744,199

Int. Cl.[5] B22F *7/04*

U.S. Cl. 428—553 **22 Claims**

1. An article having a slip-resistant surface, comprising:

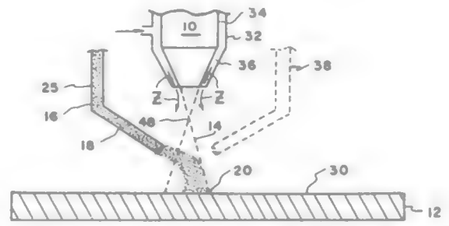
a) a base plate made of a material and having a surface portion;

b) a series of spaced raised configurations;

c) said configurations chemically bonded to said base plate and extending above said surface portion of said base plate;

d) said configurations each having been formed of molten particles;

e) said configurations each having an anchor portion and a generally upright portion;



f) each said anchor portion extending into said surface portion and comprising a weld of said base plate material uninterrupted with the corresponding configuration; and

g) each said anchor portion having a height dimension less than the height dimension of the corresponding configuration.

5,368,948

MAGNETIC MATERIALS FOR SECURITY APPLICATIONS

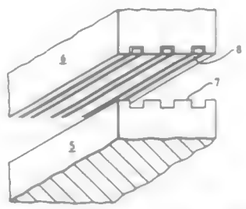
Dafydd G. Davies, Cambridge, Great Britain, assignor to Esselte Meto International Produktions, Germany

Continuation of Ser. No. 575,866, Aug. 31, 1990, abandoned. This application Apr. 9, 1993, Ser. No. 44,111

Claims priority, application United Kingdom, Jan. 9, 1989, 8900398.2

Int. Cl.[5] G08B *13/24;* **B32B** *3/00*

U.S. Cl. 428—611 **8 Claims**



1. A magnetically active tag or marker which comprises a substrate; an 'active' magnetic material which is a soft magnetic material having a high magnetic permeability and a low coercive force; and a deactivating material which is a hard or semi-hard magnetic material having a moderate or high coercive force and a moderate magnetic permeability, whereby the deactivating material, when subjected to a sufficiently high magnetizing force, is able to clamp the magnetic properties of the 'active' material so as to deactivate the 'active' material, characterized in that said deactivating material consists of nickel with a columnar crystal grain structure and substantially isotropic magnetic properties in the plane of said substrate, said deactivating material being formed by electrodeposition, electroforming or electroless chemical deposition.

5,368,949

MAGNETIC RECORDING MEDIUM HAVING SPECIFIC SUBBING LAYERS AND PROCESS FOR RECOVERY AND PROCESSING THEREOF

Akira Ushimaru; Hiroshi Hashimoto; Kazuko Hasai, and Keiichi Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1991, Ser. No. 759,293

Claims priority, application Japan, Sep. 14, 1990, 2-245812; Sep. 19, 1990, 2-249414; Dec. 25, 1990, 2-412973; Jan. 17, 1991, 3-004003; Sep. 12, 1991, 3-233441

Int. Cl.[5] G11B *5/66*

U.S. Cl. 428—694 BS **23 Claims**

1. A magnetic recording medium comprising a nonmagnetic plastic support having thereon a magnetic layer comprising magnetic particles in a binder and an optional backing layer on an opposite side of the nonmagnetic support as the magnetic layer, said magnetic recording medium further comprising a first subbing layer positioned between said nonmagnetic support and said magnetic layer, and a second subbing layer positioned between said nonmagnetic support and said backing layer, when said backing layer is present, said magnetic layer and said backing layer each having a void volume of 40% or less, and said first and second subbing layers having a higher solubility in a 0.5 wt % NaOH aqueous solution at 40° C. than that in water at 40° C. and being soluble in an alkaline aqueous solution having an initial pH of less than 13 or an alkaline aqueous solution having a concentration of 0.25N or less.

5,368,950

WATER-SOLUBLE, FILM-FORMING INORGANIC COMPOUNDS, FIREPROOF AND FIRE-RESISTANCE COMPOSITES AND FIRE-RESISTANCE, FLEXIBLE, SHEET COMPOSITE COVERING MATERIALS FORMED BY THE USE OF THE COMPOUNDS, AND FIRE-RESISTANCE-COVERING PROCESS

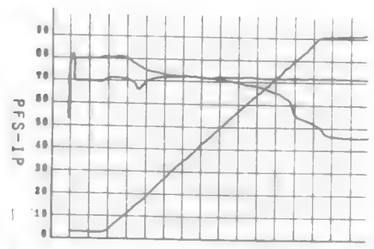
Naoto Kokuta, Himeji; Kenji Kokuta; Katsuhiro Kokuta, both of Chigasaki, and Hiroshi Kokuta, Chigasaki, all of Japan, assignors to Kohmix Co., Ltd., Japan

Division of Ser. No. 693,480, Apr. 30, 1991, Pat. No. 5,234,631, which is a division of Ser. No. 365,112, Jun. 12, 1989, Pat. No. 5,049,316. This application May 25, 1993, Ser. No. 66,223

Claims priority, application Japan, Jun. 10, 1988, 63-144397; Jun. 10, 1988, 63-144398; Jun. 10, 1988, 63-144399

Int. Cl.[5] B32B *9/04;* **C09K** *21/02;* **C09D** *5/16;* **C01B** *35/10*

U.S. Cl. 428—704 **12 Claims**



1. A fireproof or refractory composite material comprising a substrate coated or impregnated with a composition comprising a water-soluble film-forming inorganic compound, said water-soluble film-forming inorganic compound having its structure represented by the formula:

$$(AaBb)_rCcDd \text{ or } (AaBbCcDd)_sCpDq$$

wherein A is Si; B is selected from the group consisting of FH, BH_3 and B_2O_3; C is selected from the group consisting of Na, K and Li; D is selected from the group consisting of H_2O and OH; and a, b, c, d, p, q, r and s are each representative of the number of moles of their given component,

wherein the water-soluble film-forming inorganic compound is prepared from a reaction solution controlled within a temperature range of 50° C. to 100° C., wherein said reaction solution has a solid content of 10% or more by weight when its specific gravity is 1.1 or more, and wherein said water-soluble film-forming inorganic compound is applied on the substrate in a thickness of 10μ or more.

5,368,951

SOLID OXIDE FUEL CELL

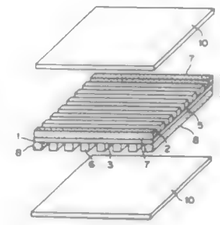
Akira Shiratori, and Hiroshi Takagi, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd.

Filed May 25, 1993, Ser. No. 66,987

Claims priority, application Japan, May 28, 1992, 4-135469

Int. Cl.[5] H01M *4/90, 8/12*

U.S. Cl. 429—30 **9 Claims**



1. A solid oxide fuel cell unit comprising:

a solid electrolyte;

an air electrode provided on a first surface of the solid electrolyte; and

a fuel electrode provided on a second surface of the solid electrolyte;

wherein the fuel electrode is made of a mixture of nickel, zirconium oxide and chromium oxide.

5,368,952

METAL SUSPENSION HALF-CELL FOR AN ACCUMULATOR, METHOD FOR OPERATING SUCH A HALF-CELL AND METAL SUSPENSION ACCUMULATOR COMPRISING SUCH A HALF-CELL

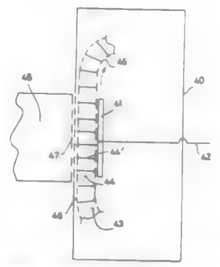
Pieter J. Sonneveld, Helmond, Netherlands, assignor to Stork Screens B.V., Boxmeer, Netherlands

Filed Jun. 11, 1992, Ser. No. 897,237

Claims priority, application Netherlands, Jun. 12, 1991, 9101015; Apr. 21, 1992, 9200717

Int. Cl.[5] H01M *2/38*

U.S. Cl. 429—67 **20 Claims**



1. Metal suspension half-cell for an accumulator at least comprising a housing for enclosing an electrolyte-containing suspension, an electrode in contact with the suspension and a membrane which can form a partition with a second half-cell which it is desired to cause to interact with the metal suspen-

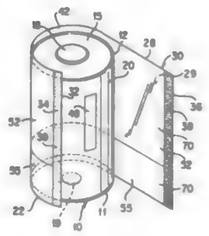
sion half-cell in order to form an accumulator, the suspension also comprising additive particles in addition to metal particles of a selected metal and electrolyte, wherein the additive particles comprise at least one ceramic material which promotes chain formation in the suspension within the half-cell and in that the suspension is essentially stationary during charging and/or discharging, wherein the ceramic material is chosen from natural and synthetic ceramic materials.

5,368,953

BATTERY CELL JACKET

John F. Zaborney, Carmel, N.Y., and William N. Tinsley, Brookfield, Conn., assignors to Duracell Inc., Bethel, Conn.

Continuation of Ser. No. 19,931, Feb. 19, 1993. This application Mar. 14, 1994, Ser. No. 214,711
Int. Cl.[5] H01M *2/02, 10/48*
U.S. Cl. 429—90 6 Claims



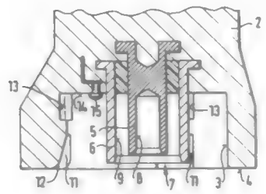
1. The combination of an electrochemical cell and a decorative label thereon; wherein the electrochemical cell has a longitudinal axis and comprises a metal casing having a cylindrical wall with first and second shoulders at opposite ends thereof; wherein the improvement comprises that said label is a heat-shrinkable film with a first edge aligned longitudinally and adhered to said cylindrical wall, a major portion of the label is adhesive free, substantially unshrunk, and tightly wrapped around said cylindrical wall; a second edge of the label overlaps and is bonded to the first edge thereof; and third and fourth edges of said label overlap said first and second shoulders; said third and fourth edges being shrunk into close contact with the ends of the electrochemical cell; and that said decorative label has indicia printed on the surface of said heat-shrinkable film contacting the cylindrical wall in a position where it can be viewed through a transparent portion thereof.

5,368,954

DEVICE ON ELECTRIC POWER HAND TOOLS

Joachim Bruns, Lichtenwald, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00750, § 371 Date Mar. 11, 1993, § 102(e) Date Mar. 11, 1993, PCT Pub. No. WO92/05919, PCT Pub. Date Apr. 16, 1992
PCT Filed Sep. 21, 1991, Ser. No. 30,127
Claims priority, application Germany, Oct. 2, 1990, 4031090
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—97 11 Claims



1. A device for mechanical and electrical coupling of batteries to electric power hand tools, comprising a locating arrangement having a substantially circular cross-section; a double bush located in said location arrangement and provided with concentrically arranged electrical power contacts connectable with electrical power contacts of batteries; and locking means provided in said locating arrangement for detachably mounting a battery casing so that the battery casing can be rotated in said locating arrangement.

5,368,955

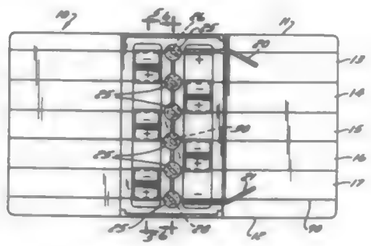
Patent Not Issued For This Number

5,368,956

MULTIPLE CELL FLAT PACK BATTERY AND SHORT PROTECTION THEREFOR

Robert G. Gruenstern, Muskego; Ronald J. Bast, Greendale, both of Wis.; Julio A. Aldecoa, Santa Cruz, and Lawrence F. Miller, Santa Clara, both of Calif., assignors to Globe-Union, Inc., Milwaukee, Wis.

Filed Feb. 8, 1993, Ser. No. 14,626
Int. Cl.[5] H01M *4/64*
U.S. Cl. 429—131 18 Claims



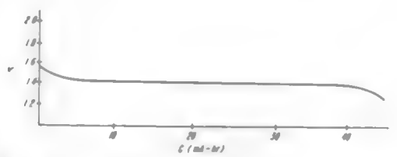
1. A rechargeable battery comprising:
a first end casing;
a second end casing;
at least one partition located between the end casings each partition having a pair of parallel and spaced apart surfaces abutting either an end casing or another partition, the abutment of two adjacent partitions, if there is more than one partition, and the abutment of a partition and each casing resulting in the creation of a cell so that at least two cells are present;
battery electrode elements, separators and electrolyte located within each cell;
each abutment being sealed; and
a plurality of support members for maintaining a constant spacing between the electrode elements within each cell, the support members being attached to at least one of a partition or a casing and passing through the electrode elements.

5,368,957

ENERGY STORAGE DEVICE

Ivan D. Kozmik, Chernovtsy; Kornel D. Tovstjuk, Lvov; Zahar D. Kovalyuk, Chernovtsy; Ivan I. Grigortchak, Ivano-Frankovsk Region; Elvria G. Krigan, Chernovtsy, and Bogdan P. Bahmatyuk, Ivano-Frankovsk Region, all of Ukraine, assignors to I. N. Frantsevich Institute for Problems in Materials Science, Kiev, Ukraine

Continuation-in-part of Ser. No. 783,886, Oct. 29, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,183
Int. Cl.[5] H01M *4/58*
U.S. Cl. 429—194 43 Claims



1. Energy storage device, comprising:
an anode including at least one species selected from the group consisting of Group Ia elements;
an electrolyte, in contact with the anode, said electrolyte being capable of transporting said species through the electrolyte; and
a cathode in electrical contact with said electrolyte, said cathode comprising a layered crystalline material of the formula $G_xMe_yCh_z$ where G is at least one guest element selected from the group consisting of Group Ia elements and $0.0 \leq x \leq 10$; Me is selected from the group consisting of Bi and Sb and $y=1, 2$; and Ch is a chalcogen element selected from the group consisting of S, Se and Te, and $z=1, 2, 3$; whereby said material has a sufficiently low defect density and appropriate impurity distribution, together sufficient to permit intercalation of at least 3 moles of lithium within van der Waals channels per one mole of said material without significant distortion of the lattice, said material further characterized in that ΔG is substantially independent of the lithium intercalation concentration.

5,368,958

LITHIUM ANODE WITH CONDUCTIVE FOR AND ANODE TAB FOR RECHARGEABLE LITHIUM BATTERY

Toshiro Hirai, and Jun-ichi Yamaki, both of Vancouver, Canada, assignors to Advanced Energy Technologies Incorporated, Burnaby, Canada

Filed Aug. 20, 1992, Ser. No. 932,593
Int. Cl.[5] H01M *4/02, 4/58*
U.S. Cl. 429—211 19 Claims

1. An anode suitable for use in a rechargeable lithium battery, wherein said anode comprises:
a first lithium sheet and second lithium sheet;
a conductive foil positioned between said first lithium sheet and said second lithium sheet, said conductive foil essentially covering all or essentially the area of the lithium sheets; and
an anode tab, wherein said anode tab is connected at a point where the tab will not disconnect during charge/discharge cycling.

16. An anode for a rechargeable lithium battery, comprising:
a first lithium sheet and a second lithium sheet each having a surface area;
a conductive foil positioned between said first lithium sheet and said second lithium sheet, said conductive foil covering essentially all the surface area of said first lithium sheet and said second lithium sheet except for a narrow edge area whereby said first lithium sheet and said second lithium sheet are in direct contact with one another over said narrow edge area, said conductive foil having a higher dissolution potential than −2.03 V and being selected from the group consisting of metal, metal alloy and metal composite foil; and
an anode tab welded directly onto the lithium in an area where the lithium does not dissolve during charge/discharge cycling.

5,368,959

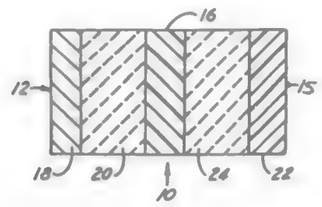
CURRENT COLLECTORS FOR ELECTROCHEMICAL CELLS AND BATTERIES

Rene Koksbang, San Jose, Calif., and Ib I. Olsen, Odense, Denmark, assignors to Valence Technology, Inc., San Jose, Calif.

Filed Mar. 30, 1993, Ser. No. 40,312
Int. Cl.[5] H01M *4/48, 4/58, 4/66*
U.S. Cl. 429—212 12 Claims

1. A battery having a positive electrode comprising a current collector, and a layer comprising an intercalation cathode active material having a reversible lithium insertion ability, said layer having a major surface in electrical contact with the current collector, the improvement comprising: the current

collector comprising a conductive polymer having a number of cyclic monomeric units selected from the group consisting



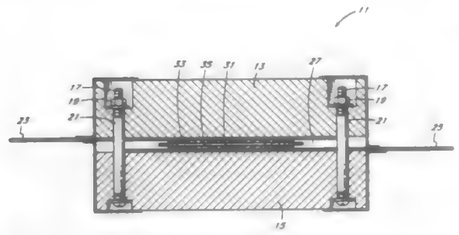
of substituted and unsubstituted: aniline, pyrrole, thiophene, phenylene and mixtures thereof.

5,368,960

UTILIZATION EFFICIENCIES BY USING HIGH SULFATE STARTING MATERIALS

John J. Rowlette, 264 Melrose Ave., Monrovia, Calif. 91016

Filed Jul. 23, 1993, Ser. No. 96,676
Int. Cl.[5] H01M *010/06, 004/22*
U.S. Cl. 429—227 **19 Claims**



1. A battery combination comprising:

a positive electrode consisting essentially of lead sulfate ($PbSO_4$);

a negative electrode consisting essentially of at least one constituent selected from the group consisting of:

tribasic lead sulfate ($3PbO'PbSO_4'H_2O$); and

monobasic lead sulfate ($PbO.PbSO_4$); and

an electrolyte in contact with said positive and negative electrodes.

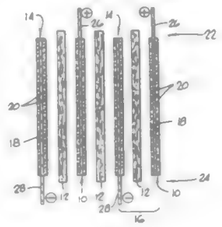
5,368,961

THIN PLATE ELECTROCHEMICAL CELL

Tristan E. Juergens, Blackhawk, Colo., assignor to Bolder Battery, Inc., Wheatridge, Colo.

Continuation-in-part of Ser. No. 945,805, Sep. 16, 1992, which is a continuation-in-part of Ser. No. 757,447, Sep. 10, 1991, Pat. No. 5,198,313, which is a continuation-in-part of Ser. No. 366,867, Jun. 14, 1989, Pat. No. 5,047,300. This application Jun. 10, 1993, Ser. No. 74,933
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] H01M *4/66*
U.S. Cl. 429—233 **31 Claims**

1. A rechargeable electrochemical cell, comprising: interleafed first and second plates of opposite polarity, the first plate including a film made primarily from lead and a porous electrochemically active paste coated onto both sides of the film, the first plate being less than about 0.01 inches thick and the first plate film being substantially non-perforated and less than about 0.005 inches thick; a polous separator interposed between the first and second plates, the separator having electro-



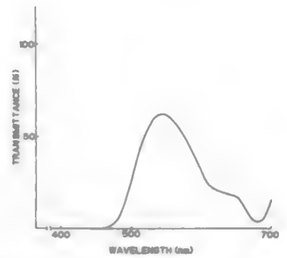
lyte in the pores; and a container to contain the plates and separator.

5,368,962

MASKING FILM

Naohiko Kiryu, Urawa; Hiroshi Maruyama; Etsuko Minezaki, both of Misato, and Yoshinori Watanabe, Chiba, all of Japan, assignors to Somar Corporation, Japan

Continuation-in-part of Ser. No. 433,169, Nov. 8, 1989, abandoned. This application Jul. 15, 1992, Ser. No. 913,414
Claims priority, application Japan, Nov. 10, 1988, 63-284163; Apr. 3, 1989, 1-85603; Apr. 11, 1989, 1-90997
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—7 **2 Claims**



1. A lightsafe masking film comprising a transparent substrate, and a transparent, lightsafe layer peelably provided over the surface of said substrate and containing a light yellow colorant and a blue colorant so that the color of the lightsafe layer is light green and the lightsafe layer can block light having a wavelength of 450 nm or less, said lightsafe layer having a maximum spectral transmittance of greater than 50% in the wavelength region of 500–570 nm.

5,368,963

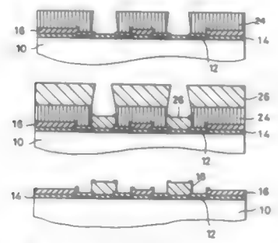
PHOTOMASK AND METHOD OF FABRICATING THE SAME

Isamu Hanyu, and Satoru Asai, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 21, 1992, Ser. No. 916,262
Claims priority, application Japan, Jul. 30, 1991, 3-190091
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—5 **11 Claims**

1. A photomask comprising light shielding areas with a light shielding layer formed on a mask substrate, and a light transmitting area defined on the mask substrate by the light shielding areas,

the light transmitting area being divided in a first area with a 90° phase shifter formed thereon for shifting phase of transmitted light by 90°+m×360° (m=0,1,2, . . .) a second area with a 270° phase shifter formed thereon for shifting phase of transmitted light by 270°+n×360° (n=0,1,2, . . .), and a third area for shifting phase of transmitted light by 0°,



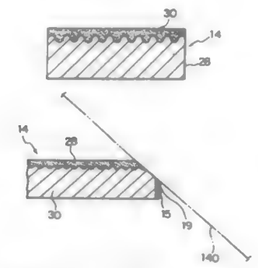
the first and the second areas being arranged without being overlapped on each other and with the light shielding areas or the third area located therebetween.

5,368,964

PROCESS FOR THE PRODUCTION OF A LITHOGRAPHIC PRINTING PLATE WITH BEVELED END PARTS

Keiichi Adachi, and Hiromichi Tachikawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 26, 1993, Ser. No. 157,299
Claims priority, application Japan, Nov. 27, 1992, 4-318574
Int. Cl.[5] G03G *13/28;* **G03F** *7/00*
U.S. Cl. 430—49 **8 Claims**



1. A process for the production of a lithographic printing plate, which comprises subjecting a lithographic printing plate transported in a predetermined direction by a transporting means to a beveling treatment of end parts thereof and then subjecting the beveled parts to a treatment for rendering hydrophilic.

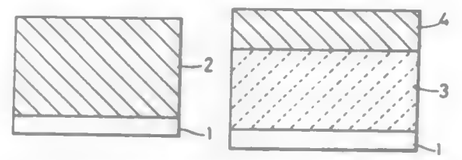
2. The process for the production of a lithographic printing plate, as claimed in claim 1, wherein the lithographic printing plate is prepared by steps of, at least, statically charging, exposing, developing with a toner, fixing the toner and removing a photoconductive layer other than the toner image.

5,368,965

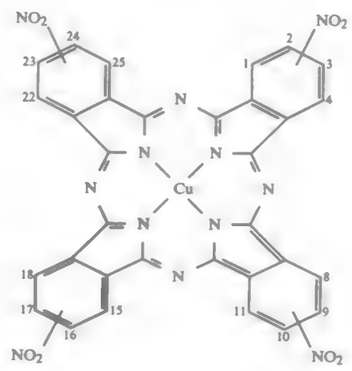
ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Mizue Fujimori; Ken Nagasawa, and Yorinobu Yamada, all of Saitama, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 52,781
Claims priority, application Japan, Apr. 24, 1992, 4-131601; May 29, 1992, 4-161639; Jun. 5, 1992, 4-171783; Feb. 5, 1993, 5-040667; Feb. 5, 1993, 5-040668; Feb. 5, 1993, 5-040669; Feb. 5, 1993, 5-040670
Int. Cl.[5] G03G *5/06, 5/043*
U.S. Cl. 430—57 **24 Claims**



1. An electrophotographic photoreceptor comprising an α-form copper phthalocyanine composition, which is obtained by treating a copper tetranitrophthalocyanine (A) having the formula I and copper phthalocyanine simultaneously to convert the crystalline form into α-form, and a photoconductive squarylium compound as the photoconductive material, the ratio of the copper tetranitrophthalocyanine (A) to the α-form copper phthalocyanine composition being 2 wt. % to 20 wt. %, and the ratio of the squarylium compound to the α-form copper phthalocyanine composition being 1 wt. % to 30 wt. %,



(I)

wherein in the formula, each nitro group is substituted at the 1-position or 4-position, 8-position or 11-position, 15-position or 18-position, and 22-position or 25-position, respectively and the copper tetranitrophthalocyanine is uniformly distributed throughout the α-form copper phthalocyanine crystals.

7. The electrophotographic photoreceptor of claim 1, which comprises two photosensitive layers, a lower photosensitive layer containing a pigment, and an upper photosensitive layer containing the α-form copper phthalocyanine composition and the photoconductive squarylium compound.

5,368,966

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY WITH INDOLE DERIVATIVE

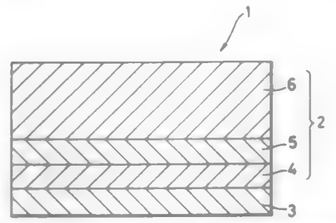
Yoichi Nakamura; Nobuyoshi Mori, and Sumitaka Nogami, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed May 12, 1993, Ser. No. 59,988

Claims priority, application Japan, May 14, 1992, 4-120901; Jul. 6, 1992, 4-177254

Int. Cl.[5] G03G *5/09, 5/047*

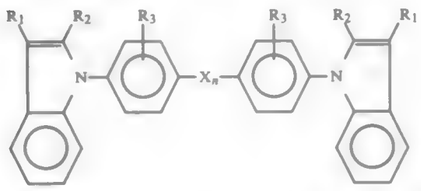
U.S. Cl. 430—59 **20 Claims**



1. A photosensitive member for electrophotography, comprising:

a conductive substrate having an electroconductive surface; and

a photosensitive layer which is laminated on said conductive substrate and which is comprised of a charge generating substance, a charge transporting substance, and a binder resin, wherein the charge transporting substance is comprised of at least one indole derivative represented by a chemical formula (I):



wherein R_1 and R_2 are groups selected from the group consisting of a hydrogen atom, and alkyl, aralkyl, allyl and alkoxy groups having 1–9 carbon atoms except that R_1 and R_2 do not both stand for hydrogen atoms; R_3 is a group selected from the group consisting of a hydrogen atom, a halogen atom, and alkyl and alkoxy groups having 1–3 carbon atoms; X is a group selected from the group consisting of alkylene, allylene, carbonyl, sulfonyl, sulfinyl and sulfide groups, and an oxygen atom; and n is an integer of 0 or 1.

5,368,967

LAYERED PHOTORECEPTOR WITH OVERCOAT CONTAINING HYDROGEN BONDED MATERIALS

Richard L. Schank, Pittsford; Damodar M. Pai, Fairport; John F. Yanus; Dale S. Renfer, both of Webster; Paul J. DeFeo, Sodus Point, and William W. Limburg, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1993, Ser. No. 172,520

Int. Cl.[5] G03G *5/047, 5/147*

U.S. Cl. 430—59 **16 Claims**

1. An electrophotographic imaging member comprising a substrate, a charge generating layer, a charge transport layer, and an overcoat layer comprising a hole transporting hydroxy arylamine compound having at least two hydroxy functional groups, a hydroxy triphenyl methane compound having at least one hydroxy functional group and a polyamide film forming binder capable of forming hydrogen bonds with said hydroxy functional groups of said hydroxy arylamine compound and said hydroxy triphenyl methane compound.

5,368,968

MODIFIED POLYESTER RESINS, A PROCESS FOR THEIR PREPARATION AND TONERS CONTAINING SUCH POLYESTER RESINS

Rolf Wehrmann, Krefeld; Matthias Köcher, Overath, both of Germany; Harald Pielartzik, Pittsburgh, Pa., and Günter Klug, Moosheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 27, 1991, Ser. No. 800,196

Claims priority, application Germany, Dec. 22, 1990, 4041520

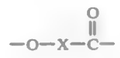
Int. Cl.[5] G03G *9/083*

U.S. Cl. 430—106.6 **5 Claims**

1. Toner for use in the development of electrostatic-charge images and magnetostatic-charge images comprising a base polymer and one or more pigments wherein the base polymer is a reaction product of

a) 1 to 99% by weight of one or more polyester blocks which have been obtained from dicarboxylic acids and dialcohols.

b) 0 to 60% by weight of compounds introducing into the reaction product groupings of the formula



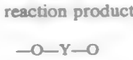
(I)

in which

X represents a hydrocarbon radical having 1 to 20 C atoms,

c) 1 to 99% by weight of a mixture of

c1) 40 to 60 mol-% of compounds introducing into the reaction product groupings of the formula (II)

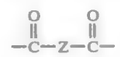


(II)

in which

Y represents an aliphatic, cycloaliphatic or araliphatic hydrocarbon radical having 2 to 25 C atoms, and

c2) 40 to 60 mol-% of compounds introducing into the reaction product groupings of the formula (III)



(III)

which

Z represents a hydrocarbon radical having 1 to 20 C atoms, and

d) 0 to 10% by weight of crosslinking agents which are trifunctional or more than trifunctional,

components a), b), c) and d) adding up to 100% by weight, and components c1) and c2) adding up to 100 mol-% of c).

5,368,969

COATING AGENT FOR ELECTROPHOTOGRAPHIC CARRIER AND CARRIER COATED THEREWITH

Yuji Yoshikawa, Annaka, and Mitsuhiro Takarada, Takasaki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

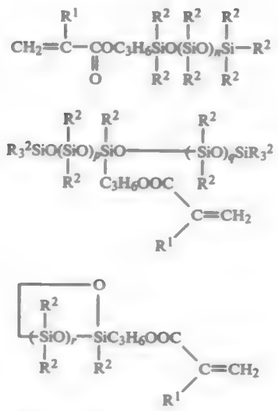
Filed Feb. 11, 1993, Ser. No. 16,273

Claims priority, application Japan, Feb. 14, 1992, 4-059779

Int. Cl.[5] G03G *9/00*

U.S. Cl. 430—108 **2 Claims**

1. A coating agent for an electrophotographic carrier comprising as a major component a copolymer of at least one monomer selected from the organopolysiloxanes represented by the following formulas 1, 2, and 3 with another polymerizable monomer:



(1)

(2)

(3)

wherein in the formulas 1, 2, and 3, R^1 is a hydrogen atom or methyl group; R^2 is C_1–C_{10} alkyl or phenyl group; n, p, and q are defined as $n \geqq 3$, $p \geqq 0$, $q \geqq 3$, and $p < q$; and r is an integer of 2–20.

5,368,970

TONER COMPOSITIONS WITH COMPATIBILIZER

Bernard Grushkin, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1993, Ser. No. 165,422

Int. Cl.[5] G03G *9/087, 9/097*

U.S. Cl. 430—110 **25 Claims**

1. A toner composition comprised of the reaction product of resin particles containing hydroxyl, or acid groups, and an alkylene-glycidyl methacrylate polymer; pigment particles, and a wax component.

5,368,971

ELECTROPHOTOGRAPHIC TONER CONTAINING A ZINC BENZOATE COMPOUND

Mitsutoshi Anzai, Ushiku; Noboru Akuzawa, Kita; Yuuji Matsuura, Tsukuba, and Genpei Sugiyama, Kita, all of Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

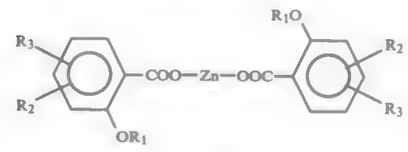
Continuation of Ser. No. 988,026, Dec. 9, 1992, abandoned, which is a continuation of Ser. No. 709,962, Jun. 4, 1991, abandoned. This application Aug. 11, 1993, Ser. No. 104,601

Claims priority, application Japan, Jun. 29, 1990, 2-169757; Mar. 8, 1991, 3-042164

Int. Cl.[5] G03G *9/097*

U.S. Cl. 430—110 **1 Claim**

1. An electrophotographic developer comprising a binder resin, a coloring material, a carrier and a charge control agent, said charge control agent being a zinc benzoate compound represented by the following general formula:



(1)

wherein R_1 represents an alkyl group; and R_2 and R_3, independently from each other, each represent an alkyl, aralkyl, aryl or alkoxy group.

5,368,972

METHOD OF PREPARING COMPOSITE PARTICLES COMPRISING ADHERING WAX PARTICLES TO THE SURFACE OF RESIN PARTICLES

Hiroshi Yamashita, Numazu; Akihiro Kotsugai, Shizuoka; Yoichiro Watanabe, Fuji; Koichi Katoh, Numazu, and Hiromitsu Kawase, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 11, 1993, Ser. No. 16,502

Claims priority, application Japan, Feb. 15, 1992, 4-061338

Int. Cl.[5] G03G *5/00*

U.S. Cl. 430—137 **20 Claims**

1. A method of preparing composite particles comprising the steps of;

(i) dispersing matrix organic resin particles having a polar group on a surface thereof in a hydrophilic organic liquid, water or mixture thereof to prepare a dispersion of said matrix organic resin particles,

(ii) dispersing a wax in a hydrophilic organic liquid, water or mixture thereof by use of a nonionic surface active agent to prepare an emulsion of said wax,

(iii) mixing said dispersion of said matrix organic resin particles and said emulsion of said wax in the presence of a surface active agent with a polarity opposite to that of said polar group on said matrix organic resin particles to obtain a dispersion in which finely-divided particles of said wax are caused to adhere to said surface of said matrix organic resin particles, and

(iv) heating said dispersion to fix said finely-divided particles of said wax on said surface of said matrix organic resin particles.

5,368,973

LIGHT-SENSITIVE ELEMENT AND PROCESS FOR PREPARATION THEREOF

Akira Hasegawa, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Oct. 30, 1991, Ser. No. 784,992

Claims priority, application Japan, Oct. 31, 1990, 2-294728

Int. Cl.[5] G03C *1/74*

U.S. Cl. 430—138 **3 Claims**

1. A process for preparing a light-sensitive element which comprises the steps of providing a dispersion of microcapsules containing at least an ethylenically unsaturated compound and a photopolymerization initiator, adding to said dispersion a solvent which swells the wall of said microcapsules and dissolves said ethylenically unsaturated compound and said photopolymerization initiator to prepare a light-sensitive solution wherein the ethylenically unsaturated compound and the photopolymerization initiator diffuse from the microcapsules to be present on and around the surface of the microcapsules, coating the light-sensitive solution on a substrate and drying the coated substrate.

5,368,974

LITHOGRAPHIC PRINTING PLATES HAVING A HYDROPHILIC BARRIER LAYER COMPRISED OF A COPOLYMER OF VINYLPHOSPHONIC ACID AND ACRYLAMIDE OVERLYING AN ALUMINUM SUPPORT

John E. Walls, and Paul R. West, both of Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1993, Ser. No. 67,459

Int. Cl.[5] G03F *7/095, 7/11*

U.S. Cl. 430—156 **10 Claims**

1. A lithographic printing plate comprising:

(1) an aluminum support;

(2) a hydrophilic barrier layer; and

(3) an image-forming layer that is capable of providing a lithographic printing surface; said hydrophilic barrier layer being in direct contact with said aluminum support and interposed between said aluminum support and said image-forming layer and being comprised of a copolymer

of about 40 to about 90 mole percent vinylphosphonic acid and about 10 to about 60 mole percent acrylamide.

5,368,975

POSITIVE-WORKING 1,2-QUINONE DIAZIDE RADIATION-SENSITIVE MIXTURE AND RECORDING MATERIAL CONTAINING URETHANE COMPOUND TO DIMINISH DEVELOPER SOLUBILITY

Andreas Elsaesser, Idstein; Hans W. Franz; Otfried Gaschler, both of Wiesbaden; Dieter Mohr, Budenheim, and Gerhard Buhr, Koenigstein, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 651,210, Feb. 6, 1991, abandoned. This application Mar. 26, 1993, Ser. No. 39,554

Claims priority, application Germany, Feb. 15, 1990, 4004719

Int. Cl.[5] G03F *7/023*

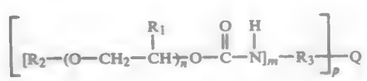
U.S. Cl. 430—165 **15 Claims**

1. A normally positive-working radiation-sensitive mixture, consisting essentially of, in admixture:

from 50 to 85% by weight, relative to the weight of the non-volatile components of the radiation-sensitive mixture, of a binder that is a polycondensation product or polymer having free phenolic hydroxyl groups, said binder being insoluble in water and soluble in aqueous-/alkaline solutions;

a 1,2-quinone diazide; and

at least one urethane compound in an amount sufficient to diminish the developer solubility of exposed regions of a layer of said mixture coated on a substrate when said layer is subjected to heat treatment, subsequently blanket-exposed and finally developed with a developer solution to produce a negative image, said at least one urethane represented by formula I:



I

in which

R_1 is hydrogen or methyl,

R_2 is hydrogen, alkyl, substituted or unsubstituted aryl, or substituted or unsubstituted arylaminocarbonyl,

R_3 is substituted or unsubstituted arylene or arylenealkylene,

Q is hydrogen, carbonyl, oxygen, sulfur, sulfonyl, $-CH_{4-p}$, or $-CR_5R_6$ in which R_5 and R_6 can be identical or different and are selected from the group consisting of hydrogen, alkyl and aryl,

m is 1, 2 or 3,

n is at least 1 and not more than 50, and

is 1, 2 or 3.

5,368,976

PIGMENT-DISPERSED COLOR-FILTER COMPOSITION COMPRISING AN ALKALI-SOLUBLE BLOCK COPOLYMER AS A BINDER

Yusuke Tajima; Nobuo Bessho; Fumitake Takinishi, all of Yokohama; Yasuaki Yokoyama, Yokkaichi, and Hideaki Masuko, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,253

Claims priority, application Japan, Mar. 27, 1992, 4-100155; Jun. 11, 1992, 4-151848; Jun. 24, 1992, 4-166165

Int. Cl.[5] G03F *7/016, 7/008, 7/033*

U.S. Cl. 430—176 **6 Claims**

1. A pigment-dispersed color-filter composition comprising an admixture of:

(A) an alkali-soluble block copolymer composed of a block having an acid group and a block having no acid group;

(B) a radiation-sensitive compound,

(C) a pigment,

(D) an organic medium, and

(E) an aliphatic or aromatic dicarboxylic acid having a molecular weight of 1,000 or less.

5,368,977

POSITIVE TYPE PHOTOSENSITIVE QUINONE DIAZIDE PHENOLIC RESIN COMPOSITION

Eiji Yoda; Hitoshi Yuasa, and Yutaka Otsuki, all of Yokohama, Japan, assignors to Nippon Oil Co. Ltd., Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,357

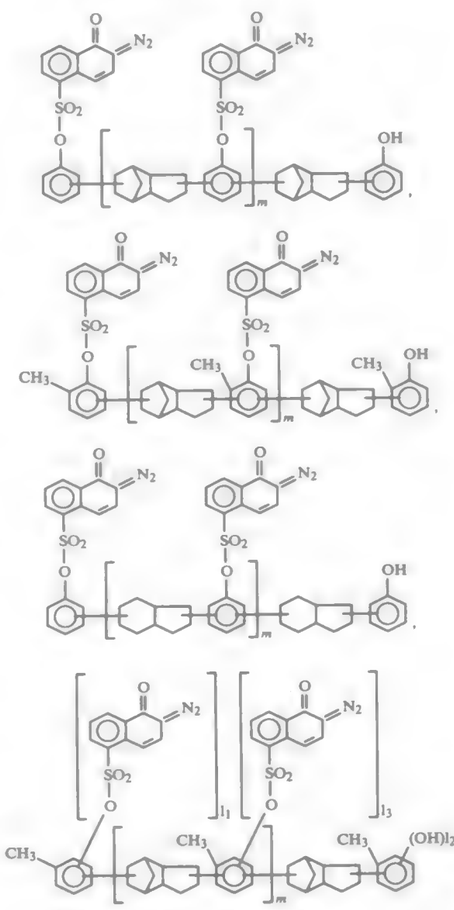
Claims priority, application Japan, Mar. 23, 1992, 4-065327

Int. Cl.[5] G03F *7/023*

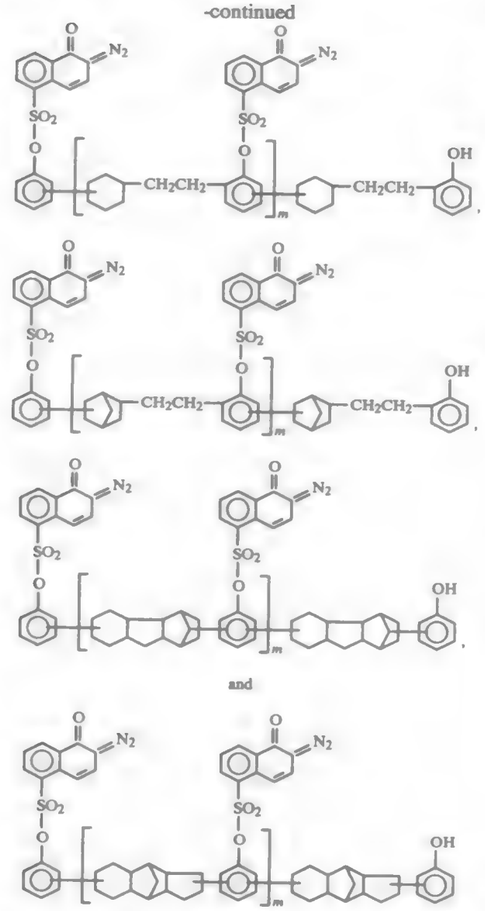
U.S. Cl. 430—190 **6 Claims**

1. A positive type photosensitive resin composition comprising:

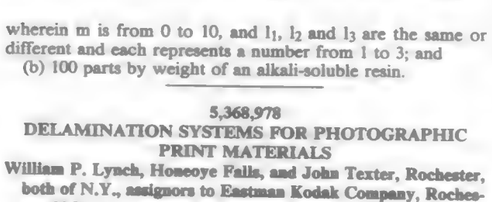
(a) from 5 to 100 parts by weight of a quinone diazido phenolic resin selected from the group consisting of compounds represented by the formulae:



-continued



and



wherein m is from 0 to 10, and l_1, l_2 and l_3 are the same or different and each represents a number from 1 to 3; and

(b) 100 parts by weight of an alkali-soluble resin.

5,368,978

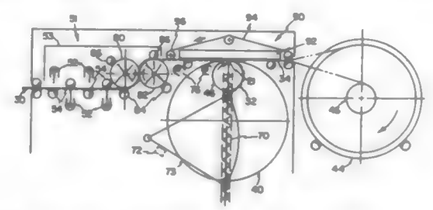
DELAMINATION SYSTEMS FOR PHOTOGRAPHIC PRINT MATERIALS

William P. Lynch, Honeoye Falls, and John Texter, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 858,726, Mar. 27, 1992, Pat. No. 5,294,514. This application Dec. 7, 1993, Ser. No. 163,223

Int. Cl.[5] G03C *8/32, 8/50*

U.S. Cl. 430—203 **16 Claims**



1. A method of delaminating silver halide imaging materials comprising providing an integral composite imaging material comprising donor and receiver elements, heating said imaging material, applying opposed forces to said donor and receiver elements to separate said imaging material into donor and receiver elements, and accumulating the separated donor element, wherein at least one of said opposed forces is applied through an adhesive stripping sheet to said donor element.

5,368,979

THERMALLY DEVELOPABLE PHOTOSENSITIVE ELEMENT

James R. Freedman, Newton Centre, and David P. Waller, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1994, Ser. No. 187,222

Int. Cl.[5] G03C *1/498*

U.S. Cl. 430—203 **12 Claims**

1. A photothermographic image-recording element comprising

a first support and an optional second support and carried by said first support or confined between said first and second supports:

an image dye-providing material layer;

a photosensitive silver halide material layer;

a silver salt oxidizing material layer;

an image-receiving material layer;

a thermal solvent and a reducing agent wherein said photosensitive silver halide material layer is arranged between said image dye-providing material layer and said silver salt oxidizing material layer, and

wherein one or more of said image dye-providing material, said photosensitive silver halide material, said silver salt oxidizing material and said reducing agent is a component of a competitive chemical imaging system which provides an imagewise distribution of diffusible image dye as a result of an imagewise distribution of soluble silver ions and/or soluble silver complex during photothermographic processing of said element.

5,368,980

PROCESS OF DEVELOPING A DIFFUSION TRANSFER PRINTING PLATE

Paul Davies, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 25, 1993, Ser. No. 142,229

Int. Cl.[5] G03C *5/54*

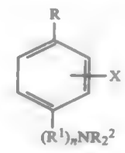
U.S. Cl. 430—204 **6 Claims**

1. A method of making a lithographic printing plate that comprises of:

(a) imagewise exposing a light sensitive material comprising of a support, at least a negative working light sensitive silver halide layer and a surface physical development nucleating layer, said material containing a silver halide black-and-white photographic developing agent and an electron transfer agent in one or more layers;

(b) processing said printing plate in a diffusion-transfer alkaline activator solution to provide a transferred oleophilic silver complex and a non-transferred black image in the nucleating layer;

(c) said diffusion-transfer alkaline activator comprising at least one compound of the following structure:



where R is a hydrogen, hydroxy or amine group,

R^1 is a methine group,
n is zero or one,
R^2 is hydrogen, a lower alkyl, alkoxy, or. carboxyl, and X is one or more of hydrogen, amine, hydroxy, lower alkyl, lower alkoxy or carboxyl groups.

5,368,981

METHOD FOR INCREASING BETA-TYROSINASE ACTIVITY IN *ERWINIA HERBICOLA*

Takayasu Tsuchida; Yoshitaka Nishimoto; Takuya Kotani, and Katsuo Iizumi, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Division of Ser. No. 36,268, Mar. 24, 1993. This application Jan. 26, 1994, Ser. No. 186,645
Int. Cl.[5] C12N *9/88*
U.S. Cl. 435—232 **2 Claims**

1. A method for increasing the β-tyrosinase activity of a strain of *Erwinia herbicola*, comprising:

culturing said strain until reaching a stationary phase, and further maintaining the culture for 6 to 24 hours while maintaining the pH within a range of from 7 to 8.3.

5,368,982

IMAGE FORMING PROCESS

Tamotsu Suzuki, Shizuoka; Tomohisa Tago, Tokyo, and Fumiaki Shinozaki, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 20, 1992, Ser. No. 916,969
Claims priority, application Japan, Jul. 22, 1991, 3-206292
Int. Cl.[5] G03C *11/12*
U.S. Cl. 430—256 **5 Claims**

1. An image forming process comprising the steps of imagewise exposing to light a light-sensitive image forming material comprising either a support, a peel layer provided thereon and a light-sensitive resin layer containing a lake pigment having the formula

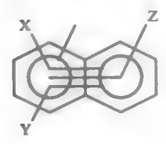
(I) $[A—N{=}N—B]^{n-}M^{n+}$

wherein

A is a group represented by the following formula (1) or (2):



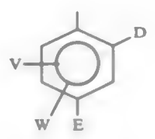
(1)



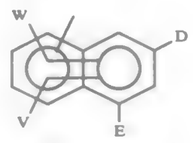
(2)

in which X, Y and Z each represents a carboxylic acid group, a sulfonic acid group an alkyl group of 1 to 12 carbon atoms, an alkoxy group of 1 to 12 carbon atoms, nitro, a halogen atom or hydrogen;

B is a group represented by the following formula (3) or (4):



(3)



(4)

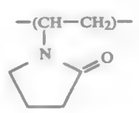
in which V and W each represents a carboxylic acid group, a sulfonic acid group or hydrogen and D and E each represents hydrogen or hydroxy and at least one of D and E is hydroxy; at least one of X, Y, Z, V and W is a carboxylic acid group or a sulfonic acid group;

M represents a metal atom; and

n represents an integer of 1 to 5;

provided on the peel layer, or a support, a peel layer provided thereon, a colorant layer containing the lake pigment provided on the peel layer and light-sensitive resin layer provided on the colorant layer, and

developing the image forming material by the use of an aqueous alkaline developing solution which contains a polymer having the following recurring unit (A):



(A)

to form an image on the peel layer.

5,368,983

METHOD FOR FORMING AN IMAGE

Yasuhiro Okamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 26, 1993, Ser. No. 141,010
Claims priority, application Japan, Oct. 26, 1992, 4-287822
Int. Cl.[5] G03C *5/29*
U.S. Cl. 430—264 **7 Claims**

1. A method for forming an image, comprising processing a silver halide photographic material having on a support at least two silver halide emulsion layers having different sensitivities, the emulsion layer closer to the support having the higher sensitivity, in a developing solution containing a di- or trihydroxybenzene compound and a 3-pyrazolidone compound or in a developing solution containing a di- or trihydroxybenzene compound and an aminophenol compound in the absence of a hydrazine compound, wherein a characteristic curve obtained has a gradient (γ) of 6.0 or more in the segment of the curve from D=0.1 to D=3.0 where D is the density.

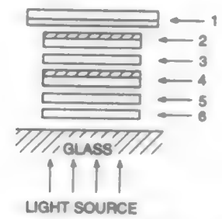
5,368,984

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kazuhiro Yoshida, Hino, Japan, assignor to Konica Corporation, Japan

Filed Nov. 10, 1993, Ser. No. 150,423
Claims priority, application Japan, Nov. 13, 1992, 4-303896
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 **4 Claims**

1. A silver halide photographic light-sensitive material comprising a support and a light-sensitive silver halide emulsion layer wherein said silver halide photographic light-sensitive material comprising a latex prepared in the presence of added



gelatin during or after polymerization of the latex and a redox compound from which a development inhibitor is released when said redox is oxidized during developing process.

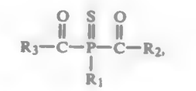
5,368,985

BISACYLPHOSPHINE SULFIDES

Werner Rutsch; Gebhard Hug, Fribourg, and Manfred Köhler, Freiburg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 925,239, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 819,320, Jan. 9, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,858
Claims priority, application Switzerland, Jan. 14, 1991, 84/91-2
Int. Cl.[5] C08F *2/50, 4/00*; C08G *59/17*; G03F *7/029*; C07F *9/53*
U.S. Cl. 430—269 **15 Claims**

1. A compound of formula I



(I)

wherein R_1 is unsubstituted C_1–C_{18}alkyl or C_1–C_8alkyl which is substituted by phenyl, —CN, C_1–C_{12}alkoxy or halogen, C_2–C_{18}alkenyl, unsubstituted C_5–C_8cycloalkyl or C_5–C_8cycloalkyl which is substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy or halogen, unsubstituted C_6–C_{12}aryl or C_6–C_{12}aryl which is substituted by halogen, C_1–C_{12}alkyl or C_1–C_{12}alkoxy, or a 5- or 6-membered aromatic heterocyclic radical which contains oxygen, sulfur and/or nitrogen and is unsubstituted or substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy, and

R_2 and R_3 are each independently of the other unsubstituted C_1–C_{18}alkyl or C_1–C_8alkyl which is substituted by phenyl, halogen or C_1–C_{12}alkoxy, C_2–C_6alkenyl, unsubstituted C_5–C_8cycloalkyl or C_5–C_8cycloalkyl which is substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy or halogen, unsubstituted C_6–C_{12}aryl or C_6–C_{12}aryl which is substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy, C_2–C_{12}alkoxyalkyl, C_1–C_4alkylthio or halogen, or a 5- or 6-membered aromatic heterocyclic radical which contains oxygen, sulfur and/or nitrogen and is unsubstituted or substituted by halogen, C_1–C_4alkyl or C_1–C_4alkoxy.

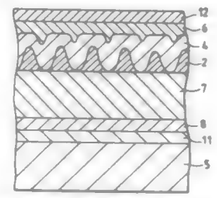
7. A composition comprising (a) at least one ethylenically unsaturated photopolymerisable compound and (b) at least one compound of formula I according to claim 1.

5,368,986

INFORMATION RECORDING MEDIA, MANUFACTURING METHOD FOR THE SAME, AND INFORMATION RECORDING METHOD

Motoyasu Terao, Hinode; Keikichi Andoo, Musashino; Shigenori Okamine, Kodaira; Yasushi Miyauchi, Akishima; Masahiko Takahashi, Kodaira; Masaaki Futamoto, Kanagawa, and Reiji Tamura, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Maxell, Ltd., Osaka, both of Japan

Continuation-in-part of Ser. No. 694,492, May 2, 1991, abandoned. This application May 6, 1992, Ser. No. 878,976
Claims priority, application Japan, May 8, 1991, 3-102508
Int. Cl.[5] B32B *3/00*
U.S. Cl. 430—270 **8 Claims**



1. An information recording medium comprising at least a substrate and an information recording film which is mounted on said substrate and has a physical property thereof changed under irradiation of a recording energy beam, the information recording medium having at least one recording track, the at least one recording track extending in a first direction, wherein a surface of an information recordable area of said substrate is uneven, both surfaces of said recording film are also uneven, and at least one inorganic protective layer is provided in contact with at least one surface of said recording film, wherein unevenness of the surface of the information recordable area of the substrate and of both surfaces of the recording film extend in the first direction and in a direction perpendicular to the first direction, the surface of the information recording film furthest from the substrate having dents, wherein the surface of the substrate further includes an arrangement of dents and protrusions for providing information on a synchronizing signal for at least one of writing and reading, said arrangement of dents and protrusions of the surface of the substrate being in addition to said unevenness of the surface of the substrate, and wherein a surface of the inorganic protective layer furthest from the substrate is even and the dents in the information recording film furthest from the substrate are filled completely by the inorganic protective layer.

5,368,987

PROCESS FOR PRODUCING RESIST COMPOSITION

Yukio Hanamoto, Toyonaka; Hiroshi Takagaki, Higashiosaka, and Ayako Ida, Kobe, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Continuation of Ser. No. 996,155, Dec. 23, 1992, abandoned. This application Feb. 28, 1994, Ser. No. 203,616
Claims priority, application Japan, Dec. 27, 1991, 3-346692
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—270 **4 Claims**

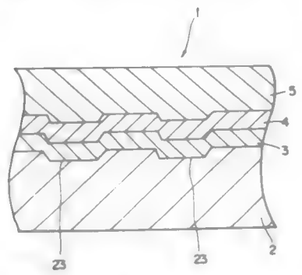
1. A process for producing a resist composition which comprises filtering a mixture comprising an alkali-soluble resin, a radiation-sensitive compound and an organic solvent by the use of a filter having a pore diameter of 0.1 μm or below and a particle-removing performance of 99% or above.

5,368,988

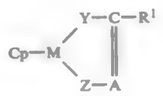
OPTICAL RECORDING MEDIUM

Masahiro Shinkai, Chiba, and Kenryo Namba, Tokyo, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Sep. 7, 1993, Ser. No. 116,603
Claims priority, application Japan, Sep. 11, 1992, 4-269446; Feb. 25, 1993, 5-60890
Int. Cl.[5] G11B 7/00; G03C 1/00
U.S. Cl. 430—270 10 Claims



1. An optical recording medium comprising on a substrate a recording layer which contains a dye and a quencher, the quencher being a complex of the formula (1) or a dimer thereof:



(1)

wherein

Cp is cyclopentadiene,

A is C-R^2 or N,

R^1 and R^2 are independently selected from the group consisting of a hydrogen atom, halogen atom, alkyl, aryl, cyano, ether, ester, acyl, alkylthio, sulfamoyl, alkylsulfonyl, heterocyclic, and nitro radical, or R^1 and R^2 taken together may form a ring when A is C-R^2,

Y and Z are independently selected from the group consisting of S, Se, O and NR^3 wherein R^3 is a hydrogen atom, alkyl or phenyl radical, and

M is a metal atom selected from the group consisting of Co, Ni, Pt, Zn, Cu and Rh,

said recording layer being formed by coating an alcohol solution of the dye and the quencher.

5,368,989

PHOTOLITHOGRAPHIC ARTICLE UTILIZING POLYMERS WITH LIGHT-ABSORBING PROPERTIES FOR ANTI-REFLECTIVE COATING

Tony D. Flaim, St. James; James Lamb, III, Rolla; Kimberly A. Moeckli, Salem, and Terry Brewer, Rolla, all of Mo., assignors to Brewer Science, Inc., Rolla, Mo.

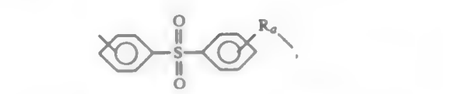
Division of Ser. No. 835,715, Feb. 12, 1992, Pat. No. 5,234,990.
This application Apr. 30, 1993, Ser. No. 55,916
Int. Cl.[5] G03F 7/11
U.S. Cl. 430—271 1 Claim

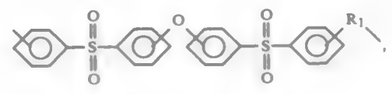
1. A photolithographable article of manufacture comprising:

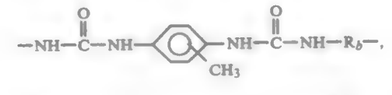
a) a top layer of photoresist material;

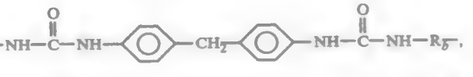
b) an anti-reflective sublayer consisting essentially of a polymer; and

c) a micro-electronic substrate; said polymer having a functional repeat unit selected from the group consisting of:

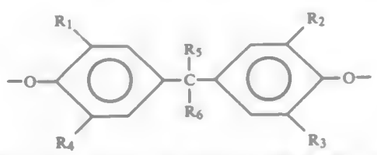






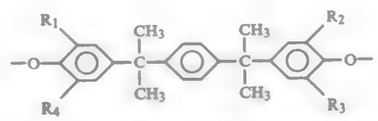


and combinations thereof, wherein R_a is selected from the group consisting of:



(A)

wherein R_1=R_4; R_2=R_3; R_1, R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen and methyl; and R_6 is selected from the group consisting of hydrogen, methyl and phenyl;

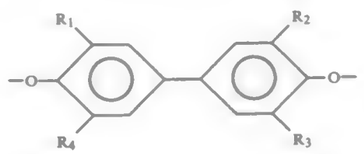


(B)

wherein R_1=R_2=R_3=R_4 and are selected from the group consisting of hydrogen and methyl;

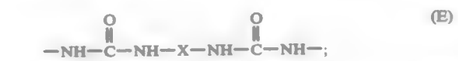


(C)



(D)

wherein R_1=R_2=R_3=R_4 and are selected from the group consisting of hydrogen and methyl;



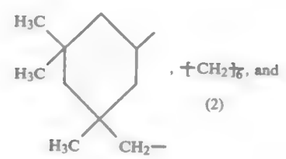
(E)



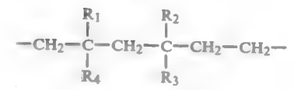
(F)

wherein X is selected from the group consisting of:

-continued



(1)

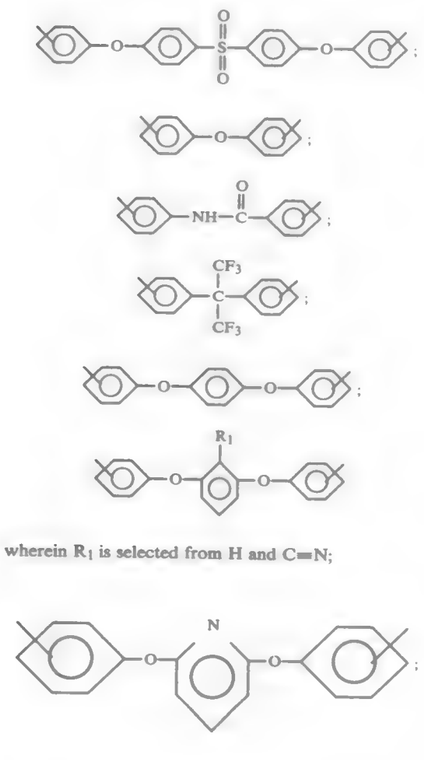


(3)

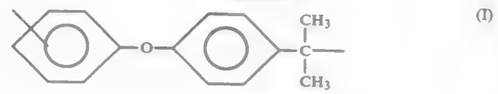
wherein R_1=R_2=R_3=CH_3 and R_4=H, or R_1=R_2=R_4=CH_3 and R_3=H; and G) combinations thereof; wherein R_b is selected from the group consisting of:



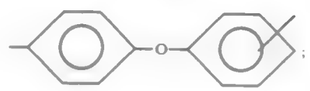
wherein R_1 is selected from the group consisting of Cl, C≡N, CH_3, H, OCH_3, and $COOR_2$, wherein R_2 is —CH_3 or —CH_2CH_3;

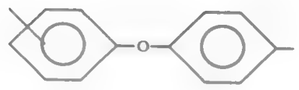


wherein R_1 is selected from H and C≡N;

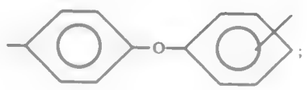


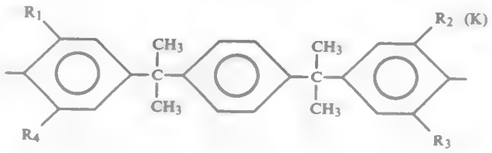
(I)





(J)

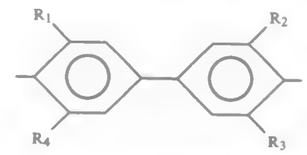




(A)

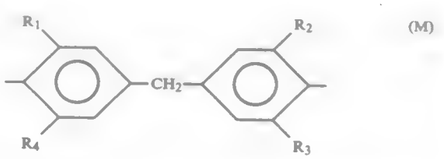
(K)

wherein R_1=R_2=R_3=R_4=H or CH_3;



(B)

(L)



(C)

wherein R_1=R_2 and are selected from consisting of H, CH_3, OCH_3, and R_3=R_4 and are selected from consisting of H and CH_3;

(D)

(E)

(M)

(F)

wherein R_1=R_2=R_3=R_4=H or CH_3; and (N) combinations thereof.

(G)

5,368,990

PHOTOPOLYMERIZABLE COMPOSITION

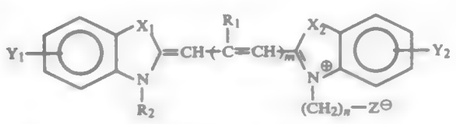
Masami Kawabata, Takatsuki; Akihiko Sato, Suita, and Iwao Sumiyoshi, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00044, § 371 Date Nov. 5, 1992, § 102(e) Date Nov. 5, 1992, PCT Pub. No. WO92/13008, PCT Pub. Date Aug. 6, 1992
PCT Filed Jan. 22, 1992, Ser. No. 923,977
Claims priority, application Japan, Jan. 22, 1991, 3-005569
Int. Cl.[5] G03C 1/73
U.S. Cl. 430—281 2 Claims

(H)

1. A photopolymerizable composition comprising an addition polymerizable compound having an ethylenically unsaturated double bond and a photopolymerization initiating com-

position, said photopolymerizable initiating composition comprising (a) a dye of the formula:



(I)

wherein R_1 is H, an alkyl group having 1 to 3 carbon atoms, a phenyl group or a halogen atom; R_2 is a methyl group, an ethyl group or $(CH_2)_p$-Q (wherein Q is a carboxyl group, a sulfonyl group or salt thereof and p is an integer of 1 to 4); X_1 and X_2 are independently —O—, —S—, —CH=CH— or >N—R_2; Y_1 and Y_2 are independently H, an alkyl group having 1 to 3 carbon atoms, an alkoxy group having 1 to 3 carbon atoms, a phenyl group or a halogen atom; Z is —COO or —SO_3; m is 0 or 1; and n is an integer of 1 to 4, and (b) diaryliodonium salt as a polymerization initiator.

5,368,991

PHOTOSENSITIVE RESIN COMPOSITION FOR USE AS A LIGHT-SHIELDING FILM WHICH CAN BE USED AS BLACK MATRICES

Kiyoshi Uchikawa; Hiroshi Komano; Toshimi Aoyama, and Katsuyuki Ohta, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Filed Jul. 21, 1993, Ser. No. 94,214

Claims priority, application Japan, Jul. 29, 1992, 4-221991

Int. Cl.[5] G03C *1/725*; G03F *9/00*

U.S. Cl. 430—288 **10 Claims**

1. A photosensitive resin composition formed into a light-shielding film, the composition comprising a photosensitive resin and a light-shielding coloring material in admixture, wherein light transmission properties of the photosensitive resin composition are controlled by the light-shielding coloring material selected from the group consisting of (a) yellow, red, and blue pigments, (b) orange and blue pigments, (c) yellow and violet pigments, and (d) green and red pigments, so that

(i) the light transmission through the light-shielding film is 1% or more in at least one wavelength of a light wavelength region of from 330 nm to less than 425 nm, and

(ii) the light transmission through the light-shielding film is 2% or less in a light wavelength region of from 425 nm to 650 nm.

5,368,992

METHOD OF PRODUCING DIFFRACTION GRATING

Yasuhiro Kunitsuga, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1993, Ser. No. 34,785

Claims priority, application Japan, Apr. 23, 1992, 4-131768

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—321 **4 Claims**

1. A method of producing a λ/4-shifted diffraction grating utilizing a two-luminous-flux interference exposure method comprising:

applying a positive type photoresist to a substrate in a thickness such that the surface of the photoresist is positioned in the vicinity of the node of the nodes of a standing wave light intensity distribution in the thickness direction of the photoresist that is nearest the substrate, the standing wave light intensity distribution being produced by interference between light incident on the photoresist and light within the photoresist that is reflected by the substrate;

exposing said positive type photoresist, with an interference pattern produced by two interfering light beams;

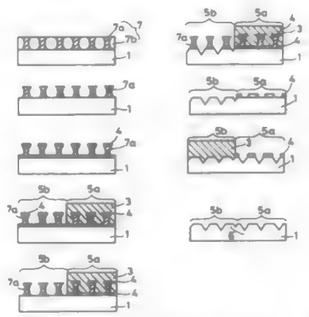
developing said positive type photoresist to form a pattern of said photoresist comprising a plurality of photoresist film regions each region having an over-hanging portion wherein the substrate is exposed between the regions;

depositing an insulating film on the photoresist pattern and on the exposed substrate;

forming a first protective resist on a portion of the photoresist pattern;

removing the portion of said insulating film that is not covered by the first protective resist;

etching a portion of the substrate using the portion of the photoresist pattern that is not covered by the first protective resist as a mask to form a periodic pattern of grooves in a first portion of the substrate;



removing the photoresist pattern together with the first protective resist and the insulating film on the photoresist pattern by lift-off, leaving the insulating film on the substrate;

selectively forming a second protective resist on the etched portion of the substrate; and

etching a portion of the substrate using the insulating film on the substrate as a mask, thereby forming a periodic pattern of grooves in a second portion of the substrate having a phase that is reversed with respect to the periodic pattern of grooves in the first portion of the substrate, the first portion being covered by the second protective resist.

5,368,993

METHOD OF FORMING RELIEF IMAGE HAVING LINE WIDTH LESS THAN 0.35 MICRONS UTILIZING COPOLYMER BINDER HAVING PHENOLIC AND NONAROMATIC CYCLIC ALCOHOL UNITS

James W. Thackeray, Braintree; Mark Denison, Cambridge, and George W. Orsula, Tewksbury, all of Mass., assignors to Shipley Company Inc., Marlborough, Mass.

Division of Ser. No. 10,815, Jan. 29, 1993. This application Apr. 15, 1994, Ser. No. 228,159

Int. Cl.[5] G03F *7/30*

U.S. Cl. 430—325 **5 Claims**

1. A method of forming a photoresist relief image comprising a pattern of lines, each line of the pattern having a width of less than about 0.35 microns and essentially vertical sidewalls, the method comprising:

(a) providing a photoresist composition comprising an admixture of a resin binder and a radiation sensitive component, said resin binder comprising a copolymer having phenolic and nonaromatic cyclic alcohol units where the copolymer has a weight average molecular weight of less than about 5,000 daltons, a weight average molecular weight to number average molecular weight ratio not exceeding 3, and a distribution of the cyclic alcohol concentration not exceeding about 8 mole percent, the radiation sensitive component being present in an amount capable of generating a latent image by exposure of a coating layer of said photoresist to activating radiation;

(b) applying a coating layer of the photoresist on a substrate and exposing the coating layer with patterned activating radiation; and

(c) developing the imagewise exposed photoresist coating layer to provide said relief image.

5,368,994

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Itsuo Fujiwara; Tadashi Ito, and Naoki Arai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 4, 1993, Ser. No. 55,874

Claims priority, application Japan, May 6, 1992, 4-139607

Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—508 **11 Claims**

1. A silver halide photographic material comprising a hydrophilic colloidal layer structure including at least two silver halide emulsion layers including a lower silver halide emulsion layer comprising silver halide grains and an upper silver halide emulsion layer comprising silver halide grains, both of said emulsion layers being provided on at least one side of a transparent support, and at least said lower silver halide emulsion layer contains an iridium compound, wherein the average amount of iridium compound per unit mol of silver in said lower silver halide emulsion layer located nearer to said support is greater than the iridium content of said upper silver halide emulsion layer located further from said support, and the maximum value of γ on the characteristic curve of optical density versus exposure (logarithm) of said photographic material is not more than 3.2 when said silver halide photographic material is exposed to laser light having a wavelength falling within the range of 600 to 850 nm for forming an image.

5,368,995

IMAGING ELEMENT COMPRISING AN ELECTRICALLY-CONDUCTIVE LAYER CONTAINING PARTICLES OF A METAL ANTIMONATE

Paul A. Christian, Pittsford, and Charles C. Anderson, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 22, 1994, Ser. No. 231,218

Int. Cl.[5] G03C *1/85*

U.S. Cl. 430—530 **26 Claims**

1. An imaging element for use in an image-forming process; said imaging element comprising a support, an image-forming layer, and an electrically-conductive layer; said electrically-conductive layer comprising a dispersion in a film-forming binder of fine particles of an electronically-conductive metal antimonate.

5,368,996

COLOR PHOTOGRAPHIC MATERIAL

Masahiro Asami, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 2, 1993, Ser. No. 84,998

Claims priority, application Japan, Jul. 6, 1992, 4-200206

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—531 **15 Claims**

1. A color photographic material having photographic constituent layers including at least one light-sensitive silver halide emulsion layer on a reflective support, wherein the light-sensitive silver halide emulsion layer comprises silver chloride or silver chlorobromide containing 90 mol % or more of silver chloride and further comprises a pyrazolotriazole magenta coupler in which a secondary or tertiary alkyl group is directly bonded to the 2-, 3- or 6- position of a pyrazolotriazole ring, said reflective support comprises at least one water-resistant resin layer, the water-resistant resin layer on the side of the support on which a silver halide emulsion layer is formed contains 14% by weight or more of a white pigment, and the total amount of calcium contained in the photographic constituent layers on the light-sensitive layer side of the photographic material is 10 mg/m^2 or less.

5,368,997

SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH POLYESTER SUPPORT

Fumio Kawamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1994, Ser. No. 209,053

Claims priority, application Japan, Mar. 11, 1993, 5-076480; Mar. 23, 1993, 5-063879

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—533 **13 Claims**

1. A silver halide photographic material which comprises a support comprising polyester and at least one photographic layer provided thereon,

wherein the polyester comprises poly(ethylene-2,6-naphthalate) which has Young's modulus of 550 to 650 kg/mm^2 in both a lengthwise direction and a widthwise direction and a breaking elongation of not less than 70%.

5,368,998

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Hiroshi Ishidai; Hiroshi Kita; Yutaka Kaneko, and Koji Daifuku, all of Hino, Japan, assignors to Konica Corporation, Japan

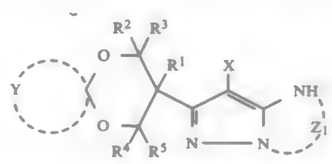
Filed Jan. 10, 1994, Ser. No. 179,314

Claims priority, application Japan, Jan. 14, 1993, 5-005047; Jan. 14, 1993, 5-005048

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—558 **7 Claims**

1. A silver halide color photographic light-sensitive material comprising a support and a light-sensitive silver halide emulsion layer wherein the silver halide color photographic light-sensitive material comprises a magenta coupler represented by



wherein R^1, R^2, R^3, R^4 and R^5 each represent a hydrogen atom, an aliphatic group, aromatic group or heterocyclic group, and R^1, R^2, R^3, R^4 and R^5 each are same or different, the aliphatic group and aromatic group each may have a substituent; X is a hydrogen atom, or a group or atom which is released upon the reaction with the oxidation product of developing agent; Z_1 is a non-metal group to form a 5-membered cycle in combination with a nitrogen atom; Y is a non-metal group to form a 3- to 7-membered cycle in combination with a carbon atom; the cycle represented by Z_1 and Y may have a sustituent.

5,368,999

SILVER HALIDE EMULSION AND SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL USING THE SAME

Katsumi Makino, Minami-Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 26, 1990, Ser. No. 633,661

Claims priority, application Japan, Dec. 28, 1989, 1-343638

Int. Cl.[5] G03C *1/00, 1/005*

U.S. Cl. 430—569 **12 Claims**

1. A negative silver halide emulsion containing light-sensitive silver halide grains in a binder, wherein said silver halide emulsion has been subjected to reduction-sensitization during grain formation and at least one compound represented by the following formula (I), (II), or (III) is added after reduction

sensitization is started and 80% of total water-soluble silver salt required for the formation of silver halide grain are added:

$$R—SO_2S—M \quad (I)$$

$$R—SO_2S—R^1 \quad (II)$$

$$R—SO_2S—Lm\text{-}SSO_2—R^2 \quad (III)$$

wherein R, R^1, and R^2 may be the same or different and represent an aliphatic group, an aromatic group, or a heterocyclic group, M represents a cation, L represents a divalent bonding group, and m represents 0 or 1.

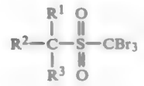
5,369,000

POST-PROCESSING STABILIZERS FOR PHOTOTHERMOGRAPHIC ARTICLES

Kumars Sakizadeh, Woodbury; John T. Blair, Oakdale, both of Minn., and David T. Ask, Somerset, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 29, 1993, Ser. No. 54,850
Int. Cl.[5] G03C *1/498, 1/34*
U.S. Cl. 430—619 7 Claims

1. A photothermographic article comprising a photothermographic composition coated on a substrate wherein said photothermographic composition comprises:
(a) light-sensitive silver halide;
(b) a light-insensitive organic silver salt;
(c) a reducing agent for the light-insensitive organic silver salt; and
(d) an antifoggant of the formula:



wherein: R^1, R^2, and R^3 are $—(CH_2)_ySO_2CBr_3$ wherein y is an integer from 0 to 22 inclusive.

5,369,001

STABILIZATION OF LEUKOCYTES

Bernard M. Babior, 4295 Ibis St., San Diego, Calif. 92103

Division of Ser. No. 437,361, Nov. 15, 1989, Pat. No. 5,211,960, which is a division of Ser. No. 277,256, Nov. 29, 1988, Pat. No. 4,923,797. This application Sep. 28, 1992, Ser. No. 952,571
Int. Cl.[5] A01N *1/02;* A61K *37/12*
U.S. Cl. 435—2 3 Claims

1. An aqueous stock solution comprising from 20–40% by weight modified fluid gelatin in a buffer at pH4–7.5, said stock solution being suitable for the preservation of human leukocytes during storage of said leukocytes in a non-frozen state, in that said buffer is physiologically acceptable to humans.

5,369,002

METHOD OF DETECTING INJURED NUCLEAR DNA

Masaru Fukuda, Fukui, Japan, assignor to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 40,972
Claims priority, application Japan, Apr. 1, 1992, 4-105221
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 13 Claims

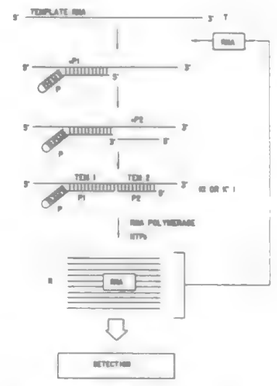
1. A method for detecting the presence of injured nuclear DNA in a pathological tissue specimen comprising the steps of:
(A) treating a pathological tissue specimen with an acid to selectively hydrolyze only injured DNA in said pathological tissue specimen and to form single-stranded DNA,
(B) treating the resulting pathological tissue specimen of step (A) with an anti-single-stranded DNA antibody which does not specifically bind double-stranded DNA, and
(C) subjecting the resulting pathological tissue specimen of step (B) to morphological inspection to detect the presence of binding of said single-stranded DNA with said antibody, wherein the binding of said antibody to said single-stranded DNA indicates the presence of injured nuclear DNA in a pathological tissue specimen.

5,369,003

PROCESS FOR THE SPECIFIC PRODUCTION OF RIBONUCLEIC ACIDS

Udo Reischl, Grafenau; Rudiger Rueger, Seeshaupt; Christoph Kessler, Dorfen, and Rudolf Seibl, Penzberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Sep. 28, 1992, Ser. No. 951,983
Claims priority, application Germany, Sep. 26, 1991, 4132133
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 11 Claims



1. A process for the specific production of ribonucleic acids comprising the steps of:
a) hybridizing a template specific promotor oligonucleotide P1 and a template specific oligonucleotide P2 with a template nucleic acid T to form a complex K, and
b) forming transcripts R containing at least the template specific sequence information from P1 to P2 by promotor controlled transcription,
wherein the oligonucleotides P1 and P2 used are not enzymatically ligated together in any step in the process.

5,369,004

FIVE HIGHLY INFORMATIVE MICROSATELLITE REPEAT POLYMORPHIC DNA MARKERS

Mihael H. Polymeropoulos, Potomac, and Carl R. Merril, Rockville, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 799,828, Nov. 27, 1991, which is a continuation-in-part of Ser. No. 707,501, May 29, 1991, abandoned. This application Jul. 31, 1992, Ser. No. 922,723
Int. Cl.[5] C12Q *1/68;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 4 Claims

1. A polynucleotide selected from the group consisting of polynucleotides having a sequence according to SEQ ID NO:64 through SEQ ID NO:73.

5,369,005

METHOD FOR MYCOPLASMA DETECTION IN A BIOLOGICAL SAMPLE

Joel B. Baseman; C. J. Su, and S. F. Dallo, all of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 558,886, Jul. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 118,967, Nov. 19, 1987, Pat. No. 5,026,636, which is a continuation-in-part of Ser. No. 4,767, Jan. 9, 1987, Pat. No. 4,945,041. This application Oct. 22, 1992, Ser. No. 965,055
Int. Cl.[5] C12Q *1/68;* C12N *1/00, 15/00;* C07H *17/00*
U.S. Cl. 435—6 12 Claims

1. A method of detecting mycoplasmal DNA in a biological sample comprising the steps of:
(a) obtaining a biological sample suspected of Mycoplasma contamination or infection, wherein said sample is selected from the group consisting of blood, cell culture or tissue;
(b) isolating DNA from said biological sample;
(c) hybridizing said DNA with a labelled polynucleotide segment encoding a portion of *M. pneumoniae* P1 polypeptide, wherein said polynucleotide segment is selected from a group consisting of polynucleotide segment —156 to 258, polynucleotide segment 259 to 909, polynucleotide segment 910 to 1184, polynucleotide segment 1771 to 2340, polynucleotide segment 4103 to 4338, and polynucleotide segment 4339 to 4897 of the nucleotide sequences shown in FIG. 6, said polynucleotide segment is capable of hybridizing under moderate stringency hybridization conditions to mycoplasmal DNA present in at least two of the following, *M. genitallure, M. gallisepticum, M. fermentans, M. incognitus, M. hominis, M. pulmonis,* and *M. sualvi,* wherein the homology required for moderate stringency hybridization is at least approximately 75% hornology between the labelled polynucleotide segment and the DNA in the biological sample; and
(c) identifying DNA which hybridizes to said labelled polynucleotide segment by means of detecting said hybridization.

5,369,006

DETERMINATION OF CK ISOENZYMES AND CK ISOFORMS

David M. Obzansky, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1991, Ser. No. 752,944
Int. Cl.[5] G01N *33/53, 33/551, 33/567;* C12Q *1/50*
U.S. Cl. 435—7.4 4 Claims

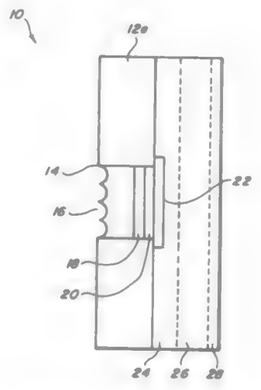
1. A heterogeneous immunoassay for the measurement of CK isoenzyme or CK isoform in a liquid sample comprising the steps of:
(a) immobilizing an antibody specific for CK isoenzyme or CK isoform onto a solid phase through a cleavable linker containing a disulfide bond;
(b) contacting the immobilized antibody with a sample containing CK isoenzyme or CK isoform to form immobilized antibody-CK isoenzyme or antibody-CK isoform complex;
(c) separating the immobilized complex formed in step (b) from soluble components;
(d) releasing antibody-CK isoenzyme or antibody CK-isoform complex from the solid phase by contacting the immobilized complex with a reducing agent capable of cleaving the disulfide bond of the clearable linker and simultaneously activating the CK isoenzyme or CK isoform enzymatic activity;
(e) separating the solid phase from the released antibody-CK isoenzyme or antibody-CK isoform complex; and
(f) determining the enzymatic activity of CK isoenzyme or CK isoform in solution.

5,369,007

MICROASSAY ON A CARD

David A. Kidwell, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 578,390, Sep. 7, 1990, Pat. No. 5,200,321. This application Aug. 26, 1992, Ser. No. 981,857
The portion of the term of this patent subsequent to Apr. 6, 2010, has been disclaimed.
Int. Cl.[5] G01N *33/53, 33/543*
U.S. Cl. 435—7.9 18 Claims



1. A card for assaying of a suspected substance in a liquid sample, comprising:
a first layer comprising a hydrophobic portion having formed therein at least one well for receiving the liquid sample:
a second layer defining a bottom surface of said well, comprising a supporting surface of cellulose which directly and covalently binds and supports thereon a reactive species, and a control membrane, beneath said supporting surface, for controlling the velocity of liquid flow therethrough so that, if said substance is present in said sample, said substance in said sample detectably reacts with said reactive species;
a third layer underneath said well and said control membrane, comprising a polymeric superabsorbent material impregnated with a reagent which produces a signal directly proportional to the concentration of any suspected substance in the liquid sample received in said well, said superabsorbent material having an absorptive capacity of at least about 200 mL distilled water/100 cm^2; said third layer also including a backing beneath said superabsorbent material for supporting said superabsorbent material, said backing and said superabsorbent layer being sufficiently transparent to said signal when wet so that said signal may be detected by reading said signal through said wet backing;
a conjugated molecule selected from the group consisting of an antibody-enzyme conjugate capable of specifically binding said substance and a conjugate of said substance and an enzyme, said conjugated molecule being within said first or second layer and said reagent comprising a substrate for said enzyme;
said reactive species being a binding partner for said conjugated molecule, said binding partner being selected from the group consisting of:
(i) an antibody capable of specifically binding said conjugate of said substance and said enzyme; and
(ii) said substance.

5,369,008

METHODS FOR THE DETECTION OF BCR-ABL AND ABNORMAL ABL PROTEINS IN LEUKEMIA PATIENTS

Ralph B. Arlinghaus, Bellaire, Tex.; Jean Y. J. Wang, San Diego, Calif., and Jie O. Guo, Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 704,981, May 24, 1991, abandoned. This application Nov. 12, 1993, Ser. No. 152,069

Int. Cl.[5] G01N *33/573, 33/574, 33/53*

U.S. Cl. 435—7.23 32 Claims

9. A method for the quantitative determination of a BCR-ABL gene product, an abnormal ABL gene product or a normal ABL gene product in a patient sample selected from whole blood, bone marrow, plasma or solid tumor, said method comprising:

(a) denaturing degradative enzymes present in said sample;

(b) separating said gene products in said sample by molecular weight;

(c) contacting said separated gene products with a monoclonal antibody that specifically binds with said BCD-ABL gene product and abnormal gene product, but does not cross-react with non-ABL components in said sample, wherein said monoclonal antibody specifically binds the SH2 region of the ABL gene product; and

(d) detecting and determining the amount of antibody binding to said BCR-ABL gene product, abnormal gene product or normal ABL gene product, whereby the amount of antibody binding to said BCR-ABL gene product, abnormal gene product or normal ABL gene product indicates the quantity of said BCR-ABL, abnormal ABL gene product or normal ABL gene product, in said sample.

5,369,009

ANTIBODIES FOR P-GLYCOPROTEIN ENCODED BY THE MDR1 GENE AND USES THEREOF

Robert J. Arceci, Westwood, and James M. Croop, Jamaica Plain, both of Mass., assignors to Dana Farber Cancer Institute, Boston, Mass.

Filed Apr. 17, 1992, Ser. No. 870,627

Int. Cl.[5] G01N *33/574, 33/53;* C12N *5/12;* C07K *15/28*

U.S. Cl. 435—7.23 21 Claims

3. A monoclonal antibody which specifically binds the same epitope as monoclonal antibody 4E3 without increasing the intracellular accumulation of DAUNOMYCIN or VINBLASTINE as measured by using 10 to 100 μg/ml of said antibody per cell when said cell is exposed to 0,001 to 10 μ/ml of DAUNOMYCIN, or 0.1 to 10 μg/ml of VINBLASTINE, and wherein said antibody does not inhibit the growth of MDR cells as measured by adding up to 20 μg/ml of the antibody to said MDR cells.

5,369,010

MONOCLONAL ANTIBODY TO POLYMORPHIC HLA DETERMINANT -B27

Karen A. Nelson, Seattle, and Douglas M. Strong, Edmonds, both of Wash., assignors to Genetic Systems Corporation, Seattle, Wash.

Continuation of Ser. No. 601,597, Oct. 18, 1990, abandoned, which is a continuation of Ser. No. 449,490, Dec. 11, 1989, abandoned, which is a continuation of Ser. No. 766,739, Aug. 16, 1985, abandoned. This application Feb. 5, 1993, Ser. No. 14,063

Int. Cl.[5] C07K *15/28;* C12N *5/20;* G01N *33/577*

U.S. Cl. 435—7.24 18 Claims

1. A monoclonal antibody composition specific for the human HLA-B27 antigen, not cross-reactive with HLA-B22, and not substantially cross-reactive with HLA-B7, —B14, and —B47 antigens.

5,369,011

METHOD AND APPARATUS FOR COLLECTING AND DETECTING BACTERIA

Richard C. Ebersole, Wilmington, Del., and Frank T. Gelormini, Gibbstown, N.J., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 169,718, Mar. 21, 1988, abandoned. This application Jun. 16, 1992, Ser. No. 899,824

Int. Cl.[5] C12Q *1/08*

U.S. Cl. 435—7.32 7 Claims

1. A method for separating and detecting bacteria from a heterogeneous environmental sample which comprises materials which interfere in detection of said bacteria, said method comprising the sequential steps of:

(a) providing a substantially uniform suspension of said sample with particles in a first fluid, said particles being selected from the group consisting of diatomaceous earth, perlite and zeolite, at least 50% of said particles having a particle size between 2 and 10 microns and having a density greater than 1.0 g per cc;

(b) forming a first liquid phase and a first solid phase from said suspension, wherein said solid phase comprises said particles and said bacteria;

(c) removing said first liquid phase;

(d) releasing said bacteria from said particles by forming a suspension of said first solid phase in a buffer solution,

(e) forming a second liquid phase and a second solid phase from the suspension in step d), said second liquid phase comprising the buffer solution and said bacteria, and said second solid phase comprising said particles; and

(f) detecting said bacteria from step e).

5,369,012

METHOD OF MAKING A MEMBRANE HAVING HYDROPHILIC AND HYDROPHOBIC SURFACES FOR ADHERING CELLS OR ANTIBODIES BY USING ATOMIC OXYGEN OR HYDROXYL RADICALS

Steven L. Koontz, Seabrook, and Glenn F. Spaulding, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 26, 1992, Ser. No. 857,901

Int. Cl.[5] G01N *33/545, 33/535;* C12N *11/08, 5/00*

U.S. Cl. 435—7.92 10 Claims

1. An organic polymer membrane having first and second opposing surfaces, wherein said first surface is hydrophilic and has an adjacent absorbent layer and said second surface is hydrophobic and contains adhered antibodies, said hydrophilic surface is prepared by a method comprising:

exposing a hydrophobic exterior surface of said membrane to a dosage of atomic oxygen or hydroxyl radicals at a temperature below about 40° C., said dosage being sufficient to form said hydrophilic surface having a uniform surface layer of hydrophilic functional hydroxyl groups, wherein said dosage is generated by a flowing afterglow microwave discharge and said surface is outside of a plasma produced by said discharge, wherein said surface exposed to said dosage has a depth of from about 50 to about 5000 angstroms and said dosage over said surface is within about 10 percent of an average dosage.

2. An organic polymer membrane having a surface comprised of a plurality of hydrophilic regions bounded by adjacent hydrophobic regions, said hydrophilic regions containing adhered cells at a maximum density of one cell per each hydrophilic region and said hydrophobic regions are substantially free of adhered cells, said hydrophilic regions having a uniform surface layer of hydrophilic functional hydroxyl groups created by exposing an exterior hydrophobic surface of said membrane at a temperature below about 40° C. to a dosage of atomic oxygen or hydroxyl radicals, said dosage being generated by a flowing afterglow microwave discharge and said surface being outside of a plasma produced by said discharge,

wherein said exterior surface exposed to said atomic oxygen has a depth of from about 50 to about 5000 angstroms and said dosage over said surface is within about 10 percent of an average dosage.

5,369,013

METHOD, REAGENT MIXTURE AND KIT FOR DETERMINING THE PRESENCE OF BACTERIAL OR SOMATIC CELLS IN URINE

Nathan Citri, Jerusalem, Israel, assignor to Yissum Research Development Company of the Hebrew University of Jerusalem, Israel

Continuation-in-part of Ser. No. 676,864, Mar. 28, 1991, abandoned, which is a continuation of Ser. No. 548,023, Jul. 5, 1990, abandoned, which is a continuation of Ser. No. 65,315, Jun. 22, 1987, abandoned. This application Jul. 27, 1992, Ser. No. 919,925

Int. Cl.[5] C12Q *1/30, 1/62, 1/44*

U.S. Cl. 435—27 11 Claims

1. A method for testing a urine sample for the presence of catalase as an indicator of the presence of bacterial or somatic cells comprising reacting said sample in solution with a substantially catalase-free alkaline protease enzyme produced by *Bacillus subtilis* and a detergent compatible therewith in the presence of hydrogen peroxide and at least 20 mM of a pH buffer which acts as a solute, said buffer being present alone or in combination with one or more additional solutes which reduce the solubility of oxygen in solution, the solution of said buffer and said one or more additional solutes, when present, having a pH in the range of 7.5–9.0, and the total concentration of said buffer and said one or more additional solutes, when present, being from about 0.02M to about 0.4M to form an admixture which is maintained under conditions and for a time sufficient to disrupt any such cells present in the sample and release active catalase therefrom, thereafter determining the presence of catalase in said sample by visually observing the extent of foam generated in said admixture, said buffer and said one or more additional solutes, when present, serving to increase the amount of released oxygen available to generate said foam.

5,369,014

IN-VITRO METHOD FOR DETERMINING A SURREPTITIOUS USE OF EXOGENOUS ERYTHROPOIESIS STIMULATING AGENTS BY A NORMAL LIVING SUBJECT

Carlo Brugnara, Newton Highlands; Margot S. Kruskall, Dover; Mark A. Goldberg, Boston, all of Mass., and Linda A. Chambers, Worthington, Ohio, assignors to Beth Israel Hospital Assoc., Boston, Mass.

Filed Aug. 17, 1992, Ser. No. 930,361

Int. Cl.[5] C12Q *1/02, 1/00*

U.S. Cl. 435—29 5 Claims

1. An in-vitro method for identifying the surreptitious use of an exogenous erythropoiesis stimulating agent to generate an increase in red blood cell production in a living normal subject, said method comprising the steps of:

obtaining an aliquot of the blood circulating within the living subject;

testing said aliquot of blood to establish an absence of anemia in the living subject, said testing comprising determining at least one parameter selected from the group consisting of hematocrit value and blood hemoglobin concentration, a test result that lies within the normal range of values for said at least one parameter establishing the absence of anemia in the subject;

evaluating said aliquot of blood to establish the presence of at least normal total body iron stores in the living subject, said evaluating comprising the determination of at least one indicator selected from the group consisting of serum iron value, serum transferrin value, serum transferrin saturation, serum ferritin value, and red blood cell ferritin concentration, a determined result that lies within the normal range of values for said at least one indicator establishing the presence of said at least normal total body iron stores in the subject; and

analyzing said aliquot of blood to establish the presence of at least one abnormality within the individual red blood cells of the living subject, said at least one abnormality being at least one selected from the group consisting of a less than normal concentration of hemoglobin within individual red blood cells and a greater than normal content of zinc protoporphyrin within individual red blood cells,

whereby the established absence of anemia, and the established presence at least normal total body iron stores, and the established presence of said at least one abnormality within individual red blood cells identify that normal living subject as a surreptitious user.

5,369,015

METHOD FOR PRODUCING AN ANGIOTENSIN CONVERTING ENZYME INHIBITOR-CONTAINING COMPOSITION

Masaaki Yoshikawa, Joyo; Keiichi Yokoyama; Masayasu Hasegawa, both of Kyoto; Ryoichi Yasumoto, Kawachinagano, and Hiroyuki Fujita, Suita, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1992, Ser. No. 960,636

Claims priority, application Japan, Oct. 17, 1991, 3-298061

Int. Cl.[5] A61K *37/02;* C07K *5/06;* C12P *21/00*

U.S. Cl. 435—68.1 1 Claim

1. A method of producing an angiotensin converting enzyme inhibitor-containing composition which comprises heat-treating a dried bonito meat in water at a temperature not lower than 50° C. to extract water-soluble protein and hydrolyzing the residue predominantly composed of water-insoluble protein with a thermolysin.

5,369,016

PEPTIDE AMIDASE AND THE USE THEREOF

Doerte Steinke, Aachen; Maria-Regina Kula, Niederzier-Hambach; Alexander Schwarz, Cologne, and Christian Wandrey, Juelich, all of Germany, assignors to Forschungszentrum Juelich GmbH, Juelich and Degussa Aktiengesellschaft, Frankfurt am Main, both of Germany

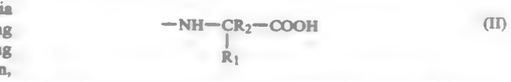
Continuation of Ser. No. 694,981, May 6, 1991, Pat. No. 5,190,875. This application Jan. 19, 1993, Ser. No. 5,819

Claims priority, application Germany, May 7, 1990, 4014564

Int. Cl.[5] C12P *21/00;* C12N *9/78*

U.S. Cl. 435—68.1 8 Claims

1. A process for the production of N-terminally protected or unprotected peptides and N-terminally protected amino acids having the general formula R′-AS (I) wherein AS is an L-amino acid having the general formula



(II)

wherein R′ is a protective group or any N-terminally protected or unprotected amino acid or peptide residue attached by a peptide or isopeptide bond; R_2 is a hydrogen or alkyl and R_1 is a hydrogen or any side chain; comprising the step of deamidating a compound corresponding to (I) and having C-terminally a free amido group with a peptide amidase that catalyzes the selective hydrolytic elimination of the free amino group, leaving inter-amino acid peptide bonds intact, and is isolated from the flavedo of citrus fruits.

5,369,017

PROCESS FOR SOLID PHASE GLYCOPEPTIDE SYNTHESIS

Chi-Huey Wong, Rancho Sante Fe, and Matthias Schuster, San Diego, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Feb. 4, 1994, Ser. No. 191,777
Int. Cl.[5] C12P *21/00*
U.S. Cl. 435—68.1 13 Claims

1. A process for the in vitro synthesis of a glycopeptide that comprises the steps of:

(a) providing a particulate solid matrix comprising a silica-based solid support having a plurality of two-part spacer groups covalently linked to the surface of the particles, said spacer groups having a proximal end and a distal end and a chain length equal to that of about 12 to about 40 methylene groups, said proximal end including the first part of the spacer and providing said covalent link to the particles, said distal end including the second part of the spacer and having a terminal amine or hydroxyl group, the first spacer part having a length equal to that of 3 to about 10 methylene groups and being covalently linked to the second spacer part, said second spacer part having a length equal to that of about 9 to about 30 methylene groups, said second spacer part being soluble as a free molecule in water, dimethylformamide and dichloromethane;

(b) coupling the α-carboxyl group of zero to about five amino acid residues to said terminal amine or hydroxyl group of the spacer group to provide a terminal free amine;

(c) coupling a moiety having a selectively severable bond to the free amino or hydroxyl group (i) of said solid matrix when zero residues are added in step (b) or (ii) of an α-amino group of an amino acid residue coupled in step (b) to form a selectively severable matrix, said selectively severable moiety also including an amino or hydroxyl group breaking of said selectively severable bond freeing the solid matrix from anything bonded to the moiety having the selectively severable bond;

(d) coupling the α-carboxyl group of zero to about five amino acid residues to the amino or hydroxyl group of the selectively severable matrix to provide an amino group;

(e) coupling the α-carboxyl group of a glycosyl amino acid or glycosyl peptide containing up to about five amino acid residues to the amino or hydroxyl group (i) of the selectively severable matrix when zero residues are coupled in step (d) or (ii) of an α-amino group of an amino acid residue coupled in step (d) to form a glycosyl peptide;

(f) enzymatically coupling a further glycosyl moiety to the formed glycosyl peptide in an aqueous medium to form an oligoglycosyl peptide;

(g) repeating step (f) zero to about five times with the same or different glycosyl moiety and enzyme; and

(h) selectively severing said selectively severable bond to free the oligoglycosyl peptide from said solid matrix.

5,369,018

METHOD OF PRODUCING PEPTIDES

Hans-Dieter Jakubke; Dirk Ullmann, both of Leipzig; Karlheinz Drauz, Freigericht, and Andreas Bommarius, Frankfurt am Main, all of Germany, assignors to Degussa Aktiengesellschaft, Germany

Filed Apr. 22, 1994, Ser. No. 231,174
Claims priority, application Germany, Apr. 23, 1993, 4313440; Jul. 31, 1993, 4325746
Int. Cl.[5] C12P *21/00, 21/02*
U.S. Cl. 435—68.1 7 Claims

1. In a method for the biocatalytic production of a peptide in the presence of a biocatalyst; the improvement in which the biocatalyst is a zymogen.

5,369,019

PASTEURELLA VACCINE

Niels T. Foged, Frederiksberg, and Svend Petersen, Lyngby, both of Denmark, assignors to Intervet International B.V., Boxmeer, Netherlands

PCT No. PCT/DK89/00084, § 371 Date Oct. 12, 1990, § 102(e) Date Oct. 12, 1990, PCT Pub. No. WO89/09617, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 11, 1989, Ser. No. 582,945
Claims priority, application Denmark, Dec. 4, 1988, 1995/88
Int. Cl.[5] C07H *15/12;* C12P *21/06, 21/04;* C12N *1/00*
U.S. Cl. 435—69.3 9 Claims

1. An isolated and purified DNA molecule that encodes a polypeptide product comprising the amino acid sequence of SEQ. ID. NO. 1, lacking amino acid 30 to 150.

5,369,020

METHOD FOR SUPPRESSING COLORING OF HUMAN SERUM ALBUMIN

Akinori Sumi; Wataru Ohtani; Naoto Furuhata; Kazuya Takeshima; Kaeko Kamide; Takao Ohmura, and Kazumasa Yokoyama, all of Hirakata, Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Mar. 16, 1993, Ser. No. 31,823
Claims priority, application Japan, Mar. 16, 1992, 4-091624
Int. Cl.[5] C12P *1/02, 21/02*
U.S. Cl. 435—69.6 7 Claims

1. In a method for producing human serum albumin expressed by genetic engineering, the improvement which comprises culturing recombinant host cells expressing human serum albumin and/or purifying the expressed human serum albumin in the presence of an amine compound selected from the group consisting of diamines, selected from the group consisting of alkylenediamines having 1 to 6 carbon atoms and N,N-dialkylenediamines having 1 to 6 carbon atoms, guanidines, and aminophenylacetic acids.

5,369,021

MICROORGANISM FOR SELECTIVE PRODUCTION OF A SPECIFIC COMPOUND OF AVERMECTIN AND A METHOD FOR SELECTIVE PRODUCTION THEREOF

Ōmura Satoshi, and Ikeda Haruo, both of Tokyo, Japan, assignors to The Kitasato Institute, Tokyo, Japan

Division of Ser. No. 565,448, Aug. 10, 1990, Pat. No. 5,206,155.
This application Dec. 30, 1992, Ser. No. 998,861
Claims priority, application Japan, Mar. 5, 1990, 2-53411
Int. Cl.[5] C12P *1/04, 7/22, 17/02*
U.S. Cl. 435—71.3 9 Claims

1. A process for selective production of an avermectin compound "a", comprising the step of culturing a strain of *Streptomyces avermitilis* microorganism selected from the group consisting of *Streptomyces avermitilis* K 2038 (FERM BP-2775), *Streptomyces avermitilis* K 2033 (FERM BP-2773) and *Streptomyces avermitilis* K 2034 (FERM BP-2774) capable of producing essentially only avermectin compound "a" and wherein the culture retains the ability to degrade isoleucine or its keto acid (3-methyl-2-oxovaleric acid) but has a decreased ability to degrade valine or its keto acid (2-oxoisovaleric acid) in the avermectin pathway on an aqueous nutrient medium comprising an assimilable source of nitrogen, carbon and inorganic salt; and

recovering the avermectin compound "a" from the medium.

5,369,022

METHOD TO IMPROVE THE PROTECTION OF CROPS FROM HERBICIDAL INJURY

Keith E. Newhouse, Bensalem, and Thomas J. Schaefer, Levittown, both of Pa., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 682,507, Apr. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 292,207, Dec. 30, 1988, abandoned. This application Sep. 17, 1993, Ser. No. 123,460
Int. Cl.[5] A01H *4/00;* A01C *1/06*
U.S. Cl. 435—172.1 9 Claims

1. A method for protecting a corn crop or a wheat crop from inhibition of growth or development due to an acetohydroxyacid synthase inhibiting herbicidal compound which comprises incorporating genetically imparted resistance into the crop to the herbicide in combination with treating the crop with a chemical safener to the herbicide wherein said chemical safener is selected from the group consisting of 1,8-naphthalic anhydride, the dicationic salt of 1,8-naphthalic acid and butyl [(5-chloro-8-quinolyl)oxy]acetate.

5,369,023

METHOD OF PURIFYING PUTRESCINE N-METHYLTRANSFERASE FROM TOBACCO PLANT EXTRACT WITH AN ANION EXCHANGE MEDIUM

Herbert Y. Nakatani, Midlothian, and Vedpal S. Malik, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 613,160, Nov. 14, 1990, Pat. No. 5,260,205. This application Aug. 9, 1993, Ser. No. 104,493
The portion of the term of this patent subsequent to Nov. 9, 2010, has been disclaimed.
Int. Cl.[5] C12N *9/10*
U.S. Cl. 435—193 14 Claims

1. A process for purifying putrescine N-methyltransferase from a tobacco plant extract comprising the steps of:

(a) applying the extract to a solid phase anion exchange medium, wherein the application temperature and the pH and chemical composition of the extract are such that putrescine N-methyltransferase is retained by the anion exchange medium;

(b) selectively eluting the putrescine N-methyltransferase from the anion exchange medium with an elution buffer comprising an amount of a polyamine selected from the group consisting of putrescine, N-methylputrescine, spermine, spermidine, agmatine, cadaverine, and mixtures thereof, wherein the elution temperature and the pH and chemical composition of the elution buffer are such that the putrescine N-methyltransferase would be retained by the anion exchange medium if the polyamine were not present; and

(c) obtaining the purified putrescine N-methyltransferase in the eluate.

5,369,024

XYLANASE FROM STREPTOMYCES ROSEISCLEROTICUS NRRL-11019 FOR REMOVING COLOR FROM KRAFT WOOD PULPS

Thomas W. Jeffries; Anthony C. Grabski, and Rajesh N. Patel, all of Madison, Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 25, 1992, Ser. No. 857,060
Int. Cl.[5] C12N *9/24, 1/20*
U.S. Cl. 435—200 1 Claim

1. A substantially pure preparation of xyl 3 obtained from *Streptomyces roseiscleroticus* NRRL B-11019, wherein xyl 3 has a molecular weight of approximately 21 kD as determined by SDS-gel electrophoresis and a pH optima of pH 5-pH 7.

5,369,025

RECOMBINANT FOWLPOX VACCINE FOR PROTECTION AGAINST MAREK'S DISEASE

Keyvan Nazerian, Haslett; Lucy F. Lee, East Lansing; Noboru Yanagida, East Lansing; Ryohei Ogawa, East Lansing, and Yi Li, East Lansing, all of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 722,860, Jun. 28, 1991, abandoned. This application Dec. 10, 1991, Ser. No. 803,633
Int. Cl.[5] C12N *7/00, 15/00;* C12P *21/02, 19/34*
U.S. Cl. 435—235.1 1 Claim

1. The recombinant fowlpox virus rec.FPV/MDVgBh and which is assigned deposit number ATCC VR-2330.

5,369,026

DNA ENCODING BOVINE CORONAVIRUS POLYPEPTIDES E2 AND E3

Michael D. Parker; Graham J. Cox, and Lorne A. Babiuk, all of Saskatoon, Canada, assignors to Veterinary Infectious Disease Organization, Saskatoon, Canada

Continuation of Ser. No. 397,689, Aug. 22, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 919,976
Int. Cl.[5] C12N *5/10, 15/50, 1/19, 1/21*
U.S. Cl. 435—240.1 12 Claims

1. A DNA molecule comprising a coding sequence for Bovine Coronavirus (BCV) protein wherein the BCV protein is selected from the group consisting of E2 and E3.

5,369,027

BACILLUS THURINGIENSIS STRAINS TOXIC TO DIABROTICA SPECIES

Bart J. Lambert, Beernem; Stefan K. Jansens, and Marnix Peferoen, both of Gent, all of , assignors to Plant Genetic Systems, N.V.,

Filed Jul. 12, 1993, Ser. No. 89,809
Int. Cl.[5] C12N *1/20;* A01N *63/00*
U.S. Cl. 435—252.2 2 Claims

1. A biologically pure culture of *Bacillus thuringiensis* LMG P-14025.

5,369,028

DNA AND MRNA ENCODING HUMAN NEURONAL NICOTINIC ACETYLCHOLINE RECEPTOR COMPOSITIONS AND CELLS TRANSFORMED WITH SAME

Michael M. Harpold and Steven B. Ellis, both of San Diego, Calif., assignors to The Salk Institute Biotechnology/Industrial Associates, Inc., San Diego, Calif.

Filed Apr. 3, 1990, Ser. No. 504,455
Int. Cl.[5] C12N *1/20;* C12P *21/06, 21/04;* C07H *17/00*
U.S. Cl. 435—252.3 18 Claims

1. Isolated and purified DNA consisting of the human neuronal nicotinic acetylcholine receptor alpha3 subunit-encoding portion of plasmid HnAChRα3 (ATCC accession No. 68278), and degenerate variants thereof.

5,369,029

METHOD FOR DEGRADING NUCLEIC ACIDS IN WASTE FERMENTATION SOLUTIONS WITH *PAECILOMYCES LILACINUS*

Michael Bröker, and Mathias Fibi, both of Marburg, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Continuation of Ser. No. 619,449, Nov. 29, 1990, abandoned. This application Apr. 1, 1993, Ser. No. 41,351
Claims priority, application Germany, Dec. 1, 1989, 3939771
Int. Cl.[5] C12N *1/08, 9/16, 1/00*
U.S. Cl. 435—262.5 7 Claims

1. A method for degrading nucleic acids in a waste fermenta-

tion solution, which comprises exposing the waste solution to RNases and/or DNases released by autolysis of and/or secreted from *Paecilomyces lilacinus* present in or added to the waste solution, said RNases and/or DNases being present during fermentation of the waste solution under sterile conditions.

5,369,030

METHOD OF INDUCING CELLULAR DIFFERENTIATIONS AND ALTERING CELL PHENOTYPE USING CERAMIDE ANALOGS

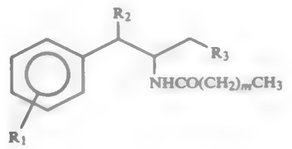
Yusuf A. Hannun, Chapel Hill, and Alicja Bielawska, Apex, both of N.C., assignors to Duke University, Durham, N.C.

Filed Sep. 11, 1992, Ser. No. 944,100

Int. Cl.[5] C12N *5/00*; A61K *31/16*

U.S. Cl. 435—240.2 **17 Claims**

1. A method of inducing mammalian cell differentiation, comprising contacting a mammalian cell capable of undergoing differentiation with an amount of a compound effective to induce differentiation, said compound having the formula:



wherein

R_1 is H, NO_2, OH, chlorine, bromine or fluorine;

R_2 is H, OH or methoxy;

R_3 is H or OH; and

m is an integer from about 10 to about 14.

5,369,031

BIOREMEDIATION OF POLAR ORGANIC COMPOUNDS

Brian S. Middleditch, and Peter S. K. Lee, both of Houston, Tex., assignors to University of Houston, Houston, Tex.

Filed Jul. 21, 1992, Ser. No. 918,713

Int. Cl.[5] C12F *1/04*; C02F *3/30, 3/34*

U.S. Cl. 435—284 **23 Claims**

1. A method for the bioremediation of a medium contaminated with ketones, comprising the steps of:

contacting a sufficient amount of an isolated and identified ketone degrading bacteria of the species *Bacillus thuringiensis* and an organic nutrient to said medium under conditions which allow said bacteria to biodegrade said ketone.

5,369,032

APPARATUS FOR ADMINISTERING LIVE BACTERIA AS FEED ADDITIVES TO LIVESTOCK AND POULTRY

William C. Pratt, Canyon, Tex., assignor to Micro Chemical, Inc., Amarillo, Tex.

Continuation of Ser. No. 486,952, Mar. 1, 1990, abandoned, which is a division of Ser. No. 215,210, Jul. 5, 1988, Pat. No. 4,910,024. This application Dec. 2, 1993, Ser. No. 161,201

Int. Cl.[5] C12M *1/38*

U.S. Cl. 435—290 **12 Claims**

9. An apparatus for maintaining live probiotic bacteria at an animal feedlot in a ready-to-administer condition for administration as a feed additive to animals at the feedlot, the apparatus comprising:

(a) a first vessel for receiving a first aqueous carrier liquid and a quantity of probiotic bacteria;

(b) first agitation means for agitating the liquid in the first vessel to form and maintain a first uniform suspension of the bacteria and liquid at a known first concentration in the first vessel;

(c) cooling means associated with the first vessel for cooling the first suspension in the vessel;

(d) first delivery means for delivering the first suspension from the first vessel;

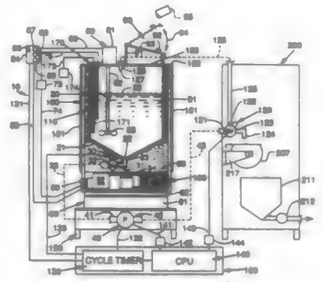
(e) a second vessel for receiving the first suspension delivered from the first vessel;

(f) means for delivering a second aqueous carrier liquid to the second vessel for intermixing with the first suspension in the second vessel;

(g) second agitation means for agitating the first suspension and the second carrier liquid in the second vessel to form and maintain a second uniform suspension comprising the first suspension and the second carrier liquid in the second vessel such that the second suspension has a known second concentration of probiotic bacteria that is less than the first concentration of probiotic bacteria in the first suspension;

(h) second delivery means for delivering the second suspension from the second vessel; and

(i) control means operable to



operate the first agitation means to form and maintain the first suspension in the first vessel;

operate said cooling means so as to maintain the temperature of the first suspension within a predetermined temperature range such that the predetermined first concentration of probiotic bacteria is maintained in the first suspension without substantial propagation and without substantial loss of viability of the probiotic bacteria;

on demand, operate said first delivery means to deliver a demanded amount of the first suspension from the first vessel into the second vessel;

while the first suspension is in the second vessel, operate the second agitation means in the second vessel to form and maintain the second suspension within the second vessel; and

after the second suspension is formed in the second vessel, operate the second delivery means to deliver the second suspension from the second vessel to a receiving station for intermixing the delivered second suspension with a feed ration.

5,369,033

SUPERCRITICAL FLUID CONTAMINATION MONITOR

Edward S. Di Milia, Gardena; Darrell A. Gleichauf, Redondo Beach, and Thomas E. Whiting, Hermosa Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 24, 1992, Ser. No. 828,533

Int. Cl.[5] G01N *15/00*

U.S. Cl. 436—148 **20 Claims**

1. A system for monitoring contaminants present in a flowing stream of supercritical fluid wherein the amount of said contaminants decreases with time, said system comprising:

a tube for containing said flowing stream of supercritical fluid;

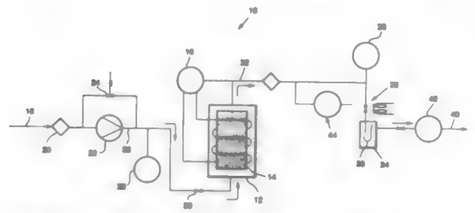
a contaminant measurement zone connected to said tube;

sampling means for removing at least a portion of supercritical fluid from said flowing stream and introducing said portion of supercritical fluid into said contaminant measurement zone as a sample stream;

pressure release means connected to said measurement zone for maintaining the pressure within said measurement zone at or below the level required to convert said sample stream into a gas wherein said contaminants present in said sample stream remain in a non-gaseous form in said measurement zone;

a quartz crystal microbalance system in said measurement zone, on which said contaminants deposit in non-gaseous form for measuring changes in the amount of contaminants introduced into said measurement zone by said sample stream to thereby provide for monitoring of decreases in the amount of contaminants in said flowing stream of supercritical fluid.

11. A method for monitoring contaminants present in a flowing stream of supercritical fluid comprising the steps of:



removing at least a portion of supercritical fluid from said flowing stream and introducing said portion of supercritical fluid into a contaminant measurement zone as a sample stream;

maintaining the pressure within said measurement zone at or below the level required to convert said sample stream into a gas wherein said contaminants present in said sample stream remain in a non-gaseous form;

using a quartz crystal microbalance system in said measurement zone to measure changes in the amount of contaminants introduced into said measurement zone by said sample stream wherein contaminants deposit on said quartz crystal microbalance system to thereby provide for monitoring of changes in the amount of contaminants in said flowing stream of supercritical fluid.

5,369,034

USE OF A VENTABLE RUPTURE DIAPHRAGM-PROTECTED CONTAINER FOR HEATING CONTAINED MATERIALS BY MICROWAVE RADIATION

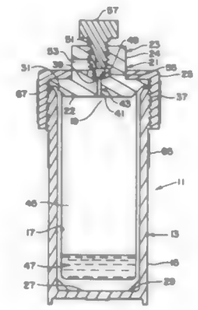
Wyatt P. Hargett, Matthews, and Sara E. Littan, Charlotte, both of N.C., assignors to CEM Corporation, Matthews, N.C.

Continuation of Ser. No. 948,134, Sep. 21, 1992, Pat. No. 5,230,865, which is a continuation of Ser. No. 404,693, Sep. 8, 1989, abandoned. This application May 25, 1993, Ser. No. 67,292

Int. Cl.[5] G01N *1/00*; G05D *16/08*

U.S. Cl. 436—155 **7 Claims**

1. A process for heating a material to elevated temperature in a container while simultaneously protecting the container against damage by pressure developed in said container due to said heating, and providing for controllable venting of container contents which comprises providing said material in a sealed veritable container, which container comprises a container body and a closure for such body which seals the container and makes the container pressure tight, which closure comprises venting means for venting gas from the container, said venting means comprising rupturable means that is rupturable by pressure in the container in excess of a predetermined upper limit of such pressure, seating means against which the rupturable means is held, an outlet means from the container interior to outside of the container, which outlet means is sealed by the rupturable means and through which container contents are discharged when the rupturable means is ruptured, and means for controllably releasing the rupturable means from said seating means to unseal said outlet means and controllably release gas from the container through said outlet means without releasing gas at any other location of the container, heating said material in said sealed ventable container with radiant energy, and controllably venting the container



prior to said rupturable means being ruptured by manipulating said means for releasing the rupturable means so as to controllably release the rupturable means from said seating means to unseal said outlet means and controllably release gas from the container through said outlet means.

5,369,035

METHOD AND APPARATUS FOR ANALYTICAL SAMPLE PREPARATION

Alan R. Eastgate, and Wilfried Vogel, both of Cully, Switzerland, assignors to Fisons plc, Ipswich, England

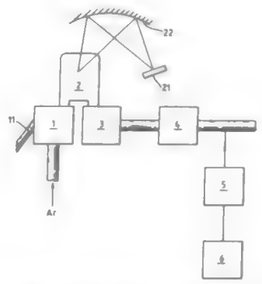
PCT No. PCT/GB91/01345, § 371 Date Apr. 2, 1993, § 102(e) Date Apr. 2, 1993, PCT Pub. No. WO92/02282, PCT Pub. Date Feb. 20, 1992

PCT Filed Aug. 7, 1991, Ser. No. 969,228

Claims priority, application United Kingdom, Aug. 9, 1990, 9017446.7; Sep. 18, 1990, 9020315.9

Int. Cl.[5] G01N *21/62*

U.S. Cl. 436—171 **16 Claims**



12. A method for the elemental analysis of an analyte present in a liquid sample, said method comprising the steps of:

(a) nebulizing said liquid sample to produce droplets therefrom;

(b) subjecting the droplets so formed to radiant heat to evaporate liquid therefrom;

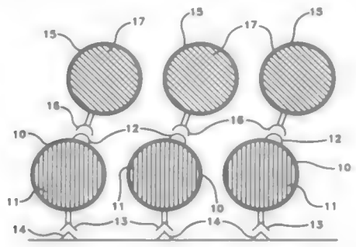
(c) generating a plasma and introducing the heated droplets into said plasma; and

(d) analyzing for at least one element present in said analyte by utilizing the optical emission, atomic absorption or atomic fluorescence spectroscopy of the radiation emitted by said plasma, or by utilizing the mass spectroscopy of ions produced in said plasma;

wherein

(i) in step (b), the droplets are subjected to radiant heat from a source of radiant heat; and
(ii) said source of radiant heat has sufficient power to heat said droplets to above their boiling point in less than 100 ms, thereby causing the droplets produced in step
(a) to explode into smaller droplets before the liquid is completely evaporated, each said smaller droplet containing a smaller quantity of the analyte than contained in the droplet from which it is formed.

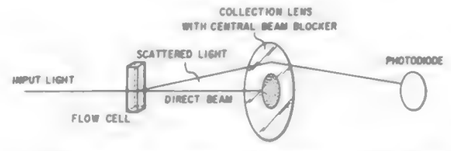
5,369,036
ENHANCEMENT OF SIGNAL IN IMMUNOASSAYS USING MICROPARTICLES WHICH CONTAIN DIFFERENT DETECTABLE SUBSTANCES
Thomas J. Mercolino, Stockton, N.J.; Joanne H. Hauskamp, and Edward C. McFarland, both of Baltimore, Md., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Jul. 2, 1992, Ser. No. 908,136
Int. Cl.[5] G01N *33/543*
U.S. Cl. 436—523 **2 Claims**



1. A process for the assay of a sample, suspected of containing at least one analyte, comprising:
1) contacting said sample with a binder and a tracer, wherein said binder
is immobilized on a solid support, and
specifically binds to said at least one analyte, and
wherein said tracer comprises
a first particulate label which includes a first detectable substance and which has a first and second ligand immobilized thereon, wherein said first ligand specifically binds to either said binder or said at least one analyte, and
a second particulate label which includes a second detectable substance and which has a third ligand immobilized thereon, wherein said third ligand specifically binds said second ligand on said first particulate label,
under conditions such that said tracer becomes bound to said binder in proportion to the amount of said at least one analyte in said sample; and
2) detecting said first and second detectable substances as a measure of the amount of said at least one analyte in said sample.

5,369,037
SIMULTANEOUS MULTIPLE ASSAYS
W. Peter Hansen, New York, N.Y., assignor to Sienna Biotech, Inc., New York, N.Y.
Division of Ser. No. 883,574, May 15, 1992, Pat. No. 5,286,452, which is a continuation-in-part of Ser. No. 702,302, May 20, 1991, abandoned. This application Aug. 30, 1993, Ser. No. 113,327
Int. Cl.[5] G01N *15/02*
U.S. Cl. 436—533 **52 Claims**

1. A particle agglutination method for simultaneously determining the concentration of or detecting the presence of multiple analytes in a single fluid sample, comprising the steps of:
a) preparing a reaction mixture comprising said fluid sample and adding a reagent containing, for each of said multiple analytes, monomeric particles of a diameter or refractive index unique for each said analyte, each said unique monomeric particle being coated with a different composition that binds specifically to a corresponding analyte to form a coated particle-analyte binding pair, with the proviso that said unique monomeric particles or aggregates thereof are optically resolvable, one diameter or refractive index from another;
b) passing said mixture through a sheath flow cell of an optical flow particle analyzer ("OFPA") with an external source of incident light so that each incident light produces from each said unique binding pair or aggregate thereof unidirectional low angle forward light scatter pulse signals unique for each of said unique binding pair or aggregate thereof, said OFPA comprising:
i) a light source;
ii) an optically-defined viewing zone upon which said incident light from said light source is focused;
iii) sheath flow means for flowing the particles of said reaction mixture through said viewing zone;
iv) lens means for collecting said pulse signals of said unidirectional low angle forward scattered light;
v) single light detector means for receiving said collected scattered light pulse signals and converting said collected light pulse signals into electrical pulse signals, each of said electrical pulse signals being unique for each said unique binding pair or aggregate thereof corresponding to each analyte;

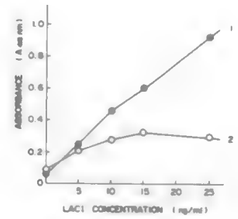


vi) analyzer means for separating said electrical pulse signals into separate output signals, each of said separate output signals being representative of a different analyte, wherein said analyzer means comprises a plurality of single channel analyzers ("SCA") each one dedicated to each said unique binding pair or aggregate thereof, wherein each said SCA passes, as output signals, signals falling within predetermined electronically set ranges of signal values, said ranges differing for each subset of said unique binding pair or aggregate thereof corresponding to each said analyte; and,
vii) calculator means for calculating and correlating a rate of arrival of each said output signal per unit time for each said analyte;
c) analyzing said unidirectional low angle forward light scatter electronically so as to measure simultaneously characteristics and an instantaneous count rate of each said unique binding pair or multimeric aggregate thereof; and
d) relating said characteristics of each said count rate to said concentration or presence of each said analyte.

5,369,038
METHOD FOR IMMUNOLOGICAL ASSAY OF FREE LIPOPROTEIN ASSOCIATED COAGULATION INHIBITOR (LACI) AND KIT THEREFOR
Yukiya Koike, Hino; Koji Suzuki, Tsu, and Yataro Ichikawa, Tokorozawa, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Oct. 30, 1992, Ser. No. 969,368
Claims priority, application Japan, Oct. 31, 1991, 3-311442; Nov. 29, 1991, 3-339560
Int. Cl.[5] G01N *33/53*; C12Q *1/00*; C07K *15/28*
U.S. Cl. 436—548 **11 Claims**

1. A method for immunologically assaying free lipoprotein

associated coagulation inhibitor (hereafter abbreviated as "LACI") in a human sample comprising contacting said sample with a first antibody immobilized on an insoluble carrier and a labeled second antibody, wherein



Antibody / Standard curve	First antibody (Immobilized antibody)	Second antibody (Enzyme-labeled antibody)
1	K3-antibody	K1-antibody
2	K3-antibody	K2-antibody

(i) any one antibody of the first antibody and the second antibody is a monoclonal antibody which specifically binds to the polypeptide (K3) of the following amino acid sequence (SEQ ID NO:1)

Leu Thr Pro Ala Asp Arg Gly Leu Cys Arg
Ala Asn Glu Asn Arg Phe Tyr Tyr Asn Ser
Val

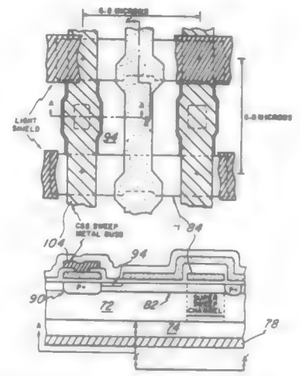
(hereafter referred to as a "K3-antibody"), and
(ii) the other antibody is a monoclonal antibody which specifically binds to the polypeptide (K1) of the following amino acid sequence (SEQ ID NO:2)

Ala Phe Lys Ala Asp Asp Gly Pro Cys Lys
Ala Ile Met Lys Arg Phe Phe Phe Asn Ile
Phe

(hereafter referred to as a "K1-antibody") to produce a complex consisting of said first antibody, said second antibody and free LACI, and detecting the complex attached to the insoluble carrier.

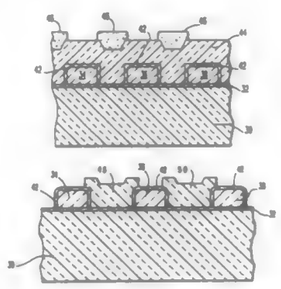
5,369,039
METHOD OF MAKING CHARGE COUPLED DEVICE/CHARGE SUPER SWEEP IMAGE SYSTEM
Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 682,858, Apr. 5, 1991, Pat. No. 5,182,623, which is a continuation of Ser. No. 435,649, Nov. 13, 1989, abandoned. This application Oct. 9, 1992, Ser. No. 958,617
Int. Cl.[5] H01L *21/339*
U.S. Cl. 437—2 **10 Claims**

1. A method for fabricating an image sensor comprising:
forming a semiconductor layer of a first conductivity type;
forming a series of semiconductor wells of a second conductivity type in said semiconductor layer;
growing a first insulator layer over said semiconductor layer;
forming a semiconductor buried channel region of said first conductivity type in selected ones of said semiconductor wells;
depositing a first polysilicon layer over the first insulator layer;
depositing a patterned insulator over said first polysilicon layer above said buried channel region to define a series of charge transfer channels;
forming a series of channel stop regions adjacent respective ones of said charge transfer channels;
etching the first polysilicon layer to form a resistive gate over first portions of said buried channel region;
depositing a patterned second polysilicon layer overlying and spaced apart from said resistive gate, and overlying



and spaced apart from second portions of said buried channel region; and
forming a virtual gate in said buried channel region below said resistive gate.

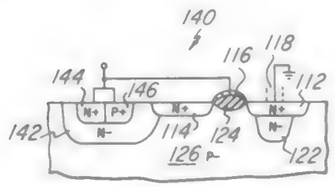
5,369,040
METHOD OF MAKING TRANSPARENT POLYSILICON GATE FOR IMAGING ARRAYS
James Halvis, Severna Park; Nathan Bluzer, Rockville; Robert R. Shiskowski, Glen Burnie, and Li-Shu Chen, Ellicott City, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 884,974, May 18, 1992, abandoned. This application Apr. 12, 1993, Ser. No. 58,629
Int. Cl.[5] H01L *31/18*
U.S. Cl. 437—3 **7 Claims**



1. A method of making a transparent polysilicon gate, comprising the steps of: forming
an active photon absorber from a semiconductor substrate;
forming a gate dielectric layer on said active photon absorber;
depositing a first layer of polysilicon-carbon over said gate dielectric layer;
defining a first array of gates by placing a first resist pattern over said first layer of polysilicon-carbon whereby portions of said first layer of polysilicon-carbon are exposed;
forming said first array of gates by removing said exposed polysilicon-carbon in said first resist pattern;
removing said first resist pattern;
forming an insulating layer on said first array of gates;

depositing a second layer of polysilicon-carbon ever said first array of gates;
defining a second array of gates by placing a second resist pattern over said second layer of polysilicon-carbon whereby portions of said second layer of polysilicon-carbon are exposed; and
forming said second array of gates by removing said exposed polysilicon-carbon in said second resist pattern.

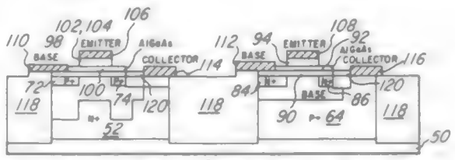
5,369,041
METHOD FOR FORMING A SILICON CONTROLLED RECTIFIER
Charvaka Duvvury, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 14, 1993, Ser. No. 91,544
The portion of the term of this patent subsequent to Oct. 22, 2010, has been disclaimed.
Int. Cl.[5] H01L *21/332*
U.S. Cl. 437—6 **10 Claims**



1. A method of forming a semiconductor controlled rectifier, comprising the steps of:
providing a semiconductor region of a first conductivity type;
forming a first doped region within said semiconductor region, said doped region having a first doping concentration of a second conductivity type opposite said first conductivity type;
forming a first well region of said second conductivity type within said semiconductor region, said first well region extending through said first doped region into said semiconductor region, said first well region having a doping concentration less than said first doping concentration;
forming a contact pad on said first doped region above said first well region;
forming a second well region within said semiconductor region and spaced from said first doped region; and
forming second and third doped regions within said second well region, said second doped region of a conductivity type opposite that of said third doped region.

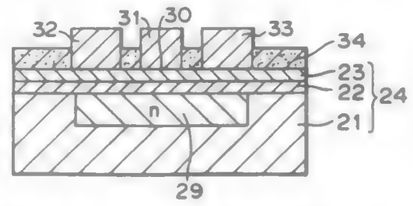
5,369,042
ENHANCED PERFORMANCE BIPOLAR TRANSISTOR PROCESS
Francis J. Morris, Plano; Jau-Yuann Yang, Richardson; Donald L. Plunton, and Han-Tzong Yuan, both of Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 5, 1993, Ser. No. 26,886
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 **19 Claims**

1. A method of forming complementary NPN and PNP bipolar transistors comprising:
a. forming a n-type subcollector layer, having a doping concentration, on a substrate;
b. forming a n-type first layer, of a lower doping concentration than said subcollector layer, over said subcollector layer;
c. increasing said doping concentration of first and second regions of said first layer in an NPN transistor area;
d. counter-doping portions of said n-type subcollector and said n-type first layer, thereby forming a p-type subcollector in a PNP transistor area;
e. forming a n-type second layer, of a lower doping concentration than said n-type subcollector layer, over said first layer;
f. increasing said doping concentration of a first region of said second layer which is over said first region of said first layer, whereby said subcollector layer, said first region of said first layer, and said first region of said second layer are a collector of an NPN transistor;



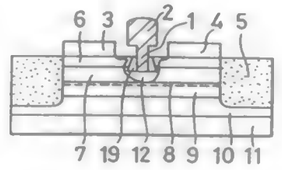
g. counter-doping a second region of said second layer in said PNP portion of said transistor, whereby said p-type subcollector and said second region of said second layer are a collector of a PNP transistor;
h. forming a n-type base layer over said second layer in said PNP transistor area;
i. forming a p-type emitter layer over said n-type base layer;
j. forming a p-type base layer over said second layer in said NPN transistor area; and
k. forming an n-type emitter layer over said p-type base layer.

5,369,043
SEMICONDUCTOR CIRCUIT DEVICE AND METHOD FOR PRODUCTION THEREOF
Fumiaki Hyuga, Tokyo; Kenji Shiojima, Isahara; Tatsuo Aoki, Hachioji; Kazuyoshi Asai, Atsugi; Masami Tokunitsu; Kazumi Nishimura, both of Isehara, and Yasuro Yamane, Sagamihara, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
Filed Dec. 22, 1993, Ser. No. 171,396
Claims priority, application Japan, Dec. 25, 1992, 4-358052; Jan. 4, 1993, 5-014405
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **24 Claims**



1. A method for producing a semiconductor circuit device comprising;
a step of forming on a semi-insulating semiconductor substrate comprising a first III-V compound semiconductor a semi-insulating barrier layer comprising InGaP with a wider energy bandgap than that of the first III-V compound semiconductor,
a step of forming a semi-insulating cap layer comprising a semiconductor with a narrower energy bandgap than that of the InGaP and free from In as a constituent element,
a step of forming a patterned mask layer on the cap layer, and implanting n type impurity ions into the substrate through the mask layer as a mask to form an n type impurity ion implanted region,
a step of depositing an annealing cap film on the cap layer after the mask layer is removed, and annealing the substrate to activate the impurity ion implanted region and convert it into an n type semiconductor region,
a step of providing an opening at a position of the annealing cap film above the n type semiconductor region, and forming a gate electrode comprising a refractory metal, and
a step of providing openings at opposite positions, across the gate electrode, of the annealing cap film, and forming a source electrode and a drain electrode.

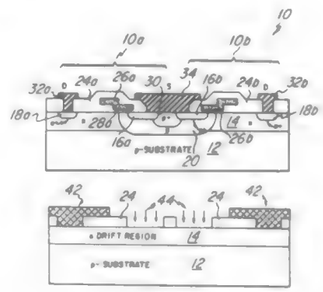
5,369,044
METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE
Teruyuki Shimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 921,572, Jul. 30, 1992, Pat. No. 5,270,556.
This application Jul. 20, 1993, Ser. No. 93,862
Claims priority, application Japan, Sep. 12, 1991, 3-263275
Int. Cl.[5] H01L *21/283, 21/312*
U.S. Cl. 437—40 **2 Claims**



1. A method for producing a semiconductor device comprising:
forming source and drain electrodes spaced from each other on a substrate structure including a layer in which a two-dimensional electron gas is formed;
applying a first resist to the entire surface of the substrate structure and a second resist to the first resist;
forming a stripe-shaped first opening through the second resist between the source and drain electrodes which has a width and extends in a direction perpendicular to a direction connecting the source and drain electrodes;
forming a plurality of second openings in the first resist in the first opening, the second openings being narrower than the first opening and arranged at intervals along a longitudinal direction of the first opening; and
depositing a gate metal on the entire surface and removing unnecessary portions of the gate metal together with the first and second resists by lift-off to form a gate electrode.

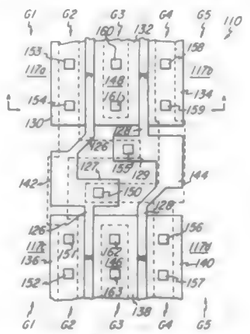
5,369,045
METHOD FOR FORMING A SELF-ALIGNED LATERAL DMOS TRANSISTOR
Wia T. Ng, Thorahill, Canada, and Oh-Kyong Kwon, Seoul, Rep. of Korea, assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jul. 1, 1993, Ser. No. 86,773
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **20 Claims**

1. A method of forming a DMOS transistor device comprising the steps of:
providing a semiconductor layer of a first conductivity type;
forming an insulating layer on said semiconductor layer;
patterning said insulating layer to expose a source window portion of said semiconductor layer and to expose a drain window portion of said semiconductor layer;
forming a D-well region by introducing a conductive impurity within said source window portion of said semiconductor layer;
forming a sidewall region adjacent a sidewall of said insulating layer around said source window;
forming a source region within said source window portion of said semiconductor layer and forming a drain region within said drain window portion of said semiconductor layer; and



forming a gate electrode over a portion of said D-well region between said source region and said insulating layer, said gate electrode formed over a channel region within said D-well between said source and drain regions.

5,369,046
METHOD FOR FORMING A GATE ARRAY BASE CELL
Masahashi Hashimoto, Garland, and Shivaling S. Mahant-Shetti, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 682,803, Apr. 8, 1991, abandoned. This application Oct. 29, 1992, Ser. No. 968,213
Int. Cl.[5] H01C *21/265*; H01L *21/28*
U.S. Cl. 437—48 **12 Claims**



1. A method of forming an array of base cells in a semiconductor region, the method of forming each cell comprising the steps of:
forming an n-doped region in said semiconductor region;
forming a p-doped region in said semiconductor region, said p-doped region spaced from said n-doped region by an insulating region;
doping said n-doped region with p-type dopants to form first, second, and third p-doped source/drain regions, said first and second p-doped source/drain regions separated by a first n-doped channel, and said second and third p-doped source/drain regions separated by a second n-doped channel;
doping said p-doped region with n-type dopants to form first, second, and third n-doped source/drain regions, said first and second n-doped source/drain regions separated by a first p-doped channel, and said second and third n-doped source/drain regions separated by a second p-doped channel;
said doping steps performed such that said first n-doped and

first p-doped source/drain regions are formed centered along a first grid line, said second n-doped and second p-doped source/drain regions are formed centered along a second grid line, and said third n-doped and third p-doped source/drain regions are formed centered along a third grid line and wherein said first, second and third grid lines are non-collinear;

forming an insulating layer over each of said channel regions;

forming a first conductive gate over said first n-doped channel, said insulating region and said first p-doped channel, wherein the portion of said first gate formed on said insulating region crosses said first and second grid lines; and

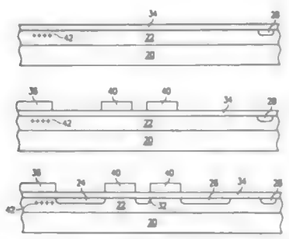
forming a second conductive gate over said second n-doped channel, said insulating region and said second p-doped channel, wherein the portion of said second gate formed on said insulating region crosses said second and third grid lines.

5,369,047

METHOD OF MAKING A BCD LOW NOISE HIGH SENSITIVITY CHARGE DETECTION AMPLIFIER FOR HIGH PERFORMANCE IMAGE SENSORS

Jaroslav Hynecek, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 1, 1993, Ser. No. 87,645
Int. Cl.[5] H01L *21/72*
U.S. Cl. 437—50 **16 Claims**



11. A method for making an active transistor charge detection device comprising:

forming a semiconductor layer of a first conductivity type in a semiconductor substrate of a second conductivity type;

forming an insulator layer over the semiconductor latter;

forming first implants in a portion of the semiconductor layer;

forming a charge drain region of the first conductivity type in the semiconductor layer and spaced apart from the first implants;

forming a transistor gate and a transfer gate over the insulator layer, the transistor gate is between the transfer gate and the charge drain region, a portion of the transfer gate is over the first implants;

forming a source region of the second conductivity type and a transistor drain region of the second conductivity type, the source region is surrounded by the transistor gate, the transistor drain region surrounds the transistor gate; and

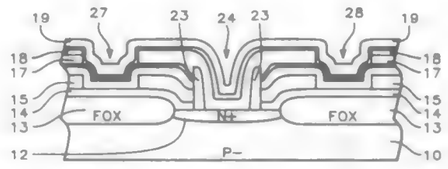
forming second implants below a portion of the transistor drain region between the transistor gate and the charge drain region.

5,369,048

STACK CAPACITOR DRAM CELL WITH BURIED BIT-LINE AND METHOD OF MANUFACTURE

Chen-Chiu Hsue, Hsin-chu, Taiwan, Prov. of China, assignor to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Aug. 26, 1993, Ser. No. 112,126
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **12 Claims**



1. A method of manufacture of an integrated circuit DRAM cell with a stack capacitor on a semiconductor substrate comprising a source region, a drain region, a gate oxide layer formed over said source and drain region and a gate comprising a word line formed over said gate oxide layer, comprising the steps of

(a) deposition of a first dielectric layer over said gate layer,

(b) forming a mask and etching through said first dielectric layer to form a bit-line contact opening therein exposing a portion of the surface of said drain region,

(c) formation of a bit-line conductor layer over the product of (b) and into said bit-line contact opening,

(d) forming a mask and etching a bit-line pattern from said bit-line conductor layer,

(e) deposition of a second dielectric layer composed of silicon dioxide,

(f) deposition of a lower capacitor plate layer, wherein said bit-line pattern, said silicon dioxide layer, and said lower capacitor plate layer are intermediate layers,

(g) node contact etching a trench through said intermediate layers including said lower capacitor plate layer, said silicon dioxide layer and said bit-line pattern to form a node contact opening exposing the surface of said source region,

(h) deposition of a dielectric spacer layer to form material for dielectric spacers in said trench comprising said node contact opening,

(i) forming a mask and etching said dielectric spacer layer leaving spacer structures on the side wall of the trench comprising said node contact opening into which node contact is made,

(j) deposition of a second lower capacitor plate layer forming the top portion of the two layer capacitor plate extending down into said trench forming said node contact opening to make electrical contact to the top surface of source region,

(k) depositing a capacitor dielectric layer over said lower capacitor plate structure, and

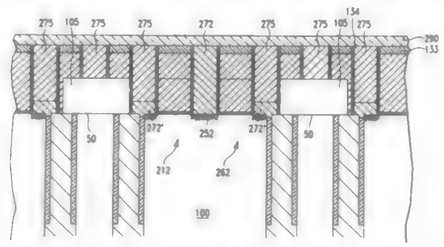
(l) depositing an upper capacitor plate layer over said capacitor dielectric.

5,369,049

DRAM CELL HAVING RAISED SOURCE, DRAIN AND ISOLATION

Joyce E. Acocella, Hopewell Junction; Louis L. Hsu, Fishkill; Seiki Ogura, Hopewell Junction; Nivo Rovedo, LaGrangeville, and Joseph F. Shepard, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1993, Ser. No. 169,873
Int. Cl.[5] H01L *27/00, 21/70*
U.S. Cl. 437—52 **8 Claims**



1. A method of forming a set of memory cells for a MOS DRAM in a set of cell areas of a silicon substrate, each memory cell having an access transistor formed on an epi top surface of a single crystal epitaxial silicon layer, controlled by a first control line, and connected between an input/output line and a trench storage capacitor, comprising the steps of:

preparing said epitaxial layer;

forming a set of said trench storage capacitors in said epitaxial layer having a conductive center electrode insulated from said epitaxial layer, said center electrode having a conductive trench top surface covered by a trench top insulator;

forming a gate stack set of layers comprising a gate oxide layer on said epi top surface, at least one gate poly layer above said gate oxide layer and a gate nitride layer above said gate poly layer;

forming a set of isolation apertures isolating said cell areas by etching said gate nitride and said gate poly layers down to said gate oxide layer in a set of isolation areas covering an isolation portion of said trench top insulator and extending between adjacent cell areas, whereby said trench top insulator has a strap portion outside said isolation aperture and within said cell area;

depositing isolation oxide in said isolation apertures and polishing said isolation oxide using said gate nitride as a polish stop down to an isolation surface defined by said gate nitride;

forming a gate conductive layer of poly over said cell areas and isolation areas;

forming a gate protective layer of nitride over said gate conductive layer of poly;

patterning and etching down to said gate oxide layer a set of source-drain apertures covering source and drain portions of said cell, said set of source-drain apertures including a strap aperture subset of said set of source-drain apertures, exposing said strap portions of said trench top insulators said strap aperture subset being aligned with said isolation regions and individual pairs of said set of source-drain apertures being separated by a transistor gate portion of said gate stack and said gate conductive layer of poly;

removing said trench top insulator and said gate oxide within said strap aperture subset of said set of source-drain apertures;

implanting an LDD dose of ions within said set of source-drain apertures;

forming LDD sidewalls within said set of source-drain apertures by depositing at least one conformal insulating layer on side walls of said source-drain apertures and removing said conformal layer from the bottom of said apertures, thereby forming a set of self-aligned strap apertures in which the strap location is insulated from misaligned portions of the gate stack by the sidewalls;

implanting sources and drains within said set of source-drain apertures, thereby defining a self-aligned access transistor comprising a source, a drain and a transistor gate lying between said source and drain;

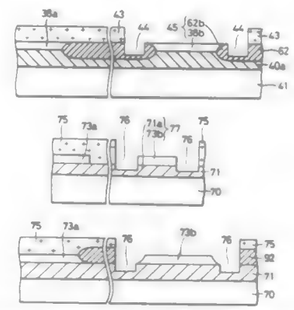
depositing a conductive material within said set of source-drain apertures, thereby forming a surface strap connection between said trench capacitor and said access transistor and a cell input/output contact and polishing said conductive material to be coplanar with said isolation surface.

5,369,050

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Shinichi Kawai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 29, 1992, Ser. No. 889,953
Claims priority, application Japan, May 31, 1991, 3-129492
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—62 **19 Claims**



1. A method of fabricating a semiconductor device comprising the steps of:

forming a semiconductor layer having a device area and an alignment mark on an insulating layer;

selectively etching the insulating layer area around the alignment mark using the alignment mark as a mask so as to form a groove around the alignment mark; and

aligning a mask pattern using the alignment mark surrounded by the groove as a reference point.

5,369,051

SIDEWALL-SEALED POLY-BUFFERED LOCOS ISOLATION

Kalipatnam V. Rao, Plano; Joel T. Tomlin, Garland, and Monica A. Beals, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 552,279, Jul. 12, 1990, abandoned, which is a continuation of Ser. No. 244,968, Sep. 15, 1988, abandoned. This application Aug. 5, 1992, Ser. No. 925,547
Int. Cl.[5] H01L *21/76, 21/31*
U.S. Cl. 437—69 **3 Claims**

1. A method for forming a semiconductor device, comprising the steps of:

providing a semiconductor body;

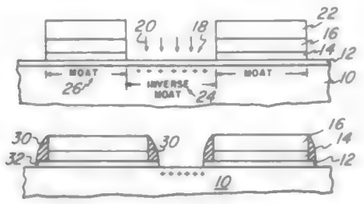
growing a pad oxide layer over said semiconductor body;

forming by low-pressure chemical vapor deposition a polysilicon buffer film over said pad oxide layer;

forming by low-pressure chemical vapor deposition a nitride film over said polysilicon buffer layer;

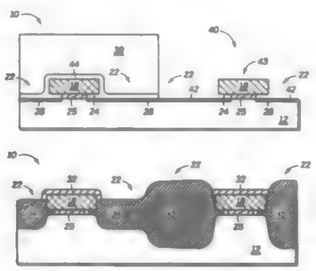
patterning an inverse moat region with a patterning material, said inverse moat region surrounding an active moat region;

plasma etching to remove said nitride and said polysilicon from said inverse moat region, leaving a moat region nitride over said moat region;
forming a channel-stop implant in said inverse-moat region;
stripping said patterning material;
forming by low-pressure chemical vapor deposition a nitride layer over said semiconductor body;
anisotropic plasma-etching said nitride layer to form a thin nitride sidewall all along said moat perimeter to seal edges of said polysilicon in said moat region;



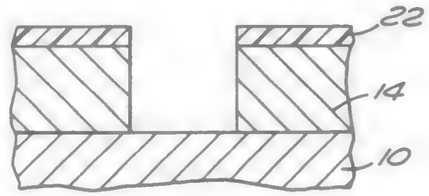
growing a field oxide in said inverse moat region wherein an oxynitride skin is formed on said moat region nitride, further including the steps of:
deglazing said semiconductor body to strip said oxynitride skin off said moat region nitride;
removing said moat region nitride and nitride sidewalls;
removing said polysilicon film; and
removing said moat pad oxide.

5,369,052
METHOD OF FORMING DUAL FIELD OXIDE ISOLATION
Prashant Keskare; James R. Pfiester, and Shih-Wei Sun, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 6, 1993, Ser. No. 161,362
Int. Cl.[5] H01L *21/76*
U.S. Cl. 437—70 **20 Claims**



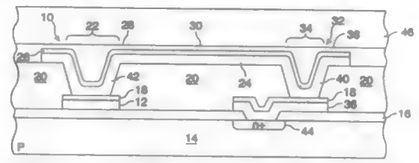
1. A method for forming a dual field thickness isolation structure in an integrated circuit device on a semiconductor substrate, comprising the steps of:
forming a buffer layer overlying the substrate;
forming a first masking layer overlying the buffer layer;
patterning the first masking layer to form a first exposed portion of the buffer layer, to leave a remaining portion of the first masking layer, and to define an isolation region of the substrate;
forming a nitride layer overlying the remaining portion of the first masking layer and the first exposed portion of the buffer layer;
forming a second masking layer overlying a portion of the nitride layer, wherein the second masking layer is patterned to form an exposed portion of the nitride layer;
removing the exposed portion of the nitride layer to form a second exposed portion of the buffer layer and to form an exposed portion of the remaining portion of the first masking layer, wherein a remaining portion of the nitride layer is protected by the second masking layer;
removing the second masking layer after the step of removing the exposed portion of the nitride layer; and
oxidizing through the remaining portion of the nitride layer and through the second exposed portion of the buffer layer to form an oxidized layer having the dual field thickness electrical isolation structure in the isolation region of the substrate.

5,369,053
METHOD FOR PATTERNING ALUMINUM METALLIZATIONS
Leuh Fang, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Continuation of Ser. No. 426,124, Oct. 24, 1989, abandoned.
This application Mar. 8, 1991, Ser. No. 667,250
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—194 **18 Claims**



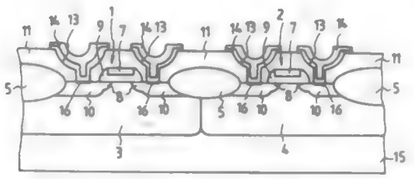
1. A process for forming a preselected pattern of aluminum-based metallizations on a semiconductor device of the type that includes a substrate of semiconductor material comprising the steps of:
a) depositing a layer of aluminum-based metallization comprising an alloy of copper and aluminum on said substrate; then
b) depositing a layer of TiW at the top of said metallization; then
c) depositing a layer of material resistant to chlorine-based etchants; then
d) depositing a layer of photoresist on said resistant layer; then
e) developing and removing regions of said layer of photoresist in accordance with said predetermined pattern to thereby expose predetermined regions of said layer of resistant material; then
f) applying a fluorine-based etchant to said exposed regions of said layer of resistant material to thereby create a hard mask having a predetermined pattern of apertures for exposing predetermined, underlying regions of said TiW layer; then
g) continuing to apply said fluorine-based etchant to etch said exposed regions of said TiW layer; then
h) applying a chlorine-based etchant until said exposed regions of said layer of metallization are removed, whereby said preselected pattern of metallizations is formed on said semiconductor substrate; and
i) utilizing the hard mask for passivation, of the underlying pattern of metallization, in subsequent semiconductor assembly.

5,369,054
CIRCUITS FOR ESD PROTECTION OF METAL-TO-METAL ANTIFUSES DURING PROCESSING
Yeouchung Yen, San Jose; Wenn-Jei Chen, Sunnyvale; Steve S. Chiang, Saratoga, and Abdul R. Forouhi, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.
Filed Jul. 7, 1993, Ser. No. 87,942
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—195 **4 Claims**



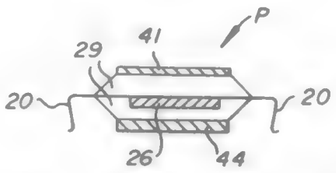
1. A process for forming a protection device for at least one antifuse disposed between a lower conductor comprising a lower antifuse electrode and an upper conductor comprising an upper antifuse electrode, said upper electrode separated from said lower electrode by an insulating layer having a first aperture of a first size formed therethrough, said antifuse characterized by a layer of antifuse material formed over said lower conductor in said first aperture, comprising the steps of:
forming a second aperture through said insulating layer to expose said lower conductor, said second aperture having a second size smaller than said first size;
forming a layer of said antifuse material in said first and second apertures over said lower conductor; and
forming said upper conductor over said layer of antifuse material in said first and second apertures.

5,369,055
METHOD FOR FABRICATING TITANIUM SILICIDE CONTACTS
Ji H. Chung, Sungdongku, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungkido, Rep. of Korea
Filed Jun. 4, 1993, Ser. No. 72,527
Claims priority, application Rep. of Korea, Jun. 5, 1992, 1992-9728
Int. Cl.[5] H01L *21/265, 21/283*
U.S. Cl. 437—200 **7 Claims**



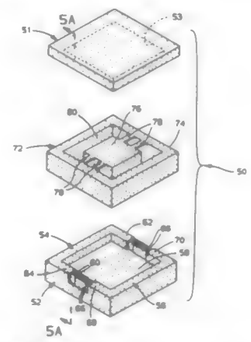
1. A method for fabricating titanium silicide contacts on high concentration source and drain regions, comprising the steps:
depositing an insulating film over an entire exposed upper surface of a structure including the source and drain regions and then forming contact holes through which the source and drain regions are partially exposed;
implanting, in surfaces of the exposed portions of the source and drain regions as high concentration active regions, impurity ions with a conductivity opposite to a conductivity of the source and drain regions, the impurity with the opposite conductivity implanted in the source and drain regions is BF_2;
depositing a titanium film over each of the source and drain region portions implanted with the impurity ions of the opposite conductivity; and
heat treating the titanium film, to form a titanium silicide film, and forming a metal contact on the titanium silicide film, the metal contact capable of enhancing a contact resistance and a delay characteristic.

5,369,056
WARP-RESISTENT ULTRA-THIN INTEGRATED CIRCUIT PACKAGE FABRICATION METHOD
Carmen D. Burns; James W. Cady; Jerry M. Roane, all of Austin, and Phillip R. Troetschel, Buda, all of Tex., assignors to Staktek Corporation, Austin, Tex.
Filed Mar. 29, 1993, Ser. No. 37,830
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **18 Claims**



1. A method of manufacturing a warp-resistant integrated circuit package of the type that includes a molded casing containing an integrated circuit die formed on a silicon substrate comprising the steps of:
providing an integrated circuit package having upper and lower major surfaces;
reducing the overall thickness of said integrated circuit package by removing some casing material uniformly across said upper major surface;
mounting a thin layer of material with a coefficient of thermal expansion less than or equal to the coefficient of thermal expansion of silicon to said upper major surface of said integrated circuit package; and
reducing the overall thickness of said integrated circuit package by removing some casing material uniformly across said lower major surface.

5,369,057
METHOD OF MAKING AND SEALING A SEMICONDUCTOR DEVICE HAVING AN AIR PATH THERETHROUGH
Han-Sheng Lee, Bloomfield Hill, Mich.; Steven E. Staller; James H. Logsdon, both of Kokomo, Ind., and Dan W. Chilcott, Sharpsville, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.
Filed Dec. 21, 1993, Ser. No. 169,118
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 **6 Claims**



1. A method of making an accelerometer comprising:
providing a first wafer having a support shoulder and a

proof mass suspended by a thin membrane bridge between the support shoulder and proof mass, and an associated circuitry for detecting deflection of the proof mass upon extreme acceleration,

providing a second wafer having a cavity formed therein, for accommodating the deflection of the proof mass of the first wafer,

at least one serpentine venting path formed in the at least one of said wafers;

bonding the first and second wafers together; and

exposing the bonded wafers to a sealing composition so that the sealing composition enters the serpentine venting path to seal the device.

5,369,058

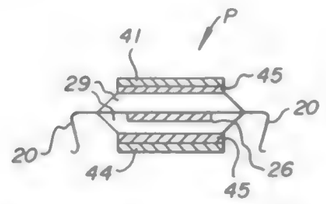
WARP-RESISTENT ULTRA-THIN INTEGRATED CIRCUIT PACKAGE FABRICATION METHOD

Carmen D. Burns; James W. Cady; Jerry M. Roane, all of Austin, and Philip R. Troetschel, Buda, all of Tex., assignors to Staktek Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 37,830, Mar. 29, 1993. This application Mar. 4, 1994, Ser. No. 206,304

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **18 Claims**



1. A method of manufacturing a warp-resistant integrated circuit package of the type that includes a molded casing containing an integrated circuit die formed on a silicon substrate comprising the steps of:

providing an integrated circuit package having upper and lower major surfaces;

reducing the overall thickness of said integrated circuit package by removing some casing material uniformly across said upper major surface;

mounting a first thin layer of material with a coefficient of thermal expansion less than or equal to the coefficient of thermal expansion of silicon with at least one layer of high temperature adhesive to said upper major surface of said integrated circuit package;

reducing the overall thickness of said integrated circuit package by removing some casing material uniformly across said lower major surface;

applying a first layer of high temperature adhesive to the upper and lower major surfaces of a second thin layer of material having a coefficient of thermal expansion greater than the coefficient of thermal expansion of silicon;

curing said first layer of adhesive;

applying a second layer of high temperature adhesive over said cured first layer of adhesive; and

mounting said second thin layer of material to said lower major surface of said integrated circuit package.

5,369,059

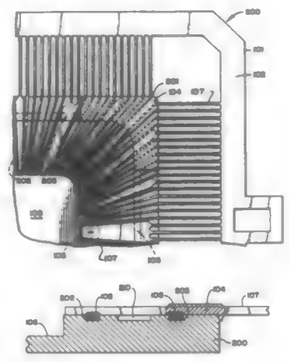
METHOD FOR CONSTRUCTING A REDUCED CAPACITANCE CHIP CARRIER

Delvin D. Eberlein, Altoona, Wis., assignor to Cray Research, Inc., Eagen, Minn.

Continuation of Ser. No. 610,793, Nov. 8, 1990, abandoned, which is a division of Ser. No. 447,651, Dec. 8, 1989, abandoned. This application Apr. 8, 1992, Ser. No. 865,675

Int. Cl.[5] H01L *21/52, 21/56, 21/58, 21/60*

U.S. Cl. 437—213 **3 Claims**



1. A method of constructing a chip carrier, comprising the steps of:

(a) providing a substrate having a substantially planar surface, said substrate forming a part of said chip carrier;

(b) creating on said planar surface at a centrally located position a cavity for subsequently locating an integrated circuit die;

(c) creating a first channel in said surface concentric to said cavity;

(d) creating a second channel in said surface concentric to said first channel;

(e) creating a third channel in said surface concentric to said second channel;

(f) depositing and substantially confining adhesive glass in said first channel and said second channel by placing a layer of adhesive glass on said first channel and said second channel;

(g) attaching a plurality of leads to said planar surface by placing said plurality of leads on said planar surface so that said adhesive glass secures said leads to said substrate, and further so that said leads contact said planar surface on each side of each of said first, second and third channels; and

(h) providing said third channel with an air space beneath a portion of said leads in said chip carrier.

5,369,060

METHOD FOR DICING COMPOSITE WAFERS

Helmut Baumann, Gomaringen; Juergen Kurle, Reutlingen, and Peter Elberger, Lichtenstein, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 1, 1993, Ser. No. 70,141

Claims priority, application Germany, Jun. 20, 1992, 4220284

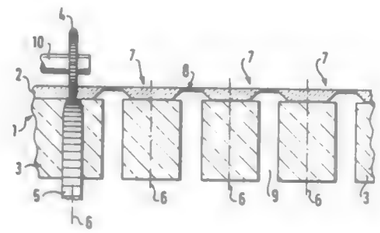
Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—226 **9 Claims**

1. A method of dicing a composite wafer into a plurality of chips, wherein the wafer is formed of first and second layers of different materials, thereby defining an interface between the first and second layers, comprising the steps of:

making a first cut into the first layer at a first side of the wafer so that the first cut extends from the first side of the wafer to the interface between the first and second layers, the first layer being composed of a first material; and

making a second cut into the second layer at a second side of the wafer so that the second cut extends from the second



side of the wafer, through the second layer, to the interface between the first and second layers, the second layer being composed of a second material different than the first material.

5,369,061

METHOD OF PRODUCING SEMICONDUCTOR DEVICE USING A HYDROGEN-ENRICHED LAYER

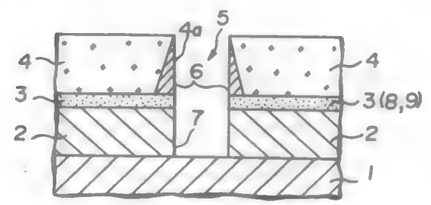
Tetsuji Nagayama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1993, Ser. No. 77,054

Claims priority, application Japan, Jun. 16, 1992, 4-156981

Int. Cl.[5] H01L *21/302, 21/31*

U.S. Cl. 437—228 **13 Claims**



10. A method of producing a semiconductor device comprising the steps of:

forming a hydrogen-enriched layer on an upper surface of a silicon oxide interlayer insulation film covering an underlying metallization by ion implantation of hydrogen into the film;

forming on said hydrogen-enriched layer and said silicon oxide interlayer insulation film a resist pattern having an inversely tapered cross-sectional shape; and

etching said hydrogen-enriched layer and said silicon oxide interlayer insulation film using said resist pattern as a mask and an etching gas containing a fluorocarbon based compound;

wherein hydrogen released from said hydrogen-enriched layer during said etching is utilized for promoting deposition of an etching reaction product, and said silicon oxide interlayer insulation film is etched while the cross-sectional shape of said resist pattern is shaped in a substantially vertical wall state by the deposition.

5,369,062

PROCESS FOR PRODUCING CERAMIC GLASS COMPOSITION

Joseph F. Chiang, Oneonta, N.Y.; Pinzhen Chen, and You-wu Xu, both of Shanghai, China, assignors to The Research Foundation of State University of NY, Albany, N.Y.

Filed Aug. 20, 1993, Ser. No. 110,047

Int. Cl.[5] C03C *3/091*

U.S. Cl. 501—63 **42 Claims**

1. A process for producing an amorphous ceramic glass, comprising the steps of:

forming an intermediate ceramic mixture comprising SiO_2, Al_2O_3, CaO, MgO, TiO_2, B_2O_3, and P_2O_5; and

subjecting said ceramic mixture to a heat treatment comprising the steps of:

heating said ceramic mixture to a first ceramic mixture heating temperature of between about 850° and 1000° C. at a heating rate of between about 1° and 2° C. per minute; and

sintering said ceramic mixture at a sintering temperature between about 850° and 1000° C. for a time period sufficient to increase the density of said ceramic mixture to at least about 2.1 g/cm^3.

5,369,063

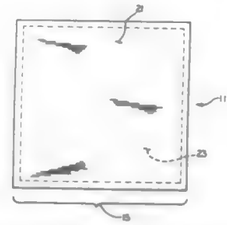
MOLTEN METAL FILTER MEDIUM AND METHOD FOR MAKING SAME

Alison W. Gee, Bedford Hts.; Premachandran Krishnaswamy, Moreland Hills, and Ajit Y. Sane, Willoughby, all of Ohio, assignors to Metaullics Systems Co., L.P., Solon, Ohio

Division of Ser. No. 564,678, Aug. 7, 1990, Pat. No. 5,177,035, which is a continuation of Ser. No. 879,789, Jun. 27, 1986, abandoned. This application May 28, 1992, Ser. No. 890,742

Int. Cl.[5] C04B *38/06*

U.S. Cl. 501—82 **20 Claims**



1. A green body, from which a porous ceramic body of high strength and integrity can be formed, comprising a consolidation of a predominantly homogenous mixture of a curable resin with a sinterable ceramic powder which is intermixed with a plurality of pore formers, the materials of said resin and said pore formers being selected such that the wetability of said resin in respect to said pore formers is such that said resin tends to bead when in contact with the surfaces of said pore formers, before said resin is cured, said resin in said consolidation which is cured and said pore formers in said consolidation which are removable after said resin in said green body has been cured.

5,369,064

SHAPED FIBROUS MATERIALS FOR FIBER-REINFORCED METALS

Takayuki Ohashi, Kanagawa; Kenichi Shibata, Tokyo; Junichi Ogawa, and Mitsushi Wadasako, both of Kanagawa, all of Japan, assignors to Nichias Corporation, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of Japan

Filed May 27, 1992, Ser. No. 887,751

Claims priority, application Japan, May 27, 1991, 3-149289

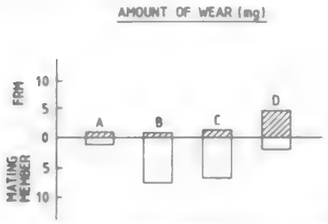
Int. Cl.[5] C04B *35/02, 35/08*

U.S. Cl. 501—95 **8 Claims**

1. A shaped fibrous material for use in fiber reinforced metal

having increased resistance to mating member wear, said shaped fibrous material comprising a uniform mixture of:

20% to 80% by volume of ceramic fibers compared to said uniform mixture; and



20% to 80% by volume of aluminum borate whiskers compared to said uniform mixture, wherein a volume fraction of said ceramic fibers and aluminum borate whiskers after molding said shaped fibrous material is from about 5 to 40%.

5,369,065

SILICON NITRIDE SINTERED BODY AND PROCESS FOR PRODUCING THE SAME

Masashi Yoshimura; Jin-Joo Matsui; Takehisa Yamamoto, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Sep. 8, 1993, Ser. No. 118,023

Claims priority, application Japan, Sep. 21, 1992, 4-276607

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—97 3 Claims

1. A silicon nitride sintered body comprising a matrix phase consisting of silicon nitride, and a grain boundary phase in which the silicon nitride consists of 66% to 99% by volume of β-Si_3N_4, β'-sialon, or a combination thereof, with the balance comprising α-Si_3N_4, α'-sialon, or a combination thereof,

said β-Si_3N_4 and β'-sialon consisting of hexagonal rod-shaped grains having a maximum minor axis diameter of 500 nm and an aspect ratio of 5 to 25,

said α-Si_3N_4 and α'-sialon consisting of equi-axised grains having a maximum average diameter of 300 nm,

titanium compounds being contained within grains of said matrix phase and in said grain boundary phase, said titanium compound contained within said grains of said matrix phase having an average particle size of 1 to 100 nm and being present in an amount of 0.01% to 5% by volume, based on the total volume of the matrix phase, including said titanium compounds dispersed therein,

said titanium compounds contained in said grain boundary phase having a maximum average particle size of 300 nm, and being present in an amount of 0.1% to 5% by volume, based on the total volume of said grain boundary phase, including the titanium compounds dispersed therein.

5,369,066

REFRACTORY MATERIAL AND PRODUCT THEREOF CONTAINING LOW-SILICA ELECTROFUSED MAGNESIA CLINKER

Naoki Furuta; Masakazu Ootsubo; Setsunori Hamaguchi; Isao Watanabe; Yoichi Furuta, and Toshihiro Suruga, all of Kitakyushu, Japan, assignors to Krosaki Corporation, Fukuoka, Japan

PCT No. PCT/JP92/01189, § 371 Date Apr. 26, 1993, § 102(e) Date Apr. 26, 1993, PCT Pub. No. WO93/06057, PCT Pub. Date Apr. 1, 1993

PCT Filed Sep. 18, 1992, Ser. No. 39,330

Claims priority, application Japan, Sep. 18, 1991, 3-238313; Nov. 22, 1991, 3-308055; Jan. 8, 1992, 4-001782

Int. Cl.[5] C04B *35/04*

U.S. Cl. 501—108 14 Claims

1. An electrofused magnesia clinker for a refractory material consisting essentially of 98.0 to 99.8 wt. % of MgO, less than 0.05 wt. % of SiO_2, and 0.1 to 2.0 wt. % of CaO.

5,369,067

COMPOSITE SUBSTRATES AND THEIR PRODUCTION

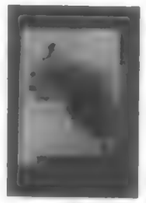
Morhudun G. M. U. Ismail; Zenjiro Nakai, and Hiroshi Arai, all of Kumagaya, Japan, assignors to Chichibu Cement Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1993, Ser. No. 18,752

Claims priority, application Japan, Feb. 19, 1992, 4-032315; Aug. 20, 1992, 4-221289

Int. Cl.[5] C04B *35/16*

U.S. Cl. 501—119 9 Claims



1. A method for producing a composite substrate which involves the steps of:

mixing together a boehmite sol, a silica sol, a water-soluble magnesium salt and a water-soluble calcium salt to prepare a composite cordierite-anorthite composition sol,

gelating said composition sol,

calcining the obtained gel at from 800° C. to 1,100° C., and

sintering the calcined gel to provide a composite.

5,369,068

BISMUTH LAMELLAR COMPOUND

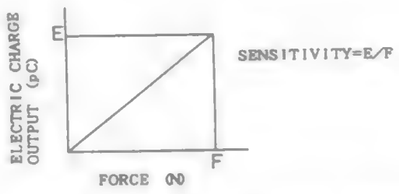
Kazuhide Kaneko, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 28, 1993, Ser. No. 98,103

Claims priority, application Japan, Jul. 31, 1992, 4-204791; Jul. 31, 1992, 4-204792; Jul. 31, 1992, 4-204802; Jul. 31, 1992, 4-204833

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—135 13 Claims



1. A bismuth layer compound expressed by the chemical formula:

$(M1_{1-2x}M2_xBi_{4+x})Ti_4O_{15}$, wherein

"M1" is Sr or Sr and at least one other alkaline earth metal;

"M2" is an alkali metal: and

"x" falls in a range, $0.06 \leqq x \leqq 0.44$.

5,369,069

METHOD FOR PRODUCTION OF PILLARED CLAY HAVING CATION-EXCHANGE CAPACITY

Kenzi Suzaki, Aichi, and Toshiaki Mori, Yokkaichi, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, Tokyo, Japan

Filed Oct. 19, 1993, Ser. No. 137,751

Claims priority, application Japan, Oct. 20, 1992, 4-306391; Oct. 20, 1992, 4-306392

Int. Cl.[5] B01J *21/16, 20/12*

U.S. Cl. 502—63 10 Claims

1. A method for the production of a pillared clay possessed of a cation-exchange capacity, which method comprises heating a cation-exchange clay essentially consisting of (1) silicate layers composed of one kind of octahedrons selected from the group consisting of octahedrons of alumina having part of the aluminum thereof substituted by magnesium and octahedrons of magnesia having part of the magnesium thereof substituted by lithium and tetrahedrons of silica disposed one each the opposite sides of the octahedrons and sharing oxygen atoms with the octahedrons, assuming a negative electric charge, and parallelly opposed across a space and (2) exchangeable cations interposed between the silicate layers and retaining an electric charge balance with the negative electric charge of the silicate layers, thereby fixing part of the exchangeable cations in hexagonal holes formed by oxygen molecules, which are components of the silicate layers, and consequently decreasing the cation-exchange capacity of the clay, then cross-linking the silicate layers of the clay with pillars thereby giving rise to a pillared clay, and subsequently reproving the fixed cations from the hexagonal holes.

9. A method for the production of a pillared clay having pillars of a plurality of kinds, characterized by subjecting a pillared clay possessing the ability to exchange cations and obtained by the method of claim 1 further to a cross-linking treatment using pillars different in kind from the pillars of the mother clay.

5,369,070

ZEOLITE Y-BASED CATALYTIC COMPOSITION WHICH CAN BE USED IN TREATING OXYGENATED EFFLUENT CONTAINING NITROGEN OXIDES, ITS PREPARATION AND PROCESS FOR USE

M. Gilles Descat, Saint Avold, and M. Christian Hamon, Saint Nazaire, both of France, assignors to Elf Atochem S.A., Puteaux, France

PCT No. PCT/FR90/00519, § 371 Date Feb. 28, 1992, § 102(e) Date Feb. 28, 1992, PCT Pub. No. WO91/00773, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 10, 1990, Ser. No. 809,492

Claims priority, application France, Jul. 12, 1989, 89 09402

Int. Cl.[5] B01J *29/10*

U.S. Cl. 502—68 13 Claims

1. A catalytic composition comprising 70 to 90% of zeolite NH_4Y having a specific surface between 750 and 950 m^2/g exchanged to cupric ions, wherein the copper content is between 2 and 12% relative to the weight of the zeolite; and 10 to 30% of a binder.

5,369,071

MANUFACTURE OF IMPROVED CATALYST

Thomas F. Degnan, Moorestown; Donald J. Klocke, Somerdale, both of N.J., and Mae K. Rubin, Bala Cynwyd, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 11, 1992, Ser. No. 988,992

Int. Cl.[5] B01J *29/28*

U.S. Cl. 502—71 26 Claims

24. In a catalyst composition comprising crystals of ZSM-5 structure and matrix, the improvement wherein said catalyst has been manufactured by the method comprising:

(i) forming a reaction mixture hydrogel having a pH of from about 10 to about 14, containing sources of alkali or alkaline earth metal (M) cations; an oxide of trivalent element (X) selected from the group consisting of aluminum, boron, iron, gallium, indium, and mixtures thereof; an oxide of tetravalent element (Y) selected from the group consisting of silicon, germanium, tin, and mixtures thereof; n-propylamine directing agent (R); and water, said reaction mixture having a composition in terms of mole ratios, within the following ranges:

YO_2/X_2O_3	<40
H_2O/YO_2	10 to 35
OH^-/YO_2	0.1 to 0.3
M/YO_2	0.2 to 0.6
R/YO_2	0.01 to 0.6

(ii) maintaining the reaction mixture until crystals of ZSM-5 structure are formed, said crystals having a formula on an anhydrous basis

$(x)M_2O:(0.2 \text{ to } 1.4)R_2O:X_2O_3:(y)YO_2$

wherein x is a number greater than 0.1; and y is a number less than about 30,

(iii) recovering the ZSM-5 crystals from the reaction mixture,

(iv) ammonium exchanging the recovered ZSM-5 crystals,

(v) deagglomerating the ion-exchanged crystals,

(vi) slurrying a matrix material with the deagglomerated ZSM-5 crystals at a pH of from about 2 to about 12, to yield a ZSM-5/matrix material comprising from about 5 to about 80 wt. % ZSM-5 and from about 20 to about 95 wt. % matrix,

(vii) drying the ZSM-5/matrix material, and

(viii) converting the dried ZSM-5/matrix material to the protonic form having an Alpha Value of greater than about 30.

5,369,072

GRANULAR MEDIA FOR REMOVING CONTAMINANTS FROM WATER AND METHODS FOR MAKING THE SAME

Mark M. Benjamin; Robert P. Bailey, both of Seattle; Thomas E. Bennett, Bellingham; Yu-Jung Chang; Chi-Wang Li, both of Seattle, all of Wash.; Marc A. Edwards, Boulder, Colo., and Paul R. Anderson, Geneva, Ill., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 616,882, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 367,507, Jun. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 193,006, May 10, 1988, abandoned. This application Dec. 17, 1992, Ser. No. 992,644

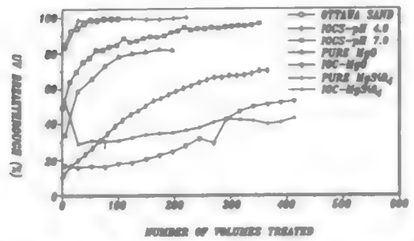
Int. Cl.[5] B01J *20/12, 20/10, 20/20;* C02F *1/42*

U.S. Cl. 502—84 21 Claims

1. A method of preparing an adsorbent media useful for reversibly adsorbing metal ions and for filtering particulate matter from water, comprising the steps:

contacting an aqueous solution containing about 2 to 2.5 moles/liter ferric nitrate with a support material from the group consisting of sand, magnesium oxide, dolomite, olivine, kaolinite, illite and montmorillonite to from a

mixture said aqueous solution being present in an amount sufficient to at least fill the pore spaces between the support material; and



heating the mixture to dryness at a temperature below about 220° C., a portion of said ferric nitrate being converted to ferric oxide during the heating step.

5,369,073

HOMOGENEOUS CATALYTIC SYSTEM AND PROCESS FOR COPOLYMERIZING OLEFINS WITH CARBON MONOXIDE

Anna Sommazzi, Santa Margherita Ligure; Gabriele Lugli, Milan; Fabio Garbassi, Novara, and Fausto Calderazzo, Ghezzano, all of Italy, assignors to Enichem S.p.A., Milan, Italy

Filed Mar. 11, 1993, Ser. No. 29,875

Claims priority, application Italy, Mar. 11, 1992, MI92A/000553; Dec. 11, 1992, MI92A/002820

Int. Cl.[5] B01J *31/18, 31/28*

U.S. Cl. 502—162 **12 Claims**

1. Homogeneous catalytic system active in the preparation of alternating copolymers of olefins with carbon monoxide (CO), constituted by:

(a) at least one salt of a metal of Group 1B of the Periodic Table,

(b) a bidentate chelating base containing two phosphorus or nitrogen atoms wherein the chelating base is selected from the group consisting of compounds having the general formula (I)

$$R_1R_2—M—R—M—R_3R_4 \qquad (I)$$

in which:

M represents a phosphorus or nitrogen atom,

R stands for a polymethylene radical containing from 2 to 4 carbon atoms, a cycloalkylidene radical containing from 2 to 10 carbon atoms, or a phenylene radical,

R_1, R_2, R_3, and R_4, which may be the same or different from each other, represent an alkyl radical of from 3 to 6 carbon atoms, a cycloalkyl radical of from 3 to 6 carbon atoms, or an aromatic radical of from 6 to 12 carbon atoms; and

(c) an organic or mineral acid, with the proviso that it shall not be a hydrohalic acid and shall have a pKa value lower than 6.

5,369,074

CATALYST COMPOSITION FOR POLYMERIZING CARBON MONOXIDE AND ETHYLENICALLY UNSATURATED HYDROCARBONS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 922,284, Jul. 30, 1992, Pat. No. 5,247,064. This application Jun. 15, 1993, Ser. No. 76,037

Claims priority, application Netherlands, Aug. 6, 1991, 9101351

The portion of the term of this patent subsequent to Nov. 30, 2010, has been disclaimed.

Int. Cl.[5] B01J *31/34;* **C08G** *67/02*

U.S. Cl. 502—162 **8 Claims**

1. A catalyst composition formed from a compound of palladium, at least 5 mols per mol of palladium of a non-hydrohalogenic acid having a pKa below 2 and a bidentate ligand of phosphorus wherein each monovalent phosphorus substituent is characterized by having up to 10 carbon atoms inclusive and by the presence of a carbon atom having no more than 1 hydrogen substituent which is directly linked to the phosphorus atom by a methylene group.

5,369,075

POLYMERIZATION PROCESS

Eit Drent, and Johannes J. Keijsper, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 833,201, Feb. 10, 1992, Pat. No. 5,245,123. This application Mar. 23, 1993, Ser. No. 35,848

Claims priority, application Netherlands, Feb. 26, 1991, 9100341

Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—167 **10 Claims**

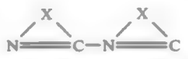
1. A catalyst composition useful in the gas-phase production of linear alternating polymers of carbon monoxide and at least one ethylenically unsaturated hydrocarbon comprising (a) a compound of palladium, (b) a Lewis acid of the formula MF_n wherein n is 3 or 5 and M is a Group III or V element which forms a binary fluoride, said Lewis acid present in an amount of from about 0.5 to 200 mols per mol of palladium compound, and (c) a bidentate ligand of:

(i) sulfur represented by the formula

$$R—S—R^1—S—R$$

wherein R independently is aliphatic or aromatic of up to 10 carbons inclusive and R^1 is a divalent hydrocarbyl linking group of up to 10 carbon atoms inclusive with from 2 to 4 carbon atoms inclusive in the bridge,

(ii) nitrogen represented by the formula



wherein X individually is a divalent linking group of up to 10 carbon atoms with from 3 to 4 atoms in the bridge, at least two of which are carbon atoms, or

(iii) of phosphorus represented by the formula



wherein R and R' have the previously stated meanings, said ligand present in an amount from about 0.5 to 100 mols per mol of palladium.

5,369,076

VANADIUM CATALYSTS AND DESULFURIZATION OF SULFUR COMPOUND-CONTAINING GASES THEREWITH

Roman A. Bouyanov, Novosibirsk; Albert M. Tsybouleasky, Moscow; Boris P. Zolotovsky; Dimitri P. Klevtsov, both of Novosibirsk, and Vladimir I. Mourine, Moscow, all of U.S.S.R., assignors to Institut De Catalyse Du Department Siberien De L'Academie Des Sciences De Russie and Vniigaz (Institut de recherches de gas naturels), Novosibirsk, U.S.S.R.

Filed Jun. 17, 1992, Ser. No. 899,912

Claims priority, application U.S.S.R., Jun. 17, 1991, 4941760/04

Int. Cl.[5] B01J *23/22*

U.S. Cl. 502—354 **28 Claims**

1. A catalyst shaped article which comprises a support substrate having an active catalytic phase deposited thereon, said active catalytic phase comprising an electroneutral solid solution having the average composition:

$$A_{4\pm y}V_{2\pm x}O_9$$

in which A is a metal other than vanadium, $0 \leqq x \leqq 0.2$ and $0 \leqq y \leqq 0.5$.

5,369,077

THERMAL DYE TRANSFER RECEIVING ELEMENT

Daniel J. Harrison, Pittsford, and Paul D. Yacobucci, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 665,613, Mar. 6, 1991, abandoned. This application Nov. 26, 1991, Ser. No. 799,919

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **19 Claims**

1. In a dye-receiving element for thermal dye transfer comprising a support having on one side thereof a dye image-receiving layer, the improvement wherein the dye image-receiving layer or an overcoat layer thereon comprises a linear condensation copolymer containing block polysiloxane units copolymerized into a linear polymer chain, said linear copolymer comprising from about 1 to about 40 wt.% of polysiloxane units.

5,369,078

THERMAL TRANSFER SHEET

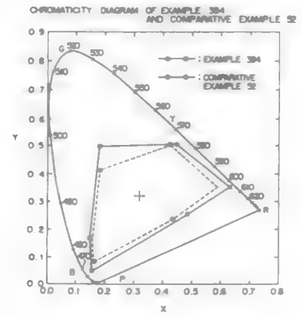
Hiroshi Eguchi; Komei Kafuku, and Ryohei Takiguchi, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Nov. 13, 1992, Ser. No. 974,723

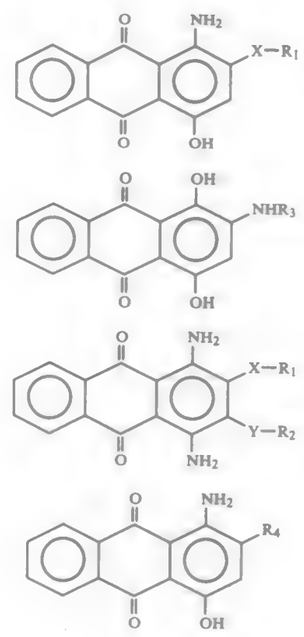
Claims priority, application Japan, Nov. 14, 1991, 3-325058; Nov. 14, 1991, 3-325060; Jan. 21, 1992, 4-029042; Jan. 21, 1992, 4-029043; Jun. 25, 1992, 4-190257; Sep. 22, 1992, 4-276811

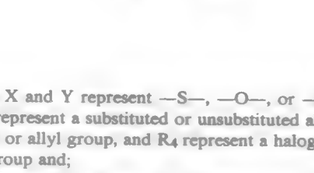
Int. Cl.[5] B41M *5/035, 5/38*

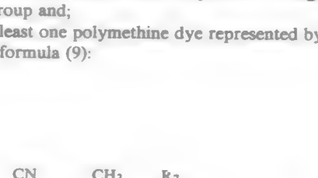
U.S. Cl. 503—227 **3 Claims**

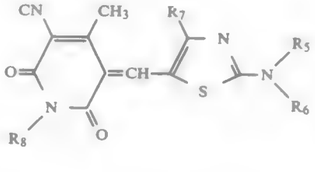


1. A thermal transfer sheet comprising a base sheet and a dye-containing layer formed on one surface of said base sheet wherein a magenta dye included in said dye-containing layer is a mixture of (i) at least one anthraquinone dye represented by the following formulae (5) through (8):


(5)


(6)


(7)


(8)

wherein X and Y represent —S—, —O—, or $—SO_2$; R_1, R_2 and R_3 represent a substituted or unsubstituted alkyl, cycloalkyl, aryl or allyl group, and R_4 represent a halogen atom or a cyano group and;

(ii) at least one polymethine dye represented by the following formula (9):

(9)

wherein R_5 and R_6 represent a substituted or unsubstituted alkyl; R_7 represents a substituted or unsubstituted aryl group or a substituted or unsubstituted aromatic heterocyclic group; R_8 represents a substituted or unsubstituted alkyl or cycloalkyl group or NR_9R_{10}; and R_9 and R_{10} represent a substituted or unsubstituted alkylcarbonyl group or a substituted or unsubstituted arylcarbonyl group.

5,369,079

PROCESS FOR MAKING A HEAT-TRANSFERRED IMAGED ARTICLE

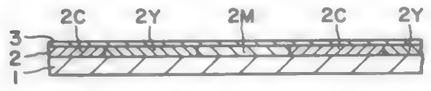
Yoichi Higuchi; Katsuyuki Oshima, and Mineo Yamauchi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 593,009, Oct. 4, 1990, Pat. No. 5,202,176. This application Dec. 9, 1992, Ser. No. 988,284

Claims priority, application Japan, Oct. 4, 1989, 1-257837; Oct. 4, 1989, 1-257838; Oct. 4, 1989, 1-257839; Oct. 4, 1989, 1-257940

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **5 Claims**



1. A process for making a heat-transferred imaged article comprising a substrate, a resin-containing dye-receiving layer and a dye image heat-transferred onto said dye-receiving layer, said process comprising the steps of:

providing said substrate;

forming said resin-containing dye-receiving layer on one side of said substrate;

providing a silane coupling agent in or on said dye-receiving layer after formation of said dye-receiving layer, said silane coupling agent having a polymerizable double bond; and

applying said image either before, during or after said silane coupling agent is provided.

5,369,080

INDOANILINE DYE MIXTURE IN DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER

Kristine B. Lawrence, and Steven Evans, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,779

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **12 Claims**

6. A process of forming a dye transfer image comprising imagewise-heating a dye donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said dye comprises a mixture of at least two different cyan dyes, each said dye comprising a 2-carbamoyl-4-[N-(p-substituted aminoaryl)imino]-1,4-naphthoquinone, with the proviso that at least one said dye is present at a concentration of at least 10 wt-% and that same said dye also contains an alkyl group substituted with a group capable of intermolecular hydrogen bonding.

5,369,081

NITROPYRAZOLYLAZOANILINE DYE-DONOR ELEMENT FOR THERMAL DYE TRANSFER

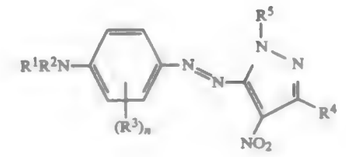
Steven Evans, Rochester, N.Y.; Max A. Weaver, Kingsport, Tenn., and Helmut Weber, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1993, Ser. No. 169,834

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **9 Claims**

5. A process of forming a dye transfer image comprising imagewise-heating a dye donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye-receiving element to form said dye transfer image, wherein said dye is a 4-nitro-pyrazol-5-yl-azoaniline magenta dye having the formula:



wherein:

R^1 is a substituted or unsubstituted alkyl group of 1 to about 12 carbon atoms, substituted or unsubstituted aryl group of from about 6 to about 10 carbon atoms, a substituted or unsubstituted cycloaklyl group of from about 5 to about 7 carbon atoms or a substituted or unsubstituted allyl group;

R^2 may be H or R^1;

R^1 and R^2 may be joined together to form a 5- or 6-membered ring;

either or both of R^1 and R^2 may be joined together with one of R^3 to form a 5- or 6-membered ring;

R^3 may be H, acyloxy, alkoxy, aryloxy, alkylthio, arylthio, alkylsulfonyl, arylsulfonyl, alkylaminosulfonyl, arylaminosulfonyl, alkylsulfonylamino, arylsulfonylamino, thiocyano, cyano, halogen, alkoxycarbonyl, aryloxycarbonyl, acetyl, aroyl, alkylaminocarbonyl, arylaminocarbonyl, alkylaminocarbonyloxy, arylaminocarbonyloxy, acylamino, amino, alkylamino, arylamino, trihalomethyl, alkyl, aryl, hetaryl, alkylureido, arylureido, succinimido or phthalimido;

any two adjacent R^3's may be combined to form a 5- or 6-membered carbo- or heterocyclic saturated or aromatic ring;

n represents an integer from 1–4;

R^4 is the same as R^2; and

R^5 is R^1, acetyl, aroyl, alkylsulfonyl, arylsulfonyl or substituted or unsubstituted vinyl.

5,369,082

LIQUID PREPARATION OF HERBICIDE MIXTURES BASED ON GLUFOSINATE

Gerhard Frisch, Wehrheim/Taunus, and Thomas Maier, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 822,597, Jan. 17, 1992, Pat. No. 5,238,904. This application Aug. 23, 1993, Ser. No. 110,430

Claims priority, application Germany, Jan. 22, 1991, 4101691

Int. Cl.[5] A01N *25/30, 43/70, 47/30, 57/04*

U.S. Cl. 504—127 **19 Claims**

1. A herbicidal aqueous preparation which contains glufosinate or its salts in dissolved form and at least one further herbicide active substance in dispersed form, said preparation consisting essentially of:

a) 0.1 to 60% by weight of an active substance combination of

a1) glufosinate or its salts and at least

a2) one dispersed herbicide active substance selected from the group consisting of linuron, monolinuron, isoproturon, chlortoluron, neburon, monuron, simazine, atrazine and terbuthylazine in the ratio 1:100 to 100:1 of the active substances a1:a2,

b) 0.5 to 30% by weight, relative to active substance, of a surfactant from the long-chain α-olefin sulfonate group,

c) 0.5 to 20% by weight, relative to active substance, of one or more co-surfactants selected from the group consisting of condensation products based on aromatics, alkanols and disulfites, condensation products based on naphthalenesulfonic acids or their salts and ligninsulfonates,

d) 10 to 70% by weight of water and

e) 0 to 15% by weight of customary auxiliary.

5,369,083

SULFONYLUREAS

Rolf Schurter, Binningen, and Werner Föry, Rieben, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

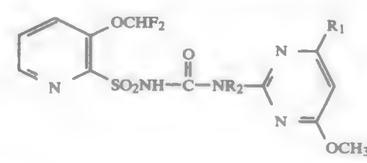
Filed Jul. 26, 1993, Ser. No. 97,144

Claims priority, application Germany, Jul. 30, 1992, 92810582

Int. Cl.[5] C07D *239/42;* **A01N** *43/54*

U.S. Cl. 504—215 **9 Claims**

1. An N-pyridylsulfonyl-N'-pyrimidinylurea of formula I



(I)

wherein

R_1 is methyl or methoxy and

R_2 is hydrogen or methyl, or a salt of such a compound with an amine, an alkali metal or alkaline earth metal base or with a quaternary ammonium base.

5,369,084

ISONICOTINIC ACID DERIVATIVES AND RELATED SPIRO COMPOUNDS WITH HERBICIDAL ACTION

Hans-Rudolf Waespe, Allschwil, Switzerland; Guy R. E. Van Lommen, Berlaar, and Victor K. Sipido, Merksem, both of Belgium, assignors to Janssen Pharmaceutical N.V., Beerse, Belgium

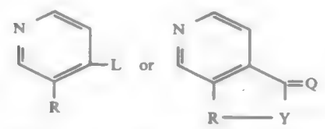
Filed May 6, 1993, Ser. No. 50,269

Claims priority, application Switzerland, Nov. 22, 1990, 3695/90; Jan. 24, 1991, 00211/91

Int. Cl.[5] A01N *43/40, 43/90;* **C07D** *213/78, 491/048*

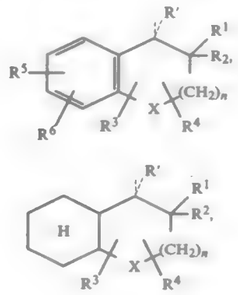
U.S. Cl. 504—244 **24 Claims**

1. A compound having the formula

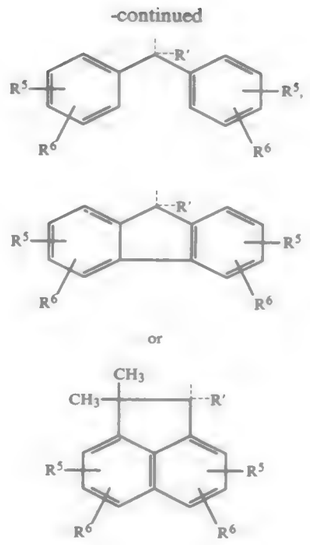


(I)

an acceptable addition salt, a stereochemically isomeric form or a N-oxide thereof, wherein R is attached to the pyridinyl group by a single bond or by a spiro-bond, and R has the formula



-continued



wherein

R' is hydrogen, fluoro, hydroxy or a spiro-bond;

R^1 and R^2 are each independently hydrogen, C_{1-6}alkyl or R^1 and R^2 together with the carbon atom to which they are connected form a spiro C_{3-6}cycloalkyl group; or R' and R^1 form an extra bond;

R^3 and R^4 are each independently hydrogen or C_{1-6}alkyl;

R^5 and R^6 are each independently hydrogen, halo, C_{1-4}alkyl, C_{1-4}alkoxy, C_{1-4}haloalkyloxy, C_{1-4}haloalkyl, C_{3-7}alkenyl, amino, carbonyl, nitro, methoxycarbonyl or aminocarbonyl;

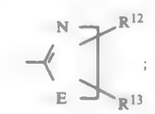
Q is O, S or NR^7;

X is CH_2, O, S, SO or NR^8;

Y is O, S or NR^8;

n is 0, 1 or 2;

L is $COOR^9$, $CONR^{10}R^{11}$, $C(=S)NR^{10}R^{11}$, CN, or a radical of formula



;

E is O, S or NR^8;

R^7 is 1,1-dimethyl-2-hydroxyethyl or 2-methyl-2-fluoropropyl;

R^8 is hydrogen, C_{1-6}alkyl or 1,1-dimethyl-2-hydroxyethyl;

R^9 is hydrogen, C_{1-7}alkyl, C_{3-8}alkenyl, C_{3-8}alkynyl, C_{2-16}alkyloxyalkyl or C_{3-7}cycloalkyl;

R^{10} is hydrogen, C_{1-3}alkyl or 1,1-dimethyl-2-hydroxyethyl;

R^{11} is hydrogen, C_{1-3}alkyl or phenyl; and

R^{12} and R^{13} each independently are hydrogen or methyl.

except for:

3,3-diphenyl-3H-furo[3,4-c]pyridin-1-one and

3-(diphenylhydroxymethyl)-N,N-bis(1-methylethyl)-4-pyridinecarboxamide.

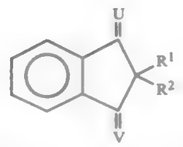
5,369,085

INDANE-1, 3-DIONE DERIVATIVES AND HERBICIDES CONTAINING THEM AS ACTIVE INGREDIENT

Akemi Hosokawa, Yokohama; Osamu Ikeda, Machida; Noriko Minami, Setagaya, and Nobuo Kyomura, Sagamihara, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

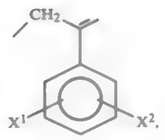
Filed Mar. 9, 1993, Ser. No. 28,185
Claims priority, application Japan, Mar. 10, 1992, 4-051590
Int. Cl.[5] A01N *43/02;* **C07D** *303/32*
U.S. Cl. 504—249 **11 Claims**

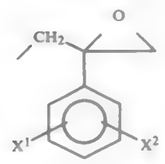
1. A compound of the formula



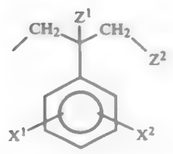
wherein R^1 represents C_2–C_{10} alkenyl, C_2–C_6 alkynyl, C_1–C_6 haloalkyl, C_2–C_6 haloalkenyl, C_1–C_4 hydroxylalkyl, C_2–C_5 alkoxy carbonyl, halogen, C_2–C_4 cyanoalkyl, or —CH_2-A, in which A represents phenyl, pyridyl, or oxiranyl, said phenyl and pyridyl groups being unsubstituted or substituted by halogen, C_1–C_3 alkyl, hydroxy, C_1–C_4 alkoxy, C_1–C_4 alkylthio, nitro or cyano;

R^2 represents





or



in which X^1 and X^2 each independently represent hydrogen, halogen, C_1–C_4 alkyl, C_1–C_3 haloalkyl or nitro; Z^1 and Z^2 each independently represent hydroxy, or C_1–C_4 alkylsulfonyloxy; and

U and V represent oxygen.

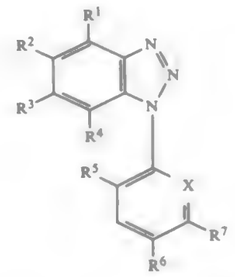
5,369,086

N-BENZOTRIAZOLES

Donald R. James, El Sobrante, and Raymond A. Felix, Richmond, both of Calif., assignors to Zeneca Limited, United Kingdom

Filed Apr. 28, 1993, Ser. No. 54,573
Int. Cl.[5] C07D *401/04;* **A01N** *43/40*
U.S. Cl. 504—253 **26 Claims**

1. A substituted benzotriazole compound having the formula



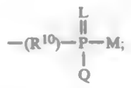
in which:

R^1, R^2 and R^3 may independently be hydrogen; halogen; nitro; hydroxy; cyano; alkyl; amino; alkoxyiminoalkyl; cyanoalkyl; carboxyalkyl; carboalkoxyalkyl; cyano(carboalkoxy)alkyl; hydroxyalkyl; alkoxyalkyl; alkylsulfonylaminoalkyl; haloalkylsulfonylaminoalkyl; $(alkyl)_n$aminoalkyl; $(alkylcarbonyloxy)_2$alkyl; haloalkyl; formyl; alkylcarbonyl; carboxy or its salts; COOalkyl; carboxamido; mono or di- substituted carboxamido wherein the nitrogen substituents can be selected from hydrogen, alkyl, haloalkylsulfonyl, and alkylsulfonyl; sulfonamido wherein the nitrogen substituents can be selected from hydrogen and alkyl; $(alkylsulfonyl)_2$amino; $(acetyl)_2$amino;



and

YR^8 wherein Y is O, NR^9, or $S(O)_n$; and R^8 is $—(R^{10})_m—COR^{11}$; $—(R^{10})_m—SO_2R^{11}$;



alkyl; haloalkyl; hydroxyalkyl; cyanoalkyl; acetoxyalkyl; alkoxyalkyl; hydroxy; alkenyl or alkynyl;

R^9 is hydrogen; alkyl; alkynyl, alkenyl or alkylcarbonyl;

R^{10} is alkylene;

R^{11} is alkyl; haloalkyl; hydrogen, hydroxy; alkoxy; haloalkoxy; alkoxyalkyl; alkoxyalkoxy; alkoxyalkylamino; dialkoxyalkylamino; alkoxycarbonyl; hydroxycarbonyl; alkoxycarbonylalkyl; hydroxycarbonylalkyl; $(alkyl)_n$amino; $(alkyl)_n$hydrazino; alkoxycarbonylalkylamino; hydroxyalkylamino; $(alkyl)_n$aminoalkylamino; $(alkyl)_n$aminocarbonylalkylamino; hydroxycarbonylalkylamino; alkylsulfonylamino; arylsulfonylamino; acetylaminoalkylamino; N-alkoxy-N-$(alkyl)_m$amino; N-hydroxy-N-$(alkyl)_m$amino; cyanoalkylamino; $(alkenyl)_n$amino; alkoxyalkylamino; $(alkynyl)_n$amino; alkenyloxy; alkynyloxy or semicarbazido;

m is 0 or 1;

n is 0, 1 or 2;

z is 1 or 2;

M and Q are independently alkoxy; alkyl; $(alkyl)_n$amino; hydroxy; hydrogen; alkenyloxy; $(alkenyl)_n$amino; alkynyloxy; or $(alkynyl)_n$amino;

L is oxygen or sulfur;

P is phosphorus;

R^4 is hydrogen, halogen, alkyl or nitro;

R^5 is halogen; cyano; alkylthio; alkylsulfinyl; alkylsulfonyl; alkoxy; acetylamino or amino;

R^6 is halogen; haloalkyl; haloalkoxy; or SO_yR^{12} and R^{12} is alkyl or haloalkyl and y is 0, 1 or 2;

R^7 is hydrogen or halogen; and X is N; and agriculturally acceptable salts thereof;

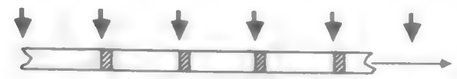
wherein each alkyl group may contain from one to six carbon atoms, and each alkenyl and alkynyl may contain from two to six carbon atoms.

5,369,087

METHOD FOR THE RAPID PRODUCTION OF SUPERCONDUCTING CERAMIC WIRES OR RIBBONS

Philip R. Critchlow, St Bruno, and Julian Cave, Montreal, both of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Jul. 11, 1991, Ser. No. 728,387
Claims priority, application Canada, Nov. 21, 1990, 2030483
Int. Cl.[5] H01L *39/24*
U.S. Cl. 505—430 **16 Claims**



1. A method for producing a high transition temperature superconducting ceramic element of a given length, said method comprising the steps of:

forming an element of given length with grains of a high temperature superconducting ceramic precursor material extending adjacent each other over all of said given length;

subjecting said element to zone melting over all of its length at a temperature and a speed sufficient such that said precursor material becomes textured into new grains that are aligned and have a good intergranular connectivity, thereby forming a melt-textured superconducting ceramic element; and

subjecting the melt-textured superconducting ceramic element to oxygen annealing, thereby adjusting its oxygen level and raising its transition temperature,

wherein said step of subjecting said element to zone melting includes

providing a plurality of heating devices equally spaced apart over at least one part of said given length;

moving said element and said plurality of heating devices relative to each other while each of said heating devices are generating heat of a temperature the same as that of each other said heating device, thereby heating and melting said element, wherein each heating device only heats and melts a portion of said element and each devices, and wherein each of said heating devices moves relative to said element simultaneously with respect to each other said heating device, at a speed equal to that of each other said heating device, and in a direction the same as that of each other said heating device, thereby forming similarly textured zones along said at least one part of said given length of said element until a merging of all of said textured zones occurs, and stopping said zone melting as soon as said textured zones have merged,

then subjecting any other part of said given length of said element to the same kind of zone melting carried out in the very same manner until all of said length is formed of merged textured zones, and

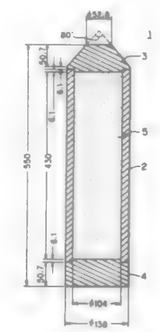
prior to subjecting said element to said zone melting, adjusting the spacing between said heating devices as a function of the amount of impurities initially present in the precursor material, thereby ensuring that the concentration of impurities which tends to increase along the textured zones while said zones are being formed along said element, always remain under a predetermined value such that superconductivity of the produced element is not dramatically reduced.

5,369,088

METHOD OF PREPARING OXIDE SUPERCONDUCTING WIRE

Hidehito Mukai; Kenichi Sato, and Nobuhiro Shibuta, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Inc., Osaka, Japan

Filed Mar. 19, 1992, Ser. No. 854,127
Claims priority, application Japan, Mar. 20, 1991, 3-056685
Int. Cl.[5] H01L *39/00;* **H01B** *12/00*
U.S. Cl. 505—432 **5 Claims**



1. A method of preparing an oxide superconducting wire having a critical current density of 10^4 A/cm^2 at the liquid nitrogen temperature and a length of at least about 5 km, comprising the steps of:

filling up a metal billet with raw material powder for an oxide superconductor;

degassing said metal billet;

sealing said degassed metal billet;

applying hydrostatic extrusion on said sealed metal billet;

deformation processing said extruded metal billet to elongate said extruded metal billet; and

heat treating the elongated, extruded metal billet for sintering said raw material powder to form the oxide superconductor.

5,369,089

METHOD OF PREPARING OXIDE SUPERCONDUCTING WIRE

Kenichi Sato; Hidehito Mukai, and Takeshi Hikata, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 730,409, Jul. 16, 1991, abandoned. This application Sep. 27, 1993, Ser. No. 128,010
Claims priority, application Japan, Jul. 16, 1990, 2-188495
Int. Cl.[5] H01L *39/24;* **H01B** *13/00*
U.S. Cl. 505—433 **3 Claims**

1. A method of preparing an oxide superconducting wire, consisting essentially of the following sequence of steps:

covering a powder material for forming an oxide superconductor with a metal covering;

performing deformation processing on said metal-covered

powder material to obtain a tape-shaped wire material having a length of at least about 20 meters;
superposing a plurality of said tape-shaped wire materials;
performing a first heat treatment on said plurality of superposed tape-shaped wire materials, wherein said metal coverings are diffusion-bonded to each other in said first heat treatment step;
performing deformation processing consisting essentially of a rolling on said plurality of superposed tape-shaped wire materials; and
performing a second heat treatment on said plurality of deformation-processed tape-shaped wire materials.

5,369,090

PROCESS FOR PRODUCING BI-BASED OXIDE SUPERCONDUCTOR SINGLE CRYSTALS

Kenshi Takamuku, Chiba, Japan; Genda Gu, New South Wales, Australia, and Naoki Koshizuka, Chiba, Japan, assignors to International Supercondustivity Technology Center, Tokyo, Japan

Filed Apr. 15, 1993, Ser. No. 46,975
Claims priority, application Japan, Apr. 15, 1992, 4-122709
Int. Cl.[5] C30B *13/20*
U.S. Cl. 505—451 **7 Claims**



1. A process for producing Bi-based oxide superconductor single crystals by the floating zone method, which comprises using a feed rod of an oxide comprising a formulation of metallic elements represented by the following general formula

$$Bi_pSr_qCa_rCu_2O_y$$

wherein

$$2.00<p<2.18,\ 1.87<q<2.00,\ 0.9\leqq r\leqq 1.0,$$

and y is a positive number, in a moving rate of said rod of from 0.1 to 0.35 mm per hour on the side where crystals are accumulated.

5,369,091

PROCESS FOR THE MANUFACTURE OF 95% BY WEIGHT SINGLE PHASE YCBO POWDER IN ONE COMBUSTION STEP, COMPRISING THE USE OF CITRATE COMPLEX COMPOUNDS AS STARTING MATERIALS

Stefano Fortunati, Ardea; Mario Talui, Rome, and Luca Risso, Genoa, all of Italy, assignors to Centro Sviluppo Material S.p.A., Rome, Italy

Continuation of Ser. No. 915/137, Jul. 20, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,535
Claims priority, application Italy, Jul. 23, 1991, RM91A000555
Int. Cl.[5] H01B *12/00;* **H01L** *39/12*
U.S. Cl. 505—445 **19 Claims**

1. A process for producing a YBCO powder, comprising providing a clear aqueous solution containing the ions yttrium, barium and copper, in the final proportions desired for the powder, in the form of citrate complex compounds and in the presence of a detonating system comprising a combination of ammonium ions and nitrate ions, said detonating system being formed by adding NH_4OH to the solution at a rate and in a total amount such that the solution remains free of suspended bodies, concentrating the solution by evaporation until triggering a violent combustion that lasts about 1 to 10 seconds to form a combustion product, and keeping the combustion product at a temperature higher than 850° C. for about 60 to 360 seconds to form a superconductive YBCO powder that is at least 95% by weight single-phase.

5,369,092

ODORANT COMPOSITIONS

John M. Blakeway, Nucourt, and Francoise Sauvage, Bois-Colombes, both of France, assignors to Givaudan-Roure Corporation, Clifton, N.J.

PCT No. PCT/EP92/02141, § 371 Date Jul. 1, 1993, § 102(e) Date Jul. 1, 1993, PCT Pub. No. WO93/05761, PCT Pub. Date Apr. 1, 1993
PCT Filed Sep. 17, 1992, Ser. No. 50,438
Claims priority, application Hague Agreement, Sep. 23, 1991, 91116114.9
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—2 **14 Claims**

1. Odorant composition in the form of solutions and exhibiting prolonged diffusion after application on the skin, said odorant composition comprising from about 70 to about 99% of ethanol, from about 0.5 to about 30% of perfume concentrate, from about 0.1 to about 20% of panthenol and from about 0% to about 30% of water.

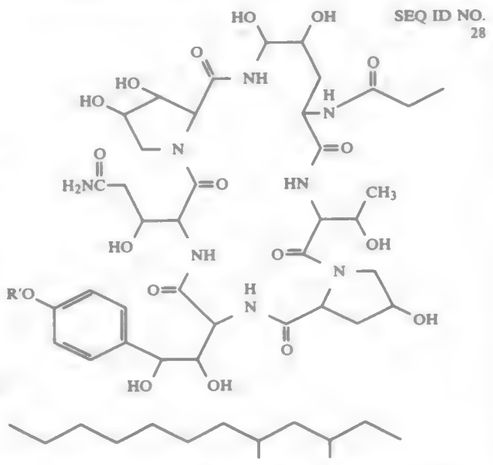
5,369,093

LIPOPEPTIDE DERIVATIVES

Milton L. Hammond, Somerville; James M. Balkovec, North Plainfield, and David J. Mathre, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 15, 1991, Ser. No. 670,604
Int. Cl.[5] A61K *37/02;* **C07K** *7/06, 5/12*
U.S. Cl. 514—11 **9 Claims**

1. A compound having the formula



wherein R' is a phosphono, sulfo or acyl radical having a charged group at neutral pH, wherein

(1) "phosphono" is a radical or group derived from and remaining after an OH of the phosphoric acid or monoester of phosphoric acid has reacted with the hydrogen of the phenolic group on the lipopeptide and is represented by $—PO_3AH$ wherein A is H, C_1–C_6 alkyl, phenyl or substituted phenyl in which the substituent is alkyl, alkyloxy, alkylthio, or alkylamino, or a cation salt thereof;

(2) "sulfo" is a radical group derived from and remaining after an OH of the sulfuric acid has reacted with the hydrogen of the phenolic group on the lipopeptide and is represented by $—SO_3H$ or cation salt thereof;
(3) "acyl" is a radical or group derived from a carboxylic acid and further defined as follows:
(i) $COC_nH_{2n}CO_2H$ wherein n is 1 to 6, or a cation malt thereof;
(ii) $CONAC_nH_{2n}CO_2H$ where A is as defined in (1) and n is 1 to 6, or a cation salt thereof;
(iii) $COOC_nH_{2n}CO2H$ wherein n is 1 to 6, or a cation malt thereof;
(iv) $CONA(CHB)CO_2H$ wherein A is as defined in (1) and B is a residue of an amino acid, or a cation salt thereof;
(v) $COCHBNR_1R_2$ wherein B is a residue of an amino acid, R_1 and R_2 independently are H, C_1–C_6 alkyl, or phenyl, or an acid addition salt thereof;
(vi) $CONAC_nH_{2n}NR_1R_2$ wherein A is as defined in (1), R_1 and R_2 independently are as defined in (v), n is 2 to 6, or an acid addition salt thereof;
(vii) $COOC_nH_{2n}R_1R_2$ wherein R_1 and R_2 independently are as defined in (v), n is 2 to 6, or an acid addition salt thereof;
(viii) $COC_nH_{2n}NR_1R_2$ wherein R_1 and R_2 independently are as defined in (v), n is 1 to 6 or an acid addition salt thereof.

5,369,094

POLYPEPTIDE BOMBESIN ANTAGONISTS

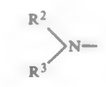
Andrew V. Schally, and Renzhi Cai, both of Metairie, La., assignors to The Administrators of the Tulane Educational Fund, New Orleans, La.

Continuation-in-part of Ser. No. 619,747, Nov. 29, 1990, Pat. No. 5,244,883. This application Mar. 15, 1993, Ser. No. 31,325
Int. Cl.[5] A61K *37/00, 37/02;* **C07K** *5/00, 7/00*
U.S. Cl. 514—15 **20 Claims**

1. A bombesin antagonist peptide having the formula:

$$X\text{-}A^1\text{-}A^2\text{-Trp-Ala-Val-Gly-His-Leu-}_{psi}\text{-}A^9\text{-}Q$$

wherein
X is hydrogen,
a single bond linking the alpha amino group of A^1 to the gamma carboxyl moiety on the 3-propionyl moiety of A^2 when A^2 is Glu[—], or
a group of formula $R^1CO—$, wherein R^1 is selected from the groups consisting of
a) hydrogen, $C_{1\text{-}10}$ alkyl, phenyl, phenyl-$C_{1\text{-}10}$-alkyl, p-HI-phenyl, p-HI-phenyl-$C_{1\text{-}10}$-alkyl, naphthyl, naphthyl-$C_{1\text{-}10}$-alkyl, indolyl, indolyl-$C_{1\text{-}10}$-alkyl, pyridyl, pyridyl-$C_{1\text{-}10}$-alkyl, thienyl, thienyl-$C_{1\text{-}10}$-alkyl, cyclohexyl or cyclohexyl-$C_{1\text{-}10}$-alkyl, where HI =F, Cl, Br, OH, CH_3 or OCH_3;
b)



wherein
R^2 is hydrogen, $C_{1\text{-}10}$ alkyl, phenyl or phenyl-$C_{1\text{-}10}$-alkyl,
R^3 is hydrogen or $C_{1\text{-}10}$ alkyl;
c) $R^4—O$ wherein R^4 is $C_{1\text{-}10}$ alkyl, phenyl or phenyl-$C_{1\text{-}10}$-alkyl;
A^1 is a D- or L-amino acid residue selected from the group consisting of Phe, p-HI-Phe, pGlu, Nal, Pal, Tpi, unsubstituted Trp or Trp substituted in the benzene ring by one or more members selected from the group consisting of F, Cl, Br, NH_2 or $C_{1\text{-}3}$ alkyl;
or a peptide bond linking the acyl moiety of $R^1—CO$ to the alpha amino moiety of A^2, provided $X=R^1CO$;
A^2 is Gln, Glu[—], Glu(Y), or His, wherein
[—] is a single bond when X is a single bond and A^2 is Glu[—], said[—] linking the gamma carboxyl moiety on the 3-propionyl moiety of said A^2 with the alpha amino group of A^1,
Y is
a) $—OR^5$ wherein R^3 is hydrogen, $C_{1\text{-}10}$ alkyl or phenyl;
or
b),



wherein
R^6 is hydrogen or $C_{1\text{-}3}$ alkyl; and
R^7 is hydrogen, $C_{1\text{-}3}$ alkyl or—$NHCONH_2$;
Leu-$_{psi}$- is a reduced form of Leu wherein the C=O moiety is instead $—CH_2—$ such that the bond of this $—CH_2—$ moiety with the alpha amino group of the adjacent A^9 residue is a pseudopeptide bond;
A^9 is Tac, MTac or DMTac; and
Q is NH_2 or OQ^1 where Q^1 is hydrogen, $C_{1\text{-}10}$ alkyl, phenyl or phenyl-$C_{1\text{-}10}$-alkyl;
and the pharmaceutically acceptable acids or salts thereof.

5,369,095

COMPOSITIONS AND METHOD COMPRISING SUBSTITUTED GLYCOSIDES AS MUCUS MEMBRANE PERMEATION ENHANCERS

Tai-Lee Kee, Grand Prairie, Tex., and Jack M. Shaw, Mechanicsville, Va., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

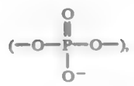
Continuation of Ser. No. 745,136, Aug. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 480,471, Feb. 14, 1990, abandoned. This application Mar. 12, 1993, Ser. No. 31,000
Int. Cl.[5] A61K *9/10, 31/715, 31/725, 31/79*
U.S. Cl. 514—24 **10 Claims**

1. A method of enhancing the penetration of a drug across mucus covered epithelial tissues, which comprises:
topically applying to the mucus covered epithelial tissue a pharmaceutical composition comprising a therapeutically effective amount of the drug and an amount of a substituted glycoside effective to enhance penetration of the drug across the mucus covered epithelial tissue said substituted glycoside having the formula:

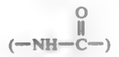
$$R_1—Z—(R_2)_x$$

wherein, R_1 is a hydrophobic group including saturated and unsaturated aliphatic hydrocarbon groups which range from 8 to 28 carbons in length with 1 to 5 double bonds and said aliphatic hydrocarbon group can be a straight or branched chain and may be substituted by one or more aromatic, cycloaliphatic or hydrophilic groups;
R_2 is a group derived from any cyclic or acyclic saccharide containing 4–7 carbons;
X is an integer from 1–10; and
Z is an oxy (—O—), carbonyloxy

phosphoryl



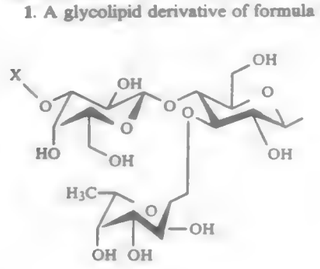
thio
(—S—), or carboxamido



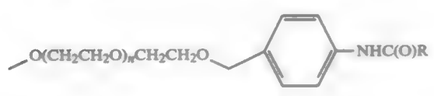
group where R_2 is covalently bound to such group.

5,369,096
GLYCOLIPID DERIVATIVES
Yutaka Yamada; Naofumi Takahashi; Keisuke Adachi, and Akihiko Kameyama, all of Yokohama, Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan
Filed Jul. 15, 1993, Ser. No. 91,252
Claims priority, application Japan, Jul. 15, 1992, 4-188001
Int. Cl.[5] A61K *31/72*
U.S. Cl. 514—61 **5 Claims**

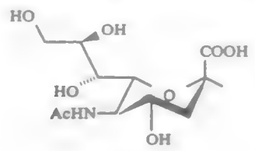
1. A glycolipid derivative of formula (I)



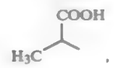
(I)



wherein X is selected from the group consisting of



and



n is 0 or an integer from 1–10, and R is a branched hydrocarbon chain containing from 19 to 39 carbon atoms, or a pharmaceutically acceptable salt thereof.

5,369,097
PHOSPHONATES AS ANTI-CANCER AGENTS
Hassan Salari, Ladner, Canada, and Robert Bittman, Roslyn Heights, N.Y., assignors to The University of British Columbia, Vancouver, Canada
Continuation-in-part of Ser. No. 835,732, Feb. 11, 1992, Pat. No. 5,219,845, which is a continuation-in-part of Ser. No. 692,452, Apr. 25, 1991, abandoned. This application May 4, 1993, Ser. No. 59,170
Int. Cl.[5] A61K *31/685*
U.S. Cl. 514—77 **4 Claims**

1. A method of treating lymphoma, lung carcinoma or leukemia in a mammal afflicted with lymphoma, lung carcinoma or leukemia comprising treating the afflicted mammal with a therapeutic amount of a compound of the formula:

wherein n is 0 or 1 and R_1 is an alkyl group of C_{16} or C_{18}; wherein R_2 is a methyl group; and wherein R_3 is a $(CH_2)_mN^+(CH_3)_3$ group with m=2.

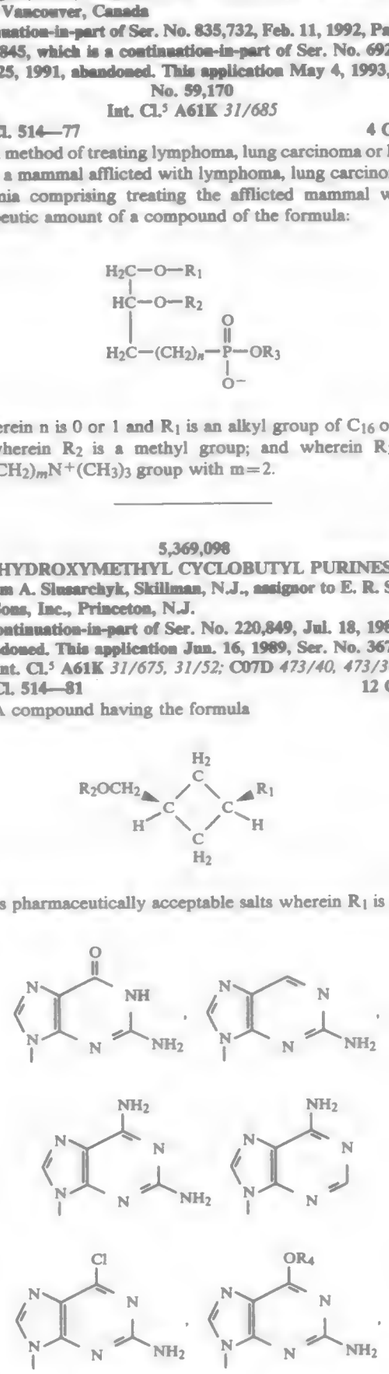
5,369,098
HYDROXYMETHYL CYCLOBUTYL PURINES
William A. Slusarchyk, Skillman, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 220,849, Jul. 18, 1988, abandoned. This application Jun. 16, 1989, Ser. No. 367,167
Int. Cl.[5] A61K *31/675, 31/52;* **C07D** *473/40, 473/36*
U.S. Cl. 514—81 **12 Claims**

1. A compound having the formula

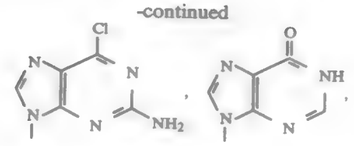


1

and its pharmaceutically acceptable salts wherein R_1 is



-continued

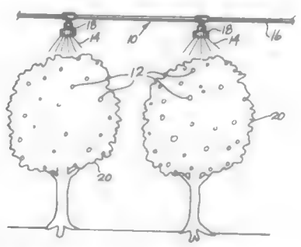


wherein R_2 is hydrogen, $—PO_3H_2$, or



wherein R_3 is hydrogen, alkyl, substituted alkyl, or aryl, and R_4 is alkyl wherein the term alkyl refers to both straight and branched chain groups having one to ten carbon atoms; the term substituted alkyl refers to alkyl groups having one or more substituents wherein the substituent is halogen, amino, azido, hydroxy, cyano, trialkylammonium (wherein each alkyl group has 1 to 6 carbons), alkoxy of 1 to 6 carbons, aryl and carboxy; the term aryl refers to phenyl and phenyl substituted with one, two or three substituents wherein the substituent is alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, halogen, trifluoromethyl, amino, alkylamino, dialkylamino, nitro, cyano, alkanoyloxy of 2 to 11 carbons, carboxy, carbamoyl and hydroxy.

5,369,099
METHOD AND COMPOSITION FOR INHIBITING THE FORMATION OF HARDWATER DEPOSITS ON FRUIT
Thomas Iverson, Jr., Yakima, and Joyce Prindle, Olympia, both of Wash., assignors to CH_2O Incorporated, Olympia, Wash.
Filed Apr. 22, 1993, Ser. No. 52,065
Int. Cl.[5] A01N *57/12*
U.S. Cl. 514—108 **12 Claims**



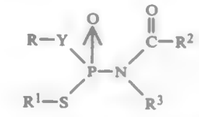
1. A method of cooling fruit, while the fruit is still on its tree or vine, by the use of source cooling water containing fruit scale forming minerals, comprising:

applying to the surface of the fruit, while the fruit is still on its tree or vine, a mixture of said cooling water and 1-hydroxyethane 1, 1-diphosphonic acid (HEDPA), the latter being present in the mixture in an amount sufficient to alter the fruit scale forming minerals, such that, following evaporation of the cooling water, the minerals will appear as a powder on the fruit that is easily removed from the fruit after the fruit is harvested.

5,369,100
CHEMICALLY STABLE COMPACTED PARTICLES CONTAINING INSECTICIDAL PHOSPHOROAMIDOTHIOATES AND METHODS FOR THE MANUFACTURE AND USE THEREOF
Gary L. Cummings, Moraga, Calif., assignor to Valent U.S.A. Corporation, Walnut Creek, Calif.
Continuation-in-part of Ser. No. 856,485, Mar. 24, 1992, which is a continuation-in-part of Ser. No. 674,857, Mar. 25, 1991, abandoned. This application Sep. 24, 1992, Ser. No. 950,295
Int. Cl.[5] A01N *57/02, 57/04, 59/02*
U.S. Cl. 514—120 **16 Claims**

1. A method for manufacturing an insecticidal composition, comprising

(a) mixing components consisting essentially of ammonium sulfate and at least one insecticidal compound of the formula:



wherein R and R^1 individually are an alkyl, alkenyl or alkynyl group containing up to 6 carbon atoms, R^2 is hydrogen, an alkyl group containing 1 to 18 carbon atoms, a cycloalkyl group containing 3 to 8 carbon atoms, an alkenyl group containing 2 to 18 carbon atoms or an alkynyl group containing 3 to 18 carbon atoms, R^3 is hydrogen or an alkyl group containing 1 to 6 carbon atoms, and Y is oxygen or sulfur in a mixer to produce a compacted formulation,
wherein the components being mixed do not include any water;

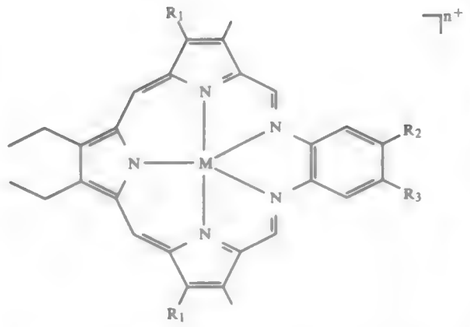
(b) compacting the mixture in a compactor to produce a compacted formulation;

(c) crushing the compacted formulation to form irregularly shaped to spherically shaped compacted particles; and

(d) screening the compacted particles through a screen to separate oversized particles and undersized particles from particles having a desired particle size.

5,369,101
EXPANDED PORPHYRINS: LARGE PORPHYRIN-LIKE TRIPYRROLEDIMETHINE-DERIVED MACROCYCLES
Jonathan L. Sessler; Gregory W. Hemmi, both of Austin, Tex., and Toshiaki Murai, Gifu, Japan, assignors to Board of Regents, The University of Texas System, Austin, Tex.
Division of Ser. No. 880,131, May 7, 1992, Pat. No. 5,272,142, which is a division of Ser. No. 539,975, Jun. 18, 1990, Pat. No. 5,162,509, which is a division of Ser. No. 320,293, Mar. 6, 1989, Pat. No. 4,935,498. This application Dec. 16, 1993, Ser. No. 168,668
Int. Cl.[5] C07D *487/22*
U.S. Cl. 534—13 **8 Claims**

1. A compound having the structure:



wherein:

M is H; a trivalent metal cation selected from the group consisting of Mn^{+3}, Co^{+3}, Ni^{+3}, Fe^{+3}, Ho^{+3}, Ce^{+3}, Y^{+3}, In^{+3}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, Lu^{+3}, La^{+3}, and U^{+3}; or a divalent metal cation selected from the group consisting of Ca^{+2}, Mn^{+2}, Co^{+2}, Ni^{+2}, Zn^{+2}, Cd^{+2}, Hg^{+2}, Sm^{+2}, and UO_2^{+2};

R_1, R_2, and R_3 are independently hydrogen, alkyl, carboxy or carboxyalkyl where at least one of R_1, R_2, and R_3 is carboxy or carboxyalkyl;

the molecular weight of any one of R_1, R_2, or R_3 is less than or equal to about 1000 daltons; and n is an integer less than or equal to 2.

5,369,102

2-SUBSTITUTED ALKYL-3-CARBOXY CARBOPENEMS AS ANTIBIOTICS AND A METHOD OF PRODUCING THEM

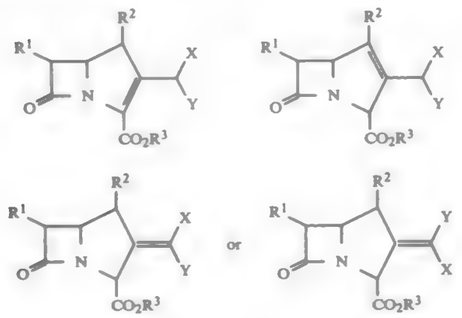
Carl B. Ziegler, Jr.; William V. Carran, both of Pearl River, and Gregg Feigelson, Spring Valley, all of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Continuation of Ser. No. 749,019, Aug. 23, 1991, abandoned, which is a division of Ser. No. 507,271, Apr. 10, 1990, Pat. No. 5,068,232. This application Jul. 6, 1993, Ser. No. 87,944

Int. Cl.[5] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 514—210 **6 Claims**

1. A 2-substituted alkyl-3-carboxy carbapenem compound having the formula:



wherein R^1 is hydrogen; a straight-chain or branched lower alkyl group selected from ethyl, n-propyl, n-butyl, isobutyl, sec-butyl, tert-butyl, n-pentyl, or isopentyl; a straight-chained or branched lower alkoxy group selected from methoxy, ethoxy, n-propoxy, isopropoxy, n-butoxy, isobutoxy, sec-butoxy, or tert-butoxy; or an R^4 B group (wherein R^4 is a hydroxyl group; a lower alkoxy group selected from methoxy, ethoxy, n-propoxy, or isopropoxy; fluoride; an acyloxy group selected from acetoxy, propionyloxy, n-butyryloxy, or isobutyryloxy; or an aralkyloxycarbonyloxy group selected from benzyloxycarbonyloxy or p-nitrobenzyloxycarbonyloxy; a lower alkylsulfonyloxy group selected from methanesulfonyloxy, ethanesulfonyloxy, or propanesulfonyloxy; an arylsulfonyloxy group selected from benzenesulfonyloxy or p-toluenesulfonyloxy; a lower trialkylsilyloxy group selected from trimethylsilyloxy or tertbutyldimethylsilyloxy; a mercapto group; a lower alkylthio group selected from methylthio, ethylthio, n-propylthio, or isopropylthio; an amino group; or a lower aliphatic acylamino group selected from acetylamino, propionylamino, n-butyrylamino, or isobutyrylamino; and B is an alkylene group that may have trifluoromethyl or phenyl substituents, selected from methylene, ethylene, ethylidene, trimethylene, propylidene, isopropylidene, tetramethylene, butylidene, pentamethylene, pentylidene, 2,2,2-trifluoroethylidene, 3,3,3-trifluoropropylidene, or benzylidene);

R^2=hydrogen, C_1–C_6 alkyl, phenyl and C_1–C_6 alkyl substituted phenyl;

R^3 is a hydrogen atom; a straight-chain or branched lower alkyl group selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, or tert-butyl; a lower haloalkyl group selected from 2-iodoethyl, 2,2-dibromoethyl, or 2,2,2-trichloroethyl; a lower alkoxymethyl group selected from methoxymethyl, ethoxymethyl, n-propoxymethyl, isopropoxymethyl, n-butoxymethyl, or isobutoxymethyl; a lower aliphatic acyloxymethyl group selected from acetoxymethyl, propionyloxymethyl, n-butyryloxymethyl, isobutyryloxymethyl, or pivaloyloxymethyl; a 1-(lower alkoxy)carbonyloxyethyl group selected from 1-methoxycarbonyloxyethyl, 1-ethoxycarbonyloxyethyl, 1-n-propoxycarbonyloxyethyl, 1-isopropoxycarbonyloxyethyl, 1-n-butoxycarbonyloxyethyl, or 1-isobutoxycarbonyloxyethyl; an aralkyl group selected from benzyl, p-methoxybenzyl, o-nitrobenzyl, or p-nitrobenzyl; a benzhydryl group; a phthalidyl group, a silyl selected from trimethylsilyl or t-butyldimethylsilyl or 2-trimethylsilylethyl; an allylic group selected from allyl, 2-chloro-2-propenyl, 2-butenyl, 3-methyl-2-butenyl or 2-cinnamyl or water soluble cation selected from lithium, sodium, potassium, ammonium or tetraalkyl ammonium (alkyl of C_1–C_4);

X=H;

Y=



F, Cl, Br, I;

R^{16}=a straight-chain or branched lower alkyl group selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl; a lower haloalkyl group selected from 2-chloroethyl, 3-chloropropyl, 2-iodoethyl, 2,2-dibromoethyl or 2,2,2-trichloroethyl; a lower trimethylsilylalkyl group selected from 2-trimethylsilylethyl; substituted allyl selected from 2-chloro-2-propenyl, 3-methyl-2-propenyl, 3-methyl-2-butenyl, 3-phenyl-2-propenyl; a lower alkyl-t-butyldimethylsiloxy group of 2-4 carbon atoms selected from 2-[t-butyldimethylsiloxy]ethyl or 2-[t-butyldimethylsiloxy]propyl; a lower alkyl-hydroxy group of 2-4 carbon atoms selected from 2-hydroxyethyl, 3-hydroxylpropyl or 3-hydroxy-n-butyl; phenyl; an alkylheteroaryl group with 1–3 carbon atoms in the alkyl chain attached to a 5- or 6-membered heteroaryl ring that contains 1–4 O, N or S atoms attached through a ring carbon or nitrogen; a alkylheterocycle group with 1–3 carbon atoms in the alkyl chain attached to a 5- or 6-membered ring that contains 1–4 O, N or S atoms attached through a ring carbon or ring nitrogen;

R^{18} and R^{19} are independently selected from hydrogen; substituted or unsubstituted alkyl having from 1–10 carbon atoms; substituted or unsubstituted cycloalkyl having from 1–10 carbon atoms; aralkyl, selected from phenyl alkyl and heterocycloalkyl wherein the alkyl has 1–6 carbon atoms and the heteroatom or atoms are selected from O, N and S; and cyclic group wherein R^{18} and R^{19} together form a ring which optionally may be substituted by amino, mono, di- and trialkylamino (each alkyl having 1–6 C atoms), hydroxyl, carboxyl, alkoxyl having from 1–6 carbon atoms, halo such as chloro, bromo, fluoro, nitro, sulfonamido, phenyl, benzyl and alkoxylcarbonyl having 1–3 carbon atoms in the alkoxy moiety.

5,369,103

PIPERAZINE DERIVATIVES

Ian A. Cliffe, Slough; Alan C. White, Eaglefield Green, and Anderson D. Ifill, Didcot, all of England, assignors to John Wyeth & Brother, Limited, Maidenhead, England

Filed Jun. 19, 1992, Ser. No. 861,834

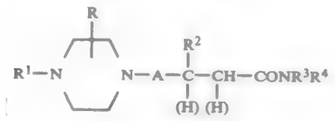
Claims priority, application United Kingdom, Oct. 19, 1990, 9022790

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] **A61K** *31/395, 31/495;* **C07D** *403/06, 403/14*

U.S. Cl. 514—211 **4 Claims**

1. A compound of the formula (I)



(I)

wherein

A is an alkylene chain of 1 or 2 carbon atoms optionally substituted by one or more lower alkyl groups,

R is hydrogen or lower alkyl,

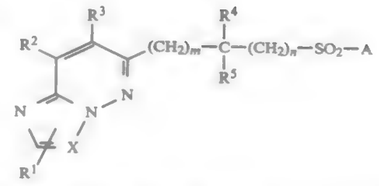
R^1 is an aryl or a heteroaryl radical,

R^2 is an aryl radical, a heteroaryl radical, or an aryl- or heteroaryl-lower alkyl radical,

R^3 and R^4 together with the nitrogen atom to which they are both attached represent a saturated heterocyclic ring which may contain a further hetero atom, and the dotted line represents a single or double bond, the hydrogen atoms shown in brackets being present when the dotted line represents a single bond;

wherein aryl means phenyl or naphthyl optionally substituted by one or more substituents selected from lower alkoxy, (lower)alkylthio, halogen, trifluoromethyl, nitro, carbalkoxy, carboxamido, cyano, amino, (lower)alkylamino, and di(lower)alkylamino, and

heteroaryl means a monocyclic heteroaromatic radical containing 5 to 7 ring atoms or a bicyclic heteroaromatic radical containing 9 to 11 ring atoms, in which the heteroatoms are selected from one or two N atoms, one N atom and one O or S atom, and one O or S atom, and which is optionally substituted as for aryl.



[I]

wherein X stands for the group —CH═, or a nitrogen atom; R^1 stands for (i) a hydrogen atom, (ii) a straight chain or branched C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, carboxy, nitro, mono- or di-C_{1-6} alkyl amino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen or (iii) a halogen atom; R^2 and R^3 respectively stand for (i) a hydrogen atom or (ii) a straight chain or branched C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, carboxy, nitro, mono- or di-C_{1-6} alkyl amino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen; R^4 and R^5 respectively stand for (i) a hydrogen atom or (ii) a straight chain or branched C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, carboxy, nitro, mono- or di-C_{1-6} alkyl amino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen, or (iii), taken together, form a C_{3-7} cycloalkane, C_{3-7} cycloalkene, oxetane, tetrahydrofuran, tetrahydropyran, azetidine, pyrrolidine, piperidine, piperazine, tetrahydrothiophene, homopiperidine or morpholine, each of which may be substituted with one to five substituent(s) selected from the group consisting of (a) a C_{1-6} alkyl group which may be substituted with one to four substituents(s) selected from the group consisting of a hydroxyl, an amino, a mono-or di- C_{1-6} alkylamino, a C_{1-6} alkoxy, a C_{1-6} alkylcarbonyloxy and a (b) an amino group which may be substituted with one or two substituent(s) selected from the group consisting of a C_{1-6} alkyl, a C_{1-6} acyl, a pyrrolidino, a morpholino, a piperidino and a 1-piperazinyl, (c) a hydroxy, (d) a carboxy, (e) a nitro, (f) a C_{1-6} alkoxy and (g) a halogen; A stands for a group of



wherein R^6 and R^7 respectively stand for (i) a hydrogen atom, (ii) a C_{1-6} alkyl group which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, carboxy, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen atom, (iii) a C_{3-6} cycloalkyl group which may be substituted with one to four substituents selected from the group consisting of hydroxy, amino, carboxy, nitro, mono- or di-C_{1-6} alkylamino, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen atom, (iv) a phenyl or naphthyl group which may be substituted with one to five substituents selected from the group consisting of C_{1-6} alkyl, amino, acetamido, hydroxy, carboxy, nitro, C_{1-6} alkoxy, C_{1-6} alkylcarbonyloxy and halogen atom, or (v) an N-containing heterocyclic ring formed by R^6 and R^7 in combination with the adjacent nitrogen atom selected from the group consisting of:



5,369,104

PYRIDAZINE COMPOUNDS, THEIR PRODUCTION AND USE

Akio Miyake, Hirakata; Yasuhiko Kawano, Suita, and Yasuko Ashida, Takatsuki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Dec. 28, 1992, Ser. No. 997,538

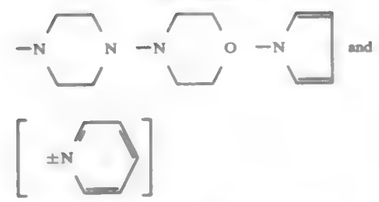
Claims priority, application Japan, Dec. 27, 1991, 3-347196; Aug. 19, 1992, 4-220137

Int. Cl.[5] **A61K** *31/50, 31/55;* **C07D** *487/04, 487/14*

U.S. Cl. 514—212 **29 Claims**

1. A compound represented by the formula:

-continued



each of which may substituted with one to four substituent(s) selected from the group consisting of (a) a C_{1-6} alkyl group which may be substituted with one to four substituent(s) selected from the group consisting of a hydroxyl, an amino, a mono- or di-C_{1-6} alkylamino, a C_{1-6} alkoxy, a C_{1-6} alkylcarbonyloxy and a halogen, (b) an amino group which may be substituted with one or two substituent(s) selected from the group consisting of a C_{1-6} alkyl, a C_{1-6} acyl, a pyrrolidino, a morpholino, a piperidino and a 1-piperazinyl, (c) a hydroxy, (d) a carboxy, (e) a nitro, (f) a C_{1-6} alkoxy and (g) a halogen; m and n denote a whole number of one to four, respectively, or a pharmaceutically acceptable salt thereof.

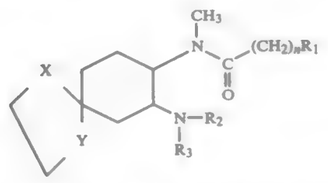
5,369,105

7-((SUBSTITUTED)AMINO-8-((SUBSTITUTED)CARBONYL)-METHYLAMINO-1-OXASPIRO(4,5)DECANES USEFUL IN PARKINSON'S DISEASE, DYSTONIA, AND OTHER MOVEMENT DISORDERS

Alexander McKnight, Ely, and Geoffrey N. Woodruff, Braughing Nr. Ware, both of United Kingdom, assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 941,576, Sep. 8, 1992, Pat. No. 5,317,028. This application Dec. 1, 1993, Ser. No. 160,533
Int. Cl.[5] A61K *31/335, 31/38, 31/445, 31/55*
U.S. Cl. 514—212 **4 Claims**

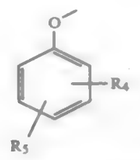
1. A method for treating Parkinson's disease which comprises administering to a patient in need of said treatment a therapeutically effective amount of a compound in unit dosage form of formula



I

or a pharmaceutically acceptable salt thereof wherein n is an integer of from one to six; either of X or Y is oxygen and the other is $—CH_2—$; R_1 is selected from

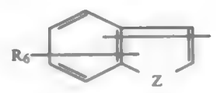
a)



where R_4 and R_5 are independently hydrogen, fluorine, chlorine, bromine, nitro, trifluoromethyl, alkyl of from one to six carbon atoms, alkoxy of from one to six carbon atoms, or aryl;

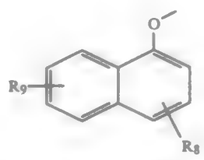
b) 3,4,5-trimethylphenoxy;

c)



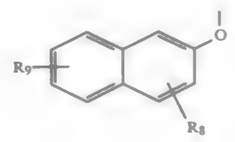
where R_6 is hydrogen, fluorine, chlorine, alkyl of from one to six carbon atoms, or aryl; Z is $—CH_2—$, —O—, —S—, or $—NR_7—$ where R_7 is hydrogen, alkanoyl of from one to six carbon atoms, or alkyl of from one to six carbon atoms;

d)

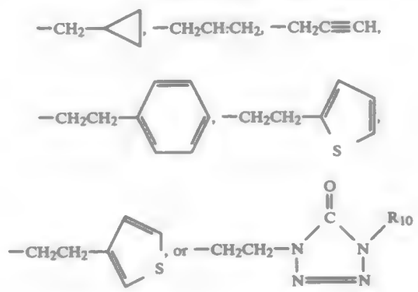


wherein R_8 and R_9 are independently hydrogen, fluorine, bromine, alkyl of from one to six carbon atoms, or alkoxy of from one to four carbon atoms; or

e)



where R_8 and R_9 are as defined above; where R_2 is methyl and R_3 is hydrogen, alkyl of from one to six carbon atoms,



where R_{10} is alkyl of from one to four carbon atoms; or where R_2 and R_3 when taken together with the nitrogen atom to which they are attached, form a piperidinyl or hexahydro-1H-azepinyl ring.

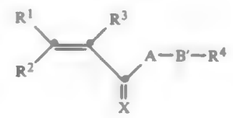
5,369,106

N-ACRYLOYLPIPERAZINE DERIVATIVES, THEIR PREPARATION AND THEIR USE OF PAF ANTAGONISTS

Norio Nakamura; Nobuyuki Ohkawa; Takeshi Oshima; Masaaki Miyamoto, and Yasuteru Iijima, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 751,871, Aug. 28, 1991, Pat. No. 5,192,766, which is a continuation-in-part of Ser. No. 514,523, Apr. 25, 1990, abandoned. This application Nov. 6, 1992, Ser. No. 973,086
Claims priority, application Japan, Apr. 28, 1989, 1-111295
Int. Cl.[5] A01N *43/42;* **C07D** *243/08*
U.S. Cl. 514—218 **32 Claims**

1. A compound of formula (I):



(I)

wherein:

R^1 and R^2 are the same or different, and each represents a group having the formula $—R^5$, $—CH═CH—R^5$ or $—C≡C—R^5$,

wherein R^5 represents a C_6–C_{14} carbocyclic aryl group which is unsubstituted or has one to three substituents selected from the group consisting of substituents (a), defined below,

R^3 represents a hydrogen atom, a C_1–C_6 alkyl group, a cyano group, or a group having the formula $—R^5$, in which R^5 is as defined above:

X represents an oxygen atom or a sulfur atom;

A represents a 1,4-homopiperazin-1,4-diyl group;

B′ represents a C_1–C_6 alkylene group, a carbonyl group, a thiocarbonyl group, a sulfinyl group or a sulfonyl group;

R^4 represents an unsubstituted phenyl group or a substituted phenyl group having from 1 to 5 substituents selected from the group consisting of substituents (a) and substituents (b), defined below;

substituents (a):

C_1–C_6 alkyl groups; C_1–C_6 alkoxy groups; C_1–C_6 haloalkyl groups; hydroxy groups; C_1–C_4 alkylenedioxy groups; C_1–C_6 aliphatic carboxylic acyloxy groups; substituted C_1–C_6 aliphatic carboxylic acyloxy groups having at least one to three substituents selected from the group consisting of substituents (c), defined below; C_7–C_{15} carbocyclic aromatic carboxylic acyloxy groups; substituted C_7–C_{15} carbocyclic aromatic carboxylic acyloxy groups having one to three substituents selected from the group consisting of substituents (d), defined below; C_8–C_{15} aralkyloxycarbonyloxy groups in which the aryl part is unsubstituted or has one to three substituents selected from the group consisting of substituents (d), defined below; C_1–C_6 alkanesulfonyloxy groups in which the alkane part is unsubstituted or has one to three substituents selected from the group consisting of substituents (c), defined below; arylsulfonyloxy groups in which the aryl part is unsubstituted or has one to three substituents selected from the group consisting of substituents (d), defined below; halogen atoms; and nitro groups;

substituents (b):

C_1–C_6 alkylsulfonyl groups; C_1–C_6 alkylsulfinyl groups; and C_1–C_6 alkylthio groups;

substituents (c):

C_1–C_6 alkyl groups; C_1–C_6 haloalkyl groups; halogen atoms; C_1–C_6 alkoxy groups; and (C_1–C_6 alkanoyloxy)methoxycarbonyl group;

substituents (d):

C_1–C_6 alkyl groups; C_1–C_6 alkoxy groups; halogen atoms; unsubstituted C_6–C_{10} aryl groups; nitro groups; and (C_1–C_6 alkoxy)carbonyl groups;

and pharmaceutically acceptable salts thereof.

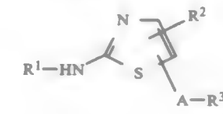
5,369,107

THIAZOLE DERIVATIVES, PROCESSES FOR PRODUCTION THEREOF AND PHARMACEUTICAL COMPOSITIONS COMPRISING THE SAME

Masaaki Matsuo, Toyonaka; Takashi Ogino, Kobe; Norihiro Igari, Amagasaki; Hachiro Seno, Kadoma, and Kyoichi Shimomura, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 867,085, Apr. 14, 1992, Pat. No. 5,256,675, which is a continuation of Ser. No. 554,413, Jul. 19, 1990, abandoned. This application Jul. 13, 1993, Ser. No. 90,325
Claims priority, application United Kingdom, Aug. 7, 1989, 8918045.9; Feb. 21, 1990, 9003930.6
Int. Cl.[5] A61K *31/505, 31/44, 31/41, 31/425*
U.S. Cl. 514—252 **4 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or acyl which may be substituted with halogen,

R^2 is hydrogen, lower alkyl, hydroxy(lower)alkyl, halogen or carboxy,

A is

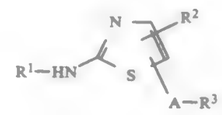


wherein m is 0, 1, or 2, and

R^3 is an unsaturated heterocyclic group selected from the group consisting of pyrrolyl, pyrrolinyl, imidazolyl, pyrazolyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl, and thiadiazolyl;

wherein said unsaturated heterocyclic group may be substituted 1 to 4 times with lower alkyl, amino, hydroxy, or halo(lower)alkyl, or pharmaceutically acceptable salts thereof.

2. A compound of the formula:



wherein

R^1 is lower alkanesulfonyl which may be substituted with halogen,

R^2 is hydrogen, lower alkyl, hydroxy(lower)alkyl, halogen or carboxy,

A is



wherein m is 0, 1 or 2, and

R^3 is an unsaturated heterocyclic group selected from the group consisting of pyrrolyl, pyrrolinyl, imidazolyl, pyrazolyl, pyrimidinyl, pyrazinyl, pyridazinyl, triazolyl, tetrazolyl and thiadiazolyl;

wherein said unsaturated heterocyclic group may be substituted 1 to 4 times with lower alkyl, amino, hydroxy, or halo(lower)alkyl,

or pharmaceutically acceptable salts thereof.

5,369,108

POTENT INDUCERS OF TERMINAL DIFFERENTIATION AND METHODS OF USE THEREOF

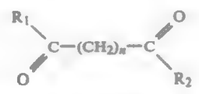
Ronald Breslow, Englewood, N.J.; Paul A. Marks, Bridgewater, Conn.; Richard A. Rifkind, New York, N.Y., and Branko Jursic, New Orleans, La., assignors to Sloan-Kettering Institute for Cancer Research and The Trustees of Columbia, both of New York, N.Y.

Filed Oct. 4, 1991, Ser. No. 771,760

Int. Cl.[5] A01N *43/90;* **C07C** *233/00, 235/00;* **C07N** *211/30*

U.S. Cl. 514—266 **17 Claims**

1. A compound having the structure:



wherein each of R_1 and R_2 are independently the same as or different from each other; when R_1 and R_2 are the same, each is a substituted or unsubstituted cycloalkylamino, pyridineamino, piperidino, 9-purine-6-amine, or thiazoleamino group; when R_1 and R_2 are different, R_1=R_3—N—R_4, wherein each of R_3 and R_4 are independently the same as or different from each other and are a hydrogen atom, a hydroxyl group, a substituted or unsubstituted, branched or unbranched alkyl, alkenyl, cycloalkyl, aryl, alkyloxy, aryloxy, arylalkyloxy, or pyridine group, or R_3 and R_4 bond together to form a piperidine group and R_2 is a hydroxylamino, hydroxyl, amino, alkylamino, or alkyloxy group; and n is an integer from about 4 to about 8.

5,369,109

OPTICALLY ACTIVE ESTERS OF 7-SUBSTITUTED 3,5-DIFUNCTIONALIZED 6-HEPTENOIC ACIDS

Tamejiro Hiyama; Tatsuya Minami, both of Sagamihara; Takeshi Hanamoto, Okazaki, all of Japan, and Guntoori B. Reddy, Montreal, Canada, assignors to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 748,076, Aug. 21, 1991, Pat. No. 5,276,154. This application Jun. 17, 1993, Ser. No. 77,454

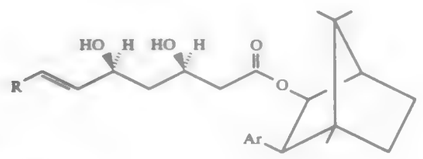
Claims priority, application Japan, Aug. 30, 1990, 2-226741; Aug. 1, 1991, 3-214148

Int. Cl.[5] A01N *43/40;* **C07C** *69/73;* **C07D** *215/06, 471/04*

U.S. Cl. 514—277 **5 Claims**

1. An optically active ester of β,δ-syn-dihydroxycarboxylic acid represented by the following formula (IV):

(IV)



wherein

R is a phenyl group optionally substituted with one to four substituents selected from the group consisting of a C_1–C_3 alkyl group, a halogen, a C_1–C_3 alkoxy group, and a phenyl group optionally substituted with a halogen, a C_1–C_3 alkyl group or both a halogen and C_1–C_3 alkyl group;

a vinyl group substituted with two or three substituents selected from the group consisting of a C_1–C_3 alkyl group, a phenyl group optionally substituted with a halogen, a C_1–C_3 alkyl group or both a halogen and C_1–C_3 alkyl group, and a 1H-tetrazolyl group optionally substituted with a halogen, a C_1–C_3 alkyl group or both a halogen and C_1–C_3 alkyl group;

a pyridyl group optionally substituted with one to four substituents selected from the group consisting of a halogen, a cyclopropyl group, an oxo group, a C_1–C_3 alkyl group optionally substituted with benzyloxy group, and a phenyl group optionally substituted with a halogen, a C_1–C_3 alkyl group or both a halogen and C_1–C_3 alkyl group; or

a pyridyl group condensed with benzene ring, pyrazole ring, or thiophene ring, optionally substituted with one to four substituents selected from the group consisting of a halogen, a cyclopropyl group, an oxo group, a C_1–C_4 alkyl group optionally substituted with benzyloxy group, and a phenyl group optionally substituted with a halogen, a C_1–C_3 alkyl group or both a halogen and C_1–C_3 alkyl group; and

Ar is a condensed aromatic group, or an enantiomer thereof.

5,369,110

BIPHENYLYL COMPOUNDS

Tibor Schmidlin, Basel; Franz Ostermayer, Riehen, and Peter Bühlmayer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 805,256, Dec. 9, 1991, abandoned. This application Jul. 9, 1993, Ser. No. 89,393

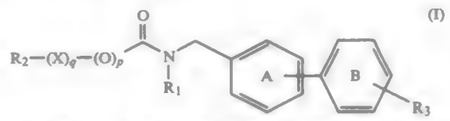
Claims priority, application Switzerland, Dec. 14, 1990, 03965/90

Int. Cl.[5] A61K *31/41;* **C07D** *257/04*

U.S. Cl. 514—281 **14 Claims**

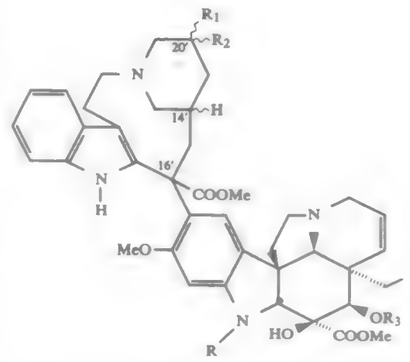
1. A compound of formula

(I)



wherein R_1 is lower alkyl, lower alkenyl, lower alkynyl, halo-lower alkyl, -lower alkenyl or -lower alkynyl carrying halogen in a position higher than the β-position with respect to the nitrogen atom shown in formula I, hydroxy-lower alkyl, -lower alkenyl or -lower alkynyl carrying hydroxy in a position higher than the β-position with respect to the nitrogen atom shown in formula I, cyclo-lower alkyl, cyclo-lower alkenyl, phenyl-lower alkyl or phenyl-lower alkenyl or -lower alkynyl; R_2 is 1H-tetrazol-5-yl, carboxy, carboxy esterified by an alcohol the alcoholic hydroxy function of which is bonded to lower alkyl, lower alkenyl or lower alkynyl or to lower alkoxy-lower alkyl, -lower alkenyl or -lower alkynyl, or is carbamoyl in which the amino group is unsubstituted or is mono- or di-substituted by a substituent or substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and phenyl-lower alkyl, -lower alkenyl and -lower alkynyl, or is di-substituted by lower alkylene or by lower alkyleneoxy-lower alkylene, or is amino, amino that is mono- or di-substituted by a substituent or substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and phenyl-lower alkyl, -lower alkenyl and -lower alkynyl, or is di-substituted by lower alkylene or by lower alkyleneoxy-lower alkylene, or amino that is mono-substituted by lower alkanoyl or by benzoyl, or is formyl, di-lower alkoxymethyl, 1,3-dioxacycloalk-2-yl, hydroxy, lower alkoxy, lower alkenyloxy, phenoxy, benzyloxy, $S(O)_m$—R, wherein m is 0, 1 or 2 and R is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, or lower alkanoyl, aminosulfonyl, aminosulfonyl in which the amino group is mono- or di-substituted by a substituent or substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl and phenyl-lower alkyl, -lower alkenyl and -lower alkynyl, or is di-substituted by lower alkylene or by lower alkyleneoxy-lower alkylene, or PO_2H_2, PO_3H_2 or sulfonylamino in which the sulfur atom of the sulfonylamino group is mono-substituted by lower alkyl, lower alkenyl, lower alkynyl, halo-lower alkyl, -lower alkenyl or -lower alkynyl, phenyl-lower alkyl, -lower alkenyl or -lower alkynyl or by phenyl; R_3 is carboxy, 1H-tetrazol-5-yl, SO_3H, PO_2H_2, PO_3H_2 or halo-lower alkanesulfonylamino; X is straight-chained lower alkylene, straight-chained lower alkylene in which one or, independently of each other, two methylene group(s) has(have) been replaced by cyclo-lower alk-1,1-ylene, straight-chained lower alkylene that is mono-, di-, tri- or tetra-substituted by a substituent or substituents selected from the group consisting of lower alkyl, lower alkenyl and lower alkynyl, or straight-chained lower alkylene that is mono-, di-, tri- or tetra-substituted by a substituent or substituents selected from the group consisting of lower alkyl, lower alkenyl and lower alkynyl and in which one or, independently of each other, two methylene group(s) of the methylene groups present in the corresponding unsubstituted straight-chained lower alkylene group has(have) been replaced by cyclo-lower alk-1,1-ylene; each of the rings A and B, independently of the other, is unsubstituted or is substituted by halogen, hydroxy, lower alkoxy, lower alkenyloxy, phenoxy, benzyloxy, $S(O)_m$—R, wherein m is 0, 1 or 2 and R is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, or by lower alkyl, lower alkenyl, lower alkynyl, halo-lower alkyl, -lower alkenyl or -lower alkynyl, hydroxy-lower alkyl, -lower alkenyl or -lower alkynyl, or by unsubstituted or halo- or hydroxy-substituted lower alkoxy-lower alkyl, -lower alkenyl or -lower alkynyl, or unsubstituted or halo- or hydroxy-substituted lower alkenyloxy-lower alkyl, -lower alkenyl or -lower alkynyl; and either p and q are both 1 or p is 0 and q is 0 or 1; wherein phenyl in phenyl radicals per se and in phenyl-lower alkyl, phenyl-lower alkenyl, phenyl-lower alkynyl, benzoyl, phenoxy and benzyloxy groups is in each case unsubstituted phenyl or phenyl mono- or poly-substituted by a substituent or substituents selected from the group consisting of halogen, hydroxy, lower alkoxy, lower alkyl and trifluoromethyl; or a pharmaceutically acceptable salt thereof.

I



wherein

R=formyl or methyl (R_1, R_2)=(H, ethyl), (H,H), (Methyl, H) or (Methyl, Methyl).

R_3=H or acetyl.

5,369,111

MODULATOR AGENT AND USE THEREOF

Martin E. Kuehne, Burlington, and Linda S. Borman, Essex Junction, both of Vt., assignors to University of Vermont, Burlington, Vt.

Continuation of Ser. No. 506,615, Apr. 10, 1990, abandoned. This application Jun. 19, 1992, Ser. No. 900,745

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—283 **5 Claims**

1. A method for sensitizing, in a patient in need thereof, tumoral cells to vinca alkaloid or antibiotic chemotherapy anticancerous drugs or reversing the tumoral cells resistance to vinca alkaloid or antibiotic chemotherapeutic antitumoral drugs or both, which comprises administering to said patient an enhancer agent in an amount effective to sensitive said tumoral cells to vinca alkaloid or antibiotic chemotherapeutic anticancerous drugs or to reversing the tumoral cells resistance to vinca alkaloid or antibiotic chemotherapeutic antitumoral drugs or both; wherein said enhancer agent is a binary vinca alkaloid, analog to vinblastine or vincristine, with a low cytotoxicity or devoid of cytotoxicity, wherein said enhancer agent has the following Formula I:

5,369,112

METHOD OF TREATING CATARACTS CAUSED BY ACTIVE OXYGEN

Hiroshi Maeda; Takaaki Akaike, both of Kumamoto; Hideo Nishigoori; Teizi Urakami, both of Tokyo, and Chieko Yoshida, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company Inc., Tokyo, Japan

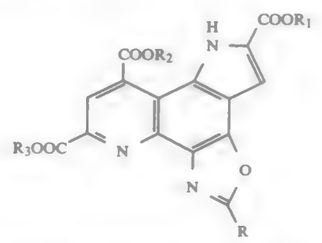
Filed Feb. 26, 1992, Ser. No. 841,563

Claims priority, application Japan, Mar. 4, 1991, 3-062592; Mar. 4, 1991, 3-062593

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—287 **2 Claims**

1. A method of treating cataracts caused by active oxygen in a patient in need of such treatment comprising administering to said patient a therapeutically effective amount of at least one compound selected from the group consisting of compounds represented by the formula:



wherein R represents hydrogen or a substituted or unsubstituted lower alkyl group having 1 to 4 carbon atoms, said substituent being selected from the group consisting of hydroxyl, carboxyl, mercapto, amino, carbamyl, phenyl, hydroxyphenyl, guanidino, imidazolyl and methylmercapto groups; and R_1, R_2 and R_3 which may be the same or different, represent hydrogen, lower alkyl, allyl or benzyl.

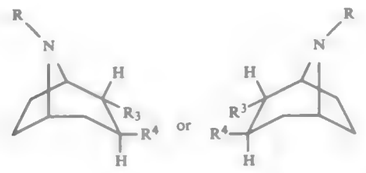
5,369,113

CERTAIN 2,3-DIPHENYL-2-(1,2,4-OXADIAZOL-5-YL)TROPANES USEFUL AS DOPAMIDE REUPTAKE INHIBITORS

Peter Moldt, Humlebæk; Jørgen Scheel-Krüger, Glostrup, and Leif H. Jensen, Copenhagen, all of Denmark, assignors to NeuroSearch A/S, Glostrup, Denmark

Filed Jul. 16, 1993, Ser. No. 93,183
Claims priority, application Denmark, Dec. 23, 1992, 1541/92
Int. Cl.[5] A61K *31/44, 31/46;* C07D *451/02*
U.S. Cl. 514—304 9 Claims

1. A method of treating a disorder or disease of a living animal body, including a human, selected from Parkinsonism, drug addiction or abuse, and depression, which disorder or disease is responsive to the inhibition of dopamine reuptake, comprising the step of administering to such a living animal body, including a human, in need thereof an effective amount of a 2,3-trans disubstituted tropane compound having the formula



any mixture thereof, or a pharmaceutically-acceptable salt thereof;

wherein

R is hydrogen, alkyl, alkenyl, alkynyl, cycloalkylalkyl or 2-hydroxyethyl;

R^3 is

1,2,4-oxadiazol-3-yl optionally substituted in the 5 position with alkyl; cycloalkyl; cycloalkylalkyl; or 1,2,4-oxadiazol-5-yl optionally substituted in the 3 position with alkyl; cycloalkyl; cycloalkylalkyl; and

R^4 is

phenyl optionally substituted one or two times with substituents selected from the group consisting of halogen, CF_3, CN, alkoxy, alkyl, alkenyl, alkynyl, amino, nitro, or aryl;

3,4-methylenedioxyphenyl; benzyl optionally substituted one or two times with substituents selected from the group consisting of halogen, CF_3, CN, alkoxy, alkyl, alkenyl, alkynyl, amino, nitro, or aryl;

aryl optionally substituted one or more times with substituents selected from the group consisting of halogen, CF_3, CN, alkoxy, alkyl, alkenyl, alkynyl, amino, nitro, or aryl; or

naphthyl optionally substituted one or more times with substituents selected from the group consisting of halogen, CF_3, CN, alkoxy, alkyl, alkenyl, alkynyl, amino, nitro, or aryl.

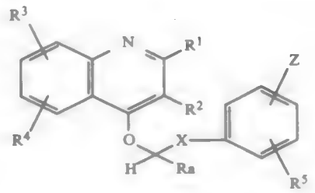
5,369,114

BIPHENYLENE BRANCHED ALKYLENEOXY QUINOLINES

David A. Roberts, Congleton; Robert J. Pearce; Robert H. Bradbury, both of Wilmslow, and Andrew P. Thomas, Congleton, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 697,145, May 8, 1991, abandoned. This application Aug. 3, 1993, Ser. No. 101,104
Claims priority, application United Kingdom, May 9, 1990, 9010394.6
Int. Cl.[5] A61K *31/47*
U.S. Cl. 514—312 10 Claims

1. A quinoline compound of the formula I



I

wherein R^1 is hydrogen, (1–8C)alkyl, (3–8C)cycloalkyl, phenyl or substituted (1–4C)alkyl, the latter bearing one or more fluoro substituents or bearing a (3–8C)cycloalkyl, hydroxy, (1–4C)alkoxy or phenyl substituent; R^2 is hydrogen, R^3 and R^4 are independently selected from hydrogen, (1–4C)alkyl, (1–4C)alkoxy, fluoro(1–4C)alkoxy, halogeno, trifluoromethyl, cyano, nitro, hydroxy, amino, (1–4C)alkanoylamino, alkylamino and dialkylamino of up to 6 carbon atoms, dialkylamino-alkyl of 3 to 8 carbon atoms, (1–4C)alkanoyl, carbamoyl, N-alkylcarbamoyl and di-(N-alkyl)carbamoyl of up to 7 carbon atoms, carboxy, (1–4)alkoxycarbonyl, (1–6C)alkylthio, and substituted (1–4C)alkyl, the latter bearing an amino, hydroxy or (1–4C)alkoxy substituent; or R^3 and R^4 together form (1–4C)alkylenedioxy attached to adjacent carbon atoms of the benzene moiety of formula I; R^5 is hydrogen, (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano or nitro; X is phenylene optionally bearing a substituent selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, trifluoromethyl, cyano and nitro; Ra is (1–4C)alkyl optionally bearing one or more fluoro substituents; Z is 1H-tetrazol-5-yl, —CO.NH.(1H-tetrazol-5-yl) or a group of the formula —CO.OR^6 or —CO.NH.$SO_2.R^7$ in which R^6 is hydrogen or a non-toxic, biodegradable residue of a physiologically acceptable alcohol or phenol, and R^7 is (1–6C)alkyl, (3–8C)cycloalkyl or phenyl; and wherein any of said phenyl moieties may be unsubstituted or bear one or two substituents independently selected from (1–4C)alkyl, (1–4C)alkoxy, halogeno, cyano and trifluoromethyl; or a non-toxic salt thereof.

5,369,115

MICROBIAL INHIBITING COMPOSITIONS AND THEIR USE

Deborah K. Donofrio, The Woodlands, Tex., and Wilson K. Whitekettle, Jamison, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 38,583, Mar. 26, 1993, Pat. No. 5,292,776. This application Oct. 29, 1993, Ser. No. 146,273
Int. Cl.[5] A01N *41/10, 43/78*
U.S. Cl. 514—367 6 Claims

1. A method for controlling the growth of fungal microbes in an aqueous system which comprises adding to an infected aqueous system a synergistic fungicidally effective amount of the mixture of (a) diiodomethyl-p-tolylsulfone and (b) 2-(thiocyano-methyl thio) benzothiazole, the weight ratio of (a) to (b) being from about 1:158 to 3.85:1.

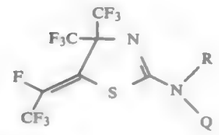
5,369,116

POLYFLUORINATED THIAZOLINE DERIVATIVE AND CHEMICAL FOR CONTROLLING NOXIOUS ORGANISMS CONTAINING THE SAME

Tokio Obata; Katsutoshi Fujii, and Yasuhisa Fukuda, Kiyoshi Tsutsumiuchi, Yoshinori Yamanaka; All of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jul. 2, 1993, Ser. No. 85,060
Claims priority, application Japan, Jul. 3, 1992, 4-214447
Int. Cl.[5] C07D *277/42;* A01N *43/78*
U.S. Cl. 514—370 8 Claims

1. A polyfluorinated thiazoline compound represented by the following formula (I):



(I)

wherein

Q represents a phenyl group; a phenyl group substituted by a halogen atom, a halo-lower alkyl group, a nitro group, a cyano group, a formyl group, a lower alkoxycarbonyl group or a benzoyl group; a pyridyl group; or a pyridyl group substituted by a halogen atom, a halo-lower alkyl group, a nitro group, a cyano group, a formyl group, a lower alkoxycarbonyl group or a benzoyl group; and

R represents a hydrogen atom, a lower alkyl group or an acetyl group.

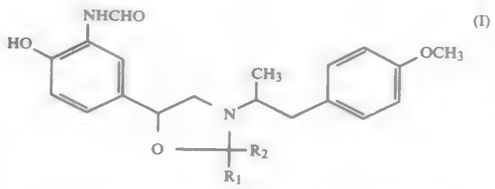
5,369,117

5-(3-FORMYLAMINO-4-HYDROXYPHENYL)-3-(1-(4-METHOXYPHENYL)PROP-2-YL)-OXAZOLIDINES

Alfred Sallmann, Bottmingen; Hans-Peter Gschwind, Basel, and Eric Francotte, Nuglar, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 17, 1993, Ser. No. 107,552
Claims priority, application Switzerland, Sep. 2, 1992, 2742/92-9
Int. Cl.[5] C07D *263/06*
U.S. Cl. 514—374 7 Claims

1. A compound of formula (I)



(I)

wherein R_1 and R_2 are simultaneously hydrogen or both are the same lower alkyl radical or together are 4- to 7-membered lower alkylene, or a pharmaceutically acceptable salt thereof in racemic or chiral form.

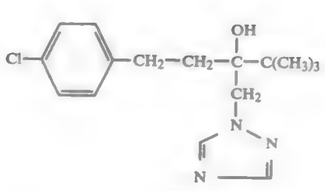
5,369,118

N-ALKYL-LACTAMS AS CRYSTALLIZATION INHIBITORS

Karl Reizlein, Cologne; Ulrich Engelhardt, Leverkusen; Heinz-Otto Horstmann, Bergisch-Gladbach; Rolf-Jürgen Singer, Wuppertal; Klaus Wangermann, Krefeld, and Wolfgang Wirth, Hennef, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 30, 1990, Ser. No. 502,369
Claims priority, application Germany, Apr. 5, 1989, 3910921
The portion of the term of this patent subsequent to Mar. 29, 2009, has been disclaimed.
Int. Cl.[5] A01N *43/64;* C07D *249/14, 249/16*
U.S. Cl. 514—383 10 Claims

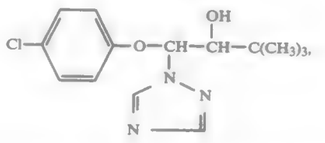
1. An aqueous spray liquor composition comprising a) at least one component selected from the group consisting of 1-(4-chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-yl-methyl)-pentan-3-ol of the formula



(II)

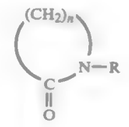
and

1-(4-chlorophenoxy)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butan-2-ol of the formula



(III)

and b) at least one N-alkyl-lactam of the formula



(I)

in which

R represents alkyl having 8 to 18 carbon atoms and

n represents the numbers 3, 4, or 5, and optionally at least one member selected from the group consisting of a surface-active agent, organic diluent and low temperature stabilizer and

wherein the active compounds II plus III are present in an amount of from about 0.0001 to 3 per cent by weight and the ratio of compounds II plus III:I is from about 1:0.2 to 1:5.

5,369,119

USE OF IMEXON AS AN IMMUNE SUPPRESSIVE AND PHARMACEUTICAL COMPOSITIONS CONTAINING IMEXON

Dieter Herrmann, Heidelberg; Rainer Haag, Ladenburg; Elmar Bosies, Weinheim; Uwe Bicker, Bensheim, and Wolfgang Kampe, Heddesheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Division of Ser. No. 759,204, Sep. 11, 1991, abandoned, which is a division of Ser. No. 617,301, Nov. 20, 1990, abandoned, which is a continuation of Ser. No. 385,920, Jul. 27, 1989, abandoned.
This application Mar. 2, 1993, Ser. No. 26,210
Claims priority, application Germany, Oct. 5, 1989, 3825667
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—389 13 Claims

1. A method of suppressing B-cell proliferation or activation caused by AIDS or ARC, or involved in a B-cell lymphoma or B-cell leukemia, in a patient, said method comprising administering to said patient a B-cell proliferation or activation suppressing amount of Imexon or physiologically acceptable salt thereof.

5,369,120

PHARMACEUTICAL COMPOSITION OF 7-((SUBSTITUTED)AMINO-8-((SUBSTITUTED)CARBONYL)-(METHYLAMINO)-1-OXASP IRO(4,5)DECANES AND L-DOPA

Geoffrey N. Woodruff, Dassels Braughing, Nr. Ware, United Kingdom, assignor to Warner-Lambert Company, Morris Plains, N.J.

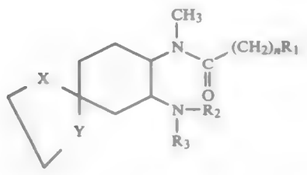
Filed Jul. 28, 1993, Ser. No. 98,979

The portion of the term of this patent subsequent to May 31, 2011, has been disclaimed.

Int. Cl.[5] A61K *31/40, 31/195*

U.S. Cl. 514—409 **4 Claims**

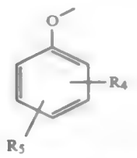
1. A pharmaceutical composition for treating Parkinson's disease comprising from 1 to 25 μg of a compound of formula



I

or a pharmaceutically acceptable salt thereof wherein n is an integer of from 1 to 6; either of X or Y is oxygen and the other is —CH_2—; R_1 is selected from

a)



where R_4 and R_5 are independently hydrogen, fluorine, chlorine, bromine, nitro, trifluoromethyl, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms, or aryl;

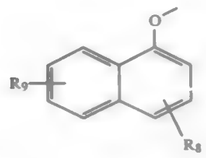
b) 3,4,5-trimethylphenoxy;

c)



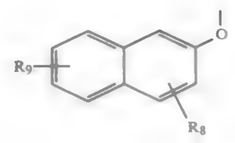
where R_6 is hydrogen, fluorine, chlorine, aikyl of from 1 to 6 carbon atoms, or aryl; Z is —CH_2—, —O—, —S—, or —NR_7— where R_7 is hydrogen, alkanoyl of from 1 to 6 carbon atoms, or alkyl of from 1 to 6 carbon atoms;

d)

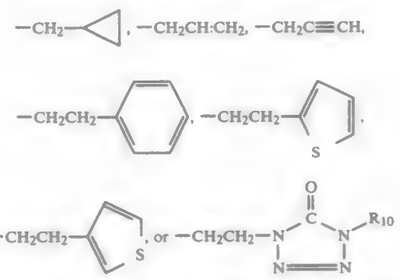


wherein R_8 and R_9 are independently hydrogen, fluorine, bromine, alkyl of from 1 to 6 carbon atoms, or alkoxy of from 1 to 4 carbon atoms; or

e)



where R_8 and R_9 are as defined above; where R_2 is methyl and R_3 is hydrogen, aikyl of from 1 to 6 carbon atoms,



where R_{10} is alkyl of from 1 to 4 carbon atoms; or where R_2 and R_3 when taken together with the nitrogen atom to which they are attached, form a pyrrolidinyl, piperidinyl, or hexahydro-1H-azepinyl ring

and 0.8 to 4.0 g of L-DOPA or a pharmaceutically acceptable salt thereof in admixture with a pharmaceutically acceptable carrier.

5,369,121

ARTHROPODICIDAL PYRAZOLINES, PYRAZOLIDINES AND HYDRAZINES

Charles R. Harrison, Newark, and George P. Lahm, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US91/00913, § 371 Date Jul. 31, 1992, § 102(e) Date Jul. 31, 1992

Continuation-in-part of Ser. No. 472,901, Jan. 31, 1990, abandoned, and a continuation-in-part of Ser. No. 473,795, Feb. 2, 1990, abandoned. This PCT application Jan. 8, 1991, Ser. No. 917,073

Int. Cl.[5] A01N *43/56, 43/90;* **C07D** *231/54, 471/04*

U.S. Cl. 514—403 **7 Claims**

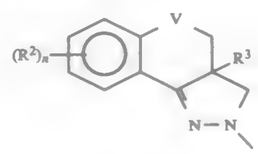
1. A compound of the formula



wherein:

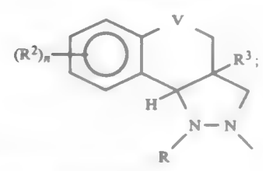
Q is attached to the carbon terminus of W and is selected from the group

Q-1

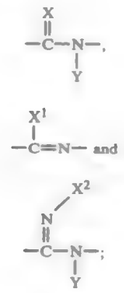


and

-continued



W is selected from the group



wherein:

V is O;

X is selected from the group O and S;

X^1 is selected from the group Cl, Br, OR^6, SR^6, and NR^6R^7;

X^2 is selected from the group R^6, OH, OR^6, CN, SO_2R^6, $OC(O)NR^7R^8$, $OC(O)OCH_3$, NR^7R^8, phenyl optionally substituted with R^9 and SO_2Ph optionally substituted with R^9;

Y is selected from the group H, C_1–C_6 alkyl, benzyl, C_2–C_6 alkoxyalkyl, CHO, C_2–C_6 alkylcarbonyl, C_2–C_6 alkoxycarbonyl, C_2–C_6 haloalkylcarbonyl, C_1–C_6 alkylthio, C_1–C_6 haloalkylthio, phenylthio, $R^{17}OC(O)N(R)^{18}S$ and $SN(R^{19})R^{20}$;

R is selected from the group H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkylcarbonyl, C_2–C_4 haloalkylcarbonyl, C_2–C_4 alkoxycarbonyl, C_2–C_4 haloalkoxycarbonyl, C_2–C_5 alkylcarbamoyl, C_3–C_6 cycloalkyl, C_3–C_6 halocycloalkyl, C_4–C_7 alkylcycloalkyl, C_4–C_7 haloalkylcycloalkyl, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkylsulfonyl and SO_2Ph;

R^1, R^2, R^9, R^{10}, R^{14} are each independently selected from the group H, halogen, CN, C_1–C_3 haloalkyl, C_1–C_3 haloalkoxy and $OS(O)_2C_1$–C_3 haloalkyl;

R^3 is selected from the group H, C_1–C_6 alkyl, C_2–C_6 alkenyl, CO_2R^{13} and phenyl optionally substituted by $(R^{14})_p$;

R^5 is selected from the group H and C_1–C_4 alkyl;

R^6 is selected from the group C_1–C_3 alkyl, benzyl optionally substituted with R^9, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_3 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_3 alkoxycarbonyl, C_3–C_6 cycloalkyl and C_2–C_3 alkylcarbonyl; or R^6 is C_1–C_3 alkyl substituted with a member selected from the group OCH_3, OCH_2CH_3, NO_2, CN, CO_2CH_3, $CO_2CH_2CH_3$, SCH_3 and SCH_2CH_3;

R^7 is selected from the group H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxycarbonyl, phenyl optionally substituted with R^{10} and pyridyl optionally substituted with R^{10}; or

R^6 and R^7 are taken together as $CH_2CH_2CH_2CH_2$, $CH_2CH_2CH_2CH_2CH_2$, or $CH_2CH_2OCH_2CH_2$ when X^1 is NR^6R^7;

R^8 is selected from the group H and C_1–C_4 alkyl; or R^7 and R^8 are taken together as $CH_2CH_2CH_2CH_2$, $CH_2CH_2CH_2CH_2CH_2$, or $CH_2CH_2OCH_2CH_2$;

R^{13} is selected from the group H and C_1–C_3 alkyl;

R^{17} is selected from C_1–C_6 alkyl;

R^{18} is selected from C_1–C_6 alkyl;

R^{19} and R^{20} are independently C_1–C_4 alkyl; or

Q-6 R^{19} and R^{20} are taken together as $CH_2CH_2CH_2CH_2CH_2$ or $CH_2CH_2OCH_2CH_2$;

m is 1 or 2;

n is 1 or 2; and

p is 1 or 2;

wherein when Q is Q-1, then W is W-2 or W-3.

5,369,122

PROCESS FOR MANUFACTURING A HUMECTANT

Walter Steinmetzer, Süpplingen, Germany, assignor to Amino GmbH, Frellstadt, Germany

Filed Mar. 20, 1992, Ser. No. 855,724

Claims priority, application European Pat. Off., Mar. 28, 1991, 91104968.2

Int. Cl.[5] A61K *31/40;* **C07D** *207/28*

U.S. Cl. 514—423 **15 Claims**

W-2 1. A process for manufacturing a humectant containing neutralized, concentrated L-2-pyrrolidone-5-carboxylic acid and lactic acid, comprising:

W-3 selecting an at least partially desugarized residual molasses from sugar beet molasses, said residual molasses containing potassium salts of L-2-pyrrolidone-5-carboxylic acid and of lactic acid and prepared by chromatographic separation of sugar beet molasses, using ion exclusion, into fractions and recovering the first fraction which contains the potassium salts of L-2-pyrrolidone-5-carboxylic acid and of lactic acid;

converting said potassium salts into respective free acids thereof;

separating said free acids from other components of said residual molasses or by-products of said conversion step; and

neutralizing and concentrating said free acids to form said humectant.

5,369,123

NITROGEN-SUBSTITUTED MEVINIC ACID DERIVATIVES USEFUL AS HMG-COA REDUCTASE INHIBITORS

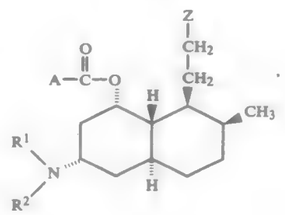
Dinos P. Santafianos, Maplewood; Kathleen M. Poss, Lawrenceville, both of N.J.; Eric M. Gordon, Palo Alto, Calif., and Peggy J. McCann, West Trenton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 9, 1992, Ser. No. 958,849

Int. Cl.[5] A61K *31/40, 31/365;* **C07D** *309/30;* **C07C** *69/74*

U.S. Cl. 514—428 **11 Claims**

1. A compound having the following formula I:

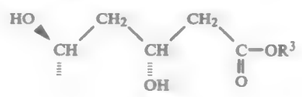


(I)

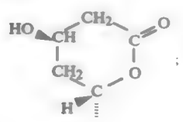
where

A is alkyl or aryl;

Z is the open chain moiety:



or Z is the lactone moiety:



(i) R^1 and R^2 are each independently selected from:
(1) hydrogen;
(2) unsubstituted or substituted alkyl;
(3) aryl;
(4) acyl;
(5) R^5—SO_2—;
(6) $(R^4)(R^6)N$—SO_2—;
(7) $(R^4)(R^6)N$—SO—;

(8) $(R^4)(R^6)N$—C(=NR^7)—;

(9) $(R^4)(R^6)N$—C(O)—;
(10) $(R^5)O$—C(O)—;
(11) alkenyl;
(12) alkynyl;
(13) carbocyclo; or
(14) R^5—SO—; or

(ii) $R^1$and R^2, together with the nitrogen atom to which they are bonded, form a heterocyclo group wherein said nitrogen atom is the sole ring heteroatom;

R^3 is:
(1) hydrogen;
(2) a pharmaceutically acceptable cation; or
(3) a moiety which, together with the atoms to which it is bonded, forms a pharmaceutically acceptable ester group;

R^4 and $R^6$are each independently selected from:
(1) hydrogen;
(2) alkyl;
(3) aryl;
(4) carbocyclo;
(5) alkenyl; or
(6) alkynyl;

R^5 is selected from:
(1) alkyl;
(2) aryl;
(3) carbocyclo;
(4) alkenyl; or
(5) alkynyl; and

R^7 is selected from:
(1) hydrogen;
(2) alkyl;
(3) aryl;
(4) cyano;
(5) nitro; or
(6) —$COOR^5$;

and N-oxides and/or salts thereof.

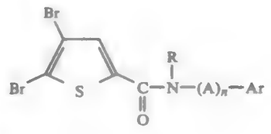
5,369,124

SUBSTITUTED THIOPHENECARBOXAMIDES

Hans-Ludwig Elbe, Wuppertal; Ralf Tiemann, and Gerd Hänssler, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sep. 24, 1993, Ser. No. 126,821
Claims priority, application Germany, Oct. 2, 1992, 4233198
Int. Cl.[5] C07D *333/28;* **A01N** *43/10*
U.S. Cl. 514—448 **11 Claims**

1. A substituted thiophenecarboxamide of the formula



in which
R represents hydrogen or methyl,
A represents doubly linked methylene or ethylene,
Ar represents phenyl which is optionally substituted identically or differently once to three times, suitable substituents being selected from the group consisting of: fluorine, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, methylthio, methylsulphonyl, trifluoromethyl, trifluoromehoxy, trifluoromethylthio or trifluoromethylsulphonyl and
n represents a number 0 or 1,
with the exception of the compounds 4,5-dibromothiophene-2-carboxylic acid N-(4-bromophenyl)-amide, 4,5-dibromo-thiophene-2-carboxylic acid N-(2,3-dichlorophenyl)-amide and 4,5-dibromothiophene-2-carboxylic acid N-[2-(3,4-dimethoxyphenyl)-ethyl]-amide.

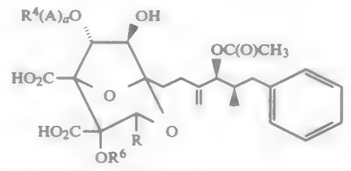
5,369,125

CHOLESTEROL-LOWERING AGENTS

Gregory D. Berger, Belle Mead; James D. Bergstrom, Neshanic; Tesfaye Biftu, Westfield; Robert L. Bugianesi, Colonia, all of N.J.; Robert M. Burk, Laguna Beach, Calif.; Narindar N. Girotra, Old Bridge; C. H. Kuo, South Plainfield; William H. Parsons, Edison; Mitree M. Ponpipom, Branchburg, all of N.J., and Lori L. Whiting, West Carrollton, Ohio, assignors to Merck & Co., Inc., Rahway, N.J.

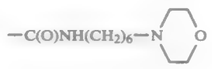
Continuation-in-part of Ser. No. 916,774, Jul. 17, 1992, abandoned. This application Mar. 19, 1993, Ser. No. 33,913
Int. Cl.[5] A61K *31/335;* **C07D** *319/04*
U.S. Cl. 514—452 **15 Claims**

1. The compound of structural formula (VI)

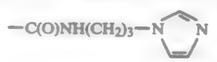
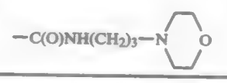


(VI)

wherein R^4—$(A)_a$, R^6 and R are each:

Comp. No.	R^4—$(A)_a$—	R^6	R
134	—C(O)—NH—$(CH_2)_{11}CH_3$	H	—$C(O)CH_2CH_2CH_2CH_3$
135	—C(O)—$NH(CH_2)_9CH_3$	H	—$C(O)CH_3$
136	—$(CH_2)_{13}CH_3$	H	—$C(O)CH_3$
137	—C(O)—$NH(CH_2)_6OH$	H	—$C(O)CH_3$
138	—$C(O)NH(CH_2)_{11}CH_3$	H	—$C(O)CH_3$
139	—$C(O)NH(CH_2)_{11}OC_6H_5$	H	—$C(O)CH_3$
140	—$C(O)NH(CH_2)_4CHO$	H	—$C(O)CH_3$
145	—C(O)—NH—$(CH_2)_6NH_2$	H	—$C(O)CH_3$
146	—$C(O)(CH_2)_{12}CH_3$	H	—$C(O)CH_3$
141	—$C(O)NH(CH_2)_6$— 	H	—$C(O)CH_3$
142	—$C(O)NH(CH_2)_6$— 	H	—$C(O)CH_3$

-continued

Comp. No.	R^4—$(A)_a$—	R^6	R
143	—$C(O)NH(CH_2)_3$— 	H	—$C(O)CH_3$
144	—$C(O)NH(CH_2)_3$— 	H	—$C(O)CH_3$.

2. A compound selected from the group consisting of:
(a) 3-hydroxyethyl-(1 S,3S,4S ,5R,6R,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid,
(b) 3-[(1′,1′-diphenethyl)-hydroxymethyl]-(1S ,3S ,4S ,5R,6R,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid,
(c) 3-[(1′,1′-dipropyl)-hydroxymethyl]-(1S,3S,4S,5R,6R ,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid,
(d) 3-[(1′,1′-diphenyl)-hydroxymethyl]-(1S,3S,4S,5R,6R ,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid,
(e) 3-[(1′,1′-dibutyl)-hydroxymethyl]-(1S,3S,4S,5R,6R ,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid, and
(f) 3-(2-hydroxymethyl ketone)-(1S,3S,4S,5R,6R,7RR)-1-[4-hydroxy-3,5-dimethyl-8-phenyl]oct-7-enyl-4,6,7-trihydroxy-6-O-(tetradeca-6,12-dienoyl-2,8-dioxabicyclo[3.2.1]octane-4,5-dicarboxylic acid.

10. A method of treating hypercholesterolemia comprising the administration to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound of claim 2.

12. A method of inhibiting squalene synthase comprising the administration to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound of claim 2.

13. A method for inhibiting fungal growth in a living organism in need of such treatment comprising the oral, systemic, topical or parenteral administration to the living organism of an antifungally effective amount of a compound of claim 2.

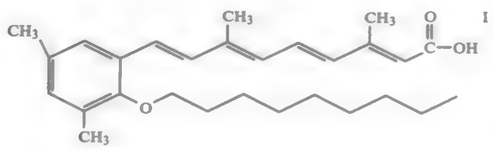
5,369,126

NONATETRAENOIC ACID DERIVATIVE FOR USE IN TREATING ACNE

Thomas I. Doran, West Orange; Michael Rosenberger, Caldwell, and Stanley S. Shapiro, Livingston, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 6, 1993, Ser. No. 1,144
Int. Cl.[5] A61K *31/20;* **C07C** *59/00*
U.S. Cl. 514—559 **8 Claims**

1. A method for treating acne which comprises the administration to patients of an effective amount of a composition comprising a therapeutically inert pharmaceutically acceptable carrier and a compound of the formula:



or its pharmaceutically acceptable salts or its pharmaceutically acceptable hydrolyzable esters.

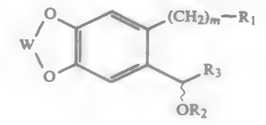
5,369,127

1,3-BENZODIOXOLE AND 1,2-DIALKOXYBENZENE DERIVATIVES AS OCULAR HYPOTENSIVE AGENTS

Robert M. Burk, Laguna Beach, and David F. Woodward, El Toro, both of Calif., assignors to Allergan, Inc., Irvine, Calif.

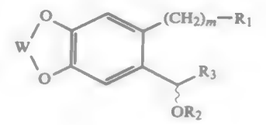
Filed Apr. 21, 1993, Ser. No. 51,104
Int. Cl.[5] A61K *31/36;* **C07D** *317/54*
U.S. Cl. 514—464 **9 Claims**

1. A compound of the formula



where
W is $(CH_2)_n$ where n is 1;
m is an integer between 1 and 8;
R_1 is CH_2OH, CH_2O—COR_7, where R_7 is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl;
R_2 is H or COR_7, and
R_3 is lower alkyl.

8. A method for lowering intraocular pressure in the eye of a mammal, which comprises administering to the mammal a pharmaceutical composition containing a pharmaceutically acceptable excipient and an effective amount of a compound having the formula



where
W is $(CH_2)_n$ where n is 1;
m is an integer between 1 and 8;
R_1 is CH_2OH, CH_2O—COR_7, where R_7 is alkyl of 1 to 10 carbons, phenyl or lower alkylphenyl;
R_2 is H or COR_7, and
R_3 is lower alkyl.

5,369,128

METHOD OF SYNCHRONIZING FARROWING IN SWINE

Walter H. Hsu, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 21, 1993, Ser. No. 80,350
Int. Cl.[5] A61K *31/557, 31/415*
U.S. Cl. 514—573 **20 Claims**

1. A method of synchronizing farrowing in pregnant sows in a herd; said method comprising:
(a) administering an effective amount of a prostaglandin to each pregnant sow; and
(b) subsequently administering an effective amount of a peripheral α_2 adrenergic agonist to each pregnant sow.

5,369,129

PREPARATION OF TOPICAL TREATMENT OF INFECTIONS CAUSED BY VIRUS, BACTERIA AND FUNGI

Gunnar Swanbeck, Askim, and Jan Faergemann, Goteborg, both of Sweden, assignors to Hydro Pharma AB, Malmo, Sweden

Continuation of Ser. No. 829,088, Feb. 13, 1992, abandoned.
This application Aug. 17, 1993, Ser. No. 108,762
Claims priority, application Sweden, Jan. 13, 1989, 8902124-0
Int. Cl.[5] A61K *31/045*
U.S. Cl. 514—738 3 Claims

1. A method for treating an infection caused by herpes viruses, which comprises the step of:

(a) topically administering a composition comprising a pentane diol or hexane diol to the infection.

5,369,130

PASTE COMPOSITION FOR SKIN BARRIER

Satoru Numata, Tokyo, Japan, assignor to Alcare Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,477
Claims priority, application Japan, Jan. 27, 1992, 4-035629
Int. Cl.[5] A61K *9/06*; A61L *25/00*
U.S. Cl. 514—772.3 3 Claims

1. An adhesive skin barrier paste composition comprising at least an organic solvent free rubber component and an organic solvent free filler component, said rubber component being between about 30% by weight and about 70% by weight of the composition and consisting of at least 30% polyisoprene liquid rubber characterized by having an average molecular weight of between about 1,000 and about 80,000, and having viscosity from about 200 to about 6,000 poise at 40 degrees C., said composition being capable of being fitted evenly to the skin, sufficiently tacky to provide secure adhesion of an exudate or excrement collection appliance to the skin without leakage therebetween, non-irritating to the skin and mucosa, and easily removable without leaving a paste residue.

5,369,131

ORAL, CUTANEOUS AND INTRAVAGINAL PHARMACEUTICAL COMPOSITIONS IN THE FORM OF FOAM

Stefano Poli; Germano Coppi, and Cesare Busetti, all of Quinto de'Stampi-Rozzano, Italy, assignors to Poli Industria Chimica S.p.A., Milan, Italy

Filed May 20, 1993, Ser. No. 63,954
Int. Cl.[5] A61K *47/32*
U.S. Cl. 514—772.4 10 Claims

1. A liquid pharmaceutical composition which is propellant free and mechanically foamable, comprising:

(1) at least one water soluble surfactant;

(2) at least one pharmaceutically active ingredients;

(3) a water-containing solvent; and

(4) at least one of;

(a) a mucoadhesive polymer selected from the group consisting of an alginic acid and derivatives, jaluronic acid and derivatives, cellulose esters or ethers, carboxyvinyl polymers, acrylic copolymers, polyene copolymers, natural or synthetic gums, polyglycuronic acid, and

(b) a thermosetting polymer selected from the group consisting of polyoxyethylene-polyoxypropylene copolymers.

5,369,132

METHOD FOR PRODUCING A SPHERICAL ACRYLONITRILE CROSSLINKED COPOLYMER

Tsuyoshi Ito, Machida; Junya Watanabe, Tokyo, and Shintaro Sawada, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 45,603, Apr. 9, 1993, Pat. No. 5,314,974.
This application Feb. 9, 1994, Ser. No. 193,745
Claims priority, application Japan, Apr. 10, 1992, 4-91177
Int. Cl.[5] C08F *236/20*, *220/44*
U.S. Cl. 521—31 12 Claims

1. A method for producing a weakly acidic cation exchange resin, which comprises hydrolyzing an acrylonitrile crosslinked copolymer obtained by copolymerizing, as polymerizable monomers,

(a) acrylonitrile

(b) an alkyl ester of acrylic or methacrylic acid

(c) a crosslinkable aliphatic or alicyclic unsaturated monomer having at least two allyl groups, and

(d) an aromatic crosslinkable polyunsaturated monomer, in the presence of from 10 to 45% by weight, based on the total amount of the polymerizable monomers of an inert organic solvent having a specific gravity of at least 1.0, wherein the polymerization reaction is conducted in a state of suspension in an aqueous medium containing a suspension stabilizer.

10. The method for producing a weakly acidic cation exchange resin according to claim 1, wherein the acrylonitrile crosslinked copolymer is hydrolyzed by using an acid or a base after removal of the organic solvent from the polymerization mixture.

5,369,133

METHOD FOR PREPARING AN IMPROVED POROUS POLYMER BEAD

Son-Ki Ihm, Seoul, and Young-Do Jo, Miryang, both of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Taejon-City, Rep. of Korea

Filed Dec. 29, 1992, Ser. No. 998,447
Claims priority, application Rep. of Korea, Sep. 26, 1992, 92-17617
Int. Cl.[5] C08J *9/28*
U.S. Cl. 521—53 6 Claims

1. A method for preparing an improved porous polymer bead which comprises the following steps: introducing a mixture comprising a purified monomer, initiator and pore-forming agent into a 4-necked reactor with a suspension stabilizer and aqueous solution, suspending the mixture to provide homogeneous organic droplets at a temperature sufficiently low so as not to decompose the initiator, increasing the temperature gradually to a final reaction temperature and maintaining the temperature at the final temperature to react completely by suspension-polymerization, the monomers in the individual organic droplet to provide the porous polymer bead, separating the bead, washing the bead with water, acetone and tetrahydrofuran, successively, and drying the bead, adding the bead to a solution mixed with monomer and thinner to fill the pores of a porous bead with the diluted monomers and introducing in a 4-necked reactor with a suspension stabilizer and aqueous solution, and by suspension-polymerization again, to coat a lightly cross-linked gel-type polymer on the surface of pores in the porous polymer bead, and again washing and drying the beads to provide an improved porous polymer bead.

5,369,134

METHOD OF TREATING POLYOLEFIN PLASTIC FOAMS

Gerhard Grab, Limburgerhof, and Dieter Jacob, Cadolzburg, both of Germany, assignors to Hein-Farben GmbH, Cadolzburg, Germany

Filed Oct. 22, 1993, Ser. No. 141,237
Claims priority, application Germany, Oct. 22, 1992, 4235693
Int. Cl.[5] C08J *9/224*, *9/232*
U.S. Cl. 521—57 15 Claims

1. A method for modifying the properties of polyolefin foam particles which comprises wetting said particles with an organic liquid, flame-proofing agent admixing the wetted particles with a powdered flame-retardent agent comprising a polyolefin additive admixed with a film forming agent; and sintering said admixture to form a shaped article.

5,369,135

CONTROLLED MICROCELLULAR FOAMS OF CRYSTALLINE AMORPHOUS POLYMERS

Gregory A. Campbell, and Don H. Rasmussen, both of Canton, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 13, 1992, Ser. No. 882,466
Int. Cl.[5] C08L *27/00*
U.S. Cl. 521—134 39 Claims

1. A microcellular foamed polymer composition comprising:

a polymer matrix material selected from the group consisting of polyester, polyethylene, polystyrene acrylonitril, polyphenylene oxide/polystyrene, polycarbonate, polyetherimide, polypropylene, nylon, and teflon; and

a plurality of closed cells, located within said polymeric matrix material, comprising a gas enclosed by a shell comprising a second phase solid polymeric material which has a transition temperature below the transition temperature of said polymeric matrix material, said second phase polymeric material being a nucleating agent for said plurality of closed cells.

5,369,136

FOAM STRUCTURES OF ETHYLENIC POLYMER MATERIAL HAVING ENHANCED TOUGHNESS AND ELASTICITY AND PROCESS FOR MAKING

Chung P. Park, Pickerington, Ohio; James C. Stevens, Midland, Mich., and George W. Knight, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 54,330, Apr. 28, 1993, which is a continuation-in-part of Ser. No. 32,917, Mar. 18, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 226,150
Int. Cl.[5] C08J *9/14*
U.S. Cl. 521—143 22 Claims

1. An ethylene polymer foam structure, comprising: an ethylene polymer material comprising a substantially linear ethylene polymer having:

a) a melt flow ratio, I_{10}/I_2, $\geqq 5.63$;

b) a molecular weight distribution, M_w/M_n, defined by the equation: $M_w/M_n \geqq (I_{10}/I_2) - 4.63$; and

c) a critical shear rate at onset of surface melt fracture of at least 50 percent greater than the critical shear rate at the onset of surface melt fracture of a linear olefin polymer having about the same I_2 and M_w/M_n.

5,369,137

FLEXIBLE BIMODAL FOAM STRUCTURES

Andrew N. Paquet, and Kyung W. Suh, both of Granville, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 161,946, Dec. 3, 1993, which is a continuation of Ser. No. 52,855, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 895,970, Jun. 9, 1992, abandoned.
This application Apr. 20, 1994, Ser. No. 230,185
Int. Cl.[5] C08J *9/12*
U.S. Cl. 521—146 6 Claims

1. A flexible styrenic polymer foam structure, comprising: a foam of a polymeric composition of greater than 50 percent by weight of a styrenic polymer, the foam having relatively larger primary cells with an average cell size range of about 0.05 to about 1.2 millimeters and relatively smaller secondary cells ranging in cell size from about 5 percent to about 50 percent of the average cell size of the primary cells, the primary and secondary cells constituting at least about 90 percent of the total volume of the foam structure, the primary and secondary cells having pinholes between 1 and 30 percent by number of the total number of primary and secondary cells.

5,369,138

PREPARATION OF FLEXIBLE, MOLDED, COLD-CURE POLYURETHANE FOAMS

Peter Gansen, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 4, 1993, Ser. No. 13,469
Claims priority, application Germany, Feb. 14, 1992, 4204395
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—159 4 Claims

1. A process for the preparation of a molded cold-cure, flexible polyurethane foam comprising reacting:

a) a polyisocyanate of the diphenylmethane diisocyanate type, said polyisocyanate containing from 6 to 38% by weight of 2,4'-diisocyanatodiphenylmethane, from 50 to 67% by weight of 4,4'-diisocyanatodiphenylmethane, and from 12 to 34% by weight of higher functional polyisocyanates of the diphenylmethane series, the %s by weight totalling 100%,

b) a mixture of hydroxy-containing polyethers having molecular weights of from 400 to 14,000 consisting essentially of:

1) from 5 to 30 wt-% of a polyether containing at least two hydroxyl groups, having an OH number of less than 150, and having an ethylene oxide content of at least 50 wt-%, based upon the total amount of alkylene oxide in said polyether b)1), and

2) from 70 to 95 wt-% of a polyether containing at least two hydroxyl groups, having an OH number of from 14 to 50, and having an ethylene oxide content of from 5 to 25 wt-%, based upon the total amount of alkylene oxide in said polyether b)2), and

c) from 2 to 4 wt-%, based upon the amount of component b), of water as blowing agent, in a closed mold and at an isocyanate index of from 80 to 120.

5,369,139

RADIATION AND PEROXIDE CURABLE EMULSIFIED COATINGS

Rudolph H. Boeckeler, Grafton, and Delano R. Eslinger, West Bend, both of Wis., assignors to Cook Composites and Polymers Company, Port Washington, Wis.

Filed Aug. 17, 1993, Ser. No. 107,521
Int. Cl.[5] C08F *2/46*, *4/42*, *16/12*
U.S. Cl. 522—21 16 Claims

1. An oligomeric emulsion curable by at least one of (i) exposure to actinic radiation, and (ii) by contact with a peroxide initiator, the emulsion comprising, based on the weight of the emulsion, between about:

A. 10 to about 60 wt % water;

B. 0.5 to about 15 wt % of a reactive, nonionic surfactant represented by the following graphic formula:

$$R—O—(R'O)_m—(EO)_{n-1}—CH_2CH_2—X$$

wherein

R is an organic monovalent radical having α, β-olefinic unsaturation;

R'O is a bivalent alkylene-oxy group derived from a cyclic ether other than ethylene oxide or mixture of such cyclic ethers;

E is a bivalent ethylene radical;

X is selected from the group consisting of hydroxyl, chlo-

ride, sulfonate, sulfate, phosphate, diphosphate, acetate, isethionate, and the alkali metal salts of the aforedescribed sulfonate, sulfate, phosphate, acetate and isethionate anionic groups and tertiary amino; and

m and n are each numbers which may vary from about 5 to about 100;

C. 0.005 to about 0.08%, based on the wt of metal in the drier, of a metallic salt drier; and

D. the balance of an α,β-ethylenically unsaturated oligomer.

5,369,140

RADIATION CURABLE LIGHT-STABLISED COMPOSITIONS

Andreas Valet, Eimeldingen, and Manfred Köhler, Freiburg, both of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 3, 1991, Ser. No. 695,374

Claims priority, application Switzerland, May 10, 1990, 1588/90

Int. Cl.[5] C08K *5/29;* **C08F** *2/50, 2/48*

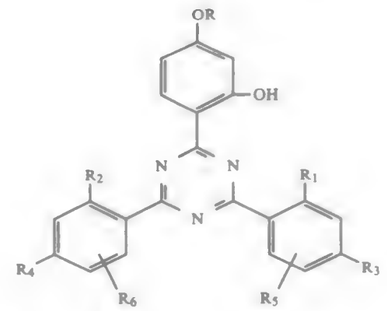
U.S. Cl. 522—75 **17 Claims**

1. A radiation curable, light-stabilized coating composition comprising:

(A) a curable ethylenically unsaturated monomer or oligomer which is crosslinkable upon exposure to radiation or electron beams and selected from the group consisting of:

a) alkyl (meth)acrylates,
b) hydroxyalkyl (meth)acrylates,
c) acylamide,
d) methacrylamide,
e) N-substituted (meth)acylamides,
f) vinyl esters,
g) vinyl esters,
h) styrene,
i) alkylstyrenes,
j) halostyrenes,
k) N-vinylpyrrolidone,
l) vinyl chloride,
m) vinylidene chloride,
n) 4,4'-bis(2-acryloyloxyethoxy)diphenylpropane,
o) trimethylolpropane triacrylate,
p) pentaerythritol triacrylate and tetraacrylate,
q) vinyl acrylate,
r) divinylbenzene,
s) divinyl succinate,
t) diallyl phthalate,
u) triallyl phosphate,
v) triallyl isocyanurate,
w) tris(2-acryloyloxyethyl)isocyanurate,
x) ethylene glycol diacrylate,
y) bisphenol A diacrylate,
z) acrylated epoxy resins,
aa) acylated polyethers,
bb) acylated polyurethanes,
cc) acylated polyesters,
dd) unsaturated polyester resins prepared from maleic acid, phthalic acid and one or more diols which have molecular weights of ca. 500 to 3000; and
ee) mixtures of said monomers and oligomers; and

B) an effective stabilizing amount of triazine UV absorber of formula I



wherein

R is hydrogen or C_1–C_{18}alkyl,

R_1 and R_2 are each, independently of the other, hydrogen, OH, C_1–C_{12} alkyl, halogen or halomethyl,

R_3 and R_4 are each, independently of the other, hydrogen, OH, C_1–C_{12}alkyl, C_1–C_{18} alkoxy or halogen, and

R_5 and R_6 are each, independently of the other, hydrogen, C_1–C_{12}alkyl or halogen.

5,369,141

POLYMERS OF HIGH REFRACTIVE INDEX AND HIGH HEAT DISTORTION TEMPERATURE

Charles R. Coleman, Pittsburgh; Stephanie J. Oates, Monroeville; James Colton, Trafford, and Vaikunth S. Prabhu, Murrysville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 537,308, Jun. 13, 1990, abandoned. This application Jun. 17, 1992, Ser. No. 900,036

Int. Cl.[5] G02B *1/00;* **B29B** *11/00*

U.S. Cl. 523—106 **17 Claims**

1. An ophthalmic lens or lens blank produced by polymerizing a polymerizable, homogeneous composition comprising:

(a) epichalcogen resin having an average epichalcogin functionality of at least about 1.5 wherein each epichalcogen group is independently an epoxy group or an epithio group;

(b) aliphatic polythiol having an average thiol functionality of at least about 2; and

(c) cyclic anhydride,

wherein:

(d) said polymerizable, homogeneous composition is characterized by an aromatic content of at least about 23 weight percent, and a sulfur content of at least about 1.9 weight percent; and

(e) said lens or lens blank has a heat distortion temperature of at least about 50° C. and a refractive index, at 20° C. and a wavelength of 589.3 nanometers, of at least about 1.56.

5,369,142

WATER SOLUBLE POLYMERS CONTAINING AMINO ACID RESIDUES FOR DENTAL RESTORATIVES

Billy M. Culbertson, Worthington, and Elizabeth C. Kao, Westerville, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Jan. 15, 1993, Ser. No. 3,971

Int. Cl.[5] A61K *6/08;* **C08F** *20/60*

U.S. Cl. 523—116 **19 Claims**

1. A curable water soluble polymer composition comprising the reaction product of A and B, wherein A is selected from the group consisting of polyalkenoic mono-, di-, and tricarboxylic acids and homopolymers and copolymers thereof, and wherein B is selected from the group of synthetic and natural amino acids, whereby the polyalkenoic acid is derivatized with pendent amino residues, and wherein the reaction product of A and B is then homopolymerized or copolymerized with one or more other monomers to form a curable water soluble polymer, the composition further comprising C, wherein C is a different amino acid than B.

5,369,143

INORGANIC FIBER HAVING MODIFIED SURFACE AND ITS USE FOR REINFORCEMENT OF RESINS

Isao Kurimoto, Toyonaka; Naoki Inui, Yamatokoriyama; Kohji Yamatsuta; Hitoshi Murotani, both of Tsukuba; Hideo Nagasaki, Osaka, and Shinichi Yachigo, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

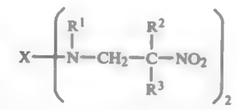
Continuation of Ser. No. 442,699, Nov. 29, 1989, abandoned. This application Aug. 31, 1993, Ser. No. 113,769

Claims priority, application Japan, Dec. 6, 1988, 63-308560

Int. Cl.[5] C08K *9/00*

U.S. Cl. 523—215 **17 Claims**

1. A method for reinforcing an epoxy resin, which comprises incorporating into the epoxy resin a composition of matter comprising inorganic fiber and a dinitrodiamine compound adhered onto the surface of the inorganic fiber, said dinitrodiamine compound being represented by the formula of



wherein X is a divalent aliphatic, alicyclic or aromatic group which may contain halogen or oxygen in the group, R^1 is hydrogen, an aliphatic group, an alicyclic group or an aromatic group, with the proviso that two nitrogen atoms linking through X may further link through R^1 when both X and R^1 are the aliphatic groups, and R^2 and R^3 independently of one another are each hydrogen or an alkyl of 1 to 12 carbon atoms, with the proviso that R^2 and R^3 may conjointly form a ring;

thereby improving bonding strength at the fiber/matrix resin interface of the resulting composite.

5,369,144

ADHESIVE COMPOSITION FOR ADHERING ARTIFICIAL NAIL

Hiroshi Uemura, Muko; Ethuo Yosida, Kameoka, and Shin Iwaki, Yawata, all of Japan, assignors to Ohara Paragium Chemical Co., Ltd., Kyoto, Japan

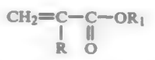
Filed Dec. 27, 1993, Ser. No. 173,066

Claims priority, application Japan, Sep. 1, 1993, 5-242040

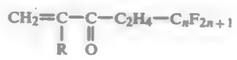
Int. Cl.[5] C08L *27/00, 31/00;* **C08F** *259/00*

U.S. Cl. 525—11.8 **4 Claims**

1. An adhesive composition for adhering an artificial nail to the nail with use of an adhesive composition consisting primarily 2-methoxyisopropyl α-cyanoacrylate, and a copolymer of an alkyl acrylate or alkyl methacrylate represented by the formula (2)



wherein R is H or CH_3, and R_1, is alkyl having 1 to 18 carbon atoms and a fluorinated alkyl acrylate or fluorinated alkyl methacrylate represented by the formula (3)



wherein R is H or CH_3, and n is an integer of from 4 to 8.

5,369,145

DENTURE ADHESIVE

Robert C. Gasman, West Milford, N.J.; Eddie Wong, Elmhurst; Hal C. Clarke, Elmont, both of N.Y., and Hyung-kook Ahn, Bayonne, N.J., assignors to Block Drug Company, Jersey City, N.J.

Filed Jun. 14, 1993, Ser. No. 76,810

Int. Cl.[5] A61K *6/00;* **C08K** *3/18, 3/10*

U.S. Cl. 523—120 **41 Claims**

1. A denture adhesive composition comprising:

(a) a salt comprising (i) a copolymer of (A) a vinyl alkyl ether and (B) maleic anhydride or maleic acid copolymer and (ii) a cation from Group IA or Group IIA of the Periodic Table; and

(b) a zinc compound, nonionically associated with said salt.

5,369,146

CARBON FIBER YARN HAVING IMPROVED HANDLING CHARACTERISTICS

James D. Miller, Roswell, and Chris D. Levan, Alpharetta, both of Ga., assignors to Amoco Corporation, Chicago, Ill.

Filed Sep. 28, 1993, Ser. No. 128,304

Int. Cl.[5] C08K *9/00*

U.S. Cl. 523—215 **5 Claims**

1. A sizing formulation adapted for use with carbon fiber yarn comprising an aqueous dispersion of from about 0.5 to about 4 wt % of a film-forming, heat-reactive resin selected from the group consisting of acrylic ester resins and aliphatic polyester urethane resins, said resin having a Tg in the range of from about −50° C. to about −65° C. and from about 0.5 to about 4 wt % of a water-dispersible ethoxylated nonylphenol having a hydrophylic-lipophylic balance in the range of from about 14 to about 16.

5,369,147

CURED UNSATURATED POLYESTER-POLYURETHANE HYBRID HIGHLY FILLED RESIN FOAMS

John N. Mushovic, The Plains, Va., assignor to Ecomat, Inc., Chantilly, Va.

Continuation-in-part of Ser. No. 961,332, Oct. 15, 1992, Pat. No. 5,302,634. This application Apr. 8, 1994, Ser. No. 224,775

The portion of the term of this patent subsequent to Apr. 12, 2011, has been disclaimed.

Int. Cl.[5] C08J *9/32*

U.S. Cl. 523—219 **43 Claims**

1. A rigid, lightweight filled resin foam, comprising:

(A) a continuous phase having cellular voids therein, wherein said continuous phase comprises a matrix formed from a complex crosslinked network comprising an unsaturated polyester polyurethane resin which is the reaction product of an unsaturated polyester polyol, a saturated polyol, a poly- or diisocyanate, and a reactive monomer, and optionally further comprising:

(1) polyurethane modified hybrid networks;
(2) networks of polymerization products of reactive monomers;
(3) networks of polymerization products of saturated polyester polyol and poly- or diisocyanates;
(4) other networks that may form during the formation of the polyester polyurethane resin; or
(5) mixtures of the above networks; and

(B) fine multisize reinforcing particles dispersed in said matrix of said continuous phase, wherein the diameter of the largest of said multisize particles is no greater than about 33% of the average thickness of said walls between said cellular voids, and wherein at least a portion of said multisize particles are capable of containing and releasing a blowing agent during the formation of said polyester polyurethane resin.

5,369,148

METHOD FOR CONTINUOUS AGGLOMERATION OF AN ABSORBENT RESIN POWDER AND APPARATUS THEREFOR

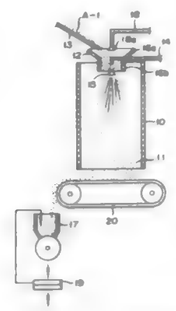
Hitoshi Takahashi; Hiroyuki Kakita; Yoshio Irie, all of Himeji; Teruaki Fujiwara, Nagaokakyo, and Kazumi Akihisa, Himeji, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

PCT No. PCT/JP90/00560, § 371 Date Dec. 26, 1991, § 102(e) Date Dec. 26, 1991, PCT Pub. No. WO91/17200, PCT Pub. Date Nov. 14, 1991

PCT Filed Apr. 27, 1990, Ser. No. 781,140

Int. Cl.[5] C08F *6/00;* B01J *2/16*

U.S. Cl. 523—315 18 Claims



1. A method for continuous agglomeration of an absorbent resin powder, which comprises the steps of introducing said absorbent resin powder into a cylindrical member having an open lower end by means of a current of air through a dispersing member disposed in the upper part of said cylindrical member and, at the same time, spraying minute droplets of an aqueous liquid downwardly through a nozzle disposed inside said dispersing member thereby establishing mutual parallel flow contact between said absorbent resin powder descending toward the lower part of said cylindrical member as dispersed with said current of air and said liquid droplets descending toward the lower part of said cylindrical member as diffused in the radial direction, and removing the consequently produced agglomerate having groups of a plurality of particles of said absorbent resin powder cohesively united through the medium of said liquid droplets via the lower part of said cylindrical member.

5,369,149

METHOD FOR CONTINUOUSLY PREPARING THERMO-CROSSLINKABLE AND/OR THERMOPLASTIC ELASTOMER BLENDS

Jacques Unger, Zofingen, Switzerland, assignor to Gezolan AG, Dagmersellen, Switzerland

Filed Oct. 13, 1994, Ser. No. 959,694

Int. Cl.[5] C08J *3/24, 3/22, 3/20*

U.S. Cl. 523—353 22 Claims

1. A method for preparing mixtures comprising a thermocrosslinkable and/or thermoplastic elastomer and a plasticizer oil, said method comprising the steps of

(a) providing premix ingredients comprising said elastomer in particulate form and additives comprising at least part of said plasticizer oil;

(b) continuously introducing said premix ingredients into an annular zone mixer;

(c) continuously forming a premix of said premix ingredients by operating said annular zone mixer at a high speed which is effective to subject said premix ingredients to high turbulence and frictional forces in the annular zone of said annular zone mixer whereby mixing of the elastomer with other ingredients is effected essentially exclusively in the annular zone, the duration of operation of the annular zone mixer being effective to embed said additives into the polymer matrix of said particulate elastomer; and

(d) subjecting said premix to completion of mixing in a kneader mixing unit in which the premix is kneaded.

5,369,150

RESIN COMPOSITION FOR AQUEOUS PAINTS

Toshio Fujibayashi, Hadano, and Haruo Nagaoka, Hiratsuka, both of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed Apr. 20, 1993, Ser. No. 48,512

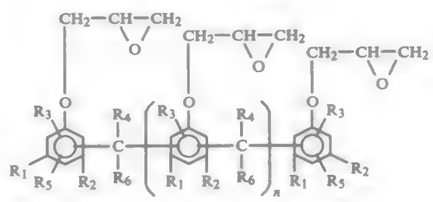
Claims priority, application Japan, Apr. 24, 1992, 4-129740

Int. Cl.[5] C08K *3/20;* C08L *63/04*

U.S. Cl. 523—414 16 Claims

1. A resin composition for an aqueous coating composition, comprising as a main component a cationizable resin (U) having a primary hydroxyl group obtained by reacting:

(A) a phenol-novolak type epoxy resin represented by the following general formula (I)



(I)

wherein

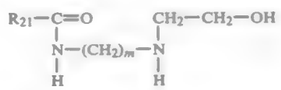
R_1 and R_2, which are the same or different, independently represent a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, an aryl group, an aralkyl group or a halogen atom; R_3 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group, an aralkyl group, an allyl group or a halogen atom;

R_4 and R_6, which are the same or different, independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a glycidyloxyphenyl group;

R_5 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group, an aralkyl group, an allyl group or a halogen atom; and

n is an integer of 1 to 38,

(B) a secondary amine compound having primary hydroxyl group(s) selected from the group consisting of N-alkylalkanolamines, dialkanolamines, addition products of a monoalkanolamine with an α,β-unsaturated carbonyl compound, and amine compounds represented by the formula (VII) below



(VII)

wherein

m is an integer of 1 to 6;

R_{21} is hydrocarbon chain having 4 to 36 carbon atoms which may contain a hydroxyl group and/or a polymerizable unsaturated group; and

(C) a phenol compound having at least one phenolic hydroxyl group per molecule, said phenol compound being present in an amount within the range of 0.05 to 1.5 moles per mole of said epoxy resin (A).

5,369,151

RESIN COMPOSITION FOR AQUEOUS PAINTS

Toshio Fujibayashi, Hadano, and Haruo Nagaoka, Hiratsuka, both of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

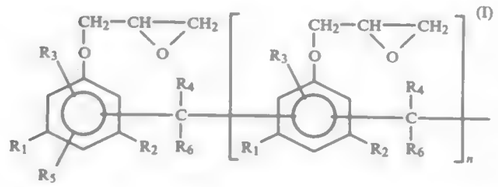
Division of Ser. No. 48,512, Apr. 20, 1993. This application Sep. 15, 1993, Ser. No. 120,787

Int. Cl.[5] C08K *3/20;* C08L *63/04*

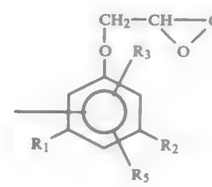
U.S. Cl. 523—414 7 Claims

1. A cationic electrodeposition coating composition (V) comprising as a main component a mixture of a cationizable resin (U) having a primary hydroxyl group and a hardening agent (H), wherein said cationizable resin (U) is obtained by reacting:

(A) a phenol-novolak type epoxy resin represented by the following general formula (I)



(I)



wherein

R_2 and R_2, which are the same or different, independently represent a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, an aryl group, an aralkyl group or a halogen atom;

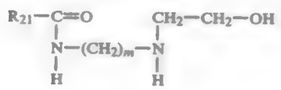
R_3 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group, an aralkyl group, an allyl group or a halogen atom;

R_4 and R_6, which are the same or different, independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a glycidyloxyphenyl group;

R_5 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms, an aryl group, an aralkyl group, an allyl group or a halogen atom; and

n is an integer of 1 to 38,

(B) a secondary amine compound having primary hydroxyl group(s) selected from the group consisting of N-alkylalkanolamines, dialkanolamines, addition products of a monoalkanolamine with an α,β-unsaturated carbonyl compound, and amine compounds represented by the formula (VII) below



(VII)

wherein

m is an integer of 1 to 6;

R_{21} is hydrocarbon chain having 4 to 36 carbon atoms which may contain a hydroxyl group and/or a polymerizable unsaturated group; and

(C) a phenol compound having at least one phenolic hydroxyl group per molecule, said phenol compound being present in an amount within the range of 0.05 to 1.5 moles per mole of said epoxy resin (A).

5,369,152

URETHANE MODIFIED WATERBORNE DISPERSIONS

Bryan A. Naderhoff, Durham; Timothy P. Takas, Cary, and David P. Allerton, Raleigh, all of N.C., assignors to Reichhold Chemicals, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 618,489, Nov. 27, 1990, Pat. No. 5,204,385. This application Apr. 14, 1993, Ser. No. 46,637

Int. Cl.[5] C08K *3/20;* C08L *63/02*

U.S. Cl. 523—415 12 Claims

1. A method for preparing a urethane modified waterborne dispersion comprising:

(a) reacting an excess amount of a urethane modified polyfunctional epoxide compound with a tertiary amine salt to form a quaternized polyfunctional epoxide compound with unreacted epoxy functionality;

(b) dispersing the quaternized polyfunctional epoxide compound in water; and

(c) reacting all the residual epoxy functionality in the quaternized polyfunctional epoxide compound with a polyamine containing primary amine groups to form a urethane modified waterborne dispersion.

5,369,153

ACID-EPOXY-MELAMINE COATING COMPOSITION MODIFIED WITH A SILANE POLYMER

Robert J. Barsotti, Franklinville, N.J., and Jeffery W. Johnson, Rochester Hills, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1992, Ser. No. 977,866

Int. Cl.[5] C08K *5/01;* C09D *133/06, 143/04, 163/00*

U.S. Cl. 523—429 10 Claims

1. A clearcoat composition which is essentially anhydride-free comprising 20–80% by weight of reactive binder components and 80–20% by weight of an organic liquid carrier; wherein the binder comprises:

(a) 25–90% by weight, based on the weight of the binder, of an acrylic copolymer having at least two reactive acid groups and comprising polymerized monomers of an ethylenically unsaturated monoacid or an ethylenically unsaturated dicarboxylic acid and polymerized monomers selected from the group consisting of alkyl methacrylate, alkyl acrylate and any mixtures therof, wherein the alkyl groups have 1–8 carbon atoms and the polymer has a weight average molecular weight of about 2,000–50,000;

(b) 5–30% by weight, based on the weight of the binder, of a glycidyl ether or ester or cycloaliphatic epoxy compound containing at least two reactive glycidyl groups;

(c) 5–30% by weight, based on the weight of the binder, of an alkylated melamine formaldehyde resin that is partially or fully alkylated and has a degree of polymerization of about 1 to 5; and

(d) 10–30% by weight, based on the weight of the binder, of an acrylosilane polymer which is the polymerization product of about 5–70% by weight ethylenically unsaturated alkoxysilane containing monomers, based on the weight of the polymer, and having a number average molecular weight of 500–10,000; and

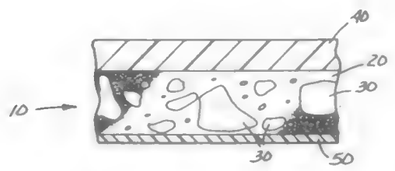
(e) an effective amount of a curing catalyst selected from the group consisting of tertiary amines quaternary ammonium salts, and phosphonium compounds,

wherein components (a), (b), (c) and (d) are different components.

5,369,154
POLYCARBONATE/AROMATIC POLYESTER BLENDS CONTAINING AN OLEFINIC MODIFIER
Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 703,934, May 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 508,997, Apr. 12, 1990, abandoned. This application Oct. 9, 1992, Ser. No. 960,482
The portion of the term of this patent subsequent to Mar. 23, 2010, has been disclaimed.
Int. Cl.[5] C08L *69/00, 67/02*
U.S. Cl. 523—436 **18 Claims**

1. A composition of matter comprising, in admixture,
(a) an aromatic polycarbonate,
(b) a crystalline aromatic polyester,
(c) a thermoplastic epoxide-containing copolymer, having a glass transition temperature of less than 0° C., prepared from (i) one or more olefin monomers, and (ii) at least one vinyl monomer carrying at least one epoxide group, and
(d) a thermoplastic block copolymer containing a rigid block polymerized from a vinyl aromatic compound and a rubbery block polymerized from a diene,
in which component (d), the block copolymer, is dispersed in particles of component (c), the epoxide-containing copolymer.

5,369,155
COMPOSITE OF A DISPERSED GEL IN AN ADHESIVE MATRIX AND METHOD FOR PREPARING SAME
Robert A. Asmus, Hudson Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 905,490, Jun. 25, 1992, Pat. No. 5,270,358, which is a continuation of Ser. No. 827,500, Jan. 24, 1992, abandoned, which is a continuation of Ser. No. 458,246, Dec. 28, 1989, abandoned. This application Jul. 1, 1993, Ser. No. 86,324
Int. Cl.[5] C08J *3/20;* **C08K** *5/05;* **C08L** *89/00*
U.S. Cl. 524—55 **8 Claims**



1. A method for preparing a composite of a gel dispersed in a pressure sensitive adhesive matrix having a high moisture vapor transmission rate, comprising:
(a) grinding hydrocolloid into finely divided particles
(b) swelling said hydrocolloid particles non-reacting conditions with a non-volatile, hydrophilic swelling agent to fully form swollen discrete hydrocolloid gel particles; and
(c) dispersing said fully formed gel particles into a hydrophobic solution comprising a pressure sensitive adhesive.

5,369,156
BLENDING BITUMEN INTO POLYISOBUTYLENE-ETHYLENE/VINYL ACETATE MIXTURE
Jean Lesage, Deuil-la-Barre, France, assignor to The British Petroleum Company plc, London, England
Continuation of Ser. No. 987,077, Dec. 7, 1992, abandoned, which is a continuation of Ser. No. 595,744, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 203,941, Jun. 8, 1988, abandoned. This application Feb. 17, 1994, Ser. No. 197,543
Int. Cl.[5] C08K *5/01*
U.S. Cl. 524—68 **10 Claims**

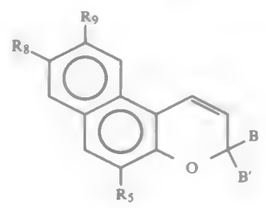
1. Process for preparing a bituminous binder which comprises: mixing with a bitumen, 1 to 35% by weight, based on the total weight of the mixture, of a beforehand prepared composition of an ethylene/vinyl acetate copolymer and a polyisobutylene having a number average molecular weight of greater than 400 or less than 1,000, wherein the ratio of polyisobutylene to ethylene/vinyl acetate is between 90:10 and 50:50.

5,369,157
THERMOPLASTIC COMPOSITIONS IMPROVED FIRE PERFORMANCE CONTAINING ALKENYL AROMATAIC POLYMERS
René Wirth, Lens, France, assignor to Atochem, Paris, France
Continuation of Ser. No. 632,322, Dec. 21, 1990, abandoned. This application Dec. 27, 1993, Ser. No. 173,100
Claims priority, application France, Dec. 21, 1989, 89 16973
Int. Cl.[5] C08K *5/3477, 5/05*
U.S. Cl. 524—100 **8 Claims**

1. A thermoplastic composition having a low combustion rate and free of halogen atom-containing combustion retardant agents consisting of at least one alkenyl aromatic hydrocarbon polymer or copolymer and melamine or melamine isocyanurate, and up to 20% by weight of said polymer or copolymer of an elastomeric resin and containing, for each 100 parts by weight of said at least one alkenyl aromatic hydrocarbon polymer or copolymer, and elastomeric resin if present:
a) from 5 to 30 parts by weight of melamine or melamine isocyanurate, and
b) from 2 to 10 parts by weight of at least one polyol containing at least 4 hydroxyl functions per molecule.

5,369,158
PHOTOCHROMIC NAPHTHOPYRANS
David B. Knowles, Apollo, Pa., assignor to Transitions Optical, Inc., Pinellas Park, Fla.
Division of Ser. No. 840,378, Feb. 24, 1992, Pat. No. 5,238,981. This application Jun. 2, 1993, Ser. No. 71,121
Int. Cl.[5] C07D *311/92, 333/06;* **C08K** *5/15, 5/34*
U.S. Cl. 524—110 **16 Claims**

7. A photochromic article comprising a polymerized organic host material and a photochromic amount of a naphthopyran compound represented by the following graphic formula:

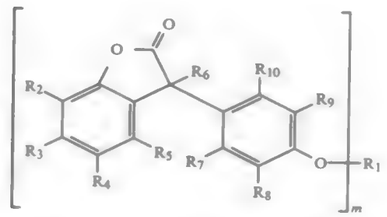


wherein R_5 and R_9 are each selected from the group consisting of hydrogen, C_1–C_4 alkoxy and C_1–C_4 alkyl, R_8 is selected from the group consisting of halogen, C_1–C_5 acyloxy, benzoyloxy, methoxybenzoyloxy, di(C_1–C_5)alkylamino, and

LO—, wherein L is a C_1–C_{12} alkyl, C_6–C_9 aryl(C_1–C_3)alkyl, C_5–C_7 cycloalkyl, or C_1–C_4 alkyl substituted C_5–C_7 cycloalkyl, and wherein (i)B is selected from the group consisting of the unsubstituted or substituted phenyl, and B' is selected from the group consisting of the unsubstituted or substituted heterocyclic aromatic groups pyridyl, thienyl, benzothienyl, furyl, and benzofuryl, or (ii) B and B' taken together form the adamantyl group, said aryl and heterocyclic group substituents each being selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxy, C_1–C_4 alkoxy(C_1–C_4)alkyl, di(C_1–C_5)alkylamino, and halogen, said halogen and halo substituents being selected from the group consisting of fluorine, chlorine and bromine.

5,369,159
3-(ACYLOXYPHENYL)BENZOFURAN-2-ONE STABILISERS
Peter Nesvadba, Marly, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 17, 1993, Ser. No. 64,191
Claims priority, application Switzerland, May 22, 1992, 1652/92-3
Int. Cl.[5] C08K *5/15;* **C09K** *15/06*
U.S. Cl. 524—111 **11 Claims**

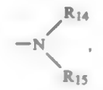
1. A composition comprising
a) an organic material which is subject to oxidative, thermal or light-induced degradation and
b) at least one compound of the formula(1)


(1)

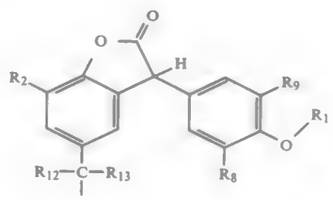
in which R_2, R_3, R_4 and R_5, independently of one another, are hydrogen. C_1–C_{25}alkyl, C_7–C_9phenylalkyl, unsubstituted or C_1–C_4alkyl-substituted phenyl, unsubstituted or C_1–C_4-alkyl-substituted C_5–C_8cycloalkyl; C_1–C_{18}alkoxy, hydroxyl, C_1–C_{25}alkanoyloxy, C_3–C_{25}alkenoyloxy, C_3–C_{25}alkanoyloxy which is interrupted by oxygen, sulfur or >N—R_{16}; C_6–C_9cycloalkylcarbonyloxy, benzoyloxy or C_1–C_{12}alkyl-substituted benzoyloxy, where R_{16} is hydrogen or C_1–C_8alkyl, or, furthermore, the radicals R_2 and R_3 or the radicals R_4 and R_5 together with the carbon atoms to which they are bound form a phenyl ring, R_4 is additionally —$(CH_2)_n$—COR_{11}, in which n is 0, 1 or 2, R_{11} is hydroxyl,



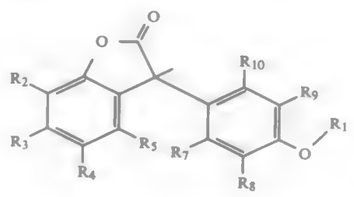
C_1–C_{18}alkoxy or



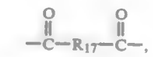
R_{14} and R_{15}, independently of one another, are hydrogen or C_1–C_{18}alkyl, M is an r-valent metal cation and r is 1, 2 or 3, R_7, R_8, R_9 and R_{10}, independently of one another, are hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, with the proviso that at least one of the radicals R_7, R_8, R_9 and R_{10} is hydrogen and, in the case where R_3, R_5, R_6, R_7 and R_{10} are hydrogen, R_4 is additionally a radical of the formula (2)


(2)

in which R_2, R_8 and R_9 are as defined above and R_1 is as defined below for m=1, and R_{12} and R_{13}, independently of one another, are hydrogen, C_1–C_{12}alkyl or phenyl, m is 1 or 2, and,
in the case where m is 1,
R_1 is hydrogen, C_1–C_{25}alkanoyl, C_3–C_{25}alkenoyl, C_3–C_{25}alkanoyl which is interrupted by oxygen, sulfur or >N—R_{16}; C_6–C_9cycloalkylcarbonyl, benzoyl or C_1–C_{12}alkyl-substituted benzoyl, R_{16} is as defined above and R_6 is hydrogen or a radical of the formula (3)


(3)

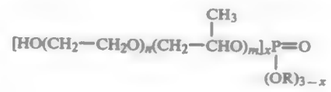
in which R_1, R_2, R_3, R_4, R_5, R_7, R_8, R_9 and R_{10} are as defined above, and,
in the case where m is 2,
R_1 is



in which R_{17} is a direct bond, C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by oxygen, sulfur or >N—R_{16}; C_2–C_{18}alkenylene, C_2–C_{20}alkylidene, C_7–C_{20}-phenylalkylidene, C_5–C_8cycloalkylene, C_7–C_8bicycloalkylene or phenylene, R_{16} is as defined above and R_6 is hydrogen.

5,369,160
THERMOPLASTIC POLYAMIDE WITH REDUCED FLAMMABILITY
Atish Adyha, and Robert L. Lilly, both of Asheville, N.C., assignors to BASF Corporation, Parsippany, N.J.
Filed Sep. 24, 1992, Ser. No. 950,843
The portion of the term of this patent subsequent to Aug. 24, 2010, has been disclaimed.
Int. Cl.[5] C08K *5/521;* **C08G** *79/04*
U.S. Cl. 524—140 **11 Claims**

1. A thermoplastic polyamide obtained by melt mixing a polyamide with a phosphate ester of the general formula:



wherein

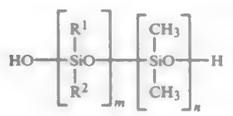
n is a number of from 1 to 10;
m is a number of from 0 to 3;
x is a number of from 1 to 3;
R is linear or branched C_1-to C_{18}-alkyl radical; at a temperature of from about 250° C. to about 300° C.

5,369,161
PROCESS FOR INSULATING HIGH VOLTAGE ELECTRICAL CONDUCTING MEDIA
Shigehiko Kunieda, Iwakura; Shigeo Ishino, Niwa; Takao Nakai, Ichinomiya; Kazuo Hirai, Kimitsu; Takao Matsushita, Kisarazu, and Kazuhide Takeshita, Chiryu, all of Japan, assignors to NGK Insulators, Ltd., Aichi and Dow Corning Toray Silicone Co., Ltd., Tokyo, both of Japan
Continuation of Ser. No. 735,440, Jul. 25, 1991, abandoned. This application Dec. 22, 1992, Ser. No. 995,351
Claims priority, application Japan, Jul. 26, 1990, 2-196139
Int. Cl.[5] C08K *5/54*
U.S. Cl. 524—266 **5 Claims**

1. A process for insulating high voltage electrical conducting media comprising the step of insulating a high voltage electrical conducting medium with a composition which excludes a platinum catalyst, said composition consisting essentially of:
(a) 100 parts by weight of an organopolysiloxane gum represented by the average unit formula

$$R_aSiO_{\frac{4-a}{2}},$$

where R is a monovalent hydrocarbon group of which at least 50 mole % is alkyl; and a is a number of 1.98 to 2.02;
(b) 10–100 parts by weight of a finally divided silica filler;
(c) 15–300 parts by weight of aluminum hydroxide;
(d) 1–20 parts by weight of an organosilane or an organosiloxane oligomer represented by the general formula



where R^1 and R^2, which may be the same or different, are each an unsubstituted or substituted monovalent hydrocarbon group, with the proviso that at least one R^1 and R^2 is phenyl; m is an integer of 1 to 20; and n is 0 or an integer of 1 to 20; and
(e) 0.05–6 parts by weight of an organic peroxide.

5,369,162
DECYL ALCOHOL MIXTURES, PHTHALIC ESTERS OBTAINABLE THEREFROM AND THEIR USE AS PLASTICIZERS
Helmut Bahrmann, Hamminkeln; Wolfgang Greb; Peter Lappe, both of Dinslaken; Peter Heymanns, Essen; Jürgen Szameitat, Wesel; Thomas Müller, Dinslaken, and Ernst Wiebus, Oberhausen, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany
Division of Ser. No. 34,267, Mar. 22, 1993, Pat. No. 5,268,514. This application Jun. 30, 1993, Ser. No. 85,551
Claims priority, application Germany, Mar. 27, 1992, 4210026
Int. Cl.[5] C07C *69/76;* **C08K** *5/09*
U.S. Cl. 524—296 **2 Claims**

1. A mixture of isomeric didecyl pthalates which is the reaction product of esterification of phthalic acid or phtalic anhydride with a mixture of isomeric decyl alcohols, said alcohols being a product of hydroformylation of a mixture consisting essentially of 1-butene and 2-butene in a first stage and further hydroformylating unreacted butenes from said first stage in a second stage,
said first stage being carried out in a heterogenous reaction system in the presence of an aqueous solution of first rhodium compounds containing complexed water soluble phosphines as catalysts, said first stage taking place at a first reaction temperature of 20° to 150° C. and under a first reaction pressure of 0.1 to 20 MPa to form a first reaction mixture containing a first aldehyde mixture,
said second stage being carried out in a homogenous phase in the presence of second rhodium compounds as catalysts, said second stage taking place at a second reaction temperature of 90° to 180° C. and under a second reaction pressure of 10 to 35 MPa to form a second reaction mixture containing a second aldehyde mixture,
isolating said first aldehyde mixture from said first reaction mixture, isolating said second aldehyde mixture from said second reaction mixture, combining said first aldehyde mixture and said second aldehyde mixture to form a combined aldehyde mixture,
condensing said combined mixture to form an aldol mixture, isolating and hydrogenating said aldol mixture to form said mixture of isomeric decyl alcohols.
2. A method of plasticizing a polymer comprising mixing therewith a mixture of isomeric didecyl phtalates of claim 1.

5,369,163
PROCESS FOR PREPARING LARGE DIMENSION EMULSION POLYMER PARTICLES, POLYMER PRODUCT AND USES THEREOF
Shang-Jaw Chiou; Miao-Hsun L. Sheng, both of Lower Gwynedd; John W. Hook, III, Warminster, and Travis E. Stevens, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Filed Nov. 13, 1992, Ser. No. 975,746
Int. Cl.[5] C08K *3/20*
U.S. Cl. 524—458 **23 Claims**

1. An emulsion polymerization process for preparing emulsion polymer particles, comprising:
polymerizing at least one ethylenically unsaturated monomer in an aqueous medium in the presence of:
i) from about 0.5 to about 50 weight percent, based on the total monomer reactants and optional organic additive, of a substantially water-insoluble amphiphilic polymeric stabilizer selected from the group consisting of hydrophobic-hydrophilic balanced alkaline soluble resins and hydrophobic-hydrophilic balanced acid soluble resins,
ii) an amount of a neutralizer compound effective to render the substantially water-insoluble amphiphilic polymeric stabilizer soluble in the aqueous medium, wherein said neutralizer compound is selected from the group consisting of organic bases, inorganic bases, organic acids and inorganic acids, and
iii) a free radical polymerization initiator; wherein the monomer is introduced into the aqueous medium in a controlled manner under conditions which favor the continued solubility of the amphiphilic polymeric stabilizer.

5,369,164
AQUEOUS DISPERSION OR SOLUTION CROSSLINKING WITH DIVINYL ETHER
Hubertus Kroener; Uwe Dittrich, and Alexander Zettl, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Oct. 14, 1993, Ser. No. 135,977
Claims priority, application Germany, Nov. 6, 1992, 4237438
Int. Cl.[5] C08L *51/06;* **C09J** *133/08, 133/10;* **B32B** *7/12*
U.S. Cl. 524—458 **17 Claims**

1. An aqueous dispersion or solution of a crosslinkable polymer, crosslinkable at room temperature, prepared by free radical polymerization, comprising said polymer and a vinyl ether crosslinking agent containing at least two vinyl ether groups, wherein said polymer contains

(a) ethylenically unsaturated monomer units having at least one COOH or SO_3H group;
(b) 30–99.99 wt % of monomer units of at least one C_1-C_{20}-alkyl(meth)acrylate, vinyl ester of a carboxylic acid of 1–20 carbon atoms, vinyl aromatic of up to 20 carbon atoms, ethylenically unsaturated nitrile of 3–6 carbon atoms, vinyl halide, or non-aromatic hydrocarbon having 4–8 carbon atoms and at least two conjugated double bonds;
(c) 0–60 wt % of monomer units of at least one additional ethylenically unsaturated monomer;
wherein said polymer comprises 0.01–10 wt % COOH or SO_3H groups and the sum a+b+c=100 wt %.

5,369,165
POLYOLEFIN SOLUTION USING HALOGEN GROUP SOLVENTS
Jinichiro Kato; Toshio Yoneyama, both of Nobeoka; Kazuhiko Shimura, Moriyama; Yoshiaki Nakayama, and Kenji Kanekiyo, both of Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 922,546, Jul. 31, 1992, Pat. No. 5,286,422. This application Feb. 3, 1994, Ser. No. 191,130
Claims priority, application Japan, Aug. 3, 1991, 3-194551; Nov. 5, 1991, 3-288766; Jan. 14, 1992, 4-004780; Jan. 14, 1992, 4-004936; Jan. 14, 1992, 4-004938; Nov. 5, 1992, 3-288682
Int. Cl.[5] C08K *5/02, 5/15, 5/32, 5/51*
U.S. Cl. 524—462 **6 Claims**

1. A polyolefin solution prepared under high temperature and high pressure conditions, wherein said polyolefin solution is comprised of a mixed solvent consisting essentially of at least one solvent, bromochloromethane or 1,2-dichloroethylene, and a co-solvent wherein said co-solvent is carbon dioxide, sulfur hexafluoride, difluorochloromethane, 1,1,1,2-tetrafluoroethane, 1-chloro-1,2,2,2-tetrafluoroethane, 1-chloro-1,1-difluoroethane, 1,1-dichloro-2,2,3,3,3-pentafluoropropane, 1,3-dichloro-1,2,2,3,3-pentafluoropropane, dodecafluoropentane or tetra-decafluorohexane, and the content of said co-solvent in the mixed solvent is 3 to 50% by weight and the concentration of the polyolefin is 5 to 25% by weight based on the polyolefin solution.

5,369,166
COPOLYMER LATEX, METHOD FOR PREPARING THE SAME AND USE THEREOF
Yutaka Ozawa, and Hisanori Ohta, both of Tokyo, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Mar. 2, 1993, Ser. No. 24,763
Claims priority, application Japan, Sep. 30, 1991, 3-276201; Mar. 3, 1992, 4-80357; Dec. 22, 1992, 4-356523
Int. Cl.[5] C08L *33/06;* **C08F** *4/28*
U.S. Cl. 524—560 **12 Claims**

1. A copolymer latex comprising 30 to 90% by weight of a conjugated diene monomer unit, 9 to 50% by weight of an ethylenically unsaturated nitrile monomer unit, 0.1 to 20% by weight of an ethylenically unsaturated acid monomer unit, and 0 to 20% by weight of an other ethylenically unsaturated monomer unit copolymerizable therewith, having a polystyrene-converted weight average molecular weight of 50,000 to 500,000, and containing 45% or less of a methyl ethyl ketone insoluble matter, wherein said copolymer latex is obtained by emulsion polymerization of said monomers using a polymerization initiator selected from the group consisting of diisopropylbenzene hydroperoxide, cumene hydroperoxide, 1,1,3,3-tetramethylbutyl hydroperoxide and 2,5-dimethylhexane-2,5-dihydroperoxide.

5,369,167
MELT BLENDING ACID OR ANHYDRIDE-GRAFTED BLOCK COOPLYMER PELLETS WITH EPOXY RESIN
Lorelle A. Pottick, and David J. St. Clair, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Division of Ser. No. 448,192, Dec. 8, 1989. This application Mar. 28, 1994, Ser. No. 218,494
Int. Cl.[5] C08L *51/06, 63/02, 63/04*
U.S. Cl. 525—65 **19 Claims**

1. A process to produce an epoxy resin composition comprising the steps of:
a) providing from 1 to about 100 parts by weight of pellets having an average particle size with the range of 0.05 in. to 0.3 in. of modified hydrogenated block copolymer comprising at least one block comprising predominantly polymerized monoalkenyl aromatic hydrocarbon monomer units, and at least one block comprising predominantly, before hydrogenation, polymerized conjugated diolefin monomer units, the hydrogenated block copolymer having been modified by grafting substantially to the blocks of polymerized conjugated diolefin monomer units, on the average, between about 2 and about 200 maleic anhydride functional groups for each polymer molecule of modified hydrogenated block copolymer;
b) melt blending the modified hydrogenated block copolymer with 100 parts by weight of an epoxy resin;
c) agitating the blend by high shear mixing under conditions sufficient to react an amount of the maleic anhydride functional group with epoxy groups of the epoxy resin effective to provide a stable dispersion of modified hydrogenated block copolymer in the epoxy resin;
d) recovering an epoxy resin composition; and
e) adding a curing agent to the epoxy composition.

5,369,168
REACTIVE MELT EXTRUSION GRAFTING OF THERMOPLASTIC POLYVINYL ALCOHOL/POLYOLEFIN BLENDS
Amir Famili, Orefield; Lloyd M. Robeson, Macungie, and James F. Nangeroni, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Aug. 3, 1992, Ser. No. 923,756
Int. Cl.[5] C08L *29/04, 51/06, 23/26*
U.S. Cl. 525—57 **21 Claims**

1. A method for preparing a compatible blend of polyolefin and thermoplastic polyvinyl alcohol comprising performing the following steps in a single pass through a melt extruder:
(a) melting polyolefin in a melt extruder,
(b) melt blending an unsaturated carboxylic acid or anhydride with the melted polyolefin,
(c) adding a free radical source to the melt blend and grafting the unsaturated carboxylic acid or anhydride onto the polyolefin, and
(d) melt blending thermoplastic PVOH into the grafted polyolefin/unsaturated carboxylic acid or anhydride melt mixture.

5,369,169

POLYMER BLENDS WITH ENHANCED PROPERTIES

Edward E. La Fleur, Warminster; Robert M. Amici, Doylestown, both of Pa.; William T. Freed, Stockton, N.J.; William J. Work, Huntingdon Valley, Pa., and William G. Carson, Moorestown, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 19,410, Feb. 16, 1993, Pat. No. 5,296,537, which is a division of Ser. No. 843,784, Feb. 28, 1992, Pat. No. 5,208,083, which is a division of Ser. No. 438,371, Nov. 16, 1989, Pat. No. 5,147,930. This application Oct. 15, 1993, Ser. No. 138,294

The portion of the term of this patent subsequent to Sep. 15, 2009, has been disclaimed.

Int. Cl.[5] C08L *33/10, 33/08*

U.S. Cl. 525—57 12 Claims

1. A gas-barrier polymer blend comprising

a) from about 20% to about 95% by weight of a first polymer containing at least 50 mole percent mers of one or both of C_1 to C_6 alky(meth)acrylates and glutarimides and forming a continuous phase, and

b) from about 2.5% to about 40% by weight of a second polymer containing ethylene mers and alkenoxy (meth)acrylate mers and having at least 50 mole percent vinyl alcohol mers which is either miscible with, or forms a discontinuous phase in, the continuous phase, wherein the permeability to oxygen of the blend is 10% or less of the permeability of the first polymer alone.

5,369,170

COMPOSITE SYSTEMS OF POLYKETONE AND AMINATED, MODIFIED POLYOLEFINS

Donald H. Weinkauf, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 13, 1993, Ser. No. 166,135

Int. Cl.[5] C08F *8/32;* C08G *67/02*

U.S. Cl. 525—64 8 Claims

1. A composite system comprising an aminated modified polyolefin and a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon.

5,369,171

IN SITU POLYMER ALLOYS AND MICROCOMPOUNDS, PROCESS FOR THEIR MANUFACTURE, AND USE THEREOF

Rolf Mülhaupt, Freiburg; Joachim Rösch, Gundelfingen; Siegfried Hopperdietzel, Selb; Ekkehard Weinberg, Schönwald, and Herbert Klein, Hof/Saale, all of Germany, assignors to Rehau AG + Co., Rehau, Germany

Filed Jun. 10, 1992, Ser. No. 895,368

Claims priority, application Germany, Jun. 11, 1991, 4119146

Int. Cl.[5] C08L *77/02*

U.S. Cl. 525—66 35 Claims

1. A polymer mixture including microphases of melt-polymerized material in a thermoplastic polymer, the polymer mixture comprising:

a component A composed of at least one thermoplastic polymer which is one of (i) selected from the group consisting of olefin homopolymers, olefin copolymers, styrene homopolymers, and styrene copolymers or is (ii) a polar, heteroatom-containing thermoplastic polymer selected from the group consisting of polyamides and polyamidimides; and

melt-polymerization reaction products of from 0.2–90 weight % of a component B bases on the weight of the polymer mixture composed of at least one compound having the structure $X_n—R^1—(Y—N—R^2—CO)_m$, wherein X is NH_2, NHR^3, or OH; Y is CO, SO_2, or $R^5P{=}O$; R^1 is a (n+m) valent aromatic radical or an aliphatic radical having the formula $C_xH_{(2x+2-m-n)}$ or a cycloaliphatic radical of the formula $C_xH_{(2x-m-n)}$ with $1>x>15$; R^2 is a bivalent radical of the formula $(CH_2)_z$ with $1<z<15$; and R^3 and R^5 are monovalent aromatic radicals or monovalent aliphatic radicals of the formula $C_pH_{(2p+1)}$ or monovalent cycloaliphatic radicals of the formula $C_pH_{(2p-1)}$ with $1<p<20$ and radicals R^1, R^2, R^3 and R^5 optionally contain heteroatoms in place of the formulas recited for R_1, R_2, R_3 and R_5 and are optionally unsaturated; and n and m are integers with $1<m$ and $n<5$, the polymerization reaction products being linear, branched or cross-linked, high or low molecular weight polymers constituting microphases.

5,369,172

POLYMER BLEND WITH LOW GLOSS

Sarah E. Morgan, Evansville, Ind.; Charles F. Pratt, Brasschaat, Belgium, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 878,071, May 4, 1992, abandoned. This application Jan. 31, 1994, Ser. No. 189,273

Claims priority, application European Pat. Off., Jun. 19, 1991, 91110064.2

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 10 Claims

1. A polymer blend comprising:

(a) an aromatic carbonate polymer without a carboxylic acid group, carboxylic acid anhydride group, amine group or alcohol group;

(b) a polymer or copolymer having a reactive epoxy group; and

(c) an aromatic carbonate polymer or copolymer having a reactive group selected from the group of carboxylic acid groups, carboxylic acid anhydride groups, amine groups, alcohol groups or a mixture thereof further comprising one or more of the following types of ingredients:

d) a graft copolymer obtained by grafting d(1) and d(2);

d(1) styrene, alpha-methylstyrene, a styrene substituted in its nucleus, methylmethacrylate or blends thereof and

d(2) (meth) acrylonitrile, methylmethacrylate, maleic anhydride, N-substituted maleinimid or blends thereof upon

d(3) a rubbery latex and/or

e) a copolymer of e(1) and e(2);

e(1) styrene, alpha-methylstyrene, a styrene substituted in its nucleus, methylmethacrylate or blends thereof and

e(2) (meth) acrylonitrile, methylacrylate, maleic anhydride, N-substituted maleimide or blends thereof.

5,369,173

GLASS FIBER-REINFORCED RESIN COMPOSITION

Motonobu Furuta, Tsukuba, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 662,183, Feb. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 479,857, Feb. 14, 1990, abandoned. This application Jan. 19, 1993, Ser. No. 5,416

Claims priority, application Japan, Jun. 13, 1989, 1-148481

Int. Cl.[5] C08L *23/10, 71/12*

U.S. Cl. 525—68 12 Claims

1. A resin composition comprising

(A) 100 parts by weight of

(a) 1 to 50% by weight of polyphenylene ether or polyphenylene ether-containing resin composition,

(b) 10 to 90% by weight of propylene polymer which is not modified with an oxygen-containing unsaturated compound,

(c) 10 to 40% by weight of propylene polymer grafted with an organic compound having one or more of an acid or acid anhydride unit selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, itaconic acid, fumaric acid, maleic anhydride and itaconic anhydride, and

(d) 0 to 30% by weight of a natural or synthetic polymeric elastomer which is elastic at room temperature, and

(B) 3 to 60 parts by weight of

(e) glass fiber treated with a silane compound on its surface.

5,369,174

BLENDS FOR ENHANCING PROPERTIES OF VINYL AROMATIC-CONJUGATED DIENE BLOCK COPOLYMERS

Lori C. Hasselbring, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 2, 1992, Ser. No. 862,904

Int. Cl.[5] C08L *51/06, 53/02*

U.S. Cl. 525—71 7 Claims

1. A composition comprising (a) resinous styrene-butadiene block copolymer containing from about 50 to about 95 weight percent styrene, based on the total weight of said block copolymer; (b) grafted polypropylene which is a polypropylene having been grafted with a grafting agent selected from the group consisting of carboxylic acids, anhydrides of carboxylic acids, and mixtures thereof; and (c) styrene-ethylene/butylene-styrene rubber.

5,369,175

METHOD FOR PREPARING ASYMMETRIC RADIAL COPOLYMERS HAVING FOUR FIRST ARMS AND TWO SECOND ARMS

Ronald J. Hoxmeier; Bridget A. Spence, and Steven S. Chin, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 9, 1993, Ser. No. 149,598

Int. Cl.[5] C08L *53/02;* C08F *297/04*

U.S. Cl. 525—99 12 Claims

1. A method for preparing an asymmetric radial polymer comprising the steps of:

(a) contacting a first conjugated diene polymer having a single reactive end group per molecule with a coupling agent containing six functional groups which will react with the reactive end group such that said first conjugated diene polymer reacts with four of the functional groups on each molecule of the coupling agent;

(b) contacting a second conjugated diene polymer having a single reactive end group per molecule with the reaction product from step (a) under conditions such that reaction between said second polymer and the reaction product from step (a) proceeds substantially to completion; and

(c) recovering an asymmetric radial polymer having at least 75% by weight of six-arm radial polymer molecules having a ratio of four polymeric arms from the first conjugated diene polymer to two polymeric arms from the second conjugated diene polymer.

5,369,176

COMPOSITION TO BE USED IN THE RESIN INJECTION MOLDING TECHNIQUE, CONTAINING LOW MOLECULAR WEIGHT COMPOUNDS JOINTLY FORMING A HYBRID NETWORK

Adrianus De Koning, Zwolle, Netherlands, assignor to DSM N.V., Heerlen, Netherlands

PCT No. PCT/NL91/00084, § 371 Date Nov. 20, 1992, § 102(e) Date Nov. 20, 1992, PCT Pub. No. WO91/18033, PCT Pub. Date Nov. 28, 1991

Continuation of Ser. No. 949,858, Nov. 20, 1992, abandoned.

This PCT application May 21, 1991, Ser. No. 200,534

Claims priority, application Netherlands, May 22, 1990, 9001181

Int. Cl.[5] C08L *75/04*

U.S. Cl. 525—126 15 Claims

1. A reaction injection molding process for making products from a composition which contains at least 70% of low molecular weight compounds capable of forming a crosslinked polymer, which composition contains a first component consisting of a compound with at least an ethylenic unsaturation and an isocyanate-reactive group, a second component containing an ethylenically unsaturated monomer capable of copolymerizing with the first component, and, as a third component, a polyisocyanate, wherein the first, second and third components are monomers having a molecular weight less than 1000, the first component consists of a monomer having 1 terminal vinyl group and 1 isocyanate-reactive group per molecule and a molecular weight less than 500, wherein the polymerization of the first and second components takes place before the reaction of the first and third components.

5,369,177

UV-STABILIZED POLYOXYMETHYLENE MOLDING MATERIALS

Sabine Kielhorn-Bayer, Maxdorf; Hartmut Zeiner; Heiner Goerrissen, both of Ludwigshafen, and Dietrich Saenger, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Aug. 30, 1993, Ser. No. 113,094

Claims priority, application Germany, Sep. 5, 1992, 4229760

Int. Cl.[5] C08L *59/02, 59/04*

U.S. Cl. 525—154 6 Claims

1. A thermoplastic molding material containing

A) from 40 to 99.69% by weight of a polyoxymethylene homo- or copolymer,

B) from 0.1 to 2% by weight of at least one stabilizer selected from the group consisting of the benzotriazole or benzophenone or aromatic benzoate compounds,

C) from 0.1 to 2% by weight of at least one sterically hindered amino compound,

D) from 0.005 to 2% by weight of a polyamide,

E) from 0 to 2% by weight of an epoxy-containing compound,

F) from 0 to 50% by weight of an elastomeric polymer and

G) from 0 to 50% by weight of a fibrous or particulate filler or of a mixture thereof.

5,369,178

RESIN COMPOSITION FOR THERMOSETTING COATING

Eiichiro Miyazaki, Fujisawa, and Taisaku Kano, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jul. 1, 1992, Ser. No. 907,176

Claims priority, application Japan, Jul. 5, 1991, 3-165529; Nov. 8, 1991, 3-293087; Nov. 8, 1991, 3-293088; Nov. 8, 1991, 3-293089

Int. Cl.[5] C08L *33/02, 33/06*

U.S. Cl. 525—155 33 Claims

1. A resin composition for a thermosetting coating, which comprises

(a_1) an acrylic copolymer containing a carboxylic acid group-containing monomer and another monomer copolymerizable therewith, said acrylic copolymer having an acid value of 30–150 mgKOH/g,

(b) an acrylic copolymer containing an epoxy group-containing monomer and another monomer copolymerizable therewith, said acrylic copolymer having an epoxy equivalent of 200–1,000 g/eq, and

(c) a monobasic acid having a dissociation constant (pKa) of 3 or less selected from the group consisting of p-toluenesulfonic acid, dodecylbenzenesulfonic acid, dinonylnaphthalenesulfonic acid, methanesulfonic acid, trichloroacetic acid, thioscetic acid, acidic phosphoric acid esters, hydrochloric acid and nitric acid, and wherein the equivalent ratio of the carboxylic acid groups of (a_1) and the epoxy groups of (b) is 1:0.5 to 0.5:1 and the amount of (c) is 0.01–5 parts by weight per 100 parts by weight of the total of (a_1) and (b).

5,369,179

INHERENTLY ANTISTATIC THERMOPLASTIC POLYAMIDE-POLYETHER FILMS

Marvin R. Havens, Greer, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation-in-part of Ser. No. 647,859, Jan. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,961, Sep. 7, 1990, abandoned. This application May 3, 1991, Ser. No. 695,175

Int. Cl.[5] C08F 8/32

U.S. Cl. 525—183 6 Claims

1. A method to decrease the hydrophilicity of a hydrophilic polyether block amide copolymer when making an antistatic film therefrom comprising forming a thermoplastic antistatic film from a blend of hydrophilic polyether block amide copolymer and compatible polymer in a ratio by weight in the range of from about 5:95 to about 95:5, respectively; said compatible polymer comprising a multi-valent ionomer and said forming step comprises (1) extruding said hydrophilic polyether block amide copolymer and said multi-valent ionomer into a film, which film has a degree of hydrophilicity suitable for packaging static sensitive devices, and (2) then subjecting said film to curing treatment, whereby from said curing treatment, said film is antistatic in accordance with the military specification test, even in the absence of an added antistatic agent, in that said film will dissipate 5000 volts direct current in about 2000 milliseconds or less.

5,369,180

MISCIBLE POLYKETONE POLYMER BLEND

Joseph M. Machado, Richmond, and Raymond N. French, Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 22, 1991, Ser. No. 748,404

Int. Cl.[5] C08G 67/02; C08L 25/12

U.S. Cl. 525—185 19 Claims

1. A miscible polymer blend composition comprising:

a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, and

a copolymer of a vinyl aromatic monomer and an acrylonitrile monomer, wherein the copolymer contains from greater than about 45 wt % to less than about 80 wt % acrylonitrile monomer, based on weight of copolymer.

5,369,181

OLEFINIC POLYMER BLENDS FOR IMPROVING POLYOLEFINS

Charles C. Hwo, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 29, 1993, Ser. No. 99,017

Int. Cl.[5] C08L 23/20, 23/10

U.S. Cl. 525—240 4 Claims

1. A blend having and exhibiting improved processing and mechanical properties comprising:

more than 90 wt % of polypropylene having a melt flow of less than 20 g/10 min;

a positive amount to less than 10 wt % of poly-1-butene copolymer having a melt flow of from about 0.1 to 40 g/min; and

a positive amount to less than 10 wt % of poly-1-butene homopolymer having a melt flow of greater than 45 g/10 min.

5,369,182

IMPACT MODIFICATION OF POLYAMIDES

Thomas C. Yu, Bellaire, Tex.; Kenneth W. Powers, Berkeley Heights, and Hsien C. Wang, Edison, both of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation of Ser. No. 923,208, Jul. 31, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,846

Int. Cl.[5] C08L 23/16, 23/18

U.S. Cl. 525—240 9 Claims

1. An impact modifier for polyamide compositions consisting essentially of a blend of:

(a) a halogenated copolymer of a C_4 to C_7 isomonoolefin and an alkylstyrene, and

(b) a polyolefin component comprising an elastomeric polyolefin, a crystalline polyolefin, or mixtures thereof.

5,369,183

COMPOSITE AND MOLDING FROM THE COMPOSITE

Masashi Okada; Tetsuo Maeda; Kenji Nakamura, and Kenichi Hibino, all of Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan

Filed Oct. 5, 1990, Ser. No. 593,873

Claims priority, application Japan, Oct. 9, 1989, 1-263548; Oct. 9, 1989, 1-263549; Oct. 11, 1989, 1-264322; Oct. 11, 1989, 1-264323; Oct. 12, 1989, 1-265829; Jan. 23, 1990, 2-14045; Jan. 23, 1990, 2-14046; Jun. 20, 1990, 2-162472; Jun. 20, 1990, 2-162473

Int. Cl.[5] C08F 259/04, 283/00, 265/06; B32B 27/00

U.S. Cl. 525—289 12 Claims

1. A composite for moldings comprising:

(A) at least a thermoplastic resin; and

(B) a polymerizable monomer system which is:

(B_1) an acrylate or methacrylate monomer having at least two ethylenically unsaturated polymerizable groups in the molecule and having a alicyclic structure unit, or

a mixture consisting of said monomer (B_1) and (B_2) an acrylate or methacrylate monomer having only one ethylenically unsaturated polymerizable group in the molecule and having at least two alicyclic structure units,

wherein the weight ratio of (A) to (B), based on the total weight of (A) and (B), ranges from 20:80 to 80:20.

5,369,184

RESINS FOR CROSSLINKING AND ADHESION PROMOTION

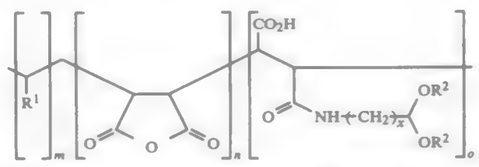
William F. Burgoyne, Jr., Allentown; Jeremiah P. Casey, Emmaus, and Thomas A. Manuel, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 77,696, Jun. 15, 1993, Pat. No. 5,298,567. This application Dec. 23, 1993, Ser. No. 172,469

Int. Cl.[5] C08F 8/32

U.S. Cl. 525—327.6 2 Claims

1. A resin useful for crosslinking and adhesion promotion in coating and adhesive applications which resin comprises a polymer having members of the structural formula:



wherein R^1 is aryl, C_1–C_{20} alkyl, C_1–C_8 alkoxy, acetate, halide, or ester; R^2 is a C_1–C_6 alkyl group; X is from 1 to 6; m is from 0.05 to 0.95; n is from 0.00 to 0.25; and o is from 0.10 to 0.80; which polymer has been titrated with an amine represented by the chemical formula $(R^3)_2NH$ wherein each R^3 is independently H, C_1–C_6 alkyl or hydroxyalkyl, or ω,ω-dialkoxyalkyl.

5,369,185

MULTIPLE ACETAL CONTAINING RESINS

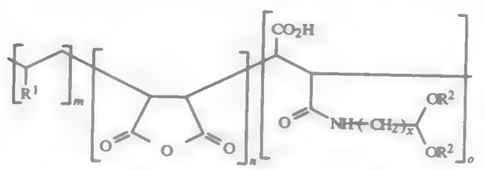
William F. Burgoyne, Jr., Allentown; Jeremiah P. Casey, Emmaus; Thomas A. Manuel, and Joel E. Goldstein, both of Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 77,696, Jun. 15, 1993, Pat. No. 5,298,567. This application Dec. 23, 1993, Ser. No. 172,470

Int. Cl.[5] C08F 8/32

U.S. Cl. 525—327.6 6 Claims

1. A resin useful for crosslinking and adhesion promotion in coating and adhesive applications which resin comprises a polymer having members of the structural formula:



wherein R^1 is alkyl, C_1–C_2O alkyl, C_1–C_8 alkoxy, acetate, halide, or ester; R^2 is a C_1–C_6 alkyl group; X is from 1 to 6; m is from 0.05 to 0.95; n is from 0.00 to 0.25; and o is from 0.10 to 0.80; which polymer has been titrated with a tertiary amine or an alkali base.

5,369,186

ALPHA OLEFINS FUNCTIONALIZED POLYMERS

Maurizio Galimberti; Umberto Giannini, both of Milan; Romano Mazzocchi, Novara; Enrico Albizzati, Novara, and Umberto Zucchini, Ferrara, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

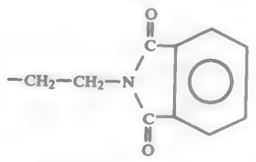
Filed Nov. 12, 1991, Ser. No. 790,630

Claims priority, application Italy, Nov. 13, 1990, 22039 A/90

Int. Cl.[5] C08F 214/16, 226/06, 8/26

U.S. Cl. 525—330.7 2 Claims

1. An elastomeric copolymer of ethylene and propylene, that contains 30–70 mole % of ethylene units, and 70–30 mole % of propylene units, with 1–15 mole % of the ethylene units having a radical selected from the group consisting of $—CH_2–CH_2I$, $—CH=CH_2$, $—CH_2–CH_2—CH(COOR^5)_2$, and



wherein R^1 is C_{1-18} alkyl, C_{3-18} cycloalkyl, C_{6-18} aryl or C_{7-18} aralkyl, and R is C_1–C_{18} hydrocarbyl.

5,369,187

POLYMERS CONTAINING REPEATING CYCLOKETONIC UNITS, AND METHOD FOR OBTAINING THEM

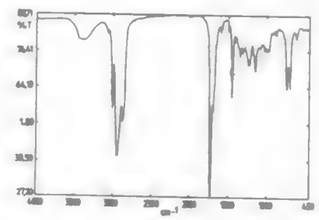
Anna Sommazzi, S. Margherita Ligure; Nicoletta Cardi, Olgiate Olona; Fabio Garbassi, Novara, and Clarascostomos Chatgilialoglu, Monghidoro, all of Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome and Enichem S.p.A., Milan, both of Italy

Filed Jun. 3, 1993, Ser. No. 71,517

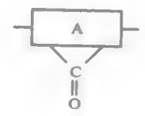
Claims priority, application Italy, Jun. 4, 1992, MI92 A 001377

Int. Cl.[5] C08F 8/00; C08G 67/02

U.S. Cl. 525—332.8 37 Claims



1. A polymer containing, randomly distributed along its chain, repeating cycloketonic structural units having the following formula (I):



(I)

wherein:

A represents an aliphatic or cycloaliphatic, substituted or non-substituted, tetravalent moiety, containing a total number of 4 to 50 carbon atoms.

5,369,188

PROCESS FOR DIRECT ADDITION OF ACID TO POLYMERS

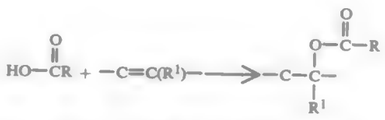
Young H. Kim, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 511,181, Apr. 17, 1990, Pat. No. 5,216,072. This application Feb. 11, 1993, Ser. No. 16,552

Int. Cl.[5] C08F 8/00

U.S. Cl. 525—359.4 12 Claims

1. A process comprising the direct uncatalyzed addition of a halogenated C_2 to C_5 carboxylic acid having a pKa of less than 2.5 to an olefinic noncyclic compound containing a $—C=C(R^1)—$ group



wherein R^1 is alkyl or cyclic alkyl and R is a halogen containing alkyl group wherein the olefinic non-cyclic compound containing a $—C=C(R^1)—$ group comprises a homopolymer of a conjugated diene, a block or random copolymer of at least one conjugated diene and at least one other monomer, or a polyolefin.

5,369,189

PROCESS FOR THE PREPARATION OF HEAT RESISTANT AND TRANSPARENT ACRYLIC RESIN

Jin B. Kim, Yousong-gu, and Young S. Hur, Seo-gu, both of Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

PCT No. PCT/KR90/00023, § 371 Date Jun. 8, 1992, § 102(e) Date Jun. 8, 1992, PCT Pub. No. WO91/09886, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 28, 1990, Ser. No. 773,896

Claims priority, application Rep. of Korea, Dec. 29, 1989, 89-20194; Dec. 30, 1989, 89-20345; Aug. 13, 1990, 90-12452; Aug. 13, 1990, 90-12453; Aug. 13, 1990, 90-12454

Int. Cl.[5] C08F *8/32*

U.S. Cl. 525—378 **12 Claims**

1. A process for the preparation of heat resistant and transparent acrylic resins comprising reacting an acylic resin with an imidizing material comprising a compound selected from the group consisting of ammonia, primary amines and compounds capable of liberating ammonia or primary amines upon decomposition under reaction conditions, in the presence of 1–20% by weight of the acrylic resin and imidizing material of water and 0.01–15% by weight of the acrylic resin and imidizing material of a compound of the formula (IV) as a catalyst:

$$R_4NOH \qquad (IV)$$

wherein R_4 represents an unsubstituted or substituted C_1–C_{20} alkyl cycloalkyl, aryl, aralkyl, allyl or mixtures thereof, at a temperature of 100° to 350° C. in a solvent.

5,369,190

CROSSLINKING COMPONENTS FOR CATHODICALLY DEPOSITABLE PAINT BINDERS

Helmut Hönig; Herbert Matzer; Georg Pampouchidis, and Willibald Paar, all of Graz, Austria, assignors to Vianova Kunstharz, A.G., Graz, Austria

Division of Ser. No. 787,313, Sep. 17, 1991, Pat. No. 5,264,497. This application Nov. 10, 1993, Ser. No. 149,783

Claims priority, application Austria, Sep. 17, 1990, A 1875/90

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—433 **6 Claims**

1. A paint binder containing a crosslinking component having hydroxyl groups and/or primary or secondary amino groups, which component is the reaction product obtained by reacting at least 50% of the isocyanate-reactive groups of a hydroxyl-functional carbamate compound with a diisocyanate which is half-blocked with monohydroxy compounds and has an unblocking temperature below about 180° C. in combination with a cationic base resin which contains hydroxyl groups and/or primary or secondary amino groups and are water-dilutable after protonation.

5,369,191

AROMATIC THIOETHER KETONE/THIOETHER SULFONE COPOLYMER AND PRODUCTION PROCESS THEREOF

Yukichika Kawakami, and Zenya Shiiki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan

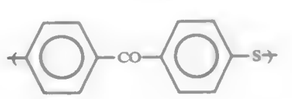
Filed Jan. 12, 1993, Ser. No. 3,034

Claims priority, application Japan, Jan. 23, 1992, 4-34251; Mar. 26, 1992, 4-101692; Oct. 23, 1992, 4-307908

Int. Cl.[5] C08G *75/14*; C08L *81/04*

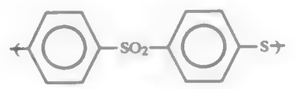
U.S. Cl. 525—471 **5 Claims**

1. An aromatic thioether ketone/thioether sulfone random copolymer comprising recurring units of the formula (I):



(I)

and recurring units of the formula (II):



(II)

(a) the compositional ratio (I:II) of the recurring units (I) to the recurring units (II) ranging from 98:2 to 65:35,

(b) the solution viscosity (η_{inh}) being at least 0.3 dl/g as determined by viscosity measurement at 30° C. and a polymer concentration of 0.4 g/dl in a 1:1 (by weight) mixed solvent of m-chlorophenol and 1,2,4-trichlorobenzene,

(c) the melt crystallization time (τ) being 3–15 minutes,

(d) the melting point (Tm) being 300°–350° C.,

(e) the glass transition temperature being at least 125° C.,

(f) the retention (400° C./20 min) of melt crystallization enthalpy (ΔHmc) being at least 60%, wherein the ΔHmc retention (400° C./20 min) is determined by measuring, by means of a differential scanning calorimeter, (1) melt crystallization enthalpy, ΔHmc (400° C./1 min) and (2) melt crystallization enthalpy, ΔHmc (400° C./21 min) when cooled at a rate of 10° C./min from 400° C. after the copolymer is held at 50° C. for 5 minutes in an inert gas atmosphere, heated to 400° C. at a rate of 100° C./min and then held, respectively, for 1 minute at 400° C. and for 21 minutes at 400° C., and then calculating the retention in accordance with the following equation:

$$\Delta Hmc\ retention\ (400°\ C./20\ min) = [\Delta Hmc\ (400°\ C./21\ min)/\Delta Hmc\ (400°\ C./1\ min)] \times 100,$$

and

(g) the average particle size being at least 0.1 mm.

5,369,192

BINDER RESIN FOR RESIN TRANSFER MOLDING PREFORMS

Chan U. Ko, Woodbury, and Steven C. Hackett, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1993, Ser. No. 83,400

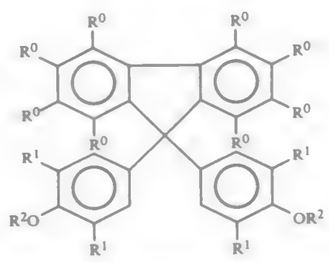
Int. Cl.[5] C08G *59/50*

U.S. Cl. 525—484 **16 Claims**

1. A resin transfer molding preform binder resin comprising:

a) at least one aromatic polyepoxide;

b) a fluorene epoxide different than the aromatic epoxide and having the following structure:



I

wherein each R^0 is independently selected from the group consisting of hydrogen, halogen, linear and branched alkyl groups having 1 to 6 carbon atoms, aromatic groups, nitro groups, acetyl groups, and trimethylsilyl groups;

each R^1 is independently selected from the group consisting of hydrogen, halogen, aromatic groups, and linear and branched alkyl groups having 1 to 6 carbon atoms; and each R^2 is independently a terminal epoxy functionalized alkyl group having 1 to 6 carbon atoms; and

c) a 9,9-bis(aminophenyl)fluorene curing agent for crosslinking the polyepoxide and the fluorene epoxide;

wherein the binder resin is a solid, room temperature stable, essentially nonsintering powder, and further wherein the uncured binder resin displays a glass transition temperature greater than about 40° C.

5,369,193

PROCESS FOR PREPARING POLYOLEFINS

Akira Sano; Takeichi Shiraishi, both of Kawasaki; Kunihiro Suzuki; Mitsuo Okamoto, both of Yokohama, and Kazuo Matsuura, Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 553,109, Jul. 13, 1990, abandoned. This application Oct. 27, 1992, Ser. No. 967,556

Claims priority, application Japan, Jul. 17, 1989, 1-182474

Int. Cl.[5] C08F *4/685*

U.S. Cl. 526—116 **18 Claims**

1. A process for preparing a polyolefin by polymerizing an olefin or olefins in the presence of a catalyst comprising a solid catalyst component and an organometallic compound, the said solid catalyst component being prepared by reacting the following components (I) and (II) at first and then reacting the reaction product thus obtained with the following component (III):

(I) a reaction product obtained by reacting:

(1) a silicon oxide and/or an aluminum oxide, and

(2) a titanium compound, or a titanium compound and a vanadium compound,

(II) a reaction product obtained by the reaction of:

(1) a magnesium halide,

(2) a compound represented by the general formula $Me(OR)_nX_{z-n}$ wherein Me represents an element of Groups I to IV in the Periodic Table, z represents the valence of the element Me, n is $o<n\leqq z$, X is a halogen atom, and R is a hydrocarbon group having 1 to 20 carbon atoms, and

(3) a titanium compound, or a titanium compound and a vanadium compound; and

(III) an organoaluminum compound.

5,369,194

OLEFIN POLYMERIZATION METHOD

Leonard V. Cribbs, Houston, Tex., and Michael W. Lynch, Schaumburg, Ill., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Division of Ser. No. 923,147, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 712,206, Jun. 7, 1991, Pat. No. 5,155,079. This application Feb. 24, 1993, Ser. No. 23,135

Int. Cl.[5] C08F *2/06, 4/64, 4/68*

U.S. Cl. 526—116 **40 Claims**

1. A method of making polymers of one or more 1-olefins, said method comprising the step of polymerizing said one or more 1-olefins under polymerizing conditions by contact with a catalyst system comprising:

(A) a solid catalyst component prepared by the method comprising the steps of:

(a) directly contacting particles of a solid support material with a zirconium compound or complex under conditions whereby said zirconium compound or complex reacts with or precipitates on the surface of said support material to produce a contact product, said zirconium compound or complex being of a formula selected from the group consisting of ZrR_aX_{4-a} and $Zr(OR)_aX_{4-a}.(R^1OH)_x$ where R and R^1 are independently selected from the group consisting of C_1–C_{20} alkyl, aryl, and alkaryl groups, a is zero or a positive integer of 1 to 4, inclusive, X is halogen, and x is zero or a positive number;

(b) contacting the contact product of step (a) with a Lewis acid when said zirconium compound or complex is of the formula $Zr(OR)_aX_{4-a}.(R^1OH)_x$ where a is a positive integer of 1 to 4, inclusive, and, optionally, with an alkylating agent to produce an intermediate product;

(c) optionally isolating and washing the contact product of step (a) or said intermediate product of step (b) to remove soluble reaction by-products therefrom to produce a washed product; and,

(d) reacting the contact product of step (a), the intermediate product of step (b), or the washed product of step (c) with a compound of titanium or vanadium to produce a solid catalyst component;

provided that when said zirconium compound is of the formula ZrR_aX_{4-a} step (c) or step (d) is directly carried out on the contact product of step (a); and,

(B) an effective amount of a cocatalyst or effective amounts of a cocatalyst and a modifier.

5,369,195

POLYMERIZATION OF CYCLIC OLEFINS

Donald R. Kelsey, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 770,749, Oct. 3, 1991, abandoned, which is a continuation of Ser. No. 548,445, Jul. 5, 1990, abandoned, which is a continuation of Ser. No. 278,101, Nov. 30, 1988, abandoned. This application Nov. 9, 1992, Ser. No. 973,934

Int. Cl.[5] C08F *4/608, 36/20*

U.S. Cl. 526—119 **29 Claims**

1. A metathesis-polymerizable composition comprising

(a) a tungsten compound which is the reaction product of a tungsten salt and a phenol;

(b) from about 1 to about 15 moles, per mole of the tungsten compound, of an organo tin hydride which can be represented by the formula $Sn(R)_3H$, in which each R is selected independently from substituted or unsubstituted aryl and $C_{1\text{-}20}$ alkyl;

(c) a boron halide present in an amount of from about 0.001 to about 10 moles per mole of the tungsten compound; and

(d) a cyclic olefin having a norbornene moiety present in the composition in an amount within the range of 1000 to about 8000 moles per mole of the transition metal.

5,369,196

PRODUCTION PROCESS OF OLEFIN BASED POLYMERS

Junichi Matsumoto; Takuji Okamoto; Masami Watanabe, and Nobuhide Ishihara, all of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP91/01658, § 371 Date Aug. 20, 1992, § 102(e) Date Aug. 20, 1992, PCT Pub. No. WO92/09640, PCT Pub. Date Jun. 11, 1992

PCT Filed Nov. 29, 1991, Ser. No. 916,119

Claims priority, application Japan, Nov. 30, 1990, 2-329539; Apr. 9, 1991, 3-103754

Int. Cl.[5] C08F *4/64*

U.S. Cl. 526—127 **3 Claims**

1. A process for producing an olefin based polymer in which polymerization of one or more alpha-olefins of formula (XIII)

$$R^{13}—CH=CH_2$$

wherein R^{13} is a hydrogen atom or an alkyi group having from 1 to 28 carbon atoms, is carried out in the presence of a catalyst comprising the compounds (A) and (B):

(A) a transition metal compound (A1) represented by the following formula:

$$M^1R^1{}_aR^2{}_bR^3{}_cR^4{}_d$$

wherein M^1 is Ti, Zr or Hf, R^1, R^2, R^3 and R^4 are each independently hydrogen, oxygen, halogen, $C_{1\text{-}20}$ alkyl, $C_{1\text{-}20}$ alkoxy, $C_{6\text{-}20}$ aryl, $C_{6\text{-}20}$ aryloxy, alkylaryl, arylalkyl,

C_{1-20} acyloxy, allyl, trialkylsilyl, ether, thioether, ester, nitrile, amine, phosphine or acetylacetonate; a, b, c and d are each independently an integer of from 0 to 4; and two or more of R^1, R^2, R^3 and R^4 may form a ring; and

(B) a compound capable of forming an ionic complex when reacted with said transition metal compound.

5,369,197

PEROXIDE EMULSIONS CONTAINING AN ANTIFREEZING COMPOUND

Reinder Torenbeek, Twello, and Willem F. Verhelst, Gorssel, both of Netherlands, assignors to Akzo N.V., Netherlands

Division of Ser. No. 8,894, Jan. 25, 1993, Pat. No. 5,260,390, which is a continuation of Ser. No. 336,063, Apr. 11, 1989, abandoned, which is a continuation of Ser. No. 578,594, Feb. 10, 1984, Pat. No. 4,950,422, which is a continuation of Ser. No. 534,264, Sep. 21, 1983, abandoned, which is a division of Ser. No. 417,759, Sep. 13, 1982, abandoned, which is a division of Ser. No. 222,844, Jan. 6, 1981, abandoned. This application Oct. 22, 1993, Ser. No. 139,772

Claims priority, application Netherlands, Jan. 16, 1980, 80 00 260

Int. Cl.[5] C08F *4/34*; B01J *31/02*

U.S. Cl. 526—230.5 **9 Claims**

1. A process for using an aqueous emulsion of a polymerization initiator, which aqueous emulsion comprises:

(a) 20–60% by weight of an organic peroxide polymerization initiator which is liquid at −5° C.;

(b) 0.01–20% by weight of a surfactant and/or protective colloid;

(c) at least 2% by weight of a compound selected from the group consisting of alkanols having 1–4 carbon atoms, alkane diols having 2–4 carbon atoms and mixtures thereof: and

(d) the balance water; comprising the step of suspension (co)polymerizing an ethylenically unsaturated compound in the presence of a sufficient amount of said aqueous emulsion to initiate the polymerization.

5,369,198

COPOLYMERS BASED ON MALEIC ACID DERIVATIVES AND VINYL MONOMERS, THEIR PRODUCTION AND APPLICATION

Gerhard Albrecht, Leonding; Hubert Leitner, Haus/Enastal; Rudolf Lindenberger, Steyr; Richard Siedl, Asten; Christian Wereuka, Ansfelden, all of Austria, and Willi Suter, Burgdorf, Switzerland, assignors to Chemie Linz Gesellschaft m.b.H, Austria and Holderchem Holding AG, Switzerland

Filed Feb. 1, 1994, Ser. No. 189,642

Claims priority, application Austria, Feb. 1, 1993, A 162/93

Int. Cl.[5] C08F *30/04*

U.S. Cl. 526—240 **3 Claims**

1. Copolymers which are composed essentially of the structural elements

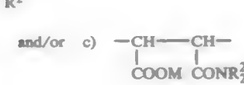


A)



and/or

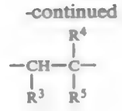
B)



wherein R_1 represents a hydrogen atom or a lower alkyl group; —X— represents —O— or —NH—; R_2 represents $(CH_2)_n$ $(CH_2)_n$ substituted by at least one member selected from the group consisting of a lower alkyl group and a halogen atom, and a phenylene or —CH=CH— group can be present in the chain formed by $(CH_2)_n$; R_3 represents a phenylene group or a cyclohexylene group; Me represents a divalent or trivalent metal group selected from the group consisting of Cu, Nd, Co, Fe, Ni, V, VO, W and Ce;

m is 2 or 3; and n is an integer of from 1 to 5.

-continued



C)

and, optionally,



D)

whereby

M: represents H or a cation such as alkaline or alkaline-earth metal, an ammonium group, or the residue of an organic amino group,

R^1: represents C_1 to C_{20} alkyl, C_5 to C_8 cycloalkyl or aryl group residue,

R^2: represents H, C_1 to C_{20} alkyl or hydroxyalkyl, C5 to C8 cycloalkyl or aryl group residue in which 1 or more H atoms can be substituted by the structural elements —COOM, $—SO_3M$ and/or PO_3M_2, as well as structural units of the General Formula $(C_mH_{2m}O)_nR^1$, which optionally can be repeated,

R^3: represents H, a methyl or a methylene group which can be substituted if necessary and which forms a 5 to 8-member ring or an indene ring which includes R^5,

R^4: represents H, a methyl or ethyl group,

R^5: represents H, C^1–C^{20} alkyl, C_5–C^8 cycloalkyl or aryl group residue, an alkoxy carbonyl group, an alkoxy group, an alkyl or aryl carboxylate group, a carboxylate group, a hydroxyalkoxy carbonyl group,

m: represents a whole number from 2 to 4,

n: represents a whole number from 0–100, preferably from 1–20.

5,369,199

LIGHT-RESPONSIVE PLATE CONTAINING METAL SALT OF A PHTHALIC ACID DERIVATIVE

Toshimi Satake; Tomoaki Nagai; Hiroshi Fukui; Miyuki Yokoyama, and Akio Sekine, all of Kita, Japan, assignors to Jujo Paper Co., Ltd., Tokyo, Japan

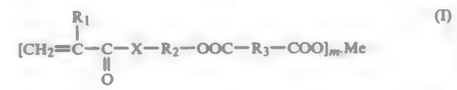
Division of Ser. No. 589,372, Sep. 27, 1990, Pat. No. 5,202,450. This application Aug. 2, 1991, Ser. No. 740,005

Claims priority, application Japan, Sep. 27, 1989, 1-250863

Int. Cl.[5] C08F *30/04*

U.S. Cl. 526—241 **2 Claims**

1. A light shading plate comprised of a transparent polymer, wherein said polymer is obtained by polymerizing a mixture of a methacrylate monomer and a phthalic acid derivative metal salt represented by the following formula



(I)

5,369,200

POSITIVE PHOTORESIST HAVING IMPROVED PROCESSING PROPERTIES

Ulrich Schädeli, Plasselb, Switzerland, and Norbert Münzel, Heitersheim, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland and OCG Microelectronics, Inc., West Paterson, N.J.

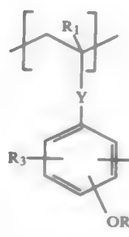
Filed Dec. 3, 1993, Ser. No. 160,818

Claims priority, application Switzerland, Dec. 4, 1992, 3723/92-0

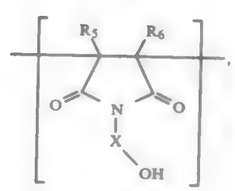
Int. Cl.[5] C08F *22/40*

U.S. Cl. 526—262 **8 Claims**

1. A polymer having a molecular weight (weight average) M_w from 10^3 to 10^6, comprising recurring structural units of the formulae (I), (IIa) and (IIb)

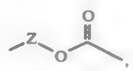


(IIa)



(IIb)

in which R_1 is hydrogen or methyl, Y is a direct bond or a divalent radical of the formula (III)



(III)

in which Z is a C_1–C_6alkylene group bound to the phenyl nucleus,

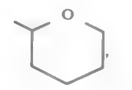
OR_2 is an acid-cleavable radical,

in which R_2 is C_4–C_{10}tert-alkyl, allyl, cyclohex-2-enyl, C_6–C_{14}aryl or C_7–C_{16}aralkyl which are unsubstituted or mono- or poly-substituted by C_1–C_6alkyl groups, C_1–C_6alkoxy groups or halogen atoms, trialkylsilyl or a group of the formulae (IV)–(VII)

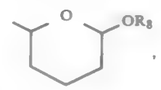


(IV)

-continued



(V)



(VI)



(VII)

(I) in which R_8 is C_1–C_6alkyl, or C_6–C_{14}aryl or C_7–C_{16}aralkyl which are unsubstituted or mono- or poly-substituted by C_1–C_6alkyl groups, C_1–C_6alkoxy groups or halogen atoms,

R_3 and R_4 independently or one another are hydrogen, C_1–C_6 alkyl groups, C_1–C_6alkoxy groups or halogen atoms,

R_5 and R_6 independently of one another are hydrogen or methyl,

X is C_1–C_6alkylene and R_7 is C_1–C_6alkyl, or C_6–C_{14}aryl or C_7–C_{16}aralkyl which are unsubstituted or mono- or poly-substituted by C_1–C_6alkyl groups, C_1–C_6alkoxy groups or halogen atoms, or is —CO—R_8 in which R_8 is as defined in formula (IV).

5,369,201

LAMINATING RESINS HAVING LOW ORGANIC EMISSIONS

Thomas W. Smeal, Murrysville, and George L. Brownell, Mount Lebanon Township, Allegheny County, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 47,526, Apr. 19, 1993, Pat. No. 5,292,841. This application Mar. 2, 1994, Ser. No. 204,924

Int. Cl.[5] C08F *24/00*

U.S. Cl. 526—273 **3 Claims**

1. A laminating resin composition comprising (A) an acrylated or methacrylated cycloaliphatic epoxide, (B) an acrylated or methacrylated alkoxylated bisphenol-A in a weight ratio of (A) to (B) of about 3 to 1 to about 1:5, (C) about 5% to about 50%, based on the total composition, cyclohexyl methacrylate, and (D) up to about 20% vinyl toluene, by weight based on the total composition.

5,369,202

POLYMERS OR BROMINATED STYRENE

Ray W. Atwell, West Lafayette; Harry A. Hodgen, Battle Ground; William R. Fielding, West Lafayette; Nicolai A. Favstritsky, and Earico J. Termine, both of Lafayette, all of Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Division of Ser. No. 95,865, Jul. 22, 1993, Pat. No. 5,304,618. This application Mar. 22, 1994, Ser. No. 215,803

Int. Cl.[5] C08F *12/16, 14/16*

U.S. Cl. 526—293 **4 Claims**

1. A process for the polymerization of brominated styrenes, comprising the steps of:

(a) providing an essentially solventless blend of:

(i) monomers of brominated styrenes; and

(ii) a polymerization initiator;

(b) feeding the monomer/polymerization initiator blend into a prepolymerizer;

(c) reacting the monomer/polymerization initiator blend in the prepolymerizer for a time of between about 1 minute and about 5 minutes, wherein said reacting is effective to polymerize at least about 20% of the monomers of brominated styrenes;

(d) feeding the reaction blend of step (c) into a reaction vessel;
(e) reacting the reaction blend under conditions effective to polymerize at least about 80% of the monomers in a time between about 1 minute and about 20 minutes; and
(f) removing the polymerized bromostyrene from the reaction vessel.

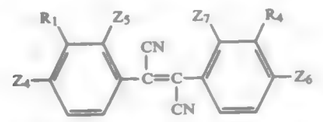
5,369,203

POLYMERIC PHTHALOCYANINES AND PRECURSORS THEREFOR

Allan S. Hay, 5015 Gleneairn Avenue, Montreal, Quebec, Canada H3W 2B3

Filed Apr. 21, 1993, Ser. No. 50,813
Int. Cl.[5] C08F *122/30*
U.S. Cl. 526—297 **2 Claims**

1. A fumaronitrile group-containing homopolymer or copolymer containing units of formula (III)



(III)

wherein Z_4 is H or an ether linkage —O— and Z_5 is R_2 or an ether linkage —O—, provided that one, and only one, of Z_4 and Z_5 is an ether linkage —O—, Z_6 is H or a linkage —O—Ar— and Z_7 is R_3 or a linkage —O—Ar—, provided that one, and only one, of Z_5 and Z_6 is a linkage —O—Ar—, and R_1, R_2, R_3 and R_4, which may be the same or different, are selected from hydrogen, chloro, bromo, cyano, lower alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or hetaryl, and Ar is a divalent aromatic linkage.

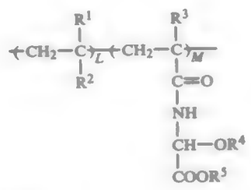
5,369,204

LOW MOLECULAR WEIGHT ACRYLAMIDOGLYCOLATE CROSSLINKER AND PROCESS

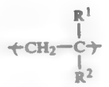
Kuang-Jong Wu, Shelton; Howard R. Lucas, Danbury; Robert G. Lees, Stamford, and Nicholas J. Albrecht, Redding, all of Conn., assignors to Cytec Technology Corp., Wilmington, Del.

Continuation of Ser. No. 786,441, Nov. 1, 1991, abandoned. This application Feb. 16, 1993, Ser. No. 18,483
Int. Cl.[5] C08F *20/58, 214/18, 214/02, 220/42, 220/54, 218/02, 220/28, 212/06*
U.S. Cl. 526—304 **14 Claims**

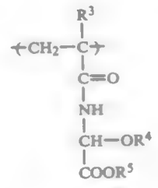
1. A low molecular weight crosslinker having a plurality of the same or different segments represented by the formula:



wherein L groups of the



units are the same or different, and the R^1 and R^2 groups in each of the L units are independently selected from a group consisting of hydrogen, fluoro, acyloxy, carboxy, cyano, chloro, alkoxy, acetoxy, acyl, aminocarbonyl, N-alklyaminocarbonyl, N,N-dialkylaminocarbonyl, aryl, alkyl or 1 to 20 carbon atoms, aralykl, alkoxycarbonyl of 1 to 20 carbon atoms, beta-hydroxyethoxycarbonyl, beta-hydroxypropoxycarbonyl, and gamma-hydroxypropoxycarbonyl groups; and wherein M groups of the



units are the same or different; and the R^3 group in each of the M units is independently selected from a group consisting of hydrogen, methyl, and phenyl; and the R^4 and R^5 groups in each of the M units are independently selected from a group consisting of hydrogen, alkyl of 1 to 20 carbon atoms, alkoxyalkyl, aralkyl, perfluoroalkyl, and aryl groups; and wherein L is from zero to about 100; and M is from one to about 50;

with the proviso that the crosslinker has a weight average molecular weight of 10,000 or less.

5,369,205

UV-CURABLE EPOXYSILICONES BEARING PENDANT SILICONE RESIN

Richard P. Eckberg, Saratoga Springs, and Roy M. Griswold, Ballston Spa, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jul. 30, 1992, Ser. No. 923,112
Int. Cl.[5] C08F *2/50*; C08G *77/46*
U.S. Cl. 528—25 **18 Claims**

1. A UV curable epoxysilicone polymer comprising:
the reaction product of
a linear low molecular weight SiH containing fluid of the formula

$$MD^H_xD_yM,$$

where
M is $R_3SiO_{\frac{1}{2}}$,
D^H is $R(H)SiO_{2/2}$
D is $R_2SiO_{2/2}$
x ranges from about 2 to about 50, y ranges from about 5 to about 500, and R is an aliphatic or aromatic radical and
a $M^{Vi}MQ$ or $M^{Vi}MTQ$ resin having a ratio of M:Q of about 0.3:1.0 to about 2.5:1 and wherein the total weight % vinyl is about 0.5 to about 5.0 based on the weight of resin resulting in a hydrosilation partial reaction product and;
which hydrosilation partial reaction product is then reacted by hydrosilation with an epoxy containing unsaturated compound selected from aliphatic or cyclo aliphatic epoxies, said reaction product being an epoxy-functional silicone bearing pendant silicone Q resin moieties.

5,369,206

METHOD FOR THE PREPARATION OF AN ORGANOPOLYSILOXANE POLYMERIZABLE AT A SINGLE MOLECULAR CHAIN END

Masanao Kamei, and Tomohisa Suzuki, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1994, Ser. No. 189,386
Claims priority, application Japan, Jan. 29, 1993, 5-034734
Int. Cl.[5] C08G *77/20*
U.S. Cl. 528—32 **5 Claims**

1. A method for the preparation of an organopolysiloxane

ethylenically polymerizable only at a single molecular chain end represented by the general formula

$$R_3Si—O—(—SiR_2—O—)_{n+1}—SiMe_2—R\text{-}^2—O—CO—CR^1=CH_2,$$

in which Me is a methyl group, R is, each independently, an alkyl group having 1 to 6 carbon atoms or a phenyl group, R^1 is a hydrogen atom or a methyl group, R^2 is a divalent hydrocarbon group having 1 to 6 carbon atoms and n is zero or a positive integer not exceeding 1000, which comprises:
reacting an organopolysiloxane having a silanolic hydroxy group only at a single molecular chain end as represented by the general formula

$$R_3Si—O—(—SiR_2—O—)_n—SiR_2—OH,$$

in which each symbol has the same meaning as defined above, with an ω-(meth)acryloxyalkyl dimethyl dialkylamino silane compound represented by the general formula

$$R^3{}_2N—SiMe_2(R^2—O—CO—CR^1=CH_2),$$

in which Me, R^1 and R^2 each have the same meaning as defined above and R^3 is an alkyl group having 1 to 6 carbon atoms.

5,369,207

PREPARATION OF LOW-VISCOSITY, ISOCYANURATE AND URETHANE GROUP-CONTAINING POLYISOCYANATE MIXTURES

Stefan Wolff, Limburgerhof; Hans Renz, Meckenheim, and Guenter Mohrhardt, Speyer, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Jul. 12, 1993, Ser. No. 90,419
Claims priority, application Germany, Sep. 2, 1992, 4229183
Int. Cl.[5] C08G *18/80, 18/30*
U.S. Cl. 528—49 **20 Claims**

1. A process for the preparation of isocyanurate and urethane group-containing polyisocyanate mixtures by partially cyclizing organic diisocyanates in the presence of trimerization catalysts, deactiving the trimerization catalysts when the cyclization is complete, and subsequently reacting the resultant isocyanurate group-containing polyisocyanate mixtures with hydroxyl compounds, which comprises reacting the partially trimerized isocyanurate group-containing polyisocyanate mixtures with from 0.5 to 10 mol % of at least one hydroxyl compound selected from the group consisting of aliphatic alcohols, cycloaliphatic alcohols polyoxyalkylene alcohols and mixtures thereof, and then separating off the monomeric diisocyanates.

5,369,208

LOW VOC, FAST DRYING, MOISTURE CURABLE, ONE-COMPONENT ISOCYANATE-BASED COATING COMPOSITIONS

Fred A. Stuber, North Haven, Conn.; Michael M. Martinez, Fairporte, N.Y.; Michael J. Morgan, Torrington, and Kiran B. Chandalia, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed May 24, 1993, Ser. No. 64,995
Int. Cl.[5] C08G *18/02*
U.S. Cl. 528—53 **8 Claims**

1. A coating composition having a viscosity as measured by ZAHN cup 2 of less than about 200 seconds and consisting essentially of at least one aliphatic or cycloaliphatic polyisocyanate, or combination thereof, a solvent in an amount of between 0% and 45% by weight based upon the amount of said polyisocyanate in said composition and containing no greater than 0.7% volatile diisocyanates based upon the weight of the polyisocyanate, and a tertiary amine catalyst in an amount of between about 0.1% and about 5% based upon the weight of the coating composition selected from the group consisting of N,N′-dimethylethanolamine, N,N-dimethylamino-ethoxyethanol, N,N′-dimethylaminoethyl-N-methylethanolamine, N,N-dimethyl-N′,N′-2-hydroxypropyl-1,3-propylene diamine, N,N,N′-trimethyl-N′-hydroxyethyl-bis)amino ethyl) ether, N,N-bis(3-dimethylaminopropyl) amino-2-propanol, and combinations thereof, said composition being moisture curable upon exposure to atmospheric moisture.

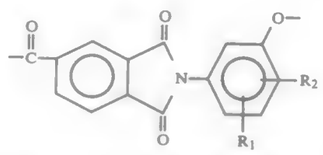
5,369,209

AMORPHOUS POLYESTERIMIDES WHICH CAN BE PROCESSED AS THERMOPLASTICS

Horst-Tore Land, Frankfurt am Main; Michaela Gedan, Sohland/Spr.; Manfred Rätzsch, Dresden, and Frank Böhme, Dresden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 3, 1993, Ser. No. 101,186
Claims priority, application Germany, Aug. 5, 1992, 4225865
Int. Cl.[5] C08G *73/00*
U.S. Cl. 528—170 **9 Claims**

1. An amorphous polyesterimide comprising 50 to 100 mole-% of units of formula II



Formula II

and from 0 to 50 mole-% of units of formula I



Formula I

in which units
R_1 and R_2, independently of one another, are H, branched or unbranched alkyl radicals having 1 to 6 carbon atoms, branched or unbranched alkoxy radicals having 1 to 6 carbon atoms, or F, Cl or Br.

5,369,210

HEAT-RESISTANT WATER-DISPERSIBLE SULFOPOLYESTER COMPOSITIONS

Scott E. George, and Bobby J. Sublett, both of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.

Filed Jul. 23, 1993, Ser. No. 95,464
Int. Cl.[5] C08G *63/688*
U.S. Cl. 528—293 **12 Claims**

1. A water-dispersible sulfopolyester having a glass transition temperature of greater than 89° C. and low melt viscosity consisting essentially of repeat units from:
(a) 10 to 93 mole percent of a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, naphthalene-2,7-dicarboxylic acid, naphthalene-2,6-dicarboxylate ester and naphthalene-2,7-dicarboxylate ester;
(b) 2 to 85 mole percent of a dicarboxylic acid selected from the group consisting of isophthalic acid, terephthalic acid, dimethyl terephthalate, and dimethyl isophthalate. and combinations thereof;
(c) a diol wherein 0.1 to 5 mole percent of the diol is a polymeric diol having the formula HO—$(OCH_2—CH_2)_x$—OH , wherein x is 10 to 50; and
(d) a difunctional sulfomonomer containing at least one sulfonate group attached to an aromatic nucleus wherein the functional groups are hydroxy, carboxy or amino, provided the difunctional sulfomonomer is present in an amount from 15 to 25 mole percent based on 100 mole percent dicarboxylic acid and 100 mole percent diol.

5,369,211
WATER-DISPERSIBLE SULFO-POLYESTER COMPOSTIONS HAVING A TG OF GREATER THAN 89°C.
Scott E. George; Donna L. Jordan, and Bobby J. Sublett, all of Kingsport, Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.
Continuation of Ser. No. 41,105, Apr. 1, 1993, abandoned. This application Jan. 18, 1994, Ser. No. 182,466
Int. Cl.[5] C08G *63/688*
U.S. Cl. 528—293 7 Claims

1. A water-dispersible sulfo-polyester having a glass transition temperature of greater than 89° C. consisting essentially of repeat units from:
(a) a dicarboxylic acid selected from the group consisting of naphthalene-2,6-dicarboxylic acid, naphthalene-2,7-dicarboxylic acid, naphthalene-2,6-dicarboxylic ester and naphthalene-2,7-dicarboxylate ester;
(b) a diol selected from the group consisting of ethylene glycol, 1,4-cyclohexanedimethanol, propane-1,2-diol, and 2,2-dimethyl-1,3-propanediol, and mixtures thereof; and
(c) a difunctional sulfomonomer containing at least one sulfonate group attached to an aromatic nucleus wherein the functional groups are hydroxy, carboxy or amino, provided the difunctional sulfomonomer is present in an amount from 15 to 25 mole percent based on 100 mole percent dicarboxylic acid and 100 mole percent diol.

5,369,212
METHOD OF PREPARING TETRAMETHYLAMMONIUM AZIDE
Karl O. Christe, Calabasas, and William W. Wilson, Simi Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 26, 1993, Ser. No. 23,247
Int. Cl.[5] C07C *209/00, 211/63*
U.S. Cl. 564—296 3 Claims

1. A method for preparing $N(CH_3)_4N_3$ comprising, reacting the following:

$$N(CH_3)_4F + (CH_3)_3SiN_3 \xrightarrow[\text{amb. temp.}]{CH_3CN} N(CH_3)_4N_3 + (CH_3)_3SiF.$$

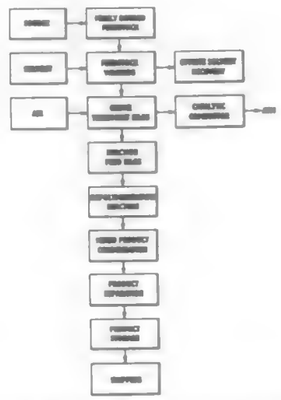
5,369,213
OXIDATIVE COUPLING OF DIAMONDOIDS AND AROMATICS
Dong-Ming Shea, Langhorne, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed Jan. 30, 1993, Ser. No. 83,850
Int. Cl.[5] C07C *13/28*
U.S. Cl. 585—352 8 Claims

1. A method for arylating a diamondoid compound having at least one unsubstituted bridgehead carbon with an aromatic compound having at least one unsubstituted ring-member carbon comprising reacting said diamondoid compound with said aromatic compound in the presence of an olefin and a catalytically effective amount of a Lewis acid.

5,369,214
METHOD FOR SELECTIVE DEHALOGENATION OF HALOGENATED POLYAROMATIC COMPOUNDS
Malvina Farcasiu, Pittsburgh, and Steven C. Petrosius, Library, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 33,480, Mar. 18, 1993, abandoned. This application Jan. 7, 1994, Ser. No. 180,752
Int. Cl.[5] C07C *1/20, 22/00*
U.S. Cl. 585—469 15 Claims

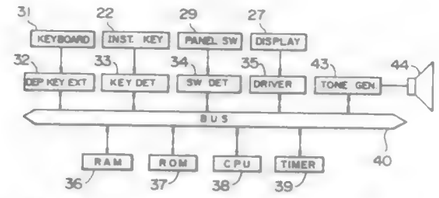
1. A method for dehalogenating halogenated polyaromatic compounds without incinerating the polyaromatic compounds but allowing the dehalogenated polyaromatic compound to be recovered and recycled, comprising:
a) mixing the halogenated polyaromatic compounds with a hydrogen donor solvent and a carbon molecular sieve catalyst in a weight ratio of approximately 1:4:0.1, said catalyst selected from the group carbon molecular sieves consisting of carbon black and carbon fiber compounds;
b) initiating a dehalogenation reaction in a liquid phase by heating the mixture to between approximately 330° C. and 450° C. for approximately one hour; and
c) recovering the dehalogenated polyaromatic compounds.

5,369,215
DEPOLYMERIZATION METHOD FOR RESOURCE RECOVERY FROM POLYMERIC WASTES
Gerald A. Platz, Conroe, Tex., assignor to S-P Reclamation, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 864,426, Apr. 6, 1992, Pat. No. 5,264,640. This application Aug. 16, 1993, Ser. No. 107,281
The portion of the term of this patent subsequent to Nov. 23, 2010, has been disclaimed.
Int. Cl.[5] C07C *4/04, 4/06*
U.S. Cl. 585—241 15 Claims



1. A process for recovering a monomer from a vulcanized addition polymer feedstock formed at least from the monomer and from compounded additives, comprising the steps of:
(a) washing the addition polymer feedstock to remove the additives from the surface of the feedstock;
(b) exposing the washed feedstock to gaseous ozone under conditions sufficient to rupture chemical bonds formed during the vulcanization process of the addition polymer feedstock and thereby form one or more intermediate products;
(c) heating in the presence of a catalyst the mixture formed in step (b) to a temperature and for a time sufficient to depolymerize the addition polymer and form the monomer; and
(d) removing the monomer following its formation from the mixture.

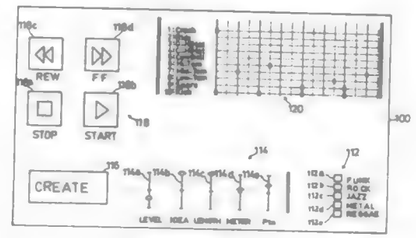
5,369,216
ELECTRONIC MUSICAL INSTRUMENT HAVING COMPOSING FUNCTION
Hiromu Miyamoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan
Continuation of Ser. No. 813,854, Dec. 26, 1991, abandoned. This application Feb. 25, 1993, Ser. No. 23,485
Claims priority, application Japan, Dec. 28, 1990, 2-416781
Int. Cl.[5] G10H *7/00*
U.S. Cl. 84—609 11 Claims



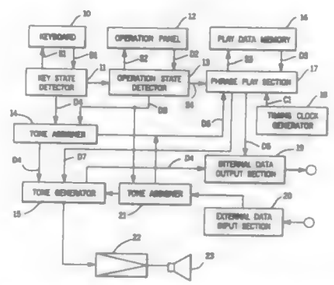
11. An electronic musical instrument comprising:
tone generator means for generating musical tones on the basis of performance pattern data;
first memory means for storing a plurality of performance pattern data, each containing at least one measure;
selecting means for selecting one of the plurality of performance pattern data stored in the first memory means;
reader means, responsive to said selecting means, for reading out the performance pattern data selected by said selecting means from the first memory means;
control means, responsive to said selecting means, for controlling said reader means and said tone generator means to supply performance pattern data read out by said reader means to said tone generator means to generate musical tones;
second memory means for storing performance pattern data corresponding to a song;
write designating means for designating to write the performance pattern data selected by said selecting means and generated in said tone generator means, into said second memory means;
writing means for successively writing performance pattern data selected by said selecting means, in said second memory means each time said write designation means designates to write; and
means responsive to writing performance pattern data selected by said selecting means for supplying the performance pattern data to said tone generator means to generate musical tones represented by the performance pattern data, so that selection of the performance pattern data by a composer can be verified;
whereby the electronic musical instrument is capable of composing a song by successively selecting performance pattern data from among the plurality of performance pattern data preliminarily stored in the first memory means.

5,369,217
RHYTHM CREATING SYSTEM FOR CREATING A RHYTHM PATTERN FROM SPECIFYING INPUT DATA
Yuji Yamashita, and Katsuhiro Toyota, both of Osaka, Japan, assignors to Roland Corporation, Osaka, Japan
Filed Sep. 10, 1992, Ser. No. 942,612
Claims priority, application Japan, Jan. 16, 1992, 4-005679; Jan. 16, 1992, 4-005680; Jan. 16, 1992, 4-005682
Int. Cl.[5] G10H *7/00, 1/40*
U.S. Cl. 84—611 3 Claims

1. A rhythm pattern creating system comprising:
a first memory storing a first rule data base for associating the melody of a piece of music with the choices of a plurality of parameters specifying the features of a desired rhythm;
a second memory storing a second rule data base for associating the choices of the plurality of parameters with a plurality of rhythm patterns;
an instruction input means for entering information representing the melody of a desired piece of music and a plurality of parameters specifying the features of a desired rhythm pattern to be created corresponding to the entered melody;
a parameter extracting means for extracting the predetermined choices of at least some of the plurality of parameters for each part of the desired piece of music with reference to the first rule data base stored in the first memory, on the basis of information representing the melody of the desired piece of music; and
a rhythm pattern creating means for creating rhythm patterns for the entire piece of music by creating rhythm patterns for each part of the desired piece of music with reference to the second rule data base stored in the second memory, on the basis of the predetermined choices extracted by the parameter extracting means for each part of the desired piece of music.



5,369,218
EXTERNAL DEVICE PHRASE DATA INPUT/OUTPUT APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT
Shinya Konishi, Shizuoka, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Japan
Filed Oct. 8, 1992, Ser. No. 958,517
Claims priority, application Japan, Oct. 14, 1991, 3-291974
Int. Cl.[5] G10H *1/00*
U.S. Cl. 84—649 6 Claims



1. A phrase data input/output apparatus for an electronic musical instrument having an external device connectable thereto, said apparatus, upon receipt of key data from a keyboard, either selecting tone generating means for generating a single musical tone in agreement with the key data in normal playing of the instrument or selecting phrase playing means for generating a specified phrase of multiple musical tones in

agreement with the key data in phrase playing of the instrument, thereby to produce music, said apparatus comprising:

instructing means (13) for instructing either normal playing or phrase playing of the instrument;

assigning means (14) assigning the key data from the keyboard to either the tone generating means (15) or to the phrase playing means (17) of the instrument, upon receipt of an instruction from said instructing means; and

output means (19) for connecting the electronic musical instrument to the external device, said output means being coupled to said tone generating means and to said phrase playing means and being responsive to said assigning means for sending to the external device either key data, outputted by the tone generating means, or phrase playing control data specifying a phrase pattern and outputted by the phrase playing means, said phrase playing control data being obtained through a predetermined conversion of said key data from said keyboard.

5,369,219

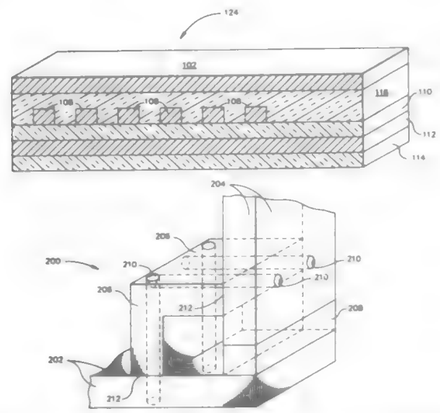
MULTI-LAYER PRINTED CIRCUIT BOARD APPARATUS AND METHOD FOR MAKING SAME

Robert Q. Kerns, Blanchester, Ohio, assignor to Multimedia Design, Inc., Blanchester, Ohio

Division of Ser. No. 717,341, Jun. 18, 1991, Pat. No. 5,196,087. This application Feb. 10, 1993, Ser. No. 16,043

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—250 **23 Claims**



1. A multi-layer printed circuit board, wherein said printed circuit board comprises at least three layers of conductive traces, and has conductive traces that are between 0.0127 mm and 0.0508 mm in width, which are spaced apart by between 0.0127 mm and 0.0508 mm.

5,369,220

WIRING BOARD HAVING LAMINATED WIRING PATTERNS

Keizo Harada; Takatoshi Takikawa; Takao Maeda; Shunsuke Ban, and Shosaku Yamanaka, all of Itami, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

PCT No. PCT/JP92/00198, § 371 Date Oct. 23, 1992, § 102(e) Date Oct. 23, 1992, PCT Pub. No. WO92/15117, PCT Pub. Date Sep. 3, 1992

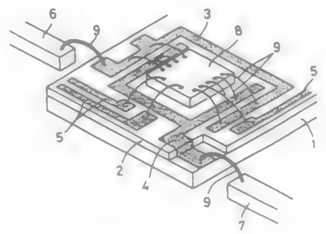
PCT Filed Feb. 24, 1992, Ser. No. 949,474

Claims priority, application Japan, Feb. 25, 1991, 3-030185; Mar. 20, 1991, 3-056522; Mar. 20, 1991, 3-056556

Int. Cl.[5] H01L *39/02, 23/48, 29/46, 29/62*

U.S. Cl. 174—257 **12 Claims**

1. A wiring board comprising a metal plate, a thin film of a dielectric disposed over a surface of said metal plate, and wiring patterns on said dielectric layer, each of said wiring patterns being a laminate including a conductive layer of aluminum, an adhesive layer, a diffusion barrier layer, and a corrosion-preventive wire bonding layer of gold, and wherein said



adhesive layer is a chromium layer, a titanium layer or a laminate of chromium and titanium, and said diffusion barrier layer is nickel layer, a copper layer or a laminate of nickel and copper.

5,369,221

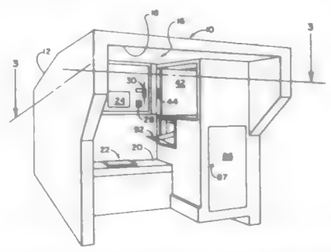
SYSTEM FOR MAILING AND COLLECTING ITEMS

Gary W. Ramsden, Eau Claire, Wis., assignor to U-Ship, USA, Ltd., Eau Claire, Wis.

Division of Ser. No. 903,342, Jun. 24, 1992, which is a continuation-in-part of Ser. No. 683,243, Apr. 10, 1991, Pat. No. 5,233,532. This application Dec. 22, 1993, Ser. No. 171,833

Int. Cl.[5] G01G *19/40*

U.S. Cl. 177—25.15 **8 Claims**



1. An outdoor system for accepting and storing parcel packages for subsequent pickup by a commercial carrier, comprising:

an outer housing having inner and outer surfaces, said inner surface defining a storage area which is constructed and sized to store a multiplicity of parcels;

a scale for weighing a parcel which a customer intends to ship;

means for inputting information relating to the destination of the parcel from the customer;

control means for calculating a shipment fee for the parcel, said control means being in communication with said scale and said information inputting means;

deposit means, enabled by said control means, for permitting a customer to securely deposit the parcel into said storage area; and

climate control means for maintaining said storage area at a safe temperature which will not damage the parcel.

5,369,222

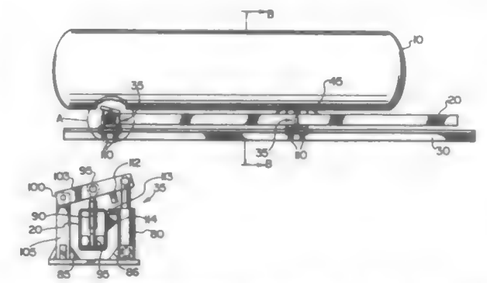
MOBILE WEIGHING SYSTEM

William P. Strelioff, Box 3 Site 5 RR6, Saskatoon, Sask., Canada 57K 3J9

Filed May 24, 1993, Ser. No. 64,909

Int. Cl.[5] G01G *19/08, 19/02*

U.S. Cl. 177—136 **9 Claims**



1. A mobile weighing system for mounting onto a truck or trailer to weigh a load carried by said truck or trailers, said weighing system comprising:

(a) a load support frame for supporting a load;

(b) a truck or trailer frame below said load support frame; and,

(c) a plurality of weighing cells, each said weighing cell comprising a lifting mechanism having an extended position and a rest position, a vertically disposed tension load cell and a linkage assembly coupling said lifting mechanism and said load cell to cause an upward force on a top end of said load cell when said lifting mechanism is in an extended position, the bottom end of said load cell being coupled to said support frame whereby said support frame is suspended by said load cells when said lifting mechanisms are in an extended position;

whereby said weighing cells are mounted over said truck or trailer frame in such a manner as to bear an approximately even distribution of said load and said lifting mechanisms and linkage assemblies of said weighing cells are coupled to said truck or trailer frame.

5,369,223

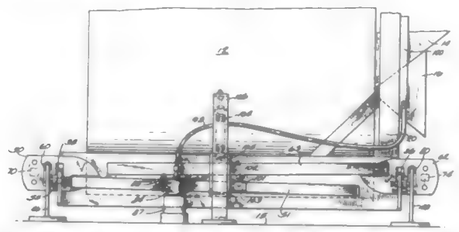
APPARATUS FOR WEIGHING AND PROCESSING MATERIALS

Vernon R. Berg, Jr., and Monte W. Haugland, both of Marshfield, Wis., assignors to Sand Mark Corp., Marshfield, Wis.

Filed May 4, 1992, Ser. No. 877,758

Int. Cl.[5] G01G *5/04*

U.S. Cl. 177—208 **12 Claims**



1. Apparatus for processing fluid materials and having a means for weighing incorporated therein comprising:

a receptacle for containing and processing fluid materials, said fluid materials having a weight to be determined,

a frame for supporting said receptacle on a base surface,

a weighing mechanism supporting said frame comprising at least one spring supported on said base surface yieldable proportionally in response to weight of said fluid materials contained in said receptacle,

at least one arm pivotably supported on said base surface, said arm supporting said frame and being connected to said spring and being movable in response to movement thereof,

an enclosed collapsible container having circumferentially corrugated cylindrically-shaped sidewalls and a first closed end and a second closed end defining an enclosed interior,

said first closed end being supported by a fixed support,

said second closed end being aligned and in contact with said arm,

a conduit having a first end and a second end, the first end thereof being in fluid flow communication with said enclosed interior of said collapsible container,

the second end of said conduit being visually transparent, vertically aligned and open to ambient atmosphere,

a liquid contained in a confined space defined by said interior of said collapsible container and said conduit, said liquid extending into said vertically aligned second end of said conduit to a height corresponding to a weight of the fluid materials in said receptacle, and

a visually readable scale for reading said height of said liquid contained in said vertically aligned end of said conduit, said scale being calibrated to produce readings indicative of said weight of said fluid materials contained in said receptacle.

5,369,224

ELECTRONIC MUSICAL INSTRUMENT PRODUCING PITCH-DEPENDENT STEREO SOUND

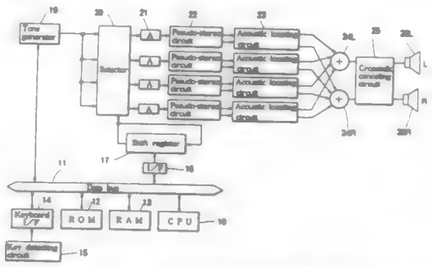
Tomomi Miyata, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 18, 1993, Ser. No. 80,408

Claims priority, application Japan, Jul. 1, 1992, 4-174182

Int. Cl.[5] G10H *1/02*

U.S. Cl. 84—662 **20 Claims**



13. A stereophonic function imparting circuit for an electronic musical instrument comprising:

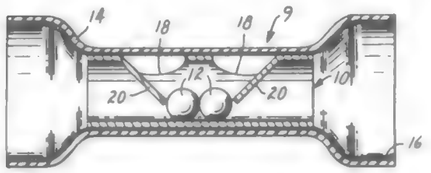
a key detecting circuit which determines if a key is actuated;

a tone generator which generates a monaural tone signal having a pitch corresponding to an actuated key;

a selector circuit, coupled to the tone generator, which outputs the monaural tone signal in a selected one of a plurality of pitch ranges, the selected pitch range being determined by the pitch corresponding to the actuated key; and

a plurality of range channels, one for each of the pitch ranges, coupled to the selector circuit to impart to the monaural tone signal in the selected pitch range stereophonic characteristics determined by the selected pitch ranges.

5,369,225
WIRE CONNECTOR
Gary S. Natwig, Austin; John S. Young, Leander, and Robert B. Ericson, Austin, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 20, 1993, Ser. No. 17,852
Int. Cl.[5] H01R 4/02, 43/02
U.S. Cl. 174—84 R 23 Claims

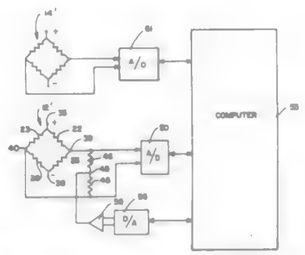


1. A wire connector for making an electrical connection between a plurality of wires and forming an insulated connection comprises:
a hollow tubular conductive member of electrically conductive metal having self actuated wire retaining means formed from the material of the conductive member, positioned adjacent the ends of the tubular member and extending into the tubular member for affording wire retention for wires inserted into the tubular member,
a mass of solder positioned within said tubular member generally centrally thereof between its ends and the wire retaining means, and
a shrinkable sleeve positioned about the tubular member with the tubular member positioned generally midway between the ends thereof and with the inner diameter of the shrinkable sleeve fitted to the outside surface of the tubular member to enclose the tubular member and provide an insulative cover.

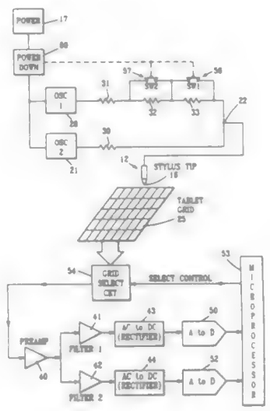
22. A method of making a wire connector comprising the steps of
cutting into a sheet of electrically conductive material, having two opposite sides and two ends, to make a pair of generally U-shaped cuts with the open ends of the U positioned oppositely of each other and opening toward the ends of the sheet,
forming the sheet into a hollow cylinder,
joining the opposite sides to form a seam to hold the sheet in the cylindrical shape,
depressing the section of material within each of the pair of U-shaped cuts into the cylinder to form tabs directed toward each other within the cylinder,
placing a mass of solder into the cylinder through the cut and depressed area of the material to position the solder between the tabs, and
inserting the cylinder into a shrinkable sleeve to be positioned between the ends thereof.

5,369,226
LOAD SHIFT COMPENSATION FOR WEIGHING APPARATUS
Neil C. Griffen, Westerville, Ohio, and Richard C. Loshbough, Spartanburg, S.C., assignors to Mettler-Toledo, Inc., Worthington, Ohio
Filed Apr. 29, 1993, Ser. No. 55,719
Int. Cl.[5] G01G 3/14, 3/08; G01L 1/22
U.S. Cl. 177—211 9 Claims

1. Weighing apparatus comprising at least one beam having a longitudinal axis and an axis transverse thereto, support means connected to one end of the beam, a receiver supported by the other end of the beam, strain gages mounted on the beam, means connecting the strain gages in a bridge circuit, a series resistor network connected across the output of the bridge circuit, and means connected to a junction point of the resistor network for establishing a predetermined signal to cause the output of the bridge circuit to be substantially independent of the position of a load on the load receiver in directions parallel to one axis of the beam.

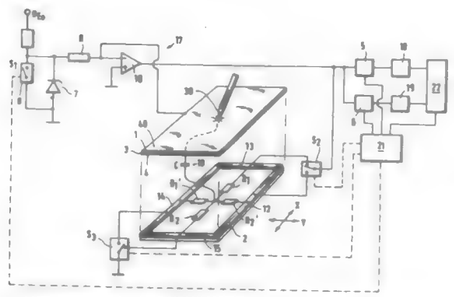


5,369,227
STYLUS SWITCH STATUS DETERMINATION IN A DIGITIZER TABLET HAVING A CORDLESS STYLUS
Thomas L. Stone, Beacon Falls, Conn., assignor to Summagraphics Corporation, Austin, Tex.
Filed Jul. 22, 1992, Ser. No. 918,579
Int. Cl.[5] G08C 21/00
U.S. Cl. 178—18 23 Claims



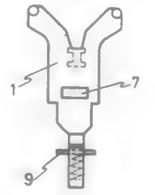
1. A cordless pointing device for use with a position determining system, comprising:
a switch having a manually changeable status; and
means for generating signals which the position determining system uses to determine the position of said pointing device relative to a surface of the position determining system and the status of said switch; said signal generating means generating first and second signals at first and second different frequencies and a composite signal from said first and second signals which is receivable by the position determining system;
said signal generating means including means responsive to a change in status of said switch for altering a parameter of at least one of said first and second signals while maintaining a parameter of said composite signal substantially constant.

5,369,228
DATA INPUT DEVICE WITH A PRESSURE-SENSITIVE INPUT SURFACE
Benedikt P. Faust, Bonn, Germany, assignor to Signagraphics Corporation, Los Gatos, Calif.
Filed Nov. 25, 1992, Ser. No. 981,353
Claims priority, application Germany, Nov. 30, 1991, 4139577
Int. Cl.[5] G08C 21/00
U.S. Cl. 178—18 15 Claims



1. A pressure sensitive data input device, comprising
an input surface adapted to be locally exposed to an amount of pressure at a pressure point,
a resistive layer comprising at least two pairs of mutually spaced electrodes, each of the at least two pairs of mutually spaced electrodes being arranged in opposed, spaced relationship,
a deformable layer arranged between the input surface and the resistive layer, the deformable layer comprising at least one of an electrically insulating layer and a dielectric layer, the deformable layer having a thickness that, when an amount of pressure is applied to the input surface at the pressure point, is locally reducible to a non-zero thickness at the pressure point,
an electrode layer spaced from the resistive layer by at least the deformable layer, the distance between the electrode layer and the resistive layer at the pressure point being reducible in relationship to the amount of pressure applied at the pressure point, wherein the deformable layer defines a local capacitance between the electrode layer and the resistive layer at the pressure point and wherein the resistive layer defines corresponding resistances between the pressure point and the at least two pairs of mutually spaced electrodes,
evaluating means, electrically connected to the at least two pairs of mutually spaced electrodes and to the electrode layer, for receiving electric signals from the at least two pairs of mutually spaced electrodes, the electric signals representing the local capacitance and the corresponding electric resistances,
the evaluating means further comprising:
means for evaluating the local capacitance and the corresponding electric resistances and for outputting data indicating the amount of pressure at the pressure point and the position of the pressure point relative to the input surface,
a filtering circuit connected to the electrode layer and to at least one electrode of the at least two pairs of mutually spaced electrodes, and
means for generating an output signal upon application of an input voltage to the filtering circuit, the output signal indicating the amount of pressure at the pressure point and the position of the pressure point relative to at least two electrodes of the at least two pairs of mutually spaced electrodes.

5,369,229
MECHANICAL INTERLOCK FOR CONTACTOR BANKS
Juan Agut Sanz, Terrassa, Spain, assignor to Agut, S.A., Terrassa, Spain
Filed Feb. 17, 1993, Ser. No. 19,125
Claims priority, application Spain, Feb. 18, 1992, 9200351
Int. Cl.[5] H01H 9/26
U.S. Cl. 200—50 C 8 Claims



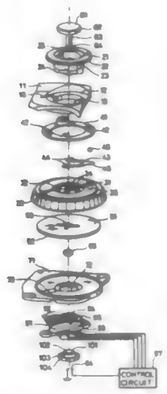
1. A mechanical locking device for contactor banks comprising:
a frame;
a first sliding piece and a second sliding piece being linearly moveable with respect to said frame from a first position where a contactor is switched off to a second position where a contactor is switched on;
a first cam being pivotably connected to said frame, said first cam being operatively connected to said first sliding piece such that said first cam pivots when said first sliding piece moves from said first position to said second position;
a second cam being pivotably connected to said frame, said second cam being operatively connected to said second sliding piece such that said second cam pivots when said second sliding piece moves from said first position to said second position; and
said first cam having a surface which prevents the pivoting of the second cam when said first sliding piece is disposed in said second position, said second cam having a surface which prevents the pivoting of said first cam when said second sliding piece is disposed in said second position.

8. The mechanical locking device for contactor banks, according to claim 1, wherein said sliding pieces include auxiliary floating electric contacts that are placed in connection with terminals mounted on the frame when said sliding piece is in said second position.

5,369,230
SWITCH APPARATUS
Masayuki Misawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 9, 1992, Ser. No. 942,405
Claims priority, application Japan, Sep. 13, 1991, 3-96350[U]
Int. Cl.[5] H01H 9/00; G03B 7/00
U.S. Cl. 200—52 R 20 Claims

1. A switch apparatus useable with a camera, comprising:
an indicating member affixed to an external surface of the camera, said indicating member being rotatably mounted to an external member which is shaped to conform to a contour of the camera;
a rotatable operation member located below said external surface of the camera and having an operating portion that is exposed from a side surface of the camera, said rotatable operation member being operated to rotate said indicating member;

means for producing a first signal representing a rotational position of said rotatable operation member; and



a push button movable through an opening in said indicating member for producing a second signal.

5,369,231

QUICK-RESPONSE ACCELEROMETER WITH INCREASED CONTACT DWELL TIME

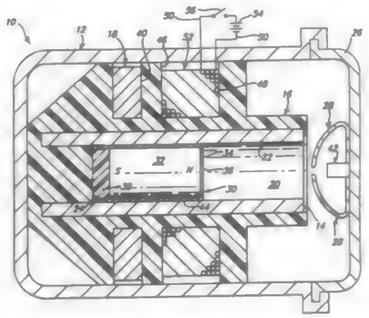
Steven J. Anderson, Willis, and Leonard W. Behr, Pontiac, both of Mich., assignors to Automotive Systems Laboratory, Inc.

Continuation-in-part of Ser. No. 577,485, Sep. 5, 1990, Pat. No. 5,149,925. This application Sep. 22, 1992, Ser. No. 949,786

The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.

Int. Cl.[5] G01P *15/135;* **H01H** *35/14*

U.S. Cl. 200—61.45 M **8 Claims**



1. An accelerometer comprising:

a housing having a cylindrical passage formed therein;

an annular magnetically-permeable element secured to said housing so as to encircle a first longitudinal portion of the passage;

a cylindrical magnetic sensing mass located within the passage, said sensing mass magnetically-interacting with said element so as to be magnetically biased towards a first position within the passage, said first position being characterized in that a longitudinal portion of said sensing mass is situated within said first portion of the passage, said sensing mass being displaced from said first position towards a second position within the passage in response to an accelerating force exceeding said magnetic bias, wherein said magnetic bias varies with displacement of said sensing mass, said magnetic bias being a first value when said sensing mass is in said first position, a second value when said in an intermediate position in said passage intermediate said first and second positions, and a third value when said sensing mass is in said second position, said second value being greater than said first value, and said third value being greater than said first value but less than said second value; and

switch means on said housing responsive to said sensing mass when said sensing mass is displaced to said second position within the passage.

5,369,232

DRIVER SIDE AIRBAG MODULE COVER AND HORN SWITCH

F. Paul Leonelli, Roy, Utah, assignor to Morton International, Inc., Chicago, Ill.

Filed Jul. 23, 1993, Ser. No. 96,559

Int. Cl.[5] H01H *9/00*

U.S. Cl. 200—61.54 **4 Claims**



1. A relatively flexible driver's side airbag module cover having a front outer surface and a rear inner surface which comprises:

a horn actuation area defined by a thinned area on the rear inner surface of said cover and depressible from its front surface by a driver;

a membrane type horn switch mounted behind said horn actuation area within and substantially filling said thinned area on the rear surface of said cover; and

a substantially rigid back panel mounted to the rear surface of said cover, overlapping said thinned area and enclosing said horn switch therebetween.

5,369,233

SAFETY PRESSURE SENSOR, IN PARTICULAR FOR MICROSWITCHES

Cesare Gallone, Via Milano 27, Cornaredo (MI), Italy

Filed Jul. 6, 1993, Ser. No. 88,195

Claims priority, application Italy, Jul. 24, 1992, MI92 U 000055

Int. Cl.[5] H01H *35/34*

U.S. Cl. 200—83 J **3 Claims**

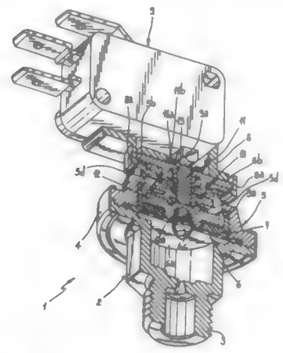
1. In a safety pressure sensor and microswitch combination which includes a base body which is at least partly hollow adapted to be connected to a receptacle containing fluid under pressure, a switching member for the microswitch, and a flexible diaphragm mounted on said base body exposed to said fluid under pressure and acting on the switching member, the improvement comprising:

a protective cap covering said flexible diaphragm mounted on said base body, and

actuating means for the microswitch adapted to transmit movement of the diaphragm to the switching member,

said actuating means comprising a pusher extending through said protective cap and the pusher having one end contacting the switching member and an opposite end, an actuating disc interposed between said opposite end of the pusher and said diaphragm, and a spring located within the cap constructed to urge said actuating disc against the diaphragm,

said actuating disc having a slit therein and said cap having a discharge opening therein facing away from said switching member and said slit and discharge opening communi-



cating with each other and providing a path for the escape of fluid that may collect within the cap.

5,369,234

PERPENDICULARLY-OPENING GROUNDING SECTION SWITCH

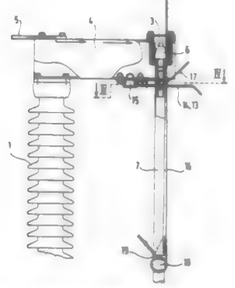
Daniel Demissy, Montreal, Canada, assignor to Gec Alsthom Energie Inc., Laprairie, Canada

Filed May 7, 1993, Ser. No. 57,854

Claims priority, application France, May 11, 1992, 92 05689

Int. Cl.[5] H01H *33/12, 9/38*

U.S. Cl. 200—146 R **2 Claims**



1. A perpendicularly-opening grounding section switch comprising:

an insulating column mounted on a stand;

a metal support fixed on a top portion of said insulating column and carrying a current terminal;

a female contact disposed at one end of said metal support;

a drive arm having a first end and a second end, said second end being electrically connected to the stand which is at ground potential;

a male contact disposed at said first end of said drive arm and for cooperating with said female contact;

section switch drive means for imparting an up and down motion to said drive arm and also for imparting a rotary motion to said drive arm so as to swing said drive arm through an angle of amplitude of approximately 90°, said drive arm being operative to move between a section switch closed position where said male contact and female contact are engaged and a section switch open position where said male contact and female contact are separated;

a pair of parallel metal horns fixed to said metal support and in electrical contact therewith, said metal horns being spaced apart by such a gap as to rigidly clamp against said first end of said drive arm in a vicinity of said male contact when said drive arm is in said section switch closed position;

a flexible metal whip having one end fixed at a position on said drive arm and extending along said drive arm when said drive arm is in said section switch closed position; and

a stationary guide piece fixed to said metal support and defining a fixed point along which said whip is constrained to slide while said drive arm is being swung by said section switch drive means to said section switch open position where said male contact moves away from said female contact;

whereby when said male contact separates from said female contact as said drive arm is moved to said section switch open position, electrical current is diverted firstly to said pair of metal horns which remain in contact with said drive arm for a predetermined distance, and subsequently to said whip as said drive arm separates from said pair of metal horns, said whip remaining in electrical contact with said guide piece until a distance between said male contact and said female contact reaches a maximum.

5,369,235

PROCESS FOR MANUFACTURING A CONTACTING DEVICE, CONTACTING DEVICE AND ITS USE

Horst Hendel, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

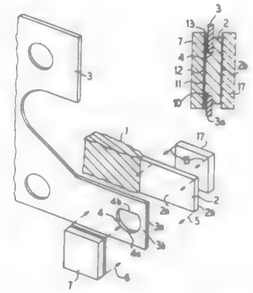
PCT No. PCT/DE90/00431, § 371 Date Apr. 23, 1992, § 102(e) Date Apr. 23, 1992, PCT Pub. No. WO91/06965, PCT Pub. Date May 16, 1991

PCT Filed Jun. 5, 1990, Ser. No. 849,406

Claims priority, application Germany, Oct. 24, 1989, 3935773

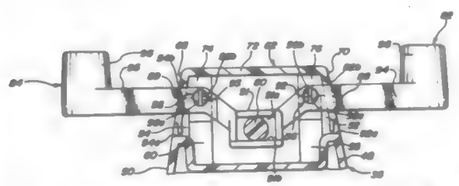
Int. Cl.[5] H01H *1/06, 11/04;* **B21D** *39/00*

U.S. Cl. 200—275 **12 Claims**



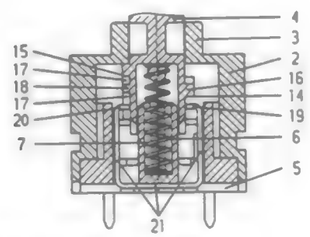
1. A process for manufacturing a contacting device comprising the steps of: guiding an end section of an electrical connecting line to a first flat side of a leaf-shaped contact support, forcing the end section through a recess of the contact support and connecting the end section in an electrically conductive fashion to a contacting piece on a second flat side lying opposite the first flat side, the end section of the connecting line being placed parallel with a pressed-flat longitudinal side on the first flat side of the contact support, covering the recess on all sides, an extension being stamped out of the end section of the connecting line perpendicularly to the first flat side through the recess of the contact support, and during the stamping process the contact support serving as a shaping tool with a contour of the recess.

5,369,236
CONTROL SWITCH ARRANGEMENT FOR ORBITAL POLISHER
Richard C. Nickels, Jr., Hampstead, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Oct. 1, 1992, Ser. No. 954,814
Int. Cl.[5] H01H *3/00*
U.S. Cl. 200—329 22 Claims



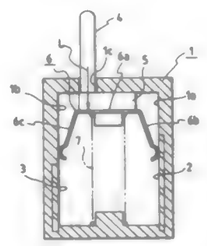
1. An electrical control device for an electrical tool, said device comprising:
a housing;
electrical switch means connected to said housing for controlling said tool, said electrical switch means including a projecting actuator having opposite first and second sides and manually movable into either of two "on" positions and a stable "off" position; and
actuating means, including at least one pair of elongated levers, for selectively moving said actuator between said "on" and "off" positions, each of said levers being mounted to pivot around a respective axis relative to said housing and having, respectively, a manually actuatable first end portion which extends transversely from its pivot axis, and a collar portion which is connected to said actuator and is movable against each of said first and second sides of said projecting actuator, each of said levers and said actuator moving conjointly.

5,369,237
ELECTRICAL SWITCH
Thomas Mejerl, Rottweil, and Franz Vozeler-Pape, Tuttlingen, both of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Germany
Filed Jan. 27, 1993, Ser. No. 9,754
Claims priority, application Germany, Jan. 28, 1992, 4202214
Int. Cl.[5] H01H *3/42*
U.S. Cl. 200—524 14 Claims



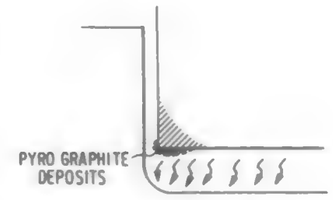
1. An electrical switch comprising
(a) a switch housing;
(b) a stationary electric contact mounted in said switch housing;
(c) an actuator mounted in the switch housing and guided therein for displacements in opposite directions relative to said switch housing to assume several positions; said actuator having opposite first and second surfaces extending parallel to said directions;
(d) first and second guide curves provided in said first and second surfaces, respectively; said first and second guide curves being of unlike course as viewed in said directions;
(e) a movable electric contact carried by said actuator and being in engagement with said stationary electric contact in an on position of said actuator and being separated from said stationary electric contact in an off position of said actuator;
(f) first and second pins extending into said first and second guide curves, respectively, to be guided by said first and second guide pins upon movement of said actuator; and
(g) a resilient connecting element coupling said first and second pins to one another; said connecting element being held in said switch housing such that said connecting element is elastically deformable upon movement of said actuator by forces exerted by said first and second guide curves on said first and second pins, whereby a restoring force is exerted on said first and second pins by said connecting element; said first and second pins cooperating with said first and second guide curves for determining first and second latched positions of said actuator; in said first latched position said stationary and movable electric contacts are in engagement with one another and in said second latched position said stationary and said movable electric contacts are separated from one another.

5,369,238
SPRING-RETURN SWITCH
Toshihisa Hirata, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 17, 1993, Ser. No. 108,203
Claims priority, application Japan, Aug. 20, 1992, 4-058530[U]; Aug. 20, 1992, 4-058531[U]
Int. Cl.[5] H01H *13/14*
U.S. Cl. 200—530 4 Claims



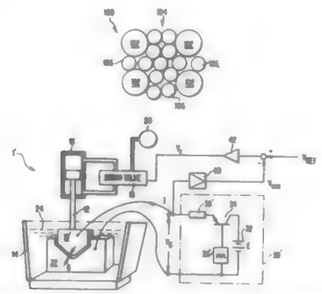
1. A spring-return switch comprising:
a case having a lower wall, an upper wall, and first and second opposing side walls connected between the lower wall and the upper wall, the case defining a central axis extending between the upper wall and the lower wall, the central axis being centrally-located between the first and second side walls, the upper wall defining an opening which is located between the central axis and the first side wall;
a slider slidably supported within the case, the slider including an operating rod extending through the opening in the upper wall;
a movable contact connected to the slider and located within the case, the movable contact including a first arm contacting the first side wall, and a second arm contacting the second side wall; and
a return spring having a first end connected to the bottom wall at a point intersected by the central axis, and a second end connected to the slider.

5,369,239
METHOD AND APPARATUS FOR SINK-TYPE ELECTRICAL DISCHARGE MACHINING WITH CONTROL OF PYROGRAPHITE BUILDUP
Tetsuro Itoh, Rolling Meadows, Ill., assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1992, Ser. No. 884,131
Int. Cl.[5] B23H *1/02, 7/18, 7/16*
U.S. Cl. 219—69.13 16 Claims



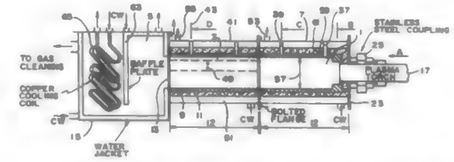
12. A discharge machining apparatus, comprising:
a graphite based electrode;
a power supply coupled to said electrode to create a voltage difference across a gap defined between said electrode and a workpiece;
means for controlling pyrographite buildup on said electrode and erosion of said electrode by controlling the wear ratio of said electrode.

5,369,240
GRAPHITE MATRIX ELECTRODE WITH DISPERSED SILICON PARTICLES
Tetsuro Itoh, Rolling Meadows, Ill., assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 5, 1992, Ser. No. 831,543
Int. Cl.[5] B23H *1/06*
U.S. Cl. 219—69.15 6 Claims



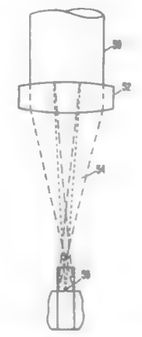
1. An electric discharge machining apparatus for machining a workpiece including an electrode facing the workpiece across a machining gap between said electrode and the workpiece wherein said electrode machines the workpiece by the development of an electric charge across said machining gap toward the workpiece said electrode comprising:
means for introducing free silicon particles into said machining gap by releasing said free silicon particles out of surface regions of said electrode, to provide a plurality of discharge paths for said electric charge developed at said electrode, and wherein said means for introducing said free silicon particles into said machining gap comprises an electrode structure in the form of first particles of silicon dispersed in a continuous matrix of second particles of a low-wear material.

5,369,241
PLASMA PRODUCTION OF ULTRA-FINE CERAMIC CARBIDES
Patrick R. Taylor, and Shahid A. Pirzada, both of Moscow, Id., assignors to Idaho Research Foundation, Moscow, Id.
Continuation of Ser. No. 658,649, Feb. 22, 1991, abandoned.
This application Nov. 15, 1991, Ser. No. 792,790
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.47 17 Claims



1. An apparatus for producing relatively uniform sized ultra-fine pure ceramic carbides comprising:
(a) a plasma torch for heat treating materials, said plasma torch producing a plume hot enough to vaporize particulate feed and disassociate gases included in said materials;
(b) a reactor chamber for receiving said plasma torch plume and for receiving and heat treating materials to be heat treated, said reactor chamber having a plurality of separate reactor chamber zones and means for independently controlling temperatures in said plurality of separate reactor chamber zones, the temperatures of said plurality of separate reactor chamber zones decreasing from a first reactor temperature zone including the plasma torch to a final reactor temperature zone including a collector; and
(c) a collection chamber including a heat exchanger, said heat exchanger at least partially disposed in the interior of the collection chamber, for rapid cooling of said materials heat treated by said reactor chamber by heat exchange with a circulating fluid passing through said heat exchange to prevent re-oxidation of said materials and for collecting said materials, said collection chamber removing sufficient thermal energy from said gases and solids to prevent re-oxidation.

5,369,242
SPLIT BEAM LASER WELDING APPARATUS
Stephen C. Hatfield, and Richard P. Broders, both of Granby, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 8, 1993, Ser. No. 162,888
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 14 Claims



1. A system for performing laser welding, comprising:
an optical lens having a top surface for receiving an incom-

ing laser beam and a having a bottom surface for emitting a plurality of beam segments;

said top surface comprising a planar central surface surrounded by four angled surfaces; and

said bottom surface comprising a convex surface;

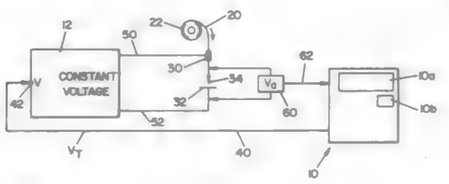
wherein said planar central surface and said four angled surfaces divide said incoming laser beam into five beam portions, said five beam portions being focused and directed by said convex surface onto a respective five welding locations.

5,369,243

METHOD AND SYSTEM FOR DETERMINING OPERATING CHARACTERISTICS OF ARC WELDING WIRE

Arthur Kramer, Solon, and Boris Kahn, Beachwood, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed Sep. 7, 1993, Ser. No. 117,539
Int. Cl.[5] B23K *9/095*
U.S. Cl. 219—130.01 **14 Claims**



1. Method for locating a voltage sensitive parameter of an electric arc welding wire, which parameter is indicative of the welder perceived welding characteristics of said filler wire, said method comprises the steps of:

(a) feeding said wire toward a workpiece;

(b) applying a voltage between said filler wire and said workpiece whereby a welding arc is created between said filler wire and said workpiece to melt and deposit said filler wire onto said workpiece by a voltage sensitive arc welding procedure;

(c) gradually changing said applied voltage whereby said welding procedure shifts through a transfer region and between spray and globular welding;

(d) detecting the actual voltage between the wire and workpiece as said applied voltage is changed;

(e) sensing each time when said actual voltage decreases below a selected threshold voltage;

(f) averaging the sensed number of times;

(g) comparing said sensed number of times to said applied voltage, where said sensed number of times function of said applied voltage and detecting the applied voltage value when the averaged sensed number of times equals a selected number; and,

(h) selecting said selected number to have a value indicative of said welding procedure being in said transfer region.

5,369,244

FLUX CORED ARC WELDING ELECTRODE

Karl J. Kulikowski, Cleveland Hts., and Robert P. Munz, Jefferson, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 806,777, Dec. 12, 1991, Pat. No. 5,225,661, which is a continuation of Ser. No. 608,300, Nov. 2, 1990, abandoned, which is a division of Ser. No. 405,727, Sep. 11, 1989, Pat. No. 5,003,155, and a continuation-in-part of Ser. No. 501,167, Mar. 29, 1990, Pat. No. 5,118,919, which is a continuation-in-part of Ser. No. 495,696, Mar. 19, 1990, Pat. No. 5,055,655, which is a continuation-in-part of Ser. No. 405,727, Sep. 11, 1989, Pat. No. 5,003,155. This application Oct. 30, 1992, Ser. No. 969,122
Int. Cl.[5] B23K *35/22*
U.S. Cl. 219—145.22 **43 Claims**

1. A flux cored arc welding electrode of the type used with external shielding gas, said electrode comprising an outer ferrous sheath and a particulate fill material comprising an acidic flux system and alloying agents with the fill material having the following constituents:

(a) an arc stabilizer;

(b) titanium dioxide;

(c) calcium fluoride;

(d) an alloying system of 0–4.0 percent by weight of electrode selected from the class consisting of aluminum silicon, titanium, carbon and manganese;

(e) iron to control the percentage of fill; and,

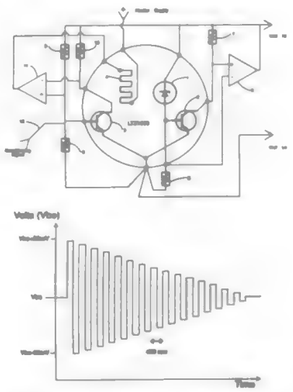
(f) 0.2 to 1.0 percent by weight of electrode polytetrafluoroethylene powder.

5,369,245

METHOD AND APPARATUS FOR CONDITIONING AN ELECTRONIC COMPONENT HAVING A CHARACTERISTIC SUBJECT TO VARIATION WITH TEMPERATURE

John R. Pickering, Alderford, United Kingdom, assignor to Metron Designs Ltd., Alderford, United Kingdom

Filed Jul. 30, 1992, Ser. No. 922,989
Claims priority, application United Kingdom, Jul. 31, 1991, 9116539.9
Int. Cl.[5] H01L *27/00, 49/00*
U.S. Cl. 219—209 **32 Claims**



1. A method of conditioning an electronic component having a characteristic subject to distortion following a change in temperature, wherein, prior to operating the component at a given temperature, the temperature of the component is controlled to vary relatively to said given temperature in such a direction and for such a period of time as to remove any inherent change in said characteristic due to temperature hysteresis effects, wherein said component is included in an electronic

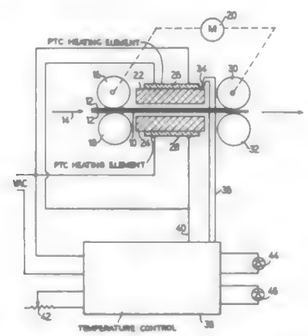
circuit, and the circuit is caused to operate during said controlled variation of temperature.

5,369,246

TEMPERATURE CONTROL FOR LAMINATOR

Nicholas M. Nanos, Morton Grove, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Aug. 16, 1993, Ser. No. 107,925
Int. Cl.[5] F27B *9/06*
U.S. Cl. 219—388 **3 Claims**



1. In a laminator apparatus having at least one heating plate and a control circuit, the laminator apparatus comprising:

a temperature sensor mounted on the at least one heating plate;

a sensing amplifier having first and second sensing inputs and an output, said first input connected to said temperature sensor, said sensing amplifier emitting an alternating signal having a proportionally controlled duty cycle from said output when a signal at said first sensing input exceeds a reference level determined by said second sensing input, said sensing amplifier inhibiting emission of said alternating signal when said signal as said first sensing input is below said reference level;

a plurality of ceramic heating elements connected in parallel and mounted on said at least one heating plate, said plurality of ceramic heating elements each a positive temperature characteristic;

a triac having a gate connected to an output of said sensing amplifier, and transmitting leads connected in series with said plurality of ceramic heating elements to control application of power to said ceramic heating elements;

adjustment means connected to said first input of said sensing amplifier for adjusting a temperature at which said alternating signal is inhibited;

a comparator having a first input at a reference level and a second input connected to said temperature sensor;

a ready condition indicator connected to an output of said comparator to indicate a predetermined temperature condition sensed by said temperature sensor;

at least one pair of rollers mounted to move an item to be laminated past a position adjacent to said at least one heating plate;

a motor connected to drive said at least one pair of rollers; and

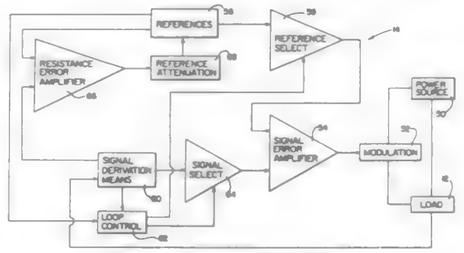
means for selectively operating said motor when said ready condition indicator indicates said predetermined temperature condition.

5,369,247

SELF-REGULATING ELECTRICAL HEATER SYSTEM AND METHOD

Frank A. Doljack, 750 Montevino Dr., Pleasanton, Calif. 94566-6318

Filed Oct. 29, 1992, Ser. No. 968,169
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—485 **14 Claims**



1. A self-regulating heater, comprising:

resistance means for converting electrical power to thermal energy, said resistance means having a negative temperature coefficient of resistance; and

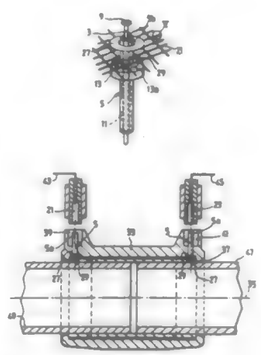
power supply means for supplying electrical power to said resistance means; said power means including feedback control means for controlling the electrical power supplied to said resistance means along a first path bounded by second and third paths as a function of the real time energy consumption rate of said resistance means, said second path defined by constant voltage, with a cross-over to constant current when the power output reaches a maximum, and said third path being defined by constant power with a cross-over to maximum current when the power supply reaches maximum current.

5,369,248

ELECTRO-WELDABLE CONNECTING PIECE HAVING CONNECTION TERMINALS AND ITS METHOD OF MANUFACTURE

Denis Dufour, Franconville, and Martine Brunet, Groslay, both of France, assignors to Gaz de France, Paris, France

Filed Aug. 31, 1993, Ser. No. 113,827
Claims priority, application France, Sep. 1, 1992, 92 10450; European Pat. Off., Aug. 23, 1993, 93 402085
Int. Cl.[5] H05B *3/58*
U.S. Cl. 219—541 **10 Claims**



1. A connecting device for connecting two pipes therebetween, said pipes being at least partly made of a heat-weldable thermoplastic material, said connecting device comprising:

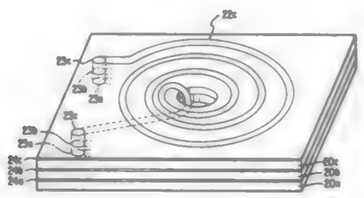
a moldable body made of a heat-weldable thermoplastic material including a resistive element and connection terminals electrically connected to said resistive element;
said resistive element having a mesh structure comprising an electrical wire for heating said thermoplastic material of the body and welding it with the thermoplastic material of the pipes;
said resistive element being embedded in the thermoplastic material of said device body;
said connection terminals each being riveted through the mesh of said resistive element, and each terminal being partially embedded and molded within the thermoplastic material of said device body and extending therethrough so as to emerge outwardly on an outer surface thereof; and
wherein each of said terminals includes a tubular rivet body made of an electrically conductive material so as to be an electrical connector, said tubular rivet body including a collar integrally formed with a hollow shaft and a flanged portion bent over said collar for immobilizing said resistive element between said collar and flanged portion.

5,369,249

INDUCTOR ARRANGEMENT FOR AN INDUCTION HEATING APPARATUS

Kyung A. Kwon, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 10, 1992, Ser. No. 926,437
Claims priority, application Rep. of Korea, Aug. 8, 1991, 91-13724
Int. Cl.[5] H05B *6/44*
U.S. Cl. 219—624 **11 Claims**



1. An inductor arrangement for an induction heating apparatus comprising:
a substrate made of an insulating material;
a copper coated line group formed on said substrate, wherein said copper coated line group forms a spiral and comprises a plurality of parallelly spaced copper coated fine lines;
a pair of power source terminals formed on both ends of said copper coated line group, wherein all of one ends of said copper coated fine lines are connected to one of said pair of power source terminals and all of the other ends of said copper coated fine lines are connected to other of said pair of power source terminals.

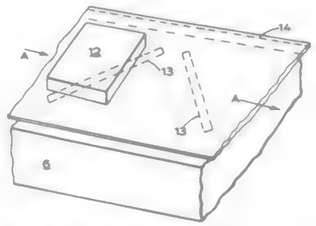
5,369,250

METHOD AND APPARATUS FOR UNIFORM MICROWAVE HEATING OF AN ARTICLE USING RESONANT SLOTS

Roger J. Meredith, Rutland, England, assignor to APV Corporation Limited, London, United Kingdom

Filed Sep. 25, 1992, Ser. No. 950,953
Claims priority, application United Kingdom, Sep. 27, 1991, 9120589.9; Mar. 20, 1992, 9206162.1
Int. Cl.[5] H05B *6/72, 6/78*
U.S. Cl. 219—691 **17 Claims**

1. A method of heating an article having a known dielectric value using microwave energy, said method comprising:
providing a microwave emission means formed with at least one microwave emission slot for emitting microwave radiation;
exciting said microwave emission means with a microwave generator capable of producing microwave radiation at a microwave excitation frequency;
dimensioning said slot such that when said article of known dielectric value is placed in a close proximal position adjacent to said slot along an outer portion of said microwave emission means, the dielectric nature of the article



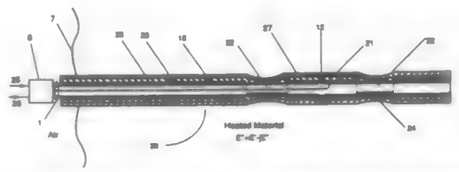
tunes said slot substantially to resonance at said microwave excitation frequency, which results in coupling of microwave radiation between said article and said slot, said slot being substantially out of tune when said article is moved away from said slot;
transporting said article to be heated on a transport means along a predetermined path in a direction of travel so that said article is first moved into said close proximal position and is then transported away from said slot.

5,369,251

MICROWAVE INTERSTITIAL HYPERTHERMIA PROBE

Ray J. King, and Karl V. King, both of Pleasanton, Calif., assignors to KDC Technology Corp., Livermore, Calif.

Filed Sep. 14, 1992, Ser. No. 944,947
Int. Cl.[5] H05B *6/72*
U.S. Cl. 219—695 **25 Claims**



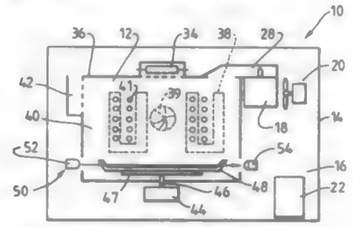
1. A microwave resonator heat applicator probe for selective deposition of microwave power and heating patterns in lossy dielectric materials, comprising:
a coaxial cable having a metal shield and center conductor;
a short circumferential gap in the metal shield of the coaxial cable, the center conductor of the coaxial cable extending immediately beyond the gap, and then shorted to the cable shield;
a thin dielectric substrate sheath covering the cable shield and the gap;
a thin conductive dipole resonator placed on the substrate sheath and positioned near the gap to facilitate inductive coupling between the gap and the resonator;
capacitive terminations at the ends of the conductive dipole resonator, formed by widening the ends of the resonator and reducing the dielectric substrate to a very thin insulator between the widened resonator ends and the coaxial cable shield;
a thin first dielectric superstrate sheath covering the conductive dipole resonator and capacitive terminations;
a thin conductive strip placed on the first dielectric superstrate and extending parallel to the dipole resonator so as to partially cover the resonator;
a thin second dielectric superstrate sheath covering the entire probe assembly.

5,369,252

COOKING APPLIANCE AND METHOD WITH A LIGHT SENSOR

Tomoyuki Kondo, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 4, 1993, Ser. No. 71,064
Claims priority, application Japan, Jun. 5, 1992, 4-145379
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—704 **11 Claims**



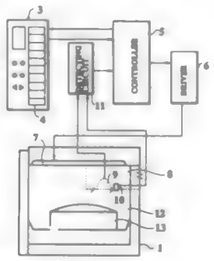
1. A cooking appliance, comprising:
a chamber in which cooking is performed;
means for generating heat in said chamber, said generating means being disposed proximate said chamber;
means for emitting a plurality of pulses of light in sequence across said chamber;
means for detecting the pulses of light disposed in said chamber; and
control means, coupled to the detecting means, for detecting the presence or absence of an object in said chamber by counting the number of pulses of light detected by the detecting means, and for controlling the generating means based on the counted number.

5,369,253

HEATING COOKER

Kyoko Kuwata; Sachiko Endo; Koji Murakami; Yukinobu Takahashi, and Norisuke Fukuda, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 690,846, Apr. 26, 1991, abandoned.
This application Jun. 29, 1993, Ser. No. 83,331
Claims priority, application Japan, Apr. 28, 1990, 2-114389; Jul. 30, 1990, 2-199144
Int. Cl.[5] H05B *6/50*
U.S. Cl. 219—707 **10 Claims**



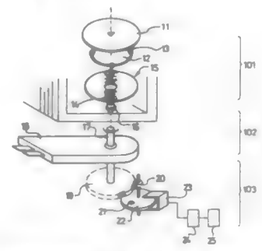
1. A heating cooker comprising:
(a) a cooking chamber having a heater for heating an object;
(b) a gas sensor located in said cooking chamber for detecting gas or vapor evaporating from the object being heated in said cooking chamber, said gas sensor producing an output which is indicative of a quantity of gas or vapor evaporating from the object being heated;
(c) a temperature sensor molted proximate to said gas sensor for detecting a temperature around said gas sensor in said cooking chamber; and
(d) control means for controlling electric supply to said heater,
said control means 1) measuring a first output (V0) of said gas sensor at a start of cooking, 2) measuring a second output (V1) of said gas sensor after the inside of said cooking chamber attains a set temperature which is lower than a lowest cooking temperature specifically associated with the object being heated, 3) adjusting said electric supply to heat the object at a temperature (t2) for a set time, 4) thereafter measuring a third output value (V2) of said gas sensor, 5) determining a kind of the object based on the first and second outputs (V0 and V1) 6) adjusting said electric supply to heat the object at a cooking temperature and for a cooking time which are each calculated based on the first, second, and third output values (V0, V1, and v2).

5,369,254

FOOD WEIGHT DETECTING DEVICE FOR A MICROWAVE OVEN

Kyung A. Kwon, Seoul, Rep. of Korea, assignor to Goldstar Company, Ltd., Seoul, Rep. of Korea

Filed Jan. 12, 1994, Ser. No. 180,363
Claims priority, application Rep. of Korea, Jan. 12, 1993, 93-340
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—708 **16 Claims**



1. A food weight detecting device for a microwave oven, comprising:
a microwave oven turntable on which food is to be placed;
a rotating ring disposed under said turntable and rotatable therewith;
weight sensing means for sensing variation of rotation speed of said rotating ring as weight information of the food, said weight sensing means including a base plate having a protrusion formed thereon with predetermined ascending and descending angles, and at least one roller incorporated with said rotating ring to roll on said base plate;
rotating means for rotating said turnable; and
weight evaluating means for evaluating the weight of the food corresponding to the variation of the rotation speed of said rotating ring provided from said weight sensing means.

5,369,255

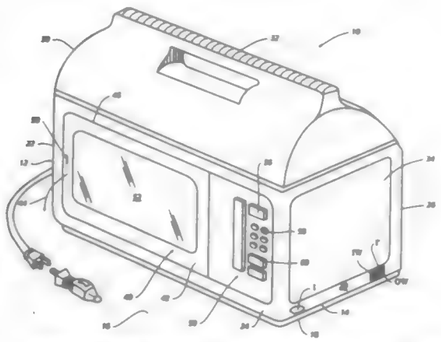
COMBINED MICROWAVE UNIT AND FOOD CARRIER

Shane Sherer, and Daria J. Sherer, both of Hilltop Mobile Home Park, 914 9th St., Bloomington, Ill. 61704-7437

Filed Jun. 18, 1993, Ser. No. 88,119
Int. Cl.[5] H05B *6/64*
U.S. Cl. 219—725 **1 Claim**

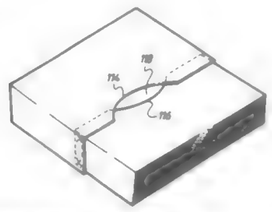
1. A combined microwave unit and food carrier comprising:
A) a housing that includes a base section having insulation therein, a top section fixed to said base section, a handle fixed to said top section, pivot pins pivotally connecting said handle to said base section, said base section including two end walls, a front wall, a rear wall, and a bottom wall, said top section including a handle storage compartment for storing said handle; and
B) a microwave unit in said base section and including

(1) a door in said front wall,
(2) a viewing window in said door,
(3) sealing means on said door sealing said door to said front wall in a manner that permits said door to be opened and closed yet prevents air from entering or leaving said base section when said door is closed,
(4) control buttons on said front wall,
(5) microwave circuitry in said base section connecting



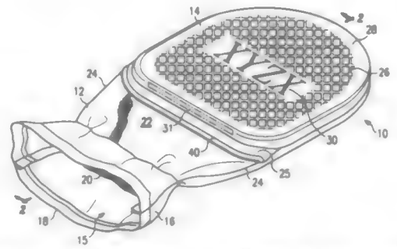
said control buttons to a magnetron in said base section to a source of power, and a power cord connected to said microwave circuitry,
(6) rechargeable batteries contained in a battery compartment in said base section, and
(7) a power adapter means for connecting said power cord to a motor vehicle battery, said power adapter means including means for establishing electrical connection with a cigarette lighter on a motor vehicle.

5,369,256
PACKAGING CAPABLE OF MICROWAVE HEATING
Kenneth D. Woods, Manchester, England, assignor to Waddingtons Cartons Limited, Leeds, England
Filed Nov. 20, 1992, Ser. No. 979,761
Claims priority, application United Kingdom, Apr. 3, 1992, 9207318.8
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—727 **8 Claims**



1. The combination of a closed packaging container and its foodstuff contents in the form of plural items to be microwave cooked when in the container wherein the packaging container is a box comprising
(a) a base tray, said base tray comprising
i) a base panel on which the plural items stand and including a front edge, a rear edge and side edges;
ii) a front flange connected to and extending upwardly from said base panel front edge; and
iii) side flanges connected to and extending upwardly from said base panel side edges respectively;
(b) a top, said top comprising:
i) a top panel of the same size as the said base panel and having a front edge, a rear edge and side edges;
ii) a front flange connected to and extending downwardly from said top panel front edge; and
iii) side flanges connected to and extending downwardly from said top panel side edges respectively, and
(c) a rear wall connecting the rear edge of the base panel and the rear edge of the top panel,
and wherein in the closed condition of the packaging container the flanges of the top and the base tray overlap, and the rear wall is hinged to said top panel so that to open the container the top is hinged relative to the rear wall to a position in which the rear wall and the top panel lie in the same plane and together define a surface of greater area than the base panel alone and onto which the plural items can be spread out so as to be more spread out for more effective microwave cooking.

5,369,257
WINDSHIELD DE-ICING AND DEFROSTING MITT USING MICROWAVE ENERGY HEATING AND METHOD
Robert M. Gibbon, Fort Worth, Tex., assignor to JMK International, Inc., Fort Worth, Tex.
Filed Jul. 8, 1993, Ser. No. 89,202
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—759 **20 Claims**

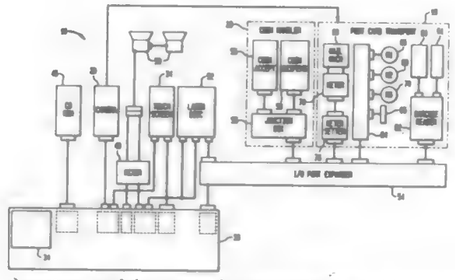


1. Apparatus for removing frozen water from a vehicle windshield or window by hand, comprising:
a cured microwave-heatable layer including, prior to cure:
at least one curable polydiorganosiloxane gum having a Williams plasticity in the range of 120 to 170 mm;
a curing catalyst adaptable to cure said gum; and
microwave-heatable particulate matter dispersed in said gum, said cured microwave-heatable layer having opposed inner and outer faces, an external surface of said apparatus including said outer face of said cured microwave-heatable layer;
an insulative fabric layer which is substantially transparent to microwave energy and which is affixed to said inner face of microwave-heatable layer, said insulated layer adapted to be interposed between said inner face and the hand; and
means for attaching the hand adjacent said insulative layer, said microwave-heatable layer adapted to be heated by microwave energy and then directly applied to a vehicle windshield or window to melt frozen water therefrom.

5,369,258
POSTAGE APPLYING KIOSK
Ronald P. Sansone, Weston; Michael D. O'Hare, Fairfield, both of Conn.; Steven M. Kaye, Bronx, N.Y., and Scott Korowotny, Oxford, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Jul. 29, 1993, Ser. No. 99,367
Int. Cl.[5] G06R *7/08*
U.S. Cl. 235—381 **14 Claims**

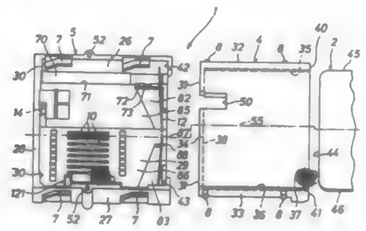
1. A kiosk for applying postage to a mail piece having a bar code thereon, comprising:
a) means for defining a path of travel for a mail piece,

b) means for conveying a mail piece along said path,
c) scanner means located on the path of travel,
d) a bar code reader in communication with said scanner for reading the bar code on a mail piece being conveyed along said path, and



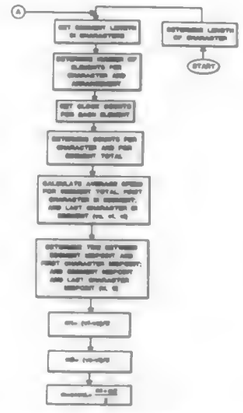
e) postage applying means in communication with said bar code reader for applying postage to a mail piece in response to said bar code reader reading a bar code on a mail piece.

5,369,259
CHIP CARD READER
Robert Bleier, Untergruppenbach, and Hans G. Hubner, Heilbronn, both of Germany, assignors to Amphenol Corporation, Wallingford, Conn.
Continuation of Ser. No. 842,154, May 4, 1992, abandoned. This application Dec. 20, 1993, Ser. No. 169,554
Claims priority, application Germany, Sep. 21, 1989, 3931508
Int. Cl.[5] G06K *7/06*
U.S. Cl. 235—441 **15 Claims**



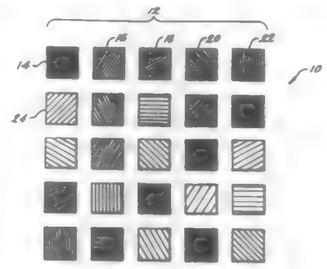
1. A chip card reader comprising a contact support having contact elements and a card receiving means
wherein the contact elements are stationarily mounted in said contact support and said card receiving means is reciprocally mounted in said contact support such that when said chip card is inserted into said card receiving means, said card receiving means is moved together with the chip card towards the contact elements provided in said contact support, and
further comprising a card brake which comes directly into engagement with said card and holds the card in the reading position, said card brake being pivotably mounted such that the brake can follow the downward movement of the chip card so as to avoid having the chip card pushed out of its position with respect to said contact elements.

5,369,260
BAR CODE SCANNING WITH CORRECTION FOR SPOT SPEED VARIATION
Frederick Schuessler, Mt. Sinai, N.Y., assignor to Symbol Technologies, Inc., Bohemia, N.Y.
Filed Apr. 8, 1993, Ser. No. 44,135
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—463 **24 Claims**



11. Apparatus for decoding the output of a bar code scanner of the type used for scanning bar code symbols which have a plurality of characters, each of which comprises a plurality of elements, the output of the scanner representing the time variation of light reflected from a spot moving across the elements of the bar code symbol at a varying speed, said apparatus comprising:
means for receiving a signal comprising a series of values each of which represents the time required for the spot to cross an element in the bar code symbol;
means for processing said series of values to determine a spot-speed profile for at least a portion of said symbol, said profile having non-zero acceleration within at least some of the characters; and
means for adjusting said series of values to lessen the effect of variation in spot speed.

5,369,261
MULTI-COLOR INFORMATION ENCODING SYSTEM
Harry Shamir, 20 Shute Path, Newton Centre, Mass. 02159
Filed Feb. 12, 1992, Ser. No. 834,666
Int. Cl.[5] G06K *7/12*
U.S. Cl. 235—469 **20 Claims**



1. A method for machine-reading data encoded on a medium having a number of regions, each region having a spot with one of a plurality of hues and one of a plurality of intensity

levels, wherein the number of regions includes data regions and reference regions, the reference regions having respective predetermined reference hue and respective predetermined reference intensity, the method comprising the steps of:

determining the hues and the intensity levels of the data regions;

determining the hues and the intensity levels of the reference regions;

comparing the determined hues and intensity levels of the reference regions with the corresponding predetermined reference hues and the predetermined reference intensity levels;

determining an error factor based at least in part on the difference between the determined hue and intensity of at least one reference region and the predetermined reference hue and predetermined reference intensity of at least one reference region; and

applying a correction factor to the determined hue and intensity of at least one data region to obtain an adjusted hue and/or an adjusted intensity, wherein the correction factor is derived at least in part from the error factor.

5,369,262

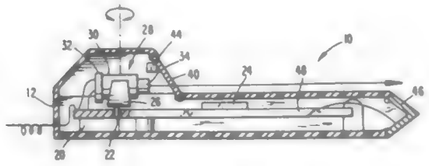
ELECTRONIC STYLUS TYPE OPTICAL READER

Paul Dvorkis, Stony Brook; Ralph Thomas, East Patchogve; David Goren, Ronkonkoma, all of N.Y.; Robert Fuller, Pataskala, Ohio, and Leonard H. Goldner, Cold Spring Harbor, N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Division of Ser. No. 892,889, Jun. 3, 1992. This application Aug. 2, 1993, Ser. No. 100,220

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **12 Claims**



1. An electronic stylus for use with a computer having a digitizer, said stylus comprising:

a light emitter for emitting light for illumination of optically encoded information;

a photodetector for sensing light reflected from the illuminated optically encoded information and producing an electrical signal representative of the optically encoded information;

stylus electronics for providing positional input data by contacting a digitizer tablet with said stylus; and

a stylus housing containing said light emitter, said photodetector and said stylus electronics, said stylus housing having a tip disposed at a fore end of said housing adapted for contact with the digitizer tablet;

wherein said light is emitted from other than said fore end of said housing.

5,369,263

EMBOSSED CARD READER

Parameswaran B. Nair, Acworth; John C. Evans, Atlanta, and James F. Price, Alpharetta, all of Ga., assignors to Microbilt Corporation, Atlanta, Ga.

Filed Oct. 30, 1992, Ser. No. 970,410

Int. Cl.[5] G06K *7/04*

U.S. Cl. 235—448 **14 Claims**

1. An embossed card reader for reading characters embossed on a surface of a card, comprising:

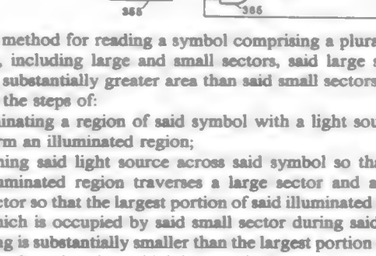
means for moving said card along a path;

a plurality of pins positioned to contact said characters;

said pins comprising an elongated contact portion for contacting said characters and a support portion having a diameter larger than said contact portion;

said pins being supported generally orthogonally to said surface of said card;

a support block including a plurality of support passageways having a diameter for slidably receiving said contact portion of said pins;



a leaf spring comprising a leaf spring body and a plurality of leaf spring fingers, each of said fingers defining a generally triangular shape having a base operatively associated with said leaf spring body and an apex positioned opposite said base, said finger contacting with said support portion of said pin supported in said support block;

said leaf spring comprising an electrical contact switch for making an electrical circuit responsive to the movement of said pin in contact with said characters on said card.

5,369,264

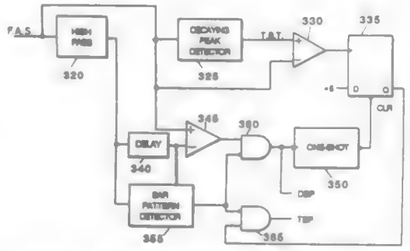
READING BAR CODES WITH A WIDE LASER BEAM

Ralph Rosa, Oakdale; Jay Greenrose, Lindenhurst; Menashe Benzaiel, Westbury; Paul Dvorkis, Stony Brook; Christina S. Barkan, and Edward Barkan, both of Miller Place, all of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation-in-part of Ser. No. 592,021, Sep. 28, 1990, Pat. No. 5,218,190. This application Sep. 25, 1992, Ser. No. 951,562

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **16 Claims**



1. A method for reading a symbol comprising a plurality of sectors, including large and small sectors, said large sectors having substantially greater area than said small sectors, comprising the steps of:

illuminating a region of said symbol with a light source to form an illuminated region;

scanning said light source across said symbol so that said illuminated region traverses a large sector and a small sector so that the largest portion of said illuminated region which is occupied by said small sector during said scanning is substantially smaller than the largest portion of said illuminated region which is occupied by said large sector during said scanning;

collecting light which is reflected from said symbol as said light source scans across said symbol, said collected light varying in intensity as said light source traverses said sectors;

sensing said collected light to generate an analog signal which exhibits peaks, small valleys, large valleys and transitions therebetween as said light source scans said symbol;

generating a digital bar pattern (DBP) signal which includes a pulse for each detected bar;

generating a tall bar pattern (TBP) signal which includes a pulse for each large valley of the analog signal; and

decoding said digital bar pattern signal and said tall bar pattern signal to determine characters encoded into said sectors.

5,369,265

BAR-CODE READER APPARATUS WITH AN AUTOMATIC READ STARTING FUNCTION

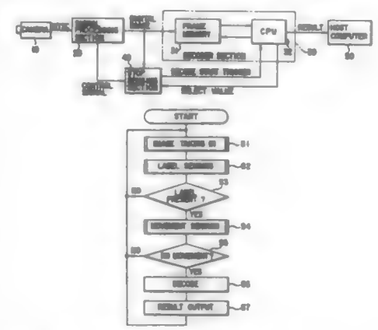
Yutaka Adachi, Sagamihara, and Mitsunori Kubo, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 24, 1993, Ser. No. 66,478

Claims priority, application Japan, May 26, 1992, 4-133688

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **14 Claims**



1. A bar-code reader apparatus comprising:

imaging means for imaging a bar code, the bar code comprising bars and spaces;

sensing means for sensing a movement of an image taken by said imaging means, and for generating a sensing signal responsive to sensed movement of the image; and

control means for controlling the start of a decoding process of a bar code image taken by said imaging means based on said sensing signal from said sensing means.

5,369,266

HIGH DEFINITION IMAGE PICK-UP WHICH SHIFTS THE IMAGE BY ONE-HALF PIXEL PITCH

Shigetoshi Nohda, Kanagawa, and Kakuji Kunii, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

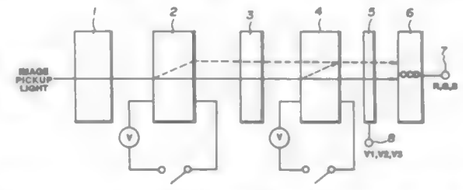
Filed Jun. 10, 1993, Ser. No. 74,426

Claims priority, application Japan, Jun. 11, 1992, 4-152130

Int. Cl.[5] G02F *1/1335*

U.S. Cl. 250—208.1 **4 Claims**

1. A high definition image pickup device comprising, first electro-optical effect means selectively operable in a first mode or a second mode, said first electro-optical effect means being designed for splitting an incident image pickup light into an ordinary light ray and an extraordinary light ray having its optical axis shifted vertically with respect to that of said ordinary light ray for said first mode and for transmitting said incident image pickup light as an ordinary light ray for said second mode, light transforming means for transforming said ordinary light ray from said first electro-optical effect means into an extraordinary light ray and for transforming said extraordinary light ray from said first electro-optical effect means into an ordinary light ray, second electro-optical effect means selectively operable in a first mode or a second mode, said second electro-optical effect means being designed to transmit said ordinary light ray from said light transforming means and to shift the optical axis of said extraordinary light ray vertically with respect to that of said ordinary light ray so that said extraordinary light ray and said ordinary light ray are mixed together for said first mode, said second electro-optical effect means being designed to transmit said extraordinary light ray from said light transforming means for said second mode, and image sensor means for transforming said ordinary



light ray and said extraordinary light ray from said second electro-optical effect means into electrical signals, wherein said image sensor means is operated by non-interlaced scanning, wherein said first and second electro-optical effect means are controlled by an electric signal for alternatingly selecting one or the other of the first and second modes, wherein said first mode or said second mode is selected at a one-field interval, wherein said extraordinary light ray is shifted vertically by a pitch equal to one-half pixel by said first and second electro-optical means in said first mode and said first and second electro-optical means shift said extraordinary light ray in the opposite directions, and wherein said image sensor means is a charge-coupled device.

5,369,267

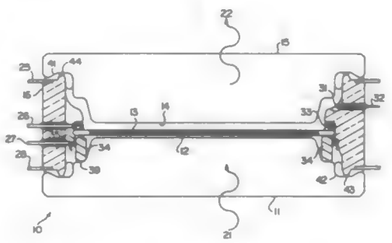
MICROCHANNEL IMAGE INTENSIFIER TUBE WITH NOVEL SEALING FEATURE

David B. Johnson; Allan W. Scott, both of Santa Clara County, and Stephen J. Bartz, San Mateo County, all of Calif., assignors to Intevac, Inc., Santa Clara, Calif.

Filed May 18, 1993, Ser. No. 63,234

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **19 Claims**



1. An image intensifier tube comprising:

a generally tubular housing capable of providing a hermetic seal;

a glass input window for receiving and transmitting incident light;

a photocathode bonded to said input window for generating photoelectrons in response to light transmitted through said input window to said photocathode;

a microchannel plate spaced apart from said photocathode for amplifying photoelectrons transmitted thereto;

a glass output window spaced from said microchannel plate;

a phosphor screen spaced apart from said microchannel plate and disposed on said glass output window to create

a light image output in response to said intensified photoelectrons;

said glass output window for sealing said tube and transmitting said amplified lightimage from said phosphor screen thereon;

said input and output windows being vacuum sealed within said housing by a ring of indium that contacts at least a portion of the interface between each of said windows and said housing, said housing having a pair of raised pointed flanges each positioned along the inner housing surface interfacing said windows, and each being adapted to protrude into the adjacent ring of indium for creating a vacuum seal between said input and output windows and the tube body.

5,369,268

X-RAY DETECTOR WITH CHARGE PATTERN READ-OUT BY TFT SWITCHING MATRIX

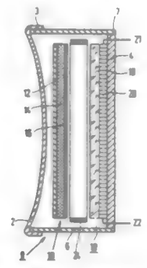
Gerardus Van Aller, Heerlen, Netherlands, and Ulrich Schiebel, Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 951,514, Sep. 25, 1992, abandoned. This application Feb. 15, 1994, Ser. No. 197,105

Claims priority, application European Pat. Off., Sep. 27, 1991, 91202532.7

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 VT **20 Claims**



1. An X-ray detector comprising a vacuum-tight casing within which an input screen and an output screen are contained, said input screen having a luminescent layer for producing light radiation in response to incident X-ray radiation and a photocathode layer for producing photoelectrons in response to the light radiation produced by said luminescent layer, and said output screen being positioned relative to said input screen for receiving incident electrons resulting from the photoelectrons produced by the photocathode layer and having a conversion layer for converting said incident electrons into an electric charge pattern, and a switching matrix fixedly positioned for direct readout of said electric charge pattern.

5,369,269

HUMAN BODY DETECTION SYSTEM

Masahiko Fukuda; Hiromi Numakura, both of Kamakura; Koji Iio, and Akira Hidaka, both of Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1993, Ser. No. 22,120

Claims priority, application Japan, Apr. 21, 1992, 4-126700

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **9 Claims**

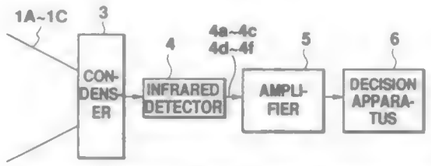
1. A system for detecting a human body, comprising:

(a) a condenser including a plurality of partial detection regions each having an elongated zone, and a plurality of effective detection regions each having a different area and correspondingly contained within each of said partial detection regions, said condenser condensing infrared rays radiated from the human body which may exist within one of said effective detection regions;

(b) an infrared detector for converting the infrared rays condensed on said effective detection regions through said condenser into electric signals;

(c) an amplifier for amplifying the electric signals derived from said infrared detector;

(d) a decision apparatus which detects fluctuation times or frequencies of the electric signals amplified by said amplifier and corresponding to said effective detection regions, specifies the effective detection regions having areas corresponding to thus detected fluctuation times or frequencies, and specifies partial detection regions containing said effective detection regions to judge a position where the human body may exist.



5,369,270

SIGNAL GENERATOR ACTIVATED BY RADIATION FROM A SCREEN-LIKE SPACE

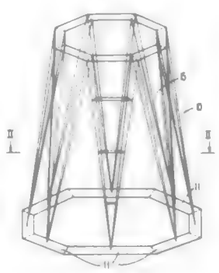
Asaf Gurner, Tel-Aviv, and Oded Y. Zur, Netanya, both of Israel, assignors to Interactive Light, Inc., Los Angeles, Calif.

Continuation of Ser. No. 776,669, Oct. 15, 1991, abandoned. This application Aug. 2, 1993, Ser. No. 102,541

Claims priority, application Israel, Oct. 15, 1990, 095998

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—221 **24 Claims**



1. An apparatus for detecting an object, comprising:

a) a support;

b) emitter means supported by the support, and operative for transmitting radiation away from the support into an emission space;

c) sensor means supported by the support and having a sensing space, said sensor means being operative for receiving radiation directed by an object located in the sensing space to the sensor means, and for generating an electrical signal indicative of the presence of the object in the sensing space;

d) at least one of said sensor means and said emitter means including means for shaping at least one of said spaces to have a generally thin, screen-like volume having a cross-sectional width and a cross-sectional thickness less than said width substantially throughout said volume; and

e) said at least one of said spaces lying substantially entirely within the other of said spaces.

5,369,271

ROTATION DETECTOR USING DUAL POSITION INTERFERENCE LIGHT

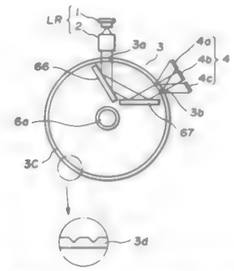
Masaru Nyui, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 28,137, Mar. 9, 1993, abandoned. This application Feb. 25, 1994, Ser. No. 202,685

Claims priority, application Japan, Mar. 13, 1992, 4-089761

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.16 **42 Claims**



1. A device for detecting relative rotation between first and second members, one of which is rotated about an axis of rotation relative to the other, said device comprising:

a scale fixed relative to the first member, said scale being provided along the direction of relative rotation between the first and second members;

a light source provided on the second member for generating light beams;

a detection system provided on the second member for receiving at least one of the light beams emitted from said light source and passing through said scale, to detect the relative rotation between the first and second members; and

a light guiding system for projecting the light beams from said light source onto a first position of said scale, and for forming and projecting a Fourier image of the first position on a second position of said scale using interference between at least first-order diffracted light and O-order light generated from the first position, light beams from the second position being sensed by said detection system, and said light guiding system being disposed so that the optical path from the first position to the second position for forming the Fourier image does not include the axis of the relative rotation between the first and second members.

5,369,272

LASER BEAM SCANNING APPARATUS HAVING BEAM INTENSITY CONTROL

Tatsuya Eguchi, Toyohashi, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan

Filed Apr. 21, 1993, Ser. No. 50,836

Claims priority, application Japan, Apr. 24, 1992, 4-131891

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—235 **18 Claims**

1. A laser beam scanning apparatus comprising:

a laser beam emitting source for emitting a laser beam;

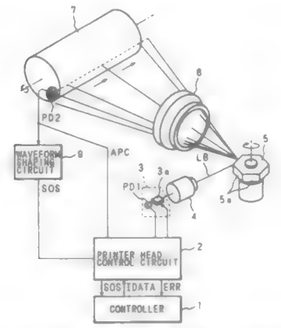
an optical member disposed in an optical path of the laser beam;

first photoreceptor means for detecting the laser beam which has passed through the optical member;

second photoreceptor means for detecting the laser beam without it passing through the optical member;

control means for controlling the intensity of the laser beam emitting from the laser beam emitting source, in response to the output from the first photoreceptor means; and

trouble dealing means for dealing with troubles in the laser beam emitting source in response to an output from the second photoreceptor means if the laser beam power



exceeds a predetermined value when said control means controls the intensity of said laser beam.

5,369,273

METHOD FOR LABELING AN OBJECT USING LASER RADIATION

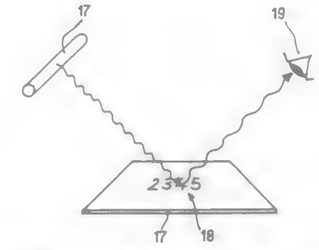
Oleg I. Fisun; Lev N. Lupichev; Viktor V. Maklakov, all of Moscow, Richard Schimko, Berlin, Germany, assignors to BORUS Spezialverfahren und -geräte im Sondermaschinenbau GmbH, Berlin, Germany

Filed Sep. 8, 1993, Ser. No. 117,834

Claims priority, application Germany, Sep. 8, 1992, 4230551

Int. Cl.[5] G06K *1/12*

U.S. Cl. 250—271 **11 Claims**



1. Method for labeling an object by local radiation of the object in a predetermined area of the object by high energy electromagnetic radiation characterized in that

the wavelength of the radiation is chosen to be beyond the visible but within the optical range of the spectrum of electromagnetic radiation, in a range where there is a maximal spectral absorption of this radiation in the predetermined area of the object with respect to this wavelength and

that the other parameters of the radiation are thus predetermined that—as a result of material based preliminary tests—due to the interaction of the radiation with the molecule structure in the predetermined area of the object a permanent altering of the optical characteristics is induced which is perceptable when irradiated in the wavelength range of the absorption maximum, but in a way that the area of the object is not mechanically altered and/or that when irradiated with visible light is non perceptably altered.

5,369,274

METHOD AND AN APPARATUS FOR THE EXAMINATION OF STRUCTURES ON MEMBRANE SURFACES

Wilhelm Brünger, Berlin, Germany, assignor to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V., Germany

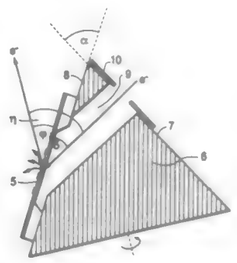
PCT No. PCT/DE89/00398, § 371 Date Feb. 11, 1991, § 102(e) Date Feb. 11, 1991, PCT Pub. No. WO89/12818, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 16, 1989, Ser. No. 623,930

Claims priority, application Germany, Jun. 16, 1988, 3820549

Int. Cl.[5] H01J *39/00*

U.S. Cl. 50—306 **12 Claims**



1. A method for the examination of membrane surfaces using photoelectron spectroscopy wherein a primary electron beam is beamed into a local area of a membrane to be examined from which x-rays are released which in turn trigger photoelectrons which are analyzed by a spectrometer, the method comprising the steps of:

impinging said primary electron beam on a rear surface of the membrane at a presettable first angle;

emitting photoelectrons from a front surface of the membrane as a result of said impinging of said primary electron beam;

observing the photoelectrons emitted from said front surface at a presettable second angle;

emitting secondary electrons from said rear surface of the membrane; and

keeping back said secondary electrons emitted from said rear surface so as not to impinge on the spectrometer.

5,369,275

APPARATUS FOR SOLID SURFACE ANALYSIS USING X-RAY SPECTROSCOPY

Toshio Usui; Yuji Aoki; Masayuki Kamei, and Tadataka Morishita, all of Tokyo, Japan, assignors to International Superconductivity Technology Center; Fujikura Ltd., both of Tokyo and Showa Electric Wire & Cable Co., Ltd., Kawasaka, all of Japan

Filed Jul. 10, 1992, Ser. No. 911,740

Claims priority, application Japan, Jul. 11, 1991, 3-197065; Aug. 14, 1991, 3-228723; Aug. 14, 1991, 3-228724

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—310 **20 Claims**

1. An apparatus for solid surface analysis, comprising:

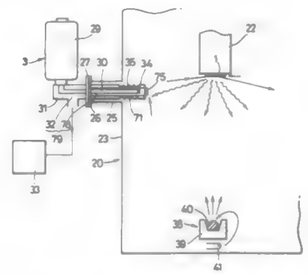
a vacuum chamber means for containing a sample to be analyzed;

electron gun means for irradiating an electron beam onto a surface of the sample contained in the vacuum chamber means;

energy dispersive X-ray detector means for detecting X-ray fluorescence emitted from the surface of the sample excited by the electron beam from the electron gun means;

electron detector means for detecting secondary electrons emitted from the surface of the sample excited by the electron beam from the electron gun means: and

a connection means for connecting the energy dispersive X-ray detector means to the vacuum chamber means, having one end connected to the vacuum chamber means, another end capable of detachably attaching the energy dispersive X-ray detector means, and a vacuum pump for



creating a vacuum state in an interior of the connection means without affecting a vacuum state inside the vacuum chamber means.

5,369,276

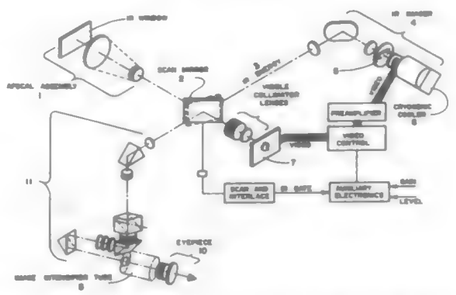
METHOD AND SYSTEM FOR REAL-TIME WAVELENGTH IDENTIFICATION FOR INFRARED DETECTORS

A. Wayne Antesberger, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 1, 1992, Ser. No. 907,099

Int. Cl.[5] G01J *3/18*

U.S. Cl. 250—334 **2 Claims**



1. A real-time wavelength detection system having an infrared detector responsive to focused input radiation indicative of a source image over a given frequency range further including:

diffraction means positioned on a detector surface window for obtaining a diffraction pattern of the focused radiation;

output means for providing an output of the image and diffraction pattern whereby the diffraction pattern is used for determining a discrete wavelength for the given frequency range of the source detected, without substantial impairment of system imagery.

5,369,277

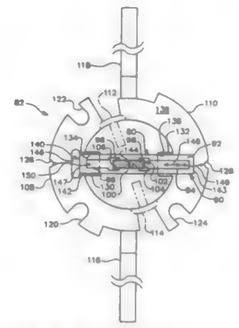
INFRARED SOURCE

Daniel W. Knodle, Seattle; Paul K. Graham, Renton, and Lawrence L. Labuda, Issaquah, all of Wash., assignors to NTC Technology, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 528,059, May 23, 1990, abandoned. This application Oct. 17, 1990, Ser. No. 598,984

Int. Cl.[5] G01N *21/61*

U.S. Cl. 250—343 **38 Claims**



17. That method of manufacturing an infrared radiation source which includes the steps of:

providing an infrared radiation emitter which includes a substrate and a layer of an emissive, electrically resistive material on said substrate;

providing a centrally apertured, electrically conductive lead frame;

fixing said infrared radiation emitter to said lead frame with the emitter spanning the central aperture in the lead frame;

electrically connecting opposite ends of the emissive material layer of the infrared radiation source to said lead frame on opposite sides of the aperture therein;

installing the assembly of infrared radiation emitter and lead frame in a base; and then

interrupting the continuity of said lead frame at locations on opposite sides of the lead frame and between the infrared radiation emitter-to-lead frame connections to thereby divide the lead frame into two electrically isolated segments and create a circuit in which an electrical current applied to one of said segments flows therefrom through the layer of emissive, electrically resistive material to the other of the lead frame segments.

5,369,278

CALIBRATION METHOD FOR GAS CONCENTRATION MEASUREMENTS

Ari Lehto, Helsinki, Finland, assignor to Vaisala Oy, Helsinki, Finland

Filed Jan. 7, 1993, Ser. No. 1,636

Claims priority, application Finland, Jan. 30, 1992, 920410; Oct. 22, 1992, 924788

Int. Cl.[5] G01D *18/00*; **G01N** *21/61*

U.S. Cl. 250—343 **5 Claims**

1. A calibration method for gas component concentration measurement with a measurement apparatus corresponding to an NDIR technique based on optical absorption, comprising the steps of:

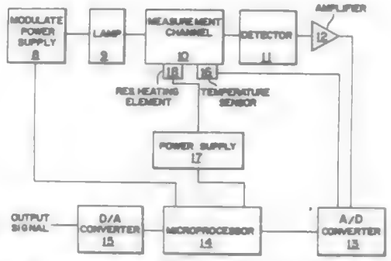
directing radiation on a gas under measurement including the gas component contained in a measurement channel in the measurement apparatus;

measuring the intensity of radiation transmitted through the gas under measurement; and

deviating the temperature of the gas through a heating cycle; characterized in that

the measurement channel permits gas expansion during the heating cycle to maintain a constant pressure during measurement,

the measurement of the intensity of radiation transmitted through the gas is performed at least at two different temperatures, the measurement results being utilized for calibration of the measurement apparatus and then for computing the concentration of the gas under measurement, and



the deviation of the gas temperature occurs during such a short interval of time that the concentration of the gas entering the system does not change, whereby the density of the gas under measurement decreases with increasing temperature while the partial pressure of the gas component under measurement remains essentially constant.

5,369,279

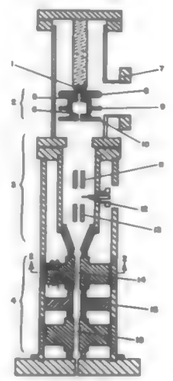
CHROMATICALLY COMPENSATED PARTICLE-BEAM COLUMN

Frederick W. Martin, Colebrook Rd., North Stratford, N.H. 03590

Continuation of Ser. No. 893,849, Jun. 4, 1992, abandoned. This application Aug. 20, 1993, Ser. No. 109,976

Int. Cl.[5] H01J *3/26*

U.S. Cl. 250—396 R **7 Claims**

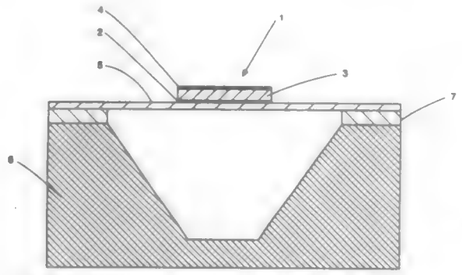


1. An particle-optical column comprising a needle-type particle source, an extraction electrode, a condensing lens, and an interleaved quadrupole lens system for forming a finely focused particle beam, in which the interleaved lenses are operated at the critical ratio of electric to magnetic fields, such that the negative chromatic aberration of the interleaved lenses cancels the positive chromatic aberration of all other particle-optical components, and the spot diameter is substantially independent of small changes in the particle energy.

5,369,280
SEMICONDUCTOR FILM BOLOMETER THERMAL INFRARED DETECTOR

Kevin C. Liddiard, Adelaide, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU91/00162, § 371 Date Dec. 17, 1992, § 102(e) Date Dec. 17, 1992, PCT Pub. No. WO91/16607, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 24, 1991, Ser. No. 940,883
Claims priority, application Australia, Apr. 26, 1990, PJ9813
Int. Cl.[5] G61J 5/20
U.S. Cl. 250—370.08 16 Claims

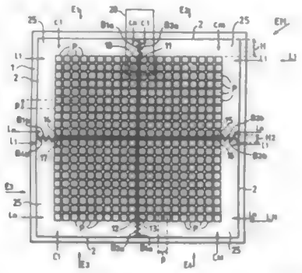


1. A thermal infrared detector, comprising:
a heat-sensitive semiconductor layer and a plurality of thin film metallic contacts therefor, deposited onto a dielectric pellicle of low thermal conductivity material suspended over a cavity of a supporting substrate for said pellicle.

5,369,281
MATRIX SCREEN, PARTICULARLY A LARGE SCREEN, AND A METHOD OF MANUFACTURING IT

Vincent Spinnler, St Egreve, and Marc Arques, Grenoble, both of France, assignors to Thomson Tubes Electroniques, Velizy, France

Filed Feb. 12, 1993, Ser. No. 16,900
Claims priority, application France, Feb. 18, 1992, 92 01810
Int. Cl.[5] G01T 1/24
U.S. Cl. 250—370.09 8 Claims

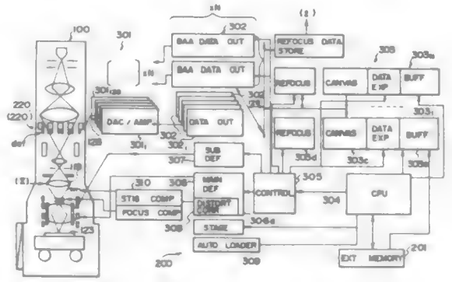


1. A method for manufacturing a large size matrix screen comprising the steps of forming at least two large size elementary screens each having lateral dimensions of more than ten centimeters and each carrying a respective bidimensional matrix of active elements on a respective non-crystalline substrate, said method further comprising the step of cutting at least one side of each elementary screen by means of an excimer laser, said cutting operation forming a mechanical stop on said one side at an edge of the screen, the mechanical stop thus formed matching with a corresponding mechanical stop similarly formed on a side of an adjacent elementary screen to position the adjacent elementary screens relative to each other, and abutting said adjacent elementary screens side to side, with said mechanical stops of adjacent screens in corresponding abutment.

5,369,282
ELECTRON BEAM EXPOSURE METHOD AND SYSTEM FOR EXPOSING A PATTERN ON A SUBSTRATE WITH AN IMPROVED ACCURACY AND THROUGHPUT

Soichiro Arai; Hiroshi Yasuda; Junichi Kai, and Yoshihisa Oae, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 29, 1993, Ser. No. 98,875
Claims priority, application Japan, Aug. 3, 1992, 4-206790; Feb. 19, 1993, 5-030902; Jul. 13, 1993, 5-173388
Int. Cl.[5] H01J 37/302
U.S. Cl. 250—492.22 22 Claims

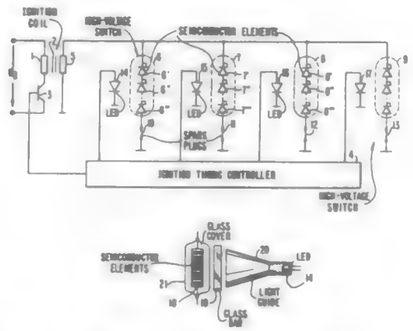


1. A method for exposing a pattern on an object by means of an electron beam, comprising the steps of:
producing an electron beam such that said electron beam travels toward said object;
shaping said electron beam to produce a plurality of electron beam elements of a common size and shape and forming an electron beam pattern;
exposing said electron beam pattern on said object in the form of an array of exposure dots arranged with a predetermined pitch, by radiating said electron beam elements on said object;
said step of shaping being conducted so as to produce said plurality of electron beam elements in the form of a first group of beam elements and a second group of beam elements, simultaneously and such that said first group of beam elements forms a first electron beam pattern and said second group of beam elements forms a second, different electron beam pattern; and
said step of exposing being conducted as a first sub-step and a second sub-step such that, in said first sub-step, said first electron beam pattern is exposed on an exposure field defined on said object, and such that, in said second sub-step said second electron beam pattern is exposed on said same exposure field defined on said object.

5,369,283
HIGH-VOLTAGE SWITCH HAVING SERIES-CONNECTED LIGHT-RESPONSIVE SEMICONDUCTOR ELEMENTS AND LIGHT CONCENTRATING MEANS FOR THE SEMICONDUCTOR ELEMENTS

Manfred Vogel, Ditzingen-Heimerdingen; Werner Herden, Gerlingen, and Johann Konrad, Tamm, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE91/00711, § 371 Date Jan. 26, 1993, § 102(e) Date Jan. 26, 1993, PCT Pub. No. WO92/07188, PCT Pub. Date Mar. 30, 1992
PCT Filed Sep. 6, 1991, Ser. No. 971,752
Claims priority, application Germany, Oct. 10, 1990, 4032131
Int. Cl.[5] G02B 27/00
U.S. Cl. 250—551 19 Claims

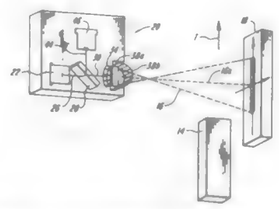


1. High-voltage switch comprising
light emitting means for producing light energy,
a plurality of semiconductor elements connected electrically in series with each other, stacked on top of each other and having light sensitive zones, said semiconductor elements being positioned so that said light sensitive zones receive said light energy generated by said light emitting means, said semiconductor elements being structured to become conductive when receiving said light energy from said light emitting means and when a predetermined voltage is applied to said plurality of said semiconductor elements;
a transparent insulating layer coating said plurality of said semiconductor elements; and
light concentrating means for concentrating said light energy from said light emitting means on the light sensitive zones of said semiconductor elements to minimize loss of said light energy.

5,369,284
ACTIVE EDGE POSITION MEASURING DEVICE

Stephen L. Bellio, West Roxbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 30, 1993, Ser. No. 40,367
Int. Cl.[5] G01B 11/14
U.S. Cl. 250—561 8 Claims

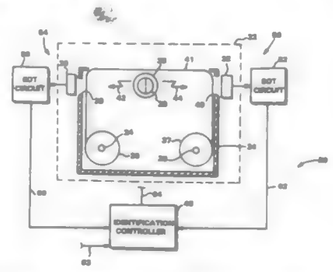


1. A position detecting system comprising:
A. an optical source including means for generating an optical beam along an optical axis,
B. a beamsplitter having a first input axis and a second input axis extending into and from opposite sides thereof, and having an output axis, said first input axis and said second input axis being substantially parallel to said optical axis, and said output axis being angularly offset with respect to and substantially coplanar with said second input axis, and said beamsplitter being positioned to receive said optical beam along said first input axis and adapted:
i. to pass at least a portion of light incident thereon along said first input axis through said beamsplitter and away from said beamsplitter along said second input axis, and
ii. to pass at least a portion of light incident thereon along said second input axis away from said beamsplitter along said output axis,
C. convex lens positioned along said second input axis and having a first face transverse to said second input axis and positioned to face said beamsplitter and receive light passing from said beamsplitter along said second input axis, and having a convex second face transverse to said second input axis, said second face having a first radius of curvature measured with respect to a first axis perpendicular to said second input axis, and having a second radius of curvature measured with respect to a second axis perpendicular to said second input axis, said first and second axes being mutually perpendicular and intersecting said second input axis at a common point, and said first axis being substantially perpendicular to a plane of said second input axis and said output axis, and said first radius of curvature being smaller than said second radius of curvature,
D. a retroreflector surface positioned along said second input axis and extending transverse thereto and being positioned to receive light passing from said convex face and to reflect said received light back to said convex face, and
E. a photodetector positioned along said output axis including means for receiving light passing from said beamsplitter along said output axis and for generating a signal representative thereof.

5,369,285
METHOD AND APPARATUS FOR OPTICAL DETECTION OF CLEANING MEDIUM IN AN INFORMATION STORAGE DRIVE

Steven P. Georgis; Robert Sugar, both of Boulder; Rodney Brittner, and Thomas D. Fox, both of Longmont, all of Colo., assignors to Exabyte Corporation, Boulder, Colo.

Continuation of Ser. No. 933,824, Aug. 24, 1992, abandoned.
This application Dec. 10, 1993, Ser. No. 164,762
Int. Cl.[5] G01N 21/86; G01V 9/04
U.S. Cl. 250—561 19 Claims



1. Apparatus for detecting a type of medium inserted in an information storage drive, the apparatus comprising:
an optical device for determining the translucency of a medium inserted into the information storage drive;
a medium identification controller connected to the translucency determination means for using the translucency

determination to determine the type of medium inserted into the information storage drive.

5,369,286

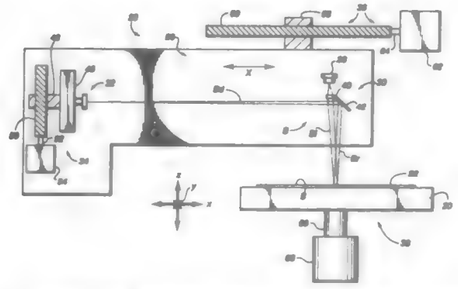
METHOD AND APPARATUS FOR MEASURING STRESS IN A FILM APPLIED TO SURFACE OF A WORKPIECE

David Cheng, Sunnyvale, Calif., assignor to Ann F. Koo, Los Altos, Calif.

Continuation of Ser. No. 144,141, Oct. 27, 1993, abandoned, which is a division of Ser. No. 876,576, Apr. 30, 1992, Pat. No. 5,270,560, which is a continuation-in-part of Ser. No. 822,910, Jan. 21, 1992, Pat. No. 5,233,201, which is a continuation-in-part of Ser. No. 357,403, May 26, 1989, Pat. No. 5,118,955. This application Apr. 8, 1994, Ser. No. 225,425

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—561 20 Claims



1. A method for measuring stress in a film applied to a surface of a workpiece comprising:

scanning a beam of radiant energy over a surface of a workpiece prior to the application of a film to said surface to obtain blank displacement data corresponding to the displacement of a portion of said beam reflected from said surface due to a first curvature of said surface;

scanning said beam of radiant energy over said surface of said workpiece after a film has been applied to said surface to obtain deposited displacement data corresponding to the displacement of a portion of said beam reflected from said surface due to a second curvature of said surface; and

processing said blank displacement data and said deposited displacement data to determine a level of stress in said film.

5,369,287

REFRIGERATOR OIL COMPOSITION CONTAINING PHENOLIC ANTIOXIDANT AMINE AND PHOSPHORIC TRIESTER COMPONENTS

Takashi Sunaga, Ora, and Takeo Komatsubara, Kiryu, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

PCT No. PCT/JP92/00504, § 371 Date Nov. 13, 1992, § 102(e) Date Nov. 13, 1992, PCT Pub. No. WO92/19704, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 20, 1992, Ser. No. 945,656

Claims priority, application Japan, May 7, 1991, 3-101521

Int. Cl.[5] C10M *169/04*

U.S. Cl. 252—50 1 Claim

1. A refrigerator oil composition which is compatible with 1,1,1,2-tetrafluoroethane used as the refrigerant, wherein said oil composition consists essentially of

(a) 0.01 to 0.30% by weight of a phenolic antioxidant,

(b) 0.01 to 0.30% by weight of an amine selected from the group consisting of amylamine, hexylamine, heptylamine, dipropylamine, tripropylamine, trinonylamine, and dibenzylamine having a melting point of −15° C. or below and a boiling point of 100° C. or above,

(c) 0.10 to 1.0% by weight of a tricresyl phosphate, and

(d) a polyolester base oil composed of a polyhydric alcohol and a fatty acid.

5,369,288

SEMICONDUCTOR DEVICE FOR SWITCHING A BALLISTIC FLOW OF CARRIERS

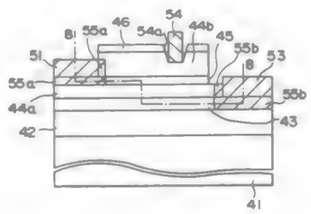
Tatsuya Usuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 7, 1993, Ser. No. 57,842

Claims priority, application Japan, May 8, 1992, 4-116068

Int. Cl.[5] H01L *29/84*

U.S. Cl. 257—26 12 Claims



1. A semiconductor device for switching a flow of ballistic carriers, comprising:

a channel layer of an undoped semiconductor material operative for passing carriers therethrough, said channel layer having upper and lower major surfaces extending two-dimensionally, and thus in a longitudinal direction and in a lateral direction that is perpendicular to said longitudinal direction;

carrier injection means, provided on said channel layer, for injecting carriers into said channel layer with directivity, such that the carriers comprise conducting carriers and travel ballistically through said channel layer in a predetermined direction along a carrier path, said channel layer being substantially free of any conducting carriers other than as injected by said carrier injection means;

carrier detection means, provided on said channel layer, for detecting said carriers injected by said carrier injection means;

carrier drainage means, provided on said channel layer, for absorbing carriers that have strayed away from said carrier path; and

potential control means extending parallel to said upper and lower major surfaces of said channel layer, for controlling add thereby selectively setting a potential of said channel layer such that said selectively set potential is substantially constant in said channel layer, in each of said longitudinal and lateral directions, and enables said carrier injection means to inject carriers into said channel layers.

5,369,289

GALLIUM NITRIDE-BASED COMPOUND SEMICONDUCTOR LIGHT-EMITTING DEVICE AND METHOD FOR MAKING THE SAME

Makoto Tanaki, Inazawa, and Takahiro Kozawa, Owariasahi, both of Japan, assignors to Toyoda Gosei Co. Ltd., Nishikasugai and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, both of Japan

Filed Oct. 30, 1992, Ser. No. 969,769

Claims priority, application Japan, Oct. 30, 1991, 3-313977

Int. Cl.[5] H01L *29/205, 33/00*

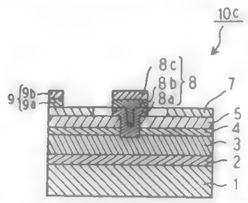
U.S. Cl. 257—99 18 Claims

1. A semiconductor light-emitting device which comprises:

an n-type layer made of an n-type gallium nitride-based compound semiconductor of the formula $Al_XGa_{1-X}N$, wherein $0 \leqq X < 1$;

an i-type layer formed on the n-type layer and made of a semi-insulating i-type gallium nitride-based compound semiconductor of the formula $Al_XGa_{1-X}N$, wherein $0 \leqq X < 1$, and doped with a p-type impurity for junction with the n-type layer;

a first electrode formed on the surface of the i-type layer and made of a transparent conductive film; and



a second electrode formed to connect to the n-type layer wherein light is emitted from the side of the i-type layer to the outside,

wherein said first electrode is formed at a central portion of said i-type layer and said second electrode is provided around said first electrode and connected to a side wall of said n-type layer.

5,369,290

LIGHT EMISSION ELEMENT USING A POLYCRYSTALLINE SEMICONDUCTOR MATERIAL OF III-V GROUP COMPOUND

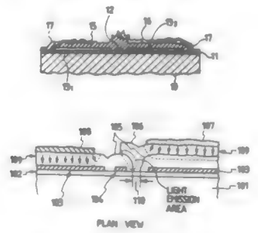
Hideshi Kawasaki, Yamato, and Hiroyuki Tokunaga, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,287

Claims priority, application Japan, Apr. 22, 1991, 3-116523; Apr. 21, 1992, 4-100778

Int. Cl.[5] H01L *33/00, 29/04*

U.S. Cl. 257—103 2 Claims



1. A light emission element using a polycrystalline semiconductor material of III-V group compound including an n type semiconductor polycrystalline layer and a p type semiconductor polycrystalline layer, wherein

said n type semiconductor polycrystalline layer and said p type semiconductor polycrystalline layer comprise a light emitting area formed by polycrystals, the average grain size of said polycrystals being at least 0.6 μm, and a wiring area formed by polycrystals wherein the average grain size of said polycrystals is 0.5 μm or less.

5,369,291

VOLTAGE CONTROLLED THYRISTOR

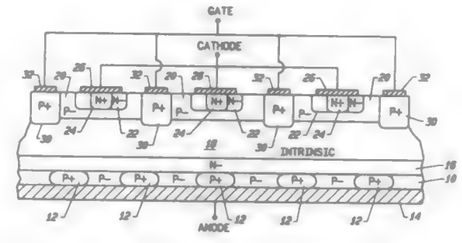
Richard M. Swanson, Los Altos, Calif., assignor to Sunpower Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 38,401, Mar. 29, 1993. This application May 28, 1993, Ser. No. 68,649

The portion of the term of this patent subsequent to Nov. 1, 2011, has been disclaimed.

Int. Cl.[5] H01L *29/90, 29/747*

U.S. Cl. 257—130 5 Claims



1. A voltage controlled thyristor comprising

a semiconductor body having first and second major opposing surfaces and an intrinsic body region therebetween,

a first layer of semiconductor material abutting said first surface, said first layer including P type dopants of a first concentration,

a first plurality of P type doped regions in said first layer having dopant of a second concentration greater than said first concentration, said second concentration being on the order of 3×10^{17} dopant atoms per cm^3;

a second layer of semiconductor material between said intrinsic body region and said first layer of semiconductor material, said second layer including N type dopant of a third concentration, said third concentration being on the order of 1×10^{18} dopant atoms per cm^3;

a third layer of semiconductor material abutting said second surface and said intrinsic body region, said third layer including P type dopants of a fourth concentration, said fourth concentration being on the order of 1×10^{17} dopant atoms per cm^3;

a first plurality of N type doped regions in said third layer having dopant of a fifth concentration,

a second plurality of N type doped regions in said first plurality of N type doped regions having dopant of a sixth concentration greater than said fifth concentration, said sixth concentration being on the order of 1×10^{18} dopant atoms per cm^3

a second plurality of P type doped regions extending from said second surface through said third layer into said intrinsic body region, said second plurality of P type doped regions being interspersed among said first plurality of N type doped regions and having a dopant concentration greater than said fourth concentration,

said first layer and said first plurality of P type doped regions comprising an anode,

said first plurality of N doped regions and said second plurality of N doped regions comprising a cathode, and

said third layer and said second plurality of P type doped regions comprising a control gate.

5,369,292

AVALANCHE PHOTODIODE HAVING A MULTIPLICATION LAYER WITH SUPERLATTICE

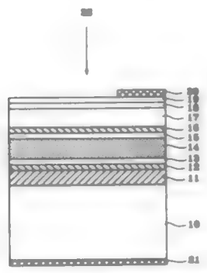
Ji-Beom Yoo; Chan-Yong Park, and Hong-Man Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute and Korea Telecommunication Authority, Rep. of Korea

Filed Nov. 10, 1993, Ser. No. 149,775

Claims priority, application Rep. of Korea, Dec. 22, 1992, 1992-25002

Int. Cl.[5] H01L *31/06*

U.S. Cl. 257—186 **3 Claims**



1. An avalanche photodiode in which a strained superlattice structure is used as a multiplication layer, the photodiode comprising:

an n^+ type InP substrate;

an n^+ type InP epitaxial layer formed on a main surface of the substrate;

an N type $In_{1-x}Al_xAs$ layer formed on the epitaxial layer;

an n^+ type $In_{1-x}Al_xAs$ layer formed on the N type $In_{1-x}Al_xAs$ layer, the n^+ type $In_{1-x}Al_xAs$ layer having a relatively high impurity concentration more than the N type $In_{1-x}Al_xAs$ layer;

the multiplication layer deposited on the n^+ type $In_{1-x}Al_xAs$ layer, the multiplication layer having an $In_{0.53}Ga_{0.47}As$-/$In_{1-x}Al_xAs$ superlattice structure;

first and second p^+ type $In_{1-x}Al_xAs$ layers laminated sequentially on the multiplication layer;

an absorbing layer formed on the second p^+ type $In_{1-x}Al_xAs$ layer, the absorbing layer being made of an $In_{0.53}Ga_{0.47}As$;

a P type InP layer formed on the absorbing layer to reduce a surface leakage current;

an $In_{0.53}Ga_{0.47}As$ layer formed on the P type InP layer to be provided for an ohmic contact, and

metal layers formed on an upper surface of the $In_{0.53}Ga_{0.47}As$ layer and the other surface of the substrate, respectively.

5,369,293

CHARGE-COUPLED DEVICE HAVING REDUCED CROSS-TALK

Arie Slob, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

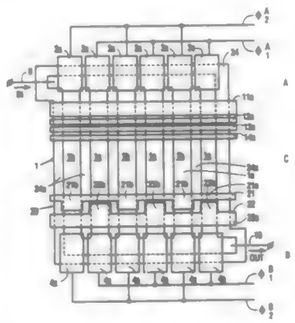
Continuation of Ser. No. 216,553, Jul. 7, 1988, abandoned. This application Nov. 29, 1990, Ser. No. 68,638

Claims priority, application United Kingdom, Jul. 10, 1987, 8716236; Netherlands, Jul. 21, 1987, 8701719

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—241 **6 Claims**

1. A charge-coupled device, comprising a series register having charge storage electrodes for defining charge storage wells and charge transfer electrodes for transporting charge between the charge storage wells, a parallel section having channels extending transversely from the series register, the parallel section having charge storage electrodes spaced apart along the channels, each charge storage electrode of said parallel section extending transversely over the channels to define a charge storage well within each channel to provide a row of charge storage wells extending transversely from the channels, the parallel section having charge transfer electrodes for transferring charge between adjacent charge storage wells, a transfer gate for transferring charge between the series register and an adjacent row of charge storage wells defined by the channels and a first charge storage electrode of the parallel section, the first charge storage electrode of the parallel section, which is the charge storage electrode closest to the series register, being shaped so that, at least over each channel, the first charge storage electrode is wider than succeeding charge storage electrodes of the parallel section, a further series register having alternate charge storage and charge transfer electrodes, the further series register being separated from the series register by the parallel section, and a further transfer gate for transferring charge between the further series register and an adjacent row of charge storage wells defined by the channels and a second one of the charge storage electrodes of the parallel section, wherein the series register comprises an



input series register and the further series register comprises an output series register of the device, and wherein the second one of the charge storage electrodes comprises part of an output stage which also comprises another charge storage electrode, the second one of the charge storage electrodes having a first row of teeth and said another charge storage electrode having a second row of teeth interdigitated with the first row, each tooth of the first row of teeth overlying a respective one of a first subsidiary group of alternate channels and each tooth of the second row of teeth overlying a respective one of a second subsidiary group of channels, a first charge transfer electrode extending across the channels for transferring charge from charge storage wells beneath the second row of teeth to charge wells defined by the second one of the charge storage electrodes and the second subsidiary group of channels, and a second charge transfer electrode for transferring charge from charge wells defined by the first subsidiary group of channels and said another charge storage electrode to charge wells beneath the first row of teeth.

5,369,294

FIELD EFFECT TRANSISTOR AND METHOD OF FABRICATING

Emel S. Bulat, Framingham, and Charles Herrick, Reading, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Division of Ser. No. 821,518, Jan. 15, 1992, Pat. No. 5,192,696. This application Dec. 30, 1992, Ser. No. 999,473

Int. Cl.[5] H01L *27/01, 29/00, 29/78*

U.S. Cl. 257—264 **3 Claims**

1. A junction field effect transistor comprising

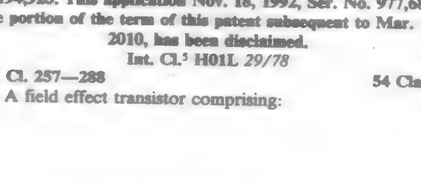
a body of semiconductor material including a substrate of semiconductor material of one conductivity type of relatively low resistivity and a layer of semiconductor material of the one conductivity type of relatively high resistivity contiguous with said substrate; said layer of semiconductor material having a surface coextensive with a surface of the body;

a layer of adherent, nonconductive, protective material adherent at said surface of said layer of semiconductor material, said layer of adherent, nonconductive, protective material having openings therein defining alternating source surface areas and gate surface areas at the surface of said layer of semiconductor material;

a gate region conductivity type the opposite of said one conductivity type inset in said layer of semiconductor material of the one conductivity type of relatively high resistivity at each of said gate surface areas;

a source region of the one conductivity type inset in said layer of semiconductor material of the one conductivity type of relatively high resistivity at each of said source surface areas, each source region being spaced from adjacent gate regions at said surface of said layer of semiconductor material of the one conductivity type of relatively high resistivity by interposed semiconductor material of said layer of semiconductor material of the one conductivity type of relatively high resistivity;

each of said source regions including a first zone of the one



conductivity type inset in said layer of semiconductor material of the one conductivity type of relatively high resistivity, the resistivity of said first zone being lower than the resistivity of the semiconductor material of said layer of semiconductor material of the one conductivity type of relatively high resistivity interposed between adjacent gate and source regions; and a second zone of the one conductivity type of lower resistivity than said first zone inset in said first zone leaving a portion of said first zone interposed between said second zone and the semiconductor material of the layer of semiconductor material of the one conductivity type of relatively high resistivity;

a gate contact member in ohmic contact with each of said gate regions at said gate surface areas;

a source contact member in ohmic contact with the second zone of each of said source regions at said source surface areas; and

a drain contact member in ohmic contact with the semiconductor material of the substrate.

wherein

said first zone extend to a maximum depth beneath said surface of from 2500 to 5000 angstroms; and

said second zones extend to a maximum depth beneath said surface of from 100 to 800 angstroms.

5,369,295

FERMI THRESHOLD FIELD EFFECT TRANSISTOR WITH REDUCED GATE AND DIFFUSION CAPACITANCE

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 826,939, Jan. 28, 1992, Pat. No. 5,194,923. This application Nov. 18, 1992, Ser. No. 977,689

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—288 **54 Claims**

2. A field effect transistor comprising:

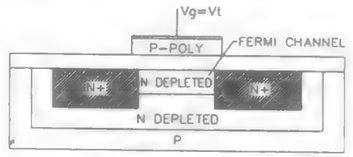
a semiconductor substrate of first conductivity type, having a first surface;

a tub region of second conductivity type in said substrate at said first surface;

spaced apart source and drain regions of said second conductivity type in said tub region at said first surface;

a channel of said second conductivity type in said tub region at said first surface, between said spaced apart source and drain regions;

a gate insulating layer on said substrate at said first surface, between said spaced apart source and drain regions; and



source, drain and gate contacts for contacting said source and drain regions and said gate insulating layer, respectively;

wherein said channel extends a first predetermined depth from said first surface, wherein said tub region extends a second predetermined depth from said channel, wherein said source region extends a third predetermined depth from said first surface, and wherein said third predetermined depth is greater than said first predetermined depth and less than the sum of said first and second predetermined depths.

5,369,296

SEMICONDUCTOR DEVICE HAVING A FERROELECTRIC FILM IN A THROUGH-HOLE

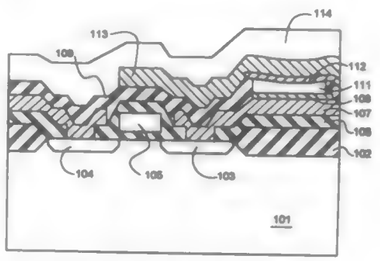
Koji Kato, Suwa, Japan, assignor to Ramtron International Corporation, Colorado Springs, Colo.

Continuation of Ser. No. 842,394, May 12, 1992, abandoned. This application Oct. 19, 1993, Ser. No. 139,340

Claims priority, application Japan, Jul. 24, 1990, 2-195864

Int. Cl.[5] H01L *29/78; G11C 11/22*

U.S. Cl. 257—295 **16 Claims**



1. A semiconductor device comprising:

a substrate with a diffusion region;

a first insulating film located adjacent to said diffusion region;

a first wiring layer located over said first insulating film;

a lower electrode located over said first wiring layer and directly above said first insulating film;

a second insulating film located over said first wiring layer and said lower electrode;

a through-hole in said second insulating film extending to said lower electrode, and located directly above said first insulating film;

a dielectric, comprising a ferroelectric material, embedded in said through-hole and disposed directly above said lower electrode and said first insulating film; and

an upper electrode located directly above said dielectric and said first insulating film

wherein said dielectric is at least equal to a thickness of said second insulating film.

5,369,297

FIELD EFFECT TRANSISTOR INCLUDING SILICON OXIDE FILM AND NITRIDED OXIDE FILM AS GATE INSULATOR FILM AND MANUFACTURING METHOD THEREOF

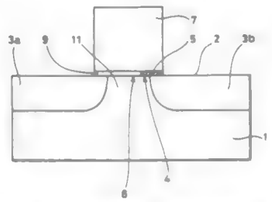
Shigeru Kusunoki, and Masahide Inuishi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1992, Ser. No. 930,932

Claims priority, application Japan, Sep. 5, 1991, 3-225686; Dec. 6, 1991, 3-323239; Jul. 3, 1992, 4-176873

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—411 **22 Claims**



1. A field effect transistor for controlling a flow of carriers by a voltage applied to a gate electrode, said field effect transistor, comprising:

a semiconductor substrate having a main surface;

a source region and a drain region formed with a spacing from each other in said semiconductor substrate;

a nitrided oxide film formed on said main surface; and

an oxide film formed on said main surface and having a nitrogen concentration equal to zero or lower than a nitrogen concentration in said nitrided oxide film, wherein said gate electrode is formed on said oxide film.

5,369,298

BIPOLAR TRANSISTOR HAVING AN EMITTER WITH INTERDIGITATED COMB-SHAPED INNER AND OUTER EDGER

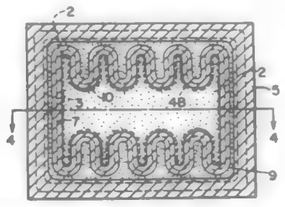
Ziro Honda, Itami, and Yasushi Nomoto, Kawanishi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1993, Ser. No. 88,054

Claims priority, application Japan, Jul. 30, 1992, 4-203725

Int. Cl.[5] H01L *27/082, 29/70*

U.S. Cl. 257—583 **2 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having opposed first and second surfaces;

a base region at the first surface of said semiconductor substrate;

an emitter region disposed within said base region having an outer edge in a comb-teeth-shaped configuration and an inner edge in a comb-teeth-shaped configuration, the inner edge defining a window through which the base region is exposed at the first surface; and

a collector region at the second surface of said substrate wherein said outer edge of said emitter region having a comb-teeth-shaped configuration is interdigitated with said inner edge of said emitter region to suppress concentration of electrical current in the window.

5,369,299

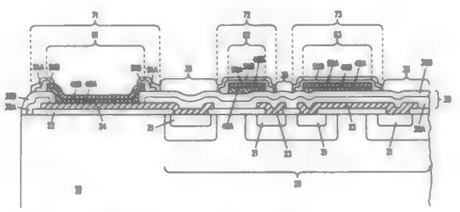
TAMPER RESISTANT INTEGRATED CIRCUIT STRUCTURE

Robert C. Byrae, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 22, 1993, Ser. No. 96,537

Int. Cl.[5] H01L *29/34, 21/465*

U.S. Cl. 257—638 **19 Claims**



1. An integrated circuit comprising:

active circuitry;

a passivation layer overlying the active circuitry; and

a tamper resistant structure formed on the passivation layer, the tamper resistant structure including:

a metal layer disposed on the passivation layer and overlying portions of the active circuitry, the metal layer being electrically isolated from the active circuitry and having a pattern which exposes portions of the passivation layer; and

a cap layer disposed on the metal layer, the cap layer having a pattern which covers portions of the metal layer but leaves portions of the passivation layer exposed, the cap layer having a chemical composition such that etches which attack the cap layer also attack the passivation layer.

5,369,300

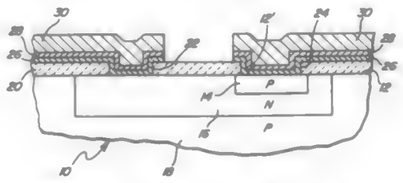
MULTILAYER METALLIZATION FOR SILICON SEMICONDUCTOR DEVICES INCLUDING A DIFFUSION BARRIER FORMED OF AMORPHOUS TUNGSTEN/SILICON

Robert J. Heideman, Galveston; Randy A. Rusch, and Michael S. Baird, both of Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jun. 10, 1993, Ser. No. 75,182

Int. Cl.[5] H01L *23/48, 29/46, 29/62, 29/64*

U.S. Cl. 257—651 **7 Claims**



1. A metallization system suitable for silicon integrated circuits, which metallization system consistently exhibits low contact resistance in contracting P-type silicon surface regions, as well as N-type silicon surface regions, said metallization system comprising:

an initial layer of a conductor selected from the group consisting of titanium, platinum silicide, tantalum silicide, and molybdenum silicide on the surface of a P-type contact region in a silicon substrate;

a middle layer of amorphous tungsten/silicon on the initial layer, said amorphous tungsten/silicon middle layer having an amorphous to crystalline transition temperature; and

an overlayer of a member selected from the group consisting of aluminum and aluminum alloys on the amorphous tungsten/silicon middle layer,

effective to produce a metallization system that consistently provides adherent, low electrical resistance contacts on P-type silicon, as well as on N-type silicon.

5,369,301

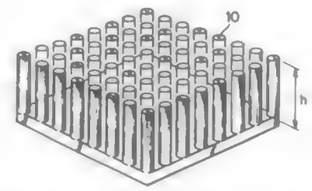
PIN-FINNED FORGED HEAT SINK

Chihiro Hayashi, Takarazuka, and Kimihiko Ohminato, Handa, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumikin Precision Forge Inc., Handa, both of Japan

Filed Jul. 9, 1993, Ser. No. 88,350

Int. Cl.[5] H01L *23/02*

U.S. Cl. 257—722 **6 Claims**



1. A pin-finned forged heat sink comprising a plurality of forged pins, each pin being substantially round in cross-section, the heat sink having good heat dissipating characteristics and satisfying the following inequality:

$$1.5 \leqq \frac{(h/d)}{\{1 + (c/d)\}^2} \leqq 7.5$$

where d is the diameter of pins, c is the distance between pins, and h is the height of pins, c being equal to $\frac{1}{2}(c_1+c_2)$ wherein c_1 is the distance between adjacent pins in a first row of pins and c_2 is the distance between adjacent pins in a second row of pins which intersects the first row of pins.

5,369,302

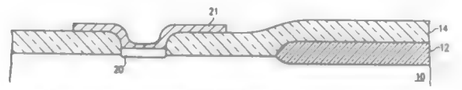
METHOD TO IMPROVE STEP COVERAGE BY CONTACT REFLOW

Fusen E. Chen, Milpitas, Calif., and Girish A. Dixit, Dallas, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 601,286, Oct. 22, 1990, abandoned. This application Feb. 21, 1992, Ser. No. 840,679

Int. Cl.[5] H01L *21/90*

U.S. Cl. 257—734 **8 Claims**



1. An electrical contact comprising:

a substrate having a substantially planar upper surface;

a glass insulating layer over the substrate and in contact with its upper surface, the insulating layer having a contact opening therethrough having substantially rounded corners, wherein the contact opening and rounded corners have a cross-sectional profile resulting from reflowing a reflowable glass after the opening has been formed;

a refractory metal silicide barrier layer in the bottom of the contact opening wherein the barrier layer is substantially above the substrate upper surface; and,

an interconnect over the barrier layer in the bottom of the contact opening and over the insulating layer elsewhere.

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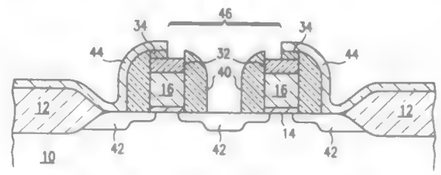
SELF-ALIGNED CONTACT PROCESS

Che-Chia Wei, Plano, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 786,019, Oct. 13, 1991. This application Sep. 2, 1993, Ser. No. 116,050

Int. Cl.[5] H01L *29/78, 29/44*

U.S. Cl. 257—751 **7 Claims**



1. A structure for an integrated circuit, comprising:

a semiconductor substrate;

a gate electrode;

a first insulating layer on an upper surface of the gate electrode;

a barrier layer, having an upper surface and containing a metallic conductor and a metal oxide insulator, covering an upper surface of the first insulating layer;

sidewall spacers alongside vertical sidewalls of the gate electrode, the first insulating layer and the barrier layer; and

a second insulating layer overlying a portion of the barrier layer;

wherein the barrier layer metal oxide insulator covers the barrier layer upper surface not covered by the second insulating layer.

5,369,304

CONDUCTIVE DIFFUSION BARRIER OF TITANIUM NITRIDE IN OHMIC CONTACT WITH A PLURALITY OF DOPED LAYERS THEREFOR

Israel A. Lesk, Phoenix; Francine Y. Robb, Tempe; Lewis E. Terry, Phoenix, and Frank S. d'Aragona, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 14, 1992, Ser. No. 929,232

Int. Cl.[5] H01L *29/74, 29/46, 23/485*

U.S. Cl. 257—782 **6 Claims**

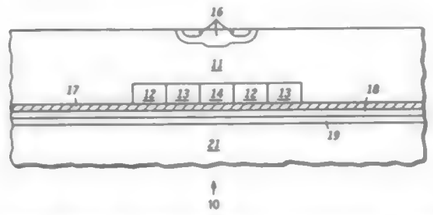
1. A semiconductor wafer having a conductive diffusion barrier comprising:

a semiconductor wafer having a plurality of doped areas in a surface of the wafer;

a layer of titanium nitride covering the plurality of doped areas and in ohmic contact with the plurality of doped areas wherein the titanium nitride forms a diffusion barrier that prevents dopants within a first doped area of the plurality of doped areas from diffusing laterally through the titanium nitride and into a second doped area of the plurality of doped areas;

a protective layer covering the titanium nitride wherein the

protective layer includes a layer of polysilicon, silicon dioxide or silicon nitride; and



a handle wafer bonded to the protective layer by wafer bonding.

5,369,305

SAFETY DEVICE

Tommy Duhan, Eskilstuna, and Stig-Hakan Nilsson, Torshälla, both of Sweden, assignors to General Engineering (Netherlands) B.V., Utrecht, Netherlands

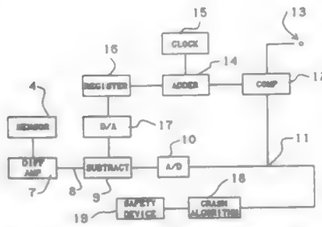
PCT No. PCT/SE91/00622, § 371 Date Jul. 17, 1992, § 102(e) Date Jul. 17, 1992, PCT Pub. No. WO92/05051, PCT Pub. Date Apr. 2, 1992

PCT Filed Sep. 17, 1991, Ser. No. 910,283

Claims priority, application United Kingdom, Sep. 20, 1990, 9020533; Jul. 9, 1991, 9114766

Int. Cl.[5] B60L *3/00*

U.S. Cl. 307—10.1 **18 Claims**



9. The safety apparatus for use in a vehicle, comprising:

a sensor for sensing deceleration of the vehicle and producing a sensor signal, the sensor signal having an off-set component and deceleration component related to a deceleration of the vehicle;

a compensator, coupled to the sensor signal, for producing a compensated signal by substantially removing the off-set component of the sensor signal so that the compensated signal corresponds to the deceleration component of the sensor signal, the compensator including,

a register for storing a first value corresponding to the off-set component; and

a difference circuit, coupled to the sensor and the register, for producing the compensated signal based on a difference between the sensor signal and a first signal related to the first value; and

a signal processing device for processing the compensated signal to determine whether to activate a safety device.

5,369,306

AUTOMATIC LOCKING AND UNLOCKING UNIT FOR A VEHICLE

Rodrigo F. Dib, 3610 S. Nogales St., Apt. 217W, West Covina, Calif. 91792

Filed Oct. 13, 1992, Ser. No. 959,782

Int. Cl.[5] B60L *1/00*

U.S. Cl. 307—10.1 **4 Claims**

3. An automatic locking and unlocking unit for a vehicle having an electric door lock system for locking the doors of said vehicle, said unit comprising:

an AND gate having a first AND gate input, a second AND gate input, and an output, with said first AND gate input, and said second AND gate input being in electrical communication with the starter and ignition connections of an ignition switch of said vehicle;

a NOR gate having a first NOR gate input, a second NOR gate input, and an output, with said first NOR gate input, and said second NOR gate input being in electrical communication with the starter and ignition connections of said ignition switch of said vehicle;

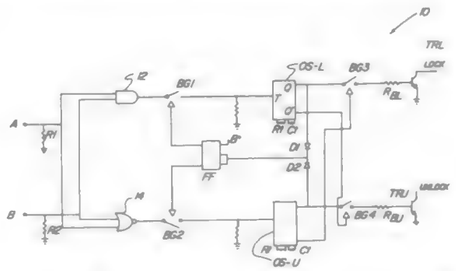
a first bilateral gate having inputs and an output, with one of said first bilateral gate inputs in electrical communication with said output of said AND gate;

a second bilateral gate having inputs and an output, with one of said second bilateral gate inputs in electrical communication with said output of said NOR gate;

a first one-shot having a first one-shot input, a first one-shot first output, and first one-shot second output, with said first one-shot input in electrical communication with said output of said first bilateral gate;

a second one-shot having a second one-shot input, a second one-shot first output, and second one-shot second output, with said second one-shot in electrical communication with said output of said second bilateral gate;

a third bilateral gate having inputs and an output, with one of said third bilateral gate inputs in electrical communication with said output of said first one-shot first output, said



third bilateral gate output in electrical communication with said electric door lock system to effect locking of said doors upon energization of said first one-shot, and another of said third bilateral gate inputs being in electrical communication with said second one-shot second output;

a fourth bilateral gate having inputs and an output, with one of said fourth bilateral gate inputs in electrical communication with said output of said second one-shot first output, said fourth bilateral gate output in electrical communication with said electric door lock system to effect unlocking of said doors upon energization of said second one-shot, and another of said fourth bilateral gate inputs being in electrical communication with said first one-shot second output, whereby only of said third and fourth bilateral gates is conductive at one time;

a flip flop having at least one input and a pair of outputs, with said at least one input in electrical communication with both said first one-shot first output and said second one-shot first output, with one of said outputs of said flip flop in electrical communication with another of said inputs of said first bilateral gate, and another of said outputs of said flip flop in electrical communication with another of said inputs of said second bilateral gate, whereby only of said first and second bilateral gates is conductive at one time;

wherein said output of said first bilateral gate is in electrical communication with said electric door lock system to effect locking of said doors, and said output of said second bilateral gate is in electrical communication with said electric door lock system to effect unlocking of said doors.

5,369,307

SWITCHING POWER SOURCE

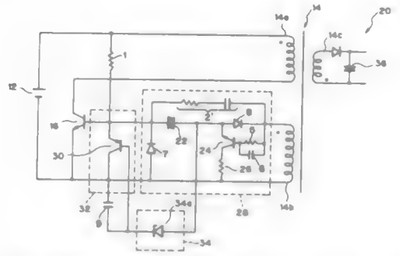
Tadashi Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 9, 1992, Ser. No. 895,947

Claims priority, application Japan, Jun. 12, 1991, 3-166246

Int. Cl.[5] H01H *47/00*

U.S. Cl. 307—125 **6 Claims**



1. A switching power source for controlling an input voltage from an input power source, comprising:

a transformer comprising a primary winding, a control winding, and at least one output winding;

a switching device connected between the primary winding of said transformer and the input power source;

a base drive circuit comprising a base drive capacitor connected to a base of said switching device for storing a charge in response to an output voltage appearing on the control winding of said transformer, said charges being stored in said base drive capacitor when said switching device is in an OFF state, and for applying said charge stored in said base drive capacitor to the base of said switching device when said switching device is in ON state for maintaining said switching device in the ON state;

a base control circuit for changing the state of said switching device from ON to OFF; and

a voltage detection circuit for detecting a voltage of said base drive capacitor and for feeding a corresponding control signal to said base control circuit.

5,369,308

POWER TRANSISTOR SWITCHING CIRCUIT WITH CONTROLLED TURN-OFF

Franciscus A. C. M. Schoofs, Eindhoven, and Johan C. Halberstadt, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 29, 1993, Ser. No. 10,965

Claims priority, application European Pat. Off., Feb. 3, 1992, 92200296

Int. Cl.[5] H03K *17/56*

U.S. Cl. 327—427 **12 Claims**

1. An arrangement for switching a power transistor, comprising:

a switching transistor having a first and a second main electrode which constitute a main current conductance path of the switching transistor, and a control electrode for a control signal (U1) for controlling the conductance of the main current conductance path of the switching transistor,

a control device comprising a control amplifier having an input coupled to a switching signal terminal for a switching signal (US) and an output for applying the control signal (U1) to the control electrode of the switching transistor,

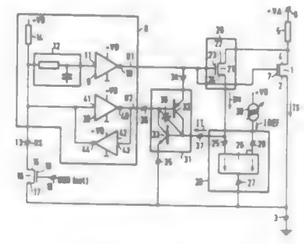
a thyristor having a first main electrode and a second main electrode which constitute a main current conductance path of the thyristor, which path is coupled to the control electrode of the switching transistor, and a first trigger gate and a second trigger gate for connecting a first trigger signal and a second trigger signal (IT), respectively,

measuring means for generating a measuring signal (IM) which is proportional to a current (IS) flowing through the main current conductance path of the switching transistor,

comparison means for comparing the measuring signal (IM) with a reference signal (IREF) and for applying the second trigger signal (IT) to the second trigger gate of the thyristor in response to the comparison of the measuring signal and the reference signal, wherein the control device further comprises:

a further control amplifier having an input coupled to the switching signal terminal and an output coupled to the first trigger gate, and of the thyristor for applying a further control signal (U2) to the first trigger gate,

delay means for delaying the control signal (U1) of the control amplifier with respect to the further control signal (U2) of the further control amplifier.



5,369,309

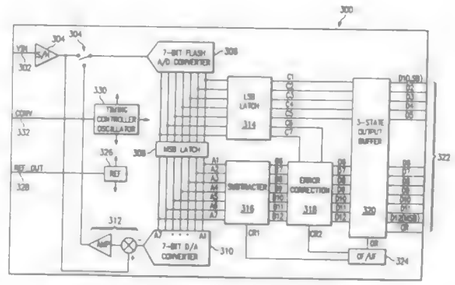
ANALOG-TO-DIGITAL CONVERTER AND METHOD OF FABRICATION

Kantilal Bacrania, Palm Bay, Fla.; Chong I. Chi, Santa Clara, Calif., and Gregory J. Fisher, Indialantic, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Oct. 30, 1991, Ser. No. 785,325

Int. Cl.[5] H03M *1/00*

U.S. Cl. 327—94 **15 Claims**



5. An integrated circuit two-step analog-to-digital converter, comprising:

(a) an analog-to-digital converter (ADC) having an input and output;

(b) a digital-to-analog converter (DAC) with an input switchably coupled to either the output of said ADC or to a fixed bit pattern;

(c) an error amplifier with an input coupled to the output of

said DAC and an output selectively connectable to the input of the ADC;

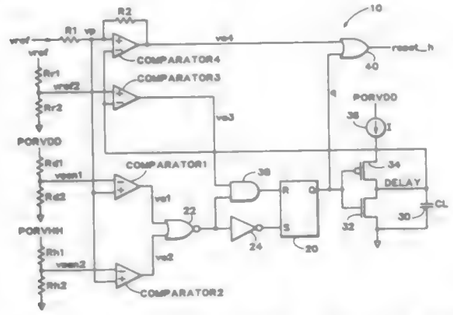
(d) A controller, said controller holding said error amplifier inactive for a first time interval immediately following a switching of the input of said DAC from said fixed bit pattern to said output of said ADC.

5,369,310

CMOS POWER-ON RESET CIRCUIT

Rajeev Badyal, Corvallis, Oreg., and Vernon Knowles, Boise, Id., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Jun. 1, 1992, Ser. No. 891,587
Int. Cl.[5] H03K *17/28, 5/24*
U.S. Cl. 327—143 **11 Claims**



1. A power-on circuit for generating a binary reset output signal having a valid state and an invalid state, comprising:

input means for receiving and scaling a power supply voltage to be monitored;

threshold voltage means for providing a threshold voltage;

first comparator means for comparing the scaled power supply voltage to the threshold voltage and indicating a valid power supply state when the power supply voltage exceeds the threshold voltage and for indicating an invalid power supply state otherwise;

a delay timer for providing a predetermined delay period and indicating completion of the delay period; the delay timer including:

a delay capacitor;

a current source for charging the delay capacitor;

a first transistor switch disposed between the current source and the delay capacitor to control charging of the capacitor;

a second transistor switch coupled to the capacitor for controllably discharging the capacitor; and

a flip-flop having a Q output coupled to the first and second switches for charging and discharging the delay capacitor, respectively, in response to a current state of the flip-flop;

means for starting the delay timer responsive to the indication of a valid power supply state;

means for delaying said starting the delay timer until after the delay timer indicates completion of the delay period, to ensure that at least the delay period elapses since the power supply last becoming invalid before changing the reset output signal to the valid state; and

means coupled to the first comparator means for forcing the reset output signal to an invalid state responsive to the indication of an invalid power supply state and without regard to the delay period, thereby immediately forcing the reset signal to the invalid state without delay and wherein

said means for starting the delay timer include means for resetting the flip-flop thereby enabling the first transistor switch to begin charging the delay capacitor responsive to the indication of the invalid state; and

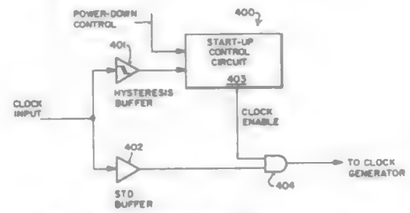
and means for delaying said starting the delay timer include a voltage comparator having a first input coupled to the delay capacitor and a second input coupled to a reference voltage and an output coupled to logic means for resetting the flipflop only after the capacitor voltage crosses the reference voltage.

5,369,311

CLOCK GENERATOR CONTROL CIRCUIT

Tan T. Wang, Penang, Malaysia, and Andrew M. Volk, Loomis, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Mar. 6, 1992, Ser. No. 847,927
Int. Cl.[5] G11C *5/00;* **H03K** *5/13, 19/007, 21/38*
U.S. Cl. 327—292 **28 Claims**



1. A clock detection circuit for supplying a device clock signal to an on-chip clocking mechanism for clocking an integrated circuit device in response to an oscillator clock signal from an oscillator, wherein said oscillator clock signal has an envelope with a magnitude that varies over a range of magnitudes as the oscillator stabilizes from an initial magnitude to a final magnitude, said circuit comprising:

detecting means for sensing said oscillator clock signal to produce a detected oscillation signal, said detecting means capable of detecting said oscillator clock signal at a plurality of magnitudes, wherein said detecting means detects said oscillator clock signal at a first magnitude and a second magnitude, wherein said first magnitude and said second magnitude are within the range of magnitudes and said first magnitude and said secoind magnitude are less than said final magnitude, said first magnitude being greater than said second magnitude, wherein said detecting means initially only produces said detected oscillation signal after said oscillator clock signal is at least at said first magnitude; and

device clock generation means coupled to the detecting means for producing the device clock signal in response to the detected oscillation signal, wherein the device clock generation means produces the device clock signal only after a predetermined time after the detecting means detects said oscillator clock signal being above said first magnitude;

wherein after said predetermined time, said detecting means becomes responsive to said oscillator clock signal being greater than said second magnitude, and wherein said detecting means enables said device clock signal to said on-chip clocking mechanism as long as the magnitude of said oscillator clock signal is at least at said second magnitude.

5,369,312

HOT CARRIER PROTECTION CIRCUIT

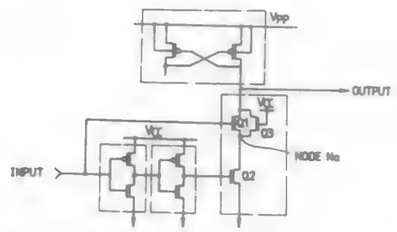
Jong H. Oh, and Hong S. Kim, both of Ichonkun, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Ichonkun, Rep. of Korea

Filed Oct. 8, 1992, Ser. No. 958,645
Claims priority, application Rep. of Korea, Oct. 8, 1991, 1991/17645
Int. Cl.[5] H01L *27/06*
U.S. Cl. 327—545 **1 Claim**

1. In a hot carrier protection circuit for an array of MOSFET devices including at least one MOSFET having a source

terminal connected to a power source V_{cc}, said protection circuit being of the type including first and second MOSFETs which are connected in series for the purpose of preventing hot carrier generation wherein the gates of said first and second MOSFETs are connected to two different points of said array of MOSFET devices, the improvement comprising:

said first and second MOSFETs being of the same size; and



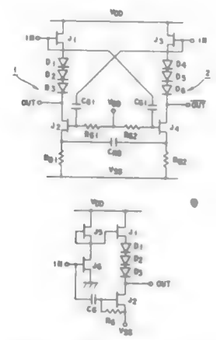
a third MOSFET for precharging a node N_a connecting said first and second MOSFETs, said third MOSFET having its source and drain respectively coupled to a source and drain of said first MOSFET other than said node Na, said first MOSFET having one of its terminals connected as an output node of said first and second MOSFETs, a gate of said third MOSFET coupled to said V_{cc} power source, whereby said node N_a is maintained at a voltage lower than V_{cc} in magnitude.

5,369,313

HIGH FREQUENCY GAIN DIFFERENTIAL SIGNAL CIRCUIT EMPLOYING A LEVEL SHIFT DEVICE

Kunio Yoshihara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 4, 1992, Ser. No. 941,220
Claims priority, application Japan, Sep. 6, 1991, 3-227453
Int. Cl.[5] H03K *19/0175, 19/0952*
U.S. Cl. 326—68 **11 Claims**



1. A level shift circuit comprising:

at least one level shift element, having first and second terminals, for shifting a DC level of an input signal supplied to said first terminal;

a resistor having one terminal and an other terminal applied with a DC bias;

a current source transistor having a drain connected to said second terminal of said level shift element and a gate connected to the other terminal of said resistor and applied with the DC bias through said resistor; and

a capacitor having one terminal connected to the gate of said current source transistor and an other terminal for receiving a signal having a phase opposite to that of the signal supplied to said first terminal,

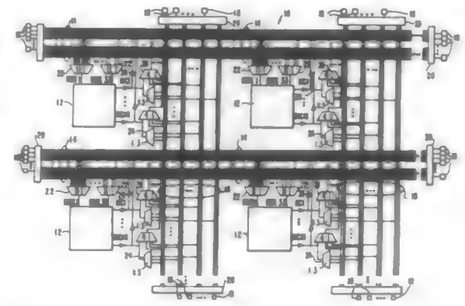
wherein the capacitor and the resistor have values chosen such that the level shift circuit amplifies only having a high frequency not less than 100 MHz.

5,369,314

PROGRAMMABLE LOGIC DEVICE WITH REDUNDANT CIRCUITRY

Rakesh H. Patel, Santa Clara, and Myron W. Wong, San Jose, both of Calif., assignors to Altera Corporation, San Jose, Calif.

Filed Feb. 22, 1994, Ser. No. 199,620
Int. Cl.[5] H03K *19/177*
U.S. Cl. 326—13 **31 Claims**



1. A programmable logic device comprising:

a plurality of normal logic groups each having a plurality of input terminals and a plurality of output terminals;

a plurality of sets of conductors, each set being associated with and adjacent to one of the normal logic groups, there being an equal number of normal logic groups and sets of conductors, the conductors each extending in a first dimension;

at least one redundant logic group having a plurality of input terminals and a plurality of output terminals, the normal logic groups and the redundant logic group being arrayed in a second dimension perpendicular to the first dimension; and

means associated with each set of conductors for selectively directing to each set of conductors one of: (a) signals from the output terminals of the logic group that is associated with and adjacent to that set and (b) signals from the output terminals of another logic group that is adjacent to the set.

5,369,315

HIGH SPEED SIGNAL DRIVING SCHEME

Hiep V. Tran, Carrollton, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 553,207, Jul. 13, 1990, Pat. No. 5,144,162. This application Aug. 18, 1992, Ser. No. 931,793
Int. Cl.[5] H03K *17/16, 17/687, 19/003*
U.S. Cl. 326—82 **5 Claims**

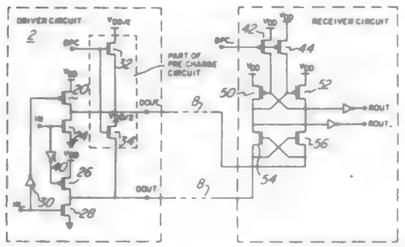
1. A signal driver comprising:

a pair of signal lines;

a receiver circuit; and

a driver circuit connected to said hair of signal lines, said driver circuit including two pairs of totem pole connected transistors, each said pair of totem pole connected transistors being connected between a circuit ground voltage and a voltage less than the supply voltage to said receiver circuit, the transistor connected to said voltage less than said supply voltage from each pair in operation, receiving

a common signal in connection with controlling the precharge of said pair of signal lines to a selected voltage;



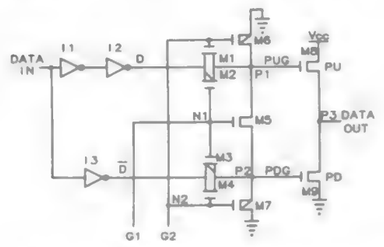
said receiver circuit connected to said pair of signal lines and in operation outputting logic high and logic low voltage levels from said precharged signal lines.

5,369,316

ADVANCED OUTPUT BUFFER WITH REDUCED VOLTAGE SWING AT OUTPUT TERMINAL

Wei Chen, Saratoga, Calif.; Shean Y. Shyu, Hsin-Chu, and Chen Chih-Hung, Hsintien, both of Taiwan, Prov. of China, assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Nov. 22, 1993, Ser. No. 155,623
Int. Cl.[5] H03K *17/04*
U.S. Cl. 326—83 **12 Claims**



1. An output buffer circuit with a reduced voltage swing at its output terminal in response to control signals and a data signal on its input terminal, comprising:

a first inverter stage with its input being the input terminal at which is applied said data signal, for delaying said data signal;

a second inverter stage with its input being the input terminal at which is applied said data signal, providing an inverted data signal at its output;

means, responsive to said control signals, for blocking said data signal and said inverted data signal;

means, responsive to said control signals, for biasing a first and second output node to a first intermediate voltage level, said first and second output nodes being connected to outputs of said blocking means;

means, with its inputs connected to said first and second output nodes, for generating a second intermediate voltage level at said output terminal in response to said first intermediate voltage level during said blocking of said data signal, wherein said

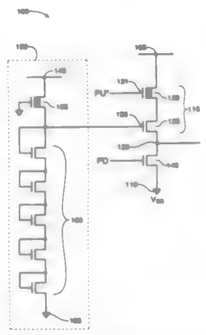
generating means provides said data signal at said output terminal when said blocking means allow said data signal to pass through.

5,369,317

CIRCUIT AND METHOD FOR CONTROLLING THE POTENTIAL OF A DIGIT LINE AND IN LIMITING SAID POTENTIAL TO A MAXIMUM VALUE

Stephen L. Casper, and Stephen R. Porter, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 904,913, Jun. 26, 1992. This application Dec. 11, 1992, Ser. No. 989,252
The portion of the term of this patent subsequent to Dec. 28, 2010, has been disclaimed.
Int. Cl.[5] H03K *17/08*
U.S. Cl. 326—87 **37 Claims**



1. A circuit for pulling a significant node to a significant node potential, comprising:

a) a first supply node connectable to a first supply potential having a digital logic level;

b) an electrical device electrically interposed between said first supply node and the significant node, said electrical device having a control input; and

c) a second supply node connectable to a second supply potential; and

d) a control circuit having a voltage follower device, said voltage follower device electrically interposed between said second supply node and said control input, said control circuit creating a control potential at said control input of said electrical device, wherein said control potential is capable of activating said electrical device thereby allowing said significant node potential to be pulled toward said digital logic level of said first supply potential, said control circuit

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5,369,318

LEVEL TRANSLATOR CAPABLE OF HIGH SPEED OPERATION

Tadahiro Kuroda, Kawasaki; Shinji Fujii, Yokohama; Masahiro Kimura, Yokohama, and Kazuhiko Kasai, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,109
Claims priority, application Japan, Jun. 26, 1992, 4-168921
Int. Cl.[5] H03K *19/0175*
U.S. Cl. 326—66 **12 Claims**

1. A level translation circuit comprising:

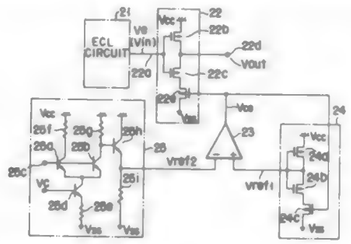
a CMOS output circuit having an input terminal, a control signal input terminal, and an output terminal for translating an input voltage at an ECL logic level, directly applied to said input terminal, to an output voltage at a CMOS logic level and outputting said output voltage to said output terminal, said CMOS output circuit having a threshold voltage that is set nearly midway between ECL voltage levels in response to a control signal applied to said control signal input terminal;

a first reference voltage generating circuit having a control signal input terminal and an output terminal for generating a voltage proportional to said threshold voltage of said

CMOS output circuit as a first reference voltage and outputting it to its output terminal, said first reference voltage generating circuit being responsive to said control signal applied to its control signal input terminal to vary said first reference voltage;

a second reference voltage generating circuit, composed of bipolar transistors, for generating a potential midway between the ECL logic levels as a second reference voltage; and

a comparator having a first input terminal connected to receive said first reference voltage output from said first



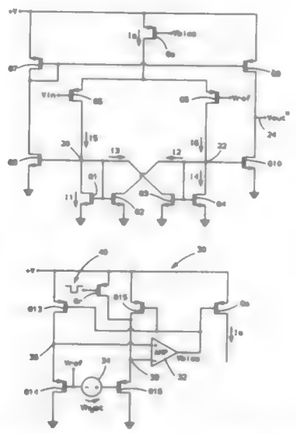
reference voltage generating circuit, a second input terminal connected to receive said second reference voltage output from said second reference voltage generating circuit, and an output terminal connected to said control signal input terminals of said CMOS output circuit and said first reference voltage generating circuit, said comparator making a comparison between said first and second reference voltages to output said control signal for controlling said CMOS output circuit and said first reference voltage generating circuit so that said first and second reference voltages may become equal to each other.

5,369,319

COMPARATOR HAVING TEMPERATURE AND PROCESS COMPENSATED HYSTERESIS CHARACTERISTIC

Brian K. Good, Greentown; Gregory J. Maalove, Kokomo, and Edward H. Hennigford, Russiaville, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 21, 1992, Ser. No. 992,306
Int. Cl.[5] H03K *5/22*
U.S. Cl. 327—73 **10 Claims**



8. A current supply circuit for a MOS transistor comparator circuit, the comparator circuit comparing an input voltage Vin and a reference voltage Vref, and having a primary current path for conducting a primary current portion of a supply current and a secondary current path for conducting a secondary portion of the supply current, the secondary current portion having a predetermined relationship to the primary current portion at a switch point of the comparator whereat Vin varies from Vref by a hysteresis voltage, the current supply circuit comprising:

bias circuit means for generating first and second reference currents, respectively, having values replicating the primary and secondary current portions supply current at the switch point of the comparator when the hysteresis voltage is at a desired hysteresis value; and

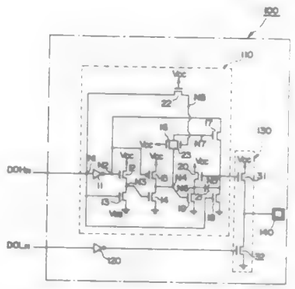
means, coupled to the bias circuit, for supplying the supply current to the comparator circuit at a value substantially equal to the sum of the first and second reference currents.

5,369,320

BOOTSTRAPPED HIGH-SPEED OUTPUT BUFFER

Norihiko Satani, and Shizuo Cho, both of Miyazaki, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1993, Ser. No. 94,614
Claims priority, application Japan, Jul. 22, 1992, 4-194335
Int. Cl.[5] H03K *17/687*
U.S. Cl. 327—108 **13 Claims**



1. An output buffer circuit comprising:

an input terminal for receiving an input signal;

an output circuit coupled to a first node for outputting an output signal in response to a potential level appearing on the first node; and

a bootstrap circuit coupled between the first node and the input terminal, comprising:

a delay circuit coupled to the input terminal for delaying the input signal to provide a delayed input signal;

a first transistor having a drain electrode coupled to the first node, a source electrode coupled for receiving a signal inverted from the input signal, and a gate electrode,

a second transistor having a source electrode coupled for receiving the delayed input signal, a gate electrode coupled for receiving a first potential level and a drain electrode coupled to the gate electrode of the first transistor;

a third transistor connected in parallel to the second transistor, the third transistor having a gate electrode;

a fourth transistor having a source electrode coupled for receiving the input signal, a drain electrode coupled to the gate electrode of the third transistor, and a gate electrode coupled for receiving the first potential level:

a charge circuit coupled between the delay circuit and the first node for boosting to the first node in response to the potential level appearing on the first node and the delayed input signal.

5,369,321

OPTICAL RECORDING MEDIUM

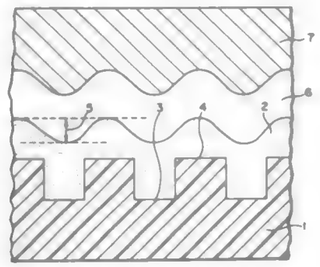
Tadashi Koike, Kamakura; Tadahiko Mizukaki, Tokyo; Tomoyoshi Sasakawa, Chiba; Yuko Suzuki, and Koichi Shima, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 868,427, Apr. 15, 1992, abandoned. This application Apr. 18, 1994, Ser. No. 229,063

Claims priority, application Japan, Apr. 16, 1991, 3-083784

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.4 6 Claims



1. An optical recording medium of a single plate type capable of recording which comprises a transparent resin substrate having a groove and a land, the groove being 900–1800 Å in depth and 0.3–0.6 .μm in width, a dye-containing recording layer overlying the substrate, a reflective layer overlying the recording layer and a protective layer overlying the reflective layer, the thickness of the recording layer being 800–1250 Å at the groove portion and 500–1100 Å at the land portion and thicker at the groove portion than at the land portion, and the surface of the recording layer at the land portion being higher than the surface of the recording layer at the groove portion by 500–1200 Å.

5,369,322

ELECTROMAGNETIC MOTOR OF THE FINITE ROTATIONAL TYPE

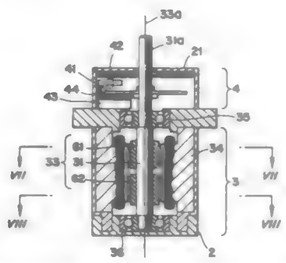
Toshiki Maruyama; Akira Akahane, and Yoshinori Ito, all of Nagano, Japan, assignors to Harmonic Drive Systems, Inc., Kanagawa, Japan

Filed Sep. 11, 1992, Ser. No. 943,563

Claims priority, application Japan, Nov. 21, 1991, 3-104253

Int. Cl.[5] H02K *33/10, 33/14, 35/00*

U.S. Cl. 310—39 11 Claims



9. An electromagnetic motor of the finite rotational type comprising:

a rotor with 2n permanent magnet poles wherein n is a positive integer;

a stator surrounding said rotor including ferromagnetic material and coil windings forming n pairs of stationary electromagnetic poles;

bearing means for supporting said rotor rotationally at least in a predetermined angular range wherein said rotor can be controllably rotated to a desired angular position within said predetermined angular range by controlling a magnetic flux between the poles of the rotor and the electromagnetic poles of the stator;

rotor-returning means for exerting a magnetic force to return said rotor to a predetermined rotational angular position and holding said rotor in said predetermined position when said electromagnetic motor is in a non-excited condition;

each of said magnetic poles of said stator having a groove formed on a surface facing the rotor, said groove being setback from an outer surface of said rotor and extending in a direction parallel to a rotational axis of said rotor; and

wherein a width of said grooves is larger than a gap between adjacent magnetic poles of said stator so as to generate a magnetic torque for forcing the magnetic poles of the rotor to stay in an angular position of 360÷4n degrees of electrical angle apart from said poles of said stator.

5,369,323

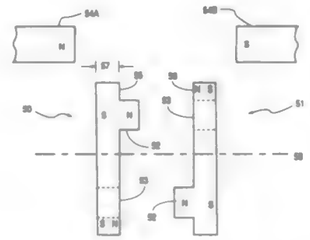
COMPOSITE MAGNET STEPPER MOTOR

Elmer C. Allwine, Jr., Santa Clara, Calif., assignor to Sloanx Engineering, Santa Clara, Calif.

Continuation-in-part of Ser. No. 880,960, May 7, 1992, Pat. No. 5,218,251, which is a continuation-in-part of Ser. No. 784,207, Oct. 28, 1991. This application Jun. 7, 1993, Ser. No. 73,405

Int. Cl.[5] H02K *37/14, 1/22*

U.S. Cl. 310—49 R 20 Claims



1. A stepper motor comprising:

a multi-pole composite magnet having a first piece and a second piece, each piece having a mating member and an arc-shaped member, wherein said first and said second pieces are magnetized in opposite axial directions, wherein the mating members of said first piece and said second piece are aligned to a common axis and the arc-shaped members of said first piece and said second piece are juxtaposed;

at least one stator member placed in operative relation to said multi-pole composite magnet; and

means for positioning said composite magnet and said at least one stator member on said common axis.

5,369,324

ELECTRIC STEPPER MOTOR

Gustav Saether, Leksvik, Norway, assignor to Lyng Elektronikk A-S, Vanvikan, Norway

Filed Jul. 16, 1993, Ser. No. 92,092

Claims priority, application Norway, Jul. 17, 1992, 92.2844

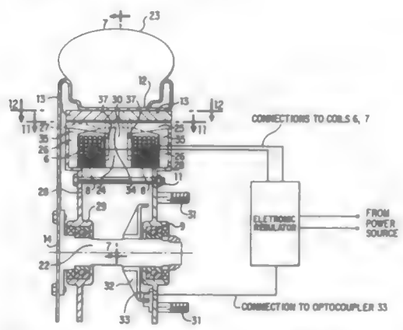
Int. Cl.[5] H02K *37/00*

U.S. Cl. 310—49 R 10 Claims

1. Electric stepper motor having a stator part and a rotor part of substantially cylindrical shape, said stator part comprising at least two annular coils (6, 7) wound on respective annular cores (8), said cores (8) being arranged in parallel with each other and with a common axis which is the motor axis, said coils (6, 7) being separately fed AC current from an electronically controlled current source to magnetize alternatingly a number of flux-conducting elements comprised by said stator part and positioned successively along a direction of a circumference of a cylinder to form a series of flux gaps (36) with flux directions substantially along a circumferential direction between the elements, said elements (30, 35) being in engagement with said cores (8) of said coils (6, 7) to conduct magnetic flux therefrom and toward and through said flux gaps (36), and where said rotor part is constituted by a wheel which is arranged concentrically on an outside of said stator part, said wheel being equipped on a radial inside part with magnets (13) for interaction with magnetic fields of the stator part, said magnets (13) having only a small clearance to a radially outer surface of said stator part, and being arranged with a pole direction pointing radially and with alternatingly north pole and south pole toward the stator part in a circumferential direction, characterized in that

a) the flux-conducting elements are generally T- and Γ-shaped profiles (30, 35) arranged with a lower end of each T-profile stem (24) between and engaging two neighboring ones of said cores (8) and a lower end of each Γ-profile stem (26) on an outside of and engaging one of the two annular cores (8),

every profile stem (24, 26) extending outward in a radial direction past said coils (6, 7) and being uniformly distributed in circularly arranged rows between and on an axial outside of said coils (6, 7),



top beams (25, 27) of the T-profiles (30) and the Γ-profiles (35) pointing in a direction parallel to said axis, the Γ top beams (27) pointing toward an opposite axial outside of said coils (6, 7), and each having a radially outer boundary surface lying substantially flush with an outer cylinder surface of the stator part,

the profile stems (24, 26) being arranged in a shifted order from one circularly arranged row to the next such that each outer coil (6, 7) on its radial outside is covered in equal and uniformly distributed, successive sectors by alternatingly a Γ-profile top beam (27) and a T-profile top beam (25) with a circumferential flux gap (36) therebetween, and in such a manner that each axially inside coil is covered in a corresponding manner by top beams (25) having T-profiles (30) with stems (24) alternatingly on one axial side and the other axial side of the AC current coil, with the same circumferential flux gap also between these top beams (25),

and top beams (25, 27) having Γ-profiles and T-profiles (35, 30) pointing toward each other in a direction parallel to said axis, being cut lengthwise to provide axial clearances (34) therebetween, and that,

b) each magnet (13) in the rotor part has an extent in the circumferential direction which substantially corresponds to a circumferential center distance between two circumferentially neighboring top beams (25, 27) in an outer cylinder surface of the stator part, and lie in a close arrangement to constitute a magnet ring, the same number of such magnet rings as a number of coils (6, 7) in the stator part, being provided closely next to each other in a direction parallel to the axis, however, with each successive magnet (13) in the ring shifted in the circumferential direction one-half magnet sector in relation to the magnets (13) in a neighboring ring.

5,369,325

ROTOR FOR BRUSHLESS ELECTROMOTOR AND METHOD FOR MAKING SAME

Takashi Nagate; Kenichi Endo; Yoshikazu Koike; Takeshi Seto, and Yoshihiko Yamagishi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

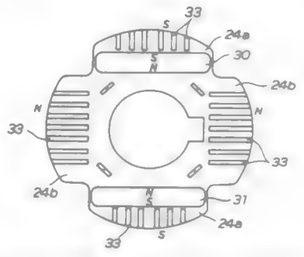
PCT No. PCT/JP91/00925, § 371 Date Feb. 4, 1993, § 102(e) Date Feb. 4, 1993, PCT Pub. No. WO92/01326, PCT Pub. Date Jan. 23, 1992

PCT Filed Jul. 10, 1991, Ser. No. 983,585

Claims priority, application Japan, Jul. 12, 1990, 2-184491; Oct. 19, 1990, 2-281537; Nov. 20, 1990, 2-121724; Nov. 20, 1990, 2-315398; Nov. 21, 1990, 2-122332[U]; Feb. 20, 1991, 3-026420; Mar. 20, 1991, 3-057037; Apr. 19, 1991, 3-088646; Apr. 23, 1991, 3-092361; May 1, 1991, 3-100150

Int. Cl.[5] H02K *21/12, 15/03, 23/42, 1/32*

U.S. Cl. 310—156 11 Claims



1. A rotor having permanent magnets for a brushless electromotor, comprising:

a yoke formed from a plurality of silicon steel sheets laminated together and provided along its outer periphery with even number of, at least four magnetic poles,

slots alternately provided on said magnetic poles at substantially equal distances from a rotational axis to receive said respective permanent magnets such that sides of said permanent magnets facing a rotary shaft have the same polarity,

slits provided on said magnetic poles with said permanent magnets and disposed outside said permanent magnets and oriented in conformity with direction of magnetism and on said magnetic poles with no permanent magnets for guiding magnetic flux to obtain a uniform distribution of magnetic flux on each magnet.

5,369,326

CYLINDRICAL CARBON SEGMENT COMMUTATOR

Georg Strobl, Repulse Bay Garden, Hong Kong, assignor to Johnson Electric S.A., Switzerland

Filed Aug. 18, 1992, Ser. No. 931,685

Claims priority, application United Kingdom, Aug. 22, 1991, 9118086

Int. Cl.[5] H02K *13/04*

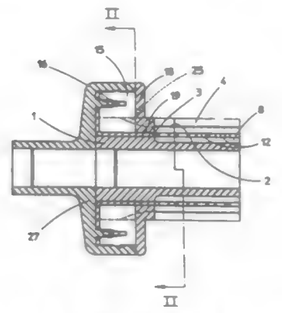
U.S. Cl. 310—235 10 Claims

1. A cylindrical carbon segment commutator, for an electric motor, comprising:

a base member, of insulating material, having an axially-extending outer surface formed with a plurality of axially-extending, slots each having a radial axis, a narrower portion and, radially inwards of the narrower portion, a broader portion of greater circumferential extent than the narrower portion:

a plurality of axially-extending contact members respectively disposed within the slots; and

a plurality of overmoulded carbon segments formed integral with anchor pieces which are respectively disposed within



the slots and fill those parts of the slots which are not occupied by the contact members disposed within the slots so as to be respectively connected to the contact members and held in fixed relation to the base member.

5,369,327

PIEZOELECTRIC CRYSTAL ELEMENT

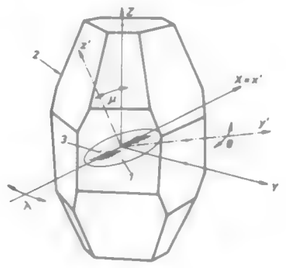
Wolfgang Wallnöfer, Graz, and Peter W. Krempl, Graz/Ragnitz, both of Austria, assignors to AVL Gesellschaft Für Verbrennungskraftmaschinen und Messtechnik m.b.H Prof.Dr.Dr.h.c. Hans List, Graz, Austria

Filed Feb. 17, 1994, Ser. No. 197,805

Claims priority, application Austria, Mar. 4, 1993, 422/93

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—313 A **9 Claims**



1. A piezoelectric crystal element with at least one substantially planar surface, to be used in surface acoustic wave devices, wherein said piezoelectric crystal element is made from $GaPO_4$ and wherein said planar surface is defined by Euler angles λ in the range of 0°, μ in the range of 40° to 75° and θ in the range of 0°.

5,369,328

SPARK PLUG HAVING Y-SHAPED OR V-SHAPED ELECTRODES

Friedrich Gruber, Hippach, Austria; Hans-Jörg Pucher, Fürstenfeldbruck, Germany, and Reinhard Auer, deceased, late of Brandenberg, Austria by Reuck Aéer, legal representative , assignors to Jenbacher Energiesysteme AG, Jenbach, Austria

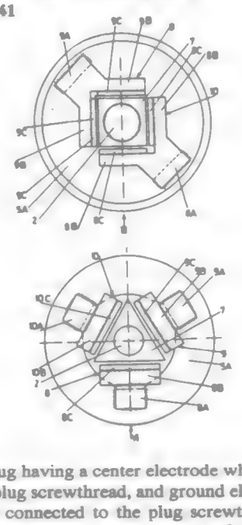
PCT No. PCT/AT91/00075, § 371 Date Dec. 24, 1992, § 102(e) Date Dec. 24, 1992, PCT Pub. No. WO92/00620, PCT Pub. Date Jan. 9, 1992

PCT Filed Jun. 28, 1991, Ser. No. 962,578

Claims priority, application Austria, Jul. 2, 1990, 1402/90

Int. Cl.[5] H01T *13/20*

U.S. Cl. 313—141 **4 Claims**



1. A spark plug having a center electrode which is insulated relative to the plug screwthread, and ground electrodes which are electrically connected to the plug screwthread, wherein mounted at the combustion chamber end of the center electrode is an attachment portion which at least partially comprises platinum or a platinum alloy, the spark paths lying between the attachment portion and the ground electrodes, wherein the attachment portion is substantially in the form of a prism having a plurality of side surfaces, the ground electrodes extending laterally beside the side surfaces of the substantially prism-shaped attachment portion substantially parallel to the prism edges of a top surface and a bottom surface, respectively, and wherein the ground electrodes are combined to provide a respective component whose two electrode arms extend at least approximately parallel to respective two side surfaces of the attachment portion of the center electrode, characterized in that a common web portion leads from an apex formed by the electrode arms of the component which is of a V-shaped or Y-shaped configuration to the ground body of the spark plug.

5,369,329

SHORT ARC LAMP ELECTRODE ROD SUPPORTS

Helge Anstad, Lebanon; Thomas Gaven, Summit Township, Union County, and Ronald A. Mack, Kenilworth, all of N.J., assignors to Canrad, Inc., Newark, N.J.

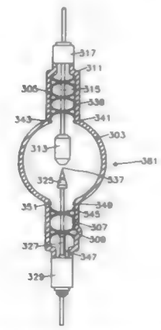
Filed Oct. 9, 1992, Ser. No. 958,767

Int. Cl.[5] H01J *1/96*

U.S. Cl. 313—284 **19 Claims**

1. In a short arc discharge lamp having a quartz envelope with a bulbous portion and a plurality of envelope arms having an inside surface and a cross-section, and wherein one or more electrode rods are supported within said lamp for specific alignment, the support elements for said electrode rods being the improvement which comprises:

a. a support element comprising a high temperature metal, and having a unistructural design, and having a flat central portion with a central orifice of sufficient dimension to receive said electrode rods, and having a multiplicity of legs radially extending upwardly and downwardly from said flat central portion to form an angle with said flat central portion, each leg has an end portion terminating with a pod formed at substantially a right angle to said flat



central portion, said legs are of sufficient length to fit said support element within the cross-section of said envelope arms so that said pods contact the inside surface of said envelope; and

b. securing means for securing said support element within an envelope arm.

5,369,330

DAMP ROD CONSTRUCTION FOR CRT GRID STRUCTURES

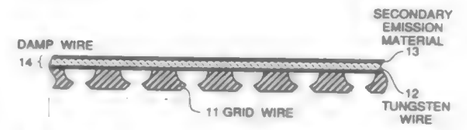
Nobumitsu Aibara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 15, 1992, Ser. No. 900,347

Claims priority, application Japan, Jun. 13, 1991, 3-140509

Int. Cl.[5] H01J *1/18*

U.S. Cl. 313—402 **28 Claims**



1. A mask structure for a color picture tube including a phosphor screen, the mask structure comprising:

a frame,

a number of grid wires stretched over the frame, the grid wires parallel to and separated from one another, and

at least one damp wire stretched over and in contact with the grid wires, and traversing the grid wires on the side of the grid wires toward the phosphor screen,

the damp wire being formed of a conductive metal core wire coated with a semiconductor material layer.

5,369,331

PIGMENT-ATTACHED BLUE-EMITTING PHOSPHOR AND COLOR CATHODE-RAY TUBE

Tomohito Mizukami; Chihito Funayama, both of Odawara, and Yasuo Oguri, Tokyo, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Feb. 3, 1993, Ser. No. 969,837

Claims priority, application Japan, Jun. 20, 1991, 3-148636

Int. Cl.[5] C09K *11/02*

U.S. Cl. 313—467 **10 Claims**

1. A pigment-attached, blue-emitting phosphor, comprising: a blue-emitting phosphor and a blue pigment attached to the surface of the blue-emitting phosphor, in an amount of 0.3 to 30 wt. %, said blue pigment having the formula:

$$xCoO.yZnO.zSiO_2$$

wherein the relative amounts of oxide components of the pigment are within the ranges of $0.05 \leqq x/z \leqq 1.5$ and $0.1 \leqq y/z \leqq 2.0$.

10. A color cathode-ray tube, comprising a face plate having, on the inner surface thereof, a blue-emitting fluorescent layer, wherein a blue pigment layer is coated between the face plate and the blue-emitting fluorescent layer, said blue pigment having the formula:

$$xCoO.yZnO.zSiO_2$$

wherein the relative amounts of oxide components of the pigment are within the range of $0.05 \leqq x/z \leqq 1.5$ and $0.1 \leqq y/z \leqq 2.0$.

5,369,332

DEVICE THAT FACILITATES WORKING AT A COMPUTER MONITOR

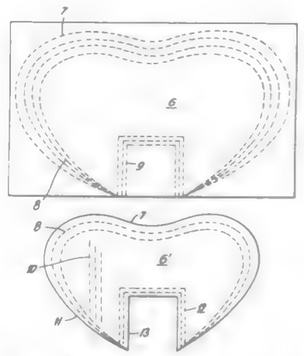
Nikolaus Droscha, Schönblick 37, 7505 Ettlingen 8, Germany

Filed Sep. 2, 1992, Ser. No. 939,191

Claims priority, application Germany, Sep. 12, 1991, 4130248

Int. Cl.[5] H01J *29/89*

U.S. Cl. 313—478 **21 Claims**



1. A device for relieving strain on the eyes of an operator working at a computer monitor, comprising: a flat shield having an outer contour configured to match an outer contour of an operator's field of vision and means for mounting the flat shield around edges of a computer monitor housing and maintaining the shield flat during use.

5,369,333

THIN FILM ELECTROLUMINESCENCE DISPLAY ELEMENT

Kazuhiro Inoguchi, Toyota; Masayuki Suzuki; Nobuei Ito, both of Chiryu, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Research Development Corporation of Japan, Tokyo, both of Japan

Filed Sep. 29, 1992, Ser. No. 953,068

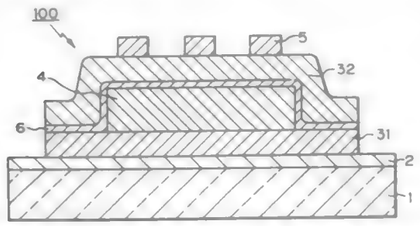
Claims priority, application Japan, Sep. 30, 1991, 3-280648

Int. Cl.[5] H05B *33/14;* **H01L** *33/00*

U.S. Cl. 313—509 **11 Claims**

1. A thin film EL display element comprising: a lower electrode; a first insulating film a luminescent layer; a second insulating film; and an upper electrode disposed on an insulat-

ing base substrate in this order, said second insulating film including a thin film that is adjacent to at least a portion of a



surface of said luminescent layer, said thin film comprising a sulfide or a selenide that does not form any sulfate or selenate.

5,369,334

HIGH-PRESSURE DISCHARGE LAMP WITH OPTIMIZED DISCHARGE VESSEL

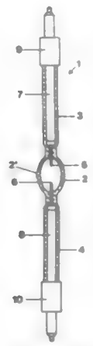
Hans-Werner Goelling, and Clemens Barthelmes, both of Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH, Munich, Germany

Filed Jul. 7, 1992, Ser. No. 909,792

Claims priority, application Germany, Jul. 19, 1991, 4124055

Int. Cl.[5] H01J *17/16, 61/30*

U.S. Cl. 313—634 **2 Claims**



1. A high-pressure discharge lamp (1) having
an essentially rotation-symmetrical discharge vessel (2) of quartz glass;
a lamp shaft (3, 4) of quartz glass extending from the discharge vessel in the direction of the axis of rotation of said rotation-symmetrical discharge vessel;
electrodes (5, 6) melt-sealed into the lamp shaft, and electric connection means (7, 8, 9, 10) electrically connected to said electrodes; and
a fill of at least one noble gas, mercury, and optional at least one metal halide within the discharge vessel,
wherein, in accordance with the invention,
the wall thickness of the discharge vessel (2) is selected in accordance with optimized parameters comprising bursting strength, interior volume of the discharge vessel, light transmissivity of the discharge vessel, color rendition index and resistance against devitrification of the quartz glass of the discharge vessel, and dimensioned to have a theoretical optimum wall thickness d in millimeters of

$$d=1.5+0.1\times\sqrt[4]{P}$$

wherein the wall thickness d may vary by a value of Δd of $\pm 0.3\times d$, in millimeters,
and wherein P is the power rating of the lamp, in watts.

5,369,335

COUPLING DEVICE FOR ANTENNA FEEDER IN A MAGNETRON COMPRISING ENGAGED MALE AND FEMALE MEMBERS

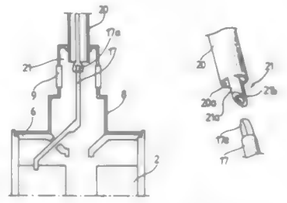
Jong H. Lim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 10, 1992, Ser. No. 990,778

Claims priority, application Rep. of Korea, Dec. 13, 1991, 91-22218

Int. Cl.[5] H01J *23/44, 25/50*

U.S. Cl. 315—39.53 **2 Claims**



1. A magnetron comprising:
a magnetron body having an upper portion;
an antenna feeder having an upper end and disposed in the magnetron body;
an evacuation tube having a lower end, said lower end is located at the upper portion of the magnetron body; and
means for coupling the antenna feeder to the evacuation tube, the means including a male engaging member connected to the upper end of the antenna feeder and a female engaging member connected to the lower end of the evacuation tube and receiving the male engaging member therein, and the female engaging member including a hollow boss and at least one slit in the hollow boss.

5,369,336

PLASMA GENERATING DEVICE

Hideomi Koinuma; Shunpei Yamazaki, both of Tokyo, and Shigenori Hayashi, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

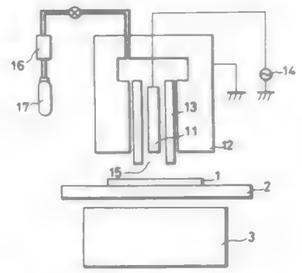
Division of Ser. No. 813,758, Dec. 30, 1991, Pat. No. 5,221,427.

This application Jan. 27, 1993, Ser. No. 9,992

Claims priority, application Japan, Dec. 31, 1990, 2-418695

Int. Cl.[5] H01J *7/24*

U.S. Cl. 315—111.21 **13 Claims**



1. A plasma generating device comprising:
a central columnar electrode;
a peripheral cylindrical electrode coaxially surrounding said central columnar electrode;
an insulating cylinder coaxially interposed between said central columnar electrode and said peripheral cylindrical electrode with a discharging space formed between said central columnar electrode and said peripheral cylindrical electrode;
an alternating current source operatively connected with said central columnar electrode and said peripheral cylindrical electrode in order to induce an alternating electric field therebetween;
a gas supply system for supplying a gas into said discharging space; and
a magnet provided on a straight extension line from axis of said central columnar electrode.

5,369,337

DC OR HF ION SOURCE

Kenichi Yanagi; Mitsuo Kato; Kazuya Tsurusaki; Toshio Taguchi; Kenji Atarashiya; Tadashi Rokkaku, and Ichiro Yamashita, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

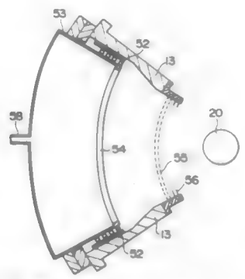
Division of Ser. No. 913,927, Jul. 17, 1992, Pat. No. 5,288,386.

This application Aug. 12, 1993, Ser. No. 104,899

Claims priority, application Japan, Jul. 18, 1991, 3-178114; Jul. 18, 1991, 3-178115; Jul. 18, 1991, 3-178116; Aug. 16, 1991, 3-205906; Aug. 16, 1991, 3-205907

Int. Cl.[5] H01J *27/02*

U.S. Cl. 315—111.81 **2 Claims**



2. A DC or high frequency ion source comprising:
a hollow cathode and substantially hollow anode for applying a DC or alternating voltage, each of said hollow cathode and said substantially hollow anode having an arcuate shape which defines an arcuate hollow box, said cathode having a rectangular cross section;
a gas inlet disposed at a convex side of said cathode for supplying a discharge gas into said cathode;
a cathode heater disposed between said anode and said cathode;
a magnet disposed adjacent said anode for improving the uniformity of a plasma;
an ion extraction outlet disposed at a concave side of said cathode opposite to said gas inlet, said ion extraction outlet having an arcuate, rectangular shape; and
an ion extraction electrode and an acceleration electrode for controlling the energy of extracted ions, wherein:
said cathode is disposed inside said substantially hollow anode; and
said ion extraction electrode and said acceleration electrode have an arcuate, rectangular shape and an opening coextensive with said ion extraction outlet, said ion extraction electrode and said acceleration electrode being disposed adjacent, and aligned with, said ion extraction outlet.

5,369,338

STRUCTURE OF A PLASMA DISPLAY PANEL AND A DRIVING METHOD THEREOF

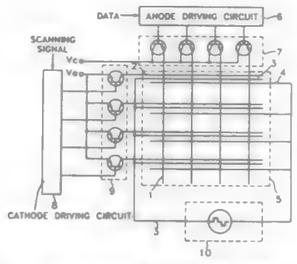
Dae-il Kim, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 2, 1992, Ser. No. 970,036

Claims priority, application Rep. of Korea, Mar. 26, 1992, 92-4969

Int. Cl.[5] G09G *3/10*

U.S. Cl. 315—169.4 **13 Claims**



1. A plasma display panel (PDP) comprising:
a first plate;
a plurality of anodes disposed on the first plate;
a second plate;
a plurality of first sustaining electrodes disposed on the second plate;
a first portion of a dielectric layer disposed on and covering the plurality of first sustaining electrodes;
a plurality of cathodes disposed on the first portion of the dielectric layer, each cathode covering and opposing a corresponding first sustaining electrode;
a plurality of second sustaining electrodes disposed on the second plate; and
a second portion of the dielectric layer disposed on the second sustaining electrodes and the cathodes, one of the cathodes being disposed adjacent one of the anodes for initiating a discharge at a selected discharge cell wherein at least one of the first sustaining electrodes and at least one of the second sustaining electrodes are disposed proximate the selected discharge cell for sustaining the discharge.

5,369,339

CIRCUIT ARRANGEMENT FOR REDUCING STRIATIONS IN A LOW-PRESSURE MERCURY DISCHARGE LAMP

Jozef H. Reijnaerts, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 20, 1992, Ser. No. 963,869

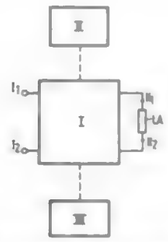
Claims priority, application European Pat. Off., Dec. 16, 1991, 912032954.3

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R **12 Claims**

1. A circuit for generating a high frequency current having a DC component and a high frequency AC component for operating a discharge lamp, said circuit comprising:
means for generating the DC component having a DC amplitude and a polarization direction with respect to a zero reference level; and
means for generating an asymmetric high frequency AC component, asymmetric about the DC component, the AC component having a first amplitude in a first polarization direction and a second amplitude in a second, opposite polarization direction, one of the AC amplitudes being

greater than the other AC amplitude with respect to the DC component, and the greater of the amplitudes having



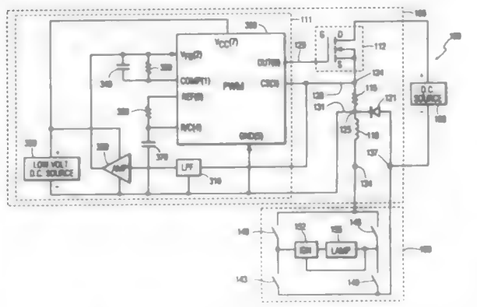
a polarization direction coincident with the polarization direction of the DC component.

5,369,340

DRIVING SCHEME FOR A HIGH INTENSITY DISCHARGE BALLAST DOWN CONVERTER

Paul Leytes, Chicago, Ill., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 29, 1992, Ser. No. 968,545
Int. Cl.[5] H05F *1/00*
U.S. Cl. 315—307 **30 Claims**



1. A ballast comprising:

supply means for supplying power at a D.C. voltage between a first supply terminal and a second supply terminal, said first supply terminal being of a positive voltage potential relative to said second supply terminal; and

down converter means for producing a varying level of output current, said down converter means including energy storage means for storing energy based on the power produced by said supply means, switching means continuously coupled to the first supply terminal and adapted to control, in response to a driving signal, the storage of energy within said energy storage means, and control means responsive to the varying level of output current without regard to variations in the D.C. voltage for producing said driving signal.

5,369,341

VERTICAL RETRACE WITH ZOOM AND CENTERED FAST RETRACE

James A. Wilber, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Dec. 11, 1992, Ser. No. 987,956
Int. Cl.[5] G09G *1/04;* **H01J** *29/70;* **H03K** *4/08*
U.S. Cl. 315—389 **15 Claims**

1. A video display apparatus, comprising:

a cathode ray tube;

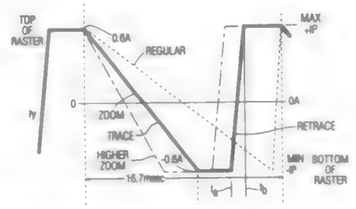
a vertical deflection winding on said cathode ray tube;

a source of an image control signal representing an image scale factor selected from a range of values;

a source of a vertical synchronization signal;

a deflection ramp generator responsive to said synchronization and image control signals for generating a ramp that varies with the selected scale factor;

a deflection amplifier responsive to said ramp for generating in said deflecting winding a cyclical deflection current having a period of a vertical interval, the deflection current ranging between a first extreme and a second extreme during a trace interval that is shorter than the vertical



interval by a time that varies with the selected scale factor; and

a retrace signal generator operable to return the deflection current from the second extreme to the first extreme during a retrace interval that is positioned within a non-trace interval, but not generally positioned adjacent to either end point of the trace interval,

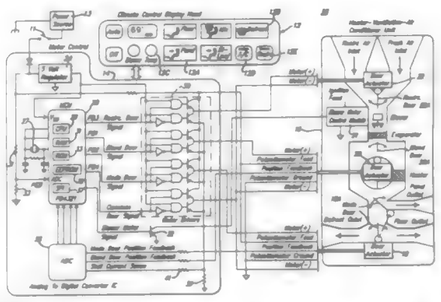
wherein a timing means of the retrace signal generator is operable to generate said retrace interval substantially centered about a midpoint of the time by which the trace interval is shorter than the vertical interval.

5,369,342

PREDICTIVE ELECTRIC MOTOR POSITIONING DEVICE, CALIBRATION SYSTEM THEREFOR

Robert G. Rudzewicz, Sterling Heights; Michael A. Dahl, Royal Oak; Thomas G. Dunn; Kenneth J. Wenzel, both of Farmington Hills, and Ronald A. Muckley, Milford, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 14, 1993, Ser. No. 47,534
Int. Cl.[5] H02P *1/58*
U.S. Cl. 318—102 **8 Claims**



1. A firmware/hardware motor calibration system for measuring motor load conditions of electric motors and time of movement between physical stops of mechanical structures coupled to output shafts of the electric motors, the system being used to calibrate electric motors arranged to operate as hybrid closed loop and open loop motor control systems, the closed loop motor control systems employing motors with potentiometers which provide analog signal representations of changes in position of the motor shafts, the motor shafts in both the open and closed loop systems being connected to linkage

for moving attached structures over arcuate paths between at least two physical stop positions, the system comprising:

(A) an input power device having terminals for receiving electric power from a designated source and generating therefrom regulated and raw power used by components in the system, the input device including an On and OFF switch for applying or removing electric power from the system when desired;

(B) motor drivers having a first set of input terminals for receiving the regulated and raw powers and a second set of input terminals for receiving logical control signals and providing therefrom at output terminals voltage control signals for bi-directional control of movement of the motor shafts in the closed and open loop systems in response to the logical control signals;

(C) an external analog-to-digital converter (ADC) having input terminals coupled to potentiometers of the closed loop motors which provide analog signal representations of changes in position of the motor shafts and producing therefrom at output terminals digital signal equivalents of the analog signal representations;

(D) a microcontroller having:

(1) a timer system which provides a reference clock signal and operates in conjunction with RAM based counters to provide therefrom at a first output terminal a first clock signal apportioned to the chosen frequency of the reference clock signal and at a second output terminal a second clock signal of another chosen frequency apportioned to the first clock signal;

(2) door motor control firmware containing instructions used by a CPU of the microcontroller for generating the digital signals used to form the logical control signals sent to the second set of terminals of the motor drivers, the CPU requesting instructions from the door motor control firmware at a rate dictated by the first clock signals;

(3) programmable input/output circuits containing (a) programmable output registers for receiving at input terminals the digital signals from the CPU and producing therefrom at output terminals the logical control signals sent to the second set of terminals of the motor drivers, (b) a serial peripheral interface which receives variable digital signals from the external ADC and producing therefrom digital data used by the CPU to establish ends of travel of the structures attached to the motor shafts, and a determination of whether the external ADC values are valid and (c) an internal ADC for receiving variations of the raw power from the input power device while a motor shaft rotates and then providing equivalent digital values used by the CPU to derive the average system voltage relative to the motor; and

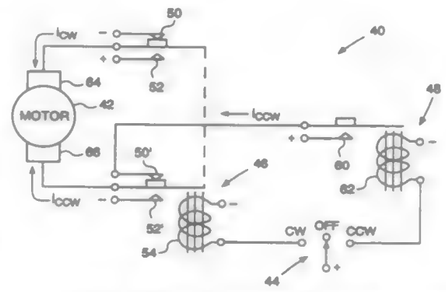
(4) door motor calibration firmware containing instructions used by the CPU for: (a) receiving the variable digital data from the external ADC and then determining if the external ADC values are valid; (b) receiving variable digital data from the internal ADC and computing and storing therefrom the average system voltage of the motor (c) requesting the execution of instructions from the door motor control firmware for turning ON a motor and obtaining the time of door movement from a starting position to a stall condition and for turning OFF a motor to allow for settlement of the motor feedback for closed loop motors, the CPU requesting instructions from the door motor calibration firmware at a rate dictated by the second clock signal.

5,369,343

SYSTEM AND METHOD FOR PERMANENT MAGNET DC MOTOR REVERSING

Paul W. Niemela, Pickens, S.C., assignor to Ryobi Motor Products, Easley, S.C.

Filed Feb. 22, 1993, Ser. No. 20,566
Int. Cl.[5] H02P *1/22*
U.S. Cl. 318—280 **19 Claims**



1. A system for selecting a rotational direction of a permanent magnet DC motor, the system comprising:

first and second switch means for switching voltage to the motor, the first and second switch means being actuated by at least one actuator from a first operating state associated with a first rotational direction to a second operating state associated with a second rotational direction;

third switch means for switching voltage to the motor, the third switch means being actuated by an actuator from a first operating state associated with the first rotational direction to a second operating state associated with the second rotational direction; and

a control switch having multiple switch positions for selecting the rotational direction of the motor,

the control switch, the motor and the switch means being electrically interconnected such that a first control switch position provides a first voltage associated with the first rotational direction to the motor, a second control switch position provides a second voltage to the motor, the second voltage being associated with the second rotational direction and having a polarity opposite that of the first voltage, and a third control switch position provides an open circuit to the motor.

19. A method for controlling the rotational direction of a motor, the method comprising:

providing first, second and third actuable switch means for switching voltage to the motor, the switch means being actuable by at least one actuator;

providing a control switch having multiple positions for selecting a desired rotational direction of the motor;

electrically interconnecting the motor, the actuable switch means and the control switch such that a first control switch position provides a first voltage associated with a first rotational direction to the motor, the first and second switch means being electrically interconnected to provide the first voltage, a second control switch position provides a second voltage to the motor, the second voltage being associated with a second rotational direction and having a polarity opposite that of the first voltage, the first, second and third switch means being electrically interconnected to provide the second voltage, and a third control switch position provides an open circuit to the motor;

selecting one of the control switch positions corresponding to a desired rotational direction of the motor so as to operate the motor; and

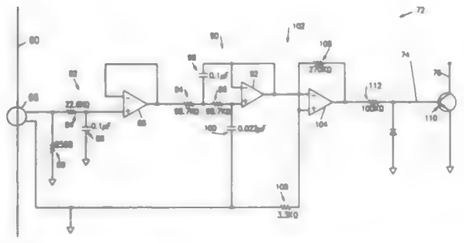
selecting the third control switch position so as to provide an open circuit to the motor.

5,369,344

TACHOMETER POR DETERMINING THE SPEED OF A MOTOR

Frank Mezzatesta, Jr., 3274 Linda Vista Rd., Glendale, Calif. 91206, and Donald M. Young, 831 S. Record Ave., Los Angeles, Calif. 90023

Filed Feb. 28, 1992, Ser. No. 843,604
Int. Cl.[5] G01P *3/48*
U.S. Cl. 318—463 **13 Claims**



1. A tachometer for determining the speed of a motor having a rotor that rotates relative to windings that define poles of the motor and having a predetermined speed profile that defines the desired motor speed during operation of the motor, the tachometer comprising:

signal means for producing a current signal that corresponds to the current in one winding of the motor;

filter means for removing frequency components of the current signal greater than a predetermined maximum value, to provide a filtered signal; and

pulse means for providing a pulse signal that indicates the frequency of the filtered signal.

12. A tachometer for determining the speed of a motor having a rotor that rotates relative to at least one winding that defines a pole of the motor, said tachometer comprising:

a detector coupled to the at least one winding so as to produce a varying electronic signal representative of the motor's phase;

a pulse circuit that is coupled to said detector to receive said varying electronic signal and that produces an output signal having a first state when said varying electronic signal matches a predefined level and a different state when said varying electronic signal does not match said predefined level; and,

a zero-crossing detector which includes

a comparator that produces a pulse at each zero-crossing of said varying electronic signal, and,

a gating device coupled to the output of said comparator to receive said pulse and to produce said output signal.

5,369,345

METHOD AND APPARATUS FOR ADAPTIVE CONTROL

Duc T. Phan, and Tien Q. Le, both of Santa Clara County, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 861,069, Mar. 31, 1992. This application Apr. 10, 1992, Ser. No. 867,319
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **64 Claims**

1. In a continuous analog signal control system for a magnetic disc storage device comprising an electromechanical actuator responsive to a command signal, at least one magnetizable rotating disc having disc track position data encoded magnetically thereupon, at least one transducer proximate said rotating disc surface for sensing said magnetic positional data, said transducer being mechanically linked to said actuator and generating a signal related to a measured position y_m in response to said sensed magnetic positional data, and a control system comprising an estimator;

a method of adaptively calibrating a plant gain for regions of said disc and for each of said transducers, by determining a plant gain adjustment factor, said method comprising the steps of:

commanding said actuator to a position r with a control signal u;

generating a single-frequency sinusoid signal u_s;

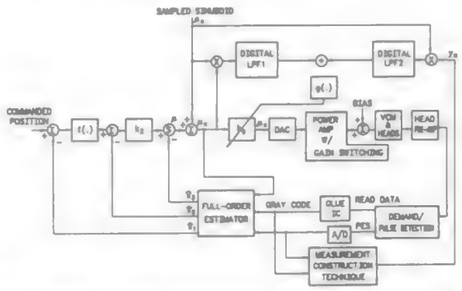
injecting said single-frequency sinusoid signal u_s to said control system so that said single-frequency sinusoid is added to said control signal;

combining said control signal u and said single-frequency sinusoidal signal u_s to generate a corrected control signal u_c;

multiplying said control signal and said added sinusoid signal by said sinusoid signal to generate a first product signal;

measuring a position of said transducer y_m;

multiplying said measured transducer position by said sinusoid value to generate a second product signal;



low-pass filtering said first product signal to generate a first filtered signal;

low-pass filtering said second product signal to generate a second filtered signal;

dividing said second filtered signal by said first filtered signal to generate an identification ratio Q proportional to the measured plant gain;

determining a new calibrated plant gain adjustment factor k_g, said factor being an inverse function of said identification ratio Q;

replacing a previous plant gain adjustment factor by said new calibrated plant gain adjustment factor;

multiplying said control signal u_c by said new calibrated plant gain adjustment factor k_g to obtain an adjusted control signal u_s;

wherein said control system automatically compensates for plant bias forces and for changes in effective plant gain.

5,369,346

EMERGENCY STOP CONTROL SYSTEM FOR MOBILE ROBOT

Hideo Takahashi, and Yukihiko Suzaki, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

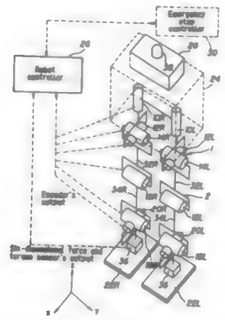
Filed May 20, 1993, Ser. No. 65,197
Claims priority, application Japan, May 22, 1992, 4-155917
Int. Cl.[5] B25J *11/00, 9/00*
U.S. Cl. 318—568.17 **17 Claims**

1. A system for controlling an emergency stop of a biped mobile robot having two articulated legs for walking, comprising:

first means for detecting an emergency stop signal generated outside of the robot;

second means for comparing the detected emergency stop signal with a first reference value to increment a counter value each time the detected emergency stop signal exceeds the first reference value in magnitude; and

control means for comparing the counter value with a second reference value and for driving the legs of the mobile



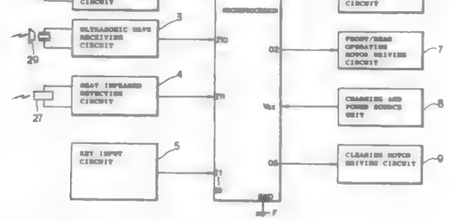
robot to stop its motion if the counter value exceeds the second reference value.

5,369,347

SELF-DRIVEN ROBOTIC CLEANING APPARATUS AND DRIVING METHOD THEREOF

Chang-Hyun Yoo, Suwon-city, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Mar. 25, 1993, Ser. No. 36,859
Claims priority, application Rep. of Korea, Mar. 25, 1992, 92-4858
Int. Cl.[5] B62D *1/02;* **G06F** *15/50;* **G01S** *15/00*
U.S. Cl. 318—568.12 **7 Claims**



1. A self-driven robotic cleaning apparatus comprising:

a charging and power source for generating a direct current;

a microprocessor for receiving the direct current generated from the charging and power source;

a key input circuit which receives an operating condition and command from a user to thereafter output the same to the microprocessor;

an infrared-heat detecting circuit for sensing infrared-heat emitted from a human body and pet animals to thereby output a sensed signal of the same to the microprocessor;

a front/rear operating motor driving circuit for receiving a driving signal outputted from the microprocessor to thereby rotate driving wheels in front and rear directions;

a steering motor driving circuit for receiving the driving signal generated from the microprocessor to rotate the wheels and thereafter to change the direction of the wheels;

an ultrasonic wave transmitting circuit for receiving an ultrasonic wave transmitting signal from the microprocessor to thereafter transmit ultrasonic waves;

an ultrasonic wave receiving circuit for receiving the ultrasonic wave transmitted from the ultrasonic wave transmitting circuit after the waves are reflected from an obstacle and for inputting a signal to the microprocessor indicating receipt of the ultrasonic waves by the ultrasonic wave receiving circuit; and

a cleaning motor driving circuit for receiving the driving signal from the microprocessor to drive a cleaning motor and thereafter to perform a cleaning job.

2. A driving method for a self-driven robotic cleaning apparatus, wherein the driving method comprises: an initialization step for establishing an initial value of a flag in a microprocessor;

a distance measurement step for measuring a distance from the self-driven robotic cleaning apparatus to a structure with an entrance;

a first position determining step for determining whether the self-driven robotic cleaning apparatus is positioned at a place deviated from the structure;

a second position determining step for determining whether the self-driven robotic cleaning apparatus is positioned facing the entrance of the structure, said second position determining step being performed when it is determined at the first position determining step that the self-driven robotic cleaning apparatus is not positioned at a place deviate from the structure;

a direction change timing determining step for determining whether a present time is a time to change a progressing direction of the self driven robotic cleaning apparatus, said direction change timing determining step being performed When it is determined at the second position determining step that the self-driven robotic cleaning apparatus is positioned facing the entrance of the structure;

a distance determining operation and operation completion display step for calculating a changeable distance between the self-driven robotic cleaning apparatus and the structure and for setting the flag indicating that an operation has been completed on the changeable distance, said distance determining operation and operation completion display step being performed when it is determined at the direction change timing determining step that the present time is a time for changing a progressing direction of the self-driven robotic cleaning apparatus;

a maximum distance arrival determining step for determining whether the self-driven robotic cleaning apparatus is substantially deviated from a pre-established maximum distance; and

a movement stopping and waiting step for stopping movement of the self-driven robotic cleaning apparatus and then for entering a waiting mode, said movement stopping and waiting step being performed when it is determined at the maximum distance arrival determining step that the self-driven robotic cleaning apparatus is deviated from the structure by more than the maximum distance.

5,369,348

DEVICE FOR ATTENUATING THE PERIODIC VIBRATIONS OF A MECHANICAL STRUCTURE

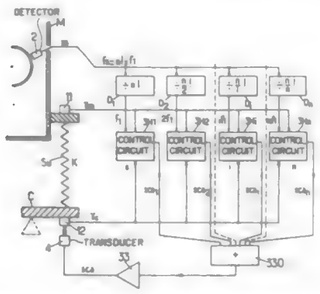
André Genneseaux, Paris, France, assignor to Hutchinson S.A., Paris, France

Filed May 28, 1992, Ser. No. 889,336
Claims priority, application France, May 31, 1991, 91 06580
Int. Cl.[5] G05B *5/01*
U.S. Cl. 318—623 **10 Claims**

1. A device for damping periodic vibrations of a mechanical structure, comprising at least one transducer detecting these vibrations and producing a detected signal, a detector of the periodicity of these vibrations producing a synchronizing signal, a control circuit connected to said at least one transducer and said detector, and a transducer connected to said control circuit for generating compensation vibrations applied to said mechanical structure in order to compensate for the periodic vibrations, wherein said control circuit includes in a cascade connection:

a filtering circuit for synchronous filtering of said detected signal from said at least one transducer, in accordance

with said synchronizing signal from said detector and, said filtering circuit producing a filtered signal whose frequency spectrum contains only at least one of an instantaneous fundamental frequency of said detected signal and its harmonic frequencies; and



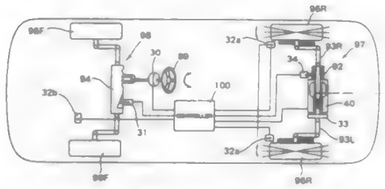
a regulating circuit for regulating said filtered signal, for receiving said filtered signal from said filtering circuit, and for producing an antivibration-control signal applied to said transducer for generating compensation vibrations, in such a way as to minimize the amplitude of said detected signal.

5,369,349

ELECTRIC MOTOR CONTROL SYSTEM

Yoshikazu Tsuchiya; Osamu Tsurumiya; Makoto Murata; Masataka Izawa, and Yukihiro Fujiwara, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1992, Ser. No. 845,229
Claims priority, application Japan, Apr. 26, 1991, 3-125290
Int. Cl.[5] H02P *5/28*
U.S. Cl. 318—811 **12 Claims**



1. An electric motor control system having motor driving means comprising a bridge of switching elements connected to an electric power supply, for supplying a pulsed current to an electric motor connected between the switching elements by turning on and off the switching elements based on drive pulse signals applied to the motor driving means, wherein the improvement comprising:

electric energy supply monitoring means for monitoring electric energy supplied to the electric motor to detect a period of time in which the electric energy supplied to the electric motor is free of pulses; and

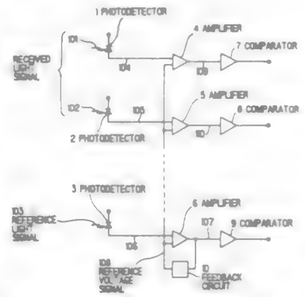
failure determining means for determining a failure when the period of time detected by said electric energy supply monitoring means exceeds a predetermined period of time.

5,369,350

OPTICAL PARALLEL RECEIVER

Kazuhiko Matsuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 4, 1992, Ser. No. 985,968
Claims priority, application Japan, Dec. 4, 1991, 3-319527
Int. Cl.[5] H04B *10/06*
U.S. Cl. 319—189 **4 Claims**



1. An optical parallel receiver, comprising:

a plurality of signal photodetectors for receiving light signals to be converted into electric signals, respectively;

a reference photodetector for receiving a reference light signal of repetitive high and low levels having a light power approximately equal to that of said received light signals, said reference light signal being converted into electric reference signal;

a plurality of signal differential amplifiers for amplifying said electric signals from said plurality of signal photodetectors, respectively;

a reference differential amplifier for amplifying said electric reference signal from said reference photodetector; and

a feedback circuit for generating a DC reference voltage signal in accordance with a difference between maximum and minimum levels of an output signal of said reference differential amplifier;

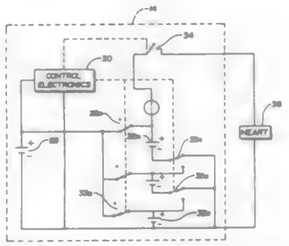
wherein said DC reference voltage signal is commonly supplied to said signal and reference differential amplifiers to be used as a common reference voltage.

5,369,351

HIGH VOLTAGE CHARGE STORAGE ARRAY FOR AN IMPANTABLE DEFIBRILLATOR

Theodore P. Adams, Edina, Minn., assignor to Angeion Corporation, Plymouth, Minn.

Filed Feb. 18, 1992, Ser. No. 835,837
Int. Cl.[5] H02J *7/00;* **A61N** *1/36*
U.S. Cl. 320—7 **13 Claims**



1. A high voltage charge storage array for an implantable device comprising:

an array of at least about fifty low voltage battery cells; and

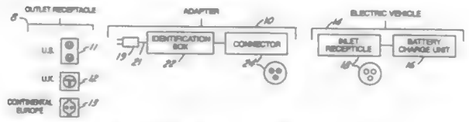
switching means electrically connected to each battery cell for selectively discharging the battery cells in series to produce a high voltage output to be delivered by the implantable device that is at least an order of magnitude greater than an output voltage of the low voltage battery cells.

5,369,352

UNIVERSAL ELECTRIC VEHICLE CHARGING ADAPTER

Craig B. Toepfer, Dearborn, and Robert K. Brown, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 26, 1993, Ser. No. 51,959
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—56 **4 Claims**



1. A power line adapter for connecting an electrical outlet to an electrical input of an electric vehicle battery charger comprising:

a connection means for electrically connecting said battery charger to said electrical outlet and adapted to be connected only to a specific electrical outlet with known electrical characteristics;

storing means for storing said electrical characteristics; and

imposing means for imposing an identifier signal upon the line voltage of said power source representative of said electrical characteristics;

wherein said imposing means includes, serial means for converting the stored characteristics to a serial communication signal;

modulating means coupled to said serial means for modulating a carrier signal according to said serial signal to produce a modulated signal;

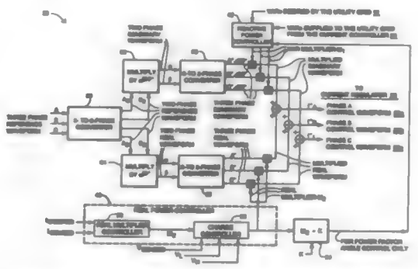
transmitting means coupled to said modulating means for transmitting said modulated signal to said battery charger.

5,369,353

CONTROLLED ELECTRICAL ENERGY STORAGE APPARATUS FOR UTILITY GRIDS

William L. Erdman, Brentwood, Calif., assignor to KENETECH Windpower, Inc., Livermore, Calif.

Filed Dec. 8, 1992, Ser. No. 986,798
The portion of the term of this patent subsequent to Feb. 16, 2010, has been disclaimed.
Int. Cl.[5] G05F *1/70*
U.S. Cl. 323—207 **23 Claims**



1. A controlled electrical energy storage apparatus for selectively storing electrical energy from an AC electric power grid and for selectively releasing said electrical energy back to the AC electric power grid, said AC electric power grid having a plurality of phase lines, said controlled electrical energy storage apparatus comprising:

a DC energy storage means for storing electrical energy;

a converter coupled between the DC energy storage means and the AC electric power grid for regulating the instantaneous current flow therebetween; and

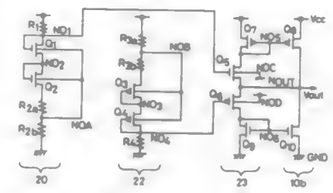
a power flow control unit for controlling the direction and amount of real power flow through the converter by pulse width modulation of the converter to control the instantaneous current flow therethrough.

5,369,354

INTERMEDIATE VOLTAGE GENERATING CIRCUIT HAVING LOW OUTPUT IMPEDANCE

Shigeru Mori, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1993, Ser. No. 107,882
Claims priority, application Japan, Oct. 14, 1992, 4-275802
Int. Cl.[5] G05F *3/16, 3/20*
U.S. Cl. 323—313 **8 Claims**



6. An intermediate voltage generating circuit for generating an intermediate voltage between externally supplied first and second voltages, comprising:

an output node;

first intermediate voltage output means including

a first N channel MOS transistor and a first P channel MOS transistor connected in series between said first and second voltages and having sources connected to said output node,

a second P channel MOS transistor connected between said first voltage and said first N channel MOS transistor and having a gate and a drain connected to each other, and

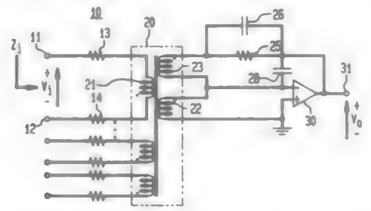
a second N channel MOS transistor connected between said first P channel MOS transistor and said second voltage and having a gate and a drain connected to each other;

second intermediate voltage output means including a third P channel MOS transistor and a third N channel MOS transistor connected in series between said first and second voltages and having gates connected to the gates and the drains of said second P channel and N channel MOS transistors and drains connected to said output node;

first reference voltage generating means for generating a first reference voltage shifted from said intermediate voltage by a threshold voltage of said first N channel MOS transistor substantially to provide the first reference voltage to a gate of said first N channel MOS transistor; and

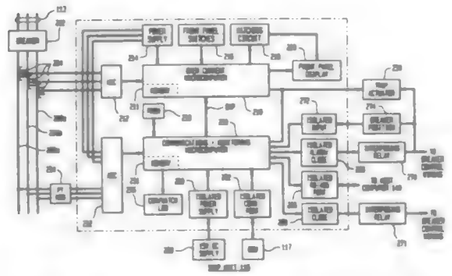
second reference voltage generating means for generating a second reference voltage shifted from said intermediate voltage by a threshold voltage of said first P channel MOS transistor substantially to provide the second reference voltage to a gate of said first P channel. MOS transistor.

5,369,355
COMPENSATION CIRCUIT FOR TRANSFORMER LINEARIZATION
John Roe, Orange, Calif., assignor to B/E Aerospace, Irvine, Calif.
Filed Nov. 12, 1992, Ser. No. 975,187
Int. Cl.[5] G05F *7/00*
U.S. Cl. 323—356 **10 Claims**



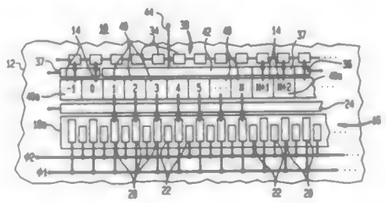
1. A system for linearizing transformer operation, comprising:
a transformer having a plurality of windings;
an active device having an input and an output coupled to each other through a feedback path comprising said transformer;
and transformer coupling established between said windings with substantially no current through at least one of the windings.

5,369,356
DISTRIBUTED CURRENT AND VOLTAGE SAMPLING FUNCTION FOR AN ELECTRIC POWER MONITORING UNIT
Michael A. Kinney, Raleigh, N.C.; James T. Cronvich, Harahan, La., and Wayne M. Zavis, Raleigh, N.C., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.
Continuation of Ser. No. 753,261, Aug. 30, 1991, abandoned. This application Jan. 8, 1993, Ser. No. 73,913
Int. Cl.[5] G01R *21/06;* **G11C** *27/02;* **H02H** *3/18*
U.S. Cl. 324—142 **6 Claims**



1. A controller suitable for monitoring electrical power lines which transmit alternating current electric power including a periodic voltage component and a periodic current component, having a predetermined frequency, to a load circuit, said apparatus comprising:
current sampling means for digitally sampling the current component of the power during a single period thereof, at a rate which produces a number of digital samples sufficient to resolve the current component to the Nth harmonic of said predetermined frequency during each period of said periodic current component, where N is an integer greater than 2; and
voltage sampling means for digitally sampling the voltage component of the power, during a sampling interval which includes multiple periods of the voltage component, at a rate less than the rate used to sample the current component to produce a number of digital samples sufficient to resolve the voltage component to the Mth harmonic of said predetermined frequency during the sampling interval, where M is an integer greater than 2.

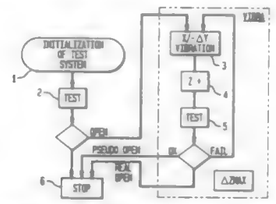
5,369,357
CCD IMAGER WITH TEST STRUCTURE
Herbert J. Erhardt, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 18, 1992, Ser. No. 902,148
Int. Cl.[5] G01R *31/26*
U.S. Cl. 324—158.1 **11 Claims**



1. In a CCD image sensor comprising a plurality of photodetectors including imaging photodetectors and test photodetectors, a CCD shift register extending along one side of the photodetectors, an exposure drain region adjacent each photodetector on the other side thereof, opposite the CCD shift register, a first exposure control gate between the imaging photodetectors and the exposure drain region for selectively coupling the imaging photodetectors to the adjacent exposure drain region, a test structure comprising:
a line of adjacent test photodetectors in line with the imaging photodetectors; and
a second exposure control gate operable independent of the first exposure control gate for selectively coupling one or more of the test photodetectors to the adjacent exposure drain region,
wherein the CCD shift register includes a channel region extending along but spaced from the line of imaging photodetectors and test photodetectors and a transfer gate between the photodetectors and the channel region.

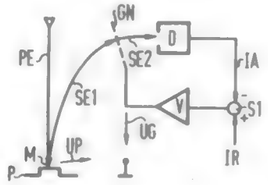
5,369,358
METHOD OF ENSURING ELECTRICAL CONTACT BETWEEN TEST PROBES AND CHIP PADS THROUGH THE USE OF VIBRATION AND NONDESTRUCTIVE DEFORMATION
Roland Metzger, Wimsheim; Manfred Schmidt, Schoenaich; Otto Torreiter, Leinfelden-Echterdingen, and Dieter Wendel, Sindelfingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 23, 1992, Ser. No. 965,472
Claims priority, application European Pat. Off., Dec. 14, 1991, 91121467.4
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—754 **13 Claims**

1. A method of testing a chip having a plurality of contact pads, which is tested with a test system having a test head provided with a plurality test probes, said method comprising the steps of:
a) moving the test head and the chips towards each other by a distance which is smaller than a predefined maximum length;
b) determining the presence of a contact between the probes and the contact pads by performing an electrical test via the probes to yield a predetermined electrical result, said result indicating the absence of electrical contact between at least one of said probes and a corresponding one of said contact pads; and
c) repeating steps a) and b) while vibrating one of the test head and the contact pads in a plane that is substantially parallel to a plane comprising the contact pads, and while



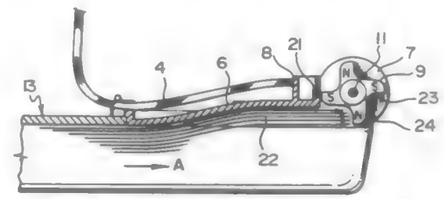
nondestructively deforming selected contact pads required to ensure that the electrical test no longer yields said predetermined electrical result, thereby indicating that electrical contact between all the test probes and their respective contact pad has been obtained.

5,369,359
PARTICLE BEAM TESTING METHOD WITH COUNTERVOLTAGE OR RETARDING VOLTAGE FOLLOW-UP OR FEEDBACK
Reinhold Schmitt, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Sep. 21, 1992, Ser. No. 947,520
Claims priority, application Germany, Nov. 5, 1991, 4136407
Int. Cl.[5] G01R *1/04*
U.S. Cl. 324—158.1 **17 Claims**



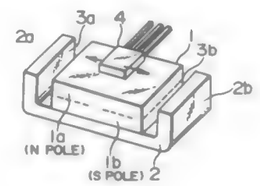
1. A particle beam testing method, comprising the steps of:
providing a specimen to be tested and a testing apparatus comprising a particle beam emitter, a detector, a retarding voltage field and a drive unit;
positioning a retarding voltage electrode between the specimen and the detector;
charging the retarding voltage electrode to a first potential;
directing a particle beam onto a test point of the specimen, and thereby causing secondary electrons to be emitted from the specimen at the test point;
detecting the secondary electrons with the detector and producing a first detector current thereat;
generating an input voltage in the drive unit;
applying to at least one portion of the specimen the input voltage and producing a change in potential at the test point;
producing with the drive unit a reference change in potential anticipated at the test point due to proximity of the input voltage;
superimposing the reference change in potential on the potential of the electrode;
producing a second detector current after application of the input voltage to the specimen; and
comparing the first and second detector currents, a faulty specimen being recognized when the first and second detector currents differ.

5,369,360
RECESSED PADDLE WHEEL SPEED MEASURING DEVICE FOR PERSONAL WATERCRAFT
Andre Amyot, Deauville, Canada, assignor to Bombardier Inc., Montreal, Canada
Filed Dec. 4, 1992, Ser. No. 985,899
Int. Cl.[5] G01G *21/10;* **G01P** *3/48*
U.S. Cl. 324—174 **16 Claims**



7. In a watercraft including a hull, a speed sensing device which includes a paddle wheel rotatably mounted within a housing mounted in a recess of said hull comprises a series of paddles that are exposed below the water line of the hull to be engaged by the water through which the watercraft travels to effect rotation of the paddle wheel at a speed proportionately calibrated to the water speed of said watercraft, the improvement comprising a protective housing including opposed wall means defining a narrow longitudinally extending channel with an open underside, said channel increasing in depth from a forward end thereof to a rearward end thereof, and said paddle wheel being positioned relative to said channel at a location wherein said paddles pass through said channel upon rotation of said paddle wheel, and are at all times completely recessed from said open underside of said channel, such that said paddles do not extend beyond the bottom or sides of said hull, thus avoiding breakage or damage from obstacles or the floor of a body of water.

5,369,361
POSITION DETECTING DEVICE EMPLOYING A MAGNET AND BACK YOKE RELATIVELY MOVABLE WITH RESPECT TO A HALL SENSOR
Jyoji Wada, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 16, 1992, Ser. No. 913,618
Claims priority, application Japan, Jul. 24, 1991, 3-184390
Int. Cl.[5] G01B *7/14;* **H01H** *36/00*
U.S. Cl. 324—207.2 **10 Claims**



5. A position detecting device of magnetic detection type comprising:
a magnet having an upper surface magnetized with a first pole and a lower surface magnetized with a second pole having a polarity opposite to a polarity of said first pole;
a back yoke of a magnetic material having a center base portion bonded to said lower surface of said magnet and having laterally extending end portions bent upwardly to form a pair of projections so that free end portions of said pair of projections are substantially aligned with said upper surface of said magnet to form narrow spaces between said magnet and said pair of projections, said free

end surfaces of said pair of projections having a magnetic polarity opposite to that of said upper surface of said magnet; and

a Hall sensor movable horizontally in proximity to and along said upper surface of said magnet and said free end surfaces of said pair of projections of said back yoke, said Hall sensor detecting its position relative to said magnet by detecting a stationary inversion point of a magnetic polarity of magnetic flux density in a selected one of said spaces between said magnet and said pair of projections.

5,369,362

METHOD OF AND APPARATUS FOR NMR TESTING

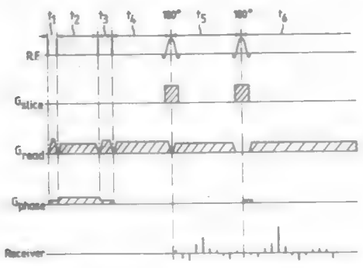
Christopher J. R. Counsell, Oxford, England, assignor to British Technology Group Limited, London, England

Continuation of Ser. No. 935,704, Aug. 26, 1992, abandoned. This application Mar. 14, 1994, Ser. No. 209,482

Claims priority, application United Kingdom, Aug. 20, 1992, 9217718.7

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—309 **26 Claims**



1. A method of nuclear magnetic resonance testing an object, comprising:

subjecting the object to a magnetic field, the field having a gradient component for encoding spatial information about the object,

applying excitation pulses at selected intervals to excite nuclear magnetic resonance, at least two of the intervals and the encoding gradient component during those intervals being selected such that, for such intervals, the values of the integral of the gradient component are proportioned according to consecutive powers of an integer, I, greater than two, and

detecting the resonance response signals.

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IMPLEMENT FOR REMOVING AND INSTALLING AND TESTING CHRISTMAS LIGHT BULBS

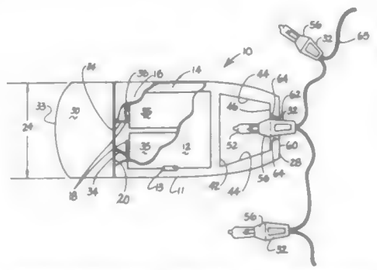
Bill L. Hey, 622 Rockford Rd., Box 14, Willshire, Ohio 45898

Filed Jun. 23, 1992, Ser. No. 902,730

Int. Cl.[5] G01R *31/24, 31/02*

U.S. Cl. 324—414 **20 Claims**

1. An implement for removing a Christmas light bulb from an appliance comprising a handle, said handle defining an axis, a cavity formed in said handle at one end, said cavity having a top, side walls extending toward said end and a bottom, said cavity having a bulb gripper formed in said bottom for gripping the base of a bulb and a side opening defined by said top and sides and bottom through which the glass portion of a bulb can be positioned in said cavity when said bulb is gripped by



said bulb gripper whereby a bulb can be disjoined from said appliance without damaging the bulb.

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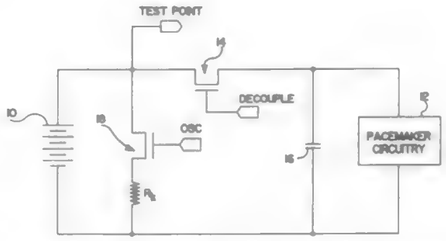
BATTERY STATE OF CHARGE DETERMINATION WITH PLURAL PERIODIC MEASUREMENTS TO DETERMINE ITS INTERNAL IMPEDANCE AND GEOMETRIC CAPACITANCE

Wim C. M. Renirie, Berg en Dal, Netherlands, and Craig L. Schmidt, Eagan, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 26, 1993, Ser. No. 53,108

Int. Cl.[5] G01N *27/416*

U.S. Cl. 324—430 **4 Claims**



1. A method of measuring depth-of-discharge of a battery delivering a voltage between first and second battery terminals, comprising the steps of measuring said battery's internal impedance and measuring said battery's geometric capacitance, wherein said step of measuring said battery's internal impedance R_{batt} comprises the sub-steps of:

(a) coupling a known impedance R_k between said first and second terminals;

(b) measuring a voltage V_k between said first and second terminals during a time interval extending from one to ten milliseconds after said step of coupling said known impedance;

(c) removing said known impedance from said first and second terminals;

(d) measuring voltage V_{oc} between said first and second terminals during a time interval extending from one to ten milliseconds after said step of removing said known impedance;

(e) computing said internal impedance according to the formula

$$R_{batt} = \frac{R_k(V_{oc} - V_k)}{V_k}$$

and wherein said step of measuring said battery's geometric capacitance comprises the sub-steps of:

(f) alternately coupling and decoupling a known impedance R_{k2} between said first and second battery terminals at a periodic rate T;

(g) measuring a voltage V_{oc2} between said battery terminals when said known impedance R_{k2} is decoupled from said battery terminals in step (f);

(h) measuring a voltage V_{k2} between said battery terminals when said known impedance R_{k2} is coupled to said battery terminals in step (f);

(i) computing said geometric capacitance according to the formula

$$\ln\left(\frac{V_{oc} - V_{k2}}{V_{oc} - V_{oc2}}\right) = \frac{T}{2 \times R_{batt}C_g}.$$

5,369,365

COMBINED WATER FIELD STRENGTH AND CONDUCTIVITY METER

David B. Waitman, 5309 Hawthorne Rd., Chubbuck, Id. 83202

Continuation-in-part of Ser. No. 347,447, May 4, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 567,592

Int. Cl.[5] G01N *27/02;* A01K *61/00*

U.S. Cl. 324—444 **20 Claims**

1. A portable, hand-held apparatus for measuring the conductivity of a body of water and for measuring the field strength of an electric field applied to the body of water in order to operate a separate electroshocker for initiating electrotaxis in fish, comprising:

a. a conductivity probe formed to permit water flow therethrough, said probe having three electrodes;

b. a first pair of electrodes mounted within said conductivity probe for measuring a known current applied to the water to indicate the conductivity of the water;

c. a second pair of electrodes mounted within said conductivity probe for measuring a field strength of a voltage gradient applied to said body of water by the electroshocker, said second pair of electrodes having one electrode in common with the first pair of electrodes;

d. processing means electrically connected to said first and second pairs of electrodes for applying a known current to said first pair of electrodes to measure water conductivity and for measuring a potential between said second pair of electrodes; and

e. display means for displaying data from said processing means.

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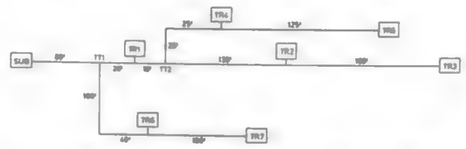
METHOD OF FINDING FAULTS IN A BRANCHED ELECTRICAL DISTRIBUTION CIRCUIT

Gregory H. Piesinger, Cave Creek, Ariz., assignor to Cable Repair Systems Corporation, Coral Springs, Fla.

Filed Feb. 12, 1993, Ser. No. 16,907

Int. Cl.[5] G01R *31/11*

U.S. Cl. 324—533 **25 Claims**



1. A method of determining the position of a fault in a branched electrical distribution circuit including a plurality of branches, the method comprising the steps of:

determining the relative positions of a plurality of discontinuities in the distribution circuit;

utilizing a cable-radar to produce a radar trace including a reflection from each discontinuity and a reflection from a fault in the distribution circuit, reflections from discontinuities in a branch containing the fault and farther from the cable-radar than the fault being diminished in size; and

comparing the radar trace to the determined relative positions of the plurality of discontinuities and, utilizing the position of the fault and diminished reflections from discontinuities farther from the cable-radar, determining which of the plurality of branches contains the fault.

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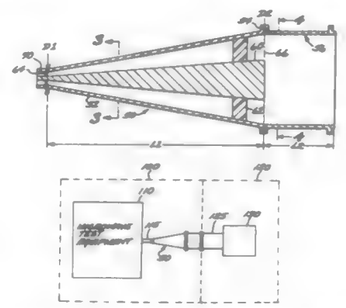
WIDEBAND COAX-TO-TM$_{01}$ CONVERTER AND TESTING SYSTEM USING THE SAME

Robert L. Eisenhart, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 2, 1992, Ser. No. 984,398

Int. Cl.[5] G01R *27/04;* H01P *5/103*

U.S. Cl. 324—632 **25 Claims**



10. A microwave testing system for performing tests of a microwave unit comprising a cylindrical waveguide, comprising:

microwave test equipment;

a coaxial transmission line connected to said microwave test equipment; and

a wideband coaxial-to-circular waveguide mode convertor for connection between said coaxial transmission line and cylindrical waveguide of said microwave unit, said mode convertor comprising:

a hollow outer conductor, said outer conductor having a diameter equal to the diameter of the outer conductor of said coaxial line at a coaxial end of said convertor and a

diameter equal to that of said circular waveguide at a circular waveguide end of said convertor;

an inner conductor concentrically mounted within said outer conductor, the diameter of said inner conductor having a diameter equal to the diameter of the inner conductor of said coaxial line at said coaxial end and a diameter at said waveguide end;

said inner conductor terminating adjacent said waveguide end to provide a means for launching TM_{01} energy into the circular waveguide; and

means for supporting said inner conductor at a concentric position within said outer conductor;

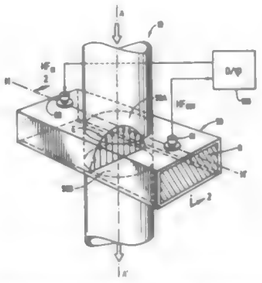
wherein said convertor creates a conversion between the coaxial (TEM) mode and the TM_{01} circular waveguide mode.

5,369,368

DEVICE FOR DETERMINING MATERIAL PARAMETERS BY MEANS OF MICROWAVE MEASUREMENTS

Rudiger Kassen, Wildbad; Albert Klein, Neunburg, and Jean M. Weber, Quentin, all of Germany, assignors to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co., Wildbad, Germany

Filed Apr. 2, 1993, Ser. No. 42,420
Claims priority, application Germany, Apr. 4, 1992, 4211362
Int. Cl.[5] G01N *22/04*
U.S. Cl. 324—632 **13 Claims**



1. A device for determining, by means of microwave measurements, a physical characteristic of a product in a dielectric medium, in combination with a pipeline through which the medium is flowing, said pipeline having a pipeline longitudinal axis and comprising a section composed at least partially of dielectric material located in a measurement area, said section having a wall, an outer diameter and an interior cross section and the dielectric material having low dielectric losses, said device comprising:

a microwave transmitting/receiving system for interacting with the medium, said system including a waveguide at least partly enclosing the pipeline section to define the measuring region, said waveguide having a side wall provided with two opposed openings through which said pipeline section passes, a waveguide longitudinal axis, an internal width dimension perpendicular to said waveguide longitudinal axis, a microwave radiation input and a microwave radiation output, said measuring region being interposed between said input and said output so that radiation guided in said waveguide traverses said measuring region and has a transverse electric field which extends perpendicular to said waveguide longitudinal axis and to said width dimension, and

means connected to said output for evaluating microwave radiation which has traversed said measuring region by measuring at least one of the damping and phase shift induced in the microwave radiation by product in the medium flowing through said waveguide, and wherein

said pipeline section extends through said openings in said waveguide side wall in such a way that said pipeline longitudinal axis coincides with the direction of said transverse electric field formed inside said waveguide,

the outer diameter of said pipeline section is not larger than said internal width dimension of said waveguide perpendicular to said pipeline longitudinal axis and perpendicular to said waveguide longitudinal axis so that said pipeline section substantially completely fills the cross-section of said waveguide and the microwave radiation acts on substantially all of the medium flowing through said pipeline, and

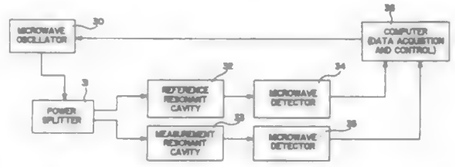
the interior cross section of said pipeline section has a dimension in the direction of said waveguide longitudinal axis which decreases from said waveguide longitudinal axis in the direction of said internal width dimension, and the mode of the transverse electric field is selected such that the intensity of the transverse electric field decreases from said waveguide longitudinal axis in the direction of said width dimension to approximately the same degree as said dimension of said pipeline section.

5,369,369

DETERMINATION OF CARBON IN A FLY ASH SAMPLE THROUGH COMPARISON TO A REFERENCE MICROWAVE ATTENUATION AND PHASE SHIFT

Nicholas G. Catmore, Woronora Heights, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Campbell, Australia

PCT No. PCT/AU91/00108, § 371 Date Sep. 14, 1992, § 102(e) Date Sep. 14, 1992, PCT Pub. No. WO91/14936, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 20, 1991, Ser. No. 930,399
Claims priority, application Australia, Mar. 23, 1990, PJ 9287
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] G01N *22/00*
U.S. Cl. 324—637 **30 Claims**



1. An apparatus to measure the unburnt carbon content of a fly ash sample comprising:

a reference chamber;

a measurement chamber for measurement of the fly ash sample;

means to generate a microwave signal;

transmitter means to launch the microwave signal for transmission through the reference chamber and the fly ash sample;

receiver means to receive a signal passed through the sample; and

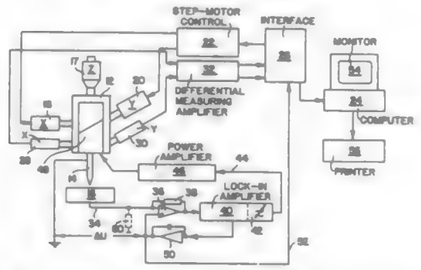
processing means for determining the attenuation and phase shift of the signal passed through the sample and the reference chamber with respect to the launched signal and for producing a measure of unburnt carbon content.

5,369,370

METHOD AND APPARATUS FOR THE MEASUREMENT OF THE CORROSION POTENTIAL BETWEEN A COATED METAL SURFACE AND A REFERENCE ELECTRODE

Martin Stratmann, Meerbusch, and Heinz Streckel, Mettmann, both of Germany, assignors to Max-Planck-Institut fuer Eisenforschung GmbH, Duesseldorf, Germany

PCT No. PCT/EP91/01093, § 371 Date Mar. 10, 1992, § 102(e) Date Mar. 10, 1992, PCT Pub. No. WO91/19972, PCT Pub. Date Dec. 26, 1991
PCT Filed Jun. 12, 1991, Ser. No. 835,933
Claims priority, application Germany, Jun. 13, 1990, 4018993
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—663 **2 Claims**



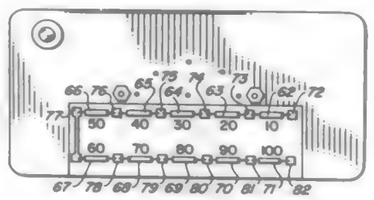
1. A method of investigating the state of corrosion of a surface of a metal member provided with a coating which comprises a polymeric material, said method including the following steps: positioning a vibrating Kelvin type probe in spaced relationship at said coating, moving said Kelvin probe across said coated surface, and determining the potential between said metal and said probe during said movement.

5,369,371

ELECTRICAL RESISTANCE TEST DEVICE WITH AN ATTACHED COMPARISON RESISTANCE SET

Charles R. Eaton, Sunnyvale, Calif., assignor to Encor Inc., Chandler, Ariz.

Filed Dec. 15, 1992, Ser. No. 991,219
Int. Cl.[5] G01R *27/02, 31/02*
U.S. Cl. 324—707 **4 Claims**



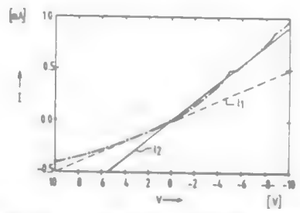
1. A megohm tester adapted to detect resistances at preselected test sites up to and in excess of 100 megohms comprising: a housing; probes for contacting said test sites and sensing resistance therein; oscillator means for receiving said sensed resistance from said probes and generating output pulses and an output pulse period proportionate to said resistance; transducer means for receiving said output pulses from said oscillator means and converting said output pulses into an audible add visual signal; a low voltage power source operatively connected to said probes, said oscillator means and said transducer means; a comparison set consisting of ten 10 megohm resistors serially connected and comparison detection points providing known combinations of resistance values of 10 megohms, 20 megohms, 30 megohms, 40 megohms, 50 megohms, 60 megohms, 70 megohms, 80 megohms, 90 megohms and 100 megohms, said housing containing said oscillator, said transducer and said power source, and further, said housing having an exit means for said probes and means for affixing said comparison set to said housing.

5,369,372

METHOD FOR RESISTANCE MEASUREMENTS ON A SEMICONDUCTOR ELEMENT WITH CONTROLLED PROBE PRESSURE

Wilfried Vandervorst, Mechelen, and Marc Meuris, Keerbergen, both of Belgium, assignors to Interuniversitair Micro Elektronica Centrum vzw, Leuven-Heverlee, Belgium

PCT No. PCT/EP91/01294, § 371 Date Mar. 9, 1992, § 102(e) Date Mar. 9, 1992, PCT Pub. No. WO92/01233, PCT Pub. Date Jan. 23, 1992
PCT Filed Jul. 9, 1991, Ser. No. 838,419
Int. Cl.[5] G01R *27/08*
U.S. Cl. 324—719 **10 Claims**



1. A method of measuring resistance or conductivity at a surface of a semiconductor element, comprising the steps of:

(a) placing at least two conductors in contact with said surface;

(b) adjusting the contact pressure between the conductors and the surface using a scanning proximity microscope to obtain an approximately linear voltage-current (VI) characteristic between the conductors;

(c) measuring resistance or conductivity between said conductors after step (b); and

(d) changing the position of at least one of the two conductors; and

(e) repeating step (c) while maintaining the contact pressure at the value achieved in step (b).

5,369,373

COMB DATA GENERATION

George F. Nelson, Coon Rapids, and David P. Andersen, Burnsville, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Oct. 16, 1992, Ser. No. 961,986
Int. Cl.[5] H03H *19/00*
U.S. Cl. 327—121 **27 Claims**

1. A comb data generation system comprising,

a sine wave source having an output constructed to produce an electrical signal of a predetermined frequency at its output,

a harmonic series line generating means having an input coupled to the output of said sine wave source and an output constructed to produce a wideband series of harmonic lines of said predetermined frequency,

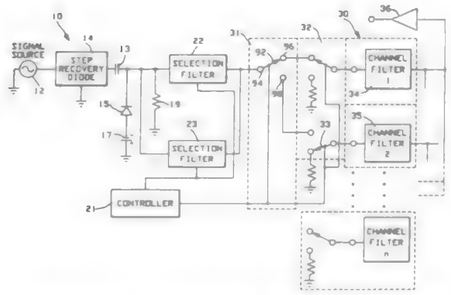
selection filter means having an input coupled to the output of said harmonic series line generating means and an output constructed to select at least one selected band of n adjacent lines of said wideband series of lines,

a plurality of channel filter means each having an input and an output, and each of which is capable of selecting m line groups, each of which consists of one line or more than one adjacent lines within at least one selected band, as desired, wherein m is equal to or less than n,

switch means constructed for selectively coupling the out-

puts of said selection filter means to the inputs of said channel filter means,

controller means coupled to said switch means constructed



to control the selection coupling of said selection filter means to said channel filter means, and

output means coupled to the output of said channel filter means for providing composite output signals.

5,369,374

DIFFERENTIAL DETECTION DEMODULATOR

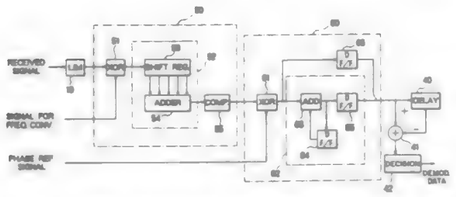
Toshiharu Kojima, Kamakura, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 997,768, Dec. 24, 1992, Pat. No. 5,313,170. This application Mar. 28, 1994, Ser. No. 219,020

Claims priority, application Japan, Dec. 27, 1991, 3-347245; Mar. 12, 1992, 4-053583; Mar. 25, 1992, 4-067124

Int. Cl.[5] H04L *27/22*

U.S. Cl. 329—306 **12 Claims**



8. A differential detection demodulator for demodulating a quantized received signal, comprising:

a phase comparator including:

a multiplier having an input for receiving said quantized received signal and a second input for receiving a phase reference signal, which multiplies the received signal and the phase reference signal, and which outputs a multiplied signal; and

a phase detector having an input coupled to an output of the multiplier for determining a phase of the quantized received signal and for outputting a detected phase signal;

a phase difference calculator circuit having an input coupled to an output of the phase detector, for determining a phase difference of the quantized received signal during one symbol period of the quantized received signal, and for outputting a phase difference signal; and

a decision circuit having an input coupled to an output of the phase difference calculator circuit for determining demodulated data from the phase difference signal and for outputting the demodulated data.

5,369,375

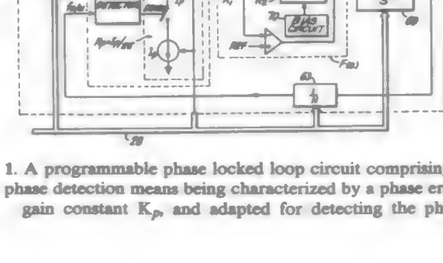
SINEWAVE GENERATING CIRCUIT AND AMPLITUDE DEMODULATOR

Stephen R. W. Cooper, Tustin; David W. Shank, Big Rapids; Carl A. Munch, Southfield, all of Mich., and Nadi S. Findikli, Forest, Va., assignors to Nartron Corporation, Reed City, Mich.

Continuation-in-part of Ser. No. 737,389, Jul. 29, 1991, Pat. No. 5,210,490, which is a continuation-in-part of Ser. No. 427,641, Oct. 26, 1989, which is a continuation-in-part of Ser. No. 296,183, Jan. 11, 1989. This application Feb. 26, 1993, Ser. No. 23,400

Int. Cl.[5] G01B *7/14;* **H01F** *21/02;* **G08C** *19/06, 19/12*

U.S. Cl. 329—347 **26 Claims**



1. Apparatus for generating a low-distortion sinewave and amplitude demodulating an input time-varying signal derived from the generated sinewave or an external source and producing an output proportional to the amplitude demodulated signal with said apparatus comprising:

a) activation circuitry for generating and driving a low-distortion sinewave with said activation circuitry including an oscillator first means, a second means for selecting frequency and a third means driving the sinewave with an amplitude that is proportional to an input reference level; and

b) monitoring circuity coupleable to said time-varying signal to achieve said amplitude demodulation including a means to detect the amplitude of the time-varying signal and a second means to provide a signal proportional to the amplitude with an adjustable scale of proportion.

5,369,376

PROGRAMMABLE PHASE LOCKED LOOP CIRCUIT AND METHOD OF PROGRAMMING SAME

Hakan Lebleblciogln, Northport, N.Y., assignor to Standard Microsystems, Inc., Hauppauge, N.Y.

Filed Nov. 29, 1991, Ser. No. 800,373

Int. Cl.[5] H03L *7/093*

U.S. Cl. 331—8 **5 Claims**

1. A programmable phase locked loop circuit comprising:

phase detection means being characterized by a phase error gain constant K_p, and adapted for detecting the phase error between first and second input signals and generating as output a phase error signal representative of said phase error;

a loop filter characterized by one or more phase margin contributing time constants T_i and being operably associated with said phase detection means to receive as input said phase error signal and produce as output a control signal,each said phase margin contributing time constant T_i being functionally dependent on an active element in said loop filter, and each said active element having a time constant contributing property functionally dependent on said phase error gain constant K_p, and said phase error gain constant K_p being proportional to a programmable current in said phase detection means, and said time constant contributing property of each said active element being functionally dependent on said programmable current;

a variable frequency oscillator being characterized by an oscillator gain constant K_o, and producing as output said second input signal having a frequency controlled by said control signal;

said programmable phase locked loop circuit having, when programmed, a cross-over frequency, a phase margin at said cross-over frequency determined by said phase margin contributing time constants, and an open loop gain K_m proportional to the product of said phase error gain constant K_p and said oscillator gain constant; and

programming means for programming the cross-over frequency of said programmable phase locked loop circuit and the phase margin thereof at said cross-over frequency, by adjusting said programmable current to one of a plurality of different programmable current values, whereby the cross-over frequency of said programmable phase locked loop circuit is automatically programmed to one of said plurality of different cross-over frequencies while the phase margin of said programmable phase locked loop circuit is maintained substantially constant at each of said plurality of different cross-over frequencies.

5,369,377

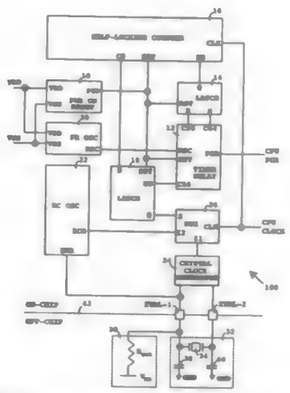
CIRCUIT FOR AUTOMATICALLY DETECTING OFF-CHIP, CRYSTAL OR ON-CHIP, RC OSCILLATOR OPTION

Boubekeur Benhamida, Boise, Id., assignor to Zilog, Inc., Campbell, Calif.

Filed Oct. 13, 1993, Ser. No. 136,291

Int. Cl.[5] H03B *5/34;* **H03K** *17/56*

U.S. Cl. 331—49 **18 Claims**



14. A method of selecting as a system clock signal for an integrated circuit chip either a first clock signal generated from an off-chip crystal oscillator if said off-chip crystal oscillator is connected to an input of said integrated circuit chip or a second clock signal generated from an on-chip R-C oscillator circuit if said off-chip crystal oscillator is not connected to said input of said integrated circuit chip, said method comprising the steps of:

detecting a state transition of said first clock signal; and

selecting as said system clock signal said first clock signal if said state transition is detected, or said second clock signal if said state transition is not detected.

5,369,378

DIGITAL DQPSK MODULATOR

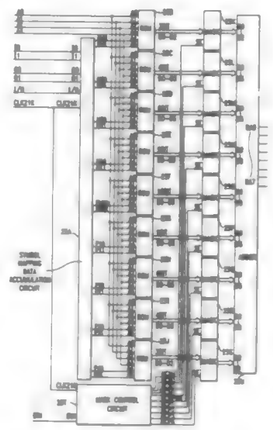
Akio Kosaka, Gifu; Mitsufumi Yoshimoto, Nara; Mitsuji Hama, Daito, and Toshinori Hasuma, Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tottori Sanyo Electric Co., Ltd., Tottori, both of Japan

Filed Nov. 4, 1992, Ser. No. 971,315

Claims priority, application Japan, Feb. 13, 1992, 4-026731; Feb. 13, 1992, 4-026732

Int. Cl.[5] H03C *3/00;* **H04L** *27/10, 27/20*

U.S. Cl. 332—104 **3 Claims**



1. A digital modulator comprising:

means for differential encoding and mapping a digital baseband signal into a pair of symbol mapping data respectfully corresponding to in-phase and quadrature phase components of said digital baseband signal;

means for designating burst transmission;

digital filter means, having a predefined impulse response waveform, wherein said impulse response waveform is divided into symbol sections, said digital filter means further comprising:

a plurality of memory means, wherein each of said memory means stores numerical values representing a different corresponding one of said symbol sections of said impulse response waveform multiplied by a carrier signal;

output masking means for selectively setting the numerical values read from said plurality of memory means to zero;

mask controlling means responsive to a designation of burst transmission by said burst transmission designating means, for controlling said output masking means in a predetermined timing pattern;

means, connected between said memory means and said encoding and mapping means, for accumulating a predefined number of said pairs of symbol mapping data, said predefined number corresponds to the number of symbol sections into which the impulse response waveform is divided;

means, connected to said accumulating means and operating in response to said accumulated pairs of symbol mapping

data, for accessing said numerical values in said plurality of memory means; and

means, connected to said plurality of memory means, for summing the accessed numerical values from each of the memory means to produce an output signal of said digital filter means; and

converting means, connected to said digital filter means, for converting said output signal of said digital filter means into an analog modulated signal.

5,369,379

CHIP TYPE DIRECTIONAL COUPLER COMPRISING A LAMINATED STRUCTURE

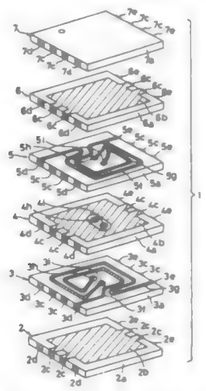
Yasuhiro Fujiki, Nagaokakyo, Japan, assignor to Murata Mfg., Co., Ltd., Japan

Filed Dec. 8, 1992, Ser. No. 986,777

Claims priority, application Japan, Dec. 9, 1991, 3-324771

Int. Cl.[5] H01P *5/18*

U.S. Cl. 333—116 7 Claims



1. A chip type directional coupler comprising:

a laminated structure including a plurality of dielectric substrates, each dielectric substrate having a pair of stripline electrodes nonlinearly disposed in parallel with each other on one major surface thereof, and a plurality of ground electrode substrates, each ground electrode substrate being provided with a ground electrode on one major surface thereof, each ground electrode having two ends, said dielectric substrates and said ground electrode substrates being alternately stacked so that uppermost and lowermost layers are defined by respective ones of said ground electrode substrates; and

said laminated structure having side surfaces, and a plurality of external electrodes disposed on said side surfaces of said laminated structure,

said pairs of stripline electrodes disposed on respective said dielectric substrates being connected in series with each other through said ground electrode substrates interposed therebetween to define a pair of stripline electrodes each having a predetermined overall electrical length and each having two ends, both ends of said stripline electrodes and said ground electrodes respectively being electrically connected to different ones of said external electrodes.

5,369,380

MICROWAVE CONNECTOR

Gregory J. Ball; Michael Dean, and Andrew L. Hume, all of Worcester, United Kingdom, assignors to The Secretary of State of Defence in Her Majesty's Goverament of the United Kingdom of Great Britain and Northern Ireland of Defence Research Agency, United Kingdom

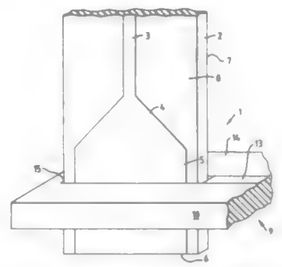
PCT No. PCT/GB91/02271, § 371 Date May 14, 1993, § 102(e) Date May 14, 1993, PCT Pub. No. WO92/12547, PCT Pub. Date Jul. 23, 1992

PCT Filed Dec. 19, 1991, Ser. No. 50,361

Claims priority, application United Kingdom, Jan. 4, 1991, 9100173

Int. Cl.[5] H01P *5/08*

U.S. Cl. 333—128 5 Claims



1. A microwave connector comprising a first substrate and a second substrate arranged with the first substrate within an aperture in the second substrate at least within 45° of being in orthogonal planes;

the first substrate being a microstrip circuit including a taper second leading from a microstrip component to a pseudo parallel plate transmission line having a length of approximately half wavelength long at center frequency terminating in a short circuit to a ground plane;

the second substrate begin a slotline circuit having a slotline component terminating in a short circuit element, and a slot aperture adjacent the short circuit element of length approximately half the slotline wavelength long sufficient to accommodate the first substrate pseudo parallel plate transmission line and width less than the slotline width;

the arrangement being such that the two substrates are electrically unconnected and that energy transfer occurs between the two substrates due to electromagnetic coupling between the parallel pate transmission line and the slotline.

5,369,381

SLOW-WAVE TRANSMISSION LINE OF THE MICROSTRIP TYPE AND CIRCUIT INCLUDING SUCH A LINE

Patrice Gamand, Yerres, France, assignor to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/NL91/00085, § 371 Date Jan. 17, 1992, § 102(e) Date Jan. 17, 1992, PCT Pub. No. WO91/19329, PCT Pub. Date Dec. 12, 1991

PCT Filed May 27, 1991, Ser. No. 820,906

Claims priority, application France, May 29, 1990, 90 06626; Jul. 6, 1990, 90 08598; Mar. 8, 1991, 91 02813

Int. Cl.[5] H01P *1/18, 3/08*

U.S. Cl. 333—161 39 Claims

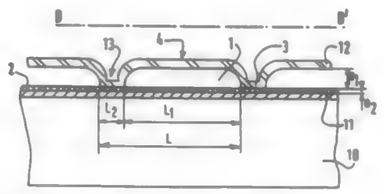
1. A slow-wave transmission line of a microstrip type comprising.

a first conductive layer being a ground plane,

a second conductive layer being at least one second conductive strip having specific transverse and longitudinal dimensions, and

a third non-conductive layer disposed between said first and second conductive layers,

wherein the transmission line is disposed in a periodic structure of said second conductive strip in a longitudinal direction, said periodic structure having a period of length L, each period being one bridge structure and one column structure, wherein each said bridge structure consists of a first section of said second conductive strip having a



length $L_1 < L$, said first section of said second conductive strip having a portion disposed on a first part of said third non-conductive layer, said third non-conductive layer being dielectric, wherein said first part of said third non-conductive layer beneath said bridge structure is air and has a relative permittivity ϵ_{r1} with a value of 1, and wherein each column structure forms a capacitance.

5,369,382

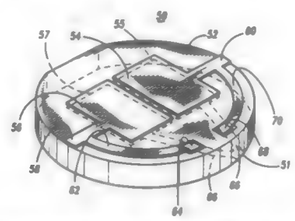
TWO-POLE MONOLITHIC CRYSTAL FILTER INCLUDING SHUNT RESONATOR STAGES

Aristotelis Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 24, 1993, Ser. No. 66,811

Int. Cl.[5] H03H *9/00*

U.S. Cl. 333—189 6 Claims



1. A monolithic piezoelectric filter comprised of:

a piezoelectric substrate;

a filter input node and a filter output node and a filter reference potential node;

a two-pole monolithic filter on said substrate comprised of: first and second resonator stages comprised of electrodes deposited onto said piezoelectric substrate, said first resonator stage coupled to said filter input node and said reference potential node, said second resonator stage coupled to said filter output node and said reference potential node, said first and second resonator stages being acoustically coupled to each other; and

a third resonator stage on said substrate substantially acoustically isolated from both said first and second resonator stages, said third resonator stage having an input and an output, said input of said third resonator stage coupled to one of said filter input node and said filter output node, said output of said third resonator stage coupled to said filter reference potential node, defining a shunt path of a signal to be attenuated from either the filter input node to the reference potential node, the filter output node to the reference potential node or both.

5,369,383

STRIP LINE FILTER HAVING DUAL MODE LOOP RESONATORS

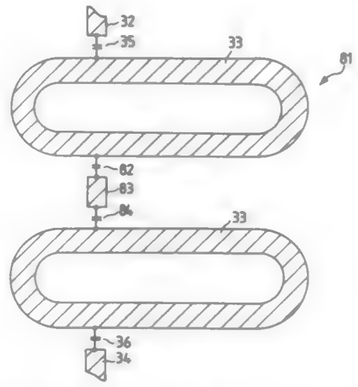
Kazuaki Takahashi, Kawasaki; Makoto Hasegawa, Tokyo; Mitsuo Makimoto, Yokohama, and Munenori Fujimura, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 29, 1993, Ser. No. 53,535

Claims priority, application Japan, Apr. 30, 1992, 4-111127; May 11, 1992, 4-117111; Jun. 12, 1992, 4-153238; Sep. 14, 1992, 4-244374

Int. Cl.[5] H01P *1/203, 7/08*

U.S. Cl. 333—204 17 Claims



14. A band-pass filter for filtering a microwave, comprising:

a plurality of loop-shaped strip lines arranged in series, each of the loop-shaped strip lines having an input point, an output point, and a pair of parallel lines arranged in parallel to each other, an electric line length of each of the loop-shaped strip lines being equivalent to a wavelength of the microwave to resonate the microwave circulated in each of the loop-shaped strip lines in two different directions according to a characteristic impedance of each of the loop-shaped strip lines, and the parallel lines of each of the loop-shaped strip lines being coupled to each other in electromagnetic coupling to change the characteristic impedance of each of the loop-shaped strip lines;

an input strip line in which the microwave is transmitted;

an input impedance element for coupling the input strip line to the loop-shaped strip line arranged in a first stage in electromagnetic coupling to transfer the microwave from the input strip line to an input point of the first-stage loop-shaped strip line;

a plurality of inter-stage impedance elements which are each arranged between an adjacent pair of upper and lower stage loop-shaped strip lines, one end of each of the inter-stage impedance elements being coupled to an output point of the upper stage loop-shaped strip line, the opposite end of each of the inter-stage impedance elements being coupled to an input point of the lower stage loop-shaped strip line,

wherein the output point of each of the loop-shaped strip lines is spaced a quarter of the wavelength of the microwave apart from the input point thereof;

an output strip line in which the microwave resonated in the loop-shaped strip lines is transmitted; and

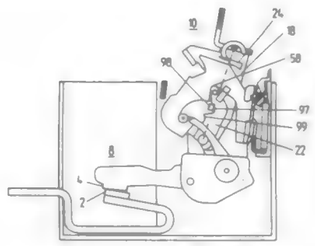
an output impedance element for coupling the output strip line to the output point of the loop-shaped strip line arranged in a final stage in electromagnetic coupling to transfer the microwave from the output point of the final-stage looped strip line to the output strip line.

5,369,384

POWER CIRCUIT BREAKER WITH A BREAKER MECHANISM AND A BREAKER MECHANISM FOR A POWER CIRCUIT BREAKER

Volker Heins, Meckenheim, Germany, assignor to Klockner-Moeller GmbH, Bonn, Germany

Filed Aug. 16, 1993, Ser. No. 107,249
Claims priority, application Germany, Aug. 17, 1992, 4227213
Int. Cl.[5] H01H *9/20*
U.S. Cl. 335—171 18 Claims



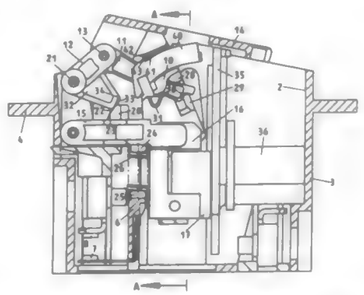
1. Power circuit breaker comprising:
a housing;
at least one electrical contact area disposed within said housing;
a breaker mechanism for connecting and disconnecting with said at least one electrical contact area, said breaker mechanism being disposed within said housing; said breaker mechanism comprising:
contact arm means being pivotably disposed within said housing, said contact arm means being configured for contacting the at least one electrical contact area to complete an electrical circuit;
toggle lever means being pivotably disposed within said housing, said toggle lever means comprising shaft said shaft means for connecting said toggle lever means with said contact arm means;
said contact arm means comprising cam slot means receiving said shaft means;
said shaft means and said cam slot means being configured for pivotally displacing said contact arm means in response to a pivotal displacement of said toggle lever means;
said toggle lever means comprising two toggle levers, said two toggle levers being disposed a substantial distance apart from one another along said shaft means, said two toggle levers being substantially symmetrical with respect to one another;
connecting element means being pivotably disposed within the housing;
single, unitary energy storage means being connected between said connecting element means and said means, said energy storage means being configured for providing a tensile force on said toggle lever means to pivot said toggle lever means in response to a pivotal displacement of said connecting element means; said energy storage means comprising only one spring;
bracing lever means being pivotably disposed within the housing, said bracing lever means for undergoing pivotal displacement in a plane of pivotal displacement;
said connecting element means being configured for pivotably displacing said bracing lever means in at least one rotational direction;
said bracing lever means comprising first and second side walls, each of said first and second side walls generally being disposed parallel to the plane of pivotal displacement of said bracing lever means;
each of said first and second side walls comprising a first surface and a second surface, said first surface of each of said first and second side walls facing inwardly and said second surface of each of said first and second side walls facing outwardly;
each of said first and second surfaces of each of said first and second side walls of said bracing lever means each defining a corresponding plane;
said first toggle lever being mounted for undergoing pivotal displacement within said first wall; and
said second toggle lever being mounted for undergoing pivotal displacement within said second wall.

5,369,385

ELECTRICAL SWITCH WITH CURRENT MONITORING

Siegfried Schulte, Lüdenscheid, and Manfred Aulmann, Schalksmühle, both of Germany, assignors to Schulte-Elektrotechnik GmbH & Co. KG, Ludenscheid, Germany

Filed Sep. 21, 1993, Ser. No. 124,721
Claims priority, application Germany, Oct. 8, 1992, 4233918
Int. Cl.[5] H01H *3/00*
U.S. Cl. 335—191 10 Claims



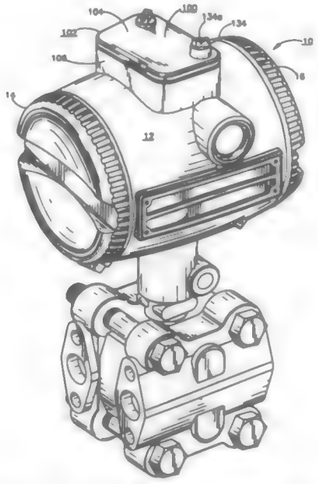
1. An electrical switch with current monitoring capabilities, comprising:
a housing;
a slide bearing a plurality of contacts for a multi-pole circuit;
a bearing being fixed to said housing;
a pivot lever engaging said slide;
a first lever being coupled to said bearing;
a second lever being constructed as a latching lever for said pivot lever, said latching lever being active in a position with said toggle lever above dead center wherein said pivot lever engages said slide;
a transmission linkage constructed as a toggle lever having a toggle joint, said toggle joint connecting said first and said second lever;
a rocker for actuating said transmission linkage and coupled to said toggle joint, with said first lever being coupled to said toggle joint to which is coupled said bearing;
a pressure spring;
a latching piece; and,
a yoke lever being constructed as a triggering lever for said second lever of said toggle lever, said yoke lever being a counterbearing for said pressure spring, wherein said latching piece latches said yoke lever and said pressure spring pre-tensions said slide and said pivot lever coupled thereto in a switched-"off" position, said pressure spring also supplying a tensioning force for said yoke lever for triggering said electrical switch.

5,369,386

REMOVABLE MAGNETIC ZERO/SPAN ACTUATOR FOR A TRANSMITTER

Jerome S. Alden, Aurora; Victor J. Budan, Eastlake, and Harold W. Thompson, N. Madison, all of Ohio, assignors to Elsag International B.V., Amsterdam, Netherlands

Filed Nov. 13, 1992, Ser. No. 975,637
Int. Cl.[5] H01H *9/00*
U.S. Cl. 335—206 20 Claims



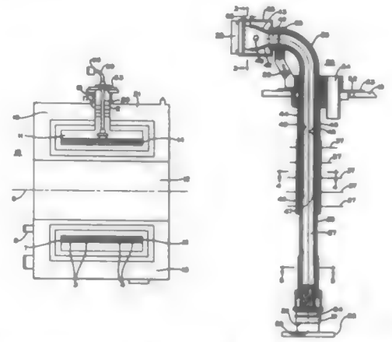
1. An actuator external to a housing for magnetically actuating either a first or a second magnetically actuable switch internal to said housing; said actuator comprising:
a. a single magnet mounted on a carrier which moves in response to a torque applied to said carrier;
b. means connected to said carrier for applying said torque in either a first direction or a second direction to cause said carrier to move said magnet from a first position occupied by said carrier wherein said magnet cannot actuate either of said switches when said torque is not applied to said torque applying means to either a second position, which is not electrically connected to said first position, wherein said magnet is over said first switch to thereby actuate only said first switch or a third position, which is not electrically connected to said first position, wherein said magnet is over said second switch to thereby actuate only said second switch, said carrier moving from said first position to said second position in response to said first direction torque applied to said torque applying means, said carrier moving from said first position to said third position in response to said second direction torque applied to said torque applying means;
c. means mounted on said carrier for returning said carrier to said first position from said second position when said first direction torque applied to said torque applying means is removed from said torque applying means and for returning said carrier to said first position from said third position when said second direction torque applied to said torque applying means is removed from said torque applying means; and
d. an enclosure adapted for removable mounting to said housing, said enclosure containing said carrier and said means connected to said carrier for applying said torque, said enclosure including means for accessing said means connected to said carrier for applying said torque from outside of said enclosure.

5,369,387

SHIM LEAD POWER COUPLING ASSEMBLY FOR SUPERCONDUCTING MAGNET

Daniel C. Woods, and William S. Stogner, both of Florence, S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed May 11, 1992, Ser. No. 880,848
Int. Cl.[5] H01F *1/00*
U.S. Cl. 335—216 11 Claims



1. In a superconducting magnet located in a pressurized chamber cryostat containing a liquid cryogen, with an outer shell spaced from the pressurized chamber, an assembly to connect electrical power from outside the shell to a plurality of magnet coils positioned within said chamber through a first multi-conductor connector in which the leads are insulated from each other passing through the wall of the chamber and connected to said magnet coils comprising:
a conduit extending from outside said shell to said first connector;
a second multi-conductor connector in which the leads are insulated from each other positioned at the end of said conduit remote from said first connector;
a plurality of electrically conducting leads insulated from each other extending between said first connector and said second connector;
insulating tubing surrounding at least a portion of each of the lengths of said plurality of leads remote from said cryostat;
an opening through said first connector to allow cryogen gas to pass from said cryostat into said conduit; and
a plug across said conduit in the end proximate said second connector;
said insulating tubing secured to said plug to limit and direct said cryogen gas to flow through said insulating tubing and around said leads to cool said leads while preventing electrical shorting of the leads;
whereby said cryogen gas flows through said first connector and separates in said conduit to flow through said tubing and around said leads before being vented.

5,369,388

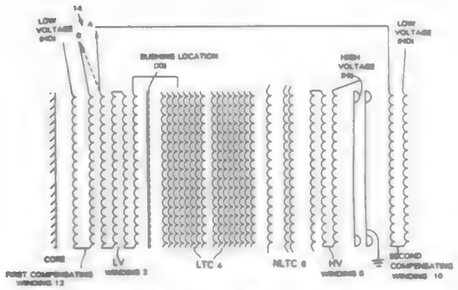
LTC COMPENSATING WINDING FOR PARALLEL OPERATION OF TRANSFORMERS

Abraham I. Manimalethu, Muncie, Ind., assignor to ABB Power T&D Company, Inc., Blue Bell, Pa.

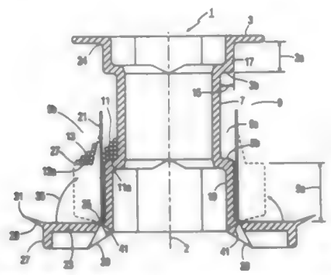
Filed Apr. 27, 1993, Ser. No. 53,012
Int. Cl.[5] H01F *21/00*
U.S. Cl. 336—145 3 Claims

1. A winding configuration for a transformer mounted on a core, comprising, from the core outward:
(a) a first low voltage compensating winding;
(b) a low voltage winding;
(c) a load tap changer;
(d) a high voltage winding disposed in Series with and on the outside of said changer with respect to the core;

(e) a second low voltage compensating winding; and
(f) a switch for coupling said first low voltage compensating winding in series with said low voltage winding to increase the impedance of the transformer, and for disconnecting said first low voltage compensating winding from said low voltage winding and coupling said second low voltage compensating winding in series with said low voltage winding to decrease the impedance of the transformer.

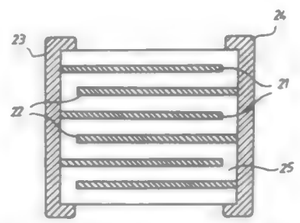


5,369,389
TRANSFORMER COMPRISING A PLASTICS COIL FORMER
Manfred Schrammek, Wetzlar; Siegbard Post, Herborn; Klaus Schütz, Wetzlar, and Heinrich Theissen, Wuppertal, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 900,868, Jun. 18, 1992, abandoned. This application Dec. 16, 1992, Ser. No. 991,453
Claims priority, application Germany, Jun. 24, 1991, 4120771
Int. Cl.[5] H01F *27/30*
U.S. Cl. 336—206 **14 Claims**



1. A transformer comprising a plastics coil former having a pair of flanges, a hollow winding tube, and a first winding and a second winding wound around said tube between said flanges, said second winding being wound on top of said first winding, at least one first spacing means for axially spacing said first winding away from said flanges (3, 5), insulating means for insulating said windings from each other and interposed between said windings and at least one second spacing means associated with each flange and rotatably coupled to said coil former for axially spacing said second winding away from said associated flange.

5,369,390
MULTILAYER ZNO VARISTOR
Jun-Nan Lin, Taichung Hsien, and Chio-Chun Kao, Hsinchu, both of Taiwan, Prov. of China, assignors to Industrial Technology Research Institute, Chutung, Taiwan, Prov. of China
Filed Mar. 23, 1993, Ser. No. 35,673
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—21 **5 Claims**



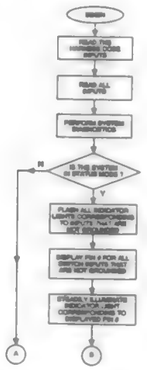
1. A multilayer zinc oxide varistor with variable breakdown voltages comprising:
a ceramic base body having a voltage-dependent nonlinear resistance which comprises at least 90 mole % ZnO, at most 10 mole % metallic oxides as additives, 0.05 to 5 mole % Bi_2O_3 and 0 to 10 wt. % glass on the basis of the total weight of all the oxides, provided that the total amount of zinc oxide and metallic oxides is less than 99.95 mole %;
a first external electrode on a first surface portion of said ceramic base body;
a second external electrode on a second surface portion of said ceramic base body opposite to said first surface;
a plurality of first internal electrodes extending parallel to one another within the ceramic base body with one edge of said plurality of first internal electrodes being flush and in contact with said first external electrode;
a plurality of second internal electrodes extending parallel to one another within the ceramic base body and alternately between said plurality of first internal electrodes, with one edge of said plurality of second internal electrodes being flush and in contact with said second external electrode; and
except for one edge of said plurality of first and second internal electrodes which is flush and connected to the respective external electrode, the other edges of each internal electrode are enclosed within the ceramic base body, whereby the breakdown voltages of the multilayer zinc oxide varistor are controlled by varying the thicknesses of the ceramic base body between two parallel internal electrodes.

5,369,391
SUN POWERED ELECTRICALLY OPERATED CHIME APPARATUS
David E. Gadsby, 322 Greenwoods Dr., Lakeland, Fla. 33813
Filed Dec. 2, 1991, Ser. No. 801,280
Int. Cl.[5] G08B *3/00;* **G10K** *1/00*
U.S. Cl. 340—392.5 **5 Claims**

1. An electrically operated chime apparatus which comprises:
a) a mounting plate;
b) means for suspending said mounting plate;
c) a plurality of resonating members for producing audible sounds, attached to said mounting plate and freely hanging therefrom;
d) an electric motor attached to the underside of said mounting plate, so that the shaft of said electric motor extends downwardly;
e) a solar collector affixed to said mounting plate and electrically connected to said electric motor; and
f) a clapper comprising an elongated cord having a first end attached to the shaft of said electric motor and a bead attached to a second end of the cord so as to freely hang therefrom to randomly swing and collide with said chime tubes when said clapper is rotated by the shaft of said electric motor, thereby causing said chime tubes to produce the audible sounds.



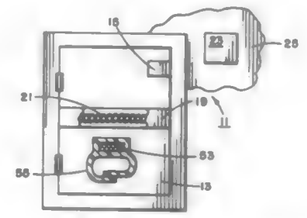
5,369,392
METHOD AND APPARATUS FOR INDICATING FAULTS IN SWITCH-TYPE INPUTS
John P. Hoffman, Peoria, and Ricky D. Vance, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.
Filed Sep. 16, 1992, Ser. No. 945,452
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—438 **17 Claims**



1. An apparatus for indicating fault conditions, comprising:
a plurality of sensor means for sensing a plurality of sensor signals, each of said sensor signals being in one of a normal state or a fault condition and having an associated pin number;
a plurality of indicator lights, each of said indicator lights being associated with one of said plurality of sensor signals;
display means for individually indicating each pin number associated with a sensor signal being in said fault condition;
means for flashing each of said indicator lights being associated with one of said plurality of sensor signals being in said fault condition; and
means for causing the indicator light associated with the sensor signal for which the associated pin number is being indicated by said display means to be steadily illuminated instead of being flashed.

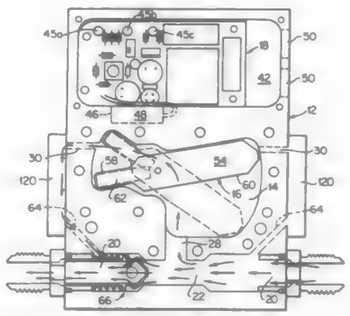
5,369,393
Patent Not Issued For This Number

5,369,394
MAGNETIC SECURITY SYSTEM RESPONSIVE TO PREDETERMINED PERSONS
Brian J. Quirk, Lockport, and Robert R. Bennett, Decatur, both of Ill., assignors to Wanderer Saf-T-Lok, Chicago, Ill.
Continuation-in-part of Ser. No. 871,057, Apr. 20, 1993, abandoned. This application Jun. 21, 1993, Ser. No. 80,289
Int. Cl.[5] G08B *13/22*
U.S. Cl. 340—551 **13 Claims**



1. A security system for operation in response to an attempted egress through a door of at least one preselected person, the security system comprising:
a security device associated with the door for energization upon the attempted egress through the door of the at least one preselected person;
a permanent magnet having a magnetic field and carried by the at least one preselected person;
means associated with the door for generating a current in response to the magnetic field of said permanent magnet when it is passed adjacent said generating means by the at least one preselected person upon the attempted egress through the door; and
means operable generally in response to the current generated by said generating means for effecting the energization of said security device.

5,369,395
DIFFERENTIAL FLOAT MEANS AND SENSOR MEANS INCORPORATING SAME
Clive G. Waller, Geraldton, Australia, assignor to Refrigerant Monitoring Systems Pty Ltd., Australia
PCT No. PCT/AU91/00386, § 371 Date Feb. 19, 1993, § 102(e) Date Feb. 19, 1993, PCT Pub. No. WO92/03718, PCT Pub. Date Mar. 5, 1992
PCT Filed Aug. 23, 1991, Ser. No. 971,988
Claims priority, application Australia, Aug. 23, 1990, PK1882
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—603 **17 Claims**



1. A differential float means for detecting the entrainment of a first fluid in a second fluid, the second fluid having a greater

specific gravity than the first fluid, the differential float means having:

a float member shaped for location and movement within a chamber, the float member having a specific gravity greater than those of the first and second fluids,

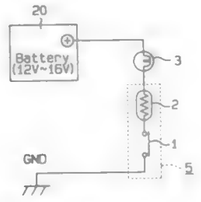
whereby, in use, the float member can be moved between two locations under the influence of said fluids depending upon the buoying force exerted by the relative quantities of said fluids present for detecting the entrainment of the first fluid in the second fluid.

5,369,396

APPARATUS FOR DETECTING A LEVEL OF LIQUID

Nobuo Kurata, Hekinan, and Hiroshi Tooyama, Nishikamo, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 7, 1993, Ser. No. 58,590
Claims priority, application Japan, May 14, 1992, 4-122222
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—623 8 Claims



1. An apparatus for detecting a level of the liquid stored in a reservoir, wherein the apparatus includes a power source, a warning device for warning of a low liquid level, and a regulator for controlling the power supplied to the warning device from the power source, wherein the regulator comprises:

a switch for switching between ON and OFF conditions in accordance with the liquid level, said ON condition of said switch indicating that the present liquid level is lower than a predetermined liquid level;

a thermistor connected to said switch in series, wherein the resistance of the thermistor decreases when a predetermined delay period of time has elapsed since the start of the application of voltage from the power source to the thermistor upon the turning ON of said switch; and

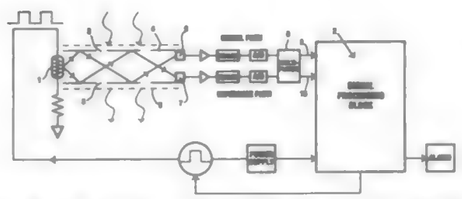
whereby the decreased resistance of said thermistor allows the power for activating the warning device to be supplied to the warning device, while said switch is turned ON.

5,369,397

ADAPTIVE FIRE DETECTOR

Jacob Y. Wong, Santa Barbara, Calif., assignor to Gaztech International Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 851,869, Mar. 16, 1992. This application Apr. 27, 1992, Ser. No. 874,394
Int. Cl.[5] G08B 17/10
U.S. Cl. 340—632 10 Claims



1. In a fire detector of the type having a carbon dioxide sensor that produces a concentration signal related to the concentration of carbon dioxide gas in the immediate vicinity of the carbon dioxide sensor, and that applies a rate signal representative of the rate of change of the concentration to a threshold so that an alarm signal is produced when the rate signal exceeds a threshold level, the improvement comprising:

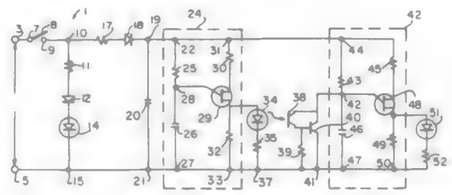
a microcomputer connected to the carbon dioxide sensor and responsive to the concentration signal for producing derived variables for each sampling interval, for continually monitoring the derived variables and for automatically altering the threshold level in relation to the derived variables.

5,369,398

CIRCUIT FOR DETECTING CALCIFICATION IN A COFFEE MAKER

John Vancha, Kewaskum, Wis., assignor to The West Bend Company, West Bend, Wis.

Filed Nov. 5, 1992, Ser. No. 971,877
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—635 9 Claims



1. In a coffee maker, a system for detecting and indicating calcification in a water conduit made of light-transmitting material, said system comprising:

a first circuit including a light source positioned near the conduit and emitting a light signal;

a second circuit including a light receiver positioned so that the conduit is between the light source and the light receiver;

and wherein:

the system includes a device for visually indicating the presence of calcification deposits in the conduit; and

the second circuit actuates the device when calcification deposits impedes the flow of light from the light source to the light receiver, whereby calcification in the conduit is detected.

5,369,399

TOLERANCE ACCUMULATING CIRCUIT SUPPORTING MECHANICAL SHOCK ISOLATOR

David A. Tribbey, Boynton Beach; Allen D. Hertz, Boca Raton; Mario A. Rivas, W. Palm Beach, and Dwight D. Brooks, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 878,126, May 4, 1992, Pat. No. 5,317,308. This application Jul. 30, 1992, Ser. No. 921,784
Int. Cl.[5] G08B 21/00, 5/22; H04B 7/00
U.S. Cl. 340—686 13 Claims

1. An electronic device, comprising structural elements, including:

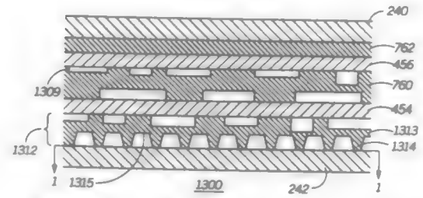
a housing; and

a circuit supporting substrate within the housing and mechanically coupled thereto, the circuit supporting substrate having an electronic circuit attached thereto,

wherein the electronic device further comprises mechanical shock isolation means within the housing and mechanically coupled to the circuit supporting substrate for increasing the natural mechanical frequency of vibration of the circuit supporting substrate, the mechanical shock isolation means comprising:

an elastomeric element having a surface, portions of which are spaced at a distance from corresponding portions of an adjacent surface of one of said structural elements, wherein said distance can range between a minimum value and a maximum value with respect to different ones of the portions of the respective surfaces, because of variations in thickness of the housing, the substrate, and the elastomeric element, and

wherein said elastomeric element comprises a plurality of protuberances contiguous with and extending perpendicularly from said surface of said elastomeric element towards said adjacent surface of said one of said structural elements, wherein the plurality of protuberances allow the mechanical shock isolation means to be compressed by mechanical contact with said one of said structural elements without producing a damaging force on the housing when said distance is at said minimum value, and further allow the mechanical shock isolation means to maintain said mechanical contact when said distance is at said maximum value.

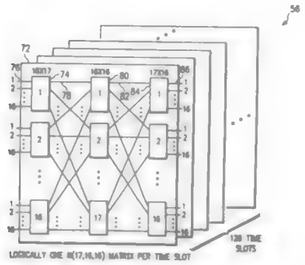


5,369,400

METHOD AND SYSTEM FOR HITLESSLY REARRANGING CONNECTIONS IN A CROSS-CONNECT COMMUNICATIONS NETWORK

Edward K. Bowdon, Plano, Tex., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed May 14, 1992, Ser. No. 883,593
Int. Cl.[5] H04Q 3/32
U.S. Cl. 340—825.8 8 Claims



2. A system for hitlessly rearranging a communications matrix and maintaining connections of previously connected signals, comprising:

circuitry for forming a connection configuration of a predetermined input gate to a predetermined output gate through a first predetermined center stage switch of the communications matrix, said first predetermined center stage switch for forming said connection configuration in response to a rearrangeably blocked condition in the communication matrix;

a second predetermined center stage switch other than said first predetermined center stage for establishing a parallel connection from said predetermined input gate to said predetermined output gate; and

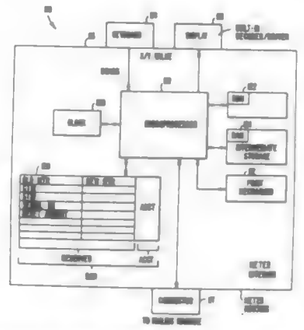
means for disconnecting said connection configuration to free said first predetermined center stage switch upon determining signal flow from said predetermined input gate to said predetermined output gate through said second predetermined center stage switch.

5,369,401

REMOTE METER OPERATION

John G. Haines, Oakland, Calif., assignor to f.m.e. Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 328,112, Mar. 23, 1989, Pat. No. 5,077,660, and Ser. No. 327,779, Mar. 23, 1989, Pat. No. 5,107,455, and Ser. No. 327,487, Mar. 23, 1989, Pat. No. 5,058,025, and Ser. No. 614,054, Nov. 9, 1990, abandoned, which is a continuation of Ser. No. 328,099, Mar. 23, 1989, abandoned.
This application Oct. 15, 1991, Ser. No. 777,776
Int. Cl.[5] G06F 7/04, 15/20
U.S. Cl. 340—825.35 8 Claims



1. An electronic postage meter having a postage amount that can be remotely set by the entry of a remote setting code, the meter comprising:

(a) detection means for detecting the entry of an invalid remote setting code a predetermined consecutive number of times;

(b) prevention means, responsive to the detection means, for selectively preventing the postage amount from being remotely set upon the entry of an invalid remote setting code the predetermined consecutive number of times;

(c) generating means for generating a first meter code and a second meter code, said generating means firmly engaged with the meter;

(d) display means, coupled to the generating means, for displaying the first meter code;

(e) entry means for entering a non-meter code different from said remote setting code, said non-meter code generated at a data center computer by receiving said first meter code;

(f) comparison means, coupled to the generating means and the entry means, for comparing the second meter and non-meter codes; and

(g) enabling means, responsive to the comparison means, for disabling the prevention means upon the second meter and non-meter codes being equal so as to reenable entry of said remote setting code.

5,369,402

DIGITAL/ANALOG CONVERTER CIRCUIT UTILIZING COMPENSATION CIRCUITRY

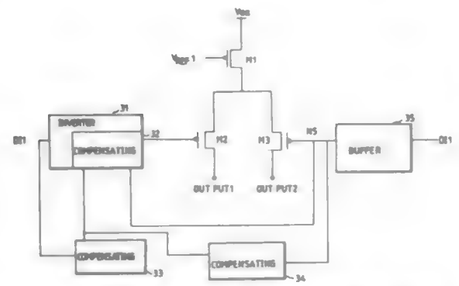
Oh B. Kwon, Bubaleub, Ichonkun, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Bubaleub, Rep. of Korea

Filed Dec. 23, 1993, Ser. No. 173,397
Claims priority, application Rep. of Korea, Dec. 31, 1992, 1992-27324
Int. Cl.[5] H03M 1/66
U.S. Cl. 341—136 6 Claims

1. A digital/analog converter circuit comprising first to

third transistors, said first transistor having a gate terminal for inputting a constant voltage and one side terminal for inputting a power source voltage, said second transistor having a gate terminal for inputting a first digital signal, one side terminal connected to the other side terminal of said first transistor and the other side terminal forming a first output terminal, said third transistor having a gate terminal for inputting a second digital signal of the opposite phase to that of the first digital signal, one side terminal connected to the other side terminal of said first transistor and the other side terminal forming a second output terminal, wherein the improvement comprises:

buffer means for buffering a digital input signal and applying the buffered digital input signal as the second digital signal to the gate terminal of said third transistor;



inverter means for inverting the digital input signal and applying the inverted digital input signal as the first digital signal to the gate terminal of said second transistor, said inverter means having first compensating means, said first compensating means removing an input transfer time difference between said second and third transistors in response to the buffered digital input signal from said buffer means;

second compensating means for removing floating electrons from said inverter means in response to the digital input signal; and

third compensating means for compensating for a poor "0" logical state transfer capability of said buffer means in response to the inverted digital input signal from said inverter means.

5,369,403

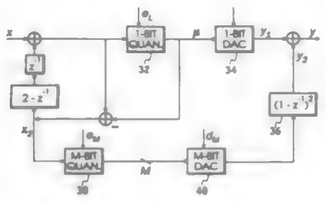
DUAL QUANTIZATION OVERSAMPLING DIGITAL-TO-ANALOG CONVERTER

Gabor C. Temes, and Shao-Feng Shu, both of Corvallis, Oreg., assignors to The State of Oregon Acting by and Through the State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.

Filed Sep. 1, 1992, Ser. No. 939,102

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **18 Claims**



1. An oversampling digital-to-analog converter comprising:

a first noise-shaping loop, including a first quantizer, for quantizing a digital input signal into a noise-shaped L-bit signal, the noise-shaping loop including a feedback path for feeding back a signal for combination with the digital input signal;

a digital-to-analog converter operably coupled to associated noise-shaped quantization error into a first analog signal;

a second quantizer for quantizing a first quantization error produced by the first quantizer into an M-bit signal, where M is greater than L;

a second digital-to-analog converter operably coupled to the second quantizer for converting the M-bit signal into a second analog signal;

a filter operably coupled to the second digital-to-analog converter for shaping the first quantization error represented by the second analog signal; and

means for combining the first and second analog signals to cancel the first quantization error contained in the first analog signal.

5,369,404

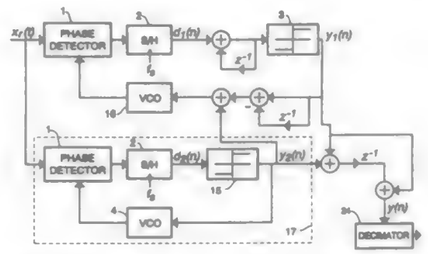
COMBINED ANGLE DEMODULATOR AND DIGITIZER

Ian Galton, Irvine, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Apr. 30, 1993, Ser. No. 56,268

Int. Cl.[5] H03M *3/02*

U.S. Cl. 341—143 **22 Claims**



1. A frequency-to-digital converter that operates on an input signal and generates a digital output signal at an output sample-rate, f, comprising:

a modulator loop means for generating a coarsely quantized digital representation of the frequency modulation of said input signal at a modulator loop sample-rate of Nf where N is a positive number, wherein the component of said digital output signal corresponding to quantization error has a spectrum that occupies primarily high frequencies; and,

a decimation filter coupled to said modulator loop means, said decimation filter for providing lowpass digital filtering and for reducing the modulator loop sample rate, Nf, to said output sample rate f.

5,369,405

COEFFICIENT GENERATION APPARATUS FOR VARIABLE LENGTH DECODER

Jong S. Choi, and Chang P. Lee, both of Seoul, Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 17, 1993, Ser. No. 63,132

Claims priority, application Rep. of Korea, May 19, 1992, 8455/1992; May 19, 1992, 8456/1992

Int. Cl.[5] H03M *7/46*

U.S. Cl. 341—63 **11 Claims**

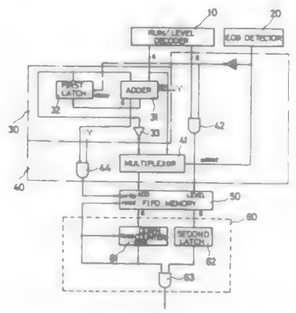
1. A coefficient generation apparatus for a variable length decoder, comprising:

a run/level decoder for decoding run/level codes received therein;

an EOB (End of Block) code detector for detecting an code from input block data;

absolute address generation means for accumulating a run signal outputted from the run/level decoder and generating an absolute address;

memory control means for selecting one of the run signal of the run/level decoder and an output signal of the absolute address generation means, to output the selected signal, and controlling outputting of a level from the run/level decoder;



a first-in and first-out (FIFO) memory for storing the level and address outputted from the memory control means; and

coefficient generation means for latching the level outputted from the FIFO memory, counting the address outputted from the FIFO memory, and controlling outputting of the latched level, based on the resultant counted value.

5,369,406

MULTIPLYING DIGITAL-TO-ANALOGUE CONVERTER

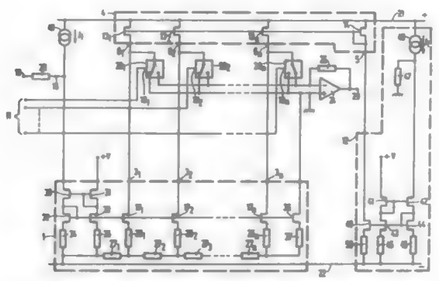
John B. Hughes, Hove, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 26, 1992, Ser. No. 966,205

Claims priority, application United Kingdom, Nov. 6, 1991, 9123560

Int. Cl.[5] H03M *1/66*

U.S. Cl. 341—135 **5 Claims**



1. A multiplying digital-to-analogue converter circuit arrangement comprising:

a first current mirror arrangement constructed to generate currents $-2^{-1}I_1, -2^{-2}I_1, \ldots, -2^{-n}I_1$ at first second, . . . nth outputs respectively thereof in response to the application of a current J_1 to an input thereof, where I_1 is in a predetermined ratio to J_1, a respective controllable switch coupling each said output to an output of the converter circuit arrangement, control inputs of said switches collectively constituting the digital signal input of said converter circuit arrangement, wherein the converter circuit arrangement includes a second current mirror arrangement constructed to generate currents $2^{-1}I_2, 2^{-2}I_2, \ldots, 2^{-n}I_2$ at first, second, . . . nth outputs respectively thereof in response to the application of a current $-J_2$ to an input thereof, where I_2 is in a predetermined ratio to J_2, d.c. connections between the first, second, . . . nth outputs of said second current mirror arrangement and the first, second, . . . nth outputs, respectively, of the first current mirror arrangement, a direct current source connected to the input of said first current mirror arrangement for applying a bias current J_1 thereto, a direct current source connected to the input of said second current mirror arrangement for applying a bias current thereto which will result in the generation of currents $2^{-1}I_1, 2^{-2}I_1, \ldots, 2^{-n}I_1$ at the first, second, . . . nth outputs, respectively, of said second current mirror arrangement, and an analogue signal current input connected to the input of said first current mirror arrangement.

5,369,407

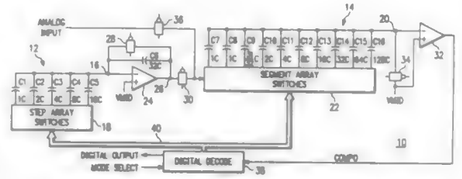
LINEAR/COMPANDING A/D CONVERTER

Henry T. Yang, Richardson; James R. Hochschild, Plano, and William A. Severin, Allen, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 861,217, Mar. 31, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 138,812

Int. Cl.[5] H03M *1/12*

U.S. Cl. 341—172 **9 Claims**



1. A multi-mode analog to digital converter comprising:

a comparator for comparing an input voltage level and a generated voltage level;

a successive approximation register for generating a provisional binary word responsive to the output of the comparator;

control circuitry for selecting a transfer function, the transfer function selected from the group consisting of linear and companding; and

a charge redistribution device for generating the generated voltage responsive to the provisional binary word and to the selected transfer function.

5,369,408

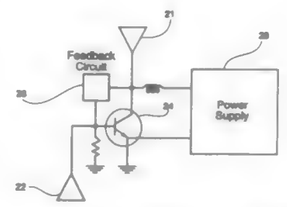
SELF-MIXING EXPENDABLE

James B. Y. Tsui, Centerville, and David M. Lin, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 23, 1990, Ser. No. 517,639

Int. Cl.[5] G01S *7/38;* **H04K** *3/00*

U.S. Cl. 342—6 **2 Claims**



1. A radar reflecting device comprising an antenna, a transistor coupled to the antenna, a power supply coupled to the transistor, a feedback circuit coupled to the transistor so that it will oscillate at a predetermined frequency, so that the antenna

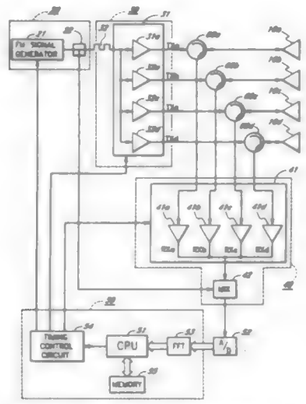
impedance will be changed at said predetermined frequency, whereby if an incident wave is reflected the reflected wave will be shifted by said predetermined oscillating frequency; wherein said transistor has emitter, base and collector electrodes, the feedback circuit is connected from the collector electrode to the base electrode, and the antenna has two arms connected respectively to the collector and base electrodes.

5,369,409

TIME-SHARING FM RADAR SYSTEM

Masanobu Urabe, Saitama, and Satoru Komatsu, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1993, Ser. No. 116,168
Claims priority, application Japan, Jun. 17, 1993, 5-171252
Int. Cl.[5] G01S *13/34*
U.S. Cl. 342—133 **14 Claims**



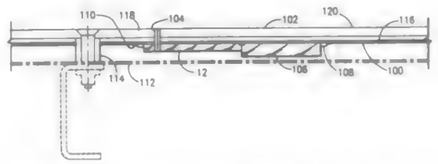
1. A time-sharing radar system comprising:
a plurality of beam radiating and receiving means arranged to radiate partially overlapping beams and to receive return beams, each of said radiating and receiving means having a selected location and direction of radiation, said radiated beams having substantially the same patterns, and said return beams being produced upon a reflection of said radiated beams by a target;
an FM signal generating means for generating an FM signal having a frequency varying with time and having a substantially constant amplitude;
a transmitting unit including a transmitting switching circuit for distributing a portion of said FM signal generated by said FM signal generating means to the beam radiating and receiving means;
a receiving unit including a receiving switching circuit and a single mixer, said receiving switching circuit comprising a plurality of amplifiers, each amplifier corresponding to one of said beam radiating and receiving means, each amplifier intermittently and in a pre-determined sequence amplifying signals received by its corresponding beam radiating and receiving means, and said mixer being capable of generating a plurality of beat signals in different timing by mixing received signals output from said receiving switching circuit, with an FM signal related to said FM signal generated by said FM signal generating means;
a direction detecting means for detecting a direction to the target based on a plurality of amplitude levels of said beat signals output from said mixer and the locations and directions of said beam radiating and receiving means; and
a range detecting means for detecting a range to the target based on a frequency of said beat signal output from said mixer.

5,369,410

OPTO-ELECTRICAL TRANSMITTER/RECEIVER MODULE

Stanley M. Reich, Jericho, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 769,560, Oct. 1, 1991, Pat. No. 5,247,309.
This application Apr. 28, 1993, Ser. No. 54,444
Int. Cl.[5] H01Q *1/28*
U.S. Cl. 342—175 **8 Claims**



1. A section of a phased array antenna for use with an aircraft having inner and outer skins, comprising:
a transmit/receive element located outside the outer skin of the aircraft for receiving and transmitting electromagnetic signals;
a planar, flexible mounting means positioned and secured between the inner and outer skins of the aircraft;
an opto-electric transmitter/receiver module for receiving an optical input signal and generating an electrical transmit signal in response to the optical input signal, and for receiving an electrical receive signal from the transmit/-receive element and generating an optical receive signal in response to the electrical receive signal, the opto-electric transmitter/receiver module being secured to said mounting means and located between the inner and outer skins of the aircraft, and including
(i) an optical elements section holding a plurality of optical elements for receiving and processing the optical input and receive signals,
(ii) an electrical elements section, separable from the optical elements section, holding a plurality of electrical elements for receiving and processing the electrical transmit and receive signals, and
(iii) means connected to the optical and electrical elements sections for transmitting optical and electrical signals therebetween;
means to transmit electrical signals between the opto-electric transmitter/receiver module and the transmit/receive element; and
spacing means positioned between the inner and outer skins of the aircraft for maintaining a space for the opto-electric transmitter/receiver module between said inner and outer skins.

5,369,411

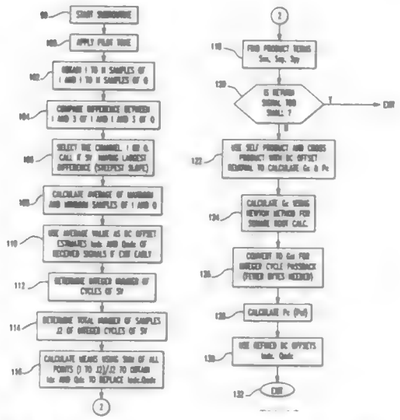
IMBALANCE CORRECTION OF IN-PHASE AND QUADRATURE PHASE RETURN SIGNALS

Thomas K. Lisle, Jr., Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jun. 1, 1993, Ser. No. 69,499
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—194 **15 Claims**

1. A method for correcting phase and amplitude imbalances between in-phase (I) and quadrature (Q) phase components of a return radiant energy signal, comprising:
converting each of the (I) and (Q) phase components of the return signal into digital data;
calculating solely in time domain, phase and amplitude coefficients for correcting digital data of the (Q) phase component of the return signal in accordance with the number and amplitude of samples taken from a selected one of the I and Q components of a pilot tone during an integer cycle of at least one cycle of the pilot tone;

multiplying the digital data of the (I) component by the phase coefficient to obtain a first product;
multiplying the digital data of the Q component by the amplitude coefficient to obtain a second product; and



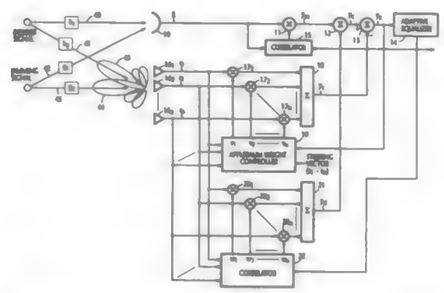
adding the first and second products to obtain a corrected Q component having a phase and amplitude substantially corresponding to the quadrature phase and amplitude of the (I) component.

5,369,412

SIDELOBE CANCELLATION AND DIVERSITY RECEPTION USING A SINGLE ARRAY OF AUXILIARY ANTENNAS

Ichiro Tsujimoto, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 14, 1993, Ser. No. 166,541
Claims priority, application Japan, Dec. 14, 1992, 4-332866
Int. Cl.[5] G01S *3/16, 3/28*
U.S. Cl. 342—380 **3 Claims**



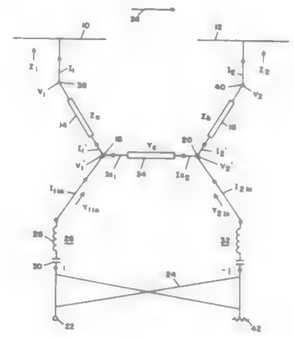
1. A sidelobe canceller comprising:
main antenna means for producing a baseband main channel signal and an array of auxiliary antenna means for producing baseband auxiliary channel signals;
a main channel multiplier for operating on the baseband main channel signal with a main channel weight signal and producing a weighted main channel signal;
a plurality of first auxiliary channel multipliers for respectively operating on said baseband auxiliary channel signals with sidelobe cancelling weight signals to produce first weighted auxiliary channel signals, and a first summer for summing the first weighted auxiliary channel signals to produce a first sum signal;
a plurality of second auxiliary channel multipliers for respectively operating on said auxiliary channel signals with diversity combining weight signals to produce second weighted auxiliary channel signals, and a second summer for summing the second weighted auxiliary channel signals to produce a second sum signal;
diversity combining means for summing the second sum signal with said weighted main channel signal to produce a diversity combined main channel signal;
subtractor means for subtracting said first sum signal from said diversity combined main channel signal;
an adaptive equalizer connected to said subtractor means for producing a decision output signal;
main channel weight control means for detecting a correlation between the decision output signal and the baseband main channel signal and deriving said main channel weight signal from the detected correlation;
first auxiliary channel weight control means for deriving said sidelobe cancelling weight signals so that said auxiliary antenna means have a first directivity pattern whose main lobe is oriented toward an undesired signal; and
second auxiliary channel weight control means for deriving said diversity combining weight signals so that said auxiliary antenna means have a second directivity pattern whole main lobe is oriented toward a desired signal.

5,369,413

Q EQUALIZATION IN DUAL-ELEMENT END-FIRE ARRAY ANTENNAS

Peter W. Hannan, Smithtown, N.Y., assignor to Hazeltine Corp., Greenlawn, N.Y.

Filed Jul. 2, 1993, Ser. No. 86,807
Int. Cl.[5] H01Q *13/10, 21/00*
U.S. Cl. 343—770 **27 Claims**



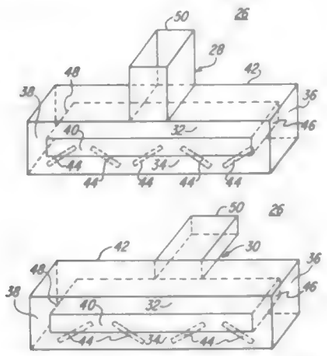
1. A dual-element end-fire array antenna with improved Q equalization, comprising:
a linear array of radiating elements including a rear element and a forward element;
rear coupling means, having a first impedance, for coupling signals to said rear element from a rear junction point;
forward coupling means, having a second impedance, for coupling signals to said forward element from a forward junction point;
input means for coupling an input signal;
feed means for coupling a first signal portion, having a reference phase, from said input means to said rear junction point and for coupling a second signal portion, having a nominally quadrature phase relation to said reference phase, from said input means to said forward junction point; and
Q equalization means, coupled between said rear and forward junction points and having an effective length nominally equal to an odd multiple of one-quarter wavelength at a frequency in said operating frequency band, for providing an inter-element coupling impedance effective, in conjunction with said first and second impedances, to

increase the conductance component of the admittance at said rear junction point.

5,369,414
DUAL END RESONANT ARRAY ANTENNA FEED HAVING A SEPTUM

Hung Y. Yee, and Phillip N. Richardson, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 650,843, Feb. 5, 1991, abandoned, which is a continuation of Ser. No. 188,637, May 2, 1988, Pat. No. 5,019,831, which is a continuation of Ser. No. 736,009, May 20, 1985, abandoned. This application Aug. 30, 1993, Ser. No. 113,885
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] H01Q *13/12*
U.S. Cl. 343—771 6 Claims



1. An antenna for at least one of transmitting and receiving rf energy comprising:

a resonant waveguide having spaced-apart first and second sections therein; said first section having a first side and said second section having a second side, said first and second sections each having opposing ends,

a septum positioned generally parallel to said first and second sides to divide said resonant waveguide into said first and second sections,

waveguide feed means coupled to said second section, said second section simultaneously coupling substantially equal portions of rf energy of a substantially predetermined frequency from said feed means to opposing ends of said second section,

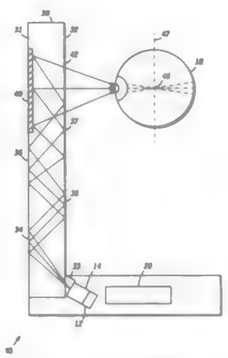
a plurality of substantially equally spaced slots disposed on said first side of said first section, and

waveguide bends, providing in conjunction with said septum which divides said first and second sections, a loop having a length substantially equal to $n\lambda_g$, where n is equal to the number of slots and λ_g is the wavelength inside said waveguide with reference to the rf energy, coupling said equal portions of rf energy from opposing ends of said second section into corresponding opposing ends of said first section to provide, by the interaction of said equal portions of rf energy with each other, a standing wave in said first section for exciting said slots.

5,369,415
DIRECT RETINAL SCAN DISPLAY WITH PLANAR IMAGER

Fred V. Richard, Scottsdale, and Michael S. Lebby, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1992, Ser. No. 889,582
Int. Cl.[5] G09G *3/02*
U.S. Cl. 345—6 14 Claims

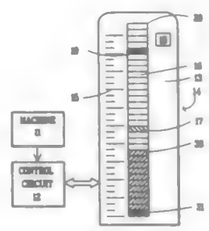


1. A direct write planar imager including an inlet for receiving a collimated beam of light scanned in two orthogonal directions and intensity modulated, an outlet for directing the light beam into the eye of an operator and a redirection diffractive optical element for creating a virtual image only on the retina of the eye, the beam of light being directed from the inlet, along a path through the planar imager to the outlet, with the redirection diffractive optical element being positioned in the path, and the path from the inlet to the outlet providing angular magnification, whereby the scanning in two orthogonal directions required to write an image on the retina of the eye is substantially reduced because of the angular magnification in the planar imager.

5,369,416
MULTI-COLOR BARGRAPH

Donald Haverty, Pelham, N.H.; Leon G. Wilde, Andover, and Dinesh Rana, Somerville, both of Mass., assignors to Indikon Company, Inc., Cambridge, Mass.

Filed Jun. 17, 1992, Ser. No. 900,004
Int. Cl.[5] G09G *3/00*
U.S. Cl. 345—39 11 Claims



1. A multi-color bargraph comprising:

a plurality of set point selectors including at least one alarm set point selector at an operator selectable level for setting an alarm level and at least one trip set point selector at an operator selectable level for setting a trip level;

at least one analog-to-digital converter for converting an input signal level, said alarm level, and said trip level to a digital input level, a digital alarm level, and a digital trip level respectively;

a plurality of latches comprising a data latch for latching said digital input level, an alarm latch for latching when said digital input level exceeds said digital alarm level and a trip latch for latching when said digital input level exceeds said digital trip level;

a display comprising a plurality of multi-color segments, each of said plurality of multi-color segments comprising a first color emitting diode and a second color emitting diode covered by a single lens, said first and said second color emitting diode illuminating individually and in combination to produce a first color, a second color and a third color;

said plurality of multi-colored segments including

an alarm segment corresponding to said alarm level,

an alarm segment illuminator for illuminating said alarm segment in a color different from other illuminated segments,

a trip segment corresponding to said trip level, and

a trip segment illuminator for illuminating said trip segment in a color different from other illuminated segments;

an address counter providing a unique recognition of each of said plurality of multi-color segments by assigning a plurality of address values thereto, the values extending from a minimum to a maximum correlated to the position of each multi-color segment;

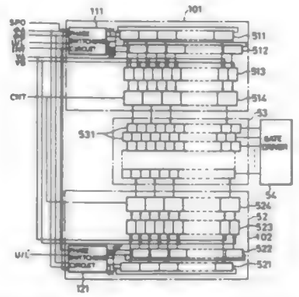
a comparator circuit including a data comparator for comparing each of said address values with a value in said data latch, an alarm comparator for comparing each of said address values with said alarm latch, and a trip comparator for comparing each of said address values with a value in said trip latch to provide a latched and a non-latched state for each of said plurality of latches according to the corresponding comparator output; and

at least one color select logic circuit providing a color select signal in response to said latched and said non-latched state for each said latch for illuminating a discrete number of said plurality of multi-color segments corresponding to said data value in a single color associated with a logical function of said comparator outputs.

5,369,417
SAMPLE AND HOLD CIRCUIT BEING ARRANGED FOR EASILY CHANGING PHASES OF SHIFT CLOCKS

Junji Tanaka, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1993, Ser. No. 36,273
Claims priority, application Japan, Mar. 31, 1992, 4-76941
Int. Cl.[5] G09G *3/36*
U.S. Cl. 345—98 6 Claims



1. A driving circuit for a liquid crystal display panel including a plurality of pixel lines, each line arranged to have a plurality of pixels arranged in a horizontal manner, and pixels of odd lines and pixels of even lines being staggered relative to each other, comprising:

a first sample and hold circuit for supplying analog signals to odd numbered pixels of each line of the liquid crystal display panel; and

a second sample and hold circuit for supplying analog signals to even numbered pixels of each line of the liquid display panel;

each of said first and second sample and hold circuits further comprising,

a first shift register including a plurality of serially connected stages and having a serial-in and parallel-out function and for shifting an input sampling pulse in synchronization to a first shift clock and outputting the shifted sampling pulse,

a second shift register including a plurality of serially connected stages and having a serial-in and parallel-out function and for shifting the input sampling pulse in synchronization to a second shift clock, said second shift clock being different from said first shift clock by a predetermined angle of phase,

a first group of sample and hold elements for sampling a first analog signal for odd numbered lines of the liquid crystal display in synchronization to outputs from respective stages of said first shift register,

a second group of sample and hold elements for sampling a second analog signal for even numbered lines of the liquid crystal display in synchronization to outputs from respective stages of said second shift register, and

a phase switching circuit for supplying said first shift register with said sampling pulse and said first shift clock and for supplying said second shift register with said sampling pulse and said second shift clock, said phase switching circuit further comprising,

means for switching a phase relation between said first shift clock and said second shift clock so as to have a difference therebetween of a predetermined phase angle, thereby permitting said first and second sample and hold element groups to reverse the sequence in which each sample and hold element receives a sampling of analog signals, said switching means being arranged to receive first and second original shift clocks, an original sampling pulse, a first control signal instructing an inversion of the display, and a second control signal designating the sample and hold circuit as either of said first and second sample and hold circuits, and to have

a first selector for selecting either the received first original shift clock or the reversal thereof as said first shift clock based on the received first and second control signals,

a second selector for selecting either the received second original shift clock or the reversal thereof based on the received first and second control signals,

a third selector for selecting either the received second original clock or the reversal thereof as said second shift clock based on the received second control signal, and

a flip-flop circuit connected to receive the input original sampling pulse and a clock selected by said second selector for outputting said sampling pulse in synchronization to said clock selected by said second selector.

5,369,418
DISPLAY APPARATUS, A METHOD OF STORING AN IMAGE AND A STORAGE DEVICE WHEREIN AN IMAGE HAS BEEN STORED

Norman D. Richards, Horsham, England, assignor to U.S. Philips Corporation, New York, N.Y.

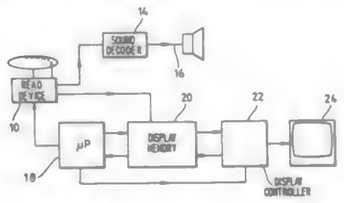
Continuation of Ser. No. 450,339, Dec. 13, 1989. This application Jan. 3, 1992, Ser. No. 816,909
Claims priority, application United Kingdom, Dec. 23, 1988, 8830210
Int. Cl.[5] G09G *1/02*
U.S. Cl. 345—185 10 Claims

1. Apparatus for displaying a scaled reproduction of an image defined by pixel data received from an image source, the pixel data including pixel values of successive scan lines in each

of successive fields of a raster of said received image; comprising:

a display memory adapted to alternately store in first and second memory banks therein the pixel values of successive scan lines of each successive field of the received image, the first and second memory banks being respectively associated with first and second display channels;

a display controller adapted to sequentially read-out from said memory banks to the associated display channels the pixel values of the successive scan lines in each successive field of the received image; and



a microprocessor for periodically reconfiguring the operation of the display controller so that during each field of the received image the display controller introduces between each successive pair of scan lines of said field a linear interpolated scan line, the pixel values of each interpolated scan line being linear weighted combinations of the values of corresponding pixels of the adjoining scan lines, the resulting sequence of scan lines and interpolated scan lines defining a field of said displayed image corresponding to said field of the received image.

5,369,419

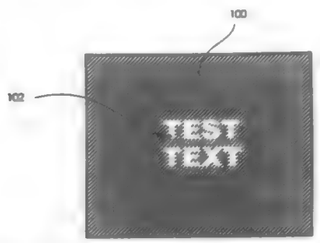
METHOD AND APPARATUS FOR MARKING A RECEIVER MEDIA WITH SPECULARLY DIFFERENTIATED INDICIA

Stanley W. Stephenson, Spencerport, and David Jeanmaire, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,388

Int. Cl.[5] B41J *2/32*

U.S. Cl. 347—61 **12 Claims**



1. A method of creating visible markings on a marking area of an object having a surface of given matte versus gloss characteristic so as to provide descriptive information thereon comprising the steps of:

applying a thermal printhead to the marking area on the surface; and

modulating the thermal printhead to imagewise apply thermal energy to said surface to change the matte versus gloss characteristic, and thereby a specularity, of said surface so as to visibly impart information conveying marks in the marking area by visibly changing the specularity of the surface of the object in the marking area.

5,369,420

METHOD OF TESTING MULTI-CHANNEL ARRAY PULSED DROPLET DEPOSITION APPARATUS

Walter S. Bartky, Chicago, Ill., assignor to XAAR Limited, Cambridge, United Kingdom

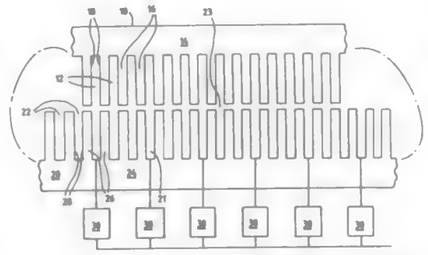
PCT No. PCT/GB91/01727, § 371 Date Jun. 4, 1993, § 102(e) Date Jun. 4, 1993, PCT Pub. No. WO92/05962, PCT Pub. Date Apr. 16, 1992

PCT Filed Oct. 4, 1991, Ser. No. 39,030

Claims priority, application United Kingdom, Oct. 5, 1990, 9021677.1

Int. Cl.[5] B41J *2/125;* **G01D** *18/00*

U.S. Cl. 347—19 **24 Claims**



1. A method of testing a multi-channel array pulsed droplet deposition apparatus comprising a multiplicity of parallel channels uniformly spaced in an array direction extending normal to a length of the channels and each of the channels with pulse imparting means for use in effecting droplet ejection therefrom, said method comprising the steps of locating said apparatus opposite a test module having mutually spaced detecting elements with channels of said apparatus respectively opposed and in close proximity to said elements, providing coupling fluid in the channels of said apparatus opposed to said detecting elements and between said detecting elements and the channels opposed thereto in order to establish a continuous fluid coupling between the channels and the detecting elements, applying test signals to impart energy pulses to said fluid in said channels opposed to said detecting elements in order to transmit signals through the coupling fluid to the detecting elements, and evaluating a pulse imparting performance of said channels to which test signals are applied from the signals detected by the detecting elements.

5,369,421

METHOD OF PRINTING COLORED IMAGE AND APPARATUS SUITABLE THEREFOR

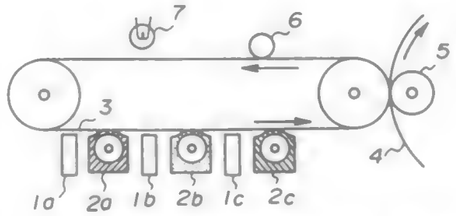
Hidenori Tomono; Yasuo Katano, and Hiromichi Komai, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 10, 1993, Ser. No. 16,089

Claims priority, application Japan, Feb. 14, 1992, 4-059808

Int. Cl.[5] B41M *5/00*

U.S. Cl. 346—76 R **9 Claims**



1. A recording method in which a liquid adhesion region and a liquid non-adhesion region of a surface of a material are utilized in a recording process, which recording method comprises the steps of:

(a) forming a latent image by partially applying heat to a single recording material, said recording material including a surface having a receding contact angle which receding contact angle decreases when a temperature of said surface becomes more than a predetermined temperature in the presence of a contacting liquid;

(b) contacting said recording material with a contacting liquid in a condition where a temperature of said surface is at or exceeds said predetermined temperature;

(c) forming a visible first color image corresponding to said latent image by causing said surface to contact a recording agent containing a first coloring agent and a fine powder of said recording material;

(d) repeating steps (a)–(c) to form visible second and subsequent color images by causing said surface to come in contact with a recording agent containing a second or subsequent coloring agent and a fine powder of said recording material, each of said color images except for the color image formed first being formed on a layer formed of said fine powder contained in a previously applied recording agent; and

(e) transferring said visible color images from said recording material onto a recording paper.

5,369,422

THERMAL TRANSFER RECORDING METHOD IN WHICH AN INK SHEET IS MOVED AT A SELECTED SPEED AND APPARATUS FOR PERFORMING THE SAME

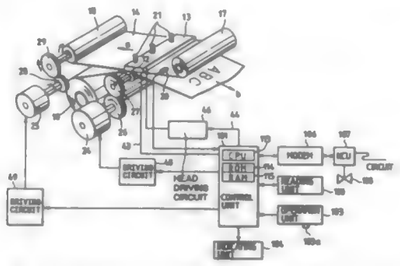
Takehiro Yoshida, Tokyo; Hisao Terajima, Yokohama; Satoshi Wada, Kawasaki; Takeshi Ono, Yokohama; Makoto Kobayashi, Tama; Minoru Yokoyama, Yokohama; Takashi Awai, Yokohama; Akihiro Tomoda, Yokohama, and Yasushi Ishida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,128, Sep. 24, 1991, abandoned, which is a continuation of Ser. No. 409,949, Sep. 20, 1989, abandoned. This application Nov. 19, 1993, Ser. No. 154,716

Claims priority, application Japan, Sep. 22, 1988, 63-236367; Sep. 22, 1988, 63-236369; Oct. 4, 1988, 63-248982; Oct. 28, 1988, 63-270880

Int. Cl.[5] B41J *2/325, 17/06*

U.S. Cl. 346—76 PH **23 Claims**



1. A thermal transfer recording apparatus for transferring an ink of an ink sheet to a recording sheet to record an image on the recording sheet, comprising:

a thermal head having a plurality of heat generating elements disposed in correspondence with a recordable width of the recording sheet;

a recording sheet mounting section for mounting the recording sheet:

a recording sheet conveying mechanism for conveying the recording sheet in a conveyance direction;

an ink sheet mounting section for mounting a multi-print ink sheet, which contains said ink in an amount sufficient for recording a number of times which is a number of multi-print, for recording along the recordable width of the recording sheet;

an ink sheet conveying mechanism for conveying the ink sheet, said ink sheet conveying mechanism conveying the ink sheet in a direction opposite to the conveyance direction of the recording sheet at a recording area when recording; and

a control mechanism for controlling setting of the number of multi-print of the ink sheet in response to a kind of said image to be recorded and conveyance by said ink sheet conveying mechanism in response to the set number of multi-print when recording.

5,369,423

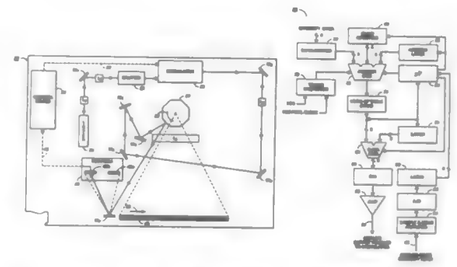
METHOD AND APPARATUS FOR THE AUTOMATIC CALIBRATION OF AN ANALOG RASTER OUTPUT SCANNER

Timothy M. Hunter, Webster; Joseph Chiang, Fairport; David Birnbaum, Pittsford, and John L. Zanghi, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 21, 1992, Ser. No. 886,208

Int. Cl.[5] B41J *2/235*

U.S. Cl. 346—108 **13 Claims**



1. An analog raster output scanner comprising:

means for generating a radiant energy beam;

means for producing a voltage signal which represents a desired intensity level of a spot to be produced on an output medium;

means for modulating the intensity of the radiant energy beam, in response to the voltage signal, to produce a modulated energy beam which exposes the output medium in proportion to the desired intensity level;

means for monitoring the modulated radiant energy beam intensity generated in response to a predetermined intensity level, said monitoring means comparing the radiant energy beam intensity with the desired intensity to generate a difference signal; and

means for initiating calibration of the voltage signal producing means upon a determination that the magnitude of the difference signal exceeds a threshold level.

5,369,424

IMAGE-FORMING APPARATUS

Setsuo Hori, Izumi; Kikunosuke Tsuji, Izumiohtsu; Tatsuya Kikumura, Settsu, and Kenichi Satake, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 27, 1992, Ser. No. 888,924

Claims priority, application Japan, Jun. 6, 1991, 3-163660; Jun. 29, 1991, 3-185554

Int. Cl.[5] G01D *15/24*

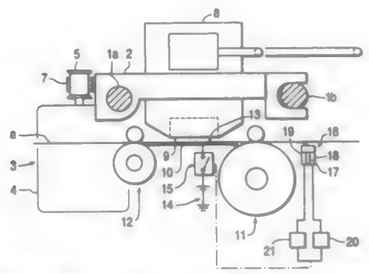
U.S. Cl. 346—134 **20 Claims**

1. In an image forming apparatus including a platen to support a paper to be printed, a print head facing said platen to print on a surface of the paper supported thereby, and an upstream paper conveying device and a downstream paper conveying device respectively positioned upstream and down-

stream of said print head, relative to a direction of conveyance of the paper, to convey the paper intermittently in said direction between said platen and said print head, said conveying devices being inoperable to convey the paper during printing operations by said print head to print the paper and operable to convey the paper between said printing operations, the improvement comprising:

said platen including an electrostatic attraction member operable to, upon application thereto of a voltage, electrostatically attract the paper to said platen;

a control operably coupled to said member to apply said



voltage thereto during said printing operations until the paper has been conveyed by said upstream conveying device to a position whereat a leading end of the paper has reached said downstream conveying device; and

said upstream conveying device operating such that time periods of intermittent conveyance which occurs prior to an arrival of the leading end of the paper at the downstream conveying device and while voltage is applied to said member are longer than time periods of intermittent conveyance which occurs when the paper is conveyed by both said upstream conveying device and said downstream conveying device.

5,369,425

DEVICE FOR AUTOMATICALLY CLAMPING AND RELEASING RECORDING MATERIAL AND OPERATION OF SAID DEVICE

Ralf Balzeit, Preetz; Gunnar Behrens, Kiel Russee; Gerhard Bloehdorn, Schoenkirchen; Bernd Lassen, Moenkeberg; Hans Penza, Preetz, and Norbert Roth, Kiel, all of Germany, assignors to Linotype-Heil AG, Kiel, Germany

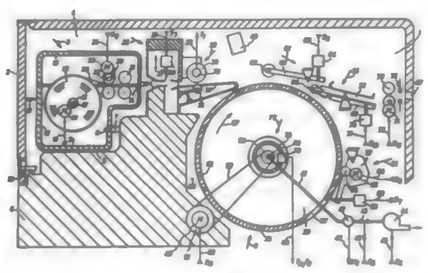
PCT No. PCT/DE90/00615, § 371 Date Feb. 18, 1992, § 102(e) Date Feb. 18, 1992, PCT Pub. No. WO91/03121, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 8, 1990, Ser. No. 834,576

Claims priority, application Germany, Aug. 17, 1989, 3927162

Int. Cl.[5] G01D *15/24*

U.S. Cl. 346—138 **15 Claims**



1. An apparatus for automatically clamping a film web onto a recording drum of a reproduction device and for releasing an exposed film sheet recorded by a recording element from the recording drum, the recording drum being situated in a substantially light-tight space of the reproduction device, comprising:

a light-tight roll film cassette that contains the film web as a rotatable film roll, said roll film cassette being provided with a slot-shaped film passage opening and light sealing means associated with the opening for providing a substantially light-tight environment in the cassette, said light sealing means comprising sealing rollers arranged above and below the film web, a length of said sealing rollers at least corresponding to a length of said film passage opening, said light-tight roll film cassette being positioned into the light-tight space of said reproduction device and being locked there, the film passage opening being positioned to open toward the recording drum and having a longitudinal extent which is parallel to an axis of the recording drum;

a film conveying means arranged in said roll film cassette for conveying the film web out of the roll film cassette means to the recording drum, said film conveying means comprising conveyor rollers, at least one of said conveyor rollers being driven by a film conveying motor;

a film winding means arranged in said roll film cassette for conveying unwound film web back into said roll film cassette and for winding it up onto the film roll;

a conveying and guide surface arranged between the film passage opening and the recording drum for receiving the film unwound from the roll film cassette and for conveying and positioning the unwound film substantially tangent relative to the recording drum;

a film length measuring means arranged between the roll film cassette and the recording drum for identifying a length of the film web that has respectively passed through;

film cutting means arranged between the roll film cassette and the recording drum for cutting a film sheet of a prescribed length from the film web to be respectively exposed;

a pressure roller which is pivotable against the recording drum at a region where a start of the film web conveyed to the recording drum comes into contact with a surface of the recording drum;

a positioning drive for rotating the recording drum into a start of clamping position, a start of exposure position, and a start of release position;

a lift-off finger pivotable against the recording drum for peeling a respectively exposed film sheet from the recording drum;

rows of suction holes in a surface of the recording drum which are arranged in an axial direction of said recording drum and which are connected by a suction line to a vacuum pump for vacuum-fixing of the film sheet on the recording drum;

a controllable air valve inserted in said suction line for reducing a vacuum during the clamping and the release of the film web and film sheet respectively; and

the film length measuring means comprises a measuring wheel driven by motion of the film web, a supporting wheel resiliently pressing the film web against the measuring wheel, and a rotational pulse generator coupled to the measuring wheel, said rotational pulse generator converting a rotation of the measuring wheel into a clock sequence such that a number of clocks is a measure of measured film length.

5,369,426

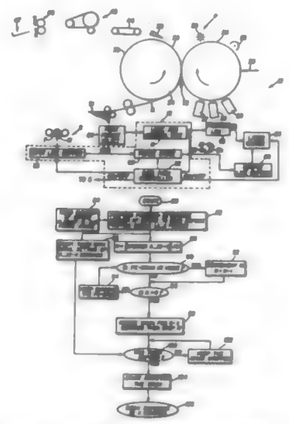
METHOD AND APPARATUS FOR OPTIMIZATION OF PRODUCTIVITY THROUGH THE SYNCHRONIZATION OF A SCANNER AND PRINTER USING A PRE-SCAN

Feraydoon S. Jamzadeh, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1993, Ser. No. 40,700

Int. Cl.[5] G01D *15/00;* **G03F** *3/08;* **G03G** *15/01*

U.S. Cl. 346—157 **17 Claims**



1. An electronic color printing apparatus for printing an array of images contained on multiple image sources on a per-batch basis comprising:

a) a movable image member having an image receiving portion and a non-image receiving portion;

b) means for pre-scanning, an array of images contained on respective multiple image sources and providing a first signal;

c) means for determining the position of said movable image member and generating a second signal in response thereto;

d) means for forming images on said movable image member; and

e) control means responsive to said first and second signals to control the position of said movable image member by selectively stopping and starting said image receiving portion so that it is positioned to receive an image from said image-forming means.

5,369,427

ELECTROSTATIC RECORDING HEAD

Masahiko Itaya; Hiroyuki Nakagoshi, and Tsutomu Sasaki, all of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 11, 1993, Ser. No. 29,649

Claims priority, application Japan, Mar. 13, 1992, 4-089411; Mar. 13, 1992, 4-089412

Int. Cl.[5] G01D *15/06*

U.S. Cl. 346—159 **20 Claims**

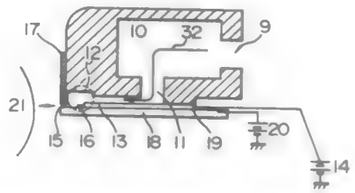
1. An electrostatic recording head comprising:

an air introducing path for introducing an air;

an ion exhaust path communicating with said air introducing path;

a pin electrode array provided near said ion exhaust path within said air introducing path, said pin electrode array being formed of an insulating member and a plurality of pin electrodes embedded into the insulating member with tips of the pin electrodes projecting about 0.1 to 2 mm outside of the insulating member;

an opposing electrode disposed at 3 to 10 mm from the tips of said pin electrodes opposite to said pin electrode array so that when a predetermined control voltage is applied to said pin electrodes, corona discharge is caused between said pin electrodes and said opposing electrode, thereby ionizing said introduced air; and



an array of control electrodes for selectively controlling flow of said ionized air through said ion exhaust path.

5,369,428

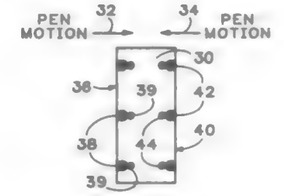
BIDIRECTIONAL INK JET PRINTING

Robert C. Maze, and Kenneth E. Trueba, both of Corvallis, Oreg., assignors to Hewlett-Packard Corporation, Palo Alto, Calif.

Filed Jun. 15, 1992, Ser. No. 898,872

Int. Cl.[5] B41J *2/07*

U.S. Cl. 347—5 **11 Claims**



1. A method of printing a character on a substrate so as to minimize exposed satellite ink drops along edges of the printed character, comprising the steps of:

partitioning the character so as to form a leading portion and a trailing portion with respect to a predetermined forward direction, the leading portion including a leading edge of the character and the trailing portion including a trailing edge of the character;

moving a pen in the forward direction;

while the pen is moving forward and at a first location, printing only the leading portion of the character so that satellite ink drops are directed toward a center of the character;

moving the pen in a reverse direction opposite the forward direction; and

while the pen is moving in the reverse direction and at the first location, printing the trailing portion of the character so that satellite ink drops are directed toward a center of the character, thereby minimizing exposed satellite ink drops along the edges of the printed character.

5,369,429

CONTINUOUS INK REFILL SYSTEM FOR DISPOSABLE INK JET CARTRIDGES HAVING A PREDETERMINED INK CAPACITY

Paul E. Erickson, Prior Lake, Minn., assignor to LaserMaster Corporation, Eden Prairie, Minn.

Filed Oct. 20, 1993, Ser. No. 139,576

Int. Cl.[5] B41J *2/175*

U.S. Cl. 347—7 **12 Claims**

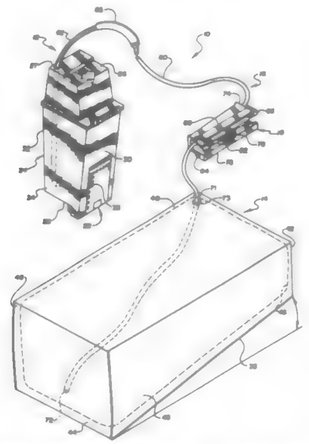
1. A continuous ink refill system for an ink jet printer having

a print carriage that moves laterally with respect to a generally horizontal print receiving media, the refill system comprising:

(a) a disposable ink jet cartridge removably mountable in said print carriage and housing in a self-contained unit a print head and an ink supply container maintained at a sub-atmospheric pressure that supplies a first quantity of liquid ink to said print head;

(b) an ink reservoir means, external to said print carriage, for storing a second quantity of liquid ink to replenish said first quantity of liquid ink in said ink supply container; and

(c) tubing means for transporting liquid ink through a sealed



connection between said ink supply container and said ink reservoir means by utilizing a passive pressure differential between said ink supply container and said ink reservoir means, said ink jet cartridge, said ink reservoir means and said tubing means being operatively coupled together as a self-contained, unitary replaceable unit and said second quantity of ink being fixed and limited to a quantity of liquid ink that is greater than said first quantity or ink, but less than some multiple of said first quantity of ink above which said print head is not reliably operable such that said self-contained unitary replaceable unit is replaced when said second quantity of ink is consumed.

5,369,430

PATTER CORRELATION TYPE FOCUS DETECTING METHOD AND FOCUS DETECTING APPARATUS

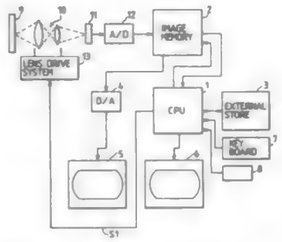
Toshiaki Kitamura, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 12, 1992, Ser. No. 974,895

Claims priority, application Japan, Nov. 14, 1991, 3-326442

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—94 **9 Claims**



1. A focus detecting method comprising the steps of:

(a) projecting a real image of an observation object including a plurality of object patterns onto an image pickup device through an optical system, and producing image data from an output of said image pickup device;

(b) calculating correlation values of the image data of each of said plurality of object patterns and image data of a prestored reference pattern while varying a relative positional relation among said image pickup device, said optical system and said observation object in a direction of an optical axis of said optical system; and

(c) judging the relative positional relation among said image pickup device, said optical system and said observation object which gives a maximum correlation value as an in-focus state.

5,369,431

VERIFICATION AND REPAIR STATION OF PCBS

Haviv Levy, Rishon Lezion, and Israel Altman, Kiryat Ono, both of Israel, assignors to Orbotech, Yavne, Israel

Filed Feb. 24, 1993, Ser. No. 21,769

Claims priority, application Israel, Feb. 25, 1992, 101063

Int. Cl.[5] H04N *7/18*

U.S. Cl. 348—126 **11 Claims**



1. A verification and repair station for examining a printed circuit board (PCB) for enabling an operator to classify suspected faults at an examination area and to effect manual repair thereof if necessary, said verification and repair station comprising:

a worktable having means for securing thereon the PCB in precise registration with an origin of the worktable,

a camera for producing a magnified image of the examination area of the PCB,

illumination means for illuminating said area of the PCB,

a computer having logic means,

translatory drive means coupled to the worktable and to the computer for moving the worktable under control of the computer through mutually orthogonal axes so that successive ones of said examination areas aligned with the camera,

a visual display monitor coupled to the computer and to the camera for displaying the magnified image of said area of the PCB,

the logic means generating a drive signal in respect of any one of said examination areas which lies in a half of the worktable remote from the operator prior to its being aligned with the camera,

a rotary drive means coupled to the worktable and to the logic means and responsive to said drive signal for rotating the worktable through 180°, and

resiliently-biased feeler means carried by the station and continually engaging the upper surface of the PCB adjacent to the examination area to generate an error signal corresponding to variations in thickness and buckling of the PCB, and means on the station responsive to the said error signal to continually adjust the height of the camera accordingly for maintaining the examination area in sharp focus.

5,369,432

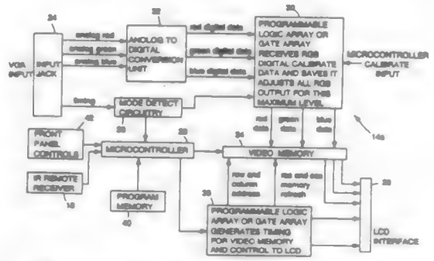
COLOR CALIBRATION FOR LCD PANEL

James K. Kennedy, Round Rock, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1992, Ser. No. 861,128

Int. Cl.[5] H04N *9/68, 9/31*

U.S. Cl. 348—181 **20 Claims**



1. A method of correcting video output which is electronically transmitted from a source external to a display device, the video output including at three components corresponding to three colors, comprising the steps of:

generating, at the source comprising interchangeable personal computers of different manufacture, a test pattern having three electrical signals corresponding to the three colors;

determining the differences between a predetermined signal level and the signal level of each of the three color signals; and

calibrating the video output by adjusting the video output based on each of the differences.

5,369,433

RECORDING VIDEO SIGNALS ON CINEMATOGRAPHIC FILM USING A DEFORMABLE MIRROR DEVICE

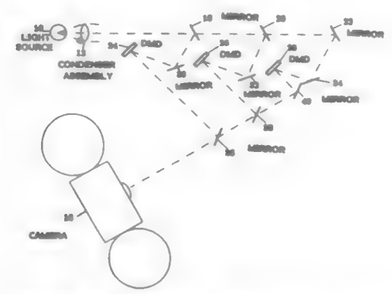
John L. E. Baldwin, Eastleigh, and Peter W. Blaxtan, Welwyn, both of United Kingdom, assignors to Rank Cintel Limited, Herts, United Kingdom

Filed Apr. 6, 1992, Ser. No. 864,327

Claims priority, application United Kingdom, Apr. 5, 1991, 9107144

Int. Cl.[5] H04N *5/225, 5/253*

U.S. Cl. 348—207 **26 Claims**



1. Apparatus for recording a video signal on cinematographic film having unexposed photographic emulsion thereon, the apparatus comprising:

a camera having a light source, a transport mechanism for passing the cinematographic film through an image plane for exposing said cinematographic film frame-by-frame, each frame of said film being maintained in said image plane for a predetermined time period corresponding to a single frame time interval, and a two dimensional array of deformable mirror devices arranged relative to said light source and said image plane for selectively reflecting light from said light source to said image plane so as to expose the photographic emulsion of the film;

each of said deformable mirror devices being switchable between a disabled and an enabled position during each of a multiplicity of separate sub-frame time intervals comprising said single frame time interval, each of said deformable mirror devices reflecting light from said light source to said image plane when in said enabled position so as to provide respective light exposures of the photographic emulsion of the film for each of said multiplicity of separate sub-frame time intervals; and

control means responsive to an incoming video signal for controlling the switching of each of said deformable mirror devices during said multiplicity of separate sub-frame time intervals in response thereto, wherein a combination of said respective light exposures is provided for each of said deformable mirror devices that are enabled in said single frame time interval, the total number of such possible combinations of said respective light exposures greatly exceeding the number of said multiplicity of separate sub-frame time intervals, so that the cinematographic film, when developed, will represent an optical image of the video signal.

5,369,434

CHARGE TRANSFER DEVICE WITH HIGH SPEED TRANSFER RATE

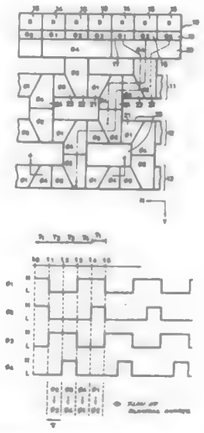
Seiichi Kawamoto, and Tadakuni Narabu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 855,089

Claims priority, application Japan, Mar. 20, 1991, 3-057269

Int. Cl.[5] H04N *3/14, 5/225*

U.S. Cl. 348—315 **5 Claims**



1. A charge transfer device having a four-phase drive system register in which first second, third and fourth transfer sections sequentially arrayed constitute one bit, each transfer section having a transfer gate electrode, characterized in that said first, second, third and fourth transfer sections are arranged such that, when applied with drive pulses of the same level, a potential difference occurs between said first and third transfer sections and those of said second and fourth transfer sections, and

that charges are transferred by four-phase drive pulses such that during a first time period said first and second transfer sections are at a high level and said third and fourth transfer sections are at a low level to define a first transfer

interval, during a second time period said first and second transfer sections turn to a low level and said third transfer section turns to a high level substantially simultaneously, such that said first, second and fourth transfer sections are at a low level and said third transfer section is at a high level during a second transfer interval, during a third time period said fourth transfer section turns to a high level, such that said first and second transfer sections are at a low level and said third and fourth transfer sections are at a high level during a third transfer interval, during a fourth time period said first transfer section turns to a high level and said third and fourth transfer sections turn to a low level substantially simultaneously such that said first transfer section is at a high level and said second, third and fourth transfer sections are at a low level during a fourth transfer interval, and during a fifth time period such that said second transfer section turns to high level.

5,369,435

CONTRAST DETECTING APPARATUS FOR CONTROLLING AN AUTOMATIC FOCUSING OPERATION OF AN IMAGING APPARATUS

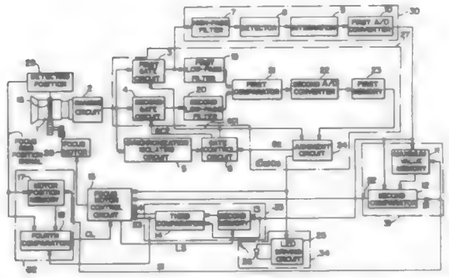
Shinobu Ueda, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 25, 1990, Ser. No. 603,324

Claims priority, application Japan, Oct. 27, 1989, 1-281266; Mar. 6, 1990, 2-55604

Int. Cl.[5] H04N *5/232*

U.S. Cl. 348—353 **13 Claims**



1. A contrast detecting apparatus for controlling an automatic focusing operation of an imaging apparatus in which a first region of an image is focused by changing a state of an optical system in accordance with a luminance signal obtained from the first region, the image being obtained by imaging a subject on an imaging screen, the contrast detecting apparatus comprising:

first setting means for setting the first region of the imaging screen;

second setting means for setting a second region of the imaging screen;

first region component extracting means for extracting a first signal component of the luminance signal corresponding to the first region set by said first setting means, the first signal component having a prescribed frequency band;

second region component extracting means for extracting a second signal component of the luminance signal corresponding to the second region set by said second setting means, the second signal component having a second frequency band lower than the prescribed frequency band;

first detecting means for detecting whether the subject has contrast in a part corresponding to the first region in accordance with the first and second signal components; and

means for activating the automatic focusing operation in response to a contrast signal output from said first detecting means indicating that contrast exists.

5,369,436

AUTOMATIC FOCUSING APPARATUS FOR AUTOMATICALLY MATCHING FOCUS IN RESPONSE TO VIDEO SIGNAL BASED ON EXTRACTED HIGH FREQUENCY COMPONENT OF NON-LINEAR PROCESSED LUMINANCE SIGNAL

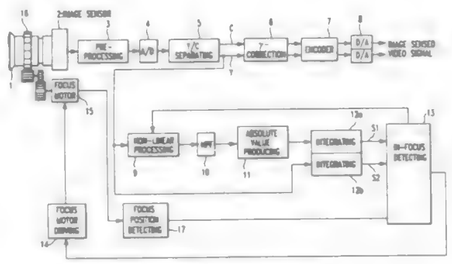
Kiyotada Kawakami; Masao Takuma, both of Osaka; Tooru Aseeda, Nara; Tooru Yamamoto, and Haruhiko Murata, both of Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 29, 1993, Ser. No. 11,527

Claims priority, application Japan, Jan. 31, 1992, 4-016227

Int. Cl.[5] H04N *5/232, 5/202*

U.S. Cl. 348—355 **6 Claims**



1. An automatic focusing apparatus for automatically matching focus to an object in response to a video signal obtained from image-sensing means, said image-sensing means having a focus lens and an image sensor with a common optical axis therebetween, said apparatus comprising:

relative position changing means for changing the relative position of said focus lens with respect to said image sensor and along a direction of the optical axis;

non-linear processing means, response to a luminance signal contained in said video signal, for generating a processed signal which varies as a pre-defined non-linear function of said luminance signal;

high-pass filtering means for extracting a high frequency component of the processed signal so as to form an extracted high frequency component;

means for detecting a level of said extracted high frequency component for every field period of said video signal and converting the level to a focus evaluating value which reaches a maximum value at an in-focus state; and

control means, responsive to said detecting and converting means, for controlling said relative position changing means so as to move the relative position of said focus lens to a position at which said focus evaluating value is maximized.

5,369,437

TIME-VARYING IMAGE SIGNAL CODING/DECODING SYSTEM

Toshio Koga, and Masayuki Okajima, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 28, 1992, Ser. No. 936,310

Claims priority, application Japan, Aug. 28, 1991, 3-215692; Aug. 28, 1991, 3-215693

Int. Cl.[5] H04N *7/133, 7/137*

U.S. Cl. 348—401 **6 Claims**

1. A time-varying image signal coding apparatus comprising:

orthogonal transform means for orthogonally transforming an inputted time-varying image signal on a block-by-block basis, each block comprising a plurality of pixels;

subtracting means for subtracting a first predicted signal from said orthogonally transformed signal to supply a prediction error signal;

first quantizing means for quantizing said prediction error signal to supply a first quantized signal;

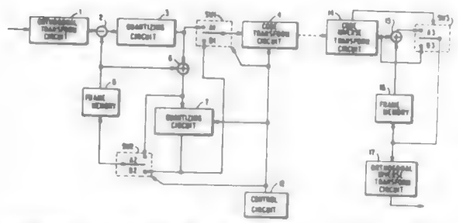
adding means for adding said first quantized signal and said first predicted signal to supply a local decoded signal;

second quantizing means for quantizing said local decoded signal to supply a second quantized signal;

first switching means for selectively connecting either said local decoded signal or said second quantized signal;

a first frame memory for delaying the signal selectively connected by said first switching means by a predetermined number of frames to supply the delayed signal as said first predicted signal;

second switching means for selectively connecting either said first or second quantized signal;



switching control means for giving a switching control signal to instruct said first and second switching means to selectively connect said second quantized signal when a second frame memory built into a time-varying image signal decoding apparatus is to be refreshed or to instruct said first and second switching means to selectively connect said local decoded signal and said first quantized signal, respectively, when said second frame memory is not to be refreshed, and instructing selective connection so that, when refreshing is to be accomplished, said block be refreshed on a group-by-group basis, each group consisting of a plurality of transform coefficients and approximately differing from others in frequency region; and

code transform means for subjecting to code transform said first and second quantized signals, selected by said second switching means, and said switching control signal, and transmitting the resultant transformed signals.

5,369,438

APPARATUS FOR PROCESSING IMAGE MOTION COMPENSATION INFORMATION FOR AN IMAGE PROCESSING SYSTEM

Si J. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 17, 1993, Ser. No. 62,192

Claims priority, application Rep. of Korea, May 19, 1992, 1992-8410

Int. Cl.[5] H04N *7/133, 7/137*

U.S. Cl. 348—402 **8 Claims**

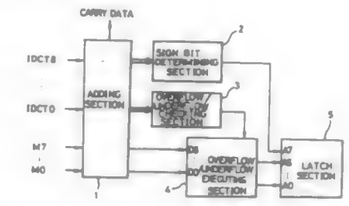
1. An apparatus for processing image motion compensation information for an image processing system comprising:

means for adding an inverse quantized data for motion-compensation and a frame memory data;

means for determining a sign bit of added data;

means for checking overflow/underflow of said added data and reducing the bit size of said added data according to checked overflow/underflow;

overflow/underflow excuting means for output-controlling said added data according to said checked overflow/underflow; and



latch means for providing final data by adding said sign bit to overflow/underflow executed data.

5,369,439

ORTHOGONAL TRANSFORM ENCODER USING DC COMPONENT TO CONTROL QUANTIZATION STEP SIZE

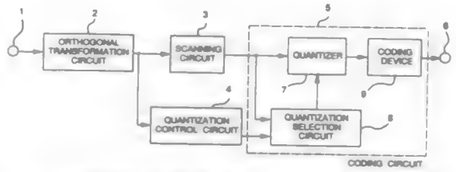
Toyohiko Matsuda, Katano; Masakazu Nishino, Kashiwara, and Shigeru Awamoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 2, 1992, Ser. No. 955,829

Claims priority, application Japan, Oct. 2, 1991, 3-255030; Oct. 23, 1991, 3-275162

Int. Cl.[5] H04N *7/133*

U.S. Cl. 348—405 **5 Claims**



1. An orthogonal transformation encoder for encoding an input video signal of sampled data divided in blocks through orthogonal transformation and quantization for each block comprising:

orthogonal transformation means for orthogonally transforming the video signal divided in blocks to obtain orthogonal transform coefficients;

scanning means for rearranging the transform coefficients obtained by said orthogonal transformation means in a zigzag scanning manner for coding;

quantization control means for detecting a degree of influence on visual sensation for each block according to the amplitude value of the direct current component of the orthogonal transform coefficients obtained by said orthogonal transformation means concurrently with the rearrangement operation of said scanning means thereby to generate a binary control signal representing the detected degree of influence;

quantizing means for quantizing the transform coefficients rearranged by said scanning means with selection of a quantization step size for controlling the amount of codes according to the binary control signal generated by said quantization control means; and

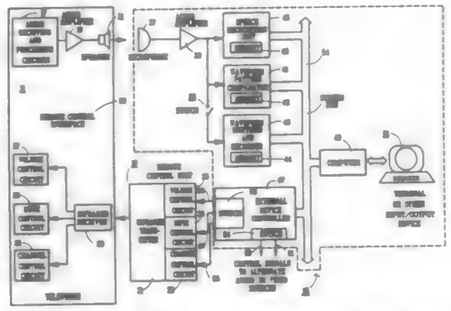
coding means for coding the transform coefficients quantized by said quantizing means.

5,369,440

SYSTEM AND METHOD FOR AUTOMATICALLY CONTROLLING THE AUDIO OUTPUT OF A TELEVISION

Barry Sussman, 70 Kosmas St., Marlboro, Mass. 01752

Filed Nov. 19, 1992, Ser. No. 978,728
Int. Cl.[5] H04N *5/60*
U.S. Cl. 348—462 **10 Claims**



5. A system for automatically controlling the audio output of a television so as to avoid listening to undesired material comprising:

a. microphone for converting the audio output of said television into an audio signal,

b. an audio amplifier for amplifying the audio signals signal from said microphone,

c. a waveform pattern digitizer and recorder for digitizing and storing patterns of audio signals received from said audio amplifier corresponding to undesired material,

d. a computer for controlling the operations of the system,

e. an input/output device coupled to said computer for entering digital signals into said computer corresponding to key words representing said undesired material,

f. a waveform pattern comparator, said waveform pattern comparator having a memory for receiving and storing digital signals of waveform patterns from said waveform pattern digitzer and recorder, said waveform pattern comparator receiving and digitizing the output of said audio amplifier and comparing said digitized output to the waveform patterns stored in said memory of said waveform pattern comparator and outputting an indicator signal if there is a match, and

g. a speech recognition unit, said speech recognition unit having a memory for storing keywords, said speech recognition unit converting the audio output of the audio amplifier into data signals corresponding to speech and comparing said speech with key words stored in said memory and outputting an indicator signal if there is a match,

h. an external device controller coupled to said waveform pattern comparator and said speech recognition system for receiving said indicator signal from either said waveform pattern comparator or said speech recognition system and generating pursuant thereto a control signal for controlling the audio output of the television.

7. A method of automatically controlling the audio output of a television so as to avoid listening to undesired material comprising the steps of:

a. generating digital information unique to said undesired material, said digital information being generated by converting waveform patterns of sound of said undesired material into data, then,

b. comparing digital information corresponding to waveform patterns of the audio output of said television with said generated digital information unique to said undesired material to determine the presence of said undesired material in said audio output and generating an indicator signal as soon as said undesired material is detected,

c. generating a control signal in response to said indicator signal, and

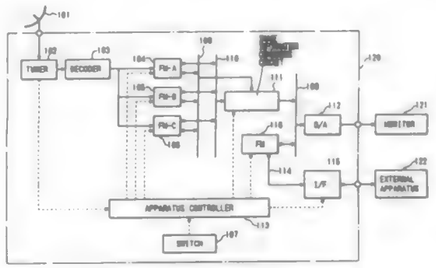
d. applying said control signal to said television to control the audio output of said television.

5,369,441

REPRODUCING APPARATUS WITH SIMULTANEOUS PARALLEL PROCESSING OF DIFFERENT IMAGE SIGNALS

Masahiko Enari, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 548,833, Jul. 6, 1990. This application Jul. 1, 1993, Ser. No. 87,113
Claims priority, application Japan, Jul. 6, 1989, 1-174966
Int. Cl.[5] H04N *1/21, 1/23, 5/222*
U.S. Cl. 348—559 **22 Claims**



1. A reproducing apparatus comprising:

(a) first storage means for storing a plurality of image signals supplied sequentially at a first rate, each of the stored image signals representing a different image;

(b) first means for reading out image signals stored in said first storage means and supplying the read out image signals sequentially to an output terminal at a second rate which is different from the first rate; and

(c) second means, comprising a second storage means for storing at least one image signal, for outputting one image signal from among the plurality of stored image signals by transferring the one image signal to said second storage means and outputting the one image signal from said second storage means while image signals are being supplied sequentially from said first means to said output terminal, said first storage means and said second storage means being coupled in parallel.

5,369,442

METHOD FOR PICTURE-IN-PICTURE INSERTION AND DEVICE FOR PERFORMING THE METHOD

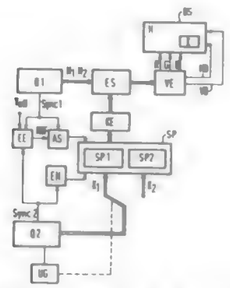
Bodo Braun, Höhenkirchen-Siegertsbrunn, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 23, 1991, Ser. No. 748,980
Claims priority, application Hague Agreement, Aug. 23, 1990, 90116186.9
Int. Cl.[5] H04N *5/272*
U.S. Cl. 348—567 **18 Claims**

1. In a method for picture-in-picture insertion in which a small picture having successive frames is to be inserted into a main picture having successive frames, the improvement which comprises:

alternatingly writing the successive frames of the small picture frame-wise into a first memory region and a second memory region of a memory device,

generating a decision signal at a beginning of a display of the main picture, for deciding from which of the first and second memory regions a stored frame of the small picture is to be read out, and generating the decision signal as a function of synchronizing signals of the small picture and the main picture, and as a function of a location of the small picture in the main picture, and



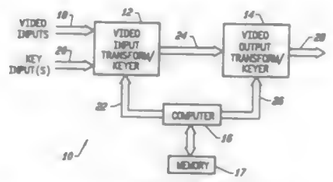
reading out successive frames of the small picture from whichever memory region enables joint-line-free insertion of the small picture into the main picture.

5,369,443

DIGITAL VIDEO EFFECTS GENERATOR

David J. Woodham, Lower Earley Reading, Great Britain, assignor to Abekas Video Systems, Inc., Redwood City, Calif.

Filed Apr. 12, 1991, Ser. No. 685,826
Int. Cl.[5] H04N *5/262, 7/12*
U.S. Cl. 348—578 **54 Claims**
MICROFICHE APPENDIX INCLUDED
(168,2 Microfiche, Pages)



1. A digital video effects generator for increasing the effective sampling frequency of and selectively spatially transforming a digital video signal, said digital video effects generator comprising:

up-sampler means for receiving and up-sampling an input digital video signal;

transformation means for receiving and selectively spatially transforming said up-sampled digital video signal; and

interpolator means for receiving and interpolating said selectively spatially transformed, up-sampled digital video signal.

5,369,444

FIELD TYPE MATCHING SYSTEM

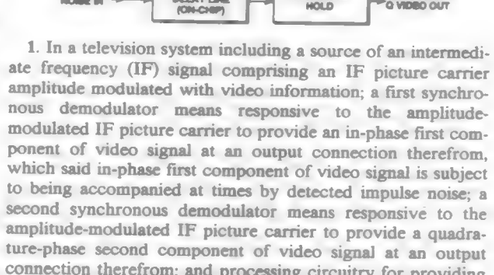
Nathaniel H. Ersoz, Brownsburg, and Barth A. Canfield, Indianapolis, both of Ind., assignors to Thomson Consumer Electronics, Indianapolis, Ind.

PCT No. PCT/US91/03741, § 371 Date Nov. 12, 1992, § 102(e) Date Nov. 12, 1992, PCT Pub. No. WO91/19385, PCT Pub. Date Dec. 12, 1991
PCT Filed May 29, 1991, Ser. No. 938,047
Claims priority, application United Kingdom, Jun. 1, 1990, 9012326.6
Int. Cl.[5] H04N *5/272, 5/262, 9/74, 5/04*
U.S. Cl. 348—598 **26 Claims**

1. A field type matching system, comprising:

first and second field type detecting means for first and second video signals respectively, each of said detecting means having an output indicating whether said respective video signal has a first or second field type;

means for generating test signals indicative of comparisons between said outputs indicating said field types of said first and second video signals;



means for generating field type control signals for changing and maintaining the field type of one of said video signals to match the field type of the other of said video signals; and,

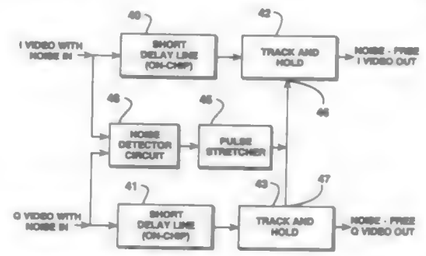
means responsive to said test signals and at least one of said field type detecting means for selecting one of said field type control signals for implementing said matching.

5,369,445

NOISE REDUCING APPARATUS AND METHODS FOR TELEVISION RECEIVERS

Jack R. Harford, Flemington, N.J., assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1992, Ser. No. 897,812
Int. Cl.[5] H04N *5/213*
U.S. Cl. 348—618 **17 Claims**



1. In a television system including a source of an intermediate frequency (IF) signal comprising an IF picture carrier amplitude modulated with video information; a first synchronous demodulator means responsive to the amplitude-modulated IF picture carrier to provide an in-phase first component of video signal at an output connection therefrom, which said in-phase first component of video signal is subject to being accompanied at times by detected impulse noise; a second synchronous demodulator means responsive to the amplitude-modulated IF picture carrier to provide a quadrature-phase second component of video signal at an output connection therefrom; and processing circuitry for providing an output video signal in response to said in-phase first component of video signal, in which output video signal response to said detected impulse noise is suppressed, said processing circuitry comprising:

impulse noise detecting means of a type for generating an output control signal responsive to said quadrature-phase second component of video signal as detected by said second synchronous demodulator means, said output control signal being indicative of whether or not an appre-

ciable amount of said detected impulse noise accompanies said quadrature-phase second component of video signal as detected by said second synchronous demodulator means;

delay means for generating a delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means; and

video output means controlled by said output control signal, responding to said delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means when said output control signal indicates there is not an appreciable amount of said detected impulse noise accompanying said quadrature-phase second component of video signal as detected by said second synchronous demodulator means, and for substituting for a current value of said delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means a constant value of video signal when said output control signal indicates there is an appreciable amount of said detected impulse noise accompanying said quadrature-phase second component of video signal as detected by said second synchronous demodulator means.

9. In a television system including a source of an intermediate frequency (IF) signal comprising an IF picture carrier amplitude modulated with video information; a first synchronous demodulator means responsive to the amplitude-modulated IF picture carrier to provide an in-phase first component of video signal at an output connection therefrom, which said in-phase first component of video signal is subject to being accompanied at times by detected impulse noise; a second synchronous demodulator means responsive to the amplitude-modulated IF picture carrier to provide a quadrature-phase second component of video signal at an output connection therefrom; and processing circuitry for providing an output video signal in response to said in-phase first component of video signal, in which output video signal response to said detected impulse noise is suppressed, said processing circuitry comprising:

noise detecting means of a type for generating an output control signal responsive both to said in-phase first component of video signal as detected by said first synchronous demodulator means and to said quadrature-phase second component of video signal as detected by said second synchronous demodulator means, said output control signal being indicative of whether or not an appreciable amount of said detected impulse noise accompanies either said in-phase first component of video signal as detected by said first synchronous demodulator means or said quadrature-phase second component of video signal as detected by said second synchronous demodulator means;

first delay means for generating a delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means; and

first video output means controlled by said output control signal, for responding to said delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means when said output control signal indicates there is not an appreciable amount of said detected impulse noise accompanying either of the components of video signal as detected by said first and second synchronous demodulator means, and for substituting for a current value of said delayed response to said in-phase first component of video signal as detected by said first synchronous demodulator means a constant value of video signal when said output control signal indicates there is an appreciable amount of said detected impulse noise accompanying either of the components of video signal as detected by said first and second synchronous demodulator means.

5,369,446

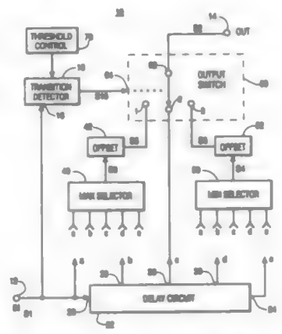
VIDEO SIGNAL PROCESSOR EMPLOYING EDGE REPLACEMENT, PRESHOOTS AND OVERSHOOTS FOR TRANSIENT ENHANCEMENT

Robert P. Parker, Westborough, Mass., and Mark R. Anderson, Indianapolis, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 30, 1992, Ser. No. 876,271

Int. Cl.[5] H04N *5/208*

U.S. Cl. 348—625 **5 Claims**



4. A method for enhancing video transitions, comprising:

detecting transitions of a video input signal and producing a control signal representative thereof;

providing a plurality of delayed video signals;

deriving maximum and minimum valued video signals from said delayed video signals;

selectively coupling a given delayed video signal, said maximum valued video signal and said minimum valued video signal to an output in response to said control signal to produce a video output signal having an enhanced rise-time for said transitions of said video input signal; and

adding a predetermined offset to each of said maximum and minimum valued video signals in a sense to produce a pre-shoot before each detected transition and to produce an over-shoot after each detected transition.

5,369,447

VIDEO IMAGE FILTERING

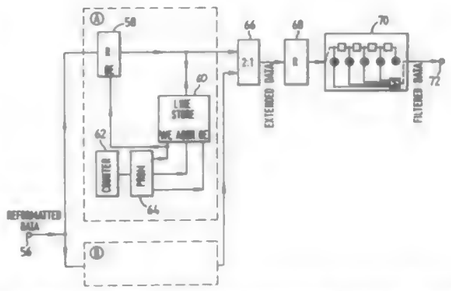
Jonathan M. Soloff, Basingstoke, United Kingdom, assignor to Sony United Kingdom Ltd., Staines, United Kingdom

Filed Oct. 7, 1992, Ser. No. 957,094

Claims priority, application United Kingdom, Nov. 15, 1991, 9124343.6

Int. Cl.[5] H04N *3/223*

U.S. Cl. 348—627 **15 Claims**



1. A video image filtering apparatus for filtering an input video signal, the input video signal having a predetermined sample rate and representing a sequence of sets of raster lines, each raster line having a period of active video data and a predetermined inter-raster blanking period, and each set of raster lines being separated by a predetermined inter-set blanking period, the video image filtering apparatus comprising:

an image store for receiving and storing the input video signal;

means for reading the image store to generate a reformatted video signal having the predetermined sample rate but representing a sequence of sets of raster lines with a different inter-raster blanking period and a different inter-set blanking period;

means for extending the active video data of the raster lines of the reformatted video signal; and

at least one multi-tap filter for filtering the reformatted video signal with extended active video data.

10. A video image filtering apparatus comprising:

a line store for receiving and storing data representing a raster line of an input video signal;

means for repeatedly reading the line store in an order that generates an extended raster line formed of the data of the raster line of the input video signal extended with at least one repeated portion of the data of the raster line of the input video signal; and

a multi-tap filter for filtering the extended raster line.

5,369,448

VIDEO SIGNAL PROCESSING SYSTEM REMOVING REDUNDANT INFORMATION FROM CHROMA/MOTION SEPARATION OUTPUT

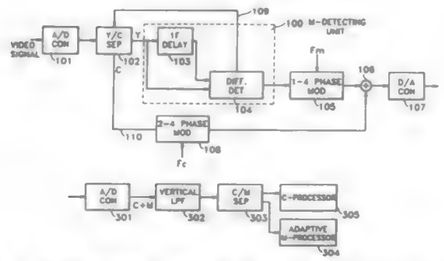
Sang-rak Lee, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Feb. 17, 1993, Ser. No. 18,596

Claims priority, application Rep. of Korea, Feb. 17, 1992, 92-2332

Int. Cl.[5] H04N *9/64, 9/79*

U.S. Cl. 348—668 **4 Claims**



1. A video signal processing system for reproducing or receiving a recorded or transmitted video signal having a motion signal modulated at a first frequency mixed with a chroma signal modulated at a second frequency, said system comprising:

a chroma/motion separating circuit for separating said video signal into said motion signal and said chroma signal; and

a vertical low-pass filter for passing vertical low frequency components and removing vertical high frequency components to thereby eliminate redundant components existing in said vertical high frequency component of the video signal, wherein, in a graph having an X-axis corresponding to a horizontal frequency and a Y-axis corresponding to a vertical frequency and spectral positions of said video signal are represented on said graph, said chroma/motion separating circuit allowing only frequency components of the second and fourth quadrants to pass.

4. A video signal processing system comprising:

a recording or transmitting circuit comprising:

a motion detecting circuit for detecting motion within a video signal and outputting a corresponding motion signal;

a first 4-phase modulator for modulating said motion signal at a first predetermined frequency and outputting a corresponding modulated motion signal;

a second 4-phase modulator for modulating a chroma signal at a second predetermined frequency and outputting a corresponding modulated chroma signal; and

an adder for combing said modulated motion signal with said modulated chroma signal into a composite video signal; and

a reproducing or receiving circuit responsive to said composite video signal comprising:

a chroma/motion separating circuit for separating said composite video signal into said motion signal and said chroma signal; and

a vertical low-pass filter for passing vertical low frequency components and removing vertical high frequency components, whereby redundant components existing in said vertical high frequency component of the video signal can be eliminated.

5,369,449

METHOD FOR PREDICTING MOVE COMPENSATION

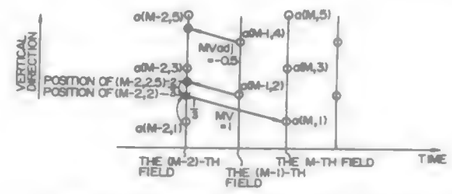
Takeshi Yukitake, and Shuji Inoue, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 2, 1992, Ser. No. 970,046

Claims priority, application Japan, Nov. 8, 1991, 3-293004; Jul. 9, 1992, 4-181980

Int. Cl.[5] H04N *7/137*

U.S. Cl. 348—699 **6 Claims**



1. A method of predicting move compensation of an input image, said method comprising steps of:

(a) sampling a reference image at a first time point, said reference image including a block unit comprising a plurality of pixels;

(b) calculating a move vector of said input image, at a second time point, on a basis of movement of a block unit which is part of said input image, said block unit of said input image including a plurality of pixels;

(c) calculating an adjustment vector for said reference image based on the move vector of said input image;

(d) calculating a move vector of said reference image on a basis of said adjustment vector and movement of said block unit of said reference image which occurs at said first time point;

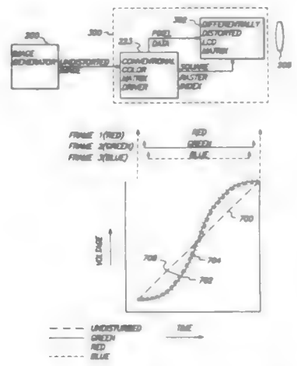
(e) predicting the move compensation for said input image, at a desired time, based on (i) the move vector of said input image and (ii) the move vector of said reference image.

5,369,450

ELECTRONIC AND COMPUTATIONAL CORRECTION OF CHROMATIC ABERRATION ASSOCIATED WITH AN OPTICAL SYSTEM USED TO VIEW A COLOR VIDEO DISPLAY

Eric C. Haseltine, Manhattan Beach, and William G. Redmann, Simi Valley, both of Calif., assignors to The Walt Disney Company, Anaheim, Calif.

Filed Jun. 1, 1993, Ser. No. 69,892
Int. Cl.[5] H04N *3/233*
U.S. Cl. 348—745 **25 Claims**



1. A method for correcting a chromatically variant optical aberration of an optical system interposed in a display system between a viewer eye position and a display surface of a color video display device to form a virtual image of the display surface, comprising the steps of:

providing color component image display control signals for a plurality of color components of an image to be displayed by the color video display device on the display surface;

defining a distortion function for a particular color component of the color video display device based on the chromatically variant optical aberration of the optical system; and

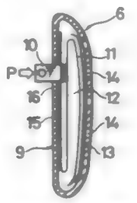
differentially transforming the color component image display control signals by applying the distortion function to a color component image display control signal for the corresponding particular color component to introduce chromatically variant distortion in the image displayed on the display surface that compensates for the optical chromatic aberration of the optical system in the virtual image.

5,369,451

NOSE PADS OF SPECTACLES

Yuzo Tamagawa, Sabae, Japan, assignor to Yugen Kaisha Tamagawa Kogyo, Fukui, Japan

Filed Oct. 7, 1993, Ser. No. 132,900
Claims priority, application Japan, Jul. 9, 1993, 5-042896[U]
Int. Cl.[5] G02C *5/12*
U.S. Cl. 351—136 **3 Claims**



1. A nose pad of spectacles comprising a hollow body having a resilient member fitted therein, three-dimensional shape of said resilient member being yieldingly deformable in the hollow space of the hollow body, said hollow body having an opening on its rear side, and said resilient member having a joint piece projecting from said opening.

5,369,452

TUBULAR EYEWEAR RETAINER AND METHOD FOR PRODUCING SAME

Lendell J. Williams, St. Charles, Mich., assignor to Karlen Manufacturing, Inc., St. Charles, Mich.

Filed Mar. 31, 1992, Ser. No. 861,256
Int. Cl.[5] G02C *5/14, 3/00*
U.S. Cl. 351—157 **17 Claims**



1. An improved method for producing a tubular eyewear retainer device from a single length of flexible sleeve material having a central body section and first and second end sections extending oppositely in prolongation of the central body section, said method comprising the steps of; inserting a first elastic collar within the first end section of the sleeve material; and infolding the first end section through the first elastic collar and then into the confines of the central body section to capture the first elastic collar between the infolded first end section and the central body section, wherein the improvement comprises the steps of:

(a) inserting a second elastic collar within the second end section of sleeve material; and

(b) joining the first end section to the second end section to form a joint and infolding the second end section through said second elastic collar into the confines of the central body section.

5,369,453

METHOD AND EYEGLASSES FOR RECTIFYING COLOR BLINDNESS

Xiaoguang Chen, 134 Sidalin St., and Zhong Lu, 4 Huxi Rd., both of Changchun 130022 Jilin, China

Continuation-in-part of Ser. No. 813,710, Dec. 27, 1991, abandoned. This application Nov. 23, 1993, Ser. No. 155,719
Int. Cl.[5] G02C *7/10*
U.S. Cl. 351—163 **15 Claims**



10. A pair of eyeglasses for rectifying color blindness in a given patient, including a pair of lenses coated to have a preselected transmission curve which is substantially coincident with one subtype of rectifying curves determined by the following steps;

a) programming a computer to simulate a predetermined color blindness, $F(\lambda)=\delta \cdot F^*(\lambda)/F^*(\lambda)$, $F(\lambda)$ being the rectifying curve satisfying $\delta^*F(\lambda)=F^*(\lambda)^*F(\lambda)$, wherein δ is a coefficient affecting transmissivity of a lens;

b) randomly selecting at least 300 abnormal color viewers;

c) testing said viewers, using said computer, thereby obtaining at least 300 different rectifying curves;

d) classifying said at least 300 rectifying curves as types A, B, C and D in accordance with their spectral characteristics, wherein as to A the wavelength of 440 nm, 535 nm and 600 nm are respectively 80% and 40%, 40% and 4% and 95% and 60%; wherein as to B the wavelength of 440 nm, 535 nm and 600 nm are respectively 40% and 2%, 1% and 1% and 95% and 60%; wherein as to C the wavelength of 440 nm, 535 nm and 600 nm are respectively 85% and 50%, 70% and 50% and 90% and 53%; wherein as to D the wavelength of 440 nm, 535 nm and 600 nm are respectively 32% and 0%, 68% and 40% and 90% and 60%;

e) classifying each of said types into eight subtypes; in consideration of color discrimination of human eyes;

f) designing thirty-two kinds of color blindness test patterns, based upon said thirty-two subtypes of rectifying curves, each said pattern corresponding to a rectifying curve;

g) testing a patient's reaction to said patterns and determining a special curve corresponding to a pattern that cannot be discriminated by the patient;

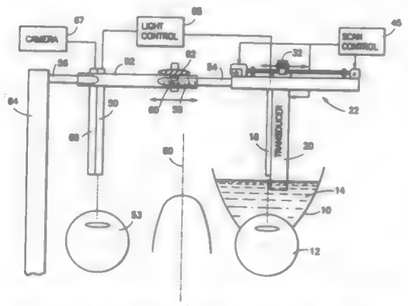
h) providing a pair of lenses for the patient which are coated to have a transmission curve substantially identical with the rectifying curve determined in step (f), above.

5,369,454

SYSTEM AND METHOD FOR PRODUCING AND MAINTAINING PARALLEL AND VERTICAL FIXATION OF VISUAL AXIS

Dan Z. Reinstein, New York; Ronald H. Silverman, Brooklyn, both of N.Y., and Donald J. Coleman, Haworth, N.J., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 1, 1993, Ser. No. 146,214
Int. Cl.[5] A61B *3/02, 8/10*
U.S. Cl. 351—201 **6 Claims**



1. Apparatus for assuring vertical and parallel alignment of visual axes of a patients first and second eyes, the patient being in a generally supine position and having a liquid bath established about said first eye wherein said first eye is completely submerged in the liquid bath, said apparatus comprising:

first light source means positioned above said liquid bath, for directing a beam of alignment light to said patient's first eye;

second light source means positioned above said patient's second eye for directing a beam of alignment light to said second eye; and

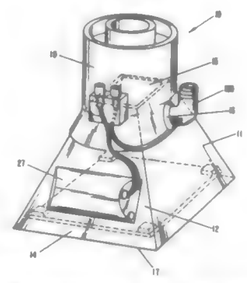
means for enabling relative movement between said first and second light sources so as to move said first and second light sources into a position where said patient indicates a fusion of said beams of said alignment light into a single spot.

5,369,455

APPARATUS FOR CAMERAS PERMITTING THE TAKING OF IN SITU PICTURES IN WATER

Claus Mayer, Beekloh 18a, 2075 Ammersbek 1, Germany

Filed Dec. 11, 1992, Ser. No. 989,072
Claims priority, application Germany, Dec. 20, 1991, 4142223
Int. Cl.[5] G03B *17/08*
U.S. Cl. 354—64 **19 Claims**



1. An apparatus for cameras permitting the taking of in situ pictures in water, comprising:

a housing have a first opening that is at least open to light relative to an object that is to be observed, and a second opening that is disposed essentially opposite to said first opening and serves for accommodating a camera, with said first opening of said housing being capable of being placed directly against said object that is to be observed, and with said housing also being provided with an inlet means for receiving water;

a cylindrical tube that is disposed on said housing and forms said second opening thereof, wherein said inlet means of said housing is essentially disposed on a lower portion of said cylindrical tube; and

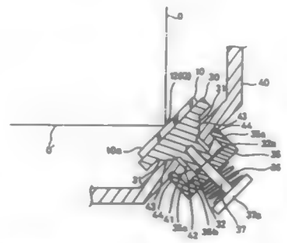
a light-transmitting, sheetlike element that at least substantially closes off said first opening of said housing, wherein at least a peripheral zone of said sheetlike element is provided with aperture means.

5,369,456

MIRROR ADJUSTING APPARATUS OF VIEW FINDER

Hidetaka Yokota, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1993, Ser. No. 80,110
Claims priority, application Japan, Jun. 30, 1992, 4-172345
Int. Cl.[5] G03B *13/10, 13/08*
U.S. Cl. 354—222 **14 Claims**



1. An adjusting apparatus of a mirror having a reflecting surface located in an optical path of a view finder, comprising:

a convex cylindrical surface provided on a securing member

to which the mirror is secured, said convex cylindrical surface being perpendicular to a plane including an optical axis of light incident upon the mirror and an optical axis of light reflected off the mirror, said convex cylindrical surface having a center of curvature located on a center axis of the mirror surface;

a recessed cylindrical surface provided on a supporting member of the mirror corresponding to said convex cylindrical surface;

a rotation restricting member which restricts the rotation of the mirror to hold the mirror at a reference design position most likely to make a visual field coincident with a field frame, when said convex cylindrical surface engages with said recessed cylindrical surface;

rotation and adjustment permitting means for releasing the rotation restricting member to permit the rotation and adjustment of the mirror while maintaining engagement of said convex cylindrical surface with said recessed cylindrical surface; and

means for preventing rotation of the mirror with respect to an adjusting axis once an adjusted position for the mirror has been set by said mirror adjusting means, said rotation preventing means being independent of said rotation restricting member;

wherein a hole is provided on said cylindrical surface of said supporting member, and wherein guide grooves are provided on a rear surface of said supporting member opposite the recessed cylindrical surface, said guide grooves being parallel with central axes of said convex cylindrical surface and said recessed cylindrical surface and located on opposite sides of a bisector of an angle defined by the optical axis of the light incident upon the mirror and the optical axis of the light reflected off the mirror.

5,369,457

PATRONE

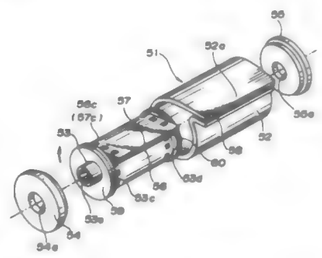
Tamotsu Koiwai, Akikawa, and Kazutoshi Shiratori, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1993, Ser. No. 96,473

Claims priority, application Japan, Jul. 23, 1992, 4-197177; Jan. 13, 1993, 5-004310

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—275 27 Claims



18. A Patrone for a camera, comprising:

a film storage container made of a non-magnetic material;

a film having a magnetic recording section;

a magnetic field shielding member formed in a distal part of said film so that when said film is taken up into said film storage container, it shields the magnetic recording sections of the film from an external magnetic field.

5,369,458

LIQUID STRIPPER FOR PHOTOGRAPHIC MATERIAL

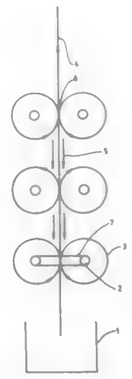
Ubbo Wernicke, Rösrath-Kleineichen; Viktor Osegowitsch, Taufkirchen, and Günter Röckle, Gummersbach, all of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 19, 1992, Ser. No. 978,828

Claims priority, application Germany, Dec. 4, 1991, 4139949; Dec. 13, 1991, 4141192

Int. Cl.[5] G03D *3/00*

U.S. Cl. 354—319 9 Claims



1. Device for processing photographic materials from at least one liquid-filled tank and means for substantially removing the tank liquid from the photographic material leaving the tank and leading said liquid back to the same tank, characterized in that in operation

a) several pairs of rollers are arranged one above the other above the liquid level of the tank or downstream of the tank,

b) the rollers of each pair of rollers are arranged parallel to one another,

c) at least one pair of rollers is provided with a supply of liquid, and

d) said device contains means for adjusting the pressure with which the rollers of at least one pair of rollers make contact with one another, the pressure is adjusted to 4,900 to 98,000 pascals.

5,369,459

SOLUTION FILLING SYSTEM FOR A FILM PROCESSOR APPARATUS

Thomas P. Muchisky, St. Louis County, Mo.; Warren G. Fischer, and Leonard Krystal, both of Kane County, Ill., assignors to Fischer Industries, Inc., Geneva, Ill.

Filed Oct. 4, 1991, Ser. No. 771,737

Int. Cl.[5] G03D *3/02*

U.S. Cl. 354—324 19 Claims

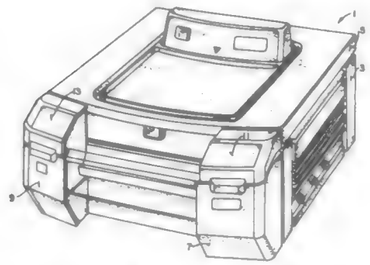
1. A film processor apparatus, comprising:

a) an internal tank assembly;

b) at least one solution tank for retaining a supply of solution;

c) a reserve tank in fluid communication with said solution tank for holding a reserve of said solution;

d) at least one solution receiving tank, separate from said reserve tank, for receiving a supply of solution for said at least one solution tank, said at least one solution receiving tank being separate from said internal tank assembly; and



e) means for providing fluid communication between said at least one solution receiving tank and said at least one solution tank.

5,369,460

CAMERA HAVING A VARIFOCAL LENS

Nobuyuki Taniguchi; Masaaki Nakai; Takanobu Omaki; Tokuji Ishida; Hisayuki Masumoto; Hisashi Tokumaru, and Tsuneyo Metabi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

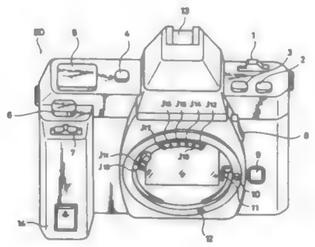
Division of Ser. No. 389,908, Aug. 4, 1989, Pat. No. 5,274,414.

This application Sep. 8, 1993, Ser. No. 117,774

Claims priority, application Japan, Aug. 5, 1988, 63-196626

Int. Cl.[5] G03B *5/00, 13/36*

U.S. Cl. 354—400 12 Claims



1. A camera system having a varifocal lens in which an in-focus position of a focusing lens is changed in correspondence with a change in focal length, comprising:

(a) varifocal lens driving means having a zooming motor for driving said varifocal lens;

(b) focusing lens driving means having a focusing motor for driving said focusing lens;

(c) a power supply for supplying power to said zooming motor and said focusing motor;

(d) power supply capacity detecting means for detecting the capacity of said power supply; and

(e) lens driving control means for controlling said motors so as to vary the driving manner of the motors corresponding to said power supply capacity.

5,369,461

AUTOMATIC FOCUS ADJUSTING DEVICE IN CAMERA SYSTEM

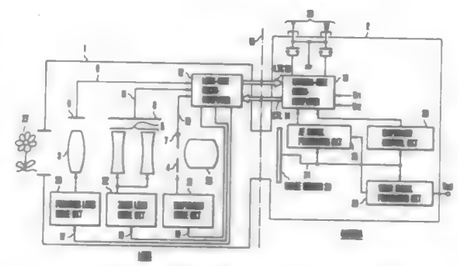
Masahide Hirasawa; Naoya Kaneda, and Hiroyuki Wada, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 789,423, Nov. 4, 1991, abandoned, which is a continuation of Ser. No. 668,343, Mar. 11, 1991, abandoned, which is a continuation of Ser. No. 385,306, Jul. 25, 1989, abandoned. This application Apr. 27, 1993, Ser. No. 53,973

Claims priority, application Japan, Jul. 29, 1988, 63-189815; Sep. 18, 1988, 63-233172; Dec. 26, 1988, 63-328465

Int. Cl.[5] G03B *13/36*

U.S. Cl. 354—402 57 Claims



1. An automatic focus adjusting device comprising:

(A) focus detecting means for detecting a focusing condition of an object image formed on an image plane by a photographic optical system;

(B) characteristic discriminating means for discriminating predetermined optical characteristic information of the photographic optical system;

(C) control means for producing and outputting a drive control signal for driving the photographic optical system on the basis of an output of said focus detecting means by defining as a parameter an amount of variation of the predetermined optical characteristic information discriminated by said characteristic discriminating means; and

(D) transmission means for transmitting the drive control signal output from said control means to the photographic optical system.

5,369,462

INCLINATION DETECTING APPARATUS AND CAMERA FOR DETECTING HAND SHAKE USING THE SAME

Azuma Miyazawa; Kouji Mizobuchi; Takeshi Ito; Masataka Ide; Atsushi Maruyama, all of Tokyo; Juro Kikuchi, Yamanashi, and Yuji Imai, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1993, Ser. No. 72,837

Claims priority, application Japan, Jun. 9, 1992, 4-149673; Jun. 9, 1992, 4-149674; Jul. 28, 1992, 4-201475; Sep. 16, 1992, 4-246846

Int. Cl.[5] G03B *17/00;* G01C *3/08*

U.S. Cl. 354—430 108 Claims

1. An inclination detecting apparatus comprising:

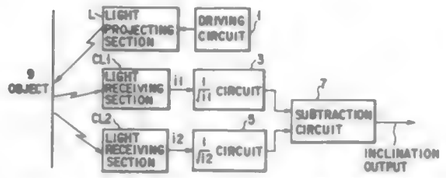
light projection means for projecting light towards a to-be-measured object;

light receiving means for receiving reflection light from said light projection means and outputting at east two photoelectric currents according to the respective received light amounts;

first operating means for deriving reciprocals of the square roots of the respective two photoelectric currents output from said light receiving means; and

second operating means for deriving a difference between

the reciprocals of the square roots derived by said first operating means, an output of said second operating



means representing the inclination of the to-be-measured object.

5,369,463

APPARATUS FOR RECORDING POSITION INFORMATION OF PRINCIPAL IMAGE AND METHOD OF DETECTING PRINCIPAL IMAGE

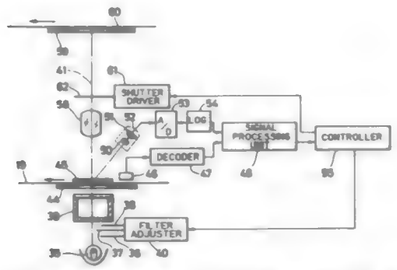
Takaaki Terashita, and Jin Murayama, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 804,434, Dec. 10, 1991, abandoned, which is a continuation of Ser. No. 515,897, Apr. 27, 1990, Pat. No. 5,128,711. This application Jun. 14, 1993, Ser. No. 76,172

Claims priority, application Japan, Apr. 28, 1989, 1-111086; Jul. 31, 1989, 1-198867; Sep. 7, 1989, 1-232487

Int. Cl.[5] G03B *27/80*

U.S. Cl. 355—38 **3 Claims**



1. A method of detecting a principal subject image within a frame recorded on a recording medium in a means for making a hard copy of said frame, said means for making including a means for reading data and means for scanning said frame, said method comprising the steps of:

reading two-dimensional position information recorded when taking a frame image, said two-dimensional position information representing part of an area of said principal subject image;

determining said area of said principal subject image in accordance with said two-dimensional position information;

deriving a characteristic value to be used for the exposure control from within said area of said principal subject image; and

determining a print exposure amount in accordance with said characteristic value when printing said frame on a photosensitive material.

5,369,464

EXPOSURE APPARATUS AND AN EXPOSURE METHOD USING THE SAME

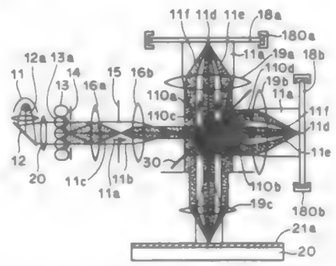
Kazuya Kamon, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1993, Ser. No. 91,870

Claims priority, application Japan, Jul. 14, 1992, 4-186843; Mar. 23, 1993, 5-063947

Int. Cl.[5] G03B *27/52, 27/70, 27/42*

U.S. Cl. 355—43 **24 Claims**



1. An exposure apparatus comprising:

a first mask stage for mounting a first photomask,

a second mask stage for mounting a second photomask,

first light guiding means for guiding a pattern of light from said first photomask to a substrate to be exposed, and

second light guiding means for guiding a pattern of light from said second photomask to said substrate to be exposed.

5,369,465

IMAGE FORMING APPARATUS WITH MAGNIFICATION VARYING FUNCTION

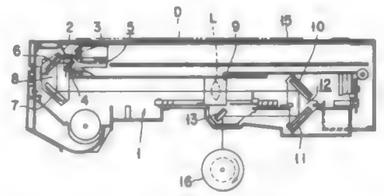
Tesshu Kuwahara, Kawaguchi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 19, 1993, Ser. No. 34,312

Claims priority, application Japan, Jul. 10, 1992, 4-183660

Int. Cl.[5] G03B *27/34*

U.S. Cl. 355—57 **2 Claims**



1. An image forming apparatus comprising:

a document table on which an original document is placed;

image forming means for forming an image of the document on an image carrying body;

magnification setting means for setting a variable magnification of the image to be formed on said image carrying body by means of said image forming means;

magnification varying means, comprising a mirror and a lens, for varying the size of the image of the document at a magnification set by said magnification setting means;

first input means for inputting data on a first distance between said document table and said magnification varying means;

second input means for inputting data on a second distance between said document table and said image carrying body;

first calculation means for calculating a value representing

characteristics of said lens of said magnification varying means by referring to said first and second distances, in the case where said first distance input by said first input means is a distance between said document table and said lens at the time the image having the magnification set by said magnification setting means is obtained, and said second distance input by said second input means is a distance between said document table and said image carrying means at the time the image in focus is obtained;

second calculation means for calculating, on the basis of the value representing the characteristics of the lens calculated by said first calculation means and the magnification input by said magnification setting means, a third distance between said document table and said lens corresponding to said magnification and a fourth distance between said document table and said image carrying body;

lens moving means for moving said lens of said magnification varying means on the basis of said third distance calculated by said second calculation means; and

mirror moving means for moving said mirror of said magnification varying means on the basis of said fourth distance calculated by said second calculation means.

5,369,466

EXPOSURE SYSTEM FOR PHOTOGRAPHIC COPYING MACHINES

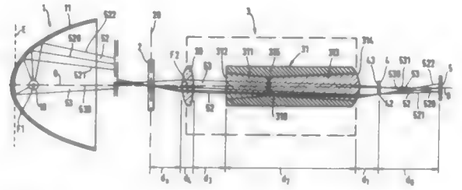
Reinhard Jenny, Ennetbaden, Switzerland, assignor to Gretag Imaging AG, Regensdorf, Switzerland

Filed Sep. 8, 1993, Ser. No. 117,715

Claims priority, application European Pat. Off., Sep. 9, 1992, 92810689.7

Int. Cl.[5] G03B *27/54*

U.S. Cl. 355—67 **5 Claims**



1. Exposure system for photographic copying machines with a bulb housing comprising:

an ellipsoid reflector;

a light source located along an optical axis near a first focal point of the ellipsoid reflector, said light source being moveable along the optical axis;

an optical unit located in a light beam path in front of an optical flat plane of an original to be copied for producing a desired distribution of exposure intensity onto the original;

imaging optics located in the light beam path behind the optical flat plane of the original for reproducing the original onto photographic copying material;

a device for dyeing light used to illuminate the original located in the light beam path in front of the optical unit, such device including color filters which can be moved into and out of the light beam path on a plane that is perpendicular to the optical axis, the light source and the optical unit being positioned such that a light beam that penetrates a point on an edge of the original and intersects the optical axis at a location of an entry pupil of an imaging optics, also intersects the optical axis at a location of the device for dyeing.

5,369,467

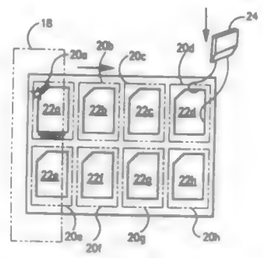
METHOD FOR MAKING SPORTSCARDS

Kenneth H. Monroe, 32758 Birchwood, Westland, Mich. 48185

Filed Oct. 12, 1993, Ser. No. 133,884

Int. Cl.[5] G03B *27/32, 27/44, 27/52*

U.S. Cl. 355—77 **3 Claims**



1. A method for making the front side of a card, such as a sportscard and the like, bearing a printed border and bearing a photographed image comprising the steps of

making a color photograph of the subject matter of the card;

making a master panel having a front side and a rear side;

printing a border on the master panel around the location of a window area, the window area having an area less than that of the photograph;

cutting the window area in master panel to form a window opening;

locating the color photograph adjacent the rear side of the master panel such that the subject matter of the photograph is visible through the window opening;

connecting the color photograph to the master panel; and

photocopying the front of the master panel and that portion of the photograph visible through the window to make a colored photocopy of the master panel and the color photograph.

5,369,468

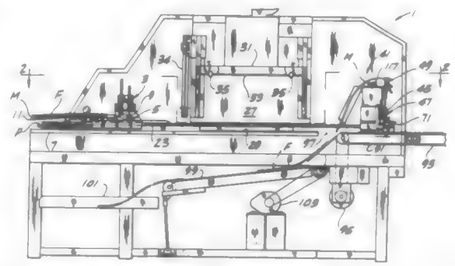
PHOTOGRAPHIC PRINTING APPARATUS AND METHOD

John W. Powers, Springfield, and Daniel G. Choate, Everton, both of Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

Filed Oct. 12, 1993, Ser. No. 135,264

Int. Cl.[5] G03B *27/04*

U.S. Cl. 355—99 **14 Claims**



1. Apparatus for exposing photosensitized plates to light through films and masks, comprising:

an exposure station at which a plate may be exposed to light through a film overlying the plate and through a mask overlying the film and plate,

a support at the exposure station for supporting the superposed plate, film and mask,

a window at the exposure station movable downwardly from a raised position spaced above the support to a lowered position for exposure of the plate through the window, mask and film to a light source,

means associated with the window operable to grip the mask to the bottom of the window, the window being movable to its raised position while gripping the mask after exposure of the plate,

a discharge carriage movable from a forward position forward of the exposure station to a rearward position at the exposure station when said window is in its raised position,

film discharge gripper means movable up and down on the discharge carriage and operable to grip a film overlying a plate on said support,

plate discharge gripper means movable up and down on the discharge carriage and operable to grip a plate on said support,

mask discharge gripper means movable up and down on the discharge carriage and operable to grip a mask on said window, and

means for operating the discharge carriage and each of said film, plate and mask discharge gripper means to move the discharge carriage rearwardly from its forward position to its rearward position when the window is in its raised position and gripping a mask, to lower the film discharge gripper means and actuate it to grip a film overlying a plate, to move the film discharge gripper means while gripping the film thereby to expose a portion of the plate under the film, to lower the plate discharge gripper means and to actuate it to grip said exposed portion of the plate, to raise the mask discharge gripper means and to actuate it to grip the mask on the window, and to move the discharge carriage forwardly to its forward position and deactuate the film, plate and mask discharge gripper means to release the film, plate and mask, respectively.

5,369,469

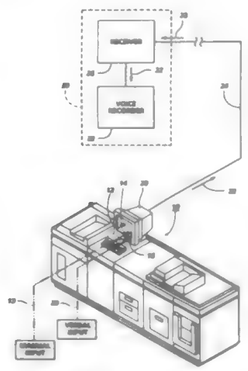
VOICE OF THE CUSTOMER ACQUISTION SYSTEM

Richard J. Leo, Rochester; David C. Blick, Webster, both of N.Y., and Vincent P. Vaccarelli, Thousand Oaks, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 9, 1993, Ser. No. 88,019

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—202 **21 Claims**



1. A method of receiving and processing a message in the form of verbal input from a user of a printing machine having at least, a voice input activator, a voice receiver, an output signal connected to a communications medium, and an output receiving station remote from the machine, including the steps of:

energizing the input activator;

speaking contemporaneously into the voice receiver;

receiving the message at the machine;

converting the message to a transmittable signal;

automatically connecting and transmitting the transmittable signal to the communications medium upon energizing the input activator;

receiving the signal at the remote station;

processing the message received at the remote station; and

deenergizing the input activator.

5,369,470

FM RECEIVER WHICH DETECTS AND RESPONDS TO RECEIVING AND INTERFERENCE STATES

Jens Hansen, Berlin, Germany, assignor to H.u.C. Elektronik GmbH, Berlin, Germany

PCT No. PCT/DE89/00359, § 371 Date Oct. 31, 1990, § 102(e) Date Oct. 31, 1990, PCT Pub. No. WO89/12355, PCT Pub. Date Dec. 14, 1989

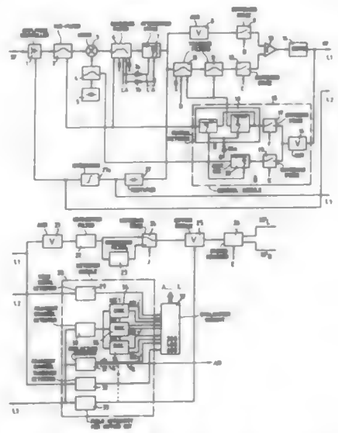
PCT Filed May 30, 1989, Ser. No. 601,743

Claims priority, application Germany, May 30, 1988, 3818749

The portion of the term of this patent subsequent to Aug. 31, 2000, has been disclaimed.

Int. Cl.[5] H04B *1/16*

U.S. Cl. 455—296 **29 Claims**



1. An improved FM receiver which includes an IF unit having a plurality of stages of an LF unit having a plurality of stages, the IF unit including a relatively narrowbanded IF filter having a controllable center frequency and the LF unit providing at least one audio frequency output signal, wherein the improvement comprises:

at least one stage of the IF unit has a control input port and at least one stage of the LF unit ha a control input port; and

the FM receiver additionally includes a transmission characteristic change means for changing a signal transmission characteristic of at least one of the IF and LF units, said transmission characteristic change means comprising

a signal detector module (**28**) including detector circuits (**29** to **33**) for detecting values characteristic of receiving or interference states, with said detector circuits having inputs which are each connected with a stage of the IF or LF unit, and with said signal detector module having outputs for signals characteristic of receiving or interference states, respectively; and

evaluation means (**400, 600**) for generating processed signals characteristic of receiving or interference states, respectively, as control signals to influence the signal transmission characteristic of at least one of the IF and LF units, with inputs of the evaluation means being connected with outputs of the signal detector module and the outputs of the evaluation means being connected with control input ports of stages of the IF and LF units,

wherein the evaluation means includes timer means (**700**) for increasing the duration of at least one of the signals which is output by the detector module during an interference state until reception has improved for a predetermined minimum time-span.

5,369,471

COMMUNICATION SYSTEM FOR IMPLEMENTING MAINTENANCE OF COPYING MACHINE

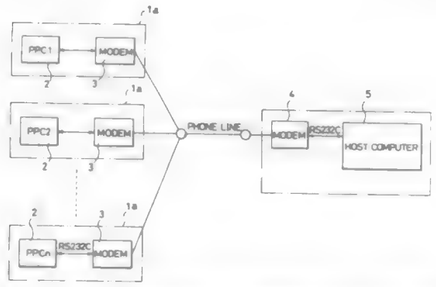
Yoshikado Yamada, Kita-Katsuragi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 16, 1992, Ser. No. 976,356

Claims priority, application Japan, Nov. 20, 1991, 3-304628; Nov. 20, 1991, 3-304629

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **2 Claims**



1. A communication system for implementing maintenance of a copying machine comprising:

a copying terminal having a counter for counting data for maintenance, input keys, and a communication modem;

a host computer having a communication modem;

a communication line connecting said copying terminal with said host computer,

said copying terminal further having inputting means for inputting communication conditions including maintenance data to be sent and a transmission time to be set by operating said input keys, comparing means for comparing the transmission time set by said maintenance data from said copying terminal when said comparing means recognizes said actual time is equal to said transmission time, and sending means for sending said maintenance data read by said reading means to said host computer, wherein said communication conditions are allowed to be set according to a kind of said copying terminal and a maintenance policy of each maintenance personnel.

5,369,472

MICROPROCESSOR CONTROLLED HIGH VOLTAGE POWER SUPPLY

Guru B. Raj, Fairport; Om P. Sud, Rochester, and Ted L. Flanders, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1992, Ser. No. 985,708

Int. Cl.[5] G03G *21/00, 15/02*

U.S. Cl. 355—208 **15 Claims**

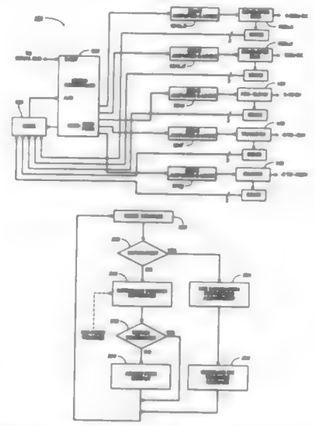
1. A power supply comprising:

an input power source for generating power, wherein said input producing source generates a low voltage current;

voltage output means, responsive to a voltage control signal, for producing a high voltage output from the low voltage current supplied by said input power source, where the voltage output means includes a step-up transformer having a primary and a secondary coil therein for converting the low voltage current applied to the primary coil of said step-up transformer into the high voltage output at the secondary coil;

means for sensing the potential of the high voltage output and generating an analog voltage signal indicative thereof by approximating the potential of the high voltage output as a function of the voltage applied across the primary coil; and

a microcontroller for receiving the analog voltage signal



from said sensing means, said microcontroller regulating the voltage control signal as a function of the analog voltage signal and a voltage set-point value, wherein said microcontroller includes

an output port suitable for generating the voltage control signal as a pulse-width modulated signal; and

an analog-to-digital converter for converting the analog voltage signal into a digital value for comparison to the voltage set-point value.

5,369,473

IMAGE FORMING APPARATUS

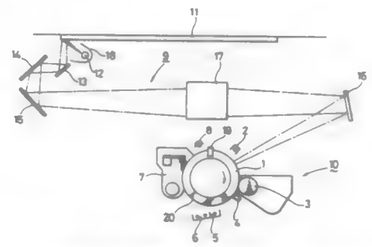
Kazuhiro Ogawa, and Kazuto Hori, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 24, 1992, Ser. No. 67,210

Claims priority, application Japan, May 27, 1992, 4-135140

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—214 **17 Claims**



13. An image forming apparatus comprising:

a photosensitive member rotatable at a fixed speed in a specified direction;

imaging means for forming a toner image on a surface of the photosensitive member, the imaging mean including:

charger means for charging a surface of the photosensitive member; and

exposure means for exposing the charged surface of the

photosensitive member to a light image to form an electrostatic latent image on the charged surface of the photosensitive member;

image forming controller means for forming a reference image, the image forming controller means controlling the imaging means to charge a whole circumferential surface of the photosensitive member, and exposing the whole circumferential surface to a reference light image to form a reference electrostatic latent image; and

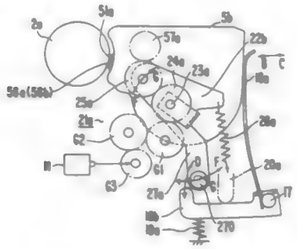
detecting means responsive to the image forming controller means for detecting an image state on the whole circumferential surface of the photosensitive member.

5,369,474

IMAGE FORMING APPARATUS INCLUDING A DEVELOPER DEVICE ENGAGING AND DISENGAGING MECHANISM

Akira Yamada, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1991, Ser. No. 798,172
Claims priority, application Japan, Nov. 30, 1990, 2-340121
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **16 Claims**



1. An image forming apparatus comprising:

an image forming device for forming an image;

a developer device which develops the image formed by said image forming device;

a first gear for driving the developer device;

a frame;

a second gear coupled to said frame;

a power source coupled to said second gear, said developer device being placed in a first position where said first gear is disengaged from said second gear so that the developer device is capable of being inserted into or removed from said image forming apparatus, or a second position where said first gear is engaged with said second gear, so that said developer device is spaced apart from said image forming device by a predetermined distance;

movement means for moving said developer device between the first position and the second position;

engaging means for engaging said first gear with said second gear when said developer device has been moved from the first position to the second position; and

disengaging means for disengaging said first gear from said second gear when said developer device is in the second position.

5,369,475

DEVELOPING ROLL POSITIONING APPARATUS

Hiromi Kashiwagi, Fukaya, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

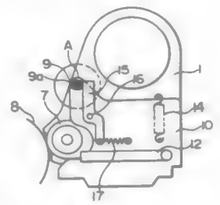
Filed Jan. 21, 1993, Ser. No. 7,629
Claims priority, application Japan, Jan. 22, 1992, 4-1729[U]
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **4 Claims**

1. A developing roll positioning apparatus comprising:

an image carrier;

a developer tank for containing a developer and positionable adjacent said image carrier, said developer tank also including a developing roll, and first and second guide rollers positioned at first and second ends of said developing roll respectively, said first and second guide rollers having an external diameter larger than an external diameter of said developing roll, said developer tank also including a support shaft positioned substantially in parallel with said developing roll;

first and second support frame means positioned on first and second axial ends of said support shaft respectively and for rotatably supporting said first and second axial ends of said support shaft and said developer tank between a first position positioning said first and second guide rollers adjacent said image carrier and a second position rotationally spaced from said image carrier, said first support frame means holding said first axial end of said support



shaft fixed with regard to movements in a plane perpendicular to said support shaft, said second support frame means holding said second axial end of said support shaft movable with regard to movements in said plane perpendicular to said support shaft for positioning said second guide roller in contact with said image carrier when said support shaft, said developing roll and said image carrier are not parallel, said second support frame means defines a slotted hole having a major diameter in said plane perpendicular to said support shaft, said second axial end of said support shaft being positioned in said slotted hole;

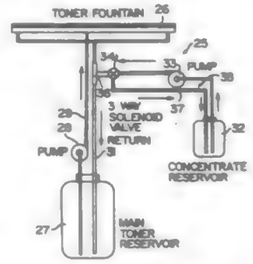
pushing means attached to said second support frame means and contacting said second axial end of said support shaft, said pushing means elastically biasing said second axial end of said support shaft toward said image carrier.

5,369,476

TONER CONTROL SYSTEM AND METHOD FOR ELECTROGRAPHIC PRINTING

Harry Bowers, New York, N.Y., and L. Douglas Clark, San Francisco, Calif., assignors to Cactus, Santa Fe Springs, Calif.

Filed Jan. 28, 1992, Ser. No. 826,600
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 **22 Claims**



1. In an electrographic printing system: a toner reservoir, a toner fountain for applying toner to an electrostatically charged sheet to form an image, means for delivering toner to the fountain from the reservoir, a source of toner concentrate, means for monitoring an image formed on the sheet to determine image quality, and means responsive to the image quality

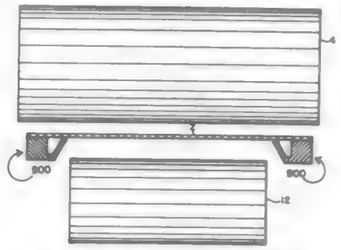
for adding concentrate to the toner to maintain a substantially constant image quality.

5,369,477

LIQUID ELECTROPHOTOGRAPHY FLUID CONTAINMENT AND BELT TRACKING DEVICE

Wayne E. Foote, Eagle, and Paul L. Jeran, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 7, 1993, Ser. No. 164,122
Int. Cl.[5] G03G *15/10*; B65G *15/60*
U.S. Cl. 355—256 **12 Claims**



1. A liquid toner image forming device for printing which comprises:

exposure means for forming a charge pattern on a photoconductor;

a photoconductor including a continuous belt for holding the charge pattern, the belt having an inside surface, an outside surface and two marginal edges;

developing means for applying liquid toner to the charge pattern, the developing means including a squeegee roller, having marginal edges, for removing excess toner from the belt and aiding affixing of the toner to the charge pattern;

a pair of resilient profiles, each being attached to a marginal edge of the belt, the profiles each having a tracking rail portion extending from the inside surface of the belt and a containment ridge portion extending from the outside surface of the belt, the containment ridge portions being positioned and configured to seal against the marginal edges of the squeegee roller; and

image transfer means for transferring an image affixed to the belt from the belt to a print medium.

5,369,478

DEVELOPING APPARATUS

Tetsuya Kobayashi, Kawasaki; Hiroshi Sasame, Yokohama; Tatsuya Kobayashi, Sohka; Naoki Enomoto; Akihiko Uchiyama, both of Yokohama, and Yoshiro Saito, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1993, Ser. No. 171,707
Claims priority, application Japan, Dec. 25, 1992, 4-346708
Int. Cl.[5] G03G *15/06, 15/08*
U.S. Cl. 355—259 **9 Claims**

1. A developing apparatus comprising:

a rotatable developer carrying member for carrying one component developer to a developing zone for developing an electrostatic latent image on an image bearing member;

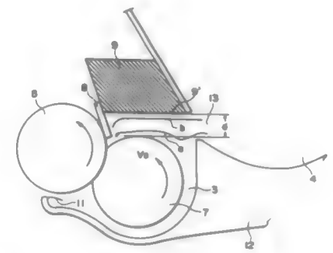
a regulating member for regulating a thickness of a layer of the developer to be carried by said developer carrying member to the developing zone;

a rotatable developer supplying member, in contact with said developer carrying member, for supplying the developer thereto; and

a developer guiding portion for guiding a reverse movement of developer blocked by said regulating member;

wherein $0.02 \leqq d/Vs \leqq 0.1$ is satisfied,

where d is a minimum distance between said developer guiding portion and said developer supplying member



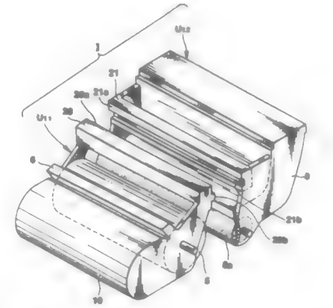
(mm), and Vs is a peripheral speed of said developer feeding supplying member (mm)/sec.

5,369,479

IMAGE FORMING ASSEMBLY AND IMAGE RECORDING APPARATUS HAVING SEPARABLE IMAGE FORMATION UNITS WITH COMPLEMENTARY HANDLES THEREFOR

Yasuhiro Tsuyuki, Tokyo, Japan, assignor to Casio Electronics Manufacturing Co., Ltd., Tokyo, Japan and Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1992, Ser. No. 935,992
Claims priority, application Japan, Sep. 25, 1991, 3-077476[U]
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—260 **22 Claims**



1. An image forming assembly, removably mounted in a housing of an image recording apparatus, the housing containing a paper feeding path, said image forming assembly being adapted to be installed in a predetermined position along the paper feeding path and to form an image on a paper sheet fed along the paper feeding path, and comprising:

a first unit provided with a first handle and including image carrier means; and

a second unit provided with a second handle and including image formation relating means, said image formation relating means being adapted to cooperate with said image carrier means of said first unit to perform an image forming operation to form an image on the paper sheet fed along the paper feeding path;

wherein said first unit and said second unit are mounted adjacent to each other in the predetermined position along the paper feeding path, thereby allowing said image carrier means of said first unit and said image formation relating means of said second unit to cooperate with each other to perform the image forming operation, and said first and second units are physically separatable from each other when said first and second units are removed from

the predetermined position along the paper feeding path; and

wherein said first handle of said first unit and said second handle of said second unit form a handle unit to be gripped with a single hand by an operator, when said first unit and said second unit are mounted in the predetermined position along the paper feeding path, whereby the operator is allowed to simultaneously mount said first and second units in said predetermined position and to remove said first and second units therefrom by gripping said handle with a single hand.

5,369,480

MULTIFUNCTIONAL PRINTER

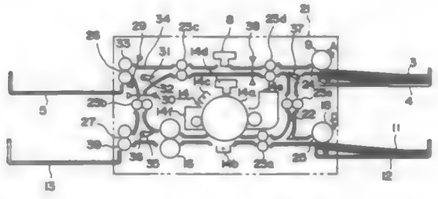
Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1992, Ser. No. 943,720

Claims priority, application Japan, Sep. 26, 1991, 3-247434

Int. Cl.[5] G03G *15/00, 21/00*

U.S. Cl. 355—320 **23 Claims**



22. A multifunctional device for reading and printing on a medium, comprising:

an enclosed medium carrying passage, said passage forming a closed path, said path including horizontal first and second segments, a vertical third segment connecting respective first ends of said first and second segments, and a vertical fourth segment connecting respective second ends of said first and second segments;

four ports, positioned at respective intersections of said first and second segments with said third and fourth segments, for inserting the medium from an exterior of the device into said passage and discharging the medium from said passage to the exterior of the device;

means for transporting the medium in said passage in opposite first and second directions, including a reversing portion in said passage for turning the medium upside down, said transporting means including three switching blades in said passage respectively adjacent three of said four ports, at least one respective reversible driven roller in each of said segments and in at least one of said ports;

said reversing portion including one of said switching blades, a plurality of the rollers, and a plurality of sensors for detecting the medium; and

first and second data transfer means, respectively positioned on said first segment and said second segment, for transferring data between the device and the medium transported, one of said first and second data transfer means including a printing portion operative for printing data onto the medium transported, the other of said first and second transfer means including a reading portion operative for reading data from the medium transported.

5,369,481

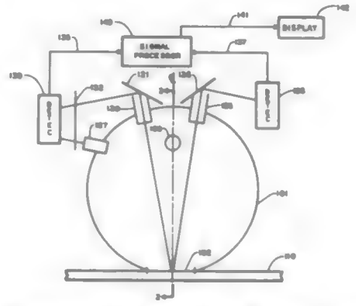
PORTABLE SPECTROPHOTOMETER

Bernard J. Berg, Kentwood; Thomas J. Boes, Grandville; Mark A. Cargill, Belding, and Patrick S. Rood, Comstock Park, all of Mich., assignors to X-Rite, Incorporated, Grandville, Mich.

Filed May 8, 1992, Ser. No. 880,807

Int. Cl.[5] G01J *3/42*

U.S. Cl. 356—319 **4 Claims**



1. Spectrophotometer apparatus for measuring color of an object under test, comprising:

an integrating sphere;

a test opening in said sphere providing access to said object under test;

a light source providing diffused source light projected through said test opening and comprising a lamp providing multidirectional light output such that at least a portion of light provided by said lamp is reflected from interior surfaces of said sphere, said lamp extending at least partially into said sphere and wherein said sphere further comprises a deflecting baffle mounted internal to said sphere adjacent said lamp and deflecting light from said lamp;

a first sensor aperture disposed in said sphere and directed toward said test opening along a line extending at a predetermined angle from a vertical centerline of said sphere detecting all light reflected from said test opening, including at least one surface reflected specular light component reflected from said opening along said line extending at said predetermined angle;

a second sensor aperture disposed in said sphere at a position opposite said centerline from said first sensor and aligned along a line extending at said predetermined angle from said centerline detecting light reflected from said test opening exclusive of said specular light component;

a plurality of sensors optically connected to said apertures; and

a signal processor connected to said sensors for combining readings of diffuse light and said at least one surface reflected specular light component received at said first sensor aperture with diffuse light excluding said reflected specular light component received at said second sensor aperture.

5,369,482

METHOD AND APPARATUS FOR MEASURING THE REFRACTIVE INDEX OF INDEX MATCHING GELS AND LIKE SUBSTANCES

Antonius B. G. Bolhaar, Wadenoyen, Netherlands, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 27, 1992, Ser. No. 936,172

Claims priority, application United Kingdom, Aug. 29, 1991, 9118524.9

Int. Cl.[5] G01N *21/41*

U.S. Cl. 356—128 **15 Claims**

1. An apparatus for measuring the refractive index of a substance, the apparatus comprising:

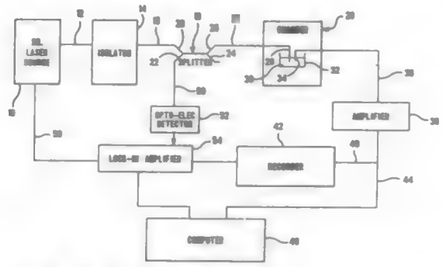
an optical splitter having an input interface, and first and second output interfaces;

a light source for emitting a light beam in a first direction, said light source being optically connected to said first output interface;

a fiber optic member optically connecting said input interface of said optical splitter to the substance to be measured, said fiber optic member having an end face adapted to cause a reflection of said light beam back through said fiber optic member due to the refractive mismatch between the substance and said fiber optic member; and

a power detector optically connected to said second output interface to measure the output light power of the reflected light, whereby

the refractive index of the substance is proportional to the reflected signal.



5,369,483

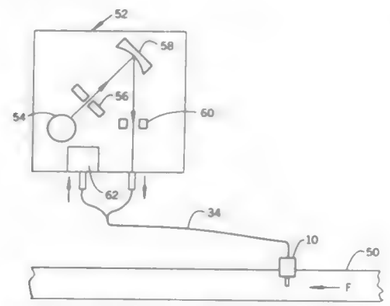
ANALYSIS OF POLYMER MELT STREAM

Phillip E. Wilson, Asheville, N.C., assignor to BASF Corporation, Parsippany, N.J.

Filed May 7, 1993, Ser. No. 59,451

Int. Cl.[5] G01J *3/42, 3/50*

U.S. Cl. 356—300 **12 Claims**



1. A method for measuring the concentration of a colorant in a stream of molten polymer moving axially through a conduit comprising:

a) inserting adjacent to the stream of molten polymer, a probe having integral therein collection means and illumination means;

b) illuminating the molten stream with the illumination means to cause electromagnetic radiation to be reflected from and through the molten polymer;

c) collecting the electromagnetic radiation reflected from and through the molten polymer;

d) supplying the collected electromagnetic radiation to a measurement device remote from the molten stream; and

e) quantifying the collected electromagnetic radiation as a function of the concentration of the colorant.

5,369,484

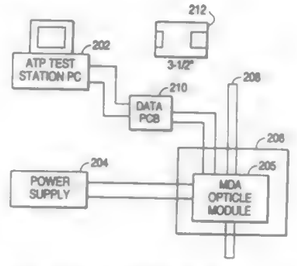
MULTIPLE DISCRETE ANALYZER TEST APPARATUS AND METHOD

Douglas G. Haugen, Durham, N.C., assignor to Akzo N.V., Arnhem, Netherlands

Filed Nov. 9, 1992, Ser. No. 973,956

Int. Cl.[5] G01J *3/02*

U.S. Cl. 356—326 **29 Claims**



1. A computer based method for testing an optical monitoring system which is electrically connected to a computer for exchanging control and data signals therewith, the computer having input means for selecting test commands and display means for displaying screens of information to a user, the method comprising:

displaying on the display means at least one screen showing a plurality of user selectable commands; and

performing programmed tests with the computer on the optical monitoring System based on user selected commands input with the input means;

wherein the optical monitoring system includes optical components and electrical circuitry, a light source, a light modifying wheel, a shutter, and a plurality of photodiode arrays having elements, the arrays being disposed at respective stations for receiving light from a respective plurality of optical channels; and

wherein the plurality of user selectable commands include a display command, an electrical systems test command, an optical dark test command, a beam alignment test command, a wavelength registration test command, a profile test command, and a filter test command.

5,369,485

FIBER OPTIC ACCELEROMETER WITH CENTRALLY SUPPORTED FLEXURAL DISK

Thomas J. Hofler, Carmel, Calif.; David A. Brown, Barrington, R.I., and Steven L. Garrett, Carmel, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 651,856, Feb. 7, 1991, Pat. No. 5,317,929.

This application Dec. 9, 1993, Ser. No. 163,789

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—345 **11 Claims**

1. A sensor for a parameter of physical movement, the sensor comprising:

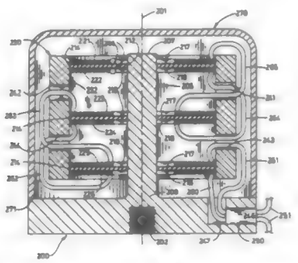
an elastic disk having opposite sides;

a mass mounted peripherally on said disk;

body means centrally supporting said disk so that momentum of said mass induces a deflection of said disk in a direction generally normal to said sides; and

an optical fiber having a spiral portion fixedly connected to

one side of said disk and wound thereon so that said deflection induces in the fiber a variation in length corresponding to said deflection for interferometric measurement of said variation in length.



5,369,486

POSITION DETECTOR FOR DETECTING THE POSITION OF AN OBJECT USING A DIFFRACTION GRATING POSITIONED AT AN ANGLE

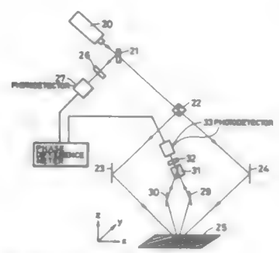
Takahiro Matsumoto; Noriyuki Nose, both of Atsugi; Minoru Yoshii, Tokyo; Kenji Saitoh, Yokohama; Masanobu Hasegawa, Fujisawa, and Koichi Sentoku, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1992, Ser. No. 947,383

Claims priority, application Japan, Sep. 27, 1991, 3-276953

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—349 **7 Claims**



1. A position detector comprising:

a diffraction grating provided on a surface of an object, said diffraction grating having a plurality of grating lines extending in a grating line direction;

an illumination system for causing a pair of light beams to be incident upon said diffraction grating along a plane extending in a first direction in which said diffraction grating extends, different from the grating line direction, for causing a first pair of diffraction light beams, diffracted by said diffraction grating, to travel in the same direction, so that the first diffraction light beams interfere with each other, said illumination system also for causing a pair of light beams to be incident upon said diffraction grating along a plane extending in a second direction in which said diffraction grating extends, different from the grating line direction, for causing a second pair of diffraction light beams, diffracted by said diffraction grating, to travel in the same direction, so that the second diffraction light beams interfere with each other;

a detection system for detecting interfering light from the first pair of diffraction light beams and for generating a first beat signal therefrom, said detection system also for detecting interfering light from the second pair of diffraction light beams and for generating a second beat signal therefrom; and

a processing system for detecting position information with respect to the first direction of said diffraction grating from the phase state of the first beat signal, said processing system also for detecting position information with respect to the second direction of said diffraction grating from the phase state of the second beat signal.

5,369,487

DEVICE FOR DETERMINING THE AMPLITUDE OF THE SPECTRAL LINES IN THE OUTPUT SIGNAL FROM A RING INTERFEROMETER

Heinz Göckler, Backnang, Germany, assignor to Ant Nachrichtentechnik GmbH, Backnang, Germany

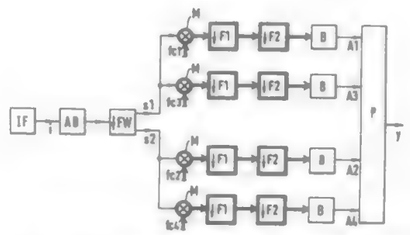
PCT No. PCT/DE91/00225, § 371 Date Nov. 6, 1992, § 102(e) Date Nov. 6, 1992, PCT Pub. No. WO91/17411, PCT Pub. Date Nov. 14, 1991

PCT Filed Mar. 14, 1991, Ser. No. 945,968

Claims priority, application Germany, May 7, 1990, 4014516

Int. Cl.[5] G01C *19/72*

U.S. Cl. 356—350 **18 Claims**



1. In a digital evaluation circuit for determining amplitudes of spectral lines contained in a digitized phase-modulated output signal of an optical ring interferometer which is being rotated, wherein the spectral lines contain information indicating the angular velocity with which the ring interferometer is being utilized, the improvement wherein said circuit comprises: a frequency-selective filter connected for splitting a digitized output signal of the ring interferometer into first and second signal portions, the first signal portion containing spectral lines corresponding to odd-numbered multiples of a given frequency which is one of the phase modulation frequency and a frequency derived from the phase modulation frequency and the second signal portion containing spectral lines corresponding to even-numbered multiples of the given frequency, wherein the spectral lines contained in the first and second signal portions are available by selective frequency separation; and two digital filters each connected to receive a respective signal portion and to filter out of the respective signal portion a signal element at the frequency of one selected spectral line in order to allow determination of the amplitude of the filtered spectral line.

5,369,488

HIGH PRECISION LOCATION MEASURING DEVICE WHEREIN A POSITION DETECTOR AND AN INTERFEROMETER ARE FIXED TO A MOVABLE HOLDER

Tadashi Morokuma, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1992, Ser. No. 986,787

Claims priority, application Japan, Dec. 10, 1991, 3-325920; Dec. 26, 1991, 3-344782; Dec. 26, 1991, 3-344784

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—358 **18 Claims**

1. A high precision coordinate measuring device comprising:

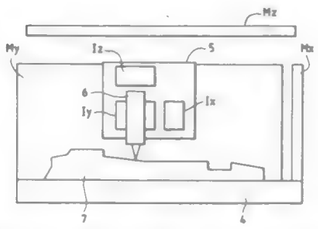
a base,

a reflecting mirror fixed to said base on a plane perpendicular to a given axis,

a movable holder disposed so as to be movable relative to said base along said axis,

an optical position detector, which is fixed to said movable holder and includes a light source, an objective lens having a focal length of f, and a photodetector detecting light emitted from said light source, transmitted through said objective lens focusing on a point to be measured on an object, reflected at said object, transmitted through said objective lens again and reflected at said reflecting mirror, and

an interferometer optical system fixed to said movable holder disposed at a distance 2 f from said point to be measured on said object, for measuring a location of said point to be measured relative to said reflecting mirror.



5,369,489

TIME DIVISION MULTIPLEXED MICROSCOPY

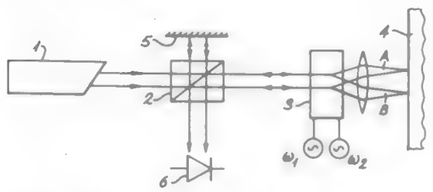
Michael G. Somekh, Wollaton, England, assignor to British Technology Group Ltd., London, England

Filed Feb. 19, 1993, Ser. No. 971,972

Claims priority, application United Kingdom, Aug. 20, 1990, 9018215.5

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—359 **5 Claims**



1. An optical apparatus for measuring the topographic properties of a surface comprising:

a source of coherent radiation,

means for splitting a beam of radiation from said source into a reference beam and a probe beam comprising a plurality of component beams,

means for successively modulating said component beams at at least two frequencies,

means for successively recombining said component beams after reflection with said reference beam to create an interference pattern, and

detector means for detecting said interference pattern and for producing a plurality of tone bursts corresponding to successive variations in said interference pattern.

5,369,490

CONTOUR MEASURING APPARATUS

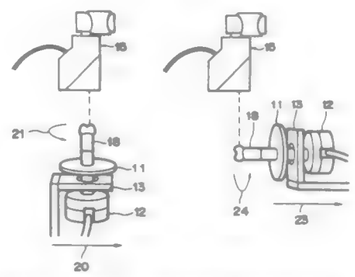
Masaharu Kawai, Kanagawa; Katsuya Miyoshi, Tokyo, and Masami Baba, Saitama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Apr. 23, 1993, Ser. No. 51,247

Claims priority, application Japan, May 29, 1992, 4-138479

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **24 Claims**



1. A contour measuring apparatus comprising:

a laser measurement unit;

hold means for holding an object;

rotation means for rotating said hold means around a predetermined axis;

altering means for supporting said hold means and said rotation means and altering a direction of said predetermined axis with respect to said laser measurement unit; and

drive means for supporting said altering means and driving said altering means to alter the position of said hold means with respect to said laser measurement unit,

wherein said altering means can take a first position in which said predetermined axis is parallel to a laser beam emitted from said laser measurement unit and a second position in which said predetermined axis is perpendicular to the laser beam emitted from said laser measurement unit.

5,369,491

METHOD FOR MEASURING THE RECIPROCAL DISPLACEMENT OF THE LAYERS OF A MULTILAYER ARRANGEMENT AND APPARATUS FOR PERFORMING THIS METHOD

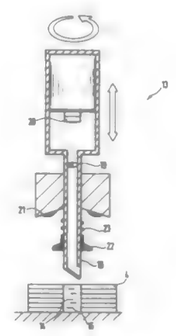
Klaus Schneider, Ritterstrasse 11, D-1000 Berlin 61, Germany

Filed Mar. 25, 1992, Ser. No. 857,338

Claims priority, application Germany, Mar. 27, 1991, 4110441

Int. Cl.[5] G01B *11/22;* **G01N** *21/88*

U.S. Cl. 356—378 **20 Claims**



1. A method for measuring the reciprocal displacement of a plurality of planar layers containing a pattern of conductors,

the planar layers being aligned and constructed into a multilayer circuit board and positioned on a unique printed circuit board drilling machine for measurement of reciprocal displacement prior to drilling at least one connecting hole to facilitate electrical connection between the planar layers, the method for measuring the reciprocal displacement of the planar layers in the multilayer circuit board comprising the steps of:

a) forming two or more test patterns on a surface of a plurality of layers;

b) constructing a multilayer circuit board from the plurality of planar layers such that the test patterns on each of the planar layers are superimposed in the multilayer circuit board;

c) positioning the multilayer circuit board on the drilling machine;

d) drilling at least two inspection holes in the multilayer circuit board at the test pattern;

e) positioning a rotatable periscope within the inspection holes;

f) illuminating the inspection hole to facilitate observation of the test patterns through the periscope;

g) observing the position and alignment of the test patterns using an optical scanner system; and

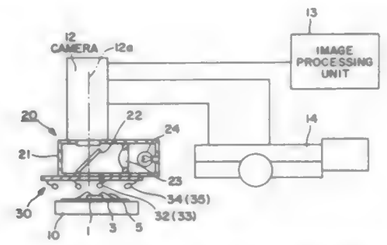
h) evaluating a plurality of the images obtained to determine the displacement and distortion of the planar layers used to form the multilayer circuit board.

5,369,492

BONDING WIRE INSPECTION APPARATUS

Kenji Sugawara, Tokyo, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Oct. 29, 1992, Ser. No. 968,299
Claims priority, application Japan, Oct. 29, 1991, 3-308358
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—394 **2 Claims**



1. A bonding wire inspection apparatus comprising:

a camera which images an object to be inspected;

a vertical illuminating means provided beneath said camera, said vertical illuminating means comprising a light source and a condenser lens so as to illuminate said object in a vertical direction;

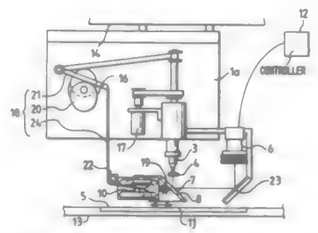
a ring-form illuminating means provided beneath said vertical illuminating means, said ring-from illuminating means comprising plural LED's arranged in a form of a plurality of concentric coaxial circles with an angle of incidence of optical axes of LED's of inner circled LED's being larger than an angle of incidence of optical axes of LED's of outer circled LED's.

5,369,493

COMPONENT TRANSPORTING APPARATUS AND METHOD

Masamichi Tomita, Chiyoda; Kazuo Honma, Ami; Shigemi Igarashi, Ushiku; Tadaaki Ishikawa; Ryu Takizawa, both of Inayoshi; Sotozi Hiramoto, Chiba; Makoto Honma, Funabashi; Seiji Hata, Fujisawa, and Mitsuo Nakamura, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1991, Ser. No. 672,039
Claims priority, application Japan, Mar. 19, 1990, 2-68752; May 18, 1990, 2-126661
Int. Cl.[5] G01N *21/64*
U.S. Cl. 356—400 **31 Claims**



1. An apparatus for transporting a component, the apparatus comprising:

a base;

a head movable relative to said base;

holding means on said head for holding said component, wherein movement of said head relative to said base in a first direction causes a transportation of said component relative to said base when said component is held by said holding means;

an imaging means fixed on said head for optically investigating said component when said component is held by said holding means;

at least one optical component on said head for defining an optical path between said imaging means and said component when said component is held by said holding means,

wherein said imaging means is fixed to said head, and said at least one optical component is movable relative to said imaging apparatus between an operating position in which said optical path is defined between said imaging apparatus and said component when said component is held by said holding means and a withdrawn position, and

wherein a further imaging means is fixed to said base for investigating said component when said component is held on the holding means in a predetermined position relative to said base.

5,369,494

PORTABLE SCANNING COLORIMETER

David R. Bowden; Timothy R. Friend, both of Grandville, and Douglas V. Baker, Grand Rapids, all of Mich., assignors to X-Rite, Incorporated, Grandville, Mich.

Filed Apr. 12, 1993, Ser. No. 45,859
Int. Cl.[5] G01J *3/51*
U.S. Cl. 356—402 **9 Claims**

1. Portable colorimeter apparatus for measuring color characteristics of a sheet, the apparatus comprising:

a generally rectangularly shaped housing assembly comprising spaced apart, upper and lower plates and having opposing sides and opposing ends;

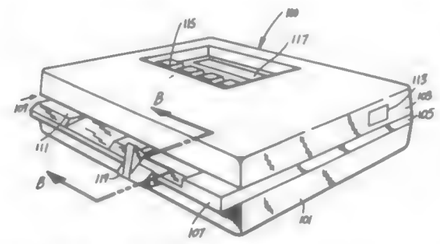
the upper plate having substantially flat upper and lower surfaces and an opening extending between the upper and lower surfaces;

an optical unit mounted on the upper surface in alignment with the opening and comprising a plurality of color sensitive optical receivers;

the lower plate comprising a substantially flat upper surface area and a drive wheel aperture;

the upper and lower plates rigidly interconnected along only one end of the housing assembly with the upper plate extending over the lower plate in a cantilever fashion, forming a spatial area between the lower surface of the upper plate and the substantially flat upper surface area of the lower plate, the spatial area having openings on three sides of the housing assembly to receive a sheet to be measured having dimensions extending beyond the dimensions of the spatially area;

a motor-driven drive wheel extending into the aperture and advancing the sheet in the spatial area in a direction of advancement generally parallel the one end;



one of the upper and lower plates having a raised section extending in the spatial area along the one end and between the opposing sides and comprising a first pair of spaced apart aligned openings adjacent one of the sides and a second pair of spaced apart aligned openings adjacent the other of the sides;

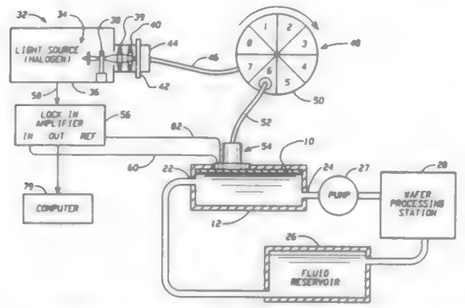
precision length spacers disposed in the pairs of aligned openings and fasteners extending between the upper and lower plates and through the spacers, whereby the fasteners and spacers ensure a proper distance relationship between the sheet and the optical unit while the sheet is advanced in the spatial area.

5,369,495

SEMICONDUCTOR CONTAMINANT SENSING SYSTEM AND METHOD

Jacek Lagowski, Tampa, Fla., assignor to University of South Florida, Tampa, Fla.

Filed Sep. 4, 1992, Ser. No. 940,527
Int. Cl.[5] G01N *21/25, 21/89*
U.S. Cl. 356—418 **33 Claims**



1. A system for measuring contamination of a fluid medium, comprising:

(a) a sensor having a back surface and a front surface, said back surface being in direct contact with a sample of the fluid medium, said sensor being made of material which is reactive with semiconductor contaminants to form recombination centers at said back surface and to enable diffusion of electrons and holes therethrough, said sensor having a bulk diffusion length and a thickness such that the magnitude of a photovoltaic effect developed at or near said front surface by means of light at a predetermined excitation state is dependent on the concentration of recombination centers on the back surface; and

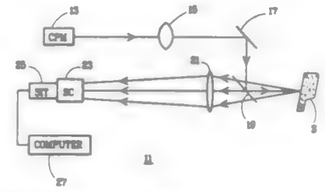
(b) photovoltaic generating and measuring means for (i) directing light at said predetermined excitation state at said front surface to develop the photovoltaic effect at or near said front surface and (ii) measuring the magnitude of the photovoltaic effect at or near said front surface.

5,369,496

NONINVASIVE METHOD AND APPARATUS FOR CHARACTERIZING BIOLOGICAL MATERIALS

Robert R. Alfano, Bronx, N.Y.; Kwong M. Yoo, Kuala Lumpur, Malaysia, and Guichen Tang, Shanghai, China, assignors to Research Foundation of City College of New York, New York, N.Y.

Filed Nov. 13, 1989, Ser. No. 434,799
Int. Cl.[5] G01N *21/47*
U.S. Cl. 356—446 **11 Claims**



1. Noninvasive apparatus for characterizing biological material comprising:

a. a laser for illuminating the biological material with a beam of light,

b. means for measuring the intensity of light scattered from the biological material in the backward direction over a predetermined angular region as a result of illumination by said laser,

c. a computer coupled to said detecting means for analyzing the scattered light as detected to determine the absorption length (l_a) and the transport mean free path (1) and then comparing the results so obtained to reference values stored in said computer, and

d. means coupled to said computer for displaying the results of the comparison made by the computer.

5,369,497

APPARATUS AND METHOD FOR MODULATING THE AREA OF PIXELS FOR TONE REPRODUCTION

Janet A. Allen, 2 Hawthorne Pl., Apt. #7A, Boston, Mass. 02114, and Guillermo S. Ferla, 48 Pasture Rd., Reading, Mass. 01867

Continuation of Ser. No. 616,633, Nov. 21, 1990, abandoned. This application Oct. 1, 1992, Ser. No. 955,360
Int. Cl.[5] H04N *1/387*; G01D *9/42*
U.S. Cl. 358—298 **14 Claims**

1. A printing apparatus for providing output utilized in forming an image in hardcopy form on a medium as a plurality of pixels, said printing apparatus comprising:

means for receiving a signal representing at least a portion of an image and, in response,

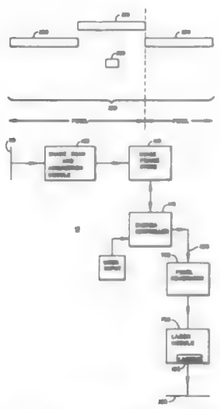
for producing at least one pixel signal that represents at least one area modulation pattern for at least one of said pixels, said area modulation pattern being comprised of subpixels called pels and said at least one area modulation pattern corresponding to a density of at least a part of said at least a portion of an image;

drive means responsive to said at least one pixel signal for

generating at least one set of predetermined pel configuration pattern signals corresponding to said area modulation pattern of pels; and

an energy source, moveable relative to the medium in a scan direction and responsive to said at least one set of predetermined pel configuration signals, for generating said output which is utilized in forming said image in hardcopy form as a plurality of pixels, each of said pixels being formed as said area modulation pattern of pels and said area modulation pattern of pels being formed in said scan direction as a plurality of substantially adjacent columns of pels;

wherein pels in at least two of said plurality of columns of pels in at least one of said at least one area modulation pattern of pels are of different size as measured transverse to said scan direction; and



wherein at least one set of the predetermined pel configuration pattern signals is further arranged to drive the energy source to generate said output for forming pels having a multiplicity of sizes in said scan direction, no matter what size said pels may have when measured transverse to said scan direction, so that said multiplicity of sizes vary continuously in predetermined amounts from predetermined minimum sizes to larger sizes within a pixel and each of which variable sized pels can be created in said scan direction one or more times within a pixel whereby said area modulation patterns for the pixels comprise predetermined combinations of different sized pels with a smaller pels operative to provide more gradual density changes for finer tone reproduction from one density to the next compared with the density changes that would otherwise be possible by using just larger sized pels.

5,369,498

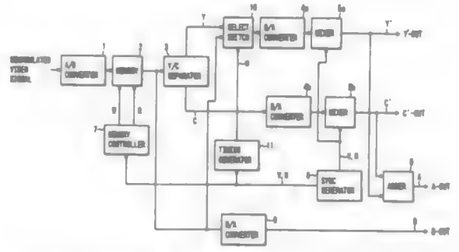
VIDEO DISK PLAYER COMPRISING A SIGNAL SELECTION CIRCUIT FOR SELECTING ONE OF A VIDEO DATA SIGNAL AND A LUMINANCE SIGNAL AS AN OUTPUT SIGNAL

Tutomu Banno, and Junichi Nakata, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 9, 1992, Ser. No. 911,036
Claims priority, application Japan, Oct. 4, 1991, 3-257986
Int. Cl.[5] H04N *5/781, 9/78*
U.S. Cl. 358—342 **5 Claims**

1. A sync generator for use with a video disk player having a field memory for storing a video data signal read from a video disk, Y/C separating means for separating the video data signal stored in the field memory into a luminance signal and a chrominance signal, signal selection means, responsive to a reference vertical sync signal and a reference horizontal sync signal, for selecting the video data signal stored in the field memory as a first output signal during a predetermined horizontal scan period and for selecting the luminance signal from the Y/C separator means as a second output signal during a scan period other than the predetermined horizontal scan period, and mixer means for mixing the reference vertical sync signal and the reference horizontal sync signal generated by the sync generator with the first or second output signal from the signal selection means and the chrominance signal from the Y/C separator means, the sync generator comprising:

sync signal generating means for generating the reference vertical sync signal and the reference horizontal sync signal;



detecting means for detecting whether a field of the video data signal prior to the video data signal being stored in the field memory is coincident with said field of said video data signal when said video data signal is read from the field memory; and

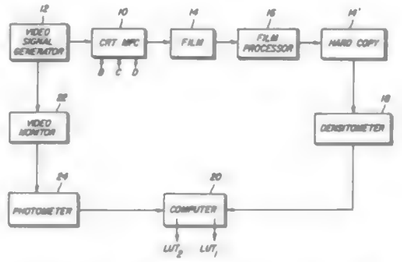
shifting means for shifting a timing of the generation of the reference vertical sync signal by the sync signal generating means when the detecting means detects that the field of the video data signal prior to the video data signal being stored in the field memory is not coincident with the field of the video data signal when the video data signal is read from the field memory.

5,369,499

CALIBRATION METHOD FOR VIDEO IMAGE REPRODUCTION WITH ELECTRONIC PRINTER AND VIDEO MONITOR

Kwok-leung Yip, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1991, Ser. No. 790,912
Int. Cl.[5] H04N *1/00, 1/40, 5/84, 5/76*
U.S. Cl. 358—406 **7 Claims**



1. A video image reproduction system comprising:

a video image printer;

a video monitor;

means for applying a video image to said video image printer to reproduce said video image in photosensitive medium and to said video monitor to display said video image on said monitor; and

means for correction said applied video image on a pixel-by-pixel basis so that said video image displayed on said monitor and said image reproduced in said medium have a uniform quantization in perceived lightness, such that the perceived grey scale varies linearly with video image signal value; wherein said video image printer is a cathode ray tube multiformat camera; wherein said cathode ray tube multiformat camera (CRT MFC) includes brightness, contrast and density controls and wherein a first look-up table is generated as follows:

printing a set of gray scale test patterns on film by means of said CRT MFC at preselected contrast and density control settings C_0 and D_0 and at incremental brightness settings B_1, B_2, B_n;

measuring the density of film with a densitometer to determine the maximum film density, D_{max}, for each brightness setting;

from a plot of B vs. D_{max}, selecting a desired D_{max} and finding the brightness control setting B′ to give the desired D_{max};

causing said CRT MFC to print on film the same said gray scale test pattern using brightness, contrast and density settings, respectively, of B′, C_0 and D_0;

with a densitometer, measuring the film density for each gray level and calculating intermediate densities using an interpolation technique;

converting the set of density values into perceived lightness values using the formula

$$S_f = c_1(10^{-D_f})^p + c_2$$

where c_1 and c_2 are normalization constants, D_f is film density, and $p \approx \frac{1}{3}$;

constructing said first look-up table from the measured and desired tone curves;

wherein said monitor has brightness and contrast controls; and

wherein a second look-up table is generated as follows:

varying said brightness and contrast controls of said monitor to obtain, using a photometer, a desired minimum luminance, L_{min}, and maximum luminance, L_{max}, which correspond to minimum digital image value, CV=0, and maximum digital image value, $CV=2^n-1$, respectively;

using a photometer, measuring the monitor luminance for each level of said gray scale test pattern used in constructing said first look-up table;

calculating said monitor luminance for other digital image values, CV, using an interpolation technique;

converting the monitor luminance values L_m into perceived lightness values S_m, using the visual perception characteristic formula

$$S_m = c_1(L_m)^p + c_2$$

where c_1 and c_2 are normalization constants and $p \approx \frac{1}{3}$; and

constructing said second look-up table from the measured and desired tone curves.

5,369,500

METHOD AND APPARATUS FOR DETERMINING FACSIMILE QUALITY AND SYSTEM USING SAME

Henry W. Jacobs, 12507 Cortaro Cove, Austin, Tex. 78729

Filed Jun. 16, 1993, Ser. No. 78,522
Int. Cl.[5] H04M *1/00*
U.S. Cl. 358—406 **13 Claims**

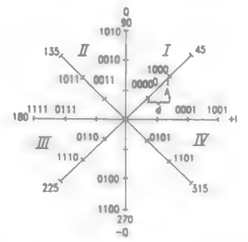
1. A method of determining the quality of received facsimile data without full expansion and subsequent decoding of the scan lines comprising the steps of:

sampling the received PCM digital signal at a telephone modem before full expansion and subsequent decoding;

determining the I, Q position of the sample;

determining the boundary of each scan line;

measuring the distance between the received I, Q position and the closest constellation or standard point for each sample; and



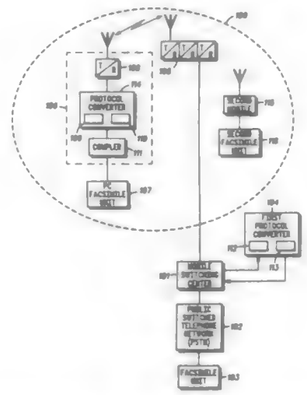
determining the accumulated distances over the number of samples per scan line to thereby determine the quality of the received facsimile data.

5,369,501

FACSIMILE TRANSMISSION IN AN RF DIGITAL COMMUNICATION SYSTEM

Timothy J. Wilson, Schaumburg, and Nimrod Averbuch, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 21, 1992, Ser. No. 993,992
Int. Cl.[5] H04N *1/00, 1/32*
U.S. Cl. 358—407 **13 Claims**



1. In a wireless communication system that includes a plurality of communication units, a method for providing facsimile capabilities to at least one communication unit of the plurality of communication units, the method comprises the steps of:

a) coupling the wireless communication system with a wireline telephone system via a first protocol converter, wherein the first protocol converter converts a predetermined interfacing protocol of the wireline telephone system to a second predetermined interfacing protocol of the wireless communication system and vice versa;

b) coupling the at least one communication unit to a first facsimile unit, wherein the at least one communication unit converts the second predetermined interfacing protocol to one of the predetermined interfacing protocol and a first predetermined interfacing protocol of the first facsimile unit and vice versa;

c) upon initiation of a facsimile transmission between the first facsimile unit and a second facsimile unit coupled to the wireline telephone system, establishing communication between the first protocol converter and the second facsimile unit based on the predetermined interfacing protocol;

d) upon initiation of the facsimile transmission between the first facsimile unit and the second facsimile unit, establishing communication between the first facsimile unit and the at least one communication unit using one of the predetermined interfacing protocol and the first predetermined interfacing protocol; and

e) upon initiation of the facsimile transmission between the first facsimile unit and the second facsimile unit, establishing communication between the at least one communication unit and the first protocol converter using the second predetermined interfacing protocol.

5,369,502

IMAGE DATA PROGRESSIVE RECONSTRUCTION METHOD AND APPARATUS

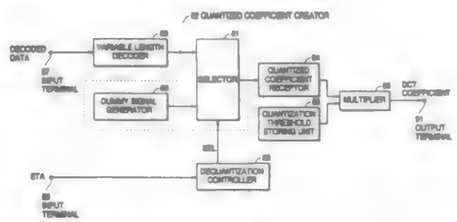
Masahiro Fukuda, and Tsugio Noda, both of Isehara, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 743,140, Aug. 9, 1991, abandoned. This application Mar. 21, 1994, Ser. No. 210,748

Claims priority, application Japan, Aug. 10, 1990, 2-213379

Int. Cl.[5] H04N *4/415*

U.S. Cl. 358—431 **20 Claims**



1. An image data reconstructing apparatus, for reconstructing an image from coded data obtained by coding quantized coefficients, which are obtained by quantizing transform coefficients obtained by an orthogonal transform of gradient values of plural picture elements in respective blocks comprising a plurality of picture elements of an original image, the image reconstructed by progressively building up from rough images in a first stage to finer images in second add later stages of a progressive image buildup mode, said image data reconstructing apparatus comprising:

a dummy data generator for generating dummy data;

a selector, coupled to said dummy data generator, for selecting one of said dummy data and said coded data;

a first controllers, coupled to said selector, for having said selector select only the coded data in the first stage, and said dummy data and then the coded data in the second and later stages; and

a second controller, coupled to said selector, for accumulating a reconstructed image in the first and later stages, and outputting the reconstructed image as image data.

5,369,503

METHOD OF PICTURE COMPRESSION BY AUTO-ORGANISATION OF A NEURAL NETWORK

Gilles Burel, and Isabelle Pottier, both of Rennes, France, assignors to Thomson-CSF, Puteaux, France

PCT No. PCT/FR90/00888, § 371 Date Jul. 25, 1991, § 102(e) Date Jul. 25, 1991, PCT Pub. No. WO91/08546, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 6, 1990, Ser. No. 730,871

Claims priority, application France, Dec. 6, 1989, 8916111

Int. Cl.[5] H04N *1/40*

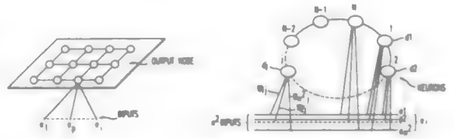
U.S. Cl. 358—433 **5 Claims**

1. Method of picture compression by autoorganisation of a neural network, characterised in that it comprises:

a preprocessing during which pictures of identical type are partitioned into pixel blocks with dimensions smaller than those of the pictures,

a phase of initialising a neural network comprising N neurons disposed in a single plane and having a number of inputs equal to the dimension of the blocks extracted from the pictures, during which values of coefficients, or weights, are randomly allocated to each connection linking a neuron j to an input ei, and an initial neighbourhood radius Vo determining the neighbour neurons of the neuron j is chosen

a learning phase during which the neural network is fed successively with pixel blocks extracted randomly from



the various pictures and the weights of the neural connections evolve by successive approximations following an algorithm simulating the behaviour of the visual cortex, through a computation of potentials which aims to elect one neuron with updating of its neighbours, until their values are as close as possible to most probable input values,

a compression phase during which the source picture is partitioned into pixel blocks, each block being presented one after the other to the inputs of the neural network and coded as a function of the neuron of which the values of the weights are closest to the inputs.

5,369,504

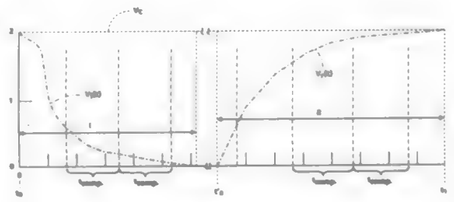
METHOD AND APPARATUS FOR REDUCING IMAGE DISTORTION IN AN ASYNCHRONOUS INPUT SCANNER

John O. Walker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1992, Ser. No. 865,548

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—437 **21 Claims**



1. A method of reducing image signal distortion in an asynchronous input scanning system operating in a transient state between receiving a stop signal and the asynchronous input scanning system returning to a nominal velocity in response to a start signal, comprising the steps of:

(a) storing a plurality of image signals for a first scanline acquired immediately before receiving the stop signal in a first memory location;

(b) storing a plurality of image signals for at least one subsequent scanline generated after receiving the start signal in a second memory location; and

(c) generating, as a function of the image signals stored in both the first and second memory locations, a plurality of corrected image signals to replace scanlines of image signals lost while the asynchronous input scanning system was operating in the transient state.

5,369,505

IMAGE PROCESSING APPARATUS

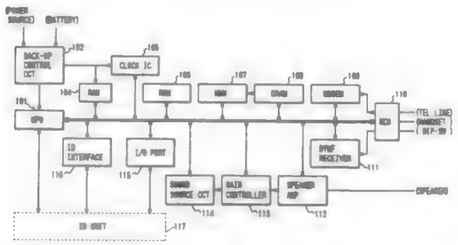
Asao Wantanabe, Higashikurume; Yukihiko Ogata, Kawasaki; Hiroyuki Nakanishi, Yokohama; Seijiro Yanase, Machida, and Koji Harada, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1991, Ser. No. 807,180

Claims priority, application Japan, Dec. 20, 1990, 2-404037

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—444 **21 Claims**



1. In image processing apparatus comprising:

means for inputting image data page by page;

means for generating non-coded image data of the image data input by said input means and coded image data of the same image data;

image memory means for storing the non-coded image data and the coded image data; and

control means for providing control such that the non-coded image data generated by said generating means is stored in a first area of said image memory means, and the coded image data is stored in a Second area of said image memory means, and one of the non-coded image data stored in the first area and the coded image data stored in the second area is invalidated in accordance with a data amount of the coded image data stored in the second area.

5,369,506

CIRCUIT ARRANGEMENT FOR SELECTING AN IMAGE DATA CORRECTION SCHEME, WRITING THE CORRECTION SCHEME TO A CORRECTION TABLE AND CORRECTING IMAGE DATA GRADATION

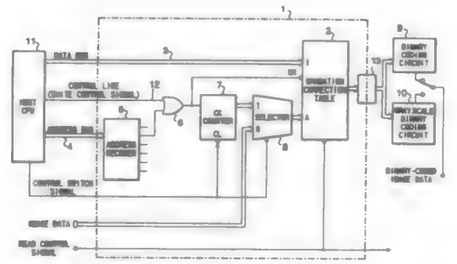
Yoshihisa Takeuchi, Uji, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Mar. 26, 1993, Ser. No. 38,360

Claims priority, application Japan, Apr. 2, 1992, 4-080978

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—455 **7 Claims**



2. A system for making a correction data table used by a circuit arrangement correcting a gradation of image data, the circuit arrangement being used with a facsimile machine having a scan-reading device, the scan-reading device scan-reading image data on a document, the image data consisting of plurality of data segments, comprising:

first data storage means for storing various kinds of gradation correction data;

means for selecting a group of gradation correction data among the various kinds of gradation correction data in accordance with the type of the scan-reading device;

second data storage means for storing the selected gradation correction data;

means for determining addresses of the selected gradation correction data in the first storage means in accordance with the pixel signal levels of the data segments of the scan-read image data; and

means for storing the gradation correction data of the group into the second data storage means using the addresses, so as to make the data correction table.

5,369,507

IMAGE PROCESSING APPARATUS AND METHOD CAPABLE OF DISCRIMINATING BETWEEN CHARACTER/PHOTOGRAPH AREAS BY FINDING BLANK-STRIPE ZONES AND DIVIDING THE AREAS INTO BLOCKS

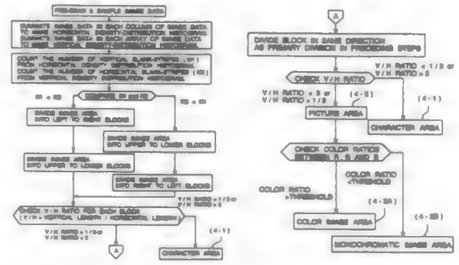
Kazuyoshi Tanaka; Koji Washio, and Yoshizumi Yasuda, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 19, 1992, Ser. No. 932,319

Claims priority, application Japan, Sep. 3, 1991, 3-223005

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—462 **6 Claims**



4. A method for processing an image, comprising the steps of:

preliminarily scanning an original image to obtain sampled image data of the original image;

scanning the original image again to obtain original image data;

judging from the sampled image data whether an area of the original image is one of a character image area and a picture image area by:

analyzing the sampled image data to find one of horizontal and vertical blank-stripe zones in the original image area by analyzing the sampled image data that corresponds to the area of the original image; and

dividing the original image into a plurality of image blocks by splitting the original image with the blank-stripe zones therein in one direction in which a number of image blocks formed by dividing the original image area having the blank-stripe zones therein is smaller than a number of image blocks that would be formed by dividing the original image area with the blank striped zones therein in another direction different than the one direction; and then

further judging whether each of the plurality of image blocks formed by the dividing means is one of a character image block and a picture image block by said dividing means further dividing each of said plurality of image blocks to form a plurality of further divided image blocks, and said analyzing step further analyzing

a ratio of a horizontal length and a vertical length of each further divided image block;

processing the original image by selectively applying thereto one of a character image processing operation and a picture image processing operation such that:

the character image processing operation is applied for processing the original image to each of the plurality of further divided blocks judged to be a character image block; and

the picture image processing operation is applied for processing the original image to each of the plurality of further divided image blocks judged to be a picture image block.

5,369,508

INFORMATION PROCESSING METHODOLOGY

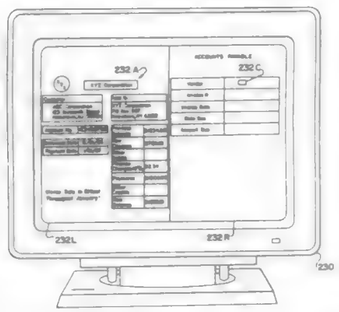
Robert Lech, Jackson; Mitchell A. Medina, Essex Fells, and Catherine B. Elias, Plainsboro, all of N.J., assignors to System X, L. P., New York, N.Y.

Continuation of Ser. No. 672,865, Mar. 20, 1991, Pat. No. 5,258,855. This application Oct. 29, 1993, Ser. No. 143,135

The portion of the term of this patent subsequent to Nov. 2, 2010, has been disclaimed.

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—462 **46 Claims**



1. A method of processing information from a diversity of hard copy documents, said method comprising the steps of:

(a) receiving output representing a diversity of hard copy documents from an automated digitizing unit and storing information from said diversity of hard copy documents into a memory, said information not fixed from one document to the next;

(b) identifying portions of said hard copy documents corresponding to a first variable; and

(c) storing information from said portions of said hard copy documents corresponding to said first variable into memory locations for said first variable.

5,369,509

DOCUMENT TRANSFERRING SYSTEM FOR A FACSIMILE APPARATUS

Seok-Kyung Ko, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 5, 1993, Ser. No. 616

Claims priority, application Rep. of Korea, Nov. 26, 1992, 22449/1992

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—498 **25 Claims**

1. A document transferring system used in a facsimile apparatus, said system comprising:

an image sensor for operating upon information borne by a document:

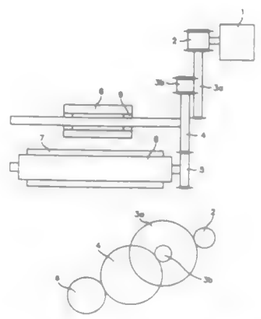
a first shaft;

a feed roller coaxially mounted on said first shaft and disposed to introduce the document into the facsimile apparatus;

a first drive gear directly connected to a motor;

idler gear means directly engaged with said first drive gear, for transferring rotational power from said first drive gear to a second drive gear directly engaged with said idler gear means, said second drive gear rotating concentrically with said first shaft to drive said feed roller;

a second shaft;



a pressure roller coaxially mounted on said second shaft and positioned to concurrently receive the document from said feed roller, apply the document to said image sensor, and discharge the document from the facsimile apparatus; and

a third drive gear directly engaging said second drive gear, said third drive gear rotating concentrically with said second shaft to drive said pressure roller.

5,369,510

IMAGE PROCESSING WITH CONTROLLED UNDER COLOR REMOVAL

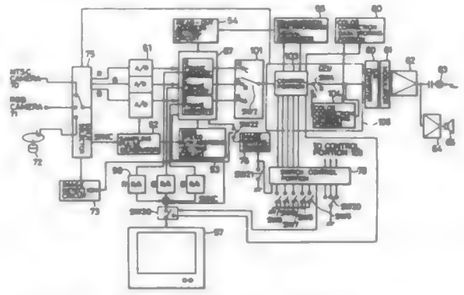
Tomishige Taguchi, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 682,391, Apr. 2, 1991, abandoned, which is a continuation of Ser. No. 376,747, Jul. 7, 1989, abandoned, which is a continuation of Ser. No. 46,086, May 5, 1987, Pat. No. 4,864,391. This application Apr. 28, 1993, Ser. No. 53,331

Claims priority, application Japan, May 9, 1986, 61-104903; May 21, 1986, 61-114903; May 21, 1986, 61-116966

Int. Cl.[5] H04N *1/46*

U.S. Cl. 358—529 **32 Claims**



1. An image processing apparatus, comprising:

a) selecting means for selecting among a plurality of image input sources;

b) storage means for storing an image from one of said image input sources, selected by said selecting means;

c) memory means for storing a plurality of coefficient values corresponding to said plurality of image input sources; and

d) under color processing means for under color removal processing the image stored in said storage means according to the coefficient values, said under color processing means processing in accordance with a selecting state of said selecting means.

5,369,511

METHODS OF AND APPARATUS FOR MANIPULATING ELECTROMAGNETIC PHENOMENON

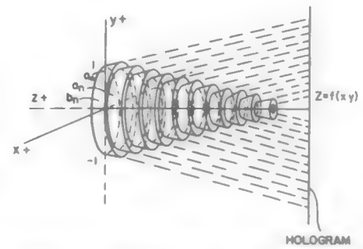
Carl R. Amos, 8310 Lincoln La., #202, McLean, Va. 22101

PCT No. PCT/US90/04726, § 371 Date Feb. 18, 1992, § 102(e) Date Feb. 18, 1992, PCT Pub. No. WO91/02992, PCT Pub. Date Mar. 7, 1991

Continuation-in-part of Ser. No. 396,201, Aug. 21, 1989, abandoned. This PCT application Aug. 21, 1990, Ser. No. 847,050

Int. Cl.[5] G02B *5/18, 27/42, 5/08*; G03H *1/04*

U.S. Cl. 359—15 **36 Claims**



36. A method of manipulating a beam of electromagnetic radiation wherein the beam is comprised of a reference beam and an object beam and wherein the beam includes a zero-order component, the method comprising the step of minimizing the zero-order component by impinging the beam axially on a nested array of aligned optical elements, each having inner and outer surfaces, at least one of said surfaces being reflective, said surfaces combining to have a shape which satisfies the Dirchlet conditions necessary for representation by a Fourier series.

5,369,512

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY WITH VARIABLE COMPENSATION CAPACITOR

Kenichi Yanai; Tsutomu Tanaka; Tatsuya Kakehi; Koji Ohgata, and Kenichi Oki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 21, 1992, Ser. No. 916,361

Claims priority, application Japan, Jul. 24, 1991, 3-184626; Aug. 28, 1991, 3-217426

Int. Cl.[5] G02F *1/1343*

U.S. Cl. 359—59 **19 Claims**

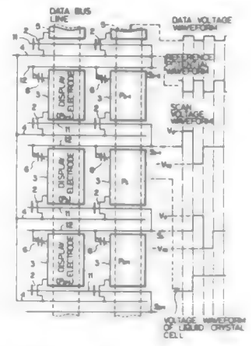
1. An active matrix liquid crystal display apparatus comprising:

first and second substrates disposed in facing relationship and a liquid crystal layer therebetween;

said first substrate having associated therewith a plurality of first and second scan bus lines, thin film transistors, display electrodes and reference potential supplying bus lines, each of said thin film transistors being respectively associated with corresponding ones of said first and second scan bus lines and reference potential supplying bus lines and with a corresponding display electrode and having a gate electrode connected to said associated first scan bus line, a source electrode connected to one of either said associated display electrode or said associated reference potential supplying bus line, and a drain electrode connected to the other of either said associated display electrode or said associated reference potential supplying bus line and said thin film transistor being controlled by said associated first scan bus line;

said second substrate having a plurality of stripe-like data bus lines disposed thereon so as to face said display electrodes; and

each of said display electrodes having a corresponding compensation capacitor which compensates for a potential



fluctuation occurring in said corresponding display electrode after the gate electrode of said thin film transistor is selected, said compensation capacitor being controlled by said second scan bus line such that the capacitance of said compensation capacitor has a larger value during a compensation period than the value thereof during a storage period in which the gate electrode of said corresponding thin film transistor is not selected.

5,369,513

LIQUID CRYSTAL DISPLAY DEVICE WITH BIAXIAL BIREFRINGENT PLATES AND LIGHT SHIELDING FILM

Minoru Akatsuka; Yuji Sohda, both of Yokohama, and Kazutoshi Sawada, Nishinomiya, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

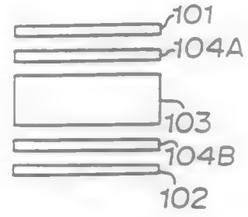
Division of Ser. No. 613,558, Nov. 16, 1990, Pat. No. 5,194,975. This application Dec. 7, 1992, Ser. No. 987,455

Claims priority, application Japan, Mar. 28, 1989, 1-73952; Apr. 6, 1989, 1-85741; Apr. 27, 1989, 1-105865; May 1, 1989, 1-109188; May 23, 1989, 1-127870; Jul. 12, 1989, 1-177964

The portion of the term of this patent subsequent to Mar. 16, 2010, has been disclaimed.

Int. Cl.[5] G02F *1/1335, 1/137*

U.S. Cl. 359—73 **4 Claims**



1. A liquid crystal display device comprising a background portion and a picture element portion which comprises:

a) a liquid crystal layer of a nematic liquid crystal having positive dielectric anisotropy and including a chiral material, wherein the product $\Delta n_1 \cdot d_1$ of the anisotropy of refractive index Δn_1 of liquid crystal molecules in the

liquid crystal layer and the thickness d_1 of the liquid crystal layer is in a range of 0.4–1.5 μm,

b) said liquid crystal layer being interposed between a pair of substrates with transparent electrodes each having an aligning layer which are arranged substantially in parallel to provide a twist angle of 160°–300°,

c) a driving means to apply a voltage across the electrodes attached to said substrates, and

d) a pair of polarizing plates arranged outside the liquid crystal layer, wherein

at least one birefringent plate is provided between the liquid crystal layer and the polarizing plate at at least one side of said liquid crystal layer, and three main refractive indices n_x, n_y and n_z of the birefringent plate are in relation of $n_x > n_z > n_y$ wherein n_x, n_y respectively represent the refractive indices in the direction of film plane of the birefringent plate (provided $n_x > n_y$) and n_z represents the refractive index in the direction of film thickness of the birefringent plate, and wherein

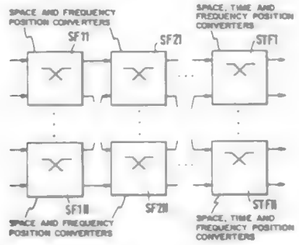
a light shielding film is provided to cover the background so that a background portion except for pixel portions is in a light shielding state.

5,369,514

MULTISTAGE SWITCHING FACILITY FOR OPTICAL SIGNALS

Gert Ellenberger, Kirchheim, and Dietrich Böttle, Salach, both of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Mar. 25, 1993, Ser. No. 36,675
Claims priority, application Germany, Mar. 26, 1992, 4209790
Int. Cl.[5] H04J *4/00, 14/00*
U.S. Cl. 319—123 **18 Claims**



4. A multistage switching device, comprising:

at least one stage having only space and frequency position converter means (SF11, . . . , SF1N, SF21, . . . , SF2N), responsive to optical input signals, for providing space and frequency position converter signals; and

a final stage having at least one time position converter means (STF1, . . . , STFN), each responsive to the space and frequency position converter signals, for providing time position converter output signals.

5,369,515

NODE FOR LOOP-TYPE OPTICAL LAN AND A LOOP-TYPE OPTICAL LAN USING THE SAME

Masao Majima, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

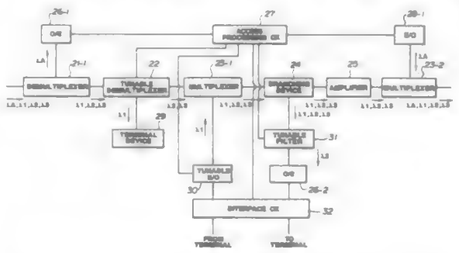
Filed Nov. 19, 1992, Ser. No. 979,076
Claims priority, application Japan, Nov. 25, 1991, 3-335759
Int. Cl.[5] H04J *14/00*
U.S. Cl. 359—125 **14 Claims**

1. A node for a loop type optical LAN using wavelength division multiplexing, said node comprising:

light source means for transmitting light including a signal having a wavelength to a loop of the optical LAN;

an optical demultiplexer for selecting from the loop light having a same wavelength as the signal transmitted by said light source means; and

absorbing means for absorbing an entire amount of the signal transmitted by said light source means after the signal circulates the loop of the optical LAN once and



then is selected by said optical demultiplexer,

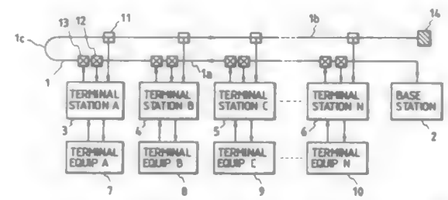
further comprising light branching means for partially branching light from the loop and a tunable filter for filtering a signal having a desired wavelength from the light branched by said branching means, wherein remaining light not branched by said branching means is transmitted to the loop.

5,369,516

OPTICAL COMMUNICATION NETWORK SYSTEM AND COMMUNICATION METHOD USING THE SAME

Mamoru Uchida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 686,378, Apr. 17, 1991, abandoned.
This application Sep. 7, 1993, Ser. No. 116,559
Claims priority, application Japan, Apr. 18, 1990, 2-102358; Jul. 6, 1990, 2-180195
Int. Cl.[5] H04B *10/20;* **H04J** *14/02*
U.S. Cl. 359—125 **63 Claims**



6. An optical communication network system comprising:

a base station for generating a plurality of beams having different wavelengths;

an optical transmission line for transmitting the plurality of beams emitted by said base station; and

a plurality of optical transmitters/receivers connected to said optical transmission line, each of said optical transmitter/receiver being provided with:

(a) an optical demultiplexing element for partially demultiplexing the plurality of beams from said optical transmission line;

(b) a first wavelength variable filter for selectively extracting a beam having an arbitrary wavelength from the beams demultiplexed by said optical demultiplexing element;

(c) a photosensor for detecting the beam extracted by said first wavelength variable filter;

(d) a second wavelength variable filter connected to said optical transmission line, for separating a beam having an arbitrary wavelength from other beams of the plurality of beams and extracting the separated beam from said optical transmission line;

(e) a signal source for generating a communication signal;

(f) an optical modulator, connected to said signal source, for modulating the beam separated by said second wavelength variable filter in accordance with the communication signal generated by said signal source; and

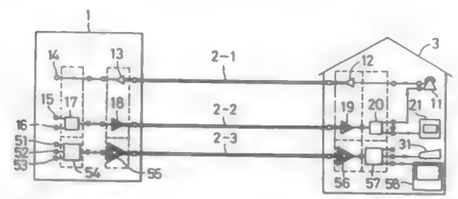
(h) an optical multiplexing element for multiplexing the beam modulated by said optical modulator to said optical transmission line.

5,369,517

OPTICAL SUBSCRIBER NETWORK TRANSMISSION SYSTEM

Yoshitaka Takasaki, Tokorozawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 512,628, Apr. 19, 1990, Pat. No. 5,175,639, which is a continuation-in-part of Ser. No. 123,463, Nov. 20, 1987, abandoned. This application Dec. 13, 1991, Ser. No. 806,386
Claims priority, application Japan, Nov. 21, 1986, 61-276557
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—161 **3 Claims**



1. An optical network system comprising:

a center having a first transmitter, a second transmitter, a first receiver, a second receiver, and at least one auxiliary line termination point;

a first subscriber and a second subscriber, each having a transmitter, a receiver and at least one auxiliary line termination point;

a first downstream optical transmission line for transmitting information from said first center transmitter to said first subscriber receiver;

a second downstream optical transmission line for transmitting information from said second center transmitter to said second subscriber receiver; p1 a first upstream optical transmission line for transmitting information from said first subscriber transmitter to said first center receiver;

a second upstream optical transmission line for transmitting information from said second subscriber transmitter to said second center receiver; and

means for replacing the transmitter and receiver connected to any from among said first downstream optical transmission line, said second downstream optical transmission line, said first upstream optical transmission line and said second upstream optical transmission line while maintaining substantially continuous transmission of information between said center and any of said subscribers, comprising:

a terminal box which is remote from said center, said first subscriber and said second subscriber, and having a plurality of auxiliary line termination points;

a first auxiliary optical transmission line extending from one of said center auxiliary line termination points to one of said terminal box termination points, said one center auxiliary line termination point having an open termination;

a second auxiliary optical transmission line extending from another one of said terminal box auxiliary line termination points to said first subscriber auxiliary line termination point, said first subscriber auxiliary line termination point having an open termination;

a third auxiliary optical transmission line extending from yet another one of said terminal box auxiliary line termination points to said second subscriber auxiliary line termination point, said second subscriber auxiliary line termination point having an open termination;

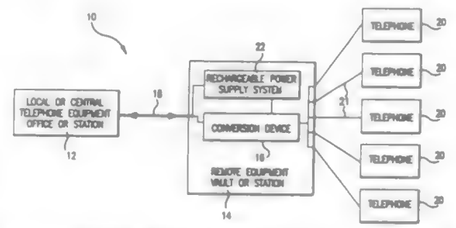
means for selectively connecting said one terminal box auxiliary line termination point to any from among said another one terminal box auxiliary line termination point and said yet another one terminal box auxiliary line termination point to provide a temporary auxiliary transmission line with open termination at both ends.

5,369,518

OPTICAL COMMUNICATION SYSTEM AND METHOD ELECTRICAL POWER TRANSMISSION FOR THEREOF

Mohd Aslami, Sturbridge, and Ronald L. Lavallee, Southbridge, both of Mass., assignors to Automated Light Technologies, Inc., Tolland, Conn.

Filed Dec. 18, 1992, Ser. No. 993,257
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—171 **19 Claims**



10. An electrical power transmission system for providing electrical power to an optical communication system between a local station and a remote station comprising:

a fiber optical cable having an electrical conductor or electrically conductive sheath connected to said local station and said remote station for transmitting optical signal;

a power source located at said local station and electrically connected to earth ground at said local station and to said electrical conductor or sheath;

a power supply means located at said remote station and electrically connected to said electrical conductor or sheath and to the earth ground at said remote station,

wherein said power supply means receives electrical power from said power source located at said local station via said conductor or sheath and the earth ground, the earth ground serving as a return path, and wherein said power supply means provides electrical power for an interface device provided at said remote station.

5,369,519

ALL-OPTICAL TIMING RESTORATION

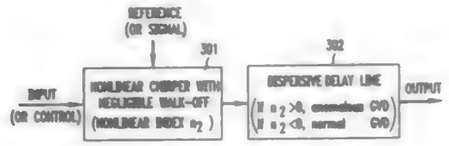
Mohammed N. Islam, Hazlet, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 679,389, Apr. 2, 1991, Pat. No. 5,224,194.
This application Feb. 5, 1993, Ser. No. 14,032
The portion of the term of this patent subsequent to Jun. 29, 2010, has been disclaimed.
Int. Cl.[5] H04B *10/12*
U.S. Cl. 359—173 **4 Claims**

1. All-optical apparatus for regenerating the shape, amplitude and timing of a series of soliton pulses in an optical communication system, said apparatus comprising

means including an optical amplifier for regenerating the shape and amplitude of said series of essentially orthogonally polarized soliton pulses; and

means including a nonlinear material with negligible walk-off and a dispersive delay line, for altering the timing of



said soliton pulses in accordance with a series of reference pulses.

5,369,520

OPTICAL REGENERATION CIRCUIT

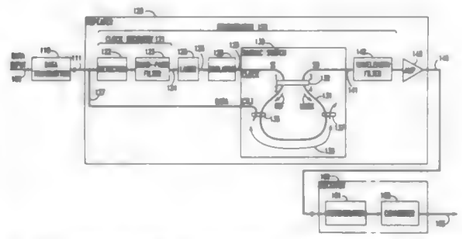
Hercules Avramopoulos, Red Bank, and Norman A. Whitaker, Jr., Atlantic Highlands, both of N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 22, 1992, Ser. No. 887,034

The portion of the term of this patent subsequent to May 3, 2011, has been disclaimed.

Int. Cl.[5] H04B *10/02;* **H04J** *14/08*

U.S. Cl. 359—176 **18 Claims**



1. An optical signal regenerator arrangement comprising means for recovering an optical clock signal from a received data signal;

means for injecting said clock signal into a controllable propagation speed medium, to develop a mark signal that travels in said medium in one direction and a reference signal that travels in said medium in the opposite direction;

means for controllably injecting said received data signal into said medium, that travels through said medium in the direction of said mark signal, the timing of said data signal in relation to said mark signal controlled so that the data signal and the mark signal traverse each other while the mark signal is traveling through said medium; and

means for combining said reference signal after its travel through said medium and said mark signal after its travel through said medium to generate a reconstructed data signal from said received data signal.

5,369,521

SCANNING TYPE PROJECTOR

Hisakazu Yoshino, Tochigi, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed Nov. 10, 1992, Ser. No. 974,272

Claims priority, application Japan, Nov. 11, 1991, 3-294525

Int. Cl.[5] G02B *26/08*

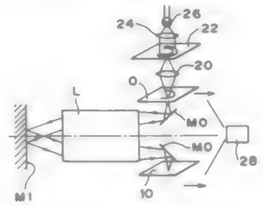
U.S. Cl. 359—196 **6 Claims**

1. A scanning type projector which projects an object to be projected by scanning the object with a predetermined scanning width having a center line, the projector comprising:

illuminating means for illuminating the object to be projected through a circular arc region having a center line on the center line of the scanning width;

projecting optical system means for correcting an aberration of the circular arc region and for forming an image of the illuminated object within an image plane;

a light receiving member located at the image plane; and



driving unit means for moving the object and the light receiving member relative to the illuminating means and the projecting optical system means.

5,369,522

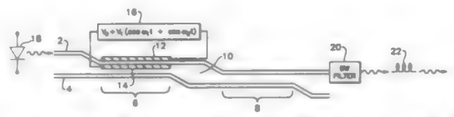
MODULATION SYSTEM AND METHOD WITH THIRD ORDER INTERMODULATION DISTORTION REDUCTION

Gregory L. Tangonan, Oxnard, and Juan F. Lam, Agoura Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 668,284, Mar. 12, 1991, abandoned. This application Jun. 3, 1992, Ser. No. 892,842

Int. Cl.[5] G02F *1/313;* **H04B** *10/14*

U.S. Cl. 359—329 **20 Claims**



1. A system for modulating a first optical beam with an electrical signal having a bias voltage and two modulating frequencies, comprising:

a first waveguide having an input end,

means for inputting said first optical beam into the input end of said first waveguide,

means for modulating said first optical beam with said electrical signal, the modulated beam being subject to third order intermodulation distortion (IMD),

a second waveguide having an input end,

a first optical coupler coupling said first and second waveguides to induce in said second waveguide a second optical beam without said second waveguide receiving an optical beam at its input end, and

a second optical coupler optically downstream from said first optical coupler coupling said second and first waveguides to induce back into said first waveguide a component of said second optical beam,

said first and second waveguides extending directly between said first and second optical couplers so that any phase differential between the optical couplers so that any phase differential between the optical signals in said waveguides at the output of said first optical coupler is substantially preserved at the input to said second optical coupler,

each of said optical couplers being characterized by respective coupling coefficients and lengths, and said waveguides being characterized by respective optical propagation coefficients within said optical couplers, wherein the coupling coefficients, lengths and waveguide propagation differentials for said first and second optical couplers, and the bias voltage of said electrical modulating signal, are selected to substantially reduce third order IMD in said optical beams.

5,369,523

OPTICAL AMPLIFIER AND LASER

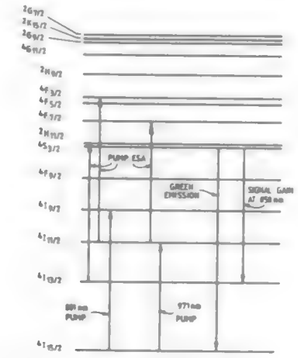
Colin A. Millar; Michael C. Brierley, and Timothy J. Whitley, all of Suffolk, England, assignors to British Telecommunications public limited company, London, England

Continuation of Ser. No. 822,287, Jan. 17, 1992, abandoned. This application May 11, 1993, Ser. No. 59,412

Claims priority, application United Kingdom, Jul. 9, 1991, 9114730.6

Int. Cl.[5] H01S *3/30;* **G02B** *6/26;* **G03C** *13/04*

U.S. Cl. 359—341 **4 Claims**



1. A non-resonant optical amplifier for room temperature operation in the absence of cryogenic cooling, and having gain at a wavelength of 546 nm, the amplifier comprising:

a fluorozirconate glass waveguide doped with erbium ions to level of between 0.01 and 1.0 weight percent; and

optical pump means to provide an optical pump signal having either a wavelength of about 971 nm or a wavelength in the range of 791 nm to 812 nm, the optical pump means being arranged in operation to launch the pump signal into said waveguide thereby exciting said erbium ions into the $^4S_{3/2}$ energy level by excited state absorption of said pump signal.

5,369,524

OPTICAL FIBER MONOFREQUENCY POWER SOURCE

Jean-Paul Pocholle, Arpajon/La Norville; Michel Papuchon, Villebon Palaiseau, and Claude Puech, Bailainvillers, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Sep. 18, 1992, Ser. No. 946,592

Claims priority, application France, Sep. 24, 1991, 91 11742

Int. Cl.[5] H01S *3/14, 3/09*

U.S. Cl. 359—345 **7 Claims**



1. A coherent light power source, comprising:

a pumping laser for emitting first and second beams of light at a first wavelength;

a coherent signal source for emitting a third beam of light at a second wavelength; and

an amplifying optical fiber for receiving said first beam of light emitted by said pumping laser and said third beam of light emitted by said coherent signal source, wherein said second beam of light at said first wavelength is received by said coherent signal source and said third beam of light at said second wavelength is received by said amplifying optical fiber through said pumping laser which is transparent to said third beam of light.

5,369,525

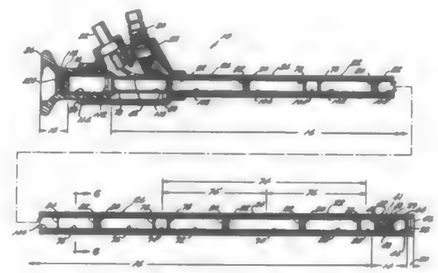
RING LENS ASSEMBLY FOR AN OPTICAL VIEWING DEVICE

John Bala, Pomfret, Conn., and Xiaohui Ning, Northboro, Mass., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 2, 1992, Ser. No. 985,686

Int. Cl.[5] G02B *17/00*

U.S. Cl. 359—435 **27 Claims**



1. An optical viewing device comprising:

an outer tubular housing having opposed first and second ends;

an inner tubular housing disposed within said outer tubular housing and having opposed first and second ends, said inner tubular housing having an eye piece section adjacent said first end thereof, a relay lens section adjacent said eye piece section and an objective lens section adjacent said relay lens section wherein said relay lens section is disposed between said eye piece section and said objective lens section;

illuminating means disposed within an annular space defined between said inner and outer tubular housings, said illuminating means defining a predetermined field of illumination; and

a ring lens disposed at a light emitting end of said illuminating means and in general alignment therewith, said ring lens having at least one lens surface to increase the predetermined field of illumination defined by said illuminating means.

5,369,526

ANTIBOW DEVICE FOR LASERS

Tom J. Chiang, Berwyn, Pa., assignor to Holo Image Technology, Inc., Langhorne, Pa.

Filed May 14, 1992, Ser. No. 882,879

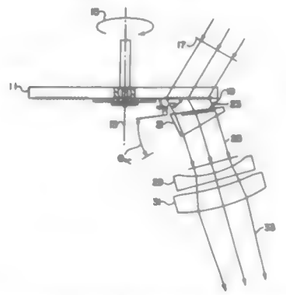
Int. Cl.[5] G02B *5/04, 5/32, 26/08;* **G06K** *7/10*

U.S. Cl. 359—615 **7 Claims**

1. In a system of hologon diffraction of a laser beam to produce a scan line, the device comprising:

a prism having a grating on at least one scan line intersecting surface and positioned at a predetermined incident angle with respect to said scan line after hologon diffraction of said laser beam, said prism adapted to refract said scan line and said grating adapted to diffract said scan line so that

the refraction of said scan line by said prism is equal and opposite to diffraction of said scan line by said grating to



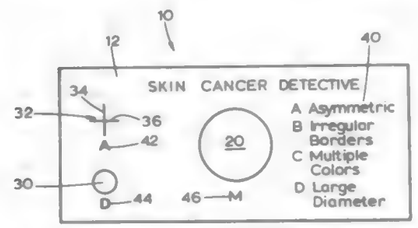
thereby produce a scan line having bow of less that 1/600 of the bow of said scan line without said prism.

5,369,527

MELANOMA DETECTION DEVICE

Robert McCracken, P.O.Box 287, Sand Lake, N.Y. 12153

Filed Dec. 3, 1992, Ser. No. 984,968
Int. Cl.[5] G02B *27/02*
U.S. Cl. 359—805 16 Claims



1. A disease detection apparatus, comprising:
means for magnifying an area of skin; and
means for detecting a visible skin disease indication;
wherein the magnifying means and the detecting means are integrally formed on a sheet made of a flexible material, wherein the detecting means includes first means for observing the diameter of a skin lesion and second means for observing a symmetrical property of a skin lesion and wherein the first observing means is circular and the second observing means is cross-shaped.

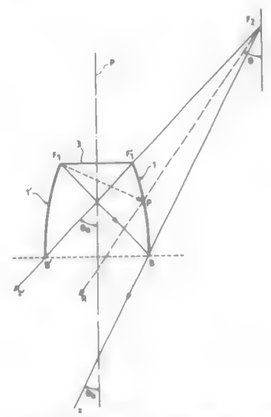
5,369,528

PLANE OR CYLINDRICAL REFLECTOR FOR SOURCE OF RADIATION

Ari Rabl, Bures-sur-Yvette, France, and Jeff M. Gordon, Sede Boker, Israel, assignors to Association pour la Recherche et le Developpement des Methodes et Processus Industriels - A.R.-M.I.N.E.S., Paris, France

Filed Oct. 22, 1992, Ser. No. 964,829
Claims priority, application France, Oct. 25, 1991, 91 13226
Int. Cl.[5] G02B *5/10*; F21V *7/00*
U.S. Cl. 359—855 20 Claims

1. A plurality of reflectors for providing substantially uniform radiation over a target surface, comprising:
said plurality of reflectors positioned adjacent each other, each of said plurality of reflectors comprising:
a source of radiation;
two reflector elements for reflecting rays of said source of radiation on said target surface symmetrically positioned with respect to a plane of symmetry passing through a longitudinal axis of said two reflector elements;
each reflector element being composed of at least one curved part comprising generatrices which are parallel to said longitudinal axis, said curved part comprising a cross-section of a curve having respective ends, so that rays reflected by said respective ends comprise two end



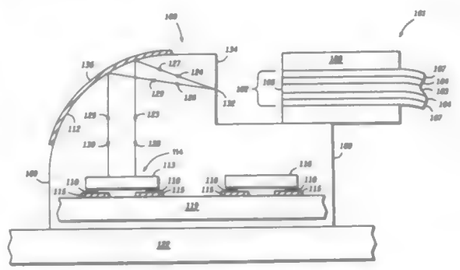
rays forming respective angles with said plane of symmetry of said two reflector elements, and all rays reflected on said reflector elements are included between said respective angles; and
any ray tangential to said source of radiation is reflected on passing through a focus of said curve, said focus being positioned upstream of the target surface.

5,369,529

REFLECTIVE OPTOELECTRONIC INTERFACE DEVICE AND METHOD OF MAKING

Shun-Meen Kuo, Chandler; Christopher K. Y. Chun, Mesa, and Michael S. Lebby, Apache Junction, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1993, Ser. No. 95,452
Int. Cl.[5] G02B *27/00, 6/32*
U.S. Cl. 359—858 20 Claims



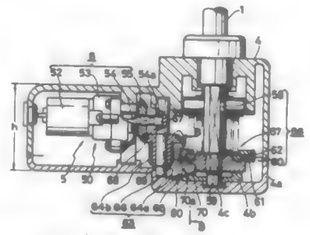
1. A reflective optoelectronic interface comprising:
a photonic device having a working portion, the photonic device including a contact electrically coupled to an electrical tracing of an interconnect substrate; and
a molded optical portion that encapsulates the photonic device, the molded optical portion forming a curved reflective surface and a light input/output surface molded therein, the curved reflective surface being positioned to direct light between the input/output surface and the photonic device.

5,369,530

STAY HOUSABLE TYPE MOTOR DRIVEN MIRROR

Yoshinori Yamauchi, Isehara; Masami Yamamoto, Machida, and Masao Enomoto, Hadano, all of Japan, assignors to Ichikoh Industries Ltd., Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 774,983
Claims priority, application Japan, Oct. 24, 1990, 2-110475[U]; Oct. 24, 1990, 2-110476[U]; Apr. 18, 1991, 3-034636[U]
Int. Cl.[5] G02B *7/182*
U.S. Cl. 359—874 9 Claims



1. A stay housable type motor driven mirror comprising:
a stay provided with a mirror body attached to a top end of said stay,
a support shaft rotatably held in a bracket case and rotated by a drive apparatus,
a drive gear rotatably driven by said drive apparatus,
a follower gear unit rotated by the drive gear, rotating said stay, and including a clutch mechanism for providing a damping function thereto when the mirror body is given an outside force, and
a spring means for holdingly pressing the follower gear unit onto the clutch mechanism,
wherein said follower gear unit and the spring means are arranged at a driven side opposite to the drive apparatus in the bracket case, and
wherein said follower gear unit has
a clutch gear enraging with said drive gear idlingly mounted on a side of the support shaft,
a clutch holder fitted on the support shaft under the clutch gear in order to rotate said support shaft, and
a clutch mechanism provided with a concave face and a convex one of said concave and convex faces being formed on a lower face of the clutch gear, and the other of said concave and
convex faces being formed on an upper face of the clutch holder.

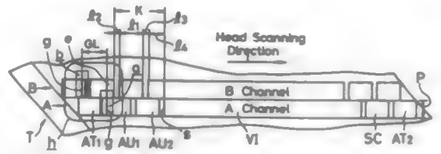
5,369,531

DIGITAL VIDEO SIGNAL RECORDING APPARATUS WITH LEADING AND TRAILING HEADS DISPLACED BY A DISTANCE LESS THAN THE DISTANCE BETWEEN THE ENDING EDGE OF AN AUXILIARY RECORDING AREA AND THE STARTING EDGE OF THE VIDEO SIGNAL RECORDING AREA

Yukio Kubota, and Yoichirou Senshu, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1992, Ser. No. 937,947
Claims priority, application Japan, Sep. 13, 1991, 3-235013
Int. Cl.[5] G11B *5/02*
U.S. Cl. 360—18 7 Claims

1. A digital video tape recorder comprising:
a rotary drum; and
a plurality of magnetic heads mounted on said rotary drum for recording video signals on a magnetic tape, said heads moving relative to said tape in a scanning direction to form successive slant tracks thereon while the tape is advanced, said heads comprising a leading head and a trailing head that simultaneously scan said tape, said leading head having a leading position in said scanning direction with respect to said trailing head, said leading and trailing heads each forming a respective track that includes, in sequence in said scanning direction, a first auxiliary recording area, a second auxiliary recording area and a video signal recording area in which said video signals are recorded; said heads being mounted on said rotary



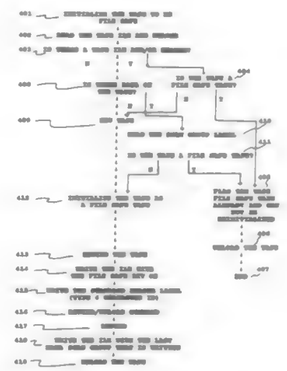
drum so that a given point of said leading head is displaced with respect to the same given point of said trailing head in said scanning direction by a distance that is less than a distance in said scanning direction between an ending edge of said first auxiliary recording area of said track formed by said trailing head and a starting edge of said video recording area of said track formed by said leading head so that when said leading and trailing heads scan the tape said heads do not reach similar recording areas simultaneously.

5,369,532

METHOD AND APPARATUS FOR MANAGING DATA ON REWRITABLE MEDIA TO DEFINE READ/WRITE OPERATIONAL STATUS

William C. Dodt, Broomfield; Jerry L. Douze, Arvada; Terry R. Gottehrer, Louisville; Ronald W. Korngiebel, Broomfield, and Donald F. McCarthy, Westminster, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 791,489, Nov. 12, 1991, abandoned. This application Jun. 9, 1992, Ser. No. 896,106
Int. Cl.[5] G11B *5/09, 15/04, 19/04*
U.S. Cl. 360—48 34 Claims



1. In a drive element that reads and writes data records received from a host computer on rewritable serial media, apparatus operationally independent of said host computer for maintaining administrative data on said rewritable serial media, comprising:
means for writing raid administrative data in a predefined

segment of said rewritable serial media, independent of said host computer including data indicative of a rewritable serial media read/write status;

means for writing media read/write mode defining data into said administrative data to indicate an operational mode required of said drive element to read/write data on said rewritable serial media; and

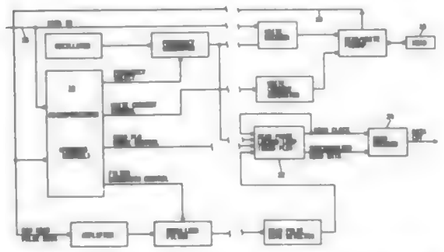
means for inserting media file safe status data into a header of each said data record written on to said rewritable serial media to indicate whether said rewritable serial media is write protected.

5,369,533

DATA STORAGE DEVICE HAVING DIFFERENT STORAGE DENSITIES FOR DIFFERING TYPES OF DATA

Hal H. Ottesen, and Gregory G. Floryance, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1992, Ser. No. 998,278
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—51 **12 Claims**



1. A data storage device which stores data serially along a track on a storage media comprising

transducer means for writing data on and reading data from said storage media;

read/write control logic means for sending data to and receiving data from said transducer means;

said control logic means including means for reading and writing data at multiple, selectable recording frequencies at respectively varying linear densities in said track on said storage media, said control logic means further including:

write frequency determination means for determining an appropriate recording frequency for data to be written received by said control logic means from at least one frequency indicator associated with said data; and

read frequency signal determination means for determining an appropriate frequency for reading data recorded by said storage device.

5,369,534

RECORDING AND REPRODUCING APPARATUS INCLUDING RECORDING/REPRODUCING HEAD SWITCHABLY CONNECTED TO COMMON ROTARY TRANSFORMER

Hyeong-deog Han, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Nov. 1, 1993, Ser. No. 144,320
Claims priority, application Rep. of Korea, Oct. 31, 1992, 92 21418
Int. Cl.[5] G11B *15/44, 5/09*
U.S. Cl. 360—64 **15 Claims**

1. An apparatus for recording and reproducing an information signal to and from magnetic tape, comprising:

a rotatable rotating assembly;

a fixed assembly;

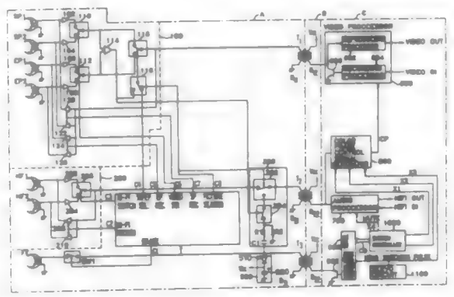
a plurality of recording and reproducing heads mounted on said rotating assembly for recording and reproducing the information signal to and from said magnetic tape;

an erasing head mounted on said rotating assembly for erasing the information signal recorded to said magnetic tape;

a first rotary transformer and a second rotary transformer whose respective primary windings are mounted on said rotating assembly and whose respective secondary windings are mounted on said fixed assembly;

a control signal generator mounted on said rotating assembly and connected to the primary winding of said second rotary transformer for generating switching control signals;

a first signal processor mounted on said rotating assembly and connected between said recording and reproducing heads and the primary winding of said first rotary transformer for reproducing an information signal in response to said switching control signals;



a switching circuit connected between said erasing head and said primary winding of said second rotary transformer, said switching circuit being switch-controlled in response to said switching control signals;

a recording and reproducing processor connected to the secondary winding of said first rotary transformer for processing the information signal;

a modulation signal generator connected to the secondary winding of said second rotary transformer for modulating an erasing signal responsive to a control signal to produce a modulated signal supplied to the secondary winding of said second rotary transformer; and

a power supply mounted on said rotating assembly and connected to the primary winding of said second rotary transformer for supplying operating power voltage to said control signal generator.

5,369,535

FIXED BLOCK ARCHITECTURE DISK FILE WITH IMPROVED POSITION IDENTIFICATION AND ERROR HANDLING

Steven R. Hetzler, Sunnyvale, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1992, Ser. No. 858,390
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—78.14 **15 Claims**

1. A data recording disk file comprising:

a rotatable data storage disk, including

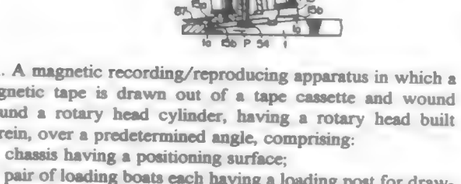
a first track having a plurality of first data regions, a plurality of first position identification fields, and a plurality of first error handling fields for handling errors in said first position identification fields,

a second track, positioned radially adjacent to said first track, having a plurality of second data regions, a plurality of second position identification fields, and a plurality of second error handling fields for handling errors in said second position identification fields,

wherein said first position identification fields and said second position identification fields are located at nonoverlapping circumferential positions and overlapping radial positions, and said first error handling fields and said second error handling fields are located at nonoverlapping circumferential positions and overlapping radial positions;

a motor for rotating said data storage disk;

an actuator arm positionable over said data storage disk;



SECTOR SERVO HEAD POSITIONING INFORMATION HAVING OFFSET ID FIELDS AND OFFSET EH FIELDS.

an actuator for positioning said actuator arm over said data storage disk;

a data recording head attached to said actuator arm, for reading or writing data on said data storage disk; and

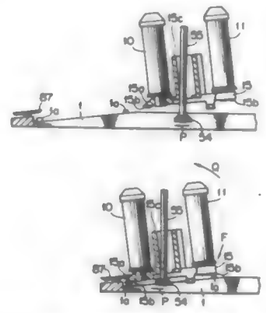
servo control means, coupled to said data recording head and said actuator for receiving head positioning information from said recording head and providing actuator control.

5,369,536

MAGNETIC RECORDING REPRODUCING APPARATUS WITH STOPPERS FOR LOADING BOATS

Akio Konishi; Yoshitomo Sakai, both of Hirakata; Yoshiyuki Saito, Kadoma, and Hideaki Yoshio, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,468
Claims priority, application Japan, Apr. 17, 1991, 3-085057; Apr. 17, 1991, 3-085058; Apr. 17, 1991, 3-085066
Int. Cl.[5] G11B *15/61*
U.S. Cl. 360—85 **7 Claims**



1. A magnetic recording/reproducing apparatus in which a magnetic tape is drawn out of a tape cassette and wound around a rotary head cylinder, having a rotary head built therein, over a predetermined angle, comprising:

a chassis having a positioning surface;

a pair of loading boats each having a loading post for drawing out said magnetic tape from said tape cassette, each of the loading boats having a V-shaped groove provided at an upper section of a front end and having a bottom surface which is provided with a reference surface, the reference surface being provided only on the bottom surface of each of the pair of loading boats;

a pair of loading guides for guiding said loading boats along the circumference of said rotary head cylinder to respective positions where an operation of drawing out said magnetic tape finishes;

drive means for moving said loading boats along respective ones of said loading guides;

stoppers engaging with the respective V-shaped grooves of said loading boats and stopping said loading boats at said positions where the tape drawing out operation finishes; and

biasing means for pushing each of said loading boats toward a direction of drawing out said magnetic tape after said V-shaped grooves have engaged with said stopper;

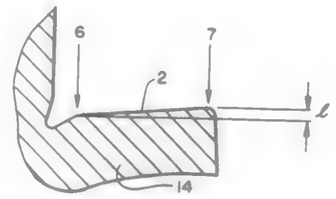
said reference surface of each of said loading boats being urged against said positioning surface by a reaction force applied to said V-shaped groove by said stopper, thereby determining an inclination of each of said loading boats and its loading post.

5,369,537

DISK DRIVING DEVICE WITH IMPROVED DISK MOUNTING SURFACE

Shinji Kinoshita, and Yoshitaka Murayama, both of Komagane, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

Filed Jan. 7, 1993, Ser. No. 1,276
Claims priority, application Japan, Jan. 9, 1992, 4-004062[U]
Int. Cl.[5] G11B *17/028*
U.S. Cl. 360—99.12 **8 Claims**



1. A rigid disk driving device comprising:

a hub on which a rigid data recording disk is mounted, said hub being rotated together with said disk;

said hub having a disk mounting surface on which said disk is mounted so as to be in surface-to-surface contact with the mounting surface;

said disk mounting surface having an inner rim portion and an outer rim portion;

said disk mounting surface being inclined upwardly and radially outwardly from the axis of rotation of said hub towards the side of said hub where said disk is mounted so as to define an acute angle with said axis of rotation so that the outer rim portion is higher than the inner rim portion.

5,369,538

ROTARY DISK DRIVE ACTUATOR

Erik Moe, Huntington Beach; Greg H. Goble, Irvine, and Leland R. Krueger, Tustin, all of Calif., assignors to Mitsumi Electric Co., Ltd., Kanagawa, Japan

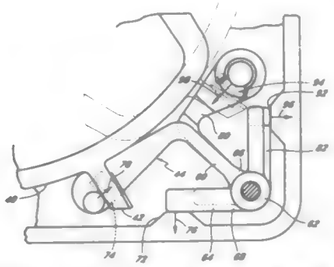
Filed Nov. 12, 1992, Ser. No. 975,386
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—106 **15 Claims**

1. A crash stop of a disk drive actuator assembly comprising:

a moving member mounted on said actuator assembly so as to traverse a path;

a first stopping member having a stopping element disposed in said path comprising a first preloaded spring, the first preloaded spring comprising a first flexing portion and a first restrained portion, each portion having respective first ends, the first flexing portion and the first restrained portion joined at their respective first ends at a hub; the first flexing portion comprising a first held member disposed away from the first flexing portion first end;

a housing comprising a hub-receiving pin, a first wall and a second wall, the first wall disposed to prevent the first restrained portion from moving in a first direction and the second wall disposed to prevent the first held member from moving in a second direction, the positioning of said hub on said pin and prevention of motion of the first



restrained portion and the first held member, simultaneously, causing preloading of the first preloaded spring; and

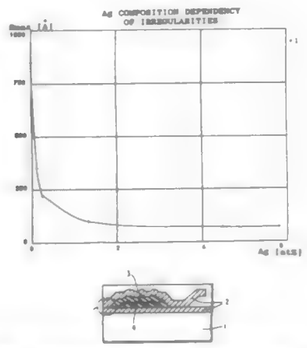
wherein the moving member traversing said path impacts the first stopping member and the first stopping member acts to stop the moving member over a distance.

5,369,539

THIN FILM MAGNETIC HEAD HAVING IMPROVED COIL CONDUCTOR LAYER

Osamu Shimizu, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1991, Ser. No. 780,937
Claims priority, application Japan, Oct. 25, 1990, 2-285925
Int. Cl.[5] G11B *5/147*
U.S. Cl. 360—126 **6 Claims**



1. A thin film magnetic head in which at least a magnetic layer, an insulating layer, and a conductor layer constituting a coil are formed and patterned to a predetermined shape on a substrate, wherein said conductor layer consists essentially of a Cu—Ag alloy, said alloy having a compositional formula of

$$Cu_{100-x}Ag_x$$

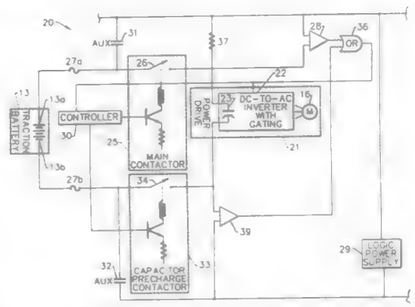
where X is 1 to 6 in terms of atomic percent.

5,369,540

ELECTRIC VEHICLE DRIVE TRAIN WITH CONTACTOR PROTECTION

Charles E. Konrad, and Ralph A. Benson, both of Roanoke, Va., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1993, Ser. No. 16,777
Int. Cl.[5] H02H *7/00*
U.S. Cl. 361—6 **27 Claims**



1. A drive train for an electric vehicle, said drive train comprising:

a traction battery;

power drive means connected to said traction battery for driving one or more wheels of the vehicle, said power drive means comprising an electric motor, gating means for permitting control of power delivered to said electric motor from said traction battery, said gating means comprising a substantially capacitive input filter;

a main contactor having a pair of contacts electrically connected between said traction battery and said capacitive input filter of said power drive means, said contacts being movable between a closed position and an open position for respectively connecting and disconnecting said traction battery and said power drive means;

precharging means connected to said traction battery and said capacitive input filter for charging said capacitive input filter when said contacts are in the open position; and

control means connected to said main contactor for operating said main contactor to move said contacts to one of the open position and the closed position, said control means comprising precharging control means cooperating with said precharging means for charging said capacitive input filter prior to moving said contacts to the closed position from the open position, voltage detecting means for detecting a voltage across said contacts, and means responsive to said voltage detecting means for operating said contactor to prevent said contacts from being moved to the closed position from the open position responsive to a voltage across said contacts exceeding a predetermined value.

5,369,541

THREE-PHASE UNBALANCE AND VOLTAGE MONITOR CIRCUIT

Henno Normet, Tavares, Fla., assignor to Diversified Electronics, Inc., Evansville, Ind.

Filed Aug. 13, 1992, Ser. No. 928,785
Int. Cl.[5] H02H *3/24*
U.S. Cl. 361—85 **19 Claims**

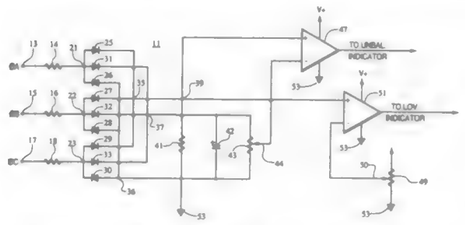
1. Multiphase electrical system phase-voltage monitoring apparatus comprising:

at least three input terminals for connection of conductors for at least three respective phases of an electrical system to be monitored;

respective input resistors of substantially equal resistance each having a one end connected to a respective one of said at least three input terminals;

a multiphase full-wavebridge rectifier circuit having at least three inputs, said inputs being connected to ends of respective ones of said input resistors opposite said at least three input terminals, said bridge rectifier circuit having an output voltage substantially proportional to the absolute value of the instantaneous voltage difference between the highest voltage of any of said terminals and the lowest voltage of any of said terminals;

means for producing a reference voltage, which voltage is



greater than one-half but less than seven-eighths of the normal maximum output voltage of said bridge rectifier circuit; and

means for comparing said output voltage and said reference voltage and producing a fault signal when the instantaneous value of said output voltage falls below the value of said reference voltage;

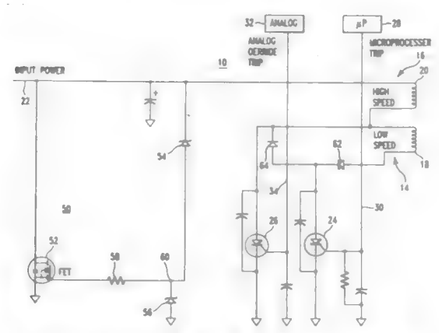
whereby a phase unbalance condition is analyzed by comparison of bridge rectifier fluctuating D. C. instantaneous voltage minimums with a voltage reference equal to a predetermined fraction of normal maximum output peak voltage of the bridge rectifier.

5,369,542

DUAL TRIP CIRCUIT FOR CIRCUIT BREAKER

David A. Leone, Lawrenceville, and William A. King, Lithonia, both of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Mar. 6, 1992, Ser. No. 848,669
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—94 **16 Claims**



1. A circuit breaker trip circuit comprising:

first trip means for tripping a circuit breaker within a first reaction time upon detection of a first current level being carried by the circuit breaker; and

second trip means for tripping the circuit breaker within a second reaction time which is quicker than the first reaction time, upon detection of a second current level being carried by the circuit breaker, wherein the second current level is greater than the first current level and wherein said first trip means has a first conductive coil, having a first inductance, for carrying a first coil actuation current upon detection of the first current level; and

said second trip means has a second conductive coil having a second inductance less than the first inductance, for carrying a second coil actuation current upon detection of the second current level;

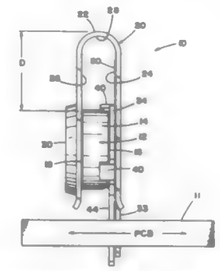
and wherein both the first and second conductive coils form electromagnets within an electromagnetic solenoid.

5,369,543

THYRISTOR FAIL-SAFE DEVICE

John S. Bonnesen, Eden Prairie, and James D. Dewey, Plymouth, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Filed Aug. 13, 1992, Ser. No. 930,152
Int. Cl.[5] H02H *1/04*
U.S. Cl. 361—117 **9 Claims**



1. A fail-safe device for use with a thyristor having a main body disposed between first and second electrically conductive end plates, said thyristor characterized by said thyristor having a predetermined elevated temperature in response to a sustained over-voltage condition, said device comprising:

(a) a spring body formed of electrically conducted material and having a first contact surface and an opposing second-contact surface resiliently biased toward said first contact surface;

(b) said thyristor disposed between said first and second contact surfaces with said second end plate in electrical contact with said second contact surface and with said first contact surface biased toward said first end plate;

(c) a first electrically conductive lead connected to said spring body for connecting said spring body to an electrical ground;

(d) an electrically conductive conductor plate disposed between said first contact surface and said first end plate and in electrical communication with said first end plate;

(e) a second electrically conductive lead for electrically connecting said conductor plate to a circuit to be protected;

(f) said second end plate and said second contact surface defining a first conductive pair of contacts, said conductor plate and said first contact surface defining a second conductive pair of contacts and said conductor plate and said first contact surface defining a third conductive pair of contacts, each of said pairs being in general linear alignment;

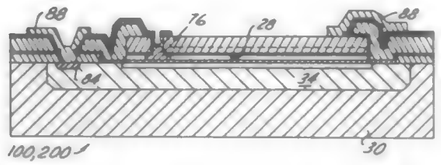
(g) a dielectric spacer disposed between contacts of at least one of said first, second and third pairs, said spacer formed of material selected to deform in response to said elevated temperature and permit movement of said contacts of said at least one pair toward electrical contact.

5,369,544

SILICON-ON-INSULATOR CAPACITIVE SURFACE MICROMACHINED ABSOLUTE PRESSURE SENSOR

Carlos H. Mastrangelo, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 5, 1993, Ser. No. 43,044
Int. Cl.[5] H01G 7/00
U.S. Cl. 361—283.4 **16 Claims**



1. An absolute pressure capacitive sensor comprising:
a substrate base of semiconductor material including a first well and a diffused conductive area defined therein for functioning as a first electrode,
a flexible diaphragm comprising a single crystal silicon layer grown on a sacrificial layer of predetermined thickness over said base so as to be generally contiguous with said first electrode, said diaphragm including a flexible diffused conductive area therein for cooperating as a second electrode with said first electrode for forming therebetween a capacitor having a capacitance variable responsive to the relative displacement of said diaphragm,
an electrically insulative support, coupled to said base and said diaphragm, for positioning and sealing a peripheral section of said diaphragm above said base by said predetermined thickness after said sacrificial layer is removed for forming a sealed diaphragm cavity therebetween,
a bore communicating through said diaphragm and into said diaphragm cavity, and
a plug for being coupled within said bore so as to seal said diaphragm cavity such that a predetermined pressurized stress is induced on said diaphragm by the pressure within said diaphragm cavity, whereby a change in the ambient pressure will cause a deflection of said diaphragm and a corresponding change in the capacitance defined between said first and second electrodes.

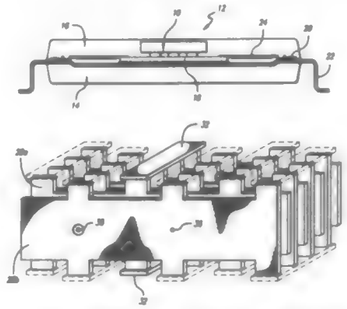
5,369,545

DE-COUPLING CAPACITOR ON THE TOP OF THE SILICON DIE BY EUTECTIC FLIP BONDING

Bidyut K. Bhattacharyya; Debendra Mallik, both of Beaverton, Oreg., and You Y. Yu, Phoenix, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1993, Ser. No. 85,557
Int. Cl.[5] H01G 1/03
U.S. Cl. 361—306.2 **4 Claims**

1. An electronic package, comprising:
a semiconductive die that has a plurality of first gold bumps located along a first edge of said die and a plurality of second gold bumps located on an inner area of said die; and,
a capacitor module attached to said second gold bumps, wherein said capacitor module includes a plurality of conductive power planes separated from a plurality of conductive ground planes by layers of dielectric material constructed from dielectric tape, said conductive power planes having tabs that extend in a first direction and an opposite second direction, said powers tabs extending in said first direction being coupled by first conductive power areas and said power tabs extending in said second direction being coupled by second conductive power areas, said conductive ground planes also having tabs that extend in a first direction and an opposite second direction, said ground tabs extending in said first direction being coupled by first conductive ground areas and said around tabs extending in said second direction being coupled by second conductive around areas, said conductive



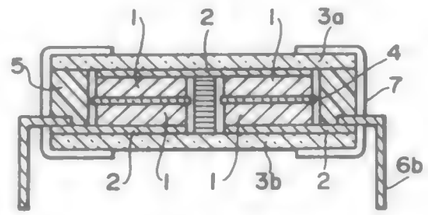
power planes being further coupled together by a plurality of power vias, and said conductive ground planes being further coupled together by a plurality of around vias.

5,369,546

ELECTRIC DOUBLE LAYER CAPACITOR AND METHOD OF MANUFACTURING THE SAME

Takashi Saito; Yukari Shimizu, and Junji Tabuchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 25, 1993, Ser. No. 22,314
Claims priority, application Japan, Feb. 26, 1992, 4-038922
Int. Cl.[5] H01G 9/00
U.S. Cl. 361—502 **15 Claims**



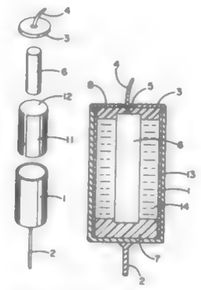
10. An electric double layer capacitor comprising:
first and second electrically insulating substrates each having a first surface, the first surface of the first electrically insulating substrate being disposed opposed to the first surface of the second electrically insulating substrate, each electrically insulating substrate including a material selected from a group of alumina and aluminium nitride;
a plurality of first conductive layers printed on the first surface of the first electrically insulating substrate, each of the first conductive layers including a material selected from a group of Au, Pt, carbon, TiN, and TiC;
a plurality of second conductive layers printed on the first surface of the second electrically insulating substrate, each of the first conductive layers including a material selected from a group of Au, Pt, carbon, TiN, and TiC;
a plurality of first polarizable electrodes respectively disposed on the plurality of first conductive layers by heat treating an activated carbon/polyacene composite material, wherein the activated carbon/polyacene composite material includes not less than 50% of activated carbon by weight;
a plurality of second polarizable electrodes respectively disposed on the plurality of second conductive layers opposed to the plurality of first polarizable electrodes by heat treating an activated carbon/polyacene composite material, wherein the activated carbon/polyacene composite material includes not less than 50% of activated carbon by weight; and
a plurality of ionic permeable porous separators respectively disposed between the plurality of first and second polarizable electrodes, wherein the plurality of first polarizable electrodes, the plurality of ionically permeable porous separators, and the plurality of second polarizable electrodes are respectively connected in series forming a plurality of fundamental cells, the plurality of fundamental cells being connected in series by the plurality of first and second conductive layers.

5,369,547

CAPACITOR

David A. Evans, Seekonk, Mass., assignor to The Evans Findings Co., Ltd., East Providence, R.I.

Filed Mar. 22, 1993, Ser. No. 35,224
Int. Cl.[5] H01G 9/05
U.S. Cl. 361—516 **40 Claims**



1. A capacitor comprising:
a container having an inside surface;
a cathode comprising a porous coating including an oxide of a metal selected from the group consisting of ruthenium, iridium, nickel, rhodium, platinum, palladium, and osmium disposed on the inside surface of the container;
an anode spaced from the porous coating and including a metal selected from the group consisting of tantalum, aluminum, niobium, zirconium, and titanium; and
an electrolyte in contact with the porous coating and the anode, the container containing the anode and the electrolyte.

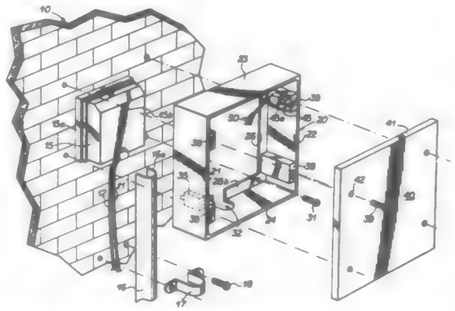
5,369,548

TAMPER PROTECTOR ENCLOSURE FOR DISTRIBUTION BOX AND ASSOCIATED WIRING

Billy O. Combs, 1961 Mars Hill Rd., Watkinsville, Ga. 30677

Filed May 27, 1993, Ser. No. 68,521
Int. Cl.[5] H02B 1/04
U.S. Cl. 361—643 **15 Claims**

10. A tamper protector for protecting a distribution box mounted on a wall of a building from being tampered with, said tamper protector comprising:
(a) a hollow tubular body having an open rear end and an open front end; said body being so dimensional that it is capable of surrounding said distribution box;
(b) flanges protruding inwardly from edges of said body adjacent to said rear end;
(c) a coverplate for closing said front end;
(d) means for removably retaining said coverplate on said body;



(e) a switch within said body for detecting when said coverplate is removed from said body,

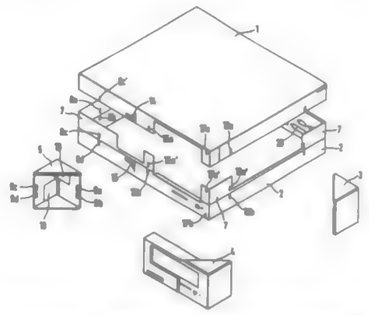
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5,369,549

CASING FOR A DEVICE

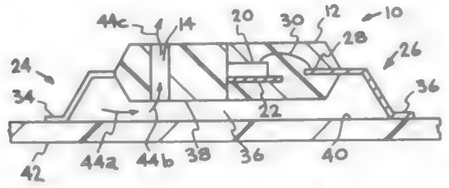
Siegfried Kopp, Renningen; Juergen Haeberle; Johannes Mahn, both of Boeblingen; Tim Schwegler, Pforzheim, and Malte Schlueter, Calw, all of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 23, 1993, Ser. No. 157,219
Claims priority, application Germany, Dec. 16, 1992, 9217174[U]
Int. Cl.[5] H05K 5/00
U.S. Cl. 361—679 **9 Claims**



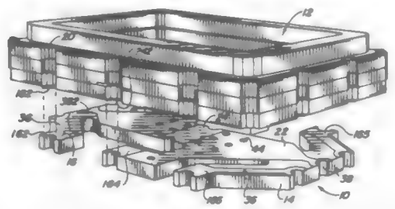
1. A casing for a device that includes functionally interconnected components, said device disposed within said casing, said casing comprising:
a first casing part and a second casing part, joined to create a three dimensional polygonal shape having at least a pair of opposed major surfaces joined by edges which intersect at corners that extend between said opposed major surfaces; and
a rigid corner part positioned at each of a plurality of said corners, each said rigid corner part having first surfaces which cover both edges which intersect at a corner, each of said first surfaces of each rigid corner part including integral locking elements that interact with and join to said first and second casing parts so as to enable each said rigid corner part to join together said first and second casing parts.

5,369,550
METHOD AND APPARATUS FOR COOLING A MOLDED-PLASTIC INTEGRATED-CIRCUIT PACKAGE
Young I. Kwon, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.
Filed Sep. 2, 1992, Ser. No. 939,216
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—690 23 Claims



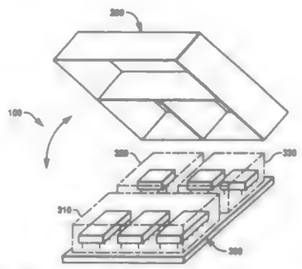
6. A molded plastic package assembly for an integrated circuit, comprising:
a lead frame having a die-attach paddle with an integrated-circuit die attached thereto, said die-attach paddle having a hole formed there through
a molded package body formed of a molded plastic material, said molded package body being formed around the lead frame and the attached integrated-circuit die and having a top and bottom surface, said package body having a through-hole formed there through, said through-hole extending from said top surface to said bottom surface of said molded package body, said through-hole formed in said package body aligned with said hole in said die-attach paddle to form a through-channel through said lead frame and said molded package body for passage of air for cooling of said integrated-circuit die attached to said die-attach paddle.

5,369,551
SURFACE MOUNT STRESS RELIEF INTERFACE SYSTEM AND METHOD
John G. Gore, Mt. Dora, and Neal J. Tolar, Longwood, both of Fla., assignors to Sawtek, Inc., Orlando, Fla.
Filed Nov. 8, 1993, Ser. No. 148,292
Int. Cl.[5] H05K 1/00
U.S. Cl. 361—767 19 Claims



1. An interface device useful with leadless electrical connections of components having different coefficients of thermal expansion, the device comprising:
an interface board having a first surface and an opposing second surface, the first surface dimensioned to receive a surface mount package having electrical contact pads, the second surface dimensioned to be affixed to a printed circuit board, the interface board having a central portion and a plurality of arm-like peninsular sections extending from the center section, the arm-like sections having proximal ends integrally affixed to the center section and distal ends displaced from the center sections, the interface board having a coefficient of thermal expansion proximate to that of the printed circuit board;
first leadless contact means affixed to the first surface, the first contact means arranged to make contact with surface mount package pads;
second contact means affixed to the second surface, the second contact means arranged to cooperate with printed circuit board pads, the second contact means located on the peninsular sections distal ends, the first contact means displaced from the second contact means by a distance sufficient to allow for movement between the first and second contact means resulting from temperature effects; and
means for electrical connection of the first and second contact means, the connection means integrally affixed to the interface board along a path from the first contact means to the second contact means, wherein the connection means penetrates the interface board for making electrical contact with the second contact means, the interface board containing the electrical connection means permitting flexure between the first and second connection means.

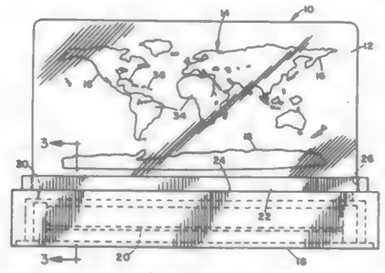
5,369,552
MULTI-CHIP MODULE WITH MULTIPLE COMPARTMENTS
Lawrence C. Barnes, and Gary R. Thornberg, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio
Filed Jul. 14, 1992, Ser. No. 913,100
Int. Cl.[5] H05K 9/00; H02B 1/00
U.S. Cl. 361—816 5 Claims



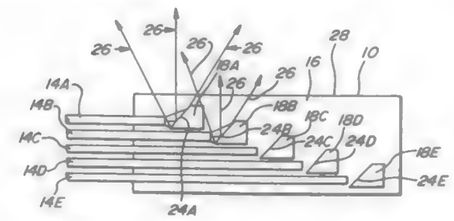
1. A multi-chip module, comprising
a substrate;
a plurality of circuit components arranged on said substrate in such a manner that circuit components requiring specific and similar operating environments are grouped together, each group of circuit components being located in a separate and discrete area of said substrate:
a cover having multiple chambers that align with said discrete areas on said substrate, said cover being secured to said substrate to define multiple compartments, each one of said compartments providing an operating environment independent of all other compartments.

5,369,553
ILLUMINATED PANEL DEVICE AND METHOD OF MANUFACTURE
Paul J. Trusiani, 420 Ravina St., La Jolla, Calif. 92037
Filed Apr. 24, 1992, Ser. No. 874,118
Int. Cl.[5] G09F 13/18
U.S. Cl. 362—31 5 Claims

1. An illuminated panel device, comprising:
a flat panel of light transmitting acrylic material having a lower edge and an upper edge and a thickness of at least ¼ inch;
the panel having a plurality of cut-out lines in a predetermined arrangement to form a selected pictorial representation;
a base housing having an upper wall with a seating means for receiving the lower edge of said panel to support said panel in an upright orientation;
a light source in said housing;
the upper wall having a completely transparent window extending along the lower edge of the panel for allowing light from the light source to be transmitted through the panel and to be reflected from the edges of said cut-out lines to thereby illuminate said pictorial representation so that it stands out from the remainder of the panel; and
the pictorial representation comprising a map having selected topographical features and the cut-out lines extend along the contours of the selected topographical features.

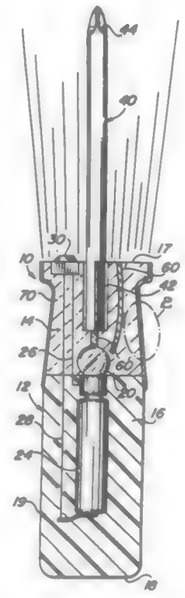


5,369,554
ILLUMINATOR UTILIZING MULTIPLE LIGHT GUIDES
Jeffrey A. Erion, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jan. 7, 1993, Ser. No. 1,608
Int. Cl.[5] F21V 8/00
U.S. Cl. 362—31 8 Claims



1. An illuminator for use with a remote light source comprising:
an array of light guides transmitting light from said remote light source to a plurality of reflective surfaces;
a block of transparent optical material, the ends of the light guides terminating therein, said block having shaped openings defining block/opening interfaces at spaced positions from the ends of said light guides;
said shaped openings are filled with air and the index of refraction between the optical material and air in said shaped openings results in total internal reflection of light at the block/opening interfaces thereby creating reflective surfaces; wherein light rays reflected by said reflective surfaces and said block includes a shaped outer surface to control said light rays for creating a specific beam pattern.

5,369,555
LIGHT EMITTING SCREWDRIVER
Paul C. McKain, 3300 NW. 97th Ave., Sunrise, Fla. 33351, and Mark Fritze, 558 Lakeside Cir., Sunrise, Fla. 33326
Filed Dec. 28, 1993, Ser. No. 174,257
Int. Cl.[5] B25B 23/18
U.S. Cl. 362—120 14 Claims



1. A tool comprising:
a handle including a solid core interior, a first end, an opposite second end, and a surrounding side wall surface, and further including an upper portion adjacent said first end and a lower portion adjacent said second end, said upper portion being formed of a light conductive material structured and disposed to transmit light therefrom,
a light emitting source encapsulated within said solid core interior of said handle and structured and disposed to direct light through said light conductive material and outwardly from said first end,
a power source encapsulated within said solid core interior of said handle for supplying electrical power to energize said light emitting source,
a shaft including a proximal end zone disposed and held within said upper portion of said handle, said shaft extending from said first end of said handle and terminating at a distal end in spaced relation to said handle,
conductor means encapsulated within said handle electrically connecting said power source with said light source and defining a circuit, and
switch means on said handle and externally accessible for operation thereof, said switch means being electrically connected to said conductor means and operable between an open circuit position to de-energize said light source and a closed circuit position, closing said circuit and supplying electrical power from said power source to said light source to energize said light source, causing light emitted therefrom to be transmitted through said light conductive material and out from said first end towards said distal end of said shaft.

5,369,556

RADIANT-ENERGY TOOL WITH FLEXIBLE EXTENSION

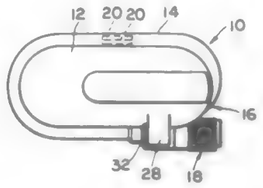
Noel E. Zeller, c/c Zelco Industries, Inc., 630 S. Columbus Ave., Mount Vernon, N.Y. 10551-4445

Continuation-in-part of Ser. No. 743,572, Aug. 9, 1991, Pat. No. Des. 337,839, and a continuation-in-part of Ser. No. 866,035, Apr. 9, 1992, abandoned, which is a continuation of Ser. No. 743,013, Aug. 9, 1991, Pat. No. 5,154,483. This application Jul. 26, 1993, Ser. No. 97,852

The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.

Int. Cl.[5] F21L *9/00*

U.S. Cl. 362—198 3 Claims



1. A radiant-energy tool comprising:

a housing adapted to accommodate a source of energy; and

an elongate extension having a proximal portion connected to the housing and a distal portion opposite the proximal protion and adapted to radiate energy;

the elongate extension conducting energy from the energy source to the distal portion to facilitate the radiation of energy from the distal portion;

the extension being formed in such a manner that it can be easily flexed by hand to assume a plurality of different shapes and can retain a given shape indefinitely;

whereby the housing and the distal portion can each be conveniently positioned and oriented independently of the other; and

wherein the housing is formed with a peripheral groove for accommodating the extension so that the extension can be wrapped around the housing for storage.

5,369,557

HIGH-POWER XENON-ARC SEARCHLIGHT WITH UNLIMITED VERTICAL BEAM DIRECTION

Kenneth R. Rooney, Reseda, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 19, 1992, Ser. No. 854,029

Int. Cl.[5] F21V *21/30*

U.S. Cl. 362—285 11 Claims

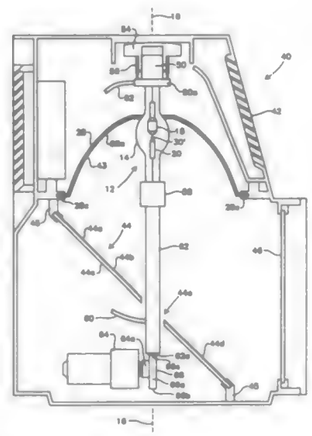
1. A searchlight, comprising:

a xenon-arc lamp having a longitudinal axis, and an anode and a cathode which are spaced from each other along said longitudinal axis, the xenon-arc lamp producing an arc which has proportionally more short wavelength light than is in sunlight and becoming inoperative when the anode is disposed below the cathode by more than a predetermined limit angle relative to horizontal that is determined by the characteristics of the lamp and is substantially closer to 0° than to 90°;

a first reflector which is rotatable with the xenon-arc lamp and has a concave reflecting surface for collecting light from said arc and reflecting said collected light generally parallel to said longitudinal axis as a beam; and

a second reflector which is rotatable with the xenon-arc lamp for receiving said beam from the first reflector and reflecting said beam away from said longitudinal axis by a predetermined reflection angle;

at least one of said first and second reflectors having a reflective surface formed of a material which reflects proportionally less short wavelength light than is in sunlight, such that said beam after reflection from the second reflector more closely approximates sunlight than does the



proportionally more short wavelength light than is in sunlight in said arc.

5,369,558

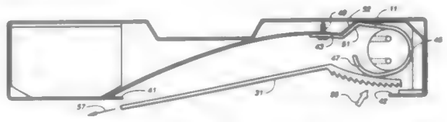
FLUORESCENT LAMP REMOVING DEVICE

Willi Munz, San Francisco, Calif., assignor to Peerless Lighting Corporation, Berkeley, Calif.

Filed Nov. 10, 1993, Ser. No. 149,974

Int. Cl.[5] F21V *17/00*

U.S. Cl. 362—375 7 Claims



1. A device for retaining a lens element of a lensed fluorescent lighting fixture and for also removing a fluorescent lamp of said lighting fixture which is in close proximity to said lens element, said device comprising

a stationary base end adapted to be mounted in a substantially fixed position within the fluorescent lighting fixture adjacent the fixture's fluorescent lamp,

a resilient middle strip portion shaped to extend from said base end around said fluorescent lamp for cradling said fluorescent lamp, and

an outwardly biased distal end extending from said middle strip portion for contacting the inside of the lens proximate said fluorescent lamp for providing a retention force thereagainst.

5,369,559

TROUBLE LIGHT ASSEMBLY

Paul A. Hedrick, Taylor Mill, Ky., and Thomas Varatta, Sr., Greenville, R.I., assignors to General Cable Industries, Inc., Highland Heights, Ky.

Filed Aug. 13, 1993, Ser. No. 106,065

Int. Cl.[5] F21V *15/00*

U.S. Cl. 362—376 15 Claims

1. A trouble light assembly comprising:

a handle portion having first and second ends;

a bulb receptacle mounted at said first end of said handle portion, said bulb receptacle having a positive terminal and a neutral terminal;

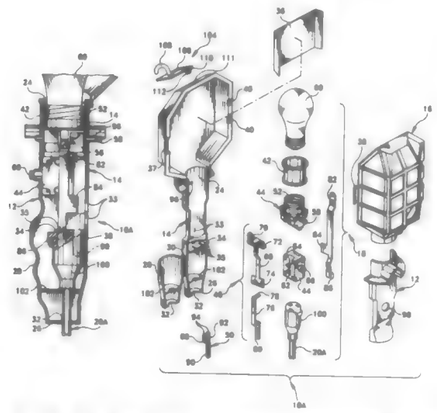
a cage portion mounted adjacent said first end of said handle portion for enclosing a light bulb received in said bulb receptacle;

positive and neutral conductor blades respectively connected to said positive and neutral terminals of said bulb receptacle,

said positive and neutral conductor blades extending downwardly from said bulb receptacle so as to define a male conductor plug in said handle portion,

said positive and neutral conductor blades being matingly engageable with a female plug end of a cord set, said female plug end being received in said tubular handle portion so that a terminal end of said cord set extends outwardly from said second end of said handle portion; and

means within said handle portion for securing said female plug end in engagement with said conductor blades.



5,369,560

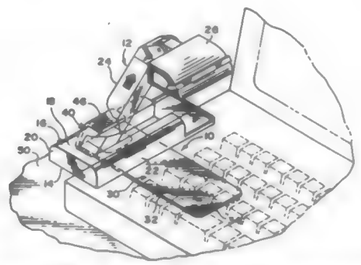
ACCESSORY CLIP FOR PORTABLE LIGHT

Arthur S. Friedman, 2144 Seneca West, Merrick, N.Y. 11566

Filed May 11, 1993, Ser. No. 59,860

Int. Cl.[5] F21V *21/00*

U.S. Cl. 362—396 6 Claims



1. A portable light means and accessory clip therefor, said light means comprising an elongate case having a forward end and a rear end, opposed sides, a predetermined width between said sides, and a predetermined length between said ends substantially greater than said width, said light means further including lamp means mounted on said case, said case, at said rear end, extending rearward of said lamp means, said case, at at least one of said sides, extending laterally outward of said lamp means; said accessory clip, in a stored position, including a base panel longitudinally underlying and engaging said case and being within the peripheral confines thereof as defined by said forward and rear ends and said opposed sides, said clip including an end panel integral with said base panel and extending laterally of said base panel, and an overlying panel integral with and projecting laterally from said end panel in overlying relation to said base panel, said end panel and overlying panel engaging about said case rearward of said lamp means and clamping said case between said overlying panel and said base panel, said clip base panel being of a length greater than said width of said case; said base panel, in a use position for said accessory clip, transversely underlying and engaging said case, said end panel and said overlying panel engaging about said case to said side of said case extending laterally outward of said lamp means and clamping said case between said overlying panel and said base panel, said base panel extending laterally beyond the side of said case opposed to said engaging end panel and said engaging overlying panel.

5,369,561

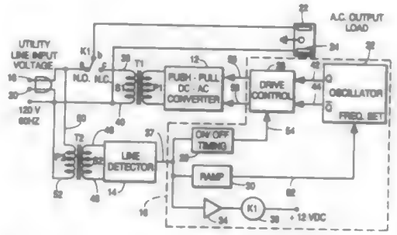
STANDBY POWER SUPPLY SYSTEM HAVING A VARIABLE FREQUENCY INVERTER

David J. McCullough, Chicago, Ill., assignor to Trippe Manufacturing Company, Chicago, Ill.

Filed Sep. 8, 1993, Ser. No. 118,510

Int. Cl.[5] H02M *5/458*

U.S. Cl. 363—37 19 Claims



1. A standby power supply system for reducing stress and preventing saturation of components in an inverter means at the time of transfer from a utility line voltage to a back-up inverter mode comprising:

input terminal means connectible to a main A.C. power source for receiving the utility line voltage;

output terminal means connectible to a load;

line detection means responsive to said utility line voltage for generating a detected logic signal which is at a low level when said utility line voltage is less than a predetermined minimum voltage value;

push-pull DC-AC inverter means having an input, and an output;

switch means responsive to said detected logic signal for disconnecting said load from said input terminal means and for connecting said load to said output of said inverter means in order to cause the transfer from the utility line voltage to the back-up inverter mode;

oscillator means responsive to said detected logic signal for generating push-pull drive signals to said input of said inverter means, said push-pull drive signals having an initial higher frequency at the time of transfer from the utility line voltage to the back-up inverter mode which is swept down gradually to the frequency of the line voltage; and

timing means responsive to detected logic signals for delaying said drive signals to the input of said inverter means for a predetermined time so as to insure that said load has been disconnected from said input terminal means,

whereby said higher frequency of said push-pull drive signals at the time of transfer eliminates stress of the magnetic

components in said inverter means and limits duration of current surges caused by said switch means.

5,369,562

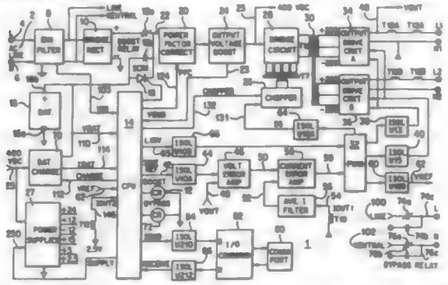
Patent Not Issued For This Number

5,369,563

FAST TURN-OFF CIRCUIT FOR USE WITH AN AC BRIDGE CIRCUIT

Frank D. Miller, Moorpark, Calif., assignor to Square D Company, Palatine, Ill.

Filed Dec. 29, 1992, Ser. No. 998,109
Int. Cl.[5] H02H 7/122
U.S. Cl. 363—56 13 Claims



1. An improved gate drive circuit for controlling conduction of a power switching device of an AC bridge circuit having at least one phase and for decreasing turn-off time of said power switching device, said power switching device having a gate terminal, a first terminal connected to a power source, and an output terminal said improved gate drive circuit comprising;

a) means for coupling a gate drive signal generated by a PWM control circuit to said gate drive circuit for controlling conduction of said power switching device;

b) means for shunting said gate terminal to said first terminal of said power switching device when said gate drive signal is removed, said shunting means including a transistor having an emitter connected to said gate terminal and a collector connected to a capacitor, said capacitor also connected to said first terminal of said power switching device:

c) wherein said power switching device has an effective gate/drain capacitance that is charged by said gate drive signal during turn-on:

d) wherein removal of said gate drive signal causes said transistor to conduct: and

e) wherein said effective gate/drain capacitance is discharged by said gate drive signal during turn-off following a conduction path from said gate terminal through said conducting transistor and said capacitor connected to said first terminal of said power switching device, decreasing said turn-off time of said power switching device.

5,369,564

PHASE-DIFFERENCE SYNCHRONIZATION CONTROLLING CIRCUIT OF PARALLEL SWITCHING MODE POWER SUPPLY

Seung Chol, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 20, 1993, Ser. No. 64,471
Claims priority, application Rep. of Korea, May 21, 1992, 1992-8608
Int. Cl.[5] H02M 3/335
U.S. Cl. 363—71 8 Claims

1. A switching mode power circuit, comprising:

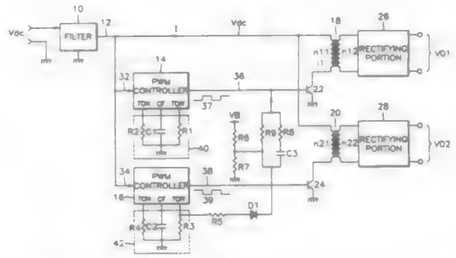
an input terminal for receiving a single DC voltage;

first and second pulse generating means coupled to said input terminal for generating first and second pulses, respectively, having first and second pulse widths in response to said DC voltage;

first generating means coupled between said input terminal and an output terminal of said first pulse generating means for generating a first DC supply voltage according to a switching operation of said first pulse having said first pulse width;

second generating means coupled between said input terminal and an output terminal of said second pulse generating means for generating a second DC supply voltage according to a switching operation of said second pulse having said second pulse width;

a first resistor having an input terminal and an output terminal, said input terminal of said first resistor for receiving a voltage potential;



a second resistor having a first terminal for receiving a second potential and having a second terminal attached to said output terminal of said first resistor at a first connecting point;

an R-C circuit having a plurality of resistors and a capacitor, said R-C circuit connected to said first and second resistors at said first connecting point and coupled to said output terminal of said first pulse generating means;

a third resistor having an input terminal and an output terminal, said input terminal of said third resistor coupled to said control terminal of said second pulse generating means; and

a diode having an input terminal and an output terminal, said input terminal of said diode connected to said output terminal of said third resistor and said output terminal of said diode coupled to said R-C circuit.

5,369,565

MODULAR POWER SUPPLY SYSTEM

Ieon C. Chen, Laguna Hills, and Michael Wilson, Torrance, both of Calif., assignors to Innova Electronics Corp., Fountain Valley, Calif.

Continuation-in-part of Ser. No. 771,684, Oct. 4, 1991, Pat. No. 5,220,269. This application Oct. 30, 1992, Ser. No. 969,042
The portion of the term of this patent subsequent to Jun. 15, 2010, has been disclaimed.
Int. Cl.[5] A45F 5/00
U.S. Cl. 363—146 16 Claims

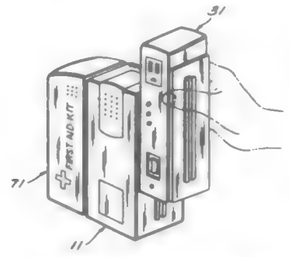
1. A portable, handheld power supply system for electrically powering a variety of interconnectable power distribution consumption devices, comprising:

a) a power supply unit having a battery disposed therein, the unit further having first disposed therein, the unit further having first and second side portions;

b) a first bracket disposed on the unit first side portion for engaging and supporting a first accessory device, said first bracket having first electrical contacts formed therein for communicating power between the battery and first accessory device said battery being directly connected to the first electrical contacts;

c) said first bracket forming a longitudinal channel extending along said unit first side portion for opposing movement of the first accessory device from the power supply unit other than along the longitudinal channel; and

d) a second bracket disposed on the unit second side portion for receiving and engaging a second accessory device,



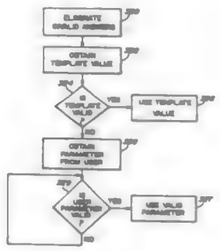
said second bracket having second electrical contacts formed therein for communicating power between the battery and second accessory device, said battery being directly connected to the second electrical contacts.

5,369,566

USER PROGRAMMABLE CONTROL

Dale R. Pfost, Los Altos; Robert M. Coppock, Mountain View; Donald S. Murray, Sunnyvale; R. Fred Pfost, Los Altos; Brian Sanford, Cupertino, all of Calif., and Katherine L. Puckett, Cambridge, Mass., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 698,759, May 10, 1991, Pat. No. 5,206,568, which is a division of Ser. No. 844,374, Mar. 26, 1986, abandoned. This application Dec. 3, 1992, Ser. No. 985,062
Int. Cl.[5] G06F 15/46
U.S. Cl. 364—147 5 Claims



1. A method of programming a programmable controller comprising the steps of:

providing a template comprising a statement shell having a plurality of decision windows;

holding in each decision window one of a plurality of bit patterns representing either a parameter or an instruction to query the user;

providing a replicate shell comprising a plurality of memory storage locations for holding a plurality of bit patterns;

examining a first of said bit patterns in said decision windows of said statement shell,

wherein when said bit pattern represents a parameter, said bit pattern is replicated in said replicate shell, and

wherein when said bit pattern represents an instruction to query the user, a message is presented to said user to elicit a user parameter for said decision window, the user parameter is interpreted, a bit pattern is provided corresponding to said user parameter, and the bit pattern is replicated corresponding to said user parameter in said replicate shell;

serially repeating at least said examining step until said plurality of memory storage locations in said replicate shell are filled with bit patterns corresponding to parameters, said filled replicate shell defining at least one executable instruction for said programmable controller; and

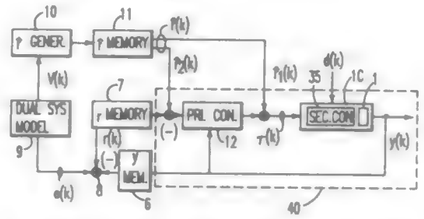
programming said controller with said at least one executable instruction defining a program and executing said program.

5,369,567

FURNACE TEMPERATURE CASCADE CONTROL APPARATUS USING ADJUSTMENT INPUT

Katsuhisa Furuta, 44-15, Minami Oizumi 4-chome, Nerima-ku, Tokyo; Akira Abe, Tokyo; Akinori Ito, Tokyo, and Hiroyuki Masabe, Tokyo, all of Japan, assignors to Okkura Electric Co., Ltd. and Katsuhisa Furuta, both of Tokyo, Japan

Filed Jun. 24, 1993, Ser. No. 80,523
Claims priority, application Japan, Mar. 11, 1993, 5-051032
Int. Cl.[5] G05B 13/04; G05D 23/30; G06F 15/46
U.S. Cl. 364—149 3 Claims



1. A cascade control apparatus for controlling inside temperature (y) of a furnace with heaters by a primary controller so as to run the furnace in repetition of a certain temperature change pattern with time, the pattern being given by a set of present temperature values (r) at a number of points in the furnace for a cycle of the repetition, the apparatus comprising a secondary controller connected between the primary controller and the furnace and adapted to minimize a difference between a heater temperature (x) and an output manipulating signal (r) from the primary controller, an output memory storing values of the furnace inside temperature (y) for a cycle of the repetition of temperature change pattern, an adjustment input memory storing values of adjustment input (r) for a cycle of the repetition and being adapted to apply the adjustment input (r) to an enlarged system including the furnace and the primary and secondary controllers in synchronism with the application of the preset temperature value (r) to the enlarged system, a dual system model with respect to the enlarged system under condition of being disconnected from the preset temperature values (r), an order of the enlarged system being the same as said number of points in the furnace for the preset temperature values (r), and an adjustment input generator which renews the values of the adjustment input r at the end of each cycle of the repetition based on a combination of the adjustment input (r) values in the preceding cycle and outputs (v) from the dual system model in response to application of errors (e) between the preset temperature values (r) and the inside temperature (y) values in the preceding cycle so as to reduce the errors (e) in next cycle of the repetition.

5,369,568

POSITION CONTROLLING METHOD OF ROBOT

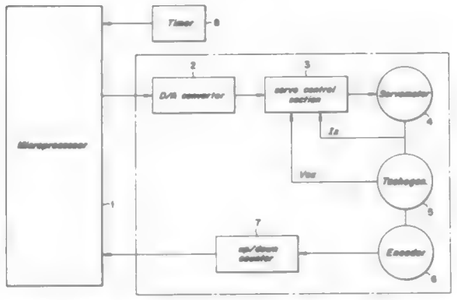
Jin-Il Song, Inchun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 21, 1991, Ser. No. 779,999
Claims priority, application Rep. of Korea, Oct. 26, 1990, 90-17260
Int. Cl.[5] G05B 19/04
U.S. Cl. 364—167.01 7 Claims

1. Position controlling method for a robot comprising:

step for computing an initial positional deviation of each axis and a maximum positional deviation;

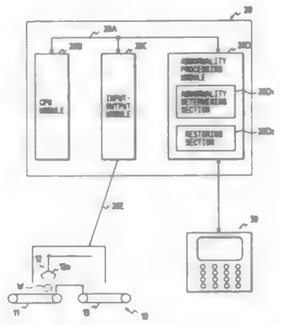
step for computing a pulse number and a movement pulse number, said movement pulse number being dependant on said pulse number and said maximum positional deviation;
step, for computing a movement pulse of each axis of the robot at every sampling time in the case of no acceleration and deceleration, said movement pulse depending on said pulse number, the positional deviation and the movement pulse number;
step for calculating a position incremental amount for each axis, and for compensating for a remainder value obtained as a result of the position incremental amount calculated for each axis;
step, for obtaining a robot driving aim position at a first incremental time point for each axis depending on said positional incremental amount, and for computing a positional deviation at the first incremental time point;
step, for executing proportional, integral, and differential control of the positional deviation at the first incremental time point, for converting proportioned integrated and



differentiated values to an analog value, for outputting the analog value to a motor;
step, for obtaining an aim position of the robot at a second incremental time point during movement of the robot, and for judging whether a value of the second incremental time point is identical to the movement pulse number at every sampling time;
step for obtaining remainder values of each axis by seeking the movement pulse number at every sampling time when it is identical;
step, for judging whether the value of the second incremental time point is larger than the movement pulse number at every sampling time;
step for computing a value by substituting zero for the movement pulse at each axis in the case when the value of the second incremental time point is larger than the movement pulse number; and
step, for judging whether or not it is a final aiming position, for terminating robot driving when it is judged that it is a final aiming position.

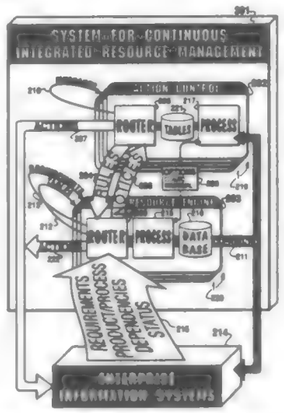
5,369,569
SYSTEM FOR RESTORING CONTROLLED UNIT FROM ABNORMAL CONDITION
Noboru Maeda, Chiryu; Tatsuo Miura, Kariya, and Haruo Murakami, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Nov. 16, 1992, Ser. No. 975,330
Claims priority, application Japan, Nov. 14, 1991, 3-299126
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—184 **10 Claims**

1. A system for restoring a controlled unit from an abnormal condition, comprising:
storing means for storing a plurality of possible abnormal conditions and corresponding restoring procedures for said controlled unit;
determining means for determining whether an actually generated abnormal condition matches one of said stored possible abnormal conditions;
restoring means for restoring said controlled unit from said abnormal condition based on said stored restoring procedure corresponding to said one of said stored possible abnormal conditions when said determining means determines that said actually generated abnormal condition matches with said one of said stored possible abnormal conditions; and



input means for inputting said actually generated abnormal condition and its corresponding restoring procedure to be stored in said storing means when said determining means determines that said actually generated abnormal condition disagrees with any of the stored abnormal conditions, where said inputted restoring procedure reflects a time required for inputting said inputted restoring procedure through said input means.

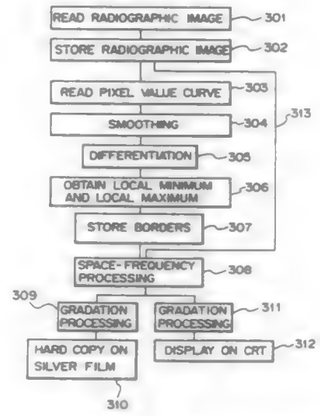
5,369,570
METHOD AND SYSTEM FOR CONTINUOUS INTEGRATED RESOURCE MANAGEMENT
Harvey A. Parad, 36 Tirrell Crescent, Newton, Mass. 02167
Filed Nov. 14, 1991, Ser. No. 792,360
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 **12 Claims**



1. A method for continuous resource management of events for a multitude of predetermined heterogenous resources with complex interrelationships by scheduling and controlling actions, said method comprising:
(a) providing memory for permanent and temporary data files;

(b) providing a resource engine for each predetermined resource for continuously performing prospective scheduling;
(c) providing an action control for each management function;
(d) providing a router;
(e) providing a processing unit for operating the resource engine, the action control and the router;
(f) providing into the memory information about each resource comprising resource characteristics, rules for resource use, and relationships with other resources for permanent data files;
(g) initializing the resource engine with independent demand and current conditions;
(h) continuously monitoring with the resource engine changes in independent demand and conditions using data from external agents and providing instructions to an action control; and
(i) using the action control to determine actions to be taken based on resource information and changes and providing instructions to a resource engine;
(j) the router managing, logging and certifying delivery of instructions from and between resource engines, action controls, and external agents;
wherein the temporary data files are used by the resource engine and the action control to store temporary data.

5,369,572
RADIOGRAPHIC IMAGE PROCESSING METHOD WHEREIN SMALL VARIATION OF DENSITY IS SELECTIVELY MADE CLEAR
Takahiro Haraki, Kawasaki; Shiro Takeda; Fumihiro Namiki; Hideyuki Hirano, and Kenji Ishiwata, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 20, 1992, Ser. No. 856,138
Claims priority, application Japan, Mar. 20, 1991, 3-057409; Mar. 5, 1992, 4-048825
Int. Cl.[5] G06F *15/68*
U.S. Cl. 364—413.13 **20 Claims**

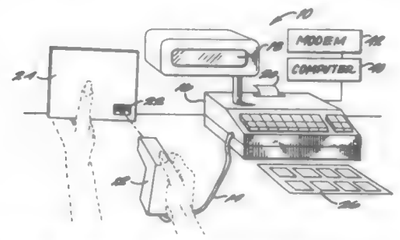


1. A method for processing a radiographic image, comprising:
generating and transmitting X-rays through a body using an X-ray generator to produce original image data;
calculating an average (S_m) of the original image data of an averaging area around each pixel of said radiographic image;
transforming the original image data of each pixel of said radiographic image to obtain a processed image data of each pixel in accordance with an equation,

$$Q=S+f(S-S_m)$$

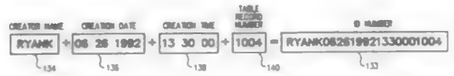
where Q is the processed image data, S is the original image data, and $f(S-S_m)$ is a function of the difference between the original image data S and the average S_m, and has a characteristic in at least one of first and second ranges of the difference between the original image data S and the average S_m, the difference between the original image data S and the average S_m is positive in said first range and negative in said second range, and according to said characteristic, the absolute value $|Q-S|$ of the difference between the processed image data Q and the original image data S varies in accordance with an increasing monotonic function of the absolute value $|S-S_m|$ of the difference between the original image data S and the average S_m when the absolute value $|S-S_m|$ of the difference between the original image data S and the average S_m is less than a predetermined value, and the absolute value $|Q-S|$ of the difference between the processed image data Q and the original image data S varies in accordance with a decreasing monotonic function of the absolute value $|S-S_m|$ of the difference between the original image data S and the average S_m when the absolute value $|S-S_m|$ of the difference between the original image data S and the average S_m is more than the predetermined value; and
outputting the processed image data to output device.

5,369,571
METHOD AND APPARATUS FOR ACQUIRING DEMOGRAPHIC INFORMATION
Rodney H. Metts, 4658 Pamlico Cir., Columbia, S.C. 29206
Filed Jun. 21, 1993, Ser. No. 80,935
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—401 **20 Claims**



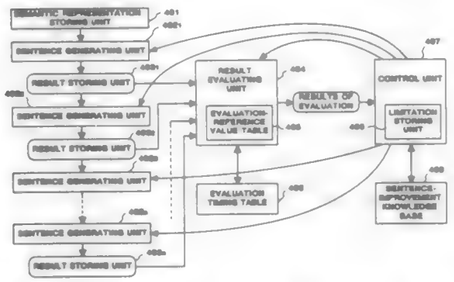
1. A method for acquiring demographic data about a purchaser selecting a product, said product having an identification, said method comprising the steps of:
determining said identification of said product upon selection of said product by said purchaser for purchase;
recording said identification as identification data;
making an assessment regarding demographic information about said purchaser;
recording said assessment as demographic data; and
associating said demographic data with said identification data.

5,369,573
STRUCTURED DOCUMENT SYNTAX MANAGEMENT
Robert W. Holloran, Kirkland, and Ryan P. Kelley, Seattle, both of Wash., assignors to Docustructure Corporation, Kirkland, Wash.
Filed Jul. 2, 1992, Ser. No. 908,706
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.07 **8 Claims**



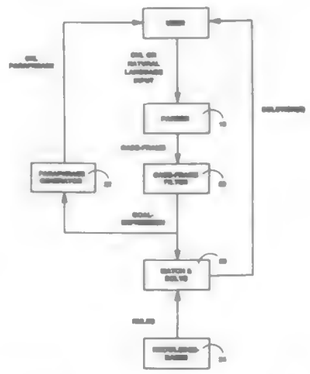
1. A structured document system comprising:
(a) words memory means for storing a plurality of sets of words, each set including at least two different parts of speech;
(b) rules memory means for storing a plurality of concatenation rules, each of which specifies how a set of words shall be assembled to produce a message; and
(c) logic means for assembling a plurality of messages, each message assembled from one of the sets of words according to one of the concatenation rules.

5,369,574
SENTENCE GENERATING SYSTEM
Koichi Masegi, Machida; Minoru Fujita, Yokohama, and Shogo Shibata, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 30, 1991, Ser. No. 738,118
Claims priority, application Japan, Aug. 1, 1990, 2-205842; Jul. 2, 1991, 3-161517; Jul. 5, 1991, 3-165732
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **21 Claims**



1. A sentence generating system for generating a sentence from an inputted semantic representation, comprising:
condition storing means for storing a condition which a generated sentence should satisfy;
sentence generating means for generating a sentence from the inputted semantic representation based upon the condition stored in said condition storing means;
evaluating means for evaluating the entire sentence generated by said sentence generating means;
altering means for altering the condition, which has been stored in said condition storing means, based upon the result of an evaluation obtained by said evaluating means; and
re-execution control means for performing control of the system in such a manner that generation of the sentence by said sentence generating means is re-executed based upon the altered condition.

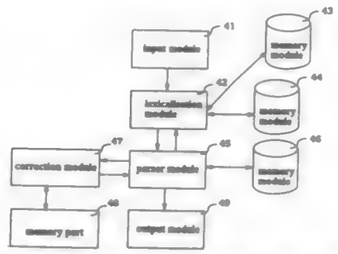
5,369,575
CONSTRAINED NATURAL LANGUAGE INTERFACE FOR A COMPUTER SYSTEM
Donna M. Lamberti, Medfield; John M. Prager, Sharon, and Mark Nappari, Arlington, all of Mass., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 15, 1992, Ser. No. 884,747
Int. Cl.[5] G06F *15/38*; G06G *7/60*
U.S. Cl. 364—419.08 **6 Claims**



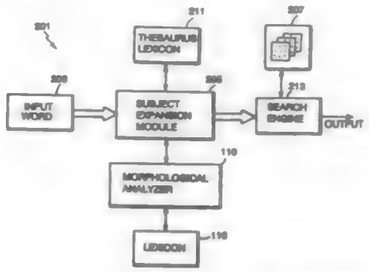
1. In a computer implemented user interface for responding to a natural language-form input, said interface employing a feedback method to reinforce a user's confidence and knowledge that the computer comprehends a query or an instruction from the user, the method comprising:
parsing a user's natural language input into a case frame structure;
filtering said case frame structure into a goal-expression data structure comprising a verb and syntactical portions of said natural language input;
converting said goal-expression into a constrained natural language-form that includes said verb and syntactical portions of said goal-expression data structure and communicating said paraphrase to said user for confirmation that the computer system has correctly interpreted the user's input;
upon confirmation by said user, comparing said goal expression data structure with pre-stored data structures of goal expression form to determine a match; and
performing an action in response to a match being found.

5,369,576
METHOD OF INFLECTING WORDS AND A DATA PROCESSING UNIT FOR PERFORMING SUCH METHOD
Robertus P. E. H. Heemels, Roermond; Eduardus J. W. van Vlierbergen, and Louis M. G. Cremers, both of Venlo, all of Netherlands, assignors to Oce-Nederland, B.V., Venlo, Netherlands
Filed Jul. 21, 1992, Ser. No. 915,676
Claims priority, application Netherlands, Jul. 23, 1991, 9101286
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419.08 **8 Claims**

1. A computer-implemented method for inflecting words, in which an input word is inflected by reference to linguistic data stored in a memory and on the basis of input data containing said input word to be inflected, a grammatical category associated with said input word, grammatical features associated with said input word, and a required inflection category, which comprises reading in from an input device input data containing said input word to be inflected, a grammatical category associated with said input word, grammatical features associated with said input word, and a required inflection category, storing said linguistic data in the form of a classification scheme in a random access portion of said memory, said classification scheme comprising a number of nested lists each comprising elements relating to grammatical properties, selecting inter-nested lists from said classification scheme stored in said random access portion on the basis of said input data by repeatedly selecting an element occurring from a list which corresponds to appropriate input data, and performance of a following selection on said list associated with the selected element, followed by selection of an element from a last selected list on the basis of said input data, which element comprises string operations, and performing said string operations for inflecting said input word.

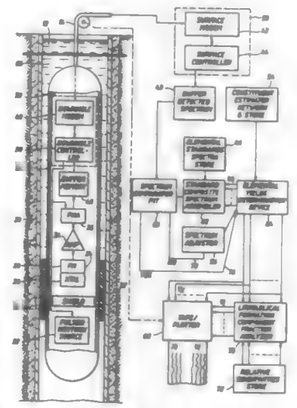


5,369,577
TEXT SEARCHING SYSTEM
A. Julie Kadashevich, Tyngsboro; Mary F. Harvey, Reading, and Cheryl Clark, Arlington, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Feb. 1, 1991, Ser. No. 650,812
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—419.13 **35 Claims**



1. A computer apparatus for searching a collection of words based upon an input word, said computer apparatus comprising:
a generating means for generating a first set of words containing members that are lexically related to the input word, said first set of words including words that are both regular inflectional nouns and words that are other than regular inflectional nouns, the generating means including
a recognition engine for finding at least one linguistic stem within said input word and identifying at least one suffix attached to each said linguistic stem,
generating members of said first set of words by stripping from said input word suffixes selected from a first group of suffixes which do not substantially change the meaning of words when stripped therefrom, and
performing inflectional and derivational analysis upon said input word by generating all inflections and derivations that can be generated from said linguistic stems by the addition of one suffix wherein said derivational analysis employs at least three derivational suffixes; and
a search engine for searching said collection of words to detect the occurrence of words from a group of search words, said group of search words comprising the input word and said first set of words.

5,369,578
METHOD AND APPARATUS FOR USING NON-LINEAR SPECTRAL FITTING PROCEDURES ON GAMMA-RAY SPECTRAL DATA
Bradley A. Roscoe, Pasadena, and Christian Stoller, Kingwood, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.
Continuation of Ser. No. 564,251, Aug. 7, 1990, abandoned. This application May 20, 1993, Ser. No. 64,622
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—422 **41 Claims**



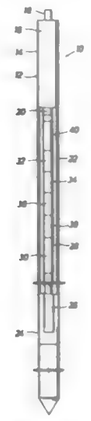
1. A method for decomposing a gamma ray spectrum representative of an unknown material in order to determine the respective gamma ray contribution of each constituent postulated to constitute said material, comprising:
measuring gamma rays of said unknown material by detecting and counting the gamma rays issued from said material;
forming an energy spectrum of said measured gamma rays;
establishing a composite spectrum constructed of individual standard spectra of said postulated constituents and comprising elemental yields being representative of the fraction of the corresponding constituents in said composite spectrum;
determining the best fit between said measured spectrum and said composite spectrum by simultaneously varying at least two parameters from a set of parameters which describe the transformation of the measured and composite spectra from channel numbers to each spectrum's physical domain, said parameter set containing gain, offset, resolution, resolution degradation, background subtraction and non-linear gain parameters; and
determining from the best fit and a best composite spectrum associated with said best fit the relative fractions of the gamma ray spectra associated with the corresponding constituents of said material or one or more of the parameters describing the spectral transformation from channel numbers to the physical domain.

5,369,579

ELECTRONIC BLAST CONTROL SYSTEM FOR DOWNHOLE WELL OPERATIONS

Otis R. Anderson, 5355 Anderson Rd., Houston, Tex. 77053

Filed Jan. 24, 1994, Ser. No. 150,610
Int. Cl.[5] E21B *43/1185*
U.S. Cl. 364—422 18 Claims



1. A method for controlling detonation of explosives in the down-hole environment of a well bore having a fluid therein establishing hydrostatic pressure and having a temperature determined by the surrounding earth formation, said method comprising;

(a) providing an electronic blasting control instrument having a central processing unit (CPU) being electronically coupled for firing control to a detonator for an explosive charge, said CPU having a clock timer, a motion sensor, a temperature sensor and a hydrostatic pressure sensor each providing electronic logic signal output to said CPU;

(b) programming said clock timer with a predetermined firing time prior to which firing of said detonator by said CPU is prevented and a predetermined end firing time after which firing of said detonator by said CPU is prevented, said firing and end firing times defining a time window during which firing of said detonator by said CPU is permitted;

(c) programming said pressure sensor with a predetermined firing pressure range within which said CPU can fire said detonator for said explosive charge and outside of which said CPU is unable to fire said detonator for said explosive charge;

(d) programming said temperature sensor with a predetermined firing temperature range within which said CPU can fire said detonator and outside of which said CPU is unable to fire said detonator;

(e) programming said motion sensor to establish a motion time delay period of predetermined duration and a firing time period of predetermined duration upon cessation of motion of said electronic blasting control instrument within said well bore and permitting firing of said detonator only after expiration of said firing time delay period and during said firing time period;

(f) moving said electronic firing control instrument through said well bore to a predetermined depth therein; and

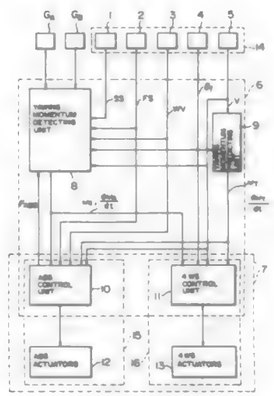
(g) initiating firing said detonator by selective firing control of said CPU to achieve selectively positioned and controlled detonation of said explosive charge, said firing being permitted by said CPU only when CPU controlled firing thereof is initiated within said time window, said firing pressure range, said firing temperature range and within said firing time period.

5,369,580

YAWING-MOMENTUM DETECTING APPARATUS FOR A VEHICLE, A DETECTING METHOD THEREOF, AND MOTION CONTROLLING APPARATUS FOR A VEHICLE, UTILIZING THE DETECTING APPARATUS

Tatsuhiko Monji, Katsuta; Shigeru Horikoshi, Mito; Kousaku Shimada, and Hayato Sugawara, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of Japan

Filed Mar. 16, 1992, Ser. No. 851,664
Claims priority, application Japan, Mar. 20, 1991, 3-056287
Int. Cl.[5] B62D *6/00*
U.S. Cl. 364—424.01 5 Claims



1. A yawing-momentum detecting apparatus for a vehicle, comprising:

a plurality of acceleration sensors disposed at symmetrical positions on said vehicle with respect to a vertical axis within a plane perpendicular to the vertical axis passing through a gravity center of said vehicle;

means for calculating yawing momentum of said vehicle occurring around said vertical axis based upon outputs from said plurality of acceleration sensors; and

characteristic correcting means for correcting output characteristics of said plural acceleration sensors under known acceleration values to coincide with reference input-output characteristic values when said known acceleration values are obtained under a certain vehicle operating condition.

5,369,581

VEHICLE CONTROL APPARATUS AND METHOD THEREFOR

Minoru Obunge; Yoshihige Ohyama, both of Katsuta; Hiroshi Kuroiwa, Hitachi; Toshiharu Nogi, Katsuta; Toshimichi Minowa, Tokai, and Hiroshi Kimura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 857,712, Mar. 25, 1992, abandoned, which is a continuation of Ser. No. 494,964, Mar. 16, 1990, abandoned. This application Oct. 1, 1993, Ser. No. 131,011
Claims priority, application Japan, Mar. 17, 1989, 1-063746
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.01 16 Claims

1. A vehicle control apparatus including:

first and second adjusting means for adjusting first and second controlled parameters of a vehicle, respectively;

first and second control means, connected to said first and second adjusting means, for controlling said first and second adjusting means, respectively;

a signal communication path interconnecting said first and second control means; and

transferring means for transferring a signal representative of a condition to be controlled determined by said first control means to said second control means over said communication path,

wherein said first control means executes a processing for calculating the first controlled parameter on the basis of data supplied, judges, on the basis of the thus calculated first controlled parameter, whether or not said second control means has to operate in cooperation with said first control means, and produces an output signal to said communication path, if the cooperative operation is required; and

said second control means executes a processing for calculating the second controlled parameter in response to the output signal produced by said first control means,

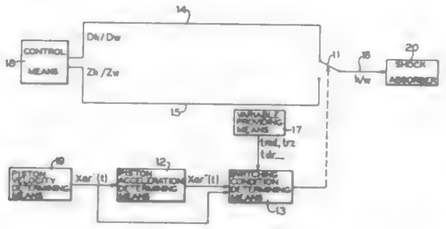
consequently said first and second adjusting means control the first and second controlled parameters associated therewith simultaneously in synchronism and in accordance with the processing results of the respective control means.

5,369,582

SYSTEM FOR CONTROL OF A VEHICLE CHASSIS

Stefan Gorny, Schwieberdingen; Rainer Kallenbach, Waiblingen-Neustadt; Andreas Klug, Stuttgart; Udo Neumann, Leonberg, and Stefan Otterbein, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 16, 1992, Ser. No. 851,919
Claims priority, application Germany, Apr. 12, 1991, 4112005
Int. Cl.[5] B60G *17/00*
U.S. Cl. 364—424.05 6 Claims



1. A system for control of a vehicle chassis, the vehicle including a body and at least one wheel unit, said system comprising:

at least one damper having opposite ends and an adjustable damping characteristic, one of said ends connected to said body and the other of said ends connected to at least one said wheel unit;

sensor means generating a first signal representing a relative velocity between said damper ends;

first means, for receiving said first signal, and for generating a second signal representing a relative acceleration between said damper ends, said second signal dependent on said first signal;

second means, for receiving said first signal and said second signal, and for determining a first threshold dependent on one of said first and second signals, comparing an other of said first and second signals with said first threshold, and generating a third signal dependent on said comparison; and

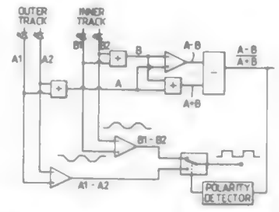
third means, for receiving said third signal, and for effecting a changeover of said adjustable damping characteristic of said damper, only when said third signal corresponds to one of at least one specified value.

5,369,583

OPTICAL TORQUE SENSORS AND STEERING SYSTEMS FOR VEHICLES INCORPORATING THEM

Roger J. Hazelden, Worcestershire, England, assignor to Lucas Industries public limited company, Solihull, England

Filed Feb. 3, 1993, Ser. No. 12,997
Claims priority, application United Kingdom, Feb. 12, 1992, 9202868
Int. Cl.[5] G06F *15/50;* G01L *3/02*
U.S. Cl. 364—424.05 16 Claims



1. A torque sensor comprising:

an input member;

an output member;

emitter means;

first receiver means for receiving a first signal, said first receiver means comprising means to output a first output signal dependent upon the first signal;

second receiver means for receiving a second signal, said second receiver means comprising means to output a second output signal dependent upon the second signal; and

signal processing means for dividing the difference between the first and second output signals by the sum of the first and second output signals so as to produce a modified output signal which is directly proportional to relative angular displacement between, or torque applied between, said input and output members.

5,369,584

CONTROL APPARATUS FOR A VEHICLE

Yasuya Kajiwara, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 622,907, Dec. 6, 1990, abandoned. This application Jun. 30, 1993, Ser. No. 83,490
Claims priority, application Japan, Dec. 8, 1989, 1-317638
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.05 10 Claims

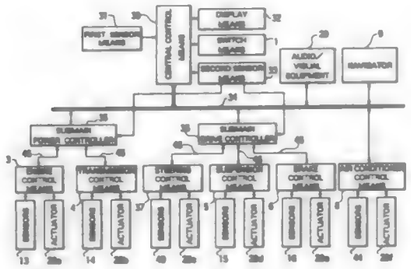
1. A control apparatus for a vehicle having a power system including at least an engine and a transmission, and a drive system including at least a steering system, a suspension system, a brake system, and an air conditioner, said control apparatus comprising:

a plurality of sensors, including first and second groups of sensors, for sensing various operating conditions of the vehicle;

a central control unit for determining, based on output signals of at least the first group of said sensors, operating conditions of the vehicle and for selectively controlling an overall operation of the vehicle including the power and drive systems;

a first subcontroller, responsive to said central control unit and at least one sensor from the second group of said sensors, for continuously and independently controlling the power system of the vehicle in accordance with at least one of an output of said central control unit and said one sensor from the second group of sensors;

a second subcontroller, responsive to said control unit and at least one sensor from the second group of said sensors, for continuously and independently controlling the drive system of the vehicle in accordance with at least one of an output of said central control unit and said one sensor from the second group of sensors;



first control means, connected to said first subcontroller, for respectively controlling individual components of the power system including the engine and transmission; and

second control means, connected to said second subcontroller, for respectively controlling individual components of the drive system including the steering system, suspension system, brake system, and air conditioner, wherein said central controller selectively controls said first and second subcontrollers for actively controlling the power and drive systems, respectively.

5,369,585

ANTI-LOCK CONTROL SYSTEM FOR MOTOR VEHICLES

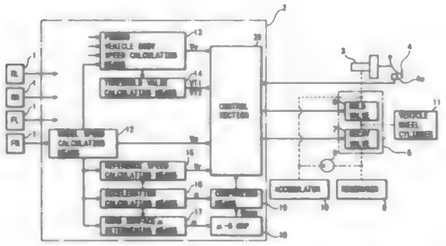
Satomi Okubo, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1992, Ser. No. 907,565

Claims priority, application Japan, Jul. 5, 1991, 3-191225

Int. Cl.[5] B60T *8/70*

U.S. Cl. 364—426.02 **3 Claims**



1. An anti-lock control apparatus for controlling a wheel speed of a vehicle during braking, by sensing a wheel speed of a wheel with a wheel rotation speed sensor, processing said sensed wheel speed and outputting a control signal which controls an anti-lock braking action of said wheel by increasing or maintaining constant a brake fluid pressure, said apparatus comprising:

first determining means for determining a coefficient of friction of a road surface;

means for setting a maximum vehicle body deceleration value capable of occurring with the road surface based upon said coefficient of friction;

means for calculating a wheel deceleration value of said wheel speed;

comparison means for comparing said wheel deceleration value with said maximum vehicle body deceleration value; and

second determining means for determining whether to increase or maintain constant said brake fluid pressure according to a result from said comparison means.

5,369,586

METHOD OF AND APPARATUS FOR CONTROLLING WHEEL SPIN

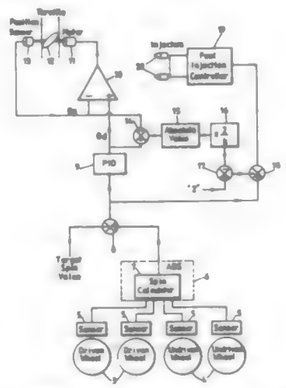
Barry J. Bridgens, West Midlands, England, assignor to Lucas Industries Public Limited Company, West Midlands, England

Filed Dec. 12, 1991, Ser. No. 805,569

Claims priority, application United Kingdom, Jan. 5, 1991, 9100224

Int. Cl.[5] B60K *26/00*

U.S. Cl. 364—426.03 **12 Claims**



1. An apparatus for controlling wheel spin for a vehicle driven by an internal combustion engine, comprising:

detection means for detecting when wheel spin exceeds a first threshold;

reduced engine demand producing means responsive to said detection means for producing a reduced engine demand;

threshold forming means for forming a second threshold which is inversely dependent on a difference between the reduced engine demand and an actual engine demand; and

fuel supply cutting means responsive to said detection means and said threshold value forming means for cutting off a supply of fuel for a predetermined pattern of engine fire events when the wheel spin exceeds the second threshold.

5,369,587

COMPUTER CONTROLLED RAILWAY BRAKE EQUIPMENT

Kevin B. Root, Black River; John J. Allen, Jr., Watertown, and Ronald O. Newton, Adams, all of N.Y., assignors to Knorr Brake Holding Corp., Westminster, Md.

Continuation of Ser. No. 984,100, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 447,816, Dec. 8, 1989, Pat. No. 5,172,316. This application Feb. 7, 1994, Ser. No. 196,901

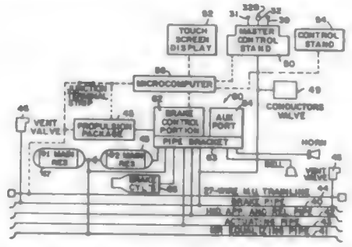
Int. Cl.[5] B60T *13/68*

U.S. Cl. 364—426.01 **4 Claims**

1. A computerized locomotive control system for a locomotive having a brake pipe, independent application and release pipe, and an actuating pipe, said system comprising:

a control stand having automatic brake and independent brake handles;

means for applying pneumatically an emergency pressure to said brake pipe when said automatic brake handle is in an emergency position;



means for converting positions of said handles into automatic and independent braking electrical signals; and

computer means for controlling pressure on said brake pipe, independent application and release pipe and actuating pipe in response to said braking signals.

5,369,588

NAVIGATION SYSTEM FOR MOTOR VEHICLES

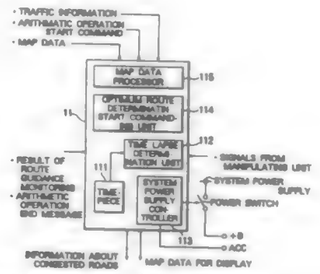
Katsuro Hayami; Kazuhiro Yokouchi; Hirofumi Goto; Chisato Yoshida, and Yasushi Fujii, all of Sanda, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1992, Ser. No. 926,029

Claims priority, application Japan, Aug. 9, 1991, 3-200560

Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—449 **3 Claims**



1. A navigation system for a motor vehicle, comprising:

manipulating means for designating at least a destination;

first storage means for storing information concerning a road network and road segments which constitute said road network;

current position detecting means for detecting a current position of said motor vehicle;

route search means for searching a plurality of routes which allows said motor vehicle to reach said destination from the current position thereof on the basis of said information available from said first storage means;

route extracting means for extracting an optimum route leading to said destination from said plurality of routes;

time lapse decision means for deciding whether or not a predetermined time period has elapsed after said optimum route was extracted, said predetermined time period starting at a point of time a system power supply was turned off; and

optimum route determination start commanding means for commanding said route search means and said route extracting means to start arithmetic determination of another optimum route, when it is decided by the time lapse decision means that said predetermined time period has elapsed.

5,369,589

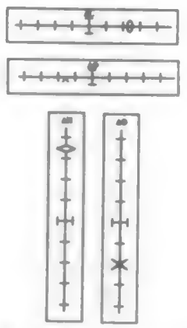
PLURAL INFORMATION DISPLAY FOR NAVIGATION

Glenn C. Steiner, Los Altos, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Sep. 15, 1993, Ser. No. 121,990

Int. Cl.[5] G06F *15/50*; **G08G** *1/123*; **G01S** *13/00*

U.S. Cl. 364—449 **25 Claims**



1. Apparatus for display of variables that characterize a path followed by a land, marine or airborne vessel, the apparatus comprising:

a computer having an associated memory unit that contains at least two of the following four vessel path variables for a preselected path that extends between a beginning path point and an ending path point: (1) first and second horizontal location coordinates, determined in a selected approximately horizontal plane, of a location on the preselected path; (2) an elevation coordinate, determined approximately perpendicular to the selected approximately horizontal plane, of a location on the preselected path; (3) horizontal bearing angle ("horizontal angle") in the selected horizontal plane at a location along the preselected path; and (4) vertical bearing angle ("vertical angle") in a selected vertical plane approximately perpendicular to the selected horizontal plane, at a location along the selected path;

vessel path characterization means for determining, at each of a sequence of two or more times, at least two of the following four vessel path variables: (1) first and second horizontal location coordinates, determined in the selected approximately horizontal plane, of the present vessel location; (2) an elevation coordinate, determined in the selected vertical plane, of the present vessel location; (3) the present horizontal angle of the vessel path; and (4) the present vertical angle of the vessel path;

first comparator means, connected to the microprocessor and to the vessel path characterization means, for determining a point on the preselected path for which preselected path vessel variable values are available in the microprocessor memory and for which that point is nearest to the present vessel location (referred to as the nearest point on the preselected path);

second comparator means, connected to the first comparator means, for determining the differences, between a value for the present vessel location and the corresponding value for the nearest point on the preselected path, of at least two of the following four variables: (1) a linear combination of least two of the first horizontal location coordinate, a second horizontal location coordinate and the elevation coordinate; (2) a choice of one of the first horizontal location coordinate, the second horizontal location coordinate and the elevation coordinate; (3) the horizontal

angle of the vessel; and (4) the vertical angle of the vessel; and

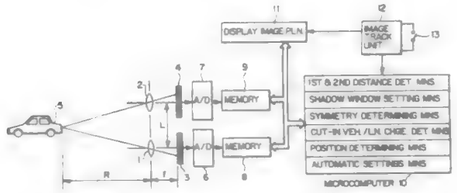
a display screen, connected to the second comparator means and having two one-dimensional scales that lie along a single axis and are interleaved with each other, the first and second scales having movable first and second variable indicia, where the first indicium visually displays a first variable difference and the second indicium displays a second variable difference that is distinct from the first variable difference, as determined by the second comparator means.

5,369,590

INTER-VEHICLE DISTANCE DETECTING DEVICE

Keiko Karasudani, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1993, Ser. No. 41,033
Claims priority, application Japan, Apr. 20, 1992, 4-098446
Int. Cl.[5] G01C *3/00*; G06F *15/50*
U.S. Cl. 364—460 **2 Claims**



1. An inter-vehicle distance detecting device wherein top and bottom image signals focused on top and bottom image sensors substantially by a pair of top and bottom optical systems, are compared and distances from a driving vehicle to preceding vehicles are measured by detecting deviation between the top and bottom images under a principle of trigonometry comprising:

a display means for displaying the images of the preceding vehicles taken by either one of the top and bottom image sensors;

an image-tracking means for setting a tracking window surrounding one of the images of the preceding vehicles and image-tracking said one of the images of the preceding vehicles by the tracking window;

a first distance detecting means for calculating the distance from the driving vehicle to the one of the preceding vehicles by detecting the deviation between the corresponding top and bottom images wherein an image signal of the one of the preceding vehicles is a reference signal;

a shadow window setting means for setting a plurality of shadow windows which are not displayed on a display image plane and which are totally different from the tracking window, at predetermined positions in the image taken by one of the top and bottom image sensors;

a second distance detecting means for detecting distances from the driving vehicle to objects caught by the respective shadow windows by detecting the deviation between top and bottom corresponding image signals wherein image signals in the shadow windows are reference signals;

a symmetry determining means for reading image signals in an arbitrary domain in the shadow windows and surroundings thereof and determining horizontal symmetry in the arbitrary domain;

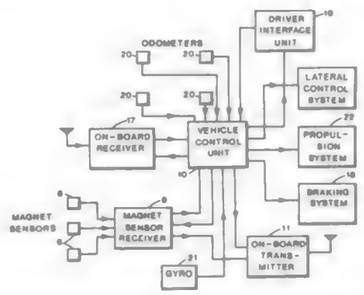
a detecting means for detecting a cut-in vehicle or lane change of the one of the preceding vehicles which is image-tracked by predicting movements of the preceding vehicles in front of the driving vehicle based on a distance information on the distances from the driving vehicle to the objects in the shadow windows caught by the second distance detecting means, an output of the symmetry determining means and an information provided by a calculation result of the image-tracking means on the one of the preceding vehicles which is image-tracked by the tracking window.

5,369,591

VEHICLE LONGITUDINAL CONTROL AND COLLISION AVOIDANCE SYSTEM FOR AN AUTOMATED HIGHWAY SYSTEM

Charles Broxmeyer, 6851 Strata St., McLean, Va. 22101

Filed Mar. 11, 1993, Ser. No. 29,722
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—461 **46 Claims**



46. A vehicle longitudinal control and collision avoidance system, for vehicles operating on a multilane highway, comprising:

means, on board each vehicle, to measure the incremental longitudinal motion of the vehicle,

gyroscope means, mounted in each vehicle, to measure the incremental motion of the vehicle around its vertical axis,

computation means, at the wayside, that are provided with an initial longitudinal position for each vehicle, and with speed limits, and receive, via vehicle-to-wayside data transmission means, outputs of said means to measure the incremental longitudinal motion of the vehicles, and generate the longitudinal position of each vehicle, and longitudinal control outputs comprising vehicle speed commands and vehicle braking commands to protect a trailing vehicle against collision with a leading vehicle, and lateral control outputs comprising vehicle steering commands causing vehicles to follow highway changes in direction and to effect vehicle transitions from a first highway lane to a second highway lane, and

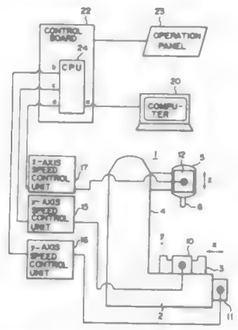
vehicle control means that receive, via wayside-to-vehicle data transmission means, said longitudinal control outputs and execute said vehicle speed commands, and said vehicle braking commands, by generating inputs to automatically control the vehicle propulsion system and the vehicle braking system of each vehicle, and receive said lateral control outputs and execute said vehicle steering commands by generating inputs for a vehicle lateral control system, said vehicle control means, further, receiving outputs of said gyroscope means and said means to measure the incremental longitudinal motion of the vehicle and generating measures of the longitudinal and lateral displacement of the vehicle from a reference point, when the vehicle departs from said first highway lane to enter said second highway lane, said measures of longitudinal and lateral displacement being communicated from said vehicle control means to said computation means via said vehicle-to-wayside data transmission means.

5,369,592

THREE-DIMENSIONAL MACHINING METHOD

Kenichi Honda, Osaka, Japan, assignor to Kabushiki Kaisha F A Labo, Osaka, Japan

Filed Oct. 26, 1992, Ser. No. 966,460
Claims priority, application Japan, Nov. 19, 1991, 3-303171
Int. Cl.[5] G06F *15/46*; G05B *19/403*
U.S. Cl. 364—474.29 **12 Claims**



1. A three-dimensional machining method for machining a workpiece, wherein machining of the workpiece is transferred from a first defined surface to a second defined surface continuously and smoothly, said three-dimensional machining method comprising the steps of:

calculating an intersection of a tool center path to machine the first defined surface and an offset surface of the second defined surface;

calculating an intersection of a tool center path to machine the second defined surface and an offset surface of the first defined surface;

generating a tool center path to create a connecting surface between the intersections; and

machining the workpiece in accordance with the generated tool center path.

5,369,593

SYSTEM FOR AND METHOD OF CONNECTING A HARDWARE MODELING ELEMENT TO A HARDWARE MODELING SYSTEM

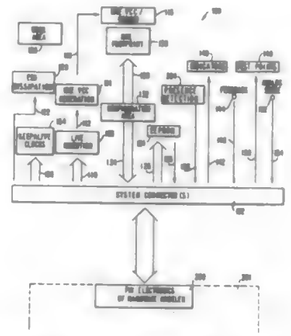
Mark S. Papamarcos, San Jose; Andrew J. Read, Sunnyvale; Wayne P. Heideman, San Jose; Robert K. Mardjuki, Pleasanton; Robert K. Couch, Santa Cruz; Peter R. Jaeger; William F. Kappauf, both of San Jose; Melvin Rudin, Los Altso; Norman F. Kelly, San Jose, and Lawrence C. Widdoes, Jr., Los Altos Hills, all of Calif., assignors to Synopsys Inc., Mountain View, Calif.

Continuation of Ser. No. 359,624, May 31, 1989, abandoned.
This application Oct. 18, 1991, Ser. No. 780,529
Int. Cl.[5] H01R *11/01*
U.S. Cl. 364—488 **19 Claims**

1. A system for connecting at least one electronic device or circuitry to a hardware modeler when the hardware modeler is powered, for evaluating the performance of the electronic device or circuitry in response to stimuli provided by the modeler, comprising:

connector means, for connection with the electronic device or circuitry, having at least one segment for mating with a section of the hardware modeler when the hardware modeler is powered, such that electrical signals can be bi-directionally transmitted between the connector means and the modeler; and

insertion circuit means, connected to the connector means, and having at least one electrical signal output, said insertion circuit means including electrostatic charge dissipation circuitry connected to the connector means configured to effect first contact with the mating section of the hardware modeler during mating to dissipate electrostatic charge on the system, ground equalization circuitry connected to the connector means configured to effect second contact with the mating section of the modeler to equalize ground levels of the system and the hardware modeler, and power supply control circuitry connected to the



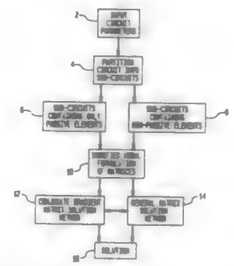
connector means configured to effect third contact with the mating section of the modeler to allow ramp-up of a power supply voltage input to the system based on a predetermined time constant said insertion circuit means and said connector means allowing for the connection and use of more than one electronic device or circuitry with a powered hardware modeler at any given time.

5,369,594

CONJUGATE GRADIENT METHOD IN COMPUTER-AIDED CIRCUIT DESIGN

Ching-Chao Huang, Hopewell Junction, and Richard D. Kimmel, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1992, Ser. No. 900,976
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **5 Claims**



1. A method for designing very large scale integrated electrical circuits having passive and non-passive circuit components, comprising the steps of:

partitioning a very large scale integrated circuit into a plurality of sub-circuits using a partitioning scheme which partitions the circuit based on a passive or non-passive nature of said circuit components, at least one of said plurality of sub-circuits consisting entirely of passive circuit components;

applying modified nodal formulation to each of said plurality of sub-circuits to formulate a corresponding matrix, each of said matrices having mathematical properties determined according to said partitioning scheme; and

solving each of said matrices with a specialized solution

method for said mathematical properties, said matrices corresponding to sub-circuits consisting entirely of passive circuit components being positive-definite symmetric and solved by conjugate-gradient method.

5,369,595

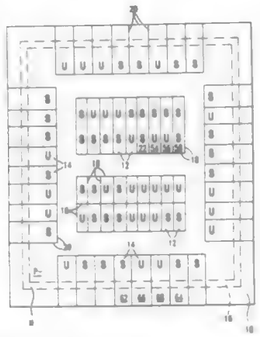
METHOD OF COMBINING GATE ARRAY AND STANDARD CELL CIRCUITS ON A COMMON SEMICONDUCTOR CHIP

Elliot L. Gould, Colchester; Douglas W. Kemerer, Essex Junction; Lance A. McAllister, Williston; Ronald A. Piro, South Burlington; Guy R. Richardson, Milton, and Deborah A. Wellburn, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 169,908, Mar. 18, 1988. This application Mar. 28, 1991, Ser. No. 676,655

Int. Cl.[5] H03K *19/177*

U.S. Cl. 364—490 **9 Claims**



1. A logic structure comprising

a semiconductor substrate having an edge, and having a plurality of contiguous inner cell locations and a plurality of contiguous outer cell locations defined therein, said outer cell locations being disposed between said inner cell locations and said edge of said substrate,

a plurality of logic circuits of a first cell type disposed within selected ones of said plurality of contiguous inner cell locations,

a plurality of logic circuits of a second cell type disposed within remaining ones of said plurality of contiguous inner cell locations,

a plurality of input/output circuits of said first cell type disposed within selected ones of said plurality of contiguous outer cell locations, and

a plurality of input/output circuits of said second cell type disposed with remaining ones of said plurality of contiguous outer cell locations.

5,369,596

SEMICONDUCTOR INTEGRATED CIRCUIT FABRICATION METHOD

Takeji Tokumaru, Kitagami, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 21, 1991, Ser. No. 795,533

Claims priority, application Japan, Nov. 22, 1990, 2-315895

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—491 **1 Claim**

1. A semiconductor integrated circuit fabrication method for designing and fabricating semiconductor circuit elements on a semiconductor substrate for a LSI circuit, comprising the steps of:

drawing a semiconductor circuit diagram by arranging standard cells for the semiconductor circuit elements and wiring among the standard cells by using a standard cell design method;

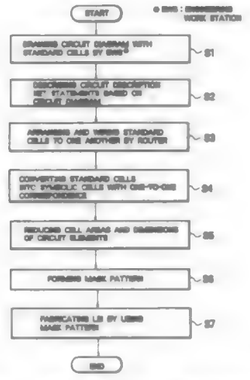
describing circuit description net statements based on the semiconductor circuit diagram;

arranging and wiring the standard cells to one another;

converting the standard cells into symbolic cells with a one-to-one correspondence to generate a symbolic cell layout;

generating a stick diagram in accordance with the symbolic cell layout;

changing the dimensions of each transistor in the symbolic cell, overlapping common areas of contact areas, vias



among them, and wires between adjacent transistors in the symbolic cells, shortening the length of wire in a transistor, and changing a position of the contact area, the vias, and the wire of the transistor to obtain the minimum area for the transistor;

forming a mask pattern in accordance with the arranging and wiring of the symbolic cells obtained by the above steps; and

forming the semiconductor circuit elements and wiring among the semiconductor circuit elements on the semiconductor substrate by using the mask pattern.

5,369,597

SYSTEM FOR CONTROLLING HEATING OR COOLING CAPACITY IN HEATING OR AIR CONDITIONING SYSTEMS

Walter E. Bujak, Jr., 7 Magnolia Dr., Suffield, Conn. 06078

Filed Dec. 21, 1992, Ser. No. 993,558

Int. Cl.[5] F24F *11/00;* **G06F** *15/20, 15/46;* **G05D** *23/00*

U.S. Cl. 364—505 **11 Claims**

1. A process for selectively activating stages of heating or cooling associated with a primary heat exchange unit, said process comprising the steps of:

sensing temperatures of a medium flowing across said primary heat exchange unit;

calculating a temperature differential from the sensed temperatures occurring in the medium flowing across the primary heat exchange unit;

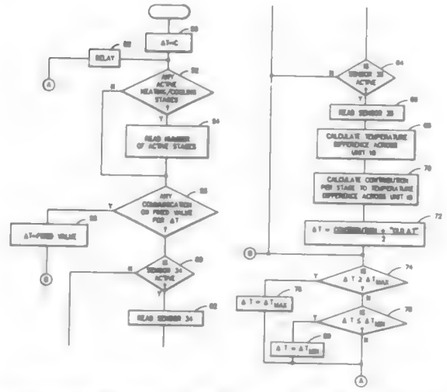
counting the number of active stages;

dividing the calculated temperature differential occurring in the medium flowing across the primary heat exchange unit by the number of currently counted active stages so as to define a currently calculated contribution by each stage;

adding the currently calculated contribution by each stage to a previously determined contribution per stage and dividing by a constant so as to define an adjusted current contribution by each stage;

using the adjusted current contribution by each stage to calculate the number of heating or cooling stages that need to be active in order to achieve a desired temperature

in a space to be heated or cooled by the medium flowing across the primary heat exchange unit; and



selectively activating the required number of heating or cooling stages.

5,369,598

FLOW AMOUNT MEASURING AND CONTROLLING APPARATUS

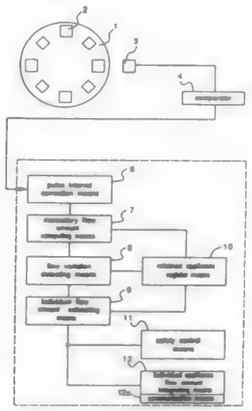
Yoshio Horiike, Katano; Toru Atsumi, Gojo; Hirokuni Murakami, and Takashi Uno, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 6, 1992, Ser. No. 848,403

Claims priority, application Japan, Apr. 4, 1991, 3-071564; Aug. 6, 1991, 3-196453; Oct. 21, 1991, 3-272302

Int. Cl.[5] G01F *1/12;* **G06F** *15/46*

U.S. Cl. 364—510 **15 Claims**



1. An apparatus for measuring and controlling the amount of flow of a fluid comprising;

a momentary amount of flow computing means for computing the amount of flow per unit time of the fluid;

an amount of flow change detecting means for detecting and outputting the amount of flow change and the time from the start of the amount of flow change to the completion thereof in accordance with the time change characteristics of the computed amount of flow per unit time of the fluid;

a retained appliance register means for storing the characteristics of the amount of flow change of each of a plurality of appliances;

an individual amount of flow estimating means for estimating the appliance whose amount of flow has changed using the amount of flow change information from the amount of flow change detecting means and the amount of flow change characteristics of the appliance stored in the retained appliance register means, and

an individual amount of flow controlling means for controlling the amount of flow of each appliance separately in accordance with the signal from the individual amount of flow estimating means.

5,369,599

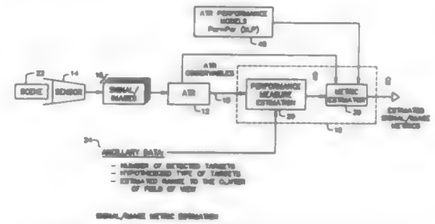
SIGNAL METRIC ESTIMATOR

Firooz A. Sadjadi, St. Anthony; Mike E. Bazakos, Bloomington, both of Minn., and Hatem Nasr, Houston, Tex., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 4, 1992, Ser. No. 925,058

Int. Cl.[5] G01S *13/04*

U.S. Cl. 364—516 **9 Claims**



1. A signal metric estimator apparatus comprising:

automatic target recognition (ATR) means for receiving a plurality of sequential multidimensional signals of a scene, and providing ATR observables, said ATR having a plurality of adjustable parameters;

ancillary data means for providing non-sensory informational data for said scene;

performance measure estimating means connected to said ATR means for receiving said ATR observables and connected to said ancillary data means for receiving said non-sensory informational data, said performance measure estimating means providing a first performance measure estimate for said ATR;

a first performance model as a function of parameters and metrics, said first performance model having coefficients;

means for varying a first parameter of said ATR from a first value to a second value;

means for determining a rate of change of a variation in said first performance measure estimate as a result of varying said first parameter from a first value to a second value; and

inverting means for using said first parameter first value, said rate of change of said variation in said first performance measure estimate, said performance model coefficients, and said first performance model to estimate a first metric value.

5,369,600

APPARATUS FOR MEASURING GAS DENSITY AND SUGAR CONTENT OF A BEVERAGE WITHIN A SEALED CONTAINER AND METHOD OF MEASURING THE SAME

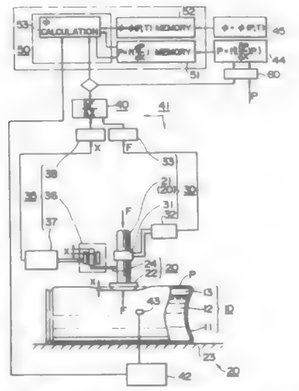
Yasushi Ito; Shogo Yamaguchi; Hironobu Fujikake; Sadahiro Abe; Masaru Nishimura; Noriaki Matsumura, and Takashi Tanaka, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Churyo Engineering Kabushiki Kaisha, Nagoya, both of Japan

Filed Dec. 23, 1992, Ser. No. 996,167

Claims priority, application Japan, Dec. 24, 1991, 3-341294; Dec. 24, 1991, 3-341295; Mar. 24, 1992, 4-066137; Sep. 17, 1992, 4-247769

Int. Cl.[5] G01L *7/00*; G01N *7/00*

U.S. Cl. 364—556 18 Claims



17. A shaking apparatus used with an apparatus for non-destructively inspecting contents in a sealed container, said contents containing a water-soluble gas and said sealed container having an elastically deformable barrel portion, said shaking apparatus agitating said contents prior to inspecting internal pressure in said container and sugar content thereof and comprising:

a water tank for immersing a part of said container to be inspected in water therein, and an ultrasonic vibrator operatively connected to said tank for transmitting ultrasonic vibrations from a lower portion of said water tank through said water to the interior of said container.

5,369,601

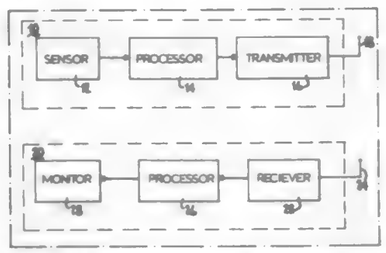
METHOD AND APPARATUS FOR EQUESTRIAN MONITORING FOR INSTRUCTION AND TRAINING

Gail Tannenbaum, 2208 Allen St., Allentown, Pa. 18104

Filed Jan. 11, 1993, Ser. No. 2,906

Int. Cl.[5] G06F *15/020*

U.S. Cl. 364—556 19 Claims



1. A method for monitoring the interaction characteristics between an animal and a rider positioned on the animal, comprising the steps of:

sensing a force exerted by a selected body portion of a rider on an animal by sensing means secured to the selected body portion;

producing a signal proportional to the magnitude of the force;

displaying a representation of the signal in a comprehensible form.

5,369,602

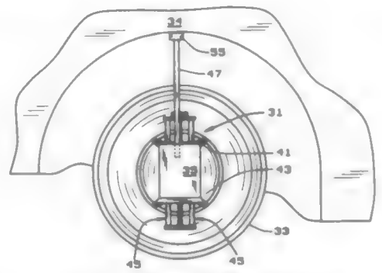
APPARATUS AND METHOD FOR DETERMINING RIDE HEIGHT

Dennis E. Naas, Woodson Terrace, and Michael T. Stieff, Wentzville, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Jul. 1, 1993, Ser. No. 86,546

Int. Cl.[5] G01D *21/00*

U.S. Cl. 364—562 21 Claims



1. Apparatus for determining ride height of a vehicle comprising:

an adapter removably mountable on a wheel of a vehicle while the wheel is mounted on the vehicle;

a member movably mounted with respect to the adapter for movement from a rest position to extended, measuring positions, said member having a first end for contacting the vehicle when the member is extended, the distance traveled by the member from its rest position to contact with the vehicle being a function of the ride height of the vehicle; and

means for determining the distance of travel of the member from its rest position to contact with the vehicle and for determining ride height from said distance of travel, said distance determining means further including means for signaling movement of the member, said distance determining means further including means responsive to the movement signaling recalls for determining when the member is in its rest position.

5,369,603

CALIBRATION OF A NON-LINEAR SENSOR

Allen Myers, Rural Route 2, Ames, Iowa 50010

Filed Jul. 19, 1992, Ser. No. 911,919

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—571.02 16 Claims

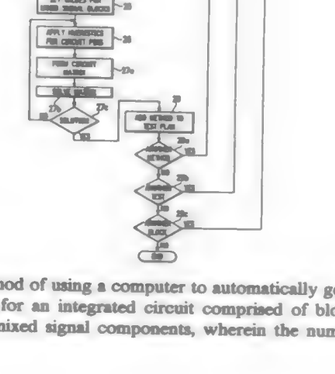
1. Apparatus for adjusting the value of a first measured parameter, comprising:

sensing means for producing an output signal which has a non-linear relationship to the value of said measured parameter;

computing means for calculating an estimated value of said measured parameter by using the value of said output signal in combination with a non-linear input output characteristic of a particular shape which relates values of said output signal to values of said measured parameter;

said computing means is operable to calculate estimated values of a second parameter which is represented by the time integral of said estimated values of said measured parameter during finite time periods;

said computing means is operable to utilize separately measured actual values of said parameter to adjust the shape of said non-linear input-output characteristic to cause said calculated values of said second parameter to closely approximate said actual values of said second parameter; and



wherein said calculation of said time integral is performed utilizing a plurality of data sums which are recorded during measurement of said measured parameter during said finite time periods, each of said data sums corresponding to a separate one of a plurality of ranges of said output signal of said sensor.

5,369,604

TEST PLAN GENERATION FOR ANALOG INTEGRATED CIRCUITS

Naiknaware Ravindranath; G. N. Nandakumar, and Srinivasa R. Kasa, all of Bangalore, India, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 5, 1993, Ser. No. 13,903

Int. Cl.[5] G05B *19/02*

U.S. Cl. 364—580 9 Claims

1. A method of using a computer to automatically generate a test plan for an integrated circuit comprised of blocks of analog or mixed signal components, wherein the number of unknown circuit voltages and currents is greater than the number of available circuit equations, comprising the steps of:

loading a block functional description of the circuit into a computer;

loading predefined block test models for each block of the integrated circuit into the computer;

setting each functional blocks' inputs to values specified by the predefined block test model for them;

automatically determining by the computer whether a sufficient number of block inputs are set by said setting step, such that the number of unknown circuit voltages and currents is the same as the number of available circuit equations;

if said number of inputs is not sufficient, automatically identifying by the computer circuit pins to be set with a known voltage value;

automatically setting by the computer each circuit pin identified during said identifying step with a voltage value;

automatically forming a matrix of circuit equations by the computer whose unknown variables include voltages at those circuit pins not identified in said identifying step;

automatically solving said matrix for said unknown variables by the computer; and

listing values provided by said solving step as circuit input values to be applied during a test of said block.

5,369,605

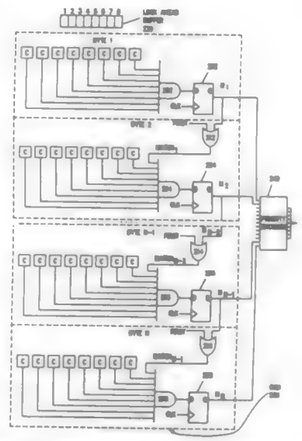
INCREMENTAL SEARCH CONTENT ADDRESSABLE MEMORY FOR INCREASED DATA COMPRESSION EFFICIENCY

Terry J. Parks, Round Rock, Tex., assignor to Dell USA, L.P., Austin, Tex.

Filed Jul. 7, 1993, Ser. No. 88,966

Int. Cl.[5] G06F *7/00*, *7/02*

U.S. Cl. 364—715.09 27 Claims



1. A memory system which performs string searches in hardware, comprising:

a plurality of memory storage units 1 to N, wherein each of said plurality of memory storage units is capable of storing associated data and is capable of comparing said associated data with external data and generating one or more compare signals indicative thereof;

wherein at least one memory storage unit included within a subset of said memory storage units comprises: a comparator which receives said one or more compare signals associated therewith and a match signal from a prior memory storage unit which indicates whether a match occurred in said prior memory storage unit, wherein said comparator asserts a respective match signal if said one or

more compare signals associated therewith indicate that said associated data of said at least one memory storage unit matches said external data and said prior memory storage unit match signal is asserted;

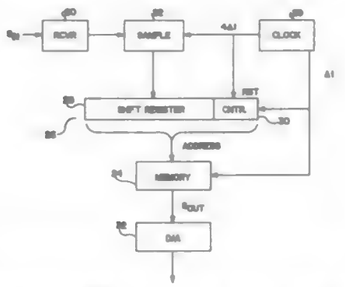
wherein said comparator provides said respective match signal to a subsequent memory storage unit.

5,369,606

REDUCED STATE FIR FILTER

Clifford Hessel, Rochester, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 14, 1992, Ser. No. 944,247
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 **13 Claims**



1. In a method of filtering an input signal in a finite impulse response (FIR) filter having plural taps in which states of the filter are stored in a memory, the improvement comprising the steps of:

providing a time-varying input signal;

sampling the input signal at a first rate to obtain a time-varying digital signal;

addressing the memory using an address derived from the digital signal and from a position indicator signal;

extracting at a second rate as the filter output, the states stored at said addressed memory;

wherein the position indicator signal is related to the ratio of the second rate to the first rate.

5,369,607

FLOATING-POINT AND FIXED-POINT ADDITION-SUBTRACTION ASSEMBLY

Fuyuki Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 12, 1993, Ser. No. 3,491
Claims priority, application Japan, Feb. 27, 1992, 4-041634
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **4 Claims**

1. A floating-point and fixed-point adder-subtractor assembly comprising:

a comparator and selector circuit comparing a first operand including a first exponent and a first fraction with a second operand including a second exponent and a second fraction, respectively, for determining which of the first and second operands has a larger magnitude;

an exponent subtracter for calculating a difference between the first and second exponents;

a first barrel shifter for shifting one of the first and second fractions in an amount equal to the difference for a first position alignment of the first and second fractions;

a first adder-subtracter for adding-subtracting the first and second fractions for generating a third fraction after the first and second fractions are positioned-aligned by the first barrel shifter;

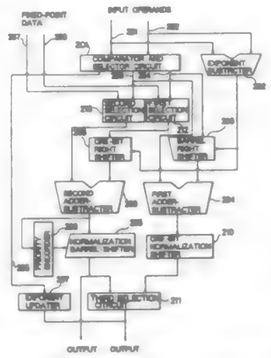
a first one-bit shifter for shifting the third fraction in an amount equal to or less than one bit for a first normalization;

a first selection circuit for selectively outputting a first fixed-point data or one of the first and second fractions supplied from the comparator and selector circuit;

a second selection circuit for selectively outputting a second fixed-point data or the other of the first and second fractions not supplied to the first selection circuit;

a second one-bit shifter for shifting the one of the first and second fractions supplied from the first selection circuit in an amount equal to the difference for a second position alignment of the first and second fractions;

a second adder-subtracter for adding-subtracting the first and second fractions for generating a fourth fraction after



the first and second fractions are positioned-aligned by the second one-bit shifter, the second adder-subtracter adding-subtracting the first fixed-point data and second fixed-point data in a fixed-point adding-subtracting mode;

a second barrel shifter for shifting the fourth fraction in an amount corresponding to the fourth fraction for a second normalization;

a third selection circuit for selecting one of the outputs of the first one-bit shifter and second barrel-shifter; and

an exponent updater for generating a third exponent for the fourth fractions.

5,369,608

APPARATUS FOR RELIEVING STANDBY CURRENT FAIL OF MEMORY DEVICE

Young H. Lim, Taegu, and Hyong G. Lee, Suweon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 23, 1992, Ser. No. 964,620
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—104 **4 Claims**

1. An apparatus for preventing standby current failure of a memory device, including:

a plurality N of string means each comprised of a NAND cell array of memory cells, each one of said memory cells including a MOS transistor having a single gate, and each of said string means being commonly connected to a respective one of a corresponding plurality N of bit lines;

a first block and a second block, each comprising:

a plurality of word lines commonly connected to said NAND cell array of each of said plurality N of string means;

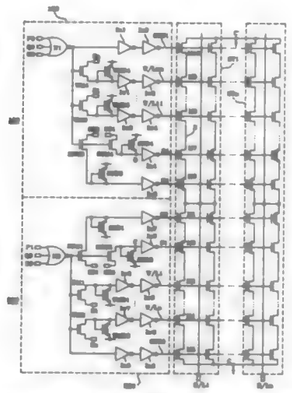
word line decoding means for selectively activating a selected one of said word lines;

a ground selection line commonly connected to said NAND cell array of each of said plurality N of string means; and,

switching means connected between said ground selection line and ground;

block decoding means for selectively activating a selected one of said first and second blocks, wherein said word line

decoding means of said selected block is enabled and said switching means of said selected block is turned on, and said switching means of the non-selected block is turned



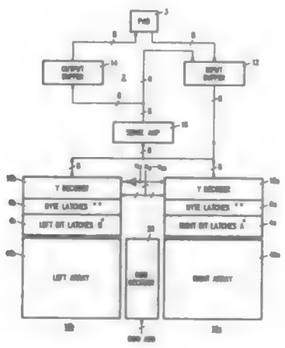
off, thereby preventing standby current failure of the memory device by suppressing a current path to ground in said non-selected block.

5,369,609

FLOATING GATE MEMORY ARRAY WITH LATCHES HAVING IMPROVED IMMUNITY TO WRITE DISTURBANCE, AND WITH STORAGE LATCHES

Ping Wang, Saratoga, and Ching-Shi Jenq, San Jose, both of Calif., assignors to Silicon Storage Technology, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 851,080, Mar. 13, 1992, Pat. No. 5,289,411. This application Nov. 12, 1992, Ser. No. 974,787
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—185 **15 Claims**



1. An electrically programmable and erasable memory device comprising:

a first section and a second section each of which is substantially identical to the other; each of said first section and said second section comprising

an array of memory cells each cell having a floating gate for the storage of charges thereon; said array of cells partitioned into a plurality of logical units with each logical unit having a first and a second plurality of memory cells connected thereto;

means for selecting a logical unit and for erasing the first and second plurality of memory cells connected to the selected logical unit;

a plurality of bit latch means;

means for storing the state of the first plurality of memory cells connected to the selected logical unit in said first section, in the bit latch means of said first section and

for storing the state of the second plurality of memory cells connected to the selected logical unit in said first section, in the bit latch means of said second section; and

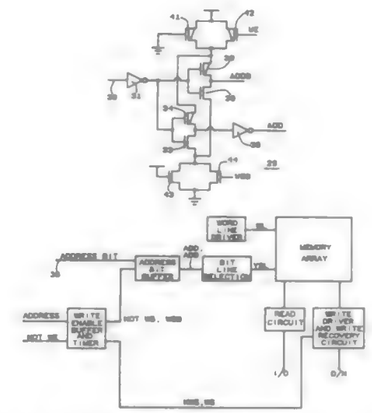
means for programming the floating gate of the first and second plurality of memory cells connected to the selected logical unit in said first section based upon the state of the bit latch means in the first section, and the state of the bit latch means in the second section.

5,369,610

STATIC MEMORY WITH IMPROVED WRITE-RECOVERY

Tung C. Chang, Hsin-chu, Taiwan, Prov. of China, and Wei Chen, Saratoga, Calif., assignors to United Microelectronics Corporation, Hsinchu, Taiwan, Prov. of China

Filed Nov. 26, 1993, Ser. No. 157,401
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.01 **18 Claims**



1. A high speed memory comprising

an array of storage cells and word selection lines and bit selection lines for selecting at least one storage cell of the array for a read or write operation in response to a multi-bit address,

write timing means for producing a signal (WE) for a write operation,

a write driver (18) responsive to a data bit (DIN) to be stored for applying a write voltage to the bit line of a selected cell, the write timing means producing a signal (WS) for the write driver,

write-recovery means (24) for thereafter discharging the selected bit line to a predetermined voltage, the write timing means producing a signal (KWS) for turning on the write-recovery means for a predetermined time, and

bit line selection means responsive to predetermined address bits for producing bit line selection signals (YSL) for read and write operations,

wherein an improved means for extending the write-recovery time comprises,

means located in the bit line selection means for selectively producing a selection signal having a predetermined length or a lengthened selection signal, and

means responsive to the write timing means for operating the bit line selection means to produce the selection signal of predetermined length during a read operation and to produce the lengthened selection signal during a write

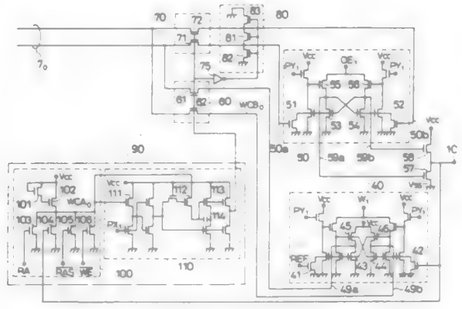
operation for extending the write-recovery timing (KWS).

5,369,611

MEMORY WITH SELECTIVELY ACTIVE INPUT/OUTPUT BUFFERS

Naoki Miura, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1993, Ser. No. 26,442
Claims priority, application Japan, Mar. 9, 1992, 4-050866
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.05 **24 Claims**



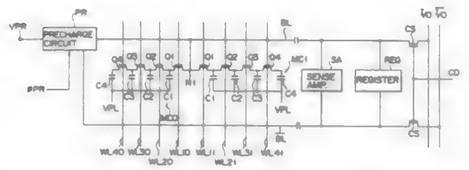
1. A random access memory having:
a plurality of cells;
a plurality of pairs of input/output bus lines transferring write data to the memory cells and read data from the memory cells;
a plurality of input/output terminals respectively corresponding to said pairs of input/output bus lines;
a plurality of input/output buffer circuits respectively corresponding to the input/output terminals and corresponding also to said input/output bus lines, each said buffer circuit being connected for transmitting write data input through the corresponding input/output terminal to the corresponding pair of input/output bus lines, and outputting read data on the corresponding pair of input/output bus lines to the corresponding input/output terminal;
wherein each of said input/output buffer circuits respectively comprises:
an output buffer connected for amplifying the read data on the corresponding input/output bus lines, and outputting amplified read data to the corresponding input/output terminal;
an output transfer gate selectively coupling and decoupling the corresponding pair of input/output bus lines with the corresponding said output buffer;
a selectively actuatable equalizing circuit connected to the corresponding pair of input/output bus lines for selectively connecting said one pair of input/output bus lines together in its operation mode; and
an access control circuit connected to control said output transfer gate to inhibit reading through said input/output buffer circuit, the access control circuit being connected to disable said output buffer selectively, on the basis of an access control signal applied to one of said input/output terminals.

5,369,612

SEMICONDUCTOR MEMORY DEVICE

Tohru Furuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 721,255, Jun. 26, 1991, abandoned. This application Dec. 27, 1993, Ser. No. 172,742
Claims priority, application Japan, Jun. 27, 1990, 2-166914; Feb. 13, 1991, 3-41316
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—189.05 **5 Claims**



1. A semiconductor memory device comprising:
a memory cell array having a plurality of dynamic memory cell units, each of the memory cell units of said memory cell array including
a first MOS transistor having first and second terminals, said first terminal of said first MOS transistor connected to a read data node;
a second MOS transistor having first and second terminals, said first terminal of said second MOS transistor connected to said second terminal of said first MOS transistor; and
first and second data storage capacitors respectively connected to said second terminals of said first and second MOS transistors;
word lines respectively connected to gates of said first and second MOS transistors for supplying signals to control ON/OFF switching of said first and second MOS transistors; and
register means arranged in a column portion of said memory cell array, for registering the data read from said memory cell units in a corresponding column in a time series manner.

5,369,613

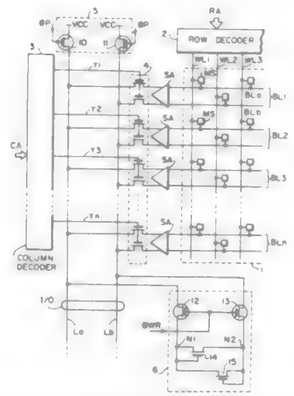
SEMICONDUCTOR MEMORY DEVICE HAVING CLAMPING CIRCIT FOR SUPPRESSING POTENTIAL DIFFERENCES BETWEEN PAIRS OF DATA I/O LINES

Yoshinori Matsui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,946
Claims priority, application Japan, Jun. 4, 1990, 2-145716
Int. Cl.[5] G11C *7/02, 11/40*
U.S. Cl. 365—189.06 **6 Claims**

1. A semiconductor memory device comprising:
a plurality of bit lines,
a plurality of word lines,
a plurality of memory cells each coupled to one of said bit lines and one of said word lines,
a plurality of sense amplifiers provided correspondingly to said bit lines,
first and second I/O lines,
a selection circuit provided between said I/O lines and said sense amplifiers for coupling one of said sense amplifiers to said I/O lines, and
a clamping circuit being activated in a data read operation

mode and forming an electrical path between said first and second I/O lines when a potential difference between said



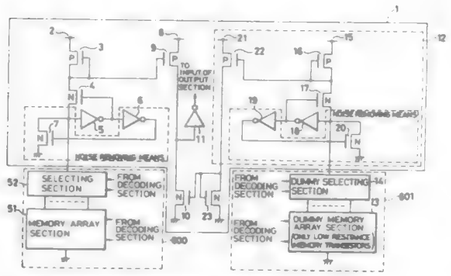
first and second I/O lines exceeds a predetermined voltage level.

5,369,614

DETECTING AMPLIFIER WITH CURRENT MIRROR STRUCTURE

Hideji Miyanishi, Toyonaka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 975,807, Nov. 13, 1992, abandoned. This application Aug. 19, 1993, Ser. No. 109,375
Claims priority, application Japan, Oct. 12, 1992, 4-272786; Nov. 30, 1992, 4-319891
Int. Cl.[5] G11C *7/02*
U.S. Cl. 365—207 **15 Claims**



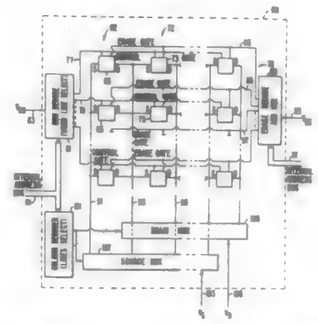
1. A detecting amplifier comprising:
a first transistor arranged between a first positive power source and a semiconductor memory means and connected in series to the first positive power source and having a low turning-on resistance value such that no lower limit value of a voltage drop value by the turning-on resistance value of the first transistor is equal to or smaller than a voltage value on a bit line;
a second transistor arranged between the first transistor and the semiconductor memory means and connected in series to the first transistor and connected to a negative feedback circuit having a first inverting element; and
a third transistor arranged between a second positive power source and an output section of the detecting amplifier and connected in series to the second positive power source and constituting a current mirror structure together with the first transistor.

5,369,615

METHOD FOR OPTIMUM ERASING OF EEPROM

Eliyahou Harari, Los Gatos; Daniel C. Guterman, Fremont; Sanjay Mehrotra, Milpitas, and Stephen J. Gross, Santa Clara, all of Calif., assignors to SunDisk Corporation, Santa Clara, Calif.

Continuation of Ser. No. 670,246, Mar. 15, 1991, Pat. No. 5,270,979. This application Nov. 8, 1993, Ser. No. 149,602
The portion of the term of this patent subsequent to Dec. 14, 2010, has been disclaimed.
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—218 **6 Claims**



1. For an array of a plurality of electrically erasable and programmable read only memory cells having means for addressing the cells to program, read and erase their states, each cell having a field effect transistor that includes a floating gate and an erase electrode, and having a natural threshold voltage that is alterable by programming or erasing to a level of charge on the floating gate to obtain an effective threshold voltage, wherein said natural threshold voltage corresponds to that when the floating gate has a level of charge equal to zero, said array being partitioned into sectors of memory cells, each sector being addressable for simultaneous erasing of all cells therein, a method of erasing a sector of addressed cells of the array, comprising the steps of:
reading a first set of erase parameters previously stored in said sector;
erasing said sector by using said first set of erase parameters;
determining a second set of erase parameter for optimally erasing of said sector in a subsequently erase; and
storing back said second set of erase parameters in said sector.

5,369,616

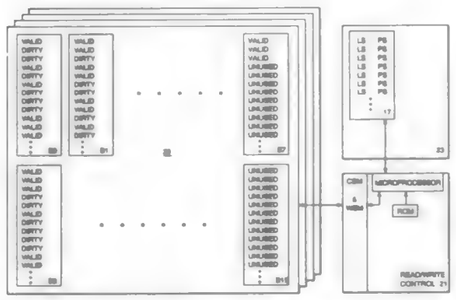
METHOD FOR ASSURING THAT AN ERASE PROCESS FOR A MEMORY ARRAY HAS BEEN PROPERLY COMPLETED

Steven E. Wells, Citrus Heights, and Eric J. Magnusson, Orangevale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 969,032, Oct. 30, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 207,228
Int. Cl.[5] G06F *13/16*
U.S. Cl. 365—218 **4 Claims**

1. A method for insuring that each erase operation practiced on a block of flash EEPROM transistors which is part of a flash EEPROM memory array is carried out reliably, each flash EEPROM transistor storing a bit having a first state and a second state, each erase operation bringing the bits in the block to the first state, the method comprising the steps of:
a designating a first group of three bits in the block to represent the condition of erase operations;
b) programming to the second state a first bit of the first

group of three bits to indicate that an erase operation should take place on the block;
c) programming to the second state a second bit of the first group of three bits before an erase operation begins;
d) beginning a first erase operation, completion of the first erase operation bringing all bits of the first group of three bits to the first state:
e) if the first erase operation was successfully completed



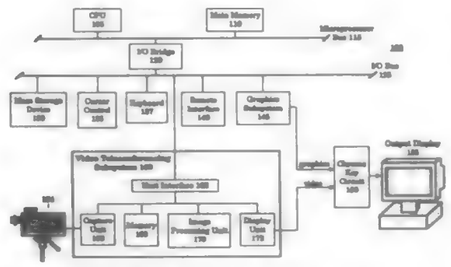
programming to the second state a third bit of the first group of three bits;
f) testing all bits of the first group of three bits to determine their condition in response to the reapplication of power to the flash EEPROM array; and
g) initiating a second erase operation unless the third bit of the first group of three bits is in the second state and the first and the second bit of the three bits both are in the first state.

5,369,617

HIGH SPEED MEMORY INTERFACE FOR VIDEO TELECONFERENCING APPLICATIONS

Bill A. Munson, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 21, 1993, Ser. No. 172,113
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—219 **36 Claims**



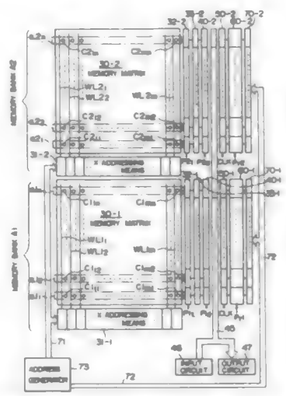
1. An apparatus for interfacing a high speed memory for video teleconferencing between a host and at least one a remote source, said apparatus comprising:
a high speed channel interface including an arbiter, coupled to said high speed memory, for allocating bandwidth for said high speed memory for display service, capture service, host service and refresh service;
a capture FIFO, including capture transfer logic, coupled to said high speed channel interface, for receiving raw capture video data, and for buffering said raw capture video data at a capture rate, and for transferring said raw capture video data from said capture FIFO to said high speed memory during said capture service;
a host FIFO, including host transfer logic, coupled to said high speed channel interface, for receiving input display video data from said at least one remote source, for buffering said input display video data, and said host transfer logic for transferring said input display video data from said host FIFO, during said host service, to said high speed memory, and for transferring, from said high speed memory, capture video data, during said host service, to said host FIFO; and
a display FIFO, including display transfer logic, coupled to said high speed channel interface, for transferring display video data, during said display service, from said high speed memory to said display FIFO, and for buffering said display video data to provide said display video data at a display rate for said host.

5,369,618

SERIAL ACCESS MEMORY

Atsushi Takasugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

PCT No. PCT/JP92/00717, § 371 Date Feb. 2, 1993, § 102(e) Date Feb. 2, 1993, PCT Pub. No. WO92/22068, PCT Pub. Date Dec. 10, 1992
PCT Filed Jun. 3, 1992, Ser. No. 978,699
Claims priority, application Japan, Jun. 4, 1991, 3-133074
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.01 **45 Claims**



34. A serial access memory comprising:
(a) a first and second memory cell arrays provided individually with plural memory cell groups each of which has a multiplicity of memory cells, a like plural number of word lines corresponding to the respective plural memory cell groups, said word lines being connected with the multiplicity of memory cells in the corresponding memory cell groups, and a like plural number of bit lines which, when any one of the plural word lines has been selected, correspond to and are electrically connected with the multiplicity of memory cells connected with the word line so selected;
(b) first and second word line address means corresponding to the first and second memory cell arrays, respectively, said first and second word line address means being adapted to select any ones of the plural word lines of the corresponding memory cell arrays;
(c) first and second data register means corresponding to the first and second memory cell arrays, respectively, each of said first and second data register means having a like plural number of latches which correspond to the plural bit lines, respectively, and are adapted to hold data to or from the corresponding bit lines;
(d) a data line for transferring data to or from the latches;
(e) first and second switching means corresponding to the

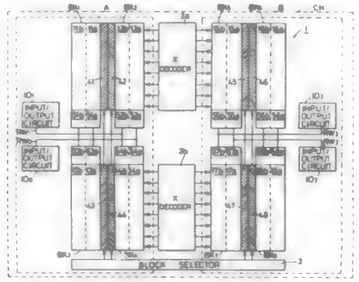
first and second memory cell arrays, respectively, each of said first and second switching means having a like plural number of switches which correspond to the plural latches, respectively, and are adapted to electrically connect or disconnect the data line with the corresponding latches; and
(f) a control for sequentially bringing plural switches, which belong to a desired first switch group out of the plural switches of said first switching means, and plural switches, which belong to a desired second switch group out of the plural switches of said switching means, into a connected state for a predetermined period of time.

5,369,619

SEMICONDUCTOR MEMORY DEVICE READING/WRITING DATA OF MULTIPLE BITS INTERNALLY

Atsushi Obba, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,582
Claims priority, application Japan, Oct. 24, 1990, 2-287890
Int. Cl.[5] G11C *7/00, 11/34*
U.S. Cl. 365—230.03 **3 Claims**



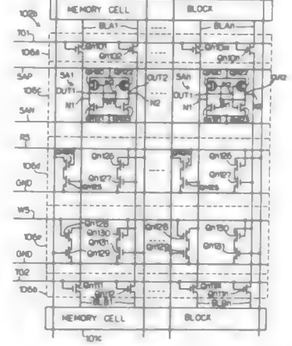
1. A semiconductor memory device in which reading/writing operation of data of a plurality of bits is carried out internally, said semiconductor memory device being substantially rectangular with a length in a first direction and a width in a second direction, at right angles with said first direction, and including a first region and a second region arranged along said first direction, comprising:
a first set of a plurality of memory array blocks provided in said first region and being arranged in first and second rows along said first direction, each memory array blocks comprising one or more sub-blocks,
a second set of a plurality of memory array blocks provided in said second region and being arranged in first and second rows along said first direction, each memory array blocks comprising one or more sub-blocks,
a first set of one or more input/output means provided in said first region, for input/output of data of a plurality of bits, and connected to said one or more sub-blocks included in each of said first set of a plurality of memory array blocks in the first region,
a second set of one or more input/output means provided in said second region for input/output of data of a plurality of bits and connected to said one or more sub-blocks included in each of said second set of a plurality of memory array blocks in the second region,
a first set of one or more data buses provided in said first region, each of said first set of one or more data buses being connected between the corresponding input/output means in said first region and the corresponding sub-blocks in said first region,
a second set of one or more data buses provided in said second region, each of said second set of one or more data buses being connected between the corresponding input-/output means in said second region and the corresponding sub-blocks in said second region,
block selecting means for selecting simultaneously one of said plurality of memory array blocks in each of said first and second regions for reading/writing of said data of a plurality of bits, and being arranged along said first direction at one side of said first and second rows of the plurality of memory array blocks,
a first set of a plurality of main word lines extending along said first direction in said first row of memory array blocks, each main word line commonly provided to said first row of memory array blocks of each region,
a second set of a plurality of main word lines extending along said first direction in said second row of memory array blocks, each main word line commonly provided to said second row of memory array blocks of each region,
first main word line selecting means for selecting one of said first set of main word lines and being arranged along said second direction and positioned between said first and second regions, and
second main word line selecting means for selecting one of said second set of main word lines and being arranged along said second direction and positioned between said first and second regions.

5,369,620

DYNAMIC RANDOM ACCESS MEMORY DEVICE HAVING COLUMN SELECTOR FOR SELECTING DATA LINES CONNECTABLE WITH BIT LINES

Tadahiko Sugibayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 16, 1993, Ser. No. 92,061
Claims priority, application Japan, Jul. 16, 1992, 4-188519
Int. Cl.[5] G11C *7/00, 8/00*
U.S. Cl. 365—230.03 **6 Claims**



1. A semiconductor memory device fabricated on a single semiconductor chip, comprising:
a) a plurality of memory cell blocks each implemented by a plurality of memory cells arranged in rows and columns;
b) a plurality sets of bit line pairs each associated with said plurality of memory cell blocks, and each having a plurality of bit line pairs respectively coupled with the columns of memory cells of the associated memory cell block;
c) a row selecting system associated with said plurality of memory cell blocks, and selectively allowing said plurality of memory cell blocks to transfer data bits from and to the associated bit line pairs;
d) a plurality of data transferring and sensing units each available for two memory cell blocks selected from said plurality of memory cell blocks, each of said plurality of data transferring and sensing units comprising
d-1) a plurality of sense amplifier circuits for amplifying

potential differences indicative of data bits, respectively,

d-2) a first transfer gate unit coupled between the plurality of bit line pairs associated with one of said two memory cell blocks and said plurality of sense amplifier circuits, and responsive to a first transfer signal for transferring said potential differences between said plurality of bit line pairs and said plurality of sense amplifier circuits,

d-3) a second transfer gate unit coupled between the plurality of bit line pairs associated with the other of said two memory cell blocks and said plurality of sense amplifier circuits, and responsive to a second transfer signal complementary to said first transfer signal for transferring said potential differences between said plurality of bit line pairs and said plurality of sense amplifier circuits,

d-4) a third transfer gate unit coupled with said plurality of sense amplifier circuits, and responsive to a read enable signal for entering on-state, and

d-5) a fourth transfer gate unit coupled with said plurality of sense amplifier circuits, and responsive to a write enable signal for entering on-state;

e) a plurality of data line pairs arranged in parallel to said plurality of bit line pairs, and coupled with both third and fourth transfer gate units;

f) a read/write amplifier unit operative to produce an output data signal from a potential difference indicative of one of said data bits and a new potential difference from an input data signal; and

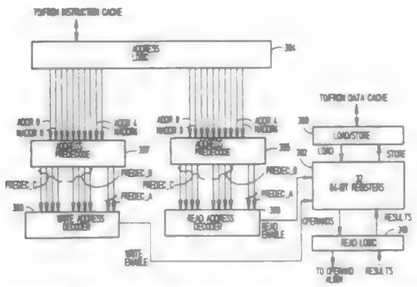
g) a column selecting and precharging means coupled between said read/write amplifier unit and said plurality of data line pairs, and operative to coupled one of said plurality of data line pairs and to charge said one of said plurality of data line pairs for producing said potential difference indicative of one of said data bits and said new potential difference thereon.

5,369,621

DOMINO STYLE ADDRESS PREDECODER

Russell W. Mason, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 26, 1992, Ser. No. 935,952
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—230.06 **4 Claims**



1. An address decoder for providing a signal for accessing a particular memory register of a memory device having a plurality of memory registers, comprising:

means for providing an address of said particular memory register across a number of address lines in accordance with the number of memory registers of said memory device;

a plurality of address decoders for selecting said particular memory register of said memory device by providing said signal to said particular memory register; and

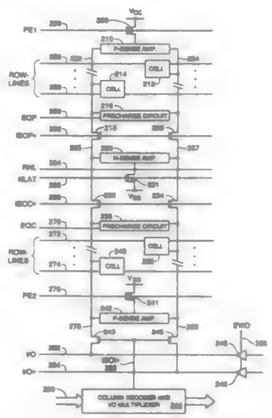
a predecoder responsive to said number of address lines for decoding every n pairs of address lines into 2n memory select lines which are provided only to the address decoders corresponding to the memory registers unique to said n pairs of address lines.

5,369,622

MEMORY WITH ISOLATED DIGIT LINES

Loren L. McLaury, Boise, Id., assignor to Micron Semiconductor, Inc., Boise, Id.

Filed Apr. 20, 1993, Ser. No. 49,275
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—233 **13 Claims**



1. A system for storing a data signal, the system responsive to the data signal and a control signal, the system comprising:

a. a timing signal generator coupled to the control signal and responsive to the control signal for providing a first timing signal, a second timing signal, a third timing signal, and a fourth timing signal;

b. a first means for coupling, the first means coupled to the data signal and responsive to the data signal, the first means coupled to the timing signal generator and responsive to the first timing signal and the second timing signal, the first means providing a gated data signal after the first timing signal is received and until the second timing signal is received;

c. a capacitance for storing a charge, the capacitance charged by the gated data signal;

d. a first sense amplifier, the first sense amplifier coupled to the first means and responsive to the gated data signal, the first sense amplifier coupled to the capacitance, the first sense amplifier responsive to the gated data signal for providing an amplified data signal;

e. a second means for coupling, the second means coupled to the first sense amplifier and responsive to the amplified data signal, the second means coupled to the timing signal generator and responsive to the third timing signal and the fourth timing signal, the second means providing a gated amplified data signal after the third timing signal is received and not after the fourth timing signal is received; and

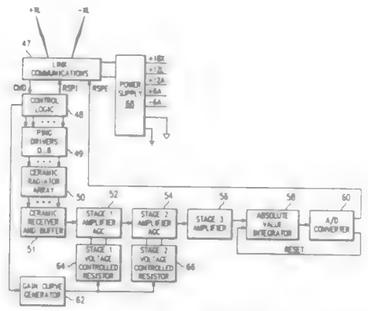
f. a cell for storing the gated amplified data signal, the cell coupled to the second means for coupling and responsive to the gated amplified data signal the gated amplified data signal and the charge in combination having sufficient power to overwrite the cell, so that the first sense amplifier attains a state corresponding to the data signal after the first timing signal is provided and the cell attains a state corresponding to the data signal after the third timing signal is provided such that the occurrence of the second signal precedes the occurrence of the third signal.

5,369,623

ACOUSTIC POOL MONITOR WITH SEQUENTIALLY ACTUATED MULTIPLE TRANSDUCERS

Frank Zerangue, Garland, Tex., assignor to Rotor Dynamics Americas, Inc., Fort Worth, Tex.

Filed Dec. 7, 1992, Ser. No. 987,019
Int. Cl.[5] G08B *21/00*
U.S. Cl. 367—93 **48 Claims**



1. In a monitoring system for use in detecting a foreign object in a body of liquid such as in a swimming pool or the like, the combination comprising:

a) at least one transducer support adapted to be immersed in a body of liquid;

b) a plurality of electro acoustic transducer means mounted on said support for transmitting acoustic energy directionally away from said support along outward conical transmission paths and for producing an output signal in response to received acoustic energy;

c) each of said transducer means being configured on said support with the active faces thereof oriented to transmit acoustic energy away from said support in complementary conical transmission paths defining different sectors of a field to be monitored;

d) control means for sequentially activating said transducer means to generate a series of time spaced acoustic pulses sequentially from said transducer means at time intervals sufficient to permit the arrival of a subsequent echo pulse at each of said transducer means before the sequential generation of a pulse from another transducer means; and

e) means responsive to a reflected echo being received at one of said transducer means before the expiration of a predetermined time period for generating an alarm function.

5,369,624

DIGITAL BEAMFORMER HAVING MULTI-PHASE PARALLEL PROCESSING

Hiroshi Fukukita, Tokyo, Japan; Lin X. Yao, Bellevue, Wash.; Zoran Banjanin, Renton, Wash.; Jin Kim, Issaquah, Wash.; Hisashi Hagiwara, and Masami Kawabuchi, both of Yokohama, Japan, assignors to Siemens Medical Systems, Inc., Iselin, N.J. and Matsushita Electrical Industrial Co. Ltd., Osaka, Japan

Filed Mar. 26, 1993, Ser. No. 37,765
Int. Cl.[5] G01S *15/00;* **A61B** *8/00*
U.S. Cl. 367—103 **26 Claims**

13. Apparatus for producing a digital beamformer signal using output signals generated by an array of transducer elements in response to the reception of waves, for electronically scanning a body, comprising:

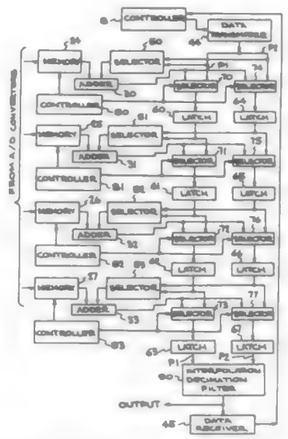
a plurality of parallel receiving channels for processing said output signals, each receiving channel including convening means for converting the output signal in each parallel receiving channel into a digital signal comprised of digital samples;

a plurality of parallel summing paths, each parallel summing path comprising a series connection of digital data adding stages and having an output;

delay determination means for determining for each digital sample of each digital signal, one of said parallel summing paths to which said digital sample is to be applied, said determination being based upon a time delay to be achieved between the digital samples of adjacent ones of said parallel receiving channels;

selective adding means responsive to said delay determination means for causing each digital sample of each of said plurality of receiving channels to be controllably added to said one parallel summing path determined for it, for forming added digital data samples in said parallel summing paths; and

combining means responsive to said added digital data samples provided from the output of said parallel summing paths for combining the added digital data samples of each of said parallel summing paths for forming said digital beamformer signal.



5,369,625

THERMOACOUSTIC SOUND GENERATOR

Thomas B. Gabrielson, Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 31, 1991, Ser. No. 709,901
Int. Cl.[5] H04R *23/00*
U.S. Cl. 367—140 **10 Claims**

1. Apparatus for projecting sound into a body of water comprising:

means providing a resonator tube, said tube being closed at one end and open at its opposite end, and having a central axis extending from the closed end toward the open end;

a thermoacoustic stack situated within said tube, said stack having first and second ends spaced from each other in the direction of the axis of the tube;

means for establishing a temperature difference between said first and second ends of the stack whereby one of said first and second ends is hotter than the other of said first and second ends; and

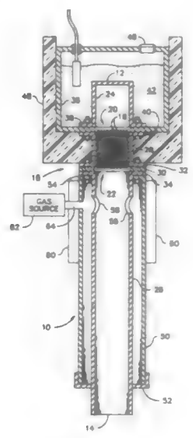
means providing a gas for substantially filling said tube;

in which said tube-providing means, when substantially filled with said gas and submerged in a body of water with substantially the entire tube situated above the level of said open opposite end, prevents the escape of said gas so that substantial entry of water into said tube is prevented by said gas;

in which said tube comprises a first tubular section extending from said closed one end toward said open opposite end,

a second tubular section extending from said open opposite end toward said closed one end, and a thermally insulating tubular means, surrounding said thermoacoustic stack;

in which said means for establishing a temperature difference between said first and second ends of the stack comprises heat generating means, first heat exchange means



thermally coupling said heat generating means to said first end of the stack, and second heat exchange means for thermally coupling said second end of the stack to a surrounding body of water; and

in which said insulating tubular means thermally insulates said first and second heat exchange means from each other.

5,369,626

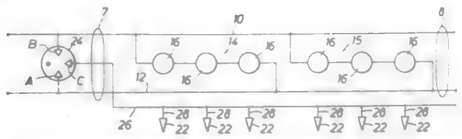
LIGHTNING PROTECTION FOR SEISMIC DATA ACQUISITION SYSTEM

Paul E. Carroll, Houston, Tex., assignor to Input/Output, Inc., Stafford, Tex.

Filed Jun. 22, 1993, Ser. No. 81,401

Int. Cl.[5] H04R *11/00*; **H02H** *9/04, 3/20*

U.S. Cl. 367—188 **7 Claims**



1. An electric circuit protection device in combination with at least one sensor implanted within a predetermined ground area for a seismic data acquisition system, said at least one sensor including a cable having a pair of electrical leads connecting the sensor for providing seismic data to recording apparatus;

said protection device comprising a surge suppressor connected across said leads for limiting the electrical energy through said at least one sensor

wherein said at least one sensor has an electrically isolated base implanted within the ground area, and a ground lead connects said base to said surge suppressor for the dissipation of electrical energy into the ground area through said base.

5,369,627

IMPROVEMENTS IN BEARING AND FRAME STRUCTURE OF A TIMEPIECE

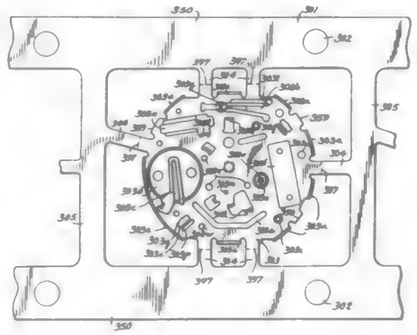
Toshimasa Ikegami, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 221,497, Jul. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 164,299, Mar. 4, 1988, Pat. No. 5,008,868. This application Feb. 27, 1992, Ser. No. 842,812

Claims priority, application Japan, Jul. 21, 1987, 62-181341; Dec. 9, 1987, 62-187315[U]

Int. Cl.[5] G04C *23/00*

U.S. Cl. 368—88 **20 Claims**





1. A timepiece comprising:

a plurality of internal members including a timekeeping gear train;

a first frame formed of metal, having bearing means formed integrally therein, and including a first side and a second side;

a second frame formed of metal having a first side and a second side and spaced from said first frame so that at least a part of the second side of said second frame faces a part of said first side of said first frame, a portion of said internal members including said timekeeping gear train being supported between and by said first and second frames, said second frame including first leaf spring bias means formed integrally therewith for applying holding force when deflected relative to said second frame; and

circuit pressing means formed of metal connected to said first frame and disposed in part facing a portion of the first side of said second frame for preventing movement of said second frame relative to said first frame, said circuit pressing means being shaped so as to not overlie the portions of said first and second frames supporting said timekeeping gear train and being coupled to the second side of said first frame, said circuit pressing means including second leaf spring bias means formed integrally therewith for positioning at least two other of the internal members relative to each other by exerting pressure against at least of one of said at least two other internal members.

5,369,628

MAGNETO-OPTIC RECORDING MEDIUM, MAGNETO-OPTIC RECORDING SYSTEM AND MAGNETO-OPTIC RECORDING METHOD

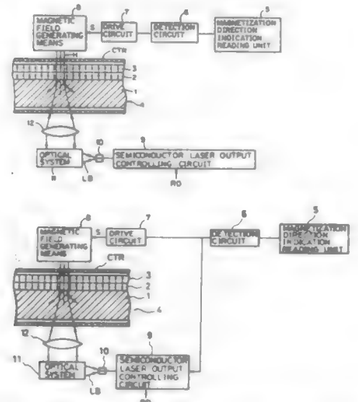
Kyosuke Yoshimoto; Osamu Ito; Kunimaro Tanaka; Koichi Takeuchi; Isao Watanabe, and Kazuhiko Tsutsumi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1990, Ser. No. 591,610

Claims priority, application Japan, Oct. 2, 1989, 1-257215; Nov. 21, 1989, 1-304274

Int. Cl.[5] G11B *13/04, 11/12, 11/10*

U.S. Cl. 369—13 **6 Claims**



1. A magneto-optical recording system for recording information by irradiating a light beam and applying a magnetic field to a magneto-optical recording medium comprising:

a magneto-optical recording medium having a first magnetic layer for information to be recorded thereon and a second magnetic layer having a fixed magnetization direction said recording medium is accommodated in a cartridge, said cartridge being provided with a magnetization direction indicating portion for indicating the direction of magnetization of said second magnetic layer; means for reading the contents of the magnetization direction indicating portion from said cartridge; means for detecting the magnetization direction of the second magnetic layer from output of said reading means; magnetic field generating means including a drive circuit means responsive to the detecting means, for generating said magnetic field having a magnetization direction opposite to the detected magnetization direction of the second magnetic layer to said medium; and optical means for irradiating said light beam to the medium.

6. A magneto-optical recording system for recording information by irradiating a light beam and applying a magnetic field to a magnetic-optical recording medium comprising:

a magneto-optical recording medium having a first magnetic layer for information to be recorded thereon and a second magnetic layer having a magnetization direction being fixed in one direction, said recording medium is accommodated in a cartridge, said cartridge is provided with a magnetization direction indicating portion for indicating the direction of magnetization of said second magnetic layer; means for reading the contents of the magnetization direction indicating portion from said cartridge; means for detecting the magnetization direction of the second magnetic layer in accordance to the output of said reading means; magnetic field generating means including a drive circuit means responsive to the detecting means, for generating said magnetic field with a magnetization direction opposite to the detected magnetization direction of the second magnetic layer to said medium; optical means for irradiating said light beam to the medium; and light beam output means for controlling the irradiating of said light beam in accordance to the direction of magnetization of the second magnetic layer detected by said means for detecting.

5,369,629

MAGNETO-OPTICAL RECORDING METHOD AND MAGNETO-OPTICAL RECORDING MEDIUM

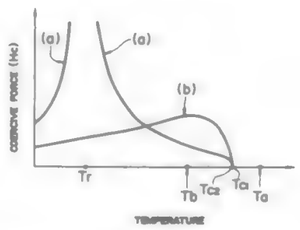
Atsuyuki Watada, Kawasaki; Toshiaki Tokita, Zama, and Motoharu Tanaka, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 28, 1992, Ser. No. 890,631

Claims priority, application Japan, May 31, 1991, 3-155434

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—13 **2 Claims**



1. A magneto-optical recording method for recording information in an overwrite mode in a magneto-optical recording medium by the application of a laser beam, said magneto-optical recording medium comprising a substrate, and at least two magnetic recording layers overlaid thereon, with an exchange force working at least between said two magnetic recording layers, and the Curie temperature of each of said two magnetic recording layers being substantially the same, comprising the step of:

conducting overwriting information by changing the power of said laser beam to be applied to at least two different levels, one at which said magnetic recording layers are heated to a temperature near or higher than said Curie temperature, and the other at which said magnetic recording layers are heated to a temperature lower than said Curie temperature, while a magnetic field is applied to said magneto-optical recording medium in one direction, in accordance with signals to be recorded in said magneto-optical recording medium, with only one initialization by the application of said magnetic field being required before recording, but no further initialization required thereafter.

5,369,630

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS HAVING MEANS FOR TRACKING ADJUSTMENT AND A METHOD OF USE THEREFORE

Kenji Hirose, Narashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 853,434, Mar. 18, 1992, abandoned. This application Jun. 30, 1993, Ser. No. 84,432

Claims priority, application Japan, Mar. 20, 1991, 3-080649; Aug. 28, 1991, 3-240297; Feb. 25, 1992, 4-038022

Int. Cl.[5] G11B *7/00*

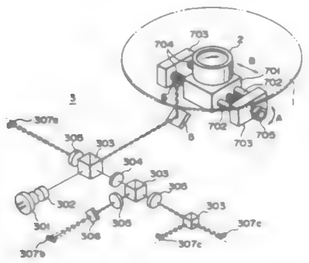
U.S. Cl. 369—100 **67 Claims**

1. An optical information recording-reproducing apparatus comprising:

means for forming a plurality of beam spots on an information recording medium to effect at least one of (i) record-

ing information, (ii) reproducing information, and (iii) erasing information;

drive means for rotatably driving the information recording medium; and



means for moving said drive means in a direction substantially perpendicular to a tracking direction which extends radially from an axis of the information recording medium and intersects at least one of the plurality of beam spots.

5,369,631

RECORDING/REPRODUCING APPARATUS FOR OPTICAL TAPE

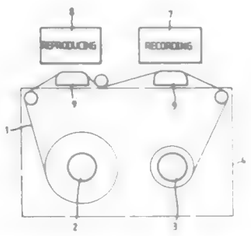
Won-Jae Hwang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Oct. 20, 1992, Ser. No. 963,672

Claims priority, application Rep. of Korea, Oct. 21, 1991, 91-18521; Oct. 23, 1991, 91-18684

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—113 **9 Claims**



1. A recording and reproducing apparatus for an optical tape comprising:

first optical pickup means for causing a light beam to scan an optical tape having a thermal converting layer, said light beam having a first predetermined amount of heat energy and being modulated in accordance with information to be recorded so as to optically record the information onto the optical tape;

second optical pickup means for radiating a light having a second predetermined amount of heat energy onto the optical tape and detecting and reproducing the light reflected therefrom to read said information;

said first and second optical pickup means each defining an exclusive optical path therein and being selectively operable based upon which one of recording and reproducing is required.

5,369,632

DISC WITH PREVENTION OF STATIC ELECTRIC CHARGE BUILD-UP

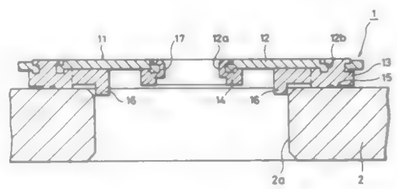
Kenji Takahashi, Miyagi, Japan, assignor to Sony Corporation, Japan

Filed Aug. 12, 1992, Ser. No. 928,348

Claims priority, application Japan, Aug. 16, 1991, 3-229686

Int. Cl.[5] G11B *3/70*

U.S. Cl. 369—282 **12 Claims**



1. A disc having a disc body and adapted to be mounted on a spindle, said disc further comprising:

a disc hub including a magnetic-chucking plate formed of a ferrous material;

an outer peripheral ring bonded to said disc body and adapted to hold said chucking plate to thereby attach said chucking plate to said disc body;

an inner ring molded onto an inner circumference of said chucking plate, and having a centering aperture formed therein for mounting said disc on said spindle, said inner ring being made of a wear-resistant resin having sufficient conductivity to effectively prevent a static electric charge build-up thereon.

5,369,633

DIGITAL SIGNAL TRANSMISSION SYSTEM HAVING MONITOR EQUIPMENT

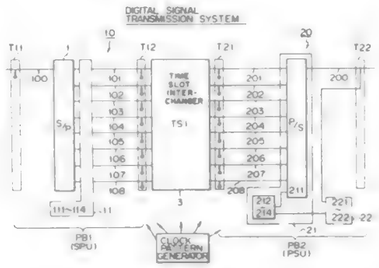
Akira Maruyama; Shuji Kimura; Shigeki Yamada; Hiroaki Shirai; Hiroichi Nara, and Kazunori Hanaeda, all of Kawasaki, Japan, assignors to Fujitsu Limited, Japan

Filed May 27, 1992, Ser. No. 888,799

Claims priority, application Japan, May 27, 1991, 3-120543

Int. Cl.[5] H04J *3/14*

U.S. Cl. 370—13 **11 Claims**



1. A digital signal transmission system having monitor equipment, the system including, at least, a serial/parallel, S/P, converter provided with a multiplexed channel line at an input side and individual channel lines at an output side, and a parallel/serial, P/S, converter provided with individual channel lines at an input side and a multiplexed channel line at an output side, said monitor equipment comprising:

an input for receiving pass pattern signals and outputting the pass pattern signals to the S/P converter;

first monitor means for receiving in parallel the pass pattern signals passing through the S/P converter and converting the same into plural sets of serial pass pattern signals to be applied in parallel to respective ones of the individual channel lines to achieve a S/P converter side pass pattern generation; and

second monitor means for receiving respective serial pass pattern signals sent via respective ones of the individual channel lines and distributing each of said serial pass pattern signals through the P/S converter to the multiplexed channel line of the P/S converter sequentially, frame by frame, to achieve a P/S converter side pass pattern generation.

5,369,634

TRANSMISSION QUALITY ASSESSMENT ARRANGEMENT

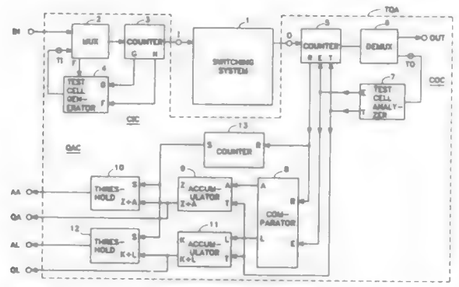
Frank L. Deuissen, Aartselaar, Belgium, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed May 14, 1991, Ser. No. 699,968

Claims priority, application European Pat. Off., May 15, 1990, 90201219.4

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—17 **11 Claims**



1. Transmission quality assessment arrangement for a communication switching system in which a cell stream of information cells is transmitted from an input to an output over a common communication path, said arrangement comprising:

an input circuit associated with said input for inserting in an original cell stream a test cell having an associated tag not present in the original cell stream and corresponding to a first count indicative of an original cell position at which the test cell was inserted in the original cell stream to thereby form a modified cell stream which is transmitted over the common communication path;

an output circuit associated with said output for counting the cells in said modified cell stream to thereby determine a second count indicative of the final cell position of said test cell in said modified cell stream after it has been transmitted over the common communication path and received by the output; and

a quality ascertaining circuit further comprising

a comparator for comparing said first count with said second count and

evaluation circuitry coupled to said comparator for deriving from said comparison an indication of the cell transmission quality.

5,369,635

HIGH BIT RATE CELL SWITCHING ELEMENT IN CMOS TECHNOLOGY

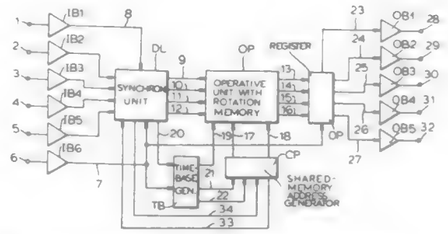
Marco Gandini, Turin; Luigi Licciardi, Vercelli; Maura Turolla, Almese, and Vinicio Vercellone, Venaria, all of Italy, assignors to Cselt-Centro Studi e Laboratori Telecommunicazioni S.P.A., Turin, Italy

Filed Mar. 8, 1993, Ser. No. 27,335

Claims priority, application Italy, Mar. 17, 1992, TO92 A 000223

Int. Cl.[5] H04L *12/56*

U.S. Cl. 370—60.1 **3 Claims**



1. A high bit rate cell switching element in CMOS technology, comprising:

a multiplicity of input buffers receiving input cell groups, a time base signal and a synchronism signal;

a synchronization block comprising a register and connected to said buffers and wherein the groups are temporarily stored for synchronization purposes, the temporary storage for synchronization purposes being controlled by the synchronism signal and the time base signal, said synchronization block outputting synchronized groups;

an operative part connected to said synchronization block and receiving said synchronized groups, said operative part having a rotation memory capable of paralleling 8-bit input cells and storing them into a shared memory for resolving the access conflicts to an output by different cells, said operative part having an output and executing inverse operations including recovering contents of the shared memory to recover 8-bit words as output cell groups, said operative part carrying out an address storage in the shared memory;

a control part forming part of the shared memory and connected to said operative part and generating writing addresses in the shared memory for input cell storage, analyzing routing labels of said cells and controlling switching thereof, said control part including:

means for generating reading addresses,

means for sending to the operative part decoding signals for reading and writing in a memory block,

means for exchanging empty cell information with said synchronization block and for exchanging a routing label with said synchronization block, and

means for sending control signals for scanning input connections and the synchronization;

a timing signal generator connected to said operative part and in said operative part to said shared memory, said timing signal generator comprising a counter which generates suitable multiples of an elementary period corresponding to an input bit cycle, after being started by a signal, and generating starting and timing signals for the control part;

a register block connected to said output of said operative part and comprising a further register wherein said output cell groups are temporarily stored for synchronization purposes controlled by the time base signal; and

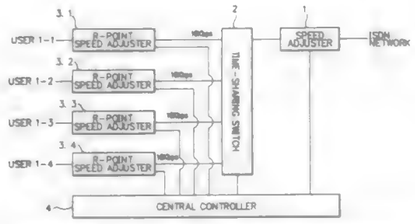
output buffers connected to said register block and through which said output cell groups are emitted.

5,369,636

MULTIPLE COMMUNICATION SPEED CONVERTING APPARATUS

Chikako Ueno, and Takashi Kakiwaki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 13, 1992, Ser. No. 976,398
Claims priority, application Japan, Nov. 15, 1991, 3-300501
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **7 Claims**



1. A multiple speed converting apparatus, comprising:

speed adjusting means for achieving a speed adjustment in conformity with the V.110 of the CCITT recommendations;

time-sharing switching means connected to the speed adjusting means for conducting a multiplexing operation in a time-sharing manner;

a number of R reference point speed adjusting means connected to the time-sharing switching means and an R reference point interface stipulated according to the CCITT recommendations for supplying data to the switching means at a synchronizing speed; and

control means responsive to the number of R reference point speed adjusting means for setting a communication speed between the switching means and the R reference point speed adjusting means to a fixed speed not exceeding 32 kbps, the fixed speed being associated with a synchronous mode;

wherein the R reference point speed adjusting means includes:

selecting means connected to the R reference point interface for achieving a change-over operation between signal lines according to a mode of a user interface;

first rate adapting means connected to the selecting means;

second rate adapting means connected to the first rate adapting means; and

third rate adapting means connected to the second rate adapting means,

the first rate adapting means achieving, when the user interface is in an asynchronous mode, communications with the second rate adapting means at a speed of $2^n \times 600$ bps (n=0, 1, 2, 3, 4, or 5),

the second rate adapting means achieving communications with the third rate adapting means at a speed of $2^k \times 8$ kbps (n=0, 1, or 2).

5,369,637

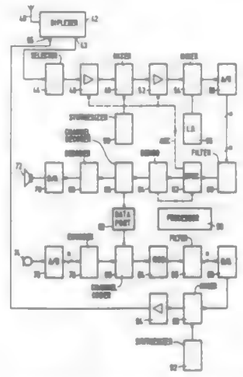
SIGNAL TRANSMISSION SYSTEM

Andrew J. Richardson, Exning, and Peter J. Mabey, Cambridge, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1992, Ser. No. 857,137
Claims priority, application United Kingdom, Apr. 3, 1991, 9106941.9; Mar. 5, 1992, 9204726.5
Int. Cl.[5] H04B *7/212*
U.S. Cl. 370—84 **26 Claims**

1. A method of transmitting information signals in the form of symbols over a digital transmission system having a carrier, comprising:

dividing said carrier into a plurality of time slots, at least some of said time slots being traffic signal time slots, each said traffic signal time slot having a respective duration equal to one of at least two different predetermined durations, at least one of said traffic signal time slots having a duration equal to a given one of said predetermined durations, and at least another of said traffic signal time slots having a duration equal to a different one of said predetermined durations, and



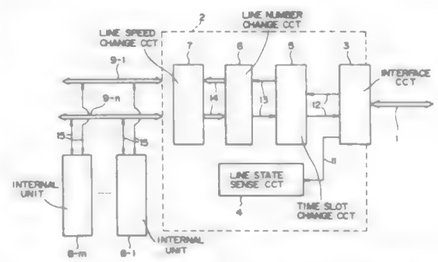
transmitting a respective plurality of symbols in each traffic signal time slot, each said plurality having substantially the same number of symbols, irrespective of the duration of the respective traffic signal time slot.

5,369,638

LINE INTERFACE FOR HIGH-SPEED TRANSMISSION LINE

Toshimitsu Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 25, 1993, Ser. No. 8,820
Claims priority, application Japan, Jan. 24, 1992, 4-010501
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **6 Claims**



3. A data interface between a high-speed transmission line and a plurality of internal units, said data interface comprising:

an interface circuit, said interface circuit being connected to said high-speed transmission line, said interface circuit converting data from said high-speed transmission line to internal level data,

a time slot change circuit, connected to said interface circuit, said time slot change circuit rearranging said internal level data into ordered data, said ordered data being in an order corresponding to said internal units,

a line number change circuit, connected to said time slot change circuit, said line number change circuit dividing said ordered data into a plurality of lines of data, and

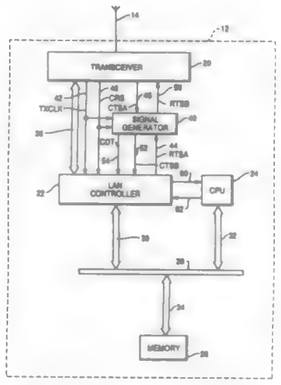
a line speed change circuit, connected to said line number change circuit, said line speed change circuit converting said plurality of lines of data into reduced speed data by reducing the speed of said plurality of lines of data, and supplying said reduced speed data to said internal units on a plurality of internal lines.

5,369,639

LOCAL AREA NETWORK HAVING A WIRELESS TRANSMISSION LINK

Adriaan Kamerman, Nieuwegein, and Hendrik van Bokhorst, Nijkerk, both of Netherlands, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1990, Ser. No. 633,691
Claims priority, application United Kingdom, Sep. 6, 1990, 9019488.7
The portion of the term of this patent subsequent to Jul. 7, 2010, has been disclaimed.
Int. Cl.[5] H04J *6/00*
U.S. Cl. 370—85.3 **11 Claims**



1. A local area network station comprising:

memory means for storing data to be transmitted;

communication controller means to control the transmission of data frames by said station;

said communication controller means including a CSMA/CD local area network (LAN) controller chip which is usually used in wired LANs to operate with collision detection;

transceiver means to operate on a single wireless transmission channel; and

signal generating means coupled to said communication controller means and said transceiver means;

said communication controller means being effective:

a. to defer transmission of a said data frame in response to a first control signal applied thereto, indicating that said transmission channel is active;

b. to terminate transmission of a said data frame being transmitted when said transmission channel is active, and to reinstate transmission thereof as a deferred data frame after a backoff period in response to a second control signal applied thereto; and

c. to output a third control signal requesting transmission of a deferred data frame;

said signal generating means being effective to generate said second control signal to cause said communication controller means to inhibit transmission of said deferred frame until said backoff period has elapsed; and

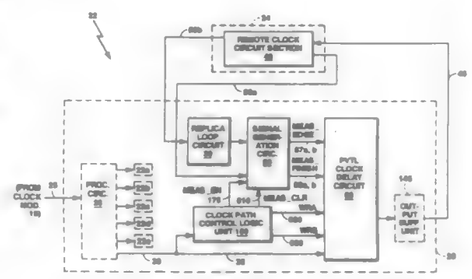
said second control signal being a simulated collision detect signal to initiate said backoff period to enable said controller chip to operate substantially with collision avoidance.

5,369,640

METHOD AND APPARATUS FOR CLOCK SKEW REDUCTION THROUGH REMOTE DELAY REGULATION

Richard B. Watson, Harvard; Russell Iknaian, Groton, and Hansel A. Collins, Clinton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 16, 1993, Ser. No. 49,019
Int. Cl.[5] H03K *5/135, 5/14*
U.S. Cl. 371—1 **20 Claims**



1. Apparatus for reducing clock skew in a computer by measuring effects of intrinsic propagation delays of an extended clock distribution path encompassing a clock repeater chip, a clock transmission line and an associated integrated circuit (IC) chip, and adjusting an input system clock signal to deliver a low-skew clock signal to point-of-use circuitry on the IC chip, said apparatus comprising:

a clock delay circuit located on the repeater chip for measuring and compensating for the effects of intrinsic propagation delays of said extended path during a measurement cycle, said clock delay circuit configured to receive the system clock signal and provide the low-skew clock signal to said point-of-use circuitry on the associated IC chip;

a remote clock circuit located on the associated IC chip for measuring the actual propagation delay effects of a clock distribution network used to distribute the low-skew clock signal on the IC chip, the point-of-use circuitry being connected to the end of the distribution network, said remote circuit receiving the low-skew clock signal from said clock delay circuit over a first transmission line; and

a signal generation circuit located on the repeater chip and coupled between said clock delay circuit and said remote circuit for generating measurement signals that define the beginning and end of the measurement cycle in response to instances of the low-skew clock signal received from said remote circuit over a pair of second transmission lines,

whereby the time between said instances of the low-skew clock signal represents the propagation delay of the clock distribution network on the associated IC chip.

5,369,641

METHOD AND APPARATUS FOR DETECTING AND CORRECTING ERRORS IN DATA ON MAGNETIC TAPE MEDIA

William C. Dodt, Broomfield; Thomas G. Liebe, Denver; Donald F. McCarthy, Westminster, and Charles A. Milligan, Golden, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Nov. 12, 1991, Ser. No. 791,793
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—2.2 **28 Claims**

1. In a drive element which reads and writes a stream of data records, received from an associated host computer, on a magnetic tape in a helical scan format, which includes a plurality of tracks helically written on said magnetic tape for storing said stream of data records, apparatus operationally indepen-

dent of said host computer for writing error correction data on said magnetic tape to protect said stream of data records, comprising:

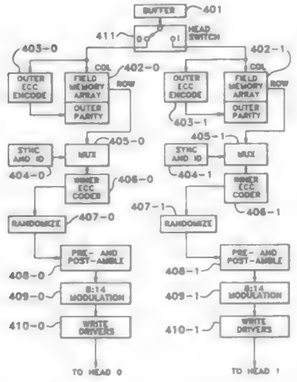
means for generating a first error correcting code specific to a plurality of bytes of said stream of data records, comprising:

means for storing said stream of data records in a memory on a column by column basis,

means for computing a first error correction code on a column by column basis for said stream of data records stored in said memory,

means for appending said generated first error correction code to said memory on a column by column basis;

means for dividing said received stream of data records and said first error correcting codes into a series of data



segments, each data segment containing a predetermined number of bytes;

means for reading said data segments on a row by row basis from said memory;

means for generating a second error correcting code specific to each of said data segments;

means for concatenating a plurality of said data segments and their associated generated second error correcting codes to form a helical track of data;

means for writing a plurality of said helical tracks of data on to said magnetic tape to form a scan group;

means for computing a third error correcting code across a plurality of said scan groups sequentially written on to said magnetic tape; and

means for writing said third error correcting code on to said magnetic tape.

5,369,642

SWITCHER FOR REDUNDANT SIGNAL TRANSMISSION SYSTEM

Masashi Shioka, and Kazuya Kikuchi, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jun. 2, 1992, Ser. No. 892,249

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—8.2 **2 Claims**

1. A switcher for a redundant signal transmission system, comprising:

a plurality of active transmitters and at least one standby transmitter arranged in parallel with one another for processing high frequency signals coming in through respective input lines;

means for detecting when a fault occurs in a faulty one of said active transmitters, to thereby generate a fault signal; and

a switching system responsive to said fault signal for switching the input line associated with said faulty active transmitter to said standby transmitter via a signal line,

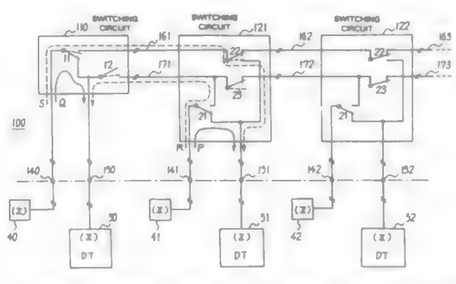
said switching system comprising an impedance matching system for maintaining impedance matching between said standby transmitter and said signal line when said switching system switches the signal line to said standby transmitter;

said impedance matching system comprising a first switching circuit associated with said standby transmitter, a plurality of second switching circuits associated one-to-one with said plurality of active transmitters, and a pair of connection lines continuously cascading said first and second switching circuits;

said first switching circuit comprising:

a first switch having a make contact connected to one of said pair of connection lines, and a break contact connected to said standby transmitter; and

a second switch having a common contact connected to said



standby transmitter, and a make contact connected to the other of said pair of connection lines;

said plurality of second switching circuits each comprising:

a third switch having a break contact serially connected to one of said pair of connection lines, and a make contact connected to an associated one of said active transmitters;

a fourth switch having a break contact serially connected to the other of said pair of connection lines; and

a fifth switch having a movable contact connected to an associated one of said input lines, a break contact connected to an associated one of said active transmitters, and a make contact connected to the other said pair of connection lines;

such that said input line is switched from said faulty active transmitter to said standby transmitter in response to said fault signal, and said third and fourth switches interrupt cascade connection of said plurality of second switching circuits by said pair of connection lines, in response to said fault signal.

5,369,643

METHOD AND APPARATUS FOR MAPPING TEST SIGNALS OF AN INTEGRATED CIRCUIT

Farid Rastgar, San Jose; Sung-Soo Cho, Sunnyvale; Diane Bryant, and Nikhil Mazumder, both of San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 853,890, Mar. 19, 1992, abandoned, which is a continuation of Ser. No. 596,229, Oct. 12, 1990, abandoned. This application Jan. 28, 1993, Ser. No. 10,422

Int. Cl.[5] G01R *31/28;* **G06F** *11/00;* **H04B** *17/00*

U.S. Cl. 371—15.1 **8 Claims**

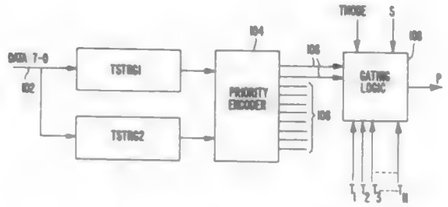
6. An improved integrated circuit in a package having a plurality of external pins, at least one pin having an operational signal coupled to a first circuit module normally associated therewith, said integrated circuit further having a second circuit module and a signal coupled thereto that is normally only internal to the integrated circuit, wherein the improvement comprises:

a) test register means for storing test configuration control data;

b) priority encoder means operatively coupled to said test register means for receiving said test configuration control data and for generating a test selection signal;

c) test mode control means for generating a test mode enable signal;

d) gating logic means operatively coupled to said priority encoder means for receiving said test selection signal and to said test mode control means for receiving said test mode enable signal, said gating logic means further coupled to one of said plurality of external pins and said associated operational signal and still further coupled to said signal that is normally only internal to said integrated circuit, wherein said gating logic means couples said one external pin to said corresponding associated operational signal when the test mode enable signal is in a first state and selectively couples said signal that is normally only internal to said integrated circuit in response to the test selection signal when the test mode enable signal is in a second state.



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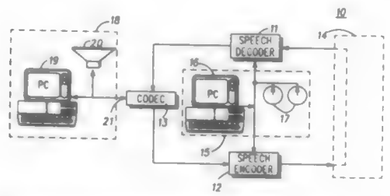
METHOD FOR TESTING A COMMUNICATION SYSTEM USING CANNED SPEECH

Douglas W. Oliver, Watauga, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1991, Ser. No. 807,329

Int. Cl.[5] G08C *25/00*

U.S. Cl. 371—20.4 **9 Claims**



1. A method for testing a communication system comprising the steps of:

providing a canned speed signal from a diagnostic controller to an encoder of said communication system;

encoding said canned speed signal in said encoder, forming an encoded canned speed signal;

transmitting said encoded caned speed signal to a transmitter of said communication system;

transmitting said encoded canned speech signal from said transmitter to a subscriber unit;

transmitting said encoded canned speech signal from said subscriber unit to a receiver of said communication system;

transmitting said encoded canned speech signal from said receiver to a decoder of said communication system;

decoding said encoded canned speech signal in said decoder forming a decoded canned speech signal;

comparing said decoded canned speech signal with said canned speech signal from said diagnostic controller; and

reporting a result of said comparing step.

5,369,645

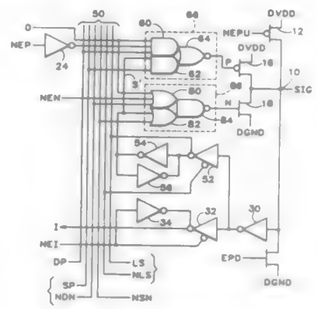
TESTING INTEGRATED CIRCUIT PAD INPUT AND OUTPUT STRUCTURES

Thomas B. Pritchard; Douglas L. Franz, both of Vancouver, Wash.; Casey D. Hoekstra, Corvallis, Oreg., and Richard I. Klaus, Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 2, 1991, Ser. No. 724,645

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.1 **4 Claims**



1. An I/O pad testing circuit for use in a digital integrated circuit for testing functionality of selected I/O pads, each selected pad having a corresponding terminal, the circuit comprising:

a first test control terminal for receiving an external tri-state logic signal (NTR) and a second test control terminal for receiving an external latch logic signal (NTM);

combinatorial logic means for tri-stating all of the selected I/O pads when the tri-state logic signal is asserted and the latch logic signal is not asserted for receiving a respective test bit applied to each of the selected I/O pad terminals;

combinatorial logic means for storing all of the test bits in response to assertion of the latch logic signal while the tri-state logic signal is asserted;

combinatorial logic means for driving a respective inverse of each stored test bit out of the corresponding terminal in response to the tri-state logic signal returning to its unasserted state; and

combinatorial logic means for returning all of the selected I/O pads to normal operation in response to the latch logic signal returning to its unasserted state, whereby all of the selected pads are tested in parallel at high speed under control of the tri-state logic signal and the latch logic signal.

5,369,646

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING TEST CIRCUIT

Junichi Shikatani, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 596,667, Oct. 10, 1990. This application Nov. 18, 1992, Ser. No. 978,067

Claims priority, application Japan, Oct. 13, 1989, 1-266662

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.5 **21 Claims**

1. A semiconductor integrated circuit device, comprising:

a logic cell array having a plurality of logic cells arranged in a matrix having a plurality of rows and columns, said logic cells respectively having input terminals and output terminals;

interconnection lines mutually connecting said logic cells via said input and output terminals of the logic cells so that desired logic circuits are formed;

a plurality of selectively actuable switch means, respectively provided for said logic cells, for selectively connecting

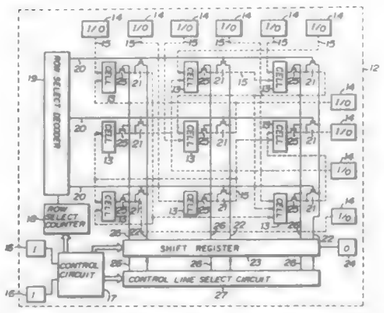
the output terminals of each of said logic cells to said interconnection lines; and

means for selectively directly supplying the input terminals of a selected one of said logic cells with desired data used for testing said semiconductor integrated circuit device;

means for coordinating said data supply with control of said plurality of selectively actuable switch means to selectively disconnect the output terminals of said logic cells from said interconnection lines, and

means for accessing said selected logic cell for evaluation of data within said cell;

wherein said plurality of selectively actuable switch means respectively comprise transistors, each provided between a corresponding one of the logic cells and a corresponding



one of the interconnection lines, said transistors respectively having ON/OFF control terminals; and

said semiconductor integrated circuit device comprises select means for selecting said logic cells for every column and for applying a select signal to the ON/OFF control terminals of said transistors related to a selected one of the columns so that said transistors related to said selected one of said columns are turned OFF when said logic cells related to said selected one of the columns are to be disconnected from corresponding interconnection lines of said interconnection lines and said desired data is to be respectively supplied to the input terminals of said logic cells connected to said transistors related to said selected one of the columns via said corresponding interconnection lines.

5,369,647

CIRCUITRY AND METHOD FOR TESTING A WRITE STATE MACHINE

Jerry Kreifels, Citrus Heights, and Mickey L. Fandrich, Placerville, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 16, 1991, Ser. No. 808,381
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—25.1 **20 Claims**

1. A method of verifying operation of next state logic within a write state machine for automatically programming and erasing a flash memory, said method comprising the steps of:

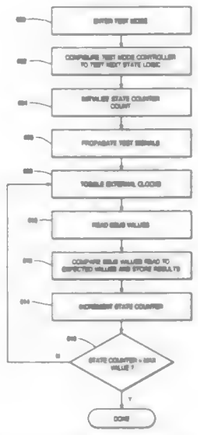
(A) configuring in a test mode the write state machine, wherein the step of configuring in a test mode further includes:

a) decoupling an internal oscillator coupled to the next state logic;

b) coupling an external clock source to the next state logic;

c) logically isolating the next state logic from the remainder of the write state machine:

(B) cycling through possible inputs to the next state logic: and



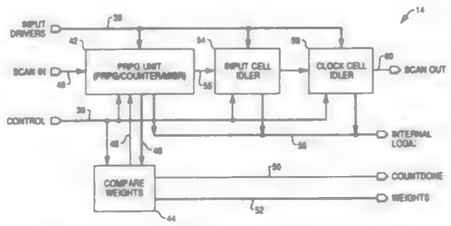
(C) comparing outputs from the next state logic to expected outputs.

5,369,648

BUILT-IN SELF-TEST CIRCUIT

Robert W. Nelson, Stillwater, Minn., assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 8, 1991, Ser. No. 789,553
Int. Cl.[5] G01R *31/28;* **G06F** *11/00*
U.S. Cl. 371—27 **4 Claims**



1. An input register for an integrated circuit, said integrated circuit including a plurality of input pads and an internal logic block, said input register comprising:

a programmable polynomial function generator for generating successive pseudo random data patterns to be supplied to said internal logic block, said programmable polynomial function generator implementing a polynomial to determine a sequence for the successive pseudo random patterns; and

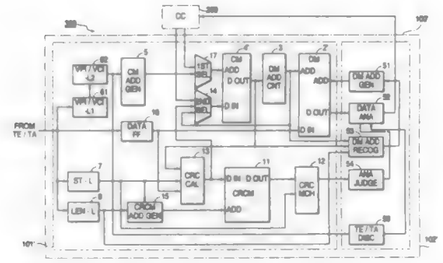
logic circuitry connected to receive the output of said programmable polynomial function generator for selecting a feedback signal to be provided back to said programmable polynomial function generator tc select a characteristic polynomial and a polynomial bit length to be implemented by said programmable polynomial function generator.

5,369,649

SIGNALING DATA RECEIVING AND PROCESSING UNIT PROVIDED IN A BROADBAND INTEGRATED SERVICES DIGITAL NETWORK

Masami Murayama, Yokohama; Satoshi Kakuma, and Shuji Yoshimura, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 17, 1991, Ser. No. 731,332
Claims priority, application Japan, Jul. 17, 1990, 2-188362
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **12 Claims**



1. A signaling data receiving and processing unit provided in a digital exchange of a broadband integrated services digital network, said digital exchange being connected with terminal equipment operating in a narrow band integrated services digital network and transferring signaling data to said signaling data receiving and processing unit asynchronously in a unit of a plurality of data cells each including divided signaling data obtained by dividing the signaling data, said signaling data receiving and processing unit being for sending analyzed information with respect to the signaling data to a central controller of the digital exchange, said signaling data receiving and processing unit comprising:

volatile data memory means for volatilly storing the signaling data sent from the terminal equipment to the signaling data receiving and processing unit; and

error check means for error checking of the signaling data transferred from the terminal equipment to the signaling data receiving and processing unit, while said signaling data is being stored in said data memory means.

5,369,650

ERROR DETECTION AND CORRECTION APPARATUS IN A BY-4 RAM DEVICE

David L. Kirk, Phoenix, and Jay W. Gustin, Scottsdale, both of Ariz., assignors to Honeywell, Inc., Minneapolis, Minn.

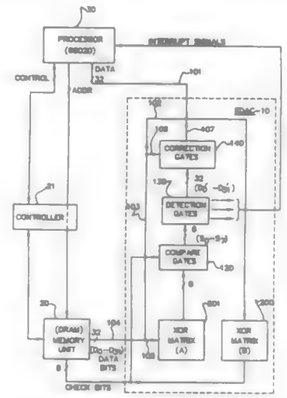
Filed Nov. 22, 1991, Ser. No. 797,515
Int. Cl.[5] H03M *13/00*
U.S. Cl. 371—40.1 **8 Claims**

1. In a system including a processor and a memory unit, said memory unit storing information for subsequent user said memory unit being made up of a plurality of BY-4 memory devices thereby forming a plurality of computer words, each computer word having a predetermined number of bits, the computer word including a predetermined number of data bits and a predetermined number of check bits associated therewith, an error detection and correction(EDAC) apparatus interfacing with said memory unit for detecting and correcting a single bit error of the computer word, detecting a two bit error of the computer word, and detecting all two, three, and four bit errors of a single memory device, upon fetching said computer word from said memory unit, said EDAC apparatus comprising:

a) matrix logic means, operatively connected to said memory unit, for generating the predetermined number of check bits from preselected participating data bits of the data bits of the computer word being fetched;

b) compare gate means, operatively connected to said matrix logic means and to said memory unit to receive the predetermined number of check bits generated by said matrix logic means and the predetermined number of check bits stored in the memory unit associated with the computer word being fetched, respectively, for comparing corresponding check bits to generate corresponding syndrome bits therefrom;

c) detection logic means, operatively connected to said compare gate means to receive said syndrome bits, for decoding the syndrome bits in accordance with a predetermined matrix mapped to identify one and two bit errors



of the computer word being fetched, to identify two, three, and four bit errors of the computer word when such errors are associated with the same BY-4 memory device, and to generate status signals associated with the decoding; and

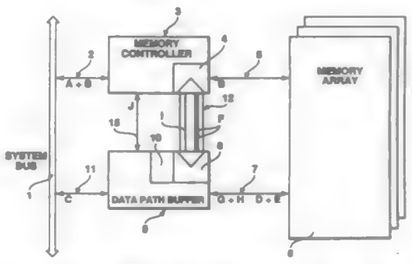
d) correction gate logic means, operatively connected to said detection logic means and to said memory unit, for correcting the data bit of the computer word identified as being in error, thereby outputting a corrected data portion of the fetched computer word, the identified data bit being corrected when such error is detected.

5,369,651

MULTIPLEXED BYTE ENABLE BUS FOR PARTIAL WORD WRITES TO ECC PROTECTED MEMORY

Suresh K. Marisetty, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 30, 1992, Ser. No. 906,693
Int. Cl.[5] G06F *12/04, 11/10*
U.S. Cl. 371—40.1 **24 Claims**



1. A memory system for performing partial word write operations to an error correction code protected memory array, said memory system coupled to a system bus for receiv-

ing and transmitting instructions, data strings and a predetermined number of byte enable signals, said byte enable signals corresponding to specific data bytes of memory strings stored in said memory array, said partial word write operations performed by overwriting data bytes of said memory strings corresponding to low byte enable signals with corresponding data bytes of said data strings to form new memory strings and generating new codes associated with said new memory strings, said memory system comprising:

memory control means coupled to said system bus and further coupled to said memory array;

buffer means coupled to said system bus and further coupled to said memory array;

multiplexing means adapted to receive and multiplex said predetermined number of byte enable signals into a predetermined number of multiplexed signals;

demultiplexing means adapted to receive and demultiplex said predetermined number of multiplexed signals into said predetermined number of byte enable signals;

a first transfer means for transmitting control signals between said memory control means and said buffer means; and

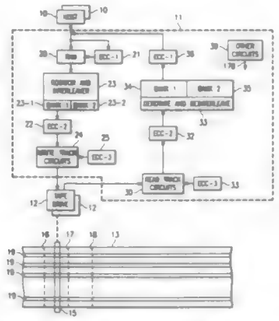
a second transfer means for transmitting said predetermined number of multiplexed signals from said multiplexing means to said demultiplexing means.

5,369,652

ERROR DETECTION AND CORRECTION HAVING ONE DATA FORMAT RECORDABLE ON RECORD MEDIA USING A DIVERSE NUMBER OF CONCURRENTLY RECORDED TRACKS

Charles E. Bailey; Ernest S. Gale; Carl A. Hassell; Scott J. Schaffer; Sushama M. Paranjape, and Stephen C. West, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 75,944
Int. Cl.[5] H03M *13/00*; G11B *5/09*
U.S. Cl. 371—40.1 **27 Claims**



1. A method of recording and reading data onto and from a record medium that includes an error detecting and correcting redundancy; the steps of:

selecting a given plurality of data bytes to be recorded;

in a random access memory, creating a block array of first data bytes in a rectangular block array of said data bytes, said block array having a first number of columns of said data bytes and second number of rows of said data bytes;

applying a first error detecting and correcting code to said data bytes in each said column of the block array to generate first redundancy bytes for said data bytes in each of said columns, respectively;

adding said generated redundancy bytes to the respective columns for adding a given number of rows to said block array for generating a third number of said rows in said block array;

selecting a predetermined number of adjacent ones of said rows into a given plurality of first sets of rows such that said sets are contiguous in said block array and each set having said predetermined number of said rows;

after said adding and selecting steps, end-around shifting the data bytes in each of said sets of rows a predetermined number of bytes, each set being shifted a different number of bytes;

storing each said shifted sets of rows in respective addressable data storage areas of said record medium such that a first byte of said data in the respective addressable data storage areas are from a different one of said columns;

retrieving said stored shifted sets of rows from said record storage medium, reversely shifting the sets said respective predetermined number of bytes for creating a retrieved array of bytes and arranging the rows in the retrieved array as a replica of the rows in said generated array; and

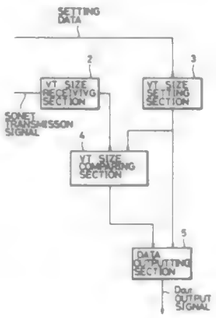
applying said first error detecting and correcting code and said first redundancy bytes to said data in the retrieved array for error detecting and correcting the data in the retrieved array.

5,369,653

SONET TRANSMISSION SIGNAL PROCESSING METHOD AND SONET TRANSMISSION SIGNAL PROCESSING APPARATUS

Yoshihide Kuroda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 20, 1992, Ser. No. 932,629
Claims priority, application Japan, Aug. 21, 1991, 3-234006
Int. Cl.[5] H04J *3/00*; G02F *1/00*
U.S. Cl. 371—67.1 **8 Claims**



4. A SONET (Synchronous Optical Network) transmission signal having a synchronization payload envelope capacity which has a first column including data and a first byte which include bits indicating a VT (Virtue Tributary) size of the data and a second column including only data, comprising:

VT size setting means for setting a desired VT size,

VT size detecting means for detecting the first byte included in the first column and determining the VT size of the data included in the first column from said first byte,

comparison means for comparing the VT size detected by the VT size detecting means with the desired VT size set by the VT size setting means, and

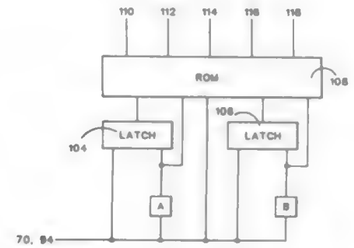
data outputting means for executing a predetermined signal processing for the data included in the first column in accordance with the desired VT size set by the VT size setting means when an output signal of the comparison means indicates coincidence between the detected VT size and the desired VT size, and for executing an error signal processing of the data included in the first column when the output signal of the comparison means indicates non-coincidence between the detected VT size and the desired VT size.

5,369,654

FAULT TOLERANT GATE ARRAY USING DUPLICATION ONLY

Hugh L. Millis, Jr., Placentia, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Continuation-in-part of Ser. No. 300,465, Jan. 23, 1989, abandoned. This application Jun. 23, 1992, Ser. No. 902,639
Int. Cl.[5] G06F *7/02*; H04L *1/00*
U.S. Cl. 371—68.1 **15 Claims**



1. A fault tolerant gate array, comprising:

(a) a first AND-drives-OR gate array and a second AND-drives-OR gate array identical to it, wherein:

(1) each AND-drives-OR gate array includes at least one AND gate;

(2) each AND gate includes a test input and at least one operating input;

(3) each operating input of the first array is connected to a corresponding operating input of the second array; and

(4) the test inputs of all of the AND gates are connected together; and

(b) an error handling device comprising a first latch, a second latch, and an input-output device, wherein:

(1) the first latch is connected to the test inputs and to the output of the first array, and is structured to receive and latch a signal from the first array when a signal of a first polarity is applied to the test inputs and to apply the latched signal to the input-output device when a signal of opposite polarity is applied to the test inputs;

(2) the second latch is connected to the test inputs and to the output of the second array, and is structured to receive and latch a signal from the second array when a signal of the first polarity is applied to the test inputs and to apply the latched signal to the input-output device when a signal of opposite polarity is applied to the test inputs; and

(3) the input-output device is connected to receive inputs from the first latch, the first array, the second latch, the second array, and the test inputs, and is constructed to produce an output when a signal of the first polarity applied to the test inputs is changed to a signal of opposite polarity.

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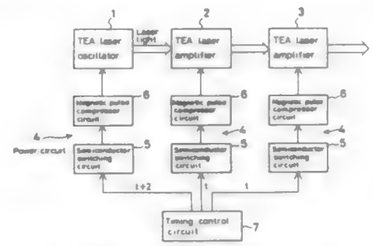
OUTPUT CONTROL METHOD FOR LASER SYSTEM

Yasuaki Miyamoto; Shigeaki Kawakami; Takayuki Taniguchi; Makoto Hasegawa, all of Ibaraki; Shigenori Fujiwara, and Nobuteru Fujimura, both of Kawasaki, all of Japan, assignors to Doryokuro Kakuneryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 24, 1993, Ser. No. 36,409
Claims priority, application Japan, Mar. 27, 1992, 4-070838
Int. Cl.[5] H01S *3/13*
U.S. Cl. 372—29 **4 Claims**

1. An output control method for a laser system having a laser oscillator and a laser amplifier for amplifying light oscillated from said laser oscillator, wherein output laser light energy is controlled by controlling a time delay of applying excitation energy of said laser oscillator with respect to depending upon a time of applying excitation energy of said laser amplifier; and

wherein excitation energy is first applied to said laser amplifier thus causing laser gain, and when, or after, said laser gain reaches a peak, excitation energy is applied to said laser oscillator to cause oscillation so as to create amplified oscillated laser light.

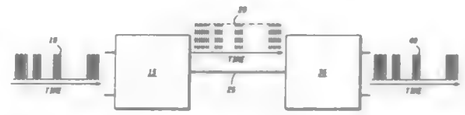


5,369,656

INVERTED DRIVE DESIGN FOR VCSEL-BASED OPTICAL INTERCONNECTS

Donald E. Ackley, Lambertville, N.J.; Chan-Long Shieh, Paradise Valley, and Earnest J. Johnson, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1993, Ser. No. 168,330
Int. Cl.[5] H01S *3/00*
U.S. Cl. 372—38 **16 Claims**



1. An inverted drive optical interconnect link comprising:

an optical transmitter module constructed to transform an input digital electrical signal into an output digital optical signal and being designed to change an input bit of logical value one to an output bit of logical value zero and an input bit of logical value zero to an output bit of logical value one;

an optical receiver module designed to transform an input digital optical signal into an output digital electrical signal and being further designed to change an input bit of logical value zero to an output bit of logical value one and an input bit of logical value one to an output bit of logical value zero; and

an optical waveguide connected to the optical transmitter module and to the optical receiver module so that the output optical signal of the transmitter module propagates down the waveguide to become the input optical signal to the receiver module and an electrical digital data stream input to the transmitter module is faithfully reproduced at the electrical output of the receiver module.

5,369,657

SILICON-BASED MICROLASER BY DOPED THIN FILMS

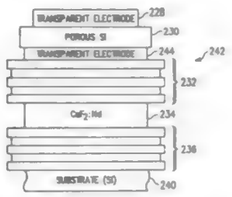
Chih-Chen Cho, Richardson, and Walter M. Duncan, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 15, 1992, Ser. No. 945,991
Int. Cl.[5] H01S *3/14*
U.S. Cl. 372—39 **26 Claims**

1. A silicon-based microlaser formed of doped thin material films, comprising:

a semiconductor substrate material comprising silicon;

at least one layer of CaF_2 grown on said semiconductor substrate material comprising a predetermined amount of dopant sufficient to cause spectral emissions on said layer when pumped; said spectral emissions having a high intensity an narrow emission linewidths;



said layer further having a thickness within an order of magnitude of the wavelength of said spectral emission such that intensities of said spectral emissions are insensitive to crystal quality of the layer.

5,369,658

SEMICONDUCTOR LASER

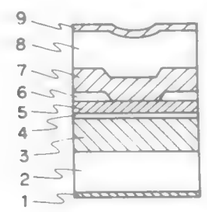
Katsuhiko Ikawa; Hiroshi Mataki, and Satoshi Uchida, all of Kyoto, Japan, assignors to Rohm Co., Ltd., Kyoto, Japan

Filed Jun. 25, 1993, Ser. No. 81,192

Claims priority, application Japan, Jun. 26, 1992, 4-169666; Jun. 26, 1992, 4-169668; Jun. 26, 1992, 4-169669

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—45 **7 Claims**



1. In a self-aligned type semiconductor laser of AlGaAs system having a waveguide mechanism resulting from a complex refractive index profile, which comprises:

an active layer;

a clad layer on the active layer; and

a current-blocking layer formed on the clad layer, the current-blocking layer being 2000 to 6000 Å thick, and wherein a distance between the active layer and the current-blocking layer is 2500 to 3500 Å.

5,369,659

FAULT TOLERANT OPTICAL SYSTEM USING DIODE LASER ARRAY

Horace W. Furumoto, Wellesley; William C. Goltsos, Burlington; Robert H. Rediker, Watertown, all of Mass., and Robert Sze, Santa Fe, N. Mex., assignors to Cynosure, Inc., Bedford; Massachusetts Institute of Technology, Cambridge, both of Mass. and Stablelase, Inc., Santa Fe, N. Mex.

Filed Dec. 7, 1993, Ser. No. 163,160

Int. Cl.[5] H01S *3/19*

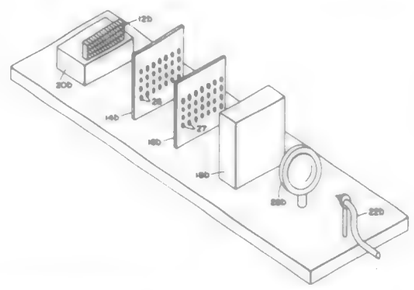
U.S. Cl. 372—50 **27 Claims**

1. An optical system comprising:

a laser array comprising a plurality of lasers illuminating along individual optic axes;

combining optics for combining light from the plurality of lasers; and

corrector optics including an array of corrector optical elements individually associated with the lasers, the corrector optical elements being of optical designs specific to



associated lasers to correct faults in the lasers and associated combining optics.

5,369,660

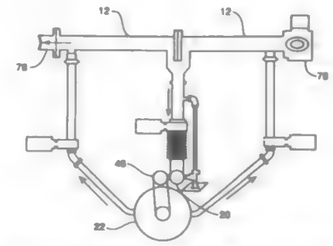
REPETITIVELY PULSED, CLOSED CYCLE, PHOTOLYTIC ATOMIC IODINE LASER

LaVerne A. Schlie, and Robert D. Rathge, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 23, 1992, Ser. No. 949,615

Int. Cl.[5] H01S *3/22*

U.S. Cl. 372—55 **39 Claims**



1. A repetitively pulsed, high output, photolytic atomic iodine laser system, said laser system comprising:

a means for selectively and repeatedly providing ultraviolet radiation to a laser gas medium to produce exclaimed atomic iodine;

a fuel system, said fuel system including means for providing a continuous flow of a laser fuel to form said laser gas medium, said continuous flow being provided by a turbo-molecular blower, said turbo-molecular blower having a rotor to move said laser fuel, said rotor being vacuum sealed therein by means of a ferrofluidic vacuum rotating seal, said blower being able to move said laser fuel being of a high molecular weight gas in a velocity range of about 10 m/s to 100 m/s in a pressure range of 20 to 60 torr;

at least one laser gain cell, said laser gain cell having said laser gas medium flying therethrough, said laser gain cell receiving said flowing laser gas medium from said fuel system, said laser gas medium therein reacting with said ultraviolet radiation; and

a laser resonator, said laser resonator optically connected to said laser gain cell, said laser resonator outputting a laser beam, said laser resonator allowing multiple passes of said laser beam through said laser gain cell.

5,369,661

SEMICONDUCTOR LASER-PUMPED SOLID STATE LASER SYSTEM AND OPTICAL COUPLING SYSTEM COUPLING SEMICONDUCTOR LASER WITH OPTICAL FIBER

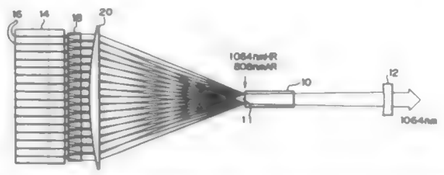
Satoshi Yamaguchi, and Hirofumi Imai, both of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,347

Claims priority, application Japan, Feb. 7, 1991, 3-036575

Int. Cl.[5] H01S *3/09*

U.S. Cl. 372—69 **21 Claims**



1. A semiconductor laser-pumped solid state laser system comprising:

a resonator means including a solid state laser;

a semiconductor laser means including a semiconductor laser array having a plurality of active laser stripes for outputting a plurality of light beams, respectively;

a condensing means, optically coupled with the semiconductor laser means, said condensing means including a gradient index lens array having a plurality of gradient index lenses located so that light beams output from the respective active layer stripes of the semiconductor laser array are collimated, for condensing the respective light beams from the respective active laser stripes of the semiconductor laser means to form condensed light beams not overlapping each other; and

a converging means, optically coupled with the condensing means, for converging the condensed light beams on an end face of the solid state laser, to thereby optically pump the solid state laser.

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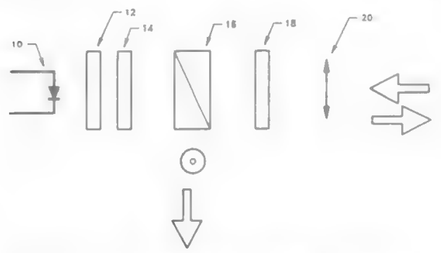
REDUCTION OF PARASITIC LASING

Mark E. Storm, Seaford, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 11, 1993, Ser. No. 105,528

Int. Cl.[5] H01S *3/10, 3/11*

U.S. Cl. 372—99 **3 Claims**



1. A device for reducing parasitic lasing, comprising:

a high gain laser system which emits light;

a continuously variable reflector for reflecting controlled, quantifiable amount of the emitted light back into the laser system creating a parasitic oscillation of the laser system; and

a means for measuring the gain of the laser system.

5,369,663

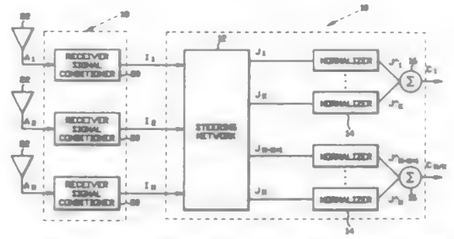
SPATIAL COMBINER FOR A DIGITAL VLF/LF RECEIVER

James W. Bond, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 5, 1991, Ser. No. 664,692

Int. Cl.[5] H04L *27/30;* **G01S** *3/16, 3/28*

U.S. Cl. 375—1 **11 Claims**



1. A spatial combiner for connection to a receiver used in conjunction with a plurality of direction-sensitive antennas for receiving a spread-spectrum communication signal in the presence of interference arriving from directions different than the communication signal being received, said spatial combiner comprising:

(a) steering network means for combining N inputs received from N antennas and producing M outputs $J_1, J_2, \ldots, J_M$, with M being a multiple of K, where K is a positive integer such that each of said M outputs is a weighted sum of said N inputs from said antennas;

(b) a plurality of normalizer means, for receiving said M outputs from said steering network, and for normalizing said M outputs to unit energy and producing normalized outputs $J_1, J_2, \ldots, J_M$; and

(c) a plurality of combiner means for receiving said normalized outputs from said plurality of normalizers and summing the first K of said normalized outputs to produce output C_1, summing the next K of said normalized outputs to produce output C_2, and continuing summing of said outputs until summing the last K of said outputs occurs to produce output $C_{M/K}$.

5,369,664

MOBILE COMMUNICATION SYSTEM

Kenichi Takahashi, Kawasaki; Hiroshi Ohnishi, Tokyo, and Minako Takeishi, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 11, 1993, Ser. No. 16,219

Claims priority, application Japan, Aug. 12, 1991, 3-201689

Int. Cl.[5] H04J *3/16;* **H04B** *7/216*

U.S. Cl. 375—1 **2 Claims**

1. A mobile communication

means for providing groups each having a plurality of communication channels;

means for generating signals to be transmitted via the respective communication channels in the groups;

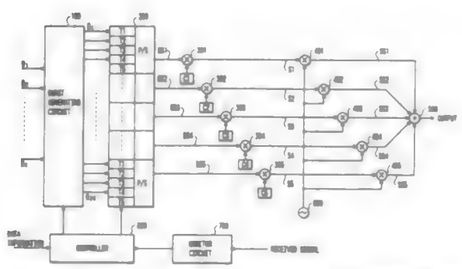
means for time-division-multiplexing the transmitted signals into a data sequence for each of the groups;

means for spectrum-spreading the data sequences in response to different spread code patterns respectively;

means for providing a reserve time slot;

means for detecting a reduction of a received signal quality related to each of the communication channels; and

means for, in cases where a reduction of a received signal quality related to one of the communication channels is



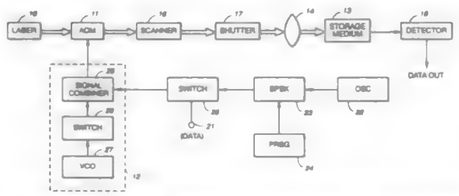
detected, using the reserve time slot in transmitting the signal of said one of the communication channels.

5,369,665

COHERENT TIME-DOMAIN DATA STORAGE WITH SPREAD-SPECTRUM DATA PULSE

Yu Sheng Bai, Palo Alto, and Ravinder Kachru, Redwood City, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 13, 1993, Ser. No. 90,826
Int. Cl.[5] G11C *13/04*
U.S. Cl. 375—1 **7 Claims**



1. Optical data storage apparatus including a coherent time-domain optical storage material and at least one laser for providing a data pulse of optical radiation in coherent time-domain optical storage relation with said material, said apparatus comprising:

means for receiving a data signal corresponding to a plurality of information-containing data segments;

means for providing a spread-spectrum modulation signal;

first modulation means for modulating the data segments of said data signal according to said spread-spectrum modulation signal; and

second modulation means responsive to said first modulation means for modulating said data pulse with the spread-spectrum modulated data signal.

5,369,666

MODEM WITH DIGITAL ISOLATION

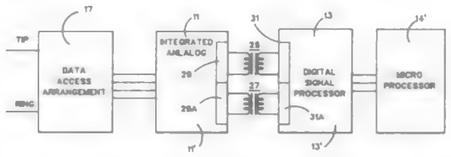
Dale E. Folwell, Placentia, and Raphael Rahamim, Orange, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Jun. 9, 1992, Ser. No. 895,968
The portion of the term of this patent subsequent to May 24, 2011, has been disclaimed.
Int. Cl.[5] H04B *1/38;* **H02H** *3/00, 3/22, 9/04*
U.S. Cl. 375—8 **23 Claims**

4. The method of eliminating a conventional transformer from a modem having a first section for receiving signals from, and transmitting signals to, a telephone line system, a second section for changing received signals from analog to digital and transmitted signals from digital to analog, a third section for processing digital signal and a fourth microprocessor section, comprising the steps of:

(a) introducing pulse transformers between the second and third sections for digital received and transmitted signals in lieu of the conventional transformer in the first section;

(b) multiplexing, in the second section, the received signals converted to digital form in the second section for application to at least one pulse transformer and demultiplexing said digital signals in the third section; and



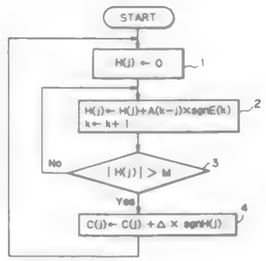
(c) multiplexing, in the third section, the third section digital signals for transmission and applying them to at least one different pulse transformer and demultiplexing the digital signals for transmission in the second section, thereby eliminating any necessity for the conventional transformer from the first section, whereby distortion produced by the conventional transformer is eliminated.

5,369,667

APPARATUS AND METHOD FOR AUTOMATICALLY ADJUSTING PARAMETERS OF AN AUTOMATIC EQUALIZER

Masaaki Hara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1992, Ser. No. 956,246
Claims priority, application Japan, Oct. 16, 1991, 3-296389; Oct. 18, 1991, 3-299662
Int. Cl.[5] H03H *7/40*
U.S. Cl. 375—12 **13 Claims**



1. A method for automatically adjusting parameters of an automatic equalizer which equalizes a signal in accordance with said parameters, comprising the steps of:

estimating a value of equalization error;

modifying said estimated value of equalization error by a correction value so as to obtain a modified estimated value;

comparing an absolute value of said modified estimated value with a predetermined convergent coefficient;

repeating said step of modifying when said absolute value of said modified estimated value is smaller than said convergent coefficient; and

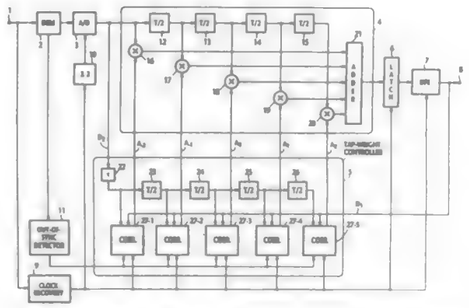
varying one of said parameters of the automatic equalizer in accordance with a polarity of said modified estimated value when said absolute value of said modified estimated value is larger than said convergent coefficient.

5,369,668

FAST RESPONSE MATCHED FILTER RECEIVER WITH DECISION FEEDBACK EQUALIZER

Takeshi Yamamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 28, 1992, Ser. No. 952,808
Claims priority, application Japan, Sep. 27, 1991, 3-248192
Int. Cl.[5] H03H *7/30, 7/40;* **H03K** *5/159;* **H03D** *1/00*
U.S. Cl. 375—14 **3 Claims**



1. A matched filter receiver in combination with a decision feedback equalizer, comprising:

a transversal filter having a tapped delay line for receiving an incoming digital signal to produce successively delayed signals at successive taps of the delay line, a plurality of tap-weight multipliers connected respectively to the successive taps of said delay line, and means for summing output signals of said tap-weight multipliers to produce a filter output, and supplying the filter output to said decision feedback equalizer;

a second tapped delay line having a series of delay elements for receiving said incoming digital signal to produce successively delayed signals at successive taps of the second delay line so that the delayed signal at a center tap of the second delay line is time coincident with an output signal from said decision feedback equalizer;

a plurality of correlation circuits corresponding respectively to the tap-weight multipliers of said transversal filter and the successive taps of the second delay line, each of the correlation circuits comprising:

a correlation detector for detecting a correlation between the output signal of said decision feedback equalizer and a signal from the corresponding tap of said second tapped delay line to produce a correlation output signal;

integrator means for integrating said correlation output signal over a prescribed interval to produce an integrated signal;

an adder having a first input terminal receiving said correlation output signal, and a second input terminal;

delay means for delaying said correlation output signal for an interval equal to said prescribed interval to produce a delayed signal;

a subtractor for detecting a difference between said delayed signal and an output signal of said adder to produce a difference signal and supplying the difference signal to the corresponding tap-weight multiplier; and

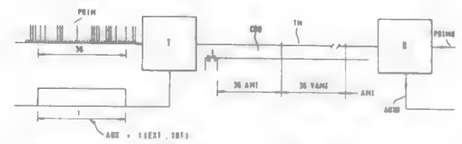
means for initially coupling said integrated signal to the second input terminal of said adder and subsequently coupling said difference signal to said second input of the adder, instead of said integrated signal.

5,369,669

DATA TRANSMISSION SYSTEM FOR SYNCHRONOUSLY TRANSMITTING AN AUXILIARY BITSTREAM WITHIN A MAIN BITSTREAM

Jurgen M. E. Tombal, Schilde; Peter P. F. Reusens, Laarne, and Daniel Sallaerts, Aarschot, all of Belgium, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Dec. 22, 1992, Ser. No. 994,827
Claims priority, application European Pat. Off., Dec. 24, 1991, 91203411.3
Int. Cl.[5] H04B *14/04;* **H04J** *3/12*
U.S. Cl. 375—25 **18 Claims**



1. Data transmission system for transmission of a main bitstream to additionally transmit an auxiliary bitstream together with said main bitstream, said data transmission system comprising a transmitter including

frame means for arranging said main bitstream in superframes, each of said superframes including a plurality of periodically occurring blocks, each of said blocks having a block length of Y bits, where Y is a predetermined integer greater than 1,

encoding means for encoding each of said blocks of Y bits according to a respective coding law such that any block of Y bits may be selectively encoded with either a first or a second coding law and a block encoded with the second coding law violates the first coding law, and

means for determining said respective coding law as a function of the value of at least one corresponding information unit of said auxiliary bitstream, whereby the auxiliary bitstream is transmitted synchronously with the main bitstream, independent of the data content of the main bitstream.

5,369,670

METHOD AND APPARATUS FOR DEMODULATION OF A SIGNAL TRANSMITTED OVER A FADING CHANNEL USING PHASE ESTIMATION

Hatim Zagloul, and Michel Fattouche, both of Alberta, Canada, assignors to AGT Limited, Canada

Filed Feb. 14, 1992, Ser. No. 837,198
Int. Cl.[5] H03D *3/02;* **H04L** *27/22;* **G06F** *15/332*
U.S. Cl. 375—84 **7 Claims**

2. A method of processing a signal transmitted over a fading channel, the information in the signal being carried by the phase $\phi(n)$ of a number of consecutive time instants of the signal, the method comprising the steps of:

sampling the signal with a sampler to produce amplitude samples of the signal;

computing a function of the amplitude of the signal to produce a data record corresponding to the function;

computing a Hilbert transform of the data record to produce a signal corresponding to an estimated phase differential of the data record;

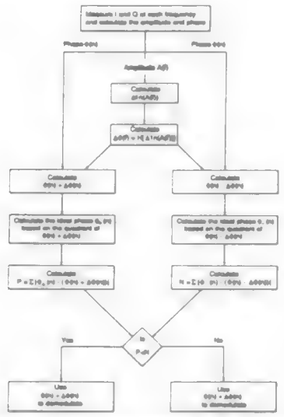
determining the sign of the estimated phase differential ($\Delta\phi(n)$) of the data record by:

determining for each sample n, the ideal phase closest to $\phi(n)+\Delta\phi(n)$ and labelling it $\phi_+(n)$;

determining the ideal phase closest to $\phi(n)-\Delta\phi(n)$ and labelling it $\phi_-(n)$;

computing $P=\Sigma|\phi_+(n)-\{\phi(n)+\Delta\phi(n)\}|$ and $N=\Sigma|\phi_-(n)-\{\phi(n)-\Delta\phi(n)\}|$ for each element of the data record; and

demodulating the electromagnetic signal in a demodulator by adding $\Delta\phi(n)$ to the phase $\phi(n)$ if $P<N$, and if not then



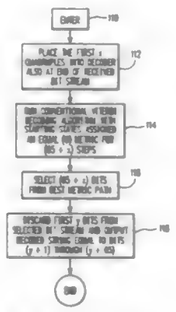
by subtracting $\Delta\phi(n)$ from the phase $\phi(n)$ to produce a corrected signal.

5,369,671

SYSTEM AND METHOD FOR DECODING TAIL-BITING CODE ESPECIALLY APPLICABLE TO DIGITAL CELLULAR BASE STATIONS AND MOBILE UNITS

Moshe Yehushua, San Diego; John Watson, Carlsbad, and Michael Parr, San Diego, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 20, 1992, Ser. No. 889,054
Int. Cl.[5] H03A *1/00*; H04L *27/06*
U.S. Cl. 375—94 **16 Claims**



1. A decoder for B bit control messages each of which is encoded in a stream of E data bits in a data frame prior to transmission by a convolutional tail-biting encoding procedure, said decoder comprising:

means for modifying the stream of E data bits in the input data frame carrying the encoded message by placing a plurality of bits corresponding to x first quadruple bits in the stream of E bits in the message carrying data frame at the end of the stream of E bits;

means for applying a Viterbi decoding algorithm to the modified stream of bits with predetermined starting states for a number of steps equal to B plus x;

means for selecting another bit stream having a number of bits equal to B plus x from a best value path generated by said algorithm;

means for discarding y first bits from said other bit stream; and

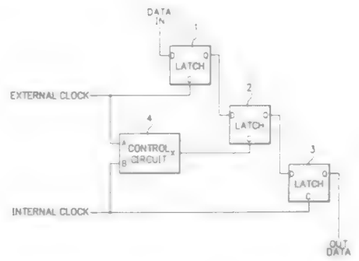
means for generating an output decoded message having a number of bits equal to the remaining bits in said other bit stream from bit y+1 through bit y+B.

5,369,672

INTERFACE CIRCUIT CAPABLE OF PERFORMING EXACT DATA TRANSFER

Yoshimi Matsumoto, Kanagawa, Japan, assignor to NEC Corporation

Filed Aug. 13, 1992, Ser. No. 929,261
Claims priority, application Japan, Aug. 23, 1991, 3-237362
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—106 **3 Claims**



1. An interface circuit for performing a data transfer between a first device operated responsive to a first clock signal and a second device operated responsive to an asynchronous second clock signal having the same frequency as the first clock signal, said interface circuit comprising:

control circuit means for generating a one-shot pulse within a period of a second clock signal whenever both one first clock signal and one second clock signal are input;

first latch means for latching data inputted to the interface circuit in response to the first clock signal,

second latch means for latching the data outputted from the first latch means in response to the one-shot pulse generated by the control circuit means; and

third latch means for latching the data outputted from the second latch means in response to the second clock signal,

the inputs and outputs of the first, second and third latch means being connected in cascade;

the first clock signal being one of either the external clock signal or the internal clock signal;

the second clock signal being the other of the external clock signal and the internal clock signal; and

the interface circuit outputting the output signal of the third latch means synchronously with the second clock signal, and outputting data responsive to the input data even when jitter occurs in the first and second clock signals.

5,369,673

FRAMED DIGITAL SIGNAL REGENERATOR SUITABLE FOR MICROWAVE DIGITAL TRANSMISSION INSTALLATIONS

Pierre Roux, Argenteuil, France, assignor to Société Anonyme dite Alcatel Telspace, Nanterre Cedex, France

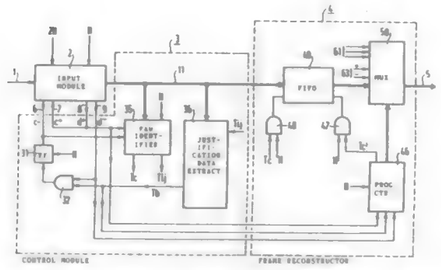
Filed Apr. 20, 1993, Ser. No. 48,431
Claims priority, application France, Apr. 28, 1992, 92 05233
Int. Cl.[5] H04B *3/36*; H03H *7/30*
U.S. Cl. 375—118 **6 Claims**

1. A regenerator for transmitting digital signal frames including payload bits and justification bits, said regenerator comprising extractor means to extract the digital signals from incoming frames, reconstructor means including a memory in which said digital signals extracted from said incoming frames are stored temporarily and which is adapted to form from said digital signals stored in said memory frames to be transmitted under the control of an internal clock signal, and control means

operating on said digital signals extracted from said incoming frames to compensate differences between said internal clock and the clock under whose control said incoming frames were sent, in which regenerator:

a) said extractor means comprise a fractionally spaced equalizer with a plurality of taps controlled at a frequency which is a multiple of the frequency of said internal clock and which supplies said digital signals of said incoming frames at a rate set by said internal clock, said extractor means being adapted to derive first and second error signals representing differences between said internal clock and the clock under whose control said incoming frames were sent and said equalizer being adapted to eliminate or duplicate digital signals in response to first and second control signals;

b) said control means are adapted to derive from said digital signals at the output of said equalizer said first control



signal indicating that a payload bit in an incoming frame is present at the output of said equalizer and said second control signal indicating that a justification bit of an incoming frame containing padding data is present in said equalizer, to derive said first control signal from said first error signal and said second control signal so that said equalizer eliminates only padding bits from incoming frames in response to said first control signal and to derive said second control signal from said second error signal so that said equalizer duplicates payload bits or justification bits of incoming frames in response to said second control signal; and

c) said reconstructor means are adapted to control the writing into said memory of payload bits indicated by said first control signal and to form frames to be transmitted from payload bits stored in said memory and regenerated justification bits.

5,369,674

PLANT DIAGNOSIS APPARATUS AND METHOD

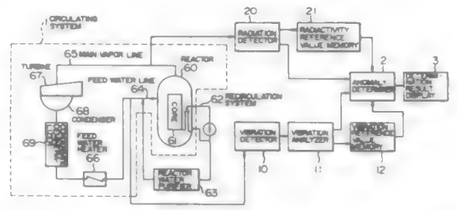
Kenji Yokose; Makoto Nagase; Hiroshi Kanimura, all of Hitachi; Yamato Asakura, Katsuta; Tetsuya Matsui, Hitachi; Hidefumi Ibe, Katsuta; Yoshitaka Nishino, and Shunsuke Uchida, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,399
Claims priority, application Japan, Jan. 23, 1991, 3-006208
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—245 **44 Claims**

30. A nuclear power plant having a recirculation system comprising:

first detecting means for detecting a vibration of a pump of said recirculation system;

second detecting means for detecting a quality of cooling water of said recirculation system, said quality being caused by and indicative of impurities in said cooling water;



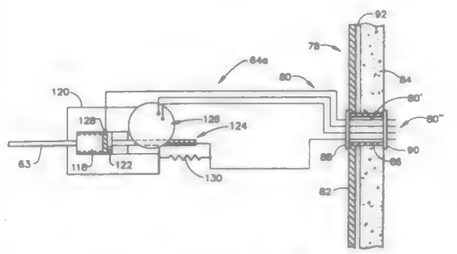
means for diagnosing said pump of said recirculation system by output of said first and second detecting means.

5,369,675

REMOTE LOAD ACTIVATING MECHANISMS

Thomas P. Diaz, San Martin; Gary W. Contreras, San Jose; Gerald M. Gordon, Soquel; Veronica L. McCarthy, Fremont, and Daniel Weinstein, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 25, 1993, Ser. No. 83,141
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—249 **20 Claims**



11. An apparatus for monitoring crack growth in a reactor pressure vessel or piping of a nuclear reactor, said reactor pressure vessel being surrounded by a drywell having a port for electrical lines, comprising:

a double-cantilever beam crack growth sensor comprising first and second cantilever beams and a crack formation zone, each of said first and second cantilever beams having one end joined to said crack formation zone;

a hollow expandable device mechanically coupled at respective ends thereof to the other ends of said first and second cantilever beams, said hollow expandable device being expandable in response to fluid pressure therein, said expanded hollow expandable device exerting a load that urges the other ends of said first and second cantilever beams mutually apart, the magnitude of said load being dependent on the pressure inside said hollow expandable device;

electrically controllable pressurizing means for supplying fluid having a predetermined pressure to said hollow expandable means, said pressurizing means being located within the confines of said drywell; and

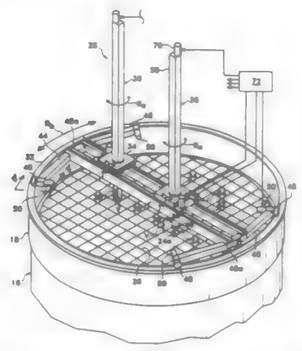
electrical conducting means for transmitting electrical signals from outside the confines of said drywell to said pressurizing means.

5,369,676

REACTOR REFUELING MECHANISM

Frank Ortega, and David L. Faulstich, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 19, 1993, Ser. No. 108,271
Int. Cl.[5] G21C *19/10*
U.S. Cl. 376—271 **16 Claims**



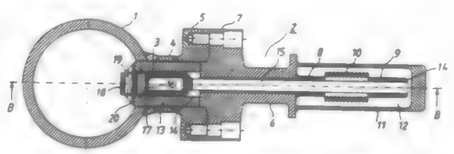
1. A reactor refueling mechanism positionable above a nuclear reactor core disposed in a cylindrical core shroud, comprising:
a bridge positionable above said core;
a trolley disposed on said bridge;
an elevator disposed on said trolley and including a vertically movable mast having a grapple at a lower end thereof for releasably holding a load;
means for rotating said bridge around said core;
means for translating said trolley along said bridge;
means for rotating said elevator on said trolley;
means for vertically moving said mast to position said grapple; and
an annular rail positionable on said core shroud for supporting said bridge thereon above said core, wherein:
said bridge comprises a center frame extending diametrally across said rail, and first and second end frames fixedly joined transversely on opposite ends of said center frame and disposed on said rail; and
said bridge rotating means comprise a plurality of spaced wheels rotatably joined to said first and second end frames and supported on said rail, with a motor driving at least one of said wheels on said rail to rotate said bridge.

5,369,677

DEVICE FOR MATERIALS TESTING IN NUCLEAR REACTORS

Anders Rosengren, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

Filed Jan. 29, 1992, Ser. No. 827,645
Claims priority, application Sweden, Feb. 19, 1991, 9100488-7
Int. Cl.[5] G21C *23/00*
U.S. Cl. 376—340 **6 Claims**



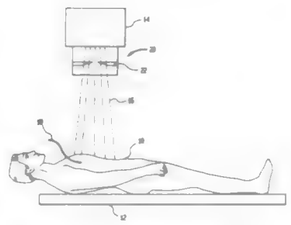
1. A device for load-testing of specimens (3) in a nuclear reactor environment, characterized in that at one of the pipes (1) of the nuclear reactor for conveying a first medium under pressure, there is fixed a testing device (2) comprising a first space (14) in open communication with said pipe (1), a movable pull rod (15) arranged in said first space (14), one end of said pull rod (15) being intended to be attached to one half (16) of a specimen (3) arranged in the space (14), the other end of said pull rod (15) being joined to a tensile force device, capable of being influenced by the first medium, for achieving a tensile stress in the specimen (3) via the pull rod (15).

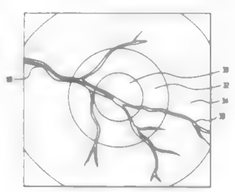
5,369,678

METHOD FOR TRACKING A CATHETER PROBE DURING A FLUOROSCOPIC PROCEDURE

Ming-Yee Chiu, Princeton Junction, N.J., and David L. Wilson, Shaker Heights, Ohio, assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Jun. 29, 1992, Ser. No. 906,149
Int. Cl.[5] G01N *23/04*
U.S. Cl. 378—62 **1 Claim**





1. A method for tracking a catheter or probe, said catheter being characterized by at least one of the following characteristics:
A. relatively thin, less than 2 mm, wire-like shape;
B. begins in periphery of an image;
C. has smooth edges;
D. does not bend much; and
E. X-ray dense as compared to the surround;
using an X-ray fluoroscopic apparatus for passing X-rays from an X-ray source means through a subject body to an X-ray detector means, including image processing means including image intensifier means, coupled thereto for providing said image and including a radiation reduction device comprising:
a controllable filter member means being responsive to a control signal, and including a filter member being semi-transparent to X-rays and having at least one aperture formed therethrough, such that X-rays passing through said at least one aperture remain unattenuated and strike said subject body in a common region;
wherein the X-rays passing through said filter member are attenuated and strike said subject body in a pattern that surrounds, and is adjacent to, said common region;
control means coupled to said X-ray source means, to said image processing means, and to said controllable filter member means;
said method comprising the following steps:
1. morphologically processing the image to enhance an image of said catheter;
opening an input image, INPUT, with a flat, structuring element;
subtracting said opened image from INPUT, to given ENHANCED;
2. threshold ENHANCED giving binary image, BINARY whereby said binary image contains silhouettes including a silhouette of said catheter;
3. analyzing regions or blobs, in BINARY to find said image of said catheter using properties of said catheter including said catheter being thin, relatively rigid, and X-ray dense;
for each blob, make at least two of the following calculations:
apply a thinning algorithm to obtain a medial axis;
compute length of said medial axis, MEDIAL_LENG;
compute AREA and PERIMETER.
DISTANCE_TO_PERIPHERY_i (i=1,2), the distance of two endpoints of the medial axis to a periphery of said image intensifier;
AREA_TO_PERIMETER, a ratio of the area to the perimeter;
PERIMETER_TO_MEDIAL_LENG, a ratio of the perimeter to the length of the medial axis;
BENDING, an average local curvature of said medial axis;
compute a mean intensity within the blob from ENHANCED;
identify potential catheters by the following properties:
a. One of the DISTANCE_TO_PERIPHERY measure should be close to zero;
b. AREA_TO_PERIMETER should be close to half the width of said catheter;
c. PERIMETER_TO_MEDIAL_LENG should be close to 2.0;
g. BENDING should be small;
e. mean intensity should be within a predetermined value.
for each potential blob, compute a score which is a function of measures identified above;
select identification of said catheter as a blob from the set of potential catheters having the highest score;
4. finding the end of said catheter selected:
the location of one endpoint of the medial axis farther away from a predetermined outer boundary is said end of said catheter selected; and
5. Ending.

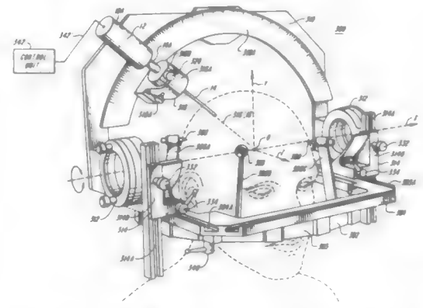
5,369,679

LOW POWER X-RAY SOURCE WITH IMPLANTABLE PROBE FOR TREATMENT OF BRAIN TUMORS

Alan P. Sliski, Lincoln; Mark T. Dinsmore, Sudbury; Anthonius J. Boom, Burlington, and Nicholas T. Zervas, Milton, all of Mass., assignors to Photoelectron Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 577,883, Sep. 5, 1990, Pat. No. 5,153,900. This application Oct. 2, 1992, Ser. No. 955,494
The portion of the term of this patent subsequent to Oct. 16, 2009, has been disclaimed.
Int. Cl.[5] H01J *35/14*
U.S. Cl. 378—65 **18 Claims**

1. An x-ray system for treating a brain tumor in a patient comprising:
A. an electron beam activated x-ray source including:
i. a housing enclosing an electron beam source having means for generating an electron beam along a beam axis extending out of said housing,
ii. an elongated tubular probe extending from said housing about said beam axis, said probe including a target positioned along said beam axis at the end of said probe distal from said housing, said probe having a biocompatible outer surface, and said target being responsive to electrons from said beam incident thereon to generate x-rays,
iii. beam positioning means for controlling the position of said beam axis whereby said beam axis intercepts said target,
iv. controller means for controlling said means for generating said electron beam and said beam positioning means whereby said generated x-rays are substantially confined to a predetermined volume when said target is positioned within the cranium of said patient,
B. a reference frame assembly including an arc-shaped frame member extending along a substantially circular circumferential axis, said circumferential axis being characterized by a radius of curvature greater than the largest radius of curvature of the outer surface of the head of said patient, and including means for coupling said frame member to the body of said patient, whereby said frame member is positioned about the head of said patient with a substantially fixed spatial relationship with said head;



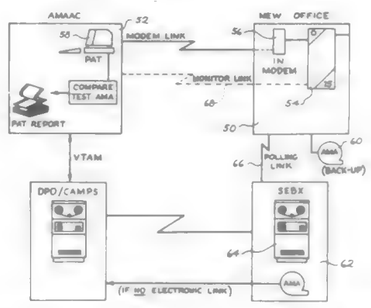
C. coupling assembly for adjustably coupling said x-ray source to said frame member including coupler means for coupling said housing to said frame member in a manner permitting:
i. selectively controlled motion of said housing along said circumferential axis of said frame member, and
ii. selectively controlled motion of said housing along a radial axis, extending from said circumferential axis
whereby said probe may be selectively positioned along said radial axis radially with respect to said circumferential axis from selected points along said circumferential axis.

5,369,680

PRO-ACTIVE BILLING AND ROUTING TEST SET

William F. Borbas, Woodridge; Douglas A. Hahn, Willowbrook, and Thomas W. Mines, Orland Park, all of Ill., assignors to Illinois Bell Telephone Company, Chicago, Ill.

Filed Mar. 9, 1993, Ser. No. 28,259
Int. Cl.[5] H04M *15/00*
U.S. Cl. 379—1 **14 Claims**



1. A telephone transaction test system for checking, from a central testing location, telephone billing transactions to a plurality of telephone calls made in a plurality of different class

of services, wherein each class of service has a different billing rate for the same telephone call, the system comprising:

a processor disposed at a first central location, the processor connected to an input device for inputting test data to the processor, the test data indicating a telephone call to be made to a respective telephone number and the class of service in which the telephone call is to be made, the processor generating a test signal in response to the test data;

a memory operatively connected to the processor and having stored therein correct billing data for telephone calls made in each different class of service;

means for transmitting the test signal from the processor;

a common telephone line connected at one end to the means for transmitting data from the processor;

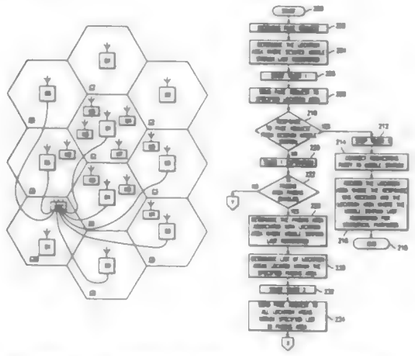
a test set disposed at a second location remote from the first location, the test set including i) means for receiving the test signal from the processor, ii) means for connecting the common telephone line to a plurality of test lines, iii) means for selecting one of the plurality of test lines in response to the test signal, and iv) a detector operatively connected to receive test signals from the test line selected, the test set identifying and storing successful completion of test signals received by the test set in a success file.

5,369,681

CELLULAR COMMUNICATIONS SYSTEM UTILIZING PAGING AREAS

Alain Boudreau, Le Gardeur, and Andre Beauregard, Bois Briand, both of Canada, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed May 12, 1992, Ser. No. 882,607
Int. Cl.[5] H04M *11/00*; H04Q *7/00*; G08B *5/22*
U.S. Cl. 379—87 **4 Claims**



1. A method of paging mobile stations within a cellular telecommunication system in which groups of cells are arranged in location areas and groups of location areas are arranged in paging areas, said method comprising the steps of:

receiving from a calling party a call request for a desired mobile station;

determining within which location area said desired mobile station last registered;

sending a first paging message to said location area within which said desired mobile station last registered;

connecting said calling party to said desired mobile station if a page response is received from said desired mobile station in response to said first paging message;

determining if paging area paging is enabled for said telecommunication system if a page response is not received from said desired mobile station in response to said first paging message;

informing said calling party that said desired mobile station is not available if paging area paging is not enabled for said telecommunication system;

determining which paging area is associated with the location area in which said mobile station last registered if paging area paging is enabled for said telecommunication system;

accessing a list including a plurality of location areas defined by said paging area;

sending a second paging message to said plurality of location areas within said paging area;

connecting said calling party to said desired mobile station if a page response is received from said desired mobile station in response to said second paging message;

determining if service area paging is enabled for said telecommunication system if a page response is not received from said desired mobile station as a result of said second paging message;

informing said calling party that said desired mobile station is not available if service area paging is not enabled for said telecommunication system;

sending a third paging message to all location areas within said service area if service area paging is enabled for said telecommunication system; and

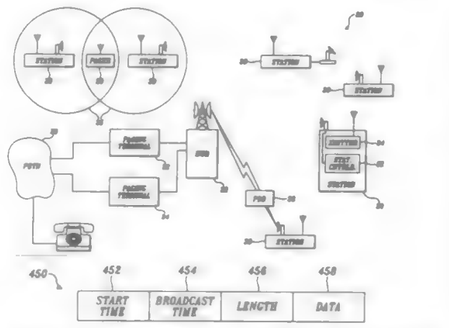
informing said calling party that said desired mobile station is not available if a page response is not received from said desired mobile station in response to said third paging message.

5,369,682

DIGITAL SIMULCAST TRANSMISSION SYSTEM

Mark L. Witsaman; Roger E. Benz; David W. Gleasner; Joel R. Crowley-Dierks, all of Quincy, Ill., and Glenn S. Fawcett, Vancouver, Canada, assignors to Glenayre Electronics, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 931,789, Aug. 17, 1992. This application Aug. 11, 1993, Ser. No. 105,228
Int. Cl.[5] H04M *11/00*; H04B *1/00*
U.S. Cl. 379—57 **13 Claims**



1. A paging system for simulcasting pages and comprising:

a paging terminal for receiving calls for system subscribers and functioning to generate corresponding pages;

a system controller including:

a clock for maintaining a system time;

means for receiving said pages and for receiving said system time, said means functioning to packetize said pages into a plurality of paging data blocks, wherein said paging data blocks are in a digital format, and further functioning to provide each paging data block with a start time based on said system time, an end time based on said system time, and an indication of the number of bits that must be broadcast in the time period between said start time and said end time; and

a first linking unit for forwarding said paging data blocks over a link channel; and

a plurality of paging stations, each paging station including:

a transmitter for broadcasting said pages;

a second linking unit for receiving said paging data blocks from the link channel;

a station clock for maintaining a station time having a predetermined relationship to said system time; and

a station controller for receiving said station time from said station clock and for receiving said paging data blocks from said second linking unit, and for forwarding said pages to be simulcast to said transmitter, said station controller functioning to remove said pages from said paging data blocks and forward said pages to said transmitter when said station time equals said start time in said paging data blocks; and

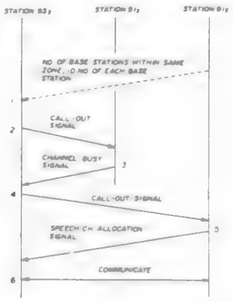
wherein said transmitter broadcast said pages in the time period between said start time and said end time.

5,369,683

LINE CONTROL METHOD AND SYSTEM

Toshihiro Yabe, and Masatoshi Nakada, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 28, 1993, Ser. No. 10,369
Claims priority, application Japan, Jan. 28, 1992, 4-013184
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **16 Claims**



9. A line control system adapted to a mobile communication system in which a mobile station communicates with one of a plurality of base stations, which are installed within a common zone, via a free speech channel of said one base station, said base stations having a common control channel, said line control system comprising:

storage means, provided in the mobile station, for storing timing information which indicates to the mobile station the corresponding access timings of the plurality of base stations installed within the common zone and is received via the common control channel; and

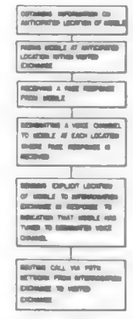
control means, coupled to said storage means and provided in the mobile station, for receiving control information which indicates a result of an allocation of free speech channels, in the one base station and with respect to each call, based on a predetermined call processing procedure of the one base station via the common control channel, and for switching the access timing of the mobile station from the access timing corresponding to the one base station to the access timing corresponding to another of the base stations and stored in said storage means, so that the mobile station communicates with said another of the base stations via a free speech channel which is determined by the control information.

5,369,684

APPARATUS AND METHOD FOR DIRECTING CALLS TO MOBILE STATION SUBSCRIBERS

Nancy Buhl; John Hayes, both of Montreal, Canada, and Harald Kallin, Sollentuna, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 765,487, Sep. 25, 1991, abandoned, which is a continuation of Ser. No. 515,836, Apr. 27, 1990, abandoned. This application Jan. 13, 1994, Ser. No. 194,872
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—59 **26 Claims**



1. In a mobile communication system having a plurality of exchanges within which at least one mobile station may roam and which are connected with one another by PSTN lines, a method for routing an incoming call from an interrogation exchange to the called mobile station, comprising:

obtaining information as to the anticipated location of the mobile station;

paging the called mobile station in at least one of a plurality of locations based upon said anticipated location information in response to the receipt of an incoming call for said mobile station by said interrogation exchange;

receiving a page response from the paged mobile station at one of said plurality of locations;

designating to said mobile a voice channel to which to tune at said one of said plurality of locations in response to receiving a page response from the paged mobile;

sending information identifying the explicit location of the called and waiting mobile to the interrogation exchange via said private data lines in response to receiving an indication at said one of said plurality of locations that said mobile has tuned to he designated voice channel and is waiting on said voice channel; and

routing the call for said mobile via said PSTN communications lines from said interrogation exchange to the exchange in which said mobile station is located and waiting on a voice channel in response to receipt of information identifying the explicit location of said mobile.

5,369,685

VOICE-ACTIVATED TELEPHONE DIRECTORY AND CALL PLACEMENT SYSTEM

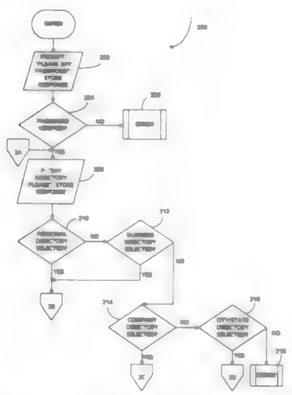
Terrence E. F. Kero, Pacifica, Calif., assignor to Sprint Communications Company L.P., Westwood, Kans.

Filed Mar. 7, 1991, Ser. No. 666,155
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—67 **10 Claims**

1. A method of operating a telecommunications network for providing a voice-activated telephone directory, the network having the capability of routing calls thereover and for processing caller-spoken, voice entries, said method comprising the steps of:

(a) storing a plurality of caller-associated telephone directo-

ries including the step of storing voice templates of a plurality of callers speaking respective directory listings;
(b) organizing said listings as part of respective subsidiary directories having respective subsidiary directory names with said subsidiary directories included as part of respective subdirectories having respective subdirectory names;
(c) storing voice templates of the callers speaking said respective subdirectory and subsidiary directory names;
(d) receiving a telephone call over the network from a caller in response to the dialing of a directory access telephone number associated with the caller's directory;
(e) verifying the identity of the caller and, in response, retrieving said directory associated with the caller;
(f) receiving a caller-spoken entry, comparing said entry with said subdirectory name template of said directory



associated with the caller, and determining whether said entry matches said subdirectory name template;
(g) if a match is determined between said entry and subdirectory name template, comparing a subsequent caller-spoken entry with said subsidiary directory name template included as part of said subdirectory, and determining whether said subsequent entry matches said subsidiary directory name template;
(h) if a match is determined between said subsequent entry and subsidiary directory name template, comparing an additional caller-spoken entry with said listing template, and determining whether said additional entry matches said listing template; and
(i) if a match is determined between said additional entry and listing template, retrieving said listing-associated telephone number.

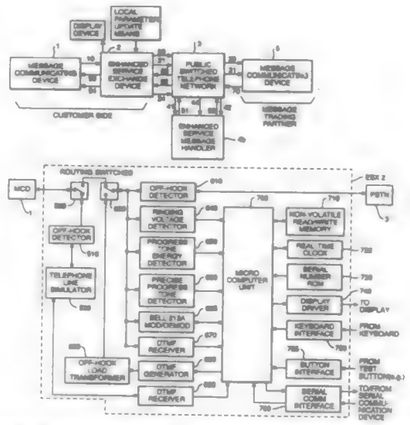
5,369,686

METHOD AND APPARATUS FOR SECONDARY-OPTION MESSAGE DELIVERY THROUGH ENHANCED SERVICE MESSAGE HANDLERS

Antonio Dutra, Lebanon, N.H.; Gordon K. Kapes, Chicago, and Randy S. Storch, Highland Park, both of Ill., assignors to Open Port Technology, Inc., Skokie, Ill.

Filed Feb. 12, 1993, Ser. No. 17,285
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—94 **48 Claims**

1. A system for transmitting and receiving digitally encoded data comprising:
(a) a first message communicating device;
(b) an enhanced service exchange device having a customer side and a public side, the enhanced service exchange device being in exclusive and dedicated communication on its customer side through a private connection with the first message communicating device, and in communication over a public line with a public-switched telephone network on its public side, the public line being part of the public-switched telephone network; and
(c) an enhanced service message handler in communication with the public-switched telephone network,
wherein the enhanced service exchange device comprises means for determining the availability of point-to-point



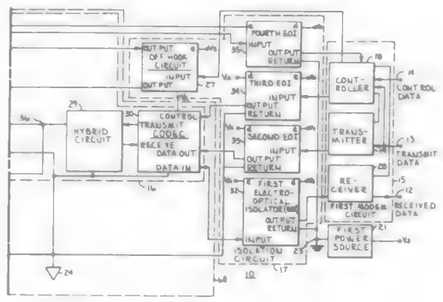
communication with a second message communicating device via the public-switched telephone network, and
wherein the enhanced service exchange device further comprises means for automatically establishing a communication path to the enhanced service message handler when it determines that point-to-point communication is not available.

5,369,687

APPARATUS FOR ELECTRICALLY ISOLATING A TELEPHONE LINE FROM A DATA DEVICE

Steven E. Farkas, Sherman Oaks, Calif., assignor to Practical Peripherals, Inc., Thousand Oaks, Calif.

Filed Dec. 17, 1992, Ser. No. 991,999
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—98 **21 Claims**



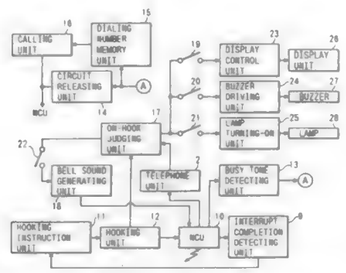
1. A modem, comprising
a modem circuit comprising a transmitter for providing an outgoing digital data signal and a receiver for receiving an incoming digital data signal;
a coder/decoder (CODEC) coupled to a telephone line for providing said incoming digital data signal by encoding an incoming analog telephone signal received via said telephone line and for providing an outgoing analog telephone signal for transmission over said telephone line by decoding said outgoing digital data signal;
a first power source, which does not draw power from said telephone line, for supplying all operating power to said modem circuit;
a second power source functionally connected to said telephone line for supplying all operating power to said CODEC by drawing power only from said telephone line; and
isolation means connected between said CODEC and said modem circuit for coupling said incoming digital data signal from said modem circuit to said CODEC, and for coupling said outgoing digital data signal from said modem circuit to said CODEC, and for electrically isolating said CODEC from said modem circuit.

5,369,688

DATA COMMUNICATION APPARATUS WITH INTERRUPT COMPLETION DETECTING

Kazuyuki Tsukamoto; Minoru Yoshida; Ryuji Hosaka; Tomoo Fukao; Naoharu Kido, and Naoki Suto, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1991, Ser. No. 774,196
Claims priority, application Japan, Jan. 16, 1991, 3-014915
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **4 Claims**



4. A data communication apparatus comprising:
a home station;
means for detecting completion of reception of data sent to the home station from a second station which interrupted telephone communication between a first station and the home station, and for outputting a hooking signal upon the completion of the data reception;
means for detecting, after the output of the hooking signal, whether busy tones are being received from the first station; and
means for releasing the first telephone circuit if it is detected that the busy tones are being received.

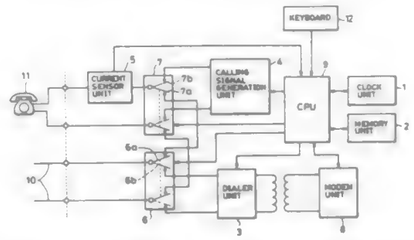
5,369,689

FACSIMILE APPARATUS

Wataru Kawamura, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 859,811, Mar. 30, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 206,265
Claims priority, application Japan, May 13, 1991, 3-107313
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **13 Claims**

12. A communication apparatus comprising:
memory means for storing a time and a dial number;
sending means for sending a dial signal according to the dial number stored in said memory to a telephone line at a first timing according to the time stored in said memory means and a number of digits of the dial number; and



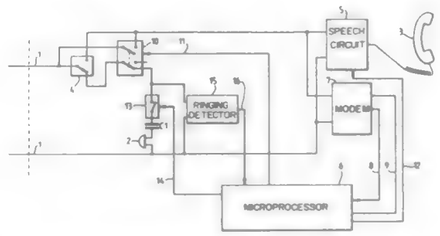
driving means for driving a sound generator to generate a sound at a second timing according to the time stored in said memory means.

5,369,690

TELEPHONE CALL DETECTING CIRCUIT AND A METHOD OF REMOTELY ACCESSING AND TESTING A TELEPHONE

John J. Comfort, Basingstoke Hampshire, United Kingdom, assignor to Mars Incorporated, McLean, Va.

PCT No. PCT/GB91/00409, § 371 Date Sep. 11, 1992, § 102(e) Date Sep. 11, 1992, PCT Pub. No. WO91/14330, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 15, 1991, Ser. No. 927,274
Claims priority, application United Kingdom, Mar. 15, 1990, 9005874.4
Int. Cl.[5] H04M *15/00*
U.S. Cl. 379—106 **21 Claims**



10. A method of remotely accessing a telephone comprising transmitting to said telephone from a remote location an enable signal to cause said telephone to respond in a predetermined manner, wherein said enable signal comprises a plurality of sequential ringing signals, said telephone is adapted to distinguish between a normal incoming telephone call and a said enable signal on the basis of the duration of each of said ringing signals received, said enable signal comprising a plurality of sequential ringing signals the duration of each of which is less than a predetermined value the accessing of said telephone comprises testing the operation thereof; and the response comprises performing a test routine and transmitting a test result signal in response to the result of said test routine.

5,369,691

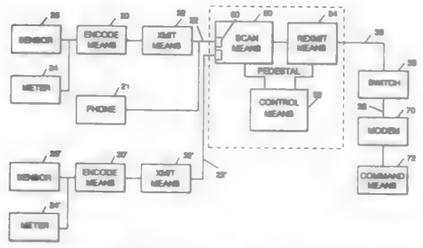
TELEPHONIC INFORMATION COMMUNICATION METHOD AND APPARATUS

Charles J. Cain, Greenville, N.C., and Ronald R. Genova, Reading, Pa., assignors to Utilex, Inc., Greenville, N.C.

Filed Mar. 4, 1993, Ser. No. 27,285
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—106 **36 Claims**

1. A method for automated utility meter reading over a telephone line of a customer, comprising:

(a) electrically encoding one or more of a customer's utility meter readings;
(b) transmitting the electrically encoded readings onto the customer's telephone line as an out-of-band frequency reading signal which is operatively transmitted concurrently over the customer's telephone line between the customer and the local distribution point with or without any customer voice communications;
(c) performing steps (a) and (b) one or more times;
(d) receiving selected out-of-band frequency readings at a local distribution point;



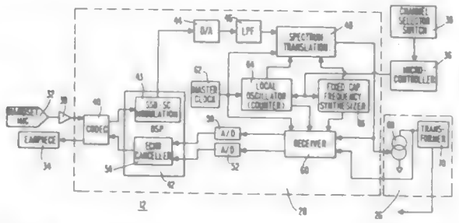
(e) converting the received selected out-of-band frequency readings to data readings at the local distribution point;
(f) selectively re-transmitting the data readings as in-band frequency reading signals over a telephone link connecting through a telephone company central office switch; and
(g) acquiring the in-band frequency reading signals at one or more remote locations through the telephone company central office switch to provide the customer's utility meter readings automatically to the remote locations.

5,369,692

PAGE PARTY SYSTEM

Edmund H. Nowicki, Denver, Pa., assignor to Gaitronics Corporation, Reading, Pa.

Continuation of Ser. No. 738,196, Jul. 30, 1991, Pat. No. 5,179,588. This application Oct. 20, 1992, Ser. No. 963,991
The portion of the term of this patent subsequent to Jan. 12, 2000, has been disclaimed.
Int. Cl.[5] H04M *13/00, 1/72*
U.S. Cl. 379—171 **18 Claims**



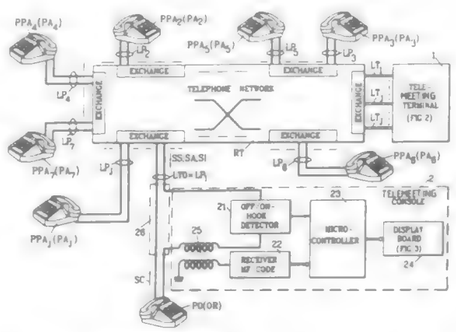
1. A page party communication system having a plurality of stations joined by a page line and by a single party line for providing plural full duplex voice conferencing channels on the single party line, each station comprising:
a current source line driver selectively coupled to either the page line for transmitting a paging message or to the party line for transmitting outgoing or receiving incoming voice signals between stations;
a channel selector switch for selecting one of said conferencing channels, each of said conferencing channels having a unique frequency band corresponding thereto;
audio input means for receiving outgoing voice signals;
a voice modem, responsive to said audio input means, including
(a) means for amplitude modulating a carrier with said outgoing voice signal and for suppressing the carrier and one its sidebands to produce a single sideband suppressed carrier spectrum;
(b) means for translating that spectrum to the frequency band of the selected conferencing channel;
(c) means, responsive to said line driver, for receiving incoming single sideband suppressed carrier spectra representing incoming voice signals from other stations on the party line and for translating said incoming spectra, located at the frequency of the selected channel, to baseband thereby producing incoming baseband voice signals; and
means, coupled to the voice modem, for generating an audio output in response to said incoming baseband voice signals.

5,369,693

TELEPHONIC TELEMEETING SYSTEM

Michel Pillet, Brest, and Daniel Piriou, Plouzane, both of France, assignors to France Telecom, France

Filed May 6, 1992, Ser. No. 879,240
Claims priority, application France, May 21, 1991, 91 06108
Int. Cl.[5] H04M *3/42*
U.S. Cl. 379—203 **16 Claims**



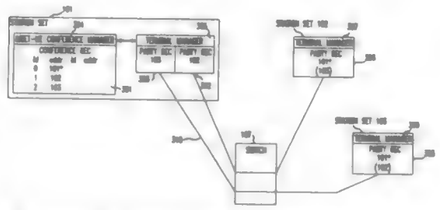
1. A telephonic telemeeting system comprising a terminal connected to a telephone network via plural terminal telephone lines equal in number to a maximum number of participants at a telemeeting, each of said participants, including an organizer of said telemeeting, disposing of a telephone set which is connected to a subscriber telephone line and associated with multifrequency-code signal generating means and which is selectively serviced by one of said terminal telephone lines through said telephone network, one of said terminal telephone lines being attributed to said telemeeting organizer,
said terminal comprising plural communication setting-up and cutting-off means respectively servicing said terminal telephone lines for seizing said terminal telephone lines and calling the participants under the control of said organizer telephone set and for answering calls from said participant telephone sets and transmitting said participant calls to said organizer telephone set, plural switching and broadcasting means connected to said plural communication setting-up and cutting-off means for selectively broadcasting, under the control of said organizer telephone set, voice signals coming from at least one of said participant telephone sets to the other participant telephone sets during said telemeeting, a multifrequency-code detector connected to one of said plural communication setting-up and cutting-off means servicing said organizer terminal telephone line for decoding encoded command signals transmitted from said organizer telephone set into decoded command signals, and a control circuit for setting-up and cutting-off communications between said participants and said organizer via said plural communication setting-up and cutting-off means and for selecting at least one of said participant telephone sets whose voice signals are to be broadcast to said other telephone sets, as a function of said decoded command signals,
said terminal further comprising a multifrequency-code transmitter connected to said one communication setting-up and cutting-off means servicing said organizer terminal telephone line for encoding signalling signals derived by said control circuit thereby transmitting encoded signalling signals to said organizer telephone set and plural multifrequency-code detectors respectively connected to said plural communication setting-up and cutting-off means for decoding indication signals derived and transmitted by said participant telephone sets, including telephone sets whose participants are only listening in and do not have the right to speak under the control of the organizer telephone set during said telemeeting, said control circuit retransmitting said indication signals via said multifrequency-code transmitter to said organizer telephone set, and
said system comprising a console for said organizer, said console including multifrequency-code reception means connectable to said subscriber telephone line servicing said organizer set for detecting seizings and releasings of said subscriber line and for decoding said encoded command signals transmitted from said organizer telephone set and said encoded signalling signals transmitted from said multifrequency-code transmitter through said telephone network, displaying means, and controlling means for controlling the display of information in said displaying means in response respectively to said encoded command signals and encoded signalling signals decoded in said reception means and the display of indications in said displaying means in response respectively to said indication signals retransmitted by said control circuit via said multifrequency-code transmitter.

5,369,694

UNATTENDED MEET-ME-CONFERENCE CONTROLLED BY A TELEPHONE TERMINAL

Bruce M. Bales, Louisville; Ted M. Fidder, Broomfield; Donald D. Gallagher, and Stephen M. Thieler, both of Boulder, all of Colo., assignors to AT&T Corp., Murray Hill, N.J.

Filed Dec. 23, 1992, Ser. No. 996,349
Int. Cl.[5] H04M *3/56, 11/06*
U.S. Cl. 379—206 **21 Claims**



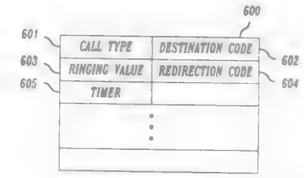
1. A method for implementing an automatic meet-me-conference on a telecommunication switching system, comprising the steps of:
starting the execution of a software application program in a first telecommunication terminal;
receiving, by the software application program, a first call directed to the first telecommunication terminal from a second telecommunication terminal;
receiving, by the software application program, a second call directed to the first telecommunication terminal from a third telecommunication terminal; and
joining the first and second calls into the meet-me-conference call by the software application program.

5,369,695

METHOD OF REDIRECTING A TELEPHONE CALL TO AN ALTERNATE DESTINATION

Vandana S. Chakravarti, Tinton Falls, N.J.; R. Paul Christmann, Irving, Tex.; Steven F. Knittel, West Allenhurst, N.J.; Margaret H. Redberg, Red Bank, N.J.; William T. Shampine, Freehold, N.J.; Lindsay A. Shur, Middletown, N.J., and Dawn E. Staniforth, Holmdel, N.J., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jan. 6, 1992, Ser. No. 817,225
Int. Cl.[5] H04M *3/42, 11/04, 15/00, 7/00*
U.S. Cl. 379—211 **18 Claims**



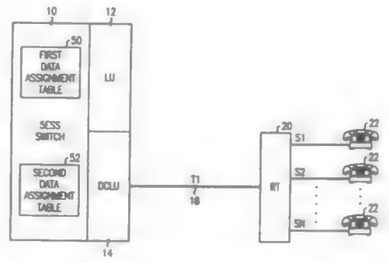
18. A method of redirecting a call from one telephone station set to another telephone station set, said method comprising the steps of:
processing an incoming call received at one of a plurality of switches forming a communications system by causing information associated with said call to be translated into at least a redirect code and a destination code, said one of said plurality of switches King an originating switch for said call,
forwarding said call to a destination switch identified by said destination code and serving said one telephone station set, and
responding thereafter at said one switch to a condition requiting redirection of said call by redirecting said call from said destination switch to another destination switch identified as a function of said redirect code and serving said other telephone station set, said redirect code being a code other than a telephone number.

5,369,696

INTRASWITCH TRANSITION TO NEW LINE SUPPORT EQUIPMENT

William J. Krauss, Elgin; Thomas J. Pieper, Warrenville; Bernard G. Ruel, Naperville; Gilbert M. Stewart, Naperville, and Kathleen C. Whildin, Sugar Grove, all of Ill., assignors to AT&T Corp., Murray Hill, N.J.

Filed May 29, 1992, Ser. No. 890,904
Int. Cl.[5] H04M *7/00*
U.S. Cl. 379—268 **14 Claims**



1. A method for transferring service provided to subscriber

lines by one set of line unit equipment coupled to a digital telecommunications switch to another set of line unit equipment coupled to said switch, said switch having a first data assignment table that includes a list of subscriber telephone numbers and, for each telephone number, the identity of a line unit port associated with said one set of line unit equipment and the states of subscriber selectable features associated with each of said telephone numbers, the method comprising the steps of:

(a) creating a second data assignment table in said switch based on said first data assignment table wherein said telephone numbers and states of corresponding subscriber selectable features contained in said first table are stored in said second table;

(b) assigning in said second table a line unit port identification of one of said another set of line unit equipment for each telephone number;

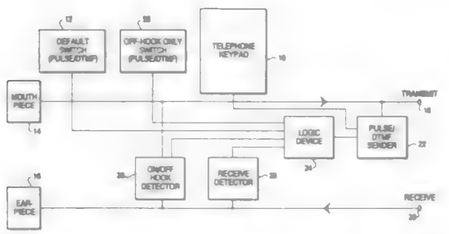
(c) following steps (a) and (b), activating said second table and deactivating said first table to transfer said service, said active second table causing said subscriber lines to be serviced via said another set of line unit equipment.

5,369,697

METHOD AND APPARATUS FOR AUTOMATICALLY SWITCHING BETWEEN PULSE CODE AND DTMF SIGNALS GENERATED BY A TELEPHONE

John P. Murray, Marblehead; David F. Hemmings, Manchester, and David S. Gergacz, Lincoln, all of Mass., assignors to Boston Technology, Inc., Wakefield, Mass.

Filed Apr. 30, 1993, Ser. No. 54,265
Int. Cl.[5] H04M *1/50*
U.S. Cl. 379—361 **11 Claims**



1. An apparatus for controlling external signals output to a telephone line by a signal generator in a telecommunications device having an on/off hook detector, in response to internal signals produced by a user of an input unit in the telecommunications device, said apparatus comprising:

a detection unit, operatively connected to the telephone line, to detect at least one of status of the telecommunications device and received signals from the telephone line and to generate a detection signal upon detecting passage of a predetermined period of time since any of the internal signals were generated; and

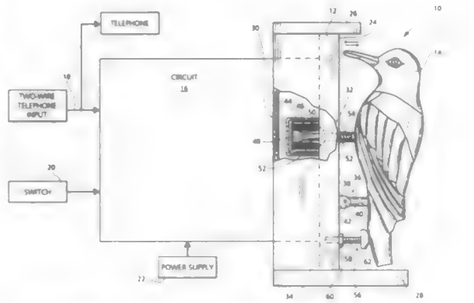
a control unit, operatively connected to said detection unit and the signal generator, to control selection between pulse code and dual tone multifrequency signals for production as the external signals corresponding to the internal signals, including instructing the signal generator to output the dual tone multifrequency signals as the external signal corresponding to subsequent internal signals when the on/off hook detector indicates that the telecommunications device is in an off-hook state and the detection signal has been generated.

5,369,698

WOODPECKER SIMULATING TELEPHONE RINGING DEVICE

Donald C. Nielsen, 10260 W. Fairbanks Ave., Beach Park, Ill. 60099

Filed Apr. 8, 1992, Ser. No. 865,284
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—373 **11 Claims**



1. A telephone ringing device comprising:

a base;

a movably mounted simulated woodpecker having a beak and being coupled to said base;

circuit means for receiving a telephone ringing signal coupled to said base and to said simulated woodpecker for causing said simulated woodpecker to tap with its beak on said base with a telephone ringing signal is received, said circuit means including a solenoid attached to said base and to a middle portion of said simulated woodpecker;

pivot means for allowing said simulated woodpecker to pivot there about, said pivot means being located between and attached to said base and to said woodpecker; and,

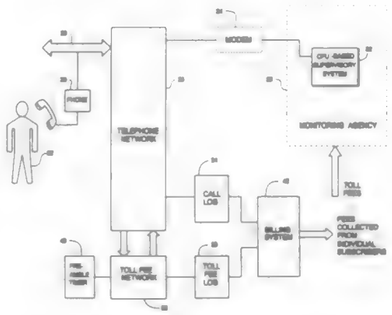
sound stroke adjustment means for adjusting the pitch and volume of said tapping sound of said simulated woodpecker extending outwardly from said base in proximity to a lower portion of said simulated woodpecker.

5,369,699

ADAPTABLE PERSONNEL SUPERVISORY SYSTEM WITH AUTOMATIC FEE COLLECTION

David M. Page, Niwot; Elvin L. Riggs; Joseph P. Newell, both of Boulder, and Vincent D. Stinton, Brighton, all of Colo., assignors to BI Incorporated, Boulder, Colo.

Continuation-in-part of Ser. No. 572,905, Aug. 23, 1990, Pat. No. 5,204,670. This application Mar. 2, 1993, Ser. No. 25,230
Int. Cl.[5] H04M *11/64, 1/64, 15/00, 1/56*
U.S. Cl. 379—38 **33 Claims**



18. An adaptable personnel monitoring and identification system for monitoring a population of individuals comprising:

means for establishing telecommunicative contact between a given individual of said population of individuals, under obligation to make regular status reports, and a central processing unit (CPU), said CPU having status information stored therein for each individual of said population of individuals being monitored;

an administrative case load management program stored in said CPU, said administrative case load management program including: (1) means for verifying the identity of said given individual once telecommunicative contact is established with said CPU, and (2) means for automatically requesting from the given individual whether the status information stored in said CPU for said given individual has changed since said given individual last contacted said CPU; and

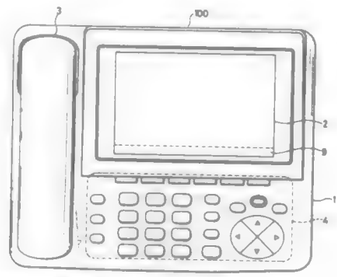
means for automatically charging said given individual with a prescribed fee once the identify of the given individual has been verified.

5,369,700

MULTI-FUNCTION TELEPHONE APPARATUS AND CONTROL METHOD

Masahiro Koura; Ryuichi Ishihara; Yoshimoto Chikatsu; Yukihiko Nagata, and Eihachiro Ohmori, all of Tokyo, Japan, assignors to Japan Business Systems, Inc., Tokyo, Japan

Filed Apr. 16, 1992, Ser. No. 869,660
Claims priority, application Japan, Jul. 16, 1991, 3-174999; Nov. 20, 1991, 3-304352
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—387 **14 Claims**



1. A multi-function telephone apparatus connected to a public telephone line, having execution means for executing any desired program, which is functionally independent of voice communication, by sharing hardware resources with the voice communication, comprising:

detection means for detecting an incoming/outgoing call and a completion of a voice communication;

means for determining a state of the program being executed by said execution means when the incoming/outgoing call is detected by said detection means;

means for completing, in response to the means for determining, a currently executing instruction of the program;

means for halting execution of the program after the currently executing instruction is completed, and holding information relating to an instruction to be subsequently executed so that a halting point in the program can be identified and the voice communication immediately becomes available in accordance with the detection by said detection means; and

restart means for automatically restarting, based on the held information, the execution of the halted program from the halting point so that the program can be recovered immediately after it is detected by said detection means that the telephone communication is completed,

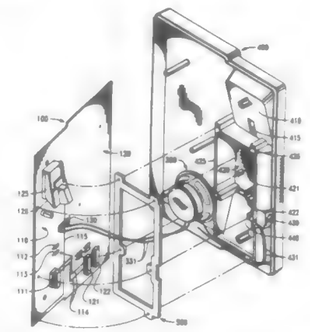
wherein said execution means is integrated in the apparatus.

5,369,701

COMPACT LOUDSPEAKER ASSEMBLY

Jeffrey P. McAteer, Fishers, and Kevin D. Willis, Indianapolis, both of Ind., assignors to AT&T Corp., Murray Hill, N.J.

Filed Oct. 28, 1992, Ser. No. 967,340
Int. Cl.[5] H04M *1/00;* **H04R** *25/00*
U.S. Cl. 379—420 **13 Claims**



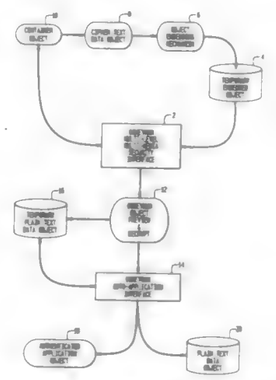
1. A compact loudspeaker assembly comprising a closed housing having a rigid surface that separates its interior and exterior regions, the rigid surface including a sound aperture therein for enabling the passage of sound waves, the interior region including a loudspeaker that is positioned to fully cover the aperture and a printed wiring board having electronic circuitry mounted on a surface thereof, the interior region further including an enclosure that separates the loudspeaker from the rest of the interior, said enclosure including a continuous sidewall having a bottom edge which is directly sealed to the printed wiring board surface, the enclosure having no opening into the interior region that would permit the passage of sound waves; whereby a sealed enclosure for the loudspeaker is compactly formed within the housing.

5,369,702

DISTRIBUTED CRYPTOGRAPHIC OBJECT METHOD

M. Greg Shanton, Fairfax, Va., assignor to TECSEC Incorporated, Vienna, Va.

Filed Oct. 18, 1993, Ser. No. 138,857
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **15 Claims**



8. A system for providing multi-level multimedia security in a data network, comprising:

A) digital logic means, the digital logic means comprising:

1) a system memory means for storing data;
2) an encryption algorithm module, comprising logic for converting unencrypted objects into encrypted objects, the encryption algorithm module being electronically connected to the system memory means for accessing data stored in the first system memory;
3) an object labelling subsystem, comprising logic means for limiting object access, subject to label conditions, the object labelling subsystem being electronically connected to the system memory means for accessing data stored in the system memory means and the object labelling subsystem being further electronically connected to the encryption algorithm module to accept inputs from the encryption algorithm module;
4) a decryption algorithm module, comprising logic for converting encrypted objects into unencrypted objects, the decryption algorithm module being electronically connected to the system memory means for accessing data stored in the system memory means; and
5) an object label identification subsystem, comprising logic for limiting object access, subject to label conditions, the object label identification subsystem being electronically connected to the system memory means for accessing data stored in the system memory means and the object label identification subsystem being further electronically connected to the decryption algorithm module to accept inputs from the decryption algorithm module;

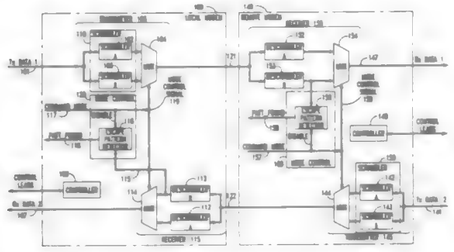
B) the encryption algorithm module working in conjunction with the object labelling subsystem to create an encrypted object such that the object label identification subsystem limits access to an encrypted object.

5,369,703

COMMAND AND CONTROL SIGNALLING METHOD AND APPARATUS

James L. Archibald, William R. Davis, and Kurt E. Holmquist, all of Clearwater, Fla., assignors to AT&T Corp., Murray Hill, N.J.

Filed Jun. 3, 1993, Ser. No. 779,455
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—9 **12 Claims**



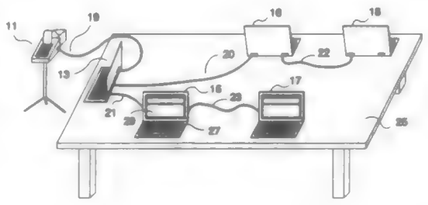
1. Digital data communication apparatus comprising
transmitter means for scrambling an inputted binary data information signal to generate a first bit pattern signal for transmission over a facility, in response to a first state of a mode control signal, and for scrambling an inputted binary control information signal to generate a second bit pattern signal for transmission over said facility, in response to a second state of said control signal;
receiver means including
first means for descrambling a first bit pattern signal received over said facility into a first information signal,
second means for descrambling a second bit pattern signal received over said facility into a second information signal, and
selector means, responsive to said first state of said control signal, for selecting said first information signal for output from said receiver means and, responsive to said second state of said control signal, for selecting said second information signal for output from said receiver means; and
mode control means, operational when said control signal is in said first state, for detecting a predetermined bit pattern in a received second bit pattern signal and in response thereto changing the state of said control signal from said first state to said second state.

5,369,704

DOWN-LINE TRANSCRIPTION SYSTEM FOR MANIPULATING REAL-TIME TESTIMONY

James D. Bennett, Chicago, and Lawrence M. Jarvis, Wheaton, both of Ill., assignors to Eagate Incorporated, Chicago, Ill.

Filed Mar. 24, 1993, Ser. No. 36,488
Int. Cl.[5] H04K *1/02*
U.S. Cl. 380—9 **29 Claims**



1. A transcription network comprising:
transcription means for generating transcript signals representative of spoken words in real time;
an attorney's terminal receiving the transcript signals generated by said transcription means for display;
an associate's terminal receiving the transcript signals generated by said transcription means for display;
said associate's terminal providing for the generation of messages to be transmitted to said attorney's terminal, and, prior to transmissions, providing for the association of the generated messages with selected portions of the transcript signals; and
said attorney's terminal providing for the display of the selected portions of the transcript signals through access to the associated messages received from said associate's terminal.

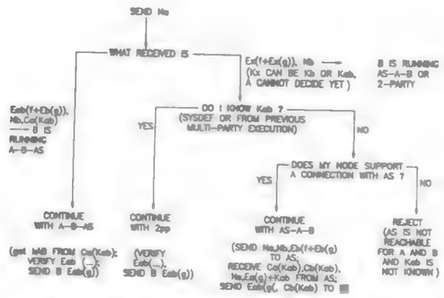
5,369,705

MULTI-PARTY SECURE SESSION/CONFERENCE

Raymond F. Bird, Durham, N.C.; Amir Herzberg, Bronx, N.Y.; Philippe A. Janson, Zurich, Switzerland; Shay Kutten, Rockaway, N.J.; Refik A. Molva, Juan les Pins, France, and Marcel M. Yung, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1992, Ser. No. 892,852
Int. Cl.[5] H04L *9/08*
U.S. Cl. 380—21 **6 Claims**

1. A method of providing secure communications between terminals of a communications network, said method comprising:
(a) storing in a server of said network an initial user key for each of said terminals, each corresponding said user key being known only to said server and a corresponding one of said terminals;
(b) transmitting, upon the event of a group of said terminals indicating a desire to communicate with each other, corresponding alleged identity and corresponding freshness information from each terminal of said group of terminals, said freshness information indicating the happening of said event and the time elapsed since said event occurred and being associated with said group and said event, each said alleged identity information and each said freshness information being transmitted to said server, each said alleged identity and freshness information being dynamically routed to said server on current available paths of said network;
(c) generating a group key which is held in a secure fashion and is usable only by said group of terminals for only a predetermined time interval following said event;
(d) computing coded information for each terminal of said group of terminals, said coded information being dependent upon said group key, corresponding said freshness information, corresponding said user key, and upon an alleged identification of a user;
(e) transmitting to each of said terminals of said group corresponding said coded information along with an attached



clear text tag representing said each terminal on said current available paths of said network; and
(f) extracting said group key, by each of said terminals, based upon corresponding said coded information, by employing said user key of said each terminal, said corresponding coded information being identified by a corresponding said attached tag,
said extracting in step (f) being successful only if an alleged user is actually the user it alleges to be in step (b), said users communicating securely with each other using said group key,
repeating steps (b) through (f) when another group of said terminals indicate that they desire to communicate with each other, wherein a new group key is generated.

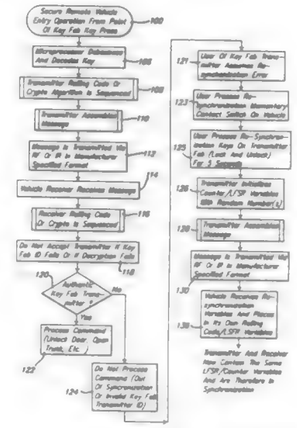
5,369,706

RESYNCHRONIZING TRANSMITTERS TO RECEIVERS FOR SECURE VEHICLE ENTRY USING CRYPTOGRAPHY OR ROLLING CODE

David S. Latka, Dearborn, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Nov. 5, 1993, Ser. No. 148,665
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—23 **7 Claims**

1. A method of synchronizing transmitter and receiver in a keyless entry system of the type which uses encrypted access codes to prevent unauthorized access, comprising:
storing secret information data in the transmitter and storing the same secret information data in the receiver, said secret information including a resynchronization authorization code;
storing at least a first access code in said transmitter and at least a first access code in said receiver, the access codes serving to permit access if transmitter and receiver first access codes match and to prevent access if transmitter and receiver first access codes do not match;
initiating a resynchronization sequence and in response to initiating a resynchronization sequence, generating a first random number access code at said transmitter;
using said transmitter to transmit said resynchronization authorization code and said first random number access code to said receiver;
substituting said first random number access code for the first access code in said transmitter;
in said receiver comparing the transmitted resynchronization authorization code with the resynchronization authorization code stored in said receiver;



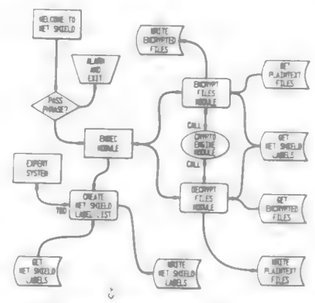
if the transmitted resynchronization authorization code and the resynchronization authorization code stored in said receiver match, substituting said first random number access code for the first access code in said receiver;
whereby the first access codes of transmitter and receiver are reset to match one another, thereby synchronizing transmitter and receiver.

5,369,707

SECURE NETWORK METHOD AND APPARATUS

Roy D. Follendore, III, Manassas, Va., assignor to TECSEC Incorporated, Vienna, Va.

Filed Jan. 27, 1993, Ser. No. 9,741
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—25 **28 Claims**



1. A system for the secure routing of encrypted data within a communications network, comprising:
A) first digital logic means and second digital logic means, the first digital logic means being electronically linked for communication with the second digital logic means;
B) the first digital logic means comprising:
1) a first system memory for storing data;
2) a first access control subsystem, comprising logic for limiting system access to authorized users, the first access control subsystem being electronically con-

nected to the first system memory for accessing data stored in the first system memory;

3) an encryption algorithm module, comprising logic for converting plain text messages into encrypted text messages, the encryption algorithm module being electronically connected to the first system memory for accessing data stored in the first system memory and the encryption algorithm module being further electronically connected to the first access control subsystem to accept inputs from the first access control subsystem;

4) a message header labelling subsystem, comprising logic for limiting system access, subject to label conditions, the message header labelling subsystem being electronically connected to the first system memory for accessing data stored in the first system memory and the message header labelling subsystem being further electronically connected to the encryption algorithm module to accept inputs from the encryption algorithm module; and

5) message transmission means for transmitting data to the second digit logic means;

C) the second digital logic means comprising:

1) a second system memory for storing data;

2) a second access control subsystem, comprising logic for limiting system access to authorized users, the second access control subsystem being electronically connected to the second system memory for accessing data stored in the second system memory;

3) a decryption algorithm module, comprising logic for converting encrypted text messages into plain text messages, the decryption algorithm module being electronically connected to the second system memory for accessing data stored in the second system memory and the decryption algorithm module being further electronically connected to the second access control subsystem to accept inputs from the second access control subsystem;

4) a message header identification subsystem, comprising logic for limiting system access, subject to label conditions, the message header identification subsystem being electronically connected to the second system memory for accessing data stored in the second system memory and the message header identification subsystem being further electronically connected to the decryption algorithm module to accept inputs from the decryption algorithm module; and

5) receiver means for receiving data transmitted by the first digital logic means;

D) the encryption algorithm module working in conjunction with the message header labelling subsystem to create an outgoing message transmitted from the transmission means of the first digital logic means to the receiver means of the second digital logic means;

E) the message header identification subsystem limiting access to an incoming message prior to conversion of a received encrypted text message into a plain text message by the decryption algorithm module by providing a cryptographic key to the encryption algorithm module;

F) the first access control subsystem and the second access control subsystem being adapted to manipulate passphrase information entered by users to generate a passkey;

G) the first access control subsystem further comprising a check key which is compared to the passkey;

H) the passkey being an input to the encryption algorithm module which allows editions of cryptographic information stored within the first system memory to be inputs to the encryption algorithm module only if the passkey exactly matches the check key;

I) the second access control subsystem further comprising a check key which is compared to the passkey;

J) the passkey being an input to the decryption algorithm module which allows editions of cryptographic information stored within the second system memory to be inputs to the decryption algorithm module only if the passkey exactly matches the check key;

K) the passkey inputs to the encryption algorithm module allowing the encryption algorithm module to convert a plain text message to an encrypted text message;

L) the passkey inputs to the decryption algorithm module allowing the decryption algorithm module to convert an encrypted text message to a plain text message;

M) the first digital logic means being adapted to exclusive OR all possible pairings of the editions of cryptographic information and an organizational account number to generate scrambled editions of cryptographic information;

N) the first digital logic means being further adapted to exclusive OR the scrambled editions of cryptographic information with label conditions to generate scrambled label conditions; and

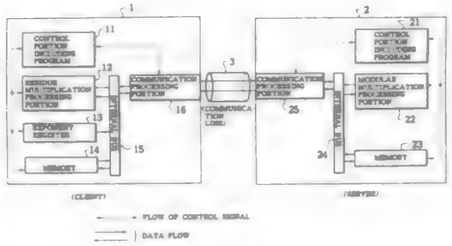
O) the first digital logic means being further adapted to manipulate the scrambled label conditions and the editions of cryptographic data to generate an encryption key for allowing the encryption algorithm module to convert a plain text message to an encrypted text message.

5,369,708

FAST SERVER-AIDED COMPUTATION SYSTEM AND METHOD FOR MODULAR EXPONENTIATION WITHOUT REVEALING CLIENT'S SECRET TO AUXILIARY DEVICE

Shinichi Kawamura, New York, N.Y., and Atsushi Shimbo, Chiba, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1993, Ser. No. 40,597
Claims priority, application Japan, Mar. 31, 1992, 4-077881
Int. Cl.[5] H04K *1/00*; H04L *9/00*
U.S. Cl. 380—30 **12 Claims**



1. An auxiliary device aided computation system, comprising:

a main device including:

a modular multiplication processing portion so that at least two integers are multiplied and a result thereof is divided by a modulus so as to obtain a residue thereof;

exponent register means for storing an exponent d;

memory means for storing a computed result in the processing portion;

an auxiliary means including:

a modular multiplication processing portion for performing computation requested by the main device and sending back a result thus obtained therefrom to the main device; and

communication means for communicating data between the main device and the auxiliary means,

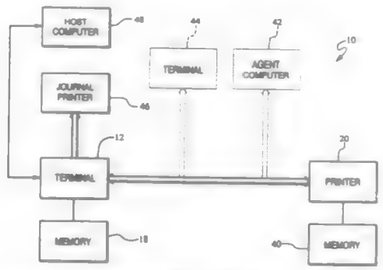
wherein the auxiliary means performs computing steps independent of the stored exponent d which is recorded only in the main device.

5,369,709

APPARATUS FOR DISPENSING MONEY ORDERS

Jack C. Foreman, Carrollton; Billy J. Steiger, Desoto, both of Tex.; Gerald L. Heyen, Fridley, Minn.; Trent R. Voigt, The Colony, Tex.; James S. Carter, Denver, Colo.; Loren F. Blaney, Nederland, Colo.; Stephen J. Tierney, Littleton, Colo., and James K. Bill, Plymouth, Minn., assignors to Travelers Express Company, Inc., Dallas, Tex.

Continuation of Ser. No. 959,322, Oct. 9, 1992, abandoned. This application Feb. 25, 1994, Ser. No. 201,710
Int. Cl.[5] H04L *9/10*
U.S. Cl. 380—51 **42 Claims**



36. A money order dispenser comprising:

print means for printing money orders and sales reports;

memory means associated with the print means for storing operating programs, logos, and transaction data;

a terminal connected to the print means for controlling the printer;

memory means associated with the terminal for storing operating programs, programmable security codes, and transaction data;

means for decryption of an encrypted password based upon the serial number of the print means for initiating communication with the print means;

a keyboard connected to the terminal for programming and data entry;

display means connected to the terminal for displaying transaction data;

sensor means in the printer for detecting preprinted timing marks on the back of the money order forms at predetermined intervals in a series of forms for prohibiting the printing of a money order when the serial number of the money order form is not evenly divisible by a number representing the distance, in number of forms, separating the forms bearing the timing marks; and

a printer housing having a square body portion and a face portion attached to and extending outwardly and downwardly from the body portion to form a generally "L" shaped housing for adaptive positioning in relation to limited availability of a supporting surface.

5,369,710

SOUND FIELD CORRECTING APPARATUS AND METHOD

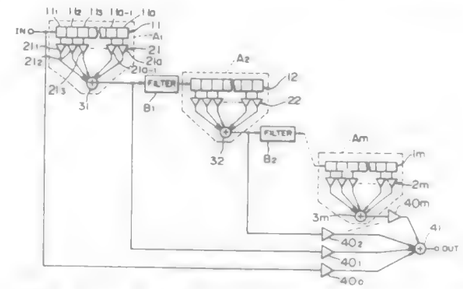
Sampei Asai, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 9, 1993, Ser. No. 29,050
Claims priority, application Japan, Mar. 23, 1992, 4-065024
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—63 **6 Claims**

1. A sound field correcting apparatus comprising:

at least two reflected sound generated circuits each of which is constructed by a plurality of delay circuits which are cascade connected, a plurality of coefficient multipliers connected to respective outputs of said plurality of delay circuits, and an adder for adding output signals of said plurality of coefficient multipliers and for generating an added signal;

connecting means for cascade connecting said reflected sound generating circuits such that the added signal generated by one of said reflected sound generating circuits serves as an input signal for a succeeding one of said reflected sound generating circuits in the cascade; and



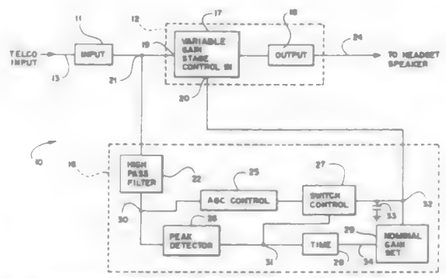
adding means for adding output signals of said reflected sound generating circuits.

5,369,711

AUTOMATIC GAIN CONTROL FOR A HEADSET

William A. Williamson, III, Stone Mountain, Ga., assignor to BellSouth Corporation, Atlanta, Ga.

Filed Aug. 31, 1990, Ser. No. 576,662
Int. Cl.[5] H03G *3/00*
U.S. Cl. 381—104 **12 Claims**



1. An improved automatic gain control circuit for a headset comprising:

an input stage for accepting input signals;

a variable gain stage having an audio input connected to the output of said input stage and having a control input, said variable gain stage being responsive to a gain control signal at said control input to vary its forward gain, said forward gain having a predetermined maximum level; and

control means having an input connected to the output of said input stage, and an output connected to said control input for providing said gain control signal comprising

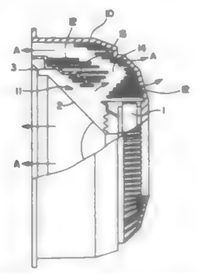
filter means connected to said input stage for providing a voice band input signal;

peak detector means for providing a peak signal in response to the detection of the peak value of said voice band input signal exceeding a predetermined threshold value;

first switch means connected to said peak detector means for causing said gain control signal to track the magnitude of said voice band input signal in response to the presence of said peak signal; and

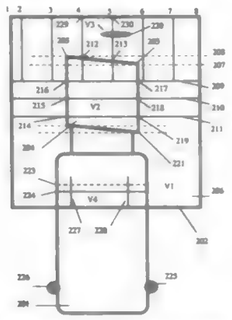
second switch means connected to said peak detector means for holding said gain control signal at a predetermined normal level less than said maximum level in response to the absence of said peak signal for a predetermined period of time.

5,369,712
SPEAKER
Beom-Taek Choi, Ra-202, Daedong yunlip, 460-4 Amsa-1Dong, Kangdong-Ku, Seoul, Rep. of Korea
Filed Dec. 17, 1991, Ser. No. 812,059
Claims priority, application Rep. of Korea, Dec. 27, 1990, 22056/1990
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—159 7 Claims



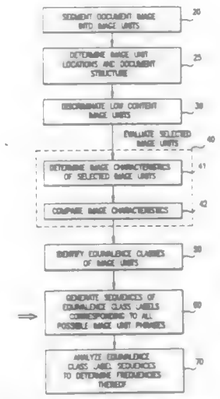
7. A speaker comprising a main speaker having a permanent magnet to the backward and a vibration plate to the forward installed to the inner side of a speaker case, a frame main body having a filtering means for filtering the whole voice frequency radiated to the backward of the vibration plate and a circulation exhaust means for radiating the filtered voice frequency by passing through the filtering means to the outside of the main speaker installed to the backward of the main speaker and then returning the filtered voice frequency to the forward,
wherein the above said filtering means is formed by attaching a large number of cilia to the whole surface of plurality of filtering pins so that the noise of the voice frequency which is circulating through the filtering pins can be filtered.

5,369,713
INSPECTION METHOD USING AREA OF INTEREST (AOI) ANALYSIS
Nira Schwartz; Arie Shahar, and Richard Woods, all of 2800 Plaza Del Amo #187, Torrance, Calif. 90503
Continuation of Ser. No. 911,130, Jul. 9, 1992, abandoned. This application Jun. 28, 1993, Ser. No. 82,437
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—8 4 Claims



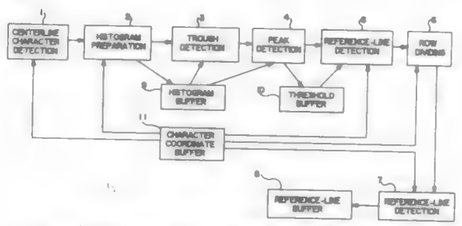
3. A method for inspecting a sealed container that has been partially filled with a fluid having a surface level, which may have defects, and which moves on a production line in a predetermined direction, comprising:
applying a force to said container to cause the level of said fluid to rise inside said container, providing a light source which is arranged to shine light upon a finish of said container, including the surface level of said fluid, so that said light is reflected from said finish of said container along a return path,
providing a sensor in said return path to collect light reflected from said finish of said container,
providing a processing unit with a memory,
creating a container image of said finish by using said sensor to sense reflected light from the finish of said container, said sensor being arranged to produce an electrical signal representative of a reflected product image of said finish, said container image comprising a multiplicity of pixels with intensity levels expressed as respective gray levels,
modifying said container image in said processing unit to produce a modified container image by modifying said gray levels of said container image to highlight transition points of said container image,
providing and saving in said memory of said processing unit a plurality of computer-generated artificial areas of interest of said modified container image, said plurality of computer generated artificial areas of interest representing separate areas of said container which are separated by a plurality of pixels, all of said pixels of said plurality of computer generated artificial areas of interest together being less than the number of pixels of which represent said container image, at least one of said plurality of computer generated artificial areas of interest including the gray levels of only some of said container's pixels, regardless of any uncertainty in said container's position in said given direction,
analyzing said transition points in said plurality of computer generated artificial areas of interest, and
utilizing said plurality of computer generated artificial areas of interest of said modified container image for product inspection.

5,369,714
METHOD AND APPARATUS FOR DETERMINING THE FREQUENCY OF PHRASES IN A DOCUMENT WITHOUT DOCUMENT IMAGE DECODING
M. Margaret Withgott, Los Altos, and Ramana R. Rao, San Francisco, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 19, 1991, Ser. No. 794,555
Int. Cl.[5] G06K 9/36, 9/72
U.S. Cl. 382—9 19 Claims



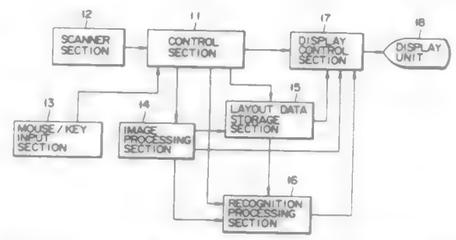
1. A method for determining a frequency of occurrence of significant word sequences in an undecoded electronic document text image, comprising the steps of:
segmenting the document image into word units;
determining at least one significant morphological image characteristic of selected word units in the document image;
identifying equivalence classes of the selected word units in the document image by clustering the ones of the selected word units with similar morphological image characteristics, each equivalence class being assigned a label;
equating the equivalence class labels to said selected word nits arranged in the order in which the selected word units appear in the document image to form a master-sequence of equivalence class labels, said master-sequence including the equivalence class labels of the selected word units in the document image arranged in the order in which the selected word units appear in the document image, said master-sequence being comprised of sub-sequences;
evaluating said equivalence class label sub-sequences to determine the frequency of each equivalence class label sub-sequence, and
outputting to an optical or electrical output device a list of significant phrases corresponding to the equivalence class label sub-sequences without having determined their content beyond the at least one significant morphological image characteristic.

5,369,715
OPTICAL CHARACTER RECOGNITION SYSTEM
Hideaki Tanaka, Daito; Toshiaki Morita, Nara, and Yoshihiro Kitamura, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 26, 1991, Ser. No. 693,247
Claims priority, application Japan, Apr. 27, 1990, 2-112296
Int. Cl.[5] G06K 9/46, 9/34
U.S. Cl. 382—18 8 Claims



1. An optical character recognition system, comprising:
means for reading images of a character row to generate an image data set representing characters of said character row;
means for forming a center line which runs through said character row;
means for determining characters which are crossed by said center line to be included in said character row;
means for preparing a graph which indicates the frequency distribution of the heights of said determined characters;
means for extracting characters from said determined characters, based on said graph, the ordinates of the data of the upper and lower extreme end portions of each of said extracted characters being assumed to be respectively on reference lines;
means for calculating and selecting the average of the upper extracting ordinates of said extracted characters as the ordinate of one of said reference lines, and the average of the lower extracting ordinates of said extracted characters as the ordinate of the other of said reference lines; and
means for using said reference lines for character recognition.

5,369,716
DOCUMENT READER AND READING PROCESSING METHOD THEREFOR
Akio Sangu, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 922,005, Aug. 4, 1992, abandoned, which is a continuation of Ser. No. 574,813, Aug. 30, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 123,694
Claims priority, application Japan, Aug. 31, 1989, 1-225417
Int. Cl.[5] G06K 9/20, 9/03
U.S. Cl. 382—61 28 Claims



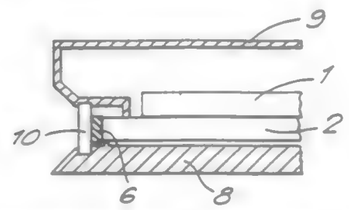
1. A document reading apparatus for reading document data without using format data, comprising:
means for reading a document image recorded on a recording sheet;
means for analyzing a layout based on the read image;
means for dividing the read document image into plural blocks in accordance with the analyzed layout;
means for setting a set order of character reading processing for the divided blocks;
means for inputting data to change the set order in which said blocks are to undergo character reading processing to a changed order in which one of said blocks is processed by said character reading processing before at least one other of said blocks from the set order of the character reading processing;
means for changing the order of the character reading processing set by said setting means in accordance with the data input by said input means; and
means for performing the character reading processing of the portions of the document included in the respective blocks in accordance with the changed order of character reading processing.

5,369,717
OPTICAL WAVEGUIDE ASSAY UNIT AND METHOD OF IMPROVING ASSAY SENSITIVITY USING SAME
John W. Attridge, Weybridge, United Kingdom, assignor to Applied Research System Ars Holding N.V., Netherlands Antilles
PCT No. PCT/GB91/00567, § 371 Date Oct. 5, 1992, § 102(e) Date Oct. 5, 1992, PCT Pub. No. WO91/15751, PCT Pub. Date Oct. 17, 1991
PCT Filed Apr. 10, 1991, Ser. No. 930,690
Claims priority, application United Kingdom, Apr. 11, 1990, 9008261.1
Int. Cl.[5] G02B 6/00; B01L 9/00; G01N 21/76, 21/01
U.S. Cl. 385—12 8 Claims

1. An optical assay unit comprising a disposable holder, said holder comprising an optical component adapted to form the first stage of an optical detector train, a fluorescence capillary fill device FCFD mounted in said holder, said FCFD comprising a planar optical waveguide with an optical edge, and an index-matching substance intimately contacting said optical edge and said optical component.

5. A method of reducing scattering of light emerging from an optical edge of an optical waveguide comprising maintaining said optical edge in intimate contact with an index-matching substance which intimately contacts a further optical com-

ponent and wherein the optical waveguide forms part of a fluorescence capillary fill device, FCFD, positioned in a dis-



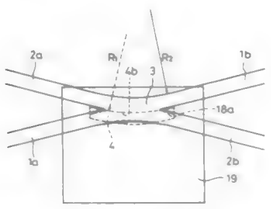
posable holder comprising said optical component, said FCFD comprising an optical waveguide with an optical edge.

5,369,718

TOTAL INTERNAL REFLECTION-TYPE OPTICAL WAVEGUIDE SWITCH

Yoshiyuki Kamata, Ichihara, and Hisaharu Yanagawa, Tokyo, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1992, Ser. No. 960,554
Claims priority, application Japan, Oct. 15, 1991, 3-265994
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—21 **30 Claims**



1. A total internal reflection-type optical waveguide switch, made of semiconductor material, the optical waveguide switch comprising:

a pair of semiconductor optical waveguides crossing each other so that a refractive index changing region for reflecting light is formed at a crossing section between the waveguides of said pair of optical waveguides;

said pair of optical waveguides and said refractive index changing region all being made of laminated layers of a semiconductor material, respectively;

an electrode on said refractive index changing region for applying electrical energy to said refractive index changing region; and

said refractive index changing region having a smoothly curved concave reflective surface recessed with respect to a lateral portion of said crossing section.

5,369,719

OPTICAL DEVICE WITH AN OPTICAL COUPLER FOR EFFECTING LIGHT BRANCHING AND/OR COMBINING AND AN OPTICAL AMPLIFIER

Seiji Mishima, and Yuichi Handa, both of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1992, Ser. No. 899,472
Claims priority, application Japan, Jun. 21, 1991, 3-177124
Int. Cl.[5] G02B *6/28*
U.S. Cl. 385—48 **44 Claims**

1. An optical device comprising:

first light guiding means for guiding a light wave;

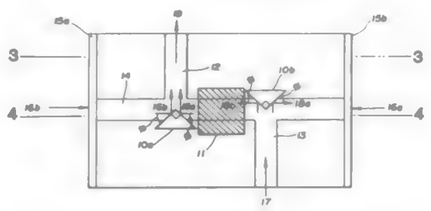
second light guiding means for guiding a light wave, said second light guiding means being connected to said first light guiding means at a first position;

third light guiding means for guiding a light wave, said third light guiding means being connected to said first light guiding means at a second position different from said first position;

light combining means arranged near said first position;

light branching means arranged near said second position;

an optical amplifier arranged on said first light guiding means between said first and second positions for compensating for a light loss of the light wave caused by each of said light branching and light combining means,



wherein an amplification factor of said optical amplifier arranged on said first light guiding means between said first and second positions is set so that the light waves entering said first light guiding means from opposite directions are guided into said second light guiding means with the same intensity; and

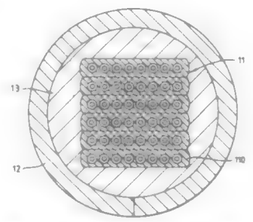
further optical amplifiers respectively arranged at opposite ends of said first light guiding means.

5,369,720

OPTICAL FIBRE CABLE INCORPORATING A STACK OF FIBRE RIBBON ELEMENTS

Mark J. Parry, Ware; Desmond J. Kenny, Sawbridgeworth, and Philip A. Norman, Bishops, all of United Kingdom, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 20, 1993, Ser. No. 139,446
Claims priority, application United Kingdom, Oct. 21, 1992, 9222119.1
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—114 **10 Claims**



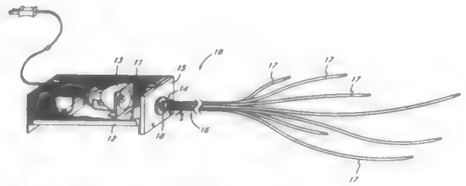
1. An optical fibre cable, including a stack of optical fibre ribbon elements enclosed in and supported by a tubular metal sheath, said stack of ribbon elements being secured to the sheath by an adhesive material selected from the group consisting of melt flow adhesives and ultraviolet curable adhesives, wherein there is substantially no overfeed of the stack of ribbon elements relative to the metal sheath, wherein said adhesive has sufficient tensile strength such that tensile forces applied in use to the cable are carried by the sheath whereby to protect the stack of ribbon elements from said forces, and wherein said adhesive has a peel strength sufficiently low as to allow separation of the ribbon elements from the sheath and separation of individual fibres from the ribbon elements whereby to access said fibres.

5,369,721

FIBER OPTIC BUNDLE WITH REMOVABLE AND REPLACEABLE LIGHT GUIDES

Mario W. Conti, 7044 Estrella de Mar Rd., Carlsbad, Calif. 92008

Filed Jan. 11, 1993, Ser. No. 2,702
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—115 **10 Claims**



1. A fiber optic bundle assembly with removable and replaceable light guides comprising:

a focused light source held by a frame;

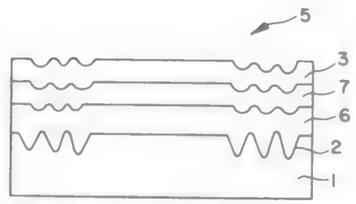
a light bundle support member supported by said frame; a plurality of light guides held by said light bundle support member, each having a light receiving end and a light transmitting end, said light receiving ends being fixed in the shape of equally sized hexagons, and said light receiving ends being packed together and aligned so that the sides of each hexagon abut at least three sides of adjacent hexagons so that the light receiving ends lie adjacent one another in a single plane and wherein at least one of the light guides is replaced with a hexagonal plug having the same external measurements as the light receiving ends of the light guides and said hexagonal plug having an end incapable of transmitting light.

5,369,722

OPTICAL INORGANIC WAVEGUIDE WITH A SUBSTANTIALLY PLANAR ORGANIC SUBSTRATE

Martin Heming, Saulheim; Roland Hochhaus, Mainz; Ralf Kersten, Bremthal; Dieter Krause, Mainz; Jürgen Otto, Mainz; Volker Paquet, Mainz; Johannes Segner, Stromberg, all of Germany, and Christof Fattinger, Blauen, Switzerland, assignors to Schott Glaswerke, Mainz, Germany and Hoffmann-LaRoche, A.G., Basel, Switzerland

Filed Sep. 18, 1992, Ser. No. 946,072
Claims priority, application Germany, Sep. 18, 1991, 4130985; Apr. 24, 1992, 4213454; Aug. 29, 1992, 4228853
Int. Cl.[5] G02B *6/10, 6/12*
U.S. Cl. 385—130 **61 Claims**



1. An optical waveguide comprising:

a substantially planar substrate (1) consisting essentially of a synthetic resin or a material having a high organic proportion, and

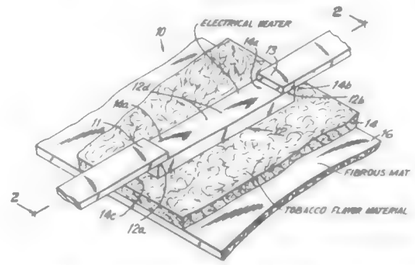
an inorganic waveguide layer (3) applied to said substrate, said inorganic waveguide layer having a refractive index $\geqq 1.74$.

5,369,723

TOBACCO FLAVOR UNIT FOR ELECTRICAL SMOKING ARTICLE COMPRISING FIBROUS MAT

Mary E. Counts, Richmond, and Susan E. Wrenn, Chesterfield, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Sep. 11, 1992, Ser. No. 943,747
Int. Cl.[5] A24F *1/00;* **H05B** *3/00*
U.S. Cl. 392—386 **75 Claims**



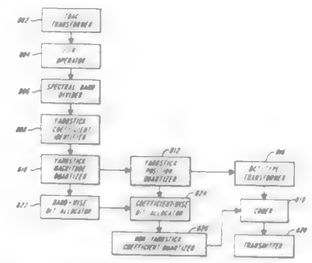
1. A tobacco product adapted to cooperate with a discrete source of heat, said tobacco product comprising a fibrous carbon mat and a tobacco flavor material disposed along a first surface of said fibrous carbon mat, an opposite surface of said fibrous carbon mat being substantially free of tobacco flavor material, and said fibrous carbon mat having a basis weight in a range between about 6 g/m^2 and 12 g/m^2 and being adapted to receive heat at at least one location along said opposite surface and to transfer a substantial portion of said heat to portions of said tobacco flavor material proximate to said location.

5,369,724

METHOD AND APPARATUS FOR ENCODING, DECODING AND COMPRESSION OF AUDIO-TYPE DATA USING REFERENCE COEFFICIENTS LOCATED WITHIN A BAND OF COEFFICIENTS

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 822,247, Jan. 17, 1992. This application May 7, 1992, Ser. No. 879,635
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.15 **15 Claims**



1. A method for encoding a selected aspect of a signal that is defined by signal elements that are discrete in at least one dimension, said method comprising the steps of:

a. dividing the signal into at least one band, at least one of said at least one band(s) having a plurality of adjacent signal elements;

b. in at least one band, identifying a signal element having a magnitude with a preselected size relative to other signal elements in said at least one band(s) and designating said signal element as a "yardstick" signal element for said at

least one band(s), at least one of said yardstick signal elements having a magnitude that is the closest to the median of the magnitudes of all of the signal elements in its respective band;

c. encoding the location of at least one yardstick signal element(s) with respect to its position along said at least one dimension in which said signal elements are discrete within its respective band; and

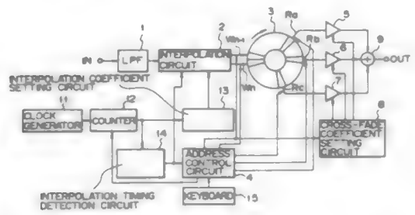
d. quantizing the magnitude of said at least one yardstick signal element(s) for which the location was encoded.

5,369,725

PITCH CONTROL SYSTEM

Tatsushi Iizuka, and Satoshi Shinohara, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 23, 1992, Ser. No. 919,019
Claims priority, application Japan, Nov. 18, 1991, 3-302153
Int. Cl.[5] G10L *3/02*
U.S. Cl. 395—2.16 **4 Claims**



1. A pitch control system, comprising:

an input means for receiving a digital audio signal containing audio data, said digital audio signal having been sampled at predetermined sampling intervals;

an interpolating means connected to said input means for producing interpolated data pieces from consecutive k data pieces of said digital audio signal where k is a constant, wherein the number of interpolated data pieces produced by said interpolating means is reduced from k to k−j when the pitch of said audio signal is to be raised, and wherein the number of interpolated data pieces produced by said interpolating means is increased from k to k+j when said pitch of said audio signal is to be lowered;

a ring buffer with a predetermined memory size connected to said interpolating means for storing said consecutive interpolated data pieces from said interpolating means;

address specifying means for specifying at least a write address and at least a read address at intervals corresponding to said sampling intervals, wherein an advance of said write address is adjusted to exclude empty space when said number of interpolated data pieces is k−j when the pitch is to be raised, and adjusted so that the written data are not in excess when said number of interpolated data pieces is k+j when the pitch is to be lowered;

writing means for writing at least one of said interpolated data pieces respectively at a write memory position of at least one write address on said ring buffer specified by said address specifying means at said sampling intervals; and

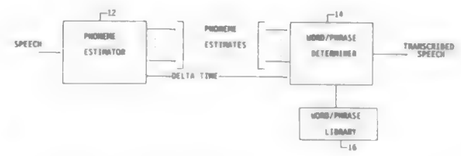
reading means for reading at least one of said interpolated data pieces respectively stored at a memory position of said at least one read address on said ring buffer specified by said address specifying means, at said sampling intervals.

5,369,726

SPEECH RECOGNITION CIRCUITRY EMPLOYING NONLINEAR PROCESSING SPEECH ELEMENT MODELING AND PHONEME ESTIMATION

John P. Kroeker, Beverly, and Robert L. Powers, Topsfield, both of Mass., assignors to Eliza Corporation, Beverly, Mass.

Continuation of Ser. No. 775,804, Oct. 11, 1991, abandoned, which is a continuation of Ser. No. 395,449, Aug. 17, 1989, Pat. No. 5,168,524. This application Feb. 9, 1993, Ser. No. 15,299
The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.
Int. Cl.[5] G10L *5/06*
U.S. Cl. 395—2.45 **2 Claims**



1. A method of identifying speech elements of interest in a speech signal, said method comprising the steps of:

A. converting the speech signal to a sequence of digital quantities;

B. subjecting the digital quantities to a sequence of digital processing steps including a sequence of vector-processing steps whose outputs are multi-element vectors and whose inputs include vector outputs of previous processing steps thereby to generate a first vector with components which are associated with a speech element;

C. comparing said first vector with a first set of model vectors which are associated with a set of known speech elements, for each comparison of said first vector with one of the model vectors in the first set of model vectors deriving a value representing the degree of similarity between the vectors and generating a second vector with these values as components;

D. processing said second vector to product a third vector; and

E. comparing said third vector with a second set of model vectors associated with a set of known speech elements and producing respective speech-element estimate signals that represent the likelihoods that the speech contains the respective known speech elements in the set.

5,369,727

METHOD OF SPEECH RECOGNITION WITH CORRELATION OF SIMILARITIES

Kazuya Nomura, and Taisuke Watanabe, both of Sagamihara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 11, 1991, Ser. No. 805,142
Claims priority, application Japan, May 16, 1991, 3-111408
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.61 **6 Claims**

1. A method of speech recognition, comprising the steps of:

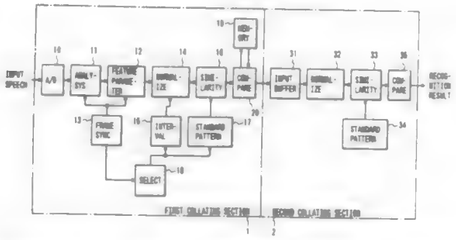
analyzing an input speech signal;

collating a result of said step of analyzing with first predetermined standard patterns of at least parts of respective recognition objects which differ from phonemes of the recognition objects;

outputting a result of said step of collating as a sequence of similarities between the result of said step of analyzing and the first predetermined standard patterns, wherein said sequence of similarities is exclusive of time base information;

handling the sequence of the similarities as feature parameters of the input speech signal,

collating the feature parameters with second predetermined standard patterns of the respective recognition objects, wherein the second predetermined standard patterns are different from the first predetermined standard patterns and are exclusive of information of a time base; and



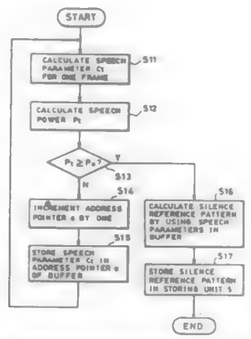
generating a final speech recognition result in accordance with a result of said step of collating the feature parameters with the second predetermined standard patterns.

5,369,728

METHOD AND APPARATUS FOR DETECTING WORDS IN INPUT SPEECH DATA

Tetsuo Kosaka, Ohazahigashi-Koazafurumori; Atsushi Sakurai, Yokohama; Junichi Tamura, Tokyo, and Hiroshi Matsuo, Akita, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1992, Ser. No. 895,813
Claims priority, application Japan, Jun. 11, 1991, 3-139091
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.63 **20 Claims**



1. A method of detecting words in input speech data, comprising the steps of:

storing data representing a reference pattern which comprises a combination of (i) a word reference pattern and (ii) silence reference patterns which are each sufficiently long to take into account silent sections of speech arising from a geminated consonant or a silent plosive consonant;

calculating distances between data representing the reference pattern and data representing input speech; and

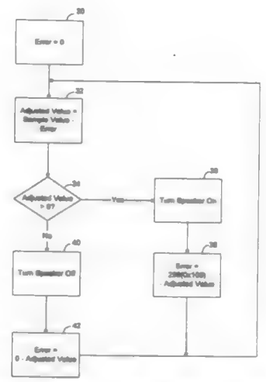
detecting words in the data representing input speech based on the calculated distances between the data representing the reference pattern and the data representing input speech.

5,369,729

CONVERSIONLESS DIGITAL SOUND PRODUCTION

David C. Norris, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Mar. 9, 1992, Ser. No. 848,047
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2.67 **20 Claims**



1. A method of producing sound from a standard computer speaker having a speaker cone, comprising:

storing a series of digital waveform sample values;

selecting a threshold value;

selecting a present error value;

selecting a present sample value from the series of digital waveform sample values;

retrieving the present sample value selected;

determining whether the present sample value minus a present error value is greater than a threshold value;

generating a first speaker bit if the present sample value minus the present error value is greater than the threshold value;

generating a second speaker bit if the present sample value minus the present error value is not greater than the threshold value;

transmitting the first or second speaker bit generated to the speaker;

turning ON the speaker if the first speaker bit is transmitted;

turning OFF the speaker if the second speaker bit is transmitted;

computing a new error value; and

for one or more iterations, repeating the steps beginning with the determining step using the new error value as the present error value, such that the speaker cone is positioned to emit sound corresponding to the present sample value.

5,369,730

SPEECH SYNTHESIZER

Shunichi Yajima, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1992, Ser. No. 888,208
Claims priority, application Japan, Jun. 5, 1991, 3-134022
Int. Cl.[5] G10L *5/02*
U.S. Cl. 395—2.76 **9 Claims**

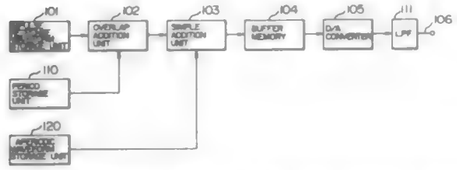
1. A speech synthesizer for synthesizing speech by overlapping a partial speech waveform signal at predetermined periods, the speech synthesizer comprising:

a one-period waveform storage means for storing a one-period waveform signal component of a speech waveform signal;

an aperiodic waveform storage means for storing an aperiodic waveform signal having a component with a higher frequency than the one-period waveform signal compo-

nent, the aperiodic waveform signal having a waveform different from the one-period waveform signal component;

an overlapping addition means for selectively repeating the one-period waveform signal component from the one-



period waveform storage means with selected periods; and, a simple addition means for superimposing the aperiodic waveform signal from the aperiodic waveform storage means onto the one-period waveform signal component.

5,369,731

ASYNCHRONOUS CONTROL SYSTEM FOR A NEURO COMPUTER

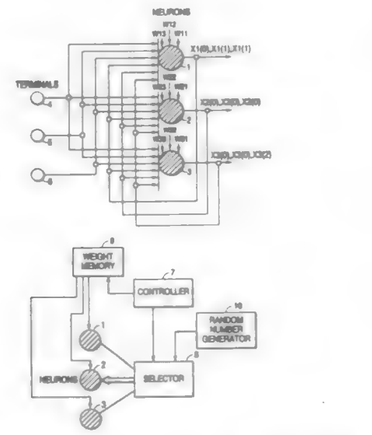
Daiki Masumoto, Yokohama; Hideki Kato, Tokyo; Hideki Yoshizawa, Tokyo, and Hiroki Iciki, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 10, 1991, Ser. No. 757,344

Claims priority, application Japan, Sep. 10, 1990, 2-237231

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—24 **2 Claims**



1. An asynchronous control system for a neuro computer, comprising:

a neural network composed of a plurality of analog neuro processors for receiving analog signals from an analog bus in a time-division fashion, for producing and summing the analog signals, thereby for outputting a sum-of-product signal and for outputting an analog signal generated by converting said sum-of-product signal using a non-linear function;

a weight memory, connected to said neural network, for storing weight data for said plurality of analog neuro processors and an address signal;

a controller, connected to said neural network, for generating control patterns which control said plurality of analog neuro processors of said neural network and said address signal of said weight memory;

connecting means for selectively connecting said controller to said plurality of analog neuro processors and for selecting said control patterns to be used to control said plurality of analog neuro processors; and

a random number generator, connected to said connecting means, for randomly generating and outputting a random signal to said connecting means, so that said control patterns are randomly selected by said connecting means responsive to said random signal.

5,369,732

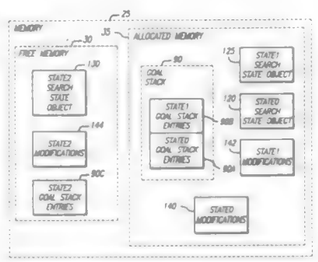
METHOD AND APPARATUS FOR GOAL PROCESSING MEMORY MANAGEMENT

John Lynch, and David Franke, both of Austin, Tex., assignors to Trilogy Development Group, Austin, Tex.

Filed Mar. 29, 1993, Ser. No. 38,968

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—51 **15 Claims**



1. A method of managing memory in a computer system implementing a goal processor for processing a set of goals comprising the steps of:

inputting to said goal processor a goal comprised of a plurality of subgoals and alternative subgoals;

performing (a)–(f) when each of said goal, subgoals, and alternative subgoals are processed by said goal processor:

(a) creating a goal stack entry;

(b) creating a search state object when said goal is processed;

(c) identifying said search state object as a most-recently-created search state object;

(d) creating a new search state object when one of said alternative subgoals is processed;

(e) identify said new search state object as said most-recently-created search state object;

(f) associating each of said subgoals to said most-recently-created search state object; and

detecting a goal processing failure;

releasing simultaneously to free memory said goal stack entries associated with said most-recently-created search state objects when said goal processing failure occurs.

5,369,733

IMAGE PROCESSING APPARATUS WITH APPARATUS FOR ADJUSTING A MAGNIFICATION SETTING

Shinobu Arimoto, Tokyo; Masanori Yamada, Kawasaki, and Katsuichi Shimizu, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 911,069, Sep. 24, 1986, abandoned, which is a continuation of Ser. No. 536,982, Sep. 29, 1983, abandoned. This application Sep. 30, 1993, Ser. No. 128,752

Claims priority, application Japan, Oct. 1, 1982, 57-172935; Oct. 18, 1982, 57-182648; Oct. 25, 1982, 57-187248; Oct. 25, 1982, 57-187249

Int. Cl.[5] G03G *15/00;* **G03B** *27/52*

U.S. Cl. 395—100 **5 Claims**

1. An apparatus for adjusting a magnification setting of a photocopying machine comprising:

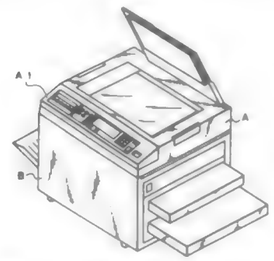
a magnification/reduction apparatus contained as part of the photocopying machine;

determination means for determining a magnification/reduction ratio based on the size of an image being copied and a copy paper size;

a storage means for storing in respective memory locations a plurality of preselected data words indicative of a selected magnification/reduction ratio between the size of an image being copied and the size of a reproduced image;

a selection means for selecting a respective one of the memory locations;

a magnification control means for reading the data word



stored in the respective selected memory location and for adjusting the magnification/reduction apparatus according to the magnification/reduction ratio stored in the respective memory location;

input means for modifying the magnification/reduction ratio in a selected one of at least a first plurality of the respective memory locations;

means for modifying the magnification/reduction ratio from that which exists in a selected memory location, without changing the data word stored in that location; and

means for inputting a modified data word representing the modified magnification/reduction ratio into the magnification control means.

5,369,734

METHOD FOR PROCESSING AND DISPLAYING HIDDEN-LINE GRAPHIC IMAGES

Yoshie Suzuki, Kawasaki; Shin Nakamura, Tokyo, and Akio Nakagawa, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 16, 1991, Ser. No. 701,084

Claims priority, application Japan, May 18, 1990, 2-126799; May 18, 1990, 2-126800

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—121 **11 Claims**

1. A graphic display processing method of displaying a three-dimensional structure on a two-dimensional display plane, the three-dimensional structure being an aggregation of rectangular elements, in which a filling function of a graphic terminal is performed on a plurality of rectangular element groups which are projected on the two-dimensional display plane form the one which is farthest from a viewpoint in three-dimensional observation to the one which is closest to the viewpoint in three-dimensional observation, and a projection figure of the three-dimensional structure as seen from the viewpoint is hidden-line processed, thereby displaying the projection figure on the two-dimensional display plane, said method comprising a step of:

displaying the projection figure by executing a hidden-line processing for eliminating hidden lines from a plurality of groups of the rectangular elements containing no distortion,

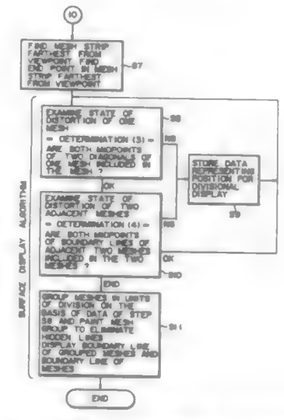
wherein the hidden-line processing includes the steps of:

(a) determining a distortion state of one rectangular element having a terminal point which is farthest from the viewpoint in three-dimensional observation, said one rectangular element belonging to a rectangular element group which is farthest from the viewpoint in three-dimensional observation;

(b) storing, when said one rectangular element has distortion, coordinate data indicating a location of said one rectangular element;

(c) displayiny said one rectangular element independently on the two-dimensional display plane;

(d) determining, when said one rectangular element has no distortion, a distortion state of two rectangular elements which include said one rectangular element and another rectangular element adjacent thereto;



(e) storing, when the two rectangular elements adjacent to each other have distortion, data indicating a boundary of the two rectangular elements;

(f) displaying the two rectangular elements independently on the two-dimensional display plane, and wherein

said displaying step groups a plurality of rectangular elements, which have no distortion individually or in any pair of adjacent ones, as one region, subjects the region to the hidden-line processing based on the filling function, displays peripheral lines and boundary lines of rectangular elements of the region, and displays the rectangular element groups successively towards the viewpoint.

5,369,735

METHOD FOR CONTROLLING A 3D PATCH-DRIVEN SPECIAL EFFECTS SYSTEM

Uri Thier; Oren Thier, both of West Hartford, Conn., and William Woodbury, Gainesville, Fla., assignors to New Microtime Inc., Bloomfield, Conn.

Continuation of Ser. No. 114,599, Aug. 31, 1993, abandoned, which is a continuation of Ser. No. 998,884, Dec. 28, 1992, abandoned, which is a continuation of Ser. No. 502,614, Mar. 30, 1990, abandoned. This application Jan. 28, 1994, Ser. No. 188,369

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—123 **4 Claims**

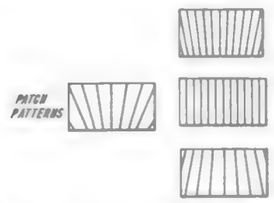
1. A method for controlling a patch-driven video 3D special effects system which constructs an output display of a desired three-dimensional shape with real-time video picture information displayed on a surface of said shape, by dividing a video source plane into a plurality of polygonal patches and manipulating said patches in three dimensions to create said shape, said method comprising the steps of:

A) receiving a plurality of inputs from a user defining a plurality of control parameters;

B) dividing said source plane into a plurality of polygonal patches by means of a number of straight line segments, the number of said patches determined by a first of said

control parameters, said line segments being segments of lines that emanate from a point located at a position determined by a second of said control parameters;

C) rotating at least one of said patches around one of said straight line segments at an angle specified by at least a



third one of said control parameters to construct said shape having a size, orientation and position; and

D) manipulating said shape size, said shape orientation and said shape position in accordance with a fourth, fifth and sixth of said control parameters.

5,369,736

TEXTURE MAPPING METHOD

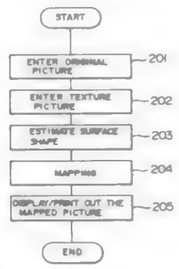
Makoto Kato; Shinichiro Miyaoka, and Makoto Nohmi, all of Kawasaki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 549,086, Jul. 6, 1990, abandoned. This application Nov. 22, 1993, Ser. No. 155,242

Claims priority, application Japan, Jul. 12, 1989, 1-179646

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—125 **12 Claims**



1. A texture mapping method comprising the steps of:

inputting data of an original picture obtained by photographing a scene and data of a texture picture to be mapped on the original picture;

estimating three-dimensional coordinates x,y,z which express a surface shape of a predetermined part in the original picture on the basis of the data of the original picture in accordance with an operator's instruction data;

modifying the estimated surface shape three-dimensionally in a three-dimensional space by designating a three-dimensional vector modification of a three-dimensional coordinate point on the estimated surface shape;

mapping the data of the texture picture onto the estimated surface shape; and

outputting picture data obtained in the mapping step, whereby the operator can visually evaluate the estimated surface shape.

5,369,737

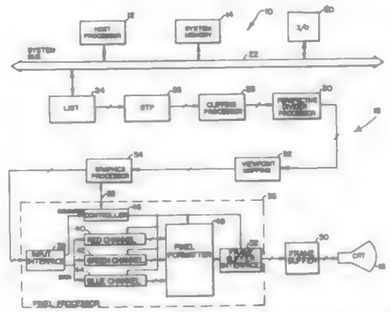
NORMALIZATION OF VECTORS ASSOCIATED WITH A DISPLAY PIXELS OF COMPUTER GENERATED IMAGES

Dariush Gholizadeh, Worcester; Hamid Assarpour, Harvard, and Mohamed Messaoudene, Cambridge, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 405,104, Sep. 8, 1989, abandoned, which is a continuation of Ser. No. 170,749, Mar. 21, 1988, abandoned. This application Aug. 15, 1990, Ser. No. 568,529

Int. Cl.[5] G06F *15/62, 15/72*

U.S. Cl. 395—126 **31 Claims**



19. Computer graphics apparatus for producing a shaded image of an object having at least one curved surface on a display device based on a description of the object in accordance with a lighting model that takes into account a position and orientation of an imaginary light source with respect to a position and orientation of said surface, comprising

a host computer system for receiving and storing said description, said host computer system including means for representing said curved surface as a plurality of adjoining polygons each of which contains display pixels and has vectors at vertices thereof that define the position and orientation of a portion of the curved surface being represented by said polygon, and means for generating data that describes each polygon, said data including vector-based terms from which intensity levels for the display pixels in said polygon can be derived, said vector-based terms being derived from said vectors,

a graphics processor system for processing said data in accordance with said lighting model to determine the intensity levels at which said display pixels will be generated on said display device to cause said shaded image to visually resemble said object,

said graphics processor system including means for evaluating said lighting model in accordance with said vector-based terms and producing for each said display pixel an intensity signal that represents a shaded intensity level for said pixel as a result of said evaluation,

a frame buffer for storing the intensity signals produced by said graphics processor, system and

means for applying said intensity signals from said frame buffer to said display device to cause said display device to generate said display pixels at intensity levels defined by said intensity signals and produce said shaded image that visually represents said object,

wherein said graphics processor system further includes

means for determining, from said vectors at the vertices of each polygon, the square (η) of the magnitude of a vector associated with said vector-based term for each said display pixel that said polygon contains,

means for approximating $1/\sqrt{\eta}$ for each said vector-based term using a series expansion that includes η but excludes said vector based term, and

means for combining each said vector-based term with the corresponding approximation of $1/\sqrt{\eta}$ to produce a normalized vector-based term for each said display pixel, said normalized vector-based term being used during said evaluation of said lighting model for said display pixel.

5,369,738

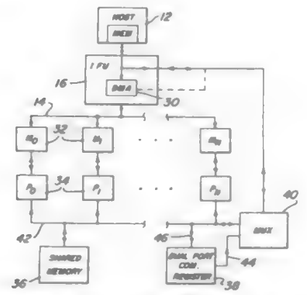
DISTRIBUTED PROCESSING APPARATUS AND METHOD FOR USE IN GLOBAL RENDERING

David F. Bremner, III, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 37,489, Mar. 26, 1993, abandoned, which is a continuation of Ser. No. 468,677, Jan. 23, 1990, abandoned. This application Feb. 16, 1994, Ser. No. 197,224

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—126 **25 Claims**



1. Apparatus for accelerating the testing for intersections between a ray under consideration and objects in a scene to be rendered on a display device, said apparatus comprising:

a) a host computer for storing data defining the scene, including data indicative of bounding volumes and polygons derived from the objects in the scene, and for storing data indicative of the ray under consideration, the data indicative of each bounding volume and polygon being stored as sequential datawords, each dataword representing one of said bounding volumes and polygons; and,

b) a transform engine comprising a plurality, P, of transform processors each being programmed to test for intersections between the ray under consideration and the bounding volumes and polygons represented by every Pth dataword, each transform processor starting with a different dataword than other transform processors so that collectively the transform processors perform ray intersection calculations for all of the bounding volumes and polygons.

5,369,739

APPARATUS AND METHOD FOR GENERATING POINT SAMPLE MASKS IN A GRAPHICS DISPLAY SYSTEM

Kurt Akeley, Mountain View, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jul. 9, 1993, Ser. No. 89,715

Int. Cl.[5] G06F *15/62*

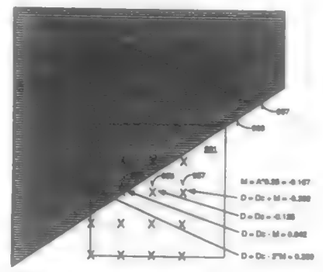
U.S. Cl. 395—134 **26 Claims**

1. In a computer system, a computer implemented method of generating a point sample mask having an array of sample points corresponding to a pixel, wherein each sample point has associated information specifying whether said sample point is inside or outside a polygon, said information being used for rendering said pixel for display by said computer system, said method comprising the steps of:

generating a first mask corresponding to a first edge of said polygon, said first mask specifying which ones of a first set of said sample points reside within a first half-plane defined by said first edge, wherein a sign of a vertical or horizontal distance metric corresponding to a first sample of said first set of sample points determines whether said first sample resides within said first half-plane;

generating a second mask corresponding to a second edge of said polygon, said second mask specifying which ones of a second set of sample points reside within a second half-plane defined by said second edge, wherein a sign of a vertical or horizontal distance metric corresponding to a second sample of said second set of sample points determines whether said second sample resides within said second half-plane;

generating a third mask corresponding to a third edge of said



polygon, said third mask specifying which ones of a third set of sample points reside within a third half-plane defined by said third edge, wherein a sign of a vertical or horizontal distance metric corresponding to a third sample of said third set of sample points determines whether said third sample resides within said third half-plane;

merging said first mask, said second mask, and said third mask to generate said point sample mask.

5,369,740

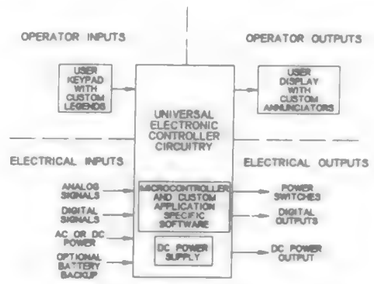
VERSATILE PROGRAMMABLE ELECTRONIC CONTROLLER

Michael A. Naylor, Indianapolis, Ind., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 12, 1991, Ser. No. 758,754

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—140 **20 Claims**



1. A versatile programmable electronic controller, comprising:

a programmable microprocessor including a non-volatile programmable read only memory, a random access memory and a non-volatile electrically erasable programmable read only memory;

a plurality of voltage-limited inputs connected with said microprocessor;

a plurality of control switches connected with said microprocessor having predetermined functions that are programmed by said non-volatile programmable read only memory;

a display device connected with said microprocessor;

a plurality of microprocessor outputs;

a power supply for said microprocessor and said display device;

said electrically erasable programmable read only memory is programmable from said plurality of control switches to store selectable information and to display said information on said display device wherein said selectable information regulates operation of said programmable read only memory, and

said programmable read only memory stores an application control program that configures said plurality of control switches to represent predetermined criteria, and configures said display device to annunciate predetermined messages.

5,369,741

METHOD FOR PRE-CLIPPING A LINE LYING WITHIN A CLIPPING RECTANGULAR REGION WHICH IS A SUBSET OF A REGION OF A DISPLAY SCREEN

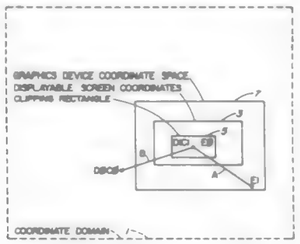
Adrian H. Hartog, Toronto, and Robin E. R. Davies, Ottawa, both of Canada, assignors to ATI Technologies, Ontario, Canada

Filed Mar. 19, 1992, Ser. No. 854,806

Claims priority, application Canada, Jan. 24, 1992, 2060039

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—143 **7 Claims**



1. In a graphics generating device adapted to be used with a host processor for generating lines with a region of a display screen and for generating said lines without intervention by said host processor, provided that endpoints of said lines lie in a graphics device coordinate region which is larger than said region, a method for pre-clipping said lines to lie within a clipping rectangle region which is a subset of said region, comprising the steps of:

(a) generating a first pair of digital outcodes C_0 and C_1 defining start and end coordinates, respectively, for each of said lines having an end within said clipping rectangle region;

(b) generating a second pair of digital outcodes D_0 and D_1 defining start and end coordinates, respectively, for segments of each said lines having an end within said graphics device coordinate region;

(c) rejecting predetermined ones of said lines for which a condition (C_0 BIT_AND C_1)!=0 is true;

(d) drawing, on said display screen, predetermined ones of said lines for which conditions (C_0 BIT_AND C_1)!=0 and (D_0 BIT_OR D_1)!=0 are false; and

(e) invoking intervention by said host processor for additional processing of predetermined ones of said lines having respective start and end coordinates outside said graphics device coordinate region.

5,369,742

IMAGE FILE AND RETRIEVING APPARATUS AND METHOD

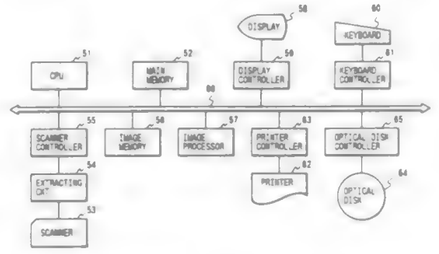
Yasuo Kurosu, Yokosuka; Shuhei Wada, Fujisawa; Yoshihiro Yokoyama, Yokohama, and Hidefumi Masuzaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1991, Ser. No. 717,914

Claims priority, application Japan, Jun. 20, 1990, 2-159727

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—147 **12 Claims**



1. An image information retrieving apparatus comprising:

means for inputting information of an image of at least one document having text information and non-text information;

means for storing the image information of the at least one document and for storing attribute information regarding a relationship between at least one of the text information and the non-text information of the at least one document; and

means for retrieving the stored image information in accordance with a retrieval condition indicating a user requested relationship between the text information and the non-text information;

wherein the retrieving means includes means for forming a fuzzy value weighting function pertaining to the user requested relationship between the text information and non-text information, means for evaluating stored image information of documents in accordance with the fuzzy value weighting function and providing evaluation values thereof, and means for selecting the stored image information in descending order of evaluation values.

5,369,743

PICTURE DISPLAYING METHOD FOR SWITCHING AMONG PICTURE DISPLAY TASKS

Noritaka Egami, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 684,269, Apr. 12, 1991, abandoned. This application Dec. 15, 1993, Ser. No. 166,892

Claims priority, application Japan, Apr. 16, 1990, 2-99821

Int. Cl.[5] G06F *15/62*

U.S. Cl. 395—157 **2 Claims**

1. A picture display method for displaying a plurality of windows on a display device, comprising the steps of:

forming a first window on the display device;

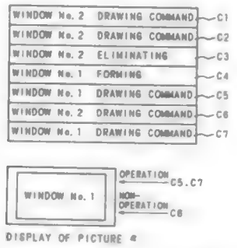
drawing a first picture in the first window using a plurality of first drawing command;

eliminating the first window and the first picture from the display device prior to completion of the first drawing commands used to draw the first picture;

forming a second window on the display device prior to the completion of the first drawing commands used to draw the first picture;

drawing a second picture in the second window using a plurality of second drawing commands prior to the completion of the first drawing commands used to draw the first picture; and

rendering non-operational any first drawing commands that occur after the forming of the second window or the drawing of the second picture;



wherein the second drawing commands begin prior to the completion of the first drawing commands.

5,369,744

ADDRESS-TRANSLATABLE GRAPHIC PROCESSOR, DATA PROCESSOR AND DRAWING METHOD WITH EMPLOYMENT OF THE SAME

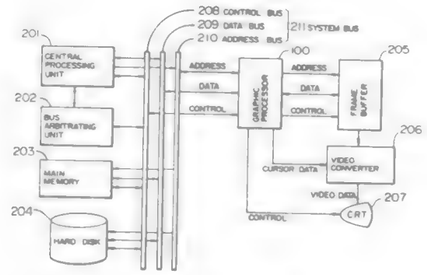
Tadashi Fukushima; Shigeru Matsuo, both of Hitachi; Shoji Yoshida, Zama, and Tooru Komagawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1990, Ser. No. 596,366

Claims priority, application Japan, Oct. 16, 1989, 1-266142; Oct. 16, 1989, 1-266143

Int. Cl.[5] G06F *15/20*

U.S. Cl. 395—162 **43 Claims**



1. A graphic processing system, comprising:

a main memory;

a buffer including a bit map memory;

a central processing unit (CPU) for translating a virtual address into a physical address;

a graphic processor for transferring data between said main memory and said buffer,

wherein said graphic processor includes address translating means for translating a logical address indicated in X-Y coordinates into a virtual address when said main memory is accessed, and having an updatable address translation table for translating the virtual address into a physical address; and

interface means for connecting said central processing unit (CPU) and said main memory to said graphic processor.

5,369,745

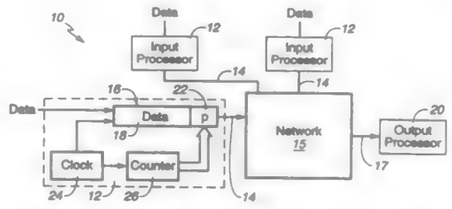
ELIMINATING LIVELOCK BY ASSIGNING THE SAME PRIORITY STATE TO EACH MESSAGE THAT IS INPUTTED INTO A FLUSHABLE ROUTING SYSTEM DURING N TIME INTERVALS

Vance Faber, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1992, Ser. No. 860,391

Int. Cl.[5] G06F *13/372*

U.S. Cl. 395—200 **7 Claims**



1. Message routing apparatus for preventing livelock in a network of interconnected nodes, said network having a flushable time T and each one of said nodes having a plurality of input and output paths, said message routing apparatus comprising:

an input message processor having an interval timer for generating a sequence of at least N time intervals, n_1 through n_N, a register for receiving input messages, and means for assigning a priority state p to each one of said input messages in said register during a nth time interval of said N time intervals, where each nth time interval is of duration T;

an output message processor connected to said input message processor through said network; and

a node message processor at each one of said nodes having means for reading said priority state on each arriving message, logic means for awarding priority to said arriving messages with priority state (p−1) during said nth time interval and to said arriving messages with priority state p during an (n+1)th time interval, and means for outputting said arriving message awarded priority on a one of said output paths toward said output message processor.

5,369,746

INTERPROCESSOR DATA TRANSFERRING SYSTEM AND METHOD

Takashi Nakamura, Hiratsuka; Kunitaka Ozawa, Isehara; Tsuneaki Kadosawa, Ninomiyamachi; Eiji Koga, Hadano, and Hitoshi Watanabe, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 772,248, Oct. 7, 1991, abandoned. This application Sep. 24, 1993, Ser. No. 126,029

Claims priority, application Japan, Oct. 8, 1990, 2-271218

Int. Cl.[5] G06F *13/00*

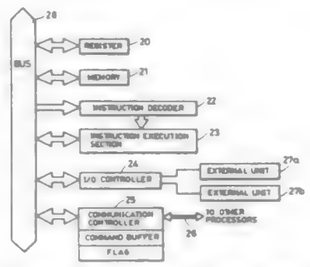
U.S. Cl. 395—200 **11 Claims**

1. An information processing system including a plurality of information processing apparatuses interconnected by communication means, each of said plurality of information processing apparatuses comprising:

discrimination means for referring to information on an address of source data or destination data indicated by an operand of a data transfer instruction to be processed in each of said plurality of information processing apparatuses, and discriminating as to which information processor the source data or destination data pertain; and

transfer means for transferring a data transfer request instruction through said communication means in a desired information processing apparatus of said plurality of infor-

mation processing apparatuses by referring to the address of the source data or destination data indicated by the



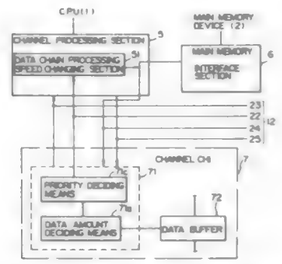
operand of the data transfer instruction based on the discrimination result of said discrimination means.

5,369,747

INPUT/OUTPUT CHANNEL APPARATUS

Takeshi Muranoi, Kanagawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 429,059, Oct. 30, 1989, abandoned. This application Jul. 20, 1992, Ser. No. 917,807
Claims priority, application Japan, Nov. 9, 1988, 63-283270
Int. Cl.[5] G06F *3/00*
U.S. Cl. 395—250 **4 Claims**



1. In a data processing system having a main memory device in which data is stored, an input/output apparatus for input-/output of data stored in the main memory device, and a data buffer provided between the main memory device and the input/output apparatus for temporarily storing the data, an input/output channel apparatus comprising:

a data amount deciding means for deciding the amount of data stored in said data buffer during an input operation when a data chain command of a channel command word is detected;

priority deciding means for deciding the priorities for channels having a large amount of data on the basis of the result given by said data amount deciding means; and

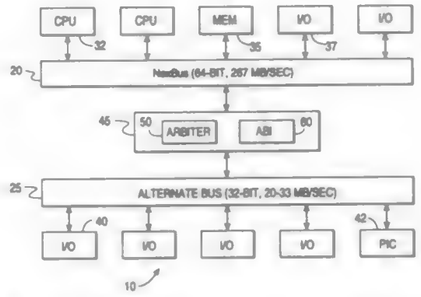
a channel processing section for obtaining a channel command word, said channel processing section including data chain processing speed changing means for changing a data chain processing speed during an input operation on the basis of the priority decided by said priority deciding means.

5,369,748

BUS ARBITRATION IN A DUAL-BUS ARCHITECTURE WHERE ONE BUS HAS RELATIVELY HIGH LATENCY

Harold L. McFarland, San Jose, and Allen P. Ho, Fremont, both of Calif., assignors to Nexgen Microsystems, Milpitas, Calif.

Filed Aug. 23, 1991, Ser. No. 748,768
Int. Cl.[5] G06F *13/36*
U.S. Cl. 395—325 **21 Claims**



18. In a computer system that includes a system bus, a plurality of adapters coupled to the system bus, an alternate bus (AB), a plurality of AB devices coupled to the AB, and an AB interface (ABI) coupling the system bus and the AB to permit communication between adapters and AB devices, a method of arbitrating requests by the adapters for use of the system bus where at least some requests require that an adapter communicate with an AB device, the method comprising the steps of:

maintaining a first record of adapter requests of a first type, referred to as NREQ requests;

maintaining a second record of adapter requests of a second type, referred to as AREQ requests;

updating the first record by including NREQ requests that are pending at a specified time for NREQ recognition, an NREQ request that is maintained in the first record being referred to as a recognized NREQ request;

updating the second record by including AREQ requests that are pending at a specified time for AREQ recognition, an AREQ request that is maintained in the second record being referred to as a recognized AREQ request;

prioritizing the NREQ and AREQ requests in the first and second records;

granting the system bus to requesting adapters according to a protocol that operates with respect to recognized NREQ and AREQ requests (a) to grant the system bus to the adapter having the highest prioritity recognized AREQ request that meets a set of conditions that includes the condition that the AB is available, a recognized AREQ request being referred to as qualified if the set of conditions is met, and (b) to grant the system bus to the adapter having the highest priority recognized NREQ request if there are no qualified AREQ requests; and

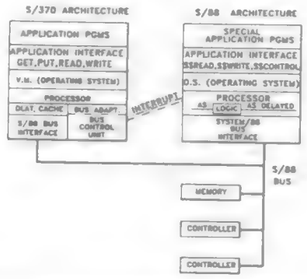
if a particular adapter desiring to perform an operation that communicates with one of the AB devices is granted the system bus in response to an NREQ request and is then denied the ability to perform the desired operation because the AB is not available for the desired operation, causing the particular adapter to make an AREQ request.

5,369,749

METHOD AND APPARATUS FOR THE DIRECT TRANSFER OF INFORMATION BETWEEN APPLICATION PROGRAMS RUNNING ON DISTINCT PROCESSORS WITHOUT UTILIZING THE SERVICES OF ONE OR BOTH OPERATING SYSTEMS

Ernest D. Baker, Boca Raton; John M. Dinwiddie, Jr., West Palm Beach; Lonnie E. Grice; James M. Joyce, both of Boca Raton; John M. Loffredo, Deerfield Beach, and Kenneth R. Sanderson, West Palm Beach, all of Fla., assignors to IBM Corporation, Boca Raton, Fla.

Continuation of Ser. No. 957,745, Oct. 7, 1992, abandoned, which is a continuation of Ser. No. 353,115, May 17, 1989, abandoned. This application Apr. 19, 1994, Ser. No. 230,433
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **13 Claims**



1. A multiple operating system computer apparatus comprising:

a first processor and associated first hardware connected thereto and operated under the control of first application programs operating through a first operating system for performing tasks;

a second processor, directly coupled to the first processor, and associated second hardware connected to the second processor, said second processor and second hardware operated under the control of second application programs operating through a second operating system for performing tasks, said second operating system providing routines for controlling resource device driver services for transferring information between the second processor and resources of the computer apparatus; and

means for isolating the second operating system and the specific second hardware from the second processor during the execution of certain instructions of a predetermined one of said first second programs such that data transfer between one of said first programs and said predetermined second program is effected by the first processor, the first hardware and the second processor incident to processing of said one first program through said first operating system.

5,369,750

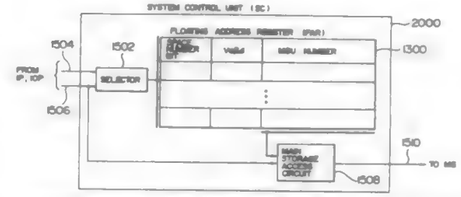
METHOD AND APPARATUS FOR CONFIGURING MULTIPLE ABSOLUTE ADDRESS SPACES

Taro Inoue, Sagamihara; Hidenori Umeno, Kanagawa; Shunji Tanaka, Sagamihara, and Tsuyoshi Watanabe, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1991, Ser. No. 743,754
Claims priority, application Japan, Aug. 15, 1990, 2-215300
Int. Cl.[5] G06F *12/00, 12/10*
U.S. Cl. 395—400 **7 Claims**

1. A multiple absolute address space configuring apparatus for a virtual machine system adapted to simultaneously operate a plurality of virtual machines on a single real computer having a main storage unit including a plurality of absolute address spaces, comprising:

means for establishing a correlation between an absolute address and a physical substance of the main storage unit, said means being provided so as to store information corresponding to each absolute address space, wherein said means for establishing a correlation includes a floating address register for registering therein a set of an



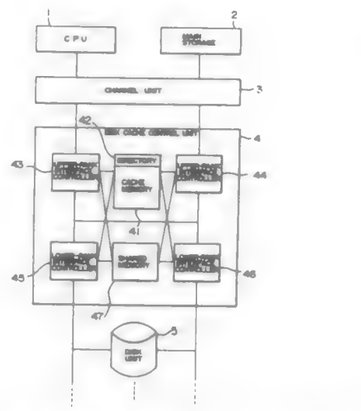
absolute address space number, a valid bit indicating that said space number is valid, and a main storage unit number corresponding to said space number.

5,369,751

DISK CACHE CONTROL UNIT

Kosaku Kambayashi; Katsunori Nakamura, both of Odawara; Takao Satoh, Kawasaki; Yoshihiro Asaka, and Teruo Nagasawa, both of Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 400,944, Aug. 31, 1989, abandoned. This application Jun. 21, 1991, Ser. No. 721,928
Claims priority, application Japan, Sep. 2, 1988, 63-219732
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **6 Claims**



1. A disk cache control unit disposed between an upper-rank processor and a disk unit, comprising:

a cache memory for holding a copy of a portion of data stored in the disk unit;

a first interface controller, including means connected to the upper-rank processor and said cache memory and responsive to an input/output command from the upper-rank processor requesting that data be read out from the disk unit for judging whether or not said data is stored in said cache memory, means responsive to said input/output command for reading data from said cache memory and transferring the data to the upper-rank processor when it is judged by said judging means that said data is stored in said cache memory, and means for sending a request for suspension of said input/output command to the upper-rank processor and for outputting a head positioning request to read out from the disk unit a range of data that is requested by said input/output command when it is

judged by said judging means that the data is not stored in said cache memory; and

a second interface controller connected to said cache memory and the disk unit and having means for requesting the disk unit to perform a head positioning in response to a head positioning request received from said first interface controller and for notifying said first interface controller of completion of the head positioning when the head positioning is completed;

wherein said first interface controller has means for sending a request for resumption of said input/output command to the upper-rank processor in response to a notice of completion of the head positioning and for issuing a data transfer request to said second interface controller in response to receipt of an input/output command from said upper-rank processor responding to said resumption request, and wherein said second interface controller has timer means for monitoring a time period in which data transfer can be initiated without a rotational delay in accessing the data from the disk unit necessitated by a need for repositioning of the head following the completion of the head positioning, means for reading data from the disk unit and sending the data to said first interface controller in response to a data transfer request from said first interface controller when said data transfer request is issued from said first interface controller during said time period; and

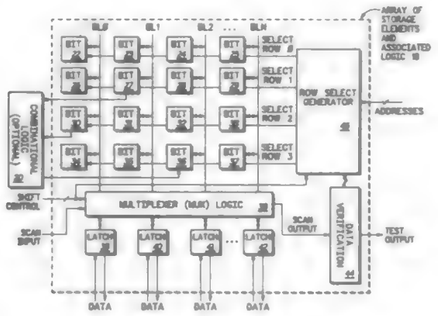
wherein said first interface controller further has means for transferring data transferred thereto from said second interface controller to the upper-rank processor, and wherein said second interface controller further has means for reading data from the disk unit and storing the data in said cache memory when said data transfer request is not received from said first interface controller during said time period following the completion of the head positioning.

5,369,752

METHOD AND APPARATUS FOR SHIFTING DATA IN AN ARRAY OF STORAGE ELEMENTS IN A DATA PROCESSING SYSTEM

Grady L. Giles; William D. Atwell, Jr.; Jesse R. Wilson, all of Austin, and Richard B. Reis, Garland, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1992, Ser. No. 891,241
Int. Cl.[5] G06F *12/02*
U.S. Cl. 395—425 **19 Claims**



1. A data processing system, comprising:

an array of storage elements arranged in a first plurality of rows and a second plurality of columns, the array of storage elements having a first storage element located in a first column and having a second storage element located in a second column, the first storage element being coupled to a first bit line and the second storage element being coupled to a second bit line, the first storage element storing a first value;

a latching means for receiving the first value and for storing the first value; and

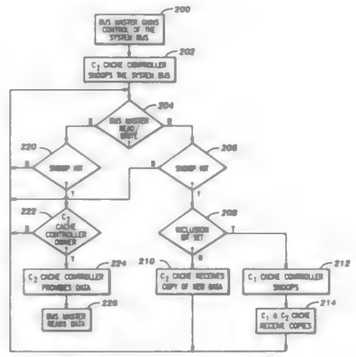
a logic means for selectively coupling the first storage element to said latching means, for transferring the first value, said multiplexer logic transferring a first data value to said latching means by way of the first bit line when the first storage element is selectively coupled to said latching means, for selectively coupling the second storage element to said latching means, and for transferring the first value to the second storage element by way of the second bit line when the second storage element is selectively coupled to said latching means.

5,369,753

METHOD AND APPARATUS FOR ACHIEVING MULTILEVEL INCLUSION IN MULTILEVEL CACHE HIERARCHIES

Roger E. Tipley, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 538,894, Jun. 15, 1990, abandoned. This application May 27, 1993, Ser. No. 68,294
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—425 **12 Claims**



1. A method for achieving multilevel inclusion in a computer system having a processor, a system bus, a first level set associative cache controller having a first number of ways, a second level set associative cache memory including a number of ways equal to or greater than the first number of ways of the first level cache memory, wherein each of the ways in the first level cache memory corresponds to at least one way in the second level cache memory, wherein data stored in a way of the first level cache memory is only placed in a corresponding way in the second level cache memory, a second level cache controller, means coupled to the second level cache controller for setting and clearing an inclusion bit associated with a second level cache memory data location based on data stored in the second level cache memory, wherein a set inclusion bit indicates that data stored in the second level cache memory is duplicated in the first level cache memory, the first and second level cache controllers including logic for communicating information and transmitting data between the first level and second level cache memories, a bus master device, and random access memory, the method for achieving multilevel inclusion in a computer system comprising:

the first level cache controller placing a copy of first data received from the random access memory in a particular first level cache way on a first level and second level cache memory read miss;

the first level cache controller communicating the particular first level cache way in which the copy of first data received from the random access memory is placed on a first level and second level cache memory read miss to the second level cache controller;

the second level cache controller placing the copy of first data received from the random access memory in a particular second level cache way corresponding to the first level cache way communicated by the first level cache controller on a first level and second level cache memory read miss;

the second level cache controller communicating to the first level cache controller a particular second level cache way where a copy of second data is located on a first level cache memory read miss and second level cache memory read hit;

the second level cache controller transmitting the copy of second data to the processor on the first level cache memory read miss and second level cache memory read hit;

the first level cache controller placing the copy of second data transmitted from the second level cache controller in a cache memory location in the corresponding first level cache way on the first level cache memory read miss and second level cache memory read hit; and

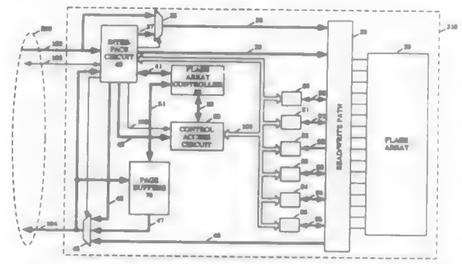
the second level cache controller setting the inclusion bit on the second level cache memory location of the second copy of data and clearing inclusion bits on any other second level cache memory locations that correspond to the first level cache memory location where the first level cache controller placed the second copy of data on the first level cache memory read miss and second level cache memory read hit.

5,369,754

BLOCK SPECIFIC STATUS INFORMATION IN A MEMORY DEVICE

Mickey L. Fandrich, Placerville; Chakravarthy Yarlagadda, Citrus Heights; Rodney R. Rozman, Placerville, and Geoffrey A. Gould, El Dorado Hills, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 85,293, Jun. 30, 1993, Pat. No. 5,353,256. This application Mar. 30, 1994, Ser. No. 220,811
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **16 Claims**



1. A method for providing a block status of a flash array block in a flash memory device, comprising the steps of:

receiving a program or erase command from a user, such that the program erase command specifies the flash array block from among a plurality of available flash array blocks in the flash memory device;

storing the program or erase command in a command queue;

retrieving the program or erase command from the command queue and performing a program or erase operation on the flash array block;

accessing a block status register corresponding to the flash array block from among a set of available block status registers, wherein each available block status registers corresponds to one of the available flash array blocks;

setting at least one status bit in the block status register;

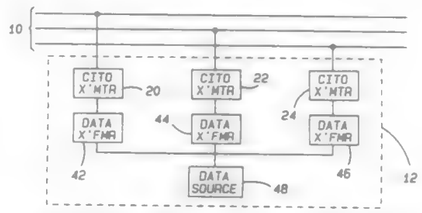
reading the block status register and transferring the status bit to the user.

5,369,755

COMPUTER COMMUNICATION BUS SYSTEM USING MULTIPLE CONTENT INDUCED TRANSACTION OVERLAP (CITO) COMMUNICATION CHANNELS

Semyon Berkovich, Rockville, Md., assignor to AlliedSignal Inc., Morris Township, Morris County, N.J.

Filed Sep. 8, 1992, Ser. No. 941,614
Int. Cl.[5] H04J *3/00*
U.S. Cl. 395—500 **12 Claims**



1. A computer communication bus system comprising:

a communication bus having at least two parallel transmission lines; and

a plurality of transmission nodes connected to said communication bus, each node of said plurality of transmission nodes comprising:

a data source for providing multi-bit data to be transmitted on said communication bus;

transformer means for transforming said multi-bit data into at least two different data encoded formats; and

CITO transmitter means for transmitting said multibit data in a first of said at least two different encoded formats on a first of said at least two parallel transmission lines, and transmitting said multi-bit data in a second of said at least two different encoded formats on a second of said at least two transmission lines, said CITO transmitter means transmitting said first and said second encoded formats of said multi-bit data on said first and said second parallel transmission lines using CITO protocol.

5,369,756

FAULT TREE DISPLAYING METHOD AND PROCESS DIAGNOSIS SUPPORT SYSTEM

Yoshihiko Imura; Akira Kaji, and Takekazu Maruyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1991, Ser. No. 642,892
Claims priority, application Japan, Jan. 18, 1990, 2-9044
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **13 Claims**

1. A method for displaying a fault tree on a display screen, comprising the steps of:

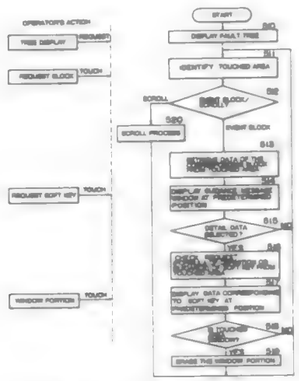
(a) providing detailed data relevant and corresponding to respective events of a fault tree to be displayed on a display screen;

(b) displaying events in an upper portion of said fault tree on a left-side portion of said display screen;

(c) displaying events in a lower portion of said fault tree on a right-side portion of said display screen; and

(d) displaying, upon receipt of a designation for at least one

of the events, in a window its relevant and corresponding detailed data on the left-side portion of said display screen



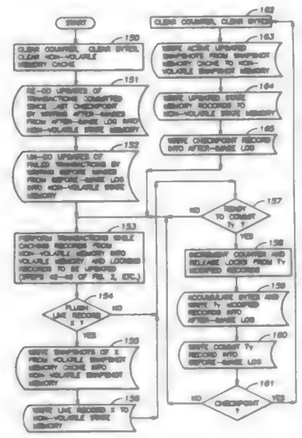
in a remaining area thereof so as not to interfere with observation of the fault tree.

5,369,757

RECOVERY LOGGING IN THE PRESENCE OF SNAPSHOT FILES BY ORDERING OF BUFFER POOL FLUSHING

Peter M. Spiro; Ananth Raghavan, and Tirumanjanam K. Rengarajan, all of Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 18, 1991, Ser. No. 717,212
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 **15 Claims**



1. A method of operating a digital computer to process transactions, said method comprising the steps of:

a) reading state records from non-volatile state memory and writing the state records into a volatile state memory cache;

b) making snapshot copies in a volatile snapshot memory cache of selected state records in the volatile state memory cache, maintaining a corresponding set of said snapshot copies in the volatile snapshot memory cache of each selected state record in the volatile state memory cache, making modifications to the selected state records in the volatile state memory cache, said modifications being specified by said transactions, and committing said modifications to an after-image log in a non-volatile memory; and then

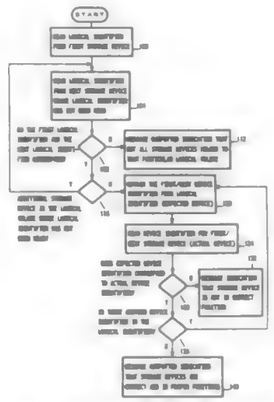
c) reading the snapshot copies from the volatile snapshot memory cache and writing the snapshot copies into a non-volatile snapshot memory, and reading the selected state records from the volatile state memory cache and writing the selected state records into the non-volatile state memory, wherein the corresponding set of snapshot copies of each selected state record are read from the volatile snapshot memory cache and written into the non-volatile snapshot memory before said each selected state record is read from the volatile state memory cache and written into the non-volatile state memory.

5,369,758

CHECKING FOR PROPER LOCATIONS OF STORAGE DEVICES IN A STORAGE ARRAY

David Larson, Broomfield; Robert E. Stubbs, and Gene Edstrom, both of Longmont, all of Colo., assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 15, 1991, Ser. No. 794,114
Int. Cl.[5] G06F *11/28, 11/30*
U.S. Cl. 395—575 **8 Claims**



1. A method for determining whether each of a plurality of storage devices of a logical volume of storage devices is positioned at a proper physical location, comprising:

determining using a processing means that each of said storage devices of said logical volume is properly located in said logical volume using an identifier means, said identifier means including:

(1a) a same logical identifier on each of said storage devices of said logical volume, and

(1b) a device identifier on each of said storage devices of said logical volume, said device identifier distinct from said logical identifier;

wherein each said logical identifier includes:

(2a) logical volume status information, and

(2b) said device identifiers for all of said storage devices of said logical volume;

wherein said step of determining includes comparing a first of said logical identifiers with a second of said logical identifiers and also comparing a first of said device identifiers included in said logical identifier with a corresponding device identifier from (1b);

monitoring, using said processing means, the occurrence of predetermined events including:

(3a) initialization of said storage devices by updating defect maps and allocation of data storage,

(3b) reconstruction of data for one of said storage devices, and

(3c) a configuration change by storing data on a replacement storage device for one of said storage devices that has failed;

obtaining information using said processing means related to said reconstruction of data, the information obtained from a source external to said processing means;

writing said logical identifier, using a controller means, to each storage device of said logical volume of said storage devices, said status information comprising status information for each of said predetermined events including first status information for said reconstruction of data after said obtaining step;

beginning execution of said reconstruction of data using at least one of:

(4a) said processing means, and

(4b) said controller means; restoring power to at least one location for said storage devices after disruption of power thereto;

reading said identifier means using said controller means for each of said storage devices after said restoring step;

completing executing of said reconstruction of data, after said reading step, using at least one of:

(5a) said processing means, and

(5b) said controller means; and

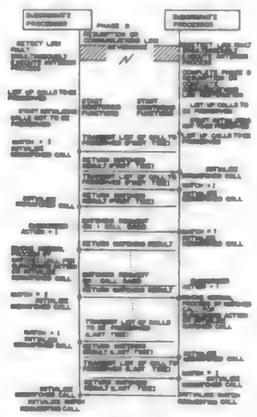
rewriting said logical identifier, using said controller means, to each said storage device of said logical volume, said logical identifier including second status information for said reconstruction of data after said completing step.

5,369,759

CALL INFORMATION BASED MATCHING SYSTEM FOR STORED PROGRAM-CONTROLLED SWITCHING SYSTEM

Hiroyuki Kanbe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1992, Ser. No. 930,998
Claims priority, application Japan, Aug. 16, 1991, 3-206042
Int. Cl.[5] H04L *29/00;* **H04M** *7/00*
U.S. Cl. 395—575 **20 Claims**



1. An information matching apparatus for use in an exchange having at least a first processor and a second processor, said first processor having stored therein a call information and said second processor having stored therein a call information, the apparatus comprising:

a first determination means, provided in said first processor, for determining whether or not to preserve an unmatched call information by matching it with another call information having a call status different from that of the call information of said first processor, in said second processor, after a recovery from a status producing said unmatched information;

a first request generation means, provided in said first processor, for determining whether or not an information related to a subscriber action has been matched, and for generating a matching request on a single-call basis for matching an information which has not yet been matched for transmitting it to said second processor;

a transmission means, provided in said first processor, for transmitting, to said second processor an information determined by said first determination means to be matched for a preservation;

a first initialization means, provided in said first processor, for receiving a result of matching from said second processor, and for initializing an information corresponding to a result of matching indicating a non-match;

a second determination means, provided in said second processor, for determining whether or not to preserve an unmatched information by matching it with another information having a call status which is different from that of the call information in said second processor, in said first processor, after a recovery from a call status producing said unmatched information;

a second request generation means provided in said second processor, for determining whether or not an information related to a subscriber action has been matched, and for generating a matching request on a single-call basis for matching an information which has not yet been matched for a transmission thereto to said first processor;

a match means, provided in said second processor, for matching an information transmitted from said transmission means with the information determined by said second determination means to be preserved, and for transmitting a result of matching, to said first initialization means in said first processor; and

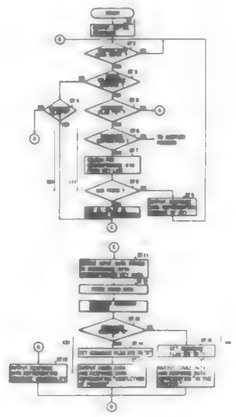
a second initialization means, provided in said second processor, for initializing an information corresponding to said result of matching indicating a non-match obtained by said match means.

5,369,760

DATA PROCESSING SYSTEM

Yasuo Iijima, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 5, 1993, Ser. No. 26,819
Claims priority, application Japan, Mar. 6, 1992, 4-049582
Int. Cl.[5] B29C *33/40;* **G06K** *5/00*
U.S. Cl. 395—575 **8 Claims**



1. A data processing system for sequentially transmitting an instruction and data, said data being divided into a plurality of

data strings which are sequentially transmitted between first and second electronic devices, wherein:

said first electronic device includes first transmission means for transmitting said instruction and a data string of said plurality of data strings together with first sequence data indicating that a next data string will be transmitted subsequently, and wherein

said second electronic device includes:

means for processing said transmitted data string based on said transmitted instruction upon receipt of said transmitted data string, independent of receipt of further data strings, and for generating resultant data based on said processing;

means for determining whether a next data string will be transmitted from said first electronic device subsequent to said received data string; and

second transmission means for transmitting said resultant data together with second sequence data to said first electronic device, said second sequence data indicating that next resultant data will be transmitted to said first electronic device when said determining means determines that a next data string will be subsequently transmitted,

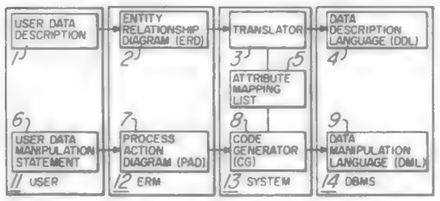
where said first transmission means transmits said next data string together with said first sequence data when said data string being transmitted is not a last data string in said plurality of data strings, and where said first transmission means transmits said last data string together with third sequence data, said third sequence data indicating that a next data string will not be transmitted subsequently.

5,369,761

AUTOMATIC AND TRANSPARENT DENORMALIZATION SUPPORT, WHEREIN DENORMALIZATION IS ACHIEVED THROUGH APPENDING OF FIELDS TO BASE RELATIONS OF A NORMALIZED DATABASE

John D. Couley, 917 Purcell Dr., Plano, Tex. 75025, and Richard P. Whitehurst, 2216 Old Orchard Ct., Plano, Tex. 75023

Filed Mar. 30, 1990, Ser. No. 502,351
Int. Cl.[5] G06F *15/401*
U.S. Cl. 395—600 **6 Claims**



1. A system for improving performance of database access from a normalized database having at least two relations and thereby requiring a join of said relations by eliminating the necessity of said join of said relations and for enabling a user to access said database by formulating queries in terms of said normalized database, said normalized database having a normalized database schema, comprising:

(a) a database convertor for converting said normalized database into an equivalent denormalized database having a denormalized database schema by appending denormalized fields to at least one of said relations; said denormalized database having said denormalized fields and corresponding base fields;

(b) input means for accepting a query in terms of said normalized database schema;

(c) a code generator coupled to said input means for processing said query and generating access statements in terms of said equivalent denormalized database schema thereby eliminating the necessity of said join of said at least two relations;

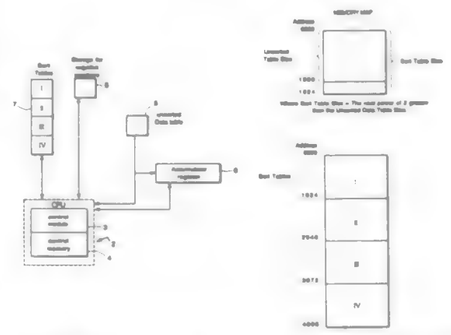
(d) a database management system coupled to said code generator for executing the access statements generated by said code generator.

5,369,762

METHOD FOR SORTING DATA IN A COMPUTER AT HIGH SPEED BY USING DATA WORD VALUES FOR ADDRESS LOCATIONS

William M. Wolf, 1 Longfellow Pl., Ste. 3123, Boston, Mass. 02114

Filed Jun. 28, 1990, Ser. No. 546,026
Int. Cl.[5] G06F *15/411, 7/36*
U.S. Cl. 395—600 **1 Claim**



1. Digital data processor apparatus for sorting a plurality of unsorted data words into sequential order, said digital data processor comprising:

A. at least four storage table means—referred to as first storage table means, second storage table means, third storage table means, and fourth storage table means, respectively—each capable of storing a plurality of data words at addressable locations therein,

B. address-forming means for generating an address for each of successive candidate ones of said unsorted data words, where each such data word has a value that can be represented by a plurality of digits arranged in order of increasing significance, and where each such address is generated by shifting the digits representing the value of the corresponding data word to remove therefrom one or more digits of least significance,

C. primary sort means, coupled to said address-forming means, for testing said first storage table means at a location corresponding to the address of a candidate data word to determine whether that location is occupied by at least one prior data word, said primary sort means including means for responding to a negative such determination for storing that candidate data word in said first storage table means at that location, said primary sort means further including means for responding to a positive such determination for (i) storing said candidate data word and said at least one prior data word in said second storage table means at a next available addressable location therein, and (ii) storing in said first storage table, at said location corresponding to the address of the candidate data word, a signal representative of that next available addressable location,

D. merge/gathering means, coupled to said at least four storage table means, for determining whether a remaining storage capacity in said second storage table means is sufficient and, if not, for storing in a selected, alternating one of said third storage table and said fourth storage table means a sorted list of data words formed by merging data words stored in the others of said storage table means, and

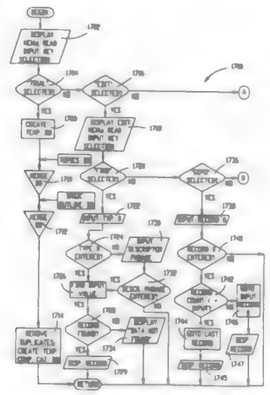
for clearing said others of said storage table means to permit storage therein of further data words.

5,369,763

DATA STORAGE AND RETRIEVAL SYSTEM WITH IMPROVED DATA BASE STRUCTURE

Bertram R. Biles, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 888,401, May 21, 1992, abandoned, which is a continuation of Ser. No. 304,685, Feb. 1, 1989, abandoned. This application May 26, 1992, Ser. No. 888,331
Int. Cl.[5] G06F *7/06, 15/40*
U.S. Cl. 395—600 **15 Claims**



1. A method of operating a computer system having memory for storing and retrieving information concerning a subject, said method comprising steps of:

(a) in the computer system memory, storing subject data concerning a plurality of subjects wherein said data includes descriptor phrases regarding various matters with which said subjects are concerned and wherein said data includes identifying information for identifying the subjects associated with said descriptor phrases;

(b) assigning selected designation numbers to said descriptor phrases and storing said selected designation numbers in the computer system memory in association with the corresponding descriptor phrases and with the identifying information wherein said designation numbers correspond to a respective plurality of topics;

(c) in the computer system memory, storing a plurality of topic headings with each heading being designated to include a specified range of designation numbers;

(d) in the computer system, for each designation number assigned to a descriptor phrase, determining which of said topic heading ranges includes said designation number and storing that designation number and corresponding descriptor phrase in association with the associated topic heading;

(e) searching the computer system memory for one of a descriptor phrase descriptive of a selected matter of interest, a range of designation numbers, and a designation number, and if a descriptor phrase is identified, determining the designation number thereof; and

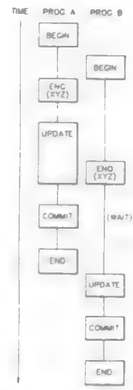
(f) using one of said range and designation number determined in step (e) to retrieve from the computer system memory the corresponding identifying information concerning the associated subject.

5,369,764

METHOD FOR SHARING ACCESS TO DATABASE ELEMENTS IN A DATA PROCESSING SYSTEM

Gary L. Blair, 2241 Sagamore Rd., Charlotte, N.C. 28209

Continuation of Ser. No. 4,626, Jan. 14, 1993, abandoned, which is a continuation of Ser. No. 514,095, Apr. 25, 1990, abandoned. This application Oct. 18, 1993, Ser. No. 139,615
Int. Cl.[5] G06F *9/312, 12/00*
U.S. Cl. 395—650 **8 Claims**



1. A method of sharing access to a plurality of database elements in a database executing on a data processing system, said method comprising the following steps performed by said data processing system:

accepting a first request to perform a first task, said first task comprising a plurality of steps including a step of accessing a first set of selected database elements in said database;

in response to the first task request, performing the first task comprising a plurality of steps including a step of accessing said first set of selected database elements;

accepting a second request to perform a second task, said second task comprising a plurality of steps including a step of accessing a second set of selected database elements, said second set of selected database elements and said first set of selected database elements having at least one selected database element in common, while the first task is being performed;

in response to the second task request, preventing performance of said second task, prior to beginning performance of said second task, thereby preventing access to said second set of selected database elements prior to performing said second task, including the step of accessing said second set of selected database elements, until said first task is completed; and

upon completion of said first task, performing the second task, comprising a plurality of steps including the step of accessing said second set of selected database elements.

5,369,765

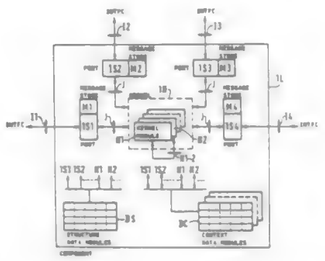
COMPOSITE SOFTWARE SYSTEM AND METHOD OF WRITING IT

Edouard Collet, Perros Guirec, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Jul. 15, 1992, Ser. No. 914,110
Claims priority, application France, Jul. 16, 1991, 91 08986
Int. Cl.[5] G06F *9/44*
U.S. Cl. 395—700 **5 Claims**

1. A composite software system comprising instructions and data written in source language for subsequent translation into machine language, wherein

said instructions and data are grouped in said source language into a plurality of software components,
each of said software components is associated with one or more respective interfaces,
each of said interfaces is associated with one or more respective communication ports,
each of said software components is made up of interface processing procedures for sending and receiving local and non-local external messages,
each said local external message is sent by an originator component to a recipient component with the system,
each said non-local external message is exchanged with an environment external to the system,
each component executes operations indicated by the external messages received by said component, said operations including processing carried out within said component in response to said received external messages and leading to the sending of other external messages,
all operations of a component define a respective function of said component,
all functions of said components define a function of the system,
at least a majority of said components are standardized components having a standardized structure such that each such standardized component comprises:
a plurality of communication ports respectively associated with a plurality of interfaces of said component,
a kernel comprising background processing procedures and communicating with each port to execute background processing tasks requested by said port, and



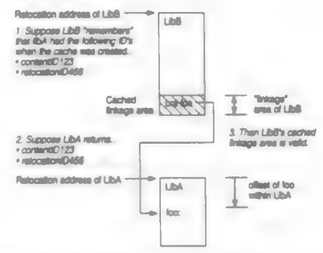
data modules written and read by each port and said kernel,
each local external message sent to a standardized component comprises not only the address of said component but also that of a specific port of said component to which said message is specifically addressed,
said specific port carries out, in response to said each local external message, interface processing optionally comprising the writing and/or reading of data in said data modules and constituting either
full interface processing leading to the sending of an external message by said port or
input interface processing leading to the sending of an incoming internal message by said port to the kernel to request background processing tasks,
at least one of said background processing tasks comprises the writing and/or the reading of data in said data modules,
said background processing task leads to the sending of an outgoing internal message by said kernel to the various ports of said component,
said outgoing internal message is of one of a plurality of types and comprising an indicator of its type,
each port of said component responds to messages that it receives by becoming selectively responsive to one type of outgoing internal message, and
each port of said component responds to an outgoing internal message of the type to which it is responsive by executing output interface processing leading to the sending of an external message by said port.

5,369,766

OBJECT-ORIENTED LOADER SYSTEM WITH SUPPORT FOR DIFFERENT LOAD FORMATS

Russell T. Nakano, Sunnyvale, and Andrew G. Heninger, Los Altos, both of Calif., assignors to Taligent, Inc., Cupertino, Calif.

Filed Mar. 25, 1993, Ser. No. 37,054
Int. Cl.[5] G06F *9/40*
U.S. Cl. 395—700 **23 Claims**



1. An apparatus for processing a plurality of load modules in a computer, said plurality of load modules created by a plurality of development environments resulting in different load module formats, comprising:
(a) the computer;
(b) a storage in the computer;
(c) processing means in the computer for loading a first object-oriented load module of a first format in said address space;
(d) processing means in the computer for loading a second load module which can be non-object-oriented of a second format in said address space; and
(e) processing means in the computer for having said first object-oriented load module and said second load module execute in said address space and utilize portions of said second load module for execution of said first object-oriented load module.

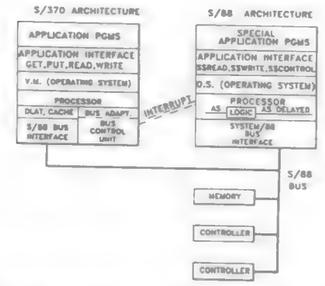
5,369,767

SERVICING INTERRUPT REQUESTS IN A DATA PROCESSING SYSTEM WITHOUT USING THE SERVICES OF AN OPERATING SYSTEM

John M. Dinwiddie, Jr., West Palm Beach; Lonnie E. Grice, Boca Raton; John M. Loffredo, Deerfield Beach, and Kenneth R. Sanderson, West Palm Beach, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 17, 1989, Ser. No. 353,117
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—725 **12 Claims**

1. A data processing apparatus comprising
a first system including a first processor and associated hardware including a main storage and I/O device operating under a first operating system containing routines for handling system interrupt requests from said hardware on plural priority levels, said first processor including means executing an interrupt acknowledge cycle to initiate the processing of each received interrupt request, and means effective during the interrupt acknowledge cycle for directing the first processor to a selected interrupt handler routine assigned to the priority level on which the interrupt signal occurs;
a second system including a second processor operating under a different operating system and including means for initiating an interrupt request to the first processor on a selected one of said levels, said first operating system having no interrupt routine to service the interrupt request from the second system;
means effective during an interrupt acknowledge cycle executed incident to the receipt of an interrupt request from the second system for uncoupling the first processor from its associated hardware to render said directing means ineffective;



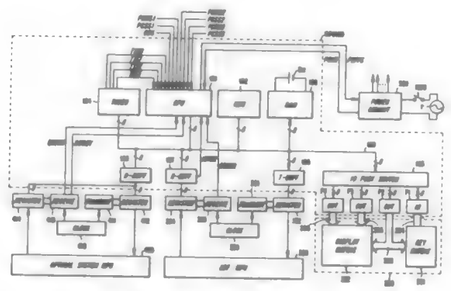
an application program in said first system including an additional interrupt handler routine to service interrupt requests from the second system;
additional means effective while the first processor is uncoupled for directing the first processor to select the additional interrupt handler routine for use in servicing the interrupt request from the second system.

5,369,768

CONTROL DEVICE FOR ELECTRONIC EQUIPMENT HAVING OPERATING MEANS AND A DISPLAY DEVICE

Yoshiaki Takano, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 18, 1991, Ser. No. 793,117
Claims priority, application Japan, Nov. 22, 1990, 2-319175
Int. Cl.[5] G06F *9/46*
U.S. Cl. 395—725 **13 Claims**



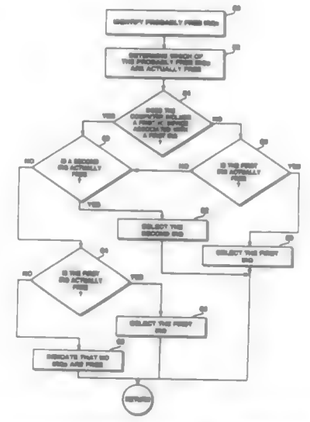
1. An electronic device comprising:
a first operating means for executing a first task;
a second operating means for executing a second task;
display means for displaying an operating condition of said electronic device;
first control means for controlling said first operating means; and
second control means for controlling said second operating means and said display means, wherein said second control means has a first interrupt routine for operating said display means and a second interrupt routine for communicating between said first control means and said second control means, said first interrupt routine having a higher priority than that of said second interrupt routine.

5,369,769

METHOD AND CIRCUITRY FOR SELECTING A FREE INTERRUPT REQUEST LEVEL FROM A MULTIPLICITY OF INTERRUPT REQUEST LEVELS IN A PERSONAL COMPUTER SYSTEM

Phil Martin, Banks, and Alan Packer, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 9, 1992, Ser. No. 942,516
Int. Cl.[5] G06F *13/24*
U.S. Cl. 395—725 **14 Claims**



14. In a computer system having a multiplicity of IRQs, a method of selecting for assignment to a device to be added to the computer system a free interrupt request level (IRQ) from the multiplicity of IRQs, the method comprising the steps of:
a) providing a programmable interrupt controller (PIC) having a PIC mask, the PIC mask indicating which of the multiplicity of IRQs are turned on and which of the multiplicity of IRQs are turned off;
b) identifying a first set of probably free IRQs from the multiplicity of IRQs;
c) identifying a second set of actually free IRQs from the first set of probably free IRQs by identifying as an actually free IRQ any probably free IRQ that the PIC mask indicates is turned off; and
d) automatically selecting for assignment to the device a one of the actually free IRQs that is least likely to be assigned.

5,369,770

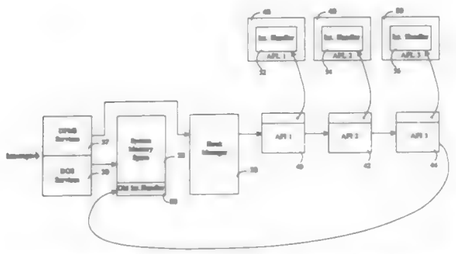
STANDARDIZED PROTECTED-MODE INTERRUPT MANAGER

Jon G. Thomason, and Earle R. Horton, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Nov. 2, 1992, Ser. No. 970,290
Int. Cl.[5] G06F *9/42*
U.S. Cl. 395—725 **15 Claims**

1. In a data processing system having a memory for holding a dynamic-link library, a user stack that is used by application programs and a processor for executing the application programs, a method comprising the steps of:
a) providing a hook manager in the dynamic-link library for managing hooking and unhooking of system interrupts for the application programs;
b) hooking a first interrupt to the hook manager;

c) manipulating the user stack so that the stack may be used by any of the application programs; and



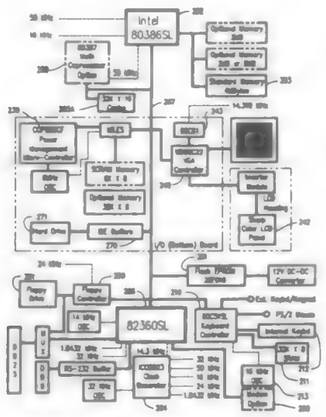
d) passing the first interrupt to one of the application programs.

5,369,771

COMPUTER WITH TRANSPARENT POWER-SAVING MANIPULATION OF CPU CLOCK

Steven K. Gettel, Austin, Tex., assignor to Dell U.S.A., L.P., Austin, Tex.

Filed Dec. 23, 1991, Ser. No. 813,380
Int. Cl.[5] G06F *1/32*
U.S. Cl. 395—750 10 Claims



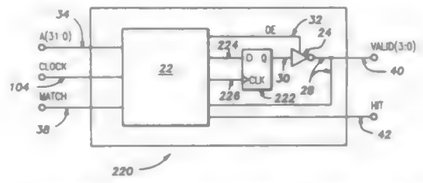
1. A computer system, comprising:
(a) a central processing unit (CPU);
(b) a clock electrically connected to said CPU, said clock having first and second non zero operating frequencies, where said first frequency is greater than said second frequency;
(c) a system timer electrically connected to said CPU;
(d) a system counter electrically corrected to said CPU; and
(e) a clock control in electronic communication with said CPU; wherein said clock control performs the steps of:
(i) recognizing at least four states for the computer system, said states including: a ready state, a global standby time out state, a low speed state, and a stop clock state;
(ii) adjusting the frequency of said clock to said first frequency while the computer system is in said ready state, to said second frequency while the computer system is in said global standby time out and low speed states, and to zero while the computer system is in said stop dock state;
(iii) switching the computer system from said ready state or said low speed state to said global standby time out state, if said system timer times out without a system event occurring;
(iv) switching the computer system from said low speed state to said ready state and resetting said timer if an IO event occurs; and
(v) switching the computer system from said global standby time out state to said stop clock state if no system event or IO event occurs, but switching to said low speed state otherwise.

5,369,772

METHOD OF MAXIMIZING DATA PIN USAGE UTILIZING POST-BUFFER FEEDBACK

Michael E. Tubbs, Montgomery, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed May 21, 1992, Ser. No. 886,766
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—775 4 Claims



4. A circuit for maximizing the usage of a data pin on programmable logic for connection to external circuitry comprising:
a programmable logic device having a selectably enableable output buffer for driving a first data pin, post-buffer feedback for inputting a signal from said first data pin, and a second data pin, said programmable logic device programmed to:
selectively disable said output buffer during a first period whereby it does not drive said first data pin;
input an input value to combinatorial logic on said programmable logic device from said first data pin, said input value driven onto said first data pin by the external circuitry during said first period;
generate an intermediate value in said combinatorial logic from a stored input value driven onto a second data pin;
drive said intermediate value as an output value to said input of said output buffer; and
selectively enable said output buffer during a second period whereby said output buffer drives said first data pin respondably to said output value; and
means external to said programmable logic device for storing said input value and for driving said stored input value to said second data pin of said programmable logic device.

5,369,773

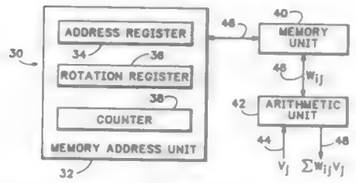
NEURAL NETWORK USING VIRTUAL-ZERO

Daniel W. Hammerstrom, Aloha, Oreg., assignor to Adaptive Solutions, Inc., Beaverton, Oreg.

Filed Apr. 26, 1991, Ser. No. 692,241
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—800 3 Claims

1. In a single instruction stream, multiple data stream (SIMD) processor having an input unit and manipulation units, a virtual-zero architecture for compressing zero-value data blocks comprising:
a memory unit (40) for storing data;
an arithmetic unit (42) for mathematically operating on the data;
a memory address generation unit (32) including
an address register (34) for identifying the address, in said memory unit, of a particular data block,

a counter (38) for counting the number of memory addresses in a particular data block, and
a rotation register (36) for causing said address register (34) to identify a data-void address in said memory unit if and only if all of the entries in the particular data block are zero, said rotation register (36) containing a



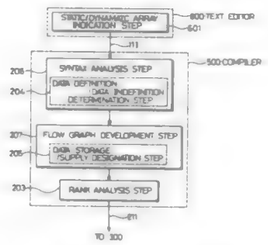
circularly shiftable succession of binary bits corresponding to a predetermined partition of data within said memory unit (40); and
an adder for computing the next memory address;
said memory address unit (32) selectively providing zero-value data blocks to said arithmetic unit (42) to simulate the data block identified by the data-void address.

5,369,774

METHOD AND APPARATUS FOR HANDLING ARRAY TYPE DATA IN A DATA DRIVEN TYPE INFORMATION PROCESSOR

Kouichi Hatakeyama, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 2, 1993, Ser. No. 12,476
Claims priority, application Japan, Feb. 4, 1992, 4-18780
Int. Cl.[5] G06F *9/00*
U.S. Cl. 395—800 20 Claims



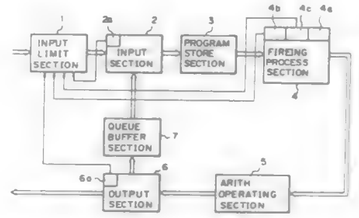
9. An apparatus for controlling execution of a data flow program in a data driven type information processor, comprising
information processing means including,
program storing means for storing a data flow program comprised of a plurality of destination information and a plurality of instruction information, receiving a data packet comprised of a destination field for storing destination information, an instruction field for storing instruction information and first and second data fields for storing data, reading destination information and instruction information from said data flow program by addressing based on destination information in the destination field of the received data packet, storing the respective read information in the destination field and the instruction field of the received data packet and outputting said received data packet;
paired data generating means for queuing said data packets output from said program storing means, storing data in a first field of one of two data packets having the same destination information in a second data field of the other data packet and outputting said the other data packet, and operating means for receiving said data packet output from said paired data generating means, decoding instruction information in the instruction field of the received data packet, operating the data in the first or the second data field of the received data packet, storing the operation result in the first data field of the received data packet and outputting said data packet;
data storing means connected to said information processing means for storing data to be processed in accordance with said data flow program in advance and supplying the data to said information processing means at the time of an execution of the program;
indicating means for indicating whether a value of array type data stored in said data packet to be processed in accordance with said data flow program is defined in advance;
determining means for determining whether the value of said array type data is defined in advance according to the indication by said indicating means; and
selectively designating means for selectively designating whether said array type data is to be stored in said data storing means in advance or to be supplied to said information processor in the form of said data packet based on the determination result of said determining means.

5,369,775

DATA-FLOW PROCESSING SYSTEM HAVING AN INPUT PACKET LIMITING SECTION FOR PREVENTING PACKET INPUT BASED UPON A THRESHOLD VALUE INDICATIVE OF AN OPTIMUM PIPELINE PROCESSING CAPACITY

Tetsuo Yamasaki; Kenji Shima; Shinji Komori; Koichi Munakata, and Yoshie Inaoka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 453,579, Dec. 20, 1989, abandoned.
This application Feb. 2, 1993, Ser. No. 12,624
Claims priority, application Japan, Dec. 20, 1988, 63-323118; Feb. 13, 1989, 1-33389; Apr. 17, 1989, 1-97194
Int. Cl.[5] G06F *15/82*
U.S. Cl. 395—800 12 Claims



11. A data flow processing system for processing packets, each packet containing a tag said tag pointing to a program instruction, and data, said systems comprising:
an input section for receiving input packets to be processed and releasing said packets for processing, and
a processing pipeline for processing said packets released from said input section and for performing arithmetic operations;
said input section including:
means for determining a predicted number of packets that will enter the input section, each time that a quantity of packets are entered, by a variance in the quantity of packets entered,
means for storing a value of a preset threshold that reflects a processing pipeline capacity,
means, responsive to a determination by the determining means, for comparing the predicted number of packets with the preset threshold value from the means for storing said value, to determine if the predicted number exceeds the preset threshold, and
an input limiting section, responsive to a determination that

the predicted number of packets exceeds the threshold, for receiving the received input packets and for delaying a release of additional packets into to the processing pipeline, said input limiting section allowing additional packets into the processing pipeline otherwise; and

wherein the means for determining the predicted number of packets comprises:

a table for storing charts and for outputting a signal indicative of the rates of increase and reduction of the predicted number of packets according to a rank included in each tag of each packet; and

an arithmetic operating unit for receiving packets from an input buffer and an output section, and for computing the predicted number of packets using the signal output from the table and the rank of the received packets.

5,369,776

APPARATUS FOR PRODUCING SLIPS OF VARIABLE LENGTH AND HAVING PRE-STORED WORD NAMES, AND WHEREIN LABELS ARE ADDED TO WORD DATA THEREON

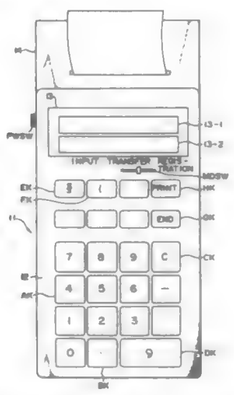
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 869,826, Apr. 15, 1992, abandoned, which is a continuation of Ser. No. 360,210, Jun. 1, 1989, abandoned. This application May 10, 1993, Ser. No. 60,211

Claims priority, application Japan, Jul. 14, 1988, 63-175415; Jul. 14, 1988, 63-175434; Jul. 14, 1988, 63-175435; Jul. 14, 1988, 63-175436; Jul. 14, 1988, 63-175437; Jul. 14, 1988, 63-175438

Int. Cl.[5] G06F *3/12*

U.S. Cl. 395—800 **1 Claim**



1. A slip producing apparatus having an arbitrary number of word names and word data corresponding to the word names, the apparatus producing a slip in which arbitrarily-defined labels are added to the word data, the slip producing apparatus comprising:

first input means for allowing a user to input a plurality of slip names, word names, and labels added to the word data and representing a unit of the word data corresponding to each of the slips, the word names defining a slip defined by slip name;

word name storage means for storing, in correspondence with the slip names, the slip names, the word names and the labels input by said first input means;

designating means for designating a slip name to operate a control means to input the word data serving as values of the word names in a slip corresponding to an input slip name;

said control means being coupled to said word name storage means for reading out and displaying the stored word names corresponding to the slip name which was designated by said designating means;

second input means for inputting word data corresponding to each of the word names read out by said control means;

word data storing means for storing the word data input by said second input means; and

output means operated after inputting of the word data by said second input means, for outputting the step name, the word names stored in said word name storage means corresponding to the slip name, and the word data read out from the word data storing means corresponding to the word names, the word data being added to the corresponding labels, to thereby output the slip.

5,369,777

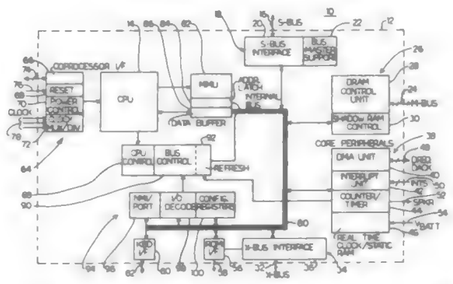
INTEGRATED DIGITAL PROCESSING APPARATUS HAVING A SINGLE BIODIRECTIONAL DATA BUS FOR ACCOMMODATING A PLURALITY OF PERIPHERAL DEVICES CONNECTED TO A PLURALITY OF EXTERNAL BUSES

Douglas D. Gephardt; James R. MacDonald, and Govinda V. Kamath, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 576,012, Aug. 31, 1990, abandoned. This application Jun. 3, 1993, Ser. No. 71,940

Int. Cl.[5] G06F *3/00, 13/00*

U.S. Cl. 395—800 **1 Claim**



1. An integrated digital apparatus for use in a computing device, said computing device having a plurality of buses coupled with a plurality of peripheral devices, each respective bus of said plurality of buses being configured to operate with a predetermined class of peripheral devices of said plurality of peripheral devices; the apparatus comprising:

a central processing means for effecting processing functions according to a program;

a plurality of bus connection means for connecting said plurality of buses with the apparatus, each respective bus connection means being designated for connection with an associated bus of said plurality of buses;

a plurality of bus accommodating means for accommodating operative connection of said plurality of peripheral devices with the apparatus via said plurality of buses; said plurality of bus accommodating means including at least one respective bus accommodating means of said plurality of bus accommodating means coupled with an associated respective bus connection means of said plurality of bus connection means; each said at least one respective bus accommodating means being configured to allow direct connection with said associated respective bus with no additional supportive means required for effective operation of said predetermined class of peripheral devices via said associated respective bus;

a single internal bidirectional bus operatively connected with said plurality of bus accommodating means and with said central processing means for accommodating communications internal of the apparatus among said central processing means and said plurality of bus accommodating means; and

an internal bus control means operatively connected with said central processing means and with said internal bidirectional bus for controlling utilization of said internal bidirectional bus; said internal bus control means utilizing said internal bidirectional bus to effect said communications in response to a plurality of addresses received from said central processing means, each of said bus accommodating means being uniquely identified by a respective address of said plurality of addresses;

each of said at least one respective bus accommodating means being tailored to said associated respective bus, said at least one respective bus accommodation means comprising appropriate respective bus control means for controlling operation of said associated respective bus;

said plurality of bus accommodating means being three bus accommodating means, said plurality of buses being three buses, and said at least respective bus accommodating means being one respective bus accommodating means;

said three buses comprising a card expansion bus, a memory bus, and an on-board expansion bus.

5,369,778

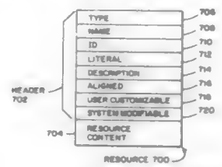
DATA PROCESSOR THAT CUSTOMIZES PROGRAM BEHAVIOR BY USING A RESOURCE RETRIEVAL CAPABILITY

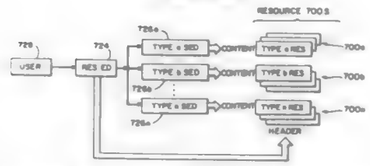
Marc San Soucie, Tyngsboro; Carolyn E. Surpreasant, Dracut; Thomas Fitzgerald, Lowell, and Susan Walker, Arlington, all of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Continuation of Ser. No. 915,775, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 88,176, Aug. 21, 1987, abandoned. This application Sep. 27, 1993, Ser. No. 127,981

Int. Cl.[5] G06F *15/403*

U.S. Cl. 395—800 **5 Claims**





1. A method for providing customized behavior of non-executing functions of a general purpose data processing system for performing a plurality of functions under control of a corresponding plurality of programs, comprising the steps of:

(A) providing a program having non-executing behavior that depends upon the content of a resource, wherein

the non-executing behavior of a program includes operations of the program which

(a) do not affect execution of the program, and

(b) do not affect operations of the data processing system in performing the operations under control of the program, and

the content of a resource is data which

(a) is used by the program, and

(b) does not affect the execution of the program,

(c) is not modified by the program using the resource, and

(d) does not affect the operations of the data processing system in performing operations under control of the program,

(B) providing an original version of the resource,

(C) creating a modified version of the resource,

(D) storing the modified version of the resource in a user profile associated with a user and containing information pertaining to the user in the data processing system, and when the resource is required by the program,

(E) the data processing system determining whether the resource is customizable,

(F) if the resource is customizable, the data processing system checking the user profile for a version of the required resource,

(G) if a version of such resource exists in the user profile, then the data processing system automatically providing to the program, and without intervention by the user of the program, the version of the resource from the user profile, otherwise the data processing system automatically providing to the program, and without intervention by the user of the program, the original version of the resource, wherein each version of a resource will control the non-executable behavior of a program independently of other versions of the resource.

5,369,779

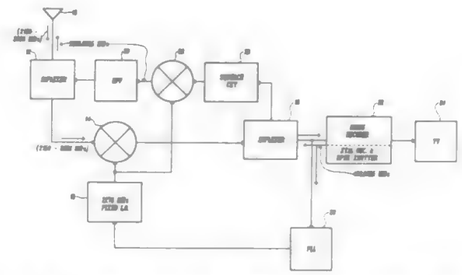
TWO-WAY MMDS COMMUNICATIONS SYSTEM

Larry K. Moreland, McHenry, Ill., assignor to Zenith Electronics Corp., Glenview, Ill.

Filed Jun. 28, 1993, Ser. No. 84,655

Int. Cl.[5] H04H *1/00;* **H04B** *1/40;* **H04N** *7/14*

U.S. Cl. 455—5.1 **11 Claims**



1. A two-way microwave multipoint distribution system MMDS comprising:

an antenna for receiving a plurality of MMDS channels in the MMDS frequency band from a transmitting site;

an MMDS decoder;

a local oscillator for generating a local oscillation signal;

means responsive to said local oscillator signal for block converting said plurality of MMDS channels to a corresponding plurality of channels comprising corresponding frequencies receivable by said MMDS decoder;

means for generating a data signal as modulation of carrier;

means responsive to said local oscillator signal for converting said data signal to a frequency in close proximity to said MMDS frequency band; and

means for coupling the block converted channels to an input of said MMDS decoder and for coupling the converted data signal to said antenna for radiation back to said transmitting site.

5,369,780

AMPLIFYING AND PHASE SHIFTING VERTICAL AND HORIZONTAL POLARIZED SIGNALS FOR FREQUENCY CONVERTING SATELLITE BROADCAST RECEPTIONS

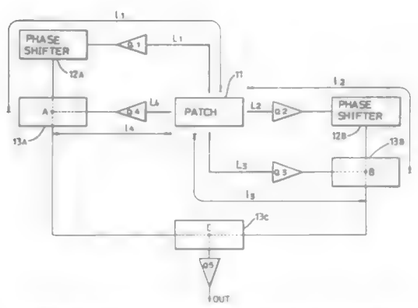
Jae R. Jung, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Rep. of Korea

Filed Nov. 12, 1992, Ser. No. 975,415

Claims priority, application Rep. of Korea, Nov. 11, 1991, 19971/1991

Int. Cl.[5] H01P *1/165;* **H04B** *7/185*

U.S. Cl. 455—12.1 **6 Claims**



1. A frequency converter for receiving polarized waves of a satellite signal, comprising:

first through fourth feeding means, each being disposed perpendicularly to each side of a patch on which the satellite signal with the polarized waves is electromagnetically focused, to allow the polarized waves of the satellite signal to be excited thereat;

first through fourth amplifying means connected, respectively, to said first through fourth feeding means, for blocking or transferring the polarized waves excited at said first through fourth feeding means in response to a reception selection control;

first and second phase shifting means connected, respectively, to outputs of the first and second amplifying means, for shifting vertical and horizontal waves of the polarized waves by a desired phase in response to the reception selection control, respectively, so that left and right circularly polarized waves can be generated; and

first through third signal adding means, said first signal adding means for adding an output signal from said first phase shifting means to an output signal from said fourth amplifying means, the second signal adding means for adding an output signal from said second phase shifting means to an output signal from said third amplifying means, and said third adding means for adding the output signals from said first and second signal adding means.

5,369,781

DISPATCH COMMUNICATION SYSTEM WITH ADJACENT SYSTEM SIGNAL REPEATING

Richard Comroe, Dundee, and Arun Sobti, Wheaton, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 457,650, Dec. 27, 1989, abandoned. This application Feb. 6, 1992, Ser. No. 832,137

Int. Cl.[5] H04B *7/14*

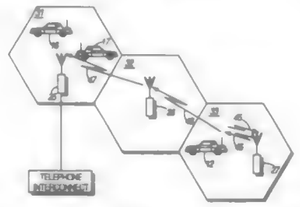
U.S. Cl. 455—15 **4 Claims**

1. An apparatus for relaying signals between a first and second dispatch communication system with each communication system of the first and second communication system having a plurality of communication units that transmit and receive signals using a predetermined format and a service coverage area with a periphery, wherein at least the first communication system includes the apparatus for relaying signals comprising:

A) a plurality of communication resources configured to communicate with at least some of the plurality of communication units of the first and second communication systems;

B) at least one communication control resource;

C) at least one communication resource configured to transmit and receive signals in the format; and



wherein at least one of the plurality of communication units is transmitting and receiving a communicated signal through the second communication system, said at least one communication unit including scanning means for detecting the at least one control resource of the first communication system and control means for requesting, when near the periphery of the service coverage area of the second communication system and over the at least one control resource, that the first communication system allocate communication resources to relay the communicated signal to and from the second communication system.

5,369,782

RADIO RELAY SYSTEM, INCLUDING INTERFERENCE SIGNAL CANCELLATION

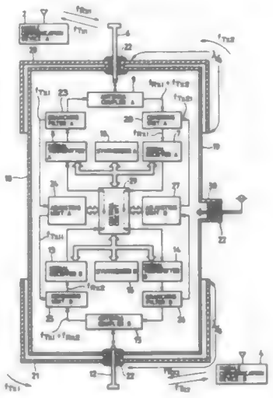
Minori Kawano; Kohji Ogawa; Sadayuki Tsukagoshi; Hiroyuki Kuroiwa; Masato Sato, all of Gunma; Yasuhiro Ishizaki, Kanagawa; Fumiaki Komatsu, Kanagawa, and Eiichi Kuroda, Kanagawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 743,973, Aug. 12, 1991, Pat. No. 5,267,297. This application Jul. 15, 1993, Ser. No. 91,444

Claims priority, application Japan, Aug. 22, 1990, 2-220530

Int. Cl.[5] H04B *7/14*

U.S. Cl. 455—16 **14 Claims**



1. A radio relay system comprising:

an external conductor;

a first antenna located on said external conductor for transmitting and receiving radio carrier wave signals of a first and a second frequency, respectively;

a second antenna located on said external conductor for transmitting and receiving radio carrier wave signals of a third and a fourth frequency, respectively;

a skirt for each of said antennas located on said external conductor, each said skirt having a length equal to a quarter of the wavelength of said first and third frequencies, respectively;

a relay circuit in said external conductor further comprising:

branching filter circuit means for extracting a portion of said radio carrier wave signals of said first and third frequencies;

adjusting unit circuit means coupled to said branching filter circuit means and being responsive to the extracted portions of said first and third frequency signals for adjusting the amplitude and phase thereof and generating modified first and third frequency signals;

combining unit circuit means coupled to said adjusting unit circuit means for combining said first and third modified frequency signals with said radio carrier wave signals of said first and third frequencies respectively received by said second and first antenna for cancelling said first and third frequency signals; and

transmitter-receiver circuit means for transmitting said radio carrier wave signal of said second frequency and received by said first antenna as a radio carrier wave signal of said second frequency from said second antenna, and for transmitting said radio carrier wave signal of said fourth frequency and received by said second antenna as a radio carrier wave signal of said first frequency from said first antenna.

5,369,783

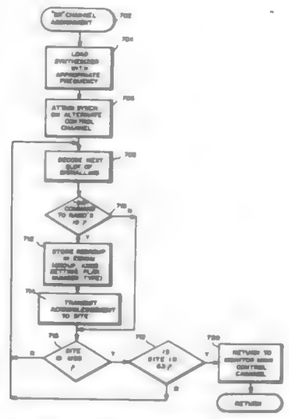
DYNAMIC REGROUPING IN A TRUNKED RADIO COMMUNICATIONS SYSTEMS

Jeffrey S. Childress, and David L. Hattey, both of Lynchburg, Va., assignors to Ericsson GE Mobile Communications Inc., Lynchburg, Va.

Continuation of Ser. No. 585,791, Sep. 20, 1990, abandoned, which is a continuation of Ser. No. 229,814, Aug. 8, 1988, Pat. No. 5,117,501. This application Oct. 13, 1993, Ser. No. 135,582

Int. Cl.[5] H04B *7/15*

U.S. Cl. 455—17 **19 Claims**



14. A method of dynamic regrouping in a trunked radio communication system including plural mobile transceivers, said method comprising:

transmitting at least one dynamic regroup message over the air so as to make said regroup resident within each of said plural mobile transceivers;

subsequently transmitting a regroup activate message over the air; and

substantially simultaneously activating said regroup at each of said plural mobile transceivers no earlier than transmission of said regroup activate message.

5,369,784

RADIO COMMUNICATIONS SYSTEM USING MULTIPLE SIMULTANEOUSLY TRANSMITTING TRANSCEIVERS

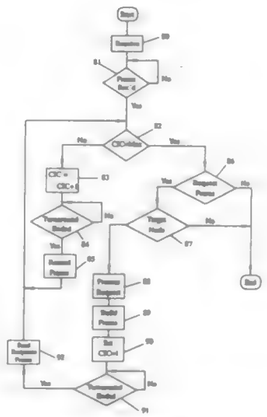
Dan R. Nelson, Delgany, Ireland, assignor to City Communications Limited, Dublin, Ireland

Filed Jul. 30, 1992, Ser. No. 922,917

Claims priority, application Ireland, Aug. 1, 1991, 1761/91

Int. Cl.[5] H04B *7/14*

U.S. Cl. 455—51.2 **9 Claims**



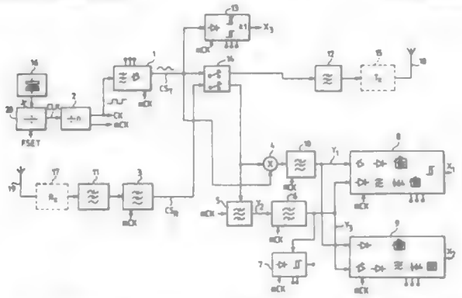
1. A radio communication system comprising a transmitter for transmitting a radio message having a predetermined format, a plurality of transceivers within range of the transmitter and a plurality of receivers out of range of the transmitter but within range of one or more of the transceivers, wherein each of the transceivers is arranged, upon receipt of the message in said predetermined format and subject to the contents of the message, to re-transmit the message substantially in synchronism with any and all other of the transceivers which received the message at the same time as said one or more of the transceivers, and wherein the message includes iteration data which defines the number of times the message has been transmitted or re-transmitted and the total number of times the message is to be transmitted or re-transmitted, and wherein said each of the transceivers upon receipt of the iteration data includes means which is responsive to the iteration data in the message to determine if the last transmission or re-transmission has been made and if so not to re-transmit the message to one or more of said transceivers and receivers and if not to update the iteration data by changing the data which defines the number of times the message has been transmitted or re-transmitted and re-transmit the message.

5,369,785

METHOD OF AND APPARATUS FOR DETECTING A MONITORING SIGNAL AT A BASE STATION IN A RADIO TELEPHONE SYSTEM

Jukka Korhonen, and Pertti Huttunen, both of Oulu, Finland, assignors to Telenokia Oy, Espoo, Finland

Filed Oct. 5, 1992, Ser. No. 915,981
Claims priority, application Finland, Feb. 8, 1990, 900619
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—54.1 **10 Claims**



1. A method for monitoring the quality of radio links between a base station and a mobile station in a radio telephone system, comprising:

(a) receiving a monitoring signal having a predetermined frequency at a base station;

(b) tuning a center frequency of an adjustable bandwidth-type bandpass filter to said predetermined frequency and thereby providing a tuned bandpass filter having a given bandwidth;

(c) filtering said monitoring signal received at the base station using said tuned bandpass filter and thereby providing an output signal;

(d) narrowing said given bandwidth of said tuned bandpass filter during said filtering, the filtering being started with the widest bandwidth of the filter, whereby the bandwidth is narrowed when a first portion of a rise time corresponding to the widest bandwidth has elapsed, and the bandwidth is changed to a final value thereof when a second portion of said rise time has elapsed; and

(e) detecting the presence of said monitoring signal on the basis of the level of said output signal of said tuned bandpass filter.

5,369,786

ENHANCED POWER LEVEL USAGE IN A RADIOTELEPHONE SYSTEM

Thomas G. Hulsebosch, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

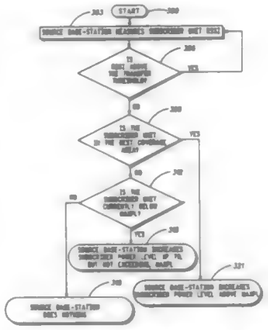
Filed May 1, 1991, Ser. No. 694,153
Int. Cl.[5] H04B *7/26*
U.S. Cl. 455—70 **27 Claims**

13. A method of enhancing maximum power level usage in a radiotelephone system, the radiotelephone system having a source base-station coupled to a plurality of target base-stations via a base-station interface, the source base-station communicating with a subscriber unit on a radio frequency (RF) channel, the source base-station having the capability to instruct the subscriber unit to transmit at at least one of a plurality of RF power levels, the source base-station having a predetermined maximum subscriber unit transmission level value (MAXPL) corresponding to a predetermined subscriber unit RF power level that said subscriber unit is allowed to transmit, said MAXPL being below the maximum subscriber unit RF power level that said subscriber unit is capable to transmit, the method comprising the steps of:

providing, at the source base-station, at least a first communication transfer threshold;

measuring, at the source base-station, a first signal quality value of a transmission from said subscriber unit on said radio frequency channel;

measuring, at at least one target base-station, at least a second signal quality value of a transmission from said subscriber unit on said radio frequency channel;



determining, at the base-station interface, whether or not said subscriber unit is in the best coverage area based on said first signal quality value and said at least a second signal quality value; and

instructing, at the source base-station, the subscriber unit to transmit at a level above said MAXPL when said first signal quality value is less than said at least a first communication transfer threshold and if said subscriber unit is in the best coverage area.

5,369,787

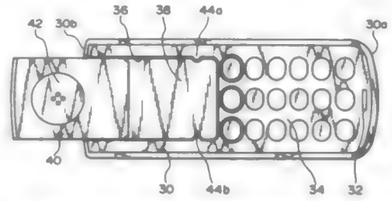
Patent Not Issued For This Number

5,369,788

MINIATURE PORTABLE RADIO COMMUNICATION APPARATUS

Michio Nagai, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 952,557, Sep. 28, 1992, abandoned. This application Mar. 7, 1994, Ser. No. 207,795
Claims priority, application Japan, Sep. 30, 1991, 3-276442
Int. Cl.[5] H04B *1/38*
U.S. Cl. 455—90 **1 Claim**



1. A miniature portable radio communication apparatus comprising;

a casing formed with a recess extending in a longitudinal direction;

a movable portion slidable received in said recess and loaded with at least a receiver, said slidable portion being movable between a fully stowed and a service position; and

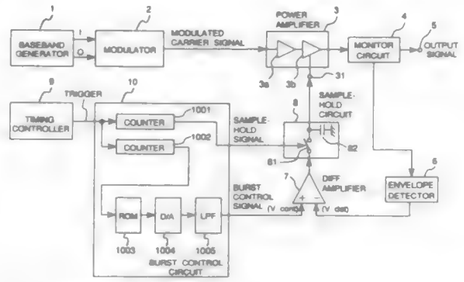
a display means mounted on a bottom of said recess of said casing, said display means being at least partly exposed to the outside of said casing when said movable portion is received in said fully stowed position within said casing, and said display means being fully exposed to the outside of said casing when said movable portion is in said service position.

5,369,789

BURST SIGNAL TRANSMITTER

Hiroaki Kosugi, Hirakata; Takayuki Matsumoto, Kadoma, and Takashi Enoki, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co Ltd., Osaka, Japan

Continuation of Ser. No. 955,257, Oct. 1, 1992, abandoned. This application Jan. 28, 1994, Ser. No. 188,115
Claims priority, application Japan, Jan. 10, 1991, 3-253354
Int. Cl.[5] H04B *1/04;* **H03G** *3/20*
U.S. Cl. 455—126 **9 Claims**



1. A transmitter comprising:

a modulator for generating a modulation carrier signal, and generating a signal during a burst ramp-up period for use as a constant envelope;

a power amplifier, comprising a gain control terminal, for amplifying said modulation carrier signal and producing an amplified transmission signal;

a monitor circuit for extracting a part of said amplified transmission signal;

an envelope detector for obtaining an envelope detection signal of the monitor signal;

a first burst control signal generator for generating a first burst control signal;

a differential amplifier for comparing said first burst control signal and said envelope detection signal, and producing an error signal indicative of a difference between said first burst control signal and said envelope detection signal;

a sample and hold signal generator for generating a sample and hold signal;

a sample and hold circuit for sampling and holding said error signal according to the sample and hold signal to produce a gain control signal which is supplied to said gain control terminal of the power amplifier; and

a timing controller for providing trigger signals to said first burst control signal generator and to said sample and hold signal generator;

wherein said first burst control signal generator comprises: a first digital counter for starting and ending counting in response to the trigger signals; a read only memory connected to said first digital counter for generating predetermined rising and falling patterns in digital form for the first burst control signal; a digital to analog converter for converting the rising and falling patterns in digital form to rising and falling patterns in analog form; and a low pass filter for smoothing the rising and falling patterns in analog form;

and wherein said sample and hold signal generator comprises a second digital counter for starting and ending counting in response to the trigger signals;

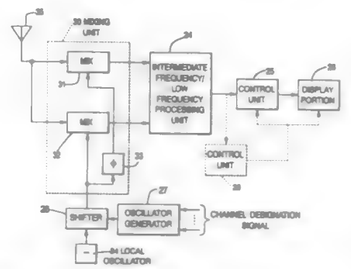
and wherein said sample and hold signal generator generates said sample and hold signal such that said signal is in a sampling state during a burst rising period and a burst falling period and is in a hold state during a burst transmission period and samples a rising pattern during said burst rising period and holds a last level of said rising pattern during said transmission period and samples a falling pattern during said burst falling period.

5,369,790

RADIO RECEIVER

Yasuhiro Yokota, Kawasaki, Japan, assignor to Fujitsu Limited, Japan

Filed Sep. 9, 1991, Ser. No. 756,585
Claims priority, application Japan, Sep. 7, 1990, 2-237986
Int. Cl.[5] H04B *17/02, 1/26;* **H03L** *7/00*
U.S. Cl. 455—164.1 **10 Claims**



1. A radio receiver comprising:

a first oscillator outputting a signal having a frequency;

a second oscillator for outputting a signal having a lower frequency than the output signal of said first oscillator;

first mixer means for mixing the output signal from said first oscillator to a signal obtained by shifting the phase of the output signal having the lower frequency of said second oscillator by $\pi/2$ and outputting a signal;

second mixer means for mixing a signal obtained by shifting the phase of the output signal having the frequency of said first oscillator by $\pi/2$ to the output signal having the lower frequency of said second oscillator and outputting a signal; and

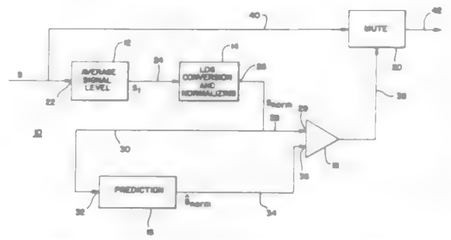
combining means for combining the output signal of said first mixer means with the output signal of said second mixer means, thereby providing a local oscillator output.

5,369,791

APPARATUS AND METHOD FOR DISCRIMINATING AND SUPPRESSING NOISE WITHIN AN INCOMING SIGNAL

Safdar M. Asghar, and John G. Bartkowiak, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 22, 1992, Ser. No. 887,076
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—222 **16 Claims**



1. A method for discriminating and suppressing noise within an incoming signal, the method comprising the steps of:

(a) generating a first iteration signal, said first iteration signal being representative of average signal level of said incoming signal, said first iteration signal being generated according to the relationship:

$$\delta_t = \sum_{i=1}^{n} |s_i|$$

where
δ_t=average signal level,
$|S_i|$=magnitude of signal level of the ith sample of said incoming signal, and
n=number of samples;

(b) generating a second iteration signal, said second iteration signal being representative of said first iteration signal normalized with respect to a maximum signal level expected of said incoming signal;

(c) providing a prediction means and using said prediction means for generating a predicted value for said second iteration signal from a plurality of earlier samples of said second iteration signal, said prediction means comprising a digital filter, said digital filter having at least as many taps as samples in said plurality of earlier samples;

(d) determining a difference between said second iteration signal and said predicted value to generate a prediction error signal;

(e) generating a control signal, said control signal having a first value when said prediction error signal exceeds a predetermined threshold value, said control signal having a second value when said prediction error does not exceed said threshold value; and

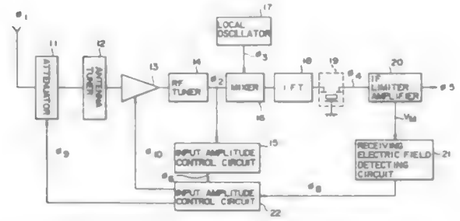
(f) providing a muting means for muting signals; said muting means being operatively connected to receive said incoming signal and said control signal, said muting means responding to said control signal to mute said incoming signal when said control signal is at one of said first value and said second value, said muting means responding to said control signal to not mute said incoming signal when said control signal is at the other of said first value and said second value, whereby the first value is used to determine muting and the second value is used to determine not muting when the prediction error is not inversed and the second value is used to determine muting and the first value is used to determine not muting when the prediction value is inversed.

5,369,792

AGC CIRCUIT OF FM FRONT-END PORTION FOR CONTROLLING BANDWIDTH DETECTION SENSITIVITY

Yutaka Matsumoto, Yokohama, and Nozomu Kawada, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 3, 1991, Ser. No. 725,522
Claims priority, application Japan, Jul. 3, 1990, 2-174509
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—245.1 **2 Claims**



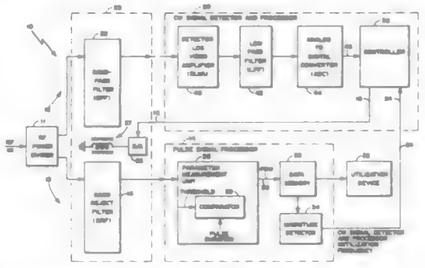
1. An AGC circuit of an FM front-end portion, comprising:
an attenuator for attenuating an input signal;
an amplifier for amplifying said input signal, said amplifier being connected, in series, to said attenuator;
first adjusting means for adjusting an attenuation amount of said attenuator and a gain amount of said amplifier in accordance with a level of a first signal output from said amplifier, said first adjusting means including a first input amplitude control circuit for outputting a second signal, a level of said second signal being controlled by said first input amplitude control circuit so as to determine said attenuation amount of said attenuator and said gain amount of said amplifier in accordance with a level of said first signal; and
second adjusting means for receiving said second signal and for outputting a third signal to said attenuator and a fourth signal to said amplifier in accordance with the level of said second signal, and means for adjusting levels of said third and fourth signals thereby decreasing the attenuation amount of said attenuator and increasing the gain amount of said amplifier when the level of a signal meter output voltage having a voltage value determined in accordance with an amplitude of an IF signal is less than or equal to a predetermined threshold value, said second adjusting means including a second input amplitude control circuit for outputting said third and fourth signals.

5,369,793

RF RECEIVER ADAPTED TO PROCESS RECEIVED RF PULSES AND REJECT RF CONTINUOUS WAVE SIGNALS

Sherman R. Vincent, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 12, 1991, Ser. No. 806,973
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—306 **8 Claims**



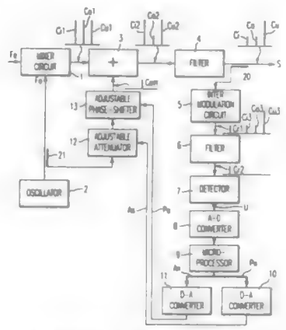
1. Apparatus comprising:
power/divider means for coupling a received signal to a pair of signal channels;
a first signal channel of said pair of signal channels comprising a band reject filter coupled to said power/divider means, such band reject filter having a reject band with a center frequency tuneable to a frequency within a predetermined frequency band;
a second signal channel of said pair of signal channels comprising:
i) a bandpass filter, coupled to said power/divider means, such bandpass filter having a pass band with a center frequency tuneable to the frequency within the predetermined frequency band;
ii) means responsive to received signals passing through the bandpass filter for determining the frequency of a continuous wave signal within the predetermined frequency band; and
iii) means responsive to the frequency of the continuous wave signal for tuning both of the center frequencies of the reject band and the pass band to the frequency of the continuous wave signal wherein the tuning means comprises means for tuning the center frequencies of the reject band and the pass band to the frequency of the continuous wave signal having an amplitude larger than amplitudes of all other continuous wave signals within the predetermined frequency band.

5,369,794

ADAPTIVE OSCILLATOR FREQUENCY FEEDTHROUGH CANCELLATION IN MIXER CIRCUIT

Didier Martineau, Andresy, France, assignor to Thomson-LGT Laboratoire General des Telecommunications, Conflans Sainte Honorine, France

Filed Dec. 23, 1992, Ser. No. 995,976
Claims priority, application France, Dec. 23, 1991, 91 16041
Int. Cl.[5] H04B *1/10*
U.S. Cl. 455—317 **8 Claims**



2. A device for changing a first signal at a frequency that shall be called an intermediate frequency by a second signal at a local frequency to obtain a signal at a useful frequency, comprising:
a local oscillator for generating the second signal;
a mixer circuit to mix the first and second signals and give a resultant signal comprising a first component at the useful frequency, a second component at the local frequency and a third component which is an image of the first component with respect to the second component;
an output filter which receives the resultant signal and extracts the first component therefrom, said output filter having an output;
first means coupled to the output of the output filter for intermodulating, an auxiliary component at the intermediate frequency;
second means for measuring a value of the power of the auxiliary component; and
third means, responsive to said second means, for attenuating and phase-shifting the second signal and adding a result thereof to the resultant signal, the attenuating and the phase-shifting being adjusted so as to make the power of the auxiliary component a minimum value.

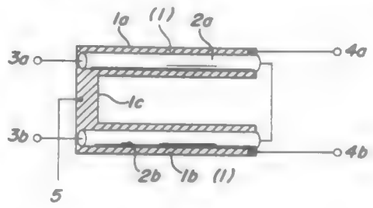
5,369,795

HIGH FREQUENCY TRANSFORMER AND MIXER USING THE SAME

Yoshiyuki Yanagimoto, Kobeshi, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1992, Ser. No. 890,626
Claims priority, application Japan, May 29, 1991, 3-153904
Int. Cl.[5] H04B *1/26*
U.S. Cl. 455—327 **13 Claims**

1. A high frequency transformer comprising:
two strip lines and a short-circuiting pattern coupled there between, each strip line having a first end connected to the short-circuiting pattern and each strip line having a second end extending away from the short-circuiting pattern;
two lead wires insulatedly formed onto the strip lines so that one lead wire is formed on each respective strip line, each lead wire so formed having a first end proximate to the first end of the respective strip line and having a second end proximate to the second end of the respective strip line; and
the second ends of the lead wires being short circuited together, the first ends of the lead wires serving as a first port and the second ends of the respective strip lines serving as a second port.

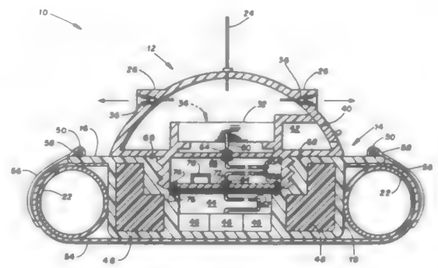


5,369,796

FLOATING SOUND SYSTEM

Gregory E. Kung, 411 Kari Ct., Houston, Tex. 77024

Filed Aug. 10, 1992, Ser. No. 926,698
Int. Cl.[5] H04B *1/06, 1/08*
U.S. Cl. 455—344 **4 Claims**



1. A floating sound system including flotation means having length, width and height dimensions, uppermost audio equipment retained within said flotation means, said audio equipment including a housing having length, width and height dimensions, and an onboard power supply including a housing having length, width and height dimensions, said audio housing attaching solely to said power supply housing,
said lowermost flotation means having length and width dimensions exceeding said length and width dimensions of said audio housing and of said power supply housing, said flotation means having top and bottom surfaces and also having means defining an opening therein, whereby said flotation opening laterally surrounds said power supply housing,
said flotation means further being covered on sides and bottom thereof by a flexible cover, said flexible cover having straps terminating in fasteners attached thereto, and
said power supply housing having an upper flange, a cylindrical body and battery means, said cylindrical body enclosing said battery means and being laterally surrounded by said flotation means, and said flange contacting and covering said top of said flotation means, said power supply housing flange having a plurality of rings engageable with said flotation strap fasteners, whereby said flotation means are readily attachable to and detachable from said power supply housing, said power supply further being located adjacent the bottom surface of said flotation means, whereby said floating sound system has a low center of gravity and floats stably on a surface of water,
said audio equipment including speaker means having speaker cones, said speaker cones being positioned radially opposite each other and located a sufficient distance

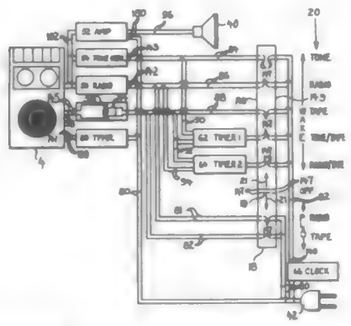
above the surface of the water so that sound emitted therefrom propagates in diametrically opposite directions generally parallel to the surface of the water, said audio equipment also having ready detachment means cooperating with said power supply, whereby said audio equipment is readily detachable from said power housing, said audio equipment housing further being generally of domed configuration, said housing thus being radially symmetric and substantially unencumbered by sharp edges, said audio housing also having at least one readily opened closure enabling atmospheric communication between the interior of said audio housing and the exterior thereof, whereby transmission of bass sound is enhanced.

5,369,797

RADIO ALARM CLOCK WITH REMOVABLE CASSETTE PLAYER/RECORDER

James G. Tyree, 470 Palm, Deland, Fla. 32724

Filed Mar. 4, 1992, Ser. No. 846,125
Int. Cl.[5] H04B *1/08*; G04C *21/14*
U.S. Cl. 455—349 **4 Claims**



1. A radio alarm clock with removable cassette player/-recorder comprising:

a radio alarm clock comprising:

an electrical plug;

a double pole slide function switch comprising:

a first side and a second side, said sides being oppositely disposed, said sides containing eight pairs of poles each, each said pairs of poles being disposed opposite a pair of poles disposed on the opposite side of said function switch; and

a sliding two pole bridge for connecting two of the pairs of oppositely disposed poles at a time;

a clock electrically connected to said plug and said function switch, said clock having an output for sending electricity to said function switch at a predetermined time;

a radio whose power input is electrically connected to said function switch;

a tone generator whose power input is electrically connected to said function switch;

a tape solenoid whose actuation coil is electrically connected to said function switch;

an amplifier electrically connected to the output signal of said radio, said tone generator and to a cassette player/-recorder, and whose power input is electrically connected to said plug;

a speaker connected to said amplifier;

a first time for routing the electricity sent from said clock output at the predetermined time from said function switch to said tone generator power input for a first adjustable period of time and thereafter to said tape solenoid actuation coil;

a second timer for routing the electricity sent from said clock output at the predetermined time from said function switch to said radio power input for a second adjustable period of time and thereafter to said tape solenoid actuation coil;

a cassette player/recorder electrically connected to said tape solenoid; and

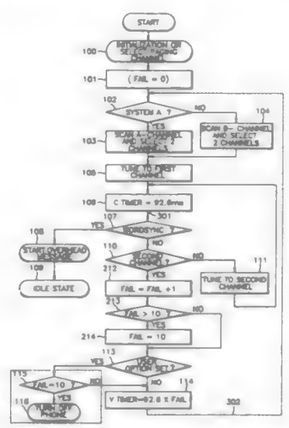
means for quickly and easily removing said cassette player/-recorder from its installed position on said radio alarm clock whereby said cassette player/recorder is used to conveniently record messages which will later be played back at the time said clock output sends electricity at the predetermined time to said function switch.

5,369,798

METHOD AND CIRCUIT FOR SAVING THE POWER OF A BATTERY USED IN A PORTABLE RADIO TELEPHONE

Young-Sub Lee, Euiwang, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 14, 1992, Ser. No. 989,823
Claims priority, application Rep. of Korea, Nov. 13, 1992, 1992-21300
Int. Cl.[5] H04B *1/16*
U.S. Cl. 455—33.1 **20 Claims**



1. A method for saving the power of a battery used in a portable radio telephone, comprising the steps of:

tuning said portable radio telephone to a first channel to set a first interrupt time interval;

enabling a signal generator for setting said first interrupt time interval to resume operation after said first interrupt time interval;

detecting word synchronization data in said first channel;

tuning said portable radio telephone to a second channel to detect said word synchronization data when said word synchronization data is not detected in said first channel;

setting a second interrupt time interval in response to a number of fails when said word synchronization data is not detected in said second channel; and

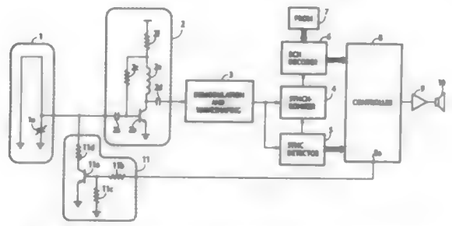
resuming the operation to detect said word synchronization data after said second interrupt time interval.

5,369,799

RADIO PAGER WITH VARIABLE GAIN SETTING CONTROLLED ACCORDING TO PRESENCE AND ABSENCE OF SYNC CODES

Kazuyuki Tsunoda, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Jun. 25, 1992, Ser. No. 904,018
Claims priority, application Japan, Jun. 25, 1991, 3-153551
Int. Cl.[5] H04B *1/06*; H04Q *3/02*
U.S. Cl. 455—38.3 **6 Claims**



1. A radio pager adapted to receive a signal containing sync codes, comprising:

a receiver for receiving said signal at one of high and low gain settings such that when said receiver is switched to the low gain setting the strength of intermodulation products is reduced in relation to the strength of a desired signal;

detector means for detecting a sync code in the received signal to establish synchronization and generating a sync-absence signal if the sync code is not detected during an expected time interval; and

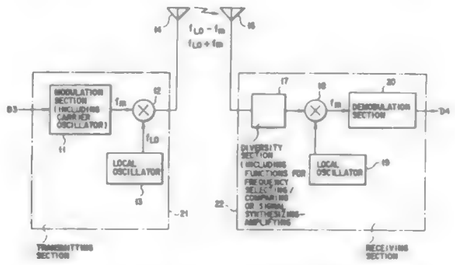
control means for initially switching said receiver to the high gain setting, switching the receiver to the low gain setting in response to a first generation of the sync-absence signal, and subsequently switching the receiver to the high gain setting in response to a second generation of the sync-absence signal.

5,369,800

MULTI-FREQUENCY COMMUNICATION SYSTEM WITH AN IMPROVED DIVERSITY SCHEME

Tasuku Takagi; Zenichirou Nagasawa, and Toshikazu Dambayashi, all of Sendai, Japan, assignors to Small Power Communication Systems Research Laboratories Co., Ltd., Sendai, Japan

Filed May 20, 1992, Ser. No. 885,966
Claims priority, application Japan, Aug. 16, 1991, 3-205799
Int. Cl.[5] H04B *7/08*
U.S. Cl. 455—59 **14 Claims**



1. A multi-frequency communication system comprising:

a transmitting section including:

modulation means including an oscillator for generating a first carrier and a mixer, for modulating the first carrier with data to be transmitted, thereby to generate a modulated output;

first local oscillation means for generating a first local oscillating signal which is to be used as a second carrier;

first mixer means for mixing the modulated output from said modulation means and the first local oscillating signal generated by said first local oscillation means, thereby to generate waves of different frequencies, including at least an upper side band wave having a frequency which is a sum of the frequencies of the modulated output and the first local oscillating signal and a lower side band wave having a frequency which is a difference between the frequencies of the modulated output and the first local oscillating signal; and

transmitting antenna means for radiating electromagnetic waves into the air, the electromagnetic waves including the waves of different frequencies generated by said first mixer means; and a receiving section including:

receiving antenna means for receiving the electromagnetic waves including the waves of different frequencies and radiated from said transmitting antenna means;

diversity means for extracting at least one wave of the upper side band wave and the lower side band wave from the waves of different frequencies received by said receiving antenna means;

second local oscillation means for generating a second local oscillating signal equal to the first local oscillating signal;

second mixer means for mixing the at least one wave extracted by said diversity means and the second local oscillating signal generated by said second local oscillation means, thereby to generate an output; and

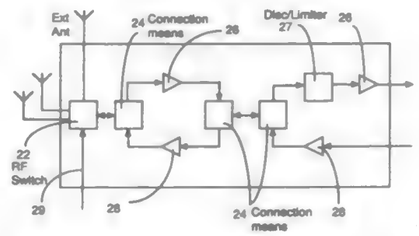
demodulation means for demodulating the output generated by said second mixer means, thereby to recover the data to be transmitted by the transmitting section.

5,369,801

ANTENNA DIVERSITY RECEPTION IN WIRELESS PERSONAL COMMUNICATIONS

Roland A. Smith, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 25, 1992, Ser. No. 950,513
Int. Cl.[5] H04B *7/08*
U.S. Cl. 455—277.1 **6 Claims**



1. A process of performing antenna diversity in reception of a digital radio signal transmitted in time division pulse coded frames, each frame containing a fixed number of coded bits in at least two specific formats, the first format consisting of Data Channel bits and Bearer Channel bits and the second format consisting of Data Channel bits, preamble bits and sync bits comprising steps of:

receiving said digital radio signal by one of a plurality of antennas;

generating a received signal strength indication RSSI of said one antenna;

when said digital radio signal is in the first format, switching said one antenna to one of the remaining antennas to receive a predetermined number of said Bearer Channel bits in one frame, starting at one of said Bearer Channel bits and ending at another of said Bearer Channel bits both

of which have low significance in decoding the first format;

when said digital radio signal is in the second format, switching said one antenna to one of the remaining antennas to receive a predetermined number of said sync bits in one frame, starting and ending at said sync bits which correspond in bit position to those of the first format and have low significance in decoding the second format;

deriving a RSSI of said one of the remaining antennas;

comparing the RSSI of said one antenna with the RSSI of said one of the remaining antennas; and

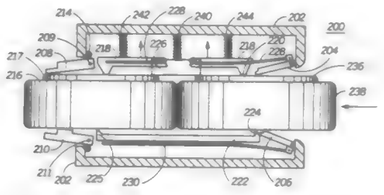
choosing the antenna with a larger RSSI for reception of following frames of the digital radio signal at one of said Bearer Channel bits in said first format and at said sync bits in said second format which correspond in bit position to those of the first format.

5,369,802

METHOD AND APPARATUS FOR IMPROVED BATTERY REPLACEMENT

Bradley A. Murray, West Palm Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1992, Ser. No. 867,959
Int. Cl.[5] H04B *1/08*; H01M *2/10*
U.S. Cl. 455—351 **11 Claims**



1. A battery operated electronic device, comprising:

electronic circuits; and

a battery holder electrically coupled to the electronic circuits for holding a first replaceable battery and for electrically coupling the first replaceable battery and the electronic circuits, the battery holder comprising:

means for inserting the first replaceable battery in the battery holder in a horizontal direction;

means for horizontally displacing the first replaceable battery in the battery holder with a second replaceable battery while allowing the electrical coupling of the electronic circuits with the second replaceable battery before electrically uncoupling the electronic circuits from the first replaceable battery, wherein the second replaceable battery displaces the first battery in the same horizontal direction;

a housing having a battery compartment for securing the battery holder in the battery operated electronic device; and

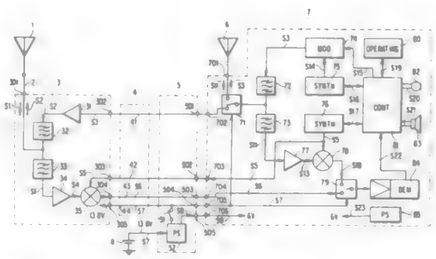
a first door for the battery compartment, the second replaceable battery utilized to open the first door for replacing the first replaceable battery in the battery holder with the second replaceable battery while the first replaceable battery opens and exits a second door for the battery compartment.

5,369,803

CAR-MOUNTED BOOSTER FOR PLUG-IN CONNECTION WITH MOBILE TELEPHONE SET

Naoki Hirasawa, Tokyo, and Shinichi Kobayashi, Saitama, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,574
Claims priority, application Japan, Mar. 27, 1991, 3-90052
Int. Cl.[5] H04B *1/38*
U.S. Cl. 455—89 **13 Claims**



13. A car telephone apparatus comprising:

cord means for passing at least a first received signal therethrough;

portable receiver antenna means for receiving an RF signal to produce a second received signal;

portable receiver means having a transmitter, a receiver and a local oscillator circuit and being connectable to said cord means and said portable receiver antenna means to selectively apply either said first or second received signal to said receiver;

car-mounted antenna means for receiving an RF signal to produce a third received signal;

amplifier means for amplifying said third received signal to produce an amplified signal; and

means for frequency mixing said amplified signal and an oscillation signal output from said local oscillator circuit to produce and supply a frequency-down converted signal to said cord means as said first received signal when said portable receiver means is coupled to said frequency mixing means via said cord means.

DESIGNS

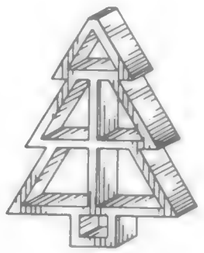
NOVEMBER 29, 1994

352,811

CHRISTMAS TREE SHAPED PASTA

Ricardo Javier Gonzalez, Gleaview, Ill., assignor to Kraft General Foods, Inc., Northfield, Ill.

Filed Jul. 12, 1993, Ser. No. 10,576
Term of patent 14 years
U.S. Cl. D1—106

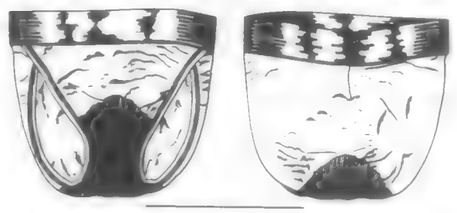


352,812

BRIEF

Anton Van Laar, Avenida 25 de Abril, Edificio Navegedor, Lote 2-6B, Cascais, Portugal

Filed Jun. 16, 1993, Ser. No. 9,702
Claims priority, application United Kingdom, Feb. 10, 1993, 2029019
Term of patent 14 years
U.S. Cl. D2—712

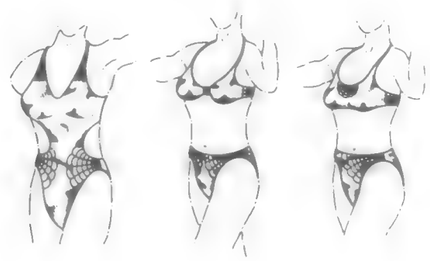


352,813

SIMULATED SPIDER WEBBED SWIMSUIT

Robert D. Delk, 51-E South Ave., Harrisonburg, Va. 22801

Filed Feb. 12, 1993, Ser. No. 4,690
Term of patent 14 years
U.S. Cl. D2—734

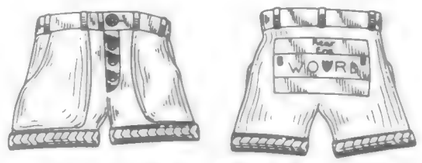


352,814

PAIR OF SHORT PANTS

Darryl Sherman, 4210 Russell Ave., #4, Mount Ranier, Md. 20712

Filed Jun. 14, 1993, Ser. No. 9,423
Term of patent 14 years
U.S. Cl. D2—734



D. 352,815

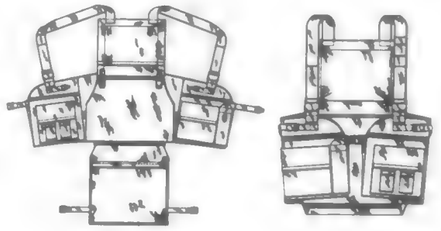
Patent Not Issued For This Number

352,816

HUNTER'S VEST

Helen Kirn, and Herman Kirn, both of 507 Elwood, Lee's Summit, Mo. 64081

Filed Apr. 16, 1993, Ser. No. 7,323
Term of patent 14 years
U.S. Cl. D2—829

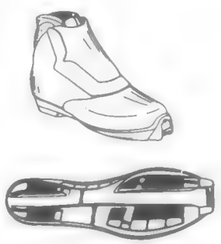


352,817

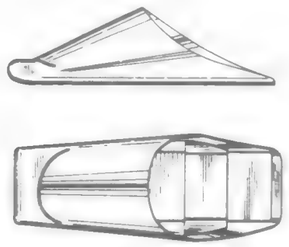
CROSS-COUNTRY BOOT

Catherine Fellouhe, Annecy le Vieux, France, assignor to Salomon S.A., Annecy Cedex, France

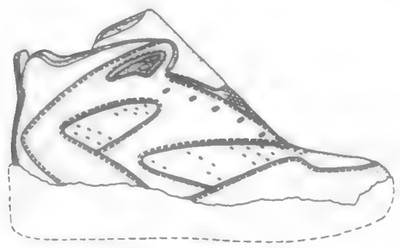
Division of Ser. No. 6,289, Mar. 25, 1993. This application Apr. 6, 1994, Ser. No. 20,997
Claims priority, application WIPO, Sep. 25, 1992, DM/023977
Term of patent 14 years
U.S. Cl. D2—904



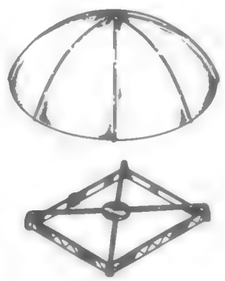
352,818
RECREATIONAL SKI SHOE
Darrell Bailey, 8405 Ann Ave., Kansas City, Kans. 66112
Filed Apr. 7, 1993, Ser. No. 6,801
Term of patent 14 years
U.S. Cl. D2—919



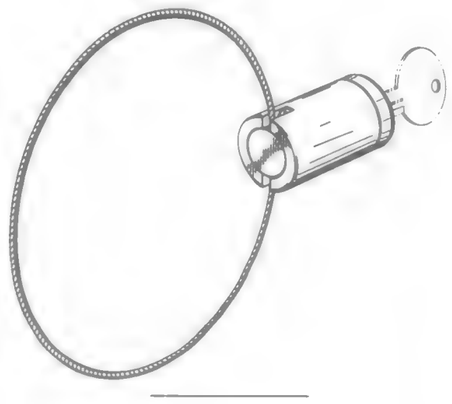
352,819
SHOE UPPER
Thomas V. DiSilvio, Somerville, Mass.; E. Scott Morris, East Providence, R.I.; Robert D. Parvy, South Easton, and Juan A. Diaz, Hingham, both of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 12,973, Sep. 14, 1993, Pat. No. D. 345,047.
This application Mar. 9, 1994, Ser. No. 19,684
Term of patent 14 years
U.S. Cl. D2—969



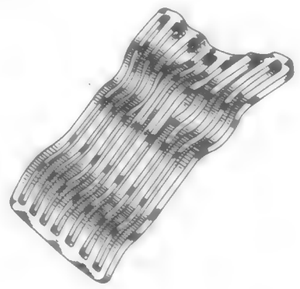
352,820
SHADE FOR A COOLER
Ramiro Martinez, 1760 Success Dr., Porterville, Calif. 93257
Filed Dec. 11, 1992, Ser. No. 2,389
Term of patent 14 years
U.S. Cl. D3—5



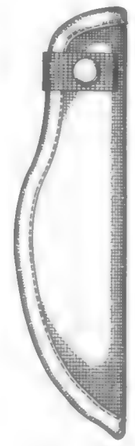
352,821
SECURE KEY HOLDER FOR SELECTIVELY LOCKING KEYS THEREON
Woodrow C. Stillwagon, Atlanta, Ga., assignor to Star Lock Systems, Inc., Hilliard, Ohio
Filed Oct. 9, 1992, Ser. No. 344
Term of patent 14 years
U.S. Cl. D3—207



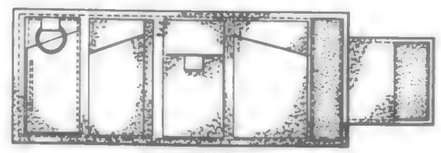
352,822
BACK PACK SUPPORT
Jeffrey D. Levis, 4776 E. Jensen, Fresno, Calif. 93725
Filed Oct. 3, 1992, Ser. No. 1,106
Term of patent 14 years
U.S. Cl. D3—216



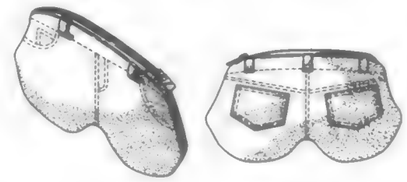
352,823
FABRIC KNIFE SHEATH
Hyrum W. Chapman, Lakeside, and Curtiss English, Escondido, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.
Filed Apr. 30, 1993, Ser. No. 7,672
Term of patent 14 years
U.S. Cl. D3—220



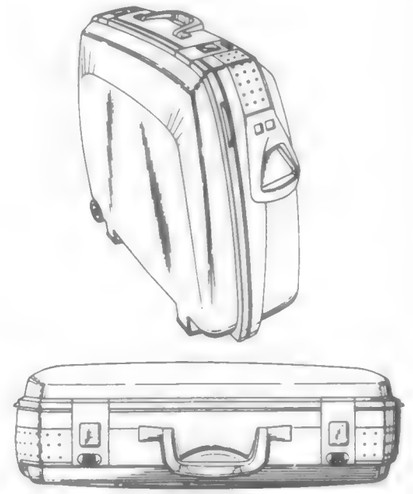
352,824
ANKLE WALLET
Nicholas R. Saggese, Jr., 5 Hutchins Cir., Lynnfield, Mass. 01940
Filed Jun. 27, 1991, Ser. No. 722,247
Term of patent 14 years
U.S. Cl. D3—226



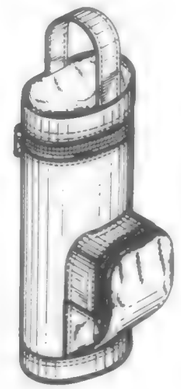
352,825
EYEGLASS CASE
Chi H. Hsieh, P.O. Box 890666, Temecula, Calif. 92592
Filed Nov. 26, 1993, Ser. No. 15,726
Term of patent 14 years
U.S. Cl. D3—265



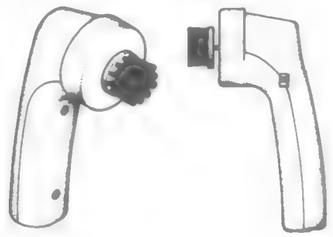
352,826
SUITCASE
P. Srinivasa Rao, Maharashtra, India, assignor to VIP Industries Limited, Maharashtra, India
Filed Jul. 7, 1993, Ser. No. 10,444
Claims priority, application United Kingdom, Jan. 8, 1993, 2028242
Term of patent 14 years
U.S. Cl. D3—276



352,827
DRINK HOLDER
Micki Schildkraut, Kings Point, N.Y., assignor to B & B Giftware, Inc., Mt. Vernon, N.Y.
Filed Aug. 18, 1993, Ser. No. 11,921
Term of patent 14 years
U.S. Cl. D3—283



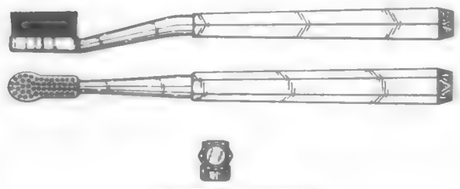
352,828
ELECTRIC SHOES SHINER
Chin-Hei Chen, No. 192, Sec. 1, Hsiang Shang S. Rd., Taichung, Taiwan, Prov. of China
Filed Aug. 2, 1993, Ser. No. 11,264
Term of patent 14 years
U.S. Cl. D4—102



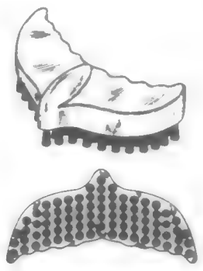
D. 352,831

Patent Not Issued For This Number

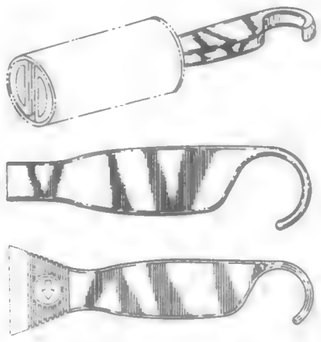
352,829
DENTURE BRUSH
George B. Perry, Cwmbran, Great Britain, assignor to Block Drug Company, Inc., Jersey City, N.J.
Division of Ser. No. 817,407, Jan. 6, 1992. This application Oct. 27, 1993, Ser. No. 14,668
Claims priority, application United Kingdom, Jul. 5, 1991, 2015842; Jul. 5, 1991, 2015843
The portion of the term of this patent subsequent to Jun. 21, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D4—104



352,830
TAIL-SHAPED SCRUB BRUSH
Stephen H. Wolff, 35 West 35th St., New York, N.Y. 10001
Filed Dec. 20, 1993, Ser. No. 16,592
Term of patent 14 years
U.S. Cl. D4—124



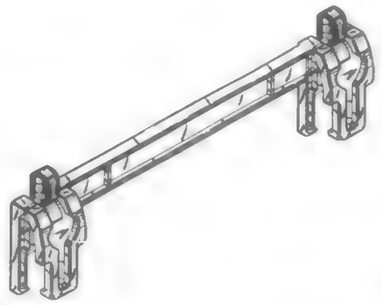
352,832
BRUSH HANDLE
William E. Brazis, and David L. Feer, both of Medina, Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 10, 1992, Ser. No. 818,967
Term of patent 14 years
U.S. Cl. D4—138

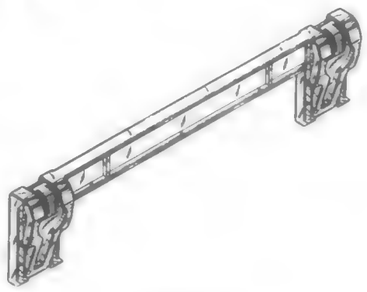


352,833
EMBOSSED FACIAL TISSUE SHEET
Galyn A. Schulz, Appleton, Wis., assignor to James River Corporation, Neenah, Wis.
Filed Aug. 1, 1991, Ser. No. 738,941
Term of patent 14 years
U.S. Cl. D5—53



352,834
GARMENT HANGER BODY
Michael D. Norman, Edison, N.J., assignor to A & E Products Group, a Division of Carlisle Plastics, Inc., Phoenix, Ariz.
Continuation-in-part of Ser. No. 732,328, Jul. 16, 1991, Pat. No. Des. 337,893. This application May 21, 1993, Ser. No. 8,673
Term of patent 14 years
U.S. Cl. D6—326





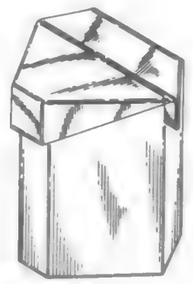
352,835
CHAIR
Darrell G. Lowman, Hickory, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jun. 11, 1993, Ser. No. 9,458
Term of patent 14 years
U.S. Cl. D6—334



352,836
CHAIR
Vlad Muller, Toronto, Canada, assignor to Global Upholstery Limited, Partnership, Downsview, Canada
Filed Sep. 27, 1991, Ser. No. 766,144
Term of patent 14 years
U.S. Cl. D6—366



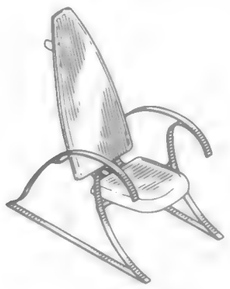
352,837
COMBINED CHAIR AND RECEPTACLE
David A. Pugh, 516 Howard Dr., Salem, Va. 24153
Filed Aug. 10, 1993, Ser. No. 11,597
Term of patent 14 years
U.S. Cl. D6—336



352,838
CHAIR
Shary Adams, 87 Marlborough Avenue, Toronto, Ontario, Canada M5R 1X5
Filed Oct. 30, 1992, Ser. No. 537
Claims priority, application Canada, Sep. 22, 1992, 2209926
Term of patent 14 years
U.S. Cl. D6—370



352,839
CHAIR
Jim Gibson, 8185 Fairview Ave., La Mesa, Calif. 91941
Filed Sep. 10, 1993, Ser. No. 12,733
Term of patent 14 years
U.S. Cl. D6—373



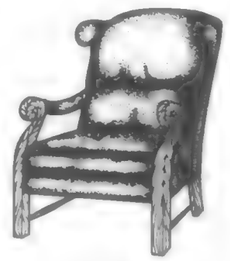
352,840
CHAIR
Roy N. Alchin, New South Wales, Australia, assignor to Alchin & Long Group Pty Limited T/AS Colonial Castings, Smithfield, Australia
Filed Aug. 9, 1993, Ser. No. 11,616
Claims priority, application Australia, Apr. 2, 1993, 998/93
Term of patent 14 years
U.S. Cl. D6—376



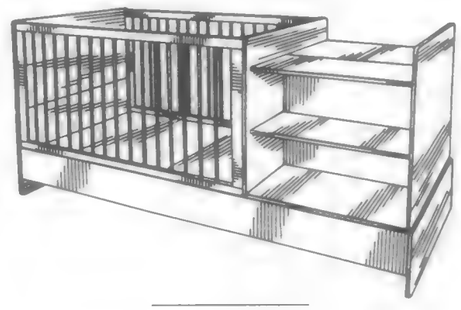
352,841
CHAIR
Darrell G. Lowman, Hickory, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jun. 11, 1993, Ser. No. 9,455
Term of patent 14 years
U.S. Cl. D6—379



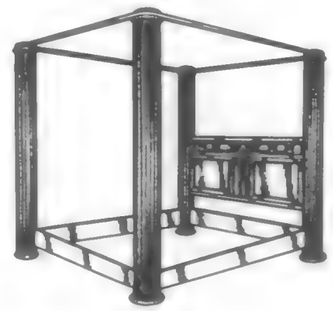
352,842
SEAT
Darrell G. Lowman, Hickory, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Aug. 9, 1993, Ser. No. 11,515
Term of patent 14 years
U.S. Cl. D6—379



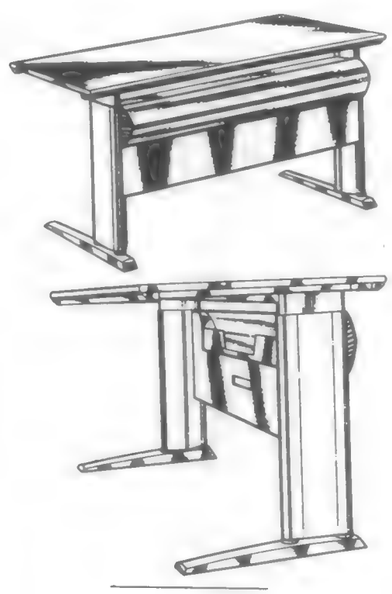
352,843
COMBINATION BED CRIB AND CHANGE TABLE
John Szebegyinszki, 150 Wellbourn Drive, Hamilton, Ontario, Canada L9A 3N4
Filed May 27, 1993, Ser. No. 8,866
Claims priority, application Canada, May 18, 1993, 18-05-93-4
Term of patent 14 years
U.S. Cl. D6—384



352,844
BED
H. Thomas Keller, High Point, assignor to Henredon Furniture Industries, Inc., Morganton, N.C.
Filed Mar. 24, 1993, Ser. No. 6,332
Term of patent 14 years
U.S. Cl. D6—389



352,845
DESK
John Hellwig, Toronto; David M. Stevenson, Barrie; and Johnny N. Lim, Toronto, all of Canada, assignors to Teknion Furniture Systems, Downsview, Canada
Filed Nov. 18, 1992, Ser. No. 1,549
Claims priority, application Canada, Jun. 5, 1992, 05-06-92-6
Term of patent 14 years
U.S. Cl. D6—422



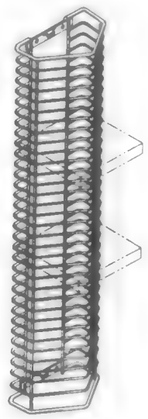
352,846
DRESSER WITH DISPLAY TOP
Gerald M. Black, High Point, N.C., assignor to Lexington Furniture Industries, Inc., Lexington, N.C.
Filed Jul. 21, 1992, Ser. No. 918,383
Term of patent 14 years
U.S. Cl. D6—446



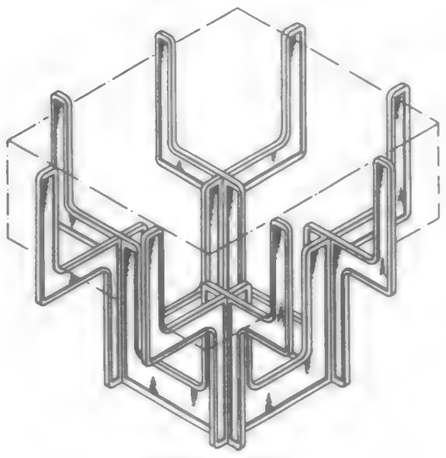
352,847
BED CLOTHES SUPPORT
Daniel C. Station, Box 2357, Mountain Home AFB, Id. 83648-2357
Filed Feb. 5, 1993, Ser. No. 4,498
Term of patent 14 years
U.S. Cl. D6—462



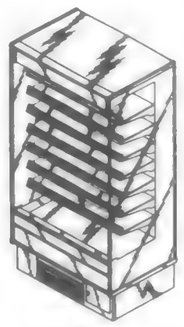
352,848
STORAGE RACK
Shahriar Dardashti, 236 S. Oakhurst Dr., Beverly Hills, Calif. 90212
Filed Sep. 2, 1992, Ser. No. 940,167
Term of patent 14 years
U.S. Cl. D6—465



352,849
NEWSPAPER STAND TO POSITION AND TO HOLD RECYCLABLE NEWSPAPERS
M. Anthony D'Alessio, 10301 SE. 28th, Bellevue, Wash. 98004
Filed Aug. 26, 1992, Ser. No. 935,563
Term of patent 14 years
U.S. Cl. D6—466



352,850
DISPLAY CASE
Kiyoshi Fujii, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan
Filed Jan. 21, 1993, Ser. No. 3,904
Claims priority, application Japan, Jul. 22, 1992, 4-21995
The portion of the term of this patent subsequent to Jul. 19, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—479



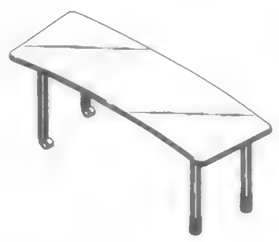
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TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Jul. 23, 1993, Ser. No. 11,008
Claims priority, application Japan, Jun. 4, 1993, 5-16344
Term of patent 14 years
U.S. Cl. D6—482



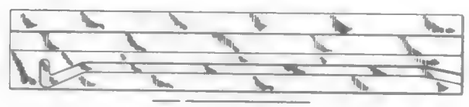
352,852
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Jul. 23, 1993, Ser. No. 11,010
Claims priority, application Japan, Jun. 4, 1993, 5-16343
Term of patent 14 years
U.S. Cl. D6—482



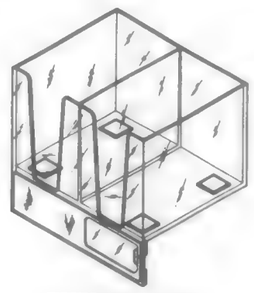
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TABLE
Isao Hose, Milan, Italy
Filed Jul. 23, 1993, Ser. No. 11,026
Term of patent 14 years
U.S. Cl. D6—482



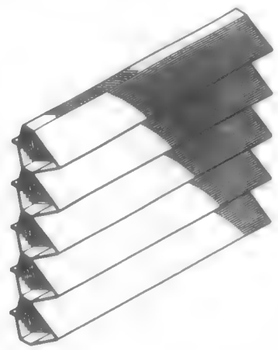
352,854
SIDE PIECE FOR A CHEST OF DRAWERS
Rudolf Svoboda, O. Kernstockstrasse 19, A-3100 St. Polten (Niederosterreich), Austria
Filed Nov. 12, 1992, Ser. No. 1,395
Claims priority, application Austria, May 12, 1992, MU-1630/92
Term of patent 14 years
U.S. Cl. D6—510



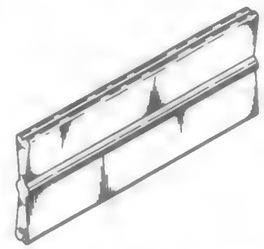
352,855
COMBINED PHARMACEUTICAL DISPENSER AND BUSINESS CARD HOLDER
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed Apr. 13, 1993, Ser. No. 7,063
Term of patent 14 years
U.S. Cl. D6—515



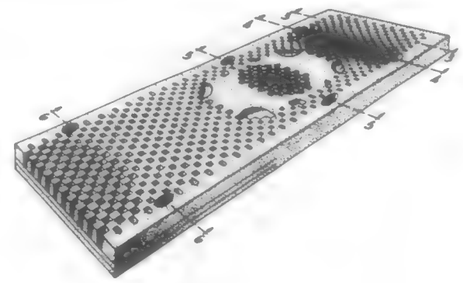
352,856
HONEYCOMB SHADE CELL
James A. Ford, Sturgis, Mich., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Sep. 10, 1993, Ser. No. 12,432
Term of patent 14 years
U.S. Cl. D6—575



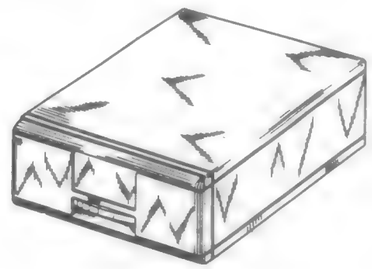
352,857
ORNAMENTAL LOUVER
Russell H. Underdahl, Arden Hills, Minn., assignor to Pinecrest, Inc., Minneapolis, Minn.
Filed Oct. 20, 1992, Ser. No. 656
Term of patent 14 years
U.S. Cl. D6—580



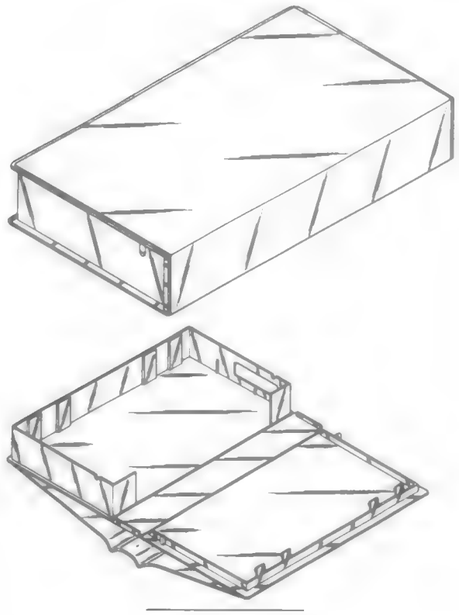
352,858
ANATOMICALLY CONFORMABLE SUPPORT PAD
David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686
Filed May 10, 1993, Ser. No. 8,177
Term of patent 14 years
U.S. Cl. D6—582



352,859
DRAWER CASE FOR COMPUTER DISKETTE STORAGE
Balthasar Kirchner, Eferding; Siegfried Schleicher, Buchkirchen, and Michael Tagger, Linz, all of Austria, assignors to Ernst Stadelmann Gesellschaft mbH, Eferding, Austria
Filed Mar. 13, 1992, Ser. No. 850,794
Claims priority, application Austria, Sep. 16, 1991, MU-2291/91
Term of patent 14 years
U.S. Cl. D6—627



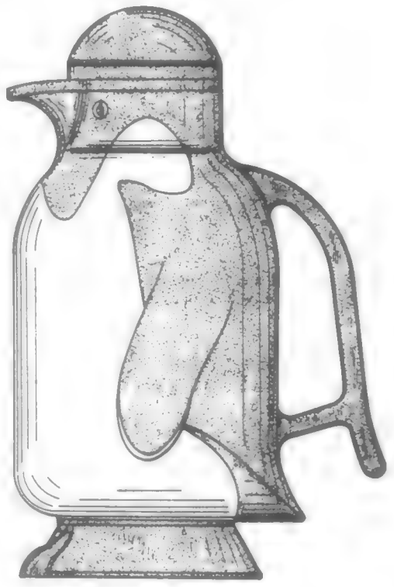
352,860
PLASTIC VIDEO CASSETTE CASE
Gerard M. Du Corday, 10871 Thorley Rd., Santa Ana, Calif. 92705
Filed Jul. 16, 1991, Ser. No. 731,026
Term of patent 14 years
U.S. Cl. D6—632



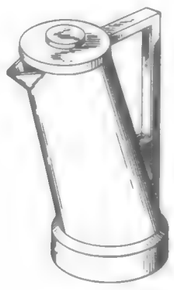
352,861
KETTLE
Jaw-Chyi Shieh, 1F, No. 34, Fujung St., Shih-Lin District, Taipei, Taiwan, Prov. of China
Filed May 10, 1993, Ser. No. 8,088
Term of patent 14 years
U.S. Cl. D7—302



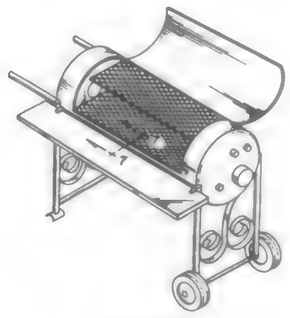
352,862
CARAFE
Fred Hollinger, Kings Park, N.Y., assignor to Metrone Imports, Inc., New York, N.Y.
Filed May 14, 1993, Ser. No. 8,329
Term of patent 14 years
U.S. Cl. D7—303



352,863
COFFEE MAKER
Martin W. VerHoven, N2865 Gaigg La., Hortonville, Wis. 54944
Filed Apr. 19, 1993, Ser. No. 7,316
Term of patent 14 years
U.S. Cl. D7—319



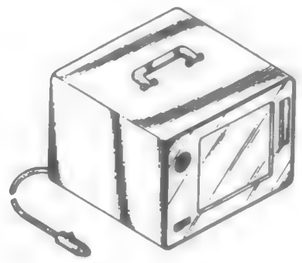
352,864
CHARCOAL GRILL
Robert L. Parker, 5473 Terrytown La., Lithonia, Ga. 30038
Filed Apr. 8, 1993, Ser. No. 6,825
Term of patent 14 years
U.S. Cl. D7—334



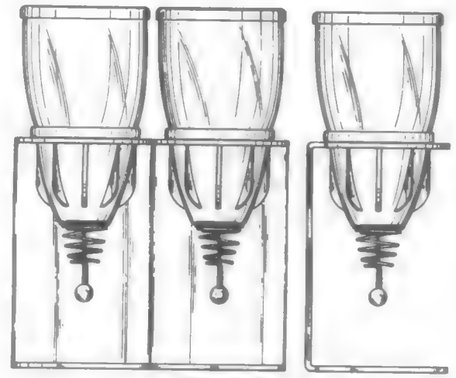
352,865
BARBECUE STOVE
Lucas Pai, No. 617, Sec. 4, Chung Hua Rd., Hsinchu City, Taiwan, Prov. of China
Filed Jan. 19, 1993, Ser. No. 3,851
Term of patent 14 years
U.S. Cl. D7—337



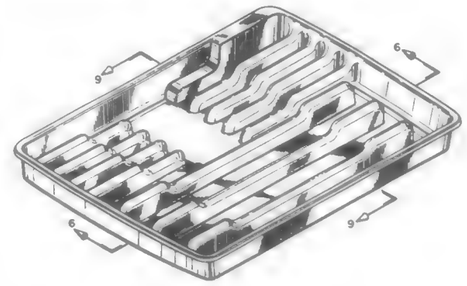
352,866
PORTABLE MICROWAVE OVEN
Clifton W. Kindley, and Linda Kindley, both of Rte. 3, Box 336, High Point, N.C. 27263
Filed Jun. 24, 1993, Ser. No. 9,805
Term of patent 14 years
U.S. Cl. D7—351



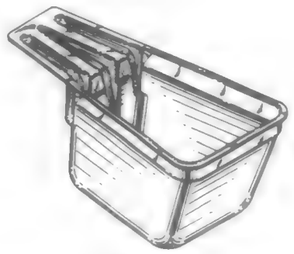
352,867
COMBINED CONDIMENT DISPENSER AND STAND THEREFOR
William Morris, 383 Ellsworth St., New Haven, Conn. 06511
Filed Dec. 21, 1992, Ser. No. 2,772
Term of patent 14 years
U.S. Cl. D7—589



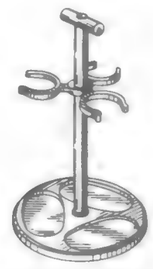
352,868
KNIFE TRAY
John D. Breen, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Aug. 5, 1993, Ser. No. 11,457
Term of patent 14 years
U.S. Cl. D7—637



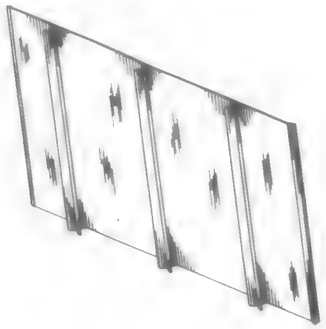
352,869
SCOOP
Gregory A. Lathrop, Manchester, Md., assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Continuation of Ser. No. 812,968, Dec. 20, 1991, abandoned.
This application Jun. 9, 1993, Ser. No. 74,196
Term of patent 14 years
U.S. Cl. D7—691



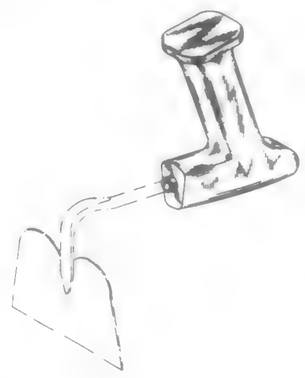
352,870
DISPLAY STAND FOR BOTTLES
Tine Eriksen, Elsinore, Denmark, assignor to Henrik Stieler, Espergaerde, Denmark
Filed May 28, 1992, Ser. No. 889,744
Term of patent 14 years
U.S. Cl. D7—708



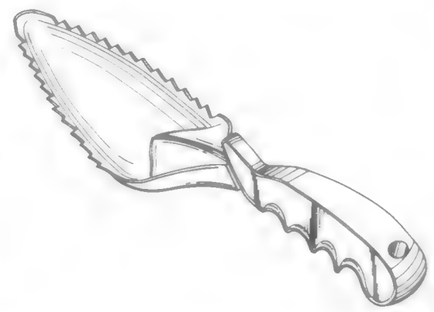
352,871
ROOT BARRIER
Michael E. Miller, 38 Ridge Ave., San Rafael, Calif. 94901, and George R. McCord, 69 Domingo Ave., Berkeley, Calif. 94705
Filed Aug. 6, 1993, Ser. No. 11,535
Term of patent 14 years
U.S. Cl. D8—1



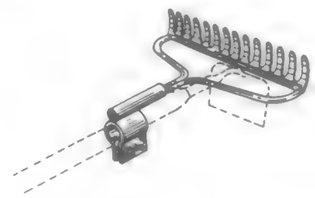
352,872
HANDLE FOR GARDEN TOOLS
Lionel C. Crockett, 5 Park Way, Shenfield, Brentwood Essex CM15 8LH, England
Filed Mar. 30, 1994, Ser. No. 20,630
Term of patent 14 years
U.S. Cl. D8—1



352,873
HAND TROWEL
Ya-Li Chen, No. 22, Alley 22, Lane 294, Sec. 3, Chang-Shui Rd., Chi-Hu Chen, Changhua Hsien, Taiwan, Prov. of China
Filed Jul. 23, 1993, Ser. No. 11,015
Term of patent 14 years
U.S. Cl. D8—9



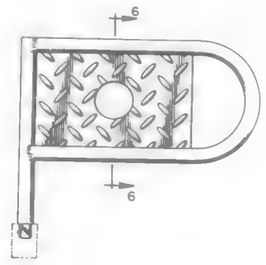
352,874
RAKE ATTACHMENT FOR A HAND HOE
Roque P. Garcia, 400 E. Spring St., Central, N. Mex. 88026
Filed May 14, 1993, Ser. No. 8,337
Term of patent 14 years
U.S. Cl. D8—13



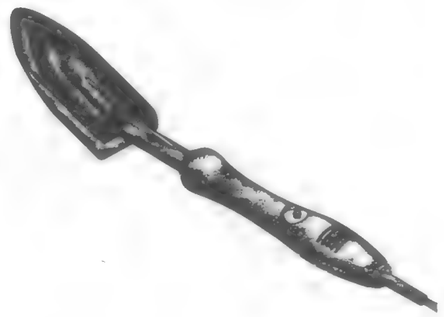
352,875
CARTRIDGE PRESSURIZATION TOOL
James D. Story; Charles N. Schwarz, and Salman Rashid, all of Houston, Tex., assignors to JetFill, Inc., Houston, Tex.
Filed Jun. 1, 1993, Ser. No. 8,944
Term of patent 14 years
U.S. Cl. D8—14



352,876
SCOCKET WRENCH HANDLE
Richard A. Munson, 6455 Yellowstone Trail, Coeur d'Alene, Id. 83814
Filed Jan. 25, 1993, Ser. No. 4,020
Term of patent 14 years
U.S. Cl. D5—21



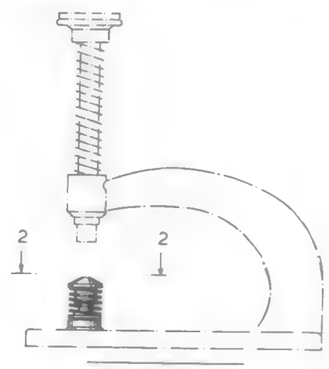
352,877
HEAT SEALING IRON FOR MODEL AIRPLANE FILM COVERING
Chen-Chang Chuang, No. 52-64, Alley 2, Lane 68, Cheng Kong Road, TaiLei, Taichung, Taiwan, Prov. of China, and Josh Kramer, No. 420, Babylon Rd., Horsham, Pa. 19044
Filed Oct. 26, 1993, Ser. No. 14,549
Term of patent 14 years
U.S. Cl. D8—29.1



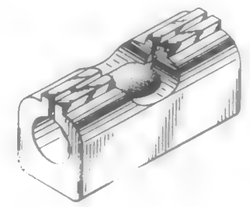
352,878
BOTTLE CAP REMOVER
Kerry W. Penrose, Brisbane, Australia, assignor to Aluminum Specialties Pty. Ltd., Toongabbie, Australia
Filed Oct. 29, 1992, Ser. No. 934
Claims priority, application Australia, May 15, 1992, 1269/92
Term of patent 14 years
U.S. Cl. D8—38



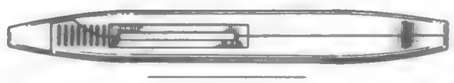
352,879
LOWER DIE FOR A PEARL SETTER
Jules E. Briskin, North Babylon, and Andrew Sinn, Laurel Hollow, both of N.Y., assignors to Brisk-Set Mfg. Inc., West Babylon, N.Y.
Filed Jan. 5, 1993, Ser. No. 3,208
Term of patent 14 years
U.S. Cl. D8—74



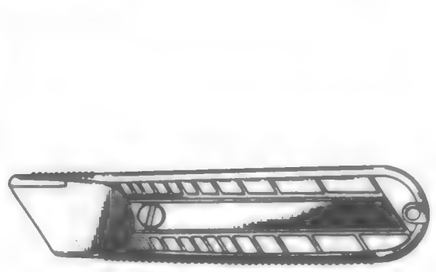
352,880
ICE SKATE BLADE SHARPENER
Bradley J. Anderson, Alexandria, Minn., assignor to Edge Specialties, Inc., Alexandria, Minn.
Filed Mar. 1, 1993, Ser. No. 5,346
Term of patent 14 years
U.S. Cl. D8—91



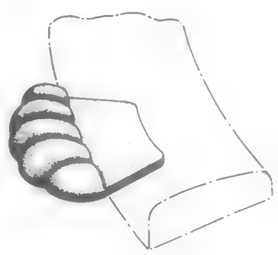
352,881
UTILITY KNIFE HANDLE
G. Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Jul. 20, 1993, Ser. No. 10,904
Term of patent 14 years
U.S. Cl. D8—107



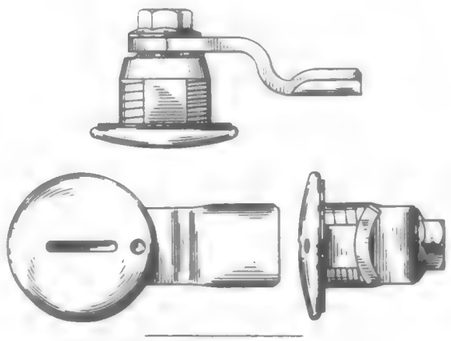
352,882
FIXED BLADE UTILITY KNIFE HANDLE
G. Gerry Schmidt, Newport Beach, Calif., assignor to Pacific Handy Cutter, Inc., Costa Mesa, Calif.
Filed Jul. 20, 1993, Ser. No. 10,905
Term of patent 14 years
U.S. Cl. D8—107



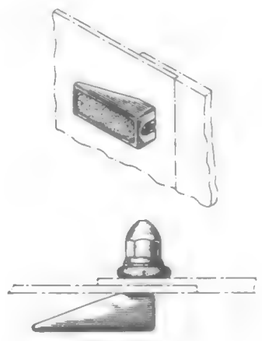
352,883
LIFTING HANDLE FOR A TOILET SEAT
Richard Elbaz, 9518 Keeler Ave., Skokie, Ill. 60076
Filed Oct. 29, 1993, Ser. No. 14,705
Term of patent 14 years
U.S. Cl. D8—307



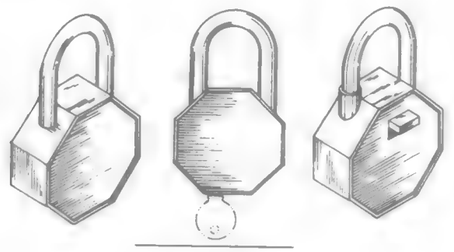
352,884
PAWL LATCH ASSEMBLY FOR SECURING HINGED PANELS TOGETHER
Richard E. Schlack, Rising Sun, Md., assignor to Southco, Inc., Concordville, Pa.
Continuation-in-part of Ser. No. 6,754, Apr. 6, 1993, abandoned.
This application Jun. 14, 1993, Ser. No. 9,473
Term of patent 14 years
U.S. Cl. D8—331



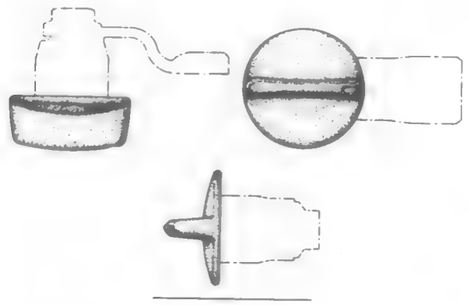
352,885
SWELL LATCH ASSEMBLY
Eli J. Holtman, Narberth, Pa., assignor to Southco, Inc., Concordville, Pa.
Continuation of Ser. No. 88,263, Jul. 7, 1993. This application Dec. 28, 1993, Ser. No. 16,846
Term of patent 14 years
U.S. Cl. D8—331



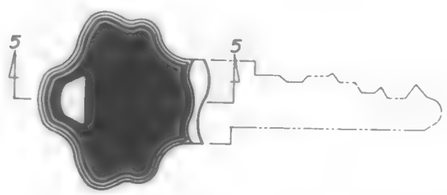
352,886
STOP SIGN PADLOCK
Jewell A. Taylor, Salinas, Calif., assignor to Lock-R-Lock, Inc., Salinas, Calif.
Filed Jun. 17, 1991, Ser. No. 716,346
Term of patent 14 years
U.S. Cl. D8—335



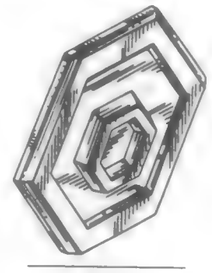
352,887
KNOB PORTION OF A PAWL LATCH ASSEMBLY FOR SECURING HINGED PANELS TOGETHER
Richard E. Schlack, Rising Sun, Md., assignor to Southco, Inc., Concordville, Pa.
Continuation-in-part of Ser. No. 9,473, Jun. 14, 1993, which is a continuation-in-part of Ser. No. 6,754, Apr. 6, 1993, abandoned.
This application Sep. 3, 1993, Ser. No. 12,637
Term of patent 14 years
U.S. Cl. D8—343



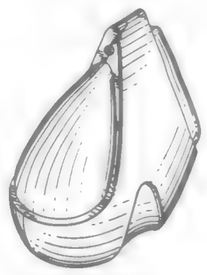
352,888
KEY BOW
Anthony J. Carsello, Chino, Calif., assignor to Emhart Inc., Newark, Del.
Filed Aug. 13, 1993, Ser. No. 11,804
Term of patent 14 years
U.S. Cl. D8—347



352,889
COMBINED DOOR BUMPER AND PATCH FOR DAMAGED WALLS
Richard H. Crowther, Redlands, and Leslie W. Burns, Mentone, both of Calif., assignors to Prime Line Products Co., Inc., San Bernardino, Calif.
Filed May 17, 1993, Ser. No. 8,477
Term of patent 14 years
U.S. Cl. D8—402



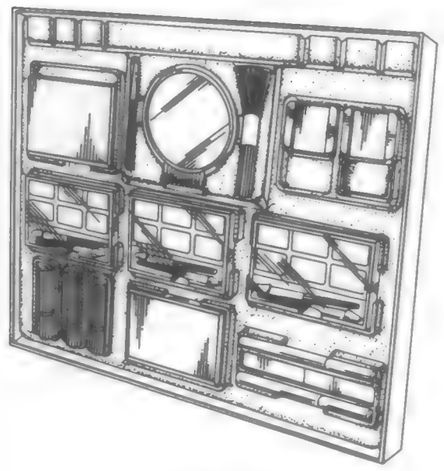
352,890
DISPENSER
Stephan Weiss, 211 E. 70th St., New York, N.Y. 10021
Filed Aug. 27, 1992, Ser. No. 937,656
Term of patent 14 years
U.S. Cl. D9—300



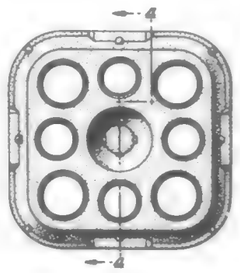
352,891
PERFUME BOTTLE
Marie-Claude Lalique, 11 rue Royale, 75008 Paris, France
Filed Mar. 23, 1993, Ser. No. 6,842
Claims priority, application France, Sep. 23, 1992, 92 6082
Term of patent 14 years
U.S. Cl. D9—335



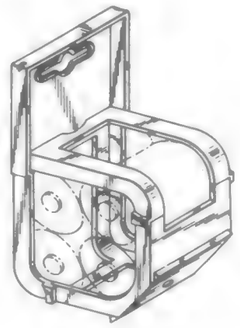
352,892
COMBINED DISPLAY TRAY
Robert Luzzi, and Susan F. Brand, both of New York, N.Y., assignors to Estee Lauder Inc., New York, N.Y.
Filed Nov. 1, 1991, Ser. No. 786,340
Term of patent 14 years
U.S. Cl. D9—337



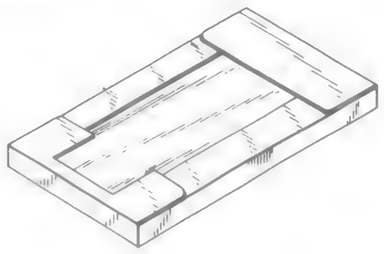
352,893
ICE CREAM CONE AND BEVERAGE CARRIER
Louis D. Legacy, 18 Helen St., Winslow, Me. 04901, and Donald V. Breton, Western Ave., North Vassalboro, Me. 04962
Filed Mar. 29, 1993, Ser. No. 6,411
Term of patent 14 years
U.S. Cl. D9—347



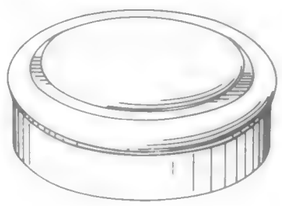
352,894
BATTERY CONTAINER AND DISPLAY PACKAGE
Daniel J. Halaburda, Rockaway, N.J.; David Dombrowski, Essex, and William H. Valis, Harwinton, both of Conn., assignors to Matsushita Electric Corporation of America, Secaucus, N.J.
Filed Jan. 21, 1993, Ser. No. 3,872
Term of patent 14 years
U.S. Cl. D9—415



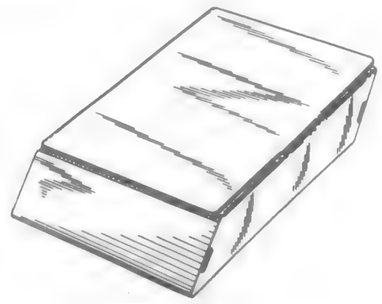
352,895
PACKAGE WITH A SLIDING LID
Brino A. van Loo, Sassenheim, Netherlands, assignor to Stadium Design BV, Hillegom, Netherlands
Filed Jan. 21, 1993, Ser. No. 3,937
Claims priority, application Benelux TM/Des. Off., Jul. 20, 1992, 22706-02
Term of patent 14 years
U.S. Cl. D9—422



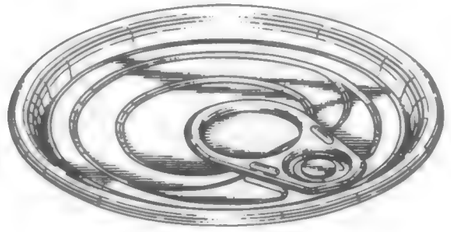
352,896
CONTAINER WITH FLYING TOY LID
Wayne Jones, 305 Lariat La., Idaho Falls, Id. 83404
Filed May 7, 1993, Ser. No. 7,993
Term of patent 14 years
U.S. Cl. D9—428



352,897
SCHOOL BOX
Charles M. Jackson, Nashville, Tenn., assignor to Berol Corporation, Brentwood, Tenn.
Filed Sep. 10, 1993, Ser. No. 12,780
Term of patent 14 years
U.S. Cl. D9—431



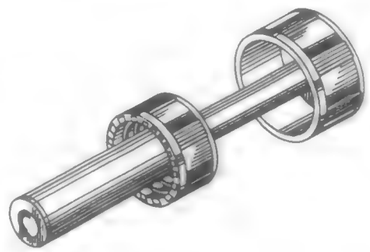
352,898
EASY OPENING END CLOSURE
Jean P. Vacher, Elancourt, France, assignor to CarnaudMetalbox S.A., France
Filed Nov. 10, 1992, Ser. No. 1,330
Term of patent 14 years
U.S. Cl. D9—438



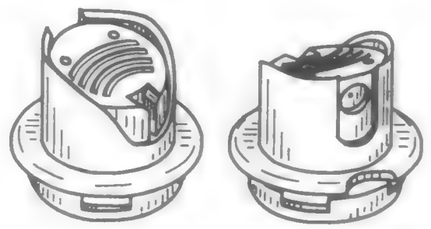
352,899
SHAKER CAP FOR CONTAINER
Nicholas J. Molo, Kissimmee, Fla., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Oct. 13, 1993, Ser. No. 14,142
Term of patent 14 years
U.S. Cl. D9—447



352,900
HAND PUMP
Lip Nhan, Block 8, 3/F Hoi Fai Industrial Bldg., 10-16 Wo Shing St., Shatin, N T, Hong Kong, China
Filed Dec. 10, 1991, Ser. No. 805,802
Claims priority, application China, Jun. 10, 1991, 91301412.5; Jun. 10, 1991, 91301413.3
Term of patent 14 years
U.S. Cl. D9—448



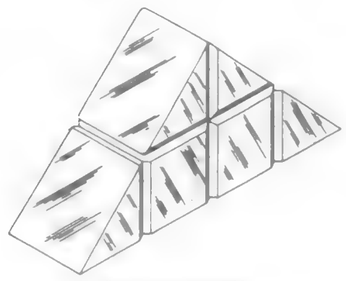
352,901
ACTUATOR
Roger K. Ufferfilge, 4500 East Dr., Crystal Lake, Ill. 60012, and Scott A. Silvenis, 1270 E. Miller Rd., Rte. 7, Midland, Mich. 48640
Filed Nov. 12, 1991, Ser. No. 791,595
Term of patent 14 years
U.S. Cl. D9—448



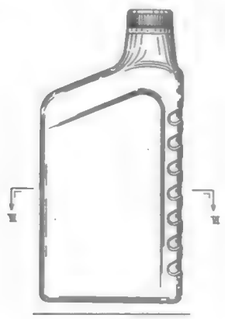
352,902
BAG HANDLE
Shawn K. Halverson, 25761 Le Parc, No. 108, El Toro, Calif. 92630
Filed Oct. 6, 1992, Ser. No. 142
Term of patent 14 years
U.S. Cl. D9—455



352,903
PERFUME FLACON
Elijah Hogan, P.O. Box 2502, Kensington, Md. 20891
Filed Dec. 28, 1993, Ser. No. 16,854
Term of patent 14 years
U.S. Cl. D9—520



352,904
BOTTLE
James E. Kearse, and James C. Grissom, both of Houston, Tex., assignors to Pennzoil Products Company, Houston, Tex.
Filed Jul. 15, 1993, Ser. No. 10,678
Term of patent 14 years
U.S. Cl. D9—523



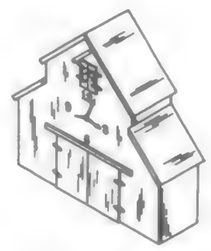
352,905
EXTERIOR SURFACE OF A SIDEWALL FOR A JUICE CONTAINER
Ted L. Beaver, Roselle, and Grover J. Manderfield, Jr., Elk Grove Village, both of Ill., assignors to Continental Plastic Containers, Inc., Norwalk, Conn.
Filed Feb. 16, 1993, Ser. No. 4,827
Term of patent 14 years
U.S. Cl. D9—528



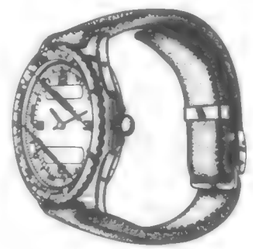
352,906
BOTTLE WITH CAP
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Columbus, Ohio
Filed Jun. 16, 1993, Ser. No. 9,613
Term of patent 14 years
U.S. Cl. D9—560



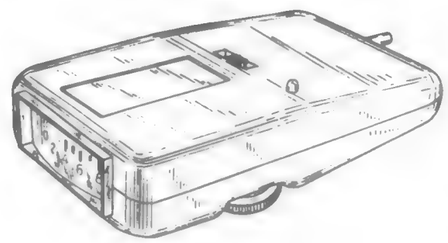
352,907
ANIMATED WALL ALARM CLOCK
George E. Ede, Box 2625, Oceanside, Calif. 92054
Filed Jul. 16, 1992, Ser. No. 915,952
Term of patent 14 years
U.S. Cl. D10—11



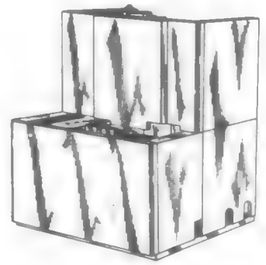
352,908
WATCH
Ernest Schneider, Evilard, Switzerland, assignor to Breitling Montres SA, Geneva, Switzerland
Filed Nov. 30, 1992, Ser. No. 2,137
Claims priority, application WIPO, Jun. 24, 1992, DM/023153
Term of patent 14 years
U.S. Cl. D10—32



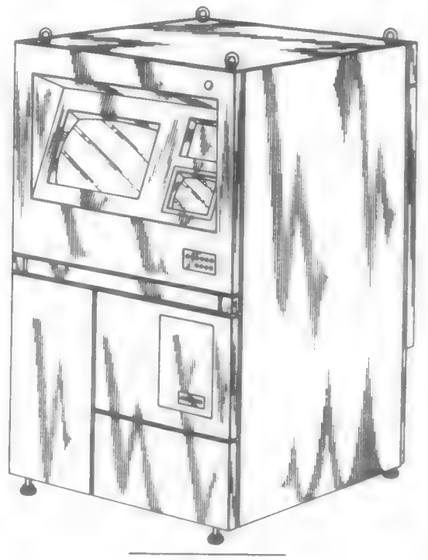
352,909
POCKET ANEMOMETER
Andrew P. Newman, 34 Joslyn Dr., Elgin, Ill. 60120
Filed Jul. 23, 1993, Ser. No. 10,946
Term of patent 14 years
U.S. Cl. D10—59



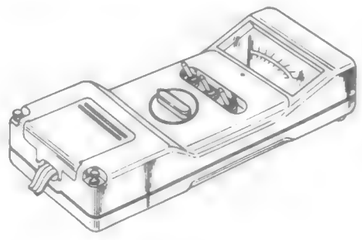
352,910
PROCESSING MACHINE FOR ELECTRON BEAM LITHOGRAPHY SYSTEM
Takashi Yamamoto, Kodaira; Tomoyuki Miyata, Kokubunji; Kazunori Hasimoto, Tachikawa; Mitsuru Ohnuma, Tokyo; Toshihiko Wada, Musashimurayama; Takashi Yamazaki, Katsuta, and Hiroyuki Sakai, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 8, 1993, Ser. No. 4,586
Claims priority, application Japan, Nov. 27, 1992, 34701/1992
Term of patent 14 years
U.S. Cl. D10—75



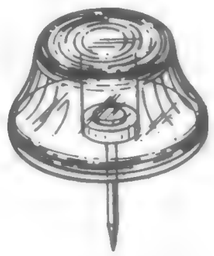
352,911
PROCESSING MACHINE FOR ELECTRON BEAM LITHOGRAPHY SYSTEM
Takashi Yamamoto, Kodaira; Tomoyuki Miyata, Kokubunji; Kazunori Hasimoto, Tachikawa; Mitsuru Ohnuma, Tokyo; Toshihiko Wada, Musashimurayama, and Seishiro Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 8, 1993, Ser. No. 4,587
Claims priority, application Japan, Nov. 27, 1992, 34703/1992
Term of patent 14 years
U.S. Cl. D10—75



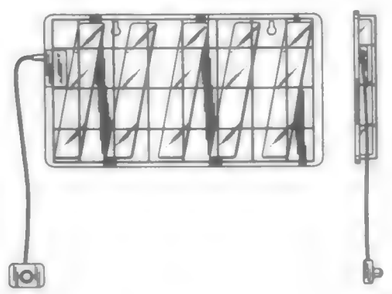
352,912
TELECOMMUNICATIONS LINE NOISE MEASUREMENT DEVICE
Robert G. Crick, 3002 Lloyd St., San Diego, Calif. 92117
Filed Apr. 23, 1993, Ser. No. 7,468
Term of patent 14 years
U.S. Cl. D10—78



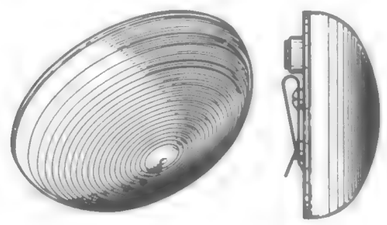
352,913
ANTI-THEFT PIN FOR STORE MERCHANDISE
Glen W. Garner, 2500 Paula Ct., Mississauga, Ontario L5K 2RS; William G. L. Knecht, 2392 Thorn Lodge Drive, and Keith Burns, 2442 Thorn Lodge Drive, both of Mississauga, Ontario L5K 1K5, all of Canada
Filed May 11, 1993, Ser. No. 8,138
Term of patent 14 years
U.S. Cl. D10—106



352,914
COMBINED SIGNALLING FLASHER AND CONTROL BUTTON TO WARN ONCOMING VEHICLES OF AERIAL LIFTS
Ronnie L. Sours, Rte. 2 Box 931, Front Royal, Va. 22630
Filed Feb. 25, 1992, Ser. No. 841,007
Term of patent 14 years
U.S. Cl. D10—114



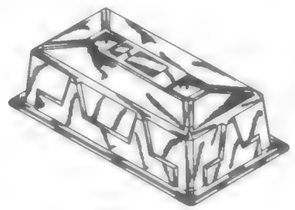
352,915
FLASHER
Huai-Cheng Wang, No. 69, Chung San Rd., Tu-Chen City, Tai-pei Hsien, Taiwan, Prov. of China
Filed Jan. 7, 1994, Ser. No. 17,211
Term of patent 14 years
U.S. Cl. D10—114



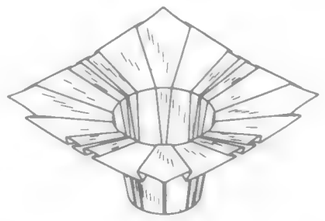
352,916
EXPANSION BRACELET
Murray L. Cowan, deceased, late of Norwood, Mass. by Barbara H. Cowan Executrix , assignor to Textron Inc., Providence, R.I.
Filed Jul. 22, 1993, Ser. No. 10,970
Term of patent 14 years
U.S. Cl. D11—21



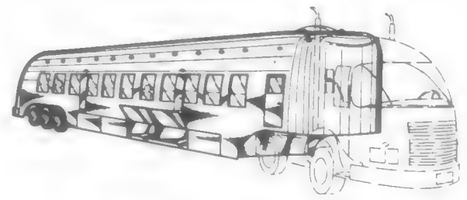
352,917
SEED DOME
Octave E. DesLaurier, Sherwood Park, Canada, assignor to Acro Foam & Plastics Ltd., Canada
Filed Feb. 14, 1992, Ser. No. 835,676
Claims priority, application Canada, Jan. 24, 1992, 24-01-92-1
Term of patent 14 years
U.S. Cl. D11—155



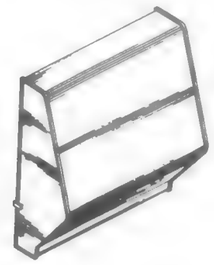
352,918
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, and a continuation-in-part of Ser. No. 411,249, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,247, Sep. 22, 1989, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989. This application Dec. 16, 1991, Ser. No. 808,566
Term of patent 14 years
U.S. Cl. D11—164



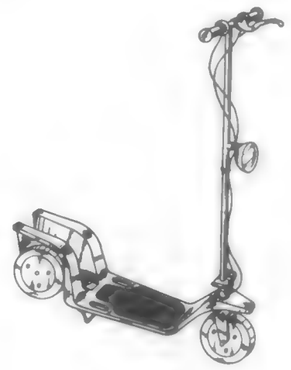
352,919
TRANSPORT VEHICLE
Harold L. Marks, Rte. 1, Box 29AA, Burnsville, W. Va. 26355, and Patricia A. Lewandowski, 16135 Cedar Cir., Omaha, Nebr. 68130
Filed Oct. 6, 1993, Ser. No. 13,912
Term of patent 14 years
U.S. Cl. D12—97



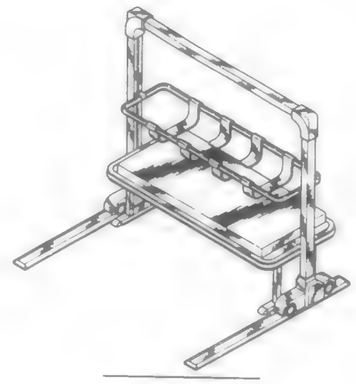
352,920
EXTERIOR SHELL FOR A RECREATIONAL VEHICLE FOLD OUT EXTENSION
Harold E. Gerring, Bristol, Ind., assignor to Amerigo, Inc., Bristol, Ind.
Filed Oct. 21, 1992, Ser. No. 701
Term of patent 14 years
U.S. Cl. D12—106



352,921
MOTORIZED SCOOTER
Anthony Pepe, 207 E. 85th St., New York, N.Y. 10028
Filed Dec. 30, 1992, Ser. No. 3,212
Term of patent 14 years
U.S. Cl. D12—110



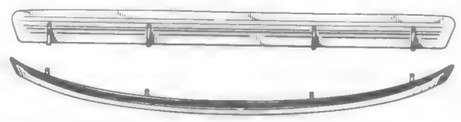
352,922
NURSING BED
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Apr. 13, 1993, Ser. No. 7,028
Claims priority, application Japan, Dec. 28, 1992, 4-38851; Dec. 28, 1992, 4-38852
Term of patent 14 years
U.S. Cl. D12—128



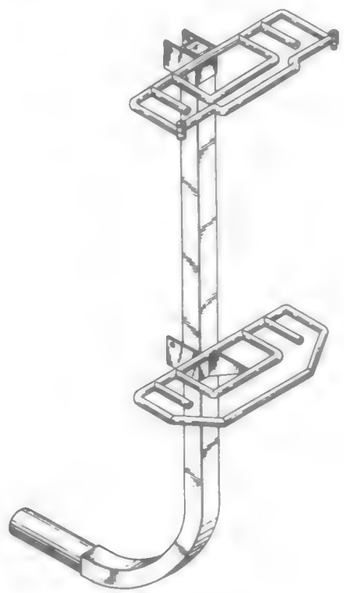
352,923
BABY CARRIAGE
Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan
Filed Mar. 15, 1993, Ser. No. 5,974
Claims priority, application Japan, Sep. 17, 1992, 4-27478
Term of patent 14 years
U.S. Cl. D12—129



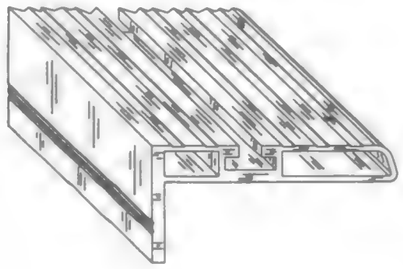
352,924
HOOD PROTECTOR
Donald W. Borgmann, Minneapolis, and Richard T. Johnson, Ramsey, both of Minn., assignors to Laser Engineering Inc., Chaska
Filed Oct. 28, 1993, Ser. No. 14,807
Term of patent 14 years
U.S. Cl. D12—190



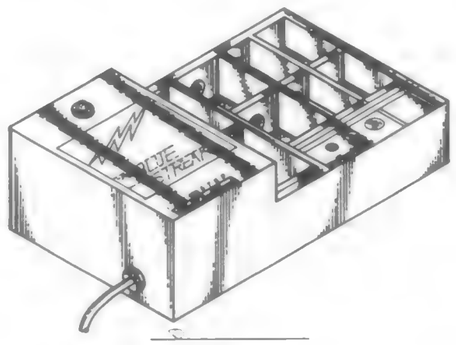
352,925
CARRIER FOR SKIS AND SKI POLES
Richard A. Eckhart, P.O. Box 7299, Thousand Oaks, Calif. 91359
Filed Apr. 7, 1993, Ser. No. 6,790
Term of patent 14 years
U.S. Cl. D12—406



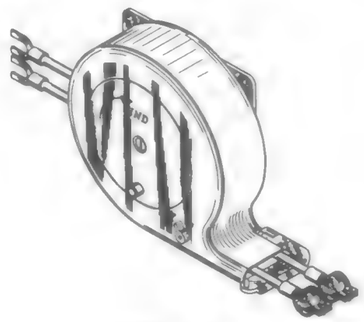
352,926
EXTRUDED RAIL FOR A UTILITY RACK
David Christensen, 11 Moores Mill Rd., Pennington, N.J. 08534
Continuation-in-part of Ser. No. 110,388, Aug. 23, 1993, and a continuation-in-part of Ser. No. 64,228, May 7, 1993. This application Nov. 15, 1993, Ser. No. 15,342
Term of patent 14 years
U.S. Cl. D12—412



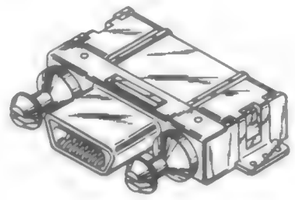
352,927
BATTERY RECHARGER
Leonard M. Williams, 1208 E. 36th Ave., Gary, Ind. 46409
Filed Mar. 5, 1993, Ser. No. 5,585
Term of patent 14 years
U.S. Cl. D13—107



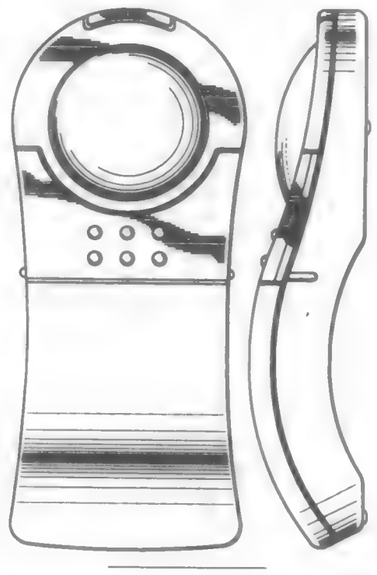
352,928
JUMPER CABLE REEL
Robert A. Ford, 128 Wyncrest Dr., Butler, Pa. 16001-1721
Filed Feb. 16, 1993, Ser. No. 4,799
Term of patent 14 years
U.S. Cl. D13—120



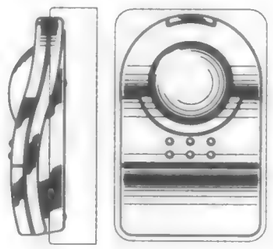
352,929
FEMALE CONNECTOR FOR SURFACE MOUNTING
Kiyoshi Sato, Tokyo, Japan, assignor to Honda Tsushin Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 25, 1993, Ser. No. 5,481
Claims priority, application Japan, Aug. 31, 1992, 4-25788
Term of patent 14 years
U.S. Cl. D13—147



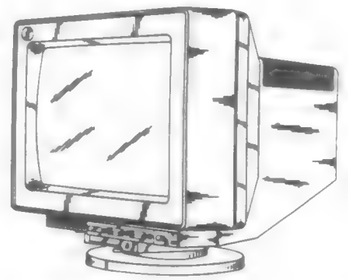
352,930
REMOTE CONTROL FOR A CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 29, 1993, Ser. No. 14,811
Term of patent 14 years
U.S. Cl. D13—168



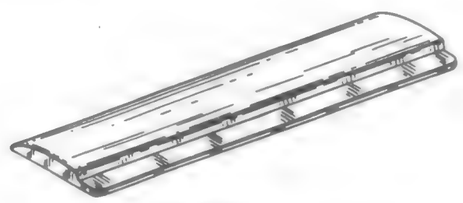
352,931
REMOTE CONTROL FOR A CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Oct. 29, 1993, Ser. No. 14,826
Term of patent 14 years
U.S. Cl. D13—168



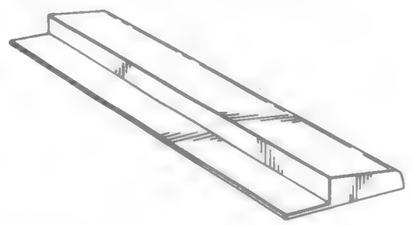
352,932
COMBINED COMPUTER DISPLAY AND BASE THEREFOR
Thomas E. Pangburn, Lexington, Ky., and John A. Wiseman, Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 4, 1990, Ser. No. 505,112
Claims priority, application United Kingdom, Oct. 5, 1989, 2001487
The portion of the term of this patent subsequent to Apr. 29, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—113



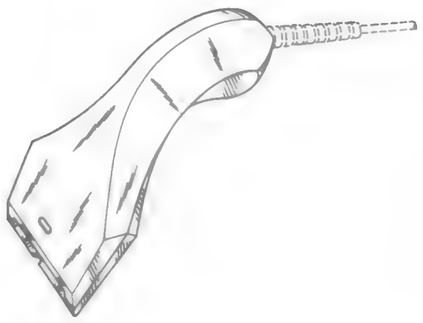
352,933
ERGONOMIC WRIST-REST
Lars A. Vaule, Portland, Me., assignor to Padware Incorporated, Braintree, Mass.
Filed Jul. 21, 1992, Ser. No. 917,602
Term of patent 14 years
U.S. Cl. D14—114



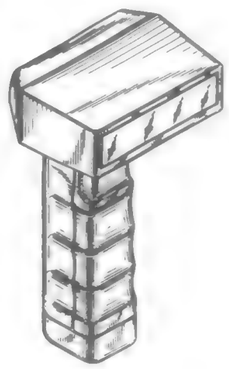
352,934
WRIST SUPPORT FOR KEYBOARD OPERATOR
Robert W. Juster, Chappaqua, N.Y., assignor to Gill Studios, Inc., Mission, Kans.
Filed Oct. 19, 1992, Ser. No. 639
Term of patent 14 years
U.S. Cl. D14—114



352,935
OPTICAL SCANNER
Taro Etoh, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Jun. 25, 1993, Ser. No. 10,836
Claims priority, application Japan, Dec. 25, 1992, 4-38393
Term of patent 14 years
U.S. Cl. D14—116



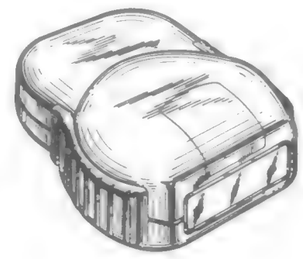
352,936
OPTICAL SCANNER
James H. Karlin, Monroe County, N.Y., assignor to PSC, Inc., Webster, N.Y.
Filed Oct. 7, 1993, Ser. No. 13,935
Term of patent 14 years
U.S. Cl. D14—116



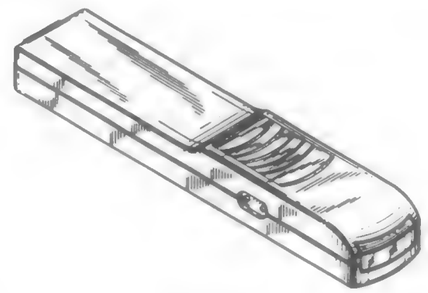
352,937
OPTICAL SCANNER
James H. Karlin, Monroe County, N.Y., assignor to PSC, Inc., Webster, N.Y.
Filed Oct. 7, 1993, Ser. No. 13,937
Term of patent 14 years
U.S. Cl. D14—116



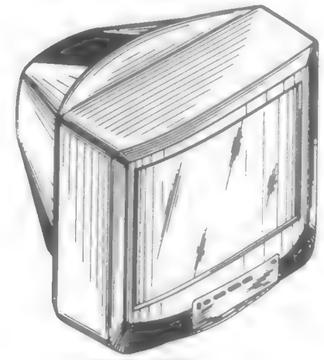
352,938
OPTICAL SCANNER
James H. Karlin, Monroe County, N.Y., assignor to PSC, Inc., Webster, N.Y.
Filed Oct. 7, 1993, Ser. No. 13,940
Term of patent 14 years
U.S. Cl. D14—116



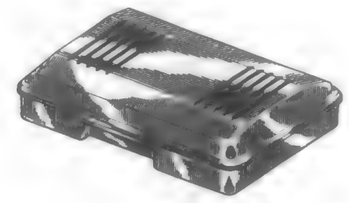
352,939
OPTICAL SCANNER
James H. Karlin, Monroe County, N.Y., assignor to PSC, Inc., Webster, N.Y.
Filed Oct. 7, 1993, Ser. No. 13,987
Term of patent 14 years
U.S. Cl. D14—116



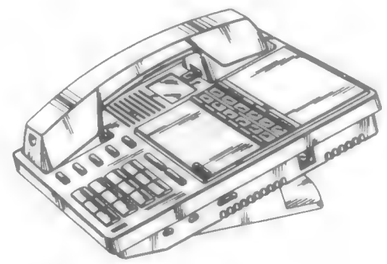
352,940
STEREOPHONIC TELEVISION RECEIVER
Shigeyuki Kazama, Ramsey, N.J., assignor to Sony Electronics Inc., Park Ridge, N.J.
Filed Dec. 20, 1993, Ser. No. 16,612
Term of patent 14 years
U.S. Cl. D14—126



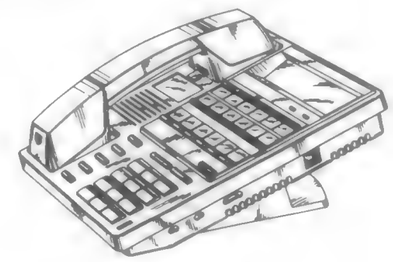
352,941
CELLULAR BASE UNIT
Albert M. Bolton, Jr., Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 23, 1993, Ser. No. 15,655
Term of patent 14 years
U.S. Cl. D14—142



352,942
TELEPHONE SET
Joe Weidinger, Phoenix, Ariz., assignor to Premier Telecom Products, Inc., Industrial Airport, Kans.
Filed Feb. 24, 1993, Ser. No. 5,156
The portion of the term of this patent subsequent to Jul. 12, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



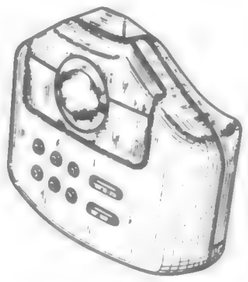
352,943
TELEPHONE SET
Joe Weidinger, Phoenix, Ariz., assignor to Premier Telecom Products, Inc., Industrial Airport, Kans.
Filed Feb. 24, 1993, Ser. No. 5,157
The portion of the term of this patent subsequent to Jul. 12, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—151



352,944
TELEPHONE SET
Chi O. Lee, Hong Kong, Hong Kong, assignor to Team Concepts International Limited, Hong Kong, Hong Kong
Filed Nov. 15, 1993, Ser. No. 15,309
Claims priority, application United Kingdom, Aug. 19, 1993, 2033238
Term of patent 14 years
U.S. Cl. D14—151



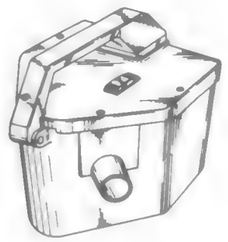
352,945
REMOTE CONTROL UNIT
Alfonsus B. A. Labohm, Maarheeze, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 11, 1993, Ser. No. 3,510
Claims priority, application WIPO, Aug. 13, 1992, DM/023.635
Term of patent 14 years
U.S. Cl. D14—218



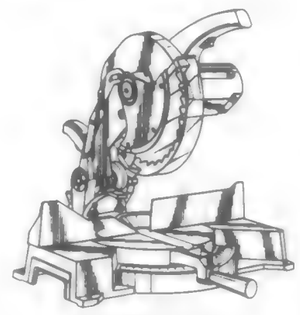
352,946
MICROPHONE HOUSING
Phillip R. Nensel, Lake Zarich; Bruce D. Hillier, Hawthorn Woods, both of Ill., and Kyu D. Kim, Bloomfield Hills, Mich., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 11, 1993, Ser. No. 3,636
Term of patent 14 years
U.S. Cl. D14—225



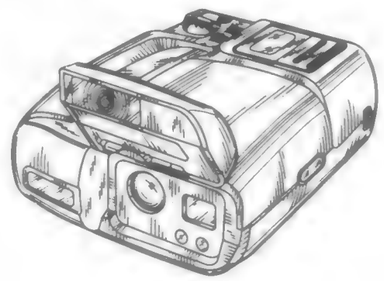
352,947
PORTABLE PUMP HOUSING
George M. Colin, Dana Point, and Robert Anderson, Costa Mesa, both of Calif., assignors to Jason Development, Inc., Grand Cayman, Cayman Islands
Filed Jul. 8, 1993, Ser. No. 10,512
Term of patent 14 years
U.S. Cl. D15—7



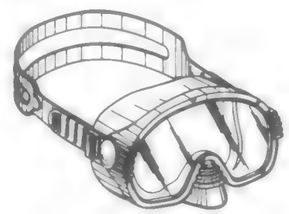
352,948
ELECTRIC SAW
Chin-Tsun Chang, Taichung, Taiwan, Prov. of China, assignor to P & F Brother Industrial Corporation, Taichung, Taiwan, Prov. of China
Filed Aug. 9, 1993, Ser. No. 11,572
Term of patent 14 years
U.S. Cl. D15—133



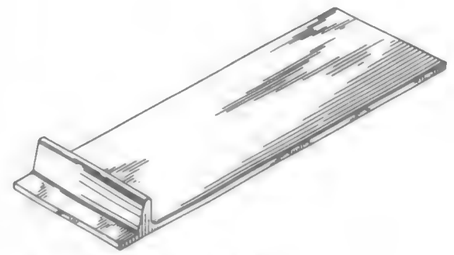
352,949
MEMORY CARD CAMERA
Shozo Kondo, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 9, 1993, Ser. No. 5,685
Claims priority, application Japan, Sep. 9, 1992, 4-26656
Term of patent 14 years
U.S. Cl. D16—202



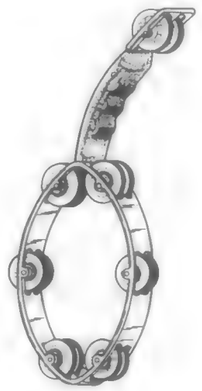
352,950
UNDERWATER MASK
Stan Rasocha, Deerfield, Ill., assignor to Aqua-Leisure Industries, Inc., Avon, Mass.
Filed Mar. 1, 1993, Ser. No. 5,304
Term of patent 14 years
U.S. Cl. D16—303



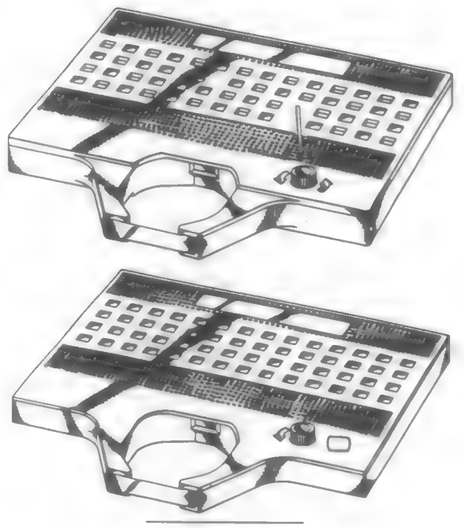
352,951
BASS DRUM RETAINING MAT
Brian W. Choate, 6159 W. Dakin St., Chicago, Ill. 60634
Filed Jun. 5, 1991, Ser. No. 710,905
Term of patent 14 years
U.S. Cl. D17—22



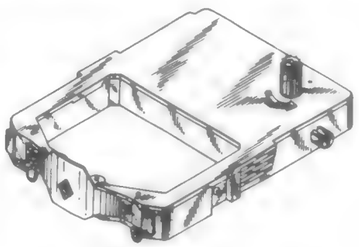
352,952
MUSICAL PERCUSSION INSTRUMENT
John T. Huth, III, 6226 Curie St., New Orleans, La. 70122
Filed Apr. 5, 1993, Ser. No. 6,675
Term of patent 14 years
U.S. Cl. D17—22



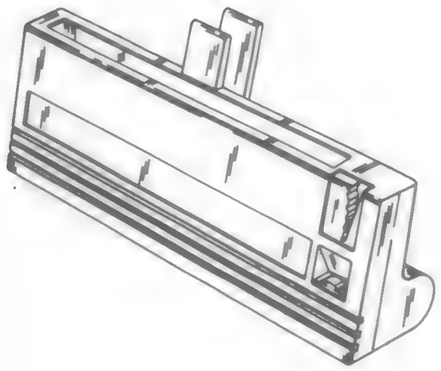
352,953
TYPING RIBBON CARTRIDGE
Enrico Maina, Leini , Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy
Division of Ser. No. 287,998, Dec. 21, 1988, Pat. No. Des. 322,272. This application Nov. 15, 1990, Ser. No. 614,214
Claims priority, application Italy, Jun. 27, 1988, 53259-B/88
Term of patent 14 years
U.S. Cl. D18—12



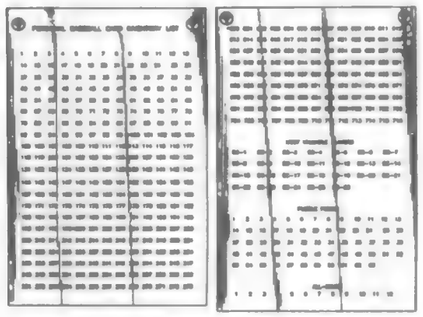
352,954
RIBBON CARTRIDGE FOR PRINTER
Tatsuya Seshimo; Kiyoto Komuro, and Kenjiro Murakami, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 17, 1992, Ser. No. 869,708
Claims priority, application Japan, Oct. 30, 1991, 3-32911
Term of patent 14 years
U.S. Cl. D18—12



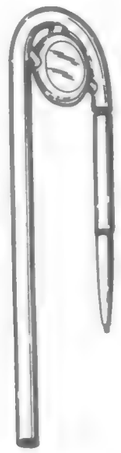
352,955
BINDING MACHINE
Peter Nordgren, Stockholm, Sweden, assignor to Bindomatic AB, Stockholm, Sweden
Filed Dec. 9, 1993, Ser. No. 16,144
Claims priority, application Sweden, Jun. 18, 1993, 931421
Term of patent 14 years
U.S. Cl. D18—34



352,956
SET OF LIST FOR BASEBALL CARD INVENTORY
Rhonda C. Vanzandt, and Paul E. Wilmoth, both of 4900 Nye Rd., Hudson, Mich. 49247
Filed Nov. 29, 1990, Ser. No. 620,334
Term of patent 14 years
U.S. Cl. D19—1



352,957
PEN
Martti Lehtimäki, Vaasa, Finland, assignor to Oy Lehtimaki & Partanen Marketing Ltd., Vaasa, Finland
Filed Jan. 21, 1993, Ser. No. 3,922
Term of patent 14 years
U.S. Cl. D19—36



352,958
COMBINATION PEN AND PENCIL
Penny L. Thompson, Rte. 2, Box 410, Ashburn, Ga. 31714
Filed Feb. 9, 1993, Ser. No. 4,605
Term of patent 14 years
U.S. Cl. D19—36



352,959
COMBINED PEN AND HOLDER THEREOF
Stephen H. Wolff, 35 W. 35th St., New York, N.Y. 10001
Filed May 13, 1993, Ser. No. 8,297
Term of patent 14 years
U.S. Cl. D19—36



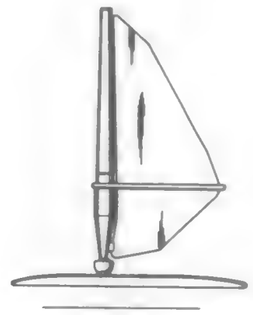
352,960
BALL-POINT PEN
Joachim Zier, Burger Kunststoff-Spritzgusswerk GmbH, Postfach 1280, D-7730 VS-Villingen, Germany
Filed Apr. 19, 1993, Ser. No. 7,110
Term of patent 14 years
U.S. Cl. D19—51



352,961
BALL-POINT PEN
Joachim Zier, Burger Kunststoff-Spritzgusswerk GmbH, Postfach 1280, D-7730 VS-Villingen, Germany
Filed Apr. 19, 1993, Ser. No. 7,167
Term of patent 14 years
U.S. Cl. D19—51



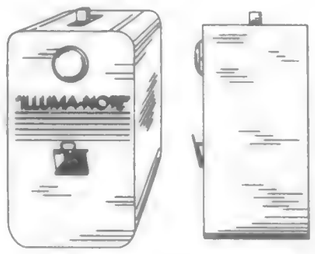
352,962
DESK SET
Joachim Zier, Burger Kunststoff-Spritzgusswerk GmbH, Postfach 1280, D-7730 VS-Villingen, Germany
Filed Mar. 8, 1993, Ser. No. 5,636
Term of patent 14 years
U.S. Cl. D19—82



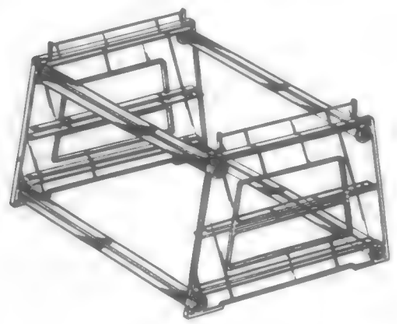
352,963
RETAINING CLIP FOR WRITING INSTRUMENTS
Buzz Siler, P.O. Box 2405, Lake Oswego, Oreg. 97035
Filed Jun. 12, 1992, Ser. No. 897,532
Term of patent 14 years
U.S. Cl. D19—83



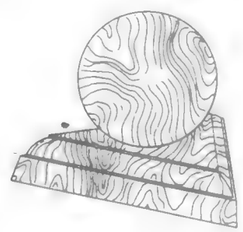
352,964
COMBINED SIGNALLING LIGHT AND MESSAGE HOLDER
Edward E. Schlotterback, 9812 N - 1000 East, Ket.dallville, Ind. 46755
Filed Sep. 7, 1993, Ser. No. 12,668
Term of patent 14 years
U.S. Cl. D19—88



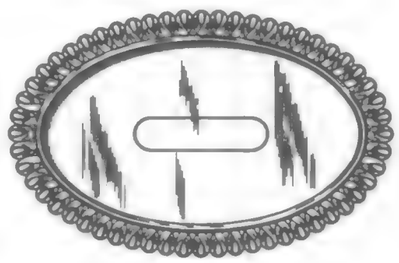
352,965
DESK TOP FILE STORAGE RACK
David M. Stravitz, 16 Park Ave., New York, N.Y. 10016
Continuation-in-part of Ser. No. 882,092, May 7, 1992. This application Mar. 11, 1993, Ser. No. 5,773
Term of patent 14 years
U.S. Cl. D19—90



352,966
PAPERWEIGHT
William H. Vana, P.O. Box 847, Lakeside, Calif. 92040-0847, and Raymond E. Fulbright, 1225 E. Washington, El Cajon, Calif. 92019
Filed Jul. 11, 1991, Ser. No. 728,932
Term of patent 14 years
U.S. Cl. D19—96

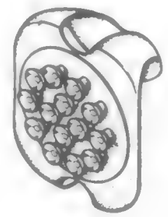


352,967
IDENTIFYING TAG FOR BOTTLED BEVERAGES
Dewey G. Laufer, #2522 Rte. 315, Deansboro, N.Y. 13328
Filed Feb. 2, 1994, Ser. No. 18,268
Term of patent 14 years
U.S. Cl. D20—28





352,968
GLOVE TARGET FOR GAME
Chou-Pao Yu, No. 15, Lane 251, Tong Yang Road, Fong Yuan, Taichung, Taiwan, Prov. of China
Filed Sep. 13, 1993, Ser. No. 12,835
Term of patent 14 years
U.S. Cl. D21—5



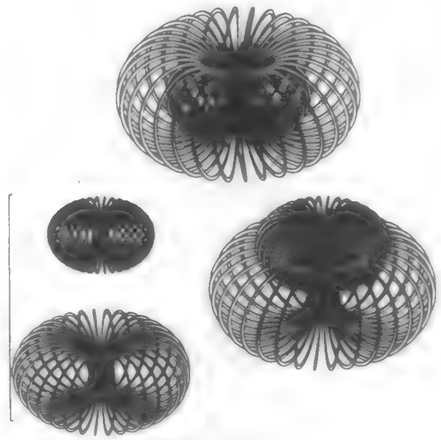
352,969
SOCCER TABLE
Claudio Cecchetti, Via Verdi, 54, Cernusco sul Naviglio (Milano), Italy
Filed Jul. 12, 1991, Ser. No. 729,402
Claims priority, application Italy, Jan. 16, 1991, MI91 000026
The portion of the term of this patent subsequent to May 24, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—11



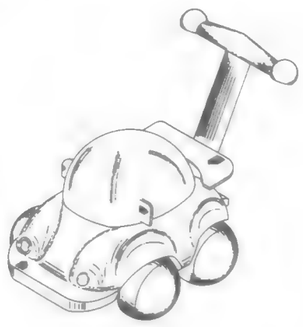
352,970
JOYSTICK
Patrick T. Ho, Kwai Chung, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong, Hong Kong
Filed Sep. 16, 1993, Ser. No. 13,046
Term of patent 14 years
U.S. Cl. D21—48



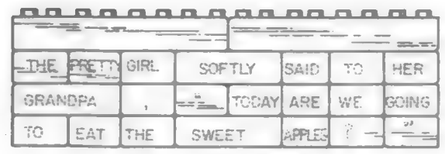
352,971
TOY
Dennis C. Lee, and Veredith A. Keller, both of 791 Tremont St. W214, Boston, Mass. 02118
Filed Dec. 9, 1992, Ser. No. 2,355
Term of patent 14 years
U.S. Cl. D21—59



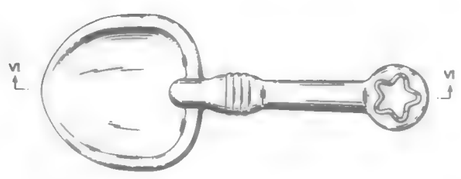
352,972
TOY
Chuan T. Chiang, Hong Kong, Hong Kong, assignor to Zei Hong Manufacturing Co., Kowloon, Hong Kong
Filed Jun. 7, 1993, Ser. No. 9,166
Term of patent 14 years
U.S. Cl. D21—59



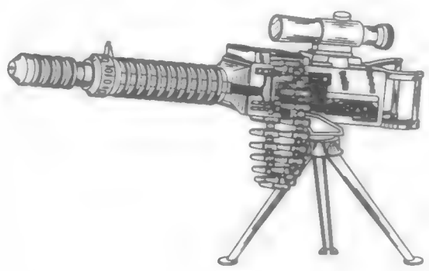
352,973
WORD BRICK STRUCTURE
Anita J. DeZego, St. Louis, Mo., assignor to Wonderworks, Inc., St. Louis, Mo.
Filed Aug. 18, 1992, Ser. No. 931,772
Term of patent 14 years
U.S. Cl. D21—108



352,974
TOY SHOVEL
Moriya Kino, Yokohama, Japan, assignor to Royal Company, Ltd., Japan
Division of Ser. No. 1,961, Nov. 25, 1992, Pat. No. Des. 350,166.
This application Jan. 6, 1994, Ser. No. 17,180
Term of patent 14 years
U.S. Cl. D21—120



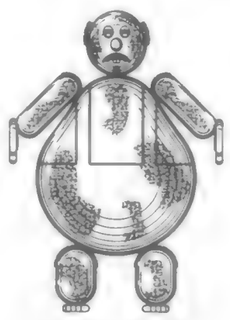
352,975
TOY MACHINE GUN
Kunio Wakasa, Tokyo, Japan, assignor to Wakasa (HK) Ltd., Hong Kong
Filed Sep. 9, 1993, Ser. No. 12,724
Term of patent 14 years
U.S. Cl. D21—146



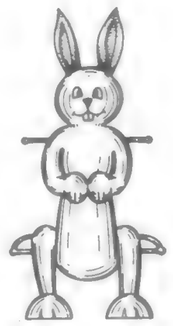
352,976
TOY GUN
Yin-Wang Hsieh, No. 91, Yun Ming Street, Pan Chiao City, Taipei Hsien, Taiwan, Prov. of China
Filed Oct. 8, 1993, Ser. No. 13,997
Term of patent 14 years
U.S. Cl. D21—147



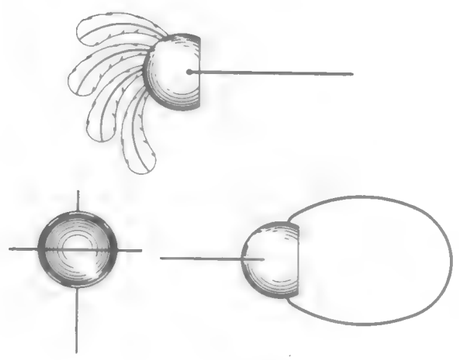
352,977
TOY FIGURE
Stanley D. Jones, and Ingrid S. Jones, both of Rte. 5 Box 5432, Cleveland, Ga. 30528
Filed Jan. 27, 1993, Ser. No. 4,101
Term of patent 14 years
U.S. Cl. D21—149



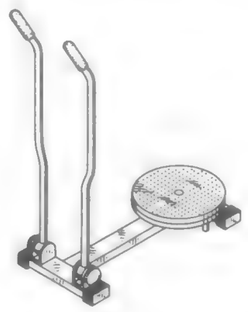
352,978
CHILDREN'S BOUNCING TOY
Carrie D. Suber, 1015 E. 82nd St., Los Angeles, Calif. 90001
Filed Feb. 12, 1992, Ser. No. 834,517
Term of patent 14 years
U.S. Cl. D21—187



352,979
NOSE MASK
Anthony G. Baum, 3632 Edgebrook Dr., Cincinnati, Ohio 45248-3116
Filed Aug. 3, 1992, Ser. No. 924,247
Term of patent 14 years
U.S. Cl. D21—190



352,980
WAIST TWISTING EXERCISER
Chun-Jine Wu, Taichung, Taiwan, Prov. of China, assignor to Herng Jye Industrial Co., Ltd., Taichung, Taiwan, Prov. of China
Filed Jul. 7, 1993, Ser. No. 10,454
Term of patent 14 years
U.S. Cl. D21—191



352,981
DUMBBELL
Ching-Ho Ko, Taipei, Taiwan, Prov. of China, assignor to Yow Li Feng Industrial Co., Ltd., Chang Hua Hsien, Taiwan, Prov. of China
Filed Jun. 28, 1993, Ser. No. 9,978
Term of patent 14 years
U.S. Cl. D21—197



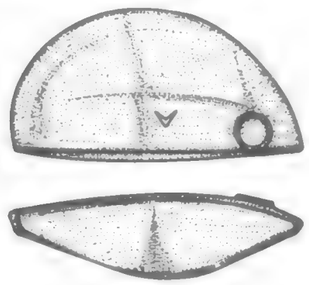
352,982
GOLF SHAG BAG
John A. Winchell, 2334 26th St. South, Great Falls, Mont. 59405
Filed Mar. 3, 1993, Ser. No. 5,392
Term of patent 14 years
U.S. Cl. D21—206



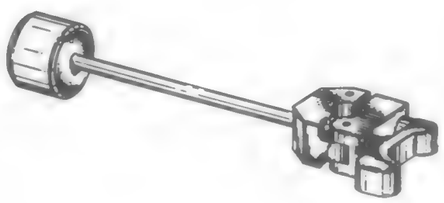
352,983
GOLF CLUB HEAD
Robert J. Williams, Jr., 40501 Clover La., Palm Desert, Calif. 92260
Filed Feb. 26, 1993, Ser. No. 5,319
Term of patent 14 years
U.S. Cl. D21—214



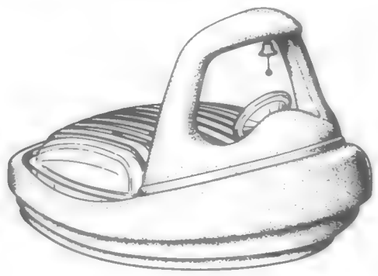
352,984
GOLF PUTTER HEAD
Richard C. Helmstetter, Carlsbad; Glenn H. Schmidt, Malibu, and Michael R. Cummings, San Marcos, all of Calif., assignors to Callaway Golf Company, Carlsbad, Calif.
Filed Mar. 19, 1993, Ser. No. 6,184
Term of patent 14 years
U.S. Cl. D21—219



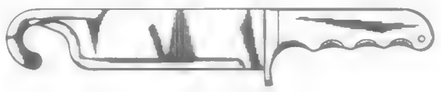
352,985
GOLF SWING TRAINING AID
Jack Eno, 5340 South Ave., Youngstown, Ohio 44512
Filed Mar. 11, 1993, Ser. No. 5,821
Term of patent 14 years
U.S. Cl. D21—234



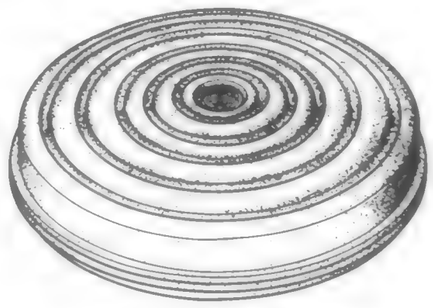
352,986
SANDBOX
Robert L. Houry, Solon, and James R. Nagy, Cuyahoga Falls, both of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Apr. 13, 1993, Ser. No. 6,994
Term of patent 14 years
U.S. Cl. D21—252



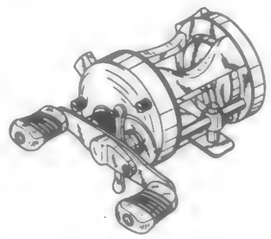
352,987
COMBINED KNIFE AND FIELD DRESSING TOOL
Edward C. Stanley, 4902 E. Parker Rd., Parker, Tex. 75002
Filed Apr. 27, 1993, Ser. No. 7,609
Term of patent 14 years
U.S. Cl. D22—118



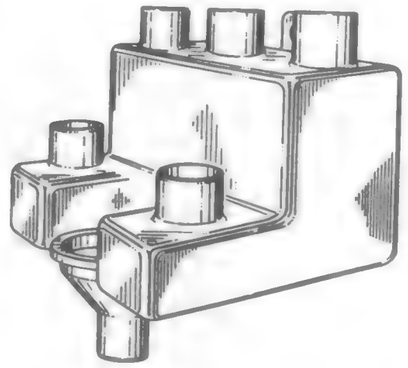
352,988
ULTRASONIC PEST CONTROLLER
Te C. Jan, 6Fl.-2, No. 15, Lane 174, Hsin-Ming Rd., Teipei, Taiwan, Prov. of China
Filed May 11, 1993, Ser. No. 8,206
Term of patent 14 years
U.S. Cl. D22—120



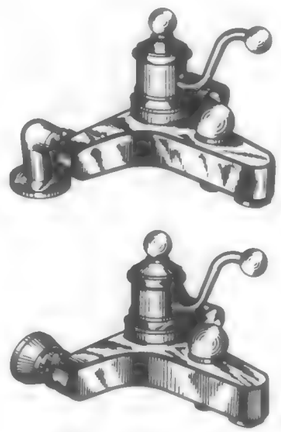
352,989
SPINNING REEL FOR FISHING
Bo K. Park, Busan, Rep. of Korea, assignor to Silver Star Co., Ltd., Busan, Rep. of Korea
Filed Nov. 30, 1992, Ser. No. 2,015
Claims priority, application Rep. of Korea, Aug. 28, 1992, 14614/1992
Term of patent 14 years
U.S. Cl. D22—140



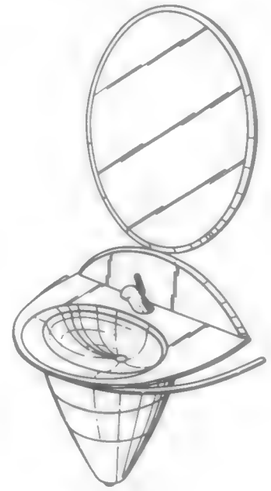
352,990
COMBINED FUNNEL FOR A USED OIL FILTER AND CONTAINER FOR GATHERING RESIDUAL OIL
Duane Sparks, R.R. 1, Box 335, Annandale, Minn. 55302; Alan Violet, Rte. 1, Box 95I, Buffalo, Minn. 55313, and David Brenner, 16640 Luther Way, Eden Prairie, Minn. 55346
Filed Feb. 18, 1992, Ser. No. 837,408
Term of patent 14 years
U.S. Cl. D23—200



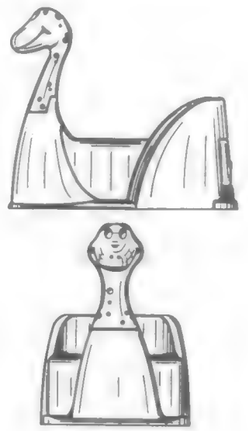
352,991
FAUCET
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Jacob Delafon, Paris, France
Filed Nov. 5, 1993, Ser. No. 15,068
Term of patent 14 years
U.S. Cl. D23—238



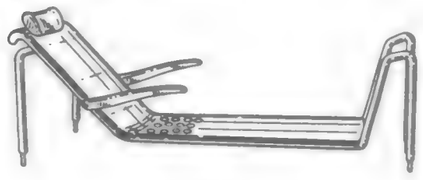
352,992
FURNITURE UNIT WITH WASH BASIN AND MIRROR
Max Pajetta, Milan, Italy, assignor to Ideal Standard S.p.A., Milan, Italy
Filed Oct. 29, 1993, Ser. No. 14,702
Claims priority, application Italy, May 4, 1993, RE930000011
Term of patent 14 years
U.S. Cl. D23—271



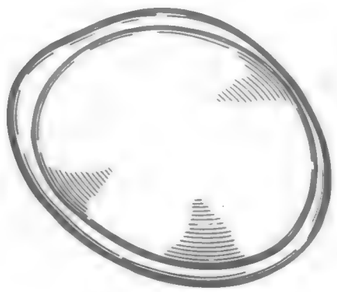
352,993
CHILD'S TRAINING TOILET
Richard A. Boucher, Ashburnham; Kurt W. Nygren, Harvard, and Attaphol Simahk, Ashburnham, all of Mass., assignors to Sanitoy, Inc., Fitchburg, Mass.
Filed Dec. 10, 1993, Ser. No. 16,605
Term of patent 14 years
U.S. Cl. D23—297



352,994
BATHING PLATFORM
Roy Parker, Slades Cottage, Adlams Lane, Sway, Hampshire, SO41 6EG, Great Britain
Filed Oct. 7, 1993, Ser. No. 13,945
Claims priority, application United Kingdom, Apr. 30, 1993, 2030799
Term of patent 14 years
U.S. Cl. D23—304



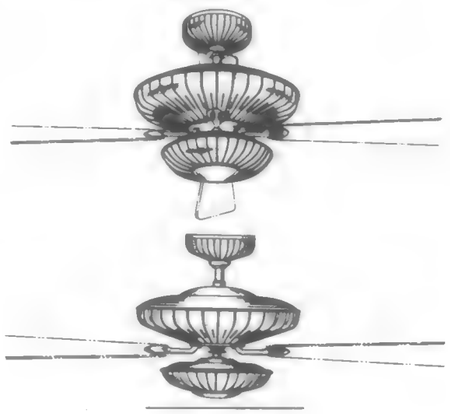
352,995
WATER CLOSET COVER
Mary J. Reid, Sheboygan, and William C. McKeone, Sheboygan Falls, both of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Nov. 5, 1993, Ser. No. 14,955
Term of patent 14 years
U.S. Cl. D23—311



352,996
VENTILATED TOILET
Jae K. Sim, 5021 Crescent Dr., Anaheim, Calif. 92807
Filed Feb. 14, 1992, Ser. No. 835,679
Term of patent 14 years
U.S. Cl. D23—301



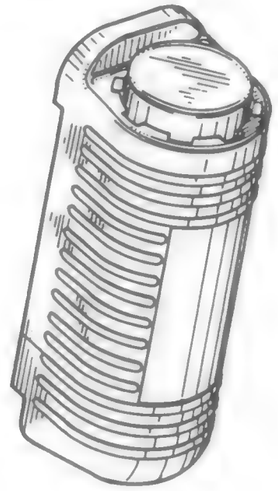
352,997
COMBINED MOUNTING CANOPY, MOTOR AND SWITCH HOUSING AND BLADE IRONS UNIT FOR A CEILING FAN
Charles J. DiPasquale, Carrollton, Tex., assignor to Smartel, Inc., Carrollton, Tex.
Filed Mar. 11, 1993, Ser. No. 5,751
Term of patent 14 years
U.S. Cl. D23—411



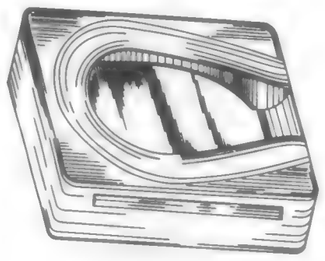
352,998
SUCTION SWAB
Paul H. Hanifl, Barrington, Ill., assignor to Sage Prodcts, Inc., Crystal Lake, Ill.
Continuation-in-part of Ser. No. 496,504, Mar. 20, 1990, abandoned. This application May 20, 1992, Ser. No. 886,782
Term of patent 14 years
U.S. Cl. D24—108



352,999
INHALATION AID
James H. Nicholson, Rickmansworth, and Michael McCarry, Ware, both of England, assignors to Glaxo Group Limited, Greenfield, England
Filed Jul. 16, 1993, Ser. No. 10,776
Claims priority, application United Kingdom, Jan. 18, 1993, 2028431
Term of patent 14 years
U.S. Cl. D24—110



353,000
HOSPITAL BED PAN
James B. Bradley, Jr., 4805 Inverness Dr., Tyler, Tex. 75703
Filed Feb. 28, 1994, Ser. No. 19,332
Term of patent 14 years
U.S. Cl. D24—123



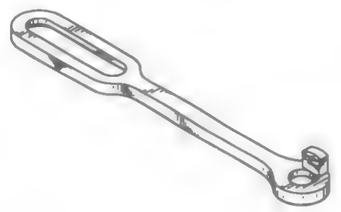
353,001
COMBINED MALLET AND PIN REMOVER
Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 91941
Filed Jan. 13, 1993, Ser. No. 3,679
Term of patent 14 years
U.S. Cl. D24—142



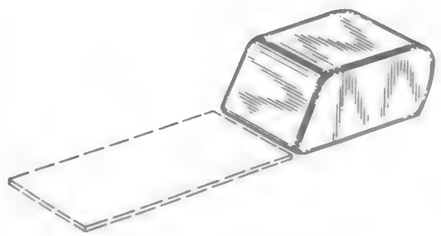
353,002
ENDOSCOPIC SUTURE KNOT PUSHER
H. Jonathan Tovey, Milford, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Filed Dec. 11, 1992, Ser. No. 2,521
Term of patent 14 years
U.S. Cl. D24—145



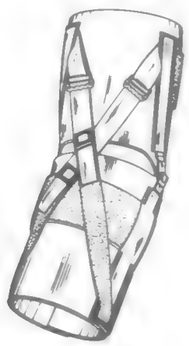
353,003
TRANSVERSE CONNECTOR FOR A SPINAL IMPLANT
Alexandre M. Dinello, Shaker Heights, Ohio, assignor to AcroMed Corporation, Cleveland, Ohio
Filed Apr. 13, 1993, Ser. No. 7,059
Term of patent 14 years
U.S. Cl. D24—155



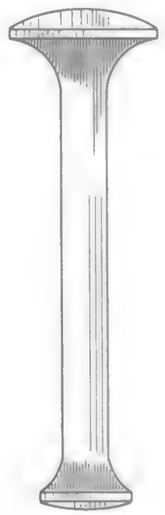
353,004
SPINE TREATMENT CUSHION
Kevin O. Boland, 5623 Massachusetts Ave., Bethesda, Md. 20816
Filed Sep. 11, 1992, Ser. No. 943,597
The portion of the term of this patent subsequent to Jan. 4, 2008, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—183



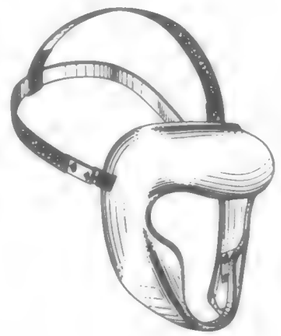
353,005
ELBOW BRACE
Geoffrey G. Glidden, 1524 Independence Pkwy., Suite M, Plano, Tex. 75075
Filed May 6, 1993, Ser. No. 7,986
Term of patent 14 years
U.S. Cl. D24—190



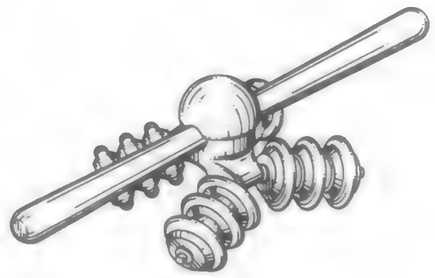
353,006
BABY BOTTLE AIR EXPELLER
Julie Korzenko, 3708 Tulip Tree Rd., Marietta, Calif. 30066
Filed Mar. 30, 1992, Ser. No. 860,350
Term of patent 14 years
U.S. Cl. D24—193



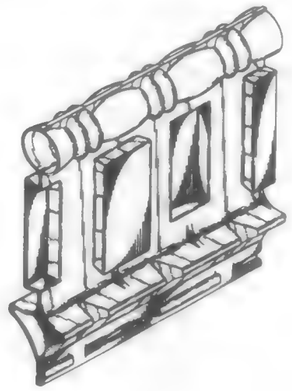
353,007
FACE SAVER MASK FOR FACIAL MASSAGING
Daniel Weiner; Joan F. Hamburg, both of New York, and Sherrye P. Henry, E. Hampton, all of N.Y., assignors to Yard Sale Development, Inc., Sagaponack, N.Y.
Filed Jun. 10, 1993, Ser. No. 10,501
Term of patent 14 years
U.S. Cl. D24—200



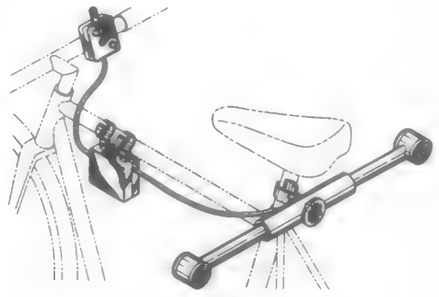
353,008
ROTATING MASSAGE UNIT
Willard L. Van Harn, Holland, Mich., assignor to Positive Advantage Corporation, Holland, Mich.
Filed Oct. 12, 1993, Ser. No. 14,049
Term of patent 14 years
U.S. Cl. D24—211



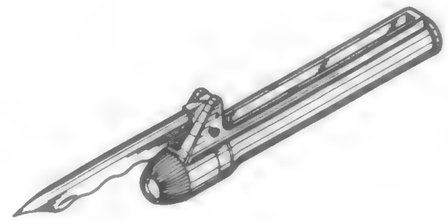
353,009
LANDSCAPE EDGING
Donald J. Reum, Bonita Springs, Fla., assignor to Avon Plastics, Inc., Albany, Minn.
Filed Jun. 2, 1993, Ser. No. 9,074
Term of patent 14 years
U.S. Cl. D25—164



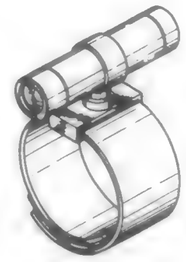
353,010
BICYCLE-MOUNTED COMBINATION TURN-SIGNAL AND HORN
John J. Izzo, Sr., 56 Richmondville Ave., Westport, Conn. 06880
Filed May 24, 1993, Ser. No. 8,661
Term of patent 14 years
U.S. Cl. D26—34



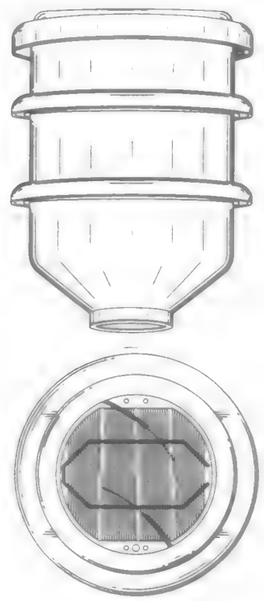
353,011
KNIFE-FLASHLIGHT COMBINATION
Steve E. Miller, 1601-C Mountain House Rd., Halifax, Pa. 17032
Filed May 18, 1993, Ser. No. 8,450
Term of patent 14 years
U.S. Cl. D26—38



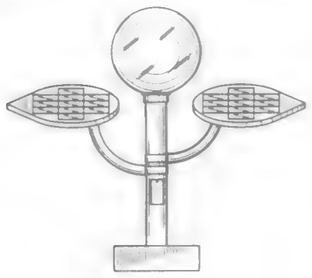
353,012
WRIST-MOUNTED LIGHT
Michael J. Mihavetz, 138 Federal City Rd., Lawrenceville, N.J. 08648
Filed Jun. 24, 1993, Ser. No. 9,800
Term of patent 14 years
U.S. Cl. D26—39



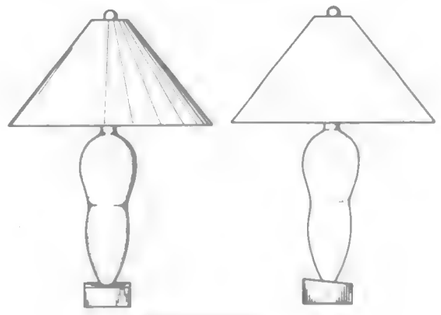
353,013
DECORATIVE SOLAR POWERED WALKWAY LIGHT
Klara Szekely, West Hills, and John S. Frost, Thousand Oaks, both of Calif., assignors to Siemens Solar Industries International, Inc., Camarillo, Calif.
Filed Aug. 12, 1993, Ser. No. 11,709
Term of patent 14 years
U.S. Cl. D26—67



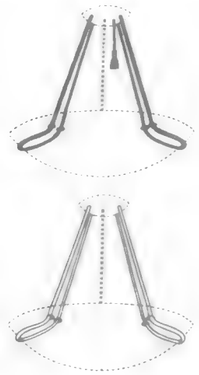
353,014
SOLAR POWERED OUTDOOR LAMP
Ami Elazari, Tel Aviv, Israel, assignor to Amitec Information Industries Ltd., Tel Aviv, Israel
Filed Sep. 23, 1991, Ser. No. 764,396
Claims priority, application Israel, Mar. 21, 1991, 17597
Term of patent 14 years
U.S. Cl. D26—68



353,015
TABLE LAMP
John Hutton, New York, N.Y., assignor to Donghia Furniture, New York, N.Y.
Filed Mar. 25, 1993, Ser. No. 6,369
Term of patent 14 years
U.S. Cl. D26—106



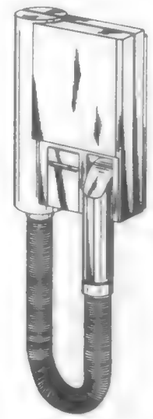
353,016
DECORATIVE CHANDELIER SUPPORT
Jean C. Mason, 2777 Woodshire Dr., Hollywood, Calif. 90068
Filed May 10, 1993, Ser. No. 8,176
Term of patent 14 years
U.S. Cl. D26—138



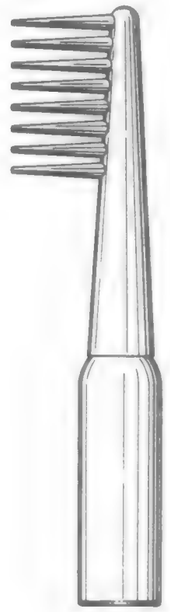
353,017
HAIR ARRANGING DEVICE
Tomima L. Edmark, 5335 S. Dentwood Dr., Dallas, Tex. 75220
Filed Jun. 22, 1993, Ser. No. 9,844
Term of patent 14 years
U.S. Cl. D28—10



353,018
WALL HAIR DRYER
Jean-Marie Froidevaux, Carouge, Switzerland, assignor to Aliseo Diffusion S.A., Switzerland
Filed Mar. 24, 1992, Ser. No. 856,945
Term of patent 14 years
U.S. Cl. D28—12



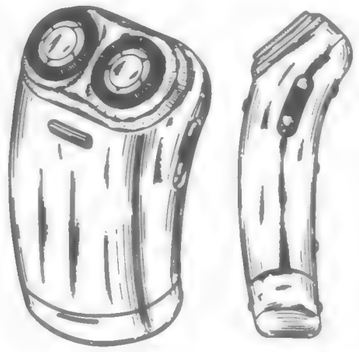
353,019
DISPENSING COMB
Steven D. Kimmell, Granada Hills, Calif., and Jack L. Forcelledo, 9255 Doheny Rd., Suite 2504, Los Angeles, Calif. 90069, assignors to Jack L. Forcelledo, Los Angeles, Calif.
Filed Apr. 28, 1993, Ser. No. 7,691
Term of patent 14 years
U.S. Cl. D28—25



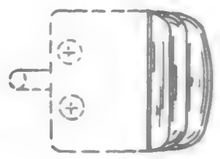
353,020
RAZOR
Mario Conti, 55B Minebrook Rd., Edison, N.J. 08820
Filed Feb. 3, 1994, Ser. No. 18,291
Term of patent 14 years
U.S. Cl. D28—46



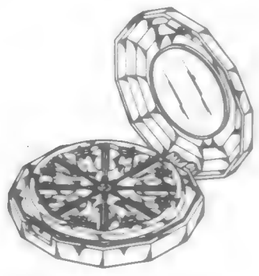
353,021
DRY SHAVER
Frank H. C. Newman, Zaidlaren, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1992, Ser. No. 366
Claims priority, application Hague Agreement, Apr. 27, 1992, DM/022.716
Term of patent 14 years
U.S. Cl. D28—50



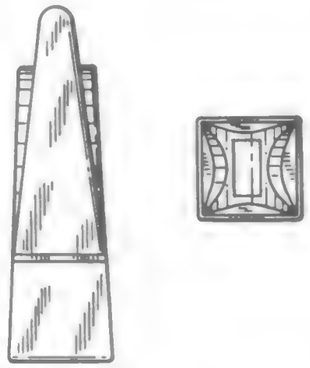
353,022
OUTER SURFACE OF A HAIR TRIMMER LID
Robert Simonelli, Palatine, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.
Filed Jul. 31, 1992, Ser. No. 924,333
Term of patent 14 years
U.S. Cl. D28—54



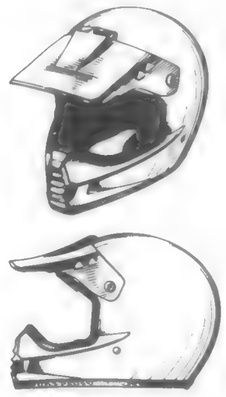
353,023
COSMETIC COMPACT
Jerry Chen, P.O. Box 82-144, Taipei,
Filed May 29, 1992, Ser. No. 890,095
Term of patent 14 years
U.S. Cl. D28—79



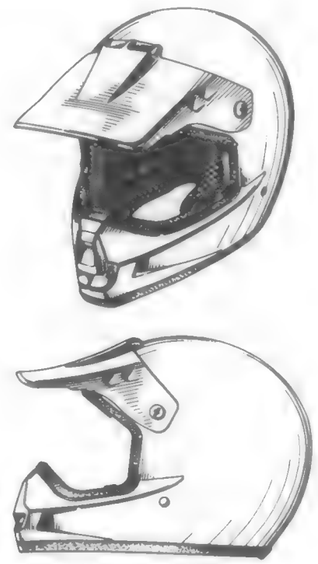
353,024
LIPSTICK HOLDER
Fred van Wolffelaar, Boterbloemstraat 17, 5662DX, Vught, Netherlands
Filed May 21, 1993, Ser. No. 8,746
Claims priority, application Benelux TM/Des. Off., Nov. 23, 1992, DM/024496
Term of patent 14 years
U.S. Cl. D28—85



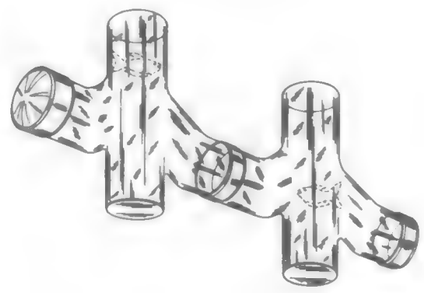
353,025
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 31, 1991, Ser. No. 814,882
Claims priority, application Japan, Nov. 12, 1991, 3-34206
Term of patent 14 years
U.S. Cl. D29—105



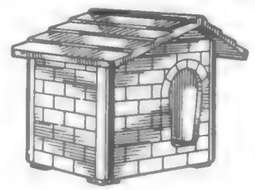
353,026
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 31, 1991, Ser. No. 814,876
Claims priority, application Japan, Dec. 11, 1991, 3-34205
Term of patent 14 years
U.S. Cl. D29—105



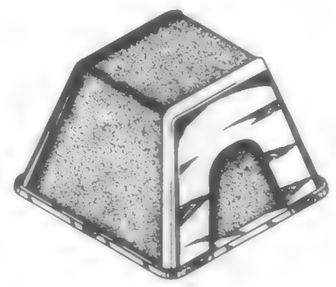
353,027
TUBULAR AQUARIUM
Randy W. Kimrey, 3133 Timberridge Lake Rd., Liberty, N.C. 27298
Filed May 18, 1993, Ser. No. 8,512
Term of patent 14 years
U.S. Cl. D30—101



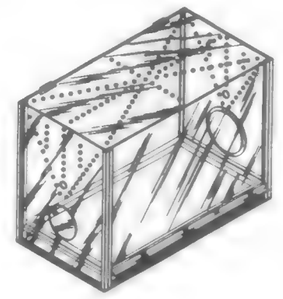
353,028
DOG HOUSE
Alvise Boscato, Via Giorgio La Pira, 1, 36033 Isola Vicentina, Italy
Filed Apr. 14, 1993, Ser. No. 7,068
Term of patent 14 years
U.S. Cl. D30—108



353,029
FELINE DOMICILE
Melaney L. Northrop, Cleburne, and Thomas B. Murphy, Arlington, both of Tex., assignors to Doskocil Manufacturing Company, Inc., Arlington, Tex.
Filed Jul. 30, 1993, Ser. No. 11,299
Term of patent 14 years
U.S. Cl. D30—108



353,030
BIRD CAGE
Hector Fernandez, 6447 Egret La., Unit 418, Bradenton, Fla. 34210
Filed Nov. 19, 1993, Ser. No. 15,532
Term of patent 14 years
U.S. Cl. D30—110



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Vikio, Pentti, 5,368,693, Cl. 162-190.000.

A-C Compressor Corporation: *See—*
Hudson, James H., 5,368,313, Cl. 277-27.000.

A-Dec, Inc.: *See—*
Fisher, William F., 5,367,717, Cl. 4-263.000.

A. E. Staley Manufacturing Company: *See—*
Smick, Cathysue; and Schanefelt, Robert V., 5,368,878, Cl. 426-646.000.

A. W. Chesterton Company: *See—*
Van Vleet, Frank R.; and Grimanis, Michael P., 5,368,336, Cl. 285-24.000.

AB Electrolux: *See—*
Worrall, Peter W.; and Woodward, Adrian M., 5,368,060, Cl. 137-15.000.

ABB Air Preheater, Inc.: *See—*
Seebald, James D.; Bledsoe, Carlton L.; and Amundson, William T., 5,368,091, Cl. 165-5.000.

ABB Atom AB: *See—*
Rosengren, Anders, 5,369,677, Cl. 376-340.000.

ABB Power T&D Company, Inc.: *See—*
Manimalethu, Abraham I., 5,369,388, Cl. 336-145.000.

ABB Reaktor GmbH: *See—*
Baro, Gunter; and Russ, Jakob, 5,368,075, Cl. 138-98.000.

ABB Vetco Gray Inc.: *See—*
Dinnes, Calum J. B., 5,368,335, Cl. 285-18.000.

Abe, Akira: *See—*
Furuta, Katsuhisa; Abe, Akira; Ito, Akinori; and Manabe, Hiroyuki, 5,369,567, Cl. 364-149.000.

Abe, Sadahiro: *See—*
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.

Abekas Video Systems, Inc.: *See—*
Woodham, David J., 5,369,443, Cl. 348-578.000.

Aboujaoude, Francois W.; and Kasel, Eugene A., to Coltec Industries Inc. Automated catalytic reduction system. 5,367,875, Cl. 60-303.000.

Abrams, Randy L.: *See—*
Crossley, David W.; Wruck, Keith R.; and Abrams, Randy L., 5,367,829, Cl. 49-465.000.

Academy Display, Inc.: *See—*
Van Beek, Robert, 5,367,807, Cl. 40-606.000.

Ace Company, Inc.: *See—*
Rupe, Lawrence A., 5,368,078, Cl. 144-234.000.

Ackley, Donald E.; Shieh, Chan-Long; and Johnson, Earnest J., to Motorola, Inc. Inverted drive design for VCSEL-based optical interconnects. 5,369,656, Cl. 372-38.000.

Acocella, Joyce E.; Hsu, Louis L.; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph F., to International Business Machines Corporation. DRAM cell having raised source, drain and isolation. 5,369,049, Cl. 437-52.000.

Actel Corporation: *See—*
Yen, Yeouchung; Chen, Wenn-Jei; Chiang, Steve S.; and Forouhi, Abdul R., 5,369,054, Cl. 437-195.000.

Acurex Environmental Corporation: *See—*
Natschke, David F.; Lutes, Christopher C.; and Ryan, Jeffrey V., 5,368,616, Cl. 44-559.000.

Acushnet Company: *See—*
Scolamiero, Stephen; Conaty, Henry; and Viveiros, Richard, 5,368,800, Cl. 264-219.000.

Adachi, Keiichi; and Tachikawa, Hiromichi, to Fuji Photo Film Co., Ltd. Process for the production of a lithographic printing plate with beveled end parts. 5,368,964, Cl. 430-49.000.

Adachi, Keisuke: *See—*
Yamada, Yutaka; Takahashi, Naofumi; Adachi, Keisuke; and Kameyama, Akihiko, 5,369,096, Cl. 514-61.000.

Adachi, Yutaka; and Kubo, Mitsunori, to Olympus Optical Co., Ltd. Bar-code reader apparatus with an automatic read starting function. 5,369,265, Cl. 235-462.000.

Adamo, Joseph R.; Lipovsky, Gloria M.; Hecker, Robert, Jr.; and Ranalli, Leon D., to Rohm and Haas Company. Continuous solution method and apparatus. 5,368,385, Cl. 366-139.000.

Adams, Theodore P., to Angeion Corporation. High voltage charge storage array for an impantable defibrillator. 5,369,351, Cl. 320-7.000.

Adamson, William G.; Updyke, Lance D.; and Sogge, John W., to Walt Disney Company, The. Method and apparatus for forming a fluid projection screen. 5,368,228, Cl. 239-18.000.

Adaptive Solutions, Inc.: *See—*
Hammerstrom, Daniel W., 5,369,773, Cl. 395-800.000.

ADC Telecommunications, Inc.: *See—*
Bonnesen, John S.; and Dewey, James D., 5,369,543, Cl. 361-117.000.

Adco Products, Inc.: *See—*
Baghdachi, Jamil; and Van Valkenburg, Cheryl, 5,368,943, Cl. 428-423.100.

Addeo, Antonio; Mascia, Francesco; Vezzoli, Annibale; and Biscotti, Aurelio, to Centro Sviluppo Settori Impiego S.r.l. Apparatus for manufacturing bodies of polymeric material having a core of foamed material enclosed by an outer shell. 5,368,458, Cl. 425-4.00R.

Adderton, Brian C.: *See—*
Weavil, Randy K.; and Adderton, Brian C., 5,368,460, Cl. 425-72.100.

Adelaide Bone and Joint Research Foundation, Inc., The: *See—*
Cain, Christopher M. J.; and Pohl, Anthony P., 5,368,044, Cl. 128-739.000.

Adelstein, Stephen; and Kindle, Terence D. Cleated shoe protector. 5,367,794, Cl. 36-135.000.

Ader, Vern; and Dohm, Myron. Golf ball retriever. 5,368,350, Cl. 294-19.200.

Administrators of the Tulane Educational Fund, The: *See—*
Scally, Andrew V.; and Cai, Renzhi, 5,369,094, Cl. 514-15.000.

Aduana, Efren M. Retractable snagproof fish hook system. 5,367,818, Cl. 43-42.440.

Advanced Energy Technologies Incorporated: *See—*
Hirai, Toshiro; and Yamaki, Jun-ichi, 5,368,958, Cl. 429-211.000.

Advanced Micro Devices, Inc.: *See—*
Asghar, Safdar M.; and Bartkowiak, John G., 5,369,791, Cl. 455-222.000.
Disko, David R.; and Durand, Joe G., 5,367,762, Cl. 29-764.000.
Gephardt, Douglas D.; MacDonald, James R.; and Kamath, Govinda V., 5,369,777, Cl. 395-800.000.

Adyha, Atish; and Lilly, Robert L., to BASF Corporation. Thermoplastic polyamide with reduced flammability. 5,369,160, Cl. 524-140.000.

Aebi, Kurt J.; Grypa, Roman D.; Aung, Thein; and Lee, Mary J., to McCormick & Company, Inc. Process for preparing dehydrated vegetable products. 5,368,873, Cl. 426-310.000.

Aeer, Reuck, legal representative: *See—*
Gruber, Friedrich; Pucher, Hans-Jorg; and Auer, Reinhard, deceased, 5,369,328, Cl. 313-141.000.

Aelick, Christopher R.: *See—*
Suppiah, Sellathurai; Burns, Deborah L.; Irving, Karen G.; and Aelick, Christopher R., 5,368,475, Cl. 431-268.000.

Aerochem Research Labs, Inc.: *See—*
Calcote, Hartwell F.; and Felder, William, 5,368,825, Cl. 422-198.000.

Aerospatiale Societe National Industrielle: *See—*
Ferrier nee Pegot, Christiane; and Vernotte, Jean-Marie, 5,368,906, Cl. 428-34.500.

Afflitto, John: *See—*
Gaffar, Abdul; Afflitto, John; and Subramanian, Malathy, 5,368,845, Cl. 424-54.000.

Afflitto, John J.: *See—*
Gaffar, Abdul; Afflitto, John J.; and Williams, Malcolm I., 5,368,844, Cl. 424-49.000.

AG Communication Systems Corporation: *See—*
Kabat, Zbigniew; and Walton, Richard A., 5,367,761, Cl. 29-764.000.

Agawa, Jiro: *See—*
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, 5,368,678, Cl. 156-405.100.

Agency of Industrial Science & Technology: *See—*
Akedo, Jun, 5,368,898, Cl. 427-510.000.
Suzuki, Kenzi; and Mori, Toshiaki, 5,369,069, Cl. 502-63.000.

Agfa Gevaert Aktiengesellschaft: *See—*
Wernicke, Ubbo; Osegowitsch, Viktor; and Rockle, Gunter, 5,369,458, Cl. 354-319.000.

Agnemo, Arne R., to Mo Och Domsjo Aktiebolag. Paper and a method of paper manufacture. 5,368,689, Cl. 162-135.000.

Agnew, Marc H.: *See—*
Nazarian, Richard A.; Agnew, Marc H.; Schneider, Daniel E.; and Mead, Wilfred A., 5,368,554, Cl. 604-4.000.

AGT Limited: *See—*
Zagloul, Hatim; and Fattouche, Michel, 5,369,670, Cl. 375-84.000.

Agut, S.A.: *See—*
Sanz, Agut, 5,369,229, Cl. 200-50.00C.

Ahlberg, Erik; and Ohlson, Kurt. Hinge connection. 5,367,744, Cl. 16-227.000.

Ahn, Hyung-kook: *See—*
Gasman, Robert C.; Wong, Eddie; Clarke, Hal C.; and Ahn, Hyung-kook, 5,369,145, Cl. 523-120.000.

Ahn, Young. Multi-layer three-dimensional display. 5,367,801, Cl. 40-152.000.

Aiba, Junichi; and Sasaki, Yoshiharu, to Furukawa Electric Co., Ltd., The. Apparatus for handling lug scrap strips from metallic strip slitters. 5,367,952, Cl. 100-45.000.

Aibara, Nobumitsu, to NEC Corporation. Damp rod construction for CRT grid structures. 5,369,330, Cl. 313-402.000.

Aihara, Toru: *See*—
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, 5,368,678, Cl. 156-405.100.

Aiken, Jeffrey D.: *See*—
McCombs, William F.; and Aiken, Jeffrey D., 5,368,317, Cl. 280-4.000.

Aime, Silvio; and Botta, Mauro, to Bracco S.p.A. Insoluble salts of lanthanides for the visual display using nuclear magnetic resonance, of the gastro-intestinal tract. 5,368,839, Cl. 424-9.000.

Air America: *See*—
Carroll, Kent L., 5,368,007, Cl. 124-56.000.

Air Products and Chemicals, Inc.: *See*—
Burgoyne, William F., Jr.; Casey, Jeremiah P.; and Manuel, Thomas A., 5,369,184, Cl. 525-327.600.
Burgoyne, William F., Jr.; Casey, Jeremiah P.; Manuel, Thomas A.; and Goldstein, Joel E., 5,369,185, Cl. 525-327.600.
Famili, Amir; Robeson, Lloyd M.; and Nangeroni, James F., 5,369,168, Cl. 525-57.000.
Holzl, Robert A.; Tilley, Benjamin H.; Benander, Robert E.; Magnotta, Vincent L.; and Dyer, Paul N., 5,368,938, Cl. 428-408.000.

Aircast, Inc.: *See*—
McVicker, Henry J., 5,368,549, Cl. 602-6.000.

Aisin Aw Co., Ltd.: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Nonaka, Shiro, 5,367,969, Cl. 112-295.000.

Ajinomoto Co., Inc.: *See*—
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,368,981, Cl. 435-232.000.

Akahane, Akira: *See*—
Maruyama, Toshiki; Akahane, Akira; and Ito, Yoshinori, 5,369,322, Cl. 310-39.000.

Akaike, Takaaki: *See*—
Maeda, Hiroshi; Akaike, Takaaki; Nishigoori, Hideo; Urakami, Teizi; and Yoshida, Chieko, 5,369,112, Cl. 514-287.000.

Akashi, Kiyoko: *See*—
Asakura, Sotoo; Koyama, Yasuto; Kiyota, Youhei; Akashi, Kiyoko; Kagayama, Akira; Murakami, Yoshio; and Nakate, Toshiomi, 5,368,865, Cl. 424-489.000.

Akatsuka, Minoru; Sohda, Yuji; and Sawada, Kazutoshi, to Asahi Glass Company, Ltd. Liquid crystal display device with biaxial birefringent plates and light shielding film. 5,369,513, Cl. 359-73.000.

Akebono Brake Industry Co., Ltd.: *See*—
Okubo, Satomi, 5,369,585, Cl. 364-426.020.

Akedo, Jun, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method of generating micro-topography on a surface. 5,368,898, Cl. 427-510.000.

Akeel, Hadi A.; and Reinicke, John A., to FANUC Robotics North America, Inc. Sensor for use in a fluid transfer system. 5,367,944, Cl. 92-5.00R.

Akeley, Kurt, to Silicon Graphics, Inc. Apparatus and method for generating point sample masks in a graphics display system. 5,369,739, Cl. 395-134.000.

Akihisa, Kazumi: *See*—
Takahashi, Hitoshi; Kakita, Hiroyuki; Irie, Yoshio; Fujiwara, Teruaki; and Akihisa, Kazumi, 5,369,148, Cl. 523-315.000.

Akiyama, Shigetoshi: *See*—
Sugahara, Tatsuya; Takagi, Takao; Mochizuki, Kimio; and Akiyama, Shigetoshi, 5,368,476, Cl. 431-285.000.

Akong, Michael: *See*—
Harpold, Michael M.; Ellis, Steven B.; Brust, Paul; Akong, Michael; and Velicelebi, Gonul, 5,369,028, Cl. 435-252.300.

Aktiebolaget Electrolux: *See*—
Wrangberth, Jan S., 5,368,379, Cl. 312-228.000.

Akuzawa, Noboru: *See*—
Anzai, Mitsutoshi; Akuzawa, Noboru; Matsuura, Yuuji; and Sugiyama, Genpei, 5,368,971, Cl. 430-110.000.

Akzo Nobel Inc.: *See*—
Greco, Carl C.; and Burk, Johst H., 5,368,768, Cl. 505-510.000.

Akzo Nobel N.V.: *See*—
Lechleiter, Robert J., 5,368,587, Cl. 604-416.000.

Akzo N.V.: *See*—
Haugen, Douglas G., 5,369,484, Cl. 356-326.000.
Torenbeek, Reinder; and Verhelst, Willem F., 5,369,197, Cl. 526-230.500.

Alari, Mark E.: *See*—
Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., 5,368,599, Cl. 606-139.000.

Albers, Mark A.: *See*—
Fay, Ralph M.; and Albers, Mark A., 5,368,184, Cl. 220-562.000.

Albert-Frankenthal Aktiengesellschaft: *See*—
Held, Michael; and Ratz, Holger, 5,367,936, Cl. 83-698.610.

Albin, Stephen D. Picture frame construction and brace therefor. 5,367,803, Cl. 40-152.100.

Albizzati, Enrico: *See*—
Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, 5,369,186, Cl. 525-330.700.

Albrecht, Gerhard; Leitner, Hubert; Lindenberger, Rudolf; Siedl, Richard; Werenka, Christian; and Suter, Willi, to Chemie Linz Gesellschaft m.b.H; and Holderchem Holding AG. Copolymers based on maleic acid derivatives and vinyl monomers, their production and application. 5,369,198, Cl. 526-240.000.

Albrecht, Nicholas J.: *See*—
Wu, Kuang-Jong; Lucas, Howard R.; Lees, Robert G.; and Albrecht, Nicholas J., 5,369,204, Cl. 526-304.000.

Alcare Co., Ltd.: *See*—
Numata, Satoru, 5,369,130, Cl. 514-772.300.

Alcatel Network Systems, Inc.: *See*—
Bowdon, Edward K., 5,369,400, Cl. 340-825.800.

Alcatel N.V.: *See*—
Collet, Edouard, 5,369,765, Cl. 395-700.000.
Denissen, Frank L., 5,369,634, Cl. 370-17.000.
Eilenberger, Gert; and Bottle, Dietrich, 5,369,514, Cl. 319-123.000.
Tombal, Jurgen M. E.; Reusens, Peter P. F.; and Sallaerts, Daniel, 5,369,669, Cl. 375-25.000.

Alchem Corp.: *See*—
Klos, Klaus P., 5,368,655, Cl. 148-250.000.

Alcon Laboratories, Inc.: *See*—
Kee, Tai-Lee; and Shaw, Jack M., 5,369,095, Cl. 514-24.000.

Aldecoa, Julio A.: *See*—
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,368,956, Cl. 429-131.000.

Alden, Jerome S.; Budan, Victor J.; and Thompson, Harold W., to Elsag International B.V. Removable magnetic zero/span actuator for a transmitter. 5,369,386, Cl. 335-206.000.

Aldred, Walter D.; McCann, Dominic P. J.; and Rasmus, John C., to Schlumberger Technology Corporation. Optimized drilling with positive displacement drilling motors. 5,368,108, Cl. 175-40.000.

Alexander, Smith & Co.: *See*—
Smith, Christopher H.; and Kieserling, Claudia, 5,367,712, Cl. 2-162.000.

Alfano, Nicholas J.; and Boffardi, Bennett P., to Calgon Corporation. Scale control in gold and silver mining heap leach and mill water circuits using polyether polyamino methylene phosphonates. 5,368,830, Cl. 423-29.000.

Alfano, Robert R.; Yoo, Kwong M.; and Tang, Guichen, to Research Foundation of City College of New York. Noninvasive method and apparatus for characterizing biological materials. 5,369,496, Cl. 356-446.000.

Allen, Daniel M., to Dover Corporation. Pull rings for the operating levers of quick connect/disconnect couplings. 5,368,343, Cl. 285-312.000.

Allen, Janet A.; and Ferla, Guillermo S. Apparatus and method for modulating the area of pixels for tone reproduction. 5,369,497, Cl. 358-298.000.

Allen, John J., Jr.: *See*—
Root, Kevin B.; Allen, John J., Jr.; and Newton, Ronald O., 5,369,587, Cl. 364-426.010.

Allen, Kenneth H., to Giddings & Lewis, Inc. Automatic drill loader. 5,367,836, Cl. 451-331.000.

Allen, Nolda R. Flower support for tombstones. 5,368,266, Cl. 248-231.400.

Allen, Reed; and Juhasz, Paul J. Lottery ticket scrapings catcher. 5,367,959, Cl. 108-23.000.

Allergan, Inc.: *See*—
Burk, Robert M.; and Woodward, David F., 5,369,127, Cl. 514-464.000.

Allerton, David P.: *See*—
Naderhoff, Bryan A.; Takas, Timothy P.; and Allerton, David P., 5,369,152, Cl. 523-415.000.

Allied Signal Inc.: *See*—
Dante, Lucian J., 5,368,273, Cl. 251-122.000.

Allied Wholesale, Inc.: *See*—
Bennett, Jeffrey E.; and Chuan, Tseng Y., 5,368,164, Cl. 206-373.000.

AlliedSignal Europe Services Techniques: *See*—
Gautier, Jean Pierre; and Verbo, Ulysse, 5,367,941, Cl. 91-369.200.

AlliedSignal Inc.: *See*—
Berkovich, Semyon, 5,369,755, Cl. 395-500.000.
Merrill, Douglas P., Jr.; and Hamilton, Robert F., 5,368,924, Cl. 428-241.000.
Minh, Nguyen Q.; Horne, Craig R.; and Guiheen, James V., 5,368,667, Cl. 156-89.000.

Allwine, Elmer C., Jr., to Slonix Engineering. Composite magnet stepper motor. 5,369,323, Cl. 310-49.00R.

Almagor, Elath: *See*—
Ramon, Arie; and Almagor, Elath, 5,368,362, Cl. 297-310.000.

Alonso, Richard: *See*—
Brazinsky, Judy; Shin, Chung T.; Alonso, Richard; and Benfatto, Anthony, 5,368,848, Cl. 424-65.000.

Alpha Forming Systems, Division of Elco Concrete Co, Inc: *See*—
Boisseau, Leon H., 5,368,269, Cl. 248-351.000.

Alps Electric Co., Ltd.: *See*—
Hirata, Toshihisa, 5,369,238, Cl. 200-530.000.

Altavela, Robert P.; Narang, Ram S.; Collins, David J.; and Sims, Julie A., to Xerox Corporation. Method of fabricating ink jet printheads. 5,368,683, Cl. 156-633.000.

Altera Corporation: *See*—
Patel, Rakesh H.; and Wong, Myron W., 5,369,314, Cl. 326-13.000.

Altman, Israel: *See*—
Levy, Haviv; and Altman, Israel, 5,369,431, Cl. 348-126.000.

Alza Corporation: *See*—
Eckenhoff, James B.; Burkoth, Terry L.; Carr, John P.; and Wright, Jeremy C., 5,368,863, Cl. 424-473.000.

Amada Company, Limited: *See*—
Matsuda, Morikatsu, 5,367,935, Cl. 83-552.000.

American Cyanamid Company: *See*—
Newhouse, Keith E.; and Schaefer, Thomas J., 5,369,022, Cl. 435-172.100.
Ziegler, Carl B., Jr.; Curran, William V.; and Feigelson, Gregg, 5,369,102, Cl. 514-210.000.

American Metal Products Co.: *See*—
Annestedt, James W., Sr., 5,368,784, Cl. 261-105.000.

Amici, Robert M.: *See*—
La Fleur, Edward E.; Amici, Robert M.; Freed, William T.; Work, William J.; and Carson, William G., 5,369,169, Cl. 525-57.000.

Amino GmbH: *See*—
Steinmetzer, Walter, 5,369,122, Cl. 514-423.000.

Ammons, Kimberley: *See*—
O'Rourke, Anthony; Perel, M. William; and Ammons, Kimberley, 5,367,986, Cl. 119-709.000.

Amoco Corporation: *See*—
Miller, James D.; and Levan, Chris D., 5,369,146, Cl. 523-215.000.

Amos, Carl R. Methods of and apparatus for manipulating electromagnetic phenomenon. 5,369,511, Cl. 359-15.000.

Amphenol Corporation: *See*—
Bleier, Robert; and Hubner, Hans G., 5,369,259, Cl. 235-441.000.

AMSTED Industries Incorporated: *See*—
Kaim, John W., 5,368,324, Cl. 280-438.100.

Amundson, William T.: *See*—
Seebald, James D.; Bledsoe, Carlton L.; and Amundson, William T., 5,368,091, Cl. 165-5.000.

Amuse Me, Inc.: *See*—
Mast, Richard, 5,368,515, Cl. 446-217.000.

Amyot, Andre, to Bombardier Inc. Recessed paddle wheel speed measuring device for personal watercraft. 5,369,360, Cl. 324-174.000.

Anapliotis, Emmanuel; and Schich, Gisbert, to Effner Biomet GmbH. Modular endoscope having easily replaceable parts. 5,368,014, Cl. 128-4.000.

Anco Chemicals Inc.: *See*—
Humphrey, John, 5,368,773, Cl. 252-389.230.

Anco Environmental Processes, Inc.: *See*—
Brewster, Michael D., 5,368,703, Cl. 204-86.000.

Andcare, Inc.: *See*—
Henkens, Robert W.; Zhao, Junguo; Wojciechowski, Marek; O'Daly, John P.; Liang, Zhi-Wei; and Morris, Susan E., 5,368,707, Cl. 204-153.120.

Andersen, Asbjorn: *See*—
Tandberg, Geir; Sangesland, Sigbjorn; and Andersen, Asbjorn, 5,368,114, Cl. 175-267.000.

Andersen, David P.: *See*—
Nelson, George F.; and Andersen, David P., 5,369,373, Cl. 327-121.000.

Anderson, Bernard J., to General Electric Company. Anti-fretting blade retention means. 5,368,444, Cl. 416-220.00R.

Anderson, Charles C.: *See*—
Christian, Paul A.; and Anderson, Charles C., 5,368,995, Cl. 430-530.000.

Anderson, Iver E.; Lograsso, Barbara K.; and Ellis, Timothy W., to Iowa State University Research Foundation, Inc. Gas atomization synthesis of refractory or intermetallic compounds and supersaturated solid solutions. 5,368,657, Cl. 148-400.000.

Anderson, Mark R.: *See*—
Parker, Robert P.; and Anderson, Mark R., 5,369,446, Cl. 348-625.000.

Anderson, Otis R. Electronic blast control system for downhole well operations. 5,369,579, Cl. 364-422.000.

Anderson, Paul R.: *See*—
Benjamin, Mark M.; Bailey, Robert P.; Bennett, Thomas E.; Chang, Yu-Jung; Li, Chi-Wang; Edwards, Marc A.; and Anderson, Paul R., 5,369,072, Cl. 502-84.000.

Anderson, Stephen N.: *See*—
Kychakoff, George; Anderson, Stephen N.; Seymore, George E.; and Manchester, Earl B., 5,368,471, Cl. 431-12.000.

Anderson, Steven J.; and Behr, Leonard W., to Automotive Systems Laboratory, Inc. Quick-response accelerometer with increased contact dwell time. 5,369,231, Cl. 200-61.45M.

Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, to Aisin Aw Co., Ltd.; and Toyota, Jidosha Kabushiki Kaisha. Control method of and system thereof for inversely proportionally raising and lowering servo hydraulic pressure, based on input torque, for engaging and disengaging frictional elements in automatic transmission. 5,368,531, Cl. 477-155.000.

Andoo, Keikichi: *See*—
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.

Andreiko, Craig A.; and Payne, Mark A., to Ormco Corporation. Method for forming jigs for custom placement of orthodontic appliances on teeth. 5,368,478, Cl. 433-24.000.

Andrew, Daniel E. Epidural needle having cannula clamp. 5,368,573, Cl. 604-158.000.

Angeion Corporation: *See*—
Adams, Theodore P., 5,369,351, Cl. 320-7.000.

Savage, Steven D., 5,368,564, Cl. 604-95.000.

Anjar Co.: *See*—
Becker, James R., 5,368,300, Cl. 273-121.00R.

Annestedt, James W., Sr., to American Metal Products Co. Scoop humidifier. 5,368,784, Cl. 261-105.000.

Anschutz, James E.: *See*—
Johnson, David R.; Stutts, Kenneth J.; Batzel, Daniel A.; Hallfrisch, Virginia A.; and Anschutz, James E., 5,368,889, Cl. 427-244.000.

Ant Nachrichtentechnik GmbH: *See*—
Gockler, Heinz, 5,369,487, Cl. 356-350.000.

Antesberger, A. Wayne, to United States of America, Army. Method and system for real-time wavelength identification for infrared detectors. 5,369,276, Cl. 250-334.000.

Anthony Industries, Inc.: *See*—
Hepler, Eric J., 5,367,847, Cl. 52-309.400.

Anthony, Thomas R.: *See*—
Cline, Harvey E.; and Anthony, Thomas R., 5,368,031, Cl. 128-653.200.

Anton, Joseph G.: *See*—
Frederickson, Dale W.; Meyer, Robert F.; and Anton, Joseph G., 5,367,900, Cl. 73-52.000.

Antonacci, Anthony C.; Uschold, Robert C.; Sorenson, Crystal C.; Bailey, Kevin J.; and Duffy, Kevin D., to Ethicon, Inc. Percutaneous catheter introducer. 5,368,574, Cl. 604-164.000.

Anzai, Mitsutoshi; Akuzawa, Noboru; Matsuura, Yuuji; and Sugiyama, Genpei, to Hodogaya Chemical Co., Ltd. Electrophotographic toner containing a zinc benzoate compound. 5,368,971, Cl. 430-110.000.

Aoki, Koso; Fukugauchi, Masaaki; Imai, Tomoyuki; Horiishi, Nanao; and Hayashi, Kazuyuki, to Toda Kogyo Corp. Superparamagnetic fine particles of iron oxide and magnetic recording media containing said particles. 5,368,933, Cl. 428-329.000.

Aoki, Tatsuo: *See*—
Hyuga, Fumiaki; Shiojima, Kenji; Aoki, Tatsuo; Asai, Kazuyoshi; Tokumitsu, Masami; Nishimura, Kazumi; and Yamane, Yasuro, 5,369,043, Cl. 437-40.000.

Aoki, Yuji: *See*—
Usui, Toshio; Aoki, Yuji; Kamei, Masayuki; and Morishita, Tadataka, 5,369,275, Cl. 250-310.000.

Aoshima, Kunimasa: *See*—
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.

Aoyama, Toshimi: *See*—
Uchikawa, Kiyoshi; Komano, Hiroshi; Aoyama, Toshimi; and Ohta, Katsuyuki, 5,368,991, Cl. 430-288.000.

API, Inc.: *See*—
Ngyuen, Tai, 5,368,165, Cl. 206-554.000.

Applied Research System Ars Holding N.V.: *See*—
Attridge, John W., 5,369,717, Cl. 385-12.000.

APV Corporation Limited: *See*—
Meredith, Roger J., 5,369,250, Cl. 219-691.000.

Arai, Hiroshi; Hewson, Clifford B.; and Hartloff, John W. Pallet support leg including semi-circular flange blades. 5,367,961, Cl. 108-56.300.

Arai, Hiroshi: *See*—
Ismail, Morhudun G. M. U.; Nakai, Zenjiro; and Arai, Hiroshi, 5,369,067, Cl. 501-119.000.

Arai, Naoki: *See*—
Fujiwara, Itsuo; Ito, Tadashi; and Arai, Naoki, 5,368,994, Cl. 430-508.000.

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Kawakami, Kiyotada; Takuma, Masao; Aseada, Tooru; Yamamoto, Tooru; and Murata, Haruhiko, 5,369,436, Cl. 348-355.000.

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Akatsuka, Minoru; Sohda, Yuji; and Sawada, Kazutoshi, 5,369,513, Cl. 359-73.000.

Asahi, Inc.: *See—*
Gross, Alexander L.; and Nakano, Kiyotaka L., 5,367,791, Cl. 36-31.000.

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Kato, Jinichiro; Yoneyama, Toshio; Shimura, Kazuhiko; Nakayama, Yoshiaki; and Kanekiyo, Kenji, 5,369,165, Cl. 524-462.000.

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Misawa, Masayuki, 5,369,230, Cl. 200-52.00R.
Yokota, Hidetaka, 5,369,456, Cl. 354-222.000.

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Kambayashi, Kosaku; Nakamura, Katsunori; Satoh, Takao; Asaka, Yoshihiro; and Nagasawa, Teruo, 5,369,751, Cl. 395-425.000.

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Yokose, Kenji; Nagase, Makoto; Kamimura, Hiroshi; Asakura, Yamato; Matsui, Tetsuya; Ibe, Hidefumi; Nishino, Yoshitaka; and Uchida, Shunsuke, 5,369,674, Cl. 376-245.000.

Asami, Masahiro, to Fuji Photo Film Co., Ltd. Color photographic material. 5,368,996, Cl. 430-531.000.

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Tanaka, Asami, 5,368,831, Cl. 433-226.000.

Asbell, Oscar D., to Georgia Tech Research Corporation. Rotary actuated, enviromental, insulation displacement connector. 5,368,501, Cl. 439-418.000.

Asghar, Safdar M.; and Bartkowiak, John G., to Advanced Micro Devices, Inc. Apparatus and method for discriminating and suppressing noise within an incoming signal. 5,369,791, Cl. 455-222.000.

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Haacke, Gottfried; Panzer, Hans P.; Magliocco, Lino G.; and Asher, Sanford A., 5,368,781, Cl. 252-582.000.

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Miyake, Akio; Kawano, Yasuhiko; and Ashida, Yasuko, 5,369,104, Cl. 514-212.000.

Ashton, Larry J.; and Sollinger, John F., to Du Pont de Nemours, E. I., and Company. Waste tank for vacuum sewage system. 5,368,636, Cl. 96-195.000.

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Hying, Clement F.; Schickert, Randy R.; and Hahn, Gregory, 5,368,084, Cl. 160-265.000.

Ask, David T.: *See—*
Sakizadeh, Kumars; Blair, John T.; and Ask, David T., 5,369,000, Cl. 430-619.000.

Aslami, Mohd; and Lavallee, Ronald L., to Automated Light Technologies, Inc. Optical communication system and method electrical power transmission for thereof. 5,369,518, Cl. 359-171.000.

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Shambroom, John R., 5,368,041, Cl. 128-731.000.

Assarpour, Hamid: *See—*
Gholizadeh, Dariush; Assarpour, Hamid; and Messaoudene, Mohamed, 5,369,737, Cl. 395-126.000.

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Rabl, Ari; and Gordon, Jeff M., 5,369,528, Cl. 359-855.000.

Asten Group, Inc.: *See—*
Cunnane, Francis J., III; and Sanders, H. Thomas, 5,368,696, Cl. 162-358.200.

Asuka Trading Co., Ltd.: *See—*
Nishii, Kouji, 5,367,915, Cl. 74-441.000.

AT&T Bell Laboratories: *See—*
Islam, Mohammed N., 5,369,519, Cl. 359-173.000.

AT&T Corp.: *See—*
Archibald, James L.; and Davis, William R., 5,369,703, Cl. 380-9.000.
Avramopoulos, Hercules; and Whitaker, Norman A., Jr., 5,369,520, Cl. 359-176.000.
Bales, Bruce M.; Fidder, Ted M.; Gallagher, Donald D.; and Thieler, Stephen M., 5,369,694, Cl. 379-206.000.
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Krauss, William J.; Pieper, Thomas J.; Ruel, Bernard G.; Stewart, Gilbert M.; and Whildin, Kathleen C., 5,369,696, Cl. 379-268.000.
McAteer, Jeffrey P.; and Willis, Kevin D., 5,369,701, Cl. 379-420.000.

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Yanagi, Kenichi; Kato, Mitsuo; Tsurusaki, Kazuya; Taguchi, Toshio; Atarashiya, Kenji; Rokkaku, Tadashi; and Yamashita, Ichiro, 5,369,337, Cl. 315-111.810.

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Hartog, Adrian H.; and Davies, Robin E. R., 5,369,741, Cl. 395-143.000.

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Bachmann, David E., 5,368,700, Cl. 203-10.000.

Atmel Corporation: *See—*
Lam, Ken, 5,367,763, Cl. 29-827.000.

Atochem: *See—*
Wirth, Rene , 5,369,157, Cl. 524-100.000.

Atomic Energy of Canada Limited: *See—*
Suppiah, Sellathurai; Burns, Deborah L.; Irving, Karen G.; and Aelick, Christopher R., 5,368,475, Cl. 431-268.000.

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Dunn, Richard L.; Tipton, Arthur J.; Southard, George L.; and Rogers, Jack A., 5,368,859, Cl. 424-426.000.

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Kohno, Satoshi; and Hidaka, Shizuaki, 5,368,146, Cl. 192-70.160.

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Atwell, William D., Jr.: *See—*
Giles Grady L.; Atwell, William D., Jr.; Wilson, Jesse R.; and Reis, Richard B., 5,369,752, Cl. 395-425.000.

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Gruber, Friedrich; Pucher, Hans-Jorg; and Auer, Reinhard, deceased, 5,369,328, Cl. 313-141.000.

Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation (S.N.E.C.M.A.). Integral composite gas turbine afterburner structure. 5,367,874, Cl. 60-261.000.

August, Henry, to Hughes Aircraft Company. Aerotumbling missile. 5,368,255, Cl. 244-3.280.

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Aebi, Kurt J.; Grypa, Roman D.; Aung, Thein; and Lee, Mary J., 5,368,873, Cl. 426-310.000.

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Austad, Helge; Gaven, Thomas; and Mack, Ronald A., to Canrad, Inc. Short arc lamp electrode rod supports. 5,369,329, Cl. 313-284.000.

Austin, Jerrold N.: *See—*
Labarre, Ernest D.; and Austin, Jerrold N., 5,367,774, Cl. 30-262.000.

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Calka, Andrzej; and Ninham, Barry W., 5,368,812, Cl. 419-5.000.

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Carpenter, Allan L.; and Farmer, Raymond F., 5,367,971, Cl. 114-243.000.

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Anderson, Steven J.; and Behr, Leonard W., 5,369,231, Cl. 200-61.45M.

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Jacobson, Wendell L.; McCulloch, Thomas R.; and McCully, Dudley L., 5,368,340, Cl. 285-158.000.

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Kadambi, Vedanth; Morgia, James J.; and Vendiluoli, Jonathan, 5,368,095, Cl. 165-83.000.

Averbuch, Nimrod: *See—*
Wilson, Timothy J.; and Averbuch, Nimrod, 5,369,501, Cl. 358-407.000.

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Richard, Daniel; Kolman, Kenneth; Case, Charles; Becker, Ronald; and Gross, Alex, 5,367,792, Cl. 36-114.000.

AVK-Holding: *See—*
Kjaer, Niels A., 5,368,064, Cl. 137-375.000.

AVL Gesellschaft Fur Verbrennungskraftmaschinen und Messtechnik m.b.H Prof.Dr.Dr.h.c. Hans List: *See—*
Wallnofer, Wolfgang; and Krempl, Peter W., 5,369,327, Cl. 310-313.00A.

AVL Medical Instruments AG: *See—*
Lubbers, Dietrich W.; and Karpf, Hellfried, 5,368,027, Cl. 128-633.000.

Avramopoulos, Hercules; and Whitaker, Norman A., Jr., to AT&T Corp. Optical regeneration circuit. 5,369,520, Cl. 359-176.000.

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Matsuda, Toyohiko; Nishino, Masakazu; and Awamoto, Shigeru, 5,369,439, Cl. 348-405.000.

Ayers, Richard A.; and Wesley, Richard H., to Pulsed Power Technologies, Inc. Apparatus for treating a confined liquid by means of a pulse electrical discharge. 5,368,724, Cl. 210-110.000.

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Ibarrola, Jesus E., 5,368,149, Cl. 194-317.000.

Azrak-Hamway International, Inc.: *See—*
Driska, John, 5,368,299, Cl. 273-119.00R.

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B. G. Roberts Chemicals Inc.: *See—*
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B-J Trading Ltd.: *See—*
Hara, Akira; and Takagi, Toshisaburou, 5,367,955, Cl. 101-424.000.

Baba, Masami: *See—*
Kawai, Masaharu; Miyoshi, Katsuya; and Baba, Masami, 5,369,490, Cl. 356-376.000.

Babcock BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG: *See—*
Bold, Jorg, 5,368,663, Cl. 156-39.000.

Babcock Feuerungssysteme GmbH: *See—*
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Kychakoff, George; Anderson, Stephen N.; Seymore, George E.; and Manchester, Earl B., 5,368,471, Cl. 431-12.000.
Williams, Paul J., 5,368,096, Cl. 165-113.000.

Babior, Bernard M. Stabilization of leukocytes. 5,369,001, Cl. 435-2.000.

Babiuk, Lorne A.: *See—*
Parker, Michael D.; Cox, Graham J.; and Babiuk, Lorne A., 5,369,026, Cl. 435-240.100.

Bachmann, David E., to Atlantic Richfield Company. System and method for reducing hydrocarbons in wastewater. 5,368,700, Cl. 203-10.000.

Bacrania, Kantilal; Chi, Chong I.; and Fisher, Gregory J., to Harris Corporation. Analog-to-digital converter and method of fabrication. 5,369,309, Cl. 327-94.000.

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Heathman, James F.; Carpenter, Robert B.; Badalamenti, Anthony M.; Marcel, Kenneth P.; Siffert, Robert R.; and Rimer, Charles J., 5,368,103, Cl. 166-289.000.

Badstieber, Johann, to Paschall-Werk G. Maier GmbH. Formwork panel having at the edges thereof projecting edge webs of flat material. 5,368,272, Cl. 249-192.000.

Badyal, Rajeev; and Knowles, Vernon, to Hewlett-Packard Corporation. CMOS power-on reset circuit. 5,369,310, Cl. 327-143.000.

Baghdachi, Jamil; and Van Valkenburg, Cheryl, to Adco Products, Inc. Polyurethane block copolymer. 5,368,943, Cl. 428-423.100.

Bahmatyuk, Bogdan P.: *See—*
Kozmik, Ivan D.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Grigortchak, Ivan I.; Krigan, Elvria G.; and Bahmatyuk, Bogdan P., 5,368,957, Cl. 429-194.000.

Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, to Hoechst Aktiengesellschaft. Decyl alcohol mixtures, phthalic esters obtainable therefrom and their use as plasticizers. 5,369,162, Cl. 524-296.000.

Bai, Yu Sheng; and Kachru, Ravinder, to SRI International. Coherent time-domain data storage with spread-spectrum data pulse. 5,369,665, Cl. 375-1.000.

Bailey, Charles E.; Gale, Ernest S.; Hassell, Carl A.; Schaffer, Scott J.; Paranjape, Sushama M.; and West, Stephen C., to International Business Machines Corporation. Error detection and correction having one data format recordable on record media using a diverse number of concurrently recorded tracks. 5,369,652, Cl. 371-40.100.

Bailey, Kevin J.: *See—*
Antonacci, Anthony C.; Uschold, Robert C.; Sorenson, Crystal C.; Bailey, Kevin J.; and Duffy, Kevin D., 5,368,574, Cl. 604-164.000.

Bailey, Robert P.: *See—*
Benjamin, Mark M.; Bailey, Robert P.; Bennett, Thomas E.; Chang, Yu-Jung; Li, Chi-Wang; Edwards, Marc A.; and Anderson, Paul R., 5,369,072, Cl. 502-84.000.

Baines, Edward A., to Continental Engineering Group, Inc. Flip-top computer workstation. 5,368,377, Cl. 312-27.000.

Baird, Michael S.: *See—*
Heideman, Robert J.; Rusch, Randy A.; and Baird, Michael S., 5,369,300, Cl. 257-651.000.

Baker, Douglas V.: *See—*
Bowden, David R.; Friend, Timothy R.; and Baker, Douglas V., 5,369,494, Cl. 356-402.000.

Baker, Edward J.; Lee, Robert W.; Cooper, Eugene R.; Toner, John L.; and Illig, Carl R., to Sterling Winthrop Inc. X-ray contrast compositions containing an organic crystalline X-ray contrast agent and a cellulose derivative. 5,368,837, Cl. 424-5.000.

Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Joyce, James M.; Loffredo, John M.; and Sanderson, Kenneth R., to International Business Machines Corporation. Method and apparatus for the direct transfer of information between application programs running on distinct processors without utilizing the services of one or both operating systems. 5,369,749, Cl. 395-325.000.

Baker Hughes Incorporated: *See—*
Borgard, Bradley G.; Harrell, Jack B., Jr.; and Link, John, 5,368,774, Cl. 252-391.000.
Glendinning, Peter H., 5,368,751, Cl. 210-791.000.

Bala, John; and Ning, Xiaohui, to United States Surgical Corporation. Ring lens assembly for an optical viewing device. 5,369,525, Cl. 359-435.000.

Baldwin Graphic Systems, Inc.: *See—*
Gasparrini, Charles R.; and Cano, Walter H., 5,368,157, Cl. 206-209.000.

Baldwin, Henry C., Jr. Rotary vegetable grater. 5,368,241, Cl. 241-91.000.

Baldwin, John L. E.; and Blaxtan, Peter W., to Rank Cintel Limited. Recording video signals on cinematographic film using a deformable mirror device. 5,369,433, Cl. 348-207.000.

Bales, Bruce M.; Fidder, Ted M.; Gallagher, Donald D.; and Thieler, Stephen M., to AT&T Corp. Unattended meet-me-conference controlled by a telephone terminal. 5,369,694, Cl. 379-206.000.

Balfour, Alan R.; and Patrick, Daniel R., to Dentsply Research & Development Corp. Dental implant wrench. 5,368,480, Cl. 433-141.000.

Balkovec, James M.: *See—*
Hammond, Milton L.; Balkovec, James M.; and Mathre, David J., 5,369,093, Cl. 514-11.000.

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Balon Corporation: *See—*
Scaramucci, John P., 5,368,066, Cl. 137-383.000.

Baltensperger, Werner; and Linzberger, Robert, to Buehler AG. Roller mill for milling grain products. 5,368,239, Cl. 241-37.000.

Balzeit, Ralf; Behrens, Gunnar; Bloehdorn, Gerhard; Lassen, Bernd; Penza, Hans; and Roth, Norbert, to Linotype-Hell AG. Device for automatically clamping and releasing recording material and operation of said device. 5,369,425, Cl. 346-138.000.

Ban, Shunsuke: *See—*
Harada, Keizo; Takikawa, Takatoshi; Maeda, Takao; Ban, Shunsuke; and Yamanaka, Shosaku, 5,369,220, Cl. 174-257.000.

Bando, Tomomi: *See—*
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Bang Zoom Design Inc.: *See—*
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Banjanin, Zoran: *See—*
Fukukita, Hiroshi; Yao, Lin X.; Banjanin, Zoran; Kim, Jin; Hagiwara, Hisashi; and Kawabuchi, Masami, 5,369,624, Cl. 367-103.000.

Banji, Masatoshi, to Sumitomo Rubber Industries, Inc. Method for manufacturing golf club heads or their prototypes. 5,368,422, Cl. 409-84.000.

Banner Beverage Systems, Inc.: *See—*
Groh, James K., 5,368,205, Cl. 222-189.000.

Banno, Tutomu; and Nakata, Junichi, to Pioneer Electronic Corporation. Video disk player comprising a signal selection circuit for selecting one of a video data signal and a luminance signal as an output signal. 5,369,498, Cl. 358-342.000.

Banzai, Keiichiro: *See—*
Sakai, Takeshi; Banzai, Keiichiro; Imani, Yuichi; and Sakurai, Katsuo, 5,368,120, Cl. 180-197.000.

Barcza, W. Kevin; and Bruchez, Raymond J., Jr., to United Technologies Corporation. One-piece flameholder. 5,367,873, Cl. 60-261.000.

Barkan, Christina S.: *See—*
Rosa, Ralph; Greenrose, Jay; Benzalel, Menashe; Dvorkis, Paul; Barkan, Christina S.; and Barkan, Edward, 5,369,264, Cl. 235-462.000.

Barkan, Edward: *See—*
Rosa, Ralph; Greenrose, Jay; Benzalel, Menashe; Dvorkis, Paul; Barkan, Christina S.; and Barkan, Edward, 5,369,264, Cl. 235-462.000.

Barker, Daniel F., to Sabian Ltd. Hand held cymbal device. 5,367,939, Cl. 84-402.000.

Barnes, Lawrence C.; and Thornberg, Gary R., to NCR Corporation. Multi-chip module with multiple compartments. 5,369,552, Cl. 361-816.000.

Baro, Gunter; and Russ, Jakob, to ABB Reaktor GmbH. Metallic sleeve for bridging a leakage point on a pipe. 5,368,075, Cl. 138-98.000.

Barrett, David J., to United States of America, Navy. Vibration-damping structural component. 5,368,914, Cl. 428-201.000.

Barringer, Ben G. Table tennis paddle and ball holder. 5,368,172, Cl. 211-13.000.

Barsotti, Robert J.; and Johnson, Jeffery W., to Du Pont de Nemours, E. I., and Company. Acid-epoxy-melamine coating composition modified with a silane polymer. 5,369,153, Cl. 523-429.000.

Barthelmes, Clemens: *See—*
Goelling, Hans-Werner; and Barthelmes, Clemens, 5,369,334, Cl. 313-634.000.

Bartholdy, Jesper, to Haldor Topsoe A/S. Void grading. 5,368,722, Cl. 208-149.000.

Bartkowiak, John G.: *See—*
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Bartky, Walter S., to XAAR Limited. Method of testing multi-channel array pulsed droplet deposition apparatus. 5,369,420, Cl. 347-19.000.

Bartz, Stephen J.: *See—*
Johnson, David B.; Scott, Allan W.; and Bartz, Stephen J., 5,369,267, Cl. 250-214.0VT.

Basak, Sanjay: *See—*
Rajeshwar, Krishnan; Wei, Chang; and Basak, Sanjay, 5,368,632, Cl. 75-721.000.

Baseman, Joel B.; Su, C. J.; and Dallo, S. F., to Board of Regents, The University of Texas System. Method for mycoplasma detection in a biological sample. 5,369,005, Cl. 435-6.000.

BASF Aktiengesellschaft: *See—*
Kielhorn-Bayer, Sabine; Zeiner, Hartmut; Goerrissen, Heiner; and Saenger, Dietrich, 5,369,177, Cl. 525-154.000.
Kroener, Hubertus; Dittrich, Uwe; and Zettl, Alexander, 5,369,164, Cl. 524-458.000.
Wolff, Stefan; Renz, Hans; and Mohrhardt, Guenter, 5,369,207, Cl. 528-49.000.

BASF Corporation: *See—*
Adyha, Atish; and Lilly, Robert L., 5,369,160, Cl. 524-140.000.
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Hartung, Michael; Lassmann, Walter; Poth, Ulrich; and Wegner, Egon, 5,368,944, Cl. 428-423.100.

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Nita, Henry, 5,368,558, Cl. 604-22.000.
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Reizlein, Karl; Engelhardt, Ulrich; Horstmann, Heinz-Otto; Singer, Rolf-Jurgen; Wangermann, Klaus; and Wirth, Wolfgang, 5,369,118, Cl. 514-383.000.
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Beckham, James. Tree edging border. 5,367,822, Cl. 47-25.000.

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Broker, Michael; and Fibi, Mathias, 5,369,029, Cl. 435-262.500.

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Berman, Paul A.; Tarlow, Kenneth A.; Holmes, Jack; and Douglas, Allan, to Douglas, Allan. Dual-footboard low-profile exercise cycle. 5,368,321, Cl. 280-221.000.

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Beth Israel Hospital Assoc.: *See—*
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Bettenhausen, Jerome H. Surfacing tool. 5,368,424, Cl. 409-182.000.

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Betz Laboratories, Inc.: *See—*
Donofrio, Deborah K.; and Whitekettle, Wilson K., 5,369,115, Cl. 514-367.000.
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Beux, Claudio. Automatic breathing apparatus for underwater immersion at medium and great depth. 5,368,020, Cl. 128-204.290.

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Biles, Bertram R., to Kansas State University Research Foundation. Data storage and retrieval system with improved data base structure. 5,369,763, Cl. 395-600.000.

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Billner, Werner, to Rieter Ingolstadt. Process and device for open-end spinning. 5,367,868, Cl. 57-409.000.

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Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., to International Business Machines Corporation. Multi-party secure session/conference. 5,369,705, Cl. 380-21.000.

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Biscotti, Aurelio: *See—*
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Black & Decker Inc.: *See—*
Nickels, Richard C., Jr., 5,369,236, Cl. 200-329.000.

Blair, Gary L. Method for sharing access to database elements in a data processing system. 5,369,764, Cl. 395-650.000.

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Blakeway, John M.; and Sauvage, Francoise, to Givaudan-Roure Corporation. Odorant compositions. 5,369,092, Cl. 512-2.000.

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Bledsoe, Carlton L.: *See—*
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Bleier, Robert; and Hubner, Hans G., to Amphenol Corporation. Chip card reader. 5,369,259, Cl. 235-441.000.

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Blizzard, John D.; Wright, Antony P.; and Cottington, Levi J., to Dow Corning Corporation. Deformable, abrasion-resistant silicone coating and method of producing the same. 5,368,941, Cl. 428-412.000.

Blizzard, William A., Jr.; and Tilton, Frederick T., to Weatherford U.S., Inc. Stage tool. 5,368,091, Cl. 166-100.000.

Block Drug Company: *See—*
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Bloom Engineering Company, Inc.: *See—*
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Blue Star Technologies, Ltd.: *See—*
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Bocarsly, Andrew B.: *See*—
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Boehringer Mannheim GmbH: *See*—
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Boezi, Stephen J.: *See*—
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Boffardi, Bennett P.: *See*—
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Bohme, Frank: *See*—
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Bohme, Reinhard D.; and Lerew, Bobby J., to James River Paper Company, Inc. Packaging material having a wax coating containing a styrene copolymer. 5,368,946, Cl. 428-484.000.

Boireau, Alain: *See*—
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Boisseau, Leon H., to Alpha Forming Systems, Division of Elco Concrete Co, Inc. Adjustable bracing system for column forms. 5,368,269, Cl. 248-351.000.

Bok, Hendrik F., to Specialty Coating Systems Inc. Vacuum chuck for coating apparatus. 5,368,645, Cl. 118-500.000.

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Bold, Jorg, to Babcock BSH Aktiengesellschaft Vormals Buttner-Schilde-Haas AG. Process for producing plate-shaped bodies made of a mixture of plaster and fibrous materials and installation for implementing. 5,368,663, Cl. 156-39.000.

Bolder Battery, Inc.: *See*—
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Bolhaar, Antonius B. G., to Whitaker Corporation, The. Method and apparatus for measuring the refractive index of index matching gels and like substances. 5,369,482, Cl. 356-128.000.

Bolte, Wallace B.: *See*—
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Jakubke, Hans-Dieter; Ullmann, Dirk; Drauz, Karlheinz; and Bommarius, Andreas, 5,369,018, Cl. 435-68.100.

Bond, James W., to United States of America, Navy. Spatial combiner for a digital VLF/LF receiver. 5,369,663, Cl. 375-1.000.

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Bonnesen, John S.; and Dewey, James D., to ADC Telecommunications, Inc. Thyristor fail-safe device. 5,369,543, Cl. 361-117.000.

Bonnet, Olivier, to UBD Patent - und Lizenzverwaltungsgesellschaft. Apparatus for reducing rubber to particles. 5,368,240, Cl. 241-41.000.

Booda Products, Inc.: *See*—
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Borgard, Bradley G.; Harrell, Jack B., Jr.; and Link, John, to Baker Hughes Incorporated. Water soluble corrosion inhibitor effective against corrosion by carbon dioxide. 5,368,774, Cl. 252-391.000.

Borman, Linda S.: *See*—
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BORUS Spezialverfahren und -gerate im Sondermaschinen-bau GmbH: *See*—
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Bosbur, Inc.: *See*—
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Bosies, Elmar: *See*—
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Clement, Thomas P.; Bates, James S.; and White, Darrell W., 5,368,045, Cl. 128-754.000.
Hamm, Mark A.; and Crowley, Robert J., 5,368,035, Cl. 128-662.060.
Isner, Jeffrey M., 5,368,034, Cl. 128-660.030.

Boston Technology, Inc.: *See*—
Murray, John P.; Hemmings, David F.; and Gergacz, David S., 5,369,697, Cl. 379-361.000.

Botanico, Inc.: *See*—
Flanders, Bobby F.; and Fults, John H., 5,368,353, Cl. 294-152.000.

Botta, Mauro: *See*—
Aime, Silvio; and Botta, Mauro, 5,368,839, Cl. 424-9.000.

Bottle, Dietrich: *See*—
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Botts, Charles R.: *See*—
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Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., to Institut De Catalyse Du Department Siberien De L'Academie Des Sciences De Russie and Vniigaz (Institut de recherches de gas naturels). Vanadium catalysts and desulfurization of sulfur compound-containing gases therewith. 5,369,076, Cl. 502-354.000.

Bowden, David R.; Friend, Timothy R.; and Baker, Douglas V., to X-Rite, Incorporated. Portable scanning colorimeter. 5,369,494, Cl. 356-402.000.

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Box, Gary W.; and Kelly, Lawrence S., to Graco Inc. Plural component controller. 5,368,059, Cl. 137-3.000.

Boyesen, Eyvind. Float bowl for carburetors. 5,368,788, Cl. 261-44.300.

Boyle, Bernard; and Kumar, Sharad, to Commonwealth Science and Industrial Research Organisation. Pox virus vaccine. 5,368,855, Cl. 435-320.100.

Boyles, Mark J., to BioCare Laboratories, Inc. Lift apparatus and method for transporting a passenger into and out of a swimming pool. 5,367,721, Cl. 4-496.000.

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Aime, Silvio; and Botta, Mauro, 5,368,839, Cl. 424-9.000.

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Roberts, David A.; Pearce, Robert J.; Bradbury, Robert H.; and Thomas, Andrew P., 5,369,114, Cl. 514-312.000.

Braschel, Volker; and Seitz, Dieter, to Lucas Industries public limited company. Method for controlling the brake pressure in an anti-lock brake system of a dual-track vehicle. 5,368,373, Cl. 303-111.000.

Braun, Bodo, to Siemens Aktiengesellschaft. Method for picture-in-picture insertion and device for performing the method. 5,369,442, Cl. 348-567.000.

Braunschweig, Ehrich J.; Nauman, Margaret M.; and Graham, Joseph, to Minnesota Mining and Manufacturing Company. Granular materials including a ceramic coating which reduces dusting, method of preparing same and method of reducing dust generation. 5,368,936, Cl. 428-403.000.

Brayer, Randall R.: *See*—
Oare, Thomas R.; Brayer, Randall R.; Kahrs, Jeffrey W.; Robinson, Beale A.; Trares, Keith C.; and McQuate, Raymond D., 5,368,082, Cl. 152-517.000.

Brazinsky, Judy; Shin, Chung T.; Alonso, Richard; and Benfatto, Anthony, to Bristol-Myers Squibb Company. Cosmetic gel stick compositions. 5,368,848, Cl. 424-65.000.

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Bremner, David F., III, to Hewlett-Packard Company. Distributed processing apparatus and method for use in global rendering. 5,369,738, Cl. 395-126.000.

Breslow, Ronald; Marks, Paul A.; Rifkind, Richard A.; and Jursic, Branko, to Sloan-Kettering Institute for Cancer Research; and Columbia, The Trustees of. Potent inducers of terminal differentiation and methods of use thereof. 5,369,108, Cl. 514-266.000.

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Flaim, Tony D.; Lamb, James, III; Moeckli, Kimberly A.; and Brewer, Terry, 5,368,989, Cl. 430-271.000.

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Bridgens, Barry J., to Lucas Industries Public Limited Company. Method of and apparatus for controlling wheel spin. 5,369,586, Cl. 364-426.030.

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Takano, Kazuya; and Onai, Seiji, 5,368,140, Cl. 188-267.000.

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Millar, Colin A.; Brierley, Michael C.; and Whitley, Timothy J., 5,369,523, Cl. 359-341.000.

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Maine, Leslie; and Stafford, Trevor G., 5,368,669, Cl. 156-158.000.

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Counsell, Christopher J. R., 5,369,362, Cl. 324-309.000.
Somekh, Michael G., 5,369,489, Cl. 356-359.000.

British Telecommunications public limited company: *See*—
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Brittner, Rodney: *See*—
Georgis, Steven P.; Sugar, Robert; Brittner, Rodney; and Fox, Thomas D., 5,369,285, Cl. 250-561.000.

Broder, Damon; Movaghar, Abdolreza; and Rhoads, W. Wistar, to Hewlett-Packard Company. Carriage support system for computer driven printer. 5,368,403, Cl. 400-352.000.

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Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.

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Tribbey, David A.; Hertz, Allen D.; Rivas, Mario A.; and Brooks, Dwight D., 5,369,399, Cl. 340-686.000.

Brow, Mark J.; and Pitsch, Ronald P., to United Technologies Automotive, Inc. Method of making resin impregnated fibrous panels. 5,368,803, Cl. 264-257.000.

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Hofler, Thomas J.; Brown, David A.; and Garrett, Steven L., 5,369,485, Cl. 356-345.000.

Brown, Dennis. Inflatable swimmer's safety belt. 5,368,512, Cl. 441-108.000.

Brown, Edward M.: *See*—
Towns, Edward J.; and Brown, Edward M., 5,368,178, Cl. 215-317.000.

Brown, Lindsey: *See*—
Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,368,902, Cl. 427-601.000.

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Brown, Robert K.: *See*—
Toepfer, Craig B.; and Brown, Robert K., 5,369,352, Cl. 320-56.000.

Brown, W. Richard: *See*—
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; and Franz, Norbert W., Jr., 5,368,274, Cl. 251-129.160.

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Broxmeyer, Charles. Vehicle longitudinal control and collision avoidance system for an automated highway system. 5,369,591, Cl. 364-461.000.

Bruchez, Raymond J., Jr.: *See*—
Barcza, W. Kevin; and Bruchez, Raymond J., Jr., 5,367,873, Cl. 60-261.000.

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Bostad, Wayne W.; Morrison, Donald C.; and Mao, Dean J., 5,368,435, Cl. 414-667.000.

Brugnara, Carlo; Kruskall, Margot S.; Goldberg, Mark A.; and Chambers, Linda A., to Beth Israel Hospital Assoc. In-vitro method for determining a surreptitious use of exogenous erythropoiesis stimulating agents by a normal living subject. 5,369,014, Cl. 435-29.000.

Bruke, Richard, to Spirac Engineering AB. Transportation device having a driven shaftless spiral freely fitted in a casing and resting thereon. 5,368,153, Cl. 198-608.000.

Brummer, Jay R.: *See*—
Munday, Theodore F.; Brummer, Jay R.; and Beck, Paul J., 5,368,741, Cl. 210-724.000.

Brunerie, Patrice; and De Laforcade, Vincent, to L'Oreal. Dispenser for foam under pressure. 5,368,231, Cl. 239-145.000.

Brunet, Martine: *See*—
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Brunetta, Fabio; and Pantini, Giovanni, to Ausimont S.p.A. Stable emulsions of perfluoropolyethers and fat substances and process for preparing them. 5,368,847, Cl. 424-61.000.

Brunger, Wilhelm, to Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V. Method and an apparatus for the examination of structures on membrane surfaces. 5,369,274, Cl. 50-306.000.

Bruns, Joachim, to Robert Bosch GmbH. Device on electric power hand tools. 5,368,954, Cl. 429-97.000.

Brusko, Paul, to Nordson Corporation. Spray disk for close centerline spacing. 5,368,233, Cl. 239-290.000.

Brust, Paul: *See*—
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Bruzzi, Mark T.; and Sherer, Peter C., to Eastman Kodak Company. Pallet assembly with container thereon. 5,368,156, Cl. 206-203.000.

Bryan, Robert. Prefabricated deck system. 5,367,853, Cl. 52-702.000.

Bryant, Diane: *See*—
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BS&B Safety Systems, Inc.: *See*—
Farwell, Stephen P.; Short, Edward H., III; and Tomasko, John A., 5,368,180, Cl. 220-89.200.

Buckholtz, Harry E.; Saran, Mohan S.; Leitert, Frederick C.; and Flautt, David A., to Occidental Chemical Corporation. Zero discharge process for manufacturing of phosphorous acid and hypophosphorous acid. 5,368,832, Cl. 423-316.000.

Budan, Victor J.: *See*—
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Buhl, Nancy; Hayes, John; and Kallin, Harald, to Telefonaktiebolaget LM Ericsson. Apparatus and method for directing calls to mobile station subscribers. 5,369,684, Cl. 379-59.000.

Buhlmayer, Peter: *See*—
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Buhr, Gerhard: *See*—
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Built for Speed, Inc.: *See*—
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Bujak, Walter E., Jr. System for controlling heating or cooling capacity in heating or air conditioning systems. 5,369,597, Cl. 364-505.000.

Bulat, Emel S.; and Herrick, Charles, to GTE Laboratories Incorporated. Field effect transistor and method of fabricating. 5,369,294, Cl. 257-264.000.

Bulle, Jean-Marie. Container having props which can be folded away into the lateral structural members. 5,368,179, Cl. 220-1.500.

Bullock, Thomas W. Insulation configurations and method of installation. 5,367,849, Cl. 52-404.000.

Bundy Corporation: *See*—
Ketcham, Mark G.; McNaughton, James; and Zielinski, Robert J., 5,368,275, Cl. 251-149.600.

Burch, Ronald H.; Sutton, Mark E.; Henry, Frank B.; and Cancienne, Warren E., to Laitram Corporation, The. Fluid jet cutting knife apparatus. 5,367,929, Cl. 83-177.000.

Burchnall, John B.: *See*—
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Burel, Gilles; and Pottier, Isabelle, to Thomson-CSF. Method of picture compression by auto-organisation of a neural network. 5,369,503, Cl. 358-433.000.

Burgoyne, William F., Jr.; Casey, Jeremiah P.; and Manuel, Thomas A., to Air Products and Chemicals, Inc. Resins for crosslinking and adhesion promotion. 5,369,184, Cl. 525-327.600.

Burgoyne, William F., Jr.; Casey, Jeremiah P.; Manuel, Thomas A.; and Goldstein, Joel E., to Air Products and Chemicals, Inc. Multiple acetal containing resins. 5,369,185, Cl. 525-327.600.

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Burk, Robert M.; and Woodward, David F., to Allergan, Inc. 1,3-benzodioxole and 1,2-dialkoxybenzene derivatives as ocular hypotensive agents. 5,369,127, Cl. 514-464.000.

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Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.

Burkhart, Stephen S. Augmented awl for creating channels in human bone tissue. 5,368,596, Cl. 606-79.000.

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Burns, Carmen D.; Roane, Jerry; and Cady, James W., to Staktek Corporation. Ultra high density integrated circuit packages method. 5,367,766, Cl. 29-848.000.

Burns, Carmen D.; Cady, James W.; Roane, Jerry M.; and Troetschel, Phillip R., to Staktek Corporation. Warp-resistent ultra-thin integrated circuit package fabrication method. 5,369,056, Cl. 437-209.000.
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Burns, Deborah L.: *See—*
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Burns, Robert J.: *See—*
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BV Optische Industrie "de Oude Delft": *See—*
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Byrd, Jerry; and O'Donnell, Michael. Apparatus for frosting drinking glasses. 5,367,887, Cl. 62-266.000.
Byrne, Robert C., to National Semiconductor Corporation. Tamper resistant integrated circuit structure. 5,369,299, Cl. 257-638.000.
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Cain, Charles J.; and Genova, Ronald R., to Utilex, Inc. Telephonic information communication method and apparatus. 5,369,691, Cl. 379-106.000.
Cain, Christopher M. J.; and Pohl, Anthony P., to Adelaide Bone and Joint Research Foundation, Inc., The. Vibrational analysis of bones. 5,368,044, Cl. 128-739.000.
Calagui, Juanito B. Protective work glove with rigid portions. 5,367,711, Cl. 2-161.600.
Calcitek, Inc.: *See—*
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CalComp Inc.: *See—*
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Calcote, Hartwell F.; and Felder, William, to Aerochem Research Labs, Inc. Apparatus for the flame preparation of ceramic powders. 5,368,825, Cl. 422-198.000.
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Dussert, Bertrand W.; Hayden, Richard A.; Lutchko, John R.; Yoshino, Kishio; Hisaki, Satoru; and Ehara, Fujito, 5,368,739, Cl. 210-660.000.
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Calka, Andrzej; and Ninham, Barry W., to Australian National University. Metal carbides and derived composites made by milling to obtain a particular nanostructural composite powder. 5,368,812, Cl. 419-5.000.
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Kamitakahara, Hirofumi; Yoshino, Hitoshi; Kanome, Osamu; Sato, Tetsuya; and Hayashi, Hisanori, 5,368,789, Cl. 264-1.330.
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Crocker, Michael, 5,368,566, Cl. 604-101.000.
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Terlop, William E.; and Casagrande, Serge, 5,367,760, Cl. 29-605.000.
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Hargett, Wyatt P.; and Littau, Sara E., 5,369,034, Cl. 436-155.000.
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Fortunati, Stefano; Tului, Mario; and Risso, Luca, 5,369,091, Cl. 505-445.000.
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Chan, Alexander; Wenke, Gottfried; and Prota, Ciuseppe, to Clairol Incorporated. Use of metal salts and chelates together with chlorites as oxidants in hair coloring. 5,368,610, Cl. 8-406.000.
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Stuber, Fred A.; Martinez, Michael M.; Morgan, Michael J.; and Chandalia, Kiran B., 5,369,208, Cl. 528-53.000.
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Bellio, Stephen L., 5,369,284, Cl. 250-561.000.
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Lee, Roger, 5,367,779, Cl. 33-290.000.
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Ismail, Morhudun G. M. U.; Nakai, Zenjiro; and Arai, Hiroshi, 5,369,067, Cl. 501-119.000.

Chief Resources Limited: *See—*
Ikari, Yoshikatsu, 5,368,851, Cl. 424-76.300.

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Lee, Han-Sheng; Staller, Steven E.; Logsdon, James H.; and Chilcott, Dan W., 5,369,057, Cl. 437-209.000.

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Powers, John W.; and Choate, Daniel G., 5,369,468, Cl. 355-99.000.

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Choi, Jong S.; and Lee, Chang P., to Goldstar Co., Ltd. Coefficient generation apparatus for variable length decoder. 5,369,405, Cl. 341-63.000.

Choi, Seung, to SamSung Electronics Co., Ltd. Phase-difference synchronization controlling circuit of parallel switching mode power supply. 5,369,564, Cl. 363-71.000.

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Christensen, Roland J. Composite spring support for bicycle seats. 5,368,358, Cl. 297-215.000.

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DeWitt, William L., 5,367,751, Cl. 24-295.000.
Rudzewicz, Robert G.; Dahl, Michael A.; Dunn, Thomas G.; Wenzel, Kenneth J.; and Muckley, Ronald A., 5,369,342, Cl. 318-102.000.

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Bennett, Jeffrey E.; and Chuan, Tseng Y., 5,368,164, Cl. 206-373.000.

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CH_2O Incorporated: *See—*
Iverson, Thomas, Jr.; and Prindle, Joyce, 5,369,099, Cl. 514-108.000.

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Schadeli, Ulrich; and Munzel, Norbert, 5,369,200, Cl. 526-262.000.

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Kuster, Kaspar, 5,368,643, Cl. 118-324.000.
Nesvadba, Peter, 5,369,159, Cl. 524-111.000.
Rutsch, Werner; Hug, Gebhard; and Kohler, Manfred, 5,368,985, Cl. 430-269.000.
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Schmidlin, Tibur; Ostermayer, Franz; and Buhlmayer, Peter, 5,369,110, Cl. 514-281.000.
Schurter, Rolf; and Fory, Werner, 5,369,083, Cl. 504-215.000.
Valet, Andreas; and Kohler, Manfred, 5,369,140, Cl. 522-75.000.

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Stone, William C., 5,368,018, Cl. 128-201.280.

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Fujimori, Mizue; Nagasawa, Ken; and Yamada, Yorinobu, 5,368,965, Cl. 430-57.000.

Citri, Nathan, to Yissum Research Development Company of the Hebrew University of Jerusalem. Method, reagent mixture and kit for determining the presence of bacterial or somatic cells in urine. 5,369,013, Cl. 435-27.000.

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Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.

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Chan, Alexander; Wenke, Gottfried; and Prota, Ciuseppe, 5,368,610, Cl. 8-406.000.

Clark, Cheryl: *See—*
Kadashevich, A. Julie; Harvey, Mary F.; and Clark, Cheryl, 5,369,577, Cl. 364-419.130.

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Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, 5,368,099, Cl. 166-246.000.

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Gasman, Robert C.; Wong, Eddie; Clarke, Hal C.; and Ahn, Hyung-kook, 5,369,145, Cl. 523-120.000.

Clarke, William H., to Ford Motor Company. Displacement sensitive valve mechanism. 5,368,141, Cl. 188-284.000.

Clatty, Jan L. R.: *See—*
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Ford, Steven D., 5,368,735, Cl. 210-512.100.

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Clemente, Roger. Fuel heat transfer assembly for an internal combustion engine. 5,368,003, Cl. 123-541.000.

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Jennings, Richard E.; and Clevenger, James T., Jr., 5,367,865, Cl. 56-341.000.

Cliffe, Ian A.; White, Alan C.; and Ifill, Anderson D., to John Wyeth & Brother, Limited. Piperazine derivatives. 5,369,103, Cl. 514-211.000.

Cline, Harvey E.; and Anthony, Thomas R., to General Electric Company. Magnetic resonance surgery using heat waves produced with a laser fiber. 5,368,031, Cl. 128-653.200.

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Coccagna, Albert J. Bathing platform for the disabled. 5,367,724, Cl. 4-571.100.

Coermann, Georg: *See—*
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Coetzer, Johan; and Vlok, Isak L., to Programme 3 Patent Holding. Electrochemical cell. 5,368,955, Cl. 429-103.000.

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Jodwischat, Gerhard D., 5,368,268, Cl. 248-309.400.

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Felice, Louis, 5,368,537, Cl. 482-140.000.

Colegrove, George, to Merck & Co., Inc. Sustained release tablets containing alginate. 5,368,862, Cl. 424-464.000.

Coleman, Charles R.; Oates, Stephanie J.; Colton, James; and Prabhu, Vaikunth S., to PPG Industries, Inc. Polymers of high refractive index and high heat distortion temperature. 5,369,141, Cl. 523-106.000.

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Dixit, Nagaraj S., 5,368,766, Cl. 252-94.000.
Gaffar, Abdul; Afflitto, John J.; and Williams, Malcolm I., 5,368,844, Cl. 424-49.000.
Gaffar, Abdul; Afflitto, John; and Subramanian, Malathy, 5,368,845, Cl. 424-54.000.

Collet, Edouard, to Alcatel N.V. Composite software system and method of writing it. 5,369,765, Cl. 395-700.000.

Collins, David J.: *See—*
Altavela, Robert P.; Narang, Ram S.; Collins, David J.; and Sims, Julie A., 5,368,683, Cl. 156-633.000.

Collins, Hansel A.: *See—*
Watson, Richard B.; Iknaian, Russell; and Collins, Hansel A., 5,369,640, Cl. 371-1.000.

Collins, Imack L., to WCI-Outdoor Products, Inc. Dynamic air cleaner and carburetor pressurization system for air cooled internal combustion engines. 5,367,988, Cl. 123-41.650.

Coltec Industries Inc: *See—*
Aboujaoude, Francois W.; and Kasel, Eugene A., 5,367,875, Cl. 60-303.000.

Colton, James: *See—*
Coleman, Charles R.; Oates, Stephanie J.; Colton, James; and Prabhu, Vaikunth S., 5,369,141, Cl. 523-106.000.

Columbia, The Trustees of: *See—*
Breslow, Ronald; Marks, Paul A.; Rifkind, Richard A.; and Jursic, Branko, 5,369,108, Cl. 514-266.000.

Combs, Billy O. Tamper protector enclosure for distribution box and associated wiring. 5,369,548, Cl. 361-643.000.

Combustion Engineering, Inc.: *See—*
Hatfield, Stephen C.; and Broders, Richard P., 5,369,242, Cl. 219-121.630.

Comfort, John J., to Mars Incorporated. Telephone call detecting circuit and a method of remotely accessing and testing a telephone. 5,369,690, Cl. 379-106.000.

Commonwealth of Australia, The: *See—*
Liddiard, Kevin C., 5,369,280, Cl. 250-370.080.

Commonwealth Science and Industrial Research Organisation: *See—*
Boyle, Bernard; and Kumar, Sharad, 5,368,855, Cl. 435-320.100.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Cutmore, Nicholas G., 5,369,369, Cl. 324-637.000.

Communication Cable, Inc.: *See—*
Fore, James R., 5,368,245, Cl. 242-157.00R.

Compaq Computer Corporation: *See—*
Tipley, Roger E., 5,369,753, Cl. 395-425.000.
Tubbs, Michael E., 5,369,772, Cl. 395-775.000.

Compeau, David E.; Raisoni, Jayprakash U.; and Shah, Suresh D., to General Motors Corporation. Tubular plastic mounting panel for door hardware. 5,367,832, Cl. 49-502.000.

Comroe, Richard; and Sobti, Arun, to Motorola, Inc. Dispatch communication system with adjacent system signal repeating. 5,369,781, Cl. 455-15.000.

Conaty, Henry: *See—*
Scolamiero, Stephen; Conaty, Henry; and Viveiros, Richard, 5,368,800, Cl. 264-219.000.

Conboy, John S. Dry wall tape. 5,368,907, Cl. 428-43.000.

Concepts ETI, Inc.: *See—*
Japikse, David; and Karon, David M., 5,368,440, Cl. 415-208.300.

Conete, Eric: *See—*
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,367,874, Cl. 60-261.000.

Confalone, Peter A., Jr.; and Dart, Ronald W., to Procorp. Inc. Luminescent display device. 5,368,489, Cl. 434-410.000.

Conley Corporation: *See—*
Greene, Karen C.; and Cheek, James A., 5,368,338, Cl. 285-133.100.

Conley, John D.; and Whitehurst, Richard P. Automatic and transparent denormalization support, wherein denormalization is achieved through appending of fields to base relations of a normalized database. 5,369,761, Cl. 395-600.000.

Connection Technology, Ltd.: *See—*
Hall, Terry, 5,368,074, Cl. 138-96.00T.

Connector Set Limited Partnership: *See—*
Glickman, Joel I.; and Simon, Robert E., Jr., 5,368,514, Cl. 446-122.000.

Conoco Inc.: *See—*
Cummings, Arthur L.; Veatch, Fred C.; and Keller, Alfred E., 5,368,818, Cl. 422-62.000.

Conrod, Jay B.; Menkin, Paul; and Cercone, Durand A., to Enthone-OMI, Inc. Electrowinning of direct metallization accelerators. 5,368,718, Cl. 205-101.000.

Consiglio Nazionale Delle Ricerche: *See—*
Sommazzi, Anna; Cardi, Nicoletta; Garbassi, Fabio; and Chatgilialoglu, Chrissostomos, 5,369,187, Cl. 525-332.800.

Consolidated Industries Corp.: *See—*
Weber, Richard H., III; Richardson, Paul T.; and Gable, Gerald K., 5,368,010, Cl. 126-110.00R.

Conti, Mario W. Fiber optic bundle with removable and replaceable light guides. 5,369,721, Cl. 385-115.000.

Contico International, Inc.: *See—*
Foster, Donald D.; and Nelson, Philip I., 5,368,234, Cl. 239-333.000.

Continental Aktiengesellschaft: *See—*
Peter, Julius; and Weckerle, Gunter, 5,368,383, Cl. 366-97.000.

Continental Engineering Group, Inc.: *See—*
Baines, Edward A., 5,368,377, Cl. 312-27.000.

Contreras, Gary W.: *See—*
Diaz, Thomas P.; Contreras, Gary W.; Gordon, Gerald M.; McCarthy, Veronica L.; and Weinstein, Daniel, 5,369,675, Cl. 376-249.000.

Controlled Para-Sailing Corp. of America, Ltd.: *See—*
McCulloh, Mark, 5,367,972, Cl. 114-253.000.

Cook Composites and Polymers Company: *See—*
Boeckeler, Rudolph H.; and Eslinger, Delano R., 5,369,139, Cl. 522-21.000.

Cook, Joseph S., Jr., to United States of America, National Aeronautics and Space Administration. Gas storage and recovery system. 5,368,067, Cl. 137-485.000.

Cooksey, William L.: *See—*
Ricketts, Jonathon E.; Farley, Herb M.; and Cooksey, William L., 5,368,522, Cl. 460-16.000.

Coon, Donald B.: *See—*
Marlow, Scott C.; Petruschke, Haans K.; Coon, Donald B.; and Nelson, John T., 5,368,606, Cl. 606-170.000.

Cooper, Eugene R.: *See—*
Baker, Edward J.; Lee, Robert W.; Cooper, Eugene R.; Toner, John L.; and Illig, Carl R., 5,368,837, Cl. 424-5.000.

Cooper, Stephen R. W.; Shank, David W.; Munch, Carl A.; and Findikli, Nadi S., to Nartron Corporation. Sinewave generating circuit and amplitude demodulator. 5,369,375, Cl. 329-347.000.

Copeland Corporation: *See—*
Rode, Donald W., 5,368,446, Cl. 417-18.000.

Copperman, Norman S.; and Winblad, Wade O., to Atari Games Corp. Vehicle simulator with realistic operating feedback. 5,368,484, Cl. 434-69.000.

Coppi, Germano: *See—*
Poli, Stefano; Coppi, Germano; and Busetti, Cesare, 5,369,131, Cl. 514-772.400.

Coppock, Robert M.: *See—*
Pfost, Dale R.; Coppock, Robert M.; Murray, Donald S.; Pfost, R. Fred; Sanford, Brian; and Puckett, Katherine L., 5,369,566, Cl. 364-147.000.

Corcoran, Cathleen; and Hendry, Jason, to Elizabeth Arden Company, Division of Conopco, Inc. Ceramide cosmetic compositions. 5,368,857, Cl. 424-401.000.

Cordis Corporation: *See—*
Lecuyer, Alain, 5,368,556, Cl. 604-8.000.

Cords, Frederick W.; and Frye, David, to Total Quality Enterprises, Inc. Hydraulic brake system for an off-road vehicle. 5,368,372, Cl. 303-11.000.

Corneal Contouring Inc.: *See—*
Kilmer, Lauren G.; and Reynolds, Alvin E., 5,368,604, Cl. 606-166.000.

Cornell Research Foundation, Inc.: *See—*
Reinstein, Dan Z.; Silverman, Ronald H.; and Coleman, Donald J., 5,369,454, Cl. 351-201.000.

Cornwell, John D.: *See—*
Ungar, Eugene K.; Harwell, William D.; and Cornwell, John D., 5,368,090, Cl. 165-1.000.

Cote, Anthony, to E. H. Price Ltd. Sliding gate terminal unit for air handling system. 5,368,072, Cl. 137-872.000.

Cottington, Levi J.: *See—*
Blizzard, John D.; Wright, Antony P.; and Cottington, Levi J., 5,368,941, Cl. 428-412.000.
Couch, Robert K.: *See—*
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.
Coughlin, Jerome A. Fire-fighting tool particularly for shipboard fires and the like. 5,368,106, Cl. 169-70.000.
Council of Scientific & Industrial Research: *See—*
Choudhary, Vasant R.; Rane, Vilas H.; and Rajput, Amarjeet M. R., 5,368,835, Cl. 423-651.000.
Maity, Sibnath; and Dhar, Bharat B., 5,368,369, Cl. 299-11.000.
Counsell, Christopher J. R., to British Technology Group Limited. Method of and apparatus for NMR testing. 5,369,362, Cl. 324-309.000.
Counts, Mary E.; and Wrenn, Susan E., to Philip Morris Incorporated. Tobacco flavor unit for electrical smoking article comprising fibrous mat. 5,369,723, Cl. 392-386.000.
Courteau, Donald M.: *See—*
Tochacek, Miroslav; and Courteau, Donald M., 5,368,668, Cl. 156-93.000.
Cousoulis, Marc: *See—*
Christy, Orrin D.; Pickett, John E.; Swanson, Leo; Matheis, Mark A.; and Cousoulis, Marc, 5,368,334, Cl. 283-67.000.
Covington, Roger G.; Malburne, Karen A.; Mehl, Douglas C.; and Niedospial, John, to Sterling Winthrop Inc. Hypodermic syringe holder. 5,368,578, Cl. 604-232.000.
Cowx, Peter M. Treatment of oxide-containing dusts. 5,368,627, Cl. 75-10.190.
Cox, Graham J.: *See—*
Parker, Michael D.; Cox, Graham J.; and Babiuk, Lorne A., 5,369,026, Cl. 435-240.100.
Crabb, Elmer R., to Caterpillar Inc. Undercarriage assembly for a vehicle. 5,368,115, Cl. 180-9.100.
Crane Plastics Company: *See—*
Groh, A. Anthony, 5,368,360, Cl. 297-219.100.
Crawford-Swift Limited: *See—*
Turnbull, Richard W., 5,367,835, Cl. 451-5.000.
Cray Research, Inc.: *See—*
Eberlein, Delvin D., 5,369,059, Cl. 437-213.000.
Creative Bath Products, Inc.: *See—*
Bindman, Stanley, 5,367,742, Cl. 16-87.200.
Creative Products Resource Associates, Ltd.: *See—*
Smith, James A.; and Murphy, Betty J., 5,368,581, Cl. 604-290.000.
Creighton, Dora B.: *See—*
Creighton, Stefan D.; and Creighton, Dora B., 5,368,387, Cl. 366-194.000.
Creighton, Stefan D.; and Creighton, Dora B. Soap chip processor and dispenser apparatus. 5,368,387, Cl. 366-194.000.
Cremers, Louis M. G.: *See—*
Heemels, Robertus P. E. H.; van Vliembergen, Eduardus J. W.; and Cremers, Louis M. G., 5,369,576, Cl. 364-419.080.
Cribbs, Leonard V.; and Lynch, Michael W., to Quantum Chemical Corporation. Olefin polymerization method. 5,369,194, Cl. 526-116.000.
Crimmins, Robert A., to ILC Dover, Inc. Flexible storage tank with removable inner liner. 5,368,395, Cl. 383-107.000.
Critchlow, Philip R.; and Cave, Julian, to Noranda Inc. Method for the rapid production of superconducting ceramic wires or ribbons. 5,369,087, Cl. 505-430.000.
Criticare Systems, Inc.: *See—*
Beard, Lane F.; Disch, Daniel I.; and Storch, John G., 5,368,021, Cl. 128-205.120.
Crocker, Michael, to Cardiovascular Dynamics, Inc. Delivery and temporary stent catheter having a reinforced perfusion lumen. 5,368,566, Cl. 604-101.000.
Croghan, Charles L.; and Johnson, David J., to U.S. Natural Resources, Inc. Zero lead planer. 5,368,077, Cl. 144-117.00R.
Cron, John M.: *See—*
Foldyna, Joseph T.; Carpenter, Donald J.; and Cron, John M., 5,368,633, Cl. 95-19.000.
Cronvich, James T.: *See—*
Kinney, Michael A.; Cronvich, James T.; and Zavis, Wayne M., 5,369,356, Cl. 324-142.000.
Croop, James M.: *See—*
Arceci, Robert J.; and Croop, James M., 5,369,009, Cl. 435-7.230.
Crossley, David W.; Wruck, Keith R.; and Abrams, Randy L., to Safety 1st, Inc. Security gate. 5,367,829, Cl. 49-465.000.
Crowe, Benjamin S.; and Sauerbrunn, Steven R., to TA Instruments, Inc. Method and apparatus for high resolution analysis. 5,368,391, Cl. 374-10.000.
Crowley-Dierks, Joel R.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; Crowley-Dierks, Joel R.; and Fawcett, Glenn S., 5,369,682, Cl. 379-57.000.
Crowley, Robert J.: *See—*
Hamm, Mark A.; and Crowley, Robert J., 5,368,035, Cl. 128-662.060.
Cruysberghs, Rudiger J. C. Pressure generator and dispensing apparatus utilizing same. 5,368,207, Cl. 222-396.000.
Cselt-Centro Studi e Laboratori Telecommunicazioni S.P.A.: *See—*
Gandini, Marco; Licciardi, Luigi; Turolla, Maura; and Vercellone, Vinicio, 5,369,635, Cl. 370-60.100.
CSIR: *See—*
Damm, Oliver F. R. A.; and Tank, Klaus, 5,368,398, Cl. 384-304.000.
Culbertson, Billy M.; and Kao, Elizabeth C., to Ohio State University, The. Water soluble polymers containing amino acid residues for dental restoratives. 5,369,142, Cl. 523-116.000.
Cullen, Lorri D.: *See—*
Huang, Victor T.; Kerschner, Laurie E.; and Cullen, Lorri D., 5,368,877, Cl. 426-589.000.
Cullen, Steven R., to Versa Corporation. Agricultural feed bagging machine having an improved auger conveyor mounted thereon. 5,367,860, Cl. 53-576.000.
Culler, Scott R., to Minnesota Mining and Manufacturing Company. Reduced viscosity slurries, abrasive articles made therefrom and methods of making said articles. 5,368,619, Cl. 51-308.000.
Cummings, Arthur L.; Veatch, Fred C.; and Keller, Alfred E., to Conoco Inc. Monitoring and control system for selective regeneration of alkanolamine from cation ion exchange resin with sodium hydroxide. 5,368,818, Cl. 422-62.000.
Cummings, Gary L., to Valent U.S.A. Corporation. Chemically stable compacted particles containing insecticidal phosphoroamidothioates and methods for the manufacture and use thereof. 5,369,100, Cl. 514-120.000.
Cunnane, Francis J., III; and Sanders, H. Thomas, to Asten Group, Inc. Papermakers wet press felt having high contact, resilient base fabric with hollow monofilaments. 5,368,696, Cl. 162-358.200.
Curran, William V.: *See—*
Ziegler, Carl B., Jr.; Curran, William V.; and Feigelson, Gregg, 5,369,102, Cl. 514-210.000.
Curtin Matheson Scientific, Inc.: *See—*
Woodward, W. Stephen, 5,367,910, Cl. 73-861.000.
Curtis, Donald G. Concealed storage cabinet. 5,368,378, Cl. 312-204.000.
Curtis, Michael J.; and Martin, Eugene G. Method of making a food product from a bird wing and food product made in accordance with the method. 5,368,519, Cl. 452-135.000.
Curzio, Frederick H., to Textile Products, Inc. Process and apparatus for manufacturing rocket exit cones, and the like. 5,368,076, Cl. 139-305.000.
Cuti, Philip M. Tennis butler. 5,368,351, Cl. 294-19.200.
Cutmore, Nicholas G., to Commonwealth Scientific and Industrial Research Organisation. Determination of carbon in a fly ash sample through comparison to a reference microwave attenuation and phase shift. 5,369,369, Cl. 324-637.000.
Cynosure, Inc.: *See—*
Furumoto, Horace W.; Goltsos, William C.; Rediker, Robert H.; and Sze, Robert, 5,369,659, Cl. 372-50.000.
Cyphert, David L.; and Sieling, Roger L., to Telesis Marking Systems, Inc. Marking apparatus with cable drive. 5,368,400, Cl. 400-124.010.
Cytec Technology Corp.: *See—*
Haacke, Gottfried; Panzer, Hans P.; Magliocco, Lino G.; and Asher, Sanford A., 5,368,781, Cl. 252-582.000.
Rothenberg, Alan S.; Ryles, Roderick G.; and So, Peter, 5,368,745, Cl. 210-734.000.
Wu, Kuang-Jong; Lucas, Howard R.; Lees, Robert G.; and Albrecht, Nicholas J., 5,369,204, Cl. 526-304.000.
D & C Limited: *See—*
Pierson, Henri G. W., 5,368,732, Cl. 210-386.000.
Dadabhoy, Jal R.: *See—*
Da Silva, Alcides B.; Tognetti, Joao B.; and Dadabhoy, Jal R., 5,368,867, Cl. 424-616.000.
Dahl, Michael A.: *See—*
Rudzewicz, Robert G.; Dahl, Michael A.; Dunn, Thomas G.; Wenzel, Kenneth J.; and Muckley, Ronald A., 5,369,342, Cl. 318-102.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Higuchi, Youichi; Oshima, Katsuyuki; and Yamauchi, Mineo, 5,369,079, Cl. 503-227.000.
Dai Nippon Printing Co., Ltd.: *See—*
Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,369,078, Cl. 503-227.000.
Daicel Chemical Industries, Ltd.: *See—*
Namikoshi, Hajime; Shibata, Tohru; and Okamoto, Ichiro, 5,368,737, Cl. 210-635.000.
Daifuku, Koji: *See—*
Ishidai, Hiroshi; Kita, Hiroshi; Kaneko, Yutaka; and Daifuku, Koji, 5,368,998, Cl. 430-558.000.
Daihen Corporation: *See—*
Okuda, Kouji; Nishi, Tokumitsu; Hoshino, Hisakiyo; Takai, Hiroshi; and Miyake, Natsumi, 5,368,673, Cl. 156-273.900.
Daimler-Benz AG: *See—*
Gotz, Hans; and Baumann, Karl-Heinz, 5,368,356, Cl. 296-180.100.
Daiwa Seiko, Inc.: *See—*
Takeuchi, Shinji, 5,368,249, Cl. 242-284.000.
Dallo, S. F.: *See—*
Baseman, Joel B.; Su, C. J.; and Dallo, S. F., 5,369,005, Cl. 435-6.000.
Dambayashi, Toshikazu: *See—*
Takagi, Tasuku; Nagasawa, Zenichirou; and Dambayashi, Toshikazu, 5,369,800, Cl. 455-59.000.
Damm, Oliver F. R. A.; and Tank, Klaus, to CSIR. Diamond bearing assembly. 5,368,398, Cl. 384-304.000.
Dana Farber Cancer Institute: *See—*
Arceci, Robert J.; and Croop, James M., 5,369,009, Cl. 435-7.230.
Daniels s.r.l.: *See—*
Doria, Alessandro, 5,368,159, Cl. 206-320.000.

Dahte, Lucian J., to Allied Signal Inc. Venturi metering system. 5,368,273, Cl. 251-122.000.
D'Aoust, Denis: *See—*
Izbinsky, Grigory; and D'Aoust, Denis, 5,368,260, Cl. 246-169.00R.
d'Aragona, Frank S.: *See—*
Lesk, Israel A.; Robb, Francine Y.; Terry, Lewis E.; and d'Aragona, Frank S., 5,369,304, Cl. 257-782.000.
Darnell, Donald L. Sound recording and play back system. 5,368,308, Cl. 273-429.000.
Dart, Ronald W.: *See—*
Confalone, Peter A., Jr.; and Dart, Ronald W., 5,368,489, Cl. 434-410.000.
Da Silva, Alcides B.; Tognetti, Joao B.; and Dadabhoy, Jal R., to Peroxidos Do Brasil. Process for the accelerated production of stable solutions, in equilibrium, of peracetic acid in low concentrations. 5,368,867, Cl. 424-616.000.
Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, to Phillips Petroleum Company. Injection of dextrins for subterranean microbial processes. 5,368,099, Cl. 166-246.000.
Davidson, Norma J. Collapsible headnet. 5,367,706, Cl. 2-4.000.
Davies, Dafydd G., to Esselte Meto International Produktions. Magnetic materials for security applications. 5,368,948, Cl. 428-611.000.
Davies, Paul, to Minnesota Mining and Manufacturing Company. Process of developing a diffusion transfer printing plate. 5,368,980, Cl. 430-204.000.
Davies, Robin E. R.: *See—*
Hartog, Adrian H.; and Davies, Robin E. R., 5,369,741, Cl. 395-143.000.
Davis, Alan R., to Eaton Corporation. Nonsynchronized positive clutch structure. 5,368,145, Cl. 192-67.00R.
Davis, Don M., Jr. Pressure and vacuum smoker apparatus and method. 5,368,872, Cl. 426-281.000.
Davis, William R.: *See—*
Archibald, James L.; and Davis, William R., 5,369,703, Cl. 380-9.000.
Davy (Distington) Limited: *See—*
Reynolds, Timothy; Perry, Robert M.; and Preshaw, David A., 5,368,089, Cl. 164-443.000.
Day, Robert S.: *See—*
Willer, Rodney L.; Day, Robert S.; and Marchand, Alan P., 5,368,662, Cl. 149-19.900.
DCI Marketing: *See—*
Johnson, Allen E., 5,368,191, Cl. 221-194.000.
De La Rue Giori S.A.: *See—*
Orlandini, Dante, 5,368,148, Cl. 194-207.000.
de la Torre, Roger A. Surgical mesh with semi-rigid border members. 5,368,602, Cl. 606-151.000.
Deacon, Ernie L.; and McMullin, Faris W., to Warm Springs Golf Club, Inc. Winter golf shoe spikes. 5,367,793, Cl. 36-127.000.
Deacon Manufacturing Company: *See—*
Owenby, Daniel B.; and Quesinberry, Gene, 5,368,611, Cl. 8-444.000.
Dean, Laurence M.: *See—*
Beauchamp, Charles H.; Dean, Laurence M.; and Raffa, Anthony V., 5,367,970, Cl. 114-140.000.
Dean, Michael: *See—*
Ball, Gregory J.; Dean, Michael; and Hume, Andrew L., 5,369,380, Cl. 333-128.000.
de Angeli, Michael: *See—*
Ranalletta, Joseph V.; and de Angeli, Michael, 5,368,496, Cl. 439-261.000.
Decora Industry, Inc.: *See—*
Liebman, Theodore E.; and Levitt, Robert H., 5,367,808, Cl. 40-617.000.
Dedeken, Ralf: *See—*
Victor, Karl-Heinz; Laarmann, Hans-Wilhelm; Dedeken, Ralf; and Maser, Gustav, 5,368,314, Cl. 277-96.100.
Dedering, Charles E. Closure for electric plug. 5,368,500, Cl. 439-367.000.
Dedoes Industries, Inc.: *See—*
Dedoes, John T., 5,368,389, Cl. 366-247.000.
Dedoes, John T., to Dedoes Industries, Inc. Paint can cover assembly. 5,368,389, Cl. 366-247.000.
Deemer, Diane L.; and Mileaf, Daryl S., to Westinghouse Electric Corporation. Adjustable pulleys for mail sorting system. 5,368,524, Cl. 474-133.000.
Deere & Company: *See—*
Hoefle, Joerg J., 5,368,118, Cl. 180-89.120.
DeFeo, Paul J.: *See—*
Schank, Richard L.; Pai, Damodar M.; Yanus, John F.; Renfer, Dale S.; DeFeo, Paul J.; and Limburg, William W., 5,368,967, Cl. 430-59.000.
DeFreitas, Dennis M., to Simmonds Precision Engine Systems. Laser ignition methods and apparatus for combustors. 5,367,869, Cl. 60-39.060.
Degnan, Thomas F.; Klocke, Donald J.; and Rubin, Mae K., to Mobil Oil Corporation. Manufacture of improved catalyst. 5,369,071, Cl. 502-71.000.
Degremont S.A.: *See—*
Vital, Jean-Louis; and Lemmel, Hubert, 5,368,730, Cl. 210-269.000.
Degussa Aktiengesellschaft: *See—*
Jakubke, Hans-Dieter; Ullmann, Dirk; Drauz, Karlheinz; and Bommarius, Andreas, 5,369,018, Cl. 435-68.100.
Steinke, Doerte; Kula, Maria-Regina; Schwarz, Alexander; and Wandrey, Christian, 5,369,016, Cl. 435-68.100.
De Koning, Adrianus, to DSM N.V. Composition to be used in the resin injection molding technique, containing low molecular weight compounds jointly forming a hybrid network. 5,369,176, Cl. 525-126.000.
De Laforcade, Vincent: *See—*
Brunerie, Patrice; and De Laforcade, Vincent, 5,368,231, Cl. 239-145.000.
Delage, Frederic: *See—*
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,367,874, Cl. 60-261.000.
Delaware Capital Formation, Inc.: *See—*
Oslin, G. Robert, 5,368,008, Cl. 126-20.200.
Delco Electronics Corp.: *See—*
Beaver, Charles D., 5,368,883, Cl. 427-96.000.
Good, Brian K.; Manlove, Gregory J.; and Honnigford, Edward H., 5,369,319, Cl. 327-73.000.
Heideman, Robert J.; Rusch, Randy A.; and Baird, Michael S., 5,369,300, Cl. 257-651.000.
Lee, Han-Sheng; Staller, Steven E.; Logsdon, James H.; and Chilcott, Dan W., 5,369,057, Cl. 437-209.000.
Litteral, Mary O'Connell, 5,368,899, Cl. 427-512.000.
Delgado, Cruz. Mechanical solution applicating device and method for cleaning and/or lubricating raw stock material. 5,368,644, Cl. 118-405.000.
Dell U.S.A., L.P.: *See—*
Gettel, Steven K., 5,369,771, Cl. 395-750.000.
Dell USA, L.P.: *See—*
Parks, Terry J., 5,369,605, Cl. 364-715.090.
DeLong, Russell I., to Medex, Inc. Balloon catheter pressure monitor for local and remote display. 5,368,565, Cl. 604-100.000.
Delventhal, Kent A., to Progress Design and Machine, Inc. Edge grinding apparatus. 5,367,834, Cl. 451-285.000.
Demachi, Takashi, to Toa Medical Electronics Co., Ltd. Apparatus for analyzing liquid specimen. 5,367,912, Cl. 73-863.730.
Demissy, Daniel, to Gec Alsthom Energie Inc. Perpendicularly-opening grounding section switch. 5,369,234, Cl. 200-146.00R.
DeMoore, Howard W.; Douglas, David D.; and Person, Steven M., to DeMoore, Howard W. Automatic coating circulation and wash-up system for printing presses. 5,367,982, Cl. 118-46.000.
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Slusarchyk, William A., 5,369,098, Cl. 514-81.000.
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Eguchi, Minoru: *See—*
Watanabe, Masahito; and Eguchi, Minoru, 5,367,979, Cl. 117-13.000.
Eguchi, Tatsuya, to Minolta Camera Co., Ltd. Laser beam scanning apparatus having beam intensity control. 5,369,272, Cl. 250-235.000.
Ehara, Fujito: *See—*
Dussert, Bertrand W.; Hayden, Richard A.; Lutchko, John R.; Yoshino, Kishio; Hisaki, Satoru; and Ehara, Fujito, 5,368,739, Cl. 210-660.000.
Ehrenberg, Scott G.: *See—*
DiStefano, Thomas H.; Ehrenberg, Scott G.; and Khandros, Igor Y., 5,367,764, Cl. 29-830.000.
Eiberger, Peter: *See—*
Baumann, Helmut; Kurle, Juergen; and Eiberger, Peter, 5,369,060, Cl. 437-226.000.
Eichengerger, Hansulrich: *See—*
Clement, Heinz; Eichengerger, Hansulrich; and Wuest, Oliver, 5,367,746, Cl. 19-115.00R.
Eilenberger, Gert; and Bottle, Dietrich, to Alcatel N.V. Multistage switching facility for optical signals. 5,369,514, Cl. 319-123.000.
Eisenhart, Robert L., to Hughes Aircraft Company. Wideband coax-to-TM_{01} converter and testing system using the same. 5,369,367, Cl. 324-632.000.
Eisenmann, Siegfried A. Gear-type machine with flattened cycloidal tooth shapes. 5,368,455, Cl. 418-171.000.
Eka Nobel AB: *See—*
Johansson, Hans E.; and Larsson, Bo V., 5,368,833, Cl. 423-338.000.
Ekkert, Len, to Phoenix Closures, Inc. Apparatus for molding closures having tamper evident bands. 5,368,469, Cl. 425-556.000.
Elbe, Hans-Ludwig; Tiemann, Ralf; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Substituted thiophenecarboxamides. 5,369,124, Cl. 514-448.000.
Elcraft A/S: *See—*
Utklev, Kjell, 5,368,709, Cl. 204-182.200.
Electronics and Telecommunications Research Institute: *See—*
Yoo, Ji-Beom; Park, Chan-Yong; and Kim, Hong-Man, 5,369,292, Cl. 257-186.000.
Elf Atochem S.A.: *See—*
Descat, M. Gilles; and Hamon, M. Christian, 5,369,070, Cl. 502-68.000.
Elfverson, Sven, to Scandmec AB. Liquid level indicator. 5,367,907, Cl. 73-319.000.
Elias, Catherine B.: *See—*
Lech, Robert; Medina, Mitchell A.; and Elias, Catherine B., 5,369,508, Cl. 358-462.000.
Eliza Corporation: *See—*
Kroeker, John P.; and Powers, Robert L., 5,369,726, Cl. 395-2.450.
Elizabeth Arden Company, Division of Conopco, Inc.: *See—*
Corcoran, Cathleen; and Hendry, Jason, 5,368,857, Cl. 424-401.000.
Ellis, Jeffrey W.; Hamilton, John W.; Owens, John M.; and Callahan, Steven A., to Ray Industries, Inc. System, apparatus and method for rapidly attaching a boat cover or canopy to a windshield and frame. 5,367,977, Cl. 114-361.000.
Ellis, Steven B.: *See—*
Harpold, Michael M.; Ellis, Steven B.; Brust, Paul; Akong, Michael; and Velicelebi, Gonul, 5,369,028, Cl. 435-252.300.
Ellis, Timothy W.: *See—*
Anderson, Iver E.; Lograsso, Barbara K.; and Ellis, Timothy W., 5,368,657, Cl. 148-400.000.
Ellis, William E. G., to Gordon Ellis and Company. Containers. 5,367,718, Cl. 4-449.000.
Elsaesser, Andreas; Frass, Hans W.; Gaschler, Otfried; Mohr, Dieter; and Buhr, Gerhard, to Hoechst Aktiengesellschaft. Positive-working 1,2-quinone diazide radiation-sensitive mixture and recording material containing urethane compound to diminish developer solubility. 5,368,975, Cl. 430-165.000.
Elsag International B.V.: *See—*
Alden, Jerome S.; Budan, Victor J.; and Thompson, Harold W., 5,369,386, Cl. 335-206.000.
El-Wakil, Mohamed M.: *See—*
Dinauer, William R.; Otis, David R.; El-Wakil, Mohamed M.; Vignali, John C.; and Macaulay, Philip D., 5,368,786, Cl. 261-130.000.
Embru-Werke, Mantel & Cie.: *See—*
Jaggi, Heinz; and Marty, Bruno, 5,367,963, Cl. 108-147.000.
Emergency One, Inc.: *See—*
McCombs, William F.; and Aiken, Jeffrey D., 5,368,317, Cl. 280-4.000.
Emerson Electric Co.: *See—*
Heilman, Raymond D.; and LaRue, Butch, 5,367,909, Cl. 73-468.000.
Naylor, Michael A., 5,369,740, Cl. 364-140.000.
Enari, Masahiko, to Canon Kabushiki Kaisha. Reproducing apparatus with simultaneous parallel processing of different image signals. 5,369,441, Cl. 348-559.000.
Encor Inc.: *See—*
Eaton, Charles R., 5,369,371, Cl. 324-707.000.
Endo, Kenichi: *See—*
Nagate, Takashi; Endo, Kenichi; Koike, Yoshikazu; Seto, Takeshi; and Yamagishi, Yoshihiko, 5,369,325, Cl. 310-156.000.
Endo, Sachiko: *See—*
Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, 5,369,253, Cl. 219-707.000.
Endosonics Corporation: *See—*
Eberle, Michael J.; Rizzuti, Gary P.; and Kiepen, Horst F., 5,368,037, Cl. 128-662.060.
Engate Incorporated: *See—*
Bennett, James D.; and Jarvis, Lawrence M., 5,369,704, Cl. 380-9.000.
Engelhardt, Ulrich: *See—*
Reizlein, Karl; Engelhardt, Ulrich; Horstmann, Heinz-Otto; Singer, Rolf-Jurgen; Wangermann, Klaus; and Wirth, Wolfgang, 5,369,118, Cl. 514-383.000.
Enichem S.p.A.: *See—*
Sommazzi, Anna; Lugli, Gabriele; Garbassi, Fabio; and Calderazzo, Fausto, 5,369,073, Cl. 502-162.000.
Sommazzi, Anna; Cardi, Nicoletta; Garbassi, Fabio; and Chatgilialoglu, Chrissostomos, 5,369,187, Cl. 525-332.800.
Enoki, Takashi: *See—*
Kosugi, Hiroaki; Matsumoto, Takayuki; and Enoki, Takashi, 5,369,789, Cl. 455-126.000.
Enomoto, Junkichi: *See—*
Sakakura, Mitsuaki; Tanaka, Yuji; Enomoto, Junkichi; and Ito, Syoji, 5,368,216, Cl. 228-1.100.
Enomoto, Masao: *See—*
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Enomoto, Naoki: *See—*
Kobayashi, Tetsuya; Sasame, Hiroshi; Kobayashi, Tatsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,369,478, Cl. 355-259.000.
Ensor, Paul M., to Flexistack Pty Ltd. Screen construction. 5,368,169, Cl. 209-403.000.
Enthone-OMI, Inc.: *See—*
Conrod, Jay B.; Menkin, Paul; and Cercone, Durand A., 5,368,718, Cl. 205-101.000.
Hurley, Michael P.; and Boezi, Stephen J., 5,368,715, Cl. 205-82.000.
Environmental Procedures, Inc.: *See—*
Seyffert, Kenneth W., 5,368,433, Cl. 414-412.000.
Environmental Products Amalgamated Pty. Ltd.: *See—*
Muston, Robert L.; and Matkowitch, Mario, 5,367,888, Cl. 62-292.000.
Eoff, Larry S.: *See—*
Rodrigues, Klein A.; and Eoff, Larry S., 5,368,642, Cl. 106-727.000.
EP Technologies, Inc.: *See—*
Stern, Roger A.; Edwards, Stuart D.; and Jackson, Jerome, 5,368,592, Cl. 606-33.000.
Epperson, Frank E. Open-face spin casting fishing reel. 5,368,246, Cl. 242-228.000.
Epping, William R. Harmonica. 5,367,937, Cl. 84-377.000.
Erdman, William L., to KENETECH Windpower, Inc. Controlled electrical energy storage apparatus for utility grids. 5,369,353, Cl. 323-207.000.
Erhardt, Herbert J., to Eastman Kodak Company. CCD imager with test structure. 5,369,357, Cl. 324-158.100.
Erickson, Paul E., to LaserMaster Corporation. Continuous ink refill system for disposable ink jet cartridges having a predetermined ink capacity. 5,369,429, Cl. 347-7.000.
Ericson, Robert B.: *See—*
Natwig, Gary S.; Young, John S.; and Ericson, Robert B., 5,369,225, Cl. 174-84.00R.
Ericsson GE Mobile Communications Inc.: *See—*
Childress, Jeffrey S.; and Hattey, David L., 5,369,783, Cl. 455-17.000.
Erion, Jeffrey A., to Ford Motor Company. Illuminator utilizing multiple light guides. 5,369,554, Cl. 362-31.000.
Ernst Jacobi GmbH: *See—*
Junger, Reiner, 5,367,738, Cl. 15-312.200.
Ersoz, Nathaniel H.; and Canfield, Barth A., to Thomson Consumer Electronics. Field type matching system. 5,369,444, Cl. 348-598.000.
Esa, Inc.: *See—*
Bowers, Mark L.; Buttaro, David; and Krebs, W. Michael, 5,368,706, Cl. 204-153.100.
Eslinger, Delano R.: *See—*
Boeckeler, Rudolph H.; and Eslinger, Delano R., 5,369,139, Cl. 522-21.000.
Essef Corporation: *See—*
Murphy, James C., 5,368,073, Cl. 138-30.000.
Esselte Meto International Produktions: *See—*
Davies, Dafydd G., 5,368,948, Cl. 428-611.000.
Esser, Hans-Peter, to Hoesch Metall+Kunststoffwerke GmbH & Co. Method of steam-treating sanitary systems and/or for disinfecting the pipelines of sanitary systems and whirlpool system for implementing the method. 5,368,651, Cl. 134-22.100.
Estes, Andrew C.: *See—*
Koch, Jay; and Estes, Andrew C., 5,368,520, Cl. 452-165.000.
Etchu, Masami: *See—*
Murooka, Hirofumi; Kato, Sumio; and Etchu, Masami, 5,368,932, Cl. 428-327.000.
Ethicon, Inc.: *See—*
Antonacci, Anthony C.; Uschold, Robert C.; Sorenson, Crystal C.; Bailey, Kevin J.; and Duffy, Kevin D., 5,368,574, Cl. 604-164.000.
Failla, Stephen J.; Hildwein, Roger L.; and Lau, Peter, 5,368,600, Cl. 606-139.000.
Evans, Charles H.: *See—*
Hooks, John J.; Evans, Charles H.; and Detrick, Barbara, 5,368,853, Cl. 424-85.100.
Evans, David A., to Evans Findings Co., Ltd., The. Capacitor. 5,369,547, Cl. 361-516.000.
Evans Findings Co., Ltd., The: *See—*
Evans, David A., 5,369,547, Cl. 361-516.000.
Evans, John C.: *See—*
Nair, Parameswaran B.; Evans, John C.; and Price, James F., 5,369,263, Cl. 235-448.000.
Evans, Steven; Weaver, Max A.; and Weber, Helmut, to Eastman Kodak Company. Nitropyrazolylazoaniline dye-donor element for thermal dye transfer. 5,369,081, Cl. 503-227.000.
Evans, Steven: *See—*
Lawrence, Kristine B.; and Evans, Steven, 5,369,080, Cl. 503-227.000.
Ewen, Jerome F. Cigarette butt receiving package. 5,368,155, Cl. 206-86.000.
Exabyte Corporation: *See—*
Georgis, Steven P.; Sugar, Robert; Brittner, Rodney; and Fox, Thomas D., 5,369,285, Cl. 250-561.000.
Extrude Hone Corporation: *See—*
Rhoades, Lawrence J.; Kohut, Thomas A.; Nokovich, Nicholas P.; and Yanda, Danny W., 5,367,833, Cl. 451-104.000.
Exxon Chemical Patents Inc.: *See—*
Yu, Thomas C.; Powers, Kenneth W.; and Wang, Hsien C., 5,369,182, Cl. 525-240.000.
Exxon Research & Engineering Co.: *See—*
Dolan, John F.; Goldstein, Stuart S.; and Swan, George A., III, 5,368,720, Cl. 208-65.000.
Terry, Patrick H.; Sherowski, Gregory S.; and Holmes, Philip, 5,368,721, Cl. 208-146.000.
f.m.e. Corporation: *See—*
Haines, John G., 5,369,401, Cl. 340-825.350.
Fabbro, Alberto. Corkscrew that extracts simultaneously with the cork a preventively cut portion of the capsule on the neck of the bottle. 5,367,923, Cl. 81-3.090.
Faber, Vance, to United States of America, Energy. Eliminating livelock by assigning the same priority state to each message that is inputted into a flushable routing system during N time intervals. 5,369,745, Cl. 395-200.000.
Fabio Perini S.p.A.: *See—*
Biagiotti, Guglielmo, 5,368,252, Cl. 242-521.000.
Fabricas Lucia Antonio Betere, S.A.: *See—*
Diaz, Enrique Sachristan D., 5,367,968, Cl. 112-262.300.
Faergemann, Jan: *See—*
Swanbeck, Gunnar; and Faergemann, Jan, 5,369,129, Cl. 514-738.000.
Failla, Stephen J.; Hildwein, Roger L.; and Lau, Peter, to Ethicon, Inc. Steerable bulldog clamp applier. 5,368,600, Cl. 606-139.000.
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; and Franz, Norbert W., Jr., to Wilson Greatbatch Ltd. Low power electromagnetic valve. 5,368,274, Cl. 251-129.160.
Famili, Amir; Robeson, Lloyd M.; and Nangeroni, James F., to Air Products and Chemicals, Inc. Reactive melt extrusion grafting of thermoplastic polyvinyl alcohol/polyolefin blends. 5,369,168, Cl. 525-57.000.
Fandrich, Mickey L.; Yarlagadda, Chakravarthy; Rozman, Rodney R.; and Gould, Geoffrey A., to Intel Corporation. Block specific status information in a memory device. 5,369,754, Cl. 395-425.000.
Fandrich, Mickey L.: *See—*
Kreifels, Jerry; and Fandrich, Mickey L., 5,369,647, Cl. 371-25.100.
Fang, Leuh, to Hewlett-Packard Company. Method for patterning aluminum metallizations. 5,369,053, Cl. 437-194.000.
FANUC Robotics North America, Inc.: *See—*
Akeel, Hadi A.; and Reinicke, John A., 5,367,944, Cl. 92-5.00R.
Farcasiu, Malvina; and Petrosius, Steven C., to United States of America, Energy. Method for selective dehalogenation of halogenated polyaromatic compounds. 5,369,214, Cl. 585-469.000.
Farkas, Steven E., to Practical Peripherals, Inc. Apparatus for electrically isolating a telephone line from a data device. 5,369,687, Cl. 379-98.000.
Farley, Herb M.: *See—*
Ricketts, Jonathon E.; Farley, Herb M.; and Cooksey, William L., 5,368,522, Cl. 460-16.000.
Farmer, Raymond F.: *See—*
Carpenter, Allan L.; and Farmer, Raymond F., 5,367,971, Cl. 114-243.000.
Farnet, Michael G., to Diversified Products Corporation. Treadmill having an automatic speed control system. 5,368,532, Cl. 482-5.000.
Farrell, Michael J., to General Motors Corporation. Bearing thrust assembly for planet gears in planetary gear carrier assemblies. 5,368,528, Cl. 475-348.000.
Farwell, Stephen P.; Short, Edward H., III; and Tomasko, John A., to BS&B Safety Systems, Inc. Perforated rupture disk assembly. 5,368,180, Cl. 220-89.200.
Fattinger, Christof: *See—*
Heming, Martin; Hochhaus, Roland; Kersten, Ralf; Krause, Dieter; Otto, Jurgen; Paquet, Volker; Segner, Johannes; and Fattinger, Christof, 5,369,722, Cl. 385-130.000.
Fattouche, Michel: *See—*
Zagloul, Hatim; and Fattouche, Michel, 5,369,670, Cl. 375-84.000.
Faulstich, David L.: *See—*
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Faust, Benedikt P., to Signagraphics Corporation. Data input device with a pressure-sensitive input surface. 5,369,228, Cl. 178-18.000.
Faustel Incorporated: *See—*
Hartley, John J., Jr., 5,368,253, Cl. 242-527.400.
Favstritsky, Nicolai A.: *See—*
Atwell, Ray W.; Hodgen, Harry A.; Fielding, William R.; Favstritsky, Nicolai A.; and Termine, Enrico J., 5,369,202, Cl. 526-293.000.
Fawcett, Glenn S.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; Crowley-Dierks, Joel R.; and Fawcett, Glenn S., 5,369,682, Cl. 379-57.000.
Fay, Ralph M.; and Albers, Mark A., to Schuller International, Inc. Insulation for vessels carrying cryogenic liquids. 5,368,184, Cl. 220-562.000.
Fazan, Pierre: *See—*
Sandhu, Gurtej S.; Westmoreland, Donald L.; and Fazan, Pierre, 5,368,687, Cl. 156-664.000.
Feigelson, Gregg: *See—*
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Feiler, Frederic C.: *See—*
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Feiring, Andrew, to Microvena Corporation. Method of effecting catheter exchange and device for use in same. 5,368,561, Cl. 604-53.000.
Felber, Kevin R., to EG&G Pressure Science, Inc. Conduit joint assembly. 5,368,069, Cl. 137-515.700.
Feldberg, Saul, to Global Upholstery Company. Adjustable arm rest assembly. 5,368,365, Cl. 297-411.360.
Felder, William: *See—*
Calcote, Hartwell F.; and Felder, William, 5,368,825, Cl. 422-198.000.
Felice, Louis, to Coin Acceptors, Inc. Exercise apparatus. 5,368,537, Cl. 482-140.000.
Felix, Raymond A.: *See—*
James, Donald R.; and Felix, Raymond A., 5,369,086, Cl. 504-253.000.
Fenoglio, Alfredo: *See—*
Lammers, Ted J.; Newman, Norman; Romaszewski, Karen M.; Scanlan, David J.; and Fenoglio, Alfredo, 5,368,894, Cl. 427-407.100.
Ferla, Guillermo S.: *See—*
Allen, Janet A.; and Ferla, Guillermo S., 5,369,497, Cl. 358-298.000.
Ferraiolo, Francesco, to Officine Maccaferri SpA. Process for making a mattress-type gabion for soil stabilization. 5,368,410, Cl. 405-16.000.
Ferramola, Guillermo: *See—*
Ottemann, William; Resch, Bruno; and Ferramola, Guillermo, 5,368,279, Cl. 254-342.000.
Ferrier nee Pegot, Christiane; and Vernotte, Jean-Marie, to Aerospatiale Societe National Industrielle. Device for the thermic protection of the internal wall of a hollow structure subjected to an ablative flow and its production method. 5,368,906, Cl. 428-34.500.
Ferris, John. Apparatus for cut flower storage and display. 5,367,823, Cl. 47-39.000.
Ferro Corporation: *See—*
Quadir, Tariq, 5,368,795, Cl. 264-63.000.
Fessenbecker, Achim: *See—*
Schafer, Volker; Kohler, Robert; Pauli, Alfred; and Fessenbecker, Achim, 5,368,776, Cl. 252-395.000.
Festo KG: *See—*
Stoll, Kurt; and Wagner, Albrecht, 5,367,943, Cl. 92-2.000.
Feuer, Mark S.; Kreiner, Fred W.; Solow, Howard J.; and Harding, Michael H., to Fittraxx. Quadrilateral exercise apparatus. 5,368,533, Cl. 482-70.000.
Fiberweb North America, Inc.: *See—*
Ortega, Albert E., 5,368,913, Cl. 428-198.000.
Fibi, Mathias: *See—*
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Fidder, Ted M.: *See—*
Bales, Bruce M.; Fidder, Ted M.; Gallagher, Donald D.; and Thieler, Stephen M., 5,369,694, Cl. 379-206.000.
Field, George R.; Bolte, Wallace B.; and Pepin, Norman N., to Big Iron Drilling Ltd. Water distillation apparatus. 5,368,698, Cl. 202-180.000.
Fielding, William R.: *See—*
Atwell, Ray W.; Hodgen, Harry A.; Fielding, William R.; Favstritsky, Nicolai A.; and Termine, Enrico J., 5,369,202, Cl. 526-293.000.
Fillon Pichon S.A.: *See—*
Fillon, Sylvain, 5,368,388, Cl. 366-245.000.
Fillon, Sylvain, to Fillon Pichon S.A. Stirrer lid device for a paint pot. 5,368,388, Cl. 366-245.000.
Finamore, Paul V., to Hairline Creations, Inc. Hairpiece. 5,368,052, Cl. 132-54.000.

Findikli, Nadi S.: *See—*
Cooper, Stephen R. W.; Shank, David W.; Munch, Carl A.; and Findikli, Nadi S., 5,369,375, Cl. 329-347.000.
Fink, David: *See—*
Monroe, Marshall; and Fink, David, 5,368,309, Cl. 273-437.000.
Finke, Harry P.: *See—*
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Finona, Michael S.: *See—*
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Fischer Industries, Inc.: *See—*
Muchisky, Thomas P.; Fischer, Warren G.; and Krystal, Leonard, 5,369,459, Cl. 354-324.000.
Fischer, Warren G.: *See—*
Muchisky, Thomas P.; Fischer, Warren G.; and Krystal, Leonard, 5,369,459, Cl. 354-324.000.
Fish, David. Bunk silo unloader. 5,368,242, Cl. 241-101.700.
Fisher, Alexander D.: *See—*
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Fisher, Gregory J.: *See—*
Bacrania, Kantilal; Chi, Chong I.; and Fisher, Gregory J., 5,369,309, Cl. 327-94.000.
Fisher, William F., to A-Dec, Inc. Cuspidor. 5,367,717, Cl. 4-263.000.
Fiskars Inc.: *See—*
Labarre, Ernest D.; and Austin, Jerrold N., 5,367,774, Cl. 30-262.000.
Fisons plc: *See—*
Eastgate, Alan R.; and Vogel, Wilfried, 5,369,035, Cl. 436-171.000.
Fisun, Oleg I.; Lupichev, Lev N.; Maklakov, Viktor V.; and Schimko, Richard, to BORUS Spezialverfahren und -gerate im Sondermaschinen-bau GmbH. Method for labeling an object using laser radiation. 5,369,273, Cl. 250-271.000.
Fittraxx: *See—*
Feuer, Mark S.; Kreiner, Fred W.; Solow, Howard J.; and Harding, Michael H., 5,368,533, Cl. 482-70.000.
Fitzgerald, Thomas: *See—*
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Fixano S.A.: *See—*
Martin, Jean-Jacques; Lescuyer, Jean-Philippe; Cartoux, Rene ; Lalain, Jean-Jacques; Michel, Frederic; and Samani, Jacques, 5,368,594, Cl. 606-61.000.
Flaim, Tony D.; Lamb, James, III; Moeckli, Kimberly A.; and Brewer, Terry, to Brewer Science, Inc. Photolithographic article utilizing polymers with light-absorbing properties for anti-reflective coating. 5,368,989, Cl. 430-271.000.
Flanagan, Patrick: *See—*
Green, David T.; Wilson, Jonathan; and Flanagan, Patrick, 5,368,215, Cl. 227-179.000.
Flanders, Bobby F.; and Fults, John H., to Botanico, Inc. Plant carrying device. 5,368,353, Cl. 294-152.000.
Flanders, Ted L.: *See—*
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Flautt, David A.: *See—*
Buckholtz, Harry E.; Saran, Mohan S.; Leitert, Frederick C.; and Flautt, David A., 5,368,832, Cl. 423-316.000.
Fleury, Richard, to GKR Industries, Inc. Bodily fluid test kit. 5,368,583, Cl. 604-318.000.
Flex Products, Inc.: *See—*
Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,368,902, Cl. 427-601.000.
Flexistack Pty Ltd: *See—*
Ensor, Paul M., 5,368,169, Cl. 209-403.000.
Floreani, David: *See—*
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Floryance, Gregory G.: *See—*
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Fluid Management Limited Partnership: *See—*
Hellenberg, Leendert; and Mink, Johannes H., 5,368,196, Cl. 222-61.000.
FMC Corporation: *See—*
Munday, Theodore F.; Brummer, Jay R.; and Beck, Paul J., 5,368,741, Cl. 210-724.000.
Foged, Niels T.; and Petersen, Svend, to Intervet International B.V. Pasteurella vaccine. 5,369,019, Cl. 435-69.300.
Fogle, Homer W., Jr. Hermetically-sealed electrically-absorptive low-pass radio frequency filters and electro-magnetically lossy ceramic materials for said filters. 5,367,956, Cl. 102-202.200.
Foldyna, Joseph T.; Carpenter, Donald J.; and Cron, John M., to Morrison-Knudson (an Idaho corporation). Pressurized radioactive gas treatment system. 5,368,633, Cl. 95-19.000.
Folk, Kenneth F.: *See—*
Deuel, Gregory F.; and Folk, Kenneth F., 5,367,767, Cl. 29-868.000.
Follendore, Roy D., III, to TECSEC Incorporated. Secure network method and apparatus. 5,369,707, Cl. 380-25.000.
Folwell, Dale E.; and Rahamim, Raphael, to Rockwell International Corporation. Modem with digital isolation. 5,369,666, Cl. 375-8.000.
Foote, Wayne E.; and Jeran, Paul L., to Hewlett-Packard Company. Liquid electrophotography fluid containment and belt tracking device. 5,369,477, Cl. 355-256.000.
Ford Motor Company: *See—*
Clarke, William H., 5,368,141, Cl. 188-284.000.
Erion, Jeffrey A., 5,369,554, Cl. 362-31.000.
Mastrangelo, Carlos H., 5,369,544, Cl. 361-283.400.
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,368,425, Cl. 409-235.000.
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,368,539, Cl. 483-1.000.
Rinz, William J.; and Sandhu, Tirlochan S., 5,368,087, Cl. 164-228.000.
Schechter, Michael M., 5,367,990, Cl. 123-90.120.
Toepfer, Craig B.; and Brown, Robert K., 5,369,352, Cl. 320-56.000.
Turck, William B.; and Rumpel, Manfred C., 5,368,326, Cl. 280-689.000.
Ford New Holland, Inc.: *See—*
Homik, William J.; and Sokol, David G., 5,367,996, Cl. 123-179.800.
Jennings, Richard E.; and Clevenger, James T., Jr., 5,367,865, Cl. 56-341.000.
Ford, Steven D., to Claude Laval Corporation. Liquid/solid separator with a conduit between a vortex and a quiescent collector zone. 5,368,735, Cl. 210-512.100.
Fore, James R., to Communication Cable, Inc. Two-piece pay-out tube. 5,368,245, Cl. 242-157.00R.
Foreman, Jack C.; Steiger, Billy J.; Heyen, Gerald L.; Voigt, Trent R.; Carter, James S.; Blaney, Loren F.; Tierney, Stephen J.; and Bill, James K., to Travelers Express Company, Inc. Apparatus for dispensing money orders. 5,369,709, Cl. 380-51.000.
Forester, David R., to Betz Laboratories, Inc. Use of dispersant additives as process antifoulants. 5,368,777, Cl. 252-403.000.
Forouhi, Abdul R.: *See—*
Yen, Yeouchung; Chen, Wenn-Jei; Chiang, Steve S.; and Forouhi, Abdul R., 5,369,054, Cl. 437-195.000.
Forschungszentrum Juelich GmbH: *See—*
Steinke, Doerte; Kula, Maria-Regina; Schwarz, Alexander; and Wandrey, Christian, 5,369,016, Cl. 435-68.100.
Forster, Franz, to Linde Aktiengesellschaft. Hydromechanical drive unit. 5,368,527, Cl. 475-83.000.
Fortunati, Stefano; Tului, Mario; and Risso, Luca, to Centro Sviluppo Material S.p.A. Process for the manufacture of 95% by weight single phase YCBO powder in one combustion step, comprising the use of citrate complex compounds as starting materials. 5,369,091, Cl. 505-445.000.
Fory, Werner: *See—*
Schurter, Rolf; and Fory, Werner, 5,369,083, Cl. 504-215.000.
Foster, Donald D.; and Nelson, Philip I., to Contico International, Inc. Nozzle assembly for trigger sprayer. 5,368,234, Cl. 239-333.000.
Foster, Michael J. Sash lock system. 5,368,346, Cl. 292-175.000.
Fotiou, James G., to Morton International, Inc. Method of applying coating powder and glass flake to produce a glass flake-containing finish. 5,368,885, Cl. 427-195.000.
Fox, Martin H.: *See—*
Parker, Paul E.; Fox, Martin H.; Turpin, Robert H.; and Golner, Thomas M., 5,368,929, Cl. 428-305.500.
Fox, Thomas D.: *See—*
Georgis, Steven P.; Sugar, Robert; Brittner, Rodney; and Fox, Thomas D., 5,369,285, Cl. 250-561.000.
Fraden, Jacob, to Thermoscan Inc. Optical system for an infrared thermometer. 5,368,038, Cl. 128-664.000.
France Telecom: *See—*
Michel, Boitel; Cailleaux, Jean-Marc; and Thierry, Mahe, 5,368,211, Cl. 225-96.500.
Pillet, Michel; and Piriou, Daniel, 5,369,693, Cl. 379-203.000.
Franceschino, Luisa M. Mail slot pouch apparatus. 5,368,226, Cl. 232-19.000.
Francotte, Eric: *See—*
Sallmann, Alfred; Gschwind, Hans-Peter; and Francotte, Eric, 5,369,117, Cl. 514-374.000.
Franke, David: *See—*
Lynch, John; and Franke, David, 5,369,732, Cl. 395-51.000.
Franz, Douglas L.: *See—*
Pritchard, Thomas B.; Franz, Douglas L.; Hoekstra, Casey D.; and Klaus, Richard I., 5,369,645, Cl. 371-22.100.
Franz, Gunter: *See—*
Sommer, Herbert; and Franz, Gunter, 5,368,893, Cl. 427-348.000.
Franz, Norbert W., Jr.: *See—*
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; and Franz, Norbert W., Jr., 5,368,274, Cl. 251-129.160.
Frass, Hans W.: *See—*
Elsaessser, Andreas; Frass, Hans W.; Gaschler, Otfried; Mohr, Dieter; and Buhr, Gerhard, 5,368,975, Cl. 430-165.000.
Fraunhofer Gesellschaft zur Foerderung der angewandten Forschung e.V.: *See—*
Brunger, Wilhelm, 5,369,274, Cl. 50-306.000.
Frederick Gumm Chemical Co., Inc.: *See—*
Klos, Klaus F , 5,368,655, Cl. 148-250.000.
Frederickson, Dale W.; Meyer, Robert F.; and Anton, Joseph G., to Pillsbury Company, The. Can tester. 5,367,900, Cl. 73-52.000.
Freed, William T.: *See—*
La Fleur, Edward E.; Amici, Robert M.; Freed, William T.; Work, William J.; and Carson, William G., 5,369,169, Cl. 525-57.000.
Freedman, James R.; and Waller, David P., to Polaroid Corporation. Thermally developable photosensitive element. 5,368,979, Cl. 430-203.000.
Freiburger, Gene. Method for transporting waste material. 5,368,436, Cl. 414-786.000.

Freitas, Michael, to Dexide, Inc. Surgical trocar and spike assembly. 5,368,607, Cl. 606-172.000.
Freiwald, Gerhard, to Carl Freudenberg, Firma. Guide bushing with an integrated seal for the clutch-release bearing of a gear unit. 5,368,397, Cl. 384-130.000.
French, Michael R., to Texaco Inc. Downhole rotary bearing sub. 5,368,110, Cl. 175-57.000.
French, Raymond N.: *See—*
Machado, Joseph M.; and French, Raymond N., 5,369,180, Cl. 525-185.000.
Frettered, Vincent T. Motorcycle clutch assembly removal tool and method therefor. 5,367,927, Cl. 81-488.000.
Friederichs, John W., to Valenite Inc. Articles of ultra fine grained cemented carbide and process for making same. 5,368,628, Cl. 75-242.000.
Friedman, Arthur S. Accessory clip for portable light. 5,369,560, Cl. 362-396.000.
Friedrich Grohe Aktiengesellschaft: *See—*
Humpert, Jurgen; Heimann, Bruno; and Dickel, Harald, 5,368,065, Cl. 137-377.000.
Friedrich, Rainer; and Schulein, Rolf G., to Leifheit AG. Spice rack with magnetically held spice containers. 5,368,203, Cl. 222-179.500.
Friedrichs, Karsten: *See—*
Kiefer, Erich; Klusener, Peter; and Friedrichs, Karsten, 5,368,462, Cl. 425-150.000.
Friend, Timothy R.: *See—*
Bowden, David R.; Friend, Timothy R.; and Baker, Douglas V., 5,369,494, Cl. 356-402.000.
Friese, Karl-Hermann; Wiedenmann, Hans-Martin; and Goehring, Eberhard, to Robert Bosch GmbH. Laminated system for gas sensors and process for producing it. 5,368,713, Cl. 204-429.000.
Frisch, Gerhard; and Maier, Thomas, to Hoechst Aktiengesellschaft. Liquid preparation of herbicide mixtures based on glufosinate. 5,369,082, Cl. 504-127.000.
Fritze, Mark: *See—*
McKain, Paul C.; and Fritze, Mark, 5,369,555, Cl. 362-120.000.
Frye, David: *See—*
Cords, Frederick W.; and Frye, David, 5,368,372, Cl. 303-11.000.
FSSL Limited: *See—*
Bosley, Kevin J., 5,368,070, Cl. 137-614.040.
Fuchs, Karl-Heinz, to Ing. Erich Pfeiffer GmbH & Co. KG. Pressure-operable locking valve for media dispenser. 5,368,201, Cl. 222-162.000.
Fucik, Milan, to Uniplet a.s. Selecting device with swingable selecting jack. 5,367,893, Cl. 66-222.000.
Fuji Electric Co., Ltd.: *See—*
Iijima, Katsuhiko; and Kinoshita, Shigenori, 5,368,116, Cl. 180-65.400.
Motai, Kenji, 5,368,805, Cl. 264-272.150.
Nakamura, Yoichi; Mori, Nobuyoshi; and Nogami, Sumitaka, 5,368,966, Cl. 430-59.000.
Fuji Photo Film Co., Ltd.: *See—*
Adachi, Keiichi; and Tachikawa, Hiromichi, 5,368,964, Cl. 430-49.000.
Asami, Masahiro, 5,368,996, Cl. 430-531.000.
Fujiwara, Itsuo; Ito, Tadashi; and Arai, Naoki, 5,368,994, Cl. 430-508.000.
Hasegawa, Akira, 5,368,973, Cl. 430-138.000.
Kato, Eiichi; and Ishii, Kazuo, 5,368,931, Cl. 428-327.000.
Kawamoto, Fumio, 5,368,997, Cl. 430-533.000.
Makino, Katsumi, 5,368,999, Cl. 430-569.000.
Okamoto, Yasuhiro, 5,368,983, Cl. 430-264.000.
Sashihara, Kenji; and Minato, Shigeru, 5,368,671, Cl. 156-195.000.
Shimizu, Osamu, 5,369,539, Cl. 360-126.000.
Sugiyama, Nobuo; and Yamashita, Naoko, 5,368,664, Cl. 156-69.000.
Suzuki, Tamotsu; Tago, Tomohisa; and Shinozaki, Fumiaki, 5,368,982, Cl. 430-256.000.
Terashita, Takaaki; and Murayama, Jin, 5,369,463, Cl. 355-38.000.
Ushimaru, Akira; Hashimoto, Hiroshi; Hanai, Kazuko; and Suzuki, Keiichi, 5,368,949, Cl. 428-694.0BS.
Fuji Photo Optical Co., Ltd.: *See—*
Tanaka, Toshizumi; and Itoi, Hiromu, 5,368,036, Cl. 128-662.060.
Fuji Xerox Co., Ltd.: *See—*
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.
Takahashi, Toyohiro; Furuya, Masami; Koyama, Toshio; and Owa, Kenichi, 5,368,402, Cl. 400-279.000.
Tsukamoto, Kazuyuki; Yoshida, Minoru; Hosaka, Ryuji; Fukao, Tomoo; Kido, Naoharu; and Suto, Naoki, 5,369,688, Cl. 379-100.000.
Fujibayashi, Toshio; and Nagaoka, Haruo, to Kansai Paint Co., Ltd. Resin composition for aqueous paints. 5,369,150, Cl. 523-414.000.
Fujibayashi, Toshio; and Nagaoka, Haruo, to Kansai Paint Co., Ltd. Resin composition for aqueous paints. 5,369,151, Cl. 523-414.000.
Fujii, Katsutoshi: *See—*
Obata, Tokio; Fujii, Katsutoshi; and Fukuda, Yasuhisa, 5,369,116, Cl. 514-370.000.
Fujii, Motoya: *See—*
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.
Fujii, Shinji: *See—*
Kuroda, Tadahiro; Fujii, Shinji; Kimura, Masahiro; and Kasai, Kazuhiko, 5,369,318, Cl. 326-66.000.
Fujii, Toshiro; Iwama, Kazuaki; and Inukai, Hitoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor. 5,368,450, Cl. 417-269.000.
Fujii, Yasushi: *See—*
Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, 5,369,588, Cl. 364-449.000.
Fujikake, Hironobu: *See—*
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.
Fujiki, Yasuhiro, to Murata Mfg., Co., Ltd. Chip type directional coupler comprising a laminated structure. 5,369,379, Cl. 333-116.000.
Fujikura Ltd.: *See—*
Usui, Toshio; Aoki, Yuji; Kamei, Masayuki; and Morishita, Tadataka, 5,369,275, Cl. 250-310.000.
Fujimori, Mizue; Nagasawa, Ken; and Yamada, Yorinobu, to Citizen Watch Co., Ltd. Electrophotographic photoreceptor. 5,368,965, Cl. 430-57.000.
Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, to NEC Corporation. Laminated vibration-damping material. 5,368,916, Cl. 428-215.000.
Fujimoto, Masami, to Wacoal Corp. Wearing article for wearing in pressed relation to human body surface. 5,367,708, Cl. 2-22.000.
Fujimoto, Tsuyoshi, to Sumitomo Electric Industries, Ltd. Brake fluid pressure control device. 5,368,374, Cl. 303-113.200.
Fujimura, Munenori: *See—*
Takahashi, Kazuaki; Hasegawa, Makoto; Makimoto, Mitsuo; and Fujimura, Munenori, 5,369,383, Cl. 333-204.000.
Fujimura, Nobuteru: *See—*
Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, 5,369,655, Cl. 372-29.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Asakura, Sotoo; Koyama, Yasuto; Kiyota, Youhei; Akashi, Kiyoko; Kagayama, Akira; Murakami, Yoshio; and Nakate, Toshiomi, 5,368,865, Cl. 424-489.000.
Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, 5,369,107, Cl. 514-252.000.
Fujisawa, Yoshihiro: *See—*
Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.
Fujita, Hiroyuki: *See—*
Yoshikawa, Masaaki; Yokoyama, Keiichi; Hasegawa, Masayasu; Yasumoto, Ryouichi; and Fujita, Hiroyuki, 5,369,015, Cl. 435-68.100.
Fujita, Minoru: *See—*
Masegi, Koichi; Fujita, Minoru; and Shibata, Shogo, 5,369,574, Cl. 364-419.080.
Fujitsu Limited: *See—*
Arai, Soichiro; Yasuda, Hiroshi; Kai, Junichi; and Oae, Yoshihisa, 5,369,282, Cl. 250-492.220.
Fukuda, Masahiro; and Noda, Tsugio, 5,369,502, Cl. 358-431.000.
Hanyu, Isamu; and Asai, Satoru, 5,368,963, Cl. 430-5.000.
Haraki, Takahiro; Takeda, Shiro; Namiki, Fumihiro; Hirano, Hideyuki; and Ishiwata, Kenji, 5,369,572, Cl. 364-413.130.
Kanbe, Hiroyuki, 5,369,759, Cl. 395-575.000.
Kawai, Shinichi, 5,369,050, Cl. 437-62.000.
Kurihara, Kazuaki; Sasaki, Kenichi; Kawarada, Motonobu; and Koshino, Nagaaki, 5,368,897, Cl. 427-450.000.
Larson, David; Stubbs, Robert E.; and Edstrom, Gene, 5,369,758, Cl. 395-575.000.
Maruyama, Akira; Kimura, Shuji; Yamada, Shigeki; Shirai, Hiroaki; Nara, Hiroichi; and Hanaeda, Kazunori, 5,369,633, Cl. 370-13.000.
Masumoto, Daiki; Kato, Hideki; Yoshizawa, Hideki; and Iciki, Hiroki, 5,369,731, Cl. 395-24.000.
Murayama, Masami; Kakuma, Satoshi; and Yoshimura, Shuji, 5,369,649, Cl. 371-37.100.
Nanba, Hideyuki; Hirata, Koji; and Sasaki, Shigenori, 5,368,290, Cl. 271-273.000.
Shikatani, Junichi, 5,369,646, Cl. 371-22.500.
Usuki, Tatsuya, 5,369,288, Cl. 257-26.000.
Yabe, Toshihiro; and Nakada, Masatoshi, 5,369,683, Cl. 379-59.000.
Yamada, Akira, 5,369,474, Cl. 355-245.000.
Yanai, Kenichi; Tanaka, Tsutomu; Kakehi, Tatsuya; Ohgata, Koji; and Oki, Kenichi, 5,369,512, Cl. 359-59.000.
Yasutake, Nobuyuki; and Yamada, Akio, 5,368,613, Cl. 29-25.010.
Yokota, Yasuhiro, 5,369,790, Cl. 455-164.100.
Fujiwara, Itsuo; Ito, Tadashi; and Arai, Naoki, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,368,994, Cl. 430-508.000.
Fujiwara, Shigenori: *See—*
Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, 5,369,655, Cl. 372-29.000.
Fujiwara, Teruaki: *See—*
Takahashi, Hitoshi; Kakita, Hiroyuki; Irie, Yoshio; Fujiwara, Teruaki; and Akihisa, Kazumi, 5,369,148, Cl. 523-315.000.
Fujiwara, Yukihiro: *See—*
Tsuchiya, Yoshikazu; Tsurumiya, Osamu; Murata, Makoto; Izawa, Masataka; and Fujiwara, Yukihiro, 5,369,349, Cl. 318-811.000.
Fukao, Tomoo: *See—*
Tsukamoto, Kazuyuki; Yoshida, Minoru; Hosaka, Ryuji; Fukao, Tomoo; Kido, Naoharu; and Suto, Naoki, 5,369,688, Cl. 379-100.000.

Fukuda, Masahiko; Numakura, Hiromi; Iio, Koji; and Hidaka, Akira, to Mitsubishi Denki Kabushiki Kaisha. Human body detection system. 5,369,269, Cl. 250-221.000.

Fukuda, Masahiro; and Noda, Tsugio, to Fujitsu Limited. Image data progressive reconstruction method and apparatus. 5,369,502, Cl. 358-431.000.

Fukuda, Masaru, to Maruzen Petrochemical Co., Ltd. Method of detecting injured nuclear DNA. 5,369,002, Cl. 435-6.000.

Fukuda, Norisuke: *See—*
Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, 5,369,253, Cl. 219-707.000.

Fukuda, Yasuhisa: *See—*
Obata, Tokio; Fujii, Katsutoshi; and Fukuda, Yasuhisa, 5,369,116, Cl. 514-370.000.

Fukugauchi, Masaaki: *See—*
Aoki, Koso; Fukugauchi, Masaaki; Imai, Tomoyuki; Horiishi, Nanao; and Hayashi, Kazuyuki, 5,368,933, Cl. 428-329.000.

Fukui, Akio; and Shibata, Yasuji, to Toyoda Jidosha Kabushiki Kaisha. Vehicle seat and method of production thereof. 5,368,368, Cl. 297-452.180.

Fukui, Hiroshi: *See—*
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Yokoyama, Miyuki; and Sekine, Akio, 5,369,199, Cl. 526-241.000.

Fukukita, Hiroshi; Yao, Lin X.; Banjanin, Zoran; Kim, Jin; Hagiwara, Hisashi; and Kawabuchi, Masami, to Siemens Medical Systems, Inc.; and Matsushita Electrical Industrial Co. Ltd. Digital beamformer having multi-phase parallel processing. 5,369,624, Cl. 367-103.000.

Fukuma, Masaki: *See—*
Asai, Akira; Nishida, Masami; and Fukuma, Masaki, 5,367,991, Cl. 123-90.160.

Fukushima, Hirotaka, to Kabushiki Kaisha Daikin Seisakusho. Flywheel assembly. 5,367,921, Cl. 74-574.000.

Fukushima, Tadashi; Matsuo, Shigeru; Yoshida, Shoji; and Komagawa, Tooru, to Hitachi, Ltd. Address-translatable graphic processor, data processor and drawing method with employment of the same. 5,369,744, Cl. 395-162.000.

Fukutomi, Osamu, to Nihon Biso Co., Ltd. Device suspending a working cage. 5,368,124, Cl. 182-142.000.

Fulkerson, Terrence M., to Nordson Corporation. Power coating guns with improved spray nozzles and improved method of power coating. 5,368,237, Cl. 239-706.000.

Fuller, Robert: *See—*
Dvorkis, Paul; Thomas, Ralph; Goren, David; Fuller, Robert; and Goldner, Leonard H., 5,369,262, Cl. 235-472.000.

Fults, John H.: *See—*
Flanders, Bobby F.; and Fults, John H., 5,368,353, Cl. 294-152.000.

Funahara, Toshikatsu: *See—*
Sagara, Toshiharu; Funahara, Toshikatsu; Nakatani, Takakazu; and Kojima, Mitsuru, 5,368,891, Cl. 427-258.000.

Funahashi, Nobuaki, to Toyoda Gosei Co., Ltd. Resin formed pulley. 5,368,525, Cl. 474-190.000.

Funayama, Chihito: *See—*
Mizukami, Tomohito; Funayama, Chihito; and Oguri, Yasuo, 5,369,331, Cl. 313-467.000.

Furihata, Toshikazu: *See—*
Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, 5,368,916, Cl. 428-215.000.

Furuhata, Naoto: *See—*
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.

Furukawa Electric Co., Ltd., The: *See—*
Aiba, Junichi; and Sasaki, Yoshiharu, 5,367,952, Cl. 100-45.000.
Kamata, Yoshiyuki; and Yanagawa, Hisaharu, 5,369,718, Cl. 385-21.000.
Nakamura, Masayuki; Shiroyama, Kaisuke; Masunaga, Satoru; and Murata, Kazuo, 5,368,661, Cl. 148-512.000.

Furumoto, Horace W.; Goltsos, William C.; Rediker, Robert H.; and Sze, Robert, to Cynosure, Inc.; Massachusetts Institute of Technology; and Stablelase, Inc. Fault tolerant optical system using diode laser array. 5,369,659, Cl. 372-50.000.

Furuta, Katsuhisa; Abe, Akira; Ito, Akinori; and Manabe, Hiroyuki, to Ohkura Electric Co., Ltd.; and Furuta, Katsuhisa. Furnace temperature cascade control apparatus using adjustment input. 5,369,567, Cl. 364-149.000.

Furuta, Motonobu, to Sumitomo Chemical Company, Limited. Glass fiber-reinforced resin composition. 5,369,173, Cl. 525-68.000.

Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, to Krosaki Corporation. Refractory material and product thereof containing low-silica electrofused magnesia clinker. 5,369,066, Cl. 501-108.000.

Furuta, Yoichi: *See—*
Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, 5,369,066, Cl. 501-108.000.

Furuya, Masami: *See—*
Takahashi, Toyohiro; Furuya, Masami; Koyama, Toshio; and Owa, Kenichi, 5,368,402, Cl. 400-279.000.

Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, to Nippon Steel Corporation; and Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus of continuously casting a metal sheet. 5,368,088, Cl. 164-415.000.

Furuyama, Kazuo, to Yugen Kaisha Furuyama Shouji. Fitting device for accessory. 5,367,891, Cl. 63-29.200.

Furuyama, Tohru, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,369,612, Cl. 365-189.050.

Futamoto, Masaaki: *See—*
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.

Gable, Gerald K.: *See—*
Weber, Richard H., III; Richardson, Paul T.; and Gable, Gerald K., 5,368,010, Cl. 126-110.00R.

Gabos, John J.; and Olenek, Michael V. Fishing tackle lure. 5,367,816, Cl. 43-42.500.

Gabrielson, Thomas [redacted], to United States of America, Navy. Thermoacoustic sound generator. 5,369,625, Cl. 367-140.000.

Gadsby, David E. Sun powered electrically operated chime apparatus. 5,369,391, Cl. 340-392.500.

Gaffar, Abdul; Afflitto, John J.; and Williams, Malcolm I., to Colgate Palmolive Company. Antiplaque, antigingivitis, anticaries oral composition. 5,368,844, Cl. 424-49.000.

Gaffar, Abdul; Afflitto, John; and Subramanian, Malathy, to Colgate Palmolive Company. Oral composition. 5,368,845, Cl. 424-54.000.

Gage In-Store Marketing, LLC: *See—*
Morrow, Lester A., 5,368,175, Cl. 211-59.100.

Gaitronics Corporation: *See—*
Nowicki, Edmund H., 5,369,692, Cl. 379-171.000.

Gale, Ernest S.: *See—*
Bailey, Charles E.; Gale, Ernest S.; Hassell, Carl A.; Schaffer, Scott J.; Paranjape, Sushama M.; and West, Stephen C., 5,369,652, Cl. 371-40.100.

Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, to Himont Incorporated. Alpha olefins functionalized polymers. 5,369,186, Cl. 525-330.700.

Gallagher, Donald D.: *See—*
Bales, Bruce M.; Fidder, Ted M.; Gallagher, Donald D.; and Thieler, Stephen M., 5,369,694, Cl. 379-206.000.

Gallet S. A.: *See—*
Miaud, Pierre, 5,368,158, Cl. 206-222.000.

Galli, Giuseppe; and Caretta, Renato, to Pirelli Coordinamento Pneumatici S.p.A. Method for production of tires in a curing mold having space between adjacent mold blocks for escape of air. 5,368,799, Cl. 264-219.000.

Gallone, Cesare. Safety pressure sensor, in particular for microswitches. 5,369,233, Cl. 200-83.00J.

Galton, Ian, to University of California, The Regents of the. Combined angle demodulator and digitizer. 5,369,404, Cl. 341-143.000.

Gamand, Patrice, to U.S. Philips Corporation. Slow-wave transmission line of the microstrip type and circuit including such a line. 5,369,381, Cl. 333-161.000.

Gambrill, Jeffrey S.; Hutchings, William F.; Markle, Stephen L.; Schutte, Marlin; and Palmer, John M., to General Signal Corporation. Mixer systems. 5,368,390, Cl. 366-273.000.

Gamer Corporation: *See—*
Iverson, Donald D.; and Strobel, Thomas A., 5,367,795, Cl. 36-136.000.

Gamow, Rustem I.; and Herr, Hugh M. Shoe and foot prosthesis with a coupled spring system. 5,367,790, Cl. 36-27.000.

Gandini, Marco; Licciardi, Luigi; Turolla, Maura; and Vercellone, Vinicio, to Cselt-Centro Studi e Laboratori Telecommunicazioni S.P.A. High bit rate cell switching element in CMOS technology. 5,369,635, Cl. 370-60.100.

Gansen, Peter, to Bayer Aktiengesellschaft. Preparation of flexible, molded, cold-cure polyurethane foams. 5,369,138, Cl. 521-159.000.

Gapinski, Richard E., to Lubrizol Corporation, The. Lubricants, greases and aqueous fluids containing additives derived from dimercaptothiadiazoles. 5,368,758, Cl. 252-42.700.

Garbassi, Fabio: *See—*
Sommazzi, Anna; Lugli, Gabriele; Garbassi, Fabio; and Calderazzo, Fausto, 5,369,073, Cl. 502-162.000.
Sommazzi, Anna; Cardi, Nicoletta; Garbassi, Fabio; and Chatgilialoglu, Chrissostomos, 5,369,187, Cl. 525-332.800.

Gardenier, Ransen, Jr. Antifreeze reclamation system and process. 5,368,753, Cl. 210-800.000.

Garrett, Frank: *See—*
Severa, William D.; Garrett, Frank; and Cheng, Po-Jen, 5,368,295, Cl. 273-73.00C.

Garrett, Steven L.: *See—*
Hofler, Thomas J.; Brown, David A.; and Garrett, Steven L., 5,369,485, Cl. 356-345.000.

Garrity, Frank J. Adjustable mounting support for a box fan. 5,368,262, Cl. 248-131.000.

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Elsaessser, Andreas; Frass, Hans W.; Gaschler, Otfried; Mohr, Dieter; and Buhr, Gerhard, 5,368,975, Cl. 430-165.000.

Gasman, Robert C.; Wong, Eddie; Clarke, Hal C.; and Ahn, Hyungkook, to Block Drug Company. Denture adhesive. 5,369,145, Cl. 523-120.000.

Gasparre, Pasquale, to Pasquale Gasparre DBA Creative Designs in Wood and Metal. Anti-crimp wrench for a garden hose. 5,367,925, Cl. 81-121.100.

Gasparrini, Charles R.; and Cano, Walter H., to Baldwin Graphic Systems, Inc. Pre-packaged, pre-soaked cleaning system and method for making the same. 5,368,157, Cl. 206-209.000.

Gaugenmaier, Karl: *See—*
Steiner, Karl; Meinecke, Albrecht; and Gaugenmaier, Karl, 5,368,697, Cl. 162-360.200.

Gautier, Jean Pierre; and Verbo, Ulysse, to AlliedSignal Europe Services Techniques. Pneumatic booster with valve. 5,367,941, Cl. 91-369.200.

Gaven, Thomas: *See—*
Austad, Helge; Gaven, Thomas; and Mack, Ronald A., 5,369,329, Cl. 313-284.000.

Gayne, Lawrence: *See—*
Leonard, Cynthia D.; and Gayne, Lawrence, 5,367,715, Cl. 2-401.000.

Gaz de France: *See—*
Dufour, Denis; and Brunet, Martine, 5,369,248, Cl. 219-541.000.

Gaztech International Corporation: *See—*
Wong, Jacob Y., 5,369,397, Cl. 340-632.000.

Gec Alsthom Energie Inc.: *See—*
Demissy, Daniel, 5,369,234, Cl. 200-146.00R.

Gedan, Michaela: *See—*
Land, Horst-Tore; Gedan, Michaela; Ratzsch, Manfred; and Bohme, Frank, 5,369,209, Cl. 528-170.000.

Gee, Alison W.; Krishnaswamy, Premachandran; and Sane, Ajit Y., to Metaullics Systems Co., L.P. Molten metal filter medium and method for making same. 5,369,063, Cl. 501-82.000.

Geiser, Peter; and Zangerle, Rolf, to Grapha-Holding AG. Method of and implement for cutting books at the backbones. 5,367,928, Cl. 83-49.000.

Gelardi, John A., to DIC Digital Supply Corporation. One-piece box construction for magnetic media devices. 5,368,163, Cl. 206-387.000.

Gelormini, Frank T.: *See—*
Ebersole, Richard C.; Gelormini, Frank T.; and Tatnall, Robert E., 5,369,011, Cl. 435-7.320.

General Binding Corporation: *See—*
Nanos, Nicholas M., 5,369,246, Cl. 219-388.000.

General Cable Industries, Inc.: *See—*
Hedrick, Paul A.; and Varatta, Thomas, Sr., 5,369,559, Cl. 362-376.000.

General Electric Company: *See—*
Anderson, Bernard J., 5,368,444, Cl. 416-220.00R.
Cline, Harvey E.; and Anthony, Thomas R., 5,368,031, Cl. 128-653.200.
Cline, Harvey E.; and Watkins, Ronald D., 5,368,032, Cl. 128-653.200.
Diaz, Thomas P.; Contreras, Gary W.; Gordon, Gerald M.; McCarthy, Veronica L.; and Weinstein, Daniel, 5,369,675, Cl. 376-249.000.
Eckberg, Richard P.; and Griswold, Roy M., 5,369,205, Cl. 528-25.000.
Konrad, Charles E.; and Benson, Ralph A., 5,369,540, Cl. 361-6.000.
Mannava, Seetharamaiah; Pratt, Vanon D.; MacLaren, Henry; Jackson, Joseph J.; and Kenney, Patrick M., 5,368,911, Cl. 428-167.000.
Morgan, Sarah E.; Pratt, Charles F.; and Savenije, Hermannus B., 5,369,172, Cl. 525-67.000.
Ortega, Frank; and Faulstich, David L., 5,369,676, Cl. 376-271.000.
Rigney, David V., 5,368,888, Cl. 427-237.000.
Venkataramani, Kattalaicheri S.; and Scott, John C., 5,367,871, Cl. 60-39.821.
Woods, Daniel C.; and Stogner, William S., 5,369,387, Cl. 335-216.000.

General Engineering (Netherlands) B.V.: *See—*
Duhan, Tommy; and Nilsson, Stig-Hakan, 5,369,305, Cl. 307-10.100.

General Hospital Corporation, The: *See—*
Trauner, Kenneth; and Hasan, Tayyaba, 5,368,841, Cl. 424-9.000.

General Mills, Inc.: *See—*
Efstathiou, John D., 5,368,870, Cl. 426-73.000.

General Motors Corporation: *See—*
Clemens, Joseph A., 5,368,137, Cl. 188-71.500.
Compeau, David E.; Raisoni, Jayprakash U.; and Shah, Suresh D., 5,367,832, Cl. 49-502.000.
Farrell, Michael J., 5,368,528, Cl. 475-348.000.
Halka, Thomas G.; and Clark, Terry L., 5,367,945, Cl. 92-187.000.
Hayden, Richard A.; Melchert, James A.; and Phaneuf, Charles A., 5,368,355, Cl. 296-65.100.
Ordo, Richard A., 5,367,914, Cl. 74-331.000.
Pfaffinger, David A., 5,368,427, Cl. 411-553.000.
Pirrallo, Frank G.; and Hickey, Gregory M., 5,368,139, Cl. 188-78.000.
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General Signal Corporation: *See—*
Gambrill, Jeffrey S.; Hutchings, William F.; Markle, Stephen L.; Schutte, Marlin; and Palmer, John M., 5,368,390, Cl. 366-273.000.

Genesis Research Corp.: *See—*
Kindig, James K., 5,368,617, Cl. 44-622.000.

Genetic Systems Corporation: *See—*
Nelson, Karen A.; and Strong, Douglas M., 5,369,010, Cl. 435-7.240.

Gennesseaux, Andre , to Hutchinson S.A. Device for attenuating the periodic vibrations of a mechanical structure. 5,369,348, Cl. 318-623.000.

Genova, Ronald R.: *See—*
Cain, Charles J.; and Genova, Ronald R., 5,369,691, Cl. 379-106.000.

Gentile, Lawrence F. Talking book. 5,368,488, Cl. 434-317.000.

George, Scott E.; and Sublett, Bobby J., to Eastman Chemical Company. Heat-resistant water-dispersible sulfopolyester compositions. 5,369,210, Cl. 528-293.000.

George, Scott E.; Jordan, Donna L.; and Sublett, Bobby J., to Eastman Chemical Company. Water-dispersible sulfo-polyester compostions having a TG of greater than 89°C. 5,369,211, Cl. 528-293.000.

Georgia Tech Research Corporation: *See—*
Asbell, Oscar D., 5,368,501, Cl. 439-418.000.

Georgis, Steven P.; Sugar, Robert; Brittner, Rodney; and Fox, Thomas D., to Exabyte Corporation. Method and apparatus for optical detection of cleaning medium in an information storage drive. 5,369,285, Cl. 250-561.000.

Gephardt, Douglas D.; MacDonald, James R.; and Kamath, Govinda V., to Advanced Micro Devices, Inc. Integrated digital processing apparatus having a single biodirectional data bus for accommodating a plurality of peripheral devices connected to a plurality of external buses. 5,369,777, Cl. 395-800.000.

Gerenz, Peter. Exerciser system and method for providing coordinated body workout. 5,368,534, Cl. 482-72.000.

Gerfast, Sten R.; and Egan, Daniel C., to Minnesota Mining and Manufacturing Company. Mechanically incompatible magnetic recording tape cartridges having the same form factor. 5,368,250, Cl. 242-347.000.

Gergacz, David S.: *See—*
Murray, John P.; Hemmings, David F.; and Gergacz, David S., 5,369,697, Cl. 379-361.000.

Gerk, Wilfried; and Hirt, Hartmut, to Samson AG. Rotating drill head with a boring bar which is pivotable by a slight distance vertically to the axis of rotation by fluidic means. 5,368,420, Cl. 408-156.000.

Gettel, Steven K., to Dell U.S.A., L.P. Computer with transparent power-saving manipulation of CPU clock. 5,369,771, Cl. 395-750.000.

Gevertz, Diane: *See—*
Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, 5,368,099, Cl. 166-246.000.

Gezolan AG: *See—*
Unger, Jacques, 5,369,149, Cl. 523-353.000.

Gholizadeh, Dariush; Assarpour, Hamid; and Messaoudene, Mohamed, to Digital Equipment Corporation. Normalization of vectors associated with a display pixels of computer generated images. 5,369,737, Cl. 395-126.000.

Giannella, Vincenzo: *See—*
Lesca, Giuseppe; and Giannella, Vincenzo, 5,368,927, Cl. 428-288.000.

Giannini, Umberto: *See—*
Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, 5,369,186, Cl. 525-330.700.

Gibbon, Robert M., to JMK International, Inc. Windshield de-icing and defrosting mitt using microwave energy heating and method. 5,369,257, Cl. 219-759.000.

Giddings & Lewis, Inc.: *See—*
Allen, Kenneth H., 5,367,836, Cl. 451-331.000.

Gierhart, Thomas J.: *See—*
Trask, Philip A.; Pillai, Vincent A.; and Gierhart, Thomas J., 5,368,221, Cl. 228-175.000.

Giles Grady L.; Atwell, William D., Jr.; Wilson, Jesse R.; and Reis, Richard B., to Motorola, Inc. Method and apparatus for shifting data in an array of storage elements in a data processing system. 5,369,752, Cl. 395-425.000.

Gillette Company, The: *See—*
Draper, Ronald A.; and Sandonato, James L., 5,368,810, Cl. 264-523.000.
Lederman, Barry P.; and Callaghan, David T., 5,368,842, Cl. 424-47.000.

Girotra, Narindar N.: *See—*
Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.

Givaudan-Roure Corporation: *See—*
Blakeway, John M.; and Sauvage, Francoise, 5,369,092, Cl. 512-2.000.

GKR Industries, Inc.: *See—*
Fleury, Richard, 5,368,583, Cl. 604-318.000.

Gleichauf, Darrell A.: *See—*
Di Milia, Edward S.; Gleichauf, Darrell A.; and Whiting, Thomas E., 5,369,033, Cl. 436-148.000.

Glenayre Electronics, Inc.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; Crowley-Dierks, Joel R.; and Fawcett, Glenn S., 5,369,682, Cl. 379-57.000.

Glendinning, Peter H., to Baker Hughes Incorporated. Automated filter press. 5,368,751, Cl. 210-791.000.

Glessner, David W.: *See—*
Witsaman, Mark L.; Benz, Roger E.; Glessner, David W.; Crowley-Dierks, Joel R.; and Fawcett, Glenn S., 5,369,682, Cl. 379-57.000.

Glickman, Joel I.; and Simon, Robert E., Jr., to Connector Set Limited Partnership. Vehicle track support for construction toy system. 5,368,514, Cl. 446-122.000.

Global Upholstery Company: *See—*
Feldberg, Saul, 5,368,365, Cl. 297-411.360.

Globe Technologies Corporation: *See—*
Gueli, Carmen, 5,368,265, Cl. 248-214.000.

Globe-Union, Inc.: *See—*
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,368,956, Cl. 429-131.000.

Glucksman, Dov: *See*—
Duncan, J. Kenneth; Cartellone, Mark; and Glucksman, Dov, 5,368,384, Cl. 366-129.000.
Goble, Greg H.: *See*—
Moe, Erik; Goble, Greg H.; and Krueger, Leland R., 5,369,538, Cl. 360-106.000.
Gockler, Heinz, to Ant Nachrichtentechnik GmbH. Device for determining the amplitude of the spectral lines in the output signal from a ring interferometer. 5,369,487, Cl. 356-350.000.
Goehring, Eberhard: *See*—
Friese, Karl-Hermann; Wiedenmann, Hans-Martin; and Goehring, Eberhard, 5,368,713, Cl. 204-429.000.
Goelling, Hans-Werner; and Barthelmes, Clemens, to Patent-Treuhand-Gesellschaft F. Elektrische Gluehlampen MBH. High-pressure discharge lamp with optimized discharge vessel. 5,369,334, Cl. 313-634.000.
Goerrissen, Heiner: *See*—
Kielhorn-Bayer, Sabine; Zeiner, Hartmut; Goerrissen, Heiner; and Saenger, Dietrich, 5,369,177, Cl. 525-154.000.
Goetze AG: *See*—
Quentin, Werner; and Stephan, Bernd, 5,368,797, Cl. 264-152.000.
Gold, James J. Rotary collider mill. 5,368,243, Cl. 241-186.200.
Gold, Mathew J.: *See*—
Gold, Michael K.; and Gold, Mathew J., 5,368,058, Cl. 137-1.000.
Gold, Michael K.; and Gold, Mathew J., to Goldeneye Solutions, Inc. Sample port valve. 5,368,058, Cl. 137-1.000.
Gold Star Co., Ltd.: *See*—
Kwon, Kyung A., 5,369,249, Cl. 219-624.000.
Goldberg, Mark A.: *See*—
Brugnara, Carlo; Kruskall, Margot S.; Goldberg, Mark A.; and Chambers, Linda A., 5,369,014, Cl. 435-29.000.
Goldeneye Solutions, Inc.: *See*—
Gold, Michael K.; and Gold, Mathew J., 5,368,058, Cl. 137-1.000.
Goldner, Leonard H.: *See*—
Dvorkis, Paul; Thomas, Ralph; Goren, David; Fuller, Robert; and Goldner, Leonard H., 5,369,262, Cl. 235-472.000.
Goldstar Co., Ltd.: *See*—
Choi, Jong S.; and Lee, Chang P., 5,369,405, Cl. 341-63.000.
Jung, Jae R., 5,369,780, Cl. 455-12.100.
Kim, Si J., 5,369,438, Cl. 348-402.000.
Kwon, Kyung A., 5,369,254, Cl. 219-708.000.
Lim, Jong H., 5,369,335, Cl. 315-39.530.
Yoon, Jung S.; Rhee, Won H.; Koh, Jae H.; and Jang, Woo S., 5,368,764, Cl. 252-62.590.
Goldstein, Joel E.: *See*—
Burgoyne, William F., Jr.; Casey, Jeremiah P.; Manuel, Thomas A.; and Goldstein, Joel E., 5,369,185, Cl. 525-327.600.
Goldstein, Stuart S.: *See*—
Dolan, John F.; Goldstein, Stuart S.; and Swan, George A., III, 5,368,720, Cl. 208-65.000.
Golner, Thomas M.: *See*—
Parker, Paul E.; Fox, Martin H.; Turpin, Robert H.; and Golner, Thomas M., 5,368,929, Cl. 428-305.500.
Goltsos, William C.: *See*—
Furumoto, Horace W.; Goltsos, William C.; Rediker, Robert H.; and Sze, Robert, 5,369,659, Cl. 372-50.000.
Gonya, Stephen G.; Lake, Jemaes K.; Long, Randy C.; and Wild, Roger N., to International Business Machines, Inc. Lead free, tin-bismuth solder alloys. 5,368,814, Cl. 420-587.000.
Good, Brian K.; Manlove, Gregory J.; and Honnigford, Edward H., to Delco Electronics Corporation. Comparator having temperature and process compensated hysteresis characteristic. 5,369,319, Cl. 327-73.000.
Goodyear Tire & Rubber Company, The: *See*—
Oare, Thomas R.; Brayer, Randall R.; Kahrs, Jeffrey W.; Robinson, Beale A.; Trares, Keith C.; and McQuate, Raymond D., 5,368,082, Cl. 152-517.000.
Gordon Ellis and Company: *See*—
Ellis, William E. G., 5,367,718, Cl. 4-449.000.
Gordon, Eric M.: *See*—
Santafianos, Dinos P.; Poss, Kathleen M.; Gordon, Eric M.; and McCann, Peggy J., 5,369,123, Cl. 514-428.000.
Gordon, Gerald M.: *See*—
Diaz, Thomas P.; Contreras, Gary W.; Gordon, Gerald M.; McCarthy, Veronica L.; and Weinstein, Daniel, 5,369,675, Cl. 376-249.000.
Gordon, Jeff M.: *See*—
Rabl, Ari; and Gordon, Jeff M., 5,369,528, Cl. 359-855.000.
Gore, John G.; and Tolar, Neal J., to Sawtek, Inc. Surface mount stress relief interface system and method. 5,369,551, Cl. 361-767.000.
Gore, Robert H.; and O'Mara, James H., to Rohm and Haas Company. Copolymer useful as a pour point depressant for a lubricating oil. 5,368,761, Cl. 252-56.00R.
Goren, David: *See*—
Dvorkis, Paul; Thomas, Ralph; Goren, David; Fuller, Robert; and Goldner, Leonard H., 5,369,262, Cl. 235-472.000.
Gorny, Stefan; Kallenbach, Rainer; Klug, Andreas; Neumann, Udo; and Otterbein, Stefan, to Robert Bosch GmbH. System for control of a vehicle chassis. 5,369,582, Cl. 364-424.050.
Goro S.A.: *See*—
Schick, Jean-Francois, 5,368,214, Cl. 227-147.000.
Goshima, Kenichi: *See*—
Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.
Goto, Hirofumi: *See*—
Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, 5,369,588, Cl. 364-449.000.
Goto, Yujiro: *See*—
Okamoto, Jun; Goto, Yujiro; Kitano, Masao; and Suzuki, Seiichi, 5,368,760, Cl. 252-47.500.
Gotoh, Tetsuya; Kondoh, Tosiyuki; Egawa, Keiichi; and Kubodera, Ken-ichi, to Toray Industries, Inc.; and Nippon Telegraph and Telephone Corporation. Method of operating third-order nonlinear optical element. 5,368,782, Cl. 252-587.000.
Gottehrer, Terry R.: *See*—
Dodt, William C.; Donze, Jerry L.; Gottehrer, Terry R.; Korngiebel, Ronald W.; and McCarthy, Donald F., 5,369,532, Cl. 360-48.000.
Gottesfeld, Shimshon; and Uribe, Francisco A., to University of California, Office of Technology Transfer, The Regents of the. Metallization of electronic insulators. 5,368,717, Cl. 205-98.000.
Gotz, Hans; and Baumann, Karl-Heinz, to Daimler-Benz AG. Wind guard for a convertible interior space. 5,368,356, Cl. 296-180.100.
Gould, Elliot L.; Kemerer, Douglas W.; McAllister, Lance A.; Piro, Ronald A.; Richardson, Guy R.; and Wellburn, Deborah A., to International Business Machines Corporation. Method of combining gate array and standard cell circuits on a common semiconductor chip. 5,369,595, Cl. 364-490.000.
Gould, Geoffrey A.: *See*—
Fandrich, Mickey L.; Yarlagadda, Chakravarthy; Rozman, Rodney R.; and Gould, Geoffrey A., 5,369,754, Cl. 395-425.000.
Goulet, Douglas P., to IMI Cornelius Inc. Beverage dispenser. 5,368,198, Cl. 222-129.100.
Grab, Gerhard; and Jacob, Dieter, to Hein-Farben GmbH. Method of treating polyolefin plastic foams. 5,369,134, Cl. 521-57.000.
Grabbe, Alexis: *See*—
Smith, Douglas T.; Grabbe, Alexis; and Horn, Roger G., 5,368,942, Cl. 428-420.000.
Grabski, Anthony C.: *See*—
Jeffries, Thomas W.; Grabski, Anthony C.; and Patel, Rajesh N., 5,369,024, Cl. 435-200.000.
Graco Inc.: *See*—
Box, Gary W.; and Kelly, Lawrence S., 5,368,059, Cl. 137-3.000.
Johnson, Harold; Kvinge, Daniel J.; Plager, Steven P.; and Zarneke, Richard D., 5,368,452, Cl. 417-395.000.
Powers, Frederick A., 5,368,454, Cl. 417-536.000.
Schroeder, James C., 5,368,232, Cl. 239-165.000.
Graham, James Patrick: *See*—
Gryder, Edd D., 5,368,746, Cl. 210-739.000.
Graham, Joseph: *See*—
Braunschweig, Ehrich J.; Nauman, Margaret M.; and Graham, Joseph, 5,368,936, Cl. 428-403.000.
Graham, Paul K.: *See*—
Knodle, Daniel W.; Graham, Paul K.; and Labuda, Lawrence L., 5,369,277, Cl. 250-343.000.
Gralinski, Edward R.: *See*—
Benjamin, Fred W.; Gralinski, Edward R.; Smith, Robert D., Jr.; and Vogel, Victor J., 5,368,417, Cl. 406-111.000.
Grapha-Holding AG: *See*—
Geiser, Peter; and Zangerle, Rolf, 5,367,928, Cl. 83-49.000.
Great Lakes Chemical Corporation: *See*—
Atwell, Ray W.; Hodgen, Harry A.; Fielding, William R.; Favstritsky, Nicolai A.; and Termine, Enrico J., 5,369,202, Cl. 526-293.000.
Greb, Wolfgang: *See*—
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Grebner, Michael; Reich, Axel; Reichert, Horst; Schuth, Ferdi; and Unger, Klaus, to Merck Patent Gesellschaft mit beschrankter Haftung. Low-template clathrasil. 5,368,836, Cl. 423-706.000.
Greco, Carl C.; and Burk, Johst H., to Akzo Nobel Inc. Copper and barium (dialkylaminoalcoholate) solutions. 5,368,768, Cl. 505-510.000.
Green Cross Corporation, The: *See*—
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.
Green, David T.; Wilson, Jonathan; and Flanagan, Patrick, to United States Surgical Corporation. Surgical apparatus and detachable anvil rod therefor. 5,368,215, Cl. 227-179.000.
Green, David T.: *See*—
Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., 5,368,599, Cl. 606-139.000.
Green, Richard M.: *See*—
Hussey, John P.; Green, Richard M.; and Keslowitz, Saul L., 5,368,428, Cl. 414-1.000.
Greene, Karen C.; and Cheek, James A., to Conley Corporation. Interlocking union system for double containment pipe. 5,368,338, Cl. 285-133.100.
Greenrose, Jay: *See*—
Rosa, Ralph; Greenrose, Jay; Benzalel, Menashe; Dvorkis, Paul; Barkan, Christina S.; and Barkan, Edward, 5,369,264, Cl. 235-462.000.
Greenwald, Roger J.: *See*—
Sauer, Jude S.; and Greenwald, Roger J., 5,368,601, Cl. 606-144.000.

Greisch, Danny L.: *See*—
Stewart, Wallace S.; and Greisch, Danny L., 5,368,464, Cl. 425-174.200.
Greshes, Martin. Method for making lenses. 5,368,790, Cl. 264-2.400.
Gretag Imaging AG: *See*—
Jenny, Reinhard, 5,369,466, Cl. 355-67.000.
Grice, Lonnie E.: *See*—
Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Joyce, James M.; Loffredo, John M.; and Sanderson, Kenneth R., 5,369,749, Cl. 395-325.000.
Dinwiddie, John M., Jr.; Grice, Lonnie E.; Loffredo, John M.; and Sanderson, Kenneth R., 5,369,767, Cl. 395-725.000.
Griffen, Neil C.; and Loshbough, Richard C., to Mettler-Toledo, Inc. Load shift compensation for weighing apparatus. 5,369,226, Cl. 177-211.000.
Griffith, John. Vending machine for newspapers and like articles. 5,368,189, Cl. 221-90.000.
Grigortchak, Ivan I.: *See*—
Kozmik, Ivan D.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Grigortchak, Ivan I.; Krigan, Elvria G.; and Bahmatyuk, Bogdan P., 5,368,957, Cl. 429-194.000.
Grimanis, Michael P.: *See*—
Van Vleet, Frank R.; and Grimanis, Michael P., 5,368,336, Cl. 285-24.000.
Griswold, Roy M.: *See*—
Eckberg, Richard P.; and Griswold, Roy M., 5,369,205, Cl. 528-25.000.
Groh, A. Anthony, to Crane Plastics Company. Cover piece for seat member of bleacher seat unit. 5,368,360, Cl. 297-219.100.
Groh, James K., to Banner Beverage Systems, Inc. Apparatus for controlling foaming and flowrate in beverage dispensing systems. 5,368,205, Cl. 222-189.000.
Gross, Alex: *See*—
Richard, Daniel; Kolman, Kenneth; Case, Charles; Becker, Ronald; and Gross, Alex, 5,367,792, Cl. 36-114.000.
Gross, Alexander L.; and Nakano, Kiyotaka L., to Asahi, Inc. Shoe sole. 5,367,791, Cl. 36-31.000.
Gross, Stephen J.: *See*—
Harari, Eliyahou; Guterman, Daniel C.; Mehrotra, Sanjay; and Gross, Stephen J., 5,369,615, Cl. 365-218.000.
Grosse, William M.: *See*—
McGraw, Royal A.; and Grosse, William M., 5,368,823, Cl. 422-134.000.
Gruber, Friedrich; Pucher, Hans-Jorg; and Auer, Reinhard, deceased (by Aeer, Reuck, legal representative), to Jenbacher Energiesysteme AG. Spark plug having Y-shaped or V-shaped electrodes. 5,369,328, Cl. 313-141.000.
Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., to Globe-Union, Inc. Multiple cell flat pack battery and short protection therefor. 5,368,956, Cl. 429-131.000.
Grumman Aerospace Corporation: *See*—
Hussey, John P.; Green, Richard M.; and Keslowitz, Saul L., 5,368,428, Cl. 414-1.000.
Reich, Stanley M., 5,369,410, Cl. 342-175.000.
Grunzweig & Hartmann AG: *See*—
Hirschmann, Klemens; and Mellem, Joachim, 5,368,623, Cl. 65-454.000.
Grushkin, Bernard, to Xerox Corporation. Toner compositions with compatibilizer. 5,368,970, Cl. 430-110.000.
Gryder, Edd D., to Gryder, Edd D.; Oberman, William Kent; and Graham, James Patrick. Environmentally beneficial bypass filter system for use with low pressure centrifugal refrigeration equipment. 5,368,746, Cl. 210-739.000.
Grypa, Roman D.: *See*—
Aebi, Kurt J.; Grypa, Roman D.; Aung, Thein; and Lee, Mary J., 5,368,873, Cl. 426-310.000.
Gschwind, Hans-Peter: *See*—
Sallmann, Alfred; Gschwind, Hans-Peter; and Francotte, Eric, 5,369,117, Cl. 514-374.000.
GTE Laboratories Incorporated: *See*—
Bulat, Emel S.; and Herrick, Charles, 5,369,294, Cl. 257-264.000.
Gu, Genda: *See*—
Takamuku, Kenshi; Gu, Genda; and Koshizuka, Naoki, 5,369,090, Cl. 505-451.000.
Gueli, Carmen, to Globe Technologies Corporation. Fusible support for signs. 5,368,265, Cl. 248-214.000.
Guiheen, James V.: *See*—
Minh, Nguyen Q.; Horne, Craig R.; and Guiheen, James V., 5,368,667, Cl. 156-89.000.
Guiher, William T.: *See*—
Clark, William L.; and Guiher, William T., 5,368,174, Cl. 211-183.000.
Gunkel, Michael D., to Standard Products Company, The. Flush mount magnetic header seal. 5,367,831, Cl. 49-478.100.
Gunzelman, Deborah M.; Hoffman, Wayne C.; and Bernstein, James L., to New Hermes Incorporated. Process for making three-dimensional signage. 5,368,672, Cl. 156-248.000.
Guo, Jie O.: *See*—
Arlinghaus, Ralph B.; Wang, Jean Y. J.; and Guo, Jie O., 5,369,008, Cl. 435-7.230.
Gurner, Asaf; and Zur, Oded Y., to Interactive Light, Inc. Signal generator activated by radiation from a screen like space. 5,369,270, Cl. 250-221.000.
Gustafson, Alan D., to Caterpillar Inc. Belt tension indicating system. 5,368,375, Cl. 305-10.000.
Gustin, Jay W.: *See*—
Kirk, David L.; and Gustin, Jay W., 5,369,650, Cl. 371-40.100.
Guterman, Daniel C.: *See*—
Harari, Eliyahou; Guterman, Daniel C.; Mehrotra, Sanjay; and Gross, Stephen J., 5,369,615, Cl. 365-218.000.
H.u.C. Elektronik GmbH: *See*—
Hansen, Jens, 5,369,470, Cl. 455-296.000.
Haacke, Gottfried; Panzer, Hans P.; Magliocco, Lino G.; and Asher, Sanford A., to Cytec Technology Corp. Narrow band radiation filter films. 5,368,781, Cl. 252-582.000.
Haag, Rainer: *See*—
Herrmann, Dieter; Haag, Rainer; Bosies, Elmar; Bicker, Uwe; and Kampe, Wolfgang, 5,369,119, Cl. 514-389.000.
Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., to Loctite Corporation; and Nottingham-Spirk Design Associates, Inc. Microwaveable hot melt dispenser. 5,368,199, Cl. 222-146.500.
Haasl, Andrew L., to Development Industries of Green Bay, Inc. Sleeving system. 5,367,858, Cl. 53-439.000.
Haberzeth, Thomas, to Autoliv-Kolb GmbH & Co. Inertial reel assembly for a safety belt. 5,368,251, Cl. 242-382.600.
Hacker, Ronald L. Printer adaptable apparatus for cutting perforated paper. 5,368,404, Cl. 400-621.100.
Hackett, Le Roy H., to Hughes Aircraft Company. Removing bubbles from small cavities. 5,368,634, Cl. 95-260.000.
Hackett, Steven C.: *See*—
Ko, Chan U.; and Hackett, Steven C., 5,369,192, Cl. 525-484.000.
Haeberle, Juergen: *See*—
Kopp, Siegfried; Haeberle, Juergen; Mahn, Johannes; Schwegler, Tim; and Schlueter, Malte, 5,369,549, Cl. 361-679.000.
Haffken, Kurt F.: *See*—
Litvin, Charles; and Haffken, Kurt F., 5,368,445, Cl. 416-246.000.
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Sanematsu, Hiroaki; and Hagihara, Tatsumi, 5,368,530, Cl. 477-43.000.
Hagiwara, Hisashi: *See*—
Fukukita, Hiroshi; Yao, Lin X.; Banjanin, Zoran; Kim, Jin; Hagiwara, Hisashi; and Kawabuchi, Masami, 5,369,624, Cl. 367-103.000.
Hahn, Douglas A.: *See*—
Borbas, William F.; Hahn, Douglas A.; and Mines, Thomas W., 5,369,680, Cl. 379-1.000.
Hahn, Gregory: *See*—
Hying, Clement F.; Schickert, Randy R.; and Hahn, Gregory, 5,368,084, Cl. 160-265.000.
Haines, John G., to f.m.e. Corporation. Remote meter operation. 5,369,401, Cl. 340-825.350.
Hairline Creations, Inc.: *See*—
Finamore, Paul V., 5,368,052, Cl. 132-54.000.
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Schoofs, Franciscus A. C. M.; and Halberstadt, Johan C., 5,369,308, Cl. 327-427.000.
Haldor Topsoe A/S: *See*—
Bartholdy, Jesper, 5,368,722, Cl. 208-149.000.
Halka, Thomas G.; and Clark, Terry L., to General Motors Corporation. Floating piston pin retainer. 5,367,945, Cl. 92-187.000.
Hall, Terry, to Connection Technology, Ltd. Well casing thread protector. 5,368,074, Cl. 138-96.00T.
Hallfrisch, Virginia A.: *See*—
Johnson, David R.; Stutts, Kenneth J.; Batzel, Daniel A.; Hallfrisch, Virginia A.; and Anschutz, James E., 5,368,889, Cl. 427-244.000.
Halliburton, Alexander G. Endarterectomy catheter, and method of use thereof. 5,368,603, Cl. 606-159.000.
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Dewprashad, Brahmadeo; and Weaver, Jimmie D., 5,368,102, Cl. 166-276.000.
Heathman, James F.; Carpenter, Robert B.; Badalamenti, Anthony M.; Marcel, Kenneth P.; Siffert, Robert R.; and Rimer, Charles J., 5,368,103, Cl. 166-289.000.
Lewandowski, David; and Schultz, Roger L., 5,368,100, Cl. 166-264.000.
Rodrigues, Klein A.; and Eoff, Larry S., 5,368,642, Cl. 106-727.000.
Schwendemann, Kenneth L.; and Young, Timothy M., 5,368,447, Cl. 417-54.000.
Halliburton Logging Services, Inc.: *See*—
Jewell, Andrew D.; and Yuratich, Michael A., 5,367,911, Cl. 73-861.080.
Halvis, James; Bluzer, Nathan; Shiskowski, Robert R.; and Chen, Li-Shu, to Westinghouse Electric Corporation. Method of making transparent polysilicon gate for imaging arrays. 5,369,040, Cl. 437-3.000.
Ham, Jay M.: *See*—
Senock, Randall S.; and Ham, Jay M., 5,367,905, Cl. 73-204.220.
Hama, Mitsuji: *See*—
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, 5,369,378, Cl. 332-104.000.
Hamabe, Kouji: *See*—
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.
Hamada, Tutomu: *See*—
Kawamura, Masahiro; Takigawa, Masuo; Kondou, Yasuhiro; Hamada, Tutomu; Maruyama, Teruo; and Masuo, Akio, 5,367,997, Cl. 123-399.000.

Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a frame-supported pellicle for photolithography. 5,368,675, Cl. 156-344.000.

Hamaguchi, Setsunori: *See—*
Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, 5,369,066, Cl. 501-108.000.

Hamanaga, Shinji, to Yamaha Corporation. Horn with intermediate tube network enlarged in inner diameter. 5,367,938, Cl. 84-387.00R.

Hamel, Gerald, to Industries P.H.L. Inc. Apparatus and method for a board infeed system. 5,368,080, Cl. 144-357.000.

Hamilton, Don A.; and Masters, William E. Kayak cockpit cover with retention edge. 5,367,975, Cl. 114-347.000.

Hamilton, John W.: *See—*
Ellis, Jeffrey W.; Hamilton, John W.; Owens, John M.; and Callahan, Steven A., 5,367,977, Cl. 114-361.000.

Hamilton, Robert F.: *See—*
Merrill, Douglas P., Jr.; and Hamilton, Robert F., 5,368,924, Cl. 428-241.000.

Hamm, Mark A.; and Crowley, Robert J., to Boston Scientific Corporation. Ultrasound imaging guidewire. 5,368,035, Cl. 128-662.060.

Hammerstrom, Daniel W., to Adaptive Solutions, Inc. Neural network using virtual-zero. 5,369,773, Cl. 395-800.000.

Hammond, John M. Metering pump. 5,368,451, Cl. 417-395.000.

Hammond, Milton L.; Balkovec, James M.; and Mathre, David J., to Merck & Co., Inc. Lipopeptide derivatives. 5,369,093, Cl. 514-11.000.

Hamon, M. Christian: *See—*
Descat, M. Gilles; and Hamon, M. Christian, 5,369,070, Cl. 502-68.000.

Hamon-Sobelco S.A.: *See—*
Bouton, Franz M. F. G., 5,368,785, Cl. 261-111.000.

Hampton, Leonard D.; Bobrosky, Vincent L.; and Burress, Paul J., to White Consolidated Industries, Inc. Vacuum cleaner with improved assembly. 5,367,741, Cl. 15-323.000.

Han, Hyeong-deog, to Samsung Electronics Co., Ltd. Recording and reproducing apparatus including recording/reproducing head switchably connected to common rotary transformer. 5,369,534, Cl. 360-64.000.

Hanaeda, Kazunori: *See—*
Maruyama, Akira; Kimura, Shuji; Yamada, Shigeki; Shirai, Hiroaki; Nara, Hiroichi; and Hanaeda, Kazunori, 5,369,633, Cl. 370-13.000.

Hanai, Kazuko: *See—*
Ushimaru, Akira; Hashimoto, Hiroshi; Hanai, Kazuko; and Suzuki, Keiichi, 5,368,949, Cl. 428-694.0BS.

Hanamoto, Takeshi: *See—*
Hiyama, Tamejiro; Minami, Tatsuya; Hanamoto, Takeshi; and Reddy, Guntoori B., 5,369,109, Cl. 514-277.000.

Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, to Sumitomo Chemical Co., Ltd. Process for producing resist composition. 5,368,987, Cl. 430-270.000.

Handa, Yuichi: *See—*
Mishima, Seiji; and Handa, Yuichi, 5,369,719, Cl. 385-48.000.

Hanna, Robert N., to Inliner U.S.A., Inc. Robotic cutter. 5,368,423, Cl. 409-132.000.

Hannan, Peter W., to Hazeltine Corp. Q equalization in dual-element end-fire array antennas. 5,369,413, Cl. 343-770.000.

Hannun, Yusuf A.; and Bielawska, Alicja, to Duke University. Method of inducing cellular differentiations and altering cell phenotype using ceramide analogs. 5,369,030, Cl. 435-240.200.

Hansen, Jens, to H.u.C. Elektronik GmbH. FM receiver which detects and responds to receiving and interference states. 5,369,470, Cl. 455-296.000.

Hansen, W. Peter, to Sienna Biotech, Inc. Simultaneous multiple assays. 5,369,037, Cl. 436-533.000.

Hanshaw, Paul C. Pen-type device with combination lock. 5,368,406, Cl. 401-195.000.

Hanssler, Gerd: *See—*
Elbe, Hans-Ludwig; Tiemann, Ralf; and Hanssler, Gerd, 5,369,124, Cl. 514-448.000.

Hanyu, Isamu; and Asai, Satoru, to Fujitsu Limited. Photomask and method of fabricating the same. 5,368,963, Cl. 430-5.000.

Hara, Akira; and Takagi, Toshisaburou, to B-J Trading Ltd. Method and device for cleaning an ink roller train for use in printing machines. 5,367,955, Cl. 101-424.000.

Hara, Masaaki, to Sony Corporation. Apparatus and method for automatically adjusting parameters of an automatic equalizer. 5,369,667, Cl. 375-12.000.

Harada, Keizo; Takikawa, Takatoshi; Maeda, Takao; Ban, Shunsuke; and Yamanaka, Shosaku, to Sumitomo Electric Industries Ltd. Wiring board having laminated wiring patterns. 5,369,220, Cl. 174-257.000.

Harada, Koji: *See—*
Wantanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, 5,369,505, Cl. 358-444.000.

Harada, Nobuyuki; Kimura, Kazumasa; and Shimomura, Tadao, to Nippon Shokubai Co., Ltd. Absorbent material comprising absorbent polymeric particulate material coated with synthetic pulp. 5,368,918, Cl. 428-219.000.

Haraki, Takahiro; Takeda, Shiro; Namiki, Fumihiro; Hirano, Hideyuki; and Ishiwata, Kenji, to Fujitsu Limited. Radiographic image processing method wherein small variation of density is selectively made clear. 5,369,572, Cl. 364-413.130.

Harari, Eliyahou; Guterman, Daniel C.; Mehrotra, Sanjay; and Gross, Stephen J., to SunDisk Corporation. Method for optimum erasing of EEPROM. 5,369,615, Cl. 365-218.000.

Harasin, Stephen J.; and Clatty, Jan L. R., to Miles Inc. Production of moldings by the reaction injection molding process. 5,368,806, Cl. 264-328.600.

Hardeman, Gerard; Westerhof, Wilhelmina; Plak, Anthonie J.; and Beens-Onstenk, Anneke, to Stamicarbon B.V. Resin composition based on a polyester resin, an amino resin and an epoxy resin. 5,368,945, Cl. 428-458.000.

Harding, Geoffrey A.: *See—*
Johnson, Warren A.; and Harding, Geoffrey A., 5,368,258, Cl. 244-130.000.

Harding, Michael H.: *See—*
Feuer, Mark S.; Kreiner, Fred W.; Solow, Howard J.; and Harding, Michael H., 5,368,533, Cl. 482-70.000.

Hardinge Brothers, Inc.: *See—*
Sheehan, Terrence M.; Kamath, Ramesh M.; Walburn, Harold E.; and Sheehan, Jack F., 5,367,754, Cl. 29-27.00C.

Harford, Jack R., to SamSung Electronics Co., Ltd. Noise reducing apparatus and methods for television receivers. 5,369,445, Cl. 348-618.000.

Hargett, Wyatt P.; and Littau, Sara E., to CEM Corporation. Use of a ventable rupture diaphragm-protected container for heating contained materials by microwave radiation. 5,369,034, Cl. 436-155.000.

Harmonic Drive Systems, Inc.: *See—*
Maruyama, Toshiki; Akahane, Akira; and Ito, Yoshinori, 5,369,322, Cl. 310-39.000.

Harper, Daniel R.: *See—*
Edwards, John W.; Harper, Daniel R.; and McNew, Quinton ■., 5,368,376, Cl. 305-35.0EB.

Harper, Raymond F., III. Apparatus for controlling of automotive exhaust emissions by treatment of exhausting gases traveling through an automotive exhaust conduit. 5,367,876, Cl. 60-310.000.

Harpold, Michael M.; Ellis, Steven B.; Brust, Paul; Akong, Michael; and Velicelebi, Gonul, to Salk Institute Biotechnology/Industrial Associates, Inc., The. DNA and mRNA encoding human neuronal nicotinic acetylcholine receptor compositions and cells transformed with same. 5,369,028, Cl. 435-252.300.

Harrell, Jack B., Jr.: *See—*
Borgard, Bradley G.; Harrell, Jack B., Jr.; and Link, John, 5,368,774, Cl. 252-391.000.

Harrell, James M., Jr.: *See—*
Nguyen, Caroline P.; and Harrell, James M., Jr., 5,367,777, Cl. 30-459.000.

Harris Corporation: *See—*
Bacrania, Kantilal; Chi, Chong I.; and Fisher, Gregory J., 5,369,309, Cl. 327-94.000.
Hessel, Clifford, 5,369,606, Cl. 364-724.160.

Harris, Herman R. Paddle board. 5,368,507, Cl. 440-29.000.

Harrison, Charles R.; and Lahm, George P., to Du Pont de Nemours, E. I., and Company. Arthropodicidal pyrazolines, pyrazolidines and hydrazines. 5,369,121, Cl. 514-403.000.

Harrison, Daniel J.; and Yacobucci, Paul D., to Eastman Kodak Company. Thermal dye transfer receiving element. 5,369,077, Cl. 503-227.000.

Harrison, Guy W. Water heater stand. 5,368,263, Cl. 248-146.000.

Hartley, John J., Jr., to Faustel Incorporated. Continuous rewind with no-fold-back splicer. 5,368,253, Cl. 242-527.400.

Hartling, Robert H. System for building a structure. 5,367,845, Cl. 52-293.100.

Hartloff, John W.: *See—*
Arai, Hiroshi; Hewson, Clifford B.; and Hartloff, John W., 5,367,961, Cl. 108-56.300.

Hartog, Adrian H.; and Davies, Robin E. R., to ATI Technologies. Method for pre-clipping a line lying within a clipping rectangular region which is a subset of a region of a display screen. 5,369,741, Cl. 395-143.000.

Hartung, Michael; Lassmann, Walter; Poth, Ulrich; and Wegner, Egon, to BASF Lacke + Farben Aktiengesellschaft. Process for the production of a multicoat protective and/or decorative finish. 5,368,944, Cl. 428-423.100.

Haruo, Ikeda: *See—*
Satoshi, Omura; and Haruo, Ikeda, 5,369,021, Cl. 435-71.300.

Harvey, Mary F.: *See—*
Kadashevich, A. Julie; Harvey, Mary F.; and Clark, Cheryl, 5,369,577, Cl. 364-419.130.

Harwath, Frank L.: *See—*
Hunsberger, Dale L.; and Harwath, Frank L., 5,368,068, Cl. 137-493.700.

Harwell, William D.: *See—*
Ungar, Eugene K.; Harwell, William D.; and Cornwell, John D., 5,368,090, Cl. 165-1.000.

Hasan, Tayyaba: *See—*
Trauner, Kenneth; and Hasan, Tayyaba, 5,368,841, Cl. 424-9.000.

Hasegawa, Akira, to Fuji Photo Film Co., Ltd. Light-sensitive element and process for preparation thereof. 5,368,973, Cl. 430-138.000.

Hasegawa, Makoto: *See—*
Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, 5,369,655, Cl. 372-29.000.
Takahashi, Kazuaki; Hasegawa, Makoto; Makimoto, Mitsuo; and Fujimura, Munenori, 5,369,383, Cl. 333-204.000.

Hasegawa, Masanobu: *See—*
Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; Saitoh, Kenji; Hasegawa, Masanobu; and Sentoku, Koichi, 5,369,486, Cl. 356-349.000.

Hasegawa, Masayasu: *See—*
Yoshikawa, Masaaki; Yokoyama, Keiichi; Hasegawa, Masayasu; Yasumoto, Ryouichi; and Fujita, Hiroyuki, 5,369,015, Cl. 435-68.100.

Hasegawa, Yukio; Miyoshi, Ryota; and Imai, Isao, to Miyoshi Kasei Co., Ltd. Organosilicon-treated pigment, process for production thereof, and cosmetic made therewith. 5,368,639, Cl. 106-490.000.

Haseltine, Eric C.; and Redmann, William G., to Walt Disney Company, The. Electronic and computational correction of chromatic aberration associated with an optical system used to view a color video display. 5,369,450, Cl. 348-745.000.

Hashemnia, Ali N. Two-way vehicle door. 5,367,828, Cl. 49-382.000.

Hashimoto, Hiroshi: *See—*
Ushimaru, Akira; Hashimoto, Hiroshi; Hanai, Kazuko; and Suzuki, Keiichi, 5,368,949, Cl. 428-694.0BS.

Hashimoto, Masahashi; and Mahant-Shetti, Shivaling S., to Texas Instruments Incorporated. Method for forming a gate array base cell. 5,369,046, Cl. 437-48.000.

Hasselbring, Lori C., to Phillips Petroleum Company. Blends for enhancing properties of vinyl aromatic-conjugated diene block copolymers. 5,369,174, Cl. 525-71.000.

Hassell, Carl A.: *See—*
Bailey, Charles E.; Gale, Ernest S.; Hassell, Carl A.; Schaffer, Scott J.; Paranjape, Sushama M.; and West, Stephen C., 5,369,652, Cl. 371-40.100.

Hasskamp, Joanne H.: *See—*
Mercolino, Thomas J.; Hasskamp, Joanne H.; and McFarland, Edward C., 5,369,036, Cl. 436-523.000.

Hasson, Harrith M. Method of manipulating an uterus using a bendable manipulator. 5,368,598, Cl. 606-119.000.

Hata, Seiji: *See—*
Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.

Hatakeyama, Kouichi, to Sharp Kabushiki Kaisha. Method and apparatus for handling array type data in a data driven type information processor. 5,369,774, Cl. 395-800.000.

Hatfield, Stephen C.; and Broders, Richard P., to Combustion Engineering, Inc. Split beam laser welding apparatus. 5,369,242, Cl. 219-121.630.

Hattey, David L.: *See—*
Childress, Jeffrey S.; and Hattey, David L., 5,369,783, Cl. 455-17.000.

Hattori, Ken: *See—*
Itom, Noriaki; Nakai, Yasuo; Hattori, Ken; Kanasaki, Junichi; and Okano, Akiko, 5,367,980, Cl. 117-108.000.

Hattori, Tadashi: *See—*
Inoguchi, Kazuhiro; Suzuki, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,369,333, Cl. 313-509.000.

Hattori, Yasuhiro: *See—*
Okada, Yasuhiro; Hoshino, Yukio; Hattori, Yasuhiro; and Hirano, Hidekazu, 5,368,150, Cl. 198-346.100.

Haugen, Douglas G., to Akzo N.V. Multiple discrete analyzer test apparatus and method. 5,369,484, Cl. 356-326.000.

Haugland, Monte W.: *See—*
Berg, Vernon R., Jr.; and Haugland, Monte W., 5,369,223, Cl. 177-208.000.

Haushalter, Robert C.: *See—*
Warren, Christopher J.; Haushalter, Robert C.; and Bocarsly, Andrew B., 5,368,701, Cl. 204-59.0QM.

Havens, Marvin R., to W. R. Grace & Co.-Conn. Inherently antistatic thermoplastic polyamide-polyether films. 5,369,179, Cl. 525-183.000.

Haverty, Donald; Wilde, Leon G.; and Rana, Dinesh, to Indikon Company, Inc. Multi-color bargraph. 5,369,416, Cl. 345-39.000.

Hay, Allan S. Polymeric phthalocyanines and precursors therefor. 5,369,203, Cl. 526-297.000.

Hayabuchi, Masahiro: *See—*
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.

Hayakawa, Kimiaki: *See—*
Ueda, Noriyoshi; and Hayakawa, Kimiaki, 5,368,677, Cl. 156-362.000.

Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, to Mitsubishi Denki Kabushiki Kaisha. Navigation system for motor vehicles. 5,369,588, Cl. 364-449.000.

Hayashi, Chihiro; and Ohminato, Kimihiko, to Sumitomo Metal Industries, Ltd.; and Sumikin Precision Forge Inc. Pin-finned forged heat sink. 5,369,301, Cl. 257-722.000.

Hayashi, Hiroyuki, to Sumitomo Wiring Systems, Ltd. Lever type connector. 5,368,492, Cl. 439-157.000.

Hayashi, Hisanori: *See—*
Kamitakahara, Hirofumi; Yoshino, Hitoshi; Kanome, Osamu; Sato, Tetsuya; and Hayashi, Hisanori, 5,368,789, Cl. 264-1.330.

Hayashi, Kazuyuki: *See—*
Aoki, Koso; Fukugauchi, Masaaki; Imai, Tomoyuki; Horiishi, Nanao; and Hayashi, Kazuyuki, 5,368,933, Cl. 428-329.000.

Hayashi, Shigenori: *See—*
Koinuma, Hideomi; Yamazaki, Shunpei; and Hayashi, Shigenori, 5,369,336, Cl. 315-111.210.

Hayden, Richard A.; Melchert, James A.; and Phaneuf, Charles A., to General Motors Corporation. Vehicle seat having normal usage and storage positions. 5,368,355, Cl. 296-65.100.

Hayden, Richard A.: *See—*
Dussert, Bertrand W.; and Hayden, Richard A., 5,368,738, Cl. 210-660.000.
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Hayes, Jerry R.; and Heren, Lawrence P., to L. R. Nelson Corporation. In ground pop-up sprinkler with above ground hose connection. 5,368,229, Cl. 239-69.000.

Hayes, John: *See—*
Buhl, Nancy; Hayes, John; and Kallin, Harald, 5,369,684, Cl. 379-59.000.

Hazelden, Roger J., to Lucas Industries public limited company. Optical torque sensors and steering systems for vehicles incorporating them. 5,369,583, Cl. 364-424.050.

Hazeltine Corp.: *See—*
Hannan, Peter W., 5,369,413, Cl. 343-770.000.

Hazen, Donald B. Universal single-wheel single beam trailer having adjustable bed. 5,368,325, Cl. 280-656.000.

Head, Kenneth A. J. Tool holder and a tool therefor. 5,368,421, Cl. 408-240.000.

Heathman, James F.; Carpenter, Robert B.; Badalamenti, Anthony M.; Marcel, Kenneth P.; Siffert, Robert R.; and Rimer, Charles J., to Halliburton Company. Method of setting a balanced cement plug in a borehole. 5,368,103, Cl. 166-289.000.

Heaton, Lisa W.: *See—*
Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., 5,368,599, Cl. 606-139.000.

Hebert, Paul G.: *See—*
Hebert, Robert; and Hebert, Paul G., 5,368,349, Cl. 292-343.000.

Hebert, Robert; and Hebert, Paul G. Door stop assembly. 5,368,349, Cl. 292-343.000.

Hecker, Robert, Jr.: *See—*
Adamo, Joseph R.; Lipovsky, Gloria M.; Hecker, Robert, Jr.; and Ranalli, Leon D., 5,368,385, Cl. 366-139.000.

Hedrick, Paul A.; and Varatta, Thomas, Sr., to General Cable Industries, Inc. Trouble light assembly. 5,369,559, Cl. 362-376.000.

Heemels, Robertus P. E. H.; van Vliembergen, Eduardus J. W.; and Cremers, Louis M. G., to Oce-Nederland, B.V. Method of inflecting words and a data processing unit for performing such method. 5,369,576, Cl. 364-419.080.

Heggertveit, Fredrik. Helicopter deck. 5,367,973, Cl. 114-261.000.

Hehl, Karl. Apparatus and transporting unit for conveying injection-molded articles away from an injection molding machine. 5,368,466, Cl. 425-556.000.

Heidelberger Druckmaschinen AG: *See—*
Saab, Saeed, 5,368,540, Cl. 493-424.000.

Heidelberger Druckmaschinin AG: *See—*
Becker, Willi, 5,367,954, Cl. 101-415.100.

Heideman, Robert J.; Rusch, Randy A.; and Baird, Michael S., to Delco Electronics Corporation. Multilayer metallization for silicon semiconductor devices including a diffusion barrier formed of amorphous tungsten/silicon. 5,369,300, Cl. 257-651.000.

Heideman, Wayne P.: *See—*
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.

Heilman, Raymond D.; and LaRue, Butch, to Emerson Electric Co. Test weight. 5,367,909, Cl. 73-468.000.

Heimann, Bruno: *See—*
Humpert, Jurgen; Heimann, Bruno; and Dickel, Harald, 5,368,065, Cl. 137-377.000.

Heimbrock, H. Howard, to Standex International Corporation. Electric street light terminal block assembly. 5,368,506, Cl. 439-813.000.

Hein-Farben GmbH: *See—*
Grab, Gerhard; and Jacob, Dieter, 5,369,134, Cl. 521-57.000.

Heins, Volker, to Klockner-Moeller GmbH. Power circuit breaker with a breaker mechanism and a breaker mechanism for a power circuit breaker. 5,369,384, Cl. 335-171.000.

Heinzelman, Bert D.: *See—*
Young, Robert L.; Heinzelman, Bert D.; and Lovejoy, David A., 5,368,025, Cl. 128-633.000.

Heitmann, William E.; Rastogi, Prabhat K.; and Oakwood, Thomas G., to Inland Steel Company. Steel spring and method for producing same. 5,368,656, Cl. 148-333.000.

Held, Michael; and Ratz, Holger, to Albert-Frankenthal Aktiengesellschaft. Adjustable cutting knife cylinder. 5,367,936, Cl. 83-698.610.

Hellenberg, Leendert; and Mink, Johannes H., to Fluid Management Limited Partnership. Apparatus for metering and dispensing flowable materials to form a blended composition. 5,368,196, Cl. 222-61.000.

Heming, Martin; Hochhaus, Roland; Kersten, Ralf; Krause, Dieter; Otto, Jurgen; Paquet, Volker; Segner, Johannes; and Fattinger, Christof, to Schott Glaswerke; and Hoffmann-LaRoche, A.G. Optical inorganic waveguide with a substantially planar organic substrate. 5,369,722, Cl. 385-130.000.

Heminuk, Richard J.: *See—*
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Hemmi, Gregory W.: *See—*
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Hemmings, David F.: *See—*
Murray, John P.; Hemmings, David F.; and Gergacz, David S., 5,369,697, Cl. 379-361.000.

Hendel, Horst, to Siemens Aktiengesellschaft. Process for manufacturing a contacting device, contacting device and its use. 5,369,235, Cl. 200-275.000.

Hendricks, Donald E.: *See—*
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Hendry, Jason: *See—*
Corcoran, Cathleen; and Hendry, Jason, 5,368,857, Cl. 424-401.000.

Heninger, Andrew G.: *See—*
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Henkel Corporation: *See—*
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Henkel Kommanditgesellschaft auf Aktien: *See—*
Inoue, Shigeyuki, 5,368,609, Cl. 8-94.220.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See—*
Pearce, Phillip W., 5,367,839, Cl. 451-526.000.

Henkens, Robert W.; Zhao, Junguo; Wojciechowski, Marek; O'Daly, John P.; Liang, Zhi-Wei; and Morris, Susan E., to Andcare, Inc. Convenient determination of trace lead in whole blood and other fluids. 5,368,707, Cl. 204-153.120.

Henley, Matthew J.: *See—*
Solarek, Daniel B.; Peek, Leroy R.; Henley, Matthew J.; Trksak, Ralph M.; and Philbin, Michael T., 5,368,690, Cl. 162-175.000.

Hennessey, Clarence E., to Texas Instruments Incorporated. Tunable timing circuit and method for operating same and blasting detonator using same. 5,367,957, Cl. 102-217.000.

Henning Berlin GmbH Chemie- und Pharmawerk: *See—*
Lahr, Wolfgang; and Weickgenannt, Guido, 5,368,864, Cl. 424-489.000.

Henry, Frank B.: *See—*
Burch, Ronald H.; Sutton, Mark E.; Henry, Frank B.; and Cancienne, Warren E., 5,367,929, Cl. 83-177.000.

Henry, Richard A. Airway anaesthesia. 5,368,016, Cl. 128-200.230.

Henson, John D.; and Offutt, Timothy J., to EDLO Sales & Engineering Inc. Support arm for a power screwdriver. 5,367,924, Cl. 81-57.400.

Henzler, Gregory W., to Liquid Carbonic Corporation. Cryogenic control of emission of solvent vapors from mixers. 5,367,881, Cl. 62-11.000.

Hepatix, Inc.: *See—*
Sussman, Norman L.; Kelly, James H.; and Lobdell, Donn D., 5,368,555, Cl. 604-4.000.

Hepler, Eric J., to Anthony Industries, Inc. Composite building structure and method for constructing same. 5,367,847, Cl. 52-309.400.

Herden, Werner: *See—*
Vogel, Manfred; Herden, Werner; and Konrad, Johann, 5,369,283, Cl. 250-551.000.

Heren, Lawrence P.: *See—*
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Herr, Hugh M.: *See—*
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Herrick, Charles: *See—*
Bulat, Emel S.; and Herrick, Charles, 5,369,294, Cl. 257-264.000.

Herrmann, Dieter; Haag, Rainer; Bosies, Elmar; Bicker, Uwe; and Kampe, Wolfgang, to Boehringer Mannheim GmbH. Use of imexon as an immune suppressive and pharmaceutical compositions containing imexon. 5,369,119, Cl. 514-389.000.

Hertz, Allen D.: *See—*
Tribbey, David A.; Hertz, Allen D.; Rivas, Mario A.; and Brooks, Dwight D., 5,369,399, Cl. 340-686.000.

Herweyer, Elliot E. Parallel piped fluid heaters with staged flow controlled by magnetic priority valves. 5,368,013, Cl. 126-362.000.

Herzberg, Amir: *See—*
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.

Hessel, Clifford, to Harris Corporation. Reduced state fir filter. 5,369,606, Cl. 364-724.160.

Hetzler, Steven R., to International Business Machines Corporation. Fixed block architecture disk file with improved position identification and error handling. 5,369,535, Cl. 360-78.140.

Hewlett-Packard Company: *See—*
Bremner, David F., III, 5,369,738, Cl. 395-126.000.
Broder, Damon; Movaghar, Abdolreza; and Rhoads, W. Wistar, 5,368,403, Cl. 400-352.000.
Fang, Leuh, 5,369,053, Cl. 437-194.000.
Foote, Wayne E.; and Jeran, Paul L., 5,369,477, Cl. 355-256.000.
Kopp, Siegfried; Haeberle, Juergen; Mahn, Johannes; Schwegler, Tim; and Schlueter, Malte, 5,369,549, Cl. 361-679.000.
Mason, Russell W., 5,369,621, Cl. 365-230.060.
Pritchard, Thomas B.; Franz, Douglas L.; Hoekstra, Casey D.; and Klaus, Richard I., 5,369,645, Cl. 371-22.100.
Yanagimoto, Yoshiyuki, 5,369,795, Cl. 455-327.000.

Hewlett-Packard Corporation: *See—*
Badyal, Rajeev; and Knowles, Vernon, 5,369,310, Cl. 327-143.000.
Maze, Robert C.; and Trueba, Kenneth E., 5,369,428, Cl. 347-5.000.

Hewson, Clifford B.: *See—*
Arai, Hiroshi; Hewson, Clifford B.; and Hartloff, John W., 5,367,961, Cl. 108-56.300.

Hey, Bill L. Implement for removing and installing and testing Christmas light bulbs. 5,369,363, Cl. 324-414.000.

Heyen, Gerald L.: *See—*
Foreman, Jack C.; Steiger, Billy J.; Heyen, Gerald L.; Voigt, Trent R.; Carter, James S.; Blaney, Loren F.; Tierney, Stephen J.; and Bill, James K., 5,369,709, Cl. 380-51.000.

Heyl, Robert D. Shaft seal assembly for a rotary valve. 5,368,311, Cl. 277-9.000.

Heymanns, Peter: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.

Hibi, Haruo; and Yamanashi, Hirotoshi, to Nagoyaseiraku Co., Ltd. Method of manufacturing rich-flavored roasted coffee beans and ground roasted coffee beans. 5,368,875, Cl. 426-466.000.

Hibino, Kenichi: *See—*
Okada, Masashi; Maeda, Tetsuo; Nakamura, Kenji; and Hibino, Kenichi, 5,369,183, Cl. 525-289.000.

Hickey, Gregory M.: *See—*
Pirrallo, Frank G.; and Hickey, Gregory M., 5,368,139, Cl. 188-78.000.

Hidaka, Akira: *See—*
Fukuda, Masahiko; Numakura, Hiromi; Iio, Koji; and Hidaka, Akira, 5,369,269, Cl. 250-221.000.

Hidaka, Shigeyuki: *See—*
Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.

Hidaka, Shizuaki: *See—*
Kohno, Satoshi; and Hidaka, Shizuaki, 5,368,146, Cl. 192-70.160.

Hieb, Larry E.; and Takamura, Toshiyuki. Apparatus for vending work objects. 5,368,190, Cl. 221-131.000.

Higashi, Kiyotsugu: *See—*
Umemoto, Mitsuo; Higashi, Kiyotsugu; and Mitani, Youko, 5,368,852, Cl. 424-78.100.

Higuchi, Youichi; Oshima, Katsuyuki; and Yamauchi, Mineo, to Dai Nippon Insatsu Kabushiki Kaisha. Process for making a heat-transferred imaged article. 5,369,079, Cl. 503-227.000.

Hihara, Toshio: *See—*
Himeno, Kiyoshi; and Hihara, Toshio, 5,368,612, Cl. 8-568.000.

Hikata, Takeshi: *See—*
Sato, Kenichi; Mukai, Hidehito; and Hikata, Takeshi, 5,369,089, Cl. 505-433.000.

Hilbrink, Herbertus E.: *See—*
Van Der Heiden, Johannes; and Hilbrink, Herbertus E., 5,368,586, Cl. 604-403.000.

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Hill, Martin H.: *See—*
Dewey, William H.; and Hill, Martin H., 5,368,264, Cl. 248-188.200.

Hill, Norman L. Vehicle cargo attachment support. 5,368,209, Cl. 224-42.440.

Hill, Steven J. Dental mold apparatus. 5,368,481, Cl. 433-159.000.

Hillegonds, Larry A.: *See—*
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Himeno, Kiyoshi; and Hihara, Toshio, to Hoechst Mitsubhishi Kasei Co., Ltd. Method of dyeing a fiber mixture with water-insoluble naphthalic acid imide dyestuffs. 5,368,612, Cl. 8-568.000.

Himont Incorporated: *See—*
Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, 5,369,186, Cl. 525-330.700.
Lesca, Giuseppe; and Giannella, Vincenzo, 5,368,927, Cl. 428-288.000.
Robeson, Leroy V., 5,368,919, Cl. 428-224.000.

Hines, Edmund L.; and Onofrey, John A. Belt with concealed whip. 5,367,714, Cl. 2-311.000.

Hinkle, Stanley J., to Detroit Diesel Corporation. Method of operating a diesel engine utilizing a continuously powered glow plug. 5,367,994, Cl. 123-145.00A.

Hirai Engineering Corporation: *See—*
Hirai, Takashi; and Hirai, Keisuke, 5,367,843, Cl. 52-200.000.

Hirai, Kazuo: *See—*
Kunieda, Shigehiko; Ishino, Shigeo; Nakai, Takao; Hirai, Kazuo; Matsushita, Takao; and Takeshita, Kazuhide, 5,369,161, Cl. 524-266.000.

Hirai, Keisuke: *See—*
Hirai, Takashi; and Hirai, Keisuke, 5,367,843, Cl. 52-200.000.

Hirai, Takashi; and Hirai, Keisuke, to Hirai Engineering Corporation. Roof apparatus. 5,367,843, Cl. 52-200.000.

Hirai, Toshiro; and Yamaki, Jun-ichi, to Advanced Energy Technologies Incorporated. Lithium anode with conductive for and anode tab for rechargeable lithium battery. 5,368,958, Cl. 429-211.000.

Hiramoto, Sotozi: *See—*
Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.

Hirano, Hidekazu: *See—*
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Hirano, Hideyuki: *See—*
Haraki, Takahiro; Takeda, Shiro; Namiki, Fumihiro; Hirano, Hideyuki; and Ishiwata, Kenji, 5,369,572, Cl. 364-413.130.

Hiraoka, Hiroyuki; Latsch, Stefan A.; and Xiao, Rong-Fu, to Hong Kong University of Science; Hong Kong University of Science and Technology; and R and D Corporation Limited. Method for the deposition of diamond on a substrate. 5,368,681, Cl. 427-585.000.

Hirasawa, Masahide; Kaneda, Naoya; and Wada, Hiroyuki, to Canon Kabushiki Kaisha. Automatic focus adjusting device in camera system. 5,369,461, Cl. 354-402.000.

Hirasawa, Naoki; and Kobayashi, Shinichi, to NEC Corporation. Car-mounted booster for plug-in connection with mobile telephone set. 5,369,803, Cl. 455-89.000.

Hirata, Koji: *See—*
Nanba, Hideyuki; Hirata, Koji; and Sasaki, Shigenori, 5,368,290, Cl. 271-273.000.

Hirata, Masanori: *See—*
Mizukoshi, Koubu; Katayama, Ken; Hirata, Masanori; and Mackawa, Kohji, 5,368,798, Cl. 264-154.000.

Hirata, Toshihisa, to Alps Electric Co., Ltd. Spring-return switch. 5,369,238, Cl. 200-530.000.

Hiratuka, Masahito: *See—*
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Hirayama, Takuya; and Yajima, Toshiya, to Kabushiki Kaisha Toshiba. Fluid compressor with bearing means disposed inside a rotary rod. 5,368,456, Cl. 418-220.000.

Hirose, Kenji, to Canon Kabushiki Kaisha. Optical information recording/reproducing apparatus having means for tracking adjustment and a method of use therefore. 5,369,630, Cl. 369-100.000.

Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., to United States Surgical Corporation. Sugical fastening apparatus with suture array. 5,368,599, Cl. 606-139.000.

Hirschmann, Klemens; and Mellem, Joachim, to Grunzweig & Hartmann AG. Process and apparatus for the continuous production of mineral wool nonwovens. 5,368,623, Cl. 65-454.000.

Hirt, Hartmut: *See—*
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Hirt, Ingo, to Wabco Westinghouse Fahrzeugbremsen GmbH. Multi-lead electric plug connector. 5,368,499, Cl. 439-350.000.

Hisaki, Satoru: *See—*
Dussert, Bertrand W.; Hayden, Richard A.; Lutchko, John R.; Yoshino, Kishio; Hisaki, Satoru; and Ehara, Fujito, 5,368,739, Cl. 210-660.000.

Hishon, Michael K.; and Stoll, Steven, to TRW Vehicle Safety Systems Inc. Retractor. 5,367,917, Cl. 74-531.000.

Hitachi Automotive Engineering Co., Ltd.: *See—*
Monji, Tatsuhiko; Horikoshi, Shigeru; Shimada, Kousaku; and Sugawara, Hayato, 5,369,580, Cl. 364-424.010.

Hitachi Instruments Engineering Co., Ltd.: *See—*
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Hitachi, Ltd.: *See—*
Fukushima, Tadashi; Matsuo, Shigeru; Yoshida, Shoji; and Komagawa, Tooru, 5,369,744, Cl. 395-162.000.
Imura, Yoshihiko; Kaji, Akira; and Maruyama, Takekazu, 5,369,756, Cl. 395-575.000.
Inoue, Taro; Umeno, Hidenori; Tanaka, Shunji; and Watanabe, Tsuyoshi, 5,369,750, Cl. 395-400.000.
Kambayashi, Kosaku; Nakamura, Katsunori; Satoh, Takao; Asaka, Yoshihiro; and Nagasawa, Teruo, 5,369,751, Cl. 395-425.000.
Kato, Makoto; Miyaoka, Shinichiro; and Nohmi, Makoto, 5,369,736, Cl. 395-125.000.
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Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.
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Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.
Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.
Tsuruoka, Shigeo; Takahashi, Ken; Miyoshi, Tadahiko; and Tokuda, Hiroatsu, 5,367,906, Cl. 73-204.270.
Yajima, Shunichi, 5,369,730, Cl. 395-2.760.
Yokose, Kenji; Nagase, Makoto; Kamimura, Hiroshi; Asakura, Yamato; Matsui, Tetsuya; Ibe, Hidefumi; Nishino, Yoshitaka; and Uchida, Shunsuke, 5,369,674, Cl. 376-245.000.
Yumiyama, Shigeru; and Mori, Hideo, 5,367,913, Cl. 74-7.00A.

Hitachi Maxell, Ltd.: *See—*
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.

Hitachi Metals, Ltd.: *See—*
Kashiwagi, Hiromi, 5,369,475, Cl. 355-245.000.

Hitchcock, Elise G. Puppet head. 5,368,518, Cl. 446-329.000.

Hittich, Reinhard: *See—*
Rieger, Bernhard; Hittich, Reinhard; Poetsch, Eike; Coates, David; and Plach, Herbert, 5,368,772, Cl. 252-299.630.

Hiyama, Tamejiro; Minami, Tatsuya; Hanamoto, Takeshi; and Reddy, Guntoori B., to Sagami Chemical Research Center. Optically active esters of 7-substituted 3,5-difunctionalized 6-heptenoic acids. 5,369,109, Cl. 514-277.000.

Ho, Allen P.: *See—*
McFarland, Harold L.; and Ho, Allen P., 5,369,748, Cl. 395-325.000.

Hoare, Richard L.: *See—*
Wilson, Ian G.; Hoare, Richard L.; and Krusina, Leo, 5,367,799, Cl. 38-77.700.

Hobbs, Linn W.; Zhou, Chuxin; and Duncan, Julia C., to Massachusetts Institute of Technology, a MA Corp. Oxidation and sulfidation resistant chromium-niobium alloy. 5,368,813, Cl. 420-425.000.

Hochfeld, Stanley: *See—*
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Hochhaus, Roland: *See—*
Heming, Martin; Hochhaus, Roland; Kersten, Ralf; Krause, Dieter; Otto, Jurgen; Paquet, Volker; Segner, Johannes; and Fattinger, Christof, 5,369,722, Cl. 385-130.000.

Hochschild, James R.: *See—*
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Hock, Christoph, to Morton International, Inc. Dual stage inflator. 5,368,329, Cl. 280-741.000.

Hockensmith, William L. Knockdown picnic table. 5,367,964, Cl. 108-180.000.

Hodgen, Harry A.: *See—*
Atwell, Ray W.; Hodgen, Harry A.; Fielding, William R.; Favstritsky, Nicolai A.; and Termine, Enrico J., 5,369,202, Cl. 526-293.000.

Hodogaya Chemical Co., Ltd.: *See—*
Anzai, Mitsutoshi; Akuzawa, Noboru; Matsuura, Yuuji; and Sugiyama, Genpei, 5,368,971, Cl. 430-110.000.

Hoechst AG: *See—*
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Hoechst Aktiengesellschaft: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.
Elsaessser, Andreas; Frass, Hans W.; Gaschler, Otfried; Mohr, Dieter; and Buhr, Gerhard, 5,368,975, Cl. 430-165.000.
Frisch, Gerhard; and Maier, Thomas, 5,369,082, Cl. 504-127.000.
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Howes, Glenn E., to Edem Steel Ltd. Vibrating conveyor screening method and apparatus. 5,368,167, Cl. 209-395.000.
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Hume, Kenneth M. Apparatus for forming a pipe from a sheet metal plate. 5,367,897, Cl. 72-155.000.
Hummer, Robert E. Elevator cart apparatus. 5,368,319, Cl. 280-46.000.
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Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.

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Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, 5,369,107, Cl. 514-252.000.

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Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, 5,369,106, Cl. 514-218.000.

Iinuma, Toshinori: *See—*
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, 5,369,378, Cl. 332-104.000.

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Fukuda, Masahiko; Numakura, Hiromi; Iio, Koji; and Hidaka, Akira, 5,369,269, Cl. 250-221.000.

Iizuka, Hiroshi: *See—*
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Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,368,981, Cl. 435-232.000.

Ikari, Yoshikatsu, to Chief Resources Limited. Composition containing divalent manganese ion and method for preparing the same. 5,368,851, Cl. 424-76.300.

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Sakamoto, Daishiro, 5,368,363, Cl. 297-362.000.

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Takahashi, Tetsuo; Araya, Shinichi; Takahashi, Kuniaki; Mogi, Kunio; Kudo, Koji; Ito, Takeshi; and Ikeda, Hiroshi, 5,368,193, Cl. 221-278.000.

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Watson, Richard B.; Iknaian, Russell; and Collins, Hansel A., 5,369,640, Cl. 371-1.000.

Ikon Ltd.: *See—*
Stead, Heyns W.; and Neophytou, Anthony S., 5,367,810, Cl. 42-17.000.

ILC Dover, Inc.: *See—*
Crimmins, Robert A., 5,368,395, Cl. 383-107.000.

Illig, Carl R.: *See—*
Baker, Edward J.; Lee, Robert W.; Cooper, Eugene R.; Toner, John L.; and Illig, Carl R., 5,368,837, Cl. 424-5.000.

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Borbas, William F.; Hahn, Douglas A.; and Mines, Thomas W., 5,369,680, Cl. 379-1.000.

Imai, Hirofumi: *See—*
Yamaguchi, Satoshi; and Imai, Hirofumi, 5,369,661, Cl. 372-69.000.

Imai, Isao: *See—*
Hasegawa, Yukio; Miyoshi, Ryota; and Imai, Isao, 5,368,639, Cl. 106-490.000.

Imai, Tomoyuki: *See—*
Aoki, Koso; Fukugauchi, Masaaki; Imai, Tomoyuki; Horiishi, Nanao; and Hayashi, Kazuyuki, 5,368,933, Cl. 428-329.000.

Imai, Yuji: *See—*
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Murakawa, Masatake; Yuki, Mikio; Imanishi, Ryozo; Tone, Masatsugu; and Minoura, Akira, 5,367,861, Cl. 56-11.800.

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Unger, Evan C., 5,368,840, Cl. 424-9.000.

Imed Corporation: *See—*
Thompson, John; and Botts, Charles R., 5,368,570, Cl. 604-131.000.

IMI Barient, Inc.: *See—*
Ottemann, William; Resch, Bruno; and Ferramola, Guillermo, 5,368,279, Cl. 254-342.000.

IMI Cornelius Inc.: *See—*
Goulet, Douglas P., 5,368,198, Cl. 222-129.100.

Imperial Chemical Industries PLC: *See—*
De Vos, Rik; and Leenslag, Jan W., 5,368,769, Cl. 252-182.200.
Roberts, David A.; Pearce, Robert J.; Bradbury, Robert H.; and Thomas, Andrew P., 5,369,114, Cl. 514-312.000.

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Inal, Osman T.: *See—*
Durlu, Nuri; and Inal, Osman T., 5,368,660, Cl. 148-421.000.

Inaoka, Yoshie: *See—*
Yamasaki, Tetsuo; Shima, Kenji; Komori, Shinji; Munakata, Koichi; and Inaoka, Yoshie, 5,369,775, Cl. 395-800.000.

INAX Corporation: *See—*
Koyama, Akihisa; Kitahara, Syoji; and Honda, Tomonori, 5,368,665, Cl. 156-71.000.

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Indikon Company, Inc.: *See—*
Haverty, Donald; Wilde, Leon G.; and Rana, Dinesh, 5,369,416, Cl. 345-39.000.

Indresco Inc.: *See—*
Hughes, James T., 5,367,798, Cl. 37-399.000.

Inductotherm Corp.: *See—*
Mortimer, John H.; and Turner, Robert C., 5,368,282, Cl. 266-44.000.

Industrial Piping, Inc.: *See—*
Mullinax, Charles H., 5,368,652, Cl. 134-22.180.

Industrial Technology Research Institute: *See—*
Hwang, Jen-Loong; Wu, Sheng-Long; Chen, Yu-Hsuan; and Lin, Chin-I, 5,368,804, Cl. 264-258.000.
Lin, Jun-Nun; and Kao, Chio-Chun, 5,369,390, Cl. 338-21.000.

Industries P.H.L. Inc.: *See—*
Hamel, Gerald, 5,368,080, Cl. 144-357.000.

Infilco Degremont, Inc.: *See—*
Weltz, Richard K.; and Schuerch, Peter, 5,368,826, Cl. 422-243.000.

Ing. Erich Pfeiffer GmbH & Co. KG: *See—*
Fuchs, Karl-Heinz, 5,368,201, Cl. 222-162.000.

Inglin, Thomas A.: *See—*
Thompson, Hugh A.; Martin, Tracey A.; and Inglin, Thomas A., 5,368,926, Cl. 428-284.000.

Inland Steel Company: *See—*
Heitmann, William E.; Rastogi, Prabhat K.; and Oakwood, Thomas G., 5,368,656, Cl. 148-333.000.

Inliner U.S.A., Inc.: *See—*
Hanna, Robert N., 5,368,423, Cl. 409-132.000.

Innova Electronics Corp.: *See—*
Chen, Ieon C.; and Wilson, Michael, 5,369,565, Cl. 363-146.000.

Inoguchi, Kazuhiro; Suzuki, Masayuki; Ito, Nobuei; and Hattori, Tadashi, to Nippondenso Co., Ltd.; and Research Development Corporation of Japan. Thin film electroluminescence display element. 5,369,333, Cl. 313-509.000.

Inoue, Akihisa: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Odera, Katsumasa; and Oguchi, Masahiro, 5,368,658, Cl. 148-403.000.

Inoue, Shigeyuki, to Henkel Kommanditgesellschaft auf Aktien. Softening filler for leather. 5,368,609, Cl. 8-94.220.

Inoue, Shuji: *See—*
Yukitake, Takeshi; and Inoue, Shuji, 5,369,449, Cl. 348-699.000.

Inoue, Taro; Umeno, Hidenori; Tanaka, Shunji; and Watanabe, Tsuyoshi, to Hitachi, Ltd. Method and apparatus for configuring multiple absolute address spaces. 5,369,750, Cl. 395-400.000.

Input/Output, Inc.: *See—*
Carroll, Paul E., 5,369,626, Cl. 367-188.000.

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Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., 5,369,076, Cl. 502-354.000.

Institut Francais du Petrole: *See—*
Asselineau, Lionel; Mikitenko, Paul; Viltard, Jean Charles; and Zuliani, Massimo, 5,368,691, Cl. 203-29.000.
Chauveteau, Guy; Lecourtier, Jacqueline; Plazanet, Veronique; and Putz, Antide, 5,368,101, Cl. 166-273.000.

Institut Straumann AG: *See—*
Sutter, Franz; and Mundwiler, Ulrich, 5,368,483, Cl. 433-173.000.

Intel Corporation: *See—*
Bhattacharyya, Bidyut K.; Mallik, Debendra; and Yu, You Y., 5,369,545, Cl. 361-306.200.
Fandrich, Mickey L.; Yarlagadda, Chakravarthy; Rozman, Rodney R.; and Gould, Geoffrey A., 5,369,754, Cl. 395-425.000.
Kreifels, Jerry; and Fandrich, Mickey L., 5,369,647, Cl. 371-25.100.
Marisetty, Suresh K., 5,369,651, Cl. 371-40.100.
Martin, Phil; and Packer, Alan, 5,369,769, Cl. 395-725.000.
Munson, Bill A., 5,369,617, Cl. 365-219.000.
Rastgar, Farid; Cho, Sung-Soo; Bryant, Diane; and Mazumder, Nikhil, 5,369,643, Cl. 371-15.100.
Wang, Tan T.; and Volk, Andrew M., 5,369,311, Cl. 327-292.000.
Wells, Steven E.; and Magnusson, Eric J., 5,369,616, Cl. 365-218.000.

Interactive Light, Inc.: *See—*
Gurner, Asaf; and Zur, Oded Y., 5,369,270, Cl. 250-221.000.

International Business Machines Corporation: *See—*
Acocella, Joyce E.; Hsu, Louis L.; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph F., 5,369,049, Cl. 437-52.000.
Bailey, Charles E.; Gale, Ernest S.; Hassell, Carl A.; Schaffer, Scott J.; Paranjape, Sushama M.; and West, Stephen C., 5,369,652, Cl. 371-40.100.
Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Joyce, James M.; Loffredo, John M.; and Sanderson, Kenneth R., 5,369,749, Cl. 395-325.000.
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.
Dinwiddie, John M., Jr.; Grice, Lonnie E.; Loffredo, John M.; and Sanderson, Kenneth R., 5,369,767, Cl. 395-725.000.
Gould, Elliot L.; Kemerer, Douglas W.; McAllister, Lance A.; Piro, Ronald A.; Richardson, Guy R.; and Wellburn, Deborah A., 5,369,595, Cl. 364-490.000.
Hetzler, Steven R., 5,369,535, Cl. 360-78.140.
Huang, Ching-Chao; and Kimmel, Richard D., 5,369,594, Cl. 364-489.000.
Koretsky, Ronald G.; Vigliotti, Donald R., deceased; and von Gutfeld, Robert J., 5,368,054, Cl. 134-153.000.
Lamberti, Donna M.; Prager, John M.; and Nappari, Mark, 5,369,575, Cl. 364-419.080.
Metzger, Roland; Schmidt, Manfred; Torreiter, Otto; and Wendel, Dieter, 5,369,358, Cl. 324-754.000.
Ottesen, Hal H.; and Floryance, Gregory G., 5,369,533, Cl. 360-51.000.

International Business Machines, Inc.: *See—*
Gonya, Stephen G.; Lake, Jemaes K.; Long, Randy C.; and Wild, Roger N., 5,368,814, Cl. 420-587.000.

International Flavors & Fragrances Inc.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; and Wilson, Richard A., 5,367,899, Cl. 73-23.340.

International Paper Company: *See—*
Schortmann, Walter E., 5,368,920, Cl. 428-224.000.

International Superconductivity Technology Center: *See—*
Takamuku, Kenshi; Gu, Genda; and Koshizuka, Naoki, 5,369,090, Cl. 505-451.000.
Usui, Toshio; Aoki, Yuji; Kamei, Masayuki; and Morishita, Tadataka, 5,369,275, Cl. 259-310.000.

Interuniversitair Micro Elektronica Centrum vzw: *See—*
Vandervorst, Wilfried; and Meuris, Marc, 5,369,372, Cl. 324-719.000.

Intervet International B.V.: *See—*
Foged, Niels T.; and Petersen, Svend, 5,369,019, Cl. 435-69.300.

Intevac, Inc.: *See—*
Johnson, David B.; Scott, Allan W.; and Bartz, Stephen J., 5,369,267, Cl. 250-214.0VT.

Inui, Naoki: *See—*
Kurimoto, Isao; Inui, Naoki; Yamatsuta, Kohji; Murotani, Hitoshi; Nagasaki, Hideo; and Yachigo, Shinichi, 5,369,143, Cl. 523-215.000.

Inuishi, Masahide: *See—*
Kusunoki, Shigeru; and Inuishi, Masahide, 5,369,297, Cl. 257-411.000.

Inukai, Hitoshi: *See—*
Fujii, Toshiro; Iwama, Kazuaki; and Inukai, Hitoshi, 5,368,450, Cl. 417-269.000.

Inventio AG: *See—*
Waldchen, Hartmut, 5,368,128, Cl. 184-15.200.

Iowa State University Research Foundation, Inc.: *See—*
Anderson, Iver E.; Lograsso, Barbara K.; and Ellis, Timothy W., 5,368,657, Cl. 148-400.000.
Hsu, Walter H., 5,369,128, Cl. 514-573.000.

Irie, Yoshio: *See—*
Takahashi, Hitoshi; Kakita, Hiroyuki; Irie, Yoshio; Fujiwara, Teruaki; and Akihisa, Kazumi, 5,369,148, Cl. 523-315.000.

Irikura, Koji, to Kanzaki Kokyukoki Mfg. Co. Ltd. Axle driving apparatus for a working car. 5,367,877, Cl. 60-435.000.

Iro AB: *See—*
Melillo, Michele; and Jacobsson, Kurt A. G., 5,368,244, Cl. 242-149.000.

Irving, Karen G.: *See—*
Suppiah, Sellathurai; Burns, Deborah L.; Irving, Karen G.; and Aelick, Christopher R., 5,368,475, Cl. 431-268.000.

Ishida, Tokuji: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Ishida, Tokuji; Masumoto, Hisayuki; Tokumaru, Hisashi; and Metabi, Tsuneyo, 5,369,460, Cl. 354-400.000.

Ishida, Yasushi: *See—*
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, 5,369,422, Cl. 346-76.0PH.

Ishidai, Hiroshi; Kita, Hiroshi; Kaneko, Yutaka; and Daifuku, Koji, to Konica Corporation. Silver halide color photographic light sensitive material. 5,368,998, Cl. 430-558.000.

Ishihara, Kazuhiko: *See—*
Nakabayashi, Nobuo; and Ishihara, Kazuhiko, 5,368,733, Cl. 210-500.230.

Ishihara, Nobuhide: *See—*
Matsumoto, Junichi; Okamoto, Takuji; Watanabe, Masami; and Ishihara, Nobuhide, 5,369,196, Cl. 526-127.000.

Ishihara, Ryuichi: *See—*
Koura, Masahiro; Ishihara, Ryuichi; Chikatsu, Yoshimoto; Nagata, Yukihiko; and Ohmori, Eihachiro, 5,369,700, Cl. 379-387.000.

Ishii, Kazuo: *See—*
Kato, Eiichi; and Ishii, Kazuo, 5,368,931, Cl. 428-327.000.

Ishii, Kenji; and Tagami, Yasunori, to Mitsubishi Gas Chemical Company, Inc. Method of treating glass fiber-based prepreg. 5,368,674, Cl. 156-272.200.

Ishii, Kenji; Nakai, Takamasa; and Matsumoto, Hiroyuki, to Mitsubishi Gas Chemical Company, Inc. Metal foil-clad laminate having surface smoothness. 5,368,921, Cl. 428-228.000.

Ishikawa Gasket Co., Ltd.: *See—*
Miyaoh, Yoshio, 5,368,316, Cl. 277-235.00B.

Ishikawa, Tadaaki: *See—*
Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.

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Ishino, Shigeo: *See—*
Kunieda, Shigehiko; Ishino, Shigeo; Nakai, Takao; Hirai, Kazuo; Matsushita, Takao; and Takeshita, Kazuhide, 5,369,161, Cl. 524-266.000.

Ishiwata, Kenji: *See—*
Haraki, Takahiro; Takeda, Shiro; Namiki, Fumihiro; Hirano, Hideyuki; and Ishiwata, Kenji, 5,369,572, Cl. 364-413.130.

Ishizaki, Yasuhiro: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,369,782, Cl. 455-16.000.

Islam, Mohammed N., to AT&T Bell Laboratories. All-optical timing restoration. 5,369,519, Cl. 359-173.000.

Ismail, Morhudun G. M. U.; Nakai, Zenjiro; and Arai, Hiroshi, to Chichibu Cement Co., Ltd. Composite substrates and their production. 5,369,067, Cl. 501-119.000.

Isner, Jeffrey M., to Boston Scientific Corporation. Method and apparatus for thrombolytic therapy. 5,368,034, Cl. 128-660.030.

Isobe, Minoru, to Oki Electric Industry Co., Ltd. Multifunctional printer. 5,369,480, Cl. 355-320.000.

Isoclear, Inc.: *See—*
Pankow, Mark L., 5,368,708, Cl. 204-180.100.

Itafuji, Hiroshi: *See—*
Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.

Italtel Societa Italiana Telecommunicazioni s.p.a.: *See—*
Scorta, Roberto, 5,368,222, Cl. 228-180.100.

Itaya, Masahiko; Nakagoshi, Hiroyuki; and Sasaki, Tsutomu, to Nippon Steel Corporation. Electrostatic recording head. 5,369,427, Cl. 346-159.000.

Ito, Akinori: *See—*
Furuta, Katsuhisa; Abe, Akira; Ito, Akinori; and Manabe, Hiroyuki, 5,369,567, Cl. 364-149.000.

Ito, Masafumi: *See—*
Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.

Ito, Masumi: *See—*
Hoshino, Sumio; Ito, Masumi; and Kanamori, Hiroo, 5,368,887, Cl. 427-226.000.

Ito, Nobuei: *See—*
Inoguchi, Kazuhiro; Suzuki, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,369,333, Cl. 313-509.000.

Ito, Osamu: *See—*
Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, 5,369,628, Cl. 369-13.000.

Ito, Seiji: *See—*
Omura, Masayuki; and Ito, Seiji, 5,367,830, Cl. 49-475.100.

Ito, Syoji: *See—*
Sakakura, Mitsuaki; Tanaka, Yuji; Enomoto, Junkichi; and Ito, Syoji, 5,368,216, Cl. 228-1.100.

Ito, Tadashi: *See—*
Fujiwara, Itsuo; Ito, Tadashi; and Arai, Naoki, 5,368,994, Cl. 430-508.000.

Ito, Takeshi: *See—*
Miyazawa, Azuma; Mizobuchi, Kouji; Ito, Takeshi; Ide, Masataka; Maruyama, Atsushi; Kikuchi, Juro; and Imai, Yuji, 5,369,462, Cl. 354-430.000.
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Ito, Tsuyoshi; Watanabe, Junya; and Sawada, Shintaro, to Mitsubishi Kasei Corporation. Method for producing a spherical acrylonitrile crosslinked copolymer. 5,369,132, Cl. 521-31.000.

Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha; and Churyo Engineering Kabushiki Kaisha. Apparatus for measuring gas density and sugar content of a beverage within a sealed container and method of measuring the same. 5,369,600, Cl. 364-556.000.

Ito, Yoshinori: *See—*
Maruyama, Toshiki; Akahane, Akira; and Ito, Yoshinori, 5,369,322, Cl. 310-39.000.

Itoh, Keizou: *See—*
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,368,771, Cl. 252-299.100.

Itoh, Kenji, to Semiconductor Energy Laboratory Co., Ltd. Improved carbon containing thin film formed by increasing bias voltage during a plasma CVD process. 5,368,937, Cl. 428-408.000.

Itoh, Seiji, to Katsuhiko Mukai. Corneal sponge and method of use. 5,368,590, Cl. 606-4.000.

Itoh, Tetsuro, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for sink-type electrical discharge machining with control of pyrographite buildup. 5,369,239, Cl. 219-69.130.

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Itoh, Yasuo: *See—*
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.

Itoi, Hiromu: *See—*
Tanaka, Toshizumi; and Itoi, Hiromu, 5,368,036, Cl. 128-662.060.

Itom, Noriaki; Nakai, Yasuo; Hattori, Ken; Kanasaki, Junichi; and Okano, Akiko, to Nagoya University, President of. Method of producing defect-free perfect surfaces. 5,367,980, Cl. 117-108.000.

Itou, Takaaki: *See—*
Hoshino, Shinichi; Okawa, Koji; Osanai, Akinori; Itou, Takaaki; Hyodo, Yoshihiko; and Kidokoro, Toru, 5,368,002, Cl. 123-520.000.

ITT Corporation: *See—*
Muzslay, Steven Z.; and Finona, Michael S., 5,368,504, Cl. 439-610.000.
Wanha, Christopher D., 5,368,802, Cl. 264-249.000.

Iverson, Donald D.; and Strobel, Thomas A., to Gamer Corporation. Shoe having individualized display areas. 5,367,795, Cl. 36-136.000.

Iverson, Thomas, Jr.; and Prindle, Joyce, to CH_2O Incorporated. Method and composition for inhibiting the formation of hardwater deposits on fruit. 5,369,099, Cl. 514-108.000.

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Uemura, Hiroshi; Yosida, Ethuo; and Iwaki, Shin, 5,369,144, Cl. 525-11.800.

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Izumitani, Takeshi. Level marking method and level marking apparatus. 5,367,782, Cl. 33-367.000.

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Phillips, James D., 5,367,866, Cl. 451-307.000.

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Steiner, Karl; Meinecke, Albrecht; and Gaugenmaier, Karl, 5,368,697, Cl. 162-360.200.

Jackson, David P. Dense fluid microwave centrifuge. 5,368,171, Cl. 134-147.000.

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Stern, Roger A.; Edwards, Stuart D.; and Jackson, Jerome, 5,368,592, Cl. 606-33.000.

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Melillo, Michele; and Jacobsson, Kurt A. G., 5,368,244, Cl. 242-149.000.

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Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.

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Philipp, Helmut; and Kurth, Wilfried, 5,368,288, Cl. 271-215.000.
Sommer, Herbert; and Franz, Gunter, 5,368,893, Cl. 427-348.000.

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Lambert, Bart J.; Jansens, Stefan K.; and Peferoen, Marnix, 5,369,027, Cl. 435-252.200.

Janson, Philippe A.: *See—*
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.

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Waespe, Hans-Rudolf; Van Lommen, Guy R. E.; and Sipido, Victor K., 5,369,084, Cl. 504-244.000.

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Koura, Masahiro; Ishihara, Ryuichi; Chikatsu, Yoshimoto; Nagata, Yukihiko; and Ohmori, Eihachiro, 5,369,700, Cl. 379-387.000.

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Tajima, Yusuke; Bessho, Nobuo; Takinishi, Fumitake; Yokoyama, Yasuaki; and Masuko, Hideaki, 5,368,976, Cl. 430-176.000.

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Japikse, David; and Karon, David M., to Concepts ETI, Inc. Radial turbo machine. 5,368,440, Cl. 415-208.300.

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Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.

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Bennett, James D.; and Jarvis, Lawrence M., 5,369,704, Cl. 380-9.000.

Jeanmaire, David: *See—*
Stephenson, Stanley W.; and Jeanmaire, David, 5,369,419, Cl. 347-61.000.

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Ritter, Karl M., 5,368,225, Cl. 229-110.000.

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Gruber, Friedrich; Pucher, Hans-Jorg; and Auer, Reinhard, deceased, 5,369,328, Cl. 313-141.000.

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Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, 5,368,099, Cl. 166-246.000.

Jennings, Francis E.: *See—*
Bowers, John L.; and Jennings, Francis E., 5,367,796, Cl. 37-410.000.

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Jennings, Thomas A. Method and apparatus for monitoring the processing of a material. 5,367,786, Cl. 34-245.000.

Jenny, Reinhard, to Gretag Imaging AG. Exposure system for photographic copying machines. 5,369,466, Cl. 355-67.000.

Jenq, Ching-Shi: *See—*
Wang, Ping; and Jenq, Ching-Shi, 5,369,609, Cl. 365-185.000.

Jensen, Leif H.: *See—*
Moldt, Peter; Scheel-Kruger, Jorgen; and Jensen, Leif H., 5,369,113, Cl. 514-304.000.

Jeran, Paul L.: *See—*
Foote, Wayne E.; and Jeran, Paul L., 5,369,477, Cl. 355-256.000.

Jewell, Andrew D.; and Yuratich, Michael A., to Halliburton Logging Services, Inc. Device for sensing fluid behavior. 5,367,911, Cl. 73-861.080.

JMK International, Inc.: *See—*
Gibbon, Robert M., 5,369,257, Cl. 219-759.000.

Jo, Young-Do: *See—*
Ihm, Son-Ki; and Jo, Young-Do, 5,369,133, Cl. 521-53.000.

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Johansson, Hans E.; and Larsson, Bo V., to Eka Nobel AB. Silica sols having high surface area. 5,368,833, Cl. 423-338.000.

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Cliffe, Ian A.; White, Alan C.; and Ifill, Anderson D., 5,369,103, Cl. 514-211.000.

Johnsen, James B.; and Oien, Hal J., to Jordco, Inc. Dental instrument servicing system. 5,368,482, Cl. 433-163.000.

Johnson, Allen E., to DCI Marketing. Gravity feed product display dispenser. 5,368,191, Cl. 221-194.000.

Johnson, Archie L. Oscillating air blowers for drying vehicles. 5,367,739, Cl. 15-316.100.

Johnson, David B.; Scott, Allan W.; and Bartz, Stephen J., to Intevac, Inc. Microchannel image intensifier tube with novel sealing feature. 5,369,267, Cl. 250-214.0VT.

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Croghan, Charles L.; and Johnson, David J., 5,368,077, Cl. 144-117.00R.

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Ackley, Donald E.; Shieh, Chan-Long; and Johnson, Earnest J., 5,369,656, Cl. 372-38.000.

Johnson Electric S.A.: *See—*
Strobl, Georg, 5,369,326, Cl. 310-235.000.

Johnson, Gail E.: *See—*
Marrs, Gevan R.; and Johnson, Gail E., 5,368,168, Cl. 209-396.000.

Johnson, Gary D.; and Hochfeld, Stanley, to Holtz, Leonard, a part interest. Windproof umbrella. 5,368,055, Cl. 135-33.700.

Johnson, Harold; Kvinge, Daniel J.; Plager, Steven P.; and Zarneke, Richard D., to Graco Inc. Double diaphragm pump having two-stage air valve actuator. 5,368,452, Cl. 417-395.000.

Johnson, Jeffery W.: *See—*
Barsotti, Robert J.; and Johnson, Jeffery W., 5,369,153, Cl. 523-429.000.

Johnson, Warren A.; and Harding, Geoffrey A., to Rohr, Inc. Arrangement for maintaining laminar air flow over gaps in aircraft engine nacelle surfaces. 5,368,258, Cl. 244-130.000.

Johnson, William L.: *See—*
Peker, Atakan; and Johnson, William L., 5,368,659, Cl. 148-403.000.

Johnston, Everett L.; and Moradi-Araghi, Ahmad, to Phillips Petroleum Company. Use of a gelling composition in waste treatment disposal or solar ponds. 5,368,412, Cl. 405-128.000.

Johnstown America Corporation: *See—*
Weiss, John C.; and Wirick, Cloyd F., 5,367,958, Cl. 105-406.100.

Jones, Hedi E. Endo-tracheal tube securing system. 5,368,024, Cl. 128-207.170.

Jones, Richard R. Turbo broiler. 5,368,009, Cl. 126-41.00R.

Jordan, Donna L.: *See—*
George, Scott E.; Jordan, Donna L.; and Sublett, Bobby J., 5,369,211, Cl. 528-293.000.

Jordco, Inc.: *See—*
Johnsen, James B.; and Oien, Hal J., 5,368,482, Cl. 433-163.000.

Jourdain, Gerard E. A.: *See—*
Auffret, Didier L. C.; Berger, Gerard C. L.; Conete, Eric; Delage, Frederic; Jourdain, Gerard E. A.; and Thorel, Christophe J. F., 5,367,874, Cl. 60-261.000.

Jousson, Jean-Pierre, to Les Produits Associes LPA-Broxo S.A. Hydraulic apparatus for bodily care, in particular oral care. 5,368,548, Cl. 601-162.000.

Joyce, James M.: *See—*
Baker, Ernest D.; Dinwiddie, John M., Jr.; Grice, Lonnie E.; Joyce, James M.; Loffredo, John M.; and Sanderson, Kenneth R., 5,369,749, Cl. 395-325.000.

Juergens, Tristan E., to Bolder Lattery, Inc. Thin plate electrochemical cell. 5,368,961, Cl. 429-233.000.

Juhas, Joseph A., to Pasternak, Charles B. Golf ball retriever. 5,368,352, Cl. 294-19.200.

Juhasz, Paul J.: *See—*
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Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Yokoyama, Miyuki; and Sekine, Akio, 5,369,199, Cl. 526-241.000.

Jung, Jae R., to Goldstar Co., Ltd. Amplifying and phase shifting vertical and horizontal polarized signals for frequency converting satellite broadcast receptions. 5,369,780, Cl. 455-12.100.

Junger, Reiner, to Ernst Jacobi GmbH. Device for cleaning rows of machines. 5,367,738, Cl. 15-312.200.

Jursic, Branko: *See—*
Breslow, Ronald; Marks, Paul A.; Rifkind, Richard A.; and Jursic, Branko, 5,369,108, Cl. 514-266.000.

Kaady, Charles M.; and Bowman, Robert E., to Kaady Chemical Corp. Rotating brush for washing the sides of vehicles. 5,367,736, Cl. 15-53.300.

Kaady Chemical Corp.: *See—*
Kaady, Charles M.; and Bowman, Robert E., 5,367,736, Cl. 15-53.300.

Kabat, Zbigniew; and Walton, Richard A., to AG Communication Systems Corporation. Printed circuit board assembly extractor tool. 5,367,761, Cl. 29-764.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Fukushima, Hirotaka, 5,367,921, Cl. 74-574.000.

Kabushiki Kaisha F A Labo: *See—*
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Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Konishi, Shinya, 5,369,218, Cl. 84-649.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Nishimura, Kouhachi; and Kishino, Takanobu, 5,368,208, Cl. 222-603.000.

Kabushiki Kaisha Shinkawa: *See—*
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Sugawara, Kenji, 5,369,492, Cl. 356-394.000.

Kabushiki Kaisha Topcon: *See—*
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Kabushiki Kaisha Toshiba: *See—*
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Hirayama, Takuya; and Yajima, Toshiya, 5,368,456, Cl. 418-220.000.
Iijima, Yasuo, 5,369,760, Cl. 395-575.000.
Kawamura, Shinichi; and Shimbo, Atsushi, 5,369,708, Cl. 380-30.000.
Kondo, Tomoyuki, 5,369,252, Cl. 219-704.000.
Kuroda, Tadahiro; Fujii, Shinji; Kimura, Masahiro; and Kasai, Kazuhiko, 5,369,318, Cl. 326-66.000.
Kuwahara, Tesshu, 5,369,465, Cl. 355-57.000.
Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, 5,369,253, Cl. 219-707.000.
Matsumoto, Yutaka; and Kawada, Nozomu, 5,369,792, Cl. 455-245.100.
Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.
Sangu, Akio, 5,369,716, Cl. 382-61.000.
Suzuki, Yoshie; Nakamura, Shin; and Nakagawa, Akio, 5,369,734, Cl. 395-121.000.
Tokumaru, Takeji, 5,369,596, Cl. 364-491.000.
Watanabe, Noriko; and Oyama, Satoshi, 5,368,457, Cl. 418-220.000.
Yoshihara, Kunio, 5,369,313, Cl. 326-68.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Tamaki, Makoto; and Kozawa, Takahiro, 5,369,289, Cl. 257-99.000.
Tojima, Kazuo; Okayama, Shinobu; Usuki, Arimitsu; Tatsuda, Narihito; Yano, Kazuhisa; and Takeuchi, Hisato, 5,368,780, Cl. 252-582.000.

Kachru, Ravinder: *See—*
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Kadagies, Klaus; and Keller, Walter, to Eduard Kusters Maschinenfabrik GmbH & Co. KG. Device for applying a treatment liquid to a moving web of material, in particular a textile web. 5,367,895, Cl. 68-22.000.

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Kadashevich, A. Julie; Harvey, Mary F.; and Clark, Cheryl, to Wang Laboratories, Inc. Text searching system. 5,369,577, Cl. 364-419.130.

Kadosawa, Tsuneaki: *See—*
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Kafuku, Komei: *See—*
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Kagayama, Akira: *See—*
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Kai, Junichi: *See—*
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Kaim, John W., to AMSTED Industries Incorporated. Mounting system for fifth wheels. 5,368,324, Cl. 280-438.100.

Kaji, Akira: *See—*
Imura, Yoshihiko; Kaji, Akira; and Maruyama, Takekazu, 5,369,756, Cl. 395-575.000.

Kajiwara, Yasuya, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for a vehicle. 5,369,584, Cl. 364-424.050.

Kakehi, Tatsuya: *See—*
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Kakiwaki, Takashi: *See*—
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Kako, Hajime, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detecting fault in exhaust gas recirculation control system of internal combustion engine. 5,368,005, Cl. 123-571.000.

Kakuma, Satoshi: *See*—
Murayama, Masami; Kakuma, Satoshi; and Yoshimura, Shuji, 5,369,649, Cl. 371-37.100.

Kalis, George, Jr.; and Lapsley, Robert M., to Stahl/Scott Fetzer Company. Utility truck body with option attachment components. 5,368,357, Cl. 296-183.000.

Kalisz, John B.; and Carlile, David E., to Lockheed Corporation. Propulsion system for a lighter-than-air vehicle. 5,368,256, Cl. 244-26.000.

Kallenbach, Rainer: *See*—
Gorny, Stefan; Kallenbach, Rainer; Klug, Andreas; Neumann, Udo; and Otterbein, Stefan, 5,369,582, Cl. 364-424.050.

Kallin, Harald: *See*—
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Kamada, Ikuo: *See*—
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Kamata, Yoshiyuki; and Yanagawa, Hisaharu, to Furukawa Electric Co., Ltd., The. Total internal reflection-type optical waveguide switch. 5,369,718, Cl. 385-21.000.

Kamath, Govinda V.: *See*—
Gephardt, Douglas D.; MacDonald, James R.; and Kamath, Govinda V., 5,369,777, Cl. 395-800.000.

Kamath, Ramesh M.: *See*—
Sheehan, Terrence M.; Kamath, Ramesh M.; Walburn, Harold E.; and Sheehan, Jack F., 5,367,754, Cl. 29-27.00C.

Kambayashi, Kosaku; Nakamura, Katsunori; Satoh, Takao; Asaka, Yoshihiro; and Nagasawa, Teruo, to Hitachi, Ltd. Disk cache control unit. 5,369,751, Cl. 395-425.000.

Kamei, Masanao; and Suzuki, Tomohisa, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of an organopolysiloxane polymerizable at a single molecular chain end. 5,369,206, Cl. 528-32.000.

Kamei, Masayuki: *See*—
Usui, Toshio; Aoki, Yuji; Kamei, Masayuki; and Morishita, Tadataka, 5,369,275, Cl. 250-310.000.

Kamerman, Adriaan; and van Bokhorst, Hendrik, to NCR Corporation. Local area network having a wireless transmission link. 5,369,639, Cl. 370-85.300.

Kameyama, Akihiko: *See*—
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Kamide, Kaeko: *See*—
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Kampe, Wolfgang: *See*—
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Kanai, Hiroshi, to Uchida Yoko Co., Ltd. Chair with armrests. 5,368,364, Cl. 297-411.270.

Kanamori, Hiroo: *See*—
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Kanasaki, Junichi: *See*—
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Kanbe, Hiroyuki, to Fujitsu Limited. Call information based matching system for stored program-controlled switching system. 5,369,759, Cl. 395-575.000.

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Kaneda, Naoya: *See*—
Hirasawa, Masahide; Kaneda, Naoya; and Wada, Hiroyuki, 5,369,461, Cl. 354-402.000.

Kanekiyo, Kenji: *See*—
Kato, Jinichiro; Yoneyama, Toshio; Shimura, Kazuhiko; Nakayama, Yoshiaki; and Kanekiyo, Kenji, 5,369,165, Cl. 524-462.000.

Kaneko, Kazuhide, to Toyota Jidosha Kabushiki Kaisha. Bismuth lamellar compound. 5,369,068, Cl. 501-135.000.

Kaneko, Masato, to Idemitsu Kosan Co., Ltd. Lubricating oil and compositions for the hydrogen-containing Flon refrigerants. 5,368,765, Cl. 252-68.000.

Kaneko, Yutaka: *See*—
Ishidai, Hiroshi; Kita, Hiroshi; Kaneko, Yutaka; and Daifuku, Koji, 5,368,998, Cl. 430-558.000.

Kanno, Tetsuya: *See*—
Yonamoto, Koh; Sawada, Hiroyuki; and Kanno, Tetsuya, 5,368,787, Cl. 261-36.100.

Kano, Taisaku: *See*—
Miyazaki, Eiichiro; and Kano, Taisaku, 5,369,178, Cl. 525-155.000.

Kanome, Osamu: *See*—
Kamitakahara, Hirofumi; Yoshino, Hitoshi; Kanome, Osamu; Sato, Tetsuya; and Hayashi, Hisanori, 5,368,789, Cl. 264-1.330.

Kansai Paint Co., Ltd.: *See*—
Fujibayashi, Toshio; and Nagaoka, Haruo, 5,369,150, Cl. 523-414.000.
Fujibayashi, Toshio; and Nagaoka, Haruo, 5,369,151, Cl. 523-414.000.
Kikuta, Makoto, 5,368,716, Cl. 205-84.000.

Kansas State University Research Foundation: *See*—
Biles, Bertram R., 5,369,763, Cl. 395-600.000.
Senock, Randall S.; and Ham, Jay M., 5,367,905, Cl. 73-204.220.

Kansei Corporation: *See*—
Chiba, Takatoshi; and Kobayashi, Shigeru, 5,368,620, Cl. 55-274.000.

Kanzaki Kokyukoki Mfg. Co. Ltd.: *See*—
Irikura, Koji, 5,367,877, Cl. 60-435.000.

Kao, Chio-Chun: *See*—
Lin, Jun-Nun; and Kao, Chio-Chun, 5,369,390, Cl. 338-21.000.

Kao, Elizabeth C.: *See*—
Culbertson, Billy M.; and Kao, Elizabeth C., 5,369,142, Cl. 523-116.000.

Kapes, Gordon K.: *See*—
Dutra, Antonio; Kapes, Gordon K.; and Storch, Randy S., 5,369,686, Cl. 379-94.000.

Kappauf, William F.: *See*—
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.

Karasudani, Keiko, to Mitsubishi Denki Kabushiki Kaisha. Inter-vehicle distance detecting device. 5,369,590, Cl. 364-460.000.

Karlen Manufacturing, Inc.: *See*—
Williams, Lendell J., 5,369,452, Cl. 351-157.000.

Karmin, James L. Medical gown for preserving privacy. 5,367,710, Cl. 2-114.000.

Karon, David M.: *See*—
Japikse, David; and Karon, David M., 5,368,440, Cl. 415-208.300.

Karpf, Hellfried: *See*—
Lubbers, Dietrich W.; and Karpf, Hellfried, 5,368,027, Cl. 128-633.000.

Kasai, Kazuhiko: *See*—
Kuroda, Tadahiro; Fujii, Shinji; Kimura, Masahiro; and Kasai, Kazuhiko, 5,369,318, Cl. 326-66.000.

Kasama, Akio: *See*—
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.

Kasanuki, Yuji: *See*—
Matsuda, Hiroshi; Kawada, Haruki; Kasanuki, Yuji; Yanagisawa, Yoshiharo; and Morikawa, Yuko, 5,368,895, Cl. 427-430.100.

Kasei Optonix, Ltd.: *See*—
Mizukami, Tomohito; Funayama, Chihito; and Oguri, Yasuo, 5,369,331, Cl. 313-467.000.
Tono, Hideo; Naito, Masaru; and Miyazaki, Tomohiro, 5,368,886, Cl. 427-221.000.

Kasel, Eugene A.: *See*—
Aboujaoude, Francois W.; and Kasel, Eugene A., 5,367,875, Cl. 60-303.000.

Kashida, Meguru: *See*—
Hamada, Yuichi; Nagata, Yoshihiko; Kashida, Meguru; and Kubota, Yoshihiro, 5,368,675, Cl. 156-344.000.

Kashihara, Akio: *See*—
Yamagami, Yoshikazu; Kashihara, Akio; Seio, Mamoru; and Tanabe, Hisaki, 5,368,884, Cl. 427-96.000.

Kashima-Kita Electric Power Corporation: *See*—
Sato, Kanji; Nakajima, Masato; and Magome, Ko, 5,368,762, Cl 252-62.200.

Kashima Oil Company: *See*—
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,368,771, Cl. 252-299.100.

Kashio, Toshio, to Casio Computer Co., Ltd. Apparatus for producing slips of variable length and having pre-stored word names, and wherein labels are added to word data thereon. 5,369,776, Cl. 395-800.000.

Kashiwagi, Akio: *See*—
Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, 5,368,063, Cl. 137-340.000.

Kashiwagi, Hiromi, to Hitachi Metals, Ltd. Developing roll positioning apparatus. 5,369,475, Cl. 355-245.000.

Kassen, Rudiger; Klein, Albert; and Weber, Jean M., to Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co. Device for determining material parameters by means of microwave measurements. 5,369,368, Cl. 324-632.000.

Kassner, Ralf; Kandula, Stanislaus; and Holzschuh, Johann, to Battenfeld GmbH. Closing unit for an injection molding machine. 5,368,463, Cl. 425-171.000.

Kasting, John R., Jr.; Potter, Ronald G.; and Phillips, Michael P., to OxiDyn, Incorporated. Process and apparatus for sanitizing articles. 5,368,815, Cl. 422-3.000.

Katano, Yasuo: *See*—
Tomono, Hidenori; Katano, Yasuo; and Komai, Hiromichi, 5,369,421, Cl. 346-76.00R.

Katayama, Ken: *See*—
Mizukoshi, Koubu; Katayama, Ken; Hirata, Masanori; and Mackawa, Kohji, 5,368,798, Cl. 264-154.000.

Katho, Youko: *See*—
Takahashi, Toshiaki; Shizukuishi, Kenichi; Katho, Youko; Senda, Naoto; and Bando, Tomomi, 5,368,727, Cl. 210-198.200.

Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Lithographic printing plate precursor of direct image type. 5,368,931, Cl. 428-327.000.

Kato, Hideki: *See*—
Masumoto, Daiki; Kato, Hideki; Yoshizawa, Hideki; and Iciki, Hiroki, 5,369,731, Cl. 395-24.000.

Kato, Hisao: *See*—
Imamiya, Susumu; Igarashi, Eiji; and Kato, Hisao, 5,368,081, Cl. 152-451.000.

Kato, Jinichiro; Yoneyama, Toshio; Shimura, Kazuhiko; Nakayama, Yoshiaki; and Kanekiyo, Kenji, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyolefin solution using halogen group solvents. 5,369,165, Cl. 524-462.000.

Kato, Koji, to Ramtron International Corporation. Semiconductor device having a ferroelectric film in a through-hole. 5,369,296, Cl. 257-295.000.

Kato, Makoto; Miyaoka, Shinichiro; and Nohmi, Makoto, to Hitachi, Ltd. Texture mapping method. 5,369,736, Cl. 395-125.000.

Kato, Mitsuo: *See*—
Yanagi, Kenichi; Kato, Mitsuo; Tsurusaki, Kazuya; Taguchi, Toshio; Atarashiya, Kenji; Rokkaku, Tadashi; and Yamashita, Ichiro, 5,369,337, Cl. 315-111.810.

Kato, Sumio: *See*—
Murooka, Hirofumi; Kato, Sumio; and Etchu, Masami, 5,368,932, Cl. 428-327.000.

Katoh, Koichi: *See*—
Yamashita, Hiroshi; Kotsugai, Akihiro; Watanabe, Yoichiro; Katoh, Koichi; and Kawase, Hiromitsu, 5,368,972, Cl. 430-137.000.

Katsuhiko Mukai: *See*—
Itoh, Seiji, 5,368,590, Cl. 606-4.000.

Kauchi, Kakutaro: *See*—
Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, 5,368,916, Cl. 428-215.000.

Kaufer, Daniel M.: *See*—
Portelli, Gene B.; Schultz, William J.; Boden, John T.; and Kaufer, Daniel M., 5,368,922, Cl. 428-229.000.

Kauffman, Donn K., to Kauffman, Theresa M.; Bosbur, Inc.; and Williamson, George L. Method of making multi-walled pipes and storage tanks for toxic and corrosive fluids. 5,368,670, Cl. 156-171.000.

Kauffman, Theresa M.: *See*—
Kauffman, Donn K., 5,368,670, Cl. 156-171.000.

Kaufman, David W.: *See*—
Sorenson, James L.; Reynolds, Valdon G.; Mackert, Stephen C.; Jeffs, Joseph H.; and Kaufman, David W., 5,368,017, Cl. 128-200.260.

Kawabata, Masami; Sato, Akihiko; and Sumiyoshi, Iwao, to Nippon Paint Co., Ltd. Photopolymerizable composition. 5,368,990, Cl. 430-281.000.

Kawabuchi, Masami: *See*—
Fukukita, Hiroshi; Yao, Lin X.; Banjanin, Zoran; Kim, Jin; Hagiwara, Hisashi; and Kawabuchi, Masami, 5,369,624, Cl. 367-103.000.

Kawada, Haruki: *See*—
Matsuda, Hiroshi; Kawada, Haruki; Kasanuki, Yuji; Yanagisawa, Yoshiharo; and Morikawa, Yuko, 5,368,895, Cl. 427-430.100.

Kawada, Nozomu: *See*—
Matsumoto, Yutaka; and Kawada, Nozomu, 5,369,792, Cl. 455-245.100.

Kawai, Masaharu; Miyoshi, Katsuya; and Baba, Masami, to Nikon Corporation. Contour measuring apparatus. 5,369,490, Cl. 356-376.000.

Kawai, Shinichi, to Fujitsu Limited. Method of fabricating semiconductor device. 5,369,050, Cl. 437-62.000.

Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; and Murata, Haruhiko, to Sanyo Electric Co., Ltd. Automatic focusing apparatus for automatically matching focus in response to video signal based on extracted high frequency component of non-linear processed luminance signal. 5,369,436, Cl. 348-355.000.

Kawakami, Masashi: *See*—
Kawasaki, Kenji; Kawakami, Masashi; Suzukawa, Kenji; and Wada, Setsu, 5,368,382, Cl. 366-2.000.

Kawakami, Shigeaki: *See*—
Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, 5,369,655, Cl. 372-29.000.

Kawakami, Yukichika; and Shiiki, Zenya, to Kureha Kagaku Kogyo K.K. Aromatic thioether ketone/thioether sulfone copolymer and production process thereof. 5,369,191, Cl. 525-471.000.

Kawamoto, Fumio, to Fuji Photo Film Co., Ltd. Silver halide photographic material with polyester support. 5,368,997, Cl. 430-533.000.

Kawamoto, Seiichi; and Narabu, Tadakuni, to Sony Corporation. Charge transfer device with high speed transfer rate. 5,369,434, Cl. 348-315.000.

Kawamura, Chuichi: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.

Kawamura, Masahiro; Takigawa, Masuo; Kondou, Yasuhiro; Hamada, Tutomu; Maruyama, Teruo; and Masuo, Akio, to Matsushita Industrial Co., Ltd. Throttle actuator. 5,367,997, Cl. 123-399.000.

Kawamura, Shingo; and Yamada, Minoru, to Yoshida Kogyo K.K. Hard multilayer coated product and process for producing same. 5,368,939, Cl. 428-408.000.

Kawamura, Shinichi; and Shimbo, Atsushi, to Kabushiki Kaisha Toshiba. Fast server-aided computation system and method for modular exponentiation without revealing client's secret to auxiliary device. 5,369,708, Cl. 380-30.000.

Kawamura, Wataru, to Canon Kabushiki Kaisha. Facsimile apparatus. 5,369,689, Cl. 379-100.000.

Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, to Mitsubishi Denki Kabushiki Kaisha. Radio relay system, including interference signal cancellation. 5,369,782, Cl. 455-16.000.

Kawano, Yasuhiko: *See*—
Miyake, Akio; Kawano, Yasuhiko; and Ashida, Yasuko, 5,369,104, Cl. 514-212.000.

Kawarada, Motonobu: *See*—
Kurihara, Kazuaki; Sasaki, Kenichi; Kawarada, Motonobu; and Koshino, Nagaaki, 5,368,897, Cl. 427-450.000.

Kawasaki, Hideshi; and Tokunaga, Hiroyuki, to Canon Kabushiki Kaisha. Light emission element using a polycrystalline semiconductor material of III-V group compound. 5,369,290, Cl. 257-103.000.

Kawasaki, Kenji; Kawakami, Masashi; Suzukawa, Kenji; and Wada, Setsu, to Konoike Construction Co., Ltd. Cement paste mixer and method for producing mortar and concrete. 5,368,382, Cl. 366-2.000.

Kawasaki Steel Corporation: *See*—
Yamazaki, Masakatsu; Narutani, Tetsu; and Kobiki, Hideaki, 5,368,763, Cl. 252-62.590.

Kawase, Hiromitsu: *See*—
Yamashita, Hiroshi; Kotsugai, Akihiro; Watanabe, Yoichiro; Katoh, Koichi; and Kawase, Hiromitsu, 5,368,972, Cl. 430-137.000.

Kaye, Steven M.: *See*—
Sansone, Ronald P.; O'Hare, Michael D.; Kaye, Steven M.; and Korowotny, Scott, 5,369,258, Cl. 235-381.000.

Kayukawa, Hiroaki: *See*—
Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, 5,368,449, Cl. 417-269.000.

KDC Technology Corp.: *See*—
King, Ray J.; and King, Karl V., 5,369,251, Cl. 219-695.000.

Kee, Tai-Lee; and Shaw, Jack M., to Alcon Laboratories, Inc. Compositions and method comprising substituted glycosides as mucus membrane permeation enhancers. 5,369,095, Cl. 514-24.000.

Keijsper, Johannes J.: *See*—
Drent, Eit; and Keijsper, Johannes J., 5,369,075, Cl. 502-167.000.

Keller, Alfred E.: *See*—
Cummings, Arthur L.; Veatch, Fred C.; and Keller, Alfred E., 5,368,818, Cl. 422-62.000.

Keller, Jacques, to Sollac. Process for improving the drawability of a metal sheet or sheet blank. 5,367,903, Cl. 72-42.000.

Keller, Walter: *See*—
Kadagies, Klaus; and Keller, Walter, 5,367,895, Cl. 68-22.000.

Kelley, Ryan P.: *See*—
Holloran, Robert W.; and Kelley, Ryan P., 5,369,573, Cl. 364-419.070.

Kellogg, Scott T.: *See*—
Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, 5,368,099, Cl. 166-246.000.

Kelly, James H.: *See*—
Sussman, Norman L.; Kelly, James H.; and Lobdell, Donn D., 5,368,555, Cl. 604-4.000.

Kelly, Lawrence S.: *See*—
Box, Gary W.; and Kelly, Lawrence S., 5,368,059, Cl. 137-3.000.

Kelly, Norman F.: *See*—
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.

Kelman, David C.; and Smith, Todd S., to DePuy, Inc. Prosthesis with highly convoluted surface. 5,368,881, Cl. 427-2.260.

Kelsey, Donald R., to Shell Oil Company. Polymerization of cyclic olefins. 5,369,195, Cl. 526-119.000.

Kemerer, Douglas W.: *See*—
Gould, Elliot L.; Kemerer, Douglas W.; McAllister, Lance A.; Piro, Ronald A.; Richardson, Guy R.; and Wellburn, Deborah A., 5,369,595, Cl. 364-490.000.

KENETECH Windpower, Inc.: *See*—
Erdman, William L., 5,369,353, Cl. 323-207.000.

Kenjiro, Uematsu; Yosimitu, Kaga; and Masaki, Saito, to Tokai Corporation. Gas lighter with safety device. 5,368,473, Cl. 431-153.000.

Kenkare, Prashant; Pfiester, James R.; and Sun, Shih-Wei, to Motorola, Inc. Method of forming dual field oxide isolation. 5,369,052, Cl. 437-70.000.

Kennedy, James K., to Minnesota Mining and Manufacturing Company. Color calibration for LCD panel. 5,369,432, Cl. 348-181.000.

Kenney, Patrick M.: *See—*
Mannava, Seetharamaiah; Pratt, Vanon D.; MacLaren, Henry; Jackson, Joseph J.; and Kenney, Patrick M., 5,368,911, Cl. 428-167.000.

Kenny, Desmond J.: *See—*
Parry, Mark J.; Kenny, Desmond J.; and Norman, Philip A., 5,369,720, Cl. 385-114.000.

Kent State University: *See—*
Saupe, Alfred; and Jakli, Antal, 5,368,770, Cl. 252-299.010.

Kerns, Robert Q., to Multimedia Design, Inc. Multi-layer printed circuit board apparatus and method for making same. 5,369,219, Cl. 174-250.000.

Kero, Terrence E. F., to Sprint Communications Company L.P. Voice-activated telephone directory and call placement system. 5,369,685, Cl. 379-67.000.

Kerschner, Laurie E.: *See—*
Huang, Victor T.; Kerschner, Laurie E.; and Cullen, Lorri D., 5,368,877, Cl. 426-589.000.

Kersten, Ralf: *See—*
Heming, Martin; Hochhaus, Roland; Kersten, Ralf; Krause, Dieter; Otto, Jurgen; Paquet, Volker; Segner, Johannes; and Fattinger, Christof, 5,369,722, Cl. 385-130.000.

Keslowitz, Saul L.: *See—*
Hussey, John P.; Green, Richard M.; and Keslowitz, Saul L., 5,368,428, Cl. 414-1.000.

Kessler, Christoph: *See—*
Reischl, Udo; Rueger, Rudiger; Kessler, Christoph; and Seibl, Rudolf, 5,369,003, Cl. 435-6.000.

KesslerTech GmbH: *See—*
Detzer, Rudiger, 5,368,816, Cl. 422-28.000.

Ketcham, Mark G.; McNaughton, James; and Zielinski, Robert J., to Bundy Corporation. Fluid line adapter. 5,368,275, Cl. 251-149.600.

Kewpie Kabushiku Kaisha: *See—*
Koike, Yoshio; Matsumoto, Kazuya; and Saito, Hisatoshi, 5,368,808, Cl. 264-512.000.

Khandros, Igor Y.: *See—*
DiStefano, Thomas H.; Ehrenberg, Scott G.; and Khandros, Igor Y., 5,367,764, Cl. 29-830.000.

Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, to Osaka Gas Co., Ltd.; Miyawaki Incorporated; and Mitsubishi Cable Industries, Ltd. Heating system for conveyor pipes. 5,368,063, Cl. 137-340.000.

Kido, Naoharu: *See—*
Tsukamoto, Kazuyuki; Yoshida, Minoru; Hosaka, Ryuji; Fukao, Tomoo; Kido, Naoharu; and Suto, Naoki, 5,369,688, Cl. 379-100.000.

Kidokoro, Toru: *See—*
Hoshino, Shinichi; Okawa, Koji; Osanai, Akinori; Itou, Takaaki; Hyodo, Yoshihiko; and Kidokoro, Toru, 5,368,002, Cl. 123-520.000.

Kidwell, David A., to United States of America, Navy. Microassay on a card. 5,369,007, Cl. 435-7.900.

Kiefer, Erich; Klusener, Peter; and Friedrichs, Karsten, to Krupp Kautex Maschinenban GmbH. Blow molding apparatus for the production of a hollow body of thermoplastic material. 5,368,462, Cl. 425-150.000.

Kielhorn-Bayer, Sabine; Zeiner, Hartmut; Goerrissen, Heiner; and Saenger, Dietrich, to BASF Aktiengesellschaft. UV-stabilized polyoxymethylene molding materials. 5,369,177, Cl. 525-154.000.

Kiepen, Horst F.: *See—*
Eberle, Michael J.; Rizzuti, Gary P.; and Kiepen, Horst F., 5,368,037, Cl. 128-662.060.

Kieserling, Claudia: *See—*
Smith, Christopher H.; and Kieserling, Claudia, 5,367,712, Cl. 2-162.000.

Kikuchi, Juro: *See—*
Miyazawa, Azuma; Mizobuchi, Kouji; Ito, Takeshi; Ide, Masataka; Maruyama, Atsushi; Kikuchi, Juro; and Imai, Yuji, 5,369,462, Cl. 354-430.000.

Kikuchi, Kazuya: *See—*
Shioka, Masashi; and Kikuchi, Kazuya, 5,369,642, Cl. 371-8.200.

Kikumura, Tatsuya: *See—*
Hori, Setsuo; Tsuji, Kikunosuke; Kikumura, Tatsuya; and Satake, Kenichi, 5,369,424, Cl. 346-134.000.

Kikuta, Makoto, to Kansai Paint Co., Ltd. Method and apparatus for analyzing the composition of an electro-deposition coating material and method and apparatus for controlling said composition. 5,368,716, Cl. 205-84.000.

Kilmer, Lauren G.; and Reynolds, Alvin E., to Corneal Contouring Inc. Method and apparatus for surgically profiling the cornea using vacuum. 5,368,604, Cl. 606-166.000.

Kim, Ann G.: *See—*
Chaiken, Robert F.; Kim, Ann G.; Kociban, Andrew M.; and Slivon, Joseph P., Jr., 5,368,105, Cl. 169-44.000.

Kim, Dae-il, to Samsung Electron Devices Co., Ltd. Structure of a plasma display panel and a driving method thereof. 5,369,338, Cl. 315-169.400.

Kim, Hong-Man: *See—*
Yoo, Ji-Beom; Park, Chan-Yong; and Kim, Hong-Man, 5,369,292, Cl. 257-186.000.

Kim, Hong S.: *See—*
Oh, Jong H.; and Kim, Hong S., 5,369,312, Cl. 327-545.000.

Kim, Jin: *See—*
Fukukita, Hiroshi; Yao, Lin X.; Banjanin, Zoran; Kim, Jin; Hagiwara, Hisashi; and Kawabuchi, Masami, 5,369,624, Cl. 367-103.000.

Kim, Jin B.; and Hur, Young S., to Lucky, Ltd. Process for the preparation of heat resistant and transparent acrylic resin. 5,369,189, Cl. 525-378.000.

Kim, Si J., to Goldstar Co., Ltd. Apparatus for processing image motion compensation information for an image processing system. 5,369,438, Cl. 348-402.000.

Kim, Sun-Ja. Methods for connection of precast concrete units. 5,367,854, Cl. 52-745.130.

Kim, Young H., to Du Pont de Nemours, E. I., and Company. Process for direct addition of acid to polymers. 5,369,188, Cl. 525-359.400.

Kimmel, Richard D.: *See—*
Huang, Ching-Chao; and Kimmel, Richard D., 5,369,594, Cl. 364-489.000.

Kimura, Hiroshi: *See—*
Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.

Kimura, Kazumasa: *See—*
Harada, Nobuyuki; Kimura, Kazumasa; and Shimomura, Tadao, 5,368,918, Cl. 428-219.000.

Kimura, Kazuya; Kayukawa, Hiroaki; Ito, Masafumi; Kawamura, Chuichi; Hidaka, Shigeyuki; and Fujisawa, Yoshihiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Refrigerant gas guiding mechanism for piston type compressor. 5,368,449, Cl. 417-269.000.

Kimura, Masahiro: *See—*
Kuroda, Tadahiro; Fujii, Shinji; Kimura, Masahiro; and Kasai, Kazuhiko, 5,369,318, Cl. 326-66.000.

Kimura, Shuji: *See—*
Maruyama, Akira; Kimura, Shuji; Yamada, Shigeki; Shirai, Hiroaki; Nara, Hiroichi; and Hanaeda, Kazunori, 5,369,633, Cl. 370-13.000.

Kindig, James K., to Genesis Research Corp. Process for reducing sulfur emissions with calcium-containing sorbents. 5,368,617, Cl. 44-622.000.

Kindle, Terence D.: *See—*
Adelstein, Stephen; and Kindle, Terence D., 5,367,794, Cl. 36-135.000.

King, Karl V.: *See—*
King, Ray J.; and King, Karl V., 5,369,251, Cl. 219-695.000.

King, Peter F., to Henkel Corporation. Lubrication for cold forming of metals. 5,368,757, Cl. 252-34.000.

King, Ray J.; and King, Karl V., to KDC Technology Corp. Microwave interstitial hyperthermia probe. 5,369,251, Cl. 219-695.000.

King, Steven R.; and Walser, Michael W., to Mesa Environmental Ventures Limited Partnership. Method and system for improved fuel system performance of a gaseous fuel engine. 5,367,999, Cl. 123-458.000.

King, William A.: *See—*
Leone, David A.; and King, William A., 5,369,542, Cl. 361-94.000.

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Iijima, Katsuhiko; and Kinoshita, Shigenori, 5,368,116, Cl. 180-65.400.

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Takei, Makoto; Kinugawa, Isao; Tamura, Mamoru; and Tashiro, Seiichi, 5,368,940, Cl. 428-408.000.

Kioritz Corporation: *See—*
Taomo, Toshio, 5,368,107, Cl. 173-162.200.

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Sunami, Masaki; Maruyama, Koji; Hori, Mitsuhiko; Tokuda, Shoichi; Saito, Kenichiro; and Kishi, Ikuo, 5,368,860, Cl. 424-448.000.

Kishino, Takanobu: *See—*
Nishimura, Kouhachi; and Kishino, Takanobu, 5,368,208, Cl. 222-603.000.

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Kitamura, Fumio, to Kitamura Kiden Co., Ltd. Cutting apparatus for cutting strip material by a plurality of slitter units to obtain a plurality

of ribbon core materials in one operation with high precision. 5,367,931, Cl. 83-407.000.

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Sakakibara, Hisayoshi; Kitamura, Keiichi; and Honda, Shin, 5,367,883, Cl. 62-85.000.

Kitamura Kiden Co., Ltd.: *See—*
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Tanaka, Hideaki; Morita, Toshiaki; and Kitamura, Yoshihiro, 5,369,715, Cl. 382-18.000.

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Okamoto, Jun; Goto, Yujiro; Kitano, Masao; and Suzuki, Seiichi, 5,368,760, Cl. 252-47.500.

Kitasato Institute, The: *See—*
Satoshi, Omura; and Haruo, Ikeda, 5,369,021, Cl. 435-71.300.

Kiunke, Paul C.; and Schaefer, Robert D., to Hughes Aircraft Company. Gimbal vibration isolation system. 5,368,271, Cl. 248-638.000.

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Pritchard, Thomas B.; Franz, Douglas L.; Hoekstra, Casey D.; and Klaus, Richard I., 5,369,645, Cl. 371-22.100.

Klein, Albert: *See—*
Kassen, Rudiger; Klein, Albert; and Weber, Jean M., 5,369,368, Cl. 324-632.000.

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Mulhaupt, Rolf; Rosch, Joachim; Hopperdietzel, Siegfried; Weinberg, Ekkehard; and Klein, Herbert, 5,369,171, Cl. 525-66.000.

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Klevtsov, Dimitri P.: *See—*
Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., 5,369,076, Cl. 502-354.000.

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Kleyn, Hendrik, 5,368,467, Cl. 425-556.000.

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Schaller, Gunter; and Klietsch, Dietmar, 5,368,545, Cl. 600-37.000.

Klocke, Donald J.: *See—*
Degnan, Thomas F.; Klocke, Donald J.; and Rubin, Mae K., 5,369,071, Cl. 502-71.000.

Klockner-Moeller GmbH: *See—*
Heins, Volker, 5,369,384, Cl. 335-171.000.

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Kloskowski, Alan B., to Sarcol, Inc. Method for making a ceramic mold. 5,368,086, Cl. 164-33.000.

Klug, Andreas: *See—*
Gorny, Stefan; Kallenbach, Rainer; Klug, Andreas; Neumann, Udo; and Otterbein, Stefan, 5,369,582, Cl. 364-424.050.

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Wehrmann, Rolf; Kocher, Matthias; Pielartzik, Harald; and Klug, Gunter, 5,368,968, Cl. 430-106.600.

Klusener, Peter: *See—*
Kiefer, Erich; Klusener, Peter; and Friedrichs, Karsten, 5,368,462, Cl. 425-150.000.

Knelson, Benjamin V. Method of extraction of mercury and gold from mine tailings. 5,368,541, Cl. 494-37.000.

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Park, Chung P.; Stevens, James C.; and Knight, George W., 5,369,136, Cl. 521-143.000.

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Chakravarti, Vandana S.; Christmann, R. Paul; Knittel, Steven F.; Redberg, Margaret H.; Shampine, William T.; Shur, Lindsay A.; and Staniforth, Dawn E., 5,369,695, Cl. 379-211.000.

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Root, Kevin B.; Allen, John J., Jr.; and Newton, Ronald O., 5,369,587, Cl. 364-426.010.

Knowles, David B., to Transitions Optical, Inc. Photochromic naphthopyrans. 5,369,158, Cl. 524-110.000.

Knowles, Vernon: *See—*
Badyal, Rajeev; and Knowles, Vernon, 5,369,310, Cl. 327-143.000.

Ko, Chan U.; and Hackett, Steven C., to Minnesota Mining and Manufacturing Company. Binder resin for resin transfer molding preforms. 5,369,192, Cl. 525-484.000.

Ko, Seok-Kyung, to Samsung Electronics Co., Ltd. Document transferring system for a facsimile apparatus. 5,369,509, Cl. 358-498.000.

Kobayashi, Hiroyuki: *See—*
Ogata, Mitsuru; Kobayashi, Hiroyuki; Inagaki, Toshitake; Masuko, Takashi; and Takeuchi, Hiroshi, 5,368,310, Cl. 273-448.000.

Kobayashi, Makoto: *See—*
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, 5,369,422, Cl. 346-76.0PH.

Kobayashi, Masakazu; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co., Ltd. Negative-working radiation-sensitive resist composition. 5,368,783, Cl. 252-600.000.

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Chiba, Takatoshi; and Kobayashi, Shigeru, 5,368,620, Cl. 55-274.000.

Kobayashi, Shinichi: *See—*
Hirasawa, Naoki; and Kobayashi, Shinichi, 5,369,803, Cl. 455-89.000.

Kobayashi, Tadashi, to NEC Corporation. Switching power source. 5,369,307, Cl. 307-125.000.

Kobayashi, Tatsuya: *See—*
Kobayashi, Tetsuya; Sasame, Hiroshi; Kobayashi, Tatsuya; Enomoto, Naoki; Uchiyama, Akihiko; and Saito, Yoshiro, 5,369,478, Cl. 355-259.000.

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Kobiki, Hideaki: *See—*
Yamazaki, Masakatsu; Narutani, Tetsu; and Kobiki, Hideaki, 5,368,763, Cl. 252-62.590.

Koch, Jay; and Estes, Andrew C. Apparatus and method for separating wings and attached breasts from poultry carcasses. 5,368,520, Cl. 452-165.000.

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Kociban, Andrew M.: *See—*
Chaiken, Robert F.; Kim, Ann G.; Kociban, Andrew M.; and Slivon, Joseph P., Jr., 5,368,105, Cl. 169-44.000.

Koga, Eiji: *See—*
Nakamura, Takashi; Ozawa, Kunitaka; Kadosawa, Tsuneaki; Koga, Eiji; and Watanabe, Hitoshi, 5,369,746, Cl. 395-200.000.

Koga, Toshio; and Okajima, Masayuki, to NEC Corporation. Time-varying image signal coding/decoding system. 5,369,437, Cl. 348-401.000.

Koh, Jae H.: *See—*
Yoon, Jung S.; Rhee, Won H.; Koh, Jae H.; and Jang, Woo S., 5,368,764, Cl. 252-62.590.

Kohler, Manfred: *See—*
Rutsch, Werner; Hug, Gebhard; and Kohler, Manfred, 5,368,985, Cl. 430-269.000.
Valet, Andreas; and Kohler, Manfred, 5,369,140, Cl. 522-75.000.

Kohler, Robert: *See—*
Schafer, Volker; Kohler, Robert; Pauli, Alfred; and Fessenbecker, Achim, 5,368,776, Cl. 252-395.000.

Kohmix Co., Ltd.: *See—*
Kokuta, Naoto; Kokuta, Kenji; Kokuta, Katsuhiro; and Kokuta, Hiroshi, 5,368,950, Cl. 428-704.000.

Kohno, Satoshi; and Hidaka, Shizuaki, to Atsugi Unisia Corp. Automotive power train. 5,368,146, Cl. 192-70.160.

Kohut, Thomas A.: *See—*
Rhoades, Lawrence J.; Kohut, Thomas A.; Nokovich, Nicholas F.; and Yanda, Danny W., 5,367,833, Cl. 451-104.000.

Koike, Tadashi; Mizukuki, Tadahiko; Sasakawa, Tomoyoshi; Suzuki, Yuko; and Shiina, Kouichi, to Mitsui Toatsu Chemicals, Inc. Optical recording medium. 5,369,321, Cl. 369-275.400.

Koike, Yoshikazu: *See—*
Nagate, Takashi; Endo, Kenichi; Koike, Yoshikazu; Seto, Takeshi; and Yamagishi, Yoshihiko, 5,369,325, Cl. 310-156.000.

Koike, Yoshio; Matsumoto, Kazuya; and Saito, Hisatoshi, to Kyoraku Co., Ltd.; and Kewpie Kabushiku Kaisha. Blowbag manufacturing method. 5,368,808, Cl. 264-512.000.

Koike, Yukiya; Suzuki, Koji; and Ichikawa, Yataro, to Teijin Limited. Method for immunological assay of free lipoprotein associated coagulation inhibitor (LACI) and kit therefor. 5,369,038, Cl. 436-548.000.

Koinuma, Hideomi; Yamazaki, Shunpei; and Hayashi, Shigenori, to Semiconductor Energy Laboratory Co., Ltd. Plasma generating device. 5,369,336, Cl. 315-111.210.

Koito Manufacturing Co., Ltd.: *See—*
Tajima, Keiichi; and Tsukamoto, Toshiyuki, 5,367,827, Cl. 49-352.000.

Koiwai, Tamotsu; and Shiratori, Kazutoshi, to Olympus Optical Co., Ltd. Patrone. 5,369,457, Cl. 354-275.000.

Kojima, Akihiro: *See—*
Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.

Kojima, Hiroshi: *See—*
Ishikawa, Yoshio; Kojima, Hiroshi; and Hiratuka, Masahito, 5,368,684, Cl. 156-643.000.

Kojima, Mitsuru: *See—*
Sagara, Toshiharu; Funahara, Toshikatsu; Nakatani, Takakazu; and Kojima, Mitsuru, 5,368,891, Cl. 427-258.000.

Kojima, Toshiharu, to Mitsubishi Denki Kabushiki Kaisha. Differential detection demodulator. 5,369,374, Cl. 329-306.000.

Koksbang, Rene; and Olsen, Ib I., to Valence Technology, Inc. Current collectors for electrochemical cells and batteries. 5,368,959, Cl. 429-212.000.

Kokuta, Hiroshi: *See—*
Kokuta, Naoto; Kokuta, Kenji; Kokuta, Katsuhiro; and Kokuta, Hiroshi, 5,368,950, Cl. 428-704.000.

Kokuta, Katsuhiro: *See*—
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Kolman, Kenneth: *See*—
Richard, Daniel; Kolman, Kenneth; Case, Charles; Becker, Ronald; and Gross, Alex, 5,367,792, Cl. 36-114.000.
Komagawa, Tooru: *See*—
Fukushima, Tadashi; Matsuo, Shigeru; Yoshida, Shoji; and Komagawa, Tooru, 5,369,744, Cl. 395-162.000.
Komai, Hiromichi: *See*—
Tomono, Hidenori; Katano, Yasuo; and Komai, Hiromichi, 5,369,421, Cl. 346-76.00R.
Komano, Hiroshi: *See*—
Uchikawa, Kiyoshi; Komano, Hiroshi; Aoyama, Toshimi; and Ohta, Katsuyuki, 5,368,991, Cl. 430-288.000.
Komatsu, Fumiaki: *See*—
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,369,782, Cl. 455-16.000.
Komatsu Ltd.: *See*—
Kitabayashi, Hiroyuki; Kuroda, Yoshiaki; and Kamada, Ikuo, 5,367,902, Cl. 72-37.000.
Komatsu, Satoru: *See*—
Urabe, Masanobu; and Komatsu, Satoru, 5,369,409, Cl. 342-133.000.
Komatsubara, Takeo: *See*—
Sunaga, Takashi; and Komatsubara, Takeo, 5,369,287, Cl. 252-50.000.
Komori, Shinji: *See*—
Yamasaki, Tetsuo; Shima, Kenji; Komori, Shinji; Munakata, Koichi; and Inaoka, Yoshie, 5,369,775, Cl. 395-800.000.
Konakawa, Tsugunori: *See*—
Shiohara, Masakazu; and Konakawa, Tsugunori, 5,367,998, Cl. 123-457.000.
Kondo, Hirotoshi, to Yoshio Kondo. Starting mechanism of an engine for a model. 5,367,995, Cl. 123-179.600.
Kondo, Tomoyuki, to Kabushiki Kaisha Toshiba. Cooking appliance and method with a light sensor. 5,369,252, Cl. 219-704.000.
Kondoh, Tosiyuki: *See*—
Gotoh, Tetsuya; Kondoh, Tosiyuki; Egawa, Keiichi; and Kubodera, Ken-ichi, 5,368,782, Cl. 252-587.000.
Kondou, Yasuhiro: *See*—
Kawamura, Masahiro; Takigawa, Masuo; Kondou, Yasuhiro; Hamada, Tutomu; Maruyama, Teruo; and Masuo, Akio, 5,367,997, Cl. 123-399.000.
Kone Oy: *See*—
Kuivamaki, Ismo, 5,368,138, Cl. 188-71.800.
Konica Corporation: *See*—
Ishidai, Hiroshi; Kita, Hiroshi; Kaneko, Yutaka; and Daifuku, Koji, 5,368,998, Cl. 430-558.000.
Tanaka, Kazuyoshi; Washio, Koji; and Yasuda, Yoshizumi, 5,369,507, Cl. 358-462.000.
Yoshida, Kazuhiro, 5,368,984, Cl. 430-264.000.
Konishi, Akio; Sakai, Yoshitomo; Saito, Yoshiyuki; and Yoshio, Hideaki, to Matsushita Electric Industrial Co., Ltd. Magnetic recording reproducing apparatus with stoppers for loading boats. 5,369,536, Cl. 360-85.000.
Konishi, Shinya, to Kabushiki Kaisha Kawai Gakki Seisakusho. External device phrase data input/output apparatus for an electronic musical instrument. 5,369,218, Cl. 84-649.000.
Kono, Ikuo; and Yang, David S., to S. M. W. Seiko. Spiral flights for improved soil mixing and efficient boring for use on multi-shaft auger soil mixing apparatus. 5,368,415, Cl. 405-267.000.
Kono, Noriyoshi: *See*—
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.
Konoike Construction Co., Ltd.: *See*—
Kawasaki, Kenji; Kawakami, Masashi; Suzukawa, Kenji; and Wada, Setsu, 5,368,382, Cl. 366-2.000.
Konrad, Charles E.; and Benson, Ralph A., to General Electric Company. Electric vehicle drive train with contactor protection. 5,369,540, Cl. 361-6.000.
Konrad, Johann: *See*—
Vogel, Manfred; Herden, Werner; and Konrad, Johann, 5,369,283, Cl. 250-551.000.
Konstance, Richard P., to United States of America, Agriculture. Seafood analogs from caseinate and process of making same. 5,368,871, Cl. 426-104.000.
Koo, Ann f.: *See*—
Cheng, David, 5,369,286, Cl. 250-561.000.
Koontz, Steven L.; and Spaulding, Glenn F., to United States of America, National Aeronautics and Space Administration. Method of making a membrane having hydrophilic and hydrophobic surfaces for adhering cells or antibodies by using atomic oxygen or hydroxyl radicals. 5,369,012, Cl. 435-7.920.
Kopp, Siegfried; Haeberle, Juergen; Mahn, Johannes; Schwegler, Tim; and Schlueter, Malte, to Hewlett-Packard Company. Casing for a device. 5,369,549, Cl. 361-679.000.
Korea Advanced Institute of Science and Technology: *See*—
Ihm, Son-Ki; and Jo, Young-Do, 5,369,133, Cl. 521-53.000.
Korea Telecommunication Authority: *See*—
Yoo, Ji-Beom; Park, Chan-Yong; and Kim, Hong-Man, 5,369,292, Cl. 257-186.000.
Koretsky, Ronald G.; Vigliotti, Donald R., deceased (by Vigliotti, Catherine H., executrix); and von Gutfeld, Robert J., to International Business Machines Corporation. Ultrasonic jet semiconductor wafer cleaning apparatus. 5,368,054, Cl. 134-153.000.
Korhonen, Jukka; and Huttunen, Pertti, to Telenokia Oy. Method of and apparatus for detecting a monitoring signal at a base station in a radio telephone system. 5,369,785, Cl. 455-54.100.
Korngiebel, Ronald W.: *See*—
Dodt, William C.; Donze, Jerry L.; Gottehrer, Terry R.; Korngiebel, Ronald W.; and McCarthy, Donald F., 5,369,532, Cl. 360-48.000.
Kornig, Robert P. Fluid distributor for stratified mixing of air streams. 5,368,521, Cl. 454-261.000.
Korowotny, Scott: *See*—
Sansone, Ronald P.; O'Hare, Michael D.; Kaye, Steven M.; and Korowotny, Scott, 5,369,258, Cl. 235-381.000.
Korpimaa, Heikki, to Valmet Transmec Ltd. Oy. Truck having a spring suspension. 5,368,322, Cl. 280-709.000.
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Digital DQPSK modulator. 5,369,378, Cl. 332-104.000.
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Koshiishi, Osamu: *See*—
Asada, Takashi; Koshiishi, Osamu; Nakazawa, Yasuhiko; and Shimomura, Masaki, 5,368,401, Cl. 400-124.210.
Koshino, Nagaaki: *See*—
Kurihara, Kazuaki; Sasaki, Kenichi; Kawarada, Motonobu; and Koshino, Nagaaki, 5,368,897, Cl. 427-450.000.
Koshizuka, Naoki: *See*—
Takamuku, Kenshi; Gu, Genda; and Koshizuka, Naoki, 5,369,090, Cl. 505-451.000.
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Kotani, Takuya: *See*—
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,368,981, Cl. 435-232.000.
Kotsugai, Akihiro: *See*—
Yamashita, Hiroshi; Kotsugai, Akihiro; Watanabe, Yoichiro; Katoh, Koichi; and Kawase, Hiromitsu, 5,368,972, Cl. 430-137.000.
Koura, Masahiro; Ishihara, Ryuichi; Chikatsu, Yoshimoto; Nagata, Yukihiko; and Ohmori, Eihachiro, to Japan Business Systems, Inc. Multi-function telephone apparatus and control method. 5,369,700, Cl. 379-387.000.
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Moriya, Nobuo; Shimoda, Keiji; Sakashita, Kouji; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,368,827, Cl. 422-245.100.
Kovalyuk, Zahar D.: *See*—
Kozmik, Ivan D.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Grigortchak, Ivan I.; Krigan, Elvria G.; and Bahmatyuk, Bogdan P., 5,368,957, Cl. 429-194.000.
Koyama, Akihisa; Kitahara, Syoji; and Honda, Tomonori, to INAX Corporation. Method of jointing porous building plates. 5,368,665, Cl. 156-71.000.
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Takahashi, Toyohiro; Furuya, Masami; Koyama, Toshio; and Owa, Kenichi, 5,368,402, Cl. 400-279.000.
Koyama, Yasuto: *See*—
Asakura, Sotoo; Koyama, Yasuto; Kiyota, Youhei; Akashi, Kiyoko; Kagayama, Akira; Murakami, Yoshio; and Nakate, Toshiomi, 5,368,865, Cl. 424-489.000.
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Tamaki, Makoto; and Kozawa, Takahiro, 5,369,289, Cl. 257-99.000.
Koziara, Robert P., to Onan Corporation. Engine efficiency improvement system. 5,368,000, Cl. 123-481.000.
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Krause, Dieter: *See*—
Heming, Martin; Hochhaus, Roland; Kersten, Ralf; Krause, Dieter; Otto, Jurgen; Paquet, Volker; Segner, Johannes; and Fattinger, Christof, 5,369,722, Cl. 385-130.000.
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Krebs, Klaus, to Hoechstmass Balzer GmbH. Roll tape measure. 5,367,784, Cl. 33-767.000.
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Bowers, Mark L.; Buttaro, David; and Krebs, W. Michael, 5,368,706, Cl. 204-153.100.

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Kreiner, Fred W.: *See*—
Feuer, Mark S.; Kreiner, Fred W.; Solow, Howard J.; and Harding, Michael H., 5,368,533, Cl. 482-70.000.
Kremer, Ross A.: *See*—
Horodysky, Andrew G.; Wei, Liwen; and Kremer, Ross A., 5,368,759, Cl. 252-475.000.
Krempl, Peter W.: *See*—
Wallnofer, Wolfgang; and Krempl, Peter W., 5,369,327, Cl. 310-313.00A.
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Kress, Edward S.; Thomas, Dennis R.; and Rabas, Michael A., 5,368,434, Cl. 414-460.000.
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Dietz, Erwin; and Kroh, Adolf, 5,368,641, Cl. 106-495.000.
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Klenk, Klaus, 5,368,151, Cl. 198-426.000.
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Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, 5,369,066, Cl. 501-108.000.
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Moe, Erik; Goble, Greg H.; and Krueger, Leland R., 5,369,538, Cl. 360-106.000.
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Kiefer, Erich; Klusener, Peter; and Friedrichs, Karsten, 5,368,462, Cl. 425-150.000.
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Wilson, Ian G.; Hoare, Richard L.; and Krusina, Leo, 5,367,799, Cl. 38-77.700.
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Brugnara, Carlo; Kruskall, Margot S.; Goldberg, Mark A.; and Chambers, Linda A., 5,369,014, Cl. 435-29.000.
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Murai, Hideaki, 5,367,707, Cl. 2-19.000.
Kubo, Mitsunori: *See*—
Adachi, Yutaka; and Kubo, Mitsunori, 5,369,265, Cl. 235-462.000.
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Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.
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Gotoh, Tetsuya; Kondoh, Tosiyuki; Egawa, Keiichi; and Kubodera, Ken-ichi, 5,368,782, Cl. 252-587.000.
Kubota Corporation: *See*—
Murakawa, Masatake; Yuki, Mikio; Imanishi, Ryozo; Tone, Masatsugu; and Minoura, Akira, 5,367,861, Cl. 56-11.800.
Ogasawara, Hiroyuki; Yamashita, Nobuyuki; and Minoura, Akira, 5,367,864, Cl. 56-15.800.
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Kuivamaki, Ismo, to Kone Oy. Electromagnetic brake with rotational structure for wear adjustment. 5,368,138, Cl. 188-71.800.
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Kumar, Sharad: *See*—
Boyle, Bernard; and Kumar, Sharad, 5,368,855, Cl. 435-320.100.
Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, to Hitachi, Ltd. Dry etching apparatus and method. 5,368,685, Cl. 156-643.000.
Kung, Gregory E. Floating sound system. 5,369,796, Cl. 455-344.000.
Kung Ta Enterprise Co., Ltd.: *See*—
Wen-Ming, Chou, 5,368,361, Cl. 297-260.000.
Kunieda, Shigehiko; Ishino, Shigeo; Nakai, Takao; Hirai, Kazuo; Matsushita, Takao; and Takeshita, Kazuhide, to NGK Insulators, Ltd.; and Dow Corning Toray Silicone Co., Ltd. Process for insulating high voltage electrical conducting media. 5,369,161, Cl. 524-266.000.
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Nohda, Shigetoshi; and Kunii, Kakuji, 5,369,266, Cl. 250-208.100.
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Kuo, C. H.: *See*—
Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.
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Kawakami, Yukichika; and Shiiki, Zenya, 5,369,191, Cl. 525-471.000.
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Baumann, Helmut; Kurle, Juergen; and Eiberger, Peter, 5,369,060, Cl. 437-226.000.
Kurmis, Viktor, to Paul Hellermann GmbH. Appliance and process for tying an article, especially a cable harness. 5,368,278, Cl. 254-216.000.
Kuroda, Eiichi: *See*—
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,369,782, Cl. 455-16.000.
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Kitabayashi, Hiroyuki; Kuroda, Yoshiaki; and Kamada, Ikuo, 5,367,902, Cl. 72-37.000.
Kuroda, Yoshihide, to NEC Corporation. SONET transmission signal processing method and SONET transmission signal processing apparatus. 5,369,653, Cl. 371-67.100.
Kuroiwa, Hiroshi: *See*—
Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.
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Kurth, Wilfried: *See*—
Philipp, Helmut; and Kurth, Wilfried, 5,368,288, Cl. 271-215.000.
Kurzman, Alan M., to Triangle Pacific Corp. System of furniture merchandising and selection. 5,368,486, Cl. 434-79.000.
Kusaka, Teruo, to NEC Corporation. Method of fabricating integrated circuit chip package. 5,367,765, Cl. 29-840.000.
Kusakabe Electric & Machinery Co. Ltd.: *See*—
Omura, Kazuo, 5,368,218, Cl. 228-19.000.
Kusmierczyk, Robert C.; Dross, Brian D.; and Dinger, Fred B., III, to Linvatec Corporation. Method and apparatus for increasing the pressure in a medical pumping system. 5,368,559, Cl. 604-28.000.
Kuster, Kaspar, to Ciba-Geigy Corporation. Coating apparatus for boards. 5,368,643, Cl. 118-324.000.
Kusumoto, Toshihiko, to Canon Kabushiki Kaisha. Automatic sheet feeding apparatus. 5,368,285, Cl. 271-9.000.
Kusunoki, Shigeru; and Inuishi, Masahide, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor including silicon oxide film and nitrided oxide film as gate insulator film and manufacturing method thereof. 5,369,297, Cl. 257-411.000.

Kutten, Shay: *See—*
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.

Kuwahara, Tesshu, to Kabushiki Kaisha Toshiba. Image forming apparatus with magnification varying function. 5,369,465, Cl. 355-57.000.

Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, to Kabushiki Kaisha Toshiba. Heating cooker. 5,369,253, Cl. 219-707.000.

Kvinge, Daniel J.: *See—*
Johnson, Harold; Kvinge, Daniel J.; Plager, Steven P.; and Zarneke, Richard D., 5,368,452, Cl. 417-395.000.

Kwon, Kyung A., to Gold Star Co., Ltd. Inductor arrangement for an induction heating apparatus. 5,369,249, Cl. 219-624.000.

Kwon, Kyung A., to Goldstar Company, Ltd. Food weight detecting device for a microwave oven. 5,369,254, Cl. 219-708.000.

Kwon, Oh B., to Hyundai Electronics Industries Co., Ltd. Digital-/analog converter circuit utilizing compensation circuitry. 5,369,402, Cl. 341-136.000.

Kwon, Oh-Kyong: *See—*
Ng, Wia T.; and Kwon, Oh-Kyong, 5,369,045, Cl. 437-41.000.

Kwon, Young I., to VLSI Technology, Inc. Method and apparatus for cooling a molded-plastic integrated-circuit package. 5,369,550, Cl. 361-690.000.

Kychakoff, George; Anderson, Stephen N.; Seymore, George E.; and Manchester, Earl B., to Babcock & Wilcox Company, The. Method and apparatus for use in monitoring and controlling a black liquor recovery furnace. 5,368,471, Cl. 431-12.000.

Kyomura, Nobuo: *See—*
Hosokawa, Akemi; Ikeda, Osamu; Minami, Noriko; and Kyomura, Nobuo, 5,369,085, Cl. 504-249.000.

Kyoraku Co., Ltd.: *See—*
Koike, Yoshio; Matsumoto, Kazuya; and Saito, Hisatoshi, 5,368,808, Cl. 264-512.000.

L.C.C. Consulting Inc.: *See—*
Leonard, Cynthia D.; and Gayne, Lawrence, 5,367,715, Cl. 2-401.000.

L. R. Nelson Corporation: *See—*
Hayes, Jerry R.; and Heren, Lawrence P., 5,368,229, Cl. 239-69.000.

La Force Hardware & Manufacturing Co.: *See—*
Diedrich, Lyle, 5,367,844, Cl. 52-239.000.

Laarmann, Hans-Wilhelm: *See—*
Victor, Karl-Heinz; Laarmann, Hans-Wilhelm; Dedeken, Ralf; and Maser, Gustav, 5,368,314, Cl. 277-96.100.

Labarre, Ernest D.; and Austin, Jerrold N., to Fiskars Inc. Resilient lock for a hand tool. 5,367,774, Cl. 30-262.000.

Laboratorium Prof. Dr. Rudolf Berthold GmbH & Co.: *See—*
Kassen, Rudiger; Klein, Albert; and Weber, Jean M., 5,369,368, Cl. 324-632.000.

Labuda, Lawrence L.: *See—*
Knodle, Daniel W.; Graham, Paul K.; and Labuda, Lawrence L., 5,369,277, Cl. 250-343.000.

Lafforthun, David. Animal trap. 5,367,820, Cl. 43-61.000.

La Fleur, Edward E.; Amici, Robert M.; Freed, William T.; Work, William J.; and Carson, William G., to Rohm and Haas Company. Polymer blends with enhanced properties. 5,369,169, Cl. 525-57.000.

Lagowski, Jacek, to University of South Florida. Semiconductor contaminant sensing system and method. 5,369,495, Cl. 356-418.000.

Lahm, George P.: *See—*
Harrison, Charles R.; and Lahm, George P., 5,369,121, Cl. 514-403.000.

Lahr, Wolfgang; and Weickgenannt, Guido, to Henning Berlin GmbH Chemie- und Pharmawerk. Formulation of oxypurinol and/or its alkali and alkaline earth salts. 5,368,864, Cl. 424-489.000.

Lai, Yang-Chuan. BNC T-type adapter. 5,368,494, Cl. 439-188.000.

L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See—*
Chevrel, Henri; and Boireau, Alain, 5,368,223, Cl. 228-214.000.

Laitram Corporation, The: *See—*
Burch, Ronald H.; Sutton, Mark E.; Henry, Frank B.; and Cancienne, Warren E., 5,367,929, Cl. 83-177.000.

Lake, Jemaes K.: *See—*
Gonya, Stephen G.; Lake, Jemaes K.; Long, Randy C.; and Wild, Roger N., 5,368,814, Cl. 420-587.000.

Lalain, Jean-Jacques: *See—*
Martin, Jean-Jacques; Lescuyer, Jean-Philippe; Cartoux, Rene ; Lalain, Jean-Jacques; Michel, Frederic; and Samani, Jacques, 5,368,594, Cl. 606-61.000.

Lam, Juan F.: *See—*
Tangonan, Gregory L.; and Lam, Juan F., 5,369,522, Cl. 359-329.000.

Lam, Ken, to Atmel Corporation. TAB testing of area array interconnected chips. 5,367,763, Cl. 29-827.000.

LAM Research Corporation: *See—*
Chen, Ching-Hwa; Liu, David; and Tran, Duc, 5,368,710, Cl. 204-192.320.
Yasuda, Arthur K.; Denison, Dean R.; Mundt, Randall S.; and Tappan, James E., 5,368,646, Cl. 118-723.00R.

Lamb, James, III: *See—*
Flaim, Tony D.; Lamb, James, III; Moeckli, Kimberly A.; and Brewer, Terry, 5,368,989, Cl. 430-271.000.

Lambert, Bart J.; Jansens, Stefan K.; and Peferoen, Marnix, to Plant Genetic Systems, N.V. *Bacillus thuringiensis* strains toxic to diabrotica species. 5,369,027, Cl. 435-252.200.

Lamberti, Donna M.; Prager, John M.; and Nappari, Mark, to International Business Machines Corporation. Constrained natural language interface for a computer system. 5,369,575, Cl. 364-419.080.

LaMED, Inc.: *See—*
Lamont, William D., 5,367,789, Cl. 36-9.00R.

Lammers, Ted J.; Newman, Norman; Romaszewski, Karen M.; Scanlan, David J.; and Fenoglio, Alfredo, to Minnesota Mining and Manufacturing Company. Method for producing a multilayered element having a top coat. 5,368,894, Cl. 427-407.100.

Lamont, William D., to LaMED, Inc. Protective medical boot and orthotic splint. 5,367,789, Cl. 36-9.00R.

Land, Horst-Tore; Gedan, Michaela; Ratzsch, Manfred; and Bohme, Frank, to Hoechst Aktiengesellschaft. Amorphous polyesterimides which can be processed as thermoplastics. 5,369,209, Cl. 528-170.000.

Langdon, Fred M.; Burchnall, John B.; and Hyde, Gregory B., to Procter & Gamble Company, The. Fluid-pervious plastic web having improved fluid drainage. 5,368,909, Cl. 428-137.000.

Langdon, Fred M., to Procter & Gamble Company, The. Macroscopically expanded plastic web having improved fluid drainage. 5,368,910, Cl. 428-137.000.

Lanyon, Joseph G. Exhaust treatment apparatus. 5,367,889, Cl. 60-297.000.

Lappe, Peter: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.

Lapsley, Robert M.: *See—*
Kalis, George, Jr.; and Lapsley, Robert M., 5,368,357, Cl. 296-183.000.

Larew, Hiram G., III: *See—*
Locke, James C.; Walter, James F.; and Larew, Hiram G., III, 5,368,856, Cl. 424-195.100.

Larson, David; Stubbs, Robert E.; and Edstrom, Gene, to Fujitsu Limited. Checking for proper locations of storage devices in a storage array. 5,369,758, Cl. 395-575.000.

Larson, Jerry B. Panel spacer and joint. 5,367,851, Cl. 52-585.100.

Larson, L. Robert. Pre-conditioned air hose assembly for aircraft. 5,368,341, Cl. 285-260.000.

Larsson, Bo V.: *See—*
Johansson, Hans E.; and Larsson, Bo V., 5,368,833, Cl. 423-338.000.

LaRue, Butch: *See—*
Heilman, Raymond D.; and LaRue, Butch, 5,367,909, Cl. 73-468.000.

LaserMaster Corporation: *See—*
Erickson, Paul E., 5,369,429, Cl. 347-7.000.

LaserSurge, Inc.: *See—*
Sauer, Jude S.; and Greenwald, Roger J., 5,368,601, Cl. 606-144.000.

Lasko Metal Products, Inc.: *See—*
Litvin, Charles; and Haffken, Kurt F., 5,368,445, Cl. 416-246.000.

Lassen, Bernd: *See—*
Balzeit, Ralf; Behrens, Gunnar; Bloehdorn, Gerhard; Lassen, Bernd; Penza, Hans; and Roth, Norbert, 5,369,425, Cl. 346-138.000.

Lassmann, Walter: *See—*
Hartung, Michael; Lassmann, Walter; Poth, Ulrich; and Wegner, Egon, 5,368,944, Cl. 428-423.100.

Latess, Mark J.: *See—*
Spear, Frank M.; and Latess, Mark J., 5,367,862, Cl. 56-12.700.

Latham, Raymond E.; and Mynheir, Charles R., to Reflange, Inc. Misalignment flange and method for use. 5,368,342, Cl. 285-261.000.

Latka, David S., to United Technologies Automotive, Inc. Resynchronizing transmitters to receivers for secure vehicle entry using cryptography or rolling code. 5,369,706, Cl. 380-23.000.

Latorraca, Gary, to Puritan-Bennett Corporation. System and method for operating a respirator compressor system under low voltage conditions. 5,368,019, Cl. 128-204.180.

Latsch, Stefan A.: *See—*
Hiraoka, Hiroyuki; Latsch, Stefan A.; and Xiao, Rong-Fu, 5,368,681, Cl. 427-585.000.

Lau, Chun P. Automatic molding system. 5,368,793, Cl. 264-39.000.

Lau, Peter: *See—*
Failla, Stephen J.; Hildwein, Roger L.; and Lau, Peter, 5,368,600, Cl. 606-139.000.

Laughner, Michael K., to Dow Chemical Company, The. Polycarbonate/aromatic polyester blends containing an olefinic modifier. 5,369,154, Cl. 523-436.000.

Lautenschlager, Werner. Sample holder for decomposition of analysis of sample materials. 5,368,820, Cl. 422-102.000.

Lautrec, Peter. Gun stock extender for a rifle. 5,367,812, Cl. 42-74.000.

Lavallee, Ronald L.: *See—*
Aslami, Mohd; and Lavallee, Ronald L., 5,369,518, Cl. 359-171.000.

Law, Chun C., to World Wide Stationery Manufacturing Co., Ltd. Ring binder carrier rails. 5,368,407, Cl. 402-36.000.

Lawrence, Kristine B.; and Evans, Steven, to Eastman Kodak Company. Indoaniline dye mixture in dye-donor element for thermal dye transfer. 5,369,080, Cl. 503-227.000.

Layfield Company, Inc.: *See—*
Russell, Michael L., 5,368,653, Cl. 134-24.000.

Lazar, Albert G.: *See—*
Lazar, Norma; and Lazar, Albert G., 5,367,729, Cl. 5-494.000.

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La Zonby, Judy G., to Nalco Chemical Company. Synergistic activity of glutaraldehyde in the presence of oxidants. 5,368,749, Cl. 210-756.000.

Le, Tien Q.: *See—*
Phan, Duc T.; and Le, Tien Q., 5,369,345, Cl. 318-561.000.

Leaf, Roger C.: *See—*
Pittard, Frederick J., Jr.; Roos, Albert E., Jr.; Leaf, Roger C.; and Drews, Steven W., 5,368,109, Cl. 175-45.000.

Lebby, Michael S.: *See—*
Kuo, Shun-Meen; Chun, Christopher K. Y.; and Lebby, Michael S., 5,369,529, Cl. 359-858.000.
Richard, Fred V.; and Lebby, Michael S., 5,369,415, Cl. 345-6.000.

Leblebicioglu, Hakan, to Standard Microsystems, Inc. Programmable phase locked loop circuit and method of programming same. 5,369,376, Cl. 331-8.000.

Lech, Robert; Medina, Mitchell A.; and Elias, Catherine B., to System X, L. P. Information processing methodology. 5,369,508, Cl. 358-462.000.

Lechleiter, Robert J., to Akzo Nobel N.V. Ampule shield. 5,368,587, Cl. 604-416.000.

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Chauveteau, Guy; Lecourtier, Jacqueline; Plazanet, Veronique; and Putz, Antide, 5,368,101, Cl. 166-273.000.

Lecuyer, Alain, to Cordis Corporation. Implantable drainage valve for the treatment of hydrocephalus. 5,368,556, Cl. 604-8.000.

Lederman, Barry P.; and Callaghan, David T., to Gillette Company, The. High efficacy aerosol antiperspirant composition. 5,368,842, Cl. 424-47.000.

Ledford, James T. Line releasing fishing float. 5,367,819, Cl. 43-43.110.

Lee, Chang P.: *See—*
Choi, Jong S.; and Lee, Chang P., 5,369,405, Cl. 341-63.000.

Lee, Han-Sheng; Staller, Steven E.; Logsdon, James H.; and Chilcott, Dan W., to Delco Electronics Corporation. Method of making and sealing a semiconductor device having an air path therethrough. 5,369,057, Cl. 437-209.000.

Lee, Hyong G.: *See—*
Lim, Young H.; and Lee, Hyong G., 5,369,608, Cl. 365-104.000.

Lee, Jeffrey A., to Schneider (USA) Inc. Dilatation balloon catheter with infusion lumen. 5,368,567, Cl. 604-102.000.

Lee, Lucy F.: *See—*
Nazerian, Keyvan; Lee, Lucy F.; Yanagida, Noboru; Ogawa, Ryohei; and Li, Yi, 5,369,025, Cl. 435-235.100.

Lee, Mary J.: *See—*
Aebi, Kurt J.; Grypa, Roman D.; Aung, Thein; and Lee, Mary J., 5,368,873, Cl. 426-310.000.

Lee, Peter S. K.: *See—*
Middleditch, Brian S.; and Lee, Peter S. K., 5,369,031, Cl. 435-284.000.

Lee, Robert W.: *See—*
Baker, Edward J.; Lee, Robert W.; Cooper, Eugene R.; Toner, John L.; and Illig, Carl R., 5,368,837, Cl. 424-5.000.

Lee, Roger, to Cheng Long Plastic Co., Ltd. Laser marker. 5,367,779, Cl. 33-290.000.

Lee, Sang-rak, to Samsung Electronics Co., Ltd. Video signal processing system removing redundant information from chroma/motion separation output. 5,369,448, Cl. 348-668.000.

Lee, Shu W.: *See—*
Tong, Sidney; and Lee, Shu W., 5,367,775, Cl. 30-324.000.

Lee, Woo H. Displacer apparatus of a split stirling cooler. 5,367,880, Cl. 62-6.000.

Lee, Young-Sub, to SamSung Electronics Co., Ltd. Method and circuit for saving the power of a battery used in a portable radio telephone. 5,369,798, Cl. 455-33.100.

Leenslag, Jan W.: *See—*
De Vos, Rik; and Leenslag, Jan W., 5,368,769, Cl. 252-182.200.

Lees, Robert G.: *See—*
Wu, Kuang-Jong; Lucas, Howard R.; Lees, Robert G.; and Albrecht, Nicholas J., 5,369,204, Cl. 526-304.000.

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Maeda, Noboru; Miura, Tatsuo; and Murakami, Haruo, to Nippondenso Co., Ltd. System for restoring controlled unit from abnormal condition. 5,369,569, Cl. 364-184.000.

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Nakatani, Herbert Y.; and Malik, Vedpal S., 5,369,023, Cl. 435-193.000.

Mallik, Debendra: *See—*
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Furuta, Katsuhisa; Abe, Akira; Ito, Akinori; and Manabe, Hiroyuki, 5,369,567, Cl. 364-149.000.

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Kychakoff, George; Anderson, Stephen N.; Seymore, George E.; and Manchester, Earl B., 5,368,471, Cl. 431-12.000.

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Mannava, Seetharamaiah; Pratt, Vanon D.; MacLaren, Henry; Jackson, Joseph J.; and Kenney, Patrick M., to General Electric Company. Method for fabrication of composite materials and composite. 5,368,911, Cl. 428-167.000.

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Willer, Rodney L.; Day, Robert S.; and Marchand, Alan P., 5,368,662, Cl. 149-19.900.

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Markling, Tracy A., to Poly-Flex, Inc. Molded wheel with integral axle retainer. 5,368,371, Cl. 301-64.700.

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Doke, Michael J.; Howarth, Richard A.; and Recine, Leonard J., Sr., 5,367,879, Cl. 62-3.600.
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Mejerl, Thomas; and Vozeler-Pape, Franz, 5,369,237, Cl. 200-524.000.

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Nell, David J.; and Zenz, Frederick A., 5,368,824, Cl. 422-143.000.

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Mars Incorporated: *See—*
Comfort, John J., 5,369,690, Cl. 379-106.000.

Marsala, Joseph: *See—*
Phillips, Benjamin A.; Zawacki, Thomas S.; and Marsala, Joseph, 5,367,884, Cl. 62-101.000.

Martin, Blake C. Pickup bed cap having passenger seat. 5,368,354, Cl. 296-64.000.

Martin, Eugene G.: *See—*
Curtis, Michael J.; and Martin, Eugene G., 5,368,519, Cl. 452-135.000.

Martin, Frederick W. Chromatically compensated particle-beam column. 5,369,279, Cl. 250-396.00R.

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Martin, Phil; and Packer, Alan, to Intel Corporation. Method and circuitry for selecting a free interrupt request level from a multiplicity of interrupt request levels in a personal computer system. 5,369,769, Cl. 395-725.000.

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Thompson, Hugh A.; Martin, Tracey A.; and Inglin, Thomas A., 5,368,926, Cl. 428-284.000.

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Stuber, Fred A.; Martinez, Michael M.; Morgan, Michael J.; and Chandalia, Kiran B., 5,369,208, Cl. 528-53.000.

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Jaggi, Heinz; and Marty, Bruno, 5,367,963, Cl. 108-147.000.

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Miyazawa, Azuma; Mizobuchi, Kouji; Ito, Takeshi; Ide, Masataka; Maruyama, Atsushi; Kikuchi, Juro; and Imai, Yuji, 5,369,462, Cl. 354-430.000.

Maruyama, Hiroshi: *See—*
Kiryu, Naohiko; Maruyama, Hiroshi; Minezaki, Etsuko; and Watanabe, Yoshinori, 5,368,962, Cl. 430-7.000.

Maruyama, Koji: *See—*
Sunami, Masaki; Maruyama, Koji; Hori, Mitsuhiko; Tokuda, Shoichi; Saito, Kenichiro; and Kishi, Ikuo, 5,368,860, Cl. 424-448.000.

Maruyama, Mitsuhiro. Apparatus for manufacturing crystals through floating zone method. 5,367,981, Cl. 117-200.000.

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Maruyama, Teruo: *See—*
Kawamura, Masahiro; Takigawa, Masuo; Kondou, Yasuhiro; Hamada, Tutomu; Maruyama, Teruo; and Masuo, Akio, 5,367,997, Cl. 123-399.000.

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Maruzen Petrochemical Co., Ltd.: *See—*
Fukuda, Masaru, 5,369,002, Cl. 435-6.000.

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Kenjiro, Uematsu; Yosimitu, Kaga; and Masaki, Saito, 5,368,473, Cl. 431-153.000.

Mascia, Francesco: *See—*
Addeo, Antonio; Mascia, Francesco; Vezzoli, Annibale; and Biscotti, Aurelio, 5,368,458, Cl. 425-4.00R.

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McCaughey, John F., 5,367,770, Cl. 29-897.320.

Masegi, Koichi; Fujita, Minoru; and Shibata, Shogo, to Canon Kabushiki Kaisha. Sentence generating system. 5,369,574, Cl. 364-419.080.

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Victor, Karl-Heinz; Laarmann, Hans-Wilhelm; Dedeken, Ralf; and Maser, Gustav, 5,368,314, Cl. 277-96.100.

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Mason, Russell W., to Hewlett-Packard Company. Domino style address predecoder. 5,369,621, Cl. 365-230.060.

Masoomian, Stephen Z., to Stone & Webster Engineering Corp. Apparatus for treating and regenerating spent caustic. 5,368,726, Cl. 210-188.000.

Massachusetts Institute of Technology: *See—*
Furumoto, Horace W.; Goltsos, William C.; Rediker, Robert H.; and Sze, Robert, 5,369,659, Cl. 372-50.000.
Lim, Jae S., 5,369,724, Cl. 395-2.150.

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Massari, Donald J., Jr., to Senco Products, Inc. Magazine for a pneumatic fastener driving tool. 5,368,213, Cl. 227-123.000.

Mast, Richard, to Amuse Me, Inc. Wind operated sound producing pinwheel. 5,368,515, Cl. 446-217.000.

Masters, William E.: *See—*
Hamilton, Don A.; and Masters, William E., 5,367,975, Cl. 114-347.000.

Mastrangelo, Carlos H., to Ford Motor Company. Silicon-on-insulator capacitive surface micromachined absolute pressure sensor. 5,369,544, Cl. 361-283.400.

Mastri, Dominick L.: *See—*
Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., 5,368,599, Cl. 606-139.000.

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Masuda, Yasuo: *See—*
Tanaka, Hiroshi; and Masuda, Yasuo, 5,368,714, Cl. 205-76.000.

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Tajima, Yusuke; Bessho, Nobuo; Takinishi, Fumitake; Yokoyama, Yasuaki; and Masuko, Hideaki, 5,368,976, Cl. 430-176.000.

Masuko, Takashi: *See—*
Ogata, Mitsuru; Kobayashi, Hiroyuki; Inagaki, Toshitake; Masuko, Takashi; and Takeuchi, Hiroshi, 5,368,310, Cl. 273-448.000.

Masumoto, Daiki; Kato, Hideki; Yoshizawa, Hideki; and Iciki, Hiroki, to Fujitsu Limited. Asynchronous control system for a neuro computer. 5,369,731, Cl. 395-24.000.

Masumoto, Hisayuki: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Ishida, Tokuji; Masumoto, Hisayuki; Tokumaru, Hisashi; and Metabi, Tsuneyo, 5,369,460, Cl. 354-400.000.

Masumoto, Tsuyoshi; Inoue, Akihisa; Odera, Katsumasa; and Oguchi, Masahiro, to Yoshida Kogyo K.K.; and Masumoto, Tsuyoshi. High strength, heat resistant aluminum-based alloys. 5,368,658, Cl. 148-403.000.

Masunaga Menlo Park Co., Ltd.: *See—*
Nakamura, Masayuki; Shiroyama, Kaisuke; Masunaga, Satoru; and Murata, Kazuo, 5,368,661, Cl. 148-512.000.

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Nakamura, Masayuki; Shiroyama, Kaisuke; Masunaga, Satoru; and Murata, Kazuo, 5,368,661, Cl. 148-512.000.

Masuo, Akio: *See—*
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Masuzaki, Hidefumi: *See—*
Kurosu, Yasuo; Wada, Shuhei; Yokoyama, Yoshihiro; and Masuzaki, Hidefumi, 5,369,742, Cl. 395-147.000.

Mataki, Hiroshi: *See—*
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Matheis, Mark A.: *See—*
Christy, Orrin D.; Pickett, John E.; Swanson, Leo; Matheis, Mark A.; and Cousoulis, Marc, 5,368,334, Cl. 283-67.000.

Mathey, Maurice. Football tee. 5,368,294, Cl. 273-55.00B.

Mathre, David J.: *See—*
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Matkowitch, Mario: *See—*
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Matsuda, Hiroshi; Kawada, Haruki; Kasanuki, Yuji; Yanagisawa, Yoshiharo; and Morikawa, Yuko, to Canon Kabushiki Kaisha. Apparatus and method for producing monomolecular films or monomolecular built-up films. 5,368,895, Cl. 427-430.100.

Matsuda, Kazuhiko, to NEC Corporation. Optical parallel receiver. 5,369,350, Cl. 319-189.000.

Matsuda, Morikatsu, to Amada Company, Limited. Turret punch press. 5,367,935, Cl. 83-552.000.

Matsuda, Toyohiko; Nishino, Masakazu; and Awamoto, Shigeru, to Matsushita Electric Industrial Co., Ltd. Orthogonal transform encoder using DC component to control quantization step size. 5,369,439, Cl. 348-405.000.

Matsuda, Yasuhiko: *See—*
Morioka, Koitsu; and Matsuda, Yasuhiko, 5,367,758, Cl. 29-410.000.

Matsui, Jin-Joo: *See—*
Yoshimura, Masashi; Matsui, Jin-Joo; Yamamoto, Takehisa; and Yamakawa, Akira, 5,369,065, Cl. 501-97.000.

Matsui, Noboru: *See—*
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Matsui, Tetsuya: *See—*
Yokose, Kenji; Nagase, Makoto; Kamimura, Hiroshi; Asakura, Yamato; Matsui, Tetsuya; Ibe, Hidefumi; Nishino, Yoshitaka; and Uchida, Shunsuke, 5,369,674, Cl. 376-245.000.

Matsui, Yoshinori, to NEC Corporation. Semiconductor memory device having clamping circit for suppressing potential differences between pairs of data I/O lines. 5,369,613, Cl. 365-189.060.

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Ishii, Kenji; Nakai, Takamasa; and Matsumoto, Hiroyuki, 5,368,921, Cl. 428-228.000.

Matsumoto, Junichi; Okamoto, Takuji; Watanabe, Masami; and Ishihara, Nobuhide, to Idemitsu Kosan Co., Ltd. Production process of olefin based polymers. 5,369,196, Cl. 526-127.000.

Matsumoto, Kazuya: *See—*
Koike, Yoshio; Matsumoto, Kazuya; and Saito, Hisatoshi, 5,368,808, Cl. 264-512.000.

Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; Saitoh, Kenji; Hasegawa, Masanobu; and Sentoku, Koichi, to Canon Kabushiki Kaisha. Position detector for detecting the position of an object using a diffraction grating positioned at an angle. 5,369,486, Cl. 356-349.000.

Matsumoto, Takayuki: *See—*
Kosugi, Hiroaki; Matsumoto, Takayuki; and Enoki, Takashi, 5,369,789, Cl. 455-126.000.

Matsumoto, Yoshimi, to NEC Corporation. Interface circuit capable of performing exact data transfer. 5,369,672, Cl. 375-106.000.

Matsumoto, Yutaka; and Kawada, Nozomu, to Kabushiki Kaisha Toshiba. AGC circuit of FM front-end portion for controlling bandwidth detection sensitivity. 5,369,792, Cl. 455-245.100.

Matsumura, Noriaki: *See—*
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.

Matsumura, Shogo: *See—*
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.

Matsuo, Hiroshi: *See—*
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Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, to Fujisawa Pharmaceutical Co., Ltd. Thiazole derivatives, processes for production thereof and pharmaceutical compositions comprising the same. 5,369,107, Cl. 514-252.000.

Matsuo, Shigeru: *See—*
Fukushima, Tadashi; Matsuo, Shigeru; Yoshida, Shoji; and Komagawa, Tooru, 5,369,744, Cl. 395-162.000.

Matsuoka, Noriyuki; and Egawa, Masanori, to Yamaichi Electric Co., Ltd. Socket for receiving electric part. 5,368,498, Cl. 439-331.000.

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Konishi, Akio; Sakai, Yoshitomo; Saito, Yoshiyuki; and Yoshio, Hideaki, 5,369,536, Cl. 360-85.000.
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Nomura, Kazuya; and Watanabe, Taisuke, 5,369,727, Cl. 395-2.610.
Takahashi, Kazuaki; Hasegawa, Makoto; Makimoto, Mitsuo; and Fujimura, Munenori, 5,369,383, Cl. 333-204.000.
Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, 5,369,664, Cl. 375-1.000.
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Matsushita Electric Works, Ltd.: *See—*
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Matsushita, Takao: *See—*
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Matsuura, Kazuo: *See—*
Sano, Akira; Shiraishi, Takeichi; Suzuki, Kunihiro; Okamoto, Mitsuo; and Matsuura, Kazuo, 5,369,193, Cl. 526-116.000.

Matsuura, Yuuji: *See—*
Anzai, Mitsutoshi; Akuzawa, Noboru; Matsuura, Yuuji; and Sugiyama, Genpei, 5,368,971, Cl. 430-110.000.

Matsuzaki, Shin-ichi, to Sumitomo Electric Industries, Ltd. Method of calculating scale factor of gyro. 5,367,898, Cl. 73-1.00E.

Matzer, Herbert: *See—*
Honig, Helmut; Matzer, Herbert; Pampouchidis, Georg; and Paar, Willibald, 5,369,190, Cl. 525-433.000.

Mauelshagen, Wilhelm: *See—*
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Max-Planck-Institut fuer Eisenforschung GmbH: *See—*
Stratmann, Martin; and Streckel, Heinz, 5,369,370, Cl. 324-663.000.

Mayer, Claus. Apparatus for cameras permitting the taking of in situ pictures in water. 5,369,455, Cl. 354-64.000.

Maytag Corporation: *See—*
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Mazda Motor Corporation: *See—*
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Sanematsu, Hiroaki; and Hagihara, Tatsumi, 5,368,530, Cl. 477-43.000.
Takahashi, Toshiki; and Tanimoto, Yoshio, 5,368,723, Cl. 208-427.000.

Maze, Robert C.; and Trueba, Kenneth E., to Hewlett-Packard Corporation. Bidirectional ink jet printing. 5,369,428, Cl. 347-5.000.

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Rastgar, Farid; Cho, Sung-Soo; Bryant, Diane; and Mazumder, Nikhil, 5,369,643, Cl. 371-15.100.

Mazziotti, Philip J., to Zeller Corporation, The. Fixed CV universal joint with serviceable inserts. 5,368,523, Cl. 464-144.000.

Mazzocchi, Romano: *See—*
Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, 5,369,186, Cl. 525-330.700.

McAllister, Lance A.: *See—*
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McAteer, Jeffrey P.; and Wilis, Kevin D., to AT&T Corp. Compact loudspeaker assembly. 5,369,701, Cl. 379-420.000.

McCallum, Timothy P. Convertible hat and bag assembly. 5,367,713, Cl. 2-209.120.

McCann, Dominic P. J.: *See—*
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McCann, Peggy J.: *See—*
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McCarthy, Donald F.: *See—*
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Dodt, William C.; Liehe, Thomas G.; McCarthy, Donald F.; and Milligan, Charles A., 5,369,641, Cl. 371-2.200.

McCarthy, Veronica L.: *See—*
Diaz, Thomas P.; Contreras, Gary W.; Gordon, Gerald M.; McCarthy, Veronica L.; and Weinstein, Daniel, 5,369,675, Cl. 376-249.000.

McCaughey, John F., to Masco Industries, Inc. Method for embossing indented door light opening edge. 5,367,770, Cl. 29-897.320.

McCombs, William F.; and Aiken, Jeffrey D., to Emergency One, Inc. Fire truck torque box chassis frame. 5,368,317, Cl. 280-4.000.

McConnohie, Duane V., to Roof Hugger Inc. Bracket. 5,367,848, Cl. 52-336.000.

McCormack, Edward A.: *See—*
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McCormick & Company, Inc.: *See—*
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McCracken, Robert. Melanoma detection device. 5,369,527, Cl. 359-805.000.

McCray, Kimothy R. Hand-held surface cleaning apparatus. 5,367,740, Cl. 15-320.000.

McCulloch, Thomas R.: *See—*
Jacobson, Wendell L.; McCulloch, Thomas R.; and McCully, Dudley L., 5,368,340, Cl. 285-158.000.

McCulloh, Mark, to Controlled Para-Sailing Corp. of America, Ltd. Para-sail rope guide system. 5,367,972, Cl. 114-253.000.
McCullough, David J., to Trippe Manufacturing Company. Standby power supply system having a variable frequency inverter. 5,369,561, Cl. 363-37.000.
McCully, Dudley L.: *See—*
Jacobson, Wendell L.; McCulloch, Thomas R.; and McCully, Dudley L., 5,368,340, Cl. 285-158.000.
Mc Donald, Alexander C.: *See—*
Rossi, Anthony M.; and Mc Donald, Alexander C., 5,368,775, Cl. 252-392.000.
McDonnell Douglas Corporation: *See—*
Lindsay, William E., 5,368,807, Cl. 264-510.000.
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McGinnis, Merrill F. Temperature limiting control valve for a shower head. 5,368,227, Cl. 236-92.00R.
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McKee, Richard C.; Baumler, Sandra L.; and Schimert, Thomas R., to Westinghouse Electric Corporation. Eutectic bond and method of gold/titanium eutectic bonding of cadmium telluride to sapphire. 5,368,880, Cl. 427-125.000.
McKenzie, Valance W. Gauge protection apparatus. 5,367,908, Cl. 73-431.000.
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Hollander, Milton B.; and McKinley, W. Earl, 5,368,392, Cl. 374-121.000.
McKissick, Todd A. Switchable power outlet. 5,368,490, Cl. 439-52.000.
McKnight, Alexander; and Woodruff, Geoffrey N., to Warner-Lambert Company. 7-((substituted)amino-8-((substituted)carbonyl)-methylamino-1-oxaspiro(4,5)decanes useful in Parkinson's disease, dystonia, and other movement disorders. 5,369,105, Cl. 514-212.000.
McLaury, Loren L., to Micron Semiconductor, Inc. Memory with isolated digit lines. 5,369,622, Cl. 365-233.000.
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McMillon, Donald C. Air conditioner filter frame. 5,368,622, Cl. 55-497.000.
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Deacon, Ernie L.; and McMullin, Faris W., 5,367,793, Cl. 36-127.000.
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Ketcham, Mark G.; McNaughton, James; and Zielinski, Robert J., 5,368,275, Cl. 251-149.600.
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Edwards, John W.; Harper, Daniel R.; and McNew, Quinton B., 5,368,376, Cl. 305-35.0EB.
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Schmoegner, John C.; and Swenson, Charles B., 5,368,821, Cl. 422-116.000.
Mead Corporation, The: *See—*
Oliff, James R.; and Stout, James T., 5,368,194, Cl. 221-305.000.
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Nazarian, Richard A.; Agnew, Marc H.; Schneider, Daniel E.; and Mead, Wilfred A., 5,368,554, Cl. 604-4.000.
Medex, Inc.: *See—*
DeLong, Russell I., 5,368,565, Cl. 604-100.000.
Medical Development Systems, Inc.: *See—*
Rambo, Robert D.; and Yorke, John, 5,368,560, Cl. 604-35.000.
Medina, Marelyn. Laparoscopic training device and method of use. 5,368,487, Cl. 434-262.000.
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Lech, Robert; Medina, Mitchell A.; and Elias, Catherine B., 5,369,508, Cl. 358-462.000.
Medtronic, Inc.: *See—*
Carney, James K., 5,368,040, Cl. 128-700.000.
Reairie, Wim C. M.; and Schmidt, Craig L., 5,369,364, Cl. 324-430.000.
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Covington, Roger G.; Malburne, Karen A.; Mehl, Douglas C.; and Niedospial, John, 5,368,578, Cl. 604-232.000.
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Harari, Eliyahou; Guterman, Daniel C.; Mehrotra, Sanjay; and Gross, Stephen J., 5,369,615, Cl. 365-218.000.
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Steiner, Karl; Meinecke, Albrecht; and Gaugenmaier, Karl, 5,368,697, Cl. 162-360.200.
Mejerl, Thomas; and Vozeler-Pape, Franz, to Marquardt GmbH. Electrical switch. 5,369,237, Cl. 200-524.000.
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Hayden, Richard A.; Melchert, James A.; and Phaneuf, Charles A., 5,368,355, Cl. 296-65.100.
Melillo, Michele; and Jacobsson, Kurt A. G., to Iro AB. Thread brake. 5,368,244, Cl. 242-149.000.
Mellem, Joachim: *See—*
Hirschmann, Klemens; and Mellem, Joachim, 5,368,623, Cl. 65-454.000.
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Conrod, Jay B.; Menkin, Paul; and Cercone, Durand A., 5,368,718, Cl. 205-101.000.
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Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.
Colegrove, George, 5,368,862, Cl. 424-464.000.
Hammond, Milton L.; Balkovec, James M.; and Mathre, David J., 5,369,093, Cl. 514-11.000.
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Grebner, Michael; Reich, Axel; Reichert, Horst; Schuth, Ferdi; and Unger, Klaus, 5,368,836, Cl. 423-706.000.
Rieger, Bernhard; Hittich, Reinhard; Poetsch, Eike; Coates, David; and Plach, Herbert, 5,368,772, Cl. 252-299.630.
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Mermelstein, Seymour, to SwimEx Systems Inc. Tank having fluid flow controlling apparatus. 5,367,719, Cl. 4-488.000.
Merril, Carl R.: *See—*
Polymeropoulos, Mihael H.; and Merril, Carl R., 5,369,004, Cl. 435-6.000.
Merrill, Douglas P., Jr.; and Hamilton, Robert F., to AlliedSignal Inc. Antenna cover fabric for microwave transmissive emitters. 5,368,924, Cl. 428-241.000.
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King, Steven R.; and Walser, Michael W., 5,367,999, Cl. 123-458.000.
Messaoudene, Mohamed: *See—*
Gholizadeh, Dariush; Assarpour, Hamid; and Messaoudene, Mohamed, 5,369,737, Cl. 395-126.000.
Metabi, Tsuneyo: *See—*
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Ishida, Tokuji; Masumoto, Hisayuki; Tokumaru, Hisashi; and Metabi, Tsuneyo, 5,369,460, Cl. 354-400.000.
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Gee, Alison W.; Krishnaswamy, Premachandran; and Sane, Ajit Y., 5,369,063, Cl. 501-82.000.
Metron Designs Ltd.: *See—*
Pickering, John R., 5,369,245, Cl. 219-209.000.
Mettler-Toledo, Inc.: *See—*
Griffen, Neil C.; and Loshbough, Richard C., 5,369,226, Cl. 177-211.000.
Metts, Rodney H. Method and apparatus for acquiring demographic information. 5,369,571, Cl. 364-401.000.
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Metzger, Roland; Schmidt, Manfred; Torreiter, Otto; and Wendel, Dieter, to International Business Machines Corporation. Method of ensuring electrical contact between test probes and chip pads through the use of vibration and nondestructive deformation. 5,369,358, Cl. 324-754.000.
Meuris, Marc: *See—*
Vandervorst, Wilfried; and Meuris, Marc, 5,369,372, Cl. 324-719.000.
Meyer, Donald A.; and Meyer, Larry, to Meyer Manufacturing Corporation. Manure spreader. 5,368,236, Cl. 239-675.000.
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Meyer, Donald A.; and Meyer, Larry, 5,368,236, Cl. 239-675.000.
Meyer Manufacturing Corporation: *See—*
Meyer, Donald A.; and Meyer, Larry, 5,368,236, Cl. 239-675.000.
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Frederickson, Dale W.; Meyer, Robert F.; and Anton, Joseph G., 5,367,900, Cl. 73-52.000.
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Martin, Jean-Jacques; Lescuyer, Jean-Philippe; Cartoux, Rene ; Lalain, Jean-Jacques; Michel, Frederic; and Samani, Jacques, 5,368,594, Cl. 606-61.000.
Micro Chemical, Inc.: *See—*
Pratt, William C., 5,369,032, Cl. 435-290.000.
Microbilt Corporation: *See—*
Nair, Parameswaran B.; Evans, John C.; and Price, James F., 5,369,263, Cl. 235-448.000.
Microelectronics and Computer Technology Corporation: *See—*
Simmons, Richard L.; and Bertram, Michael J., 5,368,217, Cl. 228-6.200.
Micromedics, Inc.: *See—*
Lonneman, Alan; and Miller, Curtis H., 5,368,563, Cl. 604-82.000.
Micron Semiconductor, Inc.: *See—*
McLaury, Loren L., 5,369,622, Cl. 365-233.000.
Micron Technology, Inc.: *See—*
Casper, Stephen L.; and Porter, Stephen R., 5,369,317, Cl. 326-87.000.
Sandhu, Gurtej S.; Westmoreland, Donald L.; and Fazan, Pierre, 5,368,687, Cl. 156-664.000.
Microsoft Corporation: *See—*
Norris, David C., 5,369,729, Cl. 395-2.670.
Thomason, Jon G.; and Horton, Earle R., 5,369,770, Cl. 395-725.000.
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Feiring, Andrew, 5,368,561, Cl. 604-53.000.
Middleditch, Brian S.; and Lee, Peter S. K., to University of Houston. Bioremediation of polar organic compounds. 5,369,031, Cl. 435-284.000.
Mieno, Mitsuhiro: *See—*
Miki, Kouhei; Yamamoto, Takuya; Shishido, Yoshiko; and Mieno, Mitsuhiro, 5,368,688, Cl. 162-56.000.
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Mikic, Frank; and Hoff, Jeffrey H., to Snap-on Incorporated. Arcuate tip driver. 5,367,926, Cl. 81-436.000.
Mikitenko, Paul: *See—*
Asselineau, Lionel; Mikitenko, Paul; Viltard, Jean Charles; and Zuliani, Massimo, 5,368,691, Cl. 203-29.000.
Mileaf, Daryl S.: *See—*
Deemer, Diane L.; and Mileaf, Daryl S., 5,368,524, Cl. 474-133.000.
Miles Inc.: *See—*
Harasin, Stephen J.; and Clatty, Jan L. R., 5,368,806, Cl. 264-328.600.
Millar, Colin A.; Brierley, Michael C.; and Whitley, Timothy J., to British Telecommunications public limited company. Optical amplifier and laser. 5,369,523, Cl. 359-341.000.
Miller, Curtis H.: *See—*
Lonneman, Alan; and Miller, Curtis H., 5,368,563, Cl. 604-82.000.
Miller, Frank D., to Square D Company. Fast turn-off circuit for use with an AC bridge circuit. 5,369,563, Cl. 363-56.000.
Miller, Herman A., Jr. Laparoscopic surgical instrument. 5,368,605, Cl. 606-170.000.
Miller, J. Allen: *See—*
Pound, J. Mathews; Miller, J. Allen; and LeMeilleur, Craig A., 5,367,983, Cl. 119-53.000.
Miller, James D.; and Levan, Chris D., to Amoco Corporation. Carbon fiber yarn having improved handling characteristics. 5,369,146, Cl. 523-215.000.
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Gruenstern, Robert G.; Bast, Ronald J.; Aldecoa, Julio A.; and Miller, Lawrence F., 5,368,956, Cl. 429-131.000.
Miller, Richard L.: *See—*
Di Fusco, Judith; and Miller, Richard L., 5,367,948, Cl. 99-289.00R.
Miller, Vincent G. Method and system for rehabilitating a bulkhead. 5,368,414, Cl. 405-262.000.
Milligan, Charles A.: *See—*
Dodt, William C.; Liehe, Thomas G.; McCarthy, Donald F.; and Milligan, Charles A., 5,369,641, Cl. 371-2.200.
Milliken Research Corporation: *See—*
Zeiler, Bernhard, 5,367,733, Cl. 8-149.100.
Millis, Hugh L., Jr., to Rockwell International Corporation. Fault tolerant gate array using duplication only. 5,369,654, Cl. 371-68.100.
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., to Ford Motor Company. Multi-axis linear motor positioner with Y-axis supported at single end. 5,368,425, Cl. 409-235.000.
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., to Ford Motor Company. Multi-positioner machining system. 5,368,539, Cl. 483-1.000.
Mills, Timothy C.: *See—*
Nita, Henry; and Mills, Timothy C., 5,368,557, Cl. 604-22.000.
Minami, Noriko: *See—*
Hosokawa, Akemi; Ikeda, Osamu; Minami, Noriko; and Kyomura, Nobuo, 5,369,085, Cl. 504-249.000.
Minami, Tatsuya: *See—*
Hiyama, Tamejiro; Minami, Tatsuya; Hanamoto, Takeshi; and Reddy, Guntoori B., 5,369,109, Cl. 514-277.000.
Minato, Shigeru: *See—*
Sashihara, Kenji; and Minato, Shigeru, 5,368,671, Cl. 156-195.000.
Mines, Thomas W.: *See—*
Borbas, William F.; Hahn, Douglas A.; and Mines, Thomas W., 5,369,680, Cl. 379-1.000.
Minezaki, Etsuko: *See—*
Kiryu, Naohiko; Maruyama, Hiroshi; Minezaki, Etsuko; and Watanabe, Yoshinori, 5,368,962, Cl. 430-7.000.
Minh, Nguyen Q.; Horne, Craig R.; and Guiheen, James V., to Allied-Signal Inc. Preparation of devices that include a thin ceramic layer. 5,368,667, Cl. 156-89.000.
Minigrip, Inc.: *See—*
Scott, Richmond M.; and Machacek, Zdenek, 5,368,394, Cl. 383-63.000.
Ministry of International Trade & Industry: *See—*
Akedo, Jun, 5,368,898, Cl. 427-510.000.
Suzuki, Kenzi; and Mori, Toshiaki, 5,369,069, Cl. 502-63.000.
Mink, Johannes H.: *See—*
Hellenberg, Leendert; and Mink, Johannes H., 5,368,196, Cl. 222-61.000.
Minnesota Mining and Manufacturing Company: *See—*
Asmus, Robert A., 5,369,155, Cl. 524-55.000.
Braunschweig, Ehrich J.; Nauman, Margaret M.; and Graham, Joseph, 5,368,936, Cl. 428-403.000.
Culler, Scott R., 5,368,619, Cl. 51-308.000.
Davies, Paul, 5,368,980, Cl. 430-204.000.
Gerfast, Sten R.; and Egan, Daniel C., 5,368,250, Cl. 242-347.000.
Kennedy, James K., 5,369,432, Cl. 348-181.000.
Ko, Chan U.; and Hackett, Steven C., 5,369,192, Cl. 525-484.000.
Lammers, Ted J.; Newman, Norman; Romaszewski, Karen M.; Scanlan, David J.; and Fenoglio, Alfredo, 5,368,894, Cl. 427-407.100.
Masmar, Craig A.; Spencer, Douglas S.; and Edblom, Elizabeth C., 5,368,618, Cl. 51-295.000.
Nagumo, Takayuki, 5,368,497, Cl. 439-266.000.
Natwig, Gary S.; Young, John S.; and Ericson, Robert B., 5,369,225, Cl. 174-84.00R.
Nazarian, Richard A.; Agnew, Marc H.; Schneider, Daniel E.; and Mead, Wilfred A., 5,368,554, Cl. 604-4.000.
Portelli, Gene B.; Schultz, William J.; Boden, John T.; and Kaufer, Daniel M., 5,368,922, Cl. 428-229.000.
Sakizadeh, Kumars; Blair, John T.; and Ask, David T., 5,369,000, Cl. 430-619.000.
Tochacek, Miroslav; and Courteau, Donald M., 5,368,668, Cl. 156-93.000.
Tran, Nang T.; and Paulson, Kenneth R., 5,368,882, Cl. 427-65.000.
Minolta Camera Co., Ltd.: *See—*
Eguchi, Tatsuya, 5,369,272, Cl. 250-235.000.
Minolta Camera Kabushiki Kaisha: *See—*
Takano, Yoshiaki, 5,369,768, Cl. 395-725.000.
Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Ishida, Tokuji; Masumoto, Hisayuki; Tokumaru, Hisashi; and Metabi, Tsuneyo, 5,369,460, Cl. 354-400.000.
Minoura, Akira: *See—*
Murakawa, Masatake; Yuki, Mikio; Imanishi, Ryozo; Tone, Masatsugu; and Minoura, Akira, 5,367,861, Cl. 56-11.800.
Ogasawara, Hiroyuki; Yamashita, Nobuyuki; and Minoura, Akira, 5,367,864, Cl. 56-15.800.
Minowa, Toshimichi: *See—*
Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.
Misawa, Masayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Switch apparatus. 5,369,230, Cl. 200-52.00R.
Mishima, Seiji; and Handa, Yuichi, to Canon Kabushiki Kaisha. Optical device with an optical coupler for effecting light branching and/or combining and an optical amplifier. 5,369,719, Cl. 385-48.000.
Mita Industrial Co., Ltd.: *See—*
Hori, Setsuo; Tsuji, Kikunosuke; Kikumura, Tatsuya; and Satake, Kenichi, 5,369,424, Cl. 346-134.000.
Ogawa, Kazuhiro; and Hori, Kazuto, 5,369,473, Cl. 355-214.000.
Mitani, Youko: *See—*
Umemoto, Mitsuo; Higashi, Kiyotsugu; and Mitani, Youko, 5,368,852, Cl. 424-78.100.
Mitchell, Dennis E. Double sized puzzle. 5,368,301, Cl. 273-157.00R.
Mitsam, Reinwald, to Leonard Kurz GmbH & Co. Apparatus for applying a stamping foil imprint to a web of flexible material. 5,368,680, Cl. 156-555.000.
Mitsubishi Cable Industries, Ltd.: *See—*
Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, 5,368,063, Cl. 137-340.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Egami, Noritaka, 5,369,743, Cl. 395-157.000.
Fukuda, Masahiko; Numakura, Hiromi; Iio, Koji; and Hidaka, Akira, 5,369,269, Cl. 250-221.000.
Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, 5,369,588, Cl. 364-449.000.
Honda, Ziro; and Nomoto, Yasushi, 5,369,298, Cl. 257-583.000.
Itoh, Tetsuro, 5,369,239, Cl. 219-69.130.
Itoh, Tetsuro, 5,369,240, Cl. 219-69.150.
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Kako, Hajime, 5,368,005, Cl. 123-571.000.
Kamon, Kazuya, 5,369,464, Cl. 355-43.000.
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Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,369,782, Cl. 455-16.000.
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Kunitsugu, Yasuhiro, 5,368,992, Cl. 430-321.000.

Kusunoki, Shigeru; and Inuishi, Masahide, 5,369,297, Cl. 257-411.000.
Mori, Shigeru, 5,369,354, Cl. 323-313.000.
Muranoi, Takeshi, 5,369,747, Cl. 395-250.000.
Ohba, Atsushi, 5,369,619, Cl. 365-230.030.
Shimura, Teruyuki, 5,369,044, Cl. 437-40.000.
Ueda, Shinobu, 5,369,435, Cl. 348-353.000.
Yamasaki, Tetsuo; Shima, Kenji; Komori, Shinji; Munakata, Koichi; and Inaoka, Yoshie, 5,369,775, Cl. 395-800.000.
Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, 5,369,628, Cl. 369-13.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Ishii, Kenji; and Tagami, Yasunori, 5,368,674, Cl. 156-272.200.
Ishii, Kenji; Nakai, Takamasa; and Matsumoto, Hiroyuki, 5,368,921, Cl. 428-228.000.
Maeda, Hiroshi; Akaike, Takaaki; Nishigoori, Hideo; Urakami, Teizi; and Yoshida, Chieko, 5,369,112, Cl. 514-287.000.

Mitsubishi Heavy Industries, Ltd.: *See—*
Iijima, Katsuhiko; and Kinoshita, Shigenori, 5,368,116, Cl. 180-65.400.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, 5,368,678, Cl. 156-405.100.
Yanagi, Kenichi; Kato, Mitsuo; Tsurusaki, Kazuya; Taguchi, Toshio; Atarashiya, Kenji; Rokkaku, Tadashi; and Yamashita, Ichiro, 5,369,337, Cl. 315-111.810.

Mitsubishi Kasei Corporation: *See—*
Hosokawa, Akemi; Ikeda, Osamu; Minami, Noriko; and Kyomura, Nobuo, 5,369,085, Cl. 504-249.000.
Ito, Tsuyoshi; Watanabe, Junya; and Sawada, Shintaro, 5,369,132, Cl. 521-31.000.

Mitsubishi Materials Corporation: *See—*
Tanaka, Hiroshi; and Masuda, Yasuo, 5,368,714, Cl. 205-76.000.

Mitsubishi Plastics Industries Limited: *See—*
Taniguchi, Kazuo; and Murakami, Tetsuo, 5,368,811, Cl. 264-567.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Koike, Tadashi; Mizukuki, Tadahiko; Sasakawa, Tomoyoshi; Suzuki, Yuko; and Shiina, Kouichi, 5,369,321, Cl. 369-275.400.
Miyazaki, Eiichiro; and Kano, Taisaku, 5,369,178, Cl. 525-155.000.

Mitsumi Electric Co., Ltd.: *See—*
Moe, Erik; Goble, Greg H.; and Krueger, Leland R., 5,369,538, Cl. 360-106.000.

Miura, Naoki, to Oki Electric Industry Co., Ltd. Memory with selectively active input/output buffers. 5,369,611, Cl. 365-189.050.

Miura, Tatsuo: *See—*
Maeda, Noboru; Miura, Tatsuo; and Murakami, Haruo, 5,369,569, Cl. 364-184.000.

Miyake, Akio; Kawano, Yasuhiko; and Ashida, Yasuko, to Takeda Chemical Industries, Ltd. Pyridazine compounds, their production and use. 5,369,104, Cl. 514-212.000.

Miyake, Natsumi: *See—*
Okuda, Kouji; Nishi, Tokumitsu; Hoshino, Hisakiyo; Takai, Hiroshi; and Miyake, Natsumi, 5,368,673, Cl. 156-273.900.

Miyamoto, Hiromu, to Yamaha Corporation. Electronic musical instrument having composing function. 5,369,216, Cl. 84-609.000.

Miyamoto, Masaki: *See—*
Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaki; and Iijima, Yasuteru, 5,369,106, Cl. 514-218.000.

Miyamoto, Masaki: *See—*
Shima, Masahiro; and Miyamoto, Masaki, 5,367,892, Cl. 66-71.000.

Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Output control method for laser system. 5,369,655, Cl. 372-29.000.

Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, to Mitsubishi Jukogyo Kabushiki Kaisha; and Yokohama Rubber Co., Ltd., The, a part interest. Tread pickup device. 5,368,678, Cl. 156-405.100.

Miyanishi, Hideji, to Ricoh Company, Ltd. Detecting amplifier with current mirror structure. 5,369,614, Cl. 365-207.000.

Miyaoh, Yoshio, to Ishikawa Gasket Co., Ltd. Metal laminate gasket with a plate connecting device. 5,368,316, Cl. 277-235.00B.

Miyaoka, Shinichiro: *See—*
Kato, Makoto; Miyaoka, Shinichiro; and Nohmi, Makoto, 5,369,736, Cl. 395-125.000.

Miyata, Tomomi, to Yamaha Corporation. Electronic musical instrument producing pitch-dependent stereo sound. 5,369,224, Cl. 84-662.000.

Miyauchi, Yasushi: *See—*
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.

Miyawaki Incorporated: *See—*
Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, 5,368,063, Cl. 137-340.000.

Miyazaki, Eiichiro; and Kano, Taisaku, to Mitsui Toatsu Chemicals, Inc. Resin composition for thermosetting coating. 5,369,178, Cl. 525-155.000.

Miyazaki, Tomohiro: *See—*
Tono, Hideo; Naito, Masaru; and Miyazaki, Tomohiro, 5,368,886, Cl. 427-221.000.

Miyazawa, Azuma; Mizobuchi, Kouji; Ito, Takeshi; Ide, Masataka; Maruyama, Atsushi; Kikuchi, Juro; and Imai, Yuji, to Olympus Optical Co., Ltd. Inclination detecting apparatus and camera for detecting hand shake using the same. 5,369,462, Cl. 354-430.000.

Miyazawa, Eriko: *See—*
Shimotomai, Naomasa; Miyazawa, Eriko; and Ueyama, Takahiro, 5,368,778, Cl. 252-542.000.

Miyoshi Kasei Co., Ltd.: *See—*
Hasegawa, Yukio; Miyoshi, Ryota; and Imai, Isao, 5,368,639, Cl. 106-490.000.

Miyoshi, Katsuya: *See—*
Kawai, Masaharu; Miyoshi, Katsuya; and Baba, Masami, 5,369,490, Cl. 356-376.000.

Miyoshi, Ryota: *See—*
Hasegawa, Yukio; Miyoshi, Ryota; and Imai, Isao, 5,368,639, Cl. 106-490.000.

Miyoshi, Tadahiko: *See—*
Tsuruoka, Shigeo; Takahashi, Ken; Miyoshi, Tadahiko; and Tokuda, Hiroatsu, 5,367,906, Cl. 73-204.270.

Mizelle, Ned W. Shallow profile legrest and furniture. 5,368,366, Cl. 297-423.300.

Mizobuchi, Kouji: *See—*
Miyazawa, Azuma; Mizobuchi, Kouji; Ito, Takeshi; Ide, Masataka; Maruyama, Atsushi; Kikuchi, Juro; and Imai, Yuji, 5,369,462, Cl. 354-430.000.

Mizuhara, Howard; and Smith, P. C., to Morgan Crucible Company plc. Sealed conductive active alloy feedthroughs. 5,368,220, Cl. 228-124.500.

Mizukami, Tomohito; Funayama, Chihito; and Oguri, Yasuo, to Kasei Optonix, Ltd. Pigment-attached blue-emitting phosphor and color cathode-ray tube. 5,369,331, Cl. 313-467.000.

Mizukoshi, Koubu; Katayama, Ken; Hirata, Masanori; and Maekawa, Kohji, to Nippla Co., Ltd.; and Snow Brand Milk Products Co., Ltd. Method for producing an in-mold labeled vessel with an elongated bottom projection. 5,368,798, Cl. 264-154.000.

Mizukuki, Tadahiko: *See—*
Koike, Tadashi; Mizukuki, Tadahiko; Sasakawa, Tomoyoshi; Suzuki, Yuko; and Shiina, Kouichi, 5,369,321, Cl. 369-275.400.

Mizusugi, Tetsuya, to Nippon Sheet Glass Co., Ltd. Conveyor roll device for preliminarily bending sheet glass. 5,368,625, Cl. 65-273.000.

Mo Och Domsjo Aktiebolag: *See—*
Agnemo, Arne R., 5,368,689, Cl. 162-135.000.

Mobil Oil Corporation: *See—*
Campbell, Gregory A.; and Rasmussen, Don H., 5,369,135, Cl. 521-134.000.
Degnan, Thomas F.; Klocke, Donald J.; and Rubin, Mae K., 5,369,071, Cl. 502-71.000.
Horodysky, Andrew G.; Wei, Liwen; and Kremer, Ross A., 5,368,759, Cl. 252-475.000.
Shen, Dong-Ming, 5,369,213, Cl. 585-352.000.

Mochizuki, Kimio: *See—*
Sugahara, Tatsuya; Takagi, Takao; Mochizuki, Kimio; and Akiyama, Shigetoshi, 5,368,476, Cl. 431-285.000.

Mochizuki, Shuuji: *See—*
Nagaseki, Kazuya; and Mochizuki, Shuuji, 5,368,676, Cl. 156-345.000.

Moe, Erik; Goble, Greg H.; and Krueger, Leland R., to Mitsumi Electric Co., Ltd. Rotary disk drive actuator. 5,369,538, Cl. 360-106.000.

Moeckli, Kimberly A.: *See—*
Flaim, Tony D.; Lamb, James, III; Moeckli, Kimberly A.; and Brewer, Terry, 5,368,989, Cl. 430-271.000.

Mogi, Kazuo: *See—*
Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, 5,368,678, Cl. 156-405.100.

Mogi, Kunio: *See—*
Takahashi, Tetsuo; Araya, Shinichi; Takahashi, Kuniaki; Mogi, Kunio; Kudo, Koji; Ito, Takeshi; and Ikeda, Hiroshi, 5,368,193, Cl. 221-278.000.

Mogi, Masao: *See—*
Sudo, Toru; Kuramoto, Takashi; Seno, Yasuhiro; Mogi, Masao; and Urase, Hisato, 5,368,817, Cl. 422-62.000.

Mohammadi, Mansur S.: *See—*
Donker, Cornelis B.; van der Hoeven, Philippus C.; and Mohammadi, Mansur S., 5,368,767, Cl. 252-95.000.

Mohr, Dieter: *See—*
Elsaessser, Andreas; Frass, Hans W.; Gaschler, Otfried; Mohr, Dieter; and Buhr, Gerhard, 5,368,975, Cl. 430-165.000.

Mohrhardt, Guenter: *See—*
Wolff, Stefan; Renz, Hans; and Mohrhardt, Guenter, 5,369,207, Cl. 528-49.000.

Moldt, Peter; Scheel-Kruger, Jorgen; and Jensen, Leif H., to Neuro-Search A/S. Certain 2,3-diphenyl-2-(1,2,4-oxadiazol-5-yl)tropanes useful as dopamide reuptake inhibitors. 5,369,113, Cl. 514-304.000.

Molex Incorporated: *See—*
O'Brien, Paul; and Previato, Mario, 5,368,493, Cl. 439-160.000.

Mollo, James R. Load sensed variable discharge fixed displacement pump control with low unload features. 5,368,061, Cl. 137-115.000.

MOLTECH Invent S.A.: *See—*
de Nora, Vittorio, 5,368,702, Cl. 204-67.000.

Molva, Refik A.: *See—*
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.

Monji, Tatsuhiko; Horikoshi, Shigeru; Shimada, Kousaku; and Sugawara, Hayato, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Yawing-momentum detecting apparatus for a vehicle, a detecting method thereof, and motion controlling apparatus for a vehicle, utilizing the detecting apparatus. 5,369,580, Cl. 364-424.010.

Monroe, Kenneth H. Method for making sportscards. 5,369,467, Cl. 355-77.000.

Monroe, Marshall; and Fink, David, to Walt Disney Company, The. Method and apparatus for a virtual video game. 5,368,309, Cl. 273-437.000.

Montal, Mauricio: *See—*
Tomich, John; and Montal, Mauricio, 5,368,712, Cl. 204-403.000.

Mookherjee, Braja D.; Trenkle, Robert W.; and Wilson, Richard A., to International Flavors & Fragrances Inc. System for perfume creation using aroma emission analysis from a living fruit and flower in close proximity. 5,367,899, Cl. 73-23.340.

Moore Business Forms, Inc.: *See—*
Christy, Orrin D.; Pickett, John E.; Swanson, Leo; Matheis, Mark A.; and Cousoulis, Marc, 5,368,334, Cl. 283-67.000.

Moore, David. Relating to handling or laying pipes. 5,368,413, Cl. 405-154.000.

Moradi-Araghi, Ahmad: *See—*
Johnston, Everett L.; and Moradi-Araghi, Ahmad, 5,368,412, Cl. 405-128.000.

Moraga, Claudio E.; and Villabla, Leopoldo. Multiple use water vehicle. 5,367,974, Cl. 114-345.000.

Moreland, Larry K., to Zenith Electronics Corp. Two-way MMDS communications system. 5,369,779, Cl. 455-5.100.

Morgan Crucible Company plc: *See—*
Mizuhara, Howard; and Smith, P. C., 5,368,220, Cl. 228-124.500.

Morgan, Michael J.: *See—*
Stuber, Fred A.; Martinez, Michael M.; Morgan, Michael J.; and Chandalia, Kiran B., 5,369,208, Cl. 528-53.000.

Morgan, Sarah E.; Pratt, Charles F.; and Savenije, Hermannus B., to General Electric Company. Polymer blend with low gloss. 5,369,172, Cl. 525-67.000.

Morgia, James J.: *See—*
Kadambi, Vedanth; Morgia, James J.; and Vendiluoli, Jonathan, 5,368,095, Cl. 165-83.000.

Mori, Hideo: *See—*
Yumiyama, Shigeru; and Mori, Hideo, 5,367,913, Cl. 74-7.00A.

Mori, Nobuyoshi: *See—*
Nakamura, Yoichi; Mori, Nobuyoshi; and Nogami, Sumitaka, 5,368,966, Cl. 430-59.000.

Mori, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Intermediate voltage generating circuit having low output impedance. 5,369,354, Cl. 323-313.000.

Mori, Toshiaki: *See—*
Suzuki, Kenzi; and Mori, Toshiaki, 5,369,069, Cl. 502-63.000.

Morikawa, Yuko: *See—*
Matsuda, Hiroshi; Kawada, Haruki; Kasanuki, Yuji; Yanagisawa, Yoshiharo; and Morikawa, Yuko, 5,368,895, Cl. 427-430.100.

Morimoto, Kazunaga. Safety steering wheel device for a motor car. 5,368,331, Cl. 280-777.000.

Morioka, Koitsu; and Matsuda, Yasuhiko, to Yoshida Kogyo K.K. Method for manufacturing slide fastener coupling elements. 5,367,758, Cl. 29-410.000.

Morishita, Tadataka: *See—*
Usui, Toshio; Aoki, Yuji; Kamei, Masayuki; and Morishita, Tadataka, 5,369,275, Cl. 250-310.000.

Morita, Toshiaki: *See—*
Tanaka, Hideaki; Morita, Toshiaki; and Kitamura, Yoshihiro, 5,369,715, Cl. 382-18.000.

Moriya, Nobuo; Shimoda, Keiji; Sakashita, Kouji; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, to Chiyoda Corporation. Process for the production of crystalline adduct of bisphenol A and phenol and apparatus therefor. 5,368,827, Cl. 422-245.100.

Mork, Jarl: *See—*
Holtman, Eli J.; McCormack, Edward A.; and Mork, Jarl, 5,368,347, Cl. 292-257.000.

Morokuma, Tadashi, to Olympus Optical Co., Ltd. High precision location measuring device wherein a position detector and an interferometer are fixed to a movable holder. 5,369,488, Cl. 356-358.000.

Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, to Texas Instruments Incorporated. Enhanced performance bipolar transistor process. 5,369,042, Cl. 437-31.000.

Morris, Lawrence E.: *See—*
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; and Franz, Norbert W., Jr., 5,368,274, Cl. 251-129.160.

Morris, Susan E.: *See—*
Henkens, Robert W.; Zhao, Junguo; Wojciechowski, Marek; O'Daly, John P.; Liang, Zhi-Wei; and Morris, Susan E., 5,368,707, Cl. 204-153.120.

Morrison, Donald C.: *See—*
Bostad, Wayne W.; Morrison, Donald C.; and Mao, Dean J., 5,368,435, Cl. 414-667.000.

Morrison-Knudson (an Idaho corporation): *See—*
Foldyna, Joseph T.; Carpenter, Donald J.; and Cron, John M., 5,368,633, Cl. 95-19.000.

Morrow, Lester A., to Gage In-Store Marketing, LLC. Pinch-actuated product distribution system. 5,368,175, Cl. 211-59.100.

Mortimer, John H.; and Turner, Robert C., to Inductotherm Corp. Induction furnace providing controlled escape of superheated metal. 5,368,282, Cl. 266-44.000.

Morton International, Inc.: *See—*
Fotiou, James G., 5,368,885, Cl. 427-195.000.
Hock, Christoph, 5,368,329, Cl. 280-741.000.
Leonelli, F. Paul, 5,369,232, Cl. 200-61.540.

Moses, John A. Method and apparatus for determining blood pressure. 5,368,039, Cl. 128-681.000.

Moshfeghi, Mehran, to North American Philips Corporation. Magnetic resonance angiography method and apparatus employing an integration projection. 5,368,033, Cl. 128-653.400.

Mosier, Dan L.: *See—*
Mosier, Sandra N.; and Mosier, Dan L., 5,367,735, Cl. 12-128.00B.

Mosier, Sandra N.; and Mosier, Dan L. Weighted insert for footwear. 5,367,735, Cl. 12-128.00B.

Mosler Inc.: *See—*
Benjamin, Fred W.; Gralinski, Edward R.; Smith, Robert D., Jr.; and Vogel, Victor J., 5,368,417, Cl. 406-111.000.

Moss, Floyd. Device for removing metal fence posts. 5,368,277, Cl. 254-30.000.

Motai, Kenji, to Fuji Electric Co., Ltd. Method for producing resin sealed type semiconductor device. 5,368,805, Cl. 264-272.150.

Motorola, Inc.: *See—*
Ackley, Donald E.; Shieh, Chan-Long; and Johnson, Earnest J., 5,369,656, Cl. 372-38.000.
Arvanitis, Aristotelis, 5,369,382, Cl. 333-189.000.
Comroe, Richard; and Sobti, Arun, 5,369,781, Cl. 455-15.000.
Giles Grady L.; Atwell, William D., Jr.; Wilson, Jesse R.; and Reis, Richard B., 5,369,752, Cl. 395-425.000.
Hulsebosch, Thomas G., 5,369,786, Cl. 455-70.000.
Jelley, Kevin W.; Hoffman, William F.; and Myszka, Edward G., 5,368,900, Cl. 427-555.000.
Kenkare, Prashant; Pfiester, James R.; and Sun, Shih-Wei, 5,369,052, Cl. 437-70.000.
Kuo, Shun-Meen; Chun, Christopher K. Y.; and Lebby, Michael S., 5,369,529, Cl. 359-858.000.
Lesk, Israel A.; Robb, Francine Y.; Terry, Lewis E.; and d'Aragona, Frank S., 5,369,304, Cl. 257-782.000.
Murray, Bradley A., 5,369,802, Cl. 455-351.000.
Oliver, Douglas W., 5,369,644, Cl. 371-20.400.
Richard, Fred V.; and Lebby, Michael S., 5,369,415, Cl. 345-6.000.
Tribbey, David A.; Hertz, Allen D.; Rivas, Mario A.; and Brooks, Dwight D., 5,369,399, Cl. 340-686.000.
Wilson, Timothy J.; and Averbuch, Nimrod, 5,369,501, Cl. 358-407.000.

Mottmiller, Russell P.; and Skov, Erik J., to Rubbermaid Incorporated. Cabinet assembly. 5,368,380, Cl. 312-263.000.

Mount, Matthew J.; and Hopkins, David G., to Union Oil Company of California. Tensioning apparatus for tie down lines. 5,368,112, Cl. 175-122.000.

Mourine, Vladimir I.: *See—*
Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., 5,369,076, Cl. 502-354.000.

Movaghar, Abdolreza: *See—*
Broder, Damon; Movaghar, Abdolreza; and Rhoads, W. Wistar, 5,368,403, Cl. 400-352.000.

MPR Associates, Inc.: *See—*
Weems, Sterling J., 5,367,768, Cl. 29-890.031.

Mrozinski, Curtis: *See—*
Marzullo, Joseph H.; and Mrozinski, Curtis, 5,368,409, Cl. 403-324.000.

Muchisky, Thomas P.; Fischer, Warren G.; and Krystal, Leonard, to Fischer Industries, Inc. Solution filling system for a film processor apparatus. 5,369,459, Cl. 354-324.000.

Muchow, Michael: *See—*
Rearden, Jim K.; and Muchow, Michael, 5,368,092, Cl. 165-45.000.

Muckley, Ronald A.: *See—*
Rudzewicz, Robert G.; Dahl, Michael A.; Dunn, Thomas G.; Wenzel, Kenneth J.; and Muckley, Ronald A., 5,369,342, Cl. 318-102.000.

Mueller, Adolf, to Lindauer Dornier GmbH. Tentering clamp and tentering chain comprising such clamps. 5,367,753, Cl. 26-73.000.

Mueller, James F.: *See—*
Bellio, Stephen L.; and Mueller, James F., 5,367,966, Cl. 112-121.120.

Mukai, Hidehito; Sato, Kenichi; and Shibuta, Nobuhiro, to Sumitomo Electric Industries, Inc. Method of preparing oxide superconducting wire. 5,369,088, Cl. 505-432.000.

Mukai, Hidehito: *See—*
Sato, Kenichi; Mukai, Hidehito; and Hikata, Takeshi, 5,369,089, Cl. 505-433.000.

Mukai, Kiyotaka, to Sanyo Electric Co., Ltd. Electric shaver with two rows of outer blades. 5,367,771, Cl. 30-43.920.

Mulder, Arjen J.: *See—*
Menke, Wilhelm; and Mulder, Arjen J., 5,368,147, Cl. 194-206.000.

Mulhaupt, Rolf; Rosch, Joachim; Hopperdietzel, Siegfried; Weinberg, Ekkehard; and Klein, Herbert, to Rehau AG + Co. In situ polymer alloys and microcompounds, process for their manufacture, and use thereof. 5,369,171, Cl. 525-66.000.

Mullaney, Sean T.: *See—*
Hoeting, Michael G.; and Mullaney, Sean T., 5,368,516, Cl. 446-288.000.

Muller, Thomas: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.
Mullinax, Charles H., to Industrial Piping, Inc. Method for purging and decontaminating a product-containing storage drum. 5,368,652, Cl. 134-22.180.
Multimatic Inc.: *See—*
Ng, Bill, 5,368,280, Cl. 254-376.000.
Multimedia Design, Inc.: *See—*
Kerns, Robert Q., 5,369,219, Cl. 174-250.000.
Multivac, Inc.: *See—*
Horsman, Dennis P.; and Nixon, J. Scott, 5,368,286, Cl. 271-11.000.
Munakata, Koichi: *See—*
Yamasaki, Tetsuo; Shima, Kenji; Komori, Shinji; Munakata, Koichi; and Inaoka, Yoshie, 5,369,775, Cl. 395-800.000.
Munch, Carl A.: *See—*
Cooper, Stephen R. W.; Shank, David W.; Munch, Carl A.; and Findikli, Nadi S., 5,369,375, Cl. 329-347.000.
Munday, Theodore F.; Brummer, Jay R.; and Beck, Paul J., to FMC Corporation. Treatment of aqueous phosphorus wastes. 5,368,741, Cl. 210-724.000.
Mundt, Randall S.: *See—*
Yasuda, Arthur K.; Denison, Dean R.; Mundt, Randall S.; and Tappan, James E., 5,368,646, Cl. 118-723.00R.
Mundwiler, Ulrich: *See—*
Sutter, Franz; and Mundwiler, Ulrich, 5,368,483, Cl. 433-173.000.
Munson, Bill A., to Intel Corporation. High speed memory interface for video teleconferencing applications. 5,369,617, Cl. 365-219.000.
Muntz, Eric P.; Nottenburg, Richard N.; and Shiflett, Geoffrey R., to University of Southern California. Transient energy release microdevices and methods. 5,367,878, Cl. 60-512.000.
Munz, Robert P.: *See—*
Kulikowski, Karl J.; and Munz, Robert P., 5,369,244, Cl. 219-145.220.
Munz, Willi, to Peerless Lighting Corporation. Fluorescent lamp removing device. 5,369,558, Cl. 362-375.000.
Munzel, Norbert: *See—*
Schadeli, Ulrich; and Munzel, Norbert, 5,369,200, Cl. 526-262.000.
Murai, Hideaki, to KSK Co., Ltd. Baseball glove or mitt. 5,367,707, Cl. 2-19.000.
Murai, Toshiaki: *See—*
Sessler, Jonathan L.; Hemmi, Gregory W.; and Murai, Toshiaki, 5,369,101, Cl. 534-13.000.
Murakami, Haruo: *See—*
Maeda, Noboru; Miura, Tatsuo; and Murakami, Haruo, 5,369,569, Cl. 364-184.000.
Murakami, Hirokuni: *See—*
Horiike, Yoshio; Atsumi, Tohru; Murakami, Hirokuni; and Uno, Takashi, 5,369,598, Cl. 364-510.000.
Murakami, Kazunori: *See—*
Suzuki, Yoshihiko; and Murakami, Kazunori, 5,368,047, Cl. 128-765.000.
Murakami, Koji: *See—*
Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, 5,369,253, Cl. 219-707.000.
Murakami, Tetsuo: *See—*
Taniguchi, Kazuo; and Murakami, Tetsuo, 5,368,811, Cl. 264-567.000.
Murakami, Yoshio: *See—*
Asakura, Sotoo; Koyama, Yasuto; Kiyota, Youhei; Akashi, Kiyoko; Kagayama, Akira; Murakami, Yoshio; and Nakate, Toshiomi, 5,368,865, Cl. 424-489.000.
Murakawa, Masatake; Yuki, Mikio; Imanishi, Ryozo; Tone, Masatsugu; and Minoura, Akira, to Kubota Corporation. Riding lawn mower. 5,367,861, Cl. 56-11.800.
Muranoi, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Input/output channel apparatus. 5,369,747, Cl. 395-250.000.
Murata, Haruhiko: *See—*
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; and Murata, Haruhiko, 5,369,436, Cl. 348-355.000.
Murata, Kazuo: *See—*
Nakamura, Masayuki; Shiroyama, Kaisuke; Masunaga, Satoru; and Murata, Kazuo, 5,368,661, Cl. 148-512.000.
Murata Kikai Kabushiki Kaisha: *See—*
Takeuchi, Yoshihisa, 5,369,506, Cl. 358-455.000.
Murata, Makoto: *See—*
Tsuchiya, Yoshikazu; Tsurumiya, Osamu; Murata, Makoto; Izawa, Masataka; and Fujiwara, Yukihiro, 5,369,349, Cl. 318-811.000.
Murata Mfg., Co., Ltd.: *See—*
Fujiki, Yasuhiro, 5,369,379, Cl. 333-116.000.
Senda, Atsuo; Nakagawa, Takuji; and Takano, Yoshihiko, 5,368,896, Cl. 427-443.100.
Shiratori, Akira; and Takagi, Hiroshi, 5,368,951, Cl. 429-30.000.
Murayama, Jin: *See—*
Terashita, Takaaki; and Murayama, Jin, 5,369,463, Cl. 355-38.000.
Murayama, Masami; Kakuma, Satoshi; and Yoshimura, Shuji, to Fujitsu Limited. Signaling data receiving and processing unit provided in a broadband integrated services digital network. 5,369,649, Cl. 371-37.100.
Murayama, Yoshinobu: *See—*
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,368,771, Cl. 252-299.100.
Murayama, Yoshitaka: *See—*
Kinoshita, Shinji; and Murayama, Yoshitaka, 5,369,537, Cl. 360-99.120.
Murooka, Hirofumi; Kato, Sumio; and Etchu, Masami, to Teijin Limited. Biaxially oriented polyester film for magnetic recording media containing theta or mixed alpha plus gamma aluminum oxide and inert organic particles. 5,368,932, Cl. 428-327.000.
Murotani, Hitoshi: *See—*
Kurimoto, Isao; Inui, Naoki; Yamatsuta, Kohji; Murotani, Hitoshi; Nagasaki, Hideo; and Yachigo, Shinichi, 5,369,143, Cl. 523-215.000.
Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 5,368,581, Cl. 604-290.000.
Murphy, James C., to Essef Corporation. Hydropneumatic pressure vessel having an improved diaphragm assembly. 5,368,073, Cl. 138-30.000.
Murphy, Robert J., to Premier Drywall Tool Co. Outside corner finishing tool. 5,368,461, Cl. 425-87.000.
Murray, Bradley A., to Motorola, Inc. Method and apparatus for improved battery replacement. 5,369,802, Cl. 455-351.000.
Murray, Donald S.: *See—*
Pfost, Dale R.; Coppock, Robert M.; Murray, Donald S.; Pfost, R. Fred; Sanford, Brian; and Puckett, Katherine L., 5,369,566, Cl. 364-147.000.
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La Zonby, Judy G., 5,368,749, Cl. 210-756.000.
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Nanos, Nicholas M., to General Binding Corporation. Temperature control for laminator. 5,369,246, Cl. 219-388.000.
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Cooper, Stephen R. W.; Shank, David W.; Munch, Carl A.; and Findikli, Nadi S., 5,369,375, Cl. 329-347.000.
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Barnes, Lawrence C.; and Thornberg, Gary R., 5,369,552, Cl. 361-816.000.
Kamerman, Adriaan; and van Bokhorst, Hendrik, 5,369,639, Cl. 370-85.300.
Nelson, Robert W., 5,369,648, Cl. 371-27.000.
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Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, 5,368,916, Cl. 428-215.000.
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Shioka, Masashi; and Kikuchi, Kazuya, 5,369,642, Cl. 371-8.200.
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Neeley, Michael J. Composite neuromuscular oral device. 5,368,477, Cl. 433-6.000.
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Swedlow, David B.; and Potratz, Robert S., 5,368,026, Cl. 128-633.000.
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New Tide Enterprise Co., Ltd.: *See*—
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Nicholas, John D., to Pawling Corporation. Fire-rated corner guard structure. 5,367,850, Cl. 52-516.000.
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Duhan, Tommy; and Nilsson, Stig-Hakan, 5,369,305, Cl. 307-10.100.
Ning, Xiaohui: *See*—
Bala, John; and Ning, Xiaohui, 5,369,525, Cl. 359-435.000.
Ninham, Barry W.: *See*—
Calka, Andrzej; and Ninham, Barry W., 5,368,812, Cl. 419-5.000.
Nippla Co., Ltd.: *See*—
Mizukoshi, Koubu; Katayama, Ken; Hirata, Masanori; and Makekawa, Kohji, 5,368,798, Cl. 264-154.000.
Nippon Glass Fiber Co., Ltd.: *See*—
Okamura, Akinobu; and Sekiguchi, Masato, 5,368,928, Cl. 428-294.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See*—
Yoshikawa, Masaaki; Yokoyama, Keiichi; Hasegawa, Masayasu; Yasumoto, Ryouichi; and Fujita, Hiroyuki, 5,369,015, Cl. 435-68.100.
Nippon Oil Company, Limited: *See*—
Sano, Akira; Shiraishi, Takeichi; Suzuki, Kunihiro; Okamoto, Mitsuo; and Matsuura, Kazuo, 5,369,193, Cl. 526-116.000.

Yoda, Eiji; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,368,977, Cl. 430-190.000.
Nippon Paint Co., Ltd.: *See*—
Kawabata, Masami; Sato, Akihiko; and Sumiyoshi, Iwao, 5,368,990, Cl. 430-281.000.
Yamagami, Yoshikazu; Kashihara, Akio; Seio, Mamoru; and Tanabe, Hisaki, 5,368,884, Cl. 427-96.000.
Nippon Sanso Corporation: *See*—
Yonamoto, Koh; Sawada, Hiroyuki; and Kanno, Tetsuya, 5,368,787, Cl. 261-36.100.
Nippon Sheet Glass Co., Ltd.: *See*—
Mizusugi, Tetsuya, 5,368,625, Cl. 65-273.000.
Nippon Shinyaku Co., Ltd.: *See*—
Ushimaru, Kouichi; Nakamichi, Kouichi; and Yasuura, Hiroyuki, 5,368,861, Cl. 424-451.000.
Nippon Shokubai Co., Ltd.: *See*—
Harada, Nobuyuki; Kimura, Kazumasa; and Shimomura, Tadao, 5,368,918, Cl. 428-219.000.
Okamoto, Jun; Goto, Yujiro; Kitano, Masao; and Suzuki, Seiichi, 5,368,760, Cl. 252-47.500.
Takahashi, Hitoshi; Kakita, Hiroyuki; Irie, Yoshio; Fujiwara, Teruaki; and Akihisa, Kazumi, 5,369,148, Cl. 523-315.000.
Nippon Steel Corporation: *See*—
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.
Itaya, Masahiko; Nakagoshi, Hiroyuki; and Sasaki, Tsutomu, 5,369,427, Cl. 346-159.000.
Yamaguchi, Satoshi; and Imai, Hirofumi, 5,369,661, Cl. 372-69.000.
Nippon Telegraph and Telephone Corporation: *See*—
Gotoh, Tetsuya; Kondoh, Tosiyuki; Egawa, Keiichi; and Kubodera, Ken-ichi, 5,368,782, Cl. 252-587.000.
Hyuga, Fumiaki; Shiojima, Kenji; Aoki, Tatsuo; Asai, Kazuyoshi; Tokumitsu, Masami; Nishimura, Kazumi; and Yamane, Yasuro, 5,369,043, Cl. 437-40.000.
Nippon Zeon Co., Ltd.: *See*—
Nazerian, Keyvan; Lee, Lucy F.; Yanagida, Noboru; Ogawa, Ryohei; and Li, Yi, 5,369,025, Cl. 435-235.100.
Ozawa, Yutaka; and Ohta, Hisanori, 5,369,166, Cl. 524-560.000.
Nippondenso Co., Ltd.: *See*—
Inoguchi, Kazuhiro; Suzuki, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,369,333, Cl. 313-509.000.
Maeda, Noboru; Miura, Tatsuo; and Murakami, Haruo, 5,369,569, Cl. 364-184.000.
Sakai, Takeshi; Banzai, Keiichiro; Imani, Yuichi; and Sakurai, Katsuo, 5,368,120, Cl. 180-197.000.
Sakakibara, Hisayoshi; Kitamura, Keiichi; and Honda, Shin, 5,367,883, Cl. 62-85.000.
Nishi, Tokumitsu: *See*—
Okuda, Kouji; Nishi, Tokumitsu; Hoshino, Hisakiyo; Takai, Hiroshi; and Miyake, Natsumi, 5,368,673, Cl. 156-273.900.
Nishida, Masami: *See*—
Asai, Akira; Nishida, Masami; and Fukuma, Masaki, 5,367,991, Cl. 123-90.160.
Nishigoori, Hideo: *See*—
Maeda, Hiroshi; Akaike, Takaaki; Nishigoori, Hideo; Urakami, Teizi; and Yoshida, Chieko, 5,369,112, Cl. 514-287.000.
Nishii, Kouji, to Asuka Trading Co., Ltd. Automatic pressure control device for a ball screw. 5,367,915, Cl. 74-441.000.
Nishijima, Hiroaki: *See*—
Moriya, Nobuo; Shimoda, Keiji; Sakashita, Kouji; Nishijima, Hiroaki; Onda, Nobuhiro; and Kouzaki, Takeshi, 5,368,827, Cl. 422-245.100.
Nishimoto, Yoshitaka: *See*—
Tsuchida, Takayasu; Nishimoto, Yoshitaka; Kotani, Takuya; and Iizumi, Katsuo, 5,368,981, Cl. 435-232.000.
Nishimura, Kazumi: *See*—
Hyuga, Fumiaki; Shiojima, Kenji; Aoki, Tatsuo; Asai, Kazuyoshi; Tokumitsu, Masami; Nishimura, Kazumi; and Yamane, Yasuro, 5,369,043, Cl. 437-40.000.
Nishimura, Kouhachi; and Kishino, Takanobu, to Kabushiki Kaisha Kobe Seiko Sho. Apparatus for shielding air from molten metal flow from laddle to tundish in continuous casting facilities. 5,368,208, Cl. 222-603.000.
Nishimura, Masaru: *See*—
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.
Nishino, Masakazu: *See*—
Matsuda, Toyohiko; Nishino, Masakazu; and Awamoto, Shigeru, 5,369,439, Cl. 348-405.000.
Nishino, Yoshitaka: *See*—
Yokose, Kenji; Nagase, Makoto; Kamimura, Hiroshi; Asakura, Yamato; Matsui, Tetsuya; Ibe, Hidefumi; Nishino, Yoshitaka; and Uchida, Shunsuke, 5,369,674, Cl. 376-245.000.
Nissan Motor Co., Ltd.: *See*—
Ohashi, Takayuki; Shibata, Kenichi; Ogawa, Junichi; and Wadasako, Mitsushi, 5,369,064, Cl. 501-95.000.
Nisshin Oil Mills, Ltd., The: *See*—
Yamada, Yutaka; Takahashi, Naofumi; Adachi, Keisuke; and Kameyama, Akihiko, 5,369,096, Cl. 514-61.000.
Nissho Corporation: *See*—
Suzuki, Yoshihiko; and Murakami, Kazunori, 5,368,047, Cl. 128-765.000.
Nita, Henry; and Mills, Timothy C., to Baxter International Inc. Ultrasonic ablation catheter device having multiple ultrasound transmission members. 5,368,557, Cl. 604-22.000.
Nita, Henry, to Baxter International Inc. Ultrasonic ablation catheter device having endoscopic component and method of using same. 5,368,558, Cl. 604-22.000.
Nitschke, John S.; and Kuhary, Daniel B., to Vend-It Corporation. Automated ventless deep fryer. 5,367,949, Cl. 99-334.000.
Nitto Denko Corporation: *See*—
Sunami, Masaki; Maruyama, Koji; Hori, Mitsuhiko; Tokuda, Shoichi; Saito, Kenichiro; and Kishi, Ikuo, 5,368,860, Cl. 424-448.000.
Nixon, J. Scott: *See*—
Horsman, Dennis P.; and Nixon, J. Scott, 5,368,286, Cl. 271-11.000.
Noda, Koji: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.
Noda, Tsugio: *See*—
Fukuda, Masahiro; and Noda, Tsugio, 5,369,502, Cl. 358-431.000.
Noddin, Richard A.: *See*—
Lennox, Charles D.; Noddin, Richard A.; and Sahatjian, Ronald, 5,368,591, Cl. 606-27.000.
Noe, Ronald O., to Westinghouse Electric Corporation. Continuous ash extraction process. 5,368,829, Cl. 423-20.000.
NOF Corporation: *See*—
Nakabayashi, Nobuo; and Ishihara, Kazuhiko, 5,368,733, Cl. 210-500.230.
Nogami, Sumitaka: *See*—
Nakamura, Yoichi; Mori, Nobuyoshi; and Nogami, Sumitaka, 5,368,966, Cl. 430-59.000.
Nogi, Toshiharu: *See*—
Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.
Nohda, Shigetoshi; and Kunii, Kakuji, to Sony Corporation. High definition image pick-up which shifts the image by one-half pixel pitch. 5,369,266, Cl. 250-208.100.
Nohmi, Makoto: *See*—
Kato, Makoto; Miyaoka, Shinichiro; and Nohmi, Makoto, 5,369,736, Cl. 395-125.000.
Nokovich, Nicholas P.: *See*—
Rhoades, Lawrence J.; Kohut, Thomas A.; Nokovich, Nicholas P.; and Yanda, Danny W., 5,367,833, Cl. 451-104.000.
Nomos Corporation: *See*—
Carol, Mark P., 5,368,543, Cl. 600-1.000.
Nomoto, Yasushi: *See*—
Honda, Ziro; and Nomoto, Yasushi, 5,369,298, Cl. 257-583.000.
Nomura, Kazuya; and Watanabe, Taisuke, to Matsushita Electric Industrial Co., Ltd. Method of speech recognition with correlation of similarities. 5,369,727, Cl. 395-2.610.
Nonaka, Shiro, to Aisin Seiki Kabushiki Kaisha. Upper thread holding device of sewing machine. 5,367,969, Cl. 112-295.000.
Noranda Inc.: *See*—
Critchlow, Philip R.; and Cave, Julian, 5,369,087, Cl. 505-430.000.
Nordenia Verpackungswerke GmbH: *See*—
Lorenz, Arnulf; and Walser, Hans P., 5,368,796, Cl. 214-140.000.
Nordson Corporation: *See*—
Brusko, Paul, 5,368,233, Cl. 239-290.000.
Fulkerson, Terrence M., 5,368,237, Cl. 239-706.000.
Hogan, Patrick T.; and Christyson, Richard G., 5,368,219, Cl. 228-33.000.
Norman, Philip A.: *See*—
Parry, Mark J.; Kenny, Desmond J.; and Norman, Philip A., 5,369,720, Cl. 385-114.000.
Normann, J. Brian. Handle for plastic bags. 5,368,393, Cl. 383-13.000.
Normet, Henno, to Diversified Electronics, Inc. Three-phase unbalance and voltage monitor circuit. 5,369,541, Cl. 361-85.000.
Norris, David C., to Microsoft Corporation. Conversionless digital sound production. 5,369,729, Cl. 395-2.670.
North American Philips Corporation: *See*—
Leyten, Paul, 5,369,340, Cl. 315-307.000.
Moshfeghi, Mehran, 5,368,033, Cl. 128-653.400.
Northern Telecom Limited: *See*—
Parry, Mark J.; Kenny, Desmond J.; and Norman, Philip A., 5,369,720, Cl. 385-114.000.
Smith, Roland A., 5,369,801, Cl. 455-277.100.
Nose, Noriyuki: *See*—
Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; Saitoh, Kenji; Hasegawa, Masanobu; and Sentoku, Koichi, 5,369,486, Cl. 356-349.000.
Nottenburg, Richard N.: *See*—
Muntz, Eric P.; Nottenburg, Richard N.; and Shiflett, Geoffrey R., 5,367,878, Cl. 60-512.000.
Nottingham, John R.: *See*—
Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.
Nottingham-Spirk Design Associates, Inc.: *See*—
Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.
Novinger, Harry E. Variable one way airport. 5,368,257, Cl. 244-114.00R.
Nowicki, Edmund H., to Gaitronics Corporation. Page party system. 5,369,692, Cl. 379-171.000.

NPBI Nederlands Produktielaboratorium voor Bloedtransfusieapparatuur en Infusievloeistoffen B.V.: *See—*
Van Der Heiden, Johannes; and Hilbrink, Herbertus E., 5,368,586, Cl. 604-403.000.

NSK Ltd.: *See—*
Machida, Hisashi, 5,368,529, Cl. 476-42.000.
Yamashita, Kenkichi; and Oyanagi, Hideaki, 5,367,953, Cl. 101-158.000.

NSM Aktiengesellschaft: *See—*
Menke, Wilhelm; and Mulder, Arjen J., 5,368,147, Cl. 194-206.000.

NTC Technology, Inc.: *See—*
Knodle, Daniel W.; Graham, Paul K.; and Labuda, Lawrence L., 5,369,277, Cl. 250-343.000.

Numakura, Hiromi: *See—*
Fukuda, Masahiko; Numakura, Hiromi; Iio, Koji; and Hidaka, Akira, 5,369,269, Cl. 250-221.000.

Numata, Satoru, to Alcare Co., Ltd. Paste composition for skin barrier. 5,369,130, Cl. 514-772.300.

NuPipe, Inc.: *See—*
Steketee, Campbell H., Jr., 5,368,809, Cl. 264-516.000.

Nygren, Eric G. Layout template tool for positioning building materials. 5,367,783, Cl. 33-613.000.

Nystrom, Sten, to Mala Skogstjanst AB. Cabin, especially for a cross-country vehicle. 5,368,119, Cl. 180-89.140.

Nyui, Masaru, to Canon Kabushiki Kaisha. Rotation detector using dual position interference light. 5,369,271, Cl. 250-231.160.

Oae, Yoshihisa: *See—*
Arai, Soichiro; Yasuda, Hiroshi; Kai, Junichi; and Oae, Yoshihisa, 5,369,282, Cl. 250-492.220.

Oakwood, Thomas G.: *See—*
Heitmann, William E.; Rastogi, Prabhat K.; and Oakwood, Thomas G., 5,368,656, Cl. 148-333.000.

Oare, Thomas R.; Brayer, Randall R.; Kahrs, Jeffrey W.; Robinson, Beale A.; Trares, Keith C.; and McQuate, Raymond D., to Goodyear Tire & Rubber Company, The. Radial ply pneumatic tire. 5,368,082, Cl. 152-517.000.

Oates, Stephanie J.: *See—*
Coleman, Charles R.; Oates, Stephanie J.; Colton, James; and Prabhu, Vaikunth S., 5,369,141, Cl. 523-106.000.

Oba, Hidehiro: *See—*
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.

Obata, Tokio; Fujii, Katsutoshi; and Fukuda, Yasuhisa, to Ube Industries, Ltd. Polyfluorinated thiazoline derivative and chemical for controlling noxious organisms containing the same. 5,369,116, Cl. 514-370.000.

Oberman, William Kent: *See—*
Gryder, Edd D., 5,368,746, Cl. 210-739.000.

O'Brien, Paul; and Previato, Mario, to Molex Incorporated. Ejector system for an IC pack connector apparatus. 5,368,493, Cl. 439-160.000.

Obzansky, David M., to Du Pont de Nemours, E. I., and Company. Determination of CK isoenzymes and CK isoforms. 5,369,006, Cl. 435-7.400.

Occidental Chemical Corporation: *See—*
Buckholtz, Harry E.; Saran, Mohan S.; Leitert, Frederick C.; and Flautt, David A., 5,368,832, Cl. 423-316.000.

Oce-Nederland, B.V.: *See—*
Heemels, Robertus P. E. H.; van Vliembergen, Eduardus J. W.; and Cremers, Louis M. G., 5,369,576, Cl. 364-419.080.

OCG Microelectronics, Inc.: *See—*
Schadeli, Ulrich; and Munzel, Norbert, 5,369,200, Cl. 526-262.000.

O'Daly, John P.: *See—*
Henkens, Robert W.; Zhao, Junguo; Wojciechowski, Marek; O'Daly, John P.; Liang, Zhi-Wei; and Morris, Susan E., 5,368,707, Cl. 204-153.120.

Odera, Katsumasa: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Odera, Katsumasa; and Oguchi, Masahiro, 5,368,658, Cl. 148-403.000.

O'Donnell, Michael: *See—*
Byrd, Jerry; and O'Donnell, Michael, 5,367,887, Cl. 62-266.000.

Officine Maccaferri SpA: *See—*
Ferraiolo, Francesco, 5,368,410, Cl. 405-16.000.

Offutt, Timothy J.: *See—*
Henson, John D.; and Offutt, Timothy J., 5,367,924, Cl. 81-57.400.

Ogasawara, Hiroyuki; Yamashita, Nobuyuki; and Minoura, Akira, to Kubota Corporation. Riding lawn mower. 5,367,864, Cl. 56-15.800.

Ogata, Mitsuru; Kobayashi, Hiroyuki; Inagaki, Toshitake; Masuko, Takashi; and Takeuchi, Hiroshi, to Namco Ltd. Shovel type game machine. 5,368,310, Cl. 273-448.000.

Ogata, Yukihiko: *See—*
Wantanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, 5,369,505, Cl. 358-444.000.

Ogawa, Hitoshi, to Matsushita Electric Works, Ltd. Hair clipper. 5,367,772, Cl. 30-201.000.

Ogawa, Junichi: *See—*
Ohashi, Takayuki; Shibata, Kenichi; Ogawa, Junichi; and Wadasako, Mitsushi, 5,369,064, Cl. 501-95.000.

Ogawa, Kazuhiro; and Hori, Kazuto, to Mita Industrial Co., Ltd. Image forming apparatus. 5,369,473, Cl. 355-214.000.

Ogawa, Kohji: *See—*
Kawano, Minori; Ogawa, Kohji; Tsukagoshi, Sadayuki; Kuroiwa, Hiroyuki; Sato, Masato; Ishizaki, Yasuhiro; Komatsu, Fumiaki; and Kuroda, Eiichi, 5,369,782, Cl. 455-16.000.

Ogawa, Ryohei: *See—*
Nazerian, Keyvan; Lee, Lucy F.; Yanagida, Noboru; Ogawa, Ryohei; and Li, Yi, 5,369,025, Cl. 435-235.100.

Ogino, Takashi: *See—*
Matsuo, Masaaki; Ogino, Takashi; Igari, Norihiro; Seno, Hachiro; and Shimomura, Kyoichi, 5,369,107, Cl. 514-252.000.

Ogita, Akira: *See—*
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.

Ogletree, Richard: *See—*
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,368,425, Cl. 409-235.000.
Mills, Daniel M.; Ogletree, Richard; and Lindem, Thomas J., 5,368,539, Cl. 483-1.000.

Oguchi, Masahiro: *See—*
Masumoto, Tsuyoshi; Inoue, Akihisa; Odera, Katsumasa; and Oguchi, Masahiro, 5,368,658, Cl. 148-403.000.

Ogura, Seiki: *See—*
Acocella, Joyce E.; Hsu, Louis L.; Ogura, Seiki; Rovedo, Nivo; and Shepard, Joseph F., 5,369,049, Cl. 437-52.000.

Oguri, Yasuo: *See—*
Mizukami, Tomohito; Funayama, Chihito; and Oguri, Yasuo, 5,369,331, Cl. 313-467.000.

Oh, Jong H.; and Kim, Hong S., to Hyundai Electronics Industries Co., Ltd. Hot carrier protection circuit. 5,369,312, Cl. 327-545.000.

O'Hara, Douglas J., to Navistar International Transportation Corp. Tandem axle alignment device. 5,367,778, Cl. 33-193.000.

Ohara Paragium Chemical Co., Ltd.: *See—*
Uemura, Hiroshi; Yosida, Ethuo; and Iwaki, Shin, 5,369,144, Cl. 525-11.800.

O'Hare, Michael D.: *See—*
Sansone, Ronald P.; O'Hare, Michael D.; Kaye, Steven M.; and Korowotny, Scott, 5,369,258, Cl. 235-381.000.

Ohashi, Takayuki; Shibata, Kenichi; Ogawa, Junichi; and Wadasako, Mitsushi, to Nichias Corporation; and Nissan Motor Co., Ltd. shaped fibrous materials for fiber-reinforced metals. 5,369,064, Cl. 501-95.000.

Ohba, Atsushi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device reading/writing data of multiple bits internally. 5,369,619, Cl. 365-230.030.

Ohgata, Koji: *See—*
Yanai, Kenichi; Tanaka, Tsutomu; Kakehi, Tatsuya; Ohgata, Koji; and Oki, Kenichi, 5,369,512, Cl. 359-59.000.

Ohio State University, The: *See—*
Culbertson, Billy M.; and Kao, Elizabeth C., 5,369,142, Cl. 523-116.000.

Ohishi, Yoshinori: *See—*
Kamiyama, Misao; Ohishi, Yoshinori; and Zeze, Kazuo, 5,368,328, Cl. 280-733.000.

Ohkawa, Nobuyuki: *See—*
Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, 5,369,106, Cl. 514-218.000.

Ohkura Electric Co., Ltd.: *See—*
Furuta, Katsuhisa; Abe, Akira; Ito, Akinori; and Manabe, Hiroyuki, 5,369,567, Cl. 364-149.000.

Ohlson, Kurt: *See—*
Ahlberg, Erik; and Ohlson, Kurt, 5,367,744, Cl. 16-227.000.

Ohminato, Kimihiko: *See—*
Hayashi, Chihiro; and Ohminato, Kimihiko, 5,369,301, Cl. 257-722.000.

Ohmori, Eihachiro: *See—*
Koura, Masahiro; Ishihara, Ryuichi; Chikatsu, Yoshimoto; Nagata, Yukihiko; and Ohmori, Eihachiro, 5,369,700, Cl. 379-387.000.

Ohmura, Masahiko: *See—*
Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, 5,368,063, Cl. 137-340.000.

Ohmura, Takao: *See—*
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.

Ohnishi, Hiroshi: *See—*
Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, 5,369,664, Cl. 375-1.000.

Ohno, Shigemi, to Nichiyu Giken Kogyo Co., Ltd. Heat-sensitive indicator. 5,368,905, Cl. 428-34.100.

Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, to Hitachi, Ltd. Vehicle control apparatus and method therefor. 5,369,581, Cl. 364-424.010.

Ohta, Hisanori: *See—*
Ozawa, Yutaka; and Ohta, Hisanori, 5,369,166, Cl. 524-560.000.

Ohta, Katsuyuki: *See—*
Uchikawa, Kiyoshi; Komano, Hiroshi; Aoyama, Toshimi; and Ohta, Katsuyuki, 5,368,991, Cl. 430-288.000.

Ohta, Shoji: *See—*
Maruno, Fujiya; Ohta, Shoji; and Ichijoh, Shyuji, 5,368,448, Cl. 417-221.000.

Ohta, Wasaburo; Orima, Isamu; Nakazawa, Masashi; Onodera, Yuzi; and Umeki, Kazuhiro, to Ricoh Company, Ltd. Optical information recording medium. 5,368,908, Cl. 428-64.000.

Ohtani, Wataru: *See—*
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.

Ohwada Carbon Industrial Co., Ltd.: *See—*
Takei, Makoto; Kinugawa, Isao; Tamura, Mamoru; and Tashiro, Seiichi, 5,368,940, Cl. 428-408.000.

Ohyama, Yoshishige: *See—*
Ohsuga, Minoru; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Nogi, Toshiharu; Minowa, Toshimichi; and Kimura, Hiroshi, 5,369,581, Cl. 364-424.010.

Oien, Hal J.: *See—*
Johnsen, James B.; and Oien, Hal J., 5,368,482, Cl. 433-163.000.

Oka, Hideki: *See—*
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.

Okada, Masashi; Maeda, Tetsuo; Nakamura, Kenji; and Hibino, Kenichi, to Sanyo Chemical Industries, Ltd. Composite and molding from the composite. 5,369,183, Cl. 525-289.000.

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Yamashita, Kenkichi; and Oyanagi, Hideaki, 5,367,953, Cl. 101-158.000.

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Honig, Helmut; Matzer, Herbert; Pampouchidis, Georg; and Paar, Willibald, 5,369,190, Cl. 525-433.000.

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Dittrich, Keith J.; Petersen, Dennis G.; and Dittrich, John M., 5,368,332, Cl. 280-838.000.

Petersen, Steven H. Apparatus for baiting a fishing line. 5,367,814, Cl. 43-4.000.

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Foged, Niels T.; and Petersen, Svend, 5,369,019, Cl. 435-69.300.

Petersen, Todd L. Aircraft analyzer to determine maximum safe altitude for a given batch of fuel. 5,367,901, Cl. 73-64.450.

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Blomquist, Michael L.; and Peterson, Thomas L., 5,368,562, Cl. 604-65.000.

Petrosius, Steven C.: *See—*
Farcasiu, Malvina; and Petrosius, Steven C., 5,369,214, Cl. 585-469.000.

Petruschke, Haans K.: *See—*
Marlow, Scott C.; Petruschke, Haans K.; Coon, Donald B.; and Nelson, John T., 5,368,606, Cl. 606-170.000.

Petty, Roy L. Expandable wrapping ribbon. 5,367,752, Cl. 24-301.000.

Peyer, Peter. Valve shutter control. 5,367,989, Cl. 123-81.00C.

Pfaffinger, David A., to General Motors Corporation. Quarter turn fastener. 5,368,427, Cl. 411-553.000.

Pfeiffer, Robert W. Valve with truncated aperture providing enhanced rangeability and logarithmic flow characteristic. 5,368,276, Cl. 251-205.000.

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Kenkare, Prashant; Pfiester, James R.; and Sun, Shih-Wei, 5,369,052, Cl. 437-70.000.

Pfost, Dale R.; Coppock, Robert M.; Murray, Donald S.; Pfost, R. Fred; Sanford, Brian; and Puckett, Katherine L., to Beckman Instruments, Inc. User programmable control. 5,369,566, Cl. 364-147.000.

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Tran, Tony N. T.; and Pham, Van N., 5,368,544, Cl. 600-9.000.

Phan, Duc T.; and Le, Tien Q., to Seagate Technology, Inc. Method and apparatus for adaptive control. 5,369,345, Cl. 318-561.000.

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Blomquist, Michael L.; and Peterson, Thomas L., 5,368,562, Cl. 604-65.000.

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Horres, Charles R., Jr., 5,368,571, Cl. 604-131.000.

Philbin, Michael T.: *See—*
Solarek, Daniel B.; Peek, Leroy R.; Henley, Matthew J.; Trksak, Ralph M.; and Philbin, Michael T., 5,368,690, Cl. 162-175.000.

Philip Morris Incorporated: *See—*
Counts, Mary E.; and Wrenn, Susan E., 5,369,723, Cl. 392-386.000.
Nakatani, Herbert Y.; and Malik, Vedpal S., 5,369,023, Cl. 435-193.000.

Philipp, Helmut; and Kurth, Wilfried, to Jagenberg Aktiengesellschaft. Method of and apparatus for the stacking of sheets. 5,368,288, Cl. 271-215.000.

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Phillips, Elizabeth L. Overlay system for design selection. 5,368,485, Cl. 434-75.000.

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Kasting, John R., Jr.; Potter, Ronald G.; and Phillips, Michael P., 5,368,815, Cl. 422-3.000.

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Davey, Mary E.; Gevertz, Diane; Jenneman, Gary E.; Kellogg, Scott T.; Wood, Willis A.; and Clark, J. Bennett, 5,368,099, Cl. 166-246.000.
Hasselbring, Lori C., 5,369,174, Cl. 525-71.000.
Johnston, Everett L.; and Moradi-Araghi, Ahmad, 5,368,412, Cl. 405-128.000.

Phillips, Roger W.: *See—*
Todd, David W.; Brown, Lindsey; Phillips, Roger W.; and Overshiner, Elliot E., 5,368,902, Cl. 427-601.000.

Phillips, W. C. Compact portable tree stand. 5,368,127, Cl. 182-187.000.

Phoenix Closures, Inc.: *See—*
Ekkert, Len, 5,368,469, Cl. 425-556.000.

Photoelectron Corporation: *See—*
Sliski, Alan P.; Dinsmore, Mark T.; Boom, Anthonius J.; and Zervas, Nicholas T., 5,369,679, Cl. 378-65.000.

Piazza, Robert W., to Price Pump Manufacturing Company. Magnetic drive pump with axially adjustable impeller. 5,368,439, Cl. 415-131.000.

Pickering, John R., to Metron Designs Ltd. Method and apparatus for conditioning an electronic component having a characteristic subject to variation with temperature. 5,369,245, Cl. 219-209.000.

Pickett, John E.: *See—*
Christy, Orrin D.; Pickett, John E.; Swanson, Leo; Matheis, Mark A.; and Cousoulis, Marc, 5,368,334, Cl. 283-67.000.

Pielartzik, Harald: *See—*
Wehrmann, Rolf; Kocher, Matthias; Pielartzik, Harald; and Klug, Gunter, 5,368,968, Cl. 430-106.600.

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Krauss, William J.; Pieper, Thomas J.; Ruel, Bernard G.; Stewart, Gilbert M.; and Whildin, Kathleen C., 5,369,696, Cl. 379-268.000.

Pierson, Henri G. W., to D & C Limited. Horizontal belt filter. 5,368,732, Cl. 210-386.000.

Piesinger, Gregory H., to Cable Repair Systems Corporation. Method of finding faults in a branched electrical distribution circuit. 5,369,366, Cl. 324-533.000.

Pillai, Vincent A.: *See—*
Trask, Philip A.; Pillai, Vincent A.; and Gierhart, Thomas J., 5,368,221, Cl. 228-175.000.

Pillet, Michel; and Piriou, Daniel, to France Telecom. Telephonic telemeeting system. 5,369,693, Cl. 379-203.000.

Pillsbury Company, The: *See—*
Frederickson, Dale W.; Meyer, Robert F.; and Anton, Joseph G., 5,367,900, Cl. 73-52.000.
Huang, Victor T.; Kerschner, Laurie E.; and Cullen, Lorri D., 5,368,877, Cl. 426-589.000.

Kirk, David; Tucker, Raymond; Perry, Michael; Reil, Steve; Dugan, Larry M.; Dreher, Michael; and LeFevre, Paul H., 5,367,856, Cl. 53-420.000.

Pioneer Electronic Corporation: *See—*
Asai, Sampei, 5,369,710, Cl. 381-63.000.
Banno, Tutomu; and Nakata, Junichi, 5,369,498, Cl. 358-342.000.
Iizuka, Tatsushi; and Shinohara, Satoshi, 5,369,725, Cl. 395-2.160.

Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Galli, Giuseppe; and Caretta, Renato, 5,368,799, Cl. 264-219.000.

Piriou, Daniel: *See—*
Pillet, Michel; and Piriou, Daniel, 5,369,693, Cl. 379-203.000.

Piro, Ronald A.: *See—*
Gould, Elliot L.; Kemerer, Douglas W.; McAllister, Lance A.; Piro, Ronald A.; Richardson, Guy R.; and Wellburn, Deborah A., 5,369,595, Cl. 364-490.000.

Pirrallo, Frank G.; and Hickey, Gregory M., to General Motors Corporation. Drum brake shoe hold down nail and spring retainer. 5,368,139, Cl. 188-78.000.

Pirzada, Shahid A.: *See—*
Taylor, Patrick R.; and Pirzada, Shahid A., 5,369,241, Cl. 219-121.470.

Pitney Bowes Inc.: *See—*
Belec, Eric A.; and Toth, William D., 5,368,287, Cl. 271-185.000.
Marzullo, Joseph H.; and Mrozinski, Curtis, 5,368,409, Cl. 403-324.000.
Sansone, Ronald P.; O'Hare, Michael D.; Kaye, Steven M.; and Korowotny, Scott, 5,369,258, Cl. 235-381.000.

Pitsch, Ronald P.: *See—*
Brow, Mark J.; and Pitsch, Ronald P., 5,368,803, Cl. 264-257.000.

Pittard, Frederick J., Jr.; Roos, Albert E., Jr.; Leaf, Roger C.; and Drews, Steven W., to Slim Dril International Inc. Apparatus for arcuate drilling. 5,368,109, Cl. 175-45.000.

Pitts, Raymond H.; Schneider, Susan J.; and Huckins, Meri L. Disabling hypodermic syringe. 5,368,568, Cl. 604-110.000.

Pitzer, Ulrike; Lerch, Klaus; and Buxbaum, Gunter, to Bayer AG. Transparent iron oxide pigments, processes for their production and their use. 5,368,640, Cl. 106-456.000.

Plach, Herbert: *See—*
Rieger, Bernhard; Hittich, Reinhard; Poetsch, Eike; Coates, David; and Plach, Herbert, 5,368,772, Cl. 252-299.630.

Plager, Steven P.: *See—*
Johnson, Harold; Kvinge, Daniel J.; Plager, Steven P.; and Zarneke, Richard D., 5,368,452, Cl. 417-395.000.

Plais, Marie-Helene. Presenting unit for dental instrumentation. 5,368,161, Cl. 206-369.000.

Plak, Anthonie J.: *See—*
Hardeman, Gerard; Westerhof, Wilhelmina; Plak, Anthonie J.; and Beens-Onstenk, Anneke, 5,368,945, Cl. 428-458.000.

Plangetis, Gus F., to United States of America, Navy. Coupling stud assembly. 5,368,344, Cl. 285-412.000.

Plant Genetic Systems, N.V.: *See—*
Lambert, Bart J.; Jansens, Stefan K.; and Peferoen, Marnix, 5,369,027, Cl. 435-252.200.

Plastic Specialties and Technologies, Inc.: *See—*
Drozdoff, Matthew L.; and Hopps, Steven R., 5,368,235, Cl. 239-542.000.

Platz, Gerald A., to S-P Reclamation, Inc. Depolymerization method for resource recovery from polymeric wastes. 5,369,215, Cl. 585-241.000.

Plazanet, Veronique: *See—*
Chauveteau, Guy; Lecourtier, Jacqueline; Plazanet, Veronique; and Putz, Antide, 5,368,101, Cl. 166-273.000.

Pleet, Lawrence; and Heminuk, Richard J. Pressurized bag-in-bottle liquid dispensing system. 5,368,195, Cl. 222-52.000.

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Pleva, Mark G.: *See—*
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Pleva Plumbing & Heating, Inc.: *See—*
Pleva, John; and Pleva, Mark G., 5,367,723, Cl. 4-508.000.

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Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,369,042, Cl. 437-31.000.

Pocholle, Jean-Paul; Papuchon, Michel; and Puech, Claude, to Thomson-CSF. Optical fiber monofrequency power source. 5,369,524, Cl. 359-345.000.

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Pohl, Anthony P.: *See—*
Cain, Christopher M. J.; and Pohl, Anthony P., 5,368,044, Cl. 128-739.000.

POHL GmbH & Co. KG: *See—*
Derksen, Klaus, 5,368,177, Cl. 215-249.000.

Polando, Gordon. Medical anti-shock appliance. 5,368,547, Cl. 601-151.000.

Polaroid Corporation: *See—*
Freedman, James R.; and Waller, David P., 5,368,979, Cl. 430-203.000.

Poli Industria Chimica S.p.A.: *See—*
Poli, Stefano; Coppi, Germano; and Busetti, Cesare, 5,369,131, Cl. 514-772.400.

Poli, Stefano; Coppi, Germano; and Busetti, Cesare, to Poli Industria Chimica S.p.A. Oral, cutaneous and intravaginal pharmaceutical compositions in the form of foam. 5,369,131, Cl. 514-772.400.

Poly-Flex, Inc.: *See—*
Markling, Tracy A., 5,368,371, Cl. 301-64.700.

Polymeropoulos, Mihael H.; and Merril, Carl R., to United States of America, Health and Human Services. Five highly informative microsatellite repeat polymorphic DNA markers. 5,369,004, Cl. 435-6.000.

Poncetta, Stanley; Castaldo, John V.; and Spence, Peter G. Method and apparatus for dispensing materials from blister packages. 5,368,187, Cl. 221-30.000.

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Pond, Gary E.; and Pond, Cecil E., 5,368,143, Cl. 190-18.00A.

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Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.

Pool, Stephen R. Filtering air cleaner cover for internal combustion engine. 5,368,621, Cl. 55-323.000.

Poole, Brent W.: *See—*
Holcombe, David A.; and Poole, Brent W., 5,368,029, Cl. 128-636.000.

Poris, Jaime. Selective metal electrodeposition process and apparatus. 5,368,711, Cl. 204-193.000.

Portelli, Gene B.; Schultz, William J.; Boden, John T.; and Kaufer, Daniel M., to Minnesota Mining and Manufacturing Company. Prepreg of thermoplastic polymer particles in liquid thermosettable resin. 5,368,922, Cl. 428-229.000.

Porter Case, Inc.: *See—*
Pond, Gary E.; and Pond, Cecil E., 5,368,143, Cl. 190-18.00A.

Porter, Stephen R.: *See—*
Casper, Stephen L.; and Porter, Stephen R., 5,369,317, Cl. 326-87.000.

Poss, Kathleen M.: *See—*
Santafianos, Dinos P.; Poss, Kathleen M.; Gordon, Eric M.; and McCann, Peggy J., 5,369,123, Cl. 514-428.000.

Post, Sieghard: *See—*
Schrammek, Manfred; Post, Sieghard; Schutz, Klaus; and Theissen, Heinrich, 5,369,389, Cl. 336-206.000.

Poth, Ulrich: *See—*
Hartung, Michael; Lassmann, Walter; Poth, Ulrich; and Wegner, Egon, 5,368,944, Cl. 428-423.100.

Poting, Reiner: *See—*
Peddinghaus, Carl U.; and Poting, Reiner, 5,368,538, Cl. 483-1.000.

Potratz, Robert S.: *See—*
Swedlow, David B.; and Potratz, Robert S., 5,368,026, Cl. 128-633.000.

Potter, Ronald G.: *See—*
Kasting, John R., Jr.; Potter, Ronald G.; and Phillips, Michael P., 5,368,815, Cl. 422-3.000.

Pottick, Lorelle A.; and St. Clair, David J., to Shell Oil Company. Melt blending acid or anhydride-grafted block cooplymer pellets with epoxy resin. 5,369,167, Cl. 525-65.000.

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Burel, Gilles; and Pottier, Isabelle, 5,369,503, Cl. 358-433.000.

Pound, J. Mathews; Miller, J. Allen; and LeMeilleur, Craig A., to United States of America, Agriculture. Device and method for its use as an aid in control of ticks and other ectoparasites on wildlife. 5,367,983, Cl. 119-53.000.

Powers, Christopher M.: *See—*
Manz, Kenneth W.; and Powers, Christopher M., 5,367,886, Cl. 62-195.000.

Powers, Frederick A., to Graco Inc. Quiet check valve. 5,368,454, Cl. 417-536.000.

Powers, John W.; and Choate, Daniel G., to Western Litho Plate & Supply Co. Photographic printing apparatus and method. 5,369,468, Cl. 355-99.000.

Powers, Kenneth W.: *See—*
Yu, Thomas C.; Powers, Kenneth W.; and Wang, Hsien C., 5,369,182, Cl. 525-240.000.

Powers, Robert L.: *See—*
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PPG Industries, Inc.: *See—*
Coleman, Charles R.; Oates, Stephanie J.; Colton, James; and Prabhu, Vaikunth S., 5,369,141, Cl. 523-106.000.

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Practical Peripherals, Inc.: *See—*
Farkas, Steven E., 5,369,687, Cl. 379-98.000.

Prager, John M.: *See—*
Lamberti, Donna M.; Prager, John M.; and Nappari, Mark, 5,369,575, Cl. 364-419.080.

Pratt, Charles F.: *See—*
Morgan, Sarah E.; Pratt, Charles F.; and Savenije, Hermannus B., 5,369,172, Cl. 525-67.000.

Pratt, Vanon D.: *See—*
Mannava, Seetharamaiah; Pratt, Vanon D.; MacLaren, Henry; Jackson, Joseph J.; and Kenney, Patrick M., 5,368,911, Cl. 428-167.000.

Pratt, William C., to Micro Chemical, Inc. Apparatus for administering live bacteria as feed additives to livestock and poultry. 5,369,032, Cl. 435-290.000.

Precision Products Group, Inc.: *See—*
Pavlin, Robert J., 5,368,283, Cl. 267-155.000.

Premier Drywall Tool Co.: *See—*
Murphy, Robert J., 5,368,461, Cl. 425-87.000.

Preshaw, David A.: *See—*
Reynolds, Timothy; Perry, Robert M.; and Preshaw, David A., 5,368,089, Cl. 164-443.000.

Previato, Mario: *See—*
O'Brien, Paul; and Previato, Mario, 5,368,493, Cl. 439-160.000.

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Nair, Parameswaran B.; Evans, John C.; and Price, James F., 5,369,263, Cl. 235-448.000.

Price Pump Manufacturing Company: *See—*
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Warren, Christopher J.; Haushalter, Robert C.; and Bocarsly, Andrew B., 5,368,701, Cl. 204-59.0QM.

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Iverson, Thomas, Jr.; and Prindle, Joyce, 5,369,099, Cl. 514-108.000.

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Procorp. Inc.: *See—*
Confalone, Peter A., Jr.; and Dart, Ronald W., 5,368,489, Cl. 434-410.000.

Procter & Gamble Company, The: *See—*
Clear, Sandra Hintz; Robles, Miguel A.; and Dreier, Kimberly A., 5,368,584, Cl. 604-385.200.
Langdon, Fred M.; Burchnall, John B.; and Hyde, Gregory B., 5,368,909, Cl. 428-137.000.
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Vogel, Alice M.; Severns, John C.; and Wahl, Errol H., 5,368,756, Cl. 252-8.800.

Programme 3 Patent Holding: *See—*
Coetzer, Johan; and Vlok, Isak L., 5,368,955, Cl. 429-103.000.

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Delventhal, Kent A., 5,367,834, Cl. 451-285.000.

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Chan, Alexander; Wenke, Gottfried; and Prota, Ciuseppe, 5,368,610, Cl. 8-406.000.

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Lennox, Charles D.; Noddin, Richard A.; and Sahatjian, Ronald, 5,368,591, Cl. 606-27.000.

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Gruber, Friedrich; Pucher, Hans-Jorg; and Auer, Reinhard, deceased, 5,369,328, Cl. 313-141.000.

Puckett, Katherine L.: *See—*
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Puech, Claude: *See—*
Pocholle, Jean-Paul; Papuchon, Michel; and Puech, Claude, 5,369,524, Cl. 359-345.000.

Pulliam, Richard J.: *See—*
Bergkamp, Alan R.; Jacobs, Richard E.; and Pulliam, Richard J., 5,368,238, Cl. 241-30.000.

Pulsed Power Technologies, Inc.: *See—*
Ayers, Richard A.; and Wesley, Richard H., 5,368,724, Cl. 210-110.000.

Puritan-Bennett Corporation: *See—*
Latorraca, Gary, 5,368,019, Cl. 128-204.180.

Purnell, Peter F. Pet litter box. 5,367,984, Cl. 119-166.000.

Purvis, William L. Grill steamer tray. 5,367,951, Cl. 99-450.000.

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Quadir, Tariq, to Ferro Corporation. Use of ethylene/vinyl acetate polymer binders as drying pressing aids for ceramic powders. 5,368,795, Cl. 264-63.000.

Quantum Chemical Corporation: *See—*
Cribbs, Leonard V.; and Lynch, Michael W., 5,369,194, Cl. 526-116.000.

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Quentin, Werner; and Stephan, Bernd, to Goetze AG. Method for making a cover assembly for use on an internal combustion engine. 5,368,797, Cl. 264-152.000.

Quesinberry, Gene: *See—*
Owenby, Daniel B.; and Quesinberry, Gene, 5,368,611, Cl. 8-444.000.

Quickie Manufacturing Corporation: *See—*
Vosbikian, Peter S.; and Vartanian, Haig, 5,367,737, Cl. 15-257.200.

Quirk, Brian J.; and Bennett, Robert R., to Wanderer Saf-T-Lok. Magnetic security system responsive to predetermined persons. 5,369,394, Cl. 340-551.000.

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Hiraoka, Hiroyuki; Latsch, Stefan A.; and Xiao, Rong-Fu, 5,368,681, Cl. 427-585.000.

R. J. Reynolds Tobacco Company: *See—*
Weavil, Randy K.; and Adderton, Brian C., 5,368,460, Cl. 425-72.100.
White, Jackie L.; and Perfetti, Thomas A., 5,368,879, Cl. 426-650.000.

R. W. Lyall & Company, Inc.: *See—*
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Rabas, Michael A.: *See—*
Kress, Edward S.; Thomas, Dennis R.; and Rabas, Michael A., 5,368,434, Cl. 414-460.000.

Rabl, Ari; and Gordon, Jeff M., to Association pour la Recherche et le Developpement des Methodes et Processus Industriels - A.R.M.I.N.E.S. Plane or cylindrical reflector for source of radiation. 5,369,528, Cl. 359-855.000.

Raby, Bruce R.: *See—*
Raby, Frederick R., Sr.; and Raby, Bruce R., 5,368,495, Cl. 439-226.000.

Raby, Frederick R., Sr.; and Raby, Bruce R. Method and adapter for relocating a fluorescent tube in a fixture. 5,368,495, Cl. 439-226.000.

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Beauchamp, Charles H.; Dean, Laurence M.; and Raffa, Anthony V., 5,367,970, Cl. 114-140.000.

Raghavan, Ananth: *See—*
Spiro, Peter M.; Raghavan, Ananth; and Rengarajan, Tirumanjanam K., 5,369,757, Cl. 395-575.000.

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Raible, Donald A., to Baxter International Inc. Blood pump. 5,368,438, Cl. 415-74.000.

Raisoni, Jayprakash U.: *See—*
Compeau, David E.; Raisoni, Jayprakash U.; and Shah, Suresh D., 5,367,832, Cl. 49-502.000.

Raj, Guru B.; Sud, Om P.; and Flanders, Ted L., to Xerox Corporation. Microprocessor controlled high voltage power supply. 5,369,472, Cl. 355-208.000.

Rajeshwar, Krishnan; Wei, Chang; and Basak, Sanjay, to Board of Regents, The University of Texas System. Redox polymer films for metal recovery applications. 5,368,632, Cl. 75-721.000.

Rajput, Amarjeet M. R.: *See—*
Choudhary, Vasant R.; Rane, Vilas H.; and Rajput, Amarjeet M. R., 5,368,835, Cl. 423-651.000.

Raman, L. Venkata; and Salmon, Stephen M., to C. R. Bard, Inc. Superelastic formable guidewire with malleable cladding. 5,368,049, Cl. 128-772.000.

Rambo, Robert D.; and Yorke, John, to Medical Development Systems, Inc. Suction nozzle. 5,368,560, Cl. 604-35.000.

Ramon, Arie; and Almagor, Elath. Seating apparatus for supporting a person in a manner which reduces sedentary ailments by allowing for a tilting movement of the seating means. 5,368,362, Cl. 297-310.000.

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Giles Grady L.; Atwell, William D., Jr.; Wilson, Jesse R.; and Reis, Richard B., 5,369,752, Cl. 395-425.000.

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Richard, Andre L. Trolling valve safety device. 5,368,510, Cl. 440-84.000.

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Watada, Atsuyuki; Tokita, Toshiaki; and Tanaka, Motoharu, 5,369,629, Cl. 369-13.000.
Yamashita, Hiroshi; Kotsugai, Akihiro; Watanabe, Yoichiro; Katoh, Koichi; and Kawase, Hiromitsu, 5,368,972, Cl. 430-137.000.

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Ronney, Kenneth R., to Hughes Aircraft Company. High-power xenon-arc searchlight with unlimited vertical beam direction. 5,369,557, Cl. 362-285.000.

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Rood, Patrick S.: *See*—
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Kono, Ikuo; and Yang, David S., 5,368,415, Cl. 405-267.000.
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Platz, Gerald A., 5,369,215, Cl. 585-241.000.
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Sagar, Christopher L. Chiller pressurization system. 5,367,885, Cl. 62-125.000.
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Sallmann, Alfred; Gschwind, Hans-Peter; and Francotte, Eric, to Ciba-Geigy Corporation. 5-(3-formylamino-4-hydroxyphenyl)-3-(1-(4-methoxyphenyl)prop-2-yl)-oxazolidines. 5,369,117, Cl. 514-374.000.
Salmon, John K.: *See—*
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Salmon, Stephen M.: *See—*
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Samani, Jacques: *See—*
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Gerk, Wilfried; and Hirt, Hartmut, 5,368,420, Cl. 408-156.000.
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Kim, Dae-il, 5,369,338, Cl. 315-169.400.
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Harford, Jack R., 5,369,445, Cl. 348-618.000.
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Ko, Seok-Kyung, 5,369,509, Cl. 358-498.000.
Lee, Sang-rak, 5,369,448, Cl. 348-668.000.
Lee, Young-Sub, 5,369,798, Cl. 455-33.100.
Lim, Young H.; and Lee, Hyong G., 5,369,608, Cl. 365-104.000.
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Sand Mark Corp.: *See—*
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Sanders, H. Thomas: *See—*
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Sanderson, Charles H., to Magnatech Corporation. Growth regulation of zebra mussels through magnetic water treatment. 5,368,748, Cl. 210-748.000.
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Sandhu, Gurtej S.; Westmoreland, Donald L.; and Fazan, Pierre, to Micron Technology, Inc. Semiconductor processing method of etching insulating inorganic metal oxide materials and method of cleaning metals from the surface of semiconductor wafers. 5,368,687, Cl. 156-664.000.
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Sandonato, James L.: *See—*
Draper, Ronald A.; and Sandonato, James L., 5,368,810, Cl. 264-523.000.
Sandridge, James B. Perfusion controlled guiding catheter apparatus and method. 5,368,579, Cl. 604-249.000.
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Sane, Ajit Y.: *See—*
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Sanematsu, Hiroaki; and Hagihara, Tatsumi, to Mazda Motor Corporation. Apparatus for controlling change ratio of stepless transmission. 5,368,530, Cl. 477-43.000.
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Sangu, Akio, to Kabushiki Kaisha Toshiba. Document reader and reading processing method therefor. 5,369,716, Cl. 382-61.000.
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Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, 5,369,106, Cl. 514-218.000.
Sankyo Seiki Mfg. Co., Ltd.: *See—*
Kinoshita, Shinji; and Murayama, Yoshitaka, 5,369,537, Cl. 360-99.120.
Sano, Akira; Shiraishi, Takeichi; Suzuki, Kunihiro; Okamoto, Mitsuo; and Matsuura, Kazuo, to Nippon Oil Company, Limited. Process for preparing polyolefins. 5,369,193, Cl. 526-116.000.
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Tsujii, Eiichiro, 5,368,509, Cl. 440-56.000.
Sansom, Kenneth C. Trigger lock device. 5,367,811, Cl. 42-70.070.
Sansone, Ronald P.; O'Hare, Michael D.; Kaye, Steven M.; and Korowotny, Scott, to Pitney Bowes Inc. Postage applying kiosk. 5,369,258, Cl. 235-381.000.
San Soucie, Marc; Surprenant, Carolyn E.; Fitzgerald, Thomas; and Walker, Susan, to Wang Laboratories, Inc. Data processor that customizes program behavior by using a resource retrieval capability. 5,369,778, Cl. 395-800.000.
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Takehashi, Takeshige, 5,368,093, Cl. 165-46.000.
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Okada, Masashi; Maeda, Tetsuo; Nakamura, Kenji; and Hibino, Kenichi, 5,369,183, Cl. 525-289.000.
Sanyo Electric Co., Ltd.: *See—*
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Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; and Murata, Haruhiko, 5,369,436, Cl. 348-355.000.
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, 5,369,378, Cl. 332-104.000.
Mukai, Kiyotaka, 5,367,771, Cl. 30-43.920.
Sunaga, Takashi; and Komatsubara, Takeo, 5,369,287, Cl. 252-50.000.
Sanz, Agut, to Agut, S.A. Mechanical interlock for contactor banks. 5,369,229, Cl. 200-50.00C.
Saran, Mohan S.: *See—*
Buckholtz, Harry E.; Saran, Mohan S.; Leitert, Frederick C.; and Flautt, David A., 5,368,832, Cl. 423-316.000.
Saranda Corporation: *See—*
Zuckerman, Raymond S., 5,368,551, Cl. 602-23.000.
Sarcol, Inc.: *See—*
Kloskowski, Alan B., 5,368,086, Cl. 164-33.000.
Sarich, Richard T., to RTS Enterprises, Inc. Vertical heat source rotisserie. 5,367,950, Cl. 99-421.00H.
Sasakawa, Tomoyoshi: *See—*
Koike, Tadashi; Mizukuki, Tadahiko; Sasakawa, Tomoyoshi; Suzuki, Yuko; and Shiina, Kouichi, 5,369,321, Cl. 369-275.400.
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Kurihara, Kazuaki; Sasaki, Kenichi; Kawarada, Motonobu; and Koshino, Nagaaki, 5,368,897, Cl. 427-450.000.
Sasaki, Kunimasa: *See—*
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Sasaki, Tsutomu: *See—*
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Sasaki, Yoshiharu: *See—*
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Sashihara, Kenji; and Minato, Shigeru, to Fuji Photo Film Co., Ltd. Paper tube for photosensitive materials. 5,368,671, Cl. 156-195.000.
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Satani, Norihiko; and Cho, Shizuo, to Oki Electric Industry Co., Ltd. Bootstrapped high-speed output buffer. 5,369,320, Cl. 327-108.000.
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Sato, Kanji; Nakajima, Masato; and Magome, Ko, to Kashima-Kita Electric Power Corporation. Method for producing vanadium electrolytic solution. 5,368,762, Cl. 252-62.200.

Sato, Kenichi; Mukai, Hidehito; and Hikata, Takeshi, to Sumitomo Electric Industries, Ltd. Method of preparing oxide superconducting wire. 5,369,089, Cl. 505-433.000.
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Sato, Masato: *See*—
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Sato, Tetsuya: *See*—
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Sato, Tominori: *See*—
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Satoh, Takao: *See*—
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Satoshi, Omura; and Haruo, Ikeda, to Kitasato Institute, The. Microorganism for selective production of a specific compound of avermectin and a method for selective production thereof. 5,369,021, Cl. 435-71.300.
Sauer, Jude S.; and Greenwald, Roger J., to LaserSurge, Inc. Trocar wound closure device. 5,368,601, Cl. 606-144.000.
Sauerbrunn, Steven R.: *See*—
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Saunders, Craig M.: *See*—
Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.
Saupe, Alfred; and Jakli, Antal, to Kent State University. Method of preparing thin liquid crystal films. 5,368,770, Cl. 252-299.010.
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Blakeway, John M.; and Sauvage, Francoise, 5,369,092, Cl. 512-2.000.
Savage Bros. Co.: *See*—
Wilke, Rudeger H.; and Floreani, David, 5,368,130, Cl. 187-236.000.
Savage, Huey P. Archery bow torque sight. 5,367,780, Cl. 33-265.000.
Savage, John M., Jr. Apparatus to connect LEDs at display panel to circuit board. 5,368,503, Cl. 439-502.000.
Savage, Steven D., to Angeion Corporation. Steerable catheter. 5,368,564, Cl. 604-95.000.
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Savenije, Hermannus B.: *See*—
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Sawada, Hiroyuki: *See*—
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Sawada, Kazutoshi: *See*—
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Sawada, Shintaro: *See*—
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Sawtek, Inc.: *See*—
Gore, John G.; and Tolar, Neal J., 5,369,551, Cl. 361-767.000.
Scally, Andrew V.; and Cai, Renzhi, to Administrators of the Tulane Educational Fund, The. Polypeptide bombesin antagonists. 5,369,094, Cl. 514-15.000.
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Scanlan, David J.: *See*—
Lammers, Ted J.; Newman, Norman; Romaszewski, Karen M.; Scanlan, David J.; and Fenoglio, Alfredo, 5,368,894, Cl. 427-407.100.
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Gambrill, Jeffrey S.; Hutchings, William F.; Markle, Stephen L.; Schutte, Marlin; and Palmer, John M., 5,368,390, Cl. 366-273.000.
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Hwo, Charles C., 5,369,181, Cl. 525-240.000.
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Machado, Joseph M.; and French, Raymond N., 5,369,180, Cl. 525-185.000.
Pottick, Lorelle A.; and St. Clair, David J., 5,369,167, Cl. 525-65.000.
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Steinke, Doerte; Kula, Maria-Regina; Schwarz, Alexander; and Wandrey, Christian, to Forschungszentrum Juelich GmbH; and Degussa Aktiengesellschaft. Peptide amidase and the use thereof. 5,369,016, Cl. 435-68.100.
Steinmetzer, Walter, to Amino GmbH. Process for manufacturing a humectant. 5,369,122, Cl. 514-423.000.
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Quentin, Werner; and Stephan, Bernd, 5,368,797, Cl. 264-152.000.
Stephens, Beery W.; and Stephens, Carey S. Foot washer apparatus. 5,367,720, Cl. 4-494.000.
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Stephenson, Stanley W.; and Jeanmaire, David, to Eastman Kodak Company. Method and apparatus for marking a receiver media with specularly differentiated indicia. 5,369,419, Cl. 347-61.000.
Stephinson, William P. Bullet resistant glass. 5,368,904, Cl. 428-34.000.
Sterling Winthrop Inc.: *See—*
Baker, Edward J.; Lee, Robert W.; Cooper, Eugene R.; Toner, John L.; and Illig, Carl R., 5,368,837, Cl. 424-5.000.
Covington, Roger G.; Malburne, Karen A.; Mehl, Douglas C.; and Niedospial, John, 5,368,578, Cl. 604-232.000.
Stern, Roger A.; Edwards, Stuart D.; and Jackson, Jerome, to EP Technologies, Inc. Articulated systems for cardiac ablation. 5,368,592, Cl. 606-33.000.
Stevens, James C.: *See—*
Park, Chung P.; Stevens, James C.; and Knight, George W., 5,369,136, Cl. 521-143.000.
Stevens, Travis E.: *See—*
Chiou, Shang-Jaw; Sheng, Miao-Hsun L.; Hook, John W., III; and Stevens, Travis E., 5,369,163, Cl. 524-458.000.
Stewart, Gilbert M.: *See—*
Krauss, William J.; Pieper, Thomas J.; Ruel, Bernard G.; Stewart, Gilbert M.; and Whildin, Kathleen C., 5,369,696, Cl. 379-268.000.
Stewart, Wallace S.; and Greisch, Danny L., to Eastman Kodak Company. Ultrasonic apparatus for cutting and placing individual chips of light lock material. 5,368,464, Cl. 425-174.200.
Stich, Walter: *See—*
Voit, Arno; and Stich, Walter, 5,368,312, Cl. 277-26.000.
Stieff, Michael T.: *See—*
Naas, Dennis E.; and Stieff, Michael T., 5,369,602, Cl. 364-562.000.
Stinton, Vincent D.: *See—*
Page, David M.; Riggs, Elvin; Newell, Joseph P.; and Stinton, Vincent D., 5,369,699, Cl. 379-38.000.
STL International, Incorporated: *See—*
Teeter, Roger C.; and Smith, Lawrence C., 5,368,320, Cl. 280-14.200.
Stodgell, Mark E. Ankle rehabilitation device. 5,368,536, Cl. 482-79.000.
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Woods, Daniel C.; and Stogner, William S., 5,369,387, Cl. 335-216.000.
Stoll, Kurt; and Wagner, Albrecht, to Festo KG. Rotary-linear unit. 5,367,943, Cl. 92-2.000.
Stoll, Steven: *See—*
Hishon, Michael K.; and Stoll, Steven, 5,367,917, Cl. 74-531.000.
Stoller, Christian: *See—*
Roscoe, Bradley A.; and Stoller, Christian, 5,369,578, Cl. 364-422.000.
Stone, Thomas L., to Summagraphics Corporation. Stylus switch status determination in a digitizer tablet having a cordless stylus. 5,369,227, Cl. 178-18.000.
Stone & Webster Engineering Corp.: *See—*
Masoomian, Stephen Z., 5,368,726, Cl. 210-188.000.
Stone, William C., to Cis-Lunar Development Laboratories, Inc. Breathing apparatus mouthpiece. 5,368,018, Cl. 128-201.280.
Storage Technology Corporation: *See—*
Dodt, William C.; Donze, Jerry L.; Gottehrer, Terry R.; Korngiebel, Ronald W.; and McCarthy, Donald F., 5,369,532, Cl. 360-48.000.
Dodt, William C.; Liehe, Thomas G.; McCarthy, Donald F.; and Milligan, Charles A., 5,369,641, Cl. 371-2.200.
Storch, John G.: *See—*
Beard, Lane F.; Disch, Daniel I.; and Storch, John G., 5,368,021, Cl. 128-205.120.
Storch, Randy S.: *See—*
Dutra, Antonio; Kapes, Gordon K.; and Storch, Randy S., 5,369,686, Cl. 379-94.000.
Stork Screens B.V.: *See—*
Sonneveld, Pieter J., 5,368,952, Cl. 429-67.000.
Storm, Mark E., to United States of America, National Aeronautics and Space Administration. Reduction of parasitic lasing. 5,369,662, Cl. 372-99.000.
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Oliff, James R.; and Stout, James T., 5,368,194, Cl. 221-305.000.
Stoy, George P.; and Blashka, Kenneth H. Method of making radio-opaque tipped, sleeved guidewire and product. 5,368,048, Cl. 128-772.000.
Stratmann, Martin; and Streckel, Heinz, to Max-Planck-Institut fuer Eisenforschung GmbH. Method and apparatus for the measurement of the corrosion potential between a coated metal surface and a reference electrode. 5,369,370, Cl. 324-663.000.
Streckel, Heinz: *See—*
Stratmann, Martin; and Streckel, Heinz, 5,369,370, Cl. 324-663.000.
Strelioff, William P. Mobile weighing system. 5,369,222, Cl. 177-136.000.
Strobel, Thomas A.: *See—*
Iverson, Donald D.; and Strobel, Thomas A., 5,367,795, Cl. 36-136.000.
Strobl, Georg, to Johnson Electric S.A. Cylindrical carbon segment commutator. 5,369,326, Cl. 310-235.000.
Strong, Douglas M.: *See—*
Nelson, Karen A.; and Strong, Douglas M., 5,369,010, Cl. 435-7.240.
Stubbs, Robert E.: *See—*
Larson, David; Stubbs, Robert E.; and Edstrom, Gene, 5,369,758, Cl. 395-575.000.
Stuber, Fred A.; Martinez, Michael M.; Morgan, Michael J.; and Chandalia, Kiran B., to Olin Corporation. Low VOC, fast drying, moisture curable, one-component isocyanate-based coating compositions. 5,369,208, Cl. 528-53.000.
Stutts, Kenneth J.: *See—*
Johnson, David R.; Stutts, Kenneth J.; Batzel, Daniel A.; Hallfrisch, Virginia A.; and Anschutz, James E., 5,368,889, Cl. 427-244.000.
Su, C. J.: *See—*
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Sublett, Bobby J.: *See—*
George, Scott E.; and Sublett, Bobby J., 5,369,210, Cl. 528-293.000.
George, Scott E.; Jordan, Donna L.; and Sublett, Bobby J., 5,369,211, Cl. 528-293.000.
Subramanian, Malathy: *See—*
Gaffar, Abdul; Afflitto, John; and Subramanian, Malathy, 5,368,845, Cl. 424-54.000.
Sud, Om P.: *See—*
Raj, Guru B.; Sud, Om P.; and Flanders, Ted L., 5,369,472, Cl. 355-208.000.
Sudo, Toru; Kuramoto, Takashi; Seno, Yasuhiro; Mogi, Masao; and Urase, Hisato, to Toppan Printing, Co., Ltd. Dampening water controller. 5,368,817, Cl. 422-62.000.
Sudo, Yoshihisa: *See—*
Okumura, Katsuya; Sudo, Yoshihisa; Goshima, Kenichi; Itafuji, Hiroshi; and Kojima, Akihiro, 5,368,062, Cl. 137-240.000.
Suga, Yasutaka, to Ibaraki Seiki Machinery Company, Ltd. Packaging apparatus. 5,367,859, Cl. 53-550.000.
Sugahara, Tatsuya; Takagi, Takao; Mochizuki, Kimio; and Akiyama, Shigetoshi, to Tokyo Gas Company Ltd.; and Takagi Ind. Co., Ltd. Low-NO_x gas burner. 5,368,476, Cl. 431-285.000.
Sugar, Robert: *See—*
Georgis, Steven P.; Sugar, Robert; Brittner, Rodney; and Fox, Thomas D., 5,369,285, Cl. 250-561.000.
Sugawara, Hayato: *See—*
Monji, Tatsuhiko; Horikoshi, Shigeru; Shimada, Kousaku; and Sugawara, Hayato, 5,369,580, Cl. 364-424.010.
Sugawara, Kenji, to Kabushiki Kaisha Shinkawa. Bonding wire inspection apparatus. 5,369,492, Cl. 356-394.000.
Suggs, Donald R., Sr., to Tire Shuttle, Inc. Tire handling tool. 5,367,732, Cl. 7-100.000.
Sugibayashi, Tadahiko, to NEC Corporation. Dynamic random access memory device having column selector for selecting data lines connectable with bit lines. 5,369,620, Cl. 365-230.030.
Sugimoto, Tomio: *See—*
Tanaka, Masaaki; and Sugimoto, Tomio, 5,368,650, Cl. 134-15.000.
Sugita, Minoru: *See—*
Torii, Takayoshi; Sugita, Minoru; and Tachikawa, Toshiyuki, 5,368,934, Cl. 428-372.000.
Sugiyama, Genpei: *See—*
Anzai, Mitsutoshi; Akuzawa, Noboru; Matsuura, Yuuji; and Sugiyama, Genpei, 5,368,971, Cl. 430-110.000.
Sugiyama, Nobuo; and Yamashita, Naoko, to Fuji Photo Film Co., Ltd. Photographic film cassette and method of manufacturing the same. 5,368,664, Cl. 156-69.000.
Suh, Kyung W.: *See—*
Paquet, Andrew N.; and Suh, Kyung W., 5,369,137, Cl. 521-146.000.
Sullivan, Michael J.; and Nesbitt, R. Dennis, to Lisco, Inc. Low spin golf ball. 5,368,304, Cl. 273-220.000.
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, to Green Cross Corporation, The. Method for suppressing coloring of human serum albumin. 5,369,020, Cl. 435-69.600.
Sumikin Precision Forge Inc.: *See—*
Hayashi, Chihiro; and Ohminato, Kimihiko, 5,369,301, Cl. 257-722.000.
Sumitomo Chemical Company, Limited: *See—*
Furuta, Motonobu, 5,369,173, Cl. 525-68.000.
Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, 5,368,987, Cl. 430-270.000.

Kurimoto, Isao; Inui, Naoki; Yamatsuta, Kohji; Murotani, Hitoshi; Nagasaki, Hideo; and Yachigo, Shinichi, 5,369,143, Cl. 523-215.000.
Sumitomo Electric Industries, Inc.: *See*—
Mukai, Hidehito; Sato, Kenichi; and Shibuta, Nobuhiro, 5,369,088, Cl. 505-432.000.
Sumitomo Electric Industries, Ltd.: *See*—
Fujimoto, Tsuyoshi, 5,368,374, Cl. 303-113.200.
Harada, Keizo; Takikawa, Takatoshi; Maeda, Takao; Ban, Shunsuke; and Yamanaka, Shosaku, 5,369,220, Cl. 174-257.000.
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Inazawa, Shinji; and Yamada, Kouichi, 5,368,935, Cl. 428-375.000.
Londo, Katsuyoshi; and Yoshinobu, Takeda, 5,368,629, Cl. 75-249.000.
Matsuzaki, Shin-ichi, 5,367,898, Cl. 73-1.00E.
Sato, Kenichi; Mukai, Hidehito; and Hikata, Takeshi, 5,369,089, Cl. 505-433.000.
Yoshimura, Masashi; Matsui, Jin-Joo; Yamamoto, Takehisa; and Yamakawa, Akira, 5,369,065, Cl. 501-97.000.
Sumitomo Heavy Industries, Ltd.: *See*—
Miki, Kouhei; Yamamoto, Takuya; Shishido, Yoshiko; and Mieno, Mitsuhiro, 5,368,688, Cl. 162-56.000.
Sumitomo Metal Industries, Ltd.: *See*—
Hayashi, Chihiro; and Ohminato, Kimihiko, 5,369,301, Cl. 257-722.000.
Sumitomo Rubber Industries, Inc.: *See*—
Banji, Masatoshi, 5,368,422, Cl. 409-84.000.
Sumitomo Wiring Systems, Ltd.: *See*—
Hayashi, Hiroyuki, 5,368,492, Cl. 439-157.000.
Sumiyoshi, Iwao: *See*—
Kawabata, Masami; Sato, Akihiko; and Sumiyoshi, Iwao, 5,368,990, Cl. 430-281.000.
Summagraphics Corporation: *See*—
Stone, Thomas L., 5,369,227, Cl. 178-18.000.
Sun, Shih-Wei: *See*—
Kenkare, Prashant; Pfiester, James R.; and Sun, Shih-Wei, 5,369,052, Cl. 437-70.000.
Sunaga, Takashi; and Komatsubara, Takeo, to Sanyo Electric Co., Ltd. Refrigerator oil composition containing phenolic antioxidant amine and phosphoric triester components. 5,369,287, Cl. 252-50.000.
Sunami, Masaki; Maruyama, Koji; Hori, Mitsuhiko; Tokuda, Shoichi; Saito, Kenichiro; and Kishi, Ikuo, to Nitto Denko Corporation. Preparation for transdermal drug administration. 5,368,860, Cl. 424-448.000.
Sunbeam Corporation Limited: *See*—
Wilson, Ian G.; Hoare, Richard L.; and Krusina, Leo, 5,367,799, Cl. 38-77.700.
Sundberg, Carl B. Key holder. 5,367,896, Cl. 70-457.000.
SunDisk Corporation: *See*—
Harari, Eliyahou; Guterman, Daniel C.; Mehrotra, Sanjay; and Gross, Stephen J., 5,369,615, Cl. 365-218.000.
Sunouchi, Yujiro; and Sakamoto, Hiroshi. Measuring system for vital muscle activity. 5,368,043, Cl. 128-733.000.
Sunpower Corporation: *See*—
Swanson, Richard M., 5,369,291, Cl. 257-130.000.
Suntec Industries Incorporated: *See*—
Hunsberger, Dale L.; and Harwath, Frank L., 5,368,068, Cl. 137-493.700.
Suppiah, Sellathurai; Burns, Deborah L.; Irving, Karen G.; and Aelick, Christopher R., to Atomic Energy of Canada Limited. Catalyst structures and burners for heat producing devices. 5,368,475, Cl. 431-268.000.
Surprenant, Carolyn E.: *See*—
San Soucie, Marc; Surprenant, Carolyn E.; Fitzgerald, Thomas; and Walker, Susan, 5,369,778, Cl. 395-800.000.
Suruga, Toshihiro: *See*—
Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, 5,369,066, Cl. 501-108.000.
Sussman, Barry. System and method for automatically controlling the audio output of a television. 5,369,440, Cl. 348-462.000.
Sussman, Norman L.; Kelly, James H.; and Lobdell, Donn D., to Hepatix, Inc. Organ support system. 5,368,555, Cl. 604-4.000.
Suter, Willi: *See*—
Albrecht, Gerhard; Leitner, Hubert; Lindenberger, Rudolf; Siedl, Richard; Werenka, Christian; and Suter, Willi, 5,369,198, Cl. 526-240.000.
Sutera, Carl M. Self-filling bottled-water cooler conversion kit. 5,368,197, Cl. 222-67.000.
Suto, Naoki: *See*—
Tsukamoto, Kazuyuki; Yoshida, Minoru; Hosaka, Ryuji; Fukao, Tomoo; Kido, Naoharu; and Suto, Naoki, 5,369,688, Cl. 379-100.000.
Sutter, Franz; and Mundwiler, Ulrich, to Institut Straumann AG. Device for fixing a dental prosthesis to a jaw bone. 5,368,483, Cl. 433-173.000.
Sutton, Mark E.: *See*—
Burch, Ronald H.; Sutton, Mark E.; Henry, Frank B.; and Cancienne, Warren E., 5,367,929, Cl. 83-177.000.
Suzaki, Yukihiko: *See*—
Takahashi, Hideo; and Suzaki, Yukihiko, 5,369,346, Cl. 318-568.170.
Suzukawa, Kenji: *See*—
Kawasaki, Kenji; Kawakami, Masashi; Suzukawa, Kenji; and Wada, Setsu, 5,368,382, Cl. 366-2.000.
Suzuki, George R. Disposable safety guard for syringe needles and the like. 5,368,580, Cl. 604-263.000.
Suzuki, Keiichi: *See*—
Ushimaru, Akira; Hashimoto, Hiroshi; Hanai, Kazuko; and Suzuki, Keiichi, 5,368,949, Cl. 428-694.0BS.
Suzuki, Kenzi; and Mori, Toshiaki, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for production of pillared clay having cation-exchange capacity. 5,369,069, Cl. 502-63.000.
Suzuki, Koji: *See*—
Koike, Yukiya; Suzuki, Koji; and Ichikawa, Yataro, 5,369,038, Cl. 436-548.000.
Suzuki, Kunihiro: *See*—
Sano, Akira; Shiraishi, Takeichi; Suzuki, Kunihiro; Okamoto, Mitsuo; and Matsuura, Kazuo, 5,369,193, Cl. 526-116.000.
Suzuki, Masayuki: *See*—
Inoguchi, Kazuhiro; Suzuki, Masayuki; Ito, Nobuei; and Hattori, Tadashi, 5,369,333, Cl. 313-509.000.
Suzuki, Nobumasa, to Canon Kabushiki Kaisha. Photo-excited processing apparatus for manufacturing a semiconductor device that uses a cylindrical reflecting surface. 5,368,647, Cl. 118-723.00I.
Suzuki, Seiichi: *See*—
Okamoto, Jun; Goto, Yujiro; Kitano, Masao; and Suzuki, Seiichi, 5,368,760, Cl. 252-47.500.
Suzuki, Tamotsu; Tago, Tomohisa; and Shinozaki, Fumiaki, to Fuji Photo Film Co., Ltd. Image forming process. 5,368,982, Cl. 430-256.000.
Suzuki, Tomohisa: *See*—
Kamei, Masanao; and Suzuki, Tomohisa, 5,369,206, Cl. 528-32.000.
Suzuki, Yoshie; Nakamura, Shin; and Nakagawa, Akio, to Kabushiki Kaisha Toshiba. Method for processing and displaying hidden-line graphic images. 5,369,734, Cl. 395-121.000.
Suzuki, Yoshihiko; and Murakami, Kazunori, to Nissho Corporation. Suction-type blood sampler. 5,368,047, Cl. 128-765.000.
Suzuki, Youhei: *See*—
Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, 5,368,916, Cl. 428-215.000.
Suzuki, Yuko: *See*—
Koike, Tadashi; Mizukuki, Tadahiko; Sasakawa, Tomoyoshi; Suzuki, Yuko; and Shiina, Kouichi, 5,369,321, Cl. 369-275.400.
Swan, George A., III: *See*—
Dolan, John F.; Goldstein, Stuart S.; and Swan, George A., III, 5,368,720, Cl. 208-65.000.
Swanbeck, Gunnar; and Faergemann, Jan, to Hydro Pharma AB. Preparation of topical treatment of infections caused by virus, bacteria and fungi. 5,369,129, Cl. 514-738.000.
Swanson, Leo: *See*—
Christy, Orrin D.; Pickett, John E.; Swanson, Leo; Matheis, Mark A.; and Cousoulis, Marc, 5,368,334, Cl. 283-67.000.
Swanson, Richard M., to Sunpower Corporation. Voltage controlled thyristor. 5,369,291, Cl. 257-130.000.
Swedlow, David B.; and Potratz, Robert S., to Nellcor Incorporated. Oximeter with motion detection for alarm modification. 5,368,026, Cl. 128-633.000.
Sweeney Enterprises, Inc.: *See*—
Ransom, Leland B., II, 5,368,192, Cl. 221-277.000.
Swenson, Charles B.: *See*—
Schmoegner, John C.; and Swenson, Charles B., 5,368,821, Cl. 422-116.000.
SwimEx Systems Inc.: *See*—
Mermelstein, Seymour, 5,367,719, Cl. 4-488.000.
Sylvestro, Joseph A.; Linask, Indrik; and Beabout, Brian K., to United Technologies Corporation. Turbine airfoil including diffusing trailing edge pedestals. 5,368,441, Cl. 416-97.00R.
Symbiosis Corporation: *See*—
Scarfone, Frank A.; Turkel, David; and Weisenborn, Alan L., 5,368,046, Cl. 128-754.000.
Symbol Technologies, Inc.: *See*—
Dvorkis, Paul; Thomas, Ralph; Goren, David; Fuller, Robert; and Goldner, Leonard H., 5,369,262, Cl. 235-472.000.
Rosa, Ralph; Greenrose, Jay; Benzalel, Menashe; Dvorkis, Paul; Barkan, Christina S.; and Barkan, Edward, 5,369,264, Cl. 235-462.000.
Schuessler, Frederick, 5,369,260, Cl. 235-463.000.
Synopsys Inc.: *See*—
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.
Synporin Technologies, Inc.: *See*—
Tomich, John; and Montal, Mauricio, 5,368,712, Cl. 204-403.000.
System X, L. P.: *See*—
Lech, Robert; Medina, Mitchell A.; and Elias, Catherine B., 5,369,508, Cl. 358-462.000.
Szameitat, Jurgen: *See*—
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.
Sze, Robert: *See*—
Furumoto, Horace W.; Goltsos, William C.; Rediker, Robert H.; and Sze, Robert, 5,369,659, Cl. 372-50.000.
T.H.I. System Corporation: *See*—
Tsukazaki, Hideo, 5,368,649, Cl. 134-1.000.
TA Instruments, Inc.: *See*—
Crowe, Benjamin S.; and Sauerbrunn, Steven R., 5,368,391, Cl. 374-10.000.

Tabor, Dorald C. Dual leading edge ram air air foil. 5,368,259, Cl. 244-145.000.
Tabuchi, Junji: *See*—
Saito, Takashi; Shimizu, Yukari; and Tabuchi, Junji, 5,369,546, Cl. 361-502.000.
Tachi, Shinichi: *See*—
Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,368,685, Cl. 156-643.000.
Tachikawa, Hiromichi: *See*—
Adachi, Keiichi; and Tachikawa, Hiromichi, 5,368,964, Cl. 430-49.000.
Tachikawa, Toshiyuki: *See*—
Torii, Takayoshi; Sugita, Minoru; and Tachikawa, Toshiyuki, 5,368,934, Cl. 428-372.000.
Taga, Yutaka: *See*—
Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.
Tagami, Yasunori: *See*—
Ishii, Kenji; and Tagami, Yasunori, 5,368,674, Cl. 156-272.200.
Tago, Tomohisa: *See*—
Suzuki, Tamotsu; Tago, Tomohisa; and Shinozaki, Fumiaki, 5,368,982, Cl. 430-256.000.
Taguchi, Tomishige, to Canon Kabushiki Kaisha. Image processing with controlled under color removal. 5,369,510, Cl. 358-529.000.
Taguchi, Toshio: *See*—
Yanagi, Kenichi; Kato, Mitsuo; Tsurusaki, Kazuya; Taguchi, Toshio; Atarashiya, Kenji; Rokkaku, Tadashi; and Yamashita, Ichiro, 5,369,337, Cl. 315-111.810.
Tajima, Keiichi; and Tsukamoto, Toshiyuki, to Koito Manufacturing Co., Ltd. Wire guide structure for power window. 5,367,827, Cl. 49-352.000.
Tajima, Yusuke; Bessho, Nobuo; Takinishi, Fumitake; Yokoyama, Yasuaki; and Masuko, Hideaki, to Japan Synthetic Rubber Co., Ltd. Pigment-dispersed color-filter composition comprising an alkali-soluble block copolymer as a binder. 5,368,976, Cl. 430-176.000.
Takagaki, Hiroshi: *See*—
Hanamoto, Yukio; Takagaki, Hiroshi; and Ida, Ayako, 5,368,987, Cl. 430-270.000.
Takagi, Hiroshi: *See*—
Shiratori, Akira; and Takagi, Hiroshi, 5,368,951, Cl. 429-30.000.
Takagi Ind. Co., Ltd.: *See*—
Sugahara, Tatsuya; Takagi, Takao; Mochizuki, Kimio; and Akiyama, Shigetoshi, 5,368,476, Cl. 431-285.000.
Takagi, Jun: *See*—
Iwaki, Yoshinari; Hyakutake, Nobuo; Takagi, Jun; Kono, Noriyoshi; Aoshima, Kunimasa; Otsuka, Hiroyuki; Ogita, Akira; and Hamabe, Kouji, 5,368,289, Cl. 271-265.000.
Takagi, Takao: *See*—
Sugahara, Tatsuya; Takagi, Takao; Mochizuki, Kimio; and Akiyama, Shigetoshi, 5,368,476, Cl. 431-285.000.
Takagi, Tasuku; Nagasawa, Zenichirou; and Dambayashi, Toshikazu, to Small Power Communication Systems Research Laboratories Co., Ltd. Multi-frequency communication system with an improved diversity scheme. 5,369,800, Cl. 455-59.000.
Takagi, Toshisaburou: *See*—
Hara, Akira; and Takagi, Toshisaburou, 5,367,955, Cl. 101-424.000.
Takahashi, Hideo; and Suzaki, Yukihiko, to Honda Giken Kogyo Kabushiki Kaisha. Emergency stop control system for mobile robot. 5,369,346, Cl. 318-568.170.
Takahashi, Hitoshi; Kakita, Hiroyuki; Irie, Yoshio; Fujiwara, Teruaki; and Akihisa, Kazumi, to Nippon Shokubai Co., Ltd. Method for continuous agglomeration of an absorbent resin powder and apparatus therefor. 5,369,148, Cl. 523-315.000.
Takahashi, Kazuaki; Hasegawa, Makoto; Makimoto, Mitsuo; and Fujimura, Munenori, to Matsushita Electric Industrial Co., Ltd. Strip line filter having dual mode loop resonators. 5,369,383, Cl. 333-204.000.
Takahashi, Ken: *See*—
Tsuruoka, Shigeo; Takahashi, Ken; Miyoshi, Tadahiko; and Tokuda, Hiroatsu, 5,367,906, Cl. 73-204.270.
Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, to Matsushita Electric Industrial Co., Ltd. Mobile communication system. 5,369,664, Cl. 375-1.000.
Takahashi, Kenji, to Sony Corporation. Disc with prevention of static electric charge build-up. 5,369,632, Cl. 369-282.000.
Takahashi, Kuniaki: *See*—
Takahashi, Tetsuo; Araya, Shinichi; Takahashi, Kuniaki; Mogi, Kunio; Kudo, Koji; Ito, Takeshi; and Ikeda, Hiroshi, 5,368,193, Cl. 221-278.000.
Takahashi, Masahiko: *See*—
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.
Takahashi, Naofumi: *See*—
Yamada, Yutaka; Takahashi, Naofumi; Adachi, Keisuke; and Kameyama, Akihiko, 5,369,096, Cl. 514-61.000.
Takahashi, Tetsuo; Araya, Shinichi; Takahashi, Kuniaki; Mogi, Kunio; Kudo, Koji; Ito, Takeshi; and Ikeda, Hiroshi, to TDK Corporation. Electronic component packaging means, and supply mechanism for and method of supplying electronic components by using the electronic component packaging means. 5,368,193, Cl. 221-278.000.
Takahashi, Toshiaki; Shizukuishi, Kenichi; Katho, Youko; Senda, Naoto; and Bando, Tomomi, to Hitachi, Ltd.; and Hitachi Instruments Engineering Co., Ltd. Liquid chromatograph mass spectrometer. 5,368,727, Cl. 210-198.200.
Takahashi, Toshiki; and Tanimoto, Yoshio, to Mazda Motor Corporation. Method of and apparatus of producing low boiling point hydrocarbon oil from waste plastics or waste rubbers. 5,368,723, Cl. 208-427.000.
Takahashi, Toyohiro; Furuya, Masami; Koyama, Toshio; and Owa, Kenichi, to Fuji Xerox Co., Ltd. Serial printer capable of promptly detecting abnormality in head carriage movement. 5,368,402, Cl. 400-279.000.
Takahashi, Yukinobu: *See*—
Kuwata, Kyoko; Endo, Sachiko; Murakami, Koji; Takahashi, Yukinobu; and Fukuda, Norisuke, 5,369,253, Cl. 219-707.000.
Takai, Hiroshi: *See*—
Okuda, Kouji; Nishi, Tokumitsu; Hoshino, Hisakiyo; Takai, Hiroshi; and Miyake, Natsumi, 5,368,673, Cl. 156-273.900.
Takamuku, Kenshi; Gu, Genda; and Koshizuka, Naoki, to International Superconductivity Technology Center. Process for producing bi-based oxide superconductor single crystals. 5,369,090, Cl. 505-451.000.
Takamura, Toshiyuki: *See*—
Hieb, Larry E.; and Takamura, Toshiyuki, 5,368,190, Cl. 221-131.000.
Takano, Kazuya; and Onai, Seiji, to Bridgestone Corporation. Damper device and method of its use, and a device for manufacturing semiconductors using the damper device. 5,368,140, Cl. 188-267.000.
Takano, Yoshiaki, to Minolta Camera Kabushiki Kaisha. Control device for electronic equipment having operating means and a display device. 5,369,768, Cl. 395-725.000.
Takano, Yoshihiko: *See*—
Senda, Atsuo; Nakagawa, Takuji; and Takano, Yoshihiko, 5,368,896, Cl. 427-443.100.
Takarada, Mitsuhiro: *See*—
Yoshikawa, Yuji; and Takarada, Mitsuhiro, 5,368,969, Cl. 430-108.000.
Takas, Timothy P.: *See*—
Naderhoff, Bryan A.; Takas, Timothy P.; and Allerton, David P., 5,369,152, Cl. 523-415.000.
Takasaki, Yoshitaka, to Hitachi, Ltd. Optical subscriber network transmission system. 5,369,517, Cl. 359-161.000.
Takasugi, Atsushi, to Oki Electric Industry Co., Ltd. Serial access memory. 5,369,618, Cl. 365-230.010.
Takata Corporation: *See*—
Kamiyama, Misao; Ohishi, Yoshinori; and Zeze, Kazuo, 5,368,328, Cl. 280-733.000.
Takata, Mashashi: *See*—
Kida, Masahiro; Kashiwagi, Akio; Nakanishi, Junji; Sato, Tominori; Ohmura, Masahiko; Nakamoto, Masahiro; Maruoka, Masakazu; and Takata, Mashashi, 5,368,063, Cl. 137-340.000.
Takeda Chemical Industries, Ltd.: *See*—
Miyake, Akio; Kawano, Yasuhiko; and Ashida, Yasuko, 5,369,104, Cl. 514-212.000.
Takeda, Mitsunori: *See*—
Namekawa, Masaaki; Nayuki, Shinichi; Itoh, Keizou; Takeda, Mitsunori; and Murayama, Yoshinobu, 5,368,771, Cl. 252-299.100.
Takeda, Shiro: *See*—
Haraki, Takahiro; Takeda, Shiro; Namiki, Fumihiro; Hirano, Hideyuki; and Ishiwata, Kenji, 5,369,572, Cl. 364-413.130.
Takehashi, Takeshige, to Sanwa Life Cela Kabushiki Kaisha. Thawing device for frozen foods. 5,368,093, Cl. 165-46.000.
Takei, Makoto; Kinugawa, Isao; Tamura, Mamoru; and Tashiro, Seiichi, to Ohwada Carbon Industrial Co., Ltd. Carbon composite material reinforced with carbon fiber and inorganic fiber. 5,368,940, Cl. 428-408.000.
Takeishi, Minako: *See*—
Takahashi, Kenichi; Ohnishi, Hiroshi; and Takeishi, Minako, 5,369,664, Cl. 375-1.000.
Takeshima, Kazuya: *See*—
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.
Takeshita, Kazuhide: *See*—
Kunieda, Shigehiko; Ishino, Shigeo; Nakai, Takao; Hirai, Kazuo; Matsushita, Takao; and Takeshita, Kazuhide, 5,369,161, Cl. 524-266.000.
Takeuchi, Hidemaro: *See*—
Furuya, Takashi; Takeuchi, Hidemaro; Kasama, Akio; Itoh, Yasuo; Fujii, Motoya; Oka, Hideki; Matsumura, Shogo; Sasaki, Kunimasa; and Yamamoto, Keiichi, 5,368,088, Cl. 164-415.000.
Takeuchi, Hiroshi: *See*—
Ogata, Mitsuru; Kobayashi, Hiroyuki; Inagaki, Toshitake; Masuko, Takashi; and Takeuchi, Hiroshi, 5,368,310, Cl. 273-448.000.
Takeuchi, Hisato: *See*—
Tojima, Kazuo; Okayama, Shinobu; Usuki, Arimitsu; Tatsuda, Narihito; Yano, Kazuhisa; and Takeuchi, Hisato, 5,368,780, Cl 252-582.000.
Takeuchi Industrial Co., Ltd.: *See*—
Takeuchi, Yasuichi, 5,367,749, Cl. 24-16.0PB.
Takeuchi, Koichi: *See*—
Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, 5,369,628, Cl 369-13.000.
Takeuchi, Shinji, to Daiwa Seiko, Inc. Handle collapsing mechanism for fishing reel. 5,368,249, Cl. 242-284.000.
Takeuchi, Yasuichi, to Takeuchi Industrial Co., Ltd. Cable tie 5,367,749, Cl. 24-16.0PB.

Takeuchi, Yoshihisa, to Murata Kikai Kabushiki Kaisha. Circuit arrangement for selecting an image data correction scheme, writing the correction scheme to a correction table and correcting image data gradation. 5,369,506, Cl. 358-455.000.

Takigawa, Masuo: *See*—
Kawamura, Masahiro; Takigawa, Masuo; Kondou, Yasuhiro; Hamada, Tutomu; Maruyama, Teruo; and Masuo, Akio, 5,367,997, Cl. 123-399.000.

Takiguchi, Ryohei: *See*—
Eguchi, Hiroshi; Kafuku, Komei; and Takiguchi, Ryohei, 5,369,078, Cl. 503-227.000.

Takikawa, Takatoshi: *See*—
Harada, Keizo; Takikawa, Takatoshi; Maeda, Takao; Ban, Shunsuke; and Yamanaka, Shosaku, 5,369,220, Cl. 174-257.000.

Takinishi, Fumitake: *See*—
Tajima, Yusuke; Bessho, Nobuo; Takinishi, Fumitake; Yokoyama, Yasuaki; and Masuko, Hideaki, 5,368,976, Cl. 430-176.000.

Takizawa, Ryu: *See*—
Tomita, Masamichi; Honma, Kazuo; Igarashi, Shigemi; Ishikawa, Tadaaki; Takizawa, Ryu; Hiramoto, Sotozi; Honma, Makoto; Hata, Seiji; and Nakamura, Mitsuo, 5,369,493, Cl. 356-400.000.

Takuma, Masao: *See*—
Kawakami, Kiyotada; Takuma, Masao; Asaeda, Tooru; Yamamoto, Tooru; and Murata, Haruhiko, 5,369,436, Cl. 348-355.000.

Taligent, Inc.: *See*—
Nakano, Russell T.; and Heninger, Andrew G., 5,369,766, Cl. 395-700.000.

Tamagawa, Yuzo, to Yugen Kaisha Tamagawa Kogyo. Nose pads of spectacles. 5,369,451, Cl. 351-136.000.

Tamaki, Makoto; and Kozawa, Takahiro, to Toyoda Gosei Co. Ltd.; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Gallium nitride-based compound semiconductor light-emitting device and method for making the same. 5,369,289, Cl. 257-99.000.

Tamglass Engineering Oy: *See*—
Lehto, Esko O.; Vehmas, Jukka H.; and Vitkala, Jorma K. J., 5,368,624, Cl. 65-29.190.

Tampella Forest Oy: *See*—
Turkia, Erkki; and Relander, Matti, 5,368,443, Cl. 416-184.000.

Tamura, Junichi: *See*—
Kosaka, Tetsuo; Sakurai, Atsushi; Tamura, Junichi; and Matsuo, Hiroshi, 5,369,728, Cl. 395-2.630.

Tamura, Mamoru: *See*—
Takei, Makoto; Kinugawa, Isao; Tamura, Mamoru; and Tashiro, Seiichi, 5,368,940, Cl. 428-408.000.

Tamura, Reiji: *See*—
Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, 5,368,986, Cl. 430-270.000.

Tamura, Tetsuya: *See*—
Fujimoto, Jun; Tamura, Tetsuya; Furihata, Toshikazu; Suzuki, Youhei; and Kauchi, Kakutaro, 5,368,916, Cl. 428-215.000.

Tanabe, Hisaki: *See*—
Yamagami, Yoshikazu; Kashihara, Akio; Seio, Mamoru; and Tanabe, Hisaki, 5,368,884, Cl. 427-96.000.

Tanaka, Asami, to Asami Tanaka Dental Enterprises Inc. Ceramic inlay and process for making same. 5,368,831, Cl. 433-226.000.

Tanaka, Hatsuyuki: *See*—
Kobayashi, Masakazu; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,368,783, Cl. 252-600.000.

Tanaka, Hideaki; Morita, Toshiaki; and Kitamura, Yoshihiro, to Sharp Kabushiki Kaisha. Optical character recognition system. 5,369,715, Cl. 382-18.000.

Tanaka, Hiroshi; and Masuda, Yasuo, to Mitsubishi Materials Corporation. Edge protector for electrolytic electrode, spreader bar thereof and method of attaching same to electrolytic electrode. 5,368,714, Cl. 205-76.000.

Tanaka, Junji, to Sharp Kabushiki Kaisha. Sample and hold circuit being arranged for easily changing phases of shift clocks. 5,369,417, Cl. 345-98.000.

Tanaka, Kazuyoshi; Washio, Koji; and Yasuda, Yoshizumi, to Konica Corporation. Image processing apparatus and method capable of discriminating between character/photograph areas by finding blank-stripe zones and dividing the areas into blocks. 5,369,507, Cl. 358-462.000.

Tanaka, Kunimaro: *See*—
Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, 5,369,628, Cl. 369-13.000.

Tanaka, Masaaki; and Sugimoto, Tomio, to House Food Industrial Co., Ltd. Method and apparatus for washing conveyer belt in heat treatment apparatus. 5,368,650, Cl. 134-15.000.

Tanaka, Motoharu: *See*—
Watada, Atsuyuki; Tokita, Toshiaki; and Tanaka, Motoharu, 5,369,629, Cl. 369-13.000.

Tanaka, Shunji: *See*—
Inoue, Taro; Umeno, Hidenori; Tanaka, Shunji; and Watanabe, Tsuyoshi, 5,369,750, Cl. 395-400.000.

Tanaka, Takashi: *See*—
Ito, Yasushi; Yamaguchi, Shogo; Fujikake, Hironobu; Abe, Sadahiro; Nishimura, Masaru; Matsumura, Noriaki; and Tanaka, Takashi, 5,369,600, Cl. 364-556.000.

Tanaka, Toshizumi; and Itoi, Hiromu, to Fuji Photo Optical Co., Ltd. Ultrasound probe. 5,368,036, Cl. 128-662.060.

Tanaka, Tsutomu: *See*—
Yanai, Kenichi; Tanaka, Tsutomu; Kakehi, Tatsuya; Ohgata, Koji; and Oki, Kenichi, 5,369,512, Cl. 359-59.000.

Tanaka, Yuji: *See*—
Sakakura, Mitsuaki; Tanaka, Yuji; Enomoto, Junkichi; and Ito, Syoji, 5,368,216, Cl. 228-1.100.

Tandberg, Geir; Sangesland, Sigbjorn; and Andersen, Asbjorn. Underreaming tool for boreholes. 5,368,114, Cl. 175-267.000.

Tang, Guichen: *See*—
Alfano, Robert R.; Yoo, Kwong M.; and Tang, Guichen, 5,369,496, Cl. 356-446.000.

Tangonan, Gregory L.; and Lam, Juan F., to Hughes Aircraft Company. Modulation system and method with third order intermodulation distortion reduction. 5,369,522, Cl. 359-329.000.

Taniguchi, Kazuo; and Murakami, Tetsuo, to Mitsubishi Plastics Industries Limited. Producing heat-shrinkable tube. 5,368,811, Cl. 264-567.000.

Taniguchi, Nobuyuki; Nakai, Masaaki; Omaki, Takanobu; Ishida, Tokuji; Masumoto, Hisayuki; Tokumaru, Hisashi; and Metabi, Tsuneyo, to Minolta Camera Kabushiki Kaisha. Camera having a varifocal lens. 5,369,460, Cl. 354-400.000.

Taniguchi, Takayuki: *See*—
Miyamoto, Yasuaki; Kawakami, Shigeaki; Taniguchi, Takayuki; Hasegawa, Makoto; Fujiwara, Shigenori; and Fujimura, Nobuteru, 5,369,655, Cl. 372-29.000.

Tanimoto, Yoshio: *See*—
Takahashi, Toshiki; and Tanimoto, Yoshio, 5,368,723, Cl. 208-427.000.

Tank, Klaus: *See*—
Damm, Oliver F. R. A.; and Tank, Klaus, 5,368,398, Cl. 384-304.000.

Tannenbaum, Gail. Method and apparatus for equestrian monitoring for instruction and training. 5,369,601, Cl. 364-558.000.

Taomo, Toshio, to Kioritz Corporation. Vibration preventive coil spring mounting structure. 5,368,107, Cl. 173-162.200.

Tappan, James E.: *See*—
Yasuda, Arthur K.; Denison, Dean R.; Mundt, Randall S.; and Tappan, James E., 5,368,646, Cl. 118-723.00R.

Tarlow, Kenneth A.: *See*—
Berman, Paul A.; Tarlow, Kenneth A.; Holmes, Jack; and Douglas, Allan, 5,368,321, Cl. 280-221.000.

Tashiro, Seiichi: *See*—
Takei, Makoto; Kinugawa, Isao; Tamura, Mamoru; and Tashiro, Seiichi, 5,368,940, Cl. 428-408.000.

Tatnall, Robert E.: *See*—
Ebersole, Richard C.; Gelormini, Frank T.; and Tatnall, Robert E., 5,369,011, Cl. 435-7.320.

Tatsuda, Narihito: *See*—
Tojima, Kazuo; Okayama, Shinobu; Usuki, Arimitsu; Tatsuda, Narihito; Yano, Kazuhisa; and Takeuchi, Hisato, 5,368,780, Cl. 252-582.000.

Tatsumi, Tetsuya; and Nagayama, Tetsuji, to Sony Corporation. Dry etching method for W polycide using sulfur deposition. 5,368,686, Cl. 156-656.000.

Taylor, Henry A. Combined muzzle brake, muzzle climb controller and noise redirector for firearms. 5,367,940, Cl. 89-14.300.

Taylor, Patrick R.; and Pirzada, Shahid A., to Idaho Research Foundation. Plasma production of ultra-fine ceramic carbides. 5,369,241, Cl. 219-121.470.

TDK Corporation: *See*—
Shinkai, Masahiro; and Namba, Kenryo, 5,368,988, Cl. 430-270.000.
Takahashi, Tetsuo; Araya, Shinichi; Takahashi, Kuniaki; Mogi, Kunio; Kudo, Koji; Ito, Takeshi; and Ikeda, Hiroshi, 5,368,193, Cl. 221-278.000.

Teasley, Nancy A. Adjustable clothing for infants. 5,367,709, Cl. 2-69.000.

TECSEC Incorporated: *See*—
Follendore, Roy D., III, 5,369,707, Cl. 380-25.000.
Shanton, M. Greg, 5,369,702, Cl. 380-4.000.

Teeter, Roger C.; and Smith, Lawrence C., to STL International, Incorporated. Automatically releasing ski binding. 5,368,320, Cl. 280-14.200.

Teijin Limited: *See*—
Koike, Yukiya; Suzuki, Koji; and Ichikawa, Yataro, 5,369,038, Cl. 436-548.000.
Murooka, Hirofumi; Kato, Sumio; and Etchu, Masami, 5,368,932, Cl. 428-327.000.

Teknekron Corporation: *See*—
Madou, Marc J.; and Tierney, Michael J., 5,368,704, Cl. 204-129.550.

Telefonaktiebolaget L M Ericsson: *See*—
Boudreau, Alain; and Beauregard, Andre, 5,369,681, Cl. 379-87.000.

Telefonaktiebolaget LM Ericsson: *See*—
Buhl, Nancy; Hayes, John; and Kallin, Harald, 5,369,684, Cl. 379-59.000.

Telenokia Oy: *See*—
Korhonen, Jukka; and Huttunen, Pertti, 5,369,785, Cl. 455-54.100.

Telesis Marking Systems, Inc.: *See*—
Cyphert, David L.; and Sieling, Roger L., 5,368,400, Cl. 400-124.010.

Temburg, Josef: *See*—
Leifeld, Ferdinand; and Temburg, Josef, 5,367,748, Cl. 19-80.00R.

Temes, Gabor C.; and Shu, Shao-Feng, to State of Oregon Acting by and Through the State Board of Higher Education on Behalf of Oregon State University, The. Dual quantization oversampling digital-to-analog converter. 5,369,403, Cl. 341-143.000.

Teoh, Clifford: *See*—
Teoh, Phillip; and Teoh, Clifford, 5,368,577, Cl. 604-198.000.

Teoh, Phillip; and Teoh, Clifford, to Biocon International Corporation. Needle stick prevention device. 5,368,577, Cl. 604-198.000.

Terada, Stanley A., to Paragon Trade Brands, Inc. Elastic band heat activation system. 5,368,666, Cl. 156-85.000.

Terajima, Hisao: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, 5,369,422, Cl. 346-76.0PH.

Terao, Motoyasu; Andoo, Keikichi; Okamine, Shigenori; Miyauchi, Yasushi; Takahashi, Masahiko; Futamoto, Masaaki; and Tamura, Reiji, to Hitachi, Ltd.; and Hitachi Maxell, Ltd. Information recording media, manufacturing method for the same, and information recording method. 5,368,986, Cl. 430-270.000.

Terashita, Takaaki; and Murayama, Jin, to Fuji Photo Film Co., Ltd. Apparatus for recording position information of principal image and method of detecting principal image. 5,369,463, Cl. 355-38.000.

Terlop, William E.; and Casagrande, Serge. Method of making a narrow profile transformer. 5,367,760, Cl. 29-605.000.

Termine, Enrico J.: *See*—
Atwell, Ray W.; Hodgen, Harry A.; Fielding, William R.; Favstritsky, Nicolai A.; and Termine, Enrico J., 5,369,202, Cl. 526-293.000.

Terry, Lewis E.: *See*—
Lesk, Israel A.; Robb, Francine Y.; Terry, Lewis E.; and d'Aragona, Frank S., 5,369,304, Cl. 257-782.000.

Terry, Patrick H.; Sherowski, Gregory S.; and Holmes, Philip, to Exxon Research & Engineering Co. Catalytic cracking system. 5,368,721, Cl. 208-146.000.

Terry, Raymond. Pliable abrasive pellet for abrading fabrics. 5,367,734, Cl. 8-159.000.

Tessera, Inc.: *See*—
DiStefano, Thomas H.; Ehrenberg, Scott G.; and Khandros, Igor Y., 5,367,764, Cl. 29-830.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Carlson, Leonard A., 5,368,828, Cl. 422-300.000.

Tetrad Corporation: *See*—
Ranalletta, Joseph V.; and de Angeli, Michael, 5,368,496, Cl. 439-261.000.

Texaco Inc.: *See*—
French, Michael R., 5,368,110, Cl. 175-57.000.
Von Klock, Byron; and Zuber, Irl L., 5,368,754, Cl. 210-806.000.

Texas Instruments Incorporated: *See*—
Cho, Chih-Chen; and Duncan, Walter M., 5,369,657, Cl. 372-39.000.
Duvvury, Charvaka, 5,369,041, Cl. 437-6.000.
Hashimoto, Masahashi; and Mahant-Shetti, Shivaling S., 5,369,046, Cl. 437-48.000.
Hennessey, Clarence E., 5,367,957, Cl. 102-217.000.
Hynecek, Jaroslav, 5,369,039, Cl. 437-2.000.
Hynecek, Jaroslav, 5,369,047, Cl. 437-50.000.
Kulwicki, Bernard M.; Lynch, David F.; and Lukasiewicz, Stanley J., 5,368,834, Cl. 423-598.000.
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,369,042, Cl. 437-31.000.
Ng, Wia T.; and Kwon, Oh-Kyong, 5,369,045, Cl. 437-41.000.
Rao, Kalipatnam V.; Tomlin, Joel T.; and Beals, Monica A., 5,369,051, Cl. 437-69.000.
Ravindranath, Naiknaware; Nandakumar, G. N.; and Rao, Kasa S., 5,369,604, Cl. 364-580.000.
Tran, Hiep V., 5,369,315, Cl. 326-82.000.
Yee, Hung Y.; and Richardson, Phillip N., 5,369,414, Cl. 343-771.000.
Yung, Henry T.; Hochschild, James R.; and Severin, William A., 5,369,407, Cl. 341-172.000.

Texter, John: *See*—
Lynch, William P.; and Texter, John, 5,368,978, Cl. 430-203.000.

Textile Products, Inc.: *See*—
Curzio, Frederick H., 5,368,076, Cl. 139-305.000.

Textiles Coated International: *See*—
Tippett, Stephen W., 5,368,923, Cl. 428-238.000.

Thackeray, James W.; Denison, Mark; and Orsula, George W., to Shipley Company Inc. Method of forming relief image having line width less than 0.35 microns utilizing copolymer binder having phenolic and nonaromatic cyclic alcohol units. 5,368,993, Cl. 430-325.000.

Thanisch, Klaus, to Zeller Plastik GmbH. Closure with snap hinge. 5,368,176, Cl. 215-235.000.

Theissen, Heinrich: *See*—
Schrammek, Manfred; Post, Sieghard; Schutz, Klaus; and Theissen, Heinrich, 5,369,389, Cl. 336-206.000.

Thermoscan Inc.: *See*—
Fraden, Jacob, 5,368,038, Cl. 128-664.000.

Thieler, Stephen M.: *See*—
Bales, Bruce M.; Fidder, Ted M.; Gallagher, Donald D.; and Thieler, Stephen M., 5,369,694, Cl. 379-206.000.

Thier, Oren: *See*—
Thier, Uri; Thier, Oren; and Woodbury, William, 5,369,735, Cl. 395-123.000.

Thier, Uri; Thier, Oren; and Woodbury, William, to New Microtime Inc. Method for controlling a 3D patch-driven special effects system. 5,369,735, Cl. 395-123.000.

Thierry, Mahe: *See*—
Michel, Boitel; Cailleaux, Jean-Marc; and Thierry, Mahe, 5,368,211, Cl. 225-96.500.

Thiokol Corporation: *See*—
Lund, Gary K.; and Richman, Kent W., 5,367,872, Cl. 60-251.000.
Willer, Rodney L.; Day, Robert S.; and Marchand, Alan P., 5,368,662, Cl. 149-19.900.

Thomas, Andrew P.: *See*—
Roberts, David A.; Pearce, Robert J.; Bradbury, Robert H.; and Thomas, Andrew P., 5,369,114, Cl. 514-312.000.

Thomas, Dennis R.: *See*—
Kress, Edward S.; Thomas, Dennis R.; and Rabas, Michael A., 5,368,434, Cl. 414-460.000.

Thomas, Felix L., to N.S.K. Golf Club, Inc. Golf putter including ball retrieving device. 5,368,302, Cl. 273-162.00E.

Thomas, Ralph: *See*—
Dvorkis, Paul; Thomas, Ralph; Goren, David; Fuller, Robert; and Goldner, Leonard H., 5,369,262, Cl. 235-472.000.

Thomason, Jon G.; and Horton, Earle R., to Microsoft Corporation. Standardized protected-mode interrupt manager. 5,369,770, Cl. 395-725.000.

Thompson, Harold W.: *See*—
Alden, Jerome S.; Budan, Victor J.; and Thompson, Harold W., 5,369,386, Cl. 335-206.000.

Thompson, Hugh A.; Martin, Tracey A.; and Inglin, Thomas A., to Procter & Gamble Company, The. Fluid accepting, transporting, and retaining structure. 5,368,926, Cl. 428-284.000.

Thompson International: *See*—
Beam, Jeffrey, 5,368,370, Cl. 301-37.360.

Thompson, John; and Botts, Charles R., to Imed Corporation. Apparatus for infusing medical solutions. 5,368,570, Cl. 604-131.000.

Thompson, Richard T.: *See*—
Haas, Hans E.; Malofsky, Bernard M.; Thompson, Richard T.; Jaros, Cynthia R.; Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,368,199, Cl. 222-146.500.

Thomson Consumer Electronics: *See*—
Ersoz, Nathaniel H.; and Canfield, Barth A., 5,369,444, Cl. 348-598.000.

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Wilber, James A., 5,369,341, Cl. 315-389.000.

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Kawasaki, Hideshi; and Tokunaga, Hiroyuki, 5,369,290, Cl. 257-103.000.

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Sekizuka, Hiroshi, 5,368,648, Cl. 118-733.000.

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Kobayashi, Masakazu; Tanaka, Hatsuyuki; and Nakayama, Toshimasa, 5,368,783, Cl. 252-600.000.
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Gotoh, Tetsuya; Kondoh, Tosiyuki; Egawa, Keiichi; and Kubodera, Ken-ichi, 5,368,782, Cl. 252-587.000.

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Belec, Eric A.; and Toth, William D., 5,368,287, Cl. 271-185.000.

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Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, 5,369,378, Cl. 332-104.000.

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Funahashi, Nobuaki, 5,368,525, Cl. 474-190.000.
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Shiraki, Kouji; and Sakamoto, Masanari, 5,368,327, Cl. 280-728.00A.
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Okada, Yasuhiro; Hoshino, Yukio; Hattori, Yasuhiro; and Hirano, Hidekazu, 5,368,150, Cl. 198-346.100.

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Ando, Masahiko; Noda, Koji; Yamamoto, Yoshihisa; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Hojo, Yasuo; Kubo, Seitoku; Taga, Yutaka; and Oba, Hidehiro, 5,368,531, Cl. 477-155.000.
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Mookherjee, Braja D.; Trenkle, Robert W.; and Wilson, Richard A., 5,367,899, Cl. 73-23.340.

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Triangle Pacific Corp.: *See*—
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Steiner, Glenn C., 5,369,589, Cl. 364-449.000.

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McCullough, David J., 5,369,561, Cl. 363-37.000.

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Rossborough, W. Neil; and Trout, Harry E., 5,368,631, Cl. 75-533.000.

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Kidwell, David A., 5,369,007, Cl. 435-7.900.
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Van Aller, Gerardus; and Schiebel, Ulrich, 5,369,268, Cl. 250-214.0VT.
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McGraw, Royal A.; and Grosse, William M., 5,368,823, Cl. 422-134.000.
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Clark, William L.; and Guiher, William T., 5,368,174, Cl. 211-183.000.
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Sudo, Toru; Kuramoto, Takashi; Seno, Yasuhiro; Mogi, Masao; and Urase, Hisato, 5,368,817, Cl. 422-62.000.
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Vaillancourt, Michael, to VLV Associates. Method of mounting a septum in a connector. 5,368,801, Cl. 264-249.000.
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Van Aller, Gerardus; and Schiebel, Ulrich, to U.S. Philips Corporation. X-ray detector with charge pattern read-out by TFT switching matrix. 5,369,268, Cl. 250-214.0VT.
Van Beek, Robert, to Academy Display, Inc. Flexible adjustable sign support and method of using same. 5,367,807, Cl. 40-606.000.
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Kamerman, Adriaan; and van Bokhorst, Hendrik, 5,369,639, Cl. 370-85.300.
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Donker, Cornelis B.; van der Hoeven, Philippus C.; and Mohammadi, Mansur S., 5,368,767, Cl. 252-95.000.
Vandervorst, Wilfried; and Meuris, Marc, to Interuniversitair Micro Elektronica Centrum vzw. Method for resistance measurements on a semiconductor element with controlled probe pressure. 5,369,372, Cl. 324-719.000.
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Waespe, Hans-Rudolf; Van Lommen, Guy R. E.; and Sipido, Victor K., 5,369,084, Cl. 504-244.000.
Van Schaik, Bob. Rowing boat and footrest for use therein. 5,367,976, Cl. 114-347.000.
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Nazarian, Richard A.; Agnew, Marc H.; Schneider, Daniel E.; and Mead, Wilfred A., 5,368,554, Cl. 604-4.000.
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Viksne, George J., to Wacker Silicones Corporation. Non-stick automotive gaskets. 5,368,315, Cl. 277-235.00A.
Villabla, Leopoldo: *See*—
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Vincent, Sherman R., to Raytheon Company. RF receiver adapted to process received RF pulses and reject RF continuous wave signals. 5,369,793, Cl. 455-306.000.
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Derrick, Arthur P., 5,368,692, Cl. 162-181.800.
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Vogel, Manfred; Herden, Werner; and Konrad, Johann, to Robert Bosch GmbH. High-voltage switch having series-connected light-responsive semiconductor elements and light concentrating means for the semiconductor elements. 5,369,283, Cl. 250-551.000.

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vonRoenn, Kenneth F., Jr. Interlocking glass block system. 5,367,846, Cl. 52-308.000.

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Vosbikian, Peter S.; and Vartanian, Haig, to Quickie Manufacturing Corporation. Locking hinged dust pan. 5,367,737, Cl. 15-257.200.

Vozeler-Pape, Franz: *See—*
Mejerl, Thomas; and Vozeler-Pape, Franz, 5,369,237, Cl. 200-524.000.

W. L. Gore & Associates, Inc.: *See—*
Wnenchak, Ray, 5,368,734, Cl. 210-505.000.

W. R. Grace & Co.-Conn.: *See—*
Havens, Marvin R., 5,369,179, Cl. 525-183.000.
Locke, James C.; Walter, James F.; and Larew, Hiram G., III, 5,368,856, Cl. 424-195.100.
Rohlf, Evan V.; Walley, Fletcher; and Wagner, Richard J., 5,368,694, Cl. 162-199.000.

Wabco Westinghouse Fahrzeugbremsen GmbH: *See—*
Hirt, Ingo, 5,368,499, Cl. 439-350.000.

Wacker Silicones Corporation: *See—*
Viksne, George J., 5,368,315, Cl. 277-235.00A.

Wacoal Corp.: *See—*
Fujimoto, Masami, 5,367,708, Cl. 2-22.000.

Wada, Hiroyuki: *See—*
Hirasawa, Masahide; Kaneda, Naoya; and Wada, Hiroyuki, 5,369,461, Cl. 354-402.000.

Wada, Jyoji, to Matsushita Electric Industrial Co., Ltd. Position detecting device employing a magnet and back yoke relatively movable with respect to a hall sensor. 5,369,361, Cl. 324-207.200.

Wada, Satoshi: *See—*
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, 5,369,422, Cl. 346-76.0PH.

Wada, Setsu: *See—*
Kawasaki, Kenji; Kawakami, Masashi; Suzukawa, Kenji; and Wada, Setsu, 5,368,382, Cl. 366-2.000.

Wada, Shuhei: *See—*
Kurosu, Yasuo; Wada, Shuhei; Yokoyama, Yoshihiro; and Masuzaki, Hidefumi, 5,369,742, Cl. 395-147.000.

Wadasako, Mitsushi: *See—*
Ohashi, Takayuki; Shibata, Kenichi; Ogawa, Junichi; and Wadasako, Mitsushi, 5,369,064, Cl. 501-95.000.

Waddingtons Cartons Limited: *See—*
Woods, Kenneth D., 5,369,256, Cl. 219-727.000.

Waespe, Hans-Rudolf; Van Lommen, Guy R. E.; and Sipido, Victor K., to Janssen Pharmaceutical N.V. Isonicotinic acid derivatives and related spiro compounds with herbicidal action. 5,369,084, Cl. 504-244.000.

Wagner, Albrecht: *See—*
Stoll, Kurt; and Wagner, Albrecht, 5,367,943, Cl. 92-2.000.

Wagner, Paul M. In-line first stage air pressure regulator for use in scuba diving. 5,368,022, Cl. 128-205.240.

Wagner, Richard J.: *See—*
Rohlf, Evan V.; Walley, Fletcher; and Wagner, Richard J., 5,368,694, Cl. 162-199.000.

Wahl, Errol H.: *See—*
Vogel, Alice M.; Severns, John C.; and Wahl, Errol H., 5,368,756, Cl. 252-8.800.

Waitman, David B. Combined water field strength and conductivity meter. 5,369,365, Cl. 324-444.000.

Wako Pure Chemical Industries, Ltd.: *See—*
Shimotomai, Naomasa; Miyazawa, Eriko; and Ueyama, Takahiro, 5,368,778, Cl. 252-542.000.

Walacavage, Adolph C. Fishing reel with variably yieldable wind lag. 5,368,248, Cl. 242-283.000.

Walbro Corporation: *See—*
Roche, Ronald H., 5,368,001, Cl. 123-510.000.

Walburn, Harold E.: *See—*
Sheehan, Terrence M.; Kamath, Ramesh M.; Walburn, Harold E.; and Sheehan, Jack F., 5,367,754, Cl. 29-27.00C.

Waldchen, Hartmut, to Inventio AG. Elevator cable lubricating apparatus. 5,368,128, Cl. 184-15.200.

Walk-Winn Plastics Co., Inc.: *See—*
Ross, Eugene B., 5,367,809, Cl. 40-668.000.

Walker, John O., to Xerox Corporation. Method and apparatus for reducing image distortion in an asynchronous input scanner. 5,369,504, Cl. 358-437.000.

Walker, Susan: *See—*
San Soucie, Marc; Surprenant, Carolyn E.; Fitzgerald, Thomas; and Walker, Susan, 5,369,778, Cl. 395-800.000.

Waller, Clive G., to Refrigerant Monitoring Systems Pty Ltd. Differential float means and sensor means incorporating same. 5,369,395, Cl. 340-603.000.

Waller, David P.: *See—*
Freedman, James R.; and Waller, David P., 5,368,979, Cl. 430-203.000.

Walley, Fletcher: *See—*
Rohlf, Evan V.; Walley, Fletcher; and Wagner, Richard J., 5,368,694, Cl. 162-199.000.

Wallnofer, Wolfgang; and Krempl, Peter W., to AVL Gesellschaft Fur Verbrennungskraftmaschinen und Messtechnik m.b.H Prof.Dr.Dr.h.c. Hans List. Piezoelectric crystal element. 5,369,327, Cl. 310-313.00A.

Walls, John E.; and West, Paul R., to Eastman Kodak Company. Lithographic printing plates having a hydrophilic barrier layer comprised of a copolymer of vinylphosphonic acid and acrylamide overlying an aluminum support. 5,368,974, Cl. 430-156.000.

Walser, Hans P.: *See—*
Lorenz, Arnulf; and Walser, Hans P., 5,368,796, Cl. 214-140.000.

Walser, Michael W.: *See—*
King, Steven R.; and Walser, Michael W., 5,367,999, Cl. 123-458.000.

Walt Disney Company, The: *See—*
Adamson, William G.; Updyke, Lance D.; and Sogge, John W., 5,368,228, Cl. 239-18.000.
Haseltine, Eric C.; and Redmann, William G., 5,369,450, Cl. 348-745.000.
Monroe, Marshall; and Fink, David, 5,368,309, Cl. 273-437.000.

Walte, Willi. Hydraulic brakes for bicycles. 5,368,136, Cl. 188-24.220.

Walter, James F.: *See—*
Locke, James C.; Walter, James F.; and Larew, Hiram G., III, 5,368,856, Cl. 424-195.100.

Walton, Richard A.: *See—*
Kabat, Zbigniew; and Walton, Richard A., 5,367,761, Cl. 29-764.000.

Wanderer, Matthew J. Ice-cream scoop with forearm appendage. 5,368,465, Cl. 425-187.000.

Wanderer Saf-T-Lok: *See—*
Quirk, Brian J.; and Bennett, Robert R., 5,369,394, Cl. 340-551.000.

Wandrey, Christian: *See—*
Steinke, Doerte; Kula, Maria-Regina; Schwarz, Alexander; and Wandrey, Christian, 5,369,016, Cl. 435-68.100.

Wang, Hsien C.: *See—*
Yu, Thomas C.; Powers, Kenneth W.; and Wang, Hsien C., 5,369,182, Cl. 525-240.000.

Wang, Jean Y. J.: *See—*
Arlinghaus, Ralph B.; Wang, Jean Y. J.; and Guo, Jie O., 5,369,008, Cl. 435-7.230.

Wang Laboratories, Inc.: *See—*
Kadashevich, A. Julie; Harvey, Mary F.; and Clark, Cheryl, 5,369,577, Cl. 364-419.130.

San Soucie, Marc; Surprenant, Carolyn E.; Fitzgerald, Thomas; and Walker, Susan, 5,369,778, Cl. 395-800.000.

Wang, Ping; and Jenq, Ching-Shi, to Silicon Storage Technology, Inc. Floating gate memory array with latches having improved immunity to write disturbance, and with storage latches. 5,369,609, Cl. 365-185.000.

Wang, Tan T.; and Volk, Andrew M., to Intel Corporation. Clock generator control circuit. 5,369,311, Cl. 327-292.000.

Wangermann, Klaus: *See—*
Reizlein, Karl; Engelhardt, Ulrich; Horstmann, Heinz-Otto; Singer, Rolf-Jurgen; Wangermann, Klaus; and Wirth, Wolfgang, 5,369,118, Cl. 514-383.000.

Wanha, Christopher D., to ITT Corporation. Heat stake press and aligner and method of use. 5,368,802, Cl. 264-249.000.

Wantanabe, Asao; Ogata, Yukihiko; Nakanishi, Hiroyuki; Yanase, Seijiro; and Harada, Koji, to Canon Kabushiki Kaisha. Image processing apparatus. 5,369,505, Cl. 358-444.000.

Ward, Mark C. Wiring harness clip. 5,367,750, Cl. 24-16.0PB.

Warm Springs Golf Club, Inc.: *See—*
Deacon, Ernie L.; and McMullin, Faris W., 5,367,793, Cl. 36-127.000.

Warner-Lambert Company: *See—*
McKnight, Alexander; and Woodruff, Geoffrey N., 5,369,105, Cl. 514-212.000.
Woodruff, Geoffrey N., 5,369,120, Cl. 514-409.000.

Warren, Christopher J.; Haushalter, Robert C.; and Bocarsly, Andrew B., to NEC Research Institute, Inc.; and Princeton University. Process for forming Zintl phases and the products thereof. 5,368,701, Cl. 204-59.0QM.

Washio, Koji: *See—*
Tanaka, Kazuyoshi; Washio, Koji; and Yasuda, Yoshizumi, 5,369,507, Cl. 358-462.000.

Waste Treatment Patents en Research N.V.: *See—*
Peterscheck, Hermann W.; Schwoyer, William L. K.; and Sillerud, Dean, 5,368,750, Cl. 210-761.000.

Watada, Atsuyuki; Tokita, Toshiaki; and Tanaka, Motoharu, to Ricoh Company, Ltd. Magneto-optical recording method and magneto-optical recording medium. 5,369,629, Cl. 369-13.000.

Watanabe, Hideo: *See—*
Uchida, Hiroshi; Onuki, Mituhiro; and Watanabe, Hideo, 5,368,791, Cl. 264-35.000.

Watanabe, Hitoshi: *See—*
Nakamura, Takashi; Ozawa, Kunitaka; Kadosawa, Tsuneaki; Koga, Eiji; and Watanabe, Hitoshi, 5,369,746, Cl. 395-200.000.

Watanabe, Isao: *See—*
Furuta, Naoki; Ootsubo, Masakazu; Hamaguchi, Setsunori; Watanabe, Isao; Furuta, Yoichi; and Suruga, Toshihiro, 5,369,066, Cl. 501-108.000.
Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, 5,369,628, Cl. 369-13.000.

Watanabe, Junya: *See—*
Ito, Tsuyoshi; Watanabe, Junya; and Sawada, Shintaro, 5,369,132, Cl. 521-31.000.

Watanabe, Masahito; and Eguchi, Minoru, to NEC Corporation. Monocrystal growing method. 5,367,979, Cl. 117-13.000.

Watanabe, Masami: *See—*
Matsumoto, Junichi; Okamoto, Takuji; Watanabe, Masami; and Ishihara, Nobuhide, 5,369,196, Cl. 526-127.000.

Watanabe, Noriko; and Oyama, Satoshi, to Kabushiki Kaisha Toshiba. Fluid compressor having a molded helical blade. 5,368,457, Cl. 418-220.000.

Watanabe, Taisuke: *See—*
Nomura, Kazuya; and Watanabe, Taisuke, 5,369,727, Cl. 395-2.610.

Watanabe, Tsuyoshi: *See—*
Inoue, Taro; Umeno, Hidenori; Tanaka, Shunji; and Watanabe, Tsuyoshi, 5,369,750, Cl. 395-400.000.

Watanabe, Yoichiro: *See—*
Yamashita, Hiroshi; Kotsugai, Akihiro; Watanabe, Yoichiro; Katoh, Koichi; and Kawase, Hiromitsu, 5,368,972, Cl. 430-137.000.

Watanabe, Yoshinori: *See—*
Kiryu, Naohiko; Maruyama, Hiroshi; Minezaki, Etsuko; and Watanabe, Yoshinori, 5,368,962, Cl. 430-7.000.

Watkins, Ronald D.: *See—*
Cline, Harvey E.; and Watkins, Ronald D., 5,368,032, Cl. 128-653.200.

Watson, John: *See—*
Yehushua, Moshe; Watson, John; and Parr, Michael, 5,369,671, Cl. 375-94.000.

Watson, Richard B.; Iknaian, Russell; and Collins, Hansel A., to Digital Equipment Corporation. Method and apparatus for clock skew reduction through remote delay regulation. 5,369,640, Cl. 371-1.000.

Watts, John R. Door lock. 5,368,345, Cl. 292-1.500.

Waugh, E. Leon. Pitcher training apparatus. 5,368,293, Cl. 273-26.00A.

WCI-Outdoor Products, Inc.: *See—*
Collins, Imack L., 5,367,988, Cl. 123-41.650.

Weatherford/Lamb, Inc.: *See—*
Schulze-Beckinghausen, Joerg E., 5,368,113, Cl. 175-162.000.

Weatherford U.S., Inc.: *See—*
Blizzard, William A., Jr.; and Tilton, Frederick T., 5,368,098, Cl. 166-100.000.

Weaver, Jimmie D.: *See—*
Dewprashad, Brahmadeo; and Weaver, Jimmie D., 5,368,102, Cl. 166-276.000.

Weaver, Max A.: *See—*
Evans, Steven; Weaver, Max A.; and Weber, Helmut, 5,369,081, Cl. 503-227.000.

Weavil, Randy K.; and Adderton, Brian C., to R. J. Reynolds Tobacco Company. Blown film die enclosure. 5,368,460, Cl. 425-72.100.

Weber, Helmut: *See—*
Evans, Steven; Weaver, Max A.; and Weber, Helmut, 5,369,081, Cl. 503-227.000.

Weber, Jean M.: *See—*
Kassen, Rudiger; Klein, Albert; and Weber, Jean M., 5,369,368, Cl. 324-632.000.

Weber, Richard H., III; Richardson, Paul T.; and Gable, Gerald K., to Consolidated Industries Corp. Multi-position forced air furnace. 5,368,010, Cl. 126-110.00R.

Weckerle, Gunter: *See—*
Peter, Julius; and Weckerle, Gunter, 5,368,383, Cl. 366-97.000.

Weems, Sterling J., to MPR Associates, Inc. Methods of repairing inconel 600 nozzles of pressurized water reactor vessels. 5,367,768, Cl. 29-890.031.

Wegner, Egon: *See—*
Hartung, Michael; Lassmann, Walter; Poth, Ulrich; and Wegner, Egon, 5,368,944, Cl. 428-423.100.

Wehrmann, Rolf; Kocher, Matthias; Pielartzik, Harald; and Klug, Gunter, to Bayer Aktiengesellschaft. Modified polyester resins, a process for their preparation and toners containing such polyester resins. 5,368,968, Cl. 430-106.600.

Wei, Chang: *See—*
Rajeshwar, Krishnan; Wei, Chang; and Basak, Sanjay, 5,368,632, Cl. 75-721.000.

Wei, Che-Chia, to SGS-Thomson Microelectronics, Inc. Self-aligned contact process. 5,369,303, Cl. 257-751.000.

Wei, Liwen: *See—*
Horodysky, Andrew G.; Wei, Liwen; and Kremer, Ross A., 5,368,759, Cl. 252-475.000.

Weickgenannt, Guido: *See—*
Lahr, Wolfgang; and Weickgenannt, Guido, 5,368,864, Cl. 424-489.000.

Weinberg, Ekkehard: *See—*
Mulhaupt, Rolf; Rosch, Joachim; Hopperdietzel, Siegfried; Weinberg, Ekkehard; and Klein, Herbert, 5,369,171, Cl. 525-66.000.

Weinkauf, Donald H., to Shell Oil Company. Composite systems of polyketone and aminated, modified polyolefins. 5,369,170, Cl. 525-64.000.

Weinstein, Daniel: *See—*
Diaz, Thomas P.; Contreras, Gary W.; Gordon, Gerald M.; McCarthy, Veronica L.; and Weinstein, Daniel, 5,369,675, Cl. 376-249.000.

Weisenborn, Alan L.: *See—*
Scarfone, Frank A.; Turkel, David; and Weisenborn, Alan L., 5,368,046, Cl. 128-754.000.

Weiss, John C.; and Wirick, Cloyd F., to Johnstown America Corporation. Two piece center sill shroud for railway cars. 5,367,958, Cl. 105-406.100.

Welden, David P. Direct fired hot water generator with more than one heat exchange zone. 5,368,474, Cl. 431-263.000.

Wellburn, Deborah A.: *See—*
Gould, Elliot L.; Kemerer, Douglas W.; McAllister, Lance A.; Piro, Ronald A.; Richardson, Guy R.; and Wellburn, Deborah A., 5,369,595, Cl. 364-490.000.

Wells, George F.: *See—*
Smith, Michael D.; and Wells, George F., 5,367,841, Cl. 451-89.000.

Wells, Steven E.; and Magnusson, Eric J., to Intel Corporation. Method for assuring that an erase process for a memory array has been properly completed. 5,369,616, Cl. 365-218.000.

Weltz, Richard K.; and Schuerch, Peter, to Infilco Degremont, Inc. Control apparatus for fluid disinfection modules and systems. 5,368,826, Cl. 422-243.000.

Wen-Ming, Chou, to Kung Ta Enterprise Co., Ltd. Mechanism for rocking chair. 5,368,361, Cl. 297-260.000.

Wendel, Dieter: *See—*
Metzger, Roland; Schmidt, Manfred; Torreiter, Otto; and Wendel, Dieter, 5,369,358, Cl. 324-754.000.

Wenke, Gottfried: *See—*
Chan, Alexander; Wenke, Gottfried; and Prota, Ciuseppe, 5,368,610, Cl. 8-406.000.

Wenzel, Kenneth J.: *See—*
Rudzewicz, Robert G.; Dahl, Michael A.; Dunn, Thomas G.; Wenzel, Kenneth J.; and Muckley, Ronald A., 5,369,342, Cl. 318-102.000.

Werenka, Christian: *See—*
Albrecht, Gerhard; Leitner, Hubert; Lindenberger, Rudolf; Siedl, Richard; Werenka, Christian; and Suter, Willi, 5,369,198, Cl. 526-240.000.

Wernicke, Ubbo; Osegowitsch, Viktor; and Rockle, Gunter, to Agfa Gevaert Aktiengesellschaft. Liquid stripper for photographic material. 5,369,458, Cl. 354-319.000.

Wesley, Richard H.: *See—*
Ayers, Richard A.; and Wesley, Richard H., 5,368,724, Cl. 210-110.000.

West Agro, Inc.: *See—*
Winicov, Murray W., 5,368,868, Cl. 424-667.000.

West Bend Company, The: *See—*
Vancha, John, 5,369,398, Cl. 340-635.000.

West, Paul R.: *See—*
Walls, John E.; and West, Paul R., 5,368,974, Cl. 430-156.000.

West, Richard A. Method and system for the abrasive cleaning of surfaces. 5,367,840, Cl. 451-78.000.
West Sanitation SErvices, Inc.: *See—*
De Winter, Koen, 5,368,200, Cl. 222-153.000.
West, Stephen C.: *See—*
Bailey, Charles E.; Gale, Ernest S.; Hassell, Carl A.; Schaffer, Scott J.; Paranjape, Sushama M.; and West, Stephen C., 5,369,652, Cl. 371-40.100.
Westerhof, Wilhelmina: *See—*
Hardeman, Gerard; Westerhof, Wilhelmina; Plak, Anthonie J.; and Beens-Onstenk, Anneke, 5,368,945, Cl. 428-458.000.
Western Litho Plate & Supply Co.: *See—*
Powers, John W.; and Choate, Daniel G., 5,369,468, Cl. 355-99.000.
Westinghouse Electric Corporation: *See—*
Deemer, Diane L.; and Mileaf, Daryl S., 5,368,524, Cl. 474-133.000.
Halvis, James; Bluzer, Nathan; Shiskowski, Robert R.; and Chen, Li-Shu, 5,369,040, Cl. 437-3.000.
Lisle, Thomas K., Jr., 5,369,411, Cl. 342-194.000.
McKee, Richard C.; Baumler, Sandra L.; and Schimert, Thomas R., 5,368,880, Cl. 427-125.000.
Noe, Ronald O., 5,368,829, Cl. 423-20.000.
Westmoreland, Donald L.: *See—*
Sandhu, Gurtej S.; Westmoreland, Donald L.; and Fazan, Pierre, 5,368,687, Cl. 156-664.000.
Weyerhaeuser Co.: *See—*
Marrs, Gevan R.; and Johnson, Gail E., 5,368,168, Cl. 209-396.000.
Weymans, Gunther: *See—*
Rhiel, Franz F.; Weymans, Gunther; and Mahiout, Said, 5,368,699, Cl. 203-2.000.
Whatman, Inc.: *See—*
Stefkovich, Joseph; and Liu, Alfonso, 5,368,729, Cl. 210-266.000.
Whildin, Kathleen C.: *See—*
Krauss, William J.; Pieper, Thomas J.; Ruel, Bernard G.; Stewart, Gilbert M.; and Whildin, Kathleen C., 5,369,696, Cl. 379-268.000.
Whitaker Corporation, The: *See—*
Bolhaar, Antonius B. G., 5,369,482, Cl. 356-128.000.
Deuel, Gregory F.; and Folk, Kenneth F., 5,367,767, Cl. 29-868.000.
Locati, Ronald P., 5,368,491, Cl. 439-62.000.
Whitaker, Norman A., Jr.: *See—*
Avramopoulos, Hercules; and Whitaker, Norman A., Jr., 5,369,520, Cl. 359-176.000.
White, Alan C.: *See—*
Cliffe, Ian A.; White, Alan C.; and Ifill, Anderson D., 5,369,103, Cl. 514-211.000.
White Consolidated Industries, Inc.: *See—*
Hampton, Leonard D.; Bobrosky, Vincent L.; and Burress, Paul J., 5,367,741, Cl. 15-323.000.
White, Darrell W.: *See—*
Clement, Thomas P.; Bates, James S.; and White, Darrell W., 5,368,045, Cl. 128-754.000.
White, Jackie L.; and Perfetti, Thomas A., to R. J. Reynolds Tobacco Company. Flavorful dry food condiment and process of providing the same. 5,368,879, Cl. 426-650.000.
Whitehurst, Richard P.: *See—*
Conley, John D.; and Whitehurst, Richard P., 5,369,761, Cl. 395-600.000.
Whitekettle, Wilson K.: *See—*
Donofrio, Deborah K.; and Whitekettle, Wilson K., 5,369,115, Cl. 514-367.000.
Whiting, Lori L.: *See—*
Berger, Gregory D.; Bergstrom, James D.; Biftu, Tesfaye; Bugianesi, Robert L.; Burk, Robert M.; Girotra, Narindar N.; Kuo, C. H.; Parsons, William H.; Ponpipom, Mitree M.; and Whiting, Lori L., 5,369,125, Cl. 514-452.000.
Whiting, Thomas E.: *See—*
Di Milia, Edward S.; Gleichauf, Darrell A.; and Whiting, Thomas E., 5,369,033, Cl. 436-148.000.
Whitley, Timothy J.: *See—*
Millar, Colin A.; Brierley, Michael C.; and Whitley, Timothy J., 5,369,523, Cl. 359-341.000.
Whittington, Burl D. Marine propeller with transversal converging ribs. 5,368,508, Cl. 440-49.000.
Wickholm, David R., to Hughes Aircraft Company. Optical imaging system including generally conical, transparent protective dome and optically refractive fixed corrector for reversing conical deformation created by viewing through the dome. 5,368,254, Cl. 244-3.160.
Widdoes, Lawrence C., Jr.: *See—*
Papamarcos, Mark S.; Read, Andrew J.; Heideman, Wayne P.; Mardjuki, Robert K.; Couch, Robert K.; Jaeger, Peter R.; Kappauf, William F.; Rudin, Melvin; Kelly, Norman F.; and Widdoes, Lawrence C., Jr., 5,369,593, Cl. 364-488.000.
Wiebus, Ernst: *See—*
Bahrmann, Helmut; Greb, Wolfgang; Lappe, Peter; Heymanns, Peter; Szameitat, Jurgen; Muller, Thomas; and Wiebus, Ernst, 5,369,162, Cl. 524-296.000.
Wiedenmann, Hans-Martin: *See—*
Friese, Karl-Hermann; Wiedenmann, Hans-Martin; and Goehring, Eberhard, 5,368,713, Cl. 204-429.000.
Wilber, James A., to Thomson Consumer Electronics, Inc. Vertical retrace with zoom and centered fast retrace. 5,369,341, Cl. 315-389.000.
Wild, Roger N.: *See—*
Gonya, Stephen G.; Lake, Jemaes K.; Long, Randy C.; and Wild, Roger N., 5,368,814, Cl. 420-587.000.
Wilde, Leon G.: *See—*
Haverty, Donald; Wilde, Leon G.; and Rana, Dinesh, 5,369,416, Cl. 345-39.000.
Wilhelm Fette GmbH: *See—*
Bentjens, Bernd; and Oppelt, Klaus, 5,368,418, Cl. 407-114.000.
Wilk, Peter J. Automated surgical system and apparatus. 5,368,015, Cl. 128-4.000.
Wilke, Rudeger H.; and Floreani, David, to Savage Bros. Co. Lift truck. 5,368,130, Cl. 187-236.000.
Wilkins, Bruce F. Aquarium air-manifold module. 5,367,985, Cl. 119-263.000.
Willer, Rodney L.; Day, Robert S.; and Marchand, Alan P., to Thiokol Corporation. TPE binder containing crystalline modifiers and solid propellants based thereon. 5,368,662, Cl. 149-19.900.
Willey, Edward B.; Willey, J. Wayne, deceased; and by Willey, Jack H., executor. Trash bag opener and remover. 5,368,431, Cl. 414-412.000.
Willey, J. Wayne, deceased: *See—*
Willey, Edward B.; Willey, J. Wayne, deceased; and Willey, Jack H., executor, 5,368,431, Cl. 414-412.000.
Willey, Jack H., executor: *See—*
Willey, Edward B.; Willey, J. Wayne, deceased; and Willey, Jack H., executor, 5,368,431, Cl. 414-412.000.
Williams Furnace Company: *See—*
Chamberlain, Albert B., 5,368,012, Cl. 126-116.00B.
Williams, Gordon F.: *See—*
Shofner, Frederick M.; Townes, Mark G.; and Williams, Gordon F., 5,367,747, Cl. 19-65.00R.
Williams, Lendell J., to Karlen Manufacturing, Inc. Tubular eyewear retainer and method for producing same. 5,369,452, Cl. 351-157.000.
Williams, Malcolm I.: *See—*
Gaffar, Abdul; Afflitto, John J.; and Williams, Malcolm I., 5,368,844, Cl. 424-49.000.
Williams, Paul J., to Babcock & Wilcox Company, The. Condensing heat exchanger scrubbing system. 5,368,096, Cl. 165-113.000.
Williamson, Craig D.; and Feiler, Frederic C., to Rocky Mountain Prosthetics Orthotics. Orthotic hip brace. 5,368,552, Cl. 602-23.000.
Williamson, George L.: *See—*
Kauffman, Donn K., 5,368,670, Cl. 156-171.000.
Williamson, William A., III, to BellSouth Corporation. Automatic gain control for a headset. 5,369,711, Cl. 381-104.000.
Willis, Kevin D.: *See—*
McAteer, Jeffrey P.; and Willis, Kevin D., 5,369,701, Cl. 379-420.000.
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Schaller, Gunter; and Klietsch, Dietmar, 5,368,545, Cl. 600-37.000.
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Yanda, Danny W.: *See*—
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Miyamoto, Yoshinori; Sato, Hidemasa; Agawa, Jiro; Yamashita, Keizo; Mogi, Kazuo; and Aihara, Toru, 5,368,678, Cl. 156-405.100.

Yokose, Kenji; Nagase, Makoto; Kamimura, Hiroshi; Asakura, Yamato; Matsui, Tetsuya; Ibe, Hidefumi; Nishino, Yoshitaka; and Uchida, Shunsuke, to Hitachi, Ltd. Plant diagnosis apparatus and method. 5,369,674, Cl. 376-245.000.

Yokota, Hidetaka, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mirror adjusting apparatus of view finder. 5,369,456, Cl. 354-222.000.

Yokota, Yasuhiro, to Fujitsu Limited. Radio receiver. 5,369,790, Cl. 455-164.100.

Yokouchi, Kazuhiro: *See*—
Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, 5,369,588, Cl. 364-449.000.

Yokoyama, Kazumasa: *See*—
Sumi, Akinori; Ohtani, Wataru; Furuhata, Naoto; Takeshima, Kazuya; Kamide, Kaeko; Ohmura, Takao; and Yokoyama, Kazumasa, 5,369,020, Cl. 435-69.600.

Yokoyama, Keiichi: *See*—
Yoshikawa, Masaaki; Yokoyama, Keiichi; Hasegawa, Masayasu; Yasumoto, Ryouichi; and Fujita, Hiroyuki, 5,369,015, Cl. 435-68.100.

Yokoyama, Minoru: *See*—
Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, 5,369,422, Cl. 346-76.0PH.

Yokoyama, Miyuki: *See*—
Satake, Toshimi; Nagai, Tomoaki; Fukui, Hiroshi; Yokoyama, Miyuki; and Sekine, Akio, 5,369,199, Cl. 526-241.000.

Yokoyama, Yasuaki: *See*—
Tajima, Yusuke; Bessho, Nobuo; Takinishi, Fumitake; Yokoyama, Yasuaki; and Masuko, Hideaki, 5,368,976, Cl. 430-176.000.

Yokoyama, Yoshihiro: *See*—
Kurosu, Yasuo; Wada, Shuhei; Yokoyama, Yoshihiro; and Masuzaki, Hidefumi, 5,369,742, Cl. 395-147.000.

Yonamoto, Koh; Sawada, Hiroyuki; and Kanno, Tetsuya, to Nippon Sanso Corporation. White smoke generating apparatus. 5,368,787, Cl. 261-36.100.

Yoneyama, Toshio: *See*—
Kato, Jinichiro; Yoneyama, Toshio; Shimura, Kazuhiko; Nakayama, Yoshiaki; and Kanekiyo, Kenji, 5,369,165, Cl. 524-462.000.

Yoo, Chang-Hyun, to Samsung Electronics Co., Ltd. Self-driven robotic cleaning apparatus and driving method thereof. 5,369,347, Cl. 318-568.120.

Yoo, Ji-Beom; Park, Chan-Yong; and Kim, Hong-Man, to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Avalanche photodiode having a multiplication layer with superlattice. 5,369,292, Cl. 257-186.000.

Yoo, Kwong M.: *See*—
Alfano, Robert R.; Yoo, Kwong M.; and Tang, Guichen, 5,369,496, Cl. 356-446.000.

Yoon, Jung S.; Rhee, Won H.; Koh, Jae H.; and Jang, Woo S., to Goldstar Co., Ltd. Mn-Zn-based single crystal ferrite composition. 5,368,764, Cl. 252-62.590.

Yorke, John: *See*—
Rambo, Robert D.; and Yorke, John, 5,368,560, Cl. 604-35.000.

Yoshida, Chieko: *See*—
Maeda, Hiroshi; Akaike, Takaaki; Nishigoori, Hideo; Urakami, Teizi; and Yoshida, Chieko, 5,369,112, Cl. 514-287.000.

Yoshida, Chisato: *See*—
Hayami, Katsuro; Yokouchi, Kazuhiro; Goto, Hirofumi; Yoshida, Chisato; and Fujii, Yasushi, 5,369,588, Cl. 364-449.000.

Yoshida, Kazuhiro, to Konica Corporation. Silver halide photographic light-sensitive material. 5,368,984, Cl. 430-264.000.

Yoshida Kogyo K.K.: *See*—
Kawamura, Shingo; and Yamada, Minoru, 5,368,939, Cl. 428-408.000.
Masumoto, Tsuyoshi; Inoue, Akihisa; Odera, Katsumasa; and Oguchi, Masahiro, 5,368,658, Cl. 148-403.000.
Morioka, Koitsu; and Matsuda, Yasuhiko, 5,367,758, Cl. 29-410.000.

Yoshida, Minoru: *See*—
Tsukamoto, Kazuyuki; Yoshida, Minoru; Hosaka, Ryuji; Fukao, Tomoo; Kido, Naoharu; and Suto, Naoki, 5,369,688, Cl. 379-100.000.

Yoshida, Shoji: *See*—
Fukushima, Tadashi; Matsuo, Shigeru; Yoshida, Shoji; and Komagawa, Tooru, 5,369,744, Cl. 395-162.000.

Yoshida, Takehiro; Terajima, Hisao; Wada, Satoshi; Ono, Takeshi; Kobayashi, Makoto; Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; and Ishida, Yasushi, to Canon Kabushiki Kaisha. Thermal transfer recording method in which an ink sheet is moved at a selected speed and apparatus for performing the same. 5,369,422, Cl. 346-76.0PH.

Yoshida, Zenji: *See*—
Hosokawa, Kanji; Okamura, Hisaya; Yoshida, Zenji; and Matsui, Noboru, 5,368,925, Cl. 428-281.000.

Yoshihara, Kunio, to Kabushiki Kaisha Toshiba. High frequency gain differential signal circuit employing a level shift device. 5,369,313, Cl. 326-68.000.

Yoshihiro, Nishiyama. Powerless emergency elevator. 5,368,131, Cl. 187-301.000.

Yoshii, Minoru: *See*—
Matsumoto, Takahiro; Nose, Noriyuki; Yoshii, Minoru; Saitoh, Kenji; Hasegawa, Masanobu; and Sentoku, Koichi, 5,369,486, Cl. 356-349.000.

Yoshikawa, Masaaki; Yokoyama, Keiichi; Hasegawa, Masayasu; Yasumoto, Ryouichi; and Fujita, Hiroyuki, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Method for producing an angiotensin converting enzyme inhibitor-containing composition. 5,369,015, Cl. 435-68.100.

Yoshikawa, Yuji; and Takarada, Mitsuhiro, to Shin-Etsu Chemical Co., Ltd. Coating agent for electrophotographic carrier and carrier coated therewith. 5,368,969, Cl. 430-108.000.

Yoshimoto, Kyosuke; Ito, Osamu; Tanaka, Kunimaro; Takeuchi, Koichi; Watanabe, Isao; and Tsutsumi, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Magneto-optic recording medium, magneto-optic recording system and magneto-optic recording method. 5,369,628, Cl. 369-13.000.

Yoshimoto, Mitsufumi: *See*—
Kosaka, Akio; Yoshimoto, Mitsufumi; Hama, Mitsuji; and Iinuma, Toshinori, 5,369,378, Cl. 332-104.000.

Yoshimura, Masashi; Matsui, Jin-Joo; Yamamoto, Takehisa; and Yamakawa, Akira, to Sumitomo Electric Industries, Ltd. Silicon nitride sintered body and process for producing the same. 5,369,065, Cl. 501-97.000.

Yoshimura, Shuji: *See*—
Murayama, Masami; Kakuma, Satoshi; and Yoshimura, Shuji, 5,369,649, Cl. 371-37.100.

Yoshino, Hisakazu, to Kabushiki Kaisha Topcon. Scanning type projector. 5,369,521, Cl. 359-196.000.

Yoshino, Hitoshi: *See*—
Kamitakahara, Hirofumi; Yoshino, Hitoshi; Kanome, Osamu; Sato, Tetsuya; and Hayashi, Hisanori, 5,368,789, Cl. 264-1.330.

Yoshino, Kishio: *See*—
Dussert, Bertrand W.; Hayden, Richard A.; Lutchko, John R.; Yoshino, Kishio; Hisaki, Satoru; and Ehara, Fujito, 5,368,739, Cl. 210-660.000.

Yoshinobu, Takeda: *See*—
Londo, Katsuyoshi; and Yoshinobu, Takeda, 5,368,629, Cl. 75-249.000.

Yoshio, Hideaki: *See*—
Konishi, Akio; Sakai, Yoshitomo; Saito, Yoshiyuki; and Yoshio, Hideaki, 5,369,536, Cl. 360-85.000.

Yoshio Kondo: *See*—
Kondo, Hirotoshi, 5,367,995, Cl. 123-179.600.

Yoshizawa, Hideki: *See*—
Masumoto, Daiki; Kato, Hideki; Yoshizawa, Hideki; and Iciki, Hiroki, 5,369,731, Cl. 395-24.000.

Yosida, Ethuo: *See*—
Uemura, Hiroshi; Yosida, Ethuo; and Iwaki, Shin, 5,369,144, Cl. 525-11.800.

Yosimitu, Kaga: *See*—
Kenjiro, Uematsu; Yosimitu, Kaga; and Masaki, Saito, 5,368,473, Cl. 431-153.000.

You, Chin-San. Game racket of composite material. 5,368,298, Cl. 273-73.00R.

Young, Donald M.: *See*—
Mezzatesta, Frank, Jr.; and Young, Donald M., 5,369,344, Cl. 318-463.000.

Young, John N. Spinning reel with excellent heat transfer and non-tangle characteristics. 5,368,247, Cl. 242-231.000.

Young, John S.: *See*—
Natwig, Gary S.; Young, John S.; and Ericson, Robert B., 5,369,225, Cl. 174-84.00R.

Young, Robert L.; Heinzelman, Bert D.; and Lovejoy, David A., to Sensor Devices, Inc. Non-invasive oximeter probe. 5,368,025, Cl. 128-633.000.

Young, Roland O. Panel lifting apparatus. 5,368,429, Cl. 414-11.000.

Young, Stephen W. Bicycle safety bar apparatus. 5,368,323, Cl. 280-293.000.

Young, Timothy M.: *See*—
Schwendemann, Kenneth L.; and Young, Timothy M., 5,368,447, Cl. 417-54.000.

Young, Wayne P.: *See*—
Hirsch, Leon C.; Green, David T.; Bolanos, Henry; Young, Wayne P.; Mastri, Dominick L.; Heaton, Lisa W.; and Alari, Mark E., 5,368,599, Cl. 606-139.000.

Yu, Thomas C.; Powers, Kenneth W.; and Wang, Hsien C., to Exxon Chemical Patents Inc. Impact modification of polyamides. 5,369,182, Cl. 525-240.000.

Yu, You Y.: *See*—
Bhattacharyya, Bidyut K.; Mallik, Debendra; and Yu, You Y., 5,369,545, Cl. 361-306.200.

Yuan, Han-Tzong: *See*—
Morris, Francis J.; Yang, Jau-Yuann; Plumton, Donald L.; and Yuan, Han-Tzong, 5,369,042, Cl. 437-31.000.

Yuasa, Hitoshi: *See*—
Yoda, Eiji; Yuasa, Hitoshi; and Otsuki, Yutaka, 5,368,977, Cl. 430-190.000.

Yugen Kaisha Furuyama Shouji: *See*—
Furuyama, Kazuo, 5,367,891, Cl. 63-29.200.
Yugen Kaisha Tamagawa Kogyo: *See*—
Tamagawa, Yuzo, 5,369,451, Cl. 351-136.000.
Yuki, Mikio: *See*—
Murakawa, Masatake; Yuki, Mikio; Imanishi, Ryozo; Tone, Masatsugu; and Minoura, Akira, 5,367,861, Cl. 56-11.800.
Yukitake, Takeshi; and Inoue, Shuji, to Matsushita Electric Industrial Co., Ltd. Method for predicting move compensation. 5,369,449, Cl. 348-699.000.
Yumiyama, Shigeru; and Mori, Hideo, to Hitachi, Ltd. Pinion shift device for starter and assembly method of the same. 5,367,913, Cl. 74-7.00A.
Yung, Henry T.; Hochschild, James R.; and Severin, William A., to Texas Instruments Incorporated. Linear/companding A/D converter. 5,369,407, Cl. 341-172.000.
Yung, Marcel M.: *See*—
Bird, Raymond F.; Herzberg, Amir; Janson, Philippe A.; Kutten, Shay; Molva, Refik A.; and Yung, Marcel M., 5,369,705, Cl. 380-21.000.
Yuratich, Michael A.: *See*—
Jewell, Andrew D.; and Yuratich, Michael A., 5,367,911, Cl. 73-861.080.
Zaborney, John F.; and Tinsley, William N., to Duracell Inc. Battery cell jacket. 5,368,953, Cl. 429-90.000.
Zagloul, Hatim; and Fattouche, Michel, to AGT Limited. Method and apparatus for demodulation of a signal transmitted over a fading channel using phase estimation. 5,369,670, Cl. 375-84.000.
Zaim, Adil Z., to Omega Environmental, Inc. Process for testing a vessel. 5,367,797, Cl. 73-49.200.
Zangerle, Rolf: *See*—
Geiser, Peter; and Zangerle, Rolf, 5,367,928, Cl. 83-49.000.
Zanghi, John L.: *See*—
Hunter, Timothy M.; Chiang, Joseph; Birnbaum, David; and Zanghi, John L., 5,369,423, Cl. 346-108.000.
Zarneke, Richard D.: *See*—
Johnson, Harold; Kvinge, Daniel J.; Plager, Steven P.; and Zarneke, Richard D., 5,368,452, Cl. 417-395.000.
Zavis, Wayne M.: *See*—
Kinney, Michael A.; Cronvich, James T.; and Zavis, Wayne M., 5,369,356, Cl. 324-142.000.
Zawacki, Thomas S.: *See*—
Phillips, Benjamin A.; Zawacki, Thomas S.; and Marsala, Joseph, 5,367,884, Cl. 62-101.000.
Zeiler, Bernhard, to Milliken Research Corporation. Method and apparatus for liquid deflection. 5,367,733, Cl. 8-149.100.
Zeiner, Hartmut: *See*—
Kielhorn-Bayer, Sabine; Zeiner, Hartmut; Goerrissen, Heiner; and Saenger, Dietrich, 5,369,177, Cl. 525-154.000.
Zeller Corporation, The: *See*—
Mazziotti, Philip J., 5,368,523, Cl. 464-144.000.
Zeller, Noel E. Radiant-energy tool with flexible extension. 5,369,556, Cl. 362-198.000.
Zeller Plastik GmbH: *See*—
Thanisch, Klaus, 5,368,176, Cl. 215-235.000.
Zellweger Uster, Inc.: *See*—
Shofner, Frederick M.; Townes, Mark G.; and Williams, Gordon F., 5,367,747, Cl. 19-65.00R.
Zeneca Limited: *See*—
James, Donald R.; and Felix, Raymond A., 5,369,086, Cl. 504-253.000.
Zenith Electronics Corp.: *See*—
Moreland, Larry K., 5,369,779, Cl. 455-5.100.
Zenz, Frederick A.: *See*—
Nell, David J.; and Zenz, Frederick A., 5,368,824, Cl. 422-143.000.
Zerangue, Frank, to Rotor Dynamics Americas, Inc. Acoustic pool monitor with sequentially actuated multiple transducers. 5,369,623, Cl. 367-93.000.
Zervas, Nicholas T.: *See*—
Sliski, Alan P.; Dinsmore, Mark T.; Boom, Anthonius J.; and Zervas, Nicholas T., 5,369,679, Cl. 378-65.000.
Zettl, Alexander: *See*—
Kroener, Hubertus; Dittrich, Uwe; and Zettl, Alexander, 5,369,164, Cl. 524-458.000.
Zeze, Kazuo: *See*—
Kamiyama, Misao; Ohishi, Yoshinori; and Zeze, Kazuo, 5,368,328, Cl. 280-733.000.
Zhao, Junguo: *See*—
Henkens, Robert W.; Zhao, Junguo; Wojciechowski, Marek; O'Daly, John P.; Liang, Zhi-Wei; and Morris, Susan E., 5,368,707, Cl. 204-153.120.
Zhou, Chuxin: *See*—
Hobbs, Linn W.; Zhou, Chuxin; and Duncan, Julia C., 5,368,813, Cl. 420-425.000.
Zidovec, Davor F.; and Fisher, Alexander D., to Betz PaperChem, Inc. Methods of controlling scale formation in the presence of metal ions in aqueous systems. 5,368,740, Cl. 210-697.000.
Ziegler, Carl B., Jr.; Curran, William V.; and Feigelson, Gregg, to American Cyanamid Company. 2-substituted alkyl-3-carboxy carbopenems as antibiotics and a method of producing them. 5,369,102, Cl. 514-210.000.
Zielinski, Robert J.: *See*—
Ketcham, Mark G.; McNaughton, James; and Zielinski, Robert J., 5,368,275, Cl. 251-149.600.
Zilog, Inc.: *See*—
Benhamida, Boubekeur, 5,369,377, Cl. 331-49.000.
Zinreich, Eva S.: *See*—
Zinreich, Simion J.; Zinreich, Eva S.; and Howson, David C., 5,368,030, Cl. 128-653.100.
Zinreich, Simion J.; Zinreich, Eva S.; and Howson, David C., to Izi Corporation. Non-invasive multi-modality radiographic surface markers. 5,368,030, Cl. 128-653.100.
Zlobin, Mikhail N.: *See*—
Chumak, Fedor A.; Cherednik, Vladimir N.; and Zlobin, Mikhail N., 5,368,166, Cl. 209-168.000.
Zolotovsky, Boris P.: *See*—
Bouyanov, Roman A.; Tsyboulesky, Albert M.; Zolotovsky, Boris P.; Klevtsov, Dimitri P.; and Mourine, Vladimir I., 5,369,076, Cl. 502-354.000.
Zuber, Irl L.: *See*—
Von Klock, Byron; and Zuber, Irl L., 5,368,754, Cl. 210-806.000.
Zucchini, Umberto: *See*—
Galimberti, Maurizio; Giannini, Umberto; Mazzocchi, Romano; Albizzati, Enrico; and Zucchini, Umberto, 5,369,186, Cl. 525-330.700.
Zuckerman, Raymond S., to Saranda Corporation. Ankle brace walker. 5,368,551, Cl. 602-23.000.
Zuliani, Massimo: *See*—
Asselineau, Lionel; Mikitenko, Paul; Viltard, Jean Charles; and Zuliani, Massimo, 5,368,691, Cl. 203-29.000.
Zur, Oded Y.: *See*—
Gurner, Asaf; and Zur, Oded Y., 5,369,270, Cl. 250-221.000.
Zurbuchen, Hans: *See*—
Lussi, Andre; Zurbuchen, Hans; and von Gunten, Jurg, 5,367,947, Cl. 99-287.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF NOVEMBER, 1994

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bagg, Greville E. G.: *See*—
Marshall, Rodney J.; Schiffrin, David J.; Walsh, Francis C.; and Bagg, Greville E. G., Re. 34,801, Cl. 204-101.000.
Hutchins, Donald C. Cardiopulmonary resuscitation prompting. Re. 34,800, Cl. 128-898.000.
Loral Fairchild Corporation: *See*—
Sayag, Michel, Re. 34,802, Cl. 250-208.100.
Marshall, Rodney J.; Schiffrin, David J.; Walsh, Francis C.; and Bagg, Greville E. G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Ministry of Defence in Her Britannic Majesty's Government of the. Electrochemical generation of N_2O_5 . Re. 34,801, Cl. 204-101.000.
Sayag, Michel, to Loral Fairchild Corporation. Non-linear photosite response in CCD imagers. Re. 34,802, Cl. 250-208.100.
Schiffrin, David J.: *See*—
Marshall, Rodney J.; Schiffrin, David J.; Walsh, Francis C.; and Bagg, Greville E. G., Re. 34,801, Cl. 204-101.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Ministry of Defence in Her Britannic Majesty's Government of the: *See*—
Marshall, Rodney J.; Schiffrin, David J.; Walsh, Francis C.; and Bagg, Greville E. G., Re. 34,801, Cl. 204-101.000.
Walsh, Francis C.: *See*—
Marshall, Rodney J.; Schiffrin, David J.; Walsh, Francis C.; and Bagg, Greville E. G., Re. 34,801, Cl. 204-101.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Albrecht, James W.; and Spriggs, Harold G., to Stromag, Inc. Shaft mounted eddy current drive. B1 4,400,638, 11-29-94, Cl. 310-95.000.
Basic Line Industries, Inc.: *See*—
Licari, Yaffa, B1 5,191,985, Cl. 211-188.000.
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., to Motorola, Inc. Digital data processing system with interface adaptor having programmable monitorable control register therein. B1 4,263,650, 11-29-94, Cl. 395-275.000.
Carlow, Earl F.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Hatakoshi, Makoto: *See*—
Kisida, Hirosi; Nishida, Sumio; and Hatakoshi, Makoto, B1 4,714,706, Cl. 514-345.000.
Hepworth, Edward C.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Kisida, Hirosi; Nishida, Sumio; and Hatakoshi, Makoto, to Sumitomo Chemical Company, Limited. Pyridyloxy derivatives and their use as insecticides. B1 4,714,706, 11-29-94, Cl. 514-345.000.
Licari, Yaffa, to Basic Line Industries, Inc. Modular support and display unit. B1 5,191,985, 11-29-94, Cl. 211-188.000.
Mathys, Wilbur L.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Mensch, William D., Jr.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Motorola, Inc.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Nishida, Sumio: *See*—
Kisida, Hirosi; Nishida, Sumio; and Hatakoshi, Makoto, B1 4,714,706, Cl. 514-345.000.
Orgill, Rodney H.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Peddle, Charles I.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.
Spriggs, Harold G.: *See*—
Albrecht, James W.; and Spriggs, Harold G., B1 4,400,638, Cl. 310-95.000.
Stromag, Inc.: *See*—
Albrecht, James W.; and Spriggs, Harold G., B1 4,400,638, Cl. 310-95.000.
Sumitomo Chemical Company, Limited: *See*—
Kisida, Hirosi; Nishida, Sumio; and Hatakoshi, Makoto, B1 4,714,706, Cl. 514-345.000.
Wiles, Michael F.: *See*—
Bennett, Thomas H.; Carlow, Earl F.; Hepworth, Edward C.; Mathys, Wilbur L.; Mensch, William D., Jr.; Orgill, Rodney H.; Peddle, Charles I.; and Wiles, Michael F., B1 4,263,650, Cl. 395-275.000.

LIST OF DESIGN PATENTEES

A & E Products Group, a Division of Carlisle Plastics, Inc.: *See*—
Norman, Michael D., 352,834, Cl. D6-326.000.
Acro Foam & Plastics Ltd.: *See*—
DesLaurier, Octave E., 352,917, Cl. D11-155.000.
AcroMed Corporation: *See*—
Dinello, Alexandre M., 353,003, Cl. D24-155.000.
Adams, Shary. Chair. 352,838, 11-29-94, Cl. D6-370.000.
Alchin & Long Group Pty Limited T/AS Colonial Castings: *See*—
Alchin, Roy N., 352,840, Cl. D6-376.000.
Alchin, Roy N., to Alchin & Long Group Pty Limited T/AS Colonial Castings. Chair. 352,840, 11-29-94, Cl. D6-376.000.
Aliseo Diffusion S.A.: *See*—
Froidevaux, Jean-Marie, 353,018, Cl. D28-12.000.

Aluminum Specialties Pty. Ltd.: *See—*
Penrose, Kerry W., 352,878, Cl. D8-38.000.
Amerigo, Inc.: *See—*
Gerring, Harold E., 352,920, Cl. D12-106.000.
Amitec Information Industries Ltd.: *See—*
Elazari, Ami, 353,014, Cl. D26-68.000.
Anderson, Bradley J., to Edge Specialties, Inc. Ice skate blade sharpener. 352,880, 11-29-94, Cl. D8-91.000.
Anderson, Robert: *See—*
Colin, George M.; and Anderson, Robert, 352,947, Cl. D15-7.000.
Aprica Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 352,922, Cl. D12-128.000.
Kassai, Kenzou, 352,923, Cl. D12-129.000.
Aqua-Leisure Industries, Inc.: *See—*
Rasocha, Stan, 352,950, Cl. D16-303.000.
Avon Plastics, Inc.: *See—*
Reum, Donald J., 353,009, Cl. D25-164.000.
B & B Giftware, Inc.: *See—*
Schildkraut, Micki, 352,827, Cl. D3-283.000.
Bailey, Darrell. Recreational ski shoe. 352,818, 11-29-94, Cl. D2-919.000.
Baum, Anthony G. Novelty nose mask. 352,979, 11-29-94, Cl. D21-190.000.
Beaver, Ted L.; and Manderfield, Grover J., Jr., to Continental Plastic Containers, Inc. Exterior surface of a sidewall for a juice container. 352,905, 11-29-94, Cl. D9-528.000.
Berol Corporation: *See—*
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Bolton, Albert M., Jr., to Motorola, Inc. Cellular base unit. 352,941, 11-29-94, Cl. D14-142.000.
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Boscato, Alvise. Dog house. 353,028, 11-29-94, Cl. D30-108.000.
Boucher, Richard A.; Nygren, Kurt W.; and Simahk, Attaphol, to Sanitoy, Inc. Child's training toilet. 352,993, 11-29-94, Cl. D23-297.000.
Bradley, James B., Jr. Hospital bed pan. 353,000, 11-29-94, Cl. D24-123.000.
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Breen, John D., to Rubbermaid Incorporated. Knife tray. 352,868, 11-29-94, Cl. D7-637.000.
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Chen, Jerry. Cosmetic compact. 353,023, 11-29-94, Cl. D28-79.000.
Chen, Ya-Li. Hand trowel. 352,873, 11-29-94, Cl. D8-9.000.
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Choate, Brian W. Bass drum retaining mat. 352,951, 11-29-94, Cl. D17-22.000.
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Chuang, Chen-Chang; and Kramer, Josh. Heat sealing iron for model airplane film covering. 352,877, 11-29-94, Cl. D8-29.100.
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Hosoe, Isao, to Itoki Co., Ltd. Table. 352,852, 11-29-94, Cl. D6-482.000.
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Salt Weeds, (Partnership): *See*—
Yensen, Nicholas P., 8,999, Cl. 100.000.
Sanford, John; Ourecky, Donald; Reich, Jack, II; and Maloney, Kevin, to Cornell Research Foundation, Inc. Strawberry Seneca. 8,991, 11-29-94, Cl. 48.000.
Sherrill, Lewis B. Sherrill Delight peach tree. 8,990, 11-29-94, Cl. 43.100.
Steur, Nicolaas D.: *See*—
Bak, Gerardus J.; Steur, Nicolaas D.; and Bak, Elly, 8,996, Cl. 88.800.
Suntory Limited: *See*—
Tachibana, Ryuichi; Tamura, Yuji; and Sakazaki, Ushio, 8,995, Cl. 87.000.
Tachibana, Ryuichi; Tamura, Yuji; and Sakazaki, Ushio, to Suntory Limited. Verbena plant — 'Sunmaref TP-R'. 8,995, 11-29-94, Cl. 87.000.
Tamura, Yuji: *See*—
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VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Lisa. 8,992, 11-29-94, Cl. 78.000.
Yensen, Nicholas P., to Salt Weeds, (Partnership). *Distichlis spicata* var. Yensen 4A. 8,999, 11-29-94, Cl. 100.000.
Yoder Brothers, Inc.: *See*—
VandenBerg, Cornelis P., 8,992, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED NOVEMBER 29, 1994

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
4 5,367,706
19 5,367,707
22 5,367,708
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114 5,367,710
161.6 5,367,711
162 5,367,712
209.12 5,367,713
311 5,367,714
401 5,367,715

CLASS 4
222 5,367,716
263 5,367,717
449 5,367,718
488 5,367,719
494 5,367,720
496 5,367,721
499 5,367,722
508 5,367,723
571.1 5,367,724

CLASS 5
99.1 5,367,725
449 5,367,726
451 5,367,727
453 5,367,728
494 5,367,729
645 5,367,731
655 5,367,730

CLASS 7
100 5,367,732

CLASS 8
94.11 5,368,608
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149.1 5,367,733
159 5,367,734
406 5,368,610
444 5,368,611
568 5,368,612

CLASS 12
128 B 5,367,735

CLASS 15
53.3 5,367,736
257.2 5,367,737
312.2 5,367,738
316.1 5,367,739
320 5,367,740
323 5,367,741

CLASS 16
87.2 5,367,742
115 5,367,743
227 5,367,744
312 5,367,745

CLASS 19
65 R 5,367,747
80 R 5,367,748
115 R 5,367,746

CLASS 24
16 PB 5,367,749
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295 5,367,751
301 5,367,752

CLASS 26
73 5,367,753

CLASS 29
25.01 5,368,613
27 C 5,367,754
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237 5,367,756
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840 5,367,765
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868 5,367,767
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897.32 5,367,770

CLASS 30
43.92 5,367,771
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228 5,367,773
262 5,367,774
324 5,367,775
417 5,367,776
459 5,367,777

CLASS 33
193 5,367,778
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367 5,367,782
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767 5,367,784
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CLASS 34
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127 5,367,793
135 5,367,794
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410 5,367,796

CLASS 38
77.7 5,367,799

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18 5,367,800
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5,367,802
152.1 5,367,803
389 5,367,804
406 5,367,805
544 5,367,806
606 5,367,807
617 5,367,808
668 5,367,809

CLASS 42
17 5,367,810
70.07 5,367,811
74 5,367,812

CLASS 43
2 5,367,813
4 5,367,814
21.2 5,367,815
42.36 5,367,817
42.44 5,367,818
42.5 5,367,816
43.11 5,367,819
61 5,367,820
139 5,367,821

CLASS 44
3 5,368,513
338 5,368,615
559 5,368,616
622 5,368,617

CLASS 47
25 5,367,822
39 5,367,823
67 5,367,824

CLASS 49
199 5,367,825
343 5,367,826
352 5,367,827
382 5,367,828
465 5,367,829
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502 5,367,832

CLASS 50
306 5,369,274

CLASS 51
295 5,368,618
308 5,368,619

CLASS 52
169.5 5,367,842
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516 5,367,850
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745.13 5,367,854

CLASS 53
137.2 5,367,855
420 5,367,856
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439 5,367,858
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576 5,367,860

CLASS 55
274 5,368,620
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302 5,367,867
409 5,367,868

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6 5,367,880
11 5,367,881
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■ 5,367,883
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195 5,367,886
266 5,367,887
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29.2 5,367,891

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273 5,368,625
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CLASS 66
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CLASS 68
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CLASS 71
23 5,368,626

CLASS 72
37 5,367,902
42 5,367,903
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863.73 5,367,912

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551.2 5,367,918
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732.1 5,367,922

CLASS 75
10.19 5,368,627
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721 5,368,632

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3.09 5,367,923
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121.1 5,367,925
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488 5,367,927

CLASS 83
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368 5,367,930
407 5,367,931
425.2 5,367,932
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440.2 5,367,933
552 5,367,935
698.61 5,367,936

CLASS 84
377 5,367,937
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CLASS 89
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369.2 5,367,941
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CLASS 96
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CLASS 99
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CLASS 100
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158 5,367,953
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406.1 5,367,958

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723 R 5,368,646
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884 5,368,050
898 Re.34,800
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15 5,368,650
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22.18 5,368,652
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95.2 5,368,053
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CLASS 135
33.7 5,368,055
88.07 5,368,056
133 5,368,057

CLASS 136
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872 5,368,072

CLASS 138
30 5,368,073
96 T 5,368,074
98 5,368,075

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305 5,368,076

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357 5,368,080

CLASS 148

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517 5,368,082

CLASS 156

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89 5,368,667
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405.1 5,368,678
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644 5,368,682
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664 5,368,687

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443 5,368,089

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5 5,368,091
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46 5,368,093
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113 5,368,096
150 5,368,097

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246 5,368,099
264 5,368,100
273 5,368,101
276 5,368,102
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70 5,368,106

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5,368,110
74 5,368,111
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162 5,368,113
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25.15 5,369,221
136 5,369,222
208 5,369,223
211 5,369,226

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9.1 5,368,115
65.4 5,368,116
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89.14 5,368,119
197 5,368,120
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220 5,368,122
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2 R 5,368,134
3 R 5,368,135
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267 5,368,140
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67 5,368,702
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554 5,368,165

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198.2 5,368,727
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188 B1 5,191,985

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CLASS 215

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708 5,369,254
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162 5,368,201
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189 5,368,205
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3.28 5,368,255
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583 5,369,298
638 5,369,299
651 5,369,300
722 5,369,301
734 5,369,302
751 5,369,303
782 5,369,304

CLASS 261

36.1 5,368,787
44.3 5,368,788
105 5,368,784
111 5,368,785
130 5,368,786

CLASS 264

1.33 5,368,789
2.4 5,368,790
35 5,368,791
36 5,368,792
39 5,368,793
45.3 5,368,794
63 5,368,795
152 5,368,797
154 5,368,798
219 5,368,799
5,368,800
249 5,368,801
5,368,802
257 5,368,803
258 5,368,804
272.15 5,368,805
328.6 5,368,806
510 5,368,807
512 5,368,808
516 5,368,809
523 5,368,810
567 5,368,811

CLASS 266

44 5,368,282

CLASS 267

155 5,368,283

CLASS 271

5 5,368,284
9 5,368,285
11 5,368,286
185 5,368,287
215 5,368,288
265 5,368,289
273 5,368,290
308 5,368,291

CLASS 273

1.5 A 5,368,292
26 A 5,368,293
55 B 5,368,294
73 C 5,368,295
5,368,296
73 D 5,368,297
73 R 5,368,298
119 R 5,368,299
121 R 5,368,300
157 R 5,368,301
162 E 5,368,302
220 5,368,304
292 5,368,305
318 5,368,306
350 5,368,307
429 5,368,308
437 5,368,309
448 5,368,310

CLASS 277

9 5,368,311
26 5,368,312
27 5,368,313
96.1 5,368,314
235 A 5,368,315
235 B 5,368,316

CLASS 280

4 5,368,317
14.2 5,368,320
33.993 5,368,318
46 5,368,319
221 5,368,321
293 5,368,323
438.1 5,368,324
656 5,368,325
689 5,368,326
709 5,368,322
728 A 5,368,327
733 5,368,328
741 5,368,329
777 5,368,330
5,368,331
838 5,368,332

CLASS 281

31 5,368,333

CLASS 283

67 5,368,334

CLASS 285

[redacted] 5,368,335
24 5,368,336
114 5,368,337
133.1 5,368,338
150 5,368,339

158 5,368,340
260 5,368,341
261 5,368,342
312 5,368,343
412 5,368,344

CLASS 292

1.5 5,368,345
175 5,368,346
257 5,368,347
339 5,368,348
343 5,368,349

CLASS 294

19.2 5,368,350
5,368,351
5,368,352
152 5,368,353

CLASS 296

64 5,368,354
65.1 5,368,355
180.1 5,368,356
183 5,368,357

CLASS 297

215 5,368,358
217 5,368,359
219.1 5,368,360
260 5,368,361
310 5,368,362
362 5,368,363
411.27 5,368,364
411.36 5,368,365
423.3 5,368,366
423.4 5,368,367
452.18 5,368,368

CLASS 299

11 5,368,369

CLASS 301

37.36 5,368,370
64.7 5,368,371

CLASS 303

11 5,368,372
111 5,368,373
113.2 5,368,374

CLASS 305

10 5,368,375
35 EB 5,368,376

CLASS 307

10.1 5,369,305
5,369,306
125 5,369,307

CLASS 310

39 5,369,322
49 R 5,369,323
5,369,324
95 B1 4,400,638
156 5,369,325
235 5,369,326
313 A 5,369,327

CLASS 312

27 5,368,377
204 5,368,378
228 5,368,379
263 5,368,380
406.2 5,368,381

CLASS 313

141 5,369,328
284 5,369,329
402 5,369,330
467 5,369,331
478 5,369,332
509 5,369,333
634 5,369,334

CLASS 315

39.53 5,369,335
111.21 5,369,336
111.81 5,369,337
169.4 5,369,338
209 R 5,369,339
307 5,369,340
389 5,369,341

CLASS 318

102 5,369,342
280 5,369,343
463 5,369,344
561 5,369,345
568.12 5,369,347
568.17 5,369,346
623 5,369,348
811 5,369,349

CLASS 319

123 5,369,514
189 5,369,350

CLASS 320

7 5,369,351
56 5,369,352

CLASS 323

207 5,369,353
313 5,369,354
356 5,369,355

CLASS 324

142 5,369,356
158.1 5,369,357
5,369,359
174 5,369,360
207.2 5,369,361
309 5,369,362
414 5,369,363
430 5,369,364
444 5,369,365
533 5,369,366
632 5,369,367
5,369,368
637 5,369,369
663 5,369,370
707 5,369,371
719 5,369,372
754 5,369,358

CLASS 326

13 5,369,314
66 5,369,318
68 5,369,313
82 5,369,315
83 5,369,316
87 5,369,317

CLASS 327

73 5,369,319
94 5,369,309
108 5,369,320
121 5,369,373
143 5,369,310
292 5,369,311
427 5,369,308
545 5,369,312

CLASS 329

306 5,369,374
347 5,369,375

CLASS 331

8 5,369,376
49 5,369,377

CLASS 332

104 5,369,378

CLASS 333

116 5,369,379
128 5,369,380
161 5,369,381
189 5,369,382
204 5,369,383

CLASS 335

171 5,369,384
191 5,369,385
206 5,369,386
216 5,369,387

CLASS 336

145 5,369,388
206 5,369,389

CLASS 338

21 5,369,390

CLASS 340

392.5 5,369,391
438 5,369,392
551 5,369,394
603 5,369,395
623 5,369,396
632 5,369,397
635 5,369,398
686 5,369,399
825.35 5,369,401
825.8 5,369,400

CLASS 341

63 5,369,405
135 5,369,406
136 5,369,402
143 5,369,403
5,369,404
172 5,369,407

CLASS 342

6 5,369,408
133 5,369,409
175 5,369,410
194 5,369,411
380 5,369,412

CLASS 343

770 5,369,413
771 5,369,414

CLASS 345

6 5,369,415
39 5,369,416
98 5,369,417
185 5,369,418

CLASS 346

76 PH 5,369,422
76 R 5,369,421
108 5,369,423
134 5,369,424
138 5,369,425
157 5,369,426
159 5,369,427

CLASS 347

5 5,369,428
7 5,369,429
19 5,369,420
61 5,369,419

CLASS 348

94 5,369,430
126 5,369,431
181 5,369,432
207 5,369,433
315 5,369,434
353 5,369,435
355 5,369,436
401 5,369,437
402 5,369,438
405 5,369,439
462 5,369,440
559 5,369,441
567 5,369,442
578 5,369,443
598 5,369,444
618 5,369,445
625 5,369,446
627 5,369,447
668 5,369,448
699 5,369,449
745 5,369,450

CLASS 351

136 5,369,451
157 5,369,452
163 5,369,453
201 5,369,454

CLASS 354

64 5,369,455
222 5,369,456
275 5,369,457
319 5,369,458
324 5,369,459
400 5,369,460
402 5,369,461
430 5,369,462

CLASS 355

38 5,369,463
43 5,369,464
57 5,369,465
67 5,369,466
77 5,369,467
99 5,369,468
202 5,369,469
208 5,369,471
5,369,472
214 5,369,473
245 5,369,474
5,369,475
256 5,369,476
5,369,477
259 5,369,478
260 5,369,479
320 5,369,480

CLASS 356

128 5,369,482
300 5,369,483
319 5,369,481
326 5,369,484
345 5,369,485
349 5,369,486
350 5,369,487
358 5,369,488
359 5,369,489
376 5,369,490
378 5,369,491
394 5,369,492
400 5,369,493
402 5,369,494
418 5,369,495
446 5,369,496

CLASS 358

298 5,369,497
342 5,369,498
406 5,369,499
5,369,500
407 5,369,501
431 5,369,502
433 5,369,503
437 5,369,504
444 5,369,505
455 5,369,506
462 5,369,507
5,369,508
498 5,369,509
529 5,369,510

CLASS 359

15 5,369,511
59 5,369,512
73 5,369,513
125 5,369,515
5,369,516
161 5,369,517
171 5,369,518
173 5,369,519
176 5,369,520
196 5,369,521
329 5,369,522
341 5,369,523
345 5,369,524
435 5,369,525
615 5,369,526
805 5,369,527
855 5,369,528
858 5,369,529
874 5,369,530

CLASS 360

[redacted] 5,369,531
48 5,369,532
51 5,369,533
64 5,369,534
78.14 5,369,535
[redacted] 5,369,536
99.12 5,369,537
106 5,369,538
126 5,369,539

CLASS 361

6 5,369,540
[redacted] 5,369,541
94 5,369,542
117 5,369,543
283.4 5,369,544
306.2 5,369,545
502 5,369,546
516 5,369,547
643 5,369,548
679 5,369,549
690 5,369,550
767 5,369,551
816 5,369,552

CLASS 362

31 5,369,553
5,369,554
120 5,369,555
198 5,369,556
285 5,369,557
375 5,369,558
376 5,369,559
396 5,369,560

CLASS 363

37 5,369,561
56 5,369,563
71 5,369,564
146 5,369,565

CLASS 364

140 5,369,740
147 5,369,566
149 5,369,567
167.01 5,369,568
184 5,369,569
401 5,369,570
5,369,571
413.13 5,369,572
419.07 5,369,573
419.08 5,369,574
5,369,575
5,369,576
419.13 5,369,577
422 5,369,578
5,369,579
424.01 5,369,580
5,369,581
424.05 5,369,582
5,369,583
5,369,584
426.01 5,369,587
426.02 5,369,585
426.03 5,369,586
449 5,369,588
5,369,589
460 5,369,590
461 5,369,591
474.29 5,369,592
488 5,369,593
489 5,369,594
490 5,369,595
491 5,369,596
505 5,369,597
510 5,369,598
516 5,369,599
556 5,369,600
558 5,369,601
562 5,369,602
571.02 5,369,603
580 5,369,604
715.09 5,369,605
724.16 5,369,606
748 5,369,607

CLASS 365

104 5,369,608
185 5,369,609
189.01 5,369,610
189.05 5,369,611
5,369,612
189.06 5,369,613
207 5,369,614
218 5,369,615
5,369,616
219 5,369,617
230.01 5,369,618
230.03 5,369,619
5,369,620
230.06 5,369,621
233 5,369,622

CLASS 366

2 5,368,382
97 5,368,383
129 5,368,384
139 5,368,385
5,368,386
194 5,368,387
245 5,368,388
247 5,368,389
273 5,368,390

CLASS 367

[redacted] 5,369,623
103 5,369,624
140 5,369,625
188 5,369,626

CLASS 368

88 5,369,627

CLASS 369

13 5,369,628
5,369,629
100 5,369,630
113 5,369,631
275.4 5,369,321
282 5,369,632

CLASS 370

13 5,369,633
17 5,369,634
60.1 5,369,635
84 5,369,636
5,369,637
5,369,638
85.3 5,369,639

CLASS 371

1 5,369,640
2.2 5,369,641
8.2 5,369,642
15.1 5,369,643
20.4 5,369,644
22.1 5,369,645
22.5 5,369,646
25.1 5,369,647
27 5,369,648
37.1 5,369,649
40.1 5,369,650
5,369,651
5,369,652
67.1 5,369,653
68.1 5,369,654

CLASS 372

29 5,369,655
38 5,369,656
39 5,369,657
45 5,369,658
50 5,369,659
55 5,369,660
69 5,369,661
99 5,369,662

CLASS 374

10 5,368,391
121 5,368,392

CLASS 375

1 5,369,663
5,369,664
5,369,665
8 5,369,666
12 5,369,667
14 5,369,668
25 5,369,669
84 5,369,670
94 5,369,671
106 5,369,672
118 5,369,673

CLASS 376

245 5,369,674
249 5,369,675
271 5,369,676
340 5,369,677

CLASS 378

62 5,369,678
65 5,369,679

CLASS 379

1 5,369,680
38 5,369,699
57 5,369,682
59 5,369,683
5,369,684
67 5,369,685
87 5,369,681
94 5,369,686
98 5,369,687
100 5,369,688
5,369,689
106 5,369,690
5,369,691
171 5,369,692
203 5,369,693
206 5,369,694
211 5,369,695
268 5,369,696
361 5,369,697
373 5,369,698
387 5,369,700
420 5,369,701

CLASS 380

4 5,369,702
9 5,369,703
5,369,704
21 5,369,705
23 5,369,706
25 5,369,707
30 5,369,708
51 5,369,709

CLASS 381

63 5,369,710
104 5,369,711
159 5,369,712

CLASS 382

8 5,369,713
9 5,369,714
18 5,369,715
61 5,369,716

CLASS 383

13 5,368,393
63 5,368,394
107 5,368,395

CLASS 384

[redacted] 5,368,396
130 5,368,397
304 5,368,398
583 5,368,399

CLASS 385

12 5,369,717
21 5,369,718
48 5,369,719
114 5,369,720
115 5,369,721
130 5,369,722

CLASS 392

386 5,369,723

CLASS 395

2.15 5,369,724
2.16 5,369,725
2.45 5,369,726
2.61 5,369,727
2.63 5,369,728
2.67 5,369,729
2.76 5,369,730
24 5,369,731
51 5,369,732
100 5,369,733
121 5,369,734
123 5,369,735
125 5,369,736
126 5,369,737
5,369,738
134 5,369,739
143 5,369,741
147 5,369,742
157 5,369,743
162 5,369,744
200 5,369,745
5,369,746
250 5,369,747
275 B1 4,263,650
325 5,369,748
5,369,749
400 5,369,750
425 5,369,751
5,369,752
5,369,753
5,369,754
500 5,369,755
575 5,369,756
5,369,757

	5,369,758
	5,369,759
	5,369,760
600	5,369,761
	5,369,762
	5,369,763
650	5,369,764
700	5,369,765
	5,369,766
725	5,369,767
	5,369,768
	5,369,769
	5,369,770
750	5,369,771
775	5,369,772
800	5,369,773
	5,369,774
	5,369,775
	5,369,776
	5,369,777
	5,369,778
CLASS 400	
124.01	5,368,400
124.21	5,368,401
279	5,368,402
352	5,368,403
621.1	5,368,404
CLASS 401	
35	5,368,405
195	5,368,406
CLASS 402	
36	5,368,407
CLASS 403	
140	5,368,408
324	5,368,409
CLASS 405	
16	5,368,410
128	5,368,411
	5,368,412
154	5,368,413
262	5,368,414
267	5,368,415
285	5,368,416
CLASS 406	
111	5,368,417
CLASS 407	
114	5,368,418
CLASS 408	
67	5,368,419
156	5,368,420
240	5,368,421
CLASS 409	
84	5,368,422
132	5,368,423
182	5,368,424
235	5,368,425
CLASS 411	
104	5,368,426
553	5,368,427
CLASS 414	
1	5,368,428
11	5,368,429
228	5,368,430
412	5,368,431
	5,368,432
	5,368,433
460	5,368,434
667	5,368,435
786	5,368,436
	5,368,437
CLASS 415	
74	5,368,438
131	5,368,439
208.3	5,368,440
CLASS 416	
97 R	5,368,441
167	5,368,442
184	5,368,443
220 R	5,368,444
246	5,368,445
CLASS 417	
18	5,368,446
54	5,368,447
221	5,368,448
269	5,368,449
	5,368,450
395	5,368,451
	5,368,452
423.5	5,368,453
536	5,368,454
CLASS 418	
171	5,368,455
220	5,368,456
	5,368,457
CLASS 419	
5	5,368,812
CLASS 420	
425	5,368,813
587	5,368,814
CLASS 422	
3	5,368,815
28	5,368,816
62	5,368,817
	5,368,818
68.1	5,368,819
102	5,368,820
116	5,368,821
124	5,368,822
134	5,368,823
143	5,368,824
198	5,368,825
243	5,368,826
245.1	5,368,827
300	5,368,828
CLASS 423	
20	5,368,829
29	5,368,830
316	5,368,832
338	5,368,833
598	5,368,834
651	5,368,835
706	5,368,836
CLASS 424	
5	5,368,837
9	5,368,839
	5,368,840
	5,368,841
47	5,368,842
49	5,368,843
	5,368,844
54	5,368,845
61	5,368,847
65	5,368,848
70	5,368,850
76.3	5,368,851
78.1	5,368,852
85.1	5,368,853
85.2	5,368,854
195.1	5,368,856
401	5,368,857
423	5,368,858
426	5,368,859
448	5,368,860
451	5,368,861
464	5,368,862
473	5,368,863
489	5,368,864
	5,368,865
581	5,368,866
616	5,368,867
667	5,368,868
CLASS 425	
4 R	5,368,458
60	5,368,459
72.1	5,368,460
87	5,368,461
150	5,368,462
171	5,368,463
174.2	5,368,464
187	5,368,465
556	5,368,466
	5,368,467
	5,368,468
	5,368,469
564	5,368,470
CLASS 426	
42	5,368,869
73	5,368,870
104	5,368,871
281	5,368,872
310	5,368,873
466	5,368,874
	5,368,875
535	5,368,876
589	5,368,877
646	5,368,878
650	5,368,879
CLASS 427	
2.26	5,368,881
65	5,368,882
96	5,368,883
	5,368,884
125	5,368,880
195	5,368,885
221	5,368,886
226	5,368,887
237	5,368,888
244	5,368,889
249	5,368,890
258	5,368,891
299	5,368,892
348	5,368,893
407.1	5,368,894
430.1	5,368,895
443.1	5,368,896
450	5,368,897
510	5,368,898
512	5,368,899
555	5,368,900
558	5,368,901
585	5,368,681
601	5,368,902
CLASS 428	
31	5,368,903
34	5,368,904
34.1	5,368,905
34.5	5,368,906
43	5,368,907
64	5,368,908
137	5,368,909
	5,368,910
167	5,368,911
192	5,368,912
198	5,368,913
201	5,368,914
209	5,368,915
215	5,368,916
	5,368,917
219	5,368,918
224	5,368,919
	5,368,920
228	5,368,921
229	5,368,922
238	5,368,923
241	5,368,924
281	5,368,925
284	5,368,926
288	5,368,927
294	5,368,928
305.5	5,368,929
323	5,368,930
327	5,368,931
	5,368,932
329	5,368,933
372	5,368,934
375	5,368,935
403	5,368,936
408	5,368,937
	5,368,938
	5,368,939
	5,368,940
412	5,368,941
420	5,368,942
423.1	5,368,943
	5,368,944
458	5,368,945
484	5,368,946
553	5,368,947
611	5,368,948
694 BS	5,368,949
704	5,368,950
CLASS 429	
30	5,368,951
67	5,368,952
90	5,368,953
97	5,368,954
103	5,368,955
131	5,368,956
194	5,368,957
211	5,368,958
212	5,368,959
227	5,368,960
233	5,368,961
CLASS 430	
5	5,368,963
7	5,368,962
49	5,368,964
57	5,368,965
59	5,368,966
	5,368,967
106.6	5,368,968
108	5,368,969
110	5,368,970
	5,368,971
137	5,368,972
138	5,368,973
156	5,368,974
165	5,368,975
176	5,368,976
190	5,368,977
203	5,368,978
	5,368,979
204	5,368,980
256	5,368,982
264	5,368,983
	5,368,984
269	5,368,985
270	5,368,986
	5,368,987
	5,368,988
271	5,368,989
281	5,368,990
288	5,368,991
321	5,368,992
325	5,368,993
508	5,368,994
530	5,368,995
531	5,368,996
533	5,368,997
558	5,368,998
569	5,368,999
619	5,369,000
CLASS 431	
12	5,368,471
115	5,368,472
153	5,368,473
263	5,368,474
268	5,368,475
285	5,368,476
CLASS 433	
6	5,368,477
24	5,368,478
29	5,368,479
141	5,368,480
159	5,368,481
163	5,368,482
173	5,368,483
226	5,368,831
CLASS 434	
69	5,368,484
75	5,368,485
79	5,368,486
262	5,368,487
317	5,368,488
410	5,368,489
CLASS 435	
2	5,369,001
6	5,369,002
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	5,369,004
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7.23	5,369,008
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7.24	5,369,010
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7.9	5,369,007
7.92	5,369,012
27	5,369,013
29	5,369,014
68.1	5,369,015
	5,369,016
	5,369,017
	5,369,018
69.3	5,369,019
69.6	5,369,020
71.3	5,369,021
172.1	5,369,022
193	5,369,023
200	5,369,024
232	5,368,981
235.1	5,369,025
240.1	5,369,026
240.2	5,369,030
252.2	5,369,027
252.3	5,369,028
262.5	5,369,029
284	5,369,031
290	5,369,032
320.1	5,368,855
CLASS 436	
148	5,369,033
155	5,369,034
171	5,369,035
523	5,369,036
533	5,369,037
548	5,369,038
CLASS 437	
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3	5,369,040
6	5,369,041
31	5,369,042
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62	5,369,050
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70	5,369,052
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195	5,369,054
200	5,369,055
209	5,369,056
	5,369,057
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213	5,369,059
226	5,369,060
228	5,369,061
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	5,368,490
62	5,368,491
157	5,368,492
160	5,368,493
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462	5,368,502
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610	5,368,504
701	5,368,505
813	5,368,506
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29	5,368,507
49	5,368,508
56	5,368,509
84	5,368,510
CLASS 441	
65	5,368,511
108	5,368,512
CLASS 446	
122	5,368,514
217	5,368,515
288	5,368,516
297	5,368,517
329	5,368,518
CLASS 451	
5	5,367,835
39	5,367,838
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89	5,367,841
104	5,367,833
285	5,367,834
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331	5,367,836
389	5,367,837
526	5,367,839
CLASS 452	
135	5,368,519
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CLASS 454	
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5.1	5,369,779
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354	5,369,076
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227	5,369,077
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127	5,369,082
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430	5,369,087
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CLASS 512	
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CLASS 514	
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143	5,369,136
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159	5,369,138
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21	5,369,139
75	5,369,140

CLASS 523	
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116	5,369,142
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215	5,369,143
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219	5,369,147
315	5,369,148
353	5,369,149
414	5,369,150
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415	5,369,152
429	5,369,153
436	5,369,154
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560	5,369,166
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332.8	5,369,187
359.4	5,369,188
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433	5,369,190
471	5,369,191
484	5,369,192
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469	5,369,214
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162	5,368,548
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CLASS 604	
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295	5,368,582
318	5,368,583
385.2	5,368,584
393	5,368,585
403	5,368,586
416	5,368,587
891.1	5,368,588
CLASS 606	
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151	5,368,602
159	5,368,603
166	5,368,604
170	5,368,605
	5,368,606
172	5,368,607

CLASSIFICATION OF DESIGNS

D1—	106	352,811		465	352,848		335	352,886		129	352,923			352,959		304	352,994
D2—	712	352,812		466	352,849		343	352,887		190	352,924		51	352,960		311	352,995
	734	352,813		479	352,850		347	352,888		406	352,925			352,961		411	352,997
		352,814		482	352,851		402	352,889		412	352,926		82	352,962	D24—	108	352,998
	829	352,816			352,852	D9—	300	352,890	D13—	107	352,927		[illegible]	352,963		110	352,999
	904	352,817			352,853		335	352,891		120	352,928		88	352,964		123	353,000
	919	352,818		510	352,854		337	352,892		147	352,929		90	352,965		142	353,001
	969	352,819		515	352,855		347	352,893		168	352,930		96	352,966		145	353,002
D3—	5	352,820		575	352,856		415	352,894			352,931	D20—	28	352,967		155	353,003
	207	352,821		580	352,857		422	352,895	D14—	113	352,932	D21—	5	352,968		183	353,004
	216	352,822		582	352,858		428	352,896		114	352,933		11	352,969		190	353,005
	220	352,823		627	352,859		431	352,897			352,934		48	352,970		193	353,006
	226	352,824		632	352,860		438	352,898		116	352,935		59	352,971		200	353,007
	265	352,825	D7—	302	352,861		447	352,899			352,936			352,972		204	353,008
	276	352,826		303	352,862		448	352,900			352,937		108	352,973	D25—	164	353,009
	283	352,827		319	352,863			352,901			352,938		120	352,974	D26—	34	353,010
D4—	102	352,828		334	352,864		455	352,902			352,939		146	352,975		38	353,011
	104	352,829		337	352,865		520	352,903			352,940		147	352,976		39	353,012
	124	352,830		351	352,866		523	352,904		126	352,941		149	352,977		67	353,013
	126	352,831		589	352,867		528	352,905		142	352,942		187	352,978		68	353,014
	138	352,832		637	352,868		560	352,906		151	352,943		190	352,979		106	353,015
D5—	21	352,876		691	352,869	D10—	11	352,907			352,944		191	352,980		138	353,016
	53	352,833		708	352,870		32	352,908			352,945		197	352,981	D28—	10	353,017
D6—	326	352,834	D8—	1	352,871		59	352,909		218	352,946		206	352,982		12	353,018
	334	352,835			352,872		75	352,910		225	352,947		214	352,983		25	353,019
	336	352,837		9	352,873			352,911	D15—	7	352,948		219	352,984		46	353,020
	366	352,836		13	352,874		78	352,912		133	352,949		234	352,985		50	353,021
	370	352,838		14	352,875		106	352,913	D16—	202	352,950		252	352,986		54	353,022
	373	352,839		29.1	352,877		114	352,914	D17—	1	352,951	D22—	118	352,987		79	353,023
	376	352,840		38	352,878			352,915	D18—	22	352,952		120	352,988		85	353,024
	379	352,841		74	352,879	D11—	21	352,916		12	352,953		140	352,989	D29—	105	353,025
		352,842		91	352,880		155	352,917	D19—	34	352,954	D23—	200	352,990			353,026
	384	352,843		107	352,881	D12—	97	352,918		1	352,955		238	352,991	D30—	101	353,027
	389	352,844			352,882		106	352,919		36	352,956		271	352,992		108	353,028
	422	352,845		307	352,883		110	352,920			352,957		297	352,993			353,029
	446	352,846		331	352,884		128	352,921			352,958		301	352,996		110	353,030
	462	352,847			352,885			352,922									

CLASSIFICATION OF PLANTS

P.—	43.1	8,989		48	8,991		80	8,993		87	8,995		8,998		
		8,990		78	8,992		82.4	8,994		87.15	8,997	88.8	8,996	100	8,999

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